

Original Alteration of Terrain Permit Application



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391, 373 and 385 Transmission Line Structure Replacement Project **Eversource Energy**

**Auburn, Chester, Candia, Raymond, Deerfield,
Rochester, and Strafford, New Hampshire**

NHDES Alteration of Terrain Permit Application

May 2019

File No. 04.0190923.01



PREPARED FOR:
Eversource Energy
Hooksett, New Hampshire

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April 26, 2019
File No. 04.0190923.01

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
391, 373, and 385 Transmission Line Structure Replacement Project
Auburn, Chester, Candia, Raymond, Deerfield, Strafford, and Rochester, 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 391, 373, and 385 Transmission Line Structure Replacement Project in accordance with Terrain Alteration Law (RSA 485-A:17), Administrative Rules (Env-Wq 1500 Alteration of Terrain), and recent discussions between New Hampshire Department of Environmental Services (NHDES) AoT Bureau and Eversource.

The proposed project includes the replacement of 60 existing utility structures, including 31 structures along the 391 Transmission Line, 16 structures along the 373 Transmission Line, and 13 structures along the 385 Transmission Line. The project area crosses through portions of Auburn, Chester, Candia, Raymond, Deerfield, Strafford, and Rochester, New Hampshire for approximately 6.9 miles in total. Replacement of the existing utility structures is necessary in order to maintain the safety and reliability of the system. In order to more efficiently conduct routine maintenance of the existing 391, 373, and 385 Transmission Lines, work pad grading and access road improvements are proposed as part of this project. Three separate proposed work areas in Chester, Candia, Deerfield, Strafford and Rochester are subject to the Terrain Alteration Law and Rules referenced above.

The proposed project will require disturbance subject to AoT permitting through the NHDES as result of;

- 1) Impact area cumulatively exceeding 100,000 square feet of contiguous area and;
- 2) Impact area cumulatively exceeding 50,000 square feet of contiguous area if any portion of the disturbance is within the protected shoreland as defined in RSA 483-B.



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 July 1, 2019. Eversource appreciates the efforts of the Alteration of Terrain Bureau in helping to maintain the anticipated construction schedule, which is dependent on previously scheduled outages dictated by regional outage planning.

Please feel free to contact us with any questions.

Very truly yours,

GZA GEOENVIRONMENTAL, INC.

Handwritten signature of Lindsey White in black ink.

Lindsey White, Apprentice Wetland Scientist
Assistant Project Manager

Handwritten signature of Tracy Tarr in black ink.

Tracy Tarr, CWS, CWB, CESSWI
Consultant/Reviewer

Handwritten signature of Deborah M. Zarta Gier in black ink.

Deborah M. Zarta Gier, CNRP
Principal

LEW/DMZ/TLT:kr

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Attachments: Alteration of Terrain Permit Application

cc: Town of Auburn, New Hampshire
Town of Chester, New Hampshire
Town of Candia, New Hampshire
Town of Raymond, New Hampshire
Town of Deerfield, New Hampshire
Town of Strafford, New Hampshire
City of Rochester, New Hampshire
Lamprey River Local Advisory Committee



TABLE OF CONTENTS

1.0 PROJECT BACKGROUND AND PURPOSE 1

2.0 SITE INFORMATION 1

2.1 SITE LOCATION AND DESCRIPTION 1

2.2 TAX MAP AND LOT(S) 2

2.3 IDENTIFICATION OF NATURAL AND CULTURAL RESOURCES 2

2.3.1 Identification of Jurisdictional Wetlands and Vernal Pools..... 2

2.3.2 Identification of Surface Waters 3

2.3.3 Identification of Rare, Threatened, and Endangered Species..... 3

2.3.4 Identification of Cultural and Historical Resources..... 3

3.0 EXISTING CONDITIONS..... 3

3.1 AOT AREA A - CHESTER..... 4

3.1.1 Surface and Groundwater Protection – Area A..... 4

3.1.2 FEMA 100-year Floodplain, Shoreland Protection, Designated Rivers – Area A..... 5

3.2 AOT AREA B - DEERFIELD..... 5

3.2.1 Surface and Groundwater Protection – Area B..... 5

3.2.2 FEMA 100-year Floodplain, Shoreland Protection, Designated Rivers – Area B..... 6

3.3 AOT AREA C – STRAFFORD/ROCHESTER..... 6

3.3.1 Surface and Groundwater Protection – Area C..... 6

3.3.2 FEMA 100-year Floodplain, Shoreland Protection, Designated Rivers – Area C..... 7

4.0 PROJECT DESCRIPTION..... 7

4.1 STRUCTURE REPLACEMENT AND MAINTENANCE..... 7

4.1.1 Access 8

4.1.1.1 *Road Construction* 8

4.1.1.2 *Wetland and Upland Temporary Matting*..... 8

4.1.2 Work Pad Construction 8

4.2 CONSTRUCTION SEQUENCE 9

4.3 BEST MANAGEMENT PRACTICES..... 9

5.0 REGULATORY COMPLIANCE 10

5.1 ALTERATION OF TERRAIN 10

5.1.1 Waiver Request: Stormwater Drainage Report; Drainage Area Plan; Hydrologic Soil Group Plans (Env-WQ 15.09) and Information Required for Projects within the 100-year Floodplain (Env-Wq 1503.09)..... 10



5.1.2 Quantification of Impacts Subject to AOT 10
5.2 OTHER REGULATORY PROGRAMS 12

FIGURES

FIGURE 1 USGS TOPOGRAPHIC MAP
FIGURE 2 ORTHOPHOTOGRAPH SITE MAP
FIGURE 3 SURFACE WATER AND GROUNDWATER OVERLAY PLANS
FIGURE 4 ALTERATION OF TERRAIN PERMITTING PLANS

APPENDICES

APPENDIX A ALTERATION OF TERRAIN PERMIT APPLICATION FORM
APPENDIX B ABUTTERS LIST
APPENDIX C NEW HAMPSHIRE NATURAL HERITAGE BUREAU REPORT
E-MAIL REVIEW FROM NHB AND NHF&G
APPENDIX D NATURAL RESOURCES CONSERVATION SERVICE WEB SOIL SURVEY
APPENDIX E PHOTO LOG
APPENDIX F WAIVER REQUEST
APPENDIX G CERTIFIED MAIL RECEIPTS



1.0 PROJECT BACKGROUND AND PURPOSE

The proposed project involves the replacement of select 391, 373, and 385 Transmission Line structures leading from Pingree Hill Road in Chester, New Hampshire, and heading in a north/northeasterly direction to just northeast of Crown Point Road in Rochester, New Hampshire. The utility structures are approximately 50 years old and have been subject to environmental damage (i.e., weathering, woodpecker holes) and must be replaced for the lines to continue to function safely and reliably. If utility structures fail, it could result in widespread electrical outages to customers. Impacts have been minimized and avoided to the greatest extent practicable through site evaluations of access routes and work pad placements.

Recent transmission line inspections determined that a total of 60 utility structures, including 31 structures along the 391 Transmission Line, 16 structures along the 373 Transmission Line, and 13 structures along the 385 Transmission Line, must be replaced due to environmental damage. The project requires approximately 503,781 square feet (sq. ft.) of total disturbance including 95,315 sq. ft. of temporary wetland and upland matting and 408,466 sq. ft. of ground disturbance. Three separate portions of the proposed structure replacement project are subject to Alteration of Terrain disturbance threshold (Env-Wq 1500 and RSA 485-A:17), including (See **Figure 4- Alteration of Terrain Permitting Plans** and **Appendix A – Alteration of Terrain Application Form**):

- 1) Area A – approximately 157,449 sq. ft. of work pad grading and associated access improvements at 373 Structures 311 to 305 and 391 Structures 306 to 302.
- 2) Area B – approximately 54,545 sq. ft. of work pad grading and associated access improvements at 373 Structures 215 to 213 and 391 Structures 219 to 217 (located within Lamprey River Shoreland Zone).
- 3) Area C – approximately 196,472 sq. ft. of work pad grading and associated access improvements at 385 Structures 60 to 52 and 391 Structures 65 to 56.

2.0 SITE INFORMATION

2.1 SITE LOCATION AND DESCRIPTION

The project area includes the portion of the shared 391 and 373 Transmission Line ROW from Pingree Hill Road in Chester, New Hampshire to just northeast of Raymond Road in Deerfield, New Hampshire. The total work area in this portion of the ROW is approximately 3.1 miles in length and approximately 270 feet (ft) in width.

The project area also includes the portion of the shared 391 and 385 Transmission Line ROW from south of Sloper Road in Strafford, New Hampshire and heading north and northeast for approximately 3.8 miles to just northeast of Crown Point Road in Rochester, New Hampshire. The ROW is also approximately 270 ft in width in this area.

The total project area is approximately 6.9 miles in length and includes the replacement of 60 utility structures in total. The project area primarily crosses privately owned rural/residential properties and eight (8) public roads, 10 unnamed perennial streams, and two (2) named perennial streams including the Lamprey River and Berrys River (see **Figure 1 – USGS Topographic Map**). There are approximately 77 wetlands along the project route located in the towns of Chester, Candia, Raymond, Deerfield, Strafford, and Rochester.



2.2 TAX MAP AND LOT(S)

Eversource holds easements across the majority of the parcels along the ROW with the exception of 21 Eversource-owned parcels: Tax Map 424, Lot 66, Tax Map 424, Lot 28, Tax Map 407, Lots 39 and 40, Tax Map 2, Lot 47-1, Tax Map 2, Lot 47-UTL, Tax Map 235, Lot 52, Tax Map 232, Lot 4, Tax Map 220, Lot 6, Tax Map 43, Lots 6 and 7, Tax Map 16, Lot 31, Tax Map 20, Lot 9, Tax Map 20, Lot 35, Tax Map 12, Lot 36, Tax Map 4, Lot 20, Tax Map 4, Lots 7 and 9, Tax Map 1, Lots 96, 97, and 98.

In addition to the 21 Eversource owned parcels, there are a total of approximately 184 abutting properties that contain pre-existing Eversource easements for the ROW involved in the project. 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

Eversource provided GZA with delineated wetland data and classification of wetlands. Wetlands were delineated and classified by Tighe and Bond in 2018. 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 February 2019. GZA confirmed 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 ACOE. The wetland delineation confirmation was conducted by GZA’s New Hampshire Certified Wetland Scientist (CWS) James H. Long (CWS No. 007) on February 6 and 15, 2019.

A vernal pool evaluation was conducted on February 12, 2019 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. GZA staff encountered four (4) areas considered potential vernal pools based on observed signs of hydrology. 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 Tighe and Bond in 2018 and confirmed by GZA in February 2019 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. Surface waters within the project area include two named perennial riverine systems: the Lamprey River and Berrys River, and 10 unnamed perennial streams.

2.3.3 Identification of Rare, Threatened, and Endangered Species

The Natural Heritage Bureau (NHB) has identified records of blanding's turtle (*Emydoidea blandingii*), spotted turtle (*Clemmys guttata*), wood turtle (*Glyptemys insculpta*), northern black racer (*Coluber constrictor constrictor*), and smooth green snake (*Opheodrys vernalis*) within the vicinity of the 391, 373, and 385 Transmission Lines shared ROW (See **Appendix C** for the NHB Report and regulatory correspondence). In correspondence with NHB and NHFG, it was requested that exposed mineral soils not be seeded or loamed upon completion of work and be left as disturbed exposed mineral soils as they provide important blanding's turtle and northern black racer nesting habitat, and both loam and available seed mixes are a potential source of invasive and non-native species which could have effects on nesting habitat. GZA can provide flyers of species including northern black racer and various turtle 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 northern black racer in this area. In addition, construction personnel will be made aware of the potential to encounter blanding's turtles, wood turtles and spotted turtles 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.

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.

Commonwealth Heritage Group (CHG) conducted a Phase IA survey of the 391, 373 and 385 Transmission Lines Corridor for the purposes of identifying areas of archeological and historical sensitivity. Twelve (12) archeological sensitivity areas were identified along the work area with the 391, 373, and 385 ROW during Phase IA survey. GZA will retain CHG to conduct a Phase IB survey within identified Phase IA archeological sensitivity areas. Results of this work will be submitted to DHR consistent with the response to the RPR.

3.0 EXISTING CONDITIONS

The proposed project is located within the existing and maintained shared 391 and 373 Transmission Lines ROW, and within the existing and maintained shared 391 and 385 Transmission Lines ROW. The proposed project work areas cross through portions of the Towns of Auburn, Chester, Candia, Raymond, Deerfield, Strafford, and



Rochester. Existing dirt and/or grass access routes currently used for access to existing utility structures within the ROW are proposed to be improved as a part of a routine structure maintenance project. Three separate areas qualify for AoT permitting throughout the proposed project, and are referred to as Areas A, B, and C.

The project area includes upland and wetland areas located in primarily rural areas. Upland areas consist primarily of shrubs including common juniper (*Juniperus communis*), eastern white pine (*Pinus strobus*), gray birch (*Betula populifolia*) saplings, and red maple (*Acer rubrum*) saplings. 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 sensitive fern (*Onoclea sensibilis*), speckled alder (*Alnus incana rugosa*), winter berry holly (*Ilex verticillate*), and meadowsweet (*Spiraea latifolia*).

Existing conditions along the 391, 373, and 385 Transmission Lines are discussed below by areas subject to jurisdiction under the Alteration of Terrain Law and Rules and consistent with recent discussions with the AoT Bureau for Eversource Line projects.

3.1 AOT AREA A - CHESTER

The first area subject to Alteration of Terrain Law and Rules begins approximately 0.34 miles north of Pingree Hill Road at Line 373 Structure 311 in Chester and continues north and northeasterly for approximately 0.61 miles to Line 373 Structure 305 in Chester. This stretch includes upland and wetland areas with elevations ranging from approximately 516 feet in the center of Wetland CHW-25 to approximately 620 feet near Line 391 Structure 302. This portion of the ROW is located in a rural forested portion of Chester.

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 A includes;

- Line 373 Structures 305 to 311 Work Pads
- Line 391 Structures 302 to 306 Work Pads
- Access roads between Line 373 Structures 305 to 311
- Access roads between Line 391 Structures 302 to 306

3.1.1 Surface and Groundwater Protection – Area A

There is one (1) surface water located within this portion of the project area which includes an unnamed perennial stream that crosses through Wetland CHW-25 (see **Figure 3 – Surface Water and Groundwater Overlay Plans**). This portion of the project area includes temporary wetland matting in two wetland systems; Wetland CHW-25 for access and work pad placement, and Wetland CHW-22 for work pad placement. Temporary 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	5,886
Upland Access Matting	0
Wetland Work Pad	9,003
Upland Work Pad	0



According to **Figure 3**, the entirety of Area A is within a Watershed for 2016 Chloride Impairments. However, Area A is located outside of the remaining AoT screening layers including “All Lakes within a Quarter Mile Buffer,” “Class A Surface Waters,” “Designated Rivers Rivers 24k Buffer Quarter Mile,” “Wellhead Protection Areas,” “Surface Water Impairments,” “Groundwater Classification Areas,” and “Water Supply Intake Protection.”

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 A.

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 A that are protected under RSA 483-B.

3.2 AOT AREA B - DEERFIELD

The second area subject to Alteration of Terrain Law and Rules begins approximately 0.14 miles southwest of Raymond Road at Line 373 Structure 213 in Deerfield and continues south and southwesterly for approximately 0.21 miles to Line 391 Structure 219 in Candia. This stretch includes upland and wetland areas with elevations ranging from approximately 210 feet in the center of Wetland CW-2 to approximately 250 feet near Line 373 Structure 213. This portion of the ROW is located in a rural forested and residential portion of Candia and Deerfield.

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;

- Line 373 Structures 213 and 214 Work Pads
- Line 391 Structures 217 and 218 Work Pads
- Access roads between Line 373 Structures 213 to 215
- Access roads between Line 391 Structures 217 to 219

3.2.1 Surface and Groundwater Protection – Area B

There is one (1) surface water located within this portion of the project area which includes the Lamprey River which crosses through Wetland DW-5 (see **Figure 3 – Surface Water and Groundwater Overlay Plans**). This portion of the project area includes temporary wetland matting in one wetland system; Wetland CW-2 for access and work pad placement. Temporary 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	161
Upland Access Matting	0
Wetland Work Pad	19,898
Upland Work Pad	0



According to **Figure 3**, the entirety of AoT Area B is within the Designated Rivers Quarter Mile Buffer for the Lamprey River. However, Area B is located outside of the remaining AoT screening layers including “Watersheds with Chloride Impairments 2016,” “All Lakes within a Quarter Mile Buffer,” “Class A Surface Waters,” “Wellhead Protection Areas,” “Surface Water Impairments,” “Groundwater Classification Areas,” and “Water Supply Intake Protection.”

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

According to the FEMA Flood Insurance layer on **Figure 3**, a portion of Area B is located within the 100-year floodplain zone for the Lamprey River including a portion of the proposed Line 373 Structure 214 work pad, and access from Line 373 Structure 214 to Line 373 Structure 213 and Line 391 Structure 217, as well as the work pads associated with Structures Line 373 Structure 213 and Line 391 Structure 217. However, it is not anticipated that the proposed grading and improvement of existing access and work pads will significantly affect drainage within the 100-year floodplain as no new impervious surface area is proposed and minimal grading is required.

According to the Consolidated List of Water Bodies Subject to RSA 483-B (January 23, 2019), and the NHDES Designated River Corridor Web Map, the Lamprey River is subject to RSA 483-B and is considered a Designated River in New Hampshire. An NHDES Shoreland Permit by Notification will be submitted for the proposed structure replacement project. No work is proposed in the Lamprey River and access to adjacent structures is not proposed through or across the Lamprey River. A copy of this application will be submitted to the Lamprey River Local Advisory Committee.

3.3 AOT AREA C – STRAFFORD/ROCHESTER

The third area subject to Alteration of Terrain Law and Rules begins on the northeast side of First Crown Point Road in Strafford, and continues in a north and northeasterly direction for approximately 0.97 miles to Line 391 Structure 56 in Rochester. This stretch includes upland and wetland areas with elevations ranging from approximately 372 feet near Line 391 Structure 56 to approximately 450 feet near Line 391 Structure 60. This portion of the ROW is located in a forested residential area of Strafford and Rochester.

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;

- Line 385 Structures 52 to 58, and Structure 60 Work Pads
- Line 391 Structures 56 to 61, Structure 63 and 65 Work Pads
- Access roads between Line 373 Structures 52 to 60
- Access roads between Line 391 Structures 56 to 65.

3.3.1 Surface and Groundwater Protection – Area C

There is one (1) surface water located within this portion of the project area which includes Berrys River which crosses through Wetland SW-2 (see **Figure 3 – Surface Water and Groundwater Overlay Plans**). This portion of the project area includes temporary wetland matting in five wetland systems; Wetland SW-1, SW-2, SW-3, RW-16, and RW-13 for access and work pad placement. Temporary upland matting is also proposed in select locations



based on field observations. Temporary 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	16,057
Upland Access Matting	4,876
Wetland Work Pad	18,178
Upland Work Pad	21,256

According to **Figure 3**, a portion of Area C is located within a Surface Water with Impairments Quarter Mile buffer due to low flow alteration impairment of the Berrys River. This quarter mile buffer covers a portion of Area C beginning at First Crown Point Road in Strafford and extending north and northeasterly to just northeast of Line 391 Structure 62 in Strafford. In addition, a portion of Area C is located within a Class A Surface Water area for the Rochester Water Supply Reservoir and Tributaries. The portion of Area C in the Class A Surface Water area includes the northeast side of Line 391 Structure 62 and extends northeasterly to Wetland SW-1 in Strafford.

Area C is located outside of the remaining AoT screening layers including “Watersheds with Chloride Impairments 2016,” “All Lakes within a Quarter Mile Buffer,” “Wellhead Protection Areas,” “Groundwater Classification Areas,” “Designated Rivers Quarter Mile Buffer,” and “Water Supply Intake Protection.”

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

According to the FEMA Flood Insurance layer on **Figure 3**, a portion of Area C is located within the 100-year floodplain zone for Berrys River including a portion of the access just northeast of First Crown Point Road and extending to Line 391 Structure 62. The area also includes a portion of Line 391 Structure 65 work pad, and all of Line 391 Structure 63 and Line 385 Structure 58 work pads. However, it is not anticipated that the proposed grading and improvement of existing access and work pads will significantly affect drainage within the 100-year floodplain as no new impervious surface area is proposed and minimal grading is required.

According to the Consolidated List of Water Bodies Subject to RSA 483-B (January 23, 2019), and the NHDES Designated River Corridor Web Map, Berrys River is not subject to RSA 483-B.

4.0 PROJECT DESCRIPTION

4.1 STRUCTURE REPLACEMENT AND MAINTENANCE

The proposed project includes the replacement of 60 existing utility structures, including including 31 structures along the Line 391 Transmission Line, 16 structures along the Line 373 Transmission Line, and 13 structures along the 385 Transmission Line, must be replaced due to environmental damage. The project requires approximately 503,781 sq. ft. of total disturbance including 95,315 sq. ft. of temporary wetland and upland matting and 408,466 sq. ft. of AoT disturbance. Three separate portions of the proposed structure replacement project are subject to Alteration of Terrain disturbance threshold (Env-Wq 1500 and RSA 485-A:17), including (See **Figure 4- Alteration of Terrain Permitting Plans** and **Appendix A – Alteration of Terrain Application Form**);



The process for replacing structures consists of drilling approximately 4-ft diameter holes to install a caisson approximately 15 to 20 ft below the ground surface. New structures will be installed in caissons and backfilled with clean, suitable materials. Spoils produced from drilling will be disposed in approved upland areas at a minimum distance of 100 ft from wetland areas. Any 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 391, 373 and 385 ROW to the greatest extent practicable. 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. Majority of proposed access road improvements are located within already existing dirt and grass access routes (see **Appendix E – 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 n 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 at the beginning of July 2019. The work is proposed to be undertaken during the summer of 2019 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 schedule, 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, and transfer of wires.
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, 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. 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 Notesheets 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, disturbed upland areas will be restored and stabilized to pre-existing conditions and areas of exposed soils will be seeded and/or mulched.



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 three distinct AoT regulated areas (referred to respectively as Areas A, B, and C) along the 391, 373, and 385 Transmission Lines ROW based on continuous areas of disturbance and the proximity to surface waters. Details on impacts in each regulated area 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) and Information Required for Projects within the 100-year Floodplain (Env-Wq 1503.09)

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 and a supplementary report for work within the 100-year floodplain 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 F**.

5.1.2 Quantification of Impacts Subject to AOT

There are approximately 503,781 sq. ft. of total disturbance including 95,315 sq. ft. of temporary wetland and upland matting and 408,466 sq. ft. of ground disturbance along the 391, 373, and 385 Transmission Lines ROW that requires an AoT permit in accordance with Env-Wq 1502.58. Specific areas and construction activities that significantly alter the terrain are detailed below. Additional details are shown in **Figure 4**.

AoT Area A - CHESTER

373 Transmission Line Structure 311 to Structure 305

Map Sheets 2-4

Access Type	Impact (sq. ft.)
Existing- To be improved	40,626
New Access	1,959
<i>Access Totals</i>	<i>42,585</i>
Work Pad	Impact (sq. ft.)
Gravel Work Pad	114,864
<i>Work Pad Totals</i>	<i>114,864</i>
<i>Total AoT Disturbed Area</i>	<i>157,449</i>

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



AoT Area B - DEERFIELD

373 Transmission Line Structure 216 to Lamprey River
 Map Sheets 8-9

Access Type	Impact (sq. ft.)
Existing- To be improved	14,328
New Access	926
<i>Access Totals</i>	<i>15,254</i>
Work Pad	Impact (sq. ft.)
Gravel Work Pad	39,291
<i>Work Pad Totals</i>	<i>39,291</i>
<u>Total AoT Disturbed Area</u>	<u>54,545</u>

Criteria: Env-Wq 1502.58 (b) (2) "An area that, over a 10 year period, ... cumulatively exceeds 50,000 square feet of contiguous area if any portion of the disturbance is within the protected shoreland as defined in RSA 483-B."

AoT Area C – STRAFFORD/ROCHESTER

First Crown Point Rd to Transmission Line 391 Structure 56
 Map Sheets 15-19

Access Type	Impact (sq. ft.)
Existing- To be improved	38,250
New Access	9,463
<i>Access Totals</i>	<i>47,713</i>
Work Pad	Impact (sq. ft.)
Gravel Work Pad	148,759
<i>Work Pad Totals</i>	<i>148,759</i>
<u>Total AoT Disturbed Area</u>	<u>196,472</u>

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



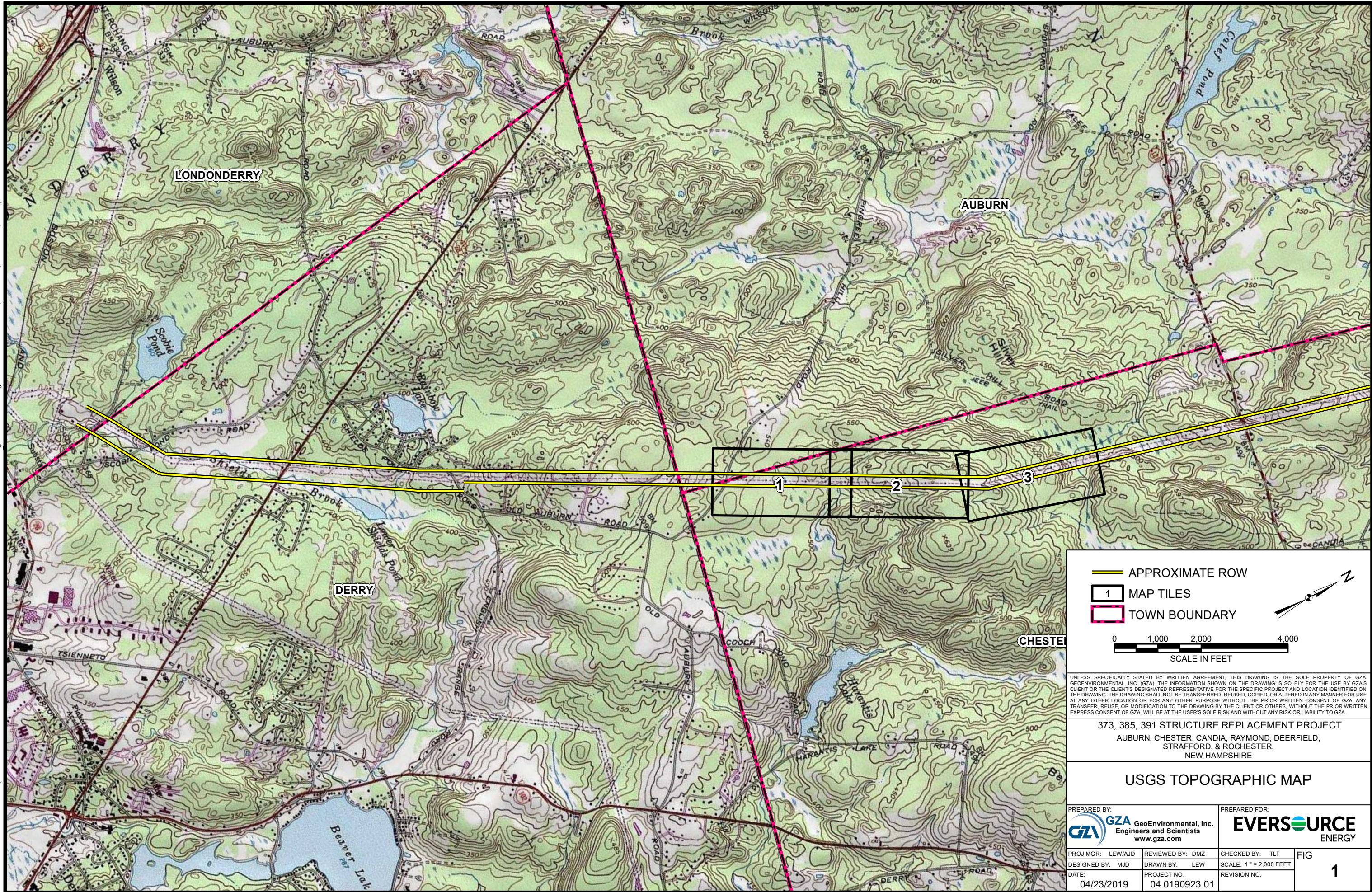
5.2 OTHER REGULATORY PROGRAMS

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

Agency	Permit/Notification	Status
<i>Local</i>		
Town of Chester	Conditional Use Permit	Approved
<i>State</i>		
NHDES	Shoreland Permit by Notification (Towns of Deerfield and Auburn)	Pending
NHDES	Utility Maintenance Notifications	
	Town/City	UMN File No.
	Candia	2019-00099
	Chester	2019-00155
	Raymond	2019-00399
	Strafford	2019-00422
	Rochester	2019-00402
		Approved
<i>Federal</i>		
EPA (Construction General Permit)	Stormwater Pollution Prevention Plan (SWPPP)	Pending



Figure 1 – USGS Topographic Map



— APPROXIMATE ROW
1 MAP TILES
- - - TOWN BOUNDARY

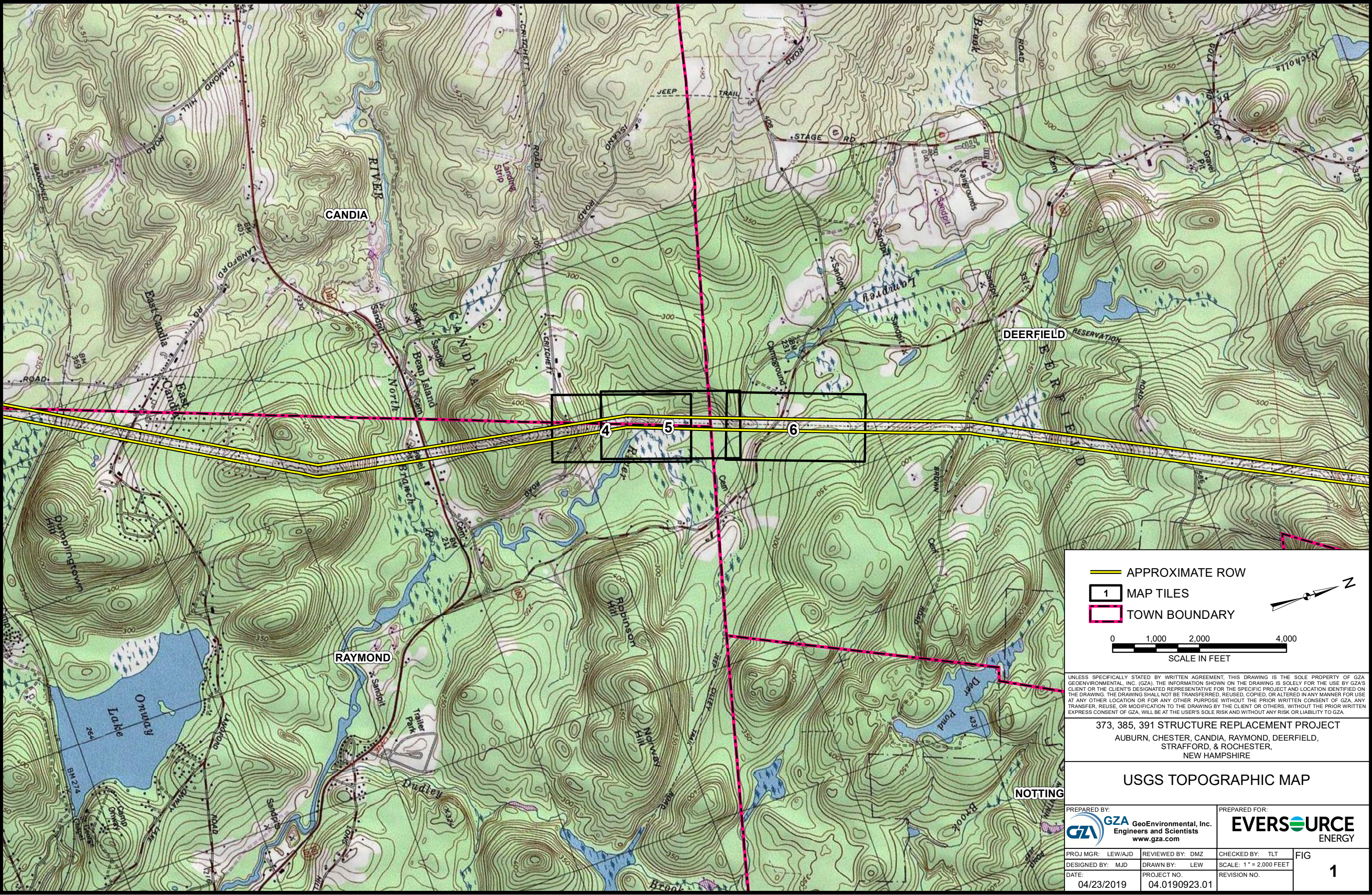
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SCALE IN FEET

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373, 385, 391 STRUCTURE REPLACEMENT PROJECT
AUBURN, CHESTER, CANDIA, RAYMOND, DEERFIELD,
STRAFFORD, & ROCHESTER,
NEW HAMPSHIRE

USGS TOPOGRAPHIC MAP

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PROJ MGR: LEW/AJD	REVIEWED BY: DMZ	CHECKED BY: TLT	FIG
DESIGNED BY: MJD	DRAWN BY: LEW	SCALE: 1" = 2,000 FEET	1
DATE: 04/23/2019	PROJECT NO: 04.0190923.01	REVISION NO.	



APPROXIMATE ROW

MAP TILES

TOWN BOUNDARY

SCALE IN FEET

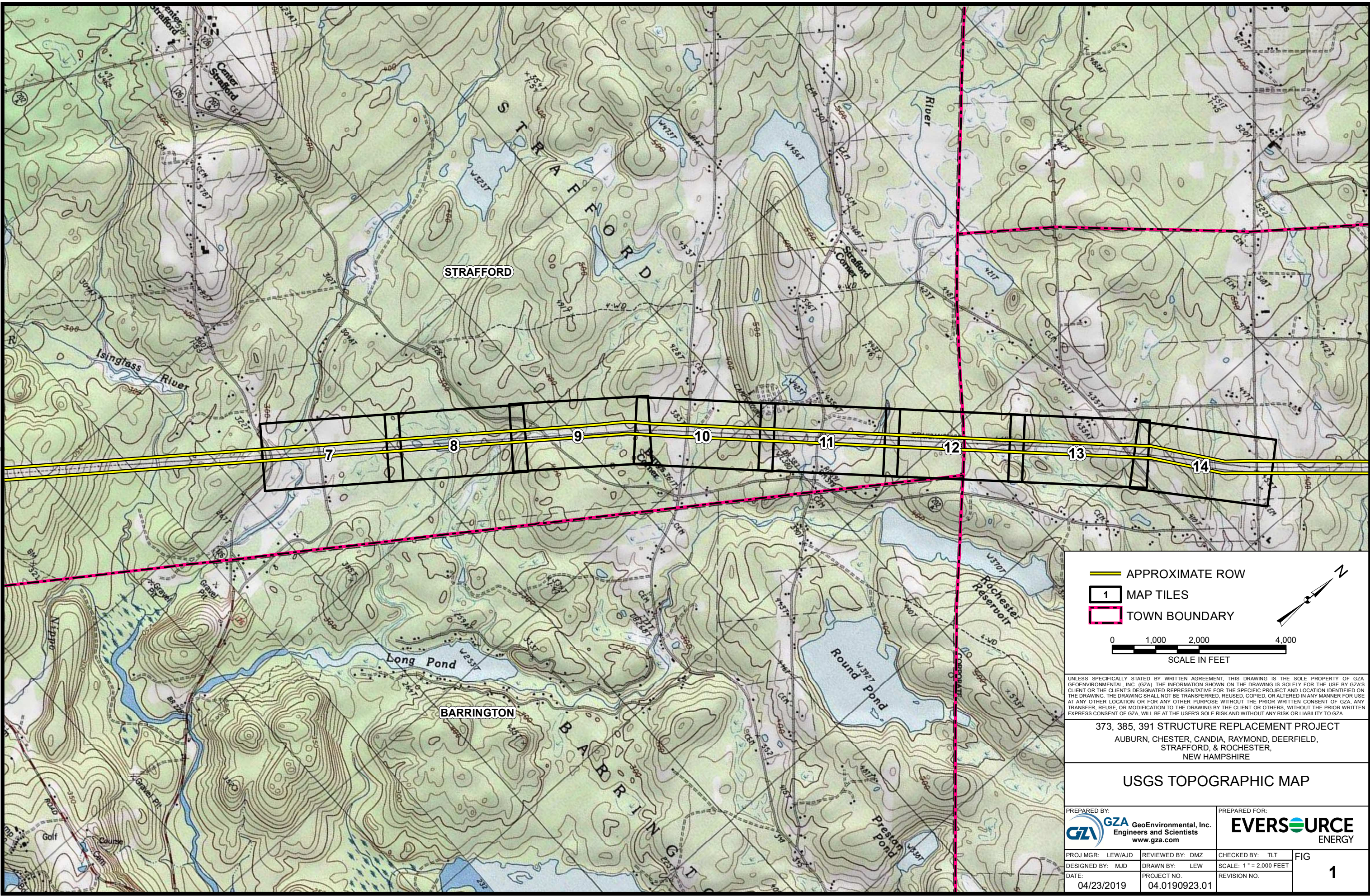
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

373, 385, 391 STRUCTURE REPLACEMENT PROJECT
 AUBURN, CHESTER, CANDIA, RAYMOND, DEERFIELD,
 STRAFFORD, & ROCHESTER,
 NEW HAMPSHIRE

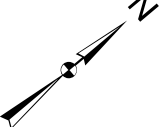
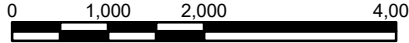
USGS TOPOGRAPHIC MAP

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PROJ MGR: LEW/AJD DESIGNED BY: MJD DATE: 04/23/2019	REVIEWED BY: DMZ DRAWN BY: LEW PROJECT NO.: 04.0190923.01	CHECKED BY: TLT SCALE: 1" = 2,000 FEET REVISION NO.	FIG 1

© 2019 - GZA GeoEnvironmental, Inc. P:\04\jobs\01909023\00 - Eversource MSA04.0190923.01 - 391 Transmission Line\Figures\MXD\AoT Figure 1 - USGS Locus.mxd, 4/23/2019, 2:37:11 PM, lindsey.white



 APPROXIMATE ROW
 MAP TILES
 TOWN BOUNDARY



 SCALE IN FEET

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373, 385, 391 STRUCTURE REPLACEMENT PROJECT
AUBURN, CHESTER, CANDIA, RAYMOND, DEERFIELD, STRAFFORD, & ROCHESTER, NEW HAMPSHIRE

USGS TOPOGRAPHIC MAP



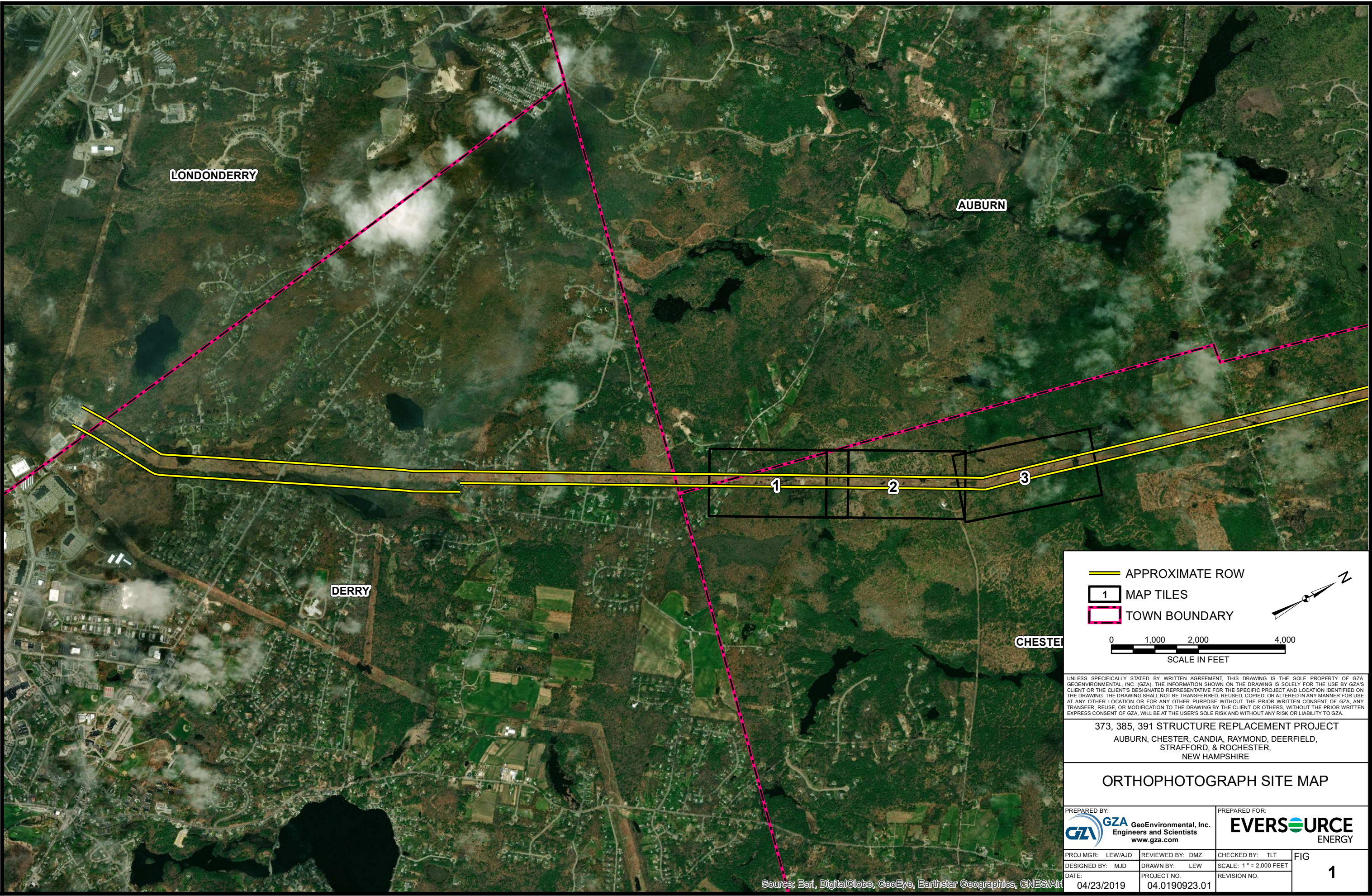



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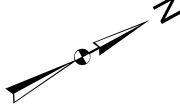
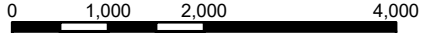


Figure 2 – Orthophotograph Site Map

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 APPROXIMATE ROW
 MAP TILES
 TOWN BOUNDARY



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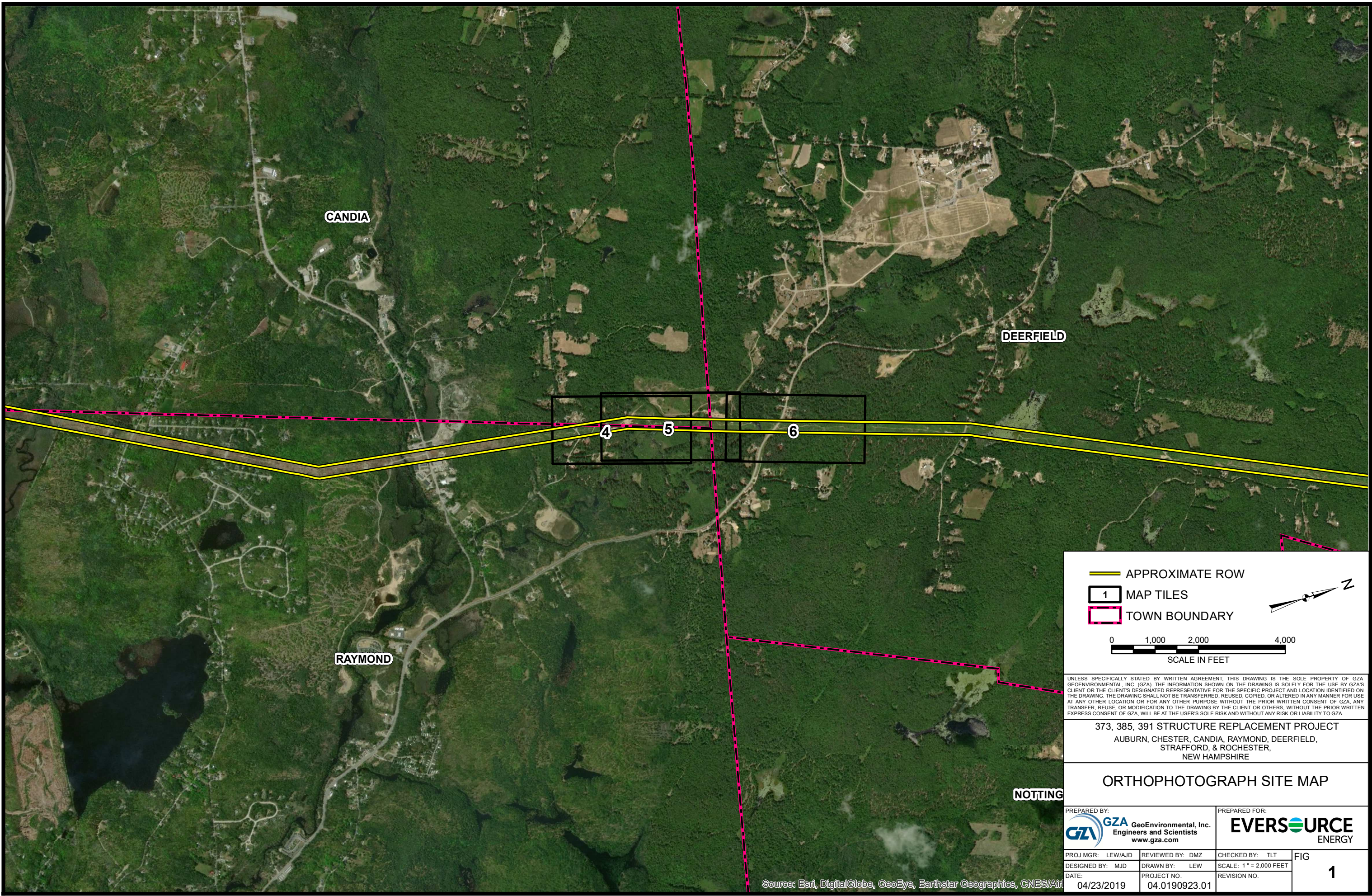
373, 385, 391 STRUCTURE REPLACEMENT PROJECT
AUBURN, CHESTER, CANDIA, RAYMOND, DEERFIELD,
STRAFFORD, & ROCHESTER,
NEW HAMPSHIRE




ORTHOPHOTOGRAPH SITE MAP


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PROJ MGR: LEW/AJD	REVIEWED BY: DMZ	CHECKED BY: TLT	FIG
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DATE: 04/23/2019	PROJECT NO: 04.0190923.01	REVISION NO.	

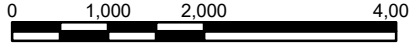
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Air

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 APPROXIMATE ROW
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 TOWN BOUNDARY

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373, 385, 391 STRUCTURE REPLACEMENT PROJECT
AUBURN, CHESTER, CANDIA, RAYMOND, DEERFIELD,
STRAFFORD, & ROCHESTER,
NEW HAMPSHIRE

ORTHOPHOTOGRAPH SITE MAP

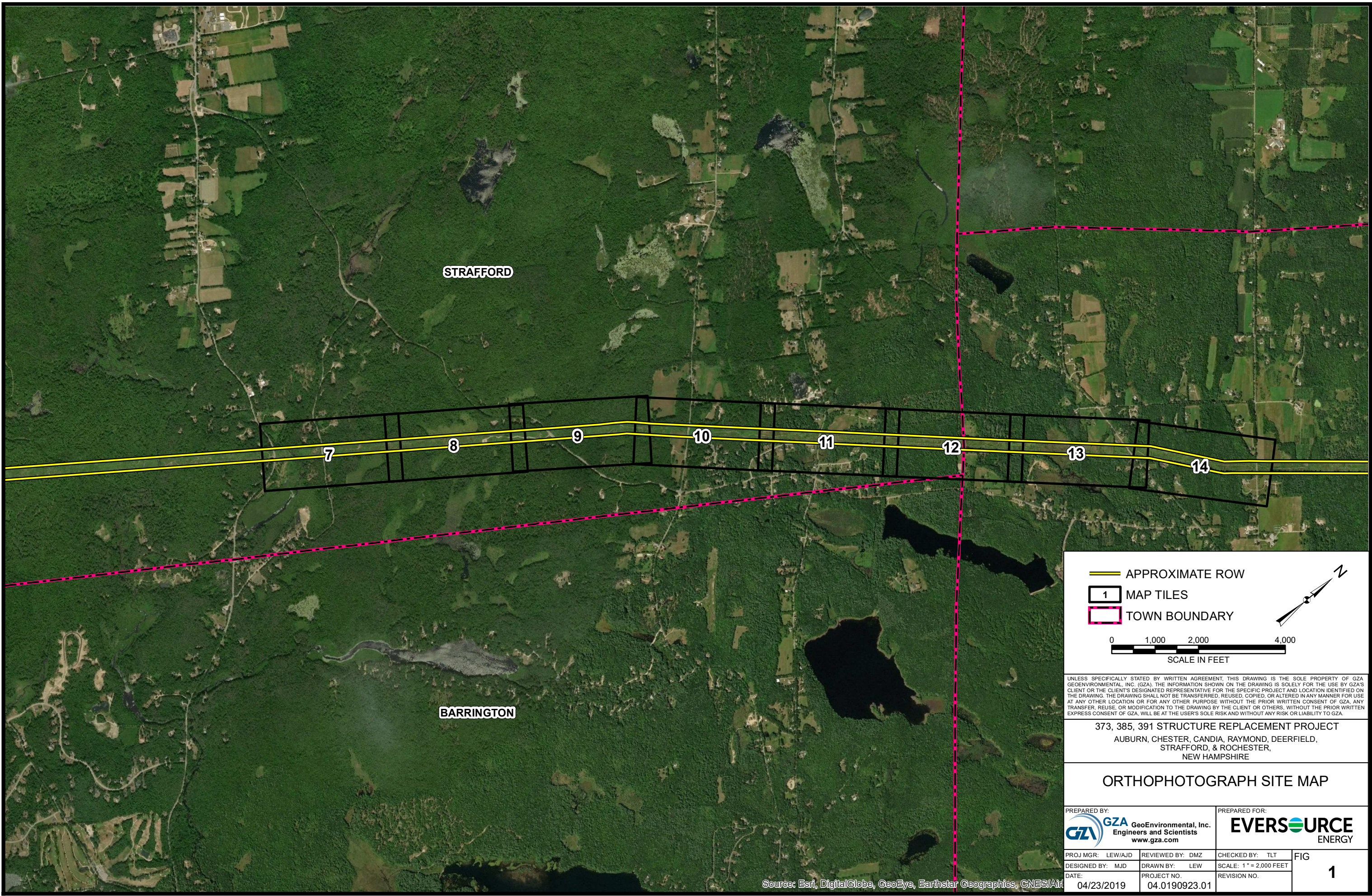
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STRAFFORD

BARRINGTON

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

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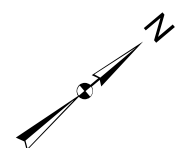
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-  APPROXIMATE ROW
-  MAP TILES
-  TOWN BOUNDARY



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373, 385, 391 STRUCTURE REPLACEMENT PROJECT
 AUBURN, CHESTER, CANDIA, RAYMOND, DEERFIELD,
 STRAFFORD, & ROCHESTER,
 NEW HAMPSHIRE

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PROJ MGR: LEW/AJD	REVIEWED BY: DMZ	CHECKED BY: TLT	FIG 1
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DATE: 04/23/2019	PROJECT NO: 04.0190923.01	REVISION NO.	

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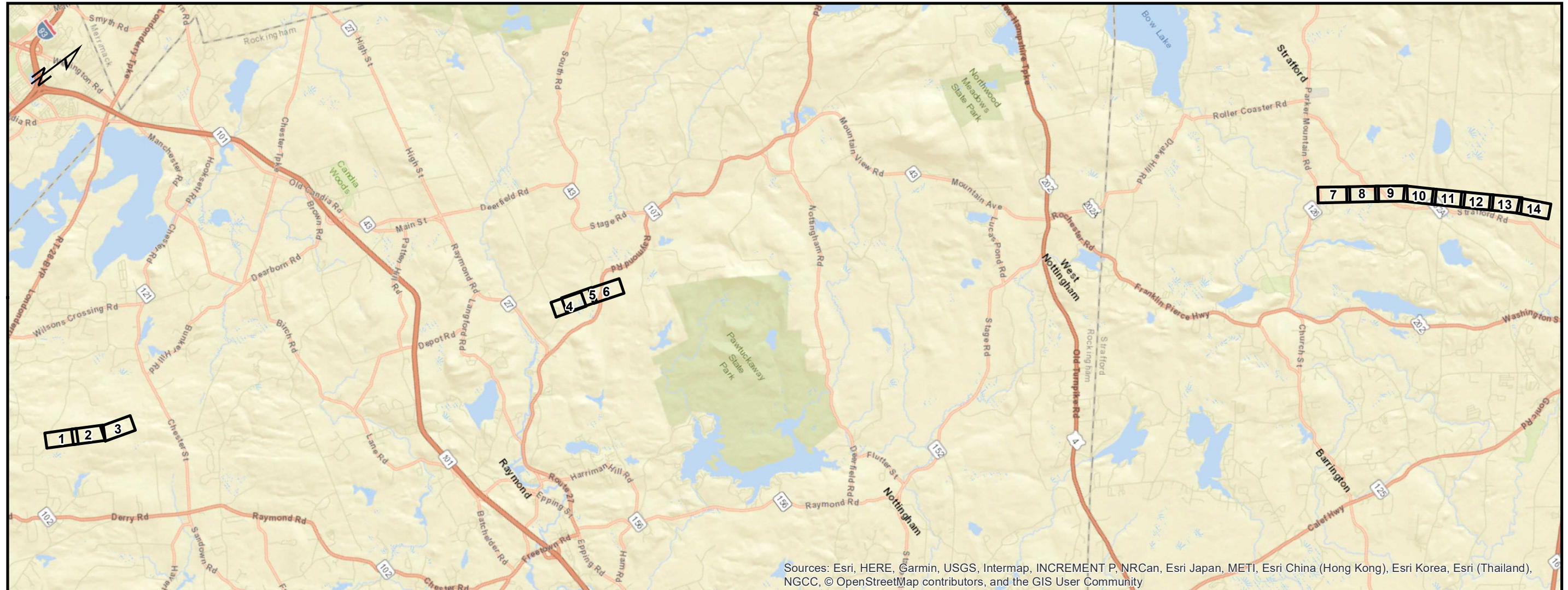
Figure 3 – Surface Water and Groundwater Overlay Plans

391, 373, & 385 TRANSMISSION LINE STRUCTURE REPLACEMENT PROJECT

SURFACE WATER AND GROUNDWATER OVERLAY PLANS

AUBURN, CHESTER, CANDIA, RAYMOND, DEERFIELD, STRAFFORD, AND ROCHESTER,
NEW HAMPSHIRE

4/24/2019



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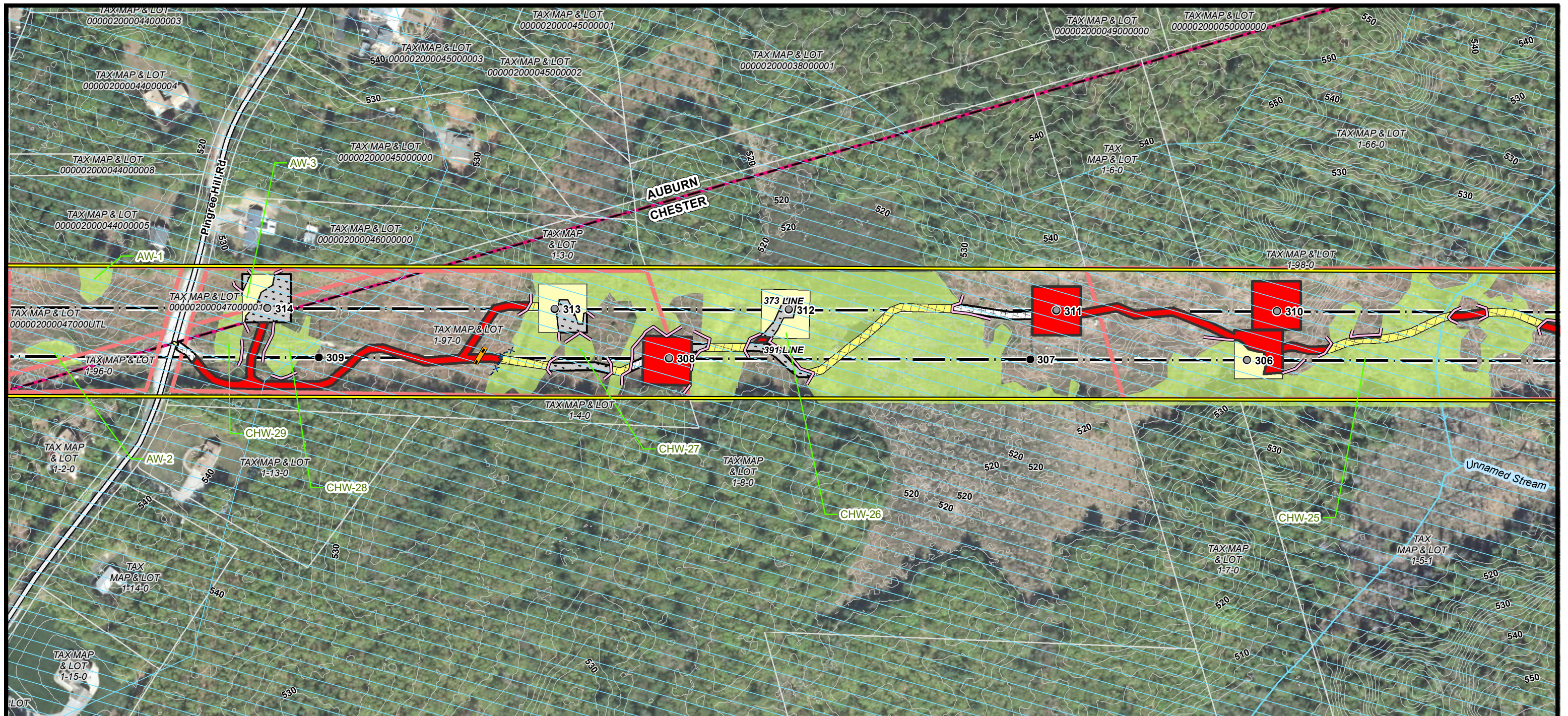
INDEX OF FIGURES

1 inch = 10,517 feet

- T1: TITLE SHEET
- 1-14: MAP SHEETS
- S1: NOTES
- S2: DETAILS
- S3: DETAILS (CONTINUED)

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Current Town: Chester/Auburn

<ul style="list-style-type: none"> ▲ Local Potential Contamination Sources — 2FT ELEVATION CONTOUR □ Wellhead Protection Areas (None) □ Watersheds with Chloride Impairments 2016 □ FEMA FIRM Special Flood Hazard Areas □ Water Supply Intake Protection Areas (None) □ Surface Waters with Impairments 2016 with Quarter Mile Buffer □ Outstanding Resource Water Watersheds □ Lakes with a Quarter Mile Buffer □ Groundwater Classification Areas GAA (None Present) □ Groundwater Classification Areas GA2 (None Present) □ Groundwater Classification Areas GA1 (None Present) □ Designated Rivers Quartermile Buffer □ All Features (Class A Surface Waters) ■ AOT DISTURBANCE ■ GRAVEL WORK PAD ■ UPLAND WORK PAD ■ WETLAND WORK PAD 	<ul style="list-style-type: none"> ● EXISTING STRUCTURE - NO PROPOSED WORK ○ EXISTING STRUCTURE TO BE REPLACED ■ FIELD DELINEATED WETLANDS — RAILROAD — TRANSMISSION LINE — FENCE — FENCE GATE ○ ROCK WALL — NHD FLOWLINE — SHORELAND ZONE BMP TYPE — SILT FENCE — STRAW WATTLE — WATER BAR ACCESS TYPE — EXISTING-IMPROVED — UPLAND MATTING — WETLAND ACCESS 	<ul style="list-style-type: none"> — NHDOT ROAD — TOWN BOUNDARY ○ PRIMARY ACCESS ○ SECONDARY ACCESS — APPROXIMATE ROW — PARCEL BOUNDARY ■ EVERSOURCE OWNED PROPERTY — 2FT ELEVATION CONTOUR
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Londonderry ← Rochester →

**373, 391, & 385 TRANSMISSION LINE
STRUCTURE REPLACEMENT PROJECT**

SURFACE WATER AND GROUNDWATER
OVERLAY PLANS
APRIL 24, 2019

AUBURN, CHESTER, CANDIA, RAYMOND,
DEERFIELD, ROCHESTER, & STRAFFORD
NEW HAMPSHIRE
PAGE 1 OF 14

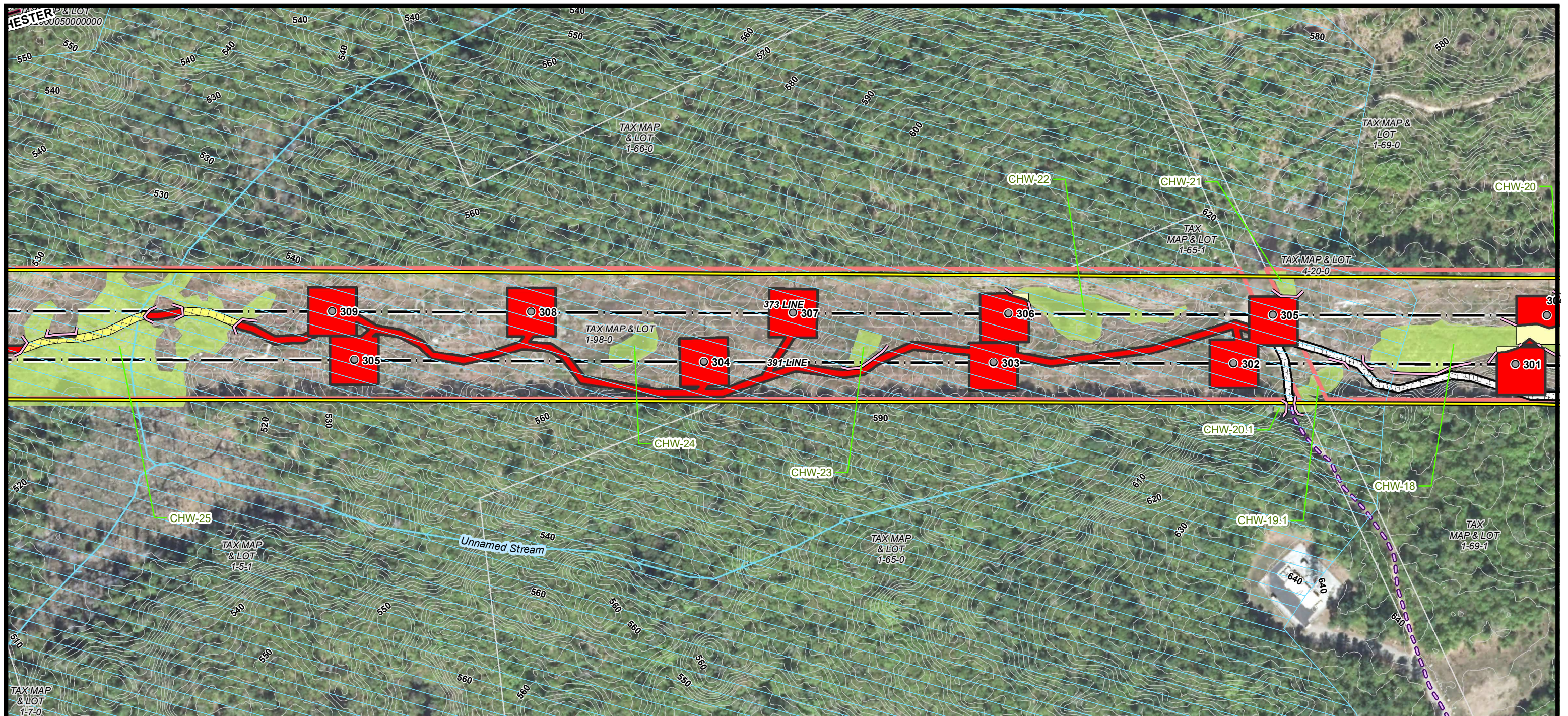
Project No.: 04.0190923.01 1 inch = 200 feet

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NOTES

1. AERIAL IMAGERY WAS OBTAINED FROM NH GRANIT CLEARINGHOUSE AND IS DATED 2015.
2. EXISTING STRUCTURE AND TRANSMISSION LINE WERE PROVIDED BY EVERSOURCE ENERGY.
3. DATA LAYERS INCLUDING "NHDOT ROAD", "NHD FLOWLINE", "TOWN BOUNDARY", "FEMA FIRM SPECIAL FLOOD HAZARD ZONES," AND "PARCEL BOUNDARY" WERE OBTAINED FROM NH GRANIT CLEARINGHOUSE.
4. APPROXIMATE ROW WAS GENERATED USING MILESHEETS PROVIDED BY EVERSOURCE ENERGY.
5. THE DATA LAYER "FIELD DELINEATED WETLANDS" WAS DELINEATED BY TIGHE & BOND IN 2018 AND VERIFIED BY GZA IN 2019.
6. "2FT ELEVATION CONTOURS" WERE GENERATED USING LIDAR DATA FROM NH GRANIT CLEARINGHOUSE (CONNECTICUT RIVER WATERSHED 2015 AND COASTAL NEW HAMPSHIRE 2011).
7. AOT SCREENING LAYERS WERE PROVIDED BY THE NHDES DRINKING WATER AND GROUNDWATER BUREAU.



Current Town: Chester

<ul style="list-style-type: none"> ▲ Local Potential Contamination Sources — 2FT ELEVATION CONTOUR □ Wellhead Protection Areas (None) □ Watersheds with Chloride Impairments 2016 □ FEMA FIRM Special Flood Hazard Areas □ Water Supply Intake Protection Areas (None) □ Surface Waters with Impairments 2016 with Quarter Mile Buffer □ Outstanding Resource Water Watersheds □ Lakes with a Quarter Mile Buffer □ Groundwater Classification Areas GAA (None Present) □ Groundwater Classification Areas GA2 (None Present) □ Groundwater Classification Areas GA1 (None Present) □ Designated Rivers Quartermile Buffer □ All Features (Class A Surface Waters) ■ AOT DISTURBANCE ■ GRAVEL WORK PAD ■ UPLAND WORK PAD ■ WETLAND WORK PAD 	<ul style="list-style-type: none"> ● EXISTING STRUCTURE - NO PROPOSED WORK ○ EXISTING STRUCTURE TO BE REPLACED ■ FIELD DELINEATED WETLANDS — RAILROAD — TRANSMISSION LINE ✕ FENCE — FENCE GATE ○ ROCK WALL — NHD FLOWLINE — SHORELAND ZONE BMP TYPE ✕ SILT FENCE — STRAW WATTLE ■ WATER BAR ACCESS TYPE ■ EXISTING-IMPROVED ■ UPLAND MATTING ■ WETLAND ACCESS 	<ul style="list-style-type: none"> — NHDOT ROAD ■ TOWN BOUNDARY ○ PRIMARY ACCESS ○ SECONDARY ACCESS — APPROXIMATE ROW □ PARCEL BOUNDARY ■ EVERSOURCE OWNED PROPERTY — 2FT ELEVATION CONTOUR
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Londonderry ← Rochester →

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**373, 391, & 385 TRANSMISSION LINE
STRUCTURE REPLACEMENT PROJECT**

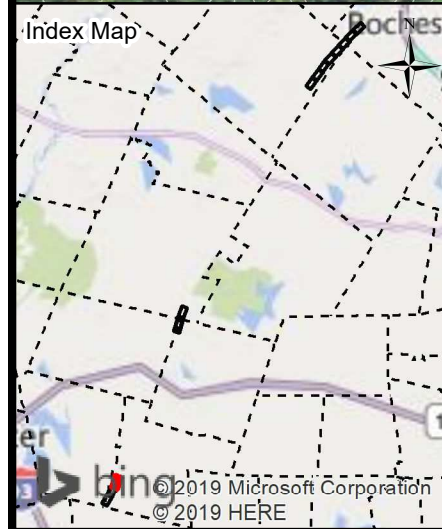
SURFACE WATER AND GROUNDWATER
OVERLAY PLANS
APRIL 24, 2019

AUBURN, CHESTER, CANDIA, RAYMOND,
DEERFIELD, ROCHESTER, & STRAFFORD
NEW HAMPSHIRE
PAGE 2 OF 14

Project No.: 04.0190923.01 1 inch = 200 feet

EVERSOURCE ENERGY

GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com



- Londonderry**
- ▲ Local Potential Contamination Sources
 - 2FT ELEVATION CONTOUR
 - Wellhead Protection Areas (None)
 - Watersheds with Chloride Impairments 2016
 - FEMA FIRM Special Flood Hazard Areas
 - Water Supply Intake Protection Areas (None)
 - Surface Waters with Impairments 2016 with Quarter Mile Buffer
 - Outstanding Resource Water Watersheds
 - Lakes with a Quarter Mile Buffer
 - Groundwater Classification Areas GAA (None Present)
 - Groundwater Classification Areas GA2 (None Present)
 - Groundwater Classification Areas GA1 (None Present)
 - Designated Rivers Quartermile Buffer
 - All Features (Class A Surface Waters)
 - AOT DISTURBANCE
 - GRAVEL WORK PAD
 - UPLAND WORK PAD
 - WETLAND WORK PAD

- Current Town: Chester**
- EXISTING STRUCTURE - NO PROPOSED WORK
 - EXISTING STRUCTURE TO BE REPLACED
 - FIELD DELINEATED WETLANDS
 - RAILROAD
 - TRANSMISSION LINE
 - FENCE
 - FENCE GATE
 - ROCK WALL
 - NHD FLOWLINE
 - SHORELAND ZONE
 - BMP TYPE**
 - SILT FENCE
 - STRAW WATTLE
 - WATER BAR
 - ACCESS TYPE**
 - EXISTING-IMPROVED
 - UPLAND MATTING
 - WETLAND ACCESS

- Rochester**
- NHDOT ROAD
 - TOWN BOUNDARY
 - PRIMARY ACCESS
 - SECONDARY ACCESS
 - APPROXIMATE ROW
 - PARCEL BOUNDARY
 - EVERSOURCE OWNED PROPERTY
 - 2FT ELEVATION CONTOUR
- NOTES**
1. AERIAL IMAGERY WAS OBTAINED FROM NH GRANIT CLEARINGHOUSE AND IS DATED 2015.
 2. EXISTING STRUCTURE AND TRANSMISSION LINE WERE PROVIDED BY EVERSOURCE ENERGY.
 3. DATA LAYERS INCLUDING "NHDOT ROAD", "NHD FLOWLINE", "TOWN BOUNDARY", "FEMA FIRM SPECIAL FLOOD HAZARD ZONES," AND "PARCEL BOUNDARY" WERE OBTAINED FROM NH GRANIT CLEARINGHOUSE.
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 7. AOT SCREENING LAYERS WERE PROVIDED BY THE NHDES DRINKING WATER AND GROUNDWATER BUREAU.

**373, 391, & 385 TRANSMISSION LINE
STRUCTURE REPLACEMENT PROJECT**

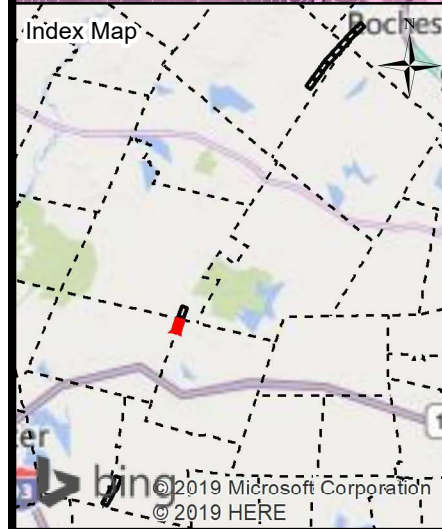
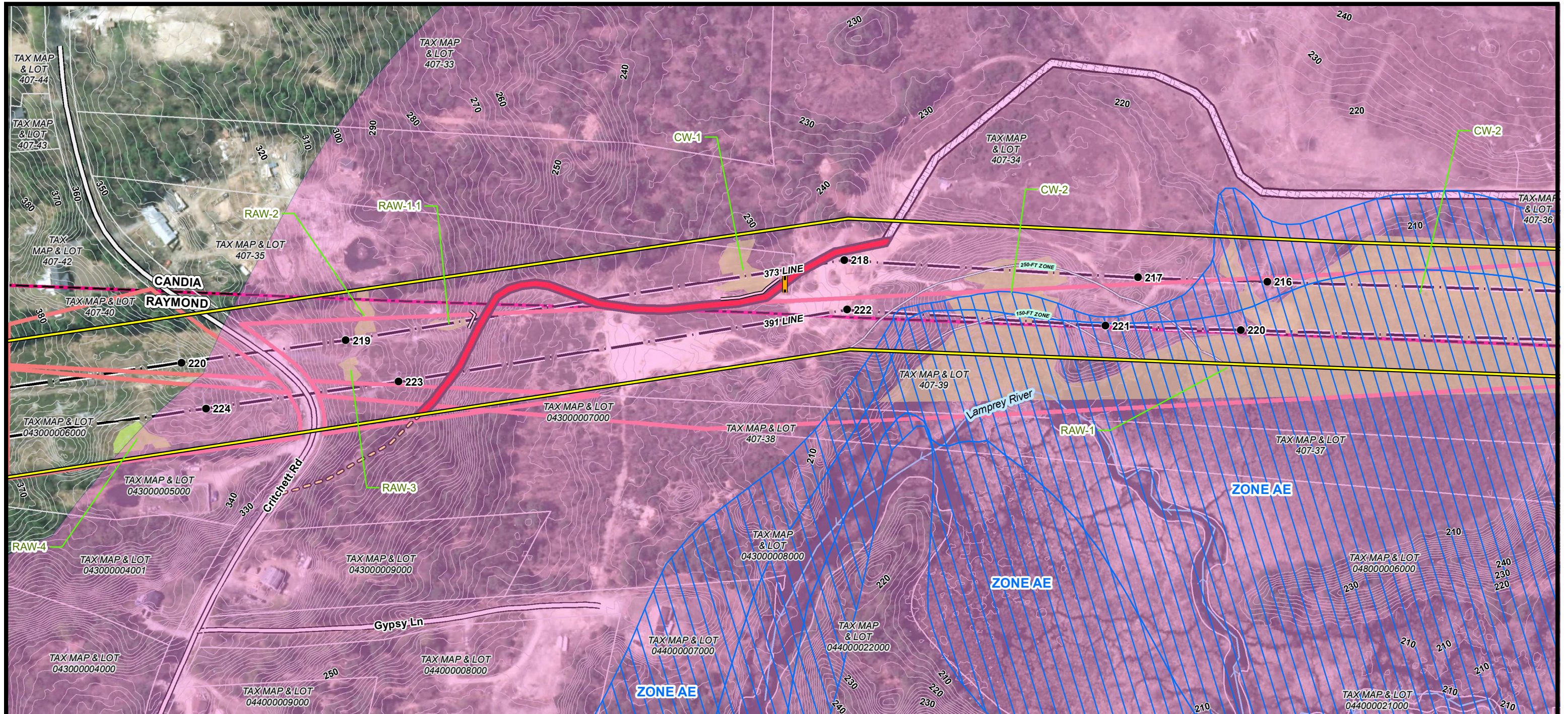
**SURFACE WATER AND GROUNDWATER
OVERLAY PLANS
APRIL 24, 2019**

AUBURN, CHESTER, CANDIA, RAYMOND,
DEERFIELD, ROCHESTER, & STRAFFORD
NEW HAMPSHIRE
PAGE 3 OF 14

Project No.: 04.0190923.01 1 inch = 200 feet

EVERSOURCE ENERGY

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 - GRAVEL WORK PAD
 - UPLAND WORK PAD
 - WETLAND WORK PAD

- Current Town: Raymond/Candia**
- EXISTING STRUCTURE - NO PROPOSED WORK
 - EXISTING STRUCTURE TO BE REPLACED
 - FIELD DELINEATED WETLANDS
 - RAILROAD
 - TRANSMISSION LINE
 - FENCE
 - FENCE GATE
 - ROCK WALL
 - NHD FLOWLINE
 - SHORELAND ZONE
 - BMP TYPE**
 - SILT FENCE
 - STRAW WATTLE
 - WATER BAR
 - ACCESS TYPE**
 - EXISTING-IMPROVED
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 - WETLAND ACCESS

- Rochester**
- NHDOT ROAD
 - TOWN BOUNDARY
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**373, 391, & 385 TRANSMISSION LINE
STRUCTURE REPLACEMENT PROJECT**

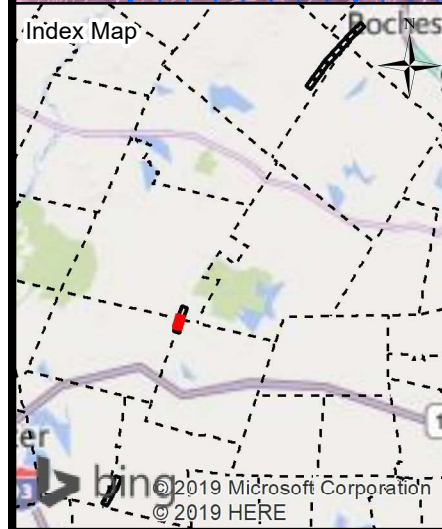
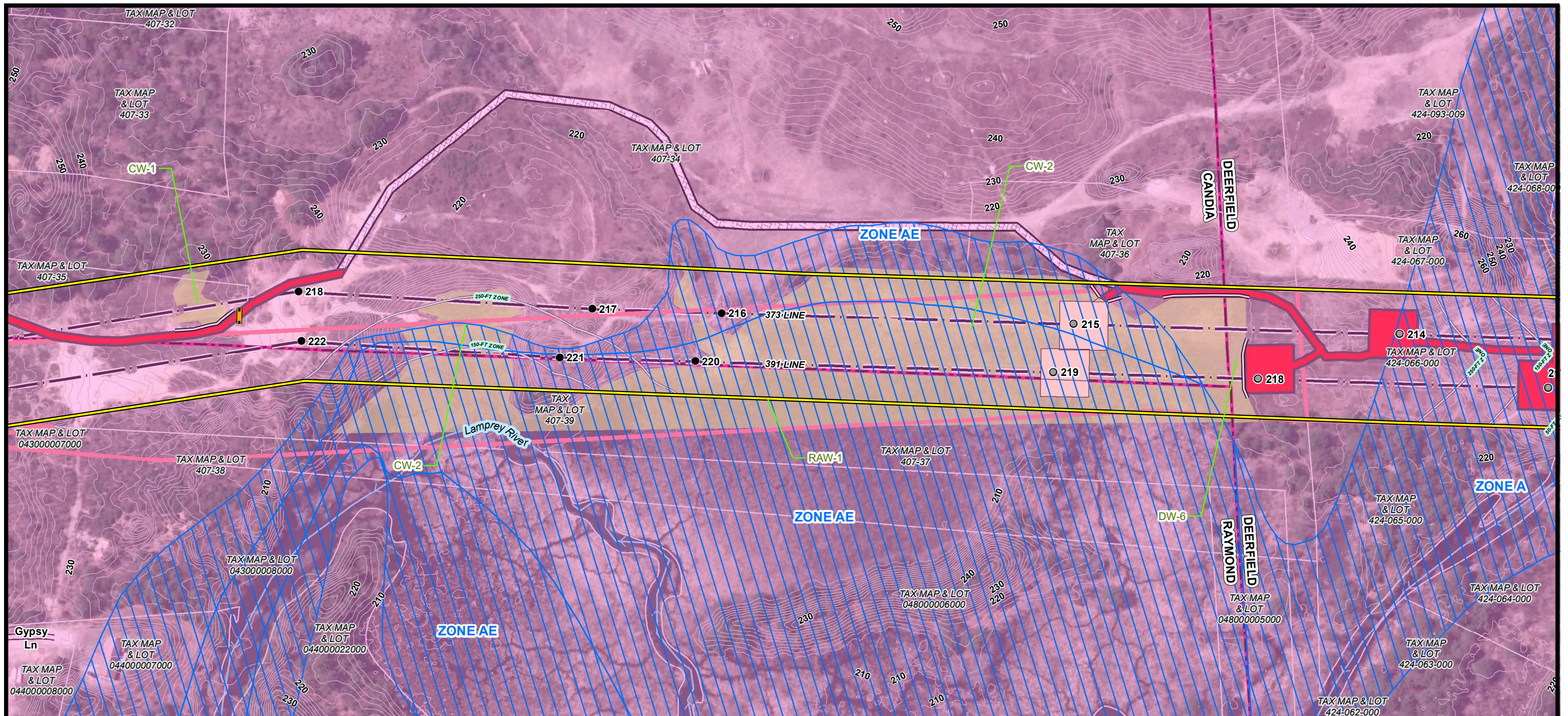
**SURFACE WATER AND GROUNDWATER
OVERLAY PLANS**
APRIL 24, 2019

AUBURN, CHESTER, CANDIA, RAYMOND,
DEERFIELD, ROCHESTER, & STRAFFORD
NEW HAMPSHIRE
PAGE 4 OF 14

Project No.: 04.0190923.01 1 inch = 200 feet

EVERSOURCE ENERGY

GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com



Current Town: Raymond/Candia/Deerfield

<ul style="list-style-type: none"> ▲ Local Potential Contamination Sources — 2FT ELEVATION CONTOUR □ Wellhead Protection Areas (None) □ Watersheds with Chloride Impairments 2016 □ FEMA FIRM Special Flood Hazard Areas □ Water Supply Intake Protection Areas (None) □ Surface Waters with Impairments 2016 with Quarter Mile Buffer □ Outstanding Resource Water Watersheds □ Lakes with a Quarter Mile Buffer □ Groundwater Classification Areas GAA (None Present) □ Groundwater Classification Areas GA2 (None Present) □ Groundwater Classification Areas GA1 (None Present) □ Designated Rivers Quartermile Buffer □ All Features (Class A Surface Waters) ■ AOT DISTURBANCE ■ GRAVEL WORK PAD ■ UPLAND WORK PAD ■ WETLAND WORK PAD 	<ul style="list-style-type: none"> ● EXISTING STRUCTURE - NO PROPOSED WORK ○ EXISTING STRUCTURE TO BE REPLACED ■ FIELD DELINEATED WETLANDS — RAILROAD — TRANSMISSION LINE — FENCE — FENCE GATE ○ ROCK WALL — NHD FLOWLINE — SHORELAND ZONE BMP TYPE — SILT FENCE — STRAW WATTLE — WATER BAR ACCESS TYPE — EXISTING-IMPROVED — UPLAND MATTING — WETLAND ACCESS 	<ul style="list-style-type: none"> — NHDOT ROAD — TOWN BOUNDARY ○ PRIMARY ACCESS ○ SECONDARY ACCESS — APPROXIMATE ROW — PARCEL BOUNDARY ■ EVERSOURCE OWNED PROPERTY — 2FT ELEVATION CONTOUR
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Londonderry ←
Current Town: Raymond/Candia/Deerfield
→ Rochester

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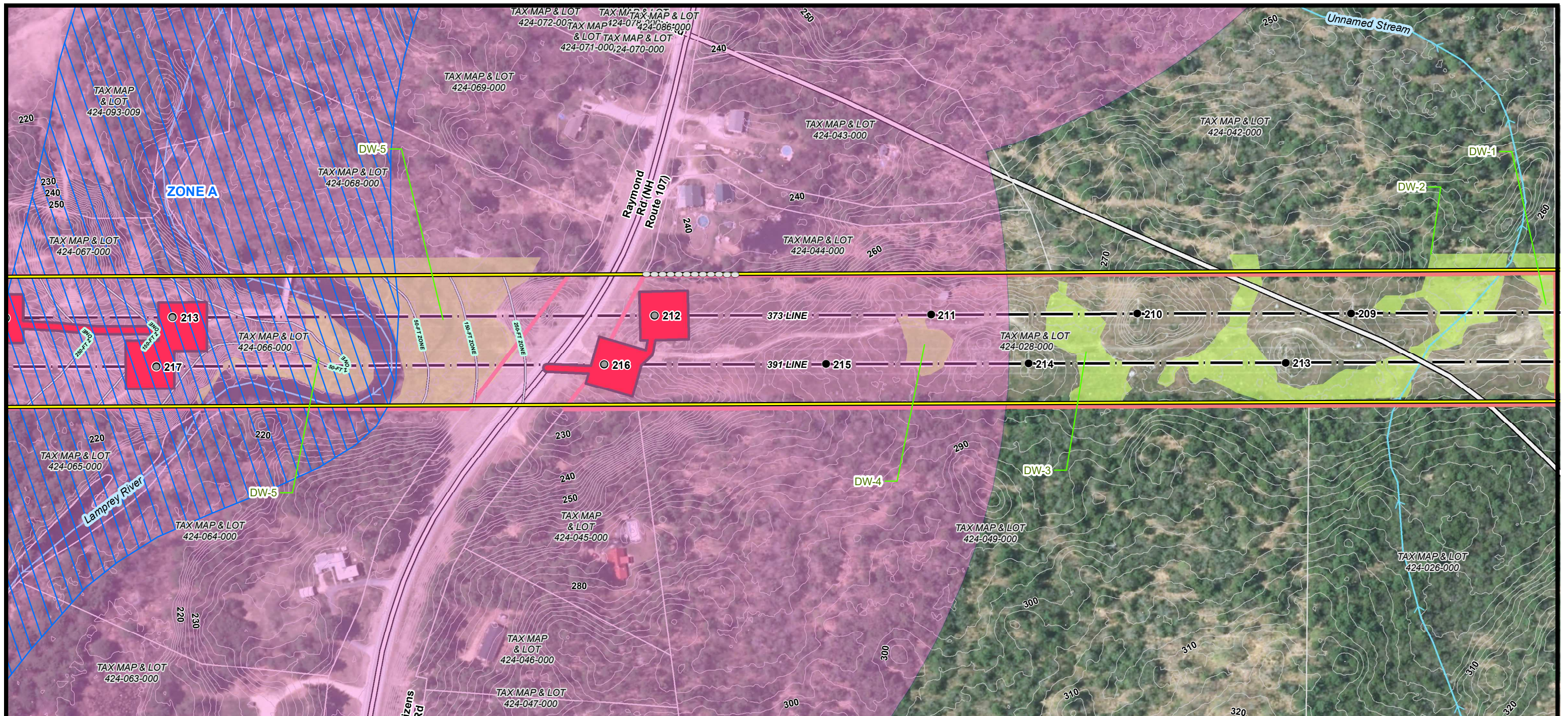
**373, 391, & 385 TRANSMISSION LINE
STRUCTURE REPLACEMENT PROJECT**

SURFACE WATER AND GROUNDWATER
OVERLAY PLANS
APRIL 24, 2019

AUBURN, CHESTER, CANDIA, RAYMOND,
DEERFIELD, ROCHESTER, & STRAFFORD
NEW HAMPSHIRE
PAGE 5 OF 14

Project No.: 04.0190923.01 1 inch = 200 feet

GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com



Current Town: Deerfield

<ul style="list-style-type: none"> ▲ Local Potential Contamination Sources — 2FT ELEVATION CONTOUR ■ Wellhead Protection Areas (None) ■ Watersheds with Chloride Impairments 2016 ■ FEMA FIRM Special Flood Hazard Areas ■ Water Supply Intake Protection Areas (None) ■ Surface Waters with Impairments 2016 with Quarter Mile Buffer ■ Outstanding Resource Water Watersheds ■ Lakes with a Quarter Mile Buffer ■ Groundwater Classification Areas GAA (None Present) ■ Groundwater Classification Areas GA2 (None Present) ■ Groundwater Classification Areas GA1 (None Present) ■ Designated Rivers Quartermile Buffer ■ All Features (Class A Surface Waters) ■ AOT DISTURBANCE ■ GRAVEL WORK PAD ■ UPLAND WORK PAD ■ WETLAND WORK PAD 	<ul style="list-style-type: none"> ● EXISTING STRUCTURE - NO PROPOSED WORK ● EXISTING STRUCTURE TO BE REPLACED ■ FIELD DELINEATED WETLANDS — RAILROAD — TRANSMISSION LINE — FENCE — FENCE GATE ○ ROCK WALL — NHD FLOWLINE — SHORELAND ZONE BMP TYPE — SILT FENCE — STRAW WATTLE — WATER BAR ACCESS TYPE ■ EXISTING-IMPROVED ■ UPLAND MATTING ■ WETLAND ACCESS 	<ul style="list-style-type: none"> — NHDOT ROAD ■ TOWN BOUNDARY ○ PRIMARY ACCESS ○ SECONDARY ACCESS — APPROXIMATE ROW — PARCEL BOUNDARY ■ EVERSOURCE OWNED PROPERTY — 2FT ELEVATION CONTOUR
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**373, 391, & 385 TRANSMISSION LINE
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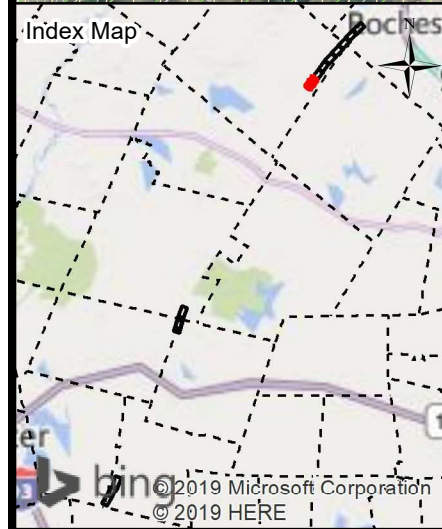
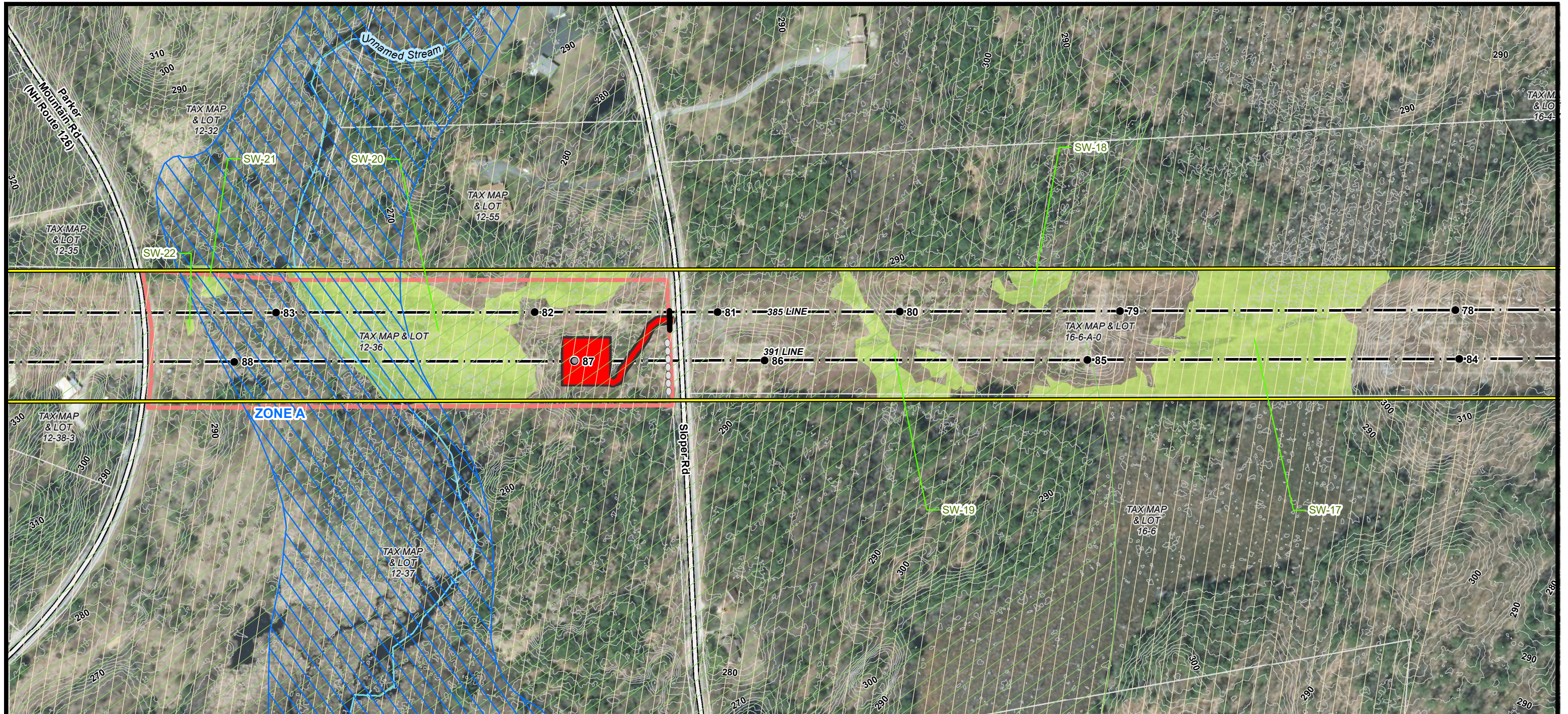
SURFACE WATER AND GROUNDWATER
OVERLAY PLANS
APRIL 24, 2019

AUBURN, CHESTER, CANDIA, RAYMOND,
DEERFIELD, ROCHESTER, & STRAFFORD
NEW HAMPSHIRE
PAGE 6 OF 14

Project No.: 04.0190923.01 1 inch = 200 feet

EVERSOURCE
ENERGY

GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com



Current Town: Strafford

<ul style="list-style-type: none"> ▲ Local Potential Contamination Sources — 2FT ELEVATION CONTOUR □ Wellhead Protection Areas (None) □ Watersheds with Chloride Impairments 2016 □ FEMA FIRM Special Flood Hazard Areas □ Water Supply Intake Protection Areas (None) □ Surface Waters with Impairments 2016 with Quarter Mile Buffer □ Outstanding Resource Water Watersheds □ Lakes with a Quarter Mile Buffer □ Groundwater Classification Areas GAA (None Present) □ Groundwater Classification Areas GA2 (None Present) □ Groundwater Classification Areas GA1 (None Present) □ Designated Rivers Quartermile Buffer □ All Features (Class A Surface Waters) ■ AOT DISTURBANCE ■ GRAVEL WORK PAD ■ UPLAND WORK PAD ■ WETLAND WORK PAD 	<ul style="list-style-type: none"> ● EXISTING STRUCTURE - NO PROPOSED WORK ● EXISTING STRUCTURE TO BE REPLACED ■ FIELD DELINEATED WETLANDS — RAILROAD — TRANSMISSION LINE — FENCE — FENCE GATE ○ ROCK WALL — NHD FLOWLINE — SHORELAND ZONE BMP TYPE — SILT FENCE — STRAW WATTLE — WATER BAR ACCESS TYPE ■ EXISTING-IMPROVED ■ UPLAND MATTING ■ WETLAND ACCESS 	<ul style="list-style-type: none"> — NHDOT ROAD — TOWN BOUNDARY ○ PRIMARY ACCESS ○ SECONDARY ACCESS — APPROXIMATE ROW — PARCEL BOUNDARY ■ EVERSOURCE OWNED PROPERTY — 2FT ELEVATION CONTOUR
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Londonderry ←
Current Town: **Strafford**
→ Rochester

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**373, 391, & 385 TRANSMISSION LINE
STRUCTURE REPLACEMENT PROJECT**


**SURFACE WATER AND GROUNDWATER
OVERLAY PLANS
APRIL 24, 2019**

AUBURN, CHESTER, CANDIA, RAYMOND,
DEERFIELD, ROCHESTER, & STRAFFORD
NEW HAMPSHIRE
PAGE 7 OF 14

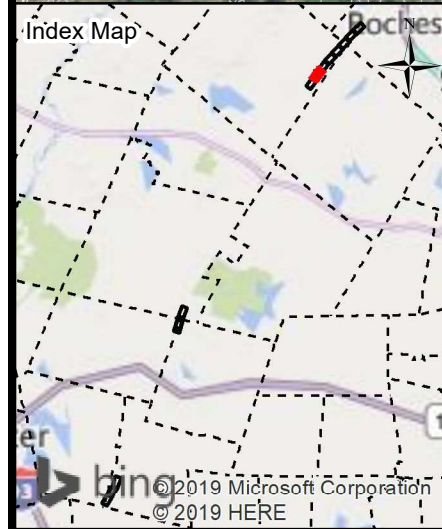
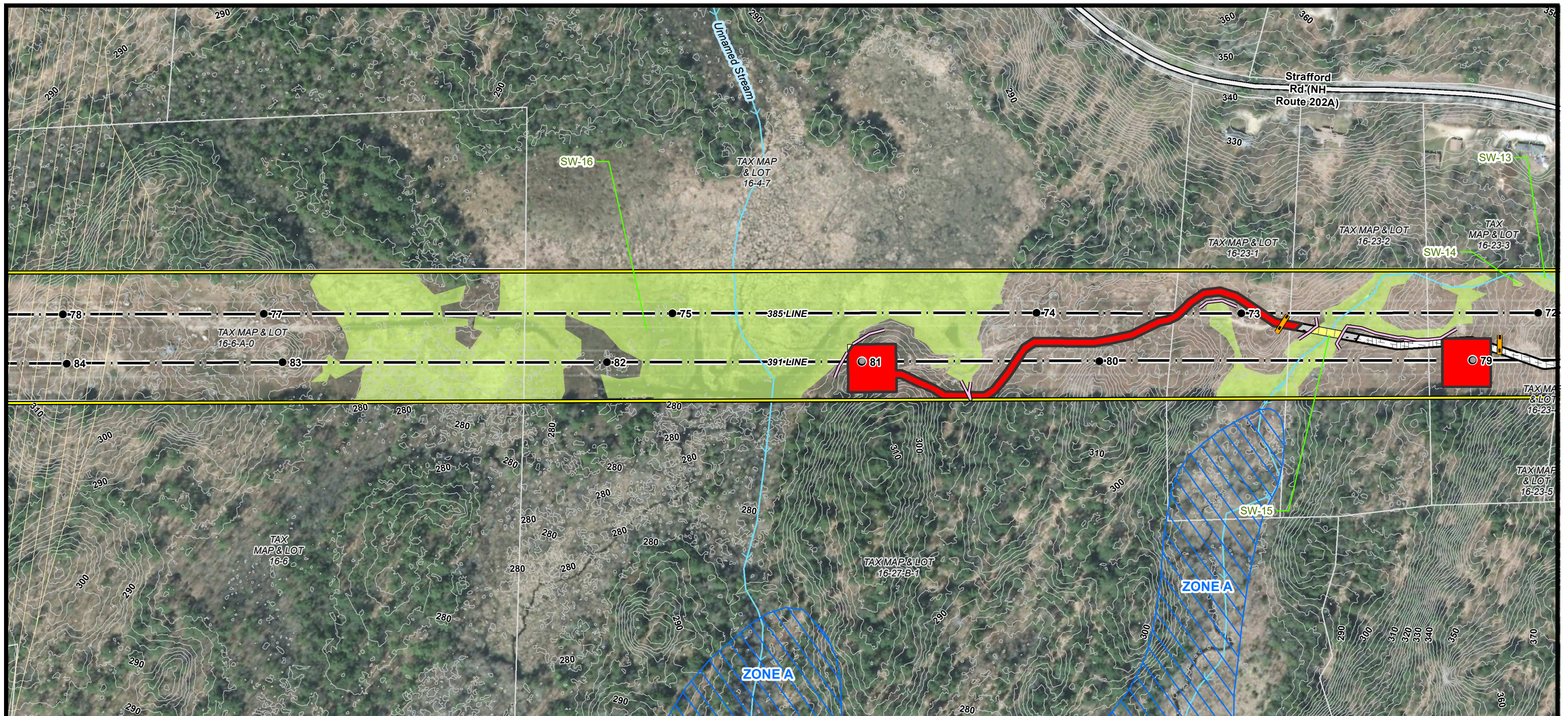
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**EVERSOURCE
ENERGY**



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- Current Town: Strafford**
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- BMP TYPE**
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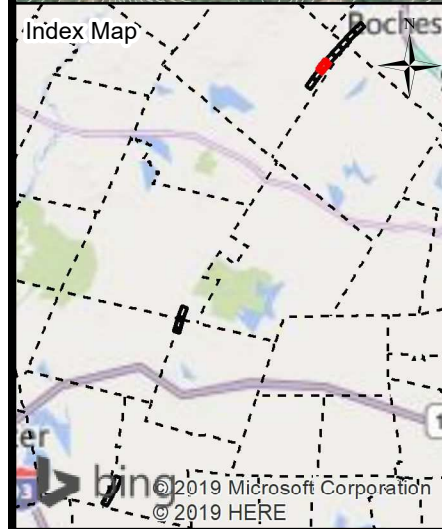
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Londonderry

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Current Town: Strafford

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Rochester

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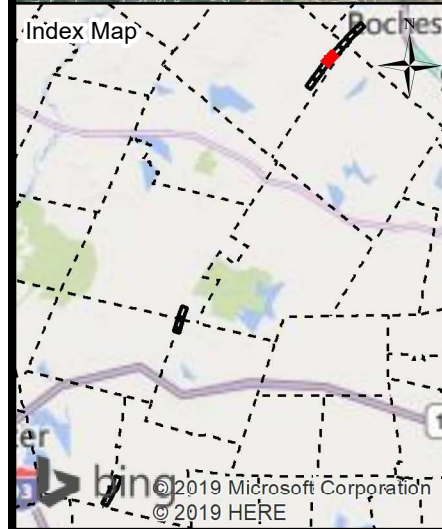
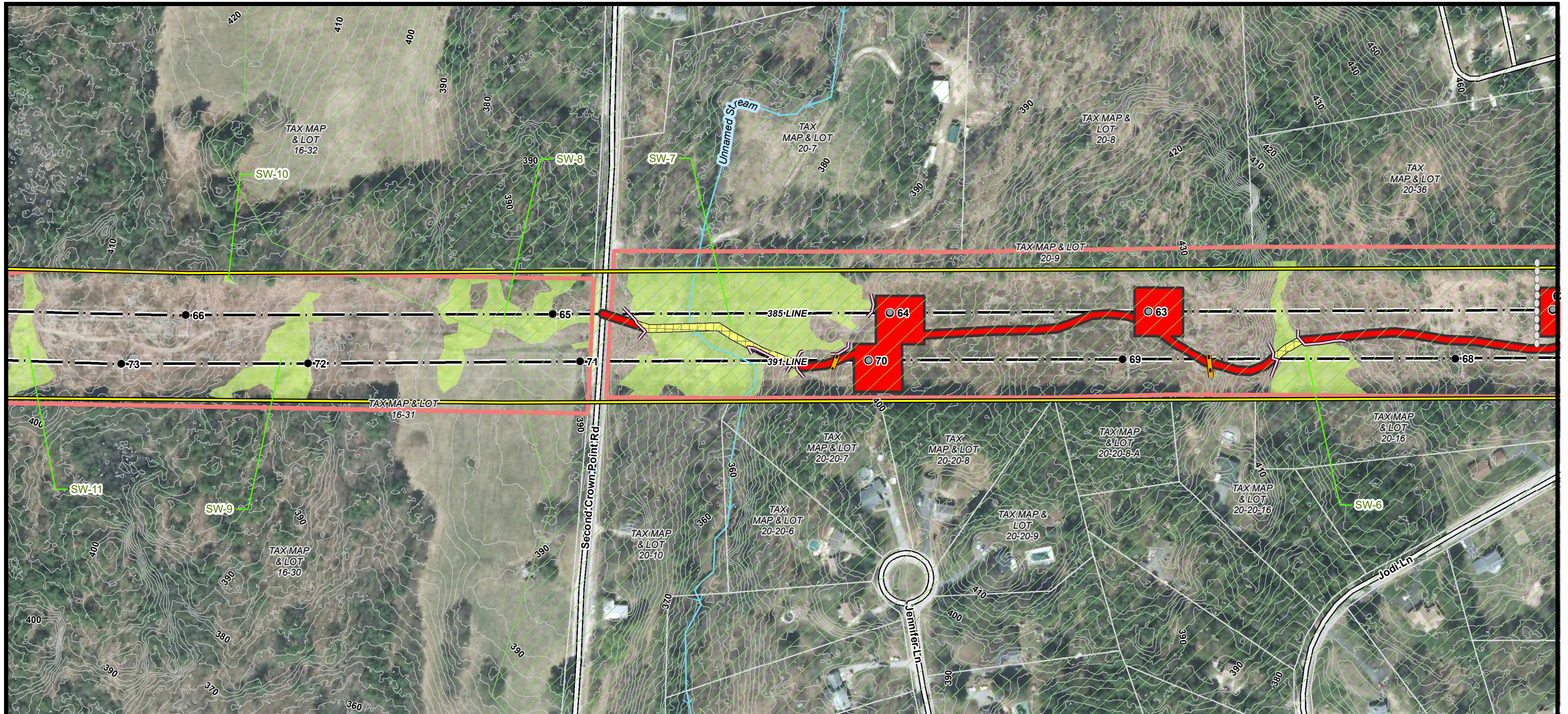
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Current Town: *Strafford*

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← Londonderry
Current Town: *Strafford*
→ Rochester

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**373, 391, & 385 TRANSMISSION LINE
STRUCTURE REPLACEMENT PROJECT**

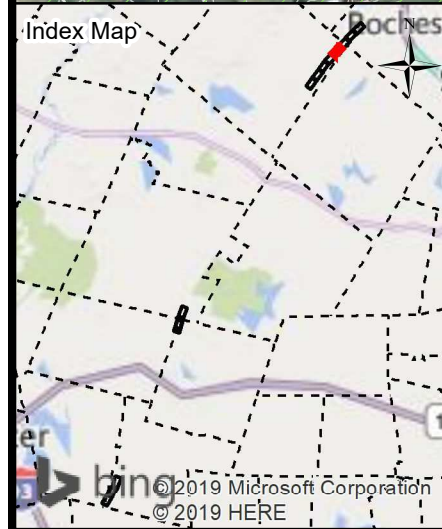
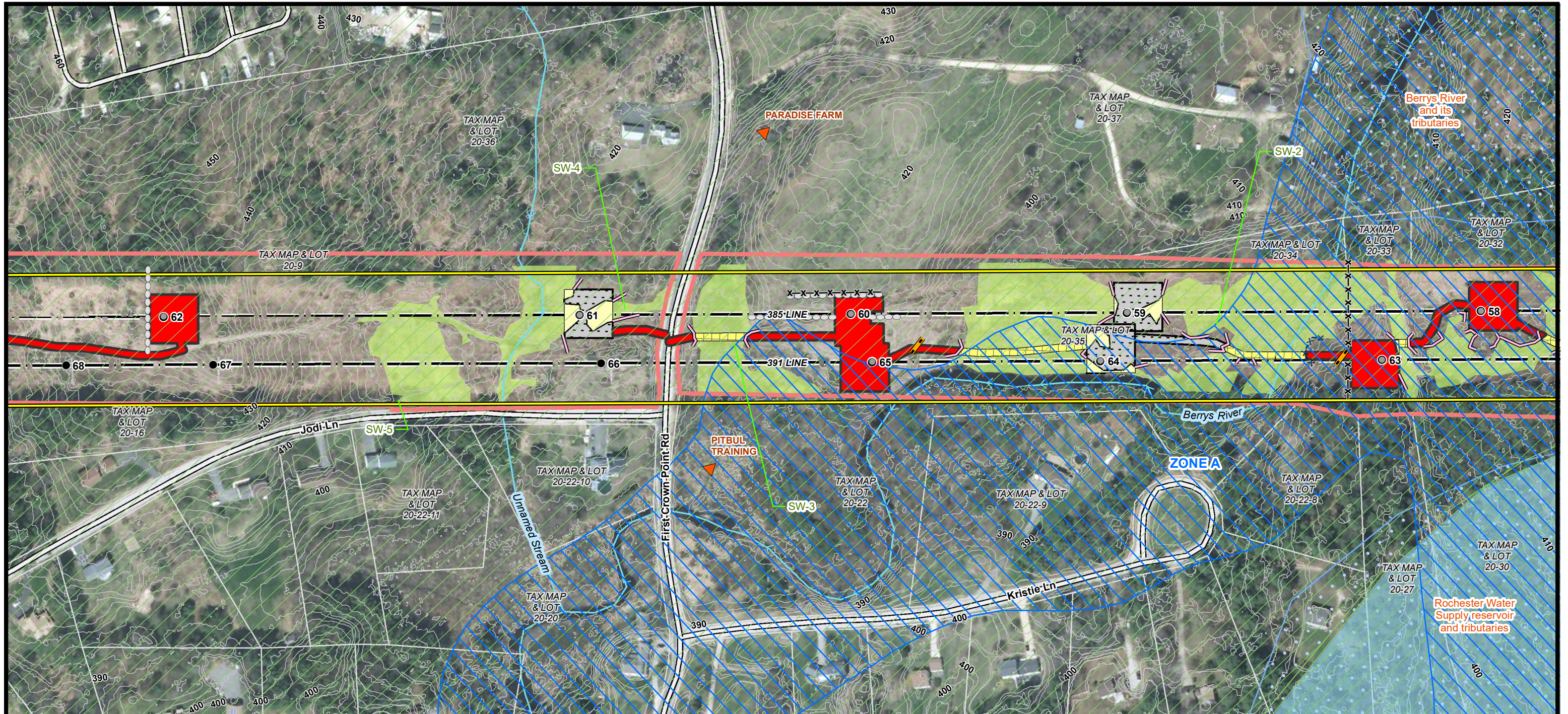
SURFACE WATER AND GROUNDWATER
OVERLAY PLANS
APRIL 24, 2019

AUBURN, CHESTER, CANDIA, RAYMOND,
DEERFIELD, ROCHESTER, & STRAFFORD
NEW HAMPSHIRE
PAGE 10 OF 14

Project No.: 04.0190923.01 1 inch = 200 feet

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<p>Local Potential Contamination Sources</p> <ul style="list-style-type: none"> ▲ Local Potential Contamination Sources ○ EXISTING STRUCTURE - NO PROPOSED WORK ○ EXISTING STRUCTURE TO BE REPLACED ■ TOWN BOUNDARY ■ FIELD DELINEATED WETLANDS ○ PRIMARY ACCESS ○ SECONDARY ACCESS — TRANSMISSION LINE — RAILROAD — TRANSMISSION LINE — APPROXIMATE ROW — PARCEL BOUNDARY ■ EVERSOURCE OWNED PROPERTY — 2FT ELEVATION CONTOUR — NHDOT ROAD — SHORELAND ZONE — BMP TYPE — ACCESS TYPE 	<p>2FT ELEVATION CONTOUR</p> <ul style="list-style-type: none"> — 2FT ELEVATION CONTOUR — Wellhead Protection Areas (None) — Watersheds with Chloride Impairments 2016 — FEMA FIRM Special Flood Hazard Areas — Water Supply Intake Protection Areas (None) — Surface Waters with Impairments 2016 with Quarter Mile Buffer — Outstanding Resource Water Watersheds — Lakes with a Quarter Mile Buffer — Groundwater Classification Areas GAA (None Present) — Groundwater Classification Areas GA2 (None Present) — Groundwater Classification Areas GA1 (None Present) — Designated Rivers Quartermile Buffer — All Features (Class A Surface Waters) — AOT DISTURBANCE — GRAVEL WORK PAD — UPLAND WORK PAD — WETLAND WORK PAD 	<p>Notes</p> <ol style="list-style-type: none"> 1. AERIAL IMAGERY WAS OBTAINED FROM NH GRANIT CLEARINGHOUSE AND IS DATED 2015. 2. EXISTING STRUCTURE AND TRANSMISSION LINE WERE PROVIDED BY EVERSOURCE ENERGY. 3. DATA LAYERS INCLUDING "NHDOT ROAD", "NHD FLOWLINE", "TOWN BOUNDARY", "FEMA FIRM SPECIAL FLOOD HAZARD ZONES," AND "PARCEL BOUNDARY" WERE OBTAINED FROM NH GRANIT CLEARINGHOUSE. 4. APPROXIMATE ROW WAS GENERATED USING MILESHEETS PROVIDED BY EVERSOURCE ENERGY. 5. THE DATA LAYER "FIELD DELINEATED WETLANDS" WAS DELINEATED BY TIGHE & BOND IN 2018 AND VERIFIED BY GZA IN 2019. 6. "2FT ELEVATION CONTOURS" WERE GENERATED USING LIDAR DATA FROM NH GRANIT CLEARINGHOUSE (CONNECTICUT RIVER WATERSHED 2015 AND COASTAL NEW HAMPSHIRE 2011). 7. AOT SCREENING LAYERS WERE PROVIDED BY THE NHDES DRINKING WATER AND GROUNDWATER BUREAU.
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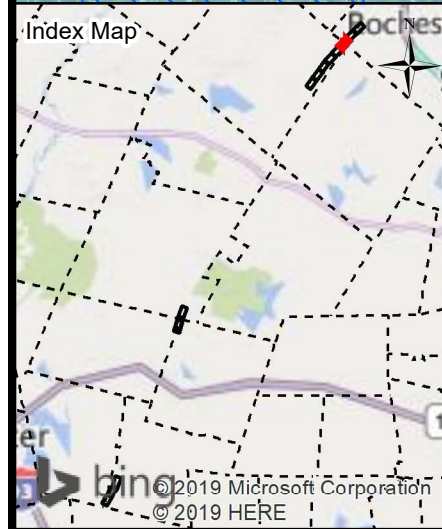
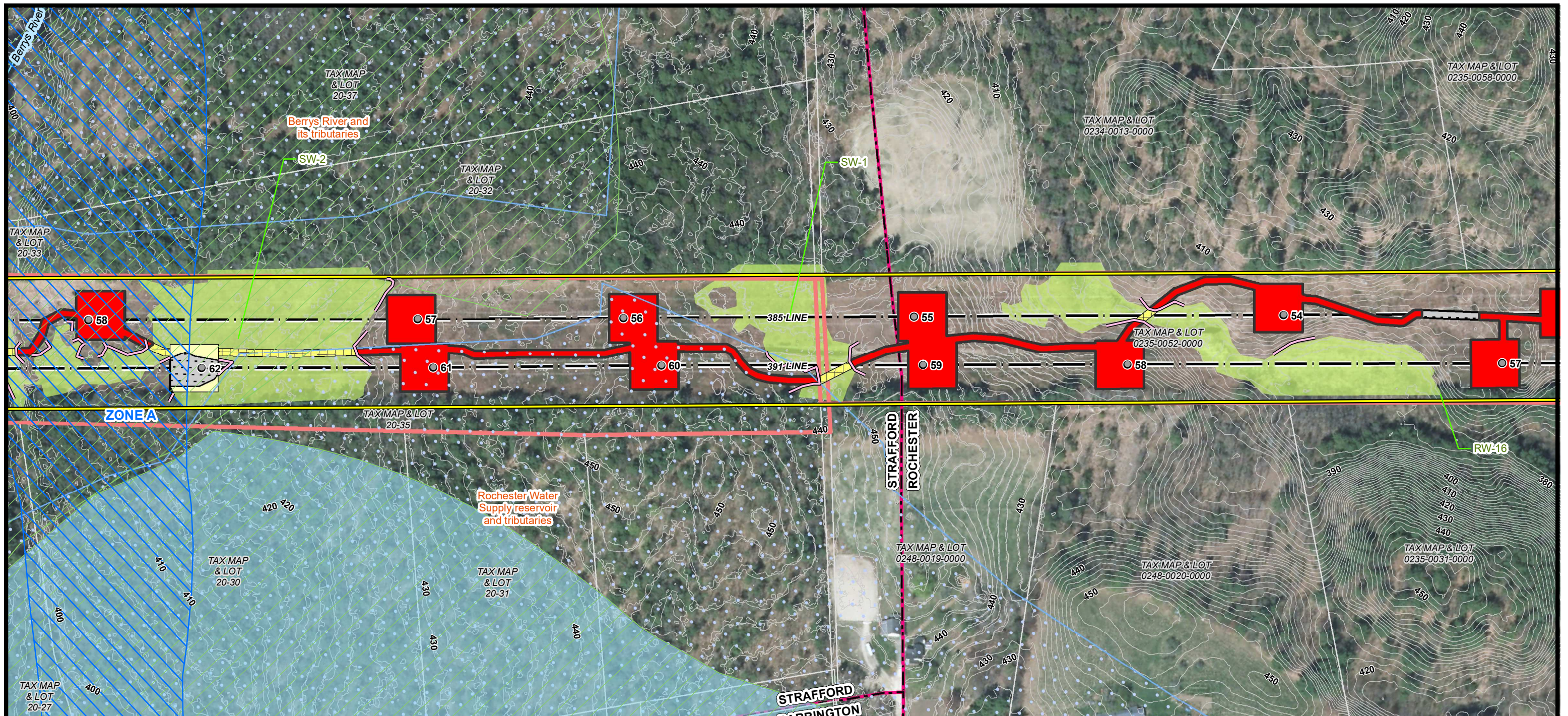
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AUBURN, CHESTER, CANDIA, RAYMOND,
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Current Town: Strafford/Rochester

<ul style="list-style-type: none"> ▲ Local Potential Contamination Sources — 2FT ELEVATION CONTOUR ■ Wellhead Protection Areas (None) ■ Watersheds with Chloride Impairments 2016 ■ FEMA FIRM Special Flood Hazard Areas ■ Water Supply Intake Protection Areas (None) ■ Surface Waters with Impairments 2016 with Quarter Mile Buffer ■ Outstanding Resource Water Watersheds ■ Lakes with a Quarter Mile Buffer ■ Groundwater Classification Areas GAA (None Present) ■ Groundwater Classification Areas GA2 (None Present) ■ Groundwater Classification Areas GA1 (None Present) ■ Designated Rivers Quartermile Buffer ■ All Features (Class A Surface Waters) ■ AOT DISTURBANCE ■ GRAVEL WORK PAD ■ UPLAND WORK PAD ■ WETLAND WORK PAD 	<ul style="list-style-type: none"> ● EXISTING STRUCTURE - NO PROPOSED WORK ● EXISTING STRUCTURE TO BE REPLACED ■ FIELD DELINEATED WETLANDS — RAILROAD — TRANSMISSION LINE — FENCE — FENCE GATE ○ ROCK WALL — NHD FLOWLINE — SHORELAND ZONE BMP TYPE — SILT FENCE — STRAW WATTLE — WATER BAR ACCESS TYPE ■ EXISTING-IMPROVED ■ UPLAND MATTING ■ WETLAND ACCESS 	<ul style="list-style-type: none"> — NHDOT ROAD — TOWN BOUNDARY ○ PRIMARY ACCESS ○ SECONDARY ACCESS — APPROXIMATE ROW — PARCEL BOUNDARY ■ EVERSOURCE OWNED PROPERTY — 2FT ELEVATION CONTOUR
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APRIL 24, 2019

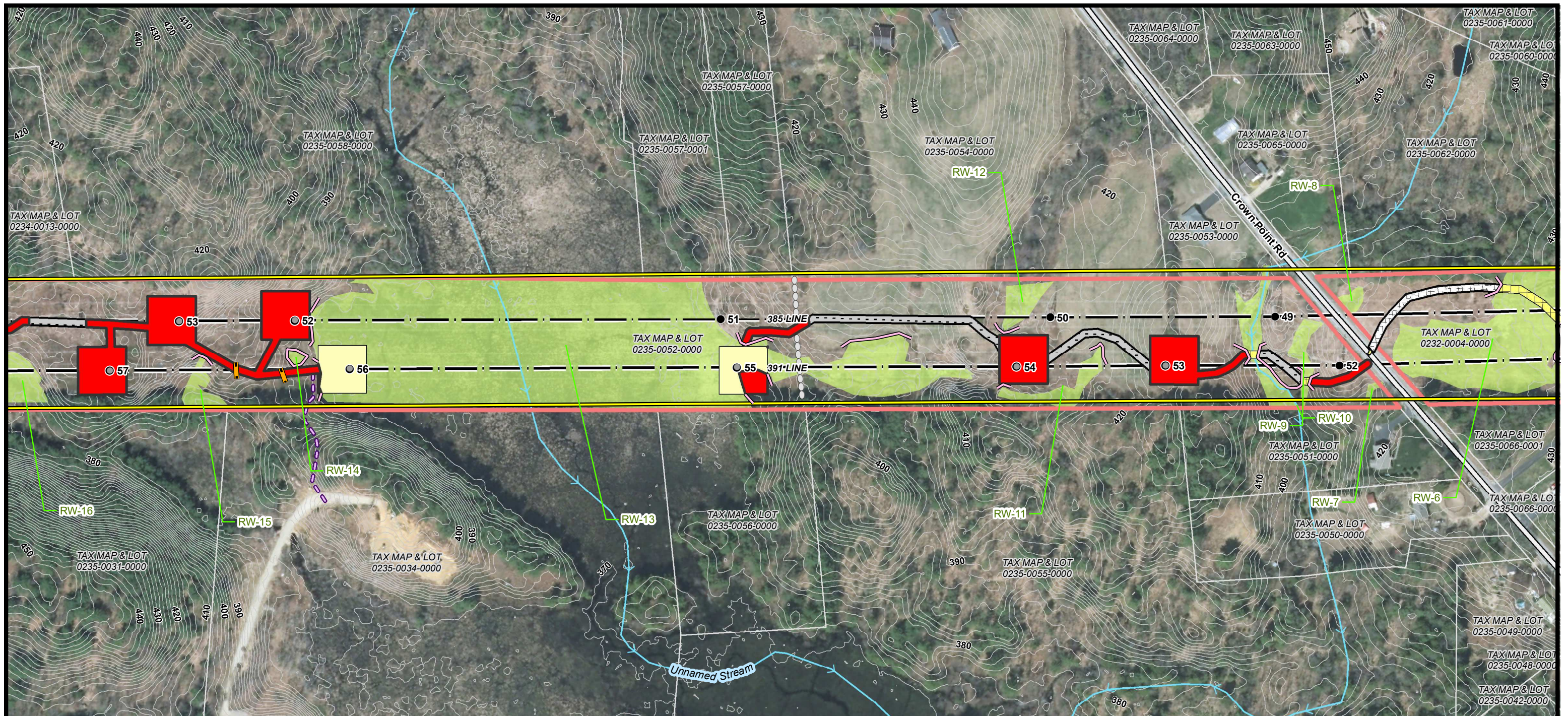
AUBURN, CHESTER, CANDIA, RAYMOND,
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NEW HAMPSHIRE
PAGE 12 OF 14

Project No.: 04.0190923.01

**EVERSOURCE
ENERGY**

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1 inch = 200 feet



Current Town: Rochester

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Londonderry ←
Rochester →

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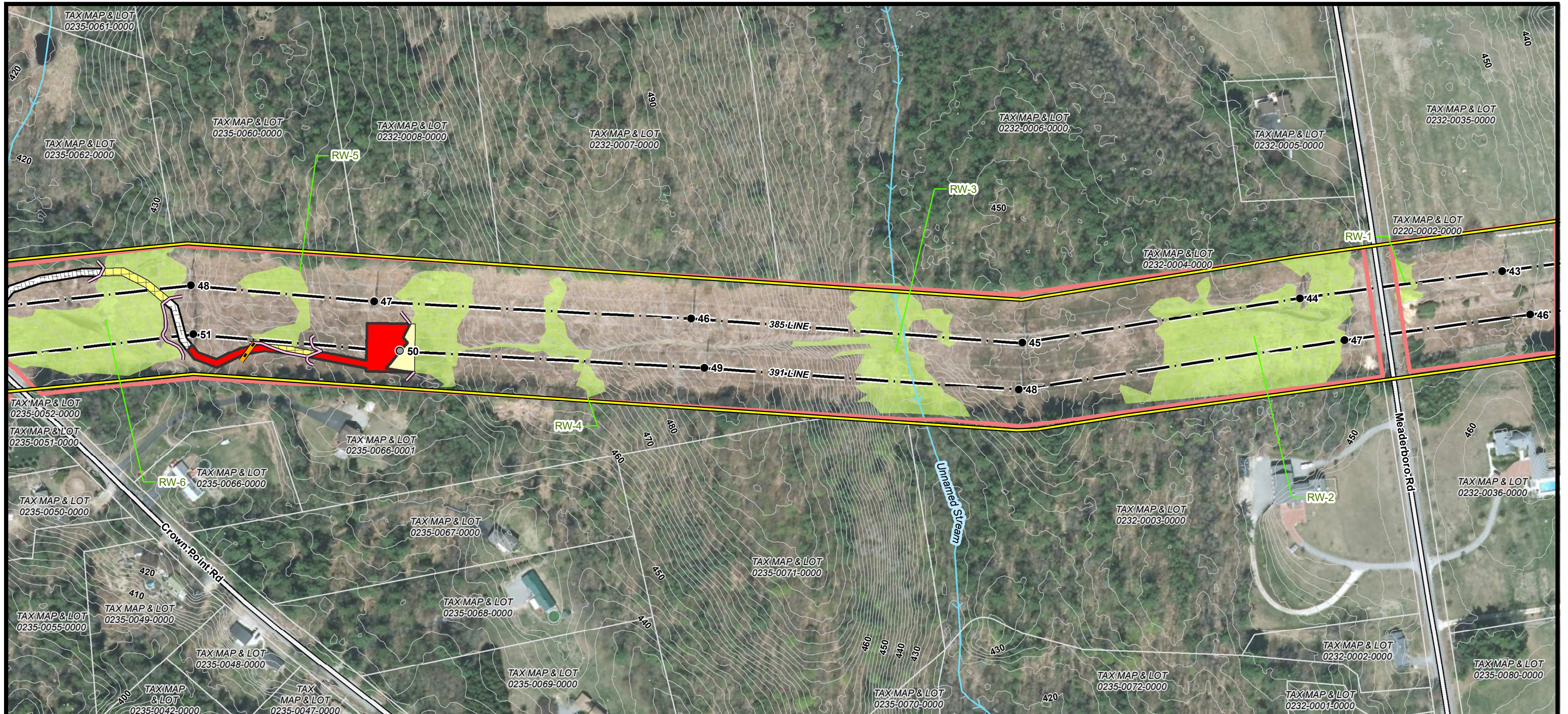
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AUBURN, CHESTER, CANDIA, RAYMOND,
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NEW HAMPSHIRE
PAGE 13 OF 14

Project No.: 04.0190923.01 1 inch = 200 feet

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Local Potential Contamination Sources

- Local Potential Contamination Sources
- 2FT ELEVATION CONTOUR
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- AOT DISTURBANCE
- GRAVEL WORK PAD
- UPLAND WORK PAD
- WETLAND WORK PAD

Current Town: Rochester

- EXISTING STRUCTURE - NO PROPOSED WORK
- EXISTING STRUCTURE TO BE REPLACED
- FIELD DELINEATED WETLANDS
- RAILROAD
- TRANSMISSION LINE
- FENCE
- FENCE GATE
- ROCK WALL
- NHD FLOWLINE
- SHORELAND ZONE
- BMP TYPE**
- SILT FENCE
- STRAW WATTLE
- WATER BAR
- ACCESS TYPE**
- EXISTING-IMPROVED
- UPLAND MATTING
- WETLAND ACCESS

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373, 391, & 385 TRANSMISSION LINE STRUCTURE REPLACEMENT PROJECT

SURFACE WATER AND GROUNDWATER OVERLAY PLANS
APRIL 24, 2019

AUBURN, CHESTER, CANDIA, RAYMOND, DEERFIELD, ROCHESTER, & STRAFFORD NEW HAMPSHIRE
PAGE 14 OF 14

Project No.: 04.0190923.01

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1 inch = 200 feet

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.
3. WETLAND IMPACTS ASSOCIATED WITH WETLAND CROSSINGS ARE REQUIRED FOR ACCESS BETWEEN STRUCTURES WITHIN THE RIGHT OF WAY. CONSTRUCTION ACTIVITIES SHALL OCCUR DURING PERIODS OF LOW FLOW.
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. ALL OPERATIONS SHALL BE CONFINED TO THE SPECIFIED ACCESS ROUTES WITHIN THE PROPOSED WETLAND IMPACT AREA. ALL 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. ALL 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. SWAMP MATS WILL BE USED ALONG ALL ACCESS ROUTES 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 SWAMP 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 SWAMP 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. SEDIMENT AND EROSION CONTROL MEASURES WILL BE EVALUATED AND REMOVED IF NECESSARY UPON THE COMPLETION OF CONSTRUCTION.

WINTER CONSTRUCTION NOTES

1. ALL PROPOSED 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. ALL 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 TIGHE AND BOND IN 2018, 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 WERE REVIEWED BY GZA GEOENVIRONMENTAL, INC. IN JANUARY AND FEBRUARY 2019.
3. GZA EVALUATED WETLANDS AS POTENTIAL VERNAL POOLS ON FEBRUARY 6, 12, AND 15, 2019 IN ACCORDANCE WITH "IDENTIFICATION AND DOCUMENTATION OF VERNAL POOLS IN NEW HAMPSHIRE," 1997, NEW HAMPSHIRE FISH AND GAME DEPARTMENT, NONGAME AND ANDANGERED WILDLIFE PROGRAM.
4. GZA PERFORMED A WETLANDS FUNCTION AND VALUES ASSESSMENT IN ACCORDANCE WITH THE ACOE'S "HIGHWAY METHODOLOGY WORKBOOK SUPPLEMENT," SEPTEMBER 1999, IN THE TOWN OF STRAFFORD.
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. ALL AREAS SHALL BE STABILIZED WITH 45 DAYS OF INITIAL DISTURBANCE.


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 AGAINST EROSION, AS NECESSARY.
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.

UNLESS SPECIFICALLY STATED BY WRITTEN AGREEMENT, THIS DRAWING IS THE SOLE PROPERTY OF GZA GEOENVIRONMENTAL, INC. (GZA). THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR THE USE BY GZA'S CLIENT OR THE CLIENT'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY THE CLIENT OR OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA.

391, 373, & 385 TRANSMISSION LINE STRUCTURE REPLACEMENT PROJECT
AUBURN, CHESTER, CANDIA, RAYMOND, DEERFIELD, STRAFFORD, AND ROCHESTER
NEW HAMPSHIRE

NOTES

PREPARED BY:  GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: EVERSOURCE ENERGY	
PROJ MGR: LEW	REVIEWED BY: AJD	CHECKED BY: DMZ	SHEET 1 1 OF 2
DESIGNED BY: MJD	DRAWN BY: MJD	SCALE:	
DATE: 04/24/2019	PROJECT NO: 04.0190923.01	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:

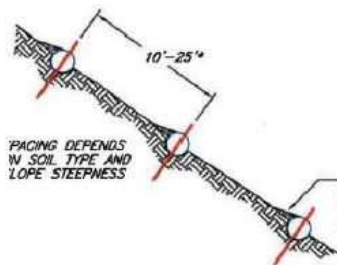
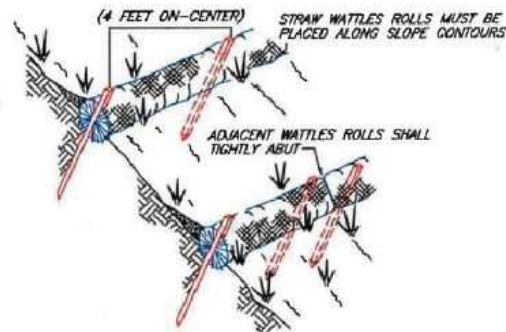
- * Along erodible or unstabilized slopes
- * Spread overland waterflow
- * Trap sediment
- * Around storm drain inlets to slow water and settle out sediment
- * Overlap ends approximately 6 inches

Installation:

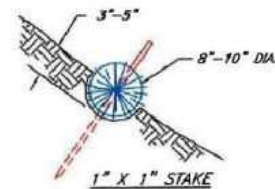
Straw wattles are installed parallel to slope contours and perpendicular to sheet flow.

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

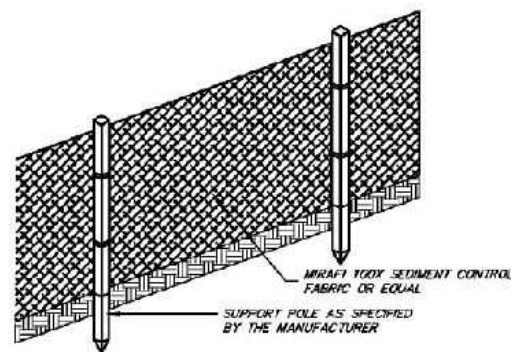
Trenching - 2"-5" inch trench
Stacking - at each end and four foot on center (i.e. 25 foot wattle uses 6 stacks)



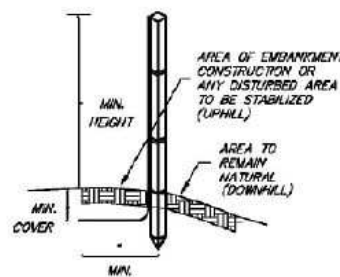
SEDIMENT, ORGANIC MATTER, AND NATIVE SEEDS ARE CAPTURED BEHIND THE WATTLE ROWS.



NOT TO SCALE



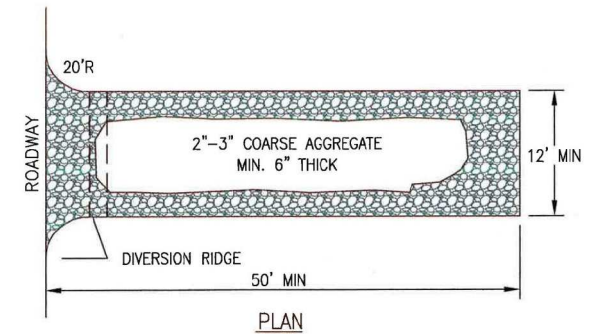
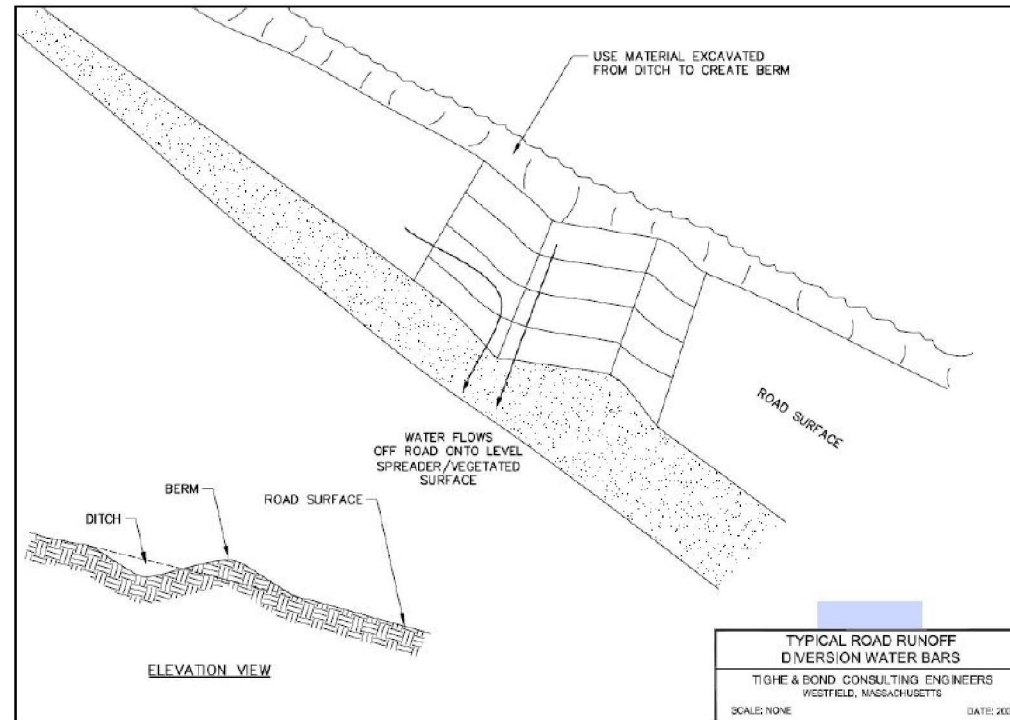
FRONT VIEW



SIDE VIEW

NOTES (SILT FENCE)

1. THE HEIGHT OF THE BARRIER SHALL NOT EXCEED 36 INCHES.
2. WHEN JOINTS ARE NECESSARY, FILTER CLOTH SHALL BE SPICED 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.



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

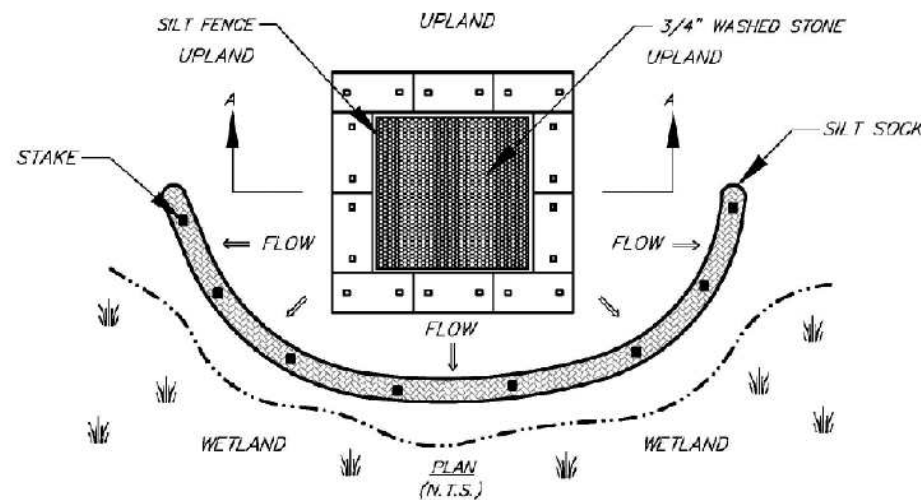
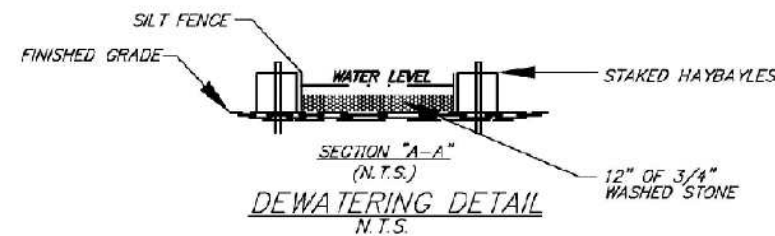


Figure 5



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391, 373, & 385 TRANSMISSION LINE STRUCTURE REPLACEMENT PROJECT
AUBURN, CHESTER, CANDIA, RAYMOND, DEERFIELD, STRAFFORD, AND ROCHESTER
NEW HAMPSHIRE

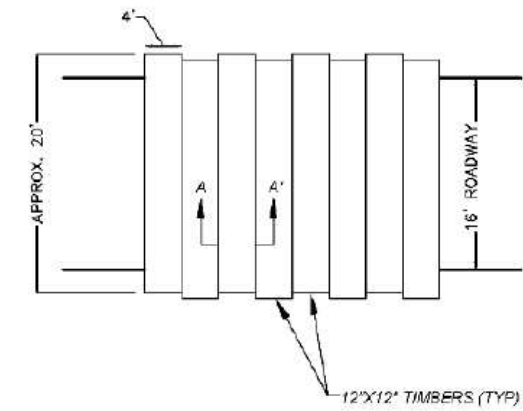
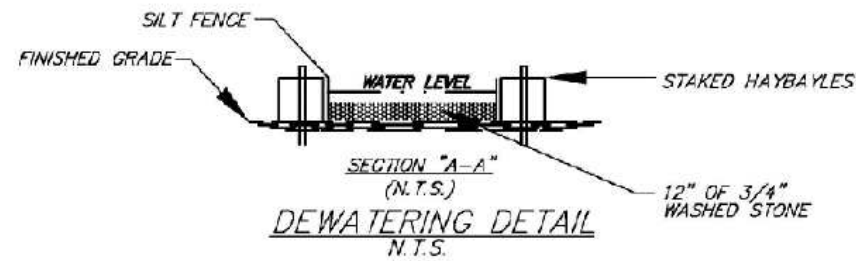
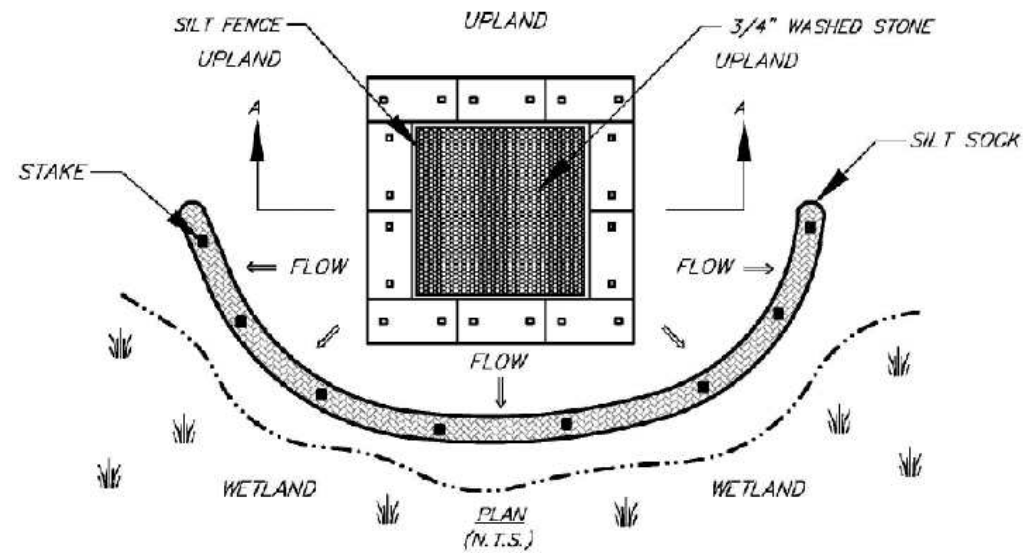
BMP DETAILS

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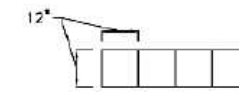
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ENERGY

PROJ MGR: LEW	REVIEWED BY: AJD	CHECKED BY: DMZ	SHEET 2
DESIGNED BY: MJD	DRAWN BY: MJD	SCALE:	
DATE: 04/24/2019	PROJECT NO: 04.0190923.01	REVISION NO:	

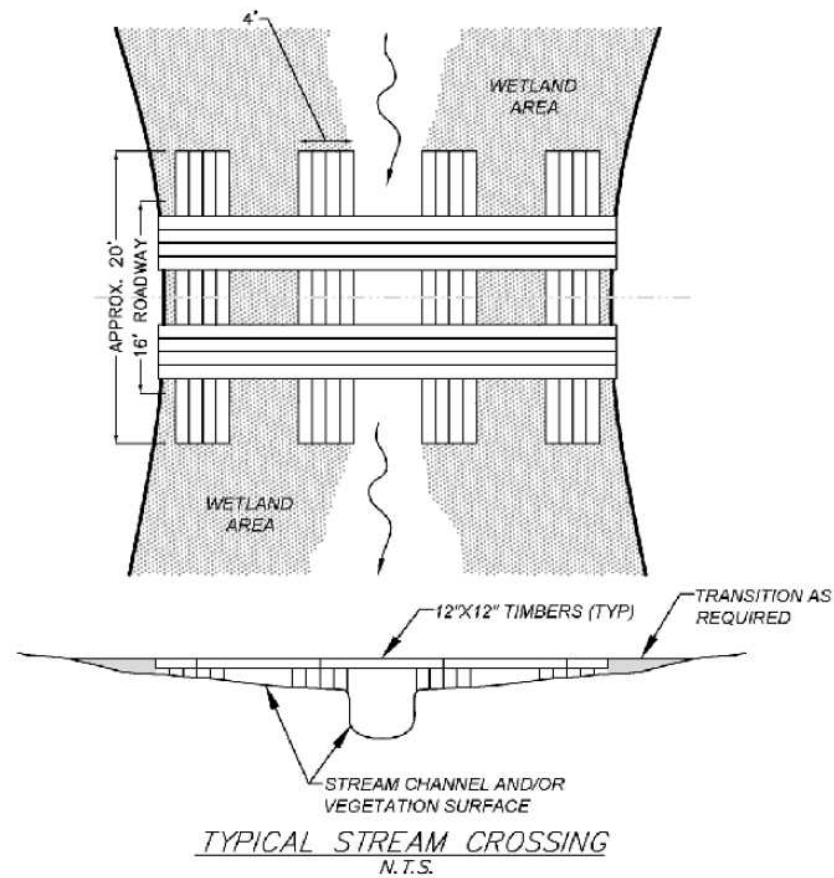
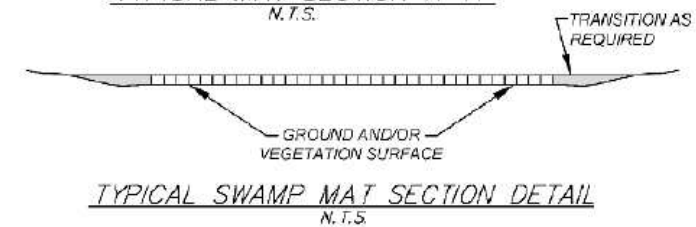
© 2019 - GZA GeoEnvironmental, Inc. P:\04jobs\01909023.00 - Eversource MSA04.0190923.01 - 391 Transmission Line\Figures\MXD\391 373 385 AcT NOTESHEET 3- BMPs 2.mxd, 4/24/2019, 1:33:43 PM, lindsey.white



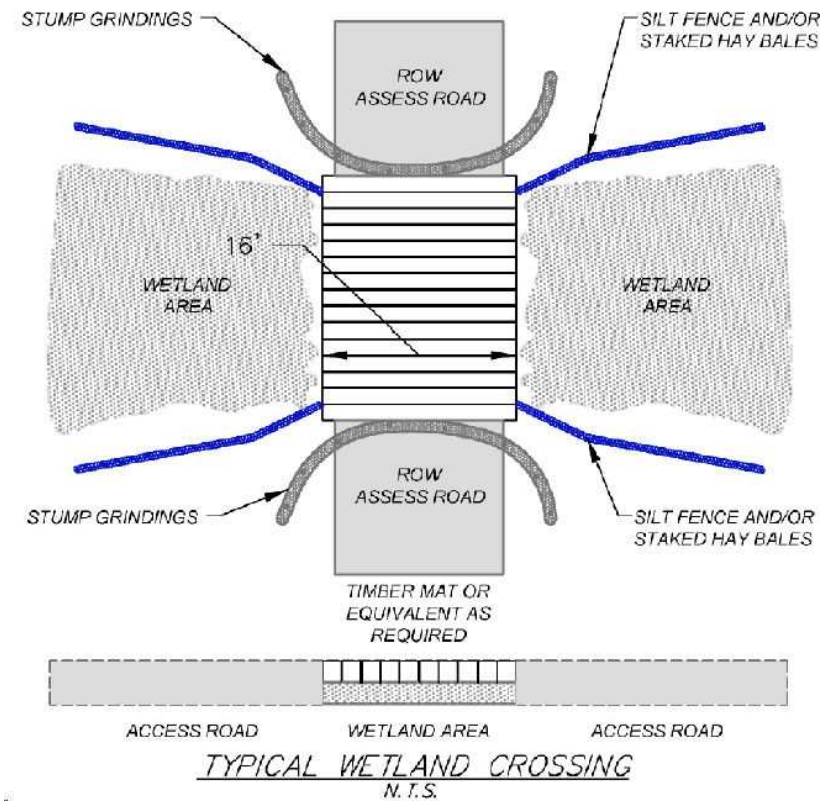
TYPICAL SWAMP MAT PLAN VIEW
N.T.S.



TYPICAL MAT SECTION A-A
N.T.S.



TYPICAL STREAM CROSSING
N.T.S.



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391, 373, & 385 TRANSMISSION LINE STRUCTURE REPLACEMENT PROJECT
AUBURN, CHESTER, CANDIA, RAYMOND, DEERFIELD, STRAFFORD, AND ROCHESTER
NEW HAMPSHIRE

BMP DETAILS

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DESIGNED BY: MJD	DRAWN BY: MJD	SCALE:	
DATE: 04/24/2019	PROJECT NO. 04.0190923.01	REVISION NO.	



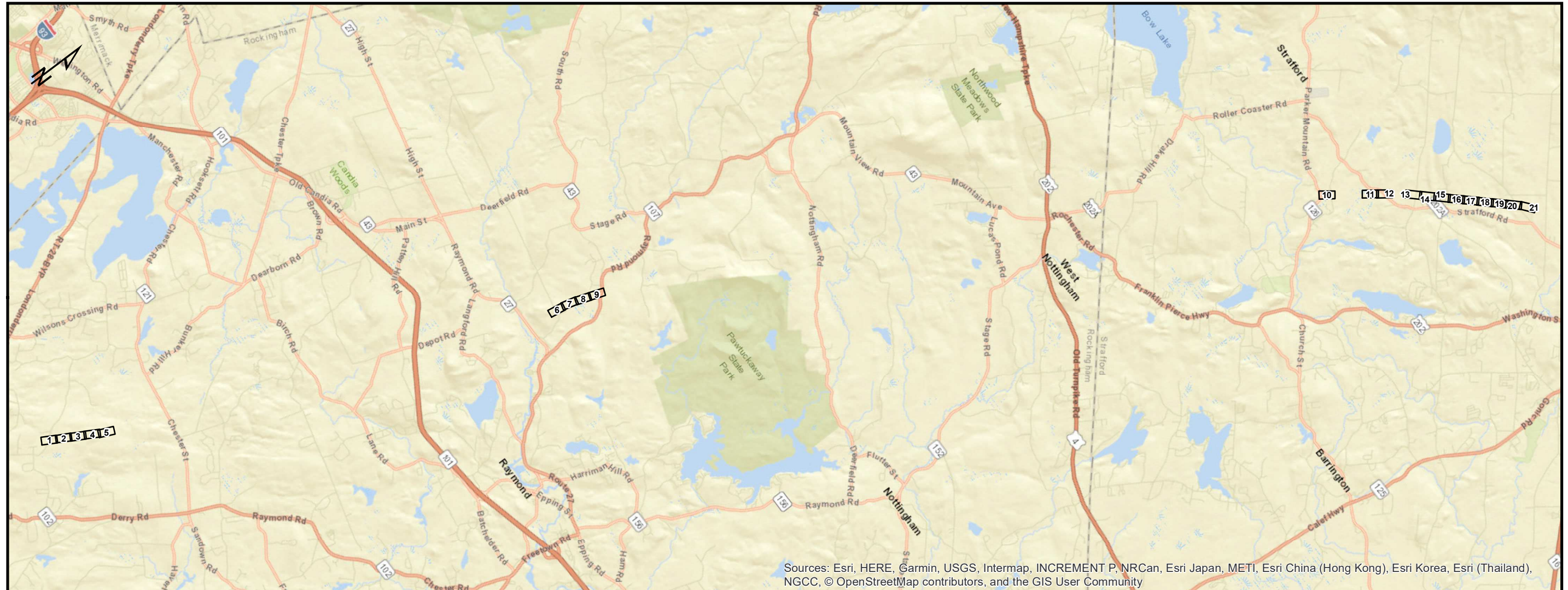
Figure 4 – Alteration of Terrain Permitting Plans

391, 373, & 385 TRANSMISSION LINE STRUCTURE REPLACEMENT PROJECT

ALTERATION OF TERRAIN PERMITTING PLANS

AUBURN, CHESTER, CANDIA, RAYMOND, DEERFIELD, STRAFFORD, AND ROCHESTER,
NEW HAMPSHIRE

4/26/2019



PREPARED FOR



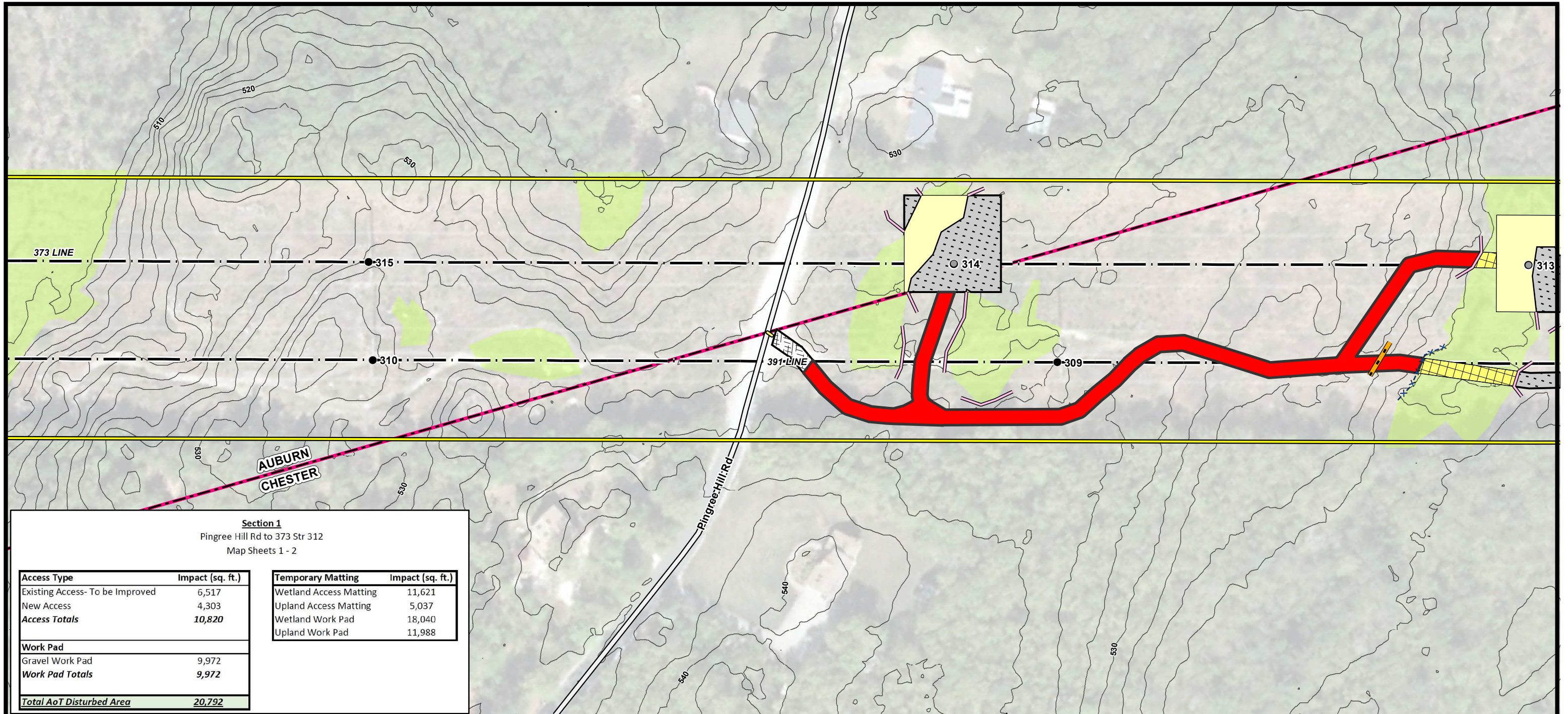
INDEX OF FIGURES

1 inch = 10,517 feet

- T1: TITLE SHEET
- 1-21: MAP SHEETS
- S1: NOTES
- S2: DETAILS
- S3: DETAILS (CONTINUED)

PREPARED BY





Section 1
Pingree Hill Rd to 373 Str 312
Map Sheets 1 - 2

Access Type	Impact (sq. ft.)
Existing Access- To be Improved	6,517
New Access	4,303
Access Totals	10,820
Work Pad	
Gravel Work Pad	9,972
Work Pad Totals	9,972
Total AoT Disturbed Area	20,792

Temporary Matting	Impact (sq. ft.)
Wetland Access Matting	11,621
Upland Access Matting	5,037
Wetland Work Pad	18,040
Upland Work Pad	11,988



- ← Londonderry
- Rochester
- 2FT ELEVATION CONTOURS
- PRIMARY ACCESS ROAD
- SECONDARY ACCESS ROAD
- APPROXIMATE ROW
- AOT DISTURBANCE AREA
- GRAVEL WORK PAD
- UPLAND WORK PAD
- WETLAND WORK PAD
- EXISTING STRUCTURE - NO PROPOSED WORK
- EXISTING STRUCTURE TO BE REPLACED
- FIELD DELINEATED WETLANDS
- RAILROAD
- TRANSMISSION LINE
- X-X- FENCE
- FENCE GATE
- ○ ○ ROCK WALL

- Current Town: Auburn/Chester**
- NHD FLOWLINE
 - SHORELAND ZONE
 - BMP TYPE**
 - X-X- SILT FENCE
 - STRAW WATTLE
 - WATER BAR
 - ACCESS TYPE**
 - EXISTING-IMPROVED
 - UPLAND MATTING
 - WETLAND ACCESS MATTING
 - NHDOT ROAD
 - TOWN BOUNDARY

NOTES:

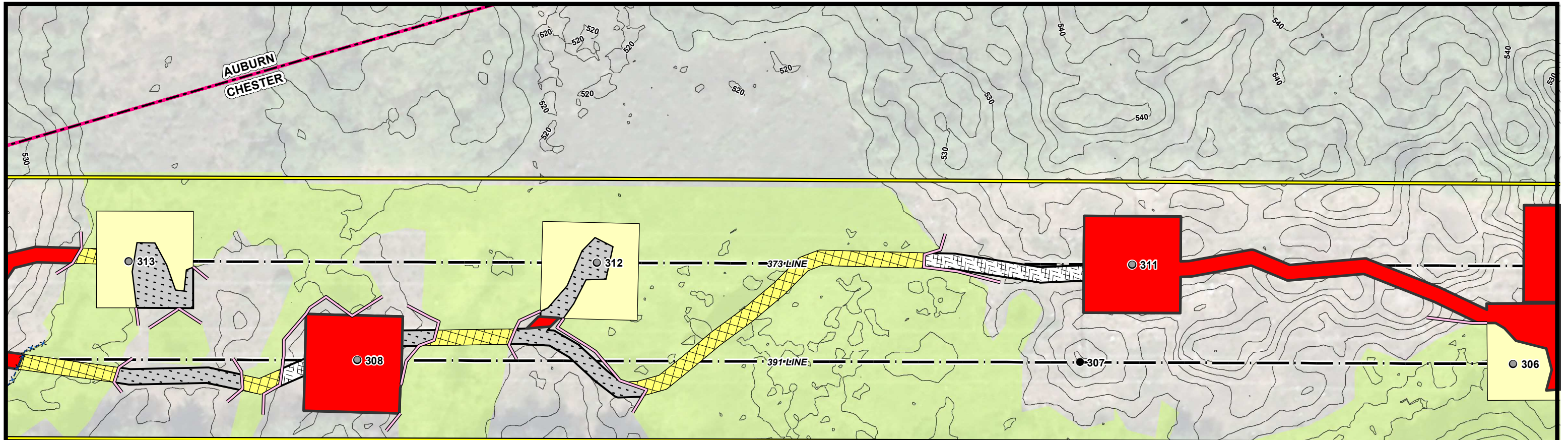
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3. DATA LAYERS INCLUDING "NHDOT ROAD", "NHD FLOWLINE", "TOWN BOUNDARY", AND "PARCEL BOUNDARY" WERE OBTAINED FROM NH GRANIT CLEARINGHOUSE.
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6. "2FT ELEVATION CONTOURS" WERE GENERATED USING LIDAR DATA FROM NH GRANIT CLEARINGHOUSE (CONNECTICUT RIVER WATERSHED 2015 AND COASTAL NEW HAMPSHIRE 2011).

**373, 391, & 385 TRANSMISSION LINE
STRUCTURE REPLACEMENT PROJECT**

ALTERATION OF TERRAIN PLANS
APRIL 26, 2019

AUBURN, CHESTER, CANDIA, RAYMOND,
DEERFIELD, ROCHESTER, & STRAFFORD
NEW HAMPSHIRE
PAGE 1 OF 21





Section 1
Pingree Hill Rd to 373 Str 312
Map Sheets 1 - 2

Access Type	Impact (sq. ft.)
Existing Access- To be Improved	6,517
New Access	4,303
Access Totals	10,820

Temporary Matting	Impact (sq. ft.)
Wetland Access Matting	11,621
Upland Access Matting	5,037
Wetland Work Pad	18,040
Upland Work Pad	11,988

Work Pad	Impact (sq. ft.)
Gravel Work Pad	9,972
Work Pad Totals	9,972

Total AoT Disturbed Area	20,792
---------------------------------	---------------

Section 2
Area A
373 Str 311 to 373 Str 305
Map Sheets 2-4

Access Type	Impact (sq. ft.)
Existing- To be improved	40,626
New Access	1,959
Access Totals	42,585

Temporary Matting	Impact (sq. ft.)
Wetland Access Matting	5,886
Upland Access Matting	0
Wetland Work Pad	9,003
Upland Work Pad	0

Work Pad	Impact (sq. ft.)
Gravel Work Pad	114,864
Work Pad Totals	114,864

Total AoT Disturbed Area	157,449
---------------------------------	----------------

* Exceeds 100,000 SF threshold



Current Town: Chester

- 2FT ELEVATION CONTOURS
- PRIMARY ACCESS ROAD
- SECONDARY ACCESS ROAD
- APPROXIMATE ROW
- AOT DISTURBANCE AREA
- GRAVEL WORK PAD
- UPLAND WORK PAD
- WETLAND WORK PAD
- EXISTING STRUCTURE - NO PROPOSED WORK
- EXISTING STRUCTURE TO BE REPLACED
- FIELD DELINEATED WETLANDS
- RAILROAD
- TRANSMISSION LINE
- FENCE
- FENCE GATE
- ROCK WALL

BMP TYPE

- NHD FLOWLINE
- SHORELAND ZONE
- SILT FENCE
- STRAW WATTLE
- WATER BAR

ACCESS TYPE

- EXISTING-IMPROVED
- UPLAND MATTING
- WETLAND ACCESS MATTING
- NHDOT ROAD
- TOWN BOUNDARY

NOTES:

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**373, 391, & 385 TRANSMISSION LINE
STRUCTURE REPLACEMENT PROJECT**

ALTERATION OF TERRAIN PLANS
APRIL 26, 2019

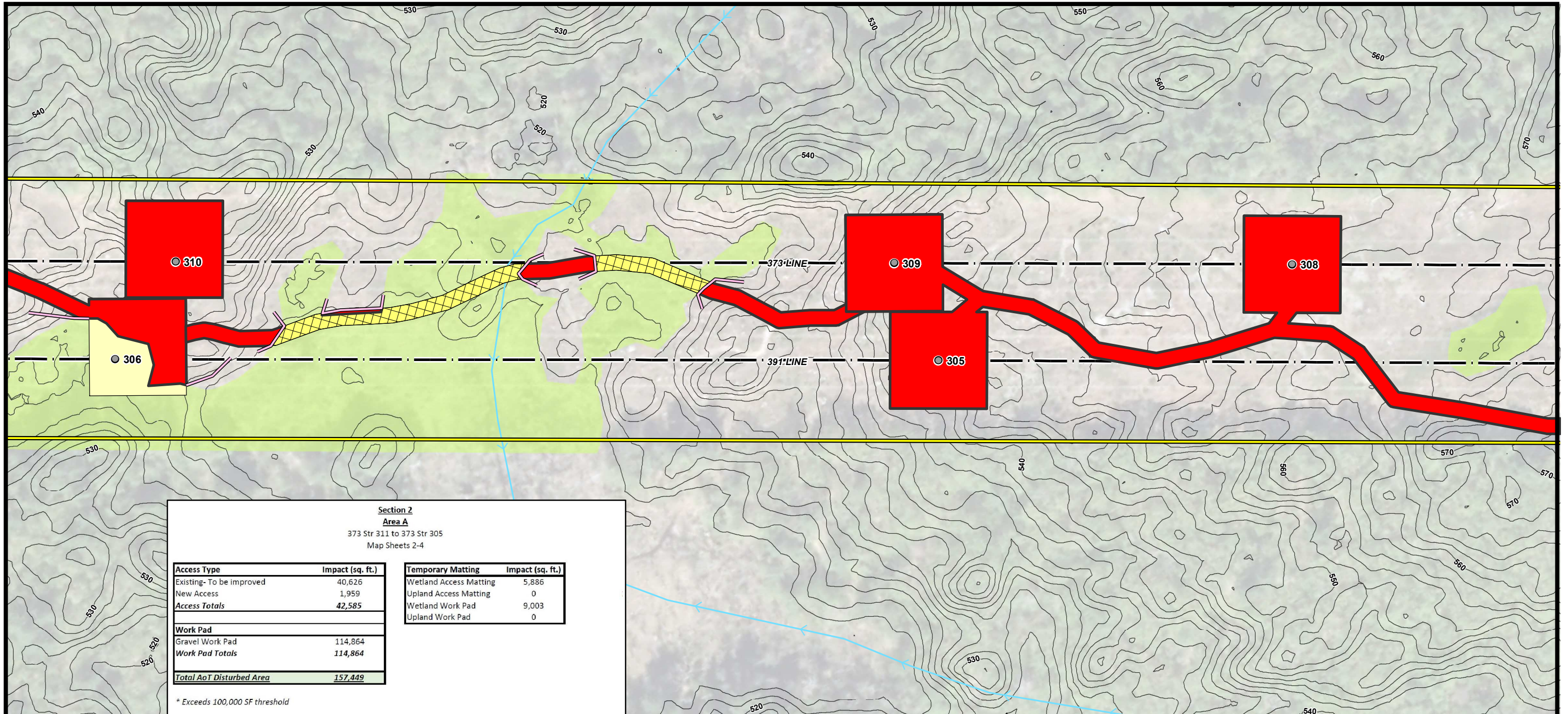
AUBURN, CHESTER, CANDIA, RAYMOND,
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NEW HAMPSHIRE
PAGE 2 OF 21

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1 inch = 100 feet



**Section 2
Area A**
373 Str 311 to 373 Str 305
Map Sheets 2-4

Access Type	Impact (sq. ft.)	Temporary Matting	Impact (sq. ft.)
Existing- To be improved	40,626	Wetland Access Matting	5,886
New Access	1,959	Upland Access Matting	0
Access Totals	42,585	Wetland Work Pad	9,003
		Upland Work Pad	0
Work Pad			
Gravel Work Pad	114,864		
Work Pad Totals	114,864		
Total AoT Disturbed Area	157,449		

* Exceeds 100,000 SF threshold



Current Town: Chester

← Londonderry Rochester →

- 2FT ELEVATION CONTOURS
- PRIMARY ACCESS ROAD
- SECONDARY ACCESS ROAD
- APPROXIMATE ROW
- AOT DISTURBANCE AREA
- GRAVEL WORK PAD
- UPLAND WORK PAD
- WETLAND WORK PAD
- EXISTING STRUCTURE - NO PROPOSED WORK
- EXISTING STRUCTURE TO BE REPLACED
- FIELD DELINEATED WETLANDS
- RAILROAD
- TRANSMISSION LINE
- X-X- FENCE
- FENCE GATE
- ○ ○ ROCK WALL

Current Town: Chester

- NHD FLOWLINE
- SHORELAND ZONE

BMP TYPE

- X-X- SILT FENCE
- STRAW WATTLE
- WATER BAR

ACCESS TYPE

- EXISTING-IMPROVED
- UPLAND MATTING
- WETLAND ACCESS MATTING
- NHDOT ROAD
- TOWN BOUNDARY

NOTES:

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**373, 391, & 385 TRANSMISSION LINE
STRUCTURE REPLACEMENT PROJECT**

ALTERATION OF TERRAIN PLANS
APRIL 26, 2019

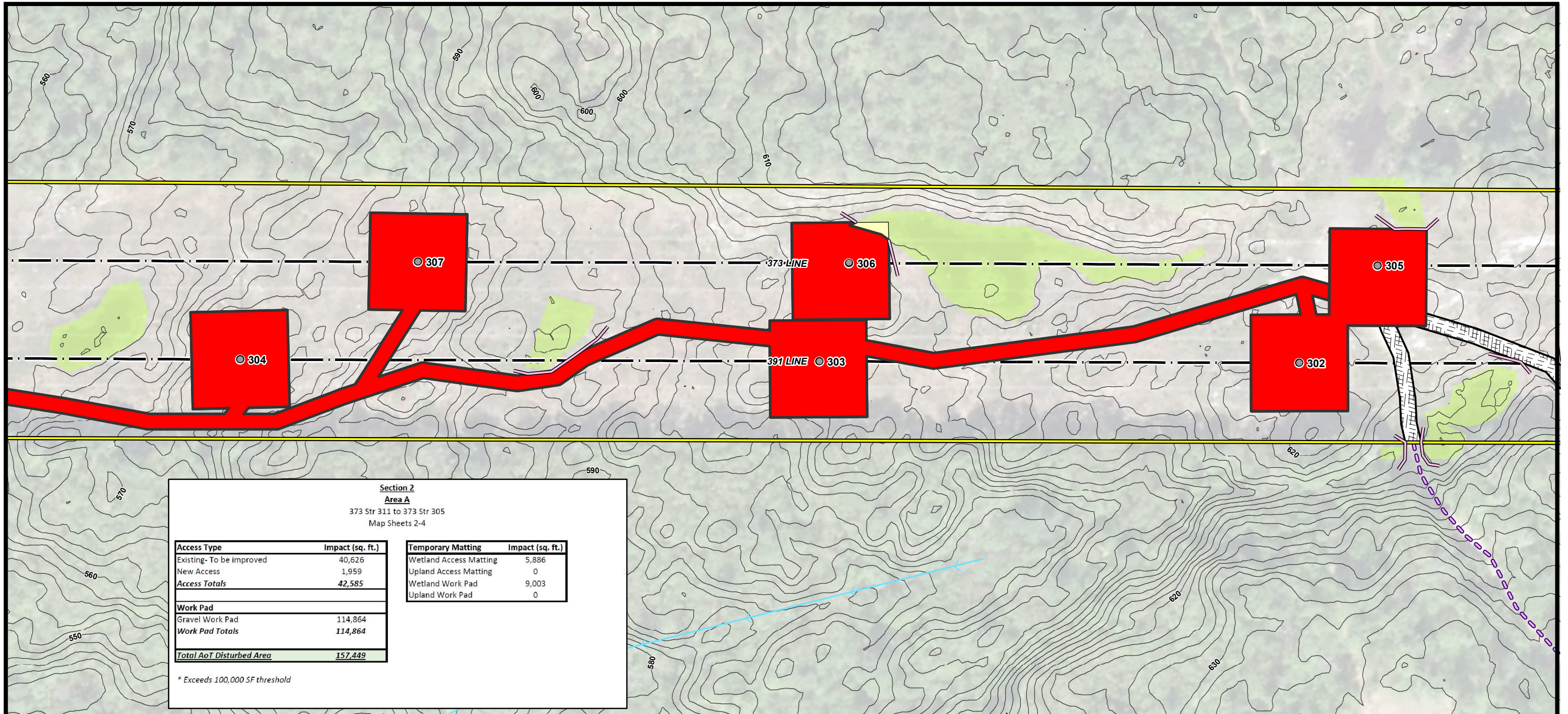
AUBURN, CHESTER, CANDIA, RAYMOND,
DEERFIELD, ROCHESTER, & STRAFFORD
NEW HAMPSHIRE
PAGE 3 OF 21

Project No.: 04.0190923.01

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Section 2
Area A
373 Str 311 to 373 Str 305
Map Sheets 2-4

Access Type	Impact (sq. ft.)	Temporary Matting	Impact (sq. ft.)
Existing- To be improved	40,626	Wetland Access Matting	5,886
New Access	1,959	Upland Access Matting	0
Access Totals	42,585	Wetland Work Pad	9,003
		Upland Work Pad	0
Work Pad			
Gravel Work Pad	114,864		
Work Pad Totals	114,864		
Total AoT Disturbed Area	157,449		

* Exceeds 100,000 SF threshold



Current Town: Chester

← Londonderry Rochester →

<ul style="list-style-type: none"> — 2FT ELEVATION CONTOURS — PRIMARY ACCESS ROAD — SECONDARY ACCESS ROAD — APPROXIMATE ROW ■ AOT DISTURBANCE AREA ■ GRAVEL WORK PAD ■ UPLAND WORK PAD ■ WETLAND WORK PAD ● EXISTING STRUCTURE - NO PROPOSED WORK ● EXISTING STRUCTURE TO BE REPLACED ■ FIELD DELINEATED WETLANDS — RAILROAD — TRANSMISSION LINE -X-X- FENCE — FENCE GATE ○ ○ ○ ROCK WALL 	<ul style="list-style-type: none"> → NHD FLOWLINE — SHORELAND ZONE BMP TYPE -X-X- SILT FENCE — STRAW WATTLE — WATER BAR ACCESS TYPE ■ EXISTING-IMPROVED ■ UPLAND MATTING ■ WETLAND ACCESS MATTING — NHDOT ROAD — TOWN BOUNDARY 	<p>NOTES:</p> <ol style="list-style-type: none"> 1. AERIAL IMAGERY WAS OBTAINED FROM NH GRANIT CLEARINGHOUSE AND IS DATED 2015. 2. EXISTING STRUCTURE AND TRANSMISSION LINE WERE PROVIDED BY EVERSOURCE ENERGY. 3. DATA LAYERS INCLUDING "NHDOT ROAD", "NHD FLOWLINE", "TOWN BOUNDARY", AND "PARCEL BOUNDARY" WERE OBTAINED FROM NH GRANIT CLEARINGHOUSE. 4. APPROXIMATE ROW WAS GENERATED USING MILESHEETS PROVIDED BY EVERSOURCE ENERGY. 5. THE DATA LAYER "FIELD DELINEATED WETLANDS" WAS DELINEATED BY TIGHE & BOND IN 2018 AND VERIFIED BY GZA IN 2019. 6. "2FT ELEVATION CONTOURS" WERE GENERATED USING LIDAR DATA FROM NH GRANIT CLEARINGHOUSE (CONNECTICUT RIVER WATERSHED 2015 AND COASTAL NEW HAMPSHIRE 2011).
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**373, 391, & 385 TRANSMISSION LINE
STRUCTURE REPLACEMENT PROJECT**

ALTERATION OF TERRAIN PLANS
APRIL 26, 2019

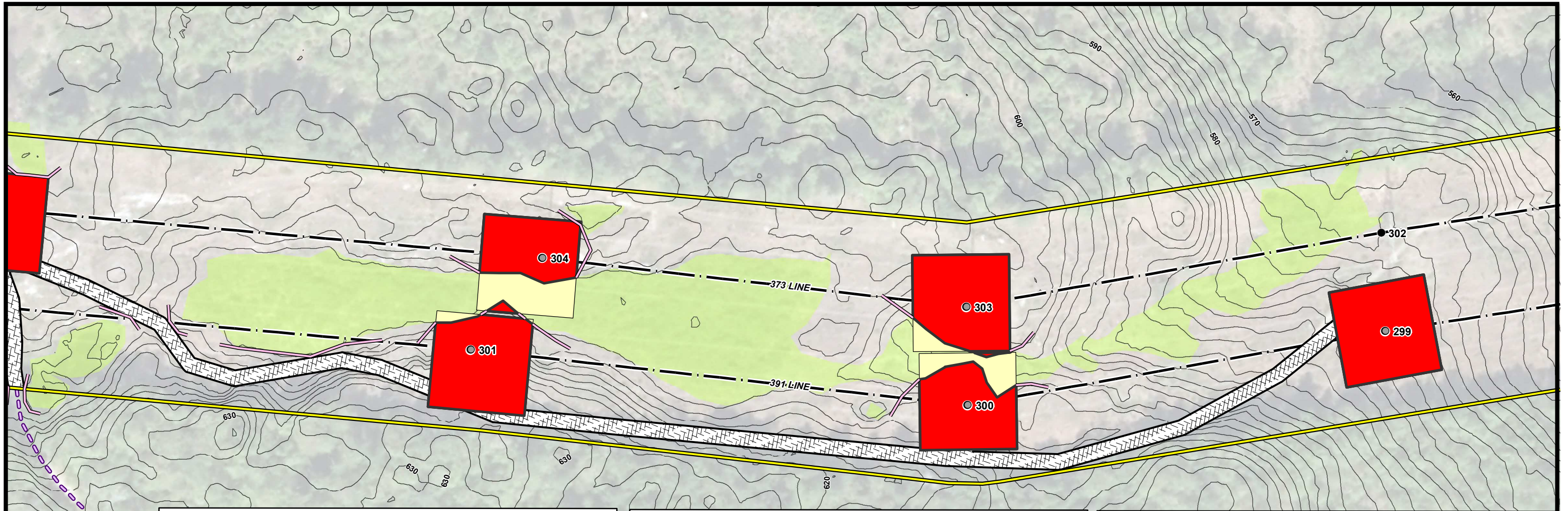
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Section 3
373 Str 304 and 391 Str 301
Map Sheet 5

Access Type	Impact (sq. ft.)	Temporary Matting	Impact (sq. ft.)
Existing- To be improved	0	Wetland Access Matting	0
New Access	0	Upland Access Matting	0
Access Totals	0	Wetland Work Pad	4,080
		Upland Work Pad	0
Work Pad			
Gravel Work Pad	15,920		
Work Pad Totals	15,920		
Total AoT Disturbed Area		15,920	

Section 4
373 Str 303 and 391 Str 300
Map Sheet 5

Access Type	Impact (sq. ft.)	Temporary Matting	Impact (sq. ft.)
Existing- To be improved	0	Wetland Access Matting	0
New Access	0	Upland Access Matting	0
Access Totals	0	Wetland Work Pad	3,072
		Upland Work Pad	0
Work Pad			
Gravel Work Pad	16,928		
Work Pad Totals	16,928		
Total AoT Disturbed Area		16,928	

Section 5
391 Str 299
Map Sheet 5

Access Type	Impact (sq. ft.)	Temporary Matting	Impact (sq. ft.)
Existing- To be improved	0	Wetland Access Matting	0
New Access	0	Upland Access Matting	0
Access Totals	0	Wetland Work Pad	0
		Upland Work Pad	0
Work Pad			
Gravel Work Pad	10,000		
Work Pad Totals	10,000		
Total AoT Disturbed Area		10,000	



Current Town: Chester

Legend:

- 2FT ELEVATION CONTOURS
- PRIMARY ACCESS ROAD
- SECONDARY ACCESS ROAD
- APPROXIMATE ROW
- AOT DISTURBANCE AREA
- GRAVEL WORK PAD
- UPLAND WORK PAD
- WETLAND WORK PAD
- EXISTING STRUCTURE - NO PROPOSED WORK
- EXISTING STRUCTURE TO BE REPLACED
- FIELD DELINEATED WETLANDS
- RAILROAD
- TRANSMISSION LINE
- FENCE
- FENCE GATE
- ROCK WALL
- NHD FLOWLINE
- SHORELAND ZONE
- BMP TYPE**
- SILT FENCE
- STRAW WATTLE
- WATER BAR
- ACCESS TYPE**
- EXISTING-IMPROVED
- UPLAND MATTING
- WETLAND ACCESS MATTING
- NHDOT ROAD
- TOWN BOUNDARY

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**373, 391, & 385 TRANSMISSION LINE
STRUCTURE REPLACEMENT PROJECT**

ALTERATION OF TERRAIN PLANS
APRIL 26, 2019

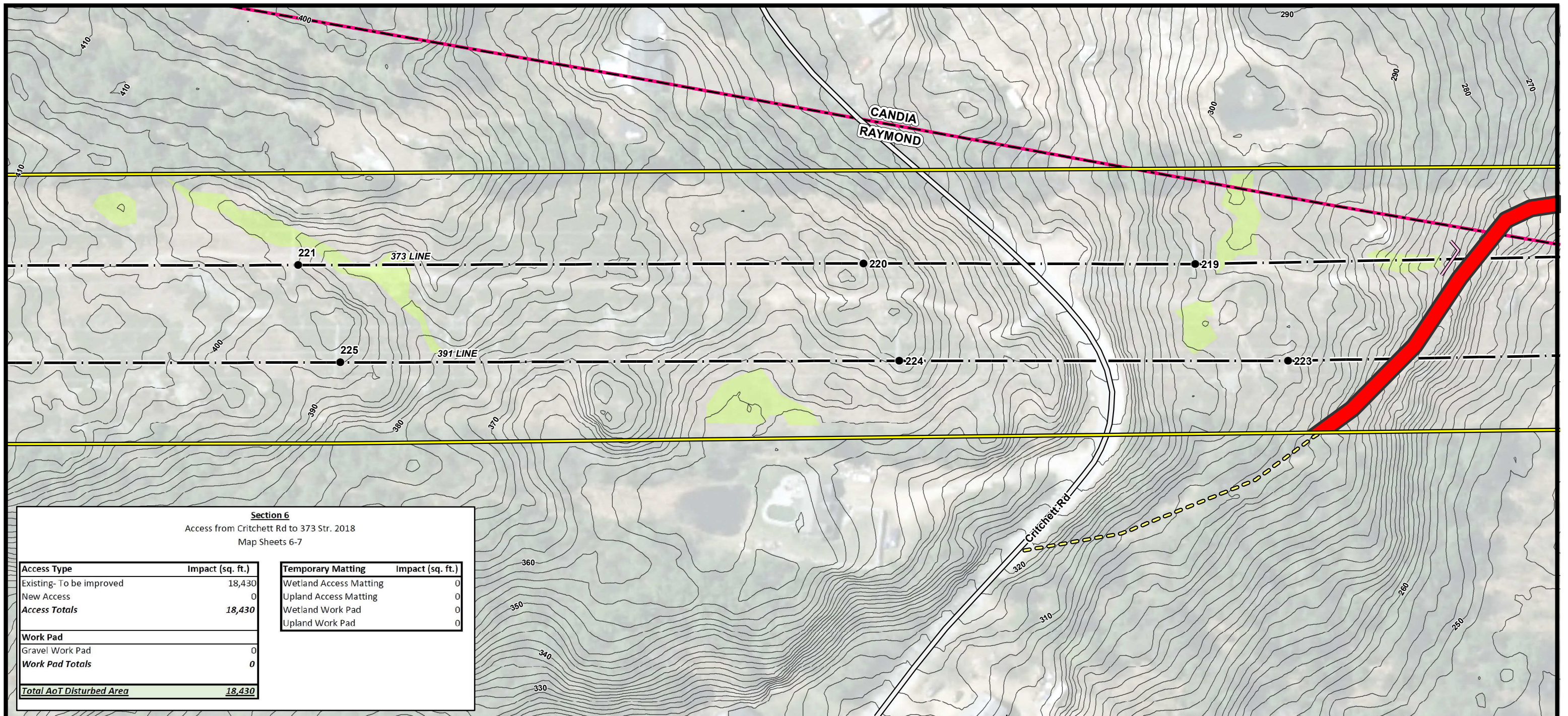
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NEW HAMPSHIRE
PAGE 5 OF 21

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1 inch = 100 feet



Section 6
Access from Critchett Rd to 373 Str. 2018
Map Sheets 6-7

Access Type	Impact (sq. ft.)
Existing- To be improved	18,430
New Access	0
Access Totals	18,430
Work Pad	
Gravel Work Pad	0
Work Pad Totals	0
Total AoT Disturbed Area	18,430

Temporary Matting	Impact (sq. ft.)
Wetland Access Matting	0
Upland Access Matting	0
Wetland Work Pad	0
Upland Work Pad	0



Current Town: Candia/Raymond

- 2FT ELEVATION CONTOURS
- PRIMARY ACCESS ROAD
- SECONDARY ACCESS ROAD
- APPROXIMATE ROW
- AOT DISTURBANCE AREA
- GRAVEL WORK PAD
- UPLAND WORK PAD
- WETLAND WORK PAD
- EXISTING STRUCTURE - NO PROPOSED WORK
- EXISTING STRUCTURE TO BE REPLACED
- FIELD DELINEATED WETLANDS
- RAILROAD
- TRANSMISSION LINE
- FENCE
- FENCE GATE
- ROCK WALL

BMP TYPE

- SILT FENCE
- STRAW WATTLE
- WATER BAR

ACCESS TYPE

- EXISTING-IMPROVED
- UPLAND MATTING
- WETLAND ACCESS MATTING
- NHDOT ROAD
- TOWN BOUNDARY

NOTES:

- AERIAL IMAGERY WAS OBTAINED FROM NH GRANIT CLEARINGHOUSE AND IS DATED 2015.
- EXISTING STRUCTURE AND TRANSMISSION LINE WERE PROVIDED BY EVERSOURCE ENERGY.
- DATA LAYERS INCLUDING "NHDOT ROAD", "NHD FLOWLINE", "TOWN BOUNDARY", AND "PARCEL BOUNDARY" WERE OBTAINED FROM NH GRANIT CLEARINGHOUSE.
- APPROXIMATE ROW WAS GENERATED USING MILESHEETS PROVIDED BY EVERSOURCE ENERGY.
- THE DATA LAYER "FIELD DELINEATED WETLANDS" WAS DELINEATED BY TIGHE & BOND IN 2018 AND VERIFIED BY GZA IN 2019.
- "2FT ELEVATION CONTOURS" WERE GENERATED USING LIDAR DATA FROM NH GRANIT CLEARINGHOUSE (CONNECTICUT RIVER WATERSHED 2015 AND COASTAL NEW HAMPSHIRE 2011).

**373, 391, & 385 TRANSMISSION LINE
STRUCTURE REPLACEMENT PROJECT**

ALTERATION OF TERRAIN PLANS
APRIL 26, 2019

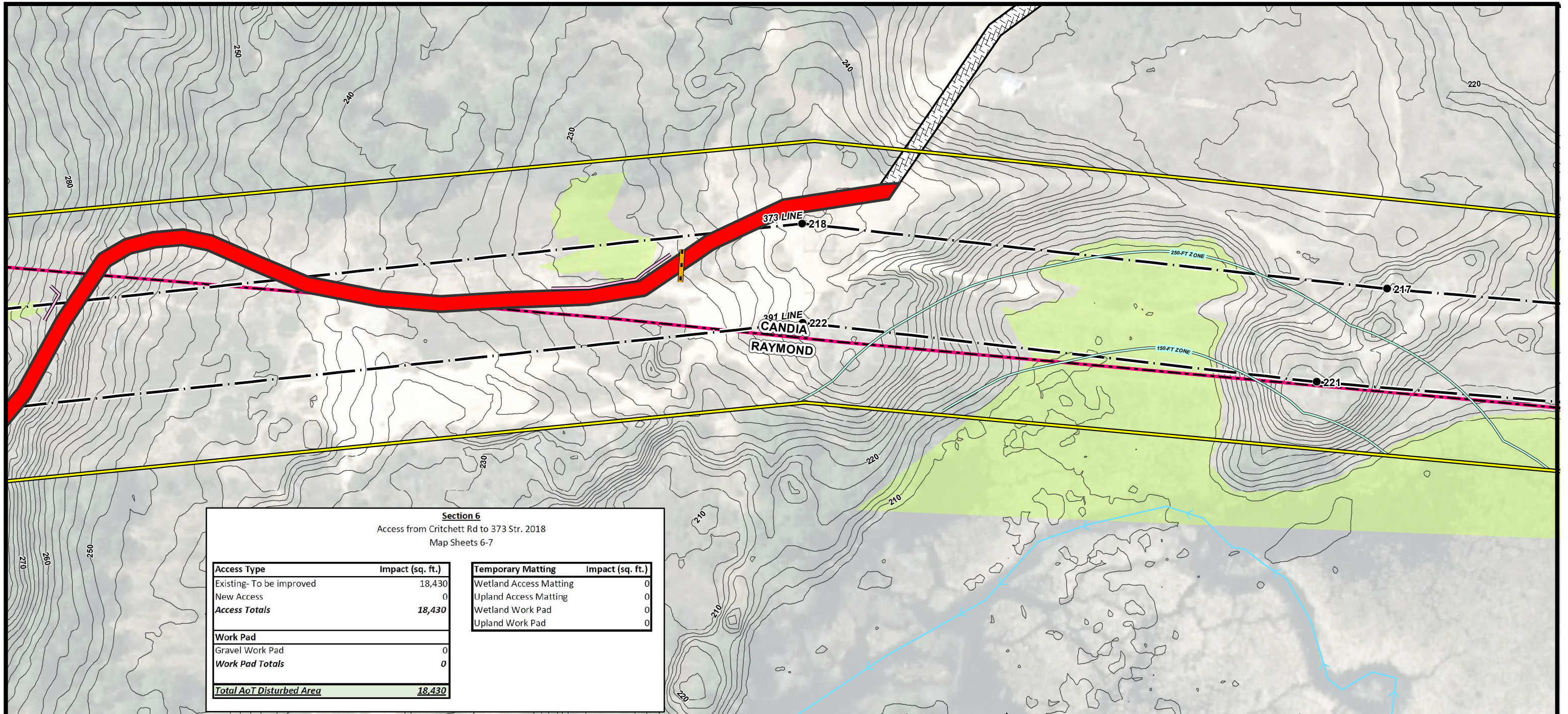
AUBURN, CHESTER, CANDIA, RAYMOND,
DEERFIELD, ROCHESTER, & STRAFFORD
NEW HAMPSHIRE
PAGE 6 OF 21

Project No.: 04.0190923.01

EVERSOURCE ENERGY

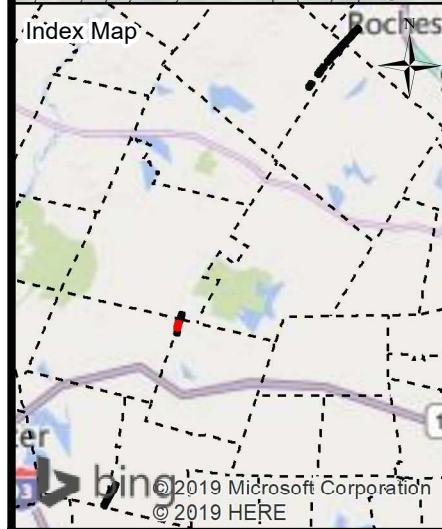
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1 inch = 100 feet



Section 6
Access from Critchett Rd to 373 Str. 2018
Map Sheets 6-7

Access Type	Impact (sq. ft.)	Temporary Matting	Impact (sq. ft.)
Existing- To be improved	18,430	Wetland Access Matting	0
New Access	0	Upland Access Matting	0
Access Totals	18,430	Wetland Work Pad	0
Work Pad		Upland Work Pad	0
Gravel Work Pad	0		
Work Pad Totals	0		
Total AoT Disturbed Area	18,430		



Current Town: Candia/Raymond

- 2FT ELEVATION CONTOURS
- PRIMARY ACCESS ROAD
- SECONDARY ACCESS ROAD
- APPROXIMATE ROW
- AOT DISTURBANCE AREA
- GRAVEL WORK PAD
- UPLAND WORK PAD
- WETLAND WORK PAD
- EXISTING STRUCTURE - NO PROPOSED WORK
- EXISTING STRUCTURE TO BE REPLACED
- FIELD DELINEATED WETLANDS
- RAILROAD
- TRANSMISSION LINE
- FENCE
- FENCE GATE
- ROCK WALL
- NHD FLOWLINE
- SHORELAND ZONE
- BMP TYPE**
- SILT FENCE
- STRAW WATTLE
- WATER BAR
- ACCESS TYPE**
- EXISTING-IMPROVED
- UPLAND MATTING
- WETLAND ACCESS MATTING
- NHDOT ROAD
- TOWN BOUNDARY

NOTES:

1. AERIAL IMAGERY WAS OBTAINED FROM NH GRANIT CLEARINGHOUSE AND IS DATED 2015.
2. EXISTING STRUCTURE AND TRANSMISSION LINE WERE PROVIDED BY EVERSOURCE ENERGY.
3. DATA LAYERS INCLUDING "NHDOT ROAD", "NHD FLOWLINE", "TOWN BOUNDARY", AND "PARCEL BOUNDARY" WERE OBTAINED FROM NH GRANIT CLEARINGHOUSE.
4. APPROXIMATE ROW WAS GENERATED USING MILESHEETS PROVIDED BY EVERSOURCE ENERGY.
5. THE DATA LAYER "FIELD DELINEATED WETLANDS" WAS DELINEATED BY TIGHE & BOND IN 2018 AND VERIFIED BY GZA IN 2019.
6. "2FT ELEVATION CONTOURS" WERE GENERATED USING LIDAR DATA FROM NH GRANIT CLEARINGHOUSE (CONNECTICUT RIVER WATERSHED 2015 AND COASTAL NEW HAMPSHIRE 2011).

**373, 391, & 385 TRANSMISSION LINE
STRUCTURE REPLACEMENT PROJECT**

ALTERATION OF TERRAIN PLANS
APRIL 26, 2019

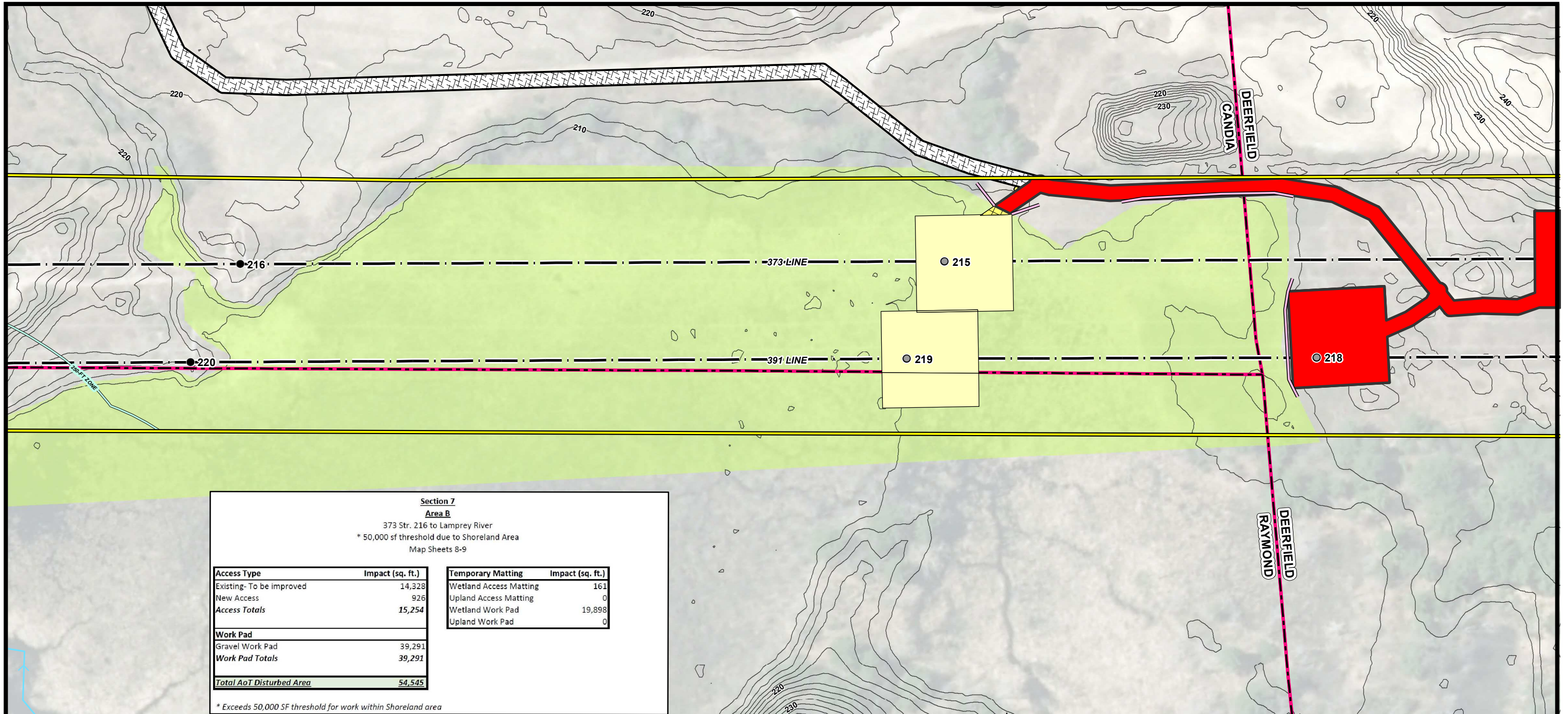
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NEW HAMPSHIRE
PAGE 7 OF 21

Project No.: 04.0190923.01

1 inch = 100 feet

EVERSOURCE ENERGY

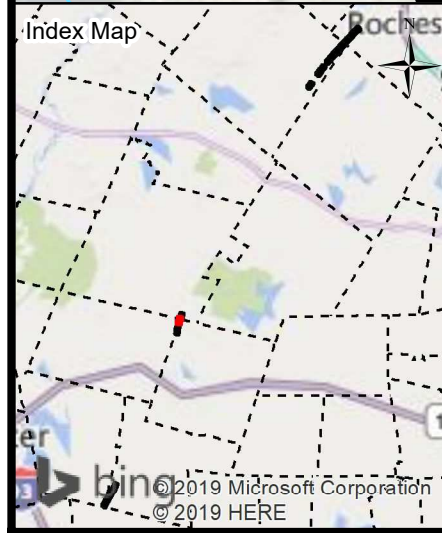
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**Section 7
Area B**
373 Str. 216 to Lamprey River
* 50,000 sf threshold due to Shoreland Area
Map Sheets 8-9

Access Type	Impact (sq. ft.)	Temporary Matting	Impact (sq. ft.)
Existing- To be improved	14,328	Wetland Access Matting	161
New Access	926	Upland Access Matting	0
Access Totals	15,254	Wetland Work Pad	19,898
		Upland Work Pad	0
Work Pad			
Gravel Work Pad	39,291		
Work Pad Totals	39,291		
Total AoT Disturbed Area	54,545		

* Exceeds 50,000 SF threshold for work within Shoreland area



Current Town: Candia/Raymond/Deerfield

- 2FT ELEVATION CONTOURS
- PRIMARY ACCESS ROAD
- SECONDARY ACCESS ROAD
- APPROXIMATE ROW
- AOT DISTURBANCE AREA
- GRAVEL WORK PAD
- UPLAND WORK PAD
- WETLAND WORK PAD
- EXISTING STRUCTURE - NO PROPOSED WORK
- EXISTING STRUCTURE TO BE REPLACED
- FIELD DELINEATED WETLANDS
- RAILROAD
- TRANSMISSION LINE
- FENCE
- FENCE GATE
- ROCK WALL
- NHD FLOWLINE
- SHORELAND ZONE
- BMP TYPE**
- SILT FENCE
- STRAW WATTLE
- WATER BAR
- ACCESS TYPE**
- EXISTING-IMPROVED
- UPLAND MATTING
- WETLAND ACCESS MATTING
- NHDOT ROAD
- TOWN BOUNDARY

NOTES:

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**373, 391, & 385 TRANSMISSION LINE
STRUCTURE REPLACEMENT PROJECT**

ALTERATION OF TERRAIN PLANS
APRIL 26, 2019

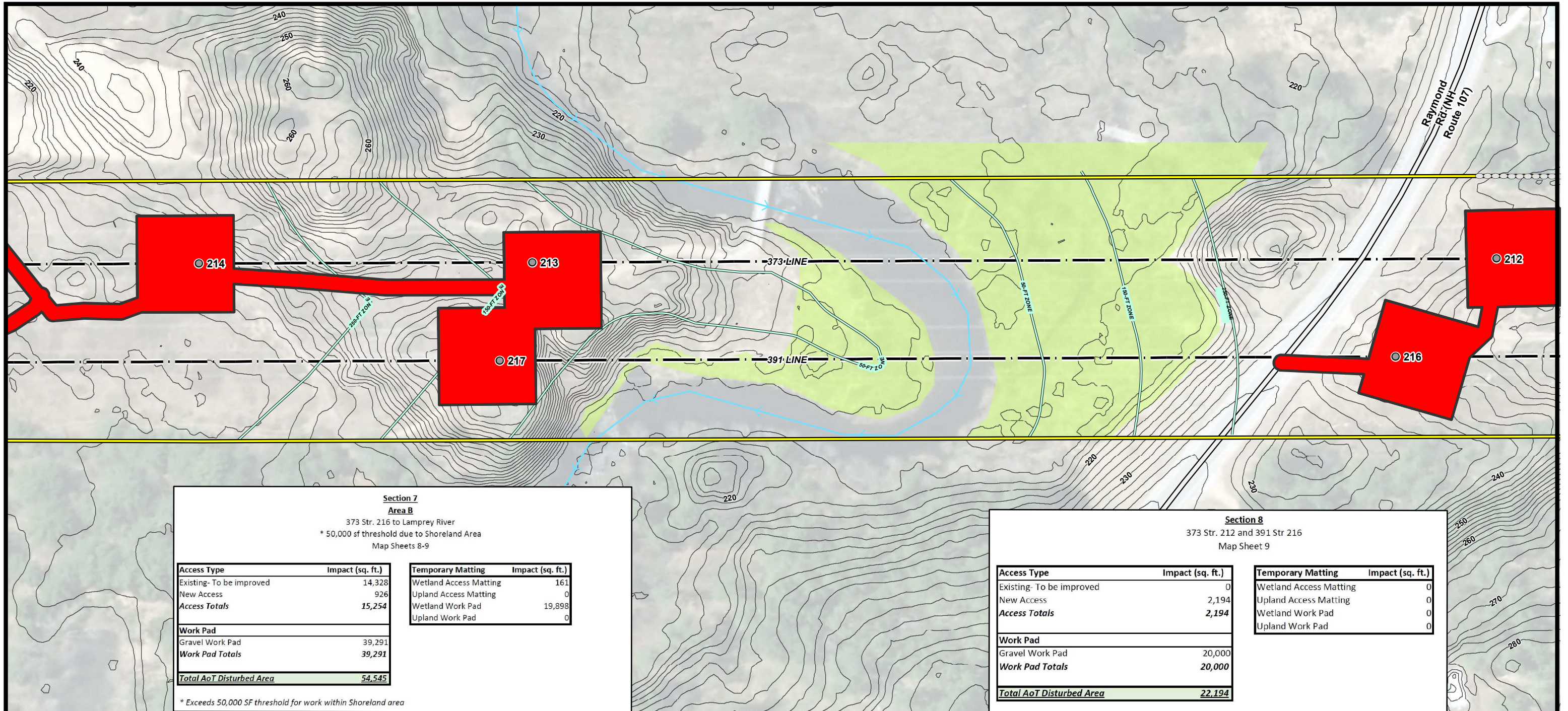
AUBURN, CHESTER, CANDIA, RAYMOND,
DEERFIELD, ROCHESTER, & STRAFFORD
NEW HAMPSHIRE
PAGE 8 OF 21

Project No.: 04.0190923.01

EVERSOURCE ENERGY

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1 inch = 100 feet



Section 7
Area B
 373 Str. 216 to Lamprey River
 * 50,000 sf threshold due to Shoreland Area
 Map Sheets 8-9

Access Type	Impact (sq. ft.)	Temporary Matting	Impact (sq. ft.)
Existing- To be improved	14,328	Wetland Access Matting	161
New Access	926	Upland Access Matting	0
Access Totals	15,254	Wetland Work Pad	19,898
		Upland Work Pad	0
Work Pad			
Gravel Work Pad	39,291		
Work Pad Totals	39,291		
Total AoT Disturbed Area	54,545		

* Exceeds 50,000 SF threshold for work within Shoreland area

Section 8
 373 Str. 212 and 391 Str 216
 Map Sheet 9

Access Type	Impact (sq. ft.)	Temporary Matting	Impact (sq. ft.)
Existing- To be improved	0	Wetland Access Matting	0
New Access	2,194	Upland Access Matting	0
Access Totals	2,194	Wetland Work Pad	0
		Upland Work Pad	0
Work Pad			
Gravel Work Pad	20,000		
Work Pad Totals	20,000		
Total AoT Disturbed Area	22,194		



Current Town: Deerfield

Legend:

- 2FT ELEVATION CONTOURS
- PRIMARY ACCESS ROAD
- SECONDARY ACCESS ROAD
- APPROXIMATE ROW
- AOT DISTURBANCE AREA
- GRAVEL WORK PAD
- UPLAND WORK PAD
- WETLAND WORK PAD
- EXISTING STRUCTURE - NO PROPOSED WORK
- EXISTING STRUCTURE TO BE REPLACED
- FIELD DELINEATED WETLANDS
- RAILROAD
- TRANSMISSION LINE
- FENCE
- FENCE GATE
- ROCK WALL
- NHD FLOWLINE
- SHORELAND ZONE
- BMP TYPE
- SILT FENCE
- STRAW WATTLE
- WATER BAR
- ACCESS TYPE
- EXISTING-IMPROVED
- UPLAND MATTING
- WETLAND ACCESS MATTING
- NHDOT ROAD
- TOWN BOUNDARY

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**373, 391, & 385 TRANSMISSION LINE
 STRUCTURE REPLACEMENT PROJECT**

ALTERATION OF TERRAIN PLANS
 APRIL 26, 2019

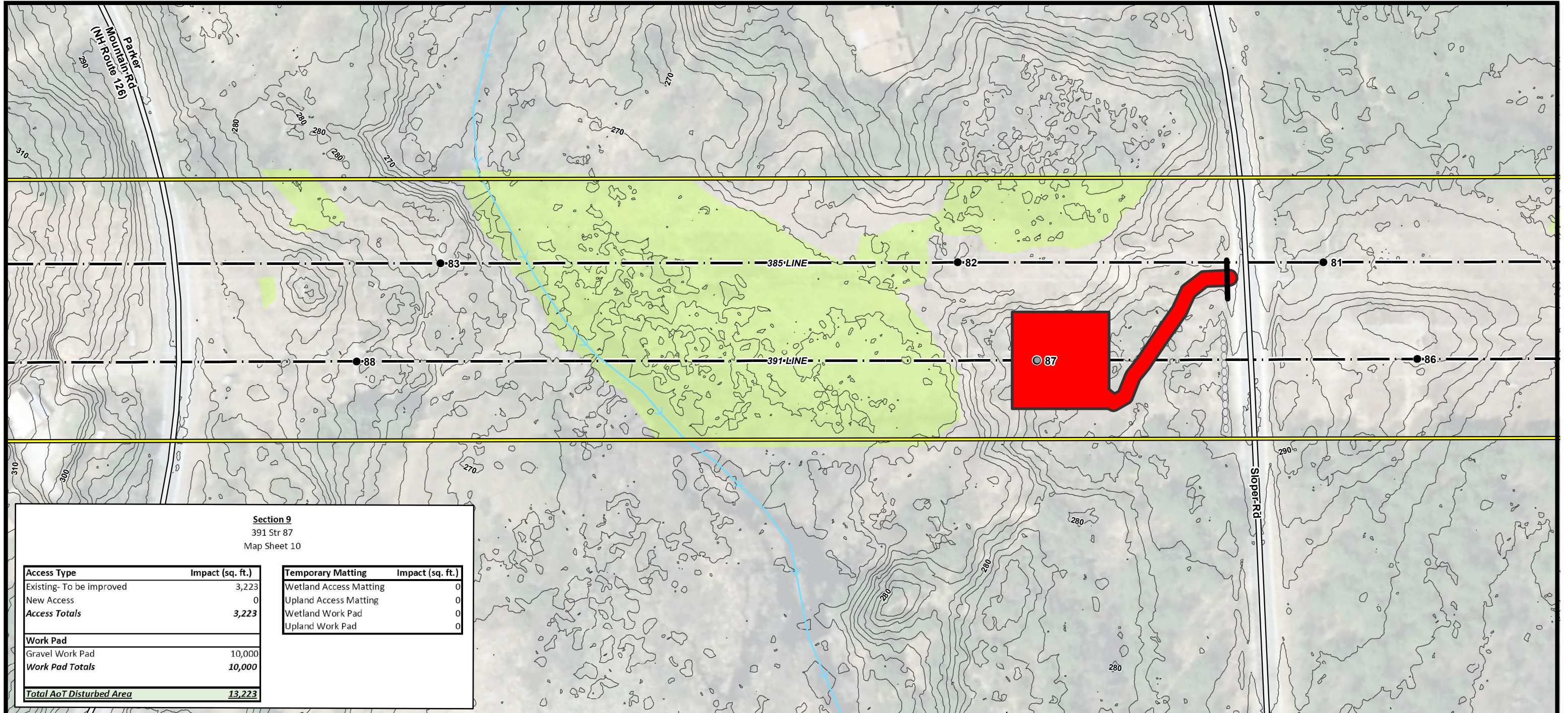
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 NEW HAMPSHIRE
 PAGE 9 OF 21

Project No.: 04.0190923.01

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1 inch = 100 feet



Section 9
391 Str 87
Map Sheet 10

Access Type	Impact (sq. ft.)
Existing- To be improved	3,223
New Access	0
Access Totals	3,223
Work Pad	
Gravel Work Pad	10,000
Work Pad Totals	10,000
Total AoT Disturbed Area	13,223

Temporary Matting	Impact (sq. ft.)
Wetland Access Matting	0
Upland Access Matting	0
Wetland Work Pad	0
Upland Work Pad	0



Current Town: Strafford

- 2FT ELEVATION CONTOURS
- PRIMARY ACCESS ROAD
- SECONDARY ACCESS ROAD
- APPROXIMATE ROW
- AOT DISTURBANCE AREA
- GRAVEL WORK PAD
- UPLAND WORK PAD
- WETLAND WORK PAD
- EXISTING STRUCTURE - NO PROPOSED WORK
- EXISTING STRUCTURE TO BE REPLACED
- FIELD DELINEATED WETLANDS
- RAILROAD
- TRANSMISSION LINE
- FENCE
- FENCE GATE
- ROCK WALL

BMP TYPE

- SILT FENCE
- STRAW WATTLE
- WATER BAR

ACCESS TYPE

- EXISTING-IMPROVED
- UPLAND MATTING
- WETLAND ACCESS MATTING
- NHDOT ROAD
- TOWN BOUNDARY

NOTES:

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**373, 391, & 385 TRANSMISSION LINE
STRUCTURE REPLACEMENT PROJECT**

ALTERATION OF TERRAIN PLANS
APRIL 26, 2019

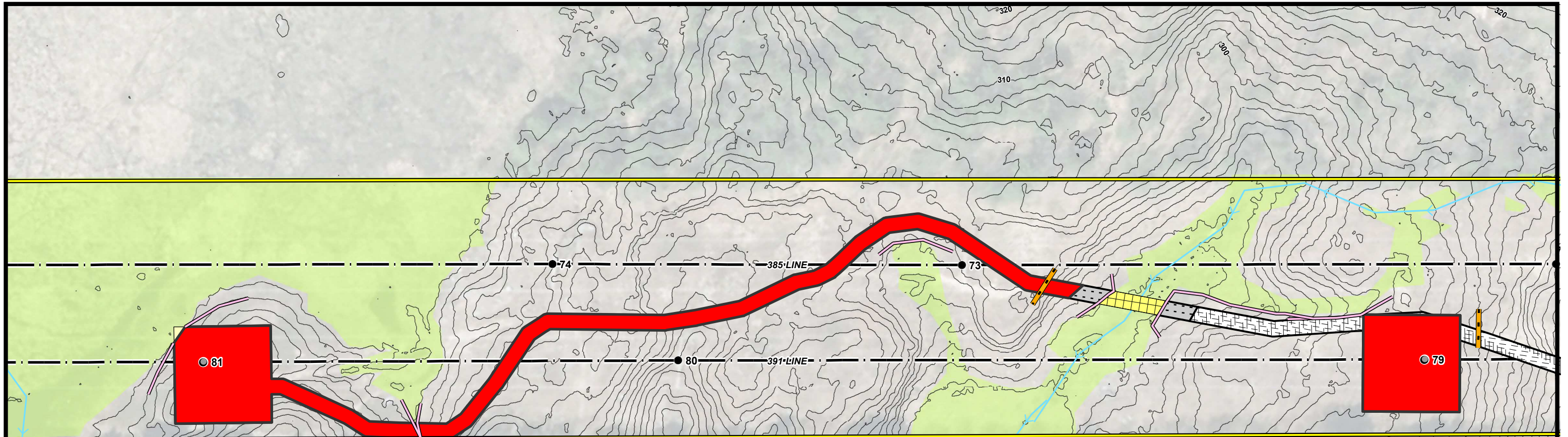
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NEW HAMPSHIRE
PAGE 10 OF 21

Project No.: 04.0190923.01

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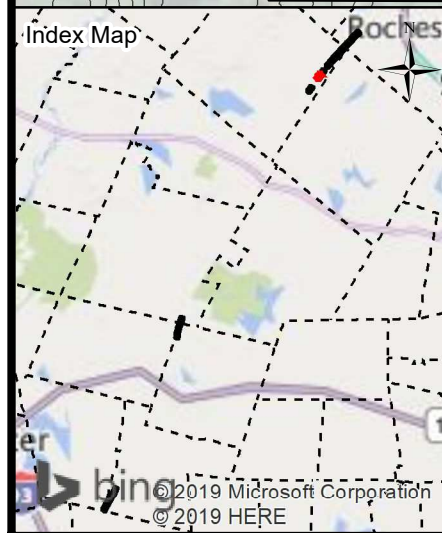


Section 10
391 Str 81 to North of 385 Str 73 (wetland crossing)
Map Sheet 11

Access Type	Impact (sq. ft.)	Temporary Matting	Impact (sq. ft.)
Existing- To be improved	6,622	Wetland Access Matting	963
New Access	8,413	Upland Access Matting	1,027
Access Totals	15,035	Wetland Work Pad	93
		Upland Work Pad	0
Work Pad			
Gravel Work Pad	9,907		
Work Pad Totals	9,907		
Total AoT Disturbed Area	24,942		

Section 11
391 Str. 79
Map Sheet 11

Access Type	Impact (sq. ft.)	Temporary Matting	Impact (sq. ft.)
Existing- To be improved	0	Wetland Access Matting	0
New Access	0	Upland Access Matting	0
Access Totals	0	Wetland Work Pad	0
		Upland Work Pad	0
Work Pad			
Gravel Work Pad	10,000		
Work Pad Totals	10,000		
Total AoT Disturbed Area	10,000		



Current Town: Strafford

Legend:

- 2FT ELEVATION CONTOURS
- PRIMARY ACCESS ROAD
- SECONDARY ACCESS ROAD
- APPROXIMATE ROW
- AOT DISTURBANCE AREA
- GRAVEL WORK PAD
- UPLAND WORK PAD
- WETLAND WORK PAD
- EXISTING STRUCTURE - NO PROPOSED WORK
- EXISTING STRUCTURE TO BE REPLACED
- FIELD DELINEATED WETLANDS
- RAILROAD
- TRANSMISSION LINE
- FENCE
- FENCE GATE
- ROCK WALL
- NHD FLOWLINE
- SHORELAND ZONE
- BMP TYPE
- SILT FENCE
- STRAW WATTLE
- WATER BAR
- ACCESS TYPE
- EXISTING-IMPROVED
- UPLAND MATTING
- WETLAND ACCESS MATTING
- NHDOT ROAD
- TOWN BOUNDARY

NOTES:

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**373, 391, & 385 TRANSMISSION LINE
STRUCTURE REPLACEMENT PROJECT**

ALTERATION OF TERRAIN PLANS
APRIL 26, 2019

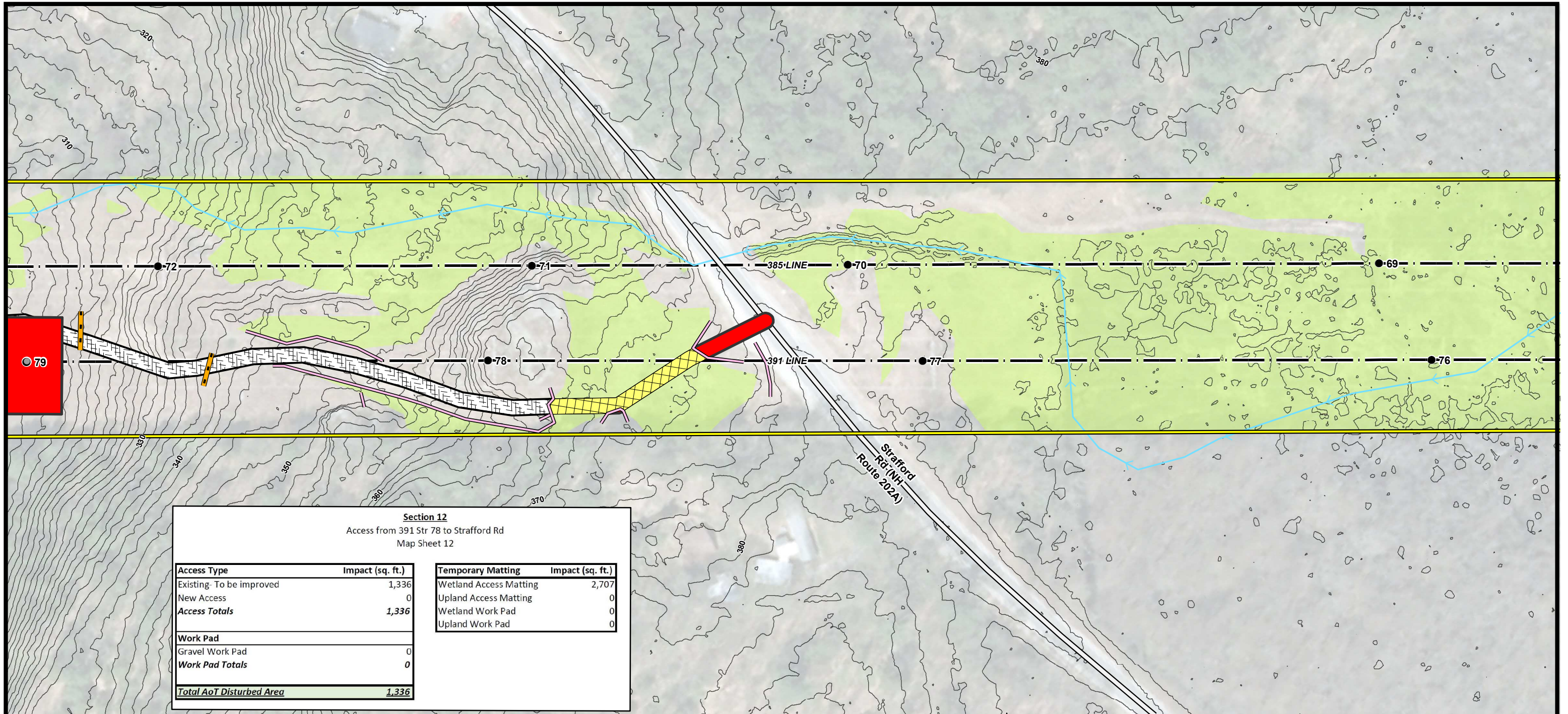
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NEW HAMPSHIRE
PAGE 11 OF 21

Project No.: 04.0190923.01

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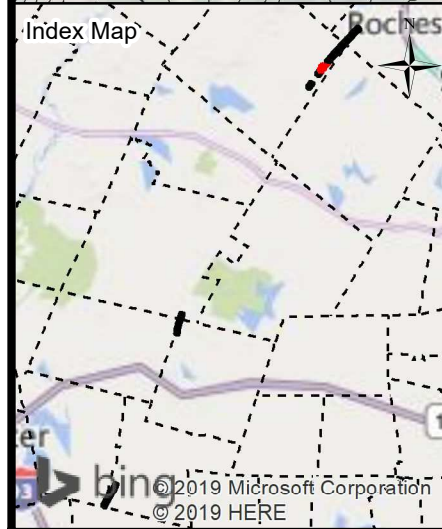
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1 inch = 100 feet



Section 12
Access from 391 Str 78 to Stafford Rd
Map Sheet 12

Access Type	Impact (sq. ft.)	Temporary Matting	Impact (sq. ft.)
Existing - To be improved	1,336	Wetland Access Matting	2,707
New Access	0	Upland Access Matting	0
Access Totals	1,336	Wetland Work Pad	0
		Upland Work Pad	0
Work Pad			
Gravel Work Pad	0		
Work Pad Totals	0		
Total AoT Disturbed Area	1,336		



Current Town: *Stafford*

Londonderry ← → Rochester

- 2FT ELEVATION CONTOURS
- PRIMARY ACCESS ROAD
- SECONDARY ACCESS ROAD
- APPROXIMATE ROW
- AOT DISTURBANCE AREA
- GRAVEL WORK PAD
- UPLAND WORK PAD
- WETLAND WORK PAD
- EXISTING STRUCTURE - NO PROPOSED WORK
- EXISTING STRUCTURE TO BE REPLACED
- FIELD DELINEATED WETLANDS
- RAILROAD
- TRANSMISSION LINE
- FENCE
- FENCE GATE
- ○ ○ ROCK WALL

NHD FLOWLINE (Blue arrow)

SHORELAND ZONE (Green line)

BMP TYPE

- x-x-x SILT FENCE
- STRAW WATTLE
- WATER BAR

ACCESS TYPE

- EXISTING-IMPROVED
- UPLAND MATTING
- WETLAND ACCESS MATTING
- NHDOT ROAD
- TOWN BOUNDARY

NOTES:

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**373, 391, & 385 TRANSMISSION LINE
STRUCTURE REPLACEMENT PROJECT**

ALTERATION OF TERRAIN PLANS
APRIL 26, 2019

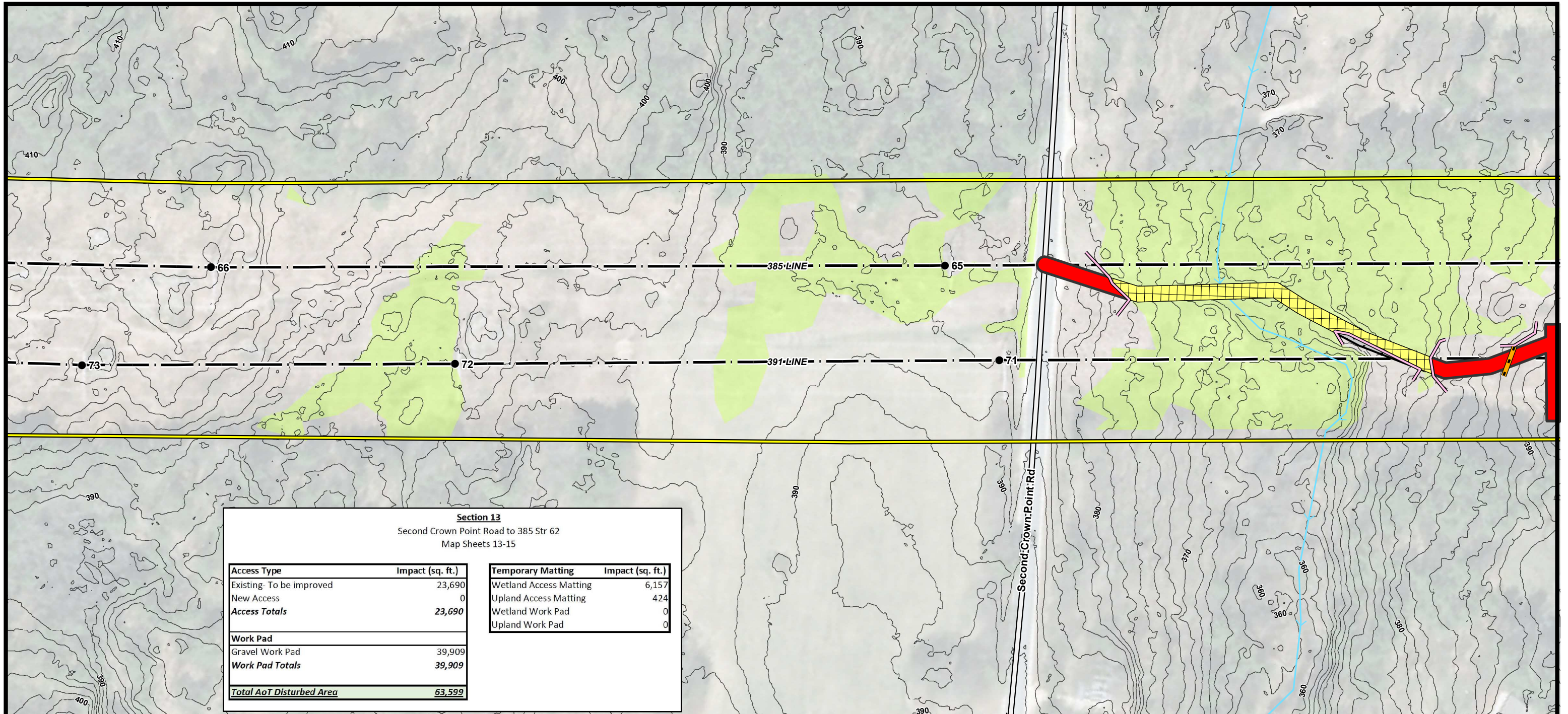
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NEW HAMPSHIRE
PAGE 12 OF 21

Project No.: 04.0190923.01

1 inch = 100 feet

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Section 13
Second Crown Point Road to 385 Str 62
Map Sheets 13-15

Access Type	Impact (sq. ft.)	Temporary Matting	Impact (sq. ft.)
Existing- To be improved	23,690	Wetland Access Matting	6,157
New Access	0	Upland Access Matting	424
Access Totals	23,690	Wetland Work Pad	0
		Upland Work Pad	0
Work Pad			
Gravel Work Pad	39,909		
Work Pad Totals	39,909		
Total AoT Disturbed Area	63,599		



Current Town: Strafford

Londonderry ← Rochester →

- 2FT ELEVATION CONTOURS
- PRIMARY ACCESS ROAD
- SECONDARY ACCESS ROAD
- APPROXIMATE ROW
- AOT DISTURBANCE AREA
- GRAVEL WORK PAD
- UPLAND WORK PAD
- WETLAND WORK PAD
- EXISTING STRUCTURE - NO PROPOSED WORK
- EXISTING STRUCTURE TO BE REPLACED
- FIELD DELINEATED WETLANDS
- RAILROAD
- TRANSMISSION LINE
- X-X FENCE
- FENCE GATE
- ○ ○ ROCK WALL

BMP TYPE

- NHD FLOWLINE
- SHORELAND ZONE
- X-X SILT FENCE
- STRAW WATTLE
- WATER BAR

ACCESS TYPE

- EXISTING-IMPROVED
- UPLAND MATTING
- WETLAND ACCESS MATTING
- NHDOT ROAD
- TOWN BOUNDARY

NOTES:

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**373, 391, & 385 TRANSMISSION LINE
STRUCTURE REPLACEMENT PROJECT**

ALTERATION OF TERRAIN PLANS
APRIL 26, 2019

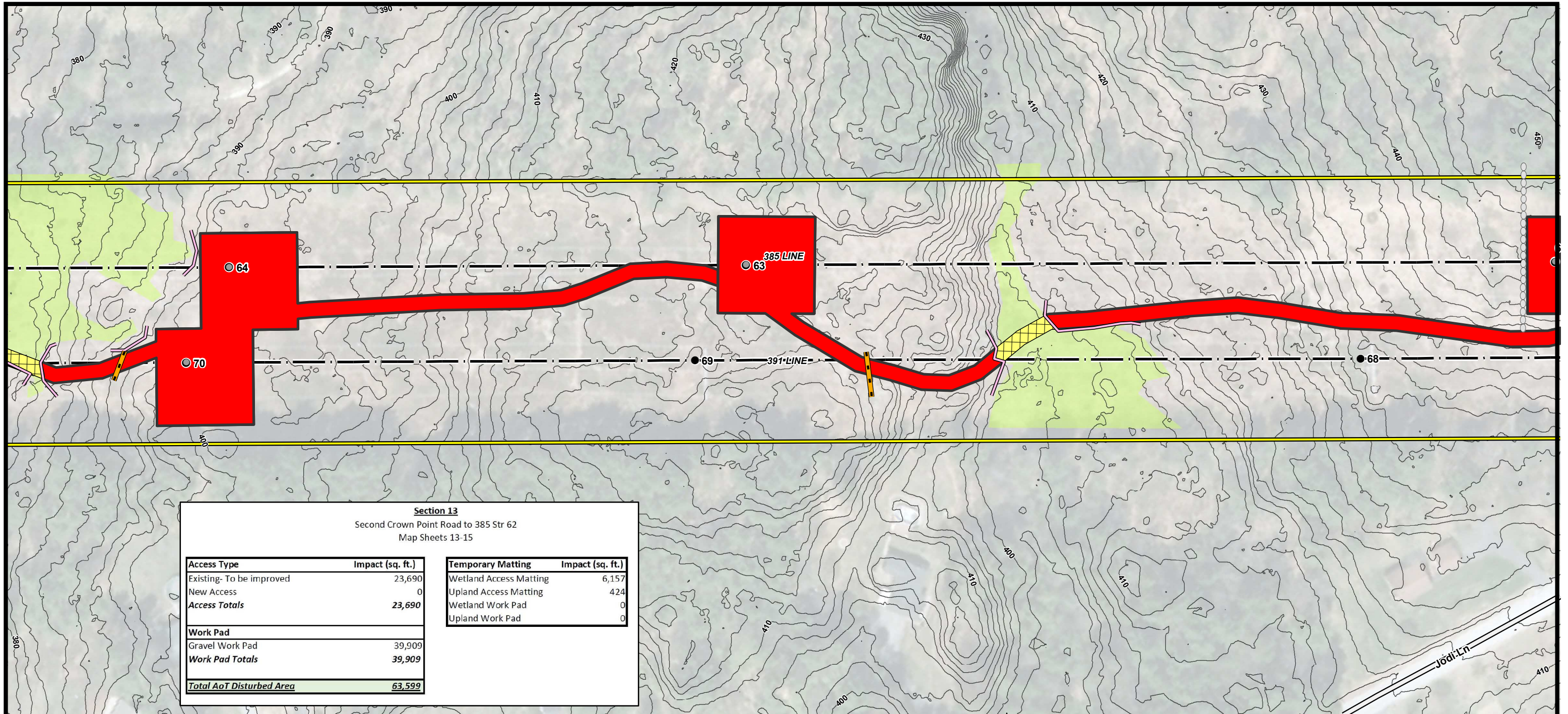
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NEW HAMPSHIRE
PAGE 13 OF 21

Project No.: 04.0190923.01

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1 inch = 100 feet



Section 13
Second Crown Point Road to 385 Str 62
Map Sheets 13-15

Access Type	Impact (sq. ft.)	Temporary Matting	Impact (sq. ft.)
Existing- To be improved	23,690	Wetland Access Matting	6,157
New Access	0	Upland Access Matting	424
Access Totals	23,690	Wetland Work Pad	0
		Upland Work Pad	0
Work Pad			
Gravel Work Pad	39,909		
Work Pad Totals	39,909		
Total AoT Disturbed Area	63,599		



Current Town: Strafford

Londonderry ← → Rochester

- 2FT ELEVATION CONTOURS
- PRIMARY ACCESS ROAD
- SECONDARY ACCESS ROAD
- APPROXIMATE ROW
- AOT DISTURBANCE AREA
- GRAVEL WORK PAD
- UPLAND WORK PAD
- WETLAND WORK PAD
- EXISTING STRUCTURE - NO PROPOSED WORK
- EXISTING STRUCTURE TO BE REPLACED
- FIELD DELINEATED WETLANDS
- RAILROAD
- TRANSMISSION LINE
- FENCE
- FENCE GATE
- ○ ○ ROCK WALL

BMP TYPE

- NHD FLOWLINE
- SHORELAND ZONE
- SILT FENCE
- STRAW WATTLE
- WATER BAR

ACCESS TYPE

- EXISTING-IMPROVED
- UPLAND MATTING
- WETLAND ACCESS MATTING
- NHDOT ROAD
- TOWN BOUNDARY

NOTES:

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2. EXISTING STRUCTURE AND TRANSMISSION LINE WERE PROVIDED BY EVERSOURCE ENERGY.
3. DATA LAYERS INCLUDING "NHDOT ROAD", "NHD FLOWLINE", "TOWN BOUNDARY", AND "PARCEL BOUNDARY" WERE OBTAINED FROM NH GRANIT CLEARINGHOUSE.
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5. THE DATA LAYER "FIELD DELINEATED WETLANDS" WAS DELINEATED BY TIGHE & BOND IN 2018 AND VERIFIED BY GZA IN 2019.
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**373, 391, & 385 TRANSMISSION LINE
STRUCTURE REPLACEMENT PROJECT**

ALTERATION OF TERRAIN PLANS
APRIL 26, 2019

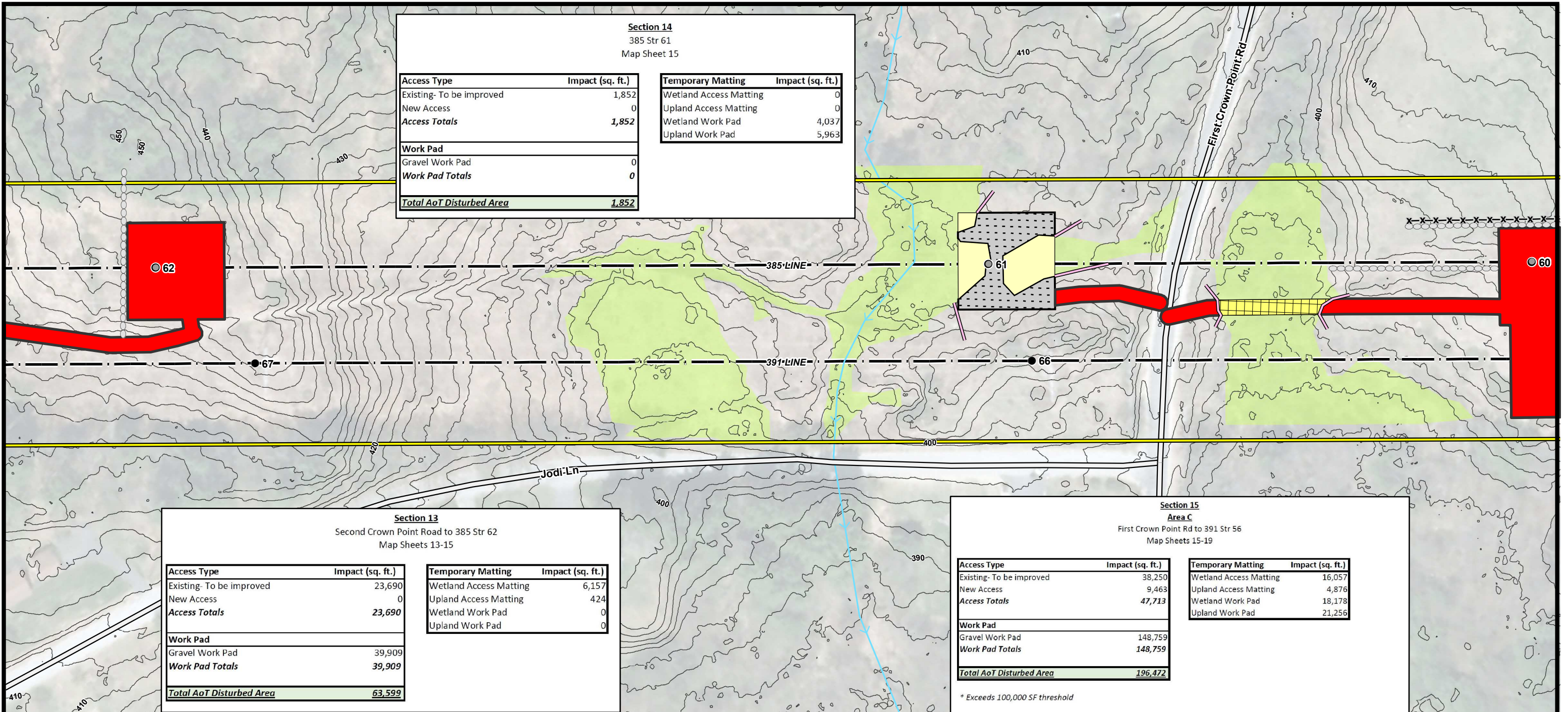
AUBURN, CHESTER, CANDIA, RAYMOND,
DEERFIELD, ROCHESTER, & STRAFFORD
NEW HAMPSHIRE
PAGE 14 OF 21

Project No.: 04.0190923.01

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1 inch = 100 feet



Section 14
385 Str 61
Map Sheet 15

Access Type	Impact (sq. ft.)	Temporary Matting	Impact (sq. ft.)
Existing- To be improved	1,852	Wetland Access Matting	0
New Access	0	Upland Access Matting	0
Access Totals	1,852	Wetland Work Pad	4,037
Work Pad		Upland Work Pad	5,963
Gravel Work Pad	0		
Work Pad Totals	0		
Total AoT Disturbed Area	1,852		

Section 13
Second Crown Point Road to 385 Str 62
Map Sheets 13-15

Access Type	Impact (sq. ft.)	Temporary Matting	Impact (sq. ft.)
Existing- To be improved	23,690	Wetland Access Matting	6,157
New Access	0	Upland Access Matting	424
Access Totals	23,690	Wetland Work Pad	0
Work Pad		Upland Work Pad	0
Gravel Work Pad	39,909		
Work Pad Totals	39,909		
Total AoT Disturbed Area	63,599		

Section 15
Area C
First Crown Point Rd to 391 Str 56
Map Sheets 15-19

Access Type	Impact (sq. ft.)	Temporary Matting	Impact (sq. ft.)
Existing- To be improved	38,250	Wetland Access Matting	16,057
New Access	9,463	Upland Access Matting	4,876
Access Totals	47,713	Wetland Work Pad	18,178
Work Pad		Upland Work Pad	21,256
Gravel Work Pad	148,759		
Work Pad Totals	148,759		
Total AoT Disturbed Area	196,472		

* Exceeds 100,000 SF threshold



Current Town: Strafford

Legend:

- 2FT ELEVATION CONTOURS
- PRIMARY ACCESS ROAD
- SECONDARY ACCESS ROAD
- APPROXIMATE ROW
- AOT DISTURBANCE AREA
- GRAVEL WORK PAD
- UPLAND WORK PAD
- WETLAND WORK PAD
- EXISTING STRUCTURE - NO PROPOSED WORK
- EXISTING STRUCTURE TO BE REPLACED
- FIELD DELINEATED WETLANDS
- RAILROAD
- TRANSMISSION LINE
- FENCE
- FENCE GATE
- ROCK WALL
- NHD FLOWLINE
- SHORELAND ZONE
- BMP TYPE
- SILT FENCE
- STRAW WATTLE
- WATER BAR
- ACCESS TYPE
- EXISTING-IMPROVED
- UPLAND MATTING
- WETLAND ACCESS MATTING
- NHDOT ROAD
- TOWN BOUNDARY

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**373, 391, & 385 TRANSMISSION LINE
STRUCTURE REPLACEMENT PROJECT**

ALTERATION OF TERRAIN PLANS
APRIL 26, 2019

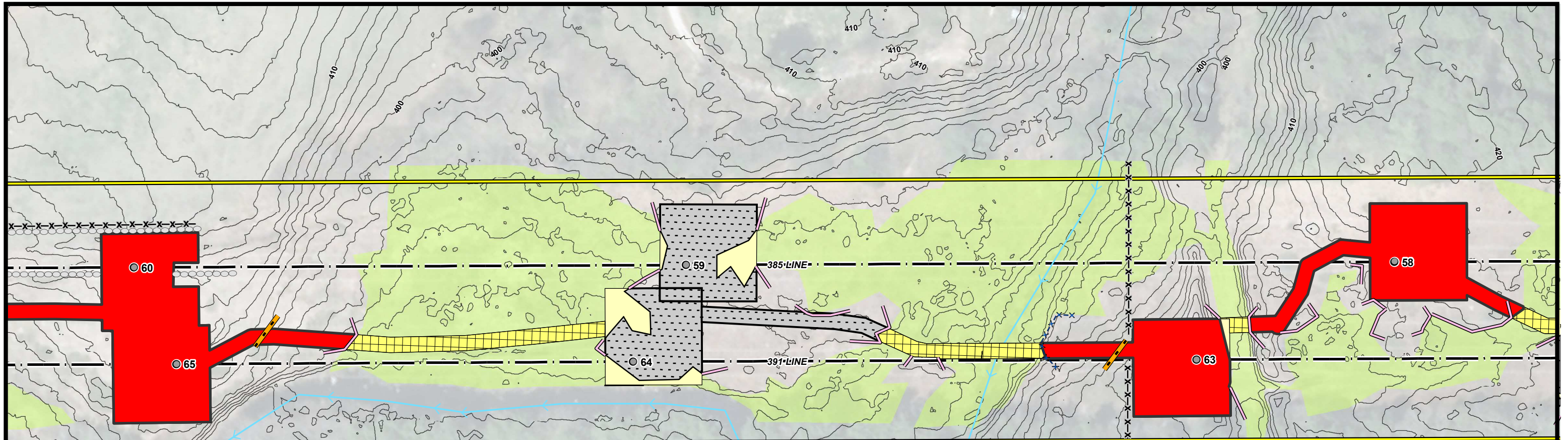
AUBURN, CHESTER, CANDIA, RAYMOND,
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NEW HAMPSHIRE
PAGE 15 OF 21

Project No.: 04.0190923.01

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Section 15
Area C
First Crown Point Rd to 391 Str 56
Map Sheets 15-19

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		Upland Work Pad	21,256
Work Pad			
Gravel Work Pad	148,759		
Work Pad Totals	148,759		
Total AoT Disturbed Area	196,472		

* Exceeds 100,000 SF threshold



Current Town: Strafford

← Londonderry Rochester →

- 2FT ELEVATION CONTOURS
- PRIMARY ACCESS ROAD
- SECONDARY ACCESS ROAD
- APPROXIMATE ROW
- AOT DISTURBANCE AREA
- GRAVEL WORK PAD
- UPLAND WORK PAD
- WETLAND WORK PAD
- EXISTING STRUCTURE - NO PROPOSED WORK
- EXISTING STRUCTURE TO BE REPLACED
- FIELD DELINEATED WETLANDS
- RAILROAD
- TRANSMISSION LINE
- FENCE
- FENCE GATE
- ○ ○ ROCK WALL

BMP TYPE

- NHD FLOWLINE
- SHORELAND ZONE
- SILT FENCE
- STRAW WATTLE
- WATER BAR

ACCESS TYPE

- EXISTING-IMPROVED
- UPLAND MATTING
- WETLAND ACCESS MATTING
- NHDOT ROAD
- TOWN BOUNDARY

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**373, 391, & 385 TRANSMISSION LINE
STRUCTURE REPLACEMENT PROJECT**

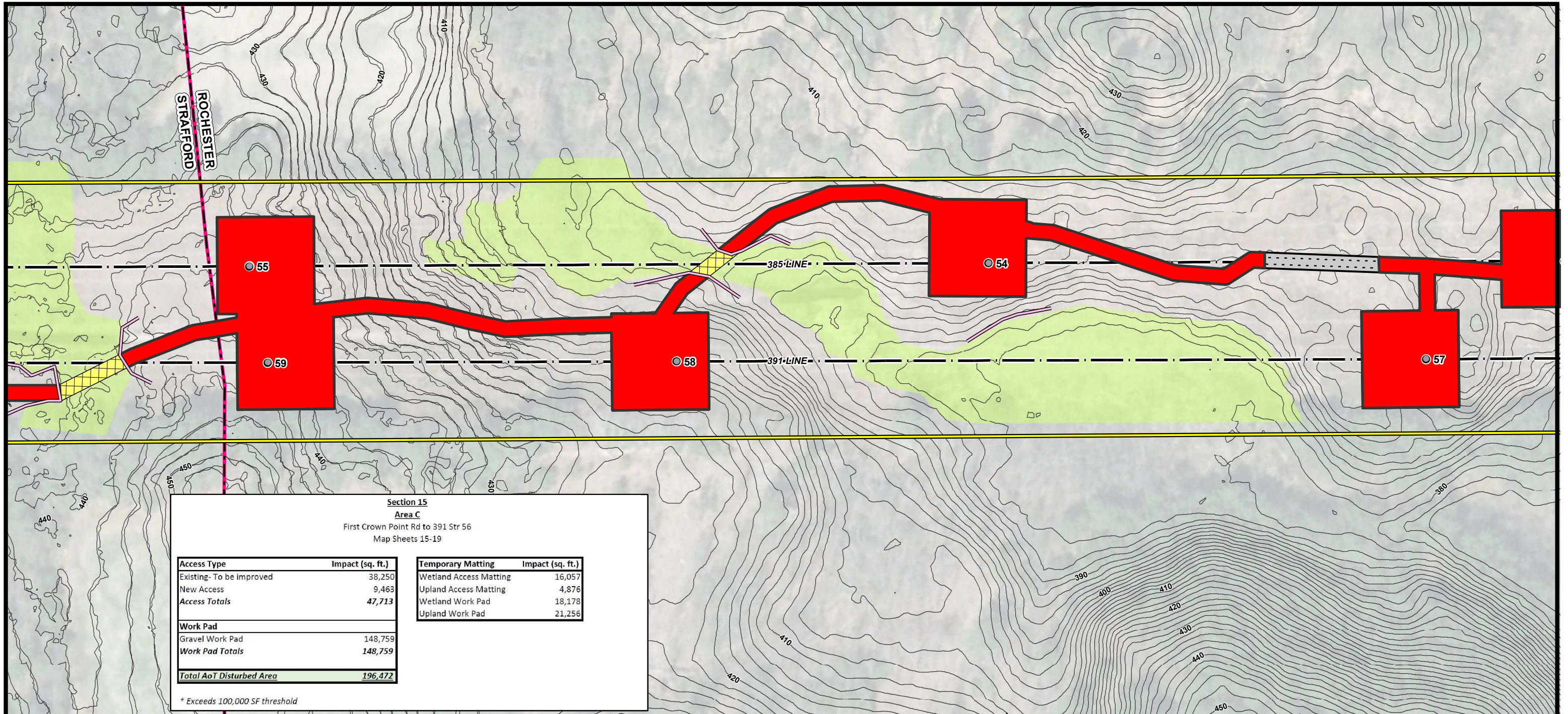
ALTERATION OF TERRAIN PLANS
APRIL 26, 2019

AUBURN, CHESTER, CANDIA, RAYMOND,
DEERFIELD, ROCHESTER, & STRAFFORD
NEW HAMPSHIRE
PAGE 16 OF 21

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Section 15
Area C
First Crown Point Rd to 391 Str 56
Map Sheets 15-19

Access Type	Impact (sq. ft.)	Temporary Matting	Impact (sq. ft.)
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Gravel Work Pad	148,759		
Work Pad Totals	148,759		
Total AoT Disturbed Area	196,472		

* Exceeds 100,000 SF threshold



Current Town: Strafford/Rochester

← Londonderry Rochester →

- 2FT ELEVATION CONTOURS
- PRIMARY ACCESS ROAD
- SECONDARY ACCESS ROAD
- APPROXIMATE ROW
- AOT DISTURBANCE AREA
- GRAVEL WORK PAD
- UPLAND WORK PAD
- WETLAND WORK PAD
- EXISTING STRUCTURE - NO PROPOSED WORK
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- FIELD DELINEATED WETLANDS
- RAILROAD
- TRANSMISSION LINE
- X-X- FENCE
- FENCE GATE
- ○ ○ ROCK WALL

BMP TYPE

- NHD FLOWLINE
- SHORELAND ZONE
- X-X- SILT FENCE
- STRAW WATTLE
- WATER BAR

ACCESS TYPE

- EXISTING-IMPROVED
- UPLAND MATTING
- WETLAND ACCESS MATTING
- NHDOT ROAD
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**373, 391, & 385 TRANSMISSION LINE
STRUCTURE REPLACEMENT PROJECT**

ALTERATION OF TERRAIN PLANS
APRIL 26, 2019

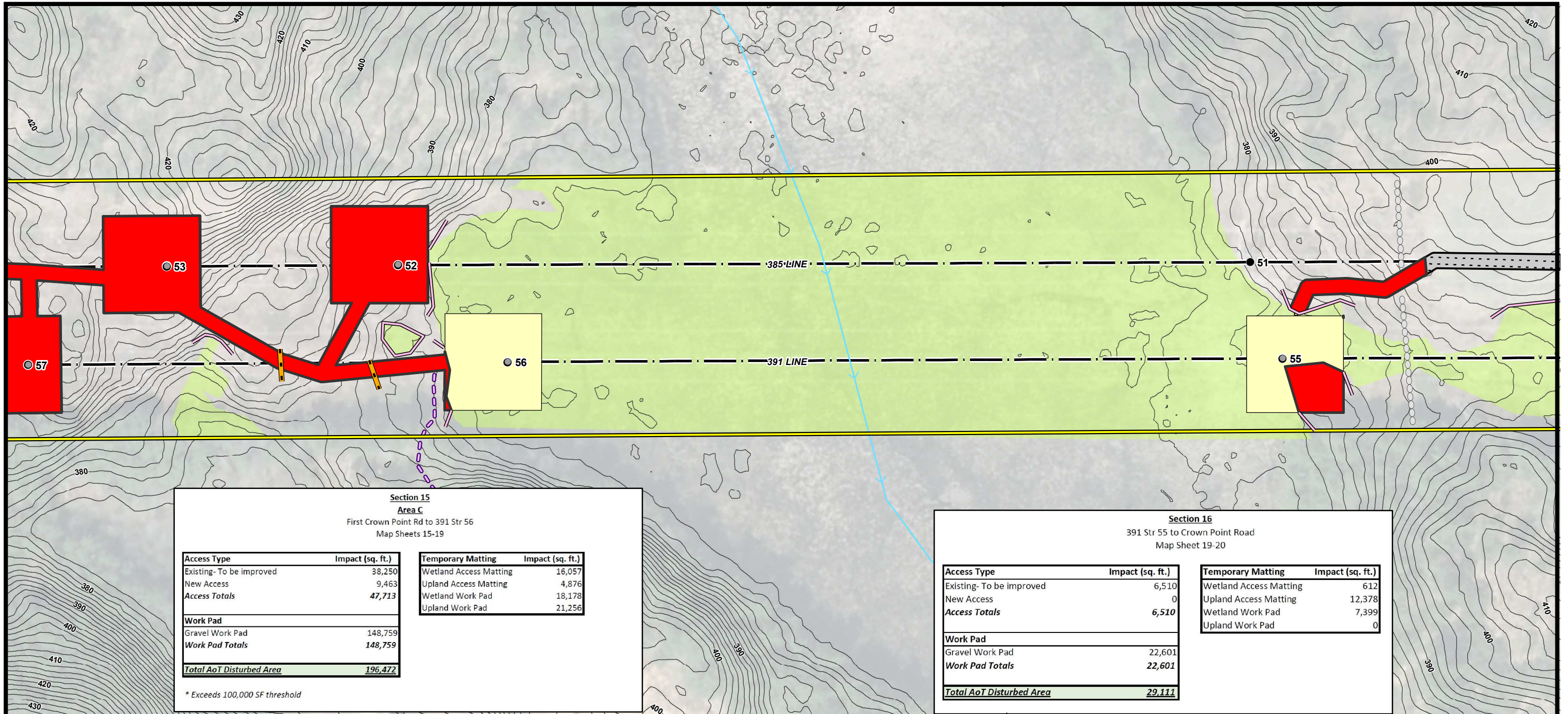
AUBURN, CHESTER, CANDIA, RAYMOND,
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NEW HAMPSHIRE
PAGE 18 OF 21

Project No.: 04.0190923.01

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Section 15
Area C
 First Crown Point Rd to 391 Str 56
 Map Sheets 15-19

Access Type	Impact (sq. ft.)	Temporary Matting	Impact (sq. ft.)
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		Upland Work Pad	21,256
Work Pad			
Gravel Work Pad	148,759		
Work Pad Totals	148,759		
Total AoT Disturbed Area	196,472		

* Exceeds 100,000 SF threshold

Section 16
 391 Str 55 to Crown Point Road
 Map Sheet 19-20

Access Type	Impact (sq. ft.)	Temporary Matting	Impact (sq. ft.)
Existing- To be improved	6,510	Wetland Access Matting	612
New Access	0	Upland Access Matting	12,378
Access Totals	6,510	Wetland Work Pad	7,399
		Upland Work Pad	0
Work Pad			
Gravel Work Pad	22,601		
Work Pad Totals	22,601		
Total AoT Disturbed Area	29,111		



Current Town: Rochester

- 2FT ELEVATION CONTOURS
- PRIMARY ACCESS ROAD
- SECONDARY ACCESS ROAD
- APPROXIMATE ROW
- AOT DISTURBANCE AREA
- GRAVEL WORK PAD
- UPLAND WORK PAD
- WETLAND WORK PAD
- EXISTING STRUCTURE - NO PROPOSED WORK
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- FIELD DELINEATED WETLANDS
- RAILROAD
- TRANSMISSION LINE
- FENCE
- FENCE GATE
- ROCK WALL
- NHD FLOWLINE
- SHORELAND ZONE

BMP TYPE

- SILT FENCE
- STRAW WATTLE
- WATER BAR

ACCESS TYPE

- EXISTING-IMPROVED
- UPLAND MATTING
- WETLAND ACCESS MATTING
- NHDOT ROAD
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**373, 391, & 385 TRANSMISSION LINE
 STRUCTURE REPLACEMENT PROJECT**

ALTERATION OF TERRAIN PLANS
 APRIL 26, 2019

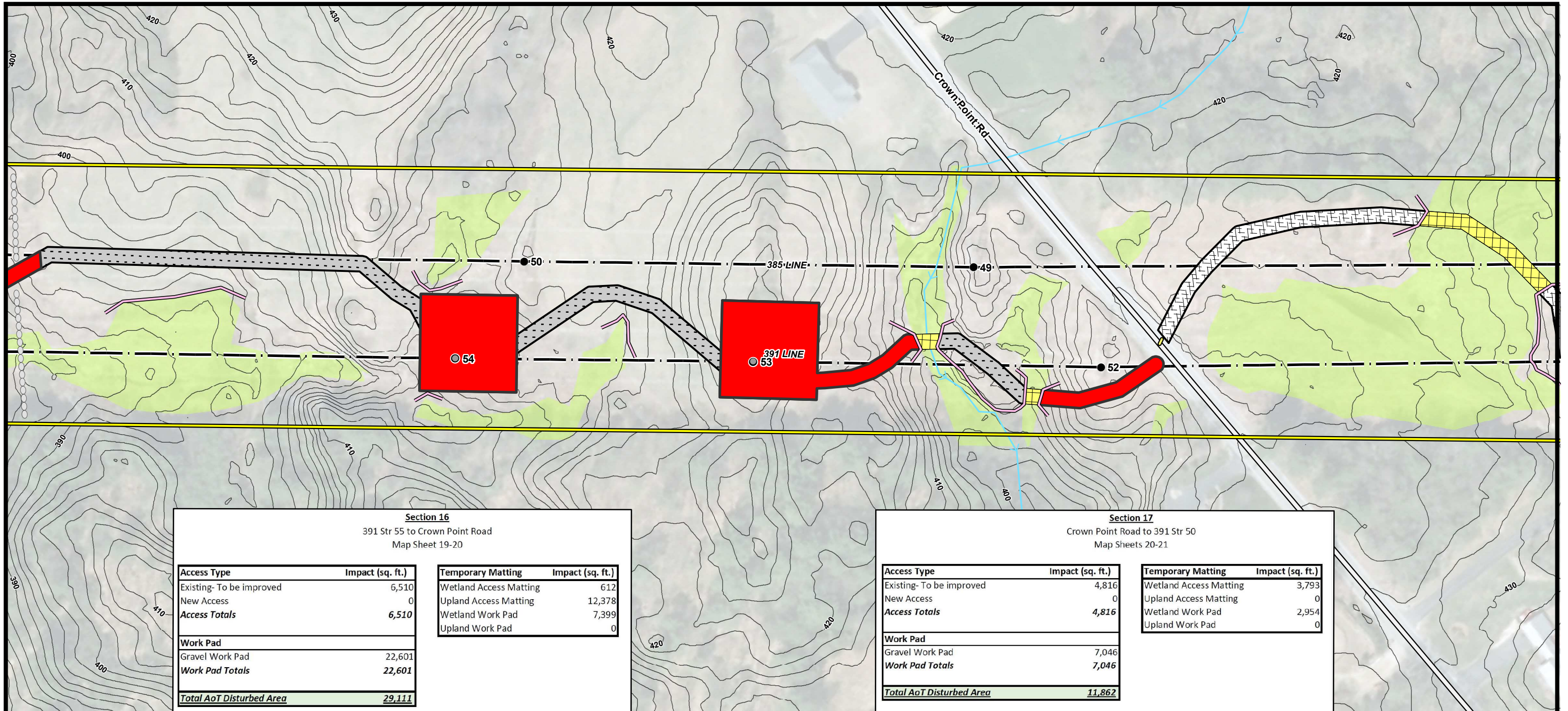
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 PAGE 19 OF 21

Project No.: 04.0190923.01

1 inch = 100 feet

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Section 16
391 Str 55 to Crown Point Road
Map Sheet 19-20

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Work Pad			
Gravel Work Pad	22,601		
Work Pad Totals	22,601		
Total AoT Disturbed Area		29,111	

Section 17
Crown Point Road to 391 Str 50
Map Sheets 20-21

Access Type	Impact (sq. ft.)	Temporary Matting	Impact (sq. ft.)
Existing- To be improved	4,816	Wetland Access Matting	3,793
New Access	0	Upland Access Matting	0
Access Totals	4,816	Wetland Work Pad	2,954
		Upland Work Pad	0
Work Pad			
Gravel Work Pad	7,046		
Work Pad Totals	7,046		
Total AoT Disturbed Area		11,862	



Current Town: Rochester

- 2FT ELEVATION CONTOURS
- PRIMARY ACCESS ROAD
- SECONDARY ACCESS ROAD
- APPROXIMATE ROW
- AOT DISTURBANCE AREA
- GRAVEL WORK PAD
- UPLAND WORK PAD
- WETLAND WORK PAD
- EXISTING STRUCTURE - NO PROPOSED WORK
- EXISTING STRUCTURE TO BE REPLACED
- FIELD DELINEATED WETLANDS
- RAILROAD
- TRANSMISSION LINE
- FENCE
- FENCE GATE
- ROCK WALL
- NHD FLOWLINE
- SHORELAND ZONE
- BMP TYPE**
- SILT FENCE
- STRAW WATTLE
- WATER BAR
- ACCESS TYPE**
- EXISTING-IMPROVED
- UPLAND MATTING
- WETLAND ACCESS MATTING
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373, 391, & 385 TRANSMISSION LINE STRUCTURE REPLACEMENT PROJECT

ALTERATION OF TERRAIN PLANS
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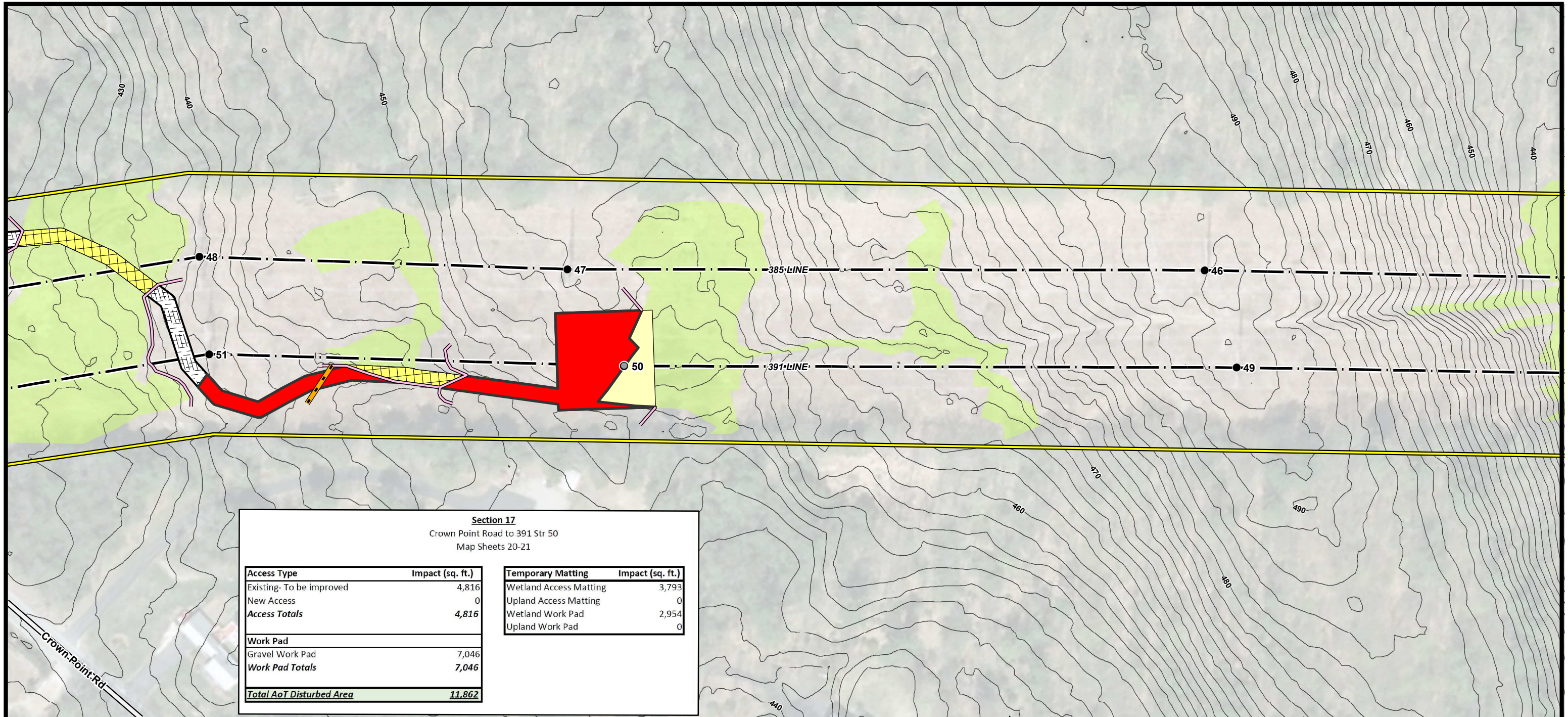
AUBURN, CHESTER, CANDIA, RAYMOND, DEERFIELD, ROCHESTER, & STRAFFORD NEW HAMPSHIRE
PAGE 20 OF 21

Project No.: 04.0190923.01

EVERSOURCE ENERGY

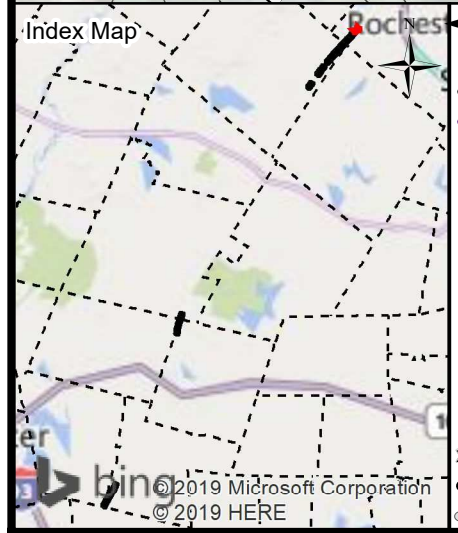
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Section 17
Crown Point Road to 391 Str 50
Map Sheets 20-21

Access Type	Impact (sq. ft.)	Temporary Matting	Impact (sq. ft.)
Existing- To be improved	4,816	Wetland Access Matting	3,793
New Access	0	Upland Access Matting	0
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		Upland Work Pad	0
Work Pad			
Gravel Work Pad	7,046		
Work Pad Totals	7,046		
Total AoT Disturbed Area			
	11,862		



Current Town: Rochester

← Londonderry Rochester →

- 2FT ELEVATION CONTOURS
- PRIMARY ACCESS ROAD
- SECONDARY ACCESS ROAD
- APPROXIMATE ROW
- AOT DISTURBANCE AREA
- GRAVEL WORK PAD
- UPLAND WORK PAD
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- EXISTING STRUCTURE - NO PROPOSED WORK
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- RAILROAD
- TRANSMISSION LINE
- X-X- FENCE
- FENCE GATE
- ○ ○ ROCK WALL

BMP TYPE

- NHD FLOWLINE
- SHORELAND ZONE
- X-X- SILT FENCE
- STRAW WATTLE
- WATER BAR

ACCESS TYPE

- EXISTING-IMPROVED
- UPLAND MATTING
- WETLAND ACCESS MATTING
- NHDOT ROAD
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**373, 391, & 385 TRANSMISSION LINE
STRUCTURE REPLACEMENT PROJECT**

ALTERATION OF TERRAIN PLANS
APRIL 26, 2019

AUBURN, CHESTER, CANDIA, RAYMOND,
DEERFIELD, ROCHESTER, & STRAFFORD
NEW HAMPSHIRE
PAGE 21 OF 21

Project No.: 04.0190923.01

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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.
3. WETLAND IMPACTS ASSOCIATED WITH WETLAND CROSSINGS ARE REQUIRED FOR ACCESS BETWEEN STRUCTURES WITHIN THE RIGHT OF WAY. CONSTRUCTION ACTIVITIES SHALL OCCUR DURING PERIODS OF LOW FLOW.
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. ALL OPERATIONS SHALL BE CONFINED TO THE SPECIFIED ACCESS ROUTES WITHIN THE PROPOSED WETLAND IMPACT AREA. ALL 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. ALL 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. SWAMP MATS WILL BE USED ALONG ALL ACCESS ROUTES 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 SWAMP 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 SWAMP 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. SEDIMENT AND EROSION CONTROL MEASURES WILL BE EVALUATED AND REMOVED IF NECESSARY UPON THE COMPLETION OF CONSTRUCTION.

WINTER CONSTRUCTION NOTES

1. ALL PROPOSED 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. ALL 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 TIGHE AND BOND IN 2018, 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 WERE REVIEWED BY GZA GEOENVIRONMENTAL, INC. IN JANUARY AND FEBRUARY 2019.
3. GZA EVALUATED WETLANDS AS POTENTIAL VERNAL POOLS ON FEBRUARY 6, 12, AND 15, 2019 IN ACCORDANCE WITH "IDENTIFICATION AND DOCUMENTATION OF VERNAL POOLS IN NEW HAMPSHIRE," 1997, NEW HAMPSHIRE FISH AND GAME DEPARTMENT, NONGAME AND ANDANGERED WILDLIFE PROGRAM.
4. GZA PERFORMED A WETLANDS FUNCTION AND VALUES ASSESSMENT IN ACCORDANCE WITH THE ACOE'S "HIGHWAY METHODOLOGY WORKBOOK SUPPLEMENT," SEPTEMBER 1999, IN THE TOWN OF STRAFFORD.
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. ALL AREAS SHALL BE STABILIZED WITH 45 DAYS OF INITIAL DISTURBANCE.


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 AGAINST EROSION, AS NECESSARY.
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.

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391, 373, & 385 TRANSMISSION LINE STRUCTURE REPLACEMENT PROJECT
AUBURN, CHESTER, CANDIA, RAYMOND, DEERFIELD, STRAFFORD, AND ROCHESTER
NEW HAMPSHIRE

NOTES

PREPARED BY:  GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: EVSOURCE ENERGY	
PROJ MGR: LEW	REVIEWED BY: AJD	CHECKED BY: DMZ	SHEET 1 1 OF 2
DESIGNED BY: MJD	DRAWN BY: MJD	SCALE:	
DATE: 04/24/2019	PROJECT NO: 04.0190923.01	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:

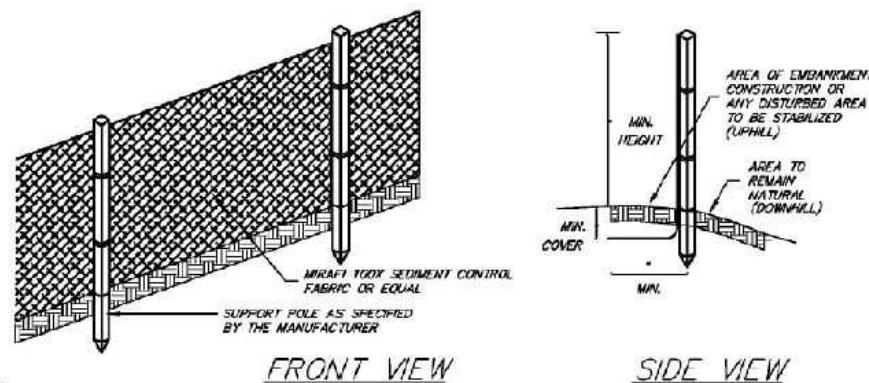
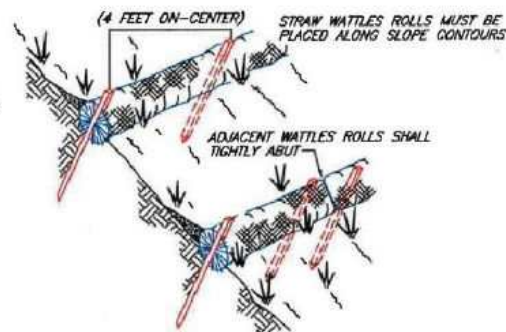
- * Along erodible or unstabilized slopes
- * Spread overland waterflow
- * Trap sediment
- * Around storm drain inlets to slow water and settle out sediment
- * Overlap ends approximately 6 inches

Installation:

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

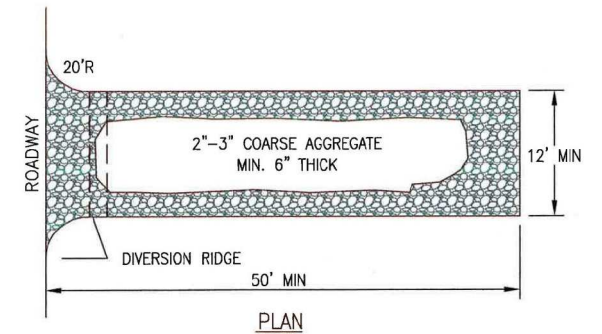
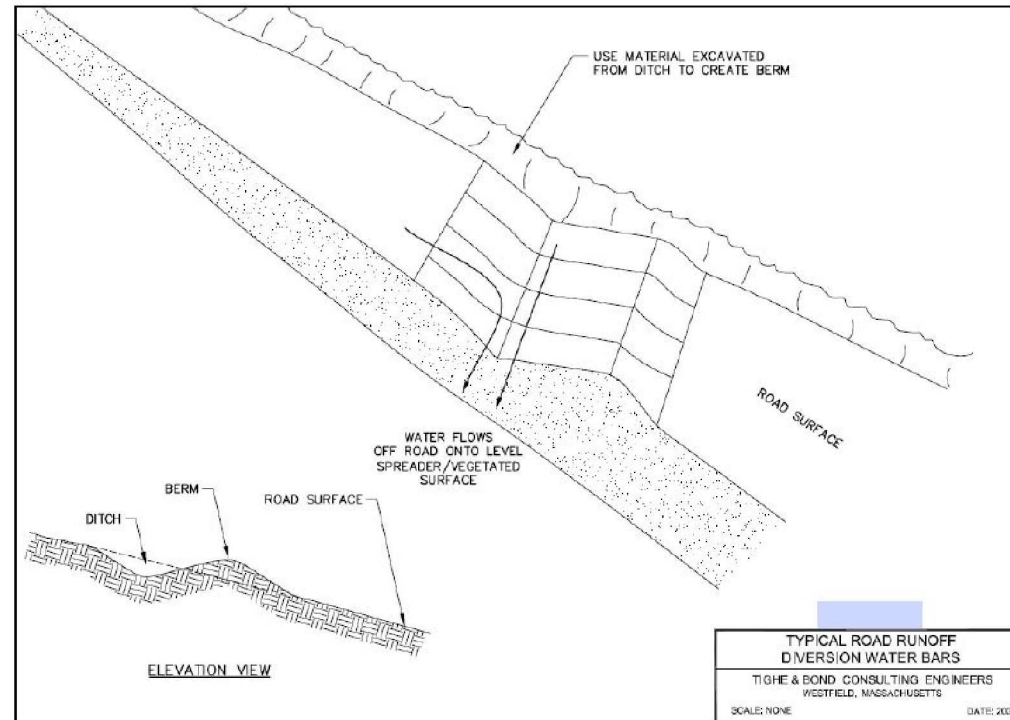
Spacing* - Dependent on slope length, soil steepness and soil type (general range 10 - 25').

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



NOTES (SILT FENCE)

1. THE HEIGHT OF THE BARRIER SHALL NOT EXCEED 36 INCHES.
2. WHEN JOINTS ARE NECESSARY, FILTER CLOTH SHALL BE SPICED 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.



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

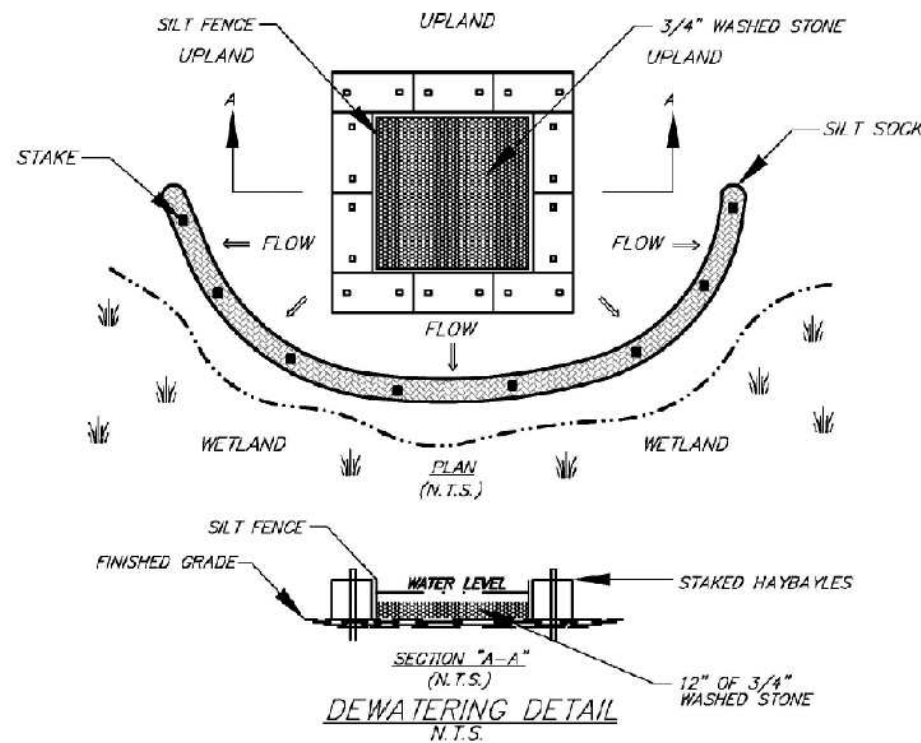


Figure 5

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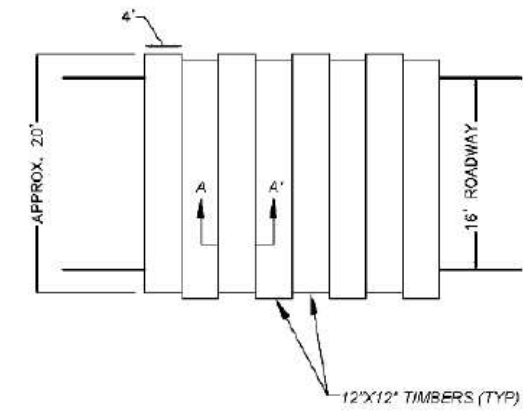
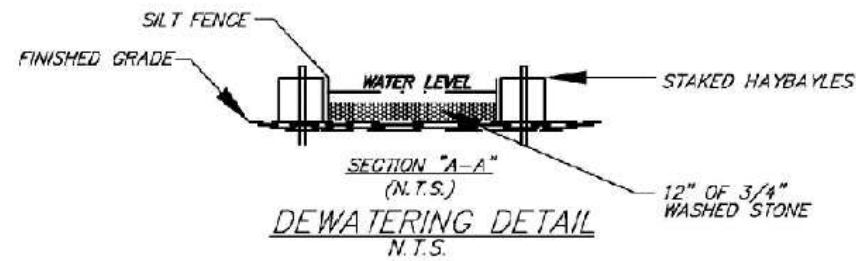
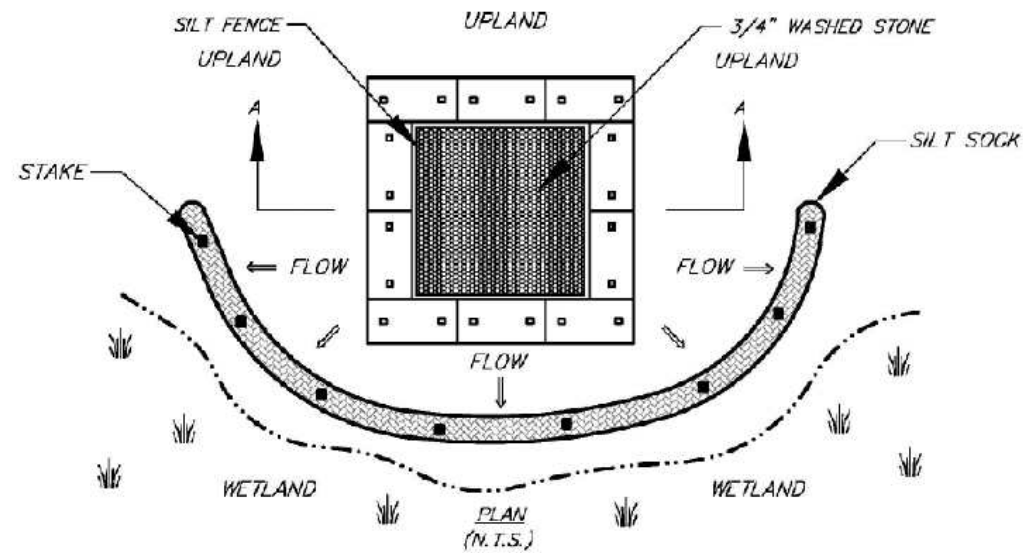
391, 373, & 385 TRANSMISSION LINE STRUCTURE REPLACEMENT PROJECT
AUBURN, CHESTER, CANDIA, RAYMOND, DEERFIELD, STRAFFORD, AND ROCHESTER
NEW HAMPSHIRE

BMP DETAILS

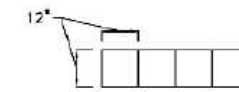
PREPARED BY: **GZA** GeoEnvironmental, Inc. Engineers and Scientists www.gza.com
PREPARED FOR: **EVERSOURCE** ENERGY

PROJ MGR: LEW	REVIEWED BY: AJD	CHECKED BY: DMZ	SHEET 2
DESIGNED BY: MJD	DRAWN BY: MJD	SCALE:	
DATE: 04/24/2019	PROJECT NO: 04.0190923.01	REVISION NO:	

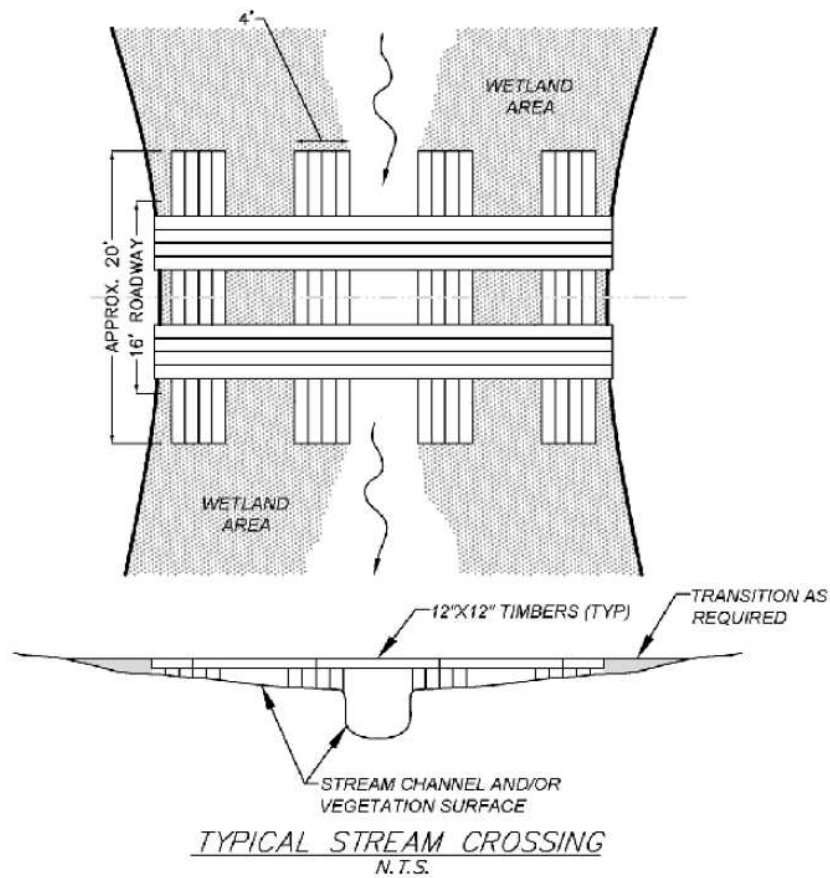
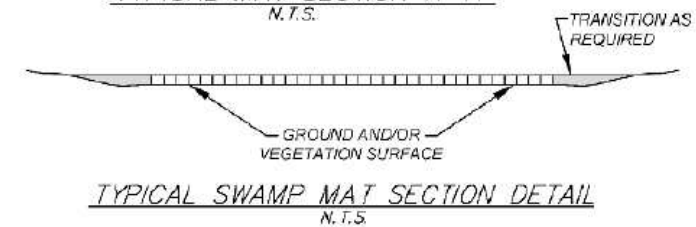
© 2019 - GZA GeoEnvironmental, Inc. P:\04\jobs\01909023\04_0190923_00 - Eversource MSA04_0190923_01 - 391 Transmission Line\Figures\MXD\391 373 385 Act NOTESHEET 3- BMPs 2.mxd, 4/24/2019, 1:33:43 PM, lindsey.white



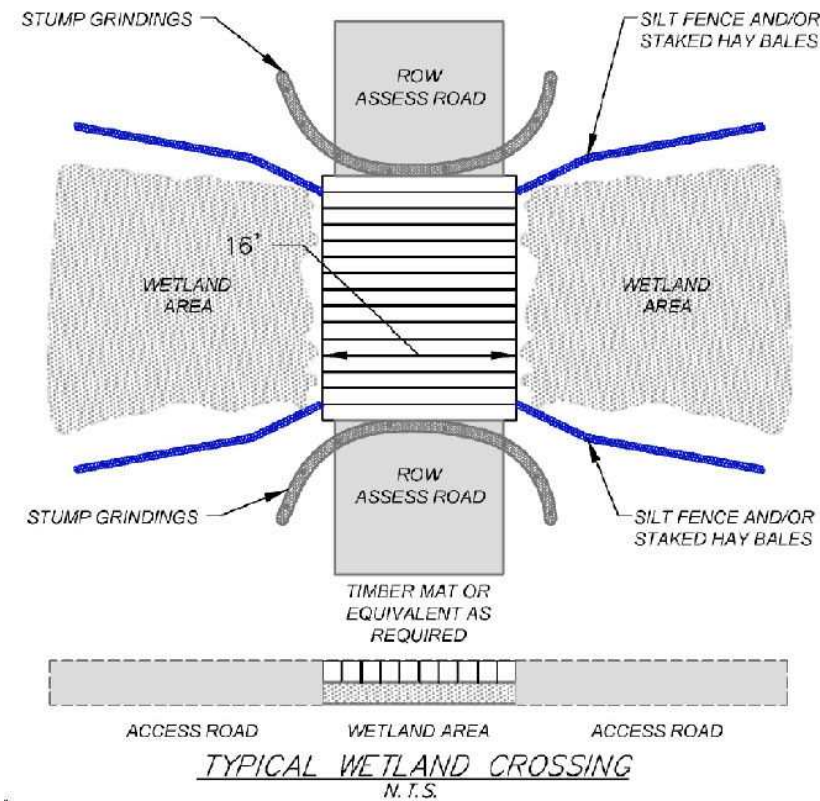
TYPICAL SWAMP MAT PLAN VIEW
N.T.S.



TYPICAL MAT SECTION A-A
N.T.S.



TYPICAL STREAM CROSSING
N.T.S.



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391, 373, & 385 TRANSMISSION LINE STRUCTURE REPLACEMENT PROJECT
AUBURN, CHESTER, CANDIA, RAYMOND, DEERFIELD, STRAFFORD, AND ROCHESTER
NEW HAMPSHIRE

BMP DETAILS

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

PREPARED FOR:
EVERSOURCE
ENERGY

PROJ MGR: LEW	REVIEWED BY: AJD	CHECKED BY: DMZ	SHEET 3
DESIGNED BY: MJD	DRAWN BY: MJD	SCALE:	
DATE: 04/24/2019	PROJECT NO. 04.0190923.01	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: Matthew Cardin	
Email: matthew.cardin@eversource.com		Daytime Telephone: 603-634-2992	
Mailing Address: 13 Legends Drive			
Town/City: Hooksett		State: NH	Zip Code: 03106
2. APPLICANT'S AGENT INFORMATION If none, check here: <input type="checkbox"/>			
Business Name: GZA GeoEnvironmental		Contact Name: Lindsey White	
Email: lindsey.white@gza.com		Daytime Telephone: 603-232-8753	
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: <input checked="" type="checkbox"/>			
Business Name:		Contact Name:	
Email:		Daytime Telephone:	
Address:			
Town/City:		State:	Zip Code:
5. CONSULTANT INFORMATION If none, check here: <input type="checkbox"/>			
Engineering Firm: GZA GeoEnvironmental		Contact Name: Lindsey White	
Email: lindsey.white@gza.com		Daytime Telephone: 603-232-8753	
Address: 5 Commerce Park North, Suite 201			
Town/City: Bedford		State: NH	Zip Code: 03110

ridge.mauck@des.nh.gov (603) 271-2147

NHDES Alteration of Terrain Bureau, PO Box 95, Concord, NH 03303-0095

www.des.nh.gov

6. PROJECT TYPE			
<input type="checkbox"/> Excavation Only	<input type="checkbox"/> Residential	<input type="checkbox"/> Commercial	<input type="checkbox"/> Golf Course
<input type="checkbox"/> Agricultural	<input type="checkbox"/> Land Conversion	<input checked="" type="checkbox"/> Other: Utility	
<input type="checkbox"/> School			
<input type="checkbox"/> Municipal			
7. PROJECT LOCATION INFORMATION			
Project Name: 391, 373, 385 Transmission Line Structure Replacement Project			
Street/Road Address: Existing Utility Right-of-Way			
Town/City: Multiple		County:	
Tax Map: See attached	Block:	Lot Number:	Unit:
Location Coordinates: 160286N, 158788E		<input type="checkbox"/> Latitude/Longitude	<input type="checkbox"/> UTM
		<input checked="" type="checkbox"/> 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:	<input type="checkbox"/> Yes	<input type="checkbox"/> Withdrawal	<input type="checkbox"/> Discharge
	<input checked="" type="checkbox"/> No		
2. Man-made pond created by impounding a stream or wetland Purpose:	<input type="checkbox"/> Yes	<input type="checkbox"/> Withdrawal	<input type="checkbox"/> Discharge
	<input checked="" type="checkbox"/> No		
3. Unlined pond dug into the water table Purpose:	<input type="checkbox"/> Yes	<input type="checkbox"/> Withdrawal	<input type="checkbox"/> Discharge
	<input checked="" type="checkbox"/> No		
Post-development, will the proposed project discharge to:			
• A surface water impaired for phosphorus and/or nitrogen? <input checked="" type="checkbox"/> No <input type="checkbox"/> 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? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes - include information to demonstrate that project will not cause net increase in phosphorus and/or nitrogen			
• A lake or pond not covered previously? <input checked="" type="checkbox"/> No <input type="checkbox"/> 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? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, specify the type of high load land use or activity: _____			
Is the project within a Water Supply Intake Protection Area (WSIPA)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
Is the project within a Groundwater Protection Area (GPA)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
Will the well setbacks identified in Env-Wq 1508.02 be met? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
If yes: Cut volume: <u>N/A</u> cubic feet within the 100-year floodplain			
Fill volume: <u>N/A</u> cubic feet within the 100-year floodplain			
<input checked="" type="checkbox"/> Project IS within ¼ mile of a designated river Name of River: Lamprey River			
<input type="checkbox"/> Project is NOT within ¼ mile of a designated river			
<input checked="" type="checkbox"/> Project IS within a Coastal/Great Bay Region community - include info required by Env-Wq 1503.08(I) if applicable			
<input type="checkbox"/> Project is NOT within a Coastal/Great Bay Region community *Not applicable - maintenance of existing utilities			
8. BRIEF PROJECT DESCRIPTION (PLEASE DO NOT REPLY "SEE ATTACHED")			
The proposed project includes the replacement of 60 utility structure along the existing 391, 373, and 385 Transmission Lines, which crosses through portions of Chester, Candia, Deerfield, Strafford, and Rochester, New Hampshire. 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			

N/A

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: 408,466 square feet

F. Additional impervious cover as a result of the project: 0 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	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/>	Permit number:
2. Wetlands Permit	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/>	Permit number: Multiple
3. Shoreland Permit	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input checked="" type="checkbox"/>	Permit number:
4. UIC Registration	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/>	Registration date:
5. Large/Small Community Well Approval	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/>	Approval letter date:
6. Large Groundwater Withdrawal Permit	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/>	Permit number:
7. Other:	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/>	Permit number:

L. List all species identified by the Natural Heritage Bureau as threatened or endangered or of concern: Blandings turtle, northern black racer, smooth green snake, spotted turtle, wood turtle.

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." ROCHESTER RESERVOIR- CYANOBACTERIA; MOHAWK BROOK- DO AND DO SATURATION; BERRYS RIVER - LOW FLOW ALT.

N. Did the applicant/applicant's agent have a pre-application meeting with AOT staff? Yes No
 If yes, name of staff member: Ridgley Mauk

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.

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.

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.nhdfi.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


MC 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: 05/06/19

Name (print or type): Matthew Cardin

Title: Environmental Permitting Coordinator

PROPERTY OWNER

PROPERTY OWNER'S AGENT:

Signature: _____

Date: _____

Name (print or type): _____

Title: _____

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 N/A - Engineering designs available for electrical infrastructure and can be provided upon request.
- 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. N/A - Impervious surfaces requiring stormwater treatment is not proposed.
- Pre-existing 2-foot contours
- Proposed 2-foot contours N/A - Permanent grading for access improvements is not expected to exceed 2-feet.
- Drainage easements protecting the drainage/treatment structures N/A - Drainage/treatment structures not proposed.
- 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. *Shoreland Permit under review for submittal. <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. N/A - Significant cut/fill activities not proposed.
- Check to see if any proposed ponds need state Dam permits. N/A - Ponds not proposed. <http://des.nh.gov/organization/divisions/water/dam/documents/damdef.pdf>

DETAILS

- Typical roadway x-section N/A - Roadways not proposed.
- Detention basin with inverts noted on the outlet structure N/A - Detention basins not proposed.
- Stone berm level spreader N/A - Stone berm level spreaders not proposed.
- Outlet protection – riprap aprons N/A - Outlets not proposed.
- 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. N/A - No existing or proposed storm drains present in ROW.
- Hay bale barriers
- Stone check dams
- Gravel construction exit
- Temporary sediment trap N/A - Temporary sediment traps not proposed.
- The treatment BMP's proposed N/A - Treatment BMPs not proposed.
- Any innovative BMP's proposed N/A - Innovative BMPs not 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. N/A
- Note that ponds and swales shall be installed early on in the construction sequence (before rough grading the site). N/A
- Note that all ditches and swales shall be stabilized prior to directing runoff to them. N/A
- Note that all roadways and parking lots shall be stabilized within 72 hours of achieving finished grade. N/A
- 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. N/A

DRAINAGE ANALYSES

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

- PE stamp N/A
- 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. N/A
- Drainage analyses, in the following order: N/A

- 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 N/A

- 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. N/A

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

Check the outlet structure proposed and make sure it matches that modeled. N/A

Check to see if the total areas in the pre and post analyses are same. N/A

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

PRE- AND POST-DEVELOPMENT DRAINAGE AREA PLANS N/A

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 N/A

11” x 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: N/A

- 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 N/A

- 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(I) if applicable.



Appendix B – Abutters List



Eversource 391,373, and 385 Transmission Line Structure Replacement Project
 Auburn, Chester, Candia, Raymond, Deerfield, Strafford,
 and Rochester,
 New Hampshire

Table 1. Parcels Intersecting Project Area

Auburn	Candia	Deerfield (cont.)	Rochester (cont.)	Strafford
Tax Map-Lot	Tax Map-Lot	Tax Map-Lot	Tax Map-Lot	Tax Map-Lot
000002000044000005	407-40	424-063-000	0232-0001-0000	16-4-7
000002000044000008	407-37	424-068-000	0232-0007-0000	16-23-1
000002000047000001	407-39		0232-0006-0001	16-23-3
000002000044000004	407-34	Derry	0232-0002-0000	16-23-5
000002000045000002	407-33	Tax Map-Lot	0235-0069-0000	16-23-4
000002000045000000	407-36	1-17-0	0235-0060-0000	16-6-A-0
000002000044000003	407-43	1-15-0	0235-0067-0000	16-6
000002000045000003	407-32	1-2-0	0235-0058-0000	16-6
000002000049000000	407-45	1-14-0	0235-0072-0000	16-27-B-1
000002000046000000	407-38	1-13-0	0235-0057-0001	16-23-2
000002000047000UTL	407-35		0235-0057-0000	16-30
000002000050000000	407-44	Raymond	0232-0003-0000	16-31
000002000038000001	407-42	Tax Map-Lot	0232-0004-0000	16-32
000002000045000001		043000008000	0235-0065-0000	20-7
		044000022000	0235-0070-0000	20-8
		044000008000	0248-0020-0000	20-36
		048000006000	0235-0031-0000	20-9
		044000007000	0235-0063-0000	20-20-7
		043000007000	0235-0068-0000	20-20-8
		043000004001	0235-0066-0001	20-10
		043000009000	0235-0034-0000	20-20-9
		043000006000	0235-0047-0000	20-20-6
		044000021000	0235-0056-0000	20-20-8-A
		043000005000	0232-0008-0000	20-20-16
		044000009000	0232-0005-0000	20-16
		043000004000	0232-0036-0000	20-22-11
		048000005000	0235-0053-0000	20-22-10
			0235-0042-0000	20-20
		Rochester	0220-0002-0000	20-22-8
		Tax Map-Lot	0232-0006-0000	20-22
		0235-0051-0000	0232-0035-0000	20-33
		0235-0066-0000	0235-0064-0000	20-34
		0235-0048-0000	0235-0080-0000	20-27
		0235-0055-0000	0234-0013-0000	20-30
		0235-0050-0000	0235-0052-0000	20-22-9
		0235-0049-0000	0248-0019-0000	20-31
		0235-0061-0000		20-35
		0235-0054-0000		20-32
		0235-0062-0000		20-37
		0235-0071-0000		12-38-3
				12-35

Chester	Deerfield
Tax Map-Lot	Tax Map-Lot
1-97-0	424-042-000
4-7-0	424-028-000
1-8-0	424-044-000
1-7-0	424-043-000
4-8-0	424-093-009
4-9-0	424-046-000
1-96-0	424-066-000
4-10-0	424-084-000
1-5-1	424-070-000
1-6-0	424-049-000
1-69-1	424-026-000
1-65-0	424-047-000
1-98-0	424-064-000
1-65-1	424-065-000
1-66-0	424-068-000
1-69-0	424-072-000
1-3-0	424-078-000
1-4-0	424-045-000
4-11-0	424-069-000
4-12-0	424-067-000
4-20-0	424-071-000
	424-062-000
	424-073-000
	424-086-000



Eversource 391,373, and 385 Transmission Line Structure Replacement Project
Auburn, Chester, Candia, Raymond, Deerfield, Strafford,
and Rochester,
New Hampshire

Table 1. Parcels Intersecting Project Area

Strafford (cont.)
Tax Map-Lot
12-55
12-32
12-36
12-37



**Appendix C – New Hampshire Natural Heritage Bureau Report and E-Mail Review from
NHB and New Hampshire Fish and Game**

CONFIDENTIAL DNCR

CONFIDENTIAL DNCR

CONFIDENTIAL DNCR

CONFIDENTIAL DNCR



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 Rockingham County, New Hampshire

391, 373, 385 Transmission Line Structure Replacement Project





United States
Department of
Agriculture

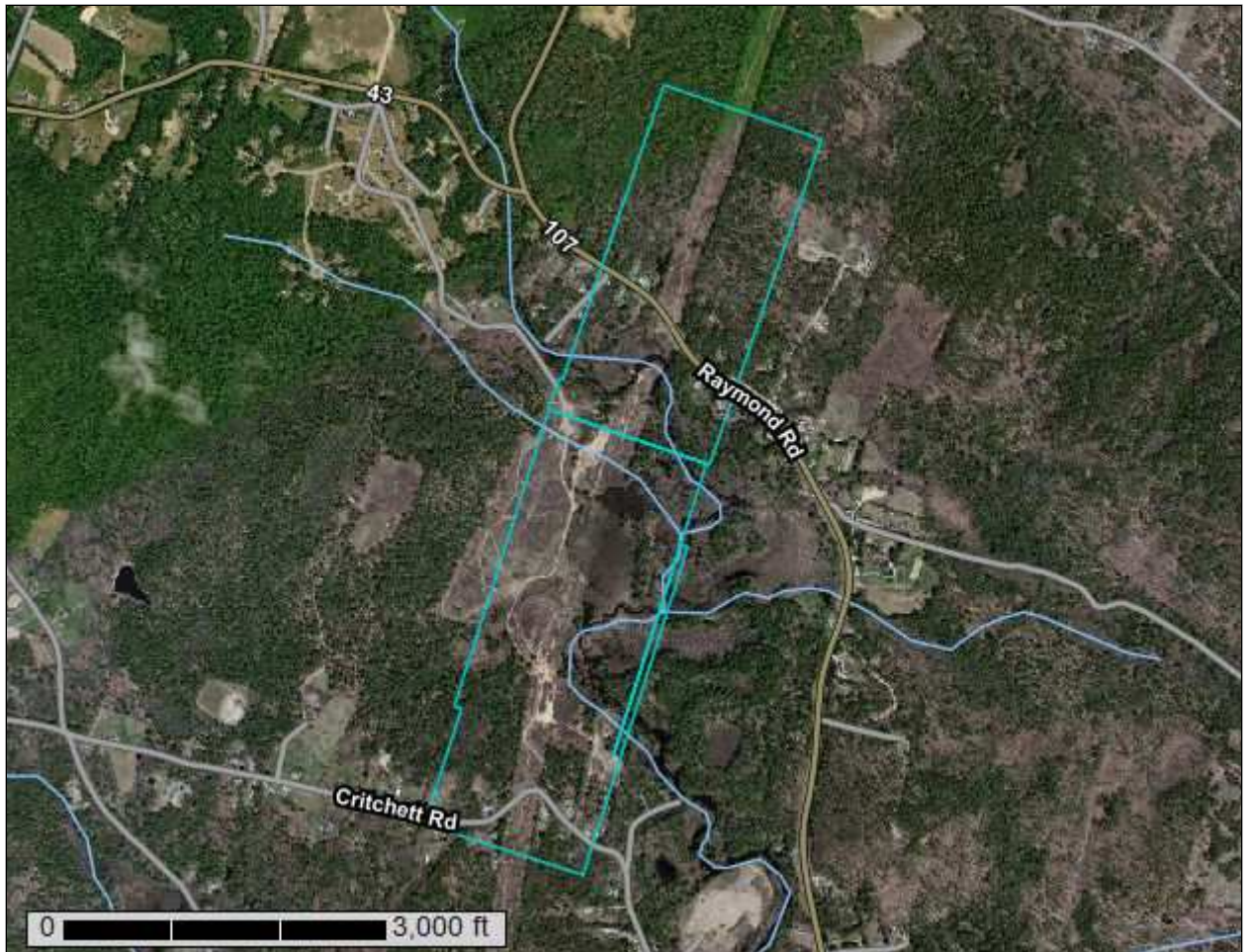
NRCS

Natural
Resources
Conservation
Service

A product of the National
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participants

Custom Soil Resource Report for Rockingham County, New Hampshire

391, 373, 385 Transmission Line Structure Replacement Project





United States
Department of
Agriculture

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Stations, and local
participants

Custom Soil Resource Report for Strafford County, New Hampshire

391, 373, 385 Transmission Line Structure Replacement Project



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.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

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Contents

Preface	2
How Soil Surveys Are Made	5
Soil Map	8
Soil Map.....	9
Legend.....	10
Map Unit Legend.....	11
Map Unit Descriptions.....	11
Rockingham County, New Hampshire.....	14
45B—Montauk fine sandy loam, 0 to 8 percent slopes, very stony.....	14
97—Freetown and Natchaug mucky peats, ponded, 0 to 2 percent slopes.....	15
125—Scarboro muck, very stony.....	17
140B—Chatfield-Hollis-Canton complex, 0 to 8 percent slopes, rocky.....	18
140C—Chatfield-Hollis-Canton complex, 8 to 15 percent slopes, rocky.....	21
140D—Chatfield-Hollis-Canton complex, 15 to 35 percent slopes, rocky...	24
295—Freetown mucky peat, 0 to 2 percent slopes.....	27
447B—Scituate-Newfields complex, 3 to 8 percent slopes, very stony.....	29
495—Natchaug mucky peat, 0 to 2 percent slopes.....	31
547B—Walpole very fine sandy loam, 3 to 8 percent slopes, very stony....	32
References	34

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

Custom Soil Resource Report

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

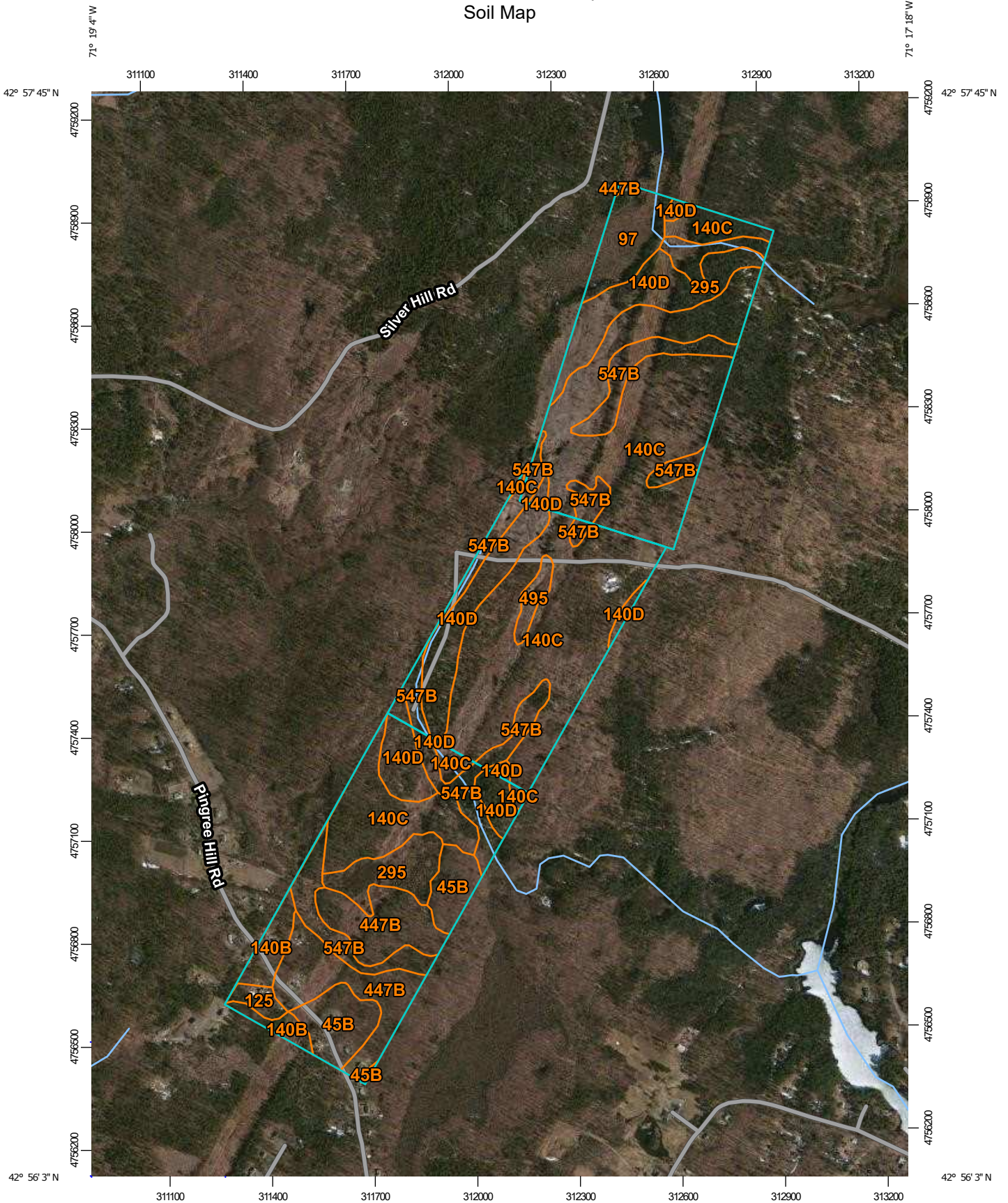
Custom Soil Resource Report

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: 1:15,400 if printed on A portrait (8.5" x 11") sheet.



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 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: Rockingham County, New Hampshire
 Survey Area Data: Version 20, Sep 7, 2018

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

Date(s) aerial images were photographed: Mar 30, 2011—Apr 8, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background 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
45B	Montauk fine sandy loam, 0 to 8 percent slopes, very stony	16.2	5.1%
97	Freetown and Natchaug mucky peats, ponded, 0 to 2 percent slopes	11.4	3.6%
125	Scarboro muck, very stony	2.6	0.8%
140B	Chatfield-Hollis-Canton complex, 0 to 8 percent slopes, rocky	7.8	2.4%
140C	Chatfield-Hollis-Canton complex, 8 to 15 percent slopes, rocky	148.5	46.6%
140D	Chatfield-Hollis-Canton complex, 15 to 35 percent slopes, rocky	45.4	14.2%
295	Freetown mucky peat, 0 to 2 percent slopes	14.6	4.6%
447B	Scituate-Newfields complex, 3 to 8 percent slopes, very stony	30.4	9.5%
495	Natchaug mucky peat, 0 to 2 percent slopes	2.8	0.9%
547B	Walpole very fine sandy loam, 3 to 8 percent slopes, very stony	39.1	12.3%
Totals for Area of Interest		318.8	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.

Custom Soil Resource Report

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

Custom Soil Resource Report

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.

Rockingham County, New Hampshire

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: Recessional moraines, drumlins, hills, ground moraines

Landform position (two-dimensional): Backslope, shoulder, summit

Landform position (three-dimensional): Side slope, crest

Down-slope shape: Linear, convex

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

Percent of area covered with surface fragments: 1.6 percent

Depth to restrictive feature: 20 to 43 inches to densic material

Natural 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

Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water storage in profile: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: C

Hydric soil rating: No

Minor Components

Scituate, very stony

Percent of map unit: 6 percent
Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Summit, footslope, backslope
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Linear, convex
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: Drainageways, hills, ground moraines, depressions
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope, head 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: Bogs, marshes, kettles, depressions, swamps
Down-slope shape: Concave

Custom Soil Resource Report

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

Percent of area covered with surface fragments: 0.0 percent

Depth to restrictive feature: More than 80 inches

Natural 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 storage in profile: Very high (about 20.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8w

Hydrologic Soil Group: B/D

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

Natural 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 in profile: 25 percent

Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water storage in profile: Very high (about 14.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8w

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Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Minor Components

Scarboro, ponded

Percent of map unit: 9 percent
Landform: Outwash terraces, depressions, outwash deltas, drainageways
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

Ridgebury, very stony

Percent of map unit: 4 percent
Landform: Depressions, drumlins, drainageways, hills, ground moraines
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope, head slope
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

125—Scarboro muck, very stony

Map Unit Setting

National map unit symbol: 9cm7
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: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Scarborough

Setting

Landform: Outwash terraces

Typical profile

O - 0 to 12 inches: mucky peat

H1 - 12 to 16 inches: sandy loam

H2 - 16 to 60 inches: sand

Properties and qualities

Slope: 0 to 3 percent

Percent of area covered with surface fragments: 0.1 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Very poorly drained

Runoff class: Negligible

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 12 inches

Frequency of flooding: None

Frequency of ponding: Frequent

Available water storage in profile: High (about 9.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: A/D

Hydric soil rating: Yes

Minor Components

Walpole

Percent of map unit: 10 percent

Landform: Ground moraines

Hydric soil rating: Yes

Ossipee

Percent of map unit: 5 percent

Landform: Bogs

Hydric soil rating: Yes

Chocorua

Percent of map unit: 5 percent

Landform: Bogs

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

Custom Soil Resource Report

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): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope, nose slope
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

O_i - 0 to 1 inches: slightly decomposed plant material
A - 1 to 2 inches: fine sandy loam
B_w - 2 to 30 inches: gravelly fine sandy loam
2R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 0 to 8 percent
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: 20 to 41 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (K_{sat}): 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
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Hydric soil rating: No

Description of Canton, Very Stony

Setting

Landform: Hills, moraines, ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, crest, nose slope
Down-slope shape: Linear, convex
Across-slope shape: Convex

Custom Soil Resource Report

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
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification
Natural 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
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Hydric soil rating: No

Description of Hollis, Very Stony

Setting

Landform: Hills, ridges
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope, nose slope
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
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: 8 to 23 inches to lithic bedrock
Natural 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

Custom Soil Resource Report

Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Newfields, very stony

Percent of map unit: 5 percent
Landform: Moraines, hills, ground 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: Depressions, marshes, swamps, kettles, bogs
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Walpole, very stony

Percent of map unit: 3 percent
Landform: Depressions, outwash plains, depressions, deltas, 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: Hills, ridges
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

Custom Soil Resource Report

Frost-free period: 145 to 240 days

Farmland classification: Not prime farmland

Map Unit Composition

Chatfield, very stony, and similar soils: 35 percent

Canton, very stony, and similar soils: 25 percent

Hollis, 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): Backslope, shoulder, summit

Landform position (three-dimensional): Crest, side slope, nose slope

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

O_i - 0 to 1 inches: slightly decomposed plant material

A - 1 to 2 inches: fine sandy loam

B_w - 2 to 30 inches: gravelly fine sandy loam

2R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent

Percent of area covered with surface fragments: 1.6 percent

Depth to restrictive feature: 20 to 41 inches to lithic bedrock

Natural drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (K_{sat}): 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

Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water storage in profile: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: B

Hydric soil rating: No

Description of Hollis, Very Stony

Setting

Landform: Hills, ridges

Landform position (two-dimensional): Backslope, shoulder, summit

Landform position (three-dimensional): Crest, side slope, nose slope

Down-slope shape: Convex

Across-slope shape: Linear, convex

Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Custom Soil Resource Report

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
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: 8 to 23 inches to lithic bedrock
Natural 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
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Hydric soil rating: No

Description of Canton, Very Stony

Setting

Landform: Hills, moraines, ridges
Landform position (two-dimensional): Backslope, summit, shoulder
Landform position (three-dimensional): Side slope, crest, nose slope
Down-slope shape: Linear, convex
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
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification
Natural 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

Custom Soil Resource Report

Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Freetown

Percent of map unit: 5 percent
Landform: Marshes, swamps, kettles, bogs, depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Newfields, very stony

Percent of map unit: 5 percent
Landform: Ground moraines, 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: Outwash deltas, drainageways, outwash terraces, depressions
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: Hills, ridges
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

Canton, very stony, and similar soils: 25 percent

Hollis, 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: Hills, ridges

Landform position (two-dimensional): Summit, backslope, shoulder

Landform position (three-dimensional): Crest, side slope, nose slope

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

O_i - 0 to 1 inches: slightly decomposed plant material

A - 1 to 2 inches: fine sandy loam

B_w - 2 to 30 inches: gravelly fine sandy loam

2R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 15 to 35 percent

Percent of area covered with surface fragments: 1.6 percent

Depth to restrictive feature: 20 to 41 inches to lithic bedrock

Natural drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (K_{sat}): 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

Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water storage in profile: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: B

Hydric soil rating: No

Description of Canton, Very Stony

Setting

Landform: Hills, moraines, ridges

Landform position (two-dimensional): Backslope, summit, shoulder

Landform position (three-dimensional): Side slope, nose slope, crest

Down-slope shape: Linear, convex

Across-slope shape: Convex

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

Custom Soil Resource Report

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
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification
Natural 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
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: B
Hydric soil rating: No

Description of Hollis, Very Stony

Setting

Landform: Hills, ridges
Landform position (two-dimensional): Shoulder, backslope, summit
Landform position (three-dimensional): Crest, side slope, nose slope
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
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: 8 to 23 inches to lithic bedrock
Natural 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

Custom Soil Resource Report

Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water storage in profile: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: D

Hydric soil rating: No

Minor Components

Montauk, very stony

Percent of map unit: 7 percent

Landform: Drumlins, hills, ground moraines, recessional moraines

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear, convex

Across-slope shape: Convex

Hydric soil rating: No

Scarboro, very stony

Percent of map unit: 6 percent

Landform: Outwash terraces, depressions, outwash deltas, drainageways

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: Hills, ridges

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: Bogs, marshes, kettles, depressions, 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

Percent of area covered with surface fragments: 0.0 percent

Depth to restrictive feature: More than 80 inches

Natural 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 storage in profile: Very high (about 20.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8

Hydrologic Soil Group: B/D

Hydric soil rating: Yes

Minor Components

Swansea

Percent of map unit: 8 percent

Landform: Bogs, depressions, marshes, kettles, swamps

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: Depressions, outwash deltas, outwash terraces, 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

Custom Soil Resource Report

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

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
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: About 32 inches to densic material
Natural 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 storage in profile: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
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

Percent of area covered with surface fragments: 1.6 percent

Depth to restrictive feature: More than 80 inches

Natural 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 storage in profile: Moderate (about 6.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: C

Hydric soil rating: No

Minor Components

Canton

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

Not named

Percent of map unit: 5 percent

Hydric soil rating: No

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

Natural 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 in profile: 25 percent

Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water storage in profile: Very high (about 14.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8w

Hydrologic Soil Group: B/D

Hydric soil rating: Yes

Minor Components

Scarboro

Percent of map unit: 4 percent
Landform: Depressions, outwash deltas, drainageways, outwash terraces
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, outwash terraces, depressions, outwash plains, depressions
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 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

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

Custom Soil Resource Report

Properties and qualities

Slope: 3 to 8 percent

Percent of area covered with surface fragments: 0.1 percent

Depth to restrictive feature: More than 80 inches

Natural 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 storage in profile: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: A/D

Hydric soil rating: Yes

Minor Components

Scarboro

Percent of map unit: 10 percent

Landform: Depressions

Hydric soil rating: Yes

Squamscott

Percent of map unit: 5 percent

Landform: Marine terraces

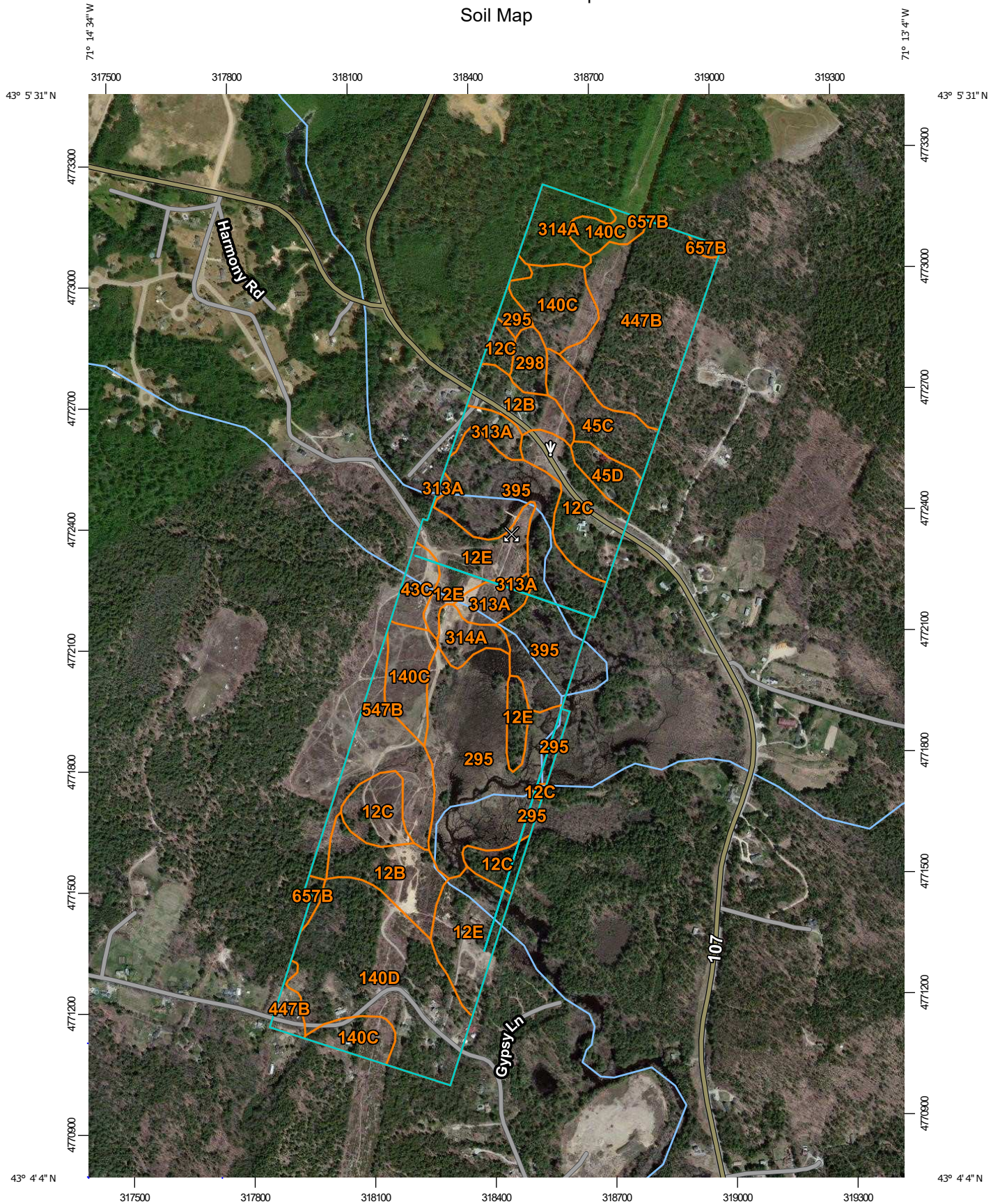
Hydric soil rating: Yes

Newfields

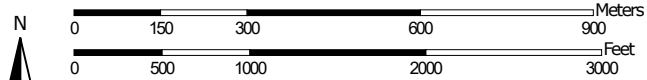
Percent of map unit: 5 percent

Hydric soil rating: No

Custom Soil Resource Report Soil Map



Map Scale: 1:13,100 if printed on A portrait (8.5" x 11") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge ticks: 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 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: Rockingham County, New Hampshire
 Survey Area Data: Version 20, Sep 7, 2018

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—May 15, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background 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
12B	Hinckley loamy sand, 3 to 8 percent slopes	15.7	6.0%
12C	Hinckley loamy sand, 8 to 15 percent slopes	21.9	8.4%
12E	Hinckley loamy sand, 15 to 60 percent slopes	23.6	9.1%
43C	Canton fine sandy loam, 8 to 15 percent slopes, very stony	3.7	1.4%
45C	Montauk fine sandy loam, 8 to 15 percent slopes, very stony	8.5	3.3%
45D	Montauk fine sandy loam, 15 to 25 percent slopes, very stony	3.8	1.5%
140C	Chatfield-Hollis-Canton complex, 8 to 15 percent slopes, rocky	22.1	8.5%
140D	Chatfield-Hollis-Canton complex, 15 to 35 percent slopes, rocky	33.0	12.7%
295	Freetown mucky peat, 0 to 2 percent slopes	32.7	12.6%
298	Pits, sand and gravel	3.0	1.2%
313A	Deerfield loamy fine sand, 0 to 3 percent slopes	7.2	2.8%
314A	Pipestone sand, 0 to 5 percent slopes	10.4	4.0%
395	Swansea mucky peat, 0 to 2 percent slopes	29.1	11.2%
447B	Scituate-Newfields complex, 3 to 8 percent slopes, very stony	30.8	11.8%
547B	Walpole very fine sandy loam, 3 to 8 percent slopes, very stony	13.1	5.0%
657B	Ridgebury fine sandy loam, 3 to 8 percent slopes, very stony	1.4	0.6%
Totals for Area of Interest		260.2	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.

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 terraces, outwash deltas, outwash plains, eskers, moraines, kame terraces, kames

Landform position (two-dimensional): Summit, shoulder, backslope, footslope

Landform position (three-dimensional): Nose slope, side slope, base slope, crest, riser, tread

Down-slope shape: Linear, concave, convex

Across-slope shape: Concave, convex, linear

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

Natural 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

Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water storage in profile: Very low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3s

Hydrologic Soil Group: A

Custom Soil Resource Report

Hydric soil rating: No

Minor Components

Windsor

Percent of map unit: 8 percent

Landform: Outwash deltas, kame terraces, outwash plains, kames, eskers, moraines, 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: Linear, concave, convex

Across-slope shape: Concave, convex, linear

Hydric soil rating: No

Sudbury

Percent of map unit: 5 percent

Landform: Outwash terraces, outwash deltas, kame terraces, outwash plains, moraines

Landform position (two-dimensional): Backslope, footslope

Landform position (three-dimensional): Side slope, base slope, head slope, tread

Down-slope shape: Concave, linear

Across-slope shape: Concave, linear

Hydric soil rating: No

Agawam

Percent of map unit: 2 percent

Landform: Outwash plains, kames, eskers, moraines, outwash terraces, outwash deltas, kame terraces

Landform position (two-dimensional): Summit, shoulder, backslope, footslope

Landform position (three-dimensional): Nose slope, side slope, base slope, crest, tread, riser

Down-slope shape: Linear, concave, convex

Across-slope shape: Concave, convex, linear

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: Moraines, outwash terraces, outwash deltas, kame terraces, outwash plains, kames, eskers

Landform position (two-dimensional): Shoulder, toeslope, footslope, backslope

Landform position (three-dimensional): Nose slope, side slope, crest, head slope, riser

Down-slope shape: Convex, linear, concave

Across-slope shape: Linear, convex, 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

Natural 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

Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water storage in profile: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: A

Hydric soil rating: No

Minor Components

Merrimac

Percent of map unit: 5 percent

Landform: Moraines, outwash terraces, outwash plains, kames, eskers

Landform position (two-dimensional): Shoulder, backslope, footslope, toeslope

Landform position (three-dimensional): Side slope, crest, head slope, nose slope, riser

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: No

Windsor

Percent of map unit: 5 percent

Landform: Moraines, kame terraces, outwash plains, outwash terraces, outwash deltas, kames, eskers

Custom Soil Resource Report

Landform position (two-dimensional): Shoulder, backslope, footslope, toeslope
Landform position (three-dimensional): Nose slope, side slope, crest, head slope, riser
Down-slope shape: Convex, linear, concave
Across-slope shape: Linear, convex, concave
Hydric soil rating: No

Sudbury

Percent of map unit: 5 percent
Landform: Kame terraces, outwash plains, moraines, outwash deltas, outwash terraces
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Concave, linear
Across-slope shape: Linear, concave
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, kame terraces, outwash plains, kames, eskers, moraines, outwash terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Nose slope, side slope, crest, head slope, riser
Down-slope shape: Linear, convex, concave
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

Custom Soil Resource Report

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

Natural 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

Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water storage in profile: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: A

Hydric soil rating: No

Minor Components

Windsor

Percent of map unit: 10 percent

Landform: Kame terraces, kames, eskers, moraines, outwash plains, outwash terraces, outwash deltas

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope, crest, nose slope, head slope, riser

Down-slope shape: Convex, linear, concave

Across-slope shape: Linear, convex, concave

Hydric soil rating: No

Merrimac

Percent of map unit: 5 percent

Landform: Moraines, outwash terraces, outwash plains, kames, eskers

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope, crest, nose slope, head slope, riser

Down-slope shape: Convex, linear, concave

Across-slope shape: Linear, convex, concave

Hydric soil rating: No

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

Custom Soil Resource Report

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: Ridges, moraines, 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

O_i - 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

Percent of area covered with surface fragments: 1.6 percent

Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification

Natural drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (K_{sat}): 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

Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water storage in profile: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: B

Hydric soil rating: No

Minor Components

Montauk, very stony

Percent of map unit: 6 percent

Landform: Recessional moraines, drumlins, hills, ground moraines

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear, convex

Across-slope shape: Convex

Custom Soil Resource Report

Hydric soil rating: No

Scituate, very stony

Percent of map unit: 5 percent

Landform: Drumlins, hills, ground moraines

Landform position (two-dimensional): Footslope, backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear, convex

Across-slope shape: Convex

Hydric soil rating: No

Chatfield, very stony

Percent of map unit: 3 percent

Landform: Hills, ridges

Landform position (two-dimensional): Shoulder, backslope, summit

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: Bogs, depressions, marshes, kettles, swamps

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, drumlins, ground moraines, recessional moraines

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex, linear

Across-slope shape: Convex

Custom Soil Resource Report

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
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: 20 to 43 inches to densic material
Natural 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
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Scituate, very stony

Percent of map unit: 6 percent
Landform: Hills, ground moraines, drumlins
Landform position (two-dimensional): Footslope, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
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: Hills, ground moraines, depressions, 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

45D—Montauk fine sandy loam, 15 to 25 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2w810
Elevation: 80 to 1,120 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

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: Recessional moraines, drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
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: 15 to 25 percent
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: 20 to 43 inches to densic material
Natural 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
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Custom Soil Resource Report

Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Scituate, very stony

Percent of map unit: 6 percent
Landform: Drumlins, hills, 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

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

Chatfield, very stony

Percent of map unit: 4 percent
Landform: Hills, ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

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
Canton, very stony, and similar soils: 25 percent
Hollis, 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): Backslope, shoulder, summit

Landform position (three-dimensional): Crest, side slope, nose slope

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

O_i - 0 to 1 inches: slightly decomposed plant material

A - 1 to 2 inches: fine sandy loam

B_w - 2 to 30 inches: gravelly fine sandy loam

2R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent

Percent of area covered with surface fragments: 1.6 percent

Depth to restrictive feature: 20 to 41 inches to lithic bedrock

Natural drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (K_{sat}): 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

Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water storage in profile: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: B

Hydric soil rating: No

Description of Hollis, Very Stony

Setting

Landform: Hills, ridges

Landform position (two-dimensional): Backslope, shoulder, summit

Landform position (three-dimensional): Crest, side slope, nose slope

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

O_i - 0 to 2 inches: slightly decomposed plant material

A - 2 to 7 inches: gravelly fine sandy loam

B_w - 7 to 16 inches: gravelly fine sandy loam

2R - 16 to 26 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent

Percent of area covered with surface fragments: 1.6 percent

Custom Soil Resource Report

Depth to restrictive feature: 8 to 23 inches to lithic bedrock
Natural 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
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Hydric soil rating: No

Description of Canton, Very Stony

Setting

Landform: Hills, moraines, ridges
Landform position (two-dimensional): Backslope, summit, shoulder
Landform position (three-dimensional): Side slope, crest, nose slope
Down-slope shape: Linear, convex
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
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification
Natural 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
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Freetown

Percent of map unit: 5 percent
Landform: Marshes, swamps, kettles, bogs, depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Newfields, very stony

Percent of map unit: 5 percent
Landform: Ground moraines, 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: Outwash deltas, drainageways, outwash terraces, depressions
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: Hills, ridges
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
Canton, very stony, and similar soils: 25 percent
Hollis, 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: Hills, ridges

Landform position (two-dimensional): Summit, backslope, shoulder

Landform position (three-dimensional): Crest, side slope, nose slope

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

O_i - 0 to 1 inches: slightly decomposed plant material

A - 1 to 2 inches: fine sandy loam

B_w - 2 to 30 inches: gravelly fine sandy loam

2R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 15 to 35 percent

Percent of area covered with surface fragments: 1.6 percent

Depth to restrictive feature: 20 to 41 inches to lithic bedrock

Natural drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (K_{sat}): 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

Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water storage in profile: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: B

Hydric soil rating: No

Description of Canton, Very Stony

Setting

Landform: Hills, moraines, ridges

Landform position (two-dimensional): Backslope, summit, shoulder

Landform position (three-dimensional): Side slope, nose slope, crest

Down-slope shape: Linear, convex

Across-slope shape: Convex

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

Typical profile

O_i - 0 to 2 inches: slightly decomposed plant material

A - 2 to 5 inches: fine sandy loam

B_{w1} - 5 to 16 inches: fine sandy loam

B_{w2} - 16 to 22 inches: gravelly fine sandy loam

2C - 22 to 67 inches: gravelly loamy sand

Properties and qualities

Slope: 15 to 35 percent

Custom Soil Resource Report

Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification
Natural 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
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: B
Hydric soil rating: No

Description of Hollis, Very Stony

Setting

Landform: Hills, ridges
Landform position (two-dimensional): Shoulder, backslope, summit
Landform position (three-dimensional): Crest, side slope, nose slope
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

O_i - 0 to 2 inches: slightly decomposed plant material
A - 2 to 7 inches: gravelly fine sandy loam
B_w - 7 to 16 inches: gravelly fine sandy loam
2R - 16 to 26 inches: bedrock

Properties and qualities

Slope: 15 to 35 percent
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: 8 to 23 inches to lithic bedrock
Natural 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
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Montauk, very stony

Percent of map unit: 7 percent
Landform: Drumlins, hills, ground moraines, recessional moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Hydric soil rating: No

Scarboro, very stony

Percent of map unit: 6 percent
Landform: Outwash terraces, depressions, outwash deltas, drainageways
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: Hills, ridges
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: Bogs, marshes, kettles, depressions, swamps
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Moderately decomposed organic material

Custom Soil Resource Report

Typical profile

Oe1 - 0 to 2 inches: mucky peat
Oe2 - 2 to 79 inches: mucky peat

Properties and qualities

Slope: 0 to 1 percent
Percent of area covered with surface fragments: 0.0 percent
Depth to restrictive feature: More than 80 inches
Natural 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 storage in profile: Very high (about 20.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Minor Components

Swansea

Percent of map unit: 8 percent
Landform: Bogs, depressions, marshes, kettles, swamps
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: Depressions, outwash deltas, outwash terraces, 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.

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, kame terraces, outwash plains, outwash deltas

Landform position (three-dimensional): Tread

Down-slope shape: Convex, linear, concave

Across-slope shape: Concave, linear, convex

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

Natural 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

Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)

Sodium adsorption ratio, maximum in profile: 11.0

Custom Soil Resource Report

Available water storage in profile: Moderate (about 6.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2w

Hydrologic Soil Group: A

Hydric soil rating: No

Minor Components

Windsor

Percent of map unit: 7 percent

Landform: Outwash plains, outwash deltas, kame terraces, outwash terraces

Landform position (three-dimensional): Tread

Down-slope shape: Linear, concave, convex

Across-slope shape: Concave, linear, convex

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 plains, outwash terraces, outwash deltas

Landform position (three-dimensional): Tread

Down-slope shape: Convex, linear, concave

Across-slope shape: Concave, linear, convex

Hydric soil rating: No

Ninigret

Percent of map unit: 1 percent

Landform: Outwash terraces, outwash plains, kame terraces

Landform position (three-dimensional): Tread

Down-slope shape: Linear, convex

Across-slope shape: Concave, convex

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

Natural 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 storage in profile: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4w

Hydrologic Soil Group: A/D

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

Deerfield

Percent of map unit: 5 percent

Hydric soil rating: No

Squamscott

Percent of map unit: 5 percent

Landform: Marine terraces

Hydric soil rating: Yes

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: Depressions, marshes, swamps, bogs, kettles
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
Natural 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 storage in profile: High (about 11.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Minor Components

Freetown

Percent of map unit: 7 percent
Landform: Kettles, depressions, swamps, bogs, marshes
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Scarboro

Percent of map unit: 5 percent
Landform: Outwash deltas, drainageways, outwash terraces, depressions
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: Drainageways, outwash terraces, depressions, 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

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Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: About 32 inches to densic material
Natural 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 storage in profile: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
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
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: More than 80 inches
Natural 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 storage in profile: Moderate (about 6.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Canton

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

Ridgebury

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

Custom Soil Resource Report

Montauk

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

Walpole

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

Not named

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

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 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

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
Percent of area covered with surface fragments: 0.1 percent
Depth to restrictive feature: More than 80 inches
Natural 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 storage in profile: Low (about 4.6 inches)

Custom Soil Resource Report

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: A/D

Hydric soil rating: Yes

Minor Components

Scarboro

Percent of map unit: 10 percent

Landform: Depressions

Hydric soil rating: Yes

Squamscott

Percent of map unit: 5 percent

Landform: Marine terraces

Hydric soil rating: Yes

Newfields

Percent of map unit: 5 percent

Hydric soil rating: No

657B—Ridgebury fine sandy loam, 3 to 8 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2xffx

Elevation: 40 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

Ridgebury, very stony, and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ridgebury, Very Stony

Setting

Landform: Drumlins, drainageways, hills, ground moraines, depressions

Landform position (two-dimensional): Toeslope, footslope

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

Custom Soil Resource Report

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: 3 to 8 percent

Percent of area covered with surface fragments: 1.6 percent

Depth to restrictive feature: 15 to 35 inches to densic material

Natural 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

Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water storage in profile: Low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4w

Hydrologic Soil Group: D

Hydric soil rating: Yes

Minor Components

Woodbridge, very stony

Percent of map unit: 7 percent

Landform: Ground moraines, drumlins, hills

Landform position (two-dimensional): Footslope, summit, backslope

Landform position (three-dimensional): Crest, side slope

Down-slope shape: Convex

Across-slope shape: Linear

Hydric soil rating: No

Whitman, very stony

Percent of map unit: 4 percent

Landform: Ground moraines, drumlins, depressions, drainageways, hills

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Base slope

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

Scituate, very stony

Percent of map unit: 2 percent

Landform: Ground moraines, drumlins, hills

Landform position (two-dimensional): Summit, footslope, backslope

Landform position (three-dimensional): Crest, side slope

Down-slope shape: Linear, convex

Across-slope shape: Convex

Hydric soil rating: No

Walpole

Percent of map unit: 2 percent

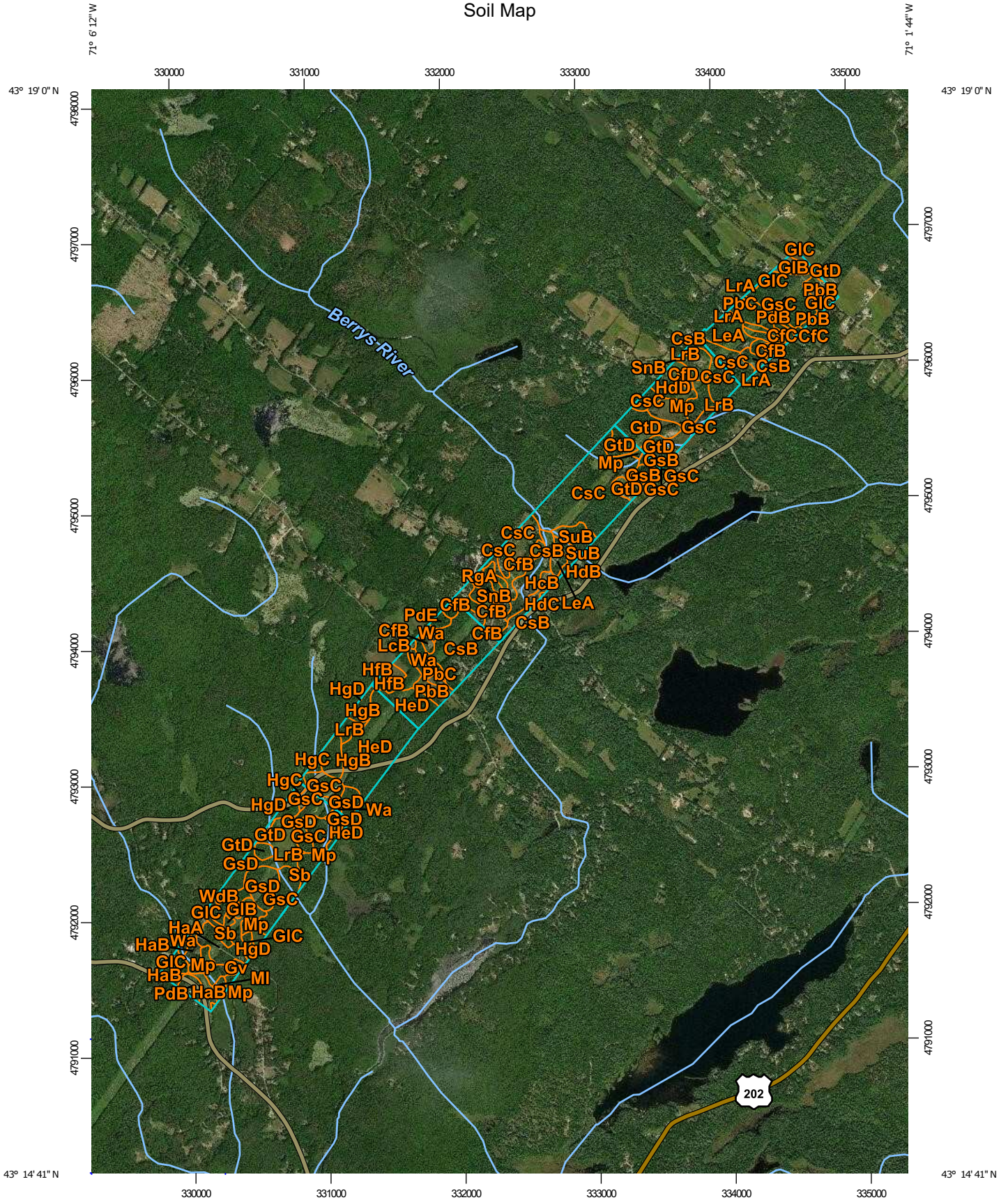
Landform: Depressions, outwash terraces, drainageways

Landform position (three-dimensional): Tread

Custom Soil Resource Report

Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Custom Soil Resource Report Soil Map



Map Scale: 1:38,900 if printed on A portrait (8.5" x 11") sheet.



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 1:20,000.

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: Strafford County, New Hampshire
 Survey Area Data: Version 18, Sep 5, 2018

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

Date(s) aerial images were photographed: Aug 28, 2015—May 15, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background 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
CfB	Charlton fine sandy loam, 3 to 8 percent slopes	61.9	7.4%
CfC	Charlton fine sandy loam, 8 to 15 percent slopes	4.6	0.5%
CfD	Charlton fine sandy loam, 15 to 25 percent slopes	7.0	0.8%
CsB	Charlton fine sandy loam, 3 to 8 percent slopes, very stony	62.8	7.6%
CsC	Charlton fine sandy loam, 8 to 15 percent slopes, very stony	104.2	12.5%
GIB	Gloucester fine sandy loam, 3 to 8 percent slopes	8.6	1.0%
GIC	Gloucester fine sandy loam, 8 to 15 percent slopes	8.3	1.0%
GsB	Gloucester very stony fine sandy loam, 3 to 8 percent slopes	5.6	0.7%
GsC	Gloucester very stony fine sandy loam, 8 to 15 percent slopes	80.5	9.7%
GsD	Gloucester very stony fine sandy loam, 15 to 25 percent slopes	35.8	4.3%
GsE	Gloucester very stony fine sandy loam, 25 to 60 percent slopes	1.5	0.2%
GtD	Gloucester extremely stony fine sandy loam, 8 to 25 percent slopes	44.7	5.4%
Gv	Gravel and borrow pits	2.3	0.3%
HaA	Hinckley loamy sand, 0 to 3 percent slopes	16.7	2.0%
HaB	Hinckley loamy sand, 3 to 8 percent slopes	12.5	1.5%
HbE	Hinckley loamy sand, 15 to 60 percent slopes	9.8	1.2%
HcB	Hollis-Charlton fine sandy loams, 3 to 8 percent slopes	5.4	0.7%
HdB	Hollis-Charlton very rocky fine sandy loams, 3 to 8 percent slopes	1.1	0.1%
HdC	Hollis-Charlton very rocky fine sandy loams, 8 to 15 percent slopes	0.2	0.0%

Custom Soil Resource Report

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
HdD	Hollis-Charlton very rocky fine sandy loams, 15 to 25 percent slopes	11.6	1.4%
HeD	Hollis-Charlton extremely rocky fine sandy loams, 8 to 25 percent slopes	75.1	9.0%
HfB	Hollis-Gloucester fine sandy loams, 3 to 8 percent slopes	3.5	0.4%
HgB	Hollis-Gloucester very rocky fine sandy loams, 3 to 8 percent slopes	25.6	3.1%
HgC	Hollis-Gloucester very rocky fine sandy loams, 8 to 15 percent slopes	4.3	0.5%
HgD	Hollis-Gloucester very rocky fine sandy loams, 15 to 25 percent slopes	5.5	0.7%
LcB	Leicester fine sandy loam, 0 to 8 percent slopes	0.6	0.1%
LeA	Leicester very stony fine sandy loam, 0 to 3 percent slopes	19.7	2.4%
LrA	Leicester-Ridgebury fine sandy loams, 0 to 3 percent slopes, very stony	4.7	0.6%
LrB	Leicester-Ridgebury fine sandy loams, 3 to 8 percent slopes, very stony	40.9	4.9%
MI	Mixed alluvial land, wet	21.1	2.5%
Mp	Freetown and Swansea mucky peats, 0 to 2 percent slopes	36.0	4.3%
PbB	Paxton fine sandy loam, 3 to 8 percent slopes	17.2	2.1%
PbC	Paxton fine sandy loam, 8 to 15 percent slopes	5.2	0.6%
PbD	Paxton fine sandy loam, 15 to 25 percent slopes	1.9	0.2%
PdB	Paxton fine sandy loam, 0 to 8 percent slopes, very stony	13.4	1.6%
PdE	Paxton very stony fine sandy loam, 25 to 60 percent slopes	7.6	0.9%
RgA	Ridgebury fine sandy loam, 0 to 3 percent slopes	0.7	0.1%
Sb	Saugatuck loamy sand	20.2	2.4%
SnB	Sutton fine sandy loam, 3 to 8 percent slopes	10.9	1.3%
SuB	Sutton fine sandy loam, 0 to 8 percent slopes, very stony	10.0	1.2%
W	Water	0.1	0.0%
Wa	Whitman very stony fine sandy loam	13.4	1.6%

Custom Soil Resource Report

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
WdB	Windsor loamy sand, 3 to 8 percent slopes	8.2	1.0%
Totals for Area of Interest		830.9	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.

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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.

Strafford County, New Hampshire

CfB—Charlton fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2wh0n
Elevation: 0 to 1,440 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

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

Description of Charlton

Setting

Landform: Hills, ground moraines, ridges
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Ap - 0 to 7 inches: fine sandy loam
Bw - 7 to 22 inches: gravelly fine sandy loam
C - 22 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural 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
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Moderate (about 6.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Sutton

Percent of map unit: 8 percent

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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

Percent of map unit: 5 percent
Landform: Hills, ground moraines, drumlins
Landform position (two-dimensional): Backslope, summit, shoulder
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Linear, convex
Across-slope shape: Convex
Hydric soil rating: No

Leicester

Percent of map unit: 1 percent
Landform: Drainageways, depressions
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

Chatfield

Percent of map unit: 1 percent
Landform: Hills, ridges
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

CfC—Charlton fine sandy loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2wh0q
Elevation: 0 to 1,440 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

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

Description of Charlton

Setting

Landform: Ground moraines, ridges, hills

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Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Ap - 0 to 7 inches: fine sandy loam
Bw - 7 to 22 inches: gravelly fine sandy loam
C - 22 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural 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
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Moderate (about 6.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Paxton

Percent of map unit: 5 percent
Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Hydric soil rating: No

Sutton, fine sandy loam

Percent of map unit: 5 percent
Landform: Ground moraines, hills, ridges
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Chatfield

Percent of map unit: 3 percent
Landform: Hills, ridges
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Convex

Custom Soil Resource Report

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

Canton

Percent of map unit: 2 percent
Landform: Hills, ground moraines, ridges
Landform position (two-dimensional): Shoulder, backslope, summit
Landform position (three-dimensional): Side slope, nose slope, crest
Down-slope shape: Linear, convex
Across-slope shape: Convex
Hydric soil rating: No

CfD—Charlton fine sandy loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 2wh0t
Elevation: 0 to 1,290 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

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

Description of Charlton

Setting

Landform: Ridges, hills, ground moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss and/or schist

Typical profile

Ap - 0 to 7 inches: fine sandy loam
Bw - 7 to 22 inches: gravelly fine sandy loam
C - 22 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: More than 80 inches
Natural 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

Custom Soil Resource Report

Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Moderate (about 6.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Sutton, fine sandy loam

Percent of map unit: 5 percent
Landform: Ground moraines, hills, ridges
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Paxton

Percent of map unit: 5 percent
Landform: Hills, ground moraines, 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

Chatfield

Percent of map unit: 3 percent
Landform: Hills, ridges
Landform position (two-dimensional): Summit, backslope, shoulder
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Canton

Percent of map unit: 2 percent
Landform: Moraines, 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

CsB—Charlton fine sandy loam, 3 to 8 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2wh0r
Elevation: 0 to 1,570 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

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

Description of Charlton, Very Stony

Setting

Landform: Hills, ground moraines, ridges
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 4 inches: fine sandy loam
Bw - 4 to 27 inches: gravelly fine sandy loam
C - 27 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 8 percent
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: More than 80 inches
Natural 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
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B

Custom Soil Resource Report

Hydric soil rating: No

Minor Components

Sutton, very stony

Percent of map unit: 5 percent
Landform: Hills, ground moraines
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Paxton, very stony

Percent of map unit: 5 percent
Landform: Hills, ground moraines, drumlins
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Linear, convex
Across-slope shape: Convex
Hydric soil rating: No

Chatfield, very stony

Percent of map unit: 3 percent
Landform: Hills, ridges
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Leicester, very stony

Percent of map unit: 2 percent
Landform: Drainageways, depressions
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

CsC—Charlton fine sandy loam, 8 to 15 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2wh0p
Elevation: 0 to 1,570 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

Charlton, very stony, and similar soils: 85 percent
Minor components: 15 percent

Custom Soil Resource Report

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Charlton, Very Stony

Setting

Landform: Hills, ground moraines, ridges

Landform position (two-dimensional): Backslope, shoulder, summit

Landform position (three-dimensional): Crest, side slope

Down-slope shape: Linear, convex

Across-slope shape: Convex

Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material

A - 2 to 4 inches: fine sandy loam

Bw - 4 to 27 inches: gravelly fine sandy loam

C - 27 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 8 to 15 percent

Percent of area covered with surface fragments: 1.6 percent

Depth to restrictive feature: More than 80 inches

Natural 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

Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water storage in profile: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: B

Hydric soil rating: No

Minor Components

Sutton, very stony

Percent of map unit: 5 percent

Landform: Hills, ground moraines

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Base slope

Down-slope shape: Concave

Across-slope shape: Linear

Hydric soil rating: No

Paxton, very stony

Percent of map unit: 5 percent

Landform: Drumlins, hills, ground moraines

Landform position (two-dimensional): Shoulder, summit, backslope

Landform position (three-dimensional): Side slope, crest

Down-slope shape: Linear, convex

Across-slope shape: Convex

Custom Soil Resource Report

Hydric soil rating: No

Chatfield, very stony

Percent of map unit: 3 percent

Landform: Hills, ridges

Landform position (two-dimensional): Summit, backslope, shoulder

Landform position (three-dimensional): Crest, side slope, nose slope

Down-slope shape: Convex

Across-slope shape: Linear, convex

Hydric soil rating: No

Leicester, very stony

Percent of map unit: 2 percent

Landform: Hills, depressions, drainageways, ground moraines

Landform position (two-dimensional): Toeslope, footslope

Landform position (three-dimensional): Base slope

Down-slope shape: Concave, linear

Across-slope shape: Concave

Hydric soil rating: Yes

GIB—Gloucester fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9d73

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

Gloucester and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gloucester

Setting

Parent material: Till

Typical profile

H1 - 0 to 14 inches: fine sandy loam

H2 - 14 to 28 inches: very gravelly loamy sand

H3 - 28 to 40 inches: very gravelly coarse sand

Properties and qualities

Slope: 3 to 8 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Somewhat excessively drained

Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)

Custom Soil Resource Report

Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Acton

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

Hollis

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

Not named pan

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

GIC—Gloucester fine sandy loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9d74
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

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

Description of Gloucester

Setting

Parent material: Till

Typical profile

H1 - 0 to 14 inches: fine sandy loam
H2 - 14 to 28 inches: very gravelly loamy sand
H3 - 28 to 40 inches: very gravelly coarse sand

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches

Custom Soil Resource Report

Natural drainage class: Somewhat excessively drained
Runoff class: Very low
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: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Not named pan

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

Acton

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

Hollis

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

GsB—Gloucester very stony fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9d75
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

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

Description of Gloucester

Setting

Parent material: Till

Typical profile

H1 - 0 to 14 inches: very stony fine sandy loam
H2 - 14 to 28 inches: very gravelly loamy sand
H3 - 28 to 40 inches: very gravelly coarse sand

Custom Soil Resource Report

Properties and qualities

Slope: 3 to 8 percent
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Runoff class: Very low
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: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Hollis

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

Not named

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

Acton

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

GsC—Gloucester very stony fine sandy loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9d76
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

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

Description of Gloucester

Setting

Parent material: Till

Custom Soil Resource Report

Typical profile

H1 - 0 to 14 inches: very stony fine sandy loam

H2 - 14 to 28 inches: very gravelly loamy sand

H3 - 28 to 40 inches: very gravelly coarse sand

Properties and qualities

Slope: 8 to 15 percent

Percent of area covered with surface fragments: 1.6 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Somewhat excessively drained

Runoff class: Very low

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: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: A

Hydric soil rating: No

Minor Components

Not named

Percent of map unit: 5 percent

Hydric soil rating: No

Acton

Percent of map unit: 5 percent

Hydric soil rating: No

Hollis

Percent of map unit: 5 percent

Hydric soil rating: No

GsD—Gloucester very stony fine sandy loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 9d77

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

Gloucester and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gloucester

Setting

Parent material: Till

Typical profile

H1 - 0 to 14 inches: very stony fine sandy loam

H2 - 14 to 28 inches: very gravelly loamy sand

H3 - 28 to 40 inches: very gravelly coarse sand

Properties and qualities

Slope: 15 to 25 percent

Percent of area covered with surface fragments: 1.6 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Somewhat excessively drained

Runoff class: Low

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: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: A

Hydric soil rating: No

Minor Components

Not named

Percent of map unit: 10 percent

Hydric soil rating: No

Hollis

Percent of map unit: 5 percent

Hydric soil rating: No

GsE—Gloucester very stony fine sandy loam, 25 to 60 percent slopes

Map Unit Setting

National map unit symbol: 9d78

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

Gloucester and similar soils: 85 percent

Minor components: 15 percent

Custom Soil Resource Report

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gloucester

Setting

Parent material: Till

Typical profile

H1 - 0 to 14 inches: very stony fine sandy loam

H2 - 14 to 28 inches: very gravelly loamy sand

H3 - 28 to 40 inches: very gravelly coarse sand

Properties and qualities

Slope: 25 to 60 percent

Percent of area covered with surface fragments: 1.6 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Somewhat excessively drained

Runoff class: Low

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: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: A

Hydric soil rating: No

Minor Components

Not named

Percent of map unit: 10 percent

Hydric soil rating: No

Hollis

Percent of map unit: 5 percent

Hydric soil rating: No

GtD—Gloucester extremely stony fine sandy loam, 8 to 25 percent slopes

Map Unit Setting

National map unit symbol: 9d79

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

Gloucester and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gloucester

Setting

Parent material: Till

Typical profile

H1 - 0 to 14 inches: extremely stony fine sandy loam

H2 - 14 to 28 inches: very gravelly loamy sand

H3 - 28 to 40 inches: very gravelly coarse sand

Properties and qualities

Slope: 8 to 25 percent

Percent of area covered with surface fragments: 9.0 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Somewhat excessively drained

Runoff class: Very low

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: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: A

Hydric soil rating: No

Minor Components

Hollis

Percent of map unit: 5 percent

Hydric soil rating: No

Acton

Percent of map unit: 5 percent

Hydric soil rating: No

Not named

Percent of map unit: 3 percent

Hydric soil rating: No

Rock outcrop

Percent of map unit: 2 percent

Hydric soil rating: No

Gv—Gravel and borrow pits

Map Unit Setting

National map unit symbol: 9d7c
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

Gravel and borrow pits: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gravel And Borrow Pits

Typical profile

H1 - 0 to 6 inches: extremely gravelly sand
H2 - 6 to 60 inches: extremely gravelly sand

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: Unranked

HaA—Hinckley loamy sand, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2svm7
Elevation: 0 to 1,420 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: Kame terraces, outwash plains, outwash terraces, outwash deltas
Landform position (three-dimensional): Tread
Down-slope shape: Concave, linear, convex

Custom Soil Resource Report

Across-slope shape: Linear, concave, convex

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: 0 to 3 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Excessively 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: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water storage in profile: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3s

Hydrologic Soil Group: A

Hydric soil rating: No

Minor Components

Windsor

Percent of map unit: 5 percent

Landform: Outwash terraces, kame terraces, outwash deltas

Landform position (three-dimensional): Tread

Down-slope shape: Concave, linear, convex

Across-slope shape: Linear, convex, concave

Hydric soil rating: No

Merrimac

Percent of map unit: 5 percent

Landform: Outwash deltas, kame terraces, outwash terraces

Landform position (three-dimensional): Tread

Down-slope shape: Convex, linear, concave

Across-slope shape: Convex, linear, concave

Hydric soil rating: No

Sudbury

Percent of map unit: 5 percent

Landform: Kame terraces, outwash terraces, outwash deltas

Landform position (three-dimensional): Tread

Down-slope shape: Convex, concave, linear

Across-slope shape: Linear, convex, concave

Hydric soil rating: No

HaB—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: Kames, outwash terraces, outwash deltas, outwash plains, eskers, moraines, kame terraces
Landform position (two-dimensional): Summit, backslope, footslope, shoulder
Landform position (three-dimensional): Nose slope, side slope, base slope, crest, riser, tread
Down-slope shape: Linear, convex, concave
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
Natural 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
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Very low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Windsor

Percent of map unit: 8 percent
Landform: Kames, eskers, moraines, outwash terraces, outwash deltas, kame terraces, 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: Linear, convex, concave
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

Sudbury

Percent of map unit: 5 percent
Landform: Outwash terraces, outwash deltas, kame terraces, outwash plains, moraines
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Side slope, base slope, head slope, tread
Down-slope shape: Concave, linear
Across-slope shape: Linear, concave
Hydric soil rating: No

Agawam

Percent of map unit: 2 percent
Landform: Kames, eskers, moraines, outwash terraces, outwash deltas, kame terraces, 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: Linear, convex, concave
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

HbE—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: Eskers, moraines, outwash terraces, outwash deltas, kame terraces, outwash plains, kames

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Crest, nose slope, side slope, head slope, riser

Down-slope shape: Linear, convex, concave

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

Natural 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

Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water storage in profile: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: A

Hydric soil rating: No

Minor Components

Windsor

Percent of map unit: 10 percent

Landform: Moraines, outwash terraces, outwash plains, outwash deltas, kame terraces, kames, eskers

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope, crest, nose slope, head slope, riser

Down-slope shape: Convex, linear, concave

Across-slope shape: Linear, convex, concave

Custom Soil Resource Report

Hydric soil rating: No

Merrimac

Percent of map unit: 5 percent

Landform: Eskers, moraines, outwash terraces, outwash plains, kames

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope, head slope, crest, nose slope, riser

Down-slope shape: Concave, linear, convex

Across-slope shape: Linear, convex, concave

Hydric soil rating: No

HcB—Hollis-Charlton fine sandy loams, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9d7j

Elevation: 0 to 1,000 feet

Mean annual precipitation: 36 to 71 inches

Mean annual air temperature: 39 to 55 degrees F

Frost-free period: 120 to 240 days

Farmland classification: Farmland of local importance

Map Unit Composition

Hollis and similar soils: 50 percent

Charlton and similar soils: 30 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hollis

Setting

Parent material: Till

Typical profile

H1 - 0 to 14 inches: fine sandy loam

H2 - 14 to 18 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent

Depth to restrictive feature: 10 to 20 inches to lithic bedrock

Natural drainage class: Well drained

Runoff class: Very high

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: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Very low (about 2.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Custom Soil Resource Report

Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Hydric soil rating: No

Description of Charlton

Setting

Parent material: Till

Typical profile

H1 - 0 to 13 inches: fine sandy loam

H2 - 13 to 36 inches: fine sandy loam

H3 - 36 to 40 inches: gravelly loamy sand

Properties and qualities

Slope: 3 to 8 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Well 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: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Low (about 5.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: A

Hydric soil rating: No

Minor Components

Not named

Percent of map unit: 5 percent

Hydric soil rating: No

Buxton

Percent of map unit: 5 percent

Hydric soil rating: No

HdB—Hollis-Charlton very rocky fine sandy loams, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9d7m

Elevation: 0 to 1,000 feet

Mean annual precipitation: 36 to 71 inches

Mean annual air temperature: 39 to 55 degrees F

Frost-free period: 120 to 240 days

Farmland classification: Not prime farmland

Map Unit Composition

Hollis and similar soils: 40 percent

Charlton and similar soils: 30 percent

Minor components: 30 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hollis

Setting

Parent material: Till

Typical profile

H1 - 0 to 14 inches: very stony fine sandy loam

H2 - 14 to 18 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent

Percent of area covered with surface fragments: 1.6 percent

Depth to restrictive feature: 10 to 20 inches to lithic bedrock

Natural drainage class: Well drained

Runoff class: Very high

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: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Very low (about 2.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: D

Hydric soil rating: No

Description of Charlton

Setting

Parent material: Till

Typical profile

H1 - 0 to 13 inches: very stony fine sandy loam

H2 - 13 to 36 inches: fine sandy loam

H3 - 36 to 40 inches: gravelly loamy sand

Properties and qualities

Slope: 3 to 8 percent

Percent of area covered with surface fragments: 1.6 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Well 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: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Low (about 5.4 inches)

Custom Soil Resource Report

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: A

Hydric soil rating: No

Minor Components

Rock outcrop

Percent of map unit: 10 percent

Hydric soil rating: No

Buxton

Percent of map unit: 5 percent

Hydric soil rating: No

Not named

Percent of map unit: 5 percent

Hydric soil rating: No

Sutton

Percent of map unit: 5 percent

Hydric soil rating: No

Leicester

Percent of map unit: 5 percent

Landform: Depressions

Hydric soil rating: Yes

HdC—Hollis-Charlton very rocky fine sandy loams, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9d7n

Elevation: 0 to 1,000 feet

Mean annual precipitation: 36 to 71 inches

Mean annual air temperature: 39 to 55 degrees F

Frost-free period: 120 to 240 days

Farmland classification: Not prime farmland

Map Unit Composition

Hollis and similar soils: 40 percent

Charlton and similar soils: 30 percent

Minor components: 30 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hollis

Setting

Parent material: Till

Custom Soil Resource Report

Typical profile

H1 - 0 to 14 inches: very stony fine sandy loam

H2 - 14 to 18 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent

Percent of area covered with surface fragments: 1.6 percent

Depth to restrictive feature: 10 to 20 inches to lithic bedrock

Natural drainage class: Well drained

Runoff class: Very high

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: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Very low (about 2.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: D

Hydric soil rating: No

Description of Charlton

Setting

Parent material: Till

Typical profile

H1 - 0 to 13 inches: very stony fine sandy loam

H2 - 13 to 36 inches: fine sandy loam

H3 - 36 to 40 inches: gravelly loamy sand

Properties and qualities

Slope: 8 to 15 percent

Percent of area covered with surface fragments: 1.6 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Well 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: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: A

Hydric soil rating: No

Minor Components

Not named

Percent of map unit: 10 percent

Hydric soil rating: No

Rock outcrop

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

Woodbridge

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

Sutton

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

HdD—Hollis-Charlton very rocky fine sandy loams, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 9d7p
Elevation: 0 to 1,000 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 120 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Hollis and similar soils: 40 percent
Charlton and similar soils: 30 percent
Minor components: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hollis

Setting

Parent material: Till

Typical profile

H1 - 0 to 14 inches: very stony fine sandy loam
H2 - 14 to 18 inches: bedrock

Properties and qualities

Slope: 15 to 25 percent
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: Very high
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: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Custom Soil Resource Report

Available water storage in profile: Very low (about 2.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: D

Hydric soil rating: No

Description of Charlton

Setting

Parent material: Till

Typical profile

H1 - 0 to 13 inches: very stony fine sandy loam

H2 - 13 to 36 inches: fine sandy loam

H3 - 36 to 40 inches: gravelly loamy sand

Properties and qualities

Slope: 15 to 25 percent

Percent of area covered with surface fragments: 1.6 percent

Depth to restrictive feature: More than 80 inches

Natural 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 storage in profile: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: A

Hydric soil rating: No

Minor Components

Not named

Percent of map unit: 20 percent

Hydric soil rating: No

Rock outcrop

Percent of map unit: 10 percent

Hydric soil rating: No

HeD—Hollis-Charlton extremely rocky fine sandy loams, 8 to 25 percent slopes

Map Unit Setting

National map unit symbol: 9d7q
Elevation: 0 to 1,000 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 120 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Hollis and similar soils: 30 percent
Charlton and similar soils: 25 percent
Minor components: 45 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hollis

Setting

Parent material: Till

Typical profile

H1 - 0 to 14 inches: extremely stony fine sandy loam
H2 - 14 to 18 inches: bedrock

Properties and qualities

Slope: 8 to 25 percent
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: Very high
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: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 2.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Hydric soil rating: No

Description of Charlton

Setting

Parent material: Till

Custom Soil Resource Report

Typical profile

H1 - 0 to 13 inches: extremely stony fine sandy loam

H2 - 13 to 36 inches: fine sandy loam

H3 - 36 to 40 inches: gravelly loamy sand

Properties and qualities

Slope: 8 to 25 percent

Percent of area covered with surface fragments: 1.6 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Well 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: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: A

Hydric soil rating: No

Minor Components

Rock outcrop

Percent of map unit: 25 percent

Hydric soil rating: No

Not named

Percent of map unit: 10 percent

Hydric soil rating: No

Leicester

Percent of map unit: 5 percent

Landform: Depressions

Hydric soil rating: Yes

Sutton

Percent of map unit: 5 percent

Hydric soil rating: No

HfB—Hollis-Gloucester fine sandy loams, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9d7s

Mean annual precipitation: 36 to 71 inches

Mean annual air temperature: 39 to 55 degrees F

Frost-free period: 140 to 240 days

Custom Soil Resource Report

Farmland classification: Not prime farmland

Map Unit Composition

Hollis and similar soils: 50 percent

Gloucester and similar soils: 30 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hollis

Setting

Parent material: Till

Typical profile

H1 - 0 to 14 inches: fine sandy loam

H2 - 14 to 18 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent

Depth to restrictive feature: 10 to 20 inches to lithic bedrock

Natural drainage class: Well drained

Runoff class: Very high

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: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Very low (about 2.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: D

Hydric soil rating: No

Description of Gloucester

Setting

Parent material: Till

Typical profile

H1 - 0 to 14 inches: fine sandy loam

H2 - 14 to 28 inches: very gravelly loamy sand

H3 - 28 to 40 inches: very gravelly coarse sand

Properties and qualities

Slope: 3 to 8 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Somewhat excessively drained

Runoff class: Very low

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: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Low (about 3.5 inches)

Custom Soil Resource Report

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2s

Hydrologic Soil Group: A

Hydric soil rating: No

Minor Components

Not named

Percent of map unit: 5 percent

Hydric soil rating: No

Acton

Percent of map unit: 3 percent

Hydric soil rating: No

Leicester

Percent of map unit: 2 percent

Landform: Depressions

Hydric soil rating: Yes

HgB—Hollis-Gloucester very rocky fine sandy loams, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9d7v

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

Hollis and similar soils: 50 percent

Gloucester and similar soils: 30 percent

Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hollis

Setting

Parent material: Till

Typical profile

H1 - 0 to 14 inches: very stony fine sandy loam

H2 - 14 to 18 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent

Percent of area covered with surface fragments: 1.6 percent

Depth to restrictive feature: 10 to 20 inches to lithic bedrock

Custom Soil Resource Report

Natural drainage class: Well drained
Runoff class: Very high
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: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 2.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Hydric soil rating: No

Description of Gloucester

Setting

Parent material: Till

Typical profile

H1 - 0 to 14 inches: very stony fine sandy loam
H2 - 14 to 28 inches: very gravelly loamy sand
H3 - 28 to 40 inches: very gravelly coarse sand

Properties and qualities

Slope: 3 to 8 percent
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Runoff class: Very low
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: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Rock outcrop

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

Not named

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

Acton

Percent of map unit: 3 percent
Hydric soil rating: No

Leicester

Percent of map unit: 2 percent
Landform: Depressions
Hydric soil rating: Yes

HgC—Hollis-Gloucester very rocky fine sandy loams, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9d7w
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

Hollis and similar soils: 50 percent
Gloucester and similar soils: 30 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hollis

Setting

Parent material: Till

Typical profile

H1 - 0 to 14 inches: very stony fine sandy loam
H2 - 14 to 18 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: Very high
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: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 2.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Hydric soil rating: No

Description of Gloucester

Setting

Parent material: Till

Typical profile

H1 - 0 to 14 inches: very stony fine sandy loam

H2 - 14 to 28 inches: very gravelly loamy sand

H3 - 28 to 40 inches: very gravelly coarse sand

Properties and qualities

Slope: 8 to 15 percent

Percent of area covered with surface fragments: 1.6 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Somewhat excessively drained

Runoff class: Very low

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: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: A

Hydric soil rating: No

Minor Components

Rock outcrop

Percent of map unit: 10 percent

Hydric soil rating: No

Not named

Percent of map unit: 7 percent

Hydric soil rating: No

Acton

Percent of map unit: 3 percent

Hydric soil rating: No

HgD—Hollis-Gloucester very rocky fine sandy loams, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 9d7x

Mean annual precipitation: 36 to 71 inches

Mean annual air temperature: 39 to 55 degrees F

Custom Soil Resource Report

Frost-free period: 140 to 240 days

Farmland classification: Not prime farmland

Map Unit Composition

Hollis and similar soils: 50 percent

Gloucester and similar soils: 30 percent

Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hollis

Setting

Parent material: Till

Typical profile

H1 - 0 to 14 inches: very stony fine sandy loam

H2 - 14 to 18 inches: bedrock

Properties and qualities

Slope: 15 to 25 percent

Percent of area covered with surface fragments: 1.6 percent

Depth to restrictive feature: 10 to 20 inches to lithic bedrock

Natural drainage class: Well drained

Runoff class: Very high

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: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Very low (about 2.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: D

Hydric soil rating: No

Description of Gloucester

Setting

Parent material: Till

Typical profile

H1 - 0 to 14 inches: very stony fine sandy loam

H2 - 14 to 28 inches: very gravelly loamy sand

H3 - 28 to 40 inches: very gravelly coarse sand

Properties and qualities

Slope: 15 to 25 percent

Percent of area covered with surface fragments: 1.6 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Somewhat excessively drained

Runoff class: Low

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: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Custom Soil Resource Report

Available water storage in profile: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: A

Hydric soil rating: No

Minor Components

Not named

Percent of map unit: 10 percent

Hydric soil rating: No

Rock outcrop

Percent of map unit: 10 percent

Hydric soil rating: No

LcB—Leicester fine sandy loam, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9d80

Elevation: 50 to 1,000 feet

Mean annual precipitation: 35 to 71 inches

Mean annual air temperature: 39 to 55 degrees F

Frost-free period: 120 to 240 days

Farmland classification: Farmland of local importance

Map Unit Composition

Leicester and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Leicester

Setting

Landform: Depressions

Parent material: Till

Typical profile

H1 - 0 to 5 inches: fine sandy loam

H2 - 5 to 44 inches: gravelly fine sandy loam

Properties and qualities

Slope: 0 to 8 percent

Depth to restrictive feature: More than 80 inches

Natural 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 12 inches

Custom Soil Resource Report

Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 5.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Hydric soil rating: Yes

Minor Components

Whitman

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

Not named wet

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

Ridgebury

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

LeA—Leicester very stony fine sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 9d81
Elevation: 0 to 2,100 feet
Mean annual precipitation: 28 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 100 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Leicester

Setting

Landform: Depressions
Parent material: Till

Typical profile

H1 - 0 to 5 inches: very stony fine sandy loam
H2 - 5 to 44 inches: gravelly fine sandy loam

Custom Soil Resource Report

Properties and qualities

Slope: 0 to 3 percent
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: More than 80 inches
Natural 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 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A/D
Hydric soil rating: Yes

Minor Components

Not named wet

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

Ridgebury

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

Whitman

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

LrA—Leicester-Ridgebury fine sandy loams, 0 to 3 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2xfr
Elevation: 20 to 960 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

Leicester, very stony, and similar soils: 60 percent
Ridgebury, very stony, and similar soils: 30 percent

Custom Soil Resource Report

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Leicester, Very Stony

Setting

Landform: Hills, depressions, drainageways, ground moraines

Landform position (two-dimensional): Toeslope, footslope

Landform position (three-dimensional): Base slope

Down-slope shape: Concave, linear

Across-slope shape: Concave

Parent material: Coarse-loamy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material

A - 1 to 7 inches: fine sandy loam

Bg - 7 to 18 inches: fine sandy loam

BC - 18 to 24 inches: fine sandy loam

C1 - 24 to 39 inches: gravelly fine sandy loam

C2 - 39 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 0 to 3 percent

Percent of area covered with surface fragments: 1.6 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Poorly drained

Runoff class: Very high

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: None

Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water storage in profile: High (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 5s

Hydrologic Soil Group: B/D

Hydric soil rating: Yes

Description of Ridgebury, Very Stony

Setting

Landform: Ground moraines, drumlins, depressions, drainageways, hills

Landform position (two-dimensional): Toeslope, footslope

Landform position (three-dimensional): Base slope, head 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

Custom Soil Resource Report

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

Percent of area covered with surface fragments: 1.6 percent

Depth to restrictive feature: 15 to 35 inches to densic material

Natural 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

Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water storage in profile: Low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 5s

Hydrologic Soil Group: D

Hydric soil rating: Yes

Minor Components

Walpole

Percent of map unit: 5 percent

Landform: Depressions, outwash terraces, drainageways

Landform position (three-dimensional): Tread

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

Whitman, very stony

Percent of map unit: 3 percent

Landform: Ground moraines, drumlins, depressions, drainageways, hills

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Base slope

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

Swansea, mucky peat

Percent of map unit: 2 percent

Landform: Marshes, kettles, swamps, bogs, depressions

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

LrB—Leicester-Ridgebury fine sandy loams, 3 to 8 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2xffs
Elevation: 100 to 1,160 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

Leicester, very stony, and similar soils: 60 percent
Ridgebury, very stony, and similar soils: 30 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Leicester, Very Stony

Setting

Landform: Ground moraines, drainageways, hills, depressions
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave, linear
Across-slope shape: Concave
Parent material: Coarse-loamy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 7 inches: fine sandy loam
Bg - 7 to 18 inches: fine sandy loam
BC - 18 to 24 inches: fine sandy loam
C1 - 24 to 39 inches: gravelly fine sandy loam
C2 - 39 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 8 percent
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Very high
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: None

Custom Soil Resource Report

Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water storage in profile: High (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: B/D

Hydric soil rating: Yes

Description of Ridgebury, Very Stony

Setting

Landform: Drumlins, depressions, drainageways, hills, ground moraines

Landform position (two-dimensional): Toeslope, footslope

Landform position (three-dimensional): Base slope, head 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: 3 to 8 percent

Percent of area covered with surface fragments: 1.6 percent

Depth to restrictive feature: 15 to 35 inches to densic material

Natural 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

Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water storage in profile: Low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: D

Hydric soil rating: Yes

Minor Components

Woodbridge, very stony

Percent of map unit: 5 percent

Landform: Ground moraines, drumlins, hills

Landform position (two-dimensional): Summit, backslope, footslope

Landform position (three-dimensional): Side slope, crest

Down-slope shape: Convex

Across-slope shape: Linear

Custom Soil Resource Report

Hydric soil rating: No

Walpole

Percent of map unit: 3 percent

Landform: Outwash terraces, drainageways, depressions

Landform position (three-dimensional): Tread

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

Whitman, very stony

Percent of map unit: 2 percent

Landform: Hills, ground moraines, drumlins, depressions, drainageways

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Base slope

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

MI—Mixed alluvial land, wet

Map Unit Setting

National map unit symbol: 9d86

Elevation: 300 to 1,800 feet

Mean annual precipitation: 30 to 50 inches

Mean annual air temperature: 45 to 54 degrees F

Frost-free period: 105 to 180 days

Farmland classification: Not prime farmland

Map Unit Composition

Mixed alluvial land: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mixed Alluvial Land

Setting

Landform: Flood plains

Typical profile

H1 - 0 to 5 inches: loam

H2 - 5 to 72 inches: very gravelly silt loam

Properties and qualities

Slope: 0 to 2 percent

Natural drainage class: Poorly drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to very high (0.06 to 20.00 in/hr)

Depth to water table: About 0 inches

Frequency of flooding: Frequent

Frequency of ponding: Occasional

Custom Soil Resource Report

Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: Moderate (about 6.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydric soil rating: Yes

Mp—Freetown and Swansea mucky peats, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2w68w
Elevation: 10 to 940 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: 50 percent
Swansea and similar soils: 30 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Freetown

Setting

Landform: Marshes, kettles, depressions, swamps, bogs
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
Percent of area covered with surface fragments: 0.0 percent
Depth to restrictive feature: More than 80 inches
Natural 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 storage in profile: Very high (about 20.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: B/D

Custom Soil Resource Report

Hydric soil rating: Yes

Description of Swansea

Setting

Landform: Kettles, swamps, bogs, depressions, marshes

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

Natural 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 storage in profile: High (about 11.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8

Hydrologic Soil Group: B/D

Hydric soil rating: Yes

Minor Components

Natchaug

Percent of map unit: 10 percent

Landform: Depressions, depressions, depressions

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

Scarboro

Percent of map unit: 4 percent

Landform: Depressions, outwash deltas, drainageways, outwash terraces

Landform position (three-dimensional): Tread

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

Whitman

Percent of map unit: 4 percent

Landform: Hills, depressions

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Base slope

Down-slope shape: Concave

Across-slope shape: Concave

Custom Soil Resource Report

Hydric soil rating: Yes

Maybid

Percent of map unit: 2 percent

Landform: Marine terraces

Landform position (three-dimensional): Tread

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

PbB—Paxton fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2t2qp

Elevation: 0 to 1,570 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

Paxton and similar soils: 80 percent

Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Paxton

Setting

Landform: Ground moraines, hills, drumlins

Landform position (two-dimensional): Backslope, summit, shoulder

Landform position (three-dimensional): Side slope, crest, nose slope

Down-slope shape: Linear, convex

Across-slope shape: Convex

Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 8 inches: fine sandy loam

Bw1 - 8 to 15 inches: fine sandy loam

Bw2 - 15 to 26 inches: fine sandy loam

Cd - 26 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 8 percent

Depth to restrictive feature: 18 to 39 inches to densic material

Natural drainage class: Well drained

Runoff class: Medium

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 18 to 37 inches

Custom Soil Resource Report

Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Woodbridge

Percent of map unit: 9 percent
Landform: Drumlins, ground moraines, hills
Landform position (two-dimensional): Backslope, footslope, summit
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Ridgebury

Percent of map unit: 6 percent
Landform: Ground moraines, depressions, drainageways, hills
Landform position (two-dimensional): Toeslope, backslope, footslope
Landform position (three-dimensional): Base slope, head slope, dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Charlton

Percent of map unit: 5 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

PbC—Paxton fine sandy loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2w66y
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 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Paxton and similar soils: 85 percent
Minor components: 15 percent

Custom Soil Resource Report

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Paxton

Setting

Landform: Drumlins, hills, ground moraines

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear, convex

Across-slope shape: Convex

Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 8 inches: fine sandy loam

Bw1 - 8 to 15 inches: fine sandy loam

Bw2 - 15 to 26 inches: fine sandy loam

Cd - 26 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 8 to 15 percent

Depth to restrictive feature: 20 to 39 inches to densic material

Natural drainage class: Well drained

Runoff class: Medium

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 18 to 37 inches

Frequency of flooding: None

Frequency of ponding: None

Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water storage in profile: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: C

Hydric soil rating: No

Minor Components

Charlton

Percent of map unit: 7 percent

Landform: Hills

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: No

Woodbridge

Percent of map unit: 6 percent

Landform: Ground moraines, drumlins, hills

Landform position (two-dimensional): Backslope, footslope, summit

Landform position (three-dimensional): Side slope

Down-slope shape: Concave

Across-slope shape: Linear

Hydric soil rating: No

Ridgebury

Percent of map unit: 2 percent
Landform: Hills, ground moraines, depressions, drainageways, drumlins
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: Yes

PbD—Paxton fine sandy loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 2w67j
Elevation: 0 to 1,450 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

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

Description of Paxton

Setting

Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 8 inches: fine sandy loam
Bw1 - 8 to 15 inches: fine sandy loam
Bw2 - 15 to 26 inches: fine sandy loam
Cd - 26 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: 20 to 39 inches to densic material
Natural drainage class: Well drained
Runoff class: 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 18 to 37 inches
Frequency of flooding: None

Custom Soil Resource Report

Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Charlton

Percent of map unit: 8 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Woodbridge

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

Ridgebury

Percent of map unit: 1 percent
Landform: Drainageways, hills, ground moraines, depressions, drumlins
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: Yes

PdB—Paxton fine sandy loam, 0 to 8 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2w673
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: 140 to 240 days
Farmland classification: Farmland of local importance

Map Unit Composition

Paxton, very stony, and similar soils: 85 percent

Custom Soil Resource Report

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Paxton, Very Stony

Setting

Landform: Drumlins, hills, ground moraines

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Crest, side slope

Down-slope shape: Linear, convex

Across-slope shape: Convex, linear

Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material

A - 2 to 10 inches: fine sandy loam

Bw1 - 10 to 17 inches: fine sandy loam

Bw2 - 17 to 28 inches: fine sandy loam

Cd - 28 to 67 inches: gravelly fine sandy loam

Properties and qualities

Slope: 0 to 8 percent

Percent of area covered with surface fragments: 1.6 percent

Depth to restrictive feature: 20 to 43 inches to densic material

Natural drainage class: Well drained

Runoff class: Medium

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 18 to 37 inches

Frequency of flooding: None

Frequency of ponding: None

Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water storage in profile: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: C

Hydric soil rating: No

Minor Components

Woodbridge, very stony

Percent of map unit: 8 percent

Landform: Ground moraines, drumlins, hills

Landform position (two-dimensional): Backslope, footslope, summit

Landform position (three-dimensional): Side slope, crest

Down-slope shape: Concave

Across-slope shape: Linear

Hydric soil rating: No

Ridgebury, very stony

Percent of map unit: 4 percent

Landform: Depressions, drainageways, drumlins, ground moraines, hills

Landform position (two-dimensional): Toeslope, footslope

Landform position (three-dimensional): Base slope, head slope

Custom Soil Resource Report

Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Charlton, very stony

Percent of map unit: 3 percent
Landform: Hills
Landform position (two-dimensional): Shoulder, summit, backslope
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

PdE—Paxton very stony fine sandy loam, 25 to 60 percent slopes

Map Unit Setting

National map unit symbol: 9d8h
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

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

Description of Paxton

Setting

Parent material: Basal lodgement till derived from granite and gneiss and/or basal lodgement till derived from schist

Typical profile

H1 - 0 to 11 inches: very stony fine sandy loam
H2 - 11 to 22 inches: fine sandy loam
H3 - 22 to 41 inches: fine sandy loam

Properties and qualities

Slope: 25 to 60 percent
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 24 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Not named

Percent of map unit: 12 percent
Hydric soil rating: No

Hollis

Percent of map unit: 3 percent
Hydric soil rating: No

RgA—Ridgebury fine sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2w69f
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: Farmland of local importance

Map Unit Composition

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

Description of Ridgebury

Setting

Landform: Hills, ground moraines, drainageways, depressions, drumlins
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope, head 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

Custom Soil Resource Report

Depth to restrictive feature: 15 to 35 inches to densic material
Natural 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
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: D
Hydric soil rating: Yes

Minor Components

Woodbridge

Percent of map unit: 9 percent
Landform: Hills, ground moraines, drumlins
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Crest, base slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Whitman

Percent of map unit: 5 percent
Landform: Drainageways, hills, depressions, ground moraines, drumlins
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Leicester

Percent of map unit: 1 percent
Landform: Depressions, drainageways, hills, ground moraines
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear, concave
Across-slope shape: Concave
Hydric soil rating: Yes

Sb—Saugatuck loamy sand

Map Unit Setting

National map unit symbol: 9d8r
Elevation: 300 to 1,000 feet

Custom Soil Resource Report

Mean annual precipitation: 27 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 125 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Saugatuck

Setting

Landform: Outwash terraces
Parent material: Outwash

Typical profile

H1 - 0 to 4 inches: loamy sand
H2 - 4 to 7 inches: sand
H3 - 7 to 26 inches: loamy sand
H4 - 26 to 42 inches: sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 10 to 16 inches to undefined
Natural drainage class: Poorly drained
Runoff class: High
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 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 1.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Minor Components

Not named wet

Percent of map unit: 15 percent
Landform: Outwash terraces
Hydric soil rating: Yes

SnB—Sutton fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2w69j

Custom Soil Resource Report

Elevation: 0 to 1,410 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

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

Description of Sutton

Setting

Landform: Hills, ground moraines, ridges
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Coarse-loamy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 5 inches: fine sandy loam
Bw1 - 5 to 17 inches: fine sandy loam
Bw2 - 17 to 25 inches: sandy loam
C1 - 25 to 39 inches: gravelly sandy loam
C2 - 39 to 60 inches: gravelly sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Very high
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 12 to 27 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 8.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Hydric soil rating: No

Minor Components

Charlton

Percent of map unit: 9 percent
Landform: Ground moraines, ridges, hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Linear, convex

Custom Soil Resource Report

Across-slope shape: Convex
Hydric soil rating: No

Leicester

Percent of map unit: 5 percent
Landform: Hills, ground moraines, depressions, drainageways
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave, linear
Across-slope shape: Concave
Hydric soil rating: Yes

Woodbridge

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

Whitman

Percent of map unit: 1 percent
Landform: Hills, ground moraines, drumlins, depressions, drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

SuB—Sutton fine sandy loam, 0 to 8 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2xff
Elevation: 0 to 1,410 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

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

Description of Sutton, Very Stony

Setting

Landform: Hills, ground moraines
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope

Custom Soil Resource Report

Down-slope shape: Concave

Across-slope shape: Linear

Parent material: Coarse-loamy melt-out till derived from gneiss, granite, and/or schist

Typical profile

O_i - 0 to 2 inches: slightly decomposed plant material

A - 2 to 7 inches: fine sandy loam

B_{w1} - 7 to 19 inches: fine sandy loam

B_{w2} - 19 to 27 inches: sandy loam

C₁ - 27 to 41 inches: gravelly sandy loam

C₂ - 41 to 62 inches: gravelly sandy loam

Properties and qualities

Slope: 0 to 8 percent

Percent of area covered with surface fragments: 1.6 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Moderately well drained

Runoff class: Very high

Capacity of the most limiting layer to transmit water (K_{sat}): Moderately low to high
(0.14 to 14.17 in/hr)

Depth to water table: About 12 to 27 inches

Frequency of flooding: None

Frequency of ponding: None

Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water storage in profile: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: B/D

Hydric soil rating: No

Minor Components

Charlton, very stony

Percent of map unit: 7 percent

Landform: Hills, ground moraines, ridges

Landform position (two-dimensional): Backslope, shoulder, summit

Landform position (three-dimensional): Crest, side slope

Down-slope shape: Linear, convex

Across-slope shape: Convex

Hydric soil rating: No

Canton, very stony

Percent of map unit: 4 percent

Landform: Ridges, hills, moraines

Landform position (two-dimensional): Backslope, shoulder, summit

Landform position (three-dimensional): Side slope, crest

Down-slope shape: Convex, linear

Across-slope shape: Convex

Hydric soil rating: No

Leicester, very stony

Percent of map unit: 3 percent

Landform: Hills, drainageways, ground moraines, depressions

Custom Soil Resource Report

Landform position (two-dimensional): Foothlope, toeslope

Landform position (three-dimensional): Base slope

Down-slope shape: Concave, linear

Across-slope shape: Concave

Hydric soil rating: Yes

Whitman, very stony

Percent of map unit: 1 percent

Landform: Depressions, drainageways, hills, ground moraines, drumlins

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Base slope

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

W—Water

Map Unit Composition

Water (less than 40 acres): 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Wa—Whitman very stony fine sandy loam

Map Unit Setting

National map unit symbol: 9d95

Elevation: 0 to 2,100 feet

Mean annual precipitation: 28 to 71 inches

Mean annual air temperature: 39 to 55 degrees F

Frost-free period: 100 to 240 days

Farmland classification: Not prime farmland

Map Unit Composition

Whitman and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Whitman

Setting

Landform: Depressions

Typical profile

H1 - 0 to 7 inches: very stony fine sandy loam

H2 - 7 to 17 inches: gravelly sandy loam

H3 - 17 to 41 inches: gravelly sandy loam

Properties and qualities

Slope: 0 to 3 percent

Percent of area covered with surface fragments: 1.6 percent

Custom Soil Resource Report

Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water storage in profile: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C/D
Hydric soil rating: Yes

Minor Components

Not named wet

Percent of map unit: 15 percent
Landform: Ground moraines
Hydric soil rating: Yes

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: Outwash terraces, deltas, outwash plains, 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

Custom Soil Resource Report

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
Natural 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
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Hinckley, loamy sand

Percent of map unit: 10 percent
Landform: Outwash plains, eskers, kames, deltas
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest, head slope, rise
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Deerfield, loamy sand

Percent of map unit: 5 percent
Landform: Outwash plains, terraces, deltas
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

References

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- 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>

Custom Soil Resource Report

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

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Appendix E – Photo Log

PHOTO LOG
391, 373, and 385 Transmission Line Structure Replacement Project
Auburn, Chester, Candia, Raymond, Deerfield, Strafford, and Rochester, New Hampshire

Photos Taken: April 4, 2019



Photograph No. 1: Looking northeasterly at proposed access route toward 391 Structure 309 in Chester.



Photograph No. 2: Looking southwesterly at access to be improved towards 373 Structure 314 in Chester.

PHOTO LOG
391, 373, and 385 Transmission Line Structure Replacement Project
Auburn, Chester, Candia, Raymond, Deerfield, Strafford, and Rochester, New Hampshire

Photos Taken: April 4, 2019



Photograph No. 3: Looking southwesterly at proposed temporary wetland crossing through Wetland CHW-26 in Chester.



Photograph No. 4: Looking southwesterly at access to be improved by 391 Structure 306 in Chester.

PHOTO LOG
391, 373, and 385 Transmission Line Structure Replacement Project
Auburn, Chester, Candia, Raymond, Deerfield, Strafford, and Rochester, New Hampshire

Photos Taken: April 4, 2019



Photograph No. 5: Looking southwesterly at 391 Structure 305 at existing access to be improved in Chester.



Photograph No. 6: Looking southwesterly at existing access to be improved adjacent to 391 Structure 304 in Chester.

PHOTO LOG
391, 373, and 385 Transmission Line Structure Replacement Project
Auburn, Chester, Candia, Raymond, Deerfield, Strafford, and Rochester, New Hampshire

Photos Taken: April 4, 2019



Photograph No. 7: Looking northerly at existing and improved access towards 391 Structure 301 in Chester.



Photograph No. 8: Looking northerly towards 391 Structure 222 along existing access to be improved in Candia.

PHOTO LOG
391, 373, and 385 Transmission Line Structure Replacement Project
Auburn, Chester, Candia, Raymond, Deerfield, Strafford, and Rochester, New Hampshire

Photos Taken: April 4, 2019



Photograph No. 9: Looking southerly toward 391 Structure 218 along existing access to be improved in Deerfield.



Photograph No. 10: Looking northerly toward 391 Structure 217 along existing access to be improved in Deerfield.

PHOTO LOG
391, 373, and 385 Transmission Line Structure Replacement Project
Auburn, Chester, Candia, Raymond, Deerfield, Strafford, and Rochester, New Hampshire

Photos Taken: April 4, 2019



Photograph No. 11: Looking northerly toward 385 Structure 81 along existing access to be improved in Strafford.



Photograph No. 12: Looking southwesterly toward 385 Structure 73 along existing access to be improved in Strafford.

PHOTO LOG
391, 373, and 385 Transmission Line Structure Replacement Project
Auburn, Chester, Candia, Raymond, Deerfield, Strafford, and Rochester, New Hampshire

Photos Taken: April 4, 2019



Photograph No. 13: Looking southwesterly toward Wetland SW-7 in Strafford. Temporary timber matting will be used to cross wetland areas.



Photograph No. 14: Looking westerly at 385 Structure 63 (right) along existing access to be improved in Strafford.

PHOTO LOG
391, 373, and 385 Transmission Line Structure Replacement Project
Auburn, Chester, Candia, Raymond, Deerfield, Strafford, and Rochester, New Hampshire

Photos Taken: April 4, 2019



Photograph No. 15: Looking northeasterly toward 391 Structure 64 along existing access to be improved in Strafford.



Photograph No. 16: Looking southwesterly toward 385 Structure 59 along proposed new access area in Strafford.

PHOTO LOG
391, 373, and 385 Transmission Line Structure Replacement Project
Auburn, Chester, Candia, Raymond, Deerfield, Strafford, and Rochester, New Hampshire

Photos Taken: April 4, 2019



Photograph No. 17: Looking northerly toward proposed wetland crossing over Wetland RW-16 and toward 385 Structure 54 in Rochester.



Photograph No. 18: Looking southwesterly toward 391 Structure 57 along existing access to be improved in Rochester.

PHOTO LOG
391, 373, and 385 Transmission Line Structure Replacement Project
Auburn, Chester, Candia, Raymond, Deerfield, Strafford, and Rochester, New Hampshire

Photos Taken: April 4, 2019



Photograph No. 19: Looking northeasterly toward 391 Structure 54 (right) and across open field where temporary upland matting will be utilized.



Photograph No. 20: Looking northerly along existing and improved access route in Rochester off Crown Point Road.



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		
391, 373, 385 Transmission Line Structure Replacement Project Project Name		
Existing 391, 373, and 385 Right-of-Way Street Address		
Auburn, Chester, Candia, Raymond, Deerfield, Strafford, & Rochester City/Town	Multiple Zip Code	
Multiple – see attached Tax Map/Lot Number		
B. APPLICANT/OWNER INFORMATION		
Matthew First Name	Cardin Last Name	
Eversource Energy Organization		
13 Legends Drive Street Address		
Hooksett City/Town	New Hampshire State	03106 Zip Code
Matthew.cardin@eversource.com Email	603-634-2992 Telephone Number	
C. APPLICANT/OWNER AGENT INFORMATION		
Lindsey First Name	White Last Name	
GZA GeoEnvironmental, Inc. Organization		
5 Commerce Park North, Suite 201 Street Address		
Bedford City/Town	New Hampshire State	03110 Zip Code
Lindsey.white@gza.com Email	603-232-8753 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 391, 373, and 385 Transmission Line structures. The proposed access and work pad improvements for continued transmission line maintenance work will not result in new impervious surfaces. 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.	
Env-Wq 1503.09 Rule Section Waiver Request	Information Required for Projects Within the 100-year Floodplain Name of Rule
Reason for Waiver Request Eversource is requesting a waiver for preparing a supplementary report for proposed work within the 100-year floodplain for proposed access improvements and work pad grading associated with maintenance of the existing 391, 373, and 385 Transmission Line structures. The proposed access and work pad improvements for continued transmission line maintenance work will not result in new impervious surfaces and is not anticipated to change existing grading by more than 2 feet. As a result,	

existing drainage and grading will not be significantly impacted within the existing 100-year floodplain.

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 1503.09.

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 no new impervious surface is proposed as part of this project. In addition, grading changes are not anticipated to exceed 2-feet. Therefore, it is not anticipated that the 100-year floodplain will be significantly impacted by the proposed 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 supplementary report for proposed work within the 100-year floodplain be waived for the purposes of the proposed utility line maintenance project.

E. SIGNATURES



Applicant/Owner, **Matthew Cardin, Eversource Energy**

05/06/19

Date



Applicant/Owner Agent, **Lindsey White, GZA**

5/6/19

Date



Appendix G – Certified Mail Receipts
[Reserved for DES certified mailing receipts]

7017 1450 0000 3946 4863

U.S. Postal Service™
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AUBURN, NH 03032

Certified Mail Fee	\$3.50
Extra Services & Fees (check box, add fee as appropriate)	\$2.80
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

Postage \$8.30

Total Postage \$14.60

Sent To: Town of Auburn
Attn: Town Clerk
47 Chester Road, PO Box 309
Auburn, NH 03032



7017 1450 0000 3946 4900

U.S. Postal Service™
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DEERFIELD, NH 03037

Certified Mail Fee	\$3.50
Extra Services & Fees (check box, add fee as appropriate)	\$2.80
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

Postage \$8.30

Total Postage \$14.60

Sent To: Town of Deerfield
Attn: Town Clerk
8 Raymond Road
Deerfield, NH 03037



7017 1450 0000 3946 4887

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
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For delivery information, visit our website at www.usps.com®.

CANDIA, NH 03034

Certified Mail Fee	\$3.50
Extra Services & Fees (check box, add fee as appropriate)	\$2.80
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

Postage \$8.30

Total Postage \$14.60

Sent To: Town of Candia
Attn: Town Clerk
74 High Street
Candia, NH 03034



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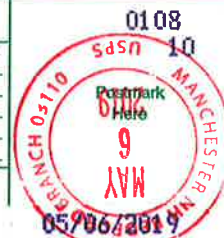
STRAFFORD, NH 03884

Certified Mail Fee	\$3.50
Extra Services & Fees (check box, add fee as appropriate)	\$2.80
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

Postage \$8.30

Total Postage \$14.60

Sent To: Town of Strafford
Attn: Town Clerk
PO Box 169
Strafford, NH 03884



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EPHING, NH 03042

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Extra Services & Fees (check box, add fee as appropriate)	\$2.80
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

Postage \$8.30

Total Postage \$14.60

Sent To: Lamprey River
Local Advisory Committee
Attn: Joseph Foley, Chair
88 Hedding Road
Epping, NH 03042



7017 1450 0000 3946 4894

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RAYMOND, NH 03077

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Extra Services & Fees (check box, add fee as appropriate)	\$2.80
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

Postage \$8.30

Total Postage \$14.60

Sent To: Town of Raymond
Attn: Town Clerk
4 Epping Street
Raymond, NH 03077



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CHESTER, NH 03036

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<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

Postage \$8.30

Total Post \$14.60

Sent To
Town of Chester
Attn: Town Clerk
84 Chester Street
Chester, NH 03036



05/06/2019

PS Form 3800, April 2010 Edition (Instructions)

7017 1450 0000 3946 4917

U.S. Postal Service™ CERTIFIED MAIL® RECEIPT

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ROCHESTER, NH 03867

Certified Mail Fee	\$3.50
Extra Services & Fees (check box, add fee as appropriate)	\$2.80
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

Postage \$8.30

Total Post \$14.60

Sent To
City of Rochester
Attn: City Clerk
31 Wakefield Street
Rochester, NH 03867



05/06/2019

PS Form 3800, April 2010 Edition (Instructions)



GZA GeoEnvironmental, Inc.

Correspondence

Lindsey White

From: Mauck, Ridge <Ridgely.Mauck@des.nh.gov>
Sent: Friday, June 28, 2019 12:35 PM
To: 'Cardin, Matthew R'
Cc: Lindsey White
Subject: RE: Eversource 373, 391, 385 Maintenance - File 20190514-088

I would prefer that these items be addressed on the "Notes" sheet (or elsewhere that you deem appropriate) of the plan set provided within the AoT permit application. Thanks.

-Ridge

From: Cardin, Matthew R <matthew.cardin@eversource.com>
Sent: Friday, June 28, 2019 11:31 AM
To: Mauck, Ridge <Ridgely.Mauck@des.nh.gov>
Cc: lindsey.white (gza.com) <lindsey.white@gza.com>
Subject: Re: Eversource 373, 391, 385 Maintenance - File 20190514-088

EXTERNAL: Do not open attachments or click on links unless you recognize and trust the sender.

Ridge,

We are aware and have no problems with those requirements.

Do you need a revised plan or can that be a condition of approval?

Thanks for getting back to me.

Matt Cardin

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From: Mauck, Ridge <Ridgely.Mauck@des.nh.gov>
Sent: Friday, June 28, 2019 10:27:18 AM
To: Cardin, Matthew R
Subject: RE: Eversource 373, 391, 385 Maintenance - File 20190514-088

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Do not click on links or attachments if sender is unknown or if the email is unexpected from someone you know, and never provide a user ID or password. Report suspicious emails by selecting 'Report Phish' or forwarding to SPAMFEEDBACK@EVERSOURCE.COM for analysis by our cyber security team.

Hi Matt,

I have completed my review of the subject AoT application and request that the following items be incorporated within the project plans. These items were outlined in a February 19, 2019 email between GZA GeoEnvironmental and NH Fish & Game, and/or in a May 30, 2019 letter to DES from GZA in response to comments from the Lamprey Rivers Advisory Committee.

- Requirements to contact NHF&G personnel in the event species of concern are observed, and the species specific seasonal time periods of concern.
- The prohibition on the import of commercial loam, and the use of erosion control matting with welded plastic netting or thread.
- The commitment to scarify disturbed areas in potential turtle breeding areas.

Let me know if you'd like to further discuss any of these issues. Thanks.

-Ridge

From: Cardin, Matthew R <matthew.cardin@eversource.com>
Sent: Thursday, June 27, 2019 3:51 PM
To: Mauck, Ridge <Ridgely.Mauck@des.nh.gov>
Subject: Eversource 373, 391, 385 Maintenance - File 20190514-088

EXTERNAL: Do not open attachments or click on links unless you recognize and trust the sender.

Hi Ridge,

You and I spoke a couple weeks ago regarding Mr. Costello in Derry, NH as well as a pending AoT permit we had for a transmission maintenance project on our 373, 391 and 385 lines (File No. **20190514-088**).

I wanted to just follow up in hopes your nearing the completion of your review and issuing a permit as we have construction planned for first week of July. Could you let me know if you think I should anticipate a permit after that timeframe?

If there are any questions I can answer or provide additional information to assist in your review, please let me know and I'll be sure to get right back to you.

I hope you are well.

Best regards,

Matthew Cardin
Environmental Permitting Coordinator &
Seacoast Reliability Field Compliance Manager



13 Legends Drive
Hooksett, NH 03106
P. 603.634.2992, C. 603.988.6635
Email: Matthew.Cardin@Eversource.com

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Revisions

© 2019 - GZA GeoEnvironmental, Inc. \\GZA Bedford\Jobs\04.0190923.00 - Eversource MSA04.0190923.01 - 391 Transmission Line\Figures\MXD\391_385_373 NOTESHEET 1.mxd, 7/1/2019, 8:35:06 AM, lindsey.white

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.
3. WETLAND IMPACTS ASSOCIATED WITH WETLAND CROSSINGS ARE REQUIRED FOR ACCESS BETWEEN STRUCTURES WITHIN THE RIGHT OF WAY. CONSTRUCTION ACTIVITIES SHALL OCCUR DURING PERIODS OF LOW FLOW.
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. ALL OPERATIONS SHALL BE CONFINED TO THE SPECIFIED ACCESS ROUTES WITHIN THE PROPOSED WETLAND IMPACT AREA. ALL 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. ALL 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. SWAMP MATS WILL BE USED ALONG ALL ACCESS ROUTES 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 SWAMP 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 SWAMP 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. SEDIMENT AND EROSION CONTROL MEASURES WILL BE EVALUATED AND REMOVED IF NECESSARY UPON THE COMPLETION OF CONSTRUCTION.
21. COMMERCIAL LOAM WILL NOT BE USED AS PART OF RESTORATION. ONLY IN-SITU TOPSOIL WILL BE USED TO RESTORE DISTURBED AREAS.
22. 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.

WINTER CONSTRUCTION NOTES

1. ALL PROPOSED 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. ALL 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 TIGHE AND BOND IN 2018, 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 WERE REVIEWED BY GZA GEOENVIRONMENTAL, INC. IN JANUARY AND FEBRUARY 2019.
3. GZA EVALUATED WETLANDS AS POTENTIAL VERNAL POOLS ON FEBRUARY 6, 12, AND 15, 2019 IN ACCORDANCE WITH "IDENTIFICATION AND DOCUMENTATION OF VERNAL POOLS IN NEW HAMPSHIRE," 1997, NEW HAMPSHIRE FISH AND GAME DEPARTMENT, NONGAME AND ANDANGERED WILDLIFE PROGRAM.
4. GZA PERFORMED A WETLANDS FUNCTION AND VALUES ASSESSMENT IN ACCORDANCE WITH THE ACOE'S "HIGHWAY METHODOLOGY WORKBOOK SUPPLEMENT," SEPTEMBER 1999, IN THE TOWN OF STRAFFORD.
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. ALL AREAS SHALL BE STABILIZED WITH 45 DAYS OF INITIAL DISTURBANCE.
9. 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 AGAINST EROSION, AS NECESSARY.
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.

UNLESS SPECIFICALLY STATED BY WRITTEN AGREEMENT, THIS DRAWING IS THE SOLE PROPERTY OF GZA GEOENVIRONMENTAL, INC. (GZA). THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR THE USE BY GZA'S CLIENT OR THE CLIENT'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY THE CLIENT OR OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA.

391, 373, & 385 TRANSMISSION LINE STRUCTURE REPLACEMENT PROJECT
AUBURN, CHESTER, CANDIA, RAYMOND, DEERFIELD, STRAFFORD, AND ROCHESTER
NEW HAMPSHIRE

NOTES

PREPARED BY:  GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR:  EVERSOURCE ENERGY	
PROJ MGR: LEW	REVIEWED BY: AJD	CHECKED BY: DMZ	SHEET 1 1 OF 2
DESIGNED BY: MJD	DRAWN BY: MJD	SCALE:	
DATE: 07/01/2019	PROJECT NO: 04.0190923.01	REVISION NO:	

Redaction Log

Total Number of Redactions in Document: 29

Redaction Reasons by Page

Page	Reason	Description	Occurrences
86	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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91	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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101	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
102	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

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Redaction Log

Redaction Reasons by Exemption

Reason	Description	Pages (Count)
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.	86(1) 87(1) 88(1) 89(1) 90(1) 91(1) 92(1) 93(1) 94(1) 95(1) 96(1) 97(1) 98(1) 99(1) 100(1) 101(1) 102(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)