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INTRODUCTION

Ken Thomson, *Botanist* conducted wetland delineation at the 1185 Pleasant Street on August 8 & 9, 2021. The property is 10 acres of undeveloped forest and forested wetlands. The property is located to the east of the Pleasant Street electric substation. The majority of the uplands are located along the eastern property line consisting of a large hill dominated by white pine, oaks and maples.

The wetlands are located in the central portion of the property. It receives drainage from south of Pleasant Street and enter the property by way of culverts. Surface flows continue to flow north then northeast through the center of the property. The wetland is a large, deep muck red maple swamp, dominant vegetation includes red maple and black tupelo in the tree layer. The shrub layer included large stands of spicebush and poison sumac. The herbaceous layer was dominated by skunk cabbage. The soils are mapped as Swansea peat. The Swansea series consists of very poorly drained organic soils. They formed in 15 to 50+ inches of highly decomposed organic material over sandy mineral. These soils are in depressions or on flat level areas on uplands and outwash plains. Depth of muck observed in the center of the wetland was greater than 3 feet.

A small pool was located in the southeast portion of the property along the eastern property line. It has stands of woolgrass within in it and may be a potential vernal pool. Observation should be done during the spring amphibian breeding season to determine the regulatory status of the pool. It is drain to the west by way of dug ditch, which empties into the central wetland.

This property is located just outside of the Hockomock Area of Critical Environmental Concern (ACEC). FEMA has identified the 100-year floodplain (1% Flood Hazard) within the wetland which has been studied (Zone AE) and has a flood elevation of 62 feet NAVD88.

WETLAND DELINEATION

Kenneth Thomson (Botanist/Wetland Scientist) identified and delineated wetlands subject to regulatory jurisdiction under Section 404 of the Clean Water Act (33 U.S.C. 1344) or the Massachusetts Wetlands Protection Act, M.G.L., Chapter 131, Section 40. Fieldwork was conducted on August 8 & 9, 2021. The predominance of hydrophytic vegetation, evidence of hydric soils, and wetland hydrology were used to define the boundary of vegetated wetlands following the Interim Regional Supplement to the 1987 Corps of Engineers Wetland Delineation



Manual: Northcentral and Northeast Region, January 2012, and the 1995 MA DEP Delineation Manual Guidelines. Pink flags are tied to woody vegetation marking the extent of vegetated wetlands, 1 to 22, A1 to A35, B1 to B28, B1 connects to D1 which continues off property to D24 and C1 to C21. Wetland Determination Data Forms were completed for plots located up-gradient and down-gradient of wetland flag #B11-20 and D17

Massachusetts wetland resources identified during the delineation include:

- *Bank*
- *Bordering Vegetated Wetlands*
- *Bordering Land Subject to Flooding*

MassGIS OLIVER REVIEW

MassGIS data maps were reviewed for wetlands, floodplain, outstanding resource waters (ORWs), surface water protection, groundwater protection and Area of Environmental Concern (ACEC) and MA Natural Heritage data. The following data layers are associated with the site under review.

Present	Absent	Natural Heritage
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Certified Vernal Pools
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Potential Vernal Pools
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Estimated Habitat
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Priority Habitat
Ground Water Protection		
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Interim Well Head Protection
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Zone 2
Surface Water Protection		
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Zone A
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Zone B
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Zone C
Wetlands		
<input checked="" type="checkbox"/>	<input type="checkbox"/>	DEP Wetland Layer
<input type="checkbox"/>	<input checked="" type="checkbox"/>	2005 Human Alter Layer
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Perennial Stream
Floodplain		
<input checked="" type="checkbox"/>	<input type="checkbox"/>	FEMA Flood Hazard Data - <i>Zone AE Elevation 62 ft NAVD88</i>
Out Standing Resource Waters (ORW)		
<input type="checkbox"/>	<input checked="" type="checkbox"/>	ORW
Area of Environmental Concern (ACEC)		
<input type="checkbox"/>	<input checked="" type="checkbox"/>	ACEC

Massachusetts Wetland Resource Areas

Wetland resource areas on the site regulated under the Massachusetts Wetlands Protection Act (MGL Chapter 131, Section 40) and its Regulations (310 CMR 10.00) include:



Banks are likely to be significant to public or private water supply, to ground water supply, to flood control, to storm damage prevention, to the prevention of pollution and to the protection of fisheries and wildlife habitat. *Bank* is defined as the first break in slope.

Bordering Vegetated Wetlands (BVW) are likely to be significant to public or private water supply, to ground water supply, to flood control, to storm damage prevention, to prevention of pollution, to the protection of fisheries and to wildlife habitat. The boundary of *Bordering Vegetated Wetlands* is the line within which 50% or more of the vegetational community consists of wetland indicator plants and saturated or inundated conditions exist.

Bordering Land Subject to Flooding (BLSF) provides a temporary storage area for flood water, flood control and storm damage prevention. BLSF likely to be significant to the protection of wildlife habitat including all areas on the ten year floodplain or within 100 feet of the bank or bordering vegetated wetland, whichever is further from the water body or waterway provide important food, shelter, migratory and overwintering areas, and breeding areas for wildlife.

A 100-foot buffer zone extends landward from the limit of the *Bordering Vegetated Wetlands* and *or Bank*.

Sincerely,

5 Wetlands

Kenneth Thomson
Botanist

National Flood Hazard Layer FIRMMette



71°1'12"W 41°58'29"N



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) <i>Zone A, V, A99</i>
		With BFE or Depth <i>Zone AE, AO, AH, VE, AR</i>
		Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile <i>Zone X</i>
		Future Conditions 1% Annual Chance Flood Hazard <i>Zone X</i>
		Area with Reduced Flood Risk due to Levee. See Notes. <i>Zone X</i>
		Area with Flood Risk due to Levee <i>Zone D</i>

OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard <i>Zone X</i>
		Effective LOMRs
		Area of Undetermined Flood Hazard <i>Zone D</i>

GENERAL STRUCTURES		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall

OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance
		17.5 Water Surface Elevation
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
		Profile Baseline
	Hydrographic Feature	

MAP PANELS		Digital Data Available
		No Digital Data Available
		Unmapped

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **8/16/2021 at 2:07 PM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

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

Applicant: **Town of Bridgewater** Prepared by: **Ken Thomson / Botanist** Project location: **1185 Pleasant Street, Bridgewater** 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 used to delineate BVW boundary: fill out Sections I and II
- Method other than dominance test used (attach additional information)

Section I.

Vegetation	Observation Plot Number: WETLAND		Transect Number: WF# B11	Date of Delineation: 8/9/2021
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 TOTAL = 60 %				
Red Maple, <i>Acer rubrum</i>	55	55/60*100=92%	Yes	FAC*
White Ash, <i>Fraxinus americana</i>	5	5/60*100=8%	No	
SAPLING TOTAL = 5%				
Red Maple, <i>Acer rubrum</i>	5	5/5*100=100%	Yes	FAC*
SHRUB TOTAL = 75%				
Spicebush, <i>Lindera benzoin</i>	75	75/75*100=100%	Yes	FACW*
GROUND COVER TOTAL = 50%				
Skunk Cabbage, <i>Symplocarpus foetidus</i>	45	45/50*100=90%	Yes	OBL*
Cinnamon Fern, <i>Osmundastrum cinnamomeum</i>	5	5/50*100=10%	No	
VINE TOTAL = N/A				

* 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: **4** Number of dominant non-wetland indicator plants: **0**

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: MassGIS

map number:

soil type mapped: Swansea Peat

hydric soil inclusions:

Are field observations consistent with soil survey? YES NO

Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
Oa	18-0 in	10YR2/1 Muck	
Bw1	0-5	5Y3/3 Sand	

Remarks:

Fine Sandy Loam=FSL

Silt Loam = SiL

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: **8 Inches**
- Depth to soil saturation in observation hole: **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.

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Check all that apply:

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

Section I.

Vegetation	Observation Plot Number: UPLAND		Transect Number: WF# B11	Date of Delineation: 8/9/2021
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 TOTAL = 60 %				
Red Maple, <i>Acer rubrum</i>	30	30/60*100=50%	Yes	FAC*
White Ash, <i>Fraxinus americana</i>	20	20/60*100=33%	Yes	FACU
Black Locust, <i>Robinia pseudoacacia</i>	10	10/60*100=17%	No	
SAPLING TOTAL = 5%				
American Elm, <i>Ulmus americana</i>	5	5/5*100=100%	Yes	FACW*
SHRUB TOTAL = 50%				
Spicebush, <i>Lindera benzoin</i>	50	50/50*100=100%	Yes	FACW*
GROUND COVER TOTAL = 80%				
Vinca Lesser, <i>Vinca minor</i>	70	70/80*100=88%	Yes	UPL
Hay-Scented Fern, <i>Dennstaedtia punctilobula</i>	10	10/80*100=12%	No	
VINE TOTAL = 35%				
Bittersweet, <i>Celastrus orbiculatus</i>	20	20/35*100=57%	Yes	UPL
Fox Grape, <i>Vitis labrusca</i>	15	15/35*100=43%	Yes	FACU

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Vegetation conclusion:

Number of dominant wetland indicator plants: **3** 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: MassGIS

map number:

soil type mapped: Merrimac Fine Sandy Loam

hydric soil inclusions:

Are field observations consistent with soil survey? YES NO

Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
Oa	1-0 in	10YR2/1 Hemic	
A	0-15	10YR3/3 FSL	
Bw1	15+	10YR4/4 FSL	

Remarks:

Fine Sandy Loam=FSL

Silt Loam = SiL

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	___	<u>X</u>
Wetland hydrology present:		
Hydric soil present	___	<u>X</u>
Other indicators of hydrology present	___	<u>X</u>
Sample location is in a BVW	___	<u>X</u>

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- Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II
- Method other than dominance test used (attach additional information)

Section I.

Vegetation	Observation Plot Number: WETLAND		Transect Number: WF# D17	Date of Delineation: 8/9/2021
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 TOTAL = 60 %				
Red Maple, <i>Acer rubrum</i>	30	30/60*100=50%	Yes	FAC*
White Pine, <i>Pinus strobus</i>	20	20/60*100=33%	Yes	FACU
White Ash, <i>Fraxinus americana</i>	10	10/60*100=17%	No	
SAPLING TOTAL = 15%				
American Beech, <i>Fagus grandifolia</i>	10	10/15*100=67%	Yes	FACU
Black Tupelo, <i>Nyssa sylvatica</i>	5	5/15*100=33%	Yes	FAC*
SHRUB TOTAL = 60%				
Sweet pepperbush, <i>Clethra alnifolia</i>	30	30/60*100=50%	Yes	FAC*
Spicebush, <i>Lindera benzoin</i>	20	20/60*100=33%	Yes	FACW*
Highbush Blueberry, <i>Vaccinium corymbosum</i>	10	10/60*100=17%	No	
GROUND COVER TOTAL = 60%				
Cinnamon Fern, <i>Osmundastrum cinnamomeum</i>	45	45/60*100=75%	Yes	FACW*
Skunk Cabbage, <i>Symplocarpus foetidus</i>	15	15/60*100=25%	Yes	OBL*
VINE TOTAL = N/A				

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Vegetation conclusion:

Number of dominant wetland indicator plants: **6** 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?

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

YES NO

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? YES NO

title/date: MassGIS

map number:

soil type mapped: Swansea Peat

hydric soil inclusions:

Are field observations consistent with soil survey? YES NO

Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
Oa	18-0 in	10YR2/1 Muck	
Bw1	0-5	5Y3/1 Very Fine Sand	

Remarks:

Fine Sandy Loam=FSL

Silt Loam = SiL

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: **Surface**
- Depth to soil saturation in observation hole: **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	<u> X </u> ___	___
Wetland hydrology present:		
Hydric soil present	<u> X </u> ___	___
Other indicators of hydrology present	<u> X </u> ___	___
Sample location is in a BVW	<u> X </u> ___	___

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- Method other than dominance test used (attach additional information)

Section I.

Vegetation	Observation Plot Number: UPLAND	Transect Number: WF# B11	Date of Delineation: 8/9/2021
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 TOTAL = 80 %			
Red Maple, <i>Acer rubrum</i>	40	40/80*100=50%	Yes
White Pine, <i>Pinus strobus</i>	40	40/80*100=50%	Yes
SAPLING TOTAL = 30%			
White Pine, <i>Pinus strobus</i>	20	20/30*100=67%	Yes
American Beech, <i>Fagus grandifolia</i>	10	10/30*100=33%	Yes
SHRUB TOTAL = 35%			
Black Huckleberry, <i>Gaylussacia baccata</i>	20	20/35*100=57%	Yes
Sweet pepperbush, <i>Clethra alnifolia</i>	10	10/35*100=29%	Yes
Highbush Blueberry, <i>Vaccinium corymbosum</i>	5	5/35*100=14%	No
GROUND COVER TOTAL = 60%			
Sarsaparilla, <i>Aralia nudicaulis</i>	20	20/60*100=33%	Yes
Tree Club Moss, <i>Dendrolycopodium dendroideum</i>	15	15/60*100=25%	Yes
Goldthread, <i>Coptis trifolia</i>	15	15/60*100=25%	Yes
Braken Fern, <i>Pteridium aquilinum</i>	5	5/60*100=8%	No
Horsebrier, <i>Smilax rotundifolia</i>	5	5/60*100=8%	No
VINE TOTAL = N/A			

* 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: **6**

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: MassGIS

map number:

soil type mapped: Merrimac Fine Sandy Loam

hydric soil inclusions:

Are field observations consistent with soil survey? YES NO

Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
Oa	1-0 in	10YR2/1 Hemic	
A	0-3	10YR4/4 FSL	
Bw1	3-18+	10YR5/6 FSL	

Remarks:

Fine Sandy Loam=FSL

Silt Loam = SiL

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.