



FUSS & O'NEILL

September 30, 2022 (last revised February 9, 2023)

Shutesbury Conservation Commission
1 Cooleyville Road
PO Box 276
Shutesbury, MA 01072

Re: Abbreviated Notice of Resource Area Delineation
66 Leverett Road
Shutesbury, Massachusetts

Dear Members of the Conservation Commission:

On behalf of the Town of Shutesbury (Town), Fuss & O'Neill is submitting this Abbreviated Notice of Resource Area Delineation (ANRAD) for the Shutesbury Parcel ID #O-32 located at 66 Leverett Road in the Town of Shutesbury.

Review Area

The ANRAD is being requested for a portion of the Shutesbury Parcel ID #O-32 as shown within the 'ANRAD Review Area' in Figures 2 and 3. The following areas are located within the ANRAD Review Area:

- Bordering Vegetated Wetland 1
- Bordering Vegetated Wetland 2
- Bordering Vegetated Wetland 3
- Isolated Vegetated Wetland 4 (non-jurisdictional)
- Isolated Vegetated Wetland 5 (non-jurisdictional)
- Isolated Vegetated Wetland 6 (non-jurisdictional)
- Isolated Vegetated Wetland 7 (non-jurisdictional)
- 100-foot Buffer Zone (including No-Contest Buffer Zone)

Table 1 below summarizes the delineated lengths of the boundary of resource areas to be reviewed and identified within the parcel subject to the Massachusetts Wetlands Protection Act (MAWPA: M.G.L. c 131 § 40) and/or the Town of Shutesbury General Wetlands Protection Bylaw. Table 1 also includes Isolated Vegetated Wetlands that are not subject to jurisdiction or protection under the Town of Shutesbury General Wetlands Protection Bylaw due to their total size measuring below 1,000 square feet. The IVW's are also not jurisdictional under the MAWPA. These IVW's are included in the ANRAD to recognize their presence on site and for the Commission to verify jurisdictional status.

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Springfield, MA
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Table 1
Summary of Delineated Length of Resource Areas and Protected Areas within the ANRAD Review Area

Resource Areas	Delineated Length	Subject to Jurisdiction/Protection under MAWPA	Subject to Jurisdiction/Protection under the Shutesbury Wetlands Bylaw
BVW 1	1,004 lf	Yes	Yes
BVW 2	184 lf	Yes	Yes
BVW 3	885 lf	Yes	Yes
IVW 4	178 lf	No	No - 663 sf
IVW 5	56 lf	No	No - 167 sf
IVW 6	91 lf	No	No - 535 sf
IVW 7	85 lf	No	No - 321 sf
100-foot Buffer Zone ¹	NA ¹	Yes	Yes

¹The 100-foot Buffer Zone was not delineated, but shown 100 feet from the boundaries of BVWs 1 through 3 which were delineated on-site. Portions of the 100-foot Buffer Zone are also shown as a 'No-Contest Buffer Zone' to conservatively depict that there may be jurisdictional resource areas off-parcel whose 100-foot Buffer Zone extends into the parcel.

The following resource areas were not identified within the Shutesbury Parcel ID #O-32: Bank, Land Under Water Bodies and Waterways, Land Subject to Flooding, and Riverfront Area.

ANRAD Background

The ANRAD was first submitted to the Shutesbury Conservation Commission on September 30, 2022. Since the submittal, a peer review has been conducted by Stockman Associates, LLC. A summary of events and submittals has been outlined below.

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Table 2
Summary of ANRAD Submission

Activity	Date
ANRAD submitted	September 30, 2022
Fuss & O'Neill Response to MassDEP (includes updated Cover Letter)	October 10, 2022
Shutesbury Conservation Commission Public Hearing (cont.)	October 13, 2022
Shutesbury Conservation Commission Public Hearing (cont.)	October 27, 2022
Site Visit #1 with Peer Review and others	October 28, 2022
Fuss & O'Neill Additional Site Investigation	November 10, 2022
Shutesbury Conservation Commission Public Hearing (cont.)	November 17, 2022
Fuss & O'Neill Response to Peer Review Comments #1	November 22, 2022
Site Visit #2 With Peer Review and others	November 28, 2022
Stockman Associates Comments #2	December 1, 2022
Fuss & O'Neill Response to Peer Review Comments	December 5, 2022
Shutesbury Conservation Commission Public Hearing (cont.)	December 8, 2022
Wetland flag locations surveyed by Professional Land Surveyor Harold L. Eaton & Associates, Inc.	December 15, 2022 and January 2023

During the December 8, 2022 Conservation Commission Hearing, flag locations and boundaries were discussed with the Commission with input by the peer-reviewer, Ms. Emily Stockman. During this hearing, the Commission indicated the Applicant could move forward with surveying the flag locations. This ANRAD reflects the wetland delineation flag locations and boundaries presented during the December 8, 2022 Hearing.

Abutters were notified of the ANRAD via certified mail. A public notice for the ANRAD was published in the Daily Hampshire Gazette on October 6, 2022. Should you have any questions regarding this application, please contact me at mkissane@fando.com / 413-333-5472.

Sincerely,

Matthew Kissane
Senior Geologist

Copy: MassDEP (WERO) Division of Wetlands and Waterways
Mary Anne Antonellis, Director, M.N. Spear Memorial Library

F:\P2009\1032\A22\Permits\ANRAD\2023-Feb Version for Final Approval\MK_02 - Letter.docx

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ATTACHMENTS

- A** **WPA Form 4A - ANRAD**
- B** **Massachusetts Inland Resource Area Delineation Report**



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Attachment A
WPA Form 4A – ANRAD



Massachusetts Department of Environmental Protection
 Bureau of Resource Protection - Wetlands
WPA Form 4A – Abbreviated Notice of
Resource Area Delineation
 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File Number

Document Transaction Number

Shutesbury
City/Town

A. General Information

1. Project Location (**Note:** electronic filers will click on button for GIS locator):

66 Leverett Road
a. Street Address

Shutesbury
b. City/Town

01072
c. Zip Code

Latitude and Longitude:

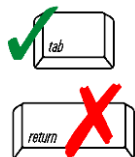
0
f. Assessors Map/Plat Number

d. Latitude

0-32
g. Parcel /Lot Number

e. Longitude

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



2. Applicant:

Mary Anne
a. First Name

Antonellis
b. Last Name

Town of Shutesbury
c. Organization

10 Cooleyville Road, PO Box 256
d. Mailing Address

Shutesbury
e. City/Town

MA
f. State

01072
g. Zip Code

413-259-1213
h. Phone Number

i. Fax Number

library.director@shutesbury.org
j. Email Address

3. Property owner (if different from applicant):

Check if more than one owner (attach additional sheet with names and contact information)

a. First Name

b. Last Name

c. Organization

d. Mailing Address

e. City/Town

f. State

g. Zip Code

h. Phone Number

i. Fax Number

j. Email Address

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

4. Representative (if any):

Matthew
a. Contact Person First Name

Kissane
b. Contact Person Last Name

Fuss & O'Neill
c. Organization

1550 Main Street, Suite 400
d. Mailing Address

Springfield
e. City/Town

MA
f. State

01103
g. Zip Code

413-333-5472
h. Phone Number

i. Fax Number

mkissane@fando.com
j. Email Address

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

Fee Exempt
a. Total Fee Paid

b. State Fee Paid

c. City/Town Fee Paid

Fees will be calculated for online users.



Massachusetts Department of Environmental Protection
 Bureau of Resource Protection - Wetlands
WPA Form 4A – Abbreviated Notice of
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 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File Number

Document Transaction Number

Shutesbury
City/Town

B. Area(s) Delineated

1. Bordering Vegetated Wetland (BVW) 2,073
Linear Feet of Boundary Delineated

2. Check all methods used to delineate the Bordering Vegetated Wetland (BVW) boundary:

- a. MassDEP BVW Field Data Form (attached)
- b. Other Methods for Determining the BVW boundary (attach documentation):
 - 1. 50% or more wetland indicator plants
 - 2. Saturated/inundated conditions exist
 - 3. Groundwater indicators
 - 4. Direct observation
 - 5. Hydric soil indicators
 - 6. Credible evidence of conditions prior to disturbance

3. Indicate any other resource area boundaries that are delineated:

Isolated Vegetated Wetlands (not jurisdictional under the Shutesbury Bylaw due to size less than 1,000 sf; not jurisdictional under MAWPA) 410
b. Linear Feet Delineated

c. Resource Area _____ d. Linear Feet Delineated _____

C. Additional Information

Applicants must include the following plans with this Abbreviated Notice of Resource Area Delineation. See instructions for details. **Online Users:** Attach the Document Transaction Number (provided on your receipt page) for any of the following information you submit to the Department.

- 1. ANRAD (Delineation Plans only)
- 2. USGS or other map of the area (along with a narrative description, if necessary) containing sufficient information for the Conservation Commission and the Department to locate the site. (Electronic filers may omit this item.)
- 3. Plans identifying the boundaries of the Bordering Vegetated Wetlands (BVW) (and/or other resource areas, if applicable).
- 4. List the titles and final revision dates for all plans and other materials submitted with this Abbreviated Notice of Resource Area Delineation.

D. Fees



Massachusetts Department of Environmental Protection
 Bureau of Resource Protection - Wetlands
**WPA Form 4A – Abbreviated Notice of
 Resource Area Delineation**
 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File Number

Document Transaction Number

Shutesbury
City/Town

The fees for work proposed under each Abbreviated Notice of Resource Area Delineation must be calculated and submitted to the Conservation Commission and the Department (see Instructions and Wetland Fee Transmittal Form).

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

Applicants must submit the following information (in addition to the attached Wetland Fee Transmittal Form) to confirm fee payment:

2. Municipal Check Number

3. Check date

4. State Check Number

5. Check date

6. Payor name on check: First Name

7. Payor name on check: Last Name

E. Signatures

I certify under the penalties of perjury that the foregoing Abbreviated Notice of Resource Area Delineation and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge. I



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

Provided by MassDEP:

 MassDEP File Number

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understand that the Conservation Commission will place notification of this Notice in a local newspaper at the expense of the applicant in accordance with the wetlands regulations, 310 CMR 10.05(5)(a).

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

I hereby grant permission, to the Agent or member of the Conservation Commission and the Department of Environmental Protection, to enter and inspect the area subject to this Notice at reasonable hours to evaluate the wetland resource boundaries subject to this Notice, and to require the submittal of any data deemed necessary by the Conservation Commission or Department for that evaluation.

I acknowledge that failure to comply with these certification requirements is grounds for the Conservation Commission or the Department to take enforcement action.

1. Signature of Applicant: Mary Ann Conforti 2. Date: 2/7/23

3. Signature of Property Owner (if different) _____ 4. Date _____

5. Signature of Representative (if any) [Signature] 6. Date: 2/3/23

For Conservation Commission:
 Two copies of the completed Abbreviated Notice of Resource Area Delineation (Form 4A), including supporting plans and documents; two copies of the ANRAD Wetland Fee Transmittal Form; and the city/town fee payment must be sent to the Conservation Commission by certified mail or hand delivery.

For MassDEP:
 One copy of the completed Abbreviated Notice of Resource Area Delineation (Form 4A), including supporting plans and documents; one copy of the ANRAD Wetland Fee Transmittal Form; and a copy of the state fee payment must be sent to the MassDEP Regional Office (see Instructions) by certified mail or hand delivery. (E-filers may submit these electronically.)

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



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

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



A. Applicant Information

1. Location of Project:

66 Leverett Road Shutesbury
 a. Street Address b. City/Town
Fee Exempt
 c. Fee amount d. Check number

2. Applicant:

Mary Anne Antonellis Town of Shutesbury
 a. First Name b. Last Name c. Company
10 Cooleyville Road, PO Box 256
 d. Mailing Address
Shutesbury MA 01072
 e. City/Town f. State g. Zip Code
413-259-1213
 h. Phone Number

3. Property Owner (if different):

a. First Name b. Last Name c. Company

 d. Mailing Address

 e. City/Town f. State g. Zip Code

 h. Phone Number

B. Fees

The fee is calculated as follows for each Resource Area Delineation included in the ANRAD (check applicable project type). The maximum fee for each ANRAD, regardless of the number of Resource Area Delineations, is \$200 activities associated with a single-family house and \$2,000 for any other activity.

Bordering Vegetated Wetland Delineation Fee:

1. single family house project
 a. feet of BVW x \$2.00 = b. Fee for BVW
 2. all other projects
 a. feet of BVW x \$2.00 = b. Fee for BVW

Other Resource Area (e.g., bank, riverfront area, etc.):

3. single family house project
 a. linear feet x \$2.00 = b. Fee
 4. all other projects
 a. linear feet x \$2.00 = b. Fee

Total Fee for all Resource Areas:
 Fee

State share of filing fee:
 5. 1/2 of total fee **less** \$12.50

City/Town share of filing fee:
 6. 1/2 of total fee **plus** \$12.50

Online users: check box if fee exempt.



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C. Submittal Requirements

- a.) Send a copy of this form, with a check or money order for the state share of the fee, payable to the Commonwealth of Massachusetts, to:

Department of Environmental Protection
Box 4062
Boston, MA 02211

- b.) **To the Conservation Commission:** Send the Abbreviated Notice of Resource Area Delineation; a **copy** of this form; and the city/town fee payment.
- c.) **To DEP Regional Office:** Send one copy of the Abbreviated Notice of Resource Area Delineation (and any additional documentation required as part of a Simplified Review Buffer Zone Project); a **copy** of this form; and a **copy** of the state fee payment. (E-filers of Notices of Intent may submit these electronically.)

Attachment B

Massachusetts Inland Resource Area Delineation Report



Massachusetts Inland Resource Area Delineation Report

Report Date: September 6, 2022 (last revised February 1, 2023)

Prepared For: Ms. Mary Anne Antonellis, Director
M.N. Spear Memorial Library
10 Cooleyville Road
PO Box 256
Shutesbury, MA 01072

Site Address: 66 Leverett Road
Shutesbury, Massachusetts 01072

Delineation Date(s): August 5 and 16, November 10 and 28, 2022

Regulated & Protected Resource Areas¹

- Bank
- Land Under Water Bodies and Waterways
- Riverfront Area
- Isolated Vegetated Wetlands (IVW)
- Priority Habitats of Rare Species
- Bordering Vegetated Wetland (BVW)
- Land Subject to Flooding
- Buffer Zone
- Estimated Habitats of Rare Wildlife
- Vernal Pool (Certified and/or Potential)

Table 1
Summary of Wetland Delineation Flag Series

Flag Series	Flag Number	Resource Area Type	Jurisdictional Under the MAWPA and Shutesbury Wetlands Bylaw	Description
1	1A-100 → 1A-133	BVW	Yes	Palustrine Forested Wetland (PFO) and mowed Palustrine Emergent Wetland (PEM)
2	2A-100 → 2A-106	BVW	Yes	PFO
3	3A-100 → 3A-118 3B-100 → 3B-113	BVW	Yes	PEM and PFO
4	4A-100 → 4A-105	IVW	No	PEM in access route
5	5A-100 → 5A-103	IVW	No	PEM in access route
6	6A-100 → 6A-104	IVW	No	PEM in access route
7	7A-100 → 7A-107	IVW	No	PEM adjacent to access route

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¹Under the Massachusetts Wetlands Protection Act (MAWPA), Shutesbury General Wetlands Protection Bylaw (Shutesbury Wetlands Bylaw), and Massachusetts Endangered Species Act (MESA)



Inland resource areas were delineated in accordance with applicable local, state, and federal statutes, as detailed within the Resource Area Description. This delineation does not constitute an official wetland boundary until such time as it is accepted and approved by local, state, or federal regulatory agencies.

The wetland delineation was conducted by:

April Doroski, PWS, CPSS
Water Resources and Climate Resilience Specialist

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Massachusetts Inland Resource Area Delineation Report
September 6, 2022 (last revised February 1, 2023)

ATTACHMENTS

A Figures

- USGS Topographic Map (Figure 1)
- Wetland Delineation Overview (Figure 2)
- Wetland Flag Locations (Figure 3)
- Wetland Delineation Change Map (Figure 4)

B Site Photographs

C Wetland Determination Data Forms – Northcentral and Northeast Region

- BVWs 1, 2, and 3
- Upland Forms

D FEMA Information

- FEMA FIRMette (Panel No. 250128 0001 0020, effective June 18, 1980)

E NRCS Custom Soil Resource Report

- Custom Soil Resource Report of Franklin County, Massachusetts (August 30, 2022)

Massachusetts Inland Resource Area Delineation Report

September 6, 2022 (last revised February 1, 2023)

Page 1

Resource Area Description

1.1 Introduction

On August 5 and 26, 2022, a Fuss & O'Neill Inc. wetland and soil scientist performed a wetland resource area delineation within the Parcel O-32 at 66 Leverett Road ("Subject Parcel") located in Shutesbury, Massachusetts. The results of the wetland delineation for the front portion of the Subject Parcel (approximately 1,450 feet from Leverett Road) are discussed below. Refer to the figures in Attachment A for the limits of the ANRAD Review Area.

The purpose of this investigation was to identify and delineate the jurisdictional limits of regulated and protected resource areas as defined by the Wetlands Protection Act (M.G.L. c. 131 § 40) and its implementing regulations (310 CMR 10.00), the 1987 Corps of Engineers Wetlands Delineation Manual, the Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Northcentral and Northeast Region (2012), and the Shutesbury General Wetlands Protection Bylaw and its implementing regulations. This report also includes an assessment of areas protected under the Massachusetts Endangered Species Act (M.G.L. c. 131A).

As part of the Peer-Review process for the Abbreviated Notice of Resource Area Delineation, subsequent investigations were conducted and wetland boundaries updated and new isolated wetlands (non-jurisdictional) were delineated. These subsequent investigations occurred on November 10 and 28, 2022. Revisions were made based on comments from the Peer-Reviewer, Stockman Associates, LLC. The results of the August delineation and November investigations are described below.

This report provides a summary of wetland resource areas within the ANRAD Review Area and includes figures (*Attachment A*), site photographs (*Attachment B*), wetland determination data forms (*Attachment C*), and supplemental information (*Attachments D and E*).

1.2 Methodology of Resource Area Delineation

The wetland delineation was conducted in conformance with local, state, and federal regulations and guidelines including:

- *Massachusetts Wetlands Protection Act* ("MAWPA"; M.G.L. c. 131, § 40), its implementing regulations set forth at 310 CMR 10.00
- Massachusetts Department of Environmental Protection (MassDEP) *Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetlands Protection Act* (March 1995)
- *Corps of Engineers Wetlands Delineation Manual*, Technical Report Y-87-1 (January 1987)

Massachusetts Inland Resource Area Delineation Report

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- *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region* (January 2012)
- *Field Indicators for Identifying Hydric Soils in New England in New England* (Version 4, April 2019)
- *Town of Shutesbury General Wetlands Protection Bylaw (Shutesbury Wetlands Bylaw)* and associated *Regulations under the General Wetlands Protection Bylaw*

Due to the disturbed nature of BVWs 1 and 2 and IVWs 4, 5, and 6, these wetlands were delineated in accordance with methodologies for altered areas including:

- 310 CMR 10.55(2)(c)3
- “Delineating BVWs where hydrology or vegetation has been altered” Section, *Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetlands Protection Act Handbook*, MassDEP, 1995
- “Section 5 Difficult Situations” of the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region*, ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-12-1. Vicksburg, MS: U.S. Army Engineer Research and Development Center (Version 2.0), US Army Corps of Engineers, 2012.

1.2.1 Investigations

During the August 5 and 26, 2022 delineation, the Fuss & O'Neill wetland and soil scientist walked transects approximately 50 feet apart within the Subject Parcel in a generally south to north alignment across the width of the subject parcel. Fuss & O'Neill observed vegetation throughout the subject parcel as well as soils, verifying the presence or absence of wetlands.

Subsequent investigations conducted on November 10 and 28, 2022 included further investigation of wetlands delineated in August and additional isolated wetland (non-jurisdictional) identified by Stockman Associates, LLC. During the November 2022 investigations and sites visits, wetland and upland areas were reviewed, soils and vegetation were documented, wetland boundaries were refined, and two new non-jurisdictional isolated wetland was delineated (#6 and #7).

Where Bordering Vegetated Wetlands (BVW) or Isolated Vegetated Wetlands (IVW) was observed, the resource area boundaries were delineated and information regarding vegetation, soils, and hydrology was collected. Each flag location was named based on a numeric-alpha-numeric nomenclature and collected by GPS with sub-meter accuracy. A Professional Land Surveyor located flags on December 13, 2022. The Figures in Attachment A include flag locations located by the Professional Land Surveyor.

Fuss & O'Neill also conducted a desktop review of available online resources prior to performing the wetland delineation including Massachusetts Mapper (MassMapper) and FEMA mapping. The Franklin County FEMA Flood Insurance Rate Map (FIRM, Map No. 250128 0001-0020, effective June 18, 1980) and the Natural Heritage & Endangered Species Program (NHESP) database 15th Edition, effective August 1, 2021 was reviewed for the Subject Parcel.

1.3 Resource Areas

1.3.1 Resource Areas Not Present

The following resource areas are not located within the Subject Parcel according to MassMapper and the FEMA FIRM:

- FEMA 100-year Floodplain
- Natural Heritage Endangered Species Program (NHESP) Estimated Habitats of Rare Wildlife
- NHESP Priority Habitats of Rare Species
- NHESP Certified Vernal Pools
- Potential Vernal Pools

1.3.2 Resource Areas and Protected Areas Present Within the Site

Bordering Vegetated Wetlands (BVW): Regulatory Framework

Bordering Vegetated Wetlands are defined under 310 CMR 10.55(2)(a) as “freshwater wetlands which border on creeks, rivers, streams, ponds, and lakes. The types of freshwater wetlands are wet meadows, marshes, swamps and bogs. Bordering Vegetated Wetlands are areas where the soils are saturated and/ or inundated such that they support a predominance of wetland indicator plants. The ground and surface water regime and the vegetation community which occur in each type of freshwater wetland are specified in M.G.L. c. 131, § 40.”

Bordering Vegetated Wetlands are also regulated under the Shutesbury Wetlands Bylaw. Three BVW’s were identified during the wetland delineation. BVW’s 1 and 3 extend beyond the Subject Parcel and therefore bordering status was not confirmed, but assumed based on mapped DEP wetlands and hydrologic connections. BVW 2 is considered bordering on the pond on 62 Leverett Road via a drop inlet structure. The pond is connected to a mapped wetland system to the east via cross culverts.

BVW: Resource Area Description

BVW 1

Bordering Vegetated Wetland 1 is best described as a seasonally saturated Palustrine Forested Wetland (PFO) and a Palustrine Emergent Wetland (PEM). BVW 1 is located within the northern portion of the Subject Parcel. The western portion of the wetland is primarily forested, while the eastern portion consists of a disturbed, regularly mowed area. Due to recent mowing, species identification was limited, but pockets of sensitive fern (*Onoclea sensibilis*, FACW) were visible. Within the mowed area, the wetland slopes down to the north to a vegetated drainage swale which conveys flow to the west. No standing water was observed within the swale at the time of the delineation. Within the mowed wetland area,

Massachusetts Inland Resource Area Delineation Report

September 6, 2022 (last revised February 1, 2023)

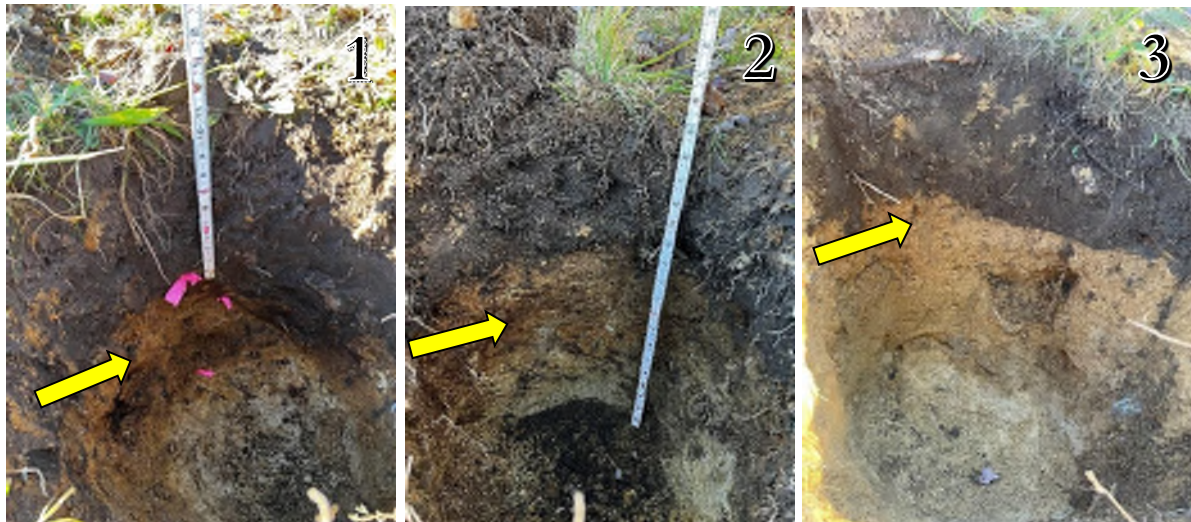
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BVW 1 was generally delineated based on the presence of sensitive fern, observations of multiple soil test holes, and minor changes in topographic relief.

Due to drought conditions reported for the Connecticut River Valley Region since May, hydrologic conditions are not typical for this time of year. According to the Massachusetts Department of Conservation and Recreation (DCR), the Connecticut River Valley Region experienced the following drought statuses: Level 1 – Mild Drought (May 2022), Level 2 -Significant Drought (June and July 2022), and Level 3 – Critical Drought (August 2022).

Vegetation observed within BVW 1 mowed area includes: sensitive fern, swamp dewberry (*Rubus hispida*; FACW), and sedges and grasses. Hydrology indicators include drainage patterns, saturation visible on aerial imagery (World Imagery; updated July 1, 2020), and FAC-neutral test. Soils exhibited a redox dark surface (F6) hydric soil indicator.

The Natural Resource Conservation Service (NRCS) mapped the BVW 1 area as Metacomet fine sandy loam. The mapped soil texture is generally consistent with field observations, but soils observed do not align with the mapped hydric soil rating of 'no'. Detailed information of these soil series mapped within the Site Parcel is included within the NRCS Custom Soil Resource Report in *Attachment E*.



Photographs 1-3 View of BVW 1 test pits from left to right: Test Pit #1, Test Pit #2, Test Pit #3. View of dark yellowish brown colors (yellow arrows) indicative of upland soils directly beneath the Ap horizon.

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BVW 2

BVW 2 is best described as a seasonally saturated PFO wetland located along the eastern border of the Subject Parcel. Vegetation includes: green ash (*Fraxinus pennsylvanica*; FACW), winterberry (*Ilex verticillata*; FACW), silky dogwood (*Cornus amomum*; FACW), sensitive fern, Oriental bittersweet (*Celastrus orbiculatus*; UPL), and Virginia creeper (*Parthenocissus quinquefolia*; FACU). BVW 2 soils were sandy and exhibited a sandy redox (S5) hydric soil indicator. Soils observed within BVW 2 do not align with the mapped hydric soil rating of 'no'.

Although the only hydrology indicator includes FAC-neutral test, this wetland contained hydrophytic vegetation and hydric soils, and is therefore considered a wetland according to the MassDEP Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetlands Protection Act (March 1995) and Shutesbury Wetland Regulations.

As recommended by Stockman Associates, the western boundary of BVW 2 was revisited during the November 10, 2022 site investigation. One test pit, BVW 2, Test Pit # 4, was dug approximately 13 feet west of the original BVW 2 boundary. The test pit, dug with a spade was advanced to 34 inches at the location below:

- BVW 2, Test Pit #4: 42.450713, -72.415545

Findings from a review of historic aerials and from the soil evaluation of one test pit in BVW 2 are summarized below:

1. The earliest aerial photograph available (1938) on Historic Aerials.com shows the land cover as a field within the vicinity of BVW 2. The 1962 historic aerial shows disturbance within the vicinity of BVW 2. In addition, an access route is visible in the 1962 aerial. These areas were altered prior to the "Hatch" Act, Chapter 220, Acts of 195, adopted March 25, 1965 and the MA Wetlands Protection Act of 1972. The soil test pit was advanced within the vicinity of the disturbance visible on the 1962 aerial.
2. Within Test Pit #4, a darker horizon was observed between 16 inches and 26 inches. Based on known past disturbance, this horizon is likely a buried A horizon.
3. A buried hydric soil (Problem Hydric Soils, Three Chroma Sands NE-S1) was observed within the Test Pit #4 (see yellow arrow in Photograph 7 below). Although the review of the 1962 aerial shows disturbance within the vicinity of the BVW 2 was prior to pertinent regulations, the location of Test Pit #4 was conservatively included in the updated BVW 2 delineation.
4. As recommended by Ms. Stockman, the mounded fill pile originally excluded from the BVW 2 delineation is included in the updated BVW 2 delineation. It is assumed the pile was placed after 1965 and in the absence of the pile, a wetland would be present.
5. The updated BVW 2 delineation generally follows the toe of access road slope.

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Photographs 1-2 View of BVW 2, Test Pit #4. Buried A horizon indicated by the yellow arrow.

BVW 3

BVW 3 is best described as a seasonally flooded/saturated PEM and PFO. BVW 3 is located south of BVW 1 and extends off the Subject Parcel to the west. BVW 3 is generally located at the toe of slope within a depression. The eastern portion of BVW 3 is a sparsely vegetated convex surface. Vegetation observed within BVW 3 includes: rice cut grass (*Leersia oryzoides*, OBL), American bugleweed (*Lycopus americanus*; OBL), white meadowsweet (*Spiraea alba*; FACW), red maple (*Acer rubrum*, FAC) saplings and trees, unidentified grasses, marsh fern (*Thelypteris palustris*, FACW), and cinnamon fern (*Osmunda cinnamomea*, FACW). Soils exhibited a sandy redox (F5) hydric soil indicator. The NRCS mapped the BVW 3 area as Pilsbury fine sandy loam. Soils observed align with the mapped hydric soil rating of ‘yes’. Buried debris was observed between flags 3A-114 and 3A-115. There is potential there could be wetland fill between these flags, but due to the depth of the overburden material (~3 feet), an investigation with hand tools was not possible. Heavy machinery may be required to excavate this area to verify or determine the wetland boundary.

Buffer Zone

Buffer Zone is defined in 310 CMR 10.04 as “that area of land extending 100 feet horizontally outward from the boundary of any area specified in 310 CMR 10.02(1)(a).” Buffer Zone is considered an area subject to protection under the MAWPA, but is not regulated as a resource area under the MAWPA.

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Unlike the MAWPA, the Shutesbury Wetlands Bylaw considers the 100-foot Buffer Zone a separate jurisdictional resource area.

The 100-foot Buffer Zone within the Subject Parcel consists of forested areas and the regularly maintained lawn area within the northern portion of the parcel. The forested areas are vegetated with a combination of deciduous and coniferous trees including red maple, American beech (*Fagus grandifolia*, FAU), white pine (*Pinus strobus*; FAU) eastern hemlock (*Tsuga canadensis*, FACU), and gray birch. Portions of the upland forest consist of a denser understory of mountain laurel and other portions have a more open understory. Additional vegetation observed includes sheep laurel (*Kalmia angustifolia*; FAC), cinnamon fern, lowbush blueberry (*Vaccinium angustifolium*; FACU), and eastern teaberry (*Gaultheria procumbens*; FACU).

Because the wetland delineation did not occur outside of the Subject Parcel, and wetlands were observed adjacent to the Subject Parcel to the west, a No-Contest 100-foot Buffer Zone has been added to along the southwest and southeast boundary of the review area. This No-Contest 100-foot Buffer Zone has been added to maximize protection of potential wetland resource areas off parcel.

1.4 Isolated Vegetated Wetlands (Non-Jurisdictional)

Four IVW's were identified within the Subject Parcel (IVW 4 through 7). These IVW's each included a surface area less than one thousand (1,000) square feet and therefore are not jurisdictional IVW's under the Shutesbury Wetland Regulations. In addition, these IVW's are not subject to jurisdiction or protection under the MAWPA.

Descriptions of these non-jurisdictional IVW's observed within the Subject Parcel review area are provided below for reference.

IVW (Non-Jurisdictional): Description

IVW 4 (663 sf)

IVW 4 is best described as a seasonally saturated/flooded PEM wetland located along the access route to the former radio tower location. IVW 4 is approximately 8 feet wide. This IVW was likely manmade due to compaction from vehicle traffic of upland areas over time. The access road ruts are 0.5 to 1 foot lower elevation than directly adjacent upland areas. IVW 4 likely collects and holds water due to its geomorphic position. No standing water was observed at the time of delineation. Vegetation observed within IVW 4 includes: cranberry (*Vaccinium oxycoccos*; OBL), red maple saplings, white meadowsweet, mountain laurel (*Kalmia latifolia*; FACU), grey birch saplings (*Betula populifolia*), and sedges (*Rhynchospora spp.*). Soils within the tire track areas were compacted. The interior of the road was more densely vegetated and included soils with a sandy redox (S5) hydric soil indicator. Soils observed within IVW 4 do not align with the mapped hydric soil rating of 'no'.

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IVW 5 (167 sf)

IVW 5 is best described as a seasonally saturated/flooded PEM wetland located within the access route just south of IVW 4. IVW 5 is approximately 8 feet wide with an area of 167 sf. This IVW was separated by IVW 4 by an upland island and consists of similar vegetation, hydrology, and disturbance history as IVW 4.

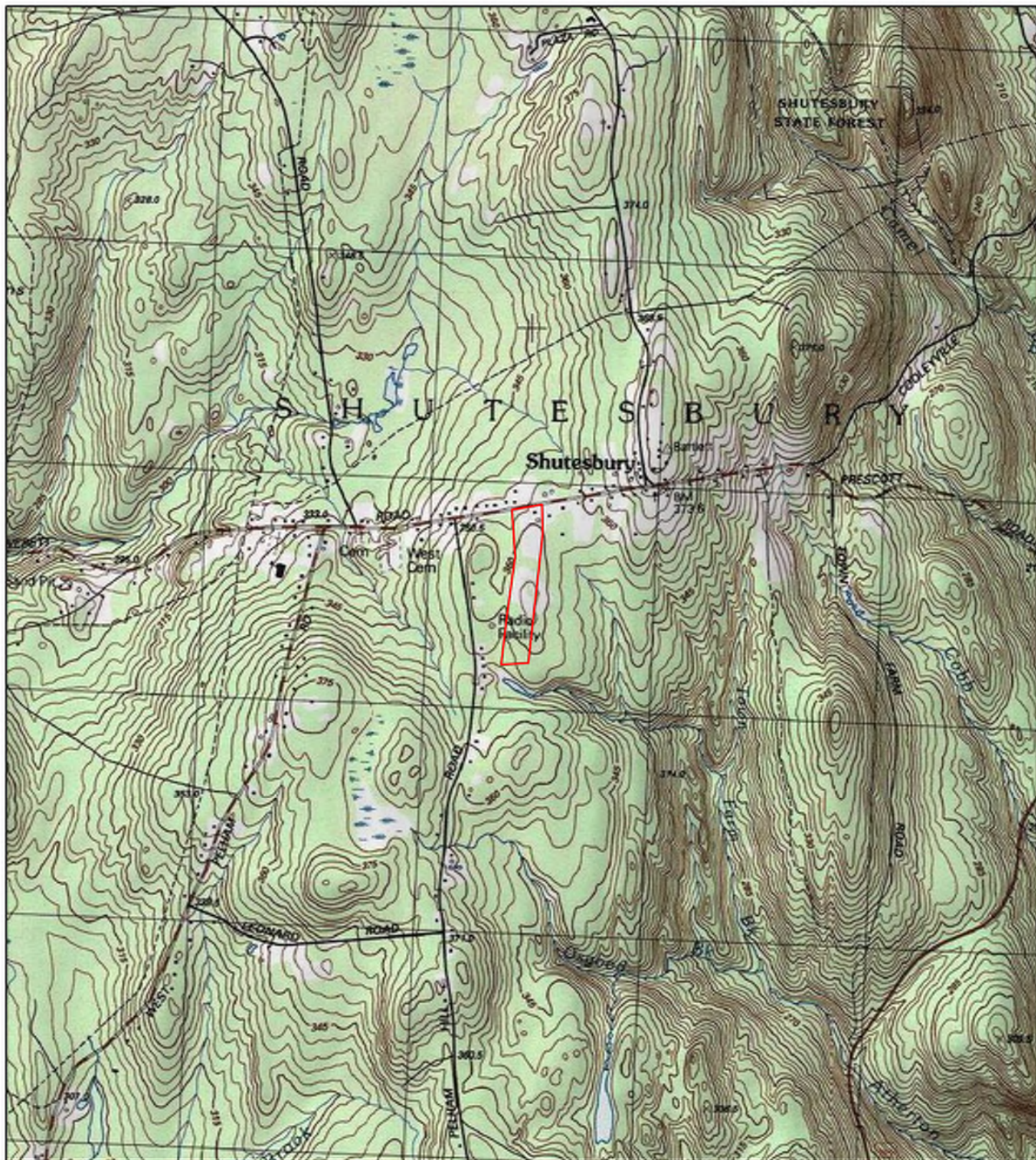
IVW 6 (535 sf)

IVW 6 is best described as a seasonally saturated/flooded PEM wetland located within the access route south of IVW 5. A portion of this IVW extends outside of the access route. The portion within the access route includes deep ruts. Standing water was not observed at the time of the delineation, but this area likely collects and holds water during precipitation events. Hydric soil indicator Depleted Matrix (F3) was observed at the base of the ruts. Vegetation included cranberry (*Vaccinium oxycoccos*; OBL), sedges (*Rhynchospora* spp.), and sheep laurel (*Kalmia angustifolia*; FAC).

IVW 7 (321 sf)

IVW 7 is best described as a seasonally saturated/flooded PEM wetland located east of the access route. During the November 28, 2022 delineation, which is outside the growing season, this IVW was holding water. Ponding was not observed in this area during previous site visits. Vegetation observed included cranberries and sheep laurel.

Attachment A
Figures



 Subject Parcel

0 1,000 2,000 Feet

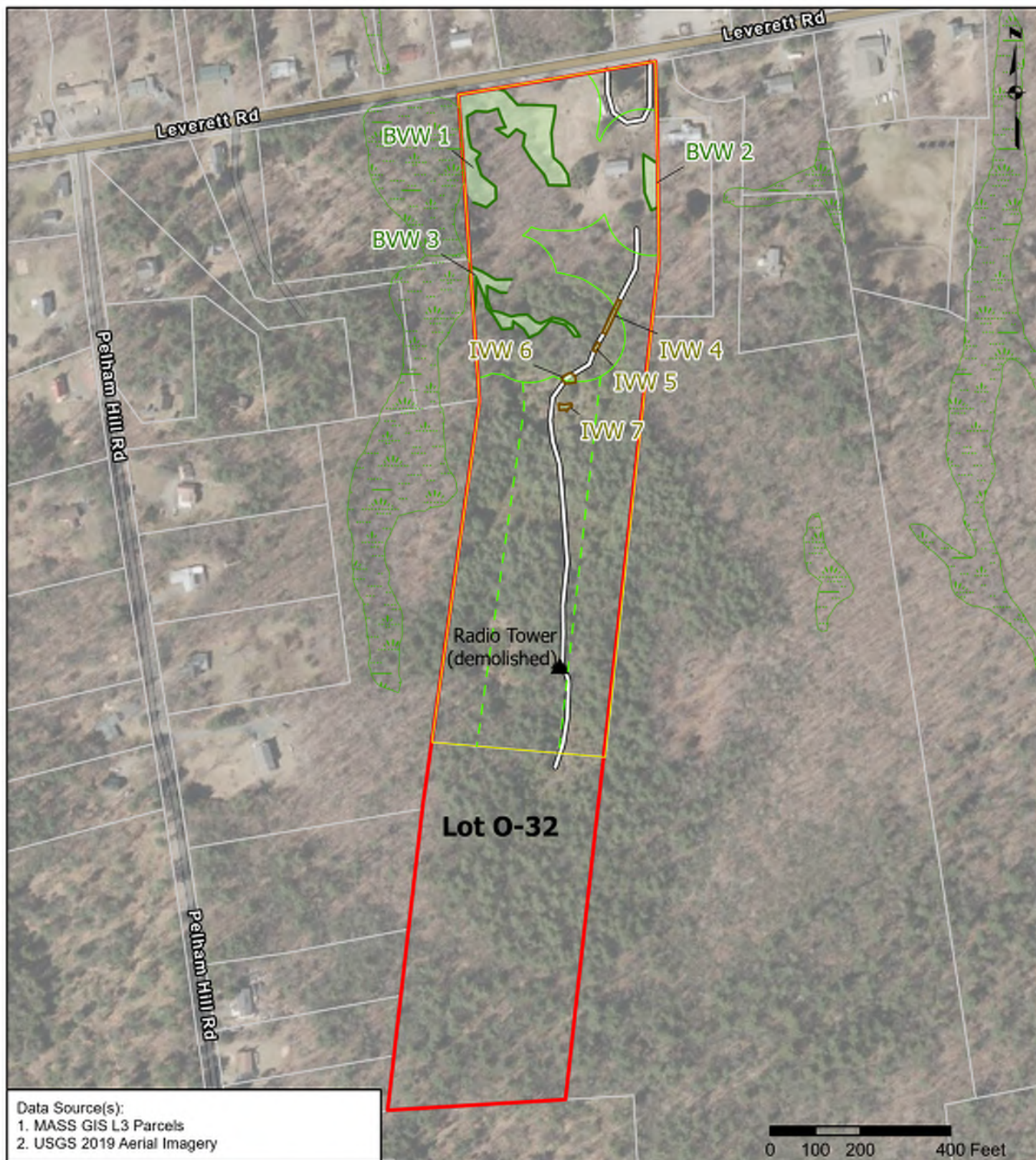


Topographic Map
66 Leverett Road
Shutesbury, Massachusetts

February 2023

 **FUSS & O'NEILL**
1550 Main Street, Suite 400
Springfield, MA 01103
413.452.0445 | www.fusdo.com

Figure
1



Data Source(s):
 1. MASS GIS L3 Parcels
 2. USGS 2019 Aerial Imagery



- | | |
|---|------------------------|
| Subject Parcel | Wetland Area |
| ANRAD Review Area | 100-ft Buffer Zone |
| Parcel Boundary | No-Contest Buffer Zone |
| BVW Boundary (Delineated) | MassDEP Mapped Wetland |
| IWW Boundary (Delineated: Not Jurisdictional) | Access |

Notes:
 Wetland Delineation conducted by Fuss & O'Neill on August 5 and 15, November 13 and 26, 2022.
 Wetland flag locations located by a Harold L. Eaton & Associates, Inc., Massachusetts PLS #20002.
 The No-Contest Buffer Zone extends 100 feet from the subject parcel boundary.

Wetland Delineation Overview

66 Leverett Road
 Shutesbury, Massachusetts

February 2023 (last revised)

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 Springfield, MA 01103
 413.452.0445 | www.fuzdo.com

**Figure
 2**



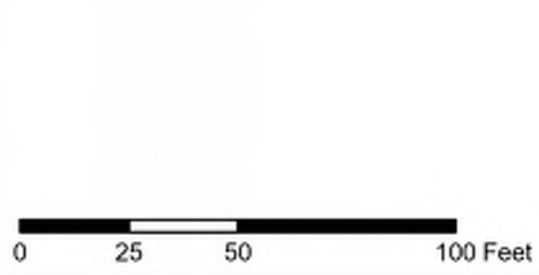


Data Source(s):
 1. MASS GIS L3 Parcels
 2. USGS 2019 Aerial Imagery



- Subject Parcel
- ANRAD Review Area
- Parcel Boundary
- Access
- BVW Boundary (Delineated)
- IVW Boundary (Delineated; Not Jurisdictional)
- Wetland Flag
- Wetland Area
- 100-ft Buffer Zone
- No-Contest Buffer Zone
- MassDEP Mapped Wetland

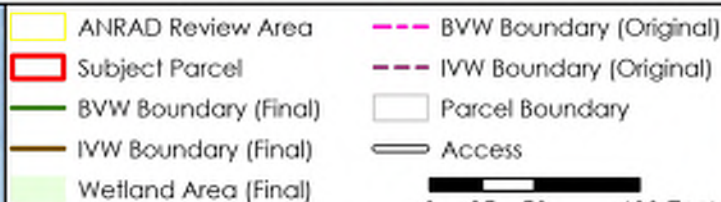
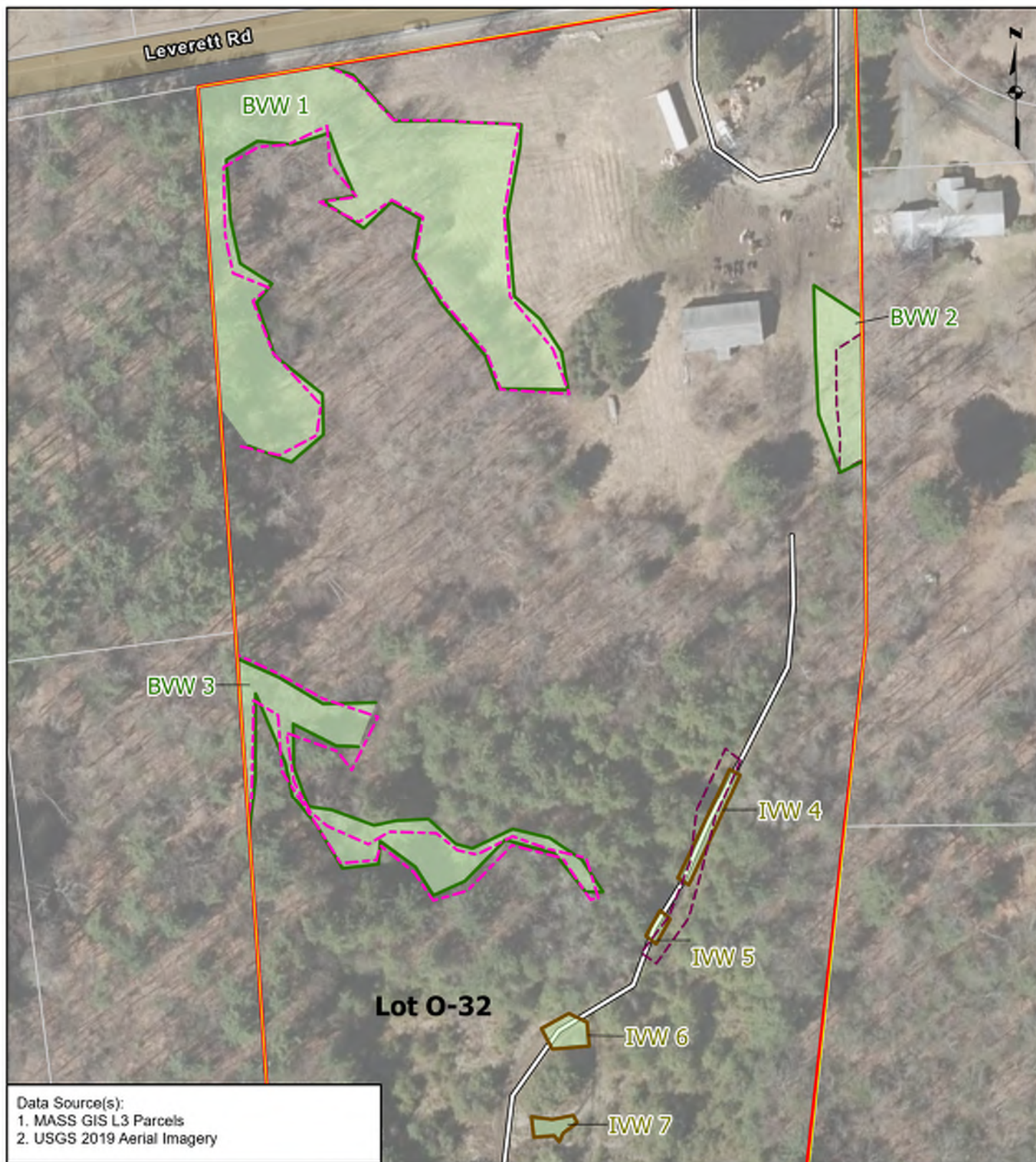
Notes:
 Wetland Delineation conducted by Fuss & O'Neill on August 5 and 16, November 30 and 28, 2022.
 Wetland Flag locations located by a Harold L. Eaton & Associates, Inc., Massachusetts PLS #15010.
 The No-Contest Buffer Zone extends 100 feet from the subject parcel boundary.



Wetland Flag Locations
 66 Leverett Road
 Shutesbury, Massachusetts
 February 2023 (last revised)

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 Springfield, MA 01103
 413.452.0445 | www.fando.com

Figure 3-2



Notes:
 Wetland Delineation conducted by Fuss & O'Neill on August 5 and 26, November 20 and 28, 2022.
 Final wetland flag locations located by Harold L. Eaton & Associates, Inc., Massachusetts PLS #2002.

Wetland Delineation Change

66 Leverett Road
 Shutesbury, Massachusetts

February 2023 (last revised)



Figure 4

Attachment B
Site Photographs



Photo 1: Overview of northern portion of the Subject Parcel, facing BVW 1 (view west, 8/16/22).



Photo 2: View of sensitive fern growing within the mowed portion of BVW 1 near flag 1A-129 (view south, 8/16/22).



Photo 3: View of the forested portion of BVW 1 near flag 1A-112 (view west, 8/5/22).



Photo 4: View of redox concentrations (yellow arrows) visible in BVW 1 soils (8/5/22).



Photo 5: View of BVW 3 near flag 3B-110 (view north, 8/16/22)



Photo 6: View of the sandy redox hydric soil in BVW 3.



Photo 7: View of BVW 2 (view southeast, 8/5/22).



Photo 8: View of IVW 4 within the access route near flag 4A-102 (view south, 8/16/22).



Photo 9: View of IVW 5 (11/28/22).



Photo 10: View of IVW 6 (view northeast, 11/10/22).



Photo 11: View of IVW 7 (view east, 11/28/22).



Photo 12: Representative view of the access route to the former radio tower location (view south, 8/5/22).



Photo 13: View of the former radio tower location (view west, 8/5/22).



Photo 14: Representative view of upland forest within 100 feet of the former radio tower location (view west, 8/16/22).

Attachment C
Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 66 Leverett Road City/County: Shutesbury Sampling Date: 8/5/2022
 Applicant/Owner: Town of Shutesbury State: MA Sampling Point: 1A-129
 Investigator(s): April Doroski, PWS, CPSS, Fuss & O'Neill Section, Township, Range: _____
 Landform (hillside, terrace, etc.): hillside Local relief (concave, convex, none): none Slope (%): 3-8
 Subregion (LRR or MLRA): LRR R, MLRA 144A Lat: 42.451036 Long: -72.416368 Datum: NAD83
 Soil Map Unit Name: 368B - Metacomet fine sandy loam and 368A - Metacomet fine sandy loam NWI classification: PEM
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)
 Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes _____ No X
 Are Vegetation X, Soil X, or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>BVW 1A</u>
Remarks: (Explain alternative procedures here or in a separate report.) Due to drought conditions reported for the Connecticut River Valley Region since May, hydrologic conditions are not typical for this time of year. According to the Massachusetts Department of Conservation and Recreation (DCR) the Connecticut River Valley Region experienced drought conditions starting in May 2022 and continuing through August 2022.	

HYDROLOGY

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

VEGETATION – Use scientific names of plants.

Sampling Point: 1A-129

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>30</u>)				
1.				
2.				
3.				
4.				
5.				
6.				
7.				
	=Total Cover			
Sapling/Shrub Stratum (Plot size: <u>15</u>)				
1.				
2.				
3.				
4.				
5.				
6.				
7.				
	=Total Cover			
Herb Stratum (Plot size: <u>5</u>)				
1.	<u>Onoclea sensibilis</u>	20	Yes	FACW
2.	<u>Rubus hispidus</u>	5	No	FACW
3.	<u>Sedges spp.</u>	5	No	
4.	<u>Grass spp.</u>	60	Yes	
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
	90 =Total Cover			
Woody Vine Stratum (Plot size: <u>5</u>)				
1.				
2.				
3.				
4.				
	=Total Cover			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>0</u>	x 1 = <u>0</u>
FACW species <u>25</u>	x 2 = <u>50</u>
FAC species <u>0</u>	x 3 = <u>0</u>
FACU species <u>0</u>	x 4 = <u>0</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>25</u> (A)	<u>50</u> (B)
Prevalence Index = B/A = <u>2.00</u>	

Hydrophytic Vegetation Indicators:

 1 - Rapid Test for Hydrophytic Vegetation

 2 - Dominance Test is >50%

 X 3 - Prevalence Index is ≤3.0¹

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

 X Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes X No

Remarks: (Include photo numbers here or on a separate sheet.)
 Area of wetland plot is problematic due to regular mowing. Identification of grass species is not possible. Sensitive fern observed in pockets. Vegetation observed within the forested portion of the wetland consisted of cinnamon fern, sensitive fern, grey birch, winterberry, and red maple.

SOIL

Sampling Point: 1A-129

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-7	10YR 2/2	90	7.5YR 4/6	10	C	M	Loamy/Clayey	Prominent redox concentrations
7-10	10YR 4/3	93	10YR 3/6	7	C	M	Loamy/Clayey	Distinct redox concentrations
10-16	2.5Y 5/3	90	10YR 4/6	10	C	M	Loamy/Clayey	Prominent redox concentrations

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

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)

- Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- High Chroma Sands (S11) (**LRR K, L**)
- Loamy Mucky Mineral (F1) (**LRR K, L**)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils³:

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

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

Restrictive Layer (if observed):

Type: NA
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx).
 Soil was moistened prior to coloring.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 66 Leverett Road City/County: Shutesbury Sampling Date: 8/5/2022, 11/10/2022
 Applicant/Owner: Town of Shutesbury State: MA Sampling Point: 2A-101
 Investigator(s): April Doroski, PWS, CPSS, Fuss & O'Neill Section, Township, Range: _____
 Landform (hillside, terrace, etc.): _____ Local relief (concave, convex, none): none Slope (%): 3-8
 Subregion (LRR or MLRA): LRR R, MLRA 144A Lat: 42.450612 Long: -72.415453 Datum: NAD83
 Soil Map Unit Name: 368B - Metacomet fine sandy loam, 3 to 8 percent slopes NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)
 Are Vegetation X, Soil X, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No X
 Are Vegetation _____, Soil X, or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>BVW 2</u>
--	--

Remarks: (Explain alternative procedures here or in a separate report.)
 Due to drought conditions reported for the Connecticut River Valley Region since May, hydrologic conditions are not typical for this time of year. According to the Massachusetts Department of Conservation and Recreation (DCR) the Connecticut River Valley Region experienced drought conditions starting in May 2022 and continuing through August 2022.

HYDROLOGY

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

Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	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: 2A-101

	Absolute % Cover	Dominant Species?	Indicator Status																	
Tree Stratum (Plot size: <u>30</u>)																				
1. <u>Fraxinus pennsylvanica</u>	80	Yes	FACW	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>66.7%</u> (A/B)																
2. _____																				
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
	80	=Total Cover																		
Sapling/Shrub Stratum (Plot size: <u>15</u>)																				
1. <u>Ilex verticillata</u>	10	Yes	FACW	Prevalence Index worksheet: <table style="width:100%; border:none;"> <tr> <td style="text-align:right;">Total % Cover of:</td> <td style="text-align:center;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>176</u></td> <td>x 2 = <u>352</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>5</u></td> <td>x 4 = <u>20</u></td> </tr> <tr> <td>UPL species <u>5</u></td> <td>x 5 = <u>25</u></td> </tr> <tr> <td>Column Totals: <u>186</u> (A)</td> <td><u>397</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align:center;">Prevalence Index = B/A = <u>2.13</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>176</u>	x 2 = <u>352</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>5</u>	x 4 = <u>20</u>	UPL species <u>5</u>	x 5 = <u>25</u>	Column Totals: <u>186</u> (A)	<u>397</u> (B)	Prevalence Index = B/A = <u>2.13</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>176</u>	x 2 = <u>352</u>																			
FAC species <u>0</u>	x 3 = <u>0</u>																			
FACU species <u>5</u>	x 4 = <u>20</u>																			
UPL species <u>5</u>	x 5 = <u>25</u>																			
Column Totals: <u>186</u> (A)	<u>397</u> (B)																			
Prevalence Index = B/A = <u>2.13</u>																				
2. <u>Cornus amomum</u>	5	Yes	FACW																	
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
	15	=Total Cover																		
Herb Stratum (Plot size: <u>5</u>)																				
1. <u>Onoclea sensibilis</u>	80	Yes	FACW	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. <u>Fraxinus pennsylvanica</u>	1	No	FACW																	
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
8. _____																				
9. _____																				
10. _____																				
11. _____																				
12. _____																				
	81	=Total Cover																		
Woody Vine Stratum (Plot size: <u>5</u>)																				
1. <u>Celastrus orbiculatus</u>	5	Yes	UPL	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.																
2. <u>Parthenocissus quinquefolia</u>	5	Yes	FACU																	
3. _____																				
4. _____																				
	10	=Total Cover																		

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

SOIL

Sampling Point: 2A-101

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR 2/1	100					Sandy	
5-12	10YR 3/2	98	10YR 3/4	2	C	M	Sandy	Distinct redox concentrations

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

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)

- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- High Chroma Sands (S11) (LRR K, L)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR K, L)

Indicators for Problematic Hydric Soils³:

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

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

Restrictive Layer (if observed):

Type: NA
 Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx).
 Soil was moistened for coloring.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 66 Leverett Road City/County: Shutesbury Sampling Date: 8/5/2022
 Applicant/Owner: Town of Shutesbury State: MA Sampling Point: 3B-110
 Investigator(s): April Doroski, PWS, CPSS, Fuss & O'Neill Section, Township, Range: _____
 Landform (hillside, terrace, etc.): depression Local relief (concave, convex, none): convex Slope (%): 3-8
 Subregion (LRR or MLRA): LRR R, MLRA 144A Lat: 42.449704 Long: -72.416383 Datum: NAD83
 Soil Map Unit Name: 75B - Pillsbury fine sandy loam NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)
 Are Vegetation X, Soil X, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No X
 Are Vegetation _____, Soil _____, or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>BVW 3</u>
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Remarks: (Explain alternative procedures here or in a separate report.)
 Due to drought conditions reported for the Connecticut River Valley Region since May, hydrologic conditions are not typical for this time of year. According to the Massachusetts Department of Conservation and Recreation (DCR) the Connecticut River Valley Region experienced drought conditions starting in May 2022 and continuing through August 2022.

HYDROLOGY

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

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

Remarks:
 The plot was taken within a sparsely vegetated area which could be a potential vernal pool. No egg masses were observed at the time of delineation. Portions of this BVW are forested.

VEGETATION – Use scientific names of plants.

Sampling Point: 3B-110

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>30</u>)				
1.				
2.				
3.				
4.				
5.				
6.				
7.				
	=Total Cover			
Sapling/Shrub Stratum (Plot size: <u>15</u>)				
1.	5	Yes		
2.				
3.				
4.				
5.				
6.				
7.				
	=Total Cover			
Herb Stratum (Plot size: <u>5</u>)				
1.	20	Yes	OBL	
2.	20	Yes		
3.	5	No	OBL	
4.	5	No	FACW	
5.	2	No	FAC	
6.				
7.				
8.				
9.				
10.				
11.				
12.				
	=Total Cover			
Woody Vine Stratum (Plot size: <u>5</u>)				
1.				
2.				
3.				
4.				
	=Total Cover			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>25</u>	x 1 = <u>25</u>
FACW species <u>5</u>	x 2 = <u>10</u>
FAC species <u>2</u>	x 3 = <u>6</u>
FACU species <u>0</u>	x 4 = <u>0</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>32</u> (A)	<u>41</u> (B)
Prevalence Index = B/A = <u>1.28</u>	

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is >50%

3 - Prevalence Index is ≤3.0¹

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

Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes X No

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

Additional vegetation observed outside of the plot includes marsh fern, sedges, red maple, and cinnamon fern.

SOIL

Sampling Point: 3B-110

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	2.5Y 4/2	99	10YR 5/8	1	C	M	Sandy	Prominent redox concentrations
4-10	5Y 5/2	97	2.5Y 5/6	3	C	M	Sandy	Prominent redox concentrations

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

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)

- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- High Chroma Sands (S11) (LRR K, L)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR K, L)

Indicators for Problematic Hydric Soils³:

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

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

Restrictive Layer (if observed):

Type: NA
 Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:
 This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx).
 Soil was moist.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 66 Leverett Road City/County: Shutesbury Sampling Date: 8/5/22
 Applicant/Owner: Town of Shutesbury State: MA Sampling Point: UPL 1-2
 Investigator(s): April Dorosk, PWS, CPSS, Fuss & O'Neill Section, Township, Range: _____
 Landform (hillside, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): 0-3
 Subregion (LRR or MLRA): LRR R, MLRA 144A Lat: 42.451046 Long: -72.416130 Datum: NAD83
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)
 Are Vegetation X, 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 <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: <u>UPL 1-2</u>
---	--

Remarks: (Explain alternative procedures here or in a separate report.)
 Due to drought conditions reported for the Connecticut River Valley Region since May, hydrologic conditions are not typical for this time of year. According to the Massachusetts Department of Conservation and Recreation (DCR) the Connecticut River Valley Region experienced drought conditions starting in May 2022 and continuing through August 2022. Plot is located in regularly mowed area.

HYDROLOGY

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: UPL 1-2

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>30</u>)				
1.				
2.				
3.				
4.				
5.				
6.				
7.				
		=Total Cover		
Sapling/Shrub Stratum (Plot size: <u>15</u>)				
1.				
2.				
3.				
4.				
5.				
6.				
7.				
		=Total Cover		
Herb Stratum (Plot size: <u>5</u>)				
1.	<u>5</u>	No	FACU	
2.	<u>2</u>	No	UPL	
3.	<u>1</u>	No	FACW	
4.	<u>82</u>	Yes		
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
	<u>90</u>	=Total Cover		
Woody Vine Stratum (Plot size: <u>5</u>)				
1.				
2.				
3.				
4.				
		=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>0</u>	x 1 = <u>0</u>
FACW species <u>1</u>	x 2 = <u>2</u>
FAC species <u>0</u>	x 3 = <u>0</u>
FACU species <u>5</u>	x 4 = <u>20</u>
UPL species <u>2</u>	x 5 = <u>10</u>
Column Totals: <u>8</u> (A)	<u>32</u> (B)
Prevalence Index = B/A = <u>4.00</u>	

Hydrophytic Vegetation Indicators:

 1 - Rapid Test for Hydrophytic Vegetation

 2 - Dominance Test is >50%

 3 - Prevalence Index is ≤3.0¹

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

 Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes No X

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

SOIL

Sampling Point: UPL 1-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR 2/1	100					Loamy/Clayey	
8-12	10YR 6/3	100					Sandy	

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

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)

- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- High Chroma Sands (S11) (LRR K, L)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR K, L)

Indicators for Problematic Hydric Soils³:

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

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

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 66 Leverett Road City/County: Shutesbury Sampling Date: 8/16/22
 Applicant/Owner: Town of Shutesbury State: MA Sampling Point: UPL 3-4
 Investigator(s): April Dorosk, PWS, CPSS, Fuss & O'Neill Section, Township, Range: _____
 Landform (hillside, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): 0-3
 Subregion (LRR or MLRA): LRR R, MLRA 144A Lat: 42.449892 Long: -72.415961 Datum: NAD83
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)
 Are Vegetation X, 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 <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: <u>UPL 3-4</u>
---	--

Remarks: (Explain alternative procedures here or in a separate report.)
 Due to drought conditions reported for the Connecticut River Valley Region since May, hydrologic conditions are not typical for this time of year. According to the Massachusetts Department of Conservation and Recreation (DCR) the Connecticut River Valley Region experienced drought conditions starting in May 2022 and continuing through August 2022. Plot is located in upland forest between the access route IVW 4 and BVW 3.

HYDROLOGY

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

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: UPL 3-4

	Absolute % Cover	Dominant Species?	Indicator Status																	
Tree Stratum (Plot size: <u>30</u>)																				
1. <u>Pinus strobus</u>	40	Yes	FACU	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0.0%</u> (A/B)																
2. <u>Fagus grandifolia</u>	10	Yes	FACU																	
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
	50	=Total Cover		Prevalence Index worksheet: <table style="width:100%; border:none;"> <tr> <td style="text-align:right;">Total % Cover of:</td> <td style="text-align:center;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>100</u></td> <td>x 4 = <u>400</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>100</u> (A)</td> <td><u>400</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align:center;">Prevalence Index = B/A = <u>4.00</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>100</u>	x 4 = <u>400</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>100</u> (A)	<u>400</u> (B)	Prevalence Index = B/A = <u>4.00</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>0</u>	x 2 = <u>0</u>																			
FAC species <u>0</u>	x 3 = <u>0</u>																			
FACU species <u>100</u>	x 4 = <u>400</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>100</u> (A)	<u>400</u> (B)																			
Prevalence Index = B/A = <u>4.00</u>																				
Sapling/Shrub Stratum (Plot size: <u>15</u>)																				
1. <u>Kalmia latifolia</u>	40	Yes	FACU																	
2. <u>Pinus strobus</u>	5	No	FACU																	
3. <u>Vaccinium angustifolium</u>	5	No	FACU																	
4. _____																				
5. _____																				
6. _____																				
7. _____																				
	50	=Total Cover																		
Herb Stratum (Plot size: <u>5</u>)																				
1. _____				Hydrophytic Vegetation Indicators: <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>2</u> - Dominance Test is >50% <u>3</u> - Prevalence Index is ≤3.0 ¹ <u>4</u> - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. _____																				
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
8. _____																				
9. _____																				
10. _____																				
11. _____																				
12. _____																				
Woody Vine Stratum (Plot size: <u>5</u>)																				
1. _____				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.																
2. _____																				
3. _____																				
4. _____																				
				Hydrophytic Vegetation Present? Yes <u> </u> No <u> X </u>																

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

SOIL

Sampling Point: UPL 3-4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-1	10YR 2/1	100					Loamy/Clayey	1-2 inches leaf litter/duff atop soil
1-7	10YR 3/3	100					Sandy	
7-12	2.5Y 5/4	100					Sandy	

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

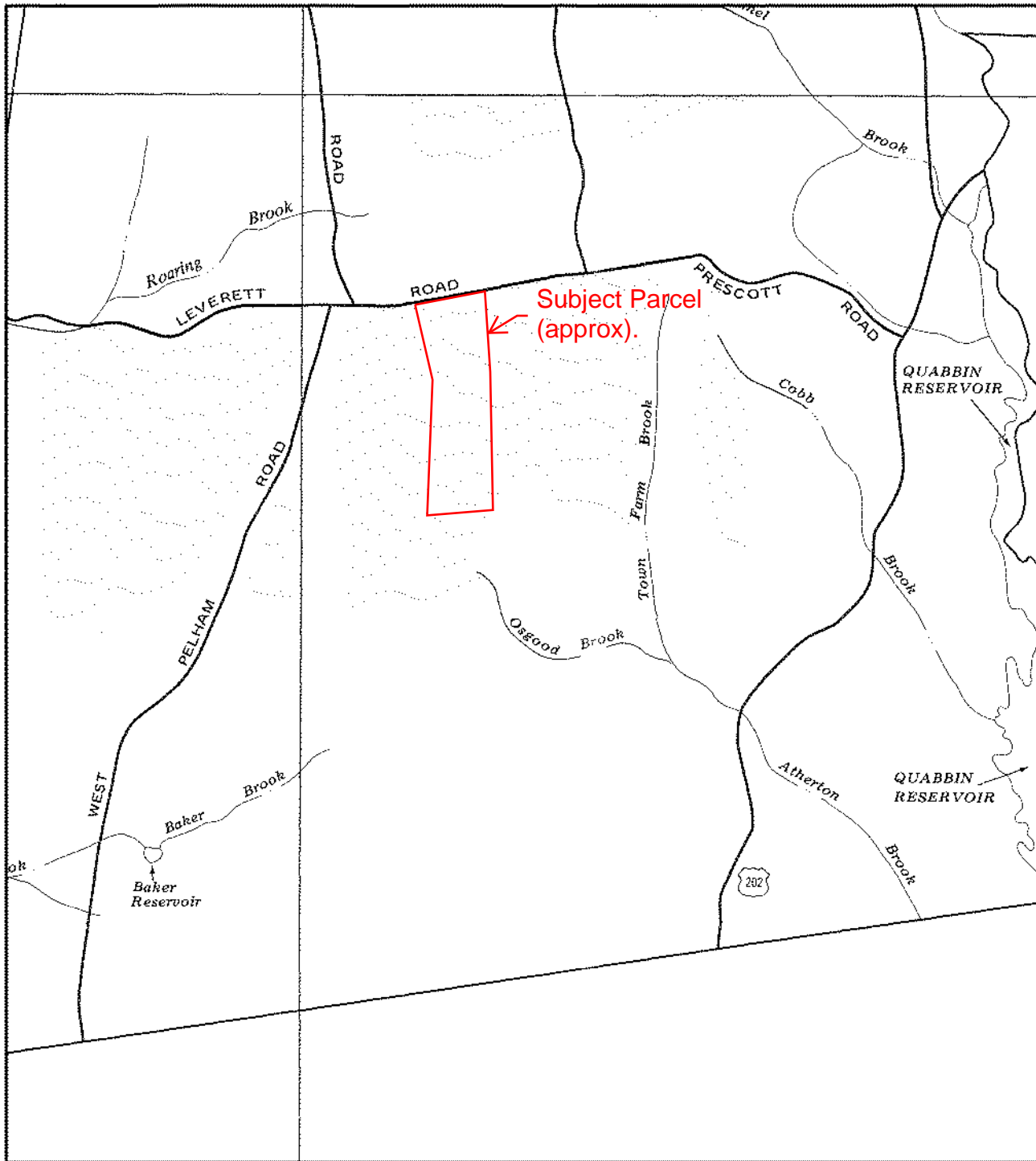
- | | | |
|--|--|--|
| Hydric Soil Indicators: | | Indicators for Problematic Hydric Soils³: |
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) | <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) |
| <input type="checkbox"/>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

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

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

Remarks:
This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

Attachment D
FEMA Information



NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

TOWN OF
SHUTESBURY,
MASSACHUSETTS
FRANKLIN COUNTY

MAP INDEX
PANELS PRINTED: 5, 10, 15

COMMUNITY-PANEL NUMBERS
250128 0001-0020

EFFECTIVE DATE:
JUNE 18, 1980



U.S. DEPARTMENT OF HOUSING
AND URBAN DEVELOPMENT
FEDERAL INSURANCE ADMINISTRATION

This is an official FIRMette showing a portion of the above-referenced flood map created from the MSC FIRMette Web tool. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For additional information about how to make sure the map is current, please see the Flood Hazard Mapping Updates Overview Fact Sheet available on the FEMA Flood Map Service Center home page at <https://msc.fema.gov>.



Attachment E
NRCS Custom Soil Resource Report



United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for Franklin County, Massachusetts

66 Leverett Road



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

Custom Soil Resource Report

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

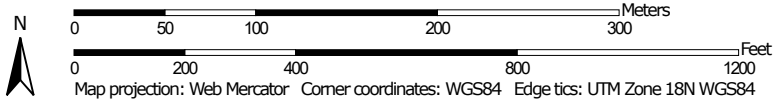
Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

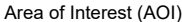



































Custom Soil Resource Report Soil Map



Map Scale: 1:4,160 if printed on A portrait (8.5" x 11") sheet.



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
- Water Features**
 -  Streams and Canals
- Transportation**
 -  Rails
 -  Interstate Highways
 -  US Routes
 -  Major Roads
 -  Local Roads
- Background**
 -  Aerial Photography
- Other Features**
 -  Spoil Area
 -  Stony Spot
 -  Very Stony Spot
 -  Wet Spot
 -  Other
 -  Special Line Features

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

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

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

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

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

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

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

Soil Survey Area: Franklin County, Massachusetts
 Survey Area Data: Version 16, Sep 2, 2021

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

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

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
75B	Pillsbury fine sandy loam, 0 to 8 percent slopes, very stony	2.2	10.8%
348C	Henniker sandy loam, 8 to 15 percent slopes	1.5	7.4%
368A	Metacomet fine sandy loam, 0 to 3 percent slopes	14.5	70.6%
368B	Metacomet fine sandy loam, 3 to 8 percent slopes	2.0	9.9%
444B	Chichester fine sandy loam, 3 to 8 percent slopes	0.3	1.3%
Totals for Area of Interest		20.5	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

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The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Franklin County, Massachusetts

75B—Pillsbury fine sandy loam, 0 to 8 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2ty6x
Elevation: 360 to 2,070 feet
Mean annual precipitation: 31 to 95 inches
Mean annual air temperature: 27 to 52 degrees F
Frost-free period: 90 to 140 days
Farmland classification: Not prime farmland

Map Unit Composition

Pillsbury, very stony, and similar soils: 79 percent
Minor components: 21 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pillsbury, Very Stony

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Mountainbase, base slope, interfluve
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Loamy lodgment till derived from gneiss and/or loamy lodgment till derived from mica schist and/or loamy lodgment till derived from granite

Typical profile

Oe - 0 to 1 inches: mucky peat
A - 1 to 6 inches: fine sandy loam
Bg1 - 6 to 13 inches: cobbly fine sandy loam
Bg2 - 13 to 23 inches: cobbly fine sandy loam
Cd - 23 to 65 inches: cobbly fine sandy loam

Properties and qualities

Slope: 0 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.1 percent
Depth to restrictive feature: 21 to 43 inches to densic material
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.01 to 1.42 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: F144BY305ME - Wet Loamy Flat
Hydric soil rating: Yes

Minor Components

Peru, very stony

Percent of map unit: 9 percent
Landform: Mountains, hills
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Mountainbase, interfluve, base slope
Microfeatures of landform position: Rises, rises
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Peacham, very stony

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Mountainbase, interfluve, base slope
Microfeatures of landform position: Closed depressions, closed depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Wonsqueak

Percent of map unit: 4 percent
Landform: Hills, mountains
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Mountainbase, base slope, interfluve
Microfeatures of landform position: Closed depressions, closed depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Lyman, very stony

Percent of map unit: 3 percent
Landform: Mountains, hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Mountainbase, interfluve, base slope
Microfeatures of landform position: Rises, rises
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

348C—Henniker sandy loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9cdv
Elevation: 920 to 1,280 feet
Mean annual precipitation: 39 to 53 inches
Mean annual air temperature: 34 to 56 degrees F
Frost-free period: 140 to 174 days

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Farmland classification: Farmland of statewide importance

Map Unit Composition

Henniker and similar soils: 83 percent

Minor components: 17 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Henniker

Setting

Landform: Drumlins, ground moraines

Landform position (two-dimensional): Backslope, toeslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear, convex

Across-slope shape: Convex, linear

Parent material: Loamy till underlain by sandy lodgment till derived from gneiss

Typical profile

O_i - 0 to 0 inches: slightly decomposed plant material

O_e - 0 to 1 inches: moderately decomposed plant material

A_p - 1 to 8 inches: sandy loam

B_w1 - 8 to 15 inches: sandy loam

B_w2 - 15 to 24 inches: sandy loam

BC - 24 to 29 inches: cobbly sandy loam

C_d1 - 29 to 39 inches: loamy sand

C_d2 - 39 to 45 inches: loamy sand

C_d3 - 45 to 65 inches: loamy sand

Properties and qualities

Slope: 8 to 15 percent

Surface area covered with cobbles, stones or boulders: 0.0 percent

Depth to restrictive feature: 18 to 36 inches to densic material

Drainage class: Well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (K_{sat}): Very low to moderately high (0.00 to 0.20 in/hr)

Depth to water table: About 13 to 31 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: B

Ecological site: F144BY501ME - Loamy Slope (Northern Hardwoods)

Hydric soil rating: No

Minor Components

Metacommet

Percent of map unit: 10 percent

Landform: Drumlins, ground moraines

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Convex

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Hydric soil rating: No

Chichester

Percent of map unit: 5 percent

Landform: Ground moraines, valley sides

Landform position (two-dimensional): Backslope, footslope

Landform position (three-dimensional): Side slope, base slope

Down-slope shape: Concave, linear

Across-slope shape: Convex, linear

Hydric soil rating: No

Pillsbury

Percent of map unit: 2 percent

Landform: Drumlins, ground moraines

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Base slope

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

368A—Metacomet fine sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 9cck

Elevation: 970 to 1,250 feet

Mean annual precipitation: 39 to 53 inches

Mean annual air temperature: 34 to 56 degrees F

Frost-free period: 140 to 174 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Metacomet and similar soils: 95 percent

Minor components: 5 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Metacomet

Setting

Landform: Drumlins, ground moraines

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Convex

Parent material: Loamy till underlain by sandy lodgment till derived from gneiss

Typical profile

O_i - 0 to 2 inches: slightly decomposed plant material

O_e - 2 to 2 inches: moderately decomposed plant material

A - 2 to 5 inches: fine sandy loam

E - 5 to 6 inches: fine sandy loam

Bw₁ - 6 to 13 inches: fine sandy loam

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Bw2 - 13 to 18 inches: fine sandy loam
Bw3 - 18 to 27 inches: sandy loam
C - 27 to 32 inches: stony loamy sand
Cd1 - 32 to 48 inches: loamy sand
Cd2 - 48 to 65 inches: sandy loam

Properties and qualities

Slope: 0 to 3 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 20 to 37 inches to densic material
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 16 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Ecological site: F144BY501ME - Loamy Slope (Northern Hardwoods)
Hydric soil rating: No

Minor Components

Pillsbury

Percent of map unit: 5 percent
Landform: Ground moraines, drumlins
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

368B—Metacomet fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9ccj
Elevation: 960 to 1,260 feet
Mean annual precipitation: 39 to 53 inches
Mean annual air temperature: 34 to 56 degrees F
Frost-free period: 140 to 174 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Metacomet and similar soils: 85 percent
Minor components: 15 percent

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Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Metacommet

Setting

Landform: Drumlins, ground moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Loamy till underlain by sandy lodgment till derived from gneiss

Typical profile

O_i - 0 to 2 inches: slightly decomposed plant material
O_e - 2 to 2 inches: moderately decomposed plant material
A - 2 to 5 inches: fine sandy loam
E - 5 to 6 inches: fine sandy loam
Bw₁ - 6 to 13 inches: fine sandy loam
Bw₂ - 13 to 18 inches: fine sandy loam
Bw₃ - 18 to 27 inches: sandy loam
C - 27 to 32 inches: stony loamy sand
Cd₁ - 32 to 48 inches: loamy sand
Cd₂ - 48 to 65 inches: sandy loam

Properties and qualities

Slope: 3 to 8 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 20 to 37 inches to densic material
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (K_{sat}): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 16 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B/D
Ecological site: F144BY501ME - Loamy Slope (Northern Hardwoods)
Hydric soil rating: No

Minor Components

Pillsbury

Percent of map unit: 10 percent
Landform: Drumlins, ground moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Henniker

Percent of map unit: 5 percent

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Landform: Drumlins, ground moraines
Landform position (two-dimensional): Backslope, toeslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex, linear
Hydric soil rating: No

444B—Chichester fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9cfm
Elevation: 940 to 1,400 feet
Mean annual precipitation: 39 to 53 inches
Mean annual air temperature: 34 to 56 degrees F
Frost-free period: 140 to 174 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Chichester and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chichester

Setting

Landform: Ground moraines, valley sides
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Side slope, base slope
Down-slope shape: Concave, linear
Across-slope shape: Convex, linear
Parent material: Loamy over sandy supraglacial meltout till derived from gneiss

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 3 inches: fine sandy loam
Ap - 3 to 7 inches: fine sandy loam
Bw1 - 7 to 10 inches: fine sandy loam
Bw2 - 10 to 20 inches: fine sandy loam
C1 - 20 to 28 inches: gravelly loamy coarse sand
C2 - 28 to 35 inches: sand
C3 - 35 to 44 inches: stony sand
C4 - 44 to 65 inches: stony sand

Properties and qualities

Slope: 3 to 8 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low

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Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.20 to 6.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: A

Ecological site: F144BY505ME - Loamy over Sandy

Hydric soil rating: No

Minor Components

Henniker

Percent of map unit: 10 percent

Landform: Drumlins, ground moraines

Landform position (two-dimensional): Backslope, toeslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear, convex

Across-slope shape: Convex, linear

Hydric soil rating: No

Millsite

Percent of map unit: 5 percent

Landform: Hills

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Mountainflank, side slope

Down-slope shape: Convex

Across-slope shape: Linear

Hydric soil rating: No

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