SOUTHWEST CONNECTICUT RELIABILITY PROJECT

BY

THE CONNECTICUT LIGHT AND POWER COMPANY

DOING BUSINESS AS EVERSOURCE ENERGY

VOLUME 2: WETLANDS AND WATERCOURSES REPORT

AND

VOLUME 3: ENVIRONMENTAL

APRIL 2016

Note: This page is intentionally left blank

INDEX

VOLUME 2: WETLANDS AND WATERCOURSES REPORT

VOLUME 3: ENVIRONMENTAL

Note: This page is intentionally left blank

SOUTHWEST CONNECTICUT RELIABILITY PROJECT

BY

THE CONNECTICUT LIGHT AND POWER COMPANY

DOING BUSINESS AS EVERSOURCE ENERGY

VOLUME 2: WETLANDS AND WATERCOURSES REPORT

APRIL 2016

Note: This page is intentionally left blank

Wetlands and Watercourses Report

Prepared For:

The Connecticut Light and Power Company doing business as
Eversource Energy
107 Selden Street
Berlin, CT 06037

Prepared By:

BSC Group
33 Waldo Street,
Worcester, MA 01608

Note: This page is intentionally left blank

Table of Contents

Table of Contents

Note: This page is intentionally left blank

Section 1
Introduction

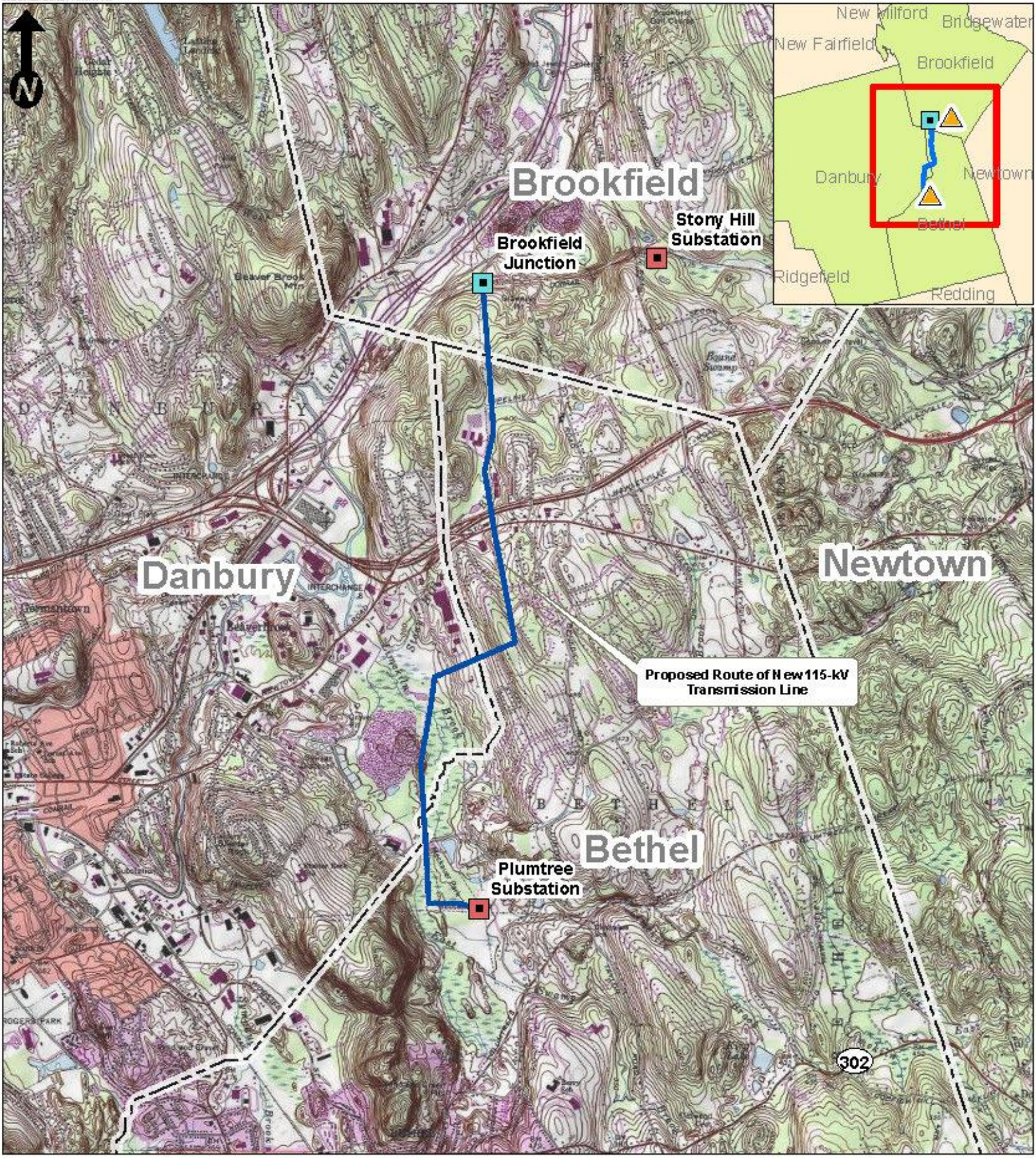
The Connecticut Light and Power Company, doing business as Eversource Energy (Eversource), proposes modifications to improve the reliability of the 115-kilovolt (kV) electric system in the Housatonic Valley-Norwalk-Plumtree sub-area of the Southwest Connecticut (SWCT) electric system region. These modifications include the construction of a new 3.4-mile 115-kV overhead electric transmission line between Plumtree Substation in the Town of Bethel and Brookfield Junction the Town of Brookfield and modifications to the Stony Hill Substation (also located in Brookfield), including reconfiguring two transmission lines that presently connect to the substation. These proposed improvements are referred collectively as the SWCT-Plumtrees Project (Project). The facilities proposed for the Project were identified as a result of system planning studies and alternative analyses performed by the Independent System Operator - New England (ISO-NE).

1.1 Project Background and Location

The Project is required to bring the electric supply system in the Housatonic Valley - Norwalk - Plumtree sub-area of SWCT into compliance with national and regional reliability standards and criteria by eliminating potential thermal overloads and voltage violations identified in studies conducted by (ISO-NE). The installation of the new 115-kV line (referred to as the 1887 Line) between Plumtree Substation and Brookfield Junction also would provide a second source of electricity into the sub-area and would eliminate a potential voltage collapse due to an outage on Eversource's existing 1770 and 1887 lines.

The proposed line will be located within an existing Eversource ROW extending from Plumtree Substation, through the eastern portion of the City of Danbury, to Brookfield Junction. This existing ROW, which is typically approximately 175-225 feet wide, is presently occupied by two existing Eversource transmission lines (a 115-kV and a 345-kV line), supported together on monopole structures. The alignment of the proposed 115-kV line within this ROW is referred to as the Proposed Route.

BSC Group (BSC) was retained by Eversource to conduct a review of environmental resources along the Proposed Route. This analysis included both a desktop and field review of wetlands, watercourses, wildlife habitat, and other natural resources. This report describes the results of BSC's water resource delineations (wetlands /watercourses). All field investigations for wetlands / watercourses were performed in April and May 2015.



Scale:

1 inch = 3,000 feet

0 1,500 3,000

Feet

SWCT RELIABILITY PROJECT

Locus Map

Bethel, Danbury & Brookfield, CT

Sources: Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

EVERSOURCE

BSC GROUP

1.2 Project Area Geographic Overview

The proposed 115-kV transmission line would be located in western – central Connecticut. would extend between Plumtree Substation (located at 16 Walnut Hill Road in Bethel) and Brookfield Junction (located south of and adjacent to the railroad tracks and west of Vail Road). The existing 1887 Line runs west from Stony Hill Substation, turns north at Brookfield Junction and connects to Brookfield Substation. The proposed 3.4-mile transmission line segment between Plumtree Substation and Brookfield Junction, the 1887 Line, will connect Plumtree Substation directly to Brookfield via its connection at Brookfield Junction.

Please refer to the locus map on the following page, which shows the Project and related facilities within the context of the surrounding area.

1.3 Physiographic and Geologic Overview

The Project area is located in the Southwest Hills physiographic region of Connecticut[1]. This region is characterized by moderately hilly terrain along with occasional steep, ledgy areas including trap rock ridges.

Bedrock geologic mapping[2] indicates the Project area generally contains gneiss and schist with marble under low floodplain areas. The surficial geology of the corridor is characterized by thin and thick till, with occasional valley settings exhibiting local outwash (sand and gravel) deposits[3].

[1] Bell, M 1985. The Face of Connecticut. People, Geology, and the Land, Bulletin 110.
[2] Rodgers, J. 1985. *Bedrock Geologic Map of Connecticut*. Connecticut Geological and Natural History Survey, CT Department of Environmental Protection. Hartford CT. 1:125,000.
[3] Stone, J.R., Schafer, J.P., London, E.H., and W.B. Thompson. 1992. *Surficial Materials Map of Connecticut*. United States Geological Survey. Denver, CO. 1:125,000.

Note: This page is intentionally left blank

Section 2
Wetland and Watercourses Regulations

In April and May 2015, BSC personnel identified wetlands and watercourses subject to state or federal jurisdiction based upon the Connecticut Inland Wetlands and Watercourses Act (CGS Section 22a-36 through 45) and the Federal Clean Water Act ([CWA]; 33 U.S.C. 1344). The Project does not cross any Navigable Waters of the United States subject to Section 10 of the Rivers and Harbors Act (33 U.S.C. 403).

2.1 Section 404 – Clean Water Act

Wetlands, springs, and other waters of the United States are regulated under Section 404 of the Federal Clean Water Act (CWA) by the U.S. Army Corps of Engineers (USACE). Federal jurisdictional wetlands include interstate wetlands, wetlands adjacent to waters of the United States, and intrastate wetlands whose degradation or destruction could affect interstate or foreign commerce as per the application of the CWA. The 1987 *Corps of Engineers Wetland Delineation Manual*[4] requires a positive wetland indicator for each of the three parameters (vegetation, soils, and hydrology). Indicators for all three of the following parameters must be present for an area to be identified as a wetland:

- Hydrophytic Vegetation: Plants growing in water or in a substrate that is at least periodically deficient in oxygen during a growing season as a result of excessive water content;
- Hydric Soils: Soils that, in an undrained condition, are saturated, flooded, or ponded long enough during a growing season to develop an anaerobic condition that supports the growth and regeneration of hydrophytic vegetation; and,
- Wetland Hydrology: Inundation or saturation by surface or groundwater at a frequency and duration during the growing season sufficient to support a prevalence of hydrophytic vegetation typically adapted for life in saturated soil conditions.

Wetlands satisfying these criteria are subject to federal jurisdiction under Section 404 of the CWA.

In January 2012, the USACE issued a *Regional Supplement to the Corps of Engineers Delineation Manual*[5] (Regional Supplement), which provides further guidance for wetland delineations in the northeastern United States. The Regional Supplement provides wetland indicators, delineation guidance, and other information specific to the Northcentral and Northeast Regions, supplementing the 1987 USACE Manual. Indicators and procedures in the 2012 Regional Supplement are designed to identify wetlands as

[4] Environmental Laboratory. (1987). *Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1*, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS

[5] Wetlands Regulatory Assistance Program. (2102). *Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Northcentral and Northeast*, U.S. Army Engineer Research and Development Center, Vicksburg, MS

defined jointly by the USACE (33 CFR 328.2) and the U.S. Environmental Protection Agency (40 CFR 230.3) and subject to regulation under Section 404 of the CWA.

2.2 Connecticut Inland Wetlands and Watercourses Act

Connecticut regulates inland wetlands under the Inland Wetlands and Watercourses Act (Section 22a-36 through 22a-45 of the Connecticut General Statutes; The Act). These state statutes are implemented through the Inland Wetlands and Watercourses regulations as administered by the individual municipalities. Under Section 2 of The Act, a wetland is defined as "land, including submerged land…which consists of poorly drained, very poorly drained, alluvial and floodplain soils as defined by the National Cooperative Soils Survey. Such areas may include filled, graded or excavated sites which possess an aquic (saturated) moisture regime as defined by the United States Department of Agriculture (USDA) Cooperative Soil Survey."

Watercourses are defined in The Act as "rivers, streams, brooks, waterways, lakes, ponds, marshes, swamps, bogs and all other bodies of water, natural or artificial, vernal or intermittent, public or private, which are contained within, flow through or border upon the state or any portion thereof." The Act defines Intermittent Watercourses as having "a defined permanent channel bed and bank and the occurrence of two of the following: A) evidence of scour or deposits of recent alluvium or detritus, B) the presence of standing or flowing water for a duration of longer than a particular storm incident, or C) the presence of hydrophytic vegetation."

Section 3
Wetland Delineation Procedures

Delineation of wetlands and watercourses within the Project area was conducted by Eversource consultants, including soil and wetland scientists, in April and May of 2015.

The wetland boundaries were delineated in accordance with USACE Headquarters and New England District guidance including: 1987 Manual, 2012 Regional Supplement, and *Field Indicators for Identifying Hydric Soils in New England, Version 3.*[6] The methods of investigation included both on-site field investigations and desktop analysis to determine the wetland and watercourse resource areas within and proximate to the Project area.

3.1 Pre-Survey Desktop Investigations

Prior to performing an on-site survey and wetland delineation, a thorough review of existing Project area information was conducted, including:

- United States Geologic Survey (USGS) 7.5-minute series topographic quadrangle maps;
- NRCS Web Soil Survey digital soil information;
- Connecticut Department of Energy and Environmental Protection (CT DEEP) digital wetland information;
- U.S. Fish and Wildlife Service (USFWS) Region 1, National Wetland Inventory (NWI) digital information;
- CT DEEP Natural Diversity Data Base digital listed species information;
- Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) digital information; and,
- Aerial photographs.

3.2 Field Surveys

BSC wetland scientists conducted an inventory of all Federal and State jurisdictional wetlands and watercourses within the Project Area, including the existing Eversource ROW between Plumtree Substation and Brookfield Junction (within which the new 115-kV line would be located), as well as Eversource property and adjacent ROW at the Stony Hill Substation. The aerial photograph based Volume 5 maps show the locations of the delineated resources relative to the limits of the ROW.

[6] New England Hydric Soils Technical Committee. 2004. *Field Indicators for Identifying Hydric Soils in New England, 3rd ed*.. New England Interstate Water Pollution Control Commission, Lowell, MA.

Wetland and watercourse boundaries were located using GPS units but were not flagged in the field. Perennial watercourses located within large, deep wetlands, were not field located but, have been mapped using aerial interpretation.

3.2.1 Soils

Soil profile observations were collected at each sampling location to a depth of at least 20 inches. Typically, a soil pit was dug with an auger or tile spade (sharpshooter) to provide a soil profile for examination. Soils profiles were inspected by identifying horizons and recording the depths to each horizon boundary. For each horizon the soil texture, structure, and moist color (matrix and redoximorphic features) were observed. Matrix and redoximorphic feature soil colors were identified using a *Munsell® Soil Color Chart.*[7] In addition to color, the kind, size, quantity and contrast of redoximorphic features were evaluated. Hydric soil indicators were field identified using the *Field Indicators for Identifying Hydric Soils in New England*[8].

3.2.2 Vegetation

Dominant plant species in each vegetation stratum (herbaceous, shrub, sapling, tree, and liana) within the general vicinity of each sampling location were identified. Hydrophytic vegetation is defined as the sum total of macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present[9]. Plant species within the wetland/upland ecotone were recorded as to their percent cover and wetland indicator status according to the *National Wetland Plant List, Region 1*[10] and the NRCS Plants Database[11]. At each plot, visual estimates of dominant plant species cover was observed to determine the location of a change in plant communities from hydrophytic dominant to upland dominant. Total vegetation dominance for all strata was determined using the "50/20 rule.

3.2.3 Wetland Numbering Method

Wetlands, watercourses, and waterbodies are labeled with sequential numbers beginning with the letter W for wetlands, S for watercourses, and WB for waterbodies (e.g. W1, S2, WB-1…). Resource areas were numbered sequentially from south to north along the ROW starting from Plumtree Substation to Brookfield Junction. Delineations performed in the vicinity of Stony Hill Substation continued with the same sequencing (e.g., W6 and W7). Flags demarcating wetland and watercourse boundaries were not hung in the field; however, GPS data were taken at each location. Tables 1 and 2 provide a list of delineated wetlands, watercourses, and waterbodies within the Project area.

Wetlands that are hydrologically connected to, or part of a larger ecological functional unit were included within the same alpha-numeric label (e.g., wetland W1). Some wetlands that were found to lack a direct surface water connection (such as those bisected by historic disturbances such as roadways) were included under the same wetland label if

[7] Gretag Macbeth. 2000. Munsell® Soil Color Charts, Year 2000 Revised Washable Edition. New Windsor, NY.
[8] New England Hydric Soils Technical Committee. 2004. Ibid.
[9] Environmental Laboratory. (1987). Ibid.
[107] *National Wetland Plant List (Updated July 2013)*. U.S. Army Engineer Research and Development Center, Vicksburg, MS
[11] http://plants.usda.gov/wetland.html

they were considered to be part of the same hydrologic system. A similar approach was taken for small wetlands arrayed along the length of a connecting watercourse.

Due to differences in state and federal wetland delineation criteria and methodology, the boundaries of state and federal jurisdictional wetlands may not correspond in all cases. For example, in Connecticut, areas of alluvial and floodplain soils, which are not hydric soils or exhibit evidence of wetland hydrology, are state jurisdictional wetlands, but not federal, jurisdictional wetlands. For the most part, however, the state and federal wetland boundaries along the Proposed Route are the same.

Wetland W1 is the only wetland identified with variations between the Federal and State wetland boundaries. A State-only alluvial/floodplain wetland associated with Limekiln Brook is present to the north of the existing Plumtree Substation in Bethel, and was included in the same wetland label as the adjoining wetland system, W1.

3.2.4 GPS Mapping

Wetland boundary flags were located using a Trimble Geo7X® Global Positioning System (GPS). A minimum of 30 static measurements were collected at each survey point to achieve an estimated a sub-meter level of accuracy. Real time positions were then post-processed for additional accuracy using static data available at public continuously operating reference stations (CORS) and referenced to the Connecticut State Plane Coordinate System NAD 83.

3.3 Wetland and Watercourse Classification

While in the field, BSC wetland scientists classified the various wetlands according to the "Cowardin system", which is a system described in the *Classification of Wetlands and Deepwater Habitats of the United States*[12]. Identified wetlands were classified as Palustrine Forested (PFO), Palustrine Emergent (PEM), Palustrine Scrub-Shrub (PSS) and Palustrine Open Water (POW) and are further described below. Dominant types have been determined for each wetland.

3.3.1 Palustrine Forested Wetlands (PFO)

Forested wetlands are characterized by woody vegetation that is 6 meters (approximately 20 feet) tall or taller and normally includes an overstory of trees, an understory of young trees or shrubs and an herbaceous layer. These wetland types are located predominantly in the unmanaged areas of the existing ROW or in adjacent off-ROW areas.

3.3.2 Palustrine Scrub-Shrub Wetlands (PSS)

Scrub-shrub wetlands are typically dominated by woody vegetation less than 6 meters (approximately 20 feet) tall. Scrub-shrub wetland types may represent a successional stage leading to a forested wetland and include shrubs, saplings, and trees or shrubs that

[12] Cowardin, L.M., V. Carter, F.C. Golet and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Fish and Wildlife Service. FWS/OBS-79/31. Washington, D.C. 103 p.

are small and/or stunted due to environmental conditions or human vegetation management practices.

3.3.3 Palustrine Emergent Wetlands (PEM)

Emergent wetlands are characterized by erect, rooted, herbaceous hydrophytes not including mosses and lichens. These wetlands maintain the same appearance year after year, are typically dominated by perennial plants, and the vegetation of these wetlands is present for the majority of the growing season.

3.3.4 Palustrine Open Water (POW)

Areas of permanent open water that border on palustrine systems are referred to as POW. Area of open water may exist as man-made or natural waterbodies.

3.4 Post-Survey Desktop Analysis

Wetland and watercourse boundaries were plotted on 2012 Aerial Imagery with 0.5-foot resolution at 100 scale to show the location of wetland resource areas relative to the existing ROW and proposed Project facilities.

Section 4
Results

4.1 Wetlands

As a result of the field investigations, as total of eight wetlands (W1-W7) were identified in the Project Area (the Proposed Route, Plumtree Substation, and Stony Hill Substation), one of which is an open water pond (POW; WB-1).

The results of the wetland field surveys demonstrate that wetland types within Eversource's existing ROW vary. Many of the wetlands along the ROW are maintained as low-growing vegetation (e.g., of PSS or PEM wetland systems) to allow for the safe operation of the existing overhead transmission lines. Thus, the majority of the wetlands within the existing cleared portion of the ROW are dominated by PEM and PSS communities. These wetland types typically transition into PFO wetlands within the unmanaged portion of the ROW that are characterized by a mixed hardwood deciduous forest.

For most of the wetlands identified within the Project Area, the field investigations determined that Connecticut and federal wetland jurisdictional boundaries coincided. In one location, the occurrence of well-drained to excessively drained alluvial soils required an area of state jurisdiction to be identified separately from the federal boundary. This are is characterized as floodplain soils associated with Limekiln Brook to the north of Plumtree Substation in the Town of Bethel.

A summary of the delineated wetlands is provided in Table 1. Representative photographs are provided in Appendix B. Wetland delineation field forms are provided in Appendix C. Watercourses are discussed in Section 4.2 of this report.

Plumtree Substation North to Brookfield Junction

Of the eight total wetland, six wetlands (W1-W5 and WB-1), were delineated along the 3.4-mile ROW between Plumtree Substation in the Town of Bethel and Brookfield Junction in the Town of Brookfield. Wetlands identified along the ROW were typically PEM or PSS habitats within the managed portions of the ROW and typically PFO within the unmanaged portions.

The southern portion of the existing Eversource ROW, near and extending north from Plumtree Substation, is dominated by a large wetland system (W1) associated with Limekiln Brook and East Swamp Brook. This system drains northerly into the Still River (which is located outside the Project area). The northern portion of the ROW extends through developed urban and suburban areas and crosses Interstate 84. North of I-84, lands are predominantly upland and wetlands that may have historically existed within the ROW have been altered or incorporated into stormwater systems (W4 and W5).

Section 4 Results

An invasive species, common reed (*Phragmites australis*), was observed in all wetlands present along the Proposed Route and, in most cases, represents the dominant cover within the ROW. Wetland W1, a large wetland complex associated with East Swamp Brook and Limekiln Brook, is principally a PEM wetland within and outside of the managed portions of the ROW; however, in certain locations, mature stands of shrubs and trees are also present. All but two of the wetlands are associated with streams, or in one case a stormwater conveyance channel (S7), along the Proposed Route.

The pond identified along the Proposed Route (designated as WB-1) is classified as palustrine open water (POW).

WB-1, the open water pond, is included in this section because wetland habitat, dominated by common reed (*Phragmites australis*), is present with the shallow portions (i.e., within the banks) of the pond. East of the ROW, wetlands are present outside of the banks of the pond.

Stony Hill Substation

Of the eight total wetlands, two wetlands were identified in the vicinity of Stony Hill Substation (W6 and W7) in the Town of Brookfield. Wetland W6 is classified as a PFO wetland and W7 is classified as an emergent (PEM) wetland. Neither wetland is within the areas that will be affected by the proposed Project modifications to the substation.

Although W7 is associated with a perennial stream, no channel was identified in the Project area. The wetland is impounded by a utility access road and railroad and ponds to the south. An invasive species, common reed (*Phragmites australis*), was observed in W7 where no forest canopy was present.

Section 4 Results

Table 1 - Delineated Wetlands within the Project Area

Mapsheet #		Municipality (s)	Wetland ID [1]	Dominant NWI Class[2]	Other NWI Classes Present	Water Regime	Associated Watercourses/ Waterbodies[3]
100' Scale	400' Scale						
Proposed Route: Plumtree to Brookfield Junction							
1-6	1-2	Bethel, Danbury	W1 [4]	PEM	PFO, PSS	Semi-permanently flooded	S1, S2, S3
6-7	2	Danbury	W2	PEM	PFO	Temporarily flooded	S4
8	2	Bethel	W3	PSS	PFO	Seasonally flooded	
11	3	Bethel	W4	PEM	PFO	Temporarily flooded	S7
11	3	Bethel	WB-1 [5]	POW	PEM	Permanently flooded	
12	3	Bethel	W5	PEM		Saturated	
Stony Hill Substation							
14	4	Brookfield	W6	PFO		Seasonally flooded	-
14	4	Brookfield	W7	PFO	PEM	Temporarily flooded	-

1 Wetland ID refers to wetlands identified in the 2015 field surveys for wetlands in and adjacent to the Project ROW. Wetland IDs are consistent with those depicted in the Volume 2 maps.

[2] Wetlands classifications and water regimes are characterized according to Cowardin et al 1979; PEM = Palustrine Emergent Wetland; PFO = Palustrine Forested Wetland; PSS = Palustrine Scrub-Shrub Wetland; POW = Palustrine Open Water.

[3] No associated vernal pools were identified within the Project ROW. Seasonally flooded pools within the floodplain of East Swamp Brook or Limekiln Brook conducive to supporting a vernal pool community could be present outside of the Project ROW in association with Wetland W1.

4Wetland W1 is a large wetland complex, portions of which extend along the ROW in both Bethel and Danbury.

5 WB-1 is an open water pond (POW) wetland and waterbody and is included in Tables 1 and 2. The margins of WB-1 are inhabited by emergent wetland vegetation dominated by *Phragmites* which is present both below and just above the banks of the pond.

* The invasive species, common reed (*Phragmites australis*), is present in all wetland except the PFO wetland W6 by Stony Hill Substation

4.1.1 Wetlands Vegetation

Wetlands within the ROW consist of a combination of emergent and scrub shrub vegetation.

These wetland types characterize the large wetland complex associated with Limekiln and East Swamp brooks. Further, in the vicinity of Eversource's existing overhead 115-kV / 345-kV lines, Eversource manages the ROW to promote low-growth vegetation, consistent with overhead transmission line operation.

The wetland complex associated with Limekiln Brook and East Swamp Brook is dominated by deep water emergent floodplains. This wetland systems grade from open emergent areas to a mixture of scrub-shrub and forested wetland in the shallows along the upland boundary. The transition from emergent wetland is often abrupt along the existing ROW edge, where there is a hard transition from emergent wetland to forested swamp or upland hardwood forest Uplands adjacent to wetlands are typically composed of a mix of oak-hickory and northern hardwood forest and include oak (*Quercus* spp.), maple (*Acer* spp), birch (*Betula* spp.) and hickory (*Carya* spp.) species.

Emergent (PEM) and scrub-shrub (PSS) wetlands transition to forested wetlands (PFO), within the un-managed portions of the ROW and are dominated by a mix of red maple (*Acer rubrum*), swamp white oak (*Quercus bicolor*) and American Elm (*Ulmus Americana*). Understory vegetation consists of Northern spicebush (*Lindera benzoin*), multiflora rose (*Rosa multiflora*), Silky dogwood (*Cornus ammomum*), red osier dogwood (*Cornus sericea*), Northern arrowwood (*Viburnum recognitum*) skunk cabbage (*Symplocarpus foetidus*), cinnamon fern (*Osmundastrum cinnamomeum*), jack-in-the-pulpit (*Arisaema triphyllum*), Sensitive Fern (*Onoclea sensibilis*), royal fern (Osmunda regalis), Common Reed (*Phragmites australis) and* jewelweed *(Impatiens capensis)*.

Shrub swamps contain a mix of speckled alder (Alnus incana), Northern Arrowood (*Viburnum recognitum*), red osier dogwood (*Cornus sericea*) bebb willow (*Salix bebbiana*) with common reed (*Phragmites australis*), tussock sedge (*Carex stricta*), jewelweed (*Impatiens capensis*) and sensitive fern (*onoclea sensibilis*).

Emergent wetlands present within the ROW include natural emergent systems associated with watercourses, and constructed stormwater systems. These constructed systems may have been constructed in areas where natural wetlands were historically present. Natural emergent systems include a mix of wet meadow, shallow and deep marsh. Wet meadow systems contain a mix of transitional wetland species including wrinkle leaved goldenrod (*solidago rugosa*), lurid sedge (*Carex lurida*) and other carex species. Shallow and deep marshes are generally dominated by common reed (*Phragmites australis*) with occasional red osier dogwood (*Cornus sericea*) and tussock sedge (*Carex stricta*). Wetlands associated with stormwater systems contain a mix of common reed (*Phragmites australis*), and fowl meadowgrass (*Poa palustris*) with occasional spicebush (Lindera benzoin) and multiflora rose (Rosa multiflora).

Common invasive species present within and adjacent to wetlands include common reed (*Phragmites australis*), multiflora rose (*Rosa multiflora*), oriental bittersweet (*Celastrus orbiculatus*), purple loosestrife (*Lythrum salicaria*) and Japanese knotweed (*Fallopia japonica*).

4.1.2 Wetland Surficial Geology, Soils, and Hydrology

Soil types within the Project area are predominantly derived from glacial till low lying areas with sandy and silty alluvial soils. The large wetland system north of Plumtree Substation contains deep mucky and loamy soils underlain by sandy and gravely layers.

Upland soils consist of Paxton, Hinckley and Montauk soils mixed with urban land and udorthents. Relatively undisturbed soils include Merrimack catden and Paxton and Montauk fine sandy loam with inclusions of Hinckley soils. These soils are generally well drained loamy soils derived from glaciofluvial deposits. Hinckley soils are excessively drained and formed from lodgement till.

Wetland soils present include mainly raypol and saco silt loam. These soils are both deep and poorly drained soils. The saco series are silty alluvial soils whereas, the raypol series are loamy soils. Both soils are underlain by sandy or gravely soils and are generally found in low lying areas and flood plains. Saco soils are frequently flooded and the raypol series have a water table that is generally close to the soil surface. These soils are mostly found on the south end of the line and are associated with large wetland systems in the flood plains of East Swamp Brook and Limekiln Brook.

4.2 Watercourses

Plumtree Substation North to Brookfield Junction

The Proposed Route crosses eight watercourses (including waterbodies and a stormwater conveyance), all in Bethel or Danbury. Of these, four are perennial watercourses; one is a perennial pond; two are intermittent watercourses; and one is a riprap-lined stormwater conveyance channel. Table 2 summarizes the major characteristics, including surface water classifications, of the delineated watercourses and waterbodies along the Proposed Route. No vernal pools were identified along or near the Project Route.

Two of the four perennial watercourses, East Swamp Brook and Limekiln Brook, are associated with the same wetland complex (W1). The channels of these two watercourses vary in width from approximately 6 to 25 feet. East Swamp Brook meanders through the ROW from existing Structure 10268 to 10264 near its confluence with Limekiln Brook. Limekiln Brook is present to the north of Plumtree Substation and crosses the Proposed Route once, south of existing structure 10261.

The two other perennial watercourses (S5 and S6) are un-named and are approximately 6-10 feet wide within the ROW. None of these perennial watercourses meet the criteria for federal designation as navigable pursuant to Section 10 of the Rivers and Harbors Act of 1899. S5 is present within wetland W3 and flows northwesterly, ultimately draining into an inlet located to the south of Target (located south of Stony Hill Road in Bethel). S6 is channel that is bordered by Interstate 84 and parking lots of commercial areas to the north of Stony Hill Road (US-6) and drains southwesterly draining into Stony Hill Brook and ultimately Limekiln Brook.

The Proposed Route also encompasses one pond, a perennial water body, which is located north of Interstate 84 in a Bethel commercial park. The banks of the pond are armored

by stone rip-rap and the surrounding upland habitat consists mainly of manicured lawn. The pond primarily serves to collect stormwater from the surrounding corporate business park, as is evident by stormwater discharge pipes. The pond is approximately 200-250 feet wide within the ROW.

The two intermittent, unnamed streams are both located along the Proposed Route in Danbury. S3 is present on either side of Old Sherman Turnpike, connected via a culvert. This intermittent stream is primarily a stormwater feature, draining westerly and dissipated into wetland W1. S4 is an intermittent channel that drains westerly from a culvert on Payne Road, ultimately dissipating into wetland W2. This stream is likely a function of stormwater flow release from the Payne road stormwater system. Intermittent watercourses are generally shallow with gradual to vertical banks and with sandy, gravelly or cobble substrates. The stormwater conveyance channel is associated with the corporate park east of Research Drive in Town of Bethel.

Stony Hill Substation

No watercourses were located in the vicinity of the Project facilities at Stony Hill Substation. Wetland W7 is associated with a perennial watercourse, however not channel was identified within or near Stony Hill Substation. Additionally, no vernal pools were identified in the vicinity of the Substation.

Table 2 - Watercourses and Waterbodies within the Project Area[1]

Volume 5 Mapsheet #		Municipality(s)	Waterbody/ Watercourse		Associated Wetland	Flow Regime	Water Quality Classification[1]	Approximate Width (feet)
100' Scale	400' Scale		ID	Name				
2-4	1	Bethel, Danbury	S1	East Swamp Brook	W1	Perennial	A	10-15
1,4-6	1-2	Bethel, Danbury	S2	Limekiln Brook	W1	Perennial	A, B	6-25
6	2	Danbury	S3		W1	Intermittent	A	1-2
7	2	Danbury	S4		W2	Intermittent	A	~1
8-9	2	Bethel	S5		W3	Perennial	A	6-10
10	2-3	Bethel	S6			Perennial	A	6-10
11	3	Bethel	S7		W4	Stormwater Conveyance	n/a	1
11	3	Bethel	WB-1	Unnamed Pond[2]		Perennial	A	

[1] No watercourses or waterbodies were identified in the vicinity of Stony Hill Substation. All watercourses and waterbodies represent those delineated along the Proposed Route from Plumtree Substation north to Brookfield Junction.

[2] WB-1 is an open water pond (POW) wetland and waterbody and is included in Tables 1 and 2. The margins of WB-1 are inhabited by emergent wetland vegetation dominated by *Phragmites* which is present both below and just above the banks of the pond.

Section 5
References

Cowardin, L.M., V. Carter, F.C. Golet and E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. U.S. Fish and Wildlife Service. FWS/OBS-79/31. Washington, D.C. 103 p.

Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual*. Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

Gretag Macbeth. 2000. *Munsell® Soil Color Charts, Year 2000 Revised Washable Edition*. New Windsor, NY.

Rodgers, J. 1985. *Bedrock Geologic Map of Connecticut*. Connecticut Geological and Natural History Survey, CT Department of Environmental Protection. Hartford CT. 1:125,000.

Stone, J.R., Schafer, J.P., London, E.H., and W.B. Thompson. 1992. *Surficial Materials Map of Connecticut*. United States Geological Survey. Denver, CO. 1:125,000.

U.S.D.A. Natural Resources Conservation Service – Web Soil Survey. http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm

Section 5 References

Note: This page is intentionally left blank

Appendix A:

Representative Wetland Photographs

Note: This page is intentionally left blank

Photo #1: View of Wetland W-1 from the west side of the Plumtree Substation. Existing 321 Line Structure 10269 is shown on the right. *Facing West.*

Photo #2: View of Wetland W-1 along the southern edge of the Plumtree Substation where swamp mat access is proposed. The wetland in this portion is a scrub-shrub wetland (PSS) dominated by speckled alder *(Alnus incana)* with only a few mature trees. *Facing West.*

Photo #3: Wetland W-1 a palustrine emergent wetland (PEM) and Lime Kiln Brook a perennial watercourse as seen from Shelter Rock Road. *Facing north.*

Photo #4: View of Wetland W-2 from Payne Road. W-2 is predominantly a palustrine emergent wetland (PEM) that is forested (PFO) along the northern and southern edges of the Right-of-Way. *Facing west.*

Photo #5: View of Wetland W-3 which is a scrub-shrub-dominated wetland. Stream 5 flows northerly through this wetland ultimately draining into an inlet present to the north of Target. *Facing east.*

Photo #6: View of Wetland W-4 which is a palustrine emergent wetland (PEM) that is forested (PFO) on the east side of the Right-of-Way. This wetland is mowed within the emergent portion and portions of which are maintained as a man-made stormwater feature. *Facing south.*

Photo #7: View of Waterbody 1 (WB-1) from Research Drive. The waterbody is an open pond with some patches of palustrine emergent habitat (PEM) along the fringes. *Facing east.*

Photo #8: View of Wetland W-5 from Research Drive which is a palustrine emergent (PEM) system. Wetland is dominated by Common Reed (*Phragmites australis)* and is bordered by planted creeping juniper *(Juniperus horizontalis). Facing southeast.*

Appendix B:

Wetland Delineation Data Forms

Note: This page is intentionally left blank

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Plumtree to Brookfield Jct. 115kV T-line Project City/County: Danbury Sampling Date: 5/13/15

Applicant/Owner: Eversource Energy State: CT Sampling Point: W1A-U

Investigator(s): K. Bednaz Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): 0-45

Subregion (LRR or MLRA): _____ Lat: 41.406764° Long: -73.406046° Datum: WGS84

Soil Map Unit Name: Udorthents-Urban land complex NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No X Hydric Soil Present? Yes _____ No X Wetland Hydrology Present? Yes _____ No X	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** X If yes, optional Wetland Site ID: _____

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches):

Water Table Present? Yes _____ No X Depth (inches):

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches):

Wetland Hydrology Present? **Yes** ☐ **No** ☑

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No evidence of hydrology observed

VEGETATION – Use scientific names of plants.

Sampling Point: W1A-U

Tree Stratum (Plot size: r=30')	Absolute % Cover	Dominant Species?	Indicator Status
1. n/a			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: r=15')			
1. Tartarian honeysuckle, Lonicera tatarica	20.5	X	FACU
2. Eastern Red Cedar sapling, Juniperus virginiana	10.5	X	FACU
3. Redosier Dogwood, Cornus sericea	10.5	X	FACW
4. Northern Arrowwood, Viburnum recognitum	3		FAC
5.			
6.			
7.			
	44.5 = Total Cover		
Herb Stratum (Plot size: r=5')			
1. Canada Goldenrod, Solidago canadensis	63	X	FACU
2. Flat-top goldenrod, Euthamia graminifolia	20.5	X	FAC
3. Sensitive Fern, Onoclea sensibilis	3		FACW
4. Field Horsetail, Equisetum arvense	3		FAC
5. Common Milkweed, sclepias syriaca	3		UPL
6. Bull Thistle, Cirsium vulgare	3		FACU
7.			
8.			
9.			
10.			
11.			
12.			
	95.5 = Total Cover		
Woody Vine Stratum (Plot size: r=30')			
1. Eastern Poison Ivy, Toxicodendron radicans	10.5	X	FAC
2. Oriental Bittersweet, Celastrus orbiculatus	6	X	UPL
3. Virginia Creeper, Parthenocissus quinquefolia	3		FACU
4.			
	19.5 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.43 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 = 0
FACW species	x 2 = 0
FAC species	x 3 = 0
FACU species	x 4 = 0
UPL species	x 5 = 0
Column Totals: 0 (A)	0 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W1A-U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10 YR 2/2	100					Loam	
4-16	10 YR 4/3	60	10 YR 3/1	30	C	M	Loamy sand	
			2.5 Y 5/2	10	D	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L, M**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:_____

Depth (inches):_____

Hydric Soil Present? **Yes** ☐ **No** ☑

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Plumtree to Brookfield Jct. 115kV T-line Project City/County: Danbury Sampling Date: 5/18/15

Applicant/Owner: Eversource Energy State: CT Sampling Point: W1A-Wet

Investigator(s): K. Bednaz Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): 0-15

Subregion (LRR or MLRA): _____ Lat: 41.406777° Long: -73.406286° Datum: WGS84

Soil Map Unit Name: Udorthents-Urban land complex NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area within a Wetland?** **Yes X** **No**
Hydric Soil Present?	Yes X	No	
Wetland Hydrology Present?	Yes X	No	If yes, optional Wetland Site ID: _____

Remarks: (Explain alternative procedures here or in a separate report.)

Landfill area. Large emergent swamp with cattails/standing water.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches):

Water Table Present? Yes _____ No _____ Depth (inches):

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): 18"

Wetland Hydrology Present? **Yes** ☑ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No oxidized rhizosphere, no free-standing water (in soil plot), and saturation at 18"

Wetland continues/includes emergent swamp to the south.

VEGETATION – Use scientific names of plants.

Sampling Point: W1A-Wet

Tree Stratum (Plot size: r=30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Eastern Red Cedar, Juniperus virginiana	10.5	X	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	10.5	= Total Cover	

Sapling/Shrub Stratum (Plot size: r=15')			
1. Redosier Dogwood, Cornus sericea	10.5	X	FACW
2. Eastern Red Cedar sapling, Juniperus virginiana	10.5	X	FACU
3. Tartarian Honeysuckle, Lonicera tatarica	3		FACU
4. Northern Arrowwood, Viburnum recognitum	3		FAC
5. Autumn Olive, Elaeagnus umbellata	3		FACU
6. Multiflora Rose, Rosa multiflora	3		FACU
7.			
	33	= Total Cover	

Herb Stratum (Plot size: r=5')			
1. Sensitive Fern, Onoclea sensibilis	53	X	FACW
2. Field Horsetail, Equisetum arvense	38	X	FAC
3. Purple Loosestrife, Lythrum salicaria	10.5		OBL
4. Flat-top goldenrod, Euthamia graminifolia	3		FAC
5. Common milkweed, Asclepias syriaca	3		UPL
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	107.5	= Total Cover	

Woody Vine Stratum (Plot size: r=30')			
1. Eastern Poison Ivy, Toxicodendron radicans	10.5	X	FAC
2. Oriental Bittersweet, Celastrus orbiculatus	6	X	FACU
3. Viginia Creeper, Parthenocissus quinquefolia	3		FACU
4.			
	19.5	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.57 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	0 (A)		0 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No**

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W1A-Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10 YR 2/2	100					Loam	
3-9	10 YR 2/2	89	2.5 Y 4/3	8	C	M	Sandy loam	
			2.5 Y 4/4	3	C	M		
9-20	10 YR 4/2	47	10 YR 4/3	30	C	M	Loamy sand	
			G1 5/10Y	20	D	M		
			10 YR 3/6	3	C	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L, M**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:_____

Depth (inches):_____

Hydric Soil Present? **Yes** ☑ **No** ☐

Remarks:

fill material/mixing present

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Plumtree to Brookfield Jct. 115kV T-line Project City/County: Brookfield Sampling Date: 4-23-2015

Applicant/Owner: Eversource Energy State: CT Sampling Point: W1B-U

Investigator(s): Chris Fox Section, Township, Range: NA

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): None Slope (%): _____

Subregion (LRR or MLRA): _____ Lat: 41.392257° Long: -73.402853° Datum: NAD 83

Soil Map Unit Name: Urban Land NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (If no, explain in Remarks.)

Are Vegetation ☑, Soil ☑, or Hydrology ☑ significantly disturbed? Are "Normal Circumstances" present? Yes ☐ No ☑

Are Vegetation ☑, Soil ☑, or Hydrology ☑ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☑	**Is the Sampled Area within a Wetland?** Yes ☐ No ☑
Hydric Soil Present?	Yes ☐	No ☑	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present?	Yes ☐	No ☑	

Remarks: (Explain alternative procedures here or in a separate report.)

The wetland boundary is determined by the edge of the fill slope around the substation yard.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ☐	No ☑	Depth (inches): _____
Water Table Present?	Yes ☐	No ☑	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes ☐	No ☑	Depth (inches): _____

Wetland Hydrology Present? Yes ☐ No ☑

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: W24-U

Tree Stratum (Plot size: 30 Ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. None			
2.			
3.			
4.			
5.			
6.			
7.			
= Total Cover			

Sapling/Shrub Stratum (Plot size: 15 Ft radius)			
1. None			
2.			
3.			
4.			
5.			
6.			
7.			
= Total Cover			

Herb Stratum (Plot size: 5 Ft radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
= Total Cover			

Woody Vine Stratum (Plot size: 30 Ft radius)			
1.			
2.			
3.			
4.			
= Total Cover			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ☐ **No** ☑

Remarks: (Include photo numbers here or on a separate sheet.)

There is no vegetation as the upland is a stone substation yard.

SOIL

Sampling Point: W24-U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
								Area is a substation yard soils are gravel.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ☐ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ☐ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ☐ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ☐ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ☐ Dark Surface (S7) (**LRR K, L**)
- ☐ Polyvalue Below Surface (S8) (**LRR K, L**)
- ☐ Thin Dark Surface (S9) (**LRR K, L**)
- ☐ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ☐ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ☐ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ☐ **No** ☑

Remarks:

The upland area is a substation yard comprised of crushed stone over gravel.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Plumtree to Brookfield Jct. 115kV T-line Project City/County: Brookfield Sampling Date: 4-23-2015

Applicant/Owner: Eversource Energy State: CT Sampling Point: W1B-W

Investigator(s): Chris Fox Section, Township, Range: NA

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): None Slope (%): _____

Subregion (LRR or MLRA): _____ Lat: 41.392063° Long: -73.402970° Datum: NAD 83

Soil Map Unit Name: Saco silt loam NWI classification: EM/SS/FO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (If no, explain in Remarks.)

Are Vegetation ☑, Soil ☑, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☐ No ☑

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☑	No ☐	**Is the Sampled Area within a Wetland?** Yes ☑ No ☐
Hydric Soil Present?	Yes ☑	No ☐	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present?	Yes ☑	No ☐	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ☑	No ☐	Depth (inches): _____
Water Table Present?	Yes ☑	No ☐	Depth (inches): 3
Saturation Present? (includes capillary fringe)	Yes ☑	No ☐	Depth (inches): Surface

Wetland Hydrology Present? Yes ☑ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: W24-W

Tree Stratum (Plot size: 30 Ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. American Elm (Ulmus americana)	40	Y	FacW
2. Swamp White Oak (Quercus bicolor)	30	Y	FacW
3.			
4.			
5.			
6.			
7.			
	70	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15 Ft radius)			
1. None			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	

Herb Stratum (Plot size: 5 Ft radius)			
1. Skunk Cabbage (Symplocarpus foetidus)	100	Y	OBL
2. Phragmites (Phragmites australis)	20	Y	FacW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	120	= Total Cover	

Woody Vine Stratum (Plot size: 30 Ft radius)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☑ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ☑ **No** ☐

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W24-W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	Black						Hemic	
2-5	10YR 3/2		10YR3/6	20	M		Muck	
6-7	10YR 3.6						Sand	
8-12	10YR 4/1						Sand	
12-24+	10YR 3/1						Muck	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☑ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ☐ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ☐ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ☐ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ☐ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ☐ Dark Surface (S7) (**LRR K, L**)
- ☐ Polyvalue Below Surface (S8) (**LRR K, L**)
- ☐ Thin Dark Surface (S9) (**LRR K, L**)
- ☐ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ☐ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ☐ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ☑ **No** ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Plumtree to Brookfield Jct. 115kV T-line Project City/County: Danbury Sampling Date: 5-15-15

Applicant/Owner: Eversource Energy State: CT Sampling Point: W2-U

Investigator(s): K. Bednaz & M. Sullivan Section, Township, Range: _____

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR or MLRA): _____ Lat: 41.407889° Long: -73.403055° Datum: WGS84

Soil Map Unit Name: Udorthents-Urban land complex NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	If yes, optional Wetland Site ID: _____

Remarks: (Explain alternative procedures here or in a separate report.)

Adjacent to roadway, some influence from road fill material and deposition

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches):
Water Table Present?	Yes _____	No X	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes _____	No X	Depth (inches):

Wetland Hydrology Present? **Yes** ☐ **No** ☑

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No evidence of hydrology observed

VEGETATION – Use scientific names of plants.

Sampling Point: W2-U

Tree Stratum (Plot size: r=30')	Absolute % Cover	Dominant Species?	Indicator Status
1. n/a			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: r=15')			
1. Multiflora Rose, Rosa multiflora	5	X	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	5 = Total Cover		
Herb Stratum (Plot size: r=5')			
1. Common Wormwood, Artemisia vulgaris	50	X	UPL
2. Dames Rocket, Hesperis matronalis	20	X	FACU
3. Common Reed, Phragmites australis	10		FACW
4. Garlic Mustard, Alliaria petiolata	5		FACU
5. Jewelweed, Impatiens capensis	5		FACW
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	90 = Total Cover		
Woody Vine Stratum (Plot size: r=30')			
1. Oriental Bittersweet, Celastrus orbiculatus	10	X	UPL
2.			
3.			
4.			
	10 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	0 (A)		0 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

Negligible amounts of skunk cabbage and jack in the pulpit.

SOIL

Sampling Point: W2-U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 2/1	100					loam	A1
3-16	10YR 3/2	100					loam	A2
16-20+	10YR 4/4	100					fine sandy loam	Bw

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L, M**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:_____

Depth (inches):_____

Hydric Soil Present? **Yes** ☐ **No** ☑

Remarks:

no saturation observed

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Plumtree to Brookfield Jct. 115kV T-line Project City/County: Danbury Sampling Date: 5-15-15

Applicant/Owner: _____ State: CT Sampling Point: W2-W

Investigator(s): K. Bednaz & M. Sullivan Section, Township, Range: _____

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR or MLRA): _____ Lat: 41.407858° Long: -73.403130° Datum: WGS84

Soil Map Unit Name: Udorthents-Urban land complex NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No Hydric Soil Present? Yes _____ No Wetland Hydrology Present? Yes _____ No	**Is the Sampled Area within a Wetland?** **Yes _____ No** If yes, optional Wetland Site ID: _____

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches):

Water Table Present? Yes _____ No _____ Depth (inches):

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches):

Wetland Hydrology Present? Yes ☑ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Likely receives runoff from roadway. Possible discharge from stormwater outfall. Ephemeral channel on the south side of ROW. Flows west in defined channel then diffuses and disperses into the wetland. Scour and vegetation present, but no active flow. Organic fine sand.

VEGETATION – Use scientific names of plants.

Sampling Point: W2-W

Tree Stratum (Plot size: r=30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Red maple, Acer rubrum	10	X	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	10	= Total Cover	
Sapling/Shrub Stratum (Plot size: r=15')			
1. Redosier Dogwood, Cornus sericea	20	X	FACW
2. Multiflora Rose, Rosa multiflora	5		FACU
3.			
4.			
5.			
6.			
7.			
	25	= Total Cover	
Herb Stratum (Plot size: r=5')			
1. Skunk Cabbage, Symplocarpus foetidus	20	X	OBL
2. Common Reed, Phragmites australis	20	X	FACW
3. Jewelweed, Impatiens capensis	15	X	FACW
4. Dames Rocket, Hesperis matronalis	10		FACU
5. Lonicera sp.	5		
6. Jack-in-the-pulpit	5		
7.			
8.			
9.			
10.			
11.			
12.			
	75	= Total Cover	
Woody Vine Stratum (Plot size: r=30')			
1. Oriental Bittersweet, Celastrus orbiculatus	10	X	UPL
2. Fox Grape, Vitis labrusca	5	X	FACU
3.			
4.			
	15	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.71 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	0 (A)		0 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No**

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W2-W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 2/1	100					silty loam	some fine roots
12-14	10YR 5/3	80					fine sandy loam	mixing of a/b layers
	10YR 2/1	20						
14-22	10YR 6/2	80	10YR 5/6	20	C	M	fine sandy loam	medium-sized redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L, M**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:_____

Depth (inches):_____

Hydric Soil Present? **Yes** ☑ **No** ☐

Remarks:

moist, but not saturated

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Plumtree to Brookfield Jct. 115kV T-line Project City/County: Bethel Sampling Date: 5-15-15

Applicant/Owner: Eversource Energy State: CT Sampling Point: W3-U

Investigator(s): K. Bednaz & Marleigh Sullivan Section, Township, Range: _____

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR or MLRA): _____ Lat: 41.411286° Long: -73.400050° Datum: WGS84

Soil Map Unit Name: Paxton and Montauk fine sandy loams, 8 to 15 percent slopes NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No X Hydric Soil Present? Yes _____ No X Wetland Hydrology Present? Yes _____ No X	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** X If yes, optional Wetland Site ID: _____

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches):

Water Table Present? Yes _____ No X Depth (inches):

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches):

Wetland Hydrology Present? **Yes** ☐ **No** ☑

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

no evidence of hydrology observed

VEGETATION – Use scientific names of plants.

Sampling Point: W3-U

Tree Stratum (Plot size: r=30')	Absolute % Cover	Dominant Species?	Indicator Status
1. n/a			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: r=15')			
1. Multiflora Rose, Rosa multiflora	80	X	FACU
2. Speckled Alder, Alnus incana	10		FACW
3. Bebb willow, Salix bebbiana	5		FACW
4.			
5.			
6.			
7.			
	95 = Total Cover		
Herb Stratum (Plot size: r=5')			
1. Jewelweed, Impatiens capensis	10	X	FACW
2. Skunk Cabbage, Symplocarpus foetidus	5	X	OBL
3. Spotted Geranium, Geranium maculatum	5	X	FACU
4. Field Horsetail, Equisetum arvense	5	X	FAC
5. Red Trillium, Trillium erectum	3		FACU
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	28 = Total Cover		
Woody Vine Stratum (Plot size: r=30')			
1. Virginia Creeper, Parthenocissus quinquefolia	3	X	FACU
2.			
3.			
4.			
	3 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	25	x 2 =	50
FAC species	5	x 3 =	15
FACU species	91	x 4 =	364
UPL species	0	x 5 =	0
Column Totals:	126 (A)		434 (B)

Prevalence Index = B/A = 3.44

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W3-U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	7.5YR 3/3	100					loam	
4-8	77.5YR 4/4	100					sandy loam	
8-15	7.5YR 4/4.5	100					sandy loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L, M**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: stony

Depth (inches): 15

Hydric Soil Present? **Yes** ☐ **No** ☑

Remarks:

Very stony @ 15"
no mottles/redox
no groundwater or saturation

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Plumtree to Brookfield Jct. 115kV T-line Project City/County: Bethel Sampling Date: 5-15-15

Applicant/Owner: Eversource Energy State: CT Sampling Point: W3-W

Investigator(s): K. Bednaz & M. Sullivan Section, Township, Range:

Landform (hillslope, terrace, etc.): toe of slope Local relief (concave, convex, none): flat Slope (%):

Subregion (LRR or MLRA): Lat: 41.411296° Long: -73.399987° Datum: WGS84

Soil Map Unit Name: Udorthents, smoothed NWI classification: PSS

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area within a Wetland?** **Yes X** **No**
Hydric Soil Present?	Yes X	No	If yes, optional Wetland Site ID:
Wetland Hydrology Present?	Yes X	No	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ____ Depth (inches):

Water Table Present? Yes ____ No ____ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ____ No ____ Depth (inches):

Wetland Hydrology Present? **Yes** ☑ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

sparsely vegetated surfaces, signs of surface flow, wetland associate with stream

VEGETATION – Use scientific names of plants.

Sampling Point: W3-W

Tree Stratum (Plot size: r=30')	Absolute % Cover	Dominant Species?	Indicator Status
1. n/a			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: r=15')			
1. Speckled Alder, Alnus incana	40	X	FACW
2. Bebb willow, Salix bebbiana	10		FACW
3. Multiflora Rose, Rosa multiflora	5		FACU
4.			
5.			
6.			
7.			
	55 = Total Cover		
Herb Stratum (Plot size: r=5')			
1. Common Reed, Phragmites australis	40	X	FACW
2. Dames rocket, Hesperis matronalis	15		FACU
3. Jewelweed, Impatiens capensis	10		FACW
4. Tussock sedge, Carex stricta	10		OBL
5. Speckled Alder, Alnus incana	5		FACW
6. Nightshade, Solanum dulcamara	5		FAC
7.			
8.			
9.			
10.			
11.			
12.			
	85 = Total Cover		
Woody Vine Stratum (Plot size: r=30')			
1. n/a			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 1.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	0 (A)		0 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No**

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W3-W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-17	10YR 2.5/1	98	2.5Y 5/2	1	D	PL	Silty loam	mottles w/in 7-8" only, some stones
			7.5YR 4/6	1	C	PL		
17-25+	10YR 3/1	50	10YR 6/2	30	D	M	sandy loam	coarse, undefined mottles
			7.5YR 5/6	20	C	M		subangular stones, uncommon
								1/8-1"

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L, M**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:_____

Depth (inches):_____

Hydric Soil Present? **Yes** ☑ **No** ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Plumtree to Brookfield Jct. 115kV T-line Project City/County: Bethel Sampling Date: 5/13/15

Applicant/Owner: Eversource Energy State: CT Sampling Point: W4-U

Investigator(s): K. Bednaz Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): 0-15

Subregion (LRR or MLRA): _____ Lat: 41.421734° Long: -73.402187° Datum: WGS84

Soil Map Unit Name: Udorthents-Urban land complex NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes X No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	If yes, optional Wetland Site ID: _____

Remarks: (Explain alternative procedures here or in a separate report.)

Vegetation stopped because of newly constructed soils. Newly constructed basin starts at flag DDW13.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches):

Water Table Present? Yes _____ No _____ Depth (inches):

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches):

Wetland Hydrology Present? Yes ☐ No ☑

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No evidence of hydrology observed

VEGETATION – Use scientific names of plants.

Sampling Point: W4-U

Tree Stratum (Plot size: r=30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Red maple, Acer rubrum	38	X	FAC
2. American Elm, Ulmus americana	10.5	X	FACW
3.			
4.			
5.			
6.			
7.			
	48.5	= Total Cover	

Sapling/Shrub Stratum (Plot size: r=15')			
1. Northern Spicebush, Lindera benzoin	20.5	X	FACW
2. Multiflora Rose, Rosa multiflora	10.5	X	FACW
3.			
4.			
5.			
6.			
7.			
	31	= Total Cover	

Herb Stratum (Plot size: r=5')			
1. Various grasses (maintained lawn), likely Poa pratensis (FACU)	38	X	ND
2. Birdseye Speedwell, Veronica persica	10.5	X	ND
3. Common Plantain, Plantago major	3		FACU
4. Dandelion, Taraxacum officinale	3		FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	54.5	= Total Cover	

Woody Vine Stratum (Plot size: r=30')			
1. n/a			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = 0
FACW species _____	x 2 = 0
FAC species _____	x 3 = 0
FACU species _____	x 4 = 0
UPL species _____	x 5 = 0
Column Totals: 0 (A)	0 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No**

Remarks: (Include photo numbers here or on a separate sheet.)

Dominant species include a mix of upland, maintained grasses and speedwell, which is not designated. Speedwell is described by Flora Novae Angliae as existing in fields, roadsides, gardens, and waste areas. Determination based on soils due to disturbed conditions.

SOIL

Sampling Point: W4-U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10 YR 2/1	100						
3-18	10 YR 4/3	50	10 YR 4/4	50			Sandy loam	mixed soils
							Loamy sand	starting at 16"

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L, M**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:_____

Depth (inches):_____

Hydric Soil Present? **Yes** ☐ **No** ☑

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Plumtree to Brookfield Jct. 115kV T-line Project City/County: Bethel Sampling Date: 5/13/15

Applicant/Owner: Eversource Energy State: CT Sampling Point: W4-Wet

Investigator(s): K. Bednaz Section, Township, Range:

Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%): 0-15

Subregion (LRR or MLRA): Lat: 41.421678° Long: -73.402100° Datum: WGS84

Soil Map Unit Name: Udorthents-Urban land complex NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ____ (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area within a Wetland?** **Yes X** **No**
Hydric Soil Present?	Yes X	No	
Wetland Hydrology Present?	Yes X	No	If yes, optional Wetland Site ID:

Remarks: (Explain alternative procedures here or in a separate report.)

Vegetation stopped because of newly constructed soils. Newly constructed basin starts at flag DDW13.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ____ Depth (inches):

Water Table Present? Yes X No ____ Depth (inches): 8"

Saturation Present? (includes capillary fringe) Yes ____ No ____ Depth (inches):

Wetland Hydrology Present? **Yes** ☑ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

free standing water at 8"
oxidized rhizosphere starting at 3"

VEGETATION – Use scientific names of plants.

Sampling Point: W4-Wet

Tree Stratum (Plot size: r=30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Red maple, Acer rubrum	38	X	FAC
2. American Elm, Ulmus americana	10.5	X	FACW
3.			
4.			
5.			
6.			
7.			
	48.5	= Total Cover	

Sapling/Shrub Stratum (Plot size: r=15')			
1. Northern Spicebush, Lindera benzoin	20.5	X	FACW
2. Multiflora Rose, Rosa multiflora	10.5	X	FACW
3.			
4.			
5.			
6.			
7.			
	31	= Total Cover	

Herb Stratum (Plot size: r=5')			
1. Fowl Bluegrass, Poa palustris	83	X	FACW
2. Common Reed, Phragmites australis	10.5		FACW
3. Skunk Cabbage, Symplocarpus foetidus	10.5		OBL
4. Rice Cutgrass, Leersia oryzoides	3		OBL
5. Common Plantain, Plantago major	3		FACU
6. Dandelion, Taraxacum officinale	3		FACU
7. Birdseye Speedwell, Veronica persica	3		ND
8.			
9.			
10.			
11.			
12.			
	116	= Total Cover	

Woody Vine Stratum (Plot size: r=30')			
1. n/a			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 1.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	0 (A)		0 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No**

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W4-Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10 YR 2/1	97	10 YR 5/4	3	C	M	Loam	
2-3	10 YR 4/1	97	10 YR 3/6	3	C	M	Sandy loam	
3-20+	2.5 Y 4/1	76	2.5 Y 5/3	20	C	M	Loamy sand	
			10 YR 3/6	4	C	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L, M**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:_____

Depth (inches):_____

Hydric Soil Present? **Yes** ☑ **No** ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Plumtree to Brookfield Jct. 115kV T-line Project City/County: Bethel Sampling Date: 5/13/15

Applicant/Owner: Eversource Energy State: CT Sampling Point: WB1-Up

Investigator(s): K. Bednaz Section, Township, Range:

Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%): 0-45

Subregion (LRR or MLRA): Lat: 41.424384° Long: -73.401972° Datum: WGS84

Soil Map Unit Name: Udorthents-Urban land complex NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ____ (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	If yes, optional Wetland Site ID:

Remarks: (Explain alternative procedures here or in a separate report.)

riprap/HTM substrate. Adjacent pond armored/constructed

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches):

Water Table Present? Yes ____ No X Depth (inches):

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches):

Wetland Hydrology Present? **Yes** ☐ **No** ☑

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

no evidence of hydrology observed

VEGETATION – Use scientific names of plants.

Sampling Point: WB1-Up

Tree Stratum (Plot size: r=30')	Absolute % Cover	Dominant Species?	Indicator Status
1. n/a			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		

Sapling/Shrub Stratum (Plot size: r=15')			
1. n/a			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		

Herb Stratum (Plot size: r=5')			
1. maintained lawn, likely Kentucky Bluegrass mix (Poa pratensis)	100	X	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100 = Total Cover		

Woody Vine Stratum (Plot size: r=30')			
1. n/a			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	0 (A)		0 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

upland is a maintained lawn

SOIL

Sampling Point: WB1-Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10 YR 3/2	90	10 YR 5/3	10	C	M	Loam	A (concentrations are sand. mechanical mixing)
6-12	10 YR 5/3	80	10 YR 6/3	10	C	M	Loamy sand	B/C - fill material - mixed
			10 YR 4/4	10	C	M		
12-14	10 YR 3/2	100					loamy sand	Ab - no redox features

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L, M**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:_____

Depth (inches):_____

Hydric Soil Present? **Yes** ☐ **No** ☑

Remarks:

fill material mixed throughout horizons

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Plumtree to Brookfield Jct. 115kV T-line Project City/County: Bethel Sampling Date: 5/13/15

Applicant/Owner: Eversource Energy State: CT Sampling Point: WB1-Wet

Investigator(s): K. Bednaz Section, Township, Range: _____

Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): _____ Slope (%): 0-15

Subregion (LRR or MLRA): _____ Lat: 41.424285° Long: -73.401904° Datum: WGS84

Soil Map Unit Name: Udorthents-Urban land complex NWI classification: PEM/open water

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area within a Wetland?** **Yes X** **No**
Hydric Soil Present?	Yes X	No	
Wetland Hydrology Present?	Yes X	No	If yes, optional Wetland Site ID: _____

Remarks: (Explain alternative procedures here or in a separate report.)

Constructed drainage basin/ armored wetland/pond

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No _____ Depth (inches):

Water Table Present? Yes _____ No _____ Depth (inches):

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): 0"

Wetland Hydrology Present? **Yes** ☑ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

standing water- armored detention pond
Saturated a/b-horizon, unsaturated C horizon

VEGETATION – Use scientific names of plants.

Sampling Point: WB1-Wet

Tree Stratum (Plot size: r=30')	Absolute % Cover	Dominant Species?	Indicator Status
1. n/a			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: r=15')			
1. n/a			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Herb Stratum (Plot size: r=5')			
1. Maintained lawn (unidentifiable gramminoids)	43	--	ND
2. Ovoid spikesedge (Eleocharis ovata)	38	X	OBL
3. Common Reed (Phragmites australis)	3		FACW
4. Pennsylvania smartweed (Polygonum pensylvanicum)	3		FACW
5. Common Plantain (Plantago Major)	3		FACU
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	90 = Total Cover		
Woody Vine Stratum (Plot size: r=30')			
1. n/a			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 1.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	38	x 1 =	38
FACW species	6	x 2 =	12
FAC species		x 3 =	0
FACU species	3	x 4 =	12
UPL species		x 5 =	0
Column Totals:	47 (A)		62 (B)

Prevalence Index = B/A = 1.32

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No**

Remarks: (Include photo numbers here or on a separate sheet.)

vegetation of maintained lawn (unidentifiable) is excluded from calculation. Lawn represents vegetation along margins of wetland.

SOIL

Sampling Point: WB1-Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10 YR 2/2	77	10 YR 5/3	3	C	M	mucky mineral	Oa - very fine roots, not ox. rhizoshpere
			G1 5/10Y	20	D	M		
3-7	5 Y 4/1	70	5 Y 4/3	30	C	M	silt w/ muck	Bw
7-12+	G1 5/5GY	95	5 Y 5/6	5	C	M	loamy sand	C

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- X Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L, M**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:_____

Depth (inches):_____

Hydric Soil Present? **Yes** ☑ **No** ☐

Remarks:

Saturated a/b-horizon, unsaturated C horizon

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Plumtree to Brookfield Jct. 115kV T-line Project City/County: Bethel Sampling Date: 5/13/15

Applicant/Owner: Eversource Energy State: CT Sampling Point: W5-Up

Investigator(s): K. Bednaz Section, Township, Range:

Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%): 0-45

Subregion (LRR or MLRA): Lat: 41.427061° Long: -73.402355° Datum: WGS84

Soil Map Unit Name: Udorthents-Urban land complex NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ____ (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	If yes, optional Wetland Site ID:

Remarks: (Explain alternative procedures here or in a separate report.)

riprap/HTM substrate. Adjacent wetland armored/ partially constructed

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches):

Water Table Present? Yes ____ No X Depth (inches):

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches):

Wetland Hydrology Present? **Yes** ☐ **No** ☑

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

no evidence of hydrology observed

VEGETATION – Use scientific names of plants.

Sampling Point: W5-Up

Tree Stratum (Plot size: r=30')	Absolute % Cover	Dominant Species?	Indicator Status
1. n/a			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: r=15')			
1. Creeping Juniper, Juniperus horizontalis (planted)	10.5	X	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	10.5 = Total Cover		
Herb Stratum (Plot size: r=5')			
1. Common Reed, Phragmites australis	63	X	FACW
2. Jewelweed, Impatiens capensis	3		FACW
3. Rough Bedstraw, Galium asprellum	3		OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	69 = Total Cover		
Woody Vine Stratum (Plot size: r=30')			
1. Oriental Bittersweet, Celastrus orbiculatus	6	X	UPL
2. Summer grape, Vitis aestivalis	2	X	FACU
3.			
4.			
	8 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.25 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	3	x 1 =	3
FACW species	66	x 2 =	132
FAC species	0	x 3 =	0
FACU species	12.5	x 4 =	50
UPL species	6	x 5 =	30
Column Totals:	88 (A)		215 (B)

Prevalence Index = B/A = 2.46

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No**

Remarks: (Include photo numbers here or on a separate sheet.)

Hydrophytic vegetation present based on prevalence index, but not dominance test.

SOIL

Sampling Point: W5-Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-1	10 YR 2/2	100					loam	A
1-18	10 YR 3/3	100					sandy loam	B

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L, M**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: fill material from basin construction

Depth (inches): 16-18"

Hydric Soil Present? Yes ☐ No ☑

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Plumtree to Brookfield Jct. 115kV T-line Project City/County: Bethel Sampling Date: 5/13/15

Applicant/Owner: Eversource Energy State: CT Sampling Point: W5-Wet

Investigator(s): K. Bednaz Section, Township, Range:

Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): Slope (%): 0-45

Subregion (LRR or MLRA): Lat: 41.426947° Long: -73.402339° Datum: WGS84

Soil Map Unit Name: Udorthents-Urban land complex NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ____ (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area within a Wetland?** **Yes X** **No**
Hydric Soil Present?	Yes X	No	
Wetland Hydrology Present?	Yes X	No	If yes, optional Wetland Site ID:

Remarks: (Explain alternative procedures here or in a separate report.)

Constructed drainage basin/ armored wetland

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ____ Depth (inches): 0-1/4"

Water Table Present? Yes ____ No ____ Depth (inches):

Saturation Present? (includes capillary fringe) Yes X No ____ Depth (inches): 0"

Wetland Hydrology Present? **Yes** ☑ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

saturated on surface. Standing water ~1/4" in some locations.

VEGETATION – Use scientific names of plants.

Sampling Point: W5-Wet

Tree Stratum (Plot size: r=30')	Absolute % Cover	Dominant Species?	Indicator Status
1. n/a			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: r=15')			
1. Creeping Juniper, Juniperus horizontalis (planted)	10.5	X	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	10.5 = Total Cover		
Herb Stratum (Plot size: r=5')			
1. Common Reed, Phragmites australis	63	X	FACW
2. Jewelweed, Impatiens capensis	3		FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	66 = Total Cover		
Woody Vine Stratum (Plot size: r=30')			
1. Oriental Bittersweet, Celastrus orbiculatus	6	X	UPL
2. Summer Grape, Vitis aestivalis	2	X	FACU
3.			
4.			
	8 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.25 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	66	x 2 =	132
FAC species	0	x 3 =	0
FACU species	12.5	x 4 =	50
UPL species	6	x 5 =	30
Column Totals:	85 (A)		212 (B)

Prevalence Index = B/A = 2.51

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No**

Remarks: (Include photo numbers here or on a separate sheet.)

hydrophytic vegetation present based on Prevalence Index

SOIL

Sampling Point: W5-Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-16	10 YR 2/1	100					muck	Oe
16-20	5 Y 5/1	100					fine sandy loam	A

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- X Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L, M**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:_____

Depth (inches):_____

Hydric Soil Present? **Yes** ☑ **No** ☐

Remarks:

Riprap present under muck, shallow riprap in some locations

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Plumtree to Brookfield Jct. 115kV T-line Project City/County: Brookfield Sampling Date: 4/24/2015

Applicant/Owner: Eversource Energy State: CT Sampling Point: W7-U

Investigator(s): Kate Bednaz, Chris Fox Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR or MLRA): _____ Lat: 41.434427° Long: -73.385664° Datum: NAD 83

Soil Map Unit Name: Ridgebury, Leicester, and Whitman soils NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	If yes, optional Wetland Site ID: _____

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: W7-U

Tree Stratum (Plot size: 30 Ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 Ft radius)			
1. Red Osier Dogwood (Cornus alba)	3		FacW
2. Tatarian Honeysuckle (Lonicera tatarica)	3		FacU
3. Multiflora Rose (Rosa multiflora)	10.5		FacU
4. Blackberry (Rubus	3		FacU
5. Gray Dogwood (Cornus racemosa)	10.5		Fac
6.			
7.			
	30 = Total Cover		
Herb Stratum (Plot size: 5 Ft radius)			
1. Trout Lilly (Erythronium americanum)	10.5	Y	UPL
2. Jewelweed (Impatiens capensis)	10.5	Y	FacW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	21 = Total Cover		
Woody Vine Stratum (Plot size: 30 Ft radius)			
1. Oriental Bittersweet (Celastrus orbiculatus)	4	Y	FacU
2.			
3.			
4.			
	4 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = 0
FACW species _____	x 2 = 0
FAC species _____	x 3 = 0
FACU species _____	x 4 = 0
UPL species _____	x 5 = 0
Column Totals: 0 (A)	0 (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W7-U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-4	10YR 2/1	100					Loam	
4-15	10YR 3/3	100					Loam	
15-18	10YR 4/6	100					Sandy Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Plumtree to Brookfield Jct. 115kV T-line Project City/County: Brookfield Sampling Date: 4/24/2015

Applicant/Owner: Eversource Energy State: CT Sampling Point: W14-W

Investigator(s): Kate Bednaz, Chris Fox Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR or MLRA): _____ Lat: 41.434445° Long: -73.385644° Datum: NAD 83

Soil Map Unit Name: Ridgebury, Leicester, and Whitman soils NWI classification: PSS/PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes** ✓ **No** _____
Hydric Soil Present?	Yes ✓	No _____	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes ✓	No _____	Depth (inches): surface
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): surface

Wetland Hydrology Present? **Yes** ✓ **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: W14-W

Tree Stratum (Plot size: 30 Ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 Ft radius)			
1. Red Osier Dogwood (Cornus alba)	3		FacW
2. Tatarian Honeysuckle (Lonicera tatarica)	3		FacU
3. Multiflora Rose (Rosa multiflora)	10.5		FacU
4. Blackberry (Rubus	3		FacU
5. Gray Dogwood (Cornus racemosa)	10.5		Fac
6.			
7.			
	30 = Total Cover		
Herb Stratum (Plot size: 5 Ft radius)			
1. Sensitive Fern (Onoclea sensibilis)	3		FacW
2. Skunk Cabbage (Symplocarpus foetidus)	10.5		OBL
3. Jewelweed (Impatiens capensis)	10.5		FacW
4. Evening Primrose (Oenothera biennis)	3		FacU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	27 = Total Cover		
Woody Vine Stratum (Plot size: 30 Ft radius)			
1. Oriental Bittersweet (Celastrus orbiculatus)	4	Y	FacU
2.			
3.			
4.			
	4 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = 0
FACW species _____	x 2 = 0
FAC species _____	~~x~~ 3 = 0
FACU species _____	x 4 = 0
UPL species _____	x 5 = 0
Column Totals: 0 (A)	0 (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W14-W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-15	10YR 2/1	100	2.5Y4/3	3-30	C	M	Mucky mineral	
			10YR 3/1	20				
15-18	10YR 5/3		10YR 5/2	2	C	M	Loamy sand	
18-24	2.5Y 5/2		2.5Y 5/4	10	C	M	Loamy sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ✓ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✓ **No** _____

Remarks:

SOUTHWEST CONNECTICUT RELIABILITY PROJECT

BY

THE CONNECTICUT LIGHT AND POWER COMPANY

DOING BUSINESS AS EVERSOURCE ENERGY

VOLUME 3: ENVIRONMENTAL

APRIL 2016

Note: This page is intentionally left blank

INDEX

VOLUME 3: ENVIRONMENTAL

Note: This page is intentionally left blank

EXHIBIT 1: BREEDING BIRD ASSESSMENT

Note: This page is intentionally left blank

SOUTHWEST CONNECTICUT RELIABILITY PROJECT

BY

THE CONNECTICUT LIGHT AND POWER COMPANY

DOING BUSINESS AS EVERSOURCE ENERGY

VOLUME 3: ENVIRONMENTAL

BREEDING BIRD ASSESSMENT

APRIL 2016

Note: This page is intentionally left blank

Breeding Bird Assessment

Prepared For:

The Connecticut Light and Power Company doing business as Eversource Energy
107 Selden Street
Berlin, CT 06037

Prepared By:

BSC Group
33 Waldo Street,
Worcester, MA 01608

Note: This page is intentionally left blank

Table of Contents

Table of Contents

Appendices

Section 1
Introduction

This report provides an assessment of breeding birds and bird habitat conducted within Project area.

1.1 Project Location

The proposed 115 kilovolt (kV) transmission line would extend between Plumtree Substation (located at 16 Walnut Hill Road in Bethel) and Brookfield Junction (located south of and adjacent to the railroad tracks and west of Vail Road). The existing 1887 line runs west from Stony Hill Substation, turns north at Brookfield Junction and connects to Brookfield Substation. The proposed 3.4 mile transmission line segment between Plumtree Substation and Brookfield Junction, the 1887 line, will connect Plumtree Substation directly to Brookfield via its connection at Brookfield Junction. The Project area is located in the Southwest Hills physiographic region of Connecticut[1]. This region is characterized by moderately hilly terrain along with occasional steep, ledgy areas including trap rock ridges.

1.2 Project Description

The Connecticut Light and Power Company, doing business as Eversource Energy (Eversource), proposes modifications to improve the reliability of the 115 kV electric system in Southwest Connecticut (SWCT). These modifications include the construction of a new 115 kV overhead electric transmission line between Plumtree Substation in the Town of Bethel and Brookfield Junction the Town of Brookfield and modifications to the Stony Hill Substation including reconfiguring two transmission lines that presently connected to the substation. These proposed improvements are referred collectively as the SWCT Reliability Project (the "Project"). The facilities proposed for the Project were identified as a result of system planning studies and alternative analyses performed by the Independent System Operator - New England (ISO-NE).

The proposed new line will be located within an existing right-of-way (ROW), much of which has been cleared of tall woody vegetation and is managed as low shrub and herbaceous vegetation under Eversource's vegetation management program. The ROW in generally varies in width from 175 feet to 225 feet. The existing circuits include the 345 kV 321 line and 115 kV 1770 line which are located on double-circuit structure on the western side of the ROW. The proposed new line would be installed along the eastern edge of the ROW. Installation of the new line would require removal of all tall woody vegetation to the eastern limit of the ROW. An additional 30 to 40 feet of vegetation removal over the

[1] Bell, M 1985. The Face of Connecticut. People, Geology, and the Land, Bulletin 110.

Section 1 Introduction

length of the Project would be needed to construct and maintain the new facilities. Where the Proposed new line is located on Eversource fee owned land, additional vegetation clearing may be necessary to accommodate pull pads, laydown areas and other construction related work areas. Once complete, the newly cleared area would be maintained in accordance with vegetation management practices similar to the existing cleared portion of the ROW.

Section 2
Regulations

There are a number of state and federal regulations that protect birds as well as address regulatory requirements pertaining specifically to birds and transmission projects.

2.1 Migratory Bird Treaty Act

One of the earliest federal statutes enacted to protect birds was the Migratory Bird Treaty Act (MBTA) of 1918. This act prohibits the taking, including possession, hunting, capturing, killing, and transporting, of migratory birds, their nests, and eggs, unless permitted by regulation. The MBTA is meant to protect all native birds from unregulated acquisition regardless of an individual species' abundance or distribution.

2.2 Federal Endangered Species Act

The Endangered Species Act of 1973 (ESA) is a federal act that provides a program for the conservation of nationally endangered and threatened animal and plant species and their ecosystems.

2.3 Connecticut Endangered Species Act

Similarly, the Connecticut Endangered Species Act (CT-ESA), passed in 1989 (Chapter 495 Sections 26-303 through 26-316 of the Connecticut General Statues), was designed to conserve, protect, restore, and enhance Connecticut's endangered or threatened species and their essential habitats. Under both the ESA and CT-ESA, species are listed according to their level of risk. Risk levels for the federal ESA include endangered and threatened, while the CT-ESA also includes a third category called species of special concern. The status of CT-ESA species is reviewed every five years.

As described in the CT-ESA, an endangered species is any native species currently in danger of being extirpated from much or all of the state. Endangered species have no more than five known occurrences in the state. Threatened species in Connecticut are native species that are likely to become endangered species in the near future and have no more than nine occurrences within the State. Species of special concern in Connecticut are native species that have a restricted range or habitat in the state, have low population levels, or are otherwise in danger of becoming threatened.

Section 26-310 of the CT-ESA requires state agencies (including CTDEEP) that provide recommendations for actions that affect terrestrial or aquatic habitats to ensure that the actions authorized by said agencies do not threaten the continued existence of any endangered or threatened species or adversely modify the habitat essential to the species. The statute requires that the best scientific data available be used to make this determination. In addition, agencies must ensure that the recommendations are consistent with the entire CT-ESA. In the event that a proposed action violates these

sections but does not appreciably reduce the likelihood of the survival or recovery of an endangered or threatened species – an "incidental taking" – the agency may file for an exemption, provided there are no prudent and feasible alternatives.

An exemption for a taking, or takings, can be granted provided: (1) the agency did not make an irreversible commitment of resources that excludes the opportunity for feasible and prudent alternatives, (2) the benefits of the action clearly outweigh the benefits of alternative courses of action and the action is in the public interest, (3) the action is of regional or state-wide significance, and (4) the agency plans to take reasonable mitigation and enhancement measures to minimize the adverse impacts of the action upon the species or essential habitat.

2.4 Connecticut Natural Diversity Data Base

CT DEEP has developed the Natural Diversity Database (NDDB) as a pre-screening tool to help applicants requesting regulatory permits from state agencies to determine if proposed projects may affect species listed as endangered, threatened, or special concern under the CT-ESA, or their habitats. Information about State-listed species in the database is graphically depicted on NDDB maps, which consist of maps that display shaded polygons representing the approximate locations of federally and State-listed species and significant natural communities. The maps are updated every six months. CT DEEP states that if a proposed project is outside of any shaded polygon then an impact to any known occurrence of an endangered or threatened species or significant natural community is not likely to result from the action.

2.5 Connecticut Siting Council

The Connecticut Siting Council (Council) published an application guide *Electric and Fuel Transmission Line Facility* in April 2010. Section VIII of the application guide provides an outline of the contents for an application to the Council. Specifically, Section VI H 1 iv requires an inventory of breeding birds and their habitats.

Section 3
Methods

BSC scientists developed an inventory of breeding birds and their habitats in the Project vicinity (refer to the Inventory of Breeding Birds in Appendix A). The inventory lists all breeding birds that are reasonably expected to occur in the Project area, as well as the habitat(s) that each species utilizes. This inventory will be refined based on field surveys to be conducted in the spring and summer prior to the submission of the Connecticut Citing Council Application when breeding birds are most active.

This inventory of breeding birds was compiled primarily by reviewing published data on the breeding birds of the state. These resources were analyzed and compiled in order to develop a list of all bird species known to breed in the vicinity of the Project. The primary source used was *The Atlas of Breeding Birds of Connecticut (Atlas)*, [2] which is the result of a five-year study (1982 1986) of all bird species known to breed in the state. The study is the most comprehensive review to date of Connecticut's breeding birds, involving the efforts of more than 500 individuals and covering virtually the entire 5,009 square mile area of the state.

A (NW)	B (NE)
C (CW)	D (CE)
E (SW)	F (SE)

The online *Breeding Bird Atlas Explorer*[3] (*Atlas Explorer*) can be used to populate a list of potential breeding birds within a defined region (county) or block. The perimeter of blocks are defined by USGS Quad maps that are broken down into six smaller rectangles (as shown in the diagram to the right). Codes identifying each block are defined by the USGS quad number followed by the letter (A-F) associated with the location of the block. The Project Route coincides with two of these blocks, 76D and 76F, which were used to populate the initial list of potential breeding birds in this inventory. The *Atlas* identifies bird species within these blocks whose presence are *possible*, *probable*, or c*onfirmed* based on available data.

This list was refined based on the presence of suitable habitat within the Project area, bio-geographical distribution, the presence or absence of critical habitat features and minimum patch size requirements. The inventory is subdivided by habitat type. A species is listed under the habitat which represents its primary breeding type. However, a species should be considered to be potentially present within ecotones associated with their primary habitat at any given time.

BSC wetland scientists classified all of the habitat types within the Project ROW and Eversource Parcels as well as within 300 feet of the ROW boundary and Eversource

---

[2] Bevier, L. R. (Ed.). *Atlas of Breeding Birds of Connecticut*. 1994. Bulletin 113. State Geological and Natural History Survey of Connecticut. 461 p.

[3] North American *Breeding Bird Atlas Explorer:* http://www.pwrc.usgs.gov/bba/index.cfm?fa=explore.ProjectHome&BBA_ID=CT1982

Property boundaries along the Proposed Route (see Volume 5 maps, Exhibit 1). Cover types were identified on aerial photographs and then verified during field investigations.

Upland cover types identified include: upland forest, old field/shrub lands, and developed categories including residential (house/yard), commercial/industrial, and other (parks and transportation corridors). No agricultural areas are present in the vicinity of the Project. Wetland habitats were classified based on the Cowardin system[4] and include forested wetland, scrub-shrub wetland, emergent marsh, and open water. Watercourses (streams and rivers) were situated in upland and wetland cover types. The habitat types that occur within the Project area are listed in the Inventory of Breeding Birds in Appendix A, and described in the following sections. Representative photographs of habitat types are provided in Appendix B.

3.1 Upland Forest

Upland forest contained within the Project area includes both deciduous and coniferous types. Forested portions of the ROW are not regularly maintained, and generally occur outside of a shrubland corridor that is periodically maintained to ensure safe clearance to the overhead conductors. Tree species found within mixed forest include deciduous species such as oak (*Quercus* spp.), maple (*Acer* spp.), Birch (*Betula* spp.), Ash (*Fraxinus* spp.) and hickory (*Carya* spp.), as well as coniferous species such as eastern white pine (*Pinus strobus*) and eastern hemlock (*Tsuga canadensis*). The understory varies in composition and density, but often contains a mixture of saplings of canopy species and shrubs, along with variable ground cover species. Common understory species include Northern Arrowwood (*Viburnum recognitum*), high bush blueberry (*Vaccinium corymbosum*), Japanese barberry (*Berberis thungbergii*), green briar (*Smilax rotundifolia*), tree clubmoss (*Lycopodium obscurum*), hay-scented fern (*Dennstaedtia punctilobula*), and teaberry (*Gaultheria procumbens*).

3.2 Old Field / Shrubland

The old field/shrubland habitat is upland characterized by shrubs, saplings, and a mixture of forbs and grasses. It is the dominant habitat in the managed portions of the ROW, where routine maintenance prevents trees from maturing and allows the vegetation to remain dominated by shrubs. This cover type has similar habitat characteristics associated with ecologically important "old field" habitats which develop due to agricultural abandonment and succession to shrub and young forest cover. Characteristic shrubs include witch hazel (*Hamamelis virginiana*), eastern red cedar (*Juniperus virginiana*), hazelnut (*Corylus americana*), elderberry (*Sambucus canadensis*), blackberry and raspberry species (*Rubus* spp.), and sweet fern (*Comptonia peregrina*). Invasive shrub and vine species such as Morrow's honeysuckle (*Lonicera morrowii*), autumn olive (*Elaeagnus umbellata*), multiflora rose (*Rosa multiflora*) and Asiatic bittersweet (*Celastrus orbiculatus*) are also common in old fields/shrublands throughout the ROW. Grasses,

[4] Cowardin, L. M., V. Carter, F. C. Golet and E. T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. U.S. Fish and Wildlife Service. FWS/OBS-79/31. Washington, D.C. 103 p.

forbs, and ferns that commonly occur in this habitat include goldenrod (*Solidago* spp.), little blue stem (*Schizachyrium scoparium*), common mullein (*Verbascum thapsus*), hay-scented fern (*Dennstaedtia punctilobula*) and bracken fern (*Pteridium aquilinum*).

3.3 Forested Wetland

Tree species common in forested wetlands include red maple (*Acer rubrum*), swamp white oak (*Quercus bicolor*), and Elm (*Ulmus spp.*) with occasional black gum (*Nyssa sylvatica*), birch (*Betula spp.*), white ash (*Fraxinus americana*), and sugar maple (*Acer saccharum*). The shrub stratum in forested wetlands varies depending on the associated soil conditions and water regime, but often includes speckled alder (*Alnus* incana), spicebush (*Lindera benzoin*), northern arrow-wood (*Viburnum recognitum*), and winterberry (*Ilex verticillata*). Common herbaceous species include: skunk cabbage (*Symplocarpus foetidus*), cinnamon fern (*Osmunda cinnamomea*), tussock sedge (*Carex stricta*). and jewelweed (*Impatiens capensis*).

3.4 Scrub-Shrub Wetland

Scrub-shrub wetland habitat, also referred to as shrub swamp or shrub wetland, is dominated by woody vegetation less than approximately 20 feet tall. This cover type may represent a successional stage leading to a forested wetland and include shrubs, saplings, and trees or shrubs that are small, and/or stunted due to saturated environmental conditions. Scrub-shrub habitat is the most prevalent wetland habitat in the managed portion of the ROW. Common species include winterberry, speckled alder (*Alnus incana*), highbush blueberry, silky dogwood (*Cornus amomum*), and maleberry (*Lyonia ligustrina*). Larger shrub swamps with wetter water regimes also support such shrubs as swamp azalea (*Rhododendron viscosum*), black chokeberry (*Aronia* sp.), buttonbush (*Cephalanthus occidentalis*), and swamp rose (*Rosa palustris*). As with forested wetlands, herbaceous species are dependent on underlying soil conditions and wetland water regime. Herbaceous species may include sedges (*Carex* spp.), rushes (*Juncus* spp.), and ferns.

3.5 Emergent Marsh

Emergent marshes generally occur in low areas on the landscape that are permanently or semi-permanently flooded. These areas tend to contain deep organic soil layers, and can include a range of emergent plant species, depending on the water regime. Most of the Emergent marshes are dominated by common reed (Phragmites australis) with occasional cattail (*Typha* spp.) and purple loosestrife (*Lythrum salicaria*). Rushes and sedges, including woolgrass (*Scirpus cyperinus*), Canadian rush (*Juncus canadensis*), and tussock sedge (*Carex stricta*) predominate in shallower marshes.

3.6 Open Water/Pond

Open water/pond areas are permanent or semi-permanent open water bodies that may be manmade or natural, and may or may not include emergent and/or floating-leaved plants such as pondweed (*Potamogeton* spp.) and water lilies (*Nymphaea* spp.). The

edges of these systems often grade to emergent wetland dominated by common reed (*Phragmites australis*).

3.7 Stream / River (Riparian)

Four perennial streams or rivers, two intermittent watercourses, and one stormwater conveyance were identified along the Proposed Route. Two of the four perennial streams/rivers include two named perennial watercourses, Limekiln Brook and East Swamp Brook are associated with floodplain habitat that consists mostly of forested, scrub-shrub, and emergent wetland habitat which supports fish and provides habitat for waterfowl and foraging. Other watercourses along the Proposed Route are heavily influenced by stormwater from surrounding development and road infrastructure.

3.8 Developed (Commercial/Industrial, Residential, Other)

This category includes commercial, industrial, residential, and other (transportation corridors and parks) land uses including buildings, structures, landscaping and associated infrastructure. Residential land uses are dominant in middle portion of the Project Route (Pane Road to US-6) which contain a mix of forested neighborhoods and lawn. Commercial and industrial land uses are dominant from US-6 to Brookfield Junction and consists of large expanses of maintained lawn, parking lots, and buildings.

Section 4
Results

An inventory of breeding birds expected to occur within the Project area was developed by reviewing the list of breeding birds populated through the online *Atlas Explorer* for the two *blocks*[5] that coincide with the Project Route (76D and 76F). This list identifies breeding birds known to occur within the two blocks based on available data of *confirmed*, *probable*, and *possible* species presence. The complete inventory is provided in Appendix A, and a summary of the inventory is provided below.

In order to evaluate the Project area's value for species of high-conservation priority as opposed to common species and habitat generalists, the inventory of birds was prioritized based on conservation status (refer to Appendix A). Species that are included either on *Connecticut's List of Endangered, Threatened and Special Concern Species* (2010) or classified as *Species of Greatest Conservation Need* (SGCN) by *Connecticut's Wildlife Action Plan* (WAP) [6] were considered to be species of high conservation priority. The WAP was created to establish a framework for proactively conserving Connecticut's fish and wildlife, including their habitats. SGCN fall into three categories in descending order of significance: *most important*, *very important*, and *important*.

A total of 66 species were identified as potential breeders by the *Atlas Explorer*. Of these 66 species, two (2) state-listed species (3%) designated as Species of Special Concern and no federally listed species (0%) were considered potentially present and are discussed in detail in Section 4.1. A total of 23 species (35% of the 66 total species) are SGCN. Of those 23 species, three (3) are classified as *most important*, 11 as *very important*, and seven nine (9) as *important*.

Of the 23 SGCN species identified, nine (39%) are associated with managed, early successional ROW vegetation (i.e. shrubland and PSS wetlands) and eight (35%) are associated with forested habitats (i.e. upland forest and PFO wetlands). The remaining six SGCN species (26%) are associated with edge habitats or developed lands. Out of the three SGCN species identified as *most important*, two are associated with managed early successional ROW vegetation as opposed to forested habitat.

[5] A "block" is a rectangle representing a sixth of a USGS quad as described in the Methods Section (Section 3).

[6] *Connecticut's Wildlife Action Plan* (2015), formerly known as *Connecticut's Comprehensive Wildlife Conservation Strategy* (2005) is currently under revision by the CTDEEP.

Section 4 Results

Table 1: Summary Breeding Bird Inventory Data – SWCT Plumtrees Project

Category	# of Species	Percent of Total
Total Species Identified in the Breeding Bird Atlas along the Proposed Route	**66**	**100%**
Listed as SGCN	23	35%
Federally-listed species	0	0%
State-listed species	**2**	**3%**
State listed species associated with early successional habitats (grassland, shrubland or PSS)	*2*	*100%*
Total potential WAP SGCN species	**23**	**35%**
SGCN species that are early successional specialists (shrubland and PSS)	*9*	*39%*
SGCN species that are forest specialists (upland forests and PFO species)	*8*	*35%*
Total SGCN species "Most Important"	**3**	**13%**
SGCN species "Most Important" early successional specialists (shrubland and PSS)	2	67%
SGCN specieies "Most Important" forest specialists (upland forest and PFO)	1	33%

The prevalence of forested and shrubland habitats in the Project area is reflected in the composition of breeding bird species expected to occur. The majority of bird species in the overall inventory includes forest-breeding songbirds and woodpeckers, shrubland and shrub swamp-breeding songbirds, species that utilize forest edges, and habitat generalists. Several species of predatory birds that breed in forests but use open, early successional habitats for hunting can also be expected to occur.

Waterbirds, including ducks, wading birds, shorebirds, gulls, and terns, make up a relatively small percentage of breeding birds in the Project area despite the abundance of wetlands. This is primarily because many species of water birds, particularly ducks, do not breed in Connecticut, but rather breed in more northerly latitudes such as northern New England and Canada. Many water birds that do breed in Connecticut tend to concentrate in coastal areas. Waterbirds included in the inventory include those species associated with freshwater wetlands (e.g., Canada goose and mallard) and rivers (e.g., waterthrush).

Birds that require grassland or agricultural habitats are not expected to be prevalent within the Project area due to a significantly lower percentage of these cover types available as compared to shrubland or forest. No agricultural lands are present and grassland habitat is mostly unsuitable due to routine mowing in residential and commercial/industrial areas.

Section 4 Results

Bird species likely to be breeding in the Project area are those that are shown to breed in open brushy ground, deep emergent marsh and mature second growth forest. Species adapted to breeding in human influenced sites including residential areas with a mix of fragmented forest blocks and open lawn are also likely to be present.

Due to the fragmented nature of the forest types and level of development in the area, the most common species are likely to be habitat generalists and species that are tolerant of a mix of developed, forested and open habitat. The large swamp associated with Limekiln Brook and East Swamp Brook is dominated by common reed (*Phragmites australis*) which limits the diversity of vegetation in open emergent marsh.

4.1 State-listed Species

Two (1) state-listed species have the potential to be present within the Project area, American kestrel *(Falco sparverius*) and brown thrasher *(Toxostoma rufum*) based on the presence of suitable habitat and their inclusion the *Atlas*. Their habitat requirements and potential Project area use are described in the following sections. Based on available data provided by CT DEEP Natural Diversity Database (NDDB), no known state-listed birds are present in or near the Project area

4.1.1 American Kestrel *(Falco sparverius)*

A wide variety of open to semi-open habitats including meadows, grasslands, deserts, early old field successional communities, open parkland, agricultural fields, and both urban and suburban areas; regardless of dominant vegetation form present. The breeding territories are characterized by either large or small patches covered by short ground vegetation, with taller woody vegetation either sparsely distributed or lacking altogether. Suitable nest trees and perches required. Typical breeding habitat in the northeast or midwest is large (>25 ha or 62 acres) pasture or recently fallowed field, with 1 or few isolated large dead trees for nesting and several potential perches[7].

For the most part there is limited suitable habitat available for American kestrel within the Project area due to the narrow linear configuration of early-successional habitats available and the limited graminoid dominated areas.

4.1.2 Brown Thrasher *(Toxostoma rufum)*

Brown thrasher inhabit thickets, brushy hillsides and woodland edges in suburban and rural areas (Bevier, 1994). Maturation of forest and other factors causing loss of early successional habitat are driving the decline in this species. Although more information is

[7] Smallwood, John A. and David M. Bird. 2002. *American Kestrel (Falco sparverius), The Birds of North America Online* (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/602

needed to adequately assess the population trend of this species in Connecticut, Breeding Bird Survey data shows a steady decline of 3.5% annually over the last four decades.

The species is considered a stewardship species of continental importance by Partners in Flight[8]. Shrubland dominated portions of the ROW represent suitable breeding habitat for thrasher. Suitable habitat occurs throughout the managed shrubland portions of the ROW.

For the most part, there is limited suitable habitat available for American kestrel within the Project area due to the narrow linear configuration of early-successional habitats available and the limited graminoid dominated areas.

[8] Leenders, A. A. (Ed.). 2009. *Connecticut State of the Birds*. Connecticut Audubon Society. Fairfield, CT. 52 p.

Section 5
Discussion

5.1 Importance of Transmission Line Corridors for Shrubland Birds

Shrublands in the northeastern United States are primarily disturbance-dependent and are typically ephemeral. Left unmanaged, these areas would naturally revert to forest. Despite the transient nature of shrublands and other early successional habitats, many species of birds and other wildlife require these habitats.

In the Northeast, shrublands and other forms of early successional vegetation were historically created by catastrophic events such as hurricanes and fires, flooding associated with beaver (*Castor canadensis*) activity[9], or other natural phenomena that alter landscape composition.[10] In the 18th and 19th century, farming contributed greatly to the amount of early successional habitat in the Northeast.[11]

In the 20th century, however, the widespread abandonment of farms[12], loss of land due to development, and suppression of fire significantly reduced the amount of early successional cover types found in the Northeast. Today these habitats are almost exclusively associated with anthropogenic activities such as silviculture and managed transmission line corridors which favor the establishment and persistence of shrub-dominated vegetation.

The decline of shrublands and other early-successional cover types in the Northeast has had considerable impacts on the populations of associated wildlife. In particular, many bird species have experienced statistically significant population declines due to the loss of suitable breeding habitat.[13] By some estimates, at least 45 percent of all shrubland birds in the Northeast have experienced statistically significant population declines between 1966 and 2000.[14]
Because transmission line corridors are one of the few sources of persistent early-successional habitat in the Northeast, they play an important role in supporting a variety of bird and wildlife species. This critical role in maintaining essential habitat and wildlife

[9] Askins, R. A. 2000. *Restoring North America's Birds: Lessons from Landscape Ecology*. Yale University Press, New Haven.
[10] Askins, R. A. 2000. Ibid.
[11] Litvaitis, J. A. 1993. *Response of Early Successional Vertebrates to Historic Changes in Land Use*. Conservation Biology 7:4.
[12] Litvaitis, J. A. 1993. Ibid.
[13] Witham, J. W., and M. L. Hunter, Jr. 1992. *Population Trends of Neotropical Migrant Landbirds in Northern Coastal New England*. In: J. M. Hagan and D. W. Johnston (Eds.), Ecology and Conservation of Neotropical Migrant Landbirds. Smithsonian Institution Press, Washington, D.C.
[14] Dettmers, R. 2003. *Status and Conservation of Shrubland Birds in the Northeastern U.S.* Forest Ecology and Management 185:81-93.

biodiversity has been widely acknowledged, not only for birds but for a number of reptile and invertebrate species.

Statewide, transmission corridors remain critical habitat for shrubland and other early-successional birds. Vegetation management of transmission line corridors is recommended as part of the regional and national conservation strategy to reverse declines of priority shrubland birds in the eastern region. Askins notes that shrubland birds today are largely dependent on clearcuts and transmission line corridors, and that the latter typically supports a rich diversity of shrubland birds[15]. In the Connecticut Audubon Society's 2009 *State of the Birds* report (p.44), it was noted that "*…shrubland birds are benefitting from maintenance of powerline corridors by utility companies which remove tall-growing trees from the vicinity of wires, creating a habitat dominated by shrubs, grass and herbs."*

The Project proposes to widen existing managed transmission ROWs, which will require the conversion of adjacent upland or wetland forests to shrubland or scrub-shrub cover types. This will ultimately increase suitable habitat for shrubland birds that are already using the existing transmission line corridor, which in turn may boost local breeding populations of many of these species. Many of the SGCN species identified as potentially present can be expected to benefit from an increase in suitable habitat resulting from this project. Of the 23 SGCN species identified as potentially present, approximately nine (39%) can be expected to benefit from an increase in suitable habitat resulting from this project.

5.2 Transmission Line Corridors and Impacts on Forest Birds

While the expansion of the managed utility corridor will have a net positive benefit on shrubland birds, it has the potential to negatively affect forest-dwelling birds due to a loss of habitat resulting from the additional forest clearing. Of the 23 SGCN identified as potential site inhabitants, eight (35%) are forest specialists (upland forest and forested wetlands)

The greatest potential for negative effects on high-conservation priority species are on those birds that are considered forest-interior birds (e.g., wood thrush). Forest-interior birds favor the interior of the forest or "forest core" away from non-forested "edge" habitat. In particular, forest interior birds may find edge habitat detrimental as it creates conditions favorable to predators such as raccoons and nest parasites such as brown-headed cowbird. Forest interior birds have become the focus of conservation efforts region-wide due to long-term population declines of many of these species due to forest fragmentation.

Given that the corridor is pre-existing, the forest bordering the managed ROW is categorized as edge forest as opposed to interior forest. This edge forest is favored by ecotone specialists or forest generalists, and is not optimal breeding habitat for forest-interior birds. Forest within the area to be cleared is predominantly edge or patch forest.

[15] Askins, R. A. 2000. Ibid.

Section 5 Discussion

Additional clearing required for this project will not impact large blocks of non-fragmented forest preferred by forest interior species. Although the Project will not *directly* impact core forest, it will indirectly impact fore forest as the additional clearing along the edge of the forest patch will result in reduced core forest within the overall forest patch. The width of the edge forest effect can vary by region or species.

In order to determine potential Project effects on forest-interior birds (and core forest habitat), the methodology described in the Center for Land Use Education and Research's (CLEAR) Forest Fragmentation Study[16] was used. The CLEAR study designates a forest as core if it is greater than 300 feet away from non-forested areas with the 300-foot zone representing edge forest that is considered sub-optimal breeding habitat for forest-interior birds.

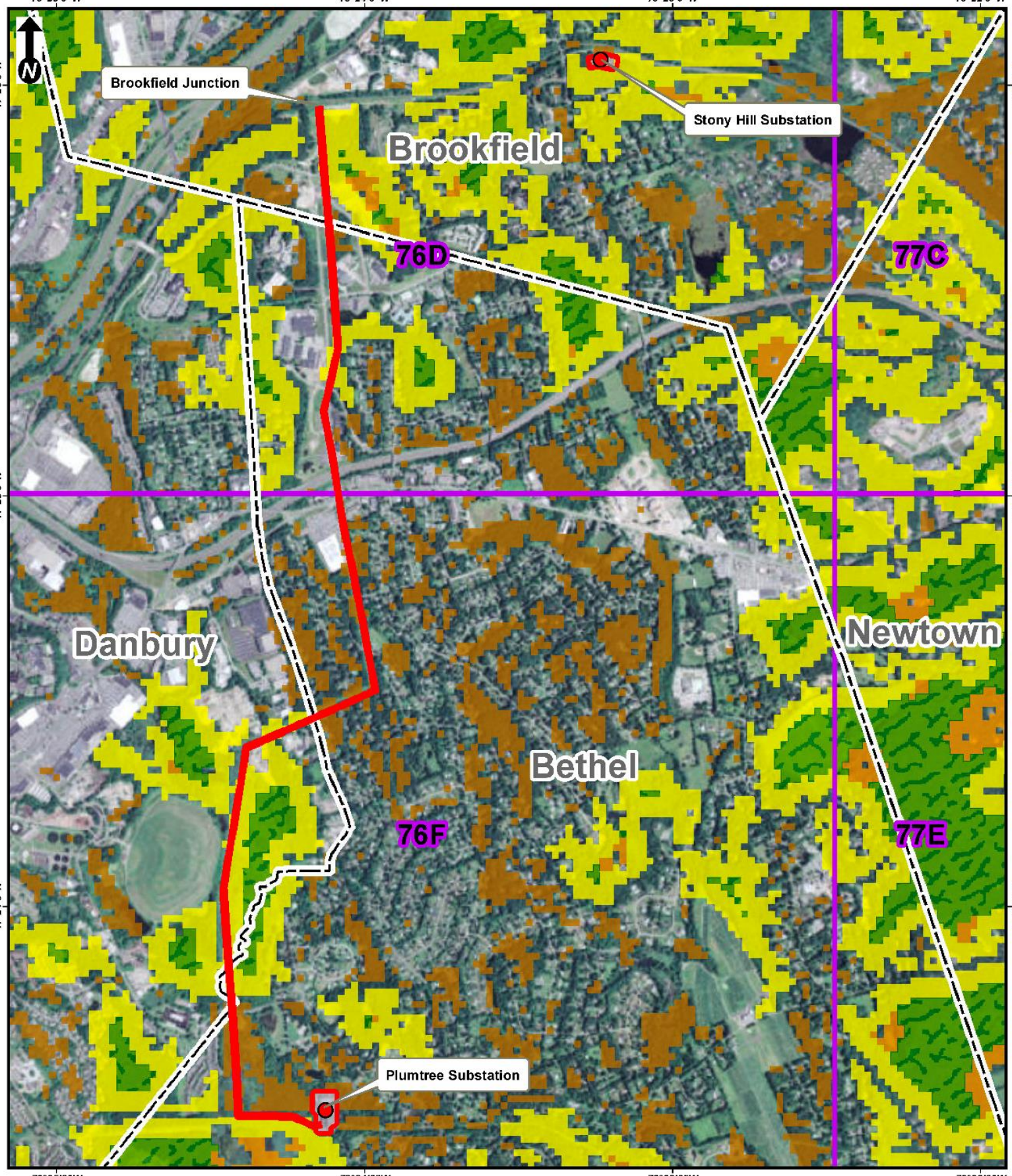
The CLEAR study, along with many other studies, have suggested that forest patch size is a critical factor for successful breeding by forest-interior birds[17]. The CLEAR study suggests that 250 acres should be considered the *absolute minimum* forest patch size needed to support area-sensitive edge-intolerant species, with a recommended minimum forest patch size of 500 acres. At that scale, a forest is presumed to provide enough suitable habitat to support more diversity of interior forest species. Therefore, not all of the forest areas impacted by the Project will constitute high-valued forest. The CLEAR forest fragmentation date is illustrate on Figure 1 in Appendix A. This data identifies three categories to indicate the viability of the core patches with respect to the size of the patch: small (<250 acres), medium (250-500 acres), and large (>500 acres).

As depicted in Figure 1, the Project area is dominated by edge and fragmented forest types (patch or perforated forests) as opposed to large forest patches. Small core forests (<250) are present adjacent to the Project. Particularly in the southern portion of the Project in Danbury and Bethel. Small core forests and forest fragments may provide some breeding habitat for forest interior species but are generally considered sub-optimal, and may serve as population sinks. Significant forest patches are not present in proximity to the Project area and none of the forest blocks to be impacted by the Project constitute high-value forest.

[16]CLEAR's Forest Fragmentation Study can be found at:
http://clear.uconn.edu/projects/landscape/forestfrag/forestfrag_public%20summary.pdf

[17] Environment Canada. 2004. How Much Habitat is Enough? (Second Edition) A Framework for Guiding Habitat Rehabilitation in the Great Lakes Areas of Concern AND Lee, M., L. Fahrig, K. Freemark and D.J. Currie. 2002. Importance of patch scale vs. landscape scale on selected forest birds. Oikos, Vol. 96, No. 1, pp. 110-118.

Document Path: G:\GISPrj\8951504\Output\Maps\MXD\ReportMaps\Plumtree\MCF_Plans\Other\Plumtree_CoreForest_20160202.mxd
Date Saved: 2/10/2016 10:42:28 AM



Scale:
1 inch = 2,500 feet
0 1,250 2,500
Feet

FIGURE 1
CORE FOREST MAP

SWCT Reliability Project

Legend
CoreForest
Patch Forest
Edge Forest
Perforated Forest
Core Forest (<250 ac)
Core Forest (250-500 ac)
Core Forest (>500 ac)
Breeding Bird Atlas Block

Source:
USGS, 1982-1990

EVERSOURCE
BSC GROUP

Section 6
Conclusion

The Project area is dominated by open habitat types such as shrubland, scrub-shrub wetlands (PSS), emergent wetlands (PEM), and developed land uses (i.e. commercial/industrial, residential lawns) located within the managed portion of the ROW. Forest habitats (upland and wetland) occur predominately along the unmanaged edges of the ROW. Breeding bird species that can be expected to occur in the Project area generally reflect this vegetative composition. There are several potential consequences to avian biodiversity related to the proposed Project. These effects can be categorized as temporary (construction-related) and permanent (permanent habitat loss).

Temporary effects are associated with Project activities such as vegetation removal or construction activities associated with the new transmission line. These disturbances may drive birds from the work areas or generally disrupt nesting, feeding or other activities. If conducted during the breeding season, such activities may result in inadvertent takings of nests and young. Once construction is complete, avian utilization of the Project area is anticipated to resume to pre-construction levels. Temporary impacts to birds resulting from vegetation removal can be minimized if this work is conducted from approximately mid-August through late March (outside of the breeding season). Such a restriction would not disrupt breeding birds, but may temporarily displace some wintering or migrating birds.

Permanent effects associated with the proposed Project are related to the conversion of forested habitats to shrubland or scrub-shrub wetlands. Because the proposed Project capitalizes on existing managed transmission corridors, the Project does not contribute to the new fragmentation of forest interior habitats, minimizing the potential impact to forest-interior birds. Furthermore, significant areas of un-fragmented forest will not be impacted, as the Project area contains no medium or large core forest patches. Forest loss is restricted to blocks of forest currently characterized as edge and fragmented (patch or perforated) forest that may be proximate to small core (<250 acre) habitat.

Shrubland and other early-successional bird species will benefit from the conversion in the long-term. These include a number of species of high-conservation priority including prairie warbler and American kestrel. Three *most important* SGCN species were identified as potentially occurring within the Project area. Two of the three SGCN classified as *most important* are associated with managed early successional ROW vegetation (i.e. shrubland and PSS wetlands) as opposed to forested habitats.

Two state-listed species were identified within the Project area as potential breeders. Both are associated with open or early-successional habitats or forest edge habitats as opposed to forest-interior. Therefore, there will not be a reduction in suitable habitat for these species and may result in an increase in suitable habitat as a result of the additional forest conversion to shrubland.

Section 6 Conclusion

Note: This page is intentionally left blank

Section 7
References

Askins, R. A. 2000. *Restoring North America's Birds: Lessons from Landscape Ecology*. Yale University Press, New Haven, CT. 320 p.

Bell, M 1985. The Face of Connecticut. People, Geology, and the Land, Bulletin 110.

Bevier, L.R. (Ed.). 1994. *Atlas of Breeding Birds of Connecticut*. Bulletin 113. State Geological and Natural History Survey of Connecticut. 461 p.

Connecticut Siting Council (CSC). 2010. *Application Guides for Terrestrial Electric Transmission Line Facilities.* 14 p.

Connecticut's Wildlife Action Plan, in prep. Connecticut Department of Energy and Environmental Protection.

Comins, P., Hanisek, G, and Oresman, S. 2003. Protecting Connecticut's Grassland Heritage. A Report of the Connecticut Grasslands Working Group. Audubon, Connecticut.

Cowardin, L.M., V. Carter, F.C. Golet and E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. U.S. Fish and Wildlife Service. FWS/OBS-79/31. Washington, D.C. 103 p.

DeGraaf, R.M. and M. Yamasaki. 2001. *New England Wildlife: Habitat, Natural History, and Distribution*. University Press of New England, Hanover, NH. 482 p.

Dettmers, R. 2003. *Status and Conservation of Shrubland Birds in the Northeastern U.S.* Forest Ecology and Management 185:81-93.

Dowhan, J.J. and R.J. Craig. 1976. Rare and endangered species of Connecticut and their habitats. State Geol. and Nat. History Survey of Connecticut.

Environment Canada. 2004. How Much Habitat is Enough? (Second Edition) A Framework for Guiding Habitat Rehabilitation in the Great Lakes Areas of Concern.

Jones, A.L. and Vickery, P.D. 1997. *Conserving Grassland Birds: Managing Agricultural Lands Including Hayfields, Crop Fields, and Pastures for Grassland Birds*. Grassland Conservation Program, Center for Biological Conservation, Massachusetts Audubon Society, Lincoln, MA. 16 p.

Leenders, A.A. (Ed.). 2009. *Connecticut State of the Birds*. Connecticut Audubon Society. Fairfield, CT. 52 p.

Section 7 References

Lee, M., L. Fahrig, K. Freemark and D.J. Currie. 2002. Importance of patch scale vs. landscape scale on selected forest birds. Oikos, Vol. 96, No. 1, pp. 110-118.

Litvaitis, J.A. 1993. *Response of Early Successional Vertebrates to Historic Changes in Land Use*. Conservation Biology 7:4.

Smallwood, John A. and David M. Bird. 2002. American Kestrel (Falco sparverius), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/602

Appendix A:

Inventory of Breeding Birds

Note: This page is intentionally left blank

SWCT Reliability Project – Inventory of Breeding Birds[1]

Species	Scientific Name	Habitat[2]	Best Evidence[3]	State Listing[4]	SGCN Status[5]
American Crow	Corvus brachyrhynchos	UF, SH	CO		
American Goldfinch	Carduelis tristis	SH	PR		
American Kestrel	Falco sparverius	SH,AG	PR	SC	1
American Robin	Turdus migratorius	UF,SH,DV	CO		
Baltimore Oriole	Icterus galbula	UF, SH, WC	CO		3
Barn Swallow	Hirundo rustica	AG, DV, WC	CO		
Barred Owl	Strix varia	UF, SH	PR		
Black-and-white Warbler	Mniotilta varia	UF	PR		3
Black-capped Chickadee	Parus atricapillus	UF	CO		
Blue Jay	Cyanocitta cristata	UF, SH, DV	CO		
Blue-winged Warbler	Vermivora pinus	SH	CO		2
Brown Thrasher	Toxostoma rufum	SH	CO	SC	2
Brown-headed Cowbird	Molothrus ater	UF, SH, AG, DV	PR		
Canada Goose	Branta canadensis	POW	CO		
Cedar Waxwing	Bombycilla cedrorum	SH, AG	CO		
Chestnut-sided Warbler	Dendroica pensylvanica	UF, SH	PO		2
Chimney Swift	Chaetura pelagica	DV	PR		2
Chipping Sparrow	Spizella passerina	DV, UF	CO		
Common Grackle	Quiscalus quiscula	PSS, POW, PEM, SH, DV	CO		
Common Yellowthroat	Geothlypis trichas	SH, PSS	CO		
Downy Woodpecker	Picoides pubescens	UF	PR		
Eastern Kingbird	Tyrannus tyrannus	SH, AG	CO		3
Eastern Phoebe	Sayornis phoebe	DV, UF, SH	CO		
Eastern Screech-Owl	Otus asio	UF	CO		
Eastern Towhee	Pipilo erythrophthalmus	SH	PR		2
Eastern Wood-Pewee	Contopus virens	UF	PO		3
European Starling	Sturnus vulgaris	DV, AG	CO		
Field Sparrow	Spizella pusilla	SH	PO		2
Gray Catbird	Dumetella carolinensis	SH, PSS, UF	CO		
Great Crested Flycatcher	Myiarchus crinitus	UF, SH	PR		

SWCT Reliability Project – Inventory of Breeding Birds[1]

Species	Scientific Name	Habitat[2]	Best Evidence[3]	State Listing[4]	SGCN Status[5]
Hairy Woodpecker	Picoides villosus	UF	CO		
House Finch	Carpodacus mexicanus	DV	CO		
House Sparrow	Passer domesticus	DV	CO		
House Wren	Troglodytes aedon	SH, AG	PR		
Indigo Bunting	Passerina cyanea	SH	PO		2
Killdeer	Charadrius vociferus	AG, DV	CO		
Least Flycatcher	Empidonax minimus	PSS, PEM, SH	PO		2
Louisiana Waterthrush	Seiurus motacilla	WC, UF	PO		2
Mallard	Anas platyrhynchos	POW, WC	PO		
Mourning Dove	Zenaida macroura	DV, UF, SH	CO		
Northern Cardinal	Cardinalis cardinalis	DV, UF, SH	CO		
Northern Flicker	Colaptes auratus	UF, DV	CO		2
Northern Mockingbird	Mimus polyglottos	AG, SH	CO		
Northern Waterthrush	Parkesia noveboracensis	WC, PFO, PSS, UF	PR		3
Ovenbird	Seiurus aurocapillus	UF	PO		3
Pileated Woodpecker	Dryocopus pileatus	UF	PO		
Prairie Warbler	Dendroica discolor	SH	PO		1
Red-eyed Vireo	Vireo olivaceus	UF	PR		
Red-tailed Hawk	Buteo jamaicensis	UF, SH, AG	CO		
Red-winged Blackbird	Agelaius phoeniceus	PEM, PSS	CO		
Rock Pigeon	Columba livia	DV, AG	CO		
Rose-breasted Grosbeak	Pheucticus ludovicianus	UF, SH	CO		3
Ruffed Grouse	Bonasa umbellus	UF	PO		2
Song Sparrow	Melospiza Melodia	SH	CO		
Spotted Sandpiper	Actitis macularius	POW, WC	PO		
Swamp Sparrow	Melospiza georgiana	PEM, PSS	PO		
Tree Swallow	Melospiza georgiana	PEM, PSS	PO		
Tufted Titmouse	Parus bicolor	UF	CO		
Turkey Vulture	Cathartes aura	SH, UF	PO		
Veery	Catharus fuscescens	UF	PO		3
Warbling Vireo	Vireo gilvus	UF, SH	PR		

SWCT Reliability Project – Inventory of Breeding Birds[1]

Species	Scientific Name	Habitat[2]	Best Evidence[3]	State Listing[4]	SGCN Status[5]
White-breasted Nuthatch	Sitta carolinensis	UF	PR		
Willow Flycatcher	Empidonax traillii	PSS	CO		3
Wood Thrush	Hylocichla mustelina	UF	CO		1
Yellow Warbler	Hylocichla mustelina	PSS, SH	CO		
Yellow-throated Vireo	Vireo flavifrons	UF	PO		

[1] Breeding Bird Atlas, 1982-1986 (Pending Review). The table includes all species listed as potentially present within the Breeding Bird Atlas quads that contain the Proposed Route (76D and 76F).

[2] Habitat Types:
UF=Upland forest, **SH=** Shrubland habitat, **AG=**Agriculture, **DV=**Developed, **WC=**Watercourse, **PFO=** Forested wetland, **PSS=** Scrub-shrub wetland, **PEM=** Emergent wetland, **POW=** Open water

[3] Best Evidence describes the likeliness of a species to be present within a particular quad for the Breeding Bird Atlas. If a species is present on the list for both quads, the "best evidence" designation of higher likelihood is reflected in the table.
PO=Possible breeding evidence, **PR**=Probable breeding evidence, and **CO**=Confirmed breeding evidence. Possible represents

[4] E= Endangered, T=Threatened, SC=Species of Special Concern

[5] The 2015 Connecticut Wildlife Action Plan (WAP) designates Species of Greatest Conservation Need (SGCN) based on conservation priority.
1= Most Important, **2=** Very Important, and **3=** Important

Note: This page is intentionally left blank

Appendix B:

Representative Photographs

Note: This page is intentionally left blank

Photo #1: Palustrine emergent habitat (PEM) dominated by common reed *(Phragmites australis)*. Palustrine forested (PFO) forest fragments (edge and patch fragments). This system can further be categorized as floodplain forest associated with the East Swamp Brook and Limekiln Brook wetland complex. *Facing southeast towards existing structure 10266.*

Photo #2: Palustrine emergent habitat associated with East Swamp Brook (shown above) dominated by common reed (*Phragmites australis*). Edge forest adjacent to small Core Forest (<250 acres) is present on either side and represents a palustrine forested community (PFO). *Facing north towards existing structure 10264 from Shelter Rock Road.*

Photo #3: Palustrine emergent habitat (PEM) present within the managed portion of the ROW bordered by patch forest (PFO or upland) are typical in the residential areas from Payne Road to US-6. *Facing west from Payne Road towards existing structure 10259.*

Photo #4: Scrub-shrub habitat within the managed portions of the ROW bordered by patch forest (upland forest) are typical in the residential areas from Payne Road to US-6. *Facing east from Payne Road towards existing structure 10258.*

Photo #5: Urban, commercial settings are common on either side of US-6 in Bethel dominated by paved surfaces, buildings, and landscaped environments. Some sparse areas of fragmented (patch) forest is present in these areas. *Facing south from the Target parking lot towards existing structure10255.*

Photo #6: Commercial/industrial land uses dominate north of US-6 in Bethel. These areas consist of land cover of lawn, paved surfaces, and buildings. Forested habitat is typically only present on the east side of the ROW and is comprised of either patch forest or edge forest. *Facing north towards Berkshire Boulevard and existing Structure 10251.*

Photo #7: Open water habitat (WB-1) is suitable for Canada goose (*Branta canadensis*), as seen above. This pond is routinely mowed and maintained by the existing commercial development. *Facing south from Park Lawn Drive in Bethel towards existing structure 10251.*

Photo #8: Palustrine emergent habitat in the commercial/industrial areas present to the north of are dominated by common reed *(Phragmites australis*) and are surrounded by a perimeter of planted juniper bushes *(Juniperus sp.*) and surrounded by lawn. The wetlands in this area are mostly armored and at least partially man made and mostly function as stormwater systems for the surrounding development. *Facing north from Park Lawn Drive towards existing structure 10250.*

EXHIBIT 2: VERNAL POOL ASSESSMENT

Note: This page is intentionally left blank

SOUTHWEST CONNECTICUT RELIABILITY PROJECT

BY

THE CONNECTICUT LIGHT AND POWER COMPANY

DOING BUSINESS AS EVERSOURCE ENERGY

VOLUME 3: ENVIRONMENTAL

VERNAL POOL ASSESSMENT

APRIL 2016

Note: This page is intentionally left blank

Vernal Pool Assessment

Prepared For:

The Connecticut Light and Power Company doing business as
Eversource Energy
107 Selden Street
Berlin, CT 06037

Prepared By:

BSC Group
33 Waldo Street,
Worcester, MA 01608

Note: This page is intentionally left blank

Table of Contents

Table of Contents

Note: This page is intentionally left blank

Section 1
Introduction

The Connecticut Light and Power Company doing business as Eversource Energy (Eversource) proposes to develop a new 3.4-mile 115-kilovolt (kV) transmission line between its existing Plumtree Substation in the Town of Bethel and Brookfield Junction in the Town of Brookfield, as well as to modify its existing Stony Hill Substation and existing 115-kV line entries to that substation. The purpose of these proposed modifications, referred to as the SWCT Reliability Project (Project), is to improve the reliability of the transmission system in southwestern Connecticut.

In support of the Eversource's planned permit and siting applications for the Project (i.e., to the Connecticut Siting Council [Council], the U.S. Army Corps of Engineers [USACE], the Connecticut Department of Energy and Environmental Protection [CT DEEP]), BSC Group (BSC) conducted field surveys of the transmission line right-of-way (ROW) from Plumtree Substation to Brookfield Junction to perform wetland and watercourse delineations during the summer of 2015. Concurrent with these delineations, BSC field staff surveyed the existing conditions within the ROW, within areas surrounding the Plumtree and Stony Hill Substation, and areas within sight from the edge of the ROW (approximately 100-200 feet), to determine if there were areas likely to support vernal pool habitat. As part of these field investigations, surveyors reviewed the landscape to determine if key features characteristic of vernal pool habitat were present such as: inland depressions, water stained leaves, lack of established fish populations, and a lack of permanent surface water connections with other wetlands or waterbodies. If these characteristics are identified, further review and analysis during active breeding seasons (April to June 2015) would be necessary to determine if these landscape features are conducive to supporting vernal pool species. Aerial imagery was also assessed to evaluate the potential presence of vernal pools outside of the ROW boundaries.

Vernal Pool Regulations

The Council published an application guide *Electric and Fuel Transmission Line Facility* in April 2010. Section VIII of the Guidelines provides an outline of the contents for an application to the Council. Specifically, Section VI I. D. requires the applicant to depict vernal pools in the existing conditions plans, along with a 100-foot buffer around the pool.

Wetlands in the State of Connecticut are regulated by individual municipalities through authority provided by the Inland Wetlands and Watercourse Act (Act) originally enacted in 1972. The regulation of vernal pools is provided through a later amendment, P.A. 95-313. This 1995 amendment expanded the definition of "watercourse" to include "*all other bodies of water, natural or artificial, vernal or intermittent*." Neither the Act nor its amendment provide a definition for vernal pool.

Section 1 Introduction

Under authority granted by Section 404 of the Clean Water Act, on July 15, 2011, the USACE - New England District issued the *Department of the Army Programmatic General Permit State of Connecticut & Lands Located Within the Exterior Boundaries of an Indian Reservation* (PGP). This PGP expires on July 15, 2016, changes with regards to vernal pools are not anticipated with the release of the new PGP. Vernal pools are included as one of six classes defined as "Special Wetlands" in the PGP. The PGP notes that determinations of USACE jurisdiction under Section 404 will be made on a case-by-case basis. According to the PGP applications for Category I or II PGPs *impacts to upland in proximity (within 500 feet) to the vernal pools shall be minimized to the maximum extent possible*.

Section 2
Vernal Pool Determination and Identification Methods

A number of vernal pool definitions have been developed by both regulatory authorities and conservation organizations. CT DEEP provides general information on vernal pools through their website[1] but cautions that the information is informational in nature and should not supplant regulations of municipal inland wetlands agencies. CT DEEP describes vernal pools as *"small bodies of standing fresh water found throughout the spring"* that are "*usually temporary"* and "*result from various combinations of snowmelt, precipitation and high water tables associated with the spring season*."

Calhoun and Klemens (2002) provides the following operational definition of vernal pools:

> *Vernal pools are seasonal bodies of water that attain maximum depths in the spring or fall, and lack permanent surface water connections with other wetlands or water bodies. Pools fill with snowmelt or runoff in the spring, although some may be fed primarily by groundwater sources. The duration of surface flooding, known as hydroperiod, caries depending upon the pool and the year; vernal pool hydroperiods range along a continuum from less than 30 days to more than one year. Pools are generally small in size (<2 acres), with the extent of vegetation varying widely. They lack established fish populations, usually as a result of periodic drying, and support communities dominated by animals adapted to living in temporary, fishless pools. In the region, they provide essential breeding habitat for one or more wildlife species including Ambystomid salamanders (Ambystoma spp., called "mole salamanders" because they live in burrows), wood frogs (Rana sylvatica), and fairy shrimp (Eubranchipus spp.).*

Vernal pool physical characteristics can vary widely while still providing habitat for indicator species. "Classic" vernal pools are natural depressions in a wooded upland with no hydrologic connection to other wetland systems. Manmade depressions such as quarry holes, old farm ponds and borrow pits can also provide similar habitat. Often, vernal pools are depressions or impoundments within larger wetland systems. These vernal pool habitats are commonly referred to as "cryptic" vernal pools.

[1] CT DEEP Vernal Pools:
http://www.ct.gov/deep/cwp/view.asp?a=2720&q=325676&depNav_GID=1654

Several species of amphibians depend on vernal pools for reproduction and development. These species are referred to as indicator[2] vernal pool species, and their presence in a temporary wetland during the breeding season helps to identify that area as a vernal pool. Indicator species present in Connecticut include the following:

- blue-spotted salamander (*Ambystoma laterale*);
- wood frog (*Rana sylvatica*);
- spotted salamander (*Ambystoma maculatum*);
- Jefferson salamander (*Ambystoma jeffersonianum*);
- eastern spadefoot toad (*Scaphiopus holbrookii*);
- marbled salamander (*Ambystoma opacum*); and
- fairy shrimp (*Branchiopoda anostraca*).

Facultative vernal pool species are fauna that utilize but do not necessarily require vernal pools for reproductive success. Examples of facultative species include the spotted turtles (*Clemmys guttata*) and four-toed salamander (*Hemidactylium scutatum*). These species may breed or feed in vernal pools, but are also capable of carrying out all phases of their lifecycle in other types of wetlands or water bodies. Evidence of breeding by facultative species alone is not considered indicative of a vernal pool.

For the purpose of this report a vernal pool is defined as an area that meets the physical characteristics described above and contains evidence of breeding activity of any of the indicator species listed above, including the presence of egg masses and larvae. This vernal pool assessment also makes an important distinction between wetlands in which indicator species may breed and those wetlands where they breed *and* successfully develop. A common phenomena is for breeding (i.e., mating and egg laying) to occur in bodies of water such as road ruts or temporary puddles where development and metamorphosis of larvae is unsuccessful. Such areas are referred to as "decoy vernal pools" as reproductive efforts are unsuccessful. In their guidance on best development practices for conserving pool breeding amphibians, Calhoun and Klemens (2002) specifically note the negative impact associated with ruts:

> "*Site clearing can cause water-filled ruts. These ruts intercept amphibians moving toward the vernal pool and may induce egg deposition. Often these ruts do not hold water long enough to allow development of amphibians and therefore acts as "sinks" that result in populations declines."* [3]

[2] Calhoun and Klemens (2002) argue that "indicator" species is a better word than the commonly used "obligate" species, as they will occasionally breed in roadside ditches and small ponds that are not vernal pools.

[3] Calhoun, A.J.K. and M.W. Klemens. 2002. *Best development practices: Conserving pool-breeding amphibians in residential and commercial developments in the northeastern United States.* MCA Technical Paper No. 5 Metropolitan Conservation Alliance, Wildlife Conservation Society, Bronx, New York. 57 p.

In addition to road rutting, other anthropogenic activities can create decoy vernal pools, including road crossings that create temporary pools often resulting from undersized or elevated culverts. Unlike "classic" or "cryptic" vernal pools, these areas often suffer recurring disturbance and generally contain little vegetation to which egg masses can be attached. Small numbers of vernal pool obligate species such as wood frog and spotted salamander may breed in these ephemeral pools, though larval survivorship is expected to be low.

Section 3
Vernal Pool Assessment

Field Assessment

BSC Group (BSC) conducted field surveys, concurrent with wetland and watercourse delineations in Summer 2015, to identify potential vernal pool habitat for the Project facilities and adjacent areas. The survey included areas within the transmission line right-of-way (ROW) from Plumtree Substation to Brookfield Junction; within sight of the edge of the ROW boundary (approximately 100-200 feet); and, within 100 feet of the Plumtree Substation and Stony Hill Sub.

BSC scientists focused field surveys on identifying landscape or structural features that may be conducive to supporting vernal pool species such as the presence of inland depressions, water stained leaves, lack of established fish populations, and a lack of permanent surfacewater connections with other wetlands or waterbodies**.** Although these evaluations were conducted outside of the prime season for vernal pool investigations, these efforts were intended to identify physical features such as landscape features and habitat structural features. Should these superficial characteristics be present, additional field studies would be necessary during active breeding seasons (April to June 2015) to determine the presence of absence of vernal pool species. Since no candidate vernal pools were identified within the survey area, no field assessments should be necessary as there is no habitat to assess.

Desktop Analysis

Since not all areas within 500 feet of a vernal pool are accessible, aerial imagery and National Wetlands Inventory (NWI) maps were assessed to determine if potential vernal pools may be present outside of the limits of the Proposed Route and Project facilities, but potentially within buffer habitat to a vernal pool. Methodology in the aerial photography primer of the *Massachusetts Aerial Photo Survey of Potential Vernal Pools* (Burne 2001)[4] was used to evaluate if vernal pools are present off-ROW. According to Burne, Aerial photo interpretation represents the best available tool for conduction large-scale inventories of potential vernal pool habitat. However, the presence or absence of vernal pool species, rather than physical characteristics, cannot be visible of aerial photographs and would require field investigations to verify it habitat and wildlife is present. CT DEEP aerial imagery such as black and white imagery during"leaf off" conditions (2004), NAIP color infrared imagery (2008), and shaded relief maps (2000) were used to as part of this evaluation. Ponded features with a direct hydrologic connection to perennial watercourses were not included as part of this evaluation due to the likely presence of predatory fish. If possible vernal pool habitat is identified through this evaluation in inaccessible areas, field

[4] Burne, Matthew R. 2001. *Massachusetts Aerial Photo Survey of Potential Vernal Pools.* Natural Heritage & Endangered Species Program Massachusetts Division of Fisheries and Wildlife. Westborough, MA.

Section 3 Vernal Pool Assessment

studies could be conducted during the active breeding season (April to June 2015) using acoustic surveys for breeding amphibians or by surveying the Project area for vernal pool species migrating to adjacent habitat. Since no candidate vernal pools were identified, no field assessments should be necessary.

Overview of Site Conditions

In general, vernal pools are not anticipated to be present within the Project area based on the general topography and hydrologic setting. Based on high resolution elevation data (2010 CT DEEP shaded relief data layers), most inland depressions present within the Project area or within 500 feet of the Proposed Route have a direct hydrologic connection to perennial watercourses. Characteristics of the three distinctive hydrologic and topographic settings found along the proposed route are described below in relation to potential for containing suitable habitat. The three settings include: 1) East Swamp Brook and Limekiln Brook floodplain valley (Plumtree Substation to Old Sherman Turnpike); 2) hilly residential areas (Old Sherman Turnpike to Sky Edge Lane); and, 3) urban environments consisting of commercial and industrial developments (Sky Edge Lane to Brookfield Junction).

1) Wetlands along and near the ROW between Plumtree Substation (in the Town of Bethel) north to Old Sherman Turnpike (in the City of Danbury) are characterized as large marsh complex associated with Limekiln Brook and East Swamp Brook, both perennial watercourses. This large wetland complex contains expansive shallow and deeply inundated areas that likely maintain semi-permanent or permanent hydrologic connections between the main river channel and the marsh, allowing fish to move between these areas. This reduces the likelihood that vernal pool species are present in the permanently to semi-permanently inundated portions of the wetland system closer to the watercourses where predaceous fish inhabit. However, along the edges of this wetland and outside of the ROW, where inundation is less common, or occurs for a shorter period of time, isolated pools may exist where flooding is seasonal and disconnected from the stream channels.
2) Between Old Sherman Turnpike (in the City of Danbury) and Sky Edge Lane (in the Town of Bethel), the ROW extends through more developed, upland, residential areas. Wetlands along and near this segment of the ROW are sloping emergent, scrub-shrub, and forested wetlands associated with intermittent or perennial watercourses. Transmission line vegetation maintenance and residential landscaping has maintained portions of these wetlands as emergent and scrub-shrub wetlands within the maintained ROW. No vernal pools or vernal pool species were identified in these areas or adjacent uplands during wetland delineation field surveys.
3) Wetland habitats along the northern portion of the ROW between Sky Edge Lane (in the Town of Bethel) and Brookfield Junction (in the Town of Bethel) are characterized as relic or constructed wetlands that function as stormwater management facilities for the commercial office park facilities that dominate land uses in this area. These wetlands are associated with commercial development and the associated management landscape that includes lawn and landscaped areas. While vernal pool species may occur in these wetland

Section 3 Vernal Pool Assessment

areas, these wetlands are moderately to severely disturbed and many have more than one stormwater input and/or outlet which has altered the natural hydrology of the area.

Section 4
Results and Discussion

Results

No vernal pool habitat was identified during the field surveys in Summer 2015. Additionally, no potential vernal pool habitat was identified within 500 feet of the Proposed Route from the desktop analysis.

Discussion

Although no habitat has been identified, vernal pool habitat could be present outside of the Project area that are not visible from the ROW boundary. Although aerial photography can be used as a tool to located vernal pools that cannot be verified in the field, aerial photographs cannot reliably small vernal pool depressions and may not be as reliable in identifying vernal pool habitat consisting of pit and mound topography. Based on available data, areas within 100-year floodplain of East Swamp Brook and Limekiln Brook, located between the Plumtree Substation in Bethel and Old Sherman Turnpike, could potentially support vernal pool species within seasonally flooded areas that may become isolated as floodwaters recede. However, vernal pool habitat is unlikely to be present within the Project ROW because this area is too closely linked to the perennial watercourses which support predatory fish and is present within submerged portions of submerged or regularly flooded portions of the wetland complex.

If vernal pool habitat is present within 500 feet of the Proposed Route that was not identified in the analysis of aerial imagery, the Project may be situated within the fringes of the migratory range of vernal pool species. Some species have even greater ranges such as wood frog (*Rana sylvatica*) which may travel 1550 to 3835 feet. [5] As such, should vernal pool species be observed within the ROW during future field investigations or construction, appropriate BMPs will be implemented to avoid and mitigate impacts to the species.Typically, the principal construction activities that could affect vernal pools (when present) include:

- The removal of vegetation within or the tree canopy above vernal pools;
- The improvement of existing access roads through vernal pool envelopes and / or critical terrestrial habitat;
- The movement of vehicles and equipment use on access roads in the vicinity of amphibian migratory routes;

[5] Calhoun, A.J.K. and M.W. Klemens. 2002. *Best development practices: Conserving pool-breeding amphibians in residential and commercial developments in the northeastern United States.* MCA Technical Paper No. 5 Metropolitan Conservation Alliance, Wildlife Conservation Society, Bronx, New York. 30 p.

Section 4 Results and Discussion

- The potential for erosion and sedimentation into vernal pools;
- The destruction of fossorial habitat through soil compaction or smoothing of natural pit and mound micro-topography; and
- The placement of structures or use of equipment within pools that could directly impact egg deposition areas or negatively affect the hydrologic regime of the pool.

Since no vernal pools were identify within proximity to the proposed new transmission line, both direct and indirect adverse impacts to vernal pools are not anticipated.

Section 5
References

Calhoun, A.J.K. and M.W. Klemens. 2002. *Best development practices: Conserving pool-breeding amphibians in residential and commercial developments in the northeastern United States.* MCA Technical Paper No. 5 Metropolitan Conservation Alliance, Wildlife Conservation Society, Bronx, New York. 57 p.

Connecticut Siting Council (CSC). 2007. *Application Guidelines for Terrestrial Electric Transmission Line Facilities.* 13 p.

Klemens, M.W. 1993. *Amphibians and Reptiles of Connecticut and Adjacent Regions*. State Geological and Natural History Survey of Connecticut, Bulletin No. 112, Connecticut Department of Environmental Protection, Hartford, CT.

Cowardin, L.M., V. Carter, F.C. Golet and E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. U.S. Fish and Wildlife Service. FWS/OBS-79/31. Washington, D.C. 103 p.

Burne, Matthew R. 2001. *Massachusetts Aerial Photo Survey of Potential Vernal Pools.* Natural Heritage & Endangered Species Program Massachusetts Division of Fisheries and Wildlife. Westborough, MA.

Section 5 References

Note: This page is intentionally left blank

EXHIBIT 3: CULTURAL RESOURCES REVIEW

Note: This page is intentionally left blank

HERITAGE
CONSULTANTS, LLC

INTEGRATED HISTORIC PRESERVATION PLANNING

January 26, 2016

Mr. Justin Adams
Environmental Affairs
Eversource Energy
107 Selden Street
Berlin, Connecticut 06037

RE: Cultural Resources Review of Proposed Utility Upgrades Associated with the Stony Hill Substation and the Brookfield Junction to Plumtree Substation Line in Bethel, Brookfield, and Danbury, Connecticut

Mr. Adams:

Heritage Consultants, LLC, is pleased to have this opportunity to provide BSC Group in support of Eversource Energy with the following preliminary archeological assessment of proposed Utility Upgrades associated with the Stony Hill Substation and the Brookfield Junction to Plumtree Substation Line in Bethel, Brookfield, and Danbury, Connecticut (Figure 1, Sheets 1 through 4). The current review entailed completion of an existing conditions cultural resources summary based on the examination of data obtained from the Connecticut State Historic Preservation Office, as well as GIS data and historic maps, aerial photographs, and topographic quadrangles maintained by Heritage Consultants, LLC. This investigation did not consider the effects of the proposed construction upon built resources, and it is based upon project location information provided to Heritage Consultants, LLC by BSC Group and Eversource Energy. The objectives of this study were: 1) to gather and present data regarding previously identified cultural resources situated within the vicinity of the proposed project areas; 2) to investigate the proposed project areas in terms of their natural and historical characteristics; and 3) to evaluate the need for completing additional cultural resources investigations. At this time, no field investigation of the Areas of Potential Effect has been conducted.

As seen in Figure 1, Sheet 1 the proposed Stony Hill Substation is located to the south of an existing Conrail line in Bethel, Connecticut. This is a mixed use area containing residential, commercial, and industrial facilities. The topography of the region is variable, with elevations ranging from 107 to 122 m (250 to 400 ft) NGVD. Figure 1, Sheets 2 through 4 depicts the route of the Brookfield Junction to Plumtree Substation Line. This line starts to the north of Interstate 84 and it heads in a southerly direction, where it terminates at the Plumtree Substation in Bethel, Connecticut. This line extends through suburban and commercial areas, and it ranges in elevation from approximately 106 to 122 m (300 to 450 ft) NGVD. Both project areas are situated in the general vicinity of a variety of unnamed wetlands and other fresh water sources.

A review of previously recorded cultural resources on file with the Connecticut State Historic Preservation Office was completed by Heritage Consultants, LLC during June of 2015 (Figures 2, Sheets 1 through 4 and Figure 3, Sheets 1 through 4). No previously recorded archaeological sites were noted within 152 m (500 ft) of the Stony Hill Substation or the Brookfield Junction to Plumtree Substation Line

P.O. Box 310249 • Newington, Connecticut 06131
Phone (860) 667-3001 • Fax (860) 667-3008
Email: info@heritage-consultants.com

(Figure 2, Sheets 1 through 4. Further, no previously identified National Register of Historic Places properties were noted within 152 m (500 ft) of any of the proposed project areas (Figure 3, Sheets 1 through 4).

In order to further refine the archaeological context of the project regions and to evaluate the likelihood that additional archaeological sites may be encountered within the proposed project areas, Heritage Consultants, LLC reviewed aerial photographs, historic mapping, and soils distributions throughout the area. Historic mapping and aerial images depicting the proposed project areas indicate that these portions of Bethel, Brookfield, and Danbury have been actively settled since the early nineteenth century, and that, historically, farming was a large part of the economic base of this region. It was not until after World War II ended that the region began to change substantially in character. The post war suburbanization process of the area was in full swing by the 1960s, when several housing subdivisions were built throughout the large area. This influx of new residents to this part of Connecticut was quickly followed by the establishment of new commercial and industrial facilities in the vicinity of the project areas. Figure 4, Sheets 1 through 4 shows the locations of the proposed project areas relative to local population and commercial areas. Despite the alteration of the region in the second half of the twentieth century, Figure 4, Sheets 2 through 4 indicate that some portions of the proposed project areas, especially those associated with the Brookfield Junction to Plumtree Substation Line project corridors, have not been disturbed to a large degree. These are places where archaeological sites may still retain their depositional integrity.

In addition, environmental characteristics frequently are used to predict the location of archeological sites. Typically distance to water, slope, and soil types are included as part of these predictive models. Favorable conditions for archaeological site locations are characterized by gently sloping, well-drained soils in close proximity to fresh water. While sections Brookfield Junction to Plumtree Substation Line have been characterized as retaining a moderate to high potential to produce intact cultural deposits (see Figure 5, Sheets 2 through 4), some areas also been impacted by modern development or are characterized by Urban Land or Udorthent soils. All of these areas lack depositional integrity; thus, they retain little, if any, potential to retain intact cultural deposits. As a result, these areas were designated as having a no/low probability for containing archeological resources. Finally, during the current investigation, those areas identified as containing moderate to extremely sloping areas also have been designated as no/low potential areas in terms of their likelihood to produce intact archaeological deposits. These areas were identified during a review of the topographic maps depicted in Figure 5, Sheets 1 through 4.

Figure 5, Sheets 1 through 4 shows the locations of all areas deemed to retain a no/low archaeological potential. Conversely, those portions of the proposed project areas that fall within areas of low slopes and in proximity to a freshwater source have been identified as moderate/high potential areas. This approach of stratifying project areas into no/low versus moderate/high probability zones based on soil types, slope, and distance to water has been used by Connecticut archaeologists for decades and it is a proven method. In general, it appears that approximately 20 to 25 percent of proposed Brookfield Junction to Plumtree Substation Line should be considered to retain a moderate to high potential to yield intact cultural deposits from either the prehistoric or historic periods. The remaining 75 to 80 percent of this line has been disturbed, contains mucky soils, and/or is buried beneath paved surfaces or located within Udorthent soils or dumps; these areas retain little, if any, intact and/or dry soils that may contain archaeological deposits. Finally, the entirety of the Stony Hill Substation has been previously disturbed by construction and no longer retains any potential to produce intact archaeological deposits.

Based on the distribution of previously identified archaeological sites, data collected from historic maps and aerials, and the environmental nature of the area, it is the professional opinion of Heritage Consultants, LLC that, if possible, ground disturbance should be avoided in areas characterized as having a moderate to high archaeological sensitivity as depicted in Figure 5; Sheets 2 through 4. If, as it is likely, the moderate/high sensitivity areas noted above cannot be avoided during construction, it is recommended that matting or some other protective measures should be taken during the construction process to avoid ground disturbance in these areas. If this is also not feasible, then a Phase I Reconnaissance Survey of the moderate/high sensitivity areas should be conducted prior to construction. No additional examination of the no/low sensitivity areas is recommended, as these areas no longer retain the potential to yield intact archaeological sites.

If you have any questions regarding this Technical Memorandum, or if we may be of additional assistance with this or any other projects you may have, please do not hesitate to call us at 860-667-3001 or email me at dgeorge@heritage-consultants.com. We are at your service.

Sincerely,

David R. George

David R. George, M.A., R.P.A.
Heritage Consultants, LLC

Figure 1, Sheet 1. Excerpt from a USGS 7.5' series topographic quadrangle image showing the Stony Hill Substation.

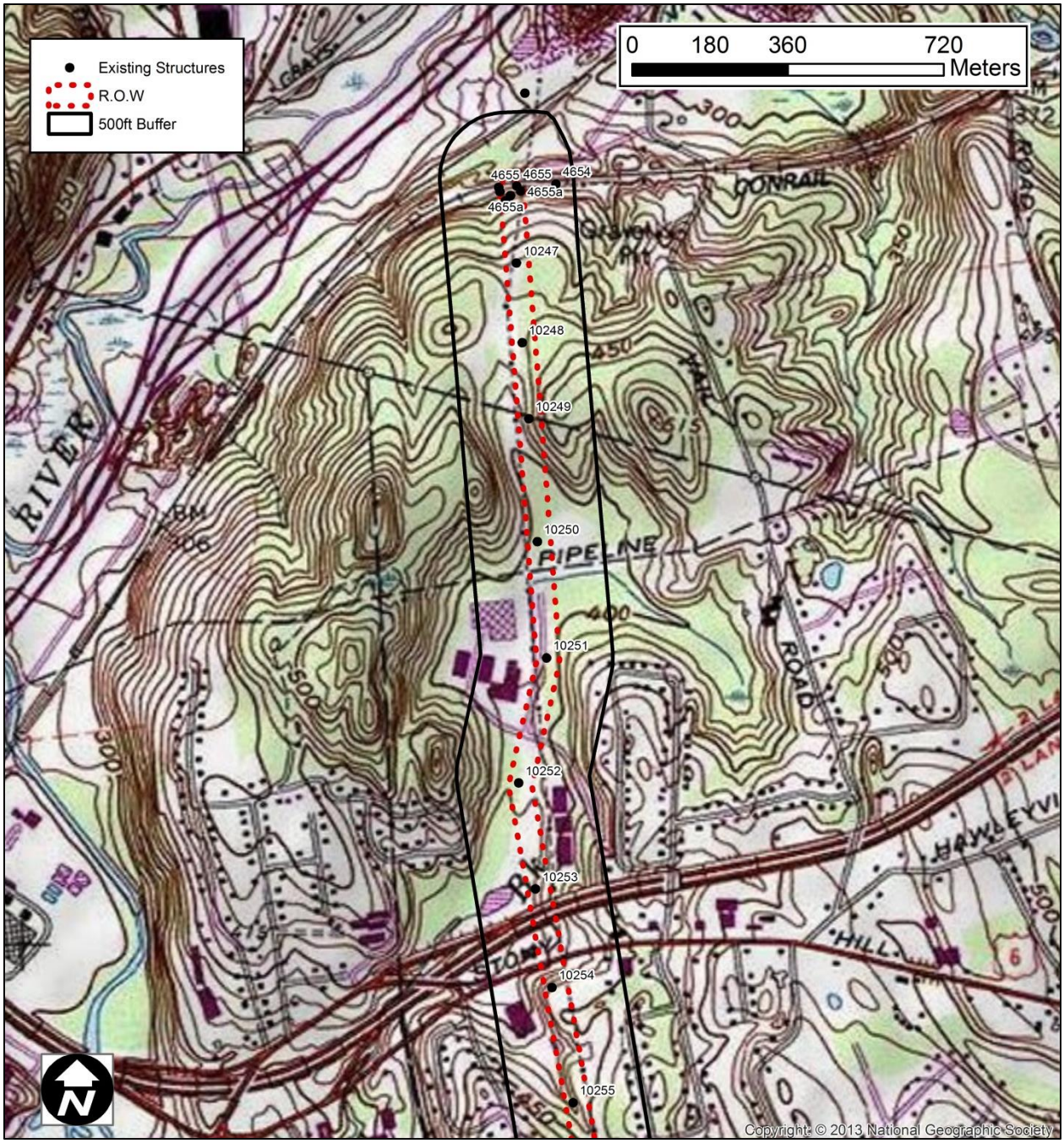


Figure 1, Sheet 2. Excerpt from a USGS 7.5' series topographic quadrangle image showing the route of the proposed Plumtree Substation to Brookfield Junction Line in Bethel, Brookfield, and Danbury, Connecticut.

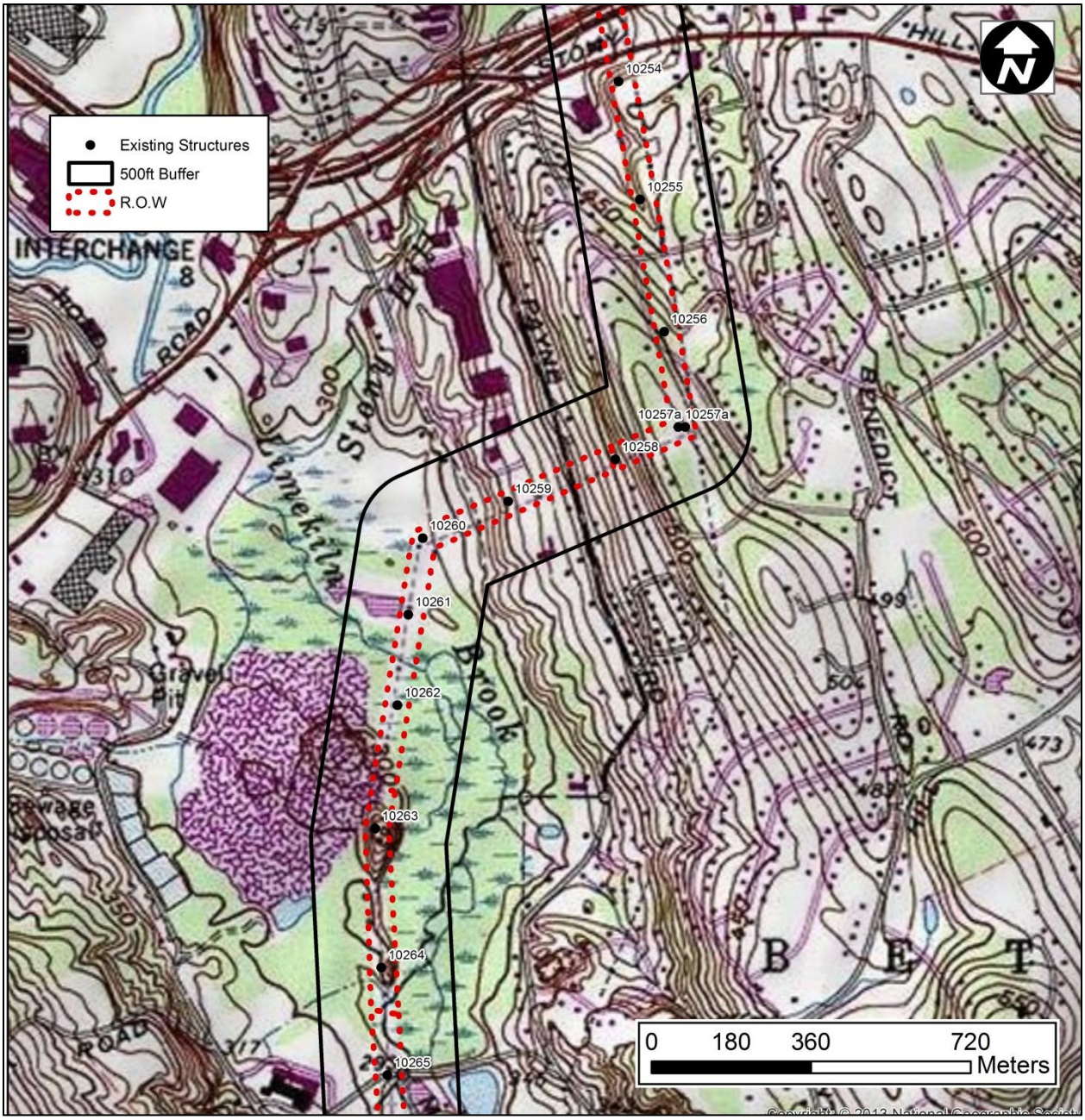


Figure 1, Sheet 3. Excerpt from a USGS 7.5' series topographic quadrangle image showing the route of the proposed Plumtree Substation to Brookfield Junction Line.

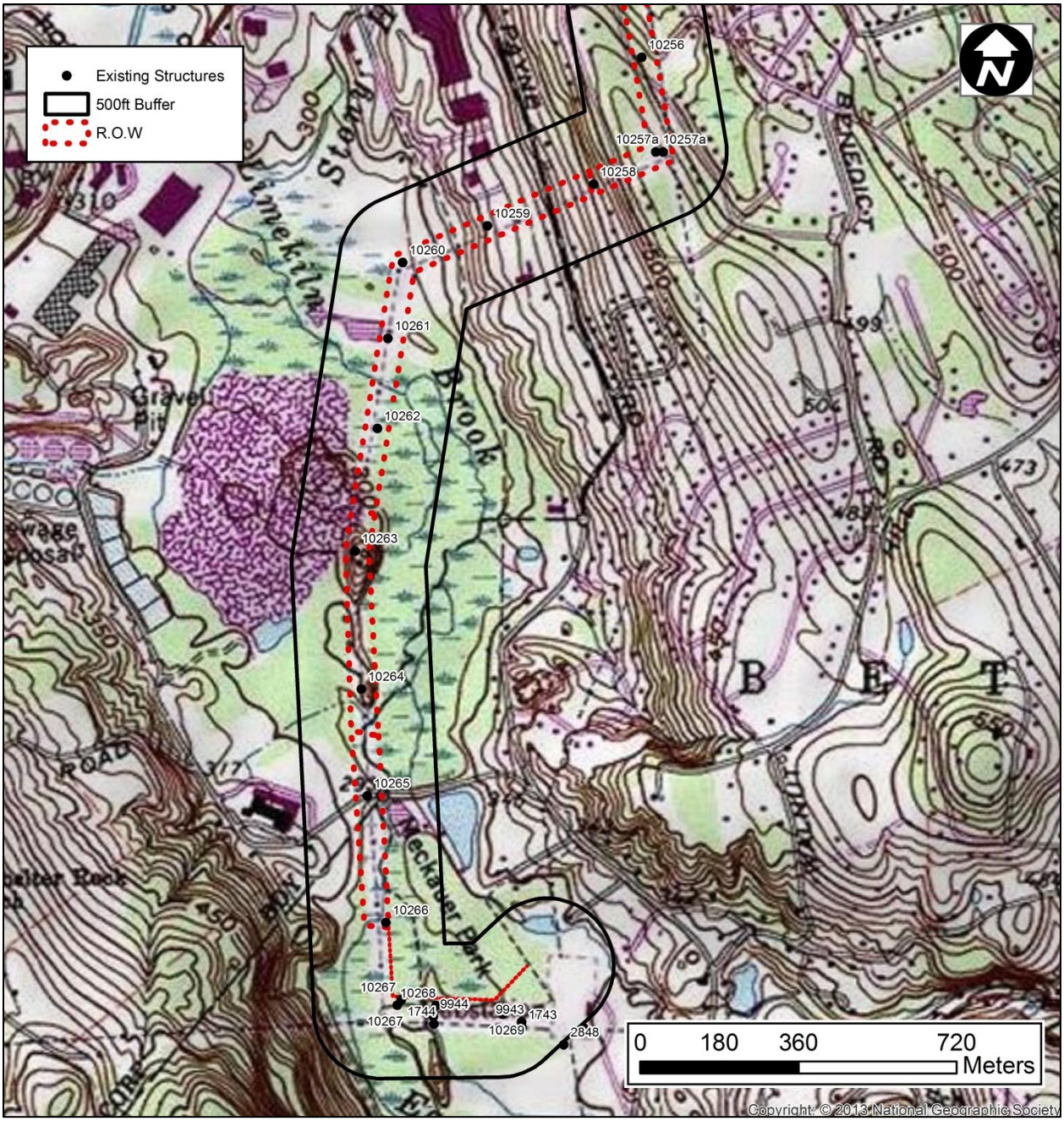


Figure 1, Sheet 4. Excerpt from a USGS 7.5' series topographic quadrangle image showing the route of the proposed Plumtree Substation to Brookfield Junction Line.

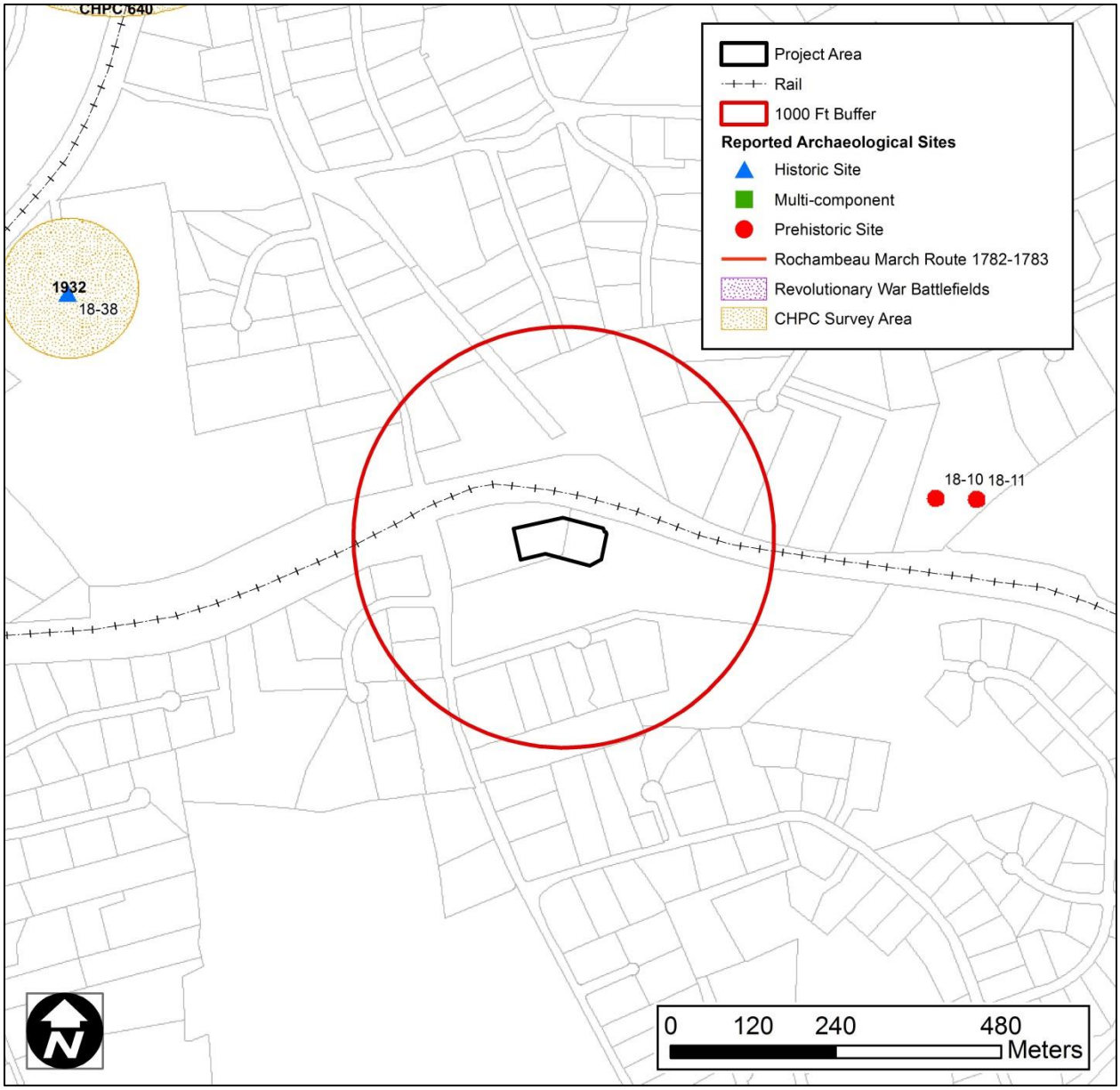


Figure 2, Sheet 1. Digital map showing the location of previously identified archaeological sites in the vicinity of the Stony Hill Substation.

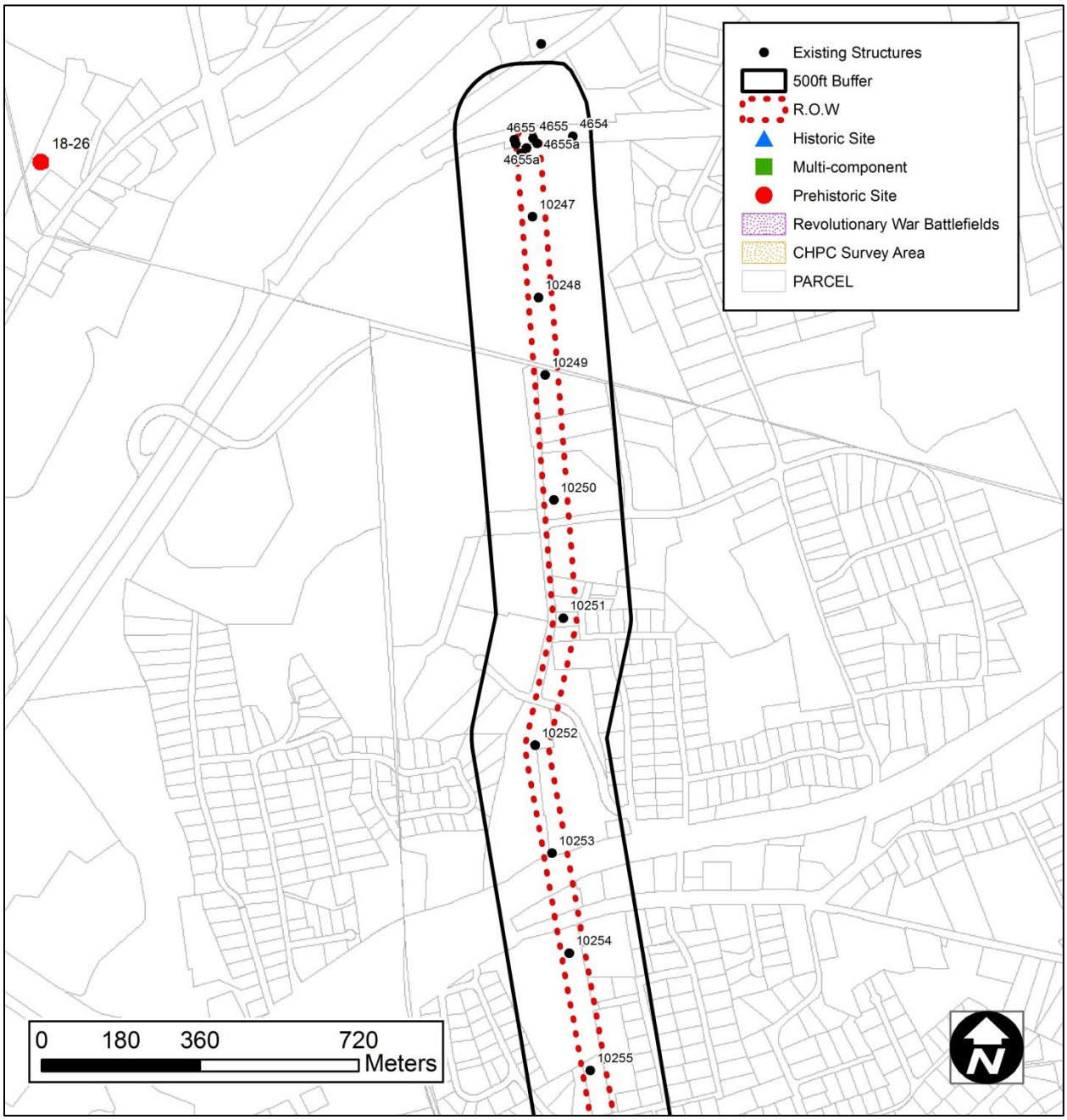


Figure 2, Sheet 2. Digital map showing the location of previously identified archaeological sites in the vicinity of the route of the proposed Plumtree Substation to Brookfield Junction Line.

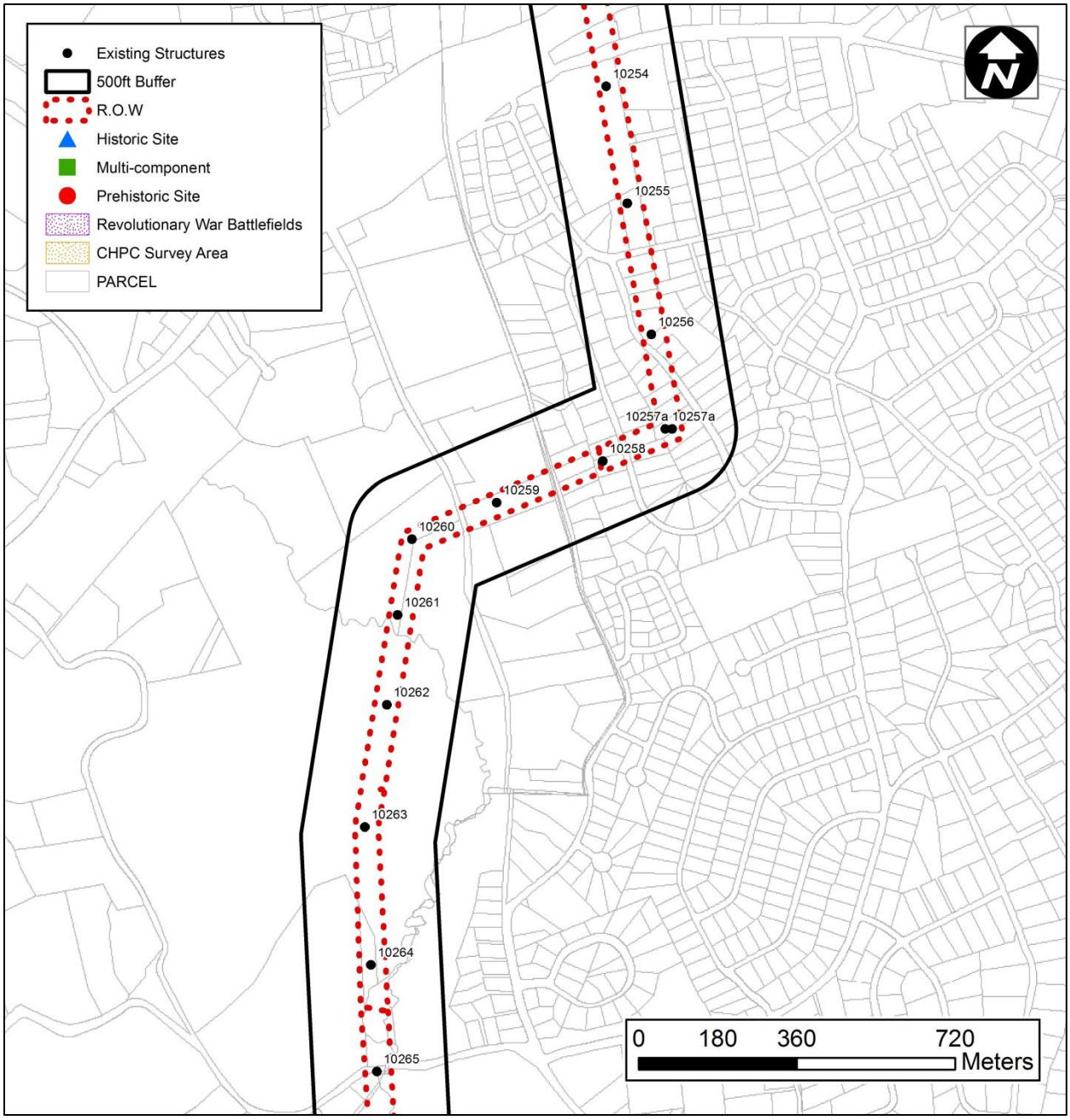


Figure 2, Sheet 3. Digital map showing the location of previously identified archaeological sites in the vicinity of the route of the proposed Plumtree Substation to Brookfield Junction Line.

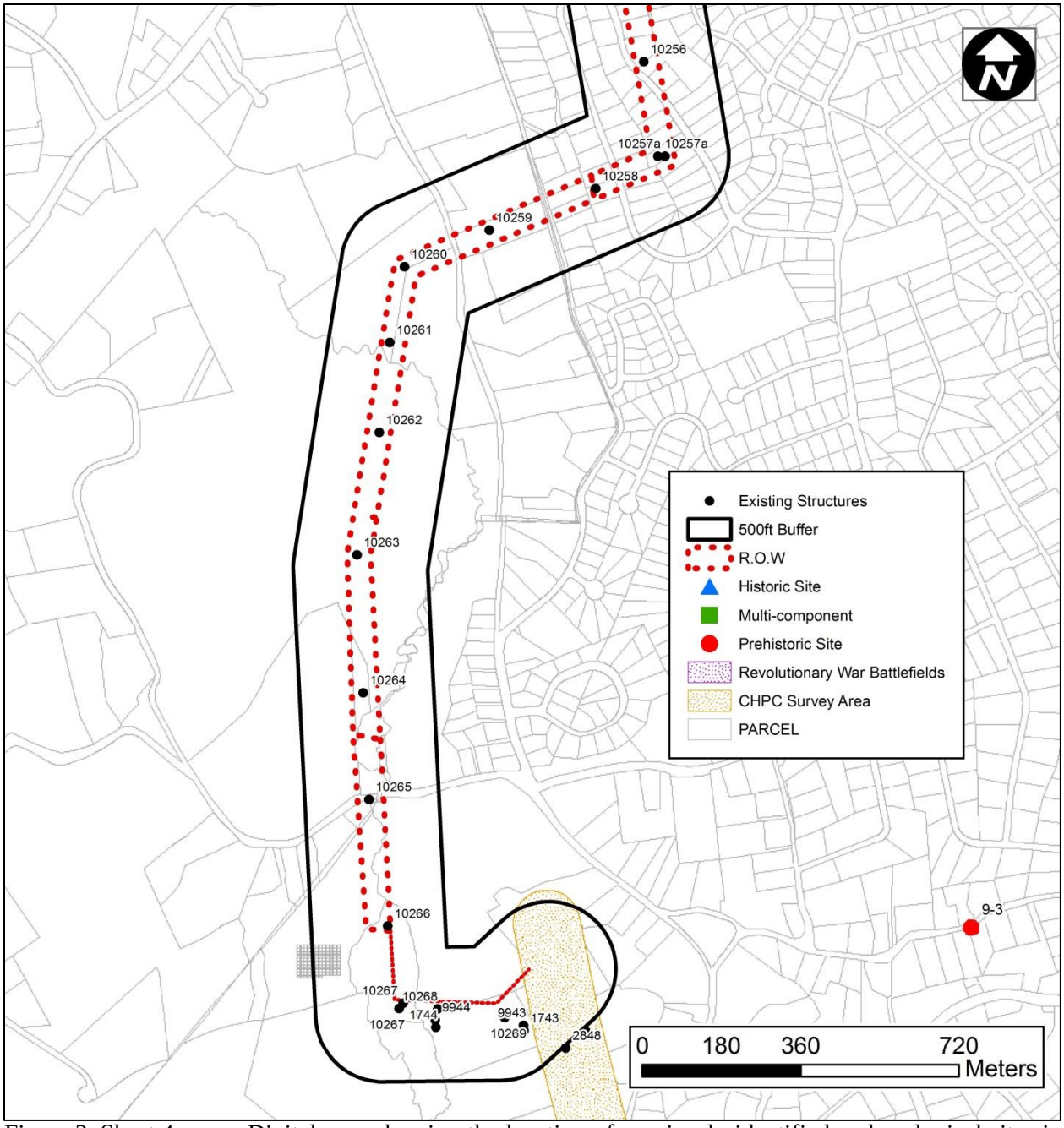


Figure 2, Sheet 4. Digital map showing the location of previously identified archaeological sites in the vicinity of the route of the proposed Plumtree Substation to Brookfield Junction Line.

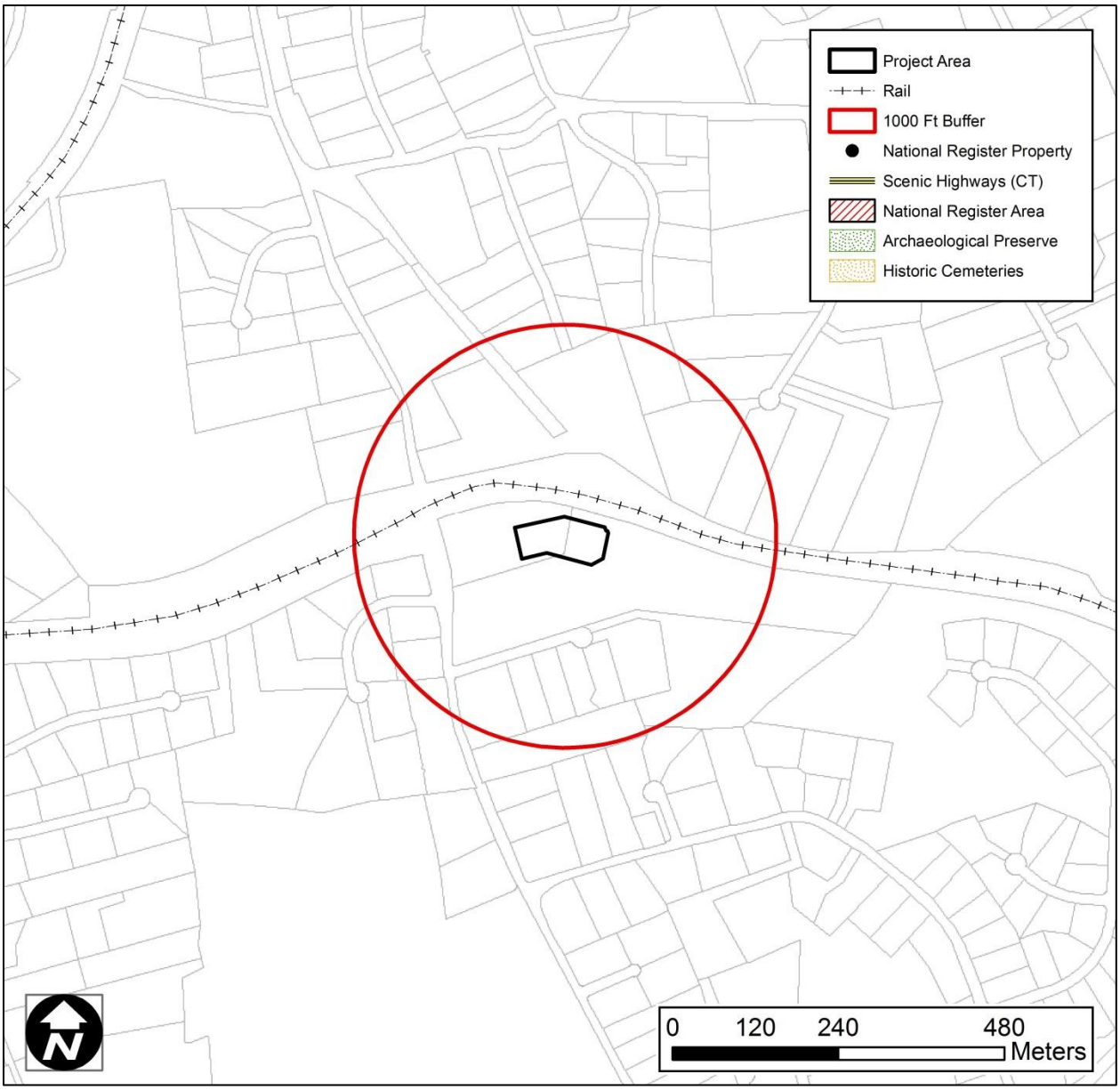


Figure 3, Sheet 1. Digital map depicting the locations of previously identified National Register of Historic Places properties in the vicinity of the Stony Hill Substation.

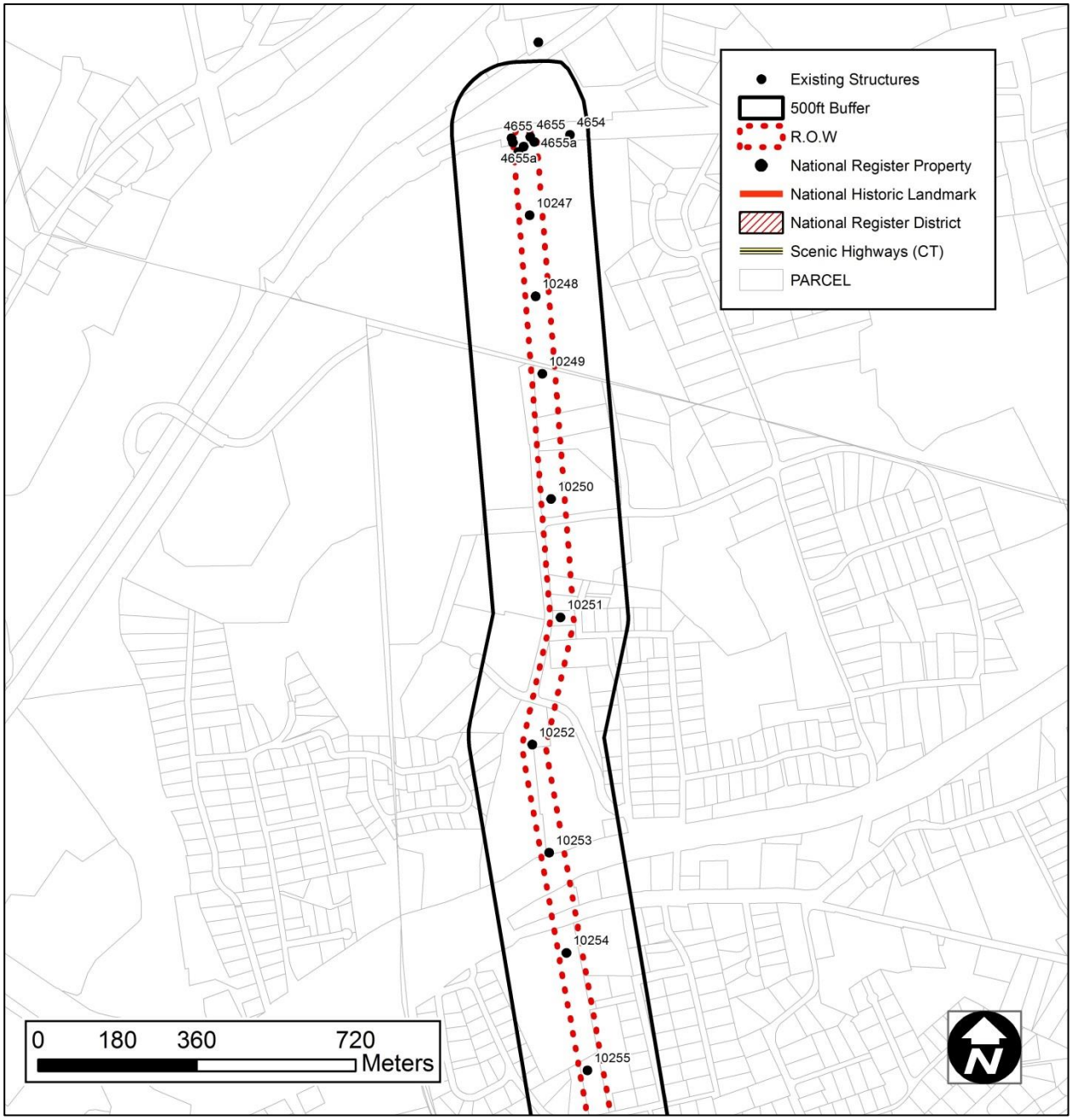


Figure 3, Sheet 2. Digital map depicting the locations of previously identified National Register of Historic Places properties in the vicinity of the route of the proposed Plumtree Substation to Brookfield Junction Line.

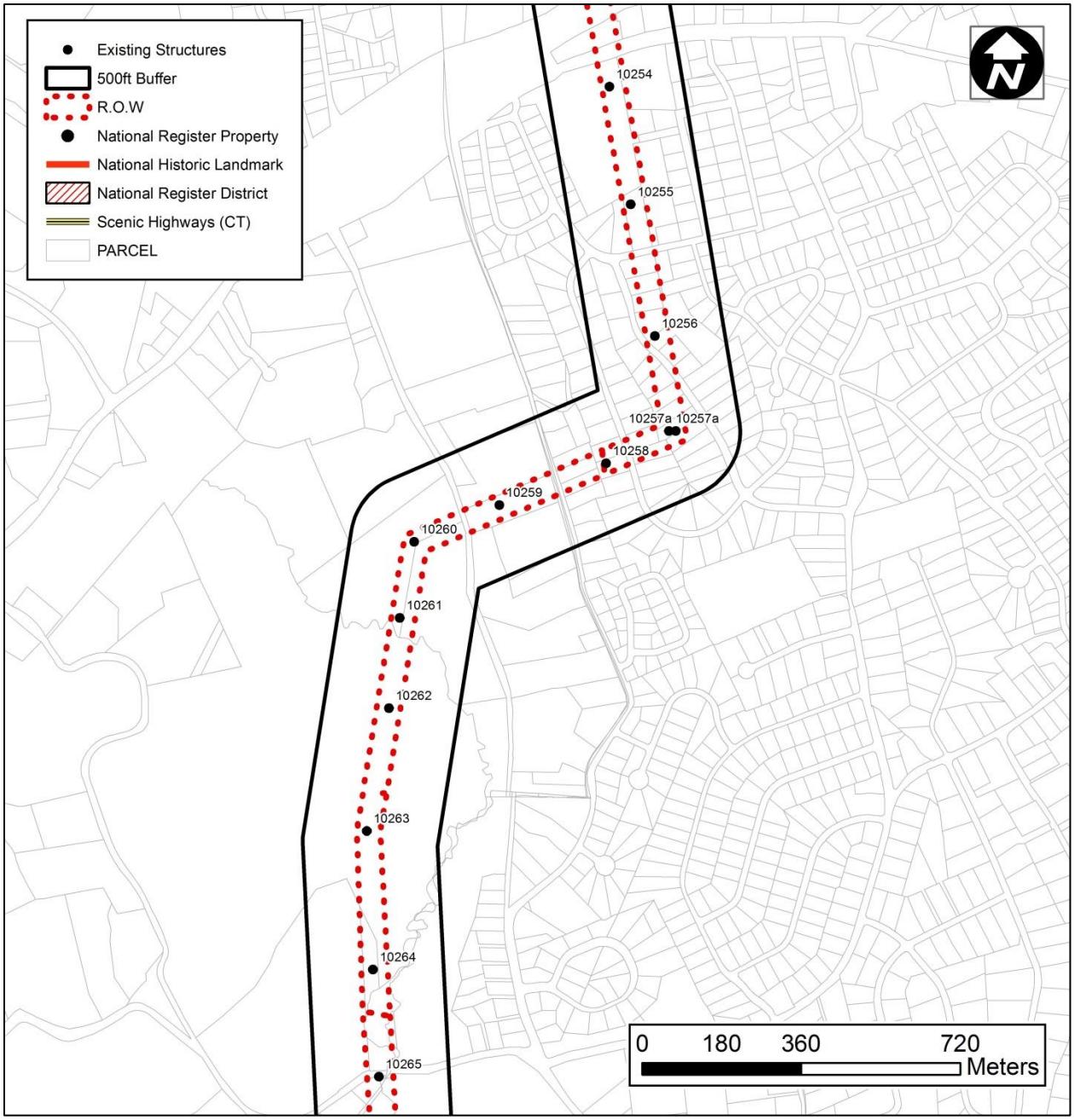


Figure 3, Sheet 3. Digital map depicting the locations of previously identified National Register of Historic Places properties in the vicinity of the route of the proposed Plumtree Substation to Brookfield Junction Line.

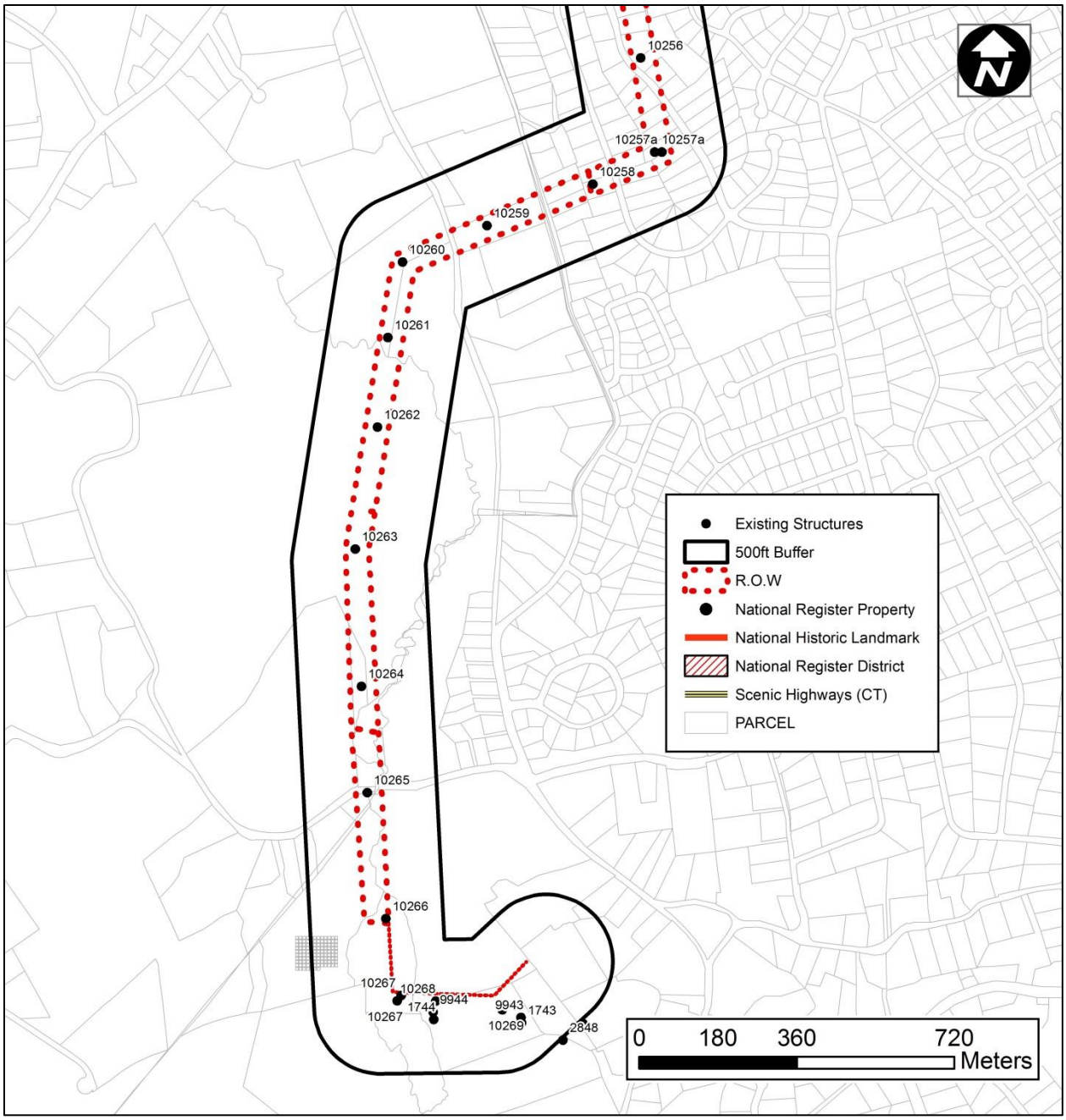


Figure 3, Sheet 4. Digital map depicting the locations of previously identified National Register of Historic Places properties in the vicinity of the route of the proposed Plumtree Substation to Brookfield Junction Line.

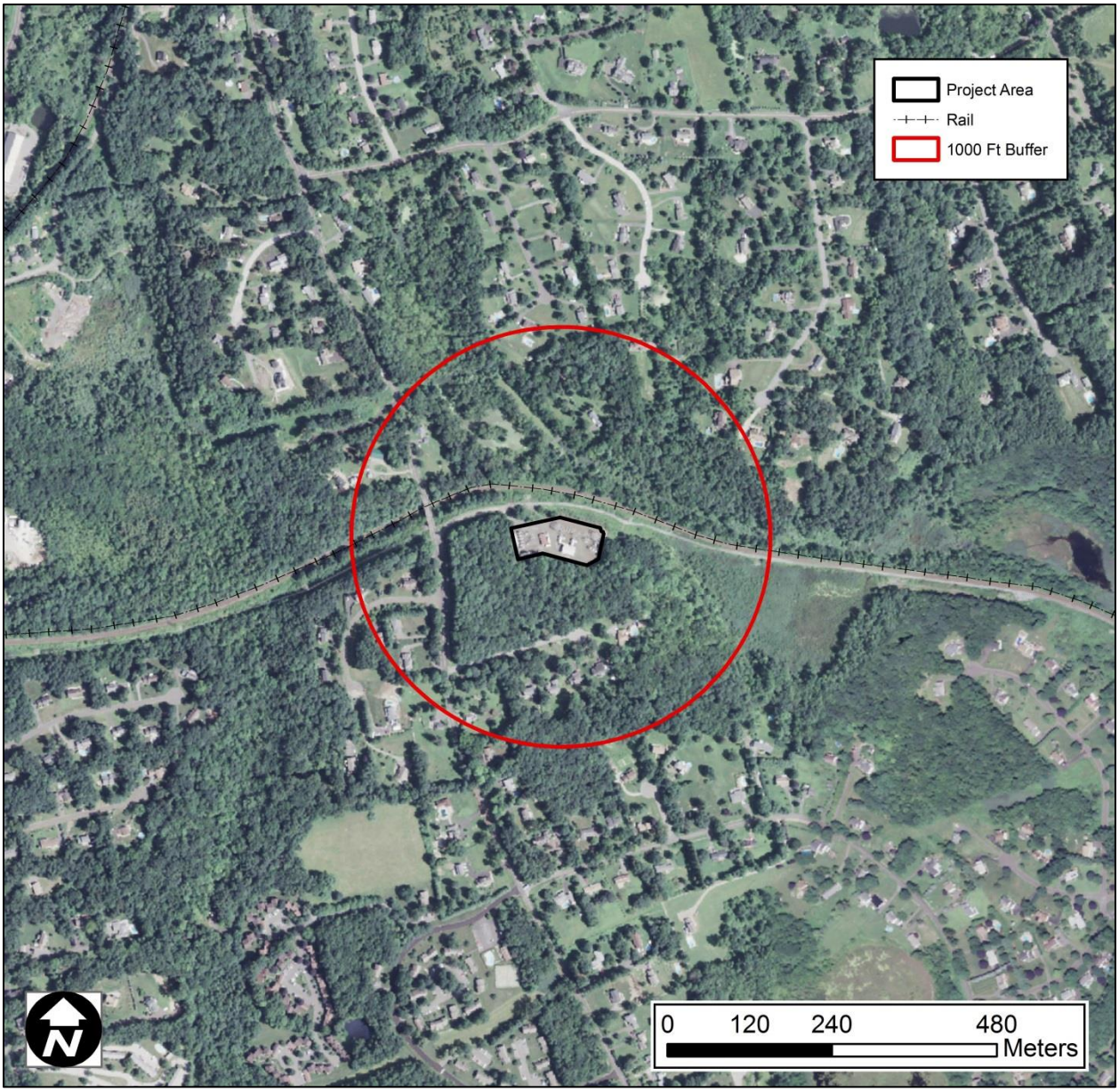


Figure 4, Sheet 1. Excerpt from a 2014 aerial image showing the Stony Hill Substation area.

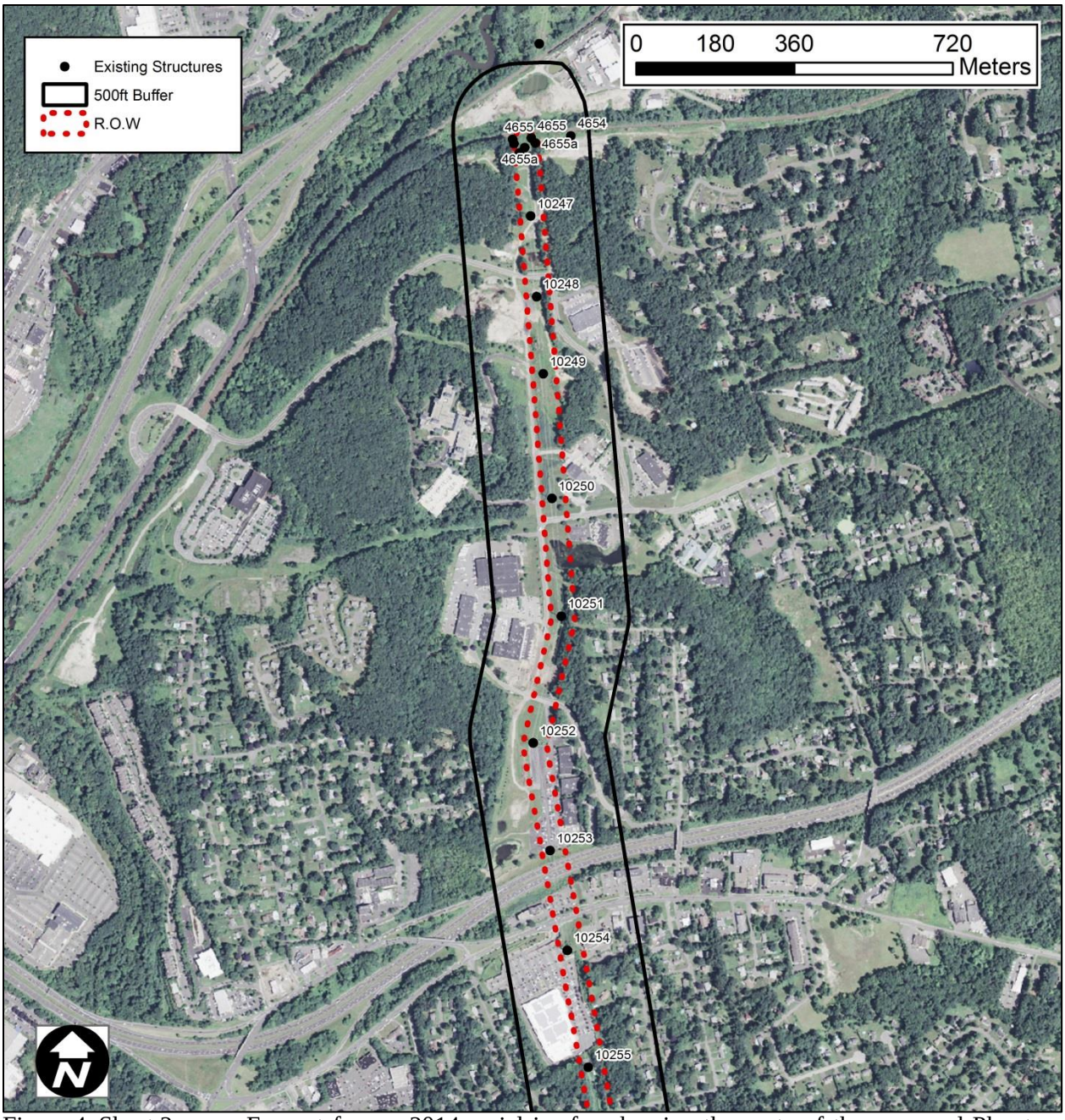


Figure 4, Sheet 2. Excerpt from a 2014 aerial imafge showing the route of the proposed Plumtree Substation to Brookfield Junction Line.

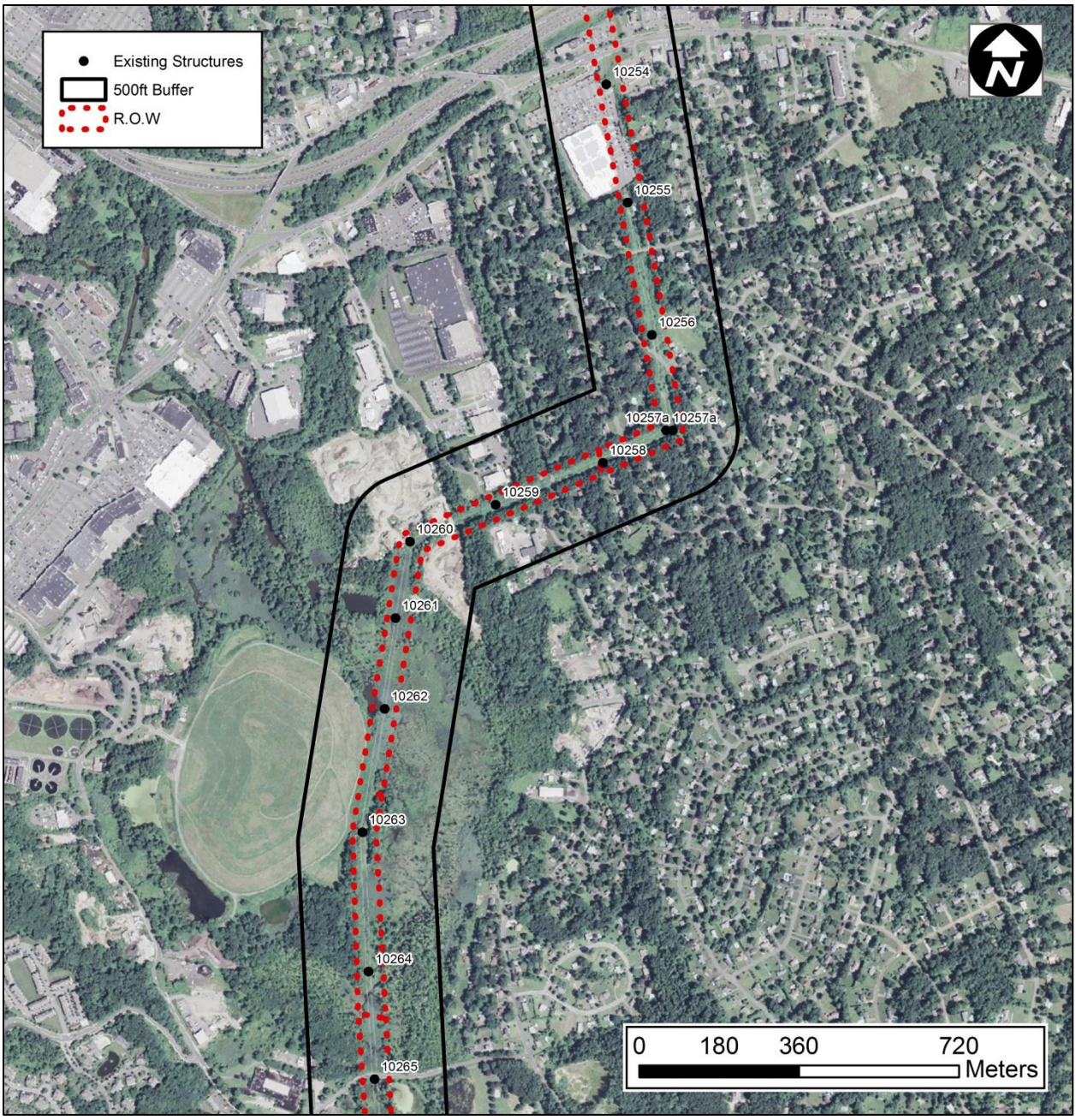


Figure 4, Sheet 3. Excerpt from a 2014 aerial imafge showing the route of the proposed Plumtree Substation to Brookfield Junction Line.

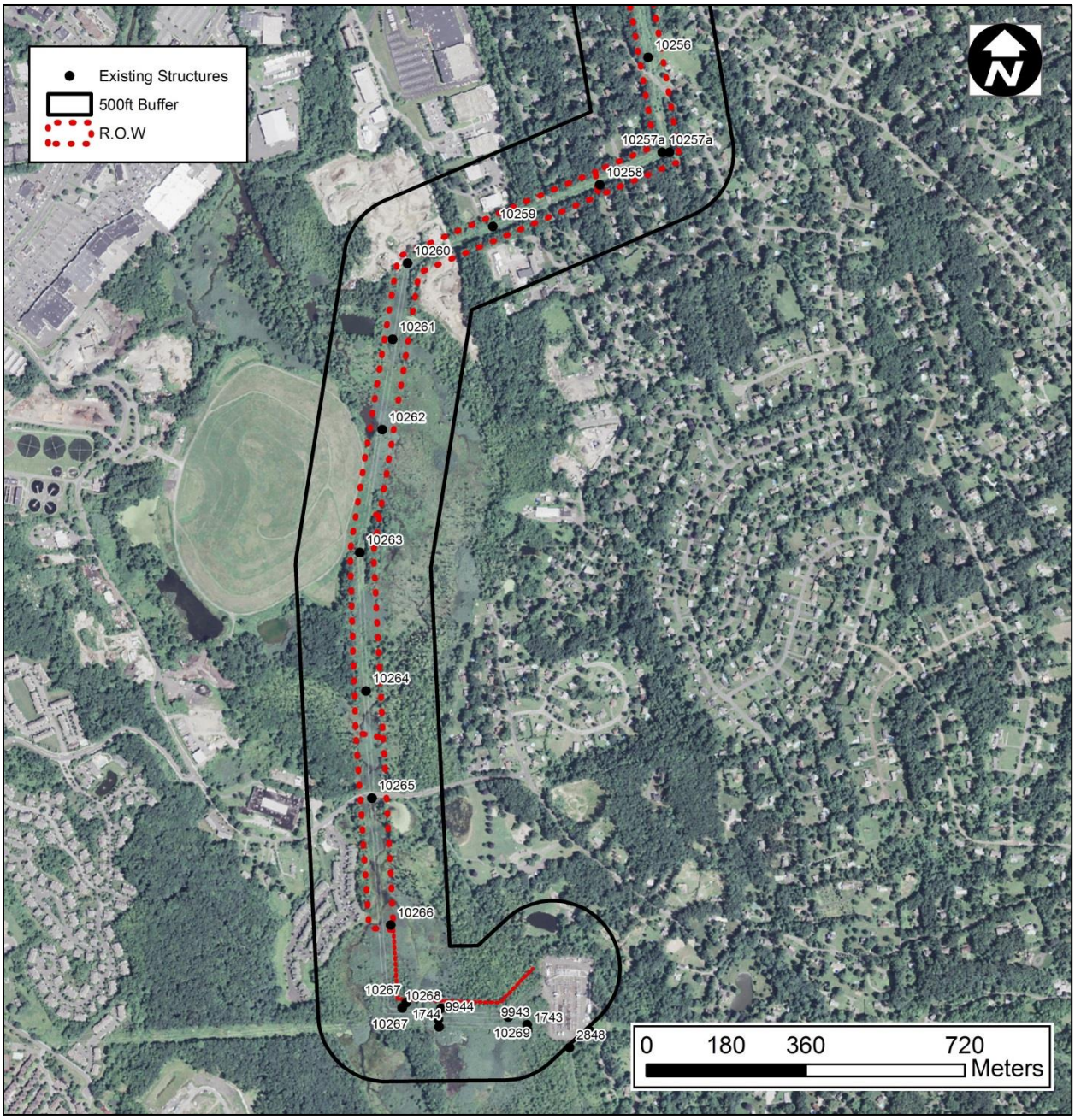


Figure 4, Sheet 4. Excerpt from a 2014 aerial imafge showing the route of the proposed Plumtree Substation to Brookfield Junction Line.

Figure 5, Sheet 1. Excerpt from a USGS 7.5' series topographical map depicting the archaeological sensitivity of the route of the Stony Hill Substation area (yellow = no/low potential; red = moderate/high potential).

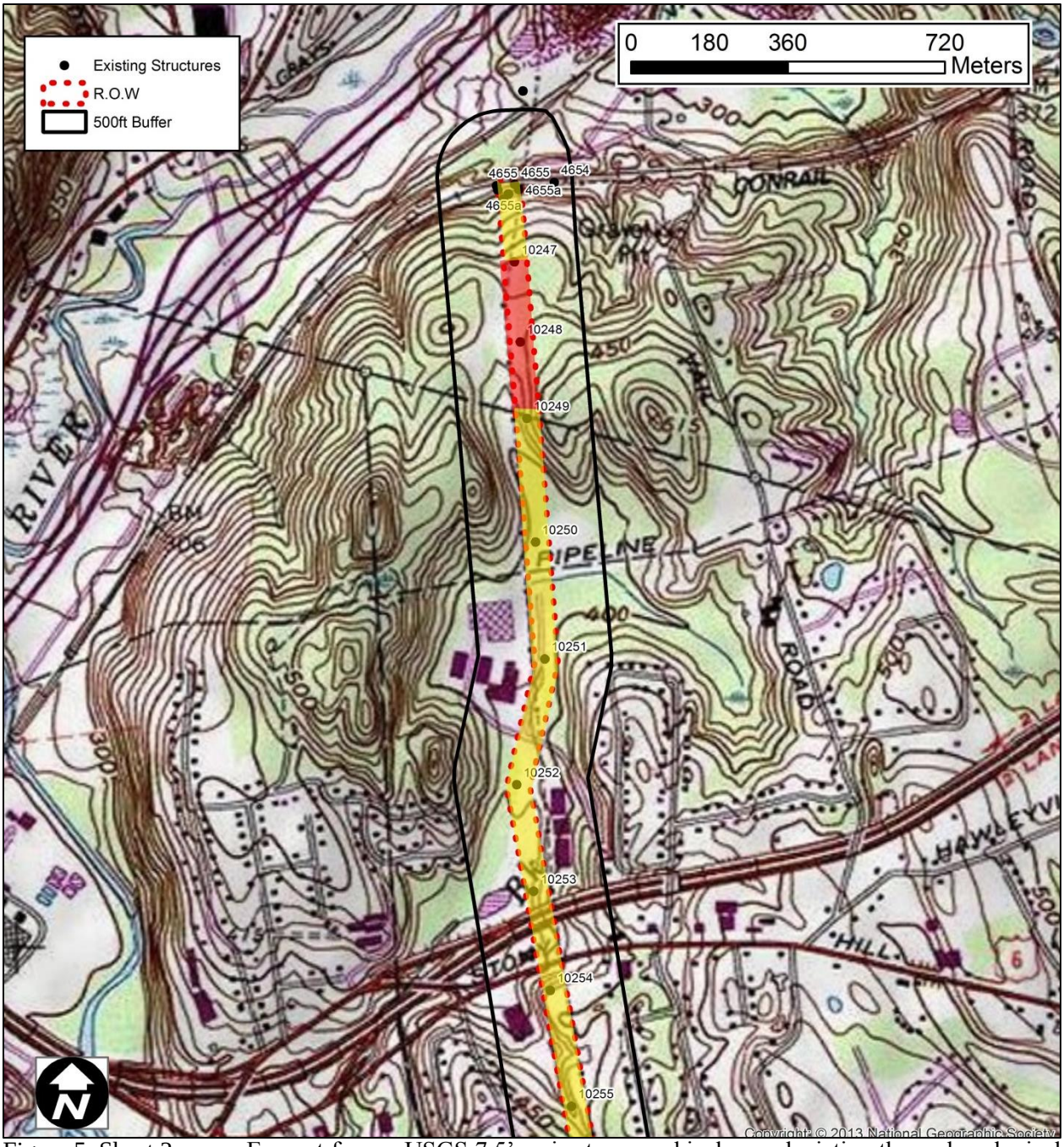


Figure 5, Sheet 2. Excerpt from a USGS 7.5' series topographical map depicting the archaeological sensitivity of the route of the proposed Plumbtree Substation to Brookfield Junction Line (yellow = no/low potential; red = moderate/high potential).

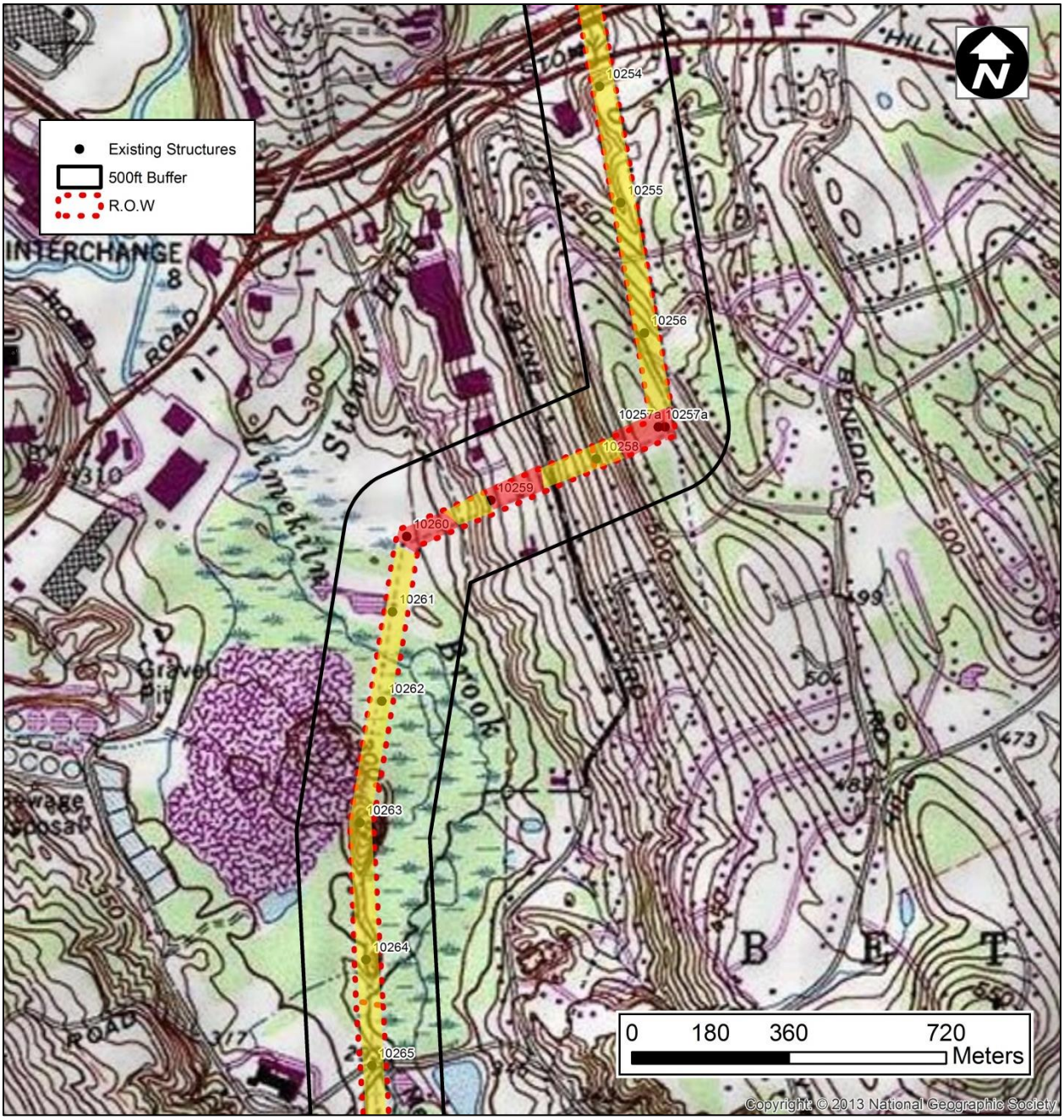


Figure 5, Sheet 3. Excerpt from a USGS 7.5' series topographical map depicting the archaeological sensitivity of the route of the proposed Plumbtree Substation to Brookfield Junction Line (yellow = no/low potential; red = moderate/high potential).

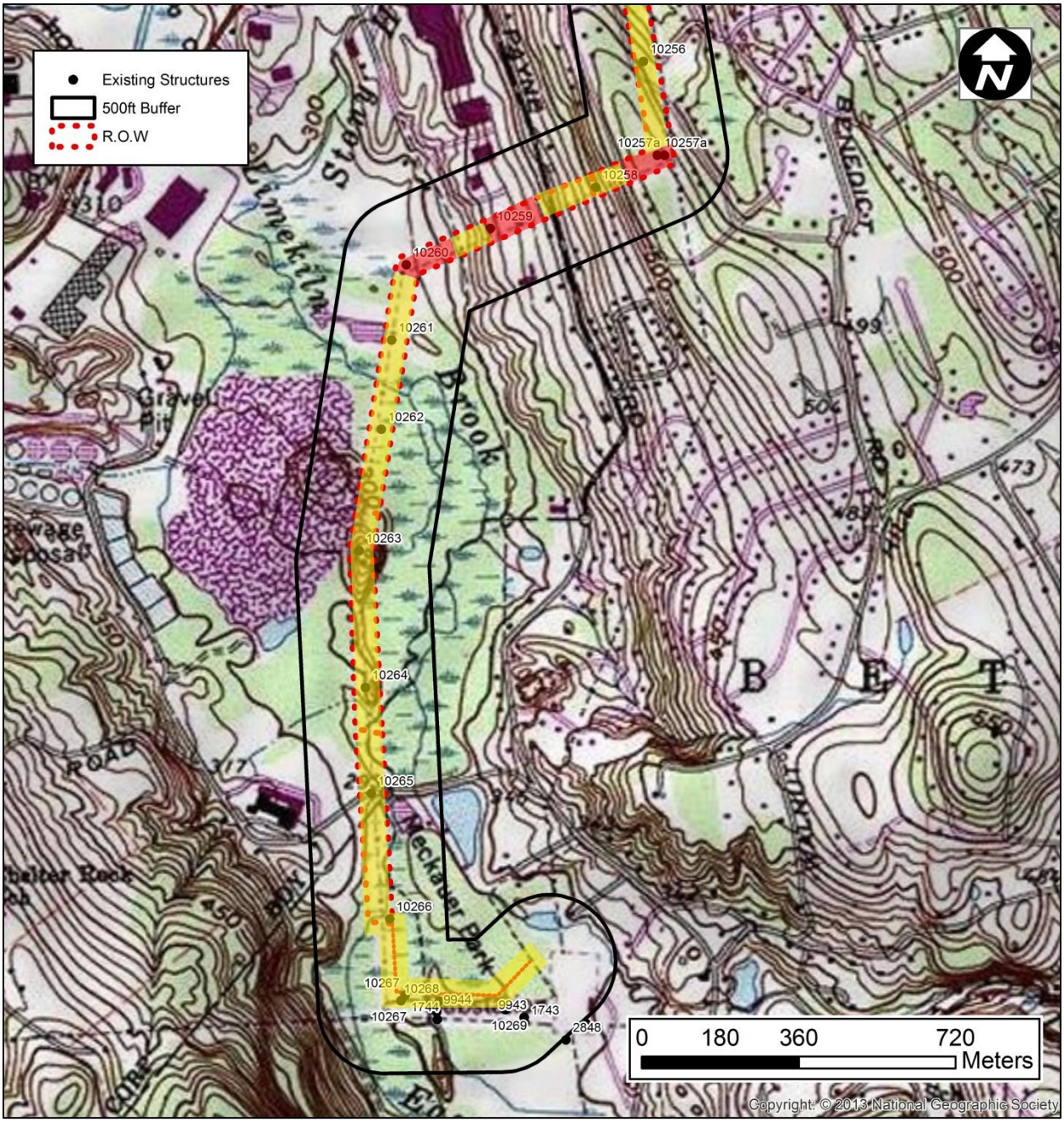


Figure 5, Sheet 4. Excerpt from a USGS 7.5' series topographical map depicting the archaeological sensitivity of the route of the proposed Plumbtree Substation to Brookfield Junction Line (yellow = no/low potential; red = moderate/high potential).

EXHIBIT 4: VISUAL RESOURCES ANALYSIS

Note: This page is intentionally left blank

SOUTHWEST CONNECTICUT RELIABILITY PROJECT

BY

THE CONNECTICUT LIGHT AND POWER COMPANY

DOING BUSINESS AS EVERSOURCE ENERGY

VOLUME 3: ENVIRONMENTAL

VISUAL RESOURCE ANALYSIS

APRIL 2016

Note: This page is intentionally left blank

Visual Resource Analysis

Prepared For:

The Connecticut Light and Power Company doing business as Eversource Energy
107 Selden Street
Berlin, CT 06037

Prepared By:

BSC Group
33 Waldo Street,
Worcester, MA 01608

Note: This page is intentionally left blank

Table of Contents

Table of Contents

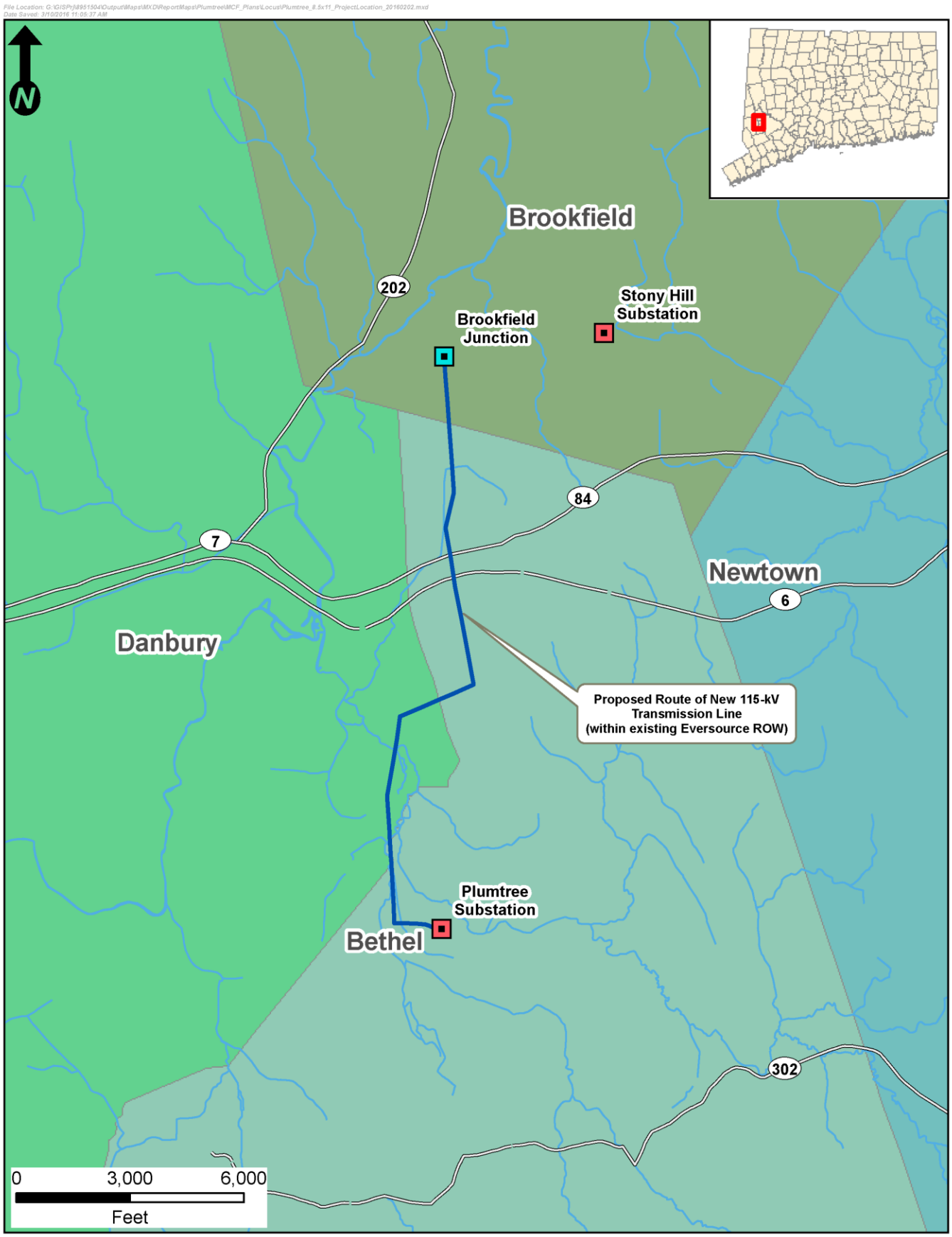
Note: This page is intentionally left blank

Section 1
Introduction and Study Objectives

1.1 Project Overview

To improve the reliability of the 115 kV electric system in Southwest Connecticut (SWCT), Eversource Energy (Eversource) proposes to construct and operate a new 3.4-mile 115-kilovolt (kV) overhead electric transmission line and to make related modifications to two existing Eversource substations (Plumtree Substation and Stony Hill Substation) in southwestern Connecticut. Extending between Plumtree Substation in the Town of Bethel and Brookfield Junction in the Town of Brookfield, the proposed 115-kV transmission line would cross portions of three municipalities in Fairfield County (Bethel, Danbury, and Brookfield). In addition to the proposed 115-kV transmission line, Eversource proposes modifications to the Stony Hill Substation, including the reconfiguration of existing transmission line interconnections to the substation. The facilities proposed for the Project were identified as a result of system planning studies and alternatives analyses performed by the Independent System Operator - New England (ISO-NE). These proposed improvements are referred collectively as the SWCT Reliability Project (the "Project," refer to Figure 1-1).

Figure 1-1: Project Location Map



Section 1 Introduction

The new 115-kV transmission line (designated by Eversource as the 1887 Line) would be constructed in an overhead configuration and would be located entirely within Eversource owned property or within an existing Eversource right-of-way (ROW), long established for utility purposes. This alignment is referred to as the Proposed Route for the new line. The width of Eversource's existing ROW ranges in width from approximately 175 feet to 225 feet, and is sufficiently wide to accommodate the new 115-kV line without requiring any easement expansion. Modifications at the Stony Hill Substation would be accomplished entirely within Eversource owned property.

The existing ROW along the Proposed Route from Plumtree Substation to Brookfield Junction is presently occupied by a double circuit transmission line that supports Eversource's 345-kV 321 Line and the 115-kV 1770 Line. At Brookfield Junction, the two existing transmission lines diverge, with the 321 Line continuing northerly and the 1770 Line continuing east to Stony Hill Substation. These existing overhead lines are supported on various structure types including steel monopoles ranging 110 to 150 feet in height.

The new overhead 115-kV transmission line would be supported on steel monopole structures that would typically range from 95 to 135 feet in height and significantly shorter in proximity to the Plumtree Substation and at Brookfield Junction[1]. Steel triple-pole structures are proposed near Plumtree Substation (Structures 1000-1003) and at Brookfield Junction (Structures 1026 and 1027) that would be approximately 30 feet in height and 85 feet in height, respectively. The proposed location and alignment of the new 115-kV line structures within the ROW in relation to the existing transmission line structures are illustrated on the cross-section drawings and Project mapping (Volume 5).

The Project also involves modifications to Plumtree Substation and Stony Hill Substation, as well as reconfiguration of the existing transmission line presently connected to Stony Hill Substation. Both substations are located on Eversource properties have long been devoted to utility use. Modifications to Plumtree Substation will remain within the existing

[1] Refer to cross-sections provided in Volume 1 Section 3 and Volume 5 Exhibit 4. XS-1 represents the typical view of ROW from Plumtree Substation to 0.2 miles east, XS-3 represents the view at Brookfield Junction, and XS-2 represents the remainder of the Proposed Route (0.2 to 3.4 from Plumtree Substation).

substation yard. Modifications to Stony Hill Substation will be conducted within the substation yard, with some modifications to 115 kV line interconnects on the adjacent, existing Eversource ROW.

1.2 Connecticut Siting Council Guidance Regarding Visual Resources

The proposed Project is subject to the jurisdiction of the Connecticut Siting Council (Council), which has established procedures for applicants to follow in applying for a Certificate of Environmental Compatibility and Public Need. These procedures are detailed in the Council's *Application Guide for Electric and Fuel Transmission Line Facilities* (April 2016; *Application Guide*).

With respect to visual resources, the *Application Guide* requires applicants to identify scenic areas in relation to proposed projects and to describe the potential effect that proposed projects would have on such areas. The *Application Guide* also requires applicants to describe and evaluate the potential effects of proposed projects on Connecticut Heritage Areas (as designated be Connecticut General Statutes [C.G.S.] § 16a-27) and Connecticut Department of Transportation (ConnDOT) Scenic Lands (C.G.S. § 13a-85a).

On December 23, 2009, the Council issued a memorandum to routine applicants / participants concerning, among other issues, the consideration of scenic quality and the aesthetic attributes of land that might be affected by projects under the Council's jurisdiction, and specifically referencing the consideration of Connecticut Heritage Areas and ConnDOT Scenic Lands as part of the project planning process. In the same memorandum, the council advised applicants to provide photographs of aesthetic areas, particularly for use in photo-simulations, which depict "leaf off" conditions. In the absence of deciduous vegetative screening, such "leaf off" conditions would tend to represent "worst case" (or maximum) views of existing facilities (e.g., overhead transmission lines, ROWs) and of potential project facilities.

1.3 Purpose of the Visual Resource Study

The objectives of this visual analysis, which was designed to conform to the Council's guidance regarding the consideration of scenic resources, were to:

- Characterize the existing visual setting in the vicinity of designated or potential scenic areas in the vicinity of the Project;
- Prepare photo-simulations of the proposed Project facilities under both "leaf off" conditions, pursuant to the Council's guidance, and "leaf on" conditions, which would be representative of views during spring—fall months; and,
- Assess the potential effects of the Project on such areas, using photo-simulations of the proposed transmission line structures and the associated expansion of the areas of the ROW where vegetation will be managed to illustrate the incremental changes to the visual environment that would be associated with the development of the new 115-kV line.

The visual analysis focuses on the proposed transmission line. The proposed modifications to Stony Hill Substation would be located on Eversource property that is already devoted to utility use and, overall, the substation and 115-kV line connections are not in the viewing area of any designated scenic areas or potential scenic sites.

Further, the Project is not located within or near any Connecticut heritage areas. As designated pursuant to state Public Act No. 09-221, a heritage area is defined as a place within Connecticut that has historic, recreational, cultural, natural, and scenic resources that form an important part of the state's heritage. State agencies must take the resources of the national heritage areas into consideration in planning and project decision-making. To date, only two Connecticut heritage areas have been designated,[2] neither are near the Project.

[2] These areas are the Upper Housatonic Valley National Heritage Area in northwestern Connecticut and the Quinebaug Shetucket Rivers Valley National Heritage Area in northeastern Connecticut.

Section 2
Methods

The methods used to conduct the visual resource study involved baseline research, followed by field inspections to photo-document views of the Proposed Route along Eversource's ROW and properties in the vicinity of publicly-designated[3] scenic, recreational, and open space properties (collectively referred to herein as the "visual sites").[4] Subsequently, the photo-documentation was used to prepare the photo-simulations.

Eversource first conducted research to identify visual sites crossed by or in the vicinity of the proposed Project. These sites were identified based on the review of Project mapping, a Cultural Resources Review (*Volume 3, Exhibit 3*), town plans, internet research, and other published information, such as the Connecticut Department of Energy and Environmental Protection's (CT DEEP's) data concerning state parks, forests, and trails. In addition, Eversource researched land trusts in the Project region (Bethel Land Trust, The Land Trust of Danbury, and Brookfield Open Space Legacy), and other preserved open space (local, state, or federal), to determine if any parcels preserved by these organizations are located in the vicinity of the Proposed Route.

In general, sites within approximately 0.5 miles of the proposed Project facilities were identified for initial evaluation. Field reconnaissance then was conducted of each of the identified potential visual sites. The objectives of the field review were to:

- Assess the relationship of each potential visual site to the existing Eversource ROW along which the proposed 115-kV transmission line would be located.
- Determine whether Eversource's existing overhead transmission lines are visible from any potential visual sites.

[3] For the purposes of this study, "publicly designated" areas refer to locations identified in federal, state, or municipal governments, land trusts, or associations.

[4] Based on the cultural resources studies conducted for the Project, no standing historic structures on or eligible for the National or State Registers of Historic Places are located in the vicinity of the ROW or Substations (See Volume 5, Exhibit 3).

Section 2 Methods

- Photo-document views, if applicable, of the existing transmission line structures / ROW in relation to the potential visual sites. Sites that were determined to be geographically remote from the ROW or from which views of the existing overhead transmission line structures were blocked by intervening topography, vegetation, or land uses, were not photographed.

- Take photographs under both "leaf off" and "leaf on" conditions for use in preparing photo-simulations to illustrate potential views of the proposed 115-kV transmission line in the vicinity of visual sites.

To document visual conditions under "leaf on" conditions, Eversource conducted field visits in October 2015. This field review served to assess and photo-document conditions when deciduous forest vegetation was leafed out, potentially partially obscuring views of the existing overhead transmission structures.

In January 2016, Eversource conducted follow-up visits to the same sites to assess and photo-document conditions under "leaf off" conditions (when views of the existing overhead transmission line structures would be expected to be more visible due to the lack of deciduous vegetative cover). In some locations, views of the transmission line structures were completely obscured under "leaf on" conditions. As a result, such locations were only documented during "leaf off" conditions..

Appendix A provide a key map that identifies photograph locations for the visual sites.

Using the "leaf off" and "leaf on" photographs, computer-generated photo simulations were prepared to illustrate the expected changes to the visual environment as a result of the development of the new 115-kV transmission line. Such photo-simulations illustrate potential changes due to not only the new transmission line, but also any changes due to the increased width of forest vegetation removal within the existing ROW. The photo-simulations of the new 115-kV transmission line structures, which are included in Appendix A, were developed based on the proposed structure heights and types as identified on the ROW segment cross-sections for the Proposed Route (refer to the Volume 5 maps and cross-sections).

The photo-simulations were developed using a combination of software platforms. Structures were modeled using 3D software (Google Earth Pro 2015) supplemented with

Section 2 Methods

3D representations of transmission line structures and vegetation (SketchUp 2016). These software platforms allow for the 1:1 re-creation of sites depicting the proposed 115-kV facilities using Project engineering design drawings and related information (e.g., transmission line structure types, line sag, and land elevation data) as input. Photo editing software (Adobe Photoshop CS5 ®) was used to overlay the rendered image on the site-specific photographs and to adjust for image distortion. A similar approach was used to create representations of existing structures such as houses or commercial buildings. In some cases, photos of these existing structures were used to create the simulated view. When photographs of structures were unavailable, structures were rendered using computer-generated images. Existing views of vegetation were also used to render a representation of the proposed ROW expansion (i.e. tree removal) when looking directly along the ROW.

Appendix B includes other representative photographs of the general visual setting of the Proposed Route, as viewed from selected public roads traversed by the existing Eversource ROW. These photographs further illustrate the general landscape in the Project region, and also provide typical views of the existing transmission line structures and ROW vegetative communities.

Section 3
Visual Setting and Resource Sites

3.1 Project Setting

The proposed 115-kV transmission line would be aligned within Eversource's existing ROW, adjacent to existing overhead transmission lines, whereas the other Proposed Project facilities (i.e. substation modifications and adjacent reconfiguration) would be similarly located to existing utility features on Eversource Property. Lands within the portions of the ROW occupied by existing transmission lines are managed to promote shrub or similar low-growth vegetation, consistent with overhead utility use. Lands encompassing the unmanaged portions of the ROW are composed of wetland or upland forest and, in some locations, coincide with developed land use features, such as residential or commercial/industrial lawns, parking lots or driveways, or industrial use (e.g. gravel pit). Both the existing overhead transmission lines and the two substations are well established elements of the local visual environments.

Lands in the Project region are characterized by varying topography and land use types. Similarly, the transmission line ROW encompasses varying vegetative types and is bordered by differing land uses. The characteristics of the ROW are summarized, as follows:

- ***From Plumtree Substation approximately 1.3 miles north to Old Sherman Turnpike***: the ROW consists of flat, floodplains with forested and open marsh associated with East Swamp Brook and Limekiln Brook. The lands surrounding the ROW consists of open space and town parks (Meckauer and Bennet Memorial Park), as well as residential, and industrial uses (e.g., the City of Danbury landfill and privately-owned gravel pit).

- ***From Old Sherman Turnpike approximately 1 miles north to Stony Hill Road (US-6):*** the ROW consists of moderately steep topography, with a mixture of upland and wetland forests as well as patches of open space associated with residential, commercial, and industrial land uses. Commercial uses include a Target superstore and a Best Western Motel (which abut Stony Hill Road to the south).

- ***From Stony Hill Road (US-6) approximately 1.1 miles north to Brookfield Junction:*** the area consists of flat to rolling topography that is

largely developed for commercial/industrial uses (Berkshire Corporate Park) comprised of roads, parking areas, buildings lawns and upland or wetland forests. Along this segment, the ROW also crosses the multi-lane Interstate 84.

From Plumtree Substation to north of Sky Edge Lane (approximately2 miles total), the existing topography and vegetative cover limits the visibility of the existing ROW and existing transmission line structures except at road crossings

From the Target parking lot located south of Stony Hill Road (US-6) north to Brookfield Junction, the existing ROW and transmission structures are highly visible within the open areas associated with the crossing of Interstate 84 and the industrial/commercial facilities located to the north (Berkshire Corporate Park). However, in this area, there are no visual sites.

The existing ROW traverses or is adjacent to various parcels designated as open space and owned by land trusts or municipal and state agencies, all of which are located in the Town of Bethel. These locations were not included as part of the visual assessment due to the nature of the properties. The majority of these properties are located within the first 1.3 miles of the Proposed Route from Plumtree Substation to Old Sherman Turnpike and include a mix of properties owned by the State of Connecticut (CT DEEP Wildlife Management Area), the Town of Bethel, and the Bethel Land Trust. The portion of the ROW that coincides with the open space properties in this area are largely inaccessible to the public due to a lack of trail systems and parcels with no frontage to a public road. One property located northeast of Chimney Drive owned by the Town of Bethel appears to be maintained as a lawn and has no apparent scenic or recreational value. One property owned by Bethel Land Trust, Sky Edge Preserve, is located north of Sky Edge Lane and east of the existing ROW. This property is approximately 3 acres and was donated to the land trust by Target Corporation in 2004; however, this parcel includes no developed trails or recreational features. Portions of the property appear to be mowed regularly to maintain an old field/ shrub vegetation to create bird habitat.

3.2 Visual Sites

The proposed 115-kV transmission line would be situated within Eversource's existing ROW, adjacent to existing overhead transmission lines. Since the majority of the Proposed Route is located in residential and commercial/industrial developments (approximately 60% of the length), no visual sites are identified in the portion of the Project from Old Sherman Turnpike north to Brookfield Junction. Additionally, no visual sites are identified in the vicinity of Stony Hill Substation which is surrounded by forested vegetation and is not visible from areas outside of the Eversource parcel or ROW. The Proposed Route does not traverse and is not located near any state-designated greenways[5],. Various undeveloped parcels preserved as open space are present along or near the proposed Route, particularly west and north of Plumtree Substation, one open space parcel is located northeast of Chimney Drive, and another located north of Sky Edge Lane to the east of the existing ROW.

The Proposed Route traverses Stony Hill Road (US-6) which coincides with the Washington-Rochambeau National Historic Trail (NHT). The Washington-Rochambeau NHT is a 680-mile route that connects historical sites throughout the eastern US representing routes the American and French soldiers took in 1781 and 1782. However, no historic sites or stopping points along this trail are present in the vicinity of the Proposed Route. Where the existing ROW traverses the NHT, the surrounding area is densely developed for commercial industrial use.

Identified Visual Sites

Only two potential visual sites were identified in the vicinity of the Proposed Route and Plumtree Substation: Meckauer Park and Bennet Memorial Park. The two Town of Bethel parks are located between the Proposed Route and Shelter Rock Road. Bennet Memorial

[5] CT DEEP, *Connecticut Greenways Council: Officially Designated Greenways 2015*. http://www.ct.gov/deep/lib/deep/greenways/greenwaysmap2015.pdf

Park is located north of and adjacent to the Plumtree Substation. A strip of forest and Limekiln Brook is present between the substation and the Park. Meckauer Park is located adjacent to and north of Bennet Memorial Park; the two parks are connected by a small patch of un-forested space that provides a footpath. The Proposed Route passes through the property containing Meckauer Park, but does not traverse the portions of the parcel maintained as recreational space, and does not affect a short intra-park trail loop. Additional information specific to each park is included below:

- **Bennet Memorial Park, Bethel,** is an 8-acre parcel owned and operated by the Town of Bethel located off of Shelter Rock Road, Bethel. This property directly abuts the Plumtree Substation to the north. This park is a day-use park with public facilities such as a pavilion, kitchen, and picnic areas that are rented out to residents. Recreational facilities on the property include a small playground, a bocce court, horseshoes, and a pond for fishing. The pond is an impounded area of Limekiln Brook that is used by CT DEEP as a stocking location for trout.

- **Meckauer Park, Bethel,** is a 39-acre parcel with mixed recreational use similar to Bennet Memorial Park and is also owned and operated by the Town of Bethel on Shelter Rock Road. The park has public facilities, such as a pavilion, picnic areas, a playground. The playground area includes a basketball court, volleyball court, and an all-purpose field. A paved biking/walking trail loop is located on the property. This property is located adjacent to Bennet Memorial Park to the North. The maintained recreational areas of the park are located to the east of the Proposed Route and to the north of the Plumtree Substation. The park also includes an enclosed fenced area designated for dogs. To the west of the maintained recreational areas, the majority of the parcel is open space. The Proposed Route crosses the portion of the parcel maintained as open space.

Section 4
Results and Conclusions

4.1 Summary of Field Visits and Photo Simulations Results

Eversource's consultants visited the two visual sites (Meckauer Park and Bennet Memorial Park) and photographed each site from which the existing ROW or transmission line structures are visible. ROW road crossings with potential visual receptors such as naturalized areas (e.g., East Swamp Brook and Limekiln Brook floodplain forest system), residential areas, and high traffic urban areas (e.g., Target and Berkshire Corporate Park) were also identified for photo-simulations.

Meckauer Park and Bennet Memorial Park, the only two visual sites from which the existing transmission lines and structures are visible, share a similar viewshed. Appendices A and B include representative photographs (under both "leaf off" and "leaf on" conditions) of these two visual sites and identify the locations from which the existing transmission lines are visible, either in foreground or background views.

In addition to these two visual sites, during the field visits, photographs were also taken at publicly-accessible vantage points, such as where the existing ROW intersects public roads. Such locations are not considered visual sites, but were nonetheless photographed to provide the basis for representative comparisons of "before" and "after" Project conditions. Aside from the two parks and road crossings, based on field visits, other views of the ROW were typically precluded by intervening topography, vegetation, and land use features.

At road crossings and at the two visual sites (Meckauer and Bennet Memorial Parks) where views of the proposed transmission line were identified as a potentially noticeable component of the local view scape, Eversource prepared photo simulations depicting views of the ROW (illustrating the new and existing transmission lines) under two conditions:

1) During the fall (October 2015), when deciduous vegetation was leafed out (i.e., "leaf on" conditions); and

2) During winter (January 2016), when no deciduous vegetation was present (i.e., "leaf off" conditions).

In locations where "leaf off" conditions would not change the view the existing and proposed transmission lines and structures, such as direct views along the ROW where deciduous cover does not obstruct views, only "leaf on" conditions are represented in photo-simulations. While the "leaf off" conditions would represent the time periods where the ROWs and transmission lines would be most visible, the "leaf on" conditions represent time periods of reduced or fully obscured views.

The photo-simulations and an index identifying areas for which photo-simulations were prepared are included in Appendix A. Appendix B includes other representative photographs of the general visual setting of the Proposed Route, as viewed from selected public roads traversed by the existing Eversource ROW.

4.2 Discussion

Based on field inspections and photo-simulations, the proposed Project would not have a significant effect on the aesthetic environment near the two visual sites. For the most part, views of the proposed transmission facilities from Bennett and Meckauer parks will represent marginal changes compared to the present views of the existing ROW and existing overhead transmission lines. Where the ROW is visible at road crossings, only incremental changes are anticipated as discussed in detail later in this section.

Visual Sites

Views of the existing Plumtree Substation, including one existing structure that reveals above the existing canopy, are clearly visible through existing vegetation when looking south from the Bennet Memorial Park and are only visible from the southern edge of

Section 4 Results and Conclusions

Meckauer Park. However, no tree clearing near the substation and no changes within the substation are proposed that would change the existing views of the substation area.

Views of the existing ROW and transmission line structures from both Meckauer Park and Bennet Memorial Park are currently obscured by the deciduous, forested buffers during "leaf on" conditions. During "leaf off" conditions, existing structures are difficult to identify since the steel monopoles blend in with the tree trunks and are not a prominent features of the visual landscape. In higher elevations of Meckauer Park and from northwestern portions of the walking trail, some structures are partially visible above the existing canopy or visible within gaps in the canopy from select locations.

In general, proposed transmission line structures are proposed to be shorter than the existing structures which share the same ROW and proposed tree removal is unlikely to increase visibility of the existing ROW from the Parks. Since only some side trimming of the ROW will be necessary to accommodate the new 115-kV transmission line, distant to both parks, and since the structures will blend into the landscape similar to the existing structures, only incremental effects on the visual setting are anticipated.

As proposed, approximately 700-feet of deciduous forest cover will remain between Bennet Memorial Park and the ROW following the removal of approximately 40-70 feet of tree cover along the margins of the existing ROW. No tree removal is proposed around the perimeter of Plumtree Substation, and views of the substation will not be affected in this area. To the southwest of Bennet Memorial Park, the new 115-kV structures are proposed to be 30-40 feet in height whereas the existing structures are 110-120 feet in height.

Although a buffer of mixed-deciduous forest is present between Meckauer Park and the existing ROW ranging from 20 to 350 feet facing west and over 800 feet facing south, the proposed tree removal will not result in noticeable changes in views of the existing ROW. Only one small patch of forest (less than 500 square feet) and a few small patches of snag trees are proposed to the west of the park, which would result in incremental changes to the existing view. Additionally, to the west of Meckauer Park the new 115-kV structures are proposed to be approximately 80-100 feet in height whereas the existing structures

are approximately 150 feet in height. As a result, the new structures will be less visible than the existing structures.

Other Locations Along the Proposed Route (Non-Visual Sites)

Where the Eversource ROW traverses roads, views of the transmission line ROW are typically most prevalent directly at the crossing point. This is the case with views of the existing 321/1770 line structures, and will be true for the new 1887 Line. At road crossings with views directed down the Eversource ROW corridor, the new transmission line would have a focused, incremental effect on the views in these areas. This effect would result from both views of the transmission line structures / conductors and from removal of forested vegetation along the ROW near the new 115-kV line. Photo-simulations of the existing transmission lines and the proposed transmission line along representative segments of the ROW are provided in Appendix A (Photo Views 3-18).

In areas where tree cover is prevalent, tree clearing along the eastern edge of the Eversource ROW will generally increase the potential views of the ROW from locations to the east. However, topography, vegetative cover, and bends in the ROW alignment will combine to limit most views. Further, views of the new 115-kV transmission line will be incremental because the aesthetic environment along and in the vicinity of the Eversource ROW is already influenced by the existing overhead transmission line facilities, as well as land uses such as the Danbury landfill, industrial uses such as a gravel pit, and commercial uses.

Some residential areas proximate to the existing Eversource ROW either have full views of the existing transmission lines (e.g., Lexington Meadow Condominiums on Lexington Boulevard in the City of Danbury and Town of Bethel) and would only experience incremental changes resulting from the new 115-KV transmission line. Residential areas from Payne Road to Sky Edge Lane in the Town of Bethel currently have either no view to partial views of the existing ROW due to obscuring deciduous vegetation during "leaf on" conditions. Generally, during "leaf off" conditions views of transmission line structures may identifiable, but are not prominent features of the visual setting because the steel monopoles typically blend in with tree trunks even during "leaf off" conditions. For the most part, residential properties with yards in close proximity to the existing ROW will experience marginal increases in their view of the existing ROW and transmission

structures from the expansion of the maintained ROW width, which will decrease the amount of obscuring vegetation during "leaf on" and "leaf off" conditions. A few residences in the Town of Bethel have yards that overlap with the Eversource ROW and / or Eversource owned properties and as a result of ROW expansion will now have an open view to the ROW.

In areas in the vicinity of and south of Sky Edge Lane, vegetation particularly limits the view of the ROW and transmission line structures during "leaf on" conditions, but also provides screening from most locations during "leaf off" conditions due to the density of tree trunks or shrubby vegetation. Views of the ROW and transmission line structures are typically obscured in this portion of the Project, except at the actual ROW road crossings.

Along the northern portion of the Proposed Route in Bethel and Brookfield (i.e., the vicinity of Stony Hill Road north across I-84 to Brookfield Junction), the existing overhead transmission lines are very visible. However, in these areas, the ROW extends through commercial and industrial areas. In these areas, the new 115-kV transmission line also will be prominently visible.

4.3 Conclusion

In general, the installation of the new 115-kV line will have only incremental effects on views of the existing ROW and transmission lines. Some residential areas between Old Sherman Turnpike and US Route 6 will have increase views of the ROW. The proposed structures are generally shorter than the existing structures, and are less likely to be visible above canopy cover. The existing topography, vegetative cover, and bends in the ROW alignment will combine to limit most views of the ROW. For this reason, the proposed expansion of the cleared width of the ROW will typically have marginal effects on views of the ROW where forested buffers will remain between the ROW and adjacent land uses. Additionally, the aesthetic environment along and in the vicinity of the Eversource ROW is already influenced by the existing overhead transmission line facilities.

Section 4 Results and Conclusions

Based on the results of the photo simulations, views of the ROW and existing and proposed transmission lines from the two visual sites, Bennet Memorial and Meckauer Park, will be marginally affected by the Proposed Project. The existing ROW is typically not visible except in select locations. Where the existing ROW is visible from the parks, the installation of the new 115-kV line will not result in significant changes to the existing view due to limited amount of proposed tree removal and the fact that the proposed structures will be shorter than the existing structures.

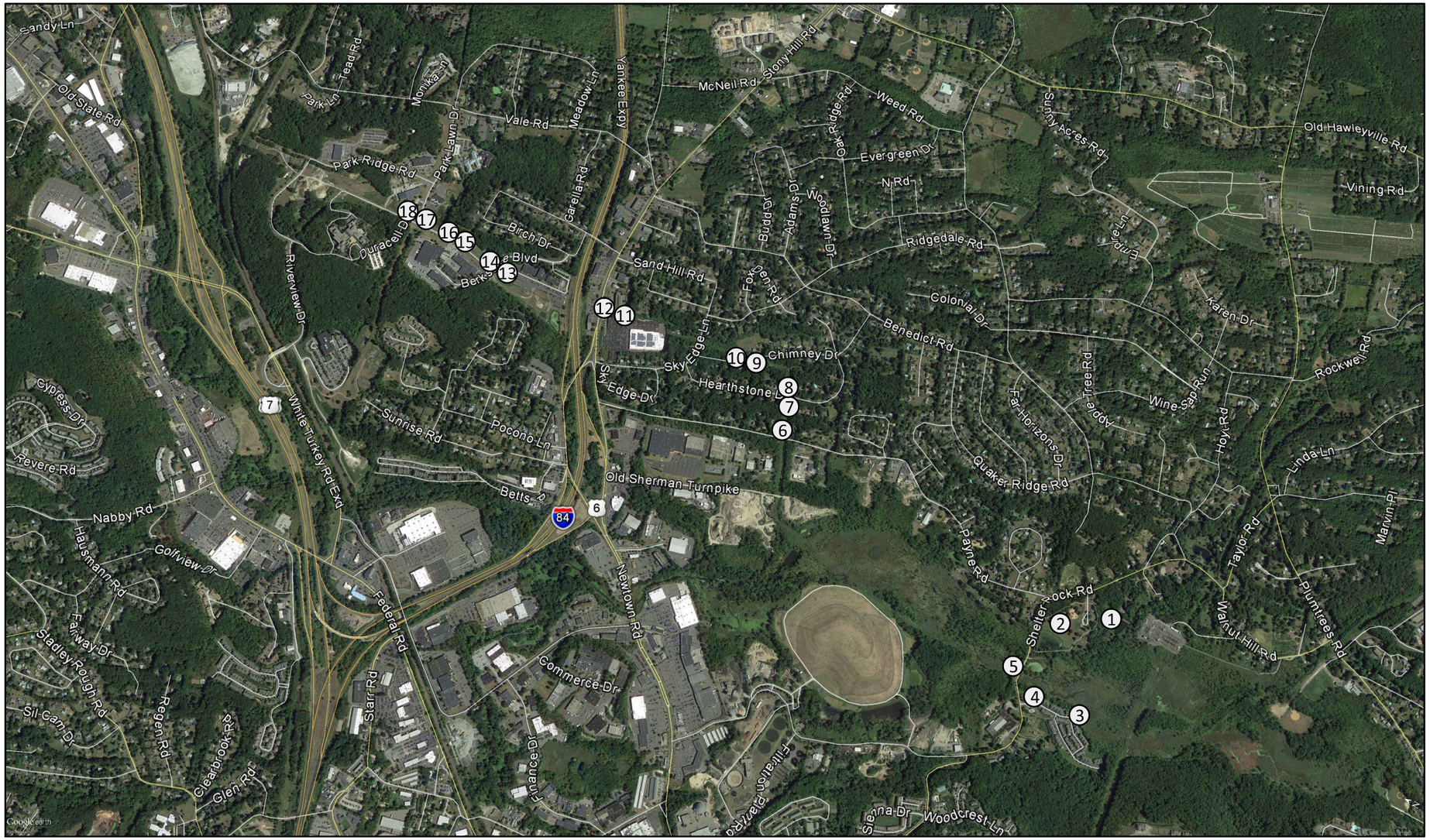
Appendix A:

Photographs of Potential Visual Sites and Photo-Simulations

Note: This page is intentionally left blank

SHEET INDEX

SITE LOCUS



PREPARED FOR:
EVERSOURCE ENERGY

PS–INDEX

VISUAL IMPACT SIMULATIONS
INDEX - SITE LOCUS

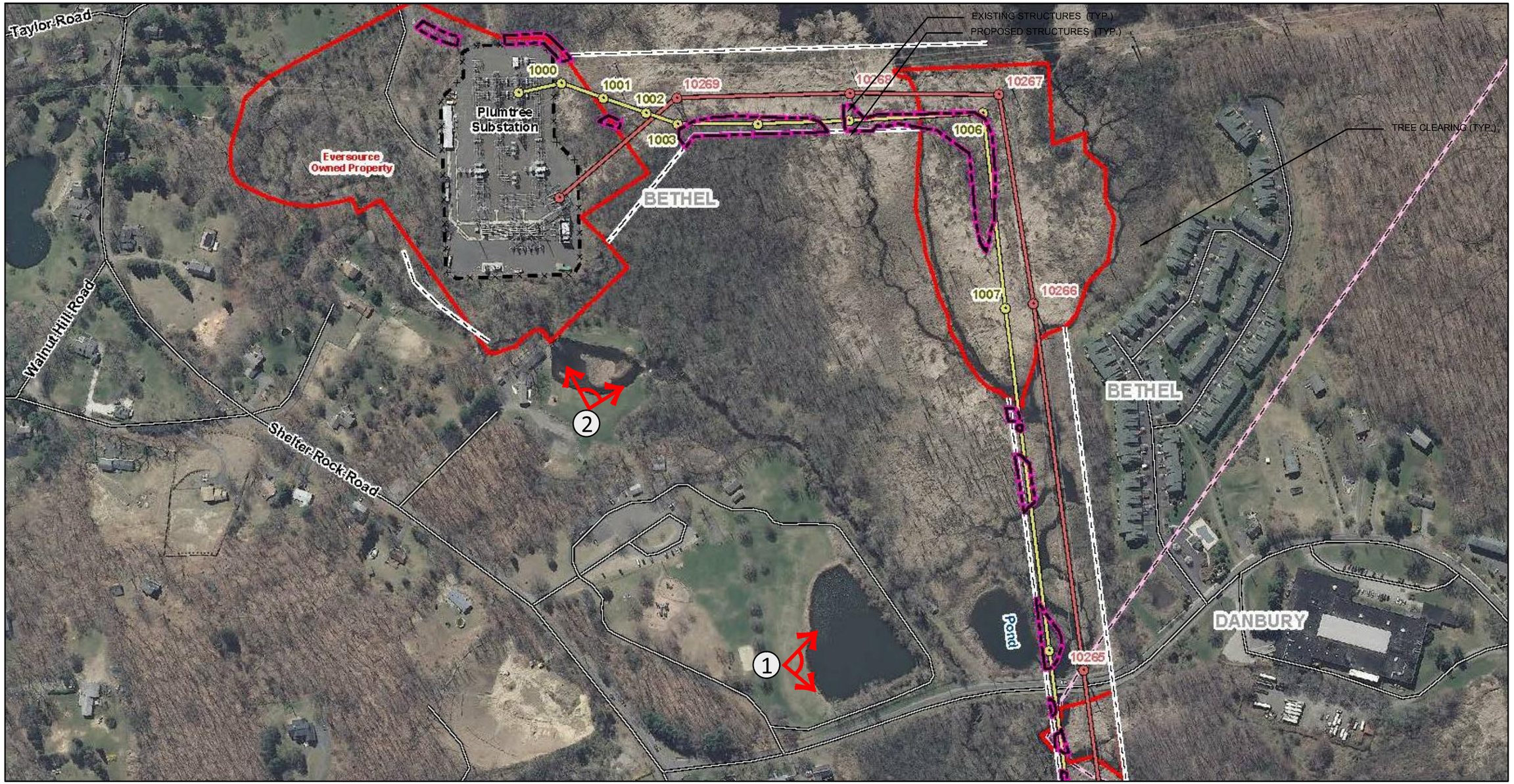
SOUTHWEST CONNECTICUT
RELIABILITY PROJECT

BSC GROUP
33 Waldo Street
Worcester, Massachusetts
01608
617 896 4490

Job No.: 89515.04 Date: 02–03–2016
Scale: NOTED Revised: 02–10–2016
Dwg. No: #.04–VIZ.DWG Figure:

File: 89515.04\ENV.\DRAW.\VISUALSIM.\...

This page is intentionally left blank



VIEW 1 LOOKING SOUTHWEST FROM MECKAUER PARK.
VIEW 2 LOOKING WEST FROM BENNETT MEMORIAL PARK.

PREPARED FOR:
EVERSOURCE ENERGY

NORTH

NOTES:
PROPOSED CONDITION FROM (SWCT RELIABILITY PROJECT PLUMTREE TO BROOKFIELD JUNCTION MAPS)

VISUAL IMPACT SIMULATIONS: MECKAUER PARK AND BENNETT MEM. PARK

SOUTHWEST CONNECTICUT RELIABILITY PROJECT

BSC GROUP
33 Waldo Street
Worcester, Massachusetts
01608
617 896 4490

Job No.: 89515.04 Date: 02-03-2016
Scale: NOTED Revised: 02-10-2016
Dwg. No: #.04-VIZ.DWG Figure:

File: 89515.04\ENV.\DRAW.\VISUALSIM.\...

WINTER LEAF OFF

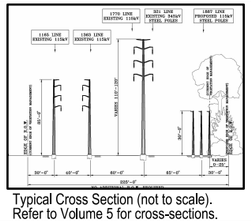
EXISTING VIEW 1

PROPOSED VIEW 1

AUTUMN LEAF ON
(NO PHOTO AVAILABLE)

PREPARED FOR:
EVERSOURCE ENERGY

PS-1



Typical Cross Section (not to scale).
Refer to Volume 5 for cross-sections.

NOTES:
SITE PHOTOS TAKEN ON 10/20/2015 AUTUMN AND 01/21/2016 WINTER
PROPOSED STRUCTURE HEIGHTS & LOCATIONS PROJECTED INTO PHOTO'S FROM 3D MODEL BASED ON MATCHED SITE TO MODEL CAMERA LOCATIONS.

VISUAL IMPACT SIMULATIONS: LOOKING SOUTHWEST FROM MECHAUER PARK

SOUTHWEST CONNECTICUT RELIABILITY PROJECT

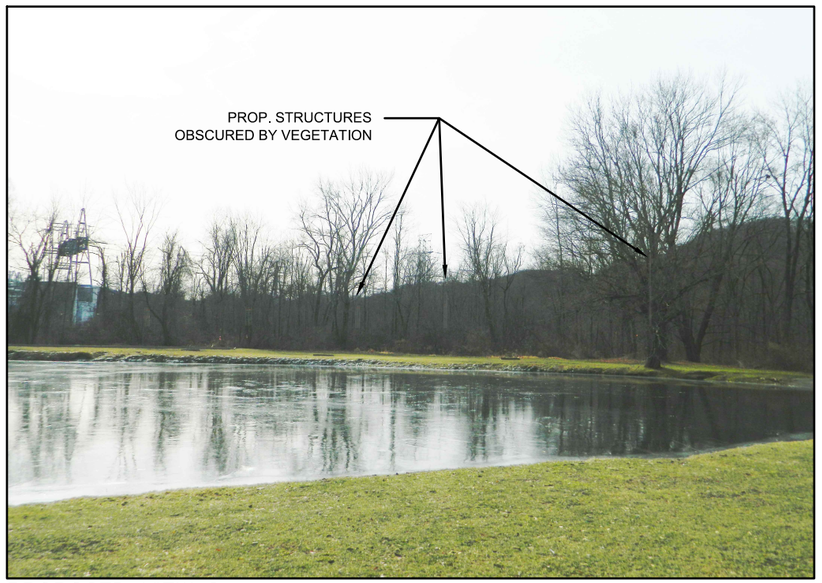
BSC GROUP
33 Waldo Street
Worcester, Massachusetts
01608
617 896 4490

Job No.: 89515.04 Date: 02-03-2016
Scale: NOTED Revised: 02-10-2016
Dwg. No: #.04-VIZ.DWG Figure:

File: 89515.04\ENV.\DRAW.\VISUALSIM.\...

WINTER LEAF OFF

EXISTING VIEW 2



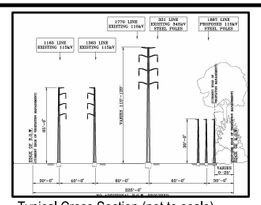
PROPOSED VIEW 2

AUTUMN LEAF ON
(NO PHOTO AVAILABLE)

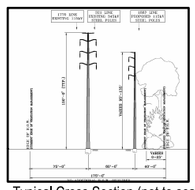
PREPARED FOR:

EVERSOURCE ENERGY

PS-2



Typical Cross Section (not to scale).
Refer to Volume 5 for cross-sections.



Typical Cross Section (not to scale).
Refer to Volume 5 for cross-sections.

NOTES:
SITE PHOTOS TAKEN ON 10/20/2015 AUTUMN AND 01/21/2016 WINTER
PROPOSED STRUCTURE HEIGHTS & LOCATIONS PROJECTED INTO PHOTO'S FROM 3D MODEL BASED ON MATCHED SITE TO MODEL CAMERA LOCATIONS.

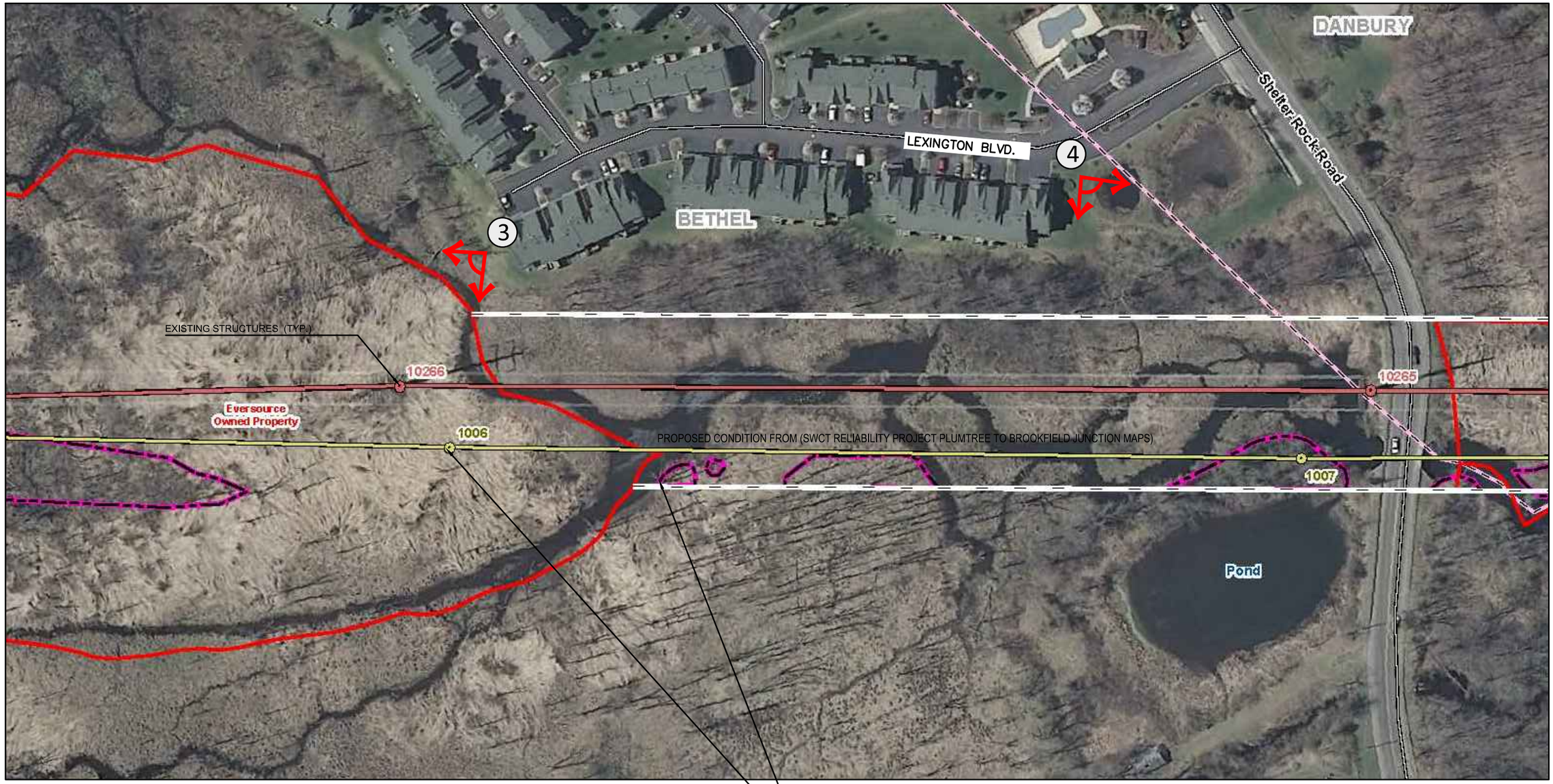
VISUAL IMPACT SIMULATIONS: LOOKING WEST FROM BENNETT MEM. PARKS

SOUTHWEST CONNECTICUT RELIABILITY PROJECT

BSC GROUP
33 Waldo Street
Worcester, Massachusetts
01608
617 896 4490

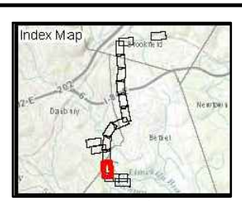
Job No.: 89515.04 Date: 02-03-2016
Scale: NOTED Revised: 02-10-2016
Dwg. No: #.04-VIZ.DWG Figure:

File: 89515.04\ENV.\DRAW.\VISUALSIM.\...

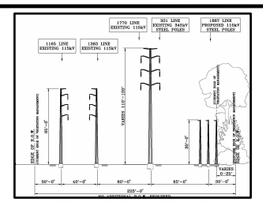


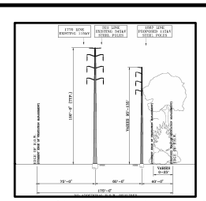
VIEW 3 LOOKING SOUTHEAST FROM END OF LEXINGTON BLVD.
VIEW 4 LOOKING NORTHEAST FROM RESIDENCE AT LEXINGTON BLVD.

PREPARED FOR:
EVERSOURCE ENERGY



Project Locus (not to scale)


Typical Cross Section (not to scale).
Refer to Volume 5 for cross-sections.


Typical Cross Section (not to scale).
Refer to Volume 5 for cross-sections.

NORTH

VISUAL IMPACT SIMULATION: LEXINGTON BLVD.

SOUTHWEST CONNECTICUT RELIABILITY PROJECT

BSC GROUP
33 Waldo Street
Worcester, Massachusetts
01608
617 896 4490

Job No.: 89515.04 Date: 02-03-2016
Scale: NOTED Revised: 02-10-2016
Dwg. No: #.04-VIZ.DWG Figure:

File: 89515.04\ENV.\DRAW.\VISUALSIM.\...

AUTUMN LEAF ON

EXISTING VIEW 3

PROPOSED VIEW 3

WINTER LEAF OFF

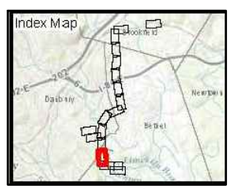
EXISTING VIEW 3

PROPOSED VIEW 3

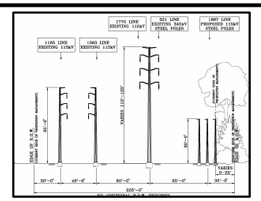
PREPARED FOR:

EVERSOURCE ENERGY

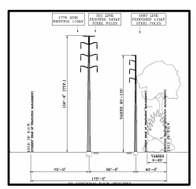
PS–3



Project Locus (not to scale)



Typical Cross Section (not to scale).
Refer to Volume 5 for cross-sections.



Typical Cross Section (not to scale).
Refer to Volume 5 for cross-sections.

NOTES:
SITE PHOTOS TAKEN ON 10/20/2015 AUTUMN AND 01/21/2016 WINTER
PROPOSED STRUCTURE HEIGHTS & LOCATIONS PROJECTED INTO PHOTO'S FROM 3D MODEL BASED ON MATCHED SITE TO MODEL CAMERA LOCATIONS.

VISUAL IMPACT SIMULATIONS: LOOKING SOUTHEAST FROM END OF LEXINGTON BLVD.

SOUTHWEST CONNECTICUT RELIABILITY PROJECT

BSC GROUP
33 Waldo Street
Worcester, Massachusetts
01608
617 896 4490

Job No.: 89515.04 Date: 02–03–2016
Scale: NOTED Revised: 02–10–2016
Dwg. No: #.04–VIZ.DWG Figure:

File: 89515.04\ENV.\DRAW.\VISUALSIM.\...

AUTUMN LEAF ON

EXISTING VIEW 4

PROPOSED VIEW 4

WINTER LEAF OFF

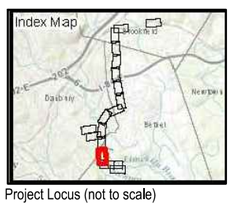
EXISTING VIEW 4

PROPOSED VIEW 4

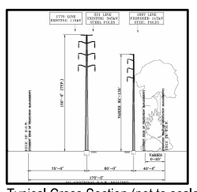
PREPARED FOR:

EVERSOURCE ENERGY

PS–4



Project Locus (not to scale)



Typical Cross Section (not to scale).
Refer to Volume 5 for cross-sections.

NOTES:
SITE PHOTOS TAKEN ON 10/20/2015 AUTUMN AND 01/21/2016 WINTER
PROPOSED STRUCTURE HEIGHTS & LOCATIONS PROJECTED INTO PHOTO'S FROM 3D MODEL BASED ON MATCHED SITE TO MODEL CAMERA LOCATIONS.

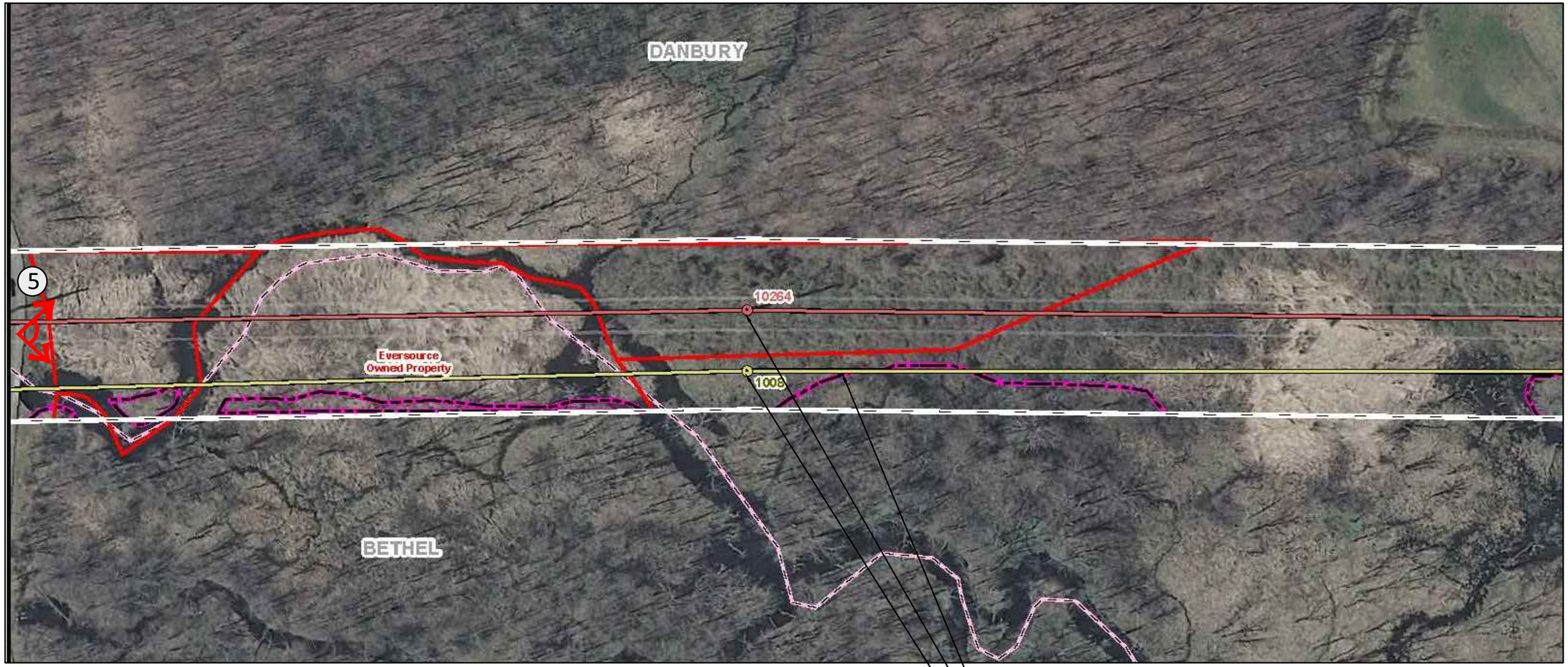
VISUAL IMPACT SIMULATIONS: LOOKING NORTHEAST FROM RESIDENCES AT LEXINGTON BLVD.

SOUTHWEST CONNECTICUT RELIABILITY PROJECT

BSC GROUP
33 Waldo Street
Worcester, Massachusetts
01608
617 896 4490

Job No.: 89515.04 Date: 02–03–2016
Scale: NOTED Revised: 02–10–2016
Dwg. No: #.04–VIZ.DWG Figure:

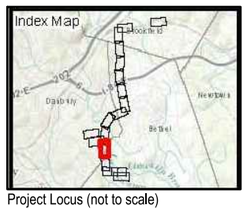
File: 89515.04\ENV.\DRAW.\VISUALSIM.\...



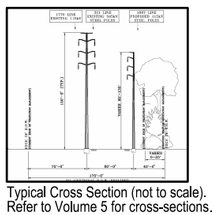
VIEW 5 LOOKING NORTH FROM SHELTER ROCK RD.

PREPARED FOR:

EVERSOURCE ENERGY



Project Locus (not to scale)



Typical Cross Section (not to scale).
Refer to Volume 5 for cross-sections.

NOTES:
SITE PHOTOS TAKEN ON 10/20/2015 AUTUMN AND 01/21/2016 WINTER
PROPOSED STRUCTURE HEIGHTS & LOCATIONS PROJECTED INTO PHOTO'S FROM 3D MODEL BASED ON MATCHED SITE TO MODEL CAMERA LOCATIONS.

VISUAL IMPACT SIMULATIONS: SHELTER ROCK RD.

SOUTHWEST CONNECTICUT RELIABILITY PROJECT

BSC GROUP
33 Waldo Street
Worcester, Massachusetts
01608
617 896 4490

Job No.: 89515.04 Date: 02–03–2016
Scale: NOTED Revised: 02–10–2016
Dwg. No: #.04–VIZ.DWG Figure:

File: 89515.04\ENV.\DRAW.\VISUALSIM.\...

AUTUMN LEAF ON

EXISTING VIEW 5

PROPOSED VIEW 5

WINTER LEAF OFF

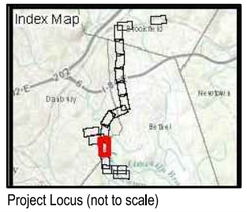
EXISTING VIEW 5

PROPOSED VIEW 5

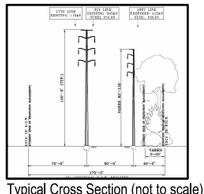
PREPARED FOR:

EVERSOURCE ENERGY

PS–5



Project Locus (not to scale)



Typical Cross Section (not to scale).
Refer to Volume 5 for cross-sections.

NOTES:
SITE PHOTOS TAKEN ON 10/20/2015 AUTUMN AND 01/21/2016 WINTER
PROPOSED STRUCTURE HEIGHTS & LOCATIONS PROJECTED INTO PHOTO'S FROM 3D MODEL BASED ON MATCHED SITE TO MODEL CAMERA LOCATIONS.

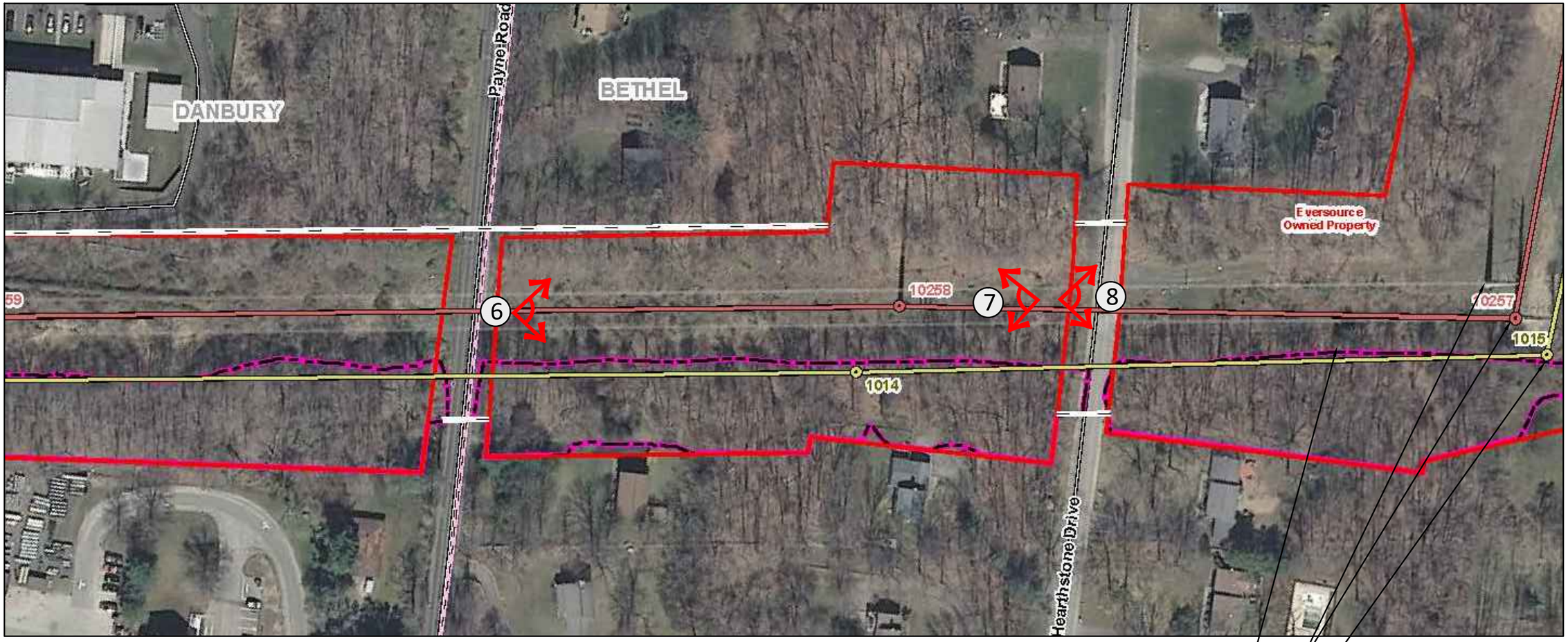
VISUAL IMPACT SIMULATIONS: LOOKING NORTH FROM SHELTER ROCK RD.

SOUTHWEST CONNECTICUT RELIABILITY PROJECT

BSC GROUP
33 Waldo Street
Worcester, Massachusetts
01608
617 896 4490

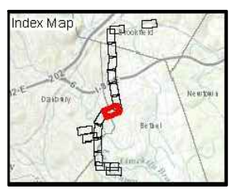
Job No.: 89515.04 Date: 02–03–2016
Scale: NOTED Revised: 02–10–2016
Dwg. No: #.04–VIZ.DWG Figure:

File: 89515.04\ENV.\DRAW.\VISUALSIM.\...

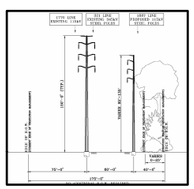


VIEW 6 LOOKING EAST FROM PAYNE RD.
VIEW 7 LOOKING WEST FROM HEARTHSTONE DR.
VIEW 8 LOOKING EAST FROM HEARTHSTONE DR.

PREPARED FOR:
EVERSOURCE ENERGY



Project Locus (not to scale)


Typical Cross Section (not to scale).
Refer to Volume 5 for cross-sections.

NOTE: PAYNE RD. WEST NOT INCLUDED NO SENSITIVE RECEPTOR IMPACT.

VISUAL IMPACT SIMULATIONS: PAYNE RD. & HEARTH STONE DR.

SOUTHWEST CONNECTICUT RELIABILITY PROJECT

BSC GROUP
33 Waldo Street
Worcester, Massachusetts
01608
617 896 4490

Job No.: 89515.04 Date: 02-03-2016
Scale: NOTED Revised: 02-10-2016
Dwg. No: #.04-VIZ.DWG Figure:

File: 89515.04\ENV.\DRAW.\VISUALSIM.\...

AUTUMN LEAF ON

EXISTING VIEW 7

PROPOSED VIEW 7

WINTER LEAF OFF

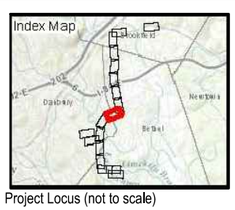
EXISTING VIEW 7

PROPOSED VIEW 7

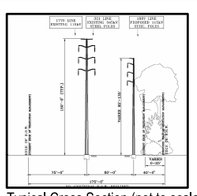
PREPARED FOR:

EVERSOURCE ENERGY

PS-7



Project Locus (not to scale)



Typical Cross Section (not to scale).
Refer to Volume 5 for cross-sections.

NOTES:
SITE PHOTOS TAKEN ON 10/20/2015 AUTUMN AND 01/21/2016 WINTER
PROPOSED STRUCTURE HEIGHTS & LOCATIONS PROJECTED INTO PHOTO'S FROM 3D MODEL BASED ON MATCHED SITE TO MODEL CAMERA LOCATIONS.

LOOKING WEST FROM HEARTHSTONE DR.

SOUTHWEST CONNECTICUT RELIABILITY PROJECT

BSC GROUP
33 Waldo Street
Worcester, Massachusetts
01608
617 896 4490

Job No.: 89515.04 Date: 02-03-2016
Scale: NOTED Revised: 02-10-2016
Dwg. No: #.04-VIZ.DWG Figure:

File: 89515.04\ENV.\DRAW.\VISUALSIM.\...

AUTUMN LEAF ON

EXISTING VIEW 6

PROPOSED VIEW 6

WINTER LEAF OFF

EXISTING VIEW 6

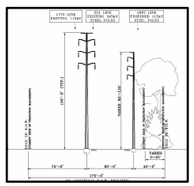
PROPOSED VIEW 6

PREPARED FOR:

EVERSOURCE ENERGY

PS–6

Project Locus (not to scale)



Typical Cross Section (not to scale).
Refer to Volume 5 for cross-sections.

NOTES:
SITE PHOTOS TAKEN ON 10/20/2015 AUTUMN AND 01/21/2016 WINTER
PROPOSED STRUCTURE HEIGHTS & LOCATIONS PROJECTED INTO PHOTO'S FROM 3D MODEL BASED ON MATCHED SITE TO MODEL CAMERA LOCATIONS.

LOOKING EAST
FROM PAYNE RD.

SOUTHWEST CONNECTICUT
RELIABILITY PROJECT

BSC GROUP
33 Waldo Street
Worcester, Massachusetts
01608
617 896 4490

Job No.: 89515.04 Date: 02–03–2016
Scale: NOTED Revised: 02–10–2016
Dwg. No: #.04–VIZ.DWG Figure:

File: 89515.04\ENV.\DRAW.\VISUALSIM.\...

AUTUMN LEAF ON

EXISTING VIEW 8

WINTER LEAF OFF

EXISTING VIEW 8

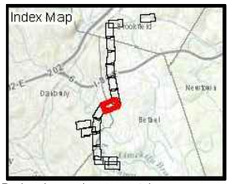
PROPOSED VIEW 8

PROPOSED VIEW 8

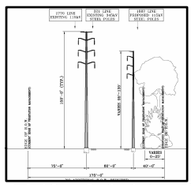
PREPARED FOR:

EVERSOURCE ENERGY

PS-8



Project Locus (not to scale)



Typical Cross Section (not to scale).
Refer to Volume 5 for cross-sections.

NOTES:
SITE PHOTOS TAKEN ON 10/20/2015 AUTUMN AND 01/21/2016 WINTER
PROPOSED STRUCTURE HEIGHTS & LOCATIONS PROJECTED INTO PHOTO'S FROM 3D MODEL BASED ON MATCHED SITE TO MODEL CAMERA LOCATIONS.

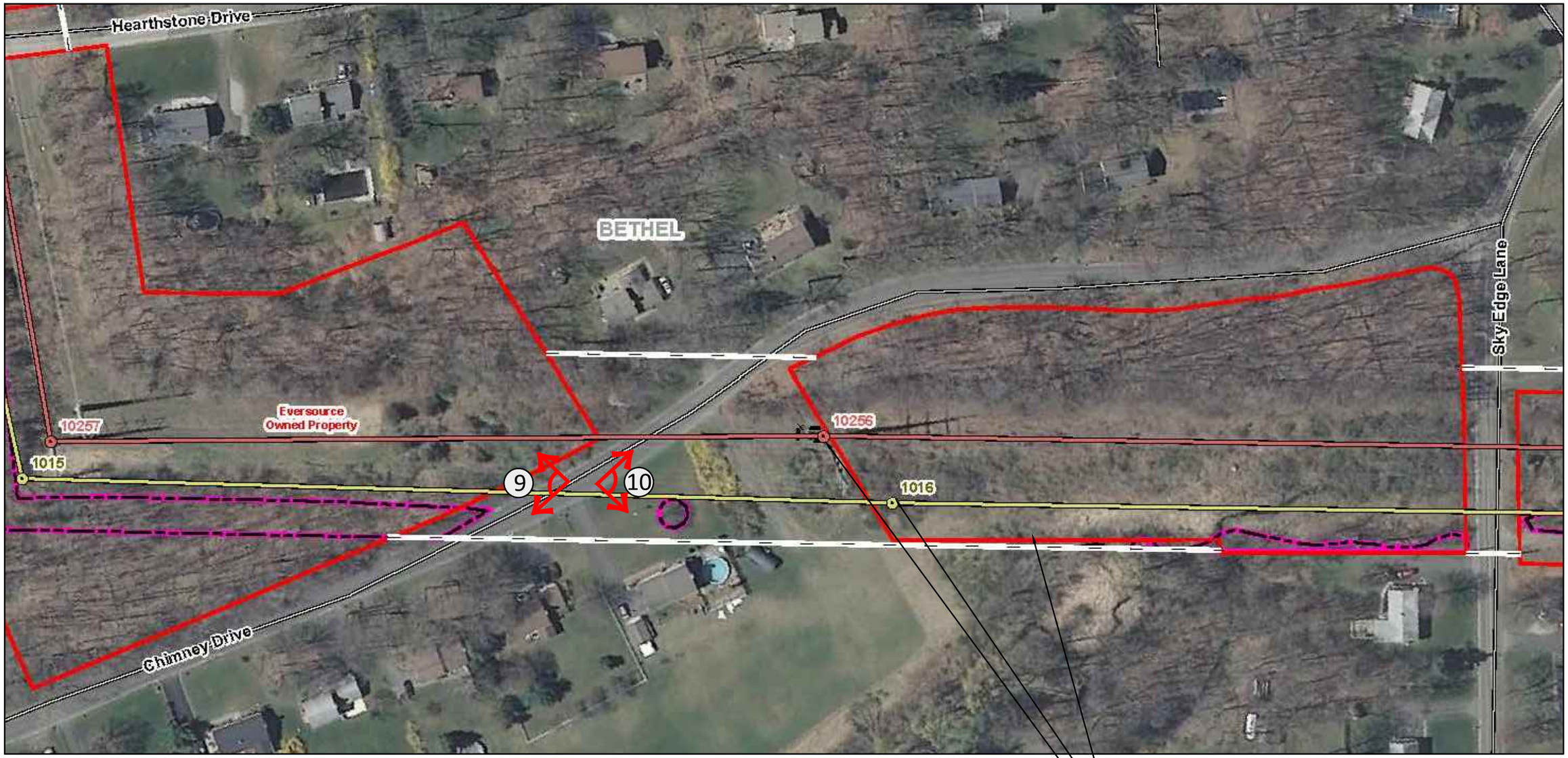
VISUAL IMPACT SIMULATIONS: LOOKING EAST FROM HEARTHSTONE DR.

SOUTHWEST CONNECTICUT RELIABILITY PROJECT

BSC GROUP
33 Waldo Street
Worcester, Massachusetts
01608
617 896 4490

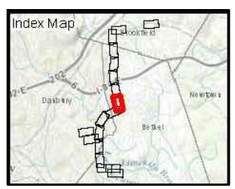
Job No.: 89515.04 Date: 02-03-2016
Scale: NOTED Revised: 02-10-2016
Dwg. No: #.04-VIZ.DWG Figure:

File: 89515.04\ENV.\DRAW.\VISUALSIM.\...

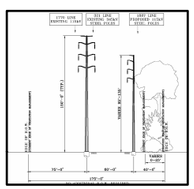


VIEW 9 LOOKING SOUTH FROM CHIMNEY DR.
VIEW 10 LOOKING NORTH FROM CHIMNEY DR.

PREPARED FOR:
EVERSOURCE ENERGY



Project Locus (not to scale)


Typical Cross Section (not to scale).
Refer to Volume 5 for cross-sections.

NORTH

VISUAL IMPACT SIMULATIONS: CHIMNEY DR.

SOUTHWEST CONNECTICUT RELIABILITY PROJECT

BSC GROUP
33 Waldo Street
Worcester, Massachusetts
01608
617 896 4490

Job No.: 89515.04 Date: 02-03-2016
Scale: NOTED Revised: 02-10-2016
Dwg. No: #.04-VIZ.DWG Figure:

File: 89515.04\ENV.\DRAW.\VISUALSIM.\...

AUTUMN LEAF ON

EXISTING VIEW 9

PROPOSED VIEW 9

WINTER LEAF OFF

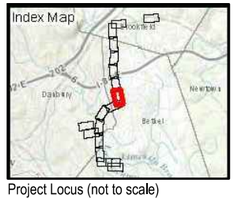
EXISTING VIEW 9

PROPOSED VIEW 9

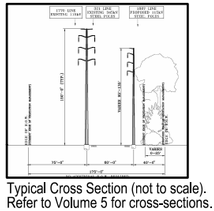
PREPARED FOR:

EVERSOURCE ENERGY

PS-9



Project Locus (not to scale)



Typical Cross Section (not to scale).
Refer to Volume 5 for cross-sections.

NOTES:
SITE PHOTOS TAKEN ON 10/20/2015 AUTUMN AND 01/21/2016 WINTER
PROPOSED STRUCTURE HEIGHTS & LOCATIONS PROJECTED INTO PHOTO'S FROM 3D MODEL BASED ON MATCHED SITE TO MODEL CAMERA LOCATIONS.

VISUAL IMPACT SIMULATIONS: LOOKING SOUTH FROM CHIMNEY DR.

SOUTHWEST CONNECTICUT RELIABILITY PROJECT

BSC GROUP
33 Waldo Street
Worcester, Massachusetts
01608
617 896 4490

Job No.: 89515.04 Date: 02-03-2016
Scale: NOTED Revised: 02-10-2016
Dwg. No: #.04-VIZ.DWG Figure:

File: 89515.04\ENV.\DRAW.\VISUALSIM.\...

AUTUMN LEAF ON

EXISTING VIEW 10

PROPOSED VIEW 10

WINTER LEAF OFF

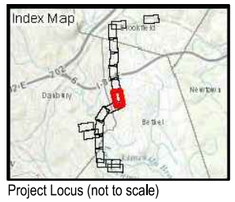
EXISTING VIEW 10

PROPOSED VIEW 10

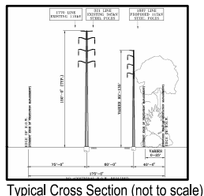
PREPARED FOR:

EVERSOURCE ENERGY

PS–10



Project Locus (not to scale)



Typical Cross Section (not to scale).
Refer to Volume 5 for cross-sections.

NOTES:
SITE PHOTOS TAKEN ON 10/20/2015 AUTUMN AND 01/21/2016 WINTER
PROPOSED STRUCTURE HEIGHTS & LOCATIONS PROJECTED INTO PHOTO'S FROM 3D MODEL BASED ON MATCHED SITE TO MODEL CAMERA LOCATIONS.

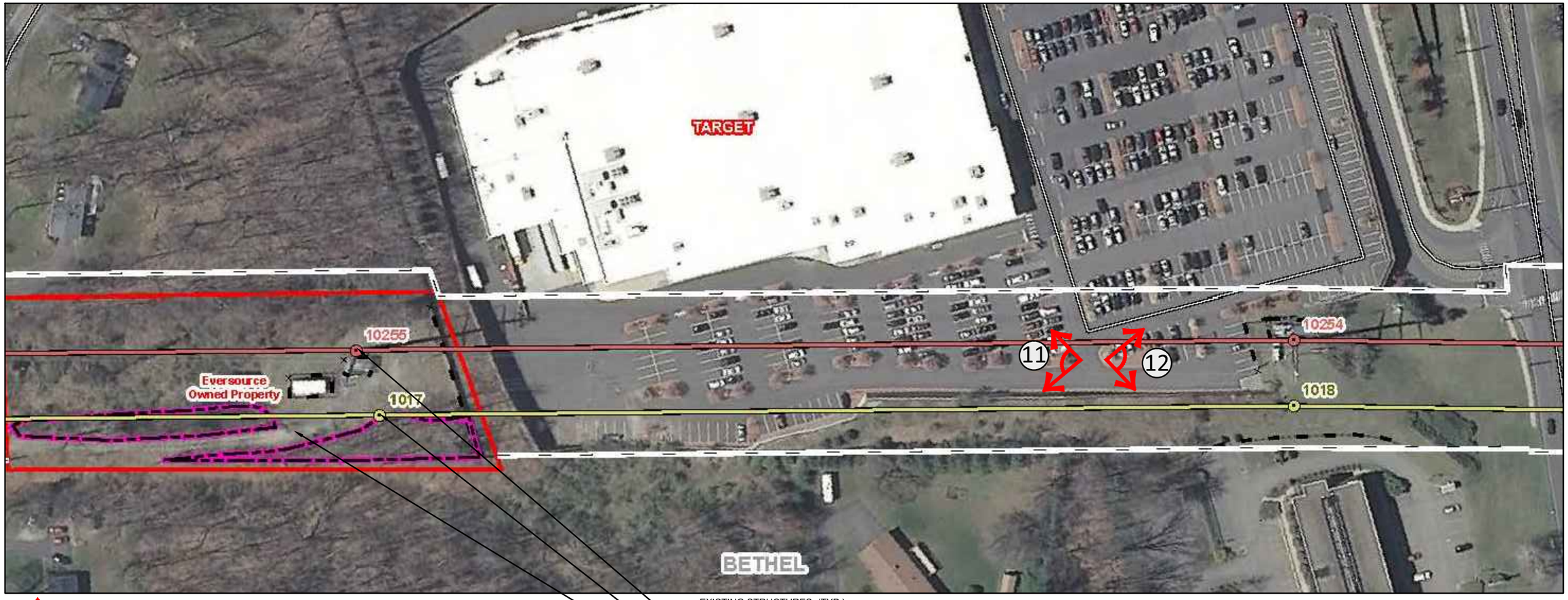
VISUAL IMPACT SIMULATIONS: LOOKING NORTH FROM CHIMNEY DR.

SOUTHWEST CONNECTICUT RELIABILITY PROJECT

BSC GROUP
33 Waldo Street
Worcester, Massachusetts
01608
617 896 4490

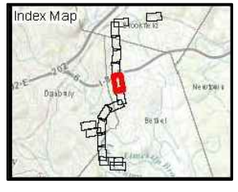
Job No.: 89515.04 Date: 02–03–2016
Scale: NOTED Revised: 02–10–2016
Dwg. No: #.04–VIZ.DWG Figure:

File: 89515.04\ENV.\DRAW.\VISUALSIM.\...

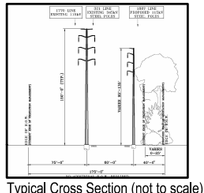


VIEW 11 LOOKING NORTH FROM END OF LEXINGTON BLVD.
VIEW 12 LOOKING SOUTH FROM RESIDENCE AT LEXINGTON BLVD.

PREPARED FOR:
EVERSOURCE ENERGY



Project Locus (not to scale)


Typical Cross Section (not to scale).
Refer to Volume 5 for cross-sections.

NORTH

VISUAL IMPACT SIMULATIONS: TARGET AT STONY HILL RD.

SOUTHWEST CONNECTICUT RELIABILITY PROJECT

BSC GROUP
33 Waldo Street
Worcester, Massachusetts
01608
617 896 4490

Job No.: 89515.04 Date: 02-03-2016
Scale: NOTED Revised: 02-10-2016
Dwg. No: #.04-VIZ.DWG Figure:

File: 89515.04\ENV.\DRAW.\VISUALSIM.\...

AUTUMN LEAF ON

EXISTING VIEW 12

PROPOSED VIEW 12

WINTER LEAF OFF

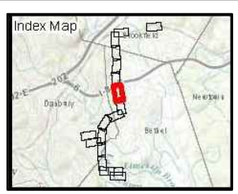
EXISTING VIEW 12

PROPOSED VIEW 12

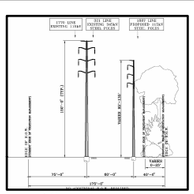
PREPARED FOR:

EVERSOURCE ENERGY

PS–12



Project Locus (not to scale)



Typical Cross Section (not to scale).
Refer to Volume 5 for cross-sections.

NOTES:
SITE PHOTOS TAKEN ON 10/20/2015 AUTUMN AND 01/21/2016 WINTER
PROPOSED STRUCTURE HEIGHTS & LOCATIONS PROJECTED INTO PHOTO'S FROM 3D MODEL BASED ON MATCHED SITE TO MODEL CAMERA LOCATIONS.

VISUAL IMPACT SIMULATIONS: LOOKING NORTH FROM TARGET AT STONY HILL

SOUTHWEST CONNECTICUT RELIABILITY PROJECT

BSC GROUP
33 Waldo Street
Worcester, Massachusetts
01608
617 896 4490

Job No.: 89515.04 Date: 02–03–2016
Scale: NOTED Revised: 02–10–2016
Dwg. No: #.04–VIZ.DWG Figure: 6.1

File: 89515.04\ENV.\DRAW.\VISUALSIM.\...

AUTUMN LEAF ON

EXISTING VIEW 11

PROPOSED VIEW 11

WINTER LEAF OFF

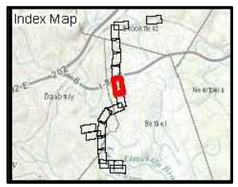
EXISTING VIEW 11

PROPOSED VIEW 11

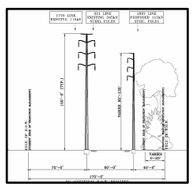
PREPARED FOR:

EVERSOURCE ENERGY

PS–11



Project Locus (not to scale)



Typical Cross Section (not to scale).
Refer to Volume 5 for cross-sections.

NOTES:
SITE PHOTOS TAKEN ON 10/20/2015 AUTUMN AND 01/21/2016 WINTER
PROPOSED STRUCTURE HEIGHTS & LOCATIONS PROJECTED INTO PHOTO'S FROM 3D MODEL BASED ON MATCHED SITE TO MODEL CAMERA LOCATIONS.

VISUAL IMPACT SIMULATIONS LOOKING SOUTH FROM TARGET AT STONY HILL

SOUTHWEST CONNECTICUT RELIABILITY PROJECT

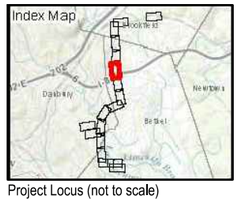
BSC GROUP
33 Waldo Street
Worcester, Massachusetts
01608
617 896 4490

Job No.: 89515.04 Date: 02–03–2016
Scale: NOTED Revised: 02–10–2016
Dwg. No: #.04–VIZ.DWG Figure:

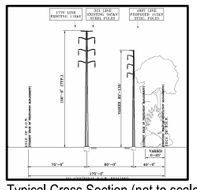
File: 89515.04\ENV.\DRAW.\VISUALSIM.\...

VIEW 13 LOOKING SOUTH FROM BERKSHIRE BLVD.
VIEW 14 LOOKING NORTH FROM BERKSHIRE BLVD.

PREPARED FOR:
EVERSOURCE ENERGY



Project Locus (not to scale)


Typical Cross Section (not to scale).
Refer to Volume 5 for cross-sections.

NORTH

VISUAL IMPACT SIMULATIONS: BERKSHIRE BLVD.

SOUTHWEST CONNECTICUT RELIABILITY PROJECT

BSC GROUP
33 Waldo Street
Worcester, Massachusetts
01608
617 896 4490

Job No.: 89515.04 Date: 02-03-2016
Scale: NOTED Revised: 02-10-2016
Dwg. No: #.04-VIZ.DWG Figure:

File: 89515.04\ENV.\DRAW.\VISUALSIM.\...

AUTUMN LEAF ON

EXISTING VIEW 13

PROPOSED VIEW 13

WINTER LEAF OFF

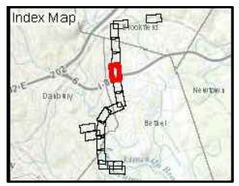
EXISTING VIEW 13

PROPOSED VIEW 13

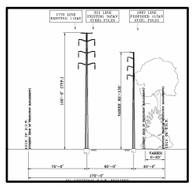
PREPARED FOR:

EVERSOURCE ENERGY

PS–13



Project Locus (not to scale)



Typical Cross Section (not to scale).
Refer to Volume 5 for cross-sections.

NOTES:
SITE PHOTOS TAKEN ON 10/20/2015 AUTUMN AND 01/21/2016 WINTER
PROPOSED STRUCTURE HEIGHTS & LOCATIONS PROJECTED INTO PHOTO'S FROM 3D MODEL BASED ON MATCHED SITE TO MODEL CAMERA LOCATIONS.

LOOKING SOUTH FROM BERKSHIRE BLVD.

SOUTHWEST CONNECTICUT RELIABILITY PROJECT

BSC GROUP
33 Waldo Street
Worcester, Massachusetts
01608
617 896 4490

Job No.: 89515.04 Date: 02–03–2016
Scale: NOTED Revised: 02–10–2016
Dwg. No: #.04–VIZ.DWG Figure:

File: 89515.04\ENV.\DRAW.\VISUALSIM.\...

AUTUMN LEAF ON

EXISTING VIEW 14

PROPOSED VIEW 14

WINTER LEAF OFF

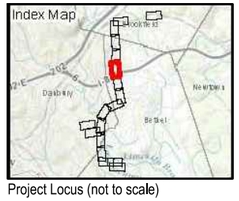
EXISTING VIEW 14

PROPOSED VIEW 14

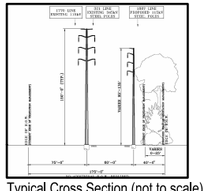
PREPARED FOR:

EVERSOURCE ENERGY

PS–14



Project Locus (not to scale)



Typical Cross Section (not to scale).
Refer to Volume 5 for cross-sections.

NOTES:
SITE PHOTOS TAKEN ON 10/20/2015 AUTUMN AND 01/21/2016 WINTER
PROPOSED STRUCTURE HEIGHTS & LOCATIONS PROJECTED INTO PHOTO'S FROM 3D MODEL BASED ON MATCHED SITE TO MODEL CAMERA LOCATIONS.

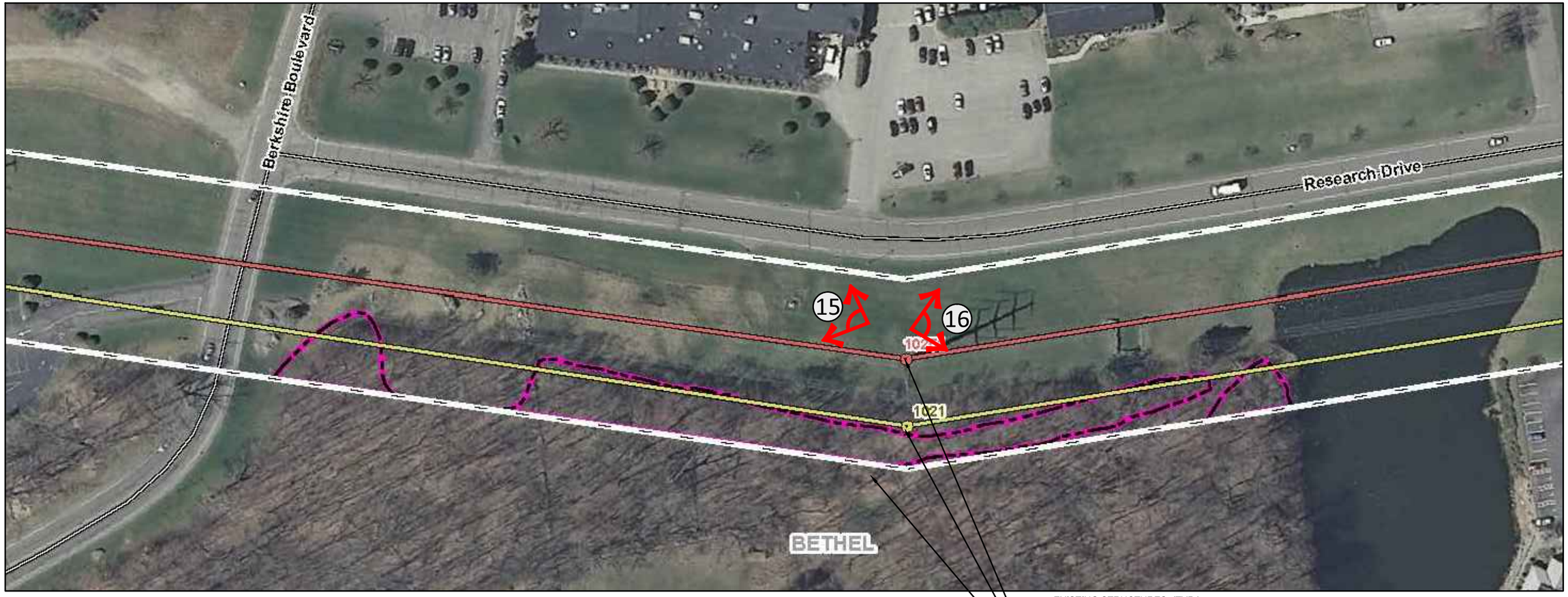
LOOKING NORTH FROM BERKSHIRE BLVD.

SOUTHWEST CONNECTICUT RELIABILITY PROJECT

BSC GROUP
33 Waldo Street
Worcester, Massachusetts
01608
617 896 4490

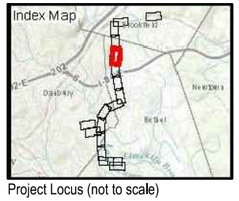
Job No.: 89515.04 Date: 02–03–2016
Scale: NOTED Revised: 02–10–2016
Dwg. No: #.04–VIZ.DWG Figure:

File: 89515.04\ENV.\DRAW.\VISUALSIM.\...

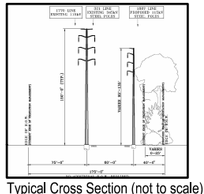


VIEW 15 LOOKING SOUTH FROM RESEARCH DR.
VIEW 16 LOOKING NORTH FROM RESEARCH DR.

PREPARED FOR:
EVERSOURCE ENERGY



Project Locus (not to scale)


Typical Cross Section (not to scale).
Refer to Volume 5 for cross-sections.

NORTH

VISUAL IMPACT SIMULATIONS: RESEARCH DR.

SOUTHWEST CONNECTICUT RELIABILITY PROJECT

BSC GROUP
33 Waldo Street
Worcester, Massachusetts
01608
617 896 4490

Job No.: 89515.04 Date: 02-03-2016
Scale: NOTED Revised: 02-10-2016
Dwg. No: #.04-VIZ.DWG Figure:

File: 89515.04\ENV.\DRAW.\VISUALSIM.\...

AUTUMN LEAF ON

EXISTING VIEW 15

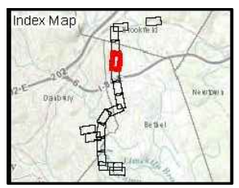
PROPOSED VIEW 15

WINTER LEAF OFF
(NO PHOTO PROVIDED)

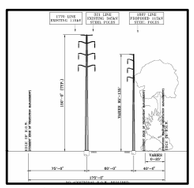
PREPARED FOR:

EVERSOURCE ENERGY

PS–15



Project Locus (not to scale)



Typical Cross Section (not to scale).
Refer to Volume 5 for cross-sections.

NOTES:
SITE PHOTOS TAKEN ON 10/20/2015 AUTUMN AND 01/21/2016 WINTER
PROPOSED STRUCTURE HEIGHTS & LOCATIONS PROJECTED INTO PHOTO'S FROM 3D MODEL BASED ON MATCHED SITE TO MODEL CAMERA LOCATIONS.

VISUAL IMPACT SIMULATIONS: LOOKING SOUTH FROM RESEARCH DR.

SOUTHWEST CONNECTICUT RELIABILITY PROJECT

BSC GROUP
33 Waldo Street
Worcester, Massachusetts
01608
617 896 4490

Job No.: 89515.04 Date: 02–03–2016
Scale: NOTED Revised: 02–10–2016
Dwg. No: #.04–VIZ.DWG Figure:

File: 89515.04\ENV.\DRAW.\VISUALSIM.\...

AUTUMN LEAF ON

EXISTING VIEW 16

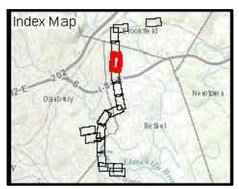
PROPOSED VIEW 16

WINTER LEAF OFF
(NO PHOTO PROVIDED)

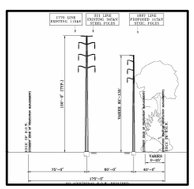
PREPARED FOR:

EVERSOURCE ENERGY

PS–16



Project Locus (not to scale)



Typical Cross Section (not to scale).
Refer to Volume 5 for cross-sections.

NOTES:
SITE PHOTOS TAKEN ON 10/20/2015 AUTUMN AND 01/21/2016 WINTER
PROPOSED STRUCTURE HEIGHTS & LOCATIONS PROJECTED INTO PHOTO'S FROM 3D MODEL BASED ON MATCHED SITE TO MODEL CAMERA LOCATIONS.

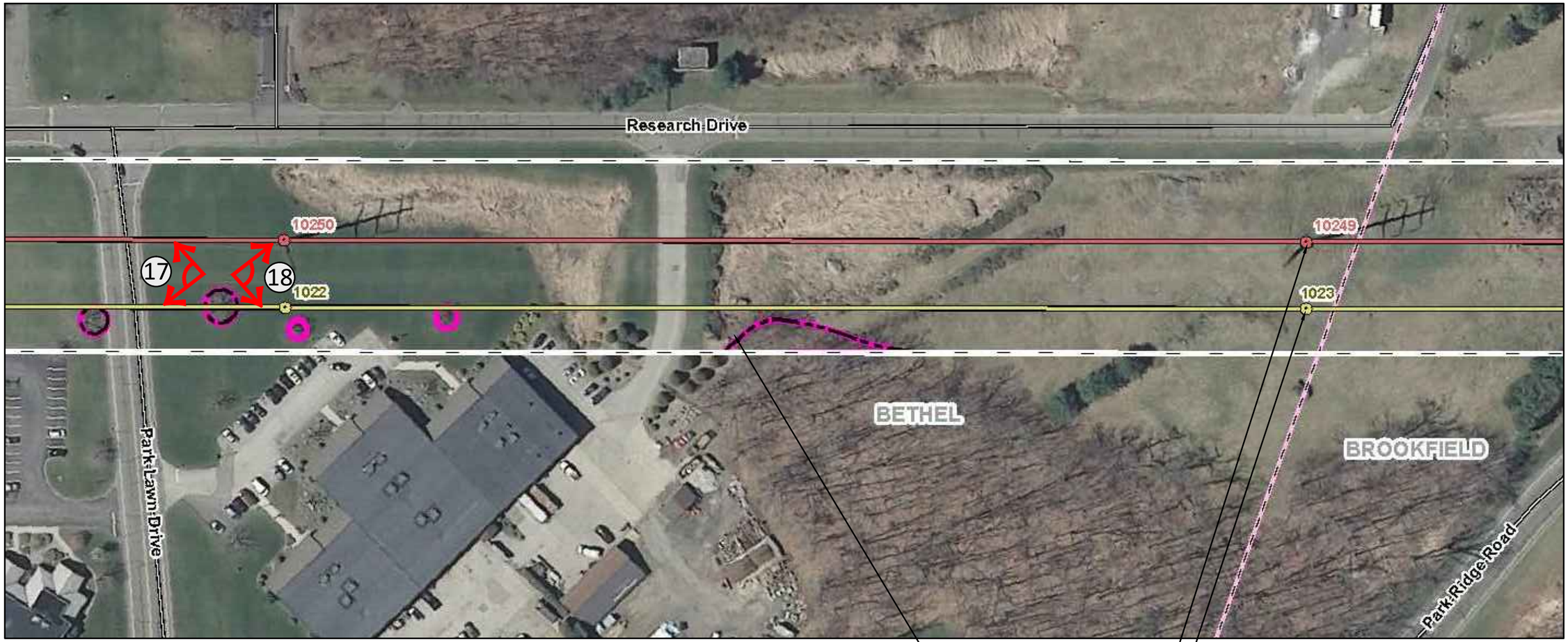
VISUAL IMPACT SIMULATIONS: LOOKING NORTH FROM RESEARCH DRIVE

SOUTHWEST CONNECTICUT RELIABILITY PROJECT

BSC GROUP
33 Waldo Street
Worcester, Massachusetts
01608
617 896 4490

Job No.: 89515.04 Date: 02–03–2016
Scale: NOTED Revised: 02–10–2016
Dwg. No: #.04–VIZ.DWG Figure:

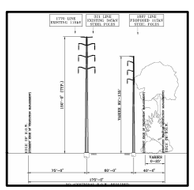
File: 89515.04\ENV.\DRAW.\VISUALSIM.\...



VIEW 17 LOOKING SOUTH FROM PARK LAWN DR.
VIEW 18 LOOKING NORTH FROM PARK LAWN DR.

PREPARED FOR:
EVERSOURCE ENERGY

Project Locus (not to scale)


Typical Cross Section (not to scale).
Refer to Volume 5 for cross-sections.

NORTH

VISUAL IMPACT SIMULATIONS: PARK LAWN DR.

SOUTHWEST CONNECTICUT RELIABILITY PROJECT

BSC GROUP
33 Waldo Street
Worcester, Massachusetts
01608
617 896 4490

Job No.: 89515.04 Date: 02-03-2016
Scale: NOTED Revised: 02-10-2016
Dwg. No: #.04-VIZ.DWG Figure:

File: 89515.04\ENV.\DRAW.\VISUALSIM.\...

AUTUMN LEAF ON

EXISTING VIEW 17

PROPOSED VIEW 17

WINTER LEAF OFF

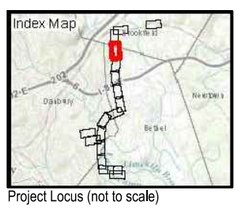
EXISTING VIEW 17

PROPOSED VIEW 17

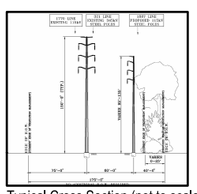
PREPARED FOR:

EVERSOURCE ENERGY

PS–17



Project Locus (not to scale)



Typical Cross Section (not to scale).
Refer to Volume 5 for cross-sections.

NOTES:
SITE PHOTOS TAKEN ON 10/20/2015 AUTUMN AND 01/21/2016 WINTER
PROPOSED STRUCTURE HEIGHTS & LOCATIONS PROJECTED INTO PHOTO'S FROM 3D MODEL BASED ON MATCHED SITE TO MODEL CAMERA LOCATIONS.

VISUAL IMPACT SIMULATIONS: VIEW LOOKING SOUTH FROM PARK LAWN DR.

SOUTHWEST CONNECTICUT RELIABILITY PROJECT

BSC GROUP
33 Waldo Street
Worcester, Massachusetts
01608
617 896 4490

Job No.: 89515.04 Date: 02–03–2016
Scale: NOTED Revised: 02–10–2016
Dwg. No: #.04–VIZ.DWG Figure: 9.1

File: 89515.04\ENV.\DRAW.\VISUALSIM.\...

AUTUMN LEAF ON

EXISTING VIEW 18

PROPOSED VIEW 18

WINTER LEAF OFF

EXISTING VIEW 18

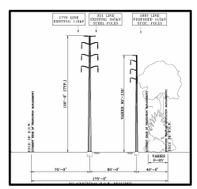
PROPOSED VIEW 18

PREPARED FOR:

EVERSOURCE ENERGY

PS–18

Project Locus (not to scale)



Typical Cross Section (not to scale).
Refer to Volume 5 for cross-sections.

NOTES:
SITE PHOTOS TAKEN ON 10/20/2015 AUTUMN AND 01/21/2016 WINTER
PROPOSED STRUCTURE HEIGHTS & LOCATIONS PROJECTED INTO PHOTO'S FROM 3D MODEL BASED ON MATCHED SITE TO MODEL CAMERA LOCATIONS.

VISUAL IMPACT SIMULATIONS: VIEW LOOKING NORTH FROM PARK LAWN DR.

SOUTHWEST CONNECTICUT RELIABILITY PROJECT

BSC GROUP
33 Waldo Street
Worcester, Massachusetts
01608
617 896 4490

Job No.: 89515.04 Date: 02–03–2016
Scale: NOTED Revised: 02–10–2016
Dwg. No: #.04–VIZ.DWG Figure:

File: 89515.04\ENV.\DRAW.\VISUALSIM.\...

This page is intentionally left blank

Appendix B:

Representative Photographs of Proposed Route: General Visual Setting from Public Road Crossings

Note: This page is intentionally left blank

Representative Photographs of ROW from Road Crossings

"Leaf On" Conditions October 2015 ***"Leaf Off" Conditions January 2016***

Photo 1A & B: View facing southeast towards the existing right-of-way as seen from the southeast corner of Lexington Boulevard (Lexington Meadows Condominiums) in Danbury.

"Leaf On" Conditions October 2015 ***"Leaf Off" Conditions January 2016***

Photo 2A & B: View facing northeast towards the existing right-of-way as seen from the northeast corner of the Lexington Boulevard (Lexington Meadows Condominium) in Danbury.

Representative Photographs of ROW from Road Crossings

"Leaf On" Conditions October 2015 ***"Leaf Off" Conditions January 2016***

Photo 3A & B: View facing south towards the existing right-of-way as seen from Shelter Rock Road in Bethel and Danbury.

"Leaf On" Conditions October 2015 ***"Leaf Off" Conditions January 2016***

Photo 4A & B: View facing north towards the existing right-of-way as seen from Shelter Rock Road in Bethel and Danbury.

Representative Photographs of ROW from Road Crossings

"Leaf On" Conditions October 2015

"Leaf Off" Conditions January 2016

Photo 5A & B: View facing westerly towards the existing right-of-way as seen from Payne Road on the Bethel-Danbury boundary.

"Leaf On" Conditions October 2015

"Leaf Off" Conditions January 2016

Photo 6A & B: View facing easterly towards the existing right-of-way as seen from Payne Road on the Bethel-Danbury boundary.

Representative Photographs of ROW from Road Crossings

"Leaf On" Conditions October 2015 ***"Leaf Off" Conditions January 2016***

Photo 7A & B: View facing westerly towards the existing right-of-way as seen from Hearthstone Drive in Bethel.

"Leaf On" Conditions October 2015 ***"Leaf Off" Conditions January 2016***

Photo 8A & B: View facing easterly towards the existing right-of-way as seen from Hearthstone Drive in Bethel.

Representative Photographs of ROW from Road Crossings

"Leaf On" Conditions October 2015 ***"Leaf Off" Conditions January 2016***

Photo 9A & B: View facing south towards the existing right-of-way as seen from Chimney Drive in Bethel.

"Leaf On" Conditions October 2015 ***"Leaf Off" Conditions January 2016***

Photo 10A & B: View facing north towards the existing right-of-way as seen from Chimney Drive in Bethel.

Representative Photographs of ROW from Road Crossings

"Leaf On" Conditions October 2015 ***"Leaf Off" Conditions January 2016***

Photo 11A & B: View facing south towards the existing right-of-way as seen from the Target parking lot in Bethel (off of Stony Hill Road- Route 6) by existing Structure 10254.

"Leaf On" Conditions October 2015 ***"Leaf Off" Conditions January 2016***

Photo 12A & B: View facing north towards the existing right-of-way as seen from the Target parking lot in Bethel (off of Stony Hill Road- Route 6). Existing Structure 10254 is shown.

Representative Photographs of ROW from Road Crossings

"Leaf On" Conditions October 2015 ***"Leaf Off" Conditions January 2016***

Photo 13A & B: View facing south towards the existing right-of-way as seen from Berkshire Boulevard in Bethel. This area is part of the Berkshire Corporate Park.

"Leaf On" Conditions October 2015 ***"Leaf Off" Conditions January 2016***

Photo 14A & B: View facing north towards the existing right-of-way as seen from Berkshire Boulevard in Bethel. This area is part of the Berkshire Corporate Park.

Representative Photographs of ROW from Road Crossings

"Leaf On" Conditions October 2015

"Leaf Off" Conditions January 2016

Photo 15A & B: View facing south towards the existing right-of-way as seen from existing Structure 10251 to the east of Research Drive in Bethel. This area is part of the Berkshire Corporate Park.

"Leaf On" Conditions October 2015

"Leaf Off" Conditions January 2016

Photo 16A & B: View facing north towards the existing right-of-way as seen from existing Structure 10251 to the east of Research Drive in Bethel. This area is part of the Berkshire Corporate Park.

Representative Photographs of ROW from Road Crossings

"Leaf On" Conditions October 2015

"Leaf Off" Conditions January 2016

Photo 17A & B: View facing south towards the existing right-of-way as seen from Park Lawn Drive in Bethel. This area is part of the Berkshire Corporate Park.

"Leaf On" Conditions October 2015

"Leaf Off" Conditions January 2016

Photo 18A & B: View facing north towards the existing right-of-way as seen from Park Lawn Drive in Bethel. This area is part of the Berkshire Corporate Park.