Massachusetts Inland Resource Area Delineation Report

Resource Area Description

Report Date: November 22, 2021

Prepared For: Town of South Hadley, Massachusetts
116 Main Street
South Hadley, MA 01075

Project number: 20170390.V30

Site Address/Location: Titus Pond, and Buttery Brook to daylighted reach located below Joffre Avenue
42.233578° N, -72.585406°W

Inspection Dates: October 18 and 21, 2021

Regulated Inland Wetland Resource Areas:

- ☒ Bank
- ☒ Land Under Water Bodies and Waterways
- ☐ Riverfront Area
- ☒ Buffer Zone
- ☐ Vernal Pool (Certified and/or Potential)
- ☒ Bordering Vegetated Wetland (BVW)
- ☐ Land Subject to Flooding (BLSF/ILSF)
- ☐ Estimated Habitats of Rare Wildlife
- ☐ Priority Habitats of Rare Species

Delineated Resource Area Field Numbering Sequence [see Attachment, *Sketch Map of Inland Resource Areas*]:

Flag Series
Bank/LUWW: A100-A153, C300-C313, D400-D411, E500-E556, F600-F656, G700-G708, H800-H812

BVW: I900-I908, J100-J107, K200-K213, L300-L313, M400-M406, N500-N514, P600-P613, Q700-Q702, R800-R815

Inland resource areas were delineated in accordance with applicable local, state and federal statutes, as detailed within the Resource Area Description attachment. This delineation does not constitute an official wetland boundary until such time as it is accepted and approved by local, state or federal regulatory agencies.

The wetlands delineation was conducted by:

Michael E. Soares
Wetlands Scientist

ATTACHMENTS

- Resource Areas Description
- Sketch Map of Inland Resource Areas
- *Resource Areas Mapped by the State of Massachusetts*
- MassDEP Bordering Vegetated Wetland Delineation Field Data Forms
- US Army Corps of Engineers Wetland Determination Data Forms
- USGS StreamStats Report
- NRCS Soil Map and Soil Report
- Site Photographs
- Explanation of Terms Used in Wetlands Function and Values

Introduction

Fuss & O'Neill Inc. performed a wetland resource area field inspection and delineation of a project area containing Titus Pond, a reach of Buttery Brook, and related wetland resource areas near Newton Street (MA-116) in South Hadley, Massachusetts ("Site"). The field inspection and delineation occurred on October 18 and 21, 2021. The purpose of the delineation was to locate the jurisdictional limits of areas regulated under the Wetlands Protection Act (M.G.L. c. 131 sec. 40) and associated Wetlands Protection Act Regulations (310 CMR 10).

The following inland wetland resource areas were identified and delineated at the Site during the field investigation: Bank, Land under Water Bodies and Waterways (LUWW), Bordering Vegetated Wetland (BVW), and Bordering Land Subject to Flooding (BLSF). Consecutively numbered flags were placed in the field to demarcate these resource area boundaries. These resource area boundary flags were then located via sub-meter GPS. Where applicable, state-regulated Riverfront Area is measured horizontally from the Banks of perennial streams; while Buttery Brook is perennial downstream of the confluence with Judd Brook, the reach of Buttery Brook within the project area is mapped by USGS as intermittent. This designation was confirmed when the local drainage area and 99-percent flow duration were calculated at the most downstream point of the brook within the project area (see Attachment *USGS StreamStats Report*). State-regulated Buffer Zone is measured horizontally from the boundaries of BVW or Banks of Titus Pond and the unnamed intermittent stream east of Titus Pond. In addition, the bylaws of the Town of South Hadley (§ 240-3) establish a 50-foot "conservation zone" for areas that are "adjacent to any freshwater wetland, bank, or water body, but not including lands subject to flooding or inundation by groundwater or surface water, and the two-hundred-foot riverfront area. The conservation zone shall not apply to artificially created stormwater management structures such as detention and retention basins, artificially lined ponds, and constructed wastewater treatment lagoons." Bank was determined at the Site to be coincident with the Mean Annual High Water Line (MAHWL).

Maps retrieved from MassGIS (http://maps.massgis.state.ma.us/map_ol/oliver.php) were used to determine if specific regulated inland wetland resources have been mapped and/or documented at the Site. MassGIS mapping does not depict Massachusetts Natural Heritage and Endangered Species Program (NHESP) Priority Habitats of Rare Species, Estimated Habitats of Rare Wildlife, or Certified Vernal Pools at the Site (see Attachment, *Resource Areas Mapped by the State of Massachusetts*). A description of each resource area present at the Site is provided below.

In addition to the field delineation of resource areas, an inspection of Titus Pond, Buttery Brook and the surrounding habitats was conducted. Titus Pond is an impoundment of approximately 1.5 acres that was created by the construction of Queensville Dam, over which Newton Street (MA-116) passes. Titus Pond is relatively shallow around its perimeter and, based on a separate bathymetric inspection, is approximately 7 feet deep at its center. Wildlife observed in and around the pond includes [common name/*scientific name*]: raccoon/*Procyon* lotor (tracks), woodland vole/*Microtus pennsylvanicus*, green frogs/*Lithobates clamitans*, American toad/*Anaxyrus amaericanus*, Canada geese/*Branta canadensis*, mallard ducks/*Anas platyrhynchos*, birds common to backyards and riparian areas, and an unknown fish species. Banks of the pond are well-vegetated, though most of the adjacent uplands consist of pavement, structures, or turfgrass.

Downstream of Titus Pond, Buttery Brook is mapped as an intermittent watercourse that flows in a south-southwesterly direction through the project area. Bankfull width of the brook ranges from 7 to 16 feet with moderately to steeply sloping banks. The banks of Buttery Brook are mostly well vegetated, and some undercutting was observed. While undercutting of the banks appears to be normal, a few locations of active

erosion and bank/slope instability were observed in the project area. Composition of the brook substrate is primarily sand and silt with a minor fraction of gravel in areas where erosion/undercutting is proximate. Flow in Buttery Brook is moderate to slow with few grade-control structures or corresponding riffle-pool habitats. Buttery Brook is not mapped as a cold-water fishery by the Department of Fish and Wildlife; culverts in the project area are either perched, clogged, collapsing, or having such a steep gradient as to make aquatic passage impossible or very unlikely. Through most of the project area, the brook is bordered by freshwater forested and scrub-shrub wetlands. Wildlife observed near the brook includes [common name/*scientific name*]: raccoon(tracks), beaver/*Castor canadensis* (chewed stumps/branches and dam in the reach south of Joffre Avenue), opossum/*Didelphis virginianus* (tracks), green frogs, and birds common to backyards and riparian areas.

Resource Areas

Bank: Regulatory Framework and Delineation Methodology

Bank is defined under 310 CMR 10.54(2)(c) as "*the portion of the land surface which normally abuts and confines a water body. It occurs between a water body and a vegetated bordering wetland and adjacent flood plain, or, in the absence of these, it occurs between a water body and an upland*." Fuss & O'Neill Inc. performed a delineation of Bank within the area of interest using consecutively numbered flags placed in the field to demarcate Bank around Titus Pond, an unnamed intermittent stream east of the pond, and along the reach of Buttery Brook downstream of the pond (ending approximately 2,000 feet downstream of the Queensville Dam, which impounds Titus Pond). Two segments of Buttery Brook are buried: immediately downstream of Titus Pond and under Joffre Avenue (230± and 650± feet in length, respectively). Due to the their lengths in excess of 200 feet, banks not were not delineated in these segments (310 CMR 10.58(2)(a)(3)(c)).

Bank: Resource Description

Bank was located in the field by the first observable break in topography between the waterbodies or waterways and adjacent upland. The delineated Bank was observed to coincide with the MAHWL, as defined under 310 CMR 10.58 (2)(a)(2).

Land under Water Bodies and Waterways (LUWW)

LUWW is defined under 310 CMR 10.56 (2)(a) as "*the 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 LUWW is defined as the mean annual low water level (310 CMR 10.56 (2)(c). LUWW was not specifically field delineated. For the intents and purposes of this resource area delineation, the delineated Bank is analogous to the limit of LUWW.

The limits of Bank/LUWW were delineated at the Site by the following flag series: A100-A153, C300-C313, D400-D411, E500-E556, F600-F656, G700-G708, H800-H812

Bordering Vegetated Wetlands (BVW): Regulatory Framework and Delineation Methodology

As stated in 310 CMR (2)(a), "*Bordering Vegetated Wetlands are 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. The ground and surface water regime and the vegetation community which occur in each type of freshwater wetland are specified in M.G.L. c 131 sec. 40."

Fuss & O'Neill Inc. inspected the Site for bordering vegetated wetlands in accordance with methodology provided in the Massachusetts DEP (MA DEP) handbook, *Delineating Bordering Vegetated Wetlands under the Massachusetts Wetlands Protection Act*, (March 1995), the 1987 *Corps of Engineers Wetlands Delineation Manual*, and the *Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Northcentral and Northeast Region* (Version 2.0. January 2012). Data regarding vegetation, soils, and hydrology were gathered to complete the required MA DEP BVW delineation field forms. Wetlands are categorized in accordance with *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979). See *Table 1: Summary of delineated wetlands* for a list of the delineated wetlands, along with their corresponding resource types and wetland classifications.

Hydric soil determinations were made in accordance with *Field Indicators for Identifying Hydric Soils in New England* (NEIWPCC, 2004). The Wetland Indicator Status for plant species was ascertained using the USACE *Northcentral and Northeast 2014 Regional Wetland Plant List* (Lichvar et al., 2014).

Flag series	Wetland resource type	Wetland classification*
B200-B215	BVW	PFO1E
I900-I908	BVW	PSS1E/ PFO1E
J100-J107	BVW	PEM1E
K200-K213	BVW	PSS1E/ PFO1E
L300-L337	BVW	PFO1E & PEM1E
M400-M406	BVW	PEM1E
N500-N514	BVW	PFO1E
P600-P613	BVW	PSS1E/ PEM1E
Q700-Q702	BVW	PFO1E
R800-R815	BVW	PSS1E/ PFO1E

Table 1. Summary of delineated wetlands. Wetland Resource Type was determined according to the methodology described previously. *US Fish and Wildlife Service wetland classification system (after Cowardin, et al., 1979). Wetlands classifications shown are based on field observation and not from USFWS.

BVW: Resource Area Description

Vegetation

BVW identified at the Site are classified primarily as combinations of palustrine forested, scrub-shrub, and emergent wetlands. Common vegetation identified within the palustrine forested wetlands includes [common name/*scientific name* (indicator status)]: red maple/*Acer rubrum* (FAC), slippery elm/*Ulmus americana* (FACW), American ash/*Fraxinus americana* (FACU), silver maple/*Acer saccharinum* (FACW), eastern cottonwood/*Populus deltoides* (FAC), norway maple/*Acer platanoides* (UPL), multiflora rose/*Rosa multiflora* (FACU), Japanese barberry/*Berberis thunbergia* (FACU), burning bush/*Euonymous alatus* (not classified), sensitive fern/*Onoclea sensibilis* (FACW), jewelweed/*Impatiens capensis* (FACW), skunk cabbage/*Symplocarpus foetidus* (FACW), and wrinkle-leaved goldernrod/*Solidago rugosa* (FAC).

Common vegetation identified within the palustrine scrub-shrub wetlands includes [common name/*scientific*

name (indicator status)]: red maple saplings, silky dogwood/*Swida amomum* (FACW), Tatarian honeysuckle/ *Lonicera tatarica* (FACU), wine raspberry/*Rubus phoenicolasius* (FACU), multiflora rose, black elderberry/ *Sabucus nigra* (FACW), Japanese barberry, sensitive fern, jewelweed/*Impatiens capensis* (FACW), and skunk cabbage.

Common vegetation identified within the palustrine emergent wetlands includes [common name/*scientific name* (indicator status)]: arrow-leaved tearthumb/*Persicaria sagittata* (OBL), common reed/*Phragmites australis* (FACW), jewelweed, and sensitive fern.

Hydrology

The Site is located within the local drainage basin of Buttery Brook, which joins the Connecticut River approximately 1.4 stream miles downstream of the project area. At the upstream end of the project area is Titus Pond, an impoundment 1.5± acres along the eastern side of Newton Street (MA-116). An unnamed intermittent stream flows into the easternmost end of the pond. The upstream reach of this stream was not inspected, as it is outside of the project area, though a review of mapping (MassGIS) for this area suggests that most of the surface water in this intermittent stream is stormwater. Buttery Brook begins at Titus Pond's outlet, located west of Newton Street. The project area contains a reach of Buttery Brook that is approximately 1,800 feet in length. The brook flows in an established channel that is contained within most of the project area by low-lying forested or scrub-shrub wetlands. Occasionally, secondary (i.e., overflow) channels within an adjacent BVW were observed. The area surrounding this reach of the brook is developed for residential and commercial uses, and it is presumed that much of the local stormwater drainage is discharged into the project area (outfalls were observed at road crossings and south of Berwyn Street). Downstream of the segment of the brook that is culverted under Joffre Avenue (650± feet in length), a beaver dam was found that moderately impedes flow and has led to sediment accumulation at the outlet – and possibly within the culvert (the culvert was mostly submerged at the time of the inspection). The dam, located approximately 200 feet downstream of the culvert's outlet, has an established spillway where the main channel for Buttery Brook re-forms.

Soils

Soil types mapped by the Natural Resource Conservation Service (NRCS) at the Site include: Boxford silt loam, Hinckley-Merrimac-Urban land complex, and Windsor-Scitico-Amostown complex. Detailed information regarding each of these soil series is included within the Attachment *NRCS Soil Map and Soil Report*. Results of the detailed field analyses of soils at the Site were generally consistent with the published NRCS soil mapping with minor exceptions.

Buffer Zone

Buffer Zone is defined in 310 CMR 10.04 as "*that area of land extending 100 feet horizontally outward from the boundary of any area specified in 310 CMR 10.02(1)(a)*." Buffer Zone within the project area is associated with wetlands resource areas delineated at the Site: Banks of Titus Pond, the unnamed intermittent stream and Buttery Brook; and BVW. Buffer Zone at the Site is comprised primarily of areas developed for residential and commercial uses, and secondly by deciduous forest in moderately sloped uplands. Portions of Buffer Zone contain one or more local roads. Common vegetation identified within the Buffer Zone includes [common name/*scientific name* (indicator status)]: red maple, Norway maple, American beech/*Fagus grnadfolia* (FACU), American ash, northern red oak/Quercus *rubra* (FACU), shagbark hiskory/ *Carya ovata* (FACU), black cherry/*Prunus serotina* (FACU), eastern white pine/*Pinus strobus* (FACU), multiflora rose,

Tatarian honeysuckle, Japanese barberry, burning bush, Asiatic bittersweet/*Celastrus orbiculatus (UPL),* poison ivy/*Toxicodendron radicans* (FAC), garlic mustard/*Alliaria petiolate (FACU), and* tall goldenrod*/Solidago altissima (FAC).*

Wetlands Functions & Values Assessment

During the field inspection, a function & values assessment was conducted of the wetland resource areas delineated in the project area. The assessment is largely based on the procedure outlined in the U.S. Army Corps of Engineers "Highway Methodology Work Book: Supplement. Wetland Functions and Values: A Descriptive Approach" (1999, NAEEP-360-1-30a). This methodology is descriptive and does not rely upon semi-quantitative numerical models to identify principal functions and values. In addition, other assessment methods were incorporated (e.g. Wisc. DNR, 1992, "Rapid Assessment Methodology for Evaluating Wetland functions and Values." and Ammann, et al., 1996) as well as professional experience.

Table 2 provides a summary of the principal and secondary functions and values identified for each resource area in the project area. Definitions for the primary and secondary functions and values listed below can be found in the Attachment *Explanation of Terms Used in Wetlands Function and Values.*

	Wetland Resource Areas												
	A	**B**	**C/D**	**E/F**	**G/H**	**I**	**J**	**K**	**L**	**M**	**N**	**P**	**Q/R**
Resource Area Type	Bank/ LUWW	BVW	Bank/ LUWW	Bank/ LUWW	Bank/ LUWW	BVW	BVW	BVW	BVW	BVW	BVW	BVW	BVW
Groundwater Recharge/Discharge	*n/a*	S (R)	*n/a*	*n/a*	*n/a*	S	P (R)	P (R)	S (R,D)	-	-	-	-
Floodflow Alteration	*n/a*	P	*n/a*	*n/a*	*n/a*	S	P	P	P	P	P	P	P
Fish and Shellfish Habitat	S	*n/a*	-	-	-	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*
Sediment, Pollutant, & Nutrient Removal	*n/a*	P	*n/a*	*n/a*	*n/a*	S	P	P	P	-	-	S	P
Production Export	*n/a*	P	*n/a*	*n/a*	*n/a*	S	P	P	P	P	P	P	P
Wildlife Habitat	*n/a*	S	*n/a*	*n/a*	*n/a*	-	S	P	S	P	P	P	P
Educational, Scientific, & Recreation Value	S	S	-	-	-	-	-	-	-	-	-	-	-
Uniqueness/Heritage	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 2. Summary of wetlands functions & values assessments. Assessments conducted in the field yielded the identification of resource areas as having Principal ("P") or Secondary ("S") functions or values. "-" indicates an assessment was conducted and no functions or values were identified. Wetlands Resource Areas are identified by the flag series used in the field and depicted on the Attachment *Sketch Map of Inland Resource Areas.*

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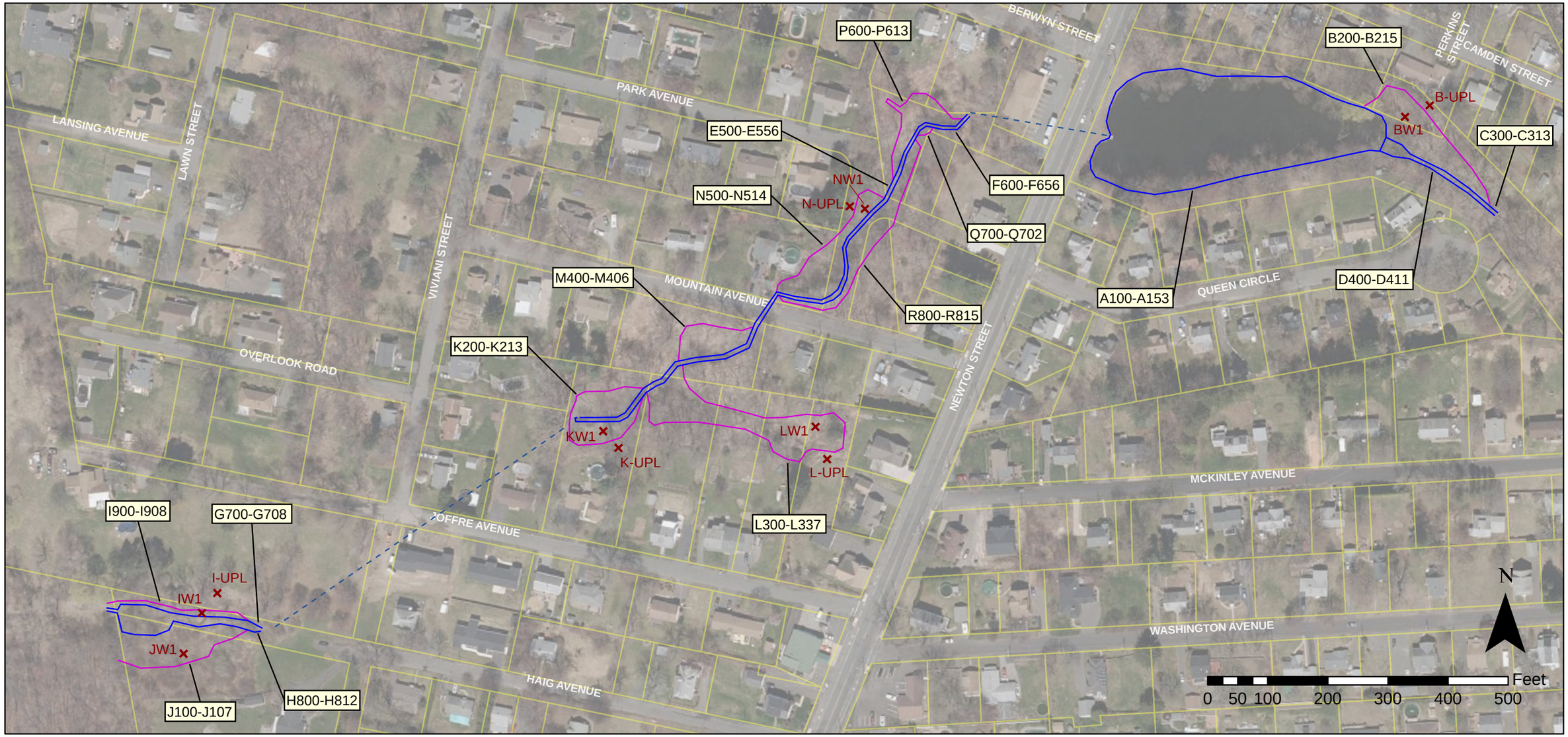
Sketch Map of Inland Resource Areas



SKETCH MAP OF INLAND RESOURCE AREAS
Titus Pond and Buttery Brook

South Hadley Massachusetts

Project #: 20170390.V30
November 2021

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LEGEND

Flag series and related wetland resource area

Bank: A100-A153, C300-C313, D400-D411, E500-E556, F600-F656, G700-G708, H800-H812

BWW: I900-I908, J100-J107, K200-K213, L300-L313, M400-M406, N500-N514, P600-P613, Q700-Q702, R800-R815

Sampling plot location

Buried segment of Buttery Brook

Wetland resource areas depicted in this sketch were identified and delineated in the field by Michael E. Soares, Wetlands Scientist (Fuss & O'Neill) on October 18 and 21, 2021.

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Resource Areas Mapped by the State of Massachusetts

South Hadley, MA

Image obtained from MassGIS OLIVER (http://maps.massgis.state.ma.us/map_ol/oliver.php) on 10/ 29/2021.

MassDEP Bordering Vegetated Wetlands Delineation Field Data Forms

MassDEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Fuss & O'Neill, Inc

Applicant: Town of South Hadley Prepared by: (Michael Soares, Wetlands Sci.) Project location: 42.23358° N, -72.58541°W DEP File #: _____

Check all that apply:

- ❑ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only
- ☒ Vegetation and other indicators of hydrology usedto delineateBVW boundary: fill out Sections I and II
- ❑ Method other than dominance test used (attach additional information)

Section I.

Vegetation	Observation Plot Number: BW1		Transect Number: 1	Date of Delineation: 10/21/21
A. Sample Layer & Plant Species (by common/scientific name)	B. Percent Cover (or basal Area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees				
Eastern cottonwood/*Populus deltoides*	38.0	42.1	yes	FAC*
Silver maple/*Acer saccharinum*	20.5	22.8	yes	FACW*
Red maple/*Acer rubrum*	10.5	11.7	no	FAC*
Norway maple/*Acer platanoides*	10.5	11.7	no	UPL
Slippery elm/*Ulmus americana*	10.5	11.7	no	FACW*
Shrubs/Saplings				
Red maple/*Acer rubrum*	10.5	35	yes	FAC*
Multiflora rose/*Rosa multiflora*	10.5	35	yes	FACU
Japanese barberry/*Berberis thunbergii*	3.0	10	no	FACU
Silky dogwood/*Swida amomum*	3.0	10	no	FACW*
Burning bush/*Euonymous alatus*	3.0	10	no	*not classified*
Herbaceous				
Jewelweed/*Impatiens capensis*	20.5	87.2	yes	FACW*
Sensitive fern/*Onoclea sensibilis*	3.0	12.8	no	FACW*

* *Use an asterisk to mark wetland indicator plants: plant species listed in the Wetlands Protection Act (MGL c.131, s.40); plants in the genus Sphagnum; plants listed as FAC, FAC+, FACW-, FACW, FACW+, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.*

Vegetation conclusion:

Number of dominant wetland indicator plants: 5 Number of dominant non-wetland indicator plants: 1

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants? yes no

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? yes no
title/date: Hampshire County, Massachusetts, Central Part
map number: MA609
soil type mapped: Hinckley-Merrimac-Urban land complex
hydric soil inclusions: not hydric

Are field observations consistent with soil survey? yes no
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
Oa	0-13	7.5YR 3/1 (mucky sand)	
B	13-19	10YR 6/2 (loamy sand)	
C	19-23	5Y 5/2 (loamy sand)	

Remarks:

3. Other:

Conclusion: Is soil hydric? yes no

Other Indicators of Hydrology: (check all that apply & describe)

- ❑ Site Inundated: _____
- ☒ Depth to free water in observation hole: 12"
- ☒ Depth to soil saturation in observation hole: at surface
- ☒ Water marks: _____
- ❑ Drift lines: _____
- ❑ Sediment Deposits: _____
- ☒ Drainage patterns in BVW: _____
- ❑ Oxidized rhizospheres: _____
- ☒ Water-stained leaves: _____
- ❑ Recorded Data (streams, lake, or tidal gauge; aerial photo; other): _____
- ❑ Other: _____

Vegetation and Hydrology Conclusion

	Yes	No
Number of wetland indicator plants ≥ # of non-wetland indicator plants	X	
Wetland hydrology present:		
Hydric soil present	X	
Other indicators of hydrology present	X	
Sample location is in a BVW	X	

Submit this form with the Request for Determination of Applicability or Notice of Intent.

MassDEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Fuss & O'Neill, Inc

Applicant: Town of South Hadley Prepared by: (Michael Soares, Wetlands Sci.) Project location: 42.23358° N, -72.58541°W DEP File #: _____

Check all that apply:

- ❑ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only
- ☒ Vegetation and other indicators of hydrology usedto delineateBVW boundary: fill out Sections I and II
- ❑ Method other than dominance test used (attach additional information)

Section I.

Vegetation	Observation Plot Number: B-UPL		Transect Number: 2	Date of Delineation: 10/21/21
A. Sample Layer & Plant Species (by common/scientific name)	B. Percent Cover (or basal Area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees				
Norway maple/*Acer platanoides*	38.0	58.4	yes	UPL
Northern red oak/Quercus *rubra*	10.5	16.2	no	FACU
Slippery elm/*Ulmus americana*	10.5	16.2	no	FACW*
American ash/*Fraxinus americana*	3.0	4.6	no	FACW*
Black cherry/*Prunus serotina*	3.0	4.6	no	FACU
Shrubs/Saplings				
Multiflora rose/*Rosa multiflora*	20.5	66.1	yes	FACU
Burning bush/*Euonymous alatus*	10.5	33.9	yes	*not classified*
Herbaceous				
Pachysandra/*Pachysandra terminalis*	10.5	100	yes	*not classified*
Vines				
Asiatic bittersweet/*Celastrus orbiculatus*	20.5	66.1	yes	UPL
Fox grape/*Vitis labrusca*	10.5	33.9	yes	FACU

* *Use an asterisk to mark wetland indicator plants: plant species listed in the Wetlands Protection Act (MGL c.131, s.40); plants in the genus Sphagnum; plants listed as FAC, FAC+, FACW-, FACW, FACW+, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.*

Vegetation conclusion:

Number of dominant wetland indicator plants: 1 Number of dominant non-wetland indicator plants: 4

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants? yes no

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? [yes] no
title/date: Hampshire County, Massachusetts, Central Part
map number: MA609
soil type mapped: Hinckley-Merrimac-Urban land complex
hydric soil inclusions: not hydric

Are field observations consistent with soil survey? [yes] no
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
Oe	0-1		
A	1-13	7.5YR 3/2 (fine sandy loam)	
Bw1	13-22	7.5YR 3/2 (fine sandy loam)	10YR 4/6
Bw2	22-27	7.5YR 4/6 (fine sandy loam)	7.5YR 3/2

3. Other:

Conclusion: Is soil hydric? yes [no]

Other Indicators of Hydrology: (check all that apply & describe)

- ❑ Site Inundated: _____
- ❑ Depth to free water in observation hole: _____
- ❑ Depth to soil saturation in observation hole: _____
- ❑ Water marks: _____
- ❑ Drift lines: _____
- ❑ Sediment Deposits: _____
- ❑ Drainage patterns in BVW: _____
- ❑ Oxidized rhizospheres: _____
- ❑ Water-stained leaves: _____
- ❑ Recorded Data (streams, lake, or tidal gauge; aerial photo; other):
  _____
  _____
  _____
- ❑ Other: _____

Vegetation and Hydrology Conclusion

	Yes	[No]
Number of wetland indicator plants ≥ # of non-wetland indicator plants	____	**X**
Wetland hydrology present:		
Hydric soil present	____	**X**
Other indicators of hydrology present	____	**X**
Sample location is in a BVW	____	**X**

Submit this form with the Request for Determination of Applicability or Notice of Intent.

MassDEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Fuss & O'Neill, Inc

Applicant: Town of South Hadley Prepared by: (Michael Soares, Wetlands Sci.) Project location: 42.23358° N, -72.58541°W DEP File #: _____

Check all that apply:

- ❑ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only
- ☒ Vegetation and other indicators of hydrology usedto delineateBVW boundary: fill out Sections I and II
- ❑ Method other than dominance test used (attach additional information)

Section I.

Vegetation	Observation Plot Number: IW1		Transect Number: 1	Date of Delineation: 10/21/21
A. Sample Layer & Plant Species (by common/scientific name)	B. Percent Cover (or basal Area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Shrubs/Saplings				
Silky dogwood/*Swida amomum*	38.0	61.4	yes	FACW*
Black elderberry/*Sabucus nigra*	10.5	16.9	no	FACW*
Black locust/*Robinia pseudoacacia*	10.5	16.9	no	FACU
Tatarian honeysuckle/*Lonicera tatarica*	3.0	4.8	no	FACU
Herbaceous				
Wrinkle-leaved goldernrod/*Solidago rugosa*	10.5	77.8	yes	FAC*
Wine raspberry/*Rubus phoenicolasius*	3.0	22.2	yes	FACU

* *Use an asterisk to mark wetland indicator plants: plant species listed in the Wetlands Protection Act (MGL c.131, s.40); plants in the genus Sphagnum; plants listed as FAC, FAC+, FACW-, FACW, FACW+, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.*

Vegetation conclusion:

Number of dominant wetland indicator plants: 2 Number of dominant non-wetland indicator plants: 1

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants? [yes] no

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? [yes] no
title/date: Hampshire County, Massachusetts, Central Part
map number: MA609
soil type mapped: Boxford silt loam
hydric soil inclusions: 1-32% hydric

Are field observations consistent with soil survey? yes [no]
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	0-9	10YR 2/2 (fine sandy loam)	10YR 4/6 (5%)
B	9-18	10YR 2/1 (fine sandy loam, with 10% HTM)	
C	18-26	5Y 4/2 (silt loam)	5Y 6/2 (25%) 10YR 5/4 (25%)

Remarks:

3. Other:

Conclusion: Is soil hydric? [yes] no

Other Indicators of Hydrology: (check all that apply & describe)

- ❑ Site Inundated: _____
- ☒ Depth to free water in observation hole: 18"
- ❑ Depth to soil saturation in observation hole: 15"
- ☒ Water marks: _____
- ☒ Drift lines: _____
- ❑ Sediment Deposits: _____
- ☒ Drainage patterns in BVW: _____
- ❑ Oxidized rhizospheres: _____
- ☒ Water-stained leaves: _____
- ❑ Recorded Data (streams, lake, or tidal gauge; aerial photo; other):
  _____
  _____
  _____
- ❑ Other: _____

Vegetation and Hydrology Conclusion

	Yes	No
Number of wetland indicator plants ≥ # of non-wetland indicator plants	X	
Wetland hydrology present:		
Hydric soil present	X	
Other indicators of hydrology present	X	
Sample location is in a BVW	X	

Submit this form with the Request for Determination of Applicability or Notice of Intent.

MassDEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Fuss & O'Neill, Inc

Applicant: Town of South Hadley Prepared by: (Michael Soares, Wetlands Sci.) Project location: 42.23358° N, -72.58541°W DEP File #: _____

Check all that apply:

- ❑ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only
- ☒ Vegetation and other indicators of hydrology usedto delineateBVW boundary: fill out Sections I and II
- ❑ Method other than dominance test used (attach additional information)

Section I.

Vegetation	Observation Plot Number: I-UPL		Transect Number: 2	Date of Delineation: 10/21/21
A. Sample Layer & Plant Species (by common/scientific name)	B. Percent Cover (or basal Area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees				
Norway maple/*Acer platanoides*	10.5	77.8	yes	UPL
Tree-of-heaven/*Ailanthus altissima*	3.0	22.2	yes	*not classified*
Shrubs/Saplings				
Multiflora rose/*Rosa multiflora*	10.5	50	yes	FACU
Burning bush/*Euonymous alatus*	10.5	50	yes	*not classified*
Herbaceous				
Flat-top goldenrod/*Euthamia graminifolia*	10.5	33.3	yes	FAC
Tall goldenrod/Solidago altissima	10.5	33.3	yes	FACU
Garlic mustard/*Alliaria petiolata*	10.5	33.3	yes	FACU
Turf (unknown grasses)	*40*			
Vines				
Asiatic bittersweet/*Celastrus orbiculatus*	3.0	100	yes	UPL

* *Use an asterisk to mark wetland indicator plants: plant species listed in the Wetlands Protection Act (MGL c.131, s.40); plants in the genus Sphagnum; plants listed as FAC, FAC+, FACW-, FACW, FACW+, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.*

Vegetation conclusion:

Number of dominant wetland indicator plants: 1 Number of dominant non-wetland indicator plants: 5

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants? yes no

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? [yes] no
title/date: Hampshire County, Massachusetts, Central Part
map number: MA609
soil type mapped: Windsor-Scitico-Amostown complex
hydric soil inclusions: 1-32% hydric

Are field observations consistent with soil survey? [yes] no
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	0-2	10YR 3/2 (fine sandy loam)	
B/C	2-21	10YR 4/2 (fine sandy loam)	

3. Other:

Conclusion: Is soil hydric? yes [no]

Other Indicators of Hydrology: (check all that apply & describe)

- ❑ Site Inundated: _____
- ❑ Depth to free water in observation hole: _____
- ❑ Depth to soil saturation in observation hole: _____
- ❑ Water marks: _____
- ❑ Drift lines: _____
- ❑ Sediment Deposits: _____
- ❑ Drainage patterns in BVW: _____
- ❑ Oxidized rhizospheres: _____
- ❑ Water-stained leaves: _____
- ❑ Recorded Data (streams, lake, or tidal gauge; aerial photo; other):
  _____
  _____
  _____
- ❑ Other: _____

Vegetation and Hydrology Conclusion

	Yes	[No]
Number of wetland indicator plants ≥ # of non-wetland indicator plants	____	**X**
Wetland hydrology present:		
Hydric soil present	____	**X**
Other indicators of hydrology present	____	**X**
Sample location is in a BVW	____	**X**

Submit this form with the Request for Determination of Applicability or Notice of Intent.

MassDEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Fuss & O'Neill, Inc

Applicant: Town of South Hadley Prepared by: (Michael Soares, Wetlands Sci.) Project location: 42.23358° N, -72.58541°W DEP File #: _____

Check all that apply:

- ❑ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only
- ☒ Vegetation and other indicators of hydrology usedto delineateBVW boundary: fill out Sections I and II
- ❑ Method other than dominance test used (attach additional information)

Section I.

Vegetation	Observation Plot Number: JW1		Transect Number: 1	Date of Delineation: 10/21/21
A. Sample Layer & Plant Species (by common/scientific name)	B. Percent Cover (or basal Area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees				
American ash/*Fraxinus americana*	10.5	100	yes	FACU
Shrubs/Saplings				
American ash/*Fraxinus americana*	3.0	25	yes	FACU
Tatarian honeysuckle/*Lonicera tatarica*	3.0	25	yes	FACU
Silky dogwood/*Swida amomum*	3.0	25	yes	FACW*
Herbaceous				
Arrow-leaved tearthumb/*Persicaria sagittata*	63.0	75.4	yes	OBL*
Sensitive fern/*Onoclea sensibilis*	20.5	24.6	yes	FACW*

* *Use an asterisk to mark wetland indicator plants: plant species listed in the Wetlands Protection Act (MGL c.131, s.40); plants in the genus Sphagnum; plants listed as FAC, FAC+, FACW-, FACW, FACW+, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.*

Vegetation conclusion:

Number of dominant wetland indicator plants: 3 Number of dominant non-wetland indicator plants: 3

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants? yes no

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? [yes] no
title/date: Hampshire County, Massachusetts, Central Part
map number: MA609
soil type mapped: Windsor-Scitico-Amostown complex
hydric soil inclusions: 1-32% hydric

Are field observations consistent with soil survey? yes [no]
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color		Mottles Color
A	0-7	5Y 4/1	(clayey silt loam)	10YR 3/6 (5%)
B	7-14	5Y 5/1	(clayey silt loam)	10YR 4/6 (25%) 5Y 6/2 (15%)
C	14-24	5Y 6/2	(clayey silt loam)	10YR 5/6 (40%) 10Y 6/1 (10%)

3. Other:

Conclusion: Is soil hydric? [yes] no

Other Indicators of Hydrology: (check all that apply & describe)

- ❑ Site Inundated: _____
- ☒ Depth to free water in observation hole: 21"
- ☒ Depth to soil saturation in observation hole: at surface
- ❑ Water marks: _____
- ☒ Drift lines: _____
- ❑ Sediment Deposits: _____
- ☒ Drainage patterns in BVW: _____
- ❑ Oxidized rhizospheres: _____
- ☒ Water-stained leaves: _____
- ❑ Recorded Data (streams, lake, or tidal gauge; aerial photo; other):
  _____
  _____
  _____
- ❑ Other: _____

Vegetation and Hydrology Conclusion

	Yes	No
Number of wetland indicator plants ≥ # of non-wetland indicator plants	X	
Wetland hydrology present:		
Hydric soil present	X	
Other indicators of hydrology present	X	
Sample location is in a BVW	X	

Submit this form with the Request for Determination of Applicability or Notice of Intent.

MassDEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Fuss & O'Neill, Inc

Applicant: Town of South Hadley Prepared by: (Michael Soares, Wetlands Sci.) Project location: 42.23358° N, -72.58541°W DEP File #: _____

Check all that apply:

- ❑ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only
- ☒ Vegetation and other indicators of hydrology usedto delineateBVW boundary: fill out Sections I and II
- ❑ Method other than dominance test used (attach additional information)

Section I.

Vegetation	Observation Plot Number: KW1		Transect Number: 1	Date of Delineation: 10/21/21
A. Sample Layer & Plant Species (by common/scientific name)	B. Percent Cover (or basal Area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees				
Silver maple/*Acer saccharinum*	63.0	100	yes	FACW*
Shrubs/Saplings				
Silky dogwood/*Swida amomum*	20.5	66.1	yes	FACW*
Multiflora rose/*Rosa multiflora*	10.5	33.9	yes	FACU
Herbaceous				
Jewelweed/*Impatiens capensis*	63.0	95.5	yes	FACW*
Wine raspberry/*Rubus phoenicolasius*	3.0	4.5	no	FACU

* *Use an asterisk to mark wetland indicator plants: plant species listed in the Wetlands Protection Act (MGL c.131, s.40); plants in the genus Sphagnum; plants listed as FAC, FAC+, FACW-, FACW, FACW+, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.*

Vegetation conclusion:

Number of dominant wetland indicator plants: 3 Number of dominant non-wetland indicator plants: 1

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants? yes no

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? yes no
title/date: Hampshire County, Massachusetts, Central Part
map number: MA609
soil type mapped: Hinckley-Merrimac-Urban land complex
hydric soil inclusions: not hydric

Are field observations consistent with soil survey? yes no
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color		Mottles Color
O	0-1	10YR 3/2		
A	1-5	10YR 4/2	(silt loam)	
Bw1	5-9	10YR 5/2	(silt loam)	
Bw2	9-11	10YR 5/2	(silt loam)	5Y 6/2 (5%)
Bw3	11-17	2.5Y 5/3	(silt loam)	5YR 5/3 (10%, faint)
C	17-26	10YR 2/1	(clayey silt loam)	10YR 6/4 (20%) N 5/ (5%)

3. Other:

Conclusion: Is soil hydric? yes no

Other Indicators of Hydrology: (check all that apply & describe)

- ❑ Site Inundated: _____
- ❑ Depth to free water in observation hole: _____
- ☒ Depth to soil saturation in observation hole: 14" _____
- ☒ Water marks: _____
- ☒ Drift lines: _____
- ❑ Sediment Deposits: _____
- ☒ Drainage patterns in BVW: _____
- ❑ Oxidized rhizospheres: _____
- ☒ Water-stained leaves: _____
- ❑ Recorded Data (streams, lake, or tidal gauge; aerial photo; other): _____ _____ _____
- ❑ Other: _____

Vegetation and Hydrology Conclusion

	Yes	No
Number of wetland indicator plants ≥ # of non-wetland indicator plants	X	
Wetland hydrology present:		
Hydric soil present		X
Other indicators of hydrology present	X	
Sample location is in a BVW	X	

Submit this form with the Request for Determination of Applicability or Notice of Intent.

MassDEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Fuss & O'Neill, Inc

Applicant: Town of South Hadley Prepared by: (Michael Soares, Wetlands Sci.) Project location: 42.23358° N, -72.58541°W DEP File #: _____

Check all that apply:

- ❑ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only
- ☒ Vegetation and other indicators of hydrology usedto delineateBVW boundary: fill out Sections I and II
- ❑ Method other than dominance test used (attach additional information)

Section I.

Vegetation	Observation Plot Number: K-UPL		Transect Number: 2	Date of Delineation: 10/21/21
A. Sample Layer & Plant Species (by common/scientific name)	B. Percent Cover (or basal Area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees				
Norway maple/*Acer platanoides*	63.0	82.4	yes	UPL
Silver maple/*Acer saccharinum*	10.5	13.7	yes	FACW*
American ash/*Fraxinus americana*	3.0	3.9	no	FACU
Shrubs/Saplings				
Norway maple/*Acer platanoides*	10.5	53.8	yes	UPL
Multiflora rose/*Rosa multiflora*	3.0	15.4	no	FACU
American beech/*Fagus grandifolia*	3.0	15.4	no	FACU
Tatarian honeysuckle/*Lonicera tatarica*	3.0	15.4	no	FACU
Vines				
Poison ivy/*Toxicodendron radicans*	10.5	77.8	yes	FAC*
Asiatic bittersweet/*Celastrus orbiculatus*	3.0	22.2	yes	UPL

* *Use an asterisk to mark wetland indicator plants: plant species listed in the Wetlands Protection Act (MGL c.131, s.40); plants in the genus Sphagnum; plants listed as FAC, FAC+, FACW-, FACW, FACW+, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.*

Vegetation conclusion:

Number of dominant wetland indicator plants: 2 Number of dominant non-wetland indicator plants: 3

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants? yes no

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? [yes] no
title/date: Hampshire County, Massachusetts, Central Part
map number: MA609
soil type mapped: Hinckley-Merrimac-Urban land complex
hydric soil inclusions: not hydric

Are field observations consistent with soil survey? [yes] no
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	0-2	10YR 4/3 (silt loam)	
B	2-14	10YR 5/3 (silt loam)	
C	14-21	10YR 6/3 (silt loam)	

3. Other:

Conclusion: Is soil hydric? yes [no]

Other Indicators of Hydrology: (check all that apply & describe)

- ❑ Site Inundated: _____
- ❑ Depth to free water in observation hole: _____
- ❑ Depth to soil saturation in observation hole: _____
- ❑ Water marks: _____
- ❑ Drift lines: _____
- ❑ Sediment Deposits: _____
- ❑ Drainage patterns in BVW: _____
- ❑ Oxidized rhizospheres: _____
- ❑ Water-stained leaves: _____
- ❑ Recorded Data (streams, lake, or tidal gauge; aerial photo; other):
  _____
  _____
  _____
- ❑ Other: _____

Vegetation and Hydrology Conclusion

	Yes	No
Number of wetland indicator plants ≥ # of non-wetland indicator plants	____	**X**
Wetland hydrology present:		
Hydric soil present	____	**X**
Other indicators of hydrology present	____	**X**
Sample location is in a BVW	____	**X**

Submit this form with the Request for Determination of Applicability or Notice of Intent.

MassDEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Fuss & O'Neill, Inc

Applicant: Town of South Hadley Prepared by: (Michael Soares, Wetlands Sci.) Project location: 42.23358° N, -72.58541°W DEP File #: _____

Check all that apply:

- ❑ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only
- ☒ Vegetation and other indicators of hydrology usedto delineateBVW boundary: fill out Sections I and II
- ❑ Method other than dominance test used (attach additional information)

Section I.

Vegetation	Observation Plot Number: LW1		Transect Number: 1	Date of Delineation: 10/21/21
A. Sample Layer & Plant Species (by common/scientific name)	B. Percent Cover (or basal Area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees				
Norway maple/*Acer platanoides*	10.5	77.8	no	UPL
Slippery elm/*Ulmus americana*	3.0	22.2	no	FACW*
Shrubs/Saplings				
Silky dogwood/*Swida amomum*	10.5	43.75	yes	FACW*
Multiflora rose/*Rosa multiflora*	10.5	43.75	yes	FACU
Tatarian honeysuckle/*Lonicera tatarica*	3.0	12.5	no	FACU
Herbaceous				
Common reed/*Phragmites australis*	10.5	77.8	yes	FACW*
Sensitive fern/*Onoclea sensibilis*	3.0	22.2	yes	FACW*

* *Use an asterisk to mark wetland indicator plants: plant species listed in the Wetlands Protection Act (MGL c.131, s.40); plants in the genus Sphagnum; plants listed as FAC, FAC+, FACW-, FACW, FACW+, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.*

Vegetation conclusion:

Number of dominant wetland indicator plants: 3 Number of dominant non-wetland indicator plants: 2

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants? yes no

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? [yes] no
title/date: Hampshire County, Massachusetts, Central Part
map number: MA609
soil type mapped: Hinckley-Merrimac-Urban land complex
hydric soil inclusions: not hydric

Are field observations consistent with soil survey? yes [no]
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
Oa1	0-5		(muck)
Oa2	5-10	N 2.5/	(mucky sand)
B	10-16	2.5Y 4/2	(gravelly sand)
C	16-23	2.5Y 4/2	(fine sandy loam)

Remarks:

3. Other:

Conclusion: Is soil hydric? [yes] no

Other Indicators of Hydrology: (check all that apply & describe)

- ❑ Site Inundated: _____
- ❑ Depth to free water in observation hole: 7"
- ☒ Depth to soil saturation in observation hole: 1"
- ☒ Water marks: _____
- ☒ Drift lines: _____
- ❑ Sediment Deposits: _____
- ☒ Drainage patterns in BVW: _____
- ❑ Oxidized rhizospheres: _____
- ☒ Water-stained leaves: _____
- ❑ Recorded Data (streams, lake, or tidal gauge; aerial photo; other): _____
- ❑ Other: _____

Vegetation and Hydrology Conclusion

	Yes	No
Number of wetland indicator plants ≥ # of non-wetland indicator plants	X	
Wetland hydrology present:		
Hydric soil present	X	
Other indicators of hydrology present	X	
Sample location is in a BVW	X	

Submit this form with the Request for Determination of Applicability or Notice of Intent.

MassDEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Fuss & O'Neill, Inc

Applicant: Town of South Hadley Prepared by: (Michael Soares, Wetlands Sci.) Project location: 42.23358° N, -72.58541°W DEP File #: _____

Check all that apply:

- ❑ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only
- ☒ Vegetation and other indicators of hydrology usedto delineateBVW boundary: fill out Sections I and II
- ❑ Method other than dominance test used (attach additional information)

Section I.

Vegetation	Observation Plot Number: L-UPL		Transect Number: 2	Date of Delineation: 10/21/21
A. Sample Layer & Plant Species (by common/scientific name)	B. Percent Cover (or basal Area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees				
Norway maple/*Acer platanoides*	63.0	72.4	yes	UPL
Red maple/*Acer rubrum*	10.5	12.1	no	FAC*
American ash/*Fraxinus americana*	10.5	12.1	no	FACU
Black cherry/*Prunus serotina*	3.0	3.4	no	FACU
Shrubs/Saplings				
Norway maple/*Acer platanoides*	38.0	69.7	yes	UPL
Multiflora rose/*Rosa multiflora*	10.5	19.3	no	FACU
Eastern white pine/*Pinus strobus*	3.0	5.5	no	FACU
Japanese barberry/*Berberis thunbergii*	3.0	5.5	no	FACU

* *Use an asterisk to mark wetland indicator plants: plant species listed in the Wetlands Protection Act (MGL c.131, s.40); plants in the genus Sphagnum; plants listed as FAC, FAC+, FACW-, FACW, FACW+, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.*

Vegetation conclusion:

Number of dominant wetland indicator plants: 0 Number of dominant non-wetland indicator plants: 2

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants? yes no

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? [yes] no
title/date: Hampshire County, Massachusetts, Central Part
map number: MA609
soil type mapped: Hinckley-Merrimac-Urban land complex
hydric soil inclusions: not hydric

Are field observations consistent with soil survey? [yes] no
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color		Mottles Color
A	0-3	10YR 2/2	(silt loam)	
B	3-12	10YR 4/3	(silt loam)	

Remarks:
Resistance at 12" (rocks, HTM)

3. Other:

Conclusion: Is soil hydric? yes [no]

Other Indicators of Hydrology: (check all that apply & describe)

- ❑ Site Inundated: _____
- ❑ Depth to free water in observation hole: _____
- ❑ Depth to soil saturation in observation hole: _____
- ❑ Water marks: _____
- ❑ Drift lines: _____
- ❑ Sediment Deposits: _____
- ❑ Drainage patterns in BVW: _____
- ❑ Oxidized rhizospheres: _____
- ❑ Water-stained leaves: _____
- ❑ Recorded Data (streams, lake, or tidal gauge; aerial photo; other):
  _____
  _____
  _____
- ❑ Other: _____

Vegetation and Hydrology Conclusion

	Yes	No
Number of wetland indicator plants ≥ # of non-wetland indicator plants	____	**X**
Wetland hydrology present:		
Hydric soil present	____	**X**
Other indicators of hydrology present	____	**X**
Sample location is in a BVW	____	**X**

Submit this form with the Request for Determination of Applicability or Notice of Intent.

MassDEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Fuss & O'Neill, Inc

Applicant: Town of South Hadley Prepared by: (Michael Soares, Wetlands Sci.) Project location: 42.23358° N, -72.58541°W DEP File #: _____

Check all that apply:

- ❑ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only
- ☒ Vegetation and other indicators of hydrology usedto delineateBVW boundary: fill out Sections I and II
- ❑ Method other than dominance test used (attach additional information)

Section I.

Vegetation	Observation Plot Number: NW1		Transect Number: 1	Date of Delineation: 10/21/21
A. Sample Layer & Plant Species (by common/scientific name)	B. Percent Cover (or basal Area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees				
Norway maple/*Acer platanoides*	20.5	39.8	yes	UPL
Slippery elm/*Ulmus americana*	20.5	39.8	yes	FACW*
Red maple/*Acer rubrum*	10.5	20.4	yes	FAC*
Shrubs/Saplings				
Slippery elm/*Ulmus americana*	38.0	78.4	yes	FACW*
Multiflora rose/*Rosa multiflora*	10.5	21.6	yes	FACU
Herbaceous				
Skunk cabbage/*Symplocarpus foetidus*	10.5	77.8	yes	FACW*
Sensitive fern/*Onoclea sensibilis*	3.0	22.2	yes	FACW*

* *Use an asterisk to mark wetland indicator plants: plant species listed in the Wetlands Protection Act (MGL c.131, s.40); plants in the genus Sphagnum; plants listed as FAC, FAC+, FACW-, FACW, FACW+, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.*

Vegetation conclusion:

Number of dominant wetland indicator plants: 5 Number of dominant non-wetland indicator plants: 2

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants? [yes] no

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? [yes] no
title/date: Hampshire County, Massachusetts, Central Part
map number: MA609
soil type mapped: Hinckley-Merrimac-Urban land complex
hydric soil inclusions: not hydric

Are field observations consistent with soil survey? yes [no]
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
Oa	0-16	N 2.5/	(muck)
B	16-28	2.5Y 3/1	(fine sandy loam)
C	28-32	2.5Y 4/2	(fine sandy loam)

Remarks:

3. Other:

Conclusion: Is soil hydric? [yes] no

Other Indicators of Hydrology: (check all that apply & describe)

- ❑ Site Inundated: _____
- ❑ Depth to free water in observation hole: 11"
- ☒ Depth to soil saturation in observation hole: 7"
- ❑ Water marks: _____
- ☒ Drift lines: _____
- ❑ Sediment Deposits: _____
- ☒ Drainage patterns in BVW: _____
- ❑ Oxidized rhizospheres: _____
- ☒ Water-stained leaves: _____
- ❑ Recorded Data (streams, lake, or tidal gauge; aerial photo; other): _____
- ❑ Other: _____

Vegetation and Hydrology Conclusion

	Yes	No
Number of wetland indicator plants ≥ # of non-wetland indicator plants	X	
Wetland hydrology present:		
Hydric soil present	X	
Other indicators of hydrology present	X	
Sample location is in a BVW	X	

Submit this form with the Request for Determination of Applicability or Notice of Intent.

MassDEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Fuss & O'Neill, Inc

Applicant: Town of South Hadley Prepared by: (Michael Soares, Wetlands Sci.) Project location: 42.23358° N, -72.58541°W DEP File #: _____

Check all that apply:

- ❑ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only
- ☒ Vegetation and other indicators of hydrology usedto delineateBVW boundary: fill out Sections I and II
- ❑ Method other than dominance test used (attach additional information)

Section I.

Vegetation	Observation Plot Number: N-UPL		Transect Number: 2	Date of Delineation: 10/21/21
A. Sample Layer & Plant Species (by common/scientific name)	B. Percent Cover (or basal Area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees				
Norway maple/*Acer platanoides*	63.0	72.4	yes	UPL
Red maple/*Acer rubrum*	10.5	12.1	no	FAC*
American ash/*Fraxinus americana*	10.5	12.1	no	FACU
Black cherry/*Prunus serotina*	3.0	3.4	no	FACU
Shrubs/Saplings				
Norway maple/*Acer platanoides*	38.0	69.7	yes	UPL
Multiflora rose/*Rosa multiflora*	10.5	19.3	no	FACU
Eastern white pine/*Pinus strobus*	3.0	5.5	no	FACU
Japanese barberry/*Berberis thunbergii*	3.0	5.5	no	FACU

* *Use an asterisk to mark wetland indicator plants: plant species listed in the Wetlands Protection Act (MGL c.131, s.40); plants in the genus Sphagnum; plants listed as FAC, FAC+, FACW-, FACW, FACW+, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.*

Vegetation conclusion:

Number of dominant wetland indicator plants: 0 Number of dominant non-wetland indicator plants: 2

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants? yes no

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? [yes] no
title/date: Hampshire County, Massachusetts, Central Part
map number: MA609
soil type mapped: Hinckley-Merrimac-Urban land complex
hydric soil inclusions: not hydric

Are field observations consistent with soil survey? [yes] no
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	0-2	2.5Y 4/3 (silt loam)	
B	2-15	10YR 5/3 (silt loam)	
C	15-22	2.5Y 5/3 (silt loam)	

3. Other:

Conclusion: Is soil hydric? yes [no]

Other Indicators of Hydrology: (check all that apply & describe)

- ❑ Site Inundated: _____
- ❑ Depth to free water in observation hole: _____
- ❑ Depth to soil saturation in observation hole: _____
- ❑ Water marks: _____
- ❑ Drift lines: _____
- ❑ Sediment Deposits: _____
- ❑ Drainage patterns in BVW: _____
- ❑ Oxidized rhizospheres: _____
- ❑ Water-stained leaves: _____
- ❑ Recorded Data (streams, lake, or tidal gauge; aerial photo; other):
  _____
  _____
  _____
- ❑ Other: _____

Vegetation and Hydrology Conclusion

	Yes	No
Number of wetland indicator plants ≥ # of non-wetland indicator plants	____	X
Wetland hydrology present:		
Hydric soil present	____	X
Other indicators of hydrology present	____	X
Sample location is in a BVW	____	X

Submit this form with the Request for Determination of Applicability or Notice of Intent.

US Army Corps of Engineers Wetlands Determination Data Forms

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Titus Pond and Buttery Brook City/County: South Hadley Sampling Date: 10/21/21

Applicant/Owner: Town of South Hadley State: MA Sampling Point: BW1

Investigator(s): Michael Soares Section, Township, Range: Hampshire County

Landform (hillside, terrace, etc.): terrace Local relief (concave, convex, none): level Slope (%): 0

Subregion (LRR or MLRA): LRR R, MLRA 145 Lat: 42.234045° Long: -72.582260° Datum: WGS-84

Soil Map Unit Name: Hinckley-Merrimac-Urban land complex NWI 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? Are "Normal Circumstances" present? Yes X No ____

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

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

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

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

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes	____	No	X	Depth (inches): ____
Water Table Present?	Yes	X	No	____	Depth (inches): 12
Saturation Present? (includes capillary fringe)	Yes	X	No	____	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: BW1

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus deltoides*	38	Yes	FAC
2. *Acer saccharinum*	21	Yes	FACW
3. *Acer platanoides*	11	No	UPL
4. *Ulmus americana*	11	No	FACW
5. *Acer rubrum*	11	No	FAC
6.			
7.			
	92	=Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. *Acer rubrum*	11	Yes	FAC
2. *Rosa multiflora*	11	Yes	FACU
3. *Berberis thunbergii*	3	No	FACU
4. *Cornus amomum*	3	No	FACW
5. *Euonymus alatus*	3	No	UPL
6.			
7.			
	31	=Total Cover	
Herb Stratum (Plot size:)			
1. *Impatiens capensis*	21	Yes	FACW
2. *Onoclea sensibilis*	3	No	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	24	=Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 80.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	59	x 2 =	118
FAC species	60	x 3 =	180
FACU species	14	x 4 =	56
UPL species	14	x 5 =	70
Column Totals:	147 (A)		424 (B)

Prevalence Index = B/A = 2.88

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

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

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

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

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

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

SOIL

Sampling Point: BW1

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-13	7.5YR 3/1	100					Mucky Sand	
13-19	10YR 6/2	100					Sandy	
19-23	5Y 5/2	100					Sandy	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- X Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ? Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Titus Pond and Buttery Brook City/County: South Hadley Sampling Date: 10/21/21

Applicant/Owner: Town of South Hadley State: MA Sampling Point: B-UPL

Investigator(s): Michael Soares Section, Township, Range: Hampshire County

Landform (hillside, terrace, etc.): shoulder Local relief (concave, convex, none): convex Slope (%): 2

Subregion (LRR or MLRA): LRR R, MLRA 145 Lat: 42.234107° Long: -72.582027° Datum: WGS-84

Soil Map Unit Name: Hinckley-Merrimac-Urban land complex NWI 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? Are "Normal Circumstances" present? Yes X No ____

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

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

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

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

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? **Yes** ____ **No** X

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: B-UPL

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus deltoides*	38	Yes	FAC
2. *Quercus rubra*	11	No	FACU
3. *Ulmus americana*	11	No	FACW
4. *Fraxinus americana*	11	No	FACU
5. *Prunus serotina*	3	No	FACU
6.			
7.			
	74	=Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. *Rosa multiflora*	21	Yes	FACU
2. *Euonymus alatus*	11	Yes	UPL
3.			
4.			
5.			
6.			
7.			
	32	=Total Cover	
Herb Stratum (Plot size:)			
1. *Pachysandra terminalis*	21	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	21	=Total Cover	
Woody Vine Stratum (Plot size:)			
1. *Celastrus orbiculatus*	21	Yes	UPL
2. *Vitis labrusca*	11	Yes	FACU
3.			
4.			
	32	=Total Cover	

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 16.7% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	11	x 2 =	22
FAC species	38	x 3 =	114
FACU species	57	x 4 =	228
UPL species	53	x 5 =	265
Column Totals:	159 (A)		629 (B)

Prevalence Index = B/A = 3.96

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

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

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

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

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

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

SOIL

Sampling Point: B-UPL

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	10YR 2/1	100					Loamy/Clayey	OM
1-13	7.5YR 3/2	100					Loamy/Clayey	
13-22	7.5YR 3/2	50					Loamy/Clayey	
	10YR 4/6	50						
22-27	7.5YR 4/6	50					Loamy/Clayey	
	7.5YR 3/2	50						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Titus Pond and Buttery Brook City/County: South Hadley Sampling Date: 10/21/21

Applicant/Owner: Town of South Hadley State: MA Sampling Point: IW1

Investigator(s): Michael Soares Section, Township, Range: Hampshire County

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

Subregion (LRR or MLRA): LRR R, MLRA 145 Lat: 42.231721° Long: -72.589307° Datum: WGS-84

Soil Map Unit Name: Boxford silt loam NWI classification: PEM1E

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

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

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

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

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

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

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches):	____
Water Table Present?	Yes X	No ____	Depth (inches):	18
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches):	15

Wetland Hydrology Present? **Yes** X **No** ____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: IW1

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1. *Cornus amomum*	38	Yes	FACW
2. *Sambucus nigra*	11	No	FACW
3. *Robinia pseudoacacia*	11	No	FACU
4. *Lonicera tatarica*	3	No	FACU
5.			
6.			
7.			
	63 =Total Cover		
Herb Stratum (Plot size:)			
1. *Solidago rugosa*	11	Yes	FAC
2. *Rubus phoenicolasius*	3	Yes	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	14 =Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
	=Total Cover		

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	49	x 2 =	98
FAC species	11	x 3 =	33
FACU species	17	x 4 =	68
UPL species	0	x 5 =	0
Column Totals:	77 (A)		199 (B)

Prevalence Index = B/A = 2.58

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

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

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

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

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

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

SOIL

Sampling Point: IW1

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-9	10YR 2/2	95	10YR 4/6	5	C	M	Loamy/Clayey	
9-18	10YR 2/1						Loamy/Clayey	10% HTM
18-26	5Y 4/2	50	5Y 6/2	25	D	M	Loamy/Clayey	
			10YR 5/4	25	C	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Titus Pond and Buttery Brook City/County: South Hadley Sampling Date: 10/21/21

Applicant/Owner: Town of South Hadley State: MA Sampling Point: I-UPL

Investigator(s): Michael Soares Section, Township, Range: Hampshire County

Landform (hillside, terrace, etc.): upland terrace Local relief (concave, convex, none): level Slope (%): 0

Subregion (LRR or MLRA): LRR R, MLRA 145 Lat: 42.231863° Long: -72.589475° Datum: WGS-84

Soil Map Unit Name: Windsor-Scitico-Amostown complex NWI 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? Are "Normal Circumstances" present? Yes X No ____

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

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

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

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

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? **Yes** ____ **No** X

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: I-UPL

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus deltoides*	11	Yes	FAC
2. *Ailanthus altissima*	3	Yes	UPL
3.			
4.			
5.			
6.			
7.			
	14	=Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. *Rosa multiflora*	11	Yes	FACU
2. *Euonymus alatus*	11	Yes	UPL
3.			
4.			
5.			
6.			
7.			
	22	=Total Cover	
Herb Stratum (Plot size:)			
1. *Euthamia graminifolia*	11	Yes	FAC
2. *Solidago altissima*	11	Yes	FACU
3. *Alliaria petiolata*	11	Yes	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	33	=Total Cover	
Woody Vine Stratum (Plot size:)			
1. *Celastrus orbiculatus*	3	No	UPL
2.			
3.			
4.			
	3	=Total Cover	

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 28.6% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	22	x 3 =	66
FACU species	33	x 4 =	132
UPL species	17	x 5 =	85
Column Totals:	72	(A)	283 (B)

Prevalence Index = B/A = 3.93

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

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

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

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

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

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

SOIL

Sampling Point: I-UPL

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 3/2	100					Loamy/Clayey	
2-21	10YR 4/2	100					Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Titus Pond and Buttery Brook City/County: South Hadley Sampling Date: 10/21/21

Applicant/Owner: Town of South Hadley State: MA Sampling Point: JW1

Investigator(s): Michael Soares Section, Township, Range: Hampshire County

Landform (hillside, terrace, etc.): terrrace Local relief (concave, convex, none): level Slope (%): 0

Subregion (LRR or MLRA): LRR R, MLRA 145 Lat: 42.231628° Long: -72.589431° Datum: WGS-84

Soil Map Unit Name: Windsor-Scitico-Amostown complex NWI classification: PEM1E

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

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

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

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

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

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

HYDROLOGY

Wetland Hydrology Indicators:

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

X Surface Water (A1)	X Water-Stained Leaves (B9)	___ Surface Soil Cracks (B6)
___ High Water Table (A2)	___ Aquatic Fauna (B13)	X Drainage Patterns (B10)
X Saturation (A3)	___ Marl Deposits (B15)	___ Moss Trim Lines (B16)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Dry-Season Water Table (C2)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Crayfish Burrows (C8)
X Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Saturation Visible on Aerial Imagery (C9)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Stunted or Stressed Plants (D1)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Geomorphic Position (D2)
___ Inundation Visible on Aerial Imagery (B7)	___ Other (Explain in Remarks)	___ Shallow Aquitard (D3)
___ Sparsely Vegetated Concave Surface (B8)		___ Microtopographic Relief (D4)
		___ FAC-Neutral Test (D5)

Secondary Indicators (minimum of two required)

Field Observations:

Surface Water Present?	Yes X	No ____	Depth (inches): ____	
Water Table Present?	Yes X	No ____	Depth (inches): 21	
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 0	**Wetland Hydrology Present?** **Yes** X **No** ____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: JW1

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus americana*	11	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	11	=Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. *Fraxinus americana*	3	Yes	FACU
2. *Lonicera tatarica*	3	Yes	FACU
3. *Cornus amomum*	3	Yes	FACW
4.			
5.			
6.			
7.			
	9	=Total Cover	
Herb Stratum (Plot size:)			
1. *Persicaria sagittata*	63	Yes	OBL
2. *Onoclea sensibilis*	21	Yes	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	84	=Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	63	x 1 =	63
FACW species	24	x 2 =	48
FAC species	0	x 3 =	0
FACU species	17	x 4 =	68
UPL species	0	x 5 =	0
Column Totals:	104 (A)		179 (B)
Prevalence Index = B/A =			1.72

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

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

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

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

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

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

SOIL

Sampling Point: JW1

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	5Y 4/1	95	10YR 3/6	5	C	M	Loamy/Clayey	
7-14	5Y 5/1	60	10YR 4/6	25	C	M	Loamy/Clayey	
			5Y 6/2	15	D	M		
14-24	5Y 6/2	50	10YR 5/6	40	C	M	Loamy/Clayey	
			10Y 6/1	10	D	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Titus Pond and Buttery Brook City/County: South Hadley Sampling Date: 10/21/21

Applicant/Owner: Town of South Hadley State: MA Sampling Point: KW1

Investigator(s): Michael Soares Section, Township, Range: Hampshire County

Landform (hillside, terrace, etc.): terrrace Local relief (concave, convex, none): level Slope (%): 0

Subregion (LRR or MLRA): LRR R, MLRA 145 Lat: 42.232523° Long: -72.587084° Datum: WGS-84

Soil Map Unit Name: Hinckley-Merrimac-Urban land complex NWI classification: PSS1E

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

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

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

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

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

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

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches):	
Water Table Present?	Yes ____	No X	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): 14	

Wetland Hydrology Present? **Yes** X **No** ____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: KW1

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer saccharinum*	63	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	63	=Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. *Cornus amomum*	21	Yes	FACW
2. *Rosa multiflora*	11	Yes	FACU
3.			
4.			
5.			
6.			
7.			
	32	=Total Cover	
Herb Stratum (Plot size:)			
1. *Impatiens capensis*	63	Yes	FACW
2. *Rubus phoenicolasius*	3	No	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	66	=Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 75.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	147	x 2 =	294
FAC species	0	x 3 =	0
FACU species	14	x 4 =	56
UPL species	0	x 5 =	0
Column Totals:	161 (A)		350 (B)

Prevalence Index = B/A = 2.17

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

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

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

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

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

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

SOIL

Sampling Point: KW1

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	10YR 3/2	100					Muck	
1-5	10YR 4/2	100					Loamy/Clayey	
5-9	10YR 5/2	100					Loamy/Clayey	
9-11	10YR 5/2	95	5Y 6/2	5	D	M	Loamy/Clayey	
11-17	2.5Y 5/3	90	5YR 5/3	10	C	M	Loamy/Clayey	
17-26	10YR 2/1	75	10YR 6/4	20	C	M	Loamy/Clayey	
			N 5/	5	D	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Titus Pond and Buttery Brook City/County: South Hadley Sampling Date: 10/21/21

Applicant/Owner: Town of South Hadley State: MA Sampling Point: K-UPL

Investigator(s): Michael Soares Section, Township, Range: Hampshire County

Landform (hillside, terrace, etc.): backslope Local relief (concave, convex, none): level Slope (%): 3

Subregion (LRR or MLRA): LRR R, MLRA 145 Lat: 42.232526° Long: -72.586917° Datum: WGS-84

Soil Map Unit Name: Hinckley-Merrimac-Urban land complex NWI 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? Are "Normal Circumstances" present? Yes X No ____

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

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

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

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

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? **Yes** ____ **No** X

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: K-UPL

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus deltoides*	63	Yes	FAC
2. *Acer saccharinum*	11	No	FACW
3. *Fraxinus americana*	3	No	FACU
4.			
5.			
6.			
7.			
	77	=Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. *Acer platanoides*	11	Yes	UPL
2. *Rosa multiflora*	3	No	FACU
3. *Fagus grandifolia*	3	No	FACU
4. *Lonicera tatarica*	3	No	FACU
5.			
6.			
7.			
	20	=Total Cover	
Herb Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
		=Total Cover	
Woody Vine Stratum (Plot size:)			
1. *Toxicodendron radicans*	11	Yes	FAC
2. *Celastrus orbiculatus*	3	Yes	UPL
3.			
4.			
	14	=Total Cover	

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	11	x 2 =	22
FAC species	74	x 3 =	222
FACU species	12	x 4 =	48
UPL species	14	x 5 =	70
Column Totals:	111 (A)		362 (B)

Prevalence Index = B/A = 3.26

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

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

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

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

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

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

SOIL

Sampling Point: K-UPL

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 4/3	100					Loamy/Clayey	
2-14	10YR 5/3	100					Loamy/Clayey	
14-21	10YR 6/3	100					Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Titus Pond and Buttery Brook City/County: South Hadley Sampling Date: 10/21/21

Applicant/Owner: Town of South Hadley State: MA Sampling Point: LW1

Investigator(s): Michael Soares Section, Township, Range: Hampshire County

Landform (hillside, terrace, etc.): swale Local relief (concave, convex, none): concave Slope (%): 1

Subregion (LRR or MLRA): LRR R, MLRA 145 Lat: 42.232558° Long: =X9-72.585855° Datum: WGS-84

Soil Map Unit Name: Hinckley-Merrimac-Urban land complex NWI classification: PSS1E

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

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

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

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

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

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

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches):	____
Water Table Present?	Yes X	No ____	Depth (inches):	7
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches):	1

Wetland Hydrology Present? **Yes** X **No** ____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: LW1

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer platanoides*	11	Yes	UPL
2. *Ulmus americana*	3	Yes	FACW
3.			
4.			
5.			
6.			
7.			
	14	=Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. *Cornus amomum*	11	Yes	FACW
2. *Rosa multiflora*	11	Yes	FACU
3. *Lonicera tatarica*	3	No	FACU
4.			
5.			
6.			
7.			
	25	=Total Cover	
Herb Stratum (Plot size:)			
1. *Phragmites australis*	11	Yes	FACW
2. *Onoclea sensibilis*	3	Yes	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	14	=Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	28	x 2 =	56
FAC species	0	x 3 =	0
FACU species	14	x 4 =	56
UPL species	11	x 5 =	55
Column Totals:	53 (A)		167 (B)

Prevalence Index = B/A = 3.15

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

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

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

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

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

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

SOIL

Sampling Point: LW1

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	N 2.5/	100					Muck	
5-10	N 2.5/	100					Mucky Sand	
10-16	2.5Y 4/2	100					Sandy	
16-23	2.5Y 4/2	100					Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- X Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ? Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Titus Pond and Buttery Brook City/County: South Hadley Sampling Date: 10/21/21

Applicant/Owner: Town of South Hadley State: MA Sampling Point: L-UPL

Investigator(s): Michael Soares Section, Township, Range: Hampshire County

Landform (hillside, terrace, etc.): upland terrace Local relief (concave, convex, none): level Slope (%): 0

Subregion (LRR or MLRA): LRR R, MLRA 145 Lat: 42.232494° Long: -72.585668° Datum: WGS-84

Soil Map Unit Name: Hinckley-Merrimac-Urban land complex NWI 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? Are "Normal Circumstances" present? Yes X No ____

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

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

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

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

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? **Yes** ____ **No** X

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: L-UPL

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus deltoides*	63	Yes	FAC
2. *Acer rubrum*	11	No	FAC
3. *Fraxinus americana*	11	No	FACU
4. *Prunus serotina*	3	No	FACU
5.			
6.			
7.			
	88	=Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. *Acer platanoides*	38	Yes	UPL
2. *Rosa multiflora*	11	Yes	FACU
3. *Pinus strobus*	3	No	FACU
4. *Berberis thunbergii*	3	No	FACU
5.			
6.			
7.			
	55	=Total Cover	
Herb Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
		=Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	74	x 3 =	222
FACU species	31	x 4 =	124
UPL species	38	x 5 =	190
Column Totals:	143	(A)	536 (B)

Prevalence Index = B/A = 3.75

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

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

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

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

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

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

SOIL

Sampling Point: L-UPL

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 2/2	100					Loamy/Clayey	
3-12	10YR 5/3	100					Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Titus Pond and Buttery Brook City/County: South Hadley Sampling Date: 10/21/21

Applicant/Owner: Town of South Hadley State: MA Sampling Point: NW1

Investigator(s): Michael Soares Section, Township, Range: Hampshire County

Landform (hillside, terrace, etc.): swale Local relief (concave, convex, none): concave Slope (%): 1

Subregion (LRR or MLRA): LRR R, MLRA 145 Lat: 42.232523° Long: -72.587084° Datum: WGS-84

Soil Map Unit Name: Hinckley-Merrimac-Urban land complex NWI classification: PSS1E

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

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

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

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

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

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

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches):	____
Water Table Present?	Yes X	No ____	Depth (inches):	11
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches):	7

Wetland Hydrology Present? **Yes** X **No** ____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: NW1

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer platanoides*	21	Yes	UPL
2. *Ulmus americana*	21	Yes	FACW
3. *Acer rubrum*	11	Yes	FAC
4.			
5.			
6.			
7.			
	53	=Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. *Ulmus americana*	38	Yes	FACW
2. *Rosa multiflora*	11	Yes	FACU
3.			
4.			
5.			
6.			
7.			
	49	=Total Cover	
Herb Stratum (Plot size:)			
1. *Symplocarpus foetidus*	11	Yes	OBL
2. *Onoclea sensibilis*	3	Yes	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	14	=Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 71.4% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	11	x 1 =	11
FACW species	62	x 2 =	124
FAC species	11	x 3 =	33
FACU species	11	x 4 =	44
UPL species	21	x 5 =	105
Column Totals:	116 (A)		317 (B)

Prevalence Index = B/A = 2.73

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

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

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

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

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

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

SOIL

Sampling Point: NW1

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	N 2.5/	100					Muck	
16-28	2.5Y 3/1	100					Loamy/Clayey	
28-32	2.5Y 4/2	100					Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- X Histosol (A1)
- X Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Titus Pond and Buttery Brook City/County: South Hadley Sampling Date: 10/21/21

Applicant/Owner: Town of South Hadley State: MA Sampling Point: N-UPL

Investigator(s): Michael Soares Section, Township, Range: Hampshire County

Landform (hillside, terrace, etc.): backslope Local relief (concave, convex, none): convex Slope (%): 2

Subregion (LRR or MLRA): LRR R, MLRA 145 Lat: 42.233620° Long: -72.585563° Datum: WGS-84

Soil Map Unit Name: Hinckley-Merrimac-Urban land complex NWI 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? Are "Normal Circumstances" present? Yes X No ____

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

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

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

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

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? **Yes** ____ **No** X

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: N-UPL

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus deltoides*	63	Yes	FAC
2. *Acer rubrum*	11	No	FAC
3. *Fraxinus americana*	11	No	FACU
4. *Prunus serotina*	3	No	FACU
5.			
6.			
7.			
	88	=Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. *Acer platanoides*	38	Yes	UPL
2. *Rosa multiflora*	11	Yes	FACU
3. *Pinus strobus*	3	No	FACU
4. *Berberis thunbergii*	3	No	FACU
5.			
6.			
7.			
	55	=Total Cover	
Herb Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
		=Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	74	x 3 =	222
FACU species	31	x 4 =	124
UPL species	38	x 5 =	190
Column Totals:	143	(A)	536 (B)

Prevalence Index = B/A = 3.75

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

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

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

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

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

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

SOIL

Sampling Point: N-UPL

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	2.5Y 4/3	100					Loamy/Clayey	
2-15	10YR 5/3	100					Loamy/Clayey	
15-22	2.5Y 5/3	100					Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

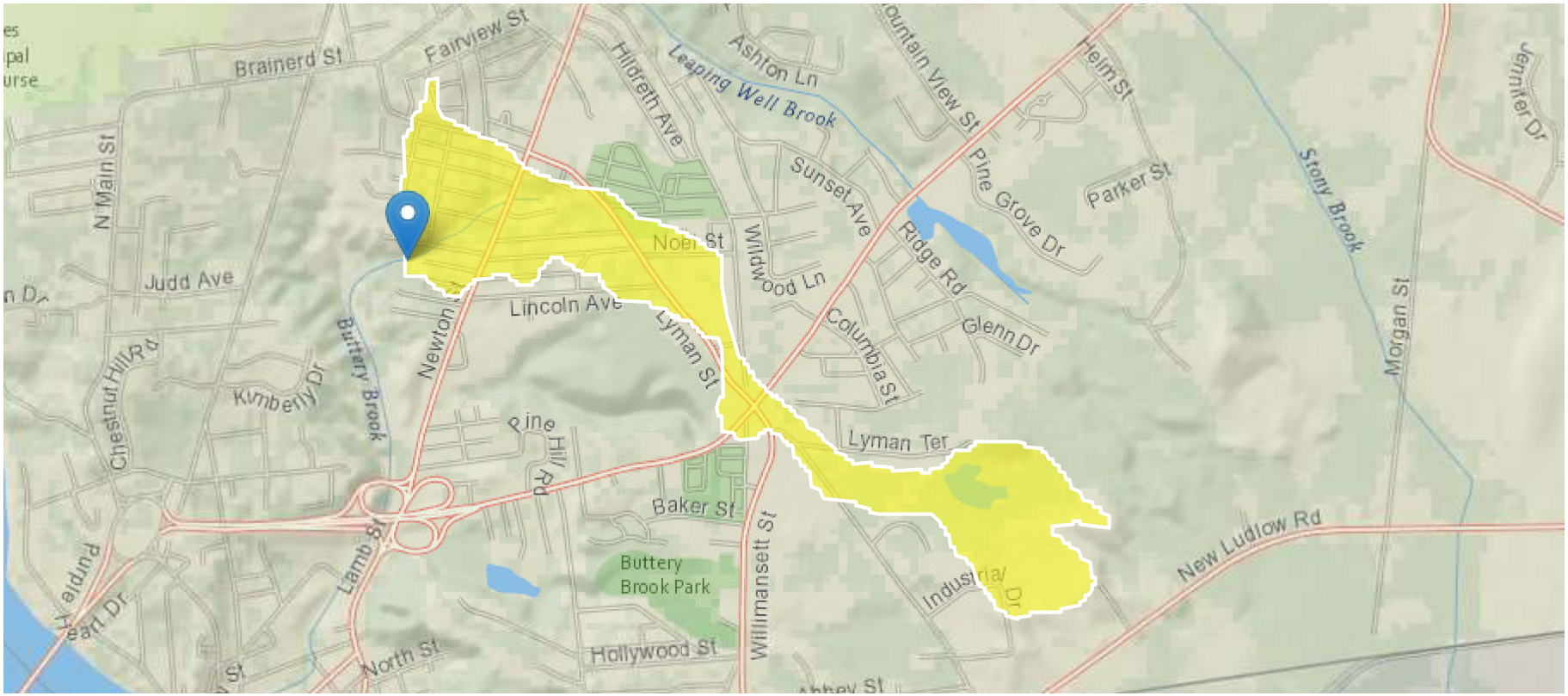
This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

FUSS & O'NEILL

USGS StreamStats Report

StreamStats Report (South Hadley MA)

Region ID: MA
Workspace ID: MA20211111220314743000
Clicked Point (Latitude, Longitude): 42.23158, -72.58941
Time: 2021-11-11 17:03:33 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	0.44	square miles
ELEV	Mean Basin Elevation	214	feet
LC06STOR	Percentage of water bodies and wetlands determined from the NLCD 2006	12.07	percent
BSLDEM250	Mean basin slope computed from 1:250K DEM	1.102	percent
DRFTPERSTR	Area of stratified drift per unit of stream length	1.01	square mile per mile
MAREGION	Region of Massachusetts 0 for Eastern 1 for Western	1	dimensionless
BSLDEM10M	Mean basin slope computed from 10 m DEM	4.006	percent

Peak-Flow Statistics Parameters [Peak Statewide 2016 5156]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.44	square miles	0.16	512
ELEV	Mean Basin Elevation	214	feet	80.6	1948
LC06STOR	Percent Storage from NLCD2006	12.07	percent	0	32.3

Peak-Flow Statistics Flow Report [Peak Statewide 2016 5156]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PII	PIu	ASEp
50-percent AEP flood	17.6	ft^3/s	8.91	34.8	42.3
20-percent AEP flood	29.8	ft^3/s	14.9	59.8	43.4
10-percent AEP flood	39.7	ft^3/s	19.3	81.6	44.7
4-percent AEP flood	54.1	ft^3/s	25.4	115	47.1

Statistic	Value	Unit	PII	Plu	ASEp
2-percent AEP flood	66	ft^3/s	30	145	49.4
1-percent AEP flood	78.9	ft^3/s	34.7	179	51.8
0.5-percent AEP flood	92.7	ft^3/s	39.5	217	54.1
0.2-percent AEP flood	113	ft^3/s	45.9	278	57.6

Peak-Flow Statistics Citations

Zarriello, P.J.,2017, Magnitude of flood flows at selected annual exceedance probabilities for streams in Massachusetts: U.S. Geological Survey Scientific Investigations Report 2016–5156, 99 p. (https://dx.doi.org/10.3133/sir20165156)

Low-Flow Statistics Parameters [Statewide Low Flow WRIR00 4135]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.44	square miles	1.61	149
BSLDEM250	Mean Basin Slope from 250K DEM	1.102	percent	0.32	24.6
DRFTPERSTR	Stratified Drift per Stream Length	1.01	square mile per mile	0	1.29
MAREGION	Massachusetts Region	1	dimensionless	0	1

Low-Flow Statistics Disclaimers [Statewide Low Flow WRIR00 4135]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Low-Flow Statistics Flow Report [Statewide Low Flow WRIR00 4135]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.121	ft^3/s

Statistic	Value	Unit
7 Day 10 Year Low Flow	0.0662	ft^3/s

Low-Flow Statistics Citations

Ries, K.G., III,2000, Methods for estimating low-flow statistics for Massachusetts streams: U.S. Geological Survey Water Resources Investigations Report 00-4135, 81 p. (http://pubs.usgs.gov/wri/wri004135/)

Flow-Duration Statistics Parameters [Statewide Low Flow WRIR00 4135]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.44	square miles	1.61	149
DRFTPERSTR	Stratified Drift per Stream Length	1.01	square mile per mile	0	1.29
MAREGION	Massachusetts Region	1	dimensionless	0	1
BSLDEM250	Mean Basin Slope from 250K DEM	1.102	percent	0.32	24.6

Flow-Duration Statistics Disclaimers [Statewide Low Flow WRIR00 4135]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Flow-Duration Statistics Flow Report [Statewide Low Flow WRIR00 4135]

Statistic	Value	Unit
50 Percent Duration	0.413	ft^3/s
60 Percent Duration	0.326	ft^3/s
70 Percent Duration	0.346	ft^3/s
75 Percent Duration	0.316	ft^3/s

Statistic	Value	Unit
80 Percent Duration	0.325	ft^3/s
85 Percent Duration	0.24	ft^3/s
90 Percent Duration	0.226	ft^3/s
95 Percent Duration	0.123	ft^3/s
98 Percent Duration	0.0939	ft^3/s
99 Percent Duration	0.0662	ft^3/s

Flow-Duration Statistics Citations

Ries, K.G., III,2000, Methods for estimating low-flow statistics for Massachusetts streams: U.S. Geological Survey Water Resources Investigations Report 00-4135, 81 p. (http://pubs.usgs.gov/wri/wri004135/)

Bankfull Statistics Parameters [Bankfull Statewide SIR2013 5155]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.44	square miles	0.6	329
BSLDEM10M	Mean Basin Slope from 10m DEM	4.006	percent	2.2	23.9

Bankfull Statistics Parameters [Appalachian Highlands D Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.44	square miles	0.07722	940.1535

Bankfull Statistics Parameters [New England P Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.44	square miles	3.799224	138.999861

Bankfull Statistics Parameters [USA Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.44	square miles	0.07722	59927.7393

Bankfull Statistics Disclaimers [Bankfull Statewide SIR2013 5155]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Bankfull Statistics Flow Report [Bankfull Statewide SIR2013 5155]

Statistic	Value	Unit
Bankfull Width	9.84	ft
Bankfull Depth	0.694	ft
Bankfull Area	6.73	ft^2
Bankfull Streamflow	12.9	ft^3/s

Bankfull Statistics Flow Report [Appalachian Highlands D Bieger 2015]

Statistic	Value	Unit
Bieger_D_channel_width	10.8	ft
Bieger_D_channel_depth	0.886	ft
Bieger_D_channel_cross_sectional_area	9.67	ft^2

Bankfull Statistics Disclaimers [New England P Bieger 2015]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Bankfull Statistics Flow Report [New England P Bieger 2015]

Statistic	Value	Unit
Bieger_P_channel_width	20.1	ft
Bieger_P_channel_depth	1.15	ft
Bieger_P_channel_cross_sectional_area	22.8	ft^2

Bankfull Statistics Flow Report [USA Bieger 2015]

Statistic	Value	Unit
Bieger_USA_channel_width	9.28	ft
Bieger_USA_channel_depth	1.01	ft
Bieger_USA_channel_cross_sectional_area	11	ft^2

Bankfull Statistics Flow Report [Area-Averaged]

Statistic	Value	Unit
Bankfull Width	9.84	ft
Bankfull Depth	0.694	ft
Bankfull Area	6.73	ft^2
Bankfull Streamflow	12.9	ft^3/s
Bieger_D_channel_width	10.8	ft
Bieger_D_channel_depth	0.886	ft
Bieger_D_channel_cross_sectional_area	9.67	ft^2
Bieger_P_channel_width	20.1	ft
Bieger_P_channel_depth	1.15	ft
Bieger_P_channel_cross_sectional_area	22.8	ft^2
Bieger_USA_channel_width	9.28	ft

Statistic	Value	Unit
Bieger_USA_channel_depth	1.01	ft
Bieger_USA_channel_cross_sectional_area	11	ft^2

Bankfull Statistics Citations

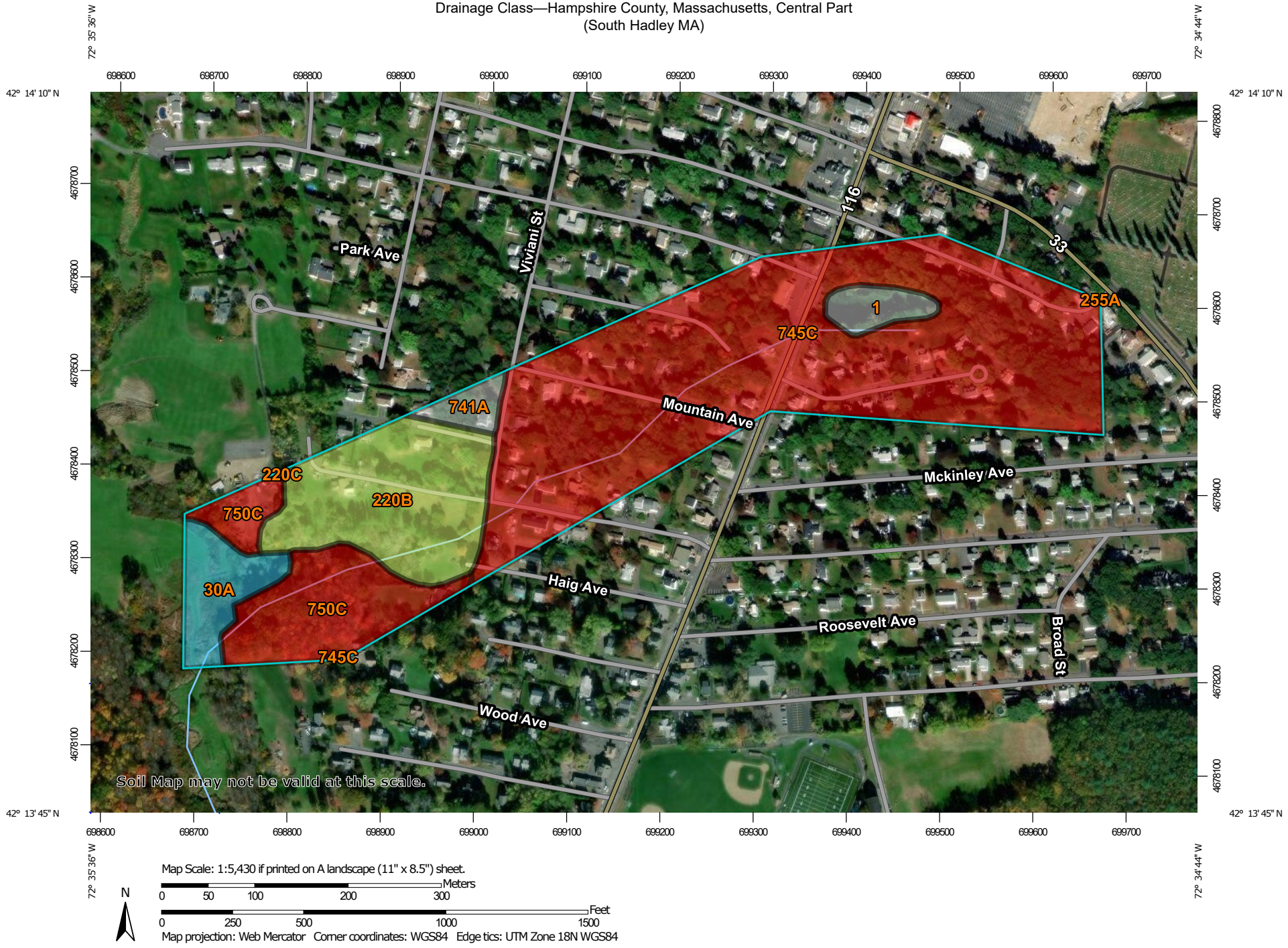
Bent, G.C., and Waite, A.M.,2013, Equations for estimating bankfull channel geometry and discharge for streams in Massachusetts: U.S. Geological Survey Scientific Investigations Report 2013–5155, 62 p., (http://pubs.usgs.gov/sir/2013/5155/)

Bieger, Katrin; Rathjens, Hendrik; Allen, Peter M.; and Arnold, Jeffrey G.,2015, Development and Evaluation of Bankfull Hydraulic Geometry Relationships for the Physiographic Regions of the United States, Publications from USDA-ARS / UNL Faculty, 17p. (https://digitalcommons.unl.edu/usdaarsfacpub/1515?utm_source=digitalcommons.unl.edu%2Fusdaarsfacpub%2F1515&utm_medium=PDF&utm_campaign=PDFCoverPages)

Application Version: 4.6.2
StreamStats Services Version: 1.2.22
NSS Services Version: 2.1.2

NRCS Soil Map and Soil Report

Drainage Class—Hampshire County, Massachusetts, Central Part
(South Hadley MA)



Map Scale: 1:5,430 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 50 100 200 300

Feet
0 250 500 1000 1500

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 Rating Polygons

Excessively drained
Somewhat excessively drained
Well drained
Moderately well drained
Somewhat poorly drained
Poorly drained
Very poorly drained
Subaqueous
Not rated or not available

Soil Rating Lines

Excessively drained
Somewhat excessively drained
Well drained
Moderately well drained
Somewhat poorly drained
Poorly drained
Very poorly drained
Subaqueous
Not rated or not available

Soil Rating Points

Excessively drained
Somewhat excessively drained
Well drained
Moderately well drained
Somewhat poorly drained
Poorly drained
Very poorly drained
Subaqueous
Not rated or not available

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 1:15,800.

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: Hampshire County, Massachusetts, Central Part
Survey Area Data: Version 16, Sep 3, 2021

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

Date(s) aerial images were photographed: Mar 15, 2016—Oct 30, 2017

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.

Drainage Class

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
1	Water		1.1	2.4%
30A	Raynham silt loam, 0 to 3 percent slopes	Poorly drained	2.4	5.2%
220B	Boxford silt loam, 3 to 8 percent slopes	Moderately well drained	7.7	16.4%
220C	Boxford silt loam, 8 to 15 percent slopes	Moderately well drained	0.0	0.1%
255A	Windsor loamy sand, 0 to 3 percent slopes	Excessively drained	0.0	0.0%
741A	Amostown-Windsor silty substratum-Urban land complex, 0 to 3 percent slopes		0.8	1.8%
745C	Hinckley-Merrimac-Urban land complex, 3 to 15 percent slopes	Excessively drained	28.9	61.4%
750C	Windsor-Scitico-Amostown complex, 0 to 15 percent slopes	Excessively drained	6.0	12.7%
Totals for Area of Interest			**47.0**	**100.0%**

Description

"Drainage class (natural)" refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized-excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained. These classes are defined in the "Soil Survey Manual."

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

FUSS & O'NEILL

Explanation of Terms Used In Wetlands Functions and Values Assessments

FUSS & O'NEILL

Explanation of Terms Used in Wetlands Function and Values

According to the U.S. Army Corps of Engineers "Highway Methodology Work Book: Supplement. Wetland Functions and Values: A Descriptive Approach" (1999, NAEEP-360-1-30a):

Functions are self-sustaining properties and processes of a wetland. They result from living and non-living components of a specific wetland and describe its ecological significance independent of human valuation. **Values** are benefits that derive from one or more functions and characteristics associated with a wetland. Most wetlands have corresponding societal value that is recognized in federal, state, and/or local legislation to protect these resources.

An assessment of *Primary* or *Secondary* indicates the relative number of satisfied criteria used as "considerations and qualifiers" for a particular function or value.

Groundwater Recharge & Discharge
The capacity or potential for a wetland to interact with groundwater such that water moves from surface water to ground water (Recharge) or from ground water to surface water (Discharge).

Floodflow Alteration
The storage of inflowing water from storm or flooding events, resulting in detention and retention of water on the wetland surface.

Fish and Shellfish Habitat (Streams & Rivers)
Considers the quality of the aquatic habitat of a perennial watercourse, and its capacity to support finfish.

Sediment, Pollutant & Nutrient Removal
The capacity of a wetland to remove dissolved, suspended and floatable material from storm water runoff and prevents degradation of water quality.

Production Export
The capacity of a wetland to produce wildlife food sources, or to export biomass that sustains downstream ecosystems and local wildlife populations.

Wildlife Habitat
The capacity of a wetland to support a diverse and abundant wildlife community typically associated with wetland and wetland edges.

Recreation
Considers the ability of watercourses to provide passive or active recreational opportunities such as canoeing, boating, fishing, hunting, and other activities.

Educational/Scientific Value
The suitability of a wetland for classroom field trips or scientific research.

Uniqueness/Heritage
The degree to which a wetland is considered a unique natural and/or historical resource.

Site Photographs

Figure 1. Titus Pond, with the inlet control structure to Buttery Brook in the foreground. Looking east-northeast near flag A101.

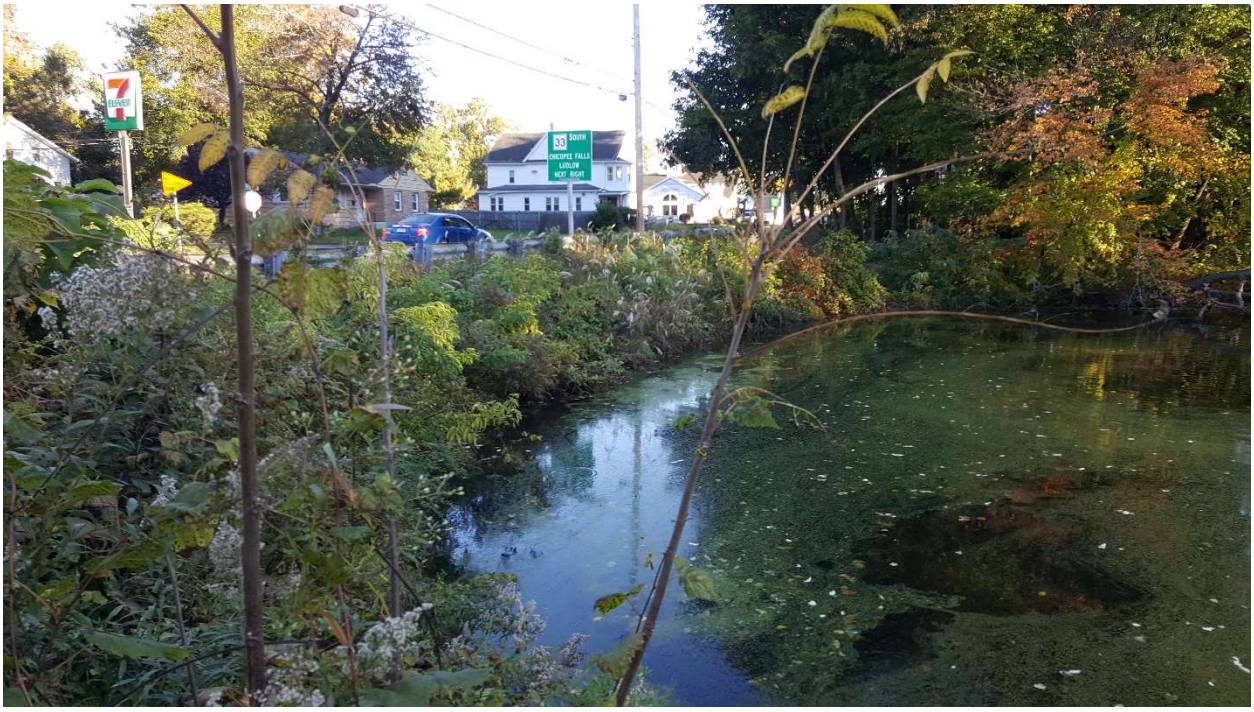


Figure 2. Western bank of Titus Pond along the eastern side of Newton Street. Looking north from the inlet control structure.

Figure 3. Titus Pond. Looking southwest near flag A113.

Figure 4. 8-inch corrugated metal pipe, presumably a stormwater outfall, within the BVW along the northern bank of Titus Pond (flag series B200-B215). Looking north.

Figure 5. Lower reach of unnamed intermittent stream (flag series C300-C313 and D400-D411) flowing into Titus Pond, in background). Looking west-northwest (downstream) near flag D404.

Figure 6. Lower reach of unnamed intermittent stream (flag series C300-C313 and D400-D411) flowing into Titus Pond, in background). Looking east-southeast (upstream) near flag D404.

Figure 7. Corrugated metal pipe, which is the outlet of Titus Pond and the beginning of Buttery Brook. Outlet is perched and severely deteriorated. Arrow indicates flow direction. Looking east near flag E501.

Figure 8. Buttery Book, with BVW at right (flag series P600-P613). Looking southwest (downstream) near flag F610.

Figure 9. Buttery Book, with BVW at right and in background at left (flag series Q700-Q702 and P600-P613, respectively). Looking northeast (upstream) near flag F610.

Figure 10. Section of debris observed in BVW east of Buttery Brook (flag series R800-R815). Looking south near flag E514.

Figure 11. Buttery Brook, with BVW at right and left (flag series N500-N514 and R800-R815, respectively). Looking south-southwest (downstream) near flag E525.

Figure 12. Buttery Brook, with BVW at right and left (flag series R800-R815 and N500-N514, respectively). Looking east (upstream) near flag F635.

Figure 13. Buttery Brook at the inlet north of Mountain Avenue. BVW are at right and left (flag series N500-N514 and R800-R815, respectively). Looking west (downstream) near flag R814.

Figure 14. Deteriorated culvert conveying Buttery Brook under Mountain Avenue. Looking south-southwest from the inlet north of the road.

Figure 15. Outlet for Buttery Brook south of Mountain Avenue. Arrow indicates where majority of flow emerges from crossing, as pipe segments have separated. Looking northeast (upstream).

Figure 16. Buttery Brook, with BVW at right (flag series M400-M406). Looking southwest (downstream) near flag E537.

Figure 17. Buttery Brook, with BVW at left (flag series M400-M406). Outlet for the Mountain Avenue crossing is in the background. Looking northeast (upstream) near flag E537.

Figure 18. BVW (flag series M400-M406), with Buttery Brook in foreground. Looking northwest near flag E537.

Figure 19. Buttery Brook. Looking northeast (upstream) near flag F649.

Figure 20. Buttery Brook, with BVW in background (flag series K200-K213). Looking southwest (downstream) near flag F649.

Figure 21. Buttery Brook and inlet to the buried reach under Joffre Avenue and surrounding area. BVW (flag series K200-K213) encircles the inlet and is visible at right and left. Looking northeast (upstream) near flag F656.

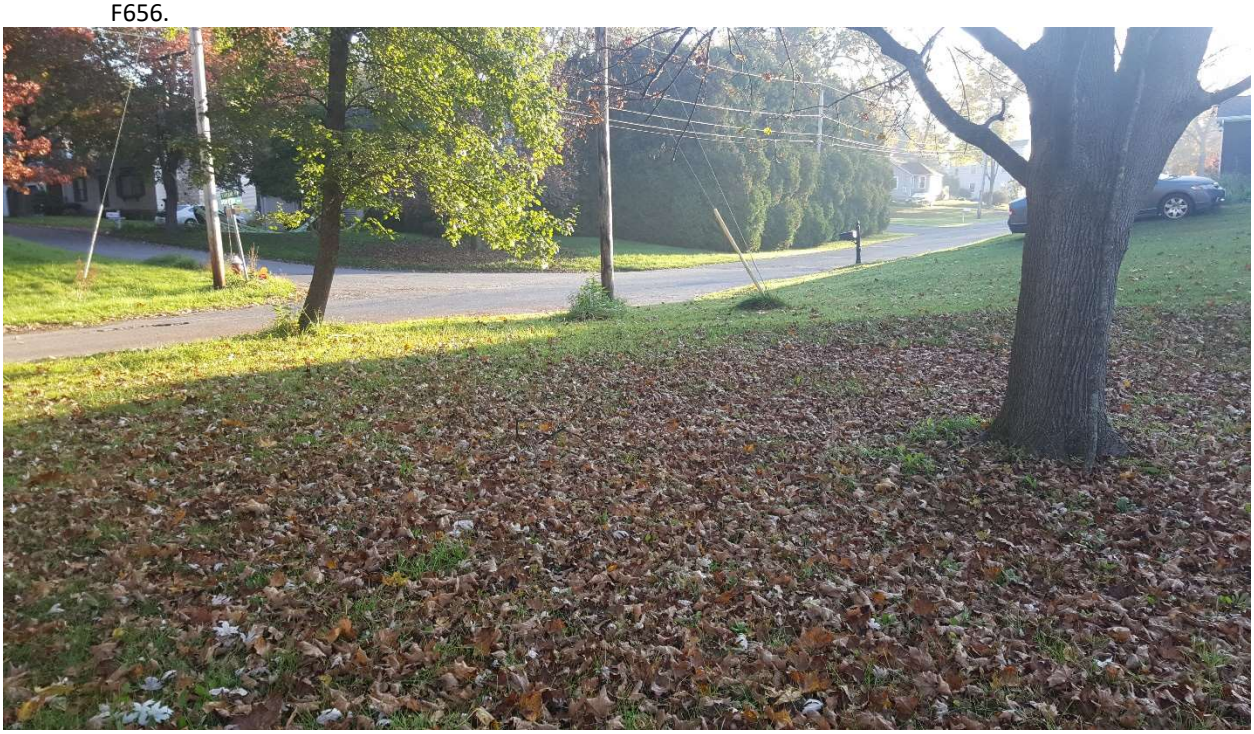


Figure 22. Approximate location of the buried reach of Buttery Brook under Joffre Avenue and surrounding area. Looking northeast (upstream) south of Joffre Avenue.

Figure 23. Approximate location of the buried reach of Buttery Brook under Joffre Avenue and surrounding area. Arrow indicates location of outlet. Looking southwest (downstream) south of Joffre Avenue

Figure 24. Outlet for Buttery Brook (flag series G700-G7-6 and H800-H812) south of Joffre Avenue. Outlet was almost entirely submerged and partially full of sediment. Looking east (upstream) near flag G702.

Figure 25. Buttery Brook, with BVW at right and left (flag series I900-I908 and J100-J107, respectively). Looking west (downstream) near flag G702.

Figure 26. Girdling of mature eastern cottonwoods (*Populus deltoides*) by beaver (*Castor canadensis)*, located in the BVW north of Buttery Brook (flag series (I900-I908). Looking east (downstream) near flag G705.

Figure 27. Beaver dam (dashed line). Looking south near flag G706)

Figure 28. Buttery Brook downstream of the beaver dam. Looking east (upstream) near flag G707.

Figure 29. BVW south of Buttery Brook (flag series J100-J107). Looking west-southwest (downstream) near flag J105.

Figure 30. BVW south of Buttery Brook (flag series L300-L337). Looking west near flag L317.

Figure 31. BVW west of Buttery Brook (flag series N500-N514). Looking north near flag N505.

Figure 32. BVW east of Buttery Brook (flag series R800-R815). Looking north near flag R804.