



Memorandum

To: Mike Moonan – CHA, MassDOT
From: James B. Hall, PWS, CPESC
Date of Delineation: Fall 2024 & Spring 2025
Re: Wetland Delineation – Bare Cove Park, Hingham

Site investigations were conducted in the Fall of 2024 and the Spring of 2025 off Bare Cove Drive in Hingham, Massachusetts for the purpose of site redevelopment for the construction of recreational pickleball courts. The inspections were conducted at and adjacent to an existing navel depot warehouse building that was constructed as part of the site development during World War II by the U.S. Navy as an ammunition depot and managed until 1971. The purpose of the site visit was to identify wetland and waterbody resource areas within and/or adjacent to 100 and 200 feet, respectively, of potential work areas associated with the project area. The wetland investigation was performed by a CHA Professional Wetland Scientist (PWS) in accordance with the Department of Environmental Protection (DEP) Massachusetts Wetland Protection Act (1995), the U.S. Army Corps of Engineers (Corps) *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast* (January 2012) as well as the Town of Hingham, MA Wetlands Protection Bylaw and Regulations (Article 22) that protects all wetland and waterbody resources.

One (1) bordering vegetated wetland (BVW), Series A, and two unnamed waterbodies were delineated on the parcel. The tributaries, delineated as Channel 1 (intermittent – CH1) and Channel 2 (perennial – CH2), are part of the Weymouth Back River watershed system. One (1) vernal pool (TOB1), classified as a Certified Vernal Pool (CVP) in 2005, was also delineated in this area, although it was not active when reviewed during the 2025 spring season. In addition, the Weymouth Back River Area of Environmental Concern (ACEC), designated in September 1982, occurs within the wetland area of Bare Cove Park.

No Special Resources, as described in the section below, occur within the project area. Note that Environmental Justice (EJ) Populations (minority/low median household income) for the Town of Hingham are not located within 1-mile of the project area.

Existing Conditions

The project area occurs within Bare Cove Park, constructed as part of the site development during World War II by the U.S. Navy as an ammunition depot and managed until 1971. It was originally established in 1906 as Hockley Hollow, serving as a munitions storage facility for aircraft and ships until decommissioned in 1961. The park occurs in the Towns of Hingham and Weymouth south of Route 3A. It is generally bounded in the Town of Hingham to the north by Route 3A, the north and east by Beal Street, the east and south by Fort Hill Street, and the south and west by Commercial Street. The active Massachusetts Bay Transportation Authority (MBTA)

commuter rail tracks and the West Hingham railway station occur to the south. The project area occurs at an existing, abandoned, navel depot warehouse off Bare Cove Drive that is proposed to be razed and redeveloped as recreational pickle ball courts. Land uses in this vicinity are classified as the municipal Bare Cove Park with walking trails/parking lots, the Hingham municipal office buildings (DPW Office, Municipal Lighting Plant and Sewer Department) to the north and east, commercial properties and the MBTA railroad station/tracks to the south with undeveloped forested areas interspersed between developed parcels. Sidewalks are present on one or both sides of Fort Hill Street in the vicinity of the project. The terrain is moderately level in this area although scattered hills occur in some areas and wetland resources generally occur in lower depressional areas. Soils in the area are classified predominantly as previously altered/excavated loamy fill Udorthents with wetland resource areas predominantly as Freetown muck.

Undeveloped portions of land along/adjacent to Bare Cove Park and Bare Cove Drive/Fort Hill Street are vegetated by mixed coniferous-deciduous forest dominated by Eastern white pine (*Pinus strobus*), northern red oak (*Quercus rubra*), red maple (*Acer rubrum*), white ash (*Fraxinus americana*), shagbark hickory (*Carya ovata*), tupelo/black gum (*Nyssa sylvatica*), Eastern red cedar (*Juniperus virginiana*) and black cherry (*Prunus serotina*). Seedlings and saplings of overstory tree species occupy the understory in addition to multiflora rose (*Rosa multiflora*), fox grape (*Vitis labrusca*), poison ivy (*Toxicodendron radicans*), common greenbrier (*Smilax rotundifolia*) and Tartarian honeysuckle (*Lonicera tatarica*). Leaf/needle litter is prevalent as ground cover in many areas and the moderate herbaceous understory may include various weedy graminoid species (Family *Poaceae*), mustards (Family *Chenopodiaceae*) and composites (Family *Asteraceae*) including Kentucky bluegrass (*Poa pratensis*), hairy crabgrass (*Digitaria sanguinalis*), little bluestem (*Schizachyrium scoparium*), deer-tongue (*Panicum clandestinum*), common dandelion (*Taraxacum officinale*), common yarrow (*Achillea millefolium*) and red raspberry (*Rubus idaeus*) as well as noxious/invasives species such as the climbing vine Oriental bittersweet (*Celastrus orbiculatus*) and common reed (*Phragmites australis*). Soils are disturbed along road edges and upland/wetland areas due to historic development and characterized as Udorthents/loamy fill and Freetown muck as classified above.

Wetland Resource Areas

Wetland resource areas along Bare Cove Drive within the project area were delineated according to the DEP Publication *Delineating Bordering Vegetated Wetlands Under the 1995 MA Wetlands Protection Act* (WPA) (310 CMR 10.00), the U.S. Army Corps of Engineers (Corps) *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast* (January 2012) as well as the as the Town of Hingham, MA Wetlands Protection Bylaw and Regulations (Article 22) (Wetlands Protection Bylaw). One (1) bordering vegetated wetland (BVW), Series A, was delineated along Bare Cove Drive. Two (2) waterbodies, an intermittent and a perennial tributary to the Weymouth Back River watershed system are also present in the project area. They are designated as Channels 1 and 2, respectively. Lastly, one (1) CVP was delineated within the Wetland Series A resource area.

There is a local 50-foot buffer related to specific activities, a local/state 100-foot buffer zone associated with BVWs and inland bank of perennial/intermittent waterbodies as well as 200-foot Riverfront Area of perennial waterbodies under the Hingham Wetlands Protection Bylaw and WPA. In addition, there is a local 100-foot undisturbed “Vernal Pool Protection Zone” from the CVP boundary/mean annual high water line.

Bordering Vegetated Wetland (BVW)

Wetland Series A – Wetland Series A, numbered with 24 pink, nylon, survey flags (WFA -1 to WFA -24), delineates a palustrine forested/scrub-shrub riparian wetland located along the northwestern side of Bare Cove Drive. The BVW extends north and west of the project area and has a connection to the unnamed Channels 1 and 2 (see following section) that is part of the Weymouth Back River watershed system. The wetland is vegetated with red maple and slippery elm (*Ulmus rubra*) in the tree and sapling overstory, and Northern red oak, shagbark hickory and black cherry may extend into the overstory from adjacent uplands. The shrub understory consists of saplings and seedlings of overstory tree species as well as Northern arrow-wood (*Viburnum dentatum*), silky dogwood (*Cornus amomum*), sweet pepper-bush

(*Clethra alnifolia*) and multiflora rose (*Rosa multiflora*). The herbaceous component is sparse in most areas due to the overstory growth and includes sensitive fern (*Onoclea sensibilis*), fowl mannagrass (*Glyceria striata*), climbing nightshade (*Solanum dulcamara*) and skunk-cabbage (*Symplocarpus foetidus*) and as well as seedlings of overstay tree and shrub species in saturated zones. Leaf litter represents the dominate ground cover in many areas.

Inland Bank (Perennial and Intermittent Waterways)

Two (2) unnamed waterbodies were delineated on the parcel. The tributaries, delineated as Channel 1 (CH1 - intermittent) and Channel 2 (CH2 - perennial), are part of the Weymouth Back River/Bare Cove watershed system. Channel 1 is an unnamed waterbody that is not shown on the USGS Weymouth topographic map and is presumed intermittent. Channel 1 was delineated with blue, nylon, survey flags numbered sequentially from CH1- 1 to CH1-5 and flows in a westerly direction to converge with Channel 2. Bankfull/ordinary high water (OHW) widths were estimated at 8 - 10 feet wide with maximum depths approximated at < 12 inches. Water widths at the time of the survey were estimated at 5 - 8 feet wide with maximum depths approximated at < 3 inches, respectively. The bottom composition was predominantly silt with a minor sand component.

Channel 2 is classified as perennial according to the USGS Weymouth topographic map and has a 90% chance of being perennial from the StreamStats program and is presumed perennial. Channel 2 was delineated with blue, nylon, survey flags numbered sequentially from CH2- 1 to CH2-8 and flows in a north/westerly direction. Bankfull/ordinary high water (OHW) widths were estimated at 8 - 12 feet wide with maximum depths approximated at approximately 1.5 feet. Water widths at the time of the survey were estimated at 5 - 10 feet wide and maximum depths approximated at 6 - 12 inches, respectively. The bottom composition was predominantly silt with a minor sand component. Land Under Waterbodies and Waterways, defined as that area below Mean low Water (MLW), occurs within this unnamed waterbody.

Certified Vernal Pool (CVP)

A Natural Heritage Endangered Species Program (NHESP) Certified Vernal Pool (#3588), that was certified via facilitative species in 2005, occurs within at the wetland northwest end of the parcel. It was partially delineated on April 8th, 2025 with blue, nylon, survey flags numbered sequentially from TOB1- 1 to TOB1-10. It was reviewed the day of the survey as well as on April 16th, 2025 for facultative and obligate vernal pool species using field equipment inclding hip waders, a dip net, a shallow plastic container for species observation and polarized sun glass. April 8th was cloudy with sporadic light rain while April 16th was sunny and approximately 65°. The pool was less than 10 inches deep at the time of the reviews. No vernal pool (VP) species were identified via observatory or auditory methods on either day. Invertebrate species observed on one or both days included water striders (Family *Gerridae*), a non-indicator species. A few spring peepers (*Pseudacris crucifer*), a facultative species, were heard from deeper within the wetland, but not at the vernal pool itself. No obligate amphibian species, such as various mole salamanders (*Ambystoma* spp.) or wood frogs (*Lithobates sylvaticus*), were observed directly or indirectly, in the form of egg masses, larvae or calling during the reviews. The CVP did not appear active during the 2025 breeding season, but this does not declassify the pool from certification. If active certification proof is required, then the pool may need to be reviewed for the next several years to assess the level of activity. Under the Hingham Wetland Bylaw, there is a 100-foot undisturbed “Vernal Pool Protection Zone” from the vernal pool boundary/mean annual high water line.

Weymouth Back River Area of Critical; Environmental Concern

The property is located adjacent to the Weymouth Back River Area of Critical Environmental Concern (ACEC)/Outstanding Resource Waters (ORWs). This 950-acre area is located within the Towns of Hingham and Weymouth and includes 180 acres of tidal waters associated with Hingham Bay. The boundary of the ACEC occurs at approximately elevation 10 feet above sea level and is adjacent to/outside the project limits. However, permitting may be required under the Department of Conservation and Recreation (DCR) and/or Higham Conservation Commission and correspondence should be anticipated.

Special Resources

A review of the Massachusetts Natural Heritage Atlas (August 2017 edition) and MassGIS data layer (2025) for the USGS Weymouth topographic quadrangle map indicates that no designated Natural Heritage Endangered Species Program (NHESP) Estimated and/or Priority Habitat, or DEP BioMap Core Habitat or Living Water under the Massachusetts Endangered Species Act (MESA) occur along the project route. According to the Town of Hingham Federal Emergency Management Agency (FEMA) Federal Insurance Rate Map (FIRM) (Community Panel No. 25023C 0081K dated July 03, 2024), no 100-year floodplains (Zone A or AE)/Bordering Land Subject to Flooding (BLSF) or Regulatory Floodways are associated with the Bare Cove Park wetland or waterbody resource areas under the WPA and/or Hingham Wetlands Protection Bylaw. Neither surface water supply protection zones (A and B)/drinking water outstanding resource waters (ORWs) or DEP Wellhead Protection Areas (Zone 1, Zone II or Intermediate) are present on the project. Note that no Environmental Justice (EJ) Populations (Minority/low median household income) for the Town of Hingham are located within 1-mile of the project area.

Regulations

According to the Wetlands Protection Act (WPA) and Town of Hingham Wetlands Protection Bylaw (July 2022) , if any portion of a proposed project is located within a Bordering Vegetated Wetland (BVW), Inland Bank, Bordering Land Subject to Flooding and/or their associated local activity-specific 50-foot buffers, local/state 100-foot buffer zones or 200-foot Riverfront Areas, as applicable, consultation with the Town of Hingham Conservation Commission is recommended to determine if a Request for Determination of Applicability (RDA) or Notice of Intent (NOI) must be filed with the Town of Hingham and DEP for a permit approval prior to the commencement of work.

If greater than 5,000 square feet of bordering vegetated wetlands and/or land under water are impacted as a result of potential project improvements, a §401 Water Quality Certificate (WQC) application with the DEP, a §404 Pre-construction Notification (PCN) application (>5,000 s.f. to one (1) acre) with the US Army Corps of Engineers under the Massachusetts General Permit (GP) (ACOE) and/or an Environmental Notification Form (ENF) under Massachusetts Environmental Policy Act (MEPA) may be required. For impacts \leq 5,000 s.f., an ACOE GP (Self – Verification Notification Form (SVNF) will be required. It should be noted that construction, widening or maintenance that will alter the bank or terrain located ten or more feet from the existing roadway for one-half or more miles, and/or removal of 5 or more public shade trees > 14-inches diameter at breast height (DBH) may also require submittal of an Environmental Notification Form (ENF) for review under Massachusetts Environmental Protection Act (MEPA). Note that Environmental Justice (EJ) Populations (minority/low median household income) for the Town of Hingham are not located within 1-mile of the project area, and a mandatory Environmental Impact Statement (Single or Draft/Final) application is not anticipated.

Section II. Indicators of Hydrology

Hydric Soil Interpretation

Wetland Series A- Plot 2/6

1. Soil Survey

Is there a published soil survey for this site? Yes no

title/date: **Soil Survey of Plymouth County, MA, USDA & NRCS
Web Soil Survey (2024)**

map number: **N/A**

soil type mapped: **52A - Freetown muck, 0 to 1 percent slopes
659B - Udorthents, 0 to 8 percent slopes,
gravelly**

hydric soil inclusions: **NA**

Are field observations consistent with soil survey? Yes no

Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
O _a	0 – 10"	10YR 2/1	Sandy OM
A _p	10– 16"	10YR 3/1	Sandy loam/silt/muck Redox: 10YR 5/1 CMD
C	16 – 20"	10YR 5/1	Sandy loam/silt/muck
Refusal/Indurated			

Remarks:

3. Other:

Conclusion: Is soil hydric? Yes No

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

- Site inundated: Stream 10' away
- Depth to free water in observation hole: 10 "
- Depth to soil saturation in observation hole: _____
- Water marks: _____
- Drift lines: _____
- Sediment deposits: _____
- Drainage patterns in BVW: Stream/surface water
- Oxidized rhizospheres: _____
- Water-stained leaves: _____
- Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- Other: buttressed roots; stormwater pipe outlet

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Wetland hydrology present:		
hydric soil present	<input checked="" type="checkbox"/>	<input type="checkbox"/>
other indicators of hydrology present	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sample location is in BVW	<input checked="" type="checkbox"/>	<input type="checkbox"/>

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

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

Applicant: Town of Hingham Prepared by: CHA Consulting, Inc. Project Location: Bare Cove Dr., Hingham 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: Upland A Transect Number: Flag WFA - 2/6 Date of Delineation: 10/09/24

A. Sample Layer and 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*
<u>Trees:</u>				
shagbark hickory (<i>Carya ovata</i>)	38	38/79 =48%	yes	FACU-
black cherry (<i>Prunus serotina</i>)	20.5	20.5/79 =26%	yes	FACU
red maple (<i>Acer rubrum</i>)	20.5	20.5/79 =26%	yes	FAC*
<u>Saplings:</u>				
shagbark hickory (<i>Carya ovata</i>)p	10.5	10.5/10.5 =48%	yes	FACU-
red maple (<i>Acer rubrum</i>)	10.5	20.5/79 =26%	yes	FAC*
common buckthorn (<i>Rhamnus cathartica</i>)	10.5	15/15 = 100%	yes	FACU
<u>Shrubs:</u>				
black cherry (<i>Prunus serotina</i>)	20.5	20.5/51.5 =40%	yes	FACU
common buckthorn (<i>Rhamnus cathartica</i>)	20.5	20.5/51.5 =40%	yes	FACU
shagbark hickory (<i>Carya ovata</i>)	10.5	10.5/51.5 =20%	yes	FACU-
<u>Herb:</u>				
Enslens' dewberry (<i>Rubus ensleni</i>)	20.5	20.5/37 =55%	yes	FACU
common buckthorn (<i>Rhamnus cathartica</i>)	10.5	10.5/37 = 28%	yes	FACU
path/Pennsylvania sedge <i>Carex pensylvanica</i>	3	3/37= 8%	no	NI-FACU
black cherry (<i>Prunus serotina</i>)	3	3/37= 8%	no	FACU
<u>Vines:</u>				
common greenbrier (<i>Smilax rotundifolia</i>)	10.5	10.5/10.5=100%	yes	FAC*

* Use an asterisk to mark 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: Upland Plant Community

Number of dominant wetland indicator plants: 3 **Number of dominant non-wetland indicator plants:** 9

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: 25% yes no

Section II. Indicators of Hydrology

Hydric Soil Interpretation

Upland Series A- Plot 2/6

1. Soil Survey

Is there a published soil survey for this site? Yes no

title/date: **Soil Survey of Plymouth County, MA, USDA & NRCS
Web Soil Survey (2025)**

map number: **N/A**

soil type mapped: **52A - Freetown muck, 0 to 1 percent slopes
659B - Udorthents, 0 to 8 percent slopes,
gravelly**

hydric soil inclusions: **NA**

Are field observations consistent with soil survey? Yes no

Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
O_A	0.5 – 0"	-	-
A_p	0 – 6"	10YR 3/2	loam
C	6 – 8"	10YR 4/6	loam

Refusal/Indurated

Remarks:

3. Other:

Conclusion: Is soil hydric? Yes No

Other Indicators of Hydrology: (check all that apply and 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 (stream, lake, or tidal gauge; aerial photo; other): _____
- _____
- Other: _____

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Wetland hydrology present:		
hydric soil present	<input type="checkbox"/>	<input checked="" type="checkbox"/>
other indicators of hydrology present	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Sample location is in BVW	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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