Weston & Sampson SM

westonandsampson.com

55 Walkers Brook Drive, Suite 100
Reading, MA 01867
tel: 978.532.1900

Request for Determination of Applicability

February 2022

BULGE AT PATTON INTERSECTION
DEVENS, MA

PREPARED FOR:
MASSDEVELOPMENT FINANCE AGENCY

SUBMITTED TO:
DEVENS ENTERPRISE COMMISSION

55 Walkers Brook Drive, Suite 100, Reading, MA 01867
Tel: 978.532.1900

February 7, 2022

Devens Enterprise Commission
c.o Devens Commerce Center
43 Buena Vista Street
Devens, MA 01432

Re: New RDA Filing
Bulge at Patton Intersection
Road Realignment

Dear Commission Members:

On behalf of Mass Development, Weston & Sampson Engineers, Inc. is hereby submitting a Unified Level 1 permit and a request for Determination of Applicability (RDA) for Bulge Road at Patton Intersection project, to fulfill the requirements of the Massachusetts Wetlands Protection Act and the Devens Enterprise Commission submittal requirements. This submittal is a formal RDA for the proposed road realignment at the Bulge at Patton Intersection. Submission fees will be provided under a separate cover. A hard copy of the application with four (4) sets of application materials to follow.

As part of the filing, we have attached the following:

Appendix A: Project Description
Appendix B: Wetland Delineation Report
Appendix C: Project Maps
Appendix D: Stormwater Report
Project Plans

If you have any questions regarding this submittal, please contact me at (978) 532-1900.

Very truly yours,

WESTON & SAMPSON, INC.

Elena Compter, PE
Environmental Scientist

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

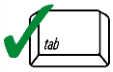
Devens
City/Town

WPA Form 1- Request for Determination of Applicability

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

A. General Information

Important:
When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



1. Applicant:

Mass Development Finance Agency
Name

E-Mail Address

99 High Street
Mailing Address

Boston
City/Town

MA
State

02110
Zip Code

617-330-2000
Phone Number

Fax Number (if applicable)

2. Representative (if any):

Weston & Sampson
Firm

Alexandra Gaspar
Contact Name

gaspara@wseinc.com
E-Mail Address

55 Walkers Brook Drive, Suite 100
Mailing Address

Reading
City/Town

MA
State

01867
Zip Code

978-532-1900
Phone Number

Fax Number (if applicable)

B. Determinations

1. I request the Devens Enterprise Commission make the following determination(s). Check any that apply:

☒ a. whether the **area** depicted on plan(s) and/or map(s) referenced below is an area subject to jurisdiction of the Wetlands Protection Act.

☐ b. whether the **boundaries** of resource area(s) depicted on plan(s) and/or map(s) referenced below are accurately delineated.

☒ c. whether the **work** depicted on plan(s) referenced below is subject to the Wetlands Protection Act.

☒ d. whether the area and/or work depicted on plan(s) referenced below is subject to the jurisdiction of any **municipal wetlands ordinance** or **bylaw** of:

Devens Enterprise Commission
Name of Municipality

☐ e. whether the following **scope of alternatives** is adequate for work in the Riverfront Area as depicted on referenced plan(s).

C. Project Description

1. a. Project Location (use maps and plans to identify the location of the area subject to this request):

Intersection of Bulge Road and Patton Road	Devens
Street Address	City/Town
n/a within roadway	n/a within roadway
Assessors Map/Plat Number	Parcel/Lot Number

b. Area Description (use additional paper, if necessary):

The site is a previously disturbed area which currently contains a roadway, associated shoulders, and cleared land. See Appendix A for additional information.

c. Plan and/or Map Reference(s):

MassDevelopment Patton Road and Bulge Road Intersection and Improvments	2/7/2022
	Date
Title	Date
Title	Date

2. a. Work Description (use additional paper and/or provide plan(s) of work, if necessary):

This project consists of road realignment work at the intersection of Bulge and Patton as well as stormwater drainage improvements. See Appendix A for additional information.

C. Project Description (cont.)

b. Identify provisions of the Wetlands Protection Act or regulations which may exempt the applicant from having to file a Notice of Intent for all or part of the described work (use additional paper, if necessary).

No work will be within wetland resource areas. Work will occur within previously disturbed area.

3. a. If this application is a Request for Determination of Scope of Alternatives for work in the Riverfront Area, indicate the one classification below that best describes the project.

- ☐ Single family house on a lot recorded on or before 8/1/96
- ☐ Single family house on a lot recorded after 8/1/96
- ☐ Expansion of an existing structure on a lot recorded after 8/1/96
- ☐ Project, other than a single family house or public project, where the applicant owned the lot before 8/7/96
- ☐ New agriculture or aquaculture project
- ☐ Public project where funds were appropriated prior to 8/7/96
- ☐ Project on a lot shown on an approved, definitive subdivision plan where there is a recorded deed restriction limiting total alteration of the Riverfront Area for the entire subdivision
- ☐ Residential subdivision; institutional, industrial, or commercial project
- ☐ Municipal project
- ☐ District, county, state, or federal government project
- ☐ Project required to evaluate off-site alternatives in more than one municipality in an Environmental Impact Report under MEPA or in an alternatives analysis pursuant to an application for a 404 permit from the U.S. Army Corps of Engineers or 401 Water Quality Certification from the Department of Environmental Protection.

b. Provide evidence (e.g., record of date subdivision lot was recorded) supporting the classification above (use additional paper and/or attach appropriate documents, if necessary.)

D. Signatures and Submittal Requirements

I hereby certify under the penalties of perjury that the foregoing Request for Determination of Applicability and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge.

I further certify that the property owner, if different from the applicant, and the appropriate DEP Regional Office were sent a complete copy of this Request (including all appropriate documentation) simultaneously with the submittal of this Request to the Conservation Commission.

Failure by the applicant to send copies in a timely manner may result in dismissal of the Request for Determination of Applicability.

Name and address of the property owner:

Massachusetts Development Finance Agency
Name

99 High Street
Mailing Address

Boston
City/Town

MA
State

02110
Zip Code

Signatures:

I also understand that notification of this Request will be placed in a local newspaper at my expense in accordance with Section 10.05(3)(b)(1) of the Wetlands Protection Act regulations.

Signature of Applicant

2/7/22
Date

Signature of Representative (if any)

2/7/2022
Date

DEVENS ENTERPRISE COMMISSION

DEC NO. _____
DATE: _____
FEE: provided under separate cover

DEVENS REGIONAL ENTERPRISE ZONE
PERMIT APPLICATION LEVEL 1

==========

ESTIMATED COST OF CONSTRUCTION / IMPROVEMENTS $960,000

OWNER Mass Development Finance Agency
ADDRESS 99 High Street
TOWN/STATE Boston, MA 02110
PHONE 617-330-2000
FAX _____

SIGNATURE

John Marc-Aurele, PE, Director of Engineering
Type or print name and title

APPLICANT Weston & Sampson
ADDRESS 100 Foxboro Blvd, Suite 250
TOWN/STATE Foxboro, MA 02035
PHONE 508-203-4214
FAX _____

SIGNATURE

Elena Compter, Senior Project Engineer
Type or print name and title

If appropriate, attach a separate sheet with the name(s), address(es), and telephone/fax numbers for the project engineer, attorney, or other "development team" personnel.

SITE / LOCATION / STREET Bulge Road, Devens (Harvard) _____

LOT SIZE / TOTAL PARCEL / ZONING DISTRICT: All proposed work takes place in public right-of-way of Bulge Rd and Patton Road, approx work area 107,000 SQ. FT.

==========

STATEMENT OF PROPOSED WORK OR ACTIVITY: On behalf of the owner, the applicant is proposing to realign the existing intersection of Bulge Road and Patton Road, resurface 1,000 feet of Bulge Road, construct curbing, sidewalk, and install drainage improvements. See Appendix A for additional info.

==========

SCOPE OF WORK (pick the actions that best fit your project or application)

___	Lot Plan - Subdivision	___	Event Police Detail & Fire Notice *
___	Site Plan	___	One-Day Liquor License Police Detail & Fire Notice *
X	Wetlands (RDA) / NOI / CoC	___	Liquor License Yearly
___	Sign Permit	___	Food Service Common Victualer
___	Minor amendment or modification of an approved plan		
___	Historic district renovations/addition/alternations	___	Certificate of Occupancy
X	Other (Specify) Review of stormwater design		

Explain work to be performed: Re-alignment of Bulge Rd & Patton Rd intersection and Bulge Road drainage improvements.

Comments from Notifying Agencies: _____

*** Police Detail Required - Call Devens Police 978-772-8800**
*** Fire Dept Require Notice - Call Devens Fire Dept 978-772-4600**

APPENDIX A
PROJECT DESCRIPTION

PROJECT DESCRIPTION

Background

Mass Development is proposing to make improvements to the Bulge and Patton intersection in Devens. The purpose of this project is to re-align existing intersection of Bulge Rd and Patton Road, resurface approximately 1,000 feet of Bulge Road, construct curbing and continuous sidewalk, and implement drainage improvements in compliance with MA Stormwater Management Standards and MS4 Permit for Devens.

Site Description

Project limits are from an intersection with Patton Road to an existing golf course maintenance facility at the terminus of Bulge Road.

Work Description

The project consists of roadway and drainage improvements of approximately 1,500-foot stretch of Bulge Road and realignment of Bulge Road and Patton Road intersection in Devens, MA.

The existing intersection of Bulge Road and Patton Road was constructed as "Y" intersection and does not meet current local and state design guidelines. Currently, Bulge Road is operating as a low volume roadway, providing access to the existing golf course and golf course maintenance facility located at road terminus. However, a significant increase in traffic is anticipated due to a construction of a new major commercial/industrial development along Bulge Road, necessitating an improvement of the Bulge Road and intersection with Patton Road to adequately service the development. The proposed project will replace an existing "Y" intersection with a standard "T" intersection to address safety issues and improve sight distances. The existing legs of Bulge Road will be reclaimed to full depth and restored to a pervious condition, and approximately 350 feet new roadway will be constructed to connect bulge Road with proposed "T" intersection at Patton Road. The remaining portion of Bulge Road will be resurfaced. Additional site work includes construction of bituminous curb and sidewalk along Bulge Road frontage, and existing stormwater drainage system will be replaced with a new system that complies with the current local and state stormwater regulations. The drainage improvements will include removal and replacement of existing drainage network along Bulge Road, replacing old catch basins with deep sump catch basins, equipped with gas and oil trap hoods. Two new infiltration basins will be constructed at the terminus of the proposed drainage network, which will provide peak rate and volume attenuation, groundwater recharge, and water quality treatment, prior to discharging of stormwater runoff into Cold Spring Brook via existing outfall.

Environmental Considerations

While there will be no direct impact to any resource areas protected by the Wetland Protection Act, stormwater runoff from the project will be discharging into the Cold Spring Brook and associated wetlands via existing outfall. This will greatly reduce the peak of runoff and will provide water quality treatment

Debris from the site preparation will be transported in covered container vehicles for off-site disposal or recycling. Erosion control measures, including the use of compost filter tubes will be used to mitigate sediment migration outside the limits of work. Catch basin protection will be implemented for all catch basins affected by the work area to minimize sediment loading into each catch basin.

Environmental protection measures will also include dust control to ensure that generation of on-site dust during work activities will be minimized. Dust control activities will not add to any additional stormwater runoff at the site, as dust control will not be used during storm events. Wet suppression shall be used to provide temporary control of dust. At a minimum, wet suppression shall be applied to demolition debris, excavated material, aggregate piles, and exposed soils and dirt. Dust suppression wetting agents shall be water soluble, non-toxic, non-reactive, non-volatile, and non-foaming and will not result in ponding of water.

APPENDIX B
WETLAND DELINEATION REPORT

Weston & Sampson

westonandsampson.com

55 Walkers Brook Drive, Suite 100
Reading, MA 01867
tel: 978.532.1900

Wetland Delineation Report

September 2021

Devens, Massachusetts
Project # ENG21-0922.D

Bulge Rd & Patton Rd
Devens, MA

Wetland Delineation Conducted By:
Devin Batchelder, CWS on 9/21/2021

Delineation Report Reviewed By:
Mel Higgins, PWS

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FIGURES

APPENDICES

1.0 SITE DESCRIPTION

On September 21st, 2021, the presence of wetland resources was investigated near Bulge Road and Patton Road in Devens, MA. This investigation area is located adjacent to an existing golf course with undeveloped woodlands and a waterbody nearby. Please see Figure 1 (Wetlands Field Map) and Figure 2 (USGS Topographic Map) of this report for the investigation area.

Wetland resource areas including a pond bank, a perennial stream bank, and a bordering vegetated wetland, were identified and flagged in the field using pink flagging by a Weston & Sampson employee who is trained in the wetland delineation process using the Massachusetts Department of Environmental Protection (MassDEP) and the US Army Corps of Engineers methodology. Further descriptions of these wetland resource areas are presented in the following sections.

2.0 DELINEATION OF WETLAND RESOURCES

2.1 Site Observations

The Weston & Sampson wetland scientist, trained in the ACOE Wetland Delineation Manual and Massachusetts Department of Environmental Protection (MassDEP) Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetland Protection Act guidance document, observed the following protected wetland resources at the site:

- Bordering Vegetated Wetlands (BVW)
- Bank – Perennial Stream
- Bank – Pond

Field data were recorded on US Army Corps of Engineers (ACOE) Wetland Determination Data Forms. See Appendix A for completed data forms and Appendix B for site photographs.

2.2 Wetland Delineation Methodology

A wetland delineation assessment was conducted in accordance with the Massachusetts Wetland Protection Act Regulations (310 CMR 10.55(2)(c)), Massachusetts Department of Environmental Protection (MassDEP) Delineating Bordering Vegetated Wetlands Under the Massachusetts Protection Act (March 1995), and ACOE Wetland Manual (Technical Report Y-87-1).

The bordering vegetated wetlands (BVW) delineation methodology included the characterization of vegetation, soil and hydrologic conditions in both wetland and upland areas to identify the transitional area, which was used as the wetland limit. Pink flags with distinct flag numbers are left in the field to show wetland resource area limits.

Vegetation, hydrology and soils are assessed in both wetland and upland areas to accurately place the wetland limits at each site. The percentage of vegetative species was estimated by creating sample plots. Sample plot radius for trees, saplings, shrubs, groundcover and woody vine strata was 30', 15', 15', 5' and 30', respectively. After creating the sample plot areas, the percent basal area coverage of each species within the monitoring plot was recorded. Using these field observations, the percent dominance of each species within its stratum was calculated. The 50/20 Rule was then used to

determine dominance. Dominant species were considered the most abundant plant species (when ranked in descending order of abundance and cumulatively totaled) that immediately exceeds 50% of the total dominance measure (basal area) for the stratum, plus any additional species comprising 20% or more of the total dominance measure for the stratum. Once the dominant species were determined, they were treated equally to determine the presence of hydrophytic vegetation. If the number of dominant species with a Wetland Indicator Status of FAC (excluding FAC-), FACW or OBL is greater than, or equal to, the number of remaining dominant species, the area was considered a jurisdictional wetland resource area based on vegetation.

A soil sample from each wetland sample plot is also taken. Each soil sample goes to a depth of at least 12-24 inches. The soil is characterized to determine if the soil sample is considered a hydric (wetland) soil. Soil samples, including mottles, are characterized based on color using Munsell Soil-Color charts as a color reference.

The general area is then assessed for hydrologic conditions, including, but not limited to, site inundation, depth to free water, depth of soil saturation, water marks, drift lines, sediment deposits, water stained leaves.

2.3 Bordering Vegetated Wetlands (BVW)

A single BVW series was delineated at the site. This BVW is located adjacent to Cold Spring Brook. The limit of the BVW resource areas were determined by locating the transitional area between wetland and upland vegetation, soils and hydrologic conditions. Wetland flags left in the field included:

- BVW-A1 through BVW-A8 (BVW "A" Series)

Dominant vegetation within the wetland resource area included *Acer rubrum* (red maple), *Pinus strobus* (eastern white pine), *Vaccinium corymbosum* (highbush blueberry), *Frangula alnus* (glossy buckthorn), *Carex stricta* (tussock sedge), *Typha latifolia* (broadleaf cattail), *Osmundastrum cinnamomeum* (cinnamon fern), and *Osmunda regalis* (royal fern) species that generally thrive in wet conditions. Soils within the BVW's were composed of a thick organic layer underlain by fine sandy loam with redoximorphic features. Other indicators of wetland hydrology included surface water, highwater table and saturation.

Dominant vegetation in the adjacent upland area included *Quercus rubra* (red oak), *Pinus strobus* (eastern white pine), *Acer rubrum* (red maple), *Prunus serotina* (black cherry), *Vaccinium angustifolium* (lowbush blueberry), *Osmundastrum cinnamomeum* (cinnamon fern) and *Gaultheria procumbens* (wintergreen). Soils within the upland were composed of fine sandy loam, with no evidence of mottling or hydrology within the top 12 inches.

A 100-foot buffer zone is associated with the BVW resource area.

2.4 Bank

Water bodies, including perennial streams, intermittent streams, ponds and lakes, have banks which are protected by the Massachusetts Wetland Protection Act. Bank is a wetland resource area defined by 310 CMR 10.54(2)(a) as "the potion of land surface which normally abuts and confines a water body. It occurs between a waterbody and a vegetated bordering wetland and adjacent floodplain, or, in absence of these, it occurs between a waterbody and an upland." Vegetated banks provide valuable functions such as flood control, stormwater prevention, fisheries protection, and water quality protection. The limit of this resource area is identified by Top of Bank (TOB) which is located at the first observable break in slope or the Mean Annual Flood Level (MAFL), whichever is lower. TOB is easily identified in the field so that indicator was utilized for this wetland delineation.

Pond Bank

A large unnamed body of standing water was identified within the investigation area. The unnamed waterbody is approximately 8.5 acres in size according to aerial imagery. Due to its size, the unnamed body of water is classified as a pond. According to the Massachusetts Wetland Protection Act a pond is defined as "any body of fresh water with a surface area observed or recorded within the last ten years of at least 10,000 square feet". According to the Massachusetts Wetland Protection Act "ponds may be either naturally occurring or human made by impoundment, excavation or otherwise". Wetland flags left in the field included:

- TOB-A1 through TOB-A13 (Pond Bank "A" Series)

Pond banks are subject to a 100-foot buffer under the Massachusetts Wetland Protection Act per 310 CMR 10.02(2)(b).

Perennial Stream Banks

A single perennial stream known as Cold Spring Brook was identified within the investigation area. The boundary of the perennial stream was identified in the field utilizing Top of Bank (TOB), identified by flag line TOB-A. Cold Spring Brook is shown as perennial on the current United States Geographical Survey (USGS) map and has a watershed size greater than 0.5 square miles in size according to USGS Stream Stats which classifies the stream as perennial per 310 CMR 10.58 (2)(a)(1)(b-c). The boundary of the perennial stream was identified in the field by the first observable break in slope (TOB). Wetland flags left in the field included:

- TOB-B1 through TOB-B16 (Perennial Stream Bank "B" Series)

Perennial streams are normally subject to a 200-foot Riverfront Area under the Massachusetts Wetland Protection Act per 301 CMR 10.58(2)(a)(2)(c). However, Devens is exempt from the Riverfront Protection Act and this exemption means that only a 100-foot buffer is applied to the bank of a perennial river.

2.5 Other Protected Areas

Weston & Sampson created environmental resources maps (see Figure 4) of the site to determine the presence of other protected areas. The data source of these map layers was the Massachusetts Geographic Information System (MassGIS). These areas included:

- NHESP Priority Habitats of Rare Species
- NHESP Estimated Habitats of Rare Wildlife
- NHESP Certified and Potential Vernal Pools
- Areas of Critical Environmental Concern (ACEC)
- Outstanding Resource Waters (ORW)

Wetland resources identified in the field were also added to these maps. Based on the MassGIS information, the entire site is located within NHESP Priority Habitat of Rare Species, and NHESP Estimated Habitat of Rare Wildlife.

FEMA Flood Insurance Rate Maps (FIRM) were created online from the FEMA website to determine if there is a 100-year flood zone at the site. See Figure 3 for FIRM map. Based on FEMA flood maps the investigation area is not located within the 100-year flood zone.

3.0 SUMMARY

On September 21st, 2021, the presence of wetland resources was investigated near Bulge Road and Patton Road in Devens, MA. A pond bank, a perennial stream bank, and a bordering vegetated wetland were identified and flagged at the site.

Additional environmental mapping was conducted using MassGIS data layers and FEMA FIRM mapping. This additional mapping indicates that the entire site is located within NHESP Priority Habitat of Rare Species and NHESP Estimated Habitat of Rare Wildlife.

This Wetlands Delineation Report has been reviewed and approved by a Professional Wetland Scientist PWS.

4.0 REFERENCES

Jackson, Scott. 1995. "Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetlands Protection Act." Massachusetts Department of Environmental Protection.

Massachusetts Division of Fisheries and Wildlife, Natural Heritage and Endangered Species Program. Massachusetts Natural Heritage Atlas, 13th Edition with 2017 web updates. Accessed on 2/3/2021.

Massachusetts Geographic Information System. January 2009. Outstanding Resource Waters. Massachusetts Department of Environmental Protection. Accessed on 2/3/2021.

Massachusetts Geographic Information System. December 2003. Areas of Critical Environmental Concern. Massachusetts Department of Environmental Protection. Accessed on 2/3/2021.

Newcomb, Lawrence. 1977. Newcomb's Wildflower Guide. Little, Brown and Company.

Web Soil Survey of Middlesex County, Massachusetts. United States Department of Agriculture, Soil Conservation Service, in cooperation with Massachusetts Agricultural Experiment Station

United States Department of Agriculture, Natural Resources Conservation Service. *2018. Field Indicators of Hydric Soils in the United States, Version 8.2.* L. M. Vasilas, G. W. Hurt, and J.F. Berkowitz (eds.). USDA, NRCS, in cooperation with the National Technical Committee for Hydric Soils.

USACOE, January 1987, Corps of Engineers Wetlands Delineation Manuel, Wetlands Research Program Technical Report Y-87-1.

FEMA Flood Map Service Center, online at msc.fema.gov/portal Assessed on 2/3/2021.

Tiner, Jr., Ralph W., 2005, Field Guide to Nontidal Wetland Identification

Tiner, Jr., Ralph W, 2009, Field Guide to Tidal Wetland Plants of the Northeastern United States and Neighboring Canada.

Wojtec, Michael, Bard – A field Guide to Trees of the Northeast.

New England Hydric Soils Technical Committee, 2019, Version 4, *Field Indicator of Identifying Hydric Soils in New England*. New England Interstate Water Pollution Control Commission, Lowell, MA.

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Data Source: Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs

Legend

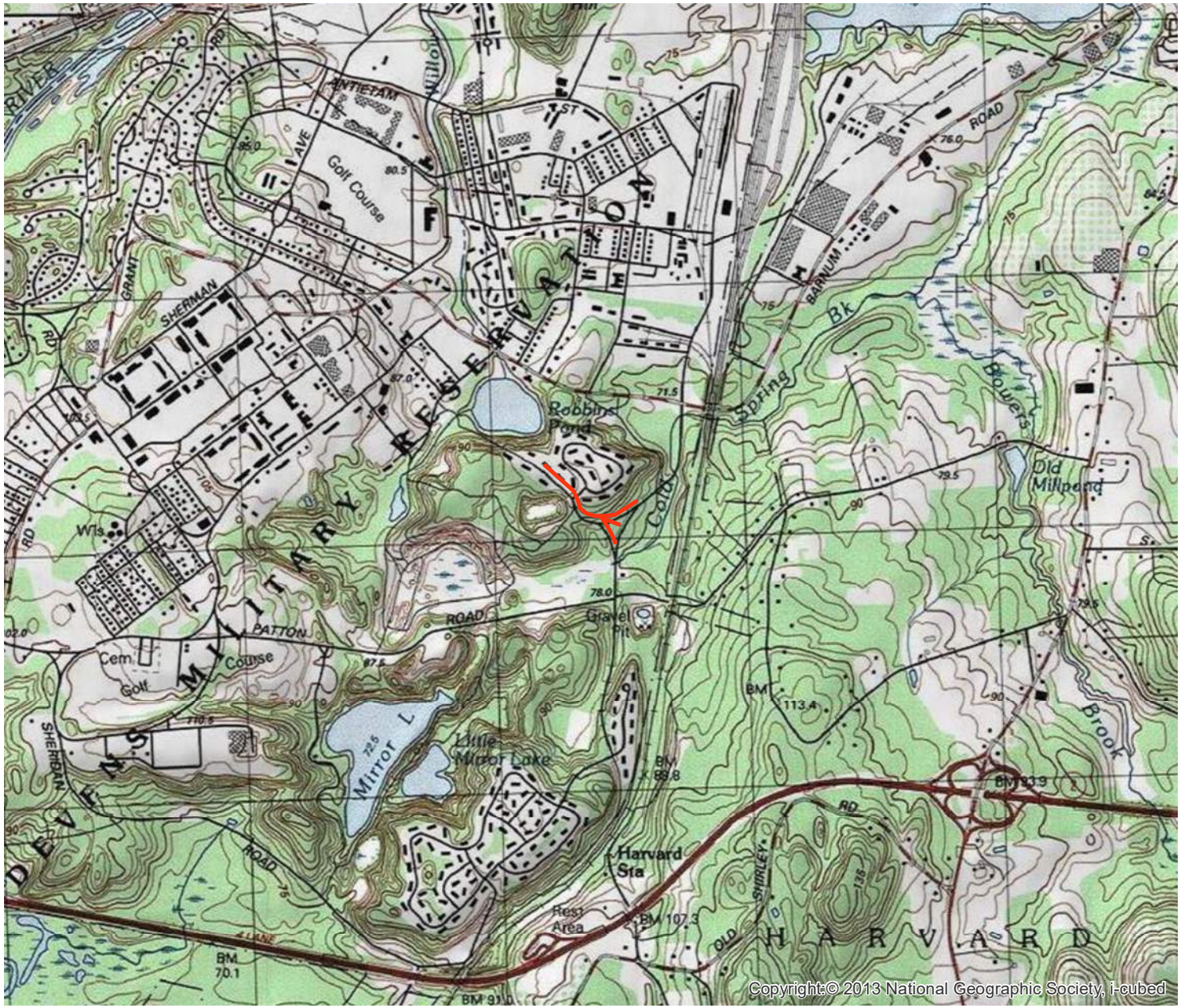
- Proposed Limit of Work
- Bordering Vegetated Wetland
- Bank - Pond
- Bank - Perennial Stream
- Perennial Stream
- Intermittent Stream
- Marsh/Bog
- Wooded marsh
- Cranberry Bog
- Salt Marsh
- Open Water
- Reservoir (with PWSID)
- Tidal Flats
- Beach/Dune

FIGURE 1

DO #7 Bulge at
Patton Intersection
Devens, MA

Wetlands Field Map

Weston & Sampson



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Data Source: Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs

Legend

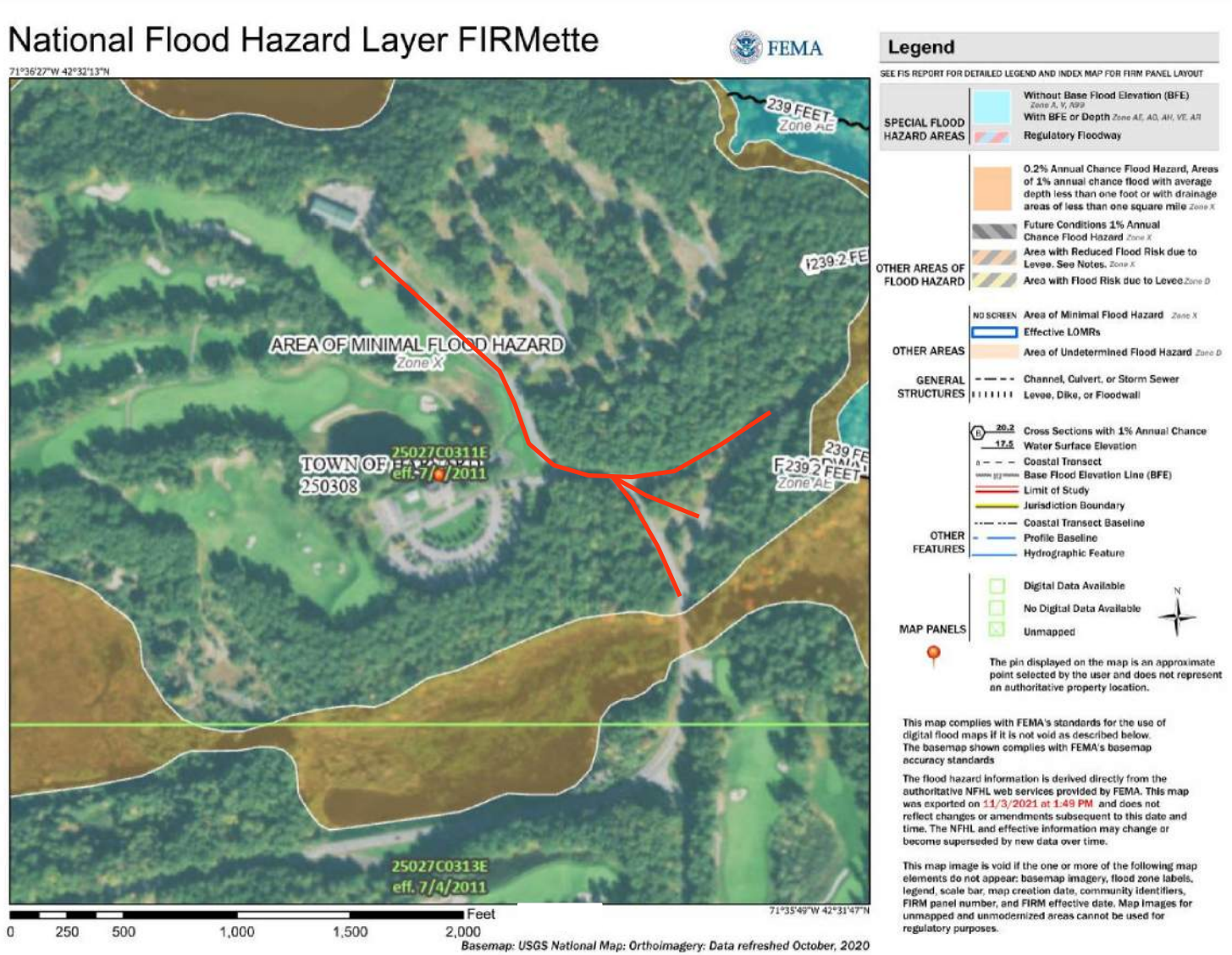
Proposed Limit of Work

FIGURE 2

DO #7 Bulge at
Patton Intersection
Devens, MA

USGS Topographic Map

Weston & Sampson



Legend

Proposed Limit of Work

FIGURE 3

DO #7 Bulge at Patton Intersection
Devens, MA

FEMA Map

Weston & Sampson

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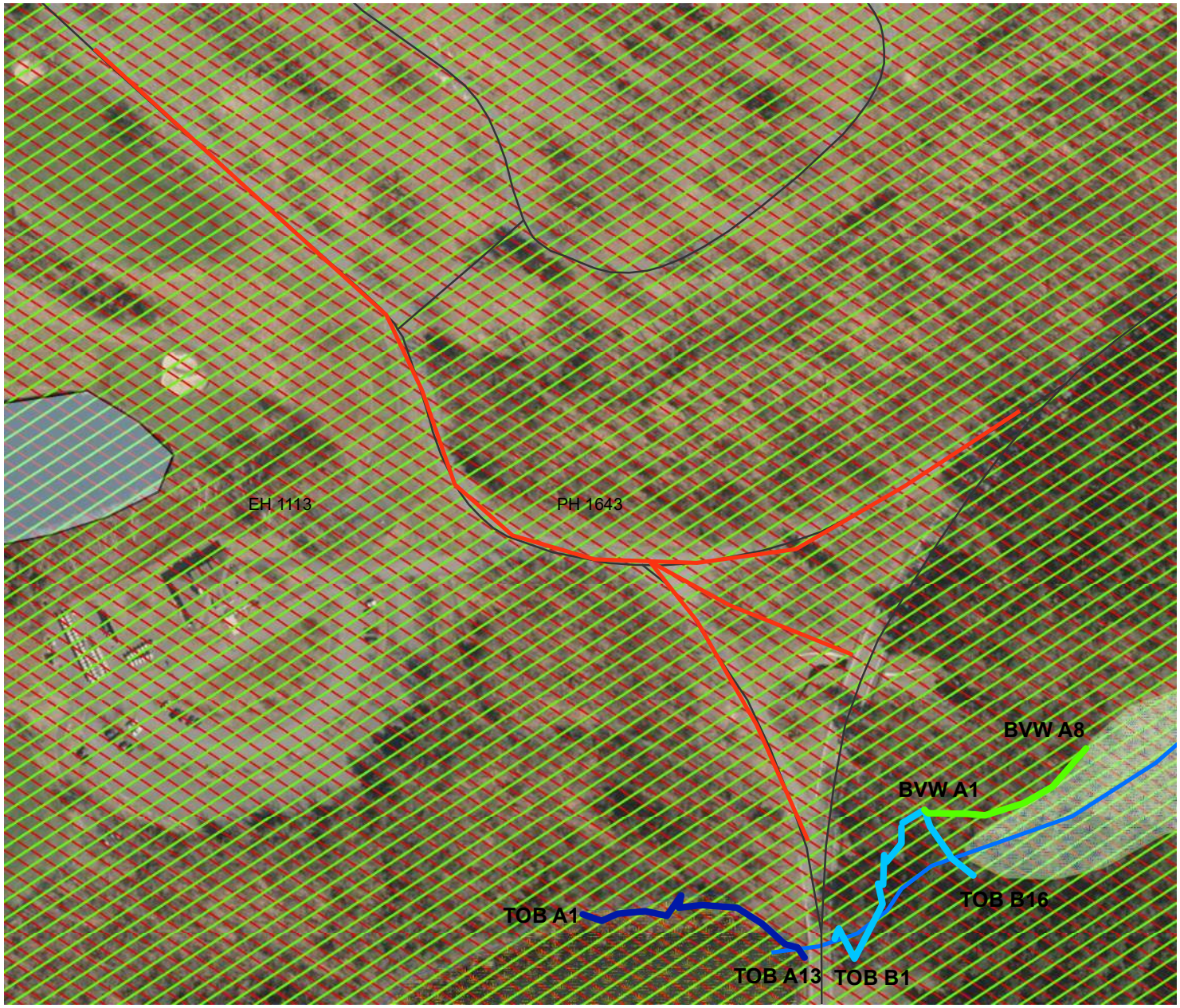

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Data Source: Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs

Legend

- Proposed Limit of Work
- Bordering Vegetated Wetland
- Bank - Pond
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- Marsh/Bog
- Wooded marsh
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- Salt Marsh
- Open Water
- Reservoir (with PWSID)
- Tidal Flats
- Beach/Dune

ACECs

- ACECs

NHESP Habitats

- NHESP Estimated Habitats of Rare Wildlife
- NHESP Priority Habitats of Rare Species
- NHESP Certified Vernal Pools
- NHESP Potential Vernal Pools

Outstanding Resource Waters

- Public Water Supply Contributor
- ORW for ACEC
- ORW for both Water Supply and Other

FIGURE 4

DO #7 Bulge at Patton Intersection
Devens, MA

Environmental Resources Map

Weston & Sampson

APPENDIX A

ACOE Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Bulge Road and Patton Road City/County: Devens Sampling Date: 9/21/2021

Applicant/Owner: State: MA Sampling Point: BVW A WET

Investigator(s): Devin Batchelder, CWS Section, Township, Range:

Landform (hillside, terrace, etc.): Local relief (concave, convex, none): Slope (%): 0-1

Subregion (LRR or MLRA): LRR R Lat: 42°31'57.28"N Long: 71°35'54.45"W Datum:

Soil Map Unit Name: Swansea Muck 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 High Water Table (A2)
- X 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)
- 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)
- 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 X	No	Depth (inches):	0
Water Table Present?	Yes X	No	Depth (inches):	0
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: BVW A WET

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum (red maple)*	10	Yes	FAC
2. *Pinus strobus (eastern white pine)*	5	Yes	FACU
3.			
4.			
5.			
6.			
7.			
	15	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft radius)			
1. *Vaccinium corymbosum (highbush blueberry)*	15	Yes	FACW
2. *Frangula alnus (glossy buckthorn)*	5	Yes	FAC
3.			
4.			
5.			
6.			
7.			
	20	=Total Cover	
Herb Stratum (Plot size: 5 ft radius)			
1. *Carex stricta (tussock sedge)*	25	Yes	OBL
2. *Typha latifolia (broadleaf cattail)*	10	Yes	OBL
3. *Osmundastrum cinnamomeum (cinnamon fern)*	10	Yes	FACW
4. *Osmunda regalis (royal fern)*	10	Yes	OBL
5. *Rubus hispidus (swamp dewberry)*	5	No	FACW
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	60	=Total Cover	
Woody Vine Stratum (Plot size:)			
1. *N/A*			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 87.5% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	45	x 1 =	45
FACW species	30	x 2 =	60
FAC species	15	x 3 =	45
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	95 (A)		170 (B)

Prevalence Index = B/A = 1.79

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: BVW A WET

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
0-8	10YR 2/2	100					Muck	
8-12	10YR 2/1	95	10YR 3/6	5	C	M	Loamy/Clayey	Prominent redox concentrations
12-24	2.5Y 4/2	90	10YR 4/6	10	C	M	Loamy/Clayey	Prominent redox concentrations

[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)
- X Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- X 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: Bulge Road and Patton Road City/County: Devens Sampling Date: 9/21/2021

Applicant/Owner: State: MA Sampling Point: BVW A UP

Investigator(s): Devin Batchelder, CWS Section, Township, Range:

Landform (hillside, terrace, etc.): Local relief (concave, convex, none): Slope (%): 0-3

Subregion (LRR or MLRA): LRR R Lat: 42°31'57.28"N Long: 71°35'54.45"W Datum:

Soil Map Unit Name: Quonset loamy sand NWI classification:

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: BVW A UP

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus rubra (red oak)*	25	Yes	FACU
2. *Pinus strobus (eastern white pine)*	10	Yes	FACU
3. *Acer rubrum (red maple)*	10	Yes	FAC
4.			
5.			
6.			
7.			
	45	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft radius)			
1. *Prunus serotina (black cherry)*	10	Yes	FACU
2. *Vaccinium angustifolium (lowbush blueberry)*	5	Yes	FACU-
3.			
4.			
5.			
6.			
7.			
	15	=Total Cover	
Herb Stratum (Plot size: 5 ft radius)			
1. *Osmundastrum cinnamomeum (cinnamon fern)*	10	Yes	FACW
2. *Gaultheria procumbens (wintergreen)*	5	Yes	FACU
3. *Uvularia sessilifolia (wild oat)*	1	No	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	16	=Total Cover	
Woody Vine Stratum (Plot size:)			
1. *N/A*			
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: 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	10	x 2 =	20
FAC species	10	x 3 =	30
FACU species	51	x 4 =	204
UPL species	0	x 5 =	0
Column Totals:	71 (A)		254 (B)

Prevalence Index = B/A = 3.58

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: BVW A UP

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
0-12	10YR 2/1	100					Sandy	
12-24	10YR 4/3	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)
- ___ 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)

APPENDIX B

Site Photographs

Photo 1: Bulge Road and Patton Road

Photo 2: Unnamed Pond

Photo 3: Water Gauge Observed On Site

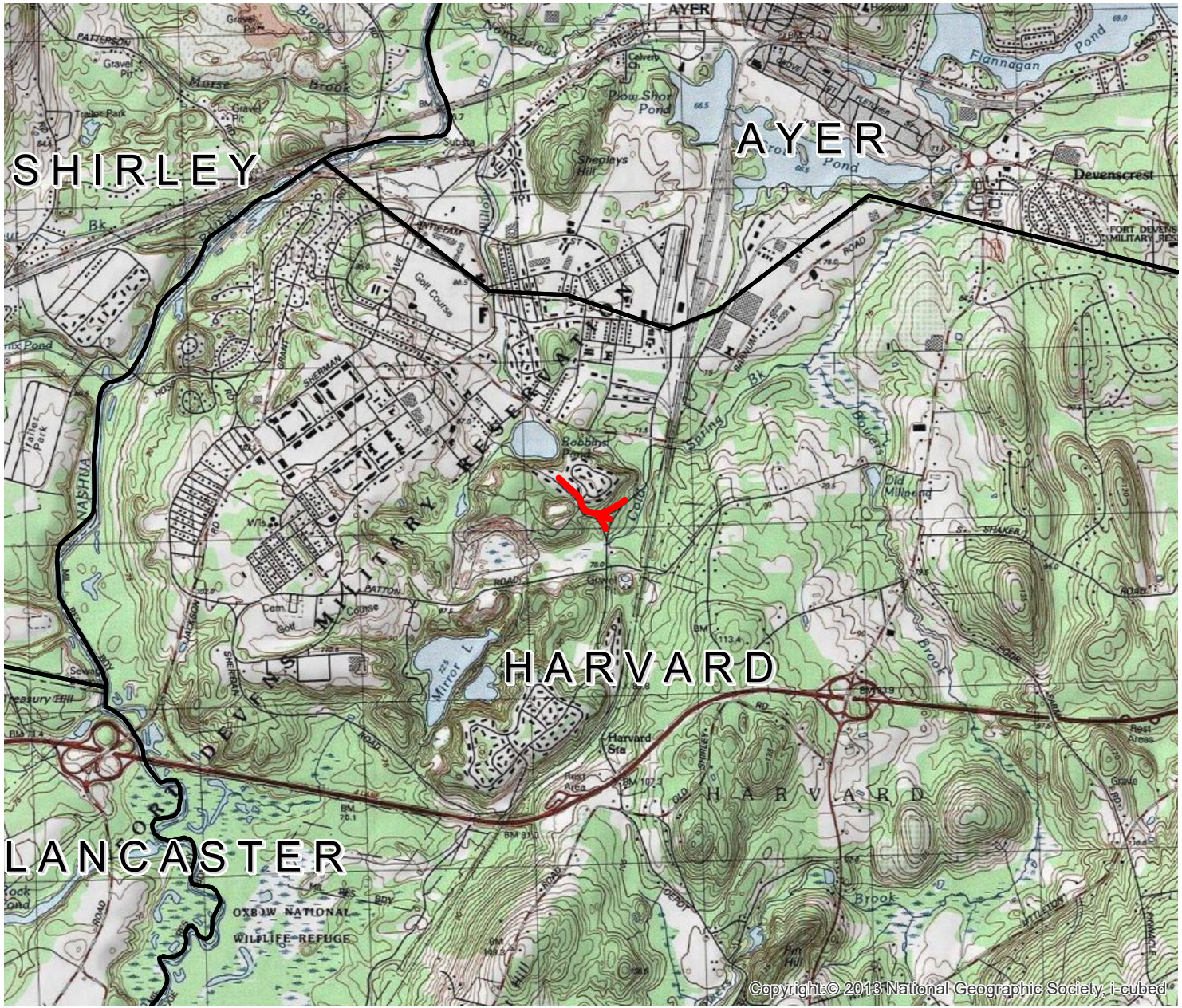

Photo 4: Cold Spring Brook

Photo 5: Bordering Vegetated Wetland (BVW A Series)

Photo 6: Wetland Soil Observed

APPENDIX C
PROJECT MAPS

Path: \\wse03.local\WSE\Depts\Water\Water Resources Group\GIS - Constraints Mapping\Devens\Bulge and Patton\Environmental Receptor - MA.mxd **User:** GasparA **Saved:** 11/12/2021 1:57:09 PM **Opened:** 2/7/2022 8:29:32 AM



N
W E
S

3,000 1,500 0 3,000
Feet

Data Source: Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs

Legend

Work Area

FIGURE 1

Bulge at Patton
Devens, MA

Locus Map

Weston & Sampson

Path: \\wse03.local\WSE\Depts\Water\Water Resources Group\GIS - Constraints Mapping\Devens\Bulge and Patton\Environmental Receptor - MA.mxd **User:** GasparA **Saved:** 11/12/2021 1:57:09 PM **Opened:** 2/7/2022 8:27:16 AM

Data Source: Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs

Legend

- Work Area
- Perennial Stream
- Intermittent Stream
- Marsh/Bog
- Wooded marsh
- Cranberry Bog
- Salt Marsh
- Open Water
- Reservoir (with PWSID)
- Tidal Flats
- Beach/Dune

ACECs

- ACECs

NHESP Habitats

- NHESP Estimated Habitats of Rare Wildlife
- NHESP Priority Habitats of Rare Species
- NHESP Certified Vernal Pools
- NHESP Potential Vernal Pools

Outstanding Resource Waters

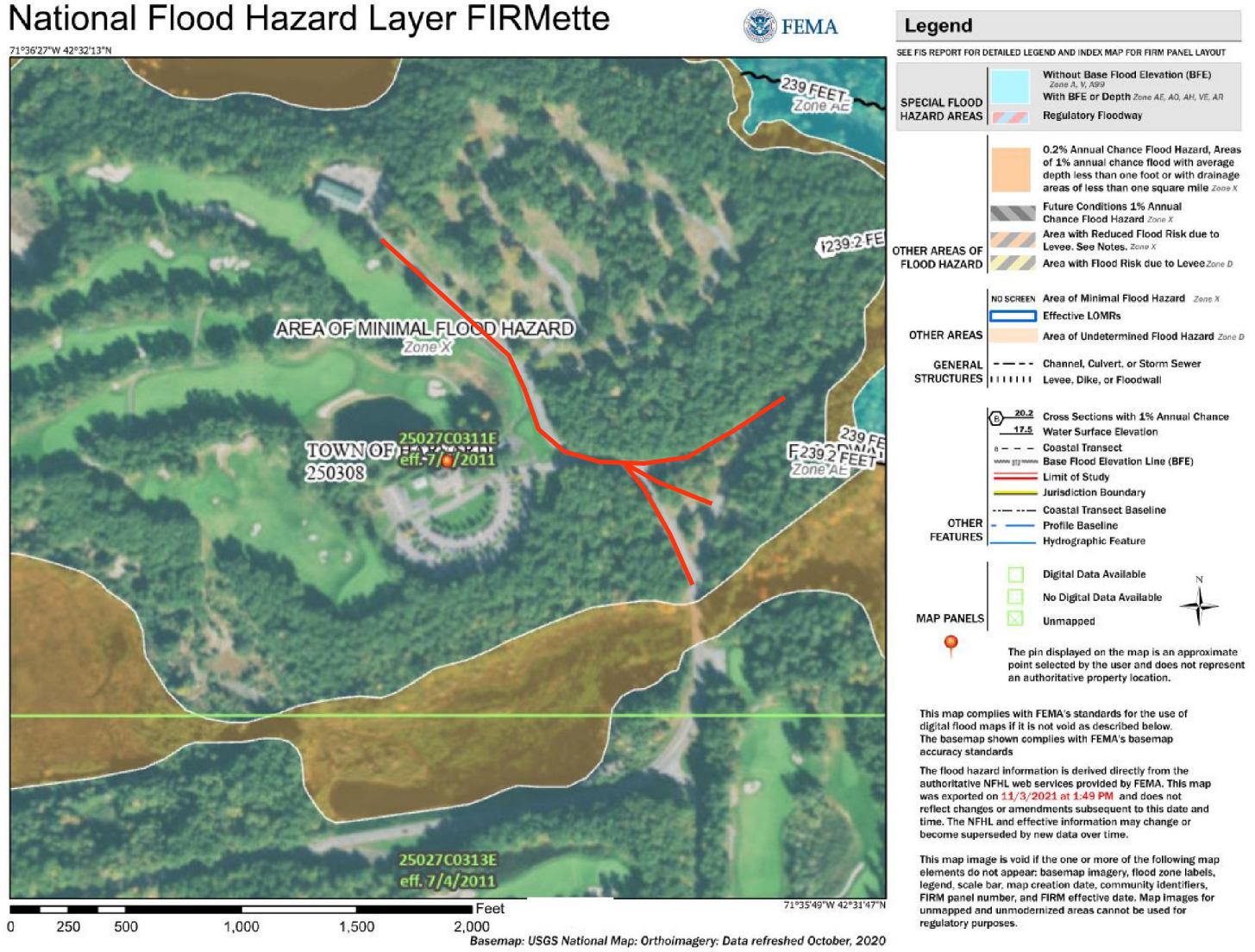
- Public Water Supply Contributor
- ORW for ACEC
- ORW for both Water Supply and Other

FIGURE 2

Bulge at Patton
Devens, MA

Environmental
Resource Map

Weston & Sampson



Legend

Proposed Limit of Work

FIGURE 3

DO #7 Bulge at Patton Intersection
Devens, MA

FEMA Map

Weston & Sampson

APPENDIX D

STORMWATER REPORT

(BOUND SEPARATELY)

PROJECT PLANS
(BOUND SEPARATELY)