

Delphi Brook Stream Crossing Replacement Project
199 Stafford Road
Wales, Massachusetts

NOTICE OF INTENT

Freehold Real Estate Management

April 2023

Tighe&Bond

F-5042-002
April 5, 2023

Wales Conservation Commission
3 Hollow Road
Wales, MA 01081

Re: **Notice of Intent**
Delphi River Stream Crossing Replacement Project
199 Stafford Road
Wales, Massachusetts

Dear Members of the Commission:

On behalf of Freehold Real Estate Management, Tighe & Bond is submitting this Notice of Intent (NOI) for activities associated with the replacement of two stream crossings over Delphi Brook, located at 199 Stafford Road in Wales, Massachusetts. The existing stream crossings do not meet the criteria of the Massachusetts Stream and River Crossing Standards. The owners are also looking to remove anthropogenic fill and debris in the wetland resource areas within the property and restore them back to their natural state.

This NOI is being filed under the Massachusetts Wetlands Protection Act (MA WPA; M.G.L. c. 131 § 40) for work occurring within inland Bank, Bordering Vegetated Wetlands (BVW), Land Under Waterbodies and Waterways (LUWW), Bordering Land Subject to Flooding (BLSF), and Riverfront Area. The work will also occur within the 100-foot Buffer Zone to inland Bank and BVW.

We look forward to having the opportunity to discuss this project at the Conservation Commission's next scheduled public hearing. Should you have any questions regarding this application or require any additional information, please do not hesitate to contact me at (413) 875-1305, or via email at klwilkins@tighebond.com.

Very truly yours,

TIGHE & BOND, INC.



Katy Wilkins
Project Manager

Copy: MassDEP – Western Regional Office (WERO), Division of Wetlands and Waterways
Mark Asnes, Freehold Real Estate Management
Matt Riley, Freehold Real Estate Management

Tighe&Bond

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WPA Form 3 – Notice of Intent

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

Provided by MassDEP:
MassDEP File Number
Document Transaction Number
Wales
City/Town

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



Note:
Before completing this form consult your local Conservation Commission regarding any municipal bylaw or ordinance.

A. General Information

1. Project Location (**Note:** electronic filers will click on button to locate project site):

<u>199 Stafford Road</u>	<u>Wales</u>	<u>01081</u>
a. Street Address	b. City/Town	c. Zip Code
Latitude and Longitude:		
<u>22</u>	<u>42.033523</u>	<u>-72.237321</u>
f. Assessors Map/Plat Number	d. Latitude	e. Longitude
	<u>199</u>	
	g. Parcel /Lot Number	

2. Applicant:

<u>Mark</u>	<u>Asnes</u>	
a. First Name	b. Last Name	
<u>Freehold Real Estate Management</u>		
c. Organization		
<u>80 Sherman Street</u>		
d. Street Address		
<u>Norwich</u>	<u>CT</u>	<u>06360</u>
e. City/Town	f. State	g. Zip Code
<u>(860) 918-4104</u>	<u>mark@freeholdre.com</u>	
h. Phone Number	i. Fax Number	j. Email Address

3. Property owner (required if different from applicant): Check if more than one owner

<u></u>	<u></u>	
a. First Name	b. Last Name	
<u></u>		
c. Organization		
<u></u>		
d. Street Address		
<u></u>	<u></u>	<u></u>
e. City/Town	f. State	g. Zip Code
<u></u>	<u></u>	<u></u>
h. Phone Number	i. Fax Number	j. Email address

4. Representative (if any):

<u>Katy</u>	<u>Wilkins</u>	
a. First Name	b. Last Name	
<u>Tighe & Bond, Inc.</u>		
c. Company		
<u>53 Southampton Road</u>		
d. Street Address		
<u>Westfield</u>	<u>MA</u>	<u>01085</u>
e. City/Town	f. State	g. Zip Code
<u>(413) 875-1305</u>	<u>klwilkins@tighebond.com</u>	
h. Phone Number	i. Fax Number	j. Email address

5. Total WPA Fee Paid (from NOI Wetland Fee Transmittal Form):

<u>\$330.00</u>	<u>\$152.50</u>	<u>\$177.50</u>
a. Total Fee Paid	b. State Fee Paid	c. City/Town Fee Paid



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A. General Information (continued)

6. General Project Description:

The project involves the replacement of two existing culverts where Delphi Brook crosses under Hemlock Lane and a service road within the privately owned parcel at 199 Stafford Road. The existing culverts are undersized and do not meet the Massachusetts Stream and River Crossing Standards. Refer to the enclosed narrative for further information.

7a. Project Type Checklist: (Limited Project Types see Section A. 7b.)

- 1. Single Family Home
- 2. Residential Subdivision
- 3. Commercial/Industrial
- 4. Dock/Pier
- 5. Utilities
- 6. Coastal Engineering Structure
- 7. Agriculture (e.g., cranberries, forestry)
- 8. Transportation
- 9. Other

7b. Is any portion of the proposed activity eligible to be treated as a limited project (including Ecological Restoration Limited Project) subject to 310 CMR 10.24 (coastal) or 310 CMR 10.53 (inland)?

- 1. Yes No If yes, describe which limited project applies to this project. (See 310 CMR 10.24 and 10.53 for a complete list and description of limited project types)

310 CMR 10.53(i): culvert replacement

2. Limited Project Type

If the proposed activity is eligible to be treated as an Ecological Restoration Limited Project (310 CMR10.24(8), 310 CMR 10.53(4)), complete and attach Appendix A: Ecological Restoration Limited Project Checklist and Signed Certification.

8. Property recorded at the Registry of Deeds for:

Hampden

a. County

19784

c. Book

b. Certificate # (if registered land)

386

d. Page Number

B. Buffer Zone & Resource Area Impacts (temporary & permanent)

- 1. Buffer Zone Only – Check if the project is located only in the Buffer Zone of a Bordering Vegetated Wetland, Inland Bank, or Coastal Resource Area.
- 2. Inland Resource Areas (see 310 CMR 10.54-10.58; if not applicable, go to Section B.3, Coastal Resource Areas).

Check all that apply below. Attach narrative and any supporting documentation describing how the project will meet all performance standards for each of the resource areas altered, including standards requiring consideration of alternative project design or location.



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B. Buffer Zone & Resource Area Impacts (temporary & permanent) (cont'd)

For all projects affecting other Resource Areas, please attach a narrative explaining how the resource area was delineated.

Table with 3 columns: Resource Area, Size of Proposed Alteration, Proposed Replacement (if any). Rows include Bank, Bordering Vegetated Wetland, and Land Under Waterbodies and Waterways.

Table with 3 columns: Resource Area, Size of Proposed Alteration, Proposed Replacement (if any). Rows include Bordering Land Subject to Flooding and Isolated Land Subject to Flooding.

f. [X] Riverfront Area
Delphi Brook (inland), unnamed tributary
1. Name of Waterway (if available) - specify coastal or inland

2. Width of Riverfront Area (check one):

- [] 25 ft. - Designated Densely Developed Areas only
[] 100 ft. - New agricultural projects only
[X] 200 ft. - All other projects

3. Total area of Riverfront Area on the site of the proposed project: 825,000 square feet

4. Proposed alteration of the Riverfront Area:

17,750 17,750 0
a. total square feet b. square feet within 100 ft. c. square feet between 100 ft. and 200 ft.

5. Has an alternatives analysis been done and is it attached to this NOI? [X] Yes [] No

6. Was the lot where the activity is proposed created prior to August 1, 1996? [X] Yes [] No

3. [] Coastal Resource Areas: (See 310 CMR 10.25-10.35)

Note: for coastal riverfront areas, please complete Section B.2.f. above.



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B. Buffer Zone & Resource Area Impacts (temporary & permanent) (cont'd)

Check all that apply below. Attach narrative and supporting documentation describing how the project will meet all performance standards for each of the resource areas altered, including standards requiring consideration of alternative project design or location.

Online Users: Include your document transaction number (provided on your receipt page) with all supplementary information you submit to the Department.

Resource Area, Size of Proposed Alteration, Proposed Replacement (if any)
a. Designated Port Areas
b. Land Under the Ocean
c. Barrier Beach
d. Coastal Beaches
e. Coastal Dunes
f. Coastal Banks
g. Rocky Intertidal Shores
h. Salt Marshes
i. Land Under Salt Ponds
j. Land Containing Shellfish
k. Fish Runs
l. Land Subject to Coastal Storm Flowage
4. Restoration/Enhancement
5. Project Involves Stream Crossings



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C. Other Applicable Standards and Requirements

- This is a proposal for an Ecological Restoration Limited Project. Skip Section C and complete Appendix A: Ecological Restoration Limited Project Checklists – Required Actions (310 CMR 10.11).

Streamlined Massachusetts Endangered Species Act/Wetlands Protection Act Review

1. Is any portion of the proposed project located in **Estimated Habitat of Rare Wildlife** as indicated on the most recent Estimated Habitat Map of State-Listed Rare Wetland Wildlife published by the Natural Heritage and Endangered Species Program (NHESP)? To view habitat maps, see the *Massachusetts Natural Heritage Atlas* or go to http://maps.massgis.state.ma.us/PRI_EST_HAB/viewer.htm.

- a. Yes No **If yes, include proof of mailing or hand delivery of NOI to:**

**Natural Heritage and Endangered Species Program
Division of Fisheries and Wildlife
1 Rabbit Hill Road
Westborough, MA 01581**

August 1, 2021

b. Date of map

If yes, the project is also subject to Massachusetts Endangered Species Act (MESA) review (321 CMR 10.18). To qualify for a streamlined, 30-day, MESA/Wetlands Protection Act review, please complete Section C.1.c, and include requested materials with this Notice of Intent (NOI); *OR* complete Section C.2.f, if applicable. *If MESA supplemental information is not included with the NOI, by completing Section 1 of this form, the NHESP will require a separate MESA filing which may take up to 90 days to review (unless noted exceptions in Section 2 apply, see below).*

- c. Submit Supplemental Information for Endangered Species Review*

1. Percentage/acreage of property to be altered:

(a) within wetland Resource Area

_____ percentage/acreage

(b) outside Resource Area

_____ percentage/acreage

2. Assessor's Map or right-of-way plan of site

2. Project plans for entire project site, including wetland resource areas and areas outside of wetlands jurisdiction, showing existing and proposed conditions, existing and proposed tree/vegetation clearing line, and clearly demarcated limits of work **

(a) Project description (including description of impacts outside of wetland resource area & buffer zone)

(b) Photographs representative of the site

* Some projects **not** in Estimated Habitat may be located in Priority Habitat, and require NHESP review (see <https://www.mass.gov/endangered-species-act-mesa-regulatory-review>).

Priority Habitat includes habitat for state-listed plants and strictly upland species not protected by the Wetlands Protection Act.

** MESA projects may not be segmented (321 CMR 10.16). The applicant must disclose full development plans even if such plans are not required as part of the Notice of Intent process.



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C. Other Applicable Standards and Requirements (cont'd)

(c) MESA filing fee (fee information available at <https://www.mass.gov/how-to/how-to-file-for-a-mesa-project-review>).

Make check payable to "Commonwealth of Massachusetts - NHESP" and **mail to NHESP** at above address

Projects altering 10 or more acres of land, also submit:

(d) Vegetation cover type map of site

(e) Project plans showing Priority & Estimated Habitat boundaries

(f) OR Check One of the Following

1. Project is exempt from MESA review.
Attach applicant letter indicating which MESA exemption applies. (See 321 CMR 10.14, <https://www.mass.gov/service-details/exemptions-from-review-for-projectsactivities-in-priority-habitat>; the NOI must still be sent to NHESP if the project is within estimated habitat pursuant to 310 CMR 10.37 and 10.59.)

2. Separate MESA review ongoing. a. NHESP Tracking # b. Date submitted to NHESP

3. Separate MESA review completed.
Include copy of NHESP "no Take" determination or valid Conservation & Management Permit with approved plan.

3. For coastal projects only, is any portion of the proposed project located below the mean high water line or in a fish run?

a. Not applicable – project is in inland resource area only b. Yes No

If yes, include proof of mailing, hand delivery, or electronic delivery of NOI to either:

South Shore - Cohasset to Rhode Island border, and the Cape & Islands:

North Shore - Hull to New Hampshire border:

Division of Marine Fisheries -
Southeast Marine Fisheries Station
Attn: Environmental Reviewer
836 South Rodney French Blvd.
New Bedford, MA 02744
Email: dmf.envreview-south@mass.gov

Division of Marine Fisheries -
North Shore Office
Attn: Environmental Reviewer
30 Emerson Avenue
Gloucester, MA 01930
Email: dmf.envreview-north@mass.gov

Also if yes, the project may require a Chapter 91 license. For coastal towns in the Northeast Region, please contact MassDEP's Boston Office. For coastal towns in the Southeast Region, please contact MassDEP's Southeast Regional Office.

c. Is this an aquaculture project? d. Yes No

If yes, include a copy of the Division of Marine Fisheries Certification Letter (M.G.L. c. 130, § 57).



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Online Users:
Include your document transaction number (provided on your receipt page) with all supplementary information you submit to the Department.

C. Other Applicable Standards and Requirements (cont'd)

4. Is any portion of the proposed project within an Area of Critical Environmental Concern (ACEC)?
 a. Yes No If yes, provide name of ACEC (see instructions to WPA Form 3 or MassDEP Website for ACEC locations). **Note:** electronic filers click on Website.
 b. ACEC
5. Is any portion of the proposed project within an area designated as an Outstanding Resource Water (ORW) as designated in the Massachusetts Surface Water Quality Standards, 314 CMR 4.00?
 a. Yes No
6. Is any portion of the site subject to a Wetlands Restriction Order under the Inland Wetlands Restriction Act (M.G.L. c. 131, § 40A) or the Coastal Wetlands Restriction Act (M.G.L. c. 130, § 105)?
 a. Yes No
7. Is this project subject to provisions of the MassDEP Stormwater Management Standards?
 a. Yes. Attach a copy of the Stormwater Report as required by the Stormwater Management Standards per 310 CMR 10.05(6)(k)-(q) and check if:
 1. Applying for Low Impact Development (LID) site design credits (as described in Stormwater Management Handbook Vol. 2, Chapter 3)
 2. A portion of the site constitutes redevelopment
 3. Proprietary BMPs are included in the Stormwater Management System.
 b. No. Check why the project is exempt:
 1. Single-family house
 2. Emergency road repair
 3. Small Residential Subdivision (less than or equal to 4 single-family houses or less than or equal to 4 units in multi-family housing project) with no discharge to Critical Areas.

D. Additional Information

- This is a proposal for an Ecological Restoration Limited Project. Skip Section D and complete Appendix A: Ecological Restoration Notice of Intent – Minimum Required Documents (310 CMR 10.12).

Applicants must include the following with this Notice of Intent (NOI). See instructions for details.

Online Users: Attach the document transaction number (provided on your receipt page) for any of the following information you submit to the Department.

1. USGS or other map of the area (along with a narrative description, if necessary) containing sufficient information for the Conservation Commission and the Department to locate the site. (Electronic filers may omit this item.)
2. Plans identifying the location of proposed activities (including activities proposed to serve as a Bordering Vegetated Wetland [BVW] replication area or other mitigating measure) relative to the boundaries of each affected resource area.



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D. Additional Information (cont'd)

3. Identify the method for BVW and other resource area boundary delineations (MassDEP BVW Field Data Form(s), Determination of Applicability, Order of Resource Area Delineation, etc.), and attach documentation of the methodology.

4. List the titles and dates for all plans and other materials submitted with this NOI.

Delphi Brook Stream Crossing Replacement Project

a. Plan Title

Tighe & Bond, Inc.

b. Prepared By

February 3, 2023

d. Final Revision Date

Jean Christy, PE

c. Signed and Stamped by

Varies

e. Scale

f. Additional Plan or Document Title

g. Date

5. If there is more than one property owner, please attach a list of these property owners not listed on this form.

6. Attach proof of mailing for Natural Heritage and Endangered Species Program, if needed.

7. Attach proof of mailing for Massachusetts Division of Marine Fisheries, if needed.

8. Attach NOI Wetland Fee Transmittal Form

9. Attach Stormwater Report, if needed.

E. Fees

1. Fee Exempt: No filing fee shall be assessed for projects of any city, town, county, or district of the Commonwealth, federally recognized Indian tribe housing authority, municipal housing authority, or the Massachusetts Bay Transportation Authority.

Applicants must submit the following information (in addition to pages 1 and 2 of the NOI Wetland Fee Transmittal Form) to confirm fee payment:

6510

2. Municipal Check Number

6507

4. State Check Number

Tighe & Bond, Inc.

6. Payor name on check: First Name

3/23/2023

3. Check date

3/23/2023

5. Check date

7. Payor name on check: Last Name



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F. Signatures and Submittal Requirements

I hereby certify under the penalties of perjury that the foregoing Notice of Intent and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge. I understand that the Conservation Commission will place notification of this Notice in a local newspaper at the expense of the applicant in accordance with the wetlands regulations, 310 CMR 10.05(5)(a).

I further certify under penalties of perjury that all abutters were notified of this application, pursuant to the requirements of M.G.L. c. 131, § 40. Notice must be made by Certificate of Mailing or in writing by hand delivery or certified mail (return receipt requested) to all abutters within 100 feet of the property line of the project location.

Mark Ames

1. Signature of Applicant

2/17/23

2. Date

Katherine Wilkins

3. Signature of Representative (if any)

4. Date

4/5/2023

6. Date

For Conservation Commission:

Two copies of the completed Notice of Intent (Form 3), including supporting plans and documents, two copies of the NOI Wetland Fee Transmittal Form, and the city/town fee payment, to the Conservation Commission by certified mail or hand delivery.

For MassDEP:

One copy of the completed Notice of Intent (Form 3), including supporting plans and documents, one copy of the NOI Wetland Fee Transmittal Form, and a **copy** of the state fee payment to the MassDEP Regional Office (see Instructions) by certified mail or hand delivery.

Other:

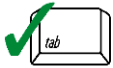
If the applicant has checked the "yes" box in any part of Section C, Item 3, above, refer to that section and the Instructions for additional submittal requirements.

The original and copies must be sent simultaneously. Failure by the applicant to send copies in a timely manner may result in dismissal of the Notice of Intent.



Massachusetts Department of Environmental Protection
 Bureau of Resource Protection - Wetlands
NOI Wetland Fee Transmittal Form
 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

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



A. Applicant Information

1. Location of Project:

199 Stafford Road	Wales
a. Street Address	b. City/Town
6507	\$152.50
c. Check number	d. Fee amount

2. Applicant Mailing Address:

Mark	Asnes	
a. First Name	b. Last Name	
Freehold Real Estate Management		
c. Organization		
P.O. Box 827		
d. Mailing Address		
Norwich	CT	06360
e. City/Town	f. State	g. Zip Code
(860) 918-4104	mark@freeholdre.com	
h. Phone Number	i. Fax Number	j. Email Address

3. Property Owner (if different):

a. First Name	b. Last Name	
c. Organization		
d. Mailing Address		
e. City/Town	f. State	g. Zip Code
h. Phone Number	i. Fax Number	j. Email Address

B. Fees

Fee should be calculated using the following process & worksheet. **Please see Instructions before filling out worksheet.**

Step 1/Type of Activity: Describe each type of activity that will occur in wetland resource area and buffer zone.

Step 2/Number of Activities: Identify the number of each type of activity.

Step 3/Individual Activity Fee: Identify each activity fee from the six project categories listed in the instructions.

Step 4/Subtotal Activity Fee: Multiply the number of activities (identified in Step 2) times the fee per category (identified in Step 3) to reach a subtotal fee amount. Note: If any of these activities are in a Riverfront Area in addition to another Resource Area or the Buffer Zone, the fee per activity should be multiplied by 1.5 and then added to the subtotal amount.

Step 5/Total Project Fee: Determine the total project fee by adding the subtotal amounts from Step 4.

Step 6/Fee Payments: To calculate the state share of the fee, divide the total fee in half and subtract \$12.50. To calculate the city/town share of the fee, divide the total fee in half and add \$12.50.

To calculate filing fees, refer to the category fee list and examples in the instructions for filling out WPA Form 3 (Notice of Intent).



Massachusetts Department of Environmental Protection
 Bureau of Resource Protection - Wetlands
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 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

B. Fees (continued)

Step 1/Type of Activity	Step 2/Number of Activities	Step 3/Individual Activity Fee	Step 4/Subtotal Activity Fee
Category 1d/resource improvement	2	\$110.00	\$220.00
	+50% (RA)	\$110.00	\$110.00
Step 5/Total Project Fee:			\$330.00
Step 6/Fee Payments:			
Total Project Fee:		\$330.00	a. Total Fee from Step 5
State share of filing Fee:		\$152.50	b. 1/2 Total Fee less \$12.50
City/Town share of filing Fee:		\$177.50	c. 1/2 Total Fee plus \$12.50

C. Submittal Requirements

- a.) Complete pages 1 and 2 and send with a check or money order for the state share of the fee, payable to the Commonwealth of Massachusetts.

Department of Environmental Protection
 Box 4062
 Boston, MA 02211

- b.) **To the Conservation Commission:** Send the Notice of Intent or Abbreviated Notice of Intent; a **copy** of this form; and the city/town fee payment.

To MassDEP Regional Office (see Instructions): Send a copy of the Notice of Intent or Abbreviated Notice of Intent; a **copy** of this form; and a **copy** of the state fee payment. (E-filers of Notices of Intent may submit these electronically.)

Tighe&Bond

SECTION 1

Section 1

Introduction

1.1 Project Background and Purpose

Wales Brookside Village mobile home park (Brookside Village) is located within the town of Wales, Massachusetts. The owner of the property, Freehold Real Estate Management, is seeking to replace two culverts and restore an area of wetland fill at Brookside Village.

On May 20, 2019, the property owners received a Unilateral Administrative Order (UAO) (#00007318) from the Massachusetts Department of Environmental Protection (MassDEP) for violating the Massachusetts Clean Waters Act M.G.L. c. 21 and the Massachusetts Wetlands Protection Act at M.G.L. c. 131 §40. As such, Freehold Real Estate Management is required to replace the culverts and restore the surrounding wetland resource areas affected by the initial construction.

The UAO was issued when the stream crossing over Delphi Brook at Hemlock Lane was replaced without necessary environmental permitting in response to a storm event that caused the culvert to fail and cause closure of the road that provides access to residents within the community.

This Notice of Intent (NOI) is being submitted to comply with Section III 7. D. of the UAO, which is provided in Attachment F for reference.

Tighe&Bond

SECTION 2

Section 2

Existing Environment

This section provides a description of the general project area, as well as information pertaining to wetland resource areas and wildlife habitat. Land use in the general vicinity of the project area was determined based on direct observations made during site inspections and a review of information available through the Massachusetts Geographic Information System (MassGIS) interactive mapping tool.

2.1 Project Site

The Project Site (i.e. limits of work) is located within Brookside Village, a senior community mobile home park with approximately 65 units distributed over 22 acres. The surrounding area is residential and forested, with the majority of the wooded area under the ownership and management of the Norcross Wildlife Foundation. Altogether, the Project Site occupies an approximate 12,250 square foot (sf) area comprised of paved private roadway, gravel private roadway, roadway embankment, maintained lawn, forest, and wetlands. Photographs of the Project Site and surrounding area are provided in Appendix C of this NOI.

2.1.1 Delphi Brook

Delphi Brook is shown as a perennial stream on the most current United States Geological Survey (USGS) topographic map (quadrangle 64, Wales, MA, 1982). Tighe & Bond performed a USGS StreamStats evaluation of the stream from approximately 100 feet downstream from the Project Site. According to StreamStats, the stream has a contributing drainage area of approximately 1.55 square miles. The drainage area is shown on the StreamStats report provided in Appendix D of this NOI.

The MAWPA regulations set forth the methodology for determining whether a stream is intermittent or perennial. Delphi Brook is classified as a perennial stream, per 310 CMR 10.58(2)(a)(1)(b).

2.1.1.1 Hydrologic Setting

Delphi Brook generally flows east to west throughout the Project Locus. Aggard Brook flows into Delphi Brook about one mile south of Hemlock Road. Delphi Brook is a tributary to the Staffordville Reservoir, which is also fed by Potash Brook.

2.1.1.2 Coldwater Fish Resource

Delphi Brook is designated as a Coldwater Fish Resource (CFR) by the Massachusetts Division of Fisheries and Wildlife (MassWildlife). A CFR is a waterbody (stream, river, or tributary thereto) used by reproducing coldwater fish to meet one or more of their life history requirements. CFRs are particularly sensitive habitats. Changes in land and water use can reduce the ability of these waters to support trout and other species of coldwater fish.

2.1.1.3 Wild and Scenic Rivers

As noted, this brook is a tributary to the Staffordville Reservoir, which feeds Furnace Brook and eventually, the Willimantic River. The Willimantic River and its northern tributaries

are not designated by the National Park Service as part of the Wild and Scenic Rivers system.

2.2 Methodology of Resource Area Investigations

On July 22, 2021, Tighe & Bond conducted wetland resource area field investigations in the vicinity of the Project Site. The wetland delineation was conducted in conformance with local, state and federal guidelines, including Delineating Bordering Vegetated Wetlands under the MA Wetlands Protection Act (1995), the 1987 Corps of Engineers Wetlands Delineation Manual; the Regional Supplement to the Corps of Engineers Wetlands Delineation Manual, Northcentral and Northeast Region (2012), and Field Indicators for Identifying Hydric Soils in New England (Version 4, 2017).

2.3 Summary of Wetland Resource Areas

The following wetland resource areas have been identified within the Project Site:

- Inland Bank
- Bordering Vegetated Wetland (BVW)
- Land Under Waterbodies and Waterways (LUWW)
- Bordering Land Subject to Flooding (BLSF)
- Riverfront Area

The Project Site is also located within the 100-foot Buffer Zone. A summary of the wetland flag series is presented in Table 2-1, and the following sections provide a detailed description of the wetland resource areas identified within the Project Site.

TABLE 2-1
Summary of Resource Area Flag Series

Flag Series	Flag Numbers	Resource Area
1	1A-1 to 1A-10	Bank (<i>Delphi Brook</i>)
	1B-1 to 1B-11	Bank (<i>Delphi Brook</i>)
	1C-1 to 1C-7	BVW (PFO1B)
	1D-1 to 1D-8	BVW (PFO/PEM1B)
	1E-1 to 1E-3	BVW (PFO1B)
4	4A-1 to 4A-12	Bank (unnamed perennial stream)
	4B-1 to 4B-8	Bank (unnamed perennial stream)
	4C-1 to 4C-5	BVW (PFO/PEM1E)
	4D-1 to 4D-4	BVW (PFO/PSS1B)
	4E-1 to 4E-5	BVW (PSS1B)
	4F-1 to 4F-8 open	BVW (PFO/PEM1E)

2.3.1 Inland Bank

Inland Bank is defined at 310 CMR 10.54(2)(a) 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 floodplain, or, in the absence of these, it occurs between a water body and an upland."

2.3.1.1 Hemlock Lane Crossing

The limits of Bank and Mean Annual High Water (MAHW) associated with Delphi Brook were demarcated with the 1A and 1B flag series. At this location, MAHW mostly coincides with the top of Bank. MAHW was determined based on observations of changes in surficial conditions, vegetation composition, and bankfull indicators. The stream flow is conveyed east to west through an undersized 4-foot diameter culvert. The stream width near the culvert inlet is approximately four feet wide with a water depth ranging between six to twelve inches. The stream is surrounded by BVW (flag series 1C through 1E). Vegetation along both banks consisted primarily of red maple (*Acer rubrum*; FAC), American elm (*Ulmus americana*; FACW), black elder (*Sambucus nigra*; FACW), and Japanese barberry (*Berberis thunbergii*; FACU). The river left bank immediately upstream of the culvert has a legacy dry stacked river rock wall ranging from 3.5 feet to 5 feet above the water surface.

2.3.1.2 Wellhouse Access Road Crossing

A small perennial stream that joins Delphi Brook from the east was demarcated with the 4A and 4B flag series. The bank width ranges from approximately five to eight feet. The stream flows southeast to northwest through a 12-inch diameter corrugated metal pipe (CMP), east of the pumphouse, and under a gravel road that connects Deerwood Lane and Hemlock Lane. The stream is surrounded by BVW (flag series 4C through 4F).

2.3.2 Bordering Vegetated Wetlands

Bordering Vegetated Wetlands (BVW) are defined at 310 CMR 10.55(2)(a) as "*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.*" Multiple BVW were observed within the vicinity of the Project Site along the banks of Delphi Brook and the unnamed perennial stream.

2.3.2.1 Hemlock Lane Crossing

The BVW bordering the northern bank of Delphi Brook on the west side of Hemlock Lane is demarcated by flag series 1C and is described as a Palustrine Forested wetland with broad-leaved deciduous vegetation and is seasonally saturated (PFO1B). This area slopes towards Delphi Brook and contains vegetation such as American hornbeam (*Carpinus caroliniana*; FAC), red maple, American elm, Japanese barberry, bristly dewberry (*Rubus hispidus*; FACW), royal fern (*Osmunda regalis*; OBL), and eastern poison ivy (*Toxicodendron radicans*; FAC).

The BVW bordering the southern bank of Delphi Brook on the west side of Hemlock Lane is demarcated by flag series 1D and is described as a Palustrine Forested/Emergent wetland that is seasonally saturated (PFO/PEM1B). Vegetation observed includes red maple, American elm, red chokeberry (*Aronia arbutifolia*; FACW), Japanese barberry, interrupted fern (*Osmunda claytoniana*; FAC), feathery false solomon's-seal (*Maianthemum racemosum*; FACU), false lily-of-the-valley (*Maianthemum canadense*; FACU), and skunk-cabbage (*Symplocarpus foetidus*; OBL).

A small fringe BVW was observed bordering the north bank of Delphi Brook immediately to the east of Hemlock Lane and is demarcated by flag series 1E. Vegetation observed includes American hornbeam, American elm, red chokeberry, interrupted fern, and sensitive fern (*Onoclea sensibilis*; FACW).

2.3.2.2 Wellhouse Access Road Crossing

The unnamed perennial stream also had associated BVWs present. The BVW along the south side of the gravel access road and east of the culvert is represented by flag series 4C. It borders the north side of the stream and is described as a Palustrine Forested/Emergent wetland that is seasonally flooded or saturated (PFP/PEM1E). Vegetation observed includes American hornbeam, yellow birch (*Betula alleghaniensis*; FAC), American witch-hazel (*Hamamelis virginiana*; FACU), New York fern (*Parathelypteris noveboracensis*; FAC), and skunk-cabbage.

The BVW bordering the south side of the gravel access road and west of the culvert is represented by flag series 4D and is described as a Palustrine Forest/Scrub-Shrub wetland with broad-leaved deciduous vegetation and is seasonally saturated (PFO/PSS1B). Vegetation observed includes red maple, speckled alder (*Alnus incana*; FACW), skunk-cabbage, interrupted fern, sensitive fern, and fringed sedge (*Carex crinata*; OBL).

The BVW bordering the east side of the stream and north of the gravel access road is demarcated by flag series 4E and is described as a Palustrine Scrub-Shrub wetland with broad-leaved deciduous vegetation and is seasonally saturated (PSS1B). Vegetation observed includes American hornbeam, speckled alder, rambler rose, skunk-cabbage, interrupted fern, and sensitive fern.

The BVW bordering the west side of the stream and north of the gravel access road is demarcated by flag series 4F and is described as a Palustrine Forested/Emergent wetland that is seasonally flooded or saturated (PFO/PSS1E). Vegetation observed includes red maple, American hornbeam, speckled alder, spotted touch-me-not (*Impatiens capensis*; FACW), skunk-cabbage, and interrupted fern. Wood debris and concrete deposits were observed in this BVW during the delineation.

2.3.3 Land Under Waterbodies and Waterways

Land Under Waterbodies and Waterways (LUWW) is defined at 310 CMR 10.56(2)(a) as "the land beneath any creek, river, stream, pond or lake." LUWW is confined to Delphi Brook and the unnamed perennial stream.

The LUWW associated with Delphi Brook primarily consists of gravel with cobble substrate. Some riffles and small pools were observed along multiple areas of the stream. The LUWW associated with the unnamed perennial stream mostly contains cobble substrate.

2.3.4 Bordering Land Subject to Flooding

Bordering Land Subject to Flooding (BLSF) is defined at 310 CMR 10.57(2)(a) as "an area with low, flat topography adjacent to and inundated by flood waters rising from creeks, rivers, streams, ponds or lakes. It extends from the banks of these waterways and water bodies; where a bordering vegetated wetland occurs, it extends from said wetland."

A review of the Flood Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM; Panel No. 25013C0486E, effective date July 16, 2013), indicates the Project Site

at the Hemlock Lane crossing is situated within the limits of the Zone A floodway associated with Delphi Brook. A copy of the FEMA FIRM is provided in Appendix D.

2.3.5 Riverfront Area

Riverfront Area is defined at 310 CMR 10.58(2)(a) as *"the area of land between a river's mean annual high water line and a parallel line measured horizontally. The riverfront area may include or overlap other resource areas or their buffer zones. The riverfront area does not have a buffer zone."*

The Mean Annual High Water (MAHW) of Delphi Brook is coincident with the delineated Bank. Riverfront Area includes BVW, paved and gravel roadways, maintained lawn, residential housing, and forest. Areas of fill consisting of concrete and wood debris was observed in the Riverfront Area south of Delphi Brook.

2.4 Estimated and Priority Habitats

The Massachusetts Natural Heritage and Endangered Species Program (NHESP) Atlas (August 1, 2021) and MassGIS online (August 2021) were consulted during the planning and design phases of this project. According to these sources, neither the Project Site or surrounding area are within the limits of mapped Priority Habitats of Rare Species or Estimated Habitats of Rare Wildlife.

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SECTION 3

Section 3 Project Description

3.1 Proposed Activities

The existing crossing at Hemlock Lane is approximately 48 inches wide and 32 feet long with 8-foot flared end pieces on either side of the crossing. This crossing was not permitted as it was constructed as a temporary emergency road crossing. The proposed crossing will consist of a precast concrete box culvert that will simulate a natural stream crossing. The culvert structure will be 14 feet wide and 45 feet long. The culvert will be eight feet in height and will be embedded with two feet of natural streambed material to match the existing grade and substrate of the stream as it flows through the culvert.

The crossing over the tributary along the well house access road consists of a failing CMP that is approximately 30 inches in diameter and approximately 20 feet long. The proposed crossing will consist of the Hemlock Road precast concrete culvert that is 48 inches in diameter and 40.5 feet long. The culvert will also be embedded with six inches of natural streambed material and graded to match the existing streambed slope.

The construction of the replacement stream crossings will require removal of the existing culverts, installation of temporary cofferdams upstream and downstream, and installation of a temporary streamflow bypass system. Refer to the Project Drawings provided in Appendix B for specific details.

Activities associated with removing the concrete fill and wood debris from the wetland resource areas include removing the material by hand, or equipment where necessary, and disposing the material off site in an appropriate manner. A summary of the existing and proposed culvert dimensions is provided below.

TABLE 3-1

Comparison of Conditions at the Hemlock Lane Crossing to the *Massachusetts River and Stream Crossing Standards*¹

General Standards	Existing Conditions	Proposed Culvert
	Precast Concrete Culvert 48" Wide x 32' Long	Precast Concrete Box Culvert 14' Wide x 45' Long
Open-bottom span preferred	No - closed bottom CMP	Three-sided bottomless box culvert with Stream Substrate
Embedment (if a culvert): <ul style="list-style-type: none"> • Min. 2' for all culverts • Min. 2' and at least 25% for round pipe • When embedment material includes elements > 15" diam., embedment depths should be at least 2x the D₈₄ of the embedment material 	None	A minimum of 2 feet to 3 feet of native stream material embedment will be provided if needed when existing culvert is removed

TABLE 3-1

Comparison of Conditions at the Hemlock Lane Crossing to the *Massachusetts River and Stream Crossing Standards*¹

General Standards	Existing Conditions	Proposed Culvert
	Precast Concrete Culvert 48" Wide x 32' Long	Precast Concrete Box Culvert 14' Wide x 45' Long
Crossing Span Min. 1.2 x bankfull width	4 feet (0.4 x bankfull width)	14 feet (1.3 x bankfull width)
Substrate Matches streambed	No – closed bottom CMP	Yes – native material will match streambed
Water Depth & Velocity	Constricts current water flow	Will allow stream to flow at natural velocity
Openness (Min. 0.82 feet)	16/32 = 0.5 feet	84/45 = 1.86 feet (2' embedment)
Banks:		
<ul style="list-style-type: none"> On both sides of stream Match the horizontal profile of existing stream Constructed so as not to hinder use by riverine wildlife 	Existing banks stop at the culvert	Proposed banks to pass through the box culvert and match upstream conditions. Downstream conditions are hour-glassed from existing culvert and too wide to match culvert inset bank

¹Based on the March 1, 2011 Revision of the *Massachusetts River and Stream Crossing Standards*.

²Bankfull width as observed in the field and based on the average of four measurements.

TABLE 3-2

Comparison of Conditions at the Wellhouse Access Road Crossing to the *Massachusetts River and Stream Crossing Standards*¹

General Standards	Existing Conditions	Proposed Culvert
	CMP 30" Wide x 20' Long	Precast Concrete Culvert 48" Wide x 40.5' Long
Open-bottom span preferred	No - closed bottom CMP	Re-purpose Box culvert with embedment
Embedment (if a culvert):	None	A minimum of 1 foot to 1.5 feet of native stream material embedment will be provided
<ul style="list-style-type: none"> Min. 2' for all culverts Min. 2' and at least 25% for round pipe When embedment material includes elements > 15" diam., embedment depths should be at least 2x the D₈₄ of the embedment material 		

TABLE 3-2

Comparison of Conditions at the Wellhouse Access Road Crossing to the *Massachusetts River and Stream Crossing Standards*¹

General Standards	Existing Conditions	Proposed Culvert
	CMP 30" Wide x 20' Long	Precast Concrete Culvert 48" Wide x 40.5' Long
Crossing Span Min. 1.2 x bankfull width	2.5 feet (0.7 x bankfull width)	4 feet (1.2 x bankfull width)
Substrate Matches streambed	No – closed bottom CMP	Yes – native material will match streambed
Water Depth & Velocity	Constricts current water flow, scour hole at outfall, perched	Will allow stream to flow at natural velocity reconnect stream bed continuity
Openness (Min. 0.82 feet)	$4.9/60.25 = 0.08$ feet	$10.2/40 = 0.25$ feet (1' embedment)
Banks:		
<ul style="list-style-type: none"> • On both sides of stream • Match the horizontal profile of existing stream • Constructed so as not to hinder use by riverine wildlife 	Existing banks stop at the culvert	Proposed banks to pass through the box culvert and match upstream and downstream conditions

¹Based on the March 1, 2011 Revision of the *Massachusetts River and Stream Crossing Standards*

²Bankfull width as observed in the field and based on the average of four measurements

3.1.1 Anticipated Construction Sequence

No work will be conducted in open or flowing water. The actual sequence of construction will be left to the discretion of the selected contractor. Based on similar projects, the proposed construction sequence includes the following:

1. Site preparation including, but not limited to, the following activities:
 - a. Post MassDEP File # sign
 - b. Install erosion and sedimentation controls, including dewatering basin
 - c. Remove existing guardrails as needed
2. Notify pertinent regulatory agencies of the construction schedule.
3. Coordinate with the owner to schedule work and perform construction layout.
4. Install upstream and downstream coffer dams to isolate the work area, as well as the temporary streamflow bypass system and other Best Management Practices (BMPs).
5. Schedule and conduct site walks with pertinent regulatory agencies to inspect construction-phase BMPs, as required.
6. Remove the existing culvert.
7. Furnish and install the new culvert.

8. Install modified rockfill and natural substrate in the bottom of the culvert.
9. Conduct *in situ* restoration in the area of temporary wetland impacts.
10. Construct mitigation wetland: prepare grades, broadcast wetland seed mix and install shrubs within the mitigated wetland area (see Inland Wetland Replacement Plan in Appendix G).
11. Remove coffer dams; restore normal stream flows through new culvert.
12. Restore roadway surface with gravel and/or asphalt.
13. Remove erosion and sedimentation controls after the site has been cleaned and the work has been approved by the owner, the engineer, and the Conservation Commission.

The applicant's contractor(s) will be required to submit project-specific construction sequences prior to commencement of work. The above sequence may change, and some tasks may be performed concurrently. The contractor who performs the work will determine the actual sequencing based on their means and methods of construction.

3.1.2 Access, Staging, and Stockpiling

The Project Site will be accessed from Stafford Road and along the existing access roads and routes within the Project Locus. Existing access roads and routes are shown on Figure 3 in Appendix A. Staging and stockpile locations will be generally located along viable access routes for removal of project-related materials from the site. Staging areas for equipment and materials will also be located outside of wetland resource areas.

3.1.3 Site Restoration

Upon the completion of the project, the disturbed areas will be restored and stabilized. The proposed restoration activities include loaming and seeding areas of exposed soil, and planting of native shrubs along the stream. The shrubs selected for planting include speckled alder (*Alnus incana*), highbush blueberry (*Vaccinium corymbosum*), sweet pepperbush (*Clethra alnifolia*), and winterberry holly (*Ilex verticillata*). The seed mix used on areas of exposed soil will consist of *New England Wetmix*, from New England Wetland Plants, Inc. (NEWP), which contains a variety of native seeds that should produce more than 75% ground cover in two full growing seasons. A BVW replacement plan is included in Appendix G and outlines the proposed replication for the permanent alteration of BVW on site.

3.2 Construction Period Protective Measures

The following Best Management Practices (BMPs) will be implemented during construction to minimize the potential for erosion and sedimentation of wetland resource areas. Erosion control locations and typical details are provided on the Project Drawings in Appendix B.

3.2.1 Erosion Control

Erosion control measures will be installed prior to any construction and maintained until disturbed areas have been stabilized. The limit of work will be clearly defined to prevent disturbance of vegetation or soil outside of the work area. Silt trapped at any barriers will be removed and disposed of in upland areas outside of wetland resource areas and their buffer zones. The proposed locations of these barriers are shown on the Project Drawings. In addition:

- The Contractor will be required to maintain a reserve supply of erosion control barriers on-site to make repairs, as necessary.
- Protective measures will be inspected after significant precipitation events. Maintenance and repairs will be conducted, as necessary.

Upon conclusion of the project, the erosion control barriers will be removed and properly disposed off-site following the stabilization of disturbed areas and Conservation Commission authorization.

3.2.2 Stream Flow Bypass

Due to the nature of the proposed project and the space constrictions of the site, it is impractical to maintain normal stream flows within the stream channel during construction and will therefore require a stream flow bypass. Work in flowing waters will be conducted in accordance with Condition 19 of the General Permits for the Commonwealth of Massachusetts. In short, the bypass will likely be accomplished by pumping water from immediately above the upstream cofferdam to immediately downstream of the isolated work area.

The weather will be monitored to determine if adjustments to the bypass pumping system need to be made to accommodate potential flooding from stormwater. The contractor will be required to prepare and provide a contingency plan, including response to significant wet weather events, prior to the commencement of work.

3.2.3 Dewatering Measures

Temporary cofferdams will be installed at the upstream and downstream limits of work within the stream to create an isolated work area. Standard dewatering measures will be employed during construction of the replacement culverts. Excess water within the work area will be pumped to an appropriate treatment system prior to discharge, if necessary. The contractor will be required to submit a site-specific dewatering plan prior to the start of construction.

3.2.4 Cofferdams

Temporary coffer dams will be installed at the upstream and downstream limits of work within Delphi Brook to create an isolated (i.e. dry) work area. The isolated work area will be dewatered as depicted in Section 3.2.3. The locations of the coffer dams are shown on the Project Drawings in Appendix A.

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SECTION 4

Section 4 Regulatory Compliance

The proposed project has been designed to avoid, minimize, and mitigate environmental impacts to the maximum extent practicable. Descriptions of the project's compliance with the regulatory requirements of the MAWPA are provided in the following sections.

4.1 Massachusetts Wetlands Protection Act

Portions of the proposed project areas will be within areas subject to protection and jurisdiction under the MAWPA. These areas consist of inland Bank, BVW, LUWW, BLSF, and Riverfront Area, as well the 100-foot Buffer Zone. The majority of impacts will be temporary in nature and the disturbed areas will be restored in kind to the maximum extent practicable.

TABLE 4-1

Summary of MAWPA Jurisdictional Alterations

Project Site	Bank	BVW (temp/perm)	LUWW	BLSF	Riverfront Area
					0-100 ft ¹
Hemlock Lane Crossing	230 lf	255/160 sf	1,800 sf	1,155 sf	8,900 sf
Wellhouse Access Road	235 lf	1,105/1,395 sf	700 sf	0 sf	8,850 sf
Total:	465 lf	1,360 sf/1,555 sf	2,500 sf	1,155 sf	17,750 sf

¹All proposed work is within the first 100 feet of Riverfront Area. No alterations will occur between 100 and 200 feet.

4.1.1 Limited Project Status

The proposed activities qualify for consideration as a Limited Project per 310 CMR 10.53(3)(i):

*"The maintenance, repair and improvement (but not substantial enlargement) of structures, including dams and reservoirs and appurtenant works to such dams and reservoirs, buildings, piers, towers, headwalls, bridges, and **culverts** which existed on the effective date of 310 CMR 10.51 through 10.60 (April 1, 1983)."*

The stream crossings at this site have been in place since prior to 1983 based on previous USGS topographic maps (dating back to the late 1800s). An alternatives analysis is presented in the following section, as required per 310 CMR 10.53(3).

On behalf of the applicant, we respectfully request the Commission grant Limited Project Status relative to the following performance standards:

- 310 CMR 10.54(4)(a)(5) – Wildlife habitat evaluation (Bank)
- 310 CMR 10.58(5)(c) – Work proximity to river (Riverfront Area)
- 310 CMR 10.58(5)(d) – Expansion of existing structures (Riverfront Area)

4.1.1.1 Alternatives Analysis

As set forth at 310 CMR 10.53(3), an alternatives analysis is required when considering authorization of activities as Limited Projects. The following alternatives were considered for this project.

No Action

The existing culverts were not permitted and fail to meet the guidelines outlined in *Massachusetts River and Stream Crossing Standards*. For these reasons, a course of "No Action" is not preferable.

Equivalent Culvert Replacement

While in-kind replacement is an affordable option, it would not improve the existing stream conditions or meet the requirements of the *Massachusetts River and Stream Crossing Standards*. The property owners view this project as an opportunity to improve stream continuity conditions for Delphi Brook at the Hemlock Lane crossing and the unnamed tributary at the Wellhouse Access Road crossing. Replacing either culvert with an equivalent structure would not provide additional benefit to the stream or adjacent landscape.

Closed-Cell Box Culvert

This alternative is limited in its functionality due to the excavation depth needed for installation. The excavation would be impeded by ledge downstream of Hemlock Lane crossings. This alternative would increase the overall impacts to resource areas during construction and would not provide sufficient depth under water to provide a natural stream substrate on the bottom of culverts.

Bridge

The construction of a bridge is not necessary to achieve compliance with the *Massachusetts River and Stream Crossing Standards* for either stream crossing. Further, construction of new bridges would require additional land development adjacent to the existing crossings increasing disturbance to the site. Grades of the roadways would need to be altered to facilitate the design and installation of a bridge. A bridge design and construction is also financial burdensome for the property owner.

4.1.2 Stream Crossing Replacement Requirements

Per 310 CMR 10.53(8), any person proposing the replacement of an existing stream crossing shall demonstrate to the Issuing Authority that the impacts of the crossing have been avoided where possible, and when not possible have been minimized and that mitigation measures have been provided to contribute to the protection of the interests identified in M.G.L. c. 131, § 40. An applicant will be presumed to have made this showing if the project is designed as follows:

- (a) *If the project includes replacement of an existing non-tidal crossing, the applicant demonstrates to the satisfaction of the Issuing Authority that the crossing complies with the Massachusetts Stream and River Crossing Standards to the maximum extent practicable.*

The proposed crossing meets the Massachusetts Stream Crossing Standards to the maximum extent practicable while providing a financially feasible and overall, less impactful, relative to footprint of disturbance, design for the replacement. Both crossings will provide an increase in the overall openness ratio, provide a natural

stream bottom, and are sized greater than 1.2 times bankfull width to allow for increase capacity and wildlife passage.

- (b) *If the project includes replacement of an existing tidal crossing that restricts tidal flow, the applicant demonstrates to the satisfaction of the Issuing Authority that tidal restriction will be eliminated to the maximum extent practicable.*

Not applicable as this is not a tidal system.

4.1.3 MAWPA General Performance Standards

The following sections present the MAWPA performance standards for the wetland resource areas (in italic font) and the proposed activities' compliance with those standards (in normal font). Inland Bank, BVW, LUWW, BLSF, and Riverfront Area alterations as presented in this section were measured in AutoCAD using surveyed topography, field delineated wetland resource areas, and other site features.

4.1.3.1 Bank

The proposed improvements will result in the alteration of approximately 230 linear feet (lf) of inland Bank associated with Delphi Brook and approximately 235 lf of inland Bank associated with the unnamed perennial stream. The project will create 50 additional lf of impervious bank at the Hemlock Lane Crossing due to the improvement from a pipe culvert to box culvert that will be graded to meet the natural substrate of the stream. The remaining alterations are due to bank stabilization techniques that will be implemented at both locations to minimize the potential for erosion and undercutting following construction.

The Performance Standards for inland Bank are set forth at 310 CMR 10.54(4)(a).

- (a) *Where the presumption set forth in 310 CMR 10.54(3) is not overcome, any proposed work on a Bank shall not impair the following:*

1. *The physical stability of the Bank;*

The proposed activities include the stabilization of disturbed areas of Bank (and adjacent slope) with coir logs and biodegradable erosion control blankets. This standard has been satisfied.

2. *The water carrying capacity of the existing channel within the Bank;*

The water carrying capacity of the channels will be improved by replacing each crossing with a larger culvert that spans the stream channel based on upstream and downstream measurements of bankfull width. As such, this standard has been met.

3. *Ground and surface water quality;*

The proposed project will increase the quantity and quality of natural streambed at both crossings. Further, the designs include measures to minimize scour which will improve surface water quality and construction period BMPs will be utilized. This standard has been met.

4. *The capacity of the Bank to provide breeding habitat, escape cover and food for fisheries;*

The project replaces the existing manmade bank with natural materials including round stones, live stakings /or tubelings, and coir logs. As such, the capacity of the

Bank to provide wildlife habitat functions is increased and this standard has been met.

5. *The capacity of the Bank to provide important wildlife habitat functions. A project or projects on a single lot, for which Notice(s) of Intent is filed on or after November 1, 1987, that (cumulatively) alter(s) up to 10% or 50 feet (whichever is less) of the length of the bank found to be significant to the protection of wildlife habitat, shall not be deemed to impair its capacity to provide important wildlife habitat functions. In the case of a bank of a river or an intermittent stream, the impact shall be measured on each side of the stream or river. Additional alterations beyond the above threshold may be permitted if they will have no adverse effects on wildlife habitat, as determined by procedures established under 310 CMR 10.60.*

As noted above, the proposed project will improve the wildlife habitat function and value of the stream bank. As a Limited Project, Freehold Real Estate Management respectfully requests that the Commission waive the requirement to perform a Wildlife Habitat Evaluation at this location given the overall improvement and extensive benefits that will result from this project.

6. *Work on a stream crossing shall be presumed to meet the performance standard set forth in 310 CMR 10.54(4)(a) provided the work is performed in compliance with the Massachusetts Stream Crossing Standards by consisting of a span or embedded culvert in which, at a minimum, the bottom of a span structure or the upper surface of an embedded culvert is above the elevation of the top of the bank, and the structure spans the channel width by a minimum of 1.2 times the bankfull width. This presumption is rebuttable and may be overcome by the submittal of credible evidence from a competent source. Notwithstanding the requirement of 310 CMR 10.54(4)(a)5., the impact on bank caused by the installation of a stream crossing is exempt from the requirement to perform a wildlife habitat evaluation in accordance with the procedures contained in 310 CMR 10.60.*

As presented in Table 3-1, the replacement crossing for over Delphi Brook meets the *Massachusetts River and Stream Crossing Standards*. Although the Wellhouse Access Road Crossing does not meet the same standard, the stream continuity will be significantly improved with a larger culvert. This will benefit and improve the stream currently, as opposed to waiting until Freehold would financially be able to install a crossing that would meet the *Massachusetts River and Stream Crossing Standards*.

- (b) *Notwithstanding the provisions of 310 CMR 10.54(4)(a), structures may be permitted in or on a Bank when required to prevent flood damage to facilities, buildings and roads constructed prior to the effective date of 310 CMR 10.51 through 10.60 or constructed pursuant to a Notice of Intent filed prior to the effective date of 310 CMR 10.51 through 10.60 (April 1, 1983), including the renovation or reconstruction (but not substantial enlargement) of such facilities, buildings and roads, provided that the following requirements are met:*

1. *The proposed protective structure, renovation or reconstruction is designed and constructed using best practical measures so as to minimize adverse effects on the characteristics and functions of the resource area;*

Hemlock Lane and the Wellhouse Access Road crossing were constructed prior to April 1, 1983. BMPs, as well as current ecological design standards, have been integrated into the project design and will improve the function and value of Bank at this location.

2. *The applicant demonstrates that there is no reasonable method of protecting, renovating or rebuilding the facility in question other than the one proposed.*

The project qualifies for consideration as a Limited Project per 310 CMR 10.53(3 (i). Based on the alternatives analysis provided in Section 4.1.1.1, the proposed method is the most reasonable method of addressing the problems at hand.

- (c) *Notwithstanding the provisions of 310 CMR 10.54(4)(a) or (b), no project may be permitted which will have any adverse effect on specified habitat sites of Rare Species, as identified by procedures established under 310 CMR 10.59.*

The proposed activities will not take place within or near any NHESP mapped Priority or Estimated Habitat.

4.1.3.2 Bordering Vegetated Wetlands

The proposed project will result in the temporary alteration of 1,360 square feet (sf) of BVW and the permanent alteration of 1,155 sf of BVW. Areas of temporary alteration will be restored in situ upon the completion of construction, while a BVW Replacement Area has been designed to replicate the permanent loss. The following section describes how the project has been designed to comply with the General Performance Standards for BVW set forth at 310 CMR 10.55(4).

- (a) *Where the presumption set forth in 310 CMR 10.55(3) is not overcome, any proposed work in a Bordering Vegetated Wetland shall not destroy or otherwise impair any portion of said area.*

The proposed project will impact approximately 2,515 square feet of BVW during construction of the replacement crossings. The areas of temporary impact due to construction will be hand seeded with a native plant seed mix (i.e., New England Wetland Plants Inc. *New England Moist Site mix*) or another approved equivalent upon completion of work. A BVW Replacement Plan has been developed and is included in Appendix G, to address the areas of permanent wetland loss.

- (b) *Notwithstanding the provisions of 310 CMR 10.55(4)(a), the issuing authority may issue an Order of Conditions permitting work which results in the loss of up to 5000 square feet of Bordering Vegetated Wetland when said area is replaced in accordance with the following general conditions and any additional, specific conditions the issuing authority deems necessary to ensure that the replacement area will function in a manner similar to the area that will be lost:*

1. *The surface of the replacement area to be created ("the replacement area") shall be equal to that of the area that will be lost ("the lost area");*

The work within the BVW involves the temporary alterations during construction for the installation of the culverts. While some BVW will be permanently impacted as a result of the construction of the proposed stream crossing structures, the Inland Wetland Replacement Plan (see Appendix G) has been designed so that the proposed wetland area is connected to the adjacent BVW at the Wellhouse Access Road site and maintains a hydrologic connection to Wetland 4F and the unnamed perennial stream.

2. *The ground water and surface elevation of the replacement area shall be approximately equal to that of the lost area;*

The areas of temporary impact will be restored in situ and the BVW replacement areas will be equal in size to the areas lost, satisfying this standard.

3. *The overall horizontal configuration and location of the replacement area with respect to the bank shall be similar to that of the lost area;*

The areas of temporary impact will be restored in situ. The proposed hydrology and surface elevation of the proposed BVW replacement area will approximate that of the adjacent BVW.

4. *The replacement area shall have an unrestricted hydraulic connection to the same water body or waterway associated with the lost area;*

The landscape position and configuration of the proposed BVW replacement area is adjacent to the impacted BVW. Some excavation will be required to maintain the same elevation as the impacted BVW, thus providing an unrestricted connection to its sources of hydrology.

5. *The replacement area shall be located within the same general area of the water body or reach of the waterway as the lost area;*

As the restoration of temporary impacts will occur in situ, the BVW will be within the same general area of the water body as the altered. The landscape position and configuration of the proposed BVW replacement area is adjacent to the impacted BVW at the Wellhouse Access Road site. The proposed BVW replacement area is located between wetland flags 4F-4 and 4F-8 along the eastern extent of the BVW.

6. *At least 75% of the surface of the replacement area shall be reestablished with indigenous wetland plant species within two growing seasons, and prior to said vegetative reestablishment any exposed soil in the replacement area shall be temporarily stabilized to prevent erosion in accordance with standard U.S. Soil Conservation Service methods; and*

As described in the Inland Wetland Replacement Plan provided in Appendix G of this NOI, the plan calls for monitoring the replacement area for multiple growing seasons following its construction, as well as annual documentation and reporting to the Wales Conservation Commission. The replacement area shall be provided in a manner which is consistent with all other General Performance Standards for each resource area in Part III of 310 CMR 10.00.

7. *The replacement area shall be provided in a manner which is consistent with all other General Performance Standards for each resource area in Part III of 310 CMR 10.00. In the exercise of this discretion, the issuing authority shall consider the magnitude of the alteration and the significance of the project site to the interests identified in M.G.L. c. 131, 40, the extent to which adverse impacts can be avoided, the extent to which adverse impacts are minimized, and the extent to which mitigation measures, including replication or restoration, are provided to contribute to the protection of the interest identified in M.G.L. c. 131, 40.*

The proposed replacement area plan has been prepared in general accordance with 310 CMR 10.00 and MassDEP guidance policies. The restoration will generally mimic and replicate the existing functions and values of the BVWs.

- (c) *Notwithstanding the provisions of 310 CMR 10.55(4)(a), the issuing authority may issue an Order of Conditions permitting work which results in the loss of a portion of Bordering Vegetated Wetland when;*

1. *Said portion has a surface area less than 500 square feet*

2. *Said portion extends in a distinct linear configuration ("finger-like") into adjacent uplands*
3. *In the judgment of the issuing authority it is not reasonable to scale down, redesign, or otherwise change the proposed work so that it could be completed without loss of said wetland.*

These provisions are not applicable to the proposed project.

- (d) *Notwithstanding the provisions of 310 CMR and 10.55(4)(a), (b) and (c), no project may be permitted which will have any adverse effect on specified habitat sites of rare vertebrate or invertebrate species, as identified by procedures established under 310 CMR 10.59.*

No portion of the proposed work areas are within specified habitat of rare vertebrate or invertebrate species as shown on the Priority Resources map provided as Figure 2 in Appendix A.

- (e) *Any proposed work shall not destroy or otherwise impair any portion of a Bordering Vegetated Wetland that is within an Area of Critical Environmental Concern designated by the Secretary of Energy and Environmental Affairs under M.G.L. c.21A, § 2(7) and 310 CMR 12.00: Area of Environmental Concern. 310 CMR 10.55(4)(e):*

The proposed project is not situated within the limits of an Area of Critical Environmental Concern (ACEC).

4.1.3.3 Land Under Waterbodies and Waterways

As noted in Table 4-1, the proposed improvements will result in the alteration of approximately 2,500 sf of LUWW associated with Delphi Brook and the unnamed perennial stream. The project will require dredging approximately 30 cubic yards to lay the new culverts and embed them with a similar amount of streambed substrate material to match the surrounding grade. The remaining impacts are due to the temporary dewatered work area within the cofferdams as shown on the Project Drawings in Appendix B. The cofferdams will be removed upon the completion of construction and the area will be restored in situ.

The Performance Standards for Land Under Water Bodies and Waterways are set forth at 310 CMR 10.56(3).

- (a) *Where the presumption set forth in 310 CMR 10.56(3) is not overcome, any proposed work within Land Under Water Bodies and Waterways shall not impair the following:*

1. *The water carrying capacity within the defined channel, which is provided by said land in conjunction with the banks;*

The proposed project will improve the water carrying capacity of the defined channel through the crossing by restoring stream continuity and a natural stream bottom that was historically constricted by the CMP culvert. As such, this standard has been met.

2. *Ground and surface water quality;*

The proposed project will increase the quantity of natural streambed substrate at the crossing over Delphi Brook by replacing the concrete culvert with a larger box culvert, and replacing the CMP crossing over the unnamed perennial stream with a larger culvert that will improve the stream's continuity. Further, the design

includes measures to minimize scour and increase substrate depth which will improve surface water quality. This standard has been met.

3. *The capacity of said land to provide breeding habitat, escape cover and food for fisheries; and*

The project will increase the depth of streambed substrate along the bottom of the culverts which will improve the habitat for wildlife function and movement.

4. *The capacity of said land to provide important wildlife habitat functions. A project or projects on a single lot, for which Notice(s) of intent is filed on or after November 1, 1987, that (cumulatively) alter(s) up to 10% or 5,000 square feet (whichever is less) of land in this resource area found to be significant to the protection of wildlife habitat, shall not be deemed to impair its capacity to provide important wildlife habitat functions. Additional alterations beyond the above threshold may be permitted if they will have no adverse effects on wildlife habitat, as determined by procedures established under 310 CMR 10.60.*

The project proposes the alteration of less than 5,000 square feet of LUWW.

5. *Work on a stream crossing shall be presumed to meet the performance standard set forth in 310 CMR 10.56(4)(a) provided the work is performed in compliance with the Massachusetts Stream Crossing Standards by consisting of a span or embedded culvert in which, at a minimum, the bottom of a span structure or the upper surface of an embedded culvert is above the elevation of the top of the bank, and the structure spans the channel width by a minimum of 1.2 times the bankfull width. This presumption is rebuttable and may be overcome by the submittal of credible evidence from a competent source. Notwithstanding the requirements of 310 CMR 10.56(4)(a)4., the impact on Land under Water Bodies and Waterways caused by the installation of a stream crossing is exempt from the requirement to perform a habitat evaluation in accordance with the procedures established under 310 CMR 10.60.*

The replacement culvert for Delphi Brook will meet the minimum requirements for spanning the stream channel as demonstrated in Table 3-1. The unnamed perennial stream crossing will also be replaced with a larger culvert as shown in Table 3-2.

- (b) Notwithstanding the provisions of 310 CMR 10.56(4)(a), the issuing authority may issue an Order in accordance with M.G.L. c. 131, § 40 to maintain or improve boat channels within Land under Water Bodies and Waterways when said work is designed and carried out using the best practical measures so as to minimize adverse effects such as the suspension or transport of pollutants, increases in turbidity, the smothering of bottom organisms, the accumulation of pollutants by organisms or the destruction of fisheries habitat or nutrient source areas.*

Not applicable. The work areas are not in a designated boating channel.

- (c) Notwithstanding the provisions of 310 CMR 10.56(4)(a) or (b), no project may be permitted which will have any adverse effect on specified habitat sites of rare vertebrate or invertebrate species, as identified by procedures established under 310 CMR 10.59.*

Not applicable. The proposed activities will not take place within or near Priority or Estimated Habitat.

4.1.3.4 Bordering Land Subject to Flooding

As noted in Table 4-1, approximately 1,155 sf of disturbance associated with the Hemlock Lane Crossing is proposed within BLSF. Work within BLSF also includes the restoration of areas disturbed from construction activities. The General Performance Standards for BLSF are set forth at 310 CMR 10.57(4)(a).

1. *Compensatory flood storage shall be provided for all flood storage volume that will be lost as the result of a proposed project within Bordering Land Subject to Flooding, when in the judgment of the issuing authority said loss will cause an increase or will contribute incrementally to an increase in the horizontal extent and level of flood water during peak flows.*

Compensatory flood storage shall mean a volume not previously used for flood storage and shall be incrementally equal to the theoretical volume of flood water at each elevation, up to and including the 100-year flood elevation, which would be displaced by the proposed project. Such compensatory volume shall have an unrestricted hydraulic connection to the same waterway or water body. Further, with respect to waterways, such compensatory volume shall be provided within the same reach of the river, stream or creek.

The culvert replacement will not result in a net fill of BLSF. Although the proposed project is located within BLSF, work on the culvert and within the roadway will be restored to pre-construction grades to maintain the overall flood storage on site. Grading along the inlet and outlet of the culvert will provide an increase in flood storage capacity of the site with the removal of a portion of the existing embankment. The overall flood storage capacity of the area is anticipated to remain the same or increase slightly from the replacement of the culvert.

2. *Work within Bordering Land Subject to Flooding, including work required to provide the above-specified compensatory flood storage, shall not restrict flows so as to cause an increase in flood stage or velocity.*

The proposed project will not result in a new fill of BLSF. Existing grades within the roadway will be restored to pre-construction grades. The proposed work is not anticipated to increase flood stages or velocities during a flooding event.

3. *Work in those portions of bordering land subject to flooding found to be significant to the protection of wildlife habitat shall not impair its capacity to provide important wildlife habitat functions. Except for work which would adversely affect vernal pool habitat, a project or projects on a single lot, for which Notice(s) of Intent is filed on or after November 1, 1987, that (cumulatively) alter(s) up to 10% or 5,000 square feet (whichever is less) of land in this resource area found to be significant to the protection of wildlife habitat, shall not be deemed to impair its capacity to provide important wildlife habitat functions. Additional alterations beyond the threshold, or altering vernal pool habitat, may be permitted if they will have no adverse effects on wildlife habitat, as determined by procedures contained in 310 CMR 10.60.*

Not applicable. The proposed activities are located within, and limited to, previously disturbed parcels and will not alter more than 5,000 sf of BLSF. The work is not anticipated to permanently change the character of BLSF at either of the locations.

4.1.3.5 Riverfront Area

Approximately 17,750 sf of temporary and permanent impact will occur within the Riverfront Area of Delphi Brook and unnamed stream Brook. The Riverfront Area within the Project Site is comprised of residential properties and maintained gravel access road and Hemlock Lane.

This section describes how the proposed project satisfies the riverfront redevelopment provisions at 310 CMR 10.58(5). The performance standards are provided below in italics, while the details of project design follow.

- (a) At a minimum, proposed work shall result in an improvement over existing conditions of the capacity of the riverfront area to protect the interests identified in M.G.L. c. 131 § 40. When a lot is previously developed but no portion of the riverfront area is degraded, the requirements of 310 CMR 10.58(4) shall be met.*

The proposed project is located within existing disturbed roadways and consists of improvement to the existing stream crossings. The replaced culverts meet the Massachusetts River and Stream Crossing Standards to the maximum extent practicable and will provide additional plantings of native woody species along the Banks of the streams. The area will be improved over existing conditions to the extent feasible while replacing the unapproved infrastructure.

- (b) Stormwater management is provided according to standards established by the Department.*

The proposed project will not generate additional stormwater runoff, increase impervious area, or create a new point source discharge. Per the Recommended Final Decision issued July 29, 2016 in the Matter of Berkshire Community College Docket No. WET-2015-023 from the MassDEP Office of Appeals and Dispute Resolution, it was ruled that 310 CMR 10.05(6)(k) through (q) do not apply to a project that does not proposed a "point source" or "stormwater discharge" within Resource Areas or their Buffer Zones. As such, this standard has been satisfied.

- (c) Within 200 foot riverfront area, proposed work shall not be located closer to the river than existing conditions or 100 feet, whichever is less, or not closer than existing conditions within 25 foot riverfront areas, except in accordance with 310 CMR 10.58(5)(f) or (g).*

The proposed culvert replacements will increase the width and openness of the crossings, thus providing additional space for stream flow and wildlife movement. The culverts cannot be placed further from the resource area as it is conveying the resource under Hemlock Lane and the Wellhouse Access Road. Freehold Real Estate Management respectively requests that the Wales Conservation Commission waive this requirement under Limited Project status.

- (d) Proposed work, including expansion of existing structures, shall be located outside the riverfront area or toward the riverfront area boundary and away from the river, except in accordance with 310 CMR 10.58(5)(f) or (g).*

The proposed culvert replacement will increase the width and openness of the crossings, thus providing additional space for stream flow and wildlife movement. Due to the nature of the project, replacement of the culverts with the larger span, locating the work outside of Riverfront Areas is not practicable. Freehold Real Estate Management respectively requests that the Wales Conservation Commission waive this requirement under Limited Project status.

- (e) *The area of proposed work shall not exceed the amount of degraded area, provided that the proposed work may alter up to 10% if the degraded area is less than 10% of the riverfront area, except in accordance with 310 CMR 10.58(5)(f) or (g).*

The proposed culvert replacement project will not increase the amount of degraded area with the replacement of the culverts. The culvert is located within the same layout of the existing culverts. Shrub plantings of native woody plant species will be installed within and around the areas of restored banks to restore lost vegetation and further enhance Riverfront Area.

- (f) *When an applicant proposed restoration on-site of degraded riverfront area, alteration may be allowed notwithstanding the criteria of 310 CMR 10.58(c), (d) and (e) at a ratio in square feet of at least 1:1 of restored area to area of alteration not conforming to the criteria. Areas immediately along the river shall be selected for restoration. Alteration not conforming to the criteria shall begin at the riverfront area boundary. Restoration shall include*
- 1. removal of all debris, but retaining any trees or other mature vegetation;*
 - 2. grading to a topography which reduces runoff and increases infiltration;*
 - 3. coverage by topsoil at a depth consistent with natural conditions at the site; and*
 - 4. seeding and planting with an erosion control seed mixture, followed by plantings of herbaceous and woody species appropriate to the site.*

The area around the new culverts will be replanted, depending on the time of year and the availability of native nursery stock, to improve vegetation along the banks of the stream to the maximum extent practicable. Existing vegetation will be maintained to the extent feasible, and topography will be graded to reduce runoff and increase infiltration.

- (g) *When an applicant proposes mitigation either on-site or in the riverfront area within the same general area of the river basin, alteration may be allowed notwithstanding the criteria of 310 CMR 10.58(c), (d), or (e) at a ratio in square feet of at least 2:1 mitigation area to area of alteration not conforming to the criteria or an equivalent level of environmental protection where square footage is not a relevant measure. Alteration not conforming to the criteria shall begin at the riverfront area boundary. Mitigation may include off-site restoration of riverfront areas, conservation restrictions under M.G.L. c. 184 §§ 31 to 33 to preserve undisturbed riverfront area that could otherwise be altered under 310 CMR 10.00, the purchase of development rights within the riverfront area, the restoration of bordering vegetated wetland, projects to remedy an existing adverse impact on the interests identified in M.G.L. c. 131 § 40 for which the applicant is not legally responsible, or similar activities undertaken voluntarily by the applicant which will support a determination by the issuing authority of no significant adverse impact. Preference shall be given to potential mitigation projects, if any, identified in a River Basin Plan approved by the Secretary of the Executive Office of Environmental Affairs.*

As previously noted, Riverfront Area will be enhanced through the installation of native woody plant species.

4.1.4 Abutter Notification

Abutters were notified in accordance with the MA WPA 310 CMR 10.05(4)(a). Copies of the abutter notification form and list of abutters are provided in Appendix E.

4.1.5 Stormwater Management Standards

The proposed project will not generate additional stormwater runoff or increase impervious area, but it will alter the hydrology of the stream due to the increased culvert size. The proposed project will not generate additional stormwater runoff, increase impervious area, or create a new point source discharge. Per the Recommended Final Decision issued July 29, 2016 in the Matter of Berkshire Community College Docket No. WET-2015-023 from the MassDEP Office of Appeals and Dispute Resolution, it was ruled that 310 CMR 10.05(6)(k) through (q) do not apply to a project that does not proposed a "point source" or "stormwater discharge" within Resource Areas or their Buffer Zones.

4.2 Other Pertinent Regulatory Programs

4.2.1 Section 401 Water Quality

Culvert replacements and fill placed below the Mean Annual High Water (MAHW) line of Waters of the United States and wetlands within the Commonwealth are subject to Massachusetts Department of Environmental Protection (MassDEP) jurisdiction under Section 401 of the Clean Water Act. As summarized in Table 4-1, the proposed project will result in less than 5,000 square feet of impacts (temporary and permanent) to Land Under Water and wetland and will dredge and/or mobilize less than 100 cubic yards of sediment. As such, the project is not categorically required to obtain an individual 401 Water Quality Certificate.

4.2.2 Section 404 of the Clean Water Act

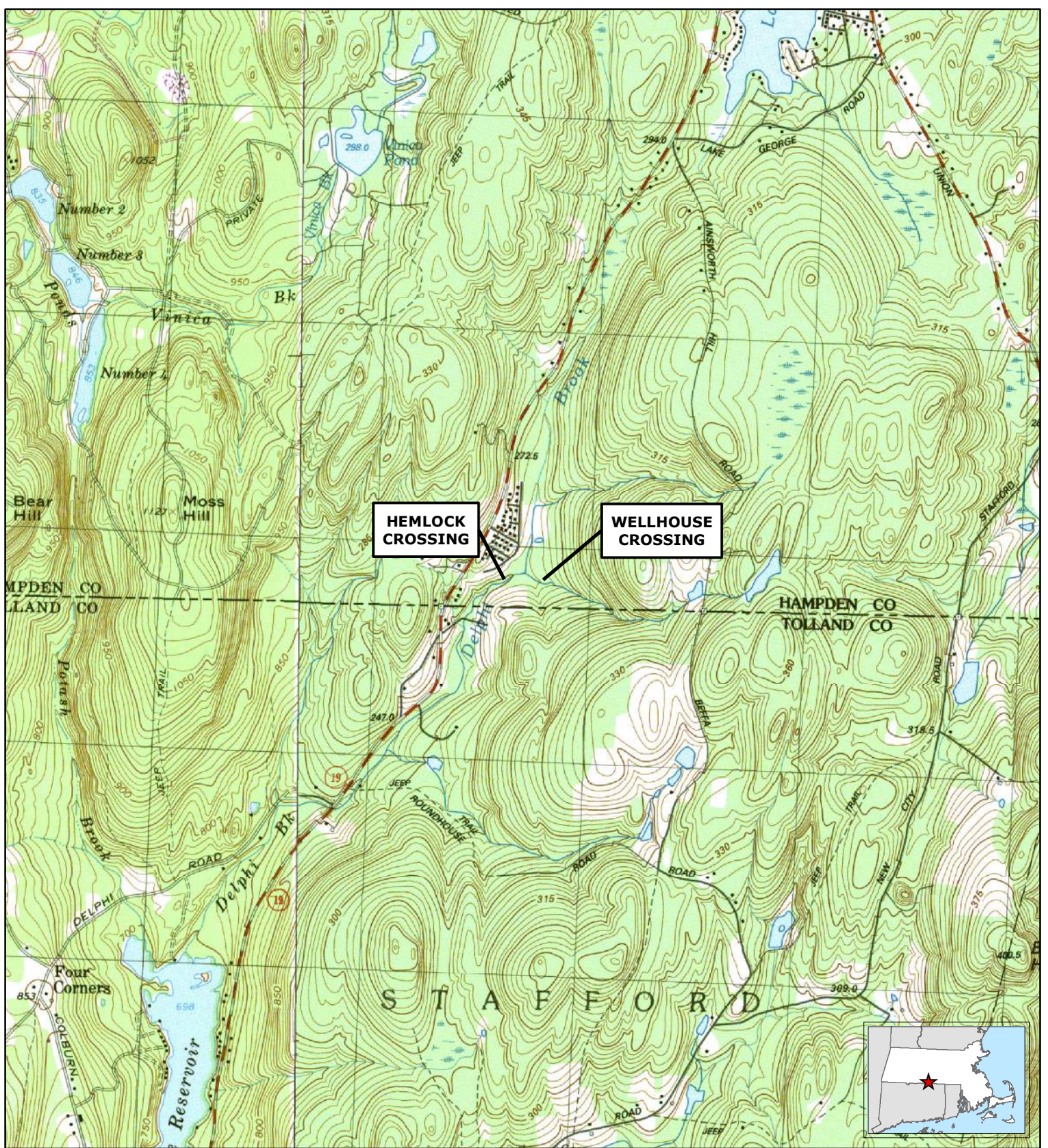
Culvert replacements and fill placed below the Ordinary High Water (OHW) line of Waters and wetlands of the United States within the Commonwealth are subject to jurisdiction under Section 404 of the Clean Water Act as administered by the United States Army Corps of Engineers (Corps). The project is subject to review under the "Pre-Construction Notification" category of the Massachusetts General Permits (MA GPs) as the project meets the stream crossing standards to the maximum extent practicable.

4.2.3 NPDES Construction General Permit

Construction activities will not result in the cumulative disturbance of one (1) or more acres of land. As such, the project does not require coverage under the NPDES Construction General Permit (CGP).

APPENDIX A

Figures



**HEMLOCK
CROSSING**

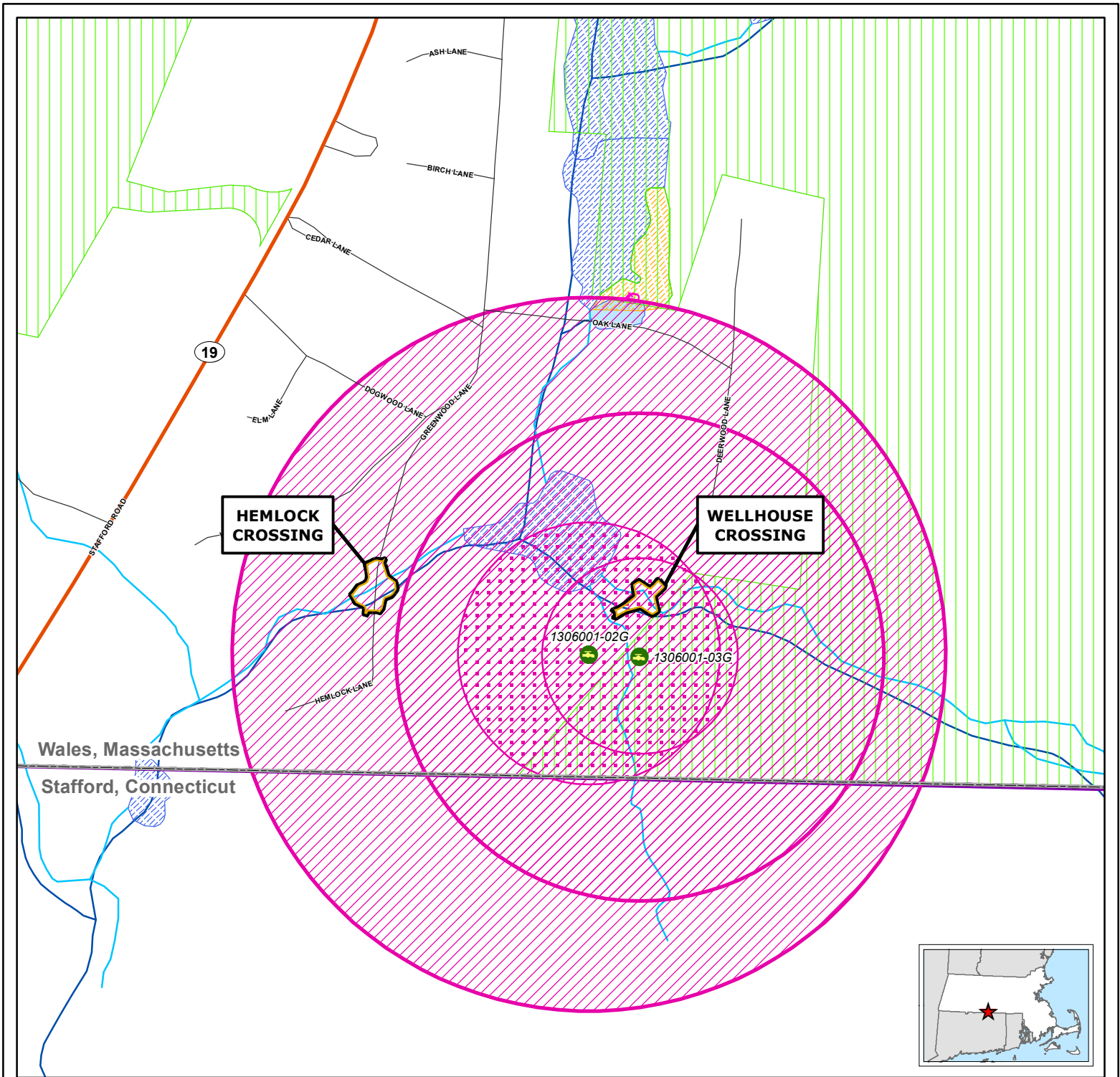
**WELLHOUSE
CROSSING**



**FIGURE 1
SITE LOCATION**

Delphi Brook
Stream Crossing Replacement Project
Wales, Massachusetts





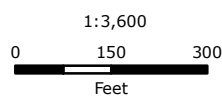
Legend

- NHESP Potential Vernal Pools
- Community Public Water Supply - Groundwater
- Other Numbered Route
- Minor Street or Road
- Hydrologic Connections
- Stream/Intermittent Stream
- DEP Approved Wellhead Protection Area (Zone I)
- DEP Interim Wellhead Protection Area (IWPA)
- Protected and Recreational Open Space
- Major Drainage Basin
- Sub Drainage Basin
- MassDEP Open Water
- MassDEP Inland Wetlands
- Water Bodies
- County Boundary
- Municipal Boundary
- Limit of Work

FIGURE 2 PRIORITY RESOURCES

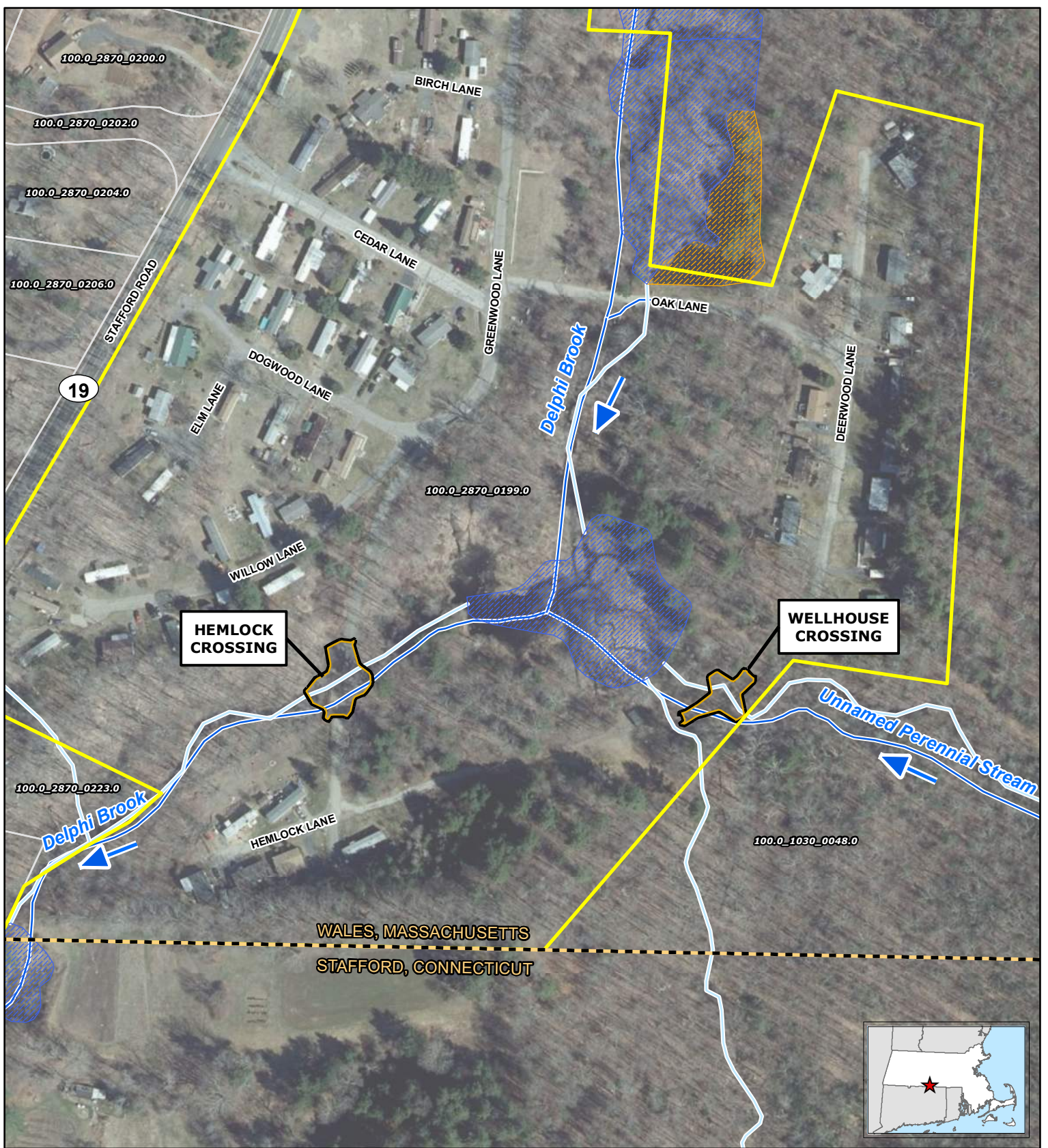
Delphi Brook
Stream Crossing Replacement Project
Wales, Massachusetts

Data source: Bureau of Geographic Information (MassGIS),
Commonwealth of Massachusetts, Executive Office of Technology
Data valid as of July 2022.



July 2022

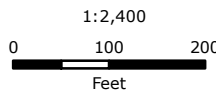
Tighe & Bond



- Hydrologic Connection
- Stream
- Limit of Work
- MassDEP Open Water
- MassDEP Inland Wetlands
- Subject Parcel
- Parcel Boundary
- Municipal Boundary

Tighe & Bond

Based on MassGIS Color Orthophotography (2021).
Parcels (FY2020) downloaded from MassGIS and are approximate.













**FIGURE 3
ORTHOPHOTOGRAPH**

Delphi Brook
Stream Crossing Replacement Project
Wales, Massachusetts

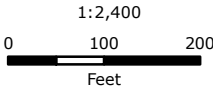
July 2022



-  Culvert
-  Bank/MAHW
-  Wetland Boundary
-  100-foot Buffer Zone
-  200-foot Riverfront Area
-  Wetland Area
-  Limit of Work
-  Subject Parcel
-  Parcel Boundary
-  Municipal Boundary

Tighe & Bond

Based on MassGIS Color Orthophotography (2021).
Parcels (FY2020) downloaded from MassGIS and are approximate.



**FIGURE 4
RESOURCE AREAS**

Delphi Brook
Stream Crossing Replacement Project
Wales, Massachusetts

July 2022

Tighe&Bond

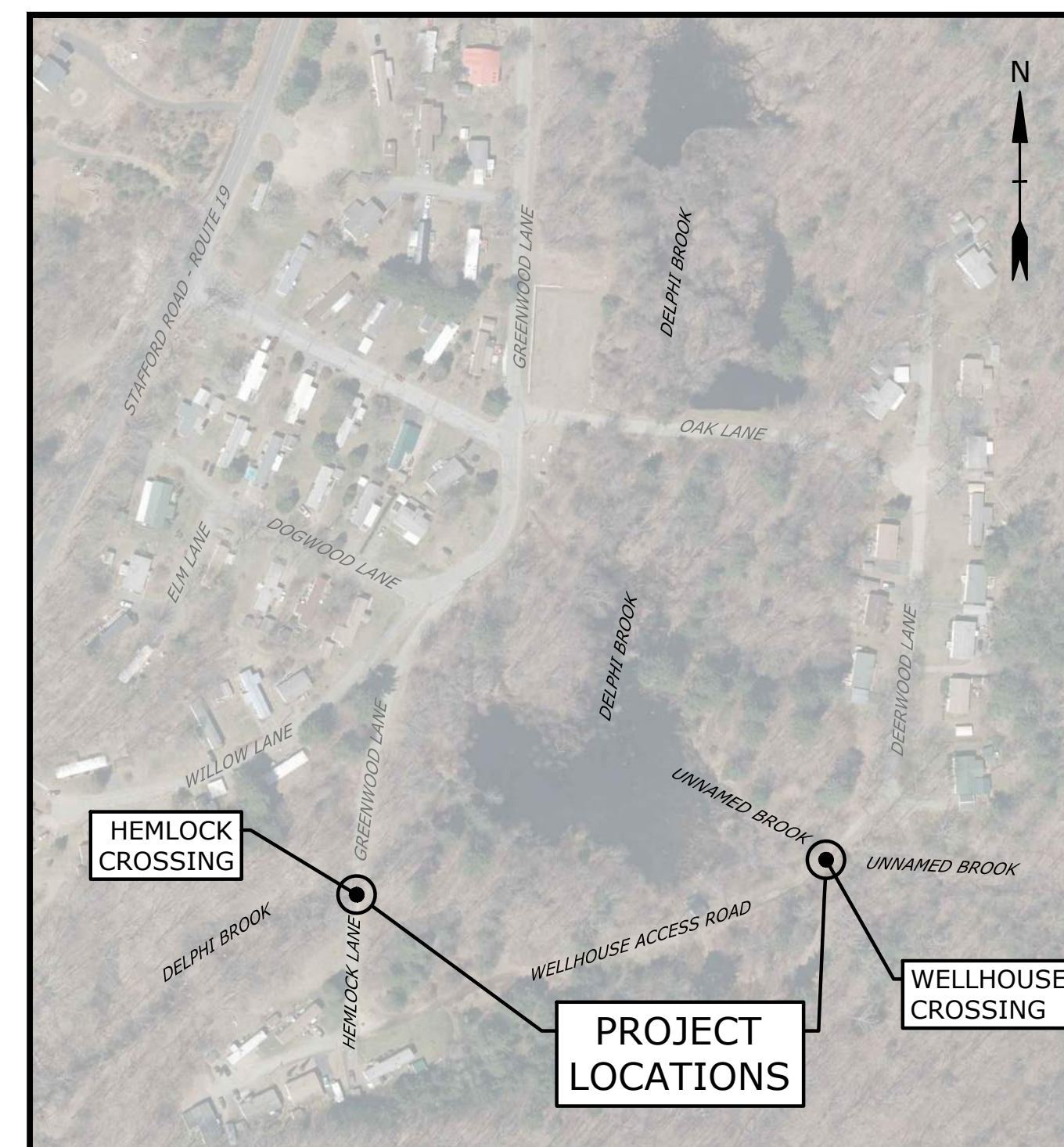
APPENDIX B

Project Drawings

TOWN OF WALES, MASSACHUSETTS DELPHI BROOK STREAM CROSSING REPLACEMENT PROJECT

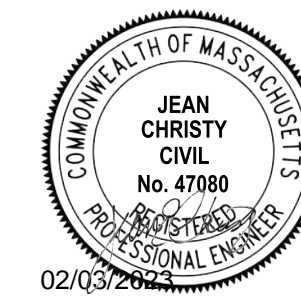
FEBRUARY 3, 2023

LIST OF DRAWINGS			
SHEET NO.	DRAWING NO.	DRAWING TITLE	DATE MODIFIED
1	G-001	COVER SHEET	02/03/2023
2	G-002	GENERAL NOTES, LEGEND & ABBREVIATIONS SHEET	02/03/2023
3	C-100	PROJECT VICINITY PLAN	02/03/2023
4	C-201	EXISTING CONDITIONS & SITE PREPARATION PLAN - HEMLOCK CROSSING	02/03/2023
5	C-202	EXISTING CONDITIONS & SITE PREPARATION PLAN - WELLHOUSE CROSSING	02/03/2023
6	C-301	PROPOSED CONDITIONS PLAN - HEMLOCK CROSSING	02/03/2023
7	C-302	PROPOSED CONDITIONS PLAN - WELLHOUSE CROSSING	02/03/2023
8	C-401	PROPOSED PROFILES - HEMLOCK & WELLHOUSE CROSSING	02/03/2023
9	C-402	PROPOSED SECTIONS - HEMLOCK & WELLHOUSE CROSSING	02/03/2023
10	C-501	STREAM & EROSION CONTROL NOTES & DETAILS SHEET	02/03/2023
11	C-502	DETAILS SHEET	02/03/2023
12	C-503	DETAILS SHEET	02/03/2023
13	C-504	DETAILS SHEET	02/03/2023
14	C-504	DETAILS SHEET	02/03/2023



LOCATION MAP
SCALE: 1" = 200'

PREPARED BY:
Tighe&Bond



PREPARED FOR:
FREEHOLD REAL ESTATE MANAGEMENT & INVESTMENT
MATT RILEY
MARK ASNES

**PERMIT DRAWINGS
NOT FOR CONSTRUCTION**

COMPLETE SET 14 SHEETS

GENERAL NOTES

- 1. BOLD TEXT AND LINES INDICATE PROPOSED WORK. LIGHT TEXT AND LINES INDICATE APPROXIMATE EXISTING CONDITIONS.
2. BASE MAP DEVELOPED WITH MASSGIS LIDAR DATA DATED 2015 AND ORTHOGRAPHIC IMAGES DATED 2019.
3. HORIZONTAL DATUM IS NAD83 AND VERTICAL DATUM IS NAVD88.
4. WETLANDS WERE DELINEATED BY TIGHE & BOND ON JULY 22, 2021.
5. NOTIFY DIGSAFE AT 1-888-344-7233 AND ALL UTILITY OWNERS IN THE AREA NOT ON THE DIGSAFE LIST AT LEAST 72 HOURS PRIOR TO COMMENCING CONSTRUCTION. UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR START ANY KIND OF EXCAVATION WORK PRIOR TO OBTAINING THE NECESSARY INFORMATION REGARDING THE LOCATION OF UNDERGROUND UTILITIES AT THE SITE.
6. PROTECTION OF THIRD PARTY UNDERGROUND UTILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR. PROPER REPAIRS OF DAMAGED UTILITIES SHALL BE MADE BY THE CONTRACTOR OR UTILITY COMPANY, AS ARRANGED BY THE CONTRACTOR, AND AS ACCEPTABLE TO THE ENGINEER. NO COMPENSATION WILL BE PROVIDED UNDER THIS CONTRACT FOR THE REPAIR OF THIRD-PARTY UTILITIES IN THE PROJECT AREA.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SUPPORT OF EXISTING FACILITIES AND REPAIR OR REPLACEMENT COSTS OF UTILITIES DAMAGED DURING CONSTRUCTION OPERATIONS, WHETHER ABOVE OR BELOW GRADE.
8. STOCKPILES OF SOIL CREATED DURING CONSTRUCTION ACTIVITIES ARE TO BE SURROUNDED WITH COMPOST FILTER SOCK WHERE POSSIBLE. STOCKPILES OF ERODIBLE MATERIAL ARE TO BE COVERED PRIOR TO INCLEMENT WEATHER WITH A MINIMUM OF 20 MIL POLYETHYLENE SHEETING.
9. EQUIPMENT FUELING AND OTHER ACTIVITIES INVOLVING PETROLEUM, OIL, OR OTHER POTENTIALLY HAZARDOUS SUBSTANCES ARE TO BE PERFORMED AT PRE-APPROVED, DESIGNATED AREAS WITH APPROPRIATE SPILL PREVENTION AND CONTROL MEASURES. ALL VEHICLE FUELING, INCLUDING TRACK-MOUNTED EQUIPMENT, SHALL BE PERFORMED AT THE STAGING AREA. SPILL CLEANUP KITS SHALL BE KEPT ON SITE AT ALL TIMES.
10. IMMEDIATELY REPORT SPILLS OF HAZARDOUS MATERIALS TO MASSDEP CHEMICAL SPILLS UNIT AND THE TOWN OF WALES.
11. THE TERM DEMOLISH SHALL MEAN TO REMOVE AND PROPERLY DISPOSE OF, IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REQUIREMENTS.
12. CLEAR AND GRUB WORK AREA, AS NEEDED TO PERFORM THE PROPOSED WORK. CLEARING AND GRUBBING SHALL NOT EXTEND BEYOND LIMITS OF WORK SHOWN ON THE DRAWINGS WITHOUT PRIOR AUTHORIZATION FROM OWNER.

EROSION AND SEDIMENTATION CONTROL NOTES

- 1. ALL EROSION CONTROL MEASURES SHOWN, SPECIFIED AND REQUIRED BY THE ENGINEER SHALL BE INSTALLED PRIOR TO ANY CONSTRUCTION OR IMMEDIATELY UPON REQUEST. THE CONTRACTOR SHALL MAINTAIN ALL SUCH CONTROL MEASURES UNTIL FINAL SURFACE TREATMENTS ARE IN PLACE AND/OR UNTIL PERMANENT VEGETATION IS ESTABLISHED.
2. PRIOR TO STARTING WORK, CLEARLY STAKE WORK LIMIT LINES. DO NOT DISTURB VEGETATION AND TOPSOIL BEYOND THE PROPOSED LIMIT LINE. THE CONTRACTOR SHALL ALSO COORDINATE WITH THE ENGINEER REGARDING THE LOCATIONS FOR THE TEMPORARY STOCKPILING OF TOPSOIL DURING CONSTRUCTION.
3. SLOPES, SHOULDER AREAS, AND DISTURBED AREAS SHALL BE COMPACTED, STABILIZED, LOAMED, AND SEEDED, AS SHOWN ON THE DRAWINGS. ALL SLOPES SHALL BE GRADED, SEEDED, AND STABILIZED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
4. SILT TRAPPED AT BARRIERS SHALL BE REMOVED AND PROPERLY DISPOSED OF IN UPLAND AREAS OUTSIDE BUFFER ZONES. MATERIALS DEPOSITED IN ANY TEMPORARY SETTLING BASINS SHALL BE REMOVED AT THE COMPLETION OF THE PROJECT. ALL DISTURBED AREAS SHALL BE RESTORED TO THEIR PRE-CONSTRUCTION CONDITION.
5. ALL SILT-LADEN WATER MUST BE SETTLED OR FILTERED TO REMOVE SEDIMENTS PRIOR TO RELEASE TO A WATERWAY USING A SEDIMENTATION FILTER BAG LOCATED WITHIN THE SEDIMENT TRAP.
6. CONTRACTOR SHALL DEWATER, AS NECESSARY, TO KEEP CONSTRUCTION AREAS FREE OF WATER. SEDIMENT SHALL BE REMOVED FROM WATER PRIOR TO DISCHARGE.
7. STANDARD DUST CONTROL MEASURES, INCLUDING SPRAYING AND MISTING SHALL BE USED AS NECESSARY. CALCIUM CHLORIDE IS NOT ALLOWED ON THIS PROJECT.
8. TO REDUCE AIRBORNE DUST AND THE TRACKING OF SEDIMENT FROM THE CONSTRUCTION SITE ONTO PUBLIC ROADS, A STABILIZED CONSTRUCTION ENTRANCE SHALL BE ESTABLISHED BY THE CONTRACTOR AT THE ENTRANCE USED FOR VEHICLE ACCESS TO THE SITE AND AT ANY ADDITIONAL AUTHORIZED PERMANENT CONSTRUCTION STAGING AREA. THE ENTRANCE SHALL CONSIST OF A 6-INCH-THICK PAD OF CRUSHED STONE UNDERLAIN BY FILTER FABRIC, AS SHOWN IN THE DETAIL ON THESE DRAWINGS.
9. ANY SEDIMENT TRACKED ONTO PUBLIC RIGHT-OF-WAYS SHALL BE SWEEPED CLEAR AT THE END OF EACH DAY.
10. EROSION AND SEDIMENTATION CONTROL REQUIREMENTS ARE INCLUDED IN THE MASSACHUSETTS WETLAND PROTECTION ACT ORDER OF CONDITIONS AND ILLUSTRATED ON THESE DRAWINGS.

SITE STABILIZATION NOTES

- 1. STABILIZATION OF DISTURBED AREAS OR NEW SOIL FILLS SHALL BE IMPLEMENTED WITHIN 14 DAYS AFTER GRADING OR CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED. APPROPRIATE VEGETATIVE SOIL STABILIZATION IS TO BE USED TO MINIMIZE EROSION. TEMPORARY AND PERMANENT VEGETATIVE COVER IS TO BE ESTABLISHED IN ACCORDANCE WITH THE PROJECT DRAWINGS AND SPECIFICATIONS, USING HYDROSEEDING, BROADCASTING, OR OTHER APPROVED TECHNIQUES.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORATION OF PREVIOUSLY VEGETATED UPLAND AREAS (ABOVE THE MAHW LINE) DISTURBED BY CONSTRUCTION ACTIVITIES. RESTORATION OF UPLAND AREAS SHALL CONSIST OF USING EXISTING TOPSOIL OR PLACEMENT OF IMPORTED LOAM AS NEEDED SUCH THAT A MINIMUM OF 6 INCHES OF SUITABLE VEGETATIVE SUPPORT MATERIAL IS PRESENT AND APPROPRIATELY LIMED, FERTILIZED, GRADED, SCARIFIED, AND SEEDED AS DESCRIBED BELOW.
3. UNLESS OTHERWISE SPECIFIED, DISTURBED UPLAND AREAS SHALL BE SEEDED WITH AN APPROVED SEED MIX AT A RATE OF 4 POUNDS OF LIVE SEED PER 1,000 SQUARE FEET. SEEDING RATE SHALL BE DOUBLED FOR DORMANT SEEDING.
4. EROSION CONTROL BLANKETS SHALL BE USED ON RESTORED SLOPES STEEPER THAN 3H:1V. ON FLAT SURFACES AND SLOPES 3H:1V OR FLATTER, MULCH OR EROSION CONTROL BLANKETS SHALL BE USED TO PROTECT SOIL FROM THE IMPACT OF FALLING RAIN AND TO INCREASE THE CAPACITY OF THE SOIL TO ABSORB WATER.
5. FINAL STABILIZATION SHALL BE CONSIDERED COMPLETE WHEN ALL SOIL-DISTURBING ACTIVITIES HAVE BEEN COMPLETED AND A UNIFORM, PERENNIAL VEGETATIVE COVER WITH A DENSITY OF 80% HAS BEEN ESTABLISHED OR EQUIVALENT STABILIZATION MEASURES (SUCH AS THE USE OF MULCHES OR EROSION CONTROL BLANKETS) HAVE BEEN EMPLOYED ON ALL UNPAVED AREAS AND AREAS NOT COVERED BY PERMANENT STRUCTURES.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF ALL VEGETATED SURFACES, INCLUDING WATERING, FERTILIZING, AND RESEEDING UNTIL ESTABLISHMENT CONDITIONS ARE MET AND UNTIL THE END OF THE CONTRACTUAL MAINTENANCE PERIOD.

COIR FABRIC CONSTRUCTION NOTES

- 1. WOVEN COIR FABRIC ARE GEOTEXTILES MADE FROM PURE COIR DRAWN FROM THE HUSK OF THE COCONUT. A 100% NATURAL PRODUCT. FABRICS ARE APPROPRIATE FOR STREAMBANK AREAS OF DISTURBANCE NOT INCLUDED IN ELJS OR ESLs. EQUAL TO:
1.A. EAST COAST EROSION BLANKETS EC-7Y COIR MAT
1.B. GEOCOIR/DEKOWE 700 (WOVEN)
1.C. ROLANKA INTERNATIONAL, IN BIOD-MAT 70
1.D. NEDIA ENTERPRISES, INC. KOIRMAT 700
2. NON-WOVEN COIR FABRIC ARE 100% BIODEGRADABLE MATS CONSISTING OF NON-WOVEN FIBER WITH TOP AND BOTTOM GRIDS SECURELY SEWN TOGETHER WITH BIODEGRADABLE THREADS. PHOTODEGRADABLE GRIDS ARE NOT ALLOWED. FABRICS ARE APPROPRIATE FOR ESL'S, AREAS BELOW OHWL AND SLOPES STEEPER THAN 2:1. EQUAL TO:
2.A. EAST COAST EROSION BLANKETS ECC-2B
2.B. COIRLANKA COIR MAT 700
2.C. NORTH AMERICAN GREEN C125BN

OPERATION AND MAINTENANCE NOTES

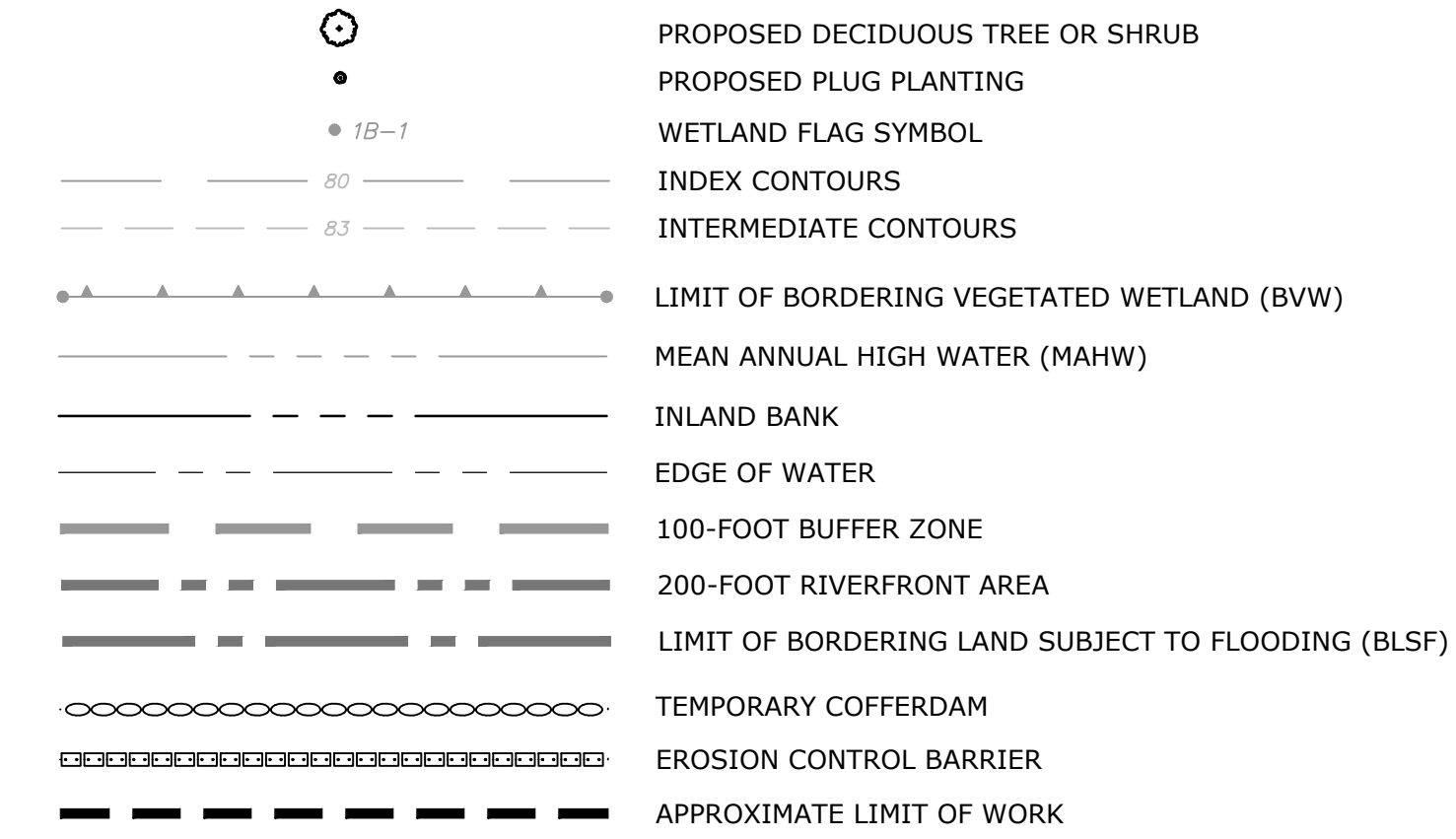
- 1. INSPECTION SHOULD OCCUR AFTER EACH OF THE FIRST FEW FLOODING EVENTS. AT MINIMUM TWICE PER YEAR ONCE IN THE FALL AND ONCE FOLLOWING THE SPRING FLOOD SEASON.
2. UNDERCUTTING AND FLANKING OF THE BANK TREATMENT AND OTHER SUBSTANTIAL SCOUR EVIDENCE SHOULD BE ADDRESSED.
3. PLANTS SHOULD BE EXAMINED FOR SURVIVAL, DENSITY, ABSENCE OF DISEASE, INSECT OR ANIMAL DAMAGE. TEMPORARY ENCLOSURES MAY BE NEEDED AS PREVENTATIVE MEASURES UNTIL PLANTS ARE WELL-ESTABLISHED.
4. SUCCESSFUL PLANTS WILL GROW VIGOROUSLY AND SPREAD ROOTS RAPIDLY THROUGHOUT BRUSH MATTRESS. IN ANY CASE REPAIR OF THE SYSTEM UNTIL VEGETATION BECOMES WELL ESTABLISHED SHOULD BE CONSIDERED. ONCE VEGETATION AND ROOT SYSTEM BECOMES ESTABLISHED ALONG THE TREATMENT, MAINTENANCE IS GREATLY REDUCED.

FABRIC ENCAPSULATED SOIL LIFT (FESL) CONSTRUCTION NOTES

- 1. INSTALL FABRIC ENCAPSULATED SOIL LIFTS FROM DOWNSTREAM TO UPSTREAM, WITH UPSTREAM COIR FABRIC OVERLAPPING DOWNSTREAM FABRIC BY 18" MINIMUM.
2. USE SANDBAGS, TIMBER FORM, OR OTHER AS NECESSARY TO FORM FACE OF LIFT AND KEEP LOWER LIFTS SUFFICIENTLY DRY FOR INSTALLATION AND COMPACTION.
3. PROTECT FROM DAMAGE WHEN CONSTRUCTED BELOW TEMPORARY ACCESS ROAD OR NEAR OTHER WORK.
4. FABRIC ENCAPSULATED SOIL (FESL) LIFTS WILL BE STACKED AND CONSTRUCTED IN LOCATIONS AND GRADES SHOWN IN THE PLANS AND SPECIFIED BELOW.

- 4.A. EXCAVATE BANK SLOPE AND PLACE FORMS (2"x8" BOARD) ALONG THE BANK AT THE FACE OF EACH FESL LOCATION TO ACHIEVE LINES AND GRADES. USE METAL T-POSTS OR WOODEN STAKES TO SECURE FORM IN PLACE FOR BOTTOM LIFT. USE WOODEN STAKES TO SECURE THE FORM WHEN CONSTRUCTING THE SECOND LIFT.
4.B. ROLL COIR FABRIC ALONG THE STREAMBANK AND PLACE FABRIC AGAINST THE SUBGRADE AND (VERTICAL) FORM FACE WITH FABRIC EMBEDMENT LENGTHS AS SHOWN.
4.C. REMOVE ALL WRINKLES IN COIR FABRIC AND ENSURE THE FABRIC RESTS TIGHTLY AGAINST THE SUBGRADE AND FORM FACE WITH PROPER EMBEDMENT LENGTHS (DEPTH). ALLOW EXCESS COIR FABRIC TO DRAPE OVER FORM TOWARD STREAM CHANNEL.
4.D. PLACE BACKFILL MATERIAL AND COMPACT TO 85% RELATIVE DENSITY. SOIL LIFT SHALL BE A MAXIMUM OF 8". FOLLOWING COMPACTION OF SOIL IN TWO (2) - 6-INCH LIFTS THE FABRIC IS WRAPPED OVER THE FRONT AND TOP OF THE SOIL MASS AND STAKED IN PLACE. THE NEXT FESL IS BUILT ON TOP OF THE LOWER LIFT AND SET BACK 2-FEET TO FORM A GEOTEXTILE RETAINING WALL.
4.E. WITHIN THE AREA IMMEDIATELY BEHIND THE FORM FACE AND WITHIN 1-FOOT OF THE FORM, EVENLY DISPERSE SEED ON THE BACKFILL MATERIAL.
4.F. PULL COIR FABRIC OVER THE BACK-FILL MATERIAL TIGHT AND STAKE.
4.G. FESL WILL BE USED IN THE BANKS FROM THE TOE LINE TO THE DISTANCE UP THE BANK WHERE MAHW IS DENOTED ON THE PLANS. THE BANK WILL CONSIST OF TOE STONE AND FESL TO THE TOP OF BANK WHERE IT WILL TIE TO TYPE 1 BANK PROTECTION OF COIR FABRIC AND A RIPARIAN VEGETATION PLAN.
4.H. PLACE LIVE PLANTING AND CUTTINGS BETWEEN THE FESL PROTRUDING FROM THE FACE OF THE CONSTRUCTED BANK AS LIFTS ARE CONSTRUCTED.
4.I. FINISHED FESL SHALL HAVE NO LOOSE COIR FABRIC. AREAS WITH LOOSE FABRIC SHALL BE STAKED WITH WOODEN STAKES TO HOLD COIR FABRICS FIRMLY TO UNDERLYING SOIL. IF COIR FABRIC FOLDS ARE REQUIRED AROUND CHANNEL BENDS, THE FOLD SHALL BE IN THE DIRECTION OF FLOW.

LEGEND



ABBREVIATIONS

Table with 2 columns: ABBREVIATION and DESCRIPTION. Includes entries for APPROX, BSP, BW, ELEV, EOW, MAHW, TBM, TSP, TYP, TW, W/, MAX, INV, MIN, VIF, COORD, WF, BVW, BLSF, FESL, BKF, etc.



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Delphi Brook Stream Crossing Replacement Project

Freehold Real Estate Management & Investment

Wales, Massachusetts

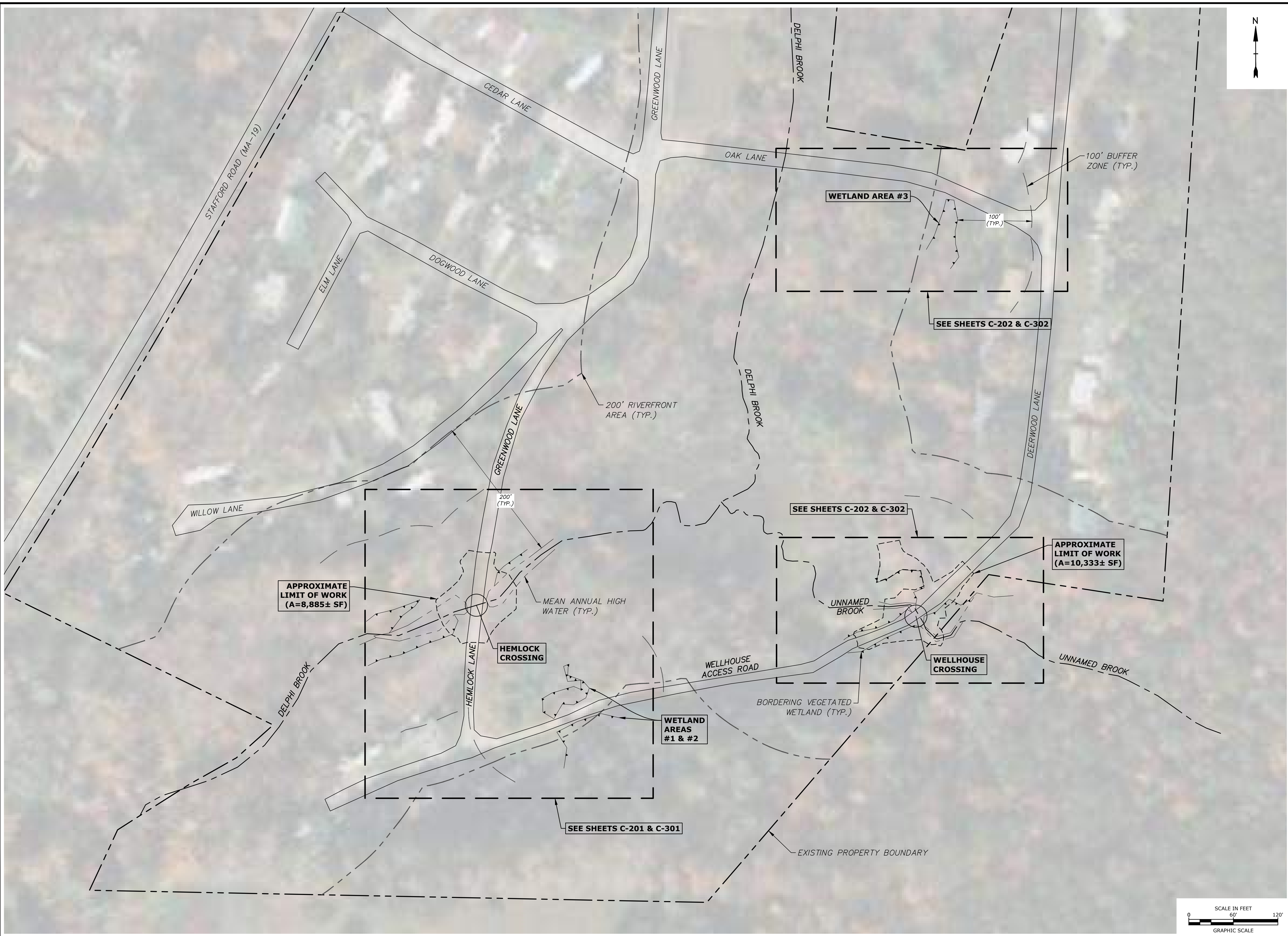
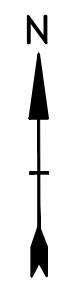
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GENERAL NOTES, LEGEND & ABBREVIATIONS SHEET

SCALE: AS SHOWN

G-002
SHEET 2 OF 14



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Delphi Brook Stream Crossing Replacement Project

Freehold Real Estate Management & Investment

Wales, Massachusetts

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DATE:	FEBRUARY 3, 2023	
FILE:	F5042-002-C-DSGN.dwg	
DRAWN BY:	NSC	
CHECKED BY:	TWB/JEC	
APPROVED BY:	DPR/JEC	

PROJECT VICINITY PLAN

SCALE: AS SHOWN

C-100
SHEET 3 OF 14

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Delphi Brook Stream Crossing Replacement Project

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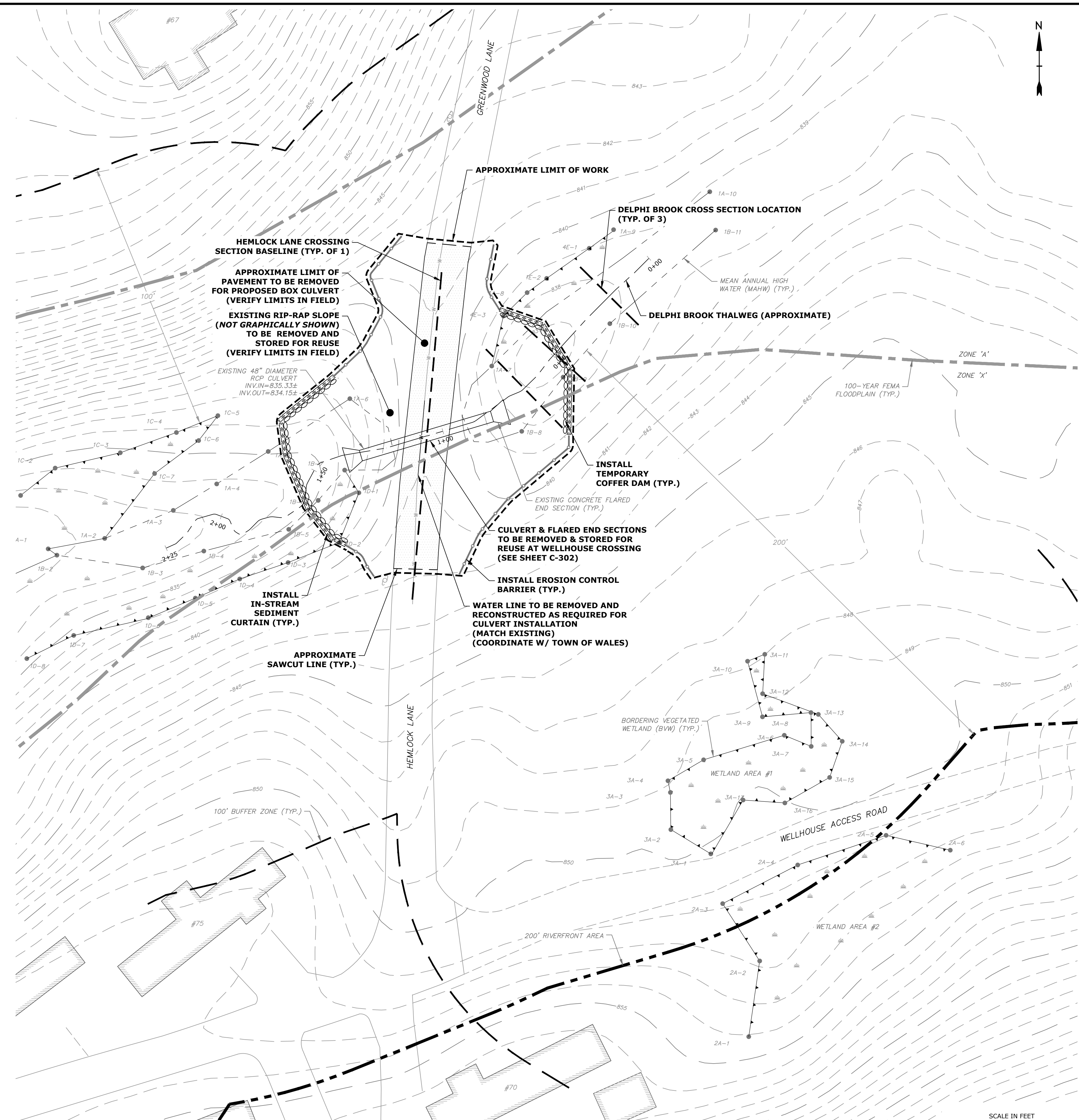
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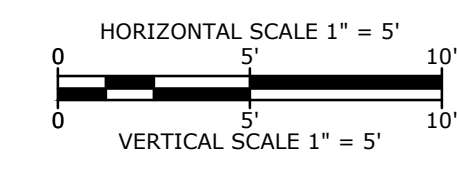
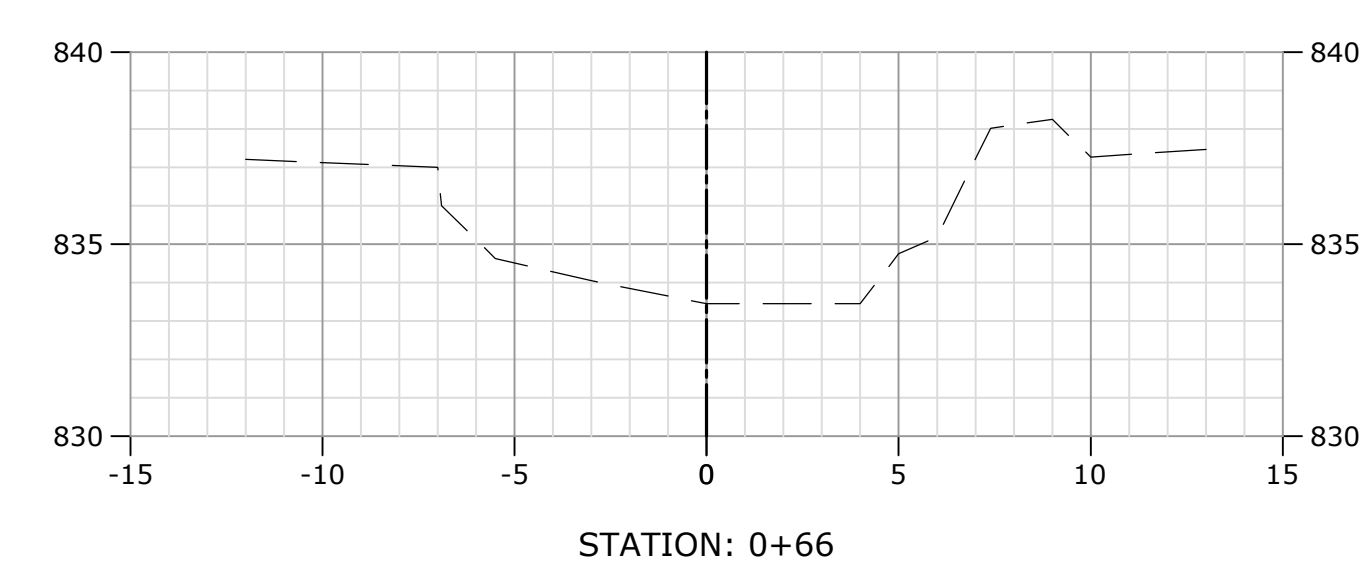
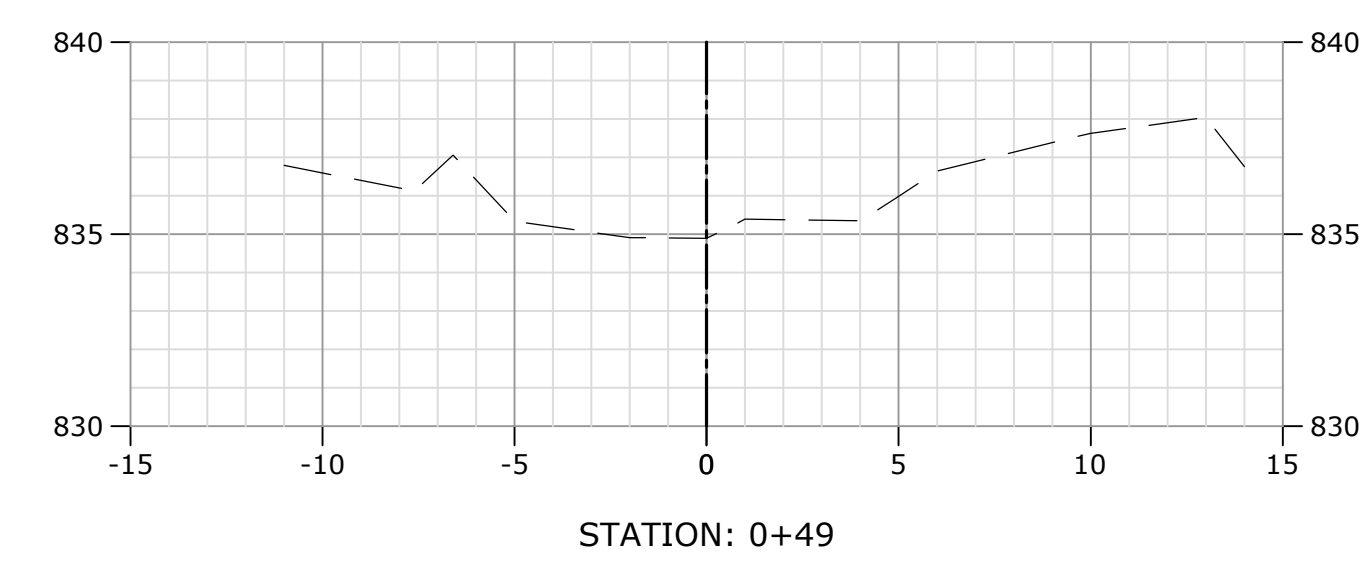
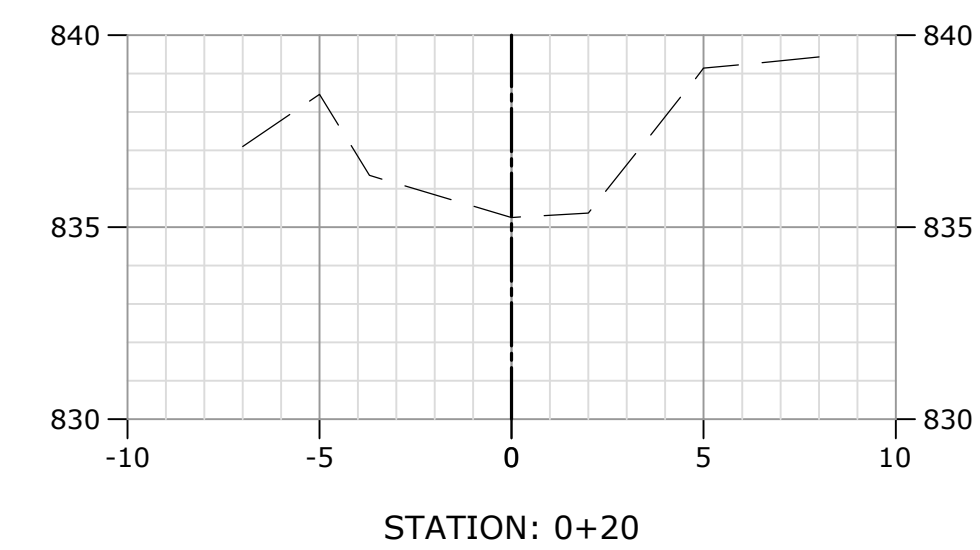
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SCALE: AS SHOWN

C-201
SHEET 4 OF 14

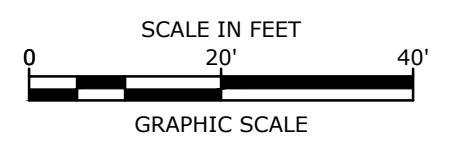


SPECIAL NOTE:
1. THE MAJORITY OF ITEMS SHOWN ON THESE PLANS ARE APPROXIMATE, THEREFORE THE CONTRACTOR SHALL VERIFY THE LIMITS OF ALL DEMOLITION AND PROPOSED ITEMS AND SHALL REPORT ANY MAJOR DISCREPANCIES TO THE ENGINEER PRIOR TO INSTALLATION.



HEMLOCK CROSSING: SECTIONS

HEMLOCK CROSSING: PLAN VIEW



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Delphi Brook Stream Crossing Replacement Project

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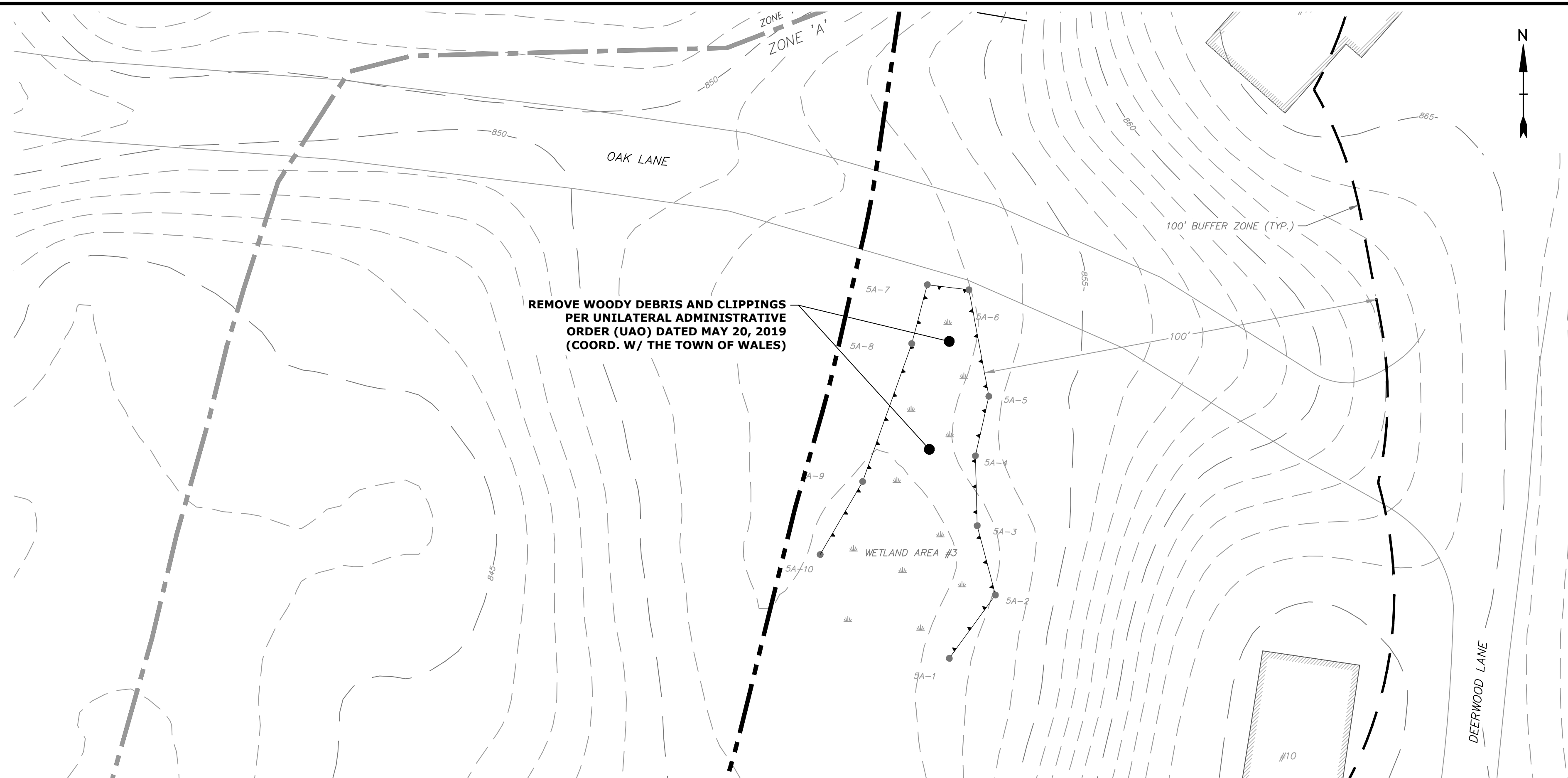
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MARK	DATE	DESCRIPTION

EXISTING CONDITIONS & SITE PREPARATION PLAN - WELLHOUSE CROSSING

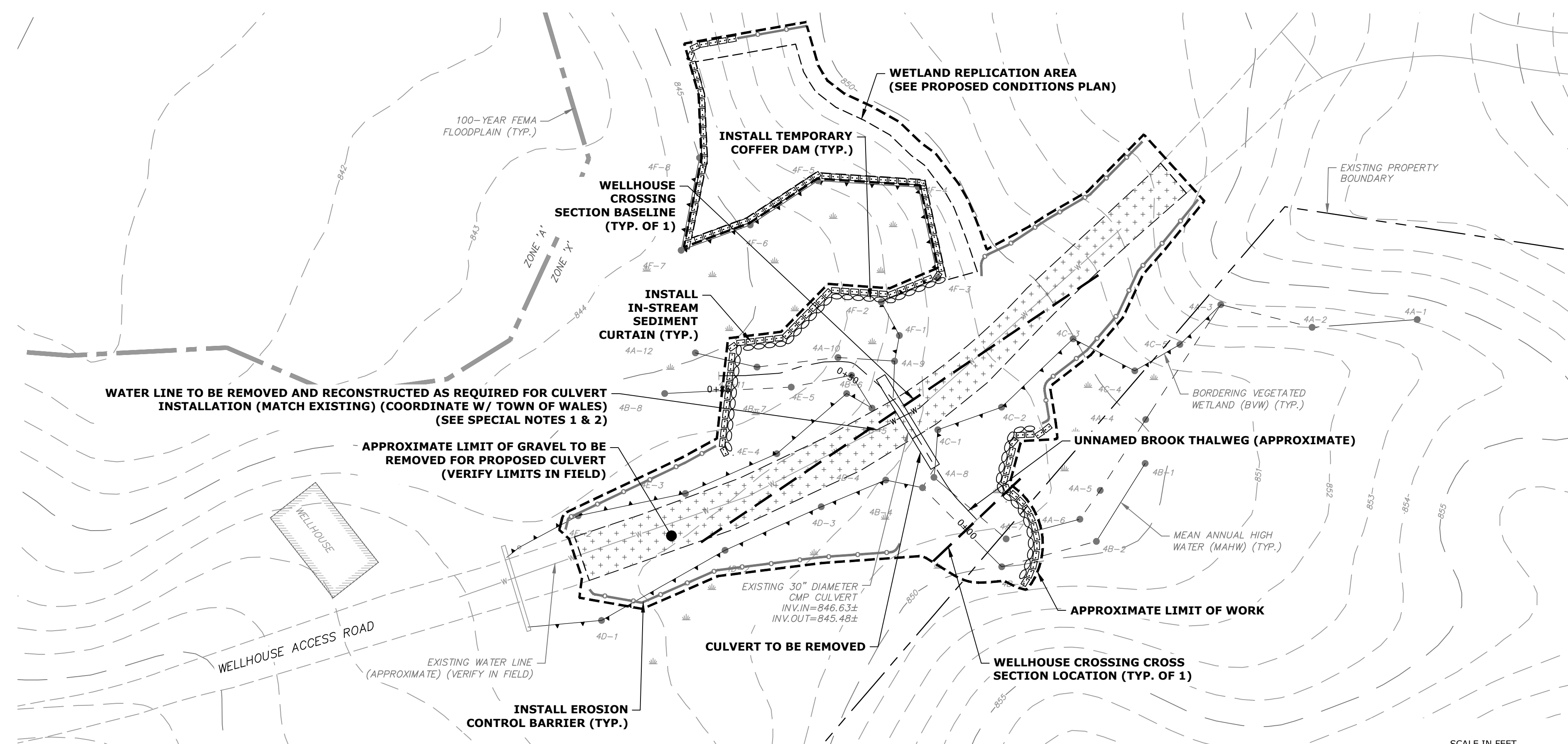
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C-202
SHEET 5 OF 14

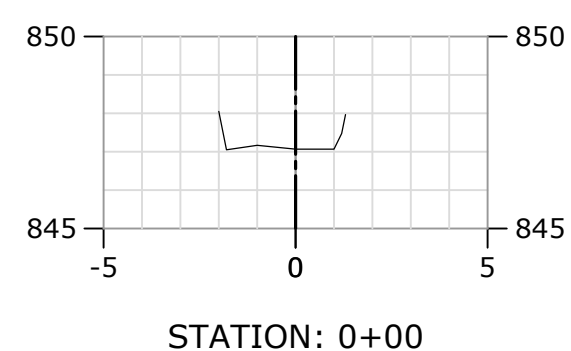


RESOURCE AREA DELINEATION AT OAK LANE: PLAN VIEW

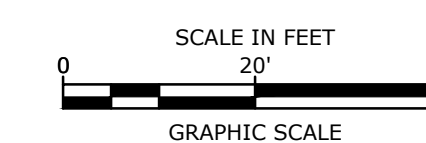
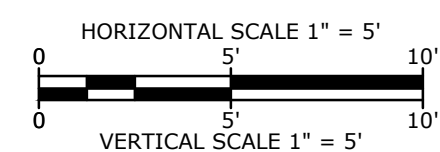
- SPECIAL NOTES:**
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 2. THE LOCATION OF THE EXISTING WATER LINE AT THE WELLHOUSE CROSSING IS UNKNOWN AND SHALL BE VERIFIED PRIOR TO INSTALLATION.



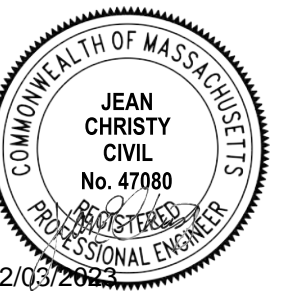
WELLHOUSE CROSSING: PLAN VIEW



WELLHOUSE CROSSING: SECTION



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Delphi Brook Stream Crossing Replacement Project

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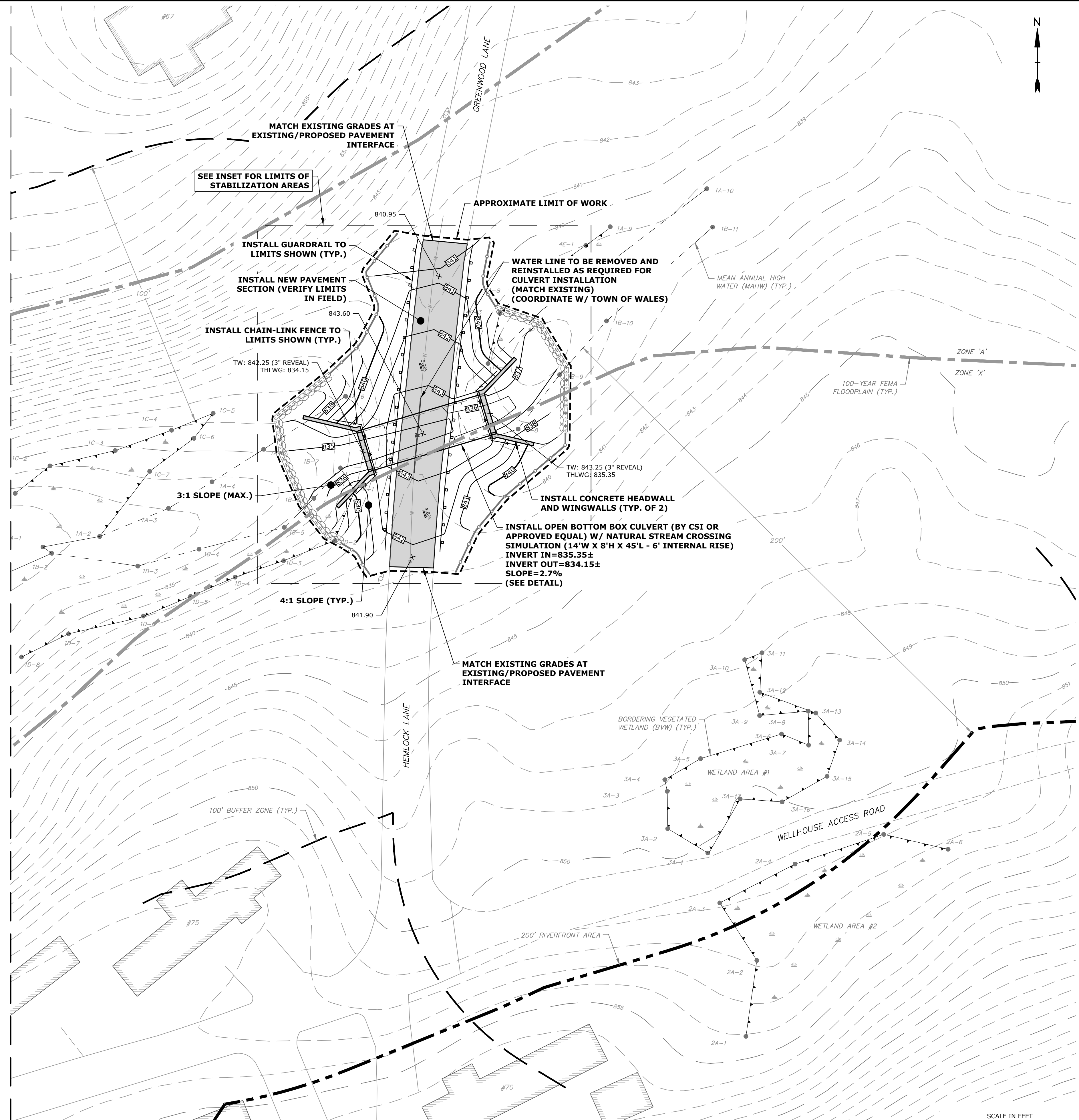
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MARK	DATE	DESCRIPTION
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DATE:	FEBRUARY 3, 2023	
FILE:	F5042-002-C-DSGN.dwg	
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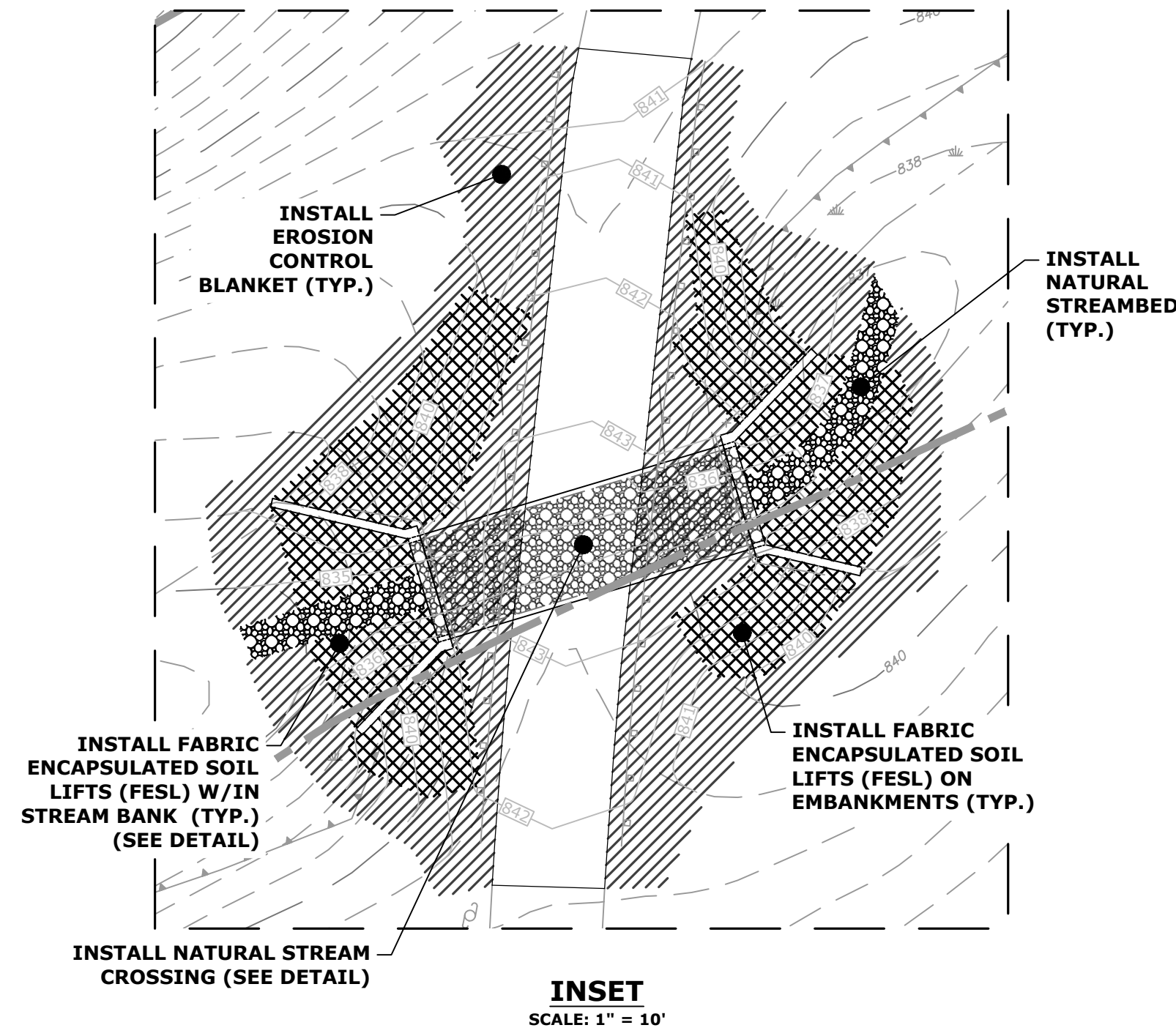
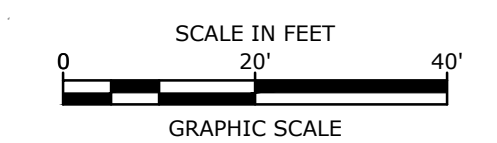
PROPOSED CONDITIONS PLAN - HEMLOCK CROSSING

SCALE: AS SHOWN

C-301
SHEET 6 OF 14



HEMLOCK CROSSING: PLAN VIEW

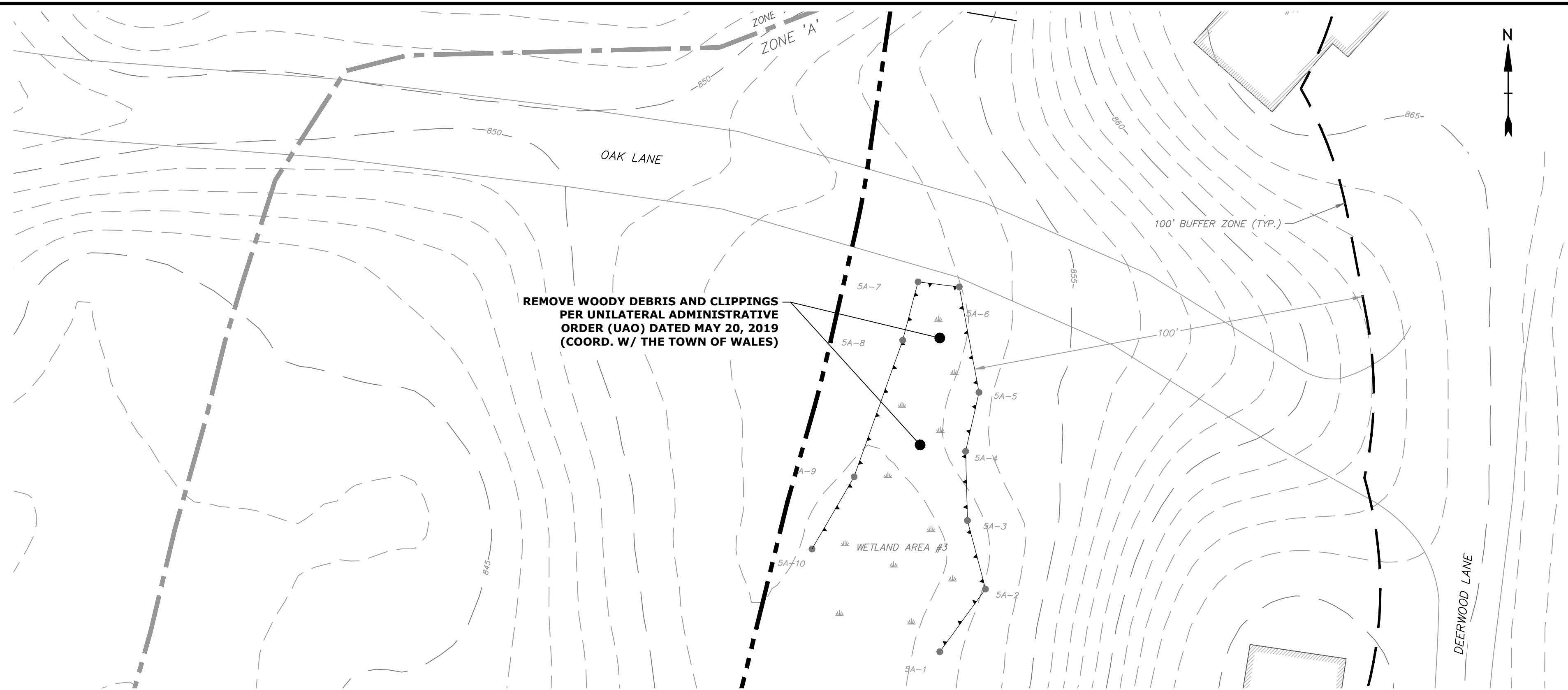


INSET
SCALE: 1" = 10'

SPECIAL NOTE:
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02/03/2023



RESOURCE AREA DELINEATION AT OAK LANE: PLAN VIEW

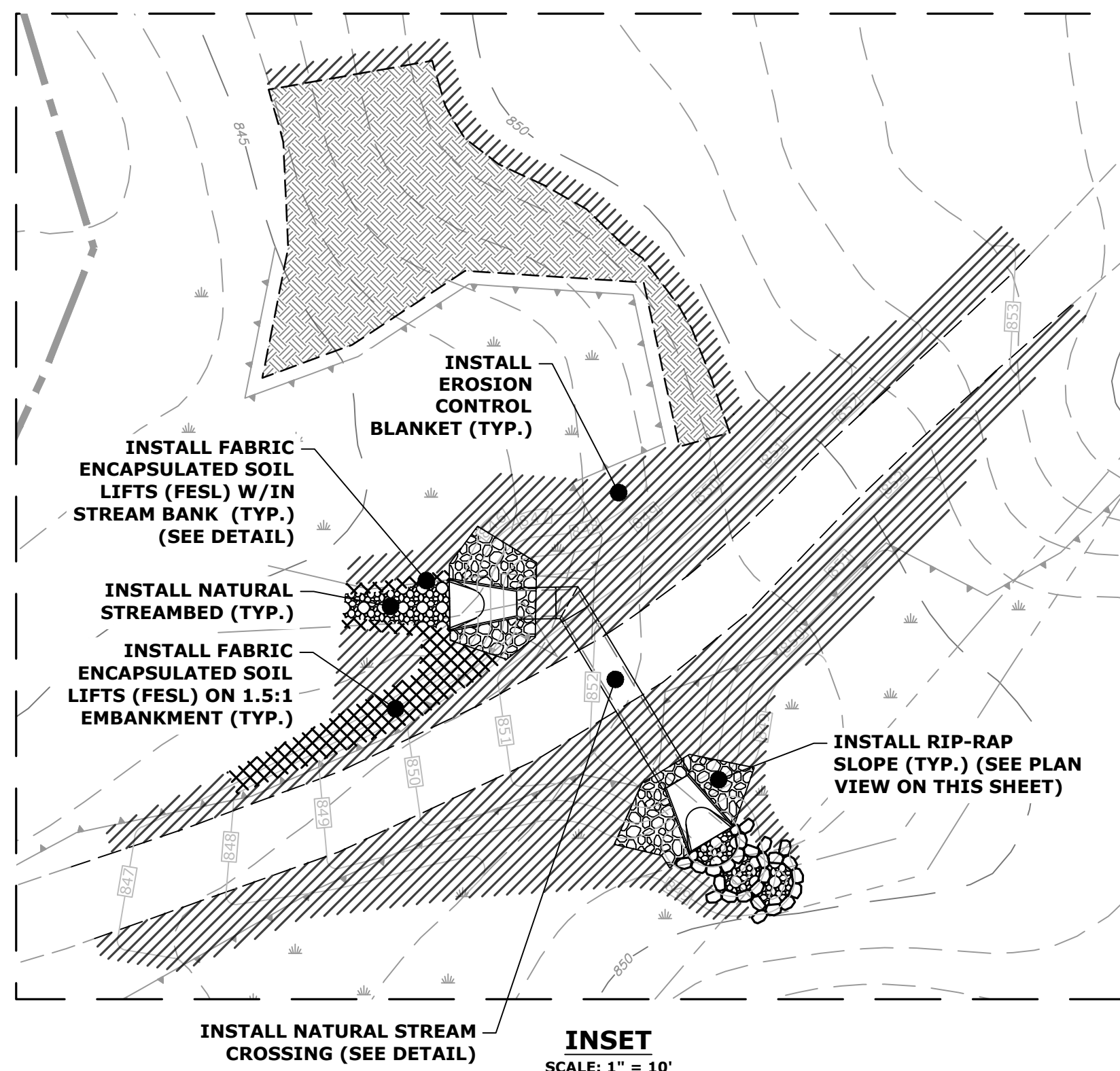
- SPECIAL NOTES:**
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 2. THE LOCATION OF THE EXISTING WATER LINE AT THE WELLHOUSE CROSSING IS UNKNOWN AND SHALL BE VERIFIED PRIOR TO INSTALLATION.

PERMIT DRAWINGS NOT FOR CONSTRUCTION

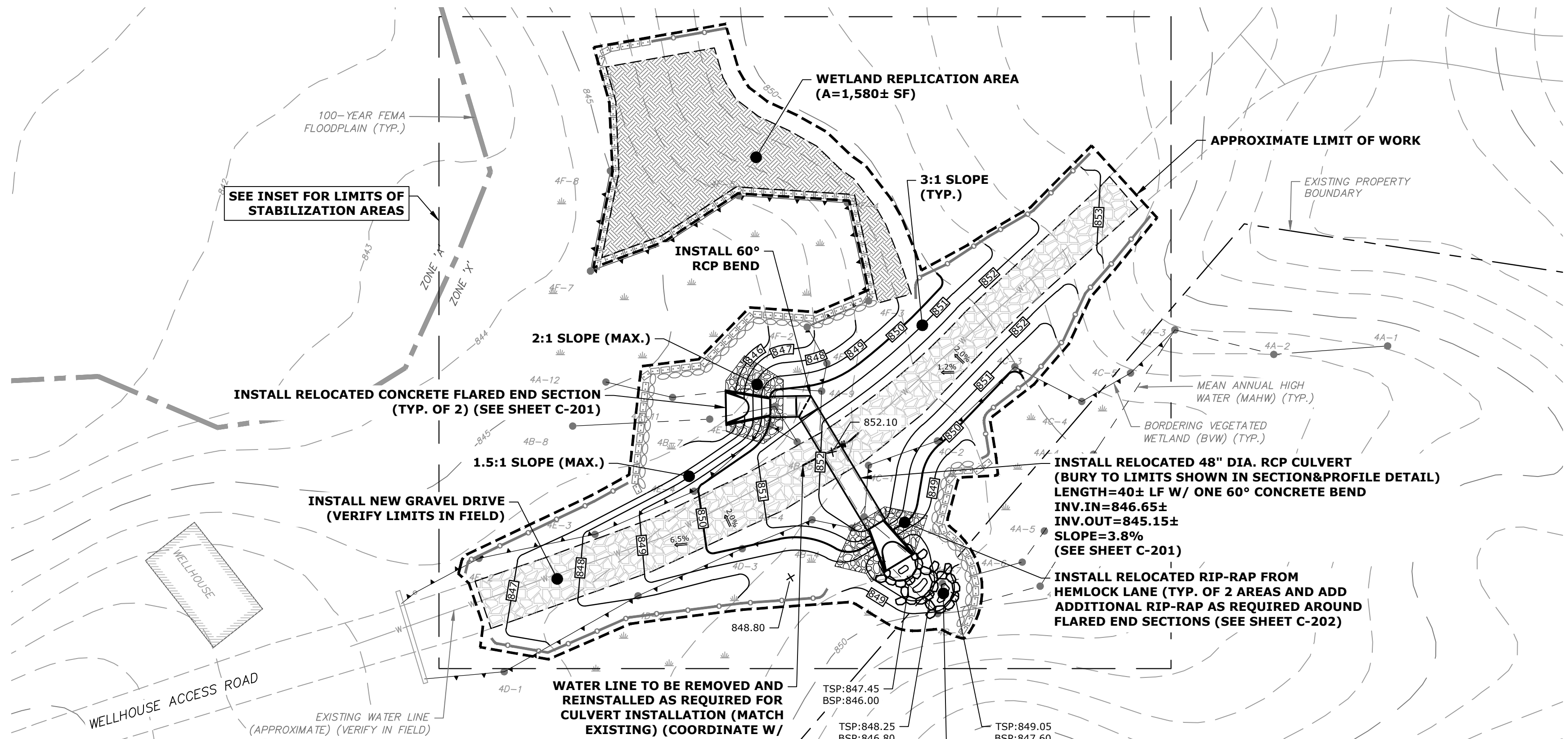
Delphi Brook Stream Crossing Replacement Project

Freehold Real Estate Management & Investment

Wales, Massachusetts



INSET SCALE: 1" = 10'

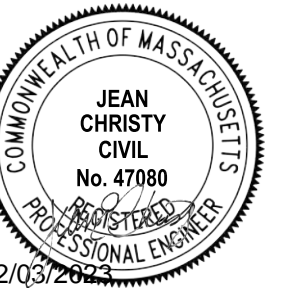


WELLHOUSE CROSSING: PLAN VIEW

MARK	DATE	DESCRIPTION

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DATE:	FEBRUARY 3, 2023
FILE:	F5042-002-C-DSGN.dwg
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APPROVED BY:	DPR/JEC

PROPOSED CONDITIONS PLAN - WELLHOUSE CROSSING SCALE: AS SHOWN C-302 SHEET 7 OF 14



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Delphi Brook Stream Crossing Replacement Project

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Wales, Massachusetts

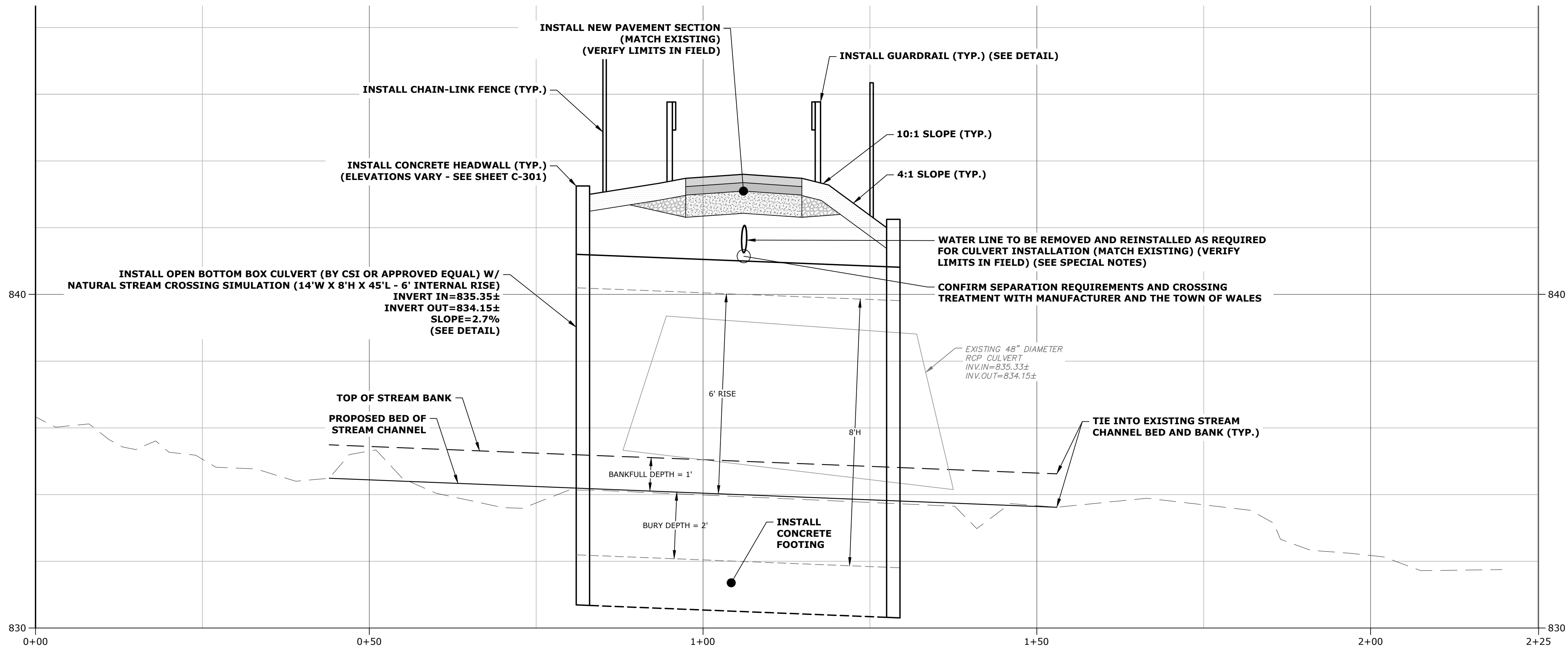
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PROPOSED PROFILES - HEMLOCK & WELLHOUSE CROSSINGS

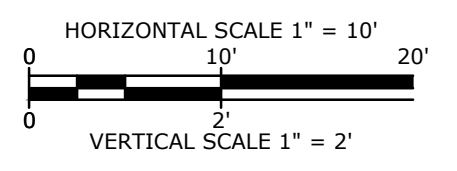
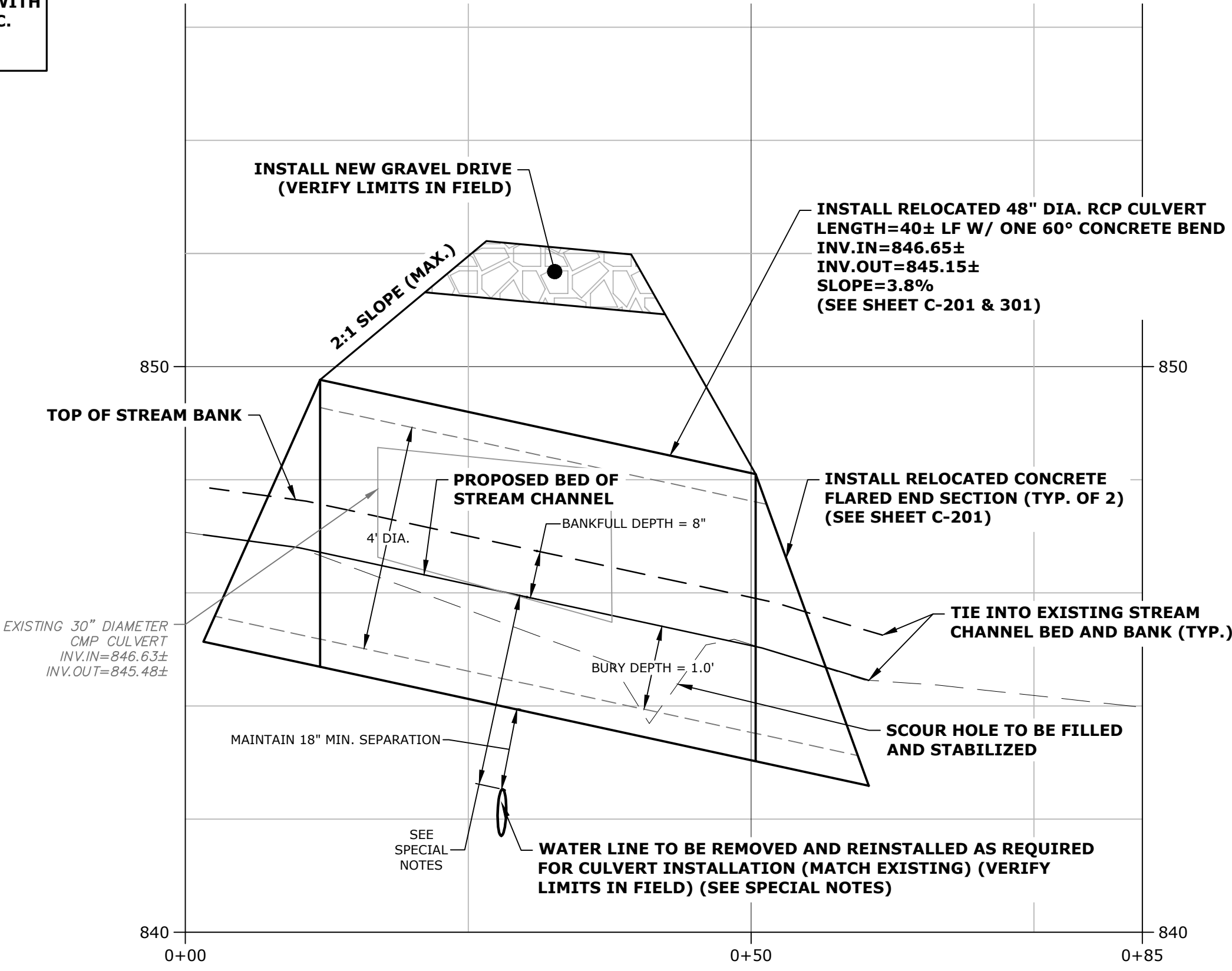
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C-401
SHEET 8 OF 14



SPECIAL NOTES:

1. THE MAJORITY OF ITEMS SHOWN ON THESE PLANS ARE APPROXIMATE, THEREFORE THE CONTRACTOR SHALL VERIFY THE LIMITS OF ALL DEMOLITION AND PROPOSED ITEMS AND SHALL REPORT ANY MAJOR DISCREPANCIES TO THE ENGINEER PRIOR TO INSTALLATION.
2. THE NEW WATER LINE INSTALLATION SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE TOWN OF WALES WITH RESPECT TO COVER, INSULATION, HEAT TRACING, ETC.
3. THE LOCATION OF THE EXISTING WATER LINE AT THE WELLHOUSE CROSSING IS UNKNOWN AND SHALL BE VERIFIED PRIOR TO INSTALLATION.



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**Delphi Brook
Stream Crossing
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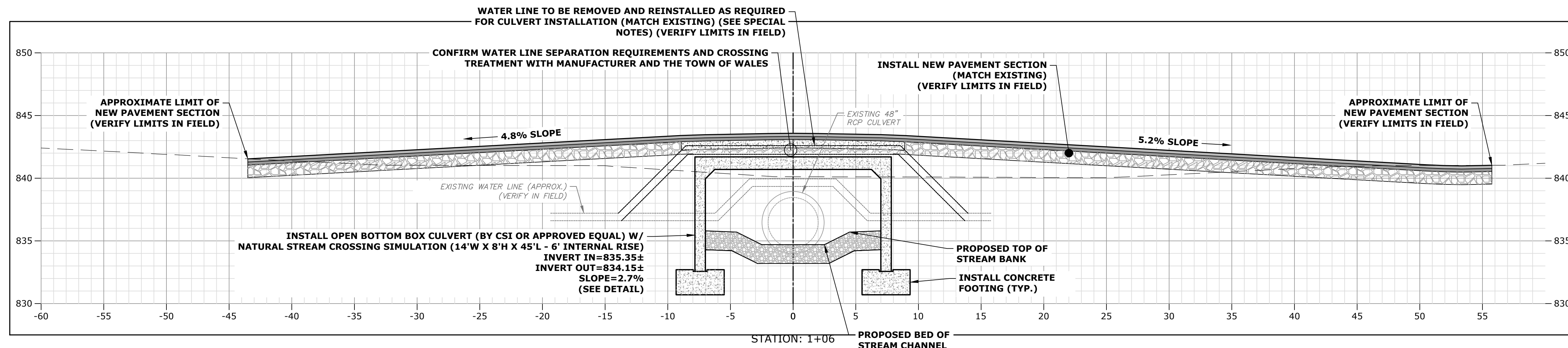
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MARK	DATE	DESCRIPTION

**PROPOSED SECTIONS -
HEMLOCK & WELLHOUSE
CROSSINGS**

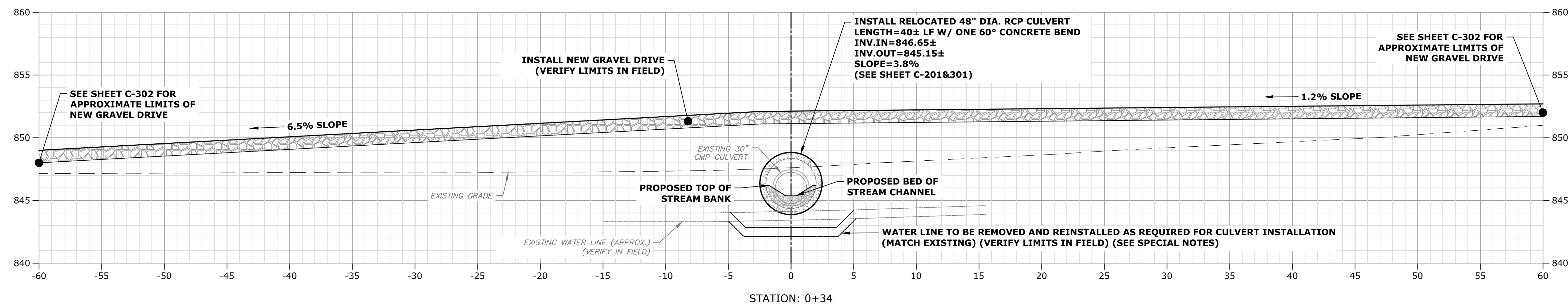
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C-402
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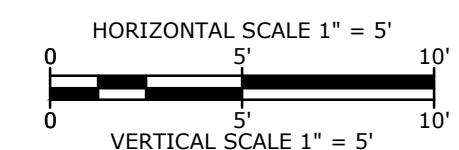


**DELPHI BROOK
HEMLOCK LANE CROSSING**

- SPECIAL NOTES:**
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 2. THE NEW WATER LINE INSTALLATION SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE TOWN OF WALES WITH RESPECT TO COVER, INSULATION, HEAT TRACING, ETC.
 3. THE LOCATION OF THE EXISTING WATER LINE AT THE WELLHOUSE CROSSING IS UNKNOWN AND SHALL BE VERIFIED PRIOR TO INSTALLATION.
 4. INSTALL CONCRETE THRUST BLOCKS AT ALL WATER LINE BENDS AND TEES.



**UNNAMED BROOK
WELLHOUSE ACCESS ROAD CROSSING**



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GENERAL SEQUENCE OF OPERATIONS

1. PROVIDE EROSION AND SEDIMENTATION CONTROLS, COFFERDAMS, AND STREAM BYPASS ACCORDING TO THE CONTRACT DRAWING AND SPECIFICATIONS.
2. COORDINATE WITH THE OWNER TO SCHEDULE WORK AND PERFORM CONSTRUCTION LAYOUT.
3. AFTER THE EROSION AND SEDIMENTATION CONTROLS HAVE BEEN INSTALLED AND THE PROPER AUTHORITIES HAVE BEEN NOTIFIED, BEGIN CONSTRUCTION.
4. AFTER CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED FOR THE DAY, CLEAN THE WORK AREA(S). SECURE AND STABILIZE THE WORK AREA(S) ACCORDING TO THE CONTRACT DRAWINGS AND SPECIFICATIONS.
5. REMOVE EROSION AND SEDIMENTATION CONTROLS AFTER THE SITE HAS BEEN CLEANED AND THE WORK HAS BEEN APPROVED BY THE OWNER AND ENGINEER.

ENVIRONMENTAL REQUIREMENTS

1. ALL WORK SHALL PROCEED IN ACCORDANCE WITH THE ORDER OF CONDITIONS ISSUED BY THE WALES CONSERVATION COMMISSION AND INCLUDED IN THE PROJECT MANUAL.
2. PORTIONS OF THE WORK AREA ARE LOCATED IN DESIGNATED INLAND WETLANDS AND/OR WATERWAYS. THE LIMITS OF THESE WETLANDS AND THEIR ASSOCIATED BUFFER ZONES ARE SHOWN ON THE CONTRACT DRAWINGS.
3. PRIOR TO ANY OTHER CONSTRUCTION ACTIVITY, PROVIDE ALL SEDIMENT AND EROSION CONTROL DEVICES REQUIRED BY THESE CONTRACT DOCUMENTS. ADDITIONAL AND SUPPLEMENTAL DEVICES LATER DETERMINED TO BE NEEDED SHALL BE PROVIDED AS THE WORK PROGRESSES. ALL SUCH DEVICES SHALL BE MAINTAINED THROUGHOUT THE DURATION OF THE WORK AND SHALL BE REMOVED ONLY WHEN AUTHORIZED BY THE OWNER'S REPRESENTATIVE.
4. PROVIDE AND MAINTAIN PROPER SEDIMENT AND SOIL EROSION CONTROL DEVICES AROUND ALL CONSTRUCTION ACTIVITIES THROUGHOUT THE DURATION OF THE ENTIRE PROJECT, AS REQUIRED BY THESE CONTRACT DOCUMENTS (WHICH INCLUDES ANY LOCAL PERMITS).
5. PROVIDE DUST CONTROL USING WATER FOR ALL RAW SLOPES, ALL EARTH STOCKPILES, ANY EARTH PILED ALONG EXCAVATIONS, AND SURFACES OF REFILLED TRENCHES. IN NO CASE SHALL EXCAVATED MATERIAL BE STOCKPILED AT SUCH LOCATIONS WHERE THE MATERIAL CAN RUNOFF INTO WETLAND AREAS, WATERWAYS, OR ADJACENT PROPERTIES.
6. RESTORE AREAS DISTURBED BY CONSTRUCTION AS SHOWN ON THE CONTRACT DRAWINGS.
7. CLEAN ALL ROADWAY AND ADJOINING AREAS AFFECTED BY THE PROPOSED WORK TO AVOID SEDIMENT BUILD-UP ON A REGULAR BASIS AND AS NEEDED.
8. PLACE EROSION AND SEDIMENTATION CONTROLS ALONG THE DOWNHILL SIDE OF ANY CONSTRUCTION RELATED (TEMPORARY) STOCKPILE OF MATERIAL. SURROUND STAGING AREAS WITH EROSION AND SEDIMENTATION CONTROLS TO PREVENT EROSION AND SEDIMENTATION, OR SECONDARY IMPACT OF WETLAND AREAS.

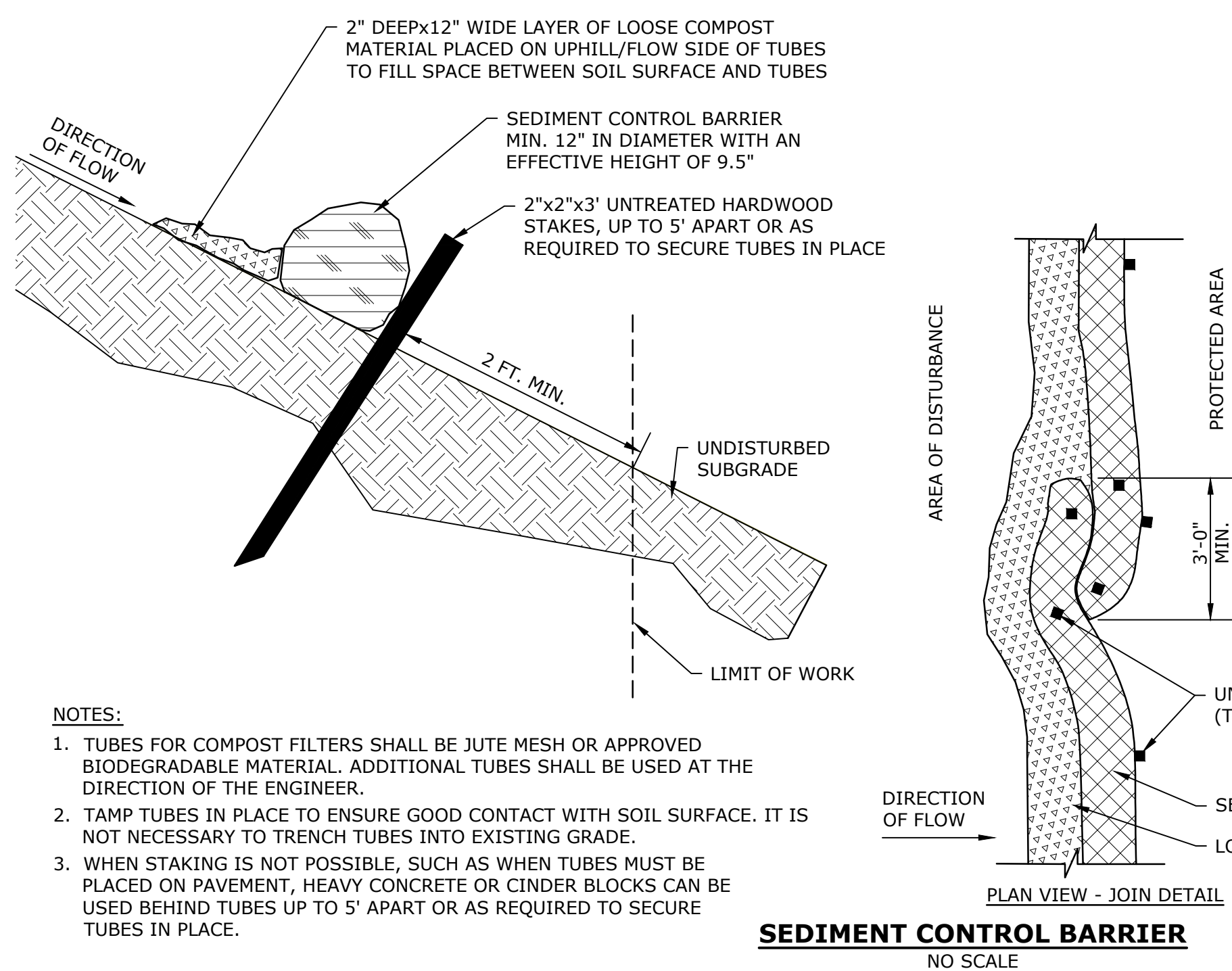
STREAM BYPASS & DEWATERING REQUIREMENTS

SUBMIT TO THE OWNER AND ENGINEER A DETAILED METHOD OF DEWATERING, TO BE APPROVED BY THE OWNER AND ENGINEER PRIOR TO THE START OF CONSTRUCTION. AS A MINIMUM, THE CONTRACTOR'S DEWATERING PLAN SHALL ADDRESS THE FOLLOWING CONCERNS AND ADHERE TO THE FOLLOWING REQUIREMENTS:

1. IF THE WATER TABLE IS INTERCEPTED DURING EXCAVATION, WATER COLLECTED IN THE WORK AREA SHALL BE PUMPED OUT SO THAT THE WORK CAN BE PERFORMED "IN THE DRY." PROVIDE ADEQUATELY SIZED DEWATERING EQUIPMENT WITH 100% BACKUP AND SEDIMENTATION/EROSION CONTROL STRUCTURES AS DETAILED ON THE CONTRACT DRAWINGS TO ENSURE CONSTRUCTION "IN THE DRY" AND ADEQUATELY PROTECT ADJACENT WETLAND AREAS AND WATERWAYS.
2. ALL GROUNDWATER REMOVED (PUMPED) FROM THE WORK AREA AND DISCHARGED TOWARD OR INTO DESIGNATED INLAND WETLANDS SHALL BE A "CLEAN DISCHARGE." PROVIDE WHATEVER DEVICES ARE REQUIRED TO ACHIEVE THE "CLEAN DISCHARGE." IF THE OWNER'S REPRESENTATIVE DETERMINES THE PUMPED DISCHARGE IS CLEAN (LESS THAN 50 NTU), THE FLOW CAN BE DIRECTED OVERLAND TOWARD THE RECEIVING BODY OF WATER. IF THE OWNER'S REPRESENTATIVE DETERMINES THAT THE FLOW IS NOT CLEAN, DIRECT THAT FLOW TO ONE OR MORE FILTRATION DEVICES FOR THE PURPOSE OF SUBSTANTIALLY REMOVING SUSPENDED SOLIDS FROM THE WATER. THE FILTRATION DEVICES SHALL BE AS SHOWN ON THE DRAWINGS OR APPROVED ALTERNATES SUGGESTED BY THE CONTRACTOR, OR AS REQUIRED BY THE LOCAL PERMITS.
3. DEWATERING DISCHARGE LOCATIONS ARE TO BE REVIEWED AND APPROVED BY THE OWNER'S REPRESENTATIVE.
4. REFER TO THE PROJECT MANUAL FOR FURTHER DIRECTION ON DEWATERING AND CONTROL OF WATER.

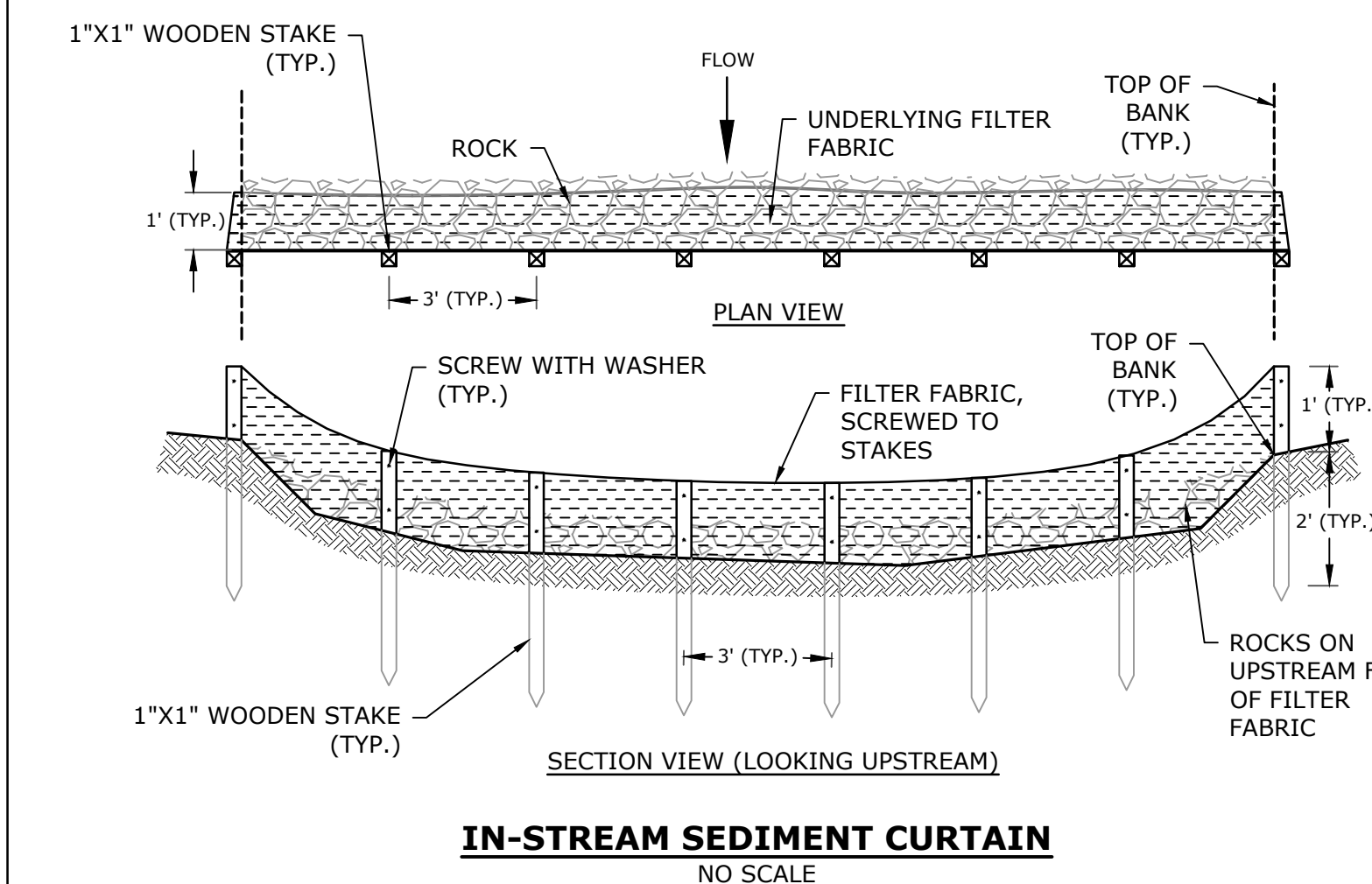
EROSION CONTROL NOTES

1. INSTALL EROSION CONTROL MEASURES PRIOR TO ANY CONSTRUCTION OR IMMEDIATELY UPON REQUEST. MAINTAIN ALL SUCH CONTROL MEASURES UNTIL FINAL SURFACE TREATMENTS ARE IN PLACE AND/OR UNTIL PERMANENT VEGETATION IS ESTABLISHED.
2. PRIOR TO STARTING WORK, CLEARLY STAKE WORK LIMIT LINE(S). DO NOT DISTURB VEGETATION AND TOPSOIL BEYOND THE PROPOSED LIMIT LINE. COORDINATE WITH THE ENGINEER THE LOCATIONS FOR THE TEMPORARY STOCKPILING OF TOPSOIL DURING CONSTRUCTION.
3. SILT TRAPPED AT BARRIERS SHALL BE REMOVED AND DISPOSED OF IN UPLAND AREAS OUTSIDE BUFFER ZONES. MATERIALS DEPOSITED IN ANY TEMPORARY SETTling BASIN SHALL BE REMOVED AT THE COMPLETION OF PROJECT. ALL DISTURBED AREAS TO BE RESTORED.
4. ALL SILT-LADEN WATER MUST BE SETTLED OR FILTERED IN A SEDIMENTATION OR FILTER BAG LOCATED DOWNSTREAM OF THE DEWATERED AREA TO REMOVE SEDIMENTS PRIOR TO RELEASE TO THE WATERWAY.
5. ANY SEDIMENT TRACKED ONTO PUBLIC RIGHT-OF-WAYS SHALL BE SWEEP AT THE END OF EACH DAY.



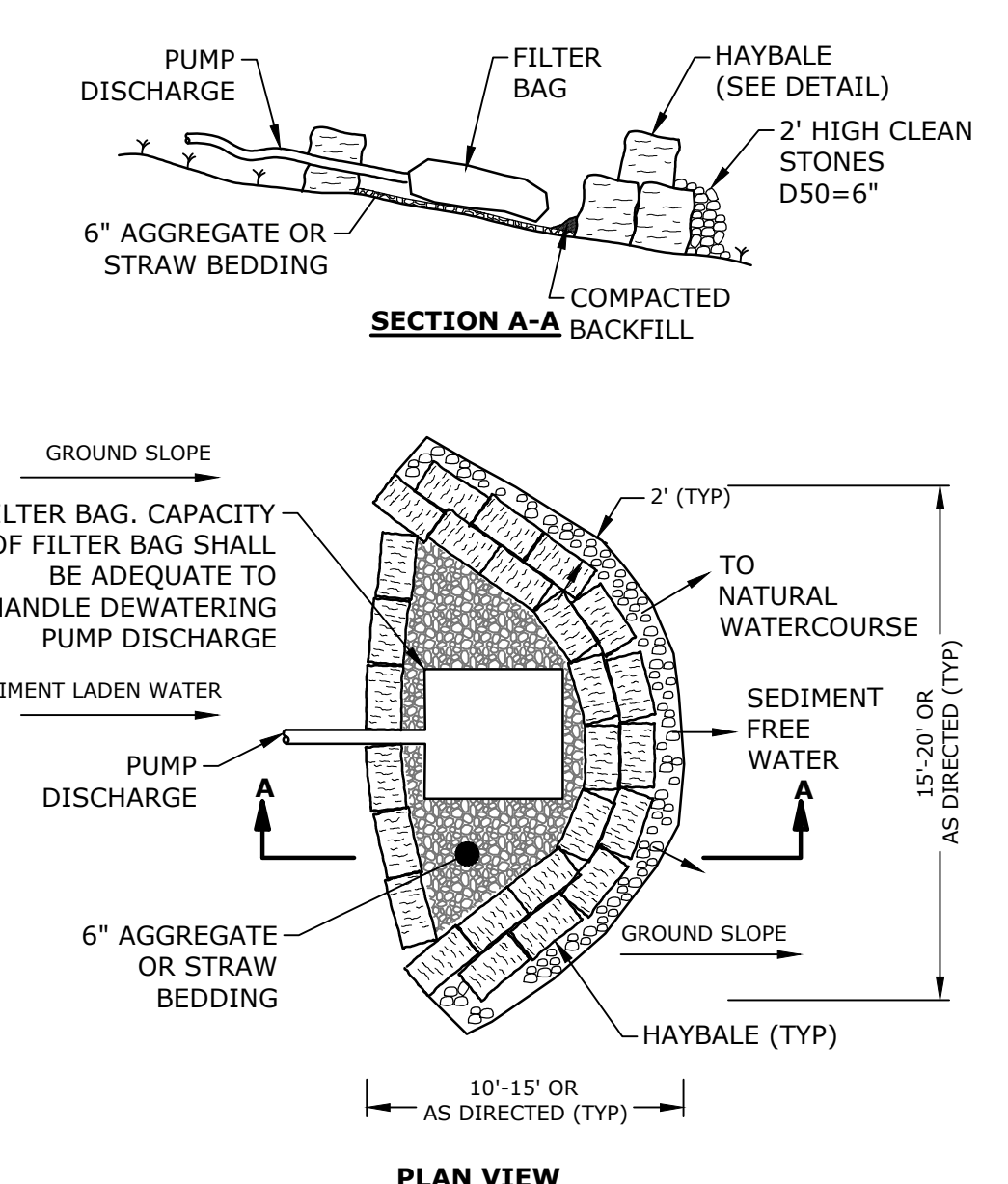
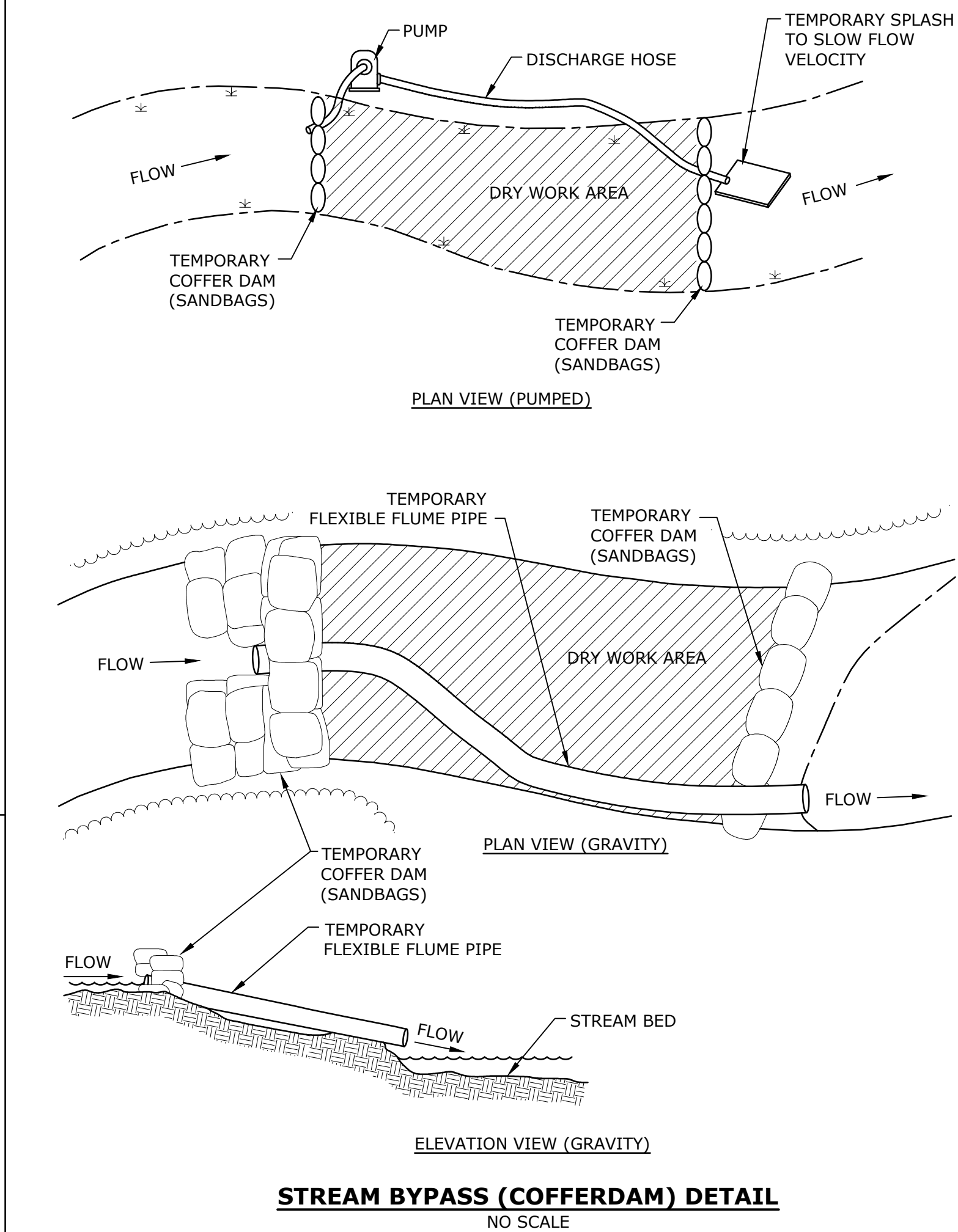
- NOTES:**
1. PROVIDE 3' MINIMUM OVERLAP AT ENDS OF TUBES TO JOIN IN A CONTINUOUS BARRIER AND UNIMPEDED FLOW.
 2. STAKE JOINING TUBES SNUGLY AGAINST EACH OTHER TO PREVENT UNFILTERED FLOW BETWEEN THEM.
 3. SECURE ENDS OF TUBES WITH STAKES SPACED 18" APART THROUGH TOPS OF TUBES.
 4. TUBES CAN BE PLACED DIRECTLY ON EXISTING PAVEMENT WHEN NECESSARY.

SEDIMENT CONTROL BARRIER
NO SCALE



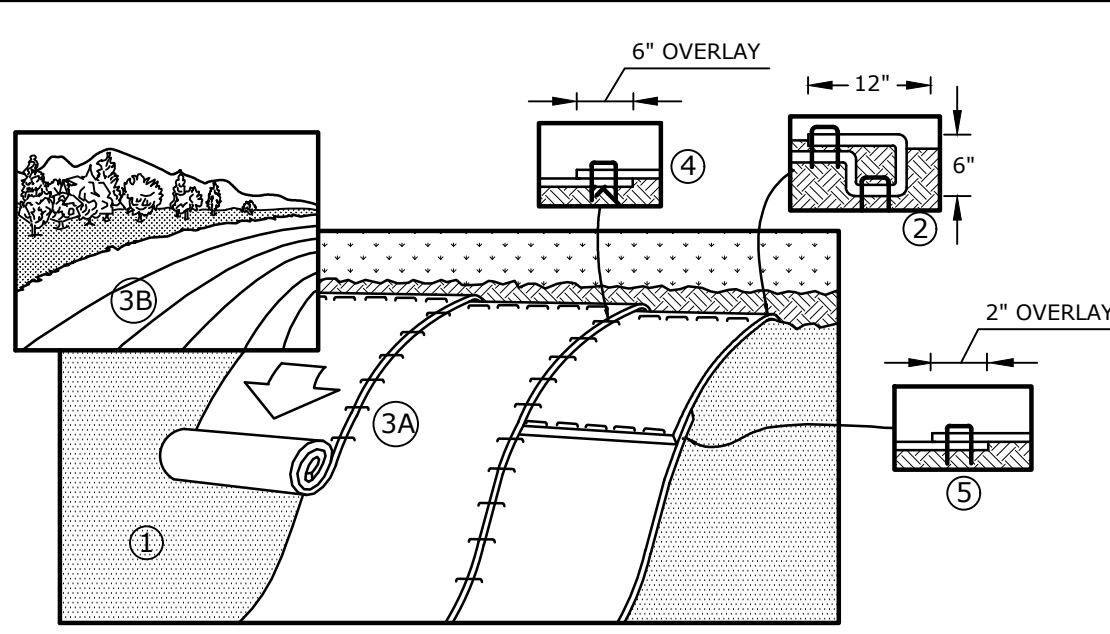
- MATERIALS:**
- THE SEDIMENT CURTAIN SHALL BE COMPOSED OF:
- FILTER FABRIC (MIRAFI 140N OR APPROVED EQUAL)
 - BOTTOM ANCHORING WEIGHT (STONE)
 - ANCHORING POSTS (WOODEN STAKES)
 - AND SECURING MECHANISM (SCREWS, ZIP TIES)
 - ROCK (RIPRAP: D50=6")

- CONSTRUCTION DETAILS:**
1. INSTALLATION
 - 1.1. THE SEDIMENT CURTAIN SHALL BE INSTALLED WHERE SHOWN ON THE PLANS.
 - 1.2. STAKES (1 in by 1 in) SHALL BE INSTALLED FROM ONE BANK TO THE OTHER, ON 3 FT CENTERS. STAKES SHALL BE DRIVEN AT LEAST 2 FT INTO THE GROUND, AND BE EXPOSED NO MORE THAN 12 IN WHERE THEY ARE IN WATER.
 - 1.3. A SCREW WITH WASHER SHALL CONNECT THE GEOTEXTILE TO THE STAKES (STAKES ON THE DOWNSTREAM SIDE OF THE FABRIC). SCREWS POSITIONED 6 IN ON CENTERS. AT THE TOP OF THE STAKES, CABLE TIES MAY BE USED IF NEEDED TO FASTEN A FLAP OF GEOTEXTILE OVER THE TOP OF THE STAKE.
 - 1.4. AT THE STREAMBED, A GEOTEXTILE FLAP SHALL EXTEND AT LEAST 1 FT UPSTREAM OF THE STAKES. STONE SHALL SIT ON THIS FLAP TO ANCHOR THE GEOTEXTILE TO THE BED.
 2. MAINTENANCE
 - 2.1. THE SEDIMENT CURTAIN SHALL BE INSPECTED DAILY, WITH ADDITIONAL MONITORING OF PERFORMANCE DURING STORMS OR SIGNIFICANT FLOW EVENTS.
 - 2.2. BED LOAD SEDIMENT ESCAPING THE DOWNSTREAM-MOST SEDIMENT CURTAIN SHALL CONSTITUTE INADEQUATE PERFORMANCE. THE CONTRACTOR SHALL IMMEDIATELY MODIFY, ADJUST, REPAIR OR REPLACE THE SEDIMENT CURTAIN TO CORRECT INADEQUACIES.
 - 2.3. THE SEDIMENT CURTAIN SHALL BE REMOVED EITHER WHEN MORE THAN 0.25 IN OF RAIN IS FORECAST OR HAS FALLEN IN A 4 hr - OR SHORTER - PERIOD; OR WHEN IN-STREAM CONSTRUCTION ACTIVITIES WILL CEASE FOR MORE THAN 16 hrs (E.G. OVER WEEKENDS).
 - 2.4. THE SEDIMENT CURTAIN SHALL REMAIN IN PLACE UNTIL THE PROTECTED CONSTRUCTION ACTIVITIES HAVE CEASED AND THE TURBIDITY OF THE WATER ENCLOSED IS REDUCED TO ACCEPTABLE LEVELS. THE CURTAIN SHALL BE REMOVED WITHIN 72 HOURS OF THIS CONDITION BEING MET.



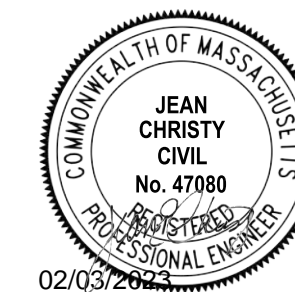
- NOTES:**
1. DISCHARGE LOCATION DEPENDS ON THE TYPE OF GROUNDWATER ENCOUNTERED.
 2. DISCHARGE INTO LIKE WATER BODY AFTER FILTRATION.

DEWATERING BASIN
NO SCALE



- NOTES:**
1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER AND SEED.
 2. BEGIN AT THE TOP OF THE SLOPE, 36" OVER THE GRADE BREAK, BY ANCHORING THE BLANKET IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF BLANKET EXTENDED BEYOND THE UPSLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF TAPLES/STAKES 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES SPACED 12" APART ACROSS THE WIDTH OF THE BLANKET.
 3. ROLL THE BLANKETS DOWN THE SLOPE. ALL BLANKETS MUST BE SECURELY FASTENED TO THE SOIL SURFACE BY PLACING STAPLES IN APPROPRIATE LOCATIONS AS SHOWN ON THE STAPLE PATTERN GUIDE.
 4. STAPLE LENGTHS SHALL BE A MINIMUM OF 8 INCHES.

EROSION CONTROL BLANKET
NO SCALE



PERMIT DRAWINGS
NOT FOR CONSTRUCTION

Delphi Brook Stream Crossing Replacement Project

Freehold Real Estate Management & Investment

Wales, Massachusetts

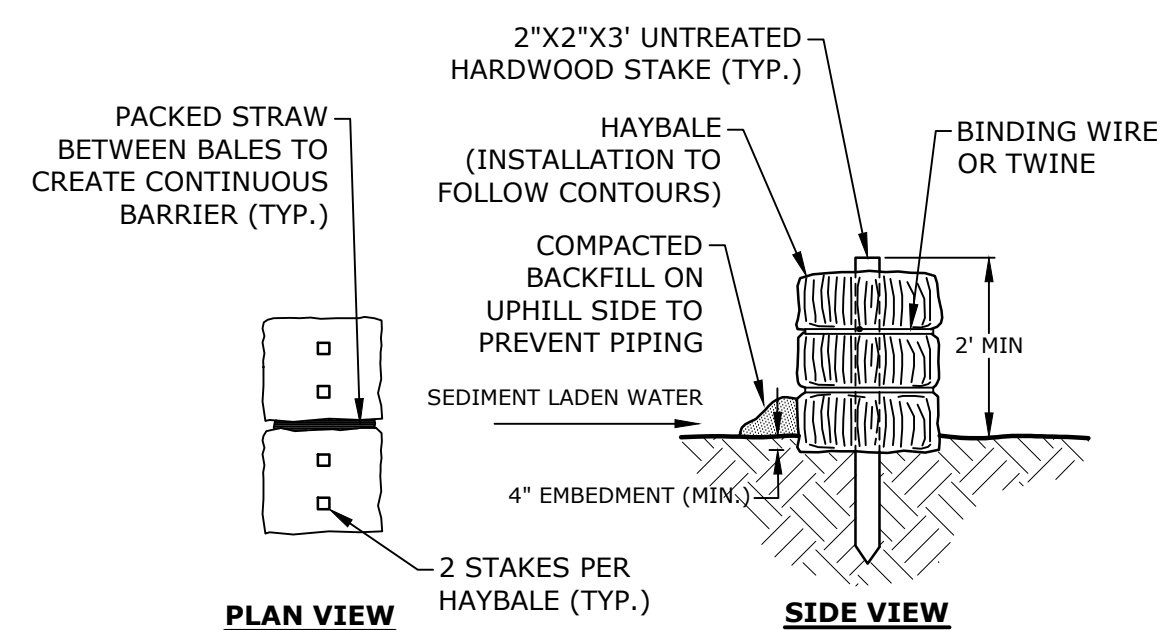
MARK	DATE	DESCRIPTION

PROJECT NO:	F5042-002
DATE:	FEBRUARY 3, 2023
FILE:	F5042-002-C-DTLS.dwg
DRAWN BY:	NSC
CHECKED BY:	TWB/JEC
APPROVED BY:	DPR/JEC

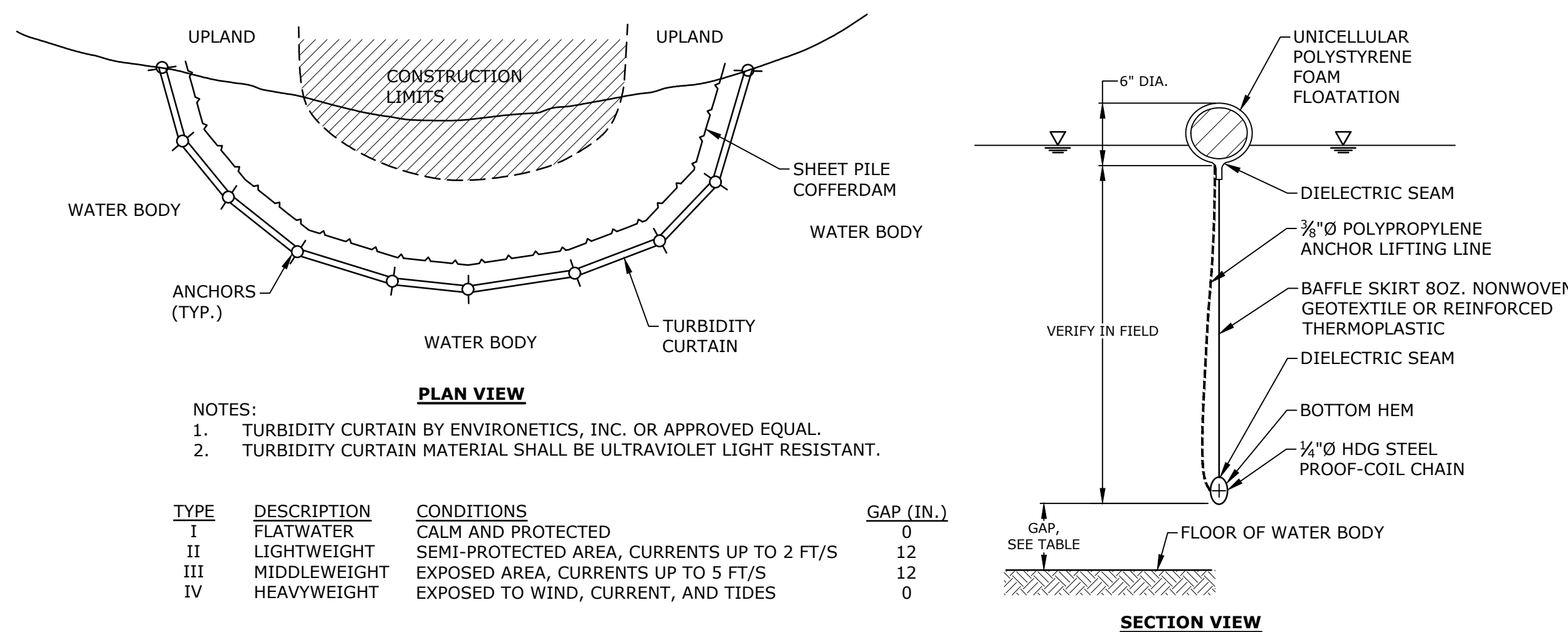
STREAM & EROSION CONTROL NOTES & DETAILS SHEET

SCALE: AS SHOWN

Last Saved: 1/17/2023 11:51:15am By: NSC
 Titled On: Feb 02, 2023 5:15pm By: NSC
 Tighe & Bond Civil
 Delphi Brook Stream Crossing Replacement Project
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HAYBALE BARRIER
NO SCALE

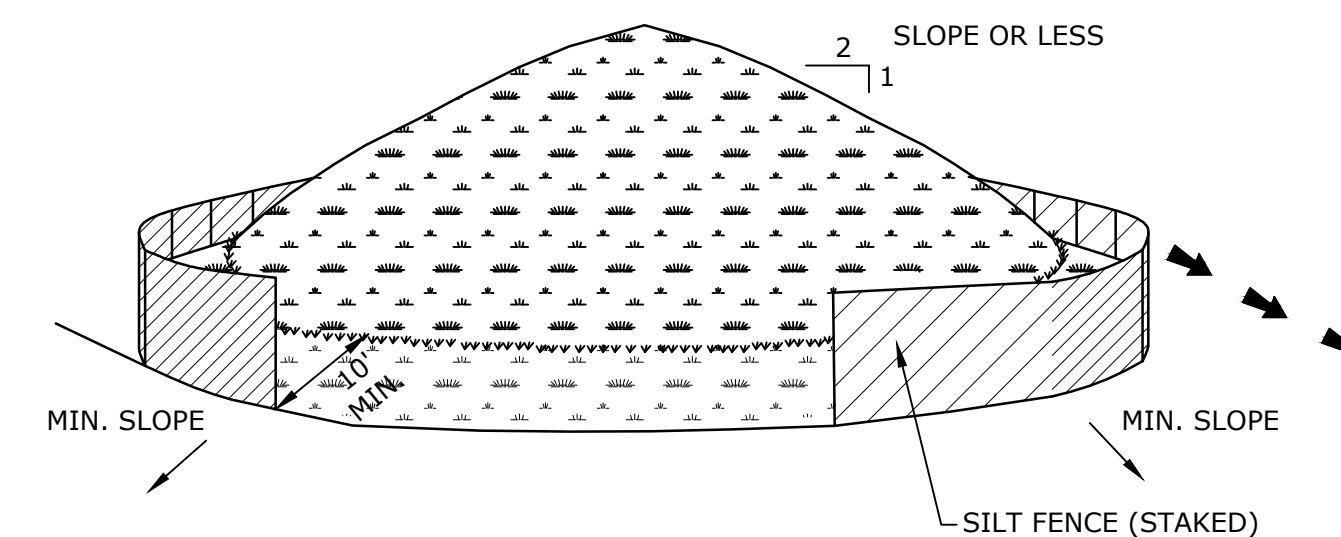


PLAN VIEW

NOTES:
1. TURBIDITY CURTAIN BY ENVIRONETICS, INC. OR APPROVED EQUAL.
2. TURBIDITY CURTAIN MATERIAL SHALL BE ULTRAVIOLET LIGHT RESISTANT.

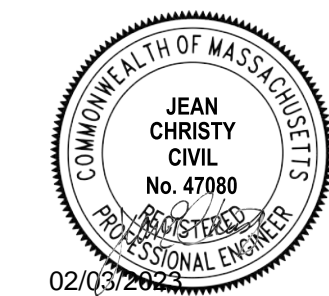
TYPE	DESCRIPTION	CONDITIONS	GAP (IN.)
I	FLATWATER	CALM AND PROTECTED	0
II	LIGHTWEIGHT	SEMI-PROTECTED AREA, CURRENTS UP TO 2 FT/S	12
III	MIDDLEWEIGHT	EXPOSED AREA, CURRENTS UP TO 5 FT/S	12
IV	HEAVYWEIGHT	EXPOSED TO WIND, CURRENT, AND TIDES	0

TURBIDITY CURTAIN
NO SCALE



- NOTES:
1. AREA CHOSEN FOR STOCKPILING OPERATIONS SHALL BE DRY, STABLE, AND LOCATED OUTSIDE FLOODPLAIN.
2. MAXIMUM SLOPE OF STOCKPILE SHALL BE 2H:1V.
3. UPON COMPLETION OF SOIL STOCKPILING, EACH PILE SHALL BE SURROUNDED WITH EITHER SILT FENCING OR STRAW BALES.
4. STOCKPILE TO BE PLACED ON POLYETHYLENE SHEETING (MIN. 10 MIL THICKNESS); SECURELY COVER WITH POLYETHYLENE SHEETING (MIN. 10 MIL THICKNESS) WHEN NOT IN USE AND AT THE END OF EACH WORK DAY.

TEMPORARY SOIL STOCKPILING
NO SCALE

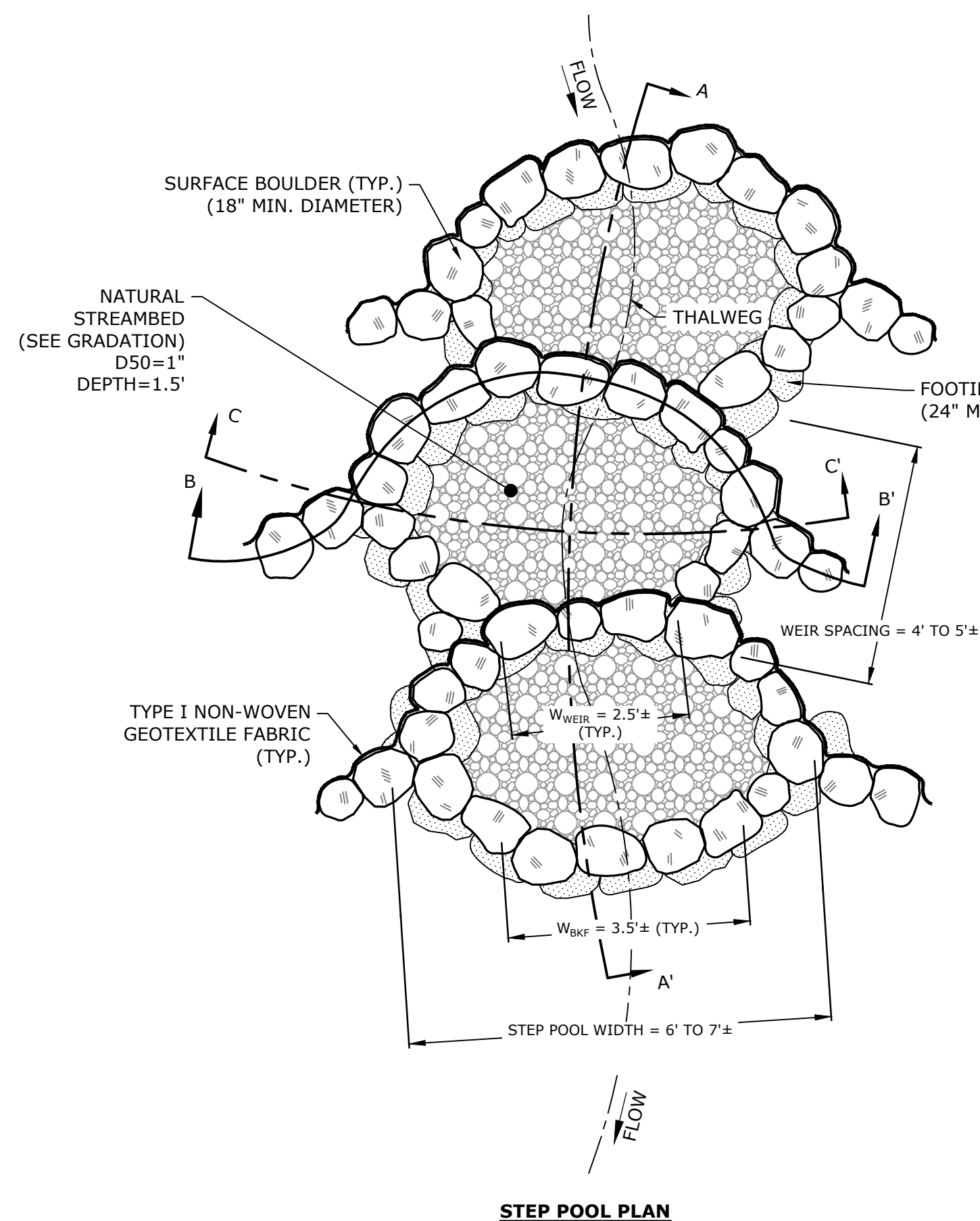


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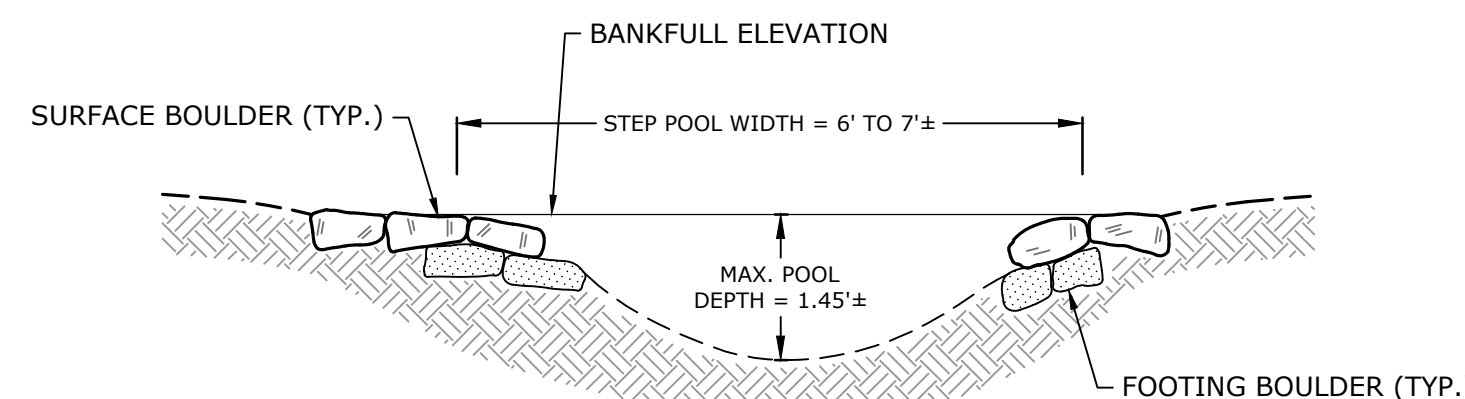
Delphi Brook Stream Crossing Replacement Project

Freehold Real Estate Management & Investment

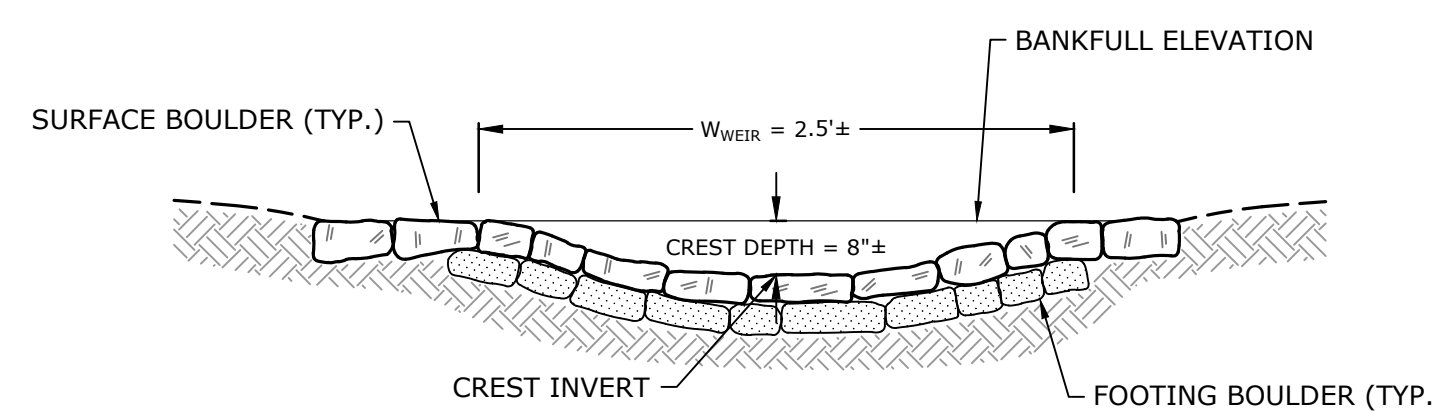
Wales, Massachusetts



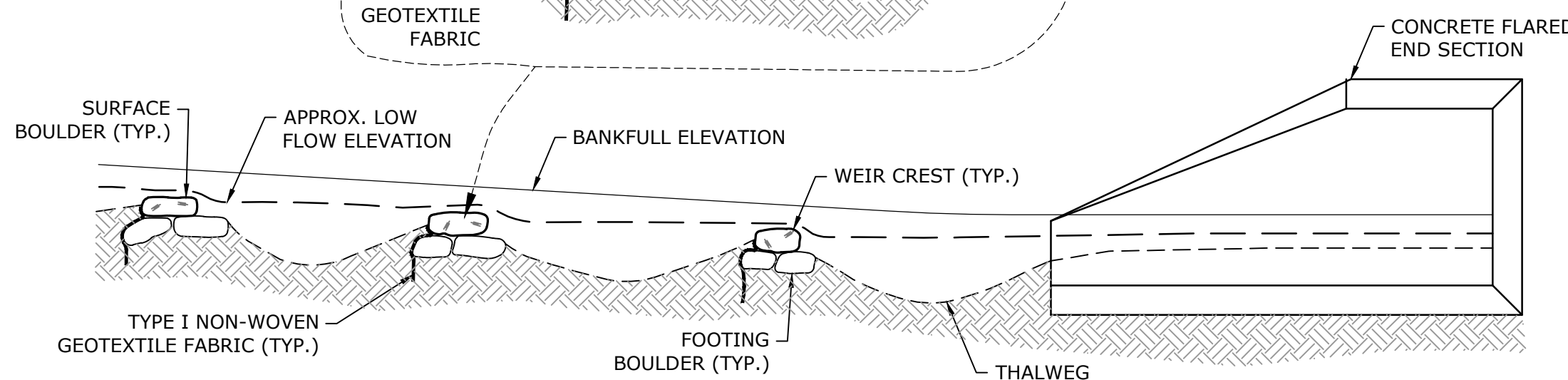
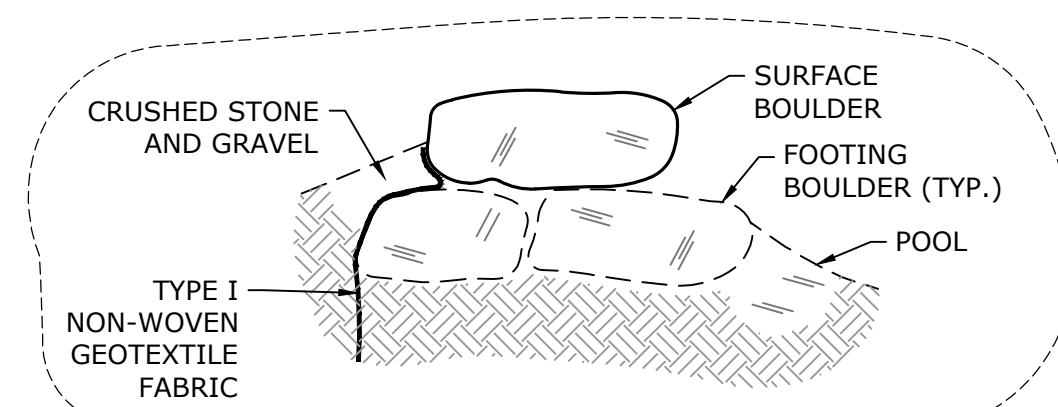
STEP POOL PLAN



STEP POOL SECTION C-C'



STEP POOL WEIR - SECTION B-B'



STEP POOL PROFILE - A-A'

STEP POOL STREAM CHANNEL
NO SCALE

MARK	DATE	DESCRIPTION
PROJECT NO:	F5042-002	
DATE:	FEBRUARY 3, 2023	
FILE:	F5042-002-C-DTLS.dwg	
DRAWN BY:	NSC	
CHECKED BY:	TWB/JEC	
APPROVED BY:	DPR/JEC	

DETAILS SHEET

SCALE: AS SHOWN

C-502
SHEET 11 OF 14



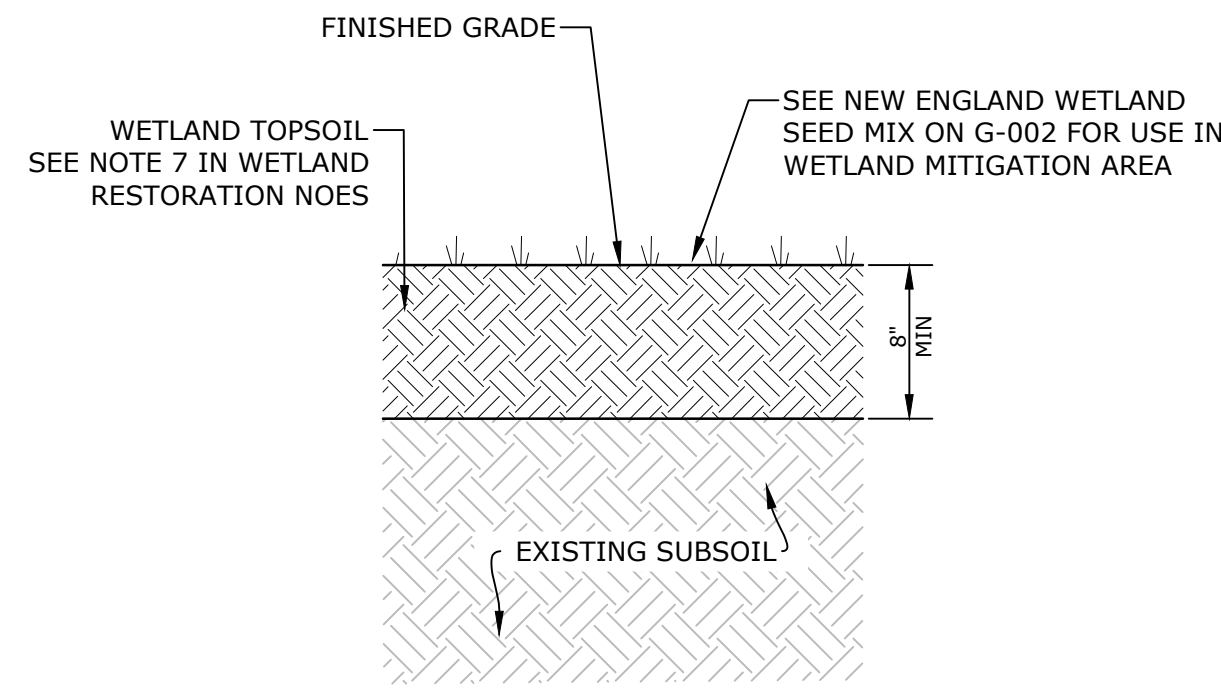
02/03/2023

NATIVE SHRUBS FOR WETLAND REPLACEMENT AREA

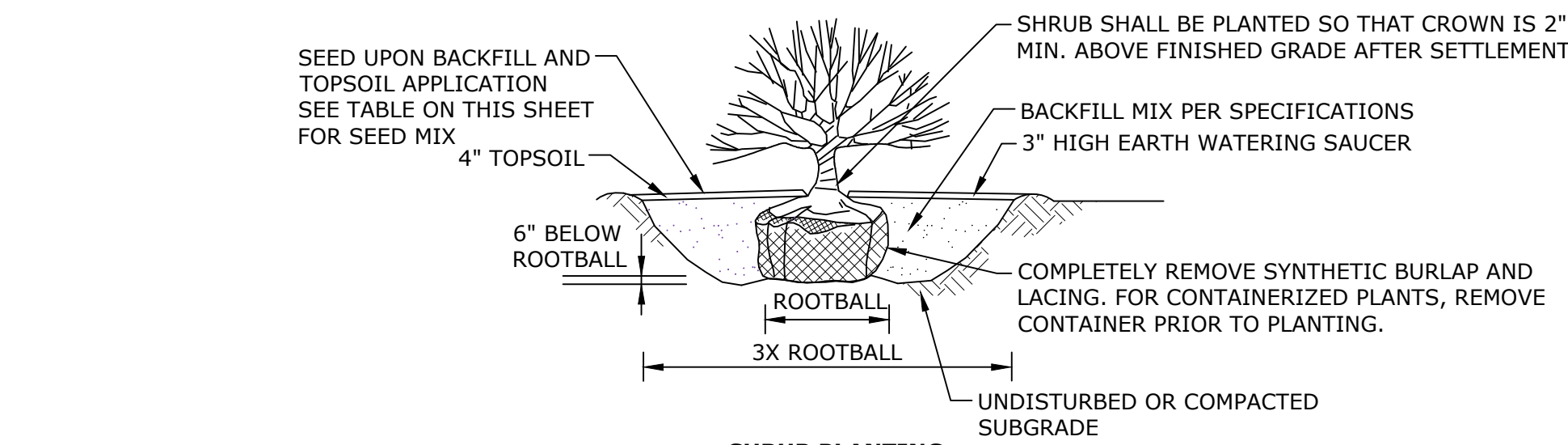
COMMON NAME	BOTANICAL NAME	INDICATOR STATUS	SIZE	ON CENTER SPACING
SPECKLED ALDER	<i>Alnus incana (rugosa)</i>	FACW	3-4"	5-7"
HIGHBUSH BLUEBERRY	<i>Vaccinium corymbosum</i>	FACW	3-4"	5-7'
SWEET PEPPERBUSH	<i>Clethra alnifolia</i>	FAC	3-4"	5-7'
WINTERBERRY	<i>Ilex verticillata</i>	FACW	3-4"	5-7'

PLANTING NOTES:

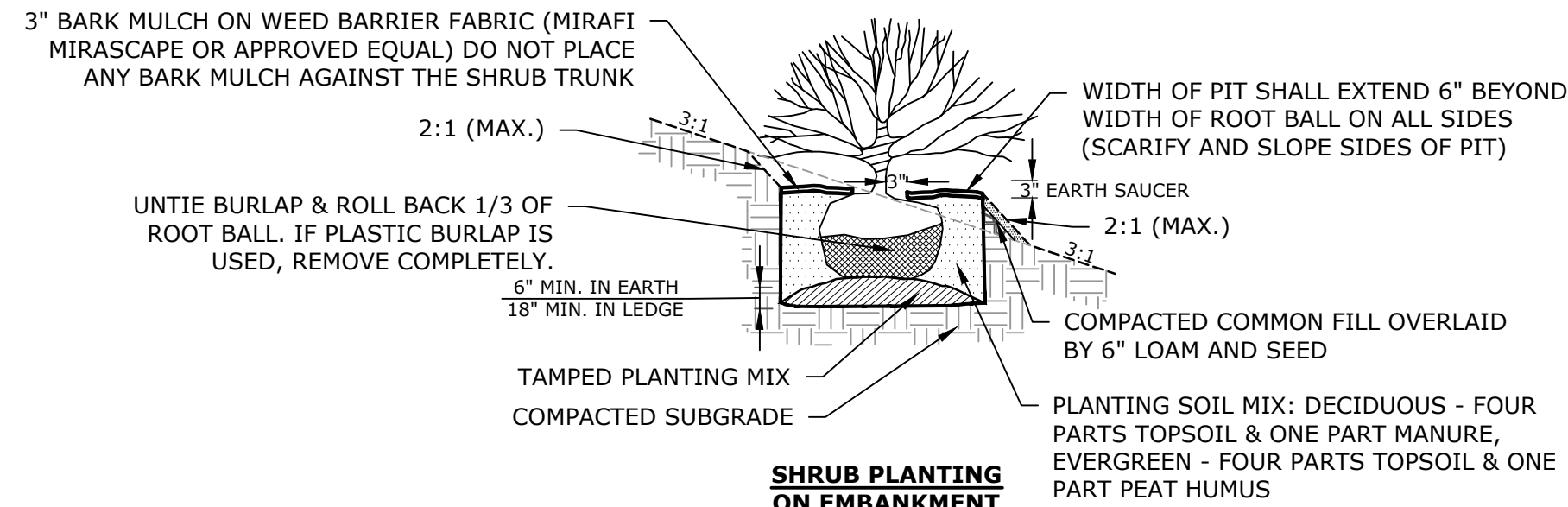
- SHRUBS TO BE SELECTED FROM THE SPECIES LISTED IN THIS TABLE BASED ON THE AVAILABILITY OF NATIVE NURSERY STOCK AT TIME OF INSTALLATION.
- SPECIES ARE NATIVE TO THE PROJECT SITE AND WORCESTER COUNTY, MASSACHUSETTS AS PER THE VASCULAR PLANTS OF MASSACHUSETTS: A COUNTY CHECKLIST (CULLINA, CONNOLLY, SORRIE, SOMERS).
- THE PLACEMENT OF SPECIES IN ALL PLANTING AREAS SHALL BE ADJUSTED ACCORDING TO SPECIFIC SITE CONDITIONS AT THE DIRECTION OF THE WETLAND SCIENTIST.
- MINIMUM SIZE (HEIGHT) IS AT THE TIME OF INSTALLATION.
- RECOMMENDED ON CENTER SPACING OF SHRUBS IS AS PER NEW ENGLAND WETLAND PLANTINGS, INC.
- INDICATOR STATUS IS BASED ON THE USDA NRCS PLANTS DATABASE.



WETLAND TOPSOIL FOR INLAND WETLAND REPLICATION AREA
NO SCALE

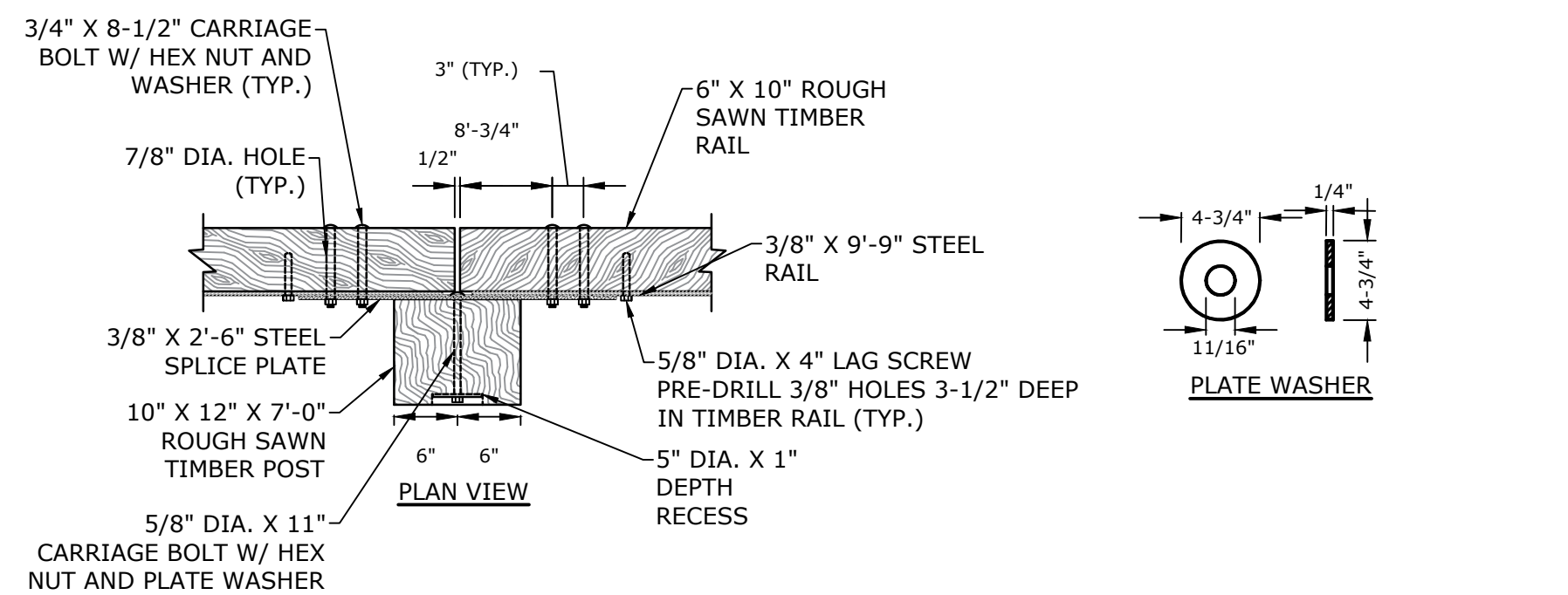


SHRUB PLANTING



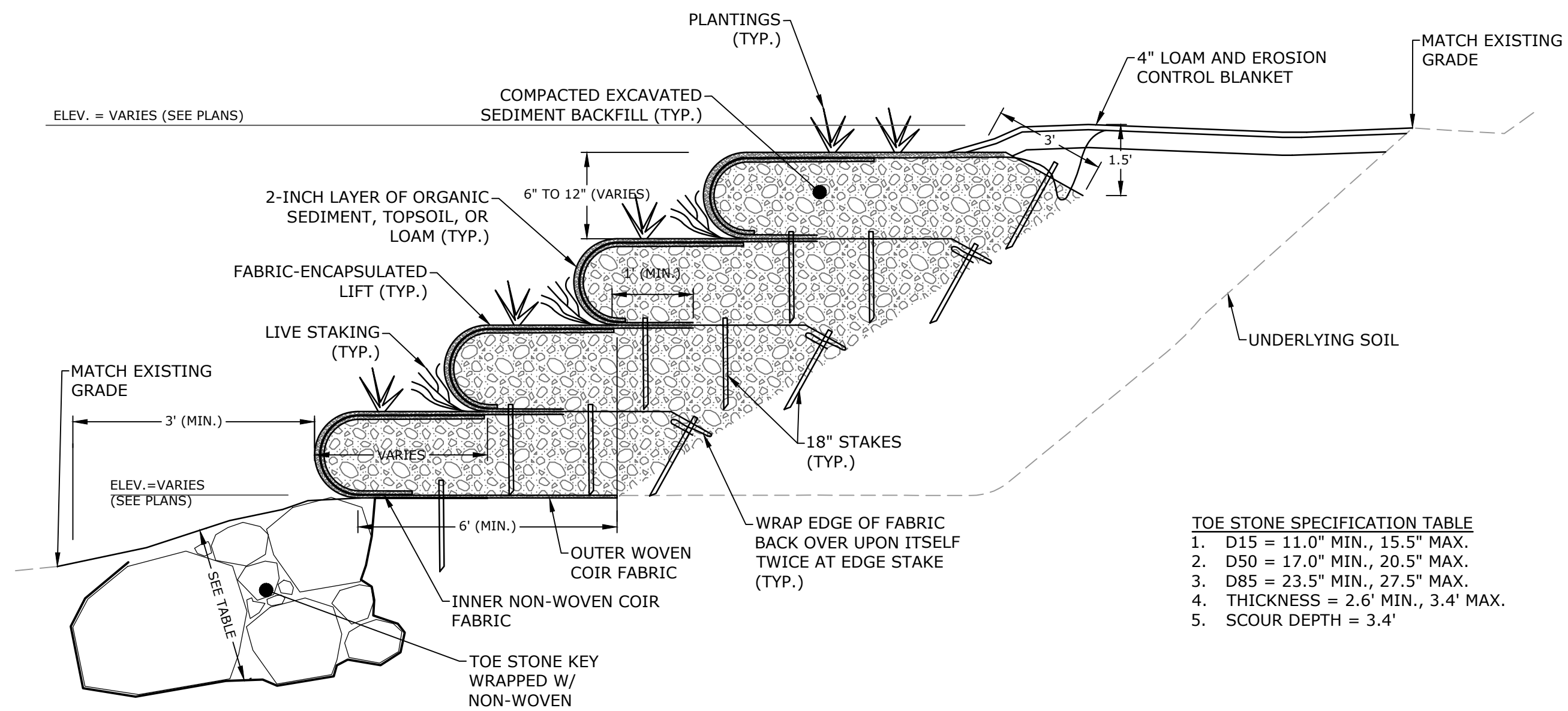
SHRUB PLANTING ON EMBANKMENT

SHRUB PLANTING DETAIL
NO SCALE



- NOTE:**
- BURIED DEPTH OF POST SHALL BE 4'-6" MINIMUM OR AS SPECIFIED BY WALL DESIGNER WHEN LOCATED BEHIND RETAINING WALL.
 - USE WEATHERING STEEL FOR ALL STRUCTURAL STEEL AND FASTENER HARDWARE.

WOOD POST AND BEAM GUARDRAIL
NO SCALE



NOTES:

- SEE THE PROPOSED CONDITIONS PLAN FOR LOCATIONS AND LIMITS OF FESL.
- INSTALL ENCAPSULATED SOIL LIFTS FROM DOWNSTREAM TO UPSTREAM, WITH UPSTREAM COIR FABRIC OVERLAPPING DOWNSTREAM FABRIC BY 18" MINIMUM.
- USE SANDBAGS, TIMBER FORM, OR OTHER AS NECESSARY TO FORM FACE OF LIFT AND KEEP LOWER LIFTS SUFFICIENTLY DRY FOR INSTALLATION AND COMPACTION.
- PROTECT FROM DAMAGE WHEN CONSTRUCTED BELOW TEMPORARY ACCESS ROAD OR NEAR OTHER WORK.
- FABRIC ENCAPSULATED SOIL LIFTS WILL BE STACKED AND CONSTRUCTED IN LOCATIONS AND GRADES SHOWN IN THE PLANS AND SPECIFIED BELOW.
 - EXCAVATE BANK SLOPE AND PLACE FORMS (2"x8" BOARD) ALONG THE BANK AT THE FACE OF EACH FESL LOCATION TO ACHIEVE LINES AND GRADES. USE METAL T-POSTS OR WOODEN STAKES TO SECURE FORM IN PLACE FOR BOTTOM LIFT. USE WOODEN STAKES TO SECURE THE FORM WHEN CONSTRUCTING THE SECOND LIFT.
 - ROLL COIR FABRIC ALONG THE STREAMBANK AND PLACE FABRIC AGAINST THE SUBGRADE AND (VERTICAL) FORM FACE WITH FABRIC EMBEDMENT LENGTHS AS SHOWN.
 - REMOVE ALL WRINKLES IN COIR FABRIC AND ENSURE THE FABRIC RESTS TIGHTLY AGAINST THE SUBGRADE AND FORM FACE WITH PROPER EMBEDMENT LENGTHS (DEPTH). ALLOW EXCESS COIR FABRIC TO DRAPE OVER FORM TOWARD STREAM CHANNEL.
 - PLACE BACKFILL MATERIAL AND COMPACT TO 85% RELATIVE DENSITY. SOIL LIFT SHALL BE A MAXIMUM OF 8". FOLLOWING COMPACTION OF SOIL IN TWO (2) - 6-INCH LIFTS THE FABRIC IS WRAPPED OVER THE FRONT AND TOP OF THE SOIL MASS AND STAKED IN PLACE. THE NEXT FESL LIFT IS BUILT ON TOP OF THE LOWER LIFT AND SET BACK 2- FEET TO FORM A GEOTEXTILE RETAINING WALL.
 - WITHIN THE AREA IMMEDIATELY BEHIND THE FORM FACE AND WITHIN 1-FOOT OF THE FORM, EVENLY DISPERSE SEED ON THE BACKFILL MATERIAL.
 - PULL COIR FABRIC OVER THE BACKFILL MATERIAL TIGHT AND STAKE.
 - FESL WILL BE USED IN THE BANKS FROM THE TOE LINE TO THE DISTANCE UP THE BANK WHERE MAHW IS DENOTED ON THE PLANS. THE BANK WILL CONSIST OF TOE STONE AND FESL TO THE TOP OF BANK WHERE IT WILL TIE TO TYPE 1 BANK PROTECTION OF COIR FABRIC AND A RIPARIAN VEGETATION PLAN.
 - PLACE LIVE PLANTING AND CUTTINGS BETWEEN THE FESL PROTRUDING FROM THE FACE OF THE CONSTRUCTED BANK AS LIFTS ARE CONSTRUCTED.
 - FINISHED FESL SHALL HAVE NO LOOSE COIR FABRIC. AREAS WITH LOOSE FABRIC SHALL BE STAKED WITH WOODEN STAKES TO HOLD COIR FABRICS FIRMLY TO UNDERLYING SOIL. IF COIR FABRIC FOLDS ARE REQUIRED AROUND CHANNEL BENDS, THE FOLD SHALL BE IN THE DIRECTION OF FLOW.

FABRIC ENCAPSULATED SOIL LIFT (FESL)
NO SCALE

PERMIT DRAWINGS
NOT FOR CONSTRUCTION

Delphi Brook Stream Crossing Replacement Project

Freehold Real Estate Management & Investment

Wales, Massachusetts

MARK	DATE	DESCRIPTION

PROJECT NO: F5042-002

DATE: FEBRUARY 3, 2023

FILE: F5042-002-C-DTLS.dwg

DRAWN BY: NSC

CHECKED BY: TWB/JEC

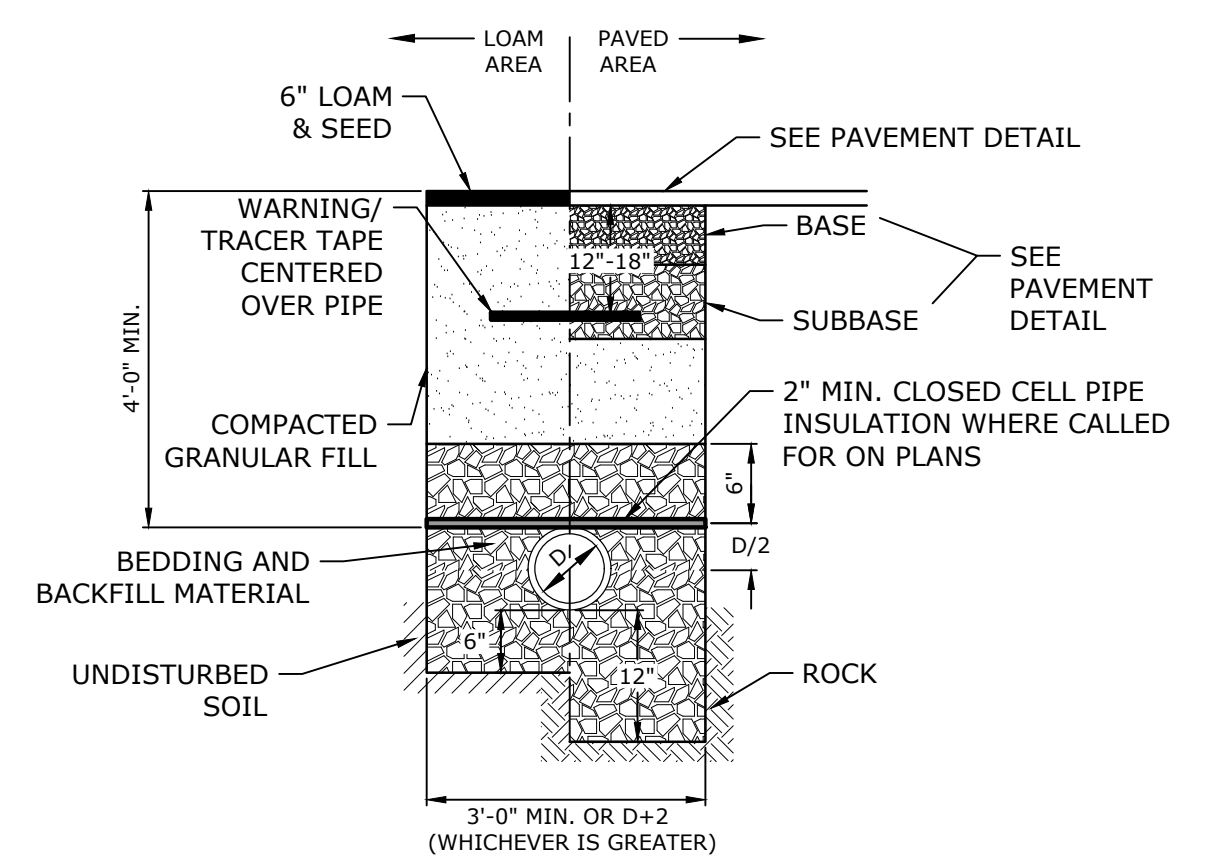
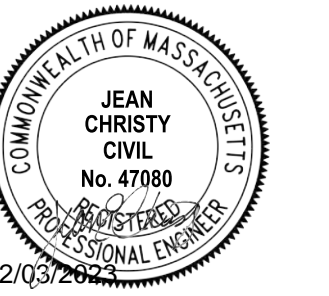
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DETAILS SHEET

SCALE: AS SHOWN

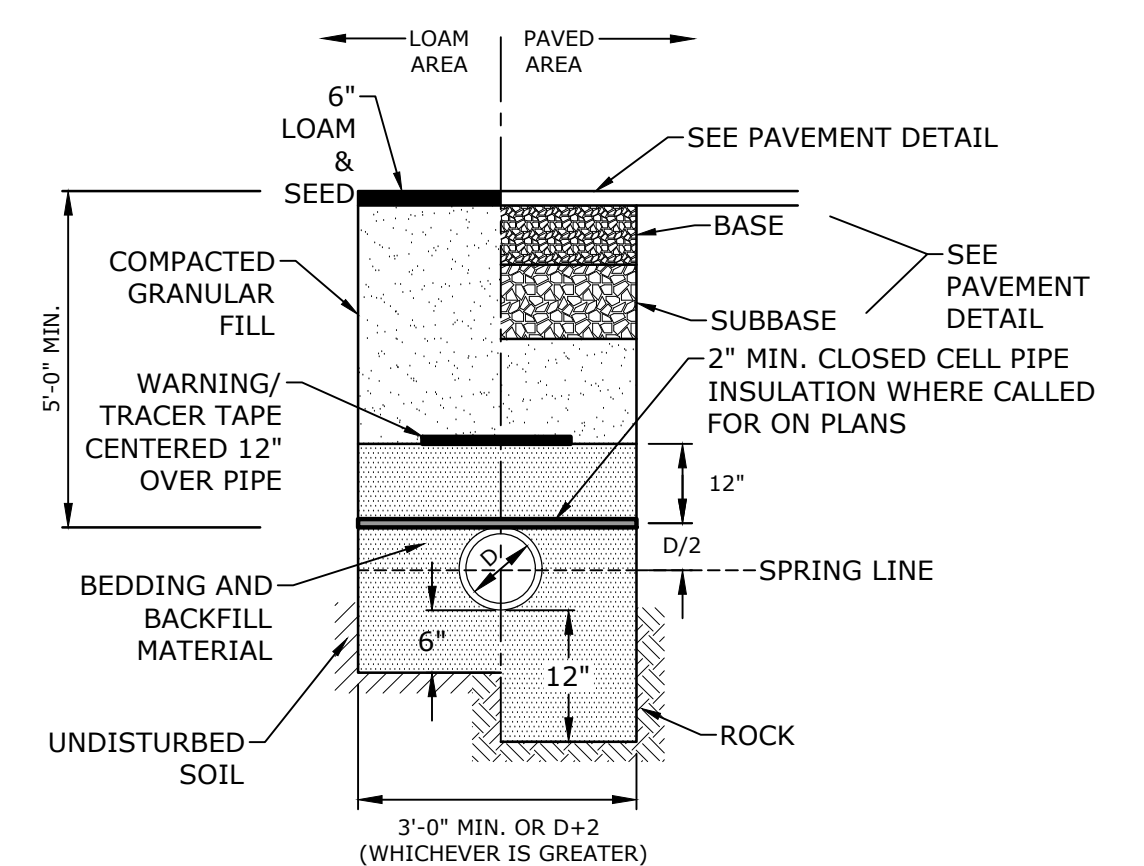
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SHEET 12 OF 14

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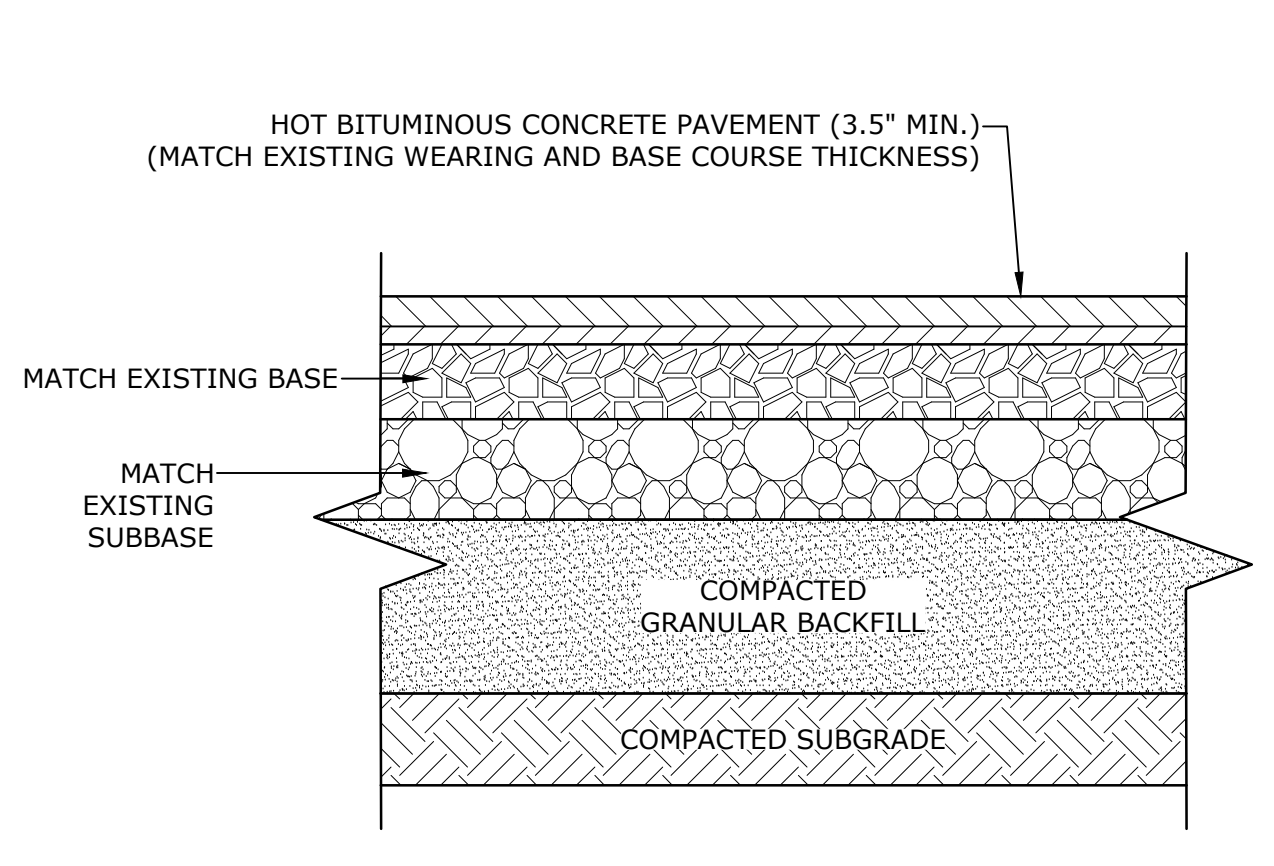
NOTES:
 1. CRUSHED STONE BEDDING AND BACKFILL FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW PIPE IN EARTH AND 12" BELOW PIPE IN ROCK UP TO 6" ABOVE TOP OF PIPE.
 2. ALL UTILITIES SHALL BE INSTALLED PER THE INDIVIDUAL UTILITY COMPANY STANDARDS. COORDINATE ALL INSTALLATIONS WITH INDIVIDUAL UTILITY COMPANIES AND THE TOWN OF WALES.

STORM DRAIN TRENCH
NO SCALE



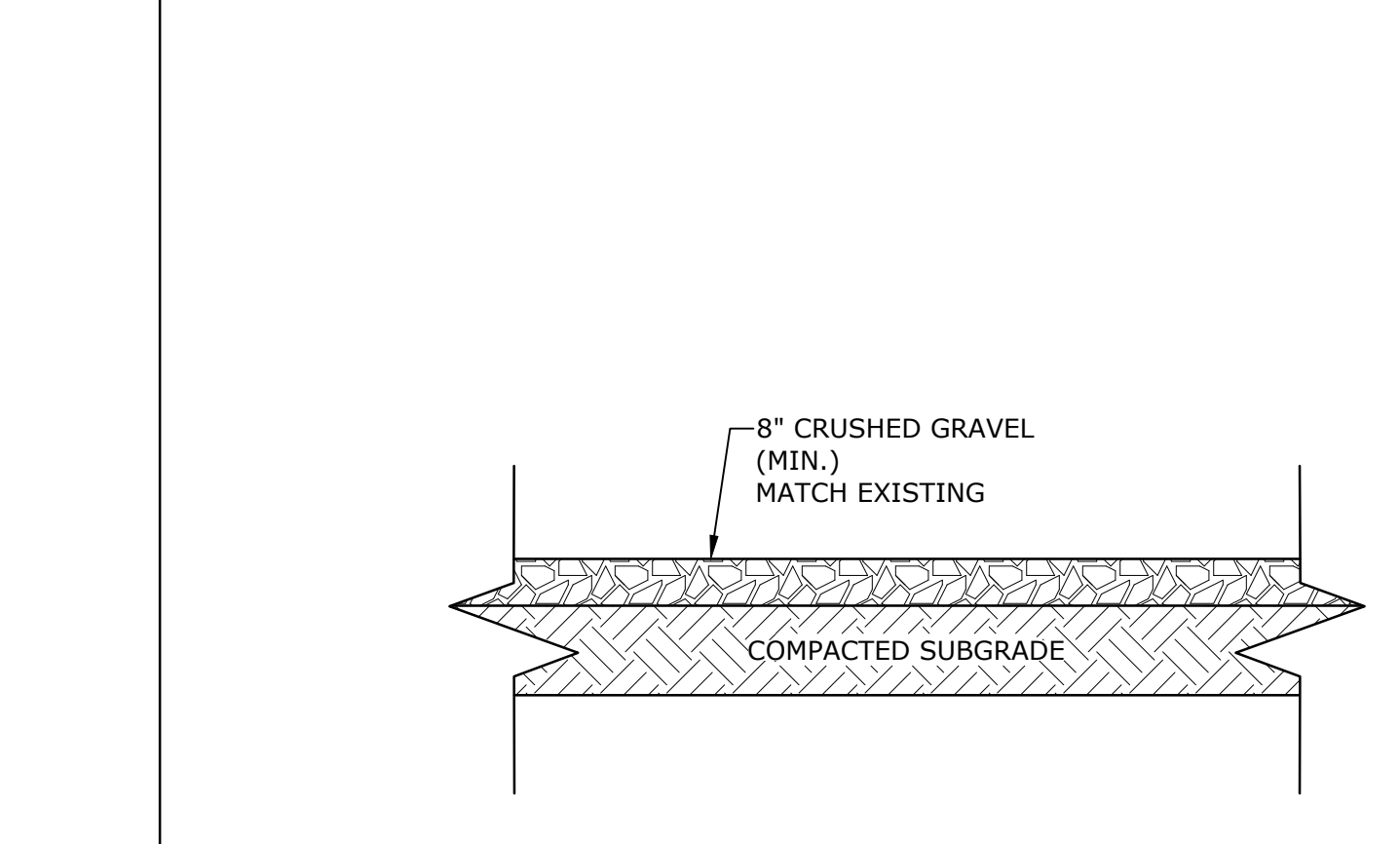
NOTES:
 1. SAND BEDDING AND BACKFILL FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW PIPE IN EARTH AND 12" BELOW PIPE IN ROCK UP TO 12" ABOVE TOP OF PIPE.
 2. ALL UTILITIES SHALL BE INSTALLED PER THE INDIVIDUAL UTILITY COMPANY STANDARDS. COORDINATE ALL INSTALLATIONS WITH INDIVIDUAL UTILITY COMPANIES AND THE TOWN OF WALES.

WATER TRENCH
NO SCALE



NOTES:
 1. SEE PROPOSED CONDITIONS PLANS FOR PAVEMENT WIDTH AND LOCATION.
 2. SEE PROPOSED CONDITIONS PLANS FOR PAVEMENT SLOPE AND CROSS-SLOPE.
 3. A TACK COAT OF RS-1 EMULSION SHALL BE PLACED ON TOP OF BINDER COURSE PAVEMENT PRIOR TO PLACING WEARING COURSE.
 4. RS-1 EMULSION SHALL BE APPLIED AT A RATE OF .03GAL/SY

HEAVY DUTY PAVEMENT SECTION
NO SCALE



NOTES:
 1. SEE PROPOSED CONDITIONS PLANS FOR GRAVEL DRIVE WIDTH AND LOCATION.
 2. SEE PROPOSED CONDITIONS PLANS FOR GRAVEL DRIVE SLOPE AND CROSS-SLOPE.

GRAVEL DRIVE SECTION
NO SCALE

New England Erosion Control/Restoration Mix for Dry Sites – Upland Seed Mix

Common Name	Scientific Name	Indicator Status
Canada Wild Rye	<i>Elymus canadensis</i>	FACU
Red Fescue	<i>Festuca rubra</i>	FACU
Annual Ryegrass	<i>Lolium multiflorum</i>	--
Perennial Ryegrass	<i>Lolium perenne</i>	--
Little Bluestem	<i>Schizachyrium scoparium</i>	FACU
Switch Grass	<i>Panicum virgatum</i>	FAC
Indian Grass	<i>Sorghastrum nutans</i>	UPL

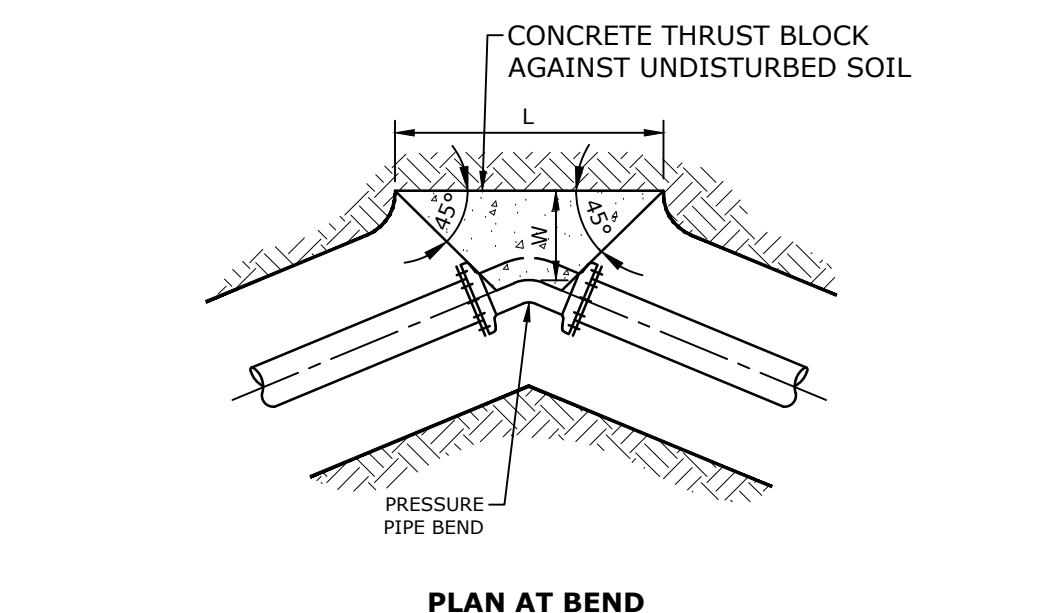
Native Shrubs for Wetland and Bank Restoration

Common Name	Scientific Name	Size ²	Number of Proposed Plantings
Silky Dogwood	<i>Cornus amomum</i>	3' – 4'	3
Common Winterberry	<i>Ilex verticillata</i>	3' – 4'	2
Speckled Alder	<i>Alnus incana</i>	3' – 4'	3

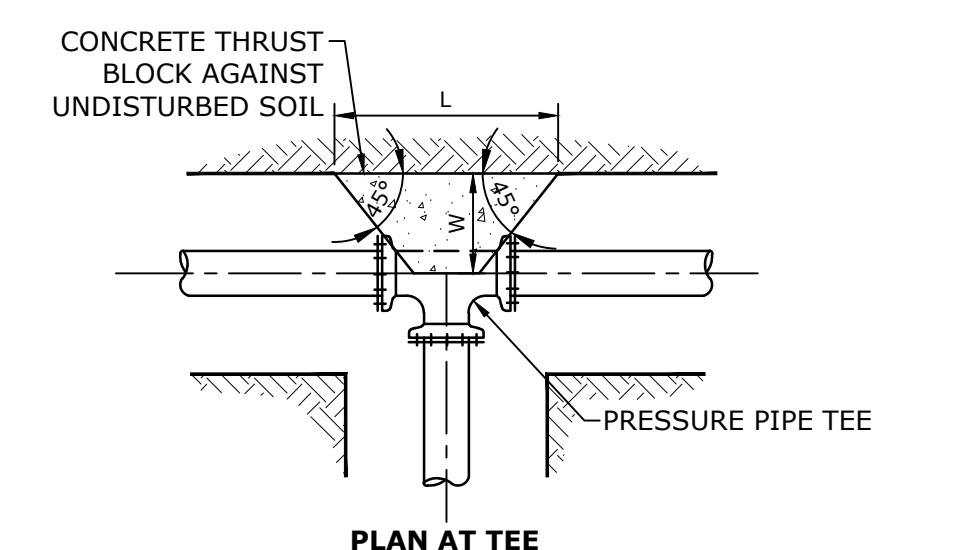
New England Erosion Control/Restoration Mix for Detention Basins and Moist Sites – Wetland Seed Mix

Common Name	Scientific Name	Indicator Status
Riverbank Wild Rye	<i>Elymus riparius</i>	FACW
Little Bluestem	<i>Schizachyrium scoparium</i>	FACU
Red Fescue	<i>Festuca rubra</i>	FACU
Big Bluestem	<i>Andropogon gerardii</i>	FAC
Switch Grass	<i>Panicum virgatum</i>	FAC
New York Ironweed	<i>Vernonia noveboracensis</i>	FACW
Upland Bentgrass	<i>Agrostis perennans</i>	FACU
Beggar Ticks	<i>Bidens frondosa</i>	FACW
Spotted Joe Pye Weed	<i>Eupatorium maculatum</i>	OBL
Boneset	<i>Eupatorium perfoliatum</i>	FACW
New England Aster	<i>Aster novae-angliae</i>	FACW
Wool Grass	<i>Scirpus cyperinus</i>	FACW
Soft Rush	<i>Juncus effusus</i>	FACW

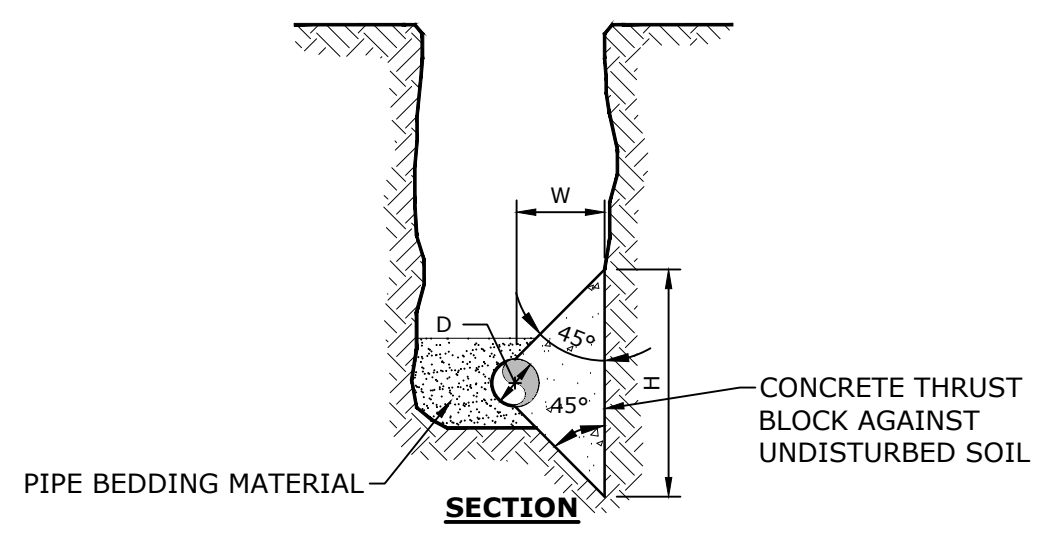
PROPOSED PLANTING SCHEDULES
NO SCALE



PLAN AT BEND



PLAN AT TEE

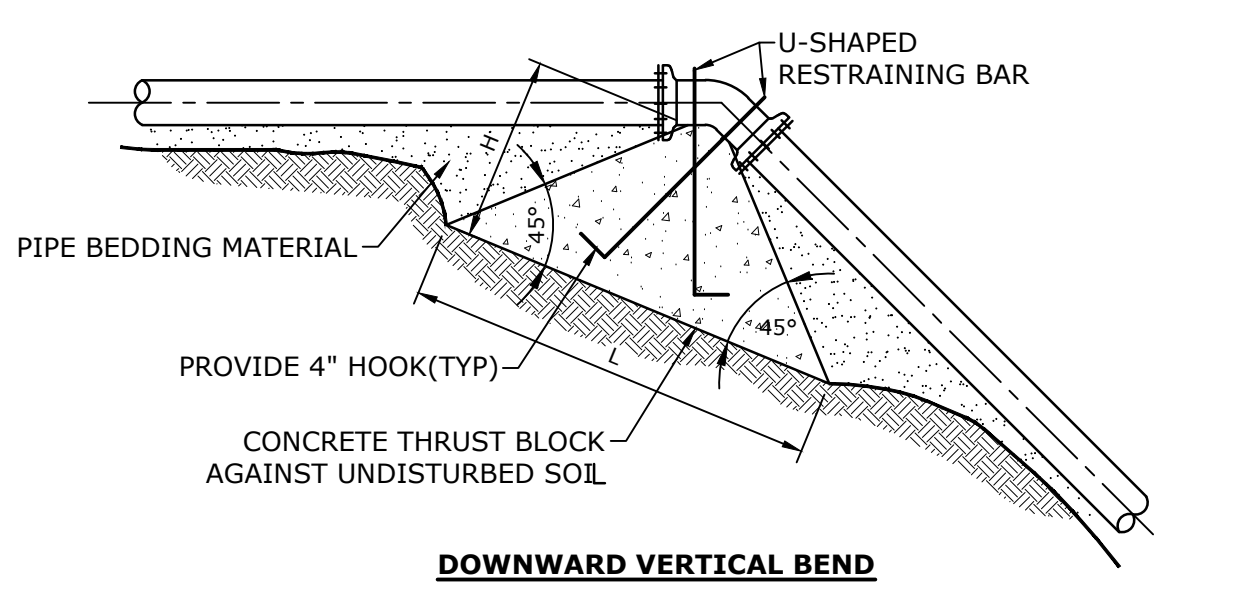


SECTION

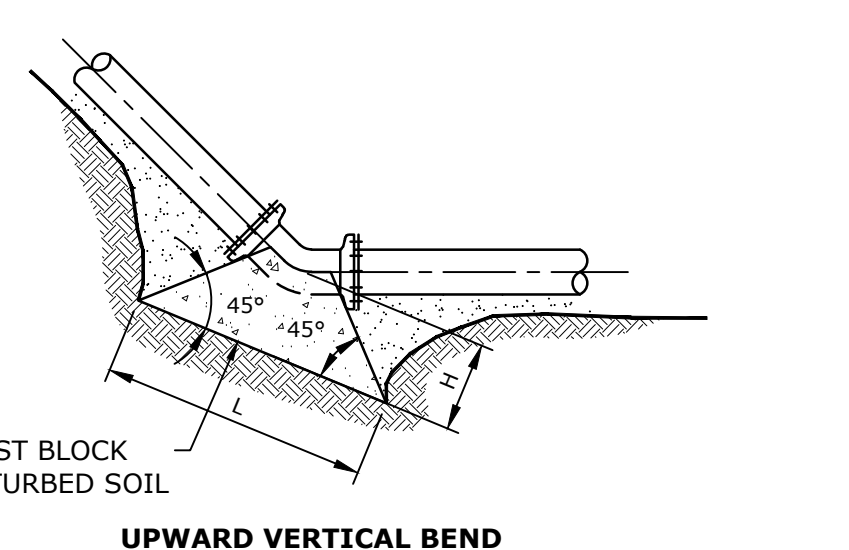
VERTICAL BENDS

NOTES:
 1. CONCRETE THRUST BLOCKS SHALL BE CONSTRUCTED OF CONCRETE MATERIAL POURED AGAINST UNDISTURBED SOIL.
 2. DIMENSIONS L, W, & H MAY BE ADJUSTED TO MEET FIELD CONDITIONS, PROVIDED THE BEARING AREA AND VOLUME REMAIN UNCHANGED.
 3. RESTRAINING BARS SHALL BE ASTM A615 GRADE 60 REINFORCING STEEL.
 4. THE HEIGHT OF THE BLOCK (H) SHALL BE LESS THAN OR EQUAL TO HALF THE TRENCH DEPTH.
 5. THE PORTION OF THE RESTRAINING BARS EXPOSED TO SOIL SHALL BE COATED WITH TWO COATS OF BITUMASTIC MATERIAL.
 6. POLYETHYLENE SHEETING SHALL BE PLACED OVER MJ FITTINGS TO PREVENT DIRECT CONTACT BETWEEN CONCRETE AND THE FITTING.
 7. ALL BOLTS SHALL REMAIN FREE FOR THE CONCRETE THRUST BLOCK.

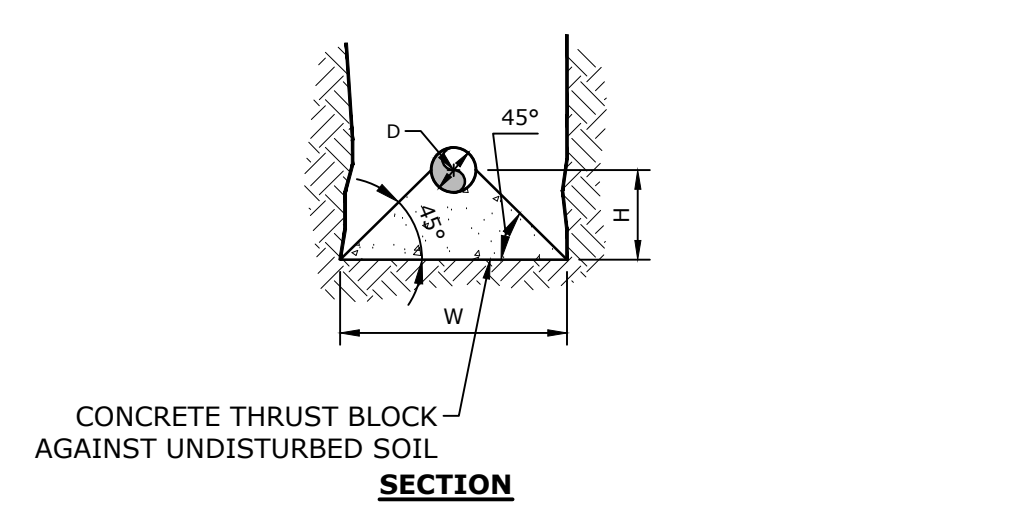
CONCRETE THRUST BLOCK
NO SCALE



DOWNWARD VERTICAL BEND



UPWARD VERTICAL BEND



SECTION

HORIZONTAL BENDS/TEES

PIPE SIZE(IN)	MIN DIM."L"(IN)	BEARING FACE(S.F.)
6" AND LESS	12"	5
8	16	10
10	20	15
12	20	21
16	24	40
18	24	48
20	30	60
24	30	85

PERMIT DRAWINGS
NOT FOR CONSTRUCTION

Delphi Brook Stream Crossing Replacement Project

Freehold Real Estate Management & Investment

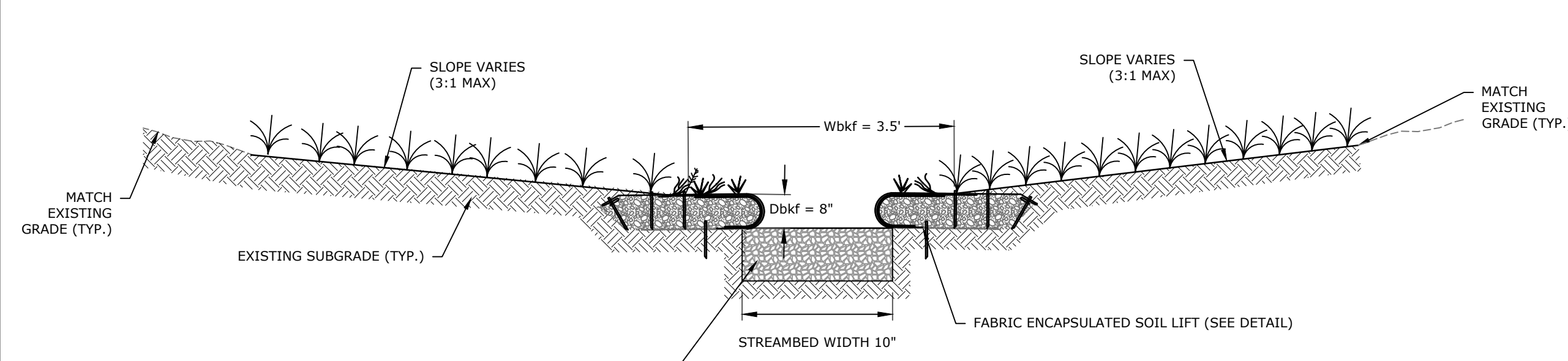
Wales, Massachusetts

MARK	DATE	DESCRIPTION

PROJECT NO: F5042-002
 DATE: FEBRUARY 3, 2023
 FILE: F5042-002-C-DTLS.dwg
 DRAWN BY: NSC
 CHECKED BY: TWB/JEC
 APPROVED BY: DPR/JEC

DETAILS SHEET
 SCALE: AS SHOWN
C-504
 SHEET 13 OF 14

Last Saved: 11/17/2023 10:46:47 AM By: NSC Tighe & Bond, Inc. 2023. All Rights Reserved. Projects: REMOTE/VAUTCAD_Delphi/Sheet\F5042-002-C-DTLS.dwg



12" DEEP NATURAL STREAMBED MATERIAL (NATIVE STREAMBED MATERIAL MAY BE SUBSTITUTED FOR NATURAL STREAMBED MATERIAL PENDING PRIOR REVIEW AND ACCEPTANCE BY ENGINEER DURING CONSTRUCTION)

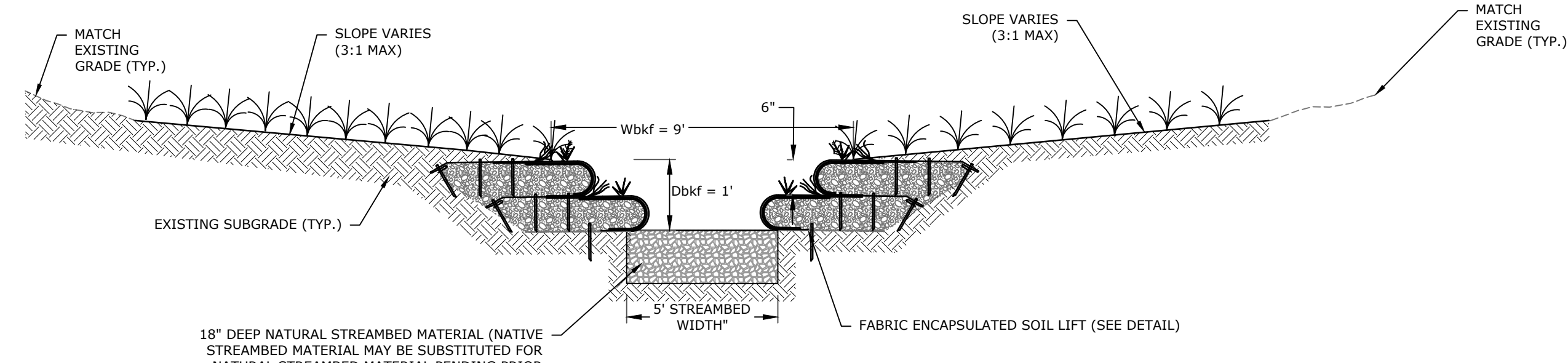
ABBREVIATIONS:
Dbkf = BANKFULL DEPTH
Wbkf = BANKFULL WIDTH
WSEL = WATER SURFACE ELEVATION

NATURAL STREAMBED MATERIAL:
NATURAL STREAMBED MATERIAL SHALL BE A SANDY GRAVELLY MIX INTERSPERSED WITH 2-4" COBBLE, MEETING THE FOLLOWING GRADATION:

SIZE (MM)	SIZE DISTRIBUTION	TYPE	
D16 15	MEAN 30.0	SILT/CLAY	0%
D35 21	DISPERSION 2.0	SAND	0%
D50 27	SKEWNESS 0.06	GRAVEL	86%
D65 35		COBBLE	14%
D84 60		BOULDER	0%
D95 86			

- NOTES:
- SEE GRADING DRAINAGE & EROSION CONTROL PLAN SHEETS FOR EROSION CONTROL BLANKET TYPE AND LOCATION.
 - SEE WETLAND PLANTING PLAN SHEETS FOR TYPE AND LOCATION OF PLANTS.
 - ALL AREAS TO BE PLANTED SHALL ALSO RECEIVE 8" OF LOAM AND SEED.

TYPICAL STREAM SECTION - WELLHOUSE CROSSING
NO SCALE



18" DEEP NATURAL STREAMBED MATERIAL (NATIVE STREAMBED MATERIAL MAY BE SUBSTITUTED FOR NATURAL STREAMBED MATERIAL PENDING PRIOR REVIEW AND ACCEPTANCE BY ENGINEER DURING CONSTRUCTION)

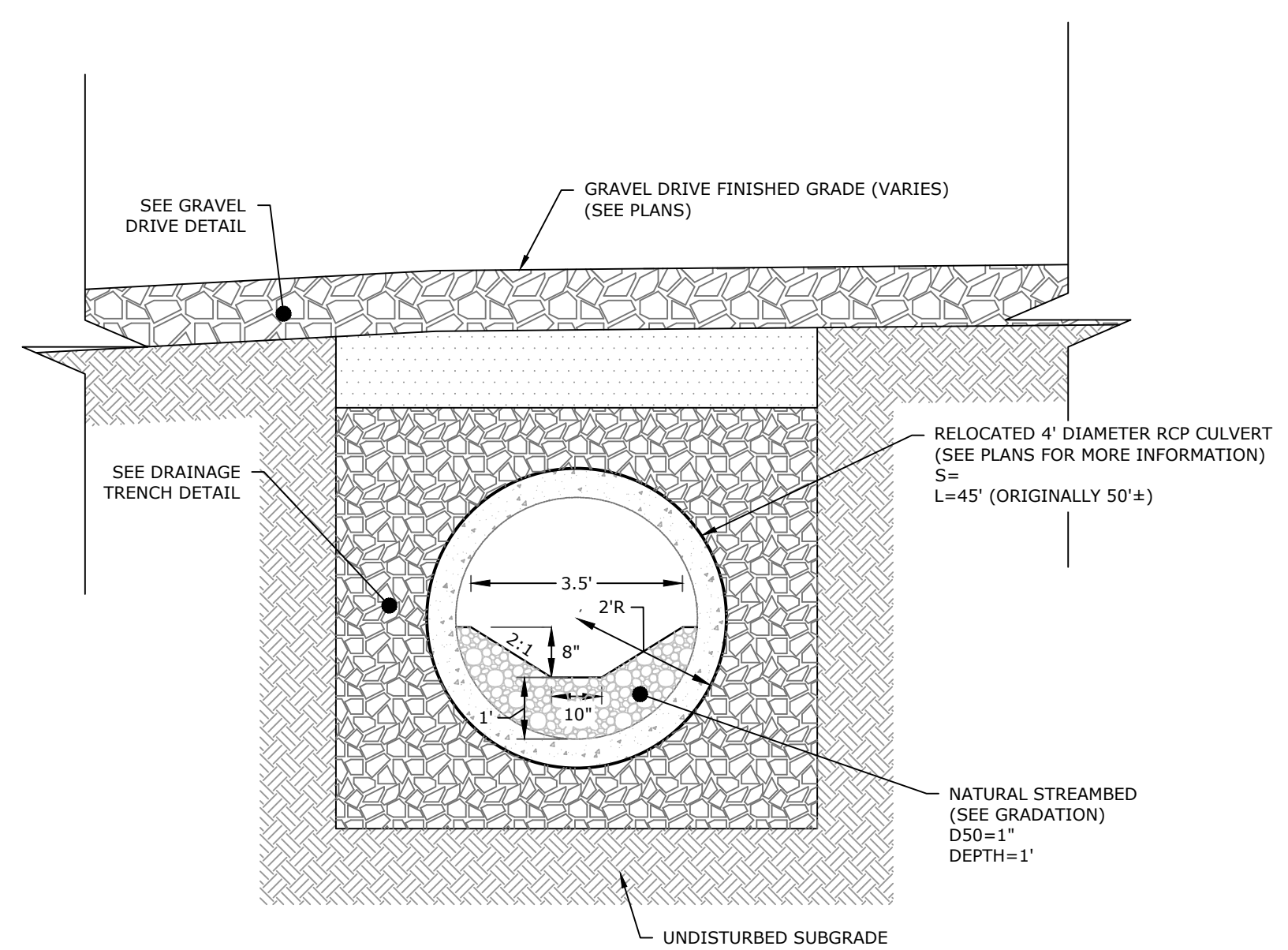
ABBREVIATIONS:
Dbkf = BANKFULL DEPTH
Wbkf = BANKFULL WIDTH
WSEL = WATER SURFACE ELEVATION

NATURAL STREAMBED MATERIAL:
NATURAL STREAMBED MATERIAL SHALL BE A SANDY GRAVELLY MIX INTERSPERSED WITH 2-4" COBBLE, MEETING THE FOLLOWING GRADATION:

SIZE (MM)	SIZE DISTRIBUTION	TYPE	
D16 16	MEAN 32.5	SILT/CLAY	0%
D35 32	DISPERSION 2.1	SAND	0%
D50 27	SKEWNESS 0.10	GRAVEL	83%
D65 36		COBBLE	17%
D84 66		BOULDER	0%
D95 88			

- NOTES:
- SEE GRADING DRAINAGE & EROSION CONTROL PLAN SHEETS FOR EROSION CONTROL BLANKET TYPE AND LOCATION.
 - SEE WETLAND PLANTING PLAN SHEETS FOR TYPE AND LOCATION OF PLANTS.
 - ALL AREAS TO BE PLANTED SHALL ALSO RECEIVE 8" OF LOAM AND SEED.

TYPICAL STREAM SECTION - HEMLOCK CROSSING
NO SCALE



WELLHOUSE STREAM CROSSING SIMULATION

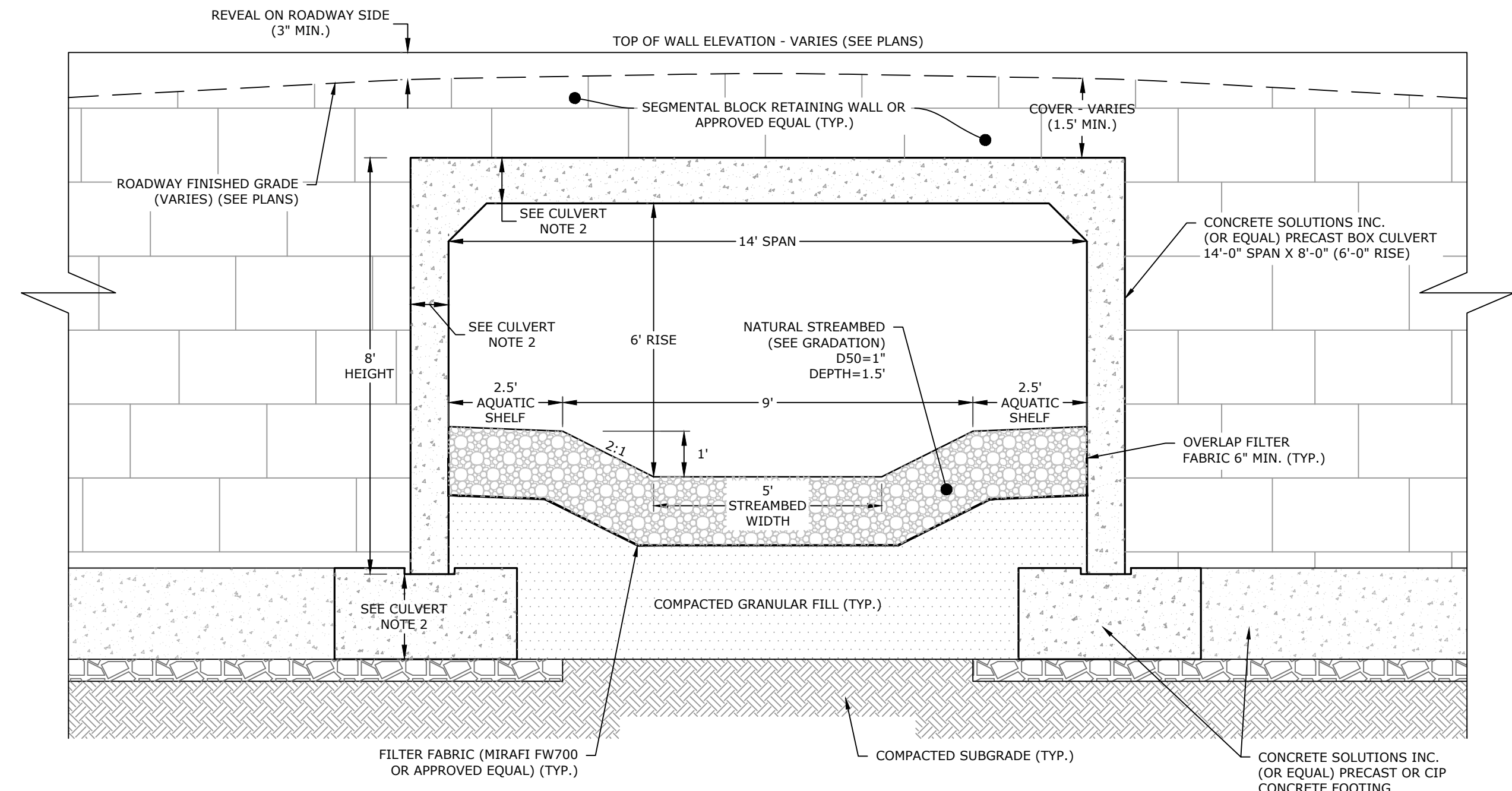
CULVERT NOTES:

- THE PRECAST CONCRETE CULVERT, HEADWALLS, WINGWALLS AND FOUNDATION SHALL BE BY CONCRETE SYSTEMS, INC OR APPROVED EQUAL.
- THE DESIGN OF THE CULVERT, HEADWALLS, WINGWALLS AND FOUNDATION SHALL BE IN ACCORDANCE WITH THE "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" MASSACHUSETTS DEPARTMENT OF TRANSPORTATION (MASSDOT) 2022 EDITION, THE AMERICAN ASSOCIATION OF STATE TRANSPORTATION OFFICIALS (AASHTO) AND THE MANUFACTURER'S SPECIFICATIONS.
- THE STRUCTURE SHALL BE DESIGNED AND CONSTRUCTED TO WITHSTAND AASHTO HS-20-44 LOADING.
- THE DESIGN OF THE PRECAST CONCRETE CULVERT, HEADWALLS, WINGWALLS AND FOUNDATION SHALL BE PROVIDED BY THE CONTRACTOR AND SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION. THE DESIGN AND SUBMITTAL SHALL INCLUDE THE FOLLOWING REQUIREMENTS:
A. THE DESIGN SHALL INCLUDE DETAILED COMPUTATIONS AND ALL DETAILS, DIMENSIONS, QUANTITIES AND CROSS SECTIONS NECESSARY TO CONSTRUCT THE STRUCTURE.
B. THE DESIGN SHALL CONFORM TO ALL OF THE REQUIREMENTS NOTED ABOVE. IN THE EVENT THAT TWO OR MORE SPECIFICATIONS APPLY TO THE WORK, THE MOST STRINGENT REQUIREMENTS SHALL GOVERN.
C. THE DESIGN PLANS SHALL BE ON 22"x34" PLANS WITH THE PROJECT NAME, NUMBER AND DESIGN FIRM NOTED.
D. THE DESIGN SHALL INCLUDE ALL BEDDING, BACKFILL AND INSTALLATION PROCEDURES.
E. THE DESIGN SHALL INCLUDE A SCOUR ANALYSIS OF THE PROPOSED STREAM CROSSING AS PART OF THE FOUNDATION DESIGN.
F. ALL PLANS AND COMPUTATIONS SHALL BE PREPARED, STAMPED AND SIGNED BY A MASSACHUSETTS LICENSED PROFESSIONAL ENGINEER.
- THE DESIGN ENGINEER FOR THE PRECAST CONCRETE CULVERT, HEADWALLS, WINGWALLS AND FOUNDATION SHALL PERFORM SUFFICIENT INSPECTIONS DURING CONSTRUCTION TO CERTIFY THAT THE INSTALLATION IS IN ACCORDANCE WITH THE DESIGN PLANS AND SPECIFICATIONS.

TEMPORARY WATER CONTROL AND DEWATERING NOTES:

- THE CONTRACTOR SHALL PROVIDE, OPERATE AND MAINTAIN ADEQUATE PUMPING, DIVERSION AND DRAINAGE FACILITIES TO MAINTAIN THE EXCAVATED AREA SUFFICIENTLY DRY FROM GROUNDWATER AND/OR SURFACE RUNOFF SO AS NOT TO ADVERSELY AFFECT CONSTRUCTION PROCEDURES NOR CAUSE EXCESSIVE DISTURBANCE OF UNDERLYING OR SURROUNDING NATURAL AREAS.
- THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS REQUIRED FOR DE-WATERING ACTIVITIES AND TAKE ACTIONS NECESSARY TO ENSURE THAT DE-WATERING DISCHARGES COMPLY WITH PERMITS APPLICABLE TO THE PROJECT. THE CONTRACTOR SHALL DISPOSE OF WATER FROM THE TRENCHES AND EXCAVATIONS IN SUCH A MANNER AS TO AVOID PUBLIC NUISANCE, INJURY TO PUBLIC HEALTH OR THE ENVIRONMENT, DAMAGE TO PUBLIC OR PRIVATE PROPERTY, OR DAMAGE TO THE WORK COMPLETED OR IN PROGRESS.
- THE CONTRACTOR SHALL BRACE OR OTHERWISE PROTECT PIPELINES AND STRUCTURES NOT STABLE AGAINST UPLIFT DURING CONSTRUCTION.
- THE CONTRACTOR SHALL NOT EXCAVATE UNTIL THE DE-WATERING SYSTEM IS OPERATIONAL AND THE EXCAVATION MAY PROCEED WITHOUT DISTURBANCE TO THE FINAL SUBGRADE OR SURROUNDING AREAS.
- THE CONTRACTOR SHALL CONTINUE DE-WATERING UNINTERRUPTED UNTIL THE STRUCTURES, PIPES AND APPURTENANCES TO BE INSTALLED HAVE BEEN COMPLETED SUCH THAT THEY WILL NOT FLOAT OR BE OTHERWISE DAMAGED BY AN INCREASE IN GROUNDWATER ELEVATION.
- DE-WATERING DISCHARGE:
A. INSTALL SAND AND GRAVEL, OR CRUSHED STONE, FILTERS IN CONJUNCTION WITH SUMPS, WELL POINTS, AND/OR DEEP WELLS TO PREVENT THE MIGRATION OF FINES FROM THE

STREAM CROSSING SIMULATIONS
NO SCALE



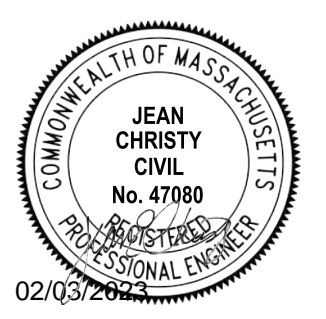
HEMLOCK STREAM CROSSING SIMULATION

EXISTING SOIL DURING THE DE-WATERING OPERATION.

- WATER PUMPED FROM EXCAVATIONS MUST BE PASSED THROUGH A SILT FILTER BAG OR OTHER SUCH BEST MANAGEMENT PRACTICE (BMP) FEATURE PRIOR TO BEING DISCHARGED BACK TO A SURFACE WATER BODY.
- DO NOT DISCHARGE WATER INTO ANY SANITARY SEWER SYSTEM.
- ALL DE-WATERING DISCHARGES SHALL BE OUTSIDE OF ANY WETLAND SYSTEMS.
- FOLLOWING TREATMENT IN AN APPROPRIATE BMP, WATER PUMPED FROM EXCAVATIONS SHOULD GENERALLY BE DISCHARGED ON THE DOWNSTREAM SIDE OF THE WORK AREA.
- THE DISCHARGE AREA FOR THE PUMP OR SIPHON OUTLET MUST BE PROPERLY PROTECTED TO PREVENT EROSION BY HIGH VELOCITY FLOW.
- DISCHARGE FLOW VELOCITY FROM PUMPS OR SIPHONS OVER UNPROTECTED, VEGETATED GROUND MUST NOT EXCEED A MAXIMUM OF 1 FOOT PER SECOND. DISCHARGE FLOW VELOCITY FROM PUMPS OR SIPHONS WITHIN THE UNPROTECTED NATURAL STREAM CHANNEL SHALL NOT EXCEED A MAXIMUM OF 3 FEET PER SECOND. IN THE EVENT EROSION RESULTS FROM VELOCITIES OF THE MAGNITUDES, THE CONTRACTOR SHALL TAKE STEPS TO MITIGATE THE EROSION OR SHALL REDUCE DISCHARGE FLOW VELOCITY.
- THE CONTRACTOR SHALL INSTALL TEMPORARY COFFERDAMS AS REQUIRED. THE EXACT CONSTRUCTION DETAILS OF THE COFFERDAM SHALL BE DETERMINED BY THE CONTRACTOR PERFORMING THE WORK.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY WATER CONTROL, SURFACE WATER AND GROUNDWATER, NECESSARY TO EXECUTE AND COMPLETE THE WORK, SUBJECT TO THE RESTRICTIONS CONTAINED IN THE PROJECT PERMITS.
- ALL TEMPORARY WATER CONTROL MEASURES SHALL BE IMPLEMENTED IN CONJUNCTION WITH APPROPRIATE SEDIMENT AND EROSION CONTROL MEASURES SO AS TO MITIGATE TO THE GREATEST EXTENT POSSIBLE RELEASE OF SEDIMENT INTO WATER BODIES AND POTENTIAL EROSION OF SOIL.
- PUMPS OR GENERATORS WHICH UTILIZE LIQUID FUEL MUST BE PLACED WITHIN AN IMPERMEABLE SECONDARY CONTAINMENT AREA WITH SUFFICIENT CAPACITY TO CONTAIN THE FULL VOLUME OF THE FUEL TANK.
- PUMP OR SIPHON INTAKES SHALL BE PLACED SUCH THAT SEDIMENT AND DEBRIS ENTRAINMENT IS MINIMIZED.
- THE TEMPORARY COFFERDAM SHALL NOT BE CONSTRUCTED OF UNCONTAINED FILL (SOIL, ROCK, OR ANY OTHER LOOSE MATERIAL). THESE TYPES OF COFFERDAMS ARE SPECIFICALLY DISALLOWED FOR ENVIRONMENTAL PROTECTION REASONS.

CONSTRUCTION SEQUENCE FOR STREAM CROSSING:

- IF PRACTICAL, ALL STREAM CROSSING WORK SHALL OCCUR DURING LOW FLOW PERIODS OF THE BROOK.
- INSTALL ALL EROSION AND SEDIMENT CONTROL BARRIERS AS FIRST ORDER OF WORK.
- CONSTRUCT THE PROPOSED STREAM CHANNEL.
- CONSTRUCT ANY REQUIRED COFFERDAMS AND/OR DE-WATERING PRACTICES REQUIRED FOR THE CONSTRUCTION OF THE PRECAST CONCRETE CULVERT, HEADWALLS, WINGWALLS AND FOUNDATION.
- CONSTRUCT THE PRECAST CONCRETE CULVERT, HEADWALLS, WINGWALLS AND FOUNDATION AND REMOVE ANY COFFERDAMS AND/OR DE-WATERING MEASURES.
- CONSTRUCT THE FINAL GRADING ABOVE AND ADJACENT TO THE STREAM CROSSING.
- WHEN THE AREA IS COMPLETELY STABILIZED, REMOVE THE EROSION AND SEDIMENT CONTROL BARRIERS.



PERMIT DRAWINGS
NOT FOR CONSTRUCTION

Delphi Brook Stream Crossing Replacement Project

Freehold Real Estate Management & Investment

Wales, Massachusetts

MARK	DATE	DESCRIPTION

PROJECT NO:	F5042-002
DATE:	FEBRUARY 3, 2023
FILE:	F5042-002-C-DTLS.dwg
DRAWN BY:	NSC
CHECKED BY:	TWB/JEC
APPROVED BY:	DPR/JEC

DETAILS SHEET

SCALE: AS SHOWN

C-505
SHEET 14 OF 14

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APPENDIX C

Photographic Log

Appendix C - Photographic Log

Client: Freehold Real Estate Management. **Job Number:** F-5042-002
Delphi Brook Stream Crossing Replacement Project
Site: 199 Stafford Road, Wales, Massachusetts

Photograph No.: 1	Date: 7/22/2021	Direction Taken: North
Description: View of the Project Site where Hemlock Lane crosses Delphi Brook.		
		

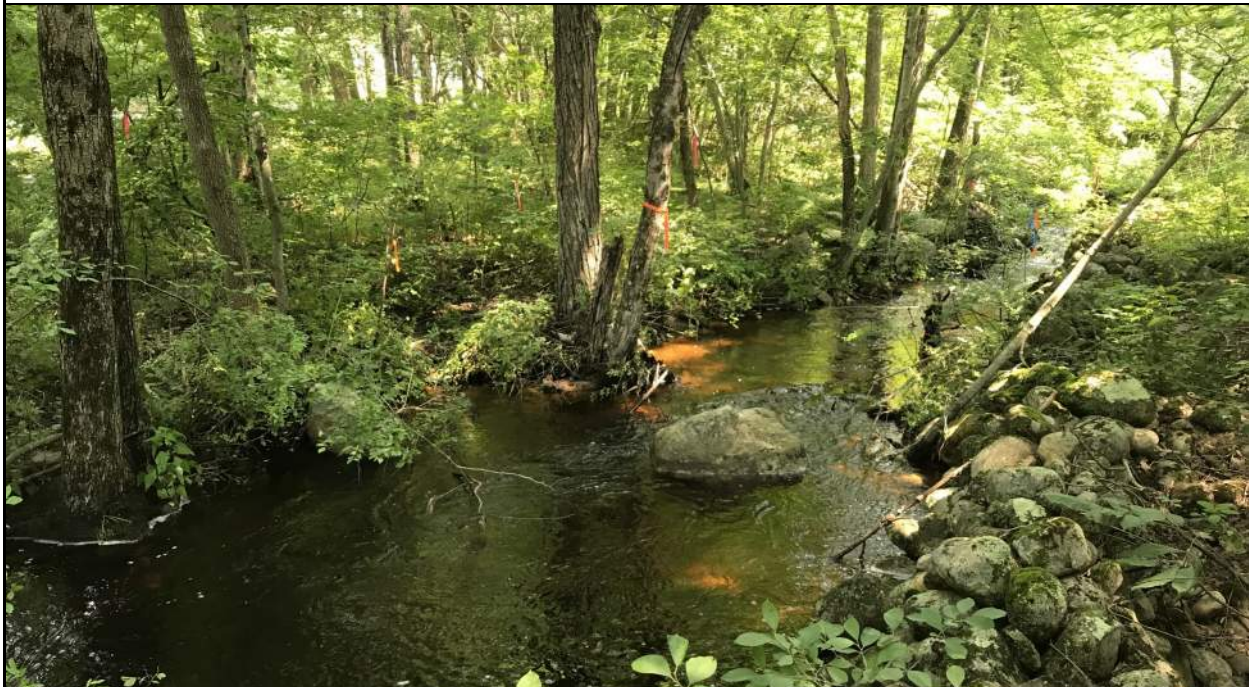
Photograph No.: 2	Date: 7/22/2021	Direction Taken: West
Description: View downstream of Delphi Brook from Hemlock Lane.		
		

Appendix C - Photographic Log

Client: Freehold Real Estate Management. **Job Number:** F-5042-002
Delphi Brook Stream Crossing Replacement Project
Site: 199 Stafford Road, Wales, Massachusetts

Photograph No.: 3	Date: 7/22/2021	Direction Taken: East
--------------------------	------------------------	------------------------------

Description: View upstream of Delphi Brook towards Hemlock Lane and BVW 1C and 1D.



Photograph No.: 4	Date: 7/22/2021	Direction Taken: East
--------------------------	------------------------	------------------------------

Description: View upstream of Delphi Brook from Hemlock Lane and BVW 1E.



Appendix C - Photographic Log

Client: Freehold Real Estate Management. **Job Number:** F-5042-002
Delphi Brook Stream Crossing Replacement Project
Site: 199 Stafford Road, Wales, Massachusetts

Photograph No.: 5	Date: 7/22/2021	Direction Taken: West
--------------------------	------------------------	------------------------------

Description: View of the Project Site where the access road crosses the unnamed perennial stream.



Photograph No.: 6	Date: 7/22/2021	Direction Taken: South
--------------------------	------------------------	-------------------------------

Description: View upstream of the unnamed perennial stream from the access road and BVW 4D.



Appendix C - Photographic Log

Client: Freehold Real Estate Management. **Job Number:** F-5042-002
Delphi Brook Stream Crossing Replacement Project
Site: 199 Stafford Road, Wales, Massachusetts

Photograph No.: 7	Date: 7/22/2021	Direction Taken: Southeast
--------------------------	------------------------	-----------------------------------

Description: View upstream of the unnamed perennial stream towards the access road and BVW 4E.



Photograph No.: 8	Date: 7/22/2021	Direction Taken: Northwest
--------------------------	------------------------	-----------------------------------

Description: View of BVW 4C.



Appendix C - Photographic Log

Client: Freehold Real Estate Management. **Job Number:** F-5042-002
Delphi Brook Stream Crossing Replacement Project
Site: 199 Stafford Road, Wales, Massachusetts

Photograph No.: 9	Date: 7/22/2021	Direction Taken: Southwest
Description: View of BVW 4D.		
		

Photograph No.: 10	Date: 7/22/2021	Direction Taken: Southwest
Description: View of BVW 4E. Concrete and wood debris are visible in the background.		
		

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APPENDIX D

USGS StreamStats Report

FEMA FIRM

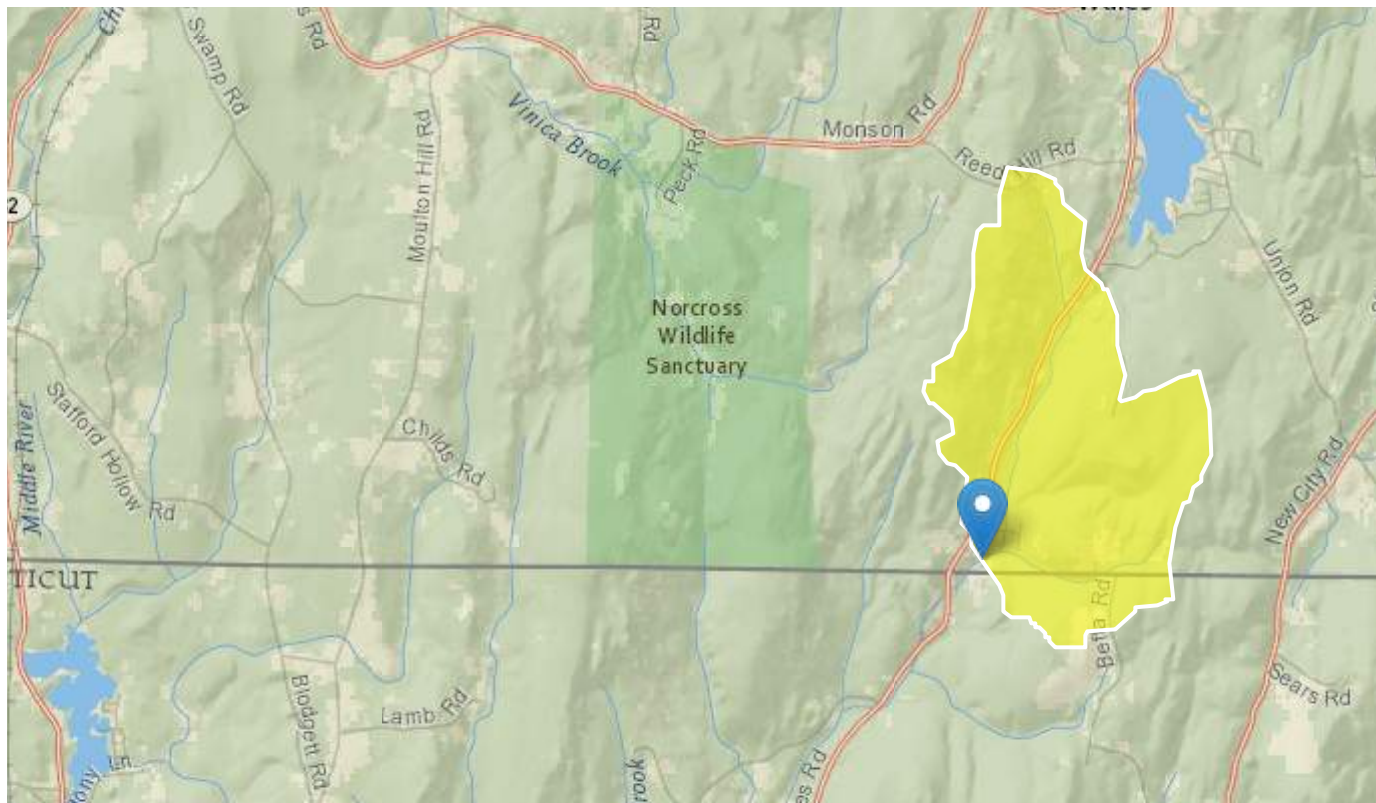
StreamStats Report - Delphi Brook at Hemlock Lane (Wales, Massachusetts)

Region ID: MA

Workspace ID: MA20210924183431354000

Clicked Point (Latitude, Longitude): 42.03226, -72.23856

Time: 2021-09-24 14:34:51 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	1.55	square miles
ELEV	Mean Basin Elevation	1030	feet
LC06STOR	Percentage of water bodies and wetlands determined from the NLCD 2006	3.39	percent
BSLDEM250	Mean basin slope computed from 1:250K DEM	5.93	percent

Parameter Code	Parameter Description	Value	Unit
DRFTPERSTR	Area of stratified drift per unit of stream length	0.0183	square mile per mile
MAREGION	Region of Massachusetts 0 for Eastern 1 for Western	0	dimensionless
BSLDEM10M	Mean basin slope computed from 10 m DEM	10.948	percent
PCTSNDGRV	Percentage of land surface underlain by sand and gravel deposits	4.33	percent
FOREST	Percentage of area covered by forest	74.65	percent
ACRSDFE	Area underlain by stratified drift	0.0982	square miles
CAT1ROADS	Length of interstates lmtd access highways and ramps for lmtd access highways, includes cloverleaf interchanges (USGS Ntl Transp Dataset)	0	miles
CAT2ROADS	Length of sec hwy or maj connecting roads; main arteries & hwys not lmtd access, usually in the US Hwy or State Hwy systems (USGS Ntl Transp Dataset)	0	miles
CAT3ROADS	Length of local connecting roads; roads that collect traffic from local roads & connect towns, subdivisions & neighborhoods (USGS Nat Transp Dataset)	1.3	miles
CAT4ROADS	Length of local roads; generally paved street, road, or byway that usually have single lane of traffic in each direction (USGS Ntl Transp Dataset)	4.23	miles
CENTROIDX	Basin centroid horizontal (x) location in state plane coordinates	139429.8	meters
CENTROIDY	Basin centroid vertical (y) location in state plane units	865824.1	meters
CROSCOUNT1	Number of intersections between streams and roads, where the roads are interstate, limited access highway, or ramp (CAT1ROADS)	0	dimensionless
CROSCOUNT2	Number of intersections between streams and roads, where the roads are secondary highway or major connecting road (CAT2ROADS)	0	dimensionless
CROSCOUNT3	Number of intersections between streams and roads, where roads are local connecting roads (CAT3ROADS)	4	dimensionless

Parameter Code	Parameter Description	Value	Unit
CROSCOUNT4	Number of intersections between streams and roads, where roads are local roads (CAT4ROADS)	6	dimensionless
CRSDFT	Percentage of area of coarse-grained stratified drift	4.33	percent
CSL10_85	Change in elevation divided by length between points 10 and 85 percent of distance along main channel to basin divide - main channel method not known	93.6	feet per mi
LAKEAREA	Percentage of Lakes and Ponds	0.55	percent
LC11DEV	Percentage of developed (urban) land from NLCD 2011 classes 21-24	7.44	percent
LC11IMP	Average percentage of impervious area determined from NLCD 2011 impervious dataset	0.65	percent
LFPLENGTH	Length of longest flow path	2.15	miles
MAXTEMPC	Mean annual maximum air temperature over basin area, in degrees Centigrade	13.3	degrees C
OUTLETX	Basin outlet horizontal (x) location in state plane coordinates	138845	feet
OUTLETY	Basin outlet vertical (y) location in state plane coordinates	864915	feet
PRECPRI00	Basin average mean annual precipitation for 1971 to 2000 from PRISM	49.6	inches
STRMTOT	total length of all mapped streams (1:24,000-scale) in the basin	5.36	miles
WETLAND	Percentage of Wetlands	4.13	percent

Peak-Flow Statistics Parameters [Peak Statewide 2016 5156]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.55	square miles	0.16	512
ELEV	Mean Basin Elevation	1030	feet	80.6	1948

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
LC06STOR	Percent Storage from NLCD2006	3.39	percent	0	32.3

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

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

Statistic	Value	Unit	PII	Plu	ASEp
50-percent AEP flood	85.1	ft ³ /s	42.3	171	42.3
20-percent AEP flood	146	ft ³ /s	71.5	298	43.4
10-percent AEP flood	197	ft ³ /s	94	413	44.7
4-percent AEP flood	273	ft ³ /s	126	594	47.1
2-percent AEP flood	338	ft ³ /s	150	761	49.4
1-percent AEP flood	409	ft ³ /s	176	951	51.8
0.5-percent AEP flood	487	ft ³ /s	203	1170	54.1
0.2-percent AEP flood	602	ft ³ /s	238	1520	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	1.55	square miles	1.61	149
BSLDEM250	Mean Basin Slope from 250K DEM	5.93	percent	0.32	24.6
DRFTPERSTR	Stratified Drift per Stream Length	0.0183	square mile per mile	0	1.29
MAREGION	Massachusetts Region	0	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	0.0738	ft ³ /s
7 Day 10 Year Low Flow	0.0269	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	1.55	square miles	1.61	149
DRFTPERSTR	Stratified Drift per Stream Length	0.0183	square mile per mile	0	1.29
MAREGION	Massachusetts Region	0	dimensionless	0	1
BSLDEM250	Mean Basin Slope from 250K DEM	5.93	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	1.49	ft ³ /s
60 Percent Duration	0.93	ft ³ /s
70 Percent Duration	0.453	ft ³ /s
75 Percent Duration	0.325	ft ³ /s
80 Percent Duration	0.258	ft ³ /s

Statistic	Value	Unit
85 Percent Duration	0.188	ft ³ /s
90 Percent Duration	0.131	ft ³ /s
95 Percent Duration	0.0747	ft ³ /s
98 Percent Duration	0.044	ft ³ /s
99 Percent Duration	0.031	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/>)

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

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.55	square miles	1.61	149
BSLDEM250	Mean Basin Slope from 250K DEM	5.93	percent	0.32	24.6
DRFTPERSTR	Stratified Drift per Stream Length	0.0183	square mile per mile	0	1.29
MAREGION	Massachusetts Region	0	dimensionless	0	1

August 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

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

Statistic	Value	Unit
August 50 Percent Duration	0.187	ft ³ /s

August 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	1.55	square miles	0.6	329
BSLDEM10M	Mean Basin Slope from 10m DEM	10.948	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	1.55	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	1.55	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	1.55	square miles	0.07722	59927.7393

Bankfull Statistics Flow Report [Bankfull Statewide SIR2013 5155]

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

Statistic	Value	Unit	ASEp
Bankfull Width	19.3	ft	21.3
Bankfull Depth	1.14	ft	19.8
Bankfull Area	21.8	ft^2	29
Bankfull Streamflow	71.8	ft^3/s	55

Bankfull Statistics Flow Report [Appalachian Highlands D Bieger 2015]

Statistic	Value	Unit
Bieger_D_channel_width	18.2	ft
Bieger_D_channel_depth	1.27	ft

Statistic	Value	Unit
Bieger_D_channel_cross_sectional_area	23.5	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	28.6	ft
Bieger_P_channel_depth	1.51	ft
Bieger_P_channel_cross_sectional_area	43.3	ft ²

Bankfull Statistics Flow Report [USA Bieger 2015]

Statistic	Value	Unit
Bieger_USA_channel_width	14.4	ft
Bieger_USA_channel_depth	1.32	ft
Bieger_USA_channel_cross_sectional_area	21.7	ft ²

Bankfull Statistics Flow Report [Area-Averaged]

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

Statistic	Value	Unit	ASEp
Bankfull Width	19.3	ft	21.3
Bankfull Depth	1.14	ft	19.8
Bankfull Area	21.8	ft ²	29
Bankfull Streamflow	71.8	ft ³ /s	55
Bieger_D_channel_width	18.2	ft	
Bieger_D_channel_depth	1.27	ft	
Bieger_D_channel_cross_sectional_area	23.5	ft ²	
Bieger_P_channel_width	28.6	ft	
Bieger_P_channel_depth	1.51	ft	
Bieger_P_channel_cross_sectional_area	43.3	ft ²	

Statistic	Value	Unit	ASEp
Bieger_USA_channel_width	14.4	ft	
Bieger_USA_channel_depth	1.32	ft	
Bieger_USA_channel_cross_sectional_area	21.7	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_can)

Probability Statistics Parameters [Perennial Flow Probability]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.55	square miles	0.01	1.99
PCTSNDGRV	Percent Underlain By Sand And Gravel	4.33	percent	0	100
FOREST	Percent Forest	74.65	percent	0	100
MAREGION	Massachusetts Region	0	dimensionless	0	1

Probability Statistics Flow Report [Perennial Flow Probability]

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

Statistic	Value	Unit	PC
Probability Stream Flowing Perennially	0.825	dim	71

Probability Statistics Citations

Bent, G.C., and Steeves, P.A.,2006, A revised logistic regression equation and an automated procedure for mapping the probability of a stream flowing perennially in Massachusetts: U.S. Geological Survey Scientific Investigations Report 2006–5031, 107 p. (http://pubs.usgs.gov/sir/2006/5031/pdfs/SIR_2006-5031rev.pdf)

USGS Data Disclaimer: Unless otherwise stated, all data, metadata and related materials are considered to satisfy the quality standards relative to the purpose for which the data were collected. Although these data and associated metadata have been reviewed for accuracy and completeness and approved for release by the U.S. Geological Survey (USGS), no warranty expressed or implied is made regarding the display or utility of the data for other purposes, nor on all computer systems, nor shall the act of distribution constitute any such warranty.

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USGS Product Names Disclaimer: Any use of trade, firm, or product names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

Application Version: 4.6.2

StreamStats Services Version: 1.2.22

NSS Services Version: 2.1.2

National Flood Hazard Layer FIRMette



72°14'37"W 42°2'19"N



0 250 500 1,000 1,500 2,000 Feet 1:6,000 72°14'W 42°1'53"N
 Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

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

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
		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 Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
		Area with Flood Risk due to Levee Zone D

OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
		Area of Undetermined Flood Hazard Zone D

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
OTHER FEATURES		Coastal Transect Baseline
		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 **9/27/2021 at 10:58 AM** 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.

APPENDIX E

Abutter Notification Information

WALES, MA

Grantee	Co grantee-s Name	Mailing Address	City	St Zip	Location
JORCROSS WILDLIFE FOUNDATION I		325 WEST 89TH ST.	NEW YORK	NY 10024	48 AINSWORTH HILL RD
STEBBINS DAVID A	& MELISSA D	157 STAFFORD RD	WALES	MA 01081	157 STAFFORD RD
WALKER MICHAEL	DAVIS ASHLEY M	159 STAFFORD RD	WALES	MA 01081	159 STAFFORD RD
BESAW RONALD	BESAW CRYSTAL	161 STAFFORD RD	WALES	MA 01081	161 STAFFORD RD
TOWN OF WALES		3 HOLLOW ROAD	WALES	MA 01081	163 STAFFORD RD
MASARANO, CAROLYN J.		192 STAFFORD RD	WALES	MA 01081	192 STAFFORD RD
MEMERS DAVID		194 STAFFORD RD	WALES	MA 01081	194 STAFFORD RD
HUGHES STEVEN + TAMMY		196 STAFFORD ROAD	WALES	MA 01081	196 STAFFORD RD
JEVINE GWENDOLYN J TRUSTEE	OF GJL RNL NOM. TRUST	198 STAFFORD RD	WALES	MA 01081	198 STAFFORD RD
WIATER JOHN	C/O WIATER, JOHN TRUSTEE	200 STAFFORD RD	WALES	MA 01081	200 STAFFORD RD
JORCROSS WILDLIFE FOUNDATION,		325 WEST 89TH STREET,	NEW YORK	NY 10024	202 STAFFORD RD
BIVNER, LEON	THEODORE, ELIZABETH M	204 STAFFORD RD	WALES	MA 01081	204 STAFFORD RD
BANGS BENJAMIN D	& SALVEZ ZUMMALINA Y	206 STAFFORD ROAD	WALES	MA 01081	206 STAFFORD RD
BOLDUC WILLIAM J	& KAREN A	210 STAFFORD RD	WALES	MA 01081	210 STAFFORD RD
ALTMORE PHILIP & NANCY	TR OF THE ALTOMARE FAM TR 2020	220 STAFFORD RD	WALES	MA 01081	220 STAFFORD RD
PHIFER PAMELA J		223 STAFFORD RD	WALES	MA 01081	223 STAFFORD RD
HELLYAR RUDOLPH M	& DICKINSON KELLY R	P.O. BOX 273	WALES	MA 01081	225 STAFFORD RD

MAY 10, 2022

ABUTTERS FOR TIGHE & BOND FOR 199 STAFFORD ROAD, WALES MA 01081

ABOVE PERSONS LISTED ARE RECORD OWNERS AS OF JANUARY 1, 2022.
ASSESSORS ARE NOT RESPONSIBLE FOR ERRORS OR OMISSIONS.

-RE: C808 ACTS & RESOLVES VOL. 1, 1975

CERTIFIED COPY

Notification to Abutters

By Hand Delivery, Certified Mail (return receipt requested), or Certificates of Mailing

This is a notification required by law. You are receiving this notification because you have been identified as the owner of land abutting another parcel of land for which certain activities are proposed. Those activities require a permit under the Massachusetts Wetlands Protection Act (M.G.L. c. 131, § 40).

In accordance with the second paragraph of the Massachusetts Wetlands Protection Act, and 310 CMR 10.05(4)(a) of the Wetlands Regulations, you are hereby notified that:

- A. A Notice of Intent was filed with the Wales Conservation Commission on April 5, 2023 seeking permission to remove, fill, dredge, or alter an area subject to protection under M.G.L. c. 131 §40. The following is a description of the proposed activity/activities:

The project involves replacing the culverts within the property where Delphi Brook crosses under Hemlock Lane, and where a tributary of Delphi Brook crosses under a service road to the property's wellhouse. The proposed stream crossings will be designed to meet the criteria of the Massachusetts River and Stream Crossing Standards to the maximum extent practicable. The overall objective of the project is to improve the stream continuity and the surrounding wetland resource areas.

- B. The name of the applicant is: Freehold Real Estate Management.
- C. The address of the land where the activity is proposed is: 199 Stafford Road, Wales, MA 01081 (Map 22, Parcel 199).
- D. Copies of the Notice of Intent may be examined or obtained at the office of the Wales Conservation Commission, located at 3 Hollow Road in Wales. The regular business hours of the Commission are Monday, Tuesday, and Thursday, from 8:00 a.m. to 2:45 p.m. The Commission may be reached at (413) 245-7571, ext. 108.
- E. Copies of the Notice of Intent may be obtained from the applicant's representative by calling Katy Wilkins, Project Manager with Tighe & Bond, at (413) 875-1305.
- F. Information regarding the date, time, and location of the public hearing regarding the Notice of Intent may be obtained from the Wales Conservation Commission. Notice of the public hearing will be published at least five business days in advance, in *The Journal Register*.

Notification provided pursuant to the above requirement does not automatically confer standing to the recipient to request Departmental Action for the underlying matter. See 310 CMR 10.05(7)(a)4.

APPENDIX F

Unilateral Administrative Order



Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

Western Regional Office • 436 Dwight Street, Springfield MA 01103 • 413-784-1100

Charles D. Baker
Governor

Kathleen A. Theoharides
Secretary

Karyn E. Polito
Lieutenant Governor

Martin Suuberg
Commissioner

SENT ELECTRONICALLY AND VIA CERTIFIED AND REGULAR MAIL

Mark Asnes
Wales Village, LLC
80 Sherman Street
Norwich, Connecticut 06360
mark@freeholdre.com

May 20, 2019

RE: Violation of Massachusetts Wetlands Protection Act
- G. L. c. 131, § 40; and Massachusetts Clean
Waters Act - G.L. c. 21, §§ 26 through 53
UAO- 00007318
199 Stafford Road, Wales, MA

**THIS IS AN IMPORTANT NOTICE. FAILURE TO RESPOND TO THIS NOTICE COULD
RESULT IN SERIOUS LEGAL CONSEQUENCES.**

Dear Mr. Asnes:

The Massachusetts Department of Environmental Protection (hereinafter the "Department") is hereby notifying you of the issuance of Unilateral Administrative Order, UAO-00007318, for violations of the above-referenced statutes at 199 Stafford Road, Wales, Massachusetts.

MassDEP encourages you to review and follow the requirements of the attached documents. Failure to do so may subject you to further enforcement action. There is a right to appeal the attached document. Any appeal must be initiated as specifically set forth in each document. The Department retains its authority to pursue additional enforcement actions, including but not limited to the issuance of civil administrative penalties.

Should you have any questions relative to this matter, please contact me at 413-755-2138.

Sincerely,

David Cameron, PWS
Wetlands Program Chief

This information is available in alternate format. Contact Michelle Waters-Ekanem, Director of Diversity/Civil Rights at 617-292-5751.
TTY# MassRelay Service 1-800-439-2370
MassDEP Website: www.mass.gov/dep

Printed on Recycled Paper

Enclosure: Unilateral Administrative Order

Certified Mail #7018 0680 0000 8392 8022

W:\...Wales Village UAO-00007318 Letter.doc

cc: Wales Select Board
select@townofwales.net

Barbara H. Newman, Supervisor
Regulatory Division, Permits and Enforcement Branch A
United States Department of the Army
New England District, Corps of Engineers
Barbara.H.Newman@usace.army.mil

Christine Lebel, Chief Regional Counsel, DEP-OGC

Steven Ellis, Enforcement Coordinator, DEP-WERO



Massachusetts Department of Environmental Protection
One Winter Street, Boston MA 02108 • Phone: 617-292-5751

Communication For Non-English Speaking Parties - 310 CMR 1.03(5)(a)



1 English:

This document is important and should be translated immediately. If you need this document translated, please contact MassDEP's Diversity Director at the telephone numbers listed below.



2 Español (Spanish):

Este documento es importante y debe ser traducido inmediatamente. Si necesita este documento traducido, por favor póngase en contacto con el Director de Diversidad MassDEP a los números de teléfono que aparecen más abajo.



3 Português (Portuguese):

Este documento é importante e deve ser traduzida imediatamente. Se você precisa deste documento traduzido, por favor, entre em contato com Diretor de Diversidade da MassDEP para os números de telefone listados abaixo.



4(a) 中國 (傳統) (Chinese (Traditional)):

本文件非常重要，應立即翻譯。如果您需要翻譯這份文件，請用下面列出的電話號碼與MassDEP的多樣性總監聯繫。



4(b) 中国 (简体中文) (Chinese (Simplified)):

本文件非常重要，应立即翻译。如果您需要翻译这份文件，请用下面列出的电话号码与MassDEP的多样性总监联系。



5 Ayisyen (franse kreyòl) (Haitian) (French Creole):

Dokiman sa-a se yon bagay enpòtan epi yo ta dwe tradui imedyatman. Si ou bezwen dokiman sa a tradui, tanpri kontakte Divèsite Direktè MassDEP a nan nimewo telefòn ki nan lis pi ba a.



6 Việt (Vietnamese):

Tài liệu này là rất quan trọng và cần được dịch ngay lập tức. Nếu bạn cần dịch tài liệu này, xin vui lòng liên hệ với Giám đốc MassDEP đã dạng tại các số điện thoại được liệt kê dưới đây.



7 ប្រទេសកម្ពុជា (Kmer (Cambodian)):

ឯកសារនេះគឺមានសារៈសំខាន់និងគួរត្រូវបានបកប្រែភ្លាមៗ ប្រសិនបើអ្នកត្រូវបានបកប្រែ ឯកសារនេះសូមទំនាក់ទំនងឆ្នោតជំនាញក MassDEP នៅលេខទូរស័ព្ទដែលបានរាយខាងក្រោម។



8 Kriolu Kabuverdianu (Cape Verdean):

Es documento é importante e deve ser traduzido imidiatamente. Se bo precisa des documento traduzido, por favor contacta Director de Diversidade na MassDEP's pa es numero indicode li d'boche.



9 Русский язык (Russian):

Этот документ должен быть немедленно. Если вам нужна помощь при переводе, свяжитесь пожалуйста с директором по этике и разнообразие в MassDEP по телефону указанному ниже.

**10 العربية (Arabic):**

هذه الوثيقة الهامة وينبغي أن تترجم على الفور. اذا كنت بحاجة الى هذه الوثيقة المترجمة، يرجى الاتصال مدير التنوع في MassDEP على أرقام الهواتف المدرجة أدناه.

**11 한국어 (Korean):**

이 문서는 중요하고 즉시 번역해야 합니다. 당신이 번역이 문서가 필요하다면 아래의 전화 번호로 MassDEP의 다양성 감독에 문의하시기 바랍니다.

**12 հայերեն (Armenian):**

Այս փաստաթուղթը շատ կարևոր է եւ պետք է թարգմանել անմիջապես. Եթե Ձեզ անհրաժեշտ է այս փաստաթուղթը թարգմանվել դիմել MassDEP բարձրագույնությունը տնօրեն է հեռախոսահամարների թվարկված են ստորև.

**13 فارسی (Farsi [Persian]):**

این سند مهم است و باید فوراً ترجمه شده است. اگر شما نیاز به این سند ترجمه شده، لطفاً با ما تماس تنوع مدیر MassDEP در شماره تلفن های ذکر شده در زیر.

**14 Français (French):**

Ce document est important et devrait être traduit immédiatement. Si vous avez besoin de ce document traduit, s'il vous plaît communiquer avec le directeur de la diversité MassDEP aux numéros de téléphone indiqués ci-dessous.

**15 Deutsch (German):**

Dieses Dokument ist wichtig und sollte sofort übersetzt werden. Wenn Sie die Übersetzung von diesem Dokument benötigen, wenden Sie sich bitte bei der/dem Diversity Director MassDEP an die unten aufgeführte Telefonnummer.

**16 Ελληνική (Greek):**

Το έγγραφο αυτό είναι σημαντικό και θα πρέπει να μεταφραστούν αμέσως. Αν χρειάζεστε αυτό το έγγραφο μεταφράζεται, παρακαλούμε επικοινωνήστε Diversity Director MassDEP κατά τους αριθμούς τηλεφώνου που αναγράφεται πιο κάτω.

**17 Italiano (Italian):**

Questo documento è importante e dovrebbe essere tradotto immediatamente. Se avete bisogno di questo documento tradotto, si prega di contattare la diversità Direttore di MassDEP ai numeri di telefono elencati di seguito.

**18 Język Polski (Polish):**

Dokument ten jest ważny i powinien być natychmiast przetłumaczone. Jeśli potrzebujesz tego dokumentu tłumaczone, prosimy o kontakt z Dyrektorem MassDEP w różnorodności na numery telefonów wymienionych poniżej.

**19 हिन्दी (Hindi):**

यह दस्तावेज महत्वपूर्ण है और तुरंत अनुवाद किया जाना चाहिए. आप अनुवाद इस दस्तावेज की जरूरत है, नीचे सूचीबद्ध फोन नंबरों पर MassDEP की विविधता निदेशक से संपर्क करें.

**COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION**

In the matter of:

Wales Village, LLC
80 Sherman Street
Norwich, Connecticut 06360

**UNILATERAL
ADMINISTRATIVE ORDER**

Enforcement Number 00007318

I. THE PARTIES

1. The Massachusetts Department of Environmental Protection (“MassDEP” or “the Department”) is a duly constituted agency of the Commonwealth of Massachusetts established pursuant to M.G.L. c. 21A, §7. MassDEP has its principal office located at One Winter Street, Boston, Massachusetts 02108, and its Western Regional Office at 436 Dwight Street, Springfield, Massachusetts 01103.
2. Wales Village, LLC (“Wales Village”) is a Limited Liability Company with a mailing address of 80 Sherman Street, Norwich, Connecticut 06360. Wales Village is the owner of the property at 199 Stafford Road, Wales, Massachusetts.

II. STATEMENT OF FACTS AND LAW

3. The Department is charged with administration and enforcement of M.G.L. c. 131, § 40 (the Massachusetts Wetlands Protection Act) and the Department’s Wetlands Regulations at 310 CMR 10.00; and M.G.L. c. 21, §§ 26 through 53 (the Massachusetts Clean Waters Act) and the Department’s Regulations governing 401 Water Quality Certification for Discharge of Dredged or Fill Material, Dredging, and Dredged Material Disposal in Waters of the United States within the Commonwealth at 314 CMR 9.00. The Department’s authority to issue this Unilateral Administrative Order (“Order”) and to set deadlines for compliance is conferred by the foregoing and by M.G.L. c. 111, § 2C.
4. Wales Village holds no valid Wetlands Permit, Water Quality Certification or Emergency Certification under the statutes and regulations outlined above.
5. The following facts have led to the issuance of this Order:
 - A. Wales Village owns and operates the Brookside Village Mobile Home Park (“Brookside Village” and “Project Site” [as defined at 310 CMR 10.04]), located at 199 Stafford Road, Wales, Mass 01081.

- B. Wales Village retained an excavation contractor to commence replacement of a culvert beneath a roadway at the Project Site. Said culvert conveys Delphi Brook beneath the road.
 - C. Delphi Brook is a “river” [as defined at 310 CMR 10.58(2)(a)1.a.] and is also a designated cold-water fishery (as defined at 310 CMR 10.04). Delphi Brook is comprised of the Resource Areas (as defined at 310 CMR 10.04) “Bank” and “Land Under Waterbodies & Waterways” (as defined at 310 CMR 10.54(2) and 310 CMR 10.56(2), respectively). Moreover, Delphi Brook discharges to Staffordville Reservoir, a public drinking water supply (“PWS”) in Stafford Springs, Connecticut roughly 1.5 miles downstream of the Project Site.
 - D. On the evening of Thursday, May 16, 2019, the Department received a complaint alleging aberrant sedimentation of Delphi Brook at a location in Stafford Springs, Connecticut, roughly one mile downstream of the Project Site.
 - E. In response, on Thursday, May 16, 2019, the Department’s Emergency Response staff conducted an after-hours inspection and was able to readily determine that the cause of the aforementioned sedimentation was the result of construction activities at the Project Site.
 - F. During this inspection, Department staff observed the direct discharge of sediment into Delphi Brook. A corrugated steel culvert that channelized the brook under Hemlock Road at the Project Site was being replaced by a new concrete structure. The sidewalls of the stream channel where the culvert was being installed were not stabilized and soil was observed collapsing into the stream causing significant sedimentation to Delphi Brook. Moreover, no proper dewatering system was in place; the culvert replacement work, with its exposed trench soils, was in the process of being conducted without isolating the work area from the Brook’s flows. These discharges of sediment and fill/structures were in noncompliance with 310 CMR 10.00.
 - G. The installation of the new culvert and direct discharge of sediment into Delphi Brook resulted in a violation of the Massachusetts Clean Waters Act regulations at 314 CMR 9.00, as it resulted in noncompliant discharges of sediment and fill/structures to Waters of the United States within the Commonwealth (“WUSWC”, as defined at 314 CMR 9.02) as prohibited at 314 CMR 9.06(6)(a).
 - H. Activities at the Project Site have resulted in water-quality impacts to down-gradient parcels to south.
6. The foregoing facts constitute violations of the following statutes and regulations:
- A. The Massachusetts Wetlands Protection Act, M.G.L. c. 131, § 40, which states in part: “No person shall remove, fill, dredge or alter any area subject to protection

under this section without the required authorization, or cause, suffer or allow such activity, or leave in place unauthorized fill, or otherwise fail to restore illegally altered land to its original condition, or fail to comply with an enforcement order issued pursuant to this section.”

- B. Illegal discharge of sediment into WUSWC, in violation of the Massachusetts Clean Waters Act, M.G.L. c. 21, §§ 26 through 53.
- C. 314 CMR 9.06(2): “No discharge...shall be permitted...”;
- D. 314 CMR 9.06(6)(a)1.: “No...outfalls may discharge...or cause erosion in wetlands or waters of the Commonwealth”; and
- E. 314 CMR 9.11: “failure to comply with 314 CMR 9.00...shall be enforced...”

III. ORDER

- 7. For the reasons and pursuant to the authority stated above, and pursuant to its authority at 310 CMR 10.02(2)(d), the Department hereby orders that:
 - A. Wales Village shall immediately undertake any and all practicable measures to provide short- term stabilization of surficial soils, slopes, banks, and stormwater at the Project Site.
 - B. Within ten (10) business days of the issuance date of this Unilateral Administrative Order, Wales Village shall nominate in writing to the Department an environmental consultant it intends to retain to assist with restoration and proper permitting at the Project Site. Said consultant shall have at least five (5) years of experience in developing “restoration/mitigation area” plans for Bank alteration per 310 CMR 10.54, Bordering Vegetated Wetland (“BVW”) alteration per 310 CMR 10.55 and Buffer Zone alterations per 310 CMR 10.04. The Department maintains the right to approve or deny the nominee based upon the individual’s level of experience as it relates to the successful construction and completion of wetland “restoration/mitigation areas.”
 - C. Wales Village’s environmental consultant shall delineate and survey the jurisdictional limits of all Resource Areas and WUSWC proximal to the Project Site. Wales Village shall submit a site plan illustrating said information to the Department within ten (10) business days of retaining the requisite environmental consultant. In addition, the environmental consultant shall include in said plan details regarding additional stabilization measures that he or she may deem appropriate for the Project Site.
 - D. Within twenty (20) business days of the issuance date of this Order, Wales Village

shall prepare and submit to the Wales Conservation Commission (or Wales Select Board, in the Commission's stead) a Notice of Intent ("NOI") for the Stream Crossing of Delphi Brook. Said NOI shall request an Order of Conditions for a compliant stream crossing (i.e., one that complies with the performance standards for Bank and Land Under Waterbodies & Waterways at 310 CMR 10.54(4) and 10.56(4), respectively). The NOI shall also provide for compliance with all other state and federal environmental requirements associated with said such work, including, but not limited to, the standards at 310 CMR 10.53(8). If the newly installed culvert does not comply with said performance standards, it shall be removed and replaced with one that does in accordance with all applicable requirements. Said NOI shall also include provisions for any restoration of proximal Resource Areas or Buffer Zone impacted by the original culvert replacement, including but not limited to removal of feasibly recoverable sediments from Delphi Brook and any adjacent BVW, Bordering Land Subject to Flooding, or Riverfront Area (the latter two defined at 310 CMR 10.57(2). And 310 CMR 10.58(2).

8. Failure to comply with this Order may constitute grounds for further legal action. You are hereby advised that, if you fail to comply with this Order, M.G.L. c. 21, §§ 26 through 53 provides for civil penalties of up to \$25,000.00 per violation per day, for violations of the statute, its implementing regulations and this Order. The Department reserves the right to exercise the full extent of its legal authority, including without limitation, pursuit of criminal prosecution or civil action, court-imposed civil penalties, and/or administrative penalties assessed by the Department.

IV. HEARING RIGHTS

9. Wales Village is hereby notified of its right to an adjudicatory hearing under the Massachusetts Administrative Procedures Act, G.L. Chapter 30A, Section 10, regarding this Order.
 - A. Notice of Claim: In accordance with the Department's Rules for Conduct of Adjudicatory Proceedings, 310 CMR 1.00, should Wales Village choose to appeal this Order, a Notice of Claim for Adjudicatory Hearing ("Notice of Claim") must be filed in writing, as follows:

Pursuant to 310 CMR 1.01(6), Wales Village must file of any Notice of Claim **within twenty-one (21) days** of the date of issuance of this Order.

The Notice of Claim must state clearly and concisely the facts which are grounds for the proceedings and the relief sought; and must include the appropriate filing fee and Fee Transmittal Form (found at:

<http://www.mass.gov/eea/docs/dep/service/adr/adjherfm.pdf>).

The Notice of Claim for Adjudicatory Hearing and a copy of the filing fee (if not excepted as set forth below) must be addressed to:

Docket Clerk
Office of Appeals and Dispute Resolution
Massachusetts Department of Environmental Protection
One Winter Street
Boston, Massachusetts 02108

A copy of said Notice of Claim must be sent concurrently to:

David Cameron, Section Chief
Massachusetts Department of Environmental Protection
Western Regional Office-Division of Wetlands and Waterways
436 Dwight Street
Springfield, MA 01103

- B. Filing Fee: The Notice of Claim for Adjudicatory Hearing must be made concurrently with the payment of a filing fee payable to the Commonwealth of Massachusetts in the amount of \$100.00. The check for the filing fee and the Fee Transmittal Form (found at <http://www.mass.gov/eea/docs/dep/service/adr/adjherfm.pdf>) must be mailed separately to:


Commonwealth of Massachusetts
Department of Environmental Protection
Lock Box 4062
Boston, Massachusetts 02211

- (1) The hearing request **will be dismissed** if the filing fee is not paid, unless the appellant is exempt or granted a waiver as described below.
- (2) **EXCEPTIONS**: The filing fee is not required if the appellant is a city or town (or municipal agency), county, or district of the Commonwealth of Massachusetts, or a municipal housing authority.
- (3) **WAIVER**: The Department may waive the adjudicatory hearing filing fee for a person who shows that paying the fee will create an undue financial hardship. A person seeking a waiver must file, together with the hearing request as provided above, an affidavit setting forth the facts believed to support the claim of undue financial hardship.

Wales Village, LLC
Unilateral Administrative Order (UAO)
Enforcement Number: UAO-WE-19-6W-00007318
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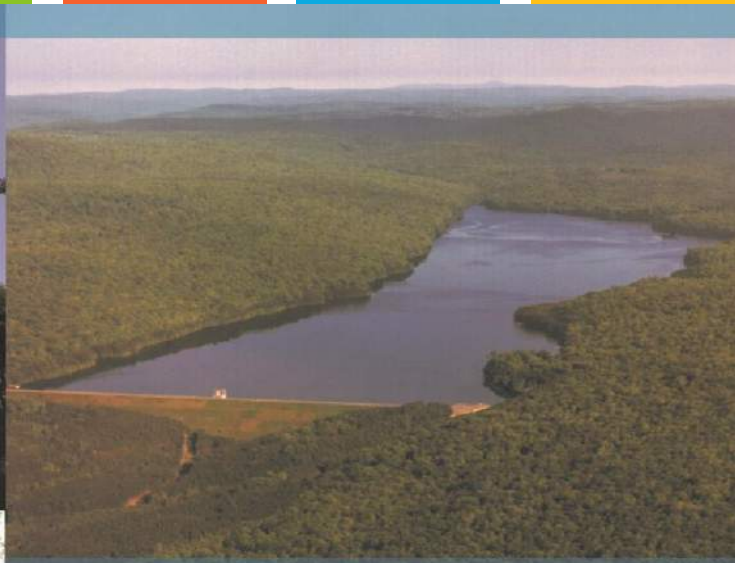
SO ORDERED:

Massachusetts Department of Environmental Protection,

By:  Date: 5/20/19
Michael J. Gorski, Regional Director
Massachusetts Department of Environmental Protection
Western Regional Office
436 Dwight Street
Springfield, Massachusetts 01103

APPENDIX G

BVW Replacement Plan



Delphi Book Stream Crossing Replacement Project
Wales, Massachusetts

INLAND WETLAND REPLACEMENT PLAN

Freehold Real Estate Management

December 2022

Tighe&Bond

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- A Figures and Drawings
 - Figure 1 – USGS Site Locus Map
 - Dublin Road Culvert Replacement Project – November 2020

- B Existing Conditions Information
 - Site Photographs
 - USDA NRCS Soil Survey
 - ACOE Delineation Data Form

- C Western Regional Office, Bureau of Resource Protection, Wetlands Program Addendum to Statement of Technical Deficiency Data Required for Proposed Bordering Vegetated Wetland Replacement Areas Per *Massachusetts Inland Wetland Replication Guidelines* (MassDEP 2002) And 314 CMR 9.06(2)

- D Monitoring Form

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Section 1 Introduction

This *Inland Wetland Replacement Plan* design has been developed by Tighe & Bond, Inc. on behalf of the Freehold Real Estate Management (the Applicant), Hampden County, Massachusetts. It is intended to address the requirement to meet the Bordering Vegetated Wetland (BVW) general performance standard set forth at 310 CMR 10.56(4)(b)(1) through (7), using the Inland Wetland Restoration Plan Form, issued by the Massachusetts Department of Environmental Protection (MassDEP) on April 25, 2018.

This design has been prepared in accordance with the *Massachusetts Inland Wetland Replication Guidelines* (MassDEP, 2002), 310 CMR 10.55(4)(b)(1) through (7), inclusive, and the *Western Regional Office, Bureau of Resource Protection, Wetlands Program Addendum to Statement of Technical Deficiency Data Required for Proposed Bordering Vegetated Wetland Replacement Areas Per Massachusetts Inland Wetland Replication Guidelines* (MassDEP 2002) and 314 CMR 9.06(2).

1.1 Parcel and Project Data

Parcel and project data are summarized below in Table 1-1.

TABLE 1-1
Parcel and Project Data

Project Proponent:	Freehold Real Estate Management 80 Sherman Street Norwich, CT 06360
Project Locus:	Map 22, Lot 199
Project Site(s):	Wetland 1D & 1E – Hemlock Lane Wetlands 4C, 4D, 4E, 4F – Wellhouse Access Road
Deed Reference(s):	Book 19784, Page 386
Land Use/Land Cover/Justification of Siting:	Adjacent Upland Wetland Replacement/Restoration
Name and Credentials of BVW designer:	Katherine Wilkins; 10 years of applied wetlands and ecological experience; B.A. Wildlife Conservation (2008) and MS Water, Wetlands, Waterways (2015)
Environmental Compliance Monitor:	Katherine Wilkins of Tighe & Bond, Inc.

1.2 Avoidance and Minimization of Impacts

This *Inland Wetland Replacement Plan* has been prepared in accordance with the anticipated Order of Conditions that will serve as the Water Quality Certification with regard to temporary BVW alterations proposed at this location. Existing and proposed conditions for the BVW impact areas are presented on the Project Drawings in Attachment A. Descriptions of the BVW impact areas is provided in the following sections.

1.2.1 Wetland 1D and 1E – Embankment Grading (Hemlock Lane)

Grading for the installation of the proposed precast concrete box culvert is proposed within Wetland 1D and 1E. Minor grading within Wetland 1D is needed near along the Bank to match stream grade at the culvert's inlet and outlet. The span of the culvert is increasing by approximately twelve feet in this area. The area of grading will be stabilized using erosion control blanket, the installation of shrub plantings, and appropriate seed mix along the Bank of Delphi Brook.

1.2.2 Wetland 4C, 4D, 4E, and 4F – Embankment Grading (Wellhouse Access Road)

Grading for the installation of the proposed precast concrete culvert is proposed within the unnamed perennial stream. Wetlands 4C, 4D, 4E, and 4F run along either side of the Wellhouse Access Road. Grading within Wetlands 4C, 4D, 4E, and 4F is needed along the Bank to match stream grade at the culvert's inlet and outlet and also along the access road to provide more cover for the larger culvert. The span of the culvert is increasing by approximately 18 inches. The area of grading will be stabilized using loam and an appropriate seed mix along the Bank of the unnamed perennial stream.

Section 2 Data for BVW Impact Areas

2.1 General

The Project Site consists of the existing stream crossing structure for Delphi Brook where it flows beneath Hemlock Lane as well as the stream crossing structure for the unnamed perennial stream under the Wellhouse Access Road in Wales, Hampden County, Massachusetts. The project is situated within one parcel of land owned by Freehold Real Estate Management. A USGS Site Locus Map is provided as Figure 1 in Attachment A. Existing conditions are also shown on [Sheet C-101](#) in Attachment A.

2.2 Wetland Resource Areas

Existing conditions of wetland resource areas (i.e., wetlands and Waters of the United States) were evaluated through a review of publicly available mapping sources (i.e., USGS topographic quadrangles, USDA NRCS soil survey, National Wetlands Inventory, MassGIS MassDEP wetlands mapping, aerial photographs). In addition to the preliminary mapping review, wetland resource area investigations were conducted on July 22, 2021 to confirm the presence and location of wetland resource areas that are jurisdictional under local, state, and federal statutes.

Wetland resource areas were also evaluated in accordance with Massachusetts Department of Environmental Protection (MassDEP) guidelines, 310 CMR 10.00, and the United States Army Corps of Engineers *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region* (January 2012). Based on Tighe & Bond's reviews, we have estimated impacts proposed to jurisdictional resource areas and summarized this information in Table 2-1.

TABLE 2-1

Summary of Estimated Alterations to Jurisdictional Resource Areas.

Impact Area ID	Resource Area Type	Impact (sf) Temporary	Impact (sf) Permanent	Activity
Wetland 1D and 1E	BVW	255	160	Construction Access / Grading
Wetland 4C, 4D, 4E, and 4F	BVW	1,105	1,395	Construction Access / Grading
Total		1,360	1,555	

2.2.1 Wetland 1D and 1E

The BVW bordering the southern bank of Delphi Brook on the west side of Hemlock Lane is demarcated by flag series 1D and is described as a Palustrine Forested/Emergent wetland that is seasonally saturated (PFO/PEM1B). Vegetation observed includes red maple, American elm, red chokeberry (*Aronia arbutifolia*; FACW), Japanese barberry, interrupted fern (*Osmunda claytoniana*; FAC), feathery false solomon's-seal (*Maianthemum racemosum*; FACU), false lily-of-the-valley (*Maianthemum canadense*; FACU), and skunk-cabbage (*Symplocarpus foetidus*; OBL).

A small fringe BVW was observed bordering the north bank of Delphi Brook immediately to the east of Hemlock Lane and is demarcated by flag series 1E. Vegetation observed includes American hornbeam, American elm, red chokeberry, interrupted fern, and sensitive fern (*Onoclea sensibilis*; FACW).

2.2.2 Wetland 4C, 4D, 4E and 4F

The unnamed perennial stream also had associated BVWs present. The BVW along the south side of the gravel access road and east of the culvert is represented by flag series 4C. It borders the north side of the stream and is described as a Palustrine Forested/Emergent wetland that is seasonally flooded or saturated (PFO/PEM1E). Vegetation observed includes American hornbeam, yellow birch (*Betula alleghaniensis*; FAC), American witch-hazel (*Hamamelis virginiana*; FACU), New York fern (*Parathelypteris noveboracensis*; FAC), and skunk-cabbage.

The BVW bordering the south side of the gravel access road and west of the culvert is represented by flag series 4D and is described as a Palustrine Forest/Scrub-Shrub wetland with broad-leaved deciduous vegetation and is seasonally saturated (PFO/PSS1B). Vegetation observed includes red maple, speckled alder (*Alnus incana*; FACW), skunk-cabbage, interrupted fern, sensitive fern, and fringed sedge (*Carex crinata*; OBL).

The BVW bordering the east side of the stream and north of the gravel access road is demarcated by flag series 4E and is described as a Palustrine Scrub-Shrub wetland with broad-leaved deciduous vegetation and is seasonally saturated (PSS1B). Vegetation observed includes American hornbeam, speckled alder, rambler rose, skunk-cabbage, interrupted fern, and sensitive fern.

The BVW bordering the west side of the stream and north of the gravel access road is demarcated by flag series 4F and is described as a Palustrine Forested/Emergent wetland that is seasonally flooded or saturated (PFO/PSS1E). Vegetation observed includes red maple, American hornbeam, speckled alder, spotted touch-me-not

(*Impatiens capensis*; FACW), skunk-cabbage, and interrupted fern. Wood debris and concrete deposits were observed in this BVW during the delineation.

Copies of the Corps delineation data forms are provided in Attachment B.

2.3 Hydrology

Hydrology at the BVW alteration areas, presented in Table 2-2, is based on the field observations from delineation efforts on site. This designation is also based on the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin, et al., 1979). Additional observations of hydrology are also provided for each wetland.

TABLE 2-2

Summary of Altered (Permanent and Temporary) Wetland Resource Areas Hydrology

Impact Area	Habitat/Cover Type	Source(s) of Hydrology ¹
Wetland 1D and 1E	PSS1/PEM1	Seasonally Flooded/Saturated
Wetland 4C	PFO1/PEM1	Seasonally Flooded/Saturated
Wetland 4D	PFO1/PSS1	Seasonally Flooded/Saturated
Wetland 4E	PSS1	Saturated
Wetland 4F	PFO1/PSS1	Seasonally Flooded/Saturated

¹ Based on field observations and mapping by NWI and MassGIS.

2.4 Hydric Soil Structure

According to the USDA NRCS [online] Soil Survey of Franklin County, Massachusetts, the project area is mapped as two distinct soil types. A copy of the soil survey is provided in Attachment B. A brief description of the soil units are as follows:

Ridgebury (71A) are very deep, very poorly drained soils formed in lodgment till derived mainly from granite, gneiss and/or schist. They are nearly level to gently sloping soils in depressions in uplands. Slope ranges from 0 to 15 percent.

Brookfield (401C) are very deep, well drained loamy soils formed in till derived mainly from iron sulfide bearing schist. They are nearly level to very steep soils on plains and hills on uplands. Slope ranges from 0 to 60 percent.

2.5 Wetland Plant Communities

2.5.1 Wetland 1D and 1E

The dominant vegetation observed at the proposed BVW impact area adjacent to Delphi Brook in Wetlands 1D and 1E was red maple (*Acer rubrum*; FAC), American elm (*Ulmus americana*; FACW), red chokeberry (*Aronia arbutifolia*; FACW), Japanese barberry (*Berberis thunbergii*; FACU), interrupted fern (*Osmunda claytoniana*; FAC), and skunk-cabbage (*Symplocarpus foetidus*; OBL).

2.5.3 Wetlands 4C, 4D, 4E, and 4F

The dominant vegetation observed at the proposed BVW impact areas adjacent to the unnamed perennial stream at wetland 4C was American hornbeam (*Carpinus caroliniana*; FAC), yellow birch (*Betula alleghaniensis*; FAC), American witch-hazel (*Hamamelis virginiana*; FACU), New York fern (*Parathelypteris noveboracensis*; FAC), and skunk-cabbage.

Dominant vegetation observed in Wetlands 4D, 4E, and 4F was red maple (*Acer rubrum*, FAC), speckled alder (*Alnus incana*; FACW), American hornbeam (*Carpinus caroliniana*; FAC), skunk-cabbage (*Symplocarpus foetidus*; OBL) and interrupted fern (*Osmunda claytoniana*; FAC).

2.6 Functions and Values

The BVWs impacted by the culvert replacements are located in depressions adjacent to the Delphi Brook at Hemlock Lane and the unnamed perennial stream on the Wellhouse Access Road. Relative to the statutory interests outlined at M.G.L. Chapter 131 § 40 and 310 CMR 10.00, the BVW areas that are being impacted likely serves some of the functions and values of the Act, including:

- Protection of public or private water supply
- Flood control
- Prevention of pollution
- Protection of wildlife habitat

2.7 Abiotic and Biotic Features

There is limited presence of biotic and abiotic structural components within the areas of proposed impact. Although several structural components are present adjacent to the impact areas and associated landscape, these features will not be lost or otherwise disturbed as part of the proposed work.

Section 3

BVW Replacement Area Design

The *Inland Wetland Replacement Plan* is illustrated on Sheets C-302 in the project drawings in Attachment A. Details regarding the proposed hydrology, hydric soil structure, and wetland plant community is provided in this section.

Impacts to all of the wetlands impacted will be replaced *in situ* and *ex situ*. The *ex situ* replacement wetland was designed to be in close proximity to the wetland area at the Wellhouse Access Road crossing as it had the most undisturbed wetland resources as well as area to create contiguous replication. There is limited area for replication to take place at the Hemlock Lane crossing so replication for these wetland impact will be added to the replication area by the Wellhouse Access Road.

The replication area is adjacent to the wetland that is being permanently impacted and at a similar elevation so that minimal grading will be necessary to create the replacement wetland area at the same level as the existing BVW. The Wetland Replacement Area is adjacent to flags 4F-3 and 4F-8 at the toe of slope of the slope to a open maintained area off Wellhouse Access Road.

3.1 Hydrology

3.1.1 *In Situ* Restoration

The existing hydrology of the proposed *in situ* replacement area is not anticipated to change. The *in situ* Vegetated Wetland Replacement Area consists of approximately 1,360 (sf) between the two sites and located within the existing wetlands. The current hydrology of the area comes from Delphi Brook and the unnamed perennial stream and groundwater. The current hydrologic scheme will be present post restoration.

3.1.2 *Ex Situ* Restoration

The proposed replacement area is adjacent to Wetland 4F, which borders the unnamed perennial stream, just northwest of the replacement crossing on the Wellhouse Access Road. The Vegetated Wetland Replacement Area consists of approximately 1,555 sf adjacent to flags 4F-3 and 4F-8. The current hydrology of this area comes from Bloody Brook and groundwater. The current hydrologic scheme of the adjacent wetland is anticipated to be present post development.

3.2 Hydric Soil Structure

3.2.1 *In Situ* Restoration

The hydric soil structure is not anticipated to be lost in the *in situ* replacement areas. No excavation or soil enhancement is proposed in this area.

3.2.2 *Ex Situ* Restoration

The proposed replacement area is in the adjacent upland to Wetland 4F to the North of the unnamed perennial stream. The Vegetated Wetland Replacement Area will need to be excavated in the area of flags 4F-3 to 4F-8 to replace the upland soil with wetland soil from the impact area of BVW Wetland 4.

The proposed alteration to a portion of the BVWs will be approximately 1,555 sf. Wetland topsoil will be excavated and stockpiled from where the grading will occur from the installation of the inlet wing walls. The wetland topsoil will be used to create a hydric soil structure in the wetland replacement area. The current hydrology of this area comes from the larger emergent wetland and the unnamed intermittent stream. The current hydrologic scheme will be present post development.

3.3 Wetland Plant Community

3.3.1 In Situ

Due to the activities within the BVWs we anticipate impacts to the plant community. Post construction the contractor shall use the specified New England Wetland Plants, Inc. (NEWP) New England Erosion Control/Restoration Mix for Moist Sites, as detailed on Sheet C-302 of the Project Drawing in Attachment A, to restore impacted hydrophytic vegetation.

3.3.2 Ex Situ

The goal of this Plan is to replace the functions and values lost as a result of the proposed impacts. To that end, the plant community specified was selected based on native species that can be found in proximity to the project area, survivability and availability from local plant nurseries.

As noted in the Mitigation Wetland Detail on Sheet C-302 of the Project Drawings in Attachment A, silky dogwood (*Cornus amomum*), winterberry (*Ilex verticillata*), speckled alder (*Alnus incana*), and red maple (*Acer rubrum*) are the preferred plant species to use for plantings. The proposed replacement plan also specifies to use the seed mix identified above in addition to the shrub plantings within the mitigated wetland area.

TABLE 3-1

Proposed Wetland Plant Community for Vegetated Wetland Replacement in the mitigation area

Common Name	Scientific Name	Size	Spacing	Approximate # of Plants
Silky Dogwood	<i>Cornus amomum</i>	3'-4'	4' OC	6
Common Winterberry	<i>Ilex verticillata</i>	3'-4'	4' OC	4
Speckled Alder	<i>Alnus incana</i>	3'-4'	4' OC	8
Red Maple	<i>Acer rubrum</i>	3'-4'	4' OC	8
Wetland Seed Mix ¹	--	1 lb. bag	18 lbs. per Acre	N/A

¹ New England Wetland Plants, Inc. (NEWP) New England Erosion Control/Restoration Mix for Moist Sites

3.4 Functions and Values

Successful restoration of the permanent and temporarily altered areas will protect the statutory interests that are currently provided by the area, which include:

- Protection of public or private water supply
- Flood control

- Prevention of pollution
- Protection of wildlife habitat

3.5 Abiotic and Biotic Features

None proposed.

Section 4

Plan Implementation

4.1 Construction-Phase

A designated wetland specialist will monitor replacement area construction activities in the field. At a minimum, the wetland restoration specialist (i.e. Project Monitor) shall have a minimum of two (2) years of experience with wetlands replication and restoration. This plan will be implemented post completion of the culvert replacement work in either the early or late growing season, depending on the construction schedule in order to avoid seasonal high temperatures and/or low precipitation rates that might adversely affect the viability of seed germination.

4.1.1 Construction Sequence

The following steps represent the anticipated sequence of actions necessary to replace the affected wetland in accordance with this plan. Minor variations may be necessary to adjust to field conditions such as weather.

4.1.1.1 Vegetated Wetland Replacement Area

1. Excavate as necessary to achieve proposed grades for the wing wall; stockpile the upper 24 inches of wetland topsoil in an appropriate stockpile protection area on Wellhouse Access Road.
2. Complete the installation of the new proposed stream crossing structure and associated armoring.
3. Excavate the proposed replacement wetland area down to slightly below the grade as the adjacent Wetland in the area between flags 4F-3 and 4F-8 as shown on Sheet C-302 of the Project Drawings in Attachment A.
4. Spread the stockpiled wetland soil across entire wetland replacement area shown on Sheet C-302 of the Project Drawings in Attachment A.
5. Install shrub plantings and wetland seed mix as outlined in Table 3-1, water as necessary based on time of year and weather conditions.
6. Apply straw mulch to wetland replacement area (see Section 4.1.2).

4.1.2 Mulching

At the discretion of the wetland specialist, the Contractor will lightly mulch restored area with straw once planting is complete. Straw mulch will not be more than one (1) inch thick. It is anticipated that mulching will serve to protect the soil surface until vegetation is re-established.

4.2 Maintenance

While the vegetation becomes established, maintenance may be required. Typical maintenance activities could include providing irrigation (e.g. watering in) the shrubs and seedlings, and over time, the hand-removal of non-native and/or invasive species.

4.2.1 Irrigation

As noted above, annual and seasonal variations in temperature, humidity and precipitation (i.e. weather) may necessitate additional measures to provide irrigation. Irrigation, or additional watering in, will be necessary in the event that no natural precipitation occurs for five (5) or more consecutive days during the growing season (i.e. between April 6 and October 27).

4.2.2 Invasive Species Control

As with any recently disturbed soil surface, there is the potential for colonization by non-native and/or invasive plant species. Limited invasive species were observed within the project area at the time of the site investigation on July 22, 2021; however, efforts to monitor for invasive species should still be made in the time that the shrubs and seed take root and grow.

Section 5

Monitoring

The Town will be responsible for implementing this Plan, including the monitoring, and reporting requirements outlined in this Section.

5.1 Schedule

The Project Monitor will be present on-site to perform or observe the following tasks:

- Pre-construction wetland flagging inspection.
 - Prior to the installation of erosion and sedimentation controls, wetland flagging within the project area will be inspected and refreshed, as necessary.
- Observe grading and planting of the wetland replacement area.
 - Observations will include the proper installation rate of prescribed native plants as outlined in Section 3 of this Plan.
- Observe replacement area at the end of the construction year growing season to determine vegetation development and to collect data for annual documentation and reporting (see following sections) relative to regulatory compliance.
 - Observations and data collected during this site inspection will be documented on the approved monitoring form, as well as in color photographs of each area. These materials will support the second annual monitoring report provided to MassDEP (see Sections 5.2 and 5.3 for details). These observations will be made two (2) times during the first post-construction growing season. The first will be conducted during the early-to-mid growing season (*e.g.*, June/July) and the second during the mid-to-late growing season (*e.g.*, September/October).
- Observe replacement area after two (2) full growing seasons to determine vegetation development and to collect data for annual documentation and reporting (see following sections) relative to regulatory compliance.
 - Observations and data collected during this site inspection will be documented on the approved monitoring form, as well as in color photographs of each area. These materials will support the third annual monitoring report provided to MassDEP (see Sections 5.2 and 5.3 for details). These observations will be made two (2) times during the first post-construction growing season. The first will be conducted during the early-to-mid growing season (*e.g.*, June/July) and the second during the mid-to-late growing season (*e.g.*, September/October).

5.2 Documentation

Monitoring reports will include, at a minimum, the following information:

- Narrative description of activities performed to date and observations of the replacement area (*e.g.*, rate of vegetation growth, relative cover, presence/absence of non-native and/or invasive species), as well as recommended corrective actions, if necessary.

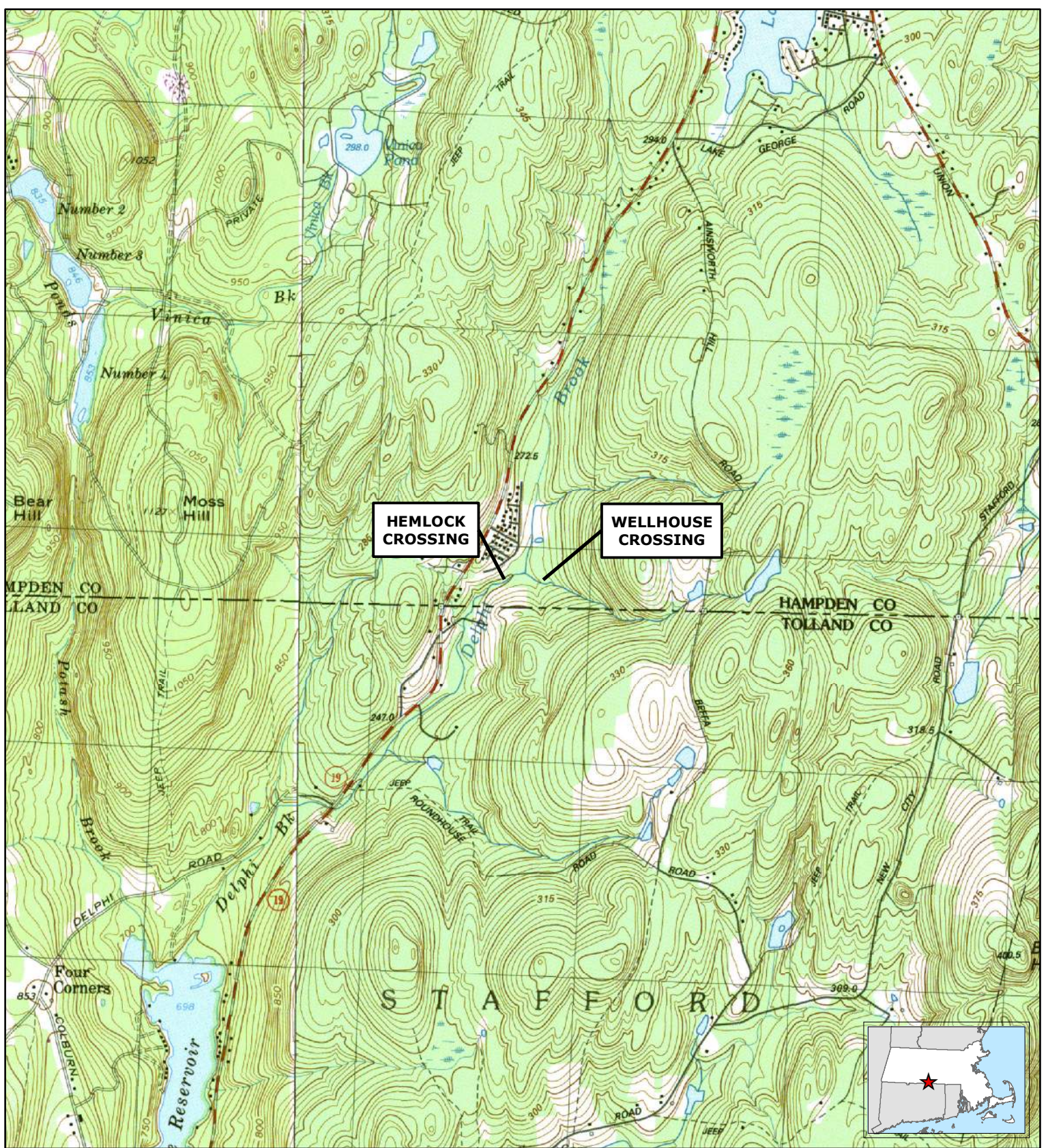
- Copies of monitoring forms (see Attachment D of this Plan for a sample form).
- Evaluation of vegetation cover, soils and hydrology for one (1) reference plot within the replacement area.
- Digital color photographs of the reference plot as well as the overall replacement area.

5.3 Reporting

Annual reports will be submitted to MassDEP no later than November 30th of each calendar year for a period of two (2) full growing seasons. The first annual report will document the implementation of this Plan. The second and third reports will be submitted in draft form for the Commission's review and comment.

J:\F\F5042 Freehold Real Estate\002 - Delphi Brook Culvert - Wales\Permitting\NOI\Draft\Appendix G - BVW Replacement Plan\2-Narrative Wetland Replacement Plan.doc

ATTACHMENT A
FIGURES AND DRAWINGS



**HEMLOCK
CROSSING**

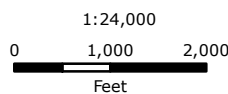
**WELLHOUSE
CROSSING**

**FIGURE 1
SITE LOCATION**

Delphi Brook
Stream Crossing Replacement Project
Wales, Massachusetts



Based on USGS Topographic Map for
Wales, MA Revised 1982. Contour Equals 3-Meters. [Site Quad]
Monson, MA Revised 1979. Contour Equals 10-feet.



July 2022

ATTACHMENT B

EXISTING CONDITIONS INFORMATION

**SITE PHOTOGRAPHS, USDA NRCS SOIL SURVEY, ACOE
DELINEATION DATA FORMS**

Appendix B - Photographic Log

Client: Freehold Real Estate Management. **Job Number:** F-5042-002
Delphi Brook Stream Crossing Replacement Project
Site: 199 Stafford Road, Wales, Massachusetts

Photograph No.: 1	Date: 7/22/2021	Direction Taken: Southeast
Description: View upstream of the unnamed perennial stream towards the access road and BVW 4E.		
		

Photograph No.: 2	Date: 7/22/2021	Direction Taken: Northwest
Description: View of BVW 4C.		
		

Appendix B - Photographic Log

Client: Freehold Real Estate Management. **Job Number:** F-5042-002
Delphi Brook Stream Crossing Replacement Project
Site: 199 Stafford Road, Wales, Massachusetts

Photograph No.: 3	Date: 7/22/2021	Direction Taken: Southwest
Description: View of BVW 4D.		
		

Photograph No.: 4	Date: 7/22/2021	Direction Taken: Southwest
Description: View of BVW 4E. Concrete and wood debris are visible in the background.		
		

Appendix B - Photographic Log

Client: Freehold Real Estate Management. **Job Number:** F-5042-002
Delphi Brook Stream Crossing Replacement Project
Site: 199 Stafford Road, Wales, Massachusetts

Photograph No.: 5	Date: 7/22/2021	Direction Taken: Southwest
--------------------------	------------------------	-----------------------------------

Description: View of the ends of BVW 4F in the area of proposed replication.



Photograph No.: 6	Date: 7/22/2021	Direction Taken: West
--------------------------	------------------------	------------------------------

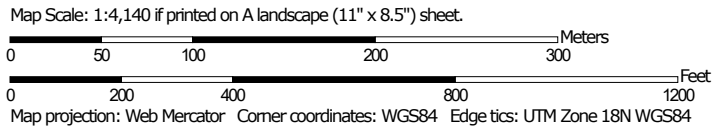
Description: View of the ends of BVW 4F in the area of proposed replication.



Soil Map—Hampden and Hampshire Counties, Massachusetts, Eastern Part; and State of Connecticut
(Delphi Brook, Wales, MA)



Soil Map may not be valid at this scale.



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

Water Features



Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

Background



Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at scales ranging from 1:12,000 to 1:25,000.

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

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

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

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

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

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

Soil Survey Area: Hampden and Hampshire Counties, Massachusetts, Eastern Part
Survey Area Data: Version 17, Sep 9, 2022

Soil Survey Area: State of Connecticut
Survey Area Data: Version 22, Sep 12, 2022

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

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

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

MAP LEGEND

MAP INFORMATION

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
51A	Swansea muck, 0 to 1 percent slopes	1.7	2.7%
71A	Ridgebury fine sandy loam, 0 to 3 percent slopes, extremely stony	15.3	24.5%
100C	Brookfield-Brimfield-Rock outcrop complex, strongly sloping	8.1	13.0%
392E	Paxton and Montauk fine sandy loams, 15 to 35 percent slopes, extremely stony	9.2	14.7%
401C	Brookfield fine sandy loam, 8 to 15 percent slopes, extremely stony	12.7	20.4%
421C	Canton fine sandy loam, 8 to 15 percent slopes, very stony	7.0	11.1%
Subtotals for Soil Survey Area		54.0	86.4%
Totals for Area of Interest		62.5	100.0%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
3	Ridgebury, Leicester, and Whitman soils, 0 to 8 percent slopes, extremely stony	0.1	0.1%
60B	Canton and Charlton fine sandy loams, 3 to 8 percent slopes	0.7	1.2%
60C	Canton and Charlton fine sandy loams, 8 to 15 percent slopes	3.8	6.1%
71C	Nipmuck-Brimfield-Rock outcrop complex, 3 to 15 percent slopes	3.8	6.1%
72E	Nipmuck-Brookfield complex, 15 to 45 percent slopes, very rocky	0.0	0.0%
Subtotals for Soil Survey Area		8.5	13.6%
Totals for Area of Interest		62.5	100.0%

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Brookside Village Mobile Home Park/199 Stafford Road City/County: Wales/Hampden Sampling Date: 07/22/2021
 Applicant/Owner: Freehold Real Estate Management State: MA Sampling Point: 1C
 Investigator(s): Katy Wilkins, Megan Woytik Section, Township, Range: _____
 Landform (hillside, terrace, etc.): Terrace Local relief (concave, convex, none): _____ Slope (%): 1
 Subregion (LRR or MLRA): LRR R, MLRA 145 Lat: 42.03246 Long: -72.23821 Datum: NAD 1983
 Soil Map Unit Name: 401C - Brookfield fine sandy loam, 8 to 15 percent slopes, extremely stony 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 <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>Flag 1C-2</u>
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u>	Secondary Indicators (minimum of two required)
<input checked="" type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input checked="" type="checkbox"/> High Water Table (A2) _____ Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) _____ Marl Deposits (B15) _____ Water Marks (B1) _____ Hydrogen Sulfide Odor (C1) _____ Sediment Deposits (B2) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Drift Deposits (B3) _____ Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Iron Deposits (B5) _____ Thin Muck Surface (C7) _____ Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8)	_____ Surface Soil Cracks (B6) <input checked="" type="checkbox"/> Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Stunted or Stressed Plants (D1) <input checked="" type="checkbox"/> Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: 1C

	Absolute % Cover	Dominant Species?	Indicator Status																	
Tree Stratum (Plot size: <u>30'</u>)																				
1. <u><i>Carpinus caroliniana</i></u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>6</u> (A) Total Number of Dominant Species Across All Strata: <u>7</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>85.7%</u> (A/B)																
2. <u><i>Ulmus americana</i></u>	<u>10</u>	<u>Yes</u>	<u>FACW</u>																	
3. <u><i>Acer rubrum</i></u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>																	
4. _____																				
5. _____																				
6. _____																				
7. _____																				
	<u>50</u>	=Total Cover		Prevalence Index worksheet: <table style="width:100%; border:none;"> <tr> <td style="width:50%; text-align:center;">Total % Cover of:</td> <td style="width:50%; text-align:center;">Multiply by:</td> </tr> <tr> <td>OBL species <u>40</u></td> <td>x 1 = <u>40</u></td> </tr> <tr> <td>FACW species <u>30</u></td> <td>x 2 = <u>60</u></td> </tr> <tr> <td>FAC species <u>60</u></td> <td>x 3 = <u>180</u></td> </tr> <tr> <td>FACU species <u>30</u></td> <td>x 4 = <u>120</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>160</u></td> <td>(A) <u>400</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align:center;">Prevalence Index = B/A = <u>2.50</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>40</u>	x 1 = <u>40</u>	FACW species <u>30</u>	x 2 = <u>60</u>	FAC species <u>60</u>	x 3 = <u>180</u>	FACU species <u>30</u>	x 4 = <u>120</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>160</u>	(A) <u>400</u> (B)	Prevalence Index = B/A = <u>2.50</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>40</u>	x 1 = <u>40</u>																			
FACW species <u>30</u>	x 2 = <u>60</u>																			
FAC species <u>60</u>	x 3 = <u>180</u>																			
FACU species <u>30</u>	x 4 = <u>120</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>160</u>	(A) <u>400</u> (B)																			
Prevalence Index = B/A = <u>2.50</u>																				
Sapling/Shrub Stratum (Plot size: <u>15'</u>)																				
1. <u><i>Berberis thunbergii</i></u>	<u>30</u>	<u>Yes</u>	<u>FACU</u>																	
2. <u><i>Rubus hispida</i></u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>																	
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
	<u>50</u>	=Total Cover																		
Herb Stratum (Plot size: <u>5'</u>)																				
1. <u><i>Osmunda regalis</i></u>	<u>40</u>	<u>Yes</u>	<u>OBL</u>	Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. _____																				
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
8. _____																				
9. _____																				
10. _____																				
11. _____																				
12. _____																				
	<u>40</u>	=Total Cover																		
Woody Vine Stratum (Plot size: <u>30'</u>)																				
1. <u><i>Toxicodendron radicans</i></u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	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.																
2. _____																				
3. _____																				
4. _____																				
	<u>20</u>	=Total Cover																		
Hydrophytic Vegetation Present?				Yes <u>X</u> No <u> </u>																

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

SOIL

Sampling Point: 1C

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR 2/1	100		0	0	0	Mucky Sand	
8-15	10YR 3/4	100		0	0	0	Sandy	

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

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils³:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> High Chroma Sands (S11) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input checked="" type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Marl (F10) (LRR K, L)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Dark Surface (S7)			

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

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes <u>X</u> 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: Brookside Village Mobile Home Park/199 Stafford Road City/County: Wales/Hampden Sampling Date: 07/22/2021
 Applicant/Owner: Freehold Real Estate Management State: MA Sampling Point: 1D
 Investigator(s): Katy Wilkins, Megan Woytik Section, Township, Range: _____
 Landform (hillside, terrace, etc.): toe of slope Local relief (concave, convex, none): _____ Slope (%): 1
 Subregion (LRR or MLRA): LRR R, MLRA 145 Lat: 42.03236 Long: -72.23821 Datum: NAD 1983
 Soil Map Unit Name: 401C - Brookfield fine sandy loam, 8 to 15 percent slopes, extremely stony 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 <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>Flag 1D-4</u>
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input checked="" type="checkbox"/> Surface Water (A1) _____ Water-Stained Leaves (B9) <input checked="" type="checkbox"/> High Water Table (A2) _____ Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) _____ Marl Deposits (B15) _____ Water Marks (B1) _____ Hydrogen Sulfide Odor (C1) _____ Sediment Deposits (B2) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Drift Deposits (B3) _____ Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Iron Deposits (B5) _____ Thin Muck Surface (C7) _____ Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> _____ 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) <input checked="" type="checkbox"/> Geomorphic Position (D2) _____ Shallow Aquitard (D3) <input checked="" type="checkbox"/> Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
--	---

Field Observations: Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>1</u> Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>1</u> Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____
---	---

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: 1D

	Absolute % Cover	Dominant Species?	Indicator Status																	
Tree Stratum (Plot size: <u>30'</u>)																				
1. <u>Fraxinus pennsylvanica</u>	35	Yes	FACW	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>83.3%</u> (A/B)																
2. <u>Acer rubrum</u>	35	Yes	FAC																	
3. <u>Ulmus americana</u>	10	No	FACW																	
4. _____																				
5. _____																				
6. _____																				
7. _____																				
	80	=Total Cover																		
Sapling/Shrub Stratum (Plot size: <u>15'</u>)																				
1. <u>Aronia melanocarpa</u>	10	Yes	FAC	Prevalence Index worksheet: <table style="width:100%; border:none;"> <tr> <td style="width:50%; text-align:center;">Total % Cover of:</td> <td style="width:50%; text-align:center;">Multiply by:</td> </tr> <tr> <td>OBL species <u>40</u></td> <td>x 1 = <u>40</u></td> </tr> <tr> <td>FACW species <u>45</u></td> <td>x 2 = <u>90</u></td> </tr> <tr> <td>FAC species <u>65</u></td> <td>x 3 = <u>195</u></td> </tr> <tr> <td>FACU species <u>30</u></td> <td>x 4 = <u>120</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>180</u> (A)</td> <td><u>445</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align:center;">Prevalence Index = B/A = <u>2.47</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>40</u>	x 1 = <u>40</u>	FACW species <u>45</u>	x 2 = <u>90</u>	FAC species <u>65</u>	x 3 = <u>195</u>	FACU species <u>30</u>	x 4 = <u>120</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>180</u> (A)	<u>445</u> (B)	Prevalence Index = B/A = <u>2.47</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>40</u>	x 1 = <u>40</u>																			
FACW species <u>45</u>	x 2 = <u>90</u>																			
FAC species <u>65</u>	x 3 = <u>195</u>																			
FACU species <u>30</u>	x 4 = <u>120</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>180</u> (A)	<u>445</u> (B)																			
Prevalence Index = B/A = <u>2.47</u>																				
2. <u>Berberis thunbergii</u>	10	Yes	FACU																	
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
	20	=Total Cover																		
Herb Stratum (Plot size: <u>5'</u>)																				
1. <u>Osmunda claytoniana</u>	20	Yes	FAC	Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain)																
2. <u>Polygonatum biflorum</u>	10	No	FACU																	
3. <u>Maianthemum canadense</u>	10	No	FACU																	
4. <u>Symplocarpus foetidus</u>	40	Yes	OBL																	
5. _____																				
6. _____																				
7. _____																				
8. _____																				
9. _____																				
10. _____																				
11. _____																				
12. _____																				
	80	=Total Cover																		
Woody Vine Stratum (Plot size: <u>30'</u>)																				
1. _____				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.																
2. _____																				
3. _____																				
4. _____																				
				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																

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

SOIL

Sampling Point: 1D

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-7	10YR 3/2	100					Muck	
7-18	10YR 3/6	100					Muck	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: 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 Soils³:

- 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)

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

Restrictive Layer (if observed):
 Type: Bedrock
 Depth (inches): 18

Hydric Soil Present? Yes 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: Brookside Village Mobile Home Park/199 Stafford Road City/County: Wales/Hampden Sampling Date: 07/22/2021
 Applicant/Owner: Freehold Real Estate Management State: MA Sampling Point: 1E
 Investigator(s): Katy Wilkins, Megan Woytik Section, Township, Range: _____
 Landform (hillside, terrace, etc.): Terrace Local relief (concave, convex, none): _____ Slope (%): 0
 Subregion (LRR or MLRA): LRR R, MLRA 145 Lat: 42.03242 Long: -72.23802 Datum: NAD 1983
 Soil Map Unit Name: 71A - Ridgebury fine sandy loam, 0 to 3 percent slopes, extremely stony NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes 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 <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____ If yes, optional Wetland Site ID: <u>Flag 1E-2</u>
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ Water-Stained Leaves (B9) _____ High Water Table (A2) _____ Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) _____ Marl Deposits (B15) _____ Water Marks (B1) _____ Hydrogen Sulfide Odor (C1) _____ Sediment Deposits (B2) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Drift Deposits (B3) _____ Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Iron Deposits (B5) _____ Thin Muck Surface (C7) _____ Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> _____ 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) <input checked="" type="checkbox"/> Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
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Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
---	--

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: 1E

	Absolute % Cover	Dominant Species?	Indicator Status																	
Tree Stratum (Plot size: <u>30'</u>)																				
1. <u><i>Carpinus caroliniana</i></u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																
2. <u><i>Ulmus americana</i></u>	<u>30</u>	<u>Yes</u>	<u>FACW</u>																	
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
	<u>50</u>	=Total Cover		Prevalence Index worksheet: <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%; text-align:center;">Total % Cover of:</td> <td style="width:50%; text-align:center;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>70</u></td> <td>x 2 = <u>140</u></td> </tr> <tr> <td>FAC species <u>70</u></td> <td>x 3 = <u>210</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>140</u> (A)</td> <td><u>350</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align:center;">Prevalence Index = B/A = <u>2.50</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>70</u>	x 2 = <u>140</u>	FAC species <u>70</u>	x 3 = <u>210</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>140</u> (A)	<u>350</u> (B)	Prevalence Index = B/A = <u>2.50</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>70</u>	x 2 = <u>140</u>																			
FAC species <u>70</u>	x 3 = <u>210</u>																			
FACU species <u>0</u>	x 4 = <u>0</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>140</u> (A)	<u>350</u> (B)																			
Prevalence Index = B/A = <u>2.50</u>																				
Sapling/Shrub Stratum (Plot size: <u>15'</u>)																				
1. <u><i>Aronia melanocarpa</i></u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. _____																				
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
	<u>30</u>	=Total Cover																		
Herb Stratum (Plot size: <u>5'</u>)																				
1. <u><i>Osmunda claytoniana</i></u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	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 <u>X</u> No <u> </u>																
2. <u><i>Onoclea sensibilis</i></u>	<u>40</u>	<u>Yes</u>	<u>FACW</u>																	
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
8. _____																				
9. _____																				
10. _____																				
11. _____																				
12. _____																				
	<u>60</u>	=Total Cover																		
Woody Vine Stratum (Plot size: <u>30'</u>)																				
1. _____																				
2. _____																				
3. _____																				
4. _____																				
	=Total Cover																			

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

SOIL

Sampling Point: 1E

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR 2/1	100					Muck	
7-20	10YR 2/2	100					Mucky Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: 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 Soils³:

- 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)

³Indicators 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

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: Brookside Village Mobile Home Park/199 Stafford Road City/County: Wales/Hampden Sampling Date: 07/22/2021
 Applicant/Owner: Freehold Real Estate Management State: MA Sampling Point: 4C
 Investigator(s): Katy Wilkins, Megan Woytik Section, Township, Range: _____
 Landform (hillside, terrace, etc.): toe of slope Local relief (concave, convex, none): _____ Slope (%): 1
 Subregion (LRR or MLRA): LRR R, MLRA 145 Lat: 42.03235 Long: -72.23584 Datum: NAD 1983
 Soil Map Unit Name: 71A -Ridgebury fine sandy loam, 0 to 3 percent slopes, extremely stony 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 <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>Flag 4C-3</u>
Remarks: (Explain alternative procedures here or in a separate report.)	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u>	<u>Secondary Indicators (minimum of two required)</u>																															
<table style="width: 100%;"> <tr> <td><u>X</u> Surface Water (A1)</td> <td><u>X</u> Water-Stained Leaves (B9)</td> </tr> <tr> <td><u>X</u> High Water Table (A2)</td> <td>_____ Aquatic Fauna (B13)</td> </tr> <tr> <td><u>X</u> Saturation (A3)</td> <td>_____ Marl Deposits (B15)</td> </tr> <tr> <td>_____ Water Marks (B1)</td> <td>_____ Hydrogen Sulfide Odor (C1)</td> </tr> <tr> <td>_____ Sediment Deposits (B2)</td> <td>_____ Oxidized Rhizospheres on Living Roots (C3)</td> </tr> <tr> <td>_____ Drift Deposits (B3)</td> <td>_____ Presence of Reduced Iron (C4)</td> </tr> <tr> <td>_____ Algal Mat or Crust (B4)</td> <td>_____ Recent Iron Reduction in Tilled Soils (C6)</td> </tr> <tr> <td>_____ Iron Deposits (B5)</td> <td>_____ Thin Muck Surface (C7)</td> </tr> <tr> <td>_____ Inundation Visible on Aerial Imagery (B7)</td> <td>_____ Other (Explain in Remarks)</td> </tr> <tr> <td>_____ Sparsely Vegetated Concave Surface (B8)</td> <td></td> </tr> </table>	<u>X</u> Surface Water (A1)	<u>X</u> Water-Stained Leaves (B9)	<u>X</u> High Water Table (A2)	_____ Aquatic Fauna (B13)	<u>X</u> Saturation (A3)	_____ Marl Deposits (B15)	_____ Water Marks (B1)	_____ Hydrogen Sulfide Odor (C1)	_____ Sediment Deposits (B2)	_____ Oxidized Rhizospheres on Living Roots (C3)	_____ Drift Deposits (B3)	_____ Presence of Reduced Iron (C4)	_____ Algal Mat or Crust (B4)	_____ Recent Iron Reduction in Tilled Soils (C6)	_____ Iron Deposits (B5)	_____ Thin Muck Surface (C7)	_____ Inundation Visible on Aerial Imagery (B7)	_____ Other (Explain in Remarks)	_____ Sparsely Vegetated Concave Surface (B8)		<table style="width: 100%;"> <tr> <td>_____ Surface Soil Cracks (B6)</td> </tr> <tr> <td>_____ Drainage Patterns (B10)</td> </tr> <tr> <td>_____ Moss Trim Lines (B16)</td> </tr> <tr> <td>_____ Dry-Season Water Table (C2)</td> </tr> <tr> <td>_____ Crayfish Burrows (C8)</td> </tr> <tr> <td>_____ Saturation Visible on Aerial Imagery (C9)</td> </tr> <tr> <td>_____ Stunted or Stressed Plants (D1)</td> </tr> <tr> <td><u>X</u> Geomorphic Position (D2)</td> </tr> <tr> <td>_____ Shallow Aquitard (D3)</td> </tr> <tr> <td><u>X</u> Microtopographic Relief (D4)</td> </tr> <tr> <td>_____ FAC-Neutral Test (D5)</td> </tr> </table>	_____ 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)	<u>X</u> Geomorphic Position (D2)	_____ Shallow Aquitard (D3)	<u>X</u> Microtopographic Relief (D4)	_____ FAC-Neutral Test (D5)
<u>X</u> Surface Water (A1)	<u>X</u> Water-Stained Leaves (B9)																															
<u>X</u> High Water Table (A2)	_____ Aquatic Fauna (B13)																															
<u>X</u> Saturation (A3)	_____ Marl Deposits (B15)																															
_____ Water Marks (B1)	_____ Hydrogen Sulfide Odor (C1)																															
_____ Sediment Deposits (B2)	_____ Oxidized Rhizospheres on Living Roots (C3)																															
_____ Drift Deposits (B3)	_____ Presence of Reduced Iron (C4)																															
_____ Algal Mat or Crust (B4)	_____ Recent Iron Reduction in Tilled Soils (C6)																															
_____ Iron Deposits (B5)	_____ Thin Muck Surface (C7)																															
_____ Inundation Visible on Aerial Imagery (B7)	_____ Other (Explain in Remarks)																															
_____ Sparsely Vegetated Concave Surface (B8)																																
_____ Surface Soil Cracks (B6)																																
_____ Drainage Patterns (B10)																																
_____ Moss Trim Lines (B16)																																
_____ Dry-Season Water Table (C2)																																
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_____ Stunted or Stressed Plants (D1)																																
<u>X</u> Geomorphic Position (D2)																																
_____ Shallow Aquitard (D3)																																
<u>X</u> Microtopographic Relief (D4)																																
_____ FAC-Neutral Test (D5)																																

Field Observations: Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: 4C

	Absolute % Cover	Dominant Species?	Indicator Status																	
Tree Stratum (Plot size: <u>30'</u>)																				
1. <u><i>Carpinus caroliniana</i></u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75.0%</u> (A/B)																
2. <u><i>Betula alleghaniensis</i></u>	<u>50</u>	<u>Yes</u>	<u>FAC</u>																	
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
	<u>75</u> =Total Cover																			
Sapling/Shrub Stratum (Plot size: <u>15'</u>)																				
1. <u><i>Hamamelis virginiana</i></u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>	Prevalence Index worksheet: <table style="width:100%; border:none;"> <tr> <td style="width:50%; text-align:center;">Total % Cover of:</td> <td style="width:50%; text-align:center;">Multiply by:</td> </tr> <tr> <td>OBL species <u>60</u></td> <td>x 1 = <u>60</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>95</u></td> <td>x 3 = <u>285</u></td> </tr> <tr> <td>FACU species <u>20</u></td> <td>x 4 = <u>80</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>175</u> (A)</td> <td><u>425</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align:center;">Prevalence Index = B/A = <u>2.43</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>60</u>	x 1 = <u>60</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>95</u>	x 3 = <u>285</u>	FACU species <u>20</u>	x 4 = <u>80</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>175</u> (A)	<u>425</u> (B)	Prevalence Index = B/A = <u>2.43</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>60</u>	x 1 = <u>60</u>																			
FACW species <u>0</u>	x 2 = <u>0</u>																			
FAC species <u>95</u>	x 3 = <u>285</u>																			
FACU species <u>20</u>	x 4 = <u>80</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>175</u> (A)	<u>425</u> (B)																			
Prevalence Index = B/A = <u>2.43</u>																				
2. _____																				
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
	<u>20</u> =Total Cover																			
Herb Stratum (Plot size: <u>5'</u>)																				
1. <u><i>Parathelypteris noveboracensis</i></u>	<u>15</u>	<u>No</u>	<u>FAC</u>	Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. <u><i>Symplocarpus foetidus</i></u>	<u>60</u>	<u>Yes</u>	<u>OBL</u>																	
3. <u><i>Osmunda claytoniana</i></u>	<u>5</u>	<u>No</u>	<u>FAC</u>																	
4. _____																				
5. _____																				
6. _____																				
7. _____																				
8. _____																				
9. _____																				
10. _____																				
11. _____																				
12. _____																				
	<u>80</u> =Total Cover																			
Woody Vine Stratum (Plot size: <u>30'</u>)																				
1. _____				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.																
2. _____																				
3. _____																				
4. _____																				
	_____ =Total Cover																			

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

SOIL

Sampling Point: 4C

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 2/2	100					Mucky Loam/Clay	
4-8	10YR 2/1	100					Mucky Sand	
8-12	10YR 3/3	100					Sandy	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: 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 Soils³:

- 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)

³Indicators 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: Brookside Village Mobile Home Park/199 Stafford Road City/County: Wales/Hampden Sampling Date: 07/22/2021
 Applicant/Owner: Freehold Real Estate Management State: MA Sampling Point: 4D
 Investigator(s): Katy Wilkins, Megan Woytik Section, Township, Range: _____
 Landform (hillside, terrace, etc.): terrace Local relief (concave, convex, none): _____ Slope (%): 1
 Subregion (LRR or MLRA): LRR R, MLRA 145 Lat: 42.03222 Long: -72.23625 Datum: NAD 1983
 Soil Map Unit Name: 71A - Ridgebury fine sandy loam, 0 to 3 percent slopes, extremely stony NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes 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 <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____ If yes, optional Wetland Site ID: <u>Flag 4D-2</u>
Remarks: (Explain alternative procedures here or in a separate report.)	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input checked="" type="checkbox"/> High Water Table (A2) _____ Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) _____ Marl Deposits (B15) _____ Water Marks (B1) _____ Hydrogen Sulfide Odor (C1) _____ Sediment Deposits (B2) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Drift Deposits (B3) _____ Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Iron Deposits (B5) _____ Thin Muck Surface (C7) _____ Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) <input checked="" type="checkbox"/> 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) <input checked="" type="checkbox"/> Geomorphic Position (D2) _____ Shallow Aquitard (D3) <input checked="" type="checkbox"/> Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
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Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>1</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>1</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
---	--

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: 4D

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: <u>30'</u>)			
1. <u><i>Acer rubrum</i></u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>
2. <u><i>Alnus incana</i></u>	<u>40</u>	<u>Yes</u>	<u>FACW</u>
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	<u>80</u>	<u>=Total Cover</u>	
Sapling/Shrub Stratum (Plot size: <u>15'</u>)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	_____	<u>=Total Cover</u>	
Herb Stratum (Plot size: <u>5'</u>)			
1. <u><i>Osmunda claytoniana</i></u>	<u>10</u>	<u>No</u>	<u>FAC</u>
2. <u><i>Symplocarpus foetidus</i></u>	<u>30</u>	<u>Yes</u>	<u>OBL</u>
3. <u><i>Carex crinita</i></u>	<u>30</u>	<u>Yes</u>	<u>OBL</u>
4. <u><i>Onoclea sensibilis</i></u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____
	<u>90</u>	<u>=Total Cover</u>	
Woody Vine Stratum (Plot size: <u>30'</u>)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
	_____	<u>=Total Cover</u>	

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>60</u>	x 1 = <u>60</u>
FACW species <u>60</u>	x 2 = <u>120</u>
FAC species <u>50</u>	x 3 = <u>150</u>
FACU species <u>0</u>	x 4 = <u>0</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>170</u> (A)	<u>330</u> (B)
Prevalence Index = B/A = <u>1.94</u>	

Hydrophytic Vegetation Indicators:

 1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is >50%

3 - Prevalence Index is ≤3.0¹

 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

 Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators 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

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

SOIL

Sampling Point: 4D

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR 3/3	100					Mucky Sand	
5-12	10YR 3/2	100					Sandy	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: 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 Soils³:

- 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)

³Indicators 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

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: Brookside Village Mobile Home Park/199 Stafford Road City/County: Wales/Hampden Sampling Date: 07/22/2021
 Applicant/Owner: Freehold Real Estate Management State: MA Sampling Point: 4E
 Investigator(s): Katy Wilkins, Megan Woytik Section, Township, Range: _____
 Landform (hillside, terrace, etc.): terrace Local relief (concave, convex, none): _____ Slope (%): 0
 Subregion (LRR or MLRA): LRR R, MLRA 145 Lat: 42.03253 Long: -72.23582 Datum: NAD 1983
 Soil Map Unit Name: 71A - Ridgebury fine sandy loam, 0 to 3 percent slopes, extremely stony NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes 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 <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____ If yes, optional Wetland Site ID: <u>Flag 4E-2</u>
Remarks: (Explain alternative procedures here or in a separate report.)	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input checked="" type="checkbox"/> High Water Table (A2) _____ Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) _____ Marl Deposits (B15) _____ Water Marks (B1) _____ Hydrogen Sulfide Odor (C1) _____ Sediment Deposits (B2) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Drift Deposits (B3) _____ Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Iron Deposits (B5) _____ Thin Muck Surface (C7) <input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) <input checked="" type="checkbox"/> Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) <input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
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Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>1</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>1</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: 4E

	Absolute % Cover	Dominant Species?	Indicator Status																	
Tree Stratum (Plot size: <u>30'</u>)																				
1. <u><i>Alnus incana</i></u>	60	Yes	FACW	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																
2. <u><i>Carpinus caroliniana</i></u>	20	Yes	FAC																	
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
	80	=Total Cover		Prevalence Index worksheet: <table style="width:100%; border:none;"> <tr> <td style="width:50%; text-align:center;">Total % Cover of:</td> <td style="width:50%; text-align:center;">Multiply by:</td> </tr> <tr> <td>OBL species <u>40</u></td> <td>x 1 = <u>40</u></td> </tr> <tr> <td>FACW species <u>75</u></td> <td>x 2 = <u>150</u></td> </tr> <tr> <td>FAC species <u>40</u></td> <td>x 3 = <u>120</u></td> </tr> <tr> <td>FACU species <u>15</u></td> <td>x 4 = <u>60</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>170</u> (A)</td> <td><u>370</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align:center;">Prevalence Index = B/A = <u>2.18</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>40</u>	x 1 = <u>40</u>	FACW species <u>75</u>	x 2 = <u>150</u>	FAC species <u>40</u>	x 3 = <u>120</u>	FACU species <u>15</u>	x 4 = <u>60</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>170</u> (A)	<u>370</u> (B)	Prevalence Index = B/A = <u>2.18</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>40</u>	x 1 = <u>40</u>																			
FACW species <u>75</u>	x 2 = <u>150</u>																			
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UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>170</u> (A)	<u>370</u> (B)																			
Prevalence Index = B/A = <u>2.18</u>																				
Sapling/Shrub Stratum (Plot size: <u>15'</u>)																				
1. <u><i>Symplocarpus foetidus</i></u>	40	Yes	OBL																	
2. <u><i>Onoclea sensibilis</i></u>	15	No	FACW																	
3. <u><i>Rosa multiflora</i></u>	15	No	FACU																	
4. <u><i>Osmunda claytoniana</i></u>	20	Yes	FAC																	
5. _____																				
6. _____																				
7. _____																				
	90	=Total Cover																		
Herb Stratum (Plot size: <u>5'</u>)																				
1. _____				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. _____																				
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
8. _____																				
9. _____																				
10. _____																				
11. _____																				
12. _____																				
Woody Vine Stratum (Plot size: <u>30'</u>)																				
1. _____				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.																
2. _____																				
3. _____																				
4. _____																				
=Total Cover																				
<table style="width:100%; border:none;"> <tr> <td style="width:60%;">Hydrophytic Vegetation Present?</td> <td style="width:20%; text-align:center;">Yes <u>X</u></td> <td style="width:20%; text-align:center;">No _____</td> </tr> </table>					Hydrophytic Vegetation Present?	Yes <u>X</u>	No _____													
Hydrophytic Vegetation Present?	Yes <u>X</u>	No _____																		

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

SOIL

Sampling Point: 4E

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR 2/1	100					Muck	
3-12	10YR 2/1	100					Mucky Sand	

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

- | | |
|--|--|
| Hydric Soil Indicators: | Indicators for Problematic Hydric Soils³: |
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) |
| <input type="checkbox"/> Stratified Layers (A5) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) |
| <input checked="" type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Red Parent Material (F21) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Dark Surface (S7) | |
| <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) | |
| <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) | |
| <input type="checkbox"/> High Chroma Sands (S11) (LRR K, L) | |
| <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) | |
| <input type="checkbox"/> Loamy Gleyed Matrix (F2) | |
| <input type="checkbox"/> Depleted Matrix (F3) | |
| <input type="checkbox"/> Redox Dark Surface (F6) | |
| <input type="checkbox"/> Depleted Dark Surface (F7) | |
| <input type="checkbox"/> Redox Depressions (F8) | |
| <input type="checkbox"/> Marl (F10) (LRR K, L) | |

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

Restrictive Layer (if observed):	Hydric Soil Present?
Type: _____	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Depth (inches): _____	

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: Brookside Village Mobile Home Park/199 Stafford Road City/County: Wales/Hampden Sampling Date: 07/22/2021
 Applicant/Owner: Freehold Real Estate Management State: MA Sampling Point: 4F
 Investigator(s): Katy Wilkins, Megan Woytik Section, Township, Range: _____
 Landform (hillside, terrace, etc.): toe of slope Local relief (concave, convex, none): _____ Slope (%): 0
 Subregion (LRR or MLRA): LRR R, MLRA 145 Lat: 42.03253 Long: -72.23595 Datum: NAD 1983
 Soil Map Unit Name: 71A - Ridgebury fine sandy loam, 0 to 3 percent slopes, extremely stony 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 <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>Flag 4F-5</u>
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input checked="" type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input checked="" type="checkbox"/> High Water Table (A2) _____ Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) _____ Marl Deposits (B15) _____ Water Marks (B1) _____ Hydrogen Sulfide Odor (C1) _____ Sediment Deposits (B2) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Drift Deposits (B3) _____ Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Iron Deposits (B5) _____ Thin Muck Surface (C7) _____ Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) <input checked="" type="checkbox"/> 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) <input checked="" type="checkbox"/> Geomorphic Position (D2) _____ Shallow Aquitard (D3) <input checked="" type="checkbox"/> Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
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Field Observations: Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: 4F

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: <u>30'</u>)			
1. <u><i>Alnus incana</i></u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>
2. <u><i>Carpinus caroliniana</i></u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>
3. <u><i>Acer rubrum</i></u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	<u>50</u>	<u>=Total Cover</u>	
Sapling/Shrub Stratum (Plot size: <u>15'</u>)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	_____	<u>=Total Cover</u>	
Herb Stratum (Plot size: <u>5'</u>)			
1. <u><i>Symplocarpus foetidus</i></u>	<u>35</u>	<u>Yes</u>	<u>OBL</u>
2. <u><i>Osmunda claytoniana</i></u>	<u>15</u>	<u>No</u>	<u>FAC</u>
3. <u><i>Impatiens capensis</i></u>	<u>35</u>	<u>Yes</u>	<u>FACW</u>
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____
	<u>85</u>	<u>=Total Cover</u>	
Woody Vine Stratum (Plot size: <u>30'</u>)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
	_____	<u>=Total Cover</u>	

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>35</u>	x 1 = <u>35</u>
FACW species <u>55</u>	x 2 = <u>110</u>
FAC species <u>45</u>	x 3 = <u>135</u>
FACU species <u>0</u>	x 4 = <u>0</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>135</u> (A)	<u>280</u> (B)
Prevalence Index = B/A = <u>2.07</u>	

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators 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

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

SOIL

Sampling Point: 4F

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 2/1	100					Muck	
4-12	10YR 3/2	100					Mucky Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: 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 Soils³:

- 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)

³Indicators 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

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: Brookside Village Mobile Home Park/199 Stafford Road City/County: Wales/Hampden Sampling Date: 07/22/2021
 Applicant/Owner: Freehold Real Estate Management State: MA Sampling Point: 2A
 Investigator(s): Katy Wilkins, Megan Woytik Section, Township, Range: _____
 Landform (hillside, terrace, etc.): toe of slope Local relief (concave, convex, none): _____ Slope (%): 1
 Subregion (LRR or MLRA): LRR R, MLRA 145 Lat: 42.03196 Long: -72.23754 Datum: NAD 1983
 Soil Map Unit Name: 421C - Canton fine sandy loam, 8 to 15 percent slopes, very stony NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes 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 <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If yes, optional Wetland Site ID: <u>Flag 2A-2</u>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Remarks: (Explain alternative procedures here or in a separate report.)			

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
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Field Observations: Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u> Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: 2A

<u>Tree Stratum</u> (Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>6</u> (A) Total Number of Dominant Species Across All Strata: <u>7</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>85.7%</u> (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
=Total Cover				Prevalence Index worksheet: <table style="width:100%; border:none;"> <tr> <td style="width:50%; text-align:center;">Total % Cover of:</td> <td style="width:50%; text-align:center;">Multiply by:</td> </tr> <tr> <td>OBL species <u>30</u></td> <td>x 1 = <u>30</u></td> </tr> <tr> <td>FACW species <u>60</u></td> <td>x 2 = <u>120</u></td> </tr> <tr> <td>FAC species <u>20</u></td> <td>x 3 = <u>60</u></td> </tr> <tr> <td>FACU species <u>10</u></td> <td>x 4 = <u>40</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>120</u> (A)</td> <td><u>250</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align:center;">Prevalence Index = B/A = <u>2.08</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>30</u>	x 1 = <u>30</u>	FACW species <u>60</u>	x 2 = <u>120</u>	FAC species <u>20</u>	x 3 = <u>60</u>	FACU species <u>10</u>	x 4 = <u>40</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>120</u> (A)	<u>250</u> (B)	Prevalence Index = B/A = <u>2.08</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>30</u>	x 1 = <u>30</u>																			
FACW species <u>60</u>	x 2 = <u>120</u>																			
FAC species <u>20</u>	x 3 = <u>60</u>																			
FACU species <u>10</u>	x 4 = <u>40</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>120</u> (A)	<u>250</u> (B)																			
Prevalence Index = B/A = <u>2.08</u>																				
=Total Cover																				
<u>Sapling/Shrub Stratum</u> (Plot size: <u>15'</u>)																				
1. <u><i>Ilex verticillata</i></u>	<u>30</u>	<u>Yes</u>	<u>FACW</u>																	
2. <u><i>Myrica gale</i></u>	<u>10</u>	<u>Yes</u>	<u>OBL</u>																	
3. <u><i>Rosa multiflora</i></u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
=Total Cover																				
<u>50</u>																				
<u>Herb Stratum</u> (Plot size: <u>5'</u>)																				
1. <u><i>Carex vulpinoidea</i></u>	<u>20</u>	<u>Yes</u>	<u>OBL</u>																	
2. <u><i>Dichanthelium clandestinum</i></u>	<u>15</u>	<u>Yes</u>	<u>FACW</u>																	
3. <u><i>Onoclea sensibilis</i></u>	<u>15</u>	<u>Yes</u>	<u>FACW</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
12. _____	_____	_____	_____																	
=Total Cover																				
<u>50</u>																				
<u>Woody Vine Stratum</u> (Plot size: <u>30'</u>)																				
1. <u><i>Vitis riparia</i></u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
=Total Cover																				
<u>20</u>																				

Hydrophytic Vegetation Indicators:
 1 - Rapid Test for Hydrophytic Vegetation
 X 2 - Dominance Test is >50%
 X 3 - Prevalence Index is ≤3.0¹
 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 Problematic Hydrophytic Vegetation¹ (Explain)
¹Indicators 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: 2A

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR 2/2	100					Mucky Sand	
8-16	10YR 2/1	100					Sandy	

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

- | | | |
|--|--|--|
| Hydric Soil Indicators: | | Indicators for Problematic Hydric Soils³: |
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) | <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) | <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> High Chroma Sands (S11) (LRR K, L) | <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) |
| <input type="checkbox"/> Stratified Layers (A5) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Dark Surface (F6) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) |
| <input checked="" type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Depleted Dark Surface (F7) | <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Redox Depressions (F8) | <input type="checkbox"/> Red Parent Material (F21) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Marl (F10) (LRR K, L) | <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Stripped Matrix (S6) | | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Dark Surface (S7) | | |

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

Restrictive Layer (if observed):	
Type: _____	
Depth (inches): _____	
	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

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: Brookside Village Mobile Home Park/199 Stafford Road City/County: Wales/Hampden Sampling Date: 07/22/2021
 Applicant/Owner: Freehold Real Estate Management State: MA Sampling Point: 3A
 Investigator(s): Katy Wilkins, Megan Woytik Section, Township, Range: _____
 Landform (hillside, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 2
 Subregion (LRR or MLRA): LRR R, MLRA 145 Lat: 42.03208 Long: -72.23767 Datum: NAD 1983
 Soil Map Unit Name: 421 - Canton fine sandy loam, 8 to 15 percent slopes, very stony 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 <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>Flag 3A-7</u>
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input checked="" type="checkbox"/> Surface Water (A1) _____ Water-Stained Leaves (B9) <input checked="" type="checkbox"/> High Water Table (A2) _____ Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) _____ Marl Deposits (B15) _____ Water Marks (B1) _____ Hydrogen Sulfide Odor (C1) _____ Sediment Deposits (B2) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Drift Deposits (B3) _____ Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Iron Deposits (B5) _____ Thin Muck Surface (C7) _____ Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> _____ 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) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
--	---

Field Observations: Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____
---	---

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: 3A

Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Carpinus caroliniana</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	<u>25</u> =Total Cover		
Sapling/Shrub Stratum (Plot size: <u>15'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Rosa multiflora</u>	<u>15</u>	<u>Yes</u>	<u>FACU</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	<u>15</u> =Total Cover		
Herb Stratum (Plot size: <u>5'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Onoclea sensibilis</u>	<u>30</u>	<u>Yes</u>	<u>FACW</u>
2. <u>Dichanthelium clandestinum</u>	<u>35</u>	<u>Yes</u>	<u>FACW</u>
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____
	<u>65</u> =Total Cover		
Woody Vine Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
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 <u>0</u>	x 1 = <u>0</u>
FACW species <u>65</u>	x 2 = <u>130</u>
FAC species <u>25</u>	x 3 = <u>75</u>
FACU species <u>15</u>	x 4 = <u>60</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>105</u> (A)	<u>265</u> (B)
Prevalence Index = B/A = <u>2.52</u>	

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators 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

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

SOIL

Sampling Point: 3A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-9	10YR 3/4	100					Muck	
9-15	10YR 2/2	98	10YR 6/6	2	C	M	Mucky Sand	Prominent redox concentrations

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: 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 Soils³:

- 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)

³Indicators 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

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: Brookside Village Mobile Home Park/199 Stafford Road City/County: Wales/Hampden Sampling Date: 07/22/2021
 Applicant/Owner: Freehold Real Estate Management State: MA Sampling Point: 5A
 Investigator(s): Katy Wilkins, Megan Woytik Section, Township, Range: _____
 Landform (hillside, terrace, etc.): Terrace Local relief (concave, convex, none): _____ Slope (%): 1
 Subregion (LRR or MLRA): LRR R, MLRA 145 Lat: 42.03381 Long: -72.23576 Datum: NAD 1983
 Soil Map Unit Name: 71A - Ridgebury fine sandy loam, 0 to 3 percent slopes, extremely stony 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 X, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No X
 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 <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>Flag 5A-5</u>
Remarks: (Explain alternative procedures here or in a separate report.) Evidence of dumped woody debris present.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input checked="" type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input checked="" type="checkbox"/> High Water Table (A2) _____ Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) _____ Marl Deposits (B15) _____ Water Marks (B1) _____ Hydrogen Sulfide Odor (C1) _____ Sediment Deposits (B2) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Drift Deposits (B3) _____ Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Iron Deposits (B5) _____ Thin Muck Surface (C7) _____ Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> _____ 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) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
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Field Observations: Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>6</u> Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>6</u> Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: 5A

	Absolute % Cover	Dominant Species?	Indicator Status																	
Tree Stratum (Plot size: <u>30'</u>)																				
1. <u><i>Acer rubrum</i></u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																
2. <u><i>Carpinus caroliniana</i></u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>																	
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
	<u>50</u>	=Total Cover		Prevalence Index worksheet: <table style="width:100%; border:none;"> <tr> <td style="text-align:center;">Total % Cover of:</td> <td style="text-align:center;">Multiply by:</td> </tr> <tr> <td>OBL species <u>60</u></td> <td>x 1 = <u>60</u></td> </tr> <tr> <td>FACW species <u>30</u></td> <td>x 2 = <u>60</u></td> </tr> <tr> <td>FAC species <u>50</u></td> <td>x 3 = <u>150</u></td> </tr> <tr> <td>FACU species <u>10</u></td> <td>x 4 = <u>40</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>150</u></td> <td>(A) <u>310</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align:center;">Prevalence Index = B/A = <u>2.07</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>60</u>	x 1 = <u>60</u>	FACW species <u>30</u>	x 2 = <u>60</u>	FAC species <u>50</u>	x 3 = <u>150</u>	FACU species <u>10</u>	x 4 = <u>40</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>150</u>	(A) <u>310</u> (B)	Prevalence Index = B/A = <u>2.07</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>60</u>	x 1 = <u>60</u>																			
FACW species <u>30</u>	x 2 = <u>60</u>																			
FAC species <u>50</u>	x 3 = <u>150</u>																			
FACU species <u>10</u>	x 4 = <u>40</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>150</u>	(A) <u>310</u> (B)																			
Prevalence Index = B/A = <u>2.07</u>																				
Sapling/Shrub Stratum (Plot size: <u>15'</u>)																				
1. _____																				
2. _____																				
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
		=Total Cover																		
Herb Stratum (Plot size: <u>5'</u>)																				
1. <u><i>Symplocarpus foetidus</i></u>	<u>40</u>	<u>Yes</u>	<u>OBL</u>	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. <u><i>Osmunda regalis</i></u>	<u>20</u>	<u>Yes</u>	<u>OBL</u>																	
3. <u><i>Trillium undulatum</i></u>	<u>10</u>	<u>No</u>	<u>FACU</u>																	
4. <u><i>Veratrum viride</i></u>	<u>30</u>	<u>Yes</u>	<u>FACW</u>																	
5. _____																				
6. _____																				
7. _____																				
8. _____																				
9. _____																				
10. _____																				
11. _____																				
12. _____																				
	<u>100</u>	=Total Cover																		
Woody Vine Stratum (Plot size: <u>30'</u>)																				
1. _____				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.																
2. _____																				
3. _____																				
4. _____																				
		=Total Cover																		
Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																				

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

SOIL

Sampling Point: 5A

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10yr 2/1	100					Peat	
3-15	7.5YR 2.5/1	100					Sandy	
15-21	10YR 4/2	100					Sandy	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: 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 Soils³:

- 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)

³Indicators 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

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)

ATTACHMENT C
WETLAND REPLACEMENT PLAN FORMS

Western Regional Office, Bureau of Water Resources, Wetlands Program

Restoration Plan in Response to Information Request Letter

Data Required for Proposed **Bordering Vegetated Wetland Restoration/Replication Area(s)**
Per *Massachusetts Inland Wetland Replication Guidelines* (MassDEP 2002)
and 310 CMR 10.55(2)(b)1. through 7. and 314 CMR 9.06(2)

The Applicant shall, at a minimum, provide the following information per the *Massachusetts Inland Wetland Replication Guidelines* (MassDEP 2002) and the Western Region Wetlands Program, which shall serve as the **Restoration Plan** in compliance with applicable regulation. If a particular piece or kind of information requested in this Form is more detailed or specific than that called for in *Massachusetts Inland Wetland Replication Guidelines*, the Applicant shall defer to this **Restoration Plan** and supply the requested information per this **Restoration Plan**.

Please check each below indicating that the data has been collected and provided. Blank spaces have been provided after each ► to fill in applicable information, or references to documents and plans where such information can be located. Please use a different color and/or font when filling in blank spaces after the ►.

Some data required below may not be applicable to a given site. If so, record “n/a” adjacent to the ► and further justify as necessary.

PLEASE NOTE: The below shall be filled out on behalf of the Applicant by the designated Wetland Scientist approved by the Department in proceedings before it.

PLEASE NOTE: For the proposed “loss” of “Bordering Vegetated Wetlands” [as defined at 310 CMR 10.55(2)]; and/or “discharge of dredged or fill material” (as defined at 314 CMR 9.02) to “Bordering Vegetated Wetlands” and /or “Isolated Vegetated Wetlands” [as defined at 310 CMR 10.55(2) and/or 314 CMR 9.02] of substantial areal size, and/or in disparate geographic settings or locations, and/or when differing structural/plant community characteristics are encountered in heterogenous complexes; the Wetland Scientist may elect to fill out a copy of this form for each distinct area, provided each such form is linked to an identifiable geography or location.

- If checked, this is one (1) of several forms necessary to comply with applicable regulation.
Geography or Location Descriptor ► [Wetland 1E & 1D – Hemlock Lane](#)
[Wetlands 4C, 4D, 4E, & 4F – Wellhouse Access Road](#)

1 PARCEL AND PROJECT DATA

- Wetlands File Number and/or Transmittal Number (if any):
- Owner(s) of parcel(s) on which proposed Bordering Vegetated Wetland [hereinafter BVW, and including Isolated Vegetated Wetland (IVW) where applicable] Restoration/Replication Area(s) [per 310 CMR 10.55(4)(b)1. through 7. and/or 314 CMR 9.06(2)] will be located:
- [Freehold Real Estate Management](#)
- Municipality and locus, including facility name (if any) and street address (“the Site”):
- [Hemlock Lane and Wellhouse Access Road, Wales, MA - Approximately 42.033523, - 72.237321](#)
- Assessor’s map and parcel identifying codes:
- [Book 19784 Page 386](#)

- Land use and land cover of the **present** condition of the proposed BVW Restoration/Replication Area(s) site(s):
 - ▶ Roadside culvert for a perennial stream (Delhi Brook and unnamed stream) and residential area
- Name and credentials of Wetland Scientist who designed BVW Restoration/Replication Area(s):
 - ▶ Katherine Wilkins; 10+ years of applied wetlands and ecology; B.A. Wildlife Conservation (2008) and MS Water, Wetlands, Waterways (2015)
- Name and credentials of construction contractors responsible for building BVW Restoration/Replication Area(s), and designated foreperson:
 - ▶ Pending contract award
- Name and credentials of Compliance Monitor appointed to monitor BVW Restoration/Replication Area(s):
 - ▶ Pending contract award

2 DATA FOR LOST BVW

Standard Classification of Lost BVW

- Classification from *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al, US Fish and Wildlife Service, FWS/OBS-79/31, 1979):
 - ▶ System:
 - Palustrine
 - Other▶
 - ▶ Subsystem: None/Or▶
 - ▶ Class: Scrub-Shrub /Emergent
 - ▶ Subclass: Persistent / Nonpersistent
 - ▶ Water Regime Modifier: Seasonally Flooded/Saturated
 - ▶ Other Modifiers:
 - ▶ Dominance Type:▶ Scrub-shrub

Wetland Hydrology of Lost BVW

- Hydrogeomorphic setting of lost BVW:
 - ▶ Please refer to Section 2 of the Inland Wetland Replacement Plan (December 2022)
- National Wetlands Inventory Water Regime Modifier (Northeast Region Version)
 - ▶ Seasonally Flooded/Saturated
- Inventory and describe all supportive surface evidence of wetland hydrology:*
 - Depth and distribution of surface inundation:
 - ▶ 6"
 - Water marks present
 - Drift lines present
 - Water-born sediment deposits present
 - Water-stained or silt-stained leaves present (silted)
 - Surface scoured areas present
 - Surface drainage patterns present
 - Windthrown trees with exposed root masses present
 - Morphological plant adaptations present
- Inventory and describe all supportive sub-surface evidence for analysis of long-term wetland hydrology:*
 - Distinct or prominent redoximorphic features present
 - Oxidized rhizospheres present
 - Shallow rooting of hydrophytes observed
 - Soil saturation observed and recorded

Inventory and describe all supportive collateral evidence for analysis of long-term wetland hydrology:

- Interpretation of aerial photographs conducted (list sources and conclusions):
- ▶
- US Soil Conservation Service county soil survey series descriptions (hydrologic data within series descriptions and elsewhere) used (list results):
- ▶ [Ridgebury fine sandy loam \(Map Unit 71A\)](#)
- Government and scientific records used (list sources and conclusions):
- ▶
- Previous permit findings used (list sources and conclusions):
- ▶

Hydric Soil Structure in Lost BVW

- Wetland Scientist has identified Hydric Soil Indicators per *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region*, ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble, ERDC/EL TR-12-1, Vicksburg, MS: U.S. Army Engineer Research and Development Center (US Army Corps of Engineers 2012). The Hydric Soil Indicator(s) is: [S11, A2](#)
- ▶
- Soil Profile Descriptions of lost BVW collected in “Wetland Determination Data Forms – Northcentral and Northeast Region”, and attached as/in:
- ▶ [Please refer to Section 2 of the Inland Wetland Replacement Plan \(December 2022\)](#)
- Wetland Scientist used definition of “Soil Surface” per “Glossary of Terms” of *Field Indicators for Identifying Hydric Soils in New England* (NEIWPC 2004) or an equivalent acceptable to the Department for each Soil Profile Description
- Soil Profile Description(s)
- Wetland Scientist identified soil texture for each horizon in each profile
- Munsell Notation for each horizon in each profile recorded for:
 - Matrix
 - Redoximorphic features
- Soil Morphology:
 - Nodules and concretions present
 - Redox concentrations present
 - Redox depletions present
 - Gleyed matrix present
 - Pore linings, including oxidized rhizospheres, present
 - Sulfidic materials present
 - Histosol present
 - Histic epipedon present
 - Organic streaking present
- Color photographs of the soil profile(s) and any encountered free water are included as/in:
- ▶ [Please refer to Appendix B of the Inland Wetland Replacement Plan \(December 2022\)](#)
- Wetland Scientist has conducted an inventory of non-indigenous vascular plant species within 50 feet of outer perimeter of proposed soil translocation area (if any) and attached as/in:
- ▶ [Barberry \(*Berberis thundbergii*\)](#)

Wetland Plant Community in Lost BVW

- The Wetland Scientist has fully completed “Wetland Determination Data Forms – Northcentral and Northeast Region” [as found within: US Army Corps of Engineers. 2012. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual:*

Northcentral and Northeast Region, ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-12-1. Vicksburg, MS: U.S. Army Engineer Research and Development Center (Version 2.0)], for Observation Plots of a sufficient number to fully describe each distinct ecological unit of BVW. Forms shall be completed per the methods detailed within *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region*, ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble, ERDC/EL TR-12-1, Vicksburg, MS: U.S. Army Engineer Research and Development Center (US Army Corps of Engineers 2012). Plants shall be identified to the species level and scientific nomenclature should follow *The Vascular Plants of Massachusetts: A County Checklist-First Revision*, by Melissa Dow Cullina, Bryan Connolly, Bruce Sorrie and Paul Somers (Massachusetts Natural Heritage & Endangered Species Program, Massachusetts Division of Fish and Wildlife, 2011), or an equivalent acceptable to the Department. Soil profiles shall be prepared per the above using *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region*. Color photographs or color reproductions of photographs for each Observation Plot, both for plant community composition and hydric soil characteristics, shall be submitted as part of this information

► [Please refer to Attachment B of the Inland Wetland Replacement Plan \(December 2022\)](#)

- The Wetland Scientist has assessed the area of the lost BVW per the requirements of Chapter 5, “Difficult Wetland Situations”, of the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region*, if applicable.
- A complete and thorough inventory of all vascular species of hydrophytes within the area of lost BVW has been completed, using scientific nomenclature following *The Vascular Plants of Massachusetts: A County Checklist-First Revision*, by Melissa Dow Cullina, Bryan Connolly, Bruce Sorrie and Paul Somers (Massachusetts Natural Heritage & Endangered Species Program, Massachusetts Division of Fish and Wildlife, 2011), or an equivalent acceptable to the Department, and is included as/in:

► [Please refer to Section 2 of the Inland Wetland Replacement Plan \(December 2022\)](#)

- Each species inventoried has been ranked through visual estimate as to abundance.
- A “dominance type” [see *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al 1979)] has been assigned to each “vegetation stratum” [see “Definitions of Strata” in Chapter 2 of *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region*].
- The Wetland Scientist has provided a written description of the structural and community heterogeneity within the lost BVW, as expressed minimally through National Wetlands Inventory alphanumeric codes and annotated color photographs. This written description is attached as/in:

► [Please refer to Section 2 of the Inland Wetland Replacement Plan \(December 2022\)](#)

Abiotic and Biotic Structure in the Lost BVW

Inventory and Describe the substrate condition (characteristics and distribution)

- Grade description provided in:
 - n/a – none present
 - Microtopography present
 - Rock fragments and ledge/outcrops present
 - Unvegetated, unconsolidated substrate present
 - Dead organic material, including trunks, stumps, logs, branches, etc, present
 - Written description of above provided at/in:
 - n/a – none present

- Areal extent, as expressed in square feet, of the lost BVW is:
 - ▶ 1,550 SF
- Methodology for calculating the areal extent of the lost BVW is:
 - ▶ AutoCAD

3 DATA FOR PROPOSED BVW RESTORATION/REPLICATION AREA(S)

Proposed Location of BVW Restoration/Replication Area(s)

- In Situ* (within footprint of altered/filled BVW)
- Elsewhere

Justify reason that *in situ* restoration is not possible; and where replication will occur ▶

Restoration of the Bordering Vegetated Wetland will be completed in the adjacent upland where grading is required to make the replacement wetland at the same grade as the adjacent existing wetland to maintain a hydrologic connection to existing Wetland 4F. In-Situ restoration is not feasible due to the location of the replacement culverts and grading.

Proposed Hydrology of BVW Restoration/Replication Area(s)

Inventory and describe all supportive sub-surface evidence for analysis of long-term hydrology at proposed design depth of Restoration/Replication Area(s)

- Depth to distinct or prominent redoximorphic features measured to be:
 - ▶ n/a – same as existing
- Depth to observed soil saturation:
 - ▶ n/a – same as existing
- Wetland Scientist has predicted the periodicity and duration of the apparent water table at design depth to be:
 - ▶ n/a – same as existing
- Color photographs of the soil profile(s) and any encountered free water are included as:
 - ▶ n/a – same as existing

Proposed Soil Structure of BVW Restoration/Replication Area(s)

- Wetland Scientist has completed a written methodology for translocation of “donor” soil, attached as:
 - ▶ n/a
- Wetland Scientist has prepared a list of materials, quantification of materials, and source of materials and attached as:
 - ▶ n/a
- Wetland Scientist has provided a written justification for proposed use of off-site materials, if any, and attached as:
 - ▶
 - Clean leaf compost will be used
 - Peat moss and peat moss by-products will NOT be used
 - Wood chips will NOT be used
 - Clean mineral soil of the following texture and source is proposed:
 - ▶
 - Other. Specify: ▶

Proposed Hydrophytic Plant Community in BVW Restoration/Replication Area(s)

- The Wetland Scientist has proposed a written projection of the structural and plant community composition for the BVW Restoration/Replication Area(s) upon its maturation, and has provided a written justification, attached as:
 - ▶ Please refer to Section 3 of the Inland Wetland Replacement Plan (December 2022)

- The Wetland Scientist has proposed a written floral composition of the BVW Restoration/Replication Area(s) upon the completion of construction, which is attached as:

▶ Please refer to [Section 3 of the Inland Wetland Replacement Plan \(December 2022\)](#)

- Within this written floral composition, the Wetland Scientist has listed proposed species by:
 - Scientific Name (use *The Vascular Plants of Massachusetts: A County Checklist-First Revision*, by Melissa Dow Cullina, Bryan Connolly, Bruce Sorrie and Paul Somers (Massachusetts Natural Heritage & Endangered Species Program, Massachusetts Division of Fish and Wildlife, 2011))
 - Horticultural source of stock/condition
 - Total number of planting units per species
 - Type of planting (bare root, potted, transplanted, etc.)
 - Type of seeding (specification(s) for commercial mix, on-site source, etc.)
 - Planting schedule
 - Post-planting care by species, and responsible party(ies)

4 MINIMUM SITE PLAN FEATURES

- Site plan has been stamped by a Professional Land Surveyor or Registered Professional Engineer
 - Scale is 1 inch = 30 feet or better, unless alternate scale is approved by the Department
 - Contour interval of one (1) foot
 - All data collection points, Observation Plots, transects geographically portrayed
 - Proposed boundary of BVW Restoration/Replication Area(s) clearly demarcated
 - Areal extent, as expressed in square feet, of BVW Restoration/Replication Area(s) is printed
 - Boundary of extant BVW is shown, with surveyed points (flags)
 - Location of planted material is clearly referenced
 - Location and extent of seeded areas is clearly referenced
 - Microtopographic features spatially portrayed (mapped) *n/a*
 - Depressions and/or pools
 - Mounds
 - Rock fragments, bedrock left in place
 - Woody debris
 - Other proposed features (perches, nesting boxes, platforms, etc.)
 - "Limit-of-work" boundary clearly demarcated
 - Position and type of erosion and sedimentation controls
 - Long-term protective measures within the Buffer Zone (fences, signs, easements) *n/a*
 - Cross-section plans with:
 - Depth to excavated surface
 - Proposed depth of translocated soil with layer depths
 - Predicted vertical range (elevations) of apparent water table
 - Predicted duration of saturation/inundation, and justification
 - Confining layers, if any
 - Gradient statistics for proposed and/or existing contours within one hundred (100) feet of the proposed boundary of BVW Restoration/Replication Area(s)
 - Proposed location of chemically treated surfaces (e.g. roads) within one hundred (100) feet of the proposed boundary of BVW Restoration/Replication Area(s) and mitigation,
- OR**

- No chemically treated surfaces are proposed within one hundred (100) feet of the proposed boundary of the BVW Restoration/Replication Area(s)
- Proposed location of snow disposal areas within one hundred (100) feet of the proposed boundary of the BVW Restoration/Replication Area(s) and mitigation, **OR**
- No snow disposal areas are proposed within one hundred (100) feet of the proposed boundary of the BVW Restoration/Replication Area(s)
- Proposed location of “point sources” of “stormwater discharge” within one hundred (100) feet of the proposed boundary of the BVW Restoration/Replication Area(s) [please note that the proposed discharge of treated stormwater into a BVW Restoration/Replication Area(s) may fail 314 CMR 9.06(5) and/or (6)] **OR**
- No “point sources” of “stormwater discharge” are proposed within one hundred (100) feet of the proposed boundary of the BVW Restoration/Replication Area(s)

5 BVW RESTORATION/REPLICATION AREA(S) MONITORING

- The Wetland Scientist is aware that the Superseding Order of Conditions and/or the Water Quality Certification requires construction of a BVW Restoration/Replication Area(s) per the standards at 310 CMR 10.55(4)(b)1. through 7. and/or 314 CMR 9.06(2); and that the Superseding Order of Conditions and/or Water Quality Certification will require a comprehensive monitoring and reporting plan with the following minimum data and submittals:
 - Fully completed “Wetland Determination Data Forms – Northcentral and Northeast Region” [as found within: US Army Corps of Engineers. 2012. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region*, ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-12-1. Vicksburg, MS: U.S. Army Engineer Research and Development Center (Version 2.0)], for Observation Plots of a sufficient number to fully describe each distinct ecological unit of BVW. Forms shall be completed per the methods detailed within *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region*, ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble, ERDC/EL TR-12-1, Vicksburg, MS: U.S. Army Engineer Research and Development Center (US Army Corps of Engineers 2012). Plants shall be identified to the species level and scientific nomenclature should follow *The Vascular Plants of Massachusetts: A County Checklist-First Revision*, by Melissa Dow Cullina, Bryan Connolly, Bruce Sorrie and Paul Somers (Massachusetts Natural Heritage & Endangered Species Program, Massachusetts Division of Fish and Wildlife, 2011), or an equivalent acceptable to the Department. Soil profiles shall be prepared per the above using *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region*. Color photographs or color reproductions of photographs for each Observation Plot, both for plant community composition and hydric soil characteristics, shall be submitted as part of this information
 - All plants encountered shall be identified to the species level. Scientific nomenclature shall follow *The Vascular Plants of Massachusetts: A County Checklist-First Revision*, by Melissa Dow Cullina, Bryan Connolly, Bruce Sorrie and Paul Somers (Massachusetts Natural Heritage & Endangered Species Program, Massachusetts Division of Fish and Wildlife, 2011), or an equivalent acceptable to the Department.
 - Data collected on “Wetland Determination Data Forms – Northcentral and Northeast Region” shall be taken during or near peak biomass in early summer;

- Annual follow-up data collection on “Wetland Determination Data Forms – Northcentral and Northeast Region” shall be gathered within fourteen (14) calendar days of the date of the first such data collection
- Each sampling event shall include hydrologic data garnered from “observation holes”. These “observation holes” shall be at least twenty-four inches deep, as measured from the surface of the mineral soil horizon. Alternatively, and with the permission of the Department, the Wetland Scientist or her/his designee(s) can establish a shallow monitoring well directly adjacent to each Observation Plot within the Restoration/Replication Area(s). The shallow monitoring wells shall be constructed, installed, and operated in accordance with “Installing Monitoring Wells/Piezometers in Wetlands” [US Army Corps of Engineers, Wetlands Regulatory Assistance Program, WRAP Technical Note ERDC TN-WRAP-00-02, July 2000].
- This shall be repeated for at least two (2) full consecutive growing seasons after completion of construction, and then until such time at the BVW Restoration/Replication Area(s) meets 314 CMR 9.06(2), as determined solely by the Department.
- Using the “observation holes” or the “shallow monitoring wells”, the Wetland Scientist, or her/his designee(s) shall collect data on wetland hydrology within the Restoration/Replication Area(s) at least once per month during the growing season in the years specified in the Superseding Order of Conditions and/or Water Quality Certification. At a minimum the Wetland Scientist shall record depth to apparent water table and/or depth of surface inundation, both as measured from the soil surface [see *Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetlands Protection Act* (DEP 1995) for a definition] during each monthly observation.
- A complete and thorough annual inventory of all vascular plants within the entire BVW Restoration/Replication Area(s) shall be conducted. Scientific nomenclature shall follow *The Vascular Plants of Massachusetts: A County Checklist-First Revision*, by Melissa Dow Cullina, Bryan Connolly, Bruce Sorrie and Paul Somers (Massachusetts Natural Heritage & Endangered Species Program, Massachusetts Division of Fish and Wildlife, 2011), or an equivalent acceptable to the Department. All non-indigenous species encountered shall be identified as such in the inventory, and if encountered, a draft eradication/control plan shall be submitted to the Department for approval by August 31st of each year.
- Color photographs or color reproductions of photographs showing the entire BVW Restoration/Replication Area(s), the location of data collection points for all Observation Plots, and any surficial or subsurface evidence of wetland hydrology shall be submitted.
- All data collected during each of the years specified in the Superseding Order of Conditions and/or the Water Quality Certification shall be submitted in a written report. Based upon the data collected during sampling events, the Wetland Scientist shall render a conclusion within each report as to the success of the “Restoration/Replication Area(s)” in terms of 310 CMR 10.55(4)(b)1. through 7. and/or 314 CMR 9.06(2), **and** the establishment of wetland hydrology.

Western Regional Office, Bureau of Water Resources, Wetlands Program

In Situ Restoration Plan in Response to Information Request Letter

Data Required for Proposed **Bordering Vegetated Wetland Restoration/Replication Area(s)**
Per *Massachusetts Inland Wetland Replication Guidelines* (MassDEP 2002)
and 310 CMR 10.55(2)(b)1. through 7. and 314 CMR 9.06(2)

The Applicant shall, at a minimum, provide the following information per the *Massachusetts Inland Wetland Replication Guidelines* (MassDEP 2002) and the Western Region Wetlands Program, which shall serve as the **Restoration Plan** in compliance with applicable regulation. If a particular piece or kind of information requested in this Form is more detailed or specific than that called for in *Massachusetts Inland Wetland Replication Guidelines*, the Applicant shall defer to this **Restoration Plan** and supply the requested information per this **Restoration Plan**.

Please check each below indicating that the data has been collected and provided. Blank spaces have been provided after each ► to fill in applicable information, or references to documents and plans where such information can be located. Please use a different color and/or font when filling in blank spaces after the ►.

Some data required below may not be applicable to a given site. If so, record “n/a” adjacent to the ► and further justify as necessary.

PLEASE NOTE: The below shall be filled out on behalf of the Applicant by the designated Wetland Scientist approved by the Department in proceedings before it.

PLEASE NOTE: For the proposed “loss” of “Bordering Vegetated Wetlands” [as defined at 310 CMR 10.55(2)]; and/or “discharge of dredged or fill material” (as defined at 314 CMR 9.02) to “Bordering Vegetated Wetlands” and /or “Isolated Vegetated Wetlands” [as defined at 310 CMR 10.55(2) and/or 314 CMR 9.02] of substantial areal size, and/or in disparate geographic settings or locations, and/or when differing structural/plant community characteristics are encountered in heterogenous complexes; the Wetland Scientist may elect to fill out a copy of this form for each distinct area, provided each such form is linked to an identifiable geography or location.

- If checked, this is one (1) of several forms necessary to comply with applicable regulation.
Geography or Location Descriptor ► **Wetland 1E & 1D – Hemlock Lane**
Wetlands 4C, 4D, 4F, and 4F – Wellhouse Access Road

1 PARCEL AND PROJECT DATA

- Wetlands File Number and/or Transmittal Number (if any):
- Owner(s) of parcel(s) on which proposed Bordering Vegetated Wetland [hereinafter BVW, and including Isolated Vegetated Wetland (IVW) where applicable] Restoration/Replication Area(s) [per 310 CMR 10.55(4)(b)1. through 7. and/or 314 CMR 9.06(2)] will be located:
- **Freehold Real Estate Management**
- Municipality and locus, including facility name (if any) and street address (“the Site”):
- **Hemlock Lane and Wellhouse Access Road, Wales, MA - Approximately 42.033523/-72.237321**
- Assessor’s map and parcel identifying codes:
- **Book 19784 Page 386**

- Land use and land cover of the **present** condition of the proposed BVW Restoration/Replication Area(s) site(s):
 - ▶ Roadside culvert for a perennial stream (Delphi Brook and unnamed Stream) and residential area
- Name and credentials of Wetland Scientist who designed BVW Restoration/Replication Area(s):
 - ▶ Katherine Wilkins; 10+ years of applied wetlands and ecology; B.A. Wildlife Conservation (2008) and MS Water, Wetlands, Waterways (2015)
- Name and credentials of construction contractors responsible for building BVW Restoration/Replication Area(s), and designated foreperson:
 - ▶ Pending contract award
- Name and credentials of Compliance Monitor appointed to monitor BVW Restoration/Replication Area(s):
 - ▶ Pending contract award

2 DATA FOR LOST BVW

Standard Classification of Lost BVW

- Classification from *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al, US Fish and Wildlife Service, FWS/OBS-79/31, 1979):
 - ▶ System:
 - Palustrine
 - Other▶
 - ▶ Subsystem: None/Or▶
 - ▶ Class: Scrub-Shrub/Emergent
 - ▶ Subclass: Persistent / Nonpersistent
 - ▶ Water Regime Modifier: Seasonally Flooded/Saturated
 - ▶ Other Modifiers:
 - ▶ Dominance Type:▶ Scrub-shrub

Wetland Hydrology of Lost BVW

- Hydrogeomorphic setting of lost BVW:
 - ▶ Please refer to Section 2 of the Inland Wetland Replacement Plan (December 2022)
- National Wetlands Inventory Water Regime Modifier (Northeast Region Version)
 - ▶ Seasonally Flooded/Saturated
- Inventory and describe all supportive surface evidence of wetland hydrology:*
 - Depth and distribution of surface inundation:
 - ▶ 6"
 - Water marks present
 - Drift lines present
 - Water-born sediment deposits present
 - Water-stained or silt-stained leaves present (silted)
 - Surface scoured areas present
 - Surface drainage patterns present
 - Windthrown trees with exposed root masses present
 - Morphological plant adaptations present
- Inventory and describe all supportive sub-surface evidence for analysis of long-term wetland hydrology:*
 - Distinct or prominent redoximorphic features present
 - Oxidized rhizospheres present
 - Shallow rooting of hydrophytes observed
 - Soil saturation observed and recorded

Inventory and describe all supportive collateral evidence for analysis of long-term wetland hydrology:

- Interpretation of aerial photographs conducted (list sources and conclusions):
- ▶
- US Soil Conservation Service county soil survey series descriptions (hydrologic data within series descriptions and elsewhere) used (list results):
- ▶ [Ridgebury fine sandy loam \(Map Unit 71A\)](#)
- Government and scientific records used (list sources and conclusions):
- ▶
- Previous permit findings used (list sources and conclusions):
- ▶

Hydric Soil Structure in Lost BVW

- Wetland Scientist has identified Hydric Soil Indicators per *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region*, ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble, ERDC/EL TR-12-1, Vicksburg, MS: U.S. Army Engineer Research and Development Center (US Army Corps of Engineers 2012). The Hydric Soil Indicator(s) is: [S1](#), [A2](#)
- ▶
- Soil Profile Descriptions of lost BVW collected in “Wetland Determination Data Forms – Northcentral and Northeast Region”, and attached as/in:
- ▶ [Please refer to Section 2 of the Inland Wetland Replacement Plan \(December 2022\)](#)
- Wetland Scientist used definition of “Soil Surface” per “Glossary of Terms” of *Field Indicators for Identifying Hydric Soils in New England* (NEIWPC 2004) or an equivalent acceptable to the Department for each Soil Profile Description
- Soil Profile Description(s)
- Wetland Scientist identified soil texture for each horizon in each profile
- Munsell Notation for each horizon in each profile recorded for:
 - Matrix
 - Redoximorphic features
- Soil Morphology:
 - Nodules and concretions present
 - Redox concentrations present
 - Redox depletions present
 - Gleyed matrix present
 - Pore linings, including oxidized rhizospheres, present
 - Sulfidic materials present
 - Histosol present
 - Histic epipedon present
 - Organic streaking present
- Color photographs of the soil profile(s) and any encountered free water are included as/in:
- ▶ [Please refer to Attachment B of the Inland Wetland Replacement Plan \(December 2022\)](#)
- Wetland Scientist has conducted an inventory of non-indigenous vascular plant species within 50 feet of outer perimeter of proposed soil translocation area (if any) and attached as/in:
- ▶ [Barberry \(Berberis thundbergii\)](#)

Wetland Plant Community in Lost BVW

- The Wetland Scientist has fully completed “Wetland Determination Data Forms – Northcentral and Northeast Region” [as found within: US Army Corps of Engineers. 2012. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual:*

Northcentral and Northeast Region, ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-12-1. Vicksburg, MS: U.S. Army Engineer Research and Development Center (Version 2.0)], for Observation Plots of a sufficient number to fully describe each distinct ecological unit of BVW. Forms shall be completed per the methods detailed within *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region*, ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble, ERDC/EL TR-12-1, Vicksburg, MS: U.S. Army Engineer Research and Development Center (US Army Corps of Engineers 2012). Plants shall be identified to the species level and scientific nomenclature should follow *The Vascular Plants of Massachusetts: A County Checklist-First Revision*, by Melissa Dow Cullina, Bryan Connolly, Bruce Sorrie and Paul Somers (Massachusetts Natural Heritage & Endangered Species Program, Massachusetts Division of Fish and Wildlife, 2011), or an equivalent acceptable to the Department. Soil profiles shall be prepared per the above using *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region*. Color photographs or color reproductions of photographs for each Observation Plot, both for plant community composition and hydric soil characteristics, shall be submitted as part of this information

► [Please refer to Attachment B of the Inland Wetland Replacement Plan \(December 2022\)](#)

- The Wetland Scientist has assessed the area of the lost BVW per the requirements of Chapter 5, “Difficult Wetland Situations”, of the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region*, if applicable.
- A complete and thorough inventory of all vascular species of hydrophytes within the area of lost BVW has been completed, using scientific nomenclature following *The Vascular Plants of Massachusetts: A County Checklist-First Revision*, by Melissa Dow Cullina, Bryan Connolly, Bruce Sorrie and Paul Somers (Massachusetts Natural Heritage & Endangered Species Program, Massachusetts Division of Fish and Wildlife, 2011), or an equivalent acceptable to the Department, and is included as/in:

► [Please refer to Section 2 of the Inland Wetland Replacement Plan \(December 2022\)](#)

- Each species inventoried has been ranked through visual estimate as to abundance.
- A “dominance type” [see *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al 1979)] has been assigned to each “vegetation stratum” [see “Definitions of Strata” in Chapter 2 of *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region*].
- The Wetland Scientist has provided a written description of the structural and community heterogeneity within the lost BVW, as expressed minimally through National Wetlands Inventory alphanumeric codes and annotated color photographs. This written description is attached as/in:

► [Please refer to Section 2 of the Inland Wetland Replacement Plan \(December 2022\)](#)

Abiotic and Biotic Structure in the Lost BVW

Inventory and Describe the substrate condition (characteristics and distribution)

- Grade description provided in:
 - [n/a – none present](#)
 - Microtopography present
 - Rock fragments and ledge/outcrops present
 - Unvegetated, unconsolidated substrate present
 - Dead organic material, including trunks, stumps, logs, branches, etc, present
 - Written description of above provided at/in:
 - [n/a – none present](#)
- Areal extent, as expressed in square feet, of the lost BVW is:

▶ 1,360 SF (Temporary)

Methodology for calculating the areal extent of the lost BVW is:

▶ AutoCAD

3 DATA FOR PROPOSED BVW RESTORATION/REPLICATION AREA(S)

Proposed Location of BVW Restoration/Replication Area(s)

In Situ (within footprint of altered/filled BVW)

Elsewhere

Justify reason that *in situ* restoration is not possible; and where replication will occur ▶ [In-situ restoration is proposed.](#)

Proposed Hydrology of BVW Restoration/Replication Area(s)

Inventory and describe all supportive sub-surface evidence for analysis of long-term hydrology at proposed design depth of Restoration/Replication Area(s)

Depth to distinct or prominent redoximorphic features measured to be:

▶ n/a – same as existing

Depth to observed soil saturation:

▶ n/a – same as existing

Wetland Scientist has predicted the periodicity and duration of the apparent water table at design depth to be:

▶ n/a – same as existing

Color photographs of the soil profile(s) and any encountered free water are included as:

▶ n/a – same as existing

Proposed Soil Structure of BVW Restoration/Replication Area(s)

Wetland Scientist has completed a written methodology for translocation of “donor” soil, attached as:

▶ n/a

Wetland Scientist has prepared a list of materials, quantification of materials, and source of materials and attached as:

▶ n/a

Wetland Scientist has provided a written justification for proposed use of off-site materials, if any, and attached as:

▶

Clean leaf compost will be used

Peat moss and peat moss by-products will NOT be used

Wood chips will NOT be used

Clean mineral soil of the following texture and source is proposed:

▶

Other. Specify: ▶

Proposed Hydrophytic Plant Community in BVW Restoration/Replication Area(s)

The Wetland Scientist has proposed a written projection of the structural and plant community composition for the BVW Restoration/Replication Area(s) upon its maturation, and has provided a written justification, attached as:

▶ [Please refer to Section 3 of the Inland Wetland Replacement Plan \(December 2022\)](#)

The Wetland Scientist has proposed a written floral composition of the BVW Restoration/Replication Area(s) upon the completion of construction, which is attached as:

▶ [Please refer to Section 3 of the Inland Wetland Replacement Plan \(December 2022\)](#)

- Within this written floral composition, the Wetland Scientist has listed proposed species by:
 - Scientific Name (use *The Vascular Plants of Massachusetts: A County Checklist-First Revision*, by Melissa Dow Cullina, Bryan Connolly, Bruce Sorrie and Paul Somers (Massachusetts Natural Heritage & Endangered Species Program, Massachusetts Division of Fish and Wildlife, 2011))
 - Horticultural source of stock/condition
 - Total number of planting units per species
 - Type of planting (bare root, potted, transplanted, etc.)
 - Type of seeding (specification(s) for commercial mix, on-site source, etc.)
 - Planting schedule
 - Post-planting care by species, and responsible party(ies)

4 MINIMUM SITE PLAN FEATURES

- Site plan has been stamped by a Professional Land Surveyor or Registered Professional Engineer
- Scale is 1 inch = 30 feet or better, unless alternate scale is approved by the Department
- Contour interval of one (1) foot
- All data collection points, Observation Plots, transects geographically portrayed
- Proposed boundary of BVW Restoration/Replication Area(s) clearly demarcated
- Areal extent, as expressed in square feet, of BVW Restoration/Replication Area(s) is printed
- Boundary of extant BVW is shown, with surveyed points (flags)
- Location of planted material is clearly referenced
- Location and extent of seeded areas is clearly referenced
- Microtopographic features spatially portrayed (mapped) *n/a*
 - Depressions and/or pools
 - Mounds
 - Rock fragments, bedrock left in place
 - Woody debris
 - Other proposed features (perches, nesting boxes, platforms, etc.)
- "Limit-of-work" boundary clearly demarcated
- Position and type of erosion and sedimentation controls
- Long-term protective measures within the Buffer Zone (fences, signs, easements) *n/a*
- Cross-section plans with:
 - Depth to excavated surface
 - Proposed depth of translocated soil with layer depths
 - Predicted vertical range (elevations) of apparent water table
 - Predicted duration of saturation/inundation, and justification
 - Confining layers, if any
 - Gradient statistics for proposed and/or existing contours within one hundred (100) feet of the proposed boundary of BVW Restoration/Replication Area(s)
- Proposed location of chemically treated surfaces (e.g. roads) within one hundred (100) feet of the proposed boundary of BVW Restoration/Replication Area(s) and mitigation, **OR**
- No chemically treated surfaces are proposed within one hundred (100) feet of the proposed boundary of the BVW Restoration/Replication Area(s)
- Proposed location of snow disposal areas within one hundred (100) feet of the proposed boundary of the BVW Restoration/Replication Area(s) and mitigation, **OR**

- No snow disposal areas are proposed within one hundred (100) feet of the proposed boundary of the BVW Restoration/Replication Area(s)
- Proposed location of “point sources” of “stormwater discharge” within one hundred (100) feet of the proposed boundary of the BVW Restoration/Replication Area(s) [please note that the proposed discharge of treated stormwater into a BVW Restoration/Replication Area(s) may fail 314 CMR 9.06(5) and/or (6)] **OR**
- No “point sources” of “stormwater discharge” are proposed within one hundred (100) feet of the proposed boundary of the BVW Restoration/Replication Area(s)

5 BVW RESTORATION/REPLICATION AREA(S) MONITORING

- The Wetland Scientist is aware that the Superseding Order of Conditions and/or the Water Quality Certification requires construction of a BVW Restoration/Replication Area(s) per the standards at 310 CMR 10.55(4)(b)1. through 7. and/or 314 CMR 9.06(2); and that the Superseding Order of Conditions and/or Water Quality Certification will require a comprehensive monitoring and reporting plan with the following minimum data and submittals:
 - Fully completed “Wetland Determination Data Forms – Northcentral and Northeast Region” [as found within: US Army Corps of Engineers. 2012. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region*, ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-12-1. Vicksburg, MS: U.S. Army Engineer Research and Development Center (Version 2.0)], for Observation Plots of a sufficient number to fully describe each distinct ecological unit of BVW. Forms shall be completed per the methods detailed within *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region*, ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble, ERDC/EL TR-12-1, Vicksburg, MS: U.S. Army Engineer Research and Development Center (US Army Corps of Engineers 2012). Plants shall be identified to the species level and scientific nomenclature should follow *The Vascular Plants of Massachusetts: A County Checklist-First Revision*, by Melissa Dow Cullina, Bryan Connolly, Bruce Sorrie and Paul Somers (Massachusetts Natural Heritage & Endangered Species Program, Massachusetts Division of Fish and Wildlife, 2011), or an equivalent acceptable to the Department. Soil profiles shall be prepared per the above using *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region*. Color photographs or color reproductions of photographs for each Observation Plot, both for plant community composition and hydric soil characteristics, shall be submitted as part of this information
 - All plants encountered shall be identified to the species level. Scientific nomenclature shall follow *The Vascular Plants of Massachusetts: A County Checklist-First Revision*, by Melissa Dow Cullina, Bryan Connolly, Bruce Sorrie and Paul Somers (Massachusetts Natural Heritage & Endangered Species Program, Massachusetts Division of Fish and Wildlife, 2011), or an equivalent acceptable to the Department.
 - Data collected on “Wetland Determination Data Forms – Northcentral and Northeast Region” shall be taken during or near peak biomass in early summer;
 - Annual follow-up data collection on “Wetland Determination Data Forms – Northcentral and Northeast Region” shall be gathered within fourteen (14) calendar days of the date of the first such data collection

- Each sampling event shall include hydrologic data garnered from “observation holes”. These “observation holes” shall be at least twenty-four inches deep, as measured from the surface of the mineral soil horizon. Alternatively, and with the permission of the Department, the Wetland Scientist or her/his designee(s) can establish a shallow monitoring well directly adjacent to each Observation Plot within the Restoration/Replication Area(s). The shallow monitoring wells shall be constructed, installed, and operated in accordance with “Installing Monitoring Wells/Piezometers in Wetlands” [US Army Corps of Engineers, Wetlands Regulatory Assistance Program, WRAP Technical Note ERDC TN-WRAP-00-02, July 2000].
- This shall be repeated for at least two (2) full consecutive growing seasons after completion of construction, and then until such time at the BVW Restoration/Replication Area(s) meets 314 CMR 9.06(2), as determined solely by the Department.
- Using the “observation holes” or the “shallow monitoring wells”, the Wetland Scientist, or her/his designee(s) shall collect data on wetland hydrology within the Restoration/Replication Area(s) at least once per month during the growing season in the years specified in the Superseding Order of Conditions and/or Water Quality Certification. At a minimum the Wetland Scientist shall record depth to apparent water table and/or depth of surface inundation, both as measured from the soil surface [see *Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetlands Protection Act* (DEP 1995) for a definition] during each monthly observation.
- A complete and thorough annual inventory of all vascular plants within the entire BVW Restoration/Replication Area(s) shall be conducted. Scientific nomenclature shall follow *The Vascular Plants of Massachusetts: A County Checklist-First Revision*, by Melissa Dow Cullina, Bryan Connolly, Bruce Sorrie and Paul Somers (Massachusetts Natural Heritage & Endangered Species Program, Massachusetts Division of Fish and Wildlife, 2011), or an equivalent acceptable to the Department. All non-indigenous species encountered shall be identified as such in the inventory, and if encountered, a draft eradication/control plan shall be submitted to the Department for approval by August 31st of each year.
- Color photographs or color reproductions of photographs showing the entire BVW Restoration/Replication Area(s), the location of data collection points for all Observation Plots, and any surficial or subsurface evidence of wetland hydrology shall be submitted.
- All data collected during each of the years specified in the Superseding Order of Conditions and/or the Water Quality Certification shall be submitted in a written report. Based upon the data collected during sampling events, the Wetland Scientist shall render a conclusion within each report as to the success of the “Restoration/Replication Area(s)” in terms of 310 CMR 10.55(4)(b)1. through 7. and/or 314 CMR 9.06(2), **and** the establishment of wetland hydrology.

ATTACHMENT D
MONITORING FORMS

MADEP File #:

Project Name:

Permittee Name:

Permittee Address:

Person Completing Form:

Date of Monitoring Event:

Purpose of Monitoring Event:

Weather Conditions:

BVW Impact Area ID:

VEGETATION & COVER¹:

Hydrophytic/Non-Hydrophytic

% Cover Herbaceous Vegetation

% Cover Shrubs

% Cover Trees

% Cover Vines

% Cover Native Vegetation

% Cover Non-Native Vegetation^{1,2}

HYDROLOGY¹:

SOILS¹:

OTHER OBSERVATIONS:

¹ Refer to attached floristic inventory

² Refer to attached Replacement Area site sketch (below) for location of vegetation cover types

