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326 and 380 Transmission Line Structure and Optical Ground Wire Replacement Project

Eversource Energy

Litchfield, Londonderry, Hudson, and Pelham New Hampshire

NHDES Alteration of Terrain Permit Application

March 29, 2022
File No. 04.0190999.70

PREPARED FOR:
Eversource Energy
Hooksett, New Hampshire

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March 29, 2022
File No. 04.0190999.70

Mr. Ridgely Mauck, P.E.
Program Supervisor - Permitting
NHDES Land Resources Management
Alteration of Terrain Bureau
29 Hazen Drive, PO Box 95
Concord, New Hampshire 03302

Re: Alteration of Terrain Permit
326 and 380 Transmission Lines Structure and Optical Ground Wire Replacement Project
Litchfield, Londonderry, Hudson, and Pelham, New Hampshire

Dear Mr. Mauck:

On behalf of Public Service Company of New Hampshire dba Eversource Energy (Eversource), GZA GeoEnvironmental, Inc. (GZA) is submitting this Alteration of Terrain (AoT) Permit Application for the proposed 326 and 380 Transmission Line Structure and Optical Ground Wire (OPGW) Replacement Project in accordance with Terrain Alteration Law (RSA 485-A:17), Administrative Rules (Env-Wq 1500 Alteration of Terrain), and discussions between New Hampshire Department of Environmental Services (NHDES) AoT Bureau and Eversource.

The proposed project includes the replacement of 15 existing utility structures and removal of one utility structure along the 380 Transmission Line, and the replacement of 22 structures along the 326 Transmission Line. The project area spans portions of Litchfield, Londonderry, Hudson, and Pelham, New Hampshire over a distance of approximately 5.1 miles. Replacement of the existing utility structures is necessary to maintain the safety and reliability of the system. Additionally, OPGW is proposed to replace existing static wire and improve the transmission lines by serving to shield conductor wires below it from lightning and serve as a telecommunications path for internal communications. In order to more efficiently and safely conduct routine maintenance of the existing 326 and 380 Transmission Lines, work pad grading and access road improvements are proposed as part of this project. Based on the cumulative impact of the planned scope of work, the proposed project is subject to the Terrain Alteration Law and Rules referenced above.

The proposed project will require disturbance subject to AoT permitting through the NHDES as a result of impact areas cumulatively exceeding 100,000 square feet of contiguous disturbed area.

In addition, included with this submittal is a copy of the application fee check, a completed AoT Permit Application Form, a detailed project overview narrative, required plans and figures, and additional required materials. In addition, a waiver request for the preparation of a stormwater drainage report, drainage area plans, and hydrologic soil group plans is enclosed as required by Env-Wq 1509.04. The proposed project is scheduled to start in the summer of 2022. Eversource appreciates the efforts of the Alteration of Terrain Bureau in helping to maintain the anticipated construction schedule, which is dependent on scheduled outages dictated by regional outage planning.

Please feel free to contact us with any questions.

Very truly yours,

GZA GEOENVIRONMENTAL, INC.

Conor Madison, CPESC, CESSWI
Project Manager

Tracy Tarr, CWS, CWB, CESSWI
Associate Principal

Deborah M. Zarta Gier, CNRP
Consultant/Reviewer

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Attachments: Alteration of Terrain Permit Application

cc: Town of Litchfield, New Hampshire
Town of Londonderry, New Hampshire
Town of Hudson, New Hampshire
Town of Pelham, New Hampshire

TABLE OF CONTENTS

FIGURES

APPENDICES

1.0 PROJECT BACKGROUND AND PURPOSE

The proposed project involves the replacement of 15 existing transmission structures and removal of one existing transmission structure on the 380 Transmission Line, and the replacement of 22 structures along the 326 Transmission Line in portions of Litchfield, Londonderry, Hudson, and Pelham, New Hampshire. Additionally, optical guide wire (OPGW) replacement is proposed on both the 326 and 380 Transmission Lines. Approximately 0.8 miles of the 380 Transmission Line is located within an existing 300-foot wide utility right-of-way (ROW) that also includes the H123 and K165 Transmission lines. The 380 Transmission Line then continues for approximately 3.0 miles with a ROW width of 170-feet, then enters an approximately 520-foot-wide ROW shared with the 326, 3124, X116, and Z119 lines for approximately 5.7 miles. Approximately 8.5 miles of the 326 Transmission line is located within an existing 270-foot wide ROW that also includes the 3144 Transmission Line. The 326 Transmission Line then continues for approximately 3.9 miles in an existing 215-foot wide ROW that includes the 3124 Transmission Line before joining the existing 380 Transmission Line ROW.

In total, the 380 Transmission Line is approximately 9.5 miles in length and extends from the Eagle Substation in Merrimack to the Scobie Pond Substation in Londonderry, New Hampshire. The 326 Transmission Line is approximately 17.7 miles in length and extends from the border of Hudson, New Hampshire and Tyngsboro, Massachusetts to the Scobie Pond Substation. The proposed replacement structures are old and worn and must be replaced in order for the transmission lines to continue to function safely and reliably. The proposed structure replacements were selected based on site visit evaluations, including pole and equipment condition. Additionally, Eversource plans to install OPGW to replace existing static wires and improve the transmission lines by serving to shield conductor wires below it from lightning. Planned impacts have been minimized and avoided to the greatest extent practicable through site evaluations of access routes and work pad placements.

The project requires approximately 508,589 square feet (sq. ft.) of total disturbance. The proposed structure replacement project is subject to the Alteration of Terrain disturbance threshold (Env-Wq 1500 and RSA 485-A:17) (See **Figure 4- Alteration of Terrain Permitting Plans** and **Appendix A – Alteration of Terrain Application Form**).

2.0 SITE INFORMATION

2.1 SITE LOCATION AND DESCRIPTION

The project work locations include both separate and contiguous portions of the 326 and 380 Transmission Line ROWs, and for purposes of this application are designated by Town as distinct work areas (i.e. Areas A, B, C, and D).

In Litchfield (Area A), there is one distinct work location that extends from Brickyard Drive to 380 Structure 85. The total work area in this portion of the ROW is approximately 0.1 miles in length and varies in width from 330-ft to 185-ft.

In Londonderry (Area B), there are 12 distinct work locations that extend from 360 Structure 66 to Rockingham Road in the 380 and shared 326 and 380 ROWs, and from 326 Structure 69 to 326 Structure 72 in the 326 ROW. The work areas in this portion of the ROW total approximately 2.9 miles in length and range in width from 220-ft to 540-ft.

In Hudson (Area C), there are three distinct work locations that extend from Breakneck Road to 326 Structure 155. The total work area in this portion of the ROW is approximately 1.25 miles in length and approximately 275-ft in length.

In Pelham (Area D), there is one distinct work location that extends from the Pelham/Hudson Town boundary to 326 Structure 121. The total work area in this portion of the ROW is approximately 0.17 miles in length and approximately 275-ft in length.

The total project length is approximately 4.7 miles and includes the replacement of 37 utility structures and the removal of one utility structure in total. The project area primarily crosses privately owned rural/residential properties (see **Figure 1 – USGS Topographic Map**). There are approximately 21 wetlands along the project route located in the towns of Litchfield, Londonderry, Hudson, and Pelham. The majority of ground disturbance resulting from the project will be related to access and work pad preparations.

2.2 TAX MAP AND LOT(S)

Eversource holds easements across all parcels along the ROW with the exception of 24 parcels which are owned by Eversource (see **Figure 4**). The remaining 39 abutting properties contain existing Eversource easements for the ROW within the project area. In those project locations, the easements are considered to be the "subject property" because Eversource is the applicant/owner and only has control over the easement. These abutters have been identified and listed on the enclosed abutters list. See **Appendix B** for Abutters List.

2.3 IDENTIFICATION OF NATURAL AND CULTURAL RESOURCES

GZA GeoEnvironmental, Inc. (GZA) has been retained by Eversource to provide professional services on this project that relate to natural and cultural resource identification and assessment as well as permit applications for natural resource and alteration of terrain impacts required to complete the project. GZA has conducted field evaluations and has corresponded with the appropriate agencies to identify natural and cultural resources present in the vicinity of the proposed project.

2.3.1 Identification of Jurisdictional Wetlands and Vernal Pools

GZA confirmed wetland boundaries, photographed resources, completed additional wetland documentation, and recorded data relevant to functions and values provided by these natural resources within the ROW in October 2021. GZA delineated wetland boundaries in accordance with the United States Army Corps of Engineers (ACOE) Wetlands Delineation Manual using the Routine Determinations Method, and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual as required by the New Hampshire Department of Environmental Services (NHDES) Wetlands Bureau and the USACE.

GZA conducted a vernal pool evaluation in 2021 in accordance with "Identification and Documentation of Vernal Pools in New Hampshire," 2016, New Hampshire Fish and Game Department, Nongame and Endangered Wildlife Program. Vernal pool areas exist as confined basins and must exhibit vernal pool criteria outlined in the New Hampshire Code of Administrative Rules, Env-Wt 101.75, 101.86, and 101.106. All potential vernal pools are considered vernal pools for the purposes of impact avoidance and minimization for this project. Therefore, no temporary or permanent impacts are proposed to any potential vernal pools as a result of this project.

2.3.2 Identification of Surface Waters

Jurisdictional limits of surface waters of the State of New Hampshire were delineated by Normandeau in 2016 and reviewed by GZA in 2021 in accordance with their definition in RSA 485-A:2 XIV, 482-A:4 II and rule Env-Wt 101.97. Surface waters include wherever fresh water flows or stands and tidal waters. This includes, but is not limited to, rivers, perennial and intermittent streams, lakes, ponds, intertidal zones, and tidal waters. In addition, jurisdiction extends to the portion of any bank or shore which borders such surface waters, and to any swamp or bog subject to periodic flooding by fresh water including the surrounding shore. The limit of jurisdiction for surface water areas were confirmed as the top of bank, where a natural bank occurs or its ordinary high-water mark where a natural bank is not present.

2.3.3 Identification of Rare, Threatened, and Endangered Species

The Natural Heritage Bureau (NHB) has identified records of Hairy bedstraw (*Galium pilosum var. pilosum)*, Slender bush-clover (*Lespedeza virginica)*, Roundleaved trailing tick-trefoil *(Desmodium rotundifolium),* Nuttall's reed grass *(Calamagrostis coarctata)*, Red threeawn *(Aristida longespica var. geniculate)*, Blanding's Turtle (*Emydoidea blandingii*), Eastern Hognose Snake (*Heterodon platirhinos*), Smooth Green Snake (*Opheodrys vernalis*), Eastern Box Turtle *(Terrapene Carolina)* and Spotted Turtle (*Clemmys guttata*) within the vicinity of the 326 and 380 Transmission Line ROWs in the Towns of Litchfield, Londonderry, Hudson and Pelham (See **Appendix C** for the NHB Report and regulatory correspondence). GZA will coordinate with NHFG and NHB prior to start of construction. GZA can provide flyers of species including various turtle and snake species to construction personnel prior to the start of work. GZA is retained to complete construction oversight and construction personnel will be made aware of the potential presence of wood and eastern box turtle in this area. In addition, construction personnel will be made aware of the potential to encounter Blanding's turtle, eastern box turtle, wood turtle and spotted turtle more frequently during turtle nesting season from late May through the beginning of July. GZA will notify the NHFG and NHB of any rare species observations for inclusion in the statewide database. GZA has received the NHB data request and are currently coordinating BMPs with both NHB and NHFG. GZA will attach and send the coordination once finalized.

2.3.4 Identification of Cultural and Historical Resources

GZA will submit a Request for Project Review (RPR) to the New Hampshire Division of Historical Resources (NHDHR) for the proposed project.

Victoria Bunker, Inc. (VBI) completed Phase IA Archeological Assessment for the 326 ROW during in support of other maintenance work. Independent Archaeology Consultants (IAC) completed Phase IA Archeological Assessment for the 380 ROW from the Eagle Substation to the MVRP ROW during in support of other maintenance work. This work will not impact any archeological sensitive areas along the ROW.

3.0 EXISTING CONDITIONS

The proposed project is located within the existing and maintained 326 and 380 Transmission Line ROWs. The proposed project work areas subject to the Alteration of Terrain permit cross through portions of the Towns of Litchfield, Londonderry, Hudson, and Pelham, New Hampshire. Existing dirt and/or grass access routes currently used for access to existing utility structures within the ROW are proposed to be improved using gravel and stone as a part of a routine structure maintenance project. Proposed access road improvements include 12- to 16-foot-

wide gravel and stone roads with a 20-foot total width limit of disturbance. Based on Natural Resource Conservation Service soil mapping, existing upland soils are primarily fine sandy loams and are typically stony or very stony with some rock outcrops. Slopes are variable and generally range from 0 to 35%, with an average of approximately 10%. As previously noted, the project has five separate areas that are subject to AoT permitting throughout the proposed project, and are referred to as Areas A, B, C, D and E.

The project area includes upland and wetland areas located in primarily rural areas (see Appendix D for additional habitat descriptions). Upland areas consist primarily of shrubs and saplings including eastern white pine (*Pinus strobus*), gray birch (*Betula populifolia*), and red maple (*Acer rubrum*). Wetlands in the ROW primarily consist of palustrine emergent (PEM) or palustrine scrub shrub (PSS) systems that are seasonally saturated. Vegetation in the wetlands were dominated by meadowsweet (*Spiraea alba*), steeplebush (*Spiraea tomentosa*), speckled alder (*alnus incanca* spp. *rugosa*), winterberry holly (*Ilex verticillata*), highbush blueberry (*Vaccinium corymbosum*), gray birch, broad-leaved cattail (*Typha latifolia*), rattlesnake grass (*Glyceria canadensis*), cinnamon fern (*Osmundastrum cinnamomeum*), royal fern (*Usmunda regalis*), and sphagnum moss (*Sphagnum* spp.)

Existing conditions along the 326 and 380 Transmission Lines are discussed below by areas subject to jurisdiction under the Alteration of Terrain Law and Rules and consistent with discussions with the AoT Bureau for Eversource Line projects.

3.1 AOT AREA A – LITCHFIELD

Area A extends from Brickyard Drive to 380 Transmission Structure 85. This area includes upland and wetland impacts with an approximate elevation of 176 feet. This portion of the ROW is located in a primarily forested undeveloped area.

Land disturbance subject to Alteration of Terrain Law and Rules due to *Env-Wq 1502.58 (b) (2)* (see *Section 5.1.2* below) within Area B includes:

- Structure 85 work pad and pull pads, and
- Access road from Brickyard Drive to structure 85.

3.1.1 Surface and Groundwater Protection – Area A

There are no named or unnamed watercourses within this portion of the project area (see **Figure 3 – Surface Water and Groundwater Overlay Plans**). This portion of the project area includes temporary wetland matting in wetland LIW-9 for work pad placement. Temporary wetland matting totals are summarized in the table below. AoT disturbance area is summarized in *Section 5.1.2*.

Temporary Matting	Impact (sq. ft.)
Wetland Access Matting	0
Wetland Work Pad	5,625

According to **Figure 3**, Area A is located within one AoT screening layer: "Surface Water with Impairments Quarter Mile buffer,". The following areas were not present within Area B: "Class A Surface Water (RSA 485 A9) Watersheds," "Watersheds with Chloride Impairments 2016," "All Lakes within a Quarter Mile Buffer," "Wellhead

Protection Areas," "Water Supply Intake Protection," "Groundwater Classification Areas," and "Designated Rivers Quarter Mile Buffer."

3.1.2 FEMA 100-year Floodplain, Shoreland Protection, Designated Rivers – Area A

According to the FEMA Flood Insurance layer on Figure 3, there are no mapped 100-year floodplain areas within Area B.

According to the Consolidated List of Water Bodies Subject to RSA 483-B (January 23, 2019), and the NHDES Designated River Corridor Web Map, there are no rivers within Area B that are protected under RSA 483-B.

3.2 AOT AREA B – LONDONDERRY

Area B spans 12 distinct work locations that extend from 360 Structure 66 to Rockingham Road in the 380 and shared 326 and 380 ROWs, and from 326 Structure 69 to 326 Structure 72 in the 326 ROW. This area includes upland and wetland impacts with an approximate elevation ranging from a lot of 178 feet adjacent to 380 Structure 66 to a high of 410 feet adjacent to 380 Structure 12. This portion of the ROW is located in a primarily forested undeveloped area.

Land disturbance subject to Alteration of Terrain Law and Rules due to *Env-Wq 1502.58 (b) (2)* (see *Section 5.1.2* below) within Area C includes:

- 380 Structures 11-14, 23-25, 28, 29, 55, 56, 58, 61, 62, 65, 66, and associated work pads,
- 326 Structures 6-11, 13, 49, 51, 69-72, and associated work pads, and
- Associated access roads.

3.2.1 Surface and Groundwater Protection – Area B

There are no named watercourses and one unnamed watercourse within this portion of the project area associated with wetland LDW-59 (see **Figure 3 – Surface Water and Groundwater Overlay Plans**). This portion of the project area includes temporary wetland matting in wetlands LDW-6, LDW-7, LDW-15, LDW-18, LDW-22, LDW-25, LDW-57, LDW-58, LDW-59, LDW-82, LDW-88.1, and LDW-91 for work pad placement and access. Temporary wetland matting totals are summarized in the table below. AoT disturbance area is summarized in *Section 5.1.2*.

Temporary Matting	**Impact (sq. ft.)**
Wetland Access Matting	26,581
Wetland Work Pad	42,751

According to **Figure 3**, Area B is located within one AoT screening layer: "Surface Water with Impairments Quarter Mile buffer,". The following screening layers do no overlap Area C: "Class A Surface Water (RSA 485 A9) Watersheds," "Watersheds with Chloride Impairments 2016," "All Lakes within a Quarter Mile Buffer," "Wellhead Protection Areas," "Water Supply Intake Protection," "Groundwater Classification Areas," and "Designated Rivers Quarter Mile Buffer."

3.2.2 FEMA 100-year Floodplain, Shoreland Protection, Designated Rivers – Area B

According to the FEMA Flood Insurance layer on Figure 3, there are no mapped 100-year floodplain areas within Area B.

According to the Consolidated List of Water Bodies Subject to RSA 483-B (January 23, 2019), and the NHDES Designated River Corridor Web Map, there are no rivers within Area B that are protected under RSA 483-B.

3.3 AOT AREA C – HUDSON

Area C spans three distinct work locations that extend from Breakneck Road to 326 Structure 155. This area includes upland and wetland impacts with an approximate elevation ranging from a low of 126 feet adjacent to 325 Structure 55 to a high of 374 feet adjacent to 326 Structure 123. This portion of the ROW is located in a primarily forested undeveloped area.

Land disturbance subject to Alteration of Terrain Law and Rules due to *Env-Wq 1502.58 (b) (2)* (see *Section 5.1.2* below) within Area D includes:

- 326 Structures 78-80, 123, 152-155, and associated work pads, and
- Associated access roads.

3.3.1 Surface and Groundwater Protection – Area C

There was one named watercourse (Musquash Brook) within this portion of the project area associated with wetland HW-45. There were no unnamed watercourses within this portion of the project area (see **Figure 3 – Surface Water and Groundwater Overlay Plans**). This portion of the project Site includes temporary wetland matting in wetlands HW-5.1, HW-45, and HW-81 for work pad placement and access. Temporary wetland matting totals are summarized in the table below. AoT disturbance area is summarized in *Section 5.1.2*.

Temporary Matting	Impact (sq. ft.)
Wetland Access Matting	9,718
Wetland Work Pad	26,633

According to **Figure 3**, Area C is located within one AoT screening layer: "Groundwater Classification Areas,". The following screening layers do not overlap Area B: "Class A Surface Water (RSA 485 A9) Watersheds," "Watersheds with Chloride Impairments 2016," "All Lakes within a Quarter Mile Buffer," "Wellhead Protection Areas," "Water Supply Intake Protection," "Surface Water with Impairments Quarter Mile buffer," and "Designated Rivers Quarter Mile Buffer."

3.3.2 FEMA 100-year Floodplain, Shoreland Protection, Designated Rivers – Area C

According to the FEMA Flood Insurance layer on Figure 3, there are no mapped 100-year floodplain areas within Area C.

According to the Consolidated List of Water Bodies Subject to RSA 483-B (January 23, 2019), and the NHDES Designated River Corridor Web Map, there are no rivers within Area D that are protected under RSA 483-B.

3.4 AOT AREA D – PELHAM

Area D is one distinct work location that extends from the Pelham/Hudson Town boundary to 326 Structure 121. This area includes upland and wetland impacts with an approximate elevation ranging from a low of 368 feet adjacent to wetland PW-3 to a high of 376 feet adjacent to 326 Structure 121. This portion of the ROW is located in a primarily forested undeveloped area.

Land disturbance subject to Alteration of Terrain Law and Rules due to *Env-Wq 1502.58 (b) (2)* (see *Section 5.1.2* below) within Area D includes:

- 326 Structures 121, 123, and associated work pads, and
- Associated access roads.

3.4.1 Surface and Groundwater Protection – Area D

There were no named or unnamed watercourses within this portion of the project area (see **Figure 3 – Surface Water and Groundwater Overlay Plans**). This portion of the project Site includes temporary wetland matting in wetlands PW-2 and PW-3 for work pad placement and access. Temporary wetland matting totals are summarized in the table below. AoT disturbance area is summarized in *Section 5.1.2*.

Temporary Matting	Impact (sq. ft.)
Wetland Access Matting	4,856
Wetland Work Pad	3,266

According to **Figure 3**, Area D is located within one AoT screening layer: "Surface Water with Impairments Quarter Mile buffer,". The following screening layers do not overlap Area B: "Class A Surface Water (RSA 485 A9) Watersheds," "Watersheds with Chloride Impairments 2016," "All Lakes within a Quarter Mile Buffer," "Wellhead Protection Areas," "Water Supply Intake Protection," "Groundwater Classification Areas," and "Designated Rivers Quarter Mile Buffer."

3.4.2 FEMA 100-year Floodplain, Shoreland Protection, Designated Rivers – Area D

According to the FEMA Flood Insurance layer on Figure 3, there are no mapped 100-year floodplain areas within Area D.

According to the Consolidated List of Water Bodies Subject to RSA 483-B (January 23, 2019), and the NHDES Designated River Corridor Web Map, there are no rivers within Area D that are protected under RSA 483-B.

4.0 PROJECT DESCRIPTION

4.1 STRUCTURE REPLACEMENT AND MAINTENANCE

As previously mentioned, the proposed project includes the replacement of 15 existing transmission structures and removal of one existing transmission structure on the 380 Transmission Line, and the replacement of 22 structures along the 326 Transmission Line that must be replaced due to environmental damage. The process for

replacing structures consists of drilling approximately 4-ft diameter holes to install a caisson approximately 7 to 15 ft below the ground surface. New structures will be installed in caissons and backfilled with clean, suitable materials. Excess soils produced from drilling will be spread in approved upland areas at a minimum distance of 100 ft from wetland areas. Disturbed upland and wetland areas will be restored or stabilized upon completion of work. Anchors will also be installed to stabilize new structures. Anchors will be installed by excavating trenches, installing the concrete block anchors, and backfilling trenches. Backfill for anchors in wetlands will consist of hydric soils to maintain hydric conditions in the soil.

Old structures will be cut at the ground surface. In addition to removal of old structures, old cross-arms, wires and accessory equipment will be removed off site and disposed. Old structure butts will not be dug up and removed unless they impact the structural integrity of new structures.

4.1.1 Access

The proposed structure replacement project utilizes existing access routes within the existing 326 and 380 ROWs to the greatest extent practicable. The majority of existing access routes are comprised of dirt or grassy areas and are proposed to be improved as part of this project. Proposed access routes are shown on the plans in both **Figures 3 and 4**. Access into the existing ROW will be obtained from various state and local roadways, and private properties where permission has been obtained. Proposed access routes as shown on **Figures 3 and 4** were identified to minimize ground disturbance to the greatest extent practicable while providing safe and efficient access to existing utility structures. Access through existing wetlands within the project area will be completed using temporary timber matting.

4.1.1.1 Road Construction

Proposed access road improvements include 12- to 16-foot-wide gravel and stone roads with a 20-foot total width limit of disturbance. The roads will provide access to existing utility structures for routine maintenance activities. Improved access will provide reliable, permanent and quick efficient access to utility structures for future maintenance activities and when emergency repairs are required. The majority of the proposed access road improvements are located within already existing dirt and grass access routes (see **Appendix F – Photo Log**).

4.1.1.2 Wetland and Upland Temporary Matting

Access through existing wetlands in the project area will be completed using temporary timber matting to minimize and prevent rutting in the wetlands (see **Figure 4- Alteration of Terrain Permitting Plans**). In addition, upland matting may be used rather than improving access with gravel and stone if access is necessary through maintained property owner lawns or farm fields.

4.1.2 Work Pad Construction

The proposed project includes the construction of 100-foot by 100-foot gravel work pads to stage construction equipment and vehicles necessary to replace utility structures. Work pads will be constructed using clean modified riprap (6- to 8-inch diameter) or equivalent stone. In addition, the work pad will be top dressed with 1.5- to 3-inch diameter clean stone. Lastly, disturbed areas in proximity to the final work pad configuration will be stabilized with upland seed mix.

Proposed work pads in wetland areas will be constructed using temporary timber matting and removed upon completion of work.

4.2 CONSTRUCTION SEQUENCE

This proposed project is scheduled to begin in the summer of 2022. The work is proposed to be undertaken during the summer of 2022 following the receipt of all regulatory approvals. The following is a description of anticipated construction sequence for this type of routine maintenance work. Once contractor(s) are scheduled, a more finalized sequence and schedule will be determined.

1) Install sediment and erosion controls in proposed locations as shown on **Figure 4**.

2) Upgrade access routes and build work pads. Timber matting to be used in uplands and wetlands as designated by **Figure 4**.

3) Conduct structure replacement activities including installation of new structures, removal of old structures, removal of old wire, and installation of OPGW wire.

4) Remove temporary timber matting and stabilized exposed soils within the ROW and restore temporarily disturbed wetland areas with appropriate wetland seed mix.

5) Remove erosion and sedimentation controls following stabilization.

4.3 BEST MANAGEMENT PRACTICES

Work will be conducted in accordance with Eversource's standard Best Management Practices (BMPs) as designated by the NHDES Best Management Practices Manual for Utility Maintenance in and Adjacent to Wetlands and Waterbodies in New Hampshire dated March 2019. By implementing these BMPs, impacts to both wetland and upland areas will be minimized and prevented to the greatest extent practicable.

Where necessary, perimeter protective measures consisting of silt fence, straw wattle, mulch, and straw bales will be installed around the structures to minimize potential impacts to nearby resource areas. Water bars will be installed in areas of road improvements with steep slopes as identified by the Contractor. If necessary and based on localized site conditions, silt fence may be used. Disturbed soil will be seeded and mulched with hay or straw for stabilization as needed following completion of work. No equipment or material will be stored within wetland areas. Erosion controls will be implemented during construction as detailed in Note Sheets 1 and 2 of **Figures 3 and 4** to minimize potential impacts during construction (see **Figure 3 – Surface Water and Groundwater Overlay Plans** and **Figure 4 – Alteration of Terrain Permitting Plans**).

Timber matting will be used in wetlands and in some upland areas to minimize impacts and provide level work pads. Upon completion of work where timber matting is implemented in upland areas, those upland areas will be restored and stabilized to pre-existing conditions and areas of exposed soils will be seeded and/or mulched. Additionally, should any removal of BMPs be necessary, it will occur during restoration activities.

5.0 REGULATORY COMPLIANCE

5.1 ALTERATION OF TERRAIN

The NHDES requires an AoT permit whenever a project proposes to disturb more than 100,000 sq. ft. of terrain (50,000 sq. ft. if within a protected shoreland). This NHDES requirement, which is found in Administrative Rule Env-Wq-1500, is intended to protect New Hampshire surface waters by controlling soil erosion and managing stormwater runoff from developed areas. The project contains five AoT regulated areas (referred to respectively as Areas A, B, C, D, and E) along the 326 and 380 Transmission Line ROWs that are separated by Town. Details on impacts in each Town are provided below in *Section 5.1.2* Quantification of Impacts Subject to AoT.

5.1.1 Waiver Request: Stormwater Drainage Report; Drainage Area Plan; Hydrologic Soil Group Plans (Env-WQ 15.09)

Per Env-Wq 1509.02, a waiver is being requested from the requirements to prepare a Stormwater Drainage Report, Drainage Area Plans and Hydrologic Soil Group Plans because new impervious surface is limited to the footprint of new transmission line structures. It is not anticipated that the proposed structures will have a significant impact on site drainage patterns. Accordingly, stormwater treatment practices are not proposed. A formal waiver request is provided in **Appendix G**.

5.1.2 Quantification of Impacts Subject to AOT

The project requires approximately 508,589 square feet (sq. ft.) of total disturbance. The proposed structure replacement project is subject to the Alteration of Terrain disturbance threshold (Env-Wq 1500 and RSA 485-A:17) (See **Figure 4- Alteration of Terrain Permitting Plans** and **Appendix A – Alteration of Terrain Application Form**). Specific areas and construction activities that significantly alter the terrain are detailed below. Additional details are shown in **Figure 4**.

AoT Area A - Litchfield Map Sheet 3	
Disturbance Type	**Impact (sq. ft)**
New Access	2,078
Gravel Work Pad	14,970
Total AoT Disturbed Area	***17,048***
-Criteria: Env-Wq 1502.58 (b) (2) "An area that, over a 10 year period, cumulatively exceeds 100,000 square feet of contiguous area."	
-Work pad dimensions: Up to 100-ft x 100-ft; Access road width: 16-ft	

AoT Area B - Londonderry Map Sheets 4 to 10, 17 to 26	
Disturbance Type	**Impact (sq. ft)**
New Access	163,716
Gravel Work Pad	236,188
Total AoT Disturbed Area	***399,904***
-Criteria: Env-Wq 1502.58 (b) (2) "An area that, over a 10 year period, cumulatively exceeds 100,000 square feet of contiguous area." -Work pad dimensions: Up to 100-ft x 100-ft; Access road width: 16-ft	

AoT Area C - Hudson Map Sheets 11 to 16	
Disturbance Type	**Impact (sq. ft)**
New Access	29,434
Gravel Work Pad	52,546
Total AoT Disturbed Area	***81,980***
-Criteria: Env-Wq 1502.58 (b) (2) "An area that, over a 10 year period, cumulatively exceeds 100,000 square feet of contiguous area." -Work pad dimensions: Up to 100-ft x 100-ft; Access road width: 16-ft	

AoT Area D - Pelham Map Sheets 13 to 14	
Disturbance Type	**Impact (sq. ft)**
New Access	0
Gravel Work Pad	9,657
Total AoT Disturbed Area	***9,657***
-Criteria: Env-Wq 1502.58 (b) (2) "An area that, over a 10 year period, cumulatively exceeds 100,000 square feet of contiguous area." -Work pad dimensions: Up to 100-ft x 100-ft; Access road width: 16-ft	

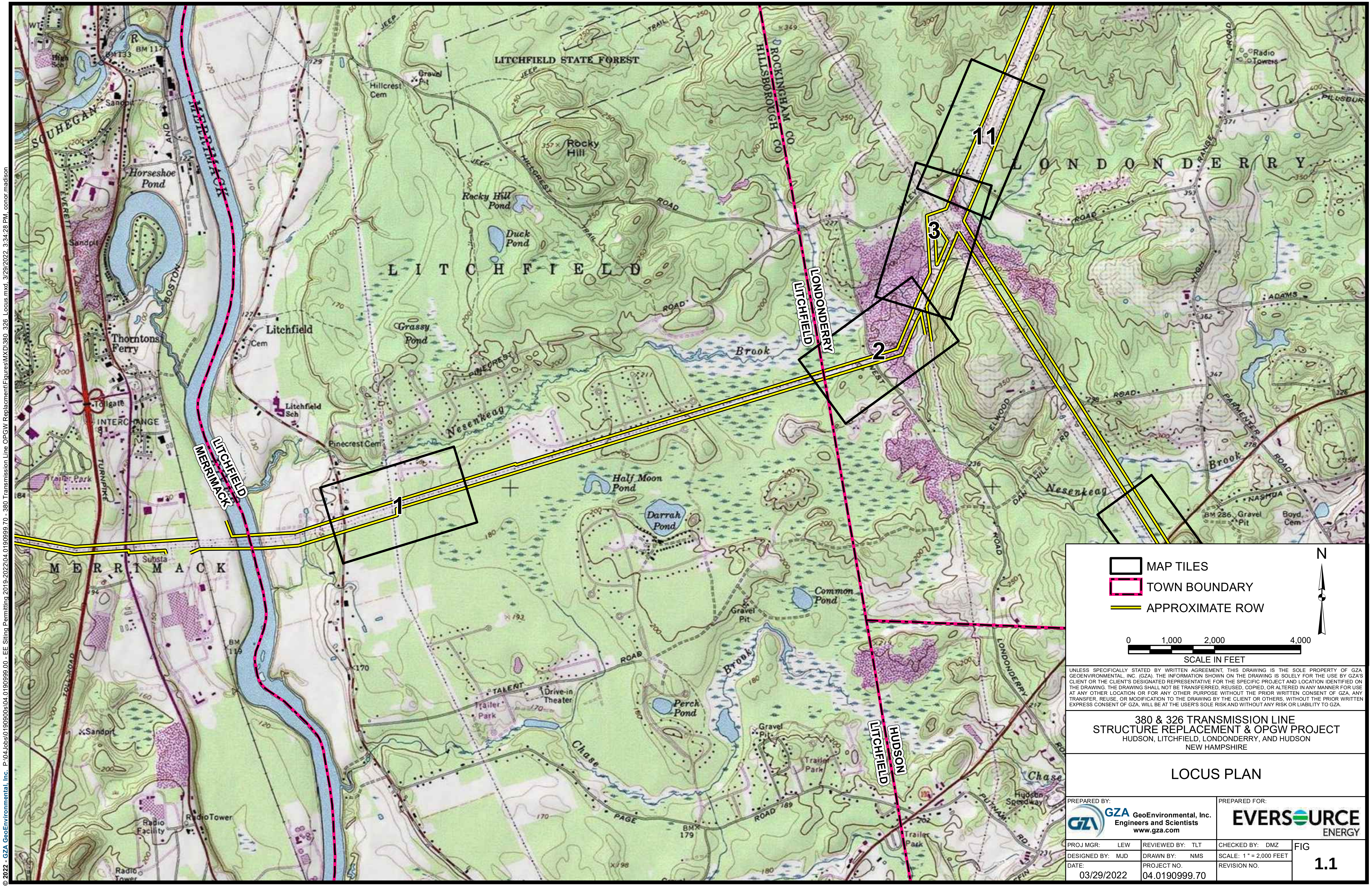
5.2 OTHER REGULATORY PROGRAMS

Other regulatory permits and notifications required for the proposed project are summarized below.

Agency	Permit/Notification		Status
Local			
Londonderry Litchfield Hudson Pelham	Conditional Use Permit Special Exception Permit Conditional Use Permit Conditional Use Permit		Pending
State			
NHDES	Statutory Permit by Notification		Pending
	Town/City	SPN File No.	
	Londonderry	2022-XXXX	
	Litchfield	2022-XXXX	
	Hudson	2022-XXXX	
	Pelham	2022-XXXX	
NHDES	Shoreland Permit by Notification		Pending
NHDOT	Driveway Permits		Pending
Federal			
EPA (Construction General Permit)	Stormwater Pollution Prevention Plan (SWPPP)		Pending

The proposed project includes the replacement of 15 existing transmission structures and removal of one existing transmission structure on the 380 Transmission Line, and the replacement of 22 structures along the 326 Transmission Line that exceed AoT impact thresholds. This includes a total of approximately 508,589 sq. ft. of the impact associated with access improvements and work pad grading in four separate work areas. Area A in Litchfield includes approximately 17,048 sq. ft. of impact. Area B in Londonderry includes approximately 399,904 sq. ft. of impact. Area C in Hudson includes approximately 81,980 sq. ft. of impact. Area D in Pelham includes approximately 9,657 sq. ft. of impact. The proposed project is necessary for routine maintenance of the 380 and 326 Transmission Lines, and to ensure the long-term safety and reliability of the electrical infrastructure.

Figure 1 – USGS Topographic Map



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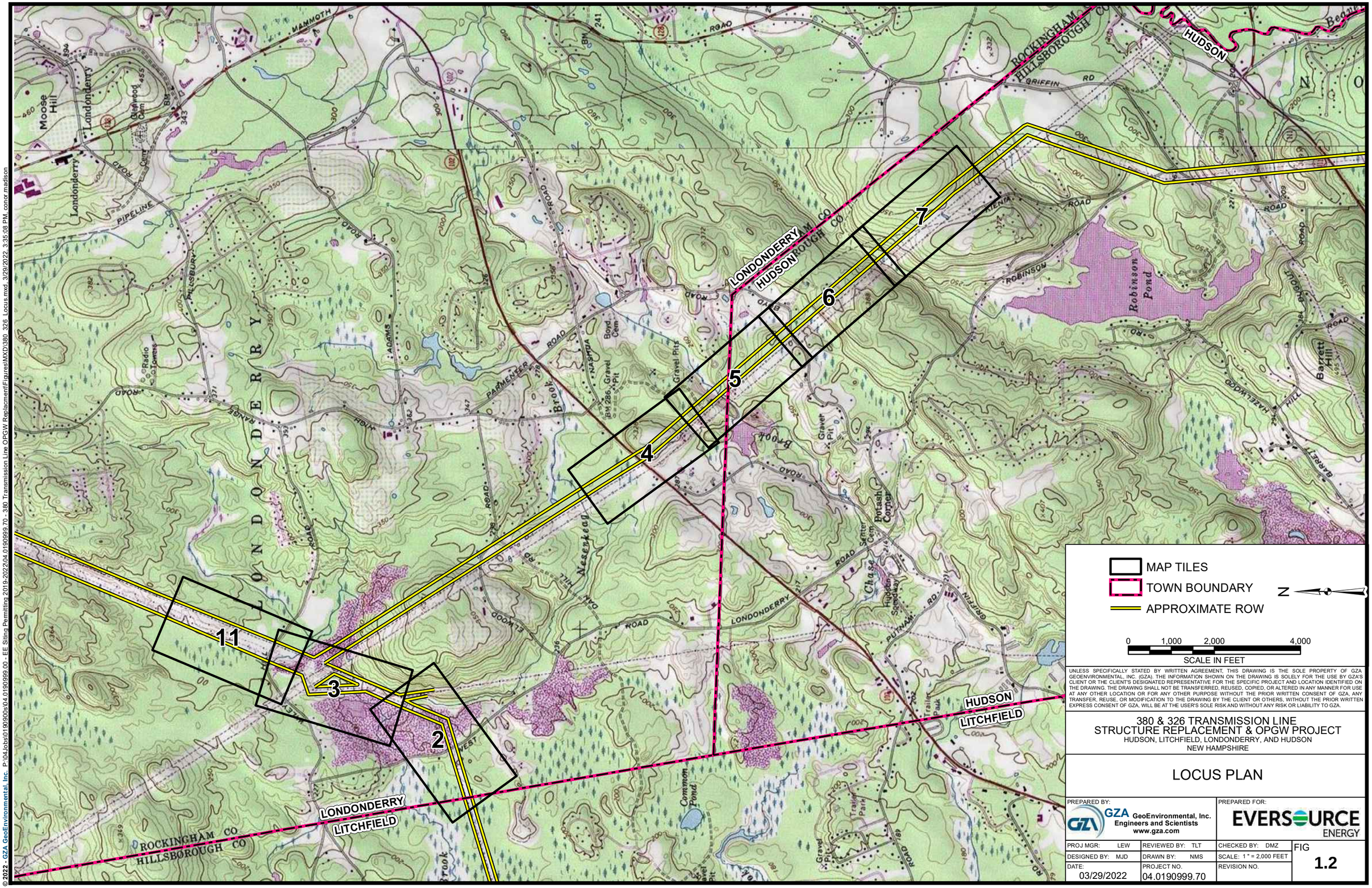
380 & 326 TRANSMISSION LINE
STRUCTURE REPLACEMENT & OPGW PROJECT
HUDSON, LITCHFIELD, LONDONDERRY, AND HUDSON
NEW HAMPSHIRE

LOCUS PLAN

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: EVERSOURCE ENERGY	
PROJ MGR: LEW	REVIEWED BY: TLT	CHECKED BY: DMZ	FIG 1.1
DESIGNED BY: MJD	DRAWN BY: NMS	SCALE: 1 " = 2,000 FEET	
DATE: 03/29/2022	PROJECT NO. 04.0190999.70	REVISION NO.	



380 & 326 TRANSMISSION LINE STRUCTURE REPLACEMENT & OPGW PROJECT

HUDSON, LITCHFIELD, LONDONDERRY, AND HUDSON
NEW HAMPSHIRE

LOCUS PLAN

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PROJ MGR: LEW	REVIEWED BY: TLT	CHECKED BY: DMZ	FIG 1.2
DESIGNED BY: MJD	DRAWN BY: NMS	SCALE: 1 " = 2,000 FEET	
DATE: 03/29/2022	PROJECT NO. 04.0190999.70	REVISION NO.	

8

9

10

PELHAM

HUDSON

MAP TILES

TOWN BOUNDARY

APPROXIMATE ROW

N

0 1,000 2,000 4,000

SCALE IN FEET

380 & 326 TRANSMISSION LINE STRUCTURE REPLACEMENT & OPGW PROJECT

HUDSON, LITCHFIELD, LONDONDERRY, AND HUDSON
NEW HAMPSHIRE

LOCUS PLAN

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PROJ MGR: LEW	REVIEWED BY: TLT	CHECKED BY: DMZ	FIG 1.3
DESIGNED BY: MJD	DRAWN BY: NMS	SCALE: 1 " = 2,000 FEET	
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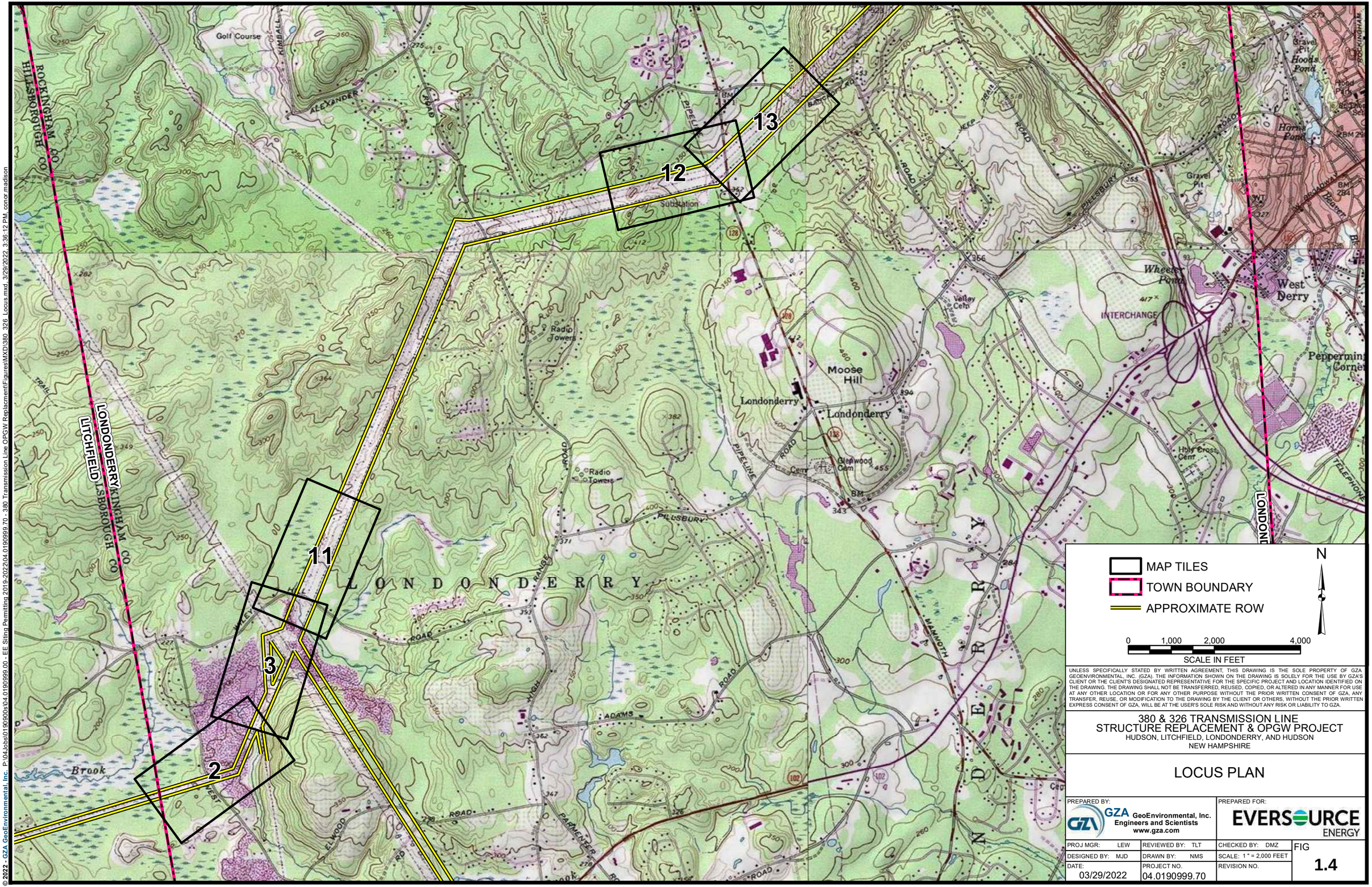

MAP TILES

TOWN BOUNDARY

APPROXIMATE ROW

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0 1,000 2,000 4,000

SCALE IN FEET

380 & 326 TRANSMISSION LINE STRUCTURE REPLACEMENT & OPGW PROJECT

HUDSON, LITCHFIELD, LONDONDERRY, AND HUDSON
NEW HAMPSHIRE

LOCUS PLAN

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PROJ MGR: LEW	REVIEWED BY: TLT	CHECKED BY: DMZ	FIG 1.4
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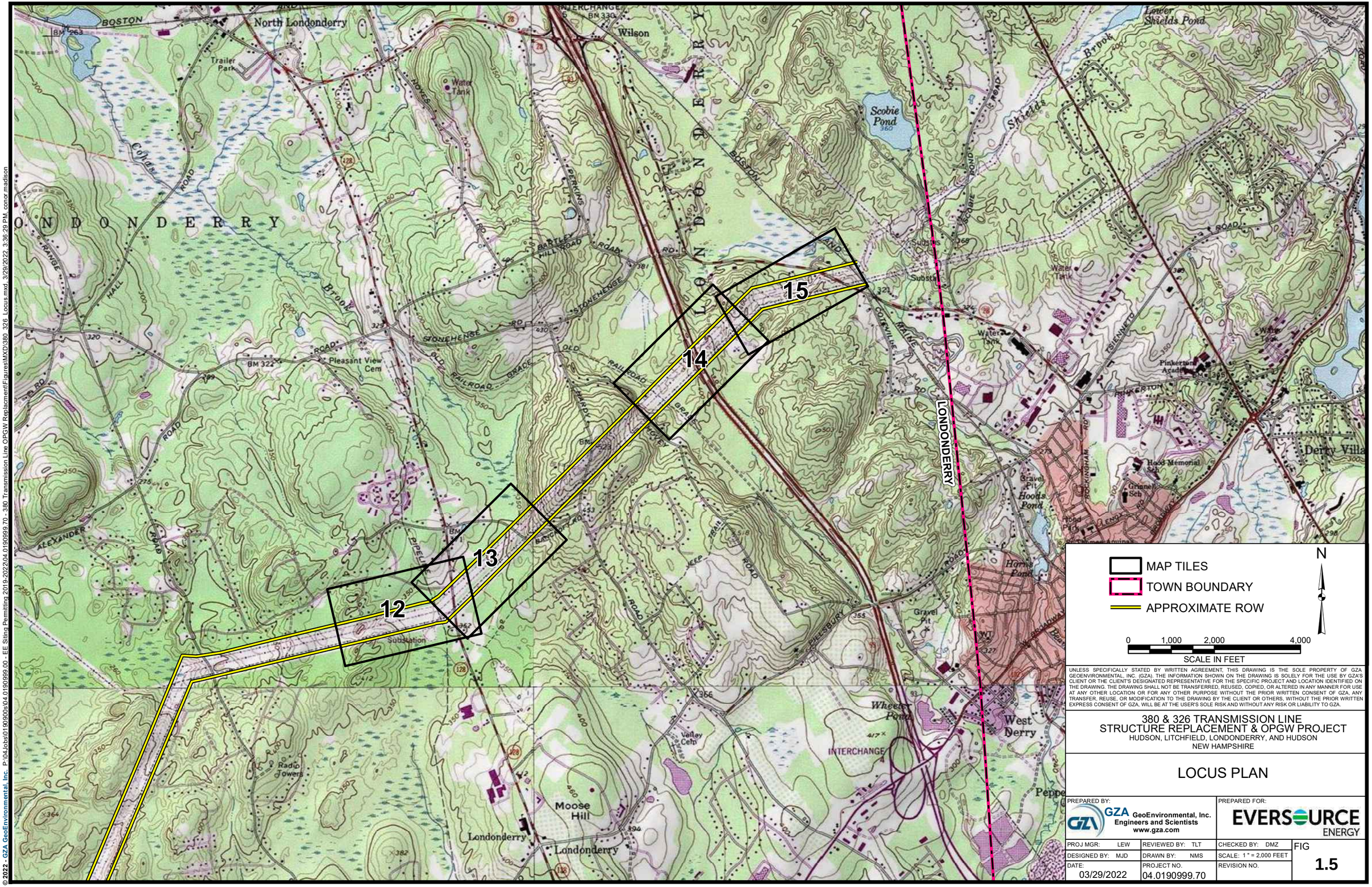

380 & 326 TRANSMISSION LINE STRUCTURE REPLACEMENT & OPGW PROJECT

HUDSON, LITCHFIELD, LONDONDERRY, AND HUDSON
NEW HAMPSHIRE

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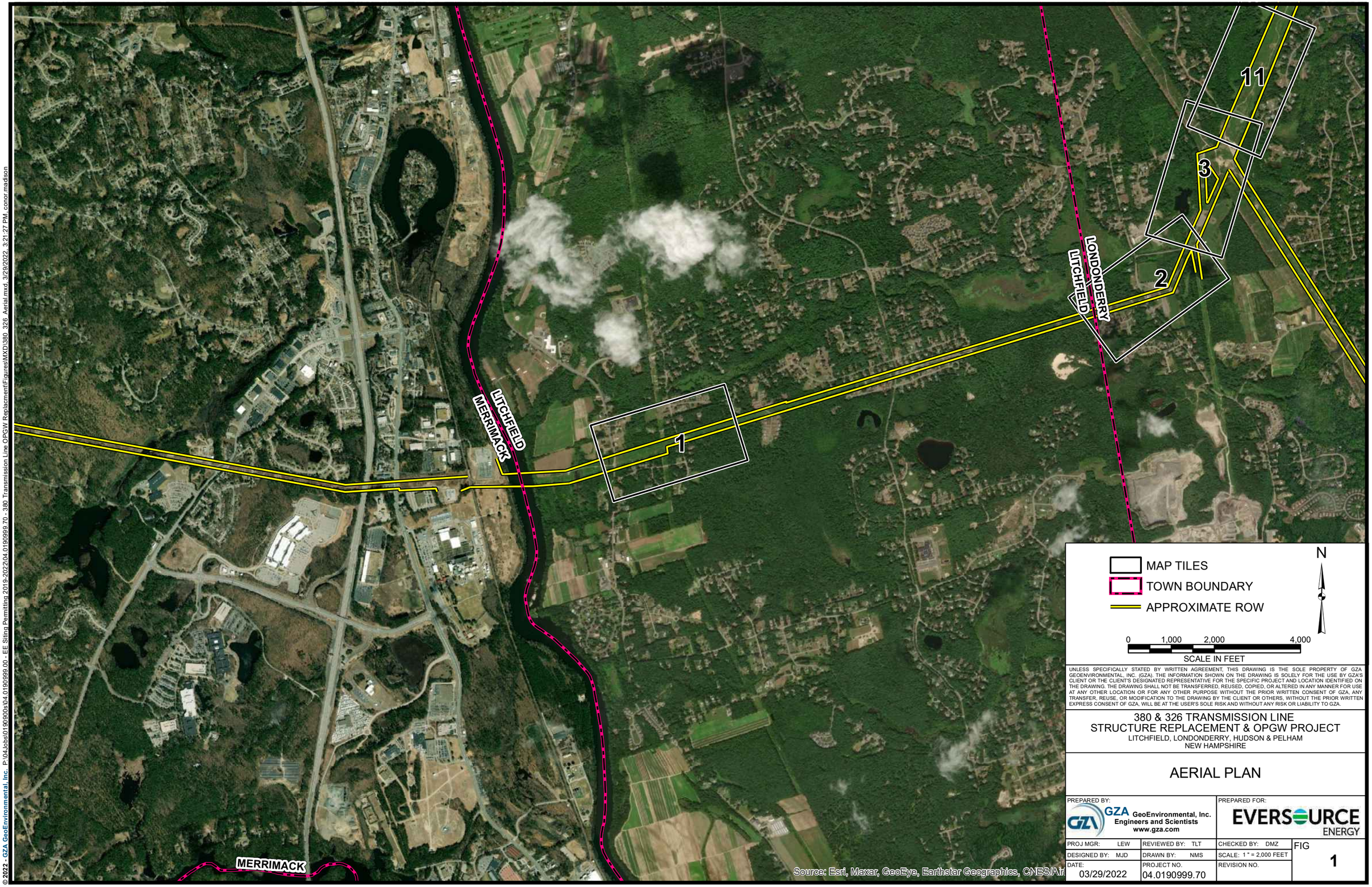
PROJ MGR: LEW	REVIEWED BY: TLT	CHECKED BY: DMZ	FIG 1.5
DESIGNED BY: MJD	DRAWN BY: NMS	SCALE: 1 " = 2,000 FEET	
DATE: 03/29/2022	PROJECT NO. 04.0190999.70	REVISION NO.	

Figure 2 – Orthophotograph Site Map



MAP TILES

TOWN BOUNDARY

APPROXIMATE ROW

N

0 1,000 2,000 4,000

SCALE IN FEET

380 & 326 TRANSMISSION LINE STRUCTURE REPLACEMENT & OPGW PROJECT

LITCHFIELD, LONDONDERRY, HUDSON & PELHAM
NEW HAMPSHIRE

AERIAL PLAN

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: EVERSOURCE ENERGY	
PROJ MGR: LEW	REVIEWED BY: TLT	CHECKED BY: DMZ	FIG 1
DESIGNED BY: MJD	DRAWN BY: NMS	SCALE: 1 " = 2,000 FEET	
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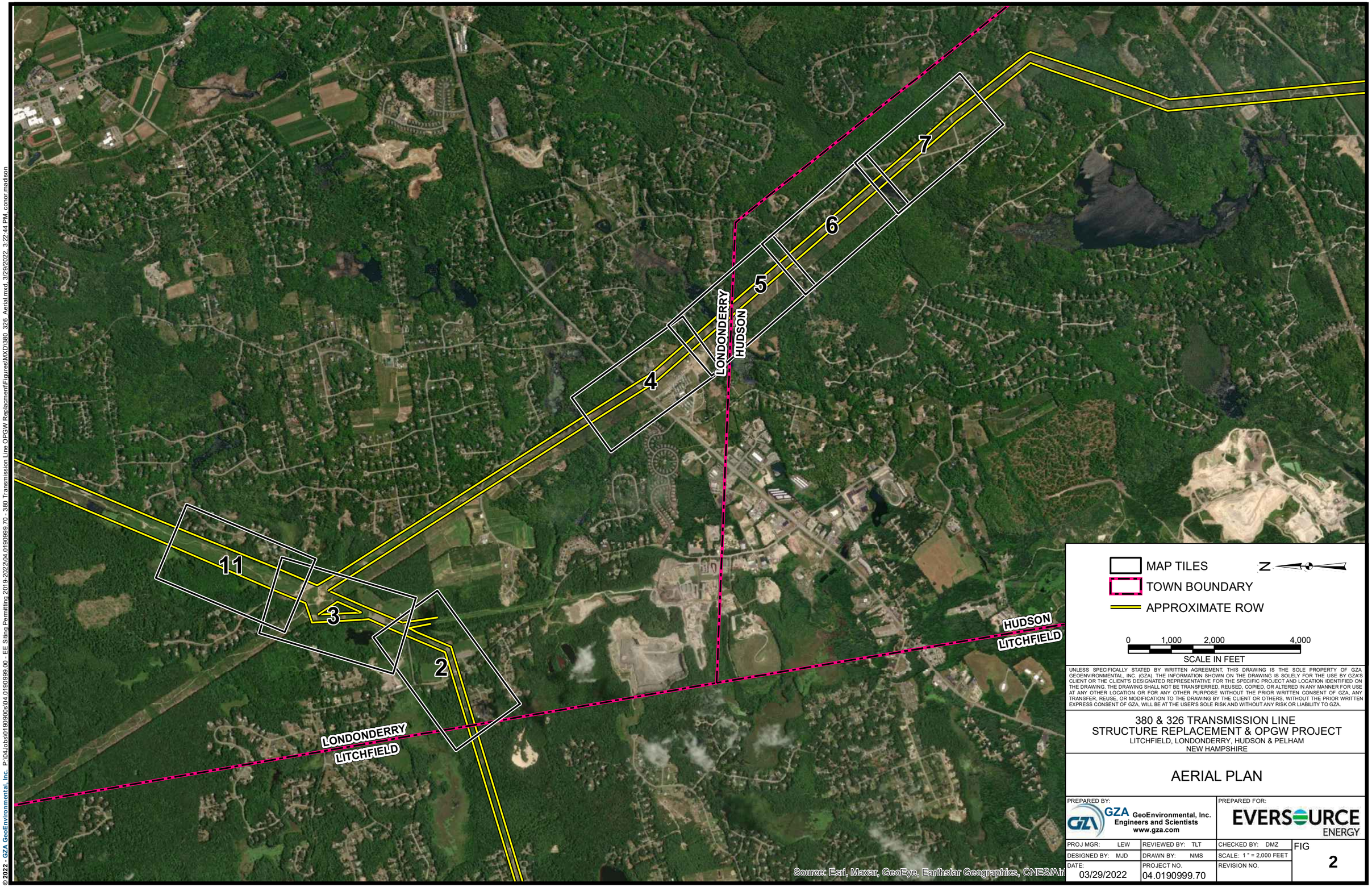

MAP TILES

TOWN BOUNDARY

APPROXIMATE ROW

N

0 1,000 2,000 4,000

SCALE IN FEET

380 & 326 TRANSMISSION LINE STRUCTURE REPLACEMENT & OPGW PROJECT

LITCHFIELD, LONDONDERRY, HUDSON & PELHAM
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PROJ MGR: LEW	REVIEWED BY: TLT	CHECKED BY: DMZ	FIG 2
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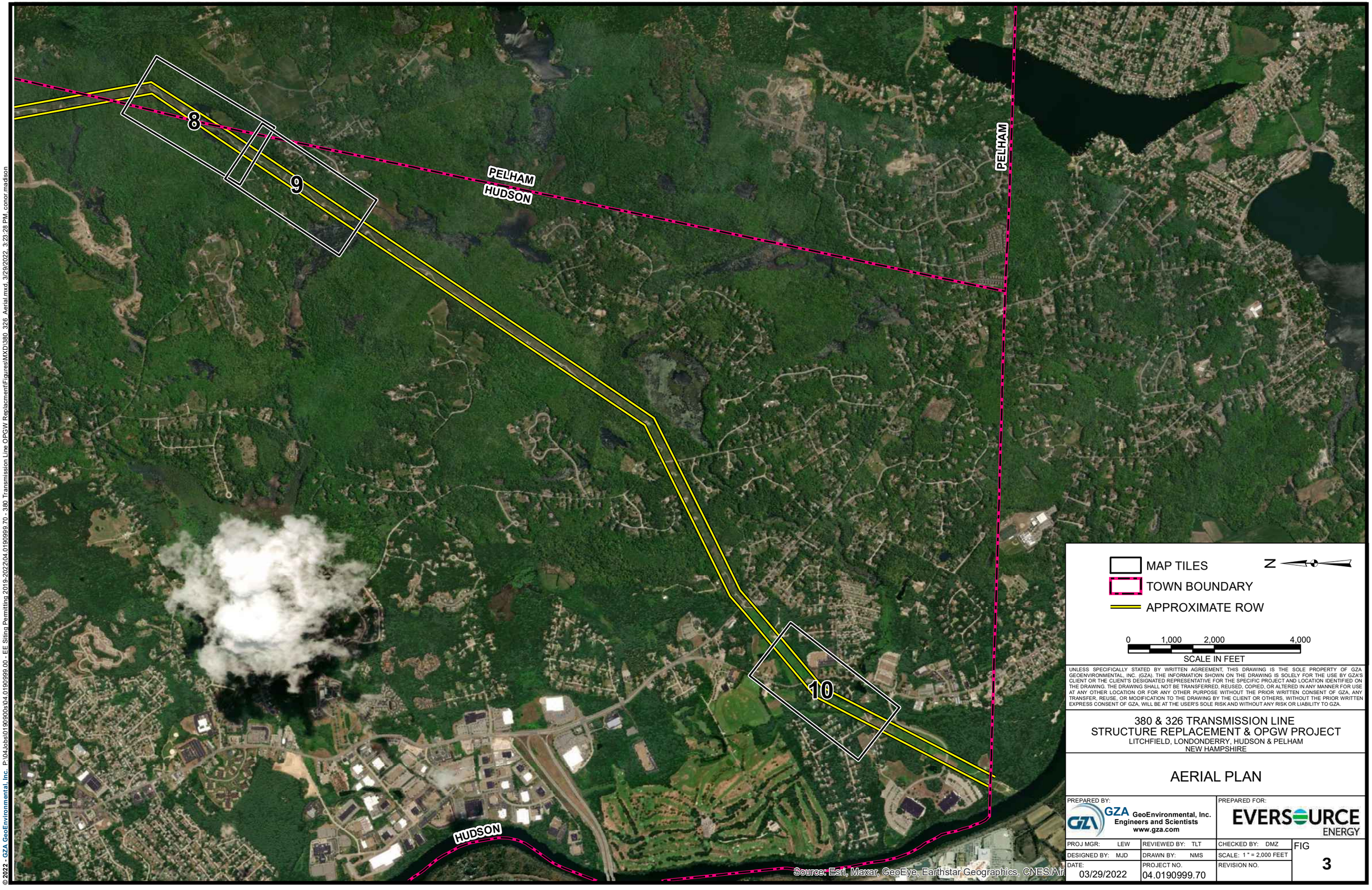

MAP TILES

TOWN BOUNDARY

APPROXIMATE ROW

N

0 1,000 2,000 4,000

SCALE IN FEET

380 & 326 TRANSMISSION LINE STRUCTURE REPLACEMENT & OPGW PROJECT

LITCHFIELD, LONDONDERRY, HUDSON & PELHAM
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PROJ MGR: LEW	REVIEWED BY: TLT	CHECKED BY: DMZ	FIG 3
DESIGNED BY: MJD	DRAWN BY: NMS	SCALE: 1 " = 2,000 FEET	
DATE: 03/29/2022	PROJECT NO. 04.0190999.70	REVISION NO.	

LONDONDERRY
LITCHFIELD

1
2
3
4
11
12
13

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Ai

MAP TILES
TOWN BOUNDARY
APPROXIMATE ROW

N

0 1,000 2,000 4,000
SCALE IN FEET

380 & 326 TRANSMISSION LINE STRUCTURE REPLACEMENT & OPGW PROJECT

LITCHFIELD, LONDONDERRY, HUDSON & PELHAM
NEW HAMPSHIRE

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PROJ MGR: LEW	REVIEWED BY: TLT	CHECKED BY: DMZ	FIG 4
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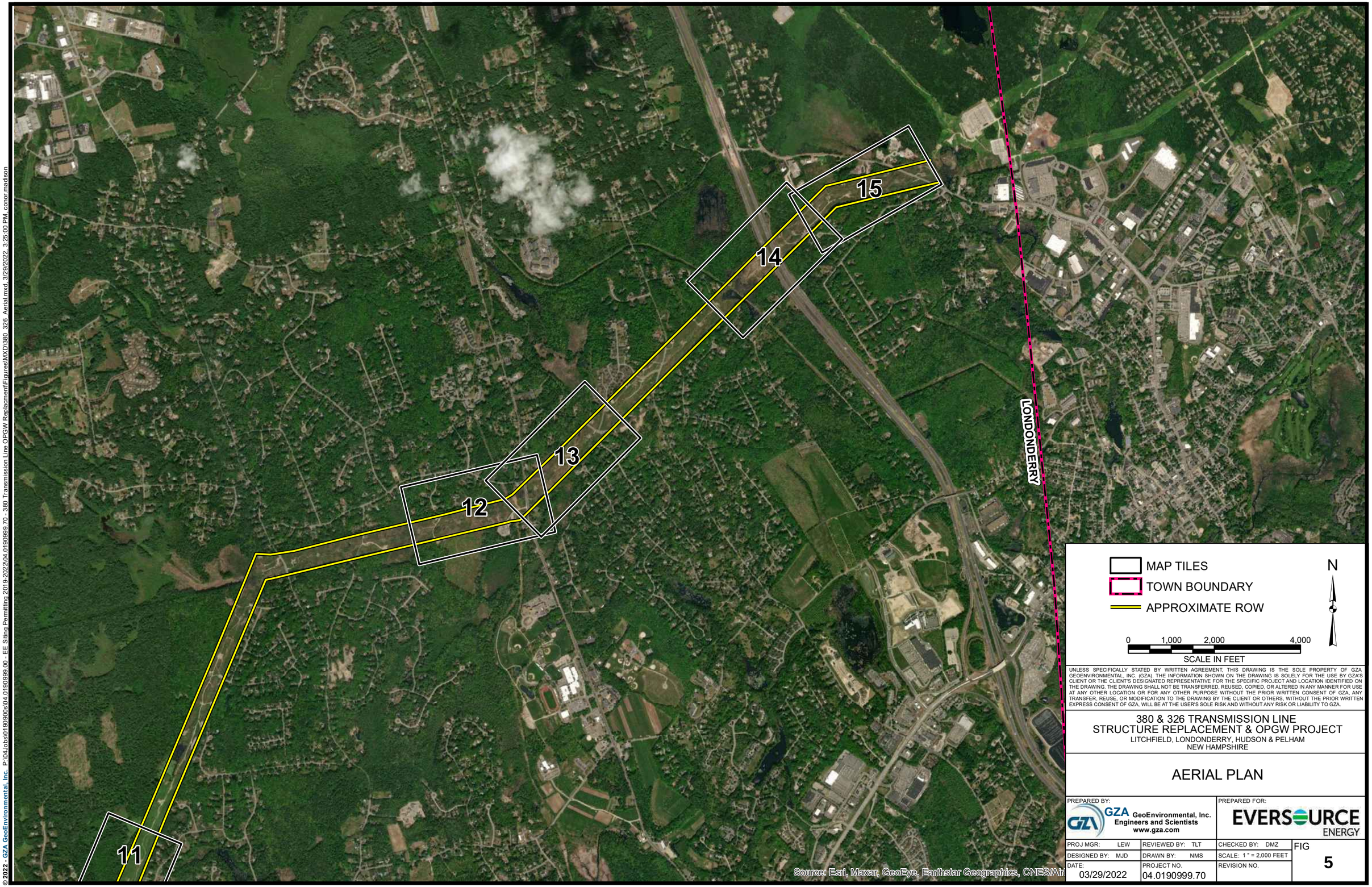

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Ai

MAP TILES
TOWN BOUNDARY
APPROXIMATE ROW

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0 1,000 2,000 4,000
SCALE IN FEET

380 & 326 TRANSMISSION LINE STRUCTURE REPLACEMENT & OPGW PROJECT

LITCHFIELD, LONDONDERRY, HUDSON & PELHAM
NEW HAMPSHIRE

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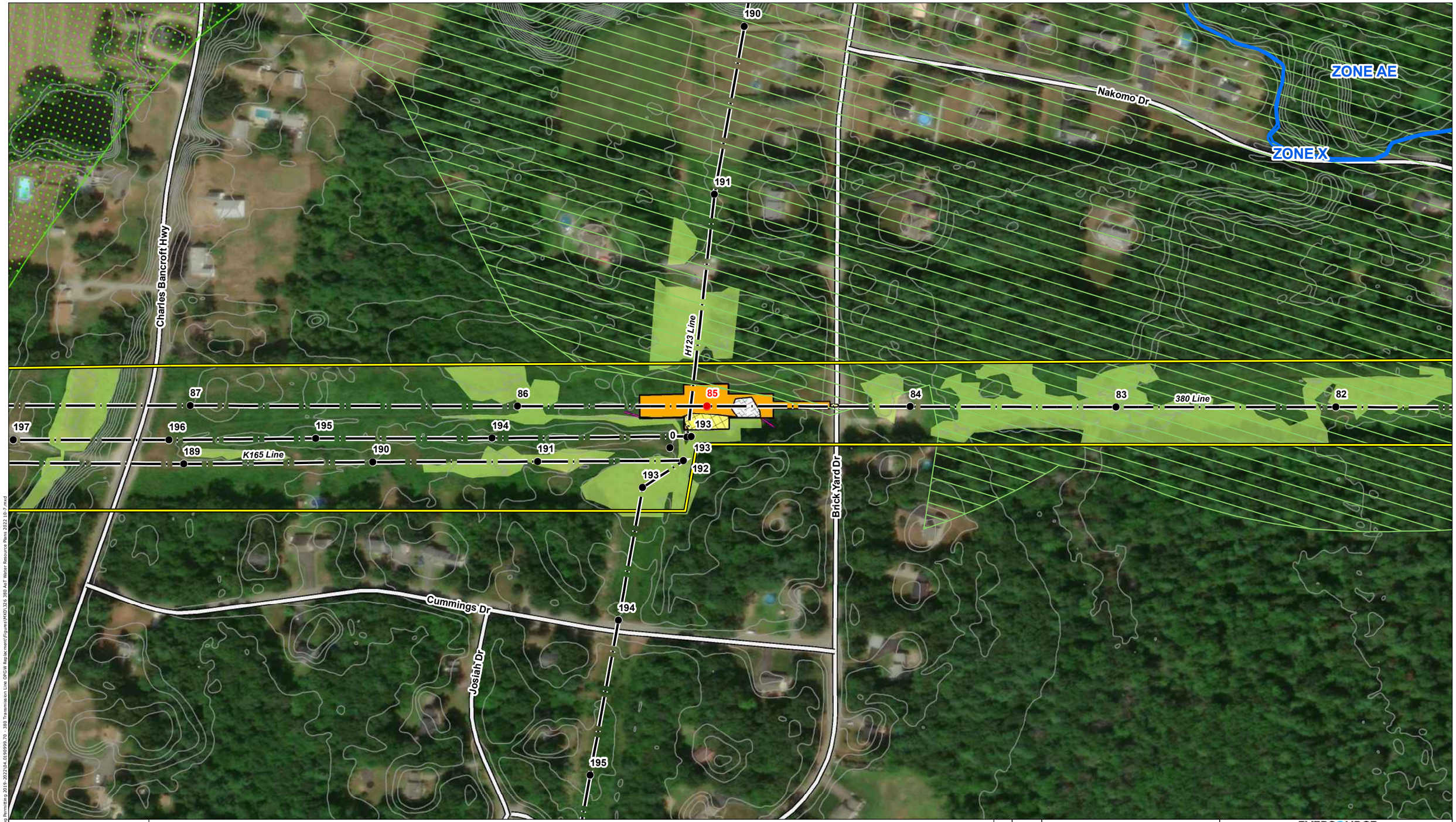
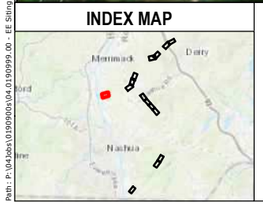
PROJ MGR: LEW	REVIEWED BY: TLT	CHECKED BY: DMZ	FIG 5
DESIGNED BY: MJD	DRAWN BY: NMS	SCALE: 1 " = 2,000 FEET	
DATE: 03/29/2022	PROJECT NO. 04.0190999.70	REVISION NO.	

Figure 3 – Surface Water and Groundwater Overlay Plans



INDEX MAP



- Local Potential Contamination Sources
- Outstanding Resource Water Watershed (None Present)
- FEMA Special Flood Hazard Area
- Designated River Quarter Mile Buffer
- Wellhead Protection Areas
- Watersheds with Chloride Impairments 2016
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- PULL PAD
- WORK AREA
- TRENCH AREA
- EROSION AND SEDIMENT CONTROL
- CULVERT
- NHD FLOWLINE
- TOWN BOUNDARY
- 2 FOOT CONTOUR
- WETLAND

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N

1 inch = 200 feet

0 50 100 200 Feet

NO.	DATE	REVISIONS

EVERSOURCE ENERGY

326 and 380 Line and OPGW Replacement Surface and Groundwater Overlay Plans

LITCHFIELD	MAP SHEET
Date: March, 2022	1
04.0190999.70	

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ZONE AE

ZONE X

LITCHFIELD
LONDONDERRY

Driveway A504

380 Line

West Rd

Morway Dr

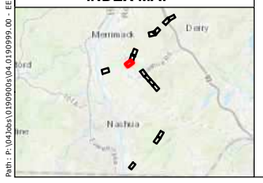
Nesenkeag Brook

Z119 Line

X116 Line

61
62
63
64
65
66
79
80
81
82
83

INDEX MAP



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NO.	DATE	REVISIONS

EVERSOURCE ENERGY

326 and 380 Line and OPGW Replacement Surface and Groundwater Overlay Plans

LITCHFIELD/LONDONDERRY

MAP SHEET

Date: March, 2022

04.0190999.70

2

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Nesenkeag Brook

No Name

No Name

Wiley Hill Rd

ZONE AE

380 Line

Z119 Line

X116 Line

326 Line

3124 Line

No Name

Driveway
A504

APPROXIMATE TRENCHING
AREA: 3FTX3FT
(NOT TO SCALE)

TRENCH BOX LOCATION
5FTx7FT

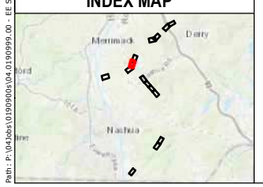
ZONE X

Wiley Hill Rd

Colonial Dr

79 80 78 60 77 79 78 76 75 77 74 76 53 55 54 59 58 57 54 53 52 73 75 74 72 74 71 73 51 56 55 61

INDEX MAP



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326 and 380 Line and OPGW Replacement Surface and Groundwater Overlay Plans

LONDONDERRY | MAP SHEET

Date: March, 2022 | 3

04.0190999.70

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Burbank Rd

Burbank Rd

66

67

68

69

70

71

72

3124 Line

326 Line

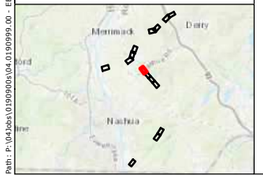
Nashua Rd (Route 102)

Nesenkeag Brook

ZONE X

ZONE AE

INDEX MAP



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EVERSOURCE ENERGY

326 and 380 Line and OPGW Replacement Surface and Groundwater Overlay Plans

LONDONDERRY	MAP SHEET
Date: March, 2022	4
04.0190999.70	

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Burbank Rd

Burbank Rd

Ridgemont Dr

ZONE X

71 72 73 74 75 3124 Line 76

72 73 74 326 Line 75 76

NEW ENGLAND POWER COMPANY

LONDONDERRY

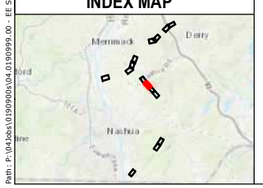
HUDSON

Boyd Rd

ZONE A

Chase Brook

INDEX MAP



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0 50 100 200 Feet

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EVERSOURCE ENERGY

326 and 380 Line and OPGW Replacement Surface and Groundwater Overlay Plans

LONDONDERRY/HUDSON

MAP SHEET

Date: March, 2022

04.0190999.70

5

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Breakneck Rd

Klenia Rd

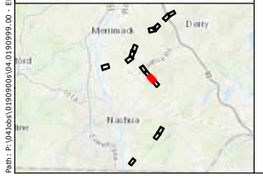
Boyd Rd

76 77 78 79 80 81 3124 Line

326 Line

ZONE X

INDEX MAP



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- TRENCH AREA
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- CULVERT
- NHD FLOWLINE
- TOWN BOUNDARY
- 2 FOOT CONTOUR
- WETLAND

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1 inch = 200 feet

0 50 100 200 Feet

NO.	DATE	REVISIONS

EVERSOURCE ENERGY

326 and 380 Line and OPGW Replacement Surface and Groundwater Overlay Plans

HUDSON

MAP SHEET

Date: March, 2022

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6

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Breakneck Rd

Lenny Ln

Kienia Rd

Marie Ln

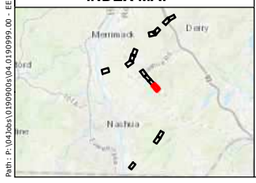
Julie Ln

82 83 84 85 86 3124 Line

81 82 83 84 85 326 Line

ZONE X

INDEX MAP



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HUDSON	MAP SHEET
Date: March, 2022	7
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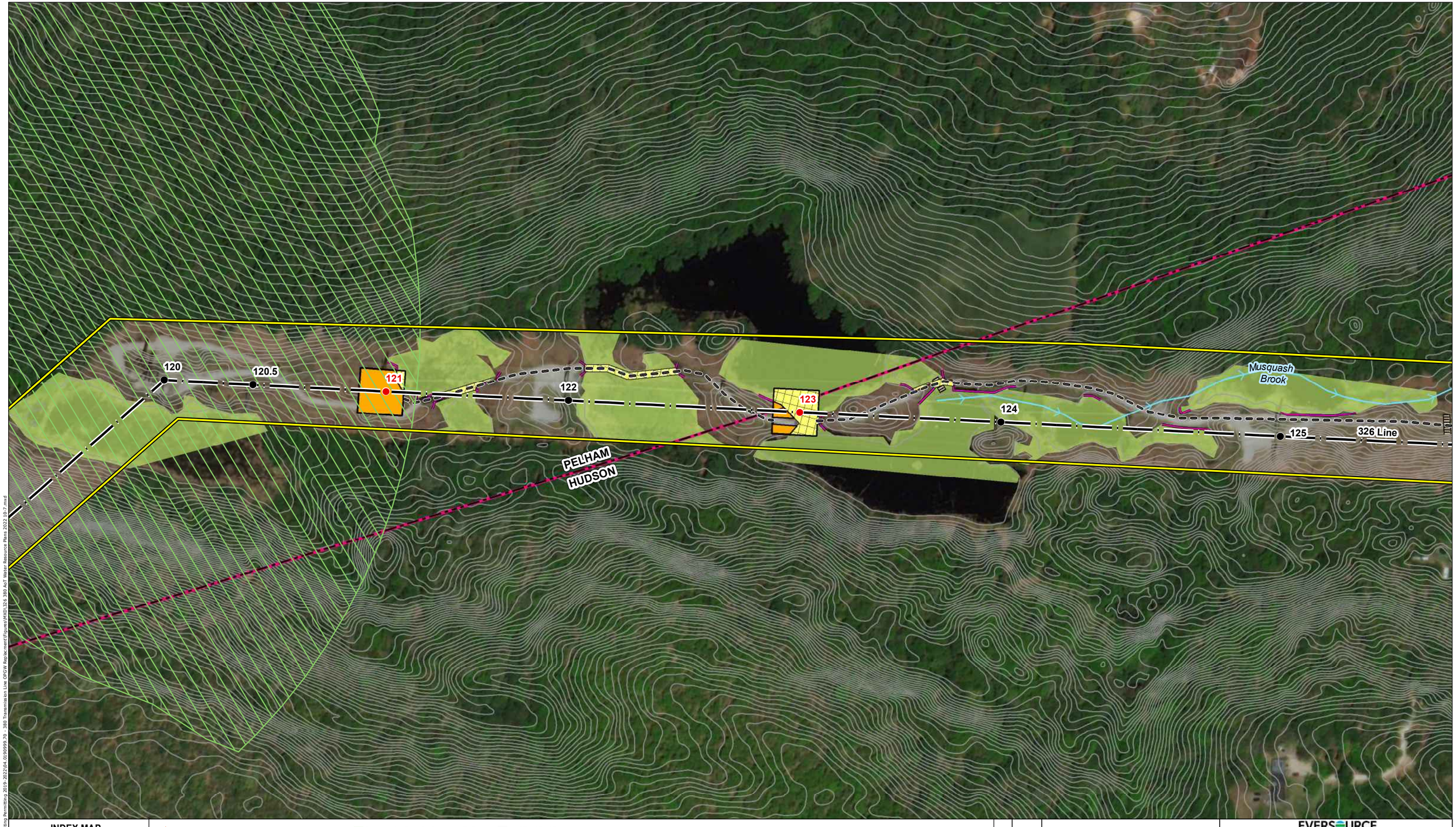

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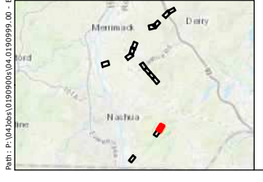

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326 and 380 Line and OPGW Replacement Surface and Groundwater Overlay Plans

HUDSON/PELHAM | MAP SHEET

Date: March, 2022 | 8

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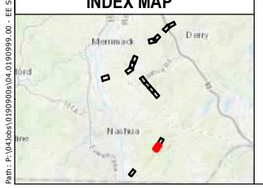
PELHAM
HUDSON
Sir Isaac Way
Bush Hill Rd
Woodland Dr
Musquash Brook
Musquash Brook
126
127
128
129
130
326 Line
Bush Hill Rd
ZONE X
Second Brook

INDEX MAP



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326 and 380 Line and OPGW Replacement Surface and Groundwater Overlay Plans

HUDSON | MAP SHEET

Date: March, 2022 | 9

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Path: P:\043xx\0190900\04.0190999.00 - EE Siting Permitting 2019-2022\04.0190999.20 - 380 Transmission Line OPGW Replacement\Figures\MXD\324 380 AoT Water Resource Plans 2022.10.7.mxd

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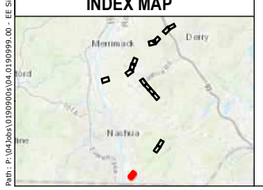

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EVERSOURCE ENERGY

326 and 380 Line and OPGW Replacement Surface and Groundwater Overlay Plans

HUDSON	MAP SHEET
Date: March, 2022	10
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Path: P:\04Jobs\01909900s\04.0190999.00 - EE Siting Permitting 2019-2021\04.0190999.70 - 380 Transmission Line OPGW Replacement\Figures\MXD\326 380 AoT Water Resource Revs 2022-10-7.mxd

Preserve Dr
Wiley Hill Rd
No Name
Colonial Dr
Colonial Dr
326 Line
380 Line
3124 Line
X116 Line
Z119 Line
ZONE X
ZONE AE
56
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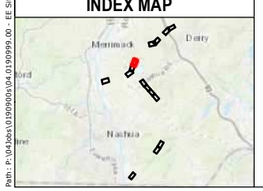
INDEX MAP



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NO.	DATE	REVISIONS

EVERSOURCE ENERGY

326 and 380 Line and OPGW Replacement Surface and Groundwater Overlay Plans

LONDONDERRY | MAP SHEET

Date: March, 2022 | **11**

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PEU/MINISTERIAL/PARRISH HILLS

PEU/MINISTERIAL/PARRISH HILLS

Wheelwright Cir

Shasta Dr

380 Line

326 Line

3124 Line

X116 Line

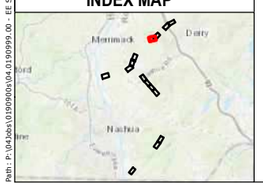
Z119 Line

No Name

Mammoth Rd (Rt 128)

ZONE A

INDEX MAP



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EVERSOURCE ENERGY

326 and 380 Line and OPGW Replacement Surface and Groundwater Overlay Plans

LONDONDERRY | MAP SHEET

Date: March, 2022 | **12**

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Path: P:\04Jobs\0190900s\04.0190999.00 - EE Siting Permitting 2019- 2022\04.0190999.70 - 380 Transmission Line OPGW Replacement\Figures\MXD\ 324 380 AoT Water Resource Revs 2022 10-7.mxd

Shasta Dr
Mammoth Rd (Rt.128)
PEU/MINISTERIAL/PARRISH HILLS
PEU/MINISTERIAL/PARRISH HILLS
Bancroft Rd
South Parrish Dr
380 Line
326 Line
3124 Line
X116 Line
Z119 Line
No Name
Darrow Way
King Henry Dr
26
25
24
23
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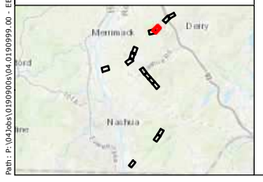
INDEX MAP



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326 and 380 Line and OPGW Replacement Surface and Groundwater Overlay Plans

LONDONDERRY | MAP SHEET

Date: March, 2022 | 13

04.0190999.70

Path: P:\04Jobs\0190900s\04.0190999.00 - EE Siting Permitting 2019-2022\04.0190999.70 - 380 Transmission Line OPGW Replacement\Figures\MXD\326 380 AoT Water Resource Revs 2022 10-7.mxd

Beaver Brook

PEU/MINISTERIAL/PARRISH HILLS

PEU/MINISTERIAL/PARRISH HILLS

Hovey Rd

Interstate 93 S

Interstate 93 N

380 Line

326 Line

I93 Crossover

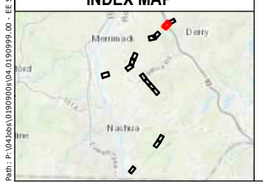
3124 Line

X116 Line

Z119 Line

Snowflake Ln

INDEX MAP



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326 and 380 Line and OPGW Replacement Surface and Groundwater Overlay Plans

LONDONDERRY | MAP SHEET

Date: March, 2022 | **14**

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Path: P:\Mxd\en\0190900s\04.0190999.00 - EE Siting Permitting 2019-2022\04.0190999.70 - 380 Transmission Line OPGW Replacement\Figures\MXD\326 380 AoT Water Resource Plans 2022-10-7.mxd

ZONE X

ZONE AE

Beaver Brook

Rockingham Rd (Route 28)

Commercial Ln

326 Line

3124 Line

380 Line

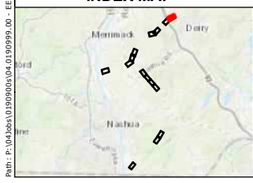
Z119 Line

X116 Line

Snowflake Ln

Seasons Ln

INDEX MAP



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326 and 380 Line and OPGW Replacement Surface and Groundwater Overlay Plans

LONDONDERRY | MAP SHEET

Date: March, 2022 | **15**

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Path: P:\043p\01909900\04.0190999.00 - EE Siting Permitting 2019-2022\04.0190999.70 - 380 Transmission Line OPGW Replacement\Figures\MXD\326_380 AoT Water Resource Revs 2022.10.7.mxd

Figure 4 – Alteration of Terrain Permitting Plans

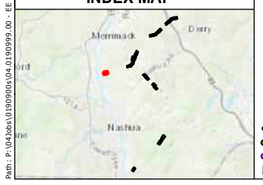
AoT Area A - Litchfield Map Sheet 3	
Disturbance Type	**Impact (sq. ft)**
New Access	2,078
Gravel Work Pad	14,970
Total AoT Disturbed Area	***17,048***

-Criteria: Env-Wq 1502.58 (b) (2) "An area that, over a 10 year period, cumulatively exceeds 100,000 square feet of contiguous area."

-Work pad dimensions: Up to 100-ft x 100-ft; Access road width: 16-ft

H123 Line
K165 Line
380 Line
Brick Yard Dr
Cummings Dr
LFW06
LFW07
LFW11
LFW12
84
85
86
0
190
191
192
193
194

INDEX MAP



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EVERSOURCE ENERGY

326 and 380 Line Structure Replacement & OPGW Project
Altertarion of Terrain Permitting Plans

Litchfield, NH | MAP SHEET

Date: March, 2022 | 1

Path: P:\GIS\e\0190900\p04.0190999.00 - EE Siting Permitting 2019_2022\04_0190999.70 - 380 Transmission Line OPGW Replacement\Figures\MXD\326 380 AoT Plan_20221007.mxd

AoT Area B - Londonderry
Map Sheets 4 to 10, 17 to 26

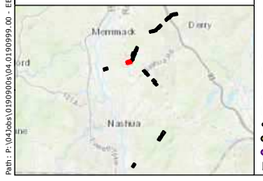
Disturbance Type	Impact (sq. ft)
New Access	163,716
Gravel Work Pad	236,188
Total AoT Disturbed Area	***399,904***

-Criteria: Env-Wq 1502.58 (b) (2) "An area that, over a 10 year period, cumulatively exceeds 100,000 square feet of contiguous area."

-Work pad dimensions: Up to 100-ft x 100-ft; Access road width: 16-ft

LFW13
LITCHFIELD
LONDONDERRY
West Rd
Morway Dr
380 Line
67
66
65

INDEX MAP



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- RAILROAD
- NHD FLOWLINE
- TOWN BOUNDARY
- 2 FOOT CONTOUR
- WETLAND

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N

1 inch = 100 feet

0 50 100 Feet

NO.	DATE	REVISIONS

EVERSOURCE ENERGY

326 and 380 Line Structure Replacement & OPGW Project
Altertarion of Terrain Permitting Plans

Londonderry, NH | MAP SHEET

Date: March, 2022 | **2**

Path: P:\045xbn\01909900s\04.0190999.00 - eE Siting Permitting 2019-2022\04.0190999.70 - 380 Transmission Line OPGW Replacement\Figures\MXD\326 380 AoT Plans 2022 10-7.mxd

AoT Area B - Londonderry
Map Sheets 4 to 10, 17 to 26

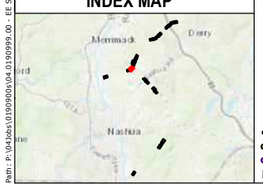
Disturbance Type	Impact (sq. ft)
New Access	163,716
Gravel Work Pad	236,188
Total AoT Disturbed Area	***399,904***

-Criteria: Env-Wq 1502.58 (b) (2) "An area that, over a 10 year period, cumulatively exceeds 100,000 square feet of contiguous area."

-Work pad dimensions: Up to 100-ft x 100-ft; Access road width: 16-ft

Driveway A504
Morway Dr
380 Line
Z119 Line
X116 Line
Nesenkeag Brook
LDW04
LDW04
63
64
62
80
81

INDEX MAP



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- EXISTING STRUCTURE TO BE REPLACED
- EXISTING TRANSMISSION LINE
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- TRENCH AREA
- EROSION AND SEDIMENT CONTROL
- TEMPORARY CONSTRUCTION MATTING
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- PRIMARY ACCESS
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EVERSOURCE ENERGY

326 and 380 Line Structure Replacement & OPGW Project
Altertarion of Terrain Permitting Plans

Londonderry, NH | MAP SHEET

Date: March, 2022 | **3**

Path: P:\04Jobs\01909900\04.0190999.00 - EE Siting Permitting 2019 - 2021\04.0190999.70 - 380 Transmission Line OPGW Replacement\Figures\MXD\326 380 AoT Plan 2022 10-7.mxd

AoT Area B - Londonderry Map Sheets 4 to 10, 17 to 26	
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LDW04

LDW02

LDW03

LDW04

380 Line

Z119 Line

X116 Line

61

59

60

79

80

78

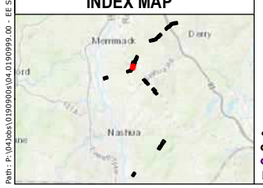
77

76

79

78

INDEX MAP



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EVERSOURCE ENERGY

326 and 380 Line Structure Replacement & OPGW Project
Altertarion of Terrain Permitting Plans

Londonderry, NH

MAP SHEET

Date: March, 2022

4

Path: P:\043dtc\01909060s\04.0190999.00 - EE.Siting.Permitting 2019-2022\04.0190999.70 - 380 Transmission Line OPGW Replacement\Figures\MXD\326 380 AoT Plans 2022.10.7.mxd

AoT Area B - Londonderry Map Sheets 4 to 10, 17 to 26	
Disturbance Type	**Impact (sq. ft)**
New Access	163,716
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Wiley Hill Rd

No Name

LDW01

LDW02

APPROXIMATE TRENCHING AREA: 3FTX3FT (NOT TO SCALE)

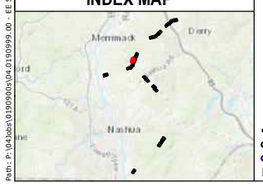
380 Line

58

59

57

INDEX MAP



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EVERSOURCE ENERGY

326 and 380 Line Structure Replacement & OPGW Project
Altertarion of Terrain Permitting Plans

Londonderry, NH | MAP SHEET

Date: March, 2022 | **5**

Path: P:\043obs\0190900\p04.0190999.00 - EE Siting Permitting 2019-2022\04.0190999.70 - 380 Transmission Line OPGW Replacement\Figures\MXD\326 380 AoT Plans 20221 0-7.mxd

AoT Area B - Londonderry Map Sheets 4 to 10, 17 to 26	
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No Name

Wiley Hill Rd

380 Line

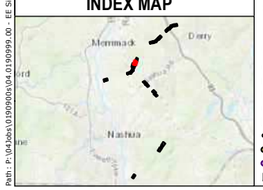
326 Line

3124 Line

Z119 Line

X116 Line

INDEX MAP



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EVERSOURCE ENERGY

326 and 380 Line Structure Replacement & OPGW Project
Altertarion of Terrain Permitting Plans

Londonderry, NH

Date: March, 2022

MAP SHEET

6

Path: P:\04Jobs\01909900s\04.01909999.00 - EE Siting Permitting 2019-2022\04.01909999.70 - 380 Transmission Line OPGW Replacement\Figures\MXD\326 380 AoT Plan 2022 10-7.mxd

AoT Area B - Londonderry Map Sheets 4 to 10, 17 to 26	
Disturbance Type	**Impact (sq. ft)**
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Wheelwright Cir

31 30 29 380 Line

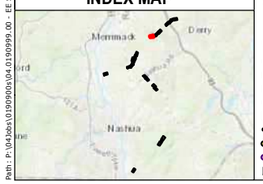
30.5 30 326 Line 29

29 28 27 3124 Line

43 42 41 40 X116 Line 39

42 41 40 39 Z119 Line 38

INDEX MAP



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EVERSOURCE ENERGY

326 and 380 Line Structure Replacement & OPGW Project
Altertarion of Terrain Permitting Plans

Londonderry, NH

MAP SHEET

Date: March, 2022

7

Path: P:\043dtn\0190900s\04.0190999.00 - EE Siting Permitting 2019-2022\04.0190999.70 - 380 Transmission Line OPGW Replacement\Figures\MXD\326 380 AoT Plans 2022 10-7.mxd

AoT Area B - Londonderry Map Sheets 4 to 10, 17 to 26	
Disturbance Type	**Impact (sq. ft)**
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Shasta Dr

380 Line

326 Line

3124 Line

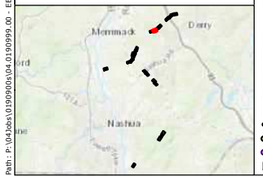
Z119 Line

X116 Line

No Name

Mammoth Rd (Rt 128)

INDEX MAP



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EVERSOURCE ENERGY

326 and 380 Line Structure Replacement & OPGW Project
Altertarion of Terrain Permitting Plans

Londonderry, NH | MAP SHEET

Date: March, 2022 | 8

Path: P:\043dtn\0190900s\04.0190999.00 - EE Sitting Permitting 2019- 2022\04.0190999.70 - 380 Transmission Line OPGW Replacement\Figures\MXD\326 380 AoT Plans 2022 10-7.mxd

AoT Area B - Londonderry Map Sheets 4 to 10, 17 to 26	
Disturbance Type	**Impact (sq. ft)**
New Access	163,716
Gravel Work Pad	236,188
Total AoT Disturbed Area	***399,904***

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Shasta Dr

Mammoth Rd (Rt-128)

380 Line

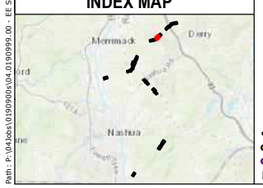
326 Line

3124 Line

X116 Line

Z119 Line

INDEX MAP



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EVERSOURCE ENERGY

326 and 380 Line Structure Replacement & OPGW Project
Altertarion of Terrain Permitting Plans

Londonderry, NH | MAP SHEET

Date: March, 2022 | **9**

Path: P:\04\dev\0190900\04.0190999.00 - EE Siting Permitting 2019- 2022\04.0190999.70 - 380 Transmission Line OPGW Replacement\Figures\MXD\326 380 AoT Plans 2022.10.7.mxd

AoT Area B - Londonderry

Map Sheets 4 to 10, 17 to 26

Disturbance Type	Impact (sq. ft)
New Access	163,716
Gravel Work Pad	236,188
Total AoT Disturbed Area	***399,904***

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Bancroft Rd

South Parrish Dr

326 Line

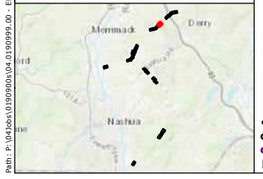
380 Line

3124 Line

X116 Line

Z119 Line

INDEX MAP



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EVERSOURCE ENERGY

326 and 380 Line Structure Replacement & OPGW Project
Altertarion of Terrain Permitting Plans

Londonderry, NH | MAP SHEET

Date: March, 2022 | **10**

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AoT Area B - Londonderry

Map Sheets 4 to 10, 17 to 26

Disturbance Type	Impact (sq. ft)
New Access	163,716
Gravel Work Pad	236,188
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Hovey Rd

380 Line

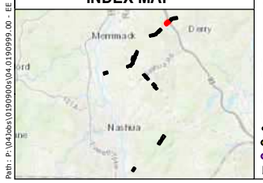
326 Line

3124 Line

X116 Line

Interstate 93 S

INDEX MAP



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EVERSOURCE ENERGY

326 and 380 Line Structure Replacement & OPGW Project
Altertarion of Terrain Permitting Plans

Londonderry, NH | MAP SHEET

Date: March, 2022 | **11**

AoT Area B - Londonderry

Map Sheets 4 to 10, 17 to 26

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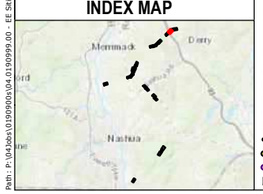
INDEX MAP



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326 and 380 Line Structure Replacement & OPGW Project
Altertarion of Terrain Permitting Plans

Londonderry, NH | MAP SHEET

Date: March, 2022 | **12**

Path: P:\043obs\0190900\p04.0190999.00 - EE Siting Permitting 2019-2022\p04.0190999.70 - 380 Transmission Line OPGW Replacement\figures\MXD\326 380 AoT Plans 2022 10-7.mxd

LDW02

AoT Area B - Londonderry Map Sheets 4 to 10, 17 to 26	
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APPROXIMATE TRENCHING AREA: 3FTX3FT (NOT TO SCALE)

TRENCH BOX LOCATION 5FTX7FT

380 Line

Z119 Line

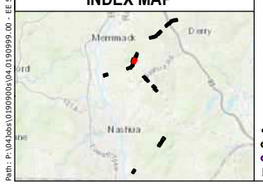
X116 Line

326 Line

3124 Line

No Name

INDEX MAP



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EVERSOURCE ENERGY

326 and 380 Line Structure Replacement & OPGW Project
Altertarion of Terrain Permitting Plans

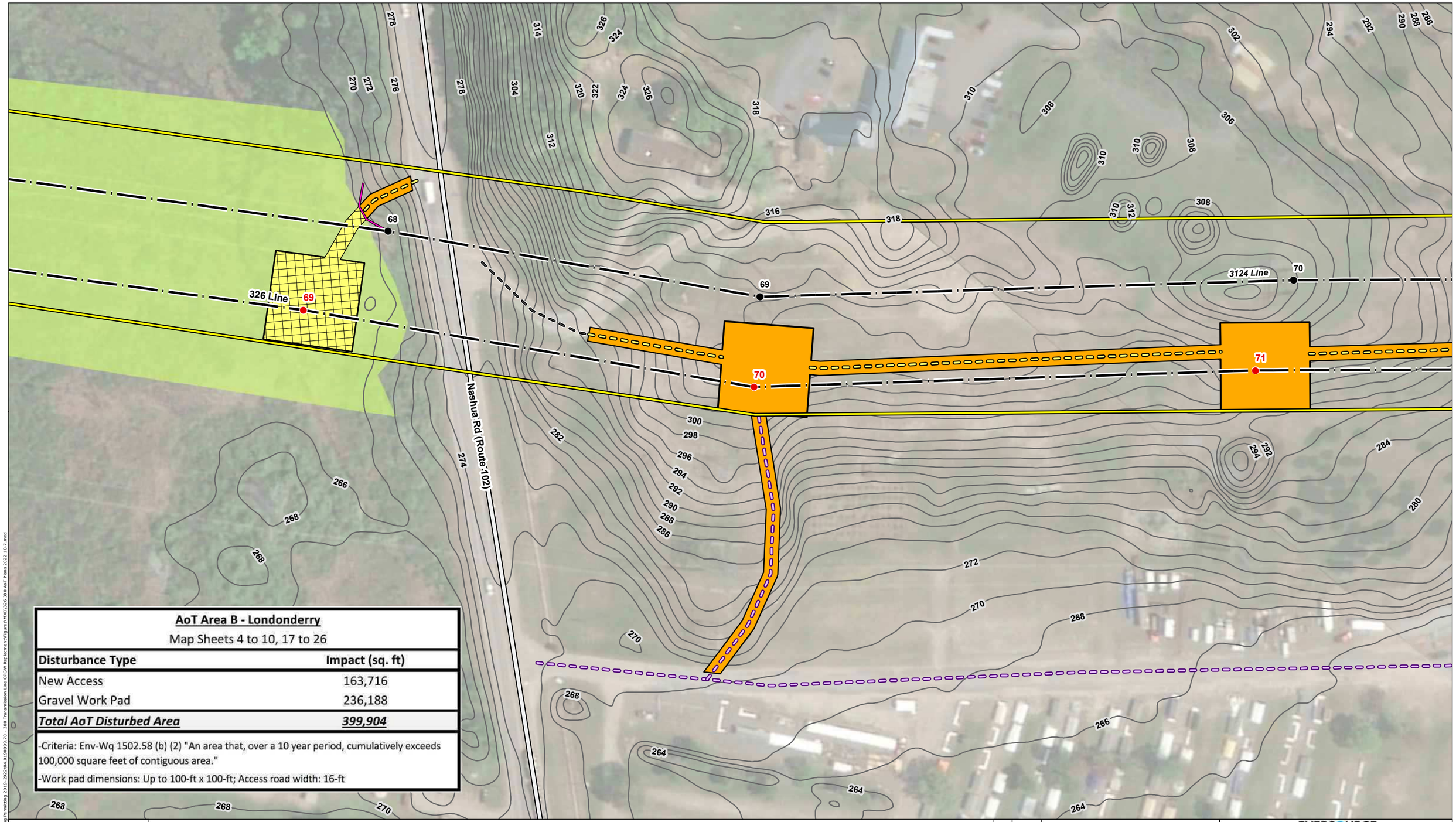
Londonderry, NH

MAP SHEET

Date: March, 2022

13

Path: P:\04\active\0190900\04.0190999.00 - EE Siting Permitting 2019-2022\04.0190999.70 - 380 Transmission Line OPGW Replacement\Figures\MXD\326 380 AoT Plan_20221007.mxd



AoT Area B - Londonderry

Map Sheets 4 to 10, 17 to 26

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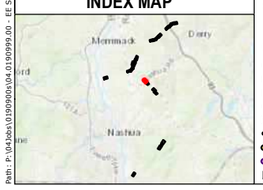
INDEX MAP



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- EXISTING STRUCTURE TO BE REPLACED
- EXISTING TRANSMISSION LINE
- APPROXIMATE ROW
- TRENCH AREA
- EROSION AND SEDIMENT CONTROL
- TEMPORARY CONSTRUCTION MATTING
- EXISTING ACCESS
- PRIMARY ACCESS
- OFF-ROW ACCESS
- AOT AREA
- PULL PAD
- NHDOT ROADS
- WORK PAD
- RAILROAD
- NHD FLOWLINE
- TOWN BOUNDARY
- 2 FOOT CONTOUR
- WETLAND

This mapping product has been created to comply with submittal requirements to obtain certain regulatory approvals and, as such, there is no reliance on the information contained herein for any other purpose.

1 inch = 100 feet

0 50 100 Feet

NO.	DATE	REVISIONS

EVERSOURCE ENERGY

326 and 380 Line Structure Replacement & OPGW Project
Altertarion of Terrain Permitting Plans

Londonderry, NH | MAP SHEET

Date: March, 2022 | **14**

Path: P:\04Jobs\01909900s\04.01909999.00 - EE Siting Permitting 2019-2022\04.01909999.70 - 380 Transmission Line OPGW Replacement\Figures\MXD\326 380 AoT Plans 2022 10-7 .mxd

AoT Area B - Londonderry Map Sheets 4 to 10, 17 to 26	
Disturbance Type	**Impact (sq. ft)**
New Access	163,716
Gravel Work Pad	236,188
Total AoT Disturbed Area	***399,904***

-Criteria: Env-Wq 1502.58 (b) (2) "An area that, over a 10 year period, cumulatively exceeds 100,000 square feet of contiguous area."

-Work pad dimensions: Up to 100-ft x 100-ft; Access road width: 16-ft

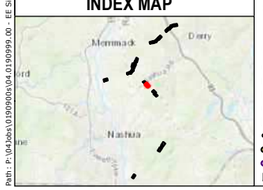
70 71 72 3124 Line 326 Line 73

Chase Brook

LONDONDERRY

HUDSON

INDEX MAP



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EVERSOURCE ENERGY

326 and 380 Line Structure Replacement & OPGW Project
Altertarion of Terrain Permitting Plans

Londonderry, NH | MAP SHEET

Date: March, 2022 | **15**

Path: P:\04Sites\0190999\04.0190999.00 - EE Siting Permitting 2019-2022\04.0190999.70 - 380 Transmission Line OPGW Replacement\Figures\MXD\326 380 AoT Plan_20220 10-7.mxd

AoT Area C - Hudson

Map Sheets 11 to 16

Disturbance Type	Impact (sq. ft)
New Access	29,434
Gravel Work Pad	52,546
Total AoT Disturbed Area	***81,980***

-Criteria: Env-Wq 1502.58 (b) (2) "An area that, over a 10 year period, cumulatively exceeds 100,000 square feet of contiguous area."

-Work pad dimensions: Up to 100-ft x 100-ft; Access road width: 16-ft

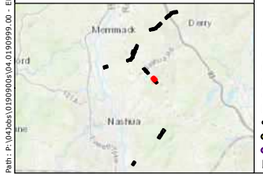
Breakneck Rd

326 Line

3124 Line

78 79 80

INDEX MAP



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EVERSOURCE ENERGY

326 and 380 Line Structure Replacement & OPGW Project
Altertarion of Terrain Permitting Plans

Hudson, NH | MAP SHEET

Date: March, 2022 | **16**

Path: P:\043dtn\01909900\04.0190999.00 - EE Siting Permitting 2019-2022\04.0190999.70 - 380 Transmission Line OPGW Replacement\Figures\MXD\326 380 AoT Plans 2022.10.7.mxd

AoT Area C - Hudson
Map Sheets 11 to 16

Disturbance Type	Impact (sq. ft)
New Access	29,434
Gravel Work Pad	52,546
Total AoT Disturbed Area	***81,980***

-Criteria: Env-Wq 1502.58 (b) (2) "An area that, over a 10 year period, cumulatively exceeds 100,000 square feet of contiguous area."

-Work pad dimensions: Up to 100-ft x 100-ft; Access road width: 16-ft

Kienia Rd

Marie Ln

81

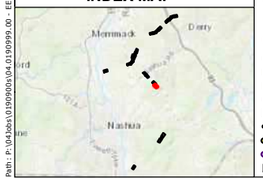
82

3124 Line

326 Line

81

INDEX MAP



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NO.	DATE	REVISIONS

EVERSOURCE ENERGY

326 and 380 Line Structure Replacement & OPGW Project
Altertarion of Terrain Permitting Plans

Hudson, NH | MAP SHEET

Date: March, 2022 | **17**

Path: P:\043dot\0190900\04.0190999.00 - EE Siting Permitting 2019- 2022\04.0190999.70 - 380 Transmission Line OPGW Replacement\Figures\MXD\326 & 380 AoT Plans 2022 10-7.mxd

AoT Area C - Hudson
Map Sheets 11 to 16

Disturbance Type	Impact (sq. ft)
New Access	29,434
Gravel Work Pad	52,546
Total AoT Disturbed Area	***81,980***

-Criteria: Env-Wq 1502.58 (b) (2) "An area that, over a 10 year period, cumulatively exceeds 100,000 square feet of contiguous area."

-Work pad dimensions: Up to 100-ft x 100-ft; Access road width: 16-ft

AoT Area D - Pelham
Map Sheets 13 to 14

Disturbance Type	Impact (sq. ft)
New Access	0
Gravel Work Pad	9,657
Total AoT Disturbed Area	***9,657***

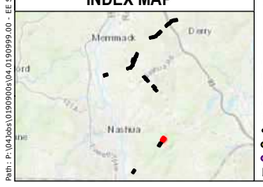
-Criteria: Env-Wq 1502.58 (b) (2) "An area that, over a 10 year period, cumulatively exceeds 100,000 square feet of contiguous area."

-Work pad dimensions: Up to 100-ft x 100-ft; Access road width: 16-ft

120 120.5 121 326 Line 122 123

PELHAM HUDSON

INDEX MAP



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NO.	DATE	REVISIONS

EVERSOURCE ENERGY

326 and 380 Line Structure Replacement & OPGW Project
Altertarion of Terrain Permitting Plans

Hudson/Pelham, NH | MAP SHEET

Date: March, 2022 | **18**

Path: P:\04\dev\0190900\004.0190999.00 - EE Siting Permitting 2019-2022\04.0190999.70 - 380 Transmission Line OPGW Replacement\Figures\MXD\326 380 AoT Plans 2022 10-7.mxd

AoT Area C - Hudson Map Sheets 11 to 16	
Disturbance Type	**Impact (sq. ft)**
New Access	29,434
Gravel Work Pad	52,546
Total AoT Disturbed Area	***81,980***

-Criteria: Env-Wq 1502.58 (b) (2) "An area that, over a 10 year period, cumulatively exceeds 100,000 square feet of contiguous area."

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Disturbance Type	**Impact (sq. ft)**
New Access	0
Gravel Work Pad	9,657
Total AoT Disturbed Area	***9,657***

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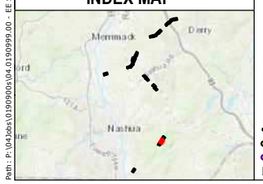
-Work pad dimensions: Up to 100-ft x 100-ft; Access road width: 16-ft

PELHAM
HUDSON

Musquash Brook

123
124
125
326 Line

INDEX MAP



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EVERSOURCE ENERGY

326 and 380 Line Structure Replacement & OPGW Project
Altertarion of Terrain Permitting Plans

Hudson/Pelham, NH | MAP SHEET

Date: March, 2022 | **19**

Path: P:\04Jobs\01909000s\04.01909999.00 - EE.Siting.Permitting 2019-2022\04.01909999.70 - 380 Transmission Line OPGW Replacment\Figures\MXD\326 380 AoT Plan 2021-10-7.mxd

AoT Area C - Hudson

Map Sheets 11 to 16

Disturbance Type	Impact (sq. ft)
New Access	29,434
Gravel Work Pad	52,546
Total AoT Disturbed Area	***81,980***

-Criteria: Env-Wq 1502.58 (b) (2) "An area that, over a 10 year period, cumulatively exceeds 100,000 square feet of contiguous area."

-Work pad dimensions: Up to 100-ft x 100-ft; Access road width: 16-ft

Musquash Brook

Bush Hill Rd

326 Line

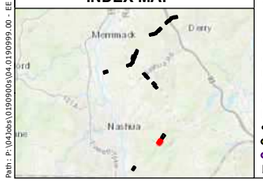
126

127

128

Bush Hill Rd

INDEX MAP



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NO.	DATE	REVISIONS

EVERSOURCE ENERGY

326 and 380 Line Structure Replacement & OPGW Project
Altertarion of Terrain Permitting Plans

Hudson, NH | MAP SHEET

Date: March, 2022 | **20**

Path: P:\043dev\0190900\04.0190999.00 - EE Siting Permitting 2019-2022\04.0190999.20 - 380 Transmission Line OPGW Replacement\Figures\MXD\326 380 AoT Plans 2022_10-7.mxd

AoT Area C - Hudson
Map Sheets 11 to 16

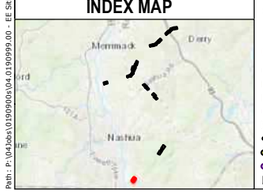
Disturbance Type	Impact (sq. ft)
New Access	29,434
Gravel Work Pad	52,546
Total AoT Disturbed Area	***81,980***

-Criteria: Env-Wq 1502.58 (b) (2) "An area that, over a 10 year period, cumulatively exceeds 100,000 square feet of contiguous area."

-Work pad dimensions: Up to 100-ft x 100-ft; Access road width: 16-ft

153
154
155
326 Line
Chalifoux Rd
River Rd (Route 3A)
Limit Brook

INDEX MAP



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EVERSOURCE ENERGY

326 and 380 Line Structure Replacement & OPGW Project
Altertarion of Terrain Permitting Plans

Hudson, NH | MAP SHEET

Date: March, 2022 | **21**

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AoT Area B - Londonderry Map Sheets 4 to 10, 17 to 26	
Disturbance Type	**Impact (sq. ft)**
New Access	163,716
Gravel Work Pad	236,188
Total AoT Disturbed Area	***399,904***

-Criteria: Env-Wq 1502.58 (b) (2) "An area that, over a 10 year period, cumulatively exceeds 100,000 square feet of contiguous area."

-Work pad dimensions: Up to 100-ft x 100-ft; Access road width: 16-ft

380 Line

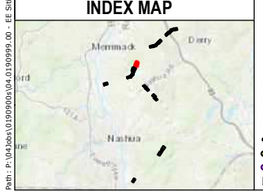
326 Line

3124 Line

Z119 Line

X116 Line

INDEX MAP



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NO.	DATE	REVISIONS

EVERSOURCE ENERGY

326 and 380 Line Structure Replacement & OPGW Project
Altertarion of Terrain Permitting Plans

Londonderry, NH | MAP SHEET

Date: March, 2022 | **22**

AoT Area B - Londonderry

Map Sheets 4 to 10, 17 to 26

Disturbance Type	Impact (sq. ft)
New Access	163,716
Gravel Work Pad	236,188
Total AoT Disturbed Area	***399,904***

-Criteria: Env-Wq 1502.58 (b) (2) "An area that, over a 10 year period, cumulatively exceeds 100,000 square feet of contiguous area."

-Work pad dimensions: Up to 100-ft x 100-ft; Access road width: 16-ft

Rockingham Rd (Route 28)

380 Line

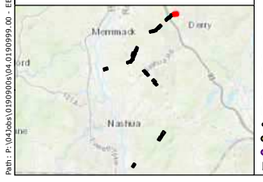
326 Line

3124 Line

X116 Line

Z119 Line

INDEX MAP



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EVERSOURCE ENERGY

326 and 380 Line Structure Replacement & OPGW Project
Altertarion of Terrain Permitting Plans

Londonderry, NH | MAP SHEET

Date: March, 2022 | **23**

Path: P:\04Jobs\01909900\04.01909999.00 - EE Siting Permitting 2019- 2022\04.01909999.70 - 380 Transmission Line OPGW Replacment\Figures\MXD\ 326 380 AoT Plan s 2022 1-to-7 .mxd

CONSTRUCTION SEQUENCE:

1. WETLAND BOUNDARIES TO BE CLEARLY MARKED PRIOR TO THE START OF CONSTRUCTION.

2. SEDIMENT AND EROSION CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH THE DETAIL PROVIDED, AS NECESSARY, AND CONSISTENT WITH THE NHDES MARCH 2019 BMP MANUAL FOR UTILITY MAINTENANCE.

3. WETLAND IMPACTS ASSOCIATED WITH WETLAND CROSSINGS ARE REQUIRED FOR ACCESS BETWEEN STRUCTURES WITHIN THE RIGHT OF WAY.

4. ADEQUATE PRECAUTION SHALL BE EXERCISED TO AVOID SPILLAGE OF FUEL OILS, CHEMICALS, OR SIMILAR SUBSTANCES; NO FUELS, LUBRICANTS, CHEMICALS OR SIMILAR SUBSTANCES SHALL BE STORED BENEATH TREES OR IN THE VICINITY OF ANY WETLANDS, RIVER, STREAM OR OTHER BODY OF WATER; OR IN THE VICINITY OF NATURAL OR MAN-MADE CHANNELS LEADING THERETO. NO POWER EQUIPMENT SHALL BE STORED, MAINTAINED, OR FUELED IN ANY AREA ADJACENT TO A WETLAND, RIVER, STREAM OR OTHER BODY OF WATER.

5. REMOVE COMPLETELY ALL CONTAMINATION FROM ANY SPILLAGE OF CHEMICALS OR PETROLEUM PRODUCT WITH COMPLETE REHABILITATION OF THE AFFECTED AREA.

6. ACCESS ROUTES HAVE BEEN SELECTED TO PREVENT DEGRADATION OF THE RIGHT-OF-WAY AND MINIMIZE ENVIRONMENTAL IMPACT. OPERATIONS SHALL BE CONFINED TO THE SPECIFIED ACCESS ROUTES WITHIN THE PROPOSED WETLAND IMPACT AREA. ACCESS ROUTES SHALL NOT EXCEED A 16 FOOT-WIDTH.

7. IMPACT TO VEGETATION WITHIN WETLANDS WILL BE LIMITED TO THE EXTENT NECESSARY TO PLACE THE SWAMP MATS WHERE REQUIRED.

8. LOW GROWING VARIETIES OF VEGETATION ADJACENT TO WETLANDS SHALL BE PRESERVED TO THE EXTENT POSSIBLE. STUMPS AND ROCKS SHALL NOT BE REMOVED, AND THERE SHALL BE NO EXCAVATIONS, FILLS OR GRADING DONE ADJACENT TO WETLANDS, UNLESS MINOR EXCAVATIONS IS NEEDED FOR ACCESS.

9. TIMBER MATS AND PERIMETER CONTROLS WILL BE USED ALONG ACCESS ROUTES AND WORK PADS WITHIN WETLAND AREAS. THESE MATS ARE CONSTRUCTED OF HEAVY TIMBERS OR COMPOSITE MATERIAL, BOLTED TOGETHER, AND ARE PLACED END-TO-END IN THE WETLAND TO SUPPORT HEAVY EQUIPMENT. ALL SWAMP MATS SHALL BE PLACED AND REMOVED SO AS NOT TO CAUSE ANY RUTS, CHANNELS OR DEPRESSIONS, OR OTHERWISE CAUSE ANY UNDUE DISTURBANCE TO WETLANDS.

10. IF TIMBER MAT BMP IS NOT SUFFICIENT DUE TO HIGH WATER, ADDITIONAL BMP'S MAY INCLUDE THE PLACEMENT OF GEOTEXTILE FABRIC, 3"-4" STONE, AND GRAVEL TO PROVIDE A SUITABLE ROAD BED. A TEMPORARY CULVERT MAY BE REQUIRED IN AREAS OF HIGH FLOW TO MAINTAIN HYDROLOGIC CONNECTIVITY. ALL MATERIAL WILL BE REMOVED FROM JURISDICTIONAL AREAS AFTER CONSTRUCTION COMPLETION.

11. NO MATERIAL SHALL BE PLACED IN ANY LOCATION OR IN ANY MANNER SO AS TO IMPAIR SURFACE WATER FLOW INTO, THROUGH OR OUT OF ANY WETLAND AREA. NO INSTALLATION SHALL CREATE AN IMPOUNDMENT THAT WILL IMPEDE THE FLOW OF WATER OR CAUSE FLOODING.

12. NO MATERIAL SHALL BE TAKEN FROM THE WETLANDS AREA EXCEPT THAT WHICH MUST NECESSARILY BE REMOVED FOR THE STRUCTURE OR FOUNDATION PLACEMENT OR STABILIZATION. ALL EXCESS MATERIAL TAKEN FROM THE WETLAND WILL BE REMOVED FROM THE SITE.

13. ANY PROPOSED SUPPORT FILLS SHALL BE CLEAN GRAVEL AND STONE, FREE OF WASTE METAL PRODUCTS, ORGANIC MATERIALS AND SIMILAR DEBRIS AND SHALL NOT EXCEED THE AMOUNT PERMITTED. THIS ALLOWABLE FILL IS THE ONLY FILL THAT MAY REMAIN IN THE WETLAND AFTER CONSTRUCTION. ALL CUT AND FILLS SLOPES SHALL BE SEEDED/LOAMED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.

14. INSTALL NEW POLES IN THE LOCATIONS DESIGNATED ON THE PERMITTING PLANS.

15. CABLE INSTALLATION WILL BE PERFORMED IN A MANNER SO AS TO AVOID, OR LIMIT TO THE MAXIMUM EXTENT POSSIBLE, TRAVERSING WETLANDS WITH HEAVY EQUIPMENT. IN SOME CASES, A HELICOPTER MAY BE USED DURING THE INSTALLATION TO MINIMIZE IMPACTS.

16. REMOVAL OF THE OLD POLE WILL OCCUR ONCE THE CABLE HAS BEEN INSTALLED ON THE NEW STRUCTURE. THE OLD STRUCTURES WILL BE REMOVED FROM THE SITE. POLES WILL BE CUT AT THE GROUND SURFACE. FOOTINGS WILL BE ABANDONED IN PLACE TO MINIMIZE IMPACTS.

17. ALL TIMBER MATS, MATERIAL, AND DEBRIS WILL BE REMOVED FROM THE WORK AREA UPON THE COMPLETION OF CONSTRUCTION.

18. UPLAND DISTURBED AREAS SHALL BE RESTORED AND STABILIZED UPON COMPLETION OF CONSTRUCTION. WORK PAD RESTORATION SHOULD INCLUDE REDUCING THE WORK PAD TO A 30 BY 60 FOOT AREA, AND REDUCING SLOPES TO A MAXIMUM OF 25%. STOCKPILED MATERIAL SHOULD BE SPREAD TO REDUCE ANY UNNECESSARY SLOPES. GRAVEL WORK PADS AND SLOPES SHOULD BE SCARIFIED TO A MINIMUM OF 3" BEFORE SPREADING TOPSOIL/LOAM.

19. ALL TEMPORARY WETLAND IMPACTS WILL BE RE-GRADED TO ORIGINAL CONTOURS FOLLOWING CONSTRUCTION. NEW ENGLAND EROSION CONTROL/RESTORATION MIX, AVAILABLE THROUGH NEW ENGLAND WETLAND PLANTS, INC., 820 WEST STREET, AMHERST, MA 01002, 413-548-8000, OR EQUIVALENT SEED MIX SHALL BE APPLIED IN WETLAND AREAS THAT ARE NOT INUNDATED, AS NECESSARY.

20. MULCH USED FOR STABLIZATION SHALL CONSIST OF SEEDLESS STRAW.

21. SEDIMENT AND EROSION CONTROL MEASURES WILL BE EVALUATED AND REMOVED IF NECESSARY UPON THE COMPLETION OF CONSTRUCTION.

22. COMMERCIAL LOAM WILL NOT BE USED AS PART OF RESTORATION. ONLY IN-SITU TOPSOIL WILL BE USED TO RESTORE DISTURBED AREAS.

23. WHERE OPTIMAL TURTLE BREEDING AREAS OVERLAP WITH DISTURBANCE (AS DETERMINED BY AN ENVIRONMENTAL MONITOR), MINERAL SOILS WILL BE SCARIFIED TO ALLEVIATE COMPACTION AND BECOME MORE SUITED FOR TURTLE BREEDING.

24. NATURALLY VEGETATED LOCAL WETLAND BUFFER AREAS OUTSIDE OF EXISTING TRAILS MUST BE RESTORED UPON COMPLETION OF WORK.

WINTER CONSTRUCTION NOTES

1. PROP0SED VEGETATED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED. STABILIZATION METHODS SHALL INCLUDE SEEDING AND MULCH, AND INSTALLATION OF EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS.

2. DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE TEMPORARILY STABILIZED WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.

3. AFTER NOVEMBER 15TH, INCOMPLETE ROAD OR PARKING SURFACES, WHERE WORK HAS STOPPED FOR THE WINTER SEASON, SHALL BE PROTECTED WITH A MINIMUM OF 3 INCHES OF CRUSHED GRAVEL (NHDOT 304.3).

GENERAL NOTES:

OWNER: EVERSOURCE ENERGY
13 LEGENDS DRIVE
HOOKSETT, NH 03106

1. BASE PLAN PROVIDED BY EVERSOURCE ENERGY. EVERSOURCE ENERGY PROVIDED THE WETLAND DATA. EVERSOURCE ENERGY PROVIDED THE UTILITY DESIGN.

2. JURISDICTIONAL WETLANDS WERE DELINEATED BY NORMANDEAU IN 2016, IN ACCORDANCE WITH THE 1987 U.S. ARMY CORPS OF ENGINEERS' "WETLANDS DELINEATION MANUAL, TECHNICAL REPORT Y-87-1," AND REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTH CENTRAL AND NORTHEAST REGION," JANUARY 2012. WETLANDS WILL BE REVIEWED BY GZA GEOENVIRONMENTAL, INC. PRIOR TO START OF WORK.

3. NORMANDEAU EVALUATED WETLANDS AS POTENTIAL VERNAL POOLS IN 2016 IN ACCORDANCE WITH "IDENTIFICATION AND DOCUMENTATION OF VERNAL POOLS IN NEW HAMPSHIRE," 1997, NEW HAMPSHIRE FISH AND GAME DEPARTMENT, NONGAME AND ENDANGERED WILDLIFE PROGRAM.

4. NORMANDEAU COMPLETED WETLANDS FUNCTION AND VALUES ASSESSMENT IN 2016 IN ACCORDANCE WITH THE ACOE'S "HIGHWAY METHODOLOGY WORKBOOK SUPPLEMENT," SEPTEMBER 1999.

5. SITE PLAN IS FOR PERMITTING PURPOSES ONLY AND DOES NOT REPRESENT A PROPERTY BOUNDARY SURVEY.

6. THE PROJECT WILL BE MANAGED IN A MANNER THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES.

7. IN ACCORANCE WITH ENV-WQ 1505.02, THE SMALLEST PRACTICAL AREA SHALL BE DISTURBED DURING CONSTRUCTION, BUT IN NO CASE SHALL EXCEED 5 ACRES AT ANY ONE TIME BEFORE DISTURBED AREAS ARE STABILIZED. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
   - A MINIMUM 85 PERCENT VEGETATED GROWTH HAS BEEN ESTABLISHED
   - A MINIMUM OF 3 INCHES OF NON-EROSIVE MATERIAL HAS BEEN INSTALLED
   - OR, EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.

8. IN THE EVENT THAT A RARE OR THREATENED SPECIES IS OBSERVED, THE NEW HAMPSHIRE FISH AND GAME AND NEW HAMPSHIRE NATURAL HERITAGE BUREAU WILL BE NOTIFIED. TURTLE NESTING SEASON EXTENDS FROM LATE MAY THROUGH THE BEGINNING OF JULY. IF WOOD, BLANDING'S OR SPOTTED TURTLES ARE FOUND LAYING EGGS IN THE WORK AREA, CONTACT MELISSA DOPERALSKI AT 603-271-1738 OR JOSH MEGYESY AT 603-271-1125 FOR FURTHER INSTRUCTIONS. OBSERVATIONS OF NORTHERN BLACK RACER SNAKES SEEN IN ANY AREA FROM THE END OF SEPTEMBER THROUGH THE MONTH OF APRIL MUST BE IMMEDIATELY REPORTED TO THE NHFG DEPARTMENT (BRENDAN CLIFFORD AT 603-271-0463 OR MELISSA DOPERALSKI AT 603-271-1738). IF NORTHERN BLACK RACER IS FOUND IN A WORK AREA FROM NOVEMBER THROUGH THE MONTH OF APRIL, WORK SHALL IMMEDIATELY CEASE AND THE OBSERVATION MUST BE REPORTED TO THE NHFG (BRENDAN CLIFFORD OR MELISSA DOPERALSKI).

EROSION CONTROL NOTES:

1. INSTALLATION OF EROSION CONTROL GRINDINGS AND/OR SILT FENCES SHALL BE COMPLETE PRIOR TO THE START OF WORK IN ANY GIVEN AREA. EROSION CONTROLS SHALL BE USED DURING CONSTRUCTION AND REMOVED WHEN ALL SLOPES HAVE A HEALTHY STAND OF VEGETATION COVER. EROSION CONTROL MEASURES SHALL BE INSPECTED ON A WEEKLY BASIS AND AFTER .25" OR GREATER RAINFALL EVENTS.

2. AS REQUIRED, CONSTRUCT TEMPORARY BERMS, SILTATION FENCES, SEDIMENT TRAPS, ETC. TO PREVENT EROSION & SEDIMENTATION OF WETLANDS.

3. THE WORK AREA SHALL BE GRADED AND OTHERWISE SHAPED IN SUCH A MANNER AS TO MINIMIZE SOIL EROSION, SILTATION OF DRAINAGE CHANNELS, DAMAGE TO EXISTING VEGETATION, AND DAMAGE TO PROPERTY OUTSIDE LIMITS OF THE WORK AREA. EROSION CONTROL GRINDINGS WILL BE NECESSARY TO ACCOMPLISH THIS END.

4. ANY STRIPPED TOPSOIL SHALL BE STOCKPILED, WITHOUT COMPACTION, AND STABILIZED WITH BMPS.

5. PERMANENT OR TEMPORARY COVER MUST BE IN PLACE BEFORE THE GROWING SEASON ENDS. WHEN SEEDED AREAS ARE NOT MULCHED, PLANTINGS SHOULD BE MADE FROM EARLY SPRING TO MAY 20 OR FROM AUGUST 15 TO SEPTEMBER 15. NO DISTURBED AREA SHALL BE LEFT EXPOSED DURING WINTER MONTHS, PLANT ANNUAL RYEGRASS PRIOR TO OCTOBER 15TH.

6. EROSION CONTROLS SHALL BE INSPECTED WEEKLY AND AFTER EVERY HALF-INCH OF RAINFALL.

7. EROSION CONTROL MATTING, IF REQUIRED, WILL CONSIST OF JUTE MATTING. MATTING WITH WELDED PLASTIC OR 'BIODEGRADABLE PLASTIC' NETTING OR THREAD WILL BE AVOIDED TO LIMIT UNINTENTIONAL MORTALITY TO SNAKES.

326 AND 380 TRANSMISSION LINE STRUCTURE REPLACEMENT & OPGW PROJECT

MERRIMACK, LITCHFIELD, LONDONDERRY, HUDSON, AND PELHAM NEW HAMPSHIRE

NOTES

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: EVERSOURCE ENERGY	
PROJ MGR: LEW	REVIEWED BY: TLT	CHECKED BY: DMZ	SHEET S1
DESIGNED BY: MJD	DRAWN BY: MJD	SCALE:	
DATE: 03/04/2022	PROJECT NO. 04.0190999.70	REVISION NO.	

Best Management Practices (BMP's) for Straw wattles

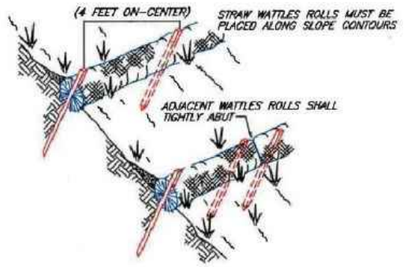
Definition and purpose:
Straw wattles are burlap rolls filled with straw that trap sediment and interrupt water flow by reducing slope lengths.

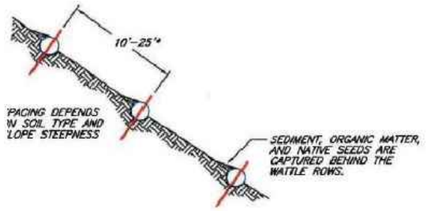
Applications:
* Along erodible or unstablizied slopes
* Spread overland waterflow
* Trap sediment
* Around storm drain inlets to slow water and settle out sediment
* Overlap ends approximately 6 inches

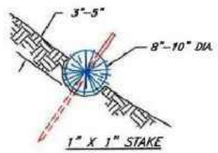
Installation:
Straw wattles are installed parallel to slope contours and perpendicular to sheet flow.

Spacing* - Dependent on slope length, soil steepness and soil type (general range 10 - 25').

Trenching - 2"-5" inch trench
Stacking - at each end and four foot on center (i.e. 25 foot wattle uses 6 stacks)







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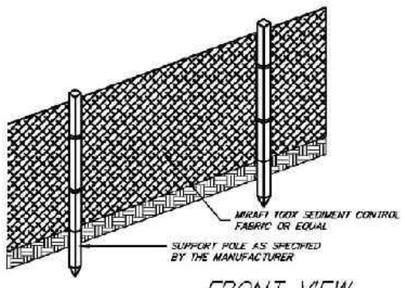
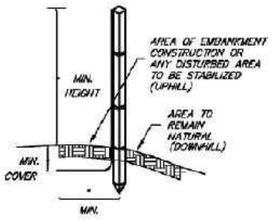
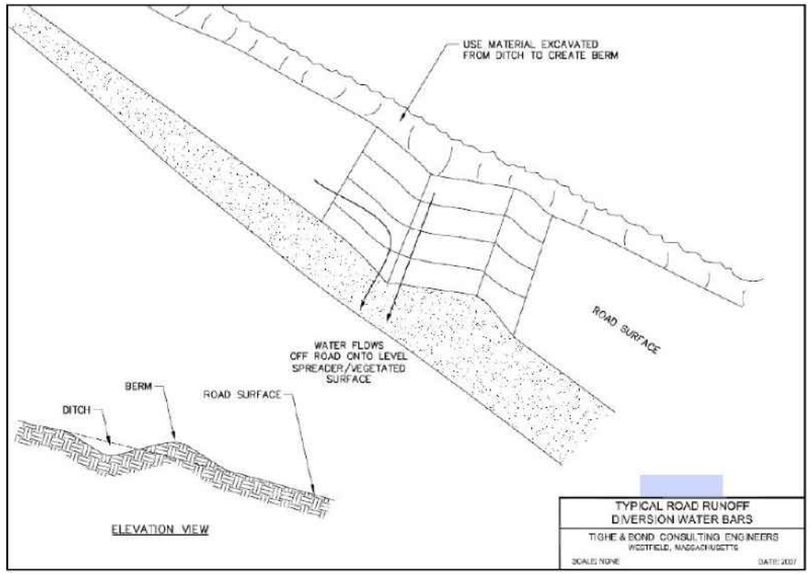


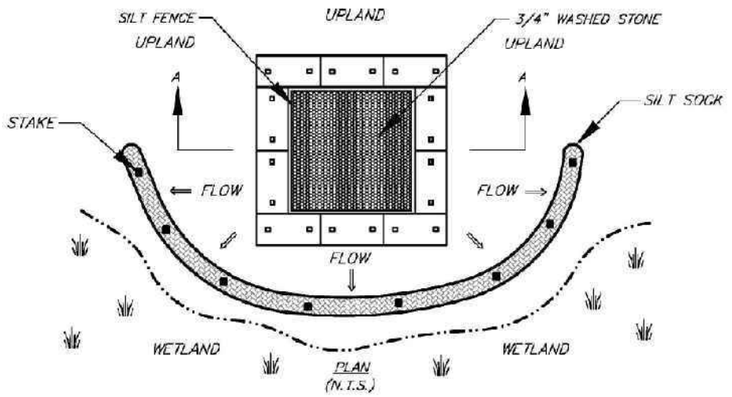
FRONT VIEW



SIDE VIEW

NOTES (SILT FENCE)
1. THE HEIGHT OF THE BARRIER SHALL NOT EXEED 36 INCHES.
2. WHEN JOINTS ARE NECESSARY, FILTER CLOTH SHALL BE SPLICED TOGETHER ONLY AT A SUPPORT POST, WITH A MINIMUM 6—INCH OVERLAP, AND SECURELY SEALED. SEE MANUFACTURER'S RECOMMENDATIONS.
3 POSTS SHALL BE PLACED AT A MAXIMUM OF 10 FEET APART AT THE BARRIER LOCATION AND DRIVEN SECURELY INTO THE GROUND (MINIMUM OF 12 INCHES). WHEN EXTRA STRENGTH FABRIC IS USED WITHOUT THE WIRE SUPPORT FENCE, POST SPACING SHALL BE AS MANUFACTURER RECOMMENDS.
4. A TRENCH SHALL BE EXCAVATED APPROXIMATELY 6 INCHES WIDE AND 6 INCHES DEEP ALONG THE LINE OF POSTS AND UPSLOPE OF THE BARRIER IN ACCORDANCE WITH RECOMMENDATIONS
5. THE FABRIC SHALL NOT EXTEND MORE THAN 36 INCHES ABOVE THE ORIGINAL GROUND SURFACE, AND WILL EXTEND A MINIMUM OF 8 INCHES INTO THE TRENCH. FILTER FABRIC SHALL NOT BE STAPLED TO EXISTING TREES.
6. THE TRENCH SHALL BE BACKFILLED AND THE SOIL COMPACTED OVER THE FILTER FABRIC.
7. FABRIC BARRIERS SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFUL PURPOSE, BUT NOT BEFORE THE UPSLOPE AREA HAS BEEN PERMANENTLY STABILIZED.
8. FILTER BARRIERS SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST ONCE DAILY DURING PROLONGED RAINFALL AND ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.
9. SHOULD THE FABRIC DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE BARRIER STILL BE NECESSARY, THE FABRIC SHALL BE REPLACED PROMPTLY.
10. SEDIMENT DEPOSITS SHOULD BE REMOVED WHEN THEY REACH APPROXIMATELY ONE—HALF THE HEIGHT OF THE BARRIER.
11. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT FENCE OR FILTER BARRIER IS NO LONGER REQUIRED SHALL BE DRESSED TO CONFORM TO THE EXISTING GRADE, PREPARED AND SEEDED.





DEWATERING DETAIL
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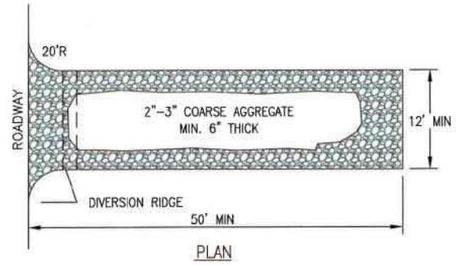


PLAN

NOTES:
1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.

2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.

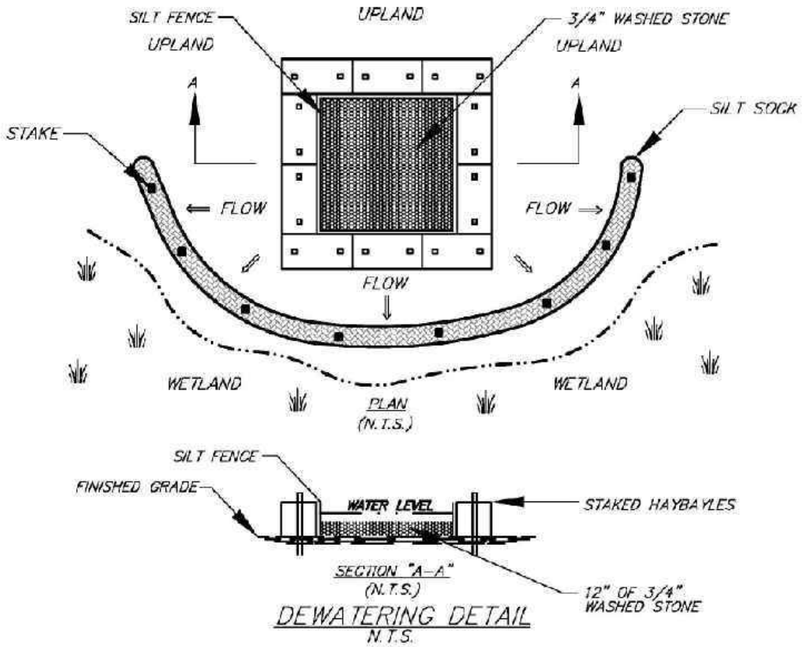
CONSTRUCTION ENTRANCE

NOT TO SCALE

326 AND 380 TRANSMISSION LINE
OPGW AND STRUCTURE REPLACEMENT PROJECT
MERRIMACK, LITCHFIELD, LONDONDERRY, HUDSON, AND PELHAM
NEW HAMPSHIRE

BMP DETAILS

PREPARED BY:		PREPARED FOR:	
GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		EVERSOURCE ENERGY	
PROJ MGR: LEW	REVIEWED BY: TLT	CHECKED BY: DMZ	SHEET S2
DESIGNED BY: MJD	DRAWN BY: MJD	SCALE:	
DATE: 03/04/2022	PROJECT NO. 04.0190999.70	REVISION NO.	



DEWATERING DETAIL
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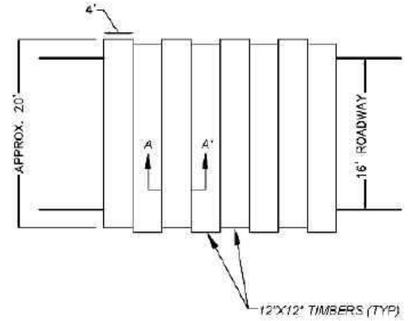

TYPICAL SWAMP MAT PLAN VIEW
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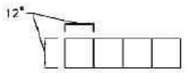

TYPICAL MAT SECTION A-A
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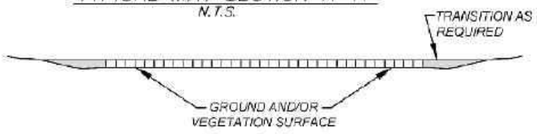

TYPICAL SWAMP MAT SECTION DETAIL
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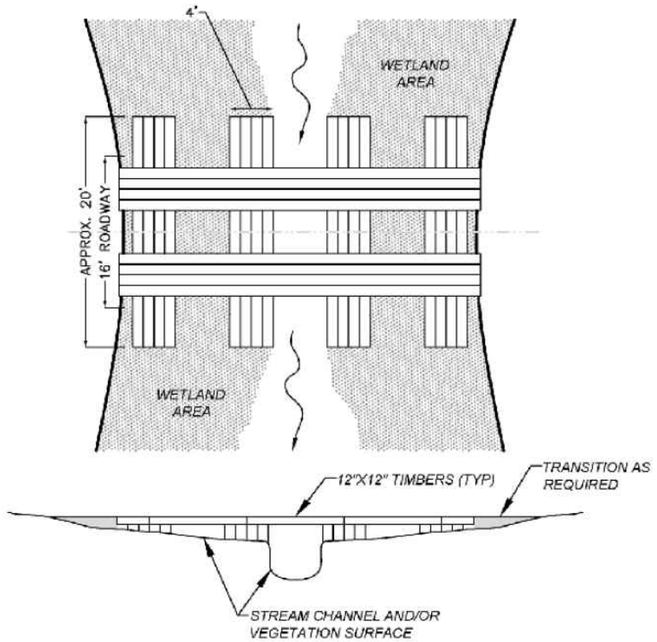

TYPICAL STREAM CROSSING
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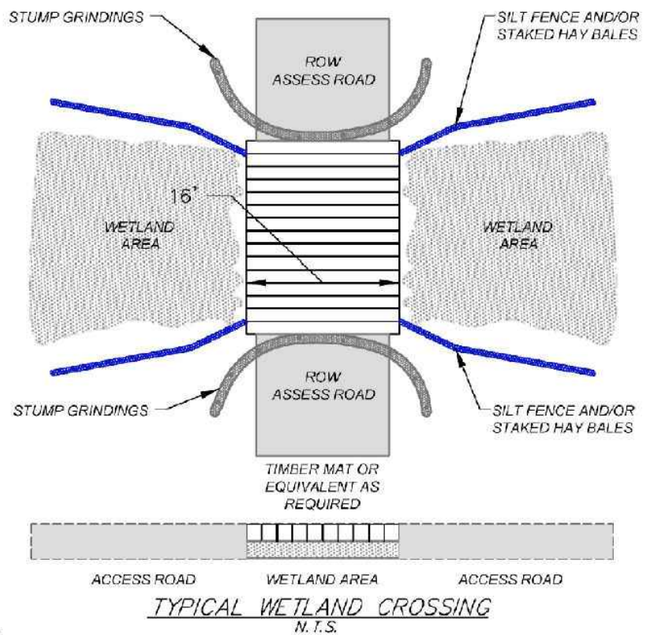

TYPICAL WETLAND CROSSING
N. T. S.

326 AND 380 TRANSMISSION LINE
OPGW AND STRUCTURE REPLACEMENT PROJECT
MERRIMACK, LITCHFIELD, LONDONDERRY, HUDSON, AND PELHAM
NEW HAMPSHIRE

BMP DETAILS

PREPARED BY:
GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR:
EVERSOURCE ENERGY

PROJ MGR: LEW	REVIEWED BY: TLT	CHECKED BY: DMZ	SHEET S3
DESIGNED BY: MJD	DRAWN BY: MJD	SCALE:	
DATE: 03/04/2022	PROJECT NO. 04.0190999.70	REVISION NO.	

NOTES

1. BLANDING'S TURTLE (STATE ENDANGERED), SPOTTED TURTLE (STATE THREATENED), BLACK RACER (STATE THREATENED), EASTERN BOX TURTLE (STATE ENDANGERED) AND EASTERN HOGNOSE SNAKE (STATE ENDANGERED) OCCUR WITHIN THE VICINITY OF THE PROJECT SITE. SITE OPERATORS SHALL BE INFORMED OF THE POTENTIAL PRESENCE OF THESE SPECIES AND SHALL BE PROVIDED A FLYER THAT HELPS TO IDENTIFY THESE SPECIES ALONG WITH NHFG CONTACT INFORMATION. SEE PLAN SHEET 4-7.

2. VERNAL POOLS AND POTENTIAL VERNAL POOLS SHALL BE FLAGGED PRIOR TO WORK AND ALL IMPACTS TO VERNAL POOLS AND POTENTIAL VERNAL POOLS SHALL BE AVOIDED.

3. SIGHTINGS OF EASTERN BOX SHALL BE REPORTED IMMEDIATELY TO NHFG WILDLIFE BIOLOGISTS MELISSA WINTERS (ALL HOURS,603-479-1129). IMMEDIATE REPORTING OF OBSERVATIONS IS CRITICAL AS NHFG BIOLOGISTS WILL NEED TO COLLECT DATA ON THE INDIVIDUAL.

4. TURTLES AND SNAKES MAY BE ATTRACTED TO DISTURBED GROUND DURING NESTING SEASON (MAY 15TH – JUNE 30TH). ALL TURTLE SPECIES NESTS ARE PROTECTED BY NH LAWS. IF A NEST IS OBSERVED OR SUSPECTED, CONTACT MELISSA WINTERS (603-479-1129) OR JOSH MEGYESY (978-578-0802) AT NHFG IMMEDIATELY FOR FURTHER CONSULTATION.

5. ALL OBSERVATIONS OF EASTERN HOGNOSE SNAKE SEEN AT ANY TIME SHALL BE IMMEDIATELY REPORTED TO THE NHFG DEPARTMENT (MELISSA WINTERS (603-479-1129 CELL) OR JOSH MEGYESY (978-578-0802 CELL)) FOR FURTHER INSTRUCTIONS. PLEASE ATTEMPT TO PHOTOGRAPH THIS SPECIES TO SEND TO US FOR VERIFICATION.

6. PRIOR TO DAILY CONSTRUCTION ACTIVITIES, TIMBER MATTING SHALL BE SWEPT FOR SNAKES AND TURTLES.

7. ALL MANUFACTURED EROSION AND SEDIMENT CONTROL PRODUCTS, WITH THE EXCEPTION OF TURF REINFORCEMENT MATS, UTILIZED FOR, BUT NOT LIMITED TO, SLOPE PROTECTION, RUNOFF DIVERSION, SLOPE INTERRUPTION, PERIMETER CONTROL, INLET PROTECTION, CHECK DAMS, AND SEDIMENT TRAPS SHALL NOT CONTAIN PLASTIC, OR MULTIFILAMENT OR MONOFILAMENT POLYPROPYLENE NETTING OR MESH WITH AN OPENING SIZE OF GREATER THAN 1/8 INCHES;

8. ALL OBSERVATIONS OF THREATENED OR ENDANGERED SPECIES ON THE PROJECT SITE SHALL BE REPORTED IMMEDIATELY TO THE NHFG NONGAME AND ENDANGERED WILDLIFE ENVIRONMENTAL REVIEW PROGRAM BY PHONE AT 603-271-2461 AND BY EMAIL AT NHFGREVIEW@WILDLIFE.NH.GOV, WITH THE EMAIL SUBJECT LINE CONTAINING THE NHB DATACHECK TOOL RESULTS LETTER ASSIGNED NUMBER, THE PROJECT NAME, AND THE TERM WILDLIFE SPECIES OBSERVATION;

9. PHOTOGRAPHS OF THE OBSERVED SPECIES AND NEARBY ELEMENTS OF HABITAT OR AREAS OF LAND DISTURBANCE SHALL BE PROVIDED TO NHFG IN DIGITAL FORMAT AT THE ABOVE EMAIL ADDRESS FOR VERIFICATION, AS FEASIBLE;

10. IN THE EVENT A THREATENED OR ENDANGERED SPECIES IS OBSERVED ON THE PROJECT SITE DURING THE TERM OF THE PERMIT, THE SPECIES SHALL NOT BE DISTURBED, HANDLED, OR HARMED IN ANY WAY PRIOR TO CONSULTATION WITH NHFG AND IMPLEMENTATION OF CORRECTIVE ACTIONS RECOMMENDED BY NHFG, IF ANY, TO ASSURE THE PROJECT DOES NOT APPRECIABLY JEOPARDIZE THE CONTINUED EXISTENCE OF THREATENED AND ENDANGERED SPECIES AS DEFINED IN FIS 1002.04;
SITE OPERATORS SHALL BE ALLOWED TO RELOCATE WILDLIFE ENCOUNTERED IF DISCOVERED WITHIN THE ACTIVE WORK ZONE AND IF IN DIRECT HARM FROM PROJECT ACTIVITIES. WILDLIFE SHALL BE RELOCATED IN CLOSE PROXIMITY TO THE CAPTURE LOCATION BUT OUTSIDE OF THE WORK ZONE AND IN THE DIRECTION THE INDIVIDUAL WAS HEADING. NHFG SHALL BE CONTACTED IMMEDIATELY IF THIS ACTION OCCURS.

11. THE NHFG, INCLUDING ITS EMPLOYEES AND AUTHORIZED AGENTS, SHALL HAVE ACCESS TO THE PROPERTY DURING THE TERM OF THE PERMIT.

12. NESTING AREAS MAY INCLUDE WORK PADS AND ACCESS ROADS THAT ARE NOT HARD PACK GRAVEL AND OTHER SANDY/GRAVEL WORK AREAS. ALL TURTLE SPECIES NESTS AND NORTHERN BLACK RACER NESTS ARE PROTECTED BY NH LAWS. BE AWARE OF THE POTENTIAL TO ENCOUNTER NESTING WILDLIFE IN THESE AREAS.

13. IF A TURTLE OR SNAKE NEST IS OBSERVED OR SUSPECTED, OPERATORS SHALL CONTACT MELISSA WINTERS (603-479-1129) OR JOSH MEGYESY (978-578-0802) AT NHFG IMMEDIATELY FOR FURTHER CONSULTATION. TURTLES NESTING OR EXHIBITING NESTING BEHAVIOR SHALL NOT BE MOVED OR IN ANY WAY DISTURBED.

14. OBSERVATIONS OF NORTHERN BLACK RACERS IN THE MONTHS OF APRIL-MAY AND SEPTEMBER-OCTOBER MAY INDICATE THE POTENTIAL FOR A DEN SITE ON OR NEAR THE PROJECT SITE. OBSERVATIONS OF THIS SPECIES DURING THIS TIMEFRAME SHALL BE REPORTED IMMEDIATELY TO THE NEW HAMPSHIRE FISH AND GAME DEPARTMENT NONGAME AND ENDANGERED WILDLIFE ENVIRONMENTAL REVIEW PROGRAM. PLEASE CONTACT MELISSA WINTERS (603-479-1129) OR BRENDAN CLIFFORD (603-944-0885). OBSERVATIONS OF THIS SPECIES OUTSIDE OF THIS TIMEFRAME CAN FOLLOW GENERAL REPORTING GUIDANCE. PLEASE INCLUDE PHOTOGRAPH WITH TEXT IF FEASIBLE.

15. NO WORK SHALL OCCUR IN THE LONDONDERRY PROJECT SITES WEST OF MAMMOTH ROAD AND NORTH OF ELWOOD ROAD UNTIL AFTER OCTOBER 15TH 2022. NHFG SHALL BE CONTACTED PRIOR TO THE START OF WORK IN THESE SECTIONS SO THAT COORDINATION CAN OCCUR TO MINIMIZE POTENTIAL IMPACTS TO RARE TURTLES.

16. ALL WORK ACTIVITIES SHALL BE RESTRICTED TO THE DEFINED ROADS, CONSTRUCTION AREAS, AND STAGING AREAS, WITH NO EQUIPMENT OR MATERIALS STAGED OR STORED OUTSIDE OF THE DEFINED AREAS.

17. ALL DEFINED ROADS, CONSTRUCTION AREAS, AND STAGING AREAS SHALL BE KEPT CLEARED OF PLANT SUCCESSION AND PIONEER VEGETATION TO PREVENT TURTLES FROM SEEKING REFUGE AND POTENTIALLY BEING CRUSHED IF HIDDEN.

18. EASTERN BOX TURTLES ARE KNOWN TO NEST IN THE VICINITY OF THE PROJECT. NO WORK SHALL OCCUR IN THE HUDSON PROJECT SITES UNTIL AFTER OCTOBER 15TH 2022 EXCEPT FOR SECTIONS OF LINE NORTH OF KIENIA RD (STRUCTURES 74-81 ON MAP SHEETS 6, 7, AND 8 DATED MARCH 2022). NHFG SHALL BE CONTACTED PRIOR TO THE START OF WORK IN HUDSON SO THAT COORDINATION CAN OCCUR TO MINIMIZE POTENTIAL IMPACTS TO EASTERN BOX TURTLES.

19. A BIOLOGIST WITH EXPERIENCE WITH TURTLES (ID AND MONITORING) SHALL BE ONSITE AT ALL TIMES DURING PROJECT ACTIVITIES WHEN ACTIVITIES ARE OCCURRING WITHIN THE WORK AREAS IN HUDSON EXCEPT FOR SECTIONS OF LINE NORTH OF KIENIA RD (STRUCTURES 74-81 ON MAP SHEETS 6, 7, AND 8 DATED MARCH 2022).

20. SWEEPS OF LAYDOWN AREAS/FENCING AND WORK EQUIPMENT SHALL BE CONDUCTED IN THE MORNING PRIOR TO WORK AND DURING THE DAY WHEN/IF EQUIPMENT IS LEFT SITTING IN AN AREA.

21. AREAS OF DISTURBANCE SHALL BE MINIMIZED TO THE EXTENT POSSIBLE. EQUIPMENT PARKING AREAS, LAYDOWN AREAS AND ACCESS SHALL BE CLEARLY DEFINED AND EQUIPMENT/ TRUCKS SHALL BE RESTRICTED TO THESE AREAS.

22. IF TURTLE TRACKS ARE OBSERVED, A POTENTIAL NEST LOCATED, PREDATED NEST OR A TURTLE IS FOUND TO BE OR SUSPECTED OF NESTING WITHIN THE PROJECT AREA, CONTACT NHFG IMMEDIATELY.

23. AT LEAST ONE QUALIFIED BIOLOGICAL MONITOR SHALL BE ON-SITE AT ALL TIMES IN ALL WORK AREAS WEST OF MAMMOTH ROAD AND NORTH OF ELWOOD ROAD. A QUALIFIED BIOLOGICAL MONITOR SHALL BE SOMEONE WITH TRAINING AND EXPERIENCE IN TURTLE AND REPTILE IDENTIFICATION AND HANDLING TECHNIQUES AND SHALL OPERATE UNDER THE GUIDANCE OF A QUALIFIED HERPETOLOGIST. A QUALIFIED HERPETOLOGIST SHALL BE A WILDLIFE BIOLOGIST WELL VERSED ON AND WITH EXTENSIVE EXPERIENCE IN TURTLE IDENTIFICATION, LIFE HISTORY, HABITAT PREFERENCE, HANDLING, AND DOCUMENTATION, I.E. ACTIVITY, SEXING, AGING, ETC.
THE QUALIFIED HERPETOLOGIST SHALL BE RESPONSIBLE FOR:
□SEARCHING FOR, IDENTIFYING, DOCUMENTING, REPORTING AND RELOCATING ANY STATE-LISTED HERPETOFAUNA WITHIN THE WORK AREAS IMMEDIATELY PRIOR TO THE PLACEMENT OF GRAVEL AND/OR MATTING.
□INSTRUCTING AND GUIDING BIOLOGICAL MONITOR ON MATTERS PERTAINING TO HERPETOFAUNA.
□ENSURING PROPER DOCUMENTATION AND HANDLING TECHNIQUES ARE ABIDED TO BY THE CONSTRUCTION PERSONNEL AND THE BIOLOGICAL MONITOR.
□AT THE END OF THE PROJECT, THE QUALIFIED HERPETOLOGIST SHALL PROVIDE EVERSOURCE LICENSING AND PERMITTING STAFF A REPORT, WHICH INCLUDES A SUMMARY OF OBSERVATIONS, REPORTING LOGS DOCUMENTING ANY DOCUMENTED STATE-LISTED SPECIES, AND MAPPING AND .SHP FILES SHOWING THE LOCATION OF ANY OBSERVED STATE-LISTED SPECIES. THE REPORT SHALL BE REVIEWED AND PROVIDED TO NH F&G FOR THEIR RECORDS.
THE BIOLOGICAL MONITOR SHALL:
□INSPECT ALL WORK AREAS DAILY FOR S&E CONTROLS, THE PRESENCE OF STATE-LISTED SPECIES, TO ENSURE COMPLIANCE WITH ENVIRONMENTAL REGULATIONS AND PERMIT CONDITIONS.
□MAINTAIN REGULAR CONTACT WITH THE PROJECT'S QUALIFIED HERPETOLOGIST ON ALL MATTERS PERTAINING TO HERPETOFAUNA PROTECTION AND SURVEYS.
□SERVE AS THE PRIMARY CONTACT BETWEEN THE CONTRACTOR AND EL&P STAFF.
□REPORT OBSERVATIONS OF STATE-LISTED SPECIES IMMEDIATELY TO EL&P STAFF WHO SHALL IN TURN REPORT THOSE OBSERVATIONS TO NHF&G.
□DOCUMENT FIELD ACTIVITIES AND OBSERVATIONS DAILY.

24. MINIMIZE WORK PAD AREAS, INCLUDING MATTING, TO THE GREATEST EXTENT POSSIBLE, ESPECIALLY IN WETLANDS AND OTHER SENSITIVE AREAS. RESTORE WORK PADS USING TOPSOIL STOCKPILED DURING INITIAL GRADING TO AN APPROXIMATELY 30-FOOT BY 60-FOOT OR SMALLER AREA AT THE BASE OF THE STRUCTURE TO ALLOW FOR FUTURE MAINTENANCE. STABILIZE EXPOSED SOILS WITH SEED AND MULCH AS NECESSARY.

SPOTTED TURTLE (CLEMMYS GUTTATA)

STATE THREATENED

SPOTTED TURTLE IDENTIFICATION

1.SMALL, MOSTLY AQUATIC WITH BLACK OR DARK BROWN WITH YELLOW SPOTS.
2. FAIRLY FLAT SHELL COMPARED TO BLANDING'S TURTLE.
3. SPOTS VARY IN COLOR AND NUMBER.

BLANDING'S TURTLE (EMYDOIDEA BLANDINGII)

STATE ENDANGERED

BLANDING'S TURTLE IDENTIFICATION

1. LARGE, DARK/BLACK DOMED SHELL WITH LIGHTER SPECKLES.
2. DISTINCT YELLOW THROAT/CHIN.
3. AQUATIC BUT OFTEN MOVES ON LAND.

*ALL PHOTOS AND IDENTIFICATION INFORMATION COURTESY OF NEW HAMPSHIRE FISH AND GAME DEPARTMENT.

380 & 326 TRANSMISSION LINE
OPGW AND STRUCTURE REPLACEMENT PROJECT
PELHAM, LITCHFIELD, LONDONDERRY, AND HUDSON
NEW HAMPSHIRE

WILDLIFE NOTES

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: EVERSOURCE ENERGY	
PROJ MGR: LEW	REVIEWED BY: TLT	CHECKED BY: DMZ	SHEET S4
DESIGNED BY: MJD	DRAWN BY: MJD	SCALE:	
DATE: 07/25/2022	PROJECT NO. 04.0190999.70	REVISION NO.	

NORTHERN BLACK RACER (COLUBER CONSTRICTOR)

STATE THREATENED

NORTHERN BLACK RACER IDENTIFICATION

1. SOLID BLACK WITH A WHITE THROAT.
2. SLENDER WITH GLOSSY SCLAES.
3. 3-6 FT. LONG.
4. HATCHLINGS ARE VERY SMALL AND PATTERNED.

EASTERN HOGNOSE SNAKE (HETERODON PLATIRHINOS)

STATE ENDANGERED

EASTERN HOGNOSE SNAKE IDENTIFICATION

1. BLACK, GRAY OR PATTERNED APPEARANCE.
2. UPTURNED SNOUT.
3. 2-3 FT. LONG
4. MAY SPREAD NECK OUT OR HISS.

**ALL PHOTOS AND IDENTIFICATION INFORMATION COURTESY OF NEW HAMPSHIRE FISH AND GAME DEPARTMENT.*

380& 326 TRANSMISSION LINE
OPGW AND STRUCTURE REPLACEMENT PROJECT
PELHAM, LITCHFIELD, LONDONDERRY, AND HUDSON
NEW HAMPSHIRE

WILDLIFE NOTES (CONT.)

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: EVERSOURCE ENERGY	
PROJ MGR: LEW	REVIEWED BY: TLT	CHECKED BY: DMZ	SHEET S5
DESIGNED BY: MJD	DRAWN BY: MJD	SCALE:	
DATE: 07/19/2022	PROJECT NO. 04.0190999.70	REVISION NO.	

WOOD TURTLE (GLYPTEMYS INSCULPTA)

STATE SPECIES OF SPECIAL CONCERN

WOOD TURTLE IDENTIFICATION

1. NECK AND FORELIMBS ARE ORANGE.
2. CHARACTERIZED BY ITS HIGHLY SCULPTED SHELL WITH EACH LARGE SCUTE TAKING ON AN IRREGULAR PYRAMIDAL SHAPE.
3. ADULTS CAN BE 5-8 INCHES LONG.

EASTERN BOX TURTLE (TERRAPENE CAROLINA CAROLINA)

STATE ENDANGERED

EASTERN BOX TURTLE IDENTIFICATION

1. A SMALL 4.5-7 INCH TURTLE WITH A HIGHLY DOMED SHELL AND VARIABLE PATTERNING.
2. COLOR PATTERNS OF THE CARAPACE TYPICALLY CONSIST OF IRREGULAR YELLOW OR ORANGE MARKINGS OVER A BROWN OR BLACK BASE..
3. THE SKIN IS UNIFORMLY DARK WITH YELLOW OR ORANGE MARKINGS.

**ALL PHOTOS AND IDENTIFICATION INFORMATION COURTESY OF NEW HAMPSHIRE FISH AND GAME DEPARTMENT.*

380 & 326 TRANSMISSION LINE
OPGW AND STRUCTURE REPLACEMENT PROJECT
PELHAM, LITCHFIELD, LONDONDERRY, AND HUDSON
NEW HAMPSHIRE

WILDLIFE NOTES (CONT.)

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: EVERSOURCE ENERGY	
PROJ MGR: LEW	REVIEWED BY: TLT	CHECKED BY: DMZ	SHEET S6
DESIGNED BY: MJD	DRAWN BY: MJD	SCALE:	
DATE: 07/19/2022	PROJECT NO. 04.0190999.70	REVISION NO.	

JEFFERSON/BLUE-SPOTTED SALAMANDER COMPLEX (AMBYSTOMA POP. 3)

RARE SPECIES

JEFFERSON/BLUE-SPOTTED SALAMANDER COMPLEX IDENTIFICATION

1. DARK-BODIED SALAMANDER
2. APPROXIMATELY 3.5-5 INCHES LONG
3. SPECKLED WITH BLUE OR WHITE FLECKS AND SPOTS ACROSS BACK, SIDES, AND TAIL

SMOOTH GREEN SNAKE (LIOCHLOROPHIS VERNALIS)

SPECIES OF SPECIAL CONCERN

SMOOTH GREEN SNAKE IDENTIFICATION

1. A THIN, SLENDER BRIGHT-GREEN SNAKE MEASURING 10-20 INCHES
2. THE UNDERSIDE IS WHILE OR PALE YELLOW

**ALL PHOTOS AND IDENTIFICATION INFORMATION COURTESY OF NEW HAMPSHIRE FISH AND GAME DEPARTMENT.*

380 & 326 TRANSMISSION LINE
OPGW AND STRUCTURE REPLACEMENT PROJECT

PELHAM, LITCHFIELD, LONDONDERRY, AND HUDSON
NEW HAMPSHIRE

WILDLIFE NOTES (CONT.)

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: EVERSOURCE ENERGY	
PROJ MGR: LEW	REVIEWED BY: TLT	CHECKED BY: DMZ	SHEET S7
DESIGNED BY: MJD	DRAWN BY: MJD	SCALE:	
DATE: 07/20/2022	PROJECT NO. 04.0190999.70	REVISION NO.	

Appendix A – Alteration of Terrain Permit Application Form

ALTERATION OF TERRAIN PERMIT APPLICATION

Water Division/ Alteration of Terrain Bureau/ Land Resources Management
Check the Status of your Application: www.des.nh.gov/onestop

RSA/ Rule: RSA 485-A:17, Env-Wq 1500

Administrative Use Only	Administrative Use Only	Administrative Use Only	File Number:
			Check No.
			Amount:
			Initials:

1. APPLICANT INFORMATION (INTENDED PERMIT HOLDER)		
Applicant Name: Eversource Energy	Contact Name: Kurt Nelson	
Email: kurt.nelson@eversource.com	Daytime Telephone: 603-714-3031	
Mailing Address: 13 Legends Drive		
Town/City: Hooksett	State: NH	Zip Code: 03106
2. APPLICANT'S AGENT INFORMATION If none, check here: ☐		
Business Name: GZA GeoEnvironmental, Inc.	Contact Name: Conor Madison	
Email: conor.madison@gza.com	Daytime Telephone: 603-232-8784	
Address: 5 Commerce Park North, Suite 201		
Town/City: Bedford	State: NH	Zip Code: 03110
3. PROPERTY OWNER INFORMATION (IF DIFFERENT FROM APPLICANT)		
Applicant Name: ROW consists of existing easements	Contact Name:	
Email:	Daytime Telephone:	
Mailing Address:		
Town/City:	State:	Zip Code:
4. PROPERTY OWNER'S AGENT INFORMATION If none, check here: ☒		
Business Name:	Contact Name:	
Email:	Daytime Telephone:	
Address:		
Town/City:	State:	Zip Code:
5. CONSULTANT INFORMATION If none, check here: ☐		
Engineering Firm: GZA GeoEnvironmental, Inc.	Contact Name: Conor Madison	
Email: conor.madison@gza.com	Daytime Telephone: 603-232-8784	
Address: 5 Commerce Park North, Suite 201		
Town/City: Bedford	State: NH	Zip Code: 03110

6. PROJECT TYPE

☐ Excavation Only ☐ Residential ☐ Commercial ☐ Golf Course ☐ School ☐ Municipal
☐ Agricultural ☐ Land Conversion ☒ Other: Utility

7. PROJECT LOCATION INFORMATION

Project Name: 380 and 326 Transmission Line Optical and Structure Replacement Project

Street/Road Address: Existing Utility Right-of-Way

Town/City: Various		County: Hillsborough and Rockingham	
Tax Map: See attached	Block:	Lot Number:	Unit:

Location Coordinates: 1033301N, 121035E ☐ Latitude/Longitude ☐ UTM ☒ State Plane

Post-development, will the proposed project withdraw from or directly discharge to any of the following? If yes, identify the purpose.

1. Stream or Wetland Purpose:	☐ Yes ☒ No	☐ Withdrawal	☐ Discharge
2. Man-made pond created by impounding a stream or wetland Purpose:	☐ Yes ☒ No	☐ Withdrawal	☐ Discharge
3. Unlined pond dug into the water table Purpose:	☐ Yes ☒ No	☐ Withdrawal	☐ Discharge

Post-development, will the proposed project discharge to:

- A surface water impaired for phosphorus and/or nitrogen? ☒ No ☐ **Yes - include information to demonstrate that project will not cause net increase in phosphorus and/or nitrogen**
- A Class A surface water or Outstanding Resource Water? ☒ No ☐ **Yes - include information to demonstrate that project will not cause net increase in phosphorus and/or nitrogen**
- A lake or pond not covered previously? ☒ No ☐ **Yes - include information to demonstrate that project will not cause net increase in phosphorus in the lake or pond**

Is the project a High Load area? ☐ Yes ☒ No
If yes, specify the type of high load land use or activity: _____

Is the project within a Water Supply Intake Protection Area (WSIPA)? ☐ Yes ☒ No
Is the project within a Groundwater Protection Area (GPA)? ☐ Yes ☒ No
Will the well setbacks identified in Env-Wq 1508.02 be met? ☒ Yes ☐ No

Note: Guidance document titled "*Using NHDES's OneStop WebGIS to Locate Protection Areas*" is available online. For more details on the restrictions in these areas, read Chapter 3.1 in Volume 2 of the NH Stormwater Manual.

Is any part of the property within the 100-year floodplain? ☐ Yes ☒ No
If yes: Cut volume: 0 cubic feet within the 100-year floodplain
Fill volume: 0 cubic feet within the 100-year floodplain

☒ Project **IS** within **¼ mile of a designated river** Name of River: Merrimack River
☐ Project is **NOT** within ¼ mile of a designated river

☐ Project **IS** within **a Coastal/Great Bay Region community** - **include info required by Env-Wq 1503.08(l) if applicable**
☒ Project is **NOT** within a Coastal/Great Bay Region community

8. BRIEF PROJECT DESCRIPTION (PLEASE DO NOT REPLY "SEE ATTACHED")

The proposed project includes the replacement of 15 existing utility structures and removal of one utility structure along the 380 Transmission Line, and the replacement of 22 structures along the 326 Transmission Line. Access road improvements and work pad grading are proposed as part of this project for continued maintenance of the existing transmission lines.

9. IF APPLICABLE, DESCRIBE ANY WORK STARTED PRIOR TO RECEIVING PERMIT

No work has been started prior to receiving a permit.

10. ADDITIONAL REQUIRED INFORMATION

A. Date a copy of the application was sent to the municipality as required by Env-Wq 1503.05(e)[1]: __/__/____.

(Attach proof of delivery)

B. Date a copy of the application was sent to the local river advisory committee if required by Env-Wq 1503.05(e)[2]: __/__/____.

(Attach proof of delivery)

C. Type of plan required: ☐ Land Conversion ☐ Detailed Development ☒ Excavation, Grading & Reclamation ☐ Steep Slope

D. Additional plans required: ☐ Stormwater Drainage & Hydrologic Soil Groups ☐ Source Control ☐ Chloride Management

E. Total area of disturbance: _____ square feet

F. Additional impervious cover as a result of the project: _____ square feet (use the "-" symbol to indicate a net reduction in impervious coverage).

Total final impervious cover: 0 square feet

G. Total undisturbed cover: 0 square feet

H. Number of lots proposed: 0

I. Total length of roadway: 0 linear feet

J. Name(s) of receiving water(s): 0

K. Identify all other NHDES permits required for the project, and for each indicate whether an application has been filed and is pending, or if the required approval has been issued provide the permit number, registration date, or approval letter number, as applicable.

Type of Approval	Application Filed?	Status	
		Pending	If Issued:
1. Water Supply Approval	☐ Yes ☒ No ☐ N/A	☐	Permit number:
2. Wetlands Permit	☐ Yes ☒ No ☐ N/A	☐	Permit number:
3. Shoreland Permit	☐ Yes ☒ No ☐ N/A	☐	Permit number:
4. UIC Registration	☐ Yes ☒ No ☐ N/A	☐	Registration date:
5. Large/Small Community Well Approval	☐ Yes ☒ No ☐ N/A	☐	Approval letter date:
6. Large Groundwater Withdrawal Permit	☐ Yes ☒ No ☐ N/A	☐	Permit number:
7. Other:	☐ Yes ☐ No	☐	Permit number:

L. List all species identified by the Natural Heritage Bureau as threatened or endangered or of concern: _____

M. Using NHDES's Web GIS OneStop program (www2.des.state.nh.us/gis/onestop/), with the Surface Water Impairment layer turned on, list the impairments identified for each receiving water. If no pollutants are listed, enter "N/A."

N/A

N. Did the applicant/applicant's agent have a pre-application meeting with AOT staff? ☐ Yes ☒ No

If yes, name of staff member:

O. Will blasting of bedrock be required? ☐ Yes ☒ No If yes, estimated quantity of blast rock: _____ cubic yards

If yes, standard blasting BMP notes must be placed on the plans, available at:
http://des.nh.gov/organization/commissioner/pip/publications/wd/documents/wd-10-12.pdf

NOTE: If greater than 5,000 cubic yards of blast rock will be generated, a groundwater monitoring program must be developed and submitted to NHDES. Contact AOT staff for additional detail.

[1] Env-Wq 1503.05(c)(6), requires proof that a completed application form, checklist, plans and specifications, and all other supporting materials have been sent or delivered to the governing body of each municipality in which the project is proposed.

[2] Env-Wq 1503.05(c)(6), requires proof that a completed application form, checklist, plans and specifications, and all other supporting materials have been sent or delivered to the Local River Advisory Committee, if the project is within ¼ mile of a designated river.

11. CHECK ALL APPLICATION ATTACHMENTS THAT APPLY (SUBMIT WITH APPLICATION IN ORDER LISTED)

LOOSE:

- ☒ Signed application form: des.nh.gov/organization/divisions/water/aot/index.htm (with attached proof(s) of delivery)
- ☒ Check for the application fee: des.nh.gov/organization/divisions/water/aot/fees.htm
- ☒ Color copy of a USGS map with the property boundaries outlined (1" = 2,000' scale)
- ☐ If Applicant is not the property owner, proof that the applicant will have a legal right to undertake the project on the property if a permit is issued to the applicant.

BIND IN A REPORT IN THE FOLLOWING ORDER:

- ☒ Copy of the signed application form & application checklist (des.nh.gov/organization/divisions/water/aot/index.htm)
- ☒ Copy of the check
- ☒ Copy of the USGS map with the property boundaries outlined (1" = 2,000' scale)
- ☐ Narrative of the project with a summary table of the peak discharge rate for the off-site discharge points
- ☒ Web GIS printout with the "Surface Water Impairments" layer turned on - http://www4.des.state.nh.us/onestopdatamapper/onestopmapper.aspx
- ☒ Web GIS printouts with the AOT screening layers turned on - http://www4.des.state.nh.us/onestopdatamapper/onestopmapper.aspx
- ☒ NHB letter using DataCheck Tool – www.nhdfl.org/about-forests-and-lands/bureaus/natural-heritage-bureau/
- ☒ The Web Soil Survey Map with project's watershed outlined – websoilsurvey.nrcs.usda.gov
- ☒ Aerial photograph (1" = 2,000' scale with the site boundaries outlined)
- ☒ Photographs representative of the site
- ☐ Groundwater Recharge Volume calculations (one worksheet for each permit application): des.nh.gov/organization/divisions/water/aot/documents/bmp_worksh.xls
- ☐ BMP worksheets (one worksheet for each treatment system): des.nh.gov/organization/divisions/water/aot/documents/bmp_worksh.xls
- ☐ Drainage analysis, stamped by a professional engineer (see Application Checklist for details)
- ☐ Riprap apron or other energy dissipation or stability calculations
- ☐ Site Specific Soil Survey report, stamped and with a certification note prepared by the soil scientist that the survey was done in accordance with the Site Specific Soil Mapping standards, *Site-Specific Soil Mapping Standards for NH & VT, SSSNNE Special Publication No. 3*.
- ☐ Infiltration Feasibility Report (example online) [Env-Wq 1503.08(f)(3)]
- ☐ Registration and Notification Form for Storm Water Infiltration to Groundwater (UIC Registration-for underground systems only, including drywells and trenches): (http://des.nh.gov/organization/divisions/water/dwgb/dwspp/gw_discharge)
- ☐ Inspection and maintenance manual with, if applicable, long term maintenance agreements [Env-Wq 1503.08(g)]
- ☐ Source control plan

PLANS:

- ☐ One set of design plans on 34 - 36" by 22 - 24" white paper (see Application Checklist for details)
- ☐ Pre & post-development color coded soil plans on 11" x 17" (see Application Checklist for details)
- ☐ Pre & post-development drainage area plans on 34 - 36" by 22 - 24" white paper (see Application Checklist for details)

100-YEAR FLOODPLAIN REPORT:

- ☐ All information required in Env-Wq 1503.09, submitted as a separate report.

ADDITIONAL INFORMATION RE: NUTRIENTS, CLIMATE

- ☒ See Checklist for Details

☒ **REVIEW APPLICATION FOR COMPLETENESS & CONFIRM INFORMATION LISTED ON THE APPLICATION IS INCLUDED WITH SUBMITTAL.**

12. REQUIRED SIGNATURES

KN By initialing here, I acknowledge that I am required by Env-Wq 1503.20(e) to submit a copy of all approved documents to the department in PDF format on a CD within one week after permit approval.

By signing below, I certify that:

- The information contained in or otherwise submitted with this application is true, complete, and not misleading to the best of my knowledge and belief;
- I understand that the submission of false, incomplete, or misleading information constitutes grounds for the department to deny the application, revoke any permit that is granted based on the information, and/or refer the matter to the board of professional engineers established by RSA 310-A:3 if I am a professional engineer; and
- I understand that I am subject to the penalties specified in New Hampshire law for falsification in official matters, currently RSA 641.

☐ **APPLICANT** ☒ **APPLICANT'S AGENT**:

Signature:  Date: 3/17/2022

Name (print or type): Conor Madison Title: Project Manager

☒ PROPERTY OWNER ☐ PROPERTY OWNER'S AGENT:

Signature:  Date: 3/17/2022

Name (print or type): Kurt Nelson Title: Permitting Specialist

ATTACHMENT A:
ALTERATION OF TERRAIN PERMIT APPLICATION CHECKLIST

Check the box to indicate the item has been provided or provide an explanation why the item does not apply.

DESIGN PLANS

☐ Plans printed on 34 - 36" by 22 - 24" white paper

☐ PE stamp

☒ Wetland delineation

☒ Temporary erosion control measures

☐ Treatment for all stormwater runoff from impervious surfaces such as roadways (including gravel roadways), parking areas, and non-residential roof runoff. Guidance on treatment BMPs can be found in Volume 2, Chapter 4 of the NH Stormwater Management Manual.

☒ Pre-existing 2-foot contours

☐ Proposed 2-foot contours

☐ Drainage easements protecting the drainage/treatment structures

☒ Compliance with the Wetlands Bureau, RSA 482- A http://des.nh.gov/organization/divisions/water/wetlands/index.htm. Note that artificial detention in wetlands is not allowed.

☐ Compliance with the Comprehensive Shoreland Protection Act, RSA 483-B. http://des.nh.gov/organization/divisions/water/wetlands/cspa

☐ Benches. Benching is needed if you have more than 20 feet change in elevation on a 2:1 slope, 30 feet change in elevation on a 3:1 slope, 40 feet change in elevation on a 4:1 slope.

☐ Check to see if any proposed ponds need state Dam permits.
http://des.nh.gov/organization/divisions/water/dam/documents/damdef.pdf

DETAILS

☐ Typical roadway x-section

☐ Detention basin with inverts noted on the outlet structure

☐ Stone berm level spreader

☐ Outlet protection – riprap aprons

☒ A general installation detail for an erosion control blanket

☒ Silt fences or mulch berm

☐ Storm drain inlet protection. Note that since hay bales must be embedded 4 inches into the ground, they are not to be used on hard surfaces such as pavement.

☒ Hay bale barriers

☐ Stone check dams

☒ Gravel construction exit

☐ Temporary sediment trap

☐ The treatment BMP's proposed

☐ Any innovative BMP's proposed

CONSTRUCTION SEQUENCE/EROSION CONTROL

☒ Note that the project is to be managed in a manner that meets the requirements and intent of RSA 430:53 and Chapter Agr 3800 relative to invasive species.

☒ Note that perimeter controls shall be installed prior to earth moving operations.

☐ Note that temporary water diversion (swales, basins, etc) must be used as necessary until areas are stabilized.

☐ Note that ponds and swales shall be installed early on in the construction sequence (before rough grading the site).

☐ Note that all ditches and swales shall be stabilized prior to directing runoff to them.

☐ Note that all roadways and parking lots shall be stabilized within 72 hours of achieving finished grade.

☒ Note that all cut and fill slopes shall be seeded/loamed within 72 hours of achieving finished grade

☒ Note that all erosion controls shall be inspected weekly AND after every half-inch of rainfall.

☒ Note the limits on the open area allowed, see Env-Wq 1505.02 for detailed information.

Example note: The smallest practical area shall be disturbed during construction, but in no case shall exceed 5 acres at any one time before disturbed areas are stabilized.

☒ Note the definition of the word "stable"

Example note: An area shall be considered stable if one of the following has occurred:

- Base course gravels have been installed in areas to be paved.
- A minimum of 85 percent vegetated growth has been established.
- A minimum of 3 inches of non-erosive material such stone or riprap has been installed.
- Or, erosion control blankets have been properly installed.

☒ Note the limit of time an area may be exposed
Example note: All areas shall be stabilized within 45 days of initial disturbance.

☒ Provide temporary and permanent seeding specifications. (Reed canary grass is listed in the Green Book; however, this is a problematic species according to the Wetlands Bureau and therefore should not be specified)

☒ Provide winter construction notes that meet or exceed our standards.

Standard Winter Notes:

- All proposed vegetated areas that do not exhibit a minimum of 85 percent vegetative growth by October 15, or which are disturbed after October 15, shall be stabilized by seeding and installing erosion control blankets on slopes greater than 3:1, and seeding and placing 3 to 4 tons of mulch per acre, secured with anchored netting, elsewhere. The installation of erosion control blankets or mulch and netting shall not occur over accumulated snow or on frozen ground and shall be completed in advance of thaw or spring melt events.
- All ditches or swales which do not exhibit a minimum of 85 percent vegetative growth by October 15, or which are disturbed after October 15, shall be stabilized temporarily with stone or erosion control blankets appropriate for the design flow conditions.
- After October 15, incomplete road or parking surfaces, where work has stopped for the winter season, shall be protected with a minimum of 3 inches of crushed gravel per NHDOT item 304.3.

☐ Note at the end of the construction sequence that "Lot disturbance, other than that shown on the approved plans, shall not commence until after the roadway has the base course to design elevation and the associated drainage is complete and stable." – This note is applicable to single/duplex family subdivisions, when lot development is not part of the permit.

DRAINAGE ANALYSES

Please double-side 8 ½" × 11" sheets where possible but, **do not** reduce the text such that more than one page fits on one side.

☐ PE stamp

☐ Rainfall amount obtained from the Northeast Regional Climate Center- http://precip.eas.cornell.edu/. Include extreme precipitation table as obtained from the above referenced website.

☐ Drainage analyses, in the following order:

- Pre-development analysis: Drainage diagram.
- Pre-development analysis: Area Listing and Soil Listing.
- Pre-development analysis: Node listing 1-year (if applicable), 2-year, 10-year and 50-year.
- Pre-development analysis: Full summary of the 10-year storm.
- Post-development analysis: Drainage diagram.
- Post-development analysis: Area Listing and Soil Listing.
- Post-development analysis: Node listing for the 2-year, 10-year and 50-year.
- Post-development analysis: Full summary of the 10-year storm.

☐ Review the Area Listing and Soil Listing reports

- Hydrologic soil groups (HSG) match the HSGs on the soil maps provided.
- There is the same or less HSG A soil area after development (check for each HSG).
- There is the same or less "woods" cover in the post-development.
- Undeveloped land was assumed to be in "good" condition.
- The amount of impervious cover in the analyses is correct.

Note: A good check is to subtract the total impervious area used in the pre analysis from the total impervious area used in the post-analysis. For residential projects without demolition occurring, a good check is to take this change in impervious area, subtract out the roadway and divide the remaining by the number of houses/units proposed. Do these numbers make sense?

☐ Check the storage input used to model the ponds.

☐ Check to see if the artificial berms pass the 50-year storm, i.e., make sure the constructed berms on ponds are not overtopped.

☐ Check the outlet structure proposed and make sure it matches that modeled.

☐ Check to see if the total areas in the pre and post analyses are same.

☐ Confirm the correct NRCS storm type was modeled (Coos, Carroll & Grafton counties are Type II, all others Type III).

.

PRE- AND POST-DEVELOPMENT DRAINAGE AREA PLANS

☐ Plans printed on 34 - 36" by 22 - 24" on white paper.

☐ Submit these plans separate from the soil plans.

☐ A north arrow.

☐ A scale.

☐ Labeled subcatchments, reaches and ponds.

☐ Tc lines.

☐ A clear delineation of the subcatchment boundaries.

☐ Roadway station numbers.

☐ Culverts and other conveyance structures.

PRE AND POST-DEVELOPMENT COLOR-CODED SOIL PLANS

☐ 11" × 17"sheets suitable, as long as it is readable.

☐ Submit these plans separate from the drainage area plans.

☐ A north arrow.

☐ A scale.

☐ Name of the soil scientist who performed the survey and date the soil survey took place.

☐ 2-foot contours (5-foot contours if application is for a gravel pit) as well as other surveyed features.

☐ Delineation of the soil boundaries and wetland boundaries.

☐ Delineation of the subcatchment boundaries.

☐ Soil series symbols (e.g., 26).

☐ A key or legend which identifies each soil series symbol and its associated soil series name (e.g., 26 = Windsor).

☐ The hydrologic soil group color coding (A = Green, B = yellow, C= orange, D=red, Water=blue, & Impervious = gray).

Please note that excavation projects (e.g., gravel pits) have similar requirements to that above, however the following are common exceptions/additions:

☐ Drainage report is not needed if site does not have off-site flow.

☐ 5 foot contours allowed rather than 2 foot.

☐ No PE stamp needed on the plans.

☐ Add a note to the plans that the applicant must submit to the Department of Environmental Services a written update of the project and revised plans documenting the project status every five years from the date of the Alteration of Terrain permit.

☐ Add reclamation notes.

See NRCS publication titled: *Vegetating New Hampshire Sand and Gravel Pits* for a good resource, it is posted online at: http://des.nh.gov/organization/divisions/water/aot/categories/publications.

ADDITIONAL INFORMATION RE: NUTRIENTS, CLIMATE

☐ If project will discharge stormwater to a surface water impaired for phosphorus and/or nitrogen, include information to demonstrate that project will not cause net increase in phosphorus and/or nitrogen.

☐ If project will discharge stormwater to a Class A surface water or Outstanding Resource Water, include information to demonstrate that project will not cause net increase in phosphorus and/or nitrogen.

☐ If project will discharge stormwater to a lake or pond not covered previously, include information to demonstrate that project will not cause net increase in phosphorus in the lake or pond.

☐ If project is within a Coastal/Great Bay Region community, include info required by Env-Wq 1503.08(l) if applicable.

Appendix B – Abutters List

Appendix B - Parcels Intersecting Project Area

Litchfield
Tax Map - Lot
4-189

Hudson
Tax Map - Lot
208-10
208-11
208-18
112-6
240-23
112-4
112-5
107-26
246-66
107-30
246-65
112-3
246-64
240-10

Londonderry
Tax Map - Lot
002 029A 0
002 028A 0
002 022B 0
002 028 0
002 029 0
005 017 0
005 006C A
005 019 3
005 004 6
005 019A 0
005 016A 0
009 023A 0
005 062 0
005 062A 0
005 016B 0
005 019 5
005 057 0
005 004 7
005 017A 0
005 055 0
005 071 0
005 056 0
005 052 0
005 004 0
005 016 0
005 004 8
013 056 0
013 013 0
013 060A 0
009 025 0
013 011 1
009 083 18
009 083 17
009 012A 0
013 057 0
009 083 1
013 019 1
013 065 0

Londonderry
Tax Map - Lot
013 011 0
013 012 0
013 070A 0
013 071 63
013 068 0
013 070 0
005 019 4

Pelham
Tax Map - Lot
058-078-000
058-076-000
057-106-000

Appendix C – New Hampshire Natural Heritage Bureau Report

Memo

NH Natural Heritage Bureau
NHB DataCheck Results Letter

Please note: portions of this document are confidential.
Maps and NHB record pages are confidential and should be redacted from public documents.

To: Lindsey White, GZA GeoEnvironmental
5 Commerce Park North
Suite 201
Bedford, NH 03110

From: NHB Review, NH Natural Heritage Bureau
Date: 3/22/2022 (valid until 03/22/2023)
Re: Review by NH Natural Heritage Bureau
Permits: NHDES - Alteration of Terrain Permit, NHDES - Utility Statutory Permit by Notification (SPN), USACE - General Permit, USEPA - Stormwater Pollution Prevention

NHB ID: **NHB22-0740** Town: Pelham Location: Eversource Right-of-way
Description: Eversource is proposing to replace one existing transmission structure within the existing 326 right-of-way in Pelham.

As requested, I have searched our database for records of rare species and exemplary natural communities, with the following results.

Comments **NHB: Please indicate the estimated time of year that the project will occur in, provide an aerial overview plan showing the location of existing and proposed access, work pad locations, existing and proposed structures. Show all areas of proposed ground disturbance. Plant surveys may be necessary.**
F&G: No Comments At This Time

Natural Community	**State[1]**	**Federal**	**Notes**
Dry Appalachian oak forest*	--	--	Threats include logging, introduction of invasive species, and direct destruction due to development.
Rich Appalachian oak rocky woods	--	--	The primary threat to this natural community is logging.

Plant species	**State[1]**	**Federal**	**Notes**
anemone meadow-rue (*Thalictrum thalictroides*)	E	--	This species occurs in rocky ridges and woodlands, dry forests, and thin woods. Threats would include development of its habitat or recreational use that directly impacted the plants.
blunt-lobed cliff fern (*Woodsia obtusa ssp. obtusa*)	E	--	

Department of Natural and Cultural Resources
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

DNCR/NHB
172 Pembroke Rd.
Concord, NH 03301

Memo

NH Natural Heritage Bureau
NHB DataCheck Results Letter

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common star-grass (*Hypoxis hirsuta*)	T	--	This species occurs in sandplains, disturbed openings, dry forests, and thin woods. Threats would include direct destruction of the plants or major alterations in their habitat.
four-leaved milkweed (*Asclepias quadrifolia*)	E	--	Threats include any major changes to its habitat, which includes dry forests and thin woods.
hairy bedstraw (*Galium pilosum var. pilosum*)*	E	--	
hoary mountain-mint (*Pycnanthemum incanum var. incanum*)	E	--	
late purple American-aster (*Symphyotrichum patens var. patens*)	T	--	
narrow-leaved white-topped-aster (*Sericocarpus linifolius*)*	E	--	This species occurs in dry forests, thin woods, sandplains, and disturbed openings. Threats would include development of its habitat or recreational use that directly impacted the plants.
round-leaved trailing tick-trefoil (*Desmodium rotundifolium*)	T	--	This species occurs in sandplains, disturbed openings, dry forests, and thin woods. Threats would include direct destruction of the plants or major alterations in their habitat.
sicklepod rockcress (*Boechera canadensis*)	T	--	This species is adapted to forest or woodland habitats. It is intolerant of completely open conditions and may be threatened by significant canopy removals.
slender bush-clover (*Lespedeza virginica*)	E	--	This species occurs in sandplains, disturbed openings, dry forests, and thin woods. Threats would include direct destruction of the plants or major alterations in their habitat.
smooth forked whitlow-wort (*Paronychia canadensis*)	E	--	Threats include any major changes to its habitat, which includes dry forests and thin woods.

[1]Codes: "E" = Endangered, "T" = Threatened, “SC” = Special Concern, "--" = an exemplary natural community, or a rare species tracked by NH Natural Heritage that has not yet been added to the official state list. An asterisk (*) indicates that the most recent report for that occurrence was more than 20 years ago.

A negative result (no record in our database) does not mean that a sensitive species is not present. Our data can only tell you of known occurrences, based on information gathered by qualified biologists and reported to our office. However, many areas have never been surveyed, or have only been surveyed for certain species. An on-site survey would provide better information on what species and communities are indeed present.

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Memo

NH Natural Heritage Bureau
NHB DataCheck Results Letter

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To: Lindsey White, GZA GeoEnvironmental
5 Commerce Park North
Suite 201
Bedford, NH 03110

From: NHB Review, NH Natural Heritage Bureau
Date: 3/22/2022 (valid until 03/22/2023)
Re: Review by NH Natural Heritage Bureau
Permits: NHDES - Utility Statutory Permit by Notification (SPN)

NHB ID: **NHB22-0743** Town: Hudson Location: Eversource Right-of-way
Description: Eversource is proposing to replace eight existing transmission structures within the existing 326 right-of-way in Hudson.
cc: Kim Tuttle

As requested, I have searched our database for records of rare species and exemplary natural communities, with the following results.

Comments **NHB: Please indicate the estimated time of year that the project will occur in, provide an aerial overview plan showing the location of existing and proposed access, work pad locations, existing and proposed structures. Show all areas of proposed ground disturbance. Plant surveys may be requested.**
F&G: Please provide job timing and access routes on a simple Google Earth aerial map so that we can more easily assess potential impacts to Eastern box turtle. Also provide BMPs for any other listed species.

Natural Community	State[1]	Federal	Notes
Dry Appalachian oak forest*	--	--	Threats include logging, introduction of invasive species, and direct destruction due to development.
Rich Appalachian oak rocky woods	--	--	The primary threat to this natural community is logging.

Plant species	State[1]	Federal	Notes
anemone meadow-rue (*Thalictrum thalictroides*)	E	--	This species occurs in rocky ridges and woodlands, dry forests, and thin woods. Threats would include development of its habitat or recreational use that directly impacted the plants.

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NHB DataCheck Results Letter

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blunt-lobed cliff fern (*Woodsia obtusa ssp. obtusa*)	E	--	
common star-grass (*Hypoxis hirsuta*)	T	--	This species occurs in sandplains, disturbed openings, dry forests, and thin woods. Threats would include direct destruction of the plants or major alterations in their habitat.
four-leaved milkweed (*Asclepias quadrifolia*)	E	--	Threats include any major changes to its habitat, which includes dry forests and thin woods.
hairy bedstraw (*Galium pilosum var. pilosum*)*	E	--	
hoary mountain-mint (*Pycnanthemum incanum var. incanum*)	E	--	
late purple American-aster (*Symphyotrichum patens var. patens*)	T	--	
narrow-leaved white-topped-aster (*Sericocarpus linifolius*)*	E	--	This species occurs in dry forests, thin woods, sandplains, and disturbed openings. Threats would include development of its habitat or recreational use that directly impacted the plants.
Nuttall's reed grass (*Calamagrostis coarctata*)	E	--	
red threeawn (*Aristida longespica var. geniculata*)	T	--	The pond or lake shore natural communities where this species occurs are extremely vulnerable to trampling, and tend to disappear from areas that experience even moderate recreational use. They are also vulnerable to changes to the lake's hydrology. Additional habitats include sandplains and disturbed openings.
round-leaved trailing tick-trefoil (*Desmodium rotundifolium*)	T	--	This species occurs in sandplains, disturbed openings, dry forests, and thin woods. Threats would include direct destruction of the plants or major alterations in their habitat.
sicklepod rockcress (*Boechera canadensis*)	T	--	This species is adapted to forest or woodland habitats. It is intolerant of completely open conditions and may be threatened by significant canopy removals.
slender bush-clover (*Lespedeza virginica*)	E	--	This species occurs in sandplains, disturbed openings, dry forests, and thin woods. Threats would include direct destruction of the plants or major alterations in their habitat.
smooth forked whitlow-wort (*Paronychia canadensis*)	E	--	Threats include any major changes to its habitat, which includes dry forests and thin woods.

Vertebrate species	**State[1]**	**Federal**	**Notes**
Blanding's Turtle (*Emydoidea blandingii*)	E	--	Contact the NH Fish & Game Dept (see below).
Eastern Box Turtle (*Terrapene carolina*)	E	--	Contact the NH Fish & Game Dept (see below).

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NHB DataCheck Results Letter

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Jefferson/Blue-spotted Salamander Complex (*Ambystoma pop. 3*)	--	--	Contact the NH Fish & Game Dept (see below).

[1]Codes: "E" = Endangered, "T" = Threatened, "SC" = Special Concern, "--" = an exemplary natural community, or a rare species tracked by NH Natural Heritage that has not yet been added to the official state list. An asterisk (*) indicates that the most recent report for that occurrence was more than 20 years ago.

Contact for all animal reviews: Kim Tuttle, NH F&G, (603) 271-6544.

A negative result (no record in our database) does not mean that a sensitive species is not present. Our data can only tell you of known occurrences, based on information gathered by qualified biologists and reported to our office. However, many areas have never been surveyed, or have only been surveyed for certain species. An on-site survey would provide better information on what species and communities are indeed present.

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Memo

NH Natural Heritage Bureau
NHB DataCheck Results Letter

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To: Lindsey White, GZA GeoEnvironmental
5 Commerce Park North
Suite 201
Bedford, NH 03110

From: NHB Review, NH Natural Heritage Bureau
Date: 3/22/2022 (valid until 03/22/2023)
Re: Review by NH Natural Heritage Bureau
Permits: NHDES - Utility Statutory Permit by Notification (SPN)

NHB ID: **NHB22-0862** Town: Londonderry Location: Eversource Right-of-way
Description: Eversource is proposing to replace 10 existing transmission structures within the existing 326 right-of-way in Londonderry and 16 structures within the existing 380 right-of-way.

cc: Kim Tuttle

As requested, I have searched our database for records of rare species and exemplary natural communities, with the following results.

Comments **NHB: Please indicate the estimated time of year that the project will occur in, provide an aerial overview plan showing the location of existing and proposed access, work pad locations, existing and proposed structures. Show all areas of proposed ground disturbance.**
F&G: Please send over timing of proposed work and BMPs for the species listed on the Datacheck Letter.

Plant species	State[1]	Federal	Notes
anemone meadow-rue (*Thalictrum thalictroides*)	E	--	This species occurs in rocky ridges and woodlands, dry forests, and thin woods. Threats would include development of its habitat or recreational use that directly impacted the plants.
common star-grass (*Hypoxis hirsuta*)	T	--	This species occurs in sandplains, disturbed openings, dry forests, and thin woods. Threats would include direct destruction of the plants or major alterations in their habitat.
licorice goldenrod (*Solidago odora ssp. odora*)	T	--	
Nuttall's reed grass (*Calamagrostis coarctata*)	E	--	
orange-fruited horse-gentian (*Triosteum*	E	--	

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NHB DataCheck Results Letter

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aurantiacum var. aurantiacum)			
red threeawn (*Aristida longespica var. geniculata*)	T	--	The pond or lake shore natural communities where this species occurs are extremely vulnerable to trampling, and tend to disappear from areas that experience even moderate recreational use. They are also vulnerable to changes to the lake's hydrology. Additional habitats include sandplains and disturbed openings.

Vertebrate species	**State**[1]	**Federal**	**Notes**
Blanding's Turtle (*Emydoidea blandingii*)	E	--	Contact the NH Fish & Game Dept (see below).
Jefferson/Blue-spotted Salamander Complex (*Ambystoma pop. 3*)	--	--	Contact the NH Fish & Game Dept (see below).
Northern Black Racer (*Coluber constrictor constrictor*)	T	--	Contact the NH Fish & Game Dept (see below).
Smooth Green Snake (*Opheodrys vernalis*)	SC	--	Contact the NH Fish & Game Dept (see below).
Spotted Turtle (*Clemmys guttata*)	T	--	Contact the NH Fish & Game Dept (see below).
Wood Turtle (*Glyptemys insculpta*)	SC	--	Contact the NH Fish & Game Dept (see below).

[1]Codes: "E" = Endangered, "T" = Threatened, "SC" = Special Concern, "--" = an exemplary natural community, or a rare species tracked by NH Natural Heritage that has not yet been added to the official state list. An asterisk (*) indicates that the most recent report for that occurrence was more than 20 years ago.

Contact for all animal reviews: Kim Tuttle, NHF&G, (603) 271-6544.

A negative result (no record in our database) does not mean that a sensitive species is not present. Our data can only tell you of known occurrences, based on information gathered by qualified biologists and reported to our office. However, many areas have never been surveyed, or have only been surveyed for certain species. An on-site survey would provide better information on what species and communities are indeed present.

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NH Natural Heritage Bureau
NHB DataCheck Results Letter

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To: Conor Madison, GZA Geoenvironmental
5 Commerce Park N #201
Bedford, NH 03110

From: Amy Lamb, NH Natural Heritage Bureau
Date: 11/5/2021 (valid until 11/05/2022)
Re: Review by NH Natural Heritage Bureau
Permits: NHDES - Utility Statutory Permit by Notification (SPN)

NHB ID: **NHB21-3366** Town: Litchfield Location: 380 Transmission Line
Description: Eversource is proposing select utility pole replacements in 2022.
cc: Kim Tuttle

As requested, I have searched our database for records of rare species and exemplary natural communities, with the following results.

Comments **NHB: No Comments At This Time**
F&G: How many poles will be replaced, and when will the work occur? How will the poles be accessed?

Vertebrate species	**State[1]**	**Federal**	**Notes**
Blanding's Turtle (*Emydoidea blandingii*)	E	--	Contact the NH Fish & Game Dept (see below).
Eastern Hognose Snake (*Heterodon platirhinos*)*	E	--	Contact the NH Fish & Game Dept (see below).
Smooth Green Snake (*Opheodrys vernalis*)	SC	--	Contact the NH Fish & Game Dept (see below).
Spotted Turtle (*Clemmys guttata*)	T	--	Contact the NH Fish & Game Dept (see below).

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Contact for all animal reviews: Kim Tuttle, NH F&G, (603) 271-6544.

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NHB DataCheck Results Letter

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To: Conor Madison, GZA Geoenvironmental
5 Commerce Park N #201
Bedford, NH 03110

From: Amy Lamb, NH Natural Heritage Bureau
Date: 11/5/2021 (valid until 11/05/2022)
Re: Review by NH Natural Heritage Bureau
Permits: NHDES - Utility Statutory Permit by Notification (SPN)

NHB ID: **NHB21-3370** Town: Londonderry Location: 380 Transmission Line
Description: Eversource is proposing to install an underground optical ground wire cable (trench 3ft deep by 3ft wide) along the 380 Transmission Line maintained ROW.
cc: Kim Tuttle

As requested, I have searched our database for records of rare species and exemplary natural communities, with the following results.

Comments **NHB: Please provide project timing, photos of the proposed trench path, and information about any proposed wetland impacts. Red threeawn occurs in the vicnity in open, disturbed soils and Nuttall's reedgrass has been documented in wetlands within the ROW. F&G: When is the work proposed? Will any vernal pools be impacted? How long will the proposed trench be?**

Plant species	**State[1]**	**Federal**	**Notes**
Nuttall's reed grass (*Calamagrostis coarctata*)	E	--	
red threeawn (*Aristida longespica var. geniculata*)	T	--	The pond or lake shore natural communities where this species occurs are extremely vulnerable to trampling, and tend to disappear from areas that experience even moderate recreational use. They are also vulnerable to changes to the lake 's hydrology. Additional habitats includes andplains and disturbed openings.

Vertebrate species	**State[1]**	**Federal**	**Notes**
Blanding's Turtle (*Emydoidea blandingii*)	E	--	Contact the NH Fish & Game Dept (see below).
Smooth Green Snake (*Opheodrys vernalis*)	SC	--	Contact the NH Fish & Game Dept (see below).
Spotted Turtle (*Clemmys guttata*)	T	--	Contact the NH Fish & Game Dept (see below).

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NHB DataCheck Results Letter

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Wood Turtle (*Glyptemys insculpta*)	SC	--	Contact the NH Fish & Game Dept (see below).

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Contact for all animal reviews: Kim Tuttle, NH F&G, (603) 271-6544.

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Conor Madison

From: Conor Madison
Sent: Wednesday, November 17, 2021 10:11 AM
To: Tuttle, Kim
Subject: RE: NHB21-3366 - Litchfield 380 Transmission Line structure replacement

Hi Kim,

I will add the BMP note below to our list as well.

Thanks,
Conor

Conor Madison, CPESC, CESSWI
Assistant Project Manager
GZA | 5 Commerce Park North | Bedford, NH 03110
o: 603.232.8784 | c: 207.331.6629 | conor.madison@gza.com | www.gza.com | LinkedIn

---

From: Tuttle, Kim <Kim.A.Tuttle@wildlife.nh.gov>
Sent: Tuesday, November 16, 2021 8:16 AM
To: Conor Madison <Conor.Madison@gza.com>
Subject: RE: NHB21-3366 - Litchfield 380 Transmission Line structure replacement

Hi Conor,

Please add this note to the BMPs and we should be all set:

ALL OBSERVATIONS OF EASTERN HOGNOSE SNAKE SEEN AT ANY TIME MUST BE IMMEDIATELY REPORTED to the NHFG Department (MELISSA DOPERALSKI (603-479-1129 cell) or Brendan Clifford (cell 603-944-0885) FOR FURTHER INSTRUCTIONS. Please attempt to photograph this species to send to us for verification.

Thanks,

Kim Tuttle
Wildlife Biologist
NH Fish and Game
11 Hazen Drive
Concord, NH 03301
603-271-6544

From: Conor Madison <Conor.Madison@gza.com>
Sent: Monday, November 15, 2021 5:00 PM
To: Tuttle, Kim <Kim.A.Tuttle@wildlife.nh.gov>
Subject: RE: NHB21-3366 - Litchfield 380 Transmission Line structure replacement

Hi Kim,

Vernal pools will not be impacted and please see below for the reptile BMPs Eversource will utilize.

Eversource intends to incorporate typical reptile construction BMPs including the following:

1. Prior to daily construction activities, timber matting will be reviewed for snakes and turtles. GZA will provide an environmental addendum to the daily tailboards by the contracts to include guidance on protocols for snakes and provide identification for spotted turtles, Blanding's turtle and eastern hognose snake.
2. Observed snakes and turtles will be moved off construction access roads to limit and prevent mortality to snakes and turtles during construction.
3. Erosion control matting, if utilized, will consist of jute matting. Matting with plastic mesh will be avoided to limit the unintentional mortality to snakes.
4. At the conclusion of the project, a summary report of any rare species observations will be provided to the NHFG Nongame Program.
5. Impacts to vernal pools and potential vernal pools will be avoided.
6. Any mortality to listed species will be immediately reported to the NHFG Nongame Program and will be documented, photographed, collected and preserved.

Eversource will report on any rare species observation as typically requested.

Please let me know if you have any questions or comments. GZA will be the environmental monitor on Site and we will incorporate your feedback into the project and daily tailboards with contractors.

Thanks,
Conor

Conor Madison, CPESC, CESSWI
Assistant Project Manager
GZA | 5 Commerce Park North | Bedford, NH 03110
o: 603.232.8784 | c: 207.331.6629 | conor.madison@gza.com | www.gza.com | LinkedIn

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From: Tuttle, Kim <Kim.A.Tuttle@wildlife.nh.gov>
Sent: Monday, November 15, 2021 1:47 PM
To: Conor Madison <Conor.Madison@gza.com>
Subject: RE: NHB21-3366 - Litchfield 380 Transmission Line structure replacement

Hi Conor,

Will any vernal pools be impacted? Please send over the reptile BMPS you will be using so that we can see that they are up to date.

Thanks,

Kim Tuttle
Wildlife Biologist
NH Fish and Game
11 Hazen Drive
Concord, NH 03301
603-271-6544

From: Conor Madison <Conor.Madison@gza.com>
Sent: Monday, November 15, 2021 1:31 PM
To: Tuttle, Kim <Kim.A.Tuttle@wildlife.nh.gov>
Subject: RE: NHB21-3366 - Litchfield

Hi Kim,

I just wanted to follow up on the project in Litchfield below.

Thanks,
Conor

Conor Madison, CPESC, CESSWI
Assistant Project Manager
GZA | 5 Commerce Park North | Bedford, NH 03110
o: 603.232.8784 | c: 207.331.6629 | conor.madison@gza.com | www.gza.com | LinkedIn

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From: Conor Madison
Sent: Monday, November 8, 2021 11:56 AM
To: Tuttle, Kim <Kim.A.Tuttle@wildlife.nh.gov>
Subject: NHB21-3366 - Litchfield

Hi Kim,

Attached is the NHB report for 380 Transmission Line structure replacement project in Litchfield. The proposed project includes temporary wetland impacts for access and work pad placement for the replacement of 1 utility pole. Timber matting will be used where work areas are located within wetlands. Wood, and Spotted Turtles as well as Eastern Hognose Snake and Smooth Green Snake are known to occur within the vicinity ROW. The proposed project involves maintenance work within an existing and maintained utility ROW and does not propose expansion of the ROW. The tentative construction schedule for the proposed project is Spring 2022.

The pole proposed to be replaced is located at the intersection of the two ROWs shown on the NHB aerial imagery plan. The access to the structure will be directly off Brick Yard Drive and is approximately 250ft to the base of the structure.

Please let me know if you have any questions or comments.
Thanks,
Conor

Conor Madison, CPESC, CESSWI
Assistant Project Manager
GZA | 5 Commerce Park North | Bedford, NH 03110
o: 603.232.8784 | c: 207.331.6629 | conor.madison@gza.com | www.gza.com | LinkedIn

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For information about GZA GeoEnvironmental, Inc. and its services, please visit our website at www.gza.com.

Conor Madison

From: Conor Madison
Sent: Monday, November 15, 2021 1:28 PM
To: Tuttle, Kim
Subject: RE: NHB21-3370 - Londonderry underground optical

Hi Kim,

As always thank you for the quick reply! You are correct, I did have a typo below and meant Londonderry. I will pass this information along and add the proper BMP notes as well as the flyers you provided.

Thanks,
Conor

Conor Madison, CPESC, CESSWI
Assistant Project Manager
GZA | 5 Commerce Park North | Bedford, NH 03110
o: 603.232.8784 | c: 207.331.6629 | conor.madison@gza.com | www.gza.com | LinkedIn

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From: Tuttle, Kim <Kim.A.Tuttle@wildlife.nh.gov>
Sent: Monday, November 15, 2021 9:24 AM
To: Conor Madison <Conor.Madison@gza.com>
Subject: RE: NHB21-3370 - Londonderry underground optical

Hi Conor,

I'm assuming that Litchfield in the first sentence below is a typo and you meant Londonderry. The NHFG Nongame and Endangered Species Program has reviewed NHB21-3370 for the proposed installation of an OPGW (underground optical ground wire) cable (trench 3ft deep by 3ft wide) along the 380 Transmission Line maintained ROW approximately 1,200 linear feet in length and will utilize existing access roads and ATV paths. Please leave the trench unloamed and unseeded to provide future nesting habitat for Blanding's, spotted and wood turtle in exposed mineral soils.

Please make sure your BMPs for reptiles include the following:

1. Prior to daily construction activities, timber matting will be reviewed for snakes and turtles. GZA will provide an environmental addendum to the daily tailboards by the contracts to include guidance on protocols for snakes and provide identification for spotted turtle, wood turtle, Blanding's turtle and smooth green snake and northern black racer snake.
2. Observed snakes and turtles will be moved off of construction access roads to limit and prevent mortality to snakes and turtles during construction.
3. Erosion control matting, if utilized, will consist of jute matting. Matting with plastic or biodegradable plastic (polypropylene) mesh will be avoided to limit unintentional mortality to snakes.

4. At the conclusion of the project, a summary report of any rare species observations will be provided to the NHFG Nongame Program.
5. Impacts to vernal pools and potential vernal pools will be avoided.

The following notes will be added as well:

6. IF SPOTTED, WOOD OR BLANDING'S TURTLES ARE FOUND LAYING EGGS IN A WORK AREA, PLEASE CONTACT MELISSA DOPERALSKI (603-479-1129 cell) or JOSH MEGYESY (cell 978-578-0802) FOR FURTHER INSTRUCTIONS.
7. ALL OBSERVATIONS OF EASTERN HOGNOSE SNAKE SEEN AT ANY TIME MUST BE IMMEDIATELY REPORTED to the NHFG Department (MELISSA DOPERALSKI (603-479-1129 cell) or Brendan Clifford (cell 603-944-0885) FOR FURTHER INSTRUCTIONS. Please attempt to photograph this species to send to us for verification.

Eversource will report on any rare species observations as typically requested.

Thanks,

Kim Tuttle
Wildlife Biologist
NH Fish and Game
11 Hazen Drive
Concord, NH 03301
603-271-6544

From: Conor Madison <Conor.Madison@gza.com>
Sent: Friday, November 12, 2021 1:42 PM
To: Tuttle, Kim <Kim.A.Tuttle@wildlife.nh.gov>
Subject: NHB21-3370 - Londonderry

Hi Kim,

Attached is the NHB report for 380 Transmission Line structure replacement project in Litchfield. The proposed project includes temporary wetland impacts for access and work pad placement for the installation of OPGW wire underground. Timber matting will be used where work areas are located within wetlands. Blanding's and Spotted Turtle as well as Smooth Green Snake are known to occur within the vicinity ROW. The proposed project involves maintenance work within an existing and maintained utility ROW and does not propose expansion of the ROW. The tentative construction schedule for the proposed project is Spring 2022.

The proposed trench will be approximately 1,200 linear feet in length and will utilize existing access roads and atv paths. The one wetland impact is proposed for the access road to the site. This wetland is classified as a PEM1E and has been utilized for access in the past. I have attached photos of the wetland and proposed trench path as well as a copy of the plans.

Photograph No. 1: Looking southerly at proposed access within wetland LDW-88.1 off Wiley Hill Road.

Photograph No. 2: Looking southerly at proposed access within wetland LDW-88.1 off Wiley Hill Road.

Photograph No. 3: Looking south at proposed trench location within wetland buffer of Wetland LDW-61.

Photograph No. 4: Looking west at proposed trench location leading to Structure 380-58.

Please let me know if you have any questions or comments.
Thanks,
Conor

Conor Madison, CPESC, CESSWI
Assistant Project Manager
GZA | 5 Commerce Park North | Bedford, NH 03110
o: 603.232.8784 | c: 207.331.6629 | conor.madison@gza.com | www.gza.com | LinkedIn

Conor Madison

From: DNCR: NHB Review <nhbreview@dncr.nh.gov>
Sent: Monday, June 20, 2022 3:57 PM
To: Ford, Michelle T
Cc: Nelson, Kurt I; Conor Madison
Subject: [EXTERNAL] RE: Eversource 380-326 Consultation Req. NHB22-0743, NHB22-0862, NHB22-0740, NHB21-3366

Hi Michelle,

I finally had a chance to look at this email. Yes, the proposed survey areas, species, habitats and survey times are approved by NHB, thank you for providing this for our input prior to the surveys. Thank you for clarifying the access route demarcations.

Jessica Bouchard (she/her/hers)
Ecologist
New Hampshire Natural Heritage Bureau (NHB)
Division of Forests & Lands
NH Dept. of Natural & Cultural Resources
172 Pembroke Rd
Concord, NH 03301
(603) 271-2834 (office)

NHB DataCheck Tool

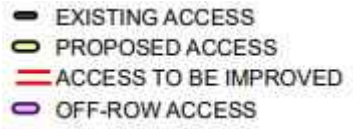
From: Ford, Michelle T <michelle.ford@eversource.com>
Sent: Thursday, June 2, 2022 8:48 AM
To: DNCR: NHB Review <nhbreview@dncr.nh.gov>
Cc: Nelson, Kurt I <kurt.nelson@eversource.com>; Conor Madison <Conor.Madison@gza.com>
Subject: RE: Eversource 380-326 Consultation Req. NHB22-0743, NHB22-0862, NHB22-0740, NHB21-3366

Jess,
In response to your questions on the 380-326:

1. *The plan set shows 'existing' access, 'primary' access, and 'off-ROW' access. Existing and off-ROW access are obvious, but can you please clarify what 'primary' access is meant to depict?*

   We've updated the plan set and legend to be more specific about access types. The updated plan set is attached.
   - "Existing Access" is an access road that needs no improvements for construction
   - "Proposed Access" is where a gravel access road must be created
   - "Access to be Improved" is an access road that needs some improvement, i.e. top dressing with gravel to accommodate construction

- "Off ROW Access" is either an "Existing", "Proposed" or "Access to be Improved" planned route located off of Eversource's existing easement. At this point in the permitting process it has yet to be determined if the off ROW access will be used as Eversource is still negotiating with property owners for permission.



2. *If new access is proposed, please describe how the work will be performed and the width of the proposed access.*

   New access entails stripping and stockpiling the loamy soil layer and laying down and compacting crushed stone to create a 16 ft wide access road in upland areas. Cut and fills of subsoils may also be required to create level access and work pad areas. Stockpiled loamy material is used to topdress the perimeter of work pad areas and is graded into the surrounding landscape.

3. *For the work to replace two structures at the Hudson/Pelham town line, will any disturbance occur for access road modification or upgrades?*

   There is a well-established access road here so this would be considered "Existing Access" and no expansion of the road is required.

Also – below is the plant survey protocol that we are proposing:

Proposed Plant Survey Protocol:

Surveys for state-listed plants will be conducted by a qualified botanist during the appropriate time of year, i.e. flowering period or other time of year when the diagnostic plant characteristics s are clearly visible, within 20' of all work areas (as shown on the project plans (attached)) in the areas specified by species below:

Segment 1: Structures 326/78 to 326/81 (northern Hudson) NHB22-0743

- Red Threeawn (*Aristida longespica var. geniculata)*
  - Survey Period: Late-August to Mid-October
  - Habitat preference: Dry, open, semi-disturbed sandy areas in ROW, and compacted soils adjacent to roadway.
- Nuttall's Reed Grass (*Calamagrostis coarctata*)
  - Survey Period: Mid-August to Early-October
  - Habitat Preference: Areas of swamps, peatlands, sandy or peaty hydric openings.
- Anemone Meadow-Rue (*Thalictrum thalictroides*)
  - Survey Period: Mid-April to June
  - Habitat Preference: Partially shaded Areas of rocky ridges and woodlands, dry forests, and thin woods
- Common Star-Grass (*Hypoxis hirsuta*)
  - Survey Period: Late-May to Early-August
  - Habitat Preference: Surveys to be focused in areas of sandplains, disturbed openings, dry forests, and thin woods.

Segment 2: Structures 380/58 to 326/49 (Londonderry) NHB22-0862

- Red Threeawn (*Aristida longespica var. geniculata)*
  - Survey Period: Late-August to Mid-October

    - Habitat Preference: Areas of dry, open, semi-disturbed sandy areas in ROW, and compacted soils adjacent to roadway.
- Nuttall's Reed Grass (*Calamagrostis coarctata*)
    - Survey Period: Mid-August to Early-October
    - Habitat Preference: Areas of swamps, peatlands, sandy or peaty hydric openings and rights-of-way.

Segment 3: Structures 380/29 to 380/6 (Londonderry) NHB22-0862

- Red Threeawn (*Aristida longespica var. geniculata*)
    - Survey Period: Late-August to Mid-October
    - Habitat Preference: Areas of dry, open, semi-disturbed sandy areas in ROW, and compacted soils adjacent to roadway.
- Nuttall's Reed Grass (*Calamagrostis coarctata*)
    - Survey Period: Mid-August to Early-October
    - Habitat Preference: Areas of swamps, peatlands, sandy or peaty hydric openings and rights-of-way.
- Licorice Goldenrod (*Solidagoodora ssp. Odora*)
    - Survey Period: Mid-August to Early-October
    - ~~o~~ Habitat Preference: Areas of previously disturbed areas and early successional habitat, such as open woodlands (growing in open areas away from overstory), fields, meadows, roadsides,. Infrequently mowed or un-mowed open, sunny areas.

Segment 4: Structures 326/69 to 326/72 NHB22-0862

- Red Threeawn (*Aristida longespica var. geniculata*)
    - Survey Period: Late-August to Mid-October
    - Habitat Preference: Areas of dry, open, semi-disturbed sandy areas in ROW, and compacted soils adjacent to roadway.
- Nuttall's Reed Grass (*Calamagrostis coarctata*)
    - Survey Period: Mid-August to Early-October
    - Habitat Preference: Areas of swamps, peatlands, sandy or peaty hydric openings and rights-of-way.
- Orange-Fruited Horse-Gentian (*Triosteum aurantiancum*)
    - Survey Period: Mid-May to Mid-June
    - Habitat Preference: Areas of rich forests and thickets. It grows best in clearings and light shade in early successional forests.

Segment 5: Structures 326/121-326/127 (Pelham/Hudson) NHB22-0740, NHB22-0743

- Four-Leave Milkweed (*Asclepias quadrifolia*)
    - Survey Period: June to July
    - Habitat Preference: Areas of dry Appalachian oak forest/rich Appalachian oak rocky woods but associated with natural communities and other rare plants within ROW.
- Hairy Bedstraw (*Galium pilosum var. pilosum*)
    - Survey Period: Early-August to Late-September
    - Habitat Preference: Surveys to be focused in areas of woodlands, ridges, fields, clearings.
- Hoary Mountain-Mint (*Pycnanthemum incanum var. incanum)*
    - Timeframe: Early-August to Late-September
    - Surveys to be focused in areas of rich Appalachian oak rocky woods but associated with natural communities and other rare plants within ROW.
- Late Purple American-Aster (*Symphyotrichum patens var. patens)*)
    - Timeframe: Mid-August to Mid-October
    - Surveys to be focused in areas of rich Appalachian oak rocky woods but associated with natural communities and other rare plants within ROW.
- Narrow-Leaved White-Topped-Aster (*Sericocarpus linifolius*)
    - Survey period: Mid-July to Late-August
    - Habitat Preference: Areas of woodlands, dry fields and clearings.

- Round-Leaved Trailing Tick-trefoil (*Desmodium roundifolium*)
    - Survey Period: Early-August to Mid-September
    - Habitat Preference: Areas of sandplains, disturbed openings, dry forests, and thin woods. Rare plants occur in both powerline ROW and in Rich Appalachian oak rocky woods.
- Slender Bush-Clover (*Lespedeza virginica*)
    - Survey Period: Mid-August to Mid-September
    - Habitat Preference: Areas of sandplains, disturbed openings, dry forests, and thin woods. Rare plants occur in both powerline ROW and in Rich Appalachian oak rocky woods.
- Sicklepod Rockcress (*Beochera sparsiflora*)
    - Survey Period: Late-June to Mid-September
    - Habitat Preference: Areas of dry Appalachian oak forest and rich Appalachian oak rocky woods. Also found within other ROW corridors but note that it is intolerant of completely open conditions.
- Smooth Forked Whitlow-Wort (*Paronychia canadensis*)
    - Survey Period: Mid-July to Mid-September
    - Habitat Preference: Areas of rich Appalachian oak rocky woods but associated with natural communities and other rare plants within ROW.

GZA will provide survey updates as work progresses, and at the end of the rare plant survey field work (End of August to beginning of September) GZA will prepare a brief narrative report summarizing our findings, relevant mapping showing identified state-listed plants, and rare plant data forms, which shall be provided to NHB via Eversource.

Please let me know if you have any questions or concerns,
Michelle

Michelle T. Ford, CWB®, PWS, CESSWI
Senior Program Administrator – Wildlife and Protected Species
EVERSOURCE
107 Selden Street, Berlin, CT 06037
(o) 860-665-3183

From: DNCR: NHB Review <nhbreview@dncr.nh.gov>
Sent: Monday, May 16, 2022 12:19 PM
To: Ford, Michelle T <michelle.ford@eversource.com>
Cc: Nelson, Kurt I <kurt.nelson@eversource.com>
Subject: Eversource 380-326 Consultation Req. NHB22-0743, NHB22-0862, NHB22-0740, NHB21-3366

Hello,

I have a couple question regarding the proposed project plan set:

1. The plan set shows 'existing' access, 'primary' access, and 'off-ROW' access. Existing and off-ROW access are obvious, but can you please clarify what 'primary' access is meant to depict?
2. If new access is proposed, please describe how the work will be performed and the width of the proposed access.
3. For the work to replace two structures at the Hudson/Pelham town line, will any disturbance occur for access road modification or upgrades?

For this project, NHB recommends that rare plant surveys are conducted (where habitat is appropriate) in areas of proposed permanent and temporary land disturbance. Rare plants within 0.5 mile of work areas are shown on the Datacheck Letter. If a rare plant species is within 0.5 mile of a work area, please include it in a survey. Please refer to the attached spreadsheet and the descriptions below for the recommended survey locations. If recommended survey locations for specific species are unclear, please let me know.

Londonderry:
-A total of six species are documented nearby the work areas in Londonderry.
-Please survey for the red threeawn, Nuttall's reed grass, common star grass, and licorice goldenrod throughout the proposed work areas within Londonderry.
-At the southernmost work segment (near Hudson) please also include orange-fruited horse gentian and anemone meadow rue in the survey.

Hudson:
-Please survey for the four species that are documented nearby the northernmost work segment in Hudson (nearby Londonderry), as shown on the Datacheck Letter (red threeawn, Nuttall's reed grass, common star grass, and anemone meadow rue).
-Surveys are not requested at the southern project segment in Hudson, as there are no documented rare species in the vicinity of this work area.

Hudson/Pelham town line:
-Ten species are documented at the Hudson/Pelham town line. Please survey for nine of these species in areas of appropriate habitat that are proposed to be disturbed by the project. These nine species are upland species that have the potential to be present in the ROW at this location. Wetlands will not need to be surveyed. Please refer to the attached spreadsheet (column 'Survey Locations') for the nine species to include in this location.

Please ensure that a qualified botanist is present during plant surveys to direct survey work and to verify species identification.

The attached spreadsheet lists the species that NHB recommends a survey for, as well as those that do not need to be surveyed due to a likely lack of appropriate habitat within the ROW. The spreadsheet includes habitat and flowering time information.

Please conduct surveys during the appropriate time of year for the species in question. Please include rare species reporting forms (one per species), GPS coordinates of occurrences (preferably shapefiles), and diagnostic photos to verify ID.

If rare plants are within areas proposed to be disturbed (excavation, dredging, fill, grading, vegetation removal), please notify NHB well in advance of proposed work to determine best methods to minimize or mitigate impacts to occurrences. Please include rare plant locations on the plan sheets so that occurrences can be visually represented.

Please let me know if you have any comments or concerns.

Thank you,

Jessica Bouchard (she/her/hers)
Environmental Reviewer / Ecological Information Specialist
New Hampshire Natural Heritage Bureau (NHB)
Division of Forests & Lands
NH Dept. of Natural & Cultural Resources
172 Pembroke Rd
Concord, NH 03301
(603) 271-2834 (office)

NHB DataCheck Tool

From: Ford, Michelle T <michelle.ford@eversource.com>
Sent: Tuesday, April 19, 2022 9:54 AM
To: FGC: NHFG review <NHFGreview@wildlife.nh.gov>; Winters, Melissa <Melissa.J.Doperalski@wildlife.nh.gov>; Wadiak, Kathleen <Kathleen.P.Wadiak@wildlife.nh.gov>; Newton, Kevin <Kevin.M.Newton@wildlife.nh.gov>; DNCR: NHB Review <nhbreview@dncr.nh.gov>
Cc: Nelson, Kurt I <kurt.nelson@eversource.com>
Subject: Eversource 380-326 Consultation Req. NHB22-0743, NHB22-0862, NHB22-0740, NHB21-3366

Please see the attached consultation request for Eversource's 380-326 Line Structure replacement project in Hudson, Litchfield, Londonderry and Pelham. Please confirm receipt at your earliest convenience and let me know if you have any questions.

Thanks as always,
Michelle

Michelle T. Ford, CWB®, PWS, CESSWI
Senior Program Administrator – Wildlife and Protected Species
EVERSOURCE
107 Selden Street, Berlin, CT 06037
(o) 860-665-3183

**Please note that I will be on vacation from Thursday, April 14 at noon through Wednesday, April 20. Please let me know if you will need project assistance during this time so we can plan accordingly.*

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Snyder, Kimberly

From: Wadiak, Kathleen
Sent: Thursday, June 16, 2022 12:05 PM
To: Ford, Michelle T
Cc: Winters, Melissa; FGC: NHFG review; Mauck, Ridgely; Nelson, Kurt I
Subject: NHFG Review NHB22-0740 NHB21-3366 NHB22-0862 NHB22-0743 Line 380 326 Structure Replacement Pelham Litchfield Londonderry Hudson AoT 220401-070

Michelle,

New Hampshire Fish and Game has completed our review of materials submitted for consultation April 19, 2022 prepared by Kurt Nelson on Eversource. The proposed project is for the replacement of 37 existing wooden utility poles with weathered steel poles along the 380 and 326 transmission line in Pelham, Litchfield, Londonderry, and Hudson.

NHB Datacheck Letters associated with this project:

- NHB22-0740 (Pelham)
- NHB21-3366 (Litchfield)
- NHB22-0862 (Londonderry)
- NHB22-0743 (Hudson)

These recommendations area associated with the following permits:

- NHDES Statutory Permit by Notification
- NHDES Shoreland Permit by Notification
- NHDES Alteration of Terrain Permit 220401-070

NHFG appreciates Eversource's cooperation in our ongoing efforts to evolve the process of how BMPs and rare species information are incorporated into plan sheets and other materials given to site operators. To the extent currently possible, please include all BMPs on all plan sheets for work occurring in the listed sections of line.

Recommendations shall apply to all work areas in specified town or section of town.

Based on the NHB datacheck results letter and the information provided in the submission, we request the following recommended permit conditions be incorporated into the sheet plans as written below (updated highlighted text as applicable) and provided to NHDES and cc NHFG for final review.

NHB22-0740 Pelham
No records of rare wildlife were returned on the NHB Datacheck letter.

NHB21-3366 Litchfield

- Blanding's turtle (state endangered), spotted turtle (state threatened), and Eastern hognose snake (state endangered) occur within the vicinity of the project site. Site operators shall be informed of the potential presence of these species and shall be provided a flyer that helps to identify these species along with NHFG contact information. See Plan Sheet xxxxxx. *Include attached flyers to plan sheet set.*
- Vernal pools and potential vernal pools shall be flagged prior to work and all impacts to vernal pools and potential vernal pools shall be avoided.
- Turtles may be attracted to disturbed ground during nesting season (May 15th – June 30th). All turtle species nests are protected by NH laws. If a nest is observed or suspected, contact Melissa Winters (603-479-1129) or Josh Megyesy (978-578-0802) at NHFG immediately for further consultation.

- All observations of Eastern Hognose snake seen at any time shall be immediately reported to the NHFG Department (Melissa Winters (603-479-1129 cell) or Josh Megyesy (978-578-0802 cell)) for further instructions. Please attempt to photograph this species to send to us for verification.
- Prior to daily construction activities, timber matting shall be swept for snakes and turtles.
- Any rare species that are observed in work areas and are in immediate danger shall be moved away from impact area in the direction the animal was moving. Any handling of rare species shall be reported to NHFG immediately.
- All manufactured erosion and sediment control products, with the exception of turf reinforcement mats, utilized for, but not limited to, slope protection, runoff diversion, slope interruption, perimeter control, inlet protection, check dams, and sediment traps shall not contain plastic, or multifilament or monofilament polypropylene netting or mesh with an opening size of greater than 1/8 inches;
- All observations of threatened or endangered species on the project site shall be reported immediately to the NHFG nongame and endangered wildlife environmental review program by phone at 603-271-2461 and by email at NHFGreview@wildlife.nh.gov, with the email subject line containing the NHB DataCheck tool results letter assigned number, the project name, and the term Wildlife Species Observation;
- Photographs of the observed species and nearby elements of habitat or areas of land disturbance shall be provided to NHFG in digital format at the above email address for verification, as feasible;
- In the event a threatened or endangered species is observed on the project site during the term of the permit, the species shall not be disturbed, handled, or harmed in any way prior to consultation with NHFG and implementation of corrective actions recommended by NHFG, if any, to assure the project does not appreciably jeopardize the continued existence of threatened and endangered species as defined in Fis 1002.04; and
- The NHFG, including its employees and authorized agents, shall have access to the property during the term of the permit.

Additional Recommendations

- Smooth green snake (state species of special concern) occurs within the vicinity of the project site. Site operators should be informed of the potential presences of this species and shall be provided a flyer that helps to identify this species along with NHFG contact information. See Plan Sheet xxxxxx. *Include attached flyers to plan sheet set.*

NHB22-0862 Londonderry

Londonderry EAST of Mammoth Road and SOUTH of Elwood Road

- Blanding's turtle (state endangered), spotted turtle (state threatened), and Northern black racer (state threatened) occur within the vicinity of the project site. Site operators shall be informed of the potential presence of these species and shall be provided a flyer that helps to identify these species along with NHFG contact information. See Plan Sheet xxxxxx. *Include attached flyers to plan sheet set.*
- Vernal pools and potential vernal pools shall be flagged prior to work and all impacts to vernal pools and potential vernal pools shall be avoided.
- Turtles and snakes may be attracted to disturbed ground during nesting season. Turtle nesting season occurs approximately May 15th – June 30th. Nesting areas may include work pads and access roads that are not hard pack gravel and other sandy/gravel work areas. All turtle species nests and Northern black racer nests are protected by NH laws. Be aware of the potential to encounter nesting wildlife in these areas.
- If a turtle or snake nest is observed or suspected, operators shall contact Melissa Winters (603-479-1129) or Josh Megyesy (978-578-0802) at NHFG immediately for further consultation.
- Prior to daily construction activities, timber matting shall be swept for snakes and turtles.
- Observations of Northern black racers in the months of April-May and September-October may indicate the potential for a den site on or near the project site. Observations of this species during this timeframe shall be reported immediately to the New Hampshire Fish and Game Department Nongame and Endangered Wildlife Environmental Review Program. Please contact Melissa Winters (603-479-1129) or Brendan Clifford (603-944-0885). Observations of this species outside of this timeframe can follow general reporting guidance. Please include photograph with text if feasible.

- Any rare species that are observed in work areas and are in immediate danger shall be moved away from impact area in the direction the animal was moving. Any handling of rare species shall be reported to NHFG immediately.
- All manufactured erosion and sediment control products, with the exception of turf reinforcement mats, utilized for, but not limited to, slope protection, runoff diversion, slope interruption, perimeter control, inlet protection, check dams, and sediment traps shall not contain plastic, or multifilament or monofilament polypropylene netting or mesh with an opening size of greater than 1/8 inches;
- All observations of threatened or endangered species on the project site shall be reported immediately to the NHFG nongame and endangered wildlife environmental review program by phone at 603-271-2461 and by email at NHFGreview@wildlife.nh.gov, with the email subject line containing the NHB DataCheck tool results letter assigned number, the project name, and the term Wildlife Species Observation;
- Photographs of the observed species and nearby elements of habitat or areas of land disturbance shall be provided to NHFG in digital format at the above email address for verification, as feasible;
- In the event a threatened or endangered species is observed on the project site during the term of the permit, the species shall not be disturbed, handled, or harmed in any way prior to consultation with NHFG and implementation of corrective actions recommended by NHFG, if any, to assure the project does not appreciably jeopardize the continued existence of threatened and endangered species as defined in Fis 1002.04; and
- The NHFG, including its employees and authorized agents, shall have access to the property during the term of the permit.

Londonderry WEST of Mammoth Road and NORTH of Elwood Road

The utility corridor WEST of Mammoth Road crosses through high priority and conservation-focused area for Blanding's and spotted turtles. NHFG works closely with state and local partners in this way through active habitat management activities and has identified this site as a long-term population monitoring site.

NHFG is aware that sections of this project overlaps with sections of the R187/S188/X116/Z119 LWS Project. If coordination is possible to use equipment and BMPs that are already in place to conduct work for this project, please notify NHFG so we can provide further instructions.

- **No work shall occur in the Londonderry project sites west of Mammoth Road and North of Elwood Road until after October 15th 2022. NHFG shall be contacted prior to the start of work in these sections so that coordination can occur to minimize potential impacts to rare turtles.**
- All work activities shall be restricted to the defined roads, construction areas, and staging areas, with no equipment or materials staged or stored outside of the defined areas.
- All defined roads, construction areas, and staging areas shall be kept cleared of plant succession and pioneer vegetation to prevent turtles from seeking refuge and potentially being crushed if hidden.
- Blanding's turtle (state endangered), spotted turtle (state threatened), and Northern black racer (state threatened) occur within the vicinity of the project site. Site operators shall be informed of the potential presence of these species and shall be provided a flyer that helps to identify these species along with NHFG contact information. See Plan Sheet xxxxxx. *Include attached flyers to plan sheet set.*
- Vernal pools and potential vernal pools shall be flagged prior to work and all impacts to vernal pools and potential vernal pools shall be avoided.
- Turtles and snakes may be attracted to disturbed ground during nesting season. Turtle nesting season occurs approximately May 15th – June 30th. Nesting areas may include work pads and access roads that are not hard pack gravel and other sandy/gravel work areas. All turtle species nests and Northern black racer nests are protected by NH laws. If a turtle or snake nest is observed or suspected, operators shall contact Melissa Winters (603-479-1129) or Josh Megyesy (978-578-0802) at NHFG immediately for further consultation.
- Prior to daily construction activities, timber matting shall be swept for snakes and turtles.
- Observations of Northern black racers in the months of April-May and September-October may indicate the potential for a den site on or near the project site. Observations of this species during this timeframe shall be reported immediately to the New Hampshire Fish and Game Department Nongame and Endangered

Wildlife Environmental Review Program. Please contact Melissa Winters (603-479-1129) or Brendan Clifford (603-944-0885). Observations of this species outside of this timeframe can follow general reporting guidance. Please include photograph with text if feasible.

- Any rare species that are observed in work areas and are in immediate danger shall be moved away from impact area in the direction the animal was moving. Any handling of rare species shall be reported to NHFG immediately.
- All manufactured erosion and sediment control products, with the exception of turf reinforcement mats, utilized for, but not limited to, slope protection, runoff diversion, slope interruption, perimeter control, inlet protection, check dams, and sediment traps shall not contain plastic, or multifilament or monofilament polypropylene netting or mesh with an opening size of greater than 1/8 inches;
- All observations of threatened or endangered species on the project site shall be reported immediately to the NHFG nongame and endangered wildlife environmental review program by phone at 603-271-2461 and by email at NHFGreview@wildlife.nh.gov, with the email subject line containing the NHB DataCheck tool results letter assigned number, the project name, and the term Wildlife Species Observation;
- Photographs of the observed species and nearby elements of habitat or areas of land disturbance shall be provided to NHFG in digital format at the above email address for verification, as feasible;
- In the event a threatened or endangered species is observed on the project site during the term of the permit, the species shall not be disturbed, handled, or harmed in any way prior to consultation with NHFG and implementation of corrective actions recommended by NHFG, if any, to assure the project does not appreciably jeopardize the continued existence of threatened and endangered species as defined in Fis 1002.04; and
- The NHFG, including its employees and authorized agents, shall have access to the property during the term of the permit.

Additional Recommendations

- Wood turtles (state species of special concern) and smooth green snake (state species of special concern) occurs within the vicinity of the project site. Site operators should be informed of the potential presences of these species and shall be provided a flyer that helps to identify these species along with NHFG contact information. See Plan Sheet xxxxxx. *Include attached flyers to plan sheet set.*

NHB22-0743 Hudson

Eastern box turtle is a terrestrial turtle species who spends the majority of its life in upland habitats, including during brumation. Upland habitat types vary and consist of wooded areas, utility corridors (e.g. shrub/brush areas) and grasslands. Like our other turtle and several snake species, they require open, sunny, sandy areas for nesting. They are experts at hiding/blending in due to their unique color patters. This species is highly endangered in our state and given their slow reproductive cycles and susceptibility to negative impacts from humans/human disturbance, it is even a more dire situation, so minimizing the chance for negative impacts is critical. NHFG is actively monitoring NH's population, and there are tracked individuals known in this ROW with a high likelihood of unmarked individuals in the vicinity of this work area. This is an extremely sensitive area. Site operators should be made aware of the sensitive nature and importance of this area. Trucks and other equipment should be driven slowly, and it is critical to remain observant for animals in roadways and work areas.

- Eastern box turtles are known to nest in the vicinity of the project. **No work shall occur in the Hudson project sites until after October 15th 2022 except for sections of line north of Kienia Rd (Structures 74-81 on Map Sheets 6, 7, and 8 dated March 2022). NHFG shall be contacted prior to the start of work in Hudson so that coordination can occur to minimize potential impacts to Eastern box turtles.**
- **A biologist with experience with turtles (ID and monitoring) shall be onsite at all times during project activities when activities are occurring within the work areas in Hudson except for sections of line north of Kienia Rd (Structures 74-81 on Map Sheets 6, 7, and 8 dated March 2022).**
- Blanding's turtle (state endangered), spotted turtle (state threatened), and Eastern box turtle (state endangered) occur within the vicinity of the project site. Site operators shall be informed of the potential

presence of these species and shall be provided a flyer that helps to identify these species along with NHFG contact information. See Plan Sheet xxxxxx. *Include attached flyers to plan sheet set.*

- Vernal pools and potential vernal pools shall be flagged prior to work and all impacts to vernal pools and potential vernal pools shall be avoided.
- Sightings of Eastern box shall be reported immediately to NHFG wildlife biologists Melissa Winters (all hours, 603-479-1129). Immediate reporting of observations is critical as NHFG biologists will need to collect data on the individual.
- Turtles may be attracted to disturbed ground during nesting season (May 15th – June 30th). All turtle species nests are protected by NH laws. If a nest is observed or suspected, contact Melissa Winters (603-479-1129) or Josh Megyesy (978-578-0802) at NHFG immediately for further consultation.
- Prior to daily construction activities, timber matting shall be swept for snakes and turtles.
- Sweeps of laydown areas/fencing and work equipment shall be conducted in the morning prior to work and during the day when/if equipment is left sitting in an area.
- Areas of disturbance shall be minimized to the extent possible. Equipment parking areas, laydown areas and access shall be clearly defined and equipment/trucks shall be restricted to these areas.
- If turtle tracks are observed, a potential nest located, predated nest or a turtle is found to be or suspected of nesting within the project area, contact NHFG immediately.
- Any rare species that are observed in work areas and are in immediate danger shall be moved away from impact area in the direction the animal was moving. Any handling of rare species shall be reported to NHFG immediately.
- All manufactured erosion and sediment control products, with the exception of turf reinforcement mats, utilized for, but not limited to, slope protection, runoff diversion, slope interruption, perimeter control, inlet protection, check dams, and sediment traps shall not contain plastic, or multifilament or monofilament polypropylene netting or mesh with an opening size of greater than 1/8 inches;
- All observations of threatened or endangered species on the project site shall be reported immediately to the NHFG nongame and endangered wildlife environmental review program by phone at 603-271-2461 and by email at NHFGreview@wildlife.nh.gov, with the email subject line containing the NHB DataCheck tool results letter assigned number, the project name, and the term Wildlife Species Observation;
- Photographs of the observed species and nearby elements of habitat or areas of land disturbance shall be provided to NHFG in digital format at the above email address for verification, as feasible;
- In the event a threatened or endangered species is observed on the project site during the term of the permit, the species shall not be disturbed, handled, or harmed in any way prior to consultation with NHFG and implementation of corrective actions recommended by NHFG, if any, to assure the project does not appreciably jeopardize the continued existence of threatened and endangered species as defined in Fis 1002.04; and
- The NHFG, including its employees and authorized agents, shall have access to the property during the term of the permit.

NHFG has completed our review of materials submitted for consultation under FIS 1004. No further coordination with NHFG is requested, and the final recommendations have been transmitted to the applicable permitting agency. Questions or concerns on NHFG recommendations must follow FIS 1004.12. Note that NHFG recommendations may be withdrawn pursuant to FIS 1004.13.

Let me know if you have any questions.

Thank you,
Kat

Kat Wadiak
Wildlife Biologist
Nongame & Endangered Wildlife Program
NH Fish and Game
11 Hazen Drive

Concord, NH 03301
603-271-3017

As of February 3, 2022, New Hampshire Fish and Game requirements for environmental review consultation have changed. To review the new rules, please go to https://www.wildlife.state.nh.us/wildlife/environmental-review.html. All requests for consultation and submittals should be sent via email to NHFGreview@wildlife.nh.gov or can be sent by mail. **The NHB datacheck results letter number needs to be included in the email subject line.**

The requirements for consultation (Fis 1004) shall not apply to the following: statutory permit by notification, permit by rule, permit by notification, routine roadway registration, docking structure registration, or conditional authorization by rule. Review requests for these projects can be sent directly to kim.tuttle@wildlife.nh.gov.

Conor Madison

Subject: RE: Question/concern with NHFG Review NHB22-0740 NHB21-3366 NHB22-0862 NHB22-0743 Line 380 326 Structure Replacement Pelham Litchfield Londonderry Hudson AoT 220401-070

From: Wadiak, Kathleen <Kathleen.P.Wadiak@wildlife.nh.gov>
Sent: Monday, July 18, 2022 12:59 PM
To: Nelson, Kurt I <kurt.nelson@eversource.com>; Ford, Michelle T <michelle.ford@eversource.com>
Cc: Winters, Melissa <Melissa.J.Winters@wildlife.nh.gov>; FGC: NHFG review <NHFGreview@wildlife.nh.gov>; Mauck, Ridgely <Addison.R.Mauck@des.nh.gov>
Subject: RE: Question/concern with NHFG Review NHB22-0740 NHB21-3366 NHB22-0862 NHB22-0743 Line 380 326 Structure Replacement Pelham Litchfield Londonderry Hudson AoT 220401-070

Michelle and Kurt,

NHFG issued recommendations for the 380 326 Structure Replacement in Pelham, Litchfield, Londonderry, and Hudson (NHB22-0740, NHB21-3366, NHB22-0862, NHB22-0743) on June 16, 2022 (attached). NHFG has reviewed Eversource's concerns with the time of year restrictions for work areas west of Mammoth Road and north of Elwood Road and the proposal for alternative work strategies to mitigate impacts to rare wildlife in the vicinity.

NHFG wants emphasize that this is an **extremely** sensitive area with rare animals known to make extensive use of the ROW and surrounding habitat, as well as an area of past compliance issues with Eversource. Future work in this region must be coordinated with NHFG earlier in the planning process in order to allow for the implementation of NHFG recommendations.

It was stated that exclusionary fence was installed around structure 56 and in the fiber area in May 2022 in anticipation of this project scope. If work in this area was anticipated in May 2022 for summer 2022, exclusionary fencing should have been placed around all structures and work areas or NHFG coordination should have been sought out sooner.

NHFG again wants to make it clear that polygons shown on NHB datacheck letters should not be interpreted as rare species habitat. Records shown on NHB datacheck letter maps represent an observation of an individual at a moment in time, and do not represent range, habitat, or other limiting factors for the individual or population. If a species is listed on the NHB datacheck letter, it should be assumed to be present in the project area.

All observations of rare species should continue to be reported to NHFG.

Project BMPs include the establishment of a qualified biological monitor. Please provide qualifications of the biological monitor to NHFG.

Recommended BMPs apply to entire project area unless otherwise specified by NHFG.

These comments apply to all work areas west of Mammoth Road and north of Elwood Road. All other recommendations issued 6/16/22 still apply. The recommendations below, the recommendations given 6/16/22, and NHFG comments made on the Protection Measures document (attached) shall be incorporated into the Protection Measures document included in the project submission. BMPs shall be included on plan sheets to the extent feasible.

- At least one qualified biological monitor shall be on-site at all times in all work areas west of Mammoth Road and north of Elwood Road. A qualified biological monitor shall be someone with training and experience in turtle and reptile identification and handling techniques and shall operate under the guidance of a qualified herpetologist. A qualified herpetologist shall be a wildlife biologist well versed on and with extensive experience in turtle identification, life history, habitat preference, handling, and documentation, i.e. activity, sexing, aging, etc.
    - The qualified herpetologist shall be responsible for:
        - Searching for, identifying, documenting, reporting and relocating any state-listed herpetofauna within the work areas immediately prior to the placement of gravel and/or matting.
        - Instructing and guiding biological monitor on matters pertaining to herpetofauna.
        - Ensuring proper documentation and handling techniques are abided to by the construction personnel and the biological monitor.
        - At the end of the project, the qualified herpetologist shall provide Eversource Licensing and Permitting staff a report, which includes a summary of observations, reporting logs documenting any documented state-listed species, and mapping and .shp files showing the location of any observed state-listed species. The report shall be reviewed and provided to NH F&G for their records.
    - The biological monitor shall:
        - Inspect all work areas daily for S&E controls, the presence of state-listed species, to ensure compliance with environmental regulations and permit conditions.
        - Maintain regular contact with the project's qualified herpetologist on all matters pertaining to herpetofauna protection and surveys.

        - Serve as the primary contact between the contractor and EL&P staff.
        - Report observations of state-listed species immediately to EL&P staff who shall in turn report those observations to NHF&G.
        - Document field activities and observations daily.
- All work activities shall be restricted to the defined roads, construction areas, and staging areas, with no equipment or materials staged or stored outside of the defined areas as shown on plan sheets.
- All defined roads, construction areas, and staging areas shall be kept cleared of plant succession and pioneer vegetation to prevent turtles from seeking refuge and potentially being crushed if hidden.
- Blanding's turtle (state endangered), spotted turtle (state threatened), and Northern black racer (state threatened) occur within the vicinity of the project site. Site operators shall be informed of the potential presence of these species and shall be provided a flyer that helps to identify these species along with NHFG contact information. See Plan Sheet xxxxxx. *Include attached flyers to plan sheet set.*
- Vernal pools and potential vernal pools shall be flagged prior to work and all impacts to vernal pools and potential vernal pools shall be avoided.
- Turtles and snakes may be attracted to disturbed ground during nesting season. Turtle nesting season occurs approximately May 15th – June 30th. Nesting areas may include work pads and access roads that are not hard pack gravel and other sandy/gravel work areas. All turtle species nests and Northern black racer nests are protected by NH laws. Turtles nesting or exhibiting nesting behavior shall not be moved or in any way disturbed. If a turtle or snake nest is observed or suspected, operators shall contact Melissa Winters (603-479-1129) or Josh Megyesy (978-578-0802) at NHFG immediately for further consultation.
- Prior to daily construction activities, timber matting shall be swept for snakes and turtles.
- Observations of Northern black racers in the months of April-May and September-October may indicate the potential for a den site on or near the project site. Observations of this species during this timeframe shall be reported immediately to the New Hampshire Fish and Game Department Nongame and Endangered Wildlife Environmental Review Program. Please contact Melissa Winters (603-479-1129) or Brendan Clifford (603-944-0885). Observations of this species outside of this timeframe can follow general reporting guidance. Please include photograph with text if feasible.
- Any rare species that are observed in work areas and are in immediate danger shall be moved away from impact area in the direction the animal was moving. Any handling of rare species shall be reported to NHFG immediately.
- Minimize work pad areas, including matting, to the greatest extent possible, especially in wetlands and other sensitive areas. Restore work pads using topsoil stockpiled during initial grading to an approximately 30-foot by 60-foot or smaller area at the base of the structure to allow for future maintenance. Stabilize exposed soils with seed and mulch as necessary.
- All manufactured erosion and sediment control products, with the exception of turf reinforcement mats, utilized for, but not limited to, slope protection, runoff diversion, slope interruption, perimeter control, inlet protection, check dams, and sediment traps shall not contain plastic, or multifilament or monofilament polypropylene netting or mesh with an opening size of greater than 1/8 inches;
- All observations of threatened or endangered species on the project site shall be reported immediately to the NHFG nongame and endangered wildlife environmental review program by phone at 603-271-2461 and by email at NHFGreview@wildlife.nh.gov, with the email subject line containing the NHB DataCheck tool results letter assigned number, the project name, and the term Wildlife Species Observation;
- Photographs of the observed species and nearby elements of habitat or areas of land disturbance shall be provided to NHFG in digital format at the above email address for verification, as feasible;
- In the event a threatened or endangered species is observed on the project site during the term of the permit, the species shall not be disturbed, handled, or harmed in any way prior to consultation with NHFG and implementation of corrective actions recommended by NHFG.
    - Site operators shall be allowed to relocate wildlife encountered if discovered within the active work zone and if in direct harm from project activities. Wildlife shall be relocated in close proximity to the capture location but outside of the work zone and in the direction the individual was heading. NHFG shall be contacted immediately if this action occurs.

- The NHFG, including its employees and authorized agents, shall have access to the property during the term of the permit.

Additional Recommendations

- Wood turtles (state species of special concern) and smooth green snake (state species of special concern) occurs within the vicinity of the project site. Site operators should be informed of the potential presences of these species and shall be provided a flyer that helps to identify these species along with NHFG contact information. See Plan Sheet xxxxxx. *Include attached flyers to plan sheet set.*

Please let me know if you have any questions.

Thank you,
Kat

From: Nelson, Kurt I <kurt.nelson@eversource.com>
Sent: Monday, July 18, 2022 12:40 PM
To: Ford, Michelle T <michelle.ford@eversource.com>; Wadiak, Kathleen <Kathleen.P.Wadiak@wildlife.nh.gov>
Cc: Winters, Melissa <Melissa.J.Winters@wildlife.nh.gov>; FGC: NHFG review <NHFGreview@wildlife.nh.gov>
Subject: RE: Question/concern with NHFG Review NHB22-0740 NHB21-3366 NHB22-0862 NHB22-0743 Line 380 326 Structure Replacement Pelham Litchfield Londonderry Hudson AoT 220401-070

Confirmed. Our schedule does align with the time of year restriction in Hudson.

Thank you.

KURT I. NELSON
SR. LAND USE LICENSING & PERMITTING SPECIALIST

EVERSOURCE ENERGY

13 LEGENDS DRIVE
HOOKSETT, NH 03106
(603) 714-3031 (CELL) (603) 634-3256 (OFFICE)
KURT.NELSON@EVERSOURCE.COM

From: Ford, Michelle T <michelle.ford@eversource.com>
Sent: Monday, July 18, 2022 12:04 PM
To: Wadiak, Kathleen <Kathleen.P.Wadiak@wildlife.nh.gov>
Cc: Winters, Melissa <Melissa.J.Winters@wildlife.nh.gov>; FGC: NHFG review <NHFGreview@wildlife.nh.gov>; Nelson, Kurt I <kurt.nelson@eversource.com>
Subject: RE: Question/concern with NHFG Review NHB22-0740 NHB21-3366 NHB22-0862 NHB22-0743 Line 380 326 Structure Replacement Pelham Litchfield Londonderry Hudson AoT 220401-070

Kat,
Thank you very much for the thorough and prompt response.

Kurt – can you please confirm with Kat ASAP if the project is able to comply with the time of year restrictions recommended for the Hudson segments of work?

Michelle

From: Wadiak, Kathleen <Kathleen.P.Wadiak@wildlife.nh.gov>
Sent: Monday, July 18, 2022 11:59 AM
To: Ford, Michelle T <michelle.ford@eversource.com>
Cc: Winters, Melissa <Melissa.J.Winters@wildlife.nh.gov>; FGC: NHFG review <NHFGreview@wildlife.nh.gov>; Nelson, Kurt I <kurt.nelson@eversource.com>
Subject: RE: Question/concern with NHFG Review NHB22-0740 NHB21-3366 NHB22-0862 NHB22-0743 Line 380 326 Structure Replacement Pelham Litchfield Londonderry Hudson AoT 220401-070

Michelle,

Yes, as discussed, inflexibility with project timing and not coordinating with NHFG earlier in the planning process makes it difficult and more time consuming to issue effective recommendations, especially in sensitive habitats such as the ones involved in this review. That process must improve moving forward in order for NHFG and Eversource to coordinate efficiently.

I am currently working on modifying NHFG's recommendations for the segment of work west of Mammoth Road and north of Elwood Road in Londonderry, the section for which you expressed concerns with meeting the time of year restrictions. I am making additional recommendations and making comments on the BMPs included in the project submission that should be incorporated in order to help minimize impacts to rare species in this area. My plan is to have these finished this afternoon.

It is my understanding that Eversource is able to comply with the time of year restrictions recommended for the Hudson segments of work. If this is not the case, please let me know immediately.

If there are concerns other than the ones I discussed above, please let me know immediately.

Thank you,
Kat

From: Ford, Michelle T <michelle.ford@eversource.com>
Sent: Monday, July 18, 2022 11:43 AM
To: Wadiak, Kathleen <Kathleen.P.Wadiak@wildlife.nh.gov>
Cc: Winters, Melissa <Melissa.J.Winters@wildlife.nh.gov>; FGC: NHFG review <NHFGreview@wildlife.nh.gov>; Nelson, Kurt I <kurt.nelson@eversource.com>
Subject: RE: Question/concern with NHFG Review NHB22-0740 NHB21-3366 NHB22-0862 NHB22-0743 Line 380 326 Structure Replacement Pelham Litchfield Londonderry Hudson AoT 220401-070

Kat,

Sorry to bug you (again) but Kurt informed me that in order to meet their current outage, the project needs to start civil work (grading and preparation for construction) next week. This also means we need the allotted 1 week notice to NHDES. Point being, do you have an idea of which path you are looking at for this project:

1. Authorize construction without the TOY restriction using the BMPs/protection measures provided by Eversource; or
2. Sticking with the recommended TOY restrictions;
3. Modifying the consultation response; or
4. F&G needs more time to evaluate (which means Eversource will likely miss their outage window).

I know we spoke last week about F&G feeling pressured to comply with Eversource's scheduled outages and that is a topic which we discussed internally with our management and will strive to improve moving forward. However, this project in particular is up against their deadline and are looking to know what they can expect from F&G.

Sorry again to bug you on this, but the project team just needs to know how to move forward. Any information is appreciated.

Thanks,
Michelle

From: Wadiak, Kathleen <Kathleen.P.Wadiak@wildlife.nh.gov>
Sent: Monday, July 18, 2022 9:09 AM
To: Ford, Michelle T <michelle.ford@eversource.com>
Cc: Winters, Melissa <Melissa.J.Winters@wildlife.nh.gov>; FGC: NHFG review <NHFGreview@wildlife.nh.gov>; Nelson, Kurt I <kurt.nelson@eversource.com>
Subject: RE: Question/concern with NHFG Review NHB22-0740 NHB21-3366 NHB22-0862 NHB22-0743 Line 380 326 Structure Replacement Pelham Litchfield Londonderry Hudson AoT 220401-070

Thank you.

From: Ford, Michelle T <michelle.ford@eversource.com>
Sent: Monday, July 18, 2022 9:00 AM
To: Wadiak, Kathleen <Kathleen.P.Wadiak@wildlife.nh.gov>
Cc: Winters, Melissa <Melissa.J.Winters@wildlife.nh.gov>; FGC: NHFG review <NHFGreview@wildlife.nh.gov>; Nelson, Kurt I <kurt.nelson@eversource.com>
Subject: RE: Question/concern with NHFG Review NHB22-0740 NHB21-3366 NHB22-0862 NHB22-0743 Line 380 326 Structure Replacement Pelham Litchfield Londonderry Hudson AoT 220401-070

Kat,
Here you go. The project BMPs are outlined in the consultation request as Item 12 and additionally as Attachment F on page 163 at the end.

Thanks,
Michelle

From: Wadiak, Kathleen <Kathleen.P.Wadiak@wildlife.nh.gov>
Sent: Monday, July 18, 2022 8:55 AM
To: Ford, Michelle T <michelle.ford@eversource.com>
Cc: Winters, Melissa <Melissa.J.Winters@wildlife.nh.gov>; FGC: NHFG review <NHFGreview@wildlife.nh.gov>; Nelson, Kurt I <kurt.nelson@eversource.com>
Subject: RE: Question/concern with NHFG Review NHB22-0740 NHB21-3366 NHB22-0862 NHB22-0743 Line 380 326 Structure Replacement Pelham Litchfield Londonderry Hudson AoT 220401-070

Michelle,

I do not see the BMP document that is referenced in the email attached. Can you please send me the document with the protections measures from the R-187/S-188/X-116/Z-119 project?

Kat

From: Ford, Michelle T <michelle.ford@eversource.com>
Sent: Monday, June 20, 2022 3:06 PM
To: Wadiak, Kathleen <Kathleen.P.Wadiak@wildlife.nh.gov>
Cc: Winters, Melissa <Melissa.J.Winters@wildlife.nh.gov>; FGC: NHFG review <NHFGreview@wildlife.nh.gov>; Nelson, Kurt I <kurt.nelson@eversource.com>
Subject: Question/concern with NHFG Review NHB22-0740 NHB21-3366 NHB22-0862 NHB22-0743 Line 380 326 Structure Replacement Pelham Litchfield Londonderry Hudson AoT 220401-070

Kat,

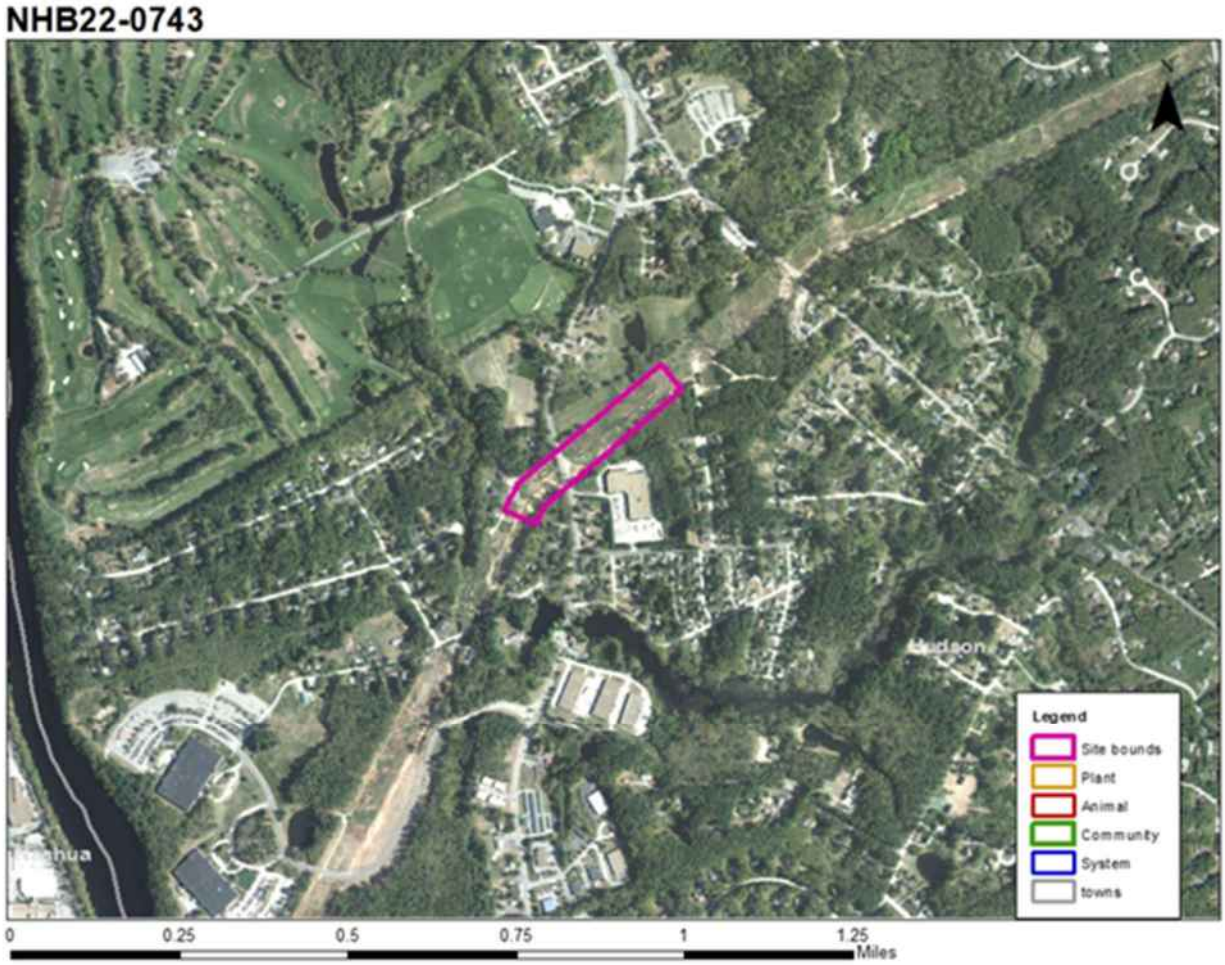
Our project team dove into your response for the 380/326 Line structure replacement project and unfortunately, due to the outage scheduling and reliability requirements, cannot comply with NHF&G's recommended time of year (TOY) restriction for the areas West of Mammoth Road and North of Elwood Road in Londonderry (NHB22-0862) and South of Keinna Road in Hudson (NHB22-0743). I am writing to request a modification to the consultation response from F&G to allow work to proceed without a TOY restriction using the same protection measures as the adjacent R-187/S-188/X-116/Z-119 project (BMP document attached). Given the proximity, the majority of structures in the area West of Mammoth Road and North of Elwood Road in Londonderry will be replaced concurrently by the trained contractor that is working on the R-187/S-188/X-116/Z-119 project and the wildlife monitors and protocols currently employed on the R-187/S-188/X-116/Z-119 will also be employed to monitor the 380/326 structure replacements in this area. The turtle protection measures and full-time environmental monitoring on the project has resulted in numerous sightings (and reporting) of state-listed turtles to NHF&G which is further validation of their efficacy at protecting turtles. Construction activities will occur between July 2022 and April 2023 outside of the critical nesting period (May/June).

In the work in the area off of Rt 3A (screenshot shown below) in Hudson (NHB22-0743), we would like some clarification on the need to implement turtle protection measures here as there are no polygons shown on the NHB report map

page for this location. The implementation of the protection measures comes at a substantial cost to Eversource (and subsequently New Hampshire rate payers) and we want to ensure that they are employed where warranted.

I appreciate your time and consideration and if it's easier to discuss by phone, I would be happy to set up a call with the environmental project specialist and project manager to discuss your concerns and identify ways we could proceed without the TOY restriction and ensure turtles are protected.

Thanks as always,
Michelle



Michelle T. Ford, CWB®, PWS, CESSWI
Senior Program Administrator – Wildlife and Protected Species
EVERSOURCE
107 Selden Street, Berlin, CT 06037
(o) 860-665-3183

Please note that I will be on vacation from Thursday, June 30 through Friday, July 8

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Protection Measures for work with State-listed species present

For all work within protected species habitat:

1. All contractors will be trained by the project qualified herpetologist in the identification and response protocols for observation of:
    - Blanding's turtle
    - Spotted turtle
    - Eastern box turtle (referred to herein as EBT)
    - Eastern hognose snake; and
    - Smooth green snake

    A copy of the training material that includes photos, habitat descriptions, response protocol for observed species, and a training log that will be provided to NHF&G.

2. In accordance with Eversource's BMP manual for S& E controls, only biodegradable E&S controls (with the exception of silt fence which will be removed post-construction) will be utilized. No nylon, welded plastic or photodegradable E&S controls shall be permitted for use on the project.

3. At least one, qualified biological monitor shall be on-site during active construction within state-listed species habitat. A qualified biological monitor shall be someone with training and experience in turtle and reptile identification and handling techniques and shall operate under the guidance of a qualified herpetologist. A qualified herpetologist shall be a wildlife biologist well versed on and with extensive experience in turtle identification, life history, habitat preference, handling, and documentation, i.e. activity, sexing, aging, etc.

    The qualified herpetologist shall be responsible for:
    a. Searching for, identifying, documenting, reporting and relocating any state-listed herpetofauna within the work areas immediately prior to the placement of gravel and/or matting.
    b. Instructing and guiding biological monitor on matters pertaining to herpetofauna.
    c. Ensuring proper documentation and handling techniques are abided to by the construction personnel and the biological monitor.
    d. At the end of the project, the qualified herpetologist shall provide Eversource Licensing and Permitting staff a report, which includes a summary of observations, reporting logs documenting any documented state-listed species, and mapping and .shp files showing the location of any observed state-listed species. The report shall be reviewed and provided to NH F&G for their records.

    The biological monitor shall:
    a. Inspect all work areas daily for S&E controls, the presence of state-listed species, to ensure compliance with environmental regulations and permit conditions.
    b. Maintain regular contact with the project's qualified herpetologist on all matters pertaining to herpetofauna protection and surveys.
    c. Serve as the primary contact between the contractor and EL&P staff.

d. Report observations of state-listed species immediately to EL&P staff who shall in turn report those observations to NHF&G.

e. Document field activities and observations daily.

4. All material shall be staged/placed within pre-established work/pull pads which have been cleared for and isolated from turtle entry. For material staged outside of work/pull pads, the area must first be swept by a qualified herpetologist prior to the placement of materials. Once materials are placed, the area shall be immediately isolated through the installation of properly installed (toed-in) silt fence which prohibits turtle entry. Silt fence installed for wildlife exclusion shall fully enclose the site and should be buried to a depth no less than 6-8" and 18" above grade. The silt fence shall be installed with the wood stakes exposed on the interior side of the work zone.

0. No equipment shall be permitted outside the established access roads, work pads, pull pads or other designated construction areas as shown on plan sheets at any time

5. Work and pull pads shall be minimized to the greatest extent possible as determined in the field based on site conditions.

For all work pertaining to Access Roads

Prior to the installation of new, gravel and matted access roads:

1. For construction of new access roads within the right-of-way conducted during the active season (April 1 – Oct 31) the following shall apply:

a. For new matted access roads:

i. Prior to the start of matting installation, the access road area shall be inspected by a qualified herpetologist immediately prior to mowing and matting placement. In the event a threatened or endangered species is observed on the project site during the term of the permit, the species shall not be disturbed, handled, or harmed in any way prior to consultation with NHFG and implementation of corrective actions recommended by NHFG.

ii. Site operators shall be allowed to relocate wildlife encountered if discovered within the active work zone and if in direct harm from project activities. Wildlife shall be relocated in close proximity to the capture location but outside of the work zone and in the direction the individual was heading. NHFG shall be contacted immediately if this action occurs.

iii. Bridge matting shall be installed with gaps which facilitate travel by turtles, snakes and other wildlife. Gaps should be created roughly every 30'.

b. For new gravel access roads:

i. Prior to the start of gravel installation, the access road area shall be inspected by a qualifiedherpetologist immediately prior to gravel placement. In the event a threatened or endangered species is observed on the project site during the term of the permit, the species shall not be disturbed, handled, or harmed in any way prior to consultation with NHFG and implementation of corrective actions recommended by NHFG. Site operators shall be allowed to relocate wildlife encountered if discovered within the active work zone and if in direct harm from project activities. Wildlife shall be relocated in close proximity to the capture location but outside of the work zone and in the direction the

individual was heading. NHFG shall be contacted immediately if this action occurs.

c. For top-dressing of existing access roads with gravel:
    i. In order to prevent turtles from nesting in existing access roads, all access roads within suitable nesting habitat, i.e. sandy, friable soils, shall be top dressed with processed stone and/or gravel and compacted in such a way to make the roads unsuitable for nesting.
    ii. Prior to the placement of gravel, the area shall be swept by a trained individual. A trained individual shall be any contractor who has gone through the project-species species protection training noted herein.

d. Once established, all access roads shall be inspected on-foot by a trained individual and/or the biological monitor or qualified herpetologist prior to road being traversed by construction vehicles.

e. Turtle protection signage (attached) shall be placed along all access roads (new and existing) to serve as a reminder to construction traffic to maintain a low rate of speed and to look for turtles and snakes that may enter the roadway. Any observed turtles and/or snakes shall be reported to the foreman who shall in turn alert the biological monitor for communication via Eversource L&P to NH F&G.

BMP 1

For work in perennial wetlands, vernal pools (VP) and VP envelopes (100' from a VP) that are suitable for:

- **Hibernating spotted and Blanding's turtles.**
- **Active spotted and Blanding's turtles.**

Overwintering and active season habitat for Blanding's and spotted turtles includes perennial wetlands with deeper water and suitable substrate/subsurface features to facilitate hibernation.

1. In order to protect potentially hibernating Blanding's and spotted turtles, civil work (matting placement) should not be undertaken in these wetlands during the dormant season (Sept. 15 through March 31).
2. If area is within the VP or VP envelope, matting should be placed after species dispersal, estimated from June 1 to September 15 and not during the dormant season (Sept. 15 through Mar. 31).
3. Immediately prior to the placement of matting, a qualified herpetologist shall inspect the area and relocate any turtles which would be impacted by the matting placement. Only after the area has been cleared by the qualified herpetologist can the matting be placed.
4. Matting shall be placed with gaps (AKA bridge matting) approximately every 30' to facilitate travel beneath and between the matting from one side to another within the wetland. This will require at least two layers of matting, which will also limit access by spotted and Blanding's turtles.
5. During construction, the work area shall be inspected prior to the start of work by a trained individual. The exterior of the work area (perimeter) shall be inspected by the biological monitor and/or qualified herpetologist daily.

BMP 2

For work in and adjacent to wetlands that are likely:

- **Unsuitable for winter use (hibernation) by Blanding's and spotted turtles but**
- **Suitable for active season use by Blanding's and spotted turtles**
- **Potential for use by eastern box turtles during the active season.**

These areas shall include work areas located on the edge of perennial wetlands where hydrology and habitat are unlikely to be suitable to support overwintering Blanding's and spotted turtles.

1. For all civil work (work pad, pull pad, and access road establishment) in these areas to be conducted during the active season (April 1 – Oct 31) the following shall apply:
    a. For matted work and pull pads:
        i) The work area shall be inspected by a qualified herpetologist immediately prior to mowing and/or matting placement. In the event a threatened or endangered species is observed on the project site during the term of the permit, the species shall not be disturbed, handled, or harmed in any way prior to consultation with NHFG and implementation of corrective actions recommended by NHFG.
        ii) Site operators shall be allowed to relocate wildlife encountered if discovered within the active work zone and if in direct harm from project activities. Wildlife shall be relocated in close proximity to the capture location but outside of the work zone and in the direction the individual was heading. NHFG shall be contacted immediately if this action occurs.
        iii) Matting shall be placed with gaps (AKA bridge matting) approximately every 30' to facilitate travel beneath and between the matting from one side to another within the wetland. This will require at least two layers of matting, which will also limit access by spotted and Blanding's turtles.
        iv) During construction, the work area shall be inspected prior to the start of work by a trained individual. The exterior of the work area (perimeter) shall be inspected by the biological monitor and/or qualified herpetologist daily.

    b. For gravel work and pull pads adjacent to wetlands:
        i. Minimize pad size to the greatest extent practicable.
        ii. The work area shall be inspected by a qualified herpetologist immediately prior to mowing and gravel placement. In the event a threatened or endangered species is observed on the project site during the term of the permit, the species shall not be disturbed, handled, or harmed in any way prior to consultation with NHFG and implementation of corrective actions recommended by NHFG.
        iii. Site operators shall be allowed to relocate wildlife encountered if discovered within the active work zone and if in direct harm from project activities. Wildlife shall be relocated in close proximity to the capture location but outside of the work zone and in the direction the individual was heading. NHFG shall be contacted immediately if this action occurs.
        iv. Topsoil shall be removed, stockpiled nearby and surrounded by properly installed silt fence to prevent access by wildlife, for later replacement in the work area post-construction. Silt fence installed for wildlife exclusion shall fully enclose the site and should be buried to a depth no less than 6-8" and 18" above grade. The silt fence shall be installed with the wood stakes exposed on the interior side of the work zone.

v. Once topsoil has been stripped, the area can be graded and gravel installed.
vi. The work/pull pad shall then be surrounded with properly installed silt fence to prevent access by turtles and snakes.
vii. During construction, the work area shall be inspected prior to the start of work by a trained individual. The exterior of the work area (perimeter) shall be inspected by the biological monitor and/or qualified herpetologist daily.
viii. Once construction is complete, the stockpiled topsoil shall be replaced and lightly graded in the workpad area post-construction. The area may be mulched to prevent erosion.

BMP 3

For work in uplands that is suitable habitat for:

- **Nesting eastern box turtles, Blanding's turtles and spotted turtles**
- **Eastern hognose and smooth green snake, and**

- **Active season use by EBTs.**

- Work within uplands will be focused primarily on avoiding impacts to suitable nesting areas which include sandy/friable soils generally free dense vegetation:

1. For all civil work (work pad, pull pad, and access road establishment) conducted during the active season (April 1 – Oct 31) the following shall apply:
    a. For matted work pads:
        i) The work area shall be inspected by a qualified herpetologist immediately prior to mowing and/or matting placement. In the event a threatened or endangered species is observed on the project site during the term of the permit, the species shall not be disturbed, handled, or harmed in any way prior to consultation with NHFG and implementation of corrective actions recommended by NHFG.
        ii) Site operators shall be allowed to relocate wildlife encountered if discovered within the active work zone and if in direct harm from project activities. Wildlife shall be relocated in close proximity to the capture location but outside of the work zone and in the direction the individual was heading. NHFG shall be contacted immediately if this action occurs.
        iii) Matting shall be placed with gaps (AKA bridge matting) approximately every 30' to facilitate travel beneath and between the matting from one side to another within the wetland. This will require at least two layers of matting which will also limit access by spotted and Blanding's turtles.
        iv) In order to prevent EBTs from accessing the work pads, matting shall be placed in two layers (that will facilitate bridge matting/gaps).
        v) If two layers of matting cannot be accommodated, the work pad shall be surrounded by silt fence stapled to the sides of the matting to prevent access by climbing turtles and snakes.
        vi) During construction, the work area shall be inspected prior to the start of work by a trained individual. The exterior of the work area (perimeter) shall be inspected by the biological monitor and/or qualified herpetologist daily.

b. <u>For gravel work pads:</u>

- **i.** Minimize pad size to the greatest extent practicable. The work area shall be inspected by a qualified herpetologist immediately prior to mowing and gravel placement. In the event a threatened or endangered species is observed on the project site during the term of the permit, the species shall not be disturbed, handled, or harmed in any way prior to consultation with NHFG and implementation of corrective actions recommended by NHFG.
- **ii.** Site operators shall be allowed to relocate wildlife encountered if discovered within the active work zone and if in direct harm from project activities. Wildlife shall be relocated in close proximity to the capture location but outside of the work zone and in the direction the individual was heading. NHFG shall be contacted immediately if this action occurs.
- **iii.** Topsoil shall be removed, stockpiled nearby and surrounded by properly installed silt fence to prevent access by wildlife, for later replacement in the work area post-construction.
- **iv.** Once topsoil has been stripped, the area can be graded and gravel installed.
- **v.** The work/pull pad shall then be surrounded with properly installed silt fence to prevent access by turtles and snakes.
- **vi.** During construction, the work area shall be inspected prior to the start of work by a trained individual. The exterior of the work area (perimeter) shall be inspected by the biological monitor and/or qualified herpetologist daily.
- **vii.** Once construction is complete, the stockpiled topsoil shall be replaced and lightly graded in the workpad area post-construction. The area may be mulched to prevent erosion.

Appendix D – Natural Resources Conservation Service Web Soil Survey

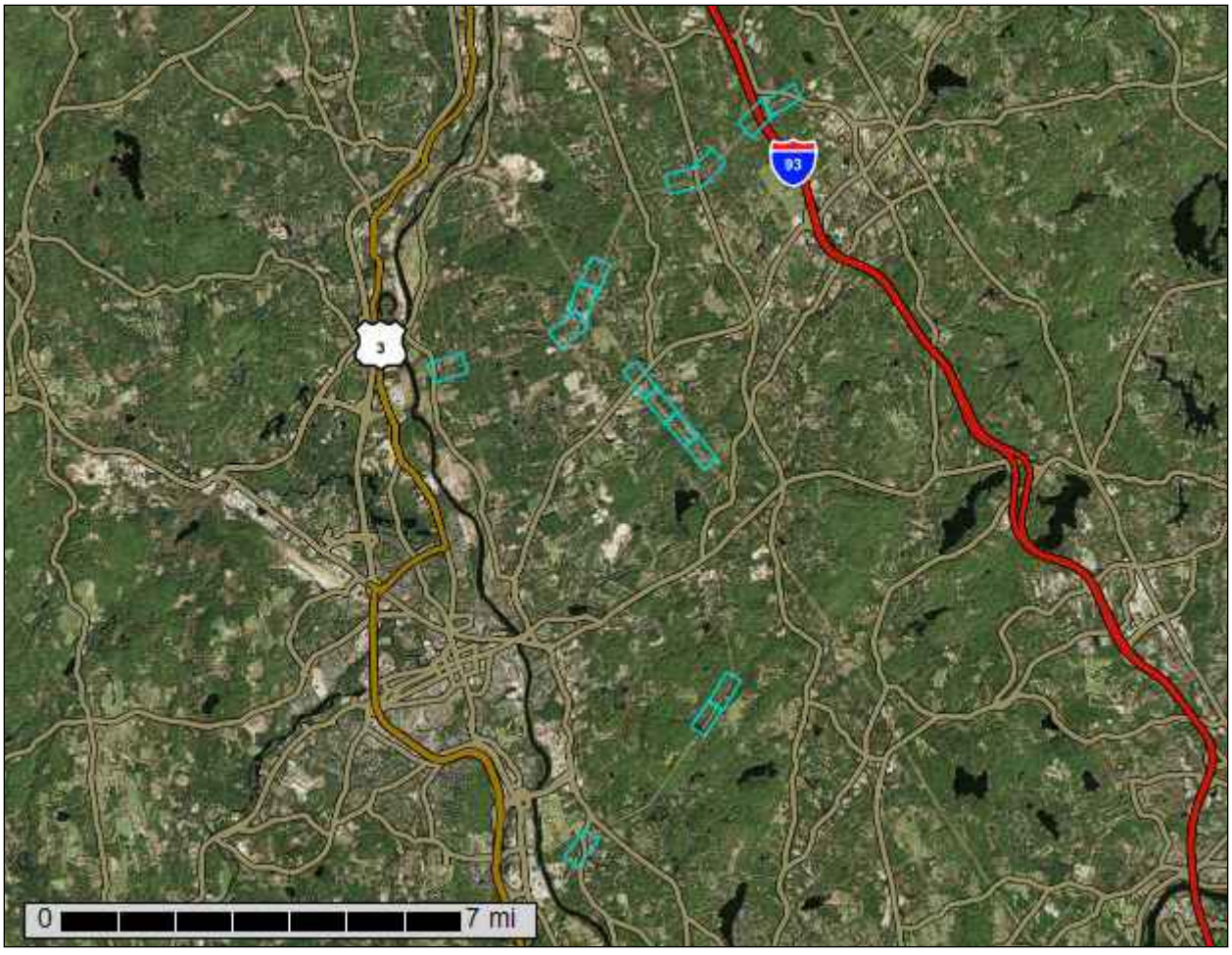
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Hillsborough County, New Hampshire, Eastern Part; and Rockingham County, New Hampshire



March 30, 2022

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

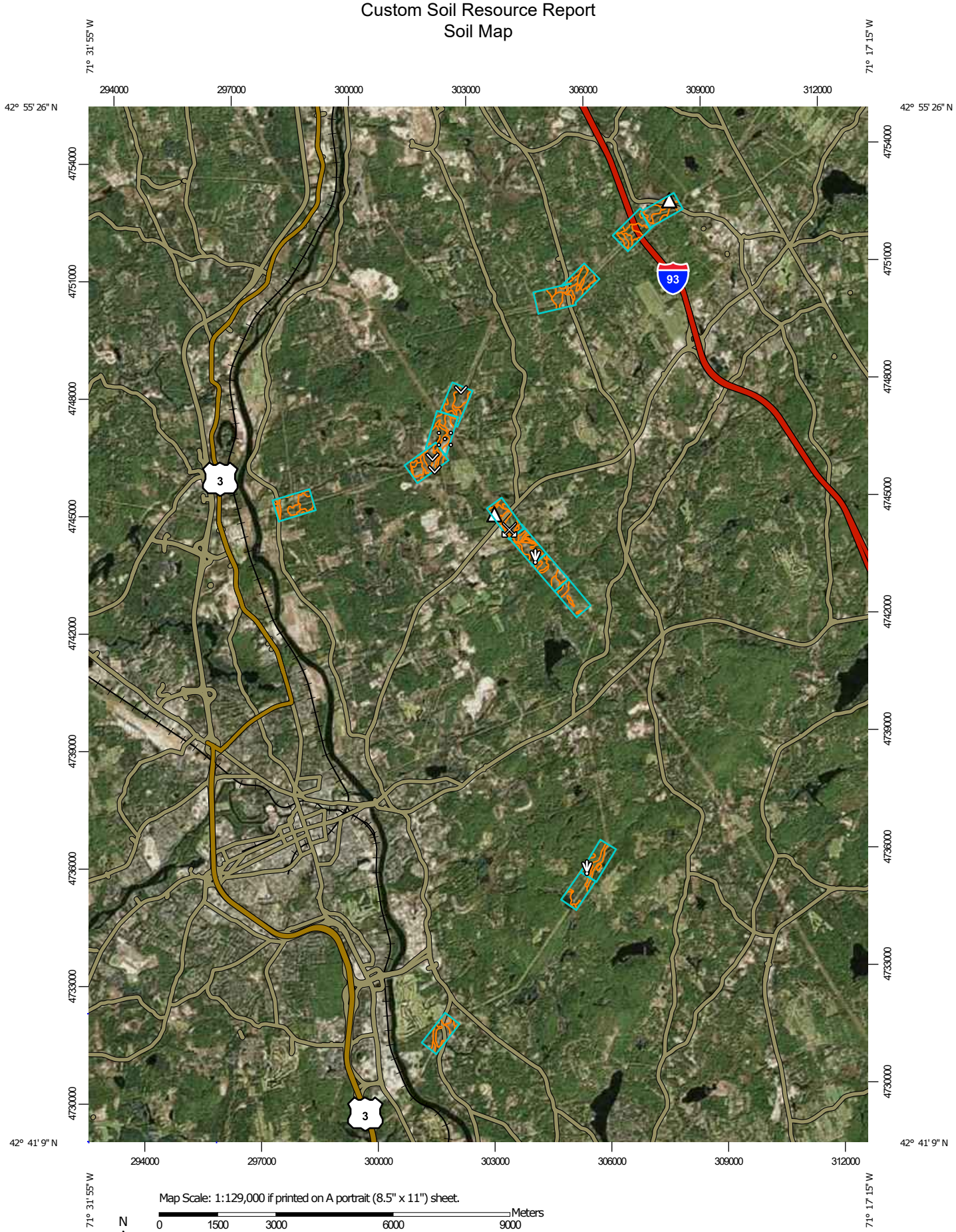
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:129,000 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 1500 3000 6000 9000

Feet
0 5000 10000 20000 30000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at scales ranging from 1:20,000 to 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Hillsborough County, New Hampshire, Eastern Part
Survey Area Data: Version 24, Aug 31, 2021

Soil Survey Area: Rockingham County, New Hampshire
Survey Area Data: Version 24, Aug 31, 2021

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 8, 2011—Oct 22, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BoA	Borohemists, nearly level	6.7	0.4%
BpA	Borohemists, ponded	2.8	0.2%
CaB	Canton fine sandy loam, 0 to 8 percent slopes	3.0	0.2%
CaC	Canton fine sandy loam, 8 to 15 percent slopes	0.4	0.0%
CmB	Canton fine sandy loam, 0 to 8 percent slopes, very stony	0.0	0.0%
CmC	Canton fine sandy loam, 8 to 15 percent slopes, very stony	93.2	5.3%
CmD	Canton fine sandy loam, 15 to 25 percent slopes, very stony	51.7	3.0%
CnD	Canton very stony fine sandy loam, 15 to 35 percent slopes	31.6	1.8%
CpB	Chatfield-Hollis-Canton complex, 3 to 8 percent slopes	48.8	2.8%
CpC	Chatfield-Hollis-Canton complex, 8 to 15 percent slopes	2.1	0.1%
CsB	Chatfield-Hollis complex, 3 to 8 percent slopes	0.1	0.0%
CsC	Chatfield-Hollis complex, 8 to 15 percent slopes, rocky	53.0	3.0%
CtD	Chatfield-Hollis-Rock outcrop complex, 15 to 35 percent slopes	112.2	6.4%
Cu	Swansea mucky peat, 0 to 2 percent slopes	26.5	1.5%
DeA	Deerfield loamy fine sand, 0 to 3 percent slopes	45.4	2.6%
Gw	Freetown mucky peat, 0 to 2 percent slopes	11.2	0.6%
LvA	Leicester-Walpole complex stony, 0 to 3 percent slopes	4.3	0.2%
LvB	Leicester-Walpole complex stony, 3 to 8 percent slopes	1.8	0.1%
PiA	Pipestone loamy sand, 0 to 3 percent slopes	19.9	1.1%
Pr	Pits, gravel	5.3	0.3%
So	Scarboro mucky fine sandy loam, 0 to 3 percent slopes	2.6	0.2%
Sr	Scarboro stony mucky loamy sand	38.5	2.2%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
W	Water (less than 40 acres)	17.3	1.0%
WdA	Windsor loamy sand, 0 to 3 percent slopes	106.6	6.1%
WdB	Windsor loamy sand, 3 to 8 percent slopes	45.3	2.6%
WdC	Windsor loamy sand, 8 to 15 percent slopes	16.0	0.9%
WdD	Windsor loamy sand, 15 to 35 percent slopes	1.4	0.1%
Subtotals for Soil Survey Area		**748.1**	**42.9%**
Totals for Area of Interest		**1,742.6**	**100.0%**

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
12B	Hinckley loamy sand, 3 to 8 percent slopes	70.1	4.0%
12C	Hinckley loamy sand, 8 to 15 percent slopes	24.7	1.4%
12E	Hinckley loamy sand, 15 to 60 percent slopes	0.1	0.0%
26B	Windsor loamy sand, 3 to 8 percent slopes	6.2	0.4%
42B	Canton fine sandy loam, 3 to 8 percent slopes	11.1	0.6%
43B	Canton fine sandy loam, 0 to 8 percent slopes, very stony	12.1	0.7%
43C	Canton fine sandy loam, 8 to 15 percent slopes, very stony	80.1	4.6%
44B	Montauk fine sandy loam, 3 to 8 percent slopes	4.2	0.2%
45B	Montauk fine sandy loam, 0 to 8 percent slopes, very stony	9.6	0.6%
45C	Montauk fine sandy loam, 8 to 15 percent slopes, very stony	24.3	1.4%
97	Freetown and Natchaug mucky peats, ponded, 0 to 2 percent slopes	4.1	0.2%
140B	Chatfield-Hollis-Canton complex, 0 to 8 percent slopes, rocky	101.5	5.8%
140C	Chatfield-Hollis-Canton complex, 8 to 15 percent slopes, rocky	182.6	10.5%
140D	Chatfield-Hollis-Canton complex, 15 to 35 percent slopes, rocky	68.6	3.9%
295	Freetown mucky peat, 0 to 2 percent slopes	111.1	6.4%
298	Pits, sand and gravel	125.4	7.2%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
299	Udorthents, smoothed	13.2	0.8%
313A	Deerfield loamy fine sand, 0 to 3 percent slopes	12.5	0.7%
313B	Deerfield loamy fine sand, 3 to 8 percent slopes	26.6	1.5%
314A	Pipestone sand, 0 to 5 percent slopes	5.8	0.3%
395	Swansea mucky peat, 0 to 2 percent slopes	44.6	2.6%
447B	Scituate-Newfields complex, 3 to 8 percent slopes, very stony	39.5	2.3%
447C	Scituate-Newfields complex, 8 to 15 percent slopes, very stony	1.9	0.1%
495	Natchaug mucky peat, 0 to 2 percent slopes	14.2	0.8%
547B	Walpole very fine sandy loam, 3 to 8 percent slopes, very stony	0.2	0.0%
657A	Ridgebury fine sandy loam, 0 to 3 percent slopes, very stony	0.1	0.0%
Subtotals for Soil Survey Area		**994.4**	**57.1%**
Totals for Area of Interest		**1,742.6**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They

generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Hillsborough County, New Hampshire, Eastern Part

BoA—Borohemists, nearly level

Map Unit Setting

National map unit symbol: 9fbw
Elevation: 100 to 1,600 feet
Mean annual precipitation: 28 to 47 inches
Mean annual air temperature: 39 to 48 degrees F
Frost-free period: 60 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Borohemists and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Borohemists

Setting

Landform: Bogs

Typical profile

O1 - 0 to 6 inches: mucky peat
O2 - 6 to 16 inches: mucky peat
O3 - 16 to 60 inches: mucky peat

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Low to high (0.01 to 6.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: Very high (about 31.7 inches)

Minor Components

Chocorua

Percent of map unit: 5 percent
Landform: Bogs
Hydric soil rating: Yes

Greenwood

Percent of map unit: 5 percent
Landform: Bogs
Hydric soil rating: Yes

BpA—Borohemists, ponded

Map Unit Setting

National map unit symbol: 9fbx
Elevation: 130 to 1,600 feet
Mean annual precipitation: 28 to 47 inches
Mean annual air temperature: 39 to 48 degrees F
Frost-free period: 60 to 165 days
Farmland classification: Not prime farmland

Map Unit Composition

Borohemists and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Borohemists

Setting

Landform: Bogs

Typical profile

O1 - 0 to 6 inches: mucky peat
O2 - 6 to 16 inches: mucky peat
O3 - 16 to 60 inches: mucky peat

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Low to high (0.01 to 6.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: Very high (about 31.7 inches)

Minor Components

Greenwood

Percent of map unit: 10 percent
Landform: Bogs
Hydric soil rating: Yes

CaB—Canton fine sandy loam, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9fby
Elevation: 0 to 1,000 feet
Mean annual precipitation: 42 to 46 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 120 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Canton and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton

Setting

Parent material: Ablation till derived from granite and gneiss

Typical profile

H1 - 0 to 4 inches: fine sandy loam
H2 - 4 to 19 inches: fine sandy loam
H3 - 19 to 60 inches: gravelly loamy sand

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: A
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Not named

Percent of map unit: 10 percent
Hydric soil rating: No

Scituate
Percent of map unit: 5 percent
Hydric soil rating: No

CaC—Canton fine sandy loam, 8 to 15 percent slopes

Map Unit Setting
National map unit symbol: 2w817
Elevation: 0 to 1,330 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Canton and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton

Setting
Landform: Hills, moraines, ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist

Typical profile
Ap - 0 to 7 inches: fine sandy loam
Bw1 - 7 to 15 inches: fine sandy loam
Bw2 - 15 to 26 inches: gravelly fine sandy loam
2C - 26 to 65 inches: gravelly loamy sand

Properties and qualities
Slope: 8 to 15 percent
Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Montauk

Percent of map unit: 6 percent
Landform: Moraines, ground moraines, hills, drumlins
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Scituate

Percent of map unit: 6 percent
Landform: Hills, drumlins, ground moraines
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Newfields

Percent of map unit: 4 percent
Landform: Ground moraines, hills, moraines
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Charlton

Percent of map unit: 4 percent
Landform: Ridges, ground moraines, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

CmB—Canton fine sandy loam, 0 to 8 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2w81l
Elevation: 0 to 1,180 feet

Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of local importance

Map Unit Composition

Canton, very stony, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton, Very Stony

Setting

Landform: Moraines, hills, ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 5 inches: fine sandy loam
Bw1 - 5 to 16 inches: fine sandy loam
Bw2 - 16 to 22 inches: gravelly fine sandy loam
2C - 22 to 67 inches: gravelly loamy sand

Properties and qualities

Slope: 0 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Scituate, very stony

Percent of map unit: 9 percent
Landform: Hills, drumlins, ground moraines
Landform position (two-dimensional): Summit, backslope, footslope
Landform position (three-dimensional): Side slope, crest

Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Montauk, very stony

Percent of map unit: 5 percent
Landform: Recessionial moraines, ground moraines, hills, drumlins
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Gloucester, very stony

Percent of map unit: 4 percent
Landform: Moraines, hills, ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Swansea

Percent of map unit: 2 percent
Landform: Marshes, depressions, bogs, swamps, kettles
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

CmC—Canton fine sandy loam, 8 to 15 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2w814
Elevation: 0 to 1,160 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of local importance

Map Unit Composition

Canton, very stony, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton, Very Stony

Setting

Landform: Moraines, ridges, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear

Across-slope shape: Convex
Parent material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 5 inches: fine sandy loam
Bw1 - 5 to 16 inches: fine sandy loam
Bw2 - 16 to 22 inches: gravelly fine sandy loam
2C - 22 to 67 inches: gravelly loamy sand

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Montauk, very stony

Percent of map unit: 6 percent
Landform: Recessionial moraines, ground moraines, hills, drumlins
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Scituate, very stony

Percent of map unit: 5 percent
Landform: Ground moraines, hills, drumlins
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Chatfield, very stony

Percent of map unit: 3 percent
Landform: Hills, ridges
Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Swansea

Percent of map unit: 1 percent
Landform: Marshes, depressions, bogs, swamps, kettles
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

CmD—Canton fine sandy loam, 15 to 25 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2w81h
Elevation: 70 to 1,120 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Canton, very stony, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton, Very Stony

Setting

Landform: Moraines, hills, ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 5 inches: fine sandy loam
Bw1 - 5 to 16 inches: fine sandy loam
Bw2 - 16 to 22 inches: gravelly fine sandy loam
2C - 22 to 67 inches: gravelly loamy sand

Properties and qualities

Slope: 15 to 25 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification
Drainage class: Well drained

Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Chatfield, very stony
Percent of map unit: 6 percent
Landform: Ridges, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Montauk, very stony
Percent of map unit: 5 percent
Landform: Hills, drumlins, recessionial moraines, ground moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Newfields, very stony
Percent of map unit: 4 percent
Landform: Ground moraines, hills, moraines
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

CnD—Canton very stony fine sandy loam, 15 to 35 percent slopes

Map Unit Setting
National map unit symbol: 9fc6
Elevation: 0 to 1,000 feet
Mean annual precipitation: 42 to 46 inches

Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 120 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Canton and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton

Setting

Parent material: Ablation till derived from granite and gneiss

Typical profile

H1 - 0 to 4 inches: fine sandy loam
H2 - 4 to 19 inches: fine sandy loam
H3 - 19 to 60 inches: gravelly loamy sand

Properties and qualities

Slope: 15 to 35 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Scituate

Percent of map unit: 5 percent
Hydric soil rating: No

Chatfield

Percent of map unit: 5 percent
Hydric soil rating: No

CpB—Chatfield-Hollis-Canton complex, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2w82q
Elevation: 140 to 1,040 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Chatfield and similar soils: 35 percent
Hollis and similar soils: 30 percent
Canton and similar soils: 25 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chatfield

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 2 inches: fine sandy loam
Bw - 2 to 30 inches: gravelly fine sandy loam
2R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 41 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Description of Hollis

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 7 inches: gravelly fine sandy loam
Bw - 7 to 16 inches: gravelly fine sandy loam
2R - 16 to 26 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 8 to 23 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: D
Ecological site: F144AY033MA - Shallow Dry Till Uplands
Hydric soil rating: No

Description of Canton

Setting

Landform: Moraines, hills, ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 5 inches: fine sandy loam
Bw1 - 5 to 16 inches: fine sandy loam
Bw2 - 16 to 22 inches: gravelly fine sandy loam

2C - 22 to 67 inches: gravelly loamy sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Leicester

Percent of map unit: 5 percent
Landform: Depressions, ground moraines, hills, drainageways
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear, concave
Across-slope shape: Concave
Hydric soil rating: Yes

Paxton

Percent of map unit: 5 percent
Landform: Hills, drumlins, ground moraines
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Hydric soil rating: No

CpC—Chatfield-Hollis-Canton complex, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2w82r
Elevation: 140 to 1,150 feet

Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Chatfield and similar soils: 35 percent
Hollis and similar soils: 30 percent
Canton and similar soils: 25 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chatfield

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 2 inches: fine sandy loam
Bw - 2 to 30 inches: gravelly fine sandy loam
2R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 20 to 41 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Description of Hollis

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex
Across-slope shape: Linear, convex

Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 7 inches: gravelly fine sandy loam
Bw - 7 to 16 inches: gravelly fine sandy loam
2R - 16 to 26 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 8 to 23 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: F144AY033MA - Shallow Dry Till Uplands
Hydric soil rating: No

Description of Canton

Setting

Landform: Moraines, hills, ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 5 inches: fine sandy loam
Bw1 - 5 to 16 inches: fine sandy loam
Bw2 - 16 to 22 inches: gravelly fine sandy loam
2C - 22 to 67 inches: gravelly loamy sand

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None

Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Leicester

Percent of map unit: 5 percent
Landform: Depressions, ground moraines, hills, drainageways
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear, concave
Across-slope shape: Concave
Hydric soil rating: Yes

Paxton

Percent of map unit: 5 percent
Landform: Hills, drumlins, ground moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Hydric soil rating: No

CsB—Chatfield-Hollis complex, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9fcc
Elevation: 0 to 1,330 feet
Mean annual precipitation: 30 to 47 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 120 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Chatfield and similar soils: 45 percent
Hollis and similar soils: 40 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chatfield

Setting

Parent material: Ablation till derived from granite and gneiss

Typical profile

H1 - 0 to 4 inches: fine sandy loam
H2 - 4 to 24 inches: sandy loam
R - 24 to 28 inches: unweathered bedrock

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Low to high (0.01 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Description of Hollis

Setting

Parent material: Ablation till derived from granite and gneiss

Typical profile

H1 - 0 to 4 inches: fine sandy loam
H2 - 4 to 19 inches: fine sandy loam
R - 19 to 23 inches: unweathered bedrock

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Low to high (0.01 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: F144AY033MA - Shallow Dry Till Uplands
Hydric soil rating: No

Minor Components

Paxton
Percent of map unit: 5 percent
Hydric soil rating: No

Canton
Percent of map unit: 5 percent
Hydric soil rating: No

Not named wet
Percent of map unit: 3 percent
Landform: Depressions
Hydric soil rating: Yes

Rock outcrop
Percent of map unit: 2 percent
Hydric soil rating: Unranked

CsC—Chatfield-Hollis complex, 8 to 15 percent slopes, rocky

Map Unit Setting
National map unit symbol: 2w69l
Elevation: 110 to 1,320 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition
Chatfield, very stony, and similar soils: 55 percent
Hollis, very stony, and similar soils: 30 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chatfield, Very Stony

Setting
Landform: Ridges, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile
Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 2 inches: fine sandy loam
Bw - 2 to 30 inches: gravelly fine sandy loam

2R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 20 to 41 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Description of Hollis, Very Stony

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 7 inches: gravelly fine sandy loam
Bw - 7 to 16 inches: gravelly fine sandy loam
2R - 16 to 26 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 8 to 23 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: D
Ecological site: F144AY033MA - Shallow Dry Till Uplands
Hydric soil rating: No

Minor Components

Charlton, very stony
Percent of map unit: 8 percent
Landform: Ridges, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Paxton, very stony
Percent of map unit: 4 percent
Landform: Ground moraines, hills, drumlins
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Hydric soil rating: No

Leicester, very stony
Percent of map unit: 2 percent
Landform: Ground moraines, hills, drainageways, depressions
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave, linear
Across-slope shape: Concave
Hydric soil rating: Yes

Rock outcrop
Percent of map unit: 1 percent
Landform: Ridges, hills
Hydric soil rating: No

CtD—Chatfield-Hollis-Rock outcrop complex, 15 to 35 percent slopes

Map Unit Setting
National map unit symbol: 2w69h
Elevation: 0 to 1,540 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition
Chatfield, extremely stony, and similar soils: 35 percent

Hollis, extremely stony, and similar soils: 30 percent
Rock outcrop: 20 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chatfield, Extremely Stony

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 2 inches: fine sandy loam
Bw - 2 to 30 inches: gravelly fine sandy loam
2R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 15 to 35 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 20 to 41 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Description of Hollis, Extremely Stony

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 7 inches: gravelly fine sandy loam

Bw - 7 to 16 inches: gravelly fine sandy loam
2R - 16 to 26 inches: bedrock

Properties and qualities

Slope: 15 to 35 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 8 to 23 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: F144AY033MA - Shallow Dry Till Uplands
Hydric soil rating: No

Description of Rock Outcrop

Setting

Landform: Ridges, hills
Parent material: Igneous and metamorphic rock

Typical profile

R - 0 to 79 inches: bedrock

Properties and qualities

Slope: 15 to 35 percent
Depth to restrictive feature: 0 inches to lithic bedrock
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Available water supply, 0 to 60 inches: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Charlton, extremely stony

Percent of map unit: 7 percent
Landform: Ridges, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Leicester, extremely stony

Percent of map unit: 4 percent
Landform: Ground moraines, hills, drainageways, depressions
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave, linear
Across-slope shape: Concave
Hydric soil rating: Yes

Sutton, extremely stony

Percent of map unit: 2 percent
Landform: Ground moraines, hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Paxton, extremely stony

Percent of map unit: 2 percent
Landform: Hills, drumlins, ground moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Hydric soil rating: No

Cu—Swansea mucky peat, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2w68x
Elevation: 0 to 950 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Swansea and similar soils: 83 percent
Minor components: 17 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Swansea

Setting

Landform: Marshes, depressions, kettles, bogs, swamps
Down-slope shape: Concave

Across-slope shape: Concave
Parent material: Moderately decomposed organic material over sandy and gravelly glaciofluvial deposits

Typical profile

Oe1 - 0 to 12 inches: mucky peat
Oe2 - 12 to 25 inches: mucky peat
Cg - 25 to 79 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: High (about 11.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: B/D
Ecological site: F144AY043MA - Acidic Organic Wetlands
Hydric soil rating: Yes

Minor Components

Freetown

Percent of map unit: 7 percent
Landform: Depressions, kettles, marshes, bogs, swamps
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Scarboro

Percent of map unit: 5 percent
Landform: Outwash deltas, depressions, outwash terraces, drainageways
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Walpole

Percent of map unit: 5 percent
Landform: Depressions, outwash terraces, drainageways, outwash deltas
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

DeA—Deerfield loamy fine sand, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2xfg8
Elevation: 0 to 1,100 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Farmland of local importance

Map Unit Composition

Deerfield and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Deerfield

Setting

Landform: Outwash terraces, outwash deltas, outwash plains, kame terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Parent material: Sandy outwash derived from granite, gneiss, and/or quartzite

Typical profile

Ap - 0 to 9 inches: loamy fine sand
Bw - 9 to 25 inches: loamy fine sand
BC - 25 to 33 inches: fine sand
Cg - 33 to 60 inches: sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: About 15 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Sodium adsorption ratio, maximum: 11.0
Available water supply, 0 to 60 inches: Moderate (about 6.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: A
Ecological site: F144AY027MA - Moist Sandy Outwash
Hydric soil rating: No

Minor Components

Windsor

Percent of map unit: 7 percent
Landform: Outwash terraces, kame terraces, outwash deltas, outwash plains
Landform position (three-dimensional): Tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

Wareham

Percent of map unit: 5 percent
Landform: Drainageways, depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Sudbury

Percent of map unit: 2 percent
Landform: Outwash plains, kame terraces, outwash deltas, outwash terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

Ninigret

Percent of map unit: 1 percent
Landform: Kame terraces, outwash plains, outwash terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex, linear
Across-slope shape: Convex, concave
Hydric soil rating: No

Gw—Freetown mucky peat, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2w68v
Elevation: 0 to 860 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Freetown and similar soils: 82 percent
Minor components: 18 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Freetown

Setting

Landform: Depressions, kettles, marshes, bogs, swamps
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Moderately decomposed organic material

Typical profile

Oe1 - 0 to 2 inches: mucky peat
Oe2 - 2 to 79 inches: mucky peat

Properties and qualities

Slope: 0 to 1 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: Very high (about 20.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: B/D
Ecological site: F144AY043MA - Acidic Organic Wetlands
Hydric soil rating: Yes

Minor Components

Swansea

Percent of map unit: 8 percent
Landform: Marshes, depressions, bogs, swamps, kettles
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Natchaug

Percent of map unit: 6 percent
Landform: Depressions, depressions, depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Scarboro

Percent of map unit: 3 percent
Landform: Outwash terraces, outwash deltas, depressions, drainageways
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Whitman

Percent of map unit: 1 percent
Landform: Depressions, hills
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

LvA—Leicester-Walpole complex stony, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 9fcw
Elevation: 0 to 2,100 feet
Mean annual precipitation: 27 to 47 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 100 to 195 days
Farmland classification: Not prime farmland

Map Unit Composition

Leicester and similar soils: 40 percent
Walpole and similar soils: 35 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Leicester

Setting

Landform: Ground moraines
Parent material: Ablation till derived from granite and gneiss and/or ablation till derived from mica schist

Typical profile

H1 - 0 to 9 inches: loam
H2 - 9 to 22 inches: fine sandy loam
H3 - 22 to 60 inches: gravelly sandy loam

Properties and qualities

Slope: 0 to 3 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: About 0 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A/D
Ecological site: F144AY009CT - Wet Till Depressions
Hydric soil rating: Yes

Description of Walpole

Setting

Landform: Ground moraines
Parent material: Glaciofluvial deposits derived from granite and gneiss

Typical profile

H1 - 0 to 5 inches: sandy loam
H2 - 5 to 18 inches: sandy loam
H3 - 18 to 60 inches: gravelly sand

Properties and qualities

Slope: 0 to 3 percent
Surface area covered with cobbles, stones or boulders: 0.1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Ecological site: F144AY028MA - Wet Outwash
Hydric soil rating: Yes

Minor Components

Ridgebury

Percent of map unit: 7 percent
Landform: Ground moraines
Hydric soil rating: Yes

Saugatuck

Percent of map unit: 6 percent
Landform: Outwash terraces
Hydric soil rating: Yes

Pipestone

Percent of map unit: 6 percent
Landform: Outwash terraces
Hydric soil rating: Yes

Scarboro

Percent of map unit: 6 percent
Landform: Depressions

Hydric soil rating: Yes

LvB—Leicester-Walpole complex stony, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9fcx
Elevation: 0 to 2,100 feet
Mean annual precipitation: 27 to 47 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 100 to 195 days
Farmland classification: Not prime farmland

Map Unit Composition

Leicester and similar soils: 40 percent
Walpole and similar soils: 35 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Leicester

Setting

Landform: Ground moraines
Parent material: Ablation till derived from granite and gneiss and/or ablation till derived from mica schist

Typical profile

H1 - 0 to 9 inches: loam
H2 - 9 to 22 inches: fine sandy loam
H3 - 22 to 60 inches: gravelly sandy loam

Properties and qualities

Slope: 3 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: About 0 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A/D
Ecological site: F144AY009CT - Wet Till Depressions
Hydric soil rating: Yes

Description of Walpole

Setting

Landform: Ground moraines
Parent material: Glaciofluvial deposits derived from granite and gneiss

Typical profile

H1 - 0 to 5 inches: sandy loam
H2 - 5 to 18 inches: sandy loam
H3 - 18 to 60 inches: gravelly sand

Properties and qualities

Slope: 3 to 8 percent
Surface area covered with cobbles, stones or boulders: 0.1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Ecological site: F144AY028MA - Wet Outwash
Hydric soil rating: Yes

Minor Components

Ridgebury

Percent of map unit: 7 percent
Landform: Ground moraines
Hydric soil rating: Yes

Scarboro

Percent of map unit: 6 percent
Landform: Depressions
Hydric soil rating: Yes

Saugatuck

Percent of map unit: 6 percent
Landform: Outwash terraces
Hydric soil rating: Yes

Pipestone

Percent of map unit: 6 percent
Landform: Outwash terraces
Hydric soil rating: Yes

PiA—Pipestone loamy sand, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 9fdl
Elevation: 0 to 1,000 feet
Mean annual precipitation: 27 to 55 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 120 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Pipestone and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pipestone

Setting

Landform: Outwash terraces
Parent material: Sandy outwash derived mainly from granite, gneiss and schist

Typical profile

H1 - 0 to 9 inches: loamy sand
H2 - 9 to 22 inches: sand
H3 - 22 to 61 inches: coarse sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Ecological site: F144AY027MA - Moist Sandy Outwash
Hydric soil rating: Yes

Minor Components

Saugatuck

Percent of map unit: 5 percent

Landform: Outwash terraces
Hydric soil rating: Yes

Deerfield
Percent of map unit: 5 percent
Hydric soil rating: No

Pr—Pits, gravel

Map Unit Composition
Gravel pits: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

So—Scarboro mucky fine sandy loam, 0 to 3 percent slopes

Map Unit Setting
National map unit symbol: 2svky
Elevation: 0 to 1,320 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 250 days
Farmland classification: Not prime farmland

Map Unit Composition
Scarboro and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Scarboro

Setting
Landform: Drainageways, outwash deltas, outwash terraces, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Sandy glaciofluvial deposits derived from schist and/or sandy glaciofluvial deposits derived from gneiss and/or sandy glaciofluvial deposits derived from granite

Typical profile
Oe - 0 to 3 inches: mucky peat
A - 3 to 11 inches: mucky fine sandy loam
Cg1 - 11 to 21 inches: sand
Cg2 - 21 to 65 inches: gravelly coarse sand

Properties and qualities
Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches

Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (1.42 to 14.17 in/hr)
Depth to water table: About 0 to 2 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: A/D
Ecological site: F144AY031MA - Very Wet Outwash
Hydric soil rating: Yes

Minor Components

Swansea

Percent of map unit: 10 percent
Landform: Bogs, swamps
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Wareham

Percent of map unit: 5 percent
Landform: Depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Walpole

Percent of map unit: 5 percent
Landform: Deltas, depressions, outwash terraces, depressions, outwash plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Sr—Scarboro stony mucky loamy sand

Map Unit Setting

National map unit symbol: 9ff1
Elevation: 0 to 2,100 feet
Mean annual precipitation: 28 to 45 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 100 to 195 days

Farmland classification: Not prime farmland

Map Unit Composition

Scarboro and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Scarboro

Setting

Landform: Depressions
Parent material: Outwash derived from granite and gneiss and/or outwash derived from mica schist

Typical profile

H1 - 0 to 9 inches: mucky loamy sand
H2 - 9 to 20 inches: sand
H3 - 20 to 38 inches: sand
H4 - 38 to 63 inches: sand

Properties and qualities

Slope: 0 to 3 percent
Surface area covered with cobbles, stones or boulders: 0.1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: Low (about 5.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A/D
Ecological site: F144AY031MA - Very Wet Outwash
Hydric soil rating: Yes

Minor Components

Chocorua

Percent of map unit: 4 percent
Landform: Bogs
Hydric soil rating: Yes

Ridgebury

Percent of map unit: 2 percent
Landform: Ground moraines
Hydric soil rating: Yes

Leicester

Percent of map unit: 2 percent
Landform: Ground moraines
Hydric soil rating: Yes

Walpole

Percent of map unit: 2 percent
Landform: Ground moraines
Hydric soil rating: Yes

W—Water (less than 40 acres)

Map Unit Composition

Water < 40: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

WdA—Windsor loamy sand, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2svkg
Elevation: 0 to 990 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of local importance

Map Unit Composition

Windsor, loamy sand, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Windsor, Loamy Sand

Setting

Landform: Outwash plains, outwash terraces, deltas, dunes
Landform position (three-dimensional): Tread, riser
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Parent material: Loose sandy glaciofluvial deposits derived from granite and/or loose sandy glaciofluvial deposits derived from schist and/or loose sandy glaciofluvial deposits derived from gneiss

Typical profile

O - 0 to 1 inches: moderately decomposed plant material
A - 1 to 3 inches: loamy sand
Bw - 3 to 25 inches: loamy sand
C - 25 to 65 inches: sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Minor Components

Deerfield, loamy sand

Percent of map unit: 10 percent
Landform: Deltas, terraces, outwash plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Hinckley, loamy sand

Percent of map unit: 5 percent
Landform: Deltas, kames, eskers, outwash plains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Head slope, nose slope, crest, side slope, rise
Down-slope shape: Convex
Across-slope shape: Convex, linear
Hydric soil rating: No

WdB—Windsor loamy sand, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2svkf
Elevation: 0 to 1,210 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of local importance

Map Unit Composition

Windsor, loamy sand, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Windsor, Loamy Sand

Setting

Landform: Dunes, outwash plains, deltas, outwash terraces
Landform position (three-dimensional): Tread, riser
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Loose sandy glaciofluvial deposits derived from granite and/or loose sandy glaciofluvial deposits derived from schist and/or loose sandy glaciofluvial deposits derived from gneiss

Typical profile

O - 0 to 1 inches: moderately decomposed plant material
A - 1 to 3 inches: loamy sand
Bw - 3 to 25 inches: loamy sand
C - 25 to 65 inches: sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Minor Components

Hinckley, loamy sand

Percent of map unit: 10 percent
Landform: Deltas, kames, eskers, outwash plains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Head slope, nose slope, crest, side slope, rise
Down-slope shape: Convex
Across-slope shape: Convex, linear
Hydric soil rating: No

Deerfield, loamy sand

Percent of map unit: 5 percent
Landform: Deltas, terraces, outwash plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear

Hydric soil rating: No

WdC—Windsor loamy sand, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2svkq
Elevation: 0 to 1,260 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Windsor and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Windsor

Setting

Landform: — error in exists on —
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, riser
Down-slope shape: Convex
Across-slope shape: Convex, linear
Parent material: Loose sandy glaciofluvial deposits derived from granite and/or loose sandy glaciofluvial deposits derived from schist and/or loose sandy glaciofluvial deposits derived from gneiss

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
Ap - 1 to 11 inches: loamy sand
Bw - 11 to 31 inches: loamy sand
C - 31 to 65 inches: sand

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Minor Components

Hinckley
Percent of map unit: 10 percent
Landform: Deltas, kames, eskers, outwash plains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Head slope, nose slope, side slope, crest, rise
Down-slope shape: Convex
Across-slope shape: Convex, linear
Hydric soil rating: No

Deerfield
Percent of map unit: 5 percent
Landform: Deltas, terraces, outwash plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

WdD—Windsor loamy sand, 15 to 35 percent slopes

Map Unit Setting
National map unit symbol: 2svl4
Elevation: 0 to 680 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition
Windsor and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Windsor

Setting
Landform: Dunes, deltas, outwash terraces, outwash plains
Landform position (three-dimensional): Tread, riser
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Loose sandy glaciofluvial deposits derived from granite and/or loose sandy glaciofluvial deposits derived from schist and/or loose sandy glaciofluvial deposits derived from gneiss

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 3 inches: loamy sand
Bw - 3 to 25 inches: loamy sand
C - 25 to 65 inches: sand

Properties and qualities

Slope: 15 to 35 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Minor Components

Merrimac

Percent of map unit: 5 percent
Landform: Outwash plains, outwash terraces, moraines, stream terraces, eskers, kames
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Hinckley

Percent of map unit: 5 percent
Landform: Deltas, kames, eskers, outwash plains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Head slope, nose slope, side slope, crest, rise
Down-slope shape: Convex
Across-slope shape: Convex, linear
Hydric soil rating: No

Rockingham County, New Hampshire

12B—Hinckley loamy sand, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2svm8
Elevation: 0 to 1,430 feet
Mean annual precipitation: 36 to 53 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 250 days
Farmland classification: Not prime farmland

Map Unit Composition

Hinckley and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hinckley

Setting

Landform: Outwash deltas, outwash terraces, kames, kame terraces, moraines, eskers, outwash plains
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Nose slope, side slope, base slope, crest, riser, tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Parent material: Sandy and gravelly glaciofluvial deposits derived from gneiss and/or granite and/or schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 8 inches: loamy sand
Bw1 - 8 to 11 inches: gravelly loamy sand
Bw2 - 11 to 16 inches: gravelly loamy sand
BC - 16 to 19 inches: very gravelly loamy sand
C - 19 to 65 inches: very gravelly sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A

Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Minor Components

Windsor
Percent of map unit: 8 percent
Landform: Outwash deltas, outwash terraces, moraines, eskers, kames, outwash plains, kame terraces
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Nose slope, side slope, base slope, crest, riser, tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

Sudbury
Percent of map unit: 5 percent
Landform: Outwash deltas, outwash terraces, moraines, outwash plains, kame terraces
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Head slope, side slope, base slope, tread
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: No

Agawam
Percent of map unit: 2 percent
Landform: Moraines, eskers, kames, outwash plains, kame terraces, outwash deltas, outwash terraces
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Nose slope, side slope, base slope, crest, riser, tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

12C—Hinckley loamy sand, 8 to 15 percent slopes

Map Unit Setting
National map unit symbol: 2svm9
Elevation: 0 to 1,480 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition
Hinckley and similar soils: 85 percent
Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hinckley

Setting

Landform: Outwash deltas, outwash terraces, moraines, eskers, kames, outwash plains, kame terraces
Landform position (two-dimensional): Shoulder, backslope, footslope, toeslope
Landform position (three-dimensional): Head slope, nose slope, side slope, crest, riser
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Parent material: Sandy and gravelly glaciofluvial deposits derived from gneiss and/or granite and/or schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 8 inches: loamy sand
Bw1 - 8 to 11 inches: gravelly loamy sand
Bw2 - 11 to 16 inches: gravelly loamy sand
BC - 16 to 19 inches: very gravelly loamy sand
C - 19 to 65 inches: very gravelly sand

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Minor Components

Windsor

Percent of map unit: 5 percent
Landform: Moraines, eskers, kames, outwash deltas, outwash terraces, outwash plains, kame terraces
Landform position (two-dimensional): Shoulder, backslope, footslope, toeslope
Landform position (three-dimensional): Head slope, nose slope, side slope, crest, riser
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

Sudbury

Percent of map unit: 5 percent
Landform: Outwash deltas, moraines, outwash plains, kame terraces, outwash terraces
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: No

Merrimac

Percent of map unit: 5 percent
Landform: Kames, outwash plains, outwash terraces, moraines, eskers
Landform position (two-dimensional): Shoulder, backslope, footslope, toeslope
Landform position (three-dimensional): Head slope, nose slope, side slope, crest, riser
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

12E—Hinckley loamy sand, 15 to 60 percent slopes

Map Unit Setting

National map unit symbol: 2svmh
Elevation: 0 to 890 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Hinckley and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hinckley

Setting

Landform: Outwash deltas, outwash terraces, moraines, eskers, kames, outwash plains, kame terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Nose slope, side slope, crest, head slope, riser
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Parent material: Sandy and gravelly glaciofluvial deposits derived from gneiss and/or granite and/or schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material

A - 1 to 8 inches: loamy sand
Bw1 - 8 to 11 inches: gravelly loamy sand
Bw2 - 11 to 16 inches: gravelly loamy sand
BC - 16 to 19 inches: very gravelly loamy sand
C - 19 to 65 inches: very gravelly sand

Properties and qualities

Slope: 15 to 60 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Minor Components

Windsor

Percent of map unit: 10 percent
Landform: Outwash terraces, moraines, eskers, kames, kame terraces, outwash deltas, outwash plains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Nose slope, side slope, crest, head slope, riser
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

Merrimac

Percent of map unit: 5 percent
Landform: Outwash plains, outwash terraces, moraines, eskers, kames
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, crest, head slope, nose slope, riser
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

26B—Windsor loamy sand, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2svkf
Elevation: 0 to 1,210 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of local importance

Map Unit Composition

Windsor, loamy sand, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Windsor, Loamy Sand

Setting

Landform: Dunes, outwash plains, deltas, outwash terraces
Landform position (three-dimensional): Tread, riser
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Loose sandy glaciofluvial deposits derived from granite and/or loose sandy glaciofluvial deposits derived from schist and/or loose sandy glaciofluvial deposits derived from gneiss

Typical profile

O - 0 to 1 inches: moderately decomposed plant material
A - 1 to 3 inches: loamy sand
Bw - 3 to 25 inches: loamy sand
C - 25 to 65 inches: sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash

Hydric soil rating: No

Minor Components

Hinckley, loamy sand

Percent of map unit: 10 percent
Landform: Deltas, kames, eskers, outwash plains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Head slope, nose slope, crest, side slope, rise
Down-slope shape: Convex
Across-slope shape: Convex, linear
Hydric soil rating: No

Deerfield, loamy sand

Percent of map unit: 5 percent
Landform: Deltas, terraces, outwash plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

42B—Canton fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2w81b
Elevation: 0 to 1,180 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Canton and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton

Setting

Landform: Hills, moraines, ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 7 inches: fine sandy loam

Bw1 - 7 to 15 inches: fine sandy loam
Bw2 - 15 to 26 inches: gravelly fine sandy loam
2C - 26 to 65 inches: gravelly loamy sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Scituate

Percent of map unit: 10 percent
Landform: Hills, drumlins, ground moraines
Landform position (two-dimensional): Summit, backslope, footslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Montauk

Percent of map unit: 5 percent
Landform: Moraines, ground moraines, hills, drumlins
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Charlton

Percent of map unit: 4 percent
Landform: Ridges, ground moraines, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Swansea

Percent of map unit: 1 percent
Landform: Marshes, depressions, bogs, swamps, kettles
Down-slope shape: Concave

Across-slope shape: Concave
Hydric soil rating: Yes

43B—Canton fine sandy loam, 0 to 8 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2w81l
Elevation: 0 to 1,180 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of local importance

Map Unit Composition

Canton, very stony, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton, Very Stony

Setting

Landform: Moraines, hills, ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 5 inches: fine sandy loam
Bw1 - 5 to 16 inches: fine sandy loam
Bw2 - 16 to 22 inches: gravelly fine sandy loam
2C - 22 to 67 inches: gravelly loamy sand

Properties and qualities

Slope: 0 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Scituate, very stony

Percent of map unit: 9 percent
Landform: Hills, drumlins, ground moraines
Landform position (two-dimensional): Summit, backslope, footslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Montauk, very stony

Percent of map unit: 5 percent
Landform: Recessionial moraines, ground moraines, hills, drumlins
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Gloucester, very stony

Percent of map unit: 4 percent
Landform: Moraines, hills, ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Swansea

Percent of map unit: 2 percent
Landform: Marshes, depressions, bogs, swamps, kettles
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

43C—Canton fine sandy loam, 8 to 15 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2w814
Elevation: 0 to 1,160 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F

Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Canton, very stony, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton, Very Stony

Setting

Landform: Moraines, ridges, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 5 inches: fine sandy loam
Bw1 - 5 to 16 inches: fine sandy loam
Bw2 - 16 to 22 inches: gravelly fine sandy loam
2C - 22 to 67 inches: gravelly loamy sand

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Montauk, very stony

Percent of map unit: 6 percent
Landform: Recessionial moraines, ground moraines, hills, drumlins
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex

Hydric soil rating: No

Scituate, very stony

Percent of map unit: 5 percent
Landform: Ground moraines, hills, drumlins
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Chatfield, very stony

Percent of map unit: 3 percent
Landform: Hills, ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Swansea

Percent of map unit: 1 percent
Landform: Marshes, depressions, bogs, swamps, kettles
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

44B—Montauk fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2tyrh
Elevation: 0 to 1,030 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Montauk and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Montauk

Setting

Landform: Recessionial moraines, ground moraines, hills, drumlins
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex

Parent material: Coarse-loamy over sandy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 4 inches: fine sandy loam
Bw1 - 4 to 26 inches: fine sandy loam
Bw2 - 26 to 34 inches: sandy loam
2Cd - 34 to 72 inches: gravelly loamy sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 39 inches to densic material
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: C
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

Minor Components

Scituate

Percent of map unit: 6 percent
Landform: Ground moraines, hills, drumlins
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Canton

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Ridgebury

Percent of map unit: 4 percent
Landform: Depressions, ground moraines, hills, drainageways
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Head slope, base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

45B—Montauk fine sandy loam, 0 to 8 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2w80v
Elevation: 0 to 1,070 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of local importance

Map Unit Composition

Montauk, very stony, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Montauk, Very Stony

Setting

Landform: Recessionial moraines, ground moraines, hills, drumlins
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 6 inches: fine sandy loam
Bw1 - 6 to 28 inches: fine sandy loam
Bw2 - 28 to 36 inches: sandy loam
2Cd - 36 to 74 inches: gravelly loamy sand

Properties and qualities

Slope: 0 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 20 to 43 inches to densic material
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: C
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

Minor Components

Scituate, very stony
Percent of map unit: 6 percent
Landform: Drumlins, ground moraines, hills
Landform position (two-dimensional): Summit, backslope, footslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Canton, very stony
Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Ridgebury, very stony
Percent of map unit: 4 percent
Landform: Depressions, ground moraines, hills, drainageways
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Head slope, base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

45C—Montauk fine sandy loam, 8 to 15 percent slopes, very stony

Map Unit Setting
National map unit symbol: 2w80w
Elevation: 0 to 1,120 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition
Montauk, very stony, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Montauk, Very Stony

Setting

Landform: Hills, recessionial moraines, ground moraines, drumlins
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 6 inches: fine sandy loam
Bw1 - 6 to 28 inches: fine sandy loam
Bw2 - 28 to 36 inches: sandy loam
2Cd - 36 to 74 inches: gravelly loamy sand

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 20 to 43 inches to densic material
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

Minor Components

Scituate, very stony

Percent of map unit: 6 percent
Landform: Ground moraines, hills, drumlins
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Canton, very stony

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear

Across-slope shape: Convex
Hydric soil rating: No

Ridgebury, very stony

Percent of map unit: 4 percent
Landform: Depressions, ground moraines, hills, drainageways
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Head slope, base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

97—Freetown and Natchaug mucky peats, ponded, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2w690
Elevation: 10 to 930 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Freetown, ponded, and similar soils: 38 percent
Natchaug, ponded, and similar soils: 37 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Freetown, Ponded

Setting

Landform: Depressions, kettles, marshes, bogs, swamps
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Moderately decomposed organic material

Typical profile

Oe1 - 0 to 2 inches: mucky peat
Oe2 - 2 to 79 inches: mucky peat

Properties and qualities

Slope: 0 to 2 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent

Available water supply, 0 to 60 inches: Very high (about 20.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w
Hydrologic Soil Group: B/D
Ecological site: F144AY043MA - Acidic Organic Wetlands
Hydric soil rating: Yes

Description of Natchaug, Ponded

Setting

Landform: Depressions, depressions, depressions
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Moderately decomposed organic material over loamy glaciofluvial deposits and/or loamy glaciolacustrine deposits and/or loamy till

Typical profile

Oe1 - 0 to 12 inches: mucky peat
Oe2 - 12 to 31 inches: mucky peat
2Cg1 - 31 to 39 inches: silt loam
2Cg2 - 39 to 79 inches: fine sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.01 to 14.17 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 25 percent
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Very high (about 14.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w
Hydrologic Soil Group: B/D
Ecological site: F144AY042NY - Semi-Rich Organic Wetlands
Hydric soil rating: Yes

Minor Components

Scarboro, ponded

Percent of map unit: 9 percent
Landform: Depressions, outwash terraces, drainageways, outwash deltas
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Maybid, ponded

Percent of map unit: 8 percent
Landform: Depressions, depressions

Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Scitico

Percent of map unit: 4 percent
Landform: Depressions, depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Ridgebury, very stony

Percent of map unit: 4 percent
Landform: Drumlins, depressions, ground moraines, hills, drainageways
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Head slope, base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

140B—Chatfield-Hollis-Canton complex, 0 to 8 percent slopes, rocky

Map Unit Setting

National map unit symbol: 2w82m
Elevation: 380 to 1,070 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Chatfield, very stony, and similar soils: 35 percent
Hollis, very stony, and similar soils: 25 percent
Canton, very stony, and similar soils: 25 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chatfield, Very Stony

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material

A - 1 to 2 inches: fine sandy loam
Bw - 2 to 30 inches: gravelly fine sandy loam
2R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 0 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 20 to 41 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Description of Hollis, Very Stony

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 7 inches: gravelly fine sandy loam
Bw - 7 to 16 inches: gravelly fine sandy loam
2R - 16 to 26 inches: bedrock

Properties and qualities

Slope: 0 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 8 to 23 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: F144AY033MA - Shallow Dry Till Uplands
Hydric soil rating: No

Description of Canton, Very Stony

Setting

Landform: Moraines, hills, ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 5 inches: fine sandy loam
Bw1 - 5 to 16 inches: fine sandy loam
Bw2 - 16 to 22 inches: gravelly fine sandy loam
2C - 22 to 67 inches: gravelly loamy sand

Properties and qualities

Slope: 0 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Newfields, very stony

Percent of map unit: 5 percent
Landform: Ground moraines, hills, moraines
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave

Hydric soil rating: No

Freetown

Percent of map unit: 5 percent
Landform: Marshes, depressions, bogs, kettles, swamps
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Walpole, very stony

Percent of map unit: 3 percent
Landform: Deltas, depressions, outwash plains, depressions, outwash terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Rock outcrop

Percent of map unit: 2 percent
Landform: Ridges, hills
Hydric soil rating: Unranked

140C—Chatfield-Hollis-Canton complex, 8 to 15 percent slopes, rocky

Map Unit Setting

National map unit symbol: 2w82s
Elevation: 0 to 980 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Chatfield, very stony, and similar soils: 35 percent
Hollis, very stony, and similar soils: 25 percent
Canton, very stony, and similar soils: 25 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chatfield, Very Stony

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex
Across-slope shape: Linear, convex

Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 2 inches: fine sandy loam
Bw - 2 to 30 inches: gravelly fine sandy loam
2R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 20 to 41 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Description of Hollis, Very Stony

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 7 inches: gravelly fine sandy loam
Bw - 7 to 16 inches: gravelly fine sandy loam
2R - 16 to 26 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 8 to 23 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None

Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: F144AY033MA - Shallow Dry Till Uplands
Hydric soil rating: No

Description of Canton, Very Stony

Setting

Landform: Moraines, hills, ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 5 inches: fine sandy loam
Bw1 - 5 to 16 inches: fine sandy loam
Bw2 - 16 to 22 inches: gravelly fine sandy loam
2C - 22 to 67 inches: gravelly loamy sand

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Freetown

Percent of map unit: 5 percent
Landform: Marshes, depressions, bogs, kettles, swamps
Down-slope shape: Concave

Across-slope shape: Concave
Hydric soil rating: Yes

Newfields, very stony

Percent of map unit: 5 percent
Landform: Moraines, ground moraines, hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Scarboro, very stony

Percent of map unit: 3 percent
Landform: Depressions, outwash terraces, drainageways, outwash deltas
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave, linear
Hydric soil rating: Yes

Rock outcrop

Percent of map unit: 2 percent
Landform: Ridges, hills
Hydric soil rating: Unranked

140D—Chatfield-Hollis-Canton complex, 15 to 35 percent slopes, rocky

Map Unit Setting

National map unit symbol: 2w82p
Elevation: 0 to 1,340 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Chatfield, very stony, and similar soils: 35 percent
Hollis, very stony, and similar soils: 25 percent
Canton, very stony, and similar soils: 25 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chatfield, Very Stony

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest

Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 2 inches: fine sandy loam
Bw - 2 to 30 inches: gravelly fine sandy loam
2R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 15 to 35 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 20 to 41 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Description of Hollis, Very Stony

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 7 inches: gravelly fine sandy loam
Bw - 7 to 16 inches: gravelly fine sandy loam
2R - 16 to 26 inches: bedrock

Properties and qualities

Slope: 15 to 35 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 8 to 23 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)

Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: F144AY033MA - Shallow Dry Till Uplands
Hydric soil rating: No

Description of Canton, Very Stony

Setting

Landform: Moraines, hills, ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 5 inches: fine sandy loam
Bw1 - 5 to 16 inches: fine sandy loam
Bw2 - 16 to 22 inches: gravelly fine sandy loam
2C - 22 to 67 inches: gravelly loamy sand

Properties and qualities

Slope: 15 to 35 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Montauk, very stony

Percent of map unit: 7 percent

Landform: Recessionial moraines, ground moraines, hills, drumlins
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Scarboro, very stony

Percent of map unit: 6 percent
Landform: Depressions, outwash terraces, drainageways, outwash deltas
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave, linear
Hydric soil rating: Yes

Rock outcrop

Percent of map unit: 2 percent
Landform: Ridges, hills
Hydric soil rating: Unranked

295—Freetown mucky peat, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2w68v
Elevation: 0 to 860 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Freetown and similar soils: 82 percent
Minor components: 18 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Freetown

Setting

Landform: Depressions, kettles, marshes, bogs, swamps
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Moderately decomposed organic material

Typical profile

Oe1 - 0 to 2 inches: mucky peat
Oe2 - 2 to 79 inches: mucky peat

Properties and qualities

Slope: 0 to 1 percent

Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: Very high (about 20.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: B/D
Ecological site: F144AY043MA - Acidic Organic Wetlands
Hydric soil rating: Yes

Minor Components

Swansea

Percent of map unit: 8 percent
Landform: Marshes, depressions, bogs, swamps, kettles
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Natchaug

Percent of map unit: 6 percent
Landform: Depressions, depressions, depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Scarboro

Percent of map unit: 3 percent
Landform: Outwash terraces, outwash deltas, depressions, drainageways
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Whitman

Percent of map unit: 1 percent
Landform: Depressions, hills
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

298—Pits, sand and gravel

Map Unit Composition

Pits: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

299—Udorthents, smoothed

Map Unit Setting

National map unit symbol: 9cmt
Elevation: 0 to 840 feet
Mean annual precipitation: 44 to 49 inches
Mean annual air temperature: 48 degrees F
Frost-free period: 155 to 165 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents

Properties and qualities

Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

313A—Deerfield loamy fine sand, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2xfg8
Elevation: 0 to 1,100 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Farmland of local importance

Map Unit Composition

Deerfield and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Deerfield

Setting

Landform: Outwash terraces, outwash deltas, outwash plains, kame terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Parent material: Sandy outwash derived from granite, gneiss, and/or quartzite

Typical profile

Ap - 0 to 9 inches: loamy fine sand
Bw - 9 to 25 inches: loamy fine sand
BC - 25 to 33 inches: fine sand
Cg - 33 to 60 inches: sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: About 15 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Sodium adsorption ratio, maximum: 11.0
Available water supply, 0 to 60 inches: Moderate (about 6.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: A
Ecological site: F144AY027MA - Moist Sandy Outwash
Hydric soil rating: No

Minor Components

Windsor

Percent of map unit: 7 percent
Landform: Outwash terraces, kame terraces, outwash deltas, outwash plains
Landform position (three-dimensional): Tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

Wareham

Percent of map unit: 5 percent
Landform: Drainageways, depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Sudbury

Percent of map unit: 2 percent
Landform: Outwash plains, kame terraces, outwash deltas, outwash terraces
Landform position (three-dimensional): Tread

Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

Ninigret

Percent of map unit: 1 percent
Landform: Kame terraces, outwash plains, outwash terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex, linear
Across-slope shape: Convex, concave
Hydric soil rating: No

313B—Deerfield loamy fine sand, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2xfg9
Elevation: 0 to 1,190 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Deerfield and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Deerfield

Setting

Landform: Outwash deltas, outwash terraces, outwash plains, kame terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Parent material: Sandy outwash derived from granite, gneiss, and/or quartzite

Typical profile

Ap - 0 to 9 inches: loamy fine sand
Bw - 9 to 25 inches: loamy fine sand
BC - 25 to 33 inches: fine sand
Cg - 33 to 60 inches: sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: About 15 to 37 inches
Frequency of flooding: None

Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Sodium adsorption ratio, maximum: 11.0
Available water supply, 0 to 60 inches: Moderate (about 6.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: A
Ecological site: F144AY027MA - Moist Sandy Outwash
Hydric soil rating: No

Minor Components

Windsor

Percent of map unit: 7 percent
Landform: Outwash terraces, outwash plains, kame terraces, outwash deltas
Landform position (three-dimensional): Tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

Wareham

Percent of map unit: 5 percent
Landform: Drainageways, depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Sudbury

Percent of map unit: 2 percent
Landform: Kame terraces, outwash deltas, outwash terraces, outwash plains
Landform position (three-dimensional): Tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

Ninigret

Percent of map unit: 1 percent
Landform: Outwash plains, outwash terraces, kame terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex, linear
Across-slope shape: Convex, concave
Hydric soil rating: No

314A—Pipestone sand, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 9cn2
Elevation: 0 to 2,100 feet
Mean annual precipitation: 28 to 55 inches

Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 100 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Pipestone and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pipestone

Setting

Landform: Outwash terraces

Typical profile

H1 - 0 to 6 inches: sand
H2 - 6 to 33 inches: sand
H3 - 33 to 60 inches: sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Ecological site: F144AY027MA - Moist Sandy Outwash
Hydric soil rating: Yes

Minor Components

Not named wet

Percent of map unit: 5 percent
Landform: Outwash terraces
Hydric soil rating: Yes

Chocorua

Percent of map unit: 5 percent
Landform: Bogs
Hydric soil rating: Yes

Scarboro

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Squamscott

Percent of map unit: 5 percent
Landform: Marine terraces

Hydric soil rating: Yes

Deerfield

Percent of map unit: 5 percent
Hydric soil rating: No

395—Swansea mucky peat, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2w68x
Elevation: 0 to 950 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Swansea and similar soils: 83 percent
Minor components: 17 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Swansea

Setting

Landform: Marshes, depressions, kettles, bogs, swamps
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Moderately decomposed organic material over sandy and gravelly glaciofluvial deposits

Typical profile

Oe1 - 0 to 12 inches: mucky peat
Oe2 - 12 to 25 inches: mucky peat
Cg - 25 to 79 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: High (about 11.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: B/D

Ecological site: F144AY043MA - Acidic Organic Wetlands
Hydric soil rating: Yes

Minor Components

Freetown
Percent of map unit: 7 percent
Landform: Depressions, kettles, marshes, bogs, swamps
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Scarboro
Percent of map unit: 5 percent
Landform: Outwash deltas, depressions, outwash terraces, drainageways
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Walpole
Percent of map unit: 5 percent
Landform: Depressions, outwash terraces, drainageways, outwash deltas
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

447B—Scituate-Newfields complex, 3 to 8 percent slopes, very stony

Map Unit Setting
National map unit symbol: 9cnr
Elevation: 0 to 1,000 feet
Mean annual precipitation: 35 to 56 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 120 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition
Scituate and similar soils: 50 percent
Newfields and similar soils: 25 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Scituate

Typical profile
H1 - 0 to 8 inches: fine sandy loam
H2 - 8 to 32 inches: cobbly fine sandy loam
H3 - 32 to 60 inches: gravelly loamy sand

Properties and qualities

Slope: 3 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Ecological site: F144AY037MA - Moist Dense Till Uplands
Hydric soil rating: No

Description of Newfields

Setting

Parent material: Till

Typical profile

H1 - 0 to 9 inches: fine sandy loam
H2 - 9 to 35 inches: fine sandy loam
H3 - 35 to 64 inches: gravelly loamy sand

Properties and qualities

Slope: 3 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 24 to 48 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Ecological site: F144AY008CT - Moist Till Uplands
Hydric soil rating: No

Minor Components

Walpole

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Ridgebury
Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Canton
Percent of map unit: 5 percent
Hydric soil rating: No

Montauk
Percent of map unit: 5 percent
Hydric soil rating: No

Not named
Percent of map unit: 5 percent
Hydric soil rating: No

447C—Scituate-Newfields complex, 8 to 15 percent slopes, very stony

Map Unit Setting
National map unit symbol: 9cns
Elevation: 0 to 1,000 feet
Mean annual precipitation: 35 to 56 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 120 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition
Scituate and similar soils: 50 percent
Newfields and similar soils: 25 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Scituate

Typical profile
H1 - 0 to 8 inches: fine sandy loam
H2 - 8 to 32 inches: cobbly fine sandy loam
H3 - 32 to 60 inches: gravelly loamy sand

Properties and qualities
Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None

Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.2 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Ecological site: F144AY037MA - Moist Dense Till Uplands
Hydric soil rating: No

Description of Newfields

Setting
Parent material: Till

Typical profile
H1 - 0 to 9 inches: fine sandy loam
H2 - 9 to 35 inches: fine sandy loam
H3 - 35 to 64 inches: gravelly loamy sand

Properties and qualities
Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 24 to 48 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.4 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Ecological site: F144AY008CT - Moist Till Uplands
Hydric soil rating: No

Minor Components

Canton
Percent of map unit: 5 percent
Hydric soil rating: No

Not named
Percent of map unit: 5 percent
Hydric soil rating: No

Ridgebury
Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Montauk
Percent of map unit: 5 percent
Hydric soil rating: No

Walpole
Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

495—Natchaug mucky peat, 0 to 2 percent slopes

Map Unit Setting
National map unit symbol: 2w691
Elevation: 0 to 910 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition
Natchaug and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Natchaug

Setting
Landform: Depressions, depressions, depressions
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Moderately decomposed organic material over loamy glaciofluvial deposits and/or loamy glaciolacustrine deposits and/or loamy till

Typical profile
Oe1 - 0 to 12 inches: mucky peat
Oe2 - 12 to 31 inches: mucky peat
2Cg1 - 31 to 39 inches: silt loam
2Cg2 - 39 to 79 inches: fine sandy loam

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.01 to 14.17 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 25 percent
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Very high (about 14.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w
Hydrologic Soil Group: B/D
Ecological site: F144AY042NY - Semi-Rich Organic Wetlands
Hydric soil rating: Yes

Minor Components

Scarboro

Percent of map unit: 4 percent
Landform: Depressions, outwash terraces, drainageways, outwash deltas
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Walpole

Percent of map unit: 4 percent
Landform: Deltas, depressions, outwash plains, depressions, outwash terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Maybid

Percent of map unit: 2 percent
Landform: Depressions, depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

547B—Walpole very fine sandy loam, 3 to 8 percent slopes, very stony

Map Unit Setting

National map unit symbol: 9cpd
Elevation: 0 to 2,100 feet
Mean annual precipitation: 28 to 48 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 100 to 195 days
Farmland classification: Not prime farmland

Map Unit Composition

Walpole and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Walpole

Setting

Landform: Depressions

Typical profile

H1 - 0 to 7 inches: very fine sandy loam
H2 - 7 to 16 inches: sandy loam
H3 - 16 to 60 inches: gravelly loamy sand

Properties and qualities

Slope: 3 to 8 percent
Surface area covered with cobbles, stones or boulders: 0.1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A/D
Ecological site: F144AY028MA - Wet Outwash
Hydric soil rating: Yes

Minor Components

Scarboro

Percent of map unit: 10 percent
Landform: Depressions
Hydric soil rating: Yes

Newfields

Percent of map unit: 5 percent
Hydric soil rating: No

Squamscott

Percent of map unit: 5 percent
Landform: Marine terraces
Hydric soil rating: Yes

657A—Ridgebury fine sandy loam, 0 to 3 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2xffq
Elevation: 90 to 1,190 feet

Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Ridgebury, very stony, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ridgebury, Very Stony

Setting

Landform: Ground moraines, hills, drainageways, depressions, drumlins
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Head slope, base slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 6 inches: fine sandy loam
Bw - 6 to 10 inches: sandy loam
Bg - 10 to 19 inches: gravelly sandy loam
Cd - 19 to 66 inches: gravelly sandy loam

Properties and qualities

Slope: 0 to 3 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 15 to 35 inches to densic material
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5s
Hydrologic Soil Group: D
Ecological site: F144AY009CT - Wet Till Depressions
Hydric soil rating: Yes

Minor Components

Walpole

Percent of map unit: 9 percent
Landform: Drainageways, outwash terraces, depressions
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave

Hydric soil rating: Yes

Woodbridge, very stony

Percent of map unit: 6 percent
Landform: Hills, drumlins, ground moraines
Landform position (two-dimensional): Summit, backslope, footslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Whitman, very stony

Percent of map unit: 3 percent
Landform: Drainageways, depressions, drumlins, ground moraines, hills
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Leicester, very stony

Percent of map unit: 2 percent
Landform: Depressions, hills, ground moraines, drainageways
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear, concave
Across-slope shape: Concave
Hydric soil rating: Yes

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

Appendix E – Photo Log

PHOTO LOG
380/326 Transmission Line Rebuild and OPGW Project
Merrimack, Litchfield, Londonderry, Hudson, and Pelham, New Hampshire
Photos Taken: March 2, 3, 8, 2022

Photograph No. 1: Looking at proposed access and work pad location from Brick Yard Drive for Structure 85 of the 380 Line.

Photograph No. 2: Looking at proposed access and work pad location adjacent to Structure 85 of the 380 Line.

PHOTO LOG
380/326 Transmission Line Rebuild and OPGW Project
Merrimack, Litchfield, Londonderry, Hudson, and Pelham, New Hampshire
Photos Taken: March 2, 3, 8, 2022

Photograph No. 3: Looking at proposed access and work pad location for Structure 66 of the 380 Line.

Photograph No. 4: Looking at proposed access and work pad location for Structure 65 of the 380 Line.

PHOTO LOG
380/326 Transmission Line Rebuild and OPGW Project
Merrimack, Litchfield, Londonderry, Hudson, and Pelham, New Hampshire
Photos Taken: March 2, 3, 8, 2022

Photograph No. 5: Looking at proposed access and work pad location adjacent to Structure 62 of the 380 Line.

Photograph No. 6: Looking at proposed work pad location adjacent for Structure 61 of the 380 Line from Driveway A504.

PHOTO LOG
380/326 Transmission Line Rebuild and OPGW Project
Merrimack, Litchfield, Londonderry, Hudson, and Pelham, New Hampshire
Photos Taken: March 2, 3, 8, 2022

Photograph No. 7: Looking at proposed access and work pad location adjacent to Structure 56 of the 380 Line.

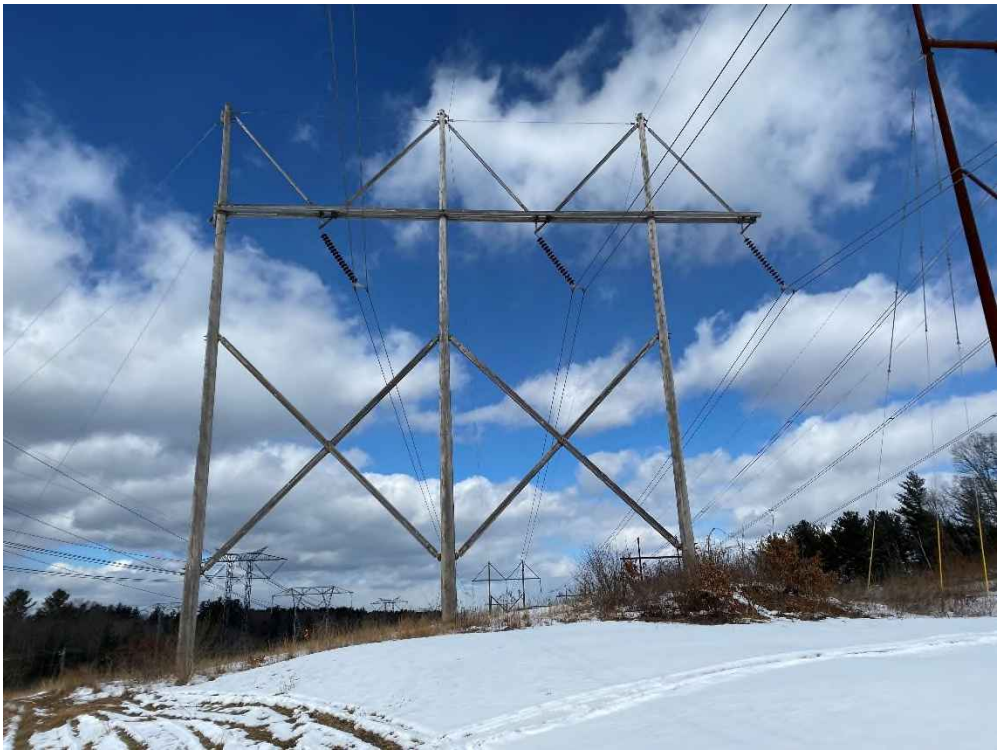
Photograph No. 8: Looking at proposed access and work pad location adjacent to Structure 55 of the 380 Line.

PHOTO LOG
380/326 Transmission Line Rebuild and OPGW Project
Merrimack, Litchfield, Londonderry, Hudson, and Pelham, New Hampshire
Photos Taken: March 2, 3, 8, 2022

Photograph No. 9: Looking at proposed access adjacent to Structure 55 of the 380 Line from Wiley Hill Road.

Photograph No. 10: Looking at proposed access and work pad location adjacent to Structure 69 of the 326 Line from Route 102.

PHOTO LOG
380/326 Transmission Line Rebuild and OPGW Project
Merrimack, Litchfield, Londonderry, Hudson, and Pelham, New Hampshire
Photos Taken: March 2, 3, 8, 2022



Photograph No. 11: Looking at proposed work pad location for Structure 70 of the 326 Line.

Photograph No. 12: Looking at proposed access and work pad location for Structure 71 of the 326 Line.

PHOTO LOG
380/326 Transmission Line Rebuild and OPGW Project
Merrimack, Litchfield, Londonderry, Hudson, and Pelham, New Hampshire
Photos Taken: March 2, 3, 8, 2022

Photograph No. 13: Looking at work pad location for Structure 72 of the 326 Line.

Photograph No. 14: Looking at proposed access adjacent to Structure 72 of the 326 Line.

PHOTO LOG
380/326 Transmission Line Rebuild and OPGW Project
Merrimack, Litchfield, Londonderry, Hudson, and Pelham, New Hampshire
Photos Taken: March 2, 3, 8, 2022

Photograph No. 15: Looking at proposed access and work pad location for Structure 78 of the 326 Line.

Photograph No. 16: Looking at proposed access and work pad location for Structure 79 of the 326 Line.

PHOTO LOG
380/326 Transmission Line Rebuild and OPGW Project
Merrimack, Litchfield, Londonderry, Hudson, and Pelham, New Hampshire
Photos Taken: March 2, 3, 8, 2022

Photograph No. 17: Looking at proposed access and work pad location for Structure 80 of the 326 Line.

Photograph No. 18: Looking at proposed work pad location for Structure 121 of the 326 Line.

PHOTO LOG
380/326 Transmission Line Rebuild and OPGW Project
Merrimack, Litchfield, Londonderry, Hudson, and Pelham, New Hampshire
Photos Taken: March 2, 3, 8, 2022

Photograph No. 19: Looking at proposed access and work pad location for Structure 123 of the 326 Line.

Photograph No. 20: Looking at proposed access and work pad location for Structure 152 of the 326 Line.

PHOTO LOG
380/326 Transmission Line Rebuild and OPGW Project
Merrimack, Litchfield, Londonderry, Hudson, and Pelham, New Hampshire
Photos Taken: March 2, 3, 8, 2022

Photograph No. 21: Looking at proposed work pad location for Structure 153 of the 326 Line.

Photograph No. 22: Looking at proposed access and work pad location for Structure 154 of the 326 Line.

PHOTO LOG
380/326 Transmission Line Rebuild and OPGW Project
Merrimack, Litchfield, Londonderry, Hudson, and Pelham, New Hampshire
Photos Taken: March 2, 3, 8, 2022

Photograph No. 23: Looking at proposed access and work pad location for Structure 155 of the 326 Line from River Road.

Photograph No. 24: Looking at proposed access and work pad location adjacent to Structure 51 of the 326 Line.

PHOTO LOG
380/326 Transmission Line Rebuild and OPGW Project
Merrimack, Litchfield, Londonderry, Hudson, and Pelham, New Hampshire
Photos Taken: March 2, 3, 8, 2022

Photograph No. 25: Looking at proposed access to Structure 49 of the 326 Line.

Photograph No. 26: Looking at proposed work pad location adjacent to Structure 49 of the 326 Line.

PHOTO LOG
380/326 Transmission Line Rebuild and OPGW Project
Merrimack, Litchfield, Londonderry, Hudson, and Pelham, New Hampshire
Photos Taken: March 2, 3, 8, 2022

Photograph No. 27: Looking at proposed access and work pad location adjacent to Structure 29 of the 380 Line.

Photograph No. 28: Looking at proposed access and work pad location adjacent to Structure 28 of the 380 Line.

PHOTO LOG
380/326 Transmission Line Rebuild and OPGW Project
Merrimack, Litchfield, Londonderry, Hudson, and Pelham, New Hampshire
Photos Taken: March 2, 3, 8, 2022

Photograph No. 29: Looking at proposed work pad location adjacent to Structure 25 of the 380 Line.

Photograph No. 30: Looking at proposed access and work pad location of Structure 24 of the 380 Line.

PHOTO LOG
380/326 Transmission Line Rebuild and OPGW Project
Merrimack, Litchfield, Londonderry, Hudson, and Pelham, New Hampshire
Photos Taken: March 2, 3, 8, 2022

Photograph No. 31: Looking at proposed access and work pad location adjacent to Structure 23 of the 380 Line.

Photograph No. 32: Looking at proposed access and work pad location for Structure 14 of the 380 Line.

PHOTO LOG
380/326 Transmission Line Rebuild and OPGW Project
Merrimack, Litchfield, Londonderry, Hudson, and Pelham, New Hampshire
Photos Taken: March 2, 3, 8, 2022

Photograph No. 33: Looking at proposed access and work pad location to Structure 13 of the 380 Line.

Photograph No. 34: Looking at proposed access and work pad location adjacent to Structure 13 of the 326 Line.

PHOTO LOG
380/326 Transmission Line Rebuild and OPGW Project
Merrimack, Litchfield, Londonderry, Hudson, and Pelham, New Hampshire
Photos Taken: March 2, 3, 8, 2022

Photograph No. 35: Looking at proposed access and work pad location adjacent to Structure 12 of the 380 Line.

Photograph No. 36: Looking at proposed access and work pad location adjacent to Structure 11 of the 380 Line.

PHOTO LOG
380/326 Transmission Line Rebuild and OPGW Project
Merrimack, Litchfield, Londonderry, Hudson, and Pelham, New Hampshire
Photos Taken: March 2, 3, 8, 2022

Photograph No. 37: Looking at proposed access and work pad location for Structure 11 of the 326 Line.

Photograph No. 38: Looking at proposed access and work pad location adjacent to Structure 10 of the 326 Line.

PHOTO LOG
380/326 Transmission Line Rebuild and OPGW Project
Merrimack, Litchfield, Londonderry, Hudson, and Pelham, New Hampshire
Photos Taken: March 2, 3, 8, 2022

Photograph No. 39: Looking at proposed access and work pad location for Structure 9 of the 326 Line.

Photograph No. 40: Looking at proposed access and work pad location for Structure 8 of the 326 Line.

PHOTO LOG
380/326 Transmission Line Rebuild and OPGW Project
Merrimack, Litchfield, Londonderry, Hudson, and Pelham, New Hampshire
Photos Taken: March 2, 3, 8, 2022

Photograph No. 41: Looking at proposed access and work pad location adjacent to Structure 7 of the 326 Line.

Photograph No. 42: Looking at proposed access and work pad location for Structure 6 of the 326 Line.

Appendix F – Waiver Request

Alteration of Terrain Waiver Request
RSA/Rule: RSA 485-A:17, Env – WQ 1500

Water Division / Alteration of Terrain Bureau / Land resources Management
29 Hazen Drive, PO Box 95
Concord, New Hampshire 03302-0095

A. PROJECT INFORMATION	
380 and 326 Transmission Line Structure Replacement and OPGW Replacement **Project Name**	
Existing 380 & 326 Transmission Line Right-of-Way **Street Address**	
Merrimack, Litchfield, Londonderry, Hudson, and Pelham **City/Town**	Multiple **Zip Code**
Multiple – see attached **Tax Map/Lot Number**	

B. APPLICANT/OWNER INFORMATION		
Kurt **First Name**	Nelson **Last Name**	
Eversource Energy **Organization**		
13 Legends Drive **Street Address**		
Hooksett **City/Town**	New Hampshire **State**	03106 **Zip Code**
kurt.nelson@eversource.com **Email**	603-634-3256 **Telephone Number**	

C. APPLICANT/OWNER AGENT INFORMATION		
Conor **First Name**	Madison **Last Name**	
GZA GeoEnvironmental, Inc. **Organization**		
5 Commerce Park North, Suite 201 **Street Address**		
Bedford **City/Town**	New Hampshire **State**	03110 **Zip Code**
Conor.madison@gza.com **Email**	603-232-8784 **Telephone Number**	

D. WAIVER REQUESTS

Env-Wq 1504.09 **Rule Section Waiver Request**	Stormwater Drainage Report; Drainage Area Plans; Hydrologic Soil Group Plans **Name of Rule**

Reason for Waiver Request

Eversource is requesting a waiver for preparing a Stormwater Drainage Report, Drainage Area Plans and Hydrologic Soil Group Plans for proposed access improvements and work pad grading associated with maintenance of the existing 380/326 Transmission Line structures. The proposed access and work pad improvements for continued transmission line maintenance work will not result in new impervious surfaces as defined in Env-Wq 1502.32. As a result, stormwater treatment practices are not proposed.

Waiver Timeline

Permanent

Proposed Alternative

The proposed access and work pad improvements will not result in new impervious surface. Therefore, there is no proposed alternative to substitute the requirements of Env-Wq 1504.09.

Compliance with Env- WQ 1509.04

The project proposes to improve access routes and work pads around utility structures for the purpose of maintaining existing utility infrastructure. This project is necessary in order to maintain the safety and reliability of the electrical infrastructure. Access and work pad improvements will be completed using stone and gravel, and therefore stormwater drainage should not be affected by the proposed project. In addition, it is not anticipated that stormwater drainage area plans would show significant differences between existing and proposed conditions. An NRCS Web Soil Survey report was generated to show general soil information within the project area. Since there is no new impervious surface area proposed and stormwater drainage is not anticipated to be affected by the proposed project, it is not anticipated that soils will be significantly impacted by the project.

Best Management Practices will be utilized to protect wetlands from erosion, sedimentation, or other environmental degradation. In addition, gravel work pads will be coated with seed and mulch to allow vegetation growth on the surface, further minimizing and preventing erosion and sedimentation. As a result, Eversource respectfully requests that a Stormwater Drainage Report, Drainage Area Plans, and Hydrologic Soil Group Plans be waived for the purposes of the proposed utility line maintenance project.

E. SIGNATURES

3/30/2022

Applicant/Owner, Kurt Nelson**, Eversource Energy** Date

3/30/2022

Applicant Agent, Conor Madison, **GZA** Date

Alteration of Terrain Waiver Request

RSA/Rule: RSA 485-A:17, Env – WQ 1500

Water Division / Alteration of Terrain Bureau / Land resources Management
29 Hazen Drive, PO Box 95
Concord, New Hampshire 03302-0095

A. PROJECT INFORMATION	
380 and 326 Transmission Line Structure Replacement Project **Project Name**	
Existing 380 and 326 Right-of-Way **Street Address**	
Litchfield, Londonderry, Hudson and Pelham **City/Town**	Multiple **Zip Code**
Multiple – see attached plans **Tax Map/Lot Number**	

B. APPLICANT/OWNER INFORMATION		
Kurt **First Name**	Nelson **Last Name**	
Public Service Company of New Hampshire d/b/a Eversource Energy (Eversource) **Organization**		
13 Legends Drive **Street Address**		
Hooksett **City/Town**	New Hampshire **State**	03106 **Zip Code**
Kurt.nelson@eversource.com **Email**	603-634-3256 **Telephone Number**	

C. APPLICANT/OWNER AGENT INFORMATION		
Conor **First Name**	Madison **Last Name**	
GZA GeoEnvironmental Inc **Organization**		
5 Commerce Park North **Street Address**		
Bedford **City/Town**	New Hampshire **State**	03110 **Zip Code**
Conor.madison@gza.com **Email**	603-232-8784 **Telephone Number**	

D. WAIVER REQUESTS

Env-Wq 1503.12 (d)(1&2) **Rule Section Waiver Request**	Measurement of Contiguous Area Disturbed; Inclusion in Plans **Name of Rule**

Reason for Waiver Request

Eversource is requesting a waiver for including past terrain disturbance in the measurement of contiguous disturbed area included in this 380 and 326 Line AOT application. No known future disturbance, beyond the scope of 380 and 326 line structure replacement project described in this application, is known at this time.

Waiver Timeline

Permanent

Proposed Alternative

Existing terrain alteration associated with past transmission line maintenance within the 380 and 326 ROW is minimal. Any existing trails or access roads that may have been created within the last 10 years will be utilized and/or improved as part of this project and have been included in the current calculations within this application. Future structure maintenance may occur within the 380 and 326 ROW. Eversource, through consultation with NHDES, will evaluate whether future terrain disturbances within the 380 and 326 ROW will be permitted with an amendment to this application or subject to a new, separate application.

Compliance with Env-Wq 1503.12 (d)(1&2)

The project proposes to improve access routes and work pads around utility structures for the purpose of maintaining existing utility infrastructure. This project is necessary to maintain the safety and reliability of the electrical infrastructure. Proposed disturbances anticipated for 2022 within the 380 and 326 ROW are included in this application and shown on Figures 3 and 4. Project disturbances included in this application and subsequent permit approvals will be considered if future structure maintenance is proposed within the 380 and 326 ROW. Eversource respectfully requests a waiver from including past disturbance in this application. Future disturbances within the 380 and 326 ROW will be evaluated and discussed with NHDES and permit amendments or new permit applications will be submitted, if necessary.

E. SIGNATURES

3/30/2022

Applicant/Owner, **Kurt Nelson,** Date
Public Service Company of New Hampshire d/b/a Eversource Energy

3/30/2022

Applicant/Owner Agent, **Conor Madison,** Date
GZA GeoEnvironmental Inc

Alteration of Terrain Waiver Request

RSA/Rule: RSA 485-A:17, Env – WQ 1500

Water Division / Alteration of Terrain Bureau / Land resources Management
29 Hazen Drive, PO Box 95
Concord, New Hampshire 03302-0095

A. PROJECT INFORMATION	
380 and 326 Transmission Line Structure Replacement Project **Project Name**	
Existing 380 and 326 Right-of-Way **Street Address**	
Litchfield, Londonderry, Hudson and Pelham **City/Town**	Multiple **Zip Code**
Multiple – see attached plans **Tax Map/Lot Number**	

B. APPLICANT/OWNER INFORMATION		
Kurt **First Name**	Nelson **Last Name**	
Public Service Company of New Hampshire d/b/a Eversource Energy (Eversource) **Organization**		
13 Legends Drive **Street Address**		
Hooksett **City/Town**	New Hampshire **State**	03106 **Zip Code**
Kurt.nelson@eversource.com **Email**	603-634-3256 **Telephone Number**	

C. APPLICANT/OWNER AGENT INFORMATION		
Conor **First Name**	Madison **Last Name**	
GZA GeoEnvironmental Inc **Organization**		
5 Commerce Park North **Street Address**		
Bedford **City/Town**	New Hampshire **State**	03110 **Zip Code**
Conor.madison@gza.com **Email**	603-232-8784 **Telephone Number**	

D. WAIVER REQUESTS

Env-Wq 1503.21 (d)(6&7) **Rule Section Waiver Request**	Notification; Certification **Name of Rule**

Reason for Waiver Request

Eversource is requesting a waiver for deviations from the approved plans without applying for an amended permit or a new permit if shifts in the proposed project layout occur. Changes in project layout are sometimes identified during construction by Eversource and their contractors and may be necessary to safely perform the work. The need for additional permit applications can impact construction schedules and incur costly delays.

Waiver Timeline

Permanent

Proposed Alternative

Allow for the access road centerlines to be relocated during construction, if necessary, up to a distance equal to the approximate width of the ROW (approximately 350-450 feet on the 380 and 326 ROWs). Shifts would not create greater than 5% increase in disturbed area along the individual access segment, which is assumed to be the length of the access road between two work pads/structures.

Allow for the center point of the parking area, assumed to be the structure replacement work pads for transmission line projects, to be relocated during construction, if necessary, up to a distance equal to half the approximate width of the ROW (approximately 350-450 feet on the 380 and 326 ROWs). Shifts would not create greater than 5% increase in disturbed area at each work pad.

This would allow contractors to avoid steep terrain or other hazardous areas, or areas that may require significant grading or earthwork that may not have been identified during initial constructability reviews. Landowners may also request layout changes be made after project permitting is complete. In most cases this shift is done to reduce the amount of disturbed area. Increased wetland impacts, or impacts to new wetlands, would not be allowed under this waiver.

Compliance with Env-Wq 1503.21 (d)(6&7)

The project proposes to improve access routes and work pads around utility structures for the purpose of maintaining existing utility infrastructure. This project is necessary to maintain the safety and reliability of the electrical infrastructure. Proposed disturbances shown on Figures 3 and 4 are the result of avoidance and minimization measures and constructability reviews. Layout changes and shifts will be limited to the proposed alternative above. A reduction in disturbed area is often the result. All other Best Management Practices will be utilized to protect wetlands from erosion, sedimentation, or other environmental degradation as originally proposed. Eversource respectfully requests a waiver from limiting shifts of the project road centerlines and parking areas to 20 feet.

E. SIGNATURES

3/30/2022

Applicant/Owner, **Kurt Nelson,** Date
Public Service Company of New Hampshire d/b/a Eversource Energy

3/30/2022

Applicant/Owner Agent, **Conor Madison,** Date
GZA GeoEnvironmental Inc.

Appendix G – Certified Mail Receipts
[Reserved for DES certified mailing receipts]

7017 3040 0001 1084 0655

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
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OFFICIAL USE

Certified Mail Fee
$ 3.75

Extra Services & Fees *(check box, add fee as appropriate)*
- ☑ Return Receipt (hardcopy) $ 3.05
- ☐ Return Receipt (electronic) $
- ☐ Certified Mail Restricted Delivery $
- ☐ Adult Signature Required $
- ☐ Adult Signature Restricted Delivery $

Postage
$ 10.55

Total Postage and Fees
$ 17.35

MANCHESTER POST OFFICE MAR 30 2022 MANCHESTER NH 03103 Postmark Here

Sent To
Town of Hudson
Street and Apt. No., or PO Box No.
12 School Street
City, State, ZIP+4®
Hudson NH 03051

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7017 3040 0001 1084 0624

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- ☐ Certified Mail Restricted Delivery $
- ☐ Adult Signature Required $
- ☐ Adult Signature Restricted Delivery $

Postage
$ 10.55

Total Postage and Fees
$ 17.35

MANCHESTER POST OFFICE MAR 30 2022 MANCHESTER NH 03103 Postmark Here

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Town of Pelham
Street and Apt. No., or PO Box No.
6 Village Green
City, State, ZIP+4®
Pelham, NH 03076

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7017 3040 0001 1084 0051

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OFFICIAL USE

Certified Mail Fee
$ [redacted] 3.75

Extra Services & Fees *(check box, add fee as appropriate)*
- ☑ Return Receipt (hardcopy) $ 3.05
- ☐ Return Receipt (electronic) $
- ☐ Certified Mail Restricted Delivery $
- ☐ Adult Signature Required $
- ☐ Adult Signature Restricted Delivery $

Postage
$ 10.55

Total Postage and Fees
$ 17.35

MANCHESTER NH 03103 MANCHESTER POST OFFICE Postmark Here MAR 30 2022

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Town of Litchfield
Street and Apt. No., or PO Box No.
2 Liberty Way
City, State, ZIP+4®
Litchfield, NH 03052

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

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Extra Services & Fees *(check box, add fee as appropriate)*
- ☑ Return Receipt (hardcopy) $ 3.05
- ☐ Return Receipt (electronic) $
- ☐ Certified Mail Restricted Delivery $
- ☐ Adult Signature Required $
- ☐ Adult Signature Restricted Delivery $

Postage
$ 10.55

Total Postage and Fees
$ 17.35

MANCHESTER POST OFFICE MAR 30 2022 MANCHESTER NH 03103 Postmark Here

Sent To
Town of Londonderry
Street and Apt. No., or PO Box No.
268B Mammoth Rd
City, State, ZIP+4®
Londonderry, NH 03053

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

GZA GeoEnvironmental, Inc.

Redaction Log

Total Number of Redactions in Document: 107

Redaction Reasons by Page

Page	Reason	Description	Occurrences
92	CONFIDENTIAL DNCR	NH RSA 91-A:5, IV Confidential information. NH Department of Natural and Cultural Resources (DNCR) has asserted a claim of confidentiality. See also NH RSA 212-A, RSA 212-B, RSA 217-A, and/or RSA 227-C:11.	1
93	CONFIDENTIAL DNCR	NH RSA 91-A:5, IV Confidential information. NH Department of Natural and Cultural Resources (DNCR) has asserted a claim of confidentiality. See also NH RSA 212-A, RSA 212-B, RSA 217-A, and/or RSA 227-C:11.	1
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Redaction Log

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143	CONFIDENTIAL DNCR	NH RSA 91-A:5, IV Confidential information. NH Department of Natural and Cultural Resources (DNCR) has asserted a claim of confidentiality. See also NH RSA 212-A, RSA 212-B, RSA 217-A, and/or RSA 227-C:11.	1
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146	CONFIDENTIAL DNCR	NH RSA 91-A:5, IV Confidential information. NH Department of Natural and Cultural Resources (DNCR) has asserted a claim of confidentiality. See also NH RSA 212-A, RSA 212-B, RSA 217-A, and/or RSA 227-C:11.	1
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153	CONFIDENTIAL DNCR	NH RSA 91-A:5, IV Confidential information. NH Department of Natural and Cultural Resources (DNCR) has asserted a claim of confidentiality. See also NH RSA 212-A, RSA 212-B, RSA 217-A, and/or RSA 227-C:11.	1
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155	CONFIDENTIAL DNCR	NH RSA 91-A:5, IV Confidential information. NH Department of Natural and Cultural Resources (DNCR) has asserted a claim of confidentiality. See also NH RSA 212-A, RSA 212-B, RSA 217-A, and/or RSA 227-C:11.	1
156	CONFIDENTIAL DNCR	NH RSA 91-A:5, IV Confidential information. NH Department of Natural and Cultural Resources (DNCR) has asserted a claim of confidentiality. See also NH RSA 212-A, RSA 212-B, RSA 217-A, and/or RSA 227-C:11.	1
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158	CONFIDENTIAL DNCR	NH RSA 91-A:5, IV Confidential information. NH Department of Natural and Cultural Resources (DNCR) has asserted a claim of confidentiality. See also NH RSA 212-A, RSA 212-B, RSA 217-A, and/or RSA 227-C:11.	1
159	CONFIDENTIAL DNCR	NH RSA 91-A:5, IV Confidential information. NH Department of Natural and Cultural Resources (DNCR) has asserted a claim of confidentiality. See also NH RSA 212-A, RSA 212-B, RSA 217-A, and/or RSA 227-C:11.	1
160	CONFIDENTIAL DNCR	NH RSA 91-A:5, IV Confidential information. NH Department of Natural and Cultural Resources (DNCR) has asserted a claim of confidentiality. See also NH RSA 212-A, RSA 212-B, RSA 217-A, and/or RSA 227-C:11.	1
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Redaction Log

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162	CONFIDENTIAL DNCR	NH RSA 91-A:5, IV Confidential information. NH Department of Natural and Cultural Resources (DNCR) has asserted a claim of confidentiality. See also NH RSA 212-A, RSA 212-B, RSA 217-A, and/or RSA 227-C:11.	1
163	CONFIDENTIAL DNCR	NH RSA 91-A:5, IV Confidential information. NH Department of Natural and Cultural Resources (DNCR) has asserted a claim of confidentiality. See also NH RSA 212-A, RSA 212-B, RSA 217-A, and/or RSA 227-C:11.	1
164	CONFIDENTIAL DNCR	NH RSA 91-A:5, IV Confidential information. NH Department of Natural and Cultural Resources (DNCR) has asserted a claim of confidentiality. See also NH RSA 212-A, RSA 212-B, RSA 217-A, and/or RSA 227-C:11.	1
165	CONFIDENTIAL DNCR	NH RSA 91-A:5, IV Confidential information. NH Department of Natural and Cultural Resources (DNCR) has asserted a claim of confidentiality. See also NH RSA 212-A, RSA 212-B, RSA 217-A, and/or RSA 227-C:11.	1
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Redaction Log

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Redaction Log

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182	CONFIDENTIAL DNCR	NH RSA 91-A:5, IV Confidential information. NH Department of Natural and Cultural Resources (DNCR) has asserted a claim of confidentiality. See also NH RSA 212-A, RSA 212-B, RSA 217-A, and/or RSA 227-C:11.	1
183	CONFIDENTIAL DNCR	NH RSA 91-A:5, IV Confidential information. NH Department of Natural and Cultural Resources (DNCR) has asserted a claim of confidentiality. See also NH RSA 212-A, RSA 212-B, RSA 217-A, and/or RSA 227-C:11.	1
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185	CONFIDENTIAL DNCR	NH RSA 91-A:5, IV Confidential information. NH Department of Natural and Cultural Resources (DNCR) has asserted a claim of confidentiality. See also NH RSA 212-A, RSA 212-B, RSA 217-A, and/or RSA 227-C:11.	1
187	CONFIDENTIAL DNCR	NH RSA 91-A:5, IV Confidential information. NH Department of Natural and Cultural Resources (DNCR) has asserted a claim of confidentiality. See also NH RSA 212-A, RSA 212-B, RSA 217-A, and/or RSA 227-C:11.	1
188	CONFIDENTIAL DNCR	NH RSA 91-A:5, IV Confidential information. NH Department of Natural and Cultural Resources (DNCR) has asserted a claim of confidentiality. See also NH RSA 212-A, RSA 212-B, RSA 217-A, and/or RSA 227-C:11.	1
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Redaction Log

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192	CONFIDENTIAL DNCR	NH RSA 91-A:5, IV Confidential information. NH Department of Natural and Cultural Resources (DNCR) has asserted a claim of confidentiality. See also NH RSA 212-A, RSA 212-B, RSA 217-A, and/or RSA 227-C:11.	1
193	CONFIDENTIAL DNCR	NH RSA 91-A:5, IV Confidential information. NH Department of Natural and Cultural Resources (DNCR) has asserted a claim of confidentiality. See also NH RSA 212-A, RSA 212-B, RSA 217-A, and/or RSA 227-C:11.	1
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Redaction Log

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202	CONFIDENTIAL DNCR	NH RSA 91-A:5, IV Confidential information. NH Department of Natural and Cultural Resources (DNCR) has asserted a claim of confidentiality. See also NH RSA 212-A, RSA 212-B, RSA 217-A, and/or RSA 227-C:11.	1
203	CONFIDENTIAL DNCR	NH RSA 91-A:5, IV Confidential information. NH Department of Natural and Cultural Resources (DNCR) has asserted a claim of confidentiality. See also NH RSA 212-A, RSA 212-B, RSA 217-A, and/or RSA 227-C:11.	1
204	CONFIDENTIAL DNCR	NH RSA 91-A:5, IV Confidential information. NH Department of Natural and Cultural Resources (DNCR) has asserted a claim of confidentiality. See also NH RSA 212-A, RSA 212-B, RSA 217-A, and/or RSA 227-C:11.	1
205	CONFIDENTIAL DNCR	NH RSA 91-A:5, IV Confidential information. NH Department of Natural and Cultural Resources (DNCR) has asserted a claim of confidentiality. See also NH RSA 212-A, RSA 212-B, RSA 217-A, and/or RSA 227-C:11.	1
206	CONFIDENTIAL DNCR	NH RSA 91-A:5, IV Confidential information. NH Department of Natural and Cultural Resources (DNCR) has asserted a claim of confidentiality. See also NH RSA 212-A, RSA 212-B, RSA 217-A, and/or RSA 227-C:11.	1
207	CONFIDENTIAL DNCR	NH RSA 91-A:5, IV Confidential information. NH Department of Natural and Cultural Resources (DNCR) has asserted a claim of confidentiality. See also NH RSA 212-A, RSA 212-B, RSA 217-A, and/or RSA 227-C:11.	1
208	CONFIDENTIAL DNCR	NH RSA 91-A:5, IV Confidential information. NH Department of Natural and Cultural Resources (DNCR) has asserted a claim of confidentiality. See also NH RSA 212-A, RSA 212-B, RSA 217-A, and/or RSA 227-C:11.	1
209	CONFIDENTIAL DNCR	NH RSA 91-A:5, IV Confidential information. NH Department of Natural and Cultural Resources (DNCR) has asserted a claim of confidentiality. See also NH RSA 212-A, RSA 212-B, RSA 217-A, and/or RSA 227-C:11.	1

Redaction Log

Redaction Reasons by Exemption

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CONFIDENTIAL DNCR	NH RSA 91-A:5, IV Confidential information. NH Department of Natural and Cultural Resources (DNCR) has asserted a claim of confidentiality. See also NH RSA 212-A, RSA 212-B, RSA 217-A, and/or RSA 227-C:11.	92(1) 93(1) 94(1) 95(1) 96(1) 97(1) 99(1) 101(1) 103(1) 104(1) 105(1) 106(1) 107(1) 108(1) 109(1) 110(1) 111(1) 112(1) 113(1) 114(1) 118(1) 119(1) 120(1) 121(1) 122(1) 123(1) 124(1) 125(1) 126(1) 127(1) 128(1) 129(1) 130(1) 131(1) 132(1) 133(1) 134(1) 135(1) 136(1) 137(1) 138(1) 139(1) 140(1) 141(1) 142(1) 143(1) 144(1) 145(1) 146(1) 147(1) 148(1) 149(1) 150(1) 153(1) 154(1) 155(1) 156(1) 157(1) 158(1) 159(1) 160(1) 161(1)

Redaction Date: 8/7/2023 10:35:52 AM

Redaction Log

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