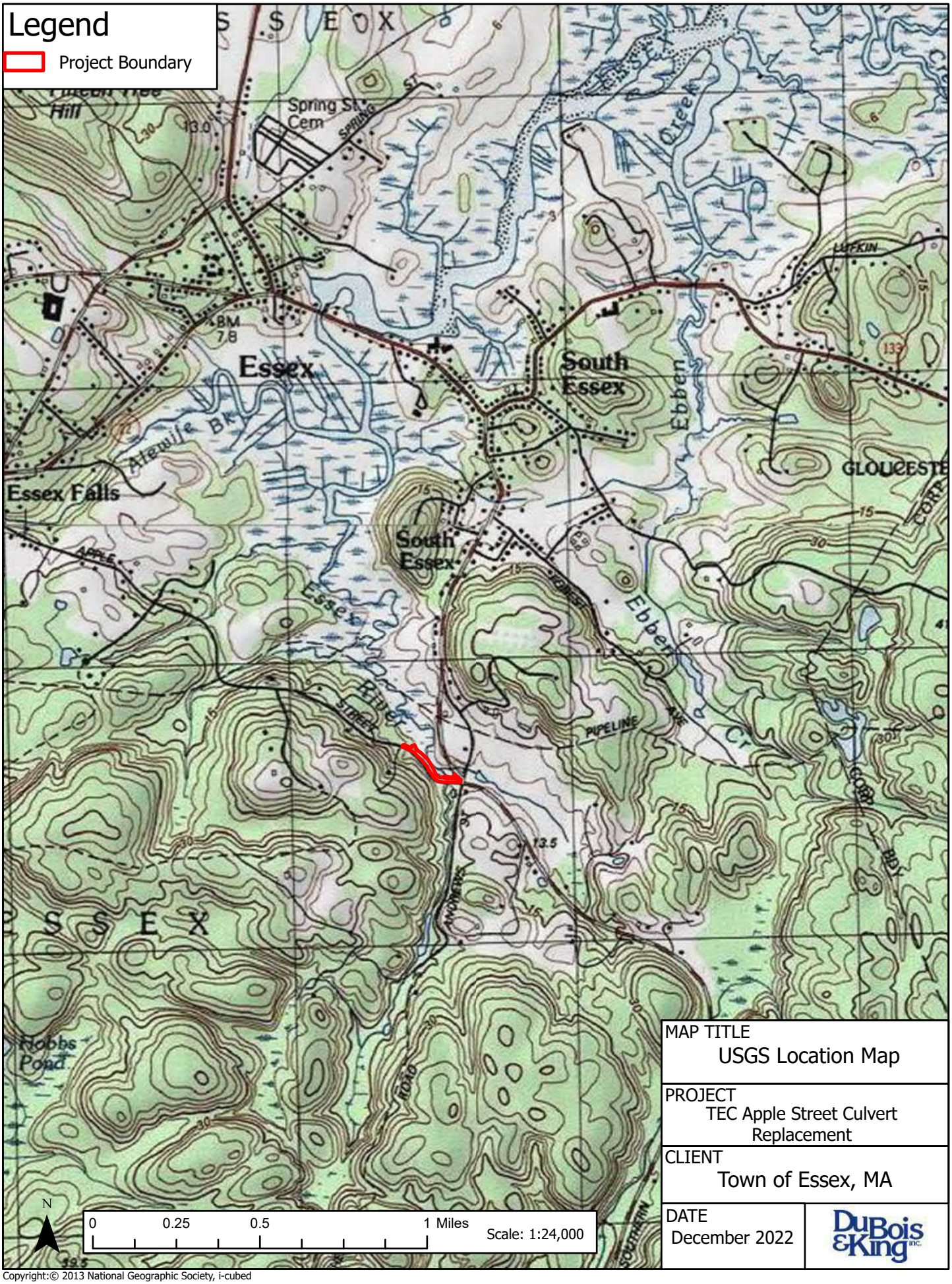
ATTACHMENT A

Figures



MAP TITLE
USGS Location Map

PROJECT
TEC Apple Street Culvert Replacement

CLIENT
Town of Essex, MA

DATE
December 2022

DuBois & King Inc.

ATTACHMENT B

DeRosa Wetland Delineation Report

DEROSA Environmental CONSULTING, INC.

167 Main Street
P. O. Box 716
Rowley Massachusetts
USA

978.948.7717 Office

derosaenvironmental.com

November 21, 2020

BY ELECTRONIC MAIL

Mr. Charlie Wear, II, PE
Director of Engineering
Meridian Associates, Inc.
500 Cummings Center, Suite 5950
Beverly, MA 01915
P 978-299-0447 | 800-466-5505
F 978-872-1157
cwear@meridianassoc.com

RE: Wetland Delineation Report

Apple Street Culvert
Apple Street, Essex MA

Dear Mr. Wear:

We have prepared this Wetland Delineation Report to summarize the wetland resource area boundary determination at Apple Street, Essex, Massachusetts. The boundaries of the existing wetland resource areas were delineated according to methodology described in the Massachusetts Wetlands Protection Act (MGL Ch. 131 Sec. 40) and its Regulations at 310 CMR 10.00, et seq., as well as guidance documents prepared by the MADEP, including *The Guide to Inland Vegetated Wetlands in Massachusetts, dated March 1988*, as well as, Appendix G of *Delineating Bordering Vegetated Wetlands Under the MA Wetlands Protection Act, dated March 1995.*

BORDERING VEGETATED WETLAND

We delineated the boundaries of the existing bordering vegetated wetland associated with the wetland finger on February 7, 2020. The boundaries were flagged with pink surveyor's flagging consecutively numbered:

- WF-A1 to WF-A21 (Bordering Vegetated Wetland)
- WF-B1 to WF-B49 (Bordering Vegetated Wetland)
- WF-C1 to WF-C5 (Salt Marsh)

(Site Plan, attached by Meridian Associates).

Vegetation, soils, and break in slope were used to determine the boundary of the wetland resource area. The wetlands are located adjacent Apple Street and border on the Essex River. There was an abrupt boundary between upland and wetland soils and vegetation at the site.

VEGETATION

The canopy layer within the wetland resource area consisted principally of a red maple canopy. The upland areas rose steeply from the wetland boundary and included hickory, red oak, American beech and white pine.

The shrub community in the wetland areas consisted principally of highbush blueberry, winterberry and glossy buckthorn but included other species in lesser densities (Figure 2. Plant Inventory Plan).

The herbaceous plant community consisted principally of soft rush, jewelweed, and sensitive fern (dormant evidence of these plants was present during the time of the delineation).

These plants constitute a wetland plant community under the Act and the local Wetland Ordinance.

The upland plant community included several dominant non-native invasive species including multiflora rose and Asiatic bittersweet as well as glossy buckthorn in the shrub layer.

The boundary between upland and wetland plant communities was clearly determined principally by a clear break in slope at the base on the steep topographic slope associated with road alignment of Apple Street as well as the steep ledge topography to the south of the wetland area (Figure 1. USGS Topographic Map).

SOILS

Soil plots were attempted within the upland and wetland areas to aid in the delineation of the wetland boundary. The presence of stony and cobble soils did not permit either upland or wetland soil samples. The steep slope in topography between wetland and upland areas provided a clear demarcation of the wetland boundary. Accordingly, vegetation and topography were adequate to determine the boundary of this wetland resource area. The A horizon of the wetland soils were saturated at the surface and consisted of organic silt with a Munsell color of 10YR2/1 (black). The soils were very stony and a deep probe was not possible.

SUMMARY

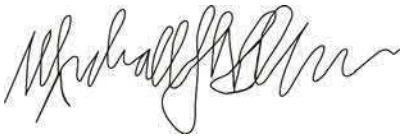
The wetland resource areas associate with this section of Apple Street consist principally of freshwater vegetated wetland areas with red maple as the dominant canopy species and a variety of shrub and herbaceous species present (Figure 2). The boundary between upland and wetland is apparent by the clear break in slope between these two areas based on the alignment of Apple Street.

In our professional opinion, the boundary of Bordering Vegetated Wetland delineated in the field accurately represents the definition of Bordering Vegetated Wetland (BVW) under the MA Wetland Protection Act (MGL Ch. 131 Section 40.000) and its Regulations at 310 CMR 10.55(2).

Should you have any questions or comments, please call anytime.

Respectfully submitted,

DeRosa Environmental Consulting, Inc.



Michael J. DeRosa, Principal
Professional Wetland Scientist (No. 2550)

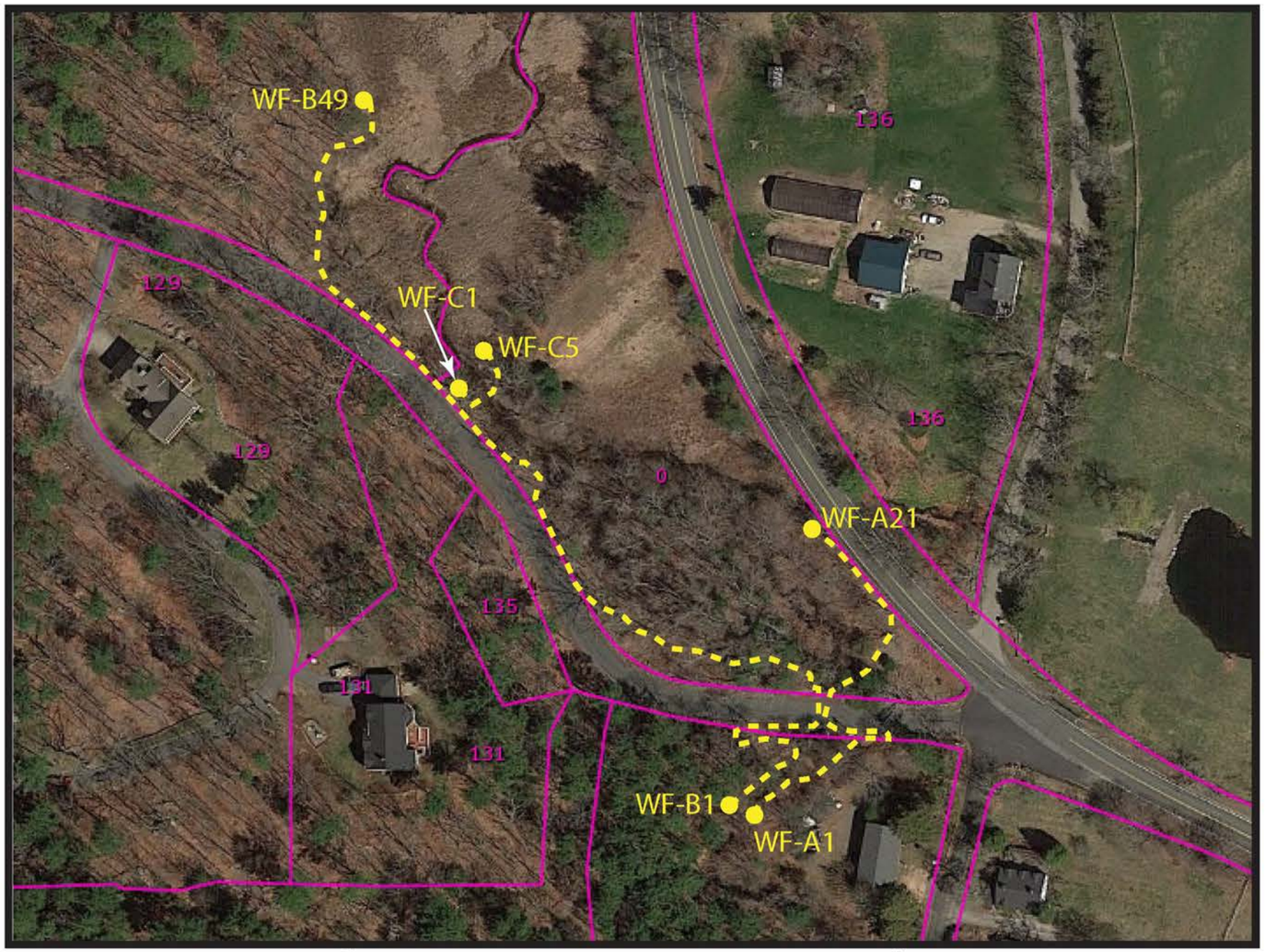
MJD/mjd

Attachments:

1. Topographic Survey of Apple Street, by Meridian Associates, Inc., dated November 18, 2020
Notes added by DeRosa Environmental Consulting Inc., November 21, 2020
2. Professional Qualifications

Delineation Sketch

Apple Street, Essex, MA.



Resource Areas Onsite:

Vegetated Wetlands: Yes

Riverfront Area: Yes, Alewife Brook

Coastal Bank: Yes

Coastal Dune: No

Salt Marsh/ACEC: Yes, salt marsh

NHESP: Yes, Natural Communities

Floodplain: Yes

Notes:

Contact: Tyler Ferrick
Cell:978-500-9053
Date: 2/7/2020, 10/20/20

Series WF-A: WF-A1 to WF-A21
Resource Area: Bordering Vegetated Wetland to Perennial Stream
Flagging: Pink

Series WF-B: WF-B1 to WF-B49
Resource Area: Bordering Vegetated Wetland to Perennial Stream
Flagging: Pink

Series WF-C: WF-C1 to WF-C5
Resource Area: Edge of Salt Marsh
Flagging: Pink

DEROSA Environmental CONSULTING, INC.
167 Main Street, PO Box 716, Rowley Massachusetts 01969 USA
978 948-7717 Office - 978 948-7718 Fax

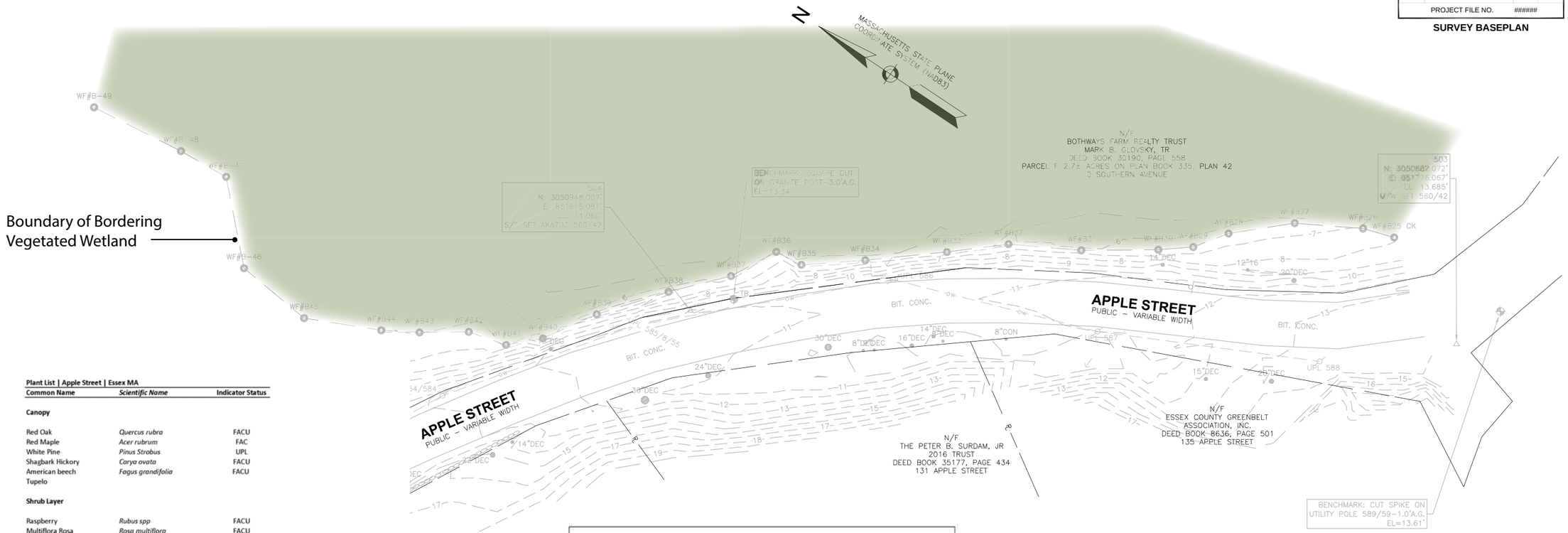
ESSEX
APPLE STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	6268	2	2
PROJECT FILE NO.	######		

SURVEY BASEPLAN

Plotted on 18-Nov-2020 4:31 PM

6268_REC_MASSDOT.DWG



Plant List | Apple Street | Essex MA

Common Name	*Scientific Name*	Indicator Status
Canopy		
Red Oak	*Quercus rubra*	FACU
Red Maple	*Acer rubrum*	FAC
White Pine	*Pinus Strobus*	UPL
Shagbark Hickory	*Carya ovata*	FACU
American beech	*Fagus grandifolia*	FACU
Tupelo		
Shrub Layer		
Raspberry	*Rubus spp*	FACU
Multiflora Rosa	*Rosa multiflora*	FACU
Staghorn Sumac	*Rhus typhina*	FACU
Swamp Azalea	*Rhododendron viscosum*	FACW
Red Cedar	*Juniperus virginiana*	UPL
Glossy Buckthorn	*Frangula alnus*	FAC
Green Briar	*Smilax glauca*	FACU
Bush Honeysuckle	*Lonicera spp.*	FAC
Japanese Barberry	*Berberis thungergii*	UPL
Winterberry	*Ilex verticilatta*	FACW
High Bush Blueberry	*Vaccinium corymbosum*	FACW
Poison Ivy	*Toxicodendron radicans*	FAC
English Privet	*Ligustrum vulgare*	FAC
Steeplebush	*Spiraea tomentosa*	FAC
Maleberry	*Lyonia ligustrina*	FAC
Herbaceous Layer		
Common Reed	*Phragmites austalis*	FACW
Sensitive Fern	*Onoclea sensibilis*	FACW
Tussock Sedge	*Carex stricta*	OBL
Cattail	*Typha angustifolia*	OBL
Jewelweed	*Impatiens capensis*	FACW
Skunk Cabbage	*Symplocarpus foetidus*	OBL
New England Aster	*Symphyotrichum novae-ang*	FAC
Sphagnum Moss	*Sphagnaceae sp*	OBL

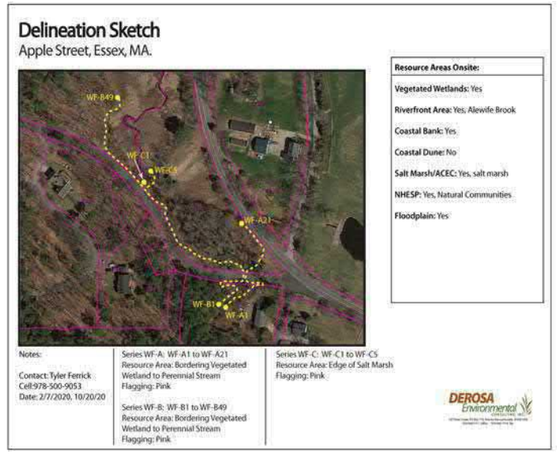


Figure 2. Wetland Delineation Plan

Apple Street Culvert Project
Massachusetts Department of Transportion

Michael J. DeRosa, PWS
November 21,20029

DEROSA Environmental CONSULTING, INC.
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massDOT
Massachusetts Department of Transportation
Highway Division

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REVISIONS		
REV.	COMMENTS	DATE

SCALE: 20 FEET TO THE INCH

FILE NAME: 6268_REC_MASSDOT
FIELD BOOK. NO: 560
DRAWN BY: ER
CHECKED BY: KD
FIELD CHIEF: DW
PARS. NO: XXXXXXX

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
PLAN OF TOPOGRAPHIC SURVEY OF
APPLE STREET
IN THE CITY OF
ESSEX
AS ORDERED BY
THE MASSACHUSETTS DEPARTMENT OF TRANSPORTATION, HIGHWAY DIVISION

DATE: NOVEMBER 18, 2020
SHEET 3 OF 3

ATTACHMENT C

D&K Wetland Review Technical Memorandums dated November 29, 2022 & January 24, 2023

MEMORANDUM

To: Aimee Rutledge, Project File
Date: November 29, 2022
From: Grace Glynn
Subject: Apple Street, Essex Road Improvements/Culvert Replacement Wetlands Review
Project No.: 126268

This memorandum summarizes the natural resources site investigation performed on October 27, 2022 along Apple Street in Essex, MA. The approximate site investigation area is shown on the attached map generated by Mass Mapper (Figure 1). Figure 2 illustrates priority natural communities mapped in the investigation area, and Figure 3 illustrates FEMA Flood Hazard Areas mapped in the investigation area. Photos of the wetland and project area are attached. The Essex Conservation Commission members were contacted prior to this site investigation but were not present during the site visit.

Wetlands and Water Resources

Wetland resource areas had been previously been delineated along Apple Street in accordance with the handbook, *Delineating Bordering Vegetated Wetlands Under the Massachusetts Protection* Act (MA Department of Environmental Protection, Division of Wetlands and Waterways, 1995). This previous wetland delineation was conducted on February 7, 2020 and is summarized in a Wetlands Report by Derosa Environmental dated November 21, 2020. During my field visit, I reviewed and re-flagged all wetland boundaries flagged by Derosa Environmental, and no changes were made to their prior delineation. Data forms based on my field observations of vegetation, soils, and break in slope are attached to this memorandum. Plants were classified using the *National List of Plant Species That Occur in Wetlands: Massachusetts*.

The wetland is located adjacent to Apple Street and is predominantly forested swamp dominated by red maple (*Acer rubrum*) and characterized by a dense shrub layer of highbush blueberry (*Vaccinium corymbosum*), winterberry (*Ilex verticillata*), and glossy false buckthorn (*Frangula alnus*). The wetland borders on the Essex River and is therefore considered a Bordering Vegetated Wetland (BVW) under the Massachusetts Wetlands Protection Act and regulations. Adjacent upland areas are dominated by black birch (*Betula lenta*), red oak (*Quercus rubra*), white oak (*Quercus alba*), white pine (*Pinus strobus*), sassafrass (*Sassafrass albidum*), and shagbark hickory (*Carya ovata*).

Derosa Environmental's delineation included one small area of Salt Marsh (flagging series WF-C). This area was reviewed during my field visit and found to be Brackish Tidal Marsh rather than Salt Marsh. This section of wetland is dominated by narrow-leaved cattail (*Typha angustifolia*), common reed (*Phragmites australis*), and saltmarsh tuber bulrush (*Bolboschoenus maritimus*). Neither cordgrass (*Spartina alterniflora*) nor salt hay (*Spartina patens*)—the dominant Salt Marsh grasses—were observed in the wetland. Therefore, this wetland natural community does not meet the definition of Salt Marsh per the Massachusetts Wetlands Protection Act (310 CMR 10.32(2)). According to the *Classification of Natural*

Communities of Massachusetts (2016), the Brackish Tidal Marsh is a rare (S2) natural community in Massachusetts that typically occurs along stretches of free-flowing coastal rivers where salt and freshwater mix. This community also occurs in smaller patches along the edges of salt marshes near freshwater transition areas, which accurately describes the section of the Essex River adjacent to Apple Street. Areas of Salt Marsh are likely present just north of the wetlands study area; these areas will not be impacted by the proposed work along Apple Street and therefore were not reviewed.

As summarized in Derosa Environmental's report, the project area also includes the following resource areas: Coastal Bank, Riverfront Area, and Floodplain. The area immediately north of Apple Street is located in a FEMA Flood Hazard Zone, as shown in Figure 3.

Non-Native Invasive Species

Asiatic bittersweet (*Celastrus orbiculatus*) and glossy false buckthorn (*Frangula alnus*) are common to dominant along the wetland boundary north of Apple Street. Common barberry (*Berberis vulgaris*), garlic mustard (*Alliaria petiolata*), orpine (*Hylotelephium telephium*), European honeysuckle (*Lonicera morrowii*), multiflora rose (*Rosa multiflora*), and bittersweet nightshade (*Solanum dulcamara*) are also common along either side of Apple Street in the investigation area.

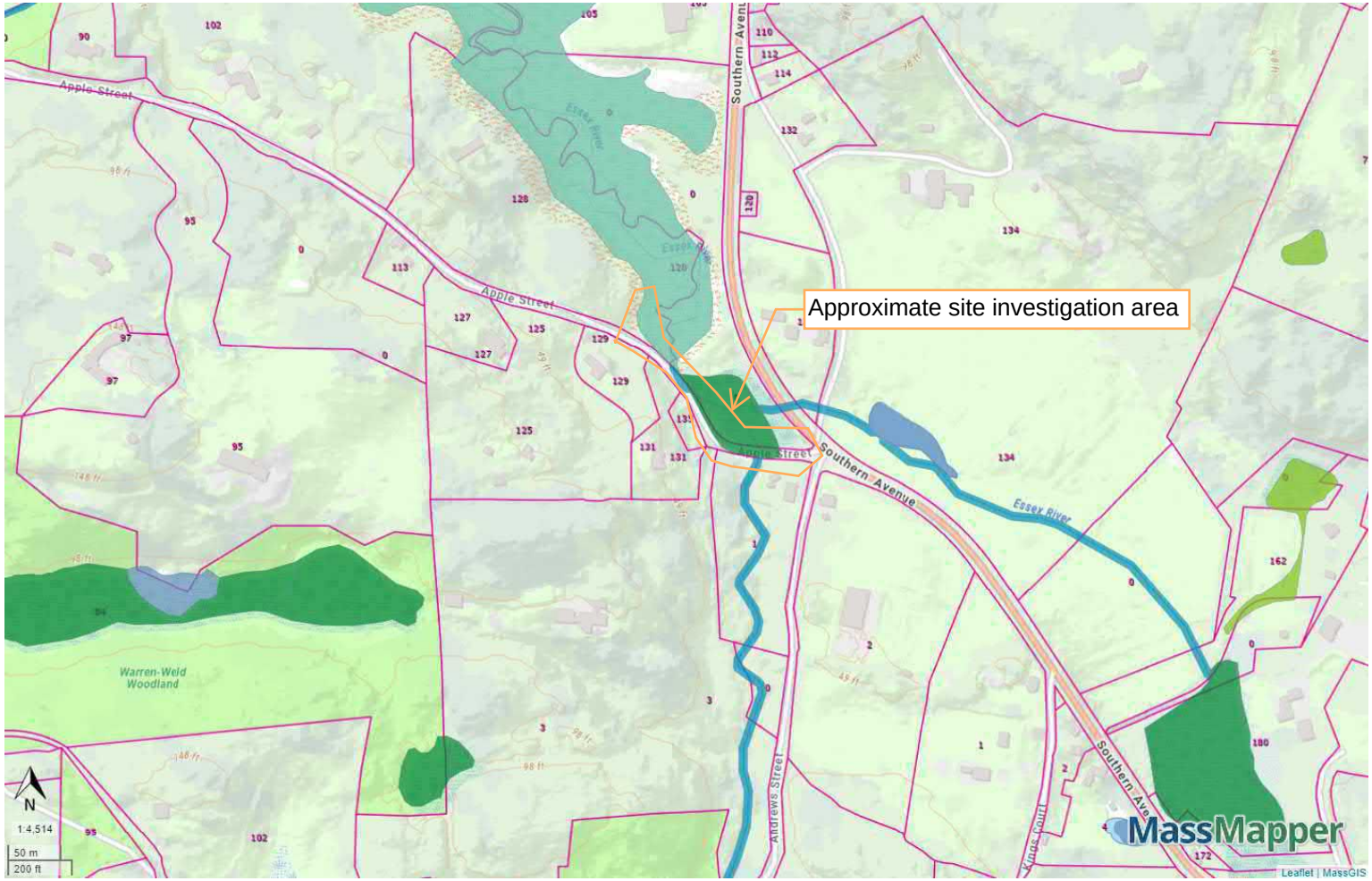
Rare, Threatened and Endangered Species and Priority Natural Communities

Mass Mapper shows no rare species habitat mapped in the vicinity of the project area (Figure 2), and no rare, threatened, or endangered species were observed during the course of field work. As shown on the attached U.S. Fish & Wildlife Service resource list, a rare species review using the Information for Planning and Consultation (IPaC) tool was completed and returned one federally threatened species: the northern long-eared bat (*Myotis septentrionalis*). One Candidate species, the monarch butterfly (*Danaus plexippus*) was also returned; Candidate species for listing receive no regulatory protection. Based on this review, no critical habitats are known from the site. However, it should be noted that mature shagbark hickory (*Carya ovata*) trees were observed in the project area; this species is sometimes utilized by northern long-eared bats for roosting. Further review of proposed tree cutting may be required depending on federal funding involvement and/or changes to the federal listing status of the northern long-eared bat. Potential changes to federal listing are anticipated in December 2022.

The Massachusetts Natural Heritage and Endangered Species Program (NHESP) maps an area of Priority Natural Vegetation Community just north of Apple Street in the project area (Figure 2). This area is defined by the NHESP as a Deciduous Wooded Swamp along the Essex River. Field review confirmed this classification. However, the ecological integrity of this swamp in areas directly adjacent to Apple Street is diminished by the presence of numerous non-native invasive species. Current species composition of this swamp is likely to change as sea level rises and this wetland transitions from freshwater to brackish.

The NHESP also maps two Priority Coastal Natural Communities in the vicinity of the project (Figure 2): Coastal Forest and Salt Marsh. However, as described above, this field review during the growing season led to the determination that no Salt Marsh is present in the immediate project area. The area previously delineated as Salt Marsh is an example of a Brackish Tidal Marsh.

Figure 1. Apple Street, Essex Location & NWI Map

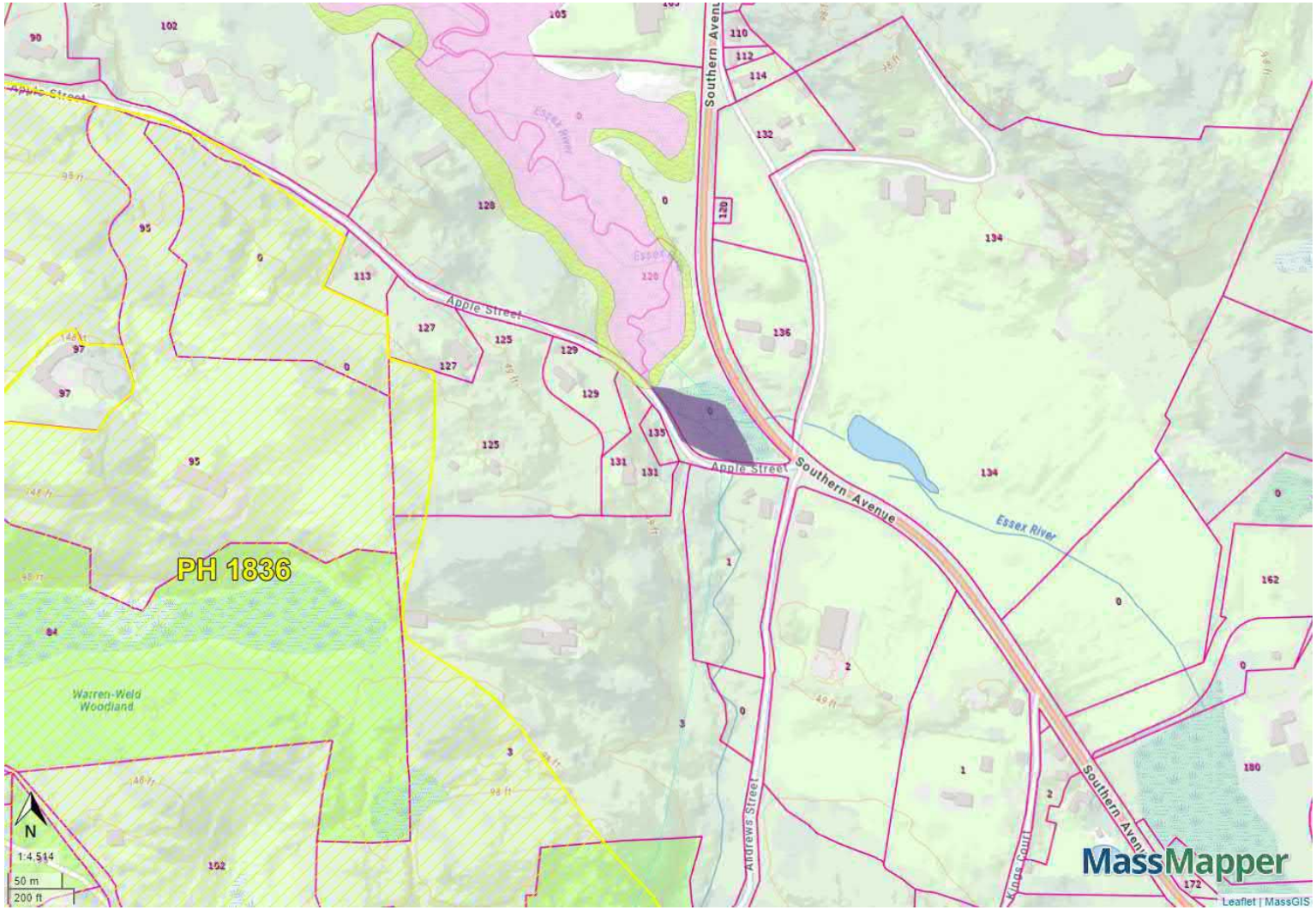


NWI Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Riverine
- Other

Property Tax Parcels

Figure 2. Apple Street, Essex Natural Communities/Rare Species Map



Riverine Natural Community Systems
- Herbaceous
- Shrubs
- Trees

Coastal Natural Community Systems
- BARRIER BEACH SWAMP DECIDUOUS
- BRACKISH TIDAL WETLAND
- FRESHWATER TIDAL MARSH
- COASTAL BANK, BEACH, DUNE
- COASTAL SALT POND SYSTEM
- COASTAL FOREST
- MARITIME FOREST
- MARITIME SHRUBLAND
- SALT MARSH
- TIDAL FLAT
- ROCKY SHORE

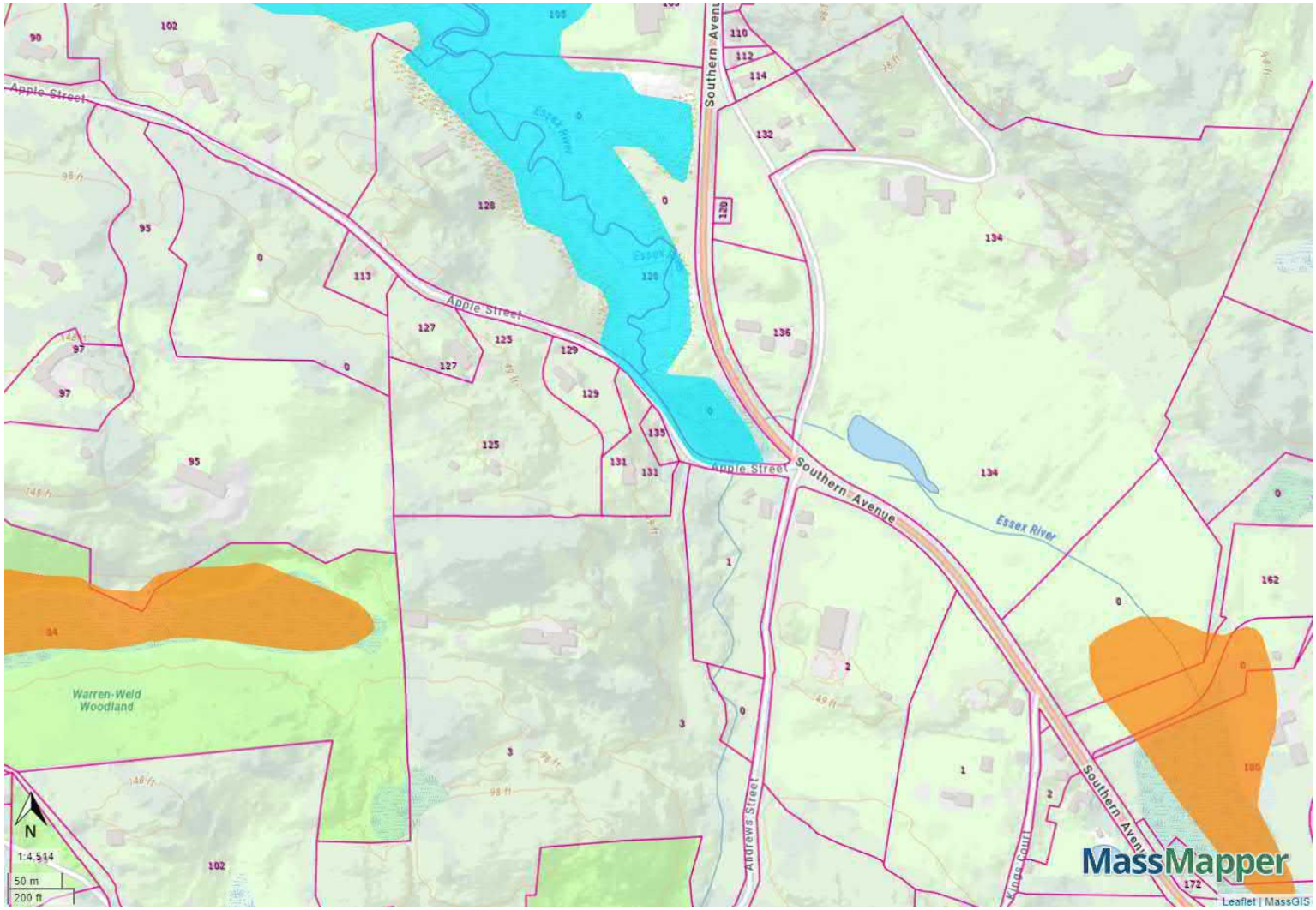
USGS Streams 100k

NHESP Priority Habitats of Rare Species

NHESP Estimated Habitats of Rare Wildlife

Property Tax Parcels

Figure 3. Apple Street, Essex Floodplain Map



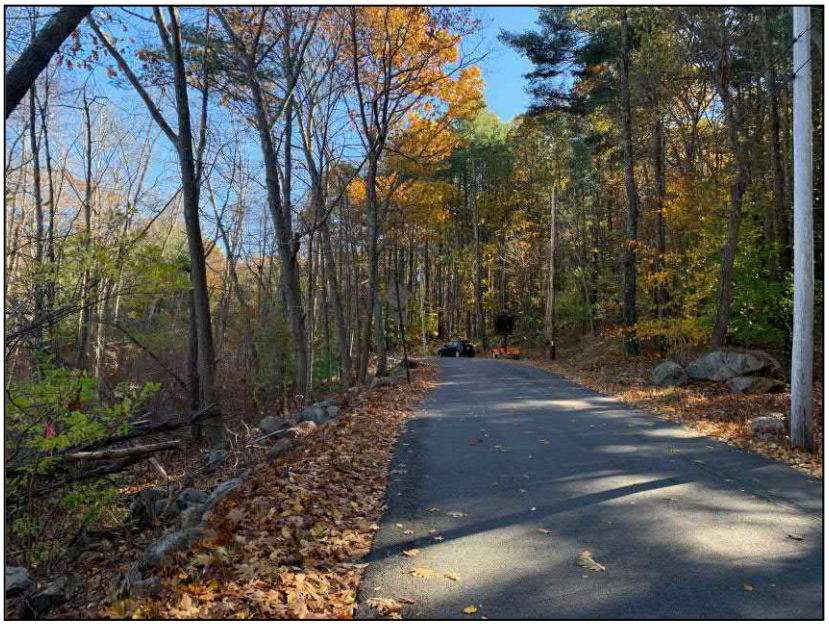
FEMA National Flood Hazard Layer Polygons

- A: 1% Annual Chance of Flooding, no BFE
- AE: 1% Annual Chance of Flooding, with BFE
- AE: Regulatory Floodway
- AH: 1% Annual Chance of 1-3ft Ponding, with BFE
- AO: 1% Annual Chance of 1-3ft Sheet Flow Flooding, with
- VE: High Risk Coastal Area
- D: Possible But Undetermined Hazard
- X: 0.2% Annual Chance of Flooding
- X: 1% Drainage Area < 1 Sq. Mi.
- X: Reduced Flood Risk due to Levee
- Area Not Included
- Area with no DFIRM - Paper FIRMs in Effect

Property Tax Parcels

Apple Street, Essex Wetlands Field Review
October 27, 2022

Photograph 1. Essex River, looking south toward culvert below Apple St



Photograph 2. Apple Street, looking east with wetland flags shown on north side of road

Photograph 3. Boundary of BVW, looking NE from upland along Apple Street

Photograph 4. Edge of Brackish Tidal Marsh, looking north from upland, with *Phragmites* stand in background and saltmarsh tuber bulrush dominant in foreground

Photograph 5. Upland silt loam soils, south of the BVW

Photograph 6. Apple Street, looking east with BVW visible north of Apple Street

MassDEP Field Data Form and Instructions

The Department of Environmental Protection's field data form should be used when delineating the boundary of a Bordering Vegetated Wetland (BVW) under the Massachusetts Wetlands Protection Act (M.G.L. Chapter 131, Section 40) and regulations (310 CMR 10.55). It should be used whether the boundary is delineated by vegetation alone or by vegetation and other indicators of wetland hydrology. Note: if detailed vegetative assessment is not necessary for the site, make a note on the data form and submit it. The field data form should be submitted with a Request for Determination of Applicability or a Notice of Intent. Details on the criteria for delineating a BVW boundary and the terminology used in this field data form are described in the handbook, *Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetlands Protection Act* (MA Department of Environmental Protection, Division of Wetlands and Waterways, 1995).

INSTRUCTIONS

The data form includes a section on project identification, including the applicant's name, the name of the person performing the delineation, project location, and the MassDEP file number, if available. If vegetation alone is presumed adequate to delineate the BVW boundary, mark the first box, complete Section I of the data form, and submit the document. If vegetation and other indicators of hydrology are used to delineate the BVW boundary, mark the second box, complete Sections I and II of the form, and submit the document. MassDEP has selected the dominance test as the preferred method of vegetation analysis at sample plot locations. The information gathered for that method should be recorded on the form. If a method other than the dominance test is used, mark the third box and explain the method and why it was used.

Section I: Vegetation

Section I should be used to record information about the vegetation within an observation plot and on a transect used to delineate the BVW boundary. Note the date of the delineation. Submit a separate data form for each observation plot. Attach supplemental sheets if more space is needed.

A. Sample Layer and Plant Species

Record each plant species using common and scientific names for the following layers:
Ground Cover: woody vegetation less than 3 feet in height (seedlings), non-climbing woody vines less than 3 feet in height, and non-woody vegetation (including mosses) of any height within a 5-foot radius plot; Shrubs: woody vegetation between 3 feet and 20 feet in height within a 15-foot radius plot;
Saplings: woody vegetation over 20 feet in height with a diameter at breast height (dbh) greater than or equal to 0.4 inches to less than 5 inches within a 15-foot radius plot; (note: dbh is measured 4.5 feet from the ground);
Climbing woody vines: woody vines that are attached, rooted, or climbing on trees, saplings, or shrubs within a 30-foot radius plot; and
Trees: woody vegetation with a dbh of 5 inches or greater and over 20 feet in height within a 30-foot radius plot.

If you do not recognize a plant species or do not know a plant's name, call it a generic name. Unknown plants need to be identified only if they are determined to be dominant plants. In that case, a plant identification book or key may be used to determine the species.

B. Percent Cover

Determine percent cover (or basal area for trees) for each plant species in each layer by visual analysis or measurement. (See handbook for information about determining percent cover, page 12.)

C. Percent Dominance

Determine percent dominance for each plant species by dividing the percent cover or basal area for each plant species by the total percent cover or basal area for the layer. (See handbook for information about the dominance test, pages 15-19.)

D. Dominant Plants

1. Identify the dominant plants. Dominant plants are:

    - plants with a percent dominance of 50 percent or greater, or plants whose percent dominance add up to immediately exceed 50 percent;
    - plants with a percent dominance of 20 percent or greater;
    - plants with a percent dominance equal to a plant already listed as a dominant species.

2. Determine common and scientific names for any unknown plants identified as dominant plants.

E. Wetland Indicator Category

1. Identify the Wetland Indicator Category for all dominant plant species using the *National List of Plant Species That Occur in Wetlands: Massachusetts*.
2. Use an asterisk to mark the wetland indicator plants. Wetland indicator plants are any of the following:
    - plant species listed in the Wetlands Protection Act;
    - plants in the genus *Sphagnum*;
    - plants listed as Facultative (FAC), Facultative+ (FAC+), Facultative Wetland(FACW-), Facultative Wetland (FACW), Facultative Wetland+ (FACW+) or Obligate (OBL);
    - plants with morphological or physiological adaptations (such as buttressed or
    - fluted trunks, shallow roots, or adventitious roots).

If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk (e.g. White pine, *Pinus strobus*, FacU*/shallow roots, buttressed trunks).

Vegetation Conclusion

List the number of dominant wetland indicator plants and the number of dominant non-wetland indicator plants. If the number of dominant wetland indicator plants is equal to or greater than the number of non-wetland indicator plants, and vegetation alone is presumed adequate for the delineation, the plot is located in a BVW.

If vegetation alone has been chosen for the delineation at this site, complete only Section I and submit the form with a Request for Determination of Applicability or a Notice of Intent. Otherwise, continue the delineation process and record information for Section II on the second page of the form.

Section II: Indicators of Hydrology

Section II should be used to record information on indicators of hydrology in those areas where vegetation alone is not presumed adequate to delineate the BVW boundary, or to overcome the presumption that vegetation alone is adequate.

Hydric Soil Interpretation

1. Soil Survey: Record information about the site from the Soil Survey Report prepared by the U.S. Natural Resources Conservation Service (NRCS) - formerly called the Soil Conservation Service.
2. Soil Description: Record information based on observations at a soil test hole located within the vegetation observation plot. Describe the soil profile of each soil horizon, noting the depth. Identify the matrix and mottles colors by hue, value, and chroma (information from Munsell Soil Color Charts). For example, 10YR 5/2. Notes on soil texture and other soil characteristics may be recorded in the Remarks section.
3. Other: note any additional information used to determine if hydric soil is present, such as regional field indicator guides.

Conclusion: Indicate whether the soil is hydric based on information observed in the field. (See list of Hydric Soil Indicators in the handbook, page 29.)

Other Indicators of Hydrology

Record observations of other indicators of hydrology. Check and describe all that apply. Due to their seasonal or temporal nature, these other indicators generally are used in conjunction with vegetation and soils to determine the location of the BVW boundary.

Vegetation and Hydrology Conclusion

Determine if the observation plot is in a BVW. The observation plot is in a BVW if the number of dominant wetland indicator plants is equal to or greater than the number of dominant non-wetland indicator plants, and if hydric soil or other indicators of hydrology are present.

For an observation plot located in a disturbed area, any one of the three indicators is sufficient to determine that the sample location is in a BVW. In that case, make a note on the form about that conclusion.

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

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

Applicant:_____ Prepared by:____Grace Glynn_____ Project location:__Apple Street, Essex MA___ DEP File #:_____
Check all that apply:

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

Section I.

Vegetation	Observation Plot Number: STP1		Transect Number: 1	Date of Delineation: 10/27/22
A. Sample Layer & Plant Species (by common/scientific name)	B. Percent Cover (or basal Area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Winterberry (*Ilex verticillata)*	40	50%	Y	FACW+
Sensitive fern (*Onoclea sensibilis*)	20	25%	N	FACW
Jewelweed (*Impatiens capensis)*	20	25%	N	FACW

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

Vegetation conclusion:

Number of dominant wetland indicator plants: 1 Number of dominant non-wetland indicator plants: 0

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

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

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? yes no
title/date: 11/22
map number: 43A
soil type mapped:Scarboro mucky fine sandy loam
hydric soil inclusions:yes

Are field observations consistent with soil survey? yes no
Remarks: Soils are partially mucky peat

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
O	0-12	10YR 2/1	NA

Remarks: poorly-decomposed mucky peat

3. Other:

Conclusion: Is soil hydric? yes no

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

- ❑ Site Inundated: __standing/flowing water present_____
- ❑ Depth to free water in observation hole: __0in_____
- ❑ Depth to soil saturation in observation hole: ___0in____
- ❑ Water marks: _____
- ❑ Drift lines: _____
- ❑ Sediment Deposits: ___sediment on plants indicating flooding_____
- ❑ Drainage patterns in BVW: __ _____
- ❑ Oxidized rhizospheres: _____
- ❑ Water-stained leaves: _____
- ❑ Recorded Data (streams, lake, or tidal gauge; aerial photo; other):
  _____
  _____
  _____
- ❑ Other: _____

Vegetation and Hydrology Conclusion

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

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

MassDEP Field Data Form and Instructions

The Department of Environmental Protection's field data form should be used when delineating the boundary of a Bordering Vegetated Wetland (BVW) under the Massachusetts Wetlands Protection Act (M.G.L. Chapter 131, Section 40) and regulations (310 CMR 10.55). It should be used whether the boundary is delineated by vegetation alone or by vegetation and other indicators of wetland hydrology. Note: if detailed vegetative assessment is not necessary for the site, make a note on the data form and submit it. The field data form should be submitted with a Request for Determination of Applicability or a Notice of Intent. Details on the criteria for delineating a BVW boundary and the terminology used in this field data form are described in the handbook, *Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetlands Protection Act* (MA Department of Environmental Protection, Division of Wetlands and Waterways, 1995).

INSTRUCTIONS

The data form includes a section on project identification, including the applicant's name, the name of the person performing the delineation, project location, and the MassDEP file number, if available. If vegetation alone is presumed adequate to delineate the BVW boundary, mark the first box, complete Section I of the data form, and submit the document. If vegetation and other indicators of hydrology are used to delineate the BVW boundary, mark the second box, complete Sections I and II of the form, and submit the document. MassDEP has selected the dominance test as the preferred method of vegetation analysis at sample plot locations. The information gathered for that method should be recorded on the form. If a method other than the dominance test is used, mark the third box and explain the method and why it was used.

Section I: Vegetation

Section I should be used to record information about the vegetation within an observation plot and on a transect used to delineate the BVW boundary. Note the date of the delineation. Submit a separate data form for each observation plot. Attach supplemental sheets if more space is needed.

A. Sample Layer and Plant Species

Record each plant species using common and scientific names for the following layers:
Ground Cover: woody vegetation less than 3 feet in height (seedlings), non-climbing woody vines less than 3 feet in height, and non-woody vegetation (including mosses) of any height within a 5-foot radius plot; Shrubs: woody vegetation between 3 feet and 20 feet in height within a 15-foot radius plot;
Saplings: woody vegetation over 20 feet in height with a diameter at breast height (dbh) greater than or equal to 0.4 inches to less than 5 inches within a 15-foot radius plot; (note: dbh is measured 4.5 feet from the ground);
Climbing woody vines: woody vines that are attached, rooted, or climbing on trees, saplings, or shrubs within a 30-foot radius plot; and
Trees: woody vegetation with a dbh of 5 inches or greater and over 20 feet in height within a 30-foot radius plot.

If you do not recognize a plant species or do not know a plant's name, call it a generic name. Unknown plants need to be identified only if they are determined to be dominant plants. In that case, a plant identification book or key may be used to determine the species.

B. Percent Cover

Determine percent cover (or basal area for trees) for each plant species in each layer by visual analysis or measurement. (See handbook for information about determining percent cover, page 12.)

C. Percent Dominance

Determine percent dominance for each plant species by dividing the percent cover or basal area for each plant species by the total percent cover or basal area for the layer. (See handbook for information about the dominance test, pages 15-19.)

D. Dominant Plants

1. Identify the dominant plants. Dominant plants are:

    - plants with a percent dominance of 50 percent or greater, or plants whose percent dominance add up to immediately exceed 50 percent;
    - plants with a percent dominance of 20 percent or greater;
    - plants with a percent dominance equal to a plant already listed as a dominant species.

2. Determine common and scientific names for any unknown plants identified as dominant plants.

E. Wetland Indicator Category

1. Identify the Wetland Indicator Category for all dominant plant species using the *National List of Plant Species That Occur in Wetlands: Massachusetts*.
2. Use an asterisk to mark the wetland indicator plants. Wetland indicator plants are any of the following:
    - plant species listed in the Wetlands Protection Act;
    - plants in the genus *Sphagnum*;
    - plants listed as Facultative (FAC), Facultative+ (FAC+), Facultative Wetland(FACW-), Facultative Wetland (FACW), Facultative Wetland+ (FACW+) or Obligate (OBL);
    - plants with morphological or physiological adaptations (such as buttressed or
    - fluted trunks, shallow roots, or adventitious roots).

If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk (e.g. White pine, *Pinus strobus*, FacU*/shallow roots, buttressed trunks).

Vegetation Conclusion

List the number of dominant wetland indicator plants and the number of dominant non-wetland indicator plants. If the number of dominant wetland indicator plants is equal to or greater than the number of non-wetland indicator plants, and vegetation alone is presumed adequate for the delineation, the plot is located in a BVW.

If vegetation alone has been chosen for the delineation at this site, complete only Section I and submit the form with a Request for Determination of Applicability or a Notice of Intent. Otherwise, continue the delineation process and record information for Section II on the second page of the form.

Section II: Indicators of Hydrology

Section II should be used to record information on indicators of hydrology in those areas where vegetation alone is not presumed adequate to delineate the BVW boundary, or to overcome the presumption that vegetation alone is adequate.

Hydric Soil Interpretation

1. Soil Survey: Record information about the site from the Soil Survey Report prepared by the U.S. Natural Resources Conservation Service (NRCS) - formerly called the Soil Conservation Service.
2. Soil Description: Record information based on observations at a soil test hole located within the vegetation observation plot. Describe the soil profile of each soil horizon, noting the depth. Identify the matrix and mottles colors by hue, value, and chroma (information from Munsell Soil Color Charts). For example, 10YR 5/2. Notes on soil texture and other soil characteristics may be recorded in the Remarks section.
3. Other: note any additional information used to determine if hydric soil is present, such as regional field indicator guides.

Conclusion: Indicate whether the soil is hydric based on information observed in the field. (See list of Hydric Soil Indicators in the handbook, page 29.)

Other Indicators of Hydrology

Record observations of other indicators of hydrology. Check and describe all that apply. Due to their seasonal or temporal nature, these other indicators generally are used in conjunction with vegetation and soils to determine the location of the BVW boundary.

Vegetation and Hydrology Conclusion

Determine if the observation plot is in a BVW. The observation plot is in a BVW if the number of dominant wetland indicator plants is equal to or greater than the number of dominant non-wetland indicator plants, and if hydric soil or other indicators of hydrology are present.

For an observation plot located in a disturbed area, any one of the three indicators is sufficient to determine that the sample location is in a BVW. In that case, make a note on the form about that conclusion.

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

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

Applicant:_____ Prepared by:____Grace Glynn_____ Project location:__Apple Street, Essex___ DEP File #:_____
Check all that apply:

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

Section I.

Vegetation	Observation Plot Number: STP2 (upland plot)		Transect Number: 1	Date of Delineation: 7/15/22
A. Sample Layer & Plant Species (by common/scientific name)	B. Percent Cover (or basal Area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Red oak (*Quercus rubra*)	40	50%	Y	FACU-
White pine (*Pinus strobus*)	20	25%	N	FACU
European honeysuckle (*Lonicera morrowii*)	20	25%	N	NI

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

Vegetation conclusion:

Number of dominant wetland indicator plants: 0 Number of dominant non-wetland indicator plants: 1

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

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

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? yes no
title/date: 11/22
map number:421B
soil type mapped:Canton fine sandy loam 0-8% slopes, very stony
hydric soil inclusions:

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

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	0-12in	10YR 3/6	NA

Remarks: si loam; dry; rocky

3. Other:

Conclusion: Is soil hydric? yes no

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

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

Vegetation and Hydrology Conclusion

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

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

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Essex County, Massachusetts

Local office

New England Ecological Services Field Office

(603) 223-2541
(603) 223-0104

70 Commercial Street, Suite 300
Concord, NH 03301-5094

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Northern Long-eared Bat Myotis septentrionalis Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045	Threatened

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
American Oystercatcher Haematopus palliatus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8935	Breeds Apr 15 to Aug 31
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Oct 15 to Aug 31
Black-billed Cuckoo Coccyzus erythropthalmus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9399	Breeds May 15 to Oct 10
Blue-winged Warbler Vermivora pinus This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds May 1 to Jun 30
Bobolink Dolichonyx oryzivorus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31
Canada Warbler Cardellina canadensis This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Aug 10

Chimney Swift Chaetura pelagica This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25
Lesser Yellowlegs Tringa flavipes This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Prairie Warbler Dendroica discolor This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
Purple Sandpiper Calidris maritima This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Ruddy Turnstone Arenaria interpres morinella This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
Rusty Blackbird Euphagus carolinus This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
Short-billed Dowitcher Limnodromus griseus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9480	Breeds elsewhere
Willet Tringa semipalmata This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 5
Wood Thrush Hylocichla mustelina This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

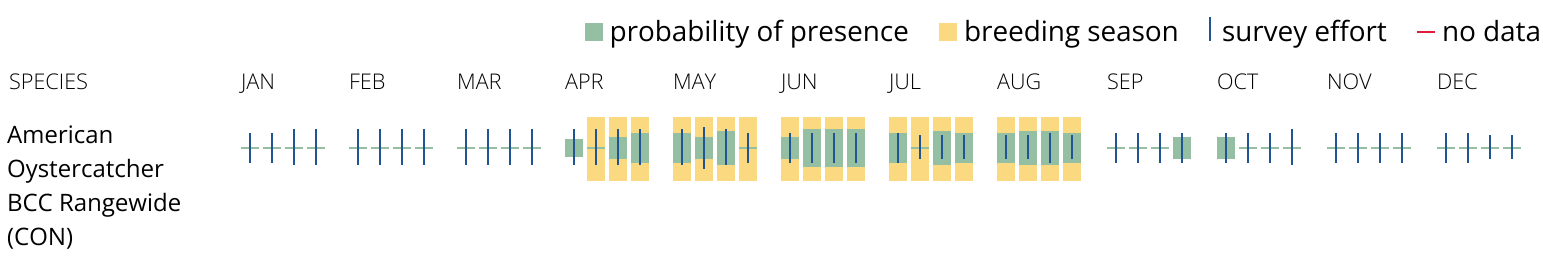
Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

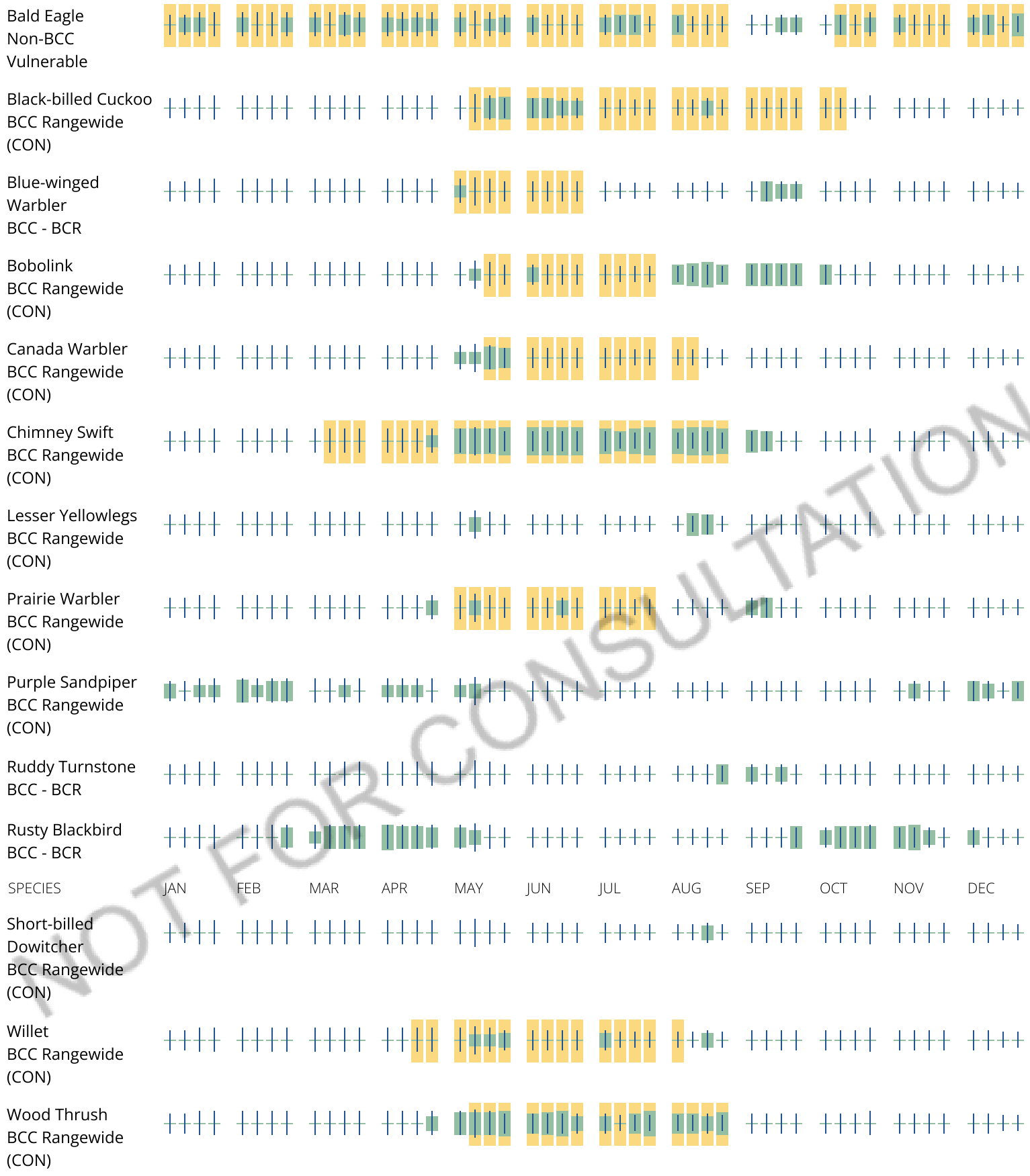
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.





Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be

breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and

requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Coastal Barrier Resources System

Projects within the John H. Chafee Coastal Barrier Resources System (CBRS) may be subject to the restrictions on Federal expenditures and financial assistance and the consultation requirements of the Coastal Barrier Resources Act (CBRA) (16 U.S.C. 3501 et seq.). For more information, please contact the local Ecological Services Field Office or visit the CBRA Consultations website. The CBRA website provides tools such as a flow chart to help determine whether consultation is required and a template to facilitate the consultation process.

There are no known coastal barriers at this location.

Data limitations

The CBRS boundaries used in IPaC are representations of the controlling boundaries, which are depicted on the official CBRS maps. The boundaries depicted in this layer are not to be considered authoritative for in/out determinations close to a CBRS boundary (i.e., within the "CBRS Buffer Zone" that appears as a hatched area on either side of the boundary). For projects that are very close to a CBRS boundary but do not clearly intersect a unit, you may contact the Service for an official determination by following the instructions here: https://www.fws.gov/service/coastal-barrier-resources-system-property-documentation

Data exclusions

CBRS units extend seaward out to either the 20- or 30-foot bathymetric contour (depending on the location of the unit). The true seaward extent of the units is not shown in the CBRS data, therefore projects in the offshore areas of units (e.g., dredging, breakwaters, offshore wind energy or oil and gas projects) may be subject to CBRA even if they do not intersect the CBRS data. For additional information, please contact CBRA@fws.gov.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Wetland information is not available at this time

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

TECHNICAL MEMORANDUM

TO:	Project File, D&K # 126268
FROM:	Brenda Bhatti, Sr. Environmental Planner/Ecologist
RE:	Essex MA, Apple Street Culvert, Wetlands Replication Soil Test Pits
DATE:	January 24, 2023

On January 17, 2023, Brenda Bhatti and Taylor Vasquez performed a day-time site inspection of the Apple Street improvement/culvert replacement area and conducted manual soil test pit (STP) excavations in support of wetland replication investigations. The fieldwork and this summary rely on previous related investigations, including the wetlands delineation and mapping performed by D&K wetlands staff on October 27, 2022 (see separate Memorandum dated November 29, 2022) and design details prepared by TEC (Attachment A). The fieldwork occurred during low tide conditions.

Project Area

The project area is located at the easterly end of Apple Street in Essex, MA. The main stem of the Essex River flows from east to westerly on the north side of Southern Avenue beyond the culvert and towards the westerly proposed replication area. The subject culvert accommodates an unnamed tributary that flows into the downgradient tidally-influenced portion of the Essex River where it widens out and flows directly to the ocean. Upgradient of the culvert is a wetland complex and headwaters area. The waterbody at this location south of Apple Street is steep, narrow, and winding through forested terrain with large cobbles and boulders along the side and multiple drops of >2' high that make it unsuitable for navigation at this location. Downgradient of the culvert north of Apple Street, the stream/river widens out into the larger floodplain of the tidal area. The three proposed wetlands replication areas are immediately adjacent to delineated wetlands (Attachment A).
[NOTE: Google maps incorrectly identifies "Essex River" to the south of Apple Street, whereas MassMapper identifies the main stem of the Essex River as flowing from east to west as described above. The subject waterbody in the project vicinity is a tributary stream.]

Methods

Using US Army Corps of Engineers (USACE) Northcentral and Northeastern Wetland Determination Data Form (ver 2.0)[1] as a basis for hydrology and hydric soil indicators, along with the Massachusetts Department of Environmental Protection (MassDEP) Field Data Form and Instructions[2], an investigation of the soil characteristics and hydrologic indicators was conducted to determine hydric features and depth to saturated conditions. Standing water was noted in specific locations. Photos and video evidence was acquired to support the findings. Other notes were taken regarding supporting observations of relevant vegetative community features.

1) Source: https://www.nae.usace.army.mil/Portals/74/docs/regulatory/JurisdictionalLimits/Wetland_Determination_Form.pdf
2) Source: https://www.mass.gov/lists/wetlands-permitting-forms specifically https://www.mass.gov/doc/bordering-vegetated-wetland-delineation-field-data-form/download

A combination of a tile spade and manual soil auger typically used for wetlands delineations were utilized to dig down from the surface to a maximum depth of approximately 24" where possible based on site-specific conditions. Although this is winter soil condition, the ground was not frozen in the STP locations.

Our inspection included looking for and inspecting the following if they occurred:

- Soil Test Pits (STP)
  - STPs identified on replication plans (Attachment A) and maps (Attachment B)
  - One (1) STP in BVW, One (1) STP in immediately adjacent proposed replication area
  - Measured water elevations observed in STPs – saturation, free standing water, redoxymorphic features, mottling, and gleyed soils information
  - Measurements of elevations of hydrologic indicators, e.g., top elevation of redox in soil or top elevation of organic soil [NOTE: "elevations" are estimated measurements rather than precise elevations via survey; notes are made on Attachment C]
  - USACE Data Forms and MassDEP BVW Forms completed for soils information (Attachment C)
  - Photos of STPs taken during excavation (Attachment D)
- Hydrologic observations of vicinity features
  - Observations and photos of nearby hydrologic features in adjacent BVW (e.g., standing water, saturated soils, root structure, flood indicators – water stains on trees, sediment, drift material, water stained leaves)
  - Photos and videos/screenshots acquired (Attachment D)
- Functions & Values Assessment (Attachment E)
  - Using USACE Highway Method (and Vermont Wetland Evaluation Form to support), completed baseline F&V assessment of the delineated BVWs with notes regarding surrounding landscape in the vicinity of three proposed wetlands replication areas
  - Documented functions of proposed wetland impact areas.
  - Photos and videos/screenshots of impact areas
- Photo summary (Attachment D):
  - STPs in BVWs adjacent to replication areas
  - STPs within proposed wetland replication areas
  - Proposed Wetland Impact Areas (not sampled due to steepness and snow/icy condition)
  - Culvert – upgradient and downgradient
  - Central channel condition between proposed wetland replication areas
- Other considerations:
  - Determination of number of trees/saplings will be required to construct the proposed wetland replication areas
  - Potential reuse of existing vegetation in replication areas
  - Functions of the proposed wetland impact areas were determined in the field and documented (Attachment E).

Results

The attached plans and maps (Attachments A and B), completed forms (Attachments C and E), and photos (Attachment D) detail our observations.

- Given that this is a winter period, soil conditions are indicative of winter condition and may vary from other seasonal periods. Furthermore, the STPs were dug during low tide and may vary otherwise.
- There were three primary locations coinciding with the three proposed replication areas.
- There were a total of five (5) soil test pits drilled comprised of one in the previously delineated BVWs (east of culvert, west of culvert) and one in each proposed wetlands replication area. [Note that a soil test pit was not excavated within the far westerly BVW, as there was obvious standing water within this BVW area.]
- The site-specific soil test pits were consistent with both the Natural Resource Conservation Service's Web Soil Survey (https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx ; accessed 1/24/23) and the earlier NRCS (Soil Conservation Service, SCS) Soil Survey of Essex County, Massachusetts, Southern Part (1984) (Attachment B).
  - The general soils mapped in the lower tidally-influenced area are comprised of the Ipswich-Westbrook-Udipsamments association. These are "deep, nearly level, very poorly drained, mucky soils formed in organic deposits; rolling, excessively drained to moderately well-drained, sandy soils formed in windblown sand." The Soil Survey notes, "This association mostly is adjacent to the ocean in tidal marshes and on sand dunes."
  - The general soils mapped in the vicinity upgradient of the culvert and at the transition with the road are comprised of Chatfield-Hollis-Rock Outcrop association. They are noted as "Moderately deep or shallow, gently sloping to steep, well drained or somewhat excessively drained, loamy soils formed in glacial till; areas of exposed bedrock." Furthermore, "This unit is on undulating and rolling ridges and hills" (Attachment B, SCS GSM). Areas of bedrock adjacent to and within the streambed upgradient of the culvert were notable. This channel is steep and winding, with multiple drops over bedrock (Attachment D, Photos).
  - The soils mapped by NRCS throughout the vicinity of the easterly and central STPs (two upland, two wetland) consist of unit 43A, Scarboro mucky fine sandy loam, 0 to 3 percent slopes. STPs in this location were consistent with the NRCS mapping (Attachment C, soil data form; Attachment D, photos).
  - The soil mapped in the vicinity of the westerly upland plot is at the transition of the 43A unit above and 421B, Canton fine sandy loam, 0 to 8 percent slopes, very stony. It is noted that, "It is in irregularly shaped areas on lower slopes of hills." The adjacent wetland area with standing water and lower tidally-influenced area is in an area mapped as 712A, Ipswich and Westbrook mucky peats, 0 to 2 percent slopes, very frequently flooded (Attachment B, soil maps; Attachment C, photos). This soil type is noted by SCS as soils that "…are in irregularly shaped areas that are subject to daily tidal flooding." The soils are downgradient from the project site, and beyond the direct impact areas.
- The three STPs in the upland areas proposed for replication were saturated at varying depths below the surface (Attachment C), so hydrologic features were present to support permanent wetland conditions subject to replication design parameters and proper plantings.
- The two STPs (STP2, STP4) in the easterly and central Bordering Vegetated Wetland (BVW) areas exhibited wetland indicators as noted in the earlier D&K wetland report (November 29, 2022), and included mottling, redoxymorphic features, and saturation (Attachment C, data forms; Attachment D, Photos). The westerly wetland area had obvious standing water, so no STP was dug in this location.
- The primary function of the proposed wetland impact areas at the culvert end (between flags A7-A11 and B10-B15) is erosion control and sediment/shoreline stabilization (Attachment D, photos;

Attachment E functions form. The impact area along the main channel of the Essex River adjacent to Apple Street consists of bank above the wetland area. The primary function of the bank in this vicinity is likewise erosion control and sediment/shoreline stabilization.

- In each of the three replication areas, trees and saplings were noted and may need to be removed depending the design parameters and exact field locations and depths/grades selected (Attachment D, photos).
  - In the easterly replication area nearest to Southern Avenue, there are at least two cedar trees and a white pine tree/sapling that may be removed, as digging down to the desired depth is likely to impact at least a portion of their root zone. Viburnums present in this area may be considered for potential reuse within the new replication area.
  - In the central replication area, there are approximately a dozen trees (>8" dbh [diameter at breast height]; e.g., two white pines, several red maples) and additional smaller saplings that will need to be removed, including a mix of red maples and other facultative species.
  - The westerly replication area contained small saplings and several larger trees ~10"+ dbh. Of note in westerly replication area were several shagbark hickories, which provide bat habitat and potential cavities for other wildlife.
  - Greenbrier (*Smilax* sp.) was prevalent along the edge of the westerly BVW/replication area (Attachment D, photos).

ATTACHMENT A Replication Area Plans With STP Notes

IMPACTS:

PERMANENT VEGETATED WELTAND (VW) IMPACT:	3,607 SF
TEMPORARY VEGETATED WELTAND (VW) IMPACT:	620 SF
TEMPORARY BANK IMPACT:	24 LF

LEGEND:

PROP MODIFIED ROCKFILL W/ COMPOST TOPDRESSING:

WETLAND REPLICATION AREA:

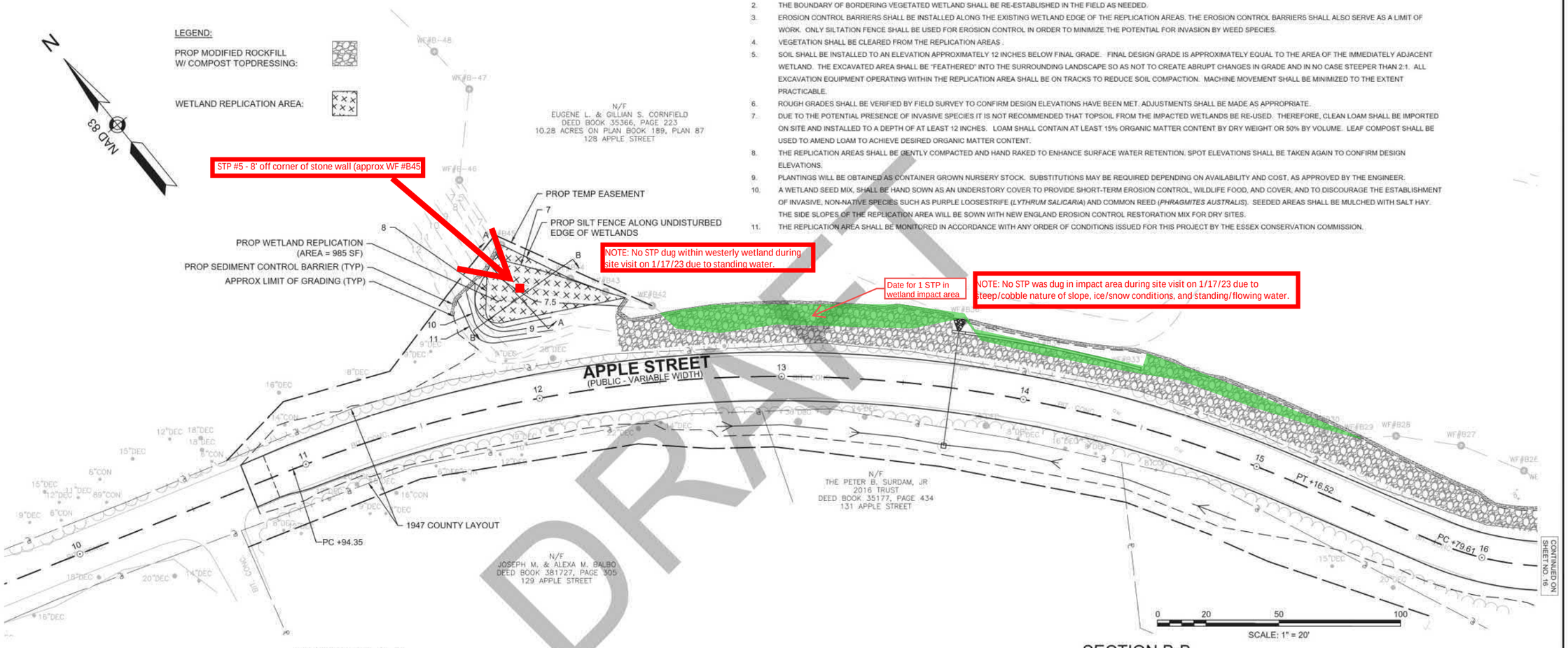
N

NAD 83

REPLICATION AREA CONSTRUCTION SEQUENCING

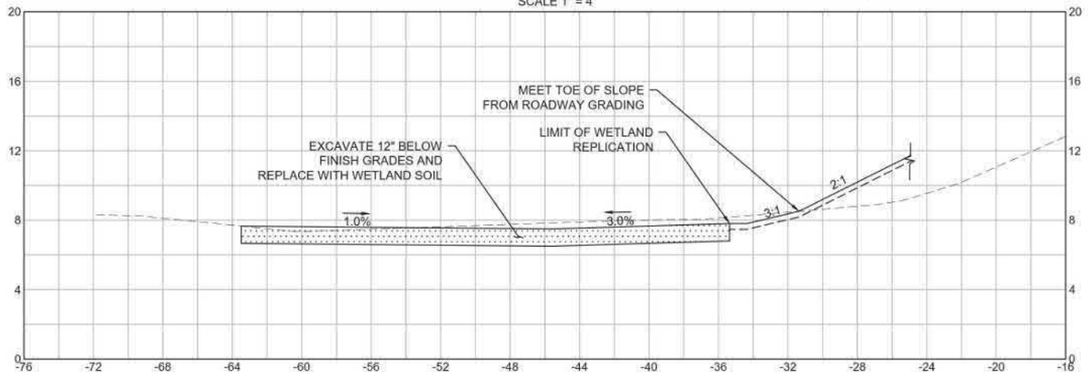
THE FOLLOWING IS A PROPOSED SEQUENCE OF CONSTRUCTION FOR THE COMPLETION OF THE WETLAND REPLICATION:

1. A PRE-CONSTRUCTION CONFERENCE WITH THE CONTRACTOR AND A QUALIFIED WETLAND SPECIALIST SHALL BE CONDUCTED TO ENSURE ALL ASPECTS OF THE PROJECT, AS WELL AS ANY ORDER OF CONDITIONS ARE UNDERSTOOD. EQUIPMENT NEEDS AND ACCESS ROUTES TO THE PROPOSED REPLICATION AREA SHALL BE FIRMLY ESTABLISHED.
2. THE BOUNDARY OF BORDERING VEGETATED WETLAND SHALL BE RE-ESTABLISHED IN THE FIELD AS NEEDED.
3. EROSION CONTROL BARRIERS SHALL BE INSTALLED ALONG THE EXISTING WETLAND EDGE OF THE REPLICATION AREAS. THE EROSION CONTROL BARRIERS SHALL ALSO SERVE AS A LIMIT OF WORK. ONLY SILTATION FENCE SHALL BE USED FOR EROSION CONTROL IN ORDER TO MINIMIZE THE POTENTIAL FOR INVASION BY WEED SPECIES.
4. VEGETATION SHALL BE CLEARED FROM THE REPLICATION AREAS .
5. SOIL SHALL BE INSTALLED TO AN ELEVATION APPROXIMATELY 12 INCHES BELOW FINAL GRADE. FINAL DESIGN GRADE IS APPROXIMATELY EQUAL TO THE AREA OF THE IMMEDIATELY ADJACENT WETLAND. THE EXCAVATED AREA SHALL BE "FEATHERED" INTO THE SURROUNDING LANDSCAPE SO AS NOT TO CREATE ABRUPT CHANGES IN GRADE AND IN NO CASE STEEPER THAN 2:1. ALL EXCAVATION EQUIPMENT OPERATING WITHIN THE REPLICATION AREA SHALL BE ON TRACKS TO REDUCE SOIL COMPACTION. MACHINE MOVEMENT SHALL BE MINIMIZED TO THE EXTENT PRACTICABLE.
6. ROUGH GRADES SHALL BE VERIFIED BY FIELD SURVEY TO CONFIRM DESIGN ELEVATIONS HAVE BEEN MET. ADJUSTMENTS SHALL BE MADE AS APPROPRIATE.
7. DUE TO THE POTENTIAL PRESENCE OF INVASIVE SPECIES IT IS NOT RECOMMENDED THAT TOPSOIL FROM THE IMPACTED WETLANDS BE RE-USED. THEREFORE, CLEAN LOAM SHALL BE IMPORTED ON SITE AND INSTALLED TO A DEPTH OF AT LEAST 12 INCHES. LOAM SHALL CONTAIN AT LEAST 15% ORGANIC MATTER CONTENT BY DRY WEIGHT OR 50% BY VOLUME. LEAF COMPOST SHALL BE USED TO AMEND LOAM TO ACHIEVE DESIRED ORGANIC MATTER CONTENT.
8. THE REPLICATION AREAS SHALL BE GENTLY COMPACTED AND HAND RAKED TO ENHANCE SURFACE WATER RETENTION. SPOT ELEVATIONS SHALL BE TAKEN AGAIN TO CONFIRM DESIGN ELEVATIONS.
9. PLANTINGS WILL BE OBTAINED AS CONTAINER GROWN NURSERY STOCK. SUBSTITUTIONS MAY BE REQUIRED DEPENDING ON AVAILABILITY AND COST, AS APPROVED BY THE ENGINEER.
10. A WETLAND SEED MIX, SHALL BE HAND SOWN AS AN UNDERSTORY COVER TO PROVIDE SHORT-TERM EROSION CONTROL, WILDLIFE FOOD, AND COVER, AND TO DISCOURAGE THE ESTABLISHMENT OF INVASIVE, NON-NATIVE SPECIES SUCH AS PURPLE LOOSESTRIFE (*LYTHRUM SALICARIA*) AND COMMON REED (*PHRAGMITES AUSTRALIS*). SEEDED AREAS SHALL BE MULCHED WITH SALT HAY. THE SIDE SLOPES OF THE REPLICATION AREA WILL BE SOWN WITH NEW ENGLAND EROSION CONTROL RESTORATION MIX FOR DRY SITES.
11. THE REPLICATION AREA SHALL BE MONITORED IN ACCORDANCE WITH ANY ORDER OF CONDITIONS ISSUED FOR THIS PROJECT BY THE ESSEX CONSERVATION COMMISSION.



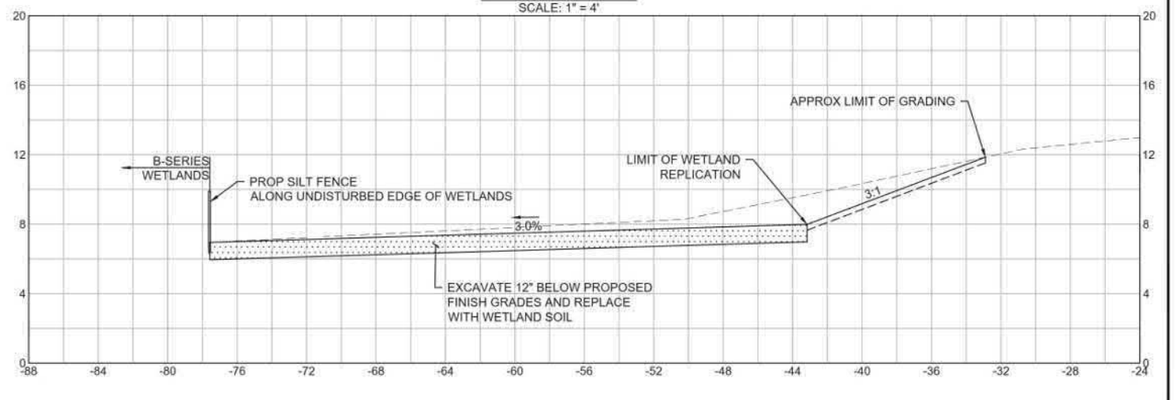
SECTION A-A

SCALE 1" = 4'



SECTION B-B

SCALE: 1" = 4'



ESSEX
APPLE STREET
WETLAND REPLICATION PLANS - 2 OF 2
SHEET 16 OF 36

IMPACTS:

PERMANENT VEGETATED WELTAND (VW) IMPACT:	3,607 SF
TEMPORARY VEGETATED WELTAND (VW) IMPACT:	620 SF
TEMPORARY BANK IMPACT:	24 LF

LEGEND:

PROP MODIFIED ROCKFILL W/ COMPOST TOPDRESSING:

PROP STREAMBED RESTORATION:

WETLAND REPLICATION AREA:

N

NAD 83

N/F
BOTHWAYS FARM REALTY TRUST
MARK B. GLOVSKY, TR
DEED BOOK 30190, PAGE 558
PARCEL F 2.7± ACRES ON PLAN BOOK 335, PLAN 42
0 SOUTHERN AVENUE

UNNAMED TRIBUTARY TO ESSEX RIVER

SOUTHERN AVENUE

CONTINUED ON SHEET NO. 15

PT +16.52

PC +19.61

N/F
ESSEX COUNTY GREENBELT ASSOCIATION, INC.
DEED BOOK 5636, PAGE 501
135 APPLE STREET

PROP TEMP EASEMENT

RET TREE

PROP SEDIMENT CONTROL BARRIER (TYP)

PROP SILT FENCE ALONG UNDISTURBED EDGE OF WETLANDS

PROP WETLAND REPLICATION AREA (1,150 SF)

PROP SILT FENCE ALONG UNDISTURBED EDGE OF WETLANDS

PROP WETLAND REPLICATION AREA (1,500 SF)

STP #4 - Within BVW (approx WF #B19-B20)

STP #3 - Central Replication Area (approx WF #B19-B20)

STP #2 -Within easterly BVW (approx WF #A14-A15)

STP #1 - Easterly Replication Area (approx WF #A14-A15)

APPLE STREET
(PUBLIC - VARIABLE WIDTH)

PT +08.83

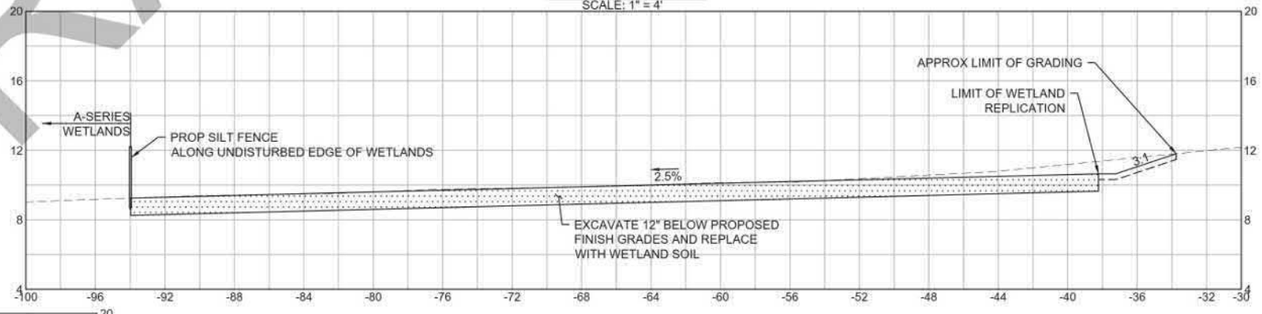
1947 COUNTY LAYOUT

20+00

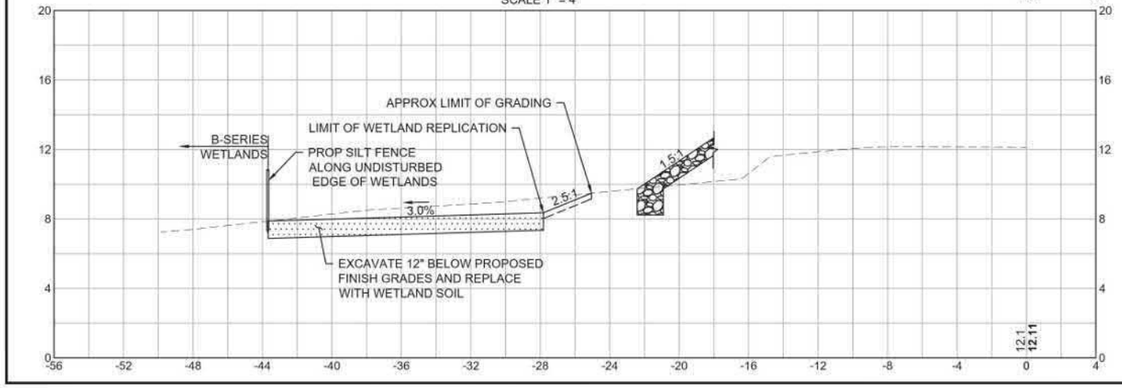
0 20 50 100
SCALE: 1" = 20'

NOTE: No STP was dug in impact area during site visit on 1/17/23 due to steep/cobble nature of slope, ice/snow conditions, and standing/flowing water.

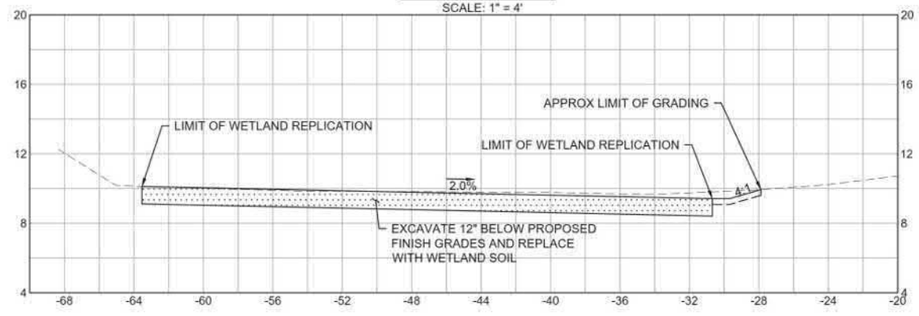
SECTION D-D
SCALE: 1" = 4'



SECTION C-C
SCALE 1" = 4'

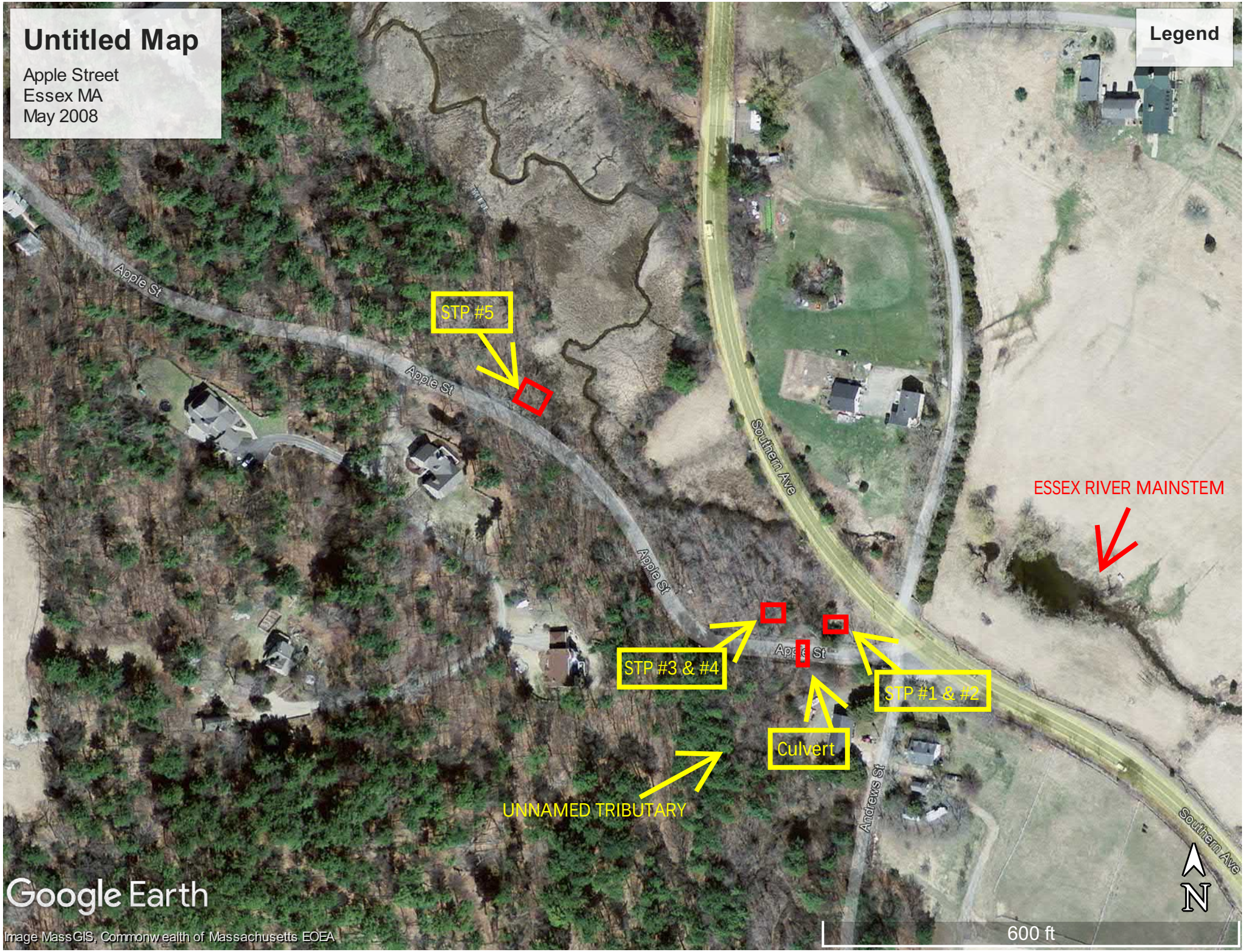


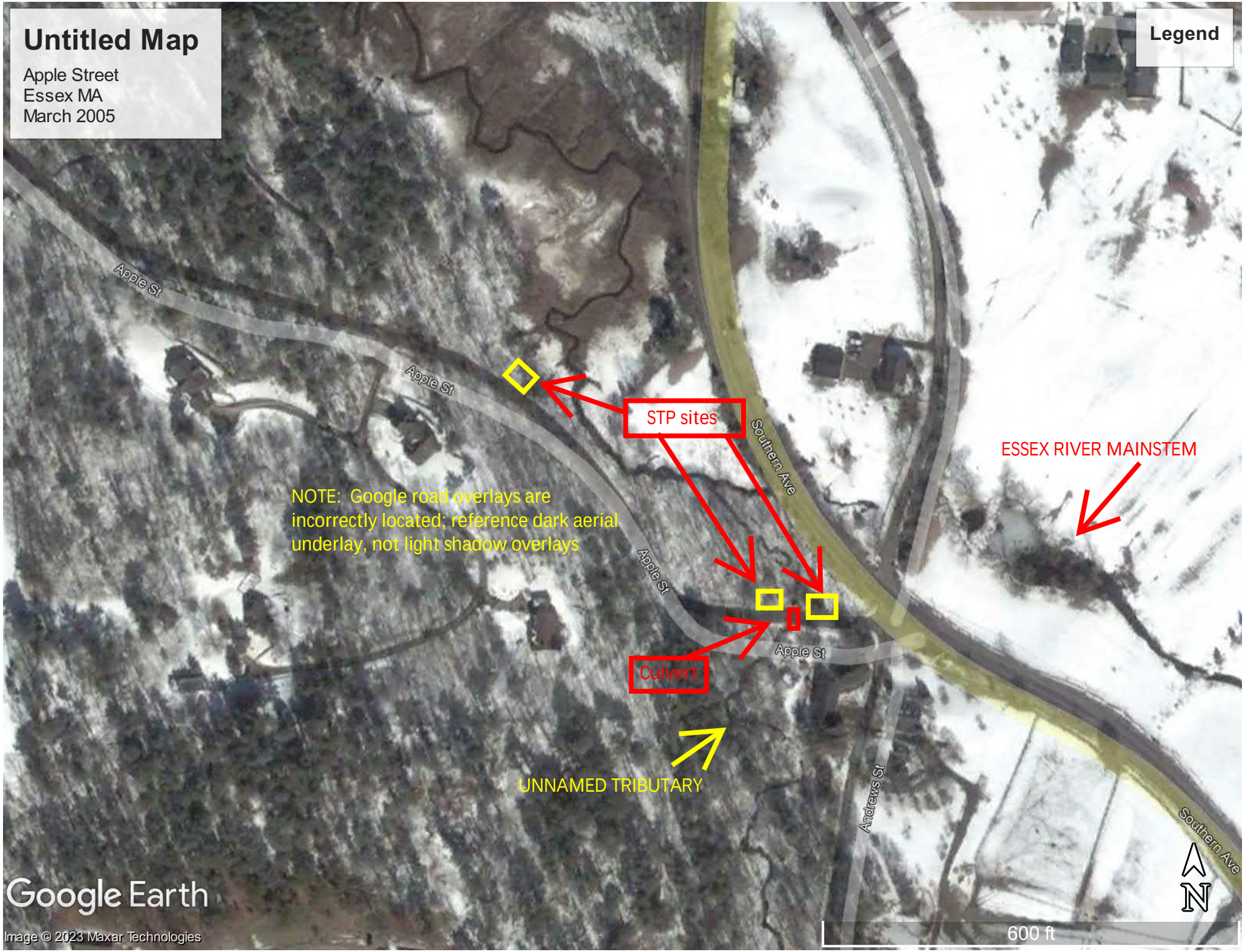
SECTION E-E
SCALE: 1" = 4'

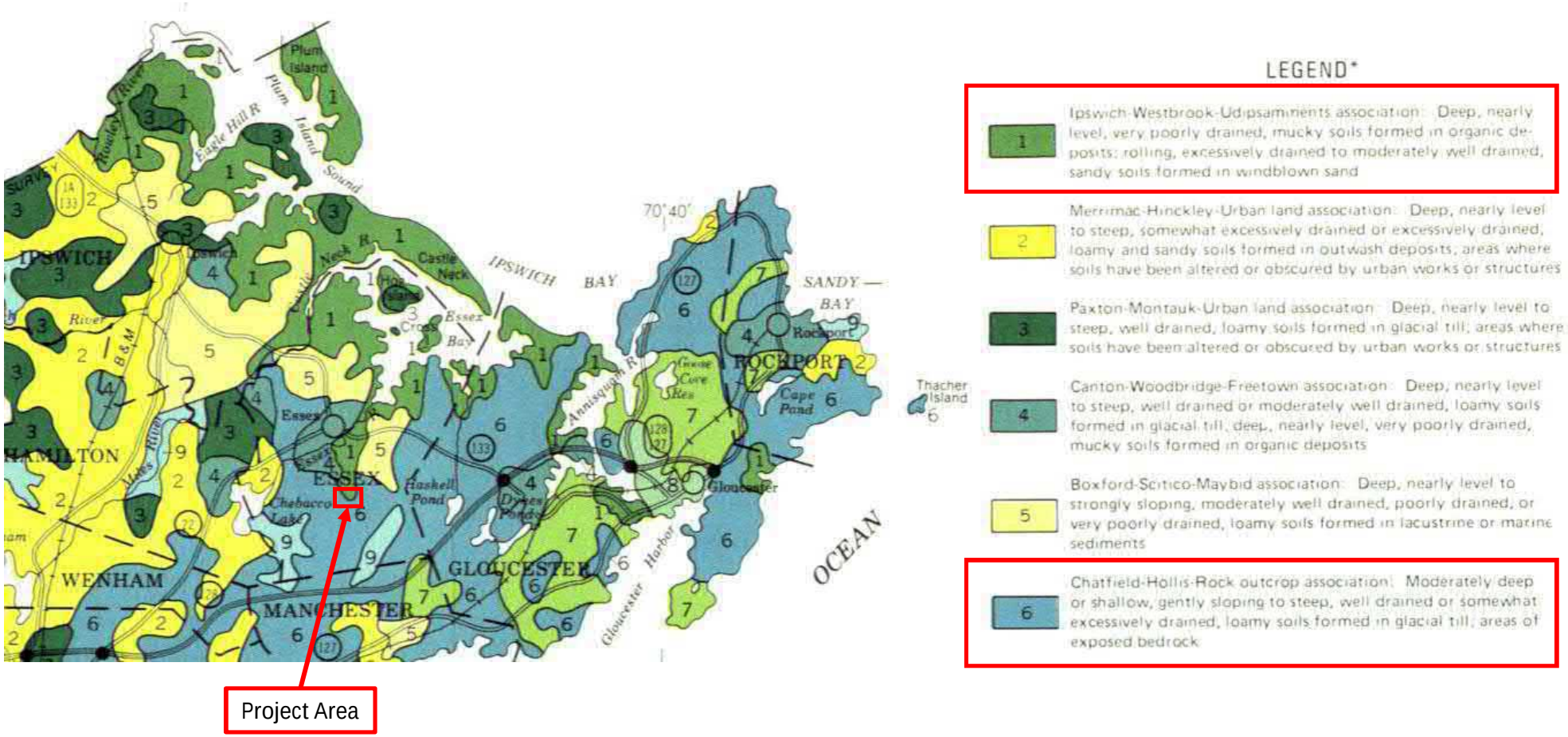


T0967.02_HD_(WET REPLICATION).DWG Plotted on 10-Nov-2022 4:24 PM

ATTACHMENT B Aerials/Maps of Study Area


Untitled Map
Apple Street
Essex MA
May 2008
Legend
STP #5
STP #3 & #4
STP #1 & #2
Culvert
UNNAMED TRIBUTARY
ESSEX RIVER MAINSTEM
Apple St
Southern Ave
Andrews St
N
600 ft
Google Earth
Image MassGIS, Commonwealth of Massachusetts EOEA


Untitled Map
Apple Street
Essex MA
March 2005
Legend
Apple St
Apple St
Apple St
Apple St
Southern Ave
Andrews St
Southern Ave
STP sites
ESSEX RIVER MAINSTEM
NOTE: Google road overlays are incorrectly located; reference dark aerial underlay, not light shadow overlays
Culvert
UNNAMED TRIBUTARY
N
600 ft
Google Earth
Image © 2023 Maxar Technologies



ATTACHMENT Approximate Project Area
General Soil Units
[Not to Scale]

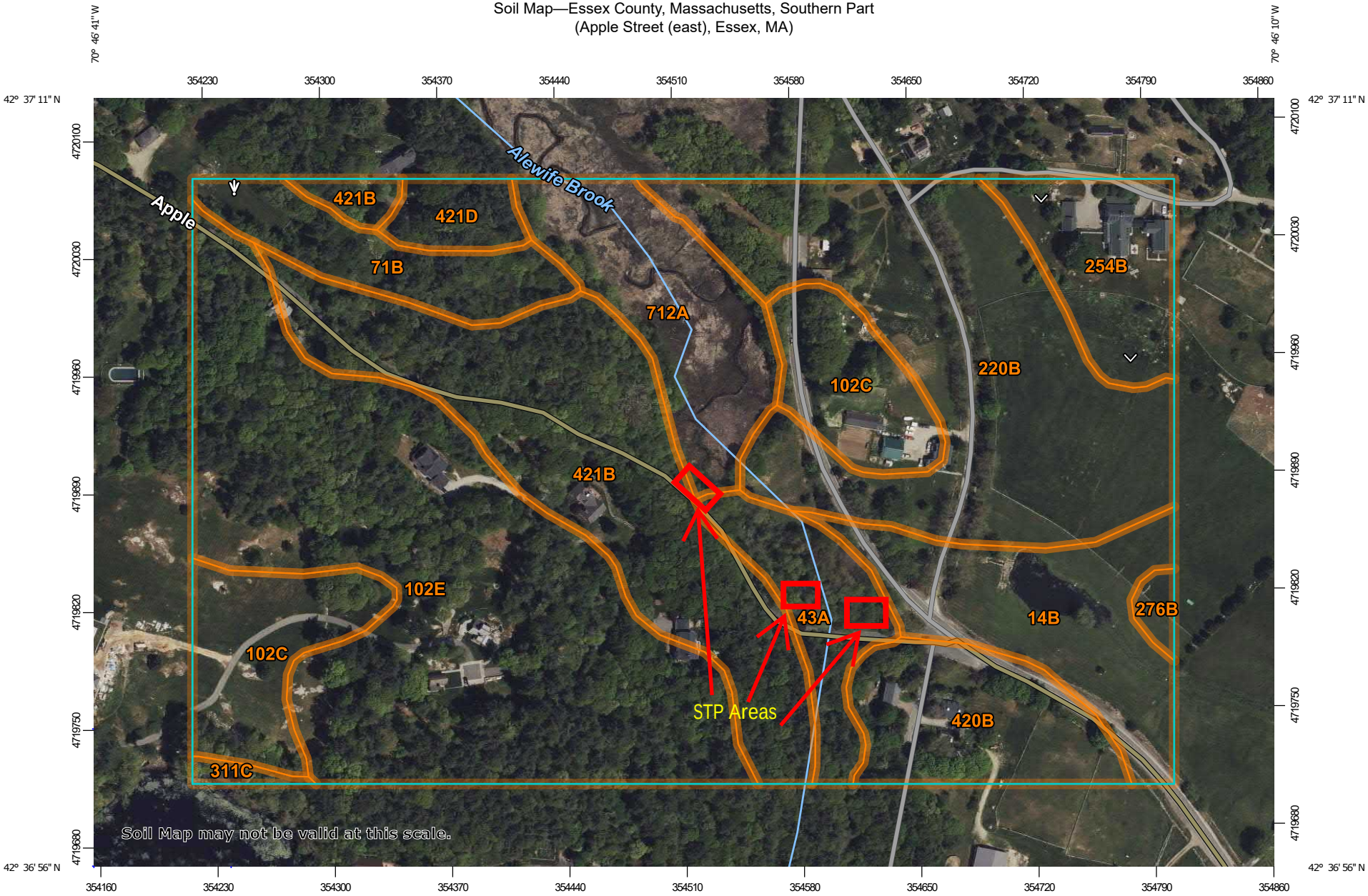
Base Image Source: USDA/NRCS (former Soil Conservation Service), Soil Survey of Essex County, MA, Southern Part (Issued May 1984), General Soil Map

PROJECT
Apple Street Culvert
Essex, MA

DATE
January 2023

DuBois & King inc.

Soil Map—Essex County, Massachusetts, Southern Part
(Apple Street (east), Essex, MA)



Map Scale: 1:3,220 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 45 90 180 270

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

D&K STP Locations
(added to map/legend;
locations approximate; not to scale)

NOTE: Essex River incorrectly mapped in NRCS system as "Alewife Brook" and mainstem flows under Southern Ave to pond at right, not south of Apple St.

USDA **Natural Resources Conservation Service**

Web Soil Survey
National Cooperative Soil Survey

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 1:15,800.

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

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

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

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

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

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

Soil Survey Area: Essex County, Massachusetts, Southern Part
Survey Area Data: Version 19, Sep 9, 2022

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

Date(s) aerial images were photographed: May 22, 2022—Jun 5, 2022

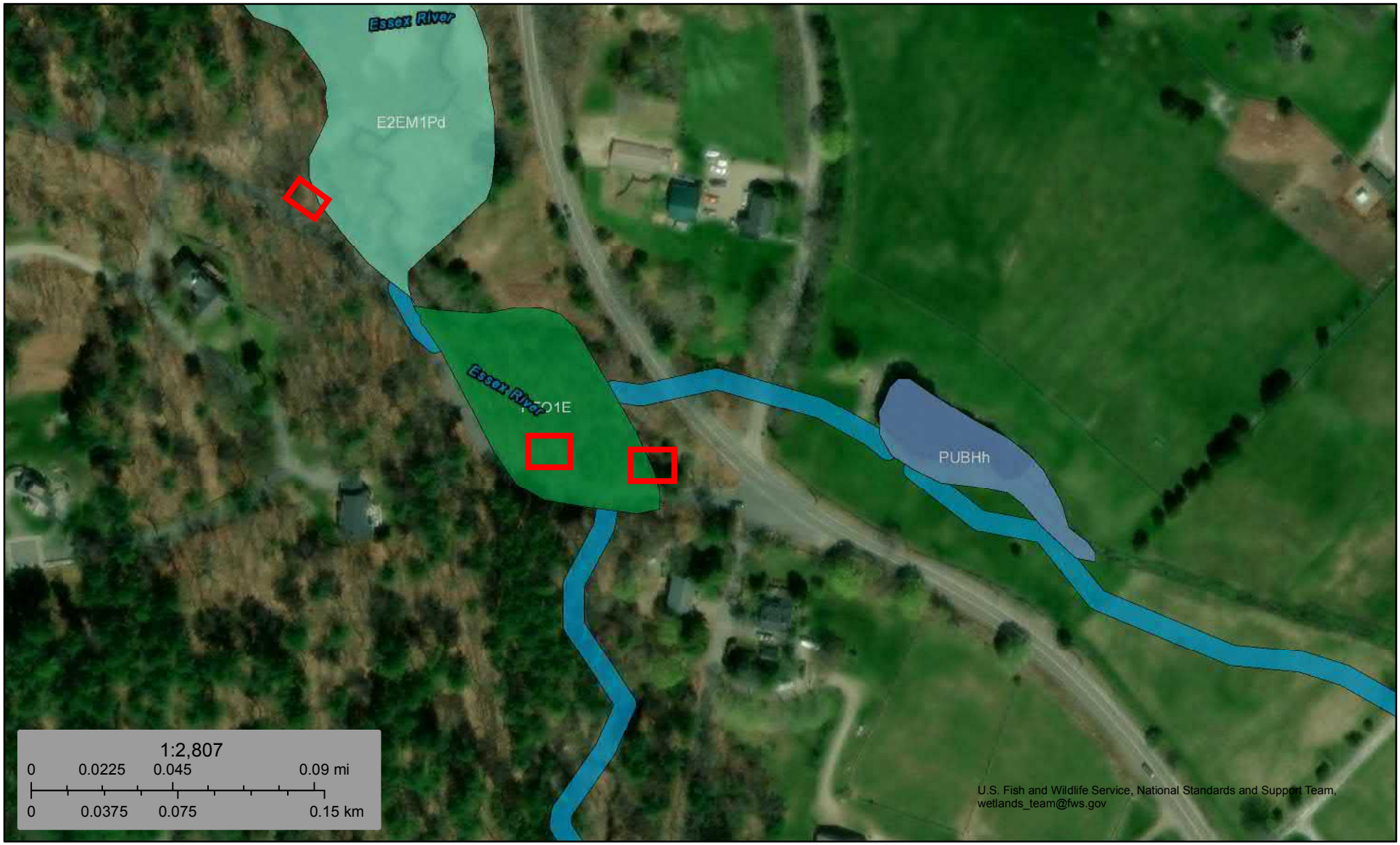
The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
14B	Scitico silt loam, 0 to 5 percent slopes	3.8	7.2%
43A	Scarboro mucky fine sandy loam, 0 to 3 percent slopes	1.9	3.7%
71B	Ridgebury fine sandy loam, 3 to 8 percent slopes, extremely stony	2.1	4.0%
102C	Chatfield-Hollis-Rock outcrop complex, 0 to 15 percent slopes	4.2	8.0%
102E	Chatfield-Hollis-Rock outcrop complex, 15 to 35 percent slopes	13.6	26.0%
220B	Boxford silt loam, 3 to 8 percent slopes	9.3	17.7%
254B	Merrimac fine sandy loam, 3 to 8 percent slopes	2.3	4.4%
276B	Ninigret fine sandy loam, 3 to 8 percent slopes	0.2	0.5%
311C	Woodbridge fine sandy loam, 8 to 15 percent slopes, very stony	0.2	0.3%
420B	Canton fine sandy loam, 3 to 8 percent slopes	2.8	5.4%
421B	Canton fine sandy loam, 0 to 8 percent slopes, very stony	7.7	14.7%
421D	Canton fine sandy loam, 15 to 25 percent slopes, very stony	0.8	1.5%
712A	Ipswich and Westbrook mucky peats, 0 to 2 percent slopes, very frequently flooded	3.5	6.7%
Totals for Area of Interest		**52.3**	**100.0%**

U.S. Fish and Wildlife Service
National Wetlands Inventory

Essex MA - Apple Street (east)



January 25, 2023

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

Approx. Location of D&K STPs (1/17/23)

National Flood Hazard Layer FIRMette

FEMA

70°46'56"W 42°37'26"N

70°46'19"W 42°37'N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

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
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

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 1/11/2023 at 4:01 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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

ATTACHMENT C Soil Data Forms

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Essex, MA - Apple Street (east Culvert) City/County: Essex Sampling Date: 1/17/23

Applicant/Owner: _____ State: MA Sampling Point: STP1

Investigator(s): B. Bhatti, T. Vasquez Section, Township, Range: _____

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

Subregion (LRR or MLRA): 144A Lat: 42.617047 Long: -70.772635 Datum: _____

Soil Map Unit Name: 43A Scarboro mucky fine sandy loam NWI classification: (N/A)

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

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

single viburnum specimen noted at edge of veg plot adjacent to STP1

Temperature ~45˚F, Sunny, clear sky

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches): _____
Water Table Present?	Yes _____	No X	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes X	No _____	Depth (inches): ~19"

Wetland Hydrology Present? **Yes** _____ **No** _____

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: STP1

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Herb Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	= Total Cover		

Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
	= Total Cover		

SEE D&K WETLANDS REPORT DATED NOVEMBER 29, 2022 FOR VEGETATION DETAILS;

THIS DATA FORM FOR ADDITIONAL WORK FROM SITE VISIT 1/17/23 FOCUSES ON SOILS/HYDROLOGY

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

__ 2 - Dominance Test is >50%

__ 3 - Prevalence Index is ≤3.0[1]

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

__ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

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

SOIL

Sampling Point: STP1

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
O - 1"-0"								Organics
A - 0"-4"	2.5Y 4/3 OR 10YR 4/2							Lighting conditions in forested understory
4"-9"	10YR 4/2						silty loam	
9"-14"	2.5Y 4/3							
14"-19"	2.5Y 4/1		10YR 4/6				sandy loam	redox features and saturation @19"
19"-23"	2.5Y 4/1		10YR 4/6				silty clay	
							saturated; water evident in hole within 5 min	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ 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)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

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

Remarks:

Section II. Indicators of Hydrology

D&K NOTE: STP1, 1/17/23

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? yes no
title/date: NRCS Web Soil Survey
(https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx ,
accessed 1/23/23; also NRCS [former SCS] "Soil Survey of Essex County, Massachusetts, Southern Part [1984])
map number: 43A
soil type mapped: Scarboro mucky fine sandy loam
hydric soil inclusions: Yes

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

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
O	1"-0"		
A	0"-4"	2.5Y 4/3 OR 10YR 4/2	
	4"-9"	10YR 4/2	
	9"-14"	2.5Y 4/3	
	14"-19"	2.5Y 4/1	10YR 4/6
	19"-23"	2.5Y 4/1	10YR 4.6

Remarks:

Saturation @19"

3. Other:

Conclusion: Is soil hydric? yes no

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

- ❑ Site Inundated: _____
- ❑ Depth to free water in observation hole: _____
- [X] Depth to soil saturation in observation hole: __19"_____
- ❑ Water marks: _____
- ❑ Drift lines: _____
- ❑ Sediment Deposits: _____
- ❑ Drainage patterns in BVW: _____
- ❑ Oxidized rhizospheres: _____
- ❑ Water-stained leaves: _____
- ❑ Recorded Data (streams, lake, or tidal gauge; aerial photo; other):
_____
_____
- ❑ Other:
_____

Vegetation and Hydrology Conclusion

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

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

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Essex, MA - Apple Street (east Culvert) City/County: Essex Sampling Date: 1/17/23

Applicant/Owner: _____ State: MA Sampling Point: STP2

Investigator(s): B. Bhatti, T. Vasquez Section, Township, Range: _____

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

Subregion (LRR or MLRA): 144A Lat: 42.617065 Long: -70.772782 Datum: _____

Soil Map Unit Name: 43A Scarboro mucky fine sandy loam NWI classification: PF01E

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

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

Temperature ~45˚F, Sunny, clear sky

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches): _____
Water Table Present?	Yes _____	No X	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes X	No _____	Depth (inches): ~15"-17"

Wetland Hydrology Present? **Yes** _____ **No** _____

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: STP2

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

SEE D&K WETLANDS REPORT DATED NOVEMBER 29, 2022 FOR VEGETATION DETAILS;

THIS DATA FORM FOR ADDITIONAL WORK FROM SITE VISIT 1/17/23 FOCUSES ON SOILS/HYDROLOGY

Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Herb Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	= Total Cover		

Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

__ 2 - Dominance Test is >50%

__ 3 - Prevalence Index is ≤3.0[1]

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

__ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

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

SOIL

Sampling Point: STP2

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
O - 3"-0"								Organics
A - 0"-7"	2.5Y 4/2						silty loam	Lighting conditions in forested understory
7"-12"	2.5Y 3/2						fine silty loam	few small roots; lg pebbles (15-20mm) @ 7" below mineral horizon; "greasy" @12"
12"-17"	2.5Y 3/2							
17"+							sandy silt	redox features and saturation @17+"
								free water evident in hole within 5 min

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ 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)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

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

Remarks:

Section II. Indicators of Hydrology

D&K NOTE: STP2, 1/17/23

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? yes no
title/date: NRCS Web Soil Survey
(https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx ,
accessed 1/23/23; also NRCS [former SCS] "Soil Survey of Essex County, Massachusetts, Southern Part [1984])
map number: 43A
soil type mapped: Scarboro mucky fine sandy loam
hydric soil inclusions: Yes

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

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
O	3"-0"		
A	0"-7"	2.5Y 4/2	
	7"-12"	2.5Y 3/2	
	12"-17"	2.5Y 3/2	

Remarks:

Saturation @15"-17" below O horizon;
free standing within <5 minutes of augering

3. Other:

Conclusion: Is soil hydric? yes no

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

- ❑ Site Inundated: _____
- ❑ Depth to free water in observation hole: _____
- [X] Depth to soil saturation in observation hole: ~15"-17" below O
- ❑ Water marks: _____
- ❑ Drift lines: _____
- ❑ Sediment Deposits: _____
- ❑ Drainage patterns in BVW: _____
- ❑ Oxidized rhizospheres: _____
- ❑ Water-stained leaves: _____
- ❑ Recorded Data (streams, lake, or tidal gauge; aerial photo; other): _____
- ❑ Other: _____

Vegetation and Hydrology Conclusion

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

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

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Essex, MA - Apple Street (east Culvert) City/County: Essex Sampling Date: 1/17/23

Applicant/Owner: _____ State: MA Sampling Point: STP3

Investigator(s): B. Bhatti, T. Vasquez Section, Township, Range: _____

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

Subregion (LRR or MLRA): 144A Lat: 42.617035 Long: -70.773056 Datum: _____

Soil Map Unit Name: 43A Scarboro mucky fine sandy loam NWI classification: (N/A)

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

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

Upland area proposed for wetland replication between flags B19 and B20
Depth to refusal ~18" (second sample pit in vicinity to confirm)
Sundown behind hill @~2:00 pm; Munsell color determination in lower light condition

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No _____

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: STP3

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Herb Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	= Total Cover		

Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
	= Total Cover		

SEE D&K WETLANDS REPORT DATED NOVEMBER 29, 2022 FOR VEGETATION DETAILS;

THIS DATA FORM FOR ADDITIONAL WORK FROM SITE VISIT 1/17/23 FOCUSES ON SOILS/HYDROLOGY

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

__ 2 - Dominance Test is >50%

__ 3 - Prevalence Index is ≤3.0[1]

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

__ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

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

SOIL

Sampling Point: STP3

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
O 2"-0"								Organics
A 0"-1"	10YR 2/2							Loamy, Roots
1"-8"	10YR 3/3							
8"-14"	7.5YR 4/6 OR 10YR 4/6							
14"-16"	5YR 4/6							
16"								Refusal

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ 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)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

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

Remarks:

Section II. Indicators of Hydrology

D&K NOTE: STP3, 1/17/23

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? yes no
title/date: NRCS Web Soil Survey
(https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx ,
accessed 1/23/23; also NRCS [former SCS] "Soil Survey of Essex
County, Massachusetts, Southern Part [1984])
map number: 43A
soil type mapped: Scarboro mucky fine sandy loam
hydric soil inclusions: Yes

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

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
O	2"-0"		
A	0"-1"	10YR 2/2	
	1"-8"	10YR 3/3	
	8"-14"	7.5YR 4/6 OR 10YR 4/6	
	14"-16"	5YR 4/6	

Remarks:

Depth to refusal – 18" from surface (16" below O horizon)

3. Other:

Conclusion: Is soil hydric? yes no

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

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

Vegetation and Hydrology Conclusion

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

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

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Essex, MA - Apple Street (east Culvert) City/County: Essex Sampling Date: 1/17/23

Applicant/Owner: State: MA Sampling Point: STP4

Investigator(s): B. Bhatti, T. Vasquez Section, Township, Range:

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

Subregion (LRR or MLRA): 144A Lat: 42.617071 Long: -70.773031 Datum:

Soil Map Unit Name: 43A Scarboro mucky fine sandy loam NWI classification: PFO1E

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

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

Within BVW just below and between flags B19 and B20

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches): _____
Water Table Present?	Yes X	No _____	Depth (inches): ~14" below O
Saturation Present? (includes capillary fringe)	Yes X	No _____	Depth (inches): 11"-12"+

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: STP4

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	_____ = Total Cover		

Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	_____ = Total Cover		

Herb Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	_____ = Total Cover		

Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
	_____ = Total Cover		

SEE D&K WETLANDS REPORT DATED NOVEMBER 29, 2022 FOR VEGETATION DETAILS;

THIS DATA FORM FOR ADDITIONAL WORK FROM SITE VISIT 1/17/23 FOCUSES ON SOILS/HYDROLOGY

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

__ 2 - Dominance Test is >50%

__ 3 - Prevalence Index is ≤3.0[1]

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

__ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

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

SOIL

Sampling Point: STP4

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
O 5"-0"	10YR 2/2							Organics
A 0"-3"	10YR 3/4						loamy sand	mottling, redox features evident
3"-6"	10YR 3/4						loamy sand	mottling, redox features evident
6"-11"	10YR 4/2		10YR 5/6				loamy sand	mottling, redox, lg pebble(s)
11"-14"	10YR 4/4							saturated
14"+								free water

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ 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)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

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

Remarks:

D&K NOTE: STP4, 1/17/23

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? yes no
title/date: NRCS Web Soil Survey
(https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx ,
accessed 1/23/23; also NRCS [former SCS] "Soil Survey of Essex County, Massachusetts, Southern Part [1984])
map number: 43A
soil type mapped: Scarboro mucky fine sandy loam
hydric soil inclusions: Yes

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

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
O	5"-0"	10YR 2/2	
A	0"-3"	10YR 3/4	
	3"-6"	10YR 3/4	
	6"-11"	10YR 4/2	10YR 5/6
	11"-14"	10YR 4/4	
	14"+		

Remarks:

Saturated at 11"; free water at 14"+

3. Other:

Conclusion: Is soil hydric? yes no

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

- ❑ Site Inundated: _____
- [X] Depth to free water in observation hole: _14"+ from O__
- [X] Depth to soil saturation in observation hole: _11" from O__
- ❑ Water marks: _____
- ❑ Drift lines: _____
- ❑ Sediment Deposits: _____
- ❑ Drainage patterns in BVW: _____
- ❑ Oxidized rhizospheres: _____
- ❑ Water-stained leaves: _____
- ❑ Recorded Data (streams, lake, or tidal gauge; aerial photo; other): _____
- ❑ Other: _____

Vegetation and Hydrology Conclusion

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

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

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Essex, MA - Apple Street (east Culvert) City/County: Essex Sampling Date: 1/17/23

Applicant/Owner: _____ State: MA Sampling Point: STP5

Investigator(s): B. Bhatti, T. Vasquez Section, Township, Range: _____

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): _____ Slope (%): 0-8

Subregion (LRR or MLRA): 144A Lat: 42.617328 Long: -70.773450 Datum: _____

Soil Map Unit Name: 421B Canton fine sandy loam NWI classification: (N/A)

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

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

STP5 was dug at the transition between the flagged wetland and the proposed wetland replication area. This area is a flat terrace just upgradient of the B wetland (standing water), so hydrologic indicators were present in the STP but wetland/hydrophytic plants were not observed. There were multiple shagbark hickory and other facultative upland (FACU) and upland (UPL) vegetative species present in this area.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): ~11" from O

Wetland Hydrology Present? Yes X No _____

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: STP5

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

SEE D&K WETLANDS REPORT DATED NOVEMBER 29, 2022 FOR VEGETATION DETAILS;

THIS DATA FORM FOR ADDITIONAL WORK FROM SITE VISIT 1/17/23 FOCUSES ON SOILS/HYDROLOGY

Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Herb Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	= Total Cover		

Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

__ 2 - Dominance Test is >50%

__ 3 - Prevalence Index is ≤3.0[1]

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

__ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

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

SOIL

Sampling Point: STP5

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
O 3"-0"	7.5YR 2.5/1 OR 10YR 3/1							Organics
A 0"-3"	10YR 3/1						Loamy sand	slightly saturated, "stone"
3"-10"	10YR 4/3							redox features, fully saturated @10"
10"-17"	10YR 4/3							"stoney muck", free water @14"
17"	10YR 3/3							
22"	10YR 4/2							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ 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)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

D&K NOTE: STP5, 1/17/23

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? yes no
title/date: NRCS Web Soil Survey
(https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx ,
accessed 1/23/23; also NRCS [former SCS] "Soil Survey of Essex County, Massachusetts, Southern Part [1984])
map number: 421B
soil type mapped: Canton fine sandy loam
hydric soil inclusions:

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

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
O	3"-0"	7.5YR 2.5/1 OR 10YR 3/1	
A	0"-3"	10YR 3/1	
	3"-10"	10YR 4/3	
	10"-17"	10YR 4/3	
	17"	10YR 3/3	
	22"	10YR 4/2	

Remarks:

Saturated at 10", free water @14"

3. Other:

Conclusion: Is soil hydric? yes no

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

- ❑ Site Inundated: _____
- [X] Depth to free water in observation hole: __14" from O layer_
- [X] Depth to soil saturation in observation hole: _10" from O layer
- ❑ Water marks: _____
- ❑ Drift lines: _____
- ❑ Sediment Deposits: _____
- ❑ Drainage patterns in BVW: _____
- ❑ Oxidized rhizospheres: _____
- ❑ Water-stained leaves: _____
- ❑ Recorded Data (streams, lake, or tidal gauge; aerial photo; other): _____
- ❑ Other: _____

Vegetation and Hydrology Conclusion

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

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

ATTACHMENT D Photos

PHOTO LOG –
Essex, MA, Apple Street Culvert
Key Vicinity Soil & Natural Resource Features

Photo 1
STP1 in easterly proposed wetland replication area; redoxymorphic features and saturation evident at ~20" from surface (including 1" O organic layer); note sheen on pedon and wet silt on hand) (1/17/23)

Photo 2
View southwesterly in vicinity of STP1 showing low terrace area proposed for easterly wetland replication area compared to upper surface of Southern Ave; pine trees/saplings apparent (1/17/23)

Photo 3
View easterly of low terraced area in vicinity of STP1 proposed for wetland replication area; cedar to the left and white pine sapling on right center and overhead upper right foreground (goldenrod, *Solidago* sp, and other persistent herbaceous winter stems evident) (1/17/23)

Photo 4
View westerly from Apple Street surface level towards easterly replication area terrace (right) and across to central replication area on other side of stream channel; cedar tree in center and wetland flags evident at center adjacent to channel (A13) and on far right (A14)
(1/17/23)

Photo 5
View northerly of STP2 location within BVW east of stream channel; with wetland flags visible; proposed replication area to right with cedar tree evident in background at transition zone
(1/17/23)

Photo 6
View STP2 sample within BVW east of stream channel; soil pedon ~20" from surface (including 3" O organic layer) (NOTE: loose/expanded section does not accurately represent actual compressed depth)
(1/17/23)

Photo 7
View of interior STP2 hole showing saturation at ~15”-17”+ (below 3” O layer) and water accumulation almost immediately (<5 minutes after augering)
(1/17/23)

Photo 8
View of STP2 at ~15”-17” below the mineral horizon line showing saturated condition (note sheen on pedon and wet/moist fingers)
(1/17/23)

Photo 9
View westerly of Apple Street with proposed replication area to the lower right just upgradient from STP3 (1/17/23)

Photo 10
View easterly towards STP3 within proposed wetland replication area (1/17/23)

Photo 11
View of STP3 within proposed wetland replication area; approx. 2" organic layer [NOTE: pedon somewhat loose, so taped measurement appears as ~3"; refusal reached at ~18" below top of organic layer] (1/17/23)

Photo 12
View near STP4 within BVW showing terraced nature adjacent to channel (1/17/23)

Photo 13
Soil pedon from STP4 within BVW from top to ~18" depth showing ~5" top layer of decomposed organics (1/17/23)

Photo 14
Upper 5" of soil pedon from STP4 within BVW showing layer of decomposed organics and small roots mixed with sand (1/17/23)

Photo 15 Composite (a-i) of STP4 soil pedon from within BVW showing details throughout (1/17/23)

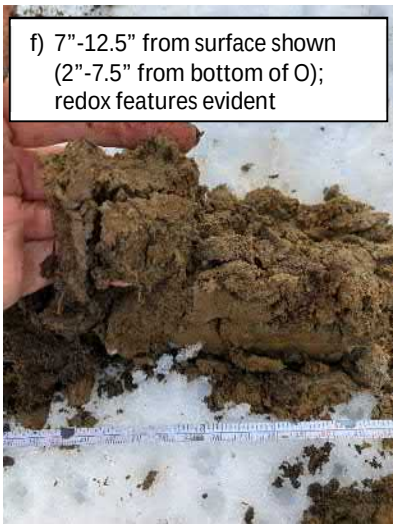


Photo 16
Wetland area at westerly end of project adjacent to proposed replication area; standing water apparent and greenbrier prevalent at right throughout wetland (*Smilax* sp.)
(1/17/23)

Photo 17
View northwesterly at transition between flagged BVW on right beyond stone wall and proposed replication area on left
(1/17/23)

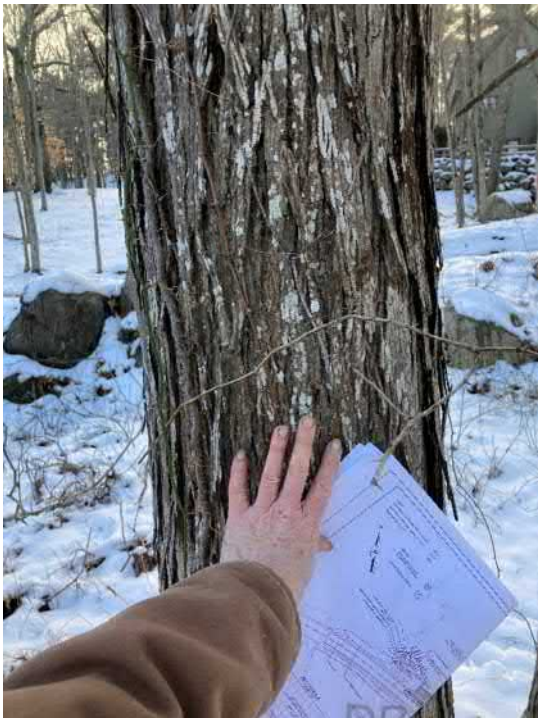


Photo 18
One of several shagbark hickories (*Carya ovata*) in proposed westerly replication area; greenbrier (*Smilax* sp.) and poison ivy (*Toxicodendron radicans*) vines evident climbing tree surface
(1/17/23)

Photo 19
STP5 from top of O layer organics to ~22" (note pedon has loosened, so tape not showing accurate depth)
(1/17/23)

Photo 20
STP5 from top of O layer organics to 18" (15" below O layer); redox features and saturation evident at 3"-10" below O layer and heavy saturation (free water) at 11" below O layer
(1/17/23)

Photo 21
View northwesterly of STP5 location within proposed replication area; flagged BVW behind stone wall with prevalent *Phragmites* sp
(1/17/23)

Photo 22
View northwest of central project area showing steep and cobble/boulder nature of proposed wetland/resource area impact slope.
(1/17/23)

Photo 23
View easterly of central project area showing steep and cobble boulder nature of proposed resource impact area.
(1/17/23)

Photo 24
View easterly of first wetland flag at westerly end of project area showing steep bank, cobble/boulder sideslope, and prevalence of *Phragmites* sp.
(1/17/23)

Photo 25
View northwesterly of the channel downgradient from the culvert with the proposed replication area to the left and the flagged BVW to the right. (1/17/23)

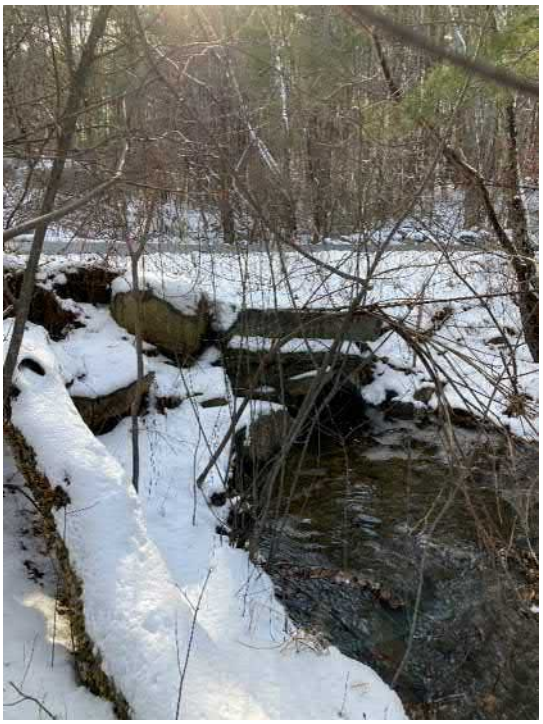


Photo 26
View southerly towards downgradient end of culvert. (1/17/23)

Photo 27
View northerly towards channel downgradient from culvert showing wetland areas in lower terrace areas on left and right. (1/17/23)

Photo 28
View northwesterly towards channel upgradient from culvert showing steep slideslopes w/cobbles/ boulders.
(1/17/23)

Photo 29
View southerly towards channel upgradient from culvert showing steep winding channel with multiple drop-offs over cobbles/boulders.
(1/17/23)

Photo 30
View southerly towards channel upgradient from culvert showing cobbles/boulders in vicinity of flagged BVW and steep winding channel through forest overstory.
(1/17/23)

ATTACHMENT E Functions & Values Form (for impact area)

VERMONT WETLAND EVALUATION FORM

Wetland ID#: BVW between flags A7-A11 & B10-B15 @ culvert; bank resource between flags B29-B42 @ central main channel of Essex River adjacent to Apple Street Project #:_____

Date: 1/17/23 Investigator: B. Bhatti

SUMMARY OF FUNCTIONAL EVALUATION:

Each function gets a score of 0= not present; L = Low; P = Present; or H = High.

1. Water Storage for Flood Water and Storm Runoff	0	**6. Rare, Threatened, and Endangered Species Habitat**	0
2. Surface & Ground Water Protection	0	**7. Education and Research in Natural Sciences**	0
3. Fish Habitat	0	**8. Recreational Value and Economic Benefits**	0
4. Wildlife Habitat	0	**9. Open Space and Aesthetics**	0
5. Exemplary Wetland Natural Community	0	**10. Erosion Control through Binding and Stabilizing the Soil**	0

NOTE: USACE Highway Method equivalent - Sediment/Shoreline Stabilization

Note:

- ***When to use this form:*** This is a field form to help you compile data needed to evaluate the 10 possible functions and values of a wetland as described in the Vermont Wetland Rules. All information in this form is replicated in the applications for both wetland determinations and wetland permits.
- ***Both a desktop review and field examination*** should be employed to accurately determine surrounding land use, hydrology, hydroperiod, vegetation, position in the landscape, and physical attributes.
- ***The entire wetland or wetland complex*** in question must be evaluated to determine the level of function in all ten (10) categories for accurate classification. A wetland complex can be defined as a series of interconnected wetland types.
- ***The surrounding upland and outflow area*** of the wetland should be examined to determine land use, development, nearby natural resources, and hydrology. The surrounding land use, previous development, and cumulative impacts may play a role in the current function of the wetland. For best results please read all descriptions prior to scoring activity.
- ***Evaluation***: The first portion in each section determines whether the wetland does or does not provide the function. If none of the conditions listed in the first section are met, proceed

to the next section. If any of these conditions are met, determine if the wetland provides this function at a higher or lower level based on the information listed in the subsequent sections.

- ***Presumptions:*** Please note that many wetlands are already presumed to be significant under the Vermont Wetland Rules. A wetland is presumed to be significant if:
    - The wetland is mapped on the VSWI map
    - The wetland is contiguous to a VSWI mapped wetland
    - The wetland meets the presumptions of significance under Section 4.6
    - The wetland has a preliminary determination that it is Class II

1. Water Storage for Flood Water and Storm Runoff

☐ Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.

- ☐ Constricted outlet or no outlet and an unconstricted inlet.
- ☐ Physical space for floodwater expansion and dense, persistent, emergent vegetation or dense woody vegetation that slows down flood waters or stormwater runoff during peak flows and facilitates water removal by evaporation and transpiration.
- ☐ If a stream is present, its course is sinuous and there is sufficient woody vegetation to intercept surface flows in the portion of the wetland that floods.
- ☐ Physical evidence of seasonal flooding or ponding such as water stained leaves, water marks on trees, drift rows, debris deposits, or standing water.
- ☐ Hydrologic or hydraulic study indicates wetland attenuates flooding.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level:

☐ Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.

- ☐ Significant flood storage capacity upstream of the wetland, and the wetland in question provides this function at a negligible level in comparison to upstream storage (unless the upstream storage is temporary such as a beaver impoundment).
- ☐ Wetland is contiguous to a major lake or pond that provides storage benefits independently of the wetland.
- ☐ Wetland's storage capacity is created primarily by recent beaver dams or other temporary structures.
- ☐ Wetland is very small in size, not contiguous to a stream, and not part of a collection of small wetlands in the landscape that provide this function cumulatively.

☐ Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.

- ☐ History of downstream flood damage to public or private property.
- ☐ Any of the following conditions present downstream of the wetland, but upstream of a major lake or pond, could be impacted by a loss or reduction of the water storage function.
  - ☐ 1. Developed public or private property.
  - ☐ 2. Stream banks susceptible to scouring and erosion.
  - ☐ 3. Important habitat for aquatic life.
- ☐ The wetland is large in size and naturally vegetated.

☐ Any of the following conditions present upstream of the wetland may indicate a large volume of runoff may reach the wetland.

- ☐ 1. A large amount of impervious surface in urbanized areas.
- ☐ 2. Relatively impervious soils.
- ☐ 3. Steep slopes in the adjacent areas.

2. Surface and Ground Water Protection

☐ Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.

- ☐ Constricted or no outlets.
- ☐ Low water velocity through dense, persistent vegetation.
- ☐ Hydroperiod permanently flooded or saturated.
- ☐ Wetlands in depositional environments with persistent vegetation wider than 20 feet.
- ☐ Wetlands with persistent vegetation comprising a defined delta, island, bar or peninsula.
- ☐ Presence of seeps or springs.
- ☐ Wetland contains a high amount of microtopography that helps slow and filter surface water.
- ☐ Position in the landscape indicates the wetland is a headwaters area.
- ☐ Wetland is adjacent to surface waters.
- ☐ Wetland recharges a drinking water source.
- ☐ Water sampling indicates removal of pollutants or nutrients.
- ☐ Water sampling indicates retention of sediments or organic matter.
- ☐ Fine mineral soils and alkalinity not low.
- ☐ The wetland provides an obvious filter between surface water or ground water and land uses that may contribute point or nonpoint sources of sediments, toxic substances or nutrients to the wetland, such as: steep erodible slopes; row crops; dumps; areas of pesticide, herbicide or fertilizer application; feed lots; parking lots or heavily traveled road; and septic systems.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level.

☐ Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.

- ☐ Presence of dead forest or shrub areas in sufficient amounts to result in diminished

nutrient uptake.

- ☐ Presence of ditches or channels that confine water and restrict contact of water with vegetation.
- ☐ Wetland is very small in size, not contiguous to a stream, and not part of a collection of small wetlands in the landscape that provide this function cumulatively.
- ☐ Current use in the wetland results in disturbance that compromises this function.

☐ Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.

- ☐ The wetland is adjacent to a well head or source protection area, and provides ground water recharge.
- ☐ The wetland provides flows to Class A surface waters.
- ☐ The wetland contributes to the protection or improvement of water quality of any impaired waters.
- ☐ The wetland is large in size and naturally vegetated.

3. Fish Habitat

☐ Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.

- ☐ Contains woody vegetation that overhangs the banks of a stream or river and provides any of the following: shading that controls summer water temperature; cover including refuges created by overhanging branches or undercut banks; source of terrestrial insects as fish food; or streambank stability.
- ☐ Provides spawning, nursery, feeding or cover habitat for fish (documented or professionally judged). Common habitat includes deep marsh and shallow marsh associates with lakes and streams, and seasonally flooded wetlands associated with streams and rivers.
- ☐ Documented or professionally judged spawning habitat for northern pike.
- ☐ Provides cold spring discharge that lowers the temperature of receiving waters and creates summer habitat for salmonoid species.
- ☐ The wetland is located along a tributary that does not support fish, but contributes to a larger body of water that does support fish. The tributary supports downstream fish by providing cooler water, and food sources.

4. Wildlife Habitat

☐ Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.

- ☐ Provides resting, feeding staging or roosting habitat to support waterfowl migration, and feeding habitat for wading birds. Good habitats for these species include open water wetlands.
- ☐ Habitat to support one or more breeding pairs or broods of waterfowl including all species of ducks, geese, and swans. Good habitats for these species include open water habitats adjacent shallow marsh, deep marsh, shrub wetland, forested wetland, or naturally vegetated buffer zone.
- ☐ Provides a nest site, a buffer for a nest site or feeding habitat for wading birds including but not limited to: great blue heron, black-crowned night heron, green-backed heron, cattle egret, or snowy egret. Good habitats for these species include open water or deep marsh adjacent to forested wetlands, or standing dead trees.
- ☐ Supports or has the habitat to support one or more breeding pairs of any migratory bird that requires wetland habitat for breeding, nesting, rearing of young, feeding, staging roosting, or migration, including: Virginia rail, common snipe, marsh wren, American bittern, northern water thrush, northern harrier, spruce grouse, Cerulean warbler, and common loon.
- ☐ Supports winter habitat for white-tailed deer. Good habitats for these species include softwood swamps. Evidence of use includes deer browsing, bark stripping, worn trails, or pellet piles.
- ☐ Provides important feeding habitat for black bear, bobcat, or moose based on an assessment of use. Good habitat for these types of species includes wetlands located in a forested mosaic.
- ☐ Has the habitat to support muskrat, otter or mink. Good habitats for these species include deep marshes, wetlands adjacent to bodies of water including lakes, ponds, rivers and streams.
- ☐ Supports an active beaver dam, one or more lodges, or evidence of use in two or more consecutive years by an adult beaver population.
- ☐ Provides the following habitats that support the reproduction of Uncommon Vermont amphibian species including:
  - ☐ 1. Wood Frog, Jefferson Salamander, Blue-spotted Salamander, or Spotted Salamander. Breeding habitat for these species includes vernal pools and small ponds.
  - ☐ 2. Northern Dusky Salamander and the Spring Salamander. Habitat for these species includes headwater seeps, springs, and streams.
  - ☐ 3. The Four-toed salamander; Fowler's Toad; Western or Boreal Chorus frog, or other amphibians found in Vermont of similar significance.

☐ Supports or has the habitat to support significant populations of Vermont amphibian species including, but not limited to Pickerel Frog, Northern Leopard Frog, Mink Frog, and others found in Vermont of similar significance. Good habitat for these types of species includes large marsh systems with open water components.

☐ Supports or has the habitat to support populations of uncommon Vermont reptile species including: Wood Turtle, Northern Map Turtle, Eastern Musk Turtle, Spotted Turtle, Spiny Softshell, Eastern Ribbonsnake, Northern Watersnake, and others found in Vermont of similar significance.

☐ Supports or has the habitat to support significant populations of Vermont reptile species, including Smooth Greensnake, DeKay's Brownsnake, or other more common wetland-associated species.

☐ Meets four or more of the following conditions indicative of wildlife habitat diversity:

- ☐ 1. Three or more wetland vegetation classes (greater than 1/2 acre) present including but not limited to: open water contiguous to, but not necessarily part of, the wetland, deep marsh, shallow marsh, shrub swamp, forested swamp, fen, or bog;
- ☐ 2. The dominant vegetation class is one of the following types: deep marsh, shallow marsh, shrub swamp or, forested swamp;
- ☐ 3. Located adjacent to a lake, pond, river or stream;
- ☐ 4. Fifty percent or more of surrounding habitat type is one or more of the following: forest, agricultural land, old field or open land;
- ☐ 5. Emergent or woody vegetation occupies 26 to 75 percent of wetland, the rest is open water;
- ☐ 6. One of the following:
  - ☐ i. hydrologically connected to other wetlands of different dominant classes or open water within 1 mile;
  - ☐ ii. hydrologically connected to other wetlands of same dominant class within 1/2 mile;
  - ☐ iii. within 1/4 mile of other wetlands of different dominant classes or open water, but not hydrologically connected;

☐ Wetland or wetland complex is owned in whole or in part by state or federal government and managed for wildlife and habitat conservation; and

☐ Contains evidence that it is used by wetland dependent wildlife species.

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level.

☐ Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.

☐ The wetland is small in size for its type and does not represent fugitive habitat in

developed areas (vernal pools and seeps are generally small in size, so this does not apply).

- ☐ The surrounding land use is densely developed enough to limit use by wildlife species (with the exception of wetlands with open water habitat). Can be negated by evidence of use.
- ☐ The current use in the wetland results in frequent cutting, mowing or other disturbance.
- ☐ The wetland hydrology and character is at a drier end of the scale and does not support wetland dependent species.

☐ Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.

- ☐ The wetland complex is large in size and high in quality.
- ☐ The habitat has the potential to support several species based on the assessment above.
- ☐ Wetland is associated with an important wildlife corridor.
- ☐ The wetland has been identified by ANR-F&W as important habitat.

5. Exemplary Wetland Natural Community

☐ Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.

- ☐ Wetlands that are identified as high quality examples of Vermont's natural community types recognized by the Natural Heritage Information Project of the Vermont Fish and Wildlife Department, including rare types such as dwarf shrub bogs, rich fens, alpine peatlands, red maple-black gum swamps and the more common types including deep bulrush marshes, cattail marshes, northern white cedar swamps, spruce-fir-tamarack swamps, and red maple-black ash seepage swamps are automatically significant for this function.

The wetland is also likely to be significant if any of the following conditions are met:

- ☐ Is an example of a wetland natural community type that has been identified and mapped by, or meets the ranking and mapping standards of, the Natural Heritage Information Project of the Vermont Fish and Wildlife Department.
- ☐ Contains ecological features that contribute to Vermont's natural heritage, including, but not limited to:
  - ☐ Deep peat accumulation reflecting a long history of wetland formation;
  - ☐ Forested wetlands displaying very old trees and other old growth characteristics;
  - ☐ A wetland natural community that is at the edge of the normal range for that type;

- ☐ A wetland mosaic containing examples of several to many wetland community types; or
- ☐ A large wetland complex with examples of several wetland community types.

6. Rare, Threatened, and Endangered Species Habitat

☐ Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.

- ☐ Wetlands that contain one or more species on the federal or state threatened or endangered lists, as well as species that are rare in Vermont, are automatically significant for this function.

The wetland is also likely to be significant if any of the following apply:

- ☐ There is creditable documentation that the wetland provides important habitat for any species on the federal or state threatened or endangered species lists;
- ☐ There is creditable documentation that threatened or endangered species have been present in past 10 years;
- ☐ There is creditable documentation that the wetland provides important habitat for any species listed as rare in Vermont (S1 or S2 ranks), state historic (SH rank), or rare to uncommon globally (G1, G2, or G3 ranks) by the Natural Heritage Information Project of the Vermont Fish and Wildlife Department;
- ☐ There is creditable documentation that the wetland provides habitat for multiple uncommon species of plants or animals (S3 rank).

List name of species and ranking:

7. Education and Research in Natural Sciences

☐ Function is present and likely to be significant: Any of the following characteristics indicate the wetland provides this function.

- ☐ Owned by or leased to a public entity dedicated to education or research.
- ☐ History of use for education or research.
- ☐ Has one or more characteristics making it valuable for education or research.

8. Recreational Value and Economic Benefits

☐ Function is present and likely to be significant: Any of the following characteristics indicate the wetland provides this function.

- ☐ Used for, or contributes to, recreational activities.
- ☐ Provides economic benefits.
- ☐ Provides important habitat for fish or wildlife which can be fished, hunted or trapped under applicable state law.
- ☐ Used for harvesting of wild foods.

Comments:

9. Open Space and Aesthetics

☐ Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.

- ☐ Can be readily observed by the public; and
  - ☐ Possesses special or unique aesthetic qualities; or
  - ☐ Has prominence as a distinct feature in the surrounding landscape;
- ☐ Has been identified as important open space in a municipal, regional or state plan.

10. Erosion Control through Binding and Stabilizing the Soil

☒ Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.

- ☒ Erosive forces such as wave or current energy are present and any of the following are present as well:
  - ☐ Dense, persistent vegetation along a shoreline or stream bank that reduces an adjacent erosive force.
  - ☐ Good interspersion of persistent emergent vegetation and water along course of water flow.
  - ☐ Studies show that wetlands of similar size, vegetation type, and hydrology are important for erosion control.

What type of erosive forces are present?

- ☐ Lake fetch and waves
- ☒ High current velocities
- ☐ Water level influenced by upstream impoundment

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level.

☐ Check box if any of the following conditions apply that may indicate the wetland provides this function at a *lower* level.

- ☐ The stream is artificially channelized and/or lacks vegetation that contributes to controlling the erosive force.

☒ Check box if any of the following conditions apply that may indicate the wetland provides this function at a *higher* level.

- ☒ The stream contains high sinuosity.
- ☐ Has been identified through fluvial geomorphic assessment to be important in maintaining the natural condition of the stream or river corridor.

ATTACHMENT D

Rare, Threatened, Endangered Species Documentation

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104

In Reply Refer To: February 04, 2023
Project Code: 2023-0041839
Project Name: Apple Street Improvements and Bridge Construction

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

Updated 12/27/2022 - Please review this letter each time you request an Official Species List, we will continue to update it with additional information and links to websites may change.

About Official Species Lists

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Federal and non-Federal project proponents have responsibilities under the Act to consider effects on listed species.

The enclosed species list identifies threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested by returning to an existing project's page in IPaC.

Endangered Species Act Project Review

Please visit the "**New England Field Office Endangered Species Project Review and Consultation**" website for step-by-step instructions on how to consider effects on listed

species and prepare and submit a project review package if necessary:

https://www.fws.gov/office/new-england-ecological-services/endangered-species-project-review

NOTE Please do not use the **Consultation Package Builder** tool in IPaC except in specific situations following coordination with our office. Please follow the project review guidance on our website instead and reference your **Project Code** in all correspondence.

Northern Long-eared Bat - (Updated 12/27/2022) Please visit our New England Field Office Project Review webpage at the link above for updated northern long-eared bat consultation guidance. The Service published a final rule to reclassify the northern long-eared bat (NLEB) as endangered on November 30, 2022. The final rule will go into effect on **January 30, 2023**. After that date, the current 4(d) rule for NLEB will no longer be in effect, and the 4(d) determination key will no longer be available. New compliance tools will be available by mid- to late-January, and information will be posted on our New England Field Office Project Review webpage in January, so please check this site often for updates.
Depending on the type of effects a project has on NLEB, the change in the species' status may trigger the need to re-initiate consultation for any actions that are not completed and for which the Federal action agency retains discretion once the new listing determination becomes effective. If your project may result in incidental take of NLEB after the new listing goes into effect, this will need to be addressed in an updated consultation that includes an Incidental Take Statement. Many of these situations will be addressed through the new compliance tools. If your project may require re-initiation of consultation, please wait for information on the new tools to appear on our website or contact our office at **newengland@fws.gov** for additional guidance.

Additional Info About Section 7 of the Act
Under section 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to determine whether projects may affect threatened and endangered species and/or designated critical habitat. If a Federal agency, or its non-Federal representative, determines that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Federal agency also may need to consider proposed species and proposed critical habitat in the consultation. 50 CFR 402.14(c)(1) specifies the information required for consultation under the Act regardless of the format of the evaluation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

https://www.fws.gov/service/section-7-consultations

In addition to consultation requirements under Section 7(a)(2) of the ESA, please note that under sections 7(a)(1) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species. Please contact NEFO if you would like more information.

Candidate species that appear on the enclosed species list have no current protections under the

ESA. The species' occurrence on an official species list does not convey a requirement to consider impacts to this species as you would a proposed, threatened, or endangered species. The ESA does not provide for interagency consultations on candidate species under section 7, however, the Service recommends that all project proponents incorporate measures into projects to benefit candidate species and their habitats wherever possible.

Migratory Birds

In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see:

https://www.fws.gov/program/migratory-bird-permit

https://www.fws.gov/library/collections/bald-and-golden-eagle-management

Please feel free to contact us at **newengland@fws.gov** with your **Project Code** in the subject line if you need more information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat.

Attachment(s): Official Species List

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
(603) 223-2541

Project Summary

Project Code: 2023-0041839
Project Name: Apple Street Improvements and Bridge Construction
Project Type: Road/Hwy - Maintenance/Modification
Project Description: Roadbed elevation for an approximate 850' section of Apple Street. Project includes replacement of a 36" culvert, for an unnamed tributary of the Essex River, with a 10' x 5' precast concrete culvert.
Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@42.61738085,-70.77360669221167,14z

Counties: Essex County, Massachusetts

Endangered Species Act Species

There is a total of 2 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

IPaC User Contact Information

Agency: Dubois & King
Name: Aimee Rutledge
Address: 6 Green Tree Drive
City: South Burlington
State: VT
Zip: 05403
Email arutledge@dubois-king.com
Phone: 8028787661

Aimee Rutledge <arutledge@dubois-king.com>

RE: NHESP/MESA Project Review - Apple Street, Essex MA

1 message

Holt, Emily (FWE) <emily.holt@state.ma.us> Fri, Apr 29, 2022 at 12:28 PM
To: Aimee Rutledge <arutledge@dubois-king.com>

Aimee,

Based on the information provided, this project, as currently proposed, does not occur within Estimated Habitat of Rare Wildlife or Priority Habitat as indicated in the *Massachusetts Natural Heritage Atlas* (15th Edition). Therefore, the project is not required to be reviewed for compliance with the rare wildlife species section of the Massachusetts Wetlands Protection Act Regulations (310 CMR 10.37, 10.59 & 10.58(4)(b)) or the MA Endangered Species Act Regulations (321 CMR 10.18).

Best,

Emily Holt

Endangered Species Review Assistant

Natural Heritage & Endangered Species Program
Massachusetts Division of Fisheries & Wildlife
1 Rabbit Hill Road, Westborough, MA 01581
p: (508) 389-6385 | f: (508) 389-7890

mass.gov/nhesp

Important: All non-essential state employees, including Environmental Review staff, are working remotely. Please visit our website (www.mass.gov/nhesp) for updates.

From: Aimee Rutledge <arutledge@dubois-king.com>
Sent: Thursday, April 28, 2022 5:42 PM
To: Holt, Emily (FWE) <emily.holt@mass.gov>
Subject: NHESP/MESA Project Review - Apple Street, Essex MA

Good afternoon,

I am emailing you regarding the presence of species and/or habitat of concern within our project area. Based on our review of available mapping, the project is outside of the Warren Weld Woodland and PH 1836 (see attached map). The project involves culvert replacement and road reconstruction of Apple Street. I've attached a map of the approximate location of the project and 50% design plans for you to reference if necessary.

Could you please confirm there are no species and/or habitat of concern within our project area?

Please email or call me on my cell phone number below to discuss further, if necessary. Thank you for your assistance in this matter.

Aimee N. Rutledge, PWS, CPESC, CPSWQ

DuBois & King, Inc.

6 Green Tree Drive

South Burlington, VT 05403

Work: 802-878-7661 x7242

Cell: 401-529-5034

<<...>> <<...>> <<...>>

ATTACHMENT E

Stormwater Compliance Documents

Stormwater Report

TEC Project File No. T0967.02

Apple Street Roadbed Elevation and Culvert Replacement Project

Essex, MA

Prepared for: **Town of Essex**
30 Martin Street
Essex, MA 01929

Prepared by: **TEC, Inc.**
282 Merrimack Street
Lawrence, MA 01843

February 15, 2023

TABLE OF CONTENTS

STORMWATER MANAGEMENT

The intention of this project is to provide safety improvements and replace the existing culvert under Apple Street. The project will also raise the elevation of Apple Street to address flooding concerns associated with coastal storm flooding of the roadway which currently splits the community in half. The roadway surface over the bridge and associated road reconstruction is an entirely impervious surface and will remain an impervious surface once construction takes place. There is one catch basin along the project length with water draining primarily through a country drainage system naturally into the Unnamed Tributary to the Essex River. The proposed improvements will significantly reduce erosion of the embankments with the addition of stable slopes, a concrete wingwall, and riprap embankments, limiting the amount of sediment being carried into the Unnamed Tributary to the Essex River by the runoff from Apple Street. During construction, all necessary erosion and sediment control measures will be installed to prevent any silt from construction activities from entering the tributary.

STORMWATER STANDARDS

This section of the report serves to accompany the attached Stormwater Checklist and describes the project scope, including existing conditions and proposed work as it pertains to stormwater management.

Standard 1: No New Untreated Discharges

The proposed project conditions introduce no new stormwater sources to adjacent wetlands that are subject to coastal flooding.

Standard 2: Peak Rate Attenuation

The project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.

Standard 3: Recharge

There is a single existing catch basin with a discharge pipe beneath the roadway which is proposed to be replaced as part of the project. Other than the single basin, all stormwater flows over land and discharges directly into either the basin or unnamed tributary. There are no areas within the project limits that would provide feasibility to propose any infiltrating BMP's due to existing topography, limited right-of-way, and bordering land subject to coastal flooding. As this is a redevelopment project of an existing roadway with the culvert being an ecologically limited project, no groundwater recharge has been proposed.

Standard 4: Water Quality

No stormwater best management practices are included as part of this project and there is a single catch basin and drainage pipe within the project limits. As this is a redevelopment project, it is required to meet the MassDEP Stormwater Standards to the maximum extent practicable.

Standard 5: Land Uses with Higher Potential Pollutant Loads

The land use is not considered a land use with a higher potential pollutant load.

Standard 6: Critical Areas

Stormwater will not discharge to critical areas.

Standard 7: Redevelopment Projects

This project is considered a redevelopment project, and as such meets Standards 2, 3, 4, 5, and 6, only to the maximum extent practicable.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

This project will "disturb" greater than one acre of land, and therefore the project is covered by a NPDES Construction General Permit.

Sedimentation controls will be in place during construction. A floating silt fence will be placed in the Unnamed Tributary to the Essex River to trap sediment and debris that may float down the Unnamed Tributary from the construction area. Water from within the control of water cofferdam will be pumped to stilling basins before reentering the Unnamed Tributary to Essex River to remove any sediment created from construction activities. The sediment control measures will be installed prior to the start of construction.

During construction, the floating silt fence will be cleaned as needed. Any items that fall into the unnamed tributary will be removed immediately. Daily roadway sweeping will also be conducted to control sediment created from construction activities.

Standard 9: Operation and Maintenance Plan

The roadway is currently and will continue to be maintained by the Town of Essex. Standard O&M procedures will continue to be used on the roadway and within the culvert.

Standard 10: Illicit Discharges

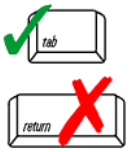
No illicit discharges are expected nor will be permitted as part of this project.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

A. Introduction

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



A Stormwater Report must be submitted with the Notice of Intent permit application to document compliance with the Stormwater Management Standards. The following checklist is NOT a substitute for the Stormwater Report (which should provide more substantive and detailed information) but is offered here as a tool to help the applicant organize their Stormwater Management documentation for their Report and for the reviewer to assess this information in a consistent format. As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the Massachusetts Stormwater Handbook. The Stormwater Report must be prepared and certified by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.[1] This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8[2]
- Operation and Maintenance Plan required by Standard 9

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

[1] The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

[2] For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

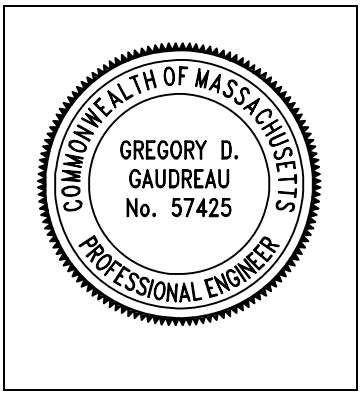
Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature



Gregory D. Gaudreau

02/15/2023

Signature and Date

Checklist

Project Type: Is the application for new development, redevelopment, or a mix of new and redevelopment?

☐ New development

☒ Redevelopment

☐ Mix of New Development and Redevelopment

Checklist for Stormwater Report

Checklist (continued)

LID Measures: Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

- ☐ No disturbance to any Wetland Resource Areas
- ☐ Site Design Practices (e.g. clustered development, reduced frontage setbacks)
- ☐ Reduced Impervious Area (Redevelopment Only)
- ☐ Minimizing disturbance to existing trees and shrubs
- ☐ LID Site Design Credit Requested:
  - ☐ Credit 1
  - ☐ Credit 2
  - ☐ Credit 3
- ☒ Use of "country drainage" versus curb and gutter conveyance and pipe
- ☐ Bioretention Cells (includes Rain Gardens)
- ☐ Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
- ☐ Treebox Filter
- ☐ Water Quality Swale
- ☐ Grass Channel
- ☐ Green Roof
- ☐ Other (describe): _____

Standard 1: No New Untreated Discharges

- ☒ No new untreated discharges
- ☒ Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
- ☐ Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.

Checklist for Stormwater Report

Checklist (continued)

Standard 2: Peak Rate Attenuation

☒ Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.

☐ Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.

☐ Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

Standard 3: Recharge

☐ Soil Analysis provided.

☐ Required Recharge Volume calculation provided.

☐ Required Recharge volume reduced through use of the LID site Design Credits.

☐ Sizing the infiltration, BMPs is based on the following method: Check the method used.

☐ Static ☐ Simple Dynamic ☐ Dynamic Field[1]

☐ Runoff from all impervious areas at the site discharging to the infiltration BMP.

☐ Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.

☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume.

☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:

☐ Site is comprised solely of C and D soils and/or bedrock at the land surface

☐ M.G.L. c. 21E sites pursuant to 310 CMR 40.0000

☐ Solid Waste Landfill pursuant to 310 CMR 19.000

☐ Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.

☐ Calculations showing that the infiltration BMPs will drain in 72 hours are provided.

☐ Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

[1] 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.

Checklist for Stormwater Report

Checklist (continued)

Standard 3: Recharge (continued)

☐ The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.

☐ Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

Standard 4: Water Quality

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
- Provisions for storing materials and waste products inside or under cover;
- Vehicle washing controls;
- Requirements for routine inspections and maintenance of stormwater BMPs;
- Spill prevention and response plans;
- Provisions for maintenance of lawns, gardens, and other landscaped areas;
- Requirements for storage and use of fertilizers, herbicides, and pesticides;
- Pet waste management provisions;
- Provisions for operation and management of septic systems;
- Provisions for solid waste management;
- Snow disposal and plowing plans relative to Wetland Resource Areas;
- Winter Road Salt and/or Sand Use and Storage restrictions;
- Street sweeping schedules;
- Provisions for prevention of illicit discharges to the stormwater management system;
- Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
- Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
- List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.

☒ A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.

☐ Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:

- ☐ is within the Zone II or Interim Wellhead Protection Area
- ☐ is near or to other critical areas
- ☐ is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
- ☐ involves runoff from land uses with higher potential pollutant loads.

☐ The Required Water Quality Volume is reduced through use of the LID site Design Credits.

☐ Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.

Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

☐ The BMP is sized (and calculations provided) based on:

- ☐ The ½" or 1" Water Quality Volume or
- ☐ The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.

☐ The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.

☐ A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)

☐ The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.

☐ The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted ***prior to*** the discharge of stormwater to the post-construction stormwater BMPs.

☐ The NPDES Multi-Sector General Permit does ***not*** cover the land use.

☐ LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.

☐ All exposure has been eliminated.

☐ All exposure has ***not*** been eliminated and all BMPs selected are on MassDEP LUHPPL list.

☐ The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

Standard 6: Critical Areas

☐ The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.

☐ Critical areas and BMPs are identified in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable

☒ The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:

- ☐ Limited Project
- ☐ Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
- ☐ Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
- ☐ Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
- ☐ Bike Path and/or Foot Path
- ☒ Redevelopment Project
- ☐ Redevelopment portion of mix of new and redevelopment.

☒ Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.

☐ The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
- Construction Period Operation and Maintenance Plan;
- Names of Persons or Entity Responsible for Plan Compliance;
- Construction Period Pollution Prevention Measures;
- Erosion and Sedimentation Control Plan Drawings;
- Detail drawings and specifications for erosion control BMPs, including sizing calculations;
- Vegetation Planning;
- Site Development Plan;
- Construction Sequencing Plan;
- Sequencing of Erosion and Sedimentation Controls;
- Operation and Maintenance of Erosion and Sedimentation Controls;
- Inspection Schedule;
- Maintenance Schedule;
- Inspection and Maintenance Log Form.

☐ A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control (continued)

☐ The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has ***not*** been included in the Stormwater Report but will be submitted ***before*** land disturbance begins.

☐ The project is ***not*** covered by a NPDES Construction General Permit.

☐ The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.

☒ The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

Standard 9: Operation and Maintenance Plan

☒ The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:

- ☒ Name of the stormwater management system owners;
- ☒ Party responsible for operation and maintenance;
- ☒ Schedule for implementation of routine and non-routine maintenance tasks;
- ☐ Plan showing the location of all stormwater BMPs maintenance access areas;
- ☐ Description and delineation of public safety features;
- ☐ Estimated operation and maintenance budget; and
- ☐ Operation and Maintenance Log Form.

☐ The responsible party is ***not*** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:

- ☐ A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
- ☐ A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

Standard 10: Prohibition of Illicit Discharges

☒ The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;

☐ An Illicit Discharge Compliance Statement is attached;

☐ NO Illicit Discharge Compliance Statement is attached but will be submitted ***prior to*** the discharge of any stormwater to post-construction BMPs.

Stormwater Management Operations & Maintenance Plan

TEC Project File No. T0967.02

Apple Street Roadbed Elevation and Culvert Replacement Project

Essex, MA

Prepared for: **Town of Essex**
30 Martin Street
Essex, MA 01929

Prepared by: **TEC, Inc.**
282 Merrimack Street
Lawrence, MA 01843

February 15, 2023

Stormwater Management Operation and Maintenance Plan
February 15, 2023

Name of Owner:	**Town of Essex**
Name of Responsible Party:	**Town of Essex, Department of Public Works**
Name of Facility:	**Apple Street over Unnamed Tributary to Essex River**
Location:	**Apple Street, Essex, MA 01929**

A detailed, written log of all scheduled preventative and corrective maintenance performed for the stormwater management measures must be kept on site, including a record of all inspections and copies of maintenance-related work orders.

An "Inspection and Maintenance Check List" shall be maintained as a record of regularly scheduled inspection and maintenance items as outlined below for every year. Maintenance required and actions taken shall be recorded in a "Inspection and Maintenance Log".

Maintenance routine and schedule: Routine inspections will be conducted on a monthly basis and thorough investigations will be conducted twice a year. Tasks systems include regular removal of accumulated sediments, floatables and debris, and scour inspection. Inspections will occur after every major storm event throughout construction and for the first six (6) months after construction is completed. Inspections will be conducted by a qualified person experienced in drainage design and stormwater management systems. Annual reports will be prepared detailing the status of the stormwater system and the maintenance performed. A copy of the annual report will be kept by the Town of Essex, if requested.

The owner agrees with a minimum maintenance schedule as follows:

1. **Grass Landscaping.** The grass landscaping will be inspected after every major storm event for the two (2) months after seeding to ensure functionality. Thereafter, inspections should take place every six (6) months in the spring and fall and after severe storm events. Grass and mulched landscaping showing signs of wear and erosion will be re-loamed/reseeded or re-mulched as necessary to prevent further erosion from taking place.

2. **Snow removal.** During large storm events, snow will be trucked off site.

The Long-Term Pollution Prevention Plan

The Owner agrees to comply with the following Long-Term Pollution Prevention Plan to ensure long-term stormwater quality discharge from the site:

- *Good housekeeping practices:* The project is a town roadway that will be maintained by the owners, including snow removal, de-icing, street sweeping and BMP inspection/maintenance.

- *Provisions for storing materials and waste products inside or under cover*: Waste products are not anticipated to be produced or stored on this site.

- *Vehicle washing controls:* Vehicle washing is not anticipated as a reasonably foreseeable use of the site.

- *Spill prevention and response plans:* There are no proposed uses at the site that would provide an opportunity for a spill of oil or hazardous materials, other than a sudden, catastrophic, vehicle failure. If a vehicle release is the result of an accident, the police and fire department will respond and address any release.

- *Provisions for maintenance of lawns, gardens, and other landscaped areas:* The owner will provide long-term maintenance for the landscaped areas and stormwater BMPs.

- *Requirements for storage and use of fertilizers, herbicides, and pesticides:* At this time there would be no foreseeable need for fertilizers, herbicides, and pesticides.

- *Provisions for operation and management of septic systems:* Not Applicable

- *Provisions for solid waste management:* Not Applicable.

- *Snow disposal and plowing plans relative to Wetland Resource Areas:* No snow will be stored or disposed of in surrounding resource areas.

- *Street sweeping*: The owner will perform street sweeping that is consistent with the Town of Essex's current scheduled sweeping.

- *Provisions for prevention of illicit discharges to the stormwater management system:* No illicit materials will be permitted to be discharged. The owners will be responsible to maintain this.

- *Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from Land Uses with Higher Potential Pollutant Loads (LUHPPL):* The project location is not considered a LUHPPL.

- *Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan:* Prior to implementation of the LTPPP, the owners shall provide an on-site meeting with the maintenance personnel to present the contents and requirements of the Stormwater Operation and Maintenance Plan and the LTPPP.

- *List of Emergency contacts for implementing Long-Term Pollution Prevention Plan*:

  Town of Essex
  Department of Public Works
  44 Centennial Grove Road
  Essex, MA 01929
  Primary Phone (978) 768-6262
  Alternate Phone (978) 768-6431

ATTACHMENT H

Miscellaneous NOI Documents

AFFIDAVIT OF SERVICE
Under the Massachusetts Wetlands Protection Act
And the Town of Sudbury Wetlands Administration Bylaw (Article XXII)

(To be submitted to the Massachusetts Department of Environmental Protection and the Conservation Commission when filing a Notice of Intent)

I, Aimee Rutledge,
Name of person making affidavit

hereby certify under the pains and penalties of perjury that on February 13, 2023
date
I gave notification to abutters in compliance with the second paragraph of Massachusetts General Laws Chapter 131, Section 40, Section 5 of the Town of Sudbury Wetlands Administration Bylaw (Article XXII), and the DEP Guide to Abutter Notification dated April 8, 1994, in connection with the following matter:

A Notice of Intent was filed under the Massachusetts Wetlands Protection Act by
Town of Essex with the
Name of Applicant

Essex Conservation Commission on February 15, 2023 for the property
date
located at 0 Apple Street.
Address of land where work is proposed

The form of the notification and a list of the abutters to whom it was given and their addresses, are attached to this Affidavit of Service.


February 15, 2023
Applicant Signature Date

PLACE STICKER AT TOP OF ENVELOPE TO THE RIGHT OF THE RETURN ADDRESS, FOLD AT DOTTED LINE

SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Peter B Jr. Tr Surdan
131 Apple St
Essex, MA 01929

9590 9402 5135 9092 9414 42

2. Article Number *(Transfer from service label)*

7019 0700 0002 2519 7974

PS Form 3811, July 2015 PSN 7530-02-000-9053

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X ☐ Agent ☐ Addressee

B. Received by *(Printed Name)* | C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☑ No

3. Service Type

- ☐ Adult Signature
- ☐ Adult Signature Restricted Delivery
- ☑ Certified Mail®
- ☐ Certified Mail Restricted Delivery
- ☐ Collect on Delivery
- ☐ Collect on Delivery Restricted Delivery
- sured Mail
- sured Mail Restricted Delivery
- ver $500)
- ☐ Priority Mail Express®
- ☐ Registered Mail™
- ☐ Registered Mail Restricted Delivery
- ☑ Return Receipt for Merchandise
- ☐ Signature Confirmation™
- ☐ Signature Confirmation Restricted Delivery

Domestic Return Receipt

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1. Article Addressed to:

Essex County Greenbelt Assoc.
82 Eastern Ave.
Essex, MA 01929

9590 9402 5135 9092 9414 35

2. Article Number *(Transfer from service label)*

7019 0700 0002 2519 7981

PS Form 3811, July 2015 PSN 7530-02-000-9053

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D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☑ No

3. Service Type

- ☐ Adult Signature
- ☐ Adult Signature Restricted Delivery
- ☑ Certified Mail®
- ☐ Certified Mail Restricted Delivery
- ☐ Collect on Delivery
- ☐ Collect on Delivery Restricted Delivery
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- ☐ Priority Mail Express®
- ☐ Registered Mail™
- ☐ Registered Mail Restricted Delivery
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- ☐ Signature Confirmation Restricted Delivery

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1. Article Addressed to:

James Ansara
P.O. Box 502
Essex, MA 01929

9590 9402 5135 9092 9406 98

2. Article Number *(Transfer from service label)*

7019 0700 0002 2519 8001

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X ☐ Agent ☐ Addressee

B. Received by *(Printed Name)* | C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☑ No

3. Service Type

- ☐ Adult Signature
- ☐ Adult Signature Restricted Delivery
- ☑ Certified Mail®
- ☐ Certified Mail Restricted Delivery
- ☐ Collect on Delivery
- ☐ Collect on Delivery Restricted Delivery
- ☐ Insured Mail
- ☐ Insured Mail Restricted Delivery (over $500)
- ☐ Priority Mail Express®
- ☐ Registered Mail™
- ☑ Registered Mail Restricted Delivery
- ☐ Return Receipt for Merchandise
- ☐ Signature Confirmation™
- ☐ Signature Confirmation Restricted Delivery

PS Form 3811, July 2015 PSN 7530-02-000-9053 Domestic Return Receipt

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1. Article Addressed to:

Joseph Balbo
129 Apple St.
Essex, MA
01929

9590 9402 5135 9092 9405 37

2. Article Number *(Transfer from service label)*

7019 0700 0002 2519 7943

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X ☐ Agent ☐ Addressee

B. Received by *(Printed Name)* | C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☑ No

3. Service Type

- ☐ Adult Signature
- ☐ Adult Signature Restricted Delivery
- ☑ Certified Mail®
- ☐ Certified Mail Restricted Delivery
- ☐ Collect on Delivery
- ☐ Collect on Delivery Restricted Delivery
- ☐ Insured Mail
- ☐ Insured Mail Restricted Delivery (over $500)
- ☐ Priority Mail Express®
- ☐ Registered Mail™
- ☐ Registered Mail Restricted Delivery
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1. Article Addressed to:

Margo Kusulas
2 Andrews St.
Essex, MA 01929

9590 9402 5135 9092 9414 59

2. Article Number *(Transfer from service label)*

7019 0700 0002 2519 7967

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X ☐ Agent ☐ Addressee

B. Received by *(Printed Name)* | C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☑ No

3. Service Type

- ☐ Adult Signature
- ☐ Adult Signature Restricted Delivery
- ☑ Certified Mail®
- ☐ Certified Mail Restricted Delivery
- ☐ Collect on Delivery
- ☐ Collect on Delivery Restricted Delivery
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1. Article Addressed to:

Glorsky Mark B Trustee
8 Washington St.
Beverly, MA 01929

9590 9402 5135 9092 9414 66

2. Article Number *(Transfer from service label)*

7019 0700 0002 2519 7950

PS Form 3811, July 2015 PSN 7530-02-000-9053

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A. Signature

X ☐ Agent ☐ Addressee

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D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☒ No

3. Service Type

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- ☐ Adult Signature Restricted Delivery
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- ☐ Insured Mail Restricted Delivery (over $500)
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- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Eugene Cornfield
128 Apple St.
Essex, MA 01929

9590 9402 5135 9092 9406 05

2. Article Number *(Transfer from service label)*

7019 0700 0002 2519 7998

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X

☐ Agent
☐ Addressee

B. Received by *(Printed Name)*

C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type

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- ☐ Signature Confirmation Restricted Delivery

PS Form 3811, July 2015 PSN 7530-02-000-9053 Domestic Return Receipt

Aimee Rutledge <arutledge@dubois-king.com>

Re: Request for Publication 11222620

1 message

GTLegals@gloucestertimes.com <GTLegals@gloucestertimes.com> Mon, Feb 13, 2023 at 2:54 PM
To: Conservation <conservation@essexma.org>
Cc: Aimee Rutledge <arutledge@dubois-king.com>, Brendhan Zubricki <bzubricki@essexma.org>

Good day,

The following information confirms the date(s) and publication(s) for your notice. Please take note to ensure this matches with your requirement and request any changes needed.
Print Date: February 15
Publication: Gloucester Times
Cost: $102.02
Payment: An invoice will be sent.

Please note if there are any necessary changes. If no changes are requested, the notice will publish as shown here. Approval of the proof is assumed if no changes are requested.

Cordially,
Christa MacDonald

Gloucester Times
36 Whittemore St.
Gloucester, MA 01930
978-675-2710
gtlegals@northofboston.com
All customers will receive a price and proof prior to publication. Please review the proof carefully. If we do not receive instructions for changes or corrections we will assume the notice is acceptable for publication.

To our active customers-- the notice will run as requested unless we are contacted to make changes.

To our pre-pay customers--payment will be required before publication. The notice will run as shown in the proof unless we are contacted to make changes.

From: Conservation <conservation@essexma.org>
To: Gloucester Times Legal Ads <gtlegals@northofboston.com>
Cc: Aimee Rutledge <arutledge@dubois-king.com>, Brendhan Zubricki <bzubricki@essexma.org>
Date: 02/12/2023 06:36 PM
Subject: Request for Publication

Attached is a legal notice for publication on Wednesday, February 15, 2023. The applicant is responsible for payment and is copied on this email. The Town of Essex has an account and the notice can be billed. Please let me know if you have any questions.

Deborah Cunningham, Administrative Clerk | Essex Conservation Commission | 30 Martin Street, Essex, MA 01929 | Phone 978-768-2509 : Email conservation@essexma.org | Office Hours Mondays, Wednesdays and Thursdays by Appointment Only[attachment "Apple St Legal Notice.pdf" deleted by Christa MacDonald/NOB]

11222620.PDF
51K

NOTICE OF PUBLIC HEARING

The Essex Conservation Commission will hold a public hearing under the Massachusetts Wetlands Protection Act, MGL Chapter 131, Section 40, on a Notice of Intent filed by the Town of Essex for proposed reconstruction/widening of approximately 850’ of roadway including installation of an 80’ retaining wall and replacement of the culvert at Apple St/Southern Ave to 129 Apple St. The hearing will be held on February 21, 2023 at 8:10 PM.

Essex Conservation Commission

GT - 2/15/23