www.vhb.com

June 21, 2024

Ref: 43207.02

Jason O. Skeels, PE
Town Engineer
Public Works Department
586 South Pleasant Street
Amherst, MA 01002

Re: Wetland & Watercourses Delineation Report
South Valley Road, Cadwell Street, Jones Road, Pelham, MA

Mr. Skeels

VHB completed an on-site investigation to determine presence or absence of wetlands and/or watercourses within approximately 12 acres along North Valley Road, Cadwell Street, and Jones Road in Pelham, Massachusetts (herein referred to as the Project Area, see Figure 1) as requested and authorized by the Amherst Public Works Department (Client). This investigation involved a wetland/watercourse delineation that was completed by wetland scientists and conducted in accordance with the principles and practices noted in the United States Department of Agriculture (USDA) Soil Survey Manual (1993) and the Massachusetts Department of Environmental Protection (MassDEP) Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetlands Protection Act (1995). The soil classification system of the National Cooperative Soil Survey was used in this investigation to identify the soil map units present within the Site.

This delineation report includes descriptions of site conditions, photographic documentation (Appendix A), Mass DEP Bordering Vegetated Wetlands (BVW) Forms (Appendix B), USDA Natural Resources Conservation Service (NRCS) Soils Report for the Site (Appendix C), a MassMapper Map showing mapped wetlands (Appendix D), and a Delineated Wetland Sketch (Figure 2) displaying delineated wetland/watercourse resources within the Site.

SITE AND INVESTIGATION DESCRIPTION

VHB conducted a desktop review prior to visiting the Site. This review included the National Resource Conservation Service (NRCS) Web Soil Survey (NRCS, 2019), United States Geological Survey (USGS) National Hydrologic Database (NHD), United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI), Massachusetts Geographical Information System (MassGIS) Environmental Resource

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Mapper, MassMapper (MassGIS, 2023), as well as orthoimagery of the Site. Four wetlands were mapped onsite by NWI (three Palustrine Forested Wetlands, PFO1E, and one Freshwater Emergent Wetland, PEM1E) and MassMapper (three Wooded Swamp Deciduous, Label WS1, and one Shallow March Meadow or Fen, Label M), and three watercourses are mapped onsite as well (Appendix D).

Following the desktop research, a site investigation was conducted. The Site is located in a rural, mostly residential area and encompasses approximately 50 feet off of both edges of the following roads: Jones Road, Cadwell Street, South Valley Road from Amherst Road to Jones Road, and Amherst Road from South Valley Road to Jones Road. Near the intersection of South Valley Road and Amherst Road is the Pelham Community Center and Public Library, the Pelham Elementary School, and the Pelham Police Department. The remainder of the proposed project area is residential and forested. The Site slopes down slight from the northeast to the southwest.

The Site was investigated by VHB wetland scientists on March 13 and April 16, 2024, with temperatures averaging 50°F and sunny during the March visit, and average temperatures around 65°f and sunny conditions during the April visit. Wetlands on the Site were delineated in accordance with methods developed by the Massachusetts Handbook for Delineation of Bordering Vegetated Wetlands (MassDEP, 2022) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0) ("Regional Supplement") (USACE, 2012) These methodologies require the evidence of three (3) criteria: a dominance of hydrophytic vegetation, the existence of hydric soils, and the presence of wetland hydrology.

REGULATORY INFORMATION

Waters of the United States (WOTUS) are defined as: "waters traditionally (currently or in the past) used for interstate or foreign commerce; as well as a tributary of, or a feature containing a "significant nexus" or connection to a traditional navigable waterway (TNW)" (USACE, 2012).

Wetlands are a subset of the WOTUS that may be subject to regulation under Section 404 of the Clean Water Act (CWA) (33 U.S.C. 1344). Wetlands are defined by key indicators, that under normal circumstances, support a "prevalence of vegetation typically adapted for life in saturated soil conditions." Wetland impacts are regulated by the CWA of 1972 (USACE, 2012). In Massachusetts, both the USACE and Massachusetts Department of Environmental Protection (MassDEP) are responsible for protecting wetlands from pollutants or activities that may result in the discharge of dredged or fill material into WOTUS. Not all regulated wetlands are mapped, and any mapped wetlands are subject to field verification.

Generally, a stream with at least intermittent flow is considered jurisdictional under the CWA. Similar to wetlands, WOTUS are regulated under CWA Section 404; navigable waterways are also regulated under Section 10 of the Rivers and Harbors act of 1899.

The state-regulated wetland resource areas identified in the vicinity of the Project limits include Bordering Vegetated Wetlands (BVW). These resource areas are defined under the WPA Regulations (310 CMR 10.00) as follows:

- **Bordering Vegetated Wetlands (BVW):** As defined at 310 CMR 10.55 (2), BVW is "freshwater wetlands which border on creeks, rivers, streams, ponds and lakes. The types of freshwater wetlands are wet meadows, marshes, swamps and bogs. Bordering Vegetated Wetlands are areas where the soils are saturated and/or inundated such that they support a predominance of wetland indicator plants."
- **Land Under Waterbodies and Waterways (LUWW):** As defined in 310 CMR 10.56 (2), LUWW is "the bottom of, or land under, the surface of the ocean or any estuary, creek, river, stream, pond, or lake."

WETLAND AND WATERCOURSE DESCRIPTION

Wetland classifications used to identify the type of wetland(s) occurring on the Site are based on guidance from the U.S. Fish and Wildlife Service (USFWS) (Cowardin et.al. 1979). These are further qualified with the Hydrogeomorphic Method of wetland classification (Brinson, 1993).

A total of seven bordering vegetated wetlands and four intermittent streams were delineated within the Site. The wetlands are depicted in the Delineated Wetlands Map is included in Figure 2 and are summarized in Table 1, below, which includes the wetland number, vegetation type, and observed hydrology. Table 2, below, summarizes the dominant vegetation within the Site.

Wetland 1 – Approximately 0.09 ac

Wetland 1 (W1) is a depressional palustrine deciduously forested wetland (PFO) located to the west of North Valley Road. Along the road edge, the vegetation is comprised mostly of pin oak (*Quercus palustris*) and red-osier dogwood (*Cornus alba*). Due to the project limits, only the area within 100 feet of the roadways was investigated. Further west, the wetland appears to be a palustrine emergent/scrub-shrub (PEM/PSS) wetland based on vegetation, although species were not determined due to lack of access to the rest of the parcels. South of W1 is Stream 1 (S1), flowing from the east under South Valley Road and continuing further west into the rest of the wetland, and the wetland appears to be fed by S1 and precipitation/runoff from the nearby roads and properties. Soils in the wetland were saturated at ten inches and redoximorphic features were observed beginning at ten inches with nine inches of mucky mineral soil on the surface. W1 is classified as a BVW under the WPA, with a 100-foot buffer zone extending from the delineated wetland boundary.

Wetland 2 – Approximately 0.35 ac

Wetland 2 (W2) is a PFO depression wetland located on the east side of South Valley Road. The wetland is fed by precipitation/runoff from nearby gentle slopes, as well as groundwater. S1 originates in the middle of W2 and flows northwest under North Valley Road via a culvert before continuing into W1. Soils in the wetland are saturated at the surface and the water table is present at four inches. Hydrophytic

vegetation observed in the wetland includes red maple (*Acer rubrum*), skunk cabbage (*Symplocarpus foetidus*), and intermediate wood fern (*Dryopteris intermedia*). Upland vegetation observed in the area includes eastern white pine, eastern hemlock (*Tsuga canadensis*), Japanese barberry (*Berberis thunbergii*), and pachysandra (*Pachysandra terminalis*). W2 is classified as a BVW under the WPA, with a 100-foot buffer zone extending from the delineated wetland boundary.

Wetland 3 – Approximately 0.18 ac

Wetland 3 (W3) is a PFO/PEM depressional wetland located on the east side of South Valley Road and south of W2, separated by a ridge. The wetland is fed by precipitation/runoff from nearby gentle slopes and the road, as well as groundwater. Soils were saturated at the surface and inundation was observed during the delineation. Hydrophytic vegetation observed in the area includes red maple, silky dogwood (*Cornus amomum*), common reed (*Phragmites australis*), sensitive fern (*Onoclea sensibilis*), and skunk cabbage. Upland vegetation in the area includes staghorn sumac (*Rhus typhina*) and multi-floral rose (*Rosa multiflora*). W3 is classified as a BVW under the WPA, with a 100-foot buffer zone extending from the delineated wetland boundary.

Wetland 4 – Approximately 0.08 ac

Wetland 4 (W4) is depressional PFO/PSS wetland located to the west of South Valley Road, north of W1. W4 is fed by groundwater and runoff from nearby properties and roads. The soils in the area are saturated at the surface and the water table is present at two inches. Hydrophytic vegetation in the area include American elm (*Ulmus americana*), speckled alder (*Alnus incana*), red maple, sensitive fern, and wrinkle-leaver goldenrod (*Solidago rugosa*). Upland vegetation in the area includes eastern white pine and multi-floral rose. W4 is classified as a BVW under the WPA, with a 100-foot buffer zone extending from the delineated wetland boundary.

Wetland 5 – Approximately 0.33 ac

Wetland 5 (W5) is a depressional PFO wetland located along the south side of Jones Road near the intersection with Cadwell Street. The wetland is fed by groundwater and precipitation/runoff from nearby properties and slopes. Soils in the area are saturated at the surface and the water table is present at three inches. Stream 3 also originates from W5 and flows eastward. Hydrophytic vegetation observed in the area includes red maple, red-osier dogwood, skunk cabbage, and sensitive fern. Upland vegetation in the area includes eastern hemlock, eastern white pine, and multi-floral rose. W5 is classified as a BVW under the WPA, with a 100-foot buffer zone extending from the delineated wetland boundary.

Wetland 6 – Approximately 0.07 ac

Wetland 6 (W6) is a depressional PFO wetland located on the west side of Cadwell Street. The wetland W4 is fed by groundwater and runoff from nearby properties and roads. Soils in the area are saturated at the surface and the water table is present at one inch, with areas of inundation observed further to the west (but outside of the Project Area). Hydrophytic vegetation observed in the area includes red maple, skunk cabbage, sensitive fern, and marsh-marigold (*Caltha palustris*). Upland vegetation in the area includes eastern white pine and multi-floral rose. W6 is classified as a BVW under the WPA, with a 100-foot buffer zone extending from the delineated wetland boundary.

Wetland 7 – Approximately 0.08 ac

Wetland 7 (W7) is a PEM/PSS wetland located on the north side of Jones Road between two residential properties. The wetland appears to be fed from a large wetland complex north of the residences (outside of the Project Area). Soils in the area were inundated during the delineation. Hydrophytic vegetation observed in the area include weeping willow (*Salix alba*), pussy willow (*Salix discolor*), red maple, tussock sedge (*Carex stricta*), sensitive fern, and rattlesnake grass (*Glyceria canadensis*). W7 is classified as a BVW under the WPA, with a 100-foot buffer zone extending from the delineated wetland boundary.

Stream 1

Stream 1 (S1) in an intermittent stream that flows southeast to northwest crossing under South Valley Road. Width of S1 is approximately two feet at the widest point and was flowing during the site visit, with approximately eight inches of water depth. The stream begins offsite, draining from a larger wetland complex located to the east of the Project Area, and flows under South Valley Road via a box culvert, then continues northwest offsite. The stream is classified as Riverine Intermittent Streambed, Cobble-Gravel, Intermittently Flooded (R4SB3J). As an intermittent stream, the area is under the jurisdiction of the WPA and classified as a Land Under Water Bodies and Waterways (LUWW), with a 100-foot buffer zone extending from the centerline of the stream.

Stream 2

Stream 2 (S2) in an intermittent stream that flows southeast to northwest from a larger wetland complex located to the east of the Project Area then discharging into W2. Width of S2 is approximately two feet at the widest point and was flowing during the site visit, with approximately four inches of water depth. The stream is classified as Riverine Intermittent Streambed, Cobble-Gravel, Intermittently Flooded (R4SB3J). As an intermittent stream, the area is under the jurisdiction of the WPA and classified as a Land Under Water Bodies and Waterways (LUWW), with a 100-foot buffer zone extending from the centerline of the stream.

Stream 3

Stream 3 (S3) is an intermittent stream that originates from W5 and flows to the northeast along the south side of Jones Road. The stream banks are mostly vertical and approximately 1.5 feet deep with gravel/sand bed material, and the stream is approximately two feet wide at the widest point. S3 had moderate flow at the time of the delineation with approximately three inches of water, and passes under driveways to residential properties via culverts, before flowing offsite. The stream is classified as Riverine Intermittent Streambed, Seasonally Flooded, Partly Drained/Ditched (R4SBCd). As an intermittent stream, the area is under the jurisdiction of the WPA and classified as a Land Under Water Bodies and Waterways (LUWW), with a 100-foot buffer zone extending from the centerline of the stream.

Stream 4

Stream 4 (S4) is an intermittent stream that flows from a culvert located under Amherst Road and flows southwest before dissipating into the woods offsite. The stream has very shallow banks and is approximately 1 foot wide at the widest point. Low flow was present at the time of the delineation, with approximately two inches of water. S4's streambed material is comprised of riprap at the culvert outlet

before changing gravel and sand. The stream is classified as Riverine Intermittent Streambed, Seasonally Flooded, Diked/Impounded (R4SBCh). As an intermittent stream, the area is under the jurisdiction of the WPA and classified as a Land Under Water Bodies and Waterways (LUWW), with a 100-foot buffer zone extending from the centerline of the stream.

Table 1: Delineated Wetlands and Watercourses within the Site

Wetland/ Watercourse Number	Dominant NWI Class[1]	Other NWI Classes	Dominant Water Regime[2]	MA WPA Wetland Type[1]	Associated Water Courses	Associated Wetland
W1	PSS	PEM	Saturated	BVW	-	-
W2	PFO	-	Saturated	BVW	S1, S2	-
W3	PFO	PEM	Seasonally Flooded	BVW	S1	-
W4	PFO	PSS	Saturated	BVW	-	-
W5	PFO	-	Saturated	BVW	S3	-
W6	PFO	-	Saturated	BVW	-	-
W7	PEM	PSS	Seasonally Flooded	BVW	-	-
S1	R4SB3J	-	Seasonally Flooded	LUWW	-	W2, W3
S2	R4SB3J	-	Seasonally Flooded	LUWW	-	W2
S3	R4SBCd	-	Seasonally Flooded	LUWW	-	W5
S4	R4SBCh	-	Seasonally Flooded	LUWW	-	-

1 – PEM = Palustrine Emergent; PSS = Palustrine Scrub Shrub; PFO = Palustrine Forested; BVW = Bordering Vegetated Wetland; LUWW = Land Under Waterbodies and Waterways
2 – Water Regime Definitions: Seasonally Flooded - Surface water is present for extended periods especially early in the growing season but is absent by the end of the season in most years. When surface water is absent, the water table is often near the land surface. Saturated -The substrate is saturated to the surface for extended periods during the growing season, but surface water is seldom present (Cowardin, 1979).

Table 2: Dominant Vegetation Onsite (Common (*Scientific*) names.)

TREES & SAPLINGS				
Scientific	**Common**	**Indicator**	**Upland**	**Wetland**
Acer rubrum	Red maple	FAC	X	X
Pinus strobus	Eastern white pine	FACU	X	X
Quercus palustris	Pin oak	FACW	X	X
Salix alba	Weeping willow	FACW	-	X
Salix discolor	Pussy willow	FACW	-	X
Tsuga canadensis	Eastern hemlock	FACU	X	X

SHRUBS				
Scientific	**Common**	**Indicator**	**Upland**	**Wetland**
Acer rubrum	Red maple	FAC	X	X
Alnus incana	Speckled alder	FACW	-	X
Berberis thunbergia	Japanese barberry	FACU	X	X
Carpinus caroliniana	American hornbeam	FAC	X	X
Cornus alba	Red-osier dogwood	FACW	-	X
Cornus amomum	Silky dogwood	FACW	X	X
Rhus typhina	Staghorn sumac	UPL	X	X
Ulmus americana	American elm	FACW	-	X

HERBS & VINES				
Scientific	**Common**	**Indicator**	**Upland**	**Wetland**
Caltha palustris	Marsh-marigold	OBL	-	X
Carex stricta	Tussock sedge	OBL	-	X
Dryopteris intermedia	Intermediate wood fern	FAC	X	X
Geum canadense	White avens	FAC	X	X
Glyceria canadensis	Rattlesnake grass	OBL	-	X
Onoclea sensibilis	Sensitive fern	FACW	X	X
Pachysandra terminalis	Pachysandra	UPL	X	X
Phragmites australis	Common reed	FACW	-	X
Rosa multiflora	Multifloral rose	FACU	X	X
Solidago rugosa	Wrinkle-leaved goldenrod	FAC	X	X
Symplocarpus foetidus	Skunk cabbage	OBL	-	X

SOILS

The Natural Resources Conservation Service (NRCS) soil survey has mapped the Site and surrounding area and classified soils within the vicinity of the Project as sandy loam and loamy sand (USDA, 2019). According to the NRCS, the Site is comprised of seven soil types, none of which are hydric soils. The majority of the Site consists of primarily Hinckley loamy sand, 8 to 15% slopes. A map depicting the soil units has been provided in Appendix C).

REFERENCES

1. Brinson, M.M. 1993. *A Hydrogeomorphic Classification for Wetlands*. Tech. Rpt.WRP-DE-4, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.
2. Cowardin, L.M., V. Carter, F.C. Golet and E.T. LaRoe, 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Fish and Wildlife Service. Washington, D.C. FWS/OBS-79/31.
3. DEP, 1995. Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetlands Protection Act.
4. DEP, 2020. Guidelines for the Certification of Vernal Pool Habitat, March 2009. Available online at https://www.mass.gov/doc/guidelines-for-the-certification-of-vernal-pool-habitat/download
5. MassGIS, 2023. MassMapper. Available online at: https://maps.massgis.digital.mass.gov/MassMapper/MassMapper.html
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8. United States Army Corps of Engineers (USACE), 2005. Regulatory Guidance Letter. Subject: Ordinary High Water Mark Identification. No. 05-05. Available online at: http://www.usace.army.mil/cw/cecwo/reg/rglsindx.htm
9. USACE, 2012. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeastern Region (Version 2.0), ed. J.S. Wakely, R.W. Lichvar, C.V. Noble. ERDC/EL TR-12-1. Vicksburg, MS: United States Army Engineer Research and Development Center.
10. USEPA, 2023. The Antecedent Precipitation Tool. Available online at: https://www.epa.gov/wotus/antecedent-precipitation-tool-apt
11. USFWS, 2021. National Wetlands Inventory (NWI) website. United States Department of the Interior (USDOI), Fish and Wildlife Service (FWS), Washington, D.C. http://www.fws.gov/wetlands/

CLOSING

Wetlands delineated on the Site as well as approximated wetlands adjacent to the Site include their associated resource area buffers subject to jurisdiction under the CWA and WPA. Any proposed work within these areas would require authorization from the appropriate regulatory authorities.

Thank you for the opportunity to work with you on this Project. Please contact Sara Berryman at 860-807-4336 if you have any questions or require additional assistance.

Sincerely,
Vanasse Hangen Brustlin, Inc.

Sara Berryman, CSS
Wetland Scientist
sberryman@vhb.com

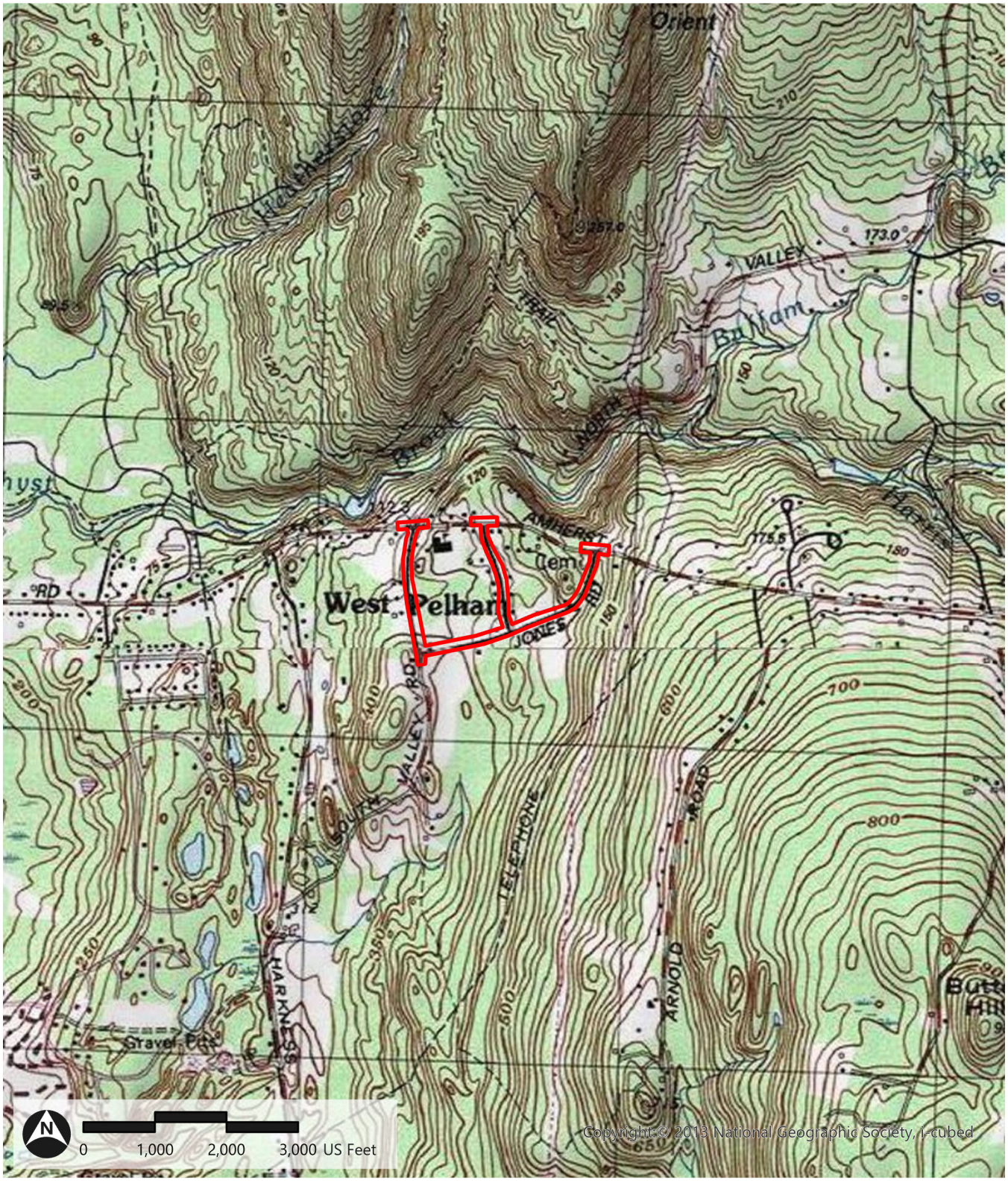
Jeffrey R. Shamas, CE, CSS, ENV SP, SPWS
Director of Environmental Services
jshamas@vhb.com

Attachments:
Figure 1 – USGS Site Location Map
Figure 2 – Delineated Wetland Map
Appendix A – Site Photograph Log
Appendix B – Massachusetts DEP BVW Forms
Appendix C – NRCS Web Soil Survey Map
Appendix D – MassDEP MassMapper Resources Map

FIGURES

Figure 1: USGS Site Location Map

South Valley Road, Cadwell Street, Jones Road | Pelham, MA

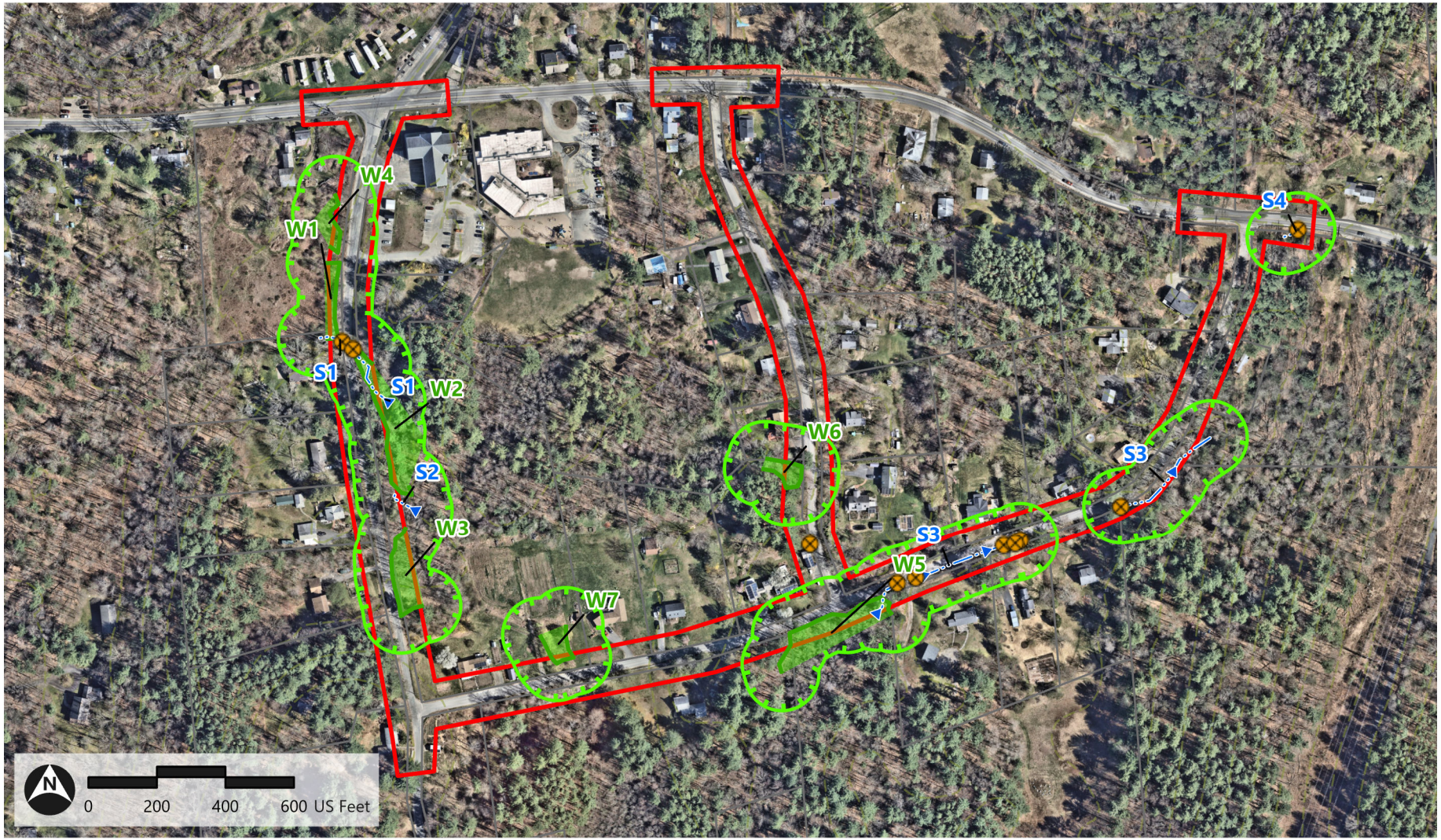


Project Area

Source: VHB, USGS

Figure 2: Delineated Resources Map

South Valley Road, Cadwell Street, Jones Road | Pelham, MA



Project Area
Parcel Boundary
Delineated Wetland Boundary
Delineated Wetland Area
Delineated Intermittent Stream
100-ft Buffer
Culvert
Contour (3m)

Source: VHB, NearMaps

ATTACHMENT A

SITE PHOTOGRAPH LOG

vhb Engineers | Scientists | Planners | Designers	**PHOTOGRAPHIC LOG**	
Client Name: South Valley Road, Jones Road, Cadwell Street	**Site Location:** Pelham, MA	**Project No**: 43207.02

Photo No.: 1	**Date:** 3/13/2024
Description: Photo of Wetland 1 (W1) looking northwest from South Valley road.	

vhb Engineers | Scientists | Planners | Designers	**PHOTOGRAPHIC LOG**	
Client Name: South Valley Road, Jones Road, Cadwell Street	**Site Location:** Pelham, MA	**Project No**: 43207.02

Photo No.: 2	**Date:** 3/13/2024
Description: Photo of W1 looking southwest from South Valley Road.	

vhb Engineers | Scientists | Planners | Designers

PHOTOGRAPHIC LOG

Client Name: South Valley Road, Jones Road, Cadwell Street | **Site Location:** Pelham, MA | **Project No**: 43207.02

Photo No.: 3 | **Date:** 3/13/2024

Description: Photo of Wetland 2 (W2) and Stream 1 (S1) looking south.

vhb Engineers | Scientists | Planners | Designers

PHOTOGRAPHIC LOG

Client Name: South Valley Road, Jones Road, Cadwell Street | **Site Location:** Pelham, MA | **Project No**: 43207.02

Photo No.: 4 | **Date:** 3/13/2024

Description: Photo of Wetland 3 (W3) looking north along South Valley Road.

Engineers | Scientists | Planners | Designers

PHOTOGRAPHIC LOG

Client Name: South Valley Road, Jones Road, Cadwell Street | **Site Location:** Pelham, MA | **Project No**: 43207.02

Photo No.: 5 | **Date:** 3/13/2024

Description: Photo of Wetland 4 (W4) looking northwest.

Engineers | Scientists | Planners | Designers

PHOTOGRAPHIC LOG

Client Name: South Valley Road, Jones Road, Cadwell Street | **Site Location:** Pelham, MA | **Project No**: 43207.02

Photo No.: 6 | **Date:** 4/16/2024

Description: Photo of Stream 3 (S3) and Wetland 5 (W5) looking south.

Engineers | Scientists | Planners | Designers

PHOTOGRAPHIC LOG

Client Name: South Valley Road, Jones Road, Cadwell Street | **Site Location:** Pelham, MA | **Project No**: 43207.02

Photo No.: 7 | **Date:** 4/16/2024

Description: Photo of S3 looking northeast toward Jones Road.

Engineers | Scientists | Planners | Designers

PHOTOGRAPHIC LOG

Client Name: South Valley Road, Jones Road, Cadwell Street | **Site Location:** Pelham, MA | **Project No**: 43207.02

Photo No.: 8 | **Date:** 4/16/2024

Description: Photo of S3 looking east along Jones Road, entering culvert under driveway.

vhb Engineers | Scientists | Planners | Designers	PHOTOGRAPHIC LOG	
Client Name: South Valley Road, Jones Road, Cadwell Street	**Site Location:** Pelham, MA	**Project No**: 43207.02

Photo No.: 9	**Date:** 4/16/2024

Description: Photo of S3 continuing into woods off of Jones Road.

vhb Engineers | Scientists | Planners | Designers	PHOTOGRAPHIC LOG	
Client Name: South Valley Road, Jones Road, Cadwell Street	**Site Location:** Pelham, MA	**Project No**: 43207.02

Photo No.: 10	**Date:** 4/16/2024

Description: Photo of S3 looking west along Jones Road.

vhb Engineers | Scientists | Planners | Designers	PHOTOGRAPHIC LOG	
Client Name: South Valley Road, Jones Road, Cadwell Street	**Site Location:** Pelham, MA	**Project No**: 43207.02

Photo No.: 11	**Date:** 4/16/2024
Description: Photo of Stream 4 (S4) looking south from Amherst Road.	

vhb Engineers | Scientists | Planners | Designers	PHOTOGRAPHIC LOG	
Client Name: South Valley Road, Jones Road, Cadwell Street	**Site Location:** Pelham, MA	**Project No**: 43207.02

Photo No.: 12	**Date:** 4/16/2024
Description: Photo of Wetland 6 (W6) looking north.	

vhb Engineers | Scientists | Planners | Designers

PHOTOGRAPHIC LOG

Client Name: South Valley Road, Jones Road, Cadwell Street	**Site Location:** Pelham, MA	**Project No**: 43207.02

Photo No.: 13	**Date:** 4/16/2024

Description: Photo of Wetland 7 (W7) looking northwest.

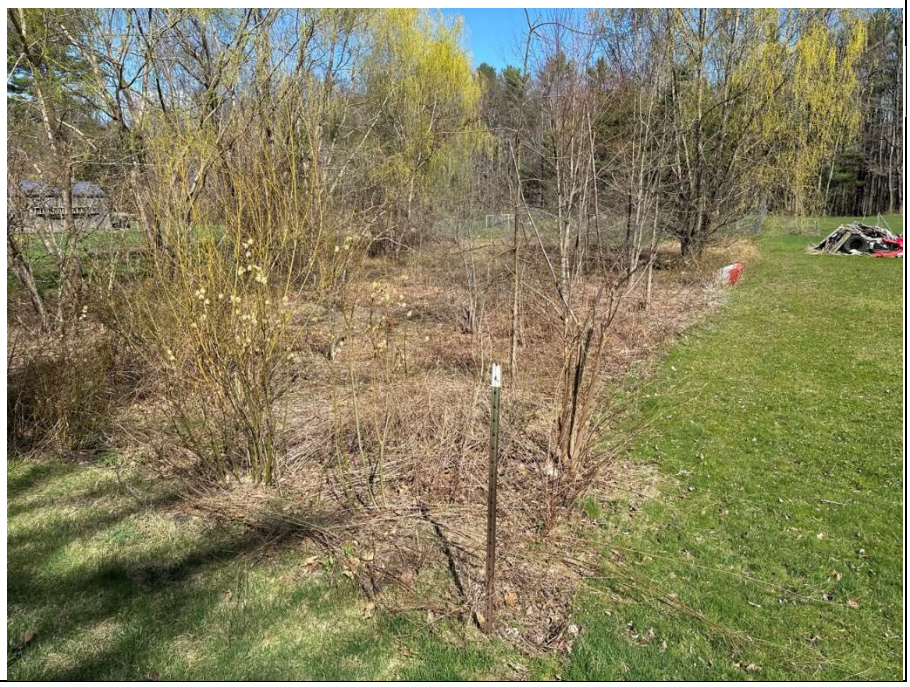
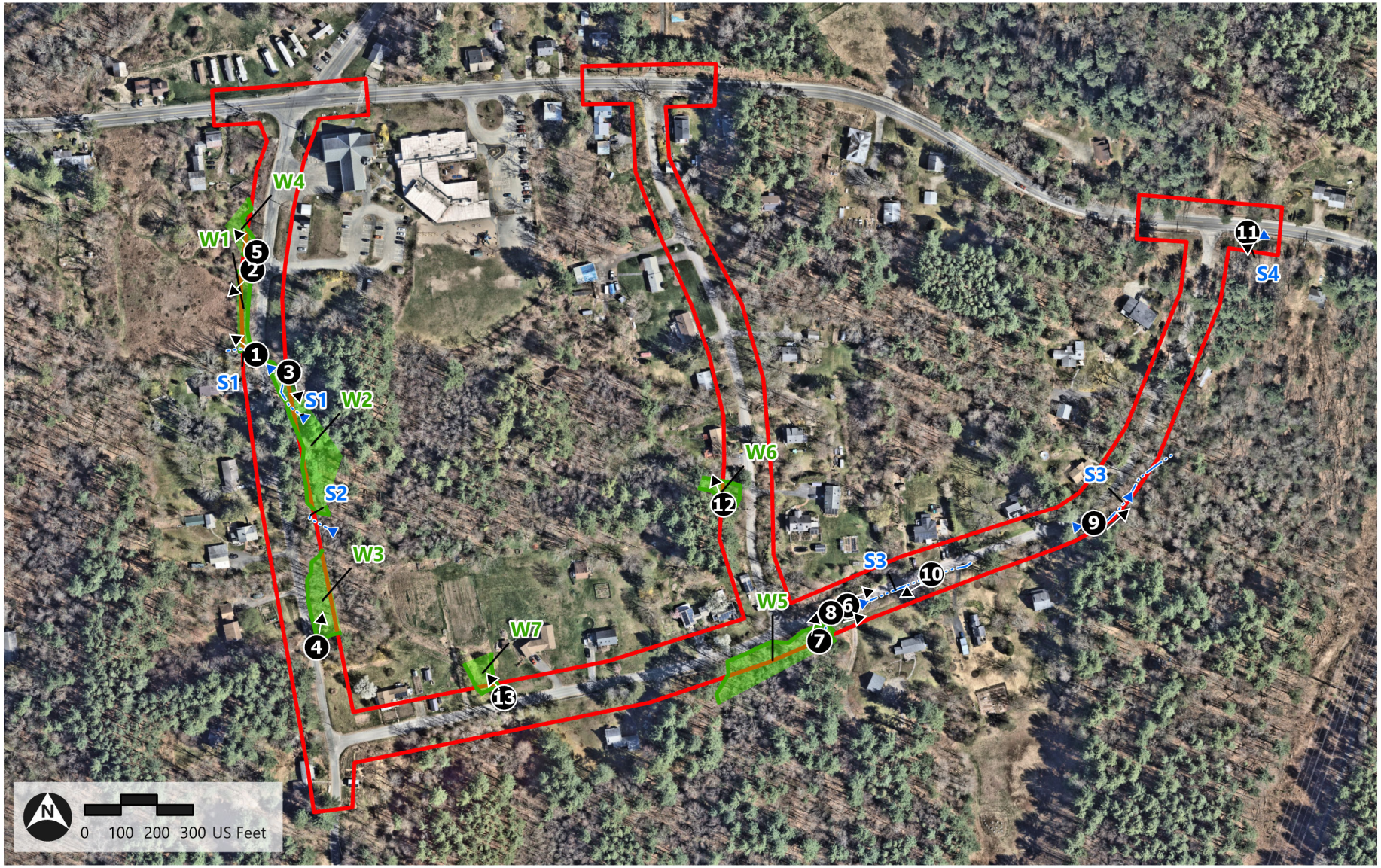


Photo Location Map

South Valley Road, Cadwell Street, Jones Road | Pelham, MA



Project Area

Photo Point

Delineated Intermittent Stream

Delineated Wetland Boundary

Delineated Wetland Area

Source: VHB, NearMaps

ATTACHMENT B

MASSACHUSETTS DEP BVW FORMS

BORDERING VEGETATED WETLAND DETERMINATION FORM

Project/Site: S. Valley Rd/Cadwell St/Jones Rd City/Town: Pelham Sampling Date: 3/13/2024

Applicant/Owner: Amherst Public Works Department Sampling Point or Zone: W1

Investigator(s): Sara Berryman Latitude/Longitude: 42.37756, -72.46977

Soil Map Unit Name: Charlton-Hollis-Rock outcrop complex NWI or DEP Classification: N/A

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? (If yes, explain in Remarks)

Are Vegetation _____ , Soil_____ , or Hydrology _____ naturally problematic? (If yes, explain in Remarks)

SUMMARY OF FINDINGS – Attach site map and photograph log showing sampling locations, transects, etc.

Wetland vegetation criterion met?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soils criterion met?	Yes _____ No X	
Wetlands hydrology present?	Yes X No _____	

Remarks, Photo Details, Flagging, etc.:

Flag series - W1-099 to W1-104

HYDROLOGY

Field Observations:		
Surface Water Present?	Yes _____ No X	Depth (inches) _____
Water Table Present?	Yes _____ No X	Depth (inches) _____
Saturation Present (including capillary fringe)?	Yes X No _____	Depth (inches) 10

Wetland Hydrology Indicators

Reliable Indicators of Wetlands Hydrology	Indicators that can be Reliable with Proper Interpretation	Indicators of the Influence of Water
X Water-stained leaves	_____Hydrological records	____ Direct observation of inundation
_____ Evidence of aquatic fauna	_____Free water in a soil test hole	X Drainage patterns
_____ Iron deposits	X Saturated soil	____ Drift lines
_____ Algal mats or crusts	_____Water marks	____ Scoured areas
X Oxidized rhizospheres/pore linings	_____Moss trim lines	____ Sediment deposits
_____ Thin muck surfaces	X Presence of reduced iron	____ Surface soil cracks
_____ Plants with air-filled tissue (aerenchyma)	_____Woody plants with adventitious roots	____ Sparsely vegetated concave surface
_____ Plants with polymorphic leaves	_____Trees with shallow root systems	X Microtopographic relief
_____ Plants with floating leaves	_____Woody plants with enlarged lenticels	X Geographic position (depression, toe of slope, fringing lowland)
_____ Hydrogen sulfide odor		

Remarks (describe recorded data from stream gauge, monitoring well, aerial photos, previous inspections, if available):

This form is only for BVW delineations. Other wetland resource areas may be present and should be delineated according to the applicable regulatory provisions.

Sampling Point W1

VEGETATION – Use both common and scientific names of plants.

Tree Stratum Plot size 30

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. Pin oak	Quercus palustris	FACW	30	Yes	Yes
2. Eastern white pine	Pinus strobus	FACU	10	Yes	No
3.					
4.					
5.					
6.					
7.					
8.					
9.					

40 = Total Cover

Shrub/Sapling Stratum Plot size 15

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. Red-osier dogwood	Cornus alba	FACW	25	Yes	Yes
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					

25 = Total Cover

Herb Stratum Plot size 5

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					

_____ = Total Cover

Sampling Point W1

VEGETATION – continued.

Woody Vine Stratum	Plot size 30				
Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. Multi-floral rose	Rosa multiflora	FACU	30	Yes	No
2.					
3.					
4.					
			30 = Total Cover		

Rapid Test:	Do all dominant species have an indicator status of OBL or FACW?			Yes _____ No X
Dominance Test:	Number of dominant species	Number of dominant species that are wetland indicator plants		Do wetland indicator plants make up ≥ 50% of dominant plant species? Yes X No _____
	4	2		
Prevalence Index:		Total % Cover (all strata)	Multiply by:	Result
	OBL species	0	X 1	= 0
	FACW species	55	X 2	= 110
	FAC species	0	X 3	= 0
	FACU species	40	X 4	= 160
	UPL species	0	X 5	= 0
	Column Totals	(A) 95		(B) 270
	Prevalence Index	B/A = 2.84		Is the Prevalence Index ≤ 3.0? Yes X No _____
Wetland vegetation criterion met?		**Yes** X **No** _____		

Definitions of Vegetation Strata

Tree - Woody plants 3 in. (7.62 cm) or more in diameter at breast height (DBH), regardless of height

Shrub/Sapling - Woody plants less than 3 in. (7.62 cm) DBH and greater than or equal to 3.3 ft. (1 m) tall

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.3 ft. (1 m) tall

Woody vines - All woody vines greater than 3.3 ft. (1 m) in height

Cover Ranges	
Range	Midpoint
1-5 %	3.0 %
6-15 %	10.5 %
15-25 %	20.5 %
26-50 %	38.0 %
51-75 %	63.0 %
76-95 %	85.5 %
96-100 %	98.0 %

Sampling Point W1

SOIL

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Location[2]		
0-9	10YR 2/1	100					Mucky minera	
9-10	2.5Y 4/2	100					FSL	
10-15	10YR 5/6	50	10YR 3/4	20	C	M	FSL	
	2.5Y 4/2	30						

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

Hydric Soil Indicators (Check all that apply)		**Indicators for Problematic Hydric Soils**
____ Histosol (A1)	____ Sandy Redox (S5)	____ 2 cm Muck (A10)
____ Histic Epipedon (A2)	____ Stripped Matrix (S6)	____ 5 cm Mucky Peat or Peat (S3)
____ Black Histic (A3)	____ Polyvalue Below Surface (S8)	____ Dark Surface (S7)
____ Hydrogen Sulfide (A4)	____ Thin Dark Surface (S9)	____ Polyvalue Below Surface (S8)
____ Stratified Layers (A5)	____ Loamy Mucky Mineral (F1)	____ Thin Dark Surface (S9)
____ Depleted Below Dark Surface (A11)	____ Loamy Gleyed Matrix (F2)	____ Iron-Manganese Masses (F12)
____ Thick Dark Surface (A12)	____ Depleted Matrix (F3)	____ Mesic Spodic (A17)
____ Sandy Mucky Mineral (S1)	____ Redox Dark Surface (F7)	____ Red Parent Material (F21)
____ Sandy Gleyed Matrix (S4)	____ Depleted Dark Surface (F8)	____ Very Shallow Dark Surface (TF12)
____ Dark Surface (S7)		____ Other (Include Explanation in Remarks)

Restrictive Layer (if observed) Type: _____ Depth (inches): _____

Remarks:

Hydric Soils criterion met? Yes _____ No X

BORDERING VEGETATED WETLAND DETERMINATION FORM

Project/Site: S. Valley Rd/Cadwell St/Jones Rd City/Town: Pelham Sampling Date: 3/13/2024

Applicant/Owner: Amherst Public Works Department Sampling Point or Zone: W2

Investigator(s): Sara Berryman Latitude/Longitude: 42.37694, -72.46951

Soil Map Unit Name: Sudbury fine sandy loam, 3-8% slopes NWI or DEP Classification: PFO1E/WS1

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? (If yes, explain in Remarks)

Are Vegetation _____ , Soil_____ , or Hydrology _____ naturally problematic? (If yes, explain in Remarks)

SUMMARY OF FINDINGS – Attach site map and photograph log showing sampling locations, transects, etc.

Wetland vegetation criterion met?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soils criterion met?	Yes _____ No X	
Wetlands hydrology present?	Yes X No _____	

Remarks, Photo Details, Flagging, etc.:

Flag series - W2-100 to W2-104, W2-200 to W2-213

HYDROLOGY

Field Observations:		
Surface Water Present?	Yes _____ No X	Depth (inches) _____
Water Table Present?	Yes X No _____	Depth (inches) 4
Saturation Present (including capillary fringe)?	Yes X No _____	Depth (inches) 0

Wetland Hydrology Indicators

Reliable Indicators of Wetlands Hydrology	Indicators that can be Reliable with Proper Interpretation	Indicators of the Influence of Water
X Water-stained leaves	_____Hydrological records	____ Direct observation of inundation
_____ Evidence of aquatic fauna	X Free water in a soil test hole	X Drainage patterns
_____ Iron deposits	X Saturated soil	____ Drift lines
_____ Algal mats or crusts	_____Water marks	____ Scoured areas
X Oxidized rhizospheres/pore linings	_____Moss trim lines	____ Sediment deposits
_____ Thin muck surfaces	X Presence of reduced iron	____ Surface soil cracks
_____ Plants with air-filled tissue (aerenchyma)	_____Woody plants with adventitious roots	____ Sparsely vegetated concave surface
_____ Plants with polymorphic leaves	_____Trees with shallow root systems	X Microtopographic relief
_____ Plants with floating leaves	_____Woody plants with enlarged lenticels	X Geographic position (depression, toe of slope, fringing lowland)
_____ Hydrogen sulfide odor		

Remarks (describe recorded data from stream gauge, monitoring well, aerial photos, previous inspections, if available):

This form is only for BVW delineations. Other wetland resource areas may be present and should be delineated according to the applicable regulatory provisions.

Sampling Point W2

VEGETATION – Use both common and scientific names of plants.

Tree Stratum Plot size 30

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. Eastern hemlock	Tsuga canadensis	FACU	40	Yes	No
2. Red maple	Acer rubrum	FAC	20	Yes	Yes
3. Eastern white pine	Pinus strobus	FACU	20	Yes	No
4.					
5.					
6.					
7.					
8.					
9.					

80 = Total Cover

Shrub/Sapling Stratum Plot size 15

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. American hornbeam	Carpinus caroliniana	FAC	20	Yes	Yes
2. Japanese barberry	Berberis thunbergii	FACU	10	Yes	Yes
3.					
4.					
5.					
6.					
7.					
8.					
9.					

30 = Total Cover

Herb Stratum Plot size 5

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. Skunk cabbage	Symplocarpus foetidus	OBL	15		
2. White avens	Geum candense	FAC	10		
3. Interm. wood fern	Dryopteris intermedia	FAC	10		
4. Pachysandra	Pachysandra terminalis	UPL	5		
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					

40 = Total Cover

Sampling Point W2

VEGETATION – continued.

Woody Vine Stratum	Plot size 30				
Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. Multi-floral rose	Rosa multiflora	FACU	20	Yes	No
2.					
3.					
4.					
			30 = Total Cover		

Rapid Test:	Do all dominant species have an indicator status of OBL or FACW?			Yes _____ No X
Dominance Test:	Number of dominant species	Number of dominant species that are wetland indicator plants		Do wetland indicator plants make up ≥ 50% of dominant plant species? Yes X No _____
	9	5		
Prevalence Index:		Total % Cover (all strata)	Multiply by:	Result
	OBL species	15	X 1	= 15
	FACW species	0	X 2	= 0
	FAC species	60	X 3	= 180
	FACU species	90	X 4	= 360
	UPL species	5	X 5	= 25
	Column Totals	(A) 170		(B) 580
Prevalence Index		B/A = 3.41		Is the Prevalence Index ≤ 3.0? Yes _____ No X
Wetland vegetation criterion met?		**Yes** X **No** _____		

Definitions of Vegetation Strata

Tree - Woody plants 3 in. (7.62 cm) or more in diameter at breast height (DBH), regardless of height

Shrub/Sapling - Woody plants less than 3 in. (7.62 cm) DBH and greater than or equal to 3.3 ft. (1 m) tall

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.3 ft. (1 m) tall

Woody vines - All woody vines greater than 3.3 ft. (1 m) in height

Cover Ranges	
Range	Midpoint
1-5 %	3.0 %
6-15 %	10.5 %
15-25 %	20.5 %
26-50 %	38.0 %
51-75 %	63.0 %
76-95 %	85.5 %
96-100 %	98.0 %

Sampling Point W2

SOIL

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Location[2]		
0-9	10YR 2/1	100					Mucky minera	
9-12	10YR 4/3	70	10YR 5/2	30	D	M	Sandy	Depletions

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

Hydric Soil Indicators (Check all that apply)		**Indicators for Problematic Hydric Soils**
____ Histosol (A1)	____ Sandy Redox (S5)	____ 2 cm Muck (A10)
____ Histic Epipedon (A2)	____ Stripped Matrix (S6)	____ 5 cm Mucky Peat or Peat (S3)
____ Black Histic (A3)	____ Polyvalue Below Surface (S8)	____ Dark Surface (S7)
____ Hydrogen Sulfide (A4)	____ Thin Dark Surface (S9)	____ Polyvalue Below Surface (S8)
____ Stratified Layers (A5)	____ Loamy Mucky Mineral (F1)	____ Thin Dark Surface (S9)
____ Depleted Below Dark Surface (A11)	____ Loamy Gleyed Matrix (F2)	____ Iron-Manganese Masses (F12)
____ Thick Dark Surface (A12)	____ Depleted Matrix (F3)	____ Mesic Spodic (A17)
____ Sandy Mucky Mineral (S1)	____ Redox Dark Surface (F7)	____ Red Parent Material (F21)
____ Sandy Gleyed Matrix (S4)	____ Depleted Dark Surface (F8)	____ Very Shallow Dark Surface (TF12)
____ Dark Surface (S7)		____ Other (Include Explanation in Remarks)

Restrictive Layer (if observed) Type: _____ Depth (inches): _____

Remarks:

Hydric Soils criterion met? Yes _____ No X

BORDERING VEGETATED WETLAND DETERMINATION FORM

Project/Site: S. Valley Rd/Cadwell St/Jones Rd City/Town: Pelham Sampling Date: 3/13/2024

Applicant/Owner: Amherst Public Works Department Sampling Point or Zone: W3

Investigator(s): Sara Berryman Latitude/Longitude: 42.37558, -72.46921

Soil Map Unit Name: Sudbury fine sandy loam, 3-8% slopes NWI or DEP Classification: PFO1E/WS1

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? (If yes, explain in Remarks)

Are Vegetation _____ , Soil_____ , or Hydrology _____ naturally problematic? (If yes, explain in Remarks)

SUMMARY OF FINDINGS – Attach site map and photograph log showing sampling locations, transects, etc.

Wetland vegetation criterion met?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soils criterion met?	Yes X No _____	
Wetlands hydrology present?	Yes X No _____	

Remarks, Photo Details, Flagging, etc.:

Flag series - W3-100 to W3-110

HYDROLOGY

Field Observations:		
Surface Water Present?	Yes X No _____	Depth (inches) 0
Water Table Present?	Yes X No _____	Depth (inches) 0
Saturation Present (including capillary fringe)?	Yes X No _____	Depth (inches) 0

Wetland Hydrology Indicators

Reliable Indicators of Wetlands Hydrology	Indicators that can be Reliable with Proper Interpretation	Indicators of the Influence of Water
X Water-stained leaves	_____Hydrological records	X Direct observation of inundation
_____ Evidence of aquatic fauna	X Free water in a soil test hole	X Drainage patterns
_____ Iron deposits	X Saturated soil	____ Drift lines
_____ Algal mats or crusts	_____Water marks	____ Scoured areas
X Oxidized rhizospheres/pore linings	_____Moss trim lines	____ Sediment deposits
_____ Thin muck surfaces	X Presence of reduced iron	____ Surface soil cracks
_____ Plants with air-filled tissue (aerenchyma)	_____Woody plants with adventitious roots	____ Sparsely vegetated concave surface
_____ Plants with polymorphic leaves	_____Trees with shallow root systems	X Microtopographic relief
_____ Plants with floating leaves	_____Woody plants with enlarged lenticels	X Geographic position (depression, toe of slope, fringing lowland)
_____ Hydrogen sulfide odor		

Remarks (describe recorded data from stream gauge, monitoring well, aerial photos, previous inspections, if available):

This form is only for BVW delineations. Other wetland resource areas may be present and should be delineated according to the applicable regulatory provisions.

Sampling Point W3

VEGETATION – Use both common and scientific names of plants.

Tree Stratum Plot size 30

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. Red maple	Acer rubrum	FAC	15	Yes	Yes
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					

15 = Total Cover

Shrub/Sapling Stratum Plot size 15

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. Silky dogwood	Cornus amomum	FACW	25	Yes	Yes
2. Staghorn sumac	Rhus typhina	UPL	15	Yes	No
3.					
4.					
5.					
6.					
7.					
8.					
9.					

40 = Total Cover

Herb Stratum Plot size 5

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. Common reed	Phragmites australis	FACW	40	Yes	Yes
2. Sensitive fern	Onoclea sensibilis	FACW	10	No	Yes
3. Skunk cabbage	Symplocarpus foetidus	OBL	10	No	Yes
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					

60 = Total Cover

Sampling Point W3

VEGETATION – continued.

Woody Vine Stratum	Plot size 30				
Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. Multi-floral rose	Rosa multiflora	FACU	30	Yes	No
2.					
3.					
4.					
			30 = Total Cover		

Rapid Test:	Do all dominant species have an indicator status of OBL or FACW?			Yes _____ No X
Dominance Test:	Number of dominant species	Number of dominant species that are wetland indicator plants		Do wetland indicator plants make up ≥ 50% of dominant plant species? Yes X No _____
	5	3		
Prevalence Index:		Total % Cover (all strata)	Multiply by:	Result
	OBL species	10	X 1	= 10
	FACW species	75	X 2	= 150
	FAC species	15	X 3	= 45
	FACU species	30	X 4	= 120
	UPL species	15	X 5	= 75
	Column Totals	(A) 145		(B) 400
Prevalence Index		B/A = 2.76		Is the Prevalence Index ≤ 3.0? Yes X No _____
Wetland vegetation criterion met?		**Yes** X **No** _____		

Definitions of Vegetation Strata

Tree - Woody plants 3 in. (7.62 cm) or more in diameter at breast height (DBH), regardless of height

Shrub/Sapling - Woody plants less than 3 in. (7.62 cm) DBH and greater than or equal to 3.3 ft. (1 m) tall

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.3 ft. (1 m) tall

Woody vines - All woody vines greater than 3.3 ft. (1 m) in height

Cover Ranges	
Range	Midpoint
1-5 %	3.0 %
6-15 %	10.5 %
15-25 %	20.5 %
26-50 %	38.0 %
51-75 %	63.0 %
76-95 %	85.5 %
96-100 %	98.0 %

Sampling Point W3

SOIL

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Location[2]		
0-12	10YR 2/1	100					Muck	

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

Hydric Soil Indicators (Check all that apply)		**Indicators for Problematic Hydric Soils**
____ Histosol (A1)	____ Sandy Redox (S5)	____ 2 cm Muck (A10)
____ Histic Epipedon (A2)	____ Stripped Matrix (S6)	____ 5 cm Mucky Peat or Peat (S3)
X Black Histic (A3)	____ Polyvalue Below Surface (S8)	____ Dark Surface (S7)
____ Hydrogen Sulfide (A4)	____ Thin Dark Surface (S9)	____ Polyvalue Below Surface (S8)
____ Stratified Layers (A5)	____ Loamy Mucky Mineral (F1)	____ Thin Dark Surface (S9)
____ Depleted Below Dark Surface (A11)	____ Loamy Gleyed Matrix (F2)	____ Iron-Manganese Masses (F12)
____ Thick Dark Surface (A12)	____ Depleted Matrix (F3)	____ Mesic Spodic (A17)
____ Sandy Mucky Mineral (S1)	____ Redox Dark Surface (F7)	____ Red Parent Material (F21)
____ Sandy Gleyed Matrix (S4)	____ Depleted Dark Surface (F8)	____ Very Shallow Dark Surface (TF12)
____ Dark Surface (S7)		____ Other (Include Explanation in Remarks)

Restrictive Layer (if observed) Type: _____ Depth (inches): _____

Remarks:

Hydric Soils criterion met? Yes X No _____

BORDERING VEGETATED WETLAND DETERMINATION FORM

Project/Site: S. Valley Rd/Cadwell St/Jones Rd City/Town: Pelham Sampling Date: 3/13/2024

Applicant/Owner: Amherst Public Works Department Sampling Point or Zone: W4

Investigator(s): Sara Berryman Latitude/Longitude: 42.37773, -72.46976

Soil Map Unit Name: Hickley loamy sand, 8-15% slopes NWI or DEP Classification: N/A

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? (If yes, explain in Remarks)

Are Vegetation _____ , Soil_____ , or Hydrology _____ naturally problematic? (If yes, explain in Remarks)

SUMMARY OF FINDINGS – Attach site map and photograph log showing sampling locations, transects, etc.

Wetland vegetation criterion met?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soils criterion met?	Yes X No _____	
Wetlands hydrology present?	Yes X No _____	

Remarks, Photo Details, Flagging, etc.:

Flag series - W4-100 to W4-107

HYDROLOGY

Field Observations:		
Surface Water Present?	Yes _____ No X	Depth (inches) _____
Water Table Present?	Yes X No _____	Depth (inches) 2
Saturation Present (including capillary fringe)?	Yes X No _____	Depth (inches) 0

Wetland Hydrology Indicators

Reliable Indicators of Wetlands Hydrology	Indicators that can be Reliable with Proper Interpretation	Indicators of the Influence of Water
X Water-stained leaves	_____Hydrological records	____ Direct observation of inundation
_____ Evidence of aquatic fauna	X Free water in a soil test hole	X Drainage patterns
X Iron deposits	X Saturated soil	____ Drift lines
_____ Algal mats or crusts	_____Water marks	____ Scoured areas
X Oxidized rhizospheres/pore linings	_____Moss trim lines	____ Sediment deposits
_____ Thin muck surfaces	X Presence of reduced iron	____ Surface soil cracks
_____ Plants with air-filled tissue (aerenchyma)	_____Woody plants with adventitious roots	____ Sparsely vegetated concave surface
_____ Plants with polymorphic leaves	_____Trees with shallow root systems	X Microtopographic relief
_____ Plants with floating leaves	_____Woody plants with enlarged lenticels	X Geographic position (depression, toe of slope, fringing lowland)
_____ Hydrogen sulfide odor		

Remarks (describe recorded data from stream gauge, monitoring well, aerial photos, previous inspections, if available):

This form is only for BVW delineations. Other wetland resource areas may be present and should be delineated according to the applicable regulatory provisions.

Sampling Point W4

VEGETATION – Use both common and scientific names of plants.

Tree Stratum Plot size 30

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. Red maple	Acer rubrum	FAC	10	Yes	Yes
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					

15 = Total Cover

Shrub/Sapling Stratum Plot size 15

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. Red maple	Acer rubrum	FAC	20	Yes	Yes
2. American elm	Ulmus americana	FACW	20	Yes	Yes
3. Speckled alder	Alnus incana	FACW	15	Yes	Yes
4. Red-osier dogwood	Cornus alba	FACW	15	Yes	Yes
5.					
6.					
7.					
8.					
9.					

70 = Total Cover

Herb Stratum Plot size 5

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. Sensitive fern	Onoclea sensibilis	FACW	15	Yes	Yes
2. Wrinkle-leaved golden	Solidago rugosa	FAC	10	Yes	Yes
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					

25 = Total Cover

Sampling Point W4

VEGETATION – continued.

Woody Vine Stratum	Plot size 30				
Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. Multi-floral rose	Rosa multiflora	FACU	40	Yes	No
2.					
3.					
4.					
			40 = Total Cover		

Rapid Test:	Do all dominant species have an indicator status of OBL or FACW?			Yes _____ No X
Dominance Test:	Number of dominant species	Number of dominant species that are wetland indicator plants		Do wetland indicator plants make up ≥ 50% of dominant plant species? Yes X No _____
	8	6		
Prevalence Index:		Total % Cover (all strata)	Multiply by:	Result
	OBL species	0	X 1	= 0
	FACW species	65	X 2	= 130
	FAC species	30	X 3	= 90
	FACU species	40	X 4	= 160
	UPL species	0	X 5	= 0
	Column Totals	(A) 135		(B) 380
	Prevalence Index	B/A = 2.81		Is the Prevalence Index ≤ 3.0? Yes _____ No X
Wetland vegetation criterion met?		**Yes** X **No** _____		

Definitions of Vegetation Strata

Tree - Woody plants 3 in. (7.62 cm) or more in diameter at breast height (DBH), regardless of height

Shrub/Sapling - Woody plants less than 3 in. (7.62 cm) DBH and greater than or equal to 3.3 ft. (1 m) tall

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.3 ft. (1 m) tall

Woody vines - All woody vines greater than 3.3 ft. (1 m) in height

Cover Ranges	
Range	Midpoint
1-5 %	3.0 %
6-15 %	10.5 %
15-25 %	20.5 %
26-50 %	38.0 %
51-75 %	63.0 %
76-95 %	85.5 %
96-100 %	98.0 %

Sampling Point W4

SOIL

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Location[2]		
0-8	10YR 2/1	100					Muck	
8-10	10YR 5/1	100					VFSL	

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

Hydric Soil Indicators (Check all that apply)		**Indicators for Problematic Hydric Soils**
____ Histosol (A1)	____ Sandy Redox (S5)	____ 2 cm Muck (A10)
____ Histic Epipedon (A2)	____ Stripped Matrix (S6)	____ 5 cm Mucky Peat or Peat (S3)
____ Black Histic (A3)	____ Polyvalue Below Surface (S8)	____ Dark Surface (S7)
____ Hydrogen Sulfide (A4)	____ Thin Dark Surface (S9)	____ Polyvalue Below Surface (S8)
____ Stratified Layers (A5)	____ Loamy Mucky Mineral (F1)	____ Thin Dark Surface (S9)
X Depleted Below Dark Surface (A11)	____ Loamy Gleyed Matrix (F2)	____ Iron-Manganese Masses (F12)
____ Thick Dark Surface (A12)	____ Depleted Matrix (F3)	____ Mesic Spodic (A17)
____ Sandy Mucky Mineral (S1)	____ Redox Dark Surface (F7)	____ Red Parent Material (F21)
____ Sandy Gleyed Matrix (S4)	____ Depleted Dark Surface (F8)	____ Very Shallow Dark Surface (TF12)
____ Dark Surface (S7)		____ Other (Include Explanation in Remarks)

Restrictive Layer (if observed) Type: _____ Depth (inches): _____

Remarks:

Hydric Soils criterion met? Yes X No _____

BORDERING VEGETATED WETLAND DETERMINATION FORM

Project/Site: S. Valley Rd/Cadwell St/Jones Rd City/Town: Pelham Sampling Date: 4/16/2024

Applicant/Owner: Amherst Public Works Department Sampling Point or Zone: W5

Investigator(s): Sara Berryman Latitude/Longitude: 42.37540, -72.46586

Soil Map Unit Name: Hinckley loamy sand, 15-25% slopes NWI or DEP Classification: PFO1E/WS1

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? (If yes, explain in Remarks)

Are Vegetation _____ , Soil_____ , or Hydrology _____ naturally problematic? (If yes, explain in Remarks)

SUMMARY OF FINDINGS – Attach site map and photograph log showing sampling locations, transects, etc.

Wetland vegetation criterion met?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soils criterion met?	Yes X No _____	
Wetlands hydrology present?	Yes X No _____	

Remarks, Photo Details, Flagging, etc.:

Flag series - W5-100 to W5-109, W5-200 to W5-203

HYDROLOGY

Field Observations:		
Surface Water Present?	Yes _____ No X Depth (inches) _____	
Water Table Present?	Yes X No _____ Depth (inches) 3	
Saturation Present (including capillary fringe)?	Yes X No _____ Depth (inches) 0	

Wetland Hydrology Indicators

Reliable Indicators of Wetlands Hydrology	Indicators that can be Reliable with Proper Interpretation	Indicators of the Influence of Water
X Water-stained leaves	_____Hydrological records	____ Direct observation of inundation
_____ Evidence of aquatic fauna	X Free water in a soil test hole	X Drainage patterns
X Iron deposits	X Saturated soil	____ Drift lines
_____ Algal mats or crusts	_____Water marks	____ Scoured areas
X Oxidized rhizospheres/pore linings	_____Moss trim lines	____ Sediment deposits
_____ Thin muck surfaces	X Presence of reduced iron	____ Surface soil cracks
_____ Plants with air-filled tissue (aerenchyma)	_____Woody plants with adventitious roots	____ Sparsely vegetated concave surface
_____ Plants with polymorphic leaves	_____Trees with shallow root systems	X Microtopographic relief
_____ Plants with floating leaves	_____Woody plants with enlarged lenticels	X Geographic position (depression, toe of slope, fringing lowland)
_____ Hydrogen sulfide odor		

Remarks (describe recorded data from stream gauge, monitoring well, aerial photos, previous inspections, if available):

This form is only for BVW delineations. Other wetland resource areas may be present and should be delineated according to the applicable regulatory provisions.

Sampling Point W5

VEGETATION – Use both common and scientific names of plants.

Tree Stratum Plot size 30

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. Eastern hemlock	Tsuga canadensis	FACU	30	Yes	No
2. Red maple	Acer rubrum	FAC	25	Yes	No
3. White pine	Pinus strobus	FAC	15	Yes	Yes
4.					
5.					
6.					
7.					
8.					
9.					

70 = Total Cover

Shrub/Sapling Stratum Plot size 15

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. Red-osier dogwood	Cornus alba	FACW	20	Yes	Yes
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					

20 = Total Cover

Herb Stratum Plot size 5

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. Skunk cabbage	Symplocarpus foetidus	OBL	50	Yes	Yes
2. Sensitive fern	Onoclea sensibilis	FACW	30	Yes	Yes
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					

80 = Total Cover

Sampling Point W5

VEGETATION – continued.

Woody Vine Stratum	Plot size 30				
Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. Multi-floral rose	Rosa multiflora	FACU	10	Yes	No
2.					
3.					
4.					
			10 = Total Cover		

Rapid Test:	Do all dominant species have an indicator status of OBL or FACW?			Yes _____ No X
Dominance Test:	Number of dominant species	Number of dominant species that are wetland indicator plants		Do wetland indicator plants make up ≥ 50% of dominant plant species? Yes X No _____
	7	4		
Prevalence Index:		Total % Cover (all strata)	Multiply by:	Result
	OBL species	50	X 1	= 50
	FACW species	50	X 2	= 100
	FAC species	25	X 3	= 75
	FACU species	55	X 4	= 220
	UPL species	0	X 5	= 0
	Column Totals	(A) 180		(B) 445
	Prevalence Index	B/A = 2.47		Is the Prevalence Index ≤ 3.0? Yes _____ No X
Wetland vegetation criterion met?		**Yes** X **No** _____		

Definitions of Vegetation Strata

Tree - Woody plants 3 in. (7.62 cm) or more in diameter at breast height (DBH), regardless of height

Shrub/Sapling - Woody plants less than 3 in. (7.62 cm) DBH and greater than or equal to 3.3 ft. (1 m) tall

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.3 ft. (1 m) tall

Woody vines - All woody vines greater than 3.3 ft. (1 m) in height

Cover Ranges	
Range	Midpoint
1-5 %	3.0 %
6-15 %	10.5 %
15-25 %	20.5 %
26-50 %	38.0 %
51-75 %	63.0 %
76-95 %	85.5 %
96-100 %	98.0 %

Sampling Point W5

SOIL

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Location[2]		
0-5	10YR 2/1	100					Mucky minera	
5-10	10YR 4/2	60	10YR 5/8	10	C	M	VFSL	Prominent redo
	10YR 3/2	30						
10-17	10YR 3/1	90	10YR 5/3	10	C	M	Silt loam	Distinct redox

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

Hydric Soil Indicators (Check all that apply)		**Indicators for Problematic Hydric Soils**
____ Histosol (A1)	____ Sandy Redox (S5)	____ 2 cm Muck (A10)
____ Histic Epipedon (A2)	____ Stripped Matrix (S6)	____ 5 cm Mucky Peat or Peat (S3)
____ Black Histic (A3)	____ Polyvalue Below Surface (S8)	____ Dark Surface (S7)
____ Hydrogen Sulfide (A4)	____ Thin Dark Surface (S9)	____ Polyvalue Below Surface (S8)
____ Stratified Layers (A5)	____ Loamy Mucky Mineral (F1)	____ Thin Dark Surface (S9)
X Depleted Below Dark Surface (A11)	____ Loamy Gleyed Matrix (F2)	____ Iron-Manganese Masses (F12)
____ Thick Dark Surface (A12)	____ Depleted Matrix (F3)	____ Mesic Spodic (A17)
____ Sandy Mucky Mineral (S1)	____ Redox Dark Surface (F7)	____ Red Parent Material (F21)
____ Sandy Gleyed Matrix (S4)	____ Depleted Dark Surface (F8)	____ Very Shallow Dark Surface (TF12)
____ Dark Surface (S7)		____ Other (Include Explanation in Remarks)

Restrictive Layer (if observed) Type: _____ Depth (inches): _____

Remarks:

Hydric Soils criterion met? Yes X No _____

BORDERING VEGETATED WETLAND DETERMINATION FORM

Project/Site: S. Valley Rd/Cadwell St/Jones Rd City/Town: Pelham Sampling Date: 4/16/2024

Applicant/Owner: Amherst Public Works Department Sampling Point or Zone: W6

Investigator(s): Sara Berryman Latitude/Longitude: 42.37635, -72.46622

Soil Map Unit Name: Sudbury fine sandy loam, 3-8% slopes NWI or DEP Classification: PFO1E/WS1

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? (If yes, explain in Remarks)

Are Vegetation _____ , Soil_____ , or Hydrology _____ naturally problematic? (If yes, explain in Remarks)

SUMMARY OF FINDINGS – Attach site map and photograph log showing sampling locations, transects, etc.

Wetland vegetation criterion met?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soils criterion met?	Yes _____ No X	
Wetlands hydrology present?	Yes X No _____	

Remarks, Photo Details, Flagging, etc.:

Flag series - W6-100 to W6-108

HYDROLOGY

Field Observations:		
Surface Water Present?	Yes _____ No X	Depth (inches) _____
Water Table Present?	Yes X No _____	Depth (inches) 1
Saturation Present (including capillary fringe)?	Yes X No _____	Depth (inches) 0

Wetland Hydrology Indicators

Reliable Indicators of Wetlands Hydrology	Indicators that can be Reliable with Proper Interpretation	Indicators of the Influence of Water
X Water-stained leaves	_____Hydrological records	____ Direct observation of inundation
_____ Evidence of aquatic fauna	X Free water in a soil test hole	X Drainage patterns
X Iron deposits	X Saturated soil	____ Drift lines
_____ Algal mats or crusts	_____Water marks	____ Scoured areas
X Oxidized rhizospheres/pore linings	_____Moss trim lines	____ Sediment deposits
_____ Thin muck surfaces	X Presence of reduced iron	____ Surface soil cracks
_____ Plants with air-filled tissue (aerenchyma)	_____Woody plants with adventitious roots	____ Sparsely vegetated concave surface
_____ Plants with polymorphic leaves	_____Trees with shallow root systems	X Microtopographic relief
_____ Plants with floating leaves	_____Woody plants with enlarged lenticels	X Geographic position (depression, toe of slope, fringing lowland)
_____ Hydrogen sulfide odor		

Remarks (describe recorded data from stream gauge, monitoring well, aerial photos, previous inspections, if available):

This form is only for BVW delineations. Other wetland resource areas may be present and should be delineated according to the applicable regulatory provisions.

Sampling Point W6

VEGETATION – Use both common and scientific names of plants.

Tree Stratum Plot size 30

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. Eastern white pine	Pinus strobus	FACU	20	Yes	No
2. Red maple	Acer rubrum	FAC	20	Yes	Yes
3.					
4.					
5.					
6.					
7.					
8.					
9.					

40 = Total Cover

Shrub/Sapling Stratum Plot size 15

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					

_____ = Total Cover

Herb Stratum Plot size 5

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. Skunk cabbage	Symplocarpus foetidus	OBL	30	Yes	Yes
2. Sensitive fern	Onoclea sensibilis	FACW	20	Yes	Yes
3. Marsh-marigold	Caltha palustris	OBL	15	Yes	Yes
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					

65 = Total Cover

Sampling Point W6

VEGETATION – continued.

Woody Vine Stratum	Plot size 30				
Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. Multi-floral rose	Rosa multiflora	FACU	20	Yes	No
2.					
3.					
4.					
			20 = Total Cover		

Rapid Test:	Do all dominant species have an indicator status of OBL or FACW?			Yes _____ No X
Dominance Test:	Number of dominant species	Number of dominant species that are wetland indicator plants		Do wetland indicator plants make up ≥ 50% of dominant plant species? Yes X No _____
	6	4		
Prevalence Index:		Total % Cover (all strata)	Multiply by:	Result
	OBL species	45	X 1	= 45
	FACW species	20	X 2	= 40
	FAC species	20	X 3	= 60
	FACU species	40	X 4	= 160
	UPL species	0	X 5	= 0
	Column Totals	(A) 125		(B) 305
Prevalence Index		B/A = 2.44		Is the Prevalence Index ≤ 3.0? Yes X No _____
Wetland vegetation criterion met?		**Yes** X **No** _____		

Definitions of Vegetation Strata

Tree - Woody plants 3 in. (7.62 cm) or more in diameter at breast height (DBH), regardless of height

Shrub/Sapling - Woody plants less than 3 in. (7.62 cm) DBH and greater than or equal to 3.3 ft. (1 m) tall

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.3 ft. (1 m) tall

Woody vines - All woody vines greater than 3.3 ft. (1 m) in height

Cover Ranges	
Range	Midpoint
1-5 %	3.0 %
6-15 %	10.5 %
15-25 %	20.5 %
26-50 %	38.0 %
51-75 %	63.0 %
76-95 %	85.5 %
96-100 %	98.0 %

Sampling Point W6

SOIL

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Location[2]		
0-3	10YR 2/1	100					Mucky peat	
3-7	10YR 2/2	100					Sandy	

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

Hydric Soil Indicators (Check all that apply)		**Indicators for Problematic Hydric Soils**
____ Histosol (A1)	____ Sandy Redox (S5)	____ 2 cm Muck (A10)
____ Histic Epipedon (A2)	____ Stripped Matrix (S6)	____ 5 cm Mucky Peat or Peat (S3)
____ Black Histic (A3)	____ Polyvalue Below Surface (S8)	____ Dark Surface (S7)
____ Hydrogen Sulfide (A4)	____ Thin Dark Surface (S9)	____ Polyvalue Below Surface (S8)
____ Stratified Layers (A5)	____ Loamy Mucky Mineral (F1)	____ Thin Dark Surface (S9)
____ Depleted Below Dark Surface (A11)	____ Loamy Gleyed Matrix (F2)	____ Iron-Manganese Masses (F12)
____ Thick Dark Surface (A12)	____ Depleted Matrix (F3)	____ Mesic Spodic (A17)
____ Sandy Mucky Mineral (S1)	____ Redox Dark Surface (F7)	____ Red Parent Material (F21)
____ Sandy Gleyed Matrix (S4)	____ Depleted Dark Surface (F8)	____ Very Shallow Dark Surface (TF12)
____ Dark Surface (S7)		____ Other (Include Explanation in Remarks)

Restrictive Layer (if observed) Type: _____ Depth (inches): _____

Remarks:

Could not get below seven inches due to free water in hole washing away soil.

Hydric Soils criterion met? Yes _____ No X

BORDERING VEGETATED WETLAND DETERMINATION FORM

Project/Site: S. Valley Rd/Cadwell St/Jones Rd City/Town: Pelham Sampling Date: 4/16/2024

Applicant/Owner: Amherst Public Works Department Sampling Point or Zone: W7

Investigator(s): Sara Berryman Latitude/Longitude: 42.37529, -72.46794

Soil Map Unit Name: Hinckley loamy sand, 8-15% slopes NWI or DEP Classification: PFO1E/WS1

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? (If yes, explain in Remarks)

Are Vegetation _____ , Soil_____ , or Hydrology _____ naturally problematic? (If yes, explain in Remarks)

SUMMARY OF FINDINGS – Attach site map and photograph log showing sampling locations, transects, etc.

Wetland vegetation criterion met?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soils criterion met?	Yes _____ No X	
Wetlands hydrology present?	Yes X No _____	

Remarks, Photo Details, Flagging, etc.:

Flag series - W7-100 to W7-108

HYDROLOGY

Field Observations:		
Surface Water Present?	Yes X No _____	Depth (inches) 0
Water Table Present?	Yes X No _____	Depth (inches) 0
Saturation Present (including capillary fringe)?	Yes X No _____	Depth (inches) 0

Wetland Hydrology Indicators

Reliable Indicators of Wetlands Hydrology	Indicators that can be Reliable with Proper Interpretation	Indicators of the Influence of Water
X Water-stained leaves	_____Hydrological records	X Direct observation of inundation
_____ Evidence of aquatic fauna	X Free water in a soil test hole	X Drainage patterns
X Iron deposits	X Saturated soil	____ Drift lines
_____ Algal mats or crusts	_____Water marks	____ Scoured areas
X Oxidized rhizospheres/pore linings	_____Moss trim lines	____ Sediment deposits
_____ Thin muck surfaces	X Presence of reduced iron	____ Surface soil cracks
_____ Plants with air-filled tissue (aerenchyma)	_____Woody plants with adventitious roots	____ Sparsely vegetated concave surface
_____ Plants with polymorphic leaves	_____Trees with shallow root systems	X Microtopographic relief
_____ Plants with floating leaves	_____Woody plants with enlarged lenticels	X Geographic position (depression, toe of slope, fringing lowland)
_____ Hydrogen sulfide odor		

Remarks (describe recorded data from stream gauge, monitoring well, aerial photos, previous inspections, if available):

This form is only for BVW delineations. Other wetland resource areas may be present and should be delineated according to the applicable regulatory provisions.

Sampling Point W7

VEGETATION – Use both common and scientific names of plants.

Tree Stratum Plot size 30

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. Red maple	Acer rubrum	FAC	20	Yes	Yes
2. Weeping willow	Salix alba	FACW	15	Yes	Yes
3. Pussy willow	Salix discolor	FACW	15	Yes	Yes
4.					
5.					
6.					
7.					
8.					
9.					

50 = Total Cover

Shrub/Sapling Stratum Plot size 15

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					

_____ = Total Cover

Herb Stratum Plot size 5

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. Tussock sedge	Carex stricta	OBL	70	Yes	Yes
2. Sensitive fern	Onoclea sensibilis	FACW	30	Yes	Yes
3. Rattlesnake grass	Glyceria canadensis	OBL	5	No	Yes
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					

105 = Total Cover

Sampling Point W7

VEGETATION – continued.

Woody Vine Stratum	Plot size 30				
Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. Multi-floral rose	Rosa multiflora	FACU	20	Yes	No
2.					
3.					
4.					
			20 = Total Cover		

Rapid Test:	Do all dominant species have an indicator status of OBL or FACW?			Yes _____ No X
Dominance Test:	Number of dominant species	Number of dominant species that are wetland indicator plants		Do wetland indicator plants make up ≥ 50% of dominant plant species? Yes X No _____
	6	5		
Prevalence Index:		Total % Cover (all strata)	Multiply by:	Result
	OBL species	75	X 1	= 75
	FACW species	60	X 2	= 120
	FAC species	20	X 3	= 60
	FACU species	20	X 4	= 80
	UPL species	0	X 5	= 0
	Column Totals	(A) 175		(B) 335
	Prevalence Index	B/A = 1.91		Is the Prevalence Index ≤ 3.0? Yes _____ No X
Wetland vegetation criterion met?		**Yes** X **No** _____		

Definitions of Vegetation Strata

Tree - Woody plants 3 in. (7.62 cm) or more in diameter at breast height (DBH), regardless of height

Shrub/Sapling - Woody plants less than 3 in. (7.62 cm) DBH and greater than or equal to 3.3 ft. (1 m) tall

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.3 ft. (1 m) tall

Woody vines - All woody vines greater than 3.3 ft. (1 m) in height

Cover Ranges	
Range	Midpoint
1-5 %	3.0 %
6-15 %	10.5 %
15-25 %	20.5 %
26-50 %	38.0 %
51-75 %	63.0 %
76-95 %	85.5 %
96-100 %	98.0 %

Sampling Point W7

SOIL

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Location[2]		
0-2	10YR 2/1	100					Mucky minera	
2-7	10YR 3/2	100					VFSL	

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

Hydric Soil Indicators (Check all that apply)		**Indicators for Problematic Hydric Soils**
____ Histosol (A1)	____ Sandy Redox (S5)	____ 2 cm Muck (A10)
____ Histic Epipedon (A2)	____ Stripped Matrix (S6)	____ 5 cm Mucky Peat or Peat (S3)
____ Black Histic (A3)	____ Polyvalue Below Surface (S8)	____ Dark Surface (S7)
____ Hydrogen Sulfide (A4)	____ Thin Dark Surface (S9)	____ Polyvalue Below Surface (S8)
____ Stratified Layers (A5)	____ Loamy Mucky Mineral (F1)	____ Thin Dark Surface (S9)
____ Depleted Below Dark Surface (A11)	____ Loamy Gleyed Matrix (F2)	____ Iron-Manganese Masses (F12)
____ Thick Dark Surface (A12)	____ Depleted Matrix (F3)	____ Mesic Spodic (A17)
____ Sandy Mucky Mineral (S1)	____ Redox Dark Surface (F7)	____ Red Parent Material (F21)
____ Sandy Gleyed Matrix (S4)	____ Depleted Dark Surface (F8)	____ Very Shallow Dark Surface (TF12)
____ Dark Surface (S7)		____ Other (Include Explanation in Remarks)

Restrictive Layer (if observed) Type: _____ Depth (inches): _____

Remarks:

Could not get below six inches due to free water in hole washing away soil.

Hydric Soils criterion met? Yes _____ No X

ATTACHMENT C

NRCS WEB SOIL SURVEY MAP

Soil Map—Hampden and Hampshire Counties, Massachusetts, Eastern Part
(South Valley Rd., Cadwell St., Jones Rd. - Pelham, MA)

Map Scale: 1:3,930 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:25,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Hampden and Hampshire Counties, Massachusetts, Eastern Part
Survey Area Data: Version 18, Sep 10, 2023

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

Date(s) aerial images were photographed: Oct 15, 2020—Oct 31, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

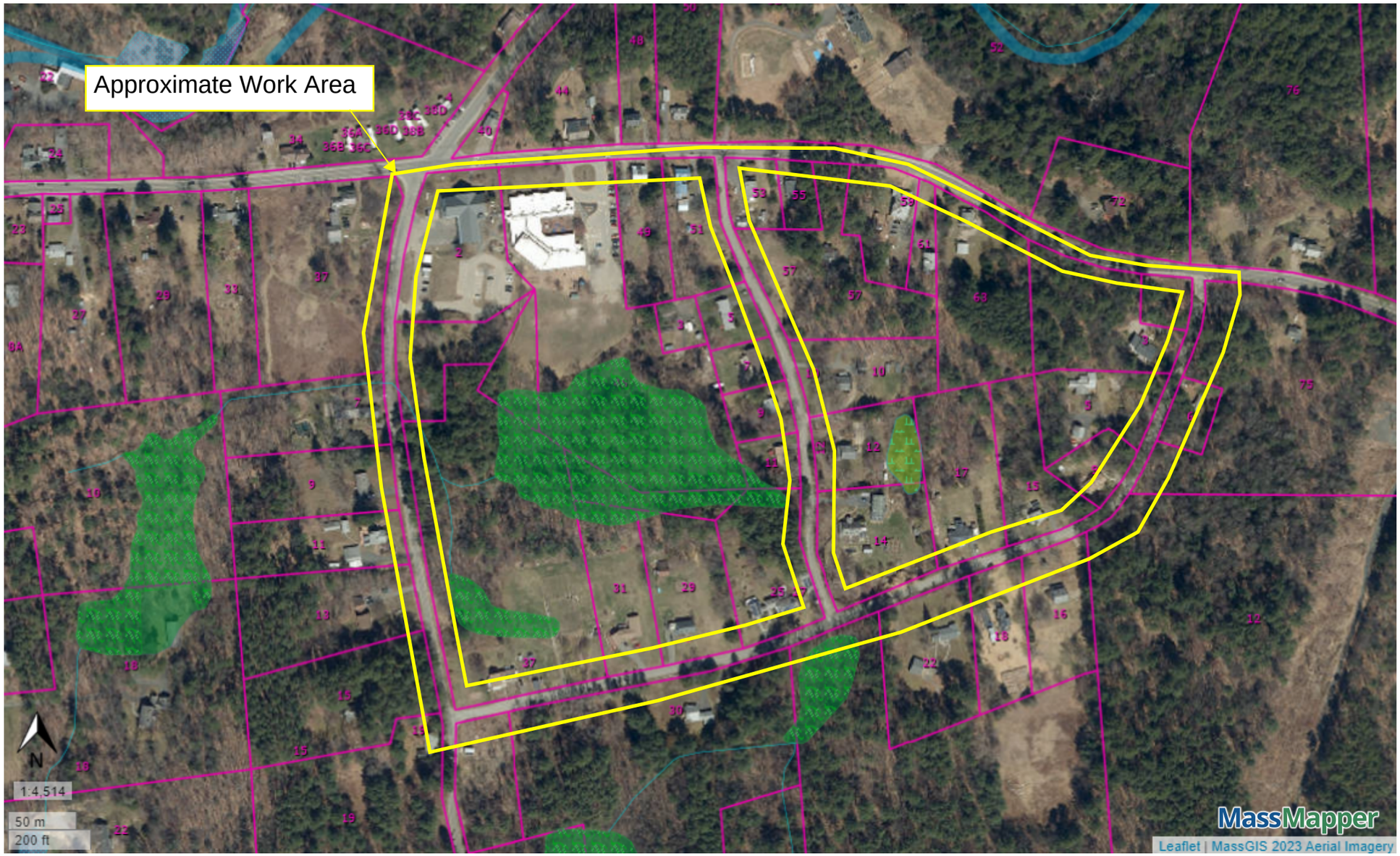
Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
103C	Charlton-Hollis-Rock outcrop complex, 8 to 15 percent slopes	1.7	14.6%
253B	Hinckley loamy sand, 3 to 8 percent slopes	0.7	6.2%
253C	Hinckley loamy sand, 8 to 15 percent slopes	5.8	49.8%
253D	Hinckley loamy sand, 15 to 25 percent slopes	2.1	17.9%
260B	Sudbury fine sandy loam, 3 to 8 percent slopes	0.8	6.5%
317D	Scituate fine sandy loam, 15 to 25 percent slopes, extremely stony	0.0	0.1%
440B	Gloucester gravelly fine sandy loam, 3 to 8 percent slopes	0.6	4.8%
Totals for Area of Interest		**11.7**	**100.0%**

ATTACHMENT D

MASSDEP MASSMAPPER RESOURCES MAP

Amherst Delineation Resources Map



DEP Wetlands Hydrologic Connections

NWI Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Riverine
- Other

DEP Wetlands Detailed With Outlines

- Barrier Beach System
- Barrier Beach-Deep Marsh
- Barrier Beach-Wooded Swamp Mixed Trees
- Barrier Beach-Coastal Beach
- Barrier Beach-Coastal Dune
- Barrier Beach-Marsh
- Barrier Beach-Salt Marsh
- Barrier Beach-Shrub Swamp
- Barrier Beach-Wooded Swamp Coniferous
- Barrier Beach-Wooded Swamp Deciduous
- Bog
- Coastal Bank Bluff or Sea Cliff
- Coastal Beach
- Coastal Dune
- Cranberry Bog
- Deep Marsh
- Barrier Beach-Open Water
- Open Water
- Rocky Intertidal Shore
- Salt Marsh
- Shallow Marsh Meadow or Fen
- Shrub Swamp
- Tidal Flat
- Wooded Swamp Coniferous
- Wooded Swamp Deciduous
- Wooded Swamp Mixed Trees

Property Tax Parcels