# THE FROST BRIDGE TO CAMPVILLE 115-kV PROJECT

**BY**

**THE CONNECTICUT LIGHT AND POWER COMPANY**

**DOING BUSINESS AS EVERSOURCE ENERGY**

## VOLUME 2: WETLANDS AND WATERCOURSES REPORT

**SEPTEMBER 2015**

*Note:  This page 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:

**Tighe & Bond**
**213 Court Street, Suite 1100**
**Middletown, CT 06457**

*Note:  This page intentionally left blank*

# Table of Contents

*Note:  This page intentionally left blank*

# Section 1
# Introduction

The Connecticut Light and Power Company doing business as Eversource Energy (Eversource) proposes to construct a new 10.4-mile 115-kilovolt (kV) overhead electric transmission line between its Frost Bridge Substation in the Town of Watertown and its Campville Substation in the Town of Harwinton (all within Litchfield County, Connecticut), and to make related improvements to both substations, collectively referred to herein as "the Project". This report provides a summary of wetland and watercourse inventories and delineations conducted by Tighe & Bond within the Project area. These delineations were conducted to identify both federal and Connecticut jurisdictional water resources.

## 1.1 Project Background and Location

The Project is required to bring the electric supply system in northwest Connecticut into compliance with applicable national and regional reliability standards and criteria by eliminating potential thermal overloads and voltage violations identified in studies conducted by ISO-New England, the independent regional system planning authority.

The proposed new 115-kV transmission line would cross portions of four towns in Litchfield County: Watertown, Thomaston, Litchfield, and Harwinton. The new line would be located entirely within Eversource's existing transmission line right-of-way (ROW). In addition, both the Frost Bridge and Campville substations are located on Eversource property.

Desktop analyses, as well as on-site field delineations were employed to determine state and federal wetland boundaries in accordance with applicable state and federal regulations. The desktop and field wetland and watercourse investigations were conducted during the spring of 2015. This report discusses the methods used to identify the wetlands and watercourses encountered in the Project area and summarizes the findings of the surveys.

Tables listing all wetlands and watercourses identified during the surveys are located in Attachments A and B; the locations of all of the delineated wetlands are depicted on the maps in Volume 5.

## 1.2 Project Area Geographic Overview

For descriptive purposes, the Project area can be characterized by three major ROW sections between line junctions, as discussed below.

Frost Bridge Substation to Purgatory Junction – This section crosses out of the Naugatuck River valley westerly through the Mattatuck State Forest crossing Park Road, Nova Scotia Hill Road, Jericho Road and U.S. Route 6 in Watertown. The section of the Project area crosses upland areas with prominent bedrock outcrops and the Turkey Brook drainage.

Purgatory Junction to Walnut Hill Junction – This section turns northerly towards Thomaston through Black Rock State Park, crossing the Branch Brook drainage and Branch Road (State Route 109), and then continues north through Mattatuck State Forest property, crossing Morton Pond and Walnut Hill Road. This section of the Project area is

characterized by bedrock controlled topography, with numerous outcroppings and steep, rugged terrain.

Walnut Hill Junction to Campville Substation – From Walnut Hill Junction, the ROW traverses State Highway 254 and the Northfield Brook drainage, then crosses Hopkins Road and enters the southeast corner of Litchfield near Campville Road and extends across State Route 8. From State Route 8, this ROW section crosses the Naugatuck River valley into Harwinton and travels northerly across Wildcat Hill Road to the Campville Substation.

## 1.3 Physiographic and Geologic Overview

According to Dowhan and Craig, the Project area is situated within the Northwest Hills physiographic region of Connecticut. This region is characterized by variably hilly terrain with local areas of considerable topographic relief and rugged hills. The bedrock is primarily metamorphic, derived from gneiss and schist, and exhibits north-trending belts and outcrops. A representative landscape of this region can be found along the ROW in Black Rock State Park and Mattatuck State Forest in Thomaston.

Bedrock geologic mapping indicates the Project area traverses extensive areas of schist bedrock (e.g., Taine Mountain formation) and some areas of granite. The surficial geology of the corridor is characterized by thin and thick till, with occasional valley settings exhibiting local outwash (sand and gravel) deposits.

# Section 2
# Wetland and Watercourses Regulations

Tighe & Bond 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* (1987 Corps Manual) 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*[1] (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

[1] 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

In the spring of 2015, Tighe & Bond soil and wetland scientists delineated wetlands within the Project area. 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*.

State jurisdictional wetlands were characterized using Connecticut delineation methodology pursuant to the Connecticut Inland Wetlands and Watercourses Act, C.G.S. §§ 22a-36 through 22a-45 (the Act). The Act defines a wetland as land, including submerged land, consisting of poorly drained, very poorly drained, alluvial, and floodplain soils as defined by the USDA Cooperative Soil Survey. Such areas may include filled, graded, or excavated sites possessing an aquic (saturated) moisture regime as defined by the USDA Cooperative Soil Survey. The Act defines watercourses as rivers, streams, brooks, waterways, lakes, ponds, marshes, swamps, bogs, and also other bodies of water, natural or artificial, public or private, contained within, flow through or border upon the state, or any portion thereof.

The methods of investigation included both desktop analyses and on-site field investigations 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:

- Wetland mapping depicting the 2009 delineations along the Project ROW;
- United States Geologic Survey (USGS) 7.5-minute series topographic quadrangle maps;
- Natural Resources Conservation Service (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.

- Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) digital information; and,

- Aerial photographs.

## 3.2 Field Surveys

The wetland delineation was initiated with an inspection of the ROW to identify soil topo-drainage sequences, drainage features, and plant associations that would indicate the potential for jurisdictional wetland classification. The wetland delineation was then completed using the *Routine On-Site Wetland Determination Method* (1987 Manual). The indicator status of dominant plant species in each stratum was evaluated in the field to determine whether a hydrophytic plant association was present. Soils profiles were sampled using a Dutch auger and/or a tile spade to determine if any hydric soil indicators were present. Indicators of wetland hydrology were also observed. Specific methods for characterizing and evaluating soil, vegetation, and hydrologic indicators are described below.

### 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.* 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.*

### 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. 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*[2] and the NRCS Plants Database[3]. 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" according to the 1987 Corps Manual.

### 3.2.3 Hydrology

The term wetland hydrology encompasses all hydrologic characteristics for areas that are periodically inundated or have soils saturated to the surface at some time during the

[7] *National Wetland Plant List (Updated July 2013)*. U.S. Army Engineer Research and Development Center, Vicksburg, MS

[3] http://plants.usda.gov/wetland.html

growing season. Corps hydrology criteria consist of inundation, saturation to the surface, or the upper part of the soil for a long or very long duration. The 1987 Corps Manual suggests that this saturation must persist for at least five percent of the growing season in most years. Areas with evident characteristics for wetland hydrology are those where the presence of water has an overriding influence on the characteristics of vegetation and soils. Indicators of wetland hydrology include vegetated hummocks, water marks on tree trunks and other vegetation, evidence of inundation or ponding (e.g., water-stained leaves), morphological adaptations of plants (e.g., buttressed trunks, adventitious roots, shallow rooting), drift lines, and drainage patterns. The depths to saturation and standing water were noted where present within 20 inches of the soil surface. The presence or absence of wetland hydrology indicators was observed at each sampling location.

### 3.2.4 Wetland Numbering Method

For the purpose of documenting and organizing the water resource information on tables and maps for this Project, groups of wetlands occurring along the ROW between selected road crossings were identified by letters of the alphabet A through G[4]. Wetlands within each segment were then labeled in an alpha-numeric sequence (e.g., W-A1, W-A2, W-A3, etc). Watercourses were numbered independently of the wetlands and prefixed by the letter S. Tables 1 and 2 (Attachments A and B) list the delineated wetlands, watercourses, and waterbodies within the Project area.

During the field investigations, the boundaries of each wetland were identified by sequentially-numbered pink vinyl flagging tied to woody vegetation and spaced at regular intervals. The first flag of each boundary series was prefixed with the wetland name, and the watershed in which the wetland is located. For example the prefix "W-A4-NR" indicates Wetland W-A4 delineated in the Naugatuck River Watershed.

Subsequent flags were numbered sequentially with the wetland or watercourse number included as a prefix. Where a break in the boundary line was necessary, a gap of ten flag numbers was incorporated in the numbering sequence.

Watercourses were field-identified with blue flagging. Most watercourses were identified by centerline flags, however the banks of several larger watercourses representing the normal annual high water mark were flagged where important.

Wetlands that were considered to be hydraulically connected or part of a larger ecological functional unit were typically included within the same alpha-numeric label. Frequently, wetlands that appear to lack direct surface water connectivity (such as those bisected by historic disturbance activities such as road construction) were included under the same wetland label if 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.

[4] Wetlands in the vicinity of the Frost Bridge Substation were identified with the letters FB. Wetlands identified with the letter A, or “A – Series” wetlands begin at Echo Lake Road (Watertown); B - Series at Park Road (Watertown); C - Series at Thomaston Road-Route 6 (Watertown); D - Series at Branch Road-Route 109 (Thomaston); E - Series at Northfield Road-Route 254 (Thomaston); F - Series at Campville Road (Litchfield); and G - Series at Wildcat Hill Road (Harwinton).

### 3.2.5 GPS Mapping

Wetland boundary flags and watercourse centerlines, or in some cases the ordinary high water (OHWM) were located using a Trimble Geo7X® Global Positioning System (GPS). A minimum of 30 static measurements with a Precision Dilution of Position (PDOP) no greater than 6.0 were also collected at each survey point to enhance 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, Tighe & Bond 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*. 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. In some cases, a wetland complex contained more than one wetland classification type. In those situations, each wetland type is listed and the first classification type represents the more dominant type. For example, within the portions of the ROW that Eversource presently manages in shrub-scrub vegetation compatible with the existing overhead transmission lines, wetlands include PEM, POW, or PSS; in certain locations, the portions of these wetlands that extend into non-managed portions of the ROW are characterized by forested (PFO) vegetation.

### 3.3.1 Palustrine Forested Wetlands (PFO)

Forested wetlands are characterized by woody vegetation that is six meters (approximately 20 feet) tall or taller and normally includes an overstory of trees, an understory of young trees and/or shrubs, and an herbaceous layer.

### 3.3.2 Palustrine Scrub-Shrub Wetlands (PSS)

Scrub-shrub wetlands are dominated by woody vegetation less than six meters (approximately 20 feet) tall. Scrub-shrub land types 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 environmental conditions.

### 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, and are typically dominated by perennial plants that are present for the majority of the growing season.

### 3.3.4 Palustrine Open Water (POW)

Areas of permanent or semi-permanent open water that border on palustrine systems are referred to as POW. Areas 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 and reviewed and confirmed by Tighe & Bond personnel responsible

for the field delineation of wetlands. The aerial photograph based Volume 5 maps show the locations of the delineated resources relative to the limits of the ROW.

*Note:  This page intentionally left blank*

# Section 4
# Results

## 4.1 Wetlands

A total of 91 wetlands were delineated within Eversource's easements or fee-owned properties in proximity to Project activities. An additional 4 wetlands were delineated along publically accessible (State Park/Forest) off-ROW access roads that are proposed for use. Of the total 95 wetlands delineated, 48 would be within the portions of the ROW traversed by the new transmission line.[5] A summary of the delineated wetlands is provided in Table 1 (Attachment A).

For most of the wetlands identified in Project area, the field investigations determined that the Connecticut and federal wetland jurisdictional boundaries coincided. In locations where the difference in the boundary location was estimated to be less than 15 feet, the upper (higher) limit was identified as sufficient to encompass jurisdiction.

In two locations, the occurrence of well-drained to excessively-drained alluvial soils required areas of state jurisdiction to be identified separately from the federal wetland boundary. These areas are characterized by floodplain soils associated with the Naugatuck River at the Frost Bridge Substation property in Watertown, and at the Naugatuck River at the Litchfield/Harwinton boundary.

### 4.1.1 Wetlands Vegetation

The predominant forested wetland type found in the Project area is red maple (*Acer rubrum*) swamp. Following Metzler and Barrett, the plant communities encountered in the ROW would most commonly be classified as acidic to circumneutral seepage swamps (*Acer rubrum*/ *Lindera benzoin* community) or acidic red maple/ericaceous basin swamp (*Acer rubrum*/ *Ilex verticillata* community). Acidic Eastern hemlock (*Tsuga canadensis*) basin swamps (and hillslope wetlands) are also encountered. Another common forested wetland canopy association is red maple and green ash (*Fraxinus pennsylvanicus*).

Representative tree species in forested wetlands include red maple, yellow birch (*Betula allegheniensis*), green ash (*Fraxinus pennsylvanicus*), and occasionally black gum (*Nyssa sylvatica*). Characteristic shrub species include winterberry (*Ilex verticillata*), highbush blueberry (*Vaccinium corymbosum*), spicebush (*Lindera benzoin*) and. to a lesser extent, northern arrowwood (*Viburnum recognitum*) and wild raisin (*Viburnum cassinoides*). Common herbaceous species include cinnamon fern (*Osmunda cinnamomea*), skunk cabbage (*Symplocarpus foetidus*), jewelweed (*Impatiens capensis*), and occasionally false hellebore (*Veratrum viride*) and swamp rue (*Thalictrum* sp.). *Sphagnum* sp. moss is common in many of these wetlands at locations exhibiting a saturated to temporarily flooded water regime.

The upper margin of forested wetlands often exhibit broad bands of cinnamon fern interspersed with such plants as tree clubmoss (*Lycopodium obscurum*), Canada mayflower (*Maianthemum canadense*), New York fern (*Thelypteris noveboracensis*), jack-

[5] The 48 wetlands are those located within the footprint of the new 115-kV line

in-the-pulpit (*Arisaema triphyllum*), witch hazel (*Hamamelis virginiana*) and hickories (*Carya* spp.). These transition areas frequently trend into uplands supporting such plants as hay-scented fern (*Dennstaedtia punctilobula*), Christmas fern (*Polystichum acrostichoides*), wood-ferns (*Dryopteris* spp.), mountain laurel (*Kalmia latifolia*), American hornbeam (*Carpinus caroliniana*), black birch (*Betula lenta*), sugar maple (*Acer saccharum*) and red oak (*Quercus rubra*). Representative community types of these locations (as identified by Metzler and Barrett 2006) include 1) sugar maple-American beech/intermediate woodfern community of the bedrock-controlled hills of western Connecticut, 2) hemlock forest, and 3) sugar maple-white ash/silver false spleenwort community. It is not uncommon to observe wetland soils and seasonal wetland hydrology extending into areas dominated by or supporting facultative upland (FACU) vegetation (Reed 1988) such as red oak, sugar maple, hickory, or white pine (*Pinus strobus*).

Forested wetland dominated by Eastern hemlock can be observed at several locations within the Project area. These typically have sparse to negligible shrub cover and an herbaceous layer comprised of ferns (e.g., *Osmunda cinnamomea*, *Dryopteris* sp.) and including *Sphagnum* sp. moss.

Shrub wetlands are commonly dominated by winterberry, highbush blueberry, silky dogwood (*Cornus amomum*), and support occasional pussy willow (*Salix discolor*). Maleberry (*Lyonia ligustrina*) is often located in drier portions and along the upland margins of these wetlands. Larger shrub swamps that are temporarily flooded to seasonally flooded also support such shrubs as swamp azalea (*Rhododendron viscosum*), black chokeberry (*Aronia* sp.), poison sumac (*Toxicodenron vernix*), and swamp rose (*Rosa palustris*).

Emergent wetlands within the Project area commonly exhibit perennial forbs such as wrinkle-leaved goldenrod (*Solidago rugosa*), sensitive fern (*Onoclea sensibilis*), joe-pyeweed (*Eupatorium* spp.), marsh fern (*Thelypteris palustris*), and low woody plants such as hardhack (*Spiraea latifolia*), poison ivy (*Toxicodendron radicans*), and steeplebush (*Spiraea tomentosa*). Wetter areas (commonly referred to as shallow marsh) exhibit such plants as tussock sedge (*Carex stricta*), woolgrass (*Scirpus cyperinus*), broad-leaved cattail (*Typha latifolia*), and skunk cabbage. Deep marsh areas commonly support pure stands of tussock sedge interspersed with areas of open water. Fallow agricultural land, wet meadows, and wet pastures typically support herbaceous plants such as soft rush (*Juncus effusus*), foxtail sedge (*Carex vulpinoidea*), marsh fern, Canada rush (*Juncus canadensis*), and grasses such as bluegrasses (*Poa* spp.), bentgrasses (*Agrostis* spp.), bluejoint grass (*Calamagrostis canadensis*), and fowl-meadow grass (*Glyceria striata*).

### 4.1.2 Wetland Suficial Geology, Soils, and Hydrology

Soil types within the Project area are predominantly derived from glacial till. As explained in Metzler and Barett: "these soils are generally [stony] and have little organic-matter accumulation in the upper layers. In the western hills, till soils are derived primarily from crystalline rocks (gneiss and schist)..."

The Hollis-Chatfield catena is the representative soil type continuum throughout the majority of the Project area. This catena includes well drained Charlton, Canton, Paxton, and Montauk soils, moderately well drained Woodbridge and Sutton soils, and poorly drained to very poorly drained Ridgebury, Leicester and Whitman soils.

The most common hydric (wetland) soil mapping unit is the extremely stony Ridgebury Leicester and Whitman fine sandy loam. This mapping unit ranges from poorly drained (Ridgebury and Leicester soils) to very poorly drained (Whitman soils) and is found in depressions and drainageways on till uplands.

Other common and characteristic wetland soil types (and characteristic of outwash areas) include poorly drained Walpole sandy loam and Raypol Series. Very poorly drained areas with mineral soils are typically Scarboro muck.

Floodplain soils are found along the Naugatuck River at the Litchfield / Harwinton town boundary and also occasionally in narrow bands along smaller streams. These soil types are characterized by moderately well drained Pootatuck and poorly drained Limerick, Lim, and Rippowam soils. Generally, however, the sloping terrain traversed by the transmission line ROW – in combination with upper landscape stream gradients – inhibits the accumulation of alluvium and the development of alluvial soils along watercourses in the upland till.

The most common water regime in the identified wetlands is seasonally saturated. These wetlands commonly support wetter areas that are saturated to temporarily flooded. A few marsh areas and vernal pool locations exhibit water regimes that are seasonally flooded to semi-permanently flooded. Permanently flooded areas include small ponds and the deeper parts of the perennial watercourses and rivers.

A substantial number of wetland areas are episaturated[6] and supported by groundwater discharge – specifically functioning as groundwater slope wetlands leading to a surface water depression (cf. Novitski 1982). The widespread presence of glacial till substrates on this landscape promotes episaturation hydrology and lateral discharge of return flows.

## 4.2 Watercourses

A total of 58 watercourses (including waterbodies) were delineated[7] within the Project area, including the Naugatuck River, 14 perennial streams, six ponds and 38 intermittent watercourses. A summary of the delineated watercourse and waterbodies is provided in Table 2 (Attachment B). The majority of the watercourses delineated within the Project area are less than five feet wide and exhibit intermittent flow. These watercourses typically exhibit a meandering channel, a sand/gravel and cobble substrate with gradual to slightly undercut banks.

Three of the identified perennial watercourses average greater than 20 feet wide and are named brooks or rivers. These include Branch Brook, Northfield Brook, and the Naugatuck River. At Eversource's existing ROW crossing in Litchfield and Harwinton, the Naugatuck River is an estimated 110 feet wide. None of the watercourses crossed by the Project area met the criteria for federal designation as navigable[8] pursuant to Section 10 of the

[6] Perched groundwater often a result of underlying densic material

[7] Six ponds are included in this total; however, they were also included within the delineated wetlands figures as they were located within larger delineated wetlands.

[8] The USACE's general definition of navigable waters of the United States is "those waters subject to the ebb and flow of the tide shoreward to the mean high water mark and/or presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce." Waterways considered to be navigable waters may be subject to regulatory jurisdiction under Section 10 of the Rivers and Harbors Act.

Rivers and Harbors Act. All of these watercourses are presently spanned by Eversource's overhead transmission lines that occupy the existing ROW along which the Proposed Route would be located.

Six unnamed ponded areas were identified within the Project area. These include natural areas of standing water, man-made agricultural and recreational ponds, and beaver impoundments. All of these ponds are already spanned by Eversource's overhead transmission lines that occupy the existing ROW along the Proposed Route.

# 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.

Dowhan, J.J., and R.J. Craig. 1976. *Rare and Endangered Species of Connecticut and Their Habitats.* State Geological and Natural History Survey of Connecticut, Department of Environmental Protection. Report of Investigations No. 6. 137 p.

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

Gleason, H.A. and A. Cronquist. 1991. *Manual of Vascular Plants of Northeastern United States and Adjacent Canada, 2nd ed*. The New York Botanical Garden. Bronx, NY. 993 p.

Gonick, W.N., A.E. Shearin, and D.E. Hill. 1970. *Soil Survey of Litchfield County, Connecticut*. U.S.D.A. Soil Conservation Service. Storrs, CT. 105 p.

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

Metzler, K.J. and R.W. Tiner. 1992. *Wetlands of Connecticut. State Geological and Natural History Survey of Connecticut, Report of Investigations No. 13*, Department of Environmental Protection. Hartford, CT in cooperation with U.S. Fish and Wildlife Service, National Wetlands Inventory. Newton Corner, MA. 115 p. + 20 plates.

Metzler, K.J. and J.P. Barrett. 2006. *The Vegetation of Connecticut, A Preliminary Classification*. State Geological and Natural History Survey of Connecticut, Report of Investigations No. 12, Department of Environmental Protection. Hartford, CT. 109 p.

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.

Novitski, R.P. 1982. *Hydrology of Wisconsin Wetlands*. U.S. Geological Survey, Information Circular 40. Reston, VA. 22 p.

Reed, P.B., Jr. 1988. *National List of Plant Species that Occur in Wetlands: Northeast (Region 1)*. U.S. Fish and Wildlife Service, Biological Report 88 (26.1). Washington, D.C. 111 p.

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

Shearin, A.E. and D.E. Hill. 1962. *Soil Survey of Hartford County, Connecticut*. U.S.D.A. Soil Conservation Service, Series 1958, No. 14. Storrs, CT. 126 p.

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.

Tiner, R.W. and P.M. Veneman. 1987. *Hydric Soils of New England*. University of Massachusetts Cooperative Extension, Bulletin C-183. Amherst, MA. 27 p.

U.S.D.A Soil Conservation Service. 1982. *National List of Scientific Plant Names*. SCS-TP-159. 416 p.

# APPENDIX A:

## TABLE 1: DELINEATED WETLANDS WITHIN THE PROJECT AREA

*Note:  This page intentionally left blank*

## Table 1: Delineated Wetlands within the Project Area

| Municipality; Vol. 5, 100 and 400 Scale Mapsheet Nos. | Wetland No. [1] | Dominant NWI Class[2] | Other NWI Classes | Water Regime | Associated Watercourse[3] |
|---|---|---|---|---|---|
| Watertown | | | | | |
| 1/1 | W-FB1 | PFO | PSS | Seasonally saturated | |
| 1/1 | W-FB2 | PFO | PSS | Saturated | S-FB1 |
| 1/1 | W-FB3 | PEM | PSS | Seasonally saturated | |
| 1/1 | W-FB4 | PEM | PSS | Seasonally saturated | |
| 1 | W-FB5 | PFO | PSS | Saturated | |
| 1 | W-FB6 | PEM | | Seasonally saturated | S-FB2, S-FB3 |
| 1/3A | W-MSF1 | PFO | | Seasonally saturated | |
| 1/3 | W-MSF2 | PFO | | Seasonally saturated | |
| 1/3A | W-MSF3 | PFO | | Seasonally saturated | |
| 1/1 | W-A1 | PSS | PEM | Saturated | S-A1 |
| 1/1 | W-A2 | PSS | PEM | Seasonally saturated | S-A2 |
| 1/2 | W-A3 | PFO | PSS | Seasonally saturated | S-A3 |
| 1/2 | W-A4 | PFO | PEM | Saturated | |
| 1/3 | W-A5 | PSS | PEM | Temporarily flooded | |
| 1/3 | W-A6 | PEM | | Temporarily flooded | S-A4 |
| 1/4 | W-A7 | PFO | PEM | Seasonally saturated | |
| 1/4 | W-A8 | PSS | | Temporarily flooded | S-A5 |
| 1-2/4-5 | W-A9 | PSS | PEM | Saturated | S-A6, S-A7 |
| 1/4 | W-A10 | PEM | | Seasonally saturated | |
| 2/5 | W-A11 | PSS | | Saturated | |
| 2/6 | W-A12 | PSS | PEM | Seasonally | |

## Table 1: Delineated Wetlands within the Project Area

| Municipality; Vol. 5, 100 and 400 Scale Mapsheet Nos. | Wetland No. [1] | Dominant NWI Class[2] | Other NWI Classes | Water Regime | Associated Watercourse[3] |
|---|---|---|---|---|---|
| | | | | saturated | |
| 2/6 | W-B1 | PSS | PEM | Saturated | |
| 2/6 | W-B2 | PSS | PEM | Saturated | |
| 2/6 | W-B3 | PSS | PEM | Intermittently flooded | |
| 2/6 | W-B4 | PFO | | Saturated | |
| 2/6-7 | W-B5 | PSS | PEM | Seasonally saturated | |
| 2/6-7 | W-B6 | PSS | PEM | Saturated | |
| 2/8 | W-B7 | PSS | PEM | Saturated | |
| 2/8 | W-B8 | POW | PEM | Temporarily flooded | |
| 2/8 | W-B9 | POW | PSS, PEM | Saturated | |
| 3/9 | W-B11 | PSS | POW | Saturated | S-B1, S-B2, S-B3 |
| 3/10A/10B | W-C1A | PSS | PFO | Saturated | |
| 3/10A/10B | W-C2A | PSS | PEM | Saturated | |
| 3/10 | W-C1 | PFO | PSS | Seasonally saturated | S-C1 |
| 3/10 | W-C2 | PFO | | Seasonally saturated | S-C2 |
| 3/10 | W-C3 | PSS | PEM | Seasonally saturated | |
| 3/11 | W-C4 | PFO | PSS | Seasonally saturated | VP C4-1 |
| 3/11 | W-C6 | PSS | | Seasonally saturated | |
| 3/11 | W-C7 | PFO | | Seasonally saturated | |
| 3/11 | W-C8 | PFO | | Saturated | |
| 3/11 | W-C10 | PFO | | Seasonally flooded | |
| 3/12 | W-C12 | PFO | PSS, PEM | Saturated | S-C3 |
| 3/12 | W-C14 | PSS | PEM | Seasonally saturated | |
| 3-4/12-13 | W-C15 | PFO | PSS, PEM | Saturated | S-C4, S-C5 |

## Table 1: Delineated Wetlands within the Project Area

| Municipality; Vol. 5, 100 and 400 Scale Mapsheet Nos. | Wetland No. [1] | Dominant NWI Class[2] | Other NWI Classes | Water Regime | Associated Watercourse[3] |
|---|---|---|---|---|---|
| 3/11 | W-C16 | PSS | PEM, PFO (off-ROW) | Saturated | |
| 3-4/13 | W-C18 | PFO | | Seasonally saturated | |
| 4/14 | W-C20 | PFO | PSS | Saturated | S-C6 |
| 4/15 | W-C21 | PFO | POW | Semi-permanently flooded | |
| 4/16 | C-C22 | PEM | PFO | Saturated | S-C7 |
| 4/17 | W-C23 | PSS | PEM | Saturated | S-C8, S-C9 |
| Thomaston | | | | | |
| 5/18 | W-D1 | PUB | | Temporarily flooded | |
| 5/18 | W-D2 | PEM | | Seasonally saturated | S-D2 |
| 5/18-19 | W-D3 | PFO | PSS | Seasonally saturated | S-D3 |
| 5/19 | W-D4 | PFO | | Seasonally saturated | |
| 5/20 | W-D5 | PEM | | Seasonally saturated | |
| 5/20 | W-D6 | POW | PEM | Permanently flooded | |
| 6/21 | W-D7 | PFO | PEM | Seasonally saturated | S-D5 |
| 6/21 | W-D8 | PFO | | Seasonally saturated | |
| 6/22 | W-D10 | PFO | PFO | Seasonally saturated | |
| 6/22 | W-D11 | PFO | PSS | Seasonally saturated | S-D8 |
| 6/22-23 | W-D12 | PSS | PFO, PEM | Seasonally saturated | S-D9, S-D10 |
| 6/23 | W-D13 | PFO | PSS | Seasonally saturated | S-D11 |
| 6/24 | W-D14 | PFO | | Saturated | |

## Table 1: Delineated Wetlands within the Project Area

| Municipality; Vol. 5, 100 and 400 Scale Mapsheet Nos. | Wetland No. [1] | Dominant NWI Class[2] | Other NWI Classes | Water Regime | Associated Watercourse[3] |
|---|---|---|---|---|---|
| 5/21 | W-D15 | PSS | PEM | Semi-permanently flooded | |
| 6/24 | W-E1 | PFO | PSS | Permanently flooded | S-E2 |
| 7/25-26 | W-E2 | PSS | PFO | Saturated | S-E3 |
| Litchfield | | | | | |
| 7/25-26 | W-E2 | PSS | PFO | Saturated | S-E4 |
| 7/26 | W-E3 | PEM | | Saturated | |
| 7/26 | W-E4 | PFO | PSS, PEM | Seasonally saturated | S-E5 |
| 7/26 | W-E5 | PEM | | Seasonally saturated | |
| 7/26 | W-E6 | PEM | | Seasonally saturated | |
| 7/26-27 | W-E7 | PSS | | Seasonally saturated | |
| 7/27 | W-E8 | PSS | PFO | Seasonally saturated | |
| 7/27-28 | W-E9 | PFO | PSS | Saturated | S-E7 |
| 7/28 | W-E10 | PSS | PFO | Saturated | |
| 7/28 | W-E11 | PSS | POW | Saturated | |
| 7/29 | W-E12 | PEM | | Seasonally saturated | |
| 7/28 | W-E13 | PFO | | Seasonally saturated | |
| 8/29 | W-F2 | PEM | | Seasonally saturated | S-F2 |
| 8/29 | W-F3 | PFO | | Seasonally saturated | |
| 8/29 | W-F4 | PFO | | Seasonally saturated | S-F1 |
| 8/29 | W-F5 | PSS | PEM | Seasonally saturated | S-F1, S-F3 |
| 8/29 | W-F6 | PFO | | Seasonally saturated | |

## Table 1: Delineated Wetlands within the Project Area

| Municipality; Vol. 5, 100 and 400 Scale Mapsheet Nos. | Wetland No. [1] | Dominant NWI Class[2] | Other NWI Classes | Water Regime | Associated Watercourse[3] |
|---|---|---|---|---|---|
| 8/29-30 | W-F7 | PSS | PFO, PEM, POW | Seasonally saturated | S-F4 |
| 8/30 | W-F8 | PEM | PSS | Seasonally saturated | S-F5 |
| 8/31 | W-F9 | PFO | POW | Intermittently flooded | S-F7 |
| Harwinton | | | | | |
| 8/31 | W-F9 | PFO | POW | Intermittently flooded | S-F7, S-F8 |
| 8/31 | W-F10 | PFO | | Temporarily flooded | S-F9 |
| 8/32 | W-F11 | PFO | PSS | Seasonally saturated | S-F11 |
| 8/32 | W-F12 | PSS | PEM | Seasonally saturated | S-F10 |
| 8-9/33 | W-F13 | PFO | PSS, PEM | Saturated | S-F12 |
| 9/34 | W-F14 | PSS | PFO | Seasonally saturated | |
| 9/34-35 | W-F15 | PEM | PFO, PSS, POW | Seasonally saturated | S-F13, S-F14 |
| 9/35 | W-G1 | PFO | PSS | Seasonally saturated | S-G1, S-G2, S-G3 |
| 9/35 | W-G2 | PSS | PFO | Saturated | |
| 9/35 | W-G3 | PSS | PEM | Seasonally saturated | |

[1] Wetland No. refers to the number generated during the 2015 field surveys to identify wetlands within the Project area. This Wetland No. is keyed to those depicted in Volume 5.

[2] Wetlands classified according to Cowardin et al 1979; PEM = Palustrine Emergent Wetland; PFO = Palustrine Forested Wetland; PSS = Palustrine Scrub-Shrub Wetland; POW = Palustrine Open Water.

[3] Associated Watercourse refers to the identification number generated during the 2015 field surveys to identify watercourses within the Project area.

*Note:  This page intentionally left blank*

# APPENDIX B:

# TABLE 2: DELINEATED WATERCOURSES AND WATERBODIES WITHIN THE PROJECT AREA

*Note:  This page intentionally left blank*

## Table 2: Delineated Watercourses and Waterbodies within the Project Area

| Municipality; Vol. 5, 100 and 400 Scale Mapsheet Nos. | Watercourse No.[1] | Watercourse / Waterbody Name | Flow Regime | Water Quality Classification | Approximate Width | Associated Wetland |
|---|---|---|---|---|---|---|
| Watertown | | | | | | |
| 1/1 | S-FB1 | | Intermittent | A | 1 - 2' | W-FB2 |
| 1 | S-FB2 | Tributary to Naugatuck River | Perennial | B/A | 3 - 6' | W-FB6 |
| 1 | S-FB3 | Tributary to Naugatuck River | Intermittent | B/A | 1' | W-FB6 |
| 1/1 | S-A1 | Tributary to Naugatuck River | Perennial | B/A | 3 - 4' | W-A1 |
| 1/1 | S-A2 | Tributary to Naugatuck River | Intermittent | B/A | 1 - 3' | W-A2 |
| 1/2 | S-A3 | Tributary to Naugatuck River | Perennial | B/A | 2 - 5' | W-A3 |
| 1/3 | S-A4 | — | Intermittent | A | 1 - 2' | W-A6 |
| 1/4 | S-A5 | Tributary to Turkey Brook | Perennial | A | 4 - 8' | W-A8 |
| 1/4 | S-A6 | Turkey Brook | Perennial | A | 3 - 7' | W-A9 |
| 1-2/4-5 | S-A7 | Turkey Brook | Perennial | A | 3 - 7' | W-A9 |
| 2/8 | | Unnamed Pond | Perennial | A | | W-B9 |
| 3/9 | | Unnamed Pond | Perennial | A | | W-B11 |
| 3/9 | S-B1 | Tributary to Hannon Pond/Purgatory Brook | Intermittent | A | 2 - 3' | W-B11 |
| 3/9 | S-B2 | Tributary to Hannon Pond/Purgatory Brook | Intermittent | A | 2 - 3' | W-B11 |
| 3/9 | S-B3 | Tributary to Hannon Pond/ Purgatory Brook | Intermittent | A | 2 - 3' | W-B11 |
| 3/10 | S-C1 | — | Intermittent | A | 2 - 3' | W-C1, W-C2 |
| 3/10 | S-C2 | Tributary to Hannon Pond/ Purgatory Brook | Intermittent | A | 2 - 3' | W-C1, W-C2 |
| 3/12 | S-C3 | — | Intermittent | A | 3 - 4' | W-C12 |
| 3/12 | S-C4 | Tributary to Lockwood Pond | Perennial | A | 3 - 4' | W-C15 |
| 3/12 | S-C5 | Tributary to Lockwood Pond | Intermittent | A | 1' | W-C15 |
| 4/14 | S-C6 | — | Intermittent | A | 2' | W-C20 |

## Table 2: Delineated Watercourses and Waterbodies within the Project Area

| Municipality; Vol. 5, 100 and 400 Scale Mapsheet Nos. | Watercourse No.[1] | Watercourse / Waterbody Name | Flow Regime | Water Quality Classification | Approximate Width | Associated Wetland |
|---|---|---|---|---|---|---|
| 4/16 | S-C7 | — | Intermittent | A | 3' | W-C22 |
| 4/17 | S-C8 | Branch Brook | Perennial | A | 20 - 30' | W-C23 |
| 4/17 | S-C9 | Tributary to Branch Brook | Intermittent | A | 3' | W-C23 |
| Thomaston | | | | | | |
| 5/18 | S-D1 | — | Intermittent | A | < 1' | |
| 5/18 | S-D2 | Tributary to Branch Brook | Intermittent | A | 2 - 3' | W-D2 |
| 5/18-19 | S-D3 | Tributary to Branch Brook | Intermittent | A | 2 - 8' | W-D3 |
| 5/20 | | Morton Pond | Perennial | A | | W-D6 |
| 6/21 | S-D5 | Tributary to Northfield Brook | Perennial | A | 3 - 8' | W-D7 |
| 6/22 | S-D8 | — | Intermittent | A | < 1' | W-D11 |
| 6/22 | S-D9 | Tributary to Northfield Brook | Intermittent | A | 5 - 10' | W-D12 |
| 6/22 | S-D10 | Tributary to Northfield Brook | Intermittent | A | 2 - 4' | W-D12 |
| 6/23 | S-D11 | Tributary to Northfield Brook | Intermittent | A | 2 - 8' | W-D13 |
| 6/24 | S-E2 | Northfield Brook | Perennial | A | 20 - 30' | W-E1 |
| 7/25 | S-E3 | Tributary to Northfield Brook | Intermittent | A | 3 - 4' | W-E2 |
| Litchfield | | | | | | |
| 7/26 | S-E4 | — | Intermittent | A | < 1' | W-E2 |
| 7/26 | S-E5 | — | Intermittent | A | 2' | W-E4 |
| 7/27 | S-E7 | — | Intermittent | A | 1' | W-E9 |
| 7/28 | | Unnamed Pond | Perennial | A | | W-E11 |
| 8/29 | S-F1 | — | Intermittent | A | 4 - 6' | W-F4, W-F5 |
| 8/29 | S-F2 | — | Intermittent | A | < 1' | W-F2 |
| 8/29 | S-F1/S-F3 | — | Intermittent | A | 3' | W-F2, W-F4, W-F5 |
| 8/30 | | Unnamed Pond | Perennial | A | | W-F7 |
| 8/30 | S-F4 | — | Intermittent | A | 1 - 2' | W-F7 |
| 8/30 | S-F5 | — | Intermittent | A | < 1' | W-F8 |

## Table 2: Delineated Watercourses and Waterbodies within the Project Area

| Municipality; Vol. 5, 400 and 100 Scale Mapsheet Nos. | Watercourse No.[1] | Watercourse / Waterbody Name | Flow Regime | Water Quality Classification | Approximate Width | Associated Wetland |
|---|---|---|---|---|---|---|
| 8/30-31 | S-F6 | Tributary to Naugatuck River | Perennial | A | 5-15’ | |
| 8/31 | S-F7 | Naugatuck River | Perennial | B | 70 - 110' | W-F9 |
| Harwinton | | | | | | |
| 8/31 | S-F7 | Naugatuck River | Perennial | B | 70 - 110' | W-F9 |
| 8/30 | S-F8 | Tributary to Naugatuck River | Perennial | A | 4 - 7' | W-F9 |
| 8/31 | S-F9 | Tributary to Naugatuck River | Intermittent | A | 1 - 2' | W-F10 |
| 8/32 | S-F10 | Tributary to Naugatuck River | Intermittent | A | 1 - 3' | W-F12 |
| 8/32 | S-F11 | Tributary to Naugatuck River | Perennial | A | 6 - 9' | W-F11 |
| 8/33 | S-F12 | Tributary to Naugatuck River | Intermittent | A | 4 - 8' | W-F13, W-F15 |
| 9/34 | S-F13 | Tributary to Naugatuck River | Intermittent | A | 1 - 3' | W-F15 |
| 9/35 | S-F14 | Tributary to Naugatuck River | Intermittent | A | 1 – 2’ | |
| 9/35 | | Unnamed Pond | Perennial | A | | W-F15 |
| 9/35 | S-G1 | — | Intermittent | A | 1 - 2' | W-G1 |
| 9/35 | S-G2 | — | Intermittent | A | 1 - 2' | W-G1 |
| 9/35 | S-G3 | — | Intermittent | A | 1 - 2' | W-G1 |

[1] Watercourse No. refers to the number generated during the 2015 field surveys to identify watercourses within the Project area. This Wetland No. is keyed to those depicted in Volume 5.

*Note:  This page intentionally left blank*

# APPENDIX C:

# REPRESENTATIVE WETLAND PHOTOGRAPHS

*Note:  This page intentionally left blank*

View facing east, Wetland A1. Frost Bridge Substation in the background.

View facing northeast, Wetland A2. Route 8 in the background.

View southwest, Wetland A3 to south side of existing ROW.

View facing north, Wetland A4 to north side of ROW.

View facing north, Wetland A5 on north side of access road.

View facing east, Wetland A6 to south side of access road.

View facing west, Wetland A7 along south side of ROW of access road.

View facing east, Wetland A8 on both side of access road.

View facing southeast, Wetland A9 along the southern edge of the ROW.

View facing southwest, Wetland A10 along south side of ROW.

View facing northeast, Wetland A11 on north side of ROW.

View facing southeast, Wetland A12 within existing ROW.

View facing southwest, Wetland B1 on south side of ROW.

View southeast, Wetland B2 on north side of ROW.

View southeast, Wetland B3 on south side of ROW.

View northwest, Wetland B4 on south side of ROW.

View south, Wetland B5 on south side of ROW.

View east, Wetland B6 on north side of ROW.

View north, Wetland B7 on south side of ROW (4/8/15).

View south, Wetland B8 on south side of ROW.

View northwest, Wetland B9 on north side of ROW.

View northeast, Wetland B11 on south side of ROW.

View south, Wetland C1 on south side of access road.

View west, Wetland C3 on north side of ROW.

View north, Wetland C4 on both sides of access road along north side of ROW.

View southwest, Wetland C6 on north side of ROW.

View north, Wetland C7 on south side of ROW.

View east, Wetland C8 on south side of ROW.

View southeast, Wetland C10 on south side of ROW.

View southwest, Wetland C11 on north side of ROW.

View northwest, Wetland C12 and Vernal Pool VP C12-1 on west side of ROW.


View of Wetland C14 along the western side of the access road.View facing south.


View of Wetland C15 of the large forested/emergent wetland along the eastern ROW boundary. View facing east.

View of Wetland C16 and riprap swale. View facing southwest.


View to the south of Wetland C18 on west side of ROW.


View of Wetland C20 on west side of access road, view facing east.


View north towards the access road of Wetland C21.


View southwest of Wetland C23 on west side of ROW.

View northwest, Wetland D1 on east side of ROW.

View northwest, Wetland D2 on the east side of the existing access road.

View northeast, Stream S-D3 within Wetland D3 on east side of ROW.

View northeast, Wetland D4 on east side of ROW.

View northeast, vernal pool VP D5-1 located within Wetland D5 on west side of ROW.

View northwest, Wetland D6 on east side of ROW.

View southwest, Wetland D7 and Stream SD5 on west side of ROW.

View northwest, Wetland D8 on east side of ROW.

View south, Wetland D10 on east side of ROW.


View south, Wetland D11 on west side of ROW.

View northeast, Wetland D12 on west side of ROW.

View southeast, Wetland D13 on east side of ROW.

View southeast, Wetland D14 on east side of ROW.

View southeast, vernal pool VP D15-1 within Wetland D15 on east side of ROW.

View northwest, Wetland E1 on east side of ROW..

View southeast, Wetland E2 on east side of ROW.

View south, Wetland E3 on west side of ROW.

View northwest, Wetland E4 on east side of existing access road.

View north, Wetland E5 on west side of ROW.

View east, Wetland E6 on east side of ROW.

View east, Wetland E7 on east side of access road.

View northeast, Wetland E8 on east side of ROW.

View south, Wetland E9 on east side of ROW.

View north, Wetland E10 on west side of ROW.

View north, Wetland E11 on east side of existing access road.

View southwest, Wetland E12 with Campville Road in the background.


View north, Wetland F1-F2 on west side of ROW.


View west, Wetland F1-F2 on east side of ROW.


View west, Wetland F3 on east side of ROW.


View southwest, Wetland F4 on east side of ROW.


View northeast, Wetland F4 on east side of ROW.


View northeast, Wetland F5 on west side of ROW.


View east, Wetland F6 on east side of ROW.


View southeast, Wetland F7 on west side of ROW.


View southwest, Wetland F8 on west side of ROW.

View west, Wetland F9 and Stream SF7 on east side of ROW.

View southeast, Wetland F10 on east side of ROW.

View northeast, Wetland F11 and Stream S01NR on east side of ROW.

View northwest, Wetland F12 on east side of existing access road.

View east, southern portion of Wetland F13 on west side of existing access road.

View north, Wetland F14 on west side (left) of existing access road.

View northwest, Wetland F15 on east side of ROW.

View east, Wetland G1 on west side of ROW.

View east, Wetland G2 north of Campville Substation.

View northeast, Wetland G3.