



**VERMONT ELECTRIC POWER
COMPANY (VELCO)
New Haven Operations Facility
New Haven, Vermont**

Natural Resources Report

November 14, 2019

Prepared for:

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1.0 INTRODUCTION

At the request of Vermont Transco LLC / Vermont Electric Power Company (VT Transco / VELCO; herein referred to as VELCO), Stantec Consulting Services Inc. (Stantec) conducted environmental resource assessments of the proposed New Haven Operations Facility Project (Project) and its surrounding area situated adjacent to VELCO's existing New Haven Substation located at 760 Vermont Route 17 (Main Street) in New Haven, Vermont (Figure 1 – Location Map). Environmental resource assessments conducted by Stantec involved database research, field assessments and delineations, and mapping of an approximately 72-acre area, herein referred to as the Study Area (Figure 2 – Natural Resources Map). This Natural Resources Report (NRR) summarizes results of those activities, observations, and findings. The purpose of this NRR is to serve as a supporting technical document for a petition by VELCO to the Vermont Public Utility Commission (Commission) for a Certificate of Public Good under Section 30 V.S.A. § 248 (Section 248). The environmental criteria of Section 248 addressed in this NRR to support that petition includes the following:

- Outstanding Resource Waters (10 V.S.A. § 1424a(d))
- Air and Water Pollution (10 V.S.A. § 6086(a)(1))
 - Headwaters (§ 6086(a)(1)(A))
 - Waste Disposal (§ 6086(a)(1)(B))
 - Water Conservation (§ 6086(a)(1)(C))
 - Floodways (§ 6086(a)(1)(D))
 - Streams (§ 6086(a)(1)(E))
 - Shorelines (§ 6086(a)(1)(F))
 - Wetlands (§ 6086(a)(1)(G))
- Water Supply (10 V.S.A. § 6086(a)(2) and (3))
- Soil Erosion (10 V.S.A. § 6086(a)(4))
- Aesthetics, Scenic and Natural Beauty (10 V.S.A. § 6086(a)(8))
 - Rare and Irreplaceable Natural Areas (§ 6086(a)(8))
 - Necessary Wildlife Habitat and Endangered Species (§ 6086(a)(8)(A))
- Primary Agricultural Soils (10 V.S.A. § 6001)

Database research, field assessments and delineations, and mapping completed by Stantec to date include: water resource delineations (wetlands, streams, potential vernal pools [PVP], and other waters of the United States); significant natural community surveys; necessary wildlife habitat surveys; rare, threatened or endangered (RTE) species assessments; and non-native invasive species (NNIS) surveys. Database research involved use of online resources, including: Vermont Agency of Natural Resources (VTANR) Atlas (2019a), Vermont Geodata Portal (VCGI 2018), Natural Resource Conservation Service (NRCS 2018), Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs) (FEMA 2018), and previous natural resource delineation data provided by VELCO.

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2.0 PROJECT DESCRIPTION

VELCO is seeking authorization from the Commission to construct the proposed New Haven Operations Facility Project. The Project will generally consist of an 18,000-square-foot (sq ft), two-story building (Main Building) located on approximately 5 acres of a larger 100-acre parcel, setback on the south side of Vermont Route 17 near VELCO's existing New Haven substation in New Haven, Vermont. The Main Building has been designed to resemble a traditional Vermont barn with dark red matte finish to blend in with the rural surroundings of the site. Consistent with VELCO's vision of a sustainable Vermont, the building design will incorporate energy efficiency and environmental sustainability principles to the greatest extent economically feasible. Key exterior Project components include:

- A back-up generator building to the immediate east of the Main Building;
- Mechanical equipment surrounded by a retaining wall located on the western side of the Main Building;
- Solar panels installed on the roof of the Main Building for onsite energy consumption;
- An eight-ft-tall, chain link security fence surrounding the Main Building, the generators, and the mechanical equipment;
- Site access provided from Vermont Route 17 via an existing driveway extending to a new parking area; and
- Two redundant and independent three-phase electric distribution services with power transformers supplied from Green Mountain Power Corporation.

The main purpose of the Project is to serve as VELCO's Backup Control Center for operating the transmission system. In addition, the Project will include a Secondary Data Center, a system operator training facility, an emergency response center, and general conference and office space for utility-related meeting.

In addition to the building facility, the Project would also include supporting wastewater and potable water systems that are designed to adequately meet the needs of the facility. A stormwater management system would be installed to manage stormwater runoff from impervious surfaces resulting from site development. Lastly, a landscaping plan including the planting of native species, would be implemented to enhance aesthetics and further blend the facility into the existing rural surroundings, while maintaining connections to the natural ecology of the area. Combined, these areas comprise an 9.8-acre limit of disturbance for construction and installation of the building and supporting infrastructure, referred to herein as the "Project Site".

3.0 EXISTING CONDITIONS

The 72-acre Study Area assessed by Stantec for the Project is located in Addison County in central New Haven on the southern side of Vermont Route 17 (Main Street), approximately 1,900 ft west of the intersection of Vermont Routes 17 and 7 (Figure 1 – Location Map). The Study Area is bordered by approximately 1,600 ft of road frontage along Vermont Route 17 to the north; an access road and open space to the west, the existing VELCO New Haven Substation and open space to the south, and open

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meadows and agricultural land to the east (Figure 2 – Natural Resources Map). The approximately 9.8-acre Project Site is located within the central portion of the Study Area (Figure 2 – Natural Resources Map).

Land use within the Study Area is a combination of developed and undeveloped areas. Developed areas consist of an existing substation, the former new haven substation site (to be relocated prior to construction of the Project), and access driveways and parking areas. Land cover within the undeveloped portions of the Study Area is predominantly comprised of open meadow with a few tree rows extending through the center and along the western, southern, and southeastern boundaries (Appendix A.1 – Representative Land Use Photographs). The tree rows and edge habitat comprise a high density of NNIS occurrences, with further detail summarized in the NNIS Technical Memorandum (Appendix B). Surrounding land use consists predominantly of agriculture (cropland and pastures), with narrow forested corridors along borders that extend through the Study Area. The Study Area is generally located within the Champlain Valley biophysical region and subwatershed (HU12) Headwaters Little Otter Creek 041504080401.

4.0 OUTSTANDING RESOURCE WATERS (10 V.S.A. § 1424a(d))

The following four waterways have been classified by the Vermont Natural Resources Board (VTNRB) as Outstanding Resource Waters (ORWs; VTNRB 2013):

1. Batten Kill River, Towns of East Dorset and Arlington
2. Pike's Falls/Ball Mountain, Town of Jamaica
3. Poultney River, Towns of Poultney and Fair Haven
4. Great Falls, Ompompanoosuc River, Town of Thetford

Stantec completed a database review of the Vermont Geodata Portal (VCGI 2018) to assess proximity of these ORWs to the Study Area and determined that there are no ORWs located within the boundaries of the Study Area. The nearest ORW is the Poultney River, which is approximately 35 miles to the southwest of the Study Area.

5.0 WATER AND AIR POLLUTION (10 V.S.A. § 6086(a)(1))

5.1 AIR AND WATER (§ 6086(a)(1))

In accordance with 10 V.S.A § 6086(a)(1), demonstration is to be made that the development will not result in undue air or water pollution. Based on review of the proposed Project design, the Project will not have process emissions or burning of forest or construction debris or fire pits of any kind. Proposed construction activities will involve implementation of erosion prevention and sediment control (EPSC) measures to mitigate potential sources of air and water pollution as it relates to dust suppression, equipment washing during construction, and/or erosion and sedimentation. EPSC measures will follow

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the Vermont Standards and Specifications for Erosion Prevention and Sediment Control (VTANR 2019b) and the VELCO Environmental Guidance Manual (VELCO 2012). Construction dust will be controlled with water and/or dust suppressants. Long-term operations of the facility will rely on rooftop solar panels and potential geothermal heating sources that are designed to maximize efficiency, while minimizing negative environmental impacts such as air and water pollution. Therefore, based on combined approaches, no undue adverse impacts to air or water are anticipated.

5.2 HEADWATERS (§ 6086(a)(1)(A))

In accordance with 10 V.S.A. § 6086(a)(1)(A), demonstration is to be made that a project meets regulations regarding reduction of the quality of ground or surface waters flowing through or upon lands which are:

- i. headwaters or watersheds characterized by steep slopes and shallow soils; or
- ii. drainage areas of 20 square miles or less; or
- iii. above 1,500 feet elevation; or
- iv. watersheds of public water supplies designated by VTANR; or
- v. areas supplying significant amounts of recharge water to aquifers.

Stantec completed a database review of soils data from the NRCS and the VTANR Atlas and reviewed topographic maps, watershed maps, and public water supply protection area information from the VTANR Atlas to assess whether the Study Area is located within headwaters as defined above. Based on this information, it was determined that the Study Area is: (a) not characterized by steep slopes and shallow soils, (b) not positioned above 1,500 ft, (c) not a watershed designated by VTANR as a public water supply, and (d) not an area supplying significant amounts of recharge water to aquifers. The Study Area is within the subwatershed (Hydraulic Unit 12 [HU12] – Subbasin) headwaters of Little Otter Creek, which has a total subwatershed area of 117.6 square miles (greater than 20 square miles). It is also located within the Greater Lake Champlain Drainage Basin (Otter Creek Basin, Water Quality Management Plan, May 31, 2012). Based on this information, it was determined that the Study Area is not located within headwaters as defined above and, therefore, the Project will not reduce the quality of ground or surface waters flowing through or upon lands as defined above.

5.3 WASTE DISPOSAL (§ 6086(a)(1)(B))

In accordance with 10 V.S.A. § 6086(a)(1)(B), demonstration is to be made that the development will not involve the injection of waste material or any harmful or toxic substances into groundwater or wells. For wastewater, the Project proposes an expansion of the existing mound system, which is located to the west of the former new haven substation site, from 60 gallons per day (gpd) to 200 gpd. For stormwater runoff, the Project proposes an operational-phase stormwater management system that is in compliance with conditions of Vermont Department of Environmental Conservation (VTDEC) General Permit 3-9015 (or new General Permit 3-9050, if applicable) and the Vermont Stormwater Management Manual and includes green stormwater infrastructure. During construction, waste material will be properly disposed of in an appropriate and approved manner, as dictated by the type of material and/or equipment to be discarded. Portable toilets to be utilized during construction will be provided by an authorized supplier who will deliver, maintain, and remove them as dictated by the Project schedule. Construction dust will be

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controlled with water and/or dust suppressants. As such, the Project is not proposing to inject waste material or any harmful or toxic substances into groundwater or wells.

5.4 WATER CONSERVATION (§ 6086(a)(1)(C))

In accordance with 10 V.S.A. § 6086(a)(1)(C), demonstration is to be made that the design has considered water conservation, incorporates multiple use or recycling where technically and economically practical, utilizes the best available technology for such applications, and provides for continued efficient operation of these systems. As proposed, the building design will incorporate energy efficiency and environmental sustainability, with the intent of receiving Leadership in Energy and Environmental Design (LEED) certification from the U.S Green Building Council. As such, it is a goal of the Project to demonstrate water conservation, incorporate use or recycling where technically and economically practical, utilize the best available technology for such applications, and provide for continued efficient operation of these systems.

5.5 FLOODWAYS (§ 6086(a)(1)(D))

Pursuant to 10 V.S.A. § 6086(a)(1)(D), demonstration is to be made that:

- i. The development of lands within a floodway will not restrict or divert the flow of flood waters, and endanger the health, welfare or safety of public or of riparian owners during flooding; and
- ii. The development within a floodway fringe will not significantly increase the peak discharge of the river or stream within or downstream from the area of development and endanger the health, welfare or safety of the public or of riparian owners during flooding.

Stantec completed an assessment of delineated watercourses within the Study Area to determine if any meet the definition of a “floodway”, which is “a channel of a watercourse which is expected to flood on an average of at least once every 100 years and the adjacent land areas which are required to carry and discharge the flood of the watercourse” or a “floodway fringe”, which is “an area which is outside a floodway and is flooded with an average frequency of once or more in each 100 years.” This assessment was supported by review of available FEMA FIRMs (Figure 3 – New Haven, VT; April 3, 1978), review of the “Little Otter Creek Watershed: Phase 2 Stream Geomorphic Assessment” (South Mountain Research and Consulting 2011), and results of a field delineation and assessment of stream features conducted by Stantec on October 11 and November 1, 2017 (see Section 5.6 of this report for a summary of findings). Based on review of this information, it was determined that the Study Area does not contain a floodway or floodway fringe nor will the Project be constructed within a floodway or floodway fringe.

5.6 STREAMS (§ 6086(a)(1)(E))

In accordance with 10 V.S.A. § 6086(a)(1)(E), demonstration is to be made that the development of land on or adjacent to the banks of a stream will, whenever feasible, maintain the natural condition of the stream and will not endanger the health, safety, or welfare of the public or of adjoining landowners. Stream is defined as “a current of water which is above an elevation of 1,500 feet above sea level or which flows at any time at a rate of less than 1.5 cubic feet per second.”

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Stantec conducted a field delineation and assessment of stream features within the Study Area on October 11 and November 1, 2017. When conducting these assessments, Stantec uses federal delineation procedures (USACE 2005) to identify streams and other waters of the United States. If there are streams with a channel wider than 6 ft, each side at the Top-of-Bank is delineated according to guidelines in the Guidance for Agency Act 250 and Section 248 Comments Regarding Riparian Buffers put forth by VTANR (2005). Streams with channel sizes less than 6 ft wide and non-jurisdictional drainage features are delineated along each features' center line. Stream classification and ordinary high water (OHW) width are also assessed, according to methods detailed in the "Regulatory Guidance Letter: Subject – Ordinary High Water Mark Identification" (USACE 2005). Each OHW width channel segment is assessed as the average of measurements of OHW widths taken at regular intervals along the surveyed portion of the watercourse. Flow regimes are preliminarily classified as perennial, intermittent, or ephemeral based on qualitative observations of instream hydrology indicators and geomorphic traits at the time of observation. All field observations are used to assign Rosgen stream classifications to each stream feature (Rosgen 1996). Streams are coded by the town name ("NH" for New Haven) and feature number (e.g., NH-204). Stream points are collected using Trimble® Global Positioning System (GPS) receivers capable of sub-meter accuracy.

Based on field investigations conducted for stream features within the Study Area, Stantec delineated one ephemeral stream segment (NH-204) located along the southern boundary of the Project Site, where it connects two segments of wetland NH-203 (Figure 2 – Natural Resources Map). Stream NH-204 is a Class B water located within the Little Otter Creek sub-drainage basin, as defined by the VWQS (VTANR 2016b). It is approximately 71 linear ft, with an approximate OHW of 5 ft (355 sq ft). For more detailed information of stream NH-204, see the stream summary table (Table 1 – Summary of Delineated Streams) and representative photographs (Appendix A.2 – Representative Stream Photographs). Based on field assessments and desktop review of the VTANR Atlas, there were no major water courses or impaired waters identified within the Study Area.

The thoughtful process involved in siting of the building location and its supporting infrastructure (parking, emergency access, utilities, stormwater management, etc.) considered many variables, including avoidance and minimization of impacts to natural resource areas. In the end, it was determined that to minimize impacts to natural resources to the extent possible, the building and supporting infrastructure would need to be located: (1) off of the existing access driveway to avoid creation of a new driveway, (2) in an area that allows redevelopment of the former New Haven substation site, and (3) in an area that is outside of mapped Class II wetland and 50-ft wetland buffer areas (see Section 5.8 of this report). This resulted in a Project footprint as depicted by the "Project Site" (or Limits of Disturbance ["LOD"]) as shown in Figure 2 – Natural Resources Map. As shown, the mapped ephemeral stream will be permanently impacted as a result of grading and filling to be conducted during Project construction. As an ephemeral stream, this watercourse is not regulated under VTANR rules although it is currently assumed to be jurisdictional under USACE regulations and, therefore, will be accounted for in the Section 404 permitting process. As a small, isolated ephemeral stream, permanent impacts to this feature are not unduly adverse.

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5.7 SHORELINES (§ 6086(a)(1)(F))

In accordance with 10 V.S.A. § 6086(a)(1)(F), demonstration is to be made that the development of shorelines will, to the extent possible:

- i. retain the shoreline and the waters in their natural condition;
- ii. allow continued access to the waters and the recreational opportunities provided by the waters;
- iii. retain or provide vegetation which will screen the development or subdivision from the waters, and;
- iv. stabilize the bank from erosion as necessary with vegetation cover.

To address these five subcriteria, Stantec reviewed the definition of “shoreline” in the context of the delineated watercourses to determine whether or not a “shoreline” was present within the Study Area. Shoreline is defined as “the land adjacent to the waters of lakes, ponds, reservoirs and rivers. Shorelines shall include the land between the mean high water mark and the mean low water mark of such surface waters.” Based on review of the delineated stream (NH-204), it was determined that a shoreline as defined above was not observed or delineated within the Study Area and, therefore, development of the Project area will not result in impacts to a shoreline.

5.8 WETLANDS (§ 6086(a)(1)(G))

In accordance with 10 V.S.A. § 6086(a)(1)(G), projects are required to comply with the Vermont Wetland Rules (VWR) put forth by the VTANR (VTANR 2018). Projects are to demonstrate that developments or subdivision will meet the standards set forth by the Vermont Natural Resources Board as they pertain to significant wetlands. Significant wetlands and their respective buffers are protected under the VWR (VTANR 2018) and defined within as “any Class I or Class II wetland that merits protection under these rules, either alone or in conjunction with other wetlands, based upon an evaluation of the extent to which it serves one or more of the functions and values pursuant to 10 V.S.A. § 905b(18)(A) and section 5 [of] these rules.” The USACE Section 404 permit program and the VTDEC Section 401 Water Quality Certification also review impacts to Class III wetland impacts, which are not regulated per to 10 V.S.A § 6086(a)(1)(G).

Stantec performed wetland delineations within the Study Area on October 11, 2017, November 1, 2017, and July 18, 2019. Wetland delineations were conducted following the U.S. Army Corps of Engineers *Wetlands Delineation Manual* (USACE 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region Routine Determination Method* (Version 2.0; USACE 2012), and pursuant to the VWR Section 3.2 Methodology for Identifying Wetlands. Wetland community classifications were assigned utilizing the *Classification of Wetlands and Deepwater Habitats of the United States* (Federal Geographic Data Committee 2013). The functions and values of each wetland were qualitatively evaluated based on the on-site observations and field notes in accordance with the VWR Section 5 (Functional Criteria for Evaluating a Wetland’s Significance) and the USACE Highway Methodology (VTANR 2018, USACE 1993; Appendix C.2 – Vermont Wetland Evaluation Forms; Appendix C.3 – USACE Wetland Function and Values Forms). Data was collected on dominant vegetation, evidence of hydrology, and hydric soil criteria to complete USACE Wetland Determination forms. USACE Wetland Determination forms were also completed with paired upland plots to document

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representative wetland boundaries (Appendix C.4 – USACE Wetland Determination Forms). Representative photographs were taken of each delineated wetland (Appendix A.3 – Representative Wetland Photographs). As with streams, wetland identifiers were coded by town name (“NH” for New Haven) and feature number (e.g., NH-008). Wetland boundaries were located using Trimble® Global Positioning System (GPS) receivers capable of sub-meter accuracy but were not demarcated with flagging or by other means during the delineation per VELCO’s requests.

Based on the field assessments conducted by Stantec, seven wetland features were delineated within the Study Area: NH-008, NH-009, NH-010, NH-201, NH-202, NH-203, and BUCC-01 (Figure 2 – Natural Resources Map). Of these seven delineated wetland features, NH-202 extends outside of the Study Area. A Wetland Summary table (Table 2 – Summary of Delineated Wetlands) lists the delineated wetland identification information along with characteristics needed to classify wetlands as Class I, II, or III pursuant to 2018 VWR Section 5 guidelines. Stantec proposed a wetland classification for each delineated wetland based on review of relevant field data (e.g., field notes, Vermont Wetland Evaluation Form), desktop analysis of additional resources (e.g., aerial maps, topography, Vermont Significant Wetland Inventory [VSWI; VTANR 2019a], existing delineation data), and professional judgement. Any delineated wetland that overlapped or connected with a VSWI wetland was automatically considered a Class II wetland. Wetland boundaries were field verified by the VTANR Wetlands Program during site visits conducted on October 11, 2018, and October 8, 2019¹. The results of these site visits confirmed that two of the delineated wetlands (NH-202 and BUCC-01) are Class II and the remaining five are Class III (Appendix C.1 – Wetland Classification Recommendation and VTANR Site Visit Correspondence). There are no Class I wetlands within the Study Area. The two Class II wetlands were found to possess one or more of the following VWR Section 5 functions:

- 5.1 Water Storage for Flood Water and Storm Runoff (NH-202 & BUCC-01)
- 5.2 Surface and Ground Water Protection (NH-202 & BUCC-01)
- 5.4 Wildlife Habitat (BUCC-01)
- 5.10 Erosion Control through Binding and Stabilizing the Soil (BUCC-01)

Based on review of the Project design, there are no proposed temporary or permanent impacts to Class II wetland BUCC-01 or Class II wetland NH-202 (Figure 2 – Natural Resources Map). Although not under VTANR jurisdiction, there is approximately 0.34 acres (14,915 sq ft) of permanent impact proposed for the Class III wetland NH-203 due to building grading and construction. In addition, there is approximately 0.02 acres (936 sq ft) of temporary and permanent impact proposed for Class III wetland NH-009, resulting from expansion of the existing mound system (Figure 2 – Natural Resources Map). The Class III wetland falls under USACE jurisdiction and, therefore, requires coverage under a Section 404 General Permit (GP) for allowed impacts. Based on USACE guidelines, compensatory mitigation may be required to account for impacts to this Class III wetland. Consultation with the USACE is anticipated to be conducted during fall/winter 2019.

Similar to the siting discussion in Section 5.6 of this report, thoughtful consideration was given to avoiding and/or minimizing potential impacts to natural resource areas, including wetlands and their buffer area (in

¹ Attendees of the October 11, 2018, site visit included Zapata Courage, VTANR District Wetland Ecologist; Polly Harris, Stantec Wetland Scientist; and Jake Reed, VELCO Environmental Representative. Attendees of the October 8, 2019, site visit included Zapata Courage and Jake Reed.

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the case of Class II wetland BUCC-01). Utilization of the existing access driveway, redevelopment of the former new haven substation site, and positioning of the site footprint outside of the Class II BUCC-01 wetland and its buffer area have achieved this approach. Therefore, it has been determined that there will be no undue adverse impacts to wetlands as a result of the Project.

Stantec conducted PVP assessments during the wetland delineations in accordance with definitions of vernal pools provided by the USACE (2013), Thompson and Sorenson (2005), and the VWR. Where PVPs are identified, formal vernal pool surveys are to be completed during the spring (e.g., April and May) when obligate vernal pool species such as wood frogs (*Lithobates sylvaticus*) or spotted salamanders (*Ambystoma maculatum*) are present and breeding. By definition, a vernal pool is a temporary to semi-permanent body of water occurring in a shallow depression that typically fills with water during the spring or fall and may dry during the summer. Vernal pools have no permanent inlet or outlet and no viable populations of predatory fish. Natural and artificially created PVPs are identified based on physical characteristics of the pools such as the presence of standing water or water marks within a confined basin. Where PVPs are identified, data is collected on origin (e.g., natural or artificially created), approximate size, and hydrology. A single GPS point is collected to identify the approximate location of the PVP. Representative photographs of the PVP and the surrounding landscape are also collected for future reference. For the assessment conducted by Stantec, no PVPs were identified within the Study Area; therefore, there will be no undue adverse impacts to vernal pools as a result of the Project.

6.0 WATER SUPPLY (10 V.S.A. § 6086(a)(2) AND (3))

In accordance with 10 V.S.A. § 6086(a)(2) and (3), demonstration is to be made that the development has sufficient water to meet foreseeable needs. Based on the proposed Project design, a new well will be installed on the east side of the proposed building to supply potable water. This new well is anticipated to have adequate capacity to meet potable water needs during building operation. Therefore, it is concluded that the development has sufficient water to meet foreseeable needs.

7.0 SOIL EROSION (10 V.S.A. § 6086(a)(4))

In accordance with 10 V.S.A. § 6086(a)(4), demonstration is to be made that the project will not cause unreasonable soil erosion or reduction in the capacity of the land to hold water. The NRCS has classified each soil series in terms of its potential erodibility (“K-factors”). Based on review of the NRCS soil survey, the majority (approximately 64%) of NRCS-mapped soils within the 72-acre Study Area consist of Vergennes clay, which has an erodibility rating (or “K factor”) of 0.49. The primary underlying soils within the 9.8-acre Project Site are listed in the following table.

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NRCS Soil Name and Symbol	Average Percent Slope	K-Factor (Erodibility Rating)	Total Area within Project Site (acres)
Vergennes clay (VgB)	2 to 6	0.49	7.1
Nellis loam (NeB)	3 to 8	0.28	1.5
Melrose fine sandy loam (MrA)	0 to 3	0.17	0.80
Nellis loam, extremely stony (NsC)	3 to 15	0.28	0.25
Raynham silt loam (RaB)	0 to 6	0.37	0.09
Nellis loam (NeC)	8 to 15%	0.28	0.05

According to the Vermont Standards and Specifications for Erosion Prevention and Sediment Control (VTANR 2019b), a “medium” erodibility ranking are those soils with K factors from 0.17 to 0.36; and a “high” erodibility ranking are those soils with K factors that are greater than 0.37. Based on this information, underlying soils within the Project Site have a combination of medium to high erodibility ratings (or erodibility potential). Therefore, the Project will implement an EPSC Plan in accordance with conditions of the VTDEC General Permit 3-9020, the Vermont Standards and Specifications for Erosion Prevention and Sediment Control (VTANR 2019b), and the VELCO Environmental Guidance Manual (VELCO 2012), with particular attention to those EPSC measures that are suitable for erodibility potentials identified for the types of soils classified for this site. Following construction, areas of exposed soil that are otherwise undeveloped will be revegetated to minimize any potential of erosion and sedimentation. Furthermore, attention will be given during construction to avoid over-compaction of areas that are to remain undeveloped and restored as vegetated areas. Based on this approach, the Project will not cause unreasonable soil erosion or reduction in the capacity of the land to hold water.

8.0 AESTHETICS, SCENIC AND NATURAL BEAUTY (10 V.S.A. § 6086(a)(8))

8.1 RARE AND IRREPLACEABLE NATURAL AREAS (§ 6086(a)(8))

In accordance with 10 V.S.A § 6086(a)(8), the project “will not have an undue adverse effect on the scenic or natural beauty of the area, aesthetics, historic sites or rare or irreplaceable natural areas.” Rare and Irreplaceable Natural Areas (RINA) as determined through a four-part test are deemed so under Criterion 8 of Act 250 (as amended by Section 248) that considers the natural area’s size, quality, fragmentation, and any adverse effects a project might have on the natural area. Surveys for RINA sites consisted of desktop review of any existing element occurrences (EO) within a 2-mile radius of the Study Area to refine target communities prior to field surveys. Each natural community EO is given an overall rating ranging from A (excellent) to D (poor) based on the current condition, landscape context, and size. Natural communities are assigned a state rank that describes a community’s rarity within Vermont ranging from S1 (extremely rare) to S5 (common). This information was obtained from VTANR Atlas (2019a). According to VTANR Guidelines for the Conservation and Protection of State-Significant Natural Communities (2004), a natural area must have a combination of quality and state rarity rankings to be

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considered significant: S1 or S2 community types with an EO Rank of A, B, or C; S3 or S4 community types with an EO Rank of A or B; or S5 community types with an EO Rank of A.

Based on a desktop analysis conducted by Stantec, three significant natural community EOs were identified as being located within a 2-mile radius of the Study Area although no EOs were identified within a 1-mile radius of the Study Area. The three that are located within a 2-mile radius are:

- One EO of a significant Mesic Clayplain forest natural community; State-ranked S2;
- One EO of a significant Northern White Cedar swamp natural community; State-ranked S3; and
- One EO of a significant Red Maple – Black Ash seepage swamp natural community; State-ranked S4.

Field data was collected on discernable ecological communities that exhibited minimal anthropogenic disturbances within the Study Area. The natural communities described in Thompson and Sorensen (2005) informed field efforts and defined specific species assemblages found within distinct natural communities. The Study Area and adjacent land primarily consists of land dominated by human activity. As described above, the Study Area is bordered by a state roadway, the existing VELCO New Haven Substation, and access roads. The Study Area is predominantly comprised of mowed fields with tree hedge rows extending through the center and along the western, southern, and southeastern boundaries. At the eastern end of the Study Area a shallow emergent marsh community occurs – documented during wetland delineations as wetland NH-202. The shallow emergent marsh community, State-ranked S4, found within the Study Area was dominated reed canary grass (*Phalaris arundinaceae*) and actively utilized for agricultural grazing land along the eastern wetland edge. Due to current land use practices and the monotypic plant community, this occurrence would likely be given a rank of C/D and. Therefore, not meet the threshold for state significance. The one scrub-shrub wetland, NH-009, located within the Study Area does not meet natural assemblage definitions as is dominated by Morrow's honeysuckle (*Lonicera morrowii*), gray dogwood (*Cornus racemosa*) and possumhaw (*Viburnum nudum*). During 2018 RTE and botanical surveys, no state significant natural communities were located within the Study Area. Several NNIS occurrences were located during field surveys, as reported in further detail in a separate technical memorandum (Appendix B – NNIS Technical Memorandum). Based on desktop analysis and field surveys, no RINAs were present within the Study Area.

8.2 NECESSARY WILDLIFE HABITAT AND ENDANGERED SPECIES (§ 6086(a)(8)(A))

8.2.1 Necessary Wildlife Habitat

In accordance with 10 V.S.A § 6086(a)(8)(A), the project shall not “destroy or significantly imperil necessary wildlife habitat or any endangered species.” Necessary wildlife habitat includes deer wintering areas (DWA), black bear mast stands, and black bear wetland feeding areas. Prior to conducting field surveys, Stantec conducted a desktop review of the VTANR Atlas (VTANR 2019a) to identify occurrences of necessary wildlife habitat previously documented within the vicinity of the Study Area. Additional field data was collected concurrent with the wetland delineations to augment the desktop review and to further evaluate potential necessary wildlife habitat.

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DWA consist of mature softwood dominated forest stands that provide white-tailed deer (*Odocoileus virginianus*) with reduced snow depth and protection from heat loss and harsh winter elements. Based on the database review, there are no mapped DWA within the Study Area. The nearest DWA is located more than 0.25 miles to the south of the Study Area. This DWA (ID – DWA3148) was not field verified due to its distance from the site.

Black bear mast stands consist of forest stands dominated by American beech (*Fagus grandifolia*) or oak species (*Quercus sp.*), which represent a fall food source for black bear (*Ursa americanus*). Mapped black bear wetlands represent a crucial spring food source for black bears when the wetlands are the first available forage in early spring. Based on the database review, there are no black bear mast stands or black bear wetlands within 3 miles of the Study Area. The closest mast stand is located approximately 3.8 miles to the north of the Study Area (ID – FMO49) and the nearest black bear wetland is approximately 11.7 miles to the northeast (ID – 4W11).

In summary, based on review and evaluation of database resources and 2017–2019 field surveys, the conclusion is that the Study Area does not contain NWH.

8.2.2 Endangered Species

The evaluation of RTE species and their associated habitats were based on the listed plants and animals pursuant to Vermont Endangered Species rules (10 V.S.A. § 123) and those protected under the Federal Endangered Species Act (ESA). Prior to completing field surveys, a desktop assessment was completed by reviewing existing EO RTE data from the VTANR Atlas within a 1-mile radius of the Study Area. The desktop assessment was used to target field surveys within habitats that may support RTE plant populations. Results of the desktop assessment yielded no existing RTE occurrences within the Study Area. Six existing plant RTE occurrences and one existing animal RTE occurrences were located within a 1-mile radius of the Study Area. Information on these known occurrences including species name, State rarity rank, and habitat information are included in Table 3: RTE Desktop Assessment. Site and habitat information from the 2017 wetland delineation effort were used to help target potential RTE species that may occur within the Study Area. Of the known state-listed (Threatened or Endangered) adjacent RTE occurrences, Greene’s rush (*Juncus greenei*) and short-styled snakeroot (*Sanicula canadensis var. canadensis*) were targeted during the 2018 botanical survey as they have previously been document to occur in habitats present within the Study Area (sandy road shoulders and mesic forests, respectively).

The RTE and botanical field survey was conducted on August 9, 2018. This timing of the survey coincided with guidelines set forth by the Vermont Natural Heritage Inventory (NHI) and was conducted according to NHI guidance (VTANR 2016a). An inventory of all observed plant species within the Study area including notations of dominant species, State-rarity rank, and NNIS status are included in Table 4: Partial Botanical Inventory Results. Based on the desktop review and 2017/2018 field surveys, no RTE plants/animals were identified within the Study Area. The Study Area and adjacent land primarily consists of land dominated by anthropogenic disturbances, agriculture activity, and NNIS species occurrences. Specifically, no occurrences of the two state-listed RTE species, Greene’s rush and short-styled snakeroot, were located within the Study Area. Based on the above-mentioned survey efforts, the conclusion is that the Study Area does not contain any populations of state or federally listed plant

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species. Additionally, no incidental sightings of any RTE or uncommon animal species were reported during 2017/2018 field surveys of the Study Area.

Based on a database inquiry of the U.S. Fish & Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) database, two federally listed species have known ranges that overlap with the Study Area: Indiana bat (*Myotis sodalis*; Federally Endangered) and the northern long-eared bat (*Myotis septentrionalis*; Federally Threatened) (USFWS 2019). The Study Area has no critical habitat for northern long-eared bat or Indiana bat, based on IPaC review. There are no known winter hibernaculum or occupied maternity roost trees for either species within 1 mile of the Study Area according to the VTANR Atlas. The Study Area would be considered "Potential Summer Habitat" for the northern long-eared bat based on Vermont Fish and Wildlife (VTFWD) guidance (*Regulatory Review Guidance for Protection Northern Long-eared Bats and Their Habitats*; VTFWD 2017); and, the Town of New Haven is considered Indiana bat summer habitat (N. Dodge/VTFWD, personal communication, October 25, 2019). However, pursuant to the federal northern long-eared bat 4(d) rule (USFWS 2016) and VTFWD guidance, we anticipate no time of year restrictions for tree clearing activities for northern long-eared bat because there are no known hibernacula or roosts within 1 mile of the Project², and the amount of forest habitat to be cleared is negligible (less than 1.0% of forested habitat within a 1-mile radius of the Project). No time of year restrictions or mitigation related to Indiana bats is anticipated to be required for the Project because there are no suitable roosts in the Project area with tree diameters at breast height generally less than eight inches. Further, the hedgerows where tree clearing activities will occur are relatively isolated in agricultural fields and provide low quality habitat. The amount of tree clearing will be negligible relative to the forest habitat in the surrounding area. The Project will be implementing an aesthetic mitigation plan with native tree plantings to be made at the periphery of the Project Site to replace portions of the forested hedgerow that are to be cleared during Project construction.

In summary, there are no undue adverse impacts on RTE plant or animal species anticipated as a result of the Project.

9.0 PRIMARY AGRICULTURAL SOILS (10 V.S.A. § 6001)

In accordance with 10 V.S.A § 6001(15), as amended by Act 250, demonstration is to be made that a project meets regulations regarding Primary Agricultural Soils (PAS) as identified by the NRCS of the U.S. Department of Agriculture (USDA), where soils are rated by NRCS as Prime, Statewide, or Local farmland of Statewide Importance. As mapped by NRCS, 94% (67.5 ac) of the soils within the 72-acre Study Area meet the criteria for Prime and Statewide PAS designations (Figure 4 – Primary Agricultural Soils Map). Within the 9.8-acre Project Site, approximately 97% (9.5 acres) meets the criteria of PAS as mapped by NRCS.

Proposed activities within the 9.5-acre area would include temporary and permanent impacts to soils, depending on the nature of the activity. For example, installation of an underground utility line would

² The USFWS 4(d) rule indicates a distance of 150 ft from known occupied roost trees and a 0.25-mile distance from hibernacula, while the VTFWD guidance indicates a distance of 0.25 miles in the Special Management Zone 1 and a 1-mile distance in the Special Management Zone 2 from known roost trees or hibernacula.

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constitute a temporary impact, while conversion of open space to a building footprint would constitute a permanent impact. Table 5 summarizes proposed temporary and permanent impacts to existing open space that has been mapped as PAS, as well as proposed impacts to existing previously developed areas that are non-functioning PAS areas, within the 9.5-acre area.

Based on review of this information, it is anticipated that Project construction will result in temporary (4.7 acres) and permanent impacts (3.5 acres), and the redevelopment (1.4 acres) of approximately 9.5 acres of NRCS-mapped PAS. Overall, the project design has been dictated by minimizing potential impacts to resource areas, including PAS. The project design specifically included the reuse of existing access roads, and the redevelopment of an existing gravel yard that was formerly the old New Haven substation.

Therefore, it has been determined that the proposed Project will not result in undue adverse impact to PAS. Consultation with the Vermont Agency of Agriculture, Food and Markets (VTAAF) is underway to determine if any mitigation or specific soil handling procedures may be required for the Project.

10.0 SUMMARY

The proposed Project is anticipated to have no undue adverse impacts on criteria listed above. There will be temporary and permanent impacts to an ephemeral stream (see Section 5.6), two Class III wetlands (see Section 5.8), tree clearing (potential bat habitat; see Section 8.2.2), and primary agricultural soils (see section 9.0). As described in Section 5.8, the Project will seek necessary permits and approvals prior to construction in order to obtain authorization as it relates to temporary and permanent impacts to wetlands. As described in Sections 8.2.2 and 9.0, the Project is committed to provide mitigation as necessary to account for impacts to bat habitat and prime agricultural soil impacts based on the outcome of consultation with USFWS and VTFWD and with VTAAF, respectively.

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TABLES

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Table 1. Summary of Delineated Streams, Proposed New Haven Operations Facility, New Haven, Vermont.

Natural Resource Map Number	Stream ID	Town	Stream Name	Mapping Type (Center Line, TOB)	Flow Regime ¹	Average Ordinary High Water (OHW) ² Width (ft)	Rosgen Classification ³	VWQS Classification ⁴	2016 Impaired Water List (Y/N) ⁵	Comment
1	NH-204	New Haven	NA	Center Line	Ephemeral	5	G6	B	N	Short ephemeral stream between segments of wetland NH-203

¹ Flow regimes were preliminarily classified as perennial, intermittent, or ephemeral based on qualitative observations of instream hydrology indicators at the time of observation and geomorphic traits.

² USACE 2005. U.S. Army Corps of Engineers. 2005. "Regulatory Guidance Letter. Subject: Ordinary High Water Mark Identification." No. 05 05.

³ Rosgen D. 1996. Applied Fluvial Morphology. Wildland Hydrology Books, Pagosa Springs, Co.

⁴ Vermont Agency of Natural Resources (ANR) 2017. Vermont Water Quality Standards. Effective January 15, 2017.

⁵ State of Vermont 2016 303(d) List of Impaired Waters.

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Table 2. Summary of Delineated Wetlands, Proposed VELCO New Haven Operations Facility, New Haven, Vermont.

Natural Resource Map Number	Wetland ID	Town	Cowardin Classification ¹	VWR Section 5 Functional Criteria (Functions and Values) ²	VWR Section 4.6 Presumptions ³	Contiguous / Overlaps VSWI (Y/N)	Associated Streams	Associated PVPs	Mapped Area (Sq Ft)	Functionally Significant (Y/N)	VWR Classification ⁴	Comments
1	NH-201	New Haven	PEM	1 L, 2 L	NA	N		NA	11,098*	N	III	Depressional wetland in mowed field
1	NH-202	New Haven	PEM	1 P, 2 H	a, h	Y		NA	37,530	Y	II	VSWI mapped wetland, large PEM wetland
1	NH-203	New Haven	PEM	1 P, 2 L	a	N	NH-204	NA	23,720*	N	III	Small swale wetland, feeds ephemeral stream
1	NH-008	New Haven	PEM	1 L, 2 L	NA	N		NA	18,205*	N	III	Wetland adjacent to access roads and Vermont Route 17
1	NH-009	New Haven	PSS	1 L, 2 L	a	N		NA	28,806*	N	III	Wetland system adjacent of laydown area and stormwater systems
1	NH-010	New Haven	PEM	2 P	NA	N		NA	796*	N	III	Small isolated wetland swale
1	BUCC-01	New Haven	PEM	1 P, 2 L, 10 L	a	N		NA	47,426*	N	II	Large PEM swale wetland, two components connected by a culvert

* Wetland is delineated completely within the Study Area.

¹ Federal Geographic Data Committee. 2013. Classification of wetlands and deepwater habitats of the United States.

² Functions and values were qualitatively evaluated based on the Function Criteria for Evaluating a Wetland's Significance in accordance with the VWR Section 5.

³ Codes listed correspond with Section 4.6 Presumptions of the 2018 Vermont Wetland Rules.

⁴ VWR classifications confirmed by VTANR staff during site visits on 10/11/18 and 10/8/19.

Table 3. RTE Desktop Assessment of Element Occurrences within 2 miles of the Study Area, Proposed VELCO New Haven Operations Facility, New Haven, Vermont.

Scientific Name	Common Name	Type	VT State Rank	VT Status	EO last observed	Habitat Description ¹	Phenology ²	2018 Survey Recommendation	
								Potential for Habitat within Study Area?	Comments
<i>Pycnanthemum muticum</i>	Blunt Mountain-mint	Plant	S1	-	2013	Woodlands, forest openings, fields, open rights-of-way, ridges, balds.	Summer - Late Summer	Yes	Not a listed species
<i>Juncus greenei</i>	Greene's Rush	Plant	S2	E	2015	Sandplains, dry fields, sandy road shoulders, rock outcrops.	Summer - Late Summer	Yes	Possible habitat along road shoulders, Endangered in Vermont
<i>Sanicula canadensis var. canadensis</i>	Short-styled Snakeroot	Plant	S2S3	T	2016	Rich, mesic forests, dry-mesic forests on sandy soils.	Summer	Yes	Possible habitat along mesic-forest edge at eastern edge of Study Area.
<i>Woodsia obtusa ssp. Obtusa</i>	Blunt-leaved Woodsia	Plant	S3	-	2002	Cliffs and rocky slopes, predominantly on high-pH substrate.	Summer - Late Summer	No	Not a listed species
<i>Carex trichocarpa</i>	Hairy Sedge	Plant	S3	-	2016	Wet meadows, ditches, lake shores, riverside marshes and fields, usually in high-pH bedrock regions.	Summer	Yes	Not a listed species
<i>Ranunculus pensylvanicus</i>	Bristly crowfoot	Plant	S3	-	2016	Shorelines, river banks, swamps, ditches, marshes.	Summer	Yes	Not a listed species
<i>Ambystoma laterale</i>	Blue-spotted Salamander	Animal	S3	-	2015	Most commonly in moist hardwood forests but also in wooded swamps, marshes, and bogs.	Spring Breeder	No	Not a listed species

¹ Potential sources for habitat descriptions include:

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² Flowering Time: Spring (April-May), Summer (June-July), Late Summer (August-September), Fall (October-November)

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Table 4. Partial Botanical Inventory Results, 9 August 2018, Proposed VELCO New Haven Operations Facility, New Haven, Vermont.

Scientific Name ¹	Common Name	Family	Forest and/or Hedge	Mowed Field	Emergent Wetland	VT Rarity Rank ²	Non-Native Invasive Species ³
<i>Acer negundo</i>	Ash-leaf maple	Sapindaceae	X				
<i>Acer rubrum</i>	Red maple	Sapindaceae	X				
<i>Acer saccharum</i>	Sugar maple	Sapindaceae	X				
<i>Actaea rubra</i>	Red baneberry	Ranunculaceae	X				
<i>Agrostis gigantea</i>	Redtop bentgrass	Poaceae		X	X		
<i>Ambrosia artemisiifolia</i>	Common ragweed	Asteraceae	X	X			
<i>Amelanchier laevis</i>	Smooth shadbush	Rosaceae	X				
<i>Anemone canadensis</i>	Canada windflower	Ranunculaceae	X				
<i>Arctium minus</i>	Common burdock	Asteraceae	X	X			
<i>Artemisia vulgaris</i> *	Common wormwood*	Asteraceae		X			
<i>Asclepias syriaca</i>	Common milkweed	Apocynaceae		X			
<i>Athyrium angustum</i>	Northern lady fern	Woosiaceae	X				
<i>Betula alleghaniensis</i>	Yellow birch	Betulaceae	X				
<i>Betula populifolia</i>	Gray birch	Betulaceae	X				
<i>Bidens frondosa</i>	Devil's beggar-ticks	Asteraceae			X		
<i>Bromus inermis</i>	Smooth brome	Poaceae		X			
<i>Calamagrostis canadensis</i>	Bluejoint	Poaceae			X		
<i>Caltha palustris</i>	Marsh marigold	Ranunculaceae			X		
<i>Calystegia sepium</i>	Hedge false bindweed	Convolvulaceae	X	X			
<i>Campanula rapunculoides</i>	Creeping bellflower	Campanulaceae		X			
<i>Carex annectens</i>	Yellow-fruited sedge	Cyperaceae		X			
<i>Carex brunnescens</i>	Brownish sedge	Cyperaceae	X				
<i>Carex crawfordii</i>	Crawford's sedge	Cyperaceae		X			
<i>Carex intumescens</i>	Greater bladder sedge	Cyperaceae	X				
<i>Carex pallescens</i>	Pale sedge	Cyperaceae		X			
<i>Carex projecta</i>	Necklace sedge	Cyperaceae		X			
<i>Carex scoparia</i>	Pointed broom sedge	Cyperaceae		X			
<i>Carex vesicaria</i>	Lesser bladder sedge	Cyperaceae			X		
<i>Centaurium pulchellum</i>	Branched centaury	Gentianaceae		X			
<i>Chenopodium album</i>	Lambsquarters	Amaranthaceae		X			
<i>Cichorium intybus</i>	Chicory	Asteraceae		X			
<i>Cinna latifolia</i>	Slender wood reed	Poaceae	X				
<i>Circaea canadensis</i>	Broad-leaved enchanter's-nightshade	Onagraceae	X				
<i>Cirsium arvense</i>	Creeping thistle	Asteraceae		X			
<i>Cirsium vulgare</i>	Common thistle	Asteraceae		X			
<i>Convallaria majalis</i>	Lily-of-the-valley	Ruscaceae	X				
<i>Conyza canadensis</i>	Canada fleabane	Asteraceae		X			
<i>Cornus racemosa</i> *	Gray dogwood*	Cornaceae	X				
<i>Cornus sericea</i>	Red Osier dogwood	Cornaceae	X				
<i>Cyperus strigosus</i>	Straw-colored flatsedge	Cyperaceae		X			
<i>Dactylis glomerata</i> *	Orchard grass*	Poaceae		X			
<i>Daucus carota</i>	Queen Anne's lace	Apiaceae		X			
<i>Dicanthelium lanuginosum</i>	Hairy rosette-panicgrass	Poaceae		X			
<i>Dryopteris carthusiana</i>	Spinulose wood fern	Dryopteridaceae	X				
<i>Dryopteris cristata</i>	Crested wood fern	Dryopteridaceae			X		
<i>Dryopteris intermedia</i>	Evergreen wood fern	Dryopteridaceae	X				
<i>Echinochloa crus-galli</i>	Common barnyard grass	Poaceae		X			
<i>Echinochloa muricata</i>	American barnyard grass	Poaceae		X			
<i>Echinocystis lobata</i>	Wild cucumber	Cucurbitaceae	X				
<i>Elaeagnus umbellata</i>	Autumn-olive	Elaeagnaceae	X				WL
<i>Eleocharis tenuis</i>	Slender spikesedge	Cyperaceae		X			
<i>Elymus repens</i>	Creeping wild-rye	Poaceae		X			
<i>Epilobium ciliatum</i>	Fringed willow-herb	Onagraceae			X		
<i>Equisetum arvense</i>	Field horsetail	Equisetaceae		X	X		
<i>Erechtites hieraciifolius</i>	American burnweed	Asteraceae		X			
<i>Erigeron annuus</i>	Annual fleabane	Asteraceae		X			
<i>Erigeron philadelphicus</i>	Philadelphia fleabane	Asteraceae		X			
<i>Erigeron strigosus</i>	Rough fleabane	Asteraceae		X			
<i>Eupatorium perfoliatum</i>	Boneset thoroughwort	Asteraceae			X		
<i>Euphorbia cyparissias</i>	Cypress spurge	Euphorbiaceae		X			WL
<i>Euthamia graminifolia</i>	Common grass-leaved goldenrod	Asteraceae	X	X			
<i>Eutrochium maculatum</i>	Spotted Joe-Pye weed	Asteraceae			X		
<i>Festuca rubra</i>	Red fescue	Poaceae		X			
<i>Fraxinus americana</i>	White ash	Oleaceae	X				
<i>Fraxinus pennsylvanica</i>	Green ash	Oleaceae	X				

NATURAL RESOURCES REPORT – NEW HAVEN OPERATIONS FACILITY

Tables

November 14, 2019

Scientific Name ¹	Common Name	Family	Forest and/or Hedge	Mowed Field	Emergent Wetland	VT Rarity Rank ²	Non-Native Invasive Species ³
<i>Galeopsis tetrahit</i>	Brittle-stemmed hemp-nettle	Lamiaceae		X			
<i>Galium asprellum</i>	Rough bedstraw	Rubiaceae			X		
<i>Galium mollugo</i>	Whorled bedstraw	Rubiaceae		X			
<i>Galium triflorum</i>	Fragrant bedstraw	Rubiaceae	X				
<i>Geum aleppicum</i>	Yellow avens	Rosaceae	X				
<i>Geum canadense</i>	White avens	Rosaceae	X				
<i>Geum rivale</i>	Water avens	Rosaceae			X		
<i>Hackelia virginiana</i>	Virginia stickseed	Boraginaceae	X				
<i>Hieracium caespitosum</i>	Yellow hawkweed	Asteraceae		X			
<i>Hylotelephium telephium</i>	Purple orpine	Crassulaceae	X				
<i>Hypericum perforatum</i>	Common St. John's-wort	Hypericaceae		X			
<i>Impatiens capensis</i>	Jewelweed	Balsaminaceae			X		
<i>Inula helenium</i>	Horse yellowhead	Asteraceae		X			
<i>Juncus dudleyi</i>	Dudley's rush	Juncaceae		X			
<i>Juncus effusus</i>	Common soft rush	Juncaceae			X		
<i>Juniperus communis</i>	Common juniper	Cupressaceae	X				
<i>Juniperus virginiana</i>	Eastern red cedar	Cupressaceae	X				
<i>Leersia oryzoides</i>	Rice cut grass	Poaceae			X		
<i>Lobelia inflata</i>	Indian-tobacco	Campanulaceae		X			
<i>Lolium perenne</i>	Perennial rye grass	Poaceae		X			
<i>Lonicera morrowii</i> *	Morrow's honeysuckle*	Caprifoliaceae	X				B
<i>Lotus corniculatus</i> *	Garden bird's-foot-trefoil*	Fabaceae		X			
<i>Lycopus americanus</i>	American water-horehound	Lamiaceae			X		
<i>Lythrum salicaria</i>	Purple loosestrife	Lythraceae			X		B
<i>Medicago sativa</i>	Alfalfa	Fabaceae		X			
<i>Melilotus albus</i>	White sweet-clover	Fabaceae		X			
<i>Oenothera biennis</i>	Common evening-primrose	Onagraceae		X			
<i>Onoclea sensibilis</i>	Sensitive fern	Onocleaceae			X		
<i>Osmunda claytoniana</i>	Interrupted fern	Osmundaceae	X				
<i>Oxalis corniculata</i>	Creeping yellow wood sorrel	Oxalidaceae		X			
<i>Oxalis stricta</i>	Common yellow wood sorrel	Oxalidaceae		X			
<i>Panicum virgatum</i>	Switch panicgrass	Poaceae		X			
<i>Parthenocissus quinquefolia</i>	Virginia creeper	Vitaceae	X	X			
<i>Pastinaca sativa</i>	Wild parsnip	Apiaceae		X			WL
<i>Persicaria pensylvanica</i>	Pennsylvania smartweed	Polygonaceae		X			
<i>Persicaria sagittata</i>	Arrow-leaved tearthumb	Polygonaceae			X		
<i>Phalaris arundinacea</i> *	Reed canary grass*	Poaceae		X	X		WL
<i>Phleum pratense</i> *	Timothy*	Poaceae		X			
<i>Pinus strobus</i> *	Eastern white pine*	Pinaceae	X				
<i>Plantago lanceolata</i>	English plantain	Plantaginaceae		X			
<i>Plantago major</i>	Common plantain	Plantaginaceae		X			
<i>Poa compressa</i>	Flat-stemmed blue grass	Poaceae		X			
<i>Poa pratensis</i>	Kentucky blue grass	Poaceae	X	X			
<i>Populus deltoides</i>	Eastern cottonwood	Salicaceae	X				
<i>Populus grandidentata</i>	Bigtooth aspen	Salicaceae	X				
<i>Populus tremuloides</i>	Quaking aspen	Salicaceae	X				
<i>Prunus serotina</i>	Black cherry	Rosaceae	X				
<i>Quercus macrocarpa</i>	Burr oak	Fagaceae	X				
<i>Quercus velutina</i>	Black oak	Fagaceae	X				
<i>Ranunculus acris</i>	Tall buttercup	Ranunculaceae		X			
<i>Rhamnus cathartica</i> *	European buckthorn*	Rhamnaceae	X				B
<i>Rhus typhina</i>	Staghorn sumac	Anacardiaceae	X				
<i>Ribes americanum</i>	Eastern black currant	Grossulariaceae	X				
<i>Rorippa palustris</i>	Common yellow-cress	Brassicaceae			X		
<i>Rosa multiflora</i>	Multiflora rose	Rosaceae	X	X			WL
<i>Rubus allegheniensis</i>	Common blackberry	Rosaceae	X				
<i>Rubus idaeus</i>	Red raspberry	Rosaceae	X	X			
<i>Rudbeckia hirta</i>	Black-eyed susan	Asteraceae		X			
<i>Rumex crispus</i>	Curly dock	Polygonaceae		X			
<i>Salix bebbiana</i>	Long-beaked willow	Salicaceae	X				
<i>Salix discolor</i>	Pussy willow	Salicaceae	X				
<i>Salix nigra</i>	Black willow	Salicaceae	X				
<i>Sambucus nigra</i>	Black elderberry	Adoxaceae			X		
<i>Saponaria officinalis</i>	Common soapwort	Caryophyllaceae		X			
<i>Setaria pumila</i>	Yellow foxtail	Poaceae		X			
<i>Scirpus atrovirens</i>	Dark-green bulrush	Cyperaceae			X		
<i>Scirpus cyperinus</i>	Common woolsedge	Cyperaceae			X		
<i>Scirpus pedicellatus</i>	Stalked woolsedge	Cyperaceae			X		

NATURAL RESOURCES REPORT – NEW HAVEN OPERATIONS FACILITY

Tables

November 14, 2019

Scientific Name ¹	Common Name	Family	Forest and/or Hedge	Mowed Field	Emergent Wetland	VT Rarity Rank ²	Non-Native Invasive Species ³
<i>Setaria viridis</i>	Green foxtail	Poaceae		X			
<i>Solanum dulcamara</i>	Climbing nightshade	Solanaceae		X			
<i>Solidago canadensis</i>	Canada goldenrod	Asteraceae		X			
<i>Solidago gigantea</i>	Smooth goldenrod	Asteraceae			X		
<i>Solidago rugosa</i>	Common wrinkle-leaved goldenrod	Asteraceae		X			
<i>Solidago uliginosa</i>	Bog goldenrod	Asteraceae			X		
<i>Sonchus arvensis</i>	Field sow-thistle	Asteraceae		X			
<i>Sonchus asper</i>	Spiny-leaved sow-thistle	Asteraceae		X			
<i>Stellaria graminea</i>	Grass-leaved stitchwort	Caryophyllaceae		X			
<i>Symphotrichum lanceolatum</i>	Lance-leaved American-aster	Asteraceae			X		
<i>Symphotrichum lateriflorum</i>	Calico American-aster	Asteraceae	X				
<i>Symphotrichum novi-belgii</i>	New York American-aster	Asteraceae			X		
<i>Symphotrichum puniceum</i>	Purple-stemmed American-aster	Asteraceae		X	X		
<i>Taraxacum officinale</i> *	Common dandelion*	Asteraceae		X			
<i>Toxicodendron radicans</i>	Poison-ivy	Anacardiaceae	X				
<i>Trifolium arvense</i>	Rabbit-foot clover	Fabaceae		X			
<i>Trifolium pratense</i>	Red clover	Fabaceae		X			
<i>Trifolium repens</i>	White clover	Fabaceae		X			
<i>Tussilago farfara</i>	Coltsfoot	Asteraceae		X			
<i>Typha angustifolia</i>	Narrow-leaved cat-tail	Typhaceae			X		
<i>Typha latifolia</i>	Broad-leaved cat-tail	Typhaceae			X		
<i>Ulmus americana</i>	American elm	Ulmaceae	X				
<i>Verbascum thapsus</i>	Common mullein	Scrophulariaceae		X			
<i>Verbena hastata</i>	Blue vervain	Verbenaceae			X		
<i>Veronica serpyllifolia</i>	Thyme-leaved speedwell	Plantaginaceae		X			
<i>Viburnum dentatum</i>	Smooth arrowwood	Adoxaceae	X				
<i>Viburnum lentago</i>	Nannyberry	Adoxaceae	X				
<i>Vicia cracca</i>	Cow vetch	Fabaceae		X			
<i>Vicia sativa</i>	Common vetch	Fabaceae		X			
<i>Viola sororia</i>	Woolly blue violet	Violaceae			X		
<i>Vitis aestivalis</i>	Summer grape	Vitaceae	X				
<i>Vitis riparia</i>	River grape	Vitaceae	X				

* Denotes a dominant species within the Study Area and/or habitat type.

¹ Nomenclature follows USDA-NRCS PLANTS database (2018) and/or Haines (2011).

² The Vermont State Rank from the "Rare and Uncommon Native Vascular Plants of Vermont - Vermont Natural Heritage Inventory - Vermont Fish & Wildlife Department", version dated March 24, 2017.

³ Vermont Agency of Agriculture, Food & Markets (VTAAF) Quarantine #3- Noxious Weeds (2012). A= Class A Noxious Weeds, B= Class B Noxious Weeds Vermont Agency of Natural Resources (ANR) Vermont Wildlife Action Plan- Appendix K Exotic Invasive and Pest Species (2017). WL= Watch List Species.

NATURAL RESOURCES REPORT – NEW HAVEN OPERATIONS FACILITY

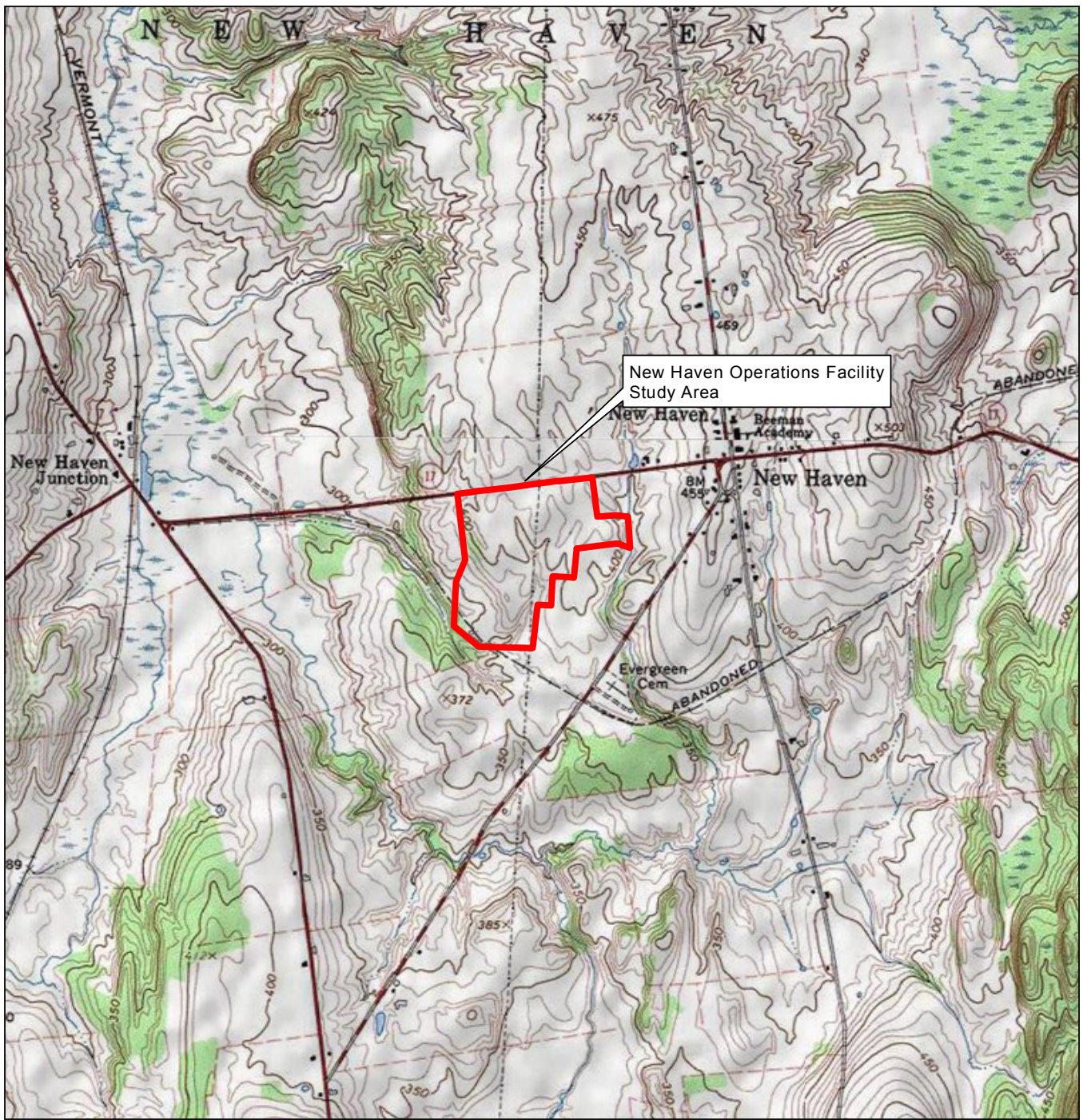
Tables


November 14, 2019

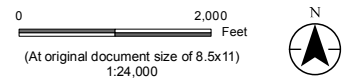
Table 5. Summary of NRCS prime farmland classifications within the Study Area, Proposed New Haven Operations Facility, New Haven, Vermont.

NRCS Soil Name and Symbol	NRCS PAS Designation	Non-functioning PAS Impact Area (acres)	Permanent PAS Impact Area (acres)	Temporary PAS Impact Area (acres)	Total (acres)
Raynham silt loam (RaB)	Prime	-	-	0.09	0.09
Nellis loam (NeB)	Prime	0.15	0.40	0.92	1.46
Melrose fine sandy loam (MrA)	Prime	-	0.20	0.60	0.80
Vergennes clay (VgB)	Statewide	1.22	2.82	3.11	7.15
Nellis loam (NsC)	n/a	-	-	0.25	0.25
Nellis loam (NeC)	Statewide	-	0.05	-	0.05
Total		1.37	3.47	4.96	9.80
SOAG Total		1.37	3.47	4.71	9.55

FIGURES



Legend
 Study Area



Project Location: New Haven, VT
 Prepared by KWH on 2019-10-08
 TR by EB on 2019-10-08
 IR Review by KR on 2019-10-xx

Client/Project: 195601391

VELCO
 New Haven Operations Facility

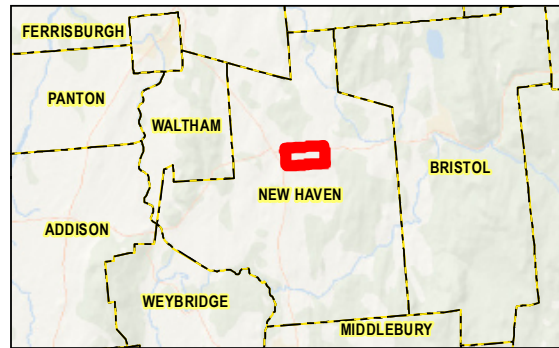
Figure No. 1

Title
Location Map

Notes
 1. Coordinate System: NAD 1983 StatePlane Vermont FIPS 4400 Feet
 2. Data Sources: Velco

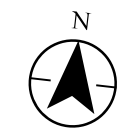
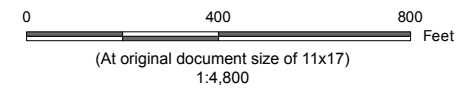
V:\1956\active\195601391\03_data\gis_cad\gis\NewHavenOP-S\01391_01_LocationMap.mxd Revised: 2019-11-07 By: knoward

Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.



- Legend**
- Culvert
 - Study Area
 - Project Site (LOD)
 - Proposed New Haven Operation Facility
 - Tax Parcel and Span
 - 20' Contour Line
 - 100' Contour Line

- Delineated Ephemeral Stream
- Delineated Wetland Boundary
- Delineated Wetland Extends
- Delineated Wetland 50' Wetland Buffer
- Delineated Wetland



Project Location
New Haven, VT

Prepared by KWH on 2019-10-08
TR by EB on 2019-10-08
IR Review by KR on 2019-11-07

Client/Project
VELCO
New Haven Operations Facility

195601391

Figure No.
2

Title
Natural Resources Map

Wetland Notes:

1. Wetland boundaries delineated in accordance with USACE Wetland Delineation Manual (1987), the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region Routine Determination Method (USACE 2012) and in accordance with the Vermont Wetland Rules, Section 3.2 Methodology for Identifying Wetlands, as amended 2017.
2. Wetland boundaries were located utilizing a Trimble Geo-XH GeoExplorer 6000 Series Receiver. Expected accuracy of GPS data is within 1 meter of actual position.

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APPROXIMATE SCALE



NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

**TOWN OF
NEW HAVEN,
VERMONT
ADDISON COUNTY**

**COMMUNITY-PANEL NUMBER
500009 0002 A**

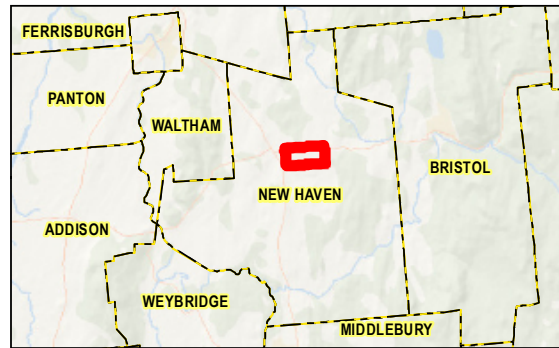
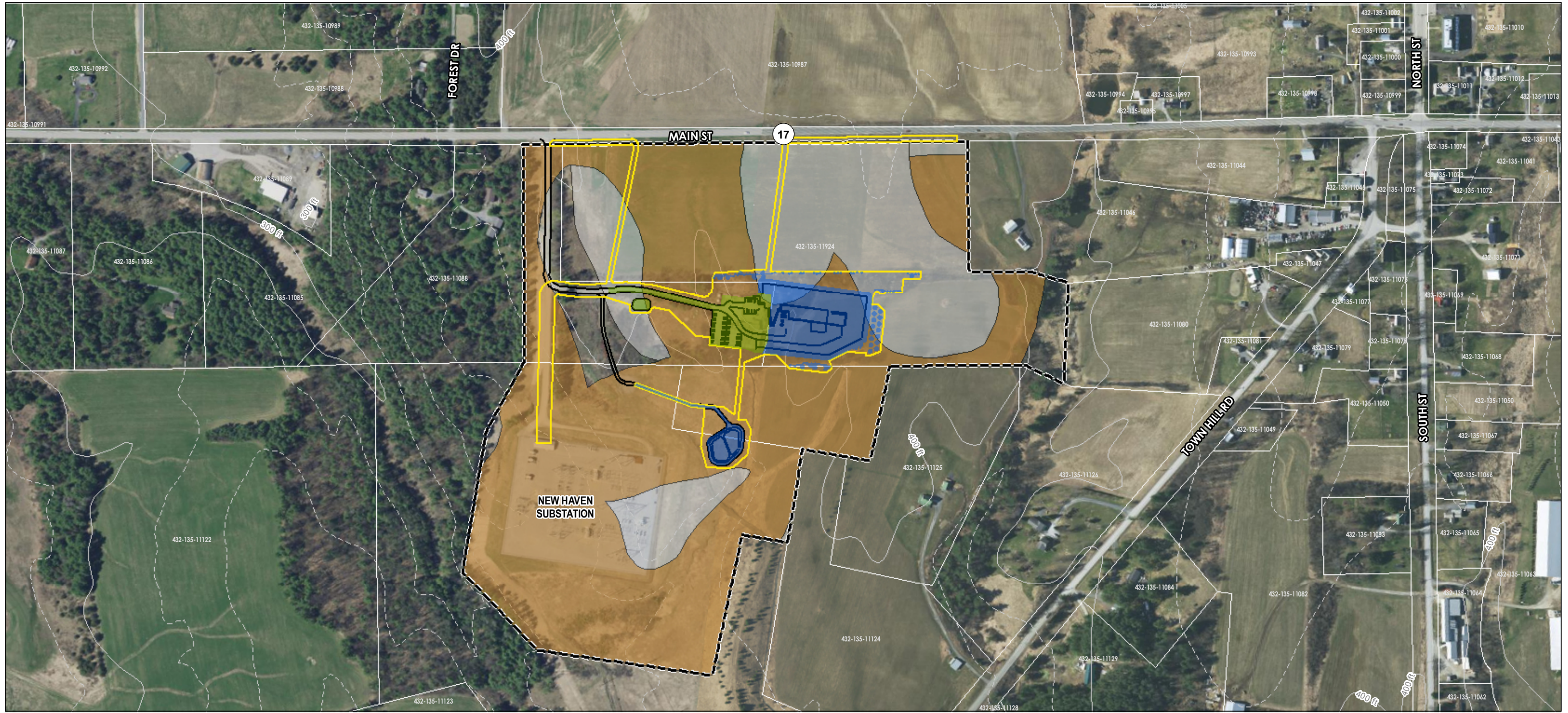
PAGE 2 OF 4
(SEE MAP INDEX FOR PAGES NOT PRINTED)

**EFFECTIVE
APRIL 3, 1978**



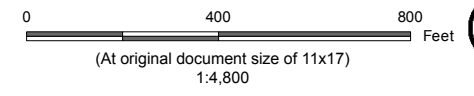
**U.S. DEPARTMENT OF HOUSING
AND URBAN DEVELOPMENT
FEDERAL INSURANCE ADMINISTRATION**

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



- Legend**
- Study Area
 - Project Site (LOD)
 - Proposed New Haven Operation Facility
 - Transmission Line ROW
 - Tax Parcel and Span
 - 20' Contour Line
 - 100' Contour Line

- Primary Agricultural Soils Within Study Area**
- Prime
 - Statewide
 - Existing Permanent Impact to Primary Agricultural Soils
 - Proposed Permanent Impact to Primary Agricultural Soils



Project Location
New Haven, VT

Prepared by KWH on 2019-10-08
TR by EB on 2019-10-08
IR Review by KR on 2019-11-07

Client/Project
VELCO
New Haven Operations Facility

195601391

Figure No.
4

Title
Primary Agricultural Soils

V:\195601391\03_data\gis\cad\gis\NewHaven\PS\01391_04_PrimeAgSoils.mxd Revised: 2019-11-11 By: khoward

APPENDICES

NATURAL RESOURCES REPORT – NEW HAVEN OPERATIONS FACILITY

Appendix A Representative Site Photographs
November 14, 2019

Appendix A REPRESENTATIVE SITE PHOTOGRAPHS

NATURAL RESOURCES REPORT – NEW HAVEN OPERATIONS FACILITY

Appendix A Representative Site Photographs
November 14, 2019

A.1 REPRESENTATIVE LAND USE PHOTOGRAPHS

NATURAL RESOURCES REPORT – NEW HAVEN OPERATIONS FACILITY

Appendix A.1 Representative Land Use Photographs
November 14, 2019



Photo 1. Representative mowed field, looking south from Vermont Rt. 17, VELCO New Haven Operation Facility, August 9, 2018, Stantec.



Photo 2. Typical tree hedge row looking east towards the Study Area edge, VELCO New Haven Operation Facility, August 9, 2018, Stantec.

NATURAL RESOURCES REPORT – NEW HAVEN OPERATIONS FACILITY

Appendix A.1 Representative Land Use Photographs
November 14, 2019



Photo 3. Access road to Study Area and adjacent substation from Rt. 17, VELCO New Haven Operation Facility, August 9, 2018, Stantec.



Photo 4. Scrub hedge separating existing laydown yard from mowed field, looking west, VELCO New Haven Operation Facility, August 9, 2018, Stantec.

NATURAL RESOURCES REPORT – NEW HAVEN OPERATIONS FACILITY

Appendix A.1 Representative Land Use Photographs
November 14, 2019



Photo 5. Mowed field looking northeast, photo taken adjacent to wet meadow NH-203, VELCO New Haven Operation Facility, August 9, 2018, Stantec.

NATURAL RESOURCES REPORT – NEW HAVEN OPERATIONS FACILITY

Appendix A Representative Site Photographs
November 14, 2019

A.2 REPRESENTATIVE STREAM PHOTOGRAPHS

NATURAL RESOURCES REPORT – NEW HAVEN OPERATIONS FACILITY

Appendix A.2 Representative Stream Photographs
November 14, 2019



Photo 1. Ephemeral stream NH-204, VELCO New Haven Operation Facility, November 1, 2017, Stantec.

NATURAL RESOURCES REPORT – NEW HAVEN OPERATIONS FACILITY

Appendix A Representative Site Photographs
November 14, 2019

A.3 REPRESENTATIVE WETLAND PHOTOGRAPHS

NATURAL RESOURCES REPORT – NEW HAVEN OPERATIONS FACILITY

Appendix A.3 Representative Wetland Photographs
November 14, 2019



Photo 1. Wetland NH-008, VELCO New Haven Operation Facility, October 11, 2017, Stantec.



Photo 2. Wetland NH-201, VELCO New Haven Operation Facility, November 1, 2017, Stantec.

NATURAL RESOURCES REPORT – NEW HAVEN OPERATIONS FACILITY

Appendix A.3 Representative Wetland Photographs
November 14, 2019



Photo 3. Wetland NH-203, VELCO New Haven Operation Facility, November 1, 2017, Stantec.



Photo 4. Wetland NH-009, VELCO New Haven Operation Facility, October 11, 2017, Stantec.

NATURAL RESOURCES REPORT – NEW HAVEN OPERATIONS FACILITY

Appendix A.3 Representative Wetland Photographs
November 14, 2019



Photo 5. Wetland NH-010, VELCO New Haven Operation Facility, October 11, 2017, Stantec.



Photo 6. Wetland NH-202, VELCO New Haven Operation Facility, November 1, 2017, Stantec.

NATURAL RESOURCES REPORT – NEW HAVEN OPERATIONS FACILITY

Appendix A.3 Representative Wetland Photographs
November 14, 2019



Photo 7. Wetland BUCC-01 VELCO New Haven Operation Facility, July 18, 2019, Stantec.

NATURAL RESOURCES REPORT – NEW HAVEN OPERATIONS FACILITY

Appendix B NNIS Technical Memorandum
November 14, 2019

Appendix B NNIS TECHNICAL MEMORANDUM

To:	VELCO VELCO: Rutland, VT	From:	Eben Baker Stantec: Topsham, Maine
File:	VELCO New Haven Operations Facility	Date:	November 14, 2019

Reference: New Haven Operations Facility Non-Native Invasive Species (NNIS) Inventory Technical Memorandum

Per the request of Vermont Transco LLC / Vermont Electric Power Company (VT Transco/VELCO; herein referred to as VELCO), Stantec Consulting Services Inc. (Stantec) conducted a Non-Native Invasive Species (NNIS) survey for their proposed New Haven Operations Facility (Project) to be located adjacent to their existing substation off State Route 17 (Main Street) in New Haven, Vermont. The NNIS survey was conducted within an approximately 72-acre area that is herein referred to as the Study Area (Attachment 1: Figure 1 – Location Map).

STUDY AREA DESCRIPTION AND SURVEY METHODOLOGIES

The Study Area is located in Addison County in central New Haven on the southern side of Vermont State Route 17 (Main Street), approximately 1,900 feet west of the intersection of Vermont Routes 17 and 6. The Study Area is approximately 72-acres in size, and is bordered by approximately 1,600 feet of road frontage along Vermont Route 17 to the north; access roads, the VELCO New Haven Substation to the west and south; and open meadows and agricultural land to the south and east. Land cover within the Study Area is predominantly comprised of open meadow with a few tree rows extending through the center and along the western, southern, and southeastern boundaries. Surrounding land use consists predominantly of agriculture (cropland and pastures), with narrow forested corridors along the Study Area borders, and extend through the general area. The Study Area is generally located within the Champlain Valley biophysical region and subwatershed (HU12) Headwaters Little Otter Creek 041504080401.

The NNIS survey was conducted concurrently with the 2017 wetland delineation effort on October 11 and November 1, 2017, and the RTE/Botanical survey effort on August 9, 2018; the findings of which were submitted to VELCO as the Natural Resource Report. Stantec recorded NNIS occurrences of Class A and B ranked noxious weeds listed on the Vermont Agency of Agriculture Noxious Weeds Rule (2012)¹. For individual occurrences of NNIS and for small populations, a Global Positioning System (GPS) point was taken at an individual plant or near the center of the population, and the size of the affected area and abundance of plants were estimated. Each point was further post-processed to create polygon features of various yet standard sizes that reflect the field estimated population area. For larger populations of invasive species, a GPS polygon was used to locate and encompass the approximate occurrence area, and the abundance of plants was estimated. For each GPS point or polygon collected, habitat data, population information, and site condition observations were recorded.

RESULTS

Stantec observed three species of NNIS within the Study Area: Morrow's honeysuckle (*Lonicera morrowii*), purple loosestrife (*Lythrum salicaria*), and common buckthorn (*Rhamnus cathartica*). Occurrences of these three NNIS were located at field edges, forested hedgerows between mowed fields, along substation access routes, and along the forested slope on the eastern edge of the Study Area (Attachment 1: Figure 2 – Invasive Species Map). A total of six occurrences, comprising three different species, were collected during the field effort and are summarized in Table 1. The percent cover of occurrences varied between evenly sparse (1-5%) for large area occurrences and dense (76–100%) for single plant occurrences. The summary table reflects the total approximate area of NNIS occurrences by species, regardless of

¹ Vermont Agency of Agriculture. 2012. Noxious Weeds Rules, Updated March 2012. Available online at: http://agriculture.vermont.gov/plant_pest/plant_weed/invasive_noxious_weeds

Reference: New Haven Operations Facility Non-Native Invasive Species (NNIS) Inventory Technical Memorandum

occurrence density. Representative photographs of each species are included (Attachment 2 – Representative Photographs).

Table 1: Summary of Non-Native Invasive Species (NNIS) Occurrences, VELCO New Haven Operations Facility Study Area

Scientific Name	Common Name	Field ID	Approximate Occurrence Abundance	Approximate NNIS Percent Cover	Approximate Occurrence Area (sq ft)
<i>Lonicera morrowii</i>	Morrow's Honeysuckle	Lon_mor_052	100–999	6–25%	29,132
		Lon_mor_059	10–100	1–5%	47,774
		Lon_mor_064	10–100	1–5%	102,262
		Lon_mor_155	100–999	1–5%	93,218
		Lon_mor_156	<10	26–50%	1,000
<i>Rhamnus cathartica</i>	Common Buckthorn	Rha_cat_050	10–100	1–5%	18,664
		Rha_cat_051	Single plant	76–100%	25
		Rha_cat_053	100–999	1–5%	23,491
<i>Lythrum salicaria</i>	Purple Loosestrife	Lyt_sal_075	<10	<1%	100

NNIS occurrences were wide-spread and well-established within forested and non-maintained portions of the Study Area. Occurrence population cover was especially dense in the forested hedgerows separating mowed fields or along the substation access route. It is important to note that NNIS populations extended outside of the Study Area.

CONCLUSION

Based on the proposed Project design, seven of the NNIS occurrences observed will be encountered during Project construction. To the extent practicable during construction, best management practices should be followed to minimize the possibility of spreading existing invasive plant populations. These measures include ensuring that equipment is clean prior to working on site and cleaned prior to leaving the site; in areas with existing invasive plant populations, the movement or storing of disturbed soil should be restricted to the immediate work area; and disturbed soils should be re-seeded and stabilized with native seed mixtures to reduce the amount of time soil are exposed. The goal of these recommendations is to prevent further proliferation of NNIS populations within the Study Area as a result of Project construction.

Stantec Consulting Services Inc.



Eben Baker PWS, Associate Ecologist
 Project Scientist
 Phone: 207 406 5459
 Fax: 207 729 2715
 eben.baker@stantec.com

Attachment: 1: Figures
 2: Representative Photographs



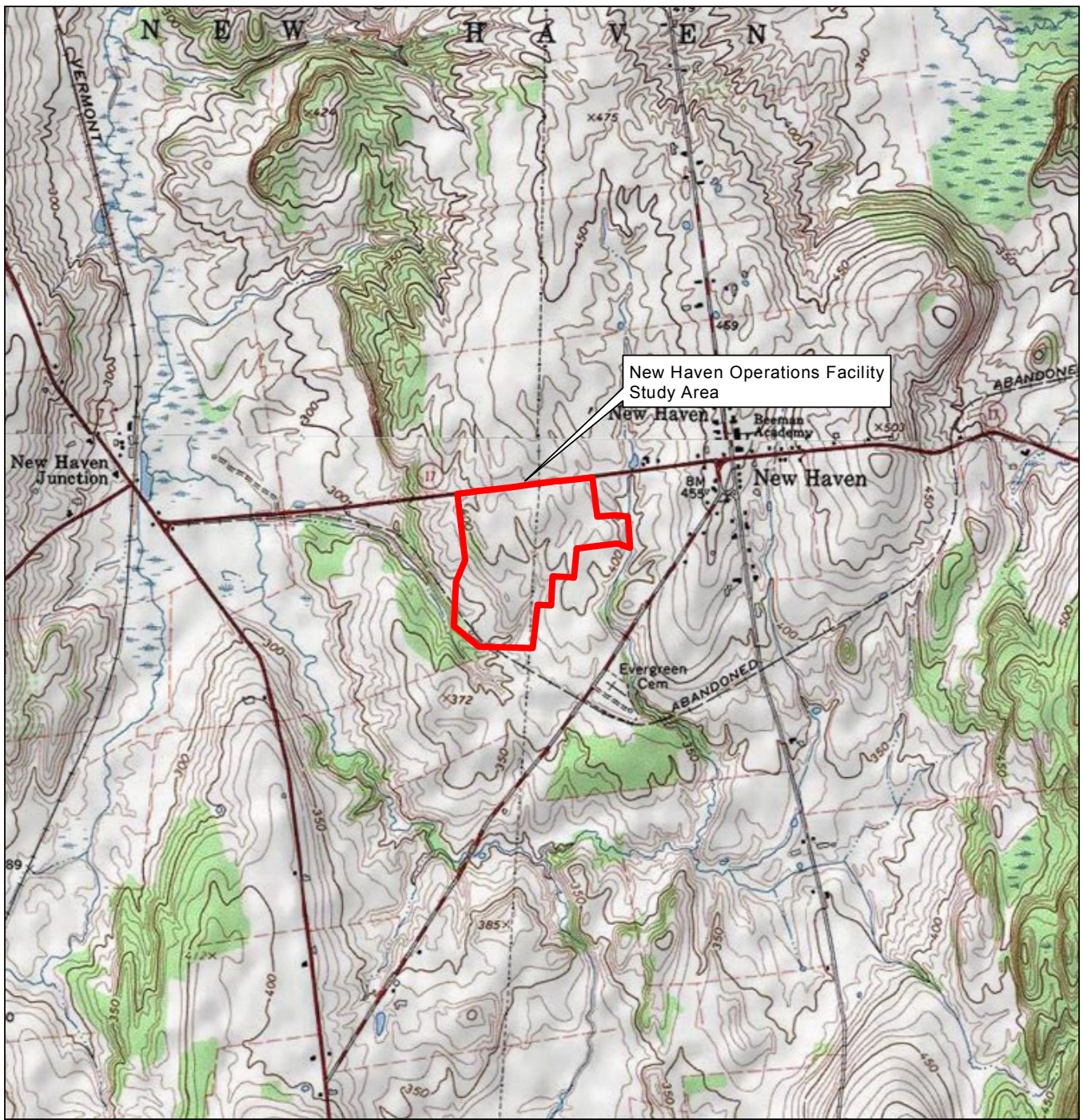
November 14, 2019

VELCO

Figures


Reference: New Haven Operations Facility Non-Native Invasive Species (NNIS) Inventory Technical Memorandum

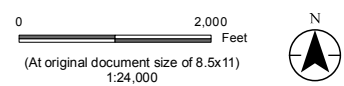
ATTACHMENT 1: FIGURES



New Haven Operations Facility Study Area



Legend
 Study Area



Project Location: New Haven, VT
 Prepared by KWH on 2019-10-08
 TR by EB on 2019-10-08
 IR Review by KR on 2019-10-xx

Client/Project: VELCO
 New Haven Operations Facility

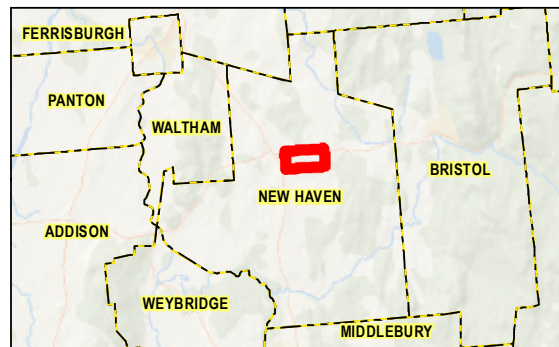
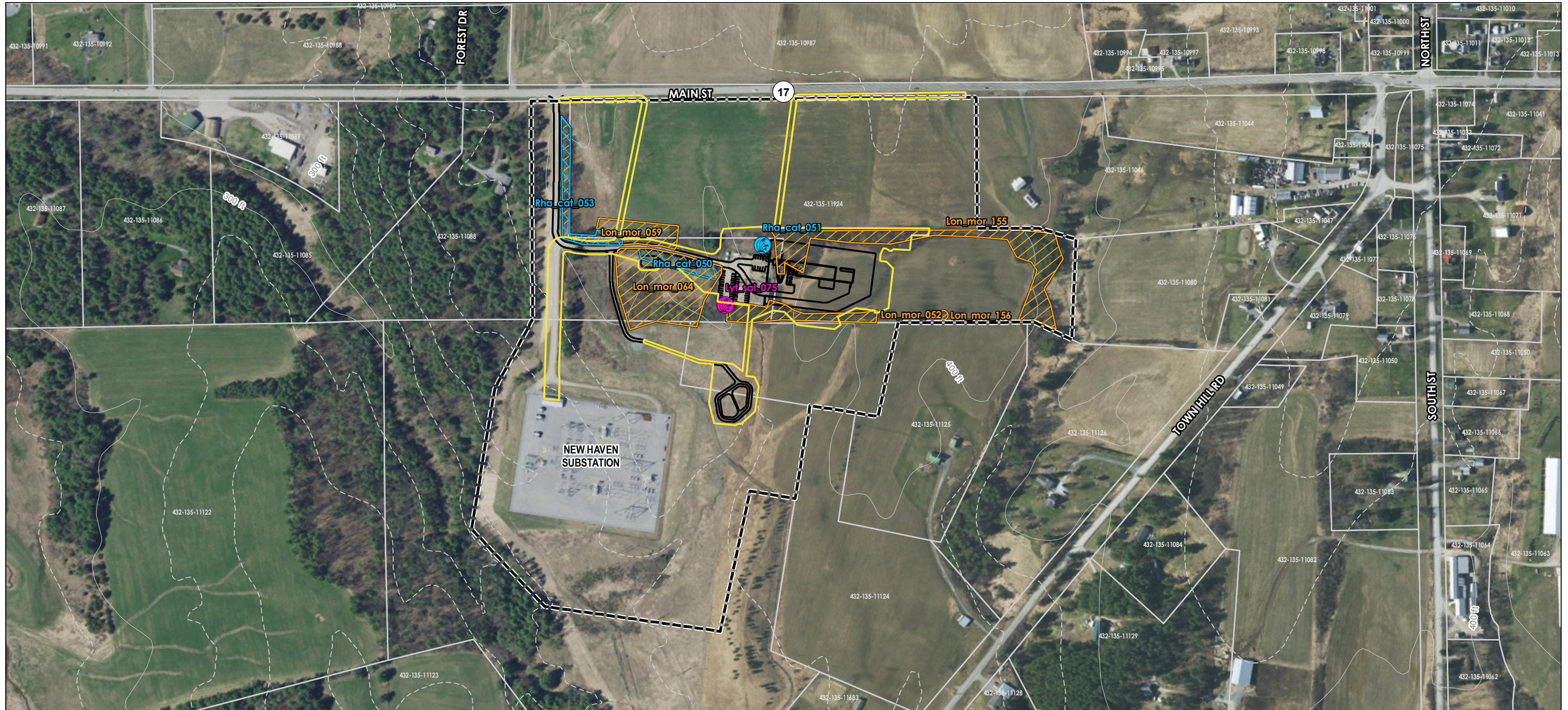
Figure No.: 1

Title: Location Map

Notes
 1. Coordinate System: NAD 1983 StatePlane Vermont FIPS 4400 Feet
 2. Data Sources: Velco

V:\1956\active\195601391\03_data\gis_cad\gis\NewHavenOP\S01391_01_LocationMap.mxd Revised: 2019-11-07 By: knoward

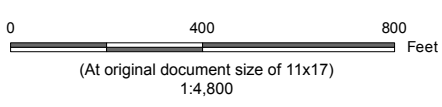
Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.



- Legend**
- Study Area
 - Project Site (LOD)
 - Proposed New Haven Operation Facility
 - Tax Parcel and Span
 - 20' Contour Line
 - 100' Contour Line

- Invasive Plant Species Location**
- Lythrum salicaria (purple loosestrife)
 - Rhamnus cathartica (common buckthorn)
 - Lonicera morrowii (Morrow honeysuckle)
 - Rhamnus cathartica (Common Buckthorn)

Invasive Note:
 1. Invasive species data located utilizing a GPS enabled iPad field tablet computer with a Garmin Glo Bluetooth GPS/GNSS receiver. Expected accuracy is within 3-5 meters depending on site conditions.



Project Location
 New Haven, VT

Client/Project
 VELCO
 New Haven Operations Facility

Figure No.
2

Title
Invasive Species Map

Notes

1. Coordinate System: NAD 1983 StatePlane Vermont FIPS 4400 Feet
2. Data Sources: VELCO, Stantec, VCGI
3. Background: 2016-2017 Color Ortho Imagery provided by VCGI web mapping services

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November 14, 2019

VELCO

Representative Photographs

Reference: New Haven Operations Facility Non-Native Invasive Species (NNIS) Inventory Technical Memorandum

ATTACHMENT 2: REPRESENTATIVE PHOTOGRAPHS

November 14, 2019
VELCO
Representative Photographs

Reference: New Haven Operations Facility Non-Native Invasive Species (NNIS) Inventory Technical Memorandum



Photo 1: Typical Morrow's honeysuckle occurrence, VELCO New Haven Operations Facility, November 1, 2017, Stantec.

November 14, 2019
VELCO
Representative Photographs

Reference: New Haven Operations Facility Non-Native Invasive Species (NNIS) Inventory Technical Memorandum



Photo 2: Typical common buckthorn occurrence, VELCO New Haven Operations Facility, October 11, 2017, Stantec.

November 14, 2019
VELCO
Representative Photographs

Reference: New Haven Operations Facility Non-Native Invasive Species (NNIS) Inventory Technical Memorandum



Photo 3: Typical purple loosestrife occurrence, VELCO New Haven Operations Facility, August 9, 2018, Stantec.

NATURAL RESOURCES REPORT – NEW HAVEN OPERATIONS FACILITY

Appendix C Wetland Reporting
November 14, 2019

Appendix C WETLAND REPORTING

NATURAL RESOURCES REPORT – NEW HAVEN OPERATIONS FACILITY

Appendix C Wetland Reporting
November 14, 2019

**C.1 WETLAND CLASSIFICATION RECOMMENDATIONS AND
DELINEATION SUMMARY**

From: Courage, Zapata
To: [Harris, Polly](#); [Jacob Reed](#)
Cc: [Reinhart, Krista](#)
Subject: RE: VELCO New Haven Property Wetland Classification Site Visit
Date: Tuesday, January 15, 2019 4:35:02 PM
Attachments: [image001.jpg](#)
[image002.jpg](#)
[VELCO_NewHavenBCC_ReportMap_20190107.pdf](#)
[Table 2 New Haven BCC wetlands_all_20190115.pdf](#)

Hello, I concur with the wetland delineation and classifications as depicted on the map and table:

- **VELCO / New Haven Backup Control Center New Haven, VT, Natural Resources Map authored by Stantec, and dated 1/7/2019**
- **VELCO - New Haven Back-up Control Center (BUCC) Table 2. Wetlands Delineated by Stantec preliminary authored by Stantec, and dated 1/15/2019**

Wetland NH-202 is Class II: . Class II significant wetlands and their 50 ft buffers are protected under the Vermont Wetland Rules (VWR). This report outlines the reasons for this decision, and serves as notice that any activity in the wetland or 50ft buffer zone may need a Vermont wetland permit before you start work. If you disagree with this decision you can petition for a formal wetland classification determination of Class III as outlined under the petition section of this report. The following table(s) document the reasons for this decision.

Wetlands NH-201, NH-203, NH-008, NH-009, and NH-010 are Class III: Class III wetlands are not protected under the Vermont Wetland Rules (VWR). No State Wetland permit is required for activities occurring in Class III wetlands. Although these wetlands may meet a presumption of size and type (Sect 4.6 [a]) under the VWR; an evaluation of Functions and Values confirmed no significance. Because wetland character, size, and function can change over time, the Wetlands Program recommends seeking a reevaluation of wetland status every 5 years, to avoid a potential violation of the VWR. If you disagree with this decision you can petition for a formal wetland classification determination of Class II as outlined under the petition section of this report.

Thank you!
Zapata

From: Courage, Zapata
To: [Jacob Reed](#); [Harris, Polly](#)
Cc: [Reinhart, Krista](#)
Subject: RE: Site Visit Tues -- VELCO BUCC
Date: Tuesday, October 15, 2019 3:58:21 PM

Hello Folks,

I concur with the wetland delineation for wetland BUCC-01 as shown on the map dated August 14, 2019, the wetland is topographically driven; Class II; drainage with stream at output end under road culvert. Jake it sounded like you may be able to make some adjustments to remain outside of the 50 ft. buffer. As I mentioned if you wish to plant native species such as white pine, juniper etc then you can do that in the buffer (no grading or berming). You have a lot of white pine on site that could be transplanted easily.

Shoot me over a final site design and I can sign off for you.

Zap

Polly, I hope all is as well as it can be for you and your mom. Hope to see you in the field soon-ish.

NATURAL RESOURCES REPORT – NEW HAVEN OPERATIONS FACILITY

Appendix C Wetland Reporting
November 14, 2019

C.2 VERMONT WETLAND EVALUATION FORMS

VERMONT WETLAND EVALUATION FORM

Project Name: Velco New Haven BUCC-01 Project #: 195601363

Date: 07/18/19 Investigator: PMH

SUMMARY OF FUNCTIONAL EVALUATION:

Each function gets a score of 0= not present; L = Low; P = Present; or H = High.

1. Water Storage for Flood Water and Storm Runoff P	6. Rare, Threatened, and Endangered Species Habitat 0
2. Surface & Ground Water Protection L	7. Education and Research in Natural Sciences 0
3. Fish Habitat 0	8. Recreational Value and Economic Benefits 0
4. Wildlife Habitat P	9. Open Space and Aesthetics 0
5. Exemplary Wetland Natural Community 0	10. Erosion Control through Binding and Stabilizing the Soil L

Note:

- **When to use this form:** This is a field form to help you compile data needed to evaluate the 10 possible functions and values of a wetland as described in the Vermont Wetland Rules. All information in this form is replicated in the applications for both wetland determinations and wetland permits.
- **Both a desktop review and field examination** should be employed to accurately determine surrounding land use, hydrology, hydroperiod, vegetation, position in the landscape, and physical attributes.
- **The entire wetland or wetland complex** in question must be evaluated to determine the level of function in all ten (10) categories for accurate classification. A wetland complex can be defined as a series of interconnected wetland types.
- **The surrounding upland and outflow area** of the wetland should be examined to determine land use, development, nearby natural resources, and hydrology. The surrounding land use, previous development, and cumulative impacts may play a role in the current function of the wetland. For best results please read all descriptions prior to scoring activity.
- **Evaluation:** The first portion in each section determines whether the wetland does or does not provide the function. If none of the conditions listed in the first section are met, proceed

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to the next section. If any of these conditions are met, determine if the wetland provides this function at a higher or lower level based on the information listed in the subsequent sections.

- **Presumptions:** Please note that many wetlands are already presumed to be significant under the Vermont Wetland Rules. A wetland is presumed to be significant if:
 - The wetland is mapped on the VSWI map
 - The wetland is contiguous to a VSWI mapped wetland
 - The wetland meets the presumptions of significance under Section 4.6
 - The wetland has a preliminary determination that it is Class II

1. Water Storage for Flood Water and Storm Runoff

Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.

Constricted outlet or no outlet and an unconstricted inlet.

Physical space for floodwater expansion and dense, persistent, emergent vegetation or dense woody vegetation that slows down flood waters or stormwater runoff during peak flows and facilitates water removal by evaporation and transpiration.

If a stream is present, its course is sinuous and there is sufficient woody vegetation to intercept surface flows in the portion of the wetland that floods.

Physical evidence of seasonal flooding or ponding such as water stained leaves, water marks on trees, drift rows, debris deposits, or standing water.

Hydrologic or hydraulic study indicates wetland attenuates flooding.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level:

Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.

Significant flood storage capacity upstream of the wetland, and the wetland in question provides this function at a negligible level in comparison to upstream storage (unless the upstream storage is temporary such as a beaver impoundment).

Wetland is contiguous to a major lake or pond that provides storage benefits independently of the wetland.

Wetland's storage capacity is created primarily by recent beaver dams or other temporary structures.

Wetland is very small in size, not contiguous to a stream, and not part of a collection of small wetlands in the landscape that provide this function cumulatively.

Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.

History of downstream flood damage to public or private property.

Any of the following conditions present downstream of the wetland, but upstream of a major lake or pond, could be impacted by a loss or reduction of the water storage function.

1. Developed public or private property.

2. Stream banks susceptible to scouring and erosion.

3. Important habitat for aquatic life.

The wetland is large in size and naturally vegetated.

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- Any of the following conditions present upstream of the wetland may indicate a large volume of runoff may reach the wetland.
 - 1. A large amount of impervious surface in urbanized areas.
 - 2. Relatively impervious soils.
 - 3. Steep slopes in the adjacent areas.

2. Surface and Ground Water Protection

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.

- Constricted or no outlets.
- Low water velocity through dense, persistent vegetation.
- Hydroperiod permanently flooded or saturated.
- Wetlands in depositional environments with persistent vegetation wider than 20 feet.
- Wetlands with persistent vegetation comprising a defined delta, island, bar or peninsula.
- Presence of seeps or springs.
- Wetland contains a high amount of microtopography that helps slow and filter surface water.
- Position in the landscape indicates the wetland is a headwaters area.
- Wetland is adjacent to surface waters.
- Wetland recharges a drinking water source.
- Water sampling indicates removal of pollutants or nutrients.
- Water sampling indicates retention of sediments or organic matter.
- Fine mineral soils and alkalinity not low.
- The wetland provides an obvious filter between surface water or ground water and land uses that may contribute point or nonpoint sources of sediments, toxic substances or nutrients to the wetland, such as: steep erodible slopes; row crops; dumps; areas of pesticide, herbicide or fertilizer application; feed lots; parking lots or heavily traveled road; and septic systems.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level.

- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.

- Presence of dead forest or shrub areas in sufficient amounts to result in diminished

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nutrient uptake.

- Presence of ditches or channels that confine water and restrict contact of water with vegetation.
 - Wetland is very small in size, not contiguous to a stream, and not part of a collection of small wetlands in the landscape that provide this function cumulatively.
 - Current use in the wetland results in disturbance that compromises this function.
- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
- The wetland is adjacent to a well head or source protection area, and provides ground water recharge.
 - The wetland provides flows to Class A surface waters.
 - The wetland contributes to the protection or improvement of water quality of any impaired waters.
 - The wetland is large in size and naturally vegetated.

3. Fish Habitat

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
- Contains woody vegetation that overhangs the banks of a stream or river and provides any of the following: shading that controls summer water temperature; cover including refuges created by overhanging branches or undercut banks; source of terrestrial insects as fish food; or streambank stability.
 - Provides spawning, nursery, feeding or cover habitat for fish (documented or professionally judged). Common habitat includes deep marsh and shallow marsh associates with lakes and streams, and seasonally flooded wetlands associated with streams and rivers.
 - Documented or professionally judged spawning habitat for northern pike.
 - Provides cold spring discharge that lowers the temperature of receiving waters and creates summer habitat for salmonoid species.
 - The wetland is located along a tributary that does not support fish, but contributes to a larger body of water that does support fish. The tributary supports downstream fish by providing cooler water, and food sources.

4. **Wildlife Habitat**

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Provides resting, feeding staging or roosting habitat to support waterfowl migration, and feeding habitat for wading birds. Good habitats for these species include open water wetlands.
 - Habitat to support one or more breeding pairs or broods of waterfowl including all species of ducks, geese, and swans. Good habitats for these species include open water habitats adjacent shallow marsh, deep marsh, shrub wetland, forested wetland, or naturally vegetated buffer zone.
 - Provides a nest site, a buffer for a nest site or feeding habitat for wading birds including but not limited to: great blue heron, black-crowned night heron, green-backed heron, cattle egret, or snowy egret. Good habitats for these species include open water or deep marsh adjacent to forested wetlands, or standing dead trees.
 - Supports or has the habitat to support one or more breeding pairs of any migratory bird that requires wetland habitat for breeding, nesting, rearing of young, feeding, staging roosting, or migration, including: Virginia rail, common snipe, marsh wren, American bittern, northern water thrush, northern harrier, spruce grouse, Cerulean warbler, and common loon.
 - Supports winter habitat for white-tailed deer. Good habitats for these species include softwood swamps. Evidence of use includes deer browsing, bark stripping, worn trails, or pellet piles.
 - Provides important feeding habitat for black bear, bobcat, or moose based on an assessment of use. Good habitat for these types of species includes wetlands located in a forested mosaic.
 - Has the habitat to support muskrat, otter or mink. Good habitats for these species include deep marshes, wetlands adjacent to bodies of water including lakes, ponds, rivers and streams.
 - Supports an active beaver dam, one or more lodges, or evidence of use in two or more consecutive years by an adult beaver population.
 - Provides the following habitats that support the reproduction of Uncommon Vermont amphibian species including:
 - 1. Wood Frog, Jefferson Salamander, Blue-spotted Salamander, or Spotted Salamander. Breeding habitat for these species includes vernal pools and small ponds.
 - 2. Northern Dusky Salamander and the Spring Salamander. Habitat for these species includes headwater seeps, springs, and streams.
 - 3. The Four-toed salamander; Fowler's Toad; Western or Boreal Chorus frog, or other amphibians found in Vermont of similar significance.

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- Supports or has the habitat to support significant populations of Vermont amphibian species including, but not limited to Pickerel Frog, Northern Leopard Frog, Mink Frog, and others found in Vermont of similar significance. Good habitat for these types of species includes large marsh systems with open water components.
- Supports or has the habitat to support populations of uncommon Vermont reptile species including: Wood Turtle, Northern Map Turtle, Eastern Musk Turtle, Spotted Turtle, Spiny Softshell, Eastern Ribbonsnake, Northern Watersnake, and others found in Vermont of similar significance.
- Supports or has the habitat to support significant populations of Vermont reptile species, including Smooth Greensnake, DeKay's Brownsnake, or other more common wetland-associated species.
- Meets four or more of the following conditions indicative of wildlife habitat diversity:
 - 1. Three or more wetland vegetation classes (greater than 1/2 acre) present including but not limited to: open water contiguous to, but not necessarily part of, the wetland, deep marsh, shallow marsh, shrub swamp, forested swamp, fen, or bog;
 - 2. The dominant vegetation class is one of the following types: deep marsh, shallow marsh, shrub swamp or, forested swamp;
 - 3. Located adjacent to a lake, pond, river or stream;
 - 4. Fifty percent or more of surrounding habitat type is one or more of the following: forest, agricultural land, old field or open land;
 - 5. Emergent or woody vegetation occupies 26 to 75 percent of wetland, the rest is open water;
 - 6. One of the following:
 - i. hydrologically connected to other wetlands of different dominant classes or open water within 1 mile;
 - ii. hydrologically connected to other wetlands of same dominant class within 1/2 mile;
 - iii. within 1/4 mile of other wetlands of different dominant classes or open water, but not hydrologically connected;
- Wetland or wetland complex is owned in whole or in part by state or federal government and managed for wildlife and habitat conservation; and
- Contains evidence that it is used by wetland dependent wildlife species.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level.

- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.
 - The wetland is small in size for its type and does not represent fugitive habitat in

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developed areas (vernal pools and seeps are generally small in size, so this does not apply).

- The surrounding land use is densely developed enough to limit use by wildlife species (with the exception of wetlands with open water habitat). Can be negated by evidence of use.
- The current use in the wetland results in frequent cutting, mowing or other disturbance.
- The wetland hydrology and character is at a drier end of the scale and does not support wetland dependent species.
- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
 - The wetland complex is large in size and high in quality.
 - The habitat has the potential to support several species based on the assessment above.
 - Wetland is associated with an important wildlife corridor.
 - The wetland has been identified by ANR-F&W as important habitat.

5. Exemplary Wetland Natural Community

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Wetlands that are identified as high quality examples of Vermont's natural community types recognized by the Natural Heritage Information Project of the Vermont Fish and Wildlife Department, including rare types such as dwarf shrub bogs, rich fens, alpine peatlands, red maple-black gum swamps and the more common types including deep bulrush marshes, cattail marshes, northern white cedar swamps, spruce-fir-tamarack swamps, and red maple-black ash seepage swamps are automatically significant for this function.

The wetland is also likely to be significant if any of the following conditions are met:

- Is an example of a wetland natural community type that has been identified and mapped by, or meets the ranking and mapping standards of, the Natural Heritage Information Project of the Vermont Fish and Wildlife Department.
- Contains ecological features that contribute to Vermont's natural heritage, including, but not limited to:
 - Deep peat accumulation reflecting a long history of wetland formation;
 - Forested wetlands displaying very old trees and other old growth characteristics;
 - A wetland natural community that is at the edge of the normal range for that type;

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- A wetland mosaic containing examples of several to many wetland community types; or
- A large wetland complex with examples of several wetland community types.

6. Rare, Threatened, and Endangered Species Habitat

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Wetlands that contain one or more species on the federal or state threatened or endangered lists, as well as species that are rare in Vermont, are automatically significant for this function.

The wetland is also likely to be significant if any of the following apply:

 - There is credible documentation that the wetland provides important habitat for any species on the federal or state threatened or endangered species lists;
 - There is credible documentation that threatened or endangered species have been present in past 10 years;
 - There is credible documentation that the wetland provides important habitat for any species listed as rare in Vermont (S1 or S2 ranks), state historic (SH rank), or rare to uncommon globally (G1, G2, or G3 ranks) by the Natural Heritage Information Project of the Vermont Fish and Wildlife Department;
 - There is credible documentation that the wetland provides habitat for multiple uncommon species of plants or animals (S3 rank).

List name of species and ranking:

7. Education and Research in Natural Sciences

- Function is present and likely to be significant: Any of the following characteristics indicate the wetland provides this function.
 - Owned by or leased to a public entity dedicated to education or research.
 - History of use for education or research.
 - Has one or more characteristics making it valuable for education or research.

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8. Recreational Value and Economic Benefits

- Function is present and likely to be significant: Any of the following characteristics indicate the wetland provides this function.
 - Used for, or contributes to, recreational activities.
 - Provides economic benefits.
 - Provides important habitat for fish or wildlife which can be fished, hunted or trapped under applicable state law.
 - Used for harvesting of wild foods.

Comments:

9. Open Space and Aesthetics

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Can be readily observed by the public; and
 - Possesses special or unique aesthetic qualities; or
 - Has prominence as a distinct feature in the surrounding landscape;
 - Has been identified as important open space in a municipal, regional or state plan.

10. Erosion Control through Binding and Stabilizing the Soil

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Erosive forces such as wave or current energy are present and any of the following are present as well:
 - Dense, persistent vegetation along a shoreline or stream bank that reduces an adjacent erosive force.
 - Good interspersion of persistent emergent vegetation and water along course of water flow.
 - Studies show that wetlands of similar size, vegetation type, and hydrology are important for erosion control.

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What type of erosive forces are present?

- Lake fetch and waves
- High current velocities
- Water level influenced by upstream impoundment

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level.

Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.

The stream is artificially channelized and/or lacks vegetation that contributes to controlling the erosive force.

Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.

The stream contains high sinuosity.

Has been identified through fluvial geomorphic assessment to be important in maintaining the natural condition of the stream or river corridor.

VERMONT WETLAND EVALUATION FORM

Project Name: Velco New Haven BCC NH-008 Project #: 195601363

Date: 10/11/2017 Investigator: SCS

SUMMARY OF FUNCTIONAL EVALUATION:

Each function gets a score of 0= not present; L = Low; P = Present; or H = High.

1. Water Storage for Flood Water and Storm Runoff L	6. Rare, Threatened, and Endangered Species Habitat 0
2. Surface & Ground Water Protection L	7. Education and Research in Natural Sciences 0
3. Fish Habitat 0	8. Recreational Value and Economic Benefits 0
4. Wildlife Habitat 0	9. Open Space and Aesthetics 0
5. Exemplary Wetland Natural Community 0	10. Erosion Control through Binding and Stabilizing the Soil 0

Note:

- **When to use this form:** This is a field form to help you compile data needed to evaluate the 10 possible functions and values of a wetland as described in the Vermont Wetland Rules. All information in this form is replicated in the applications for both wetland determinations and wetland permits.
- **Both a desktop review and field examination** should be employed to accurately determine surrounding land use, hydrology, hydroperiod, vegetation, position in the landscape, and physical attributes.
- **The entire wetland or wetland complex** in question must be evaluated to determine the level of function in all ten (10) categories for accurate classification. A wetland complex can be defined as a series of interconnected wetland types.
- **The surrounding upland and outflow area** of the wetland should be examined to determine land use, development, nearby natural resources, and hydrology. The surrounding land use, previous development, and cumulative impacts may play a role in the current function of the wetland. For best results please read all descriptions prior to scoring activity.
- **Evaluation:** The first portion in each section determines whether the wetland does or does not provide the function. If none of the conditions listed in the first section are met, proceed

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to the next section. If any of these conditions are met, determine if the wetland provides this function at a higher or lower level based on the information listed in the subsequent sections.

- **Presumptions:** Please note that many wetlands are already presumed to be significant under the Vermont Wetland Rules. A wetland is presumed to be significant if:
 - The wetland is mapped on the VSWI map
 - The wetland is contiguous to a VSWI mapped wetland
 - The wetland meets the presumptions of significance under Section 4.6
 - The wetland has a preliminary determination that it is Class II

1. Water Storage for Flood Water and Storm Runoff

Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.

- Constricted outlet or no outlet and an unconstricted inlet.
- Physical space for floodwater expansion and dense, persistent, emergent vegetation or dense woody vegetation that slows down flood waters or stormwater runoff during peak flows and facilitates water removal by evaporation and transpiration.
- If a stream is present, its course is sinuous and there is sufficient woody vegetation to intercept surface flows in the portion of the wetland that floods.
- Physical evidence of seasonal flooding or ponding such as water stained leaves, water marks on trees, drift rows, debris deposits, or standing water.
- Hydrologic or hydraulic study indicates wetland attenuates flooding.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level:

Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.

- Significant flood storage capacity upstream of the wetland, and the wetland in question provides this function at a negligible level in comparison to upstream storage (unless the upstream storage is temporary such as a beaver impoundment).
- Wetland is contiguous to a major lake or pond that provides storage benefits independently of the wetland.
- Wetland's storage capacity is created primarily by recent beaver dams or other temporary structures.
- Wetland is very small in size, not contiguous to a stream, and not part of a collection of small wetlands in the landscape that provide this function cumulatively.

Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.

- History of downstream flood damage to public or private property.
- Any of the following conditions present downstream of the wetland, but upstream of a major lake or pond, could be impacted by a loss or reduction of the water storage function.
 - 1. Developed public or private property.
 - 2. Stream banks susceptible to scouring and erosion.
 - 3. Important habitat for aquatic life.
- The wetland is large in size and naturally vegetated.

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- Any of the following conditions present upstream of the wetland may indicate a large volume of runoff may reach the wetland.
 - 1. A large amount of impervious surface in urbanized areas.
 - 2. Relatively impervious soils.
 - 3. Steep slopes in the adjacent areas.

2. Surface and Ground Water Protection

Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.

- Constricted or no outlets.
- Low water velocity through dense, persistent vegetation.
- Hydroperiod permanently flooded or saturated.
- Wetlands in depositional environments with persistent vegetation wider than 20 feet.
- Wetlands with persistent vegetation comprising a defined delta, island, bar or peninsula.
- Presence of seeps or springs.
- Wetland contains a high amount of microtopography that helps slow and filter surface water.
- Position in the landscape indicates the wetland is a headwaters area.
- Wetland is adjacent to surface waters.
- Wetland recharges a drinking water source.
- Water sampling indicates removal of pollutants or nutrients.
- Water sampling indicates retention of sediments or organic matter.
- Fine mineral soils and alkalinity not low.
- The wetland provides an obvious filter between surface water or ground water and land uses that may contribute point or nonpoint sources of sediments, toxic substances or nutrients to the wetland, such as: steep erodible slopes; row crops; dumps; areas of pesticide, herbicide or fertilizer application; feed lots; parking lots or heavily traveled road; and septic systems.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level.

Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.

- Presence of dead forest or shrub areas in sufficient amounts to result in diminished

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nutrient uptake.

- Presence of ditches or channels that confine water and restrict contact of water with vegetation.
 - Wetland is very small in size, not contiguous to a stream, and not part of a collection of small wetlands in the landscape that provide this function cumulatively.
 - Current use in the wetland results in disturbance that compromises this function.
- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
- The wetland is adjacent to a well head or source protection area, and provides ground water recharge.
 - The wetland provides flows to Class A surface waters.
 - The wetland contributes to the protection or improvement of water quality of any impaired waters.
 - The wetland is large in size and naturally vegetated.

3. Fish Habitat

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
- Contains woody vegetation that overhangs the banks of a stream or river and provides any of the following: shading that controls summer water temperature; cover including refuges created by overhanging branches or undercut banks; source of terrestrial insects as fish food; or streambank stability.
 - Provides spawning, nursery, feeding or cover habitat for fish (documented or professionally judged). Common habitat includes deep marsh and shallow marsh associates with lakes and streams, and seasonally flooded wetlands associated with streams and rivers.
 - Documented or professionally judged spawning habitat for northern pike.
 - Provides cold spring discharge that lowers the temperature of receiving waters and creates summer habitat for salmonoid species.
 - The wetland is located along a tributary that does not support fish, but contributes to a larger body of water that does support fish. The tributary supports downstream fish by providing cooler water, and food sources.

4. Wildlife Habitat

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Provides resting, feeding staging or roosting habitat to support waterfowl migration, and feeding habitat for wading birds. Good habitats for these species include open water wetlands.
 - Habitat to support one or more breeding pairs or broods of waterfowl including all species of ducks, geese, and swans. Good habitats for these species include open water habitats adjacent shallow marsh, deep marsh, shrub wetland, forested wetland, or naturally vegetated buffer zone.
 - Provides a nest site, a buffer for a nest site or feeding habitat for wading birds including but not limited to: great blue heron, black-crowned night heron, green-backed heron, cattle egret, or snowy egret. Good habitats for these species include open water or deep marsh adjacent to forested wetlands, or standing dead trees.
 - Supports or has the habitat to support one or more breeding pairs of any migratory bird that requires wetland habitat for breeding, nesting, rearing of young, feeding, staging roosting, or migration, including: Virginia rail, common snipe, marsh wren, American bittern, northern water thrush, northern harrier, spruce grouse, Cerulean warbler, and common loon.
 - Supports winter habitat for white-tailed deer. Good habitats for these species include softwood swamps. Evidence of use includes deer browsing, bark stripping, worn trails, or pellet piles.
 - Provides important feeding habitat for black bear, bobcat, or moose based on an assessment of use. Good habitat for these types of species includes wetlands located in a forested mosaic.
 - Has the habitat to support muskrat, otter or mink. Good habitats for these species include deep marshes, wetlands adjacent to bodies of water including lakes, ponds, rivers and streams.
 - Supports an active beaver dam, one or more lodges, or evidence of use in two or more consecutive years by an adult beaver population.
 - Provides the following habitats that support the reproduction of Uncommon Vermont amphibian species including:
 - 1. Wood Frog, Jefferson Salamander, Blue-spotted Salamander, or Spotted Salamander. Breeding habitat for these species includes vernal pools and small ponds.
 - 2. Northern Dusky Salamander and the Spring Salamander. Habitat for these species includes headwater seeps, springs, and streams.
 - 3. The Four-toed salamander; Fowler's Toad; Western or Boreal Chorus frog, or other amphibians found in Vermont of similar significance.

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- Supports or has the habitat to support significant populations of Vermont amphibian species including, but not limited to Pickerel Frog, Northern Leopard Frog, Mink Frog, and others found in Vermont of similar significance. Good habitat for these types of species includes large marsh systems with open water components.
- Supports or has the habitat to support populations of uncommon Vermont reptile species including: Wood Turtle, Northern Map Turtle, Eastern Musk Turtle, Spotted Turtle, Spiny Softshell, Eastern Ribbonsnake, Northern Watersnake, and others found in Vermont of similar significance.
- Supports or has the habitat to support significant populations of Vermont reptile species, including Smooth Greensnake, DeKay's Brownsnake, or other more common wetland-associated species.
- Meets four or more of the following conditions indicative of wildlife habitat diversity:
 - 1. Three or more wetland vegetation classes (greater than 1/2 acre) present including but not limited to: open water contiguous to, but not necessarily part of, the wetland, deep marsh, shallow marsh, shrub swamp, forested swamp, fen, or bog;
 - 2. The dominant vegetation class is one of the following types: deep marsh, shallow marsh, shrub swamp or, forested swamp;
 - 3. Located adjacent to a lake, pond, river or stream;
 - 4. Fifty percent or more of surrounding habitat type is one or more of the following: forest, agricultural land, old field or open land;
 - 5. Emergent or woody vegetation occupies 26 to 75 percent of wetland, the rest is open water;
 - 6. One of the following:
 - i. hydrologically connected to other wetlands of different dominant classes or open water within 1 mile;
 - ii. hydrologically connected to other wetlands of same dominant class within 1/2 mile;
 - iii. within 1/4 mile of other wetlands of different dominant classes or open water, but not hydrologically connected;
- Wetland or wetland complex is owned in whole or in part by state or federal government and managed for wildlife and habitat conservation; and
- Contains evidence that it is used by wetland dependent wildlife species.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level.

- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.
 - The wetland is small in size for its type and does not represent fugitive habitat in

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developed areas (vernal pools and seeps are generally small in size, so this does not apply).

- The surrounding land use is densely developed enough to limit use by wildlife species (with the exception of wetlands with open water habitat). Can be negated by evidence of use.
- The current use in the wetland results in frequent cutting, mowing or other disturbance.
- The wetland hydrology and character is at a drier end of the scale and does not support wetland dependent species.
- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
 - The wetland complex is large in size and high in quality.
 - The habitat has the potential to support several species based on the assessment above.
 - Wetland is associated with an important wildlife corridor.
 - The wetland has been identified by ANR-F&W as important habitat.

5. Exemplary Wetland Natural Community

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Wetlands that are identified as high quality examples of Vermont's natural community types recognized by the Natural Heritage Information Project of the Vermont Fish and Wildlife Department, including rare types such as dwarf shrub bogs, rich fens, alpine peatlands, red maple-black gum swamps and the more common types including deep bulrush marshes, cattail marshes, northern white cedar swamps, spruce-fir-tamarack swamps, and red maple-black ash seepage swamps are automatically significant for this function.

The wetland is also likely to be significant if any of the following conditions are met:

- Is an example of a wetland natural community type that has been identified and mapped by, or meets the ranking and mapping standards of, the Natural Heritage Information Project of the Vermont Fish and Wildlife Department.
- Contains ecological features that contribute to Vermont's natural heritage, including, but not limited to:
 - Deep peat accumulation reflecting a long history of wetland formation;
 - Forested wetlands displaying very old trees and other old growth characteristics;
 - A wetland natural community that is at the edge of the normal range for that type;

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- A wetland mosaic containing examples of several to many wetland community types; or
- A large wetland complex with examples of several wetland community types.

6. Rare, Threatened, and Endangered Species Habitat

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Wetlands that contain one or more species on the federal or state threatened or endangered lists, as well as species that are rare in Vermont, are automatically significant for this function.

The wetland is also likely to be significant if any of the following apply:

 - There is credible documentation that the wetland provides important habitat for any species on the federal or state threatened or endangered species lists;
 - There is credible documentation that threatened or endangered species have been present in past 10 years;
 - There is credible documentation that the wetland provides important habitat for any species listed as rare in Vermont (S1 or S2 ranks), state historic (SH rank), or rare to uncommon globally (G1, G2, or G3 ranks) by the Natural Heritage Information Project of the Vermont Fish and Wildlife Department;
 - There is credible documentation that the wetland provides habitat for multiple uncommon species of plants or animals (S3 rank).

List name of species and ranking:

7. Education and Research in Natural Sciences

- Function is present and likely to be significant: Any of the following characteristics indicate the wetland provides this function.
 - Owned by or leased to a public entity dedicated to education or research.
 - History of use for education or research.
 - Has one or more characteristics making it valuable for education or research.

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8. Recreational Value and Economic Benefits

- Function is present and likely to be significant: Any of the following characteristics indicate the wetland provides this function.
 - Used for, or contributes to, recreational activities.
 - Provides economic benefits.
 - Provides important habitat for fish or wildlife which can be fished, hunted or trapped under applicable state law.
 - Used for harvesting of wild foods.

Comments:

9. Open Space and Aesthetics

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Can be readily observed by the public; and
 - Possesses special or unique aesthetic qualities; or
 - Has prominence as a distinct feature in the surrounding landscape;
 - Has been identified as important open space in a municipal, regional or state plan.

10. Erosion Control through Binding and Stabilizing the Soil

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Erosive forces such as wave or current energy are present and any of the following are present as well:
 - Dense, persistent vegetation along a shoreline or stream bank that reduces an adjacent erosive force.
 - Good interspersion of persistent emergent vegetation and water along course of water flow.
 - Studies show that wetlands of similar size, vegetation type, and hydrology are important for erosion control.

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What type of erosive forces are present?

- Lake fetch and waves
- High current velocities
- Water level influenced by upstream impoundment

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level.

- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.
 - The stream is artificially channelized and/or lacks vegetation that contributes to controlling the erosive force.
- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
 - The stream contains high sinuosity.
 - Has been identified through fluvial geomorphic assessment to be important in maintaining the natural condition of the stream or river corridor.

VERMONT WETLAND EVALUATION FORM

Project Name: Velco New Haven Sub NH-009 Project #: 195601363

Date: 10/11/2017 Investigator: SCS

SUMMARY OF FUNCTIONAL EVALUATION:

Each function gets a score of 0= not present; L = Low; P = Present; or H = High.

1. Water Storage for Flood Water and Storm Runoff L	6. Rare, Threatened, and Endangered Species Habitat 0
2. Surface & Ground Water Protection L	7. Education and Research in Natural Sciences 0
3. Fish Habitat 0	8. Recreational Value and Economic Benefits 0
4. Wildlife Habitat 0	9. Open Space and Aesthetics 0
5. Exemplary Wetland Natural Community 0	10. Erosion Control through Binding and Stabilizing the Soil 0

Note:

- **When to use this form:** This is a field form to help you compile data needed to evaluate the 10 possible functions and values of a wetland as described in the Vermont Wetland Rules. All information in this form is replicated in the applications for both wetland determinations and wetland permits.
- **Both a desktop review and field examination** should be employed to accurately determine surrounding land use, hydrology, hydroperiod, vegetation, position in the landscape, and physical attributes.
- **The entire wetland or wetland complex** in question must be evaluated to determine the level of function in all ten (10) categories for accurate classification. A wetland complex can be defined as a series of interconnected wetland types.
- **The surrounding upland and outflow area** of the wetland should be examined to determine land use, development, nearby natural resources, and hydrology. The surrounding land use, previous development, and cumulative impacts may play a role in the current function of the wetland. For best results please read all descriptions prior to scoring activity.
- **Evaluation:** The first portion in each section determines whether the wetland does or does not provide the function. If none of the conditions listed in the first section are met, proceed

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to the next section. If any of these conditions are met, determine if the wetland provides this function at a higher or lower level based on the information listed in the subsequent sections.

- **Presumptions:** Please note that many wetlands are already presumed to be significant under the Vermont Wetland Rules. A wetland is presumed to be significant if:
 - The wetland is mapped on the VSWI map
 - The wetland is contiguous to a VSWI mapped wetland
 - The wetland meets the presumptions of significance under Section 4.6
 - The wetland has a preliminary determination that it is Class II

1. Water Storage for Flood Water and Storm Runoff

Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.

- Constricted outlet or no outlet and an unconstricted inlet.
- Physical space for floodwater expansion and dense, persistent, emergent vegetation or dense woody vegetation that slows down flood waters or stormwater runoff during peak flows and facilitates water removal by evaporation and transpiration.
- If a stream is present, its course is sinuous and there is sufficient woody vegetation to intercept surface flows in the portion of the wetland that floods.
- Physical evidence of seasonal flooding or ponding such as water stained leaves, water marks on trees, drift rows, debris deposits, or standing water.
- Hydrologic or hydraulic study indicates wetland attenuates flooding.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level:

Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.

- Significant flood storage capacity upstream of the wetland, and the wetland in question provides this function at a negligible level in comparison to upstream storage (unless the upstream storage is temporary such as a beaver impoundment).
- Wetland is contiguous to a major lake or pond that provides storage benefits independently of the wetland.
- Wetland's storage capacity is created primarily by recent beaver dams or other temporary structures.
- Wetland is very small in size, not contiguous to a stream, and not part of a collection of small wetlands in the landscape that provide this function cumulatively.

Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.

- History of downstream flood damage to public or private property.
- Any of the following conditions present downstream of the wetland, but upstream of a major lake or pond, could be impacted by a loss or reduction of the water storage function.
 - 1. Developed public or private property.
 - 2. Stream banks susceptible to scouring and erosion.
 - 3. Important habitat for aquatic life.
- The wetland is large in size and naturally vegetated.

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- Any of the following conditions present upstream of the wetland may indicate a large volume of runoff may reach the wetland.
 - 1. A large amount of impervious surface in urbanized areas.
 - 2. Relatively impervious soils.
 - 3. Steep slopes in the adjacent areas.

2. Surface and Ground Water Protection

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.

- Constricted or no outlets.
- Low water velocity through dense, persistent vegetation.
- Hydroperiod permanently flooded or saturated.
- Wetlands in depositional environments with persistent vegetation wider than 20 feet.
- Wetlands with persistent vegetation comprising a defined delta, island, bar or peninsula.
- Presence of seeps or springs.
- Wetland contains a high amount of microtopography that helps slow and filter surface water.
- Position in the landscape indicates the wetland is a headwaters area.
- Wetland is adjacent to surface waters.
- Wetland recharges a drinking water source.
- Water sampling indicates removal of pollutants or nutrients.
- Water sampling indicates retention of sediments or organic matter.
- Fine mineral soils and alkalinity not low.
- The wetland provides an obvious filter between surface water or ground water and land uses that may contribute point or nonpoint sources of sediments, toxic substances or nutrients to the wetland, such as: steep erodible slopes; row crops; dumps; areas of pesticide, herbicide or fertilizer application; feed lots; parking lots or heavily traveled road; and septic systems.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level.

- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.

- Presence of dead forest or shrub areas in sufficient amounts to result in diminished

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nutrient uptake.

- Presence of ditches or channels that confine water and restrict contact of water with vegetation.
 - Wetland is very small in size, not contiguous to a stream, and not part of a collection of small wetlands in the landscape that provide this function cumulatively.
 - Current use in the wetland results in disturbance that compromises this function.
- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
- The wetland is adjacent to a well head or source protection area, and provides ground water recharge.
 - The wetland provides flows to Class A surface waters.
 - The wetland contributes to the protection or improvement of water quality of any impaired waters.
 - The wetland is large in size and naturally vegetated.

3. Fish Habitat

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
- Contains woody vegetation that overhangs the banks of a stream or river and provides any of the following: shading that controls summer water temperature; cover including refuges created by overhanging branches or undercut banks; source of terrestrial insects as fish food; or streambank stability.
 - Provides spawning, nursery, feeding or cover habitat for fish (documented or professionally judged). Common habitat includes deep marsh and shallow marsh associates with lakes and streams, and seasonally flooded wetlands associated with streams and rivers.
 - Documented or professionally judged spawning habitat for northern pike.
 - Provides cold spring discharge that lowers the temperature of receiving waters and creates summer habitat for salmonoid species.
 - The wetland is located along a tributary that does not support fish, but contributes to a larger body of water that does support fish. The tributary supports downstream fish by providing cooler water, and food sources.

4. Wildlife Habitat

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Provides resting, feeding staging or roosting habitat to support waterfowl migration, and feeding habitat for wading birds. Good habitats for these species include open water wetlands.
 - Habitat to support one or more breeding pairs or broods of waterfowl including all species of ducks, geese, and swans. Good habitats for these species include open water habitats adjacent shallow marsh, deep marsh, shrub wetland, forested wetland, or naturally vegetated buffer zone.
 - Provides a nest site, a buffer for a nest site or feeding habitat for wading birds including but not limited to: great blue heron, black-crowned night heron, green-backed heron, cattle egret, or snowy egret. Good habitats for these species include open water or deep marsh adjacent to forested wetlands, or standing dead trees.
 - Supports or has the habitat to support one or more breeding pairs of any migratory bird that requires wetland habitat for breeding, nesting, rearing of young, feeding, staging roosting, or migration, including: Virginia rail, common snipe, marsh wren, American bittern, northern water thrush, northern harrier, spruce grouse, Cerulean warbler, and common loon.
 - Supports winter habitat for white-tailed deer. Good habitats for these species include softwood swamps. Evidence of use includes deer browsing, bark stripping, worn trails, or pellet piles.
 - Provides important feeding habitat for black bear, bobcat, or moose based on an assessment of use. Good habitat for these types of species includes wetlands located in a forested mosaic.
 - Has the habitat to support muskrat, otter or mink. Good habitats for these species include deep marshes, wetlands adjacent to bodies of water including lakes, ponds, rivers and streams.
 - Supports an active beaver dam, one or more lodges, or evidence of use in two or more consecutive years by an adult beaver population.
 - Provides the following habitats that support the reproduction of Uncommon Vermont amphibian species including:
 - 1. Wood Frog, Jefferson Salamander, Blue-spotted Salamander, or Spotted Salamander. Breeding habitat for these species includes vernal pools and small ponds.
 - 2. Northern Dusky Salamander and the Spring Salamander. Habitat for these species includes headwater seeps, springs, and streams.
 - 3. The Four-toed salamander; Fowler's Toad; Western or Boreal Chorus frog, or other amphibians found in Vermont of similar significance.

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- Supports or has the habitat to support significant populations of Vermont amphibian species including, but not limited to Pickerel Frog, Northern Leopard Frog, Mink Frog, and others found in Vermont of similar significance. Good habitat for these types of species includes large marsh systems with open water components.
- Supports or has the habitat to support populations of uncommon Vermont reptile species including: Wood Turtle, Northern Map Turtle, Eastern Musk Turtle, Spotted Turtle, Spiny Softshell, Eastern Ribbonsnake, Northern Watersnake, and others found in Vermont of similar significance.
- Supports or has the habitat to support significant populations of Vermont reptile species, including Smooth Greensnake, DeKay's Brownsnake, or other more common wetland-associated species.
- Meets four or more of the following conditions indicative of wildlife habitat diversity:
 - 1. Three or more wetland vegetation classes (greater than 1/2 acre) present including but not limited to: open water contiguous to, but not necessarily part of, the wetland, deep marsh, shallow marsh, shrub swamp, forested swamp, fen, or bog;
 - 2. The dominant vegetation class is one of the following types: deep marsh, shallow marsh, shrub swamp or, forested swamp;
 - 3. Located adjacent to a lake, pond, river or stream;
 - 4. Fifty percent or more of surrounding habitat type is one or more of the following: forest, agricultural land, old field or open land;
 - 5. Emergent or woody vegetation occupies 26 to 75 percent of wetland, the rest is open water;
 - 6. One of the following:
 - i. hydrologically connected to other wetlands of different dominant classes or open water within 1 mile;
 - ii. hydrologically connected to other wetlands of same dominant class within 1/2 mile;
 - iii. within 1/4 mile of other wetlands of different dominant classes or open water, but not hydrologically connected;
- Wetland or wetland complex is owned in whole or in part by state or federal government and managed for wildlife and habitat conservation; and
- Contains evidence that it is used by wetland dependent wildlife species.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level.

- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.
 - The wetland is small in size for its type and does not represent fugitive habitat in

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developed areas (vernal pools and seeps are generally small in size, so this does not apply).

- The surrounding land use is densely developed enough to limit use by wildlife species (with the exception of wetlands with open water habitat). Can be negated by evidence of use.
- The current use in the wetland results in frequent cutting, mowing or other disturbance.
- The wetland hydrology and character is at a drier end of the scale and does not support wetland dependent species.
- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
 - The wetland complex is large in size and high in quality.
 - The habitat has the potential to support several species based on the assessment above.
 - Wetland is associated with an important wildlife corridor.
 - The wetland has been identified by ANR-F&W as important habitat.

5. Exemplary Wetland Natural Community

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Wetlands that are identified as high quality examples of Vermont's natural community types recognized by the Natural Heritage Information Project of the Vermont Fish and Wildlife Department, including rare types such as dwarf shrub bogs, rich fens, alpine peatlands, red maple-black gum swamps and the more common types including deep bulrush marshes, cattail marshes, northern white cedar swamps, spruce-fir-tamarack swamps, and red maple-black ash seepage swamps are automatically significant for this function.

The wetland is also likely to be significant if any of the following conditions are met:

- Is an example of a wetland natural community type that has been identified and mapped by, or meets the ranking and mapping standards of, the Natural Heritage Information Project of the Vermont Fish and Wildlife Department.
- Contains ecological features that contribute to Vermont's natural heritage, including, but not limited to:
 - Deep peat accumulation reflecting a long history of wetland formation;
 - Forested wetlands displaying very old trees and other old growth characteristics;
 - A wetland natural community that is at the edge of the normal range for that type;

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- A wetland mosaic containing examples of several to many wetland community types; or
- A large wetland complex with examples of several wetland community types.

6. Rare, Threatened, and Endangered Species Habitat

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Wetlands that contain one or more species on the federal or state threatened or endangered lists, as well as species that are rare in Vermont, are automatically significant for this function.

The wetland is also likely to be significant if any of the following apply:

 - There is credible documentation that the wetland provides important habitat for any species on the federal or state threatened or endangered species lists;
 - There is credible documentation that threatened or endangered species have been present in past 10 years;
 - There is credible documentation that the wetland provides important habitat for any species listed as rare in Vermont (S1 or S2 ranks), state historic (SH rank), or rare to uncommon globally (G1, G2, or G3 ranks) by the Natural Heritage Information Project of the Vermont Fish and Wildlife Department;
 - There is credible documentation that the wetland provides habitat for multiple uncommon species of plants or animals (S3 rank).

List name of species and ranking:

7. Education and Research in Natural Sciences

- Function is present and likely to be significant: Any of the following characteristics indicate the wetland provides this function.
 - Owned by or leased to a public entity dedicated to education or research.
 - History of use for education or research.
 - Has one or more characteristics making it valuable for education or research.

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8. Recreational Value and Economic Benefits

- Function is present and likely to be significant: Any of the following characteristics indicate the wetland provides this function.
 - Used for, or contributes to, recreational activities.
 - Provides economic benefits.
 - Provides important habitat for fish or wildlife which can be fished, hunted or trapped under applicable state law.
 - Used for harvesting of wild foods.

Comments:

9. Open Space and Aesthetics

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Can be readily observed by the public; and
 - Possesses special or unique aesthetic qualities; or
 - Has prominence as a distinct feature in the surrounding landscape;
 - Has been identified as important open space in a municipal, regional or state plan.

10. Erosion Control through Binding and Stabilizing the Soil

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Erosive forces such as wave or current energy are present and any of the following are present as well:
 - Dense, persistent vegetation along a shoreline or stream bank that reduces an adjacent erosive force.
 - Good interspersion of persistent emergent vegetation and water along course of water flow.
 - Studies show that wetlands of similar size, vegetation type, and hydrology are important for erosion control.

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What type of erosive forces are present?

- Lake fetch and waves
- High current velocities
- Water level influenced by upstream impoundment

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level.

- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.
 - The stream is artificially channelized and/or lacks vegetation that contributes to controlling the erosive force.
- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
 - The stream contains high sinuosity.
 - Has been identified through fluvial geomorphic assessment to be important in maintaining the natural condition of the stream or river corridor.

VERMONT WETLAND EVALUATION FORM

Project Name: Velco New Haven Sub NH-010 Project #: 195601363

Date: 10/11/2017 Investigator: AS

SUMMARY OF FUNCTIONAL EVALUATION:

Each function gets a score of 0= not present; L = Low; P = Present; or H = High.

1. Water Storage for Flood Water and Storm Runoff	0	6. Rare, Threatened, and Endangered Species Habitat	0
2. Surface & Ground Water Protection	L	7. Education and Research in Natural Sciences	0
3. Fish Habitat	0	8. Recreational Value and Economic Benefits	0
4. Wildlife Habitat	0	9. Open Space and Aesthetics	0
5. Exemplary Wetland Natural Community	0	10. Erosion Control through Binding and Stabilizing the Soil	0

Note:

- **When to use this form:** This is a field form to help you compile data needed to evaluate the 10 possible functions and values of a wetland as described in the Vermont Wetland Rules. All information in this form is replicated in the applications for both wetland determinations and wetland permits.
- **Both a desktop review and field examination** should be employed to accurately determine surrounding land use, hydrology, hydroperiod, vegetation, position in the landscape, and physical attributes.
- **The entire wetland or wetland complex** in question must be evaluated to determine the level of function in all ten (10) categories for accurate classification. A wetland complex can be defined as a series of interconnected wetland types.
- **The surrounding upland and outflow area** of the wetland should be examined to determine land use, development, nearby natural resources, and hydrology. The surrounding land use, previous development, and cumulative impacts may play a role in the current function of the wetland. For best results please read all descriptions prior to scoring activity.
- **Evaluation:** The first portion in each section determines whether the wetland does or does not provide the function. If none of the conditions listed in the first section are met, proceed

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to the next section. If any of these conditions are met, determine if the wetland provides this function at a higher or lower level based on the information listed in the subsequent sections.

- **Presumptions:** Please note that many wetlands are already presumed to be significant under the Vermont Wetland Rules. A wetland is presumed to be significant if:
 - The wetland is mapped on the VSWI map
 - The wetland is contiguous to a VSWI mapped wetland
 - The wetland meets the presumptions of significance under Section 4.6
 - The wetland has a preliminary determination that it is Class II

1. Water Storage for Flood Water and Storm Runoff

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
- Constricted outlet or no outlet and an unconstricted inlet.
 - Physical space for floodwater expansion and dense, persistent, emergent vegetation or dense woody vegetation that slows down flood waters or stormwater runoff during peak flows and facilitates water removal by evaporation and transpiration.
 - If a stream is present, its course is sinuous and there is sufficient woody vegetation to intercept surface flows in the portion of the wetland that floods.
 - Physical evidence of seasonal flooding or ponding such as water stained leaves, water marks on trees, drift rows, debris deposits, or standing water.
 - Hydrologic or hydraulic study indicates wetland attenuates flooding.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level:

- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.
- Significant flood storage capacity upstream of the wetland, and the wetland in question provides this function at a negligible level in comparison to upstream storage (unless the upstream storage is temporary such as a beaver impoundment).
 - Wetland is contiguous to a major lake or pond that provides storage benefits independently of the wetland.
 - Wetland's storage capacity is created primarily by recent beaver dams or other temporary structures.
 - Wetland is very small in size, not contiguous to a stream, and not part of a collection of small wetlands in the landscape that provide this function cumulatively.
- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
- History of downstream flood damage to public or private property.
 - Any of the following conditions present downstream of the wetland, but upstream of a major lake or pond, could be impacted by a loss or reduction of the water storage function.
 - 1. Developed public or private property.
 - 2. Stream banks susceptible to scouring and erosion.
 - 3. Important habitat for aquatic life.
 - The wetland is large in size and naturally vegetated.

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- Any of the following conditions present upstream of the wetland may indicate a large volume of runoff may reach the wetland.
 - 1. A large amount of impervious surface in urbanized areas.
 - 2. Relatively impervious soils.
 - 3. Steep slopes in the adjacent areas.

2. Surface and Ground Water Protection

Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.

- Constricted or no outlets.
- Low water velocity through dense, persistent vegetation.
- Hydroperiod permanently flooded or saturated.
- Wetlands in depositional environments with persistent vegetation wider than 20 feet.
- Wetlands with persistent vegetation comprising a defined delta, island, bar or peninsula.
- Presence of seeps or springs.
- Wetland contains a high amount of microtopography that helps slow and filter surface water.
- Position in the landscape indicates the wetland is a headwaters area.
- Wetland is adjacent to surface waters.
- Wetland recharges a drinking water source.
- Water sampling indicates removal of pollutants or nutrients.
- Water sampling indicates retention of sediments or organic matter.
- Fine mineral soils and alkalinity not low.
- The wetland provides an obvious filter between surface water or ground water and land uses that may contribute point or nonpoint sources of sediments, toxic substances or nutrients to the wetland, such as: steep erodible slopes; row crops; dumps; areas of pesticide, herbicide or fertilizer application; feed lots; parking lots or heavily traveled road; and septic systems.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level.

Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.

- Presence of dead forest or shrub areas in sufficient amounts to result in diminished

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nutrient uptake.

- Presence of ditches or channels that confine water and restrict contact of water with vegetation.
 - Wetland is very small in size, not contiguous to a stream, and not part of a collection of small wetlands in the landscape that provide this function cumulatively.
 - Current use in the wetland results in disturbance that compromises this function.
- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
- The wetland is adjacent to a well head or source protection area, and provides ground water recharge.
 - The wetland provides flows to Class A surface waters.
 - The wetland contributes to the protection or improvement of water quality of any impaired waters.
 - The wetland is large in size and naturally vegetated.

3. Fish Habitat

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
- Contains woody vegetation that overhangs the banks of a stream or river and provides any of the following: shading that controls summer water temperature; cover including refuges created by overhanging branches or undercut banks; source of terrestrial insects as fish food; or streambank stability.
 - Provides spawning, nursery, feeding or cover habitat for fish (documented or professionally judged). Common habitat includes deep marsh and shallow marsh associates with lakes and streams, and seasonally flooded wetlands associated with streams and rivers.
 - Documented or professionally judged spawning habitat for northern pike.
 - Provides cold spring discharge that lowers the temperature of receiving waters and creates summer habitat for salmonoid species.
 - The wetland is located along a tributary that does not support fish, but contributes to a larger body of water that does support fish. The tributary supports downstream fish by providing cooler water, and food sources.

4. Wildlife Habitat

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Provides resting, feeding staging or roosting habitat to support waterfowl migration, and feeding habitat for wading birds. Good habitats for these species include open water wetlands.
 - Habitat to support one or more breeding pairs or broods of waterfowl including all species of ducks, geese, and swans. Good habitats for these species include open water habitats adjacent shallow marsh, deep marsh, shrub wetland, forested wetland, or naturally vegetated buffer zone.
 - Provides a nest site, a buffer for a nest site or feeding habitat for wading birds including but not limited to: great blue heron, black-crowned night heron, green-backed heron, cattle egret, or snowy egret. Good habitats for these species include open water or deep marsh adjacent to forested wetlands, or standing dead trees.
 - Supports or has the habitat to support one or more breeding pairs of any migratory bird that requires wetland habitat for breeding, nesting, rearing of young, feeding, staging roosting, or migration, including: Virginia rail, common snipe, marsh wren, American bittern, northern water thrush, northern harrier, spruce grouse, Cerulean warbler, and common loon.
 - Supports winter habitat for white-tailed deer. Good habitats for these species include softwood swamps. Evidence of use includes deer browsing, bark stripping, worn trails, or pellet piles.
 - Provides important feeding habitat for black bear, bobcat, or moose based on an assessment of use. Good habitat for these types of species includes wetlands located in a forested mosaic.
 - Has the habitat to support muskrat, otter or mink. Good habitats for these species include deep marshes, wetlands adjacent to bodies of water including lakes, ponds, rivers and streams.
 - Supports an active beaver dam, one or more lodges, or evidence of use in two or more consecutive years by an adult beaver population.
 - Provides the following habitats that support the reproduction of Uncommon Vermont amphibian species including:
 - 1. Wood Frog, Jefferson Salamander, Blue-spotted Salamander, or Spotted Salamander. Breeding habitat for these species includes vernal pools and small ponds.
 - 2. Northern Dusky Salamander and the Spring Salamander. Habitat for these species includes headwater seeps, springs, and streams.
 - 3. The Four-toed salamander; Fowler's Toad; Western or Boreal Chorus frog, or other amphibians found in Vermont of similar significance.

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- Supports or has the habitat to support significant populations of Vermont amphibian species including, but not limited to Pickerel Frog, Northern Leopard Frog, Mink Frog, and others found in Vermont of similar significance. Good habitat for these types of species includes large marsh systems with open water components.
- Supports or has the habitat to support populations of uncommon Vermont reptile species including: Wood Turtle, Northern Map Turtle, Eastern Musk Turtle, Spotted Turtle, Spiny Softshell, Eastern Ribbonsnake, Northern Watersnake, and others found in Vermont of similar significance.
- Supports or has the habitat to support significant populations of Vermont reptile species, including Smooth Greensnake, DeKay's Brownsnake, or other more common wetland-associated species.
- Meets four or more of the following conditions indicative of wildlife habitat diversity:
 - 1. Three or more wetland vegetation classes (greater than 1/2 acre) present including but not limited to: open water contiguous to, but not necessarily part of, the wetland, deep marsh, shallow marsh, shrub swamp, forested swamp, fen, or bog;
 - 2. The dominant vegetation class is one of the following types: deep marsh, shallow marsh, shrub swamp or, forested swamp;
 - 3. Located adjacent to a lake, pond, river or stream;
 - 4. Fifty percent or more of surrounding habitat type is one or more of the following: forest, agricultural land, old field or open land;
 - 5. Emergent or woody vegetation occupies 26 to 75 percent of wetland, the rest is open water;
 - 6. One of the following:
 - i. hydrologically connected to other wetlands of different dominant classes or open water within 1 mile;
 - ii. hydrologically connected to other wetlands of same dominant class within 1/2 mile;
 - iii. within 1/4 mile of other wetlands of different dominant classes or open water, but not hydrologically connected;
- Wetland or wetland complex is owned in whole or in part by state or federal government and managed for wildlife and habitat conservation; and
- Contains evidence that it is used by wetland dependent wildlife species.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level.

- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.
 - The wetland is small in size for its type and does not represent fugitive habitat in

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developed areas (vernal pools and seeps are generally small in size, so this does not apply).

- The surrounding land use is densely developed enough to limit use by wildlife species (with the exception of wetlands with open water habitat). Can be negated by evidence of use.
- The current use in the wetland results in frequent cutting, mowing or other disturbance.
- The wetland hydrology and character is at a drier end of the scale and does not support wetland dependent species.
- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
 - The wetland complex is large in size and high in quality.
 - The habitat has the potential to support several species based on the assessment above.
 - Wetland is associated with an important wildlife corridor.
 - The wetland has been identified by ANR-F&W as important habitat.

5. Exemplary Wetland Natural Community

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Wetlands that are identified as high quality examples of Vermont's natural community types recognized by the Natural Heritage Information Project of the Vermont Fish and Wildlife Department, including rare types such as dwarf shrub bogs, rich fens, alpine peatlands, red maple-black gum swamps and the more common types including deep bulrush marshes, cattail marshes, northern white cedar swamps, spruce-fir-tamarack swamps, and red maple-black ash seepage swamps are automatically significant for this function.

The wetland is also likely to be significant if any of the following conditions are met:

- Is an example of a wetland natural community type that has been identified and mapped by, or meets the ranking and mapping standards of, the Natural Heritage Information Project of the Vermont Fish and Wildlife Department.
- Contains ecological features that contribute to Vermont's natural heritage, including, but not limited to:
 - Deep peat accumulation reflecting a long history of wetland formation;
 - Forested wetlands displaying very old trees and other old growth characteristics;
 - A wetland natural community that is at the edge of the normal range for that type;

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- A wetland mosaic containing examples of several to many wetland community types; or
- A large wetland complex with examples of several wetland community types.

6. Rare, Threatened, and Endangered Species Habitat

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Wetlands that contain one or more species on the federal or state threatened or endangered lists, as well as species that are rare in Vermont, are automatically significant for this function.

The wetland is also likely to be significant if any of the following apply:

 - There is credible documentation that the wetland provides important habitat for any species on the federal or state threatened or endangered species lists;
 - There is credible documentation that threatened or endangered species have been present in past 10 years;
 - There is credible documentation that the wetland provides important habitat for any species listed as rare in Vermont (S1 or S2 ranks), state historic (SH rank), or rare to uncommon globally (G1, G2, or G3 ranks) by the Natural Heritage Information Project of the Vermont Fish and Wildlife Department;
 - There is credible documentation that the wetland provides habitat for multiple uncommon species of plants or animals (S3 rank).

List name of species and ranking:

7. Education and Research in Natural Sciences

- Function is present and likely to be significant: Any of the following characteristics indicate the wetland provides this function.
 - Owned by or leased to a public entity dedicated to education or research.
 - History of use for education or research.
 - Has one or more characteristics making it valuable for education or research.

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8. Recreational Value and Economic Benefits

- Function is present and likely to be significant: Any of the following characteristics indicate the wetland provides this function.
 - Used for, or contributes to, recreational activities.
 - Provides economic benefits.
 - Provides important habitat for fish or wildlife which can be fished, hunted or trapped under applicable state law.
 - Used for harvesting of wild foods.

Comments:

9. Open Space and Aesthetics

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Can be readily observed by the public; and
 - Possesses special or unique aesthetic qualities; or
 - Has prominence as a distinct feature in the surrounding landscape;
 - Has been identified as important open space in a municipal, regional or state plan.

10. Erosion Control through Binding and Stabilizing the Soil

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Erosive forces such as wave or current energy are present and any of the following are present as well:
 - Dense, persistent vegetation along a shoreline or stream bank that reduces an adjacent erosive force.
 - Good interspersion of persistent emergent vegetation and water along course of water flow.
 - Studies show that wetlands of similar size, vegetation type, and hydrology are important for erosion control.

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What type of erosive forces are present?

- Lake fetch and waves
- High current velocities
- Water level influenced by upstream impoundment

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level.

- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.
 - The stream is artificially channelized and/or lacks vegetation that contributes to controlling the erosive force.
- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
 - The stream contains high sinuosity.
 - Has been identified through fluvial geomorphic assessment to be important in maintaining the natural condition of the stream or river corridor.

VERMONT WETLAND EVALUATION FORM

Project Name: Velco New Haven BCC NH-201 Project #: 195601363

Date: 11/1/2017 Investigator: EDB

SUMMARY OF FUNCTIONAL EVALUATION:

Each function gets a score of 0= not present; L = Low; P = Present; or H = High.

1. Water Storage for Flood Water and Storm Runoff L	6. Rare, Threatened, and Endangered Species Habitat 0
2. Surface & Ground Water Protection L	7. Education and Research in Natural Sciences 0
3. Fish Habitat 0	8. Recreational Value and Economic Benefits 0
4. Wildlife Habitat 0	9. Open Space and Aesthetics 0
5. Exemplary Wetland Natural Community 0	10. Erosion Control through Binding and Stabilizing the Soil 0

Note:

- **When to use this form:** This is a field form to help you compile data needed to evaluate the 10 possible functions and values of a wetland as described in the Vermont Wetland Rules. All information in this form is replicated in the applications for both wetland determinations and wetland permits.
- **Both a desktop review and field examination** should be employed to accurately determine surrounding land use, hydrology, hydroperiod, vegetation, position in the landscape, and physical attributes.
- **The entire wetland or wetland complex** in question must be evaluated to determine the level of function in all ten (10) categories for accurate classification. A wetland complex can be defined as a series of interconnected wetland types.
- **The surrounding upland and outflow area** of the wetland should be examined to determine land use, development, nearby natural resources, and hydrology. The surrounding land use, previous development, and cumulative impacts may play a role in the current function of the wetland. For best results please read all descriptions prior to scoring activity.
- **Evaluation:** The first portion in each section determines whether the wetland does or does not provide the function. If none of the conditions listed in the first section are met, proceed

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to the next section. If any of these conditions are met, determine if the wetland provides this function at a higher or lower level based on the information listed in the subsequent sections.

- **Presumptions:** Please note that many wetlands are already presumed to be significant under the Vermont Wetland Rules. A wetland is presumed to be significant if:
 - The wetland is mapped on the VSWI map
 - The wetland is contiguous to a VSWI mapped wetland
 - The wetland meets the presumptions of significance under Section 4.6
 - The wetland has a preliminary determination that it is Class II

1. Water Storage for Flood Water and Storm Runoff

Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.

- Constricted outlet or no outlet and an unconstricted inlet.
- Physical space for floodwater expansion and dense, persistent, emergent vegetation or dense woody vegetation that slows down flood waters or stormwater runoff during peak flows and facilitates water removal by evaporation and transpiration.
- If a stream is present, its course is sinuous and there is sufficient woody vegetation to intercept surface flows in the portion of the wetland that floods.
- Physical evidence of seasonal flooding or ponding such as water stained leaves, water marks on trees, drift rows, debris deposits, or standing water.
- Hydrologic or hydraulic study indicates wetland attenuates flooding.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level:

Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.

- Significant flood storage capacity upstream of the wetland, and the wetland in question provides this function at a negligible level in comparison to upstream storage (unless the upstream storage is temporary such as a beaver impoundment).
- Wetland is contiguous to a major lake or pond that provides storage benefits independently of the wetland.
- Wetland's storage capacity is created primarily by recent beaver dams or other temporary structures.
- Wetland is very small in size, not contiguous to a stream, and not part of a collection of small wetlands in the landscape that provide this function cumulatively.

Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.

- History of downstream flood damage to public or private property.
- Any of the following conditions present downstream of the wetland, but upstream of a major lake or pond, could be impacted by a loss or reduction of the water storage function.
 - 1. Developed public or private property.
 - 2. Stream banks susceptible to scouring and erosion.
 - 3. Important habitat for aquatic life.
- The wetland is large in size and naturally vegetated.

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- Any of the following conditions present upstream of the wetland may indicate a large volume of runoff may reach the wetland.
 - 1. A large amount of impervious surface in urbanized areas.
 - 2. Relatively impervious soils.
 - 3. Steep slopes in the adjacent areas.

2. Surface and Ground Water Protection

Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.

- Constricted or no outlets.
- Low water velocity through dense, persistent vegetation.
- Hydroperiod permanently flooded or saturated.
- Wetlands in depositional environments with persistent vegetation wider than 20 feet.
- Wetlands with persistent vegetation comprising a defined delta, island, bar or peninsula.
- Presence of seeps or springs.
- Wetland contains a high amount of microtopography that helps slow and filter surface water.
- Position in the landscape indicates the wetland is a headwaters area.
- Wetland is adjacent to surface waters.
- Wetland recharges a drinking water source.
- Water sampling indicates removal of pollutants or nutrients.
- Water sampling indicates retention of sediments or organic matter.
- Fine mineral soils and alkalinity not low.
- The wetland provides an obvious filter between surface water or ground water and land uses that may contribute point or nonpoint sources of sediments, toxic substances or nutrients to the wetland, such as: steep erodible slopes; row crops; dumps; areas of pesticide, herbicide or fertilizer application; feed lots; parking lots or heavily traveled road; and septic systems.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level.

Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.

- Presence of dead forest or shrub areas in sufficient amounts to result in diminished

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nutrient uptake.

- Presence of ditches or channels that confine water and restrict contact of water with vegetation.
 - Wetland is very small in size, not contiguous to a stream, and not part of a collection of small wetlands in the landscape that provide this function cumulatively.
 - Current use in the wetland results in disturbance that compromises this function.
- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
- The wetland is adjacent to a well head or source protection area, and provides ground water recharge.
 - The wetland provides flows to Class A surface waters.
 - The wetland contributes to the protection or improvement of water quality of any impaired waters.
 - The wetland is large in size and naturally vegetated.

3. Fish Habitat

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
- Contains woody vegetation that overhangs the banks of a stream or river and provides any of the following: shading that controls summer water temperature; cover including refuges created by overhanging branches or undercut banks; source of terrestrial insects as fish food; or streambank stability.
 - Provides spawning, nursery, feeding or cover habitat for fish (documented or professionally judged). Common habitat includes deep marsh and shallow marsh associates with lakes and streams, and seasonally flooded wetlands associated with streams and rivers.
 - Documented or professionally judged spawning habitat for northern pike.
 - Provides cold spring discharge that lowers the temperature of receiving waters and creates summer habitat for salmonoid species.
 - The wetland is located along a tributary that does not support fish, but contributes to a larger body of water that does support fish. The tributary supports downstream fish by providing cooler water, and food sources.

4. Wildlife Habitat

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Provides resting, feeding staging or roosting habitat to support waterfowl migration, and feeding habitat for wading birds. Good habitats for these species include open water wetlands.
 - Habitat to support one or more breeding pairs or broods of waterfowl including all species of ducks, geese, and swans. Good habitats for these species include open water habitats adjacent shallow marsh, deep marsh, shrub wetland, forested wetland, or naturally vegetated buffer zone.
 - Provides a nest site, a buffer for a nest site or feeding habitat for wading birds including but not limited to: great blue heron, black-crowned night heron, green-backed heron, cattle egret, or snowy egret. Good habitats for these species include open water or deep marsh adjacent to forested wetlands, or standing dead trees.
 - Supports or has the habitat to support one or more breeding pairs of any migratory bird that requires wetland habitat for breeding, nesting, rearing of young, feeding, staging roosting, or migration, including: Virginia rail, common snipe, marsh wren, American bittern, northern water thrush, northern harrier, spruce grouse, Cerulean warbler, and common loon.
 - Supports winter habitat for white-tailed deer. Good habitats for these species include softwood swamps. Evidence of use includes deer browsing, bark stripping, worn trails, or pellet piles.
 - Provides important feeding habitat for black bear, bobcat, or moose based on an assessment of use. Good habitat for these types of species includes wetlands located in a forested mosaic.
 - Has the habitat to support muskrat, otter or mink. Good habitats for these species include deep marshes, wetlands adjacent to bodies of water including lakes, ponds, rivers and streams.
 - Supports an active beaver dam, one or more lodges, or evidence of use in two or more consecutive years by an adult beaver population.
 - Provides the following habitats that support the reproduction of Uncommon Vermont amphibian species including:
 - 1. Wood Frog, Jefferson Salamander, Blue-spotted Salamander, or Spotted Salamander. Breeding habitat for these species includes vernal pools and small ponds.
 - 2. Northern Dusky Salamander and the Spring Salamander. Habitat for these species includes headwater seeps, springs, and streams.
 - 3. The Four-toed salamander; Fowler's Toad; Western or Boreal Chorus frog, or other amphibians found in Vermont of similar significance.

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- Supports or has the habitat to support significant populations of Vermont amphibian species including, but not limited to Pickerel Frog, Northern Leopard Frog, Mink Frog, and others found in Vermont of similar significance. Good habitat for these types of species includes large marsh systems with open water components.
- Supports or has the habitat to support populations of uncommon Vermont reptile species including: Wood Turtle, Northern Map Turtle, Eastern Musk Turtle, Spotted Turtle, Spiny Softshell, Eastern Ribbonsnake, Northern Watersnake, and others found in Vermont of similar significance.
- Supports or has the habitat to support significant populations of Vermont reptile species, including Smooth Greensnake, DeKay's Brownsnake, or other more common wetland-associated species.
- Meets four or more of the following conditions indicative of wildlife habitat diversity:
 - 1. Three or more wetland vegetation classes (greater than 1/2 acre) present including but not limited to: open water contiguous to, but not necessarily part of, the wetland, deep marsh, shallow marsh, shrub swamp, forested swamp, fen, or bog;
 - 2. The dominant vegetation class is one of the following types: deep marsh, shallow marsh, shrub swamp or, forested swamp;
 - 3. Located adjacent to a lake, pond, river or stream;
 - 4. Fifty percent or more of surrounding habitat type is one or more of the following: forest, agricultural land, old field or open land;
 - 5. Emergent or woody vegetation occupies 26 to 75 percent of wetland, the rest is open water;
 - 6. One of the following:
 - i. hydrologically connected to other wetlands of different dominant classes or open water within 1 mile;
 - ii. hydrologically connected to other wetlands of same dominant class within 1/2 mile;
 - iii. within 1/4 mile of other wetlands of different dominant classes or open water, but not hydrologically connected;
- Wetland or wetland complex is owned in whole or in part by state or federal government and managed for wildlife and habitat conservation; and
- Contains evidence that it is used by wetland dependent wildlife species.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level.

- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.
 - The wetland is small in size for its type and does not represent fugitive habitat in

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developed areas (vernal pools and seeps are generally small in size, so this does not apply).

- The surrounding land use is densely developed enough to limit use by wildlife species (with the exception of wetlands with open water habitat). Can be negated by evidence of use.
- The current use in the wetland results in frequent cutting, mowing or other disturbance.
- The wetland hydrology and character is at a drier end of the scale and does not support wetland dependent species.
- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
 - The wetland complex is large in size and high in quality.
 - The habitat has the potential to support several species based on the assessment above.
 - Wetland is associated with an important wildlife corridor.
 - The wetland has been identified by ANR-F&W as important habitat.

5. Exemplary Wetland Natural Community

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Wetlands that are identified as high quality examples of Vermont's natural community types recognized by the Natural Heritage Information Project of the Vermont Fish and Wildlife Department, including rare types such as dwarf shrub bogs, rich fens, alpine peatlands, red maple-black gum swamps and the more common types including deep bulrush marshes, cattail marshes, northern white cedar swamps, spruce-fir-tamarack swamps, and red maple-black ash seepage swamps are automatically significant for this function.

The wetland is also likely to be significant if any of the following conditions are met:

- Is an example of a wetland natural community type that has been identified and mapped by, or meets the ranking and mapping standards of, the Natural Heritage Information Project of the Vermont Fish and Wildlife Department.
- Contains ecological features that contribute to Vermont's natural heritage, including, but not limited to:
 - Deep peat accumulation reflecting a long history of wetland formation;
 - Forested wetlands displaying very old trees and other old growth characteristics;
 - A wetland natural community that is at the edge of the normal range for that type;

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- A wetland mosaic containing examples of several to many wetland community types; or
- A large wetland complex with examples of several wetland community types.

6. Rare, Threatened, and Endangered Species Habitat

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Wetlands that contain one or more species on the federal or state threatened or endangered lists, as well as species that are rare in Vermont, are automatically significant for this function.

The wetland is also likely to be significant if any of the following apply:

 - There is credible documentation that the wetland provides important habitat for any species on the federal or state threatened or endangered species lists;
 - There is credible documentation that threatened or endangered species have been present in past 10 years;
 - There is credible documentation that the wetland provides important habitat for any species listed as rare in Vermont (S1 or S2 ranks), state historic (SH rank), or rare to uncommon globally (G1, G2, or G3 ranks) by the Natural Heritage Information Project of the Vermont Fish and Wildlife Department;
 - There is credible documentation that the wetland provides habitat for multiple uncommon species of plants or animals (S3 rank).

List name of species and ranking:

7. Education and Research in Natural Sciences

- Function is present and likely to be significant: Any of the following characteristics indicate the wetland provides this function.
 - Owned by or leased to a public entity dedicated to education or research.
 - History of use for education or research.
 - Has one or more characteristics making it valuable for education or research.

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8. Recreational Value and Economic Benefits

- Function is present and likely to be significant: Any of the following characteristics indicate the wetland provides this function.
 - Used for, or contributes to, recreational activities.
 - Provides economic benefits.
 - Provides important habitat for fish or wildlife which can be fished, hunted or trapped under applicable state law.
 - Used for harvesting of wild foods.

Comments:

9. Open Space and Aesthetics

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Can be readily observed by the public; and
 - Possesses special or unique aesthetic qualities; or
 - Has prominence as a distinct feature in the surrounding landscape;
 - Has been identified as important open space in a municipal, regional or state plan.

10. Erosion Control through Binding and Stabilizing the Soil

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Erosive forces such as wave or current energy are present and any of the following are present as well:
 - Dense, persistent vegetation along a shoreline or stream bank that reduces an adjacent erosive force.
 - Good interspersion of persistent emergent vegetation and water along course of water flow.
 - Studies show that wetlands of similar size, vegetation type, and hydrology are important for erosion control.

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What type of erosive forces are present?

- Lake fetch and waves
- High current velocities
- Water level influenced by upstream impoundment

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level.

- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.
 - The stream is artificially channelized and/or lacks vegetation that contributes to controlling the erosive force.
- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
 - The stream contains high sinuosity.
 - Has been identified through fluvial geomorphic assessment to be important in maintaining the natural condition of the stream or river corridor.

VERMONT WETLAND EVALUATION FORM

Project Name: Velco New Haven BCC NH-202 Project #: 195601363

Date: 11/1/2017 Investigator: EDB

SUMMARY OF FUNCTIONAL EVALUATION:

Each function gets a score of 0= not present; L = Low; P = Present; or H = High.

1. Water Storage for Flood Water and Storm Runoff	P	6. Rare, Threatened, and Endangered Species Habitat	0
2. Surface & Ground Water Protection	H	7. Education and Research in Natural Sciences	0
3. Fish Habitat	0	8. Recreational Value and Economic Benefits	0
4. Wildlife Habitat	0	9. Open Space and Aesthetics	0
5. Exemplary Wetland Natural Community	0	10. Erosion Control through Binding and Stabilizing the Soil	0

Note:

- **When to use this form:** This is a field form to help you compile data needed to evaluate the 10 possible functions and values of a wetland as described in the Vermont Wetland Rules. All information in this form is replicated in the applications for both wetland determinations and wetland permits.
- **Both a desktop review and field examination** should be employed to accurately determine surrounding land use, hydrology, hydroperiod, vegetation, position in the landscape, and physical attributes.
- **The entire wetland or wetland complex** in question must be evaluated to determine the level of function in all ten (10) categories for accurate classification. A wetland complex can be defined as a series of interconnected wetland types.
- **The surrounding upland and outflow area** of the wetland should be examined to determine land use, development, nearby natural resources, and hydrology. The surrounding land use, previous development, and cumulative impacts may play a role in the current function of the wetland. For best results please read all descriptions prior to scoring activity.
- **Evaluation:** The first portion in each section determines whether the wetland does or does not provide the function. If none of the conditions listed in the first section are met, proceed

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to the next section. If any of these conditions are met, determine if the wetland provides this function at a higher or lower level based on the information listed in the subsequent sections.

- **Presumptions:** Please note that many wetlands are already presumed to be significant under the Vermont Wetland Rules. A wetland is presumed to be significant if:
 - The wetland is mapped on the VSWI map
 - The wetland is contiguous to a VSWI mapped wetland
 - The wetland meets the presumptions of significance under Section 4.6
 - The wetland has a preliminary determination that it is Class II

1. Water Storage for Flood Water and Storm Runoff

Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.

- Constricted outlet or no outlet and an unconstricted inlet.
- Physical space for floodwater expansion and dense, persistent, emergent vegetation or dense woody vegetation that slows down flood waters or stormwater runoff during peak flows and facilitates water removal by evaporation and transpiration.
- If a stream is present, its course is sinuous and there is sufficient woody vegetation to intercept surface flows in the portion of the wetland that floods.
- Physical evidence of seasonal flooding or ponding such as water stained leaves, water marks on trees, drift rows, debris deposits, or standing water.
- Hydrologic or hydraulic study indicates wetland attenuates flooding.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level:

- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.
 - Significant flood storage capacity upstream of the wetland, and the wetland in question provides this function at a negligible level in comparison to upstream storage (unless the upstream storage is temporary such as a beaver impoundment).
 - Wetland is contiguous to a major lake or pond that provides storage benefits independently of the wetland.
 - Wetland's storage capacity is created primarily by recent beaver dams or other temporary structures.
 - Wetland is very small in size, not contiguous to a stream, and not part of a collection of small wetlands in the landscape that provide this function cumulatively.
- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
 - History of downstream flood damage to public or private property.
 - Any of the following conditions present downstream of the wetland, but upstream of a major lake or pond, could be impacted by a loss or reduction of the water storage function.
 - 1. Developed public or private property.
 - 2. Stream banks susceptible to scouring and erosion.
 - 3. Important habitat for aquatic life.
 - The wetland is large in size and naturally vegetated.

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- Any of the following conditions present upstream of the wetland may indicate a large volume of runoff may reach the wetland.
 - 1. A large amount of impervious surface in urbanized areas.
 - 2. Relatively impervious soils.
 - 3. Steep slopes in the adjacent areas.

2. Surface and Ground Water Protection

Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.

- Constricted or no outlets.
- Low water velocity through dense, persistent vegetation.
- Hydroperiod permanently flooded or saturated.
- Wetlands in depositional environments with persistent vegetation wider than 20 feet.
- Wetlands with persistent vegetation comprising a defined delta, island, bar or peninsula.
- Presence of seeps or springs.
- Wetland contains a high amount of microtopography that helps slow and filter surface water.
- Position in the landscape indicates the wetland is a headwaters area.
- Wetland is adjacent to surface waters.
- Wetland recharges a drinking water source.
- Water sampling indicates removal of pollutants or nutrients.
- Water sampling indicates retention of sediments or organic matter.
- Fine mineral soils and alkalinity not low.
- The wetland provides an obvious filter between surface water or ground water and land uses that may contribute point or nonpoint sources of sediments, toxic substances or nutrients to the wetland, such as: steep erodible slopes; row crops; dumps; areas of pesticide, herbicide or fertilizer application; feed lots; parking lots or heavily traveled road; and septic systems.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level.

Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.

- Presence of dead forest or shrub areas in sufficient amounts to result in diminished

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nutrient uptake.

- Presence of ditches or channels that confine water and restrict contact of water with vegetation.
- Wetland is very small in size, not contiguous to a stream, and not part of a collection of small wetlands in the landscape that provide this function cumulatively.
- Current use in the wetland results in disturbance that compromises this function.
- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
 - The wetland is adjacent to a well head or source protection area, and provides ground water recharge.
 - The wetland provides flows to Class A surface waters.
 - The wetland contributes to the protection or improvement of water quality of any impaired waters.
 - The wetland is large in size and naturally vegetated.

3. Fish Habitat

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Contains woody vegetation that overhangs the banks of a stream or river and provides any of the following: shading that controls summer water temperature; cover including refuges created by overhanging branches or undercut banks; source of terrestrial insects as fish food; or streambank stability.
 - Provides spawning, nursery, feeding or cover habitat for fish (documented or professionally judged). Common habitat includes deep marsh and shallow marsh associates with lakes and streams, and seasonally flooded wetlands associated with streams and rivers.
 - Documented or professionally judged spawning habitat for northern pike.
 - Provides cold spring discharge that lowers the temperature of receiving waters and creates summer habitat for salmonoid species.
 - The wetland is located along a tributary that does not support fish, but contributes to a larger body of water that does support fish. The tributary supports downstream fish by providing cooler water, and food sources.

4. Wildlife Habitat

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Provides resting, feeding staging or roosting habitat to support waterfowl migration, and feeding habitat for wading birds. Good habitats for these species include open water wetlands.
 - Habitat to support one or more breeding pairs or broods of waterfowl including all species of ducks, geese, and swans. Good habitats for these species include open water habitats adjacent shallow marsh, deep marsh, shrub wetland, forested wetland, or naturally vegetated buffer zone.
 - Provides a nest site, a buffer for a nest site or feeding habitat for wading birds including but not limited to: great blue heron, black-crowned night heron, green-backed heron, cattle egret, or snowy egret. Good habitats for these species include open water or deep marsh adjacent to forested wetlands, or standing dead trees.
 - Supports or has the habitat to support one or more breeding pairs of any migratory bird that requires wetland habitat for breeding, nesting, rearing of young, feeding, staging roosting, or migration, including: Virginia rail, common snipe, marsh wren, American bittern, northern water thrush, northern harrier, spruce grouse, Cerulean warbler, and common loon.
 - Supports winter habitat for white-tailed deer. Good habitats for these species include softwood swamps. Evidence of use includes deer browsing, bark stripping, worn trails, or pellet piles.
 - Provides important feeding habitat for black bear, bobcat, or moose based on an assessment of use. Good habitat for these types of species includes wetlands located in a forested mosaic.
 - Has the habitat to support muskrat, otter or mink. Good habitats for these species include deep marshes, wetlands adjacent to bodies of water including lakes, ponds, rivers and streams.
 - Supports an active beaver dam, one or more lodges, or evidence of use in two or more consecutive years by an adult beaver population.
 - Provides the following habitats that support the reproduction of Uncommon Vermont amphibian species including:
 - 1. Wood Frog, Jefferson Salamander, Blue-spotted Salamander, or Spotted Salamander. Breeding habitat for these species includes vernal pools and small ponds.
 - 2. Northern Dusky Salamander and the Spring Salamander. Habitat for these species includes headwater seeps, springs, and streams.
 - 3. The Four-toed salamander; Fowler's Toad; Western or Boreal Chorus frog, or other amphibians found in Vermont of similar significance.

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- Supports or has the habitat to support significant populations of Vermont amphibian species including, but not limited to Pickerel Frog, Northern Leopard Frog, Mink Frog, and others found in Vermont of similar significance. Good habitat for these types of species includes large marsh systems with open water components.
- Supports or has the habitat to support populations of uncommon Vermont reptile species including: Wood Turtle, Northern Map Turtle, Eastern Musk Turtle, Spotted Turtle, Spiny Softshell, Eastern Ribbonsnake, Northern Watersnake, and others found in Vermont of similar significance.
- Supports or has the habitat to support significant populations of Vermont reptile species, including Smooth Greensnake, DeKay's Brownsnake, or other more common wetland-associated species.
- Meets four or more of the following conditions indicative of wildlife habitat diversity:
 - 1. Three or more wetland vegetation classes (greater than 1/2 acre) present including but not limited to: open water contiguous to, but not necessarily part of, the wetland, deep marsh, shallow marsh, shrub swamp, forested swamp, fen, or bog;
 - 2. The dominant vegetation class is one of the following types: deep marsh, shallow marsh, shrub swamp or, forested swamp;
 - 3. Located adjacent to a lake, pond, river or stream;
 - 4. Fifty percent or more of surrounding habitat type is one or more of the following: forest, agricultural land, old field or open land;
 - 5. Emergent or woody vegetation occupies 26 to 75 percent of wetland, the rest is open water;
 - 6. One of the following:
 - i. hydrologically connected to other wetlands of different dominant classes or open water within 1 mile;
 - ii. hydrologically connected to other wetlands of same dominant class within 1/2 mile;
 - iii. within 1/4 mile of other wetlands of different dominant classes or open water, but not hydrologically connected;
- Wetland or wetland complex is owned in whole or in part by state or federal government and managed for wildlife and habitat conservation; and
- Contains evidence that it is used by wetland dependent wildlife species.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level.

- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.
 - The wetland is small in size for its type and does not represent fugitive habitat in

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developed areas (vernal pools and seeps are generally small in size, so this does not apply).

- The surrounding land use is densely developed enough to limit use by wildlife species (with the exception of wetlands with open water habitat). Can be negated by evidence of use.
- The current use in the wetland results in frequent cutting, mowing or other disturbance.
- The wetland hydrology and character is at a drier end of the scale and does not support wetland dependent species.
- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
 - The wetland complex is large in size and high in quality.
 - The habitat has the potential to support several species based on the assessment above.
 - Wetland is associated with an important wildlife corridor.
 - The wetland has been identified by ANR-F&W as important habitat.

5. Exemplary Wetland Natural Community

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Wetlands that are identified as high quality examples of Vermont's natural community types recognized by the Natural Heritage Information Project of the Vermont Fish and Wildlife Department, including rare types such as dwarf shrub bogs, rich fens, alpine peatlands, red maple-black gum swamps and the more common types including deep bulrush marshes, cattail marshes, northern white cedar swamps, spruce-fir-tamarack swamps, and red maple-black ash seepage swamps are automatically significant for this function.

The wetland is also likely to be significant if any of the following conditions are met:

- Is an example of a wetland natural community type that has been identified and mapped by, or meets the ranking and mapping standards of, the Natural Heritage Information Project of the Vermont Fish and Wildlife Department.
- Contains ecological features that contribute to Vermont's natural heritage, including, but not limited to:
 - Deep peat accumulation reflecting a long history of wetland formation;
 - Forested wetlands displaying very old trees and other old growth characteristics;
 - A wetland natural community that is at the edge of the normal range for that type;

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- A wetland mosaic containing examples of several to many wetland community types; or
- A large wetland complex with examples of several wetland community types.

6. Rare, Threatened, and Endangered Species Habitat

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Wetlands that contain one or more species on the federal or state threatened or endangered lists, as well as species that are rare in Vermont, are automatically significant for this function.

The wetland is also likely to be significant if any of the following apply:

 - There is credible documentation that the wetland provides important habitat for any species on the federal or state threatened or endangered species lists;
 - There is credible documentation that threatened or endangered species have been present in past 10 years;
 - There is credible documentation that the wetland provides important habitat for any species listed as rare in Vermont (S1 or S2 ranks), state historic (SH rank), or rare to uncommon globally (G1, G2, or G3 ranks) by the Natural Heritage Information Project of the Vermont Fish and Wildlife Department;
 - There is credible documentation that the wetland provides habitat for multiple uncommon species of plants or animals (S3 rank).

List name of species and ranking:

7. Education and Research in Natural Sciences

- Function is present and likely to be significant: Any of the following characteristics indicate the wetland provides this function.
 - Owned by or leased to a public entity dedicated to education or research.
 - History of use for education or research.
 - Has one or more characteristics making it valuable for education or research.

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8. Recreational Value and Economic Benefits

- Function is present and likely to be significant: Any of the following characteristics indicate the wetland provides this function.
 - Used for, or contributes to, recreational activities.
 - Provides economic benefits.
 - Provides important habitat for fish or wildlife which can be fished, hunted or trapped under applicable state law.
 - Used for harvesting of wild foods.

Comments:

9. Open Space and Aesthetics

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Can be readily observed by the public; and
 - Possesses special or unique aesthetic qualities; or
 - Has prominence as a distinct feature in the surrounding landscape;
 - Has been identified as important open space in a municipal, regional or state plan.

10. Erosion Control through Binding and Stabilizing the Soil

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Erosive forces such as wave or current energy are present and any of the following are present as well:
 - Dense, persistent vegetation along a shoreline or stream bank that reduces an adjacent erosive force.
 - Good interspersion of persistent emergent vegetation and water along course of water flow.
 - Studies show that wetlands of similar size, vegetation type, and hydrology are important for erosion control.

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What type of erosive forces are present?

- Lake fetch and waves
- High current velocities
- Water level influenced by upstream impoundment

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level.

- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.
 - The stream is artificially channelized and/or lacks vegetation that contributes to controlling the erosive force.
- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
 - The stream contains high sinuosity.
 - Has been identified through fluvial geomorphic assessment to be important in maintaining the natural condition of the stream or river corridor.

VERMONT WETLAND EVALUATION FORM

Project Name: Velco New Haven BCC NH-203 Project #: 195601363

Date: 11/1/2017 Investigator: EDB

SUMMARY OF FUNCTIONAL EVALUATION:

Each function gets a score of 0= not present; L = Low; P = Present; or H = High.

1. Water Storage for Flood Water and Storm Runoff P	6. Rare, Threatened, and Endangered Species Habitat 0
2. Surface & Ground Water Protection L	7. Education and Research in Natural Sciences 0
3. Fish Habitat 0	8. Recreational Value and Economic Benefits 0
4. Wildlife Habitat 0	9. Open Space and Aesthetics 0
5. Exemplary Wetland Natural Community 0	10. Erosion Control through Binding and Stabilizing the Soil 0

Note:

- **When to use this form:** This is a field form to help you compile data needed to evaluate the 10 possible functions and values of a wetland as described in the Vermont Wetland Rules. All information in this form is replicated in the applications for both wetland determinations and wetland permits.
- **Both a desktop review and field examination** should be employed to accurately determine surrounding land use, hydrology, hydroperiod, vegetation, position in the landscape, and physical attributes.
- **The entire wetland or wetland complex** in question must be evaluated to determine the level of function in all ten (10) categories for accurate classification. A wetland complex can be defined as a series of interconnected wetland types.
- **The surrounding upland and outflow area** of the wetland should be examined to determine land use, development, nearby natural resources, and hydrology. The surrounding land use, previous development, and cumulative impacts may play a role in the current function of the wetland. For best results please read all descriptions prior to scoring activity.
- **Evaluation:** The first portion in each section determines whether the wetland does or does not provide the function. If none of the conditions listed in the first section are met, proceed

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to the next section. If any of these conditions are met, determine if the wetland provides this function at a higher or lower level based on the information listed in the subsequent sections.

- **Presumptions:** Please note that many wetlands are already presumed to be significant under the Vermont Wetland Rules. A wetland is presumed to be significant if:
 - The wetland is mapped on the VSWI map
 - The wetland is contiguous to a VSWI mapped wetland
 - The wetland meets the presumptions of significance under Section 4.6
 - The wetland has a preliminary determination that it is Class II

1. Water Storage for Flood Water and Storm Runoff

Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.

Constricted outlet or no outlet and an unconstricted inlet.

Physical space for floodwater expansion and dense, persistent, emergent vegetation or dense woody vegetation that slows down flood waters or stormwater runoff during peak flows and facilitates water removal by evaporation and transpiration.

If a stream is present, its course is sinuous and there is sufficient woody vegetation to intercept surface flows in the portion of the wetland that floods.

Physical evidence of seasonal flooding or ponding such as water stained leaves, water marks on trees, drift rows, debris deposits, or standing water.

Hydrologic or hydraulic study indicates wetland attenuates flooding.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level:

Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.

Significant flood storage capacity upstream of the wetland, and the wetland in question provides this function at a negligible level in comparison to upstream storage (unless the upstream storage is temporary such as a beaver impoundment).

Wetland is contiguous to a major lake or pond that provides storage benefits independently of the wetland.

Wetland's storage capacity is created primarily by recent beaver dams or other temporary structures.

Wetland is very small in size, not contiguous to a stream, and not part of a collection of small wetlands in the landscape that provide this function cumulatively.

Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.

History of downstream flood damage to public or private property.

Any of the following conditions present downstream of the wetland, but upstream of a major lake or pond, could be impacted by a loss or reduction of the water storage function.

1. Developed public or private property.

2. Stream banks susceptible to scouring and erosion.

3. Important habitat for aquatic life.

The wetland is large in size and naturally vegetated.

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- Any of the following conditions present upstream of the wetland may indicate a large volume of runoff may reach the wetland.
 - 1. A large amount of impervious surface in urbanized areas.
 - 2. Relatively impervious soils.
 - 3. Steep slopes in the adjacent areas.

2. Surface and Ground Water Protection

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.

- Constricted or no outlets.
- Low water velocity through dense, persistent vegetation.
- Hydroperiod permanently flooded or saturated.
- Wetlands in depositional environments with persistent vegetation wider than 20 feet.
- Wetlands with persistent vegetation comprising a defined delta, island, bar or peninsula.
- Presence of seeps or springs.
- Wetland contains a high amount of microtopography that helps slow and filter surface water.
- Position in the landscape indicates the wetland is a headwaters area.
- Wetland is adjacent to surface waters.
- Wetland recharges a drinking water source.
- Water sampling indicates removal of pollutants or nutrients.
- Water sampling indicates retention of sediments or organic matter.
- Fine mineral soils and alkalinity not low.
- The wetland provides an obvious filter between surface water or ground water and land uses that may contribute point or nonpoint sources of sediments, toxic substances or nutrients to the wetland, such as: steep erodible slopes; row crops; dumps; areas of pesticide, herbicide or fertilizer application; feed lots; parking lots or heavily traveled road; and septic systems.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level.

- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.

- Presence of dead forest or shrub areas in sufficient amounts to result in diminished

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nutrient uptake.

- Presence of ditches or channels that confine water and restrict contact of water with vegetation.
- Wetland is very small in size, not contiguous to a stream, and not part of a collection of small wetlands in the landscape that provide this function cumulatively.
- Current use in the wetland results in disturbance that compromises this function.
- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
 - The wetland is adjacent to a well head or source protection area, and provides ground water recharge.
 - The wetland provides flows to Class A surface waters.
 - The wetland contributes to the protection or improvement of water quality of any impaired waters.
 - The wetland is large in size and naturally vegetated.

3. Fish Habitat

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Contains woody vegetation that overhangs the banks of a stream or river and provides any of the following: shading that controls summer water temperature; cover including refuges created by overhanging branches or undercut banks; source of terrestrial insects as fish food; or streambank stability.
 - Provides spawning, nursery, feeding or cover habitat for fish (documented or professionally judged). Common habitat includes deep marsh and shallow marsh associates with lakes and streams, and seasonally flooded wetlands associated with streams and rivers.
 - Documented or professionally judged spawning habitat for northern pike.
 - Provides cold spring discharge that lowers the temperature of receiving waters and creates summer habitat for salmonoid species.
 - The wetland is located along a tributary that does not support fish, but contributes to a larger body of water that does support fish. The tributary supports downstream fish by providing cooler water, and food sources.

4. Wildlife Habitat

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Provides resting, feeding staging or roosting habitat to support waterfowl migration, and feeding habitat for wading birds. Good habitats for these species include open water wetlands.
 - Habitat to support one or more breeding pairs or broods of waterfowl including all species of ducks, geese, and swans. Good habitats for these species include open water habitats adjacent shallow marsh, deep marsh, shrub wetland, forested wetland, or naturally vegetated buffer zone.
 - Provides a nest site, a buffer for a nest site or feeding habitat for wading birds including but not limited to: great blue heron, black-crowned night heron, green-backed heron, cattle egret, or snowy egret. Good habitats for these species include open water or deep marsh adjacent to forested wetlands, or standing dead trees.
 - Supports or has the habitat to support one or more breeding pairs of any migratory bird that requires wetland habitat for breeding, nesting, rearing of young, feeding, staging roosting, or migration, including: Virginia rail, common snipe, marsh wren, American bittern, northern water thrush, northern harrier, spruce grouse, Cerulean warbler, and common loon.
 - Supports winter habitat for white-tailed deer. Good habitats for these species include softwood swamps. Evidence of use includes deer browsing, bark stripping, worn trails, or pellet piles.
 - Provides important feeding habitat for black bear, bobcat, or moose based on an assessment of use. Good habitat for these types of species includes wetlands located in a forested mosaic.
 - Has the habitat to support muskrat, otter or mink. Good habitats for these species include deep marshes, wetlands adjacent to bodies of water including lakes, ponds, rivers and streams.
 - Supports an active beaver dam, one or more lodges, or evidence of use in two or more consecutive years by an adult beaver population.
 - Provides the following habitats that support the reproduction of Uncommon Vermont amphibian species including:
 - 1. Wood Frog, Jefferson Salamander, Blue-spotted Salamander, or Spotted Salamander. Breeding habitat for these species includes vernal pools and small ponds.
 - 2. Northern Dusky Salamander and the Spring Salamander. Habitat for these species includes headwater seeps, springs, and streams.
 - 3. The Four-toed salamander; Fowler's Toad; Western or Boreal Chorus frog, or other amphibians found in Vermont of similar significance.

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- Supports or has the habitat to support significant populations of Vermont amphibian species including, but not limited to Pickerel Frog, Northern Leopard Frog, Mink Frog, and others found in Vermont of similar significance. Good habitat for these types of species includes large marsh systems with open water components.
- Supports or has the habitat to support populations of uncommon Vermont reptile species including: Wood Turtle, Northern Map Turtle, Eastern Musk Turtle, Spotted Turtle, Spiny Softshell, Eastern Ribbonsnake, Northern Watersnake, and others found in Vermont of similar significance.
- Supports or has the habitat to support significant populations of Vermont reptile species, including Smooth Greensnake, DeKay's Brownsnake, or other more common wetland-associated species.
- Meets four or more of the following conditions indicative of wildlife habitat diversity:
 - 1. Three or more wetland vegetation classes (greater than 1/2 acre) present including but not limited to: open water contiguous to, but not necessarily part of, the wetland, deep marsh, shallow marsh, shrub swamp, forested swamp, fen, or bog;
 - 2. The dominant vegetation class is one of the following types: deep marsh, shallow marsh, shrub swamp or, forested swamp;
 - 3. Located adjacent to a lake, pond, river or stream;
 - 4. Fifty percent or more of surrounding habitat type is one or more of the following: forest, agricultural land, old field or open land;
 - 5. Emergent or woody vegetation occupies 26 to 75 percent of wetland, the rest is open water;
 - 6. One of the following:
 - i. hydrologically connected to other wetlands of different dominant classes or open water within 1 mile;
 - ii. hydrologically connected to other wetlands of same dominant class within 1/2 mile;
 - iii. within 1/4 mile of other wetlands of different dominant classes or open water, but not hydrologically connected;
- Wetland or wetland complex is owned in whole or in part by state or federal government and managed for wildlife and habitat conservation; and
- Contains evidence that it is used by wetland dependent wildlife species.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level.

- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.
 - The wetland is small in size for its type and does not represent fugitive habitat in

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developed areas (vernal pools and seeps are generally small in size, so this does not apply).

- The surrounding land use is densely developed enough to limit use by wildlife species (with the exception of wetlands with open water habitat). Can be negated by evidence of use.
- The current use in the wetland results in frequent cutting, mowing or other disturbance.
- The wetland hydrology and character is at a drier end of the scale and does not support wetland dependent species.
- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
 - The wetland complex is large in size and high in quality.
 - The habitat has the potential to support several species based on the assessment above.
 - Wetland is associated with an important wildlife corridor.
 - The wetland has been identified by ANR-F&W as important habitat.

5. Exemplary Wetland Natural Community

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Wetlands that are identified as high quality examples of Vermont's natural community types recognized by the Natural Heritage Information Project of the Vermont Fish and Wildlife Department, including rare types such as dwarf shrub bogs, rich fens, alpine peatlands, red maple-black gum swamps and the more common types including deep bulrush marshes, cattail marshes, northern white cedar swamps, spruce-fir-tamarack swamps, and red maple-black ash seepage swamps are automatically significant for this function.

The wetland is also likely to be significant if any of the following conditions are met:

- Is an example of a wetland natural community type that has been identified and mapped by, or meets the ranking and mapping standards of, the Natural Heritage Information Project of the Vermont Fish and Wildlife Department.
- Contains ecological features that contribute to Vermont's natural heritage, including, but not limited to:
 - Deep peat accumulation reflecting a long history of wetland formation;
 - Forested wetlands displaying very old trees and other old growth characteristics;
 - A wetland natural community that is at the edge of the normal range for that type;

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- A wetland mosaic containing examples of several to many wetland community types; or
- A large wetland complex with examples of several wetland community types.

6. Rare, Threatened, and Endangered Species Habitat

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Wetlands that contain one or more species on the federal or state threatened or endangered lists, as well as species that are rare in Vermont, are automatically significant for this function.

The wetland is also likely to be significant if any of the following apply:

 - There is credible documentation that the wetland provides important habitat for any species on the federal or state threatened or endangered species lists;
 - There is credible documentation that threatened or endangered species have been present in past 10 years;
 - There is credible documentation that the wetland provides important habitat for any species listed as rare in Vermont (S1 or S2 ranks), state historic (SH rank), or rare to uncommon globally (G1, G2, or G3 ranks) by the Natural Heritage Information Project of the Vermont Fish and Wildlife Department;
 - There is credible documentation that the wetland provides habitat for multiple uncommon species of plants or animals (S3 rank).

List name of species and ranking:

7. Education and Research in Natural Sciences

- Function is present and likely to be significant: Any of the following characteristics indicate the wetland provides this function.
 - Owned by or leased to a public entity dedicated to education or research.
 - History of use for education or research.
 - Has one or more characteristics making it valuable for education or research.

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8. Recreational Value and Economic Benefits

- Function is present and likely to be significant: Any of the following characteristics indicate the wetland provides this function.
 - Used for, or contributes to, recreational activities.
 - Provides economic benefits.
 - Provides important habitat for fish or wildlife which can be fished, hunted or trapped under applicable state law.
 - Used for harvesting of wild foods.

Comments:

9. Open Space and Aesthetics

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Can be readily observed by the public; and
 - Possesses special or unique aesthetic qualities; or
 - Has prominence as a distinct feature in the surrounding landscape;
 - Has been identified as important open space in a municipal, regional or state plan.

10. Erosion Control through Binding and Stabilizing the Soil

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - Erosive forces such as wave or current energy are present and any of the following are present as well:
 - Dense, persistent vegetation along a shoreline or stream bank that reduces an adjacent erosive force.
 - Good interspersion of persistent emergent vegetation and water along course of water flow.
 - Studies show that wetlands of similar size, vegetation type, and hydrology are important for erosion control.

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What type of erosive forces are present?

- Lake fetch and waves
- High current velocities
- Water level influenced by upstream impoundment

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level.

- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.
 - The stream is artificially channelized and/or lacks vegetation that contributes to controlling the erosive force.
- Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.
 - The stream contains high sinuosity.
 - Has been identified through fluvial geomorphic assessment to be important in maintaining the natural condition of the stream or river corridor.

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Appendix C Wetland Reporting
November 14, 2019

C.3 USACE WETLAND FUNCTION AND VALUES FORMS

Wetland Function-Value Evaluation Form

Total area of wetland 17,614 sq ft Human made? No Is wetland part of a wildlife corridor? No or a "habitat island"? No

Adjacent land use t-line ROW, public road, Ag. field Distance to nearest roadway or other development 15 feet

Dominant wetland systems present PEM Contiguous undeveloped buffer zone present No

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? Mid

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. New Haven Sub: NH-008













Latitude 44.122563 Longitude -73.166205

Prepared by: AS Date 10/11/2017

Wetland Impact:
Type t-line veg clearing Area 100%

Evaluation based on:
Office Field

Corps manual wetland delineation completed? Y N

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
 Groundwater Recharge/Discharge	Y	1, 2, 9, 10		no visible inlet, constricted outlet
 Floodflow Alteration	Y	5, 11, 15, 17		
 Fish and Shellfish Habitat	N			
 Sediment/Toxicant Retention	Y	1, 2, 5, 6	X	
 Nutrient Removal	Y	3, 4, 10		
 Production Export	N			
 Sediment/Shoreline Stabilization	N			
 Wildlife Habitat	N	8		
 Recreation	N			
 Educational/Scientific Value	N			
 Uniqueness/Heritage	N			
 Visual Quality/Aesthetics	N			
ES Endangered Species Habitat	N			
Other				

Notes:

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland 28,806 sq ft Human made? No Is wetland part of a wildlife corridor? No or a "habitat island"? No

Adjacent land use t-line ROW, Substation, Ag. field Distance to nearest roadway or other development 55 feet

Dominant wetland systems present PEM Contiguous undeveloped buffer zone present No

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? Mid

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. New Haven Sub: NH-009













Latitude 44.121062 Longitude -73.165039

Prepared by: AS Date 10/11/2017

Wetland Impact:
Type t-line veg clearing Area 25%

Evaluation based on:
Office Field

Corps manual wetland delineation completed? Y N

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
 Groundwater Recharge/Discharge	Y	1, 2		
 Floodflow Alteration	Y	5, 6, 11, 17		
 Fish and Shellfish Habitat	N			
 Sediment/Toxicant Retention	Y	1, 2, 6	X	
 Nutrient Removal	Y	3, 4, 10		
 Production Export	N			
 Sediment/Shoreline Stabilization	N			
 Wildlife Habitat	N			
 Recreation	N			
 Educational/Scientific Value	N			
 Uniqueness/Heritage	N			
 Visual Quality/Aesthetics	N			
ES Endangered Species Habitat	N			
Other				

Notes:

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland 796 sq ft Human made? No Is wetland part of a wildlife corridor? No or a "habitat island"? No

Adjacent land use t-line ROW, Substation, road Distance to nearest roadway or other development 200 feet

Dominant wetland systems present PEM Contiguous undeveloped buffer zone present No

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? Mid

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. New Haven Sub: NH-010













Latitude 44.120350 Longitude -73.167631

Prepared by: AS Date 10/11/2017

Wetland Impact:
Type substation veg clearing Area 100%

Evaluation based on:
Office Field

Corps manual wetland delineation completed? Y N

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
 Groundwater Recharge/Discharge	Y	1, 2		
 Floodflow Alteration	Y	5, 6, 11, 17		
 Fish and Shellfish Habitat	N			
 Sediment/Toxicant Retention	Y	1, 2, 6	X	
 Nutrient Removal	Y	3, 4, 10		
 Production Export	N			
 Sediment/Shoreline Stabilization	N			
 Wildlife Habitat	N	8		
 Recreation	N			
 Educational/Scientific Value	N			
 Uniqueness/Heritage	N			
 Visual Quality/Aesthetics	N			
ES Endangered Species Habitat	N			
Other				

Notes:

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland 11,098 sq ft Human made? No Is wetland part of a wildlife corridor? No or a "habitat island"? No

Adjacent land use t-line ROW, public road, Ag. field, substation Distance to nearest roadway or other development 90 feet

Dominant wetland systems present PEM Contiguous undeveloped buffer zone present No

Is the wetland a separate hydraulic system? Yes If not, where does the wetland lie in the drainage basin? _____

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. New Haven Sub BCC: NH-201













Latitude 44.122563 Longitude -73.166205

Prepared by: EDB Date 11/1/2017

Wetland Impact:
Type ag field Area 100%

Evaluation based on:
Office Field

Corps manual wetland delineation completed? Y N

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
 Groundwater Recharge/Discharge	Y	1, 2		
 Floodflow Alteration	Y	5, 7, 9, 15		
 Fish and Shellfish Habitat	N			
 Sediment/Toxicant Retention	Y	1, 2, 3, 4, 5, 6	X	
 Nutrient Removal	Y	3, 4, 5, 7, 9, 10, 11	X	
 Production Export	N			
 Sediment/Shoreline Stabilization	N			
 Wildlife Habitat	N			
 Recreation	N			
 Educational/Scientific Value	N			
 Uniqueness/Heritage	N			
 Visual Quality/Aesthetics	N			
ES Endangered Species Habitat	N			
Other				

Notes:

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland 37,530 sq ft Human made? No Is wetland part of a wildlife corridor? Yes or a "habitat island"? No

Adjacent land use t-line ROW, residential, Ag. field Distance to nearest roadway or other development 90 feet

Dominant wetland systems present PEM Contiguous undeveloped buffer zone present No

Is the wetland a separate hydraulic system? Yes If not, where does the wetland lie in the drainage basin? Upper

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. New Haven Sub BCC: NH-202













Latitude 44.122563 Longitude -73.166205

Prepared by: EDB Date 11/1/2017

Wetland Impact:
Type t-line row Area 10%

Evaluation based on:
Office Field

Corps manual wetland delineation completed? Y N

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
 Groundwater Recharge/Discharge	Y	1, 2, 15	X	
 Floodflow Alteration	Y	2, 3, 5, 6, 7, 8, 9, 18	X	
 Fish and Shellfish Habitat	N			
 Sediment/Toxicant Retention	Y	1, 2, 3, 4, 5, 6		
 Nutrient Removal	Y	3, 4, 5, 6, 7, 8, 9, 10, 11	X	
 Production Export	N			
 Sediment/Shoreline Stabilization	N			
 Wildlife Habitat	Y	5		
 Recreation	N			
 Educational/Scientific Value	N			
 Uniqueness/Heritage	N			
 Visual Quality/Aesthetics	N			
ES Endangered Species Habitat	N			
Other				

Notes:

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland 20,344 sq ft Human made? No Is wetland part of a wildlife corridor? No or a "habitat island"? No

Adjacent land use t-line ROW, substation, Ag. field Distance to nearest roadway or other development 65 feet

Dominant wetland systems present PEM Contiguous undeveloped buffer zone present No

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? Upper

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. New Haven Sub BCC: NH-203













Latitude 44.121272 Longitude -73.162599

Prepared by: EDB Date 11/1/2017

Wetland Impact:
Type t-line row/mowed field Area 90%

Evaluation based on:
Office Field

Corps manual wetland delineation completed? Y N

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
 Groundwater Recharge/Discharge	Y	1, 2, 10, 15		
 Floodflow Alteration	Y	2, 3, 5, 6, 8, 9, 13, 18		
 Fish and Shellfish Habitat	N			
 Sediment/Toxicant Retention	Y	1, 2, 4, 6	X	
 Nutrient Removal	Y	3, 4, 7, 8, 9, 10, 11	X	
 Production Export	N			
 Sediment/Shoreline Stabilization	N			
 Wildlife Habitat	N			
 Recreation	N			
 Educational/Scientific Value	N			
 Uniqueness/Heritage	N			
 Visual Quality/Aesthetics	N			
ES Endangered Species Habitat	N			
Other				

Notes:

* Refer to backup list of numbered considerations.

NATURAL RESOURCES REPORT – NEW HAVEN OPERATIONS FACILITY

Appendix C Wetland Reporting
November 14, 2019

C.4 USACE WETLAND DETERMINATION FORMS

Project/Site: VELCO BUCC New Haven	Stantec Project #: 195601363	Date: 07/18/19
Applicant: VELCO	Investigator #1: Polly Harris	County: Addison
Investigator #2: _____	Investigator #2: _____	State: VT
Soil Unit: Vergennes clay, 2-6%	NWI/WWI Classification: upl	Wetland ID: BUCC_01
Landform: Rise	Local Relief: Concave	Sample Point: DP UPL_01
Slope (%): 0-5	Latitude: 44.120269	Longitude: -73.162041
	Datum: NAD83	Community ID: UPL

Are climatic/hydrologic conditions on the site typical for this time of year? (if no, explain in remarks) Yes No

Are Vegetation , Soil , or Hydrology significantly disturbed? Are normal circumstances present? Yes No

Are Vegetation , Soil , or Hydrology naturally problematic? Yes No

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present? Yes No Hydic Soils Present? Yes No

Wetland Hydrology Present? Yes No **Is This Sampling Point Within A Wetland? Yes No**

Remarks: **mowed ag field**

HYDROLOGY

Wetland Hydrology Indicators (Check here if indicators are not present)

<p><u>Primary:</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> A1 - Surface Water <input type="checkbox"/> A2 - High Water Table <input type="checkbox"/> A3 - Saturation <input type="checkbox"/> B1 - Water Marks <input type="checkbox"/> B2 - Sediment Deposits <input type="checkbox"/> B3 - Drift Deposits <input type="checkbox"/> B4 - Algal Mat or Crust <input type="checkbox"/> B5 - Iron Deposits <input type="checkbox"/> B7 - Inundation Visible on Aerial Imagery <input type="checkbox"/> B8 - Sparsely Vegetated Concave Surface 	<p><u>Secondary:</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> B9 - Water-Stained Leaves <input type="checkbox"/> B13 - Aquatic Fauna <input type="checkbox"/> B15 - Marl Deposits <input type="checkbox"/> C1 - Hydrogen Sulfide Odor <input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots <input type="checkbox"/> C4 - Presence of Reduced Iron <input type="checkbox"/> C6 - Recent Iron Reduction in Tilled Soils <input type="checkbox"/> C7 - Thin Muck Surface <input type="checkbox"/> Other (Explain in Remarks) 	<ul style="list-style-type: none"> <input type="checkbox"/> B6 - Surface Soil Cracks <input type="checkbox"/> B10 - Drainage Patterns <input type="checkbox"/> B16 - Moss Trim Lines <input type="checkbox"/> C2 - Dry-Season Water Table <input type="checkbox"/> C8 - Crayfish Burrows <input type="checkbox"/> C9 - Saturation Visible on Aerial Imagery <input type="checkbox"/> D1 - Stunted or Stressed Plants <input type="checkbox"/> D2 - Geomorphic Position <input type="checkbox"/> D3 - Shallow Aquitard <input type="checkbox"/> D4 - Microtopographic Relief <input type="checkbox"/> D5 - FAC-Neutral Test
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Field Observations:

Surface Water Present? <input type="checkbox"/> Yes <input type="checkbox"/> No	Depth: (in.)	Wetland Hydrology Present? <input type="checkbox"/> Yes <input type="checkbox"/> No
Water Table Present? <input type="checkbox"/> Yes <input type="checkbox"/> No	Depth: (in.)	
Saturation Present? <input type="checkbox"/> Yes <input type="checkbox"/> No	Depth: (in.)	

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

Remarks:

SOILS

Map Unit Name: **Vergennes clay, 2-6%** Series Drainage Class: **mod well drained**

Taxonomy (Subgroup): **mesic glossaquic hapludalf**

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix			Mottles				Texture (e.g. clay, sand, loam)	
			Color (Moist)	%		Color (Moist)	%	Type	Location		
0	12	1	2.5Y	4/3	100	--	--	--	--	clay loam	
12	18	2	2.5Y	4/2	95	7.5YR	4/6	5	c	M	clay
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--

<p>NRCS Hydric Soil Field Indicators (check here if indicators are not present) <input type="checkbox"/></p> <ul style="list-style-type: none"> <input type="checkbox"/> A1 - Histosol <input type="checkbox"/> A2 - Histic Epipedon <input type="checkbox"/> A3 - Black Histic <input type="checkbox"/> A4 - Hydrogen Sulfide <input type="checkbox"/> A5 - Stratified Layers <input type="checkbox"/> A11 - Depleted Below Dark Surface <input type="checkbox"/> A12 - Thick Dark Surface <input type="checkbox"/> S1 - Sandy Muck Mineral <input type="checkbox"/> S4 - Sandy Gleyed Matrix <input type="checkbox"/> S5 - Sandy Redox <input type="checkbox"/> S6 - Stripped Matrix <input type="checkbox"/> S7 - Dark Surface (LRR R, MLRA 149B) 	<ul style="list-style-type: none"> <input type="checkbox"/> S8 - Polyvalue Below Surface (LRR R, MLRA 149B) <input type="checkbox"/> S9 - Thin Dark Surface (LRR R, MLRA 149B) <input type="checkbox"/> F1 - Loamy Mucky Mineral (LRR K, L) <input type="checkbox"/> F2 - Loamy Gleyed Matrix <input type="checkbox"/> F3 - Depleted Matrix <input type="checkbox"/> F6 - Redox Dark Surface <input type="checkbox"/> F7 - Depleted Dark Surface <input type="checkbox"/> F8 - Redox Depressions 	<p>Indicators for Problematic Soils ¹</p> <ul style="list-style-type: none"> <input type="checkbox"/> A10 - 2 cm Muck (LRR K, L, MLRA 149B) <input type="checkbox"/> A16 - Coast Prairie Redox (LRR K, L, R) <input type="checkbox"/> S3 - 5cm Mucky Peat of Peat (LRR K, L, R) <input type="checkbox"/> S7 - Dark Surface (LRR K, L, M) <input type="checkbox"/> S8 - Polyvalue Below Surface (LRR K, L) <input type="checkbox"/> S9 - Thin Dark Surface (LRR K, L) <input type="checkbox"/> F12 - Iron-Manganese Masses (LRR K, L, R) <input type="checkbox"/> F19 - Piedmont Floodplain Soils (MLRA 149B) <input type="checkbox"/> TA6 - Mesic Spodic (MLRA 144A, 145, 149B) <input type="checkbox"/> TF2 - Red Parent Material <input type="checkbox"/> TF12 - Very Shallow Dark Surface <input type="checkbox"/> Other (Explain in Remarks)
---	--	--

¹ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (If Observed) Type: **nr** Depth: _____ **Hydic Soil Present?** Yes No

Remarks:

Project/Site: **VELCO BUCC New Haven**

Wetland ID: **BUCC_01** Sample Point **P UPL_0**

VEGETATION (Species identified in all uppercase are non-native species.)				
Tree Stratum (Plot size: 10 meter radius)				
	<u>Species Name</u>	<u>% Cover</u>	<u>Dominant</u>	<u>Ind.Status</u>
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		0		
Sapling/Shrub Stratum (Plot size: 5 meter radius)				
1.				#N/A
2.				#N/A
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		0		
Herb Stratum (Plot size: 2 meter radius)				
1.	<i>Phalaris arundinacea</i>	20	Y	FACW
2.	<i>Dactylis glomerata</i>	25	y	FACU
3.	<i>Trifolium pratense</i>	20	y	FACU
4.	<i>Phleum pratense</i>	20	Y	FACU
5.	<i>Festuca rubra</i>	20	y	FACU
6.				
7.				
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
11.	--	--	--	--
12.	--	--	--	--
13.	--	--	--	--
14.	--	--	--	--
15.	--	--	--	--
Total Cover =		105		
Woody Vine Stratum (Plot size: 10 meter radius)				
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
Total Cover =		0		
Remarks:				

Dominance Test Worksheet	
Number of Dominant Species that are OBL, FACW, or FAC:	1 (A)
Total Number of Dominant Species Across All Strata:	5 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	20.0% (A/B)

Prevalence Index Worksheet	
Total % Cover of:	Multiply by:
OBL spp. 0	x 1 = 0
FACW spp. 20	x 2 = 40
FAC spp. 0	x 3 = 0
FACU spp. 85	x 4 = 340
UPL spp. 0	x 5 = 0
Total 105 (A)	380 (B)
Prevalence Index = B/A = 3.619	

Hydrophytic Vegetation Indicators:	
<input type="checkbox"/> Yes	<input type="checkbox"/> No
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

Rapid Test for Hydrophytic Vegetation
 Dominance Test is > 50%
 Prevalence Index is ≤ 3.0 *
 Morphological Adaptations (Explain) *
 Problem Hydrophytic Vegetation (Explain) *

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

Definitions of Vegetation Strata:	
Tree	Woody plants 3 in. (7.6cm) or more in diameter at breast height (DBH), regardless of height.
Sapling/Shrub	Woody plants less than 3 in. DBH and greater than 3.28 ft. 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	
	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Additional Remarks:

Project/Site: VELCO BUCC New Haven		Stantec Project #: 195601363		Date: 07/18/19
Applicant: VELCO		Investigator #1: Polly Harris		County: Addison
Investigator #2: _____		Investigator #2: _____		State: VT
Soil Unit: Vergennes clay, 2-6%		NW1/WWI Classification: PEM		Wetland ID: BUCC_01
Landform: _____		Local Relief: Concave		Sample Point: DP WL_01
Slope (%): 0-5		Latitude: 44.120645		Community ID: PEM
		Longitude: -73.161811		
		Datum: NAD83		
Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks) <input type="checkbox"/> Yes <input type="checkbox"/> No				
Are Vegetation ¹ , Soil ² , or Hydrology ³ significantly disturbed?			Are normal circumstances present?	
Are Vegetation ¹ , Soil ² , or Hydrology ³ naturally problematic?			<input type="checkbox"/> Yes <input type="checkbox"/> No	

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input type="checkbox"/> No	Hydric Soils Present? <input type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present? <input type="checkbox"/> Yes <input type="checkbox"/> No	Is This Sampling Point Within A Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Remarks: **mowed ag fields adjacent**

HYDROLOGY

Wetland Hydrology Indicators (Check here if indicators are not present):

<p><u>Primary:</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> A1 - Surface Water <input type="checkbox"/> A2 - High Water Table <input type="checkbox"/> A3 - Saturation <input type="checkbox"/> B1 - Water Marks <input type="checkbox"/> B2 - Sediment Deposits <input type="checkbox"/> B3 - Drift Deposits <input type="checkbox"/> B4 - Algal Mat or Crust <input type="checkbox"/> B5 - Iron Deposits <input type="checkbox"/> B7 - Inundation Visible on Aerial Imagery <input type="checkbox"/> B8 - Sparsely Vegetated Concave Surface 	<p><u>Secondary:</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> B9 - Water-Stained Leaves <input type="checkbox"/> B13 - Aquatic Fauna <input type="checkbox"/> B15 - Marl Deposits <input type="checkbox"/> C1 - Hydrogen Sulfide Odor <input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots <input type="checkbox"/> C4 - Presence of Reduced Iron <input type="checkbox"/> C6 - Recent Iron Reduction in Tilled Soils <input type="checkbox"/> C7 - Thin Muck Surface <input type="checkbox"/> Other (Explain in Remarks) 	<ul style="list-style-type: none"> <input type="checkbox"/> B6 - Surface Soil Cracks <input type="checkbox"/> B10 - Drainage Patterns <input type="checkbox"/> B16 - Moss Trim Lines <input type="checkbox"/> C2 - Dry-Season Water Table <input type="checkbox"/> C8 - Crayfish Burrows <input type="checkbox"/> C9 - Saturation Visible on Aerial Imagery <input type="checkbox"/> D1 - Stunted or Stressed Plants <input type="checkbox"/> D2 - Geomorphic Position <input type="checkbox"/> D3 - Shallow Aquitard <input type="checkbox"/> D4 - Microtopographic Relief <input type="checkbox"/> D5 - FAC-Neutral Test
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Field Observations:

Surface Water Present? <input type="checkbox"/> Yes <input type="checkbox"/> No	Depth: _____ (in.)	Wetland Hydrology Present? <input type="checkbox"/> Yes <input type="checkbox"/> No
Water Table Present? <input type="checkbox"/> Yes <input type="checkbox"/> No	Depth: 10 in (in.)	
Saturation Present? <input type="checkbox"/> Yes <input type="checkbox"/> No	Depth: 0 (surf) (in.)	

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

Remarks:

SOILS

Map Unit Name: **Vergennes clay, 2-6%** Series Drainage Class: **mod well drained**

Taxonomy (Subgroup): **mesic glossaquic hapludalf**

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix			Mottles				Texture (e.g. clay, sand, loam)	
			Color (Moist)	%		Color (Moist)	%	Type	Location		
0	8	1	2.5Y	4/2	100	--	--	--	--	clay loam	
8	18	2	2.5Y	4/2	90	7.5YR	4/6	10	c	M	clay
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--

NRCS Hydric Soil Field Indicators (check here if indicators are not present):

<ul style="list-style-type: none"> <input type="checkbox"/> A1- Histosol <input type="checkbox"/> A2 - Histic Epipedon <input type="checkbox"/> A3 - Black Histic <input type="checkbox"/> A4 - Hydrogen Sulfide <input type="checkbox"/> A5 - Stratified Layers <input type="checkbox"/> A11 - Depleted Below Dark Surface <input type="checkbox"/> A12 - Thick Dark Surface <input type="checkbox"/> S1 - Sandy Muck Mineral <input type="checkbox"/> S4 - Sandy Gleyed Matrix <input type="checkbox"/> S5 - Sandy Redox <input type="checkbox"/> S6 - Stripped Matrix <input type="checkbox"/> S7 - Dark Surface (LRR R, MLRA 149B) 	<ul style="list-style-type: none"> <input type="checkbox"/> S8 - Polyvalue Below Surface (LRR R, MLRA 149B) <input type="checkbox"/> S9 - Thin Dark Surface (LRR R, MLRA 149B) <input type="checkbox"/> F1 - Loamy Mucky Mineral (LRR K, L) <input type="checkbox"/> F2 - Loamy Gleyed Matrix <input type="checkbox"/> F3 - Depleted Matrix <input type="checkbox"/> F6 - Redox Dark Surface <input type="checkbox"/> F7 - Depleted Dark Surface <input type="checkbox"/> F8 - Redox Depressions 	<p>Indicators for Problematic Soils¹</p> <ul style="list-style-type: none"> <input type="checkbox"/> A10 - 2 cm Muck (LRR K, L, MLRA 149B) <input type="checkbox"/> A16 - Coast Prairie Redox (LRR K, L, R) <input type="checkbox"/> S3 - 5cm Mucky Peat of Peat (LRR K, L, R) <input type="checkbox"/> S7 - Dark Surface (LRR K, L, M) <input type="checkbox"/> S8 - Polyvalue Below Surface (LRR K, L) <input type="checkbox"/> S9 - Thin Dark Surface (LRR K, L) <input type="checkbox"/> F12 - Iron-Manganese Masses (LRR K, L, R) <input type="checkbox"/> F19 - Piedmont Floodplain Soils (MLRA 149B) <input type="checkbox"/> TA6 - Mesic Spodic (MLRA 144A, 145, 149B) <input type="checkbox"/> TF2 - Red Parent Material <input type="checkbox"/> TF12 - Very Shallow Dark Surface <input type="checkbox"/> Other (Explain in Remarks)
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¹ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (If Observed) Type: **nr** Depth: _____ **Hydric Soil Present?** Yes No

Remarks:

Project/Site: **VELCO BUCC New Haven**

Wetland ID: **BUCC_01** Sample Point **P WL_0**

VEGETATION (Species identified in all uppercase are non-native species.)				
Tree Stratum (Plot size: 10 meter radius)				
1.	<u>Species Name</u>	% Cover	Dominant	Ind. Status
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		0		
Sapling/Shrub Stratum (Plot size: 5 meter radius)				
1.				
2.				
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		0		
Herb Stratum (Plot size: 2 meter radius)				
1.	<i>Phalaris arundinacea</i>	75	Y	FACW
2.	<i>Onoclea sensibilis</i>	10	y	FACW
3.	<i>Rumex crispus</i>	5	n	FAC
4.	<i>Typha angustifolia</i>	10	Y	OBL
5.	<i>Verbena hastata</i>	5	N	FACW
6.	<i>Pastinaca sativa</i>	5	N	#N/A
7.	<i>Symphotrichum lanceolatum</i>	5	n	FACW
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
11.	--	--	--	--
12.	--	--	--	--
13.	--	--	--	--
14.	--	--	--	--
15.	--	--	--	--
Total Cover =		115		
Woody Vine Stratum (Plot size: 10 meter radius)				
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
Total Cover =		0		
Remarks:				

Additional Remarks:

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet

Total % Cover of:	Multiply by:
OBL spp. <u>10</u>	x 1 = <u>10</u>
FACW spp. <u>95</u>	x 2 = <u>190</u>
FAC spp. <u>5</u>	x 3 = <u>15</u>
FACU spp. <u>0</u>	x 4 = <u>0</u>
UPL spp. <u>0</u>	x 5 = <u>0</u>
Total <u>110</u> (A)	<u>215</u> (B)
Prevalence Index = B/A = <u>1.955</u>	

- Hydrophytic Vegetation Indicators:**
- Yes No Rapid Test for Hydrophytic Vegetation
 - Yes No Dominance Test is > 50%
 - Yes No Prevalence Index is ≤ 3.0 *
 - Yes No Morphological Adaptations (Explain) *
 - Yes No Problem Hydrophytic Vegetation (Explain) *
- * Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

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

Sapling/Shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft. 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

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 195601363 City/County: New Haven / Addison Sampling Date: 10/11/2017
 Applicant/Owner: Vermont Transco, LLC/Vermont Electric Power Company State: Vermont Sampling Point: Upland
 Investigator(s): EDB Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Rise Local relief (concave, convex, none): Concave Slope (%): 2
 Subregion (LRR or MLRA): LRR R Lat: 44.122064 Long: -73.165693 Datum: NAD83
 Soil Map Unit Name: _____ NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation X, 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 <u>X</u> No _____ Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: <u>NH-008</u>
Remarks: (Explain alternative procedures here or in a separate report.) Significantly Disturbed Notes: T-line row	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) _____ ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	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 <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: Upland

	Absolute % Cover	Dominant Species?	Indicator Status															
Tree Stratum (Plot size: <u>30'</u>)																		
1.																		
2.																		
3.																		
4.																		
5.																		
6.																		
7.																		
	_____ = Total Cover																	
Sapling/Shrub Stratum (Plot size: <u>15'</u>)																		
1.																		
2.																		
3.																		
4.																		
5.																		
6.																		
7.																		
	_____ = Total Cover																	
Herb Stratum (Plot size: <u>5'</u>)																		
1. <u>Solidago canadensis</u>	<u>60</u>	<u>Yes</u>	<u>FACU</u>															
2. <u>Phalaris arundinacea</u>	<u>25</u>	<u>Yes</u>	<u>FACW</u>															
3. <u>Poa pratensis</u>	<u>15</u>	<u>No</u>	<u>FACU</u>															
4. <u>Trifolium dubium</u>	<u>5</u>	<u>No</u>	<u>FACU</u>															
5.																		
6.																		
7.																		
8.																		
9.																		
10.																		
11.																		
12.																		
	<u>105</u> = Total Cover																	
Woody Vine Stratum (Plot size: <u>30'</u>)																		
1.																		
2.																		
3.																		
4.																		
	_____ = Total Cover																	
<p>Dominance Test worksheet:</p> <p>Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)</p> <p>Total Number of Dominant Species Across All Strata: <u>2</u> (B)</p> <p>Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50%</u> (A/B)</p> <hr/> <p>Prevalence Index worksheet:</p> <table style="width:100%; border:none;"> <tr> <td style="width:50%; text-align:right;">Total % Cover of:</td> <td style="width:50%; text-align:left;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>25</u></td> <td>x 2 = <u>50</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>80</u></td> <td>x 4 = <u>320</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>105</u> (A)</td> <td><u>370</u> (B)</td> </tr> </table> <p style="text-align:center;">Prevalence Index = B/A = 3.5</p> <hr/> <p>Hydrophytic Vegetation Indicators:</p> <p><input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation</p> <p><input type="checkbox"/> 2 - Dominance Test is >50%</p> <p><input type="checkbox"/> 3 - Prevalence Index is ≤3.0¹</p> <p><input type="checkbox"/> 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)</p> <p><input type="checkbox"/> Problematic Hydrophytic Vegetation¹ (Explain)</p> <p>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</p> <hr/> <p>Definitions of Vegetation Strata:</p> <p>Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.</p> <p>Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.</p> <p>Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.</p> <p>Woody vines – All woody vines greater than 3.28 ft in height.</p> <hr/> <p>Hydrophytic Vegetation Present? Yes _____ No <u>X</u></p>					Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>25</u>	x 2 = <u>50</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>80</u>	x 4 = <u>320</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>105</u> (A)	<u>370</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>25</u>	x 2 = <u>50</u>																	
FAC species <u>0</u>	x 3 = <u>0</u>																	
FACU species <u>80</u>	x 4 = <u>320</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>105</u> (A)	<u>370</u> (B)																	
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: Upland

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

Depth (inches)	Matrix		Redox Features			Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
0 - 5	10YR 4/4	100					Loam	
5 - 15	10YR 4/3	95					Loam	

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

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8)	Indicators for Problematic Hydric Soils³: <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
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³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: <u>Hardpan</u> Depth (inches): <u>15</u>	Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 195601363 City/County: New Haven / Addison Sampling Date: 10/11/2017
 Applicant/Owner: Vermont Transco, LLC/Vermont Electric Power Company State: Vermont Sampling Point: Wetland
 Investigator(s): RDK Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Convex Slope (%): 3-8
 Subregion (LRR or MLRA): LRR R Lat: 44.122197 Long: -73.16564 Datum: NAD83
 Soil Map Unit Name: _____ NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation X, 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 <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>NH-008</u>
Remarks: (Explain alternative procedures here or in a separate report.) Significantly Disturbed Notes: Transmission row	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input checked="" type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input checked="" type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland

	Absolute % Cover	Dominant Species?	Indicator Status															
Tree Stratum (Plot size: <u>30'</u>)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)														
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
_____ = Total Cover																		
Sapling/Shrub Stratum (Plot size: <u>15'</u>)				Prevalence Index worksheet: <table style="width:100%; border:none;"> <tr> <td style="width:50%; text-align:right;">Total % Cover of:</td> <td style="width:50%; text-align:left;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>100</u></td> <td>x 2 = <u>200</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>100</u> (A)</td> <td><u>200</u> (B)</td> </tr> </table> Prevalence Index = B/A = 2.0	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>100</u>	x 2 = <u>200</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>100</u> (A)	<u>200</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>100</u>	x 2 = <u>200</u>																	
FAC species <u>0</u>	x 3 = <u>0</u>																	
FACU species <u>0</u>	x 4 = <u>0</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>100</u> (A)	<u>200</u> (B)																	
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
_____ = Total Cover																		
Herb Stratum (Plot size: <u>5'</u>)				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 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.														
1. <u>Phalaris arundinacea</u>	<u>100</u>	<u>Yes</u>	<u>FACW</u>															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
_____ = Total Cover																		
Woody Vine Stratum (Plot size: <u>30'</u>)				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.														
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
_____ = Total Cover																		
Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: Wetland

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

Depth (inches)	Matrix		Redox Features		Type ¹	Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
0 - 8	10YR 3/2	100					Loam	
8 - 12	2.5Y 4/1	98	10YR 4/4	2	Co	Ma	Silt Loam	

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

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	<input type="checkbox"/> Other (Explain in Remarks)

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

Restrictive Layer (if observed): Type: <u>Massive dense</u> Depth (inches): <u>8</u>	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks:
 HSI: F3b

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 195601363 City/County: New Haven / Addison Sampling Date: 10/11/2017
 Applicant/Owner: Vermont Transco, LLC/Vermont Electric Power Company State: Vermont Sampling Point: Upland
 Investigator(s): EDB Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Rise Local relief (concave, convex, none): Concave Slope (%): 2
 Subregion (LRR or MLRA): LRR R Lat: 44.12133 Long: -73.16536 Datum: NAD83
 Soil Map Unit Name: _____ NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation X, Soil X, or Hydrology X 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 <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: <u>NH-009</u>
Remarks: (Explain alternative procedures here or in a separate report.) Significantly Disturbed Notes: Adjacent to road, t-line pole fill, and septic mound	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: Upland

	Absolute % Cover	Dominant Species?	Indicator Status															
Tree Stratum (Plot size: <u>30'</u>)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0%</u> (A/B)														
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
_____ = Total Cover				Prevalence Index worksheet: <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%; text-align: center;">Total % Cover of:</td> <td style="width:50%; text-align: center;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>25</u></td> <td>x 3 = <u>75</u></td> </tr> <tr> <td>FACU species <u>110</u></td> <td>x 4 = <u>440</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>135</u> (A)</td> <td><u>515</u> (B)</td> </tr> </table> Prevalence Index = B/A = 3.8	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>25</u>	x 3 = <u>75</u>	FACU species <u>110</u>	x 4 = <u>440</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>135</u> (A)	<u>515</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>25</u>	x 3 = <u>75</u>																	
FACU species <u>110</u>	x 4 = <u>440</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>135</u> (A)	<u>515</u> (B)																	
Sapling/Shrub Stratum (Plot size: <u>15'</u>)																		
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
_____ = Total Cover																		
Herb Stratum (Plot size: <u>5'</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
1. <u>Solidago canadensis</u>	<u>75</u>	<u>Yes</u>	<u>FACU</u>															
2. <u>Poa pratensis</u>	<u>35</u>	<u>Yes</u>	<u>FACU</u>															
3. <u>Symphotrichum lateriflorum</u>	<u>25</u>	<u>No</u>	<u>FAC</u>															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
12. _____	_____	_____	_____															
<u>135</u> = Total Cover																		
Woody Vine Stratum (Plot size: <u>30'</u>)				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.														
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
_____ = Total Cover																		
Remarks: (Include photo numbers here or on a separate sheet.)				Hydrophytic Vegetation Present? Yes _____ No <u>X</u>														

SOIL

Sampling Point: Upland

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

Depth (inches)	Matrix		Redox Features			Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
0 - 5	10YR 4/4	100					F. Sandy Loam	
5 - 13	10YR 4/3	90					F. Sandy Loam	
13 - 20	10YR 4/2	90	10YR 4/6	2	Co	Ma	F. Sandy Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: 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 Soils³:

- 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)

³Indicators 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 X

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 195601363 City/County: New Haven / Addison Sampling Date: 10/11/2017
 Applicant/Owner: Vermont Transco, LLC/Vermont Electric Power Company State: Vermont Sampling Point: Wetland
 Investigator(s): RDK Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-3
 Subregion (LRR or MLRA): LRR R Lat: 44.1213 Long: -73.165196 Datum: NAD83
 Soil Map Unit Name: _____ NWI classification: PSS

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation X, Soil X, or Hydrology X 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 <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>NH-009</u>
Remarks: (Explain alternative procedures here or in a separate report.) Significantly Disturbed Notes: <u>Transmission row</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) _____ ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) <u>X</u> Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) <u>X</u> Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) ___ Surface Soil Cracks (B6) <u>X</u> 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) <u>X</u> Geomorphic Position (D2) ___ Shallow Aquitard (D3) <u>X</u> Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland

	Absolute % Cover	Dominant Species?	Indicator Status															
Tree Stratum (Plot size: <u>30'</u>)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>60%</u> (A/B)														
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
_____ = Total Cover				Prevalence Index worksheet: <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%; text-align: center;">Total % Cover of:</td> <td style="width:50%; text-align: center;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>75</u></td> <td>x 2 = <u>150</u></td> </tr> <tr> <td>FAC species <u>5</u></td> <td>x 3 = <u>15</u></td> </tr> <tr> <td>FACU species <u>55</u></td> <td>x 4 = <u>220</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>135</u> (A)</td> <td><u>385</u> (B)</td> </tr> </table> Prevalence Index = B/A = 2.9	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>75</u>	x 2 = <u>150</u>	FAC species <u>5</u>	x 3 = <u>15</u>	FACU species <u>55</u>	x 4 = <u>220</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>135</u> (A)	<u>385</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>75</u>	x 2 = <u>150</u>																	
FAC species <u>5</u>	x 3 = <u>15</u>																	
FACU species <u>55</u>	x 4 = <u>220</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>135</u> (A)	<u>385</u> (B)																	
Sapling/Shrub Stratum (Plot size: <u>15'</u>)																		
1. <u>Cornus amomum</u>	<u>30</u>	<u>Yes</u>	<u>FACW</u>															
2. <u>Viburnum nudum</u>	<u>25</u>	<u>Yes</u>	<u>FACW</u>															
3. <u>Lonicera morrowii</u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>															
4. <u>Rhamnus cathartica</u>	<u>5</u>	<u>No</u>	<u>FAC</u>															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
_____ = Total Cover																		
Herb Stratum (Plot size: <u>5'</u>)																		
1. <u>Agrimonia rostellata</u>	<u>25</u>	<u>Yes</u>	<u>FACU</u>															
2. <u>Verbena hastata</u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>															
3. <u>Solidago canadensis</u>	<u>10</u>	<u>No</u>	<u>FACU</u>															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
12. _____	_____	_____	_____															
_____ = Total Cover																		
Woody Vine Stratum (Plot size: <u>30'</u>)																		
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
_____ = Total Cover																		
Hydrophytic Vegetation Present? Yes <u>X</u> No																		
				Remarks: (Include photo numbers here or on a separate sheet.)														

SOIL

Sampling Point: Wetland

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

Depth (inches)	Matrix		Redox Features			Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
0 - 4	10YR 4/3	100					Loam	
4 - 10	2.5Y 4/2	98	10YR 4/4	2	Co	Ma	Loam	

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

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils³:
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	
<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	
<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	
<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input checked="" type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Redox Depressions (F8)	

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

Restrictive Layer (if observed):	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Type: <u>Massive dense</u>	
Depth (inches): <u>10</u>	

Remarks:

HSI: F3b

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 195601363 City/County: New Haven / Addison Sampling Date: 10/11/2017
 Applicant/Owner: Vermont Transco, LLC/Vermont Electric Power Company State: Vermont Sampling Point: Upland
 Investigator(s): EDB Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Rise Local relief (concave, convex, none): Linear Slope (%): 2
 Subregion (LRR or MLRA): LRR R Lat: 44.120352 Long: -73.164729 Datum: NAD83
 Soil Map Unit Name: _____ NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation X, Soil X, or Hydrology X 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 <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: <u>NH-010</u>
Remarks: (Explain alternative procedures here or in a separate report.) Significantly Disturbed Notes: Cleared substation, adjacent to road/fill	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: Upland

	Absolute % Cover	Dominant Species?	Indicator Status															
Tree Stratum (Plot size: <u>30'</u>)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0%</u> (A/B)														
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
_____ = Total Cover				Prevalence Index worksheet: <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%; text-align: center;">Total % Cover of:</td> <td style="width:50%; text-align: center;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>110</u></td> <td>x 4 = <u>440</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>110</u> (A)</td> <td><u>440</u> (B)</td> </tr> </table> <p style="text-align: center;">Prevalence Index = B/A = 4.0</p>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>110</u>	x 4 = <u>440</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>110</u> (A)	<u>440</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>0</u>	x 3 = <u>0</u>																	
FACU species <u>110</u>	x 4 = <u>440</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>110</u> (A)	<u>440</u> (B)																	
Sapling/Shrub Stratum (Plot size: <u>15'</u>)																		
1. <u>Populus tremuloides</u>	<u>5</u>	<u>Yes</u>	<u>FACU</u>															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
_____ = Total Cover																		
Herb Stratum (Plot size: <u>5'</u>)																		
1. <u>Galium mollugo</u>	<u>75</u>	<u>Yes</u>	<u>FACU</u>															
2. <u>Lolium perenne</u>	<u>15</u>	<u>No</u>	<u>FACU</u>															
3. <u>Solidago canadensis</u>	<u>15</u>	<u>No</u>	<u>FACU</u>															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
12. _____	_____	_____	_____															
_____ = Total Cover																		
Woody Vine Stratum (Plot size: <u>30'</u>)																		
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
_____ = Total Cover																		
Remarks: (Include photo numbers here or on a separate sheet.)				Hydrophytic Vegetation Present? Yes _____ No <u>X</u>														

SOIL

Sampling Point: Upland

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

Depth (inches)	Matrix		Redox Features			Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
0 - 10	10YR 4/4	100					Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: 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 Soils³:

- 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)

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

Restrictive Layer (if observed):

Type: Rock
Depth (inches): 10

Hydric Soil Present? Yes _____ No X

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 195601363 City/County: New Haven / Addison Sampling Date: 10/11/2017
 Applicant/Owner: Vermont Transco, LLC/Vermont Electric Power Company State: Vermont Sampling Point: Wetland
 Investigator(s): EDB Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Dip Local relief (concave, convex, none): Linear Slope (%): 3
 Subregion (LRR or MLRA): LRR R Lat: 44.120365 Long: -73.164701 Datum: NAD83
 Soil Map Unit Name: _____ NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation X, Soil X, or Hydrology X 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 <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>NH-010</u>
Remarks: (Explain alternative procedures here or in a separate report.) Significantly Disturbed Notes: Cleared substation area, adjacent to old travelway berm	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland

	Absolute % Cover	Dominant Species?	Indicator Status															
Tree Stratum (Plot size: <u>30'</u>)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)														
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
_____ = Total Cover				Prevalence Index worksheet: <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%; text-align: center;">Total % Cover of:</td> <td style="width:50%; text-align: center;">Multiply by:</td> </tr> <tr> <td>OBL species <u>30</u></td> <td>x 1 = <u>30</u></td> </tr> <tr> <td>FACW species <u>65</u></td> <td>x 2 = <u>130</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>95</u> (A)</td> <td><u>160</u> (B)</td> </tr> </table> Prevalence Index = B/A = 1.7	Total % Cover of:	Multiply by:	OBL species <u>30</u>	x 1 = <u>30</u>	FACW species <u>65</u>	x 2 = <u>130</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>95</u> (A)	<u>160</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>30</u>	x 1 = <u>30</u>																	
FACW species <u>65</u>	x 2 = <u>130</u>																	
FAC species <u>0</u>	x 3 = <u>0</u>																	
FACU species <u>0</u>	x 4 = <u>0</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>95</u> (A)	<u>160</u> (B)																	
Sapling/Shrub Stratum (Plot size: <u>15'</u>)																		
1. <u>Salix bebbiana</u>	<u>15</u>	<u>Yes</u>	<u>FACW</u>															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
_____ = Total Cover																		
Herb Stratum (Plot size: <u>5'</u>)																		
1. <u>Onoclea sensibilis</u>	<u>25</u>	<u>Yes</u>	<u>FACW</u>															
2. <u>Phalaris arundinacea</u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>															
3. <u>Juncus effusus</u>	<u>15</u>	<u>No</u>	<u>OBL</u>															
4. <u>Scirpus atrovirens</u>	<u>15</u>	<u>No</u>	<u>OBL</u>															
5. <u>Epilobium ciliatum</u>	<u>5</u>	<u>No</u>	<u>FACW</u>															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
12. _____	_____	_____	_____															
_____ = Total Cover																		
Woody Vine Stratum (Plot size: <u>30'</u>)																		
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
_____ = Total Cover																		
Hydrophytic Vegetation Present? Yes <u>X</u> No																		
				Remarks: (Include photo numbers here or on a separate sheet.)														

SOIL

Sampling Point: Wetland

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

Depth (inches)	Matrix		Redox Features		Type ¹	Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
0 - 8	10YR 4/2	98	10YR 4/6	2	Co	Ma	Silt Loam	
8 - 16	2.5Y 5/2	95	2.5Y 5/6	5	Co	Ma	Silt Loam	

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

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils³:
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	
<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	
<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input checked="" type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Redox Depressions (F8)	

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

Restrictive Layer (if observed): Type: <u>Hardpan</u> Depth (inches): <u>16</u>	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 195601363 City/County: New Haven / Addison Sampling Date: 11/1/2017
 Applicant/Owner: Vermont Transco, LLC/Vermont Electric Power Company State: Vermont Sampling Point: Upland
 Investigator(s): EDB Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Rise Local relief (concave, convex, none): Linear Slope (%): 3-6
 Subregion (LRR or MLRA): LRR R Lat: 44.121848 Long: -73.164056 Datum: NAD83
 Soil Map Unit Name: _____ NWI classification: UPL

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 <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/> If yes, optional Wetland Site ID: <u>NH-201</u>
Remarks: (Explain alternative procedures here or in a separate report.) Significantly Disturbed Notes: <u>Mowed field</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: Upland

	Absolute % Cover	Dominant Species?	Indicator Status															
Tree Stratum (Plot size: <u>30'</u>)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50%</u> (A/B)														
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
_____ = Total Cover				Prevalence Index worksheet: <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%; text-align: center;">Total % Cover of:</td> <td style="width:50%; text-align: center;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>35</u></td> <td>x 2 = <u>70</u></td> </tr> <tr> <td>FAC species <u>5</u></td> <td>x 3 = <u>15</u></td> </tr> <tr> <td>FACU species <u>60</u></td> <td>x 4 = <u>240</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>100</u> (A)</td> <td><u>325</u> (B)</td> </tr> </table> <p style="text-align: center;">Prevalence Index = B/A = 3.3</p>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>35</u>	x 2 = <u>70</u>	FAC species <u>5</u>	x 3 = <u>15</u>	FACU species <u>60</u>	x 4 = <u>240</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>100</u> (A)	<u>325</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>35</u>	x 2 = <u>70</u>																	
FAC species <u>5</u>	x 3 = <u>15</u>																	
FACU species <u>60</u>	x 4 = <u>240</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>100</u> (A)	<u>325</u> (B)																	
Sapling/Shrub Stratum (Plot size: <u>15'</u>)																		
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
_____ = Total Cover																		
Herb Stratum (Plot size: <u>5'</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
1. <u>Dactylis glomerata</u>	<u>35</u>	<u>Yes</u>	<u>FACU</u>															
2. <u>Phalaris arundinacea</u>	<u>35</u>	<u>Yes</u>	<u>FACW</u>															
3. <u>Galium mollugo</u>	<u>15</u>	<u>No</u>	<u>FACU</u>															
4. <u>Ranunculus acris</u>	<u>5</u>	<u>No</u>	<u>FAC</u>															
5. <u>Taraxacum officinale</u>	<u>5</u>	<u>No</u>	<u>FACU</u>															
6. <u>Trifolium pratense</u>	<u>5</u>	<u>No</u>	<u>FACU</u>															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
12. _____	_____	_____	_____															
<u>100</u> = Total Cover																		
Woody Vine Stratum (Plot size: <u>30'</u>)				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.														
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
_____ = Total Cover																		
Remarks: (Include photo numbers here or on a separate sheet.)				Hydrophytic Vegetation Present? Yes _____ No <u>X</u>														

SOIL

Sampling Point: Upland

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

Depth (inches)	Matrix		Redox Features		Type ¹	Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
0 - 14	2.5Y 4/3	100					Clay Loam	
14 - 21	2.5Y 4/3	98	7.5YR 4/6	2	Co	Ma	Clay Loam	

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

²Location: 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 Soils³:

- 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)

³Indicators 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 X

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 195601363 City/County: New Haven / Addison Sampling Date: 11/1/2017
 Applicant/Owner: Vermont Transco, LLC/Vermont Electric Power Company State: Vermont Sampling Point: Wetland
 Investigator(s): EDB Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Dip Local relief (concave, convex, none): Linear Slope (%): 2-4
 Subregion (LRR or MLRA): LRR R Lat: 44.1211873 Long: -73.163984 Datum: NAD83
 Soil Map Unit Name: _____ NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation X, Soil X, or Hydrology X 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 <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>NH-201</u>
Remarks: (Explain alternative procedures here or in a separate report.) Significantly Disturbed Notes: <u>Mowed ag field</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>4</u> Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland

	Absolute % Cover	Dominant Species?	Indicator Status															
Tree Stratum (Plot size: <u>30'</u>)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)														
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
_____ = Total Cover																		
Sapling/Shrub Stratum (Plot size: <u>15'</u>)				Prevalence Index worksheet: <table style="width:100%; border:none;"> <tr> <td style="width:50%; text-align:center;">Total % Cover of:</td> <td style="width:50%; text-align:center;">Multiply by:</td> </tr> <tr> <td>OBL species <u>25</u></td> <td>x 1 = <u>25</u></td> </tr> <tr> <td>FACW species <u>75</u></td> <td>x 2 = <u>150</u></td> </tr> <tr> <td>FAC species <u>5</u></td> <td>x 3 = <u>15</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>105</u> (A)</td> <td><u>190</u> (B)</td> </tr> </table> Prevalence Index = B/A = 1.8	Total % Cover of:	Multiply by:	OBL species <u>25</u>	x 1 = <u>25</u>	FACW species <u>75</u>	x 2 = <u>150</u>	FAC species <u>5</u>	x 3 = <u>15</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>105</u> (A)	<u>190</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>25</u>	x 1 = <u>25</u>																	
FACW species <u>75</u>	x 2 = <u>150</u>																	
FAC species <u>5</u>	x 3 = <u>15</u>																	
FACU species <u>0</u>	x 4 = <u>0</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>105</u> (A)	<u>190</u> (B)																	
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
_____ = Total Cover																		
Herb Stratum (Plot size: <u>5'</u>)				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 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.														
1. <u>Phalaris arundinacea</u>	<u>75</u>	<u>Yes</u>	<u>FACW</u>															
2. <u>Carex gynandra</u>	<u>15</u>	<u>No</u>	<u>OBL</u>															
3. <u>Juncus effusus</u>	<u>10</u>	<u>No</u>	<u>OBL</u>															
4. <u>Ranunculus acris</u>	<u>5</u>	<u>No</u>	<u>FAC</u>															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
_____ = Total Cover																		
Woody Vine Stratum (Plot size: <u>30'</u>)				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.														
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
_____ = Total Cover																		
Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: Wetland

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

Depth (inches)	Matrix		Redox Features			Type ¹	Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%					
0 - 12	2.5Y 4/1	95	7.5YR 4/6	5	C	M	Clay Loam		
12 - 20	2.5Y 3/1	95	7.5YR 4/6	5	C	M	Clay Loam		

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

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils³:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)	
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	

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

Restrictive Layer (if observed):		Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Type: _____	Depth (inches): _____	

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 195601363 City/County: New Haven / Addison Sampling Date: 11/1/2017
 Applicant/Owner: Vermont Transco, LLC/Vermont Electric Power Company State: Vermont Sampling Point: Upland
 Investigator(s): EDB Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Rise Local relief (concave, convex, none): Convex Slope (%): 2-4
 Subregion (LRR or MLRA): LRR R Lat: 44.122189 Long: -73.158973 Datum: NAD83
 Soil Map Unit Name: _____ NWI classification: UPL

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 <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/> If yes, optional Wetland Site ID: <u>NH-202</u>
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) _____ <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: Upland

	Absolute % Cover	Dominant Species?	Indicator Status															
Tree Stratum (Plot size: <u>30'</u>)																		
1. <u>Pinus strobus</u>	<u>85</u>	Yes	FACU	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0%</u> (A/B)														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
	<u>85</u>	= Total Cover																
Sapling/Shrub Stratum (Plot size: <u>15'</u>)																		
1. <u>Lonicera morrowii</u>	<u>15</u>	Yes	FACU	Prevalence Index worksheet: <table style="width:100%; border:none;"> <tr> <td style="width:50%; text-align:center;">Total % Cover of:</td> <td style="width:50%; text-align:center;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>2</u></td> <td>x 3 = <u>6</u></td> </tr> <tr> <td>FACU species <u>112</u></td> <td>x 4 = <u>448</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>114</u> (A)</td> <td><u>454</u> (B)</td> </tr> </table> Prevalence Index = B/A = 4.0	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>2</u>	x 3 = <u>6</u>	FACU species <u>112</u>	x 4 = <u>448</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>114</u> (A)	<u>454</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>2</u>	x 3 = <u>6</u>																	
FACU species <u>112</u>	x 4 = <u>448</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>114</u> (A)	<u>454</u> (B)																	
2. <u>Viburnum lantanoides</u>	<u>10</u>	Yes	FACU															
3. <u>Acer saccharum</u>	<u>2</u>	No	FACU															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
	<u>27</u>	= Total Cover																
Herb Stratum (Plot size: <u>5'</u>)																		
1. <u>Equisetum arvense</u>	<u>2</u>	No	FAC	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
12. _____	_____	_____	_____															
	<u>2</u>	= Total Cover																
Woody Vine Stratum (Plot size: <u>30'</u>)																		
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
	_____ = Total Cover																	
<table style="width:100%; border:none;"> <tr> <td style="width:60%;">Hydrophytic Vegetation Present?</td> <td style="width:20%; text-align:center;">Yes _____</td> <td style="width:20%; text-align:center;">No X</td> </tr> </table>					Hydrophytic Vegetation Present?	Yes _____	No X											
Hydrophytic Vegetation Present?	Yes _____	No X																
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: Upland

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

Depth (inches)	Matrix		Redox Features			Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
0 - 10	10YR 4/4	100					Loam	
10 - 16	10YR 4/3	100					Clay Loam	

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

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8)	Indicators for Problematic Hydric Soils³: <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
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³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: <u>Hardpan</u> Depth (inches): <u>16</u>	Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 195601363 City/County: New Haven / Addison Sampling Date: 11/1/2017
 Applicant/Owner: Vermont Transco, LLC/Vermont Electric Power Company State: Vermont Sampling Point: Wetland
 Investigator(s): EDB Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Linear Slope (%): 2-4
 Subregion (LRR or MLRA): LRR R Lat: 44.122164 Long: -73.158905 Datum: NAD83
 Soil Map Unit Name: _____ NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X 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 <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>NH-202</u>
Remarks: (Explain alternative procedures here or in a separate report.) Significantly Disturbed Notes: Ag fields adjacent	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes <u>X</u> No _____ Depth (inches): 8 Saturation Present? Yes <u>X</u> No _____ Depth (inches): 0 (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland

	Absolute % Cover	Dominant Species?	Indicator Status															
Tree Stratum (Plot size: <u>30'</u>)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)														
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
_____ = Total Cover				Prevalence Index worksheet: <table style="width:100%; border:none;"> <tr> <td style="width:50%; text-align: center;">Total % Cover of:</td> <td style="width:50%; text-align: center;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>125</u></td> <td>x 2 = <u>250</u></td> </tr> <tr> <td>FAC species <u>5</u></td> <td>x 3 = <u>15</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>130</u> (A)</td> <td><u>265</u> (B)</td> </tr> </table> Prevalence Index = B/A = 2.0	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>125</u>	x 2 = <u>250</u>	FAC species <u>5</u>	x 3 = <u>15</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>130</u> (A)	<u>265</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>125</u>	x 2 = <u>250</u>																	
FAC species <u>5</u>	x 3 = <u>15</u>																	
FACU species <u>0</u>	x 4 = <u>0</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>130</u> (A)	<u>265</u> (B)																	
Sapling/Shrub Stratum (Plot size: <u>15'</u>)																		
1. <u>Sambucus nigra</u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>															
2. <u>Viburnum dentatum</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
_____ = Total Cover																		
Herb Stratum (Plot size: <u>5'</u>)																		
1. <u>Phalaris arundinacea</u>	<u>85</u>	<u>Yes</u>	<u>FACW</u>															
2. <u>Epilobium ciliatum</u>	<u>10</u>	<u>No</u>	<u>FACW</u>															
3. <u>Symphotrichum lanceolatum</u>	<u>10</u>	<u>No</u>	<u>FACW</u>															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
12. _____	_____	_____	_____															
_____ = Total Cover																		
Woody Vine Stratum (Plot size: <u>30'</u>)																		
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
_____ = Total Cover																		
Remarks: (Include photo numbers here or on a separate sheet.)				Hydrophytic Vegetation Present?														
				Yes <u>X</u> No														

SOIL

Sampling Point: Wetland

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

Depth (inches)	Matrix		Redox Features		Type ¹	Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
0 - 20	2.5Y 4/1	90	7.5YR 4/6	10	C	M	Clay	

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

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils³:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)			
<input type="checkbox"/> Sandy Redox (S5)			
<input type="checkbox"/> Stripped Matrix (S6)			
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)			

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

Restrictive Layer (if observed):	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Type: _____	
Depth (inches): _____	

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 195601363 City/County: New Haven / Addison Sampling Date: 11/1/2017
 Applicant/Owner: Vermont Transco, LLC/Vermont Electric Power Company State: Vermont Sampling Point: Upland
 Investigator(s): EDB Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Rise Local relief (concave, convex, none): Convex Slope (%): 2-4
 Subregion (LRR or MLRA): LRR R Lat: 44.121193 Long: -73.162509 Datum: NAD83
 Soil Map Unit Name: _____ NWI classification: UPL

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 <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/> If yes, optional Wetland Site ID: <u>NH-203</u>
Remarks: (Explain alternative procedures here or in a separate report.) Significantly Disturbed Notes: <u>Mowed field</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: Upland

	Absolute % Cover	Dominant Species?	Indicator Status															
Tree Stratum (Plot size: <u>30'</u>)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33%</u> (A/B)														
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
_____ = Total Cover				Prevalence Index worksheet: <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%; text-align: center;">Total % Cover of:</td> <td style="width:50%; text-align: center;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>30</u></td> <td>x 2 = <u>60</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>65</u></td> <td>x 4 = <u>260</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>95</u> (A)</td> <td><u>320</u> (B)</td> </tr> </table> Prevalence Index = B/A = 3,4	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>30</u>	x 2 = <u>60</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>65</u>	x 4 = <u>260</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>95</u> (A)	<u>320</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>30</u>	x 2 = <u>60</u>																	
FAC species <u>0</u>	x 3 = <u>0</u>																	
FACU species <u>65</u>	x 4 = <u>260</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>95</u> (A)	<u>320</u> (B)																	
Sapling/Shrub Stratum (Plot size: <u>15'</u>)																		
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
_____ = Total Cover																		
Herb Stratum (Plot size: <u>5'</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
1. <u>Phalaris arundinacea</u>	<u>30</u>	<u>Yes</u>	<u>FACW</u>															
2. <u>Dactylis glomerata</u>	<u>25</u>	<u>Yes</u>	<u>FACU</u>															
3. <u>Taraxacum officinale</u>	<u>25</u>	<u>Yes</u>	<u>FACU</u>															
4. <u>Trifolium pratense</u>	<u>15</u>	<u>No</u>	<u>FACU</u>															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
12. _____	_____	_____	_____															
<u>95</u> = Total Cover																		
Woody Vine Stratum (Plot size: <u>30'</u>)				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.														
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
_____ = Total Cover																		
Remarks: (Include photo numbers here or on a separate sheet.)				Hydrophytic Vegetation Present? Yes _____ No <u>X</u>														

SOIL

Sampling Point: Upland

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

Depth (inches)	Matrix		Redox Features			Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
0 - 15	2.5Y 4/3	100					Clay Loam	
15 - 21	2.5Y 4/2	95	7.5YR 4/6	5	C	M	Clay Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: 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 Soils³:

- 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)

³Indicators 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 X

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 195601363 City/County: New Haven / Addison Sampling Date: 11/1/2017
 Applicant/Owner: Vermont Transco, LLC/Vermont Electric Power Company State: Vermont Sampling Point: Wetland
 Investigator(s): EDB Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Dip Local relief (concave, convex, none): Linear Slope (%): 0-2
 Subregion (LRR or MLRA): LRR R Lat: 44.121148 Long: -73.162609 Datum: NAD83
 Soil Map Unit Name: _____ NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X 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 <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>NH-203</u>
Remarks: (Explain alternative procedures here or in a separate report.) Significantly Disturbed Notes: <u>Mowed field adjacent</u>	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) _____ ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) <u>X</u> Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	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 <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland

	Absolute % Cover	Dominant Species?	Indicator Status															
Tree Stratum (Plot size: <u>30'</u>)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)														
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
_____ = Total Cover				Prevalence Index worksheet: <table style="width:100%; border:none;"> <tr> <td style="width:50%; text-align:center;">Total % Cover of:</td> <td style="width:50%; text-align:center;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>100</u></td> <td>x 2 = <u>200</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>100</u> (A)</td> <td><u>200</u> (B)</td> </tr> </table> Prevalence Index = B/A = 2.0	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>100</u>	x 2 = <u>200</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>100</u> (A)	<u>200</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>100</u>	x 2 = <u>200</u>																	
FAC species <u>0</u>	x 3 = <u>0</u>																	
FACU species <u>0</u>	x 4 = <u>0</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>100</u> (A)	<u>200</u> (B)																	
Sapling/Shrub Stratum (Plot size: <u>15'</u>)																		
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
_____ = Total Cover																		
Herb Stratum (Plot size: <u>5'</u>)				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 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.														
1. <u>Phalaris arundinacea</u>	<u>95</u>	<u>Yes</u>	<u>FACW</u>															
2. <u>Symphotrichum lanceolatum</u>	<u>5</u>	<u>No</u>	<u>FACW</u>															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
12. _____	_____	_____	_____															
<u>100</u> = Total Cover																		
Woody Vine Stratum (Plot size: <u>30'</u>)				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.														
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
_____ = Total Cover																		
Hydrophytic Vegetation Present? Yes <u>X</u> No																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: Wetland

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

Depth (inches)	Matrix		Redox Features			Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
0 - 6	2.5Y 4/2	100					Clay Loam	
6 - 14	2.5Y 4/2	95	7.5YR 4/6	5	C	M	Clay Loam	
14 - 20	2.5Y 4/2	90	7.5YR 4/6	10	C	M	Clay Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: 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 Soils³:

- 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)
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- 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)

³Indicators 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: