ABBREVIATED NOTICE OF RESOURCE AREA DELINEATION

Filing Under the Massachusetts Wetlands Protection Act
M.G.L. Chapter 131, Section 40 and the Town of Shutesbury Wetland Bylaw

Pratt South Project
Pratt Corner Road
Shutesbury, Massachusetts

Submitted to:

Shutesbury Conservation Commission
Shutesbury Town Hall
1 Cooleyville Road
Shutesbury, Massachusetts 01072

Filed by:

W.D. Cowls, Inc.
134 Montague Road, P.O. Box 9677
North Amherst, Massachusetts 01059

Prepared by:

TRC Companies
650 Suffolk Street
Lowell, Massachusetts 01854

October 2020

650 Suffolk St., Suite 200
Lowell, MA 01854

T 978.970.5600
TRCcompanies.com

October 26, 2020

Town of Shutesbury Conservation Commission
Shutesbury Town Hall
1 Cooleyville Road
Shutesbury, MA 01072

RE: Pratt South Project
Pratt Corner Road
Abbreviated Notice of Resource Area Delineation (ANRAD)

Dear Commissioners:

TRC Companies (TRC) is writing on behalf of W.D. Cowls, Inc. to file an ANRAD for a parcel off Pratt Corner Road, Shutesbury, MA (Site) (Figure 1 in Attachment B). The Site consists of approximately 92.6 acres of a 140.18-acre parcel (listed by the Shutesbury tax assessor as Parcel ID ZU-2).

TRC conducted a wetland and waterbody delineation survey on July 29 and 30 and August 3, 2020. This survey resulted in an overall delineation of five wetlands and two streams. The total linear feet of wetland edge and other resource areas delineated during the wetland and waterbody survey effort for the Site, the focus of this ANRAD filing, are summarized in the following table:

Resource Area	Delineated Length (linear feet)
Bordering Vegetated Wetland	8,663
Bank	2,736

Please refer to Attachment B for survey methodology, delineated wetland descriptions, US Army Corps of Engineers Wetland Determination forms, site photographs, and figures showing the resource areas.

To assist your review, we have provided the following attachments:

1. Attachment A – Abbreviated Notice of Resource Area Delineation Form & Wetland Fee Transmittal Form
2. Attachment B – Wetland and Waterbody Delineation Report
3. Attachment C – Abutter Information (Certified Abutter List, Abutter Notification & Affidavit of Service)
4. Attachment D – Figure 1: Delineated Resources Map (September 2020)

Attachment B also includes the following figures:

Figure 1 – Project Location (September 2020)
Figure 2 – Wetland Delineation (September 2020)

We very much appreciate your review of this information. If you should have any questions, please do not hesitate to contact me at 978-656-3662 or via email at JBrandt@TRCcompanies.com.

Sincerely,

TRC Companies

Jeff Brandt
Senior Project Manager

ATTACHMENT A
Abbreviated Notice of Resource Area Delineation Form & Wetland Fee Transmittal Form

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

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

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

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

Pratt Corner Road	Shutesbury	01072
a. Street Address	b. City/Town	c. Zip Code

Latitude and Longitude: 42.41192 (d. Latitude) -72.46679 (e. Longitude)

Map ZU	Lot 2
f. Assessors Map/Plat Number	g. Parcel /Lot Number

2. Applicant:

a. First Name ______ b. Last Name ______

W.D. Cowls, Inc.
c. Organization

P.O. Box 9677
d. Mailing Address

North Amherst	MA	01059
e. City/Town	f. State	g. Zip Code

336-314-1702		eturner@ariespowersystems.com
h. Phone Number	i. Fax Number	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 ______

4. Representative (if any):

Jeff	Brandt
a. Contact Person First Name	b. Contact Person Last Name

TRC
c. Organization

650 Suffolk Street
d. Mailing Address

Lowell	MA	01854
e. City/Town	f. State	g. Zip Code

978-656-3662		JBrandt@TRCcompanies.com
h. Phone Number	i. Fax Number	j. Email Address

Fees will be calculated for online users.

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

$2,000.00	$987.50	$1,012.50
a. Total Fee Paid	b. State Fee Paid	c. City/Town Fee Paid

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

B. Area(s) Delineated

1. Bordering Vegetated Wetland (BVW) 8,663 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:

Bank
a. Resource Area

2,736
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.

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

D. Fees

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:

1205026
2. Municipal Check Number

September 14, 2020
3. Check date

1205034
4. State Check Number

September 14, 2020
5. Check date

TRC
6. Payor name on check: First Name

7. Payor name on check: Last Name

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

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 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.

[signature]	Oct 2020
1. Signature of Applicant	2. Date
[signature]	Oct 2020
3. Signature of Property Owner (if different)	4. Date
5. Signature of Representative (if any)	6. Date

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:

Pratt Corner Road (Parcel ID: ZU-2)	Shutesbury
a. Street Address	b. City/Town
$987.50	1205034
c. Fee amount	d. Check number

2. Applicant:

		W.D. Cowls, Inc.
a. First Name	b. Last Name	c. Company

P.O. Box 9677
d. Mailing Address

North Amherst	MA	01059
e. City/Town	f. State	g. Zip Code

336-314-1702
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

☐ **Online users:** check box if fee exempt.

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:

	a. feet of BVW	x $2.00 =	b. Fee for BVW
1. ☐ single family house project			
2. ☒ all other projects	8,663	$17,326	$2,000 (maximum fee)

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

	a. linear feet	x $2.00 =	b. Fee
3. ☐ single family house project			
4. ☒ all other projects	2,736	$5,472	$0 (maximum fee)

Total Fee for all Resource Areas:	$2,000 Fee
State share of filing fee:	$987.50 5. 1/2 of total fee **less** $12.50
City/Town share of filing fee:	$1,012.50 6. 1/2 of total fee **plus** $12.50

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
Wetland and Waterbody Delineation Report

Pratt South Project

Pratt Corner Road
Shutesbury, Massachusetts

Prepared By:

TRC
Wannalancit Mills
650 Suffolk Street
Lowell, Massachusetts 01854

Wetland and Waterbody Delineation Report

August 2020

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TABLES

APPENDICES

1.0 Introduction

This report presents the results of a wetland and waterbody delineation conducted on July 29, 30, 2020 and August 3, 2020 by TRC Companies, Inc. (TRC) south of Pratt Corner Road in the Town of Shutesbury, Franklin County, Massachusetts (Site). The survey included approximately 92.6 acres of the 140.18-acre parcel listed by the Shutesbury Tax Assessor as Parcel ID ZU-2.

The survey for wetlands and streams focused on the entire Site as well as adjacent parcels, when accessible, within 200 feet.

This report documents wetlands, streams, and other aquatic resources (ponds, lakes, impoundments, etc.) at the Site regardless of assumed jurisdictional status and addresses the implementation of local and state regulated buffer areas. To the extent practicable, the delineated resources were investigated to determine drainage patterns and a physical nexus to Waters of the United States (WOUS).

Appendix A provides a Site location map (Figure 1) and a map of the resources delineated by TRC (Figure 2). Appendix B includes representative photographs of the Site, Appendix C includes wetland determination data forms, and Appendix D contains the Natural Resources Conservation Service (NRCS) Soil Report. Appendix E contains the U.S. Geological Survey (USGS) StreamStats Report.

2.0 Regulatory Authority

2.1 United States Army Corps of Engineers

In accordance with Section 404 of the Clean Water Act (CWA), the United States Army Corps of Engineers (USACE) asserts jurisdiction over WOUS, defined as wetlands, streams, and other aquatic resources under the regulatory authority per Title 33 Code of Federal Regulations (CFR) Part 328, and the United States Environmental Protection Agency (EPA) per Title 40 CFR Part 230.3(s). Wetlands are defined as “those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (EPA, 2019).

The USACE will assert jurisdiction over the following waters:

- Traditional navigable waters;
- Wetlands adjacent to traditional navigable waters;
- Non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically three months); and
- Wetlands that directly abut such tributaries.

The USACE will decide jurisdiction over the following waters based on analysis to determine whether they have significant nexus with a traditional navigable water:

- Non-navigable tributaries that are not relatively permanent;
- Wetlands adjacent to non-navigable tributaries that are not relatively permanent; and
- Wetlands adjacent to, but that do not directly abut, a relatively permanent non-navigable tributary.

The USACE generally will not assert jurisdiction over the following features:

- Swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow); and
- Ditches (including roadside ditches) excavated wholly in and draining only uplands, and that do not carry a relatively permanent flow of water.

The USACE will apply the significant nexus standard as follows:

- A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by all wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of downstream traditional navigable waters; and
- Significant nexus includes consideration of hydrologic and ecologic factors.

The USACE also regulates navigable waters under Section 10 of the Rivers and Harbor Act (33 U.S.C. 401 et seq.), which requires that a permit must be issued by the USACE to construct any structure in or over any navigable WOUS, as well as any proposed action (such as excavation/dredging or deposition of materials) that would alter or disturb these waters. If the proposed structure or activity affects the course, location, condition, or capacity of the navigable water, even if the proposed activity is outside the boundaries of the stream in associated wetlands, a Section 10 permit from the USACE is required.

2.2 Massachusetts Department of Environmental Protection

The Massachusetts Wetlands Protection Act (WPA) (Section 40 of Chapter 131 of the General Laws of Massachusetts and regulated under 310 Code of Massachusetts Regulations [CMR] section 10.00) defines multiple coastal (310 CMR 10.25-10.37) and inland resource areas (310 CMR 10.54-10.59) and gives the Massachusetts Department of Environmental Protection (MassDEP) jurisdiction over these resource areas. In most cases, the WPA also gives MassDEP jurisdiction over buffer zone extending 100 feet from the edge of the resource area. In addition to MassDEP, local municipalities' Conservation Commissions are responsible for administering the WPA and any local wetlands ordinance or bylaw.

The WPA defines two types of Land Subject to Flooding (310 CMR 10.57): isolated and bordering. Isolated Land Subject to Flooding (ILSF) is defined as "an isolated depression or a closed basin which serves as a ponding area for run-off or high ground water which has risen above the ground surface." Bordering Land Subject to Flooding (BLSF) is defined as "an area with low, flat topography adjacent to and inundated by flood waters rising from creeks, rivers, streams, ponds or lakes. It extends from the banks of these waterways and water bodies; where a bordering vegetated wetland occurs, it extends from said wetland." The boundary of BLSF is further defined as "the estimated maximum lateral extent of flood water which will theoretically result from the statistical 100-year frequency storm" as shown on the most recently available flood profile data prepared for the community by the National Flood Insurance Program (NFIP), currently administered by the Federal Emergency Management Agency (FEMA), successor to the U.S. Department of Housing and Urban Development). Under the WPA, ILSF and BLSF do not have associated buffer zones.

The WPA defines Bordering Vegetated Wetland (BVW) under 310 CMR 10.55 as any freshwater wetland which borders on creeks, rivers, stream ponds or lakes. Under the WPA, a 100-foot buffer zone is associated with BVWs. Isolated wetlands (IWs) are not connected to a waterway or waterbody and, therefore, are not regulated under the WPA and do not have an associated buffer zone under the WPA. IWs may have an associated buffer zone or similar zone associated with them under the local ordinance or bylaw. In some cases, IWs may qualify as ILSF and, in those instances, are regulated under the WPA.

The WPA defines Bank (310 CMR 10.54) as the portion of the land surface which normally abuts and confines a waterbody, occurring between a waterbody and a BVW and adjacent floodplain, or between a waterbody and an upland. Under the WPA, a 100-foot buffer zone is associated with Banks.

The WPA defines Riverfront Area (310 CMR 10.58) as the 200-foot area of land measured horizontally from a river's Mean Annual High Water (MAHW) line. The section defines a river as any stream that is perennial and includes, but is not limited to, streams shown as perennial on current USGS maps or that have a watershed size greater than or equal to one square mile. Riverfront Area is not associated with intermittent streams as they do not flow throughout the year. Under the WPA, Riverfront Area does not have an associated buffer zone.

A Notice of Intent filing is required from the MassDEP for any disturbance, including the removal of vegetation or alteration to a Banks, BVW, ILSF, BLSF, Riverfront Area, or buffer zone.

2.3 Town of Shutesbury Conservation Commission

The Shutesbury Conservation Commission (SCC) administers a local wetlands bylaw and regulations in addition to the WPA. The SCC has jurisdiction over any freshwater wetland, marsh, wet meadow, bog, swamp, isolated wetland, lake, pond, river, and stream (surface or subsurface) and land within 100 feet of any of these areas. The SCC also has jurisdiction over land under waterbodies and land subject to flooding or inundation by groundwater, surface water, storm flowage, or within a 100-year floodplain.

3.0 Project Site Characteristics

TRC reviewed publicly available literature and materials used for the investigation, survey, and report preparation, including:

- MassGIS OLIVER[1], the National Hydrography Dataset;
- The Shutesbury, Massachusetts 7.5 Minute Quadrangle (USGS, 2018);
- The FEMA Flood Insurance Rate Map (FIRM) Panels 2501280015A (effective date June 18, 1980);
- The U.S. Fish and Wildlife Service (USFWS), National Wetlands Inventory (NWI);
- The U.S. Department of Agriculture (USDA), NRCS Web Soil Survey;
- Recent aerial orthoimagery.

The following sections summarize TRC's review of each of these resources.

3.1 Hydrology

The Site is gently sloping in the eastern half with some steep slopes in the western portion. The Site generally drains northward and eastward off-site to wetlands and tributaries to Dean Brook to the north.

[1] The MassDEP Wetlands Conservancy Program uses aerial photography and photo interpretation to delineate and map wetland boundaries. These boundaries are available via the Massachusetts Office of Geographic Information (MassGIS) online mapping tool, OLIVER. Desktop review consisted of utilizing MassGIS OLIVER to gather a general understanding of existing conditions and potential regulated resource areas.

3.1.1 Floodplains

Flood hazard areas identified on the FEMA's FIRMs are identified as Special Flood Hazard Areas (SFHAs). SFHAs are defined as the area that will be inundated by the flood event having a 1-percent chance of being equaled or exceeded in any given year. The 1-percent annual chance flood is also referred to as the base flood or 100-year flood. FEMA uses a variety of labels for SFHAs:

Zone A	Zone A99	Zone AR/A
Zone AO	Zone AR	Zone V
Zone AH	Zone AR/AE	Zone VE, and
Zones A1-A30	Zone AR/AO	Zones V1-V30
Zone AE	Zone AR/A1-A30	

Moderate flood hazard areas, labeled Zone B or Zone X (shaded on FEMA mapping) are also shown on the FIRM, and are the areas between the limits of the base flood and the 0.2-percent-annual-chance (or 500-year) flood. The areas of minimal flood hazard, which are the areas outside the SFHA and higher than the elevation of the 0.2-percent-annual-chance flood, are labeled Zone C or Zone X (unshaded on FEMA mapping).

According to the FEMA FIRM 2501280015A (effective date June 18, 1980) the Site is located within a Zone C area of minimal flood disturbance zone. Base flood elevations and flood hazard factors are not available for this area.

3.2 Federal and State Mapped Wetlands and Streams

The USFWS is the principal federal agency tasked with providing information to the public on the status and trends of wetlands on a national scale. The USFWS NWI is a publicly available resource that provides detailed information on the abundance, characteristics, and distribution of nationwide wetlands (where mapped). NWI mapping data is offered to promote the understanding, conservation, and restoration of wetlands. The online MassGIS OLIVER mapping tool was accessed to determine the extent of state-mapped aquatic resources.

According to TRC's review of NWI and MassGIS OLIVER mapping, there are four wetlands onsite: one in the northern central portion of the Site, two in the center of the Site, and one in the southeast corner of the Site. The northern central wetland extends off-site to the north and the wetland in the southeast corner extends off-site to the south.

3.3 Mapped Soils

The NRCS's Web Soil Survey identifies nine soil map units within the Site. Map units can represent a type of soil, a combination of soils, or miscellaneous land cover types (e.g., water, rock outcrop, developed impervious surface). Map units are usually named for the predominant soil series or land types within the map unit. A summary of soil characteristics for soils mapped at the Site are included in Table 1, below. The following sections provide details about hydric ratings, drainage class, prime farmland, and hydrologic soil groups (HSGs). Details about soil map unit descriptions are provided in the NRCS Soil Report included as Appendix D.

Table 1: Mapped Soils

Symbol	Soil Name	Hydric Rating (%)	Drainage Class	Hydrologic Soil Group	Farmland Classification
71B	Ridgebury fine sandy loam, 3 to 8 percent slopes, extremely stony	88	Poorly drained	D	Not prime farmland
73A	Whitman fine sandy loam, 0 to 3 percent slopes, extremely stony	99	Very poorly drained	D	Not prime farmland
109C	Chatfield-Hollis complex 8 to 15 percent slopes, rocky	2	Chatfield: Well drained Hollis: Somewhat excessively drained	Chatfield: B Hollis: D	Not prime farmland
109D	Chatfield-Hollis complex 15 to 25 percent slopes, rocky	0	Chatfield: Well drained Hollis: Somewhat excessively drained	Chatfield: B Hollis: D	Not prime farmland
245B	Hinckley loamy sand, 3 to 8 percent slopes	0	Excessively drained	A	Farmland of statewide importance
245C	Hinckley loamy sand, 8 to 15 percent slopes	0	Excessively drained	A	Farmland of statewide importance
441C	Gloucester sandy loam, 8 to 15 percent slopes, very stony	1	Somewhat excessively drained	C	Farmland of statewide importance
441D	Gloucester sandy loam, 15 to 25 percent slopes, very stony	0	Somewhat excessively drained	C	Not prime farmland
441F	Gloucester sandy loam, 25 to 45 percent slopes, very stony	0	Somewhat excessively drained	C	Not prime farmland

3.3.1 Hydric Rating

The *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory, 1987) (1987 Manual) defines a hydric soil as "…a soil that in its undrained condition, is saturated, flooded or ponded long enough during the growing season to develop anaerobic conditions that favor the growth and regeneration of hydrophytic vegetation."

Due to limitations imposed by the small scale of the soil survey mapping, it is not uncommon to identify wetlands within areas not mapped as hydric soil while areas mapped as hydric often do not support wetlands. This concept is emphasized by the NRCS:

> *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.*

Hydric Soil Rating (HSR) indicates the percentage of a map unit that meets the criteria for hydric soils.

Map unit 71B has an HSR of 88 percent, map unit 73A has an HSR of 99 percent, map unit 109C has an HSR of 2 percent, map unit 441C has an HSR of 1 percent, and map units 109D, 245B, 245C, 441D, and

441F have an HSR of 0 percent. For map unit 71B, the hydric components within the map unit are Ridgebury, extremely stony and Whitman, extremely stony. For map unit 73A, the hydric components within the map unit are Whitman, extremely stony; Ridgebury, extremely stony; Scarboro; and Swansea. For map unit 109C, the hydric component within the map unit is Leicester, very stony. For map unit 441C, the hydric component within the map unit is Ridgebury, very stony.

3.3.2 Natural Drainage Class

Natural drainage class refers to the frequency and duration of wet periods under conditions similar to those under which the soil developed. Anthropogenic alteration of the water regime, either through drainage or irrigation, is not a consideration unless the alterations have significantly changed the morphology of the soil.

Map unit 71B is rated as poorly drained. Map unit 73A is rated as very poorly drained. For map units 109C and 109D, the Chatfield component is rated as well drained and the Hollis component is rated as somewhat excessively drained. Map units 245B and 245C are rated as excessively drained. Map units 441C, 441D, and 441F are rated as somewhat excessively drained.

3.3.3 Prime Farmland

Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is available for these uses (the land could be cropland, pastureland, rangeland, forestland, or other land, but not urban built-up land or water). Land used for a specific high-value food or fiber crop is classified as “unique farmland.” Generally, additional “farmlands of statewide importance” include those that are nearly prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. In some local areas, there is concern for certain additional farmlands, even though these lands are not identified as having national or statewide importance. These farmlands are identified as being of “local importance” through ordinances adopted by local government. The NRCS State Conservationist reviews and certifies lists of farmland of state and local importance. These lists, along with state and locally established Land Evaluation and Site Assessment (LESA) systems where applicable, are used by federal agencies to review and evaluate activities that may impact farmland. As defined in 7 CFR Part 657, important farmland encompasses prime and unique farmland, as well as farmland of statewide and local importance.

According to the NRCS, map units 71B, 73A, 109C, 109D, 441D, and 441F are classified as “not prime farmland” and map units 245B, 245C, and 441C are classified as “farmland of statewide importance.”

3.3.4 Hydrologic Soil Groups

Soils are assigned to a HSG based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

> Group A: Soils have a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

> Group B: Soils have a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.
>
> Group C: Soils have a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.
>
> Group D: Soils have a very slow infiltration rate (high runoff potential) when thoroughly wet. Soils consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition in Group D are assigned to dual classes.

Map units 71B and 73A are in HSG D. For map units 109C and 109D, the Chatfield component is in HSG B and the Hollis component is in HSG D. Map units 245B and 245C are in HSG A. Map units 441C, 441D, and 441F are in HSG C.

4.0 Wetland and Stream Delineation Methodology

In addition to the desktop review described in Section 3.0, TRC biologists performed field investigations at the Site to identify wetlands, waterbodies, and other surface waters on July 29, 30, 2020 and August 3, 2020.

4.1 Non-wetland Aquatic Resource Methodology

Streams and other non-wetland aquatic features within the Site were identified by the presence of an OHWM, which is the line established by the fluctuations of water (33 CFR 328.3). The OHWM line is indicated by physical characteristics, which can include: a clear, natural line impressed on the bank; shelving; changes in the character of soil; destruction of terrestrial vegetation; the presence of litter and debris; or other characteristics of the surrounding areas. For streams three feet or more in width, each stream bank was delineated with blue flagging. For smaller streams, the stream centerline is delineated with notes for the width. Flags were located with a handheld global positioning system (GPS) unit and the data post-processed to achieve sub-meter accuracy.

4.2 Wetland Delineation Methodologies

The delineation of wetlands was conducted in accordance with criteria set forth in the 1987 Manual, the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0)* (USACE, 2012) (Supplement), and the *Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetlands Protection Act- A Handbook* (MassDEP, 1995) (the MassDEP Handbook).

The three-parameter approach to identify and delineate wetlands presented in the 1987 Manual and the Supplement requires that, except for atypical and disturbed situations, wetlands possess hydrophytic vegetation, hydric soils, and wetland hydrology. A two-parameter approach that considers only vegetation and hydrology indicators is presented in the MassDEP Handbook. Per the MassDEP Handbook, hydric soil is included as evidence of wetland hydrology.

Wetland boundary flags were located with a handheld GPS unit and the data were post-processed to achieve sub-meter accuracy. Delineated resources were classified in accordance with the system presented in *The Classification of Wetlands and Deepwater Habitats of the United States, Second Edition* (Federal Geographic Data Committee, 2013).

4.2.1 Hydrophytic Vegetation Methodologies

Hydrophytic vegetation is defined in the 1987 Manual as:

> …the sum total of macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present.

Plants are categorized according to their occurrence in wetlands. Scientific names and wetland indicator statuses for vegetation are those listed in *The National Wetland Plant List: 2016 Wetland Ratings* (NWPL) (Lichvar et al., 2016). The indicator statuses specific to the "Northcentral and Northeast Region" as defined by the USACE apply to the Site. For upland species that are not listed on the NWPL, the Integrated Taxonomic Information System was referenced for currently accepted scientific names. The official short definitions for wetland indicator statuses are as follows:

- Obligate Wetland (OBL): Almost always occur in wetlands;
- Facultative Wetland (FACW): Usually occur in wetlands, but may occur in non-wetlands;
- Facultative (FAC): Occur in wetlands and non-wetlands (50/50 mix);
- Facultative Upland (FACU): Usually occur in non-wetlands, but may occur in wetlands; and
- Upland (UPL): Almost never occur in wetlands.

Plants that are not found in a region, but are found in an adjacent region, take on the indicator status of that adjacent region for dominance calculations. Plants that are included on the NWPL, but not within the Site region or an adjacent region, are not included in dominance calculations. Plants that are not found in wetlands in any region are considered "UPL" for dominance calculations.

Vegetation community sampling was accomplished using the methodologies outlined in the 2012 Supplement. The "50/20 rule" was applied to determine whether a species was dominant in its stratum. In using the 50/20 rule, the plants that comprise each stratum are ranked from highest to lowest in percent cover. The species that cumulatively equal or exceed 50 percent of the total percent cover for each stratum are dominant species, and any additional species that individually provides 20 percent or more percent cover is also considered dominant species of its respective strata.

A hydrophytic vegetation community is present when: 1) all of the dominant species are FACW and/or OBL (Rapid Test for Hydrophytic Vegetation); 2) greater than 50 percent of the dominant species' (as determined by the 50/20 rule) indicator statuses are FAC, FACW, or OBL (Dominance Test); and/or 3) when the calculated Prevalence Index is equal to or less than 3.0. When applying the Prevalence Index, all plants are assigned a numeric value based on indicator status (OBL = 1, FACW = 2, FAC = 3, FACU = 4, and UPL = 5) and their abundance (absolute percent cover) is used to calculate the prevalence index.

Cover types are also assigned to each wetland and waterbody in accordance with the system presented in *The Classification of Wetlands and Deepwater Habitats of the United States, Second Edition* (Federal Geographic Data Committee, 2013).

4.2.2 Hydric Soil Methodologies

Hydric soil indicators described in *Field Indicators for Identifying Hydric Soils in New England, Version 4* (New England Hydric Soils Technical Committee, 2017) and in *Field Indicators of Hydric Soils in the United States, Version 8.2* (NRCS, 2018) were used to determine the presence of characteristic soil morphologies resulting from prolonged saturation and/or inundation. Soil color was described using standard color notations provided on Munsell® soil color charts (X-Rite, Inc., 2015). Soil texture was determined using the methods described by Thien (1979). Soil test pits were dug using a spade shovel to a depth of approximately 20 inches or more (if needed).

Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin (MLRA Handbook) (USDA NRCS, 2006) was referenced to determine the hydric soil indicators that apply to the Site. Per the MLRA Handbook, the Site is within Major Land Resource Area (MLRA) 144A (New England and Eastern New York Upland, Southern Part) of Land Resource Region (LRR) R (Northeastern Forage and Forest Region). Hydric soil indicators that do not apply to this MLRA were not considered on the wetland determination data forms.

The presence or absence of hydric soils was determined through examination of samples extracted with a hand shovel or hand auger from the upper horizons of the soil profile. Soils were examined to depths of approximately 18 to 20 inches, unless restrictive layers such as hard pan, rock, densely packed fill materials, etc. were encountered at shallower depths.

4.2.3 Wetland Hydrology Methodologies

Per the 1987 Manual:

> *The term "wetland hydrology" encompasses all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface at some time during the growing season. Areas with evident characteristics of wetland hydrology are those where the presence of water has an overriding influence on characteristics of vegetation and soils due to anaerobic and reducing conditions, respectively. Such characteristics are usually present in areas that are inundated or have soils that are saturated to the surface for sufficient duration to develop hydric soils and support vegetation typically adapted for life in periodically anaerobic soil conditions. Hydrology is often the least exact of the parameters, and indicators of wetland hydrology are sometimes difficult to find in the field. However, it is essential to establish that a wetland area is periodically inundated or has saturated soils during the growing season.* (Environmental Laboratory, 1987)

Wetland hydrology indicators are grouped into 18 primary and 11 secondary indicators presented in the Supplement. The USACE considers wetland hydrology to be present when at least one primary indicator or two secondary indicators are identified.

5.0 Results

5.1 Upland Areas

The upland areas consist of successional forests throughout most the Site. The dominant vegetation in the uplands consists of sweet birch (*Betula lenta*), red maple (*Acer rubrum*), eastern white pine (*Pinus strobus*), eastern hemlock (*Tsuga canadensis*), American witch-hazel (*Hamamelis virginiana*), maple-leaf arrow-wood (*Viburnum acerifolium*), false lily-of-the-valley (*Maianthemum canadense*), princess-pine (*Dendrolycopodium obscurum*), yellow birch (*Betula alleghaniensis*), partridge berry (*Mitchella ripens*), northern lady fern (*Athyrium angustum*), glossy false buckthorn (*Frangula alnus*), northern white oak (*Quercus alba*), mountain-laurel (*Kalmia latifolia*), late lowbush blueberry (*Vaccinium angustifolium*), northern red oak (*Quercus rubra*), one-flower Indian-pipe (*Monotropa uniflora*), cinnamon fern (*Osmundastrum cinnamomeum*), and hay-scented fern (*Dennstaedtia punctilobula*). The terrain of the Site is steeply sloping to the north and east in the western portion of the Site and gently sloping west in the eastern portion of the Site. The soils observed throughout upland portions of the Site were generally classified as loamy sand and sandy loam.

5.2 Delineated Wetlands and Waterbodies

TRC identified five wetlands and two waterbodies within the Site during the July and August 2020 resource delineation effort (Figure 2 in Appendix A). Delineated areas are described in the following sections and summarized at the end of this section in Table 2. Refer to the photographs in Appendix B and the wetland determination data forms in Appendix C for further details about each delineated area.

5.2.1 Delineated Wetlands

Wetland W-MJR-1 is a palustrine forested (PFO) wetland associated with stream S-MJR-1. This wetland is located along the eastern edge of the Site and extends off-site to the north, east, and south. The dominant vegetation included red maple, eastern hemlock, yellow birch, highbush blueberry (*Vaccinium corymbosum*), mountain-laurel, cinnamon fern, and spotted touch-me-not (*Impatiens capensis*). Indicators of wetland hydrology included saturation, geomorphic position, microtopographic relief, and the FAC-neutral test. Soils were composed of a thick layer of dark muck on top of silty clay loam. This soil meets Hydric Soil Indicator A1 as described in *Field Indicators of Hydric Soils in the United States, Version 8.2* (Field Indicators) (USDA NRCS, 2018). ***This wetland is MassDEP jurisdictional and it also falls under USACE jurisdiction, as it is likely connected to other WOUS.***

Wetland W-MJR-2 is a PFO wetland located on the southern boundary in the eastern half of the Site and extends off-site to the south. The dominant vegetation included eastern hemlock, red maple, yellow birch, American witch-hazel, and cinnamon fern. Indicators of wetland hydrology included geomorphic position and microtopographic relief. Soils were composed of a layer of dark sandy loam over grayish-brown sandy clay loam with redoximorphic concentrations in the matrix. This soil meets Hydric Soil Indicator F3 as described in *Field Indicators of Hydric Soils in the United States, Version 8.2* (Field Indicators) (USDA NRCS, 2018). ***This wetland is likely MassDEP jurisdictional and it also falls under USACE jurisdiction, as it is likely connected to other WOUS.***

Wetland W-MJR-3 is partially a palustrine shrub/scrub (PSS) and partially a PFO wetland with two small sections of palustrine emergent (PEM) wetland skirting the northwestern and southeastern edges of the wetland. The wetland is in the center of the Site and extends off-site to the south. The dominant vegetation within the PEM portion of the wetland included white meadowsweet (*Spiraea alba*) and swamp smartweed (*Persicaria hydropiperoides*). The dominant vegetation within the PSS portion of the wetland included speckled alder (*Alnus incana*), glossy false buckthorn, fringed sedge (*Carex crinita*), and spotted touch-me-not. The dominant vegetation within the PFO portion of the wetland included eastern hemlock, red maple, glossy false buckthorn, and spotted touch-me-not. Indicators of wetland hydrology within the PEM portion of the wetland included surface water, saturation, inundation visible on aerial imagery, geomorphic position, and the FAC-neutral test. Indicators of wetland hydrology within the PSS portion of the wetland included saturation, saturation visible on aerial imagery, geomorphic position, and the FAC-neutral test. Indicators of wetland hydrology within the PFO portion of the wetland included water0stained leaves and geomorphic position. Soils within the PEM portion were unobtainable due to inundation. Soils within the PSS portion were composed of a thick layer of dark mucky peat. Soils within the PFO portion were composed of a layer of dark loamy sand on top of a thick layer of brown sandy loam with redoximorphic concentrations in the matrix. The soil within the PEM portion of the wetland was not able to be sampled and therefore did not meet any Hydric Soil Indicator; however, according to the NRCS Web Soil Survey, the wetland's soil map unit has a high HSR (i.e., 88 percent). The soil within the PSS portion of the wetland meets Hydric soil indicator A1 according to the Field Indicators (USDA NRCS, 2018). The soil within the PFO portion of the wetland did not meet any Hydric Soil Indicator; however, according to the NRCS Web Soil Survey, the wetland's soil map unit has a high HSR (i.e., 88 percent). ***This wetland is likely MassDEP jurisdictional and it also falls under USACE jurisdiction, as it is likely connected to other WOUS.***

Wetland W-MJR-4 is a PFO wetland located in the center of the Site and extends off-site to the north and south. The dominant vegetation included eastern hemlock, red maple, mountain-laurel, yellow birch, cinnamon fern, and sensitive fern (*Onoclea sensibilis*). Indicators of wetland hydrology included saturation, water-stained leaves, drainage patterns, geomorphic position, and microtopographic relief. Soils were composed of a layer of dark mucky peat over dark-greenish gray sandy loam with redoximorphic concentrations in the matrix. This soil meets hydric soil indicators A11 and F3 as described in the Field Indicators (USDA NRCS, 2018). ***This wetland is MassDEP jurisdictional and it also falls under USACE jurisdiction, as it is likely connected to other WOUS.***

Wetland W-MJR-5 is a PFO wetland located in the northwest corner of the Site and extends off-site to the north. The dominant vegetation within this wetland included red maple, yellow birch, eastern hemlock, northern spicebush (*Lindera benzoin*), American witch-hazel, cinnamon fern, and false lily-of-the-valley. Indicators of wetland hydrology included high water table and saturation. Soils were composed of a thick layer of dark muck over gray sandy clay loam with redoximorphic concentrations in the matrix. This soil meets Hydric Soil Indicators A2 and A11 as described in the Field Indicators (USDA NRCS, 2018). ***This wetland is likely MassDEP jurisdictional and it also falls under USACE jurisdiction, as it is likely connected to other WOUS.***

5.2.2 Delineated Waterbodies

Stream S-MJR-1 is an intermittent stream (R4, NWI classification) that flows out of wetland W-MJR-1 off-site to the south. The streambed was comprised of silt and clay. TRC observed an average width of approximately 15 feet and a water depth of approximately 10 inches. Stream S-MJR-1 has defined banks slightly wider than the OHWM at approximately 17 feet wide. The bank was delineated on both sides of the stream.

The USGS maps stream S-MJR-1 as intermittent. The USGS StreamStats analysis in Appendix E shows that it has a watershed of less than 0.5 square miles and has a predicted flow rate of less than 0.01 cubic feet per second at the 99% flow duration. Therefore, this stream is considered intermittent. ***This stream is MassDEP jurisdictional and falls under USACE jurisdiction, as it is likely connected to other WOUS.***

Stream S-MJR-2 is an intermittent stream (R4, NWI classification) that flows out of wetland W-MJR-4 off-site to the north. The streambed was comprised of silt and clay. TRC observed an average width of approximately 6 feet and a water depth of approximately 0 inches. Stream S-MJR-1 has defined banks slightly wider than the OHWM at approximately 7 feet wide. The bank was delineated on both sides of the stream.

While the USGS maps stream S-MJR-2 as perennial, the USGS StreamStats analysis in Appendix E shows that it has a predicted flow rate greater than 0.01 cubic feet per second at the 99% flow duration but has a watershed that is less than 0.5 square miles. Therefore, this stream is considered intermittent. ***This stream is MassDEP jurisdictional and falls under USACE jurisdiction, as it is likely connected to other WOUS.***

Table 2. Delineated Wetlands and Waterbodies

Wetland Field Designation	Field Designated NWI Classification [1]	Assumed Jurisdictional Status	Assumed Buffer/ Setback Requirements
W-MJR-1	PFO	USACE/MassDEP/Local	100-ft buffer zone
W-MJR-2	PFO	USACE/MassDEP/Local	100-ft buffer zone
W-MJR-3	PEM/PSS/PFO	USACE/MassDEP/Local	100-ft buffer zone
W-MJR-4	PFO	USACE/MassDEP/Local	100-ft buffer zone
W-MJR-5	PFO	USACE/MassDEP/Local	100-ft buffer zone
S-MJR-1	R4	USACE/MassDEP/Local	100-ft buffer zone
S-MJR-2	R4	USACE/MassDEP/Local	100-ft buffer zone

[1] *The Classification of Wetlands and Deepwater Habitats of the United States, Second Edition* (Federal Geographic Data Committee, 2013). Categories include: Palustrine Forested (PFO), Palustrine Shrub-Scrub (PSS), Palustrine Emergent (PEM), and Riverine Intermittent (R4).

6.0 Conclusions

It is TRC's opinion that delineated wetlands W-MJR-1, W-MJR-2, W-MJR-3, W-MJR-4, and W-MJR-5 are BVWs regulated by MassDEP and are also likely under USACE jurisdiction. There are no buffers or setbacks associated with USACE-regulated wetlands. However, there is a 100-foot buffer zone associated with MassDEP- and SCC-regulated wetlands.

R4 streams S-MJR-1 and S-MJR-2 are USACE jurisdictional, as they are hydrologically connected to WOUS. These streams are also regulated by the MassDEP, as they flow within, into, or out of a MassDEP-regulated wetland resource areas.

Final determination of jurisdictional status for on-site wetlands and waterbodies must be made by the regulators.

7.0 References

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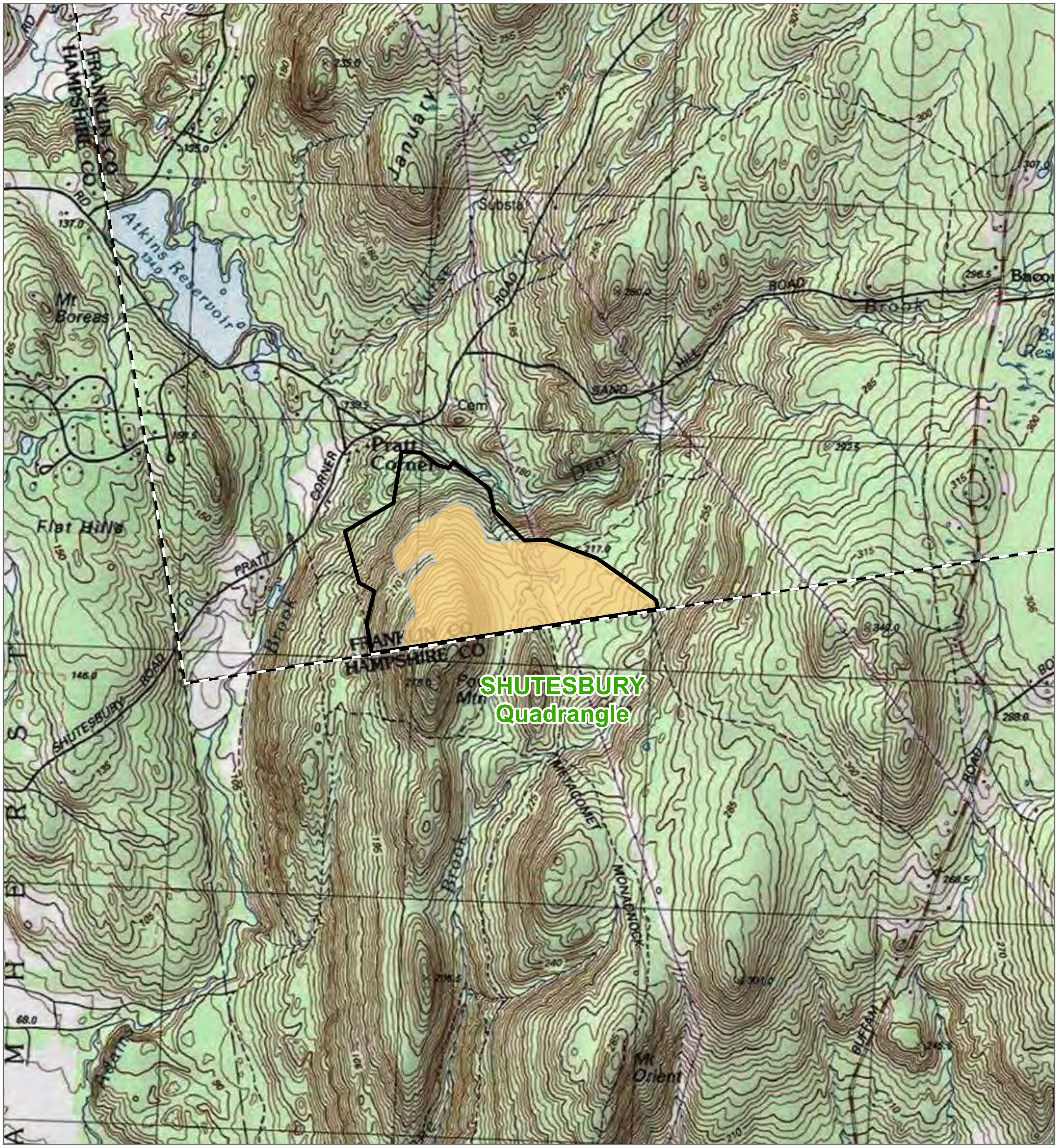
Appendix A: Figures



PROJECT PARCEL

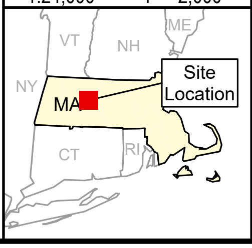
STUDY AREA

COUNTY BOUNDARY

0 1,000 2,000

FEET

1:24,000 1" = 2,000'



BASE MAP: USA TOPOGRAPHIC MAP
DATA SOURCES: ESRI, TRC 2020

PROJECT:

PRATT SOUTH PROJECT

SHUTESBURY, FRANKLIN COUNTY, MA

TITLE:

SITE LOCATION MAP

DRAWN BY:	P. JACQUES	PROJ. NO.:	402186.0000.0000
CHECKED BY:	A. THOMPSON	**FIGURE 1**	
APPROVED BY:	M. LENNON		
DATE:	SEPTEMBER 2020		

TRC
6 Ashley Drive
1st Floor
Scarborough, ME 04074
Phone: 207.879.1930

FILE: Pratt_South

Coordinate System: NAD 1983 StatePlane Massachusetts Mainland FIPS 2001 Feet; Map Rotation: 0
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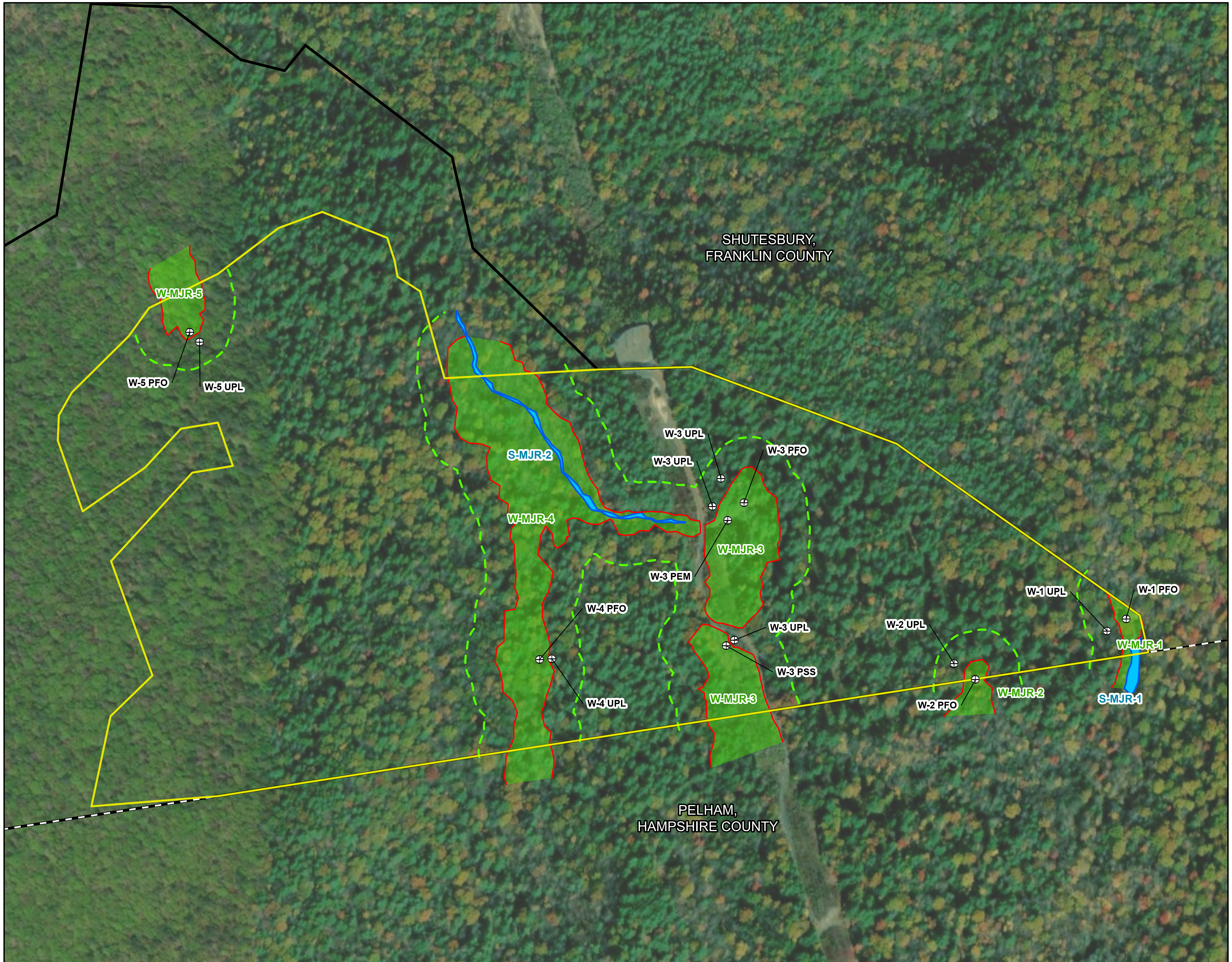
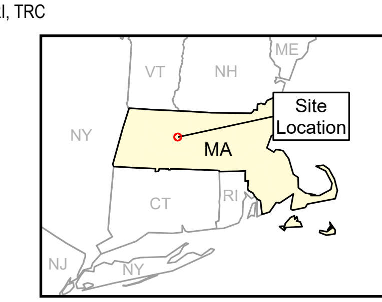


PROJECT AREA
PROJECT PARCEL
USACE PLOT
DELINEATED INTERMITTENT STREAM
DELINEATED WATERBODY
WETLAND BOUNDARY LINE
DELINEATED WETLAND
100-FT WETLAND BUFFER
TOWN BOUNDARY

BASE MAP: ESRI & CONTRIBUTORS, "WORLD IMAGERY"
DATA SOURCES: ESRI, TRC



N

1:3,900
1" = 325'
0 325 650 FEET

PROJECT:	**PRATT SOUTH PROJECT** SHUTESBURY, FRANKLIN COUNTY, MA
TITLE:	**WETLAND DELINEATION**

DRAWN BY:	P. JACQUES	PROJ. NO.:	402186.0000.0000
CHECKED BY:	A. THOMPSON	**FIGURE 2**	
APPROVED BY:	M. LENNON		
DATE:	SEPTEMBER 2020		

TRC
6 Ashley Drive
1st Floor
Scarborough, ME 04074
Phone: 207.879.1930

FILE: Pratt_South

Coordinate System: NAD 1983 StatePlane New Hampshire FIPS 2800 Feet; Map Rotation: 0
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Appendix B: Photographs

<table>
<tr><th colspan="2">PRATT SOUTH PROJECT
PRATT CORNER ROAD, SHUTESBURY, MASSACHUSETTS</th></tr>
<tr><td>Photograph: 1
Date: 7/29/2020
Direction: West
Description:
Representative conditions at Wetland W-MJR-1.</td><td></td></tr>
<tr><td>Photograph: 2
Date: 7/30/2020
Direction: East
Description:
Representative conditions at Wetland W-MJR-4.</td><td></td></tr>
</table>

PRATT SOUTH PROJECT PRATT CORNER ROAD, SHUTESBURY, MASSACHUSETTS	
Photograph: 3 Date: 8/3/2020 Direction: South Description: Representative conditions in uplands near Wetland W-MJR-5.	
Photograph: 4 Date: 8/3/2020 Direction: North Description: Representative conditions at Wetland W-MJR-5.	

<table>
<tr><th colspan="2">PRATT SOUTH PROJECT
PRATT CORNER ROAD, SHUTESBURY, MASSACHUSETTS</th></tr>
<tr><td>Photograph: 5
Date: 7/29/2020
Direction: South
Description:
Representative conditions at Wetland W-MJR-2.</td><td></td></tr>
<tr><td>Photograph: 6
Date: 7/30/2020
Direction: South
Description:
Representative conditions in PEM portion of Wetland W-MJR-3.</td><td></td></tr>
</table>

<table>
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PRATT CORNER ROAD, SHUTESBURY, MASSACHUSETTS</td></tr>
<tr><td>Photograph: 7
Date: 7/30/2020
Direction: South
Description:
Representative conditions in PFO portion of Wetland W-MJR-3.</td><td></td></tr>
<tr><td>Photograph: 8
Date: 7/30/2020
Direction: North
Description:
Representative conditions in uplands in Right-of-Way near Wetland W-MJR-3.</td><td></td></tr>
</table>

Appendix C: Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Pratt South **City/County:** Shutesbury, Franklin **Sampling Date:** 2020-July-29

Applicant/Owner: W.D. Cowls, Inc. **State:** MA **Sampling Point:** W-PMO-01_PFO-1

Investigator(s): Matt Regan, Molly Lennon, Caroline Harrington **Section, Township, Range:** ____

Landform(hillslope,terrace,etc.): Swamp **Local relief (concave, convex, none):** Concave **Slope (%):** 0 to 1

Subregion(LRRorMLRA): MLRA 144A of LRR R **Lat:** 42.4108323316 **Long:** -72.4596094061 **Datum:** WGS84

SoilMapUnitName: Hinckley loamy sand, 8 to 15 percent slopes **NWI classification:** ____

Areclimatic/hydrologicconditionsonthesitetypicalforthistimeofyear? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✓ No ____		
Hydric Soil Present?	Yes ✓ No ____	**Is the Sampled Area within a Wetland?**	**Yes ✓ No ____**
Wetland Hydrology Present?	Yes ✓ No ____	**If yes, optional Wetland Site ID:**	W-PMO-01

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

Covertype is PFO.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ____ No ✓	Depth (inches):	
Water Table Present?	Yes ____ No ✓	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ✓ No ____	Depth (inches):	0

Wetland Hydrology Present? Yes ✓ No ____

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

Remarks:

Sampling Point: W-PMO-01_PFO-1

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	10	Yes	FAC
2. *Tsuga canadensis*	10	Yes	FACU
3. *Betula alleghaniensis*	10	Yes	FAC
4. *Fraxinus pennsylvanica*	5	No	FACW
5.			
6.			
7.			
	35	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. *Vaccinium corymbosum*	35	Yes	FACW
2. *Kalmia latifolia*	15	Yes	FACU
3.			
4.			
5.			
6.			
7.			
	50	= Total Cover	
Herb Stratum (Plot size: 5 ft)			
1. *Osmundastrum cinnamomeum*	25	Yes	FACW
2. *Impatiens capensis*	20	Yes	FACW
3. *Symplocarpus foetidus*	15	No	OBL
4. *Kalmia latifolia*	10	No	FACU
5. *Onoclea sensibilis*	5	No	FACW
6. *Carex crinita*	5	No	OBL
7.			
8.			
9.			
10.			
11.			
12.			
	80	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across All Strata:	7	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	71.4	(A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply By:	
OBL species	20	x 1 =	20
FACW species	90	x 2 =	180
FAC species	20	x 3 =	60
FACU species	35	x 4 =	140
UPL species	0	x 5 =	0
Column Totals	165	(A)	400 (B)

Prevalence Index = B/A = 2.4

Hydrophytic Vegetation Indicators:

_____ 1- Rapid Test for Hydrophytic Vegetation
✓ 2 - Dominance Test is >50%
✓ 3 - Prevalence Index is ≤ 3.0[1]
_____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
_____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes ✓ No _____

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

SOIL

Sampling Point: W-PMO-01_PFO-1

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

Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type¹	Loc²		
0 - 18	2.5Y 2.5/1	100					Muck	
18 - 24	10Y 5/1	100					Silty Clay Loam	

¹Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked 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) **(LRR R, MLRA 149B)**
___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
___ Loamy Mucky Mineral (F1) **(LRR K, L)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric 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)**
___ Dark Surface (S7) **(LRR K, L)**
___ Polyvalue Below Surface (S8) **(LRR K, L)**
___ Thin Dark Surface (S9) **(LRR K, L)**
___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):
Type: None
Depth (inches):

Hydric Soil Present? Yes ✓ No ____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Pratt South **City/County:** Shutesbury, Hampshire **Sampling Date:** 2020-July-29
Applicant/Owner: W.D. Cowls, Inc. **State:** MA **Sampling Point:** W-PMO-01_UPL-1
Investigator(s): Matt Regan, Molly Lennon, Caroline Harrington **Section, Township, Range:** ____
Landform(hillslope,terrace,etc.): Hillslope **Local relief (concave, convex, none):** Concave **Slope (%):** 1 to 3
Subregion(LRRorMLRA): MLRA 144A of LRR R **Lat:** 42.4107729039 **Long:** -72.4597373978 **Datum:** WGS84
SoilMapUnitName: Hinckley loamy sand, 8 to 15 percent slopes **NWI classification:** ____
Areclimatic/hydrologicconditionsonthesitetypicalforthistimeofyear? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ____ No ✓		
Hydric Soil Present?	Yes ____ No ✓	**Is the Sampled Area within a Wetland?**	**Yes ____ No ✓**
Wetland Hydrology Present?	Yes ____ No ✓	**If yes, optional Wetland Site ID:**	

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

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ____ No ✓	Depth (inches): ____		
Water Table Present?	Yes ____ No ✓	Depth (inches): ____	**Wetland Hydrology Present?**	Yes ____ No ✓
Saturation Present? (includes capillary fringe)	Yes ____ No ✓	Depth (inches): ____		

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

Remarks:

Sampling Point: W-PMO-01_UPL-1

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Betula lenta*	20	Yes	FACU
2. *Acer rubrum*	10	Yes	FAC
3. *Pinus strobus*	10	Yes	FACU
4. *Tsuga canadensis*	10	Yes	FACU
5.			
6.			
7.			
	50	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. *Hamamelis virginiana*	25	Yes	FACU
2. *Pinus strobus*	15	Yes	FACU
3. *Acer pensylvanicum*	10	No	FACU
4. *Not Listed Plant*	5	No	NI
5.			
6.			
7.			
	55	= Total Cover	
Herb Stratum (Plot size: 5 ft)			
1. *Viburnum acerifolium*	12	Yes	UPL
2. *Maianthemum canadense*	10	Yes	FACU
3. *Dendrolycopodium obscurum*	10	Yes	FACU
4. *Vaccinium angustifolium*	5	No	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	37	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
3.			
4.			
	0	= 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:	9	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	11.1	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply By:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	10	x 3 =	30
FACU species	115	x 4 =	460
UPL species	12	x 5 =	60
Column Totals	137	(A)	550 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

_____ 1- Rapid Test for Hydrophytic Vegetation

_____ 2 - Dominance Test is > 50%

_____ 3 - Prevalence Index is ≤ 3.0[1]

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

_____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes _____ No ✓

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

SOIL

Sampling Point: W-PMO-01_UPL-1

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 3	7.5YR 3/2	100					Loamy Sand	
3 - 20	10YR 5/3	100					Loamy Sand	

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

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) **(LRR R, MLRA 149B)**
___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
___ Loamy Mucky Mineral (F1) **(LRR K, L)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):
Type: None
Depth (inches): ______

Hydric Soil Present? Yes _____ No ✓

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Pratt South **City/County:** Shutesbury, Franklin **Sampling Date:** 2020-July-29
Applicant/Owner: W.D. Cowls, Inc. **State:** MA **Sampling Point:** W-PMO-02_PFO-1
Investigator(s): Matt Regan, Molly Lennon, Caroline Harrington **Section, Township, Range:** ____
Landform(hillslope,terrace,etc.): Depression **Local relief (concave, convex, none):** Concave **Slope (%):** 0 to 1
Subregion(LRRorMLRA): MLRA 144A of LRR R **Lat:** 42.4102973147 **Long:** -72.4614644051 **Datum:** WGS84
SoilMapUnitName: Hinckley loamy sand, 8 to 15 percent slopes **NWI classification:** ____
Areclimatic/hydrologicconditionsonthesitetypicalforthistimeofyear? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation ___, Soil ___, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation ___, Soil ___, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✓ No ____		
Hydric Soil Present?	Yes ✓ No ____	**Is the Sampled Area within a Wetland?**	**Yes ✓ No ____**
Wetland Hydrology Present?	Yes ✓ No ____	**If yes, optional Wetland Site ID:**	W-PMO-02

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

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ____ No ✓	Depth (inches):	
Water Table Present?	Yes ____ No ✓	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ____ No ✓	Depth (inches):	

Wetland Hydrology Present? Yes ✓ No ____

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

Remarks:

Sampling Point: W-PMO-02_PFO-1

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Tsuga canadensis*	30	Yes	FACU
2. *Acer rubrum*	10	Yes	FAC
3. *Quercus rubra*	5	No	FACU
4.			
5.			
6.			
7.			
	45	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. *Betula alleghaniensis*	30	Yes	FAC
2. *Hamamelis virginiana*	20	Yes	FACU
3. *Osmundastrum cinnamomeum*	0	No	FACW
4.			
5.			
6.			
7.			
	50	= Total Cover	
Herb Stratum (Plot size: 5 ft)			
1. *Osmundastrum cinnamomeum*	60	Yes	FACW
2. *Acer pensylvanicum*	5	No	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	65	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	60	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply By:	
OBL species	0	x 1 =	0
FACW species	60	x 2 =	120
FAC species	40	x 3 =	120
FACU species	60	x 4 =	240
UPL species	0	x 5 =	0
Column Totals	160	(A)	480 (B)

Prevalence Index = B/A = 3

Hydrophytic Vegetation Indicators:

____ 1- Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

✓ 3 - Prevalence Index is ≤ 3.0[1]

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

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes ✓ No ____

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

SOIL

Sampling Point: W-PMO-02_PFO-1

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

Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0 - 5	10YR 2/2	100					Sandy Loam	
5 - 20	10YR 5/2	95	10YR 5/6	5	C	M	Sandy Clay Loam	

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: None

Depth (inches):

Hydric Soil Present? **Yes** ✓ **No** ____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Pratt South **City/County:** Shutesbury, Franklin **Sampling Date:** 2020-July-29

Applicant/Owner: W.D. Cowls, Inc. **State:** MA **Sampling Point:** W-PMO-02_UPL-1

Investigator(s): Matt Regan, Molly Lennon, Caroline Harrington **Section, Township, Range:** ____

Landform(hillslope,terrace,etc.): Flat **Local relief (concave, convex, none):** None **Slope (%):** 0 to 1

Subregion(LRRorMLRA): MLRA 144A of LRR R **Lat:** 42.4103392242 **Long:** -72.4618152716 **Datum:** WGS84

SoilMapUnitName: Hinckley loamy sand, 8 to 15 percent slopes **NWI classification:** ____

Areclimatic/hydrologicconditionsonthesitetypicalforthistimeofyear? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ____ No ✓		
Hydric Soil Present?	Yes ____ No ✓	**Is the Sampled Area within a Wetland?**	**Yes ____ No ✓**
Wetland Hydrology Present?	Yes ____ No ✓	**If yes, optional Wetland Site ID:**	____

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

Covertype is UPL.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ____ No ✓	Depth (inches):	____
Water Table Present?	Yes ____ No ✓	Depth (inches):	____
Saturation Present? (includes capillary fringe)	Yes ____ No ✓	Depth (inches):	____

Wetland Hydrology Present? Yes ____ No ✓

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

Remarks:

VEGETATION -- Use scientific names of plants.

Sampling Point: W-PMO-02_UPL-1

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pinus strobus*	30	Yes	FACU
2. *Tsuga canadensis*	20	Yes	FACU
3. *Acer rubrum*	10	No	FAC
4.			
5.			
6.			
7.			
	60	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. *Betula alleghaniensis*	25	Yes	FAC
2. *Hamamelis virginiana*	20	Yes	FACU
3. *Acer rubrum*	10	No	FAC
4.			
5.			
6.			
7.			
	55	= Total Cover	
Herb Stratum (Plot size: 5 ft)			
1. *Mitchella repens*	10	Yes	FACU
2. *Athyrium angustum*	10	Yes	FAC
3. *Viburnum acerifolium*	5	Yes	UPL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	25	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	7	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	28.6	(A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply By:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	55	x 3 =	165
FACU species	80	x 4 =	320
UPL species	5	x 5 =	25
Column Totals	140	(A)	510 (B)

Prevalence Index = B/A = 3.6

Hydrophytic Vegetation Indicators:

_____ 1- Rapid Test for Hydrophytic Vegetation
_____ 2 - Dominance Test is > 50%
_____ 3 - Prevalence Index is ≤ 3.0[1]
_____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
_____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes _____ No ✓

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

SOIL

Sampling Point: W-PMO-02_UPL-1

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

Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type¹	Loc²		
0 - 2	7.5YR 2.5/2	100					Loamy Sand	
2 - 20	7.5YR 4/4	100					Loamy Sand	

¹Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked 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) **(LRR R, MLRA 149B)**
___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
___ Loamy Mucky Mineral (F1) **(LRR K, L)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric 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)**
___ Dark Surface (S7) **(LRR K, L)**
___ Polyvalue Below Surface (S8) **(LRR K, L)**
___ Thin Dark Surface (S9) **(LRR K, L)**
___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):
Type: None
Depth (inches):

Hydric Soil Present? Yes ____ No ✓

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Pratt South **City/County:** Shutesbury, Franklin **Sampling Date:** 2020-July-30

Applicant/Owner: W.D. Cowls, Inc. **State:** MA **Sampling Point:** W-PMO-03_PEM-1

Investigator(s): Matt Regan, Caroline Harrington **Section, Township, Range:** ____

Landform (hillslope, terrace, etc.): Marsh **Local relief (concave, convex, none):** Concave **Slope (%):** 0 to 1

Subregion (LRR or MLRA): MLRA 144A of LRR R **Lat:** 42.4116000301 **Long:** -72.4644833152 **Datum:** WGS84

Soil Map Unit Name: Ridgebury fine sandy loam, 3 to 8 percent slopes, extremely stony **NWI classification:** ____

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✓ No ____		
Hydric Soil Present?	Yes ✓ No ____	**Is the Sampled Area within a Wetland?**	**Yes ✓ No ____**
Wetland Hydrology Present?	Yes ✓ No ____	**If yes, optional Wetland Site ID:**	W-PMO-03

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

Covertype is PEM.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ✓ No ____	Depth (inches):	6
Water Table Present?	Yes ✓ No ____	Depth (inches):	0
Saturation Present? (includes capillary fringe)	Yes ✓ No ____	Depth (inches):	0

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: W-PMO-03_PEM-1

Tree Stratum (Plot size: 30 ft)

	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15 ft)

	Absolute % Cover	Dominant Species?	Indicator Status
1. *Spiraea alba*	5	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	5	= Total Cover	

Herb Stratum (Plot size: 5 ft)

	Absolute % Cover	Dominant Species?	Indicator Status
1. *Persicaria hydropiperoides*	65	Yes	OBL
2. *Sparganium eurycarpum*	10	No	OBL
3. *Scirpus atrovirens*	10	No	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	85	= Total Cover	

Woody Vine Stratum (Plot size: 30 ft)

	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply By:	
OBL species	85	x 1 =	85
FACW species	5	x 2 =	10
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals	90	(A)	95 (B)

Prevalence Index = B/A = 1.1

Hydrophytic Vegetation Indicators:

✓ 1- Rapid Test for Hydrophytic Vegetation
✓ 2 - Dominance Test is >50%
✓ 3 - Prevalence Index is ≤ 3.0[1]
____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes ✓ No ____

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

SOIL

Sampling Point: W-PMO-03_PEM-1

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

Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
-								

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: None

Depth (inches):

Hydric Soil Present? Yes ✓ No ____

Remarks:

Due to inundation a clear soil profile was unobtainable. Soils are assumed to be hydric. Soils were assumed to be hydric due to the presence of inundation, FACW and OBL vegetation species, and a definitive wetland boundary.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Pratt South **City/County:** Shutesbury, Franklin **Sampling Date:** 2020-July-30

Applicant/Owner: W.D. Cowls, Inc. **State:** MA **Sampling Point:** W-PMO-03_PFO-1

Investigator(s): Matt Regan, Caroline Harrington **Section, Township, Range:** ______

Landform (hillslope, terrace, etc.): Depression **Local relief (concave, convex, none):** None **Slope (%):** 0 to 1

Subregion (LRR or MLRA): MLRA 144A of LRR R **Lat:** 42.4117895449 **Long:** -72.4647564814 **Datum:** WGS84

Soil Map Unit Name: Ridgebury fine sandy loam, 3 to 8 percent slopes, extremely stony **NWI classification:** ______

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ___, Soil ___, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✓ No ____		
Hydric Soil Present?	Yes ✓ No ____	**Is the Sampled Area within a Wetland?**	**Yes ✓ No ____**
Wetland Hydrology Present?	Yes ✓ No ____	**If yes, optional Wetland Site ID:**	W-PMO-03

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

Covertype is PFO.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ____ No ✓	Depth (inches):	
Water Table Present?	Yes ____ No ✓	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ____ No ✓	Depth (inches):	

Wetland Hydrology Present? Yes ✓ No ____

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

Remarks:

VEGETATION -- Use scientific names of plants.

Sampling Point: W-PMO-03_PFO-1

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Tsuga canadensis*	40	Yes	FACU
2. *Acer rubrum*	25	Yes	FAC
3.			
4.			
5.			
6.			
7.			
	65	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. *Tsuga canadensis*	25	Yes	FACU
2. *Frangula alnus*	20	Yes	FAC
3.			
4.			
5.			
6.			
7.			
	45	= Total Cover	
Herb Stratum (Plot size: 5 ft)			
1. *Impatiens capensis*	10	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	10	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	60	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply By:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	45	x 3 =	135
FACU species	65	x 4 =	260
UPL species	0	x 5 =	0
Column Totals	120	(A)	415 (B)

Prevalence Index = B/A = 3.5

Hydrophytic Vegetation Indicators:

____ 1- Rapid Test for Hydrophytic Vegetation
✓ 2 - Dominance Test is >50%
____ 3 - Prevalence Index is ≤ 3.0[1]
____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes ✓ No ____

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

SOIL

Sampling Point: W-PMO-03_PFO-1

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

Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0 - 3	10YR 3/1	100					Loamy Sand	
3 - 10	10YR 4/3	95	10YR 5/6	5	C	M	Sandy Loam	

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: None

Depth (inches):

Hydric Soil Present? Yes _✓_ No ____

Remarks:

According to the USDA NRCS the mapped soil type is classified as hydric.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Pratt South **City/County:** Shutesbury, Hampshire **Sampling Date:** 2020-July-30
Applicant/Owner: W.D. Cowls, Inc. **State:** MA **Sampling Point:** W-PMO-03_PSS-1
Investigator(s): Matt Regan, Caroline Harrington **Section, Township, Range:** ____
Landform(hillslope,terrace,etc.): Swamp **Local relief (concave, convex, none):** Concave **Slope (%):** 0 to 1
Subregion(LRRorMLRA): MLRA 144A of LRR R **Lat:** 42.410388887 **Long:** -72.464897465 **Datum:** WGS84
SoilMapUnitName: Hinckley loamy sand, 8 to 15 percent slopes **NWI classification:** ____
Areclimatic/hydrologicconditionsonthesitetypicalforthistimeofyear? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✓ No ____		
Hydric Soil Present?	Yes ✓ No ____	**Is the Sampled Area within a Wetland?**	**Yes ✓ No ____**
Wetland Hydrology Present?	Yes ✓ No ____	**If yes, optional Wetland Site ID:**	W-PMO-03

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

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ____ No ✓	Depth (inches):		
Water Table Present?	Yes ____ No ✓	Depth (inches):		**Wetland Hydrology Present?** Yes ✓ No ____
Saturation Present? (includes capillary fringe)	Yes ✓ No ____	Depth (inches):	0	

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

Remarks:

Sampling Point: W-PMO-03_PSS-1

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. *Alnus incana*	30	Yes	FACW
2. *Frangula alnus*	25	Yes	FAC
3. *Aronia arbutifolia*	10	No	FACW
4. *Spiraea alba*	5	No	FACW
5.			
6.			
7.			
	70	= Total Cover	
Herb Stratum (Plot size: 5 ft)			
1. *Carex crinita*	60	Yes	OBL
2. *Impatiens capensis*	30	Yes	FACW
3. *Scirpus atrovirens*	10	No	OBL
4. *Typha latifolia*	5	No	OBL
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	105	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply By:	
OBL species	75	x 1 =	75
FACW species	75	x 2 =	150
FAC species	25	x 3 =	75
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals	175	(A)	300 (B)

Prevalence Index = B/A = 1.7

Hydrophytic Vegetation Indicators:

____ 1- Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

✓ 3 - Prevalence Index is ≤ 3.0[1]

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

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes ✓ No ____

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

SOIL

Sampling Point: W-PMO-03_PSS-1

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 20	2.5Y 2.5/1	100					Mucky Peat	

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

Hydric Soil Indicators:

_✓_ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) **(LRR R, MLRA 149B)**
___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
___ Loamy Mucky Mineral (F1) **(LRR K, L)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):
Type: None
Depth (inches):

Hydric Soil Present? Yes _✓_ No ____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Pratt South **City/County:** Shutesbury, Franklin **Sampling Date:** 2020-July-30
Applicant/Owner: W.D. Cowls, Inc. **State:** MA **Sampling Point:** W-PMO-03_UPL-1
Investigator(s): Matt Regan, Caroline Harrington **Section, Township, Range:** Hinckley loamy sand, 8 to 15 percent slopes
Landform(hillslope,terrace,etc.): Hillslope **Local relief (concave, convex, none):** Convex **Slope (%):** 1 to 3
Subregion(LRRorMLRA): MLRA 144A of LRR R **Lat:** 42.4105282361 **Long:** -72.4644694851 **Datum:** WGS84
SoilMapUnitName: 42.4105282361 **NWI classification:**
Areclimatic/hydrologicconditionsonthesitetypicalforthistimeofyear? Yes ✓ No ___ (If no, explain in Remarks.)
Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___
Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ___ No ✓		
Hydric Soil Present?	Yes ___ No ✓	**Is the Sampled Area within a Wetland?**	**Yes ___ No ✓**
Wetland Hydrology Present?	Yes ___ No ✓	**If yes, optional Wetland Site ID:**	

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

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ___ No ✓	Depth (inches):	
Water Table Present?	Yes ___ No ✓	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ___ No ✓	Depth (inches):	

Wetland Hydrology Present? Yes ___ No ✓

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

Remarks:

VEGETATION -- Use scientific names of plants.

Sampling Point: W-PMO-03_UPL-1

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. *Frangula alnus*	10	Yes	FAC
2. *Acer rubrum*	5	Yes	FAC
3. *Quercus alba*	5	Yes	FACU
4. *Pinus strobus*	5	Yes	FACU
5.			
6.			
7.			
	25	= Total Cover	
Herb Stratum (Plot size: 5 ft)			
1. *Kalmia latifolia*	30	Yes	FACU
2. *Vaccinium angustifolium*	30	Yes	FACU
3. *Comptonia peregrina*	15	No	UPL
4. *Solidago canadensis*	10	No	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	85	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	6	(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	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	15	x 3 =	45
FACU species	80	x 4 =	320
UPL species	15	x 5 =	75
Column Totals	110	(A)	440 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

____ 1- Rapid Test for Hydrophytic Vegetation
____ 2 - Dominance Test is > 50%
____ 3 - Prevalence Index is ≤ 3.0[1]
____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes ____ No ✓

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

SOIL

Sampling Point: W-PMO-03_UPL-1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0 - 3	10YR 3/2	100					Sandy Loam	
3 - 10	10YR 4/4	100					Loamy Sand	

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

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) **(LRR R, MLRA 149B)**
___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
___ Loamy Mucky Mineral (F1) **(LRR K, L)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):
Type: None
Depth (inches):

Hydric Soil Present? Yes _____ No ✓

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Pratt South **City/County:** Shutesbury, Franklin **Sampling Date:** 2020-July-30
Applicant/Owner: W.D. Cowls, Inc. **State:** MA **Sampling Point:** W-PMO-03_UPL-2
Investigator(s): Matt Regan, Caroline Harrington, Caroline Harrington **Section, Township, Range:** ____
Landform(hillslope,terrace,etc.): Hillslope **Local relief (concave, convex, none):** Convex **Slope (%):** 1 to 3
Subregion(LRRorMLRA): MLRA 144A of LRR R **Lat:** 42.4117103359 **Long:** -72.4644889311 **Datum:** WGS84
SoilMapUnitName: ____ **NWI classification:** ____
Areclimatic/hydrologicconditionsonthesitetypicalforthistimeofyear? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ____ No ✓		
Hydric Soil Present?	Yes ____ No ✓	**Is the Sampled Area within a Wetland?**	**Yes ____ No ✓**
Wetland Hydrology Present?	Yes ____ No ✓	**If yes, optional Wetland Site ID:**	____

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

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ____ No ✓	Depth (inches):	____
Water Table Present?	Yes ____ No ✓	Depth (inches):	____
Saturation Present? (includes capillary fringe)	Yes ____ No ✓	Depth (inches):	____

Wetland Hydrology Present? Yes ____ No ✓

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

Remarks:

VEGETATION -- Use scientific names of plants.

Sampling Point: W-PMO-03_UPL-2

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pinus strobus*	20	Yes	FACU
2. *Quercus rubra*	15	Yes	FACU
3. *Acer rubrum*	10	Yes	FAC
4.			
5.			
6.			
7.			
	45	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. *Tsuga canadensis*	25	Yes	FACU
2. *Betula lenta*	10	Yes	FACU
3. *Quercus rubra*	5	No	FACU
4.			
5.			
6.			
7.			
	40	= Total Cover	
Herb Stratum (Plot size: 5 ft)			
1. *Maianthemum canadense*	10	Yes	FACU
2. *Vaccinium angustifolium*	10	Yes	FACU
3. *Dendrolycopodium obscurum*	5	Yes	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	25	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
3.			
4.			
	0	= 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:	8	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	12.5	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply By:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	10	x 3 =	30
FACU species	100	x 4 =	400
UPL species	0	x 5 =	0
Column Totals	110	(A)	430 (B)

Prevalence Index = B/A = 3.9

Hydrophytic Vegetation Indicators:

____ 1- Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is > 50%

____ 3 - Prevalence Index is ≤ 3.0[1]

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

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes ____ No ✓

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

SOIL

Sampling Point: W-PMO-03_UPL-2

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

Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type¹	Loc²		
0 - 2	7.5YR 3/2	100					Loamy Sand	
2 - 8	10YR 4/4	100					Loamy Sand	

¹Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked 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) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric 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)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 8

Hydric Soil Present? Yes _____ No ✓

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Pratt South **City/County:** Shutesbury, Franklin **Sampling Date:** 2020-July-30

Applicant/Owner: W.D. Cowls, Inc. **State:** MA **Sampling Point:** W-PMO-03_UPL-3

Investigator(s): Matt Regan, Caroline Harrington **Section, Township, Range:** ____

Landform(hillslope,terrace,etc.): Hilltop **Local relief (concave, convex, none):** Convex **Slope (%):** 1 to 3

Subregion(LRRorMLRA): MLRA 144A of LRR R **Lat:** 42.4120350089 **Long:** -72.4646558986 **Datum:** WGS84

SoilMapUnitName: Hinckley loamy sand, 8 to 15 percent slopes **NWI classification:** ____

Areclimatic/hydrologicconditionsonthesitetypicalforthistimeofyear? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ____ No ✓		
Hydric Soil Present?	Yes ____ No ✓	**Is the Sampled Area within a Wetland?**	**Yes ____ No ✓**
Wetland Hydrology Present?	Yes ____ No ✓	**If yes, optional Wetland Site ID:**	

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

Covertype is UPL.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ____ No ✓	Depth (inches):	
Water Table Present?	Yes ____ No ✓	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ____ No ✓	Depth (inches):	

Wetland Hydrology Present? Yes ____ No ✓

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

Remarks:

Sampling Point: W-PMO-03_UPL-3

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)

	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pinus strobus*	25	Yes	FACU
2. *Tsuga canadensis*	15	Yes	FACU
3. *Acer rubrum*	10	Yes	FAC
4.			
5.			
6.			
7.			
	50	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15 ft)

	Absolute % Cover	Dominant Species?	Indicator Status
1. *Tsuga canadensis*	50	Yes	FACU
2. *Betula lenta*	30	Yes	FACU
3.			
4.			
5.			
6.			
7.			
	80	= Total Cover	

Herb Stratum (Plot size: 5 ft)

	Absolute % Cover	Dominant Species?	Indicator Status
1. *Athyrium angustum*	10	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	10	= Total Cover	

Woody Vine Stratum (Plot size: 30 ft)

	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	6	(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	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	20	x 3 =	60
FACU species	120	x 4 =	480
UPL species	0	x 5 =	0
Column Totals	140	(A)	540 (B)

Prevalence Index = B/A = 3.9

Hydrophytic Vegetation Indicators:

____ 1- Rapid Test for Hydrophytic Vegetation
____ 2 - Dominance Test is > 50%
____ 3 - Prevalence Index is ≤ 3.0[1]
____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes ____ No ✓

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

SOIL

Sampling Point: W-PMO-03_UPL-3

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

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

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

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) **(LRR R, MLRA 149B)**
___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
___ Loamy Mucky Mineral (F1) **(LRR K, L)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: Rock
Depth (inches): 8

Hydric Soil Present? Yes ____ No ✓

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Pratt South **City/County:** Shutesbury, Franklin **Sampling Date:** 2020-Aug-03
Applicant/Owner: W.D. Cowls, Inc. **State:** MA **Sampling Point:** W-PMO-04_PFO-1
Investigator(s): Matt Regan, Caroline Harrington **Section, Township, Range:**
Landform (hillslope, terrace, etc.): Depression **Local relief (concave, convex, none):** Concave **Slope (%):** 0 to 1
Subregion (LRR or MLRA): MLRA 144A of LRR R **Lat:** 42.4104104704 **Long:** -72.4669386261 **Datum:** WGS84
Soil Map Unit Name: Whitman fine sandy loam, 0 to 3 percent slopes, extremely stony **NWI classification:**
Are climatic/hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)
Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___
Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✓ No ___		
Hydric Soil Present?	Yes ✓ No ___	**Is the Sampled Area within a Wetland?**	**Yes ✓ No ___**
Wetland Hydrology Present?	Yes ✓ No ___	**If yes, optional Wetland Site ID:**	W-PMO-04

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

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ___ No ✓	Depth (inches):	
Water Table Present?	Yes ___ No ✓	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ✓ No ___	Depth (inches):	0

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: W-PMO-04_PFO-1

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Tsuga canadensis*	35	Yes	FACU
2. *Acer rubrum*	20	Yes	FAC
3. *Betula alleghaniensis*	10	No	FAC
4.			
5.			
6.			
7.			
	65	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Kalmia latifolia*	15	Yes	FACU
2. *Tsuga canadensis*	10	Yes	FACU
3. *Betula alleghaniensis*	10	Yes	FAC
4.			
5.			
6.			
7.			
	35	= Total Cover	

Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Osmundastrum cinnamomeum*	65	Yes	FACW
2. *Onoclea sensibilis*	30	Yes	FACW
3. *Not Listed Plant*	30	Yes	NI
4. *Symplocarpus foetidus*	5	No	OBL
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	130	= Total Cover	

Woody Vine Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across All Strata:	8	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	50	(A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply By:	
OBL species	5	x 1 =	5
FACW species	95	x 2 =	190
FAC species	40	x 3 =	120
FACU species	60	x 4 =	240
UPL species	0	x 5 =	0
Column Totals	200	(A)	555 (B)

Prevalence Index = B/A = 2.8

Hydrophytic Vegetation Indicators:

____ 1- Rapid Test for Hydrophytic Vegetation
____ 2 - Dominance Test is > 50%
✓ 3 - Prevalence Index is ≤ 3.0[1]
____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes ✓ No ____

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

SOIL

Sampling Point: W-PMO-04_PFO-1

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

Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type¹	Loc²		
0 - 6	7.5YR 2.5/1	100					Mucky Peat	
6 - 8	10Y 4/1	95	10YR 6/6	5	C	M	Sandy Loam	

¹Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked 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) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- _✓_ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric 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)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: None

Depth (inches):

Hydric Soil Present? Yes _✓_ No ____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Pratt South **City/County:** Shutesbury, Franklin **Sampling Date:** 2020-Aug-03
Applicant/Owner: W.D. Cowls, Inc. **State:** MA **Sampling Point:** W-PMO-04_UPL-1
Investigator(s): Matt Regan, Caroline Harrington **Section, Township, Range:** ____
Landform(hillslope,terrace,etc.): Flat **Local relief (concave, convex, none):** None **Slope (%):** 0 to 1
Subregion(LRRorMLRA): MLRA 144A of LRR R **Lat:** 42.4104010826 **Long:** -72.4667832256 **Datum:** WGS84
SoilMapUnitName: Hinckley loamy sand, 8 to 15 percent slopes **NWI classification:** ____
Areclimatic/hydrologicconditionsonthesitetypicalforthistimeofyear? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ____ No ✓		
Hydric Soil Present?	Yes ____ No ✓	**Is the Sampled Area within a Wetland?**	**Yes ____ No ✓**
Wetland Hydrology Present?	Yes ____ No ✓	**If yes, optional Wetland Site ID:**	

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

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ____ No ✓	Depth (inches):		
Water Table Present?	Yes ____ No ✓	Depth (inches):		**Wetland Hydrology Present?** Yes ____ No ✓
Saturation Present? (includes capillary fringe)	Yes ____ No ✓	Depth (inches):		

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

Remarks:

VEGETATION -- Use scientific names of plants.

Sampling Point: W-PMO-04_UPL-1

Tree Stratum (Plot size: 30 ft)

	Absolute % Cover	Dominant Species?	Indicator Status
1. *Tsuga canadensis*	50	Yes	FACU
2. *Quercus rubra*	20	Yes	FACU
3.			
4.			
5.			
6.			
7.			
	70	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15 ft)

	Absolute % Cover	Dominant Species?	Indicator Status
1. *Kalmia latifolia*	20	Yes	FACU
2. *Tsuga canadensis*	15	Yes	FACU
3.			
4.			
5.			
6.			
7.			
	35	= Total Cover	

Herb Stratum (Plot size: 5 ft)

	Absolute % Cover	Dominant Species?	Indicator Status
1. *Monotropa uniflora*	5	Yes	FACU
2. *Tsuga canadensis*	5	Yes	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	10	= Total Cover	

Woody Vine Stratum (Plot size: 30 ft)

	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= 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:	6	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply By:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	115	x 4 =	460
UPL species	0	x 5 =	0
Column Totals	115	(A)	460 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

____ 1- Rapid Test for Hydrophytic Vegetation
____ 2 - Dominance Test is > 50%
____ 3 - Prevalence Index is ≤ 3.0[1]
____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes ____ No ✓

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

SOIL

Sampling Point: W-PMO-04_UPL-1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 4	7.5YR 2.5/3	100					Loamy Sand	
4 - 8	7.5YR 3/4	100					Loamy Sand	

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

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) **(LRR R, MLRA 149B)**
___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
___ Loamy Mucky Mineral (F1) **(LRR K, L)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):
Type: Rock
Depth (inches): 8

Hydric Soil Present? Yes ____ No ✓

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Pratt South **City/County:** Shutesbury, Franklin **Sampling Date:** 2020-Aug-03

Applicant/Owner: W.D. Cowls, Inc. **State:** MA **Sampling Point:** W-PMO-05_PFO-1

Investigator(s): Matt Regan, Caroline Harrington **Section, Township, Range:** ____

Landform(hillslope,terrace,etc.): Hillslope **Local relief (concave, convex, none):** Concave **Slope (%):** 1 to 3

Subregion(LRRorMLRA): MLRA 144A of LRR R **Lat:** 42.413357799 **Long:** -72.4713890814 **Datum:** WGS84

Soil Map Unit Name: Chatfield-Hollis complex, 8 to 15 percent slopes, rocky **NWI classification:** ____

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ✓ No ____		
Hydric Soil Present?	Yes ✓ No ____	**Is the Sampled Area within a Wetland?**	**Yes ✓ No ____**
Wetland Hydrology Present?	Yes ✓ No ____	**If yes, optional Wetland Site ID:**	W-PMO-05

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

Covertype is PFO.

HYDROLOGY

Wetland Hydrology Indicators:

<u>Primary Indicators (minimum of one is required; check all that apply)</u>

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

<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 ✓	Depth (inches):	
Water Table Present?	Yes ✓ No ____	Depth (inches):	0
Saturation Present? (includes capillary fringe)	Yes ✓ No ____	Depth (inches):	0

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: W-PMO-05_PFO-1

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	25	Yes	FAC
2. *Betula alleghaniensis*	15	Yes	FAC
3. *Tsuga canadensis*	10	Yes	FACU
4.			
5.			
6.			
7.			
	50	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. *Lindera benzoin*	40	Yes	FACW
2. *Hamamelis virginiana*	10	Yes	FACU
3.			
4.			
5.			
6.			
7.			
	50	= Total Cover	
Herb Stratum (Plot size: 5 ft)			
1. *Osmundastrum cinnamomeum*	50	Yes	FACW
2. *Maianthemum canadense*	20	Yes	FACU
3. *Carex crinita*	10	No	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	80	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across All Strata:	7	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	57.1	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply By:	
OBL species	10	x 1 =	10
FACW species	90	x 2 =	180
FAC species	40	x 3 =	120
FACU species	40	x 4 =	160
UPL species	0	x 5 =	0
Column Totals	180	(A)	470 (B)

Prevalence Index = B/A = 2.6

Hydrophytic Vegetation Indicators:

____ 1- Rapid Test for Hydrophytic Vegetation
✓ 2 - Dominance Test is >50%
✓ 3 - Prevalence Index is ≤ 3.0[1]
____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes ✓ No ____

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

SOIL

Sampling Point: W-PMO-05_PFO-1

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 10	2.5Y 2.5/1	100					Muck	
10 - 16	2.5Y 5/1	95	10YR 5/6	5	C	M	Sandy Clay Loam	

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

Hydric Soil Indicators:

___ Histosol (A1)
_✓_ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
_✓_ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) **(LRR R, MLRA 149B)**
___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
___ Loamy Mucky Mineral (F1) **(LRR K, L)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: None

Depth (inches): ____

Hydric Soil Present? Yes _✓_ No ____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Pratt South **City/County:** Shutesbury, Franklin **Sampling Date:** 2020-Aug-03
Applicant/Owner: W.D. Cowls, Inc. **State:** MA **Sampling Point:** W-PMO-05_UPL-1
Investigator(s): Matt Regan, Caroline Harrington **Section, Township, Range:**
Landform(hillslope,terrace,etc.): Hillslope **Local relief (concave, convex, none):** Convex **Slope (%):** 1 to 3
Subregion (LRR or MLRA): MLRA 144A of LRR R **Lat:** 42.4131767499 **Long:** -72.4711473473 **Datum:** WGS84
Soil Map Unit Name: Chatfield-Hollis complex, 8 to 15 percent slopes, rocky **NWI classification:**
Are climatic/hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ____ No ✓		
Hydric Soil Present?	Yes ____ No ✓	**Is the Sampled Area within a Wetland?**	**Yes ____ No ✓**
Wetland Hydrology Present?	Yes ____ No ✓	**If yes, optional Wetland Site ID:**	

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

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ____ No ✓	Depth (inches):	
Water Table Present?	Yes ____ No ✓	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ____ No ✓	Depth (inches):	

Wetland Hydrology Present? Yes ____ No ✓

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

Remarks:

Sampling Point: W-PMO-05_UPL-1

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)

	Absolute % Cover	Dominant Species?	Indicator Status
1. *Betula lenta*	25	Yes	FACU
2. *Quercus rubra*	20	Yes	FACU
3.			
4.			
5.			
6.			
7.			
	45	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15 ft)

	Absolute % Cover	Dominant Species?	Indicator Status
1. *Hamamelis virginiana*	20	Yes	FACU
2. *Betula lenta*	15	Yes	FACU
3.			
4.			
5.			
6.			
7.			
	35	= Total Cover	

Herb Stratum (Plot size: 5 ft)

	Absolute % Cover	Dominant Species?	Indicator Status
1. *Osmundastrum cinnamomeum*	25	Yes	FACW
2. *Dennstaedtia punctilobula*	10	Yes	UPL
3. *Maianthemum canadense*	5	No	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	40	= Total Cover	

Woody Vine Stratum (Plot size: 30 ft)

	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= 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:	6	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	16.7	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply By:	
OBL species	0	x 1 =	0
FACW species	25	x 2 =	50
FAC species	0	x 3 =	0
FACU species	85	x 4 =	340
UPL species	10	x 5 =	50
Column Totals	120	(A)	440 (B)

Prevalence Index = B/A = 3.7

Hydrophytic Vegetation Indicators:

____ 1- Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is > 50%

____ 3 - Prevalence Index is ≤ 3.0[1]

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

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes ____ No ✓

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

SOIL

Sampling Point: W-PMO-05_UPL-1

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

Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type¹	Loc²		
0 - 6	7.5YR 3/2	100					Loamy Sand	
6 - 10	7.5YR 4/3	100					Loamy Sand	

¹Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked 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) **(LRR R, MLRA 149B)**
___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
___ Loamy Mucky Mineral (F1) **(LRR K, L)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric 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)**
___ Dark Surface (S7) **(LRR K, L)**
___ Polyvalue Below Surface (S8) **(LRR K, L)**
___ Thin Dark Surface (S9) **(LRR K, L)**
___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 10

Hydric Soil Present? Yes _____ No ✓

Remarks:

Appendix D: NRCS Soil 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

September 25, 2020

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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Contents

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 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.

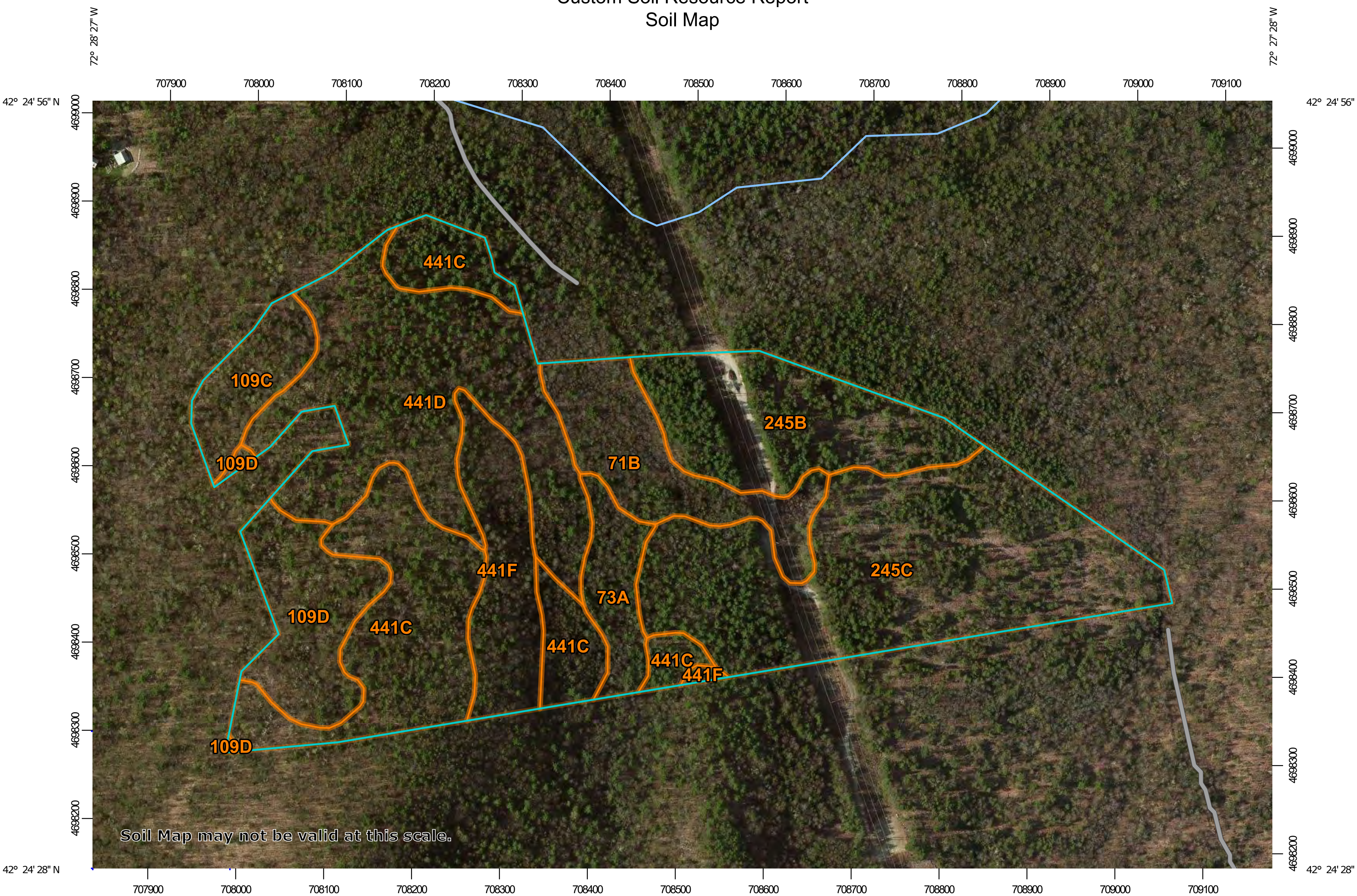
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree 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 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.

Soil Map



Map Scale: 1:6,130 if printed on A landscape (11" x 8.5") sheet.

Meters: 0, 50, 100, 200, 300

Feet: 0, 250, 500, 1000, 1500

N

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

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

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 15, Jun 9, 2020

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

Date(s) aerial images were photographed: Apr 9, 2011—May 12, 2011

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
71B	Ridgebury fine sandy loam, 3 to 8 percent slopes, extremely stony	6.9	7.5%
73A	Whitman fine sandy loam, 0 to 3 percent slopes, extremely stony	3.2	3.5%
109C	Chatfield-Hollis complex, 8 to 15 percent slopes, rocky	3.5	3.7%
109D	Chatfield-Hollis complex, 15 to 25 percent slopes, rocky	6.5	7.0%
245B	Hinckley loamy sand, 3 to 8 percent slopes	10.1	10.9%
245C	Hinckley loamy sand, 8 to 15 percent slopes	23.0	24.8%
441C	Gloucester sandy loam, 8 to 15 percent slopes, very stony	15.5	16.8%
441D	Gloucester sandy loam, 15 to 25 percent slopes, very stony	17.8	19.2%
441F	Gloucester sandy loam, 25 to 45 percent slopes, very stony	6.1	6.6%
Totals for Area of Interest		**92.6**	**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.

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

71B—Ridgebury fine sandy loam, 3 to 8 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 2w69c
Elevation: 0 to 1,290 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Ridgebury, extremely stony, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ridgebury, Extremely Stony

Setting

Landform: Drainageways, hills, ground moraines, depressions, drumlins
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 6 inches: fine sandy loam
Bw - 6 to 10 inches: sandy loam
Bg - 10 to 19 inches: gravelly sandy loam
Cd - 19 to 66 inches: gravelly sandy loam

Properties and qualities

Slope: 3 to 8 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 15 to 35 inches to densic material
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: F144AY009CT - Wet Till Depressions
Hydric soil rating: Yes

Minor Components

Woodbridge, extremely stony

Percent of map unit: 10 percent
Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Footslope, summit, backslope
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Whitman, extremely stony

Percent of map unit: 8 percent
Landform: Depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Paxton, extremely stony

Percent of map unit: 2 percent
Landform: Hills, ground moraines, drumlins
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Hydric soil rating: No

73A—Whitman fine sandy loam, 0 to 3 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 2w695
Elevation: 0 to 1,580 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Whitman, extremely stony, and similar soils: 81 percent
Minor components: 19 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Whitman, Extremely Stony

Setting

Landform: Ground moraines, drumlins, depressions, drainageways, hills
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave

Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oi - 0 to 1 inches: peat
A - 1 to 10 inches: fine sandy loam
Bg - 10 to 17 inches: gravelly fine sandy loam
Cdg - 17 to 61 inches: fine sandy loam

Properties and qualities

Slope: 0 to 3 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 7 to 38 inches to densic material
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: F144AY041MA - Very Wet Till Depressions
Hydric soil rating: Yes

Minor Components

Ridgebury, extremely stony

Percent of map unit: 10 percent
Landform: Drainageways, hills, ground moraines, depressions, drumlins
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Scarboro

Percent of map unit: 5 percent
Landform: Outwash deltas, outwash terraces, depressions, drainageways
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Swansea

Percent of map unit: 3 percent
Landform: Swamps, bogs, marshes
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Woodbridge, extremely stony

Percent of map unit: 1 percent

Landform: Hills, ground moraines, drumlins
Landform position (two-dimensional): Backslope, footslope, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

109C—Chatfield-Hollis complex, 8 to 15 percent slopes, rocky

Map Unit Setting

National map unit symbol: 2w69l
Elevation: 110 to 1,320 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Chatfield, very stony, and similar soils: 55 percent
Hollis, very stony, and similar soils: 30 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chatfield, Very Stony

Setting

Landform: Hills, ridges
Landform position (two-dimensional): Summit, backslope, shoulder
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 2 inches: fine sandy loam
Bw - 2 to 30 inches: gravelly fine sandy loam
2R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 20 to 41 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None

Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Description of Hollis, Very Stony

Setting

Landform: Hills, ridges
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 7 inches: gravelly fine sandy loam
Bw - 7 to 16 inches: gravelly fine sandy loam
2R - 16 to 26 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 8 to 23 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: F144AY033MA - Shallow Dry Till Uplands
Hydric soil rating: No

Minor Components

Charlton, very stony

Percent of map unit: 8 percent
Landform: Hills, ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex

Across-slope shape: Convex
Hydric soil rating: No

Paxton, very stony

Percent of map unit: 4 percent
Landform: Hills, ground moraines, drumlins
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex, linear
Hydric soil rating: No

Leicester, very stony

Percent of map unit: 2 percent
Landform: Hills, ground moraines, depressions, drainageways
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave, linear
Across-slope shape: Concave
Hydric soil rating: Yes

Rock outcrop

Percent of map unit: 1 percent
Landform: Ridges, hills
Hydric soil rating: No

109D—Chatfield-Hollis complex, 15 to 25 percent slopes, rocky

Map Unit Setting

National map unit symbol: 1hvbd
Elevation: 190 to 1,130 feet
Mean annual precipitation: 38 to 52 inches
Mean annual air temperature: 35 to 58 degrees F
Frost-free period: 127 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition

Chatfield, rocky, and similar soils: 60 percent
Hollis, rocky, and similar soils: 34 percent
Minor components: 6 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chatfield, Rocky

Setting

Landform: Ground moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear

Parent material: Loamy supraglacial till derived from gneiss and/or schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 4 inches: fine sandy loam
Bw1 - 4 to 9 inches: gravelly fine sandy loam
Bw2 - 9 to 19 inches: cobbly fine sandy loam
BC - 19 to 30 inches: sandy loam
C1 - 30 to 34 inches: gravelly sandy loam
C2 - 34 to 37 inches: gravelly sandy loam
R - 37 to 65 inches: bedrock

Properties and qualities

Slope: 15 to 25 percent
Surface area covered with cobbles, stones or boulders: 2.1 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 5.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Description of Hollis, Rocky

Setting

Landform: Upland slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Loamy supraglacial till derived from gneiss and/or schist

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
Oa - 1 to 3 inches: highly decomposed plant material
A - 3 to 4 inches: fine sandy loam
Bw - 4 to 15 inches: cobbly fine sandy loam
R - 15 to 65 inches: bedrock

Properties and qualities

Slope: 15 to 25 percent
Surface area covered with cobbles, stones or boulders: 2.1 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 0.60 in/hr)

Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 2.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: F144AY033MA - Shallow Dry Till Uplands
Hydric soil rating: No

Minor Components

Charlton, rocky

Percent of map unit: 2 percent
Landform: Valley sides on moraines, toes on moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Montauk, very stony

Percent of map unit: 1 percent
Landform: Drumlins, ground moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Paxton, very stony

Percent of map unit: 1 percent
Landform: Ground moraines, drumlins
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Canton, rocky

Percent of map unit: 1 percent
Landform: Ground moraines, valley sides, hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Rock outcrop

Percent of map unit: 1 percent
Hydric soil rating: Unranked

245B—Hinckley loamy sand, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2svm8
Elevation: 0 to 1,430 feet
Mean annual precipitation: 36 to 53 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 250 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Hinckley

Setting

Landform: Kames, outwash terraces, outwash deltas, outwash plains, eskers, moraines, kame terraces
Landform position (two-dimensional): Summit, backslope, footslope, shoulder
Landform position (three-dimensional): Nose slope, side slope, base slope, crest, riser, tread
Down-slope shape: Linear, convex, concave
Across-slope shape: Convex, linear, concave
Parent material: Sandy and gravelly glaciofluvial deposits derived from gneiss and/or granite and/or schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 8 inches: loamy sand
Bw1 - 8 to 11 inches: gravelly loamy sand
Bw2 - 11 to 16 inches: gravelly loamy sand
BC - 16 to 19 inches: very gravelly loamy sand
C - 19 to 65 inches: very gravelly sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Very low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Minor Components

Windsor

Percent of map unit: 8 percent
Landform: Eskers, moraines, outwash terraces, outwash deltas, kame terraces, outwash plains, kames
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Nose slope, side slope, base slope, crest, riser, tread
Down-slope shape: Linear, convex, concave
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

Sudbury

Percent of map unit: 5 percent
Landform: Outwash deltas, kame terraces, outwash plains, moraines, outwash terraces
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Side slope, base slope, head slope, tread
Down-slope shape: Concave, linear
Across-slope shape: Linear, concave
Hydric soil rating: No

Agawam

Percent of map unit: 2 percent
Landform: Outwash terraces, outwash deltas, kame terraces, outwash plains, kames, eskers, moraines
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Nose slope, side slope, base slope, crest, riser, tread
Down-slope shape: Linear, convex, concave
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

245C—Hinckley loamy sand, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2svm9
Elevation: 0 to 1,480 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Hinckley

Setting

Landform: Kames, eskers, moraines, outwash terraces, outwash deltas, kame terraces, outwash plains
Landform position (two-dimensional): Shoulder, toeslope, footslope, backslope
Landform position (three-dimensional): Nose slope, side slope, crest, head slope, riser
Down-slope shape: Linear, concave, convex
Across-slope shape: Convex, linear, concave
Parent material: Sandy and gravelly glaciofluvial deposits derived from gneiss and/or granite and/or schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 8 inches: loamy sand
Bw1 - 8 to 11 inches: gravelly loamy sand
Bw2 - 11 to 16 inches: gravelly loamy sand
BC - 16 to 19 inches: very gravelly loamy sand
C - 19 to 65 inches: very gravelly sand

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Minor Components

Merrimac

Percent of map unit: 5 percent
Landform: Moraines, outwash terraces, outwash plains, kames, eskers
Landform position (two-dimensional): Shoulder, backslope, footslope, toeslope
Landform position (three-dimensional): Side slope, crest, head slope, nose slope, riser
Down-slope shape: Convex
Across-slope shape: Convex

Hydric soil rating: No

Windsor

Percent of map unit: 5 percent
Landform: Outwash terraces, outwash deltas, kames, eskers, moraines, kame terraces, outwash plains
Landform position (two-dimensional): Shoulder, backslope, footslope, toeslope
Landform position (three-dimensional): Nose slope, side slope, crest, head slope, riser
Down-slope shape: Linear, concave, convex
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

Sudbury

Percent of map unit: 5 percent
Landform: Kame terraces, outwash plains, moraines, outwash deltas, outwash terraces
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Concave, linear
Across-slope shape: Linear, concave
Hydric soil rating: No

441C—Gloucester sandy loam, 8 to 15 percent slopes, very stony

Map Unit Setting

National map unit symbol: 9c7p
Elevation: 380 to 1,040 feet
Mean annual precipitation: 38 to 50 inches
Mean annual air temperature: 35 to 58 degrees F
Frost-free period: 127 to 178 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Gloucester, very stony, and similar soils: 87 percent
Minor components: 13 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gloucester, Very Stony

Setting

Landform: Moraines, upland slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Sandy and gravelly supraglacial till derived from gneiss

Typical profile

Oa - 0 to 2 inches: highly decomposed plant material
A - 2 to 6 inches: sandy loam

Bw1 - 6 to 15 inches: gravelly sandy loam
Bw2 - 15 to 29 inches: very gravelly loamy coarse sand
C - 29 to 65 inches: very gravelly loamy coarse sand

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 2.1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Ecological site: F144AY032NH - Dry Till Uplands
Hydric soil rating: No

Minor Components

Canton, very stony

Percent of map unit: 5 percent
Landform: Ground moraines, valley sides, hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Montauk, very stony

Percent of map unit: 5 percent
Landform: Drumlins, ground moraines
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Newfields, very stony

Percent of map unit: 2 percent
Landform: Depressions on ground moraines, swales on ground moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Ridgebury, very stony

Percent of map unit: 1 percent
Landform: Depressions on drumlins, depressions on ground moraines
Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear, convex
Hydric soil rating: Yes

441D—Gloucester sandy loam, 15 to 25 percent slopes, very stony

Map Unit Setting

National map unit symbol: 9c7q
Elevation: 360 to 1,040 feet
Mean annual precipitation: 38 to 50 inches
Mean annual air temperature: 35 to 58 degrees F
Frost-free period: 127 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition

Gloucester, very stony, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gloucester, Very Stony

Setting

Landform: Moraines, upland slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Sandy and gravelly supraglacial till derived from gneiss

Typical profile

Oa - 0 to 2 inches: highly decomposed plant material
A - 2 to 6 inches: sandy loam
Bw1 - 6 to 15 inches: gravelly sandy loam
Bw2 - 15 to 29 inches: very gravelly loamy coarse sand
C - 29 to 65 inches: very gravelly loamy coarse sand

Properties and qualities

Slope: 15 to 25 percent
Surface area covered with cobbles, stones or boulders: 2.1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Ecological site: F144AY032NH - Dry Till Uplands
Hydric soil rating: No

Minor Components

Canton, very stony

Percent of map unit: 5 percent
Landform: Valley sides, hillslopes, ground moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Montauk, very stony

Percent of map unit: 5 percent
Landform: Drumlins, ground moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

441F—Gloucester sandy loam, 25 to 45 percent slopes, very stony

Map Unit Setting

National map unit symbol: 9cd4
Elevation: 370 to 1,010 feet
Mean annual precipitation: 38 to 50 inches
Mean annual air temperature: 35 to 58 degrees F
Frost-free period: 127 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition

Gloucester, very stony, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gloucester, Very Stony

Setting

Landform: Moraines, upland slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex

Parent material: Sandy and gravelly supraglacial till derived from gneiss

Typical profile

Oa - 0 to 2 inches: highly decomposed plant material
A - 2 to 6 inches: sandy loam
Bw1 - 6 to 15 inches: gravelly sandy loam
Bw2 - 15 to 29 inches: very gravelly loamy coarse sand
C - 29 to 65 inches: very gravelly loamy coarse sand

Properties and qualities

Slope: 25 to 45 percent
Surface area covered with cobbles, stones or boulders: 2.1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C
Ecological site: F144AY032NH - Dry Till Uplands
Hydric soil rating: No

Minor Components

Canton, very stony

Percent of map unit: 5 percent
Landform: Ground moraines, valley sides, hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Montauk, very stony

Percent of map unit: 5 percent
Landform: Drumlins, ground moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

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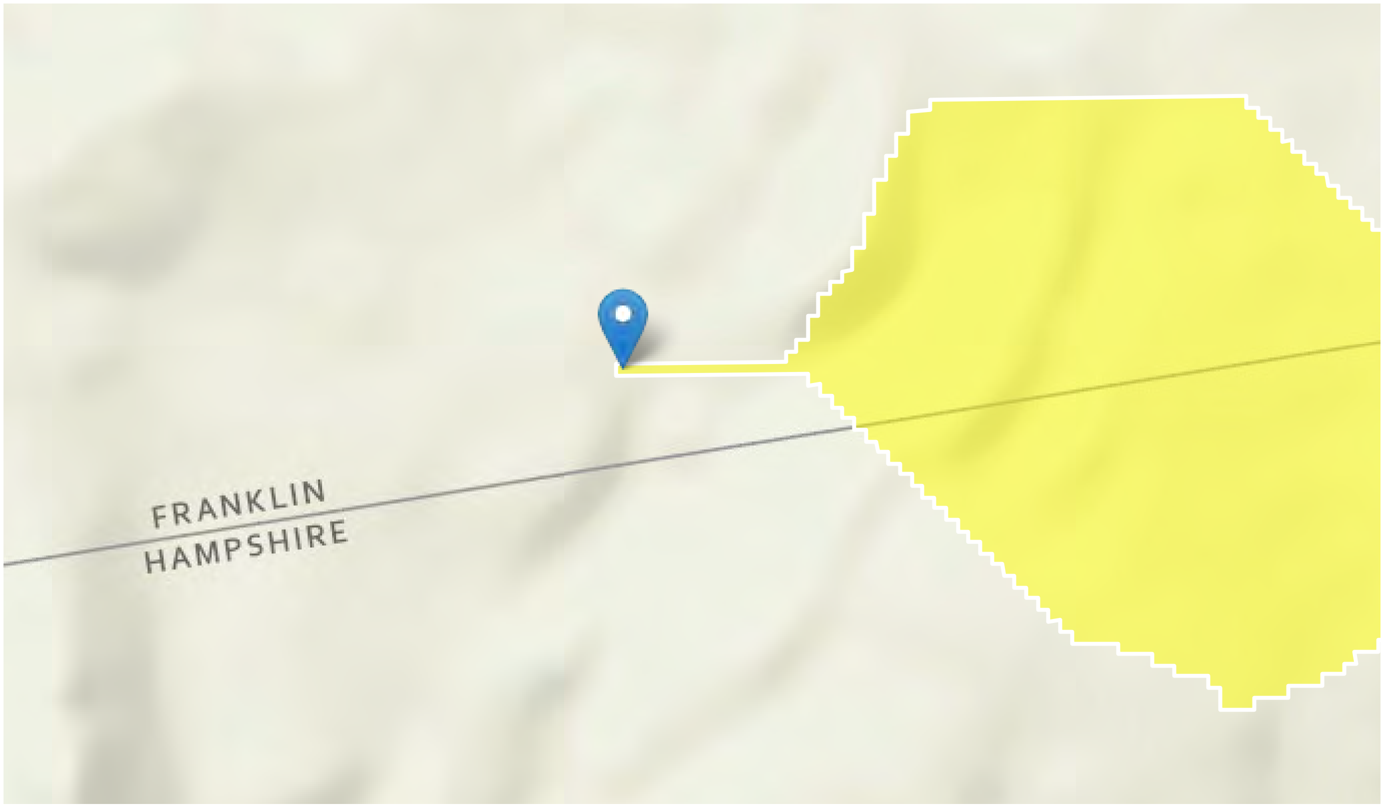
Appendix E: USGS StreamStats Report

S-MJR-1 StreamStats Report

Region ID: MA
Workspace ID: MA20200828023112111000
Clicked Point (Latitude, Longitude): 42.41106, -72.45968
Time: 2020-08-27 22:31:28 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	0.0906	square miles
ELEV	Mean Basin Elevation	970	feet
LC06STOR	Percentage of water bodies and wetlands determined from the NLCD 2006	0	percent
BSLDEM250	Mean basin slope computed from 1:250K DEM	4.012	percent
DRFTPERSTR	Area of stratified drift per unit of stream length	-100000	square mile per mile

Parameter Code	Parameter Description	Value	Unit
MAREGION	Region of Massachusetts 0 for Eastern 1 for Western	1	dimensionless
BSLDEM10M	Mean basin slope computed from 10 m DEM	11.842	percent
PCTSNDGRV	Percentage of land surface underlain by sand and gravel deposits	0	percent
FOREST	Percentage of area covered by forest	99.23	percent
ACRSDFT	Area underlain by stratified drift	0	square miles
CENTROIDX	Basin centroid horizontal (x) location in state plane coordinates	121484	meters
CENTROIDY	Basin centroid vertical (y) location in state plane units	907158.8	meters
CRSDFT	Percentage of area of coarse-grained stratified drift	0	percent
LAKEAREA	Percentage of Lakes and Ponds	0	percent
LC11DEV	Percentage of developed (urban) land from NLCD 2011 classes 21-24	0	percent
LC11IMP	Average percentage of impervious area determined from NLCD 2011 impervious dataset	0	percent
MAXTEMPC	Mean annual maximum air temperature over basin area, in degrees Centigrade	13.4	feet per mi
OUTLETX	Basin outlet horizontal (x) location in state plane coordinates	121005	feet
OUTLETY	Basin outlet vertical (y) location in state plane coordinates	907175	feet
PRECPRIS00	Basin average mean annual precipitation for 1971 to 2000 from PRISM	48.4	inches
STRMTOT	total length of all mapped streams (1:24,000-scale) in the basin	0	miles
WETLAND	Percentage of Wetlands	0	percent

Peak-Flow Statistics Parameters[Peak Statewide 2016 5156]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.0906	square miles	0.16	512
ELEV	Mean Basin Elevation	970	feet	80.6	1948
LC06STOR	Percent Storage from NLCD2006	0	percent	0	32.3

Peak-Flow Statistics Disclaimers[Peak Statewide 2016 5156]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

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

Statistic	Value	Unit
2 Year Peak Flood	9.33	ft^3/s
5 Year Peak Flood	16.5	ft^3/s
10 Year Peak Flood	22.7	ft^3/s
25 Year Peak Flood	32	ft^3/s
50 Year Peak Flood	40.1	ft^3/s
100 Year Peak Flood	48.9	ft^3/s
200 Year Peak Flood	58.8	ft^3/s
500 Year Peak Flood	73.5	ft^3/s

Peak-Flow Statistics Citations

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

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.0906	square miles	1.61	149
BSLDEM250	Mean Basin Slope from 250K DEM	4.012	percent	0.32	24.6

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRFTPERSTR	Stratified Drift per Stream Length	-100000	square mile per mile	0	1.29
MAREGION	Massachusetts Region	1	dimensionless	0	1

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

Statistic	Value	Unit

Low-Flow Statistics Citations

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

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.0906	square miles	1.61	149
DRFTPERSTR	Stratified Drift per Stream Length	-100000	square mile per mile	0	1.29
MAREGION	Massachusetts Region	1	dimensionless	0	1
BSLDEM250	Mean Basin Slope from 250K DEM	4.012	percent	0.32	24.6

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

Statistic	Value	Unit

Flow-Duration Statistics Citations

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

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.0906	square miles	1.61	149
BSLDEM250	Mean Basin Slope from 250K DEM	4.012	percent	0.32	24.6
DRFTPERSTR	Stratified Drift per Stream Length	-100000	square mile per mile	0	1.29
MAREGION	Massachusetts Region	1	dimensionless	0	1

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

Statistic	Value	Unit

August Flow-Duration Statistics Citations

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skew regression, by Veilleux, A.G.: U.S. Geological Survey Scientific Investigations Report 2014–5078, 27 p. plus appendixes. (http://pubs.usgs.gov/sir/2014/5078/)
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Wiley, J.B., and Atkins, J.T., Jr.,2010, Estimation of flood-frequency discharges for rural, unregulated streams in West Virginia: U.S. Geological Survey Scientific Investigations Report 2010–5033, 78 p. (http://pubs.usgs.gov/sir/2010/5033/)
Wiley, J.B., and Atkins, J.T., Jr.,2010, Estimation of selected seasonal streamflow statistics representative of 1930-2002 in West Virginia: U.S. Geological Survey Scientific Investigations Report 2010-5185, 20 p. (http://pubs.usgs.gov/sir/2010/5185/)
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Bankfull Statistics Parameters[Bankfull Statewide SIR2013 5155]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.0906	square miles	0.6	329
BSLDEM10M	Mean Basin Slope from 10m DEM	11.842	percent	2.2	23.9

Bankfull Statistics Disclaimers[Bankfull Statewide SIR2013 5155]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Bankfull Statistics Flow Report[Bankfull Statewide SIR2013 5155]

Statistic	Value	Unit
Bankfull Width	6.39	ft
Bankfull Depth	0.51	ft
Bankfull Area	3.2	ft^2
Bankfull Streamflow	8.95	ft^3/s

Bankfull Statistics Citations

Bent, G.C., and Waite, A.M.,2013, Equations for estimating bankfull channel geometry and discharge for streams in Massachusetts: U.S. Geological Survey Scientific Investigations Report 2013–5155, 62 p., (http://pubs.usgs.gov/sir/2013/5155/)

Probability Statistics Parameters[Perennial Flow Probability]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.0906	square miles	0.01	1.99

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
PCTSNDGRV	Percent Underlain By Sand And Gravel	0	percent	0	100
FOREST	Percent Forest	99.23	percent	0	100
MAREGION	Massachusetts Region	1	dimensionless	0	1

Probability Statistics Flow Report[Perennial Flow Probability]

PIl: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PC
Probability Stream Flowing Perennially	0.245	dim	71

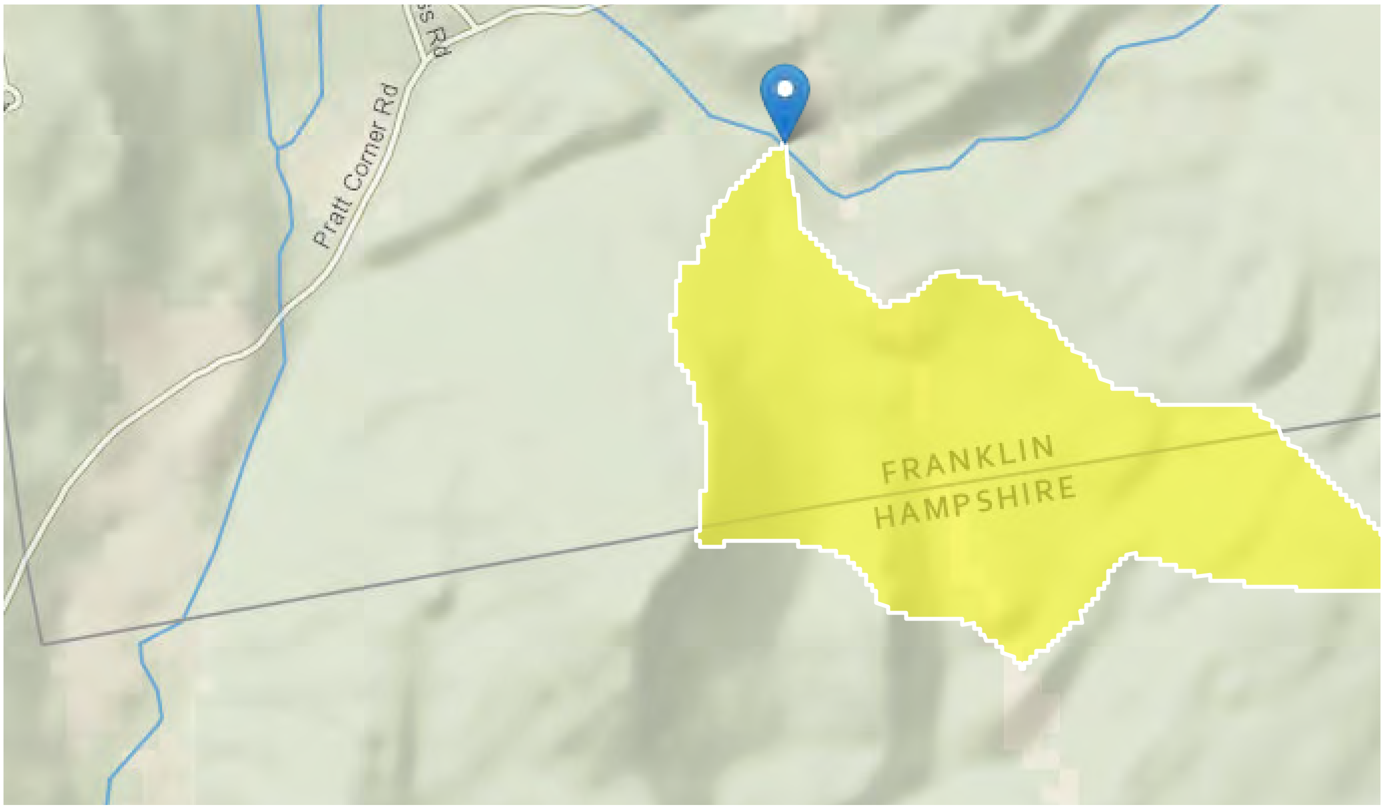
Probability Statistics Citations

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

Application Version: 4.4.0

S-MJR-2 StreamStats Report

Region ID: MA
Workspace ID: MA20200828024143728000
Clicked Point (Latitude, Longitude): 42.41516, -72.46782
Time: 2020-08-27 22:41:59 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	0.21	square miles
ELEV	Mean Basin Elevation	758	feet
LC06STOR	Percentage of water bodies and wetlands determined from the NLCD 2006	0	percent
BSLDEM250	Mean basin slope computed from 1:250K DEM	8.113	percent
DRFTPERSTR	Area of stratified drift per unit of stream length	0.13	square mile per mile

Parameter Code	Parameter Description	Value	Unit
MAREGION	Region of Massachusetts 0 for Eastern 1 for Western	1	dimensionless
BSLDEM10M	Mean basin slope computed from 10 m DEM	10.885	percent
PCTSNDGRV	Percentage of land surface underlain by sand and gravel deposits	22.71	percent
FOREST	Percentage of area covered by forest	91.39	percent
ACRSDFT	Area underlain by stratified drift	0.0471	square miles
CENTROIDX	Basin centroid horizontal (x) location in state plane coordinates	120682.7	meters
CENTROIDY	Basin centroid vertical (y) location in state plane units	907103.8	meters
CRSDFT	Percentage of area of coarse-grained stratified drift	22.71	percent
LAKEAREA	Percentage of Lakes and Ponds	0	percent
LC11DEV	Percentage of developed (urban) land from NLCD 2011 classes 21-24	3.49	percent
LC11IMP	Average percentage of impervious area determined from NLCD 2011 impervious dataset	0.0544	percent
MAXTEMPC	Mean annual maximum air temperature over basin area, in degrees Centigrade	13.7	feet per mi
OUTLETX	Basin outlet horizontal (x) location in state plane coordinates	120345	feet
OUTLETY	Basin outlet vertical (y) location in state plane coordinates	907635	feet
PRECPRIS00	Basin average mean annual precipitation for 1971 to 2000 from PRISM	48	inches
STRMTOT	total length of all mapped streams (1:24,000-scale) in the basin	0.36	miles
WETLAND	Percentage of Wetlands	3.87	percent

Peak-Flow Statistics Parameters[Peak Statewide 2016 5156]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.21	square miles	0.16	512
ELEV	Mean Basin Elevation	758	feet	80.6	1948
LC06STOR	Percent Storage from NLCD2006	0	percent	0	32.3

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

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

Statistic	Value	Unit	PII	Plu	SEp
2 Year Peak Flood	16.8	ft^3/s	8.36	33.7	42.3
5 Year Peak Flood	29.1	ft^3/s	14.2	59.4	43.4
10 Year Peak Flood	39.5	ft^3/s	18.8	82.8	44.7
25 Year Peak Flood	55.1	ft^3/s	25.3	120	47.1
50 Year Peak Flood	68.4	ft^3/s	30.3	154	49.4
100 Year Peak Flood	82.9	ft^3/s	35.5	193	51.8
200 Year Peak Flood	99	ft^3/s	41.1	238	54.1
500 Year Peak Flood	123	ft^3/s	48.6	312	57.6

Peak-Flow Statistics Citations

Zarriello, P.J.,2017, Magnitude of flood flows at selected annual exceedance probabilities for streams in Massachusetts: U.S. Geological Survey Scientific Investigations Report 2016–5156, 99 p. (https://dx.doi.org/10.3133/sir20165156)

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

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.21	square miles	1.61	149
BSLDEM250	Mean Basin Slope from 250K DEM	8.113	percent	0.32	24.6
DRFTPERSTR	Stratified Drift per Stream Length	0.13	square mile per mile	0	1.29

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
MAREGION	Massachusetts Region	1	dimensionless	0	1

Low-Flow Statistics Disclaimers[Statewide Low Flow WRIR00 4135]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

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

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.0235	ft^3/s
7 Day 10 Year Low Flow	0.0121	ft^3/s

Low-Flow Statistics Citations

Ries, K.G., III,2000, Methods for estimating low-flow statistics for Massachusetts streams: U.S. Geological Survey Water Resources Investigations Report 00-4135, 81 p. (http://pubs.usgs.gov/wri/wri004135/)

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

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.21	square miles	1.61	149
DRFTPERSTR	Stratified Drift per Stream Length	0.13	square mile per mile	0	1.29
MAREGION	Massachusetts Region	1	dimensionless	0	1
BSLDEM250	Mean Basin Slope from 250K DEM	8.113	percent	0.32	24.6

Flow-Duration Statistics Disclaimers[Statewide Low Flow WRIR00 4135]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

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

Statistic	Value	Unit

Statistic	Value	Unit
50 Percent Duration	0.194	ft^3/s
60 Percent Duration	0.124	ft^3/s
70 Percent Duration	0.0894	ft^3/s
75 Percent Duration	0.0719	ft^3/s
80 Percent Duration	0.0729	ft^3/s
85 Percent Duration	0.0556	ft^3/s
90 Percent Duration	0.0475	ft^3/s
95 Percent Duration	0.0277	ft^3/s
98 Percent Duration	0.0183	ft^3/s
99 Percent Duration	0.0126	ft^3/s

Flow-Duration Statistics Citations

Ries, K.G., III,2000, Methods for estimating low-flow statistics for Massachusetts streams: U.S. Geological Survey Water Resources Investigations Report 00-4135, 81 p. (http://pubs.usgs.gov/wri/wri004135/)

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

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.21	square miles	1.61	149
BSLDEM250	Mean Basin Slope from 250K DEM	8.113	percent	0.32	24.6
DRFTPERSTR	Stratified Drift per Stream Length	0.13	square mile per mile	0	1.29
MAREGION	Massachusetts Region	1	dimensionless	0	1

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

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

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

Statistic	Value	Unit

Statistic	Value	Unit
August 50 Percent Duration	0.0582	ft^3/s

August Flow-Duration Statistics Citations

Ries, K.G., III,2000, Methods for estimating low-flow statistics for Massachusetts streams: U.S. Geological Survey Water Resources Investigations Report 00-4135, 81 p. (http://pubs.usgs.gov/wri/wri004135/)

Bankfull Statistics Parameters[Bankfull Statewide SIR2013 5155]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.21	square miles	0.6	329
BSLDEM10M	Mean Basin Slope from 10m DEM	10.885	percent	2.2	23.9

Bankfull Statistics Disclaimers[Bankfull Statewide SIR2013 5155]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Bankfull Statistics Flow Report[Bankfull Statewide SIR2013 5155]

Statistic	Value	Unit
Bankfull Width	8.77	ft
Bankfull Depth	0.642	ft
Bankfull Area	5.53	ft^2
Bankfull Streamflow	15.8	ft^3/s

Bankfull Statistics Citations

Bent, G.C., and Waite, A.M.,2013, Equations for estimating bankfull channel geometry and discharge for streams in Massachusetts: U.S. Geological Survey Scientific Investigations Report 2013–5155, 62 p., (http://pubs.usgs.gov/sir/2013/5155/)

Probability Statistics Parameters[Perennial Flow Probability]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.21	square miles	0.01	1.99
PCTSNDGRV	Percent Underlain By Sand And Gravel	22.71	percent	0	100
FOREST	Percent Forest	91.39	percent	0	100
MAREGION	Massachusetts Region	1	dimensionless	0	1

Probability Statistics Flow Report[Perennial Flow Probability]

PIl: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PC
Probability Stream Flowing Perennially	0.535	dim	71

Probability Statistics Citations

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

Application Version: 4.4.0

ATTACHMENT C
Abutter Information
(Certified Abutter List, Abutter Notification & Affidavit of Service)

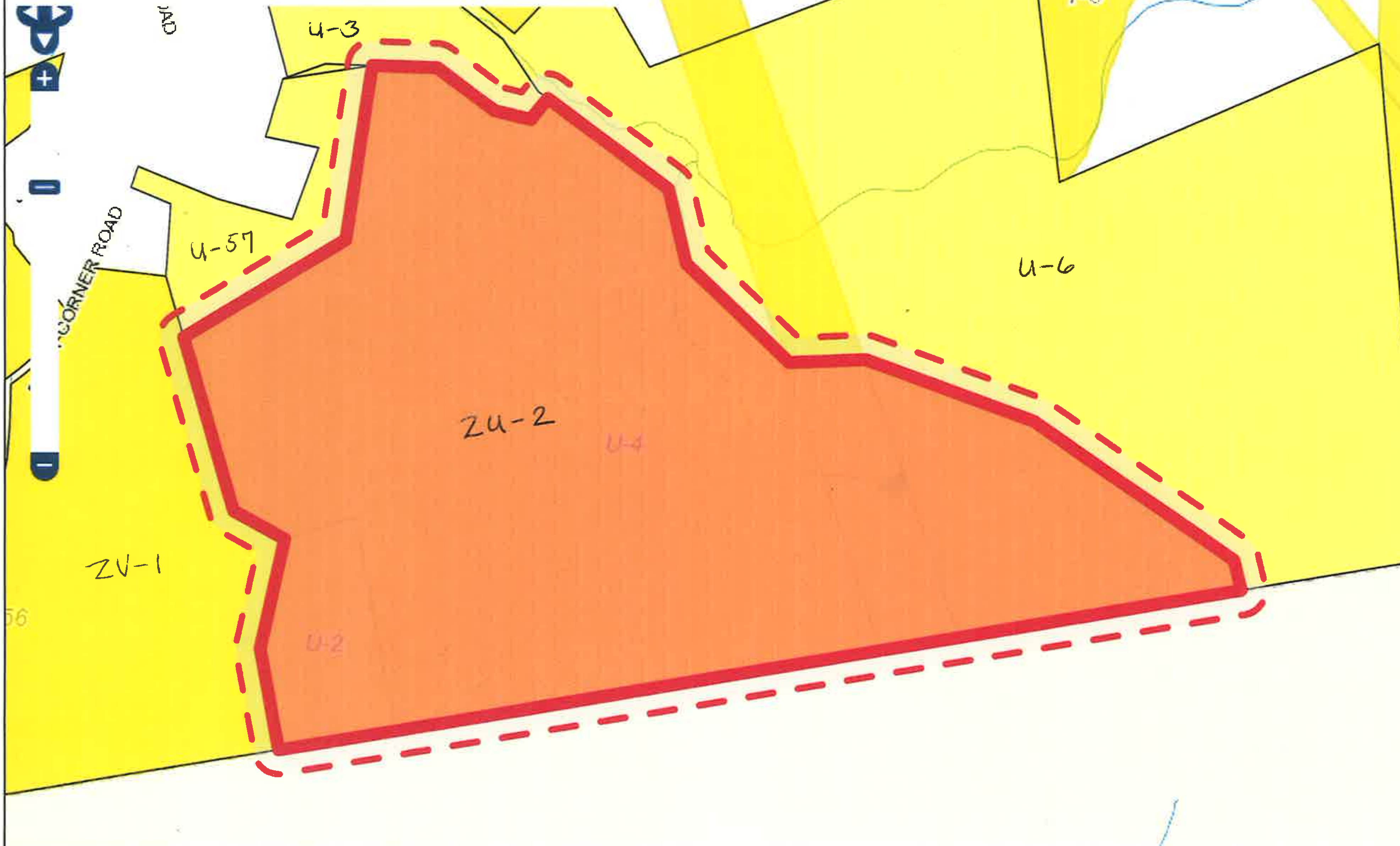
TOWN OF SHUTESBURY CERTIFIED 100' ABUTTERS LIST FOR PARCEL ZU-2 OFF PRATT CORNER RD

MAP	LOT	OWNER	CO-OWNER	MAILING ADDRESS	TOWN	ST	ZIP	LOCATION
ZU	2	W D COWLS INC		P O BOX 9677	NORTH AMHERST	MA	01059	PRATT CORNER RD
U	3	TOWN OF AMHERST		4 BOLTWOOD AVENUE	AMHERST	MA	01002	PRATT CORNER RD
U	**6**	TOWN OF AMHERST		4 BOLTWOOD AVENUE	AMHERST	MA	**1002**	PRATT CORNER RD
U	57	TRAPANI JOSEF G	TRAPANI ANNA E	692 PRATT CORNER RD	AMHERST	MA	01002	692 PRATT CORNER RD
ZV	1	POVERTY MOUNTAIN FARM, LLC	C/O WEIR, K. & BANFIELD-WEIR, C	760 PRATT CORNER RD	AMHERST	MA	01002	PRATT CORNER RD

FOR: TRC
650 Suffolk ST, Lowell, MA 01854
Molly Lennon, Environmental Scientist
Mlennon@trccompanies.com

Respectfully,
Leslie Bracebridge, Assessors Clerk for
Kevin Rudden, Administratve Assessor
9/8/2020

200908 ZU-2 100' ABUTTERS COWLS



Town of Shutesbury, Massachusetts

Selected Parcel: PRATT CORNER RD ID: ZU-2

Printed 9/8/2020 from http://www.mainstreetmaps.com/ma/shutesbury/public.asp

100 m
500 ft

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MainStreetMaps
MainStreetGIS, LLC
www.mainstreetgis.com

SHUTESBURY CONSERVATION COMMISSION
NOTIFICATION TO ABUTTERS

In accordance with the second paragraph of the Massachusetts Wetlands Protection Act (G.L. Ch. 131 §40), and §10.05(4)(a) of 310 CMR 10.00, and the Shutesbury Wetlands Protection Bylaw and regulations, you are hereby notified of a public hearing on the matter described below.

A. An ANRAD has been filed with the Shutesbury Conservation Commission.

B. The name of the applicant is: W.D. Cowls, Inc.____________________________

C. The address/lot number of the land where the activity is proposed: Pratt Corner Road, Shutesbury, MA (Parcel ID: ZU-2)

D. The proposed activity is: Review of delineated wetland resources._____ _________
____

E. A Public Hearing regarding this ANRAD will be held on: _November 12, 2020_____ __

F. **Public Participation will be via Virtual Means Only:** Governor Baker issued an Emergency Order on March 12, 2020 allowing public bodies greater flexibility in utilizing technology in the conduct of meetings under the Open Meeting Law. The Shutesbury Conservation Commission greatly values the participation of its citizens in the public meeting process, but given the current circumstances and recommendations to limit or avoid public gatherings, including Governor Baker's State of Emergency, together with the present closure of Shutesbury Town Hall, the Town has decided to implement the "remote participation" procedures allowed under Governor Baker's Emergency Order for all boards, committees, and commissions.
Remote access information will be published on the Shutesbury meeting calendar: www.shutesbury.org/node/2. Click on the agenda for the meeting you wish to attend.

G. The ANRAD may be examined on the Shutesbury Conservation Commission website: shutesbury.org/concom. A paper copy may be obtained, for a fee, from the Shutesbury Town Clerk: townclerk@shutesbury.org or 413.259.1204. Copies may also be obtained from the applicant or the applicant's representative.

Notice of the public hearing, including date, time, and place will be published at least five business days in advance in **Greenfield Recorder** or the **Hampshire Daily Gazette**.

For more information about this application or the Wetlands Protection Act, contact the Shutesbury Conservation Commission (concom@shutesbury.org or 413.259.3792) or the Department of Environmental Protection (DEP) Western Region Office at (413.784.1100). For information about the Shutesbury Wetlands Protection Bylaw, contact the Shutesbury Conservation Commission.

AFFIDAVIT OF SERVICE

I, Jeff Brandt, hereby certify under the pains and penalties of perjury that on October 26, 2020 I gave notification to abutters in compliance with the Shutesbury Wetlands Protection Bylaw and regulations as well as the second paragraph of the Massachusetts General Laws, Chapter 131, Section 40 and the DEP Guide to Abutter Notification in connection with the following matter:

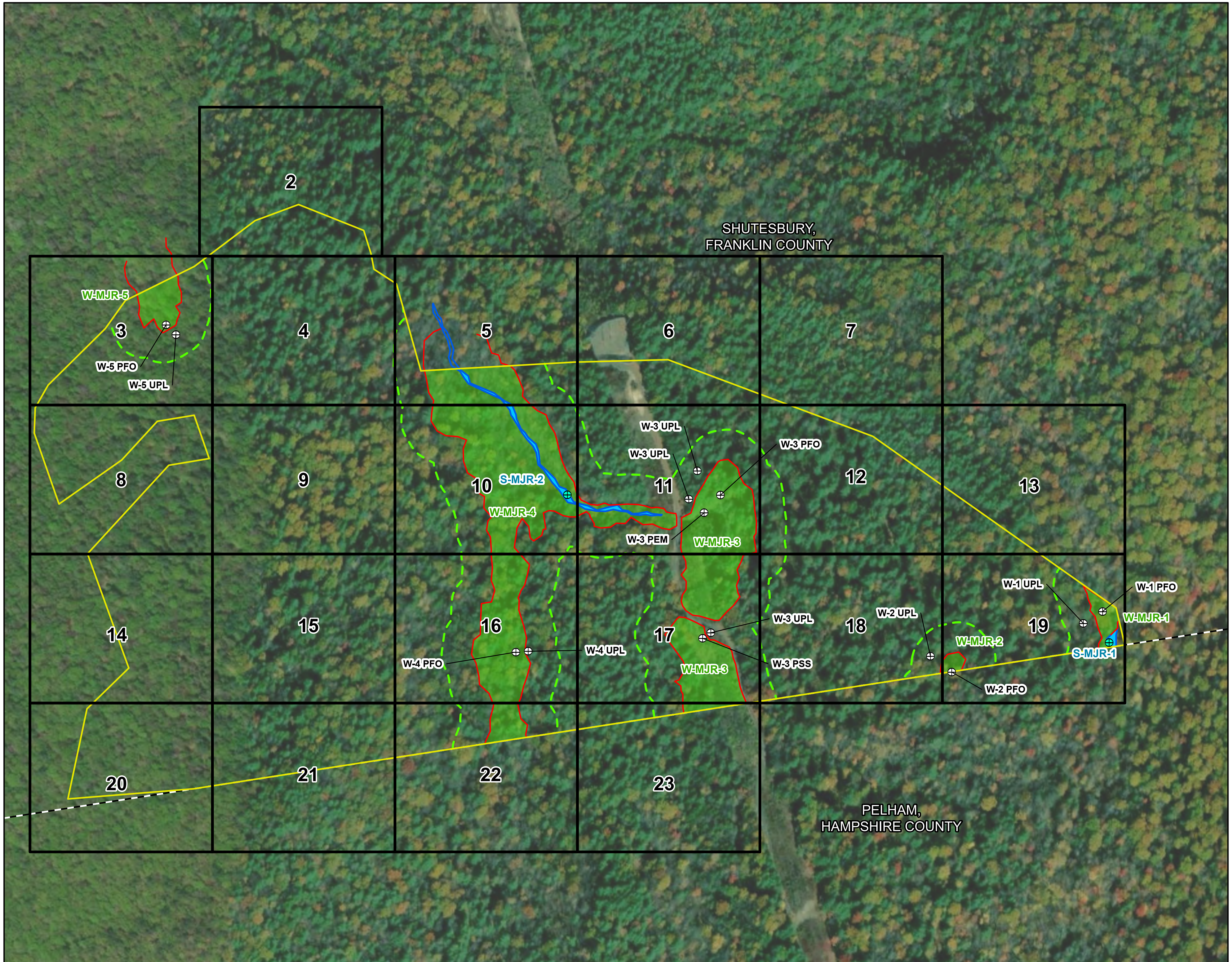
> An Abbreviated Notice of Resource Area Delineation application was filed under the Massachusetts Wetlands Protection Act by W.D. Cowls, Inc. with the Shutesbury Conservation Commission on October 26, 2020 for the property located off Pratt Corner Road, Shutesbury, Massachusetts (Assessor's ID ZU-2).

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

Jeff Brandt ________________________ 10/26/2020 ________________________

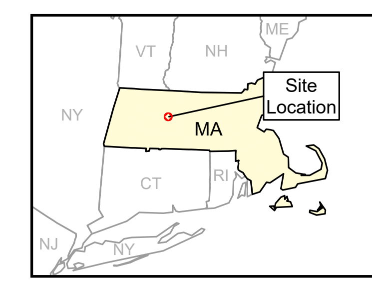
Signature Date

ATTACHMENT D
Figure 1: Delineated Resources Map
(September 2020)



PROJECT AREA
USACE PLOT
STREAM PLOT
DELINEATED INTERMITTENT STREAM
DELINEATED INTERMITTENT STREAM AREA
WETLAND BOUNDARY LINE
DELINEATED WETLAND
100-FT WETLAND BUFFER
TOWN BOUNDARY
1:50' MAP PAGE

BASE MAP: ESRI & CONTRIBUTORS, "WORLD IMAGERY"
DATA SOURCES: ESRI, TRC



1:3,900
1" = 325'
0 325 650 FEET

PROJECT:
PRATT SOUTH PROJECT
SHUTESBURY, FRANKLIN COUNTY, MA

TITLE:
WETLAND DELINEATION

DRAWN BY:	P. JACQUES	PROJ. NO.:	402186.0000.0000
CHECKED BY:	A. THOMPSON	**ANRAD FIGURE**	
APPROVED BY:	M. LENNON	**Page 1 of 23**	
DATE:	SEPTEMBER 2020		

TRC

6 Ashley Drive
1st Floor
Scarborough, ME 04074
Phone: 207.879.1930

FILE: Pratt_South

Coordinate System: NAD 1983 StatePlane New Hampshire FIPS 2800 Feet; Map Rotation: 0
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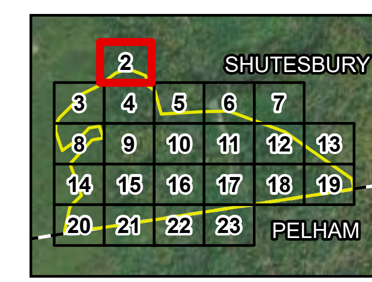
PROJECT AREA
STREAM FLAG
STREAM PLOT
WETLAND FLAG
USACE PLOT
DELINEATED INTERMITTENT STREA
DELINEATED INTERMITTENT STREAM AREA
WETLAND BOUNDARY LINE
DELINEATED WETLAND
100-FT WETLAND BUFFER
TOWN BOUNDARY
1:50' MAP PAGE

BASE MAP: ESRI & CONTRIBUTORS, "WORLD IMAGERY"
DATA SOURCES: ESRI, TRC

1:600
1" = 50'
0 50 100 FEET



PROJECT:
PRATT SOUTH PROJECT
SHUTESBURY, FRANKLIN COUNTY, MA

TITLE:
WETLAND DELINEATION

DRAWN BY:	P. JACQUES	PROJ. NO.:	402186.0000.0000
CHECKED BY:	A. THOMPSON	ANRAD FIGURE Page 2 of 23	
APPROVED BY:	M. LENNON		
DATE:	SEPTEMBER 2020		

TRC
6 Ashley Drive
1st Floor
Scarborough, ME 04074
Phone: 207.879.1930

FILE: Pratt_South

Coordinate System: NAD 1983 StatePlane New Hampshire FIPS 2800 Feet; Map Rotation: 0
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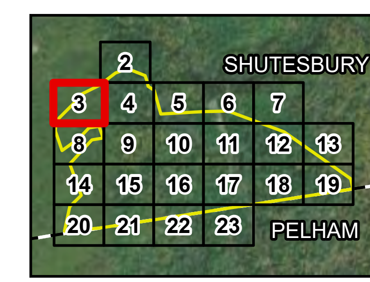
PROJECT AREA
STREAM FLAG
STREAM PLOT
WETLAND FLAG
USACE PLOT
DELINEATED INTERMITTENT STREA
DELINEATED INTERMITTENT STREAM AREA
WETLAND BOUNDARY LINE
DELINEATED WETLAND
100-FT WETLAND BUFFER
TOWN BOUNDARY
1:50' MAP PAGE

BASE MAP: ESRI & CONTRIBUTORS, "WORLD IMAGERY"
DATA SOURCES: ESRI, TRC



N

1:600
1" = 50'
0 50 100 FEET

PROJECT:
PRATT SOUTH PROJECT
SHUTESBURY, FRANKLIN COUNTY, MA

TITLE:
WETLAND DELINEATION

DRAWN BY:	P. JACQUES	PROJ. NO.:	402186.0000.0000
CHECKED BY:	A. THOMPSON	**ANRAD FIGURE** Page 3 of 23	
APPROVED BY:	M. LENNON		
DATE:	SEPTEMBER 2020		

TRC
6 Ashley Drive
1st Floor
Scarborough, ME 04074
Phone: 207.879.1930

FILE: Pratt_South

Coordinate System: NAD 1983 StatePlane New Hampshire FIPS 2800 Feet; Map Rotation: 0
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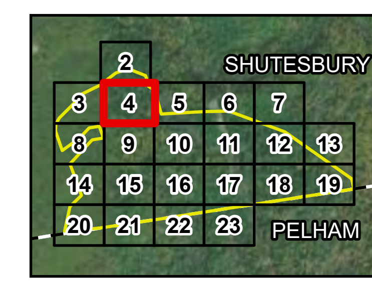
PROJECT AREA
STREAM FLAG
STREAM PLOT
WETLAND FLAG
USACE PLOT
DELINEATED INTERMITTENT STREA
DELINEATED INTERMITTENT STREAM AREA
WETLAND BOUNDARY LINE
DELINEATED WETLAND
100-FT WETLAND BUFFER
TOWN BOUNDARY
1:50' MAP PAGE

BASE MAP: ESRI & CONTRIBUTORS, "WORLD IMAGERY"
DATA SOURCES: ESRI, TRC



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1" = 50'
0 50 100 FEET

PROJECT:
PRATT SOUTH PROJECT
SHUTESBURY, FRANKLIN COUNTY, MA

TITLE:
WETLAND DELINEATION

DRAWN BY:	P. JACQUES	PROJ. NO.:	402186.0000.0000
CHECKED BY:	A. THOMPSON	**ANRAD FIGURE**	
APPROVED BY:	M. LENNON	**Page 4 of 23**	
DATE:	SEPTEMBER 2020		

TRC
6 Ashley Drive
1st Floor
Scarborough, ME 04074
Phone: 207.879.1930

FILE: Pratt_South

Coordinate System: NAD 1983 StatePlane New Hampshire FIPS 2800 Feet; Map Rotation: 0
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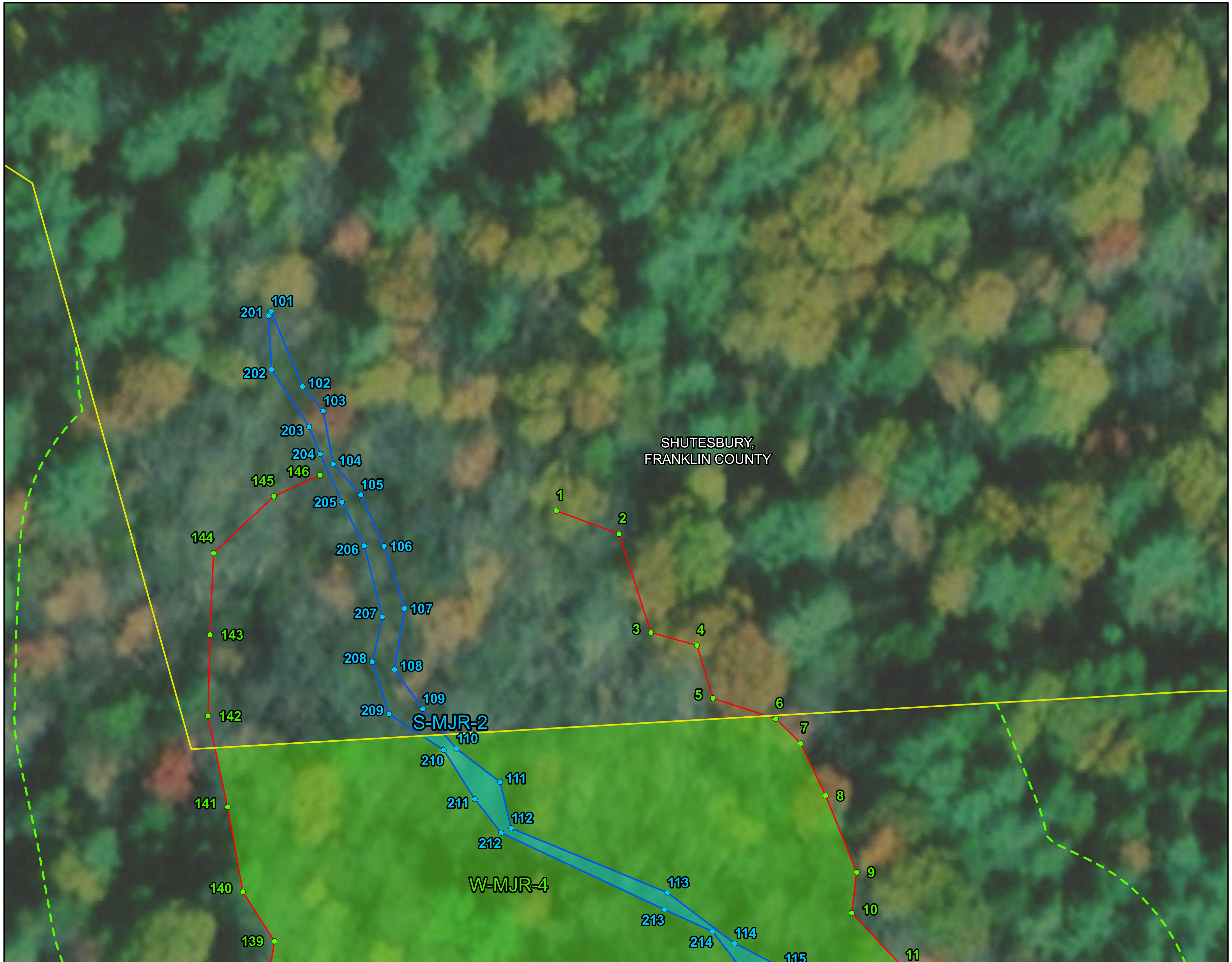

PROJECT AREA
STREAM FLAG
STREAM PLOT
WETLAND FLAG
USACE PLOT
DELINEATED INTERMITTENT STREA
DELINEATED INTERMITTENT STREAM AREA
WETLAND BOUNDARY LINE
DELINEATED WETLAND
100-FT WETLAND BUFFER
TOWN BOUNDARY
1:50' MAP PAGE

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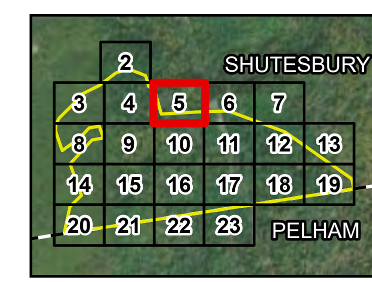

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USACE PLOT
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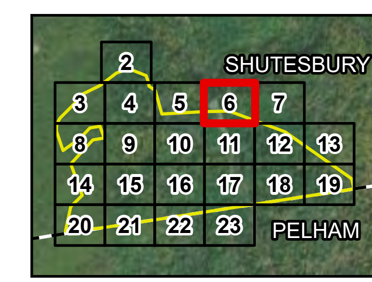

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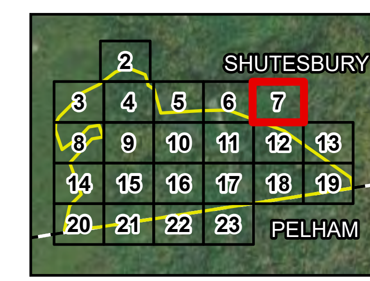

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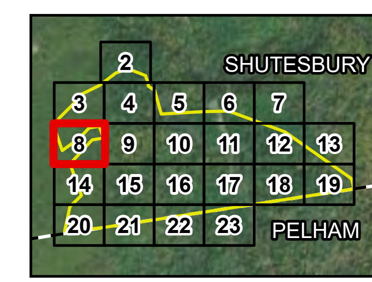

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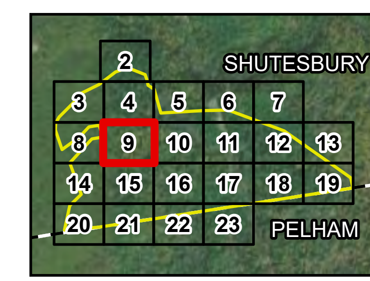

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- PROJECT AREA
- STREAM FLAG
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- USACE PLOT
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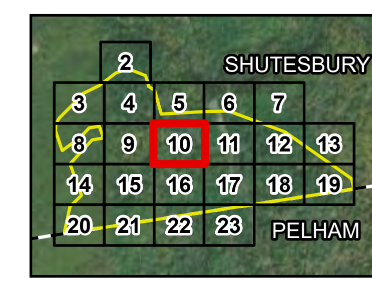

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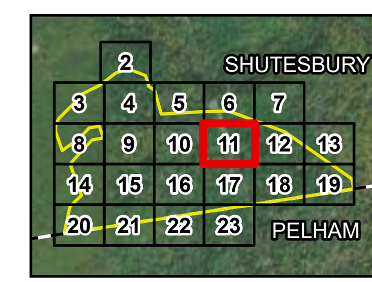

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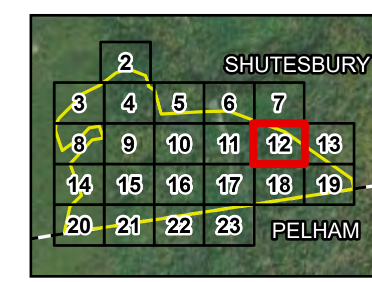

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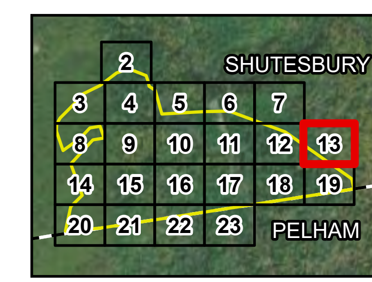

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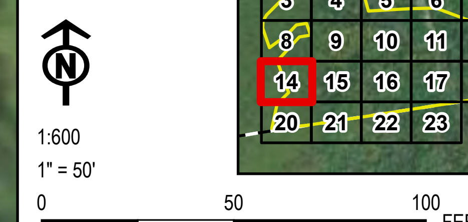

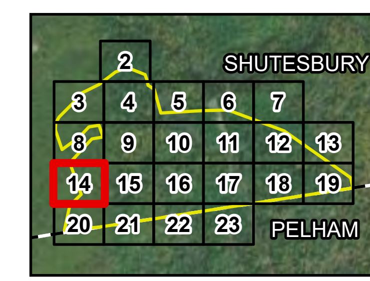

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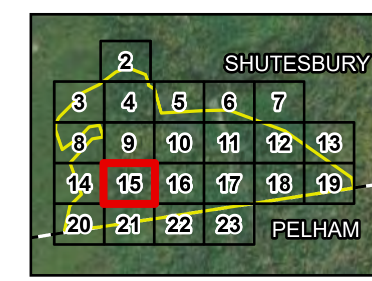

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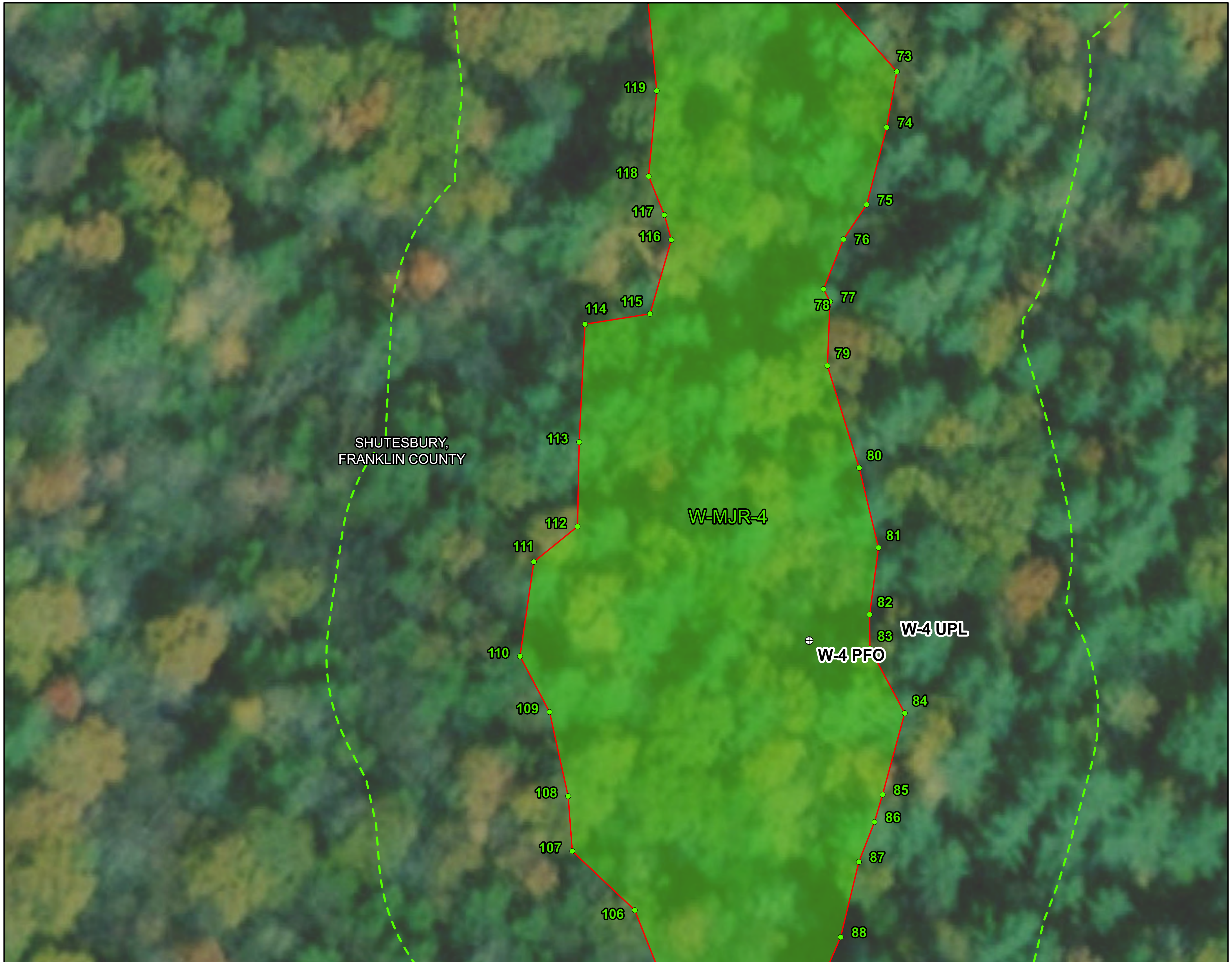

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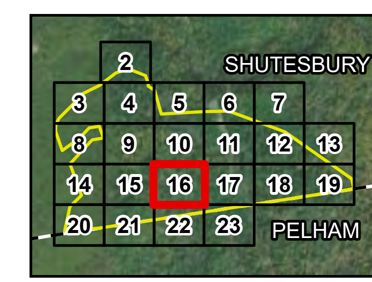

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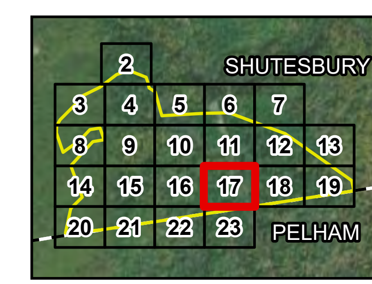

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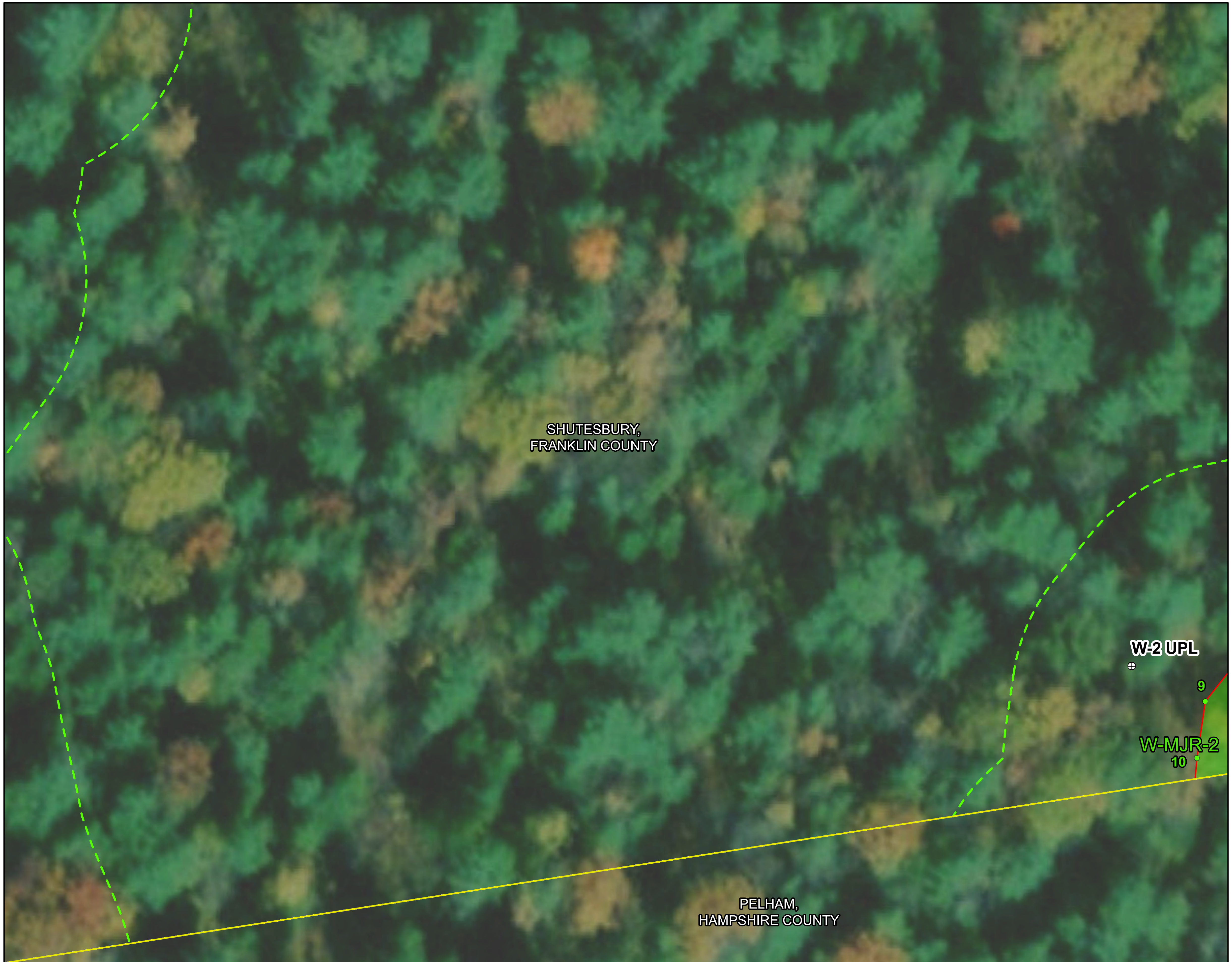

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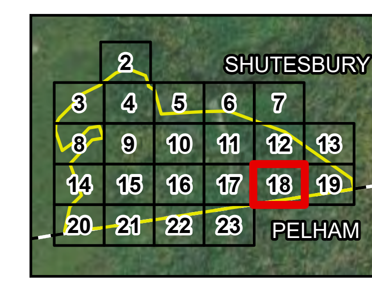

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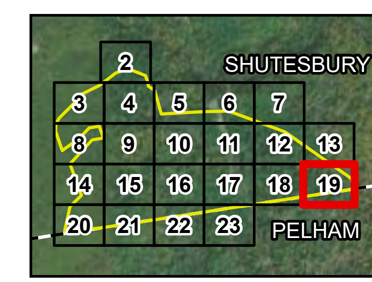
WETLAND BOUNDARY LINE
DELINEATED WETLAND
100-FT WETLAND BUFFER
TOWN BOUNDARY
1:50' MAP PAGE

BASE MAP: ESRI & CONTRIBUTORS, "WORLD IMAGERY"
DATA SOURCES: ESRI, TRC



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1:600
1" = 50'
0 50 100 FEET

PROJECT:

PRATT SOUTH PROJECT
SHUTESBURY, FRANKLIN COUNTY, MA

TITLE:

WETLAND DELINEATION

DRAWN BY:	P. JACQUES	PROJ. NO.:	402186.0000.0000
CHECKED BY:	A. THOMPSON	**ANRAD FIGURE**	
APPROVED BY:	M. LENNON	Page 19 of 23	
DATE:	SEPTEMBER 2020		

TRC
6 Ashley Drive
1st Floor
Scarborough, ME 04074
Phone: 207.879.1930

FILE: Pratt_South

Coordinate System: NAD 1983 StatePlane New Hampshire FIPS 2800 Feet; Map Rotation: 0
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PROJECT AREA
STREAM FLAG
STREAM PLOT
WETLAND FLAG
USACE PLOT
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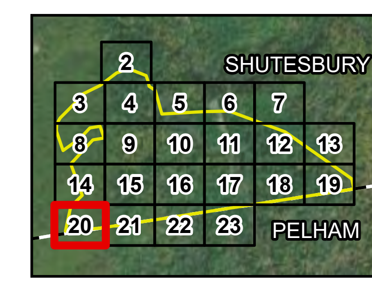

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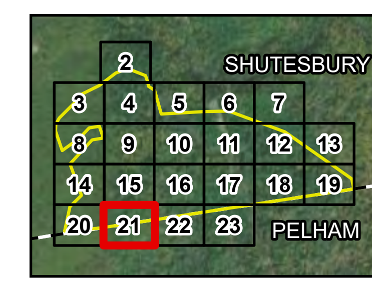

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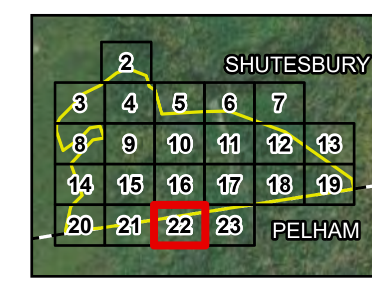

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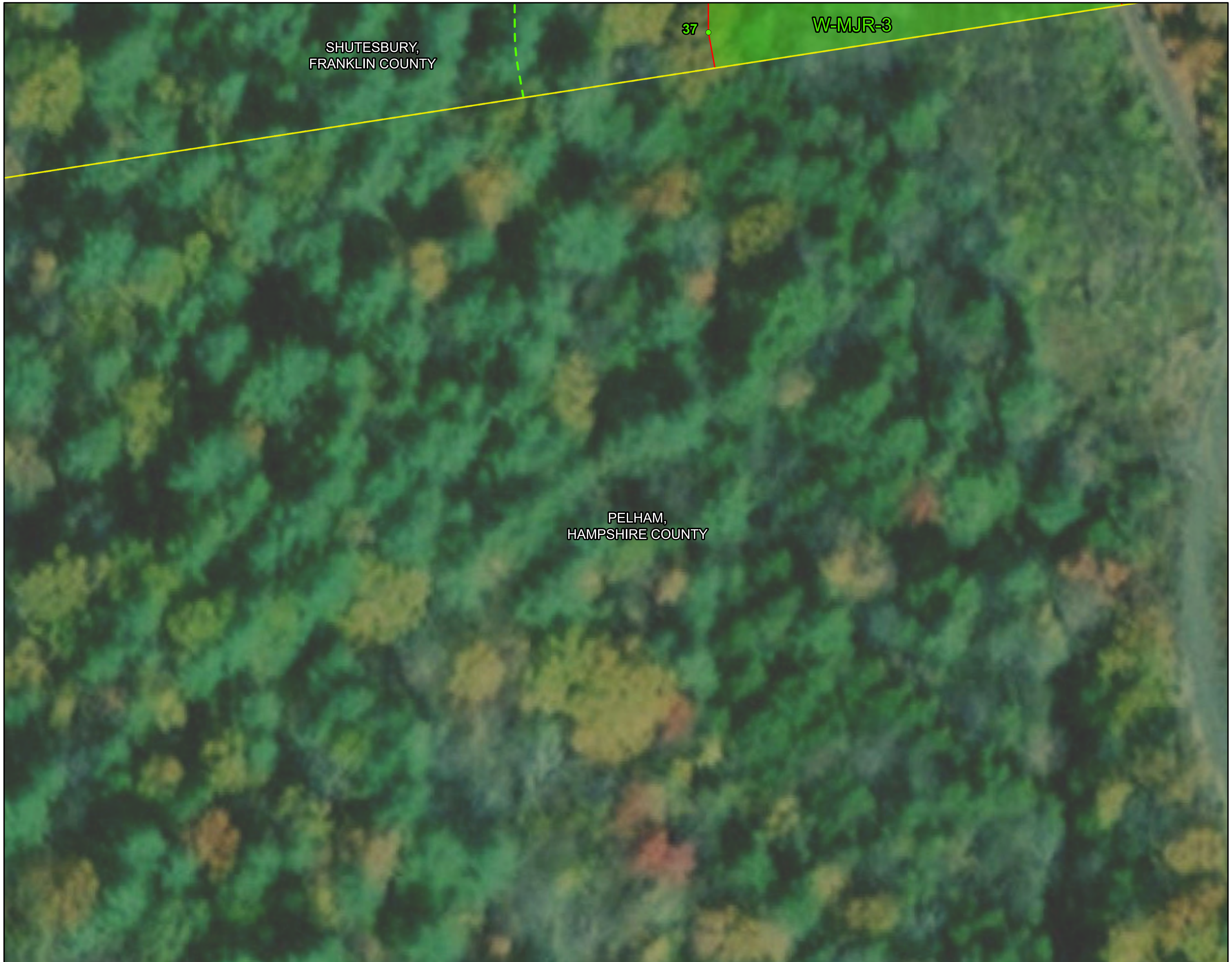

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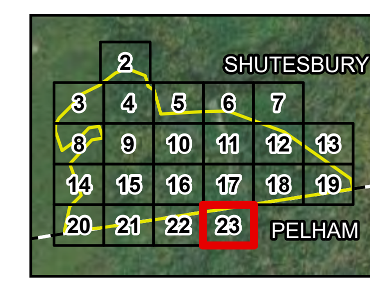

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