

930 Harvest Drive, Suite 460 Blue Bell, PA 19422 P (267) 512-7050 F (267) 512-7055 Terracon.com

May 8, 2022

Hecate Energy, LLC 621 West Randolph Street Chicago, Illinois 60661-2216

Attn: Mr. Andrew Boggs Phone: (612) 636-7953 Email: <u>Aboggs@hecateenergy.com</u>

Re: Boston Launch Wetlands Reports Hecate Energy Ward Hill Energy Center LLC Haverhill, Massachusetts Terracon Project No. K9217021

Dear Mr. Boggs:

Terracon Consultants, Inc. (Terracon) is pleased to submit the enclosed Wetland Delineation Reports for the above-referenced sites. This assessment was performed in accordance with Terracon Task Order Number K9217021 (Hecate Energy Ward Hill Energy Center LLC) dated October 22, 2021 issued under the Master Services Agreement dated June 22, 2018. The report was prepared for the exclusive reliance of Hecate. Reliance by any other party (other than a regulatory agency having jurisdiction) is prohibited without the written authorization of Hecate Energy, LLC and Terracon.

Terracon contracted Normandeau Associates to perform and prepare the attached Wetland Delineation Report. The purpose of the delineation at each site was to identify the extent of wetland resources within the project area of study regulated under the Massachusetts Wetlands Protection Act and Section 401/404 of the U.S. Clean Water Act, as well as local by-laws and regulations. In summary, the Jurisdictional wetland resource areas under the Massachusetts Wetlands Protection Act (WPA) and Section 401/404 were delineated and/or identified within the project area for the Ward Hill project site.

Terracon's services were performed in a manner consistent with generally accepted practices of the profession undertaken in similar studies in the same geographical area during the same time period. Terracon makes no warranties, express or implied, regarding the findings, conclusions or recommendations. Please note that Terracon does not warrant the work of laboratories, regulatory agencies or other third-party resources supplying information used in the preparation of the report. These services were performed in accordance with the scope of work agreed to with our client. Findings, conclusions, and recommendations resulting from these services are based upon information derived from the on-site activities and other services performed under this scope of work; such information is subject to change over time.



We appreciate the opportunity to provide the cultural resources services for you. If you have any questions about this report or require additional environmental services, please contact Marilyn Zenko at <u>Marilyn.Zenko@terracon.com</u>.

Sincerely, Terracon Consultants, Inc.

Marilyn Zenko Senior Client Development Specialist

Attachments: Wetlands Delineation Report, Ward Hill dated May 5, 2022



May 5, 2022

Marilyn Zenko Terracon 325 Sentry Parkway, Building 5 West Blue Bell, PA 19422

## RE: Wetland Delineation Report Ward Hill, Haverhill, MA

Dear Ms. Zenko:

Normandeau Associates, Inc. ("Normandeau") is pleased to provide Terracon with the following wetland delineation report describing inland wetland resource areas at a potential development site near Neck Road in Ward Hill, Haverhill, Massachusetts visited on November 2-3, November 9 and March 31 (the "Study Area"). The purpose of the delineation was to define the extent of wetland resources within the Study Area regulated under the Massachusetts Wetlands Protection Act (MGL Ch. 131 § 40) and Section 401/404 of the U.S. Clean Water Act (33 U.S.C. 1344), as well as any local by-laws and regulations. State jurisdictional wetland resource areas delineated and/or identified within the Study Area include Bordering Vegetated Wetland, Bank, Riverfront Area, Land Under Water, and Bordering Land Subject to Flooding. Please see below for more information.

## **Existing Conditions**

The Study Area (Figures 1 and 2) includes three parcels: 1160 Neck Road, 130 Neck Road, and 1269 Boston Road (hereafter "Garden Center"). The Neck Road sites are primarily agriculture, with a mix of pastureland and cropland on both sites. There is a recently cleared forested area at the northeastern part of the 1160 Neck Road parcel. In November of 2021, what appeared to be unpermitted wetland impacts were observed at 1160 Neck Road. These impacts were reported to Mass DEP. Correspondence with the landowner received on January 17, 2021 indicated that the Conservation Commission reviewed the site on November 29, 2021 and no enforcement order was issued to the landowner. The 130 Neck Road parcel is bounded on the southeast by the Merrimack River. The Merrimack River is tidal to the mouth of Creek Brook in Haverhill, approximately 1.5 miles downstream of the site<sup>1</sup>. The Garden Center is currently in use as a small retail nursery and garden center approximately 230 feet east of the Merrimack River..

According to the applicable Federal Emergency Management Agency ("FEMA") Flood Insurance Rate Maps for the City of Haverhill, Essex County, Massachusetts, Norfolk County, portions of the Study Area are located within "Zone AE - Area of 100 year flood" at base flood elevation 29 referenced to the National Geodetic Vertical Datum of 1929 (Figure 3). Mapped floodplain within the Study Area includes portions of 130 Neck Road adjacent, as well as the southeastern corner of the Garden Center.

The Massachusetts Natural Heritage and Endangered Species Program ("NHESP") maps the Merrimack River and riverbank as Priority Habitats of Rare Species and Estimated Habitats of Rare Wildlife (Figure 4). If impacts are to occur within these areas, review by the Massachusetts Endangered Species Act (MEPA) program must take place. There are no NHESP-mapped Certified or Potential Vernal Pools within the Study Area. The Study

<sup>&</sup>lt;sup>1</sup> https://www.mass.gov/files/2017-07/Merrimack River Watershed Assessment Report.pdf



Area is not located within any Areas of Critical Environmental Concern ("ACEC") as designated by the Massachusetts Secretary of Energy and Environmental Affairs under the ACEC regulations (301 CMR 12.00) or within any Outstanding Resource Waters protected under the Massachusetts Surface Water Quality Standards (314 CMR 4.00).

#### Wetland Delineation Methodology

The wetland delineation and evaluation conducted by Normandeau was completed in accordance with the following regulations and guidance documents:

- U.S. Army Corps of Engineers "Wetland Delineation Manual" (1987) and the "Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, Version 2.0" (2012);
- Massachusetts Wetlands Protection Act and implementing regulations (310 CMR 10.00) (the "Act" or "WPA");
- Massachusetts Department of Environmental Protection ("MassDEP") wetland delineation guidance document entitled "Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetlands Protection Act" (March 1995);
- The City of Haverhill, Massachusetts Code Chapter 253 Wetland Regulations ("Haverhill Regulations");

The Corps of Engineers require the presence of three criteria for an area to be classified as a wetland (water of the U.S.)<sup>2</sup>: the presence of wetland hydrology, a predominance of hydrophytic vegetation (>50%), and the presence of hydric soils. The methodology prescribed by MassDEP under the Wetlands Protection Act for Bordering Vegetated Wetlands is similar, although it requires the presence of only two criteria: a predominance of hydrophytic vegetation ( $\geq$  50%) and the presence of hydrology (which can include hydric soils per 310 CMR 10.55). The boundaries of wetlands and other resource areas were delineated in the field by tying brightly colored survey flagging to woody vegetation or other relatively permanent vegetation. Flagging tape was placed sufficiently close together to identify wetland edges and to allow regulators, work crews, or survey crews to see adjacent flags from each other. Flags were labeled sequentially using alpha numeric identifiers. In support of the delineation, Normandeau evaluated and collected soil, hydrology, and vegetation data along transects across the wetland/upland interface and prepared corresponding Corps of Engineers wetland determination data forms. Figures depicting the Study Area and mapped wetland resources are provided in Attachment A, site photographs are provided in Attachment B and the Corps data forms are provided in Attachment C.

## Wetland Resource Areas

State and local jurisdictional wetland resource areas field-delineated (i.e. flagged) within the Study Area include Bordering Vegetated Wetland and Bank. Additional WPA resource areas identified from desktop analysis within the Study Area include Riverfront Area, Land Under Water, and Bordering Land Subject to Flooding (Figure 5). Figure 6 depicts state-mapped wetland resources within the Study Area. For the purposes

<sup>&</sup>lt;sup>2</sup> Wetlands means "those area that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas." 33 C.F.R. § 328.3(b). "Waters of the United States" is broadly defined in the federal regulations that implement the Clean Water Act. It includes tidal waters, rivers, streams, lakes, ponds and wetlands.



of this evaluation it is reasonable to assume that all of the field-delineated vegetated wetlands and streams located within the Study Area are also jurisdictional "waters of the U.S." as defined under Section 401 and 404 of the U.S. Clean Water Act.

## Vegetated Wetlands (WHW Flag Series)

According to 310 CMR 10.55, Bordering Vegetated Wetlands ("BVW") are freshwater wetlands that border on creeks, rivers, streams, ponds, and lakes. Freshwater wetlands include wet meadows, marshes, swamps and bogs. BVW's are areas where soils are saturated and/or inundated such that they support a predominance of wetland indicator plants. The BVW boundary is the line within which 50 percent or more of the vegetational community consists of wetland indicator plants and saturated or inundated conditions exist. In accordance with the Haverhill Regulations, isolated vegetated wetlands are afforded the same protections as BVW. Areas of vegetated wetland were flagged within the Study Area that were observed to support a predominance of wetland indicator plants, contain evidence of saturated or inundated conditions (e.g., hydric soils, observation of prolonged or frequent flowing or standing surface water, groundwater within a major portion of the root zone), and border on a river or intermittent stream. Under the Act, BVW has a 100-foot buffer zone extending from its edge. Additionally, both the Haverhill Regulations protect a 25 foot no-disturbance zone and a 50 foot no-build zone along the boundary of vegetated wetlands.

Flag lines WHW1, WHW4, and WHW5 identify wetlands located in agricultural field. WHW1 is connected to the Merrimack River by a series of intermittent streams (WHS1-WHS3 flag series) and is therefore a BVW under the WPA, but WHW4 and WHW5 are isolated depressions. Note that these isolated wetlands are afforded the same protections as BVW. These wetlands are dominated by herbaceous vegetation and likely vary in specific composition depending on the agricultural use (Cowardin classification: PEM1E). At the time of review, WHW1 was cropland, and natural vegetation included soft rush (*Juncus effusus*) and yellow nutsedge (*Cyperus strigosus*). Wetlands WHW4 and WHW5 were currently in pasture use, and were dominated by bluejoint (*Calamagrostis canadensis*).

Flag lines WHW2 and WHW3 are BVW with a small drainage delineated by the WHS1 flag series on the 130 Neck Road parcel. Wetland WHW2 is located entirely within the cleared area, but upland trees are located adjacent to WHW3. Dominant vegetation in these wetlands includes soft rush, path rush, and spotted jewelweed (*Impatiens capensis*).

Flag lines WHW6, WHW7 and WHW8 are BVW associated with WHS6 and WHS7 located at the 1160 Neck Road Parcel. These wetlands are primarily forested (Cowardin classification: PFO1E), but also have emergent sections where agricultural or right-of-way uses have impacted the wetlands (Cowardin classification: PEM1E). Dominant vegetation in the forested components include red maple (*Acer* rubrum) and skunk cabbage (*Symplocarpus foetidus*). Emergent areas were dominated by a mix of sedges (*Carex* spp.) as well as purple loosestrife (*Lythrum salicaria*), and broad-leaved cattail (*Typha latifolia*). There is a substantial seasonally flooded area located in WHW8 which maintains hydrology suitable for vernal pool species, but none were detected on March 31 during early spring conditions and it is not expected that this area will be certified as a vernal pool.

## Bank (WHW Flag Series)

Inland Bank is defined in the WPA regulations at 310 CMR 10.54 as the portion of the land surface that normally abuts and confines a water body. It occurs between a water body and a BVW and adjacent floodplain, or, in the absence of these, it occurs between a water body and an upland. The upper boundary of



Bank is the first observable break in slope or the mean annual flood level, whichever is lower. The lower boundary of Bank is the mean annual low flow level. There is a 100-foot buffer zone associated with Inland Bank. Additionally, Haverhill Regulations protect a 25 foot no-disturbance zone and a 50 foot no-build zone along the boundary of Inland Bank.

## **Riverfront Area**

According to 310 CMR 10.58 (*in part*), Riverfront Area ("RFA") is the area of land between a river's mean annual high water line ("MAHW") and a parallel line measured 200-feet horizontally outward. A river means any natural flowing body of water that empties to any ocean, lake, pond or other river and that flows throughout the year (see 310 CMR 10.04 and 310 CMR 10.58(2)). RFA may include or overlap other resource areas or their 100-foot buffer zones. RFA does not have a 100-foot buffer zone.

There is RFA within the Study Area associated the USGS-designated perennial stream, the Merrimack River. This waterbody runs along the southeastern side of the Study Area along the 130 Neck Road parcel. The WHS4 Bank series delineates the Top of Bank and MAHW line of the channel, which are generally presumed coincident. The banks of this stream are moderately steep. The 200-foot RFA consists primarily of wooded buffer and agricultural land and would not be considered previously developed or degraded.

## Land Under Water

Land Under Water Bodies and Waterways ("LUW") is defined in the Wetlands Protection Act regulations at 310 CMR 10.56 as land beneath any creek, river, stream, pond or lake. Said land may be composed of organic muck or peat, fine sediments, rocks or bedrock. The boundary of LUW is the mean annual low water level. There is no buffer zone associated with LUW.

There is LUW in the Study Area contained within the above-described WHS4 series perennial stream (the Merrimack River). Based on (1) the regulatory definition of LUW provided at 310 CMR 10.56(2)(c), which states "the boundary of Land Under Water Bodies and Waterways is the mean annual low water level", and (2) the regulatory definition of Bank provided at 310 CMR 10.54(2)(c), which specifies "the lower boundary of Bank is the mean annual low flow level", intermittent streams do not contain LUW because the mean annual low flow level is presumed to be the dry centerline of the channel. Consequently, the only resource area present is Bank and no LUW is associated with the WHS1, WHS2, WHS3, WHS6, or WHS7 series intermittent streams.

## Bordering Land Subject to Flooding

Bordering Land Subject to Flooding ("BLSF") was not delineated in the field. The extent of this resource area is based on published FEMA flood elevations, which estimate the elevations to which water will flood during a 100-year storm event; any area below this elevation to the Bank of a waterway or waterbody is BLSF. There is no 100-foot buffer zone associated with BLSF.

As described above, according to the applicable FEMA mapping for the City of Haverhill, Essex County, Massachusetts, portions of the Study Area at 130 Neck Road and the Garden Center are located within "Zone AE - Area of 100 year flood" at base flood elevation (BFE) 29 feet referenced to the National Geodetic Vertical Datum of 1929 (NGVD29). Areas adjacent to the Merrimack River below a surveyed elevation of 29 feet NGVD29 are considered to be BLSF.



#### Vernal Pools

Although Certified or Potential Vernal Pools are located on the property, the Haverhill Regulations expands the definition of vernal pools to allow for certification of Vernal Pools within 90 days of filing of a Notice of Intent. At the time of review, no potential vernal pools were identified at 130 Neck Road or the Garden Center. One seasonally flooded area at 1160 Neck Road did not contain Vernal Pool indicators under early spring conditions and it is not expected that this area would be determined to be a Vernal Pool at a later date .

## Conclusion

As described above, a number of WPA and Section 401/404 jurisdictional wetland resource areas have been field delineated and/or identified within the Study Area. Please do not hesitate to contact me with any questions regarding this report at <u>bgriffith@normandeau.com</u> or at 603-801-1856. Thank you.

NORMANDEAU ASSOCIATES, INC.

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Benjamin Griffith, CWS Senior Scientist

ATTACHMENT A Figures



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Project 24666.000 Figure 1. Aerial Locus Map Haverhill, MA

Study Area



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Project 24666.000 Figure 3. FEMA Mapped Floodplains 1160 Neck Rd Haverhill, MA









Project 24666.000 Figure 3. FEMA Mapped Floodplains 130 Neck Rd Haverhill, MA

## Parcel Boundary

## Flood Zone Designations

- A: 1% Annual Chance of Flooding, no BFE
- AE: 1% Annual Chance of Flooding, with BFE
- AE: Regulatory Floodway
  - X: 0.2% Annual Chance of Flooding

















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Terracon May 5, 2022 Page 7

# ATTACHMENT B Site Photographs



Photo 1. WHW1 view to the east along natural vegetation. November 2, 2021.



Photo 2. WHW1 in agricultural use area. November 2, 2021.



Photo 3. WHW2 facing east. November 2, 2021.



Photo 4. WHW3 facing east. November 2, 2021.



Photo 5. WHW4 facing west. November 2, 2021.



Photo 6. WHW5 facing west. November 2, 2021.



Photo 7. WHW6 view north. March 31, 2022.



Photo 8. WHW7 view east. March 31, 2022.



Photo 9. WHW8 view north. March 31, 2022.



Photo 10. WHS1 view east. November 2, 2021.



Photo 11. WHS2 view east. November 2, 2021.



Photo 12. WHS4 view north. November 4, 2021.



Photo 13. WHS6 view upstream. March 31, 2022.



Photo 14. WHS7 view downstream. March 31, 2022.



Terracon May 5, 2022 Page 8

ATTACHMENT C Corps Data Forms

# WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Ward H	ill		City/Co	ounty: <u>Haverhil</u>	/Essex	Samp	oling Date:	11/2/2	:021
Applicant/Owner:	Terracon				State:	MA Sar	mpling Poin	t: why	/1-UPL
Investigator(s): B. Gr	iffith			Section, Tow	nship, Range: N	I/A			
Landform (hillside, terr	ace, etc.):	Hillslope	Local relief (co	oncave, convex	, none): <u>Convex</u>		Slope	e %:	5
Subregion (LRR or ML	.RA): <u>LRR R</u>	R Lat:	42.749207	Long:	-71.115223		Datum:	WGS1	1984
Soil Map Unit Name:	Sutton fine sa	andy loam, 3 to 8 per	cent slopes (410B)		NWI classifi	cation:			
Are climatic / hydrolog	ic conditions o	on the site typical for	this time of year?	Yes	No	(If no, explair	ı in Remark	s.)	
Are Vegetation	, Soil	, or Hydrology	significantly disturbed?	Are "Norma	al Circumstance	s" present?	Yes	No	
Are Vegetation	, Soil	, or Hydrology	naturally problematic?	(If needed,	explain any ans	wers in Rem	arks.)		
SUMMARY OF F	NDINGS -	Attach site map	showing sampling	ooint locati	ons, transec	ts, import	ant featu	res, e	etc.

Hydrophytic Vegetation Present?	Yes	No X	Is the Sampled Area           within a Wetland?         Yes         NoX           If yes, optional Wetland Site ID:
Hydric Soil Present?	Yes	No X	
Wetland Hydrology Present?	Yes	No X	
Remarks: (Explain alternative procedu	res here or in a	separate report.)	

## HYDROLOGY

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

# **VEGETATION** – Use scientific names of plants.

Sampling Point: WHW1-UPL

Tree Stratum (Plot size: 30' R )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1.       2.				Number of Dominant Species That Are OBL, FACW, or FAC:0 (A)
3				Total Number of Dominant Species Across All Strata: 1 (B)
5.           6.				Percent of Dominant Species That Are OBL, FACW, or FAC:0.0% (A/B)
7.				Prevalence Index worksheet:
		=Total Cover		Total % Cover of: Multiply by:
Sapling/Shrub Stratum (Plot size: 15' R )				OBL species 0 $x 1 = 0$
, ,				FACW species $0   x^2 = 0$
2.				FAC species $0 \times 3 = 0$
3				EACU species $75 \times 4 = 300$
				$\frac{1111}{1111} = \frac{1111}{1111} = \frac{1111}{1111} = \frac{11111}{1111} = \frac{11111}{1111} = \frac{111111}{11111} = \frac{1111111}{111111} = \frac{111111111}{11111111111111111111111111$
+				$\frac{1}{2} \frac{1}{2} \frac{1}$
5				Column Totals. 75 (A) 300 (B)
6				Prevalence Index = B/A = 4.00
7				Hydrophytic Vegetation Indicators:
		=Total Cover		1 - Rapid Test for Hydrophytic Vegetation
Herb Stratum (Plot size: 5' R )				2 - Dominance Test is >50%
1. Poa compressa	70	Yes	FACU	3 - Prevalence Index is ≤3.0 <sup>1</sup>
2. Galium mollugo	5	No	FACU	4 - Morphological Adaptations <sup>1</sup> (Provide supporting
3.				data in Remarks or on a separate sheet)
4.				Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
5.				
6.				be present, unless disturbed or problematic.
7				Definitions of Vegetation Strata:
8				
9.				<b>Tree</b> – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
10				Sapling/shrub – Woody plants less than 3 in. DBH
11				and greater than or equal to 3.28 ft (1 m) tall.
12				Herb - All herbaceous (non-woody) plants, regardless
	75	=Total Cover		of size, and woody plants less than 3.28 ft tall.
Woody Vine Stratum (Plot size: 30' R )				
1.				height.
2				
				Hydrophytic
				Vegetation
4				
	:	= I otal Cover		
Remarks: (Include photo numbers here or on a sepa	rate sheet.)			

Profile Des	cription: (Describe	to the de	oth needed to doc	ument t	he indica	ator or co	onfirm the absence of	indicators.)		
Depth	Matrix		Redo	x Featur	es					
(inches)	Color (moist)	%	Color (moist)	%	Type'	Loc <sup>2</sup>	Texture	Remarks		
0-12	10YR 3/2	100					Loamy/Clayey			
-										
1						<u> </u>	2	<b>D</b>		
Type: C=C	oncentration, D=Dep	letion, RIV	=Reduced Matrix, N	//S=Mas	ked Sand	d Grains.	Location: Pl	L=Pore Lining, M=Matrix.		
Hydric Soil	Indicators:			~ <i>(</i>			Indicators to	or Problematic Hydric Solls":		
Histosol	(A1)		Polyvalue Belo	ow Surfa	ce (S8) (	LRR R,	2 cm Mu	ck (A10) ( <b>LRR K, L, MLRA 149B</b> )		
	pipedon (A2)		MLRA 149B	5) (			Coast Pra	airie Redox (A16) (LRR K, L, R)		
Black H	istic (A3)		Thin Dark Surf	ace (S9	) (LRR R	, MLRA 1	149B) 5 cm Mu	cky Peat or Peat (S3) (LRR K, L, R)		
Hydroge	en Sulfide (A4)		High Chroma S	Sands (S	511) ( <b>LR</b> F	R K, L)	) Polyvalue Below Surface (S8) (LRR K, L)			
Stratifie	d Layers (A5)	<i></i>	Loamy Mucky	Mineral	(F1) ( <b>LR</b>	R K, L)	Thin Dark	k Surface (S9) (LRR K, L)		
Deplete	d Below Dark Surface	e (A11)	Loamy Gleyed	Matrix (	F2)		Iron-Man	ganese Masses (F12) (LRR K, L, R)		
Thick Da	ark Surface (A12)		Depleted Matri	ix (F3)			Piedmon	t Floodplain Soils (F19) (MLRA 149B)		
Sandy N	Aucky Mineral (S1)		Redox Dark St	urface (H	-6)		Mesic Sp	odic (TA6) ( <b>MLRA 144A, 145, 149B</b> )		
Sandy G	Eleyed Matrix (S4)		Depleted Dark	Surface	e (F7)		Red Pare	ent Material (F21)		
Sandy F	Redox (S5)		Redox Depres	sions (F	8)		Very Sha	allow Dark Surface (F22)		
Stripped	Matrix (S6)		Marl (F10) ( <b>LR</b>	R K, L)			Other (E)	xplain in Remarks)		
Dark Su	rface (S7)									
2										
<sup>3</sup> Indicators o	f hydrophytic vegetat	tion and w	etland hydrology m	ust be pi	resent, ur	nless dist	urbed or problematic.			
Restrictive	Layer (if observed):									
Туре:										
Depth (i	nches):						Hydric Soil Presen	t? Yes No X		
Remarks:							<u>+</u>			
This data for	rm is revised from No	orthcentral	and Northeast Reg	ional Su	pplemen	t Version	2.0 to include the NRC	S Field Indicators of Hydric Soils,		
Version 7.0,	2015 Errata. (http://v	www.nrcs.	usda.gov/Internet/F	SE_DOO	CUMENT	S/nrcs14	2p2_051293.docx)			

# WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Ward Hill	<u> </u>				City/Coun	ty: Haverh	ill/Es	ssex			Samp	ling Date:	11/2	/2022
Applicant/Owner: 7	Ferracon							Stat	te:	MA	Sam	npling Poir	nt: w	HW1-Wet
Investigator(s): B. Griff	fith				s	ection, To	wnsł	hip, Rang	e: <u>N</u> /	/A				
Landform (hillside, terra	ice, etc.):	Flat		Local re	elief (conc	ave, conve	ex, no	one): <u>Cor</u>	icave	Э		Slop	)e %:	0
Subregion (LRR or MLF	₹A): <u>LRR</u>	<u>R</u> L	.at:	42.749101		Long:	-71	.115174				Datum:	WG	S84
Soil Map Unit Name:	Sutton fine s	sandy loam, 3 to 8	per	cent slopes (410B)				NWI cla	ssific	ation:	PEM	1E		
Are climatic / hydrologic	conditions	on the site typical	for	this time of year?		Yes Z	_	No	(	lf no, e	explain	in Remarl	ks.)	
Are Vegetation,	Soil	, or Hydrology		significantly disturb	ed?	Are "Norr	mal (	Circumsta	nces	" prese	ent?	Yes	No	
Are Vegetation,	Soil	, or Hydrology		naturally problemat	tic?	(If needed	d, ex	plain any	ansv	wers in	Rema	ırks.)		
SUMMARY OF FIN	DINGS -	- Attach site m	ıap	showing sam	oling po	int locat	tion	is, trans	sect	s, im	porta	ant featu	ures,	etc.
Hydrophytic Vegetation	n Present?	Yes	х	No	Is the S	ampled A	rea							
Hydric Soil Present?		Yes	Х	No	within a	Wetland	?	Y	′es_	Х	No_			
Wetland Hydrology Pre	esent?	Yes	Х	No	lf yes, o	ptional We	etlan	d Site ID:						
Remarks: (Explain alte	ernative pro	cedures here or in	a s <sup>,</sup>	eparate report.)										

## HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (minimum of two required)				
Primary Indicators (minimum of one is require		Surface Soil Cracks (B6)					
Surface Water (A1)		Drainage Patterns (B10)					
X High Water Table (A2)	Aquatic Fauna (B13)		Moss Trim Lines (B16)				
Saturation (A3)	Marl Deposits (B15)		Dry-Season Water Table (C2)				
Water Marks (B1)	Hydrogen Sulfide Odor (C1)		Crayfish Burrows (C8)				
Sediment Deposits (B2)	Oxidized Rhizospheres on Living Re	oots (C3)	Saturation Visible on Aerial Imagery (C9)				
Drift Deposits (B3)	Presence of Reduced Iron (C4)		Stunted or Stressed Plants (D1)				
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soil	s (C6)	Geomorphic Position (D2)				
Iron Deposits (B5)	Thin Muck Surface (C7)		Shallow Aquitard (D3)				
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)		Microtopographic Relief (D4)				
Sparsely Vegetated Concave Surface (B	8)		FAC-Neutral Test (D5)				
Field Observations:							
Surface Water Present? Yes	No X Depth (inches):						
Water Table Present? Yes X	No Depth (inches): 0						
Saturation Present? Ves X	No Depth (inches): 0	Wotlan	d Hydrology Present? Ves X No				
		wellan					
(includes capillary fringe)		wetian					
(includes capillary fringe) Describe Recorded Data (stream gauge, mor	nitoring well, aerial photos, previous inspe	ections), if	available:				
(includes capillary fringe) Describe Recorded Data (stream gauge, mor	nitoring well, aerial photos, previous inspe	ections), if	available:				
(includes capillary fringe) Describe Recorded Data (stream gauge, mor	nitoring well, aerial photos, previous inspe	ections), if	available:				
(includes capillary fringe) Describe Recorded Data (stream gauge, mor	nitoring well, aerial photos, previous inspe	ections), if	available:				
(includes capillary fringe) Describe Recorded Data (stream gauge, mor	nitoring well, aerial photos, previous inspe	ections), if	available:				
(includes capillary fringe) Describe Recorded Data (stream gauge, mor	nitoring well, aerial photos, previous inspe	ections), if	available:				
(includes capillary fringe) Describe Recorded Data (stream gauge, mor Remarks:	nitoring well, aerial photos, previous inspe	ections), if	available:				
(includes capillary fringe) Describe Recorded Data (stream gauge, mor Remarks:	nitoring well, aerial photos, previous inspe	ections), if	available:				
(includes capillary fringe) Describe Recorded Data (stream gauge, mor Remarks:	nitoring well, aerial photos, previous inspe	ections), if	available:				
(includes capillary fringe) Describe Recorded Data (stream gauge, mor Remarks:	nitoring well, aerial photos, previous inspe	ections), if	available:				
(includes capillary fringe) Describe Recorded Data (stream gauge, mor Remarks:	nitoring well, aerial photos, previous inspe	ections), if	available:				
(includes capillary fringe) Describe Recorded Data (stream gauge, mor	nitoring well, aerial photos, previous inspe	ections), if	available:				

# **VEGETATION** – Use scientific names of plants.

Sampling Point: WHW1-Wet

Troo Strotum (Plot size: 20' P)	Absolute	Dominant	Indicator	Dominanco Tost workshoot:
<u>Tree stratum</u> (Plot size. <u>30 R</u> )	% Cover	Species?	Status	Dominance Test worksneet:
·				Number of Dominant Species
3				
а				Total Number of Dominant Species Across All Strate: 2 (B)
5				
6.				Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)
7.				Prevalence Index worksheet:
		=Total Cover		Total % Cover of: Multiply by:
Sapling/Shrub Stratum (Plot size: 15' R )				OBL species 0 x 1 = 0
1				FACW species 40 x 2 = 80
2				FAC species 20 x 3 = 60
3				FACU species25 x 4 =100
4				UPL species x 5 =0
5				Column Totals: 85 (A) 240 (B)
6				Prevalence Index = B/A = 2.82
7				Hydrophytic Vegetation Indicators:
		=Total Cover		1 - Rapid Test for Hydrophytic Vegetation
Herb Stratum (Plot size: 5' R )				2 - Dominance Test is >50%
1. Cyperus strigosus	40	Yes	FACW	X_3 - Prevalence Index is ≤3.0 <sup>1</sup>
2. Echinochloa crus-galli	10	No	FAC	4 - Morphological Adaptations <sup>1</sup> (Provide supporting
3. Plantago lanceolata	20	Yes	FACU	data in Remarks or on a separate sheet)
4. Setaria pumila	10	No	FAC	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
5. Juncus secundus	5	No	FACU	<sup>1</sup> Indicators of hydric soil and wetland hydrology must
6.				be present, unless disturbed or problematic.
7.				Definitions of Vegetation Strata:
8				<b>Tree</b> – Woody plants 3 in $(7.6 \text{ cm})$ or more in
9				diameter at breast height (DBH), regardless of height.
10				Sanling/shrub – Woody plants less than 3 in DBH
11				and greater than or equal to 3.28 ft (1 m) tall.
12				Herb – All berbaceous (non-woody) plants, regardless
	85	=Total Cover		of size, and woody plants less than 3.28 ft tall.
Woody Vine Stratum (Plot size: 30' R )				Woody vines – All woody vines greater than 3.28 ft in
1				height.
2				
3				Hydrophytic Vegetation
4				Present? Yes X No
		=Total Cover		
Remarks: (Include photo numbers here or on a sepa	rate sheet.)			·

Profile Desc	ription: (Describe	to the de	epth needed to docu	ument t	he indica	ator or co	onfirm the absence o	f indicators.)			
Depth	Matrix		Redox	x Featur	es	<u> </u>					
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks			
0-8	10YR 3/2	95	7.5YR 6/6	5	С	PL	Loamy/Clayey	Prominent redox concentrations			
8-12	10YR 6/6	100					Loamy/Clayey				
		lation Pl			kod San	Graine	<sup>2</sup> Location: E	2 - Poro Lipipa M-Matrix			
Hydric Soil I	ndicators:			10=11185	Keu Sano	d Grains.	Indicators f	or Problematic Hydric Soils <sup>3</sup>			
Histosol	(A1)		Polvvalue Belo	w Surfa	ce (S8) (	LRR R.	2 cm Mu	uck (A10) (LRR K. L. MLRA 149B)			
Histic Ep	ipedon (A2)		MLRA 149B	)		,	? Coast P	rairie Redox (A16) ( <b>LRR K, L, R</b> )			
Black His	stic (A3)		Thin Dark Surfa	, ace (S9)	) (LRR R	, MLRA 1	149B) 5 cm Mu	ucky Peat or Peat (S3) (LRR K, L, R)			
Hydroge	n Sulfide (A4)		High Chroma S	Sands (S	611) ( <b>LRF</b>	R K, L)	Polyvalu	ie Below Surface (S8) (LRR K, L)			
Stratified	Layers (A5)		Loamy Mucky	Mineral	(F1) ( <b>LR</b>	R K, L)	Thin Da	Dark Surface (S9) (LRR K, L)			
Depleted	Below Dark Surface	e (A11)	Loamy Gleyed	Matrix (	F2)		Iron-Mai	nganese Masses (F12) ( <b>LRR K, L, R</b> )			
Thick Da	rk Surface (A12)		Depleted Matrix	x (F3)			Piedmoi	nt Floodplain Soils (F19) ( <b>MLRA 149B</b> )			
Sandy M	ucky Mineral (S1)		X Redox Dark Su	urface (F	6)		Mesic S	podic (TA6) ( <b>MLRA 144A, 145, 149B</b> )			
Sandy G	leyed Matrix (S4)		Depleted Dark	Surface	e (F7)		Red Par	rent Material (F21)			
Sandy R	edox (S5)		Redox Depress	sions (F	8)		Very Sh	allow Dark Surface (F22)			
Stripped	Matrix (S6)		Marl (F10) ( <b>LR</b>	<b>R K, L</b> )			Other (Explain in Remarks)				
Dark Sur	face (S7)										
<sup>3</sup> Indicators of	hydrophytic vegetat	ion and v	vetland hydrology m	ist ha ni	rocont ur	aloce diet	urbed or problematic				
Restrictive L	aver (if observed):		notion nyorology me	201 DC PI							
Type:	,										
Depth (in	iches):						Hydric Soil Prese	nt? Yes <u>X</u> No			
Remarks:							•				
This data for	m is revised from No	rthcentra	al and Northeast Regi	ional Su	pplemen	t Version	2.0 to include the NR	CS Field Indicators of Hydric Soils,			
Version 7.0,	2015 Errata. (http://w	ww.nrcs	.usda.gov/Internet/FS	SE_DOO	CUMENT	S/nrcs14	2p2_051293.docx)				

# WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Ward H	lill		City	/County: Haverhi	ll/Essex	Sam	pling Date:	3/31/2022
Applicant/Owner:	Terracon				State:	MA Sa	mpling Poin	t: WHW8-UPL
Investigator(s): B. Gr	iffith			Section, Tov	vnship, Range: <u>N</u>	N/A		
Landform (hillside, ter	race, etc.):	Hillslope	Local relief	(concave, convex	k, none): <u>None</u>		Slop	e %: 2
Subregion (LRR or ML	_RA): <u>_</u> LR	R R	Lat: 42.742086	Long:	-71.107701		Datum:	WGS84
Soil Map Unit Name:	Woodbrid	ge fine sandy loam	, 8 to 15 percent slopes, very	stony (311C)	NWI classif	fication: U		
Are climatic / hydrolog	ic conditior	ns on the site typica	al for this time of year?	Yes X	No	(If no, explain	n in Remark	(s.)
Are Vegetation	, Soil	, or Hydrology	significantly disturbed?	Are "Norm	al Circumstance	es" present?	Yes X	No
Are Vegetation	, Soil	, or Hydrology	naturally problematic?	(If needed	, explain any ans	swers in Rem	arks.)	
SUMMARY OF F	INDINGS	6 – Attach site	map showing samplin	g point locati	ons, transed	cts, import	tant featu	ıres, etc.

Hydrophytic Vegetation Present?	Yes	No X	Is the Sampled Area within a Wetland? Yes No X If yes, optional Wetland Site ID:
Hydric Soil Present?	Yes	No X	
Wetland Hydrology Present?	Yes	No X	
Remarks: (Explain alternative procedu	ires here or in a	separate report.)	

## HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (mini	imum of two required)	
Primary Indicators (minimum of one is requ	ired; check all that apply)		Surface Soil Cracks (E	36)	
Surface Water (A1)	Water-Stained Leaves (B9)		Drainage Patterns (B1	0)	
High Water Table (A2)	Aquatic Fauna (B13)		Moss Trim Lines (B16)		
Saturation (A3)	Dry-Season Water Table (C2)				
Water Marks (B1)	Crayfish Burrows (C8)				
Sediment Deposits (B2)	Oxidized Rhizospheres on Living Ro	Saturation Visible on Aerial Imagery (C9)			
Drift Deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)			
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils	(C6)	Geomorphic Position (	D2)	
Iron Deposits (B5)	Iron Deposits (B5) Thin Muck Surface (C7)				
Inundation Visible on Aerial Imagery (B	7) Other (Explain in Remarks)		Microtopographic Relie	ef (D4)	
Sparsely Vegetated Concave Surface (	B8)		FAC-Neutral Test (D5)	1	
Field Observations:					
Surface Water Present? Yes	No X Depth (inches):				
Water Table Present? Yes	No X Depth (inches):				
Saturation Present? Yes	No X Depth (inches):	Wetlan	d Hydrology Present?	Yes No X	
(includes capillary fringe)					
Describe Recorded Data (stream gauge, m	onitoring well, aerial photos, previous inspe	ctions), if a	available:		
Remarks:					

# **VEGETATION** – Use scientific names of plants.

Sampling Point: WHW8-UPL

Tree Stratum (Plot size: 30' R )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1.       2.				Number of Dominant Species That Are OBL, FACW, or FAC:0 (A)
3 4				Total Number of Dominant Species Across All Strata: 2 (B)
5				Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)
7.				Prevalence Index worksheet:
		=Total Cover		Total % Cover of: Multiply by:
Sapling/Shrub Stratum (Plot size: 15' R )				OBL species 0 $x 1 = 0$
, 1.				FACW species $0   x^2 = 0$
2				FAC species $0 \times 3 = 0$
3				EACU species $85 \times 4 = 340$
·				$\frac{1100}{100} \text{ species} \qquad 0 \qquad x^5 = 0$
4				$\begin{array}{c} \text{OFL species} & 0 & \text{XS} = & 0 \\ \text{Column Totals:} & \text{PS} & (A) & -240 & (B) \\ \end{array}$
5				$\begin{array}{c} \text{Column rotals.} \\ \text{Column rotals.} \\$
6				Prevalence Index = B/A = 4.00
7				Hydrophytic Vegetation Indicators:
		=Total Cover		1 - Rapid Test for Hydrophytic Vegetation
Herb Stratum (Plot size: 5' R )				2 - Dominance Test is >50%
1. Solidago altissima	60	Yes	FACU	3 - Prevalence Index is ≤3.0 <sup>1</sup>
2. Oenothera biennis	20	Yes	FACU	4 - Morphological Adaptations <sup>1</sup> (Provide supporting
3. Alliaria petiolata	5	No	FACU	data in Remarks or on a separate sheet)
4				Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
5.				
6.				be present, unless disturbed or problematic.
7.				Definitions of Vegetation Strata:
8				, , , , , , , , , , , , , , , , , , ,
0				<b>Tree</b> – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH) regardless of height
10				diameter at breast height (DDH), regardless of height.
11.				<b>Sapling/shrub</b> – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.
12.				Herb All barbassaus (non woody) planta, regardless
	85	=Total Cover		of size, and woody plants less than 3.28 ft tall.
Woody Vine Stratum (Plot size: 30' R )				
				Woody vines – All woody vines greater than 3.28 ft in height
·				Toight.
2				Hydrophytic
3				Vegetation
4				Present? Yes No $\underline{X}$
		=Total Cover		
Remarks: (Include photo numbers here or on a sepa	rate sheet.)			

Depth	Matrix		Redo	x Featur	es					
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Rem	arks	
0-8	10vr 3/2	100					Loamy/Clavey			
8-12	10YR 5/6	90	10YR 5/8	10	С	PL	Loamy/Clayey	Distinct redox of	concentrations	
17. 0.0										
'Type: C=C	oncentration, D=Dep	letion, RM	=Reduced Matrix, N	MS=Mas	ked Sand	d Grains.	<sup>2</sup> Location: PL	=Pore Lining, M=N	latrix.	
Histosol Histic Er Black Hi Hydroge Stratified Depleter Thick Da Sandy M Sandy G Sandy F Stripped Dark Su	(A1) pipedon (A2) istic (A3) en Sulfide (A4) d Layers (A5) d Below Dark Surface ark Surface (A12) Mucky Mineral (S1) Bleyed Matrix (S4) Redox (S5) I Matrix (S6) rface (S7) f hydrophytic vegetar	e (A11) tion and we	Polyvalue Belo MLRA 149E Thin Dark Surf High Chroma S Loamy Mucky Loamy Gleyed Depleted Matr Redox Dark Si Depleted Dark Redox Depres Marl (F10) (LR	w Surface (S9) Sands (S Mineral I Matrix ( Matrix ( ix (F3) urface (F Surface sions (F8 <b>R K, L</b> )	ce (S8) ( ) (LRR R (F1) (LRI (F1) (LRI (F1) (LRI F2) (F7) (F7) B)	LRR R, , MLRA 1 R K, L) R K, L)	Indicators for Problematic H 2 cm Muck (A10) (LRR K, Coast Prairie Redox (A16) 5 cm Mucky Peat or Peat Polyvalue Below Surface ( Thin Dark Surface (S9) (L Iron-Manganese Masses ( Piedmont Floodplain Soils Mesic Spodic (TA6) (MLR Red Parent Material (F21) Very Shallow Dark Surface Other (Explain in Remarks		L, MLRA 149B) (LRR K, L, R) (S3) (LRR K, L, R) S8) (LRR K, L) RR K, L) F12) (LRR K, L, R) (F19) (MLRA 149B) A 144A, 145, 149B) $\Rightarrow$ (F22) ;;)	
Restrictive	Layer (if observed):									
Type: Depth (i	nches):						Hvdric Soil Present	? Yes	No X	
Pomarka:										
This data for Version 7.0,	m is revised from No 2015 Errata. (http://v	orthcentral vww.nrcs.u	and Northeast Reg isda.gov/Internet/F	ional Su SE_DOC	pplemen CUMENT	t Version S/nrcs14	2.0 to include the NRC 2p2_051293.docx)	S Field Indicators o	of Hydric Soils,	

# WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Ward H	lill			(	City/County: Have	erhi	II/Essex		Sampling Date:	10/1/2020
Applicant/Owner:	Terracon						State:	MA	Sampling Point	t:
Investigator(s): B. Griffith Section, Township, Range: N/A										
Landform (hillside, ter	race, etc.):	Depression		Local re	elief (concave, cor	nve	x, none): <u>Concav</u>	e	Slope	ə %: <u>1</u>
Subregion (LRR or ML	LRA): LRR	R	Lat:	42.742165	Lor	ng:	-71.107959		Datum:	WGS84
Soil Map Unit Name:	Woodbridge	fine sandy loam,	, 8 to	15 percent slopes, v	/ery stony (311C)		NWI classifi	cation:	: PEM1B	
Are climatic / hydrolog	jic conditions	on the site typica	al for t	this time of year?	Yes	х	No	(If no, o	explain in Remark	s.)
Are Vegetation	, Soil	, or Hydrology		significantly disturbe	ed? Are "N	orm	al Circumstance	s" pres	sent? Yes X	No
Are Vegetation	, Soil	, or Hydrology		naturally problemati	ic? (If nee	ded	l, explain any ans	wers ir	n Remarks.)	
SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.										
Hydrophytic Vegetati	ion Present?	Yes	х	No	Is the Sampled	d Ar	rea			

Hydrophytic Vegetation Present?	Yes	X	No	Is the Sampled Area within a Wetland? Yes X No If yes, optional Wetland Site ID:
Hydric Soil Present?	Yes	X	No	
Wetland Hydrology Present?	Yes	X	No	
Remarks: (Explain alternative procedur	es here or	in a se	eparate report.)	

## HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that appl	y) Surface Soil Cracks (B6)
Surface Water (A1) Water-Stained L	Leaves (B9) Drainage Patterns (B10)
X High Water Table (A2) Aquatic Fauna (	B13) Moss Trim Lines (B16)
X Saturation (A3) Marl Deposits (E	315) Dry-Season Water Table (C2)
Water Marks (B1) Hydrogen Sulfid	le Odor (C1) Crayfish Burrows (C8)
Sediment Deposits (B2) Oxidized Rhizos	pheres on Living Roots (C3) Saturation Visible on Aerial Imagery (C9)
Drift Deposits (B3) Presence of Rec	duced Iron (C4) Stunted or Stressed Plants (D1)
Algal Mat or Crust (B4) Recent Iron Rec	duction in Tilled Soils (C6) Geomorphic Position (D2)
Iron Deposits (B5) Thin Muck Surfa	ace (C7) Shallow Aquitard (D3)
Inundation Visible on Aerial Imagery (B7) Other (Explain ir	n Remarks) Microtopographic Relief (D4)
Sparsely Vegetated Concave Surface (B8)	X FAC-Neutral Test (D5)
Field Observations:	
Surface Water Present? Yes No X Depth	(inches):
Water Table Present? Yes X No Depth	(inches): 10
Saturation Present? Yes X No Depth	(inches): 6 Wetland Hydrology Present? Yes X No
Saturation Present? Yes X No Depth (includes capillary fringe)	(inches): 6 Wetland Hydrology Present? Yes X No
Saturation Present?       Yes       X       No       Depth         (includes capillary fringe)       Describe Recorded Data (stream gauge, monitoring well, aerial photon	(inches): 6 Wetland Hydrology Present? Yes X No
Saturation Present? Yes X No Depth ( (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial pho	(inches): 6 Wetland Hydrology Present? Yes X No otos, previous inspections), if available:
Saturation Present? Yes X No Depth ( (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial pho	(inches): 6 Wetland Hydrology Present? Yes X No otos, previous inspections), if available:
Saturation Present?       Yes X       No       Depth (         (includes capillary fringe)       Describe Recorded Data (stream gauge, monitoring well, aerial photon         Remarks:	(inches): 6 Wetland Hydrology Present? Yes X No otos, previous inspections), if available:
Saturation Present?       Yes X       No       Depth (         (includes capillary fringe)            Describe Recorded Data (stream gauge, monitoring well, aerial photon           Remarks:	(inches): 6 Wetland Hydrology Present? Yes X No otos, previous inspections), if available:
Saturation Present?       Yes X       No       Depth (         (includes capillary fringe)            Describe Recorded Data (stream gauge, monitoring well, aerial photon           Remarks:	(inches): <u>6</u> Wetland Hydrology Present? Yes X No otos, previous inspections), if available:
Saturation Present? Yes X No Depth ( (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial pho Remarks:	(inches): <u>6</u> Wetland Hydrology Present? Yes X No otos, previous inspections), if available:
Saturation Present?       Yes X       No       Depth (         (includes capillary fringe)	(inches): <u>6</u> Wetland Hydrology Present? Yes X No otos, previous inspections), if available:
Saturation Present?       Yes X       No       Depth (         (includes capillary fringe)	(inches): <u>6</u> Wetland Hydrology Present? Yes X No otos, previous inspections), if available:
Saturation Present?       Yes X       No       Depth (         (includes capillary fringe)	(inches): <u>6</u> Wetland Hydrology Present? Yes X No otos, previous inspections), if available:
Saturation Present?       Yes X       No       Depth (         (includes capillary fringe)	(inches): <u>6</u> Wetland Hydrology Present? Yes X No otos, previous inspections), if available:
Saturation Present?       Yes X       No       Depth (         (includes capillary fringe)	(inches): <u>6</u> Wetland Hydrology Present? Yes X No otos, previous inspections), if available:

# **VEGETATION** – Use scientific names of plants.

Sampling Point:

Tree Stratum (Plot size: 30' R )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1.       2.				Number of Dominant Species That Are OBL, FACW, or FAC:2 (A)
3				Total Number of Dominant Species Across All Strata: <u>2</u> (B)
5.           6.				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
7				Prevalence Index worksheet:
		=Total Cover		Total % Cover of: Multiply by:
Sapling/Shrub Stratum (Plot size: 15' R )				OBL species 100 x 1 = 100
, ,				FACW species $0   x^2 = 0$
2				FAC species $0 \times 3 = 0$
3				$\frac{1}{1} = \frac{1}{1} = \frac{1}$
4				$\frac{1}{2} \frac{1}{2} \frac{1}$
5				$\begin{array}{c} \text{Column lotals:}  100 \qquad \text{(A)}  100  \text{(B)} \\ \end{array}$
6				Prevalence Index = B/A = 1.00
7				Hydrophytic Vegetation Indicators:
		=Total Cover		1 - Rapid Test for Hydrophytic Vegetation
Herb Stratum (Plot size: 5' R )				X 2 - Dominance Test is >50%
1. Lythrum salicaria	50	Yes	OBL	X_3 - Prevalence Index is ≤3.0 <sup>1</sup>
2. Calamagrostis canadensis	50	Yes	OBL	4 - Morphological Adaptations <sup>1</sup> (Provide supporting
3.				data in Remarks or on a separate sheet)
4				Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
5				
· · · · · · · · · · · · · · · · · · ·				<sup>1</sup> Indicators of hydric soil and wetland hydrology must
o				be present, unless disturbed of problematic.
7				Definitions of Vegetation Strata:
8 9				<b>Tree</b> – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
10				<b>Sapling/shrub</b> – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.
12.				Herb – All herbaceous (non-woody) plants, regardless
	100	=Total Cover		of size, and woody plants less than 3.28 ft tall.
Woody Vine Stratum (Plot size: 30' R ) 1.				Woody vines – All woody vines greater than 3.28 ft in height.
2				Understadie
3.				Hydropnytic Vegetation
4.				Present? Yes X No
		=Total Cover		
Remarks: (Include photo numbers here or on a sepa	rate sheet.)			•
	,			

Profile Desc Depth	cription: (Describe	to the dep	oth needed to doc Redo	ument tl x Featur	he indica es	itor or co	onfirm the absence o	f indicators.)
(inches)	Color (moist)	%	Color (moist)	<u>%</u>	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
0-7	7.5YR 2.5/1	100					Loamy/Clayey	Coated in organic
7-12	10YR 3/1	80	10YR 5/8	20	С	PL	Loamy/Clayey	Prominent redox concentrations
		·						
		·						
		<u> </u>						
					_			
	·	<u> </u>						
<sup>1</sup> Type: C=C	oncentration, D=Depl	letion, RM	=Reduced Matrix, N	//S=Mas	ked Sand	l Grains.	<sup>2</sup> Location: P	PL=Pore Lining, M=Matrix.
Hydric Soil Histosol Histic Ej Black Hi Hydroge Stratifier Depleter Thick Da Sandy M Sandy R Sandy R Stripped Dark Su	Indicators: (A1) pipedon (A2) istic (A3) en Sulfide (A4) d Layers (A5) d Below Dark Surface ark Surface (A12) Aucky Mineral (S1) Gleyed Matrix (S4) Redox (S5) d Matrix (S6) Inface (S7) of hydrophytic vegetat	e (A11)	Polyvalue Belo MLRA 149B Thin Dark Surf High Chroma S Loamy Mucky Loamy Gleyed Depleted Matri X Redox Dark Su Depleted Dark Redox Depres Marl (F10) (LR	w Surfa (i) Sands (S Mineral Matrix ( ix (F3) urface (F Surface sions (F <b>R K, L</b> )	ce (S8) ( <b>I</b> ) ( <b>LRR R</b> ) (F1) ( <b>LRF</b> (F1) ( <b>LRF</b> F2) (F7) 8) (F7) 8)	LRR R, MLRA 1 R K, L) R K, L)	Indicators for 2 cm Mu Coast P Polyvalu Thin Dar Iron-Mar Piedmor Mesic S Red Par Very Sh Other (E	or Problematic Hydric Soils": uck (A10) (LRR K, L, MLRA 149B) rairie Redox (A16) (LRR K, L, R) ucky Peat or Peat (S3) (LRR K, L, R) ue Below Surface (S8) (LRR K, L) rk Surface (S9) (LRR K, L) nganese Masses (F12) (LRR K, L, R) nt Floodplain Soils (F19) (MLRA 149B) podic (TA6) (MLRA 144A, 145, 149B) rent Material (F21) allow Dark Surface (F22) Explain in Remarks)
Type:	Layer (If observed):							
Depth (i	nches):						Hydric Soil Prese	nt? Yes <u>X</u> No
Remarks: This data for Version 7.0,	rm is revised from No 2015 Errata. (http://w	rthcentral	and Northeast Reg Isda.gov/Internet/F	ional Su SE_DOC	pplement CUMENT	t Version S/nrcs14	2.0 to include the NR( 2p2_051293.docx)	CS Field Indicators of Hydric Soils,