

## 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

## Montague Road Project Carver Road West (Parcel ID ZD-37)

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

September 2021



September 30, 2021

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

**RE:** Montague Road Project

Carver Road West (Parcel ID ZD-37)
Abbreviated Notice of Resource Area Delineation (ANRAD)

Dear Commissioners:

TRC Companies (TRC) is writing on behalf of W.D. Cowls to file an ANRAD for a parcel off Montague Road (Carver Road West), Shutesbury, MA (Site) (Figure 1 in Attachment G). The Site consists of approximately 157 acres of a 263-acre parcel (listed by the Shutesbury tax assessor as Parcel ID ZD-37).

#### **Project History**

TRC originally conducted a wetland and waterbody delineation survey in October 2019, focused on the approximately 67 acres north of Carver Road (Figure 2 in Attachment G). This survey resulted in an overall delineation of six wetlands and one intermittent stream; the wetland and waterbody delineation report included as Attachment B reflects this portion of the survey effort.

An ANRAD application focused on the area north of Carver Road was originally filed with the Shutesbury Conservation Commission (SCC) on December 27, 2019 and the SCC opened the public hearing on January 8, 2020. On January 22, 2020, MassDEP assigned file number 286-0274 to this ANRAD. The SCC subsequently hired another consultant (Stockman Associates, LLC; SA) to review the resource area delineation. Several site visits to review the resource areas and make recommended adjustments followed:

- April 8, 2020: TRC and SA reviewed the Site. SA recommended that TRC return independently to make recommended adjustments.
- April 29, 2020: TRC made adjustments based on the April 8th site visit with SA.
- June 1, 2020: TRC and SA returned to the Site and made minor adjustments in the field.

Following the June 1<sup>st</sup> site visit, TRC was informed that additional area south of Carver Road (approximately 90 acres; Figure 2 in Attachment G) should be included to support future project plans. TRC alerted the SCC to this change and received permission to add the expansion to the existing application and review process. TRC conducted a resource area survey of this additional area in July and August 2020. This resulting in expansion of previously identified wetlands and delineation of four new wetlands and one new intermittent stream; the wetland determination data forms in Attachment C reflect this portion of the survey effort.

During the latter portion of 2020, TRC also spent time addressing SA's comments (dated July 21, 2020).

Follow up work included corresponding with MA Natural Heritage Endangered Species Program (NHESP) to determine the history of the NHESP certified vernal pool at the Site. Information from NHESP about this vernal pool is included in Attachment E. This vernal pool was located in NHESP's database

based on an estimated location northeast of W-GR-2 and W-MBF-11. During the prior site visits, TRC and Stockman Associates confirmed that NHESP's location does not accurately reflect the pool's true location. Based on the original documentation, TRC has determined that the certified vernal pool corresponds with the vernal pool located within W-GR-2 north of Carver Road and updated the certified vernal pool symbol on the plans accordingly.

Moreover, several vernal pools were identified during the April and June 2020 site visits with SA. Photo documentation from these visits are provided in Attachment F. On the plans, these areas were delineated based on observed high water during the 2020 vernal pool breeding season. W-MBF-15 is not included as a potential vernal pool because it dried out before the observed egg masses could hatch; thus, it is a biological sink rather than a functional vernal pool.

TRC provided updated plans to the SCC on July 23, 2021, so the SCC could request review of the expanded study area by SA.

#### SCC Quorum

Between January 2020 and July 2021, TRC presented at multiple SCC meetings about this ANRAD. In most cases, these presentations were brief status updates coupled with continuance requests. During this period, SCC membership changed significantly such that a qualified quorum for this project no longer existed. Therefore, the SCC is unable vote to issue an Order of Resource Area Delineation for MassDEP file number 286-0274.

The SCC notified TRC of the lack of a qualified quorum at the SCC meeting on August 12, 2021. Subsequently, at the September 23, 2021 SCC meeting, the SCC notified TRC that the ANRAD would need to be withdrawn and a new one filed before additional review with SA could commence.

#### 2021 ANRAD Application

Based on the project history and the lack of a qualified quorum on the SCC, TRC has withdrawn the original ANRAD application (MassDEP file number 286-0274) and submitted this ANRAD addressing the entire approximately 157 acre Site for the SCC's review. This ANRAD filing will be receiving a new MassDEP file number.

The total linear feet of wetland edge and other resource areas delineated during the cumulative wetland and waterbody survey efforts for the Site in 2019 and 2020, the focus of this ANRAD filing, are summarized in the following table:

Resource Area	Delineated Length (linear feet)
Bordering Vegetated Wetland	19,790
Isolated Vegetated Wetland	1,315
Bank (Intermittent Stream)	2,020

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 (December 2019)
- 3. Attachment C Additional Wetland Data Forms (July 2020)
- 4. Attachment D NHESP Certified Vernal Pool Documentation



- 5. Attachment E Additional Vernal Pool Photographs
- 6. Attachment F Abutter Information (Certified Abutter List, Abutter Map & Abutter Notification)
- 7. Attachment G Locus Maps (June & September 2021)
- 8. Attachment H Figure 1: Delineated Resources Map (June 2021)

Please refer to Attachment B for survey methodology. Please refer to Attachments B through E for delineated wetland descriptions, US Army Corps of Engineers Wetland Determination forms, site photographs, and details about the various vernal pools at the Site. Please refer to Attachment H for resource area locations.

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 <a href="mailto:JBrandt@TRCcompanies.com">JBrandt@TRCcompanies.com</a>.

Sincerely,

**TRC Companies** 

Jeff Brandt

Senior Project Manager

Brondt



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





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.

## **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

Prov	ided by MassDEP:
	MassDEP File Number
	Document Transaction Number
	Shutesbury
	City/Town

#### A General Information

Carver Road West	Shutesbury	01072			
a. Street Address	b. City/Town	c. Zip Code			
	42.47575	-72.42678			
Latitude and Longitude:	d. Latitude	e. Longitude			
Map ZD	Lot 37				
f. Assessors Map/Plat Number	g. Parcel /Lot Number				
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			
413-539-1741					
h. Phone Number i. Fax Number	j. Email Address				
Property owner (if different from applicant)		<ul> <li>Check if more than one owner (attach addition sheet with names and contact information)</li> </ul>			
a. First Name	b. Last Name				
a. First Name c. Organization	b. Last Name				
	b. Last Name				
c. Organization	b. Last Name	g. Zip Code			
c. Organization d. Mailing Address		g. Zip Code			
c. Organization  d. Mailing Address  e. City/Town	f. State	g. Zip Code			
c. Organization  d. Mailing Address  e. City/Town  h. Phone Number  i. Fax Number	f. State	g. Zip Code			
c. Organization  d. Mailing Address  e. City/Town  h. Phone Number  Representative (if any):	f. State j. Email Address				
c. Organization  d. Mailing Address  e. City/Town  h. Phone Number  Representative (if any):  Jeff	f. State  j. Email Address  Brandt				
c. Organization  d. Mailing Address  e. City/Town  h. Phone Number  Representative (if any):  Jeff a. Contact Person First Name	f. State  j. Email Address  Brandt				
c. Organization  d. Mailing Address  e. City/Town  h. Phone Number  Representative (if any):  Jeff a. Contact Person First Name  TRC c. Organization 650 Suffolk Street	f. State  j. Email Address  Brandt				
c. Organization  d. Mailing Address  e. City/Town  h. Phone Number  Representative (if any):  Jeff a. Contact Person First Name  TRC c. Organization	f. State  j. Email Address  Brandt  b. Contact Person Last Nan				
c. Organization  d. Mailing Address  e. City/Town  h. Phone Number  Representative (if any):  Jeff a. Contact Person First Name  TRC c. Organization 650 Suffolk Street d. Mailing Address Lowell	f. State  j. Email Address  Brandt b. Contact Person Last Nan	ne 01854			
c. Organization  d. Mailing Address  e. City/Town  h. Phone Number  Representative (if any):  Jeff a. Contact Person First Name  TRC c. Organization 650 Suffolk Street d. Mailing Address  Lowell e. City/Town	f. State  j. Email Address  Brandt b. Contact Person Last Nan  MA f. State	01854 g. Zip Code			
c. Organization  d. Mailing Address  e. City/Town  h. Phone Number  Representative (if any):  Jeff a. Contact Person First Name  TRC c. Organization 650 Suffolk Street d. Mailing Address Lowell	f. State  j. Email Address  Brandt b. Contact Person Last Nan	01854 g. Zip Code			

Fees will be calculated for online users.

a. Total Fee Paid

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b. State Fee Paid

c. City/Town Fee Paid



B.

#### 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. Linear Feet Delineated

Aı	ea(s) De	elineated				
1.	Bordering \	/egetated Wetland (BVW)	19,790 Linear Feet of Boundary Delineated			
2.	Check all n	nethods used to delineate the Bo	·			
۷.	Oncok all n	terrous asca to define the Be	racing vegetated vvettaria (b	vvv) boarraary.		
	a. Ma	ssDEP BVW Field Data Form (a	ttached)			
	b. 🛛 Oth	ner Methods for Determining the	BVW boundary (attach docum	entation):		
	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 an	y other resource area boundarie	s that are delineated:			
	Isolated Vegetated Wetland 1,315					
	a. Resource Area b. Linear Feet Delinear					
Bank (intermittent streams)				2,020		

#### C. Additional Information

c. Resource Area

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. Suggestion 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.  $\boxtimes$  List the titles and final revision dates for all plans and other materials submitted with this Abbreviated Notice of Resource Area Delineation.

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## **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

⊃rov	ided by MassDEP:
	MassDEP File Number
	Document Transaction Number
	Shutesbury City/Town

#### D. Fees

6. Payor name on check: First Name

The fees for work proposed under each Abbreviated No calculated and submitted to the Conservation Commiss Wetland Fee Transmittal Form).					
1.  Fee Exempt: No filing fee shall be assessed for pr the Commonwealth, federally recognized Indian tribe ho or the Massachusetts Bay Transportation Authority.					
Applicants must submit the following information (in add Form) to confirm fee payment:	dition to the attached Wetland Fee Transmittal				
1224312	9/28/2021				
2. Municipal Check Number 3. Check date					
Paid online via eDEP at time of filing. 9/30/2021					
State Check Number 5. Check date					
TDC					

7. Payor name on check: Last Name

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### 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

P	rovided by MassDEP:
	MassDEP File Number
	Document Transaction Number
	Shuteshury

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.

	9/29/2021
. Signature of Applicant	2. Date
3. Signature of Property Owner (if different)  Jeff Brandt	4. Date 9/30/2021
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.

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



return key.



□ Online users: check box if fee exempt.

## **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

<b>4.</b> Ap	plicant Inform	nation				
l. Loca	ition of Project:					
Carv	er Road West (Pard	Shutesbury				
	eet Address	b. City/Town				
\$987			Paid online via el	DED at time of	of filing	
	amount		d. Check number	DEF at time t	or illing.	
0.100	o amount		d. Official fideliber			
2. Appl	icant:					
				W.D. Cowle	Inc	
a Firs	st Name	b. Last Name		c. Company	V.D. Cowls, Inc.	
	Box 9677	b. Edot Hamo		o. Company		
	iling Address					
	h Amherst		MA		01059	
	y/Town		f. Sta	ate.	g. Zip Code	
	539-1741		1. 010		g. 2.p 0000	
	one Number					
11. 1 11	one itamber					
B. Prop	erty Owner (if differ	ent):				
a. Firs	st Name	b. Last Name		c. Company		
d. Ma	iling Address					
e. City	y/Town		f. Sta	ate	g. Zip Code	
. 5						
	one Number					
3. Fee	es					
applicabl Area Del activity.	le project type). The ineations, is \$200 a	maximum fee for each	e Area Delineation incluch ANRAD, regardless of the a single-family house of the a single of t	of the number	r of Resource for any other	
2. 🖂		19,790	\$39,580	\$2.000 (1	maximum fee)	
	projects	a. feet of BVW	x \$2.00 =	b. Fee for I		
Othe		g., bank, riverfront are	ea, etc.):			
3.	cinalo family					
э. 🗀		a. linear feet	x \$2.00 =	b. Fee		
4. 🛛			\$6,670		mum fee)	
4. 🔼	all other projects	3,335 a. linear feet	x \$2.00 =	b. Fee	mum iee)	
	projects			000 ¢2		
		Total Fee	for all Resource Areas:	Fee		
			Otata abana of fillion of	\$987.50		
		;	State share of filing fee:		tal fee <b>less</b> \$12.50	
		<u> </u>	- ,	\$1,012.5	0	

City/Town share of filing fee:

6. 1/2 of total fee **plus** \$12.50



#### **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

#### 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.)



Citizens Bank CONNECTICUT 51-7011/2111

CHECK DATE

September 28, 2021

Security Check Fe Included Details on Back

One Thousand Twelve and 50/100 Dollars

PAY TO THE ORDER OF

Town of Shutesbury

Conservation Commission

Town Hall

PO Box 276, 1 Cooleyville Road

Shutesbury, MA 01072

AMOUNT

\$ 1,012.50

AUTHORIZED SIGNATURE

21 Griffin Road North Windsor, CT 06095 860.289.9692

EMILY BUSINESS FORMS 800.392.6018 DELTEK VISION

1224312

		Che	ck Date: 9/28/202	1		
Invoice Number	Date	Voucher	Amount	Discounts	Previous Pay	Net Amount
PARCEL ID ZD-37	9/28/2021	007757359801	1,012.50			1,012.50
Town of Shutesbury		TOTAL	1,012.50			1,012.50
Citizen Bank - Dishursement	9	123516				

# ATTACHMENT B Wetland and Waterbody Delineation Report (December 2019)





#### **Montague Road Project**

**Carver Road West Shutesbury, Massachusetts** 

#### Prepared By:

TRC Wannalancit Mills 650 Suffolk Street Lowell, Massachusetts 01854

# Wetland and Waterbody Delineation Report

December 2019



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#### 1.0 Introduction

This report presents the results of a wetland and waterbody delineation conducted on October 24, 25 and 28, 2019 by TRC Companies, Inc. (TRC) off Montague Road (Carver Road West) in the Town of Shutesbury, Franklin County, Massachusetts (Site). The survey included approximately 67 acres of the 263-acre parcel listed by the Shutesbury Tax Assessor as Parcel ID ZD-37.

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<sup>1</sup>, the National Hydrography Dataset;
- The Shutesbury, Massachusetts 7.5 Minute Quadrangle (USGS 2018);
- The FEMA Flood Insurance Rate Map (FIRM) Panel 2501280010A (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 with some steep slopes in the northeastern portion. The Site generally drains westward and southward off site to wetlands and tributaries to Roaring Brook to the southeast.

<sup>&</sup>lt;sup>1</sup> 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 A99	Zone AR/A
Zone AR	Zone V
Zone AR/AE	Zone VE, and
Zone AR/AO	Zones V1-V30
	Zone AR Zone AR/AE

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 2501280010A (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 statemapped aquatic resources.

According to TRC's review of NWI and MassGIS OLIVER mapping, there are two wetlands on site: one on the central section of the southern border, and one in the southeast corner of the Site. Both of these wetlands extend off site to the south.

#### 3.3 Mapped Soils

The NRCS's Web Soil Survey identifies twelve 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

Table 1. Mapped 30115									
Symbol	Soil Name	Hydric Rating (%)	Drainage Class	Hydrologic Soil Group	Farmland Classification				
50A	Wonsqueak muck, 0 to 2 percent slopes	100	Very poorly drained	B/D	Not prime farmland				
75B	Pillsbury fine sandy loam, 0 to 8 percent slopes, very stony	88	Poorly drained	D	Not prime farmland				
124C	Woodstock-Millsite-Rock outcrop complex, 8 to 15 percent slopes	0	Woodstock, very rocky: Somewhat excessively drained  Millsite, rocky: Well drained	Woodstock, very rocky: D Millsite, rocky: B	Not prime farmland				
128D	Millsite-Chichester complex, 15 to 25 percent slopes, rocky	0	Millsite, rocky: Well drained Chichester, very stony: Well drained	Millsite, rocky: B Chichester, very stony: A	Not prime farmland				
129D	Millsite-Woodstock complex, 15 to 25 percent slopes, very rocky	0	Millsite, very rocky: Well drained  Woodstock, very rocky: Somewhat excessively drained	Millsite, very rocky: B Woodstock, very rocky: D	Not prime farmland				
245C	Hinckley loamy sand, 8 to 15 percent slopes	0	Excessively drained	А	Farmland of statewide importance				
348B	Henniker sandy loam, 3 to 8 percent slopes	2	Well drained	В	All areas are prime farmland				
348C	Henniker sandy loam, 8 to 15 percent slopes	2	Well drained	В	Farmland of statewide importance				
348D	Henniker sandy loam, 15 to 25 percent slopes	0	Well drained	В	Not prime farmland				
368B	Metacomet fine sandy loam, 3 to 8 percent slopes	10	Moderately well drained	B/D	All areas are prime farmland				
368C	Metacomet fine sandy loam, 8 to 15 percent slopes	10	Moderately well drained	B/D	Farmland of statewide importance				
444C	Chichester fine sandy loam, 8 to 15 percent slopes	0	Well drained	А	Farmland of statewide importance				

#### 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 50A has an HSR of 100 percent, map unit 75B has an HSR of 88 percent, map units 368B and 368C have an HSR of 10 percent, map units 348B and 348C have an HSR of 2 percent, and map units 124C, 128D, 129D, 245C, 348D, and 444C have an HSR of 0 percent. For map unit 50A, the hydric components within the map unit are Wonsqueak; Bucksport; Medomak, fine-silty; Peacham, very stony; and Searsport. For map unit 75B, the hydric components within the map unit are Pillsbury, very stony; Peacham, very stony; and Wonsqueak. For map units 348B, 348C, 368B, and 368C, the hydric component within each map unit is Pillsbury.

#### 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 50A is rated as very poorly drained. Map unit 75B is rated as poorly drained. For map unit 124C, the Woodstock, very rocky component is rated as somewhat excessively drained and the Millsite, rocky component is rated as well drained. For map unit 128D, the Millsite, rocky component is rated as well drained and the Chichester, very stony component is rated as well drained. For map unit 129D, the Millsite, very rocky component is rated as well drained, and the Woodstock, very rocky component is rated as somewhat excessively drained. Map unit 245C is rated as excessively drained. Map units 348B, 348C, 348D, and 444C are rated as well drained. Map units 368B and 368C are rated as moderately well 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, six map units (50A, 75B, 124C, 128D, 129D, and 348D) are classified as "not prime farmland", four map units (245C, 348C, 368C, and 444C) are classified as "farmland of statewide importance," and two map units (348B and 368B) are classified as "all areas are prime farmland."

#### 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 50A, 368B, and 368C are in the dual HSG B/D. Map unit 75B is in HSG D. For map unit 124C, the Woodstock, very rocky component is in HSG D and the Millsite, rocky component is in HSG B. For map unit 128D, the Millsite, rocky component is in HSG B and the Chichester, very stony component is in HSG A. For map unit 129D, the Millsite, very rocky component is in HSG B and the Woodstock, very rocky component is in HSG D. Map units 245C and 444C are in HSG A. Map units 348B, 348C, and 348D are in HSG B.

#### 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 October 24, 25, and 28 2019.



#### 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 eastern hemlock (*Tsuga canadensis*), American wintergreen (*Pyrola americana*), partridge berry (*Mitchella ripens*), American witch-hazel (*Hamamelis virginiana*), northern red oak (*Quercus rubra*), mountain-laurel (*Kalmia latifolia*), prickley tree-club moss (*Dendrolycopodium dendroideum*), and eastern white pine (*Pinus strobus*). The terrain of the Site is gently sloping to the west. The soils observed throughout upland portions of the Site were generally classified as silt loam or sandy loam.

#### 5.2 Delineated Wetlands and Waterbodies

TRC identified six wetlands and one waterbody within the Site during the October 2019 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-GR-1 is a palustrine forested (PFO) wetland associated with stream S-GR-1. This wetland is located along the eastern edge of the Site and extends off site to the east. The dominant vegetation included yellow birch (*Betula alleghaniensis*), Eastern hemlock (*Tsuga canadensis*), red maple (*Acer rubrum*), mountain laurel (*Kalmia latifolia*), three-leaf goldthread (*Coptis trifolia*), and bristly dewberry (*Rubus hipsidus*). Indicators of wetland hydrology included a high water table, saturation, water-stained leaves, drainage patterns, and microtopographic relief. Soils were composed of a thick layer of dark silt loam on top of sandy loam. This soil 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). Soils were assumed to be hydric due to the presence of wetland hydrology, hydrophytic vegetation, and a definitive wetland boundary. *This wetland is MassDEP jurisdictional and it also falls under USACE jurisdiction, as it is likely connected to other WOUS.* 

**Wetland W-GR-2** is a PFO wetland a located on the southern edge of the Site and extends off site to the south. The dominant vegetation included red maple, highbush blueberry (*Vaccinium corymbosum*), and



three-leaf goldthread. Indicators of wetland hydrology included saturation, sparsely vegetated concave surface, microtopographic relief, and the FAC-neutral test. Soils were composed of a layer of dark silt loam over dark grey silt loam. This soil 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). Soils were assumed to be hydric due to the presence of wetland hydrology, hydrophytic vegetation, and a definitive wetland boundary. This wetland is likely MassDEP jurisdictional as a BVW to streams off site to the south and it also falls under USACE jurisdiction, as it is likely connected to other WOUS.

Wetland W-GR-3 is an isolated palustrine scrub-shrub (PSS) wetland located completely on site in the northern portion of the Site. The dominant vegetation included red maple, northern red oak, eastern hemlock, mountain laurel, eastern white pine, striped maple (*Acer pensylvanicum*), highbush blueberry, three-leaf goldthread, and cinnamon fern (*Osmundastrum cinnamomeum*). Indicators of wetland hydrology included saturation, presence of reduced iron, geomorphic position, and microtopographic relief. Soils were composed of a layer of dark sandy loam over light-yellowish brown sandy loam. This soil meets Hydric Soil Indicator F7 as described in *Field Indicators of Hydric Soils in the United States, Version 8.2* (Field Indicators) (USDA NRCS, 2018). *This wetland is not SCC jurisdictional, as it is under 1,000 square feet in area. Similarly, it is not MassDEP jurisdictional as BVW or as ILSF and is also unlikely to fall under USACE jurisdiction.* 

**Wetland W-GR-4** is an isolated palustrine emergent (PEM) wetland located in the western portion of the Site and is completely contained on site. The dominant vegetation included nodding sedge (*Carex gynandra*), bristly dewberry, and New York fern (*Parathelypteris noveboracensis*). Indicators of wetland hydrology included saturation, microtopographic relief, and the FAC-neutral test. Soils were composed of a layer of dark mucky peat. This soil meets hydric soil indicator A1 as described in the Field Indicators (USDA NRCS, 2018). *This wetland is SCC jurisdictional as an isolated wetland. However, it is not MassDEP jurisdictional as BVW or as ILSF and is also unlikely to fall under USACE jurisdiction.* 

**Wetland W-MJR-5** is an isolated PEM wetland located in the western portion of the Site and is completely contained on site. The dominant vegetation within this wetland included New York fern and cottongrass bulrush (*Scirpus cyperinus*). Indicators of wetland hydrology included saturation, a dry-season water-table, geomorphic position, and the FAC-neutral test. Soils were composed of a layer of dark loam over sandy clay. This soil meets Hydric Soil Indicators A11, A12, and F2 as described in the Field Indicators (USDA NRCS, 2018). *This wetland is SCC jurisdictional as an isolated wetland. However, it is not MassDEP jurisdictional as BVW or as ILSF and is also unlikely to fall under USACE jurisdiction.* 

**Wetland W-MJR-6** is an isolated PFO wetland located in the western portion of the Site and is completely contained on site. The dominant vegetation within this wetland included eastern hemlock, yellow birch, mountain laurel, and interrupted fern (*Osmunda claytoniana*). Indicators of wetland hydrology included saturation, a dry-season water table, and geomorphic position. Soils within Wetland W-MJR-6 were composed of a layer of dark silt loam over sandy clay. This soil meets Hydric Soil Indicator A12 as described in the Field Indicators (USDA NRCS, 2018). *This wetland is SCC jurisdictional as an isolated wetland and is MassDEP jurisdictional as ILSF. It is unlikely to fall under USACE jurisdiction.* 

#### **5.2.2** Delineated Waterbodies

**Stream S-GR-1** is an intermittent stream (R4, NWI classification) that flows out of wetland W-GR-1 off site southeastward from the southeast corner of the Site. The streambed was comprised of organic matter. TRC observed an average width of approximately 2 feet and a water depth of approximately 2 inches. Stream



S-GR-1 has defined banks such that the OHWM and the banks are coincident. The OHWM was delineated on one side of the stream.

The USGS does not map stream S-MJR-7. However, it is digitized and the USGS StreamStats analysis in Appendix E shows that is 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.

Field Designated Wetland Field **Assumed Jurisdictional** Assumed Buffer/ Setback NWI Classification <sup>1</sup> Designation **Status** Requirements W-GR-1 **PFO** USACE/MassDEP/Local 100-ft buffer zone W-GR-2 **PFO** USACE/MassDEP/Local 100-ft buffer zone W-GR-3 **PSS** None None W-GR-4 PEM Local 100-ft buffer zone Local W-MJR-5 100-ft buffer zone PEM W-MJR-6 **PFO** MassDEP/Local 100-ft buffer zone S-GR-1 R4 USACE/MassDEP/Local 100-ft buffer zone

Table 2. Delineated Wetlands and Waterbodies

#### 6.0 Conclusions

It is TRC's opinion that delineated wetlands W-GR-1 and W-GR-2 are BVWs regulated by MassDEP and are also likely under USACE jurisdiction. Wetlands W-GR-4, W-MJR-5, and W-MJR-6 are SCC jurisdictional as isolated wetlands. W-MJR-6 is also likely MassDEP jurisdictional as ILSF. Wetland W-GR-3 is less than 1,000 square feet in area and, therefore, is not regulated at the federal, state, or local level. 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 stream S-GR-1 is USACE jurisdictional, as it is hydrologically connected to WOUS. This stream is also regulated by the MassDEP, as it flows within, into, or out of a MassDEP-regulated wetland resource area.

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

<sup>&</sup>lt;sup>1</sup> 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).

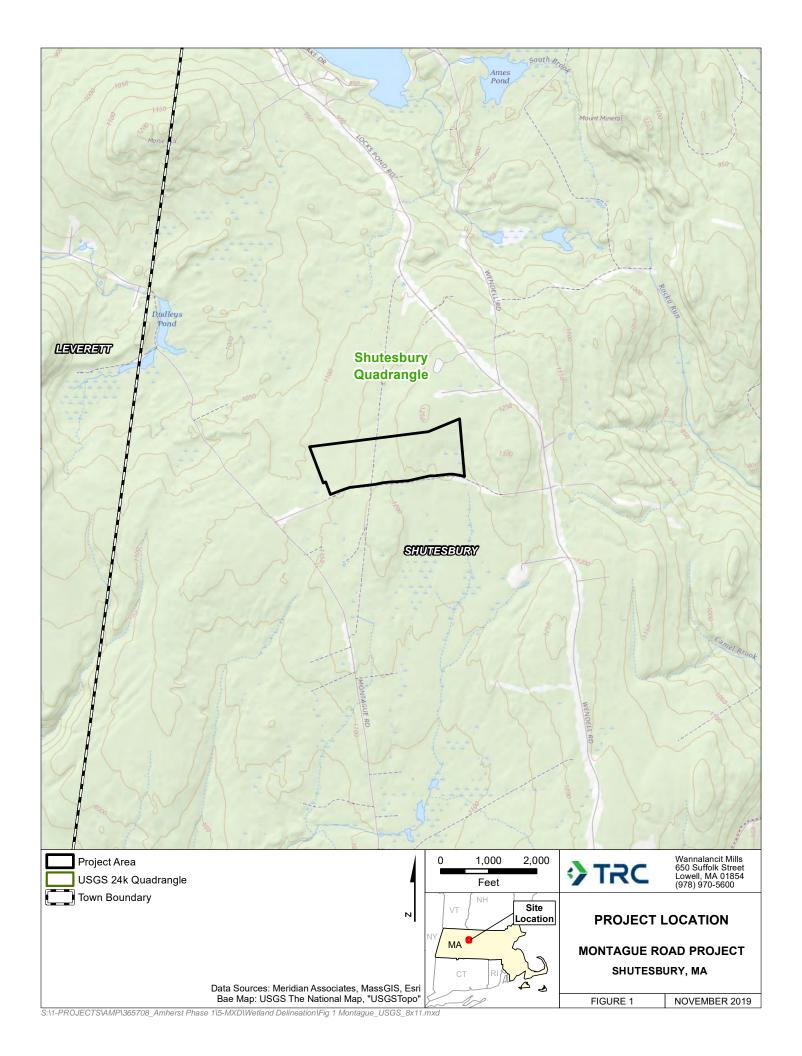


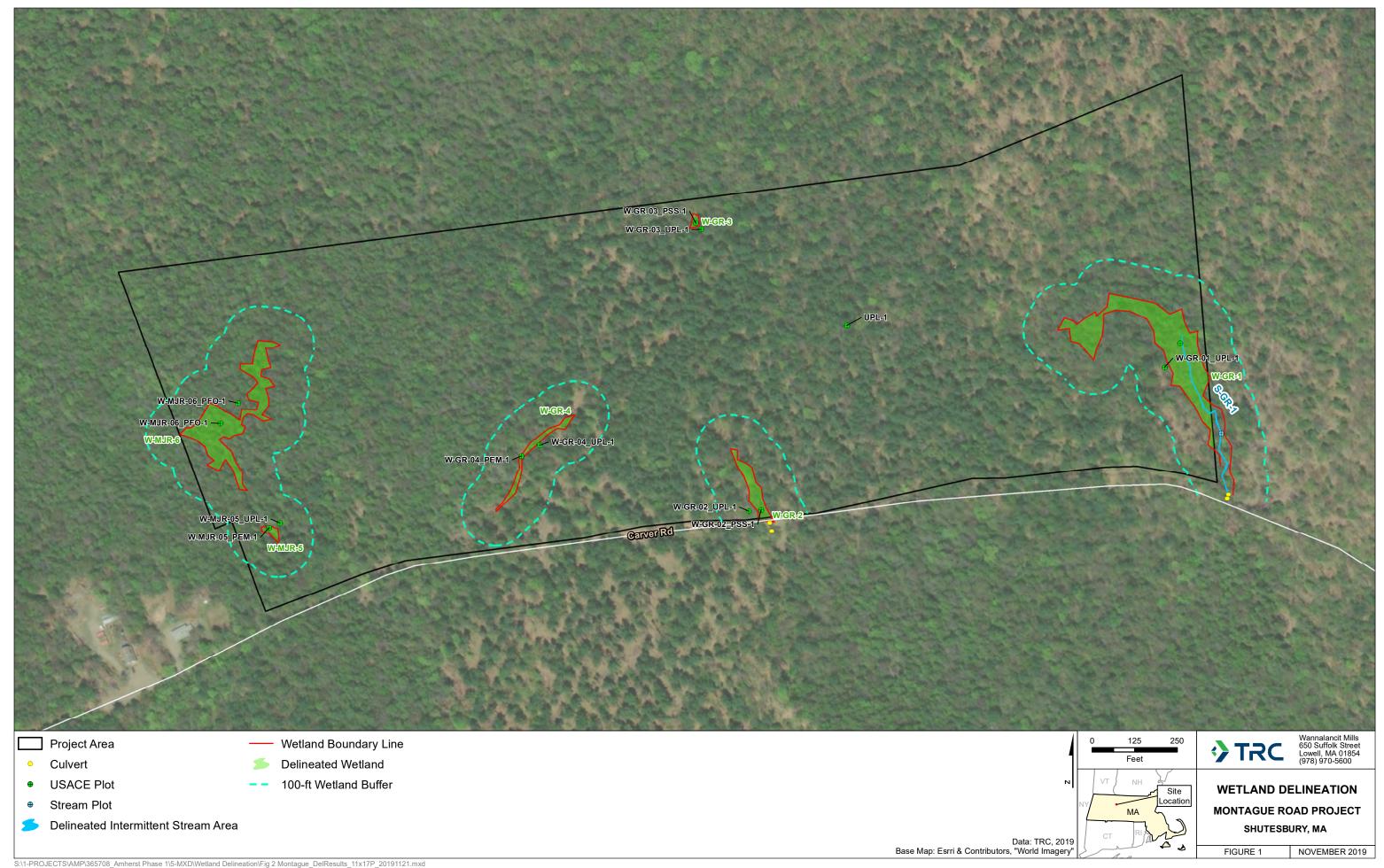
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**Appendix A: Figures** 







**Appendix B: Photographs** 

## MONTAGUE ROAD PROJECT CARVER ROAD WEST, SHUTESBURY, MASSACHUSETTS

Photograph: 1

Date: 10/24/2019

Direction: North

Description:

Typical conditions observed within forested

wetland W1.



Photograph: 2

Date: 10/24/2019

Direction: Southeast

Description:

W-GR-1-PFO Data Point.





## MONTAGUE ROAD PROJECT CARVER ROAD WEST, SHUTESBURY, MASSACHUSETTS

Photograph: 3

Date: 10/24/2019

Direction: West

Description:

Upland data point for W-

GR-1-PFO.



Photograph: 4

Date: 10/24/2019

Direction: South

Description:

Downstream view of S-GR-

1.





## MONTAGUE ROAD PROJECT CARVER ROAD WEST, SHUTESBURY, MASSACHUSETTS

Photograph: 5

Date: 10/25/2019

Direction: North

Description:

Typical conditions observed within scrubshrub wetland W2.



Photograph: 6

Date: 10/25/2019

Direction: North

Description:

W-GR-2-PSS Data Point.





Photograph: 7

Date: 10/25/2019

Direction: West

Description:

Upland data point for W-

GR-2-PSS.



Photograph: 8

Date: 10/25/2019

Direction: N/A

Description:

Open well adjacent to W-

GR-2.





Photograph: 9

Date: 10/25/2019

Direction: Northwest

Description:

Upland sample plot UPL-

GR-1.



Photograph: 10

Date: 10/25/2019

Direction: Northwest

Description:

Potential vernal pool adjacent to Carver Road on south border of the

Site.





Photograph: 11

Date: 10/25/2019

Direction: Southwest

Description:

Typical conditions observed within palustrine scrub-shrub wetland W3.



Photograph: 12

Date: 10/25/2019

Direction: Southeast

Description:

W-GR-3-PSS Data Point.





Photograph: 13

Date: 10/25/2019

Direction: Southwest

Description:

Typical conditions observed within palustrine emergent wetland W-GR-



Photograph: 14

Date: 10/25/2019

Direction: Southwest

Description:

W-GR-4-PEM Data Point.





Photograph: 15

Date: 10/25/2019

Direction: South

Description:

Upland data point for W-

GR-4-PEM.



Photograph: 16

Date: 10/28/2019

Direction: North

Description:

W-MJR-5 PEM Data Point





Photograph: 17
Date: 10/28/2019

Direction: East

Description:

Typical conditions observed within PFO wetland W-MJR-7







**Appendix C: Wetland Determination Data Forms** 

Project/Site: Montague	City/County: Shu	tesbury, Franklin	Samp	oling Date: 2019-	-Oct-24	
Applicant/Owner:		State: MA	Samplir	ng Point: W-GR-1	_PFO-1	
Investigator(s): Greg Russo, M	att Boscow	Section, Township,	Range:			
Landform (hillslope, terrace, etc.)	: Valley	Local relief (concave, conv	ex, none): Conca	/e	Slope (%): 2 to 5	
	MLRA 144A of LRR R	Lat: 42.476156	Long: -72.420	)989	Datum: WGS84	
· — —	sbury fine sandy loam, 0 to 8 percent			WI classification:	PFO	
• •	ns on the site typical for this time of ye		(If no, explai			
Are Vegetation, Soil,	or Hydrology significantly di		al Circumstances"	•	s No	
Are Vegetation, Soil,	or Hydrology naturally prob	lematic? (If needed,	explain any answe	ers in Remarks.)		
SUMMARY OF FINDINGS – A	Attach site map showing sampli	ng point locations, trai	nsects, importa	nt features, etc	c.	
Hydrophytic Vegetation Present	? Yes No					
Hydric Soil Present?	Yes No	Is the Sampled Area withi	n a Wetland?	Yes,	<u>∕_</u> No	
Wetland Hydrology Present?	Yes _ <b>_</b> _ No	If yes, optional Wetland S	ite ID:	W-GR-	1	
	ocedures here or in a separate report					
	·					
Covertype is PFO. Area is wetlan	d, all three wetland parameters are p	resent.				
HYDROLOGY						
Wetland Hydrology Indicators:						
Primary Indicators (minimum of	one is required; check all that apply)		Secondary Indicat	ors (minimum of	f two required)	
Surface Water (A1)	✓ Water-Stained Le	aves (B9)	Surface Soil Ci	racks (B6)		
✓ High Water Table (A2)	Aquatic Fauna (B´	13)	✓ Drainage Patte	erns (B10)		
✓ Saturation (A3)	Marl Deposits (B1		Moss Trim Lin	es (B16)		
Water Marks (B1)	Hydrogen Sulfide		Dry-Season Water Table (C2)			
Sediment Deposits (B2)	, ,	heres on Living Roots (C3)	Crayfish Burro	ws (C8)		
,		g(,	Saturation Vis	ible on Aerial Ima	agery (C9)	
Drift Deposits (B3)	Presence of Redu	ced Iron (C4)	Stunted or Str	essed Plants (D1)	)	
Algal Mat or Crust (B4)	Recent Iron Redu	ction in Tilled Soils (C6)	Geomorphic P	osition (D2)		
Iron Deposits (B5)	Thin Muck Surfac	e (C7)	Shallow Aquita	ard (D3)		
Inundation Visible on Aerial			Microtopogra			
Sparsely Vegetated Concave			FAC-Neutral To			
Field Observations:	24.1466 (20)			351 (23)		
Surface Water Present?	Yes No <u></u> ✓ Depth	(inches):				
		· · · · · · · · · · · · · · · · · · ·			Vac. 4 Na	
Water Table Present?	,	(inches): 1	Wetland Hydrolog	zy Present?	Yes No	
Saturation Present?	Yes No Depth	(inches): 0				
(includes capillary fringe)						
Describe Recorded Data (stream	n gauge, monitoring well, aerial photo	s, previous inspections), if	available:			
•		"				
Remarks:						
The criterion for wetland hydrol	ogy is met.					

	Absolute	Dominant	Indicator	Dominance Test worksheet:		
<u>Tree Stratum</u> (Plot size: <u>30 ft</u> )		Species?	Status	Number of Dominant Species That	4	(4)
1. Betula alleghaniensis	25	Yes	FAC	Are OBL, FACW, or FAC:	4	(A)
2. Tsuga canadensis	25	Yes	FACU	Total Number of Dominant Species	7	(B)
3. Acer rubrum	20	Yes	FAC	Across All Strata:		(b)
4.				Percent of Dominant Species That	57.1	(A/B)
5.				Are OBL, FACW, or FAC:		
6.				Prevalence Index worksheet:		_
7.				Total % Cover of:	Multiply	-
	70	= Total Cov	er	OBL species 0	x 1 =	0
Sapling/Shrub Stratum (Plot size:15 ft)		-		FACW species 25	x 2 =	50
1. Kalmia latifolia	20	Yes	FACU	FAC species 50	x 3 =	150
Tsuga canadensis	10	Yes	FACU	FACU species 55	x 4 =	220
3.			17100	UPL species 0	x 5 =	0
4.				Column Totals 130	(A) _	420 (B)
5.				Prevalence Index = B/A =	3.2	
6.				Hydrophytic Vegetation Indicators:		
7.				1- Rapid Test for Hydrophytic \	/egetation	
/·	30	= Total Cov		✓ 2 - Dominance Test is >50%		
Hank Chuchung (Blat sings   E.ft. )		_ 10tal Cov	er	$3$ - Prevalence Index is $\leq 3.0^{1}$		
Herb Stratum (Plot size:5 ft)	15	Voc	EA C\\\	4 - Morphological Adaptations	1 (Provide	supporting
1. Coptis trifolia	15	Yes	FACW	data in Remarks or on a separate sh	neet)	
2. Rubus hispidus		Yes	FACW	Problematic Hydrophytic Vege	tation¹ (Ex	plain)
3. Viburnum recognitum	5	No	FAC	<sup>1</sup> Indicators of hydric soil and wetlan	,	gy must be
4.	- ——			present, unless disturbed or proble	matic	
5				Definitions of Vegetation Strata:		
6				Tree – Woody plants 3 in. (7.6 cm) o		diameter at
7				breast height (DBH), regardless of h	_	
8				Sapling/shrub – Woody plants less t		OBH and
9	- ——			greater than or equal to 3.28 ft (1 m		
10	- ——			<b>Herb</b> – All herbaceous (non-woody) size, and woody plants less than 3.2		gardiess of
11				Woody vines – All woody vines grea		28 ft in
12				height.	ter triair 5.	20 11 111
	30	= Total Cov	er		V ( N	1.
Woody Vine Stratum (Plot size: 30 ft )				Hydrophytic Vegetation Present?	yes iv	10
1						
2						
3.						
4						
	0	= Total Cov	er			
Remarks: (Include photo numbers here or on a separa	te sheet.)					
A positive indication of hydrophytic vegetation was ob-		0% of domin	ant species	indexed as OBL, FACW, or FAC).		
, and the second of the second				, , , , , , , ,		

inches)	Color (moist)	%	Redox Color (moist)		Type <sup>1</sup>	Loc²	Texture	Remarks
0 - 12	10YR 2/1	100	color (moise)		Турс		natter Silt Loam	Kemana
12 - 16	10YR 4/1	100					andy Loam	
16 - 20	10YR 5/1	100		_			andy Loam	
10 20	1011(3/1	- 100					undy Louin	
				_				
				_				-
				_				
	•			_				•
				_				
				_				
				_				
ype: C = 0	Concentration, D =	Depletio	n, RM = Reduced	Matr	ix, MS = I	Masked Sand Grains.	<sup>2</sup> Location: PL = Pore Lini	ng, M = Matrix.
dric Soil	Indicators:						Indicators for Proble	ematic Hydric Soils³:
_ Histoso			Polyvalue Be	low Si	urface (S	8) (LRR R, MLRA 149B)		(LRR K, L, MLRA 149B)
_ Histic E <sub>l</sub>	oipedon (A2)					R, MLRA 149B)		dox (A16) <b>(LRR K, L, R)</b>
_	istic (A3)		Loamy Muck			(LRR K, L)		t or Peat (S3) <b>(LRR K, L, R)</b>
	en Sulfide (A4)		Loamy Gleye				Dark Surface (S7	) (LRR K, L)
	d Layers (A5) d Below Dark Surfa		Depleted Ma				•	Surface (S8) (LRR K, L)
	ark Surface (A12)	ucc (/ (1 1)	Depleted Dar				Thin Dark Surfac	
_	Mucky Mineral (S1)		Redox Depre					Masses (F12) (LRR K, L, R)
_ Sandy 0	Gleyed Matrix (S4)		•					plain Soils (F19) <b>(MLRA 149B)</b>
_ Sandy F	Redox (S5)						Red Parent Mate	(6) <b>(MLRA 144A, 145, 149B)</b>
_ Strippe	d Matrix (S6)						Very Shallow Da	
_ Dark Su	ırface (S7) <b>(LRR R, N</b>	/ILRA 149	9B)				Other (Explain in	
ndicators	of hydronhytic yea	retation a	and wetland hydr	าปกฐม	must he	e present, unless distur	hed or problematic	
	Layer (if observed):			0.08)			zea er proziemade.	
	Type:		None			Hydric Soil Present?		Yes/_ No
	Type.	-						<del></del>
								-
marks:	Depth (inches):							
cording t	Depth (inches):				-	lric. Soils were assume	d to be hydric due to the	e presence of inundation, FAC
ording t	Depth (inches):				-	lric. Soils were assume	d to be hydric due to the	presence of inundation, FAC
cording t	Depth (inches):				-	lric. Soils were assume	d to be hydric due to the	e presence of inundation, FAC
cording t	Depth (inches):				-	lric. Soils were assume	d to be hydric due to the	e presence of inundation, FAC
cording t	Depth (inches):				-	lric. Soils were assume	d to be hydric due to the	e presence of inundation, FAC
cording t	Depth (inches):				-	łric. Soils were assume	d to be hydric due to the	e presence of inundation, FAC
cording t	Depth (inches):				-	łric. Soils were assume	d to be hydric due to the	presence of inundation, FAC
cording t	Depth (inches):				-	lric. Soils were assume	d to be hydric due to the	presence of inundation, FAC
_	Depth (inches):				-	lric. Soils were assume	d to be hydric due to the	presence of inundation, FAC
cording t	Depth (inches):				-	lric. Soils were assume	d to be hydric due to the	e presence of inundation, FAC
cording t	Depth (inches):				-	lric. Soils were assume	d to be hydric due to the	e presence of inundation, FAC

Project/Site: Montague	City/County: Shu	tesbury, Franklin	Sampling Date	: 2019-Oct-24
Applicant/Owner:		State: MA	Sampling Point:	W-GR-1_UPL-1
Investigator(s): Greg Russo, Ma	tt Boscow	Section, Township,	Range:	
Landform(hillslope,terrace,etc.):	Hillslope	Local relief (concave, conv	ex, none): Convex	Slope (%): 2 to 5
Subregion (LRR or MLRA): MI	LRA 144A of LRR R	Lat: 42.47595	Long: -72.42116	Datum: WGS84
Soil Map Unit Name: 368B: Met	tacomet fine sandy loam, 3 to 8 perc	ent slopes	NWI classifi	cation: None
Are climatic/hydrologic conditions	on the site typical for this time of ye		(If no, explain in Rema	arks.)
Are Vegetation, Soil,	or Hydrology significantly di		al Circumstances" present?	Yes No
Are Vegetation, Soil,	or Hydrology naturally prob	lematic? (If needed,	explain any answers in Rem	narks.)
SUMMARY OF FINDINGS – At	ttach site map showing sampli	ng point locations, trar	nsects, important featu	res, etc.
Hydrophytic Vegetation Present?	Yes No <b>_</b> ✓			
Hydric Soil Present?	Yes No <b></b> ∠	Is the Sampled Area withi	n a Wetland?	Yes No <b>∠</b> _
Wetland Hydrology Present?	Yes No	If yes, optional Wetland Si	ite ID:	
			ite ib.	
	cedures here or in a separate report			
Covertype is UPL. Area is upland,	not all three wetland parameters are	e present.		
<u> </u>				
LIVEROLOGY				
HYDROLOGY				
Wetland Hydrology Indicators:				
Primary Indicators (minimum of o	one is required; check all that apply)		Secondary Indicators (mini	mum of two required)
Surface Water (A1)	Water-Stained Lea	aves (B9)	Surface Soil Cracks (B6)	
High Water Table (A2)	Aquatic Fauna (B1	13)	Drainage Patterns (B10	)
Saturation (A3)	Marl Deposits (B1	5)	Moss Trim Lines (B16)	
Water Marks (B1)	Hydrogen Sulfide	Odor (C1)	Dry-Season Water Table	e (C2)
Sediment Deposits (B2)	Oxidized Rhizosp	heres on Living Roots (C3)	Crayfish Burrows (C8)	
			Saturation Visible on Ae	
Drift Deposits (B3)	Presence of Redu		Stunted or Stressed Pla	
Algal Mat or Crust (B4)		ction in Tilled Soils (C6)	Geomorphic Position (E	02)
Iron Deposits (B5) Inundation Visible on Aerial In	Thin Muck Surface		Shallow Aquitard (D3)	f (D4)
	· · · · · · · · · · · · · · · · · · ·	Remarks)	Microtopographic Relie	I (D4)
Sparsely Vegetated Concave S Field Observations:	urrace (Bo)		FAC-Neutral Test (D5)	
Surface Water Present?	Yes No <u></u> ✓ Depth	(inches):		
		· · · · · · · · · · · · · · · · · · ·		43 V N- 4
Water Table Present?	·	(inches):	Wetland Hydrology Presen	t? Yes No <b>∠</b>
Saturation Present?	Yes No Depth	(inches):		
(includes capillary fringe)				
Describe Recorded Data (stream	gauge, monitoring well, aerial photo	s, previous inspections), if a	available:	
Remarks:				
No positive indication of wetland	hydrology was observed.			

	Absolute	Dominant	Indicator	Dominance Test worksheet:		
Tree Stratum (Plot size: 30 ft )		Species?	Status	Number of Dominant Species That		(4)
1. Tsuga canadensis	50	Yes	FACU	Are OBL, FACW, or FAC:	0	(A)
2. Pinus strobus	10	No	FACU	Total Number of Dominant Species		(D)
3. Quercus rubra	_ <del></del> 5	No	FACU	Across All Strata:	2	(B)
4.			FACO	Percent of Dominant Species That	0	(A /D)
				Are OBL, FACW, or FAC:		(A/B)
5.				Prevalence Index worksheet:		
6.				Total % Cover of:	<u>Multiply</u>	By:
7				- OBL species 0	x 1 =	0
	65	= Total Cov	er	FACW species 0	x 2 =	0
Sapling/Shrub Stratum (Plot size: 15 ft )				FAC species 0	x 3 =	0
1. Kalmia latifolia	80	Yes	FACU	FACU species 160	x 4 =	640
2. Hamamelis virginiana	15	No	FACU	- UPL species 0	x 5 =	0
3.				Column Totals 160	(A)	640 (B)
4.					-	640 (b)
5.				Prevalence Index = B/A =	4	
6.				Hydrophytic Vegetation Indicators:		
7.		-		1- Rapid Test for Hydrophytic \	/egetation	1
/·	95	= Total Cov	or	2 - Dominance Test is > 50%		
Hoch Street viv (District 5 6		_ 10tal Cov	ei	3 - Prevalence Index is $\leq 3.0^{\circ}$		
Herb Stratum (Plot size:5 ft)				4 - Morphological Adaptations	¹ (Provide	supporting
1.				data in Remarks or on a separate sh	neet)	
2				Problematic Hydrophytic Vege	tation¹ (E)	kplain)
3				<sup>1</sup> Indicators of hydric soil and wetlan	d hydrolo	gy must be
4				present, unless disturbed or proble	matic	
5				Definitions of Vegetation Strata:		
6.				Tree – Woody plants 3 in. (7.6 cm) o	r more in	diameter at
7.				breast height (DBH), regardless of h		
8.				Sapling/shrub – Woody plants less t	han 3 in. I	DBH and
9.				greater than or equal to 3.28 ft (1 m		
40		-		Herb – All herbaceous (non-woody)		gardless of
				size, and woody plants less than 3.2	8 ft tall.	
11.				Woody vines – All woody vines grea	ter than 3	.28 ft in
12				height.		
	0	_= Total Cov	er	Hydrophytic Vegetation Present?	Voc 1	10 (
Woody Vine Stratum (Plot size: 30 ft )				Trydrophytic vegetation i resent:	1631	10 <u>v</u>
1				_		
2				_		
3.						
4.						
	0	= Total Cov	er	-		
		_				
Remarks: (Include photo numbers here or on a separa						
No positive indication of hydrophytic vegetation was o	bserved (≥	:50% of dom	inant specie	es indexed as FAC– or drier).		

	to the de	pun needed to d Redox			ndicator	or confirm the a	bsence of indicators.)
Depth Matrix (inches) Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
0 - 8 10YR 2/2	100	,	_			Silt Loam	1
			_				
			_				
			_				
			_				
			_				
			_				
			_				
<del></del>			_				
<del></del>			_				
Type: C = Concentration, D =	Depletion	n, RM = Reduced	— Matı	ix, MS =	 Masked	Sand Grains. <sup>2</sup> L	ocation: PL = Pore Lining, M = Matrix.
Hydric Soil Indicators:	'	<u>·</u>		,			Indicators for Problematic Hydric Soils <sup>3</sup> :
Histosol (A1)		•				R, MLRA 149B)	2 cm Muck (A10) <b>(LRR K, L, MLRA 149B)</b>
Histic Epipedon (A2)		Thin Dark Su				-	Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A3) Hydrogen Sulfide (A4)		Loamy Mucky Loamy Gleye			(LKK K, L	-)	5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Stratified Layers (A5)		Depleted Ma					Dark Surface (S7) (LRR K, L) Polyvalue Below Surface (S8) (LRR K, L)
Depleted Below Dark Surf	ace (A11)						Thin Dark Surface (S9) (LRR K, L)
Thick Dark Surface (A12) Sandy Mucky Mineral (S1)		Depleted Dar					Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky Milleral (31) Sandy Gleyed Matrix (S4)		Redox Depre	551011	S (FO)			Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Redox (S5)							Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Stripped Matrix (S6)							Red Parent Material (F21) Very Shallow Dark Surface (TF12)
Dark Surface (S7) (LRR R, N	/ILRA 149	В)					Other (Explain in Remarks)
Indicators of hydrophytic veg	etation a	nd wetland hydr	ology	/ must be	e presen	t, unless disturbe	ed or problematic.
Restrictive Layer (if observed)							
Type:		Rock			Hydric	Soil Present?	Yes No⁄_
Depth (inches):  Remarks:		8					
No positive indication of hydr	ic soils w	as observed.					

Project/Site: Montague	City/County: Shu	tesbury, Franklin	Sampling Da	te: 2019-Oct-25
Applicant/Owner:		State: MA	Sampling Point	:: W-GR-2_PFO-1
Investigator(s): Greg Russo, Ma	att Boscow	Section, Township,	Range:	
Landform (hillslope, terrace, etc.)	: Valley	Local relief (concave, conv	ex, none): Concave	Slope (%): 2 to 5
	ILRA 144A of LRR R	Lat: 42.474771	Long: -72.425548	Datum: WGS84
·	bury fine sandy loam, 0 to 8 percent			sification: PFO
	s on the site typical for this time of ye		(If no, explain in Rer	
Are Vegetation, Soil,	or Hydrology significantly di		al Circumstances" present	
Are Vegetation, Soil,	or Hydrology naturally prob	lematic? (If needed,	explain any answers in Re	emarks.)
SUMMARY OF FINDINGS – A	Attach site map showing sampli	ng point locations, trai	nsects, important feat	ures, etc.
Hydrophytic Vegetation Present?	? Yes No			
Hydric Soil Present?	Yes No	Is the Sampled Area withi	n a Wetland?	Yes No
Wetland Hydrology Present?	Yes _ <b>_</b> No	If yes, optional Wetland S	ite ID:	W-GR-2
	ocedures here or in a separate report			<del></del>
	·			
Covertype is PFO. Area is wetland	d, all three wetland parameters are p	resent.		
HYDROLOGY				
Wetland Hydrology Indicators:				
Primary Indicators (minimum of	one is required; check all that apply)		Secondary Indicators (mi	•
Surface Water (A1)	_ <u>✓</u> Water-Stained Le	aves (B9)	Surface Soil Cracks (B	•
High Water Table (A2)	Aquatic Fauna (B´	13)	Drainage Patterns (B1	
✓ Saturation (A3)	Marl Deposits (B1		Moss Trim Lines (B16	
Water Marks (B1)	Hydrogen Sulfide	Odor (C1)	Dry-Season Water Tal	
Sediment Deposits (B2)	Oxidized Rhizosp	heres on Living Roots (C3)	Crayfish Burrows (C8)	
- 15 - 1, 1-2,			Saturation Visible on	
Drift Deposits (B3)	Presence of Redu		Stunted or Stressed P	
Algal Mat or Crust (B4)		ction in Tilled Soils (C6)	Geomorphic Position	
Iron Deposits (B5)	Thin Muck Surfac		Shallow Aquitard (D3)	
Inundation Visible on Aerial I	· · · · · · · · · · · · · · · · · · ·	Remarks)	✓ Microtopographic Rel	
<u>✓</u> Sparsely Vegetated Concave :	Surface (B8)		✓ FAC-Neutral Test (D5)	
Field Observations:				
Surface Water Present?	Yes No _ <b>_/</b> Depth	(inches):		
Water Table Present?	Yes No 🟒 Depth	(inches):	   Wetland Hydrology Prese	ent? Yes No
Saturation Present?		(inches): 0		
(includes capillary fringe)				
			1	<del></del>
Describe Recorded Data (stream	n gauge, monitoring well, aerial photo	s, previous inspections), if a	available:	
<u> </u>				
Remarks:				
The criterion for wetland hydrological	ogy is met.			
1				

	Absolute	Dominant	Indicator	Dominance Test worksheet:		
Tree Stratum (Plot size: 30 ft )		Species?	Status	Number of Dominant Species That		445
1. Acer rubrum	35	Yes	FAC	Are OBL, FACW, or FAC:	3	(A)
2.				Total Number of Dominant Species	·	(D)
3.				Across All Strata:	3	(B)
4.				Percent of Dominant Species That	100	(A /D)
5.				Are OBL, FACW, or FAC:		(A/B)
				Prevalence Index worksheet:		
6.				Total % Cover of:	Multiply I	<u>Ву:</u>
7				OBL species 0	x 1 =	0
	35	= Total Cove	r	FACW species 40	x 2 =	80
Sapling/Shrub Stratum (Plot size: 15 ft )				FAC species 35	x 3 =	105
1. Vaccinium corymbosum	30	Yes	FACW	FACU species 0	x 4 =	0
2				UPL species 0	x 5 =	0
3				Column Totals 75	(A)	185 (B)
4.					- '' -	165 (B)
5.				Prevalence Index = B/A =		<del></del>
6.				Hydrophytic Vegetation Indicators:		
7.				1- Rapid Test for Hydrophytic	Vegetation	
	30	= Total Cove	r	2 - Dominance Test is >50%		
Harb Stratum (Blat size) E ft )		- Total Cove	'	$\checkmark$ 3 - Prevalence Index is ≤ 3.0 <sup>1</sup>		
Herb Stratum (Plot size: <u>5 ft</u> )  1. Coptis trifolia	10	Voc	FACIA!	4 - Morphological Adaptation	s¹ (Provide s	supporting
		Yes	FACW	data in Remarks or on a separate s	heet)	
2				Problematic Hydrophytic Veg	etation¹ (Ex	plain)
3				Indicators of hydric soil and wetla	nd hydrolog	gy must be
4				present, unless disturbed or probl	ematic	
5				Definitions of Vegetation Strata:		
6				Tree – Woody plants 3 in. (7.6 cm)	or more in c	diameter at
7.				breast height (DBH), regardless of		
8.				Sapling/shrub – Woody plants less	than 3 in. D	BH and
9.				greater than or equal to 3.28 ft (1 i		
40				Herb – All herbaceous (non-woody	) plants, reg	gardless of
				size, and woody plants less than 3.	28 ft tall.	,
				Woody vines - All woody vines gre	ater than 3.	28 ft in
12				height.		
	10	= Total Cove	r	Hydrophytic Vegetation Present?	Voc / N	0
Woody Vine Stratum (Plot size: 30 ft )				Trydrophydd Vegetadoi'i Tesent:	163 <u>7</u> 14	o
1				.		
2						
3						
4.						
	0	= Total Cove	r			
Demarks (Include photo numbers here or on a const	ata sheet \	-				
Remarks: (Include photo numbers here or on a separ		NOV - 6 -1 !		independ on ODL FACING on FAC)		
A positive indication of hydrophytic vegetation was ol	oservea (>50	)% of domina	int species	indexed as OBL, FACW, or FAC).		

Profile Des Depth	cription: (Describe Matrix	to the c	lepth needed to o Redox			indicato	r or confirm the al	bsence of indicators.)
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
0 - 2	10YR 2/1	100		. —	7		Silt Loam	
2 - 6	10YR 4/1	100					Silt Loam	· · · · · · · · · · · · · · · · · · ·
6 - 16	10YR 4/1	90	10YR 5/1	10		M	Silt Loam	
				<u></u>				
	•			. —			_	
	-			_				
				_			-	··
1T C = 1		Danlati	DM _ Dadwaa			NA salva d	Canal Cusins 21	acations DI = David Lining M = Materix
	Concentration, D =	Depleti	on, RIVI = Reduced	ıwıatı	rix, IVIS =	Masked	Sand Grains. <sup>2</sup> Lo	ocation: PL = Pore Lining, M = Matrix.
Hydric Soil			Daharaha Da			:0) (I DD	D MI DA 4 40D)	Indicators for Problematic Hydric Soils <sup>3</sup> :
Histoso	il (A1) pipedon (A2)		Polyvalue Be Thin Dark Su				R, MLRA 149B) 4 149B)	2 cm Muck (A10) (LRR K, L, MLRA 149B)
	istic (A3)		Loamy Muck					Coast Prairie Redox (A16) (LRR K, L, R)
	en Sulfide (A4)		Loamy Gleye	-		(LIXIX IX,	-)	5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
	ed Layers (A5)		Depleted Ma					Dark Surface (S7) (LRR K, L)
	ed Below Dark Surf	face (A1						Polyvalue Below Surface (S8) (LRR K, L)
Thick D	ark Surface (A12)		Depleted Da	rk Su	rface (F7)	)		Thin Dark Surface (S9) (LRR K, L)
Sandy N	Mucky Mineral (S1)	)	Redox Depre	ession	ıs (F8)			Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy (	Gleyed Matrix (S4)							Piedmont Floodplain Soils (F19) (MLRA 149B) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy F	Redox (S5)							Red Parent Material (F21)
Strippe	d Matrix (S6)							Very Shallow Dark Surface (TF12)
Dark Su	urface (S7) <b>(LRR R,</b> l	MLRA 14	19B)					✓ Other (Explain in Remarks)
3Indicators	of hydrophytic ve	getation	and wetland hvd	rolog	v must h	e nreser	nt unless disturbe	•
-	Layer (if observed)	_	ana wedana nya	10108.	y mast b	Preser	ic, arriess distarse	a of problematic.
	Type:		rock			Hydric	Soil Present?	Yes∕_ No
	Depth (inches):		16	•				
Remarks:						1		
O	to the USDA NRCS				,	dric. Soil	ls were assumed t	to be hydric due to the presence of inundation, FACW

Project/Site: Montague	City/County: Shu	tesbury, Franklin	Sampling Date:	2019-Oct-25
Applicant/Owner:		State: MA	Sampling Point: W	/-GR-2_UPL-1
Investigator(s): Greg Russo, Ma	att Boscow	Section, Township,	Range:	
Landform(hillslope,terrace,etc.):	Hillslope	Local relief (concave, conv	ex, none): None	Slope (%): 2 to 5
Subregion (LRR or MLRA): M	ILRA 144A of LRR R	Lat: 42.474753	Long: -72.425672	Datum: WGS84
Soil Map Unit Name: 75B: Pills	bury fine sandy loam, 0 to 8 percent s	slopes, very stony	NWI classifica	ntion: None
Are climatic/hydrologic conditions	s on the site typical for this time of ye	ar? Yes <u>✓</u> No	(If no, explain in Remarl	ks.)
Are Vegetation, Soil,	or Hydrology significantly di		al Circumstances" present?	Yes No
Are Vegetation, Soil,	or Hydrology naturally prob	lematic? (If needed,	explain any answers in Rema	rks.)
SUMMARY OF FINDINGS – A	ttach site map showing sampli	ng point locations, tran	nsects, important feature	es, etc.
Hydrophytic Vegetation Present?	Yes No <b>_∠</b> _			
Hydric Soil Present?	Yes No	Is the Sampled Area within	n a Wetland?	Yes No
Wetland Hydrology Present?	Yes No _ <b>_</b> ✓	If yes, optional Wetland Si	ite ID:	
	·		ice ib.	
	ocedures here or in a separate report			
Covertype is UPL. Area is upland	, not all three wetland parameters ar	e present.		
HYDROLOCY				
HYDROLOGY				
Wetland Hydrology Indicators:				
Primary Indicators (minimum of	one is required; check all that apply)		Secondary Indicators (minim	um of two required)
Surface Water (A1)	Water-Stained Lea	aves (B9)	Surface Soil Cracks (B6)	
High Water Table (A2)	Aquatic Fauna (B1	13)	Drainage Patterns (B10)	
Saturation (A3)	Marl Deposits (B1	5)	Moss Trim Lines (B16)	
Water Marks (B1)	Hydrogen Sulfide	Odor (C1)	Dry-Season Water Table (	C2)
Sediment Deposits (B2)	Oxidized Rhizosp	heres on Living Roots (C3)	Crayfish Burrows (C8)	al Image (CO)
- 16 - 1, 1-0,			Saturation Visible on Aeri	
Drift Deposits (B3)	Presence of Redu		Stunted or Stressed Plant	
Algal Mat or Crust (B4)	<del></del>	ction in Tilled Soils (C6)	Geomorphic Position (D2	)
Iron Deposits (B5) Inundation Visible on Aerial II	Thin Muck Surfact magery (B7) Other (Explain in		<ul><li>Shallow Aquitard (D3)</li><li>Microtopographic Relief (</li></ul>	D4)
Sparsely Vegetated Concave S	· · ·	Aemarks)	FAC-Neutral Test (D5)	04)
Field Observations:	Juliace (Bo)		TAC-Neutral Test (DS)	
Surface Water Present?	Yes No <u></u> ✓ Depth	(inches):		
		· -	Matland Huduala — Duacant	Vac. No. 4
Water Table Present?	•	(inches):	Wetland Hydrology Present?	Yes No
Saturation Present?	Yes No Depth	(inches):		
(includes capillary fringe)				
Describe Recorded Data (stream	gauge, monitoring well, aerial photo	s, previous inspections), if a	available:	
Remarks:				
The criterion for wetland hydrolo	ogy is not met.			
, ,	-			

	Absolute	Dominant	Indicator	Dominance Test worksheet:		
<u>Tree Stratum</u> (Plot size: <u>30 ft</u> )		Species?	Status	Number of Dominant Species That		
1 Overeus rubra	40	Yes	FACU	Are OBL, FACW, or FAC:	1	(A)
Quercus rubra     Pinus strobus	40			Total Number of Dominant Species		
		Yes	FACU	Across All Strata:	6	(B)
3. Fagus grandifolia	40	Yes	FACU	Percent of Dominant Species That	467	
4				Are OBL, FACW, or FAC:	16.7	(A/B)
5.				Prevalence Index worksheet:	·	
6				Total % Cover of:	Multiply E	B <u>y:</u>
7				OBL species 0	x 1 =	0
	120	= Total Cov	er	FACW species 40	x 2 =	80
Sapling/Shrub Stratum (Plot size: 15 ft )				FAC species 0	x 3 =	0
1. Tsuga canadensis	30	Yes	FACU	FACU species 160	x 4 =	640
2				UPL species 0	x 5 =	0
3.				Column Totals 200	(A)	720 (B)
4.					· · · · —	720 (B)
5.				Prevalence Index = B/A =	3.6	<del></del>
6.				Hydrophytic Vegetation Indicators:		
7.				1- Rapid Test for Hydrophytic \	/egetation	
· ·	30	= Total Cov	er	2 - Dominance Test is > 50%		
Herb Stratum (Plot size: _ 5 ft)		- Total Cov	C1	$3$ - Prevalence Index is $\leq 3.0^{1}$		
1. Coptis trifolia	40	Yes	FACW	4 - Morphological Adaptations		supporting
Dendrolycopodium obscurum	10	Yes	FACU	data in Remarks or on a separate sh		
	10	162	FACU	Problematic Hydrophytic Vege		-
3.				Indicators of hydric soil and wetlan		gy must be
4				present, unless disturbed or proble	matic	
5				Definitions of Vegetation Strata:		
6				Tree – Woody plants 3 in. (7.6 cm) o	r more in d	liameter at
7				breast height (DBH), regardless of h	eight.	
8				Sapling/shrub – Woody plants less t		BH and
9.				greater than or equal to 3.28 ft (1 m	ı) tall.	
10.				Herb – All herbaceous (non-woody)		ardless of
11.				size, and woody plants less than 3.2		
12.				Woody vines – All woody vines grea	ter than 3.2	28 ft in
	50	= Total Cov	er	height.		
Woody Vine Stratum (Plot size:30 ft)			·	Hydrophytic Vegetation Present?	Yes N	0
1.						
2.				•		
				-		
3.						
4						
	0	= Total Cov	er			
Remarks: (Include photo numbers here or on a separat	e sheet.)					
No positive indication of hydrophytic vegetation was ol	oserved (≥	50% of dom	inant specie	es indexed as FAC- or drier).		
	•			·		

Color (moist)   %   Color (moist)   %   Color (moist)   %   Type¹   Loc²   Texture   Remarks	Profile Desc Depth	ription: (Describe Matrix	to the de	•			ndicato	r or confirm the al	osence of indicator	rs.)
8 - 12 10 VR 4/4 100 Silty Clay Loam 8 - 12 10 VR 5/6 100 Silt Loam  12 - 16 10 VR 5/4 100 Silty Clay Loam  Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains.    **ILocation: PL = Pore Lining, M = Matrix.    Indicators for Problematic Hydric Soils*:    Indicators for Hydric Soil Present?    Indicators for	-		<u>%</u>				l oc²	Text	ure	Remarks
8 - 12				color (moist)	0	Турс		-		Kernarks
12-16 10YR 5/4 100 Silty Clay Loam  Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix.  Hydric Soil Indicators:  Histosol (A1) Polyvalue Below Surface (58) (LRR R, MLRA 149B) 2 cm Muck (A10) (LRR K, L, MLRA 149B)  Histic Epipedon (A2) Thin Dark Surface (59) (LRR R, MLRA 149B) 2 coast Prairie Redox (A16) (LRR K, L, R)  Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (53) (LRR K, L, R)  Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Polyvalue Below Surface (S9) (LRR K, L)  Thick Dark Surface (A12) Depleted Dark Surface (F7) Into Ark Surface (F9) (LRR K, L)  Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)  Sandy Gleyed Matrix (S4) Redox (S5) Redox Dark Surface (F7) Redox Dark Surface (S7) Redox Dark Sur					-					
Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains.    **Location: PL = Pore Lining, M = Matrix.*  Hydric Soil Indicators:								-		
Hydric Soil Indicators:  — Histosol (A1) — Polyvalue Below Surface (S8) (LRR R, MLRA 149B) — Histic Epipedon (A2) — Thin Dark Surface (S9) (LRR R, MLRA 149B) — Black Histic (A3) — Loamy Mucky Mineral (F1) (LRR K, L) — Stratified Layers (A5) — Depleted Matrix (F2) — Depleted Below Dark Surface (A11) — Redox Dark Surface (F6) — Thick Dark Surface (A12) — Sandy Mucky Mineral (S1) — Sandy Gleyed Matrix (S4) — Sandy Redox (S5) — Sandy Redox (S5) — Dark Surface (S7) (LRR R, L) — Sandy Redox (S5) — Dark Surface (S7) (LRR R, L) — Dark Surface (S7) — Coast Prairie Redox (A16) (LRR K, L, R) — Dark Surface (S7) (LRR K, L) — Dark Surface (S7) (LRR K, L) — Dark Surface (S7) (LRR K, L) — Thin Dark 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)  Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.  Restrictive Layer (if observed):  Type:root	12 10	1011(3)4	100					Jilly Clu	y Louin	
Hydric Soil Indicators:  Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) Depleted Below Dark Surface (A11) Sandy Mucky Mineral (F1) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Sandy Redox (S5) Stripped Matrix (S6) Dark Surface (S7) (LRR R, L) Stratified Layers (A5) Sandy Redox (S5) Stripped Matrix (S6) Dark Surface (S7) Stripped Matrix (S6) Dark Surface (S7) (LRR R, MLRA 149B)  All dicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.  Hydric Soil Indicators for Problematic Hydric Soils?  Indicators for Problematic Hydric Soils?  2 cm Muck (A10) (LRR K, L, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R) S cm Mucky Peat or Peat (S3) (LRR K, L) S cm Mucky Peat or Peat (S3) (LRR K, L) S cm Mucky Peat or Peat (S3) (LRR K, L) S cm Mucky Peat or Peat (S3) (LRR K, L) S cm Mucky Peat or Peat (S3) (LRR K, L) S cm Mucky Peat or										
Hydric Soil Indicators:  Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) Stratified Layers (A5) Depleted Matrix (F2) Depleted Matrix (F3) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) Redox Depressions (F8) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Dark Surface (S7) (LRR R, MLRA 149B)  Stripped Matrix (S6) Dark Surface (S7) (LRR R, MLRA 149B)  All dicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.  Hydric Soil Indicators for Problematic Hydric Soils?:  Indicators for Problematic Hydric Soil Present?  Indicators for Problematic Hydric Soils?:  Indicators for Problematic Hydric Hydric Soils (LRR K, L, R)  Indicators for Problematic Hydric Hydric Soil Present?  Indicators for Problematic Hydric Hydric Soil Present?  Indicators for Problematic Hydric Hydric Soils (F1) (LRR K, L, R)  Indicators for Problematic Hydric Hydric Soil Present?  Indicators for Problematic Hydric Hydric Soil Present?  Indicators for Problematic Hydric Hydric Soil Present?  Indicators for Problematic Hydric										
Hydric Soil Indicators:  Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) Stratified Layers (A5) Depleted Matrix (F2) Depleted Matrix (F3) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) Redox Depressions (F8) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Dark Surface (S7) (LRR R, MLRA 149B)  Stripped Matrix (S6) Dark Surface (S7) (LRR R, MLRA 149B)  All dicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.  Hydric Soil Indicators for Problematic Hydric Soils?:  Indicators for Problematic Hydric Soil Present?  Indicators for Problematic Hydric Soils?:  Indicators for Problematic Hydric Hydric Soils (LRR K, L, R)  Indicators for Problematic Hydric Hydric Soil Present?  Indicators for Problematic Hydric Hydric Soil Present?  Indicators for Problematic Hydric Hydric Soils (F1) (LRR K, L, R)  Indicators for Problematic Hydric Hydric Soil Present?  Indicators for Problematic Hydric Hydric Soil Present?  Indicators for Problematic Hydric Hydric Soil Present?  Indicators for Problematic Hydric										
Hydric Soil Indicators:  Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) Depleted Below Dark Surface (A11) Sandy Mucky Mineral (F1) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Sandy Redox (S5) Stripped Matrix (S6) Dark Surface (S7) (LRR R, L) Stratified Layers (A5) Sandy Redox (S5) Stripped Matrix (S6) Dark Surface (S7) Stripped Matrix (S6) Dark Surface (S7) (LRR R, MLRA 149B)  All dicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.  Hydric Soil Indicators for Problematic Hydric Soils?  Indicators for Problematic Hydric Soils?  2 cm Muck (A10) (LRR K, L, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R) S cm Mucky Peat or Peat (S3) (LRR K, L) S cm Mucky Peat or Peat (S3) (LRR K, L) S cm Mucky Peat or Peat (S3) (LRR K, L) S cm Mucky Peat or Peat (S3) (LRR K, L) S cm Mucky Peat or Peat (S3) (LRR K, L) S cm Mucky Peat or			<del></del>							
Hydric Soil Indicators:  Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) Depleted Below Dark Surface (A11) Sandy Mucky Mineral (F1) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Sandy Redox (S5) Stripped Matrix (S6) Dark Surface (S7) (LRR R, L) Stratified Layers (A5) Sandy Redox (S5) Stripped Matrix (S6) Dark Surface (S7) Stripped Matrix (S6) Dark Surface (S7) (LRR R, MLRA 149B)  All dicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.  Hydric Soil Indicators for Problematic Hydric Soils?  Indicators for Problematic Hydric Soils?  2 cm Muck (A10) (LRR K, L, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R) S cm Mucky Peat or Peat (S3) (LRR K, L) S cm Mucky Peat or Peat (S3) (LRR K, L) S cm Mucky Peat or Peat (S3) (LRR K, L) S cm Mucky Peat or Peat (S3) (LRR K, L) S cm Mucky Peat or Peat (S3) (LRR K, L) S cm Mucky Peat or										
Hydric Soil Indicators:  Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) Depleted Below Dark Surface (A11) Sandy Mucky Mineral (F1) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Sandy Redox (S5) Stripped Matrix (S6) Dark Surface (S7) (LRR R, L) Stratified Layers (A5) Sandy Redox (S5) Stripped Matrix (S6) Dark Surface (S7) Stripped Matrix (S6) Dark Surface (S7) (LRR R, MLRA 149B)  All dicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.  Hydric Soil Indicators for Problematic Hydric Soils?  Indicators for Problematic Hydric Soils?  2 cm Muck (A10) (LRR K, L, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R) S cm Mucky Peat or Peat (S3) (LRR K, L) S cm Mucky Peat or Peat (S3) (LRR K, L) S cm Mucky Peat or Peat (S3) (LRR K, L) S cm Mucky Peat or Peat (S3) (LRR K, L) S cm Mucky Peat or Peat (S3) (LRR K, L) S cm Mucky Peat or			- —		-					
Hydric Soil Indicators:  Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) Depleted Below Dark Surface (A11) Sandy Mucky Mineral (F1) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Sandy Redox (S5) Stripped Matrix (S6) Dark Surface (S7) (LRR R, L) Stratified Layers (A5) Sandy Redox (S5) Stripped Matrix (S6) Dark Surface (S7) Stripped Matrix (S6) Dark Surface (S7) (LRR R, MLRA 149B)  All dicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.  Hydric Soil Indicators for Problematic Hydric Soils?  Indicators for Problematic Hydric Soils?  2 cm Muck (A10) (LRR K, L, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R) S cm Mucky Peat or Peat (S3) (LRR K, L) S cm Mucky Peat or Peat (S3) (LRR K, L) S cm Mucky Peat or Peat (S3) (LRR K, L) S cm Mucky Peat or Peat (S3) (LRR K, L) S cm Mucky Peat or Peat (S3) (LRR K, L) S cm Mucky Peat or					_					
Hydric Soil Indicators:  Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) Depleted Below Dark Surface (A11) Sandy Mucky Mineral (F1) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Sandy Redox (S5) Stripped Matrix (S6) Dark Surface (S7) (LRR R, L) Stratified Layers (A5) Sandy Redox (S5) Stripped Matrix (S6) Dark Surface (S7) Stripped Matrix (S6) Dark Surface (S7) (LRR R, MLRA 149B)  All dicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.  Hydric Soil Indicators for Problematic Hydric Soils?  Indicators for Problematic Hydric Soils?  2 cm Muck (A10) (LRR K, L, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R) S cm Mucky Peat or Peat (S3) (LRR K, L) S cm Mucky Peat or Peat (S3) (LRR K, L) S cm Mucky Peat or Peat (S3) (LRR K, L) S cm Mucky Peat or Peat (S3) (LRR K, L) S cm Mucky Peat or Peat (S3) (LRR K, L) S cm Mucky Peat or		_						_		
Hydric Soil Indicators:  - Histosol (A1)	1T C		D	- DM Dadward			N 4	Sand Coales 31		Lining NA NASANIN
Histosol (A1) — Polyvalue Below Surface (S8) (LRR R, MLRA 149B) — 2 cm Muck (A10) (LRR K, L, MLRA 149B) — Histic Epipedon (A2) — Thin Dark Surface (S9) (LRR R, MLRA 149B) — Coast Prairie Redox (A16) (LRR K, L, R) — Black Histic (A3) — Loamy Mucky Mineral (F1) (LRR K, L) — 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) — 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) — Dark Surface (S7) (LRR K, L) — Dark Surface (S7) (LRR K, L) — Dark Surface (S7) (LRR K, L) — Polyvalue Below Surface (S8) (LRR K, L) — Polyvalue Below Surface (S8) (LRR K, L) — Polyvalue Below Surface (S9) (LRR K, L) — Thin Dark Surface (A12) — Depleted Dark Surface (F7) — Thin Dark Surface (S9) (LRR K, L) — Iron-Manganese Masses (F12) (LRR K, L, R) — Piedmont Floodplain Soils (F19) (MLRA 149B) — Sandy Mucky Mineral (S1) — Redox Depressions (F8) — Piedmont Floodplain Soils (F19) (MLRA 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): — Toot — Hydric Soil Present? — Yes No✓  Depth (inches): 16			Depletio	n, RIVI = Reduced	Mati	IX, IVIS =	Masked	Sand Grains. <sup>2</sup> Lo		
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)  Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)  Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Dark Surface (S7) (LRR K, L)  Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Surface (S8) (LRR K, L)  Thick Dark Surface (A11) Redox Dark Surface (F6) Thin Dark Surface (S9) (LRR K, L)  Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B)  Sandy Gleyed Matrix (S4) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)  Stripped Matrix (S6) Red Parent Material (F21)  Very Shallow Dark Surface (TF12)  Other (Explain in Remarks)  Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.  Restrictive Layer (if observed):  Type: root Pepth (inches): 16  Remarks:	-			Deharder D.		6 15	0) (1 55 1	D MI DA 4 400)		•
Black Histic (A3)				•						
Hydrogen Sulfide (A4)  Stratified Layers (A5)  Depleted Matrix (F3)  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 K, L)  Thin Dark Surface (S9) (LRR K, L)  Tinn-Manganese Masses (F12) (LRR K, L, R)  Piedmont Floodplain Soils (F19) (MLRA 149B)  Redox Depressions (F8)  Mesic Spodic (TA6) (MLRA 144A, 145, 149B)  Stripped Matrix (S6)  Dark Surface (S7) (LRR R, MLRA 149B)  Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.  Restrictive Layer (if observed):  Type:  Depth (inches):  16  Remarks:		•								
Stratified Layers (A5)		` '					(LIXIX IX, I	-)	•	
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) Redox Depressions (F8)  Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Dark Surface (S7) (LRR R, MLRA 149B)  Piedmont Floodplain Soils (F19) (MLRA 149B)  Red Parent Material (F21) Very Shallow Dark Surface (TF12) Other (Explain in Remarks)  Plotyvature Below Surface (S8) (LRR R, L) Thin Dark Surface (S9) (LRR K, L) Iron-Manganese Masses (F12) (LRR K, L, R) Piedmont Floodplain Soils (F19) (MLRA 149B)  Red Parent Material (F21) Very Shallow Dark Surface (TF12) Other (Explain in Remarks)  Plotyvature Below Surface (S9) (LRR K, L) Iron-Manganese Masses (F12) (LRR K, L, R) Piedmont Floodplain Soils (F19) (MLRA 149B)  Red Parent Material (F21) Very Shallow Dark Surface (TF12) Other (Explain in Remarks)  Plotyvature Below Surface (S9) (LRR K, L) Iron-Manganese Masses (F12) (LRR K, L) Iron-Manganese										
Inick Dark Surface (A12) Depleted Dark Surface (F7) Iron-Manganese Masses (F12) (LRR K, L, R) Sandy Mucky Mineral (S1) Redox Depressions (F8) Piedmont Floodplain Soils (F19) (MLRA 149B) Mesic Spodic (TA6) (MLRA 144A, 145, 149B) Mesic Spodic (TA6) (MLRA 144A, 145, 149B) Red Parent Material (F21) Very Shallow Dark Surface (TF12) Very Shallow Dark Surface (TF12) Other (Explain in Remarks) Other (Explain in Remarks)			ace (A11)						•	
— Sandy Gleyed Matrix (S4) — Sandy Redox (S5) — Stripped Matrix (S6) — Dark Surface (S7) (LRR R, MLRA 149B)  3Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.  Restrictive Layer (if observed):  Type: root Hydric Soil Present? Yes No ✓  Depth (inches): 16  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)  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)  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)  Piedmont Floodplain Soils (F19) (MLRA 149B)	Thick Da	ark Surface (A12)		Depleted Dar	k Sui	face (F7)				
— Sandy Gleyed Matrix (S4) — Sandy Redox (S5) — Stripped Matrix (S6) — Dark Surface (S7) (LRR R, MLRA 149B)  3Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.  Restrictive Layer (if observed):  Type: root	Sandy M	lucky Mineral (S1)		Redox Depre	ssior	ıs (F8)				
Sandy Redox (S5) Red Parent Material (F21) Very Shallow Dark Surface (TF12) Other (Explain in Remarks) O	Sandy G	ileyed Matrix (S4)								
Stripped Matrix (S6) Dark Surface (S7) (LRR R, MLRA 149B)  3Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.  Restrictive Layer (if observed):	Sandy R	edox (S5)								
Dark Surface (S7) (LRR R, MLRA 149B)  Other (Explain in Remarks)  3Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.  Restrictive Layer (if observed):	Stripped	d Matrix (S6)								
³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.  Restrictive Layer (if observed):  Type: Depth (inches): 16  Type: Depth (inches): 16	Dark Su	rface (S7) <b>(LRR R, N</b>	/ILRA 149	9B)						
Restrictive Layer (if observed):  Type: Depth (inches):  16  Remarks:  Type: T	Indicators	of budrophytic you	ratation s	and wetland by	olom	, must b		at uplace disturba	•	
Type: root Hydric Soil Present? Yes No 🗸 Depth (inches): 16  Remarks:	-			and wedand nydr	ology	/ must be	preser	it, uniess disturbe	d or problematic.	
Depth (inches): 16  Remarks:		=	•	root			Hydric	Soil Present?		Ves No /
Remarks:					-		liyunc	Joil Fresent:		1es NO/
		Depth (inches):		16						
	No positive	indication of hydr	ic soils w	as observed.						

Project/Site: Montague	City/County: ,			Sampling Date: 20	019-Oct-25
Applicant/Owner:		State:		Sampling Point: W-0	
Investigator(s): Greg Russo, Mat	t Boscow	Section, Township,	Range:		
Landform(hillslope,terrace,etc.):	Depression	Local relief (concave, conv	ex, none):	Concave	Slope (%): 2 to 5
Subregion (LRR or MLRA): ML	RA 144A of LRR R	Lat: 42.477078	Long:	-72.42628	Datum: WGS84
Soil Map Unit Name: 75B: Pillsb	ury fine sandy loam, 0 to 8 percent	slopes, very stony		NWI classificati	on: None
Are climatic/hydrologic conditions	on the site typical for this time of y	ear? Yes <u>✓</u> No	(If no	o, explain in Remarks	.)
Are Vegetation, Soil,	or Hydrology significantly d		al Circumst	tances" present?	Yes No
Are Vegetation, Soil,	or Hydrology naturally prob	olematic? (If needed,	explain an	y answers in Remark	(S.)
SUMMARY OF FINDINGS – At	tach site map showing sampl	ing point locations, trar	nsects, im	portant features,	, etc.
Hydrophytic Vegetation Present?	Yes No				
Hydric Soil Present?	Yes No	Is the Sampled Area withi	n a Wetlan	d? Ye	s/_ No
Wetland Hydrology Present?	Yes No	If yes, optional Wetland Si			-GR-3
			ite ib.		-dk-3
	cedures here or in a separate repor				
Covertype is PSS. Area is wetland,	all three wetland parameters are p	resent.			
HYDROLOGY					
Wetland Hydrology Indicators:					
Primary Indicators (minimum of o	ne is required; check all that apply)	<u> </u>	Secondary	/ Indicators (minimur	m of two required)
Surface Water (A1)	Water-Stained Le	eaves (B9)	Surface	e Soil Cracks (B6)	
High Water Table (A2)	Aquatic Fauna (B		Draina	ige Patterns (B10)	
✓ Saturation (A3)	Marl Deposits (B	15)		Trim Lines (B16)	
Water Marks (B1)	Hydrogen Sulfide	e Odor (C1)	-	ason Water Table (C2	2)
Sediment Deposits (B2)	Oxidized Rhizosp	pheres on Living Roots (C3)		sh Burrows (C8)	. (50)
				tion Visible on Aerial	
Drift Deposits (B3)	<u>✓</u> Presence of Redu			d or Stressed Plants	(D1)
Algal Mat or Crust (B4)		uction in Tilled Soils (C6)		orphic Position (D2)	
Iron Deposits (B5)	Thin Muck Surface			w Aquitard (D3)	4)
Inundation Visible on Aerial Im Sparsely Vegetated Concave Si	· · ·	Remarks)		opographic Relief (D4	4)
	arrace (B8)		FAC-ING	eutral Test (D5)	
Field Observations:	Van Na ( Danti	- (i).			
Surface Water Present?	'	n (inches):	·[		
Water Table Present?	·	n (inches):	Wetland F	Hydrology Present?	Yes No
Saturation Present?	Yes _ No Depth	n (inches): 0			
(includes capillary fringe)					
Describe Recorded Data (stream g	gauge, monitoring well, aerial photo	os, previous inspections), if a	available:		
Remarks:					
The criterion for wetland hydrolog	gy is met.				
	~				

	Absoluto	Dominant	Indicator	Dominance Test worl	csheet.		
Tree Stratum (Plot size: <u>30 ft</u> )		Species?	Status	Number of Dominan			
1. Acer rubrum	10	Yes	FAC	Are OBL, FACW, or FA		4	(A)
2. Quercus rubra		Yes	FACU	Total Number of Don	ninant Species	9	(B)
3. Tsuga canadensis		Yes	FACU	Across All Strata:			(D)
4.				Percent of Dominant	•	44.4	(A/E
5.				Are OBL, FACW, or FA			
6.				Prevalence Index wo			
7.				Total % Cove		Multiply B	-
· -		= Total Cov	er	- OBL species	0	x 1 =	0
Sapling/Shrub Stratum (Plot size:15 ft)	<del></del>	-		FACW species	105	x 2 =	210
. Kalmia latifolia	10	Yes	FACU	FAC species	10	x 3 =	30
2. Pinus strobus		Yes	FACU	- FACU species	32	x 4 =	128
B. Acer pensylvanicum		Yes	FACU	- UPL species	0	x 5 =	0
1. Vaccinium corymbosum		Yes	FACW	- Column Totals	147	(A)	368 (I
5. Tsuga canadensis	2	No	FACU	- Prevalence	Index = B/A =	2.5	
5. 130ga canaderisis			TACO	Hydrophytic Vegetati	on Indicators:		
7.				1- Rapid Test fo	r Hydrophytic V	egetation/	
•		= Total Cov		2 - Dominance	Test is > 50%		
larh Stratum (Diatoiza) E ft		_ 10tal Cov	ei	3 - Prevalence II	ndex is $\leq 3.0^{1}$		
<u>Herb Stratum</u> (Plot size: <u>5 ft</u> ) 1. <i>Coptis trifolia</i>	70	Voc	FACW	4 - Morphologic	al Adaptations	(Provide sı	upportii
	<del></del>	Yes		- data in Remarks or o	n a separate sh	ieet)	
	30	Yes	FACW	Problematic Hy			
3.				Indicators of hydric		, 0,	y must l
ł				present, unless distu	rbed or problei	matic	
5.				_ Definitions of Vegeta			
5				Tree – Woody plants			iameter
7				breast height (DBH),	-	_	
3				Sapling/shrub – Woo			3H and
9				greater than or equa			11
10				Herb – All herbaceou size, and woody plan			ardiess
1				- Woody vines – All wo			0 ft in
2				height.	ouy viries great	ter triair 3.2	.0 11 111
	100	= Total Cov	er			, , ,	
Noody Vine Stratum (Plot size: <u>30 ft</u> )				Hydrophytic Vegetat	ion Present?	res <u> </u>	)
·				_			
				_			
2.							
2							

	cription: (Describe	to the	•			indicato	r or confirm the al	osence of ind	licators.)
Depth (in the se)	Matrix		Redox			12	Taratuan	_	Domonico
(inches)	Color (moist)	<u>%</u>	Color (moist)	<u>%</u>	Type <sup>1</sup>	Loc <sup>2</sup>	Texture		Remarks
0 - 6	10YR 2/1	60	10YR 5/1	40	D	<u>M</u>	Sandy Lo		
6 - 20	10YR 6/4	95	7.5YR 5/8	5	C	<u>M</u>	Sandy Lo	am	
				_					
		- —							
				_					
				_					
				_					
				_					
1Type: C = C	Concentration, D =	 Denlet	ion PM = Peduce	d Mat	riv MS =	Maskad	Sand Grains 21	ocation: PL =	Pore Lining, M = Matrix.
Hydric Soil		Depiec	ion, Rivi – Reduce	u iviat	11, 1013 -	Masked	Sana Grains. L		for Problematic Hydric Soils <sup>3</sup> :
Histoso			Pohazduo R	alow S	urfaco (S	(Q) <b>(I DD</b>	R, MLRA 149B)		•
	oipedon (A2)		Thin Dark Si						uck (A10) (LRR K, L, MLRA 149B)
	istic (A3)		Loamy Muc						rairie Redox (A16) (LRR K, L, R)
Hydroge	en Sulfide (A4)		Loamy Gley	ed Ma	trix (F2)				ucky Peat or Peat (S3) <b>(LRR K, L, R)</b> ırface (S7) <b>(LRR K, L)</b>
Stratifie	d Layers (A5)		Depleted M	atrix (I	=3)				ue Below Surface (S8) (LRR K, L)
	d Below Dark Surfa	ace (A1						•	rk Surface (S9) <b>(LRR K, L)</b>
	ark Surface (A12)		_✓ Depleted Da			)			inganese Masses (F12) (LRR K, L, R)
	Mucky Mineral (S1)		Redox Depr	essior	IS (F8)			Piedmo	nt Floodplain Soils (F19) (MLRA 149B)
-	Gleyed Matrix (S4)							Mesic S	podic (TA6) <b>(MLRA 144A, 145, 149B)</b>
_	Redox (S5)							Red Par	ent Material (F21)
	d Matrix (S6)	ALDA 1	40D)					-	allow Dark Surface (TF12)
Dark 30	rface (S7) <b>(LRR R, N</b>	ILKA I	430)					Other (E	Explain in Remarks)
	of hydrophytic veg		n and wetland hyd	Irolog	y must b	e preser	nt, unless disturbe	d or problem	natic.
Restrictive	Layer (if observed):								
	Type:		None			Hydric	Soil Present?		Yes No
	Depth (inches):								
Remarks:									
A positive in	ndication of hydric	soil wa	as observed.						
	,								
1									

Project/Site: Montague	City/County: Shu	tesbury, Franklin	Sampling Date: 2019-Oct-25				
Applicant/Owner:	-	State: MA	S	Sampling Point: W-GR-	-3_UPL-1		
Investigator(s): Greg Russo, Ma	tt Boscow	Section, Township,	Range:				
Landform(hillslope,terrace,etc.):	Hillslope	Local relief (concave, conv	ex, none):	Convex	<b>Slope (%):</b> 2 to 5		
Subregion (LRR or MLRA): M	LRA 144A of LRR R	Lat: 42.477034	Long:	-72.426224	Datum: WGS84		
Soil Map Unit Name: 75B: Pillsb	oury fine sandy loam, 0 to 8 percent	slopes, very stony		NWI classification	: None		
• •	on the site typical for this time of ye			explain in Remarks.)			
Are Vegetation, Soil,	or Hydrology significantly di			•	es No		
Are Vegetation, Soil,	or Hydrology naturally prob	lematic? (If needed,	explain any	answers in Remarks.)			
SUMMARY OF FINDINGS - A	ttach site map showing sampli	ng point locations, trar	nsects, imp	portant features, e	tc.		
Hydrophytic Vegetation Present?	Yes No _ <b>_</b> _						
Hydric Soil Present?	Yes No _ <b>_</b> _	Is the Sampled Area withi	n a Wetland	i? Yes	No⁄_		
Wetland Hydrology Present?	Yes No <b>_</b> _	If yes, optional Wetland Si	ite ID:				
	cedures here or in a separate report	<u> </u>			_		
· •	·						
Covertype is UPL. Area is upland,	not all three wetland parameters ar	e present.					
HYDROLOGY							
Wetland Hydrology Indicators:							
	one is required; check all that apply)		Secondary	Indicators (minimum o	of two required)		
•			•	Soil Cracks (B6)	or two required,		
Surface Water (A1) High Water Table (A2)	Water-Stained Le Aquatic Fauna (B´		Drainage Patterns (B10)				
Saturation (A3)	Aquatic Fauria (B Marl Deposits (B1		Moss Trim Lines (B16)				
Water Marks (B1)	Hydrogen Sulfide		Dry-Season Water Table (C2)				
Sediment Deposits (B2)	, ,	heres on Living Roots (C3)	-	h Burrows (C8)			
	<u> </u>		Saturat	ion Visible on Aerial Im	nagery (C9)		
Drift Deposits (B3)	Presence of Redu	ced Iron (C4)	Stunted	d or Stressed Plants (D	1)		
Algal Mat or Crust (B4)	Recent Iron Redu	ction in Tilled Soils (C6)	Geomo	rphic Position (D2)			
Iron Deposits (B5)	Thin Muck Surfac	e (C7)	Shallow	v Aquitard (D3)			
Inundation Visible on Aerial Ir	magery (B7) Other (Explain in	Remarks)	Microto	pographic Relief (D4)			
Sparsely Vegetated Concave S	Surface (B8)		FAC-Ne	utral Test (D5)			
Field Observations:							
Surface Water Present?	Yes No <u>_</u> Depth	(inches):					
Water Table Present?	Yes No <u></u> Depth	(inches):	-  Wetland Hv	ydrology Present?	Yes No <b>∠</b>		
Saturation Present?		(inches):	-	, a. o. o. o. j o. o			
	Tes No <u>-</u>	(IIICIIes).	-				
(includes capillary fringe)							
Describe Recorded Data (stream	gauge, monitoring well, aerial photo	s, previous inspections), if a	available:				
Remarks:							
The criterion for wetland hydrolo	gy is not met.						

	Absoluto	Dominant	Indicator	Dominance Test worksheet:		
<u>Tree Stratum</u> (Plot size: <u>30 ft</u> )		Species?	Status	Number of Dominant Species That		
1 Pinus strobus	40	<u> </u>	FACU	Are OBL, FACW, or FAC:	1	(A)
1. Pinus strobus		Yes		Total Number of Dominant Species		
2. Tsuga canadensis	30	Yes	FACU	Across All Strata:	5	(B)
3.				Percent of Dominant Species That		
4				Are OBL, FACW, or FAC:	20	(A/B)
5				Prevalence Index worksheet:		
6				Total % Cover of:	Multiply	By:
7				OBL species 0	x 1 =	0
	70	= Total Cov	er	FACW species 0	x 2 =	0
Sapling/Shrub Stratum (Plot size:15 ft)				FAC species 30	x 3 =	90
1. <i>Kalmia latifolia</i>	60	Yes	FACU	FACU species 145	x 4 =	580
2				UPL species 0	x5=	0
3.				· -	-	
4.					(A) _	670 (B)
5.				Prevalence Index = B/A =	3.8	
6.				Hydrophytic Vegetation Indicators:		
7.				1- Rapid Test for Hydrophytic \	/egetation	1
/·	60	= Total Cov	or	2 - Dominance Test is > 50%		
Herb Stratum (Plot size: _ 5 ft)		_ Total Cov	CI	$3$ - Prevalence Index is $\leq 3.0^1$		
1. Pyrola americana	30	Yes	FAC	4 - Morphological Adaptations		supporting
	15	Yes	FACU	data in Remarks or on a separate sh		
		res	FACU	Problematic Hydrophytic Vege		-
3.				Indicators of hydric soil and wetlan	-	gy must be
4				present, unless disturbed or proble	matic	
5				Definitions of Vegetation Strata:		
6				Tree – Woody plants 3 in. (7.6 cm) or		diameter at
7				breast height (DBH), regardless of h	_	
8.				Sapling/shrub – Woody plants less t		DBH and
9				greater than or equal to 3.28 ft (1 m		
10				Herb – All herbaceous (non-woody)		gardless of
11.				size, and woody plants less than 3.2		
12.				Woody vines – All woody vines grea	ter than 3	.28 ft in
	45	= Total Cov	er	height.		
Woody Vine Stratum (Plot size: 30 ft )		•		Hydrophytic Vegetation Present?	Yes N	No <u>/</u>
1.						
2.				•		
3.				-		
·						
4		- Tatal Cau		-		
	0	= Total Cov	er			
Remarks: (Include photo numbers here or on a separa	te sheet.)					
No positive indication of hydrophytic vegetation was o	bserved (≥	50% of dom	inant specie	es indexed as FAC– or drier).		

	cription: (Describe	to the de	•			ndicator	or confirm the ab	osence of indicato	rs.)
Depth	Matrix		Redox			12	T4		Days and a
(inches)	Color (moist)	<u>%</u>	Color (moist)	<u>%</u>	Type <sup>1</sup>	Loc <sup>2</sup>	Text	-	Remarks
0 - 3	10YR 2/2	100		- —			Silty Clay		
3 - 12	10YR 4/6	100		-			Silty Clay		
12 - 20	10YR 5/6	100		_			Silt Lo	oam	
				_					
								_	
				_					
				_					
1Typo: C = 0	Concentration, D =	 Doplotio	n DM - Poducod	N/ati	riv MC -	Mackad	Sand Grains 21 o	ocation: DL - Doro	Lining, M = Matrix.
		Depletio	ii, Rivi – Reduced	IVIati	IX, IVI3 –	Maskeu	Sand GrainsLC		
Hydric Soil			Dalamba Dal			0) // DD /	D A41 DA 4 40D)	indicators for Pro	oblematic Hydric Soils³:
Histoso	r (A1) pipedon (A2)		Polyvalue Bel				R, MLRA 149B)		A10) <b>(LRR K, L, MLRA 149B)</b>
	istic (A3)		Loamy Muck						Redox (A16) (LRR K, L, R)
	en Sulfide (A4)		Loamy Gleye			(LKK K, I	-)		Peat or Peat (S3) <b>(LRR K, L, R)</b>
, 0	d Layers (A5)		Depleted Ma					Dark Surface	
	d Below Dark Surfa	ace (A11)							low Surface (S8) (LRR K, L)
	ark Surface (A12)		Depleted Dar						rface (S9) <b>(LRR K, L)</b>
	Mucky Mineral (S1)		Redox Depre						ese Masses (F12) (LRR K, L, R)
	Gleyed Matrix (S4)				, ,				oodplain Soils (F19) <b>(MLRA 149B)</b>
-	Redox (S5)								(TA6) <b>(MLRA 144A, 145, 149B)</b>
-	d Matrix (S6)							Red Parent N	
	rface (S7) <b>(LRR R, N</b>	/II RA 149	)B)						Dark Surface (TF12)
Bark Se	Trace (37) (Entrie)	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	,,,					Other (Explai	in in Remarks)
	of hydrophytic veg		and wetland hydr	olog	y must be	e presen	t, unless disturbe	d or problematic.	
Restrictive	Layer (if observed):	:							
	Type:		None			Hydric	Soil Present?		Yes No
	Depth (inches):								
Remarks:									
No positivo	indication of buds	ic coile u	as observed						
No positive	indication of hydr	ic soils w	as observed.						
ı									

Project/Site: Montague	City/County: Shu	tesbury, Franklin	Sampling Date: 2019-Oct-25				
Applicant/Owner:		State: MA	Samp	oling Point: W-GR-4	1_PEM-1		
Investigator(s): Greg Russo, Ma	att Boscow	Section, Township,	Range:				
Land form (hills lope, terrace, etc.):	Depression	Local relief (concave, conv	ex, none): Cond	ave	Slope (%): 5 to 10		
Subregion (LRR or MLRA): N	ILRA 144A of LRR R	Lat: 42.475184	Long:72.4	28153 <u></u> [	Datum: WGS84		
Soil Map Unit Name: 75B: Pills	bury fine sandy loam, 0 to 8 percent	slopes, very stony		NWI classification:	None		
	s on the site typical for this time of ye			lain in Remarks.)			
Are Vegetation, Soil,	or Hydrology significantly di		al Circumstances	•	es No		
Are Vegetation, Soil,	or Hydrology naturally prob	lematic? (If needed,	explain any ansi	wers in Remarks.)			
				_			
SUMMARY OF FINDINGS – A	ttach site map showing sampli	ng point locations, trai	nsects, import	ant features, et	С.		
Hydrophytic Vegetation Present?	? Yes 🟒 No						
Hydric Soil Present?	Yes No	Is the Sampled Area withi	n a Wetland?	Yes _,	∠_ No		
Wetland Hydrology Present?	Yes <b>∠</b> _ No	If yes, optional Wetland S	ite ID:	W-GR-	-4		
	ocedures here or in a separate report						
	· · · · · ·						
Covertype is PEM. Area is wetlan	nd, all three wetland parameters are p	resent.					
HYDROLOGY							
FIDROLOGI							
Wetland Hydrology Indicators:							
Primary Indicators (minimum of	one is required; check all that apply)		Secondary India	cators (minimum o	f two required)		
Surface Water (A1)	Water-Stained Lea	aves (B9)	Surface Soil	Cracks (B6)			
High Water Table (A2)	Aquatic Fauna (B1	13)	Drainage Patterns (B10)				
✓ Saturation (A3)	Marl Deposits (B1		Moss Trim Lines (B16)				
Water Marks (B1)	Hydrogen Sulfide		Dry-Season Water Table (C2)				
Sediment Deposits (B2)	, ,	heres on Living Roots (C3)	Crayfish Bur	rrows (C8)			
		g (,	Saturation V	isible on Aerial Ima	agery (C9)		
Drift Deposits (B3)	Presence of Redu	ced Iron (C4)	Stunted or S	Stressed Plants (D1	)		
Algal Mat or Crust (B4)	Recent Iron Redu	ction in Tilled Soils (C6)	Geomorphic	c Position (D2)			
Iron Deposits (B5)	Thin Muck Surfac		Shallow Aqu				
Inundation Visible on Aerial I				raphic Relief (D4)			
Sparsely Vegetated Concave	· · · · · · · · · · · · · · · · · · ·	nerria no,	✓ FAC-Neutral				
Field Observations:	3411400 (50)		171C Nederal	1030 (03)			
Surface Water Present?	Yes No _ <b>∠</b> Depth	(inches):					
	·	· · · · · · · · · · · · · · · · · · ·		l D	V A N-		
Water Table Present?		(inches):	Wetland Hydrol	logy Present?	Yes No		
Saturation Present?	Yes No Depth	(inches): 0	.				
(includes capillary fringe)							
Describe Recorded Data (stream	n gauge, monitoring well, aerial photo	s previous inspections) if	available.				
	. 88-,	-, p					
Remarks:							
The criterion for wetland hydrolo	ngv is met						
criteriori ior wedana nyarok	26) 13 11160						

	Abcoluto	Dominant	Indicator	Dominance Test worksheet:		
Tree Stratum (Plot size: 30 ft )		Species?	Status	Number of Dominant Species Th	at	
1.	70 COVC	эрескез.	Julia	Are OBL, FACW, or FAC:	3	(A)
-				Total Number of Dominant Spec	es	
2.				Across All Strata:	3	(B)
3.				Percent of Dominant Species Tha	ıt 400	
4				Are OBL, FACW, or FAC:	100	(A/B)
5.				Prevalence Index worksheet:		
6				Total % Cover of:	Multiply	By:
7				OBL species 20	x 1 =	20
	0	= Total Cov	er	FACW species 20	x 2 =	40
Sapling/Shrub Stratum (Plot size: 15 ft )				FAC species 10	x 3 =	30
1				FACU species 0	x 4 =	0
2				UPL species 0	x 5 =	0
3				Column Totals 50	(A)	90 (B)
4				Prevalence Index = B/A		30 (B)
5						
6.				Hydrophytic Vegetation Indicator		
7.				1- Rapid Test for Hydrophyl	-	
	0	= Total Cove	er	2 - Dominance Test is >50%		
Herb Stratum (Plot size:5 ft)		_		3 - Prevalence Index is ≤ 3.		
1. Carex gynandra	20	Yes	OBL	4 - Morphological Adaptation		supporting
2. Rubus hispidus	15	Yes	FACW	data in Remarks or on a separate		nlain)
3. <i>Parathelypteris noveboracensis</i>	10	Yes	FAC	Problematic Hydrophytic Volume 1 Indicators of hydric soil and wet	_	-
4. Osmundastrum cinnamomeum		No	FACW	present, unless disturbed or pro		gy must be
5.				Definitions of Vegetation Strata:	<u>Jerriatic</u>	
6.				Tree – Woody plants 3 in. (7.6 cm	) or more in (	diameter at
7.				breast height (DBH), regardless of		ilameter at
8.				Sapling/shrub - Woody plants le	_	BH and
9.				greater than or equal to 3.28 ft (		bir ana
40				Herb – All herbaceous (non-woo		ardless of
-				size, and woody plants less than	, ,	,
11.				Woody vines – All woody vines g		28 ft in
12		Tatal Care		height.		
W. L. V. G (DL	50	= Total Cov	er	Hydrophytic Vegetation Present	Yes / N	lo
Woody Vine Stratum (Plot size:30 ft)				.,,		
1.						
2.						
3.						
4						
	0	= Total Cov	er			
Remarks: (Include photo numbers here or on a separ	ate sheet.)					
A positive indication of hydrophytic vegetation was ol	oserved (>50	0% of domin	ant species	indexed as OBL, FACW, or FAC).		

Profile Des Depth	cription: (Describe t Matrix	o the de	epth needed to do Redox			ndicator	or confirm the al	bsence of indicators	.)
(inches)	Color (moist)	%	Color (moist)		Type <sup>1</sup>	Loc2	Tex	kture	Remarks
0 - 8	10YR 2/1	100		_			-	Nucky Peat	
		<u> </u>		_					
				_					
		<u> </u>		_					
		_		_					
		_		_					
¹Type: C = 0	Concentration, D = I	Depletio	n, RM = Reduced	Matr	ix, MS = I	Masked	Sand Grains. <sup>2</sup> Lo	ocation: PL = Pore Li	ning, M = Matrix.
Hydric Soil								Indicators for Prob	olematic Hydric Soils³:
Black H Hydrog Stratifie Deplete Thick D Sandy N Sandy S Sandy F Strippe Dark Su Indicators Restrictive	I (A1) Dipedon (A2) Sistic (A3) En Sulfide (A4) d Layers (A5) d Below Dark Surfacerk Surface (A12) Mucky Mineral (S1) Gleyed Matrix (S4) Eddox (S5) d Matrix (S6) Inface (S7) (LRR R, Month of hydrophytic veget (If observed): Type: Depth (inches):	ILRA 149	Depleted Dar Redox Depre PB) and wetland hydr rock 8	rface y Min d Mar trix (F Gurfac rk Sur ssion	(S9) (LRR eral (F1) ( trix (F2) 3) ee (F6) face (F7) s (F8)	R, MLR. (LRR K, I	A 149B) -)	Coast Prairie R 5 cm Mucky Pe Dark Surface (S Polyvalue Belo Thin Dark Surf Iron-Manganes Piedmont Floo Mesic Spodic (C Red Parent Ma Very Shallow D	w Surface (S8) (LRR K, L) face (S9) (LRR K, L) se Masses (F12) (LRR K, L, R) dplain Soils (F19) (MLRA 149B) TA6) (MLRA 144A, 145, 149B) sterial (F21) Oark Surface (TF12)

Project/Site: Montague	City/County: Shu	tesbury, Franklin	Sampling Date: 2019-Oct-25				
Applicant/Owner:		State: MA	Sampling Point: W	/-GR-4_UPL-1			
Investigator(s): Greg Russo, Ma	att Boscow	Section, Township,	Range:				
Landform(hillslope,terrace,etc.):	Hillslope	Local relief (concave, conv	ex, none): Convex	Slope (%): 2 to 5			
Subregion (LRR or MLRA): M	ILRA 144A of LRR R	Lat: 42.475275	Long: -72.427954	Datum: WGS84			
Soil Map Unit Name: 75B: Pills	bury fine sandy loam, 0 to 8 percent	slopes, very stony	NWI classifica	tion: None			
• •	s on the site typical for this time of ye		(If no, explain in Remark	(s.)			
Are Vegetation, Soil,	or Hydrology significantly di		al Circumstances" present?	Yes _ <b>✓</b> No			
Are Vegetation, Soil,	or Hydrology naturally prob	lematic? (If needed,	explain any answers in Rema	rks.)			
SUMMARY OF FINDINGS – A	ttach site map showing sampli	ng point locations, tran	nsects, important feature	s, etc.			
Hydrophytic Vegetation Present?	Yes No <b>_</b> ✓						
Hydric Soil Present?	Yes No _ <b>_</b> _	Is the Sampled Area within	n a Wetland?	Yes No			
Wetland Hydrology Present?	Yes No _ <b>_</b>	If yes, optional Wetland Si	ite ID:				
	ocedures here or in a separate report						
	· · · · · · · · · · · · · · · · · · ·						
Covertype is UPL. Area is upland	, not all three wetland parameters ar	e present.					
HYDROLOGY							
rii bilotogi							
Wetland Hydrology Indicators:							
Primary Indicators (minimum of	one is required; check all that apply)		Secondary Indicators (minim	um of two required)			
Surface Water (A1)	Water-Stained Le	aves (B9)	Surface Soil Cracks (B6)				
High Water Table (A2)	Aquatic Fauna (B´	13)	Drainage Patterns (B10)				
Saturation (A3)	Marl Deposits (B1		Moss Trim Lines (B16)				
Water Marks (B1)	Hydrogen Sulfide		Dry-Season Water Table (	C2)			
Sediment Deposits (B2)		heres on Living Roots (C3)	Crayfish Burrows (C8)				
			Saturation Visible on Aeri	al Imagery (C9)			
Drift Deposits (B3)	Presence of Redu		Stunted or Stressed Plant	s (D1)			
Algal Mat or Crust (B4)	Recent Iron Redu	ction in Tilled Soils (C6)	Geomorphic Position (D2)	)			
Iron Deposits (B5)	Thin Muck Surfac	e (C7)	Shallow Aquitard (D3)				
Inundation Visible on Aerial II	magery (B7) Other (Explain in	Remarks)	Microtopographic Relief (	D4)			
Sparsely Vegetated Concave :	Surface (B8)		FAC-Neutral Test (D5)				
Field Observations:							
Surface Water Present?	Yes No Depth	(inches):					
Water Table Present?		(inches):	- Wetland Hydrology Present?	Yes No <b>_∠</b>			
Saturation Present?		· · · · · · · · · · · · · · · · · · ·	- Tredana Hydrology Fresence				
	resNo <b>/</b> Deptil	(inches):	-				
(includes capillary fringe)							
Describe Recorded Data (stream	gauge, monitoring well, aerial photo	s, previous inspections), if a	available:				
Remarks:							
No positive indication of wetland	l hydrology was observed.						

Tree Stratum (Plot size:30 ft)		Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That		
1. Tsuga canadensis	70	Yes	FACU	Are OBL, FACW, or FAC:	1	(A)
2.				Total Number of Dominant Species	3	(B)
3.				Across All Strata:		(D)
4.				Percent of Dominant Species That	33.3	(A/B)
5.				Are OBL, FACW, or FAC:  Prevalence Index worksheet:		
6.				Total % Cover of:	Multiply I	Bv.
7				OBL species 0	x 1 =	<del>оу.</del> О
	70	= Total Cov	er	FACW species 60	x 2 =	120
Sapling/Shrub Stratum (Plot size:15 ft)				FAC species 0	x3=	0
1. <i>Kalmia latifolia</i>	60	Yes	FACU	FACU species 150	x 4 =	600
2. Fagus grandifolia	10	No	FACU	UPL species 0	x 5 =	0
3				Column Totals 210	(A)	720 (B)
4					-	
5				Hydrophytic Vegetation Indicators:		
6				1- Rapid Test for Hydrophytic \	/egetation	
7				2 - Dominance Test is > 50%	regetation	
	70	_= Total Cov	er	3 - Prevalence Index is ≤ 3.0¹		
Herb Stratum (Plot size: <u>5 ft</u> )				4 - Morphological Adaptations	1 (Provide	supporting
1. <u>Coptis trifolia</u>	60	Yes	FACW	data in Remarks or on a separate sh		
2. <u>Dendrolycopodium obscurum</u>	10	No	FACU	Problematic Hydrophytic Vege	tation¹ (Ex	plain)
3				¹Indicators of hydric soil and wetlan	d hydroloខ្	gy must be
4				present, unless disturbed or proble	matic	
5				Definitions of Vegetation Strata:		
6				Tree – Woody plants 3 in. (7.6 cm) o		diameter at
7				breast height (DBH), regardless of h	_	
8.				Sapling/shrub – Woody plants less t		BH and
9.				greater than or equal to 3.28 ft (1 m <b>Herb</b> – All herbaceous (non-woody)		ardless of
10.				size, and woody plants less than 3.2		gai uless oi
11				Woody vines – All woody vines grea		28 ft in
12				height.		
NV 1 15 6 4 401 4 5 20 6 3	70	_= Total Cov	er	Hydrophytic Vegetation Present?	Yes N	0 /
Woody Vine Stratum (Plot size: 30 ft )				- yar spriyas i sgatanani i saasii		- <u></u>
1.						
2						
3.						
4		- Total Cau				
	0	_= Total Cov	er			
Remarks: (Include photo numbers here or on a separat	-					
No positive indication of hydrophytic vegetation was ol	oserved (≥	:50% of dom	inant specie	es indexed as FAC– or drier).		

	-	to the de	-			indicato	or confirm the at	osence of indicators.)
Depth	Matrix		Redox				_	
(inches)	Color (moist)	<u>%</u>	Color (moist)	<u>%</u>	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
0 - 8	10YR 2/2	100					Silt Loam	
8 - 20	10YR 4/4	95	10YR 5/6	5	C	M	Silt Loam	
				_				
				_				<del></del> -
				_				
1Typo: C = 0	Concontration D =	Doplotic	n DM - Poducod		riv MC -	Mackad	Sand Grains 21	ocation: DL = Doro Lining M = Matrix
	Concentration, D =	Dehlerio	ni, Rivi – Reduced	ıvıdl	11X, IVIS =	iviaskeu	Janu Graffis. *LC	ocation: PL = Pore Lining, M = Matrix.
Hydric Soil			Date of E	la ~		0) // 55	D MIDA 4405	Indicators for Problematic Hydric Soils <sup>3</sup> :
Histoso							R, MLRA 149B)	2 cm Muck (A10) <b>(LRR K, L, MLRA 149B)</b>
	oipedon (A2) istic (A3)		Thin Dark Su Loamy Muck					Coast Prairie Redox (A16) (LRR K, L, R)
	en Sulfide (A4)		Loamy Gleye	•		(LKK K, I	-)	5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
	d Layers (A5)		Depleted Ma					Dark Surface (S7) (LRR K, L)
	d Below Dark Surfa	ace (A11						Polyvalue Below Surface (S8) (LRR K, L)
	ark Surface (A12)	acc (/ ti i	Depleted Dai			)		Thin Dark Surface (S9) <b>(LRR K, L)</b>
	Mucky Mineral (S1)		Redox Depre					Iron-Manganese Masses (F12) (LRR K, L, R)
	Gleyed Matrix (S4)				,			Piedmont Floodplain Soils (F19) (MLRA 149B)
-	Redox (S5)							Mesic Spodic (TA6) <b>(MLRA 144A, 145, 149B)</b>
-	d Matrix (S6)							Red Parent Material (F21)
	urface (S7) <b>(LRR R, N</b>	ΛΙ DΔ 1./0	OR)					Very Shallow Dark Surface (TF12)
Dark 30	irrace (57) (ERR IC, IC	/ILIVA 14.	,					Other (Explain in Remarks)
3Indicators	of hydrophytic veg	etation	and wetland hydi	rolog	y must b	e preser	it, unless disturbe	d or problematic.
Restrictive	Layer (if observed):	:						
	Type:		None			Hydric	Soil Present?	Yes No <u>_</u> ✓
	Depth (inches):			_				
Remarks:						ı		

Project/Site: Montague	City/County: Shut	esbury, Franklin	Samı	pling Date: 2019	9-Oct-28
Applicant/Owner:		State: MA	Sampli	ng Point: W-MJF	R-5_PEM-1
Investigator(s): Matt Regan, Ma	tt Boscow	Section, Township,	Range:		
Landform(hillslope,terrace,etc.):	Depression	Local relief (concave, conv	ex, none): Conca	ive	Slope (%): 0 to 1
Subregion (LRR or MLRA): M	LRA 144A of LRR R	Lat: 42.474400182	3 <b>Long:</b> -72.43	07505973	Datum: WGS84
Soil Map Unit Name: 75B: Pillsk	oury fine sandy loam, 0 to 8 percent s	lopes, very stony	N	IWI classification	
Are climatic/hydrologic conditions	on the site typical for this time of ye	ar? Yes No	_ <b>∠</b> (If no, explain	າ in Remarks.)	
Are Vegetation, Soil,	or Hydrology significantly dis		al Circumstances"	•	es No
Are Vegetation, Soil,	or Hydrology naturally probl	ematic? (If needed,	explain any answ	ers in Remarks.)	
SUMMARY OF FINDINGS – A	ttach site map showing samplir	ng point locations, trai	nsects, importa	nt features, e	tc.
Hydrophytic Vegetation Present?	Yes _ <b>✓</b> _ No				
Hydric Soil Present?	Yes No	Is the Sampled Area withi	n a Wetland?	Yes	✓_ No
		i ·			
Wetland Hydrology Present?	Yes No	If yes, optional Wetland S	ite ib.	W-MJ	C-N
	cedures here or in a separate report)				
Covertype is PEM.					
HYDROLOGY					
IIIDKOLOGI					
Wetland Hydrology Indicators:					
Primary Indicators (minimum of o	one is required; check all that apply)		Secondary Indica	tors (minimum o	of two required)
Surface Water (A1)	Water-Stained Lea	ives (B9)	Surface Soil C		
High Water Table (A2)	Aquatic Fauna (B1	3)	Drainage Patterns (B10)		
<u>✓</u> Saturation (A3)	Marl Deposits (B1	5)	Moss Trim Lines (B16)		
Water Marks (B1)	Hydrogen Sulfide	Odor (C1)	<u>✓</u> Dry-Season Water Table (C2)		
Sediment Deposits (B2)	Oxidized Rhizosph	neres on Living Roots (C3)			
			Saturation Vis		
Drift Deposits (B3)	Presence of Reduc		Stunted or Stressed Plants (D1)		
Algal Mat or Crust (B4)		tion in Tilled Soils (C6)	✓ Geomorphic Position (D2)		
Iron Deposits (B5)	Thin Muck Surface			Shallow Aquitard (D3)	
Inundation Visible on Aerial Ir	· · · · · · · · · · · · · · · · · · ·	Remarks)	Microtopogra		
Sparsely Vegetated Concave S	urface (B8)		<u>✓</u> FAC-Neutral T	est (D5)	
Field Observations:					
Surface Water Present?	Yes No <u></u> Depth	(inches):			
Water Table Present?	Yes No Depth	(inches): 18	Wetland Hydrolo	gy Present?	Yes No
Saturation Present?	Yes No Depth	(inches): 0			
(includes capillary fringe)					
Describe Recorded Data (stream	gauge, monitoring well, aerial photos	s, previous inspections), if	available:		
•		., , , , ,			
Bana adaa					
Remarks:					

·				Danis and Task would be at	_	
<u>Tree Stratum</u> (Plot size: <u>30 ft</u> )		Dominant		Dominance Test worksheet:	l+	
	% Cover	Species?	Status	Number of Dominant Species T Are OBL, FACW, or FAC:	<sup>nat</sup> 2	(A)
1				Total Number of Dominant Spe		
2				Across All Strata:	2	(B)
3.				Percent of Dominant Species T		
4				Are OBL, FACW, or FAC:	100	(A/B)
5				Prevalence Index worksheet:		
6				Total % Cover of:	Multiply	Bv.
7.				OBL species 30	<u>мициру</u> х 1 =	<u>ъу.</u> 30
	0	= Total Cove	er	·		30
Sapling/Shrub Stratum (Plot size:15 ft)		_		· —	x 2 =	
1				FAC species 50	x 3 =	150
2.				FACU species 0	x 4 =	0
3.				UPL species 0	x 5 =	0
4.				Column Totals 95	(A)	210 (B)
5.				Prevalence Index = B	A = <u>2.2</u>	
6.				Hydrophytic Vegetation Indicat	ors:	
-				1- Rapid Test for Hydroph	ytic Vegetation	1
7				✓ 2 - Dominance Test is >50	%	
	0	_= Total Cove	er	3 - Prevalence Index is ≤ 3	3.0 <sup>1</sup>	
<u>Herb Stratum</u> (Plot size: <u>5 ft</u> )				4 - Morphological Adaptat	ions¹ (Provide	supporting
Parathelypteris noveboracensis	50	Yes	FAC	data in Remarks or on a separa		0
2. Scirpus cyperinus	30	Yes	OBL	Problematic Hydrophytic	/egetation¹ (Ex	kplain)
3. Osmundastrum cinnamomeum	10	No	FACW	¹Indicators of hydric soil and w	tland hydrolo	gy must be
4. Rubus hispidus	5	No	FACW	present, unless disturbed or pr	-	
5				Definitions of Vegetation Strata	:	
6.				Tree – Woody plants 3 in. (7.6 c		diameter at
7.				breast height (DBH), regardless		
8.				Sapling/shrub – Woody plants l		DBH and
9.				greater than or equal to 3.28 ft		
40				Herb – All herbaceous (non-wo	ody) plants, re	gardless of
				size, and woody plants less tha		
11.				Woody vines – All woody vines	greater than 3	.28 ft in
12		- Total Cause		height.	-	
	95	= Total Cove	er .	Hydrophytic Vegetation Preser	nt? Yes 🗸 N	No.
Woody Vine Stratum (Plot size: 30 ft )				.,,		
1						
2.						
3						
4						
	0	= Total Cove	er			
Remarks: (Include photo numbers here or on a sepa	rata chaat )					
Remarks. (include prioto flumbers here of off a separ	iate sileet.)					

	cription: (Describe	to the de	-			indicato	r or confirm the al	osence of i	ndicators.)
Depth _	Matrix		Redox						
(inches)	Color (moist)	<u>%</u>	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture		Remarks
0 - 12	2.5Y 2.5/1	100		_			Loam		
12 - 19	N 5/	95	2.5Y 5/6	5	C	M	Sandy Cla	ау	
				_					-
				_					
								,	
				_					
				_					
				_					
1Type: C = C	Concentration, D =	 Denletic	n PM = Peduced	Mat	riv MS =	Maskad	Sand Grains 21 (	ocation: Pl	= Pore Lining, M = Matrix.
		Depletic	ii, Kivi – Reduced	iviat	11X, 1VI3 -	iviaskeu	Janu GranisLC		s for Problematic Hydric Soils <sup>3</sup> :
Hydric Soil			Daharahia Da	د		:0) (I DD	D MI DA 140D)		·
Histoso	r (A1) pipedon (A2)		Polyvalue Be Thin Dark Su				R, MLRA 149B)		Muck (A10) <b>(LRR K, L, MLRA 149B)</b>
	istic (A3)		Loamy Muck						Prairie Redox (A16) <b>(LRR K, L, R)</b>
	en Sulfide (A4)		Loamy Gleye	•		(LKK K, I	-)		Mucky Peat or Peat (S3) (LRR K, L, R)
	d Layers (A5)		Depleted Ma						Surface (S7) <b>(LRR K, L)</b>
	d Below Dark Surfa	ace (A11	•					-	alue Below Surface (S8) (LRR K, L)
	ark Surface (A12)		Depleted Dai			)			Dark Surface (S9) <b>(LRR K, L)</b>
	Mucky Mineral (S1)		Redox Depre						Manganese Masses (F12) (LRR K, L, R)
	Gleyed Matrix (S4)				. ,				nont Floodplain Soils (F19) <b>(MLRA 149B)</b>
-	Redox (S5)								Spodic (TA6) <b>(MLRA 144A, 145, 149B)</b>
-	d Matrix (S6)								arent Material (F21)
	rface (S7) <b>(LRR R, N</b>	/II RA 149	9R)					-	Shallow Dark Surface (TF12)
bank sa	Trace (37) (Entry in	TEIO ( I I	,,,					Other	(Explain in Remarks)
-	of hydrophytic veg		and wetland hydi	olog	y must b	e preser	nt, unless disturbe	d or proble	ematic.
Restrictive	Layer (if observed):								
	Type:		None	_		Hydric	Soil Present?		Yes No
	Depth (inches):								
Remarks:									

Project/Site: Montague	City/County: Shut	esbury, Franklin	Sampling Date: 2	!019-Oct-28		
Applicant/Owner:		State: MA	Sampling Point: W-	MJR-5_UPL-1		
Investigator(s): Matt Regan, Ma	att Boscow	Section, Township,	Range:			
Landform(hillslope,terrace,etc.):	Toe	Local relief (concave, conv	vex, none): Concave	Slope (%): 0 to 1		
Subregion(LRRorMLRA): ML	RA 144A of LRR R	Lat: 42.474636929	1 Long: -72.4307588116	Datum: WGS84		
Soil Map Unit Name: 75B: Pillsk	bury fine sandy loam, 0 to 8 percent s	lopes, very stony	NWI classificat	ion:		
Are climatic/hydrologic conditions	s on the site typical for this time of ye	ar? Yes No	(If no, explain in Remarks.	.)		
Are Vegetation, Soil,	or Hydrology significantly dis		al Circumstances" present?	Yes No		
Are Vegetation, Soil,	or Hydrology naturally probl	ematic? (If needed,	explain any answers in Remark	ks.)		
SUMMARY OF FINDINGS - A	ttach site map showing samplir	ng point locations, trai	nsects, important features	s, etc.		
Hydrophytic Vegetation Present?	Yes No _ <b>✓</b> _					
Hydric Soil Present?	Yes No	Is the Sampled Area with	nin a Wetland?	Yes No∕_		
_		·				
Wetland Hydrology Present?	Yes No _ <b>_</b> ∠	If yes, optional Wetland	Site id:			
Remarks: (Explain alternative pro	ocedures here or in a separate report)					
Covertype is UPL.						
HYDROLOGY						
[						
Wetland Hydrology Indicators:						
Primary Indicators (minimum of o	one is required; check all that apply)		Secondary Indicators (minimu	m of two required)		
Surface Water (A1)	Water-Stained Lea	ives (B9)	Surface Soil Cracks (B6)			
High Water Table (A2)	Aquatic Fauna (B1		Drainage Patterns (B10)			
Saturation (A3)	Marl Deposits (B1		Moss Trim Lines (B16)			
Water Marks (B1)	Hydrogen Sulfide		Dry-Season Water Table (C2)			
Sediment Deposits (B2)	, ,	neres on Living Roots (C3)	Crayfish Burrows (C8)			
		0 . ,	Saturation Visible on Aeria	l Imagery (C9)		
Drift Deposits (B3)	Presence of Reduc	ced Iron (C4)	Stunted or Stressed Plants	(D1)		
Algal Mat or Crust (B4)	Recent Iron Reduc	tion in Tilled Soils (C6)	Geomorphic Position (D2)			
Iron Deposits (B5)	Thin Muck Surface	e (C7)	Shallow Aquitard (D3)			
Inundation Visible on Aerial Ir			Microtopographic Relief (D	04)		
Sparsely Vegetated Concave S		,	FAC-Neutral Test (D5)	,		
Field Observations:						
Surface Water Present?	Yes No <u></u> ✓ Depth	(inches):				
Water Table Present?		(inches): 10	- Wetland Hydrology Present?	Yes No		
	·	·	- Wetland Hydrology Fresents	res NO _ <b>_</b> /_		
Saturation Present?	Yes _ No Depth	(inches): 4				
(includes capillary fringe)						
Describe Recorded Data (stream	gauge, monitoring well, aerial photos	s, previous inspections), if	available:			
Remarks:						
Recent rainfall.						

Tree Stratum (Plot size: <u>30 ft</u> )		Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b> Number of Dominant Species Th	at 2	(4)
. Tsuga canadensis	50	Yes	FACU	Are OBL, FACW, or FAC:		(A)
. Betula alleghaniensis	15	Yes	FAC	Total Number of Dominant Speci	es 6	(B)
. Betula papyrifera	 5	No	FACU	Across All Strata:		
				Percent of Dominant Species Tha	t 33.3	(A/B)
5.				Are OBL, FACW, or FAC:		
				Prevalence Index worksheet:	N.A. Jaimber	
				Total % Cover of:	Multiply E	-
	70	= Total Cov	er	OBL species 0  FACW species 0	_ x1= _	0
apling/Shrub Stratum (Plot size:15 ft)		_		· -	_ x2= _	0
. <i>Kalmia latifolia</i>	30	Yes	FACU	FAC species 25	_ x3= _	75
. Tsuga canadensis	10	Yes	FACU	FACU species 105	_ ×4= _	420
. Hamamelis virginiana	5	No	FACU	UPL species 0	_ x 5 = _	0
				Column Totals 130	(A)	495 (B)
				Prevalence Index = B/A	= <u>3.8</u>	
				Hydrophytic Vegetation Indicator	s:	
				1- Rapid Test for Hydrophyt	ic Vegetation	
		Takal Car		2 - Dominance Test is > 50%		
	45	_= Total Cov	er	3 - Prevalence Index is ≤ 3.0	)1	
lerb Stratum (Plot size:5 ft)		.,		4 - Morphological Adaptatio	ns¹ (Provide s	supporting
. Osmunda claytoniana	10	Yes	FAC	data in Remarks or on a separate	sheet)	
. Mitchella repens	5	Yes	FACU	Problematic Hydrophytic Ve	getation¹ (Ex	olain)
l				¹Indicators of hydric soil and wet	and hydrolog	y must be
k				present, unless disturbed or prol		
5.				Definitions of Vegetation Strata:		
5.				Tree – Woody plants 3 in. (7.6 cm	or more in d	liameter a
1				breast height (DBH), regardless of		
				Sapling/shrub – Woody plants les		BH and
·				greater than or equal to 3.28 ft (1		Di i di id
				Herb – All herbaceous (non-wood		ardless of
0				size, and woody plants less than		a. a.ess o.
1				Woody vines – All woody vines gr		28 ft in
2		<del></del> .		height.		
	15	= Total Cov	er	-	) Voc N	· /
Voody Vine Stratum (Plot size:30 ft)				Hydrophytic Vegetation Present	res N	0
100aj 11110 bilatam (1 101 512al						
•						

Profile Desc	cription: (Describe	to the de	epth needed to d Redox			indicator	or confirm the al	osence of indicat	cors.)
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Textu	ıro	Remarks
0 - 12			Color (ITIOISE)	70	туре	LUC-	-		Remarks
	2.5Y 2.5/1	100	10VD F /4	-			Loa		
12 - 18	10YR 4/1	95	10YR 5/4	5	C	M	Silty Clay	Loam	
			_	-					
				_					
		· ——		-					
		- —		- —					
				-					
				-					
				- —					
		- —		_					
				_					
				_					-
¹Type: C = C	Concentration, D =	Depletio	n, RM = Reduced	Mati	rix, MS =	Masked	Sand Grains. <sup>2</sup> Lo		e Lining, M = Matrix.
Hydric Soil	Indicators:							Indicators for F	Problematic Hydric Soils³:
Histosol			-				R, MLRA 149B)	2 cm Muck	(A10) (LRR K, L, MLRA 149B)
	oipedon (A2)		Thin Dark Su					Coast Prair	ie Redox (A16) <b>(LRR K, L, R)</b>
Black Hi			Loamy Muck			(LRR K, I	-)	5 cm Muck	y Peat or Peat (S3) <b>(LRR K, L, R)</b>
	en Sulfide (A4) d Lavers (A5)		Loamy Gleye Depleted Ma					Dark Surfac	ce (S7) <b>(LRR K, L)</b>
	d Below Dark Surfa	ace (A11)						-	Below Surface (S8) (LRR K, L)
	ark Surface (A12)	JCC (/ (1 1)	Depleted Dark		. ,	)			Surface (S9) <b>(LRR K, L)</b>
	fucky Mineral (S1)		Redox Depre			•			anese Masses (F12) (LRR K, L, R)
_	Gleyed Matrix (S4)				. ,				Floodplain Soils (F19) (MLRA 149B)
-	ledox (S5)								lic (TA6) <b>(MLRA 144A, 145, 149B)</b>
_	d Matrix (S6)							Red Parent	
	rface (S7) (LRR R, N	/ILRA 149	9B)						w Dark Surface (TF12) lain in Remarks)
•	of hydrophytic veg		and wetland hydr	olog	y must b	e presen	t, unless disturbe	d or problemation	<u>.                                    </u>
	Layer (if observed):		None			Lludric	Coil Procent?		Vos. / No.
	Type:		None			Hydric	Soil Present?		Yes/_ No
	Depth (inches):								
Remarks:									

# WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Montague	City/County: Shu	tesbury, Franklin	Sampling I	Date: 2019-Oct-28	
Applicant/Owner:		State: MA	Sampling Po	int: W-MJR-6_PFO-1	
Investigator(s): Matt Regan, M	latt Boscow	Section, Township,	Range:		
Landform(hillslope,terrace,etc.):	Depression	Local relief (concave, conv	ex, none): Concave	Slope (%): 0 to 1	
Subregion (LRR or MLRA):	MLRA 144A of LRR R	Lat: 42.475527715	9 <b>Long:</b> -72.4315434	1416 Datum: WGS84	
Soil Map Unit Name: 75B: Pills	sbury fine sandy loam, 0 to 8 percent s	slopes, very stony	NWI cla	assification:	
• •	ns on the site typical for this time of ye		(If no, explain in Re		
Are Vegetation, Soil,	or Hydrology significantly di		al Circumstances" prese		
Are Vegetation, Soil,	or Hydrology naturally prob	lematic? (If needed,	explain any answers in	Remarks.)	
SUMMARY OF FINDINGS – A	Attach site map showing sampli	ng point locations, trar	nsects, important fe	atures, etc.	
Hydrophytic Vegetation Present	t? Yes _ <b>✓</b> _ No				
Hydric Soil Present?	Yes _ 🗸 _ No	Is the Sampled Area withi	n a Wetland?	Yes/_ No	
Wetland Hydrology Present?	Yes No	If yes, optional Wetland S		W-MIR-6	
	<del></del>		ice is.		
Covertype is PFO.	ocedures here or in a separate report	)			
Covertype is PFO.					
LIVEROLOGY					
HYDROLOGY					
Wetland Hydrology Indicators:					
Primary Indicators (minimum of	f one is required; check all that apply)		Secondary Indicators (	minimum of two required)	
Surface Water (A1)	Water-Stained Lea	aves (B9)	Surface Soil Cracks	(B6)	
High Water Table (A2)	Aquatic Fauna (B1	3)	Drainage Patterns (	B10)	
✓ Saturation (A3)	Marl Deposits (B1	5)	Moss Trim Lines (B		
Water Marks (B1)	Hydrogen Sulfide	Odor (C1)	<u>✓</u> Dry-Season Water Table (C2)		
Sediment Deposits (B2)	Oxidized Rhizospl	neres on Living Roots (C3)	Crayfish Burrows (C		
			Saturation Visible o		
Drift Deposits (B3)	Presence of Redu		Stunted or Stressed	, ,	
Algal Mat or Crust (B4)		ction in Tilled Soils (C6)	<u>✓</u> Geomorphic Position		
Iron Deposits (B5)	Thin Muck Surface		_ Shallow Aquitard (D3)		
Inundation Visible on Aerial	3 J	Remarks)	Microtopographic F		
Sparsely Vegetated Concave	Surface (B8)		FAC-Neutral Test (D	5)	
Field Observations:					
Surface Water Present?	·	(inches):			
Water Table Present?	Yes No Depth	(inches): 18	Wetland Hydrology Pre	esent? Yes No	
Saturation Present?	Yes _ No Depth	(inches): 0			
(includes capillary fringe)					
Describe Recorded Data (strean	n gauge, monitoring well, aerial photo	s, previous inspections), if a	available:		
		•			
Remarks:					
Remarks.					

#### VEGETATION -- Use scientific names of plants.

	Absolute	Dominant	Indicator	Dominance Test worksheet:		
<u>Tree Stratum</u> (Plot size: <u>30 ft</u> )		Species?	Status	Number of Dominant Species That	2	(4)
1. Tsuga canadensis	25	Yes	FACU	Are OBL, FACW, or FAC:	2	(A)
Betula alleghaniensis	15	Yes	FAC	Total Number of Dominant Species	5	(B)
3.				Across All Strata:		(B)
4.				Percent of Dominant Species That	40	(A/B)
5.				Are OBL, FACW, or FAC:		`_
6.				Prevalence Index worksheet:		_
7.				Total % Cover of:	Multiply	-
	40	= Total Cov	/er	OBL species 0	x 1 = _	0
Sapling/Shrub Stratum (Plot size:15 ft)	-	=		FACW species 0	x 2 =	0
1. Kalmia latifolia	15	Yes	FACU	FAC species 35	x 3 =	105
2. Tsuga canadensis	10	Yes	FACU	FACU species 50	x 4 =	200
3.				UPL species 0	x 5 =	0
4.				Column Totals 85	(A)	305 (B)
5.				Prevalence Index = B/A =	3.6	
6.				Hydrophytic Vegetation Indicators:		
7.				1- Rapid Test for Hydrophytic \	egetation/	1
	25	= Total Cov	/er	2 - Dominance Test is > 50%		
Herb Stratum (Plot size: _ 5 ft)		- 10tal Co	701	$3$ - Prevalence Index is $\leq 3.0^{1}$		
1. Osmunda claytoniana	20	Yes	FAC	<u>✓</u> 4 - Morphological Adaptations		supporting
2.		103		data in Remarks or on a separate sh		
3.				Problematic Hydrophytic Vege	•	•
4.				¹Indicators of hydric soil and wetlan	,	gy must be
5.				present, unless disturbed or proble	matic	
6.				Definitions of Vegetation Strata:		
7.				Tree – Woody plants 3 in. (7.6 cm) of		diameter at
-				breast height (DBH), regardless of h Sapling/shrub – Woody plants less t	-	ODLI and
8.				greater than or equal to 3.28 ft (1 m		эвн ани
9.				Herb – All herbaceous (non-woody)		gardless of
10.				size, and woody plants less than 3.2		gar aress or
11.				Woody vines – All woody vines great		.28 ft in
12				height.		
NV 1 15 G ( 1701 ) 20 G )	20	= Total Cov	/er	Hydrophytic Vegetation Present?	es 🗸 N	Jo
Woody Vine Stratum (Plot size: 30 ft )				Tryanopinyan regenation resenta		
1.						
2.						
3.						
4						
	0	_= Total Cov	/er			
Remarks: (Include photo numbers here or on a separat	e sheet.)					
Eastern hemlock was observed with shallow roots, butt	ressing ro	ots, and hu	mmock/hollo	ow microtopography .		

Depth _	cription: (Describe Matrix	to the de	epth needed to d Redox			ndicator or confirm the	absence of indicators.)
(inches)	Color (moist)	<u></u> %	Color (moist)	%	Type <sup>1</sup>	Loc² Textu	re Remarks
0 - 14	10YR 2/1	100	Color (IIIoist)		Турс	Silt Loa	
14 - 20	N 5/	100		-		Sandy (	
	1137	100		-			
			_			<del></del>	
				-			
				-			
						·	<del></del> , - <del></del> ,
						·	<del></del> , - <del></del> ,
		- —		-			<del></del>
							<del></del>
			_	- —			<del></del>
1T C		D   +: -	. DM Deduced			Maraland Cond Contra	Landing Di Dans Lining M. Matrix
		Depletic	on, RIVI = Reduced	Mati	1X, IVIS =	Masked Sand Grains. <sup>2</sup>	Location: PL = Pore Lining, M = Matrix.
Hydric Soil I			Daharahaa Da	c	6 (6	0) (I DD D A41 DA 440D)	Indicators for Problematic Hydric Soils <sup>3</sup> :
Histosol	(A1) pipedon (A2)					8) (LRR R, MLRA 149B) R, MLRA 149B)	2 cm Muck (A10) (LRR K, L, MLRA 149B)
Black Hi	•		Loamy Muck				Coast Prairie Redox (A16) (LRR K, L, R)
	en Sulfide (A4)		Loamy Gleye			(LINCIO, L)	5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
	d Layers (A5)		Depleted Ma				Dark Surface (S7) (LRR K, L)
	d Below Dark Surfa	ace (A11					Polyvalue Below Surface (S8) (LRR K, L)
_✓ Thick Da	ark Surface (A12)		Depleted Dar	k Sui	face (F7)		Thin Dark Surface (S9) (LRR K, L)
Sandy M	lucky Mineral (S1)		Redox Depre	ssion	s (F8)		Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy G	ileyed Matrix (S4)						Piedmont Floodplain Soils (F19) (MLRA 149B) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy R	edox (S5)						Red Parent Material (F21)
Stripped	d Matrix (S6)						Very Shallow Dark Surface (TF12)
Dark Su	rface (S7) <b>(LRR R, N</b>	/ILRA 149	9B)				Other (Explain in Remarks)
21	- £						
-	_ayer (if observed):		and wettand nydi	ology	y must be	e present, unless disturb	ed or problematic.
	Type:		None			Hydric Soil Present?	Yes No
	Depth (inches):		None	-		riyuric son Fresent:	165 <u>/</u> NO
	Deptil (inches).						<del></del>
Remarks:							

# WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Montague	City/County: Shut	esbury, Franklin	Sampling Date: 2	2019-Oct-28	
Applicant/Owner:		State: MA	Sampling Point: W-MJR-6_UPL-1		
Investigator(s): Matt Regan, Ma	att Boscow	Section, Township,	Range:		
Landform(hillslope,terrace,etc.):	Toe	Local relief (concave, conv	ex, none): Concave	Slope (%): 0 to 1	
Subregion(LRRorMLRA): ML	_RA 144A of LRR R	Lat: 42.475328603	8 Long: -72.4314027932	Datum: WGS84	
Soil Map Unit Name: 75B: Pills	bury fine sandy loam, 0 to 8 percent sl	lopes, very stony	NWI classificat	tion:	
Are climatic/hydrologic conditions	s on the site typical for this time of yea		✓ (If no, explain in Remarks	.)	
Are Vegetation, Soil,	or Hydrology significantly dis		al Circumstances" present?	Yes No	
Are Vegetation, Soil,	or Hydrology naturally proble	ematic? (If needed,	explain any answers in Remar	ks.)	
SUMMARY OF FINDINGS – A	ttach site map showing samplin	g point locations, trar	nsects, important features	s, etc.	
Hydrophytic Vegetation Present?	? Yes No _ <b>_/</b>				
Hydric Soil Present?	Yes No	Is the Sampled Area with	in a Wetland?	Yes No⁄_	
Wetland Hydrology Present?	Yes _ <b>.</b> ✓_ No	If yes, optional Wetland S	Site ID:		
	ocedures here or in a separate report)		······································		
· ·	reduces here of in a separate report,				
Covertype is UPL.					
HYDROLOGY					
Wetland Hydrology Indicators:					
,	one is required; check all that apply)		Secondary Indicators (minimu	ım of two required)	
•	• • • • • • • • • • • • • • • • • • • •	(50)	Surface Soil Cracks (B6)	ini oi two required)	
Surface Water (A1)	Water-Stained Lea		Drainage Patterns (B10)		
High Water Table (A2)	Aquatic Fauna (B13		Moss Trim Lines (B16)		
Saturation (A3) Water Marks (B1)	Marl Deposits (B15 Hydrogen Sulfide (		Dry-Season Water Table (C	(2)	
Sediment Deposits (B2)	, ,	eres on Living Roots (C3)	Crayfish Burrows (C8)	,	
Sediment Deposits (D2)	Oxidized Kilizospii	eres on Living Roots (CS)	Saturation Visible on Aeria	al Imagery (C9)	
Drift Deposits (B3)	Presence of Reduc	ed Iron (C4)	Stunted or Stressed Plants	s (D1)	
Algal Mat or Crust (B4)		tion in Tilled Soils (C6)	Geomorphic Position (D2)	,	
Iron Deposits (B5)	Thin Muck Surface	(C7)	Shallow Aquitard (D3)		
Inundation Visible on Aerial I	magery (B7) Other (Explain in R	emarks)	Microtopographic Relief (D	04)	
Sparsely Vegetated Concave S	Surface (B8)		FAC-Neutral Test (D5)		
Field Observations:					
Surface Water Present?	Yes No <u>_</u> Depth (	(inches):			
Water Table Present?	Yes No Depth (	(inches): 16	Wetland Hydrology Present?	Yes No	
Saturation Present?	Yes <u></u> ✓ No Depth (	(inches): 6			
(includes capillary fringe)		·			
. , , , , , , , , , , , , , , , , , , ,	gauge, monitoring well, aerial photos	nrovious inspections) if	l vailable:	<del></del>	
Describe Recorded Data (stream	gauge, monitoring well, aeriai priotos	, previous irispections), ii a	avallable.		
Remarks:					
Due to recent rainfall.					

# VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: <u>30 ft</u> )		Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b> Number of Dominant Species Th	at 1	(4)
. Tsuga canadensis	30	Yes	FACU	Are OBL, FACW, or FAC:		(A)
. Betula papyrifera	15	Yes	FACU	Total Number of Dominant Speci	es 6	(B)
. Betula alleghaniensis	10	No	FAC	Across All Strata:		
				Percent of Dominant Species Tha	16.7	(A/B)
5.				Are OBL, FACW, or FAC:		
j.				Prevalence Index worksheet:		_
				Total % Cover of:	Multiply I	-
· <del></del>	55	= Total Cov	er	OBL species 0	x1=	0
apling/Shrub Stratum (Plot size:15 ft)		-		FACW species 0	x 2 =	0
. Tsuga canadensis	10	Yes	FACU	FAC species 25	x 3 =	75
. Kalmia latifolia	10	Yes	FACU	FACU species 80	x 4 =	320
		103	17100	UPL species 0	x 5 =	0
				Column Totals 105	(A)	395 (B)
				Prevalence Index = B/A	= <u>3.8</u>	
·				Hydrophytic Vegetation Indicator	s:	
				1- Rapid Test for Hydrophyt		
				2 - Dominance Test is > 50%	_	
	20	_= Total Cov	er	3 - Prevalence Index is ≤ 3.	)1	
<u>lerb Stratum</u> (Plot size: <u>5 ft</u> )				4 - Morphological Adaptatic	ns¹ (Provide s	supporting
. Kalmia latifolia	15	Yes	FACU	data in Remarks or on a separate		
Athyrium angustum	10	Yes	FAC	Problematic Hydrophytic Ve	egetation¹ (Ex	plain)
B. Osmunda claytoniana	5	No	FAC	¹Indicators of hydric soil and wet	_	
l	_			present, unless disturbed or prol		
5				Definitions of Vegetation Strata:		
5.				Tree – Woody plants 3 in. (7.6 cm	) or more in d	liameter a
7.				breast height (DBH), regardless of		
3.				Sapling/shrub – Woody plants les		BH and
				greater than or equal to 3.28 ft (1		
				Herb – All herbaceous (non-wood	dy) plants, reg	ardless of
1				size, and woody plants less than		
2				Woody vines – All woody vines gr	eater than 3.	28 ft in
Z		- Tatal Car		height.		
	30	= Total Cov	er	Hydrophytic Vegetation Present	? Yes N	0 /
Noody Vine Stratum (Plot size: <u>30 ft</u> )				i iyar opriyaa regalaalan reselia		~ <u></u>
·				-		
3.				.		
1						
	0	_= Total Cov	er			

	cription: (Describe	to the de	-			indicato	r or confirm the ab	osence of ind	icators.)
Depth _	Matrix		Redox						
(inches)	Color (moist)	<u>%</u>	Color (moist)	<u>%</u>	Type <sup>1</sup>	Loc <sup>2</sup>	Texture		Remarks
0 - 12	10YR 2/1	100					Loam		
12 - 18	N 5/	95	10YR 5/6	5	C	M	Sandy Lo	am	
				_					
				_					
				_					
				_					
				_					·
				_					
1T C = C		Danletie	n DM - Dadwaad		- NC -	NA salvad	Canal Cuaina 21 a		David Liming M. – Matrix
	Concentration, D =	Depletic	n, Rivi = Reduced	Mat	rix, ivi5 =	Masked	Sand Grains. <sup>2</sup> LC		Pore Lining, M = Matrix.
Hydric Soil				_				Indicators f	or Problematic Hydric Soils³:
Histosol							R, MLRA 149B)	2 cm Mi	uck (A10) <b>(LRR K, L, MLRA 149B)</b>
	oipedon (A2)		Thin Dark Su					Coast P	rairie Redox (A16) <b>(LRR K, L, R)</b>
Black Hi	en Sulfide (A4)		Loamy Muck	•		(LKK K, I	-)	5 cm Mi	ucky Peat or Peat (S3) (LRR K, L, R)
, 0	d Layers (A5)		Loamy Gleye Depleted Ma					Dark Su	rface (S7) <b>(LRR K, L)</b>
	d Below Dark Surfa	aca (Δ11						-	ue Below Surface (S8) (LRR K, L)
•	ark Surface (A12)	ace (ATT	Depleted Dai			١		Thin Da	rk Surface (S9) <b>(LRR K, L)</b>
	fucky Mineral (S1)		Redox Depre			,		Iron-Ma	nganese Masses (F12) (LRR K, L, R)
-	ileyed Matrix (S4)		Redox Depre	33101	13 (1 0)			Piedmo	nt Floodplain Soils (F19) (MLRA 149B)
-	edox (S5)							Mesic S	podic (TA6) <b>(MLRA 144A, 145, 149B)</b>
_								Red Par	ent Material (F21)
	d Matrix (S6)	AL DA 14	ND)					-	allow Dark Surface (TF12)
Dark Su	rface (S7) <b>(LRR R, N</b>	/ILKA 14	96)					Other (E	Explain in Remarks)
3Indicators	of hydrophytic veg	etation	and wetland hydi	olog	y must b	e preser	it, unless disturbe	d or problem	natic.
Restrictive I	_ayer (if observed):							•	
	Type:		None			Hvdric	Soil Present?		Yes/_ No
	Depth (inches):			•		, , ,			
Remarks:	Depair (menes):								
Kerriai Ks.									
Recent rain	fall.								
1									
Í									
Ì									
l									



Appendix D: NRCS Soil Report



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



# **Preface**

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

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

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2 053951).

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

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

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

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# **How Soil Surveys Are Made**

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

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

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

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

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

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.

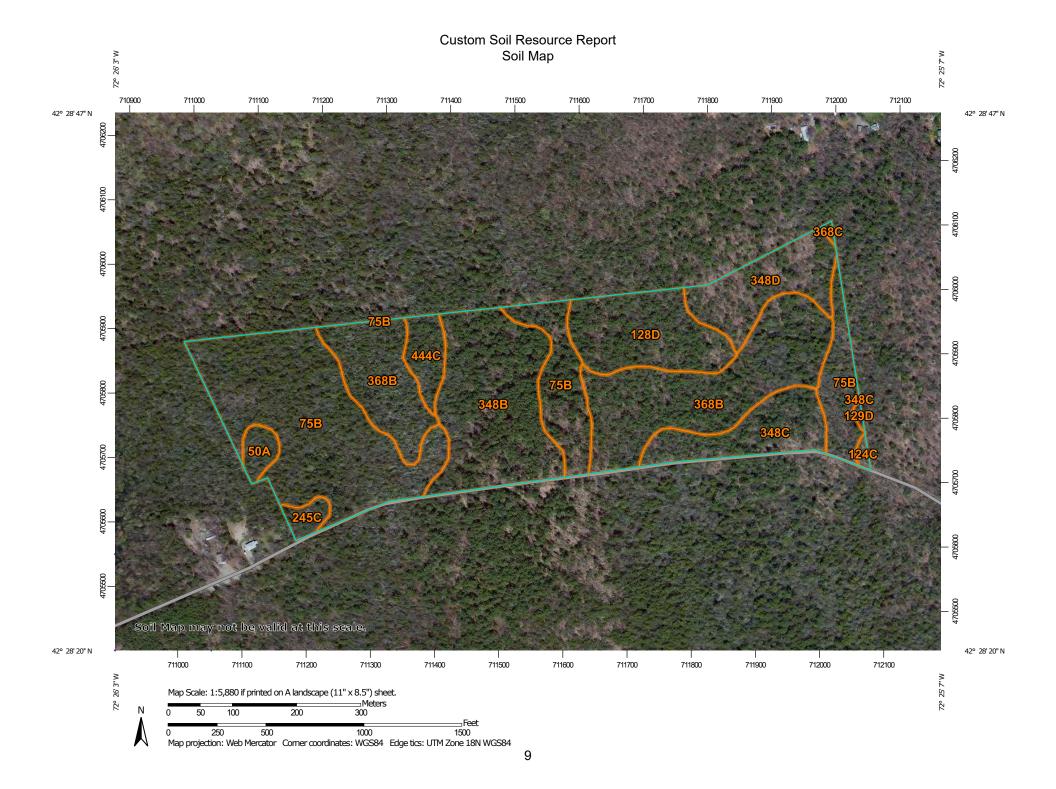
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree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



#### 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**

(0)

Blowout



Borrow Pit



Clay Spot

Gravel Pit



Closed Depression



'



Gravelly Spot



Landfill Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water
Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot

\_

Severely Eroded Spot

Λ

Sinkhole

Ø

Sodic Spot

Slide or Slip

# 8

Spoil Area Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

#### Water Features

\_

Streams and Canals

#### Transportation

ransp

Rails



Interstate Highways



US Routes



Major Roads



Local Roads

#### Background

Marie Contract

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 14, Sep 12, 2019

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
50A	Wonsqueak muck, 0 to 2 percent slopes	0.9	1.3%
75B	Pillsbury fine sandy loam, 0 to 8 percent slopes, very stony	22.5	32.1%
124C	Woodstock-Millsite-Rock outcrop complex, 8 to 15 percent slopes	0.2	0.3%
128D	Millsite-Chichester complex, 15 to 25 percent slopes, rocky	6.5	9.2%
129D	Millsite-Woodstock complex, 15 to 25 percent slopes, very rocky	0.1	0.2%
245C	Hinckley loamy sand, 8 to 15 percent slopes	0.8	1.1%
348B	Henniker sandy loam, 3 to 8 percent slopes	11.0	15.7%
348C	Henniker sandy loam, 8 to 15 percent slopes	4.6	6.5%
348D	Henniker sandy loam, 15 to 25 percent slopes	5.1	7.2%
368B	Metacomet fine sandy loam, 3 to 8 percent slopes	16.7	23.9%
368C	Metacomet fine sandy loam, 8 to 15 percent slopes	0.1	0.2%
444C	Chichester fine sandy loam, 8 to 15 percent slopes	1.7	2.5%
Totals for Area of Interest		70.1	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

# 50A—Wonsqueak muck, 0 to 2 percent slopes

#### **Map Unit Setting**

National map unit symbol: 2ty72 Elevation: 300 to 2,000 feet

Mean annual precipitation: 31 to 95 inches Mean annual air temperature: 27 to 52 degrees F

Frost-free period: 90 to 160 days

Farmland classification: Not prime farmland

#### **Map Unit Composition**

Wonsqueak and similar soils: 81 percent

Minor components: 19 percent

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

#### **Description of Wonsqueak**

#### Setting

Landform: Hills, mountains

Landform position (two-dimensional): Toeslope, footslope

Landform position (three-dimensional): Mountainbase, interfluve, base slope

Down-slope shape: Concave Across-slope shape: Concave

Parent material: Herbaceous organic material over loamy till

#### **Typical profile**

Oa1 - 0 to 8 inches: muck Oa2 - 8 to 32 inches: muck 2Cg - 32 to 65 inches: silt loam

#### Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches Natural drainage class: Very poorly drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high

(0.14 to 14.17 in/hr)

Depth to water table: About 0 inches

Frequency of flooding: None Frequency of ponding: Frequent

Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water storage in profile: Very high (about 18.8 inches)

#### Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 5w

Hydrologic Soil Group: B/D Hydric soil rating: Yes

#### **Minor Components**

#### **Bucksport**

Percent of map unit: 7 percent Landform: Hills, mountains

Landform position (two-dimensional): Toeslope, footslope

Landform position (three-dimensional): Mountainbase, interfluve, base slope

Down-slope shape: Concave Across-slope shape: Concave

Hydric soil rating: Yes

#### Medomak, fine-silty

Percent of map unit: 6 percent

Landform: Flood plains

Landform position (two-dimensional): Toeslope Landform position (three-dimensional): Tread

Down-slope shape: Linear Across-slope shape: Linear Hydric soil rating: Yes

#### Peacham, very stony

Percent of map unit: 3 percent Landform: Hills, mountains

Landform position (two-dimensional): Toeslope, footslope

Landform position (three-dimensional): Mountainbase, interfluve, base slope

Down-slope shape: Concave Across-slope shape: Concave

Hydric soil rating: Yes

#### Searsport

Percent of map unit: 3 percent Landform: Hills. mountains

Landform position (two-dimensional): Toeslope, footslope

Landform position (three-dimensional): Mountainbase, interfluve, base slope

Down-slope shape: Concave Across-slope shape: Concave

Hydric soil rating: Yes

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

#### **Map Unit Setting**

National map unit symbol: 2ty6x Elevation: 360 to 2,070 feet

Mean annual precipitation: 31 to 95 inches Mean annual air temperature: 27 to 52 degrees F

Frost-free period: 90 to 140 days

Farmland classification: Not prime farmland

# **Map Unit Composition**

Pillsbury, very stony, and similar soils: 79 percent

Minor components: 21 percent

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

#### **Description of Pillsbury, Very Stony**

#### Setting

Landform: Hills, mountains

Landform position (two-dimensional): Toeslope, footslope

Landform position (three-dimensional): Mountainbase, base slope, interfluve

Down-slope shape: Concave Across-slope shape: Concave

Parent material: Loamy lodgment till derived from gneiss and/or loamy lodgment till derived from mica schist and/or loamy lodgment till derived from granite

#### Typical profile

Oe - 0 to 1 inches: mucky peat A - 1 to 6 inches: fine sandy loam

Bg1 - 6 to 13 inches: cobbly fine sandy loam Bg2 - 13 to 23 inches: cobbly fine sandy loam Cd - 23 to 65 inches: cobbly fine sandy loam

#### **Properties and qualities**

Slope: 0 to 8 percent

Percent of area covered with surface fragments: 1.1 percent Depth to restrictive feature: 21 to 43 inches to densic material

Natural drainage class: Poorly drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to

moderately high (0.01 to 1.42 in/hr)

Depth to water table: About 0 to 12 inches

Frequency of flooding: None Frequency of ponding: None

Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water storage in profile: Low (about 3.3 inches)

#### Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: D Hydric soil rating: Yes

#### **Minor Components**

#### Peru, very stony

Percent of map unit: 9 percent Landform: Hills, mountains

Landform position (two-dimensional): Backslope, footslope

Landform position (three-dimensional): Mountainbase, interfluve, base slope

Microfeatures of landform position: Rises, rises

Down-slope shape: Convex

Across-slope shape: Linear, convex

Hydric soil rating: No

#### Peacham, very stony

Percent of map unit: 5 percent Landform: Mountains, hills

Landform position (two-dimensional): Toeslope, footslope

Landform position (three-dimensional): Mountainbase, base slope, interfluve *Microfeatures of landform position:* Closed depressions, closed depressions

Down-slope shape: Concave Across-slope shape: Concave

Hydric soil rating: Yes

#### Wonsqueak

Percent of map unit: 4 percent

Landform: Mountains, hills

Landform position (two-dimensional): Toeslope, footslope

Landform position (three-dimensional): Mountainbase, base slope, interfluve *Microfeatures of landform position:* Closed depressions, closed depressions

Down-slope shape: Concave Across-slope shape: Concave

Hydric soil rating: Yes

#### Lyman, very stony

Percent of map unit: 3 percent Landform: Hills, mountains

Landform position (two-dimensional): Backslope, shoulder, summit

Landform position (three-dimensional): Mountainbase, interfluve, base slope

Microfeatures of landform position: Rises, rises

Down-slope shape: Convex Across-slope shape: Convex

Hydric soil rating: No

# 124C—Woodstock-Millsite-Rock outcrop complex, 8 to 15 percent slopes

#### **Map Unit Setting**

National map unit symbol: 9c9n Elevation: 920 to 1,610 feet

Mean annual precipitation: 39 to 53 inches
Mean annual air temperature: 34 to 56 degrees F

Frost-free period: 129 to 174 days

Farmland classification: Not prime farmland

#### **Map Unit Composition**

Woodstock, very rocky, and similar soils: 40 percent

Millsite, rocky, and similar soils: 36 percent

Rock outcrop: 20 percent Minor components: 4 percent

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

#### **Description of Woodstock, Very Rocky**

#### Settina

Landform: Upland slopes

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Nose slope, crest

Down-slope shape: Convex, linear Across-slope shape: Convex, linear

Parent material: Loamy supraglacial till derived from gneiss

#### Typical profile

Oi - 0 to 0 inches: slightly decomposed plant material Oe - 0 to 1 inches: moderately decomposed plant material

A1 - 1 to 3 inches: fine sandy loam

A2 - 3 to 5 inches: fine sandy loam Bw - 5 to 14 inches: fine sandy loam

R - 14 to 65 inches: bedrock

#### Properties and qualities

Slope: 8 to 15 percent

Percent of area covered with surface fragments: 2.1 percent Depth to restrictive feature: 10 to 20 inches to lithic bedrock Natural drainage class: Somewhat excessively 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: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Available water storage in profile: Very low (about 2.6 inches)

#### Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: D Hydric soil rating: No

#### **Description of Millsite, Rocky**

#### Setting

Landform: Upland slopes

Landform position (two-dimensional): Backslope

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

Down-slope shape: Convex Across-slope shape: Linear

Parent material: Loamy supraglacial till derived from gneiss

#### Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material Oe - 1 to 3 inches: moderately decomposed plant material

A1 - 3 to 5 inches: fine sandy loam
A2 - 5 to 9 inches: fine sandy loam
Bw - 9 to 15 inches: fine sandy loam
BC - 15 to 26 inches: fine sandy loam
C - 26 to 33 inches: sandy loam

R - 33 to 65 inches: bedrock

#### **Properties and qualities**

Slope: 8 to 15 percent

Percent of area covered with surface fragments: 2.1 percent Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Natural drainage class: Well 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: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Available water storage in profile: Low (about 5.8 inches)

#### Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: B Hydric soil rating: No

#### **Description of Rock Outcrop**

#### Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8s

Hydric soil rating: Unranked

#### **Minor Components**

#### Chichester, very stony

Percent of map unit: 2 percent

Landform: Valley sides, ground moraines

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

Down-slope shape: Linear, concave Across-slope shape: Linear, convex

Hydric soil rating: No

#### Henniker, very stony

Percent of map unit: 2 percent

Landform: Ground moraines, drumlins

Landform position (two-dimensional): Backslope, toeslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex, linear Across-slope shape: Linear, convex

Hydric soil rating: No

#### 128D—Millsite-Chichester complex, 15 to 25 percent slopes, rocky

# **Map Unit Setting**

National map unit symbol: 9c9x Elevation: 900 to 1,370 feet

Mean annual precipitation: 39 to 53 inches
Mean annual air temperature: 34 to 56 degrees F

Frost-free period: 140 to 174 days

Farmland classification: Not prime farmland

#### **Map Unit Composition**

Millsite, rocky, and similar soils: 44 percent

Chichester, very stony, and similar soils: 40 percent Woodstock, rocky, and similar soils: 10 percent

Minor components: 6 percent

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

#### **Description of Millsite, Rocky**

#### Setting

Landform: Hills

Landform position (two-dimensional): Backslope

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

Down-slope shape: Convex Across-slope shape: Linear

Parent material: Loamy supraglacial till derived from gneiss

#### **Typical profile**

Oi - 0 to 1 inches: slightly decomposed plant material Oe - 1 to 3 inches: moderately decomposed plant material

A1 - 3 to 5 inches: fine sandy loam
A2 - 5 to 9 inches: fine sandy loam
Bw - 9 to 15 inches: fine sandy loam
BC - 15 to 26 inches: fine sandy loam
C - 26 to 33 inches: sandy loam
R - 33 to 65 inches: bedrock

#### **Properties and qualities**

Slope: 15 to 25 percent

Percent of area covered with surface fragments: 2.1 percent Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Natural drainage class: Well 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: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Available water storage in profile: Low (about 5.8 inches)

#### Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: B Hydric soil rating: No

#### **Description of Chichester, Very Stony**

#### Setting

Landform: Valley sides, ground moraines

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

Down-slope shape: Linear, concave Across-slope shape: Linear, convex

Parent material: Loamy over sandy supraglacial meltout till derived from gneiss

#### Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material

A - 1 to 3 inches: fine sandy loam

Ap - 3 to 7 inches: fine sandy loam

Bw1 - 7 to 10 inches: fine sandy loam

Bw2 - 10 to 20 inches: fine sandy loam

C1 - 20 to 28 inches: gravelly loamy coarse sand

C2 - 28 to 35 inches: sand C3 - 35 to 44 inches: stony sand C4 - 44 to 65 inches: stony sand

#### **Properties and qualities**

Slope: 15 to 25 percent

Percent of area covered with surface fragments: 2.1 percent

Depth to restrictive feature: About 20 inches to strongly contrasting textural

stratification

Natural drainage class: Well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to

high (0.20 to 6.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Available water storage in profile: Low (about 3.5 inches)

#### Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: A Hydric soil rating: No

#### **Description of Woodstock, Rocky**

#### Setting

Landform: Upland slopes

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Nose slope, crest

Down-slope shape: Linear, convex Across-slope shape: Convex, linear

Parent material: Loamy till derived from gneiss

#### Typical profile

Oi - 0 to 0 inches: slightly decomposed plant material Oe - 0 to 1 inches: moderately decomposed plant material

A1 - 1 to 3 inches: fine sandy loam
A2 - 3 to 5 inches: fine sandy loam
Bw - 5 to 14 inches: fine sandy loam

R - 14 to 65 inches: bedrock

#### **Properties and qualities**

Slope: 15 to 25 percent

Percent of area covered with surface fragments: 2.1 percent Depth to restrictive feature: 10 to 20 inches to lithic bedrock Natural drainage class: Somewhat excessively 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: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Available water storage in profile: Very low (about 2.6 inches)

#### Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: D Hydric soil rating: No

#### **Minor Components**

#### Henniker, very stony

Percent of map unit: 4 percent

Landform: Ground moraines, drumlins

Landform position (two-dimensional): Backslope, toeslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex, linear Across-slope shape: Linear, convex

Hydric soil rating: No

#### **Rock outcrop**

Percent of map unit: 2 percent

# 129D—Millsite-Woodstock complex, 15 to 25 percent slopes, very rocky

#### **Map Unit Setting**

National map unit symbol: 9cb2 Elevation: 850 to 1,610 feet

Mean annual precipitation: 39 to 53 inches
Mean annual air temperature: 34 to 56 degrees F

Frost-free period: 140 to 174 days

Farmland classification: Not prime farmland

#### **Map Unit Composition**

Millsite, very rocky, and similar soils: 55 percent Woodstock, very rocky, and similar soils: 25 percent

Minor components: 20 percent

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

#### **Description of Millsite, Very Rocky**

#### Setting

Landform: Hills

Landform position (two-dimensional): Backslope

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

Down-slope shape: Convex Across-slope shape: Linear

Parent material: Loamy supraglacial till derived from gneiss

#### Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material

Oe - 1 to 3 inches: moderately decomposed plant material

A1 - 3 to 5 inches: fine sandy loam
A2 - 5 to 9 inches: fine sandy loam
Bw - 9 to 15 inches: fine sandy loam
BC - 15 to 26 inches: fine sandy loam
C - 26 to 33 inches: sandy loam
R - 33 to 65 inches: bedrock

#### **Properties and qualities**

Slope: 15 to 25 percent

Percent of area covered with surface fragments: 2.1 percent Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Natural drainage class: Well 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: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Available water storage in profile: Low (about 5.8 inches)

#### Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: B Hydric soil rating: No

#### **Description of Woodstock, Very Rocky**

#### Setting

Landform: Upland slopes

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Nose slope, crest

Down-slope shape: Linear, convex Across-slope shape: Convex, linear

Parent material: Loamy till derived from gneiss

#### **Typical profile**

Oi - 0 to 0 inches: slightly decomposed plant material Oe - 0 to 1 inches: moderately decomposed plant material

A1 - 1 to 3 inches: fine sandy loam
A2 - 3 to 5 inches: fine sandy loam
Bw - 5 to 14 inches: fine sandy loam

R - 14 to 65 inches: bedrock

#### **Properties and qualities**

Slope: 15 to 25 percent

Percent of area covered with surface fragments: 2.1 percent Depth to restrictive feature: 10 to 20 inches to lithic bedrock Natural drainage class: Somewhat excessively 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: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Available water storage in profile: Very low (about 2.6 inches)

#### Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: D Hydric soil rating: No

#### **Minor Components**

#### Chichester, very stony

Percent of map unit: 10 percent

Landform: Valley sides, ground moraines

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

Down-slope shape: Linear, concave Across-slope shape: Linear, convex

Hydric soil rating: No

#### **Rock outcrop**

Percent of map unit: 5 percent

#### Henniker, very stony

Percent of map unit: 5 percent

Landform: Ground moraines, drumlins

Landform position (two-dimensional): Backslope, toeslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex, linear Across-slope shape: Linear, convex

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: Kame terraces, outwash plains, moraines, outwash deltas, kames, eskers, outwash terraces

Landform position (two-dimensional): Shoulder, toeslope, footslope, backslope Landform position (three-dimensional): Nose slope, side slope, crest, head slope, riser

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: 8 to 15 percent

Depth to restrictive feature: More than 80 inches Natural 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

Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm) Available water storage in profile: Low (about 3.1 inches)

#### Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: A Hydric soil rating: No

#### **Minor Components**

#### Merrimac

Percent of map unit: 5 percent

Landform: Moraines, outwash plains, kames, eskers, outwash terraces

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: Kame terraces, outwash plains, outwash deltas, moraines, kames, outwash terraces, eskers

Landform position (two-dimensional): Shoulder, backslope, footslope, toeslope Landform position (three-dimensional): Nose slope, side slope, crest, head slope, riser.

Down-slope shape: Linear, convex, concave 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

# 348B—Henniker sandy loam, 3 to 8 percent slopes

#### **Map Unit Setting**

National map unit symbol: 9cdw Elevation: 940 to 1,300 feet

Mean annual precipitation: 39 to 53 inches
Mean annual air temperature: 34 to 56 degrees F

Frost-free period: 140 to 174 days

Farmland classification: All areas are prime farmland

## **Map Unit Composition**

Henniker and similar soils: 78 percent Minor components: 22 percent

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

#### **Description of Henniker**

#### Setting

Landform: Ground moraines, drumlins

Landform position (two-dimensional): Backslope, toeslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex, linear Across-slope shape: Linear, convex

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

#### Typical profile

Oi - 0 to 0 inches: slightly decomposed plant material

Oe - 0 to 1 inches: moderately decomposed plant material

Ap - 1 to 8 inches: sandy loam
Bw1 - 8 to 15 inches: sandy loam
Bw2 - 15 to 24 inches: sandy loam
BC - 24 to 29 inches: cobbly sandy loam

Cd1 - 29 to 39 inches: loamy sand Cd2 - 39 to 45 inches: loamy sand Cd3 - 45 to 65 inches: loamy sand

#### **Properties and qualities**

Slope: 3 to 8 percent

Percent of area covered with surface fragments: 0.0 percent Depth to restrictive feature: 18 to 36 inches to densic material

Natural drainage class: Well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately

high (0.00 to 0.20 in/hr)

Depth to water table: About 13 to 31 inches

Frequency of flooding: None Frequency of ponding: None

Available water storage in profile: Low (about 3.6 inches)

#### Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: B Hydric soil rating: No

#### **Minor Components**

#### Metacomet

Percent of map unit: 10 percent Landform: Ground moraines, drumlins

Landform position (two-dimensional): Backslope Landform position (three-dimensional): Side slope

Down-slope shape: Linear Across-slope shape: Convex

Hydric soil rating: No

#### Chichester

Percent of map unit: 10 percent

Landform: Valley sides, ground moraines

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

Down-slope shape: Linear, concave Across-slope shape: Linear, convex

Hydric soil rating: No

#### **Pillsbury**

Percent of map unit: 2 percent

Landform: Drumlins, ground moraines

Landform position (two-dimensional): Backslope Landform position (three-dimensional): Base slope

Down-slope shape: Concave Across-slope shape: Concave

Hydric soil rating: Yes

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

#### Map Unit Setting

National map unit symbol: 9cdv Elevation: 920 to 1,280 feet

Mean annual precipitation: 39 to 53 inches
Mean annual air temperature: 34 to 56 degrees F

Frost-free period: 140 to 174 days

Farmland classification: Farmland of statewide importance

#### **Map Unit Composition**

Henniker and similar soils: 83 percent Minor components: 17 percent

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

#### **Description of Henniker**

#### Setting

Landform: Ground moraines, drumlins

Landform position (two-dimensional): Backslope, toeslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex, linear Across-slope shape: Linear, convex

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

# Typical profile

Oi - 0 to 0 inches: slightly decomposed plant material Oe - 0 to 1 inches: moderately decomposed plant material

Ap - 1 to 8 inches: sandy loam
Bw1 - 8 to 15 inches: sandy loam
Bw2 - 15 to 24 inches: sandy loam
BC - 24 to 29 inches: cobbly sandy loam
Cd1 - 29 to 39 inches: loamy sand
Cd2 - 39 to 45 inches: loamy sand

Cd2 - 39 to 45 inches: loamy sand Cd3 - 45 to 65 inches: loamy sand

#### **Properties and qualities**

Slope: 8 to 15 percent

Percent of area covered with surface fragments: 0.0 percent Depth to restrictive feature: 18 to 36 inches to densic material

Natural drainage class: Well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately

high (0.00 to 0.20 in/hr)

Depth to water table: About 13 to 31 inches

Frequency of flooding: None Frequency of ponding: None

Available water storage in profile: Low (about 3.6 inches)

#### Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: B Hydric soil rating: No

#### **Minor Components**

#### Metacomet

Percent of map unit: 10 percent Landform: Ground moraines, drumlins

Landform position (two-dimensional): Backslope Landform position (three-dimensional): Side slope

Down-slope shape: Linear Across-slope shape: Convex

Hydric soil rating: No

#### Chichester

Percent of map unit: 5 percent

Landform: Valley sides, ground moraines

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

Down-slope shape: Linear, concave Across-slope shape: Linear, convex

Hydric soil rating: No

#### **Pillsbury**

Percent of map unit: 2 percent

Landform: Ground moraines, drumlins

Landform position (two-dimensional): Backslope Landform position (three-dimensional): Base slope

Down-slope shape: Concave Across-slope shape: Concave

Hydric soil rating: Yes

#### 348D—Henniker sandy loam, 15 to 25 percent slopes

#### **Map Unit Setting**

National map unit symbol: 9cdt Elevation: 970 to 1,260 feet

Mean annual precipitation: 39 to 53 inches
Mean annual air temperature: 34 to 56 degrees F

Frost-free period: 140 to 174 days

Farmland classification: Not prime farmland

#### **Map Unit Composition**

Henniker and similar soils: 80 percent Minor components: 20 percent

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

#### **Description of Henniker**

#### Setting

Landform: Ground moraines, drumlins

Landform position (two-dimensional): Toeslope, backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex, linear Across-slope shape: Linear, convex

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

#### **Typical profile**

Oi - 0 to 0 inches: slightly decomposed plant material Oe - 0 to 1 inches: moderately decomposed plant material

Ap - 1 to 8 inches: sandy loam
Bw1 - 8 to 15 inches: sandy loam
Bw2 - 15 to 24 inches: sandy loam

BC - 24 to 29 inches: cobbly sandy loam Cd1 - 29 to 39 inches: loamy sand Cd2 - 39 to 45 inches: loamy sand Cd3 - 45 to 65 inches: loamy sand

#### **Properties and qualities**

Slope: 15 to 25 percent

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

Natural drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately

high (0.00 to 0.20 in/hr)

Depth to water table: About 13 to 31 inches

Frequency of flooding: None Frequency of ponding: None

Available water storage in profile: Low (about 3.6 inches)

#### Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: B Hydric soil rating: No

#### **Minor Components**

#### Metacomet

Percent of map unit: 10 percent Landform: Ground moraines, drumlins

Landform position (two-dimensional): Backslope Landform position (three-dimensional): Side slope

Down-slope shape: Linear Across-slope shape: Convex

Hydric soil rating: No

#### Chichester

Percent of map unit: 10 percent

Landform: Valley sides, ground moraines

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

Down-slope shape: Linear, concave Across-slope shape: Linear, convex

Hydric soil rating: No

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

#### Map Unit Setting

National map unit symbol: 9ccj Elevation: 960 to 1,260 feet

Mean annual precipitation: 39 to 53 inches
Mean annual air temperature: 34 to 56 degrees F

Frost-free period: 140 to 174 days

Farmland classification: All areas are prime farmland

#### **Map Unit Composition**

Metacomet and similar soils: 85 percent

Minor components: 15 percent

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

#### **Description of Metacomet**

#### Setting

Landform: Ground moraines, drumlins

Landform position (two-dimensional): Backslope Landform position (three-dimensional): Side slope

Down-slope shape: Linear Across-slope shape: Convex

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

#### **Typical profile**

Oi - 0 to 2 inches: slightly decomposed plant material Oe - 2 to 2 inches: moderately decomposed plant material

A - 2 to 5 inches: fine sandy loam
E - 5 to 6 inches: fine sandy loam
Bw1 - 6 to 13 inches: fine sandy loam
Bw2 - 13 to 18 inches: fine sandy loam
Bw3 - 18 to 27 inches: sandy loam
C - 27 to 32 inches: stony loamy sand
Cd1 - 32 to 48 inches: loamy sand
Cd2 - 48 to 65 inches: sandy loam

#### Properties and qualities

Slope: 3 to 8 percent

Percent of area covered with surface fragments: 0.0 percent Depth to restrictive feature: 20 to 37 inches to densic material

Natural drainage class: Moderately well drained

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately

high (0.00 to 0.20 in/hr)

Depth to water table: About 16 to 24 inches

Frequency of flooding: None Frequency of ponding: None

Available water storage in profile: Low (about 4.9 inches)

#### Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: B/D Hydric soil rating: No

#### **Minor Components**

#### **Pillsbury**

Percent of map unit: 10 percent Landform: Ground moraines, drumlins

Landform position (two-dimensional): Backslope Landform position (three-dimensional): Base slope

Down-slope shape: Concave Across-slope shape: Concave

Hydric soil rating: Yes

#### Henniker

Percent of map unit: 5 percent

Landform: Ground moraines, drumlins

Landform position (two-dimensional): Backslope, toeslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex, linear Across-slope shape: Linear, convex

Hydric soil rating: No

#### 368C—Metacomet fine sandy loam, 8 to 15 percent slopes

#### **Map Unit Setting**

National map unit symbol: 9cch Elevation: 970 to 1,250 feet

Mean annual precipitation: 39 to 53 inches Mean annual air temperature: 34 to 56 degrees F

Frost-free period: 140 to 174 days

Farmland classification: Farmland of statewide importance

#### **Map Unit Composition**

Metacomet and similar soils: 85 percent

Minor components: 15 percent

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

#### **Description of Metacomet**

#### Setting

Landform: Ground moraines, drumlins

Landform position (two-dimensional): Backslope Landform position (three-dimensional): Side slope

Down-slope shape: Linear Across-slope shape: Convex

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

#### Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material Oe - 2 to 2 inches: moderately decomposed plant material

A - 2 to 5 inches: fine sandy loam
E - 5 to 6 inches: fine sandy loam
Bw1 - 6 to 13 inches: fine sandy loam
Bw2 - 13 to 18 inches: fine sandy loam
Bw3 - 18 to 27 inches: sandy loam
C - 27 to 32 inches: stony loamy sand
Cd1 - 32 to 48 inches: loamy sand
Cd2 - 48 to 65 inches: sandy loam

#### **Properties and qualities**

Slope: 8 to 15 percent

Percent of area covered with surface fragments: 0.0 percent

Depth to restrictive feature: 20 to 37 inches to densic material

Natural drainage class: Moderately well drained

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately

high (0.00 to 0.20 in/hr)

Depth to water table: About 16 to 24 inches

Frequency of flooding: None Frequency of ponding: None

Available water storage in profile: Low (about 4.9 inches)

#### Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: B/D Hydric soil rating: No

#### **Minor Components**

#### **Pillsbury**

Percent of map unit: 10 percent Landform: Ground moraines, drumlins

Landform position (two-dimensional): Backslope Landform position (three-dimensional): Base slope

Down-slope shape: Concave Across-slope shape: Concave

Hydric soil rating: Yes

#### Henniker

Percent of map unit: 5 percent

Landform: Ground moraines, drumlins

Landform position (two-dimensional): Backslope, toeslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex, linear Across-slope shape: Linear, convex

Hydric soil rating: No

## 444C—Chichester fine sandy loam, 8 to 15 percent slopes

#### **Map Unit Setting**

National map unit symbol: 9cfl Elevation: 380 to 1,040 feet

Mean annual precipitation: 39 to 53 inches
Mean annual air temperature: 34 to 56 degrees F

Frost-free period: 140 to 174 days

Farmland classification: Farmland of statewide importance

#### Map Unit Composition

Chichester and similar soils: 90 percent

Minor components: 10 percent

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

#### **Description of Chichester**

#### Setting

Landform: Valley sides, ground moraines

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

Down-slope shape: Linear, concave Across-slope shape: Linear, convex

Parent material: Loamy over sandy supraglacial meltout till derived from gneiss

#### **Typical profile**

Oe - 0 to 1 inches: moderately decomposed plant material

A - 1 to 3 inches: fine sandy loam
Ap - 3 to 7 inches: fine sandy loam
Bw1 - 7 to 10 inches: fine sandy loam
Bw2 - 10 to 20 inches: fine sandy loam

C1 - 20 to 28 inches: gravelly loamy coarse sand

C2 - 28 to 35 inches: sand C3 - 35 to 44 inches: stony sand C4 - 44 to 65 inches: stony sand

#### **Properties and qualities**

Slope: 8 to 15 percent

Percent of area covered with surface fragments: 0.0 percent

Depth to restrictive feature: About 20 inches to strongly contrasting textural

stratification

Natural drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to

high (0.20 to 6.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Available water storage in profile: Low (about 3.5 inches)

#### Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: A Hydric soil rating: No

#### **Minor Components**

#### Henniker

Percent of map unit: 10 percent Landform: Ground moraines, drumlins

Landform position (two-dimensional): Backslope, toeslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex, linear Across-slope shape: Linear, convex

Hydric soil rating: No

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**Appendix E: USGS StreamStats Report** 

StreamStats Page 1 of 5

StreamStats Page 2 of 5

## AMP Montague GR-S1 StreamStats Report

Region ID: Workspace ID:

Clicked Point (Latitude, Longitude):

MA
MA20191114194807209000
42.46754, -72.42117
2019-11-14 14:48:24 -0500



Basin Characteristics					
Parameter Code	Parameter Description	Value	Unit		
DRNAREA	Area that drains to a point on a stream	0.18	square miles		
ELEV	Mean Basin Elevation	1200	feet		
LC06STOR	Percentage of water bodies and wetlands determined from the NLCD 2006	9.93	percent		
DRFTPERSTR	Area of stratified drift per unit of stream length	0	square mile per mile		
MAREGION	Region of Massachusetts 0 for Eastern 1 for Western	1	dimensionless		
BSLDEM250	Mean basin slope computed from 1:250K DEM	0.668	percent		
BSLDEM10M	Mean basin slope computed from 10 m DEM	5.517	percent		
PCTSNDGRV	Percentage of land surface underlain by sand and gravel deposits	0	percent		
FOREST	Percentage of area covered by forest	73.69	percent		
ACRSDFT	Area underlain by stratified drift	0	square miles		
CENTROIDX	Basin centroid horizontal (x) location in state plane coordinates	124414.3	meters		
CENTROIDY	Basin centroid vertical (y) location in state plane units	914012	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	4.02	percent		
LC11IMP	Average percentage of impervious area determined from NLCD 2011 impervious dataset	0.21	percent		
MAXTEMPC	Mean annual maximum air temperature over basin area, in degrees Centigrade	13.1	feet per mi		
OUTLETX	Basin outlet horizontal (x) location in state plane coordinates	124245	feet		
OUTLETY	Basin outlet vertical (y) location in state plane coordinates	913405	feet		
PRECPRIS00	Basin average mean annual precipitation for 1971 to 2000 from PRISM	50.8	inches		
STRMTOT	total length of all mapped streams (1:24,000-scale) in the basin	0.49	miles		
WETLAND	Percentage of Wetlands	10.91	percent		

Peak-Flow Statistics Paramet	<b>2FS</b> [Peak Statewide 2016 5156]					^
Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit	~

StreamStats Page 3 of 5

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.18	square miles	0.16	512
ELEV	Mean Basin Elevation	1200	feet	80.6	1948
LC06STOR	Percent Storage from NLCD2006	9.93	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)

This i rediction interval cower, i ta. i rediction interval opper, dep.		·	,	*	
Statistic	Value	Unit	PII	Plu	SEp
2 Year Peak Flood	13.7	ft^3/s	6.61	28.4	42.3
5 Year Peak Flood	24.3	ft^3/s	11.5	51.3	43.4
10 Year Peak Flood	33.4	ft^3/s	15.4	72.5	44.7
25 Year Peak Flood	47.4	ft^3/s	21	107	47.1
50 Year Peak Flood	59.3	ft^3/s	25.3	139	49.4
100 Year Peak Flood	72.6	ft^3/s	29.9	176	51.8
200 Year Peak Flood	87.2	ft^3/s	34.7	219	54.1
500 Year Peak Flood	109	ft^3/s	46	258	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)

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

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.18	square miles	1.61	149
DRFTPERSTR	Stratified Drift per Stream Length	0	square mile per mile	0	1.29
MAREGION	Massachusetts Region	1	dimensionless	0	1
BSLDEM250	Mean Basin Slope from 250K DEM	0.668	percent	0.32	24.6

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

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

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

Statistic	Value	Unit
50 Percent Duration	0.166	ft^3/s
60 Percent Duration	0.095	ft^3/s
70 Percent Duration	0.0563	ft^3/s
75 Percent Duration	0.0425	ft^3/s
80 Percent Duration	0.0216	ft^3/s
85 Percent Duration	0.0134	ft^3/s
90 Percent Duration	0.00658	ft^3/s
95 Percent Duration	0.00323	ft^3/s
98 Percent Duration	0.00233	ft^3/s
99 Percent Duration	0.00151	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/)

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

StreamStats Page 4 of 5

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.18	square miles	1.61	149
BSLDEM250	Mean Basin Slope from 250K DEM	0.668	percent	0.32	24.6
DRFTPERSTR	Stratified Drift per Stream Length	0	square mile per mile	0	1.29
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	0.0049	ft^3/s
7 Day 10 Year Low Flow	0.00105	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/)

August Flow-Duration Statistics Parameters[Statewide Low Flow WRIR00 4135] **Parameter Code Parameter Name** Value Units Min Limit **Max Limit** DRNAREA 0.18 1.61 149 Drainage Area square miles BSLDEM250 Mean Basin Slope from 250K DEM 0.668 percent 0.32 24.6

DRFTPERSTR Stratified Drift per Stream Length 0 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  $\frac{1}{2}$ 

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

 Statistic
 Value
 Unit

 August 50 Percent Duration
 0.0171
 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	0.18	square miles	0.6	329
BSLDEM10M	Mean Basin Slope from 10m DEM	5.517	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  $\frac{1}{2}$ 

Bankfull Statistics Flow Report[Bankfull Statewide SIR2013 5155]

Statistic	Value	Unit
Bankfull Width	7.32	ft
Bankfull Depth	0.56	ft
Bankfull Area	4.03	ft^2

StreamStats Page 5 of 5

Statistic	Value	Unit
Bankfull Streamflow	8.37	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 Para	ameters[Perennial Flow Probability]				
Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.18	square miles	0.01	1.99
PCTSNDGRV	Percent Underlain By Sand And Gravel	0	percent	0	100
FOREST	Percent Forest	73.69	percent	0	100
MAREGION	Massachusetts Region	1	dimensionless	0	1

Probability Statistics Flow Report[Perennial Flow Probability]

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

Statistic	Value	Unit	PC
Probability Stream Flowing Perennially	0.537	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)

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Application Version: 4.3.8

# ATTACHMENT C Additional Wetland Data Forms (July 2020)



Project/Site: Montague	City/County: Sh	nutesbury, Franklin	SamplingDate	: 2020-July-30
Applicant/Owner: W.D. Cowl	s	State: MA	SamplingPoint:	W-GR-01_PFO-2
Investigator(s): Greg Russo, M	latas R	Section, Township, F	ange:	
Landform(hillslope,terrace,etc.):	: Valley	Local relief (concave, conve	x, none): Concave	Slope (%): 1 to 3
Subregion (LRR or MLRA):	MLRA 144A of LRR R	Lat: 42.4739186839	Long: -72.4205453788	Datum: WGS84
	fine sandy loam, 0 to 8 percent slopes, very	•	NWI classific	
	ns on the site typical for this time of	-	(If no, explain in Rema	
Are Vegetation, Soil,			Circumstances" present?	Yes _ <b>✓</b> No
Are Vegetation, Soil,	or Hydrology naturally pro	oblematic? (If needed, e	xplain any answers in Rema	arks.)
SUMMARY OF FINDINGS – A	Attach site map showing samp	oling point locations, trans	sects, important featur	es, etc.
Hydrophytic Vegetation Present	t? Yes No	<u> </u>	·	
Hydric Soil Present?	Yes No	Is the Sampled Area within	a Wetland?	Yes/_ No
Wetland Hydrology Present?	Yes No	If yes, optional Wetland Site	e ID:	W-GR-01
	nd, all three wetland parameters are			
Wetland Hydrology Indicators:  Primary Indicators (minimum of the second	f one is required; check all that apply Water-Stained L Aquatic Fauna ( Marl Deposits (I Hydrogen Sulfic Oxidized Rhizos	Leaves (B9) - B13) - B15) - de Odor (C1) -	Secondary Indicators (minin Surface Soil Cracks (B6) Drainage Patterns (B10) Moss Trim Lines (B16) Dry-Season Water Table Crayfish Burrows (C8)	(C2)
Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Sparsely Vegetated Concave	Thin Muck Surfa	luction in Tilled Soils (C6) _ace (C7)	Saturation Visible on Aer Stunted or Stressed Plar Geomorphic Position (D2 Shallow Aquitard (D3) Microtopographic Relief FAC-Neutral Test (D5)	nts (D1) 2)
Field Observations:				
Surface Water Present?	Yes <u></u> ✓ No Dep	th (inches): 2		
Water Table Present?	Yes <u></u> ✓ No Dep	th (inches): 0	Wetland Hydrology Present	? Yes No
Saturation Present?	Yes _✓ No Dep	th (inches):		
(includes capillary fringe)				
	m gauge, monitoring well, aerial pho	tos, previous inspections), if a	vailable:	
Remarks:	ngaage, momening wen, actial pro-	tos, previous inspections,, ii a	unable.	
The criterion for wetland hydro	logy is met			
The Citerion for Wedana nyaro	iogy is met.			

<u>Tree Stratum</u> (Plot size: <u>30 ft</u> )		Dominant Species?	Indicator Status	Dominance Test works  Number of Dominant S			
1. Tsuga canadensis	40	Yes	FAC	Are OBL, FACW, or FAC	•	6	(A)
2. Betula alleghaniensis	20	Yes	FAC	Total Number of Domi	nant Species	7	
3. Acer rubrum	10	No	FAC	Across All Strata:			(B)
1.		110	17.0	Percent of Dominant S	pecies That	85.7	(A/I
5.				Are OBL, FACW, or FAC	:		
5.				<ul> <li>Prevalence Index work</li> </ul>	sheet:		
·				Total % Cover	<u>of:</u>	Multiply	<u>By:</u>
•	70	= Total Cov	· · · · · · · · · · · · · · · · · · ·	OBL species	10	x 1 =	10
anding/Charle Streeture (Dataine 45 ft )		- 10tal Cov	er	FACW species	30	x 2 =	60
apling/Shrub Stratum (Plot size:15 ft)	10	V	FACIL	FAC species	80	x 3 =	240
. Kalmia latifolia		Yes	FACU	– FACU species	10	x 4 =	40
2. Vaccinium corymbosum	5	Yes	FACW	UPL species	0	x 5 =	0
3				Column Totals	130	(A)	350 (E
ł				Prevalence Ir	ndex = B/A =	2.69	
·				Hydrophytic Vegetation			
j				1- Rapid Test for I		/egetation	1
· .				2 - Dominance Te		-8	
	15	= Total Cov	er	✓ 3 - Prevalence Inc			
<u>lerb Stratum</u> (Plot size: <u>5 ft</u> )				4 - Morphological		(Provide	sunnorti
. Osmundastrum cinnamomeum	20	Yes	FACW	data in Remarks or on			Supporti
2. Parathelypteris noveboracensis	10	Yes	FAC	Problematic Hydr	•		(plain)
3. <i>Carex gynandra</i>	10	Yes	OBL	_ Indicators of hydric so			
4. <i>Vaccinium corymbosum</i>	5	No	FACW	_ present, unless disturb		, ,	55
5.				Definitions of Vegetation	on Strata:		
5.				Tree – Woody plants 3		r more in	diameter
7.				breast height (DBH), re	gardless of h	eight.	
3.				Sapling/shrub - Woody	/ plants less t	han 3 in. Γ	DBH and
).				greater than or equal t	o 3.28 ft (1 m	) tall.	
0.				Herb – All herbaceous	(non-woody)	plants, re	gardless
1.				size, and woody plants	less than 3.2	8 ft tall.	
12.				Woody vines – All wood	dy vines great	ter than 3.	.28 ft in
	45	= Total Cov	er	height.			
Noody Vine Stratum (Plot size: 30 ft )		·	Ci	Hydrophytic Vegetatio	n Present?	∕es <u> </u>	10
 2.				-			
2. 3.				-			
·				-			
4				-			
	0	= Total Cov	er				

Profile Des	cription: (Describe	to the o	lepth needed to d	ocum	ent the i	indicato	r or confirm the	absence of indicator	rs.)
Depth	Matrix		Redox	Feat	ures				
(inches)	Color (moist)	%_	Color (moist)	<u>%</u>	Type <sup>1</sup>	Loc <sup>2</sup>	Te	exture	Remarks
0 - 6	10YR 2/1	100					Mucky	y Silt Loam	
6 - 20	2.5Y 5/1	90	2.5Y 4/4	10	C	M	Loa	my Sand	
								_	
¹Type: C = 0	Concentration, D =	Depleti	on, RM = Reduced	Matı	rix, MS =	Masked	Sand Grains.	<sup>2</sup> Location: PL = Pore	Lining, M = Matrix.
	Indicators:								oblematic Hydric Soils³:
Histoso			Polyvalue Be	low S	urface (S	8) <b>(LRR</b>	R, MLRA 149B)		.10) (LRR K, L, MLRA 149B)
	pipedon (A2)		Thin Dark Su		-				Redox (A16) <b>(LRR K, L, R)</b>
Black H	istic (A3)		Loamy Muck	y Min	eral (F1)	(LRR K, I	L)		Peat or Peat (S3) (LRR K, L, R)
Hydrog	en Sulfide (A4)		Loamy Gleye					Dark Surface	
	ed Layers (A5)		Depleted Ma						ow Surface (S8) (LRR K, L)
	ed Below Dark Surf	face (A1							rface (S9) <b>(LRR K, L)</b>
	ark Surface (A12)		Depleted Da			)		Iron-Mangan	ese Masses (F12) (LRR K, L, R)
_	Mucky Mineral (S1)		Redox Depre	essior	IS (F8)				odplain Soils (F19) <b>(MLRA 149B)</b>
	Gleyed Matrix (S4)							Mesic Spodic	(TA6) (MLRA 144A, 145, 149B)
	Redox (S5)							Red Parent M	
	d Matrix (S6)	MIDA 1	IOD)					Very Shallow	Dark Surface (TF12)
Dark St	ırface (S7) <b>(LRR R,</b> I	WILKA 14	190)					Other (Explain	n in Remarks)
3Indicators	of hydrophytic veg	getation	and wetland hyd	rology	must be	e preser	nt, unless distur	bed or problematic.	
Restrictive	Layer (if observed)	):							
	Type:		None			Hydric	Soil Present?		Yes No
	Depth (inches):								
Remarks:									
A		: !							
A positive i	ndication of hydric	Soli wa	s observed.						

Project/Site: Montague	City/County: Shu	tesbury, Franklin	SamplingDate: 2020-July-30			
Applicant/Owner: W.D. Cowls		State: MA	SamplingPoint: W-0	GR-01_UPL-2		
Investigator(s): Greg Russo, Ma	itas R	Section, Township,	Range:			
Landform(hillslope,terrace,etc.):	Hillslope	Local relief (concave, conv	ex, none): Undulating	Slope (%): 2 to 5		
Subregion (LRR or MLRA): M	LRA 144A of LRR R	Lat: 42.474001161	8 Long: -72.4208690879	_Datum: WGS84		
SoilMapUnitName: Pillsbury fir	ne sandy loam, 0 to 8 percent slopes, very s	tony	NWI classificatio	n: None		
Are climatic/hydrologic conditions	s on the site typical for this time of ye	ear? Yes <u>✓</u> No	(If no, explain in Remarks.)			
Are Vegetation, Soil,	or Hydrology significantly di		al Circumstances" present?	Yes No		
Are Vegetation, Soil,	or Hydrology naturally prob	lematic? (If needed,	explain any answers in Remarks	.)		
SUMMARY OF FINDINGS – A	ttach site map showing sampli	ng point locations, trar	nsects, important features,	etc.		
Hydrophytic Vegetation Present?	Yes No <b>_</b> ✓_					
Hydric Soil Present?	Yes No _ <b>_</b> _	Is the Sampled Area within	n a Wetland? Ye	s No⁄_		
Wetland Hydrology Present?		If yes, optional Wetland Si				
	Yes No _ <b>_</b> ∕_		ite ib.			
•	cedures here or in a separate report					
Covertype is UPL. Area is upland,	not all three wetland parameters ar	e present.				
HYDROLOGY						
Wetland Hydrology Indicators:						
Primary Indicators (minimum of	one is required; check all that apply)		Secondary Indicators (minimum	of two required)		
Surface Water (A1)	Water-Stained Le	aves (B9)	Surface Soil Cracks (B6)			
High Water Table (A2)	Aquatic Fauna (B		Drainage Patterns (B10)			
Saturation (A3)	Marl Deposits (B1		Moss Trim Lines (B16)			
Water Marks (B1)	Hydrogen Sulfide		Dry-Season Water Table (C2)	)		
Sediment Deposits (B2)	Oxidized Rhizosp	heres on Living Roots (C3)	Crayfish Burrows (C8)			
			Saturation Visible on Aerial I			
Drift Deposits (B3)	Presence of Redu		Stunted or Stressed Plants (	D1)		
Algal Mat or Crust (B4)		ction in Tilled Soils (C6)	Geomorphic Position (D2)			
Iron Deposits (B5)	Thin Muck Surfac		Shallow Aquitard (D3)			
Inundation Visible on Aerial Ir		Remarks)	Microtopographic Relief (D4	)		
Sparsely Vegetated Concave S	burface (B8)		FAC-Neutral Test (D5)			
Field Observations:						
Surface Water Present?	•	(inches):				
Water Table Present?	Yes No Depth	(inches):	Wetland Hydrology Present?	Yes No <b>/</b> _		
Saturation Present?	Yes No Depth	(inches):				
(includes capillary fringe)						
Describe Recorded Data (stream	gauge, monitoring well, aerial photo	s, previous inspections), if a	available:	•		
	8 · 9 · 7 · · · · · · · · · · · · · · · ·	.,,				
Remarks:						
	aguis not mot					
The criterion for wetland hydrolo	ngy is not met.					

Tree Stratum (Plot size:30 ft)	Absolute	Dominant	Indicator	Dominance Test worksheet:		
ince structure (1 for size	% Cover	Species?	Status	Number of Dominant Species That	1	(A)
1. Tsuga canadensis	75	Yes	FAC	Are OBL, FACW, or FAC:		`
2. Quercus alba	25	Yes	FACU	Total Number of Dominant Species	3	(B)
3.				Across All Strata:		`
4.				Percent of Dominant Species That	33.3	(A/B)
5.				Are OBL, FACW, or FAC:		
6.				Prevalence Index worksheet:		_
7.				Total % Cover of:	Multiply	-
	100	= Total Cov		OBL species 0	x 1 = _	0
Sapling/Shrub Stratum (Plot size:15 ft)	100	-		FACW species 0	x 2 =	0
1. Kalmia latifolia	70	Yes	FACU	FAC species 75	x 3 =	225
-		162	FACU	FACU species 95	x 4 =	380
2.				UPL species 0	x 5 =	0
3				Column Totals 170	(A)	605 (B)
4				Prevalence Index = B/A =	3.55	
5				Hydrophytic Vegetation Indicators:		
6				1- Rapid Test for Hydrophytic	Vogotation	
7				2 - Dominance Test is > 50%	vegetation	
	70	= Total Cov	er	3 - Prevalence Index is $\leq 3.0^{\circ}$		
Herb Stratum (Plot size:5 ft)					مامان معرانا	
1.				4 - Morphological Adaptations data in Remarks or on a separate sl	-	supporting
2.				Problematic Hydrophytic Vege		(nicin)
3.				, , , ,	-	
4.				Indicators of hydric soil and wetlar	, ,	gy must be
5.				present, unless disturbed or proble	mauc	_
6.				Definitions of Vegetation Strata:		
-				Tree – Woody plants 3 in. (7.6 cm) o		diameter at
7				breast height (DBH), regardless of h	_	
8				Sapling/shrub – Woody plants less t		OBH and
9				greater than or equal to 3.28 ft (1 m		
10				Herb – All herbaceous (non-woody)		gardless of
11				size, and woody plants less than 3.2		20 6: :
12				Woody vines – All woody vines grea	iter than 3.	.28 ft in
	0	= Total Cov	er	height.		
Woody Vine Stratum (Plot size: 30 ft )		_		Hydrophytic Vegetation Present?	Yes N	lo <u>    /</u>
1.						
2.						
3.						
4.						
	0	= Total Cov	or			
		_ TOTAL COV				
Remarks: (Include photo numbers here or on a separa	ate sheet.)	)				
No positive indication of hydrophytic vegetation was obser	ved (≥50%	of dominant	species ind	lexed as FAC- or drier). Per the MA WI	PA, easterr	n hemlock is
considered a wetland indicator species. Therefore, it has	been assig	ned an indic	ator status o	of "FAC" instead of "FACU."		

	•	to the de	•			indicator	or confirm the	absence of indicator	rs.)
Depth	Matrix		Redox				_		
(inches)	Color (moist)	<u>%</u>	Color (moist)	<u>%</u>	Type <sup>1</sup>	Loc <sup>2</sup>		xture	Remarks
0 - 6	10YR 2/1	100	10YR 2/1	_				lay Loam	
6 - 10	7.5YR 2.5/3	100					Silty Clay Loam		
10 - 20	10YR 4/6	100		_			Silty C	lay Loam	
				_					
				_					
		- ——		_					
				_					
				_					
¹Type: C = 0	Concentration, D =	Depletio	n, RM = Reduced	Mati	rix, MS =	Masked	Sand Grains. <sup>2</sup>	Location: PL = Pore	Lining, M = Matrix.
Hydric Soil	Indicators:							Indicators for Pro	oblematic Hydric Soils³:
Histoso	l (A1)		Polyvalue Bel	ow S	urface (S	8) <b>(LRR I</b>	R, MLRA 149B)	2 cm Muck (A	.10) (LRR K, L, MLRA 149B)
Histic E	pipedon (A2)		Thin Dark Sui						Redox (A16) (LRR K, L, R)
Black H	istic (A3)		Loamy Mucky	/ Min	eral (F1)	(LRR K, I	_)		Peat or Peat (S3) (LRR K, L, R)
	en Sulfide (A4)		Loamy Gleye					Dark Surface	
	ed Layers (A5)		Depleted Mat					Polyvalue Bel	ow Surface (S8) (LRR K, L)
	ed Below Dark Surf							Thin Dark Sui	rface (S9) <b>(LRR K, L)</b>
	ark Surface (A12) Mucky Mineral (S1)		Depleted Dar Redox Depre			•		Iron-Mangan	ese Masses (F12) (LRR K, L, R)
	Gleyed Matrix (S4)		Redox Depile	33101	15 (1-0)				odplain Soils (F19) <b>(MLRA 149B)</b>
	Redox (S5)							Mesic Spodic	(TA6) (MLRA 144A, 145, 149B)
_	d Matrix (S6)							Red Parent M	
	u Matrix (36) Irface (S7) <b>(LRR R, N</b>	/II DΔ 1/IC	)R)						Dark Surface (TF12)
Durk 30	21 race (57) (ERR R, R	/ILIU ( 1-7.	,,,					Other (Explai	n in Remarks)
3Indicators	of hydrophytic veg	getation a	and wetland hydr	olog	y must be	e presen	t, unless disturb	ed or problematic.	
Restrictive	Layer (if observed)	:							
	Type:		None			Hydric	Soil Present?		Yes No/_
	Depth (inches):								
Remarks:									
No nositive	indication of hydr	ic soils w	as observed						
ivo positive	. malcation of riyar	ic 30ii3 W	as observed.						

Project/Site: Montague	City/County: Shu	tesbury, Franklin		SamplingDate: 2020-July-30		
Applicant/Owner: W.D. Cowls	-	State: MA		SamplingPoint: W-GR-02_PFO-1		
Investigator(s): Greg Russo, Ma	atas R	Section, Township,	Range:			
Landform(hillslope,terrace,etc.):	: Depression	Local relief (concave, conv	ex, none):_	Concave	Slope (%): 1 to 3	
Subregion(LRRorMLRA): MI	LRA 144A of LRR R	Lat: 42.473664921	7 Long:_	-72.4251940661	Datum: WGS84	
SoilMapUnitName: Peacham m	ucky peat, 0 to 8 percent slopes, very stony	Ÿ		NWI classificati	on: PFO	
Areclimatic/hydrologiccondition	isonthesitetypicalforthistimeofyea	ar? Yes <u>✓</u> No	(If no,	, explain in Remarks	.)	
Are Vegetation, Soil,	or Hydrology significantly di	sturbed? Are "Norma	al Circumsta	ances" present?	Yes No	
Are Vegetation, Soil,	or Hydrology naturally prob	lematic? (If needed,	explain any	answers in Remark	S.)	
SUMMARY OF FINDINGS – At	ttach site map showing sampli	ng point locations, trar	nsects, im	portant features,	, etc.	
Hydrophytic Vegetation Present?	Yes _ <b>✓</b> _ No					
Hydric Soil Present?	Yes No	Is the Sampled Area withi	n a Wetland	d? Ye	s/_ No	
-		·			-GR-02	
Wetland Hydrology Present?	Yes No	If yes, optional Wetland Si	ite ib.	<u> </u>	-GR-02	
· ·	cedures here or in a separate report					
Covertype is PFO. Area is wetland	l, all three wetland parameters are p	resent.				
HYDROLOGY						
Wetland Hydrology Indicators:						
Primary Indicators (minimum of c	one is required; check all that apply)		Secondary	Indicators (minimur	m of two required)	
Surface Water (A1)	_ <b>∠</b> Water-Stained Le	aves (B9)	Surface	e Soil Cracks (B6)		
High Water Table (A2)	Aquatic Fauna (B		Drainag	ge Patterns (B10)		
✓ Saturation (A3)	Marl Deposits (B1		_✓ Moss Tr			
Water Marks (B1)	Hydrogen Sulfide	Odor (C1)	Dry-Season Water Table (C2)			
Sediment Deposits (B2)	Oxidized Rhizosp	heres on Living Roots (C3)		h Burrows (C8)		
				ion Visible on Aerial		
Drift Deposits (B3)	Presence of Redu			d or Stressed Plants	(D1)	
Algal Mat or Crust (B4)		ction in Tilled Soils (C6)		orphic Position (D2)		
Iron Deposits (B5)	Thin Muck Surfac			v Aquitard (D3)	40	
Inundation Visible on Aerial In	· · · · · · · · · · · · · · · · · · ·	Remarks)		ppographic Relief (D	4)	
Sparsely Vegetated Concave S	иттасе (В8)		FAC-NE	eutral Test (D5)		
Field Observations:	Van Na ( Danth	(in all a a).				
Surface Water Present?	·	(inches):				
Water Table Present?	•	(inches):	Wetland H	ydrology Present?	Yes No	
Saturation Present?	Yes No Depth	(inches): 0				
(includes capillary fringe)						
Describe Recorded Data (stream	gauge, monitoring well, aerial photo	s, previous inspections), if a	available:			
Remarks:						
The criterion for wetland hydrolog	gv is not met.					
Street of the wedation hydrolog	5, 15oc med					

<u>Tree Stratum</u> (Plot size: <u>30 ft</u> )		Dominant Species?	Indicator Status	Dominance Test works Number of Dominant	Species That	4	(A)
1. Betula alleghaniensis	55	Yes	FAC	Are OBL, FACW, or FAC			
<ol> <li>Tsuga canadensis</li> <li>3.</li> </ol>	40	Yes	FAC	Total Number of Dom Across All Strata:	inant Species	5	(B)
4.				Percent of Dominant S  Are OBL, FACW, or FAC	'	80	(A/B)
5				Prevalence Index worl			-
6				- Total % Cove	r of:	Multiply	By:
7				– OBL species	0	x 1 =	0
	95	= Total Cov	er	FACW species	25	x 2 =	50
Sapling/Shrub Stratum (Plot size: <u>15 ft</u> )				FAC species	180	x 3 =	540
1. <i>Kalmia latifolia</i>		Yes	FACU	– FACU species	20	x 4 =	80
2				– UPL species	0	x 5 =	0
3				– Column Totals	225	(A)	670 (B)
4					ndex = B/A =	2.97	0,0 (5)
5				"			<u> </u>
6				<ul><li>HydrophyticVegetatio</li><li> 1- Rapid Test for</li></ul>		/egetation	n
7				2 - Dominance To		regetation	1
	20	= Total Cov	er				
<u>Herb Stratum</u> (Plot size: <u>5 ft</u> )				X 3 - Prevalence In		1.00	
1. Parathelypteris noveboracensis	80	Yes	FAC	4 - Morphologica data in Remarks or or			supporting
2. <i>Coptis trifolia</i>	25	Yes	FACW	- Problematic Hyd		•	vnlain)
3. <i>Toxicodendron radicans</i>	5	No	FAC	- Indicators of hydric s			•
4.				_ present, unless distur		-	gy mast be
5.				Definitions of Vegetati			
6.				_ Tree – Woody plants 3		r more in	diameter a
7.				breast height (DBH), re			
8.				Sapling/shrub – Wood	y plants less t	han 3 in. [	OBH and
9.				greater than or equal	to 3.28 ft (1 m	) tall.	
10.				Herb – All herbaceous	(non-woody)	plants, re	gardless of
11.				size, and woody plants	s less than 3.2	8 ft tall.	
12.				Woody vines – All woo	dy vines grea	ter than 3	.28 ft in
	110	= Total Cov	er	height.			
Woody Vine Stratum (Plot size:30 ft)	-	=		Hydrophytic Vegetation	on Present? `	Yes <u>√</u> N	lo
1.							
2.				=			
3.				-			
4.				-			
T		- Total Cov	or	=			
	U	_= Total Cov	ei				

Profile Des Depth	cription: (Describe Matrix	to the d	lepth needed to o			ndicator	or confirm the al	osence of indicators.)	
(inches)	Color (moist)	%	Color (moist)	% %	Type <sup>1</sup>	Loc <sup>2</sup>		Texture	Remarks
0 - 14	-		Color (ITIOISC)	70	туре	LUC-	-		Remarks
	10YR 2/1	100	EVD 4/6	10				er Silty Clay Loam	
14 - 20	2.5Y 4/1	90	5YR 4/6	10	C	M	Sano	dy Clay Loam	
	•			- —			_		
				- —					
				- —					
				- —					
				- —					
				- —					
				- —					
				- —					
		- —		- —					
				<del></del>		<del></del> .			<del></del>
	Concentration, D =	Depletion	on, RM = Reduced	d Matr	ix, MS =	Masked	Sand Grains. <sup>2</sup> Lo	ocation: PL = Pore Lining, N	
Hydric Soil						a		Indicators for Problema	tic Hydric Soils³:
Histoso			•				R, MLRA 149B)	2 cm Muck (A10) (LR	
	pipedon (A2) istic (A3)		Thin Dark Su Loamy Muck					Coast Prairie Redox	
	en Sulfide (A4)		Loamy Gleye	-		(LKK K, I	-)	5 cm Mucky Peat or	
	d Layers (A5)		Depleted Ma					Dark Surface (S7) (LR	
	d Below Dark Surf	ace (A11	'					Polyvalue Below Sur	
Thick D	ark Surface (A12)		Depleted Da	rk Sur	face (F7)			Thin Dark Surface (S	
Sandy N	Mucky Mineral (S1)		Redox Depr	ession	ıs (F8)			Iron-Manganese Ma	
Sandy (	Gleyed Matrix (S4)							Mesic Spodic (TA6) (N	N Soils (F19) (MLRA 149B)
Sandy F	Redox (S5)							Red Parent Material	
Strippe	d Matrix (S6)							Very Shallow Dark St	
Dark Su	ırface (S7) <b>(LRR R, I</b>	MLRA 14	9B)					Other (Explain in Rer	
<sup>3</sup> Indicators	of hydrophytic veg	getation	and wetland hyd	rology	/ must be	e presen	t, unless disturbe		•
Restrictive	Layer (if observed)	:				İ		•	
	Type:		None			Hydric	Soil Present?		Yes No
	Depth (inches):			-		-			
Remarks:									•
	ndication of budgie	s coil was	s absorved						
A positive i	ndication of hydric	. Soli was	s observed.						

Project/Site: Montague	City/County: Shut	esbury, Franklin	SamplingDate: 2020-July-30			
Applicant/Owner: W.D. Cowls		State: MA	SamplingPoint: W-GR-2_UPI	L-2		
Investigator(s): Greg Russo, Ma	itas R	Section, Township,	Range:			
Landform(hillslope,terrace,etc.):	Hillslope	Local relief (concave, conv	ex, none): Convex Slope (	<b>%):</b> 2 to 5		
Subregion(LRRorMLRA): ML	RA 144A of LRR R	Lat: 42.473603230	Datum:	WGS84		
SoilMapUnitName: Pillsbury fine	e sandy loam, 0 to 8 percent slopes, very st	ony	NWI classification: None			
Areclimatic/hydrologiccondition:	sonthesitetypicalforthistimeofyea	r? Yes <u>✓</u> No	(If no, explain in Remarks.)			
Are Vegetation, Soil,	or Hydrology significantly dis		al Circumstances" present? Yes 🔽 N	No		
Are Vegetation, Soil,	or Hydrology naturally probl	ematic? (If needed,	explain any answers in Remarks.)			
SUMMARY OF FINDINGS – At	tach site map showing samplir	ng point locations, trar	sects, important features, etc.			
Hydrophytic Vegetation Present?	Yes No <b>_</b> ✓					
Hydric Soil Present?	Yes No	Is the Sampled Area withi	n a Wetland? Yes No	) /		
Wetland Hydrology Present?	Yes No _ <b>_∕</b> _	If yes, optional Wetland Si		<del></del>		
	<del></del>					
· ·	cedures here or in a separate report					
Covertype is UPL. Area is upland,	not all three wetland parameters are	e present.				
HADBOLOCA						
HYDROLOGY						
Wetland Hydrology Indicators:						
Primary Indicators (minimum of o	ne is required; check all that apply)		Secondary Indicators (minimum of two re	<u>equired)</u>		
Surface Water (A1)	Water-Stained Lea	aves (B9)	Surface Soil Cracks (B6)			
High Water Table (A2)	Aquatic Fauna (B1	3)	Drainage Patterns (B10)			
Saturation (A3)	Marl Deposits (B1		Moss Trim Lines (B16)			
Water Marks (B1)	Hydrogen Sulfide		Dry-Season Water Table (C2)			
Sediment Deposits (B2)	Oxidized Rhizosph	neres on Living Roots (C3)	<ul><li>Crayfish Burrows (C8)</li><li>Saturation Visible on Aerial Imagery (Control of the Control of the Contr</li></ul>	C0)		
Drift Deposits (B3)	Drosonse of Dodu	rad Iran (CA)	Stunted or Stressed Plants (D1)	_3)		
Algal Mat or Crust (B4)	Presence of Reduce	tion in Tilled Soils (C6)	Geomorphic Position (D2)			
Iron Deposits (B5)	Thin Muck Surface		Shallow Aquitard (D3)			
Inundation Visible on Aerial Im			Microtopographic Relief (D4)			
Sparsely Vegetated Concave S		,	FAC-Neutral Test (D5)			
Field Observations:						
Surface Water Present?	Yes No Depth (	(inches):				
Water Table Present?	•	(inches):	Wetland Hydrology Present? Yes	No _ <b>_</b> _		
		·	wedand flydrology fresence			
Saturation Present?	Yes No Depth (	(inches):				
(includes capillary fringe)						
Describe Recorded Data (stream g	gauge, monitoring well, aerial photos	s, previous inspections), if a	vailable:			
Remarks:						
The criterion for wetland hydrolog	gy is not met.					

	Absolute	Dominant	Indicator	Dominance Test worksheet:		
<u>Tree Stratum</u> (Plot size: <u>30 ft</u> )		Species?	Status	Number of Dominant Species That	_	
1. Quercus rubra	15	Yes	FACU	Are OBL, FACW, or FAC:	2	(A)
2. Pinus strobus	15	Yes	FACU	Total Number of Dominant Species	6	(B)
3. Acer rubrum	15	Yes	FAC	Across All Strata:		(D)
4.				Percent of Dominant Species That	33.3	(A/B)
5.				Are OBL, FACW, or FAC:		
6.				Prevalence Index worksheet:		_
7.				Total % Cover of:	Multiply	-
	45	= Total Cov	er	OBL species 0	x 1 = _	0
Sapling/Shrub Stratum (Plot size:15 ft)		=		FACW species 40	x 2 =	80
1. Kalmia latifolia	40	Yes	FACU	FAC species 25	x 3 = _	75
2. Hamamelis virginiana	25	Yes	FACU	FACU species 100	x 4 =	400
3.				UPL species 0	x 5 =	0
4.				Column Totals 165	(A) _	555 (B)
5.				Prevalence Index = B/A =	3.4	
6.				Hydrophytic Vegetation Indicators:		
7.				1- Rapid Test for Hydrophytic	egetation/	
	65	= Total Cov		2 - Dominance Test is > 50%		
Herb Stratum (Plot size: 5 ft )			<b>-</b> 1	$3$ - Prevalence Index is $\leq 3.0^{1}$		
1. Coptis trifolia	40	Yes	FACW	4 - Morphological Adaptations	-	supporting
Osmunda claytoniana	10	No	FAC	data in Remarks or on a separate sl		
3. Acer pensylvanicum	5	No	FACU	Problematic Hydrophytic Vege		
4.			17100	¹Indicators of hydric soil and wetlar	,	gy must be
5.				present, unless disturbed or proble	matic	
6.				Definitions of Vegetation Strata:		l:
7.				Tree – Woody plants 3 in. (7.6 cm) o breast height (DBH), regardless of h		liameter at
8.				Sapling/shrub – Woody plants less t	_	NRU and
9.				greater than or equal to 3.28 ft (1 m		Di i anu
10.				Herb – All herbaceous (non-woody)		ardless of
				size, and woody plants less than 3.2		,
11.				Woody vines – All woody vines grea		28 ft in
12		- Tatal Cau		height.		
March March Charles (Plateine 20 ft )	55	= Total Cov	er	Hydrophytic Vegetation Present?	Yes N	0 /
Woody Vine Stratum (Plot size: 30 ft )				J. I. J. I. S. I.		
1.						
2						
3.						
4						
	0	_= Total Cov	er ———			
Remarks: (Include photo numbers here or on a separat	e sheet.)					
No positive indication of hydrophytic vegetation was ol	oserved (≥	:50% of dom	inant specie	es indexed as FAC– or drier).		

Sampling Point: W-GR-2\_UPL-2

Depth	Matrix	to the de	eptn needed to d Redox			ndicator or co	nfirm the absence	of indicators.)
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
0 - 1	10YR 2/2	100	20.0. (0.54)		.,,,,,		. c.x.ca. c	
1 - 5	10YR 3/4	100		_			Silt Loam	
5 - 20	10YR 4/6	100		_			Silt Loam	
				_				
		· —		_				-
				_				
				_				
				_				
¹Type: C = C	Concentration, D =	Depletio	n, RM = Reduced	Mati	rix, MS =	Masked Sand	Grains. <sup>2</sup> Location	: PL = Pore Lining, M = Matrix.
Hydric Soil	Indicators:							ators for Problematic Hydric Soils³:
Histosol	l (A1)		Polyvalue Bel	ow S	urface (S	8) <b>(LRR R, MLR</b>	A 149B) 2	cm Muck (A10) <b>(LRR K, L, MLRA 149B)</b>
Histic Ep	oipedon (A2)		Thin Dark Su	rface	(S9) (LRR	R, MLRA 149E	Α.	past Prairie Redox (A16) (LRR K, L, R)
	istic (A3)		Loamy Mucky			(LRR K, L)		cm Mucky Peat or Peat (S3) <b>(LRR K, L, R)</b>
	en Sulfide (A4)		Loamy Gleye				D	ark Surface (S7) <b>(LRR K, L)</b>
	d Layers (A5)	250 (411)	Depleted Ma				Po	olyvalue Below Surface (S8) (LRR K, L)
	d Below Dark Surf ark Surface (A12)	ace (ATT	Redox Dark S Depleted Dar				Th	nin Dark Surface (S9) (LRR K, L)
	Mucky Mineral (S1)		Redox Depre				Ir	on-Manganese Masses (F12) (LRR K, L, R)
	Gleyed Matrix (S4)			55.6.	.5 (. 5)			edmont Floodplain Soils (F19) (MLRA 149B)
-	Redox (S5)							esic Spodic (TA6) <b>(MLRA 144A, 145, 149B)</b>
_	d Matrix (S6)							ed Parent Material (F21)
	ırface (S7) <b>(LRR R, N</b>	/LRA 149	9B)					ery Shallow Dark Surface (TF12)
								ther (Explain in Remarks)
-	of hydrophytic veg		and wetland hydr	olog	y must be	e present, unle T	ss disturbed or pr	oblematic.
	Layer (if observed)		None			Lludric Coil D	encant?	Voc. No. /
	Type:		None			Hydric Soil Pi	esent?	Yes No⁄_
Remarks:	Depth (inches):							<del>.</del>
No positive	indication of hydr	ic soils w	as observed.					

Project/Site: Montague	City/County: Sho	utesbury, Franklin		SamplingDate:	2020-July-31
Applicant/Owner: W.D. Cowls	;	State: MA	١	SamplingPoint: W-C	GR-10_PFO-2
Investigator(s): Greg Russo, Ma	atas R	Section, Township,	Range:		
Landform(hillslope,terrace,etc.):	Depression	Local relief (concave, conv	ex, none):(	Concave	Slope (%): 1 to 3
Subregion(LRRorMLRA): MI	LRA 144A of LRR R	Lat: 42.473316276	5 <b>Long:</b> -	72.4298226368	Datum: WGS84
Soil Map Unit Name: Pillsbury	fine sandy loam, 0 to 8 percent slope	s, very stony		NWI classification	: None
• •	s on the site typical for this time of ye			explain in Remarks.)	
Are Vegetation, Soil,	or Hydrology significantly di			·	′es _ <b>.⁄</b> _ No
Are Vegetation, Soil,	or Hydrology naturally prob	lematic? (If needed,	explain any	answers in Remarks.)	
				_	
SUMMARY OF FINDINGS – A	Attach site map showing sampli	ng point locations, trar	sects, imp	portant features, e	tc.
Hydrophytic Vegetation Present	? Yes No				
Hydric Soil Present?	Yes No	Is the Sampled Area within	n a Wetland	? Yes _	✓_ No
Wetland Hydrology Present?	Yes <b>∠</b> _ No	If yes, optional Wetland Si	te ID:	W-GI	₹-10
	ocedures here or in a separate report				
HYDROLOGY  Wetland Hydrology Indicators:					h
Primary Indicators (minimum of	one is required; check all that apply)		•	Indicators (minimum	of two required)
Surface Water (A1)	Water-Stained Lea			Soil Cracks (B6) e Patterns (B10)	
✓ High Water Table (A2)	Aquatic Fauna (B1		_	im Lines (B16)	
Saturation (A3) Water Marks (B1)	Marl Deposits (B1 Hydrogen Sulfide			son Water Table (C2)	
Sediment Deposits (B2)	, ,	heres on Living Roots (C3)	-	n Burrows (C8) on Visible on Aerial In	nageny (C9)
Drift Deposits (B3)	Presence of Redu	iced Iron (C4)		or Stressed Plants (D	3 7
Algal Mat or Crust (B4)		ction in Tilled Soils (C6)		rphic Position (D2)	1)
Iron Deposits (B5)	Thin Muck Surfac			Aquitard (D3)	
Inundation Visible on Aerial I	magery (B7) Other (Explain in	Remarks)		pographic Relief (D4)	
Sparsely Vegetated Concave	Surface (B8)		FAC-Net	utral Test (D5)	
Field Observations:					
Surface Water Present?	Yes No _ <b>_/</b> Depth	(inches):			
Water Table Present?	·	(inches): 8	Wetland Hy	drology Present?	Yes No
Saturation Present?	Yes 🔽 No Depth	(inches): 0			
(includes capillary fringe)					
Describe Recorded Data (stream  Remarks:	n gauge, monitoring well, aerial photo	s, previous inspections), if a	available:		
	ngv is met				
The criterion for wetland hydrology	оду із тіег.				

	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That	A	(4)
60	Yes	FAC	Are OBL, FACW, or FAC:		(A)
15	Yes	FAC	Total Number of Dominant Species Across All Strata:	5	(B)
			Percent of Dominant Species That	80	(A/B)
·					_
					•
	= Total Cov	er	·		0
				x 2 =	170
15	Voc	FΔCII	<u> </u>	x 3 =	225
	163	TACO	FACU species 35	x 4 =	140
			UPL species 0	x 5 =	0
			- Column Totals 195	(A)	535 (B)
			Prevalence Index = B/A =	2.74	
				/ogotatio	2
				vegetatio	ı
15	= Total Cov	er	<del></del>		
	•				
60	Yes	FACW			supporting
		FACW	· ·		
		17100	,	,	ogy must be
			Definitions of Vegetation Strata:		
			Tree – Woody plants 3 in. (7.6 cm) o	r more in	diameter at
			breast height (DBH), regardless of h	eight.	
			Sapling/shrub – Woody plants less t	han 3 in.	DBH and
			greater than or equal to 3.28 ft (1 m	ı) tall.	
			Herb – All herbaceous (non-woody)	plants, re	gardless of
			size, and woody plants less than 3.2	8 ft tall.	
				ter than 3	3.28 ft in
105	= Total Cov	er			
	_		Hydrophytic Vegetation Present?	Yes	No
			_		
			_		
			_		
	15 60 25 20	15 Yes  75 = Total Cov  15 Yes  15 = Total Cov  60 Yes  25 Yes  20 No	60 Yes FAC  15 Yes FAC  75 = Total Cover  15 Yes FACU  15 = Total Cover  20 Yes FACW  20 No FACU	Are OBL, FACW, or FAC:  Total Number of Dominant Species Across All Strata:  Percent of Dominant Species That Are OBL, FACW, or FAC:  Prevalence Index worksheet:  Total % Cover of:  OBL species  OFACW species  FAC Species  FAC Species  Total % Cover of:  OBL species  OFACW species  FAC Species  Total % Cover of:  OBL species  OFACW species  OFACW species  Total % Cover of:  OBL species  OFACW species  OFACW species  Total % Cover of:  OBL species  OFACW species  Total % Cover of:  OBL species  OFACW species  O	Are OBL, FACW, or FAC:   15

Profile Deso	cription: (Describe Matrix	to the de	epth needed to de Redox			indicato	or confirm the al	bsence of indicato	rs.)
(inches)	Color (moist)	<u></u> %	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Text	rure	Remarks
0 - 8	10YR 2/1	100	20.0. (0.50)		.,,,,,		Mucky Silt Loam		TO THE STATE OF TH
8 - 20	5Y 6/1	100		_			Loamy		
				_					
				_					
¹Type: C = 0	Concentration, D =	Depletio	n, RM = Reduced	Matı	rix, MS =	Masked	Sand Grains. <sup>2</sup> Lo	ocation: PL = Pore	Lining, M = Matrix.
Hydric Soil	Indicators:								oblematic Hydric Soils³:
Histoso	I (A1)		Polyvalue Bel	ow S	urface (S	8) <b>(LRR</b>	R, MLRA 149B)	2 cm Muck (A	410) <b>(LRR K, L, MLRA 149B)</b>
Histic E	oipedon (A2)		Thin Dark Su	face	(S9) <b>(LRR</b>	R, MLR	A 149B)		Redox (A16) (LRR K, L, R)
	istic (A3)		Loamy Mucky			(LRR K, I	-)	<del></del>	Peat or Peat (S3) <b>(LRR K, L, R)</b>
	en Sulfide (A4)		Loamy Gleye					Dark Surface	(S7) <b>(LRR K, L)</b>
	d Layers (A5) d Below Dark Surf	aco (A11	Depleted Mar					Polyvalue Be	low Surface (S8) (LRR K, L)
'	ark Surface (A12)	ace (ATT	Depleted Dark			1			rface (S9) <b>(LRR K, L)</b>
	Mucky Mineral (S1)		Redox Depre						iese Masses (F12) (LRR K, L, R)
	Gleyed Matrix (S4)								podplain Soils (F19) (MLRA 149B)
-	Redox (S5)								(TA6) (MLRA 144A, 145, 149B)
-	d Matrix (S6)							Red Parent N	
	rface (S7) (LRR R, N	/LRA 149	9B)					Other (Explai	Dark Surface (TF12)
21 1: .	61 1 1								iii iii Kemarksy
-	of hydrophytic veg Layer (if observed)		and wetland nydr	ology	y must be	e preser I	it, uniess disturbe	d or problematic.	
	Type:	•	None			Hydric	Soil Present?		Yes∕_ No
	Depth (inches):		None			liyunc	Joil Fresent:		les NO
Remarks:	Deptit (inches).								<u> </u>
	ndication of hydric	soil was	observed.						

Project/Site: Montague	City/County: Shut	esbury, Franklin		Sampling Date: 202	20-July-31
Applicant/Owner: AMP		State: MA		Sampling Point: W-M	ON-10_UPL-2
Investigator(s): Greg Russo, Mat	tas R	Section, Township,	Range:		
Landform (hillslope, terrace, etc.):	Hillslope	Local relief (concave, conv	ex, none):_	Undulating	Slope (%): 1 to 3
Subregion (LRR or MLRA): MI	LRA 144A of LRR R	Lat: 42.4734816095	5 <b>Long:</b>	-72.4295980856	Datum: WGS84
Soil Map Unit Name: Pillsbury f	ine sandy loam, 0 to 8 percent slopes	, very stony		NWI classification	n: None
• •	on the site typical for this time of yea			o, explain in Remarks.)	
Are Vegetation, Soil,	or Hydrology significantly dist			•	Yes No
Are Vegetation, Soil,	or Hydrology naturally proble	ematic? (If needed,	explain an	y answers in Remarks.	)
SUMMARY OF FINDINGS – At	tach site map showing samplin	g point locations, tran	nsects, im	nportant features, e	etc.
Hydrophytic Vegetation Present?	Yes <u> </u>				
Hydric Soil Present?	Yes No	Is the Sampled Area withi	in a Wetlar	nd? Yes	s No <u>_</u> ∠
Wetland Hydrology Present?	Yes No _ <b>_</b>	If yes, optional Wetland S	ite ID:		
- , , ,	cedures here or in a separate report)			-	
Covertype is UPL. Area is upland,	not all three wetland parameters are	present.			
HYDROLOGY					
Wetland Hydrology Indicators:					
	one is required; check all that apply)		Secondary	y Indicators (minimum	of two required)
		(DO)		e Soil Cracks (B6)	<u> </u>
Surface Water (A1) High Water Table (A2)	Water-Stained Leav Aquatic Fauna (B13			age Patterns (B10)	
Saturation (A3)	Aquatic Fauria (B13			Trim Lines (B16)	
Water Marks (B1)	Man Deposits (B13 Hydrogen Sulfide (			eason Water Table (C2)	
Sediment Deposits (B2)		eres on Living Roots (C3)	-	sh Burrows (C8)	
	<u> </u>	0.05 0.1 2.118 1.00.0 (05)	Satura	ition Visible on Aerial Ir	magery (C9)
Drift Deposits (B3)	Presence of Reduc	ed Iron (C4)	Stunte	ed or Stressed Plants (D	01)
Algal Mat or Crust (B4)	Recent Iron Reduct	tion in Tilled Soils (C6)	Geomo	orphic Position (D2)	
Iron Deposits (B5)	Thin Muck Surface	(C7)	Shallov	w Aquitard (D3)	
Inundation Visible on Aerial In	nagery (B7) Other (Explain in R	emarks)	Microt	copographic Relief (D4)	
Sparsely Vegetated Concave S	urface (B8)		FAC-Ne	eutral Test (D5)	
Field Observations:					
Surface Water Present?	Yes No <u>_</u> Depth (i	inches):			
Water Table Present?	Yes No <u></u> Depth (i	inches):	· Wetland F	Hydrology Present?	Yes No
Saturation Present?	Yes No <u>✓</u> Depth (i	· · · · · · · · · · · · · · · · · · ·		.,	
	163 NO _ <b>V</b> Depti (I		-		
(includes capillary fringe)			1		<u> </u>
Describe Recorded Data (stream	gauge, monitoring well, aerial photos,	, previous inspections), if a	available:		
Remarks:					
The criterion for wetland hydrolog	avis not mot				
The criterion for wetland hydrolog	gy is not met.				

	Ahsolute	Dominant	Indicator	Dominance Test workshee	t:		
<u>Tree Stratum</u> (Plot size: <u>30 ft</u> )		Species?	Status	Number of Dominant Spec		3	(4)
1. Tsuga canadensis	75	Yes	FAC	Are OBL, FACW, or FAC:	_	3	(A)
2. Betula alleghaniensis	25	Yes	FAC	Total Number of Dominant	t Species	5	(B)
3. Acer rubrum	15	No	FAC	Across All Strata:	_		
4. Pinus strobus	10	No	FACU	Percent of Dominant Speci	ies That	60	(A/B)
5.				Are OBL, FACW, or FAC:			
6.				Prevalence Index workshee			_
7.				Total % Cover of:		Multiply	
· ·	125	= Total Cov	er	OBL species		x1=_	0
Sapling/Shrub Stratum (Plot size:15 ft)				FACW species		x 2 = _	50
1. Kalmia latifolia	75	Yes	FACU	FAC species	115	x 3 = _	345
2.			17100	- FACU species		x 4 =	480
3.				- UPL species	0	x 5 =	0
<u>-</u>				- Column Totals	260	(A)	950 (B
4				Prevalence Index	κ = B/A = _	3.36	
5.				Hydrophytic Vegetation Inc	dicators:		-
6				1- Rapid Test for Hydi		getation	ı
7				X 2 - Dominance Test is		J	
	75	= Total Cov	er	3 - Prevalence Index i			
<u>Herb Stratum</u> (Plot size: <u>5 ft</u> )				4 - Morphological Ada		Provide	supportir
1. <i>Mitchella repens</i>	25	Yes	FACU	- data in Remarks or on a se	•		support
2. <i>Coptis trifolia</i>	25	Yes	FACW	Problematic Hydroph			(plain)
3. <i>Maianthemum racemosum</i>	10	No	FACU	¹Indicators of hydric soil ar			
4.				present, unless disturbed			6)
5.				Definitions of Vegetation S	•		
6.				Tree – Woody plants 3 in. (		more in a	diameter
7.				breast height (DBH), regard			alarricter
8.				Sapling/shrub – Woody pla			OBH and
9.				greater than or equal to 3.			20
				Herb – All herbaceous (nor			gardless o
				size, and woody plants less			5
11.				Woody vines – All woody vi			.28 ft in
12				height.			
	60	= Total Cov	er	Hydrophytic Vegetation Pr	rocont? Vo	nc / N	lo
Woody Vine Stratum (Plot size: 30 ft )				nyuropriyuc vegetation Fi	esent: 16	:5 <u>v</u> 1	NO
1				_			
2				_			
3.				_			
				_			
4.				1			
4.	0	= Total Cov	er				

Profile Desc Depth	ription: (Describe Matrix	to the d	epth needed to d Redox			indicato	or confirm the al	bsence of ind	icators.)
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Textur	re	Remarks
0 - 10	10YR 2/1	100	Color (IIIoist)		Турс		Silt Loa		Kemarks
10 - 20	10YR 4/1	100		_			Loamy S		
10 20	1011( 4/1	100		_			Louiny 3	dila	
	_			_					
				_					
				_					
				_					
				_					-
				_					-
				_					-
	_			_					
				_					-
				_			- 10 1 01		
	oncentration, D =	Depletic	on, RM = Reduced	Mati	rıx, MS =	Masked	Sand Grains. <sup>2</sup> Li		Pore Lining, M = Matrix.
Hydric Soil I				_				Indicators fo	or Problematic Hydric Soils³:
Histosol			•				R, MLRA 149B)		uck (A10) <b>(LRR K, L, MLRA 149B)</b>
Black Hi	oipedon (A2)		Thin Dark Su Loamy Muck						rairie Redox (A16) <b>(LRR K, L, R)</b>
	en Sulfide (A4)		Loamy Gleye			(LKK K, I	-)		ucky Peat or Peat (S3) <b>(LRR K, L, R)</b>
	d Layers (A5)		Depleted Ma						rface (S7) (LRR K, L)
	d Below Dark Surf	ace (A11						-	ue Below Surface (S8) (LRR K, L)
Thick Da	ark Surface (A12)		Depleted Dar	k Su	rface (F7)	)			rk Surface (S9) (LRR K, L)
Sandy N	lucky Mineral (S1)		Redox Depre	ssior	ıs (F8)				inganese Masses (F12) (LRR K, L, R)
Sandy G	ileyed Matrix (S4)								nt Floodplain Soils (F19) (MLRA 149B)
Sandy R	edox (S5)								podic (TA6) <b>(MLRA 144A, 145, 149B)</b> ent Material (F21)
Stripped	Matrix (S6)								allow Dark Surface (TF12)
Dark Su	rface (S7) <b>(LRR R, N</b>	MLRA 14	9B)					-	Explain in Remarks)
3Indicators	of hydrophytic veg	rotation	and wetland bydr	olom	, must h	a procor	at unlace disturba		•
	ayer (if observed)		and wettand nydi	olog	y must b	e preser	it, unless disturbe	d of problem	auc.
	Type:	•	None			Hydric	Soil Present?		Yes/_ No
	Depth (inches):		None			liyanc	John Frederic		163 <u>-</u> 4-140
Remarks:	Deptil (iliciles).					l .			- <u>-</u>
Remarks.									
A positive ir	ndication of hydric	soil was	observed.						

Project/Site: Montague	City/County: Shu	tesbury, Franklin		SamplingDate: 20	20-July-30
Applicant/Owner: W.D. Cowls	;	State: MA		SamplingPoint: W-G	SR-12_PFO-1
Investigator(s): Greg Russo, Ma	atas R	Section, Township,	Range:		
Landform(hillslope,terrace,etc.):	Depression	Local relief (concave, conv	ex, none):_	Concave	Slope (%): 1 to 3
Subregion (LRR or MLRA):	ILRA 144A of LRR R	Lat: 42.473169802	7 Long:	-72.4233890232	Datum: WGS84
Soil Map Unit Name: Metacom	net fine sandy loam, 3 to 8 percent slo	pes		NWI classification	n: PFO
Are climatic/hydrologic condition	s on the site typical for this time of ye	ear? Yes <u>✓</u> No	(If no,	explain in Remarks.)	
Are Vegetation, Soil,	or Hydrology significantly di	sturbed? Are "Norma	al Circumsta	ances" present?	Yes 🟒 No
Are Vegetation, Soil,	or Hydrology naturally prob	lematic? (If needed,	explain any	answers in Remarks.	)
SUMMARY OF FINDINGS - A	ttach site map showing sampli	ng point locations, trar	nsects, im	portant features, e	etc.
Hydrophytic Vegetation Present?	? Yes No				
Hydric Soil Present?	Yes/_ No	Is the Sampled Area withi	n a Wetland	l? Yes	No
		·			R-12
Wetland Hydrology Present?	Yes No	If yes, optional Wetland Si	ite ib.	<u>w-G</u>	K-12
	ocedures here or in a separate report				
Covertype is PFO. Area is wetland	d, all three wetland parameters are p	resent.			
HYDROLOGY					
Wetland Hydrology Indicators:					
Primary Indicators (minimum of	one is required; check all that apply)		Secondary	Indicators (minimum	of two required)
Surface Water (A1)	∕ Water-Stained Lea	aves (B9)	Surface	Soil Cracks (B6)	•
High Water Table (A2)	Aquatic Fauna (B1		Drainag	ge Patterns (B10)	
✓ Saturation (A3)	Marl Deposits (B1		_✓ Moss Tr	rim Lines (B16)	
Water Marks (B1)	Hydrogen Sulfide		Dry-Sea	ason Water Table (C2)	
Sediment Deposits (B2)	, ,	heres on Living Roots (C3)	-	h Burrows (C8)	
			Saturat	ion Visible on Aerial Ir	magery (C9)
Drift Deposits (B3)	Presence of Redu	ced Iron (C4)	Stunted	d or Stressed Plants (D	01)
Algal Mat or Crust (B4)	Recent Iron Redu	ction in Tilled Soils (C6)		rphic Position (D2)	
Iron Deposits (B5)	Thin Muck Surface			v Aquitard (D3)	
Inundation Visible on Aerial I	magery (B7) Other (Explain in	Remarks)		pographic Relief (D4)	
Sparsely Vegetated Concave	Surface (B8)		FAC-Ne	utral Test (D5)	
Field Observations:					
Surface Water Present?	Yes No Depth	(inches):	_		
Water Table Present?	Yes No Depth	(inches):	Wetland H	ydrology Present?	Yes No
Saturation Present?	Yes 🗸 No Depth	(inches): 0			
(includes capillary fringe)			-		
- · · · · ·	gauge, monitoring well, aerial photo	s. previous inspections), if a	available:		
	. 8aa8a,a	o, p. eeasop eed.eo,, e			
Remarks:					
The criterion for wetland hydrolo	ogy is met.				

<u>Tree Stratum</u> (Plot size: <u>30 ft</u> )		Dominant Species?	Indicator Status	Dominance Test works Number of Dominant			(4)
1. Tsuga canadensis	80	Yes	FAC	Are OBL, FACW, or FAC	4	(A)	
2. Betula alleghaniensis	20	Yes	FAC	Total Number of Domi Across All Strata:	nant Species	5	(B)
3				Percent of Dominant S  Are OBL, FACW, or FAC		80	(A/B)
5				Prevalence Index work			
6.						و را مرزمان دا	D
7.				Total % Cover		Multiply	•
	100	= Total Cov	er	OBL species	0	x 1 =	0
Sapling/Shrub Stratum (Plot size: <u>15 ft</u> )		-		FACW species	40	x 2 =	80
1. Kalmia latifolia	25	Yes	FACU	FAC species	120	x 3 =	360
<del></del>		162	FACU	– FACU species	25	x 4 =	100
2				– UPL species	0	x 5 =	0
3				- Column Totals	185	(A)	620 (B)
4.				Prevalence I	ndex = B/A =	2.91	
5. 6.				HydrophyticVegetation	onIndicators:		·
· · -				X 1- Rapid Test for	Hydrophytic	Vegetatio	n
7		- Total Cau		2 - Dominance Te	est is >50%		
Harb Stratum (Blot size) E ft )	25	= Total Cov	er	3 - Prevalence In	dex is ≤ 3.01		
Herb Stratum (Plot size:5 ft)	40	V	EA CIA/	4 - Morphologica		¹ (Provide	supporting
1. Coptis trifolia	40	Yes	FACW	data in Remarks or on	•		
2. Acer rubrum		Yes	FAC	–   Problematic Hyd	rophytic Vege	tation¹ (E	xplain)
3				- Indicators of hydric so	oil and wetlan	d hydrold	gy must be
4				present, unless distur		-	
5				Definitions of Vegetati			
6.				Tree – Woody plants 3	in. (7.6 cm) or	more in	diameter a
7.				breast height (DBH), re			
8.				Sapling/shrub - Wood	y plants less t	han 3 in. I	DBH and
9.				greater than or equal			
				Herb – All herbaceous			gardless of
10				size, and woody plants	-		O
11				Woody vines - All woo			.28 ft in
12		Tabal Carr		height.	, ,		
	60	_= Total Cov	er	Hydrophytic Vegetation	n Present? \	/es ./ N	No.
Woody Vine Stratum (Plot size: <u>30 ft</u> )				Trydropriyae regetation	on resent.	.cs_ <u>v</u>	
1				_			
2				_			
3				_			
4				_			
	0	= Total Cov	er				

	•	to the d	•			ndicator	or confirm the al	osence of indicator	s.)
Depth	Matrix		Redox			1002	Tour	tura	Domarks
(inches)	Color (moist)	<u>%</u>	Color (moist)	<u>%</u>	Type <sup>1</sup>	Loc <sup>2</sup>	Text	-	Remarks
0 - 8	10YR 2/1	100						ilt Loam	
8 - 16	2.5Y 4/1	100	10)/D 1/6				Loamy		
16 - 20	5Y 5/1	70	10YR 4/6	30	C	M	Sandy Cl	ay Loam	
				- —					
				- —					
				- —					
				- —					
				- —					
				- —					
				- —					
				-					
	Concentration, D =	Depletio	on, RM = Reduced	Mati	1X, MS =	Masked	Sand Grains. <sup>2</sup> Lo	ocation: PL = Pore L	
-	Indicators:		Dalamaka Da		6 (6	0) // DD /	2 A4 D4 4 40D)	indicators for Pro	blematic Hydric Soils³:
Histoso	il (A1) pipedon (A2)		Polyvalue Be		-		R, MLRA 149B)		10) (LRR K, L, MLRA 149B)
	istic (A3)		Loamy Muck					· <del></del>	Redox (A16) (LRR K, L, R)
	en Sulfide (A4)		Loamy Gleye	-		(=, -	-7		eat or Peat (S3) (LRR K, L, R)
,	ed Layers (A5)		Depleted Ma					Dark Surface	(S7) <b>(LRR K, L)</b> ow Surface (S8) <b>(LRR K, L)</b>
_✓ Deplete	ed Below Dark Surf	ace (A11	) Redox Dark	Surfa	ce (F6)				face (S9) <b>(LRR K, L)</b>
	ark Surface (A12)		Depleted Da			1			ese Masses (F12) (LRR K, L, R)
	Mucky Mineral (S1)		Redox Depre	essior	ıs (F8)				odplain Soils (F19) <b>(MLRA 149B)</b>
-	Gleyed Matrix (S4)								(TA6) <b>(MLRA 144A, 145, 149B)</b>
_	Redox (S5)							Red Parent M	
	d Matrix (S6)								Dark Surface (TF12)
Dark Su	urface (S7) <b>(LRR R, I</b>	MLRA 14	·9B)					Other (Explain	n in Remarks)
3Indicators	of hydrophytic veg	getation	and wetland hyd	rolog	y must be	e presen	t, unless disturbe	d or problematic.	
Restrictive	Layer (if observed)	:							
	Type:		None	_		Hydric	Soil Present?		Yes No
-	Depth (inches):								
Remarks:									
A positivo i	ndication of hydric	coil was	c observed						
A positive i	ridication of rigurit	. SOII Was	s observed.						

Project/Site: Montague	City/County: Shu	tesbury, Franklin	ranklin SamplingDate: 2020-July-					
Applicant/Owner: W.D. Cowls		State: MA		SamplingPoint: W-GR-12_UPL-1				
Investigator(s): Greg Russo, Mat	as R	Section, Township, I	Range:					
Landform(hillslope,terrace,etc.):	Hillslope	Local relief (concave, conve	ex, none):_	Undulating	Slope (%): 1 to 3			
Subregion (LRR or MLRA): ML	RA 144A of LRR R	Lat: 42.4733759556	Long:	-72.4232659769	Datum: WGS84			
Soil Map Unit Name: Metacome	et fine sandy loam, 3 to 8 percent slo	pes		NWI classification	: None			
Are climatic/hydrologic conditions	on the site typical for this time of ye			explain in Remarks.)				
Are Vegetation, Soil,	or Hydrology significantly di			•	/es <b>∠</b> No			
Are Vegetation, Soil,	or Hydrology naturally prob	lematic? (If needed, e	explain any	answers in Remarks.)				
Summary of Findings – At	tach site map showing sampli	ng point locations, tran	sects, im	portant features, e	tc.			
Hydrophytic Vegetation Present?	Yes No <b></b> /_							
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:						
	cedures here or in a separate report							
· ·	·							
Covertype is UPL. Area is upland,	not all three wetland parameters ar	e present.						
HYDROLOGY								
Wetland Hydrology Indicators:	and the second second selection of the second to A		C	La dianta da fasia incomo	- <b>6</b>			
Primary Indicators (minimum of o	one is required; check all that apply)		•	Indicators (minimum	of two required)			
Surface Water (A1)	Water-Stained Lea			Soil Cracks (B6)				
High Water Table (A2)	Aquatic Fauna (B1			ge Patterns (B10)				
Saturation (A3)	Marl Deposits (B1		Moss Trim Lines (B16) Dry-Season Water Table (C2)					
Water Marks (B1)	Hydrogen Sulfide		6 C. I. B. (60)					
Sediment Deposits (B2)	Oxidized Knizospi	heres on Living Roots (C3)	-	ion Visible on Aerial In	nagery (C9)			
Drift Deposits (B3)	Presence of Redu	ced Iron (C4)		d or Stressed Plants (D				
Algal Mat or Crust (B4)		ction in Tilled Soils (C6)						
Iron Deposits (B5)	Thin Muck Surface			v Aquitard (D3)				
Inundation Visible on Aerial Im			· · · · · · · · · · · · · · · · · · ·					
Sparsely Vegetated Concave S				utral Test (D5)				
Field Observations:								
Surface Water Present?	Yes No <u>_</u> Depth	(inches):						
Water Table Present?	Yes No _ <b>_/</b> Depth	(inches):	Wetland H	ydrology Present?	Yes No <b></b> ∠			
Saturation Present?		(inches):		, ω				
(includes capillary fringe)								
	gauge, monitoring well, aerial photo		ا ما ماماد،		<u> </u>			
Describe Recorded Data (stream §	gauge, monitoring well, aerial prioto	s, previous inspections), ii a	valiable.					
_								
Remarks:								
The criterion for wetland hydrolog	gy is not met.							

Tree Stratum (Plot size:30 ft)		Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That		(4)
1. Tsuga canadensis	80	Yes	FAC	Are OBL, FACW, or FAC:	1	(A)
2.				Total Number of Dominant Species	. 2	(D)
3.				Across All Strata:		(B)
4.				Percent of Dominant Species That	50	(A/B)
5.				Are OBL, FACW, or FAC:		(A/D)
6.				Prevalence Index worksheet:		
· · · · · · · · · · · · · · · · · · ·				Total % Cover of:	<u>Multiply</u>	<u>By:</u>
7		T-t-LC-		OBL species 0	x 1 =	0
	80	= Total Cove	er	FACW species 0	x 2 =	0
Sapling/Shrub Stratum (Plot size: 15 ft )				FAC species 80	x 3 =	240
1. Kalmia latifolia	60	Yes	FACU	FACU species 60	x 4 =	240
2				UPL species 0	x 5 =	0
3				Column Totals 140	(A)	480 (B)
4				Prevalence Index = B/A =	- ' ' -	
5						<u> </u>
6				Hydrophytic Vegetation Indicators:		
7				1- Rapid Test for Hydrophytic	vegetation	l
	60	= Total Cove	er	2 - Dominance Test is > 50%		
Herb Stratum (Plot size:5 ft)		-		3 - Prevalence Index is ≤ 3.0¹	-1 (D	
1.				4 - Morphological Adaptation	-	supporting
2.				data in Remarks or on a separate s Problematic Hydrophytic Veg		(nicla)
3.				Indicators of hydric soil and wetla		•
4.				present, unless disturbed or proble		gy must be
5.				<u> </u>	illatic	
6.				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) (	or more in	diameter at
7.				breast height (DBH), regardless of		ulameter at
8.				Sapling/shrub – Woody plants less	_	OBH and
9.				greater than or equal to 3.28 ft (1 r		DDIT and
		·		Herb – All herbaceous (non-woody		gardless of
10.				size, and woody plants less than 3.		Sar aress or
11				Woody vines – All woody vines gre		28 ft in
12				height.		
	0	= Total Cove	er	Hydrophytic Vegetation Present?	Voc N	lo (
Woody Vine Stratum (Plot size: 30 ft )				Trydrophytic vegetation resent:	1631	VO _ <b>V</b> _
1						
2						
3						
4						
	0	= Total Cov	er			
Remarks: (Include photo numbers here or on a separation No positive indication of hydrophytic vegetation was obser considered a wetland indicator species. Therefore, it has	ved (≥50%	of dominant	•	•	'PA, easterr	n hemlock is

Depth	ription: (Describe Matrix	to the de	epth needed to d Redox			ndicator or confirm th	e absence of indi	cators.)
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup> Te	xture	Remarks
0 - 4	10YR 3/1	100		<del>-</del>	-51-5		y Loam	
4 - 20	5YR 3/4	100		_			Loam	
				_				
		. —						
				_				
				_				
				_				
				_				
				_				
				_				
¹Type: C = C	oncentration, D =	Depletio	n, RM = Reduced	Matr	ix, MS =	Masked Sand Grains.	<sup>2</sup> Location: PL = F	Pore Lining, M = Matrix.
Hydric Soil	ndicators:							r Problematic Hydric Soils³:
Histosol	(A1)		Polyvalue Be	ow S	urface (S	8) (LRR R, MLRA 149B)	2 cm Mu	ck (A10) <b>(LRR K, L, MLRA 149B)</b>
	oipedon (A2)					R, MLRA 149B)		airie Redox (A16) <b>(LRR K, L, R)</b>
Black Hi			Loamy Muck			(LRR K, L)	5 cm Mu	cky Peat or Peat (S3) <b>(LRR K, L, R)</b>
	en Sulfide (A4) d Layers (A5)		Loamy Gleye				Dark Sur	face (S7) <b>(LRR K, L)</b>
	d Below Dark Surfa	ace (A11)	Depleted Ma					e Below Surface (S8) <b>(LRR K, L)</b>
	ark Surface (A12)	acc (/ 1/ 1 )	Depleted Dark					k Surface (S9) <b>(LRR K, L)</b>
	lucky Mineral (S1)		Redox Depre					nganese Masses (F12) (LRR K, L, R)
Sandy G	ileyed Matrix (S4)							t Floodplain Soils (F19) (MLRA 149B)
Sandy R	edox (S5)							odic (TA6) <b>(MLRA 144A, 145, 149B)</b> ent Material (F21)
Stripped	Matrix (S6)							llow Dark Surface (TF12)
Dark Su	rface (S7) <b>(LRR R, N</b>	1LRA 149	9B)				-	kplain in Remarks)
3Indicators	of hydrophytic yea	etation :	and wetland hydr	·olog	, must he	e present, unless distu		
	ayer (if observed):		and Wetland Hydi	ology	/ IIIust be	present, unless dista	rbed or problems	auc.
	Type:		None			Hydric Soil Present?		Yes No
	Depth (inches):			•		yae so resee.		
Remarks:	<i>y</i> ept.: (e.,e.,							
	indication of hydri	c soils w	as observed.					

Project/Site: Montague	City/County: Shu	tesbury, Franklin		SamplingDate: 2020-July-30			
Applicant/Owner: W.D. Cowls		State: MA		SamplingPoint: W-GR-16_PSS-1			
Investigator(s): Greg Russo, Ma	atas R	Section, Township,	Range:				
Landform(hillslope,terrace,etc.):	Depression	Local relief (concave, conv	ex, none):_	Concave	Slope (%): 1 to 3		
Subregion(LRRorMLRA): M	ILRA 144A of LRR R	Lat: 42.471541115	1 Long:_	-72.4268712011	Datum: WGS84		
SoilMapUnitName: Henniker	sandy loam, 8 to 15 percent slopes			NWI classification	on: PSS		
Areclimatic/hydrologicconditions	onthesitetypicalforthistimeofyear?	Yes No	(If no	, explain in Remarks.	)		
Are Vegetation, Soil,	or Hydrology significantly di	sturbed? Are "Norm	al Circumsta	ances" present?	Yes No		
Are Vegetation, Soil,	or Hydrology naturally prob	lematic? (If needed,	explain any	answers in Remark	5.)		
SUMMARY OF FINDINGS - A	ttach site map showing sampli	ng point locations, trar	nsects, im	portant features,	etc.		
Hydrophytic Vegetation Present?	Yes _ <b>✓</b> _ No						
Hydric Soil Present?	Yes No	Is the Sampled Area withi	n a Wetland	d? Yes	s No		
		·			GR-16		
Wetland Hydrology Present?	Yes No	If yes, optional Wetland S	ite ib.	<u>vv-</u>	GR-10		
·	ocedures here or in a separate report						
Covertype is PSS. Area is wetland	d, all three wetland parameters are p	resent.					
<u> </u>							
LIVEROLOGY							
HYDROLOGY							
Wetland Hydrology Indicators:							
Primary Indicators (minimum of	one is required; check all that apply)		Secondary	Indicators (minimun	n of two required)		
✓ Surface Water (A1)	Water-Stained Lea	aves (B9)	Surface	e Soil Cracks (B6)			
High Water Table (A2)	Aquatic Fauna (B1		Draina	ge Patterns (B10)			
✓ Saturation (A3)	Marl Deposits (B1	5)	_✓ Moss T				
Water Marks (B1)	Hydrogen Sulfide	Odor (C1)	-	Dry-Season Water Table (C2)			
Sediment Deposits (B2)	Oxidized Rhizosp	heres on Living Roots (C3)	-	h Burrows (C8)			
				tion Visible on Aerial			
Drift Deposits (B3)	Presence of Redu			d or Stressed Plants (	D1)		
Algal Mat or Crust (B4)		ction in Tilled Soils (C6)		omorphic Position (D2)			
Iron Deposits (B5)	Thin Muck Surface			v Aquitard (D3)			
Inundation Visible on Aerial Ir	· · ·	Remarks)		opographic Relief (D4	<del>!</del> )		
✓ Sparsely Vegetated Concave S	surface (Bo)		FAC-NE	eutral Test (D5)			
Field Observations: Surface Water Present?	Yes No <b>_∠</b> Depth	(inches):					
	·	(inches):					
Water Table Present?	'	(inches):	Wetland H	ydrology Present?	Yes No		
Saturation Present?	Yes No Depth	(inches): 0	_				
(includes capillary fringe)							
Describe Recorded Data (stream	gauge, monitoring well, aerial photo	s, previous inspections), if a	available:				
Remarks:							
The criterion for wetland hydrolo	ogy is met.						
	<b>.</b> ,						

	Absolute	Dominant	Indicator	Dominance Test worksheet:		
Tree Stratum (Plot size: 30 ft )		Species?	Status	Number of Dominant Species That		
	70 COVE	эресіез:	Julius	Are OBL, FACW, or FAC:	1	(A)
1.				Total Number of Dominant Species		
2				Across All Strata:	1	(B)
3				Percent of Dominant Species That		
4				- Are OBL, FACW, or FAC:	100	(A/B)
5				Prevalence Index worksheet:	-	<del></del>
6				- Total % Cover of:	Multiply I	21.0
7.				- OBL species 5	x 1 =	5
	0	= Total Cov	er	· -	_	
Sapling/Shrub Stratum (Plot size: 15 ft )		_			x 2 = _	80
1. Vaccinium corymbosum	40	Yes	FACW	FAC species 0	x 3 =	0
Lonicera oblongifolia	5	No	OBL	FACU species 0	x 4 =	0
3.				- UPL species 0	x 5 =	0
4.				- Column Totals 45	(A)	85 (B)
				Prevalence Index = B/A =	1.9	
5.				Hydrophytic Vegetation Indicators:		
6				1- Rapid Test for Hydrophytic	Vegetation	
7				2 - Dominance Test is >50%	J	
	45	_= Total Cov	er	$\checkmark$ 3 - Prevalence Index is $\le 3.0^{\circ}$		
Herb Stratum (Plot size:5 ft)				4 - Morphological Adaptations	1 (Provide s	supporting
1				- data in Remarks or on a separate s		, apport8
2				Problematic Hydrophytic Vege		plain)
3				Indicators of hydric soil and wetlar		
4.				present, unless disturbed or proble		55
5.				Definitions of Vegetation Strata:		
6.				Tree – Woody plants 3 in. (7.6 cm) c	r more in d	liameter at
7.				breast height (DBH), regardless of I		nameter at
8.				Sapling/shrub - Woody plants less	_	BH and
9.				greater than or equal to 3.28 ft (1 n		Birana
40				Herb – All herbaceous (non-woody)		ardless of
10.				size, and woody plants less than 3.		ar aress or
11.				Woody vines – All woody vines grea		28 ft in
12				height.		20 10 111
	0	_= Total Cov	er		Voc. / N	
Woody Vine Stratum (Plot size: 30 ft )				Hydrophytic Vegetation Present?	res IV	0
1				_		
2				_		
3.				_		
4.						
	0	= Total Cov	er			
Demarks: (Include abote numbers here or on a const	ata sheet \					
Remarks: (Include photo numbers here or on a separ		20/ af alamain		indexed as ODL FACIAL as FAC)		
A positive indication of hydrophytic vegetation was ol	oservea (>50	J% of domin	iant species	s indexed as OBL, FACW, or FAC).		

1Type: C = Cond Hydric Soil Indi Histosol (A1 Histic Epipe Black Histic Hydrogen S Stratified La Depleted Br Thick Dark!	n) edon (A2) c (A3) Sulfide (A4) ayers (A5) selow Dark Surface Surface (A12) ky Mineral (S1) red Matrix (S4) ox (S5) latrix (S6)	100	_ Polyvalue Bel _ Thin Dark Sur _ Loamy Mucky _ Loamy Gleyed _ Depleted Mat	% — — — — Matr ow St face t Mind Matarix (F	ix, MS =  urface (S (S9) (LRR eral (F1) :rix (F2) 3) e (F6) face (F7)	8) (LRR F R, MLRA (LRR K, L	R, MLRA 149B) A 149B)	Remarks    Cocation: PL = Pore Lining, M = Matrix.   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)
1Type: C = Cond Hydric Soil Indi Histosol (A1 Histic Epipe Black Histic Hydrogen S Stratified La V Depleted Bo Thick Dark S Sandy Mucl Sandy Gley Sandy Redo Stripped Mo	centration, D = Dicators:  1) edon (A2) c (A3) Sulfide (A4) aayers (A5) selow Dark Surface (A12) ky Mineral (S1) ved Matrix (S4) ox (S5) latrix (S6)	100	RM = Reduced  Polyvalue Bel- Thin Dark Sur Loamy Gleyed Depleted Mat Redox Dark S Depleted Dar	——————————————————————————————————————	ix, MS =  urface (S(S9) (LRR) eral (F1) :rix (F2) 3) e (F6) face (F7)	Masked 8) (LRR F R, MLRA (LRR K, L	Silt Loam  Sand Grains. <sup>2</sup> L  R, MLRA 149B)	.ocation: PL = Pore Lining, M = Matrix.  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)
¹Type: C = Cond Hydric Soil Indi Histosol (A1 Histic Epipe Black Histic Hydrogen S Stratified La ✓ Depleted B ☐ Thick Dark ! Sandy Mucl Sandy Gley Sandy Redc ☐ Stripped M.	centration, D = Dicators:  1) edon (A2) c (A3) Sulfide (A4) ayers (A5) selow Dark Surface Surface (A12) ky Mineral (S1) red Matrix (S4) ox (S5) latrix (S6)	Depletion,	_ Polyvalue Bel _ Thin Dark Sur _ Loamy Mucky _ Loamy Gleyec _ Depleted Mat _ Redox Dark S _ Depleted Dar	ow Si face / Mind d Mat crix (F urfac k Sur	urface (S (S9) <b>(LRR</b> eral (F1) rix (F2) 3) e (F6) face (F7)	8) (LRR F R, MLRA (LRR K, L	Sand Grains. <sup>2</sup> L R, MLRA 149B)	Location: PL = Pore Lining, M = Matrix.  Indicators for Problematic Hydric Soils <sup>3</sup> :  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)
¹Type: C = Cond Hydric Soil Indi Histosol (A1 Histic Epipe Black Histic Hydrogen S Stratified La ✓ Depleted B Thick Dark ! Sandy Mucl Sandy Gley Sandy Redc Stripped M.	centration, D = D icators: 1) edon (A2) c (A3) Sulfide (A4) ayers (A5) ielow Dark Surface Surface (A12) ky Mineral (S1) ved Matrix (S4) ox (S5) latrix (S6)	Depletion,	_ Polyvalue Bel _ Thin Dark Sur _ Loamy Mucky _ Loamy Gleyec _ Depleted Mat _ Redox Dark S _ Depleted Dar	ow Si face / Mind d Mat crix (F urfac k Sur	urface (S (S9) <b>(LRR</b> eral (F1) rix (F2) 3) e (F6) face (F7)	8) (LRR F R, MLRA (LRR K, L	R, MLRA 149B) A 149B)	Indicators for Problematic Hydric Soils <sup>3</sup> :  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)
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Hydric Soil Indi Histosol (A1 Histic Epipe Black Histic Hydrogen S Stratified La Depleted Be Thick Dark! Sandy Mucl Sandy Gley Sandy Redc Stripped M.	icators:  1) edon (A2) c (A3) Sulfide (A4) ayers (A5) selow Dark Surface Surface (A12) ky Mineral (S1) ed Matrix (S4) ox (S5) latrix (S6)	   ce (A11)	_ Polyvalue Bel _ Thin Dark Sur _ Loamy Mucky _ Loamy Gleyec _ Depleted Mat _ Redox Dark S _ Depleted Dar	ow Si face / Mind d Mat crix (F urfac k Sur	urface (S (S9) <b>(LRR</b> eral (F1) rix (F2) 3) e (F6) face (F7)	8) (LRR F R, MLRA (LRR K, L	R, MLRA 149B) A 149B)	Indicators for Problematic Hydric Soils <sup>3</sup> :  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)
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Hydric Soil Indi Histosol (A1 Histic Epipe Black Histic Hydrogen S Stratified La Depleted Be Thick Dark! Sandy Mucl Sandy Gley Sandy Redc Stripped M.	icators:  1) edon (A2) c (A3) Sulfide (A4) ayers (A5) selow Dark Surface Surface (A12) ky Mineral (S1) ed Matrix (S4) ox (S5) latrix (S6)	   ce (A11)	_ Polyvalue Bel _ Thin Dark Sur _ Loamy Mucky _ Loamy Gleyec _ Depleted Mat _ Redox Dark S _ Depleted Dar	ow Si face / Mind d Mat crix (F urfac k Sur	urface (S (S9) <b>(LRR</b> eral (F1) rix (F2) 3) e (F6) face (F7)	8) (LRR F R, MLRA (LRR K, L	R, MLRA 149B) A 149B)	Indicators for Problematic Hydric Soils <sup>3</sup> :  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)
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Hydric Soil Indi Histosol (A1 Histic Epipe Black Histic Hydrogen S Stratified La Depleted Be Thick Dark! Sandy Mucl Sandy Gley Sandy Redc Stripped M.	icators:  1) edon (A2) c (A3) Sulfide (A4) ayers (A5) selow Dark Surface Surface (A12) ky Mineral (S1) ed Matrix (S4) ox (S5) latrix (S6)	   ce (A11)	_ Polyvalue Bel _ Thin Dark Sur _ Loamy Mucky _ Loamy Gleyec _ Depleted Mat _ Redox Dark S _ Depleted Dar	ow Si face / Mind d Mat crix (F urfac k Sur	urface (S (S9) <b>(LRR</b> eral (F1) rix (F2) 3) e (F6) face (F7)	8) (LRR F R, MLRA (LRR K, L	R, MLRA 149B) A 149B)	Indicators for Problematic Hydric Soils <sup>3</sup> :  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)
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Histosol (A1 Histic Epipe Black Histic Hydrogen S Stratified La Depleted Be Thick Dark S Sandy Mucl Sandy Gleye Sandy Redc Stripped Mo	n) edon (A2) c (A3) Sulfide (A4) ayers (A5) selow Dark Surface Surface (A12) ky Mineral (S1) red Matrix (S4) ox (S5) latrix (S6)	_	Thin Dark Sur Loamy Mucky _ Loamy Gleyed _ Depleted Mat _ Redox Dark S _ Depleted Dar	face / Mind d Mat crix (F urfact k Sur	(S9) <b>(LRR</b> eral (F1) :rix (F2) 3) e (F6) face (F7)	R, MLRA (LRR K, L	A 149B)	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)
Histic Epipe Black Histic Hydrogen S Stratified La Depleted Bo Thick Dark S Sandy Mucl Sandy Gleyo Sandy Redc Stripped Mo	edon (A2) c (A3) Sulfide (A4) ayers (A5) selow Dark Surfac Surface (A12) ky Mineral (S1) red Matrix (S4) ox (S5) latrix (S6)	_	Thin Dark Sur Loamy Mucky _ Loamy Gleyed _ Depleted Mat _ Redox Dark S _ Depleted Dar	face / Mind d Mat crix (F urfact k Sur	(S9) <b>(LRR</b> eral (F1) :rix (F2) 3) e (F6) face (F7)	R, MLRA (LRR K, L	A 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)
Black Histic Hydrogen S Stratified La Depleted Bo Thick Dark S Sandy Mucl Sandy Gleyo Sandy Redc Stripped Mo	c (A3) Sulfide (A4) ayers (A5) sielow Dark Surfac Surface (A12) ky Mineral (S1) red Matrix (S4) ox (S5) latrix (S6)	_	Loamy Mucky Loamy Gleyed Depleted Mat Redox Dark S Depleted Dar	/ Mind d Mat crix (F urfact k Sur	eral (F1) :rix (F2) 3) e (F6) face (F7)	(LRR K, L		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)
Hydrogen S Stratified La Depleted Bo Thick Dark S Sandy Mucl Sandy Gleyo Sandy Redo Stripped Mo	Sulfide (A4) ayers (A5) ielow Dark Surfac Surface (A12) ky Mineral (S1) red Matrix (S4) ox (S5) latrix (S6)	_	Loamy Gleyed Depleted Mat Redox Dark S Depleted Dar	d Mat crix (F urfac k Sur	rix (F2) 3) e (F6) face (F7)		)	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)
Stratified La Depleted Bo Thick Dark S Sandy Mucl Sandy Gleyo Sandy Redo Stripped Mo	ayers (A5) ielow Dark Surfac Surface (A12) ky Mineral (S1) red Matrix (S4) ox (S5) latrix (S6)	_	Depleted Mat Redox Dark S Depleted Dar	rix (F urfac k Sur	3) e (F6) face (F7)			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)
Depleted Bo Thick Dark ! Sandy Mucl Sandy Gleyo Sandy Redo Stripped Mo	ielow Dark Surfac Surface (A12) ky Mineral (S1) red Matrix (S4) ox (S5) latrix (S6)	_	Redox Dark S Depleted Dar	urfac k Sur	e (F6) face (F7)			Thin Dark Surface (S9) (LRR K, L) Iron-Manganese Masses (F12) (LRR K, L, R) Piedmont Floodplain Soils (F19) (MLRA 149B)
Thick Dark S Thick Dark S Sandy Muck Sandy Gley Sandy Redo Stripped Mo	Surface (A12) ky Mineral (S1) red Matrix (S4) ox (S5) latrix (S6)	_	Depleted Dar	k Sur	face (F7)			Iron-Manganese Masses (F12) (LRR K, L, R) Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Muck Sandy Gley Sandy Redo	ky Mineral (S1) red Matrix (S4) ox (S5) latrix (S6)	_						Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyo Sandy Redo Stripped Mo	ved Matrix (S4) ox (S5) latrix (S6)	_	_ Nedox Depres	331011	3 (1 0)			•
Sandy Redo	ox (S5) latrix (S6)							Masic Spodic (TA6) (MI PA 1/1/A 1/15 1/19R)
Stripped M	latrix (S6)							Weste specie (1/40) (WEIGH 1447, 143, 1430)
								Red Parent Material (F21)
Daik Suriac	co (S7) /I DD D M/I	I DA 1/0B	2)					Very Shallow Dark Surface (TF12)
	Ce (37) (LKK K, WII	LNA 1430	"					Other (Explain in Remarks)
-		etation an	d wetland hydr	ology	must be	e presen	t, unless disturbe	ed or problematic.
=	er (if observed):							
Тур			Rock			Hydric	Soil Present?	Yes No
Dep	pth (inches):		8					
A positive indic	cation of hydric s	soil was o	bserved.					

Project/Site: Montague		City/County: Shu	itesbury, Franklin		SamplingDate <u>:</u>	2020-July-30	
Applicant/Owner: W.D. Cow	s		State: MA	\	SamplingPoint: W	/-GR-16_UPL-1	
Investigator(s): Greg Russo, N	latas R		Section, Township,	, Range:			
Landform(hillslope,terrace,etc.)	: <u>Hillslope</u>		Local relief (concave, conv	vex, none):_	None	Slope (%): 1 to 3	
Subregion(LRRorMLRA): N	ILRA 144A of LRR F	₹	Lat: 42.471670364	41 Long:	-72.4264880643	Datum: WGS84	
SoilMapUnitName: Henniker	sandy loam, 3 to 8	8 percent slopes			NWI classificat	ion: None	
Areclimatic/hydrologiccondition	sonthesitetypical	forthistimeofyear?	Yes _✓_ No	) (If no	 , explain in Remarks	5.)	
Are Vegetation, Soil,	or Hydrology	significantly d			ances" present?	Yes <b>∠</b> No	
Are Vegetation, Soil,		naturally prob		, explain any	, y answers in Remarl	ks.)	
SUMMARY OF FINDINGS –	Attach site map	showing sampli	ing point locations, tra	nsects, im	portant features	s, etc.	
Hydrophytic Vegetation Present	t? Yes	s No <b></b> _					
Hydric Soil Present?	Yes	s No <b>_</b> ✓	Is the Sampled Area with	in a Wetland	d? Y	⁄es No _ <b>_</b> ∠	
Wetland Hydrology Present?	Yes	No _ <b>_</b> _	If yes, optional Wetland S	Site ID:			
Remarks: (Explain alternative p				oite iD.			
Wetland Hydrology Indicators: Primary Indicators (minimum o  Surface Water (A1) High Water Table (A2) Saturation (A3)	· -	check all that apply)  Water-Stained Le  Aquatic Fauna (B  Marl Deposits (B'	aves (B9) 13)	Surface Draina	r Indicators (minimu e Soil Cracks (B6) ge Patterns (B10) Trim Lines (B16)	ım of two required)	
Saturation (AS) Water Marks (B1)	_	Mari Deposits (B Hydrogen Sulfide			y-Season Water Table (C2)		
Sediment Deposits (B2)	_		heres on Living Roots (C3)	Crayfis	h Burrows (C8)		
	_				tion Visible on Aeria	l Imagery (C9)	
Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Sparsely Vegetated Concave	O ,	Presence of Redu Recent Iron Redu Thin Muck Surfac Other (Explain in	ection in Tilled Soils (C6) re (C7)	Geomo Shallov Microto	d or Stressed Plants orphic Position (D2) w Aquitard (D3) opographic Relief (D eutral Test (D5)		
Field Observations:							
Surface Water Present?	Yes No	_ <b>_</b> Depth	(inches):	_			
Water Table Present?	Yes No	<u>✓</u> Depth	(inches):	Wetland H	lydrology Present?	Yes No <b>_</b> ✓	
Saturation Present?	Yes No		(inches):	_			
(includes capillary fringe)		<u></u>		_			
						<del></del>	
Describe Recorded Data (strear	n gauge, monitorir	ng well, aerial photo	s, previous inspections), if	avaliable:			
Remarks:							
The criterion for wetland hydro	logy is not met.						

<u>Tree Stratum</u> (Plot size: <u>30 ft</u> )		Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species Tha		
1. Tsuga canadensis	50	Yes	FAC	Are OBL, FACW, or FAC:	2	(A)
2. Acer rubrum	30	Yes	FAC	Total Number of Dominant Specie	s <u> </u>	(D)
3. Fagus grandifolia	10	No No	FACU	Across All Strata:		(B)
4.			17100	Percent of Dominant Species That	66.6	(A/B)
5.				Are OBL, FACW, or FAC:		(,,,,,,
6.				Prevalence Index worksheet:		
7.				Total % Cover of:	Multiply	<u>By:</u>
·	90	= Total Cov		OBL species 0	x 1 =	0
Conling/Chruh Ctratum (Plat size 15 ft )	90	- Total Cov	<b>:</b> 1	FACW species 0	x 2 =	0
Sapling/Shrub Stratum (Plot size:15 ft)  1. Kalmia latifolia	20	Voc	FACIL	FAC species 80	x 3 =	240
	20	Yes	FACU	FACU species 30	x 4 =	120
2.				UPL species 0	x 5 =	0
3.				Column Totals 110	(A)	360 (B)
4				Prevalence Index = B/A	=3.27	
5				HydrophyticVegetationIndicators:		
6				1- Rapid Test for Hydrophytic		1
7				X 2 - Dominance Test is > 50%	_	
	20	= Total Cov	er	3 - Prevalence Index is ≤ 3.0		
<u>Herb Stratum</u> (Plot size: <u>5 ft</u> )				4 - Morphological Adaptation		supporting
1				data in Remarks or on a separate	-	
2				Problematic Hydrophytic Ve		xplain)
3				¹Indicators of hydric soil and wetla	•	•
4.				present, unless disturbed or prob	-	8,
5.				Definitions of Vegetation Strata:		
6.				Tree – Woody plants 3 in. (7.6 cm)	or more in	diameter at
7.				breast height (DBH), regardless of		
8.				Sapling/shrub – Woody plants less	_	DBH and
9.				greater than or equal to 3.28 ft (1		
10.				Herb – All herbaceous (non-wood)	) plants, re	gardless of
11.				size, and woody plants less than 3	.28 ft tall.	
12.				Woody vines – All woody vines gre	ater than 3	.28 ft in
12.	0	= Total Cov	or.	height.		
Woody Vine Stratum (Plot size:30 ft)		- Total Cov	-1	Hydrophytic Vegetation Present?	Yes N	lo <u> </u>
1.						
2.						
3.						
4						
	0	= Total Cov	er			
Remarks: (Include photo numbers here or on a separation No positive indication of hydrophytic vegetation was obser hydrology. Per the MA WPA, eastern hemlock is considered instead of "FACU."	ved (≥50%	of dominan	-	· ·	-	-

Profile Des Depth	cription: (Describe Matrix	to the d	epth needed to d Redox			indicato	r or confirm the al	osence of indicators.)
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
0 - 4	10YR 3/1	100	Color (moist)		-урс		Silt Loam	
4 - 7	10YR 4/4	100		_			Silt Loam	
7 - 20	10YR 5/6	100		_			Silt Loam	
				_				<del>-</del>
•				_			-	<del></del>
				_				<del>-</del>
				_				
	-			_				
•				_				
-				_				
•				_				
	•			_			•	
1Type: C = 0	Concentration, D =	Denletic	n RM = Reduced	Mat	rix MS =	Masked	Sand Grains 21 (	ocation: PL = Pore Lining, M = Matrix.
Hydric Soil		Pchicut	,, Kivi – Reduced	iviat	- כועו , יייי	·vius/\CU	Jana Grants. *LC	Indicators for Problematic Hydric Soils <sup>3</sup> :
Histoso			Polyvalue Po	OW C	iurface (9	(8) <b>(I DD</b>	R, MLRA 149B)	•
	oipedon (A2)		Thin Dark Su					2 cm Muck (A10) (LRR K, L, MLRA 149B)
	istic (A3)		Loamy Muck					Coast Prairie Redox (A16) (LRR K, L, R) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrog	en Sulfide (A4)		Loamy Gleye	d Ma	trix (F2)			5 CHI Mucky Peat of Peat (55) (LRR K, L, K) Dark Surface (S7) (LRR K, L)
Stratifie	d Layers (A5)		Depleted Ma	trix (l	F3)			Polyvalue Below Surface (S8) (LRR K, L)
	d Below Dark Surf	ace (A11						Thin Dark Surface (S9) (LRR K, L)
	ark Surface (A12)		Depleted Dar			)		Iron-Manganese Masses (F12) (LRR K, L, R)
	Mucky Mineral (S1)		Redox Depre	ssior	is (F8)			Piedmont Floodplain Soils (F19) (MLRA 149B)
-	Gleyed Matrix (S4)							Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
_	Redox (S5)							Red Parent Material (F21)
	d Matrix (S6)	AL DA 44	OD)					Very Shallow Dark Surface (TF12)
Dark St	ırface (S7) <b>(LRR R, N</b>	VILKA 14	96)					Other (Explain in Remarks)
3Indicators	of hydrophytic veg	getation	and wetland hydr	olog	y must b	e preser	nt, unless disturbe	d or problematic.
Restrictive	Layer (if observed)	:						
	Type:		None			Hydric	Soil Present?	Yes No/_
	Depth (inches):							
Remarks:								
No positive	indication of hydr	ic soils w	use observed					
No positive	indication of flydi	ic solis v	vas observeu.					
1								

Project/Site: Montague	City/County: Shu	tesbury, Franklin	Franklin SamplingDate: 2020-July-			
Applicant/Owner: W.D. Cov	vls	State: MA	Sampli	ingPoint: W-G	R-17_PSS-1	
Investigator(s): Greg Russo, I	Vlatas R	Section, Township,	Range:			
Landform(hillslope,terrace,etc.	): Depression	Local relief (concave, conv	ex, none): Concav	/e	Slope (%): 1 to 3	
Subregion(LRRorMLRA):	MLRA 144A of LRR R	Lat: 42.470479421	4 Long: -72.426	7111906	Datum: WGS84	
SoilMapUnitName: Hennike	r sandy loam, 3 to 8 percent slopes		N	<b>VI</b> classification	: PFO	
Areclimatic/hydrologicconditio	nsonthesitetypicalforthistimeofyear?	Yes 🔽 No	(If no, explain	n in Remarks.)		
Are Vegetation, Soil			al Circumstances" <sub>ا</sub>	present? Y	′es No	
Are Vegetation, Soil	, or Hydrology naturally probl	lematic? (If needed,	explain any answe	rs in Remarks.)		
SUMMARY OF FINDINGS –	Attach site map showing sampli	ng point locations, trai	nsects, importar	nt features, e	tc.	
Hydrophytic Vegetation Preser	nt? Yes <u></u> ✓ No		•			
Hydric Soil Present?	Yes No	Is the Sampled Area withi	n a Wetland?	Yes _	✓_ No	
Wetland Hydrology Present?	Yes _ <b>.</b> ✓_ No	If yes, optional Wetland S	ite ID:	W-GI	R-17	
	procedures here or in a separate report nd, all three wetland parameters are pr					
Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1)	of one is required; check all that apply)  — Water-Stained Lea — Aquatic Fauna (B1 — Marl Deposits (B1 — Hydrogen Sulfide	13) 5) Odor (C1)	Secondary Indicat  Surface Soil Cr  Drainage Patte  Moss Trim Line  Dry-Season Wo	racks (B6) erns (B10) es (B16) ater Table (C2)	of two required)	
Sediment Deposits (B2) Drift Deposits (B3)	Oxidized Rhizospi Presence of Redu	heres on Living Roots (C3) ced Iron (C4)	<ul> <li>Crayfish Burrows (C8)</li> <li>Saturation Visible on Aerial Imagery (C9)</li> <li>Stunted or Stressed Plants (D1)</li> </ul>			
Algal Mat or Crust (B4)		ction in Tilled Soils (C6)	Geomorphic P			
Iron Deposits (B5)	Thin Muck Surface		Shallow Aquita			
Inundation Visible on Aeria		Remarks)	Microtopograp			
Sparsely Vegetated Concave Field Observations:	e Surface (B8)		∕ FAC-Neutral Te I	St (D2)		
Surface Water Present?	Yes No <u></u> ✓ Depth	(inches)				
	·	(inches):		<b>5</b> 13	N	
Water Table Present?		(inches):	Wetland Hydrolog	y Present?	Yes No	
Saturation Present?	Yes _ No Depth	(inches): 5				
(includes capillary fringe)						
Describe Recorded Data (strea	m gauge, monitoring well, aerial photo	s, previous inspections), if a	available:			
Remarks:						
The criterion for wetland hydro	ology is met.					

<u>Tree Stratum</u> (Plot size: <u>30 ft</u> )		Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That		
1.	% Cover	3pecies:	Status	Are OBL, FACW, or FAC:	3	(A)
2.				Total Number of Dominant Species	3	(B)
3.				Across All Strata:		
4.				Percent of Dominant Species That Are OBL, FACW, or FAC:	100	(A/B)
5				Prevalence Index worksheet:		
6				Total % Cover of:	Multiply E	Rv.
7				OBL species 0	x 1 =	0
	0	= Total Co	ver	FACW species 80	x 2 =	160
Sapling/Shrub Stratum (Plot size: 15 ft )				FAC species 0	x 3 =	0
1. Vaccinium corymbosum	25	Yes	FACW	FACU species 0	x 4 =	0
2				UPL species 0	x 5 =	0
3				Column Totals 80	(A)	160 (B)
4				Prevalence Index = B/A =	2	
5				Hydrophytic Vegetation Indicators:		
6				1- Rapid Test for Hydrophytic \	/egetation	
7				✓ 2 - Dominance Test is >50%	-8	
	25	= Total Co	ver	$\checkmark$ 3 - Prevalence Index is $\le 3.0^{\circ}$		
Herb Stratum (Plot size: <u>5 ft</u> )				4 - Morphological Adaptations	¹ (Provide s	supporting
1. Osmundastrum cinnamomeum	30	Yes	FACW	data in Remarks or on a separate sh		
2. Coptis trifolia	25	Yes	FACW	Problematic Hydrophytic Vege	tation¹ (Ex <sub>l</sub>	plain)
3				<sup>1</sup> Indicators of hydric soil and wetlan	d hydrolog	gy must be
4				present, unless disturbed or proble	matic	
5				Definitions of Vegetation Strata:		
6				Tree – Woody plants 3 in. (7.6 cm) o		liameter at
7				breast height (DBH), regardless of h	_	
8				Sapling/shrub – Woody plants less t		BH and
9				greater than or equal to 3.28 ft (1 m		ardless of
10				Herb – All herbaceous (non-woody) size, and woody plants less than 3.2		aruless of
11				Woody vines – All woody vines grea		28 ft in
12				height.		
	55	= Total Co	ver	Hydrophytic Vegetation Present?	Yes / N	0
Woody Vine Stratum (Plot size: 30 ft )				Trydrophyde Vegetation Tresent.	10311	·
1.						
2.						
3.						
4						
	0	= Total Co	ver			
Remarks: (Include photo numbers here or on a separat	e sheet.)					
A positive indication of hydrophytic vegetation was obs	erved (>50	% of domi	nant species	indexed as OBL, FACW, or FAC).		

Profile Des	cription: (Describe t Matrix	to the de	epth needed to do			ndicato	or confirm the al	bsence of indicators.)				
(inches)	Color (moist)	<del></del>	Color (moist)		Type <sup>1</sup>	Loc <sup>2</sup>	Te	exture	Remarks			
0 - 20	10YR 2/1	100	Color (moist)		<u>- турс</u>		-	ter Silt Loam	Keriara			
		_		_								
		_		_		_						
		_		_								
				_								
				_								
1T		D	- DM Dadward	N 4 - 4 -		N 4	Sand Coaling 11	Di Dan Lini	- M. Marris			
Hydric Soil	Concentration, D = I	Depletio	n, RM = Reduced	Matr	1X, IVIS =	Masked	Sand Grains. <sup>2</sup> Lo	ocation: PL = Pore Linii Indicators for Proble				
Histoso			Polyvalue Bel	OW S	urface (S	8) <b>(I DD</b>	D MIDA 1/QR)		•			
	oipedon (A2)		Polyvalue Bel						(LRR K, L, MLRA 149B)			
	Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L)							dox (A16) <b>(LRR K, L, R)</b> t or Peat (S3) <b>(LRR K, L, R)</b>				
Hydrog	en Sulfide (A4)		Loamy Gleye	d Ma	trix (F2)							
Stratifie	d Layers (A5)		Depleted Ma	trix (F	3)			Dark Surface (S7) (LRR K, L) Polyvalue Below Surface (S8) (LRR K, L)				
	Depleted Below Dark Surface (A11) Redox Dark Surface (F6)							Thin Dark Surfac				
	ark Surface (A12)		Depleted Dar						Masses (F12) (LRR K, L, R)			
	Mucky Mineral (S1)		Redox Depre	ssion	s (F8)				olain Soils (F19) <b>(MLRA 149B)</b>			
Sandy C	Gleyed Matrix (S4)							· ·	.6) (MLRA 144A, 145, 149B)			
Sandy F	Redox (S5)							Red Parent Mate				
Strippe	d Matrix (S6)							Very Shallow Dar				
Dark Su	ırface (S7) <b>(LRR R, M</b>	ILRA 149	9B)					Other (Explain in				
	of hydrophytic veg		and wetland hydr	ology	/ must be	e preser	t, unless disturbe	d or problematic.				
	Layer (if observed): _					l	- 11					
	Type:		None			Hydric	Soil Present?		Yes/_ No			
	Depth (inches):											
Remarks:  A positive in	ndication of hydric	soil was	observed.									
7 positive ii	naication of flyanc	son was	observed.									

Project/Site: Montague	City/County: Shu	itesbury, Franklin	SamplingDate: 2020-July-30				
Applicant/Owner: W.D. Cowls		State: MA		SamplingPoint: W-	GR-17_UPL-1		
Investigator(s): Greg Russo, Ma	tas R	Section, Township,	Range:				
Landform(hillslope,terrace,etc.):	Hillslope	Local relief (concave, conve	ex, none):_	None	Slope (%): 2 to 5		
Subregion(LRRorMLRA): ML	RA 144A of LRR R	Lat: 42.470404696	7 Long:	-72.4265026488	Datum: WGS84		
SoilMapUnitName: Henniker s	andy loam, 3 to 8 percent slopes			NWI classification	on: None		
Areclimatic/hydrologicconditions	onthesitetypicalforthistimeofyear?	Yes <u></u> ✓ No	(If no,	explain in Remarks.	)		
Are Vegetation, Soil,	or Hydrology significantly di	sturbed? Are "Norma	al Circumsta	ances" present?	Yes No		
Are Vegetation, Soil,	or Hydrology naturally prob	lematic? (If needed,	explain any	answers in Remarks	5.)		
SUMMARY OF FINDINGS - At	ttach site map showing sampli	ng point locations, tran	sects, im	portant features,	etc.		
Hydrophytic Vegetation Present?	Yes No <b>_</b> ✓_						
Hydric Soil Present?	Yes No	Is the Sampled Area within	n a Wetland	i? Ye	s No		
_	Yes No	·					
Wetland Hydrology Present?		If yes, optional Wetland Si	te ib.				
· ·	cedures here or in a separate report						
Covertype is UPL. Area is upland,	not all three wetland parameters ar	e present.					
HYDROLOGY							
Wetland Hydrology Indicators:							
Primary Indicators (minimum of o	one is required; check all that apply)		Secondary	Indicators (minimun	n of two required)		
Surface Water (A1)	Water-Stained Le	aves (B9)	Surface	Soil Cracks (B6)			
High Water Table (A2)	Aquatic Fauna (B		Drainag	ge Patterns (B10)			
Saturation (A3)	Marl Deposits (B1		Moss Trim Lines (B16)				
Water Marks (B1)	Hydrogen Sulfide	Odor (C1)	-	ason Water Table (C2	)		
Sediment Deposits (B2)	Oxidized Rhizosp	heres on Living Roots (C3)	-	h Burrows (C8)			
			Saturat	ion Visible on Aerial	Imagery (C9)		
Drift Deposits (B3)	Presence of Redu			d or Stressed Plants (	D1)		
Algal Mat or Crust (B4)		ction in Tilled Soils (C6)		rphic Position (D2)			
Iron Deposits (B5)	Thin Muck Surfac			v Aquitard (D3)			
Inundation Visible on Aerial In	· · · · · · · · · · · · · · · · · · ·	Remarks)		ppographic Relief (D4	<b>!</b> )		
Sparsely Vegetated Concave S	литасе (вв)		FAC-NE	utral Test (D5)			
Field Observations:	V N 1	<i>c</i> 1 )					
Surface Water Present?	·	(inches):					
Water Table Present?	·	(inches):	Wetland H	ydrology Present?	Yes No		
Saturation Present?	Yes No Depth	(inches):					
(includes capillary fringe)							
Describe Recorded Data (stream	gauge, monitoring well, aerial photo	s, previous inspections), if a	available:				
Remarks:							
No positive indication of wetland	hydrology was observed						
positive maleution of wetland	, a. 5106, 1145 55561 104.						

VEGETATION Ose scientific flames of plants.				T		
Tree Stratum (Plot size: _ 30 ft _)		Dominant	Indicator	Dominance Test worksheet:		
ince structure (1 for size	% Cover	Species?	Status	Number of Dominant Species Tha	t 2	(A)
1. Pinus strobus	15	Yes	FACU	Are OBL, FACW, or FAC:		
2. Quercus rubra	15	Yes	FACU	Total Number of Dominant Specie	s 7	(B)
3. Tsuga canadensis	15	Yes	FAC	Across All Strata:		
4. Betula alleghaniensis	10	No	FAC	Percent of Dominant Species That	28.5	(A/B)
5.				Are OBL, FACW, or FAC:	_	
6.				Prevalence Index worksheet:		
7.				Total % Cover of:	Multiply B	•
	55	= Total Cov	er	OBL species 0	_ x 1 =	0
Sapling/Shrub Stratum (Plot size:15 ft)		-	<b>.</b> .	FACW species 0	x 2 =	0
1. Hamamelis virginiana	20	Yes	FACU	FAC species 65	x 3 =	195
2. Fagus grandifolia	20	Yes	FACU	FACU species 110	x 4 =	440
3.		163	IACO	UPL species 0	x 5 =	0
				Column Totals 175	(A)	635 (B)
4				Prevalence Index = B/A	=3.62	
5				Hydrophytic Vegetation Indicators	:	
6				1- Rapid Test for Hydrophytic		
7				2 - Dominance Test is > 50%		
	40	= Total Cov	er	3 - Prevalence Index is ≤ 3.0	I	
Herb Stratum (Plot size:5 ft)				4 - Morphological Adaptation		ınnorting
1. <i>Pyrola americana</i>	40	Yes	FAC	data in Remarks or on a separate		apporting
2. Mitchella repens	40	Yes	FACU	Problematic Hydrophytic Ve		lain)
3				¹Indicators of hydric soil and wetla		
4.				present, unless disturbed or prob		,
5.				Definitions of Vegetation Strata:		
6.				Tree – Woody plants 3 in. (7.6 cm)	or more in di	ameter at
7.				breast height (DBH), regardless of		
8.				Sapling/shrub – Woody plants less	_	3H and
9.				greater than or equal to 3.28 ft (1		
10.				Herb – All herbaceous (non-wood	/) plants, rega	ardless of
11				size, and woody plants less than 3	.28 ft tall.	
11 12.				Woody vines – All woody vines gre	ater than 3.2	8 ft in
12	80	= Total Cov	or	height.		
Manda Vina Chraham (Blat sina 20 ft	- 60	_ 10tal C0V	ei	Hydrophytic Vegetation Present?	Yes No	
Woody Vine Stratum (Plot size: 30 ft )				, , , , , , , , , , , , , , , , , , ,		
1.						
2						
3						
4						
	0	= Total Cov	er			
Remarks: (Include photo numbers here or on a separate s	sheet.)					
No positive indication of hydrophytic vegetation was obser	ved (≥50%	of dominan	t species ind	lexed as FAC- or drier). Per the MA V	VPA, eastern l	hemlock is
considered a wetland indicator species. Therefore, it has	•		-	,		
<u>'</u>	9					

0 - 4 1	Matrix or (moist) 0YR 3/3 5YR 3/4	% 100 100	Redox Color (moist)	<u>%</u>	Type¹	Loc²	Texture Silt Loam Silt Loam	
0 - 4 1	0YR 3/3	100		· _			Silt Loam	
				_				
				_				
				_				
	_			_				
				_				
				_				
				_				
				_				
-				_				
				_				
				_				<del>-</del>
Type: C = Concen	tration. D = D	epletion	n. RM = Reduced	Matı	rix. MS =	Masked	Sand Grains. <sup>2</sup> Lo	ocation: PL = Pore Lining, M = Matrix.
Hydric Soil Indicat		-  -   -   -	,		.,			Indicators for Problematic Hydric Soils <sup>3</sup> :
Histosol (A1)			Polyvalue Bel	ow S	urface (S	8) <b>(LRR</b> F	R. MLRA 149B)	•
Histic Epipedo	n (A2)	-	Thin Dark Sui					2 cm Muck (A10) (LRR K, L, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R)
Black Histic (A			 Loamy Mucky					5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydrogen Sulf	ide (A4)	-	Loamy Gleye	d Ma	trix (F2)			Dark Surface (S7) (LRR K, L)
Stratified Laye	rs (A5)	-	Depleted Ma	trix (F	-3)			Polyvalue Below Surface (S8) (LRR K, L)
		e (A11)	Redox Dark S					Thin Dark Surface (S9) (LRR K, L)
Thick Dark Sur		-	Depleted Dar					Iron-Manganese Masses (F12) (LRR K, L, R)
Sandy Mucky I		-	Redox Depre	ssion	is (F8)			Piedmont Floodplain Soils (F19) (MLRA 149B)
Sandy Gleyed								Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy Redox (								Red Parent Material (F21)
Stripped Matr		DA 440	D)					Very Shallow Dark Surface (TF12)
Dark Surface (	5/) (LKK K, IVIL	KA 149	в)					Other (Explain in Remarks)
Indicators of hyd	rophytic veget	tation a	nd wetland hydr	ology	y must be	e presen	t, unless disturbe	d or problematic.
Restrictive Layer (	if observed):							
Type:			Rock			Hydric	Soil Present?	Yes No
Depth	(inches):		12					
Remarks: No positive indica	tion of hydric	soils wa	as observed.					

Project/Site: Montague	City/County: Sh	utesbury, Franklin		SamplingDate: 2	2020-July-31
Applicant/Owner: W.D. Cowls		State: MA		SamplingPoint: W	
Investigator(s): Greg Russo, Mar	tas R	Section, Township,	Range:		
Landform(hillslope,terrace,etc.):	Depression	Local relief (concave, conv	ex, none):_	Concave	Slope (%): 1 to 3
Subregion(LRRorMLRA): MLF	RA 144A of LRR R	Lat: 42.467275480	8 Long:	-72.4260031712	Datum: WGS84
Soil Map Unit Name: Pillsbury fi	ine sandy loam, 0 to 8 percent slop	es, very stony		NWI classificati	on: PFO
Are climatic/hydrologic conditions	on the site typical for this time of y	rear? Yes <u>√</u> No	(If no	, explain in Remarks	.)
Are Vegetation, Soil,	or Hydrology significantly d			ances" present?	Yes No
Are Vegetation, Soil,	or Hydrology naturally prob	olematic? (If needed,	explain an	y answers in Remark	(S.)
SUMMARY OF FINDINGS – At	tach site map showing sampl	ing point locations, trai	nsects, im	portant features	, etc.
Hydrophytic Vegetation Present?	Yes _ <b>✓</b> _ No				
Hydric Soil Present?	Yes No	Is the Sampled Area withi	n a Wetlan	d? Ye	s/_ No
Wetland Hydrology Present?	Yes _ <b>,∕</b> _ No	If yes, optional Wetland S	ite ID:	W	-GR-18
, ,,	cedures here or in a separate repor				
•	, all three wetland parameters are p				
Covertype is PPO. Area is wetland	, all tillee wetland parameters are p	oresent.			
HYDROLOGY					
HIDROLOGI					
Wetland Hydrology Indicators:					
Primary Indicators (minimum of o	one is required; check all that apply	1	Secondary	/ Indicators (minimui	m of two required)
Surface Water (A1)	_ <u>✓</u> Water-Stained Le	eaves (B9)		e Soil Cracks (B6)	
High Water Table (A2)	Aquatic Fauna (B	313)		ge Patterns (B10)	
✓ Saturation (A3)	Marl Deposits (B	15)		frim Lines (B16)	2)
Water Marks (B1)	Hydrogen Sulfide			ason Water Table (C	2)
Sediment Deposits (B2)	Oxidized Rhizosr	oheres on Living Roots (C3)		sh Burrows (C8) tion Visible on Aerial	Imagon (CO)
Duift Days a site (D2)	Dunana a f Dad				0 7
Drift Deposits (B3)	Presence of Red			d or Stressed Plants	(DT)
Algal Mat or Crust (B4) Iron Deposits (B5)	Recent from Redu Thin Muck Surface	uction in Tilled Soils (C6)		orphic Position (D2) w Aquitard (D3)	
Iron Deposits (B3) Inundation Visible on Aerial In				opographic Relief (D	4)
✓ Sparsely Vegetated Concave S	· · ·	nemarks)		eutral Test (D5)	<del></del> )
Field Observations:	aacc (20)				
Surface Water Present?	Yes No <b>_∠</b> Deptl	h (inches):			
Water Table Present?	·	h (inches):	Wetland F	lydrology Present?	Yes No
Saturation Present?			·	iyarology i reseric.	
	тез <u>-</u> по Бери	h (inches): 0			
(includes capillary fringe)					<del></del>
Describe Recorded Data (stream)	gauge, monitoring well, aerial photo	os, previous inspections), if a	available:		
Remarks:					
The criterion for wetland hydrolog	gy is met.				

<u>Tree Stratum</u> (Plot size: <u>30 ft</u> )		Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That	4	(1)
1. Acer rubrum	40	Yes	FAC	Are OBL, FACW, or FAC:	4	(A)
2. Tsuga canadensis	25	Yes	FAC	Total Number of Dominant Species	5	(B)
3. Betula alleghaniensis	15	No	FAC	Across All Strata:		
4.				Percent of Dominant Species That	80	(A/B)
5.				Are OBL, FACW, or FAC:		
6.				Prevalence Index worksheet:	N.A. daimh	. D
7.				Total % Cover of: OBL species 0	Multiply	_
	80	= Total Cov	er	FACW species 45	x 1 =	0
Sapling/Shrub Stratum (Plot size:15 ft)		-		FAC species 80	x 2 =	90
1. <i>Kalmia latifolia</i>	25	Yes	FACU		x 3 =	240
2. Vaccinium corymbosum	20	Yes	FACW	FACU species 25 UPL species 0	x 4 =	100
3.				· -	x 5 =	0
4.				Column Totals 125	(A)	130 (B)
5.				Prevalence Index = B/A =		<del>-</del>
6.				Hydrophytic Vegetation Indicators:		
7.				1- Rapid Test for Hydrophytic	Vegetatio	n
	45	= Total Cov	er	✓ 2 - Dominance Test is >50%		
Herb Stratum (Plot size:5 ft)		-		✓ 3 - Prevalence Index is ≤ 3.01		
1. Coptis trifolia	25	Yes	FACW	4 - Morphological Adaptation:	-	supporting
2.				data in Remarks or on a separate s		
3.				Problematic Hydrophytic Veg		•
4.				present, unless disturbed or proble	,	ogy must be
5.				Definitions of Vegetation Strata:	matic	
6.				Tree – Woody plants 3 in. (7.6 cm) (	or more in	diameter at
7.				breast height (DBH), regardless of		diameter at
8.		•		Sapling/shrub – Woody plants less	-	DBH and
9.				greater than or equal to 3.28 ft (1 r		
10				Herb – All herbaceous (non-woody	) plants, re	gardless of
44				size, and woody plants less than 3.	28 ft tall.	
11 12.				Woody vines – All woody vines grea	ater than 3	3.28 ft in
	 25	= Total Cov	er	height.		
Woody Vine Stratum (Plot size:30 ft)		- 10tal COV	Ci	Hydrophytic Vegetation Present?	Yes	No
1.						
2.						
3.						
4.						
Tr		= Total Cov	or			
	U	- IUIAI CUV	CI			

A positive indication of hydrophytic vegetation was observed (>50% of dominant species indexed as OBL, FACW, or FAC). Per the MA WPA, eastern hemlock is considered a wetland indicator species. Therefore, it has been assigned an indicator status of "FAC" instead of "FACU."

	•	to the de	•			ndicato	or confirm the ab	osence of indicators.)	
Depth _	Matrix		Redox				-		
(inches)	Color (moist)	<u>%</u>	Color (moist)	<u>%</u>	Type <sup>1</sup>	Loc <sup>2</sup>	-	exture	Remarks
0 - 10	10YR 2/1	100		- —			Org matt	ter Silt Loam	
10 - 20	2.5Y 6/1	100							
								_	
				_					-
				-					
				- —			-		
¹Type: C = C	Concentration, D =	Depletio	n, RM = Reduced	Matı	rix, MS =	Masked	Sand Grains. <sup>2</sup> Lo	ocation: PL = Pore Lini	ng, M = Matrix.
Hydric Soil	Indicators:							Indicators for Proble	ematic Hydric Soils³:
Histoso	I (A1)		Polyvalue Be	low S	urface (S	8) <b>(LRR</b>	R, MLRA 149B)	2 cm Muck (A10)	(LRR K, L, MLRA 149B)
Histic E	oipedon (A2)		Thin Dark Su	rface	(S9) (LRR	R, MLR	A 149B)		dox (A16) (LRR K, L, R)
Black Hi	istic (A3)		Loamy Muck	y Min	eral (F1)	(LRR K, I	_)		t or Peat (S3) <b>(LRR K, L, R)</b>
Hydroge	en Sulfide (A4)		Loamy Gleye	d Ma	trix (F2)			Dark Surface (S7	
Stratifie	d Layers (A5)		Depleted Ma	trix (f	<del>-</del> 3)				Surface (S8) (LRR K, L)
✓ Deplete	d Below Dark Surfa	ace (A11)	Redox Dark S	urfa	ce (F6)			Thin Dark Surfac	
Thick Da	ark Surface (A12)		Depleted Dar	k Su	rface (F7)				Masses (F12) (LRR K, L, R)
Sandy N	Mucky Mineral (S1)		Redox Depre	ssior	ıs (F8)				
Sandy G	Gleyed Matrix (S4)								plain Soils (F19) <b>(MLRA 149B)</b>
Sandy F	Redox (S5)							•	(6) (MLRA 144A, 145, 149B)
-	d Matrix (S6)							Red Parent Mate	
	rface (S7) <b>(LRR R, N</b>	ЛІ RA 149	)B)					Very Shallow Da	
			,					Other (Explain in	n Remarks)
3Indicators	of hydrophytic veg	etation a	and wetland hydr	ology	y must be	preser	t, unless disturbed	d or problematic.	
Restrictive	Layer (if observed):	:							
	Type:		None			Hydric	Soil Present?		Yes/_ No
	Depth (inches):			•					
Remarks:		•				1			·
Remarks.									
A positive in	ndication of hydric	soil was	observed.						

Project/Site: Montague	City/County: Shu	tesbury, Franklin	klin SamplingDate: 2020-July-31					
Applicant/Owner: W.D. Cowls		State: MA	s	SamplingPoint: W-G	R-18_UPL-1			
Investigator(s): Greg Russo, Ma	atas R	Section, Township, R	Range:					
Landform(hillslope,terrace,etc.):	: Hillslope	Local relief (concave, conve	ex, none): N	None	Slope (%): 1 to 3			
Subregion(LRRorMLRA): MI	LRA 144A of LRR R	Lat: 42.4672245188	Long: -	72.4260922708	Datum: WGS84			
SoilMapUnitName: Pillsbury fin	ne sandy loam, 0 to 8 percent slopes, very s	stony		NWI classification	: None			
Areclimatic/hydrologiccondition	nsonthesitetypicalforthistimeofyea	ar? Yes 🟒 No _	(If no, e	explain in Remarks.)				
Are Vegetation, Soil,	or Hydrology significantly di	sturbed? Are "Normal	l Circumstai	nces" present? Y	es No			
Are Vegetation, Soil,	or Hydrology naturally prob	lematic? (If needed, e	explain any	answers in Remarks.)				
SUMMARY OF FINDINGS – At	ttach site map showing sampli	ng point locations, trans	sects, imp	ortant features, e	tc.			
Hydrophytic Vegetation Present?	YesNo <b>_</b> ✓							
Hydric Soil Present?	Yes No	Is the Sampled Area within	d Area within a Wetland? Yes No/					
	Yes No	· ·						
Wetland Hydrology Present?		If yes, optional Wetland Site	e iD:					
	cedures here or in a separate report							
Covertype is UPL. Area is upland,	not all three wetland parameters ar	e present.						
HADDOI UCA								
HYDROLOGY								
Wetland Hydrology Indicators:								
Primary Indicators (minimum of c	one is required; check all that apply)	9	Secondary I	Indicators (minimum o	of two required)			
Surface Water (A1)	Water-Stained Lea	aves (B9)	Surface	Soil Cracks (B6)				
High Water Table (A2)	Aquatic Fauna (B1	13)	_	e Patterns (B10)				
Saturation (A3)	Marl Deposits (B1	5) -	Moss Trim Lines (B16)					
Water Marks (B1)	Hydrogen Sulfide		-	son Water Table (C2)				
Sediment Deposits (B2)	Oxidized Rhizospl	heres on Living Roots (C3)	-	ı Burrows (C8) on Visible on Aerial Im	23gen/(C0)			
Drift Danasits (B2)	Dracance of Dodu	-						
Drift Deposits (B3) Algal Mat or Crust (B4)	Presence of Redu	ction in Tilled Soils (C6)		or Stressed Plants (D´ phic Position (D2)	1)			
Algar Mat of Crust (B4)	Thin Muck Surface			Aquitard (D3)				
Inundation Visible on Aerial In				pographic Relief (D4)				
Sparsely Vegetated Concave S	· · ·			utral Test (D5)				
Field Observations:								
Surface Water Present?	Yes No <u></u> ✓ Depth	(inches):						
Water Table Present?	·	<del></del>	Wetland Hv	drology Present?	Yes No			
Saturation Present?		(inches):						
	Te3 NO <u>-</u> <b>/</b> Deptil	(IIICI163).						
(includes capillary fringe)								
Describe Recorded Data (stream)	gauge, monitoring well, aerial photo	s, previous inspections), if av	vailable:					
Remarks:								
The criterion for wetland hydrolog	gy is not met.							

-	Absolute	Dominant	Indicator	Dominance Test worksheet:		
Tree Stratum (Plot size: 30 ft )		Species?	Status	Number of Dominant Species That		
1. Quercus rubra	50	Yes	FACU	Are OBL, FACW, or FAC:	1	(A)
Betula alleghaniensis	30	Yes	FAC	Total Number of Dominant Species	5	(D)
3. Pinus strobus	10	No	FACU	Across All Strata:		(B)
4.			17100	Percent of Dominant Species That	20	(A/B)
5.				Are OBL, FACW, or FAC:		(A/B)
6.	· ——			Prevalence Index worksheet:		
7.	<del></del>			Total % Cover of:	Multiply	By:
/·	90	= Total Cov		OBL species 0	x 1 =	0
Continue/Charak Charaktura (Diok sinos 15 ft )	90	_ 10tal Cov	er	FACW species 0	x 2 =	0
Sapling/Shrub Stratum (Plot size:15 ft)  1. Kalmia latifolia	Ε0	V	FACIL	FAC species 30	x 3 =	90
	50	Yes	FACU	FACU species 145	x 4 =	580
2. Hamamelis virginiana	25	Yes	FACU	- UPL species 0	x 5 =	0
3				Column Totals 175	(A)	670 (B)
4				Prevalence Index = B/A =	3.8	
5				Hydrophytic Vegetation Indicators:		
6				1- Rapid Test for Hydrophytic \	/egetation	1
7				2 - Dominance Test is > 50%	- coccación	
	75	= Total Cov	er	3 - Prevalence Index is ≤ 3.01		
Herb Stratum (Plot size:5 ft)				4 - Morphological Adaptations	1 (Provide	sunnorting
1. Aralia nudicaulis	10	Yes	FACU	data in Remarks or on a separate sh		supporting
2				Problematic Hydrophytic Vege		(plain)
3				¹Indicators of hydric soil and wetlan		-
4				present, unless disturbed or proble	-	8,
5.				Definitions of Vegetation Strata:		
6.				Tree – Woody plants 3 in. (7.6 cm) or	r more in	diameter at
7.				breast height (DBH), regardless of h		
8.				Sapling/shrub – Woody plants less t	han 3 in. Γ	DBH and
9.				greater than or equal to 3.28 ft (1 m	ı) tall.	
10.				Herb – All herbaceous (non-woody)	plants, reg	gardless of
11.	· ——			size, and woody plants less than 3.2	8 ft tall.	
12.				Woody vines – All woody vines grea	ter than 3	.28 ft in
	10	= Total Cov	er	height.		
Woody Vine Stratum (Plot size:30 ft)			·	Hydrophytic Vegetation Present?	Yes N	No <u>✓</u>
1.						
2.				-		
3.						
4.						
<del>*</del>	0	= Total Cov	or			
		_ TOTAL COV	eı			
Remarks: (Include photo numbers here or on a separa	te sheet.)					
No positive indication of hydrophytic vegetation was o	bserved (≥	50% of dom	inant specie	es indexed as FAC– or drier).		

	•	to the de	•			ndicato	or confirm the ab	osence of indicators.)	
Depth	Matrix		Redox			1002	т.	oveturo	Domarka
(inches)	Color (moist)		Color (moist)	<u>%</u>	Type <sup>1</sup>	Loc <sup>2</sup>	-	exture	Remarks
0-3	10YR 2/2	100		- —				tter Silt Loam	-
3 - 6	2.5Y 4/1	100		_			-	my Sand	
6 - 9	10YR 4/4	100					San	dy Loam	
				- —			-		
				_					
				- —					
<u>1</u> Type: C = 0	Concentration, D =	Depletio	n, RM = Reduced	Mati	ix, MS =	Masked	Sand Grains. <sup>2</sup> Lo	ocation: PL = Pore Linir	ng, M = Matrix.
Hydric Soil	Indicators:							Indicators for Proble	matic Hydric Soils³:
Histoso			Polyvalue Be					2 cm Muck (A10)	(LRR K, L, MLRA 149B)
	pipedon (A2)		Thin Dark Su						ox (A16) (LRR K, L, R)
	istic (A3)		Loamy Muck	•		(LRR K, I	_)	5 cm Mucky Peat	or Peat (S3) (LRR K, L, R)
	en Sulfide (A4)		Loamy Gleye					Dark Surface (S7)	(LRR K, L)
	ed Layers (A5)	aca (A11)	Depleted Ma	-				Polyvalue Below	Surface (S8) (LRR K, L)
	ed Below Dark Surfa ark Surface (A12)	ace (ATT)	Redox Dark s Depleted Dar					Thin Dark Surface	e (S9) <b>(LRR K, L)</b>
	Mucky Mineral (S1)		Redox Depre					Iron-Manganese	Masses (F12) <b>(LRR K, L, R)</b>
	Gleyed Matrix (S4)		Redox Depre	33101	13 (1 0)			Piedmont Floodp	lain Soils (F19) <b>(MLRA 149B)</b>
-	Redox (S5)							Mesic Spodic (TA	6) <b>(MLRA 144A, 145, 149B)</b>
-	d Matrix (S6)							Red Parent Mate	
	u Matrix (36) ırface (S7) <b>(LRR R, N</b>	AI DA 140	ופו					Very Shallow Dar	
Daik 30	111ace (37) (LKK K, K	ILIXA 143	,,,					Other (Explain in	Remarks)
	of hydrophytic veg		and wetland hydr	olog	/ must be	preser	t, unless disturbe	d or problematic.	
Restrictive	Layer (if observed): _	:							
	Type:		Rock	-		Hydric	Soil Present?		Yes No⁄_
	Depth (inches):		9						_
Remarks:									
No positive	indication of hydr	ic soils w	as observed						
No positive	. malcación or riyar	ic sons w	as observed.						

Project/Site: Montague	City/County:_ Shu	tesbury, Franklin	nklin SamplingDate: 2020-Ju			
Applicant/Owner: W.D. Cowls		State: MA		SamplingPoint: W-	GR-19_PFO-1	
Investigator(s): Greg Russo, Mar	tas R	Section, Township,	Range:			
Landform(hillslope,terrace,etc.):	Flood Plain	Local relief (concave, conv	ex, none):_	Concave	Slope (%): 1 to 3	
Subregion (LRR or MLRA): MI	LRA 144A of LRR R	Lat: 42.464613807	4 Long:	-72.4276969024	Datum: WGS84	
SoilMapUnitName: Pillsbury fin	ne sandy loam, 0 to 8 percent slopes, very s	tony		NWI classificatio	n: None	
Areclimatic/hydrologiccondition	nsonthesitetypicalforthistimeofye	ar? Yes <u></u> ✓ No	(If no,	, explain in Remarks.)	)	
Are Vegetation, Soil,	or Hydrology significantly d	isturbed? Are "Norm	al Circumsta	ances" present?	Yes No	
Are Vegetation, Soil,	or Hydrology naturally prob	lematic? (If needed,	explain any	answers in Remarks	i.)	
SUMMARY OF FINDINGS – At	ttach site map showing sampli	ng point locations, trar	nsects, im	portant features,	etc.	
Hydrophytic Vegetation Present?	Yes _ <b>✓</b> _ No					
Hydric Soil Present?	Yes No	Is the Sampled Area withi	n a Wetland	1? Yes	No	
-		<u> </u>			GR-19	
Wetland Hydrology Present?	Yes _ ✓ No	If yes, optional Wetland S	ite ib.		3K-19	
	cedures here or in a separate report					
Covertype is PFO. Area is wetland	l, all three wetland parameters are p	resent.				
LIVEROLOGY						
HYDROLOGY						
Wetland Hydrology Indicators:						
Primary Indicators (minimum of c	one is required; check all that apply)		Secondary	Indicators (minimum	of two required)	
Surface Water (A1)	✓ Water-Stained Lea	aves (B9)	Surface	Soil Cracks (B6)		
High Water Table (A2)	Aquatic Fauna (B1	13)	Drainag	ge Patterns (B10)		
∕ Saturation (A3)	Marl Deposits (B1	5)	✓ Moss Trim Lines (B16)			
Water Marks (B1)	Hydrogen Sulfide	Odor (C1)	-	ason Water Table (C2)	)	
Sediment Deposits (B2)	Oxidized Rhizospl	heres on Living Roots (C3)		h Burrows (C8)	(50)	
				ion Visible on Aerial I	0 7	
Drift Deposits (B3)	Presence of Redu			d or Stressed Plants (	D1)	
Algal Mat or Crust (B4)		ction in Tilled Soils (C6)		orphic Position (D2)		
Iron Deposits (B5) Inundation Visible on Aerial Im	Thin Muck Surface			v Aquitard (D3)	`	
✓ Sparsely Vegetated Concave S	· · · · · · · · · · · · · · · · · · ·	Remarks)		opographic Relief (D4	)	
Field Observations:	urrace (bo)		FAC-INE	eutral Test (D5)		
Surface Water Present?	Yes No <u></u> ✓ Depth	(inches):				
	•				V 4 N-	
Water Table Present?		(inches):	wetiand H	ydrology Present?	Yes No	
Saturation Present?	Yes <u></u> ✓ No Depth	(inches): 0	-			
(includes capillary fringe)						
Describe Recorded Data (stream	gauge, monitoring well, aerial photo	s, previous inspections), if a	available:			
Remarks:						
The criterion for wetland hydrolog	gy is met.					

, , , , , , , , , , , , , , , , , , ,	Absolute	Dominant	Indicator	Dominance Test worksheet:		
<u>Tree Stratum</u> (Plot size: <u>30 ft</u> )	% Cover	Species?	Status	Number of Dominant Species That	5	(A)
1. Acer rubrum	50	Yes	FAC	Are OBL, FACW, or FAC:		(A)
2. Betula alleghaniensis	50	Yes	FAC	Total Number of Dominant Species	5	(B)
3.				Across All Strata:		(B)
4.				Percent of Dominant Species That	100	(A/B)
5.				Are OBL, FACW, or FAC:		
6.				Prevalence Index worksheet:		
7.				Total % Cover of:	Multiply	-
	100	= Total Cov	er	OBL species 0	x 1 = _	0
Sapling/Shrub Stratum (Plot size:15 ft)				FACW species 125	x 2 =	250
1. Vaccinium corymbosum	60	Yes	FACW	FAC species 100	x 3 =	300
2.		103	171011	FACU species 0	x 4 =	0
3.				UPL species 0	x 5 =	0
4.				Column Totals 225	(A)	550 (B)
·				Prevalence Index = B/A =	2.4	
5.				Hydrophytic Vegetation Indicators:		
6.				1- Rapid Test for Hydrophytic \	/egetation	
7				2 - Dominance Test is >50%		
	60	_= Total Cov	er	$\checkmark$ 3 - Prevalence Index is $\le$ 3.01		
Herb Stratum (Plot size: <u>5 ft</u> )				4 - Morphological Adaptations	¹ (Provide	supporting
1. <u>Coptis trifolia</u>	50	Yes	FACW	data in Remarks or on a separate sh		11 0
2. Osmundastrum cinnamomeum	15	Yes	FACW	Problematic Hydrophytic Vege	tation¹ (Ex	plain)
3				<sup>1</sup> Indicators of hydric soil and wetlan	d hydrolog	gy must be
4				present, unless disturbed or proble	matic	
5				Definitions of Vegetation Strata:		
6				Tree – Woody plants 3 in. (7.6 cm) or	r more in o	diameter at
7				breast height (DBH), regardless of h	eight.	
8.				Sapling/shrub – Woody plants less t	han 3 in. 🛭	BH and
9.				greater than or equal to 3.28 ft (1 m		
10.				Herb – All herbaceous (non-woody)		gardless of
11.				size, and woody plants less than 3.2		
12.				Woody vines – All woody vines grea	ter than 3.	28 ft in
-	65	= Total Cov	er	height.		
Woody Vine Stratum (Plot size:30 ft)		_		Hydrophytic Vegetation Present?	∕es <u> </u>	0
1.						
2.				•		
3.						
4.	-					
	0	= Total Cov	er			
			-			
Remarks: (Include photo numbers here or on a separat	-					
A positive indication of hydrophytic vegetation was obs	erved (>50	0% of domin	ant species	indexed as OBL, FACW, or FAC).		

Profile Desc Depth	ription: (Describe t Matrix	o the de	epth needed to do			ndicato	r or confirm the al	bsence of indicators.)	
(inches)	Color (moist)	%	Color (moist)		Type <sup>1</sup>	Loc <sup>2</sup>	Te	exture	Remarks
0 - 8	10YR 2/1	100	color (moist)					ter Silt Loam	Kemaks
		<u> </u>		_					
		_		_					
		<u> </u>		_					
				_					
				_					_
¹Tvpe: C = 0	Concentration, D = [	 Depletio	n. RM = Reduced	Matr	ix. MS =	Masked	Sand Grains. <sup>2</sup> Lo	ocation: PL = Pore Linii	ng. M = Matrix.
Hydric Soil			.,		,			Indicators for Proble	
Histosol			Polyvalue Be	ow S	urface (S	8) <b>(LRR</b>	R, MLRA 149B)		•
	oipedon (A2)		Thin Dark Su						(LRR K, L, MLRA 149B) dox (A16) (LRR K, L, R)
_✓ Black Hi	stic (A3)		Loamy Muck	/ Min	eral (F1)	(LRR K, I	L)		t or Peat (S3) <b>(LRR K, L, R)</b>
	en Sulfide (A4)		Loamy Gleye					Dark Surface (S7)	
	d Layers (A5)		Depleted Ma						Surface (S8) (LRR K, L)
	d Below Dark Surfa	ice (A11)						Thin Dark Surfac	e (S9) <b>(LRR K, L)</b>
	ark Surface (A12)		Depleted Dar					Iron-Manganese	Masses (F12) (LRR K, L, R)
	flucky Mineral (S1)		Redox Depre	551011	S (FO)			Piedmont Floodp	olain Soils (F19) <b>(MLRA 149B)</b>
-	ileyed Matrix (S4)							Mesic Spodic (TA	.6) <b>(MLRA 144A, 145, 149B)</b>
-	edox (S5)							Red Parent Mate	erial (F21)
	d Matrix (S6)							Very Shallow Dar	rk Surface (TF12)
Dark Su	rface (S7) <b>(LRR R, M</b>	ILKA 149	9B)					Other (Explain in	Remarks)
	of hydrophytic vege	etation a	and wetland hydr	ology	/ must be	e preser	t, unless disturbe	d or problematic.	
	_ayer (if observed):		Dl-			I I and at a	C-!  D+2		Was a Na
	Type:		Rock			Hydric	Soil Present?		Yes/_ No
	Depth (inches):		8						
Remarks: A positive in	ndication of hydric	soil was	observed.						

Project/Site: Montague	City/County: ,			SamplingDate: 2	020-July-31		
Applicant/Owner: W.D. Cowls		State:		SamplingPoint: W-	•		
Investigator(s): Greg Russo, Ma	itas R	Section, Township, Range:					
Landform(hillslope,terrace,etc.):	Hillslope	Local relief (concave, conve	x, none):	Convex	Slope (%): 2 to 5		
Subregion (LRR or MLRA): ML	RA 144A of LRR R	Lat: 42.4645174575	Long:	-72.4278650433	Datum: WGS84		
SoilMapUnitName: Pillsbury fine	e sandy loam, 0 to 8 percent slopes, very	stony		NWI classification	on: None		
Areclimatic/hydrologiccondition	sonthesitetypicalforthistimeofy	ear? Yes 🟒 No _	(If no	, explain in Remarks.	)		
Are Vegetation, Soil,	or Hydrology significantly o	listurbed? Are "Normal	Circumsta	ances" present?	Yes No		
Are Vegetation, Soil,	or Hydrology naturally pro	olematic? (If needed, ex	xplain any	answers in Remarks	5.)		
SUMMARY OF FINDINGS – Att	tach site map showing samp	ing point locations, trans	sects, im	portant features,	etc.		
Hydrophytic Vegetation Present?	Yes No <b>_</b> ✓_						
Hydric Soil Present?	Yes No/_	Is the Sampled Area within	a Wetland	d? Ye	es No		
Wetland Hydrology Present?	Yes No _ <b>_</b>	If yes, optional Wetland Site	e ID:				
	cedures here or in a separate repo						
Covertype is OPL. Area is upland, i	not all three wetland parameters a	re present.					
HYDROLOGY							
Г							
Wetland Hydrology Indicators:							
Primary Indicators (minimum of o	ne is required; check all that apply	)		Indicators (minimun	n of two required)		
Surface Water (A1)	Water-Stained Lo			e Soil Cracks (B6)			
High Water Table (A2)	Aquatic Fauna (E			rainage Patterns (B10)			
Saturation (A3)	Marl Deposits (B			Moss Trim Lines (B16)			
Water Marks (B1)	Hydrogen Sulfid			Ory-Season Water Table (C2) Crayfish Burrows (C8)			
Sediment Deposits (B2)	Oxidized Rhizos	oheres on Living Roots (C3) –	-	tion Visible on Aerial	Imagery (C9)		
Drift Deposits (B3)	Presence of Red			d or Stressed Plants (			
Algal Mat or Crust (B4)		uction in Tilled Soils (C6)		orphic Position (D2)	נוטו		
Iron Deposits (B5)	Thin Muck Surfa			v Aquitard (D3)			
Inundation Visible on Aerial Im				opographic Relief (D4	1)		
Sparsely Vegetated Concave St		_		eutral Test (D5)	•		
Field Observations:							
Surface Water Present?	Yes No <u></u> Deptl	n (inches):					
Water Table Present?		n (inches):	Wetland H	lydrology Present?	Yes No		
Saturation Present?		n (inches):		,			
(includes capillary fringe)	тез <u> —</u> по <u> </u>						
<u> </u>			بماطماني				
Describe Recorded Data (stream g	gauge, monitoring well, aerial phot	os, previous inspections), if av	aliable:				
Remarks:							
No positive indication of wetland I	nydrology was observed.						

	Absolute	Dominant	Indicator	Dominance Test worksheet:		
Tree Stratum (Plot size: 30 ft )		Species?	Status	Number of Dominant Species That	_	
1. Pinus strobus	25	Yes	FACU	Are OBL, FACW, or FAC:	0	(A)
2. Quercus rubra	25	Yes	FACU	Total Number of Dominant Species		
3.		163	IACO	Across All Strata:	5	(B)
				Percent of Dominant Species That	0	(A (D)
4.				Are OBL, FACW, or FAC:		(A/B)
5.				Prevalence Index worksheet:		
6.				Total % Cover of:	Multiply	By:
7				OBL species 0	x 1 =	0
	50	= Total Cov	er	FACW species 7	x 2 =	14
Sapling/Shrub Stratum (Plot size: 15 ft )				FAC species 0	x 3 =	0
1. Fagus grandifolia	60	Yes	FACU	FACU species 190	x 4 =	760
2. Hamamelis virginiana	40	Yes	FACU	UPL species 0	x 5 =	0
3				Column Totals 197	(A)	774 (B)
4				Prevalence Index = B/A =		774 (b)
5						
6.				Hydrophytic Vegetation Indicators:		
7.				1- Rapid Test for Hydrophytic \	/egetation	1
	100	= Total Cov	er	2 - Dominance Test is > 50%		
Herb Stratum (Plot size:5 ft)		_		3 - Prevalence Index is ≤ 3.0¹		_
1. Mitchella repens	40	Yes	FACU	4 - Morphological Adaptations		supporting
2. Osmundastrum cinnamomeum	5	No	FACW	data in Remarks or on a separate sh		
3. <i>Coptis trifolia</i>	2	No	FACW	Problematic Hydrophytic Vege		•
4.				<sup>1</sup> Indicators of hydric soil and wetlan present, unless disturbed or proble	-	gy must be
5.				·	matic	
6.				Definitions of Vegetation Strata:		di
7.				Tree – Woody plants 3 in. (7.6 cm) o breast height (DBH), regardless of h		diameter at
				Sapling/shrub – Woody plants less t	_	DDLI and
8.				greater than or equal to 3.28 ft (1 m		JBH allu
9.				Herb – All herbaceous (non-woody)		gardless of
10				size, and woody plants less than 3.2		garaiess or
11				Woody vines – All woody vines grea		28 ft in
12				height.	cer chair s	.2010111
	47	= Total Cov	er		Voc N	lo (
Woody Vine Stratum (Plot size: 30 ft )				Hydrophytic Vegetation Present?	res i	NO
1						
2						
3						
4						
	0	= Total Cov	er			
Remarks: (Include photo numbers here or on a separat	e sheet )					
No positive indication of hydrophytic vegetation was of		50% of dom	inant snaci	es indexed as EAC- or drier)		
Two positive indication of flydropflytic vegetation was of	33€1 VEU (≥	30 % Of GOIT	illiant specit	es indexed as the of difer).		

Hydric Soil Indicators:  Histosol (A1)  Histosol (A2)  Histic Epipedon (A2)  Black Histic (A3)  Hydrogen Sulfide (A4)  Stratified Layers (A5)  Depleted Below Dark Surface (A11)  Sandy Mucky Mineral (S1)  Redox Depressions (F8)  Sandy Gleyed Matrix (S4)  Sandy Redox (S5)  Stripped Matrix (S6)  Depleted Matrix (S6)  Redox Depressions (F8)  Stripped Matrix (S6)  Depleted Matrix (S6)  Redox Depressions (F8)  Sandy Redox (S5)  Stripped Matrix (S6)	f indicators.)
0-12 10YR 2/2 100 Silty Clay Loam  12-16 7.5YR 4/6 100 Silty Clay Loam  1Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. 2Location  Hydric Soil Indicators: Indication  Hydric Soil Indicators: Indication  Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2.  Histospiedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) 2.  Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5.  Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) 5.  Stratified Layers (A5) Depleted Matrix (F3) Polyvalue Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F6) The Company Mucky Mineral (S1) Redox Dark Surface (F7) Irr Sandy Mucky Mineral (S1) Redox Dark Surface (F7) Irr Sandy Mucky Mineral (S1) Redox Depressions (F8) Pi Sandy Redox (S5) Redox Depressions (F8) Pi Sandy Redox (S5) Redox (S5) Redox Depressions (F8) Pi Sandy Redox (S5) Redox (S5) Redox (S5) Redox (S6) Pi Stripped Matrix (S6) Pi Stripped Matrix (S6) Pi Redox Dark Surface (S7) (LRR R, MLRA 149B) Pi Rock Pi Mydric Soil Present? Depth (inches): 16	
12 - 16 7.5YR 4/6 100 Silty Clay Loam  Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. ²Location Hydric Soil Indicators: Ind	Remarks
"Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains.    **Location**  Hydric Soil Indicators:	
Hydric Soil Indicators:  Histosol (A1)  Histosol (A2)  Thin Dark Surface (S9) (LRR R, MLRA 149B)  Histic Epipedon (A2)  Loamy Mucky Mineral (F1) (LRR K, L)  Stratified Layers (A5)  Depleted Matrix (F2)  Depleted Matrix (F2)  Depleted Below Dark Surface (A11)  Redox Dark Surface (F6)  Thick Dark Surface (A12)  Depleted Dark Surface (F7)  Sandy Mucky Mineral (S1)  Redox Depressions (F8)  Pinal Sandy Redox (S5)  Stripped Matrix (S4)  Dark Surface (S7) (LRR R, MLRA 149B)  Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or proceed to the present of the pr	
Hydric Soil Indicators:  Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) Histic Epipedon (A2) Histic Epipedon (A2) Loamy Mucky Mineral (F1) (LRR K, L) Loamy Gleyed Matrix (F2) Loamy Gleyed Matrix (F2) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) Redox Depressions (F8) Pic Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Dark Surface (S7) (LRR R, MLRA 149B)  Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or proceeding the present of the	
Hydric Soil Indicators:  Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) Histic Epipedon (A2) Histic Epipedon (A2) Loamy Mucky Mineral (F1) (LRR K, L) Loamy Gleyed Matrix (F2) Loamy Gleyed Matrix (F2) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) Redox Depressions (F8) Pic Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Dark Surface (S7) (LRR R, MLRA 149B)  Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or proceeding the present of the	
Hydric Soil Indicators:  Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) Histic Epipedon (A2) Histic Epipedon (A2) Loamy Mucky Mineral (F1) (LRR K, L) Loamy Gleyed Matrix (F2) Loamy Gleyed Matrix (F2) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) Redox Depressions (F8) Pic Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Dark Surface (S7) (LRR R, MLRA 149B)  Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or proceeding the present of the	
Hydric Soil Indicators:  Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) Histic Epipedon (A2) Histic Epipedon (A2) Loamy Mucky Mineral (F1) (LRR K, L) Loamy Gleyed Matrix (F2) Loamy Gleyed Matrix (F2) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) Redox Depressions (F8) Pic Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Dark Surface (S7) (LRR R, MLRA 149B)  Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or proceeding the present of the	
Hydric Soil Indicators:  Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) Histic Epipedon (A2) Histic Epipedon (A2) Loamy Mucky Mineral (F1) (LRR K, L) Loamy Gleyed Matrix (F2) Loamy Gleyed Matrix (F2) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) Redox Depressions (F8) Pic Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Dark Surface (S7) (LRR R, MLRA 149B)  Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or proceeding the present of the	
Hydric Soil Indicators:  Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) Histic Epipedon (A2) Histic Epipedon (A2) Loamy Mucky Mineral (F1) (LRR K, L) Loamy Gleyed Matrix (F2) Loamy Gleyed Matrix (F2) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) Redox Depressions (F8) Pic Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Dark Surface (S7) (LRR R, MLRA 149B)  Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or proceeding the present of the	
Hydric Soil Indicators:  Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) Histic Epipedon (A2) Histic Epipedon (A2) Loamy Mucky Mineral (F1) (LRR K, L) Loamy Gleyed Matrix (F2) Loamy Gleyed Matrix (F2) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) Redox Depressions (F8) Pic Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Dark Surface (S7) (LRR R, MLRA 149B)  Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or proceeding the present of the	<del></del>
Hydric Soil Indicators:  Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) Histic Epipedon (A2) Histic Epipedon (A2) Loamy Mucky Mineral (F1) (LRR K, L) Loamy Gleyed Matrix (F2) Loamy Gleyed Matrix (F2) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) Redox Depressions (F8) Pic Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Dark Surface (S7) (LRR R, MLRA 149B)  Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or proceeding the present of the	
Hydric Soil Indicators:  Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) Histic Epipedon (A2) Histic Epipedon (A2) Loamy Mucky Mineral (F1) (LRR K, L) Loamy Gleyed Matrix (F2) Loamy Gleyed Matrix (F2) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) Redox Depressions (F8) Pic Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Dark Surface (S7) (LRR R, MLRA 149B)  Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or proceeding the present of the	
Hydric Soil Indicators:  Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) Histic Epipedon (A2) Histic Epipedon (A2) Loamy Mucky Mineral (F1) (LRR K, L) Loamy Gleyed Matrix (F2) Loamy Gleyed Matrix (F2) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) Redox Depressions (F8) Pic Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Dark Surface (S7) (LRR R, MLRA 149B)  Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or proceeding the present of the	
Hydric Soil Indicators:  Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) 2 Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Co Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Depleted Matrix (F2) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron Sandy Mucky Mineral (S1) Redox Depressions (F8) Pic Sandy Gleyed Matrix (S4) Mucky Mineral (S5) Redox Depressions (F8) Resonant Surface (S7) (LRR R, MLRA 149B) Or Restrictive Layer (if observed):  Type: Rock Polyvalue Below Surface (S8) (LRR R, MLRA 149B) Hydric Soil Present?  Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or proceed to the polyvalue of the present of the p	PL = Pore Lining, M = Matrix.
Histosol (A1) — Polyvalue Below Surface (S8) (LRR R, MLRA 149B) — 2 Histic Epipedon (A2) — Thin Dark Surface (S9) (LRR R, MLRA 149B) — Colomy Mucky Mineral (F1) (LRR K, L) — 5 Hydrogen Sulfide (A4) — Loamy Mucky Mineral (F1) (LRR K, L) — Day Stratified Layers (A5) — Depleted Matrix (F2) — Day Depleted Below Dark Surface (A11) — Redox Dark Surface (F6) — Thick Dark Surface (A12) — Depleted Dark Surface (F7) — Iron Sandy Mucky Mineral (S1) — Redox Depressions (F8) — Pin Sandy Gleyed Matrix (S4) — Mindia Surface (S7) (LRR R, MLRA 149B) — Or Stripped Matrix (S6) — Dark Surface (S7) (LRR R, MLRA 149B) — Or Restrictive Layer (if observed):  Type: Rock — Depth (inches): 16	ors for Problematic Hydric Soils <sup>3</sup> :
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B) Color Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Day Stratified Layers (A5) Depleted Matrix (F3) Po Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron Sandy Mucky Mineral (S1) Redox Depressions (F8) Pi Sandy Gleyed Matrix (S4) MM Sandy Redox (S5) Redox Depressions (F8) Redox Depressions (F8) Pi Sandy Redox (S5) Reform Matrix (S6) Vo Dark Surface (S7) (LRR R, MLRA 149B) Or Restrictive Layer (if observed):  Type: Rock Hydric Soil Present? Remarks:	·
Black Histic (A3) Loamy Mucky Mineral (F1) (LRR K, L) 5 Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Da Stratified Layers (A5) Depleted Matrix (F3) Po Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F7) Irr Sandy Mucky Mineral (S1) Redox Depressions (F8) Pi Sandy Gleyed Matrix (S4) MS Sandy Redox (S5) Re Stripped Matrix (S6) Ve Dark Surface (S7) (LRR R, MLRA 149B) Or  Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or proceeding the process of the proc	m Muck (A10) (LRR K, L, MLRA 149B)
Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Day Stratified Layers (A5) Depleted Matrix (F3) Po Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F7) Iro Sandy Mucky Mineral (S1) Redox Depressions (F8) Pi Sandy Gleyed Matrix (S4) MM Sandy Redox (S5) Redox Stripped Matrix (S6) Ve Dark Surface (S7) (LRR R, MLRA 149B) Or  Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or proceeding the process of	ast Prairie Redox (A16) (LRR K, L, R)
Stratified Layers (A5) Depleted Matrix (F3) Po Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F7) Irro Sandy Mucky Mineral (S1) Redox Depressions (F8) Pi Sandy Gleyed Matrix (S4) M Sandy Redox (S5) Re Stripped Matrix (S6) Ve Dark Surface (S7) (LRR R, MLRA 149B) Or  Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or proceeding the process of the proce	m Mucky Peat or Peat (S3) (LRR K, L, R)
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F7) Iron Sandy Mucky Mineral (S1) Redox Depressions (F8) Pic Sandy Gleyed Matrix (S4) MM Sandy Redox (S5) Respectively Stripped Matrix (S6) Ve Dark Surface (S7) (LRR R, MLRA 149B) On SIndicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or proceedings of the process of the proces	rk Surface (S7) (LRR K, L)
	yvalue Below Surface (S8) (LRR K, L)
Sandy Gleyed Matrix (S4)  Sandy Redox (S5)  Stripped Matrix (S6)  Dark Surface (S7) (LRR R, MLRA 149B)  3Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or proceeding the process of the	n Dark Surface (S9) (LRR K, L)
Sandy Gleyed Matrix (S4) Sandy Redox (S5) Stripped Matrix (S6) Dark Surface (S7) (LRR R, MLRA 149B)  3Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or proceeding the process of the pro	n-Manganese Masses (F12) (LRR K, L, R)
Sandy Redox (S5) Stripped Matrix (S6) Dark Surface (S7) (LRR R, MLRA 149B)  3Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or proceeding the strictive Layer (if observed): Type: Depth (inches): 16  Remarks:	dmont Floodplain Soils (F19) (MLRA 149B)
Stripped Matrix (S6) Vec	sic Spodic (TA6) (MLRA 144A, 145, 149B)
Dark Surface (S7) (LRR R, MLRA 149B) On	d Parent Material (F21)
3Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or pro  Restrictive Layer (if observed):  Type:  Depth (inches):  16  Remarks:  Hydric Soil Present?	y Shallow Dark Surface (TF12)
Restrictive Layer (if observed):  Type: Depth (inches):  Remarks:  Restrictive Layer (if observed):  Hydric Soil Present?  Hydric Soil Present?	ner (Explain in Remarks)
Type: Rock Hydric Soil Present?  Depth (inches): 16  Remarks:	olematic.
Depth (inches): 16  Remarks:	
Remarks:	Yes No

Project/Site: Montague	City/County: Sh	utesbury, Franklin		SamplingDate: 2020-July-31			
Applicant/Owner: W.D. Cowls		State: MA		SamplingPoint: W-GR-20_PFO-1			
Investigator(s): Greg Russo, M	atas R	Section, Township, Range:					
Landform(hillslope,terrace,etc.)	): Depression	Local relief (concave, conv	ex, none):_	Concave	Slope (%): 1 to 3		
Subregion (LRR or MLRA): M	ILRA 144A of LRR R	Lat: 42.465033363	6 Long:	-72.4284641818	Datum: WGS84		
Soil Map Unit Name: Chicheste	er fine sandy loam, 8 to 15 percent s	slopes, very stony		NWI classificatio	on: PFO		
Are climatic/hydrologic conditions	s on the site typical for this time of y	<b>/ear?</b> Yes <u></u> ✓ No	(If no	, explain in Remarks.	)		
Are Vegetation, Soil,	or Hydrology significantly o	disturbed? Are "Norma	al Circumst	ances" present?	Yes No		
Are Vegetation, Soil,	or Hydrology naturally pro	blematic? (If needed,	explain any	y answers in Remarks	5.)		
SUMMARY OF FINDINGS – A	ttach site map showing samp	ling point locations, trar	sects, im	portant features,	etc.		
Hydrophytic Vegetation Present?	Yes _✓_ No						
Hydric Soil Present?	Yes No	Is the Sampled Area withi	n a Wetland	d? Yes	No		
Wetland Hydrology Present?	Yes No	If yes, optional Wetland Si	te ID:	W-0	GR-20		
	ocedures here or in a separate repo						
	·						
Covertype is PFO. Area is wetland	d, all three wetland parameters are	present.					
HADBUI UCA							
HYDROLOGY							
Wetland Hydrology Indicators:							
Primary Indicators (minimum of o	<u>one is required; check all that apply</u>	1	Secondary	Indicators (minimum	of two required)		
Surface Water (A1)	<u></u> Water-Stained L	eaves (B9)	Surface	e Soil Cracks (B6)			
High Water Table (A2)	Aquatic Fauna (I	313)		ainage Patterns (B10)			
∕ Saturation (A3)	Marl Deposits (E	315)	_∕ Moss Trim Lines (B16)				
Water Marks (B1)	Hydrogen Sulfid		Dry-Season Water Table (C2) oots (C3) Crayfish Burrows (C8)				
Sediment Deposits (B2)	Oxidized Rhizos	pheres on Living Roots (C3)		n Burrows (C8) tion Visible on Aerial	Imageny (CO)		
Duilt Danasita (D2)	Dunning of Don				0 ,		
Drift Deposits (B3) Algal Mat or Crust (B4)	Presence of Red	uction in Tilled Soils (C6)		_ Stunted or Stressed Plants (D1) _ Geomorphic Position (D2)			
Iron Deposits (B5)	Thin Muck Surfa			_ Geomorphic Position (D2) _ Shallow Aquitard (D3)			
Inundation Visible on Aerial Ir			opographic Relief (D4	•			
Sparsely Vegetated Concave S	· · ·	. remarks,		eutral Test (D5)	,		
Field Observations:				· -/			
Surface Water Present?	Yes No <u></u> ✓ Dept	:h (inches):					
Water Table Present?		th (inches):	Wetland H	lydrology Present?	Yes No		
Saturation Present?		th (inches):		., a. o.og, coc			
	163 <u>v</u> 100 Dept	(Inches)					
(includes capillary fringe)							
Describe Recorded Data (stream	gauge, monitoring well, aerial phot	os, previous inspections), if a	available:				
Remarks:							
The criterion for wetland hydrolo	gy is met.						
1							

	Absolute	Dominant	Indicator	Dominance Test worksheet:		
<u>Tree Stratum</u> (Plot size: <u>30 ft</u> )		Species?	Status	Number of Dominant Species That		
1. Acer rubrum	60	Yes	FAC	Are OBL, FACW, or FAC:	3	(A)
2.		163	FAC	Total Number of Dominant Species		
				Across All Strata:	3	(B)
3.				Percent of Dominant Species That	400	(4 (5)
4.				Are OBL, FACW, or FAC:	100	(A/B)
5.				Prevalence Index worksheet:		
6				Total % Cover of:	Multiply	By:
7				OBL species 0	x 1 =	0
	60	_= Total Cove	r	FACW species 65	x 2 =	130
Sapling/Shrub Stratum (Plot size:15 ft)				FAC species 60	x 3 =	180
1. <i>Vaccinium corymbosum</i>	50	Yes	FACW	FACU species 0	x 4 =	0
2				UPL species 0	x5=	0
3.					_	
4.					(A) _	310 (B)
5.				Prevalence Index = B/A =	2.5	
6.				Hydrophytic Vegetation Indicators:		
	_			1- Rapid Test for Hydrophytic	Vegetation	
7	 50	- Total Covo	<u> </u>	2 - Dominance Test is >50%		
		= Total Cove	ſ	✓ 3 - Prevalence Index is ≤ 3.01		
Herb Stratum (Plot size: <u>5 ft</u> )		.,	=	4 - Morphological Adaptations	1 (Provide	supporting
1. Osmundastrum cinnamomeum	15	Yes	FACW	data in Remarks or on a separate s	neet)	
2				Problematic Hydrophytic Vege	etation¹ (Ex	plain)
3				<sup>1</sup> Indicators of hydric soil and wetlar	nd hydrolog	gy must be
4				present, unless disturbed or proble	matic	
5.				Definitions of Vegetation Strata:		
6.				Tree – Woody plants 3 in. (7.6 cm) o	r more in o	diameter at
7.				breast height (DBH), regardless of h		
8.				Sapling/shrub – Woody plants less	_	BH and
9.				greater than or equal to 3.28 ft (1 m		
				Herb – All herbaceous (non-woody)		ardless of
	_			size, and woody plants less than 3.2	28 ft tall.	,
				Woody vines – All woody vines grea	ter than 3.	28 ft in
12				height.		
	15	_= Total Cove	r	Hydrophytic Vegetation Present?	Vac / N	0
Woody Vine Stratum (Plot size: 30 ft )				Trydrophydic vegetation i resent:	163 1	o
1						
2						
3						
4						
	0	= Total Cove	r			
Demarks: (Include abote numbers here or on a sense	ata shaat \	_				
Remarks: (Include photo numbers here or on a separ		20/ - 6 -1 !		induced as ODL FACIAL as FAC)		
A positive indication of hydrophytic vegetation was o	oservea (>50	J% of domina	int species	indexed as OBL, FACW, or FAC).		

	cription: (Describe	to the d	•			ndicato	or confirm the al	bsence of indicat	tors.)
Depth	Matrix		Redox				<b>-</b> .		5 .
(inches)	Color (moist)	<u>%</u>	Color (moist)	<u>%</u>	Type <sup>1</sup>	Loc <sup>2</sup>	Texture		Remarks
0 - 10	10YR 2/2	100					Silty Clay		
10 - 20	2.5Y 4/2	60	10YR 4/4	40	C	M	Silty Clay	/ Loam	
				. —					
				. —					
				. —					
				. —					
				. —					
				. —					
				. —					
				. —					
	Concentration, D =	Depletion	on, RM = Reduced	d Mati	rix, MS =	Masked	Sand Grains. <sup>2</sup> Lo		e Lining, M = Matrix.
Hydric Soil						a		Indicators for F	Problematic Hydric Soils <sup>3</sup> :
Histoso			•				R, MLRA 149B)		(A10) (LRR K, L, MLRA 149B)
	oipedon (A2) istic (A3)		Thin Dark Su Loamy Muck					· <del></del>	ie Redox (A16) <b>(LRR K, L, R)</b>
	en Sulfide (A4)		Loamy Gleye	-		(LINNIN, I	-)	-	y Peat or Peat (S3) <b>(LRR K, L, R)</b>
, 0	d Layers (A5)		Depleted Ma						ce (S7) <b>(LRR K, L)</b>
	d Below Dark Surf	ace (A11	•						Selow Surface (S8) (LRR K, L)
Thick D	ark Surface (A12)		Depleted Da	rk Su	face (F7)				Surface (S9) <b>(LRR K, L)</b> anese Masses (F12) <b>(LRR K, L, R)</b>
Sandy N	Mucky Mineral (S1)		Redox Depre	essior	ıs (F8)				Floodplain Soils (F19) <b>(MLRA 149B)</b>
Sandy 0	Gleyed Matrix (S4)								lic (TA6) <b>(MLRA 144A, 145, 149B)</b>
_	Redox (S5)							Red Parent	
	d Matrix (S6)								w Dark Surface (TF12)
Dark Su	ırface (S7) <b>(LRR R, N</b>	MLRA 14	9B)						lain in Remarks)
3Indicators	of hydrophytic veg	getation	and wetland hyd	rolog	/ must be	e preser	it, unless disturbe	d or problematio	Ξ.
	Layer (if observed)			<u> </u>	•	ĺ		·	
	Type:		None			Hydric	Soil Present?		Yes No
	Depth (inches):			-					
Remarks:	•					•			
A positive i	ndication of hydric	soll was	s observed.						
1									

Project/Site: Montague	(	City/County: Shutesbury, Franklin SamplingDate: 2020					
Applicant/Owner: W.D. Cowl	s		State: MA	SamplingPoir	nt: W-GR-20_UPL-1		
Investigator(s): Greg Russo, M	Matas R		Section, Township,	Range:			
Landform(hillslope,terrace,etc	.): Hillslope		Local relief (concave, conv	ex, none): None	Slope (%): 1 to 3		
• · <u> </u>	MLRA 144A of LRR R			1 Long: -72.428567698	B3 Datum: WGS84		
Soil Map Unit Name: Chichest				NWI class	sification: None		
Are climatic/hydrologic conditior		-		(If no, explain in Rer			
Are Vegetation, Soil,	or Hydrology	-		al Circumstances" present			
Are Vegetation, Soil,	or Hydrology	_ naturally prob	lematic? (If needed,	explain any answers in Re	emarks.)		
SUMMARY OF FINDINGS – A	Attach site map sh	owing sampli	ng point locations, trar	nsects, important feat	tures, etc.		
Hydrophytic Vegetation Present	? Yes	No _ <b>_</b> _					
Hydric Soil Present?	Yes	No _ <b>_</b> _	Is the Sampled Area withi	n a Wetland?	Yes No		
Wetland Hydrology Present?	Yes	_ No _ <b>_</b>	If yes, optional Wetland S	ite ID:			
Covertype is UPL. Area is upland	d, not all three wetlan	d parameters ar	e present.				
HYDROLOGY  Wetland Hydrology Indicators:  Primary Indicators (minimum of	one is required; che	ck all that apply)		Secondary Indicators (mi	inimum of two required)		
Surface Water (A1)	·	Vater-Stained Lea	aves (RO)	Surface Soil Cracks (B	•		
High Water Table (A2)		quatic Fauna (B1		Drainage Patterns (B	·		
Saturation (A3)		farl Deposits (B1		Moss Trim Lines (B16	5)		
Water Marks (B1)		lydrogen Sulfide		Dry-Season Water Table (C2)			
Sediment Deposits (B2)	0	xidized Rhizospl	heres on Living Roots (C3)	Crayfish Burrows (C8)			
				Saturation Visible on	<b>3</b> ,		
Drift Deposits (B3)		resence of Redu		Stunted or Stressed F			
Algal Mat or Crust (B4) Iron Deposits (B5)		hin Muck Surface	ction in Tilled Soils (C6)	<ul><li>Geomorphic Position</li><li>Shallow Aquitard (D3</li></ul>			
Inundation Visible on Aerial		)ther (Explain in I		Microtopographic Re			
Sparsely Vegetated Concave	<b>0</b> ,	zerer (Explain iii i	nemarks)	FAC-Neutral Test (D5)			
Field Observations:							
Surface Water Present?	Yes No _ <b>_</b>	Depth	(inches):				
Water Table Present?	Yes No _ <b>_</b>	•	(inches):	- Wetland Hydrology Pres	ent? Yes No		
Saturation Present?	Yes No/		(inches):				
(includes capillary fringe)	103 100	_ Берит		=			
Describe Recorded Data (stream	n gauge, monitoring v	veii, aeriai prioto	s, previous inspections), ii a	avallable:			
The criterion for wetland hydrol	ogy is not met.						
The criterion for wedaria hydror	ogy is not met.						

	<b>A.</b>			Demain and a Test weedlich act.		
<u>Tree Stratum</u> (Plot size: <u>30 ft</u> )		Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That		
1 Pipus strobus	30	Species?	FACU	Are OBL, FACW, or FAC:	0	(A)
1. Pinus strobus	15	Yes	FACU	Total Number of Dominant Species		
Fagus grandifolia     Tsuga canadensis	10	Yes		Across All Strata:	4	(B)
		No	FAC	Percent of Dominant Species That		(A (B)
4				Are OBL, FACW, or FAC:	0	(A/B)
5				Prevalence Index worksheet:		
6				Total % Cover of:	<u>Multiply</u>	<u>By:</u>
7				OBL species 0	x 1 =	0
	55	= Total Cov	er	FACW species 0	x 2 =	0
Sapling/Shrub Stratum (Plot size: 15 ft )				FAC species 10	x 3 =	30
1. Fagus grandifolia	25	Yes	FACU	FACU species 105	x 4 =	420
2. <u>Viburnum lantanoides</u>	5	No	FACU	UPL species 0	x 5 =	0
3. <i>Quercus alba</i>	5	No	FACU	Column Totals 115	(A)	450 (B)
4				Prevalence Index = B/A =	3.91	
5						<del></del> -
6				Hydrophytic Vegetation Indicators: 1- Rapid Test for Hydrophytic	Vogotation	
7				2 - Dominance Test is > 50%	vegetation	1
	35	= Total Cov	er			
Herb Stratum (Plot size:5 ft)				3 - Prevalence Index is ≤ 3.01	1 (Dravida	cupporting
1. Maianthemum canadense	25	Yes	FACU	4 - Morphological Adaptations data in Remarks or on a separate s		supporting
2.				Problematic Hydrophytic Vege		(nlain)
3.				Indicators of hydric soil and wetlar	-	
4.				present, unless disturbed or proble	, ,	gy must be
5.				Definitions of Vegetation Strata:	matic	
6.				Tree – Woody plants 3 in. (7.6 cm) o	r more in	diameter at
7.				breast height (DBH), regardless of h		diameter at
8.				Sapling/shrub - Woody plants less	_	OBH and
9.				greater than or equal to 3.28 ft (1 m		5511 ana
10.				Herb – All herbaceous (non-woody)		gardless of
				size, and woody plants less than 3.2		<b>5</b>
11				Woody vines – All woody vines grea		.28 ft in
12	25	- Total Cau		height.		
NA 1 NE SC 1 (DL 1 206 )	25	= Total Cov	er	Hydrophytic Vegetation Present?	Yes N	
Woody Vine Stratum (Plot size: 30 ft )				.,,		
1						
2.						
3						
4						
	0	= Total Cov	er			
Remarks: (Include photo numbers here or on a separa	ate sheet.)	)				
No positive indication of hydrophytic vegetation was obser	ved (≥50%	of dominan	t species ind	lexed as FAC- or drier). Per the MA W	PA, easterr	n hemlock is
considered a wetland indicator species. Therefore, it has	been assig	ned an indic	ator status o	of "FAC" instead of "FACU."		
•						

Profile Desc Depth	cription: (Describe Matrix	to the d	epth needed to d Redox			indicato	or confirm the al	bsence of indicators.)
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
0 - 14	10YR 4/3	100		· <del>· · ·</del>	576-		Silt Loam	
14 - 20	2.5YR 5/6	100		_			Silt Loam	
				_				
				_				
				_				
				_				
	-		-	_			-	
				_			-	
				_				
				_				
				_				
				_				
 ¹Tvne: C = C	Concentration, D =	 Depletic	n RM = Reduced	Mat	rix MS =	Masked	Sand Grains 21.0	ocation: PL = Pore Lining, M = Matrix.
Hydric Soil		Depiction	, ran radaced	iviat	, 1413 -	Maskeu	Sana Granis. Li	Indicators for Problematic Hydric Soils <sup>3</sup> :
Histosol			Polyvalue Re	ow S	iurface (S	(8) <b>(I RR</b>	R, MLRA 149B)	•
	oipedon (A2)		Thin Dark Su		•		•	2 cm Muck (A10) (LRR K, L, MLRA 149B)
Black Hi			Loamy Muck					Coast Prairie Redox (A16) (LRR K, L, R) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
Hydroge	en Sulfide (A4)		Loamy Gleye	d Ma	trix (F2)			5 cm Mucky Peat of Peat (55) (LRR K, L, K) Dark Surface (S7) (LRR K, L)
Stratifie	d Layers (A5)		Depleted Ma	trix (l	F3)			Polyvalue Below Surface (S8) (LRR K, L)
	d Below Dark Surf	ace (A11						Thin Dark Surface (S9) (LRR K, L)
	ark Surface (A12)		Depleted Dar			)		Iron-Manganese Masses (F12) (LRR K, L, R)
	lucky Mineral (S1)		Redox Depre	ssior	ıs (F8)			Piedmont Floodplain Soils (F19) (MLRA 149B)
-	ileyed Matrix (S4)							Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
-	edox (S5)							Red Parent Material (F21)
	d Matrix (S6)							Very Shallow Dark Surface (TF12)
Dark Su	rface (S7) <b>(LRR R, N</b>	MLRA 14	9B)					Other (Explain in Remarks)
<sup>3</sup> Indicators	of hydrophytic veg	getation	and wetland hydr	olog	y must b	e preser	it, unless disturbe	d or problematic.
Restrictive I	_ayer (if observed)	:						
	Type:		None			Hydric	Soil Present?	Yes No <u>_</u> ✓
	Depth (inches):							
Remarks:	-							
No positive	indication of hydr	ic soils w	vas observed.					

# ATTACHMENT D NHESP Certified Vernal Pool Documentation





#### DIVISION OF FISHERIES & WILDLIFE

1 Rabbit Hill Road, Westborough, MA 01581 p: (508) 389-6300 | f: (508) 389-7890

MASS.GOV/MASSWILDLIFE

April 15, 2021

Molly Lennon **Environmental Scientist** TRC: 650 Suffolk St Lowell, MA 01854

Re: Certified Vernal Pool # 643 in Shutesbury, MA

Dear Molly Lennon,

The Massachusetts Natural Heritage and Endangered Species Program (NHESP) received your public documents request via email, on April 2, 2021 for information related to Certified Vernal Pool # 643 in Shutesbury; specifically, you requested:

1. documentation that led to the certification of the vernal pool

A search of NHESP files and records has been completed and attached are eight (8) pages of public records relative to your request. The records attached herein include the NHESP Vernal Pool Certification Forms and copies of the biological and physical documentation, and maps submitted for the certification of these pools. There were two projector slides submitted for this pool in the original documentation. Due to remote working and technology limitations, we are unable to convert these slides to digital format currently. We can attempt to make these slides available to you if necessary, please let us know.

Please note that personal phone numbers have been withheld pursuant to the privacy exemption in accordance with G.L. c. 4 s. (7)(26)(c).

If you have any questions about the enclosed materials or would like to request additional public records related to Certified Vernal Pools # 643, please contact Information Manager, Sarah Maier, at sarah.maier@mass.gov. Should you wish to challenge MassWildlife's response, you may appeal to the Supervisor of Public Records in accordance with 950 CMR 32.08(1), and you may seek judicial review of an unfavorable decision by commencing a civil action in the superior court.

Sincerely,

Everose Schlüter, Ph.D.

vase Schliete

Assistant Director

Massachusetts Division of Fisheries & Wildlife

Attached: CVP643\_CertForm.pdf, CVP643\_ObsForm\_Maps\_Redacted.pdf

# Natural Heritage & Endangered Species Program

# VERNAL POOL CERTIFICATION FORM

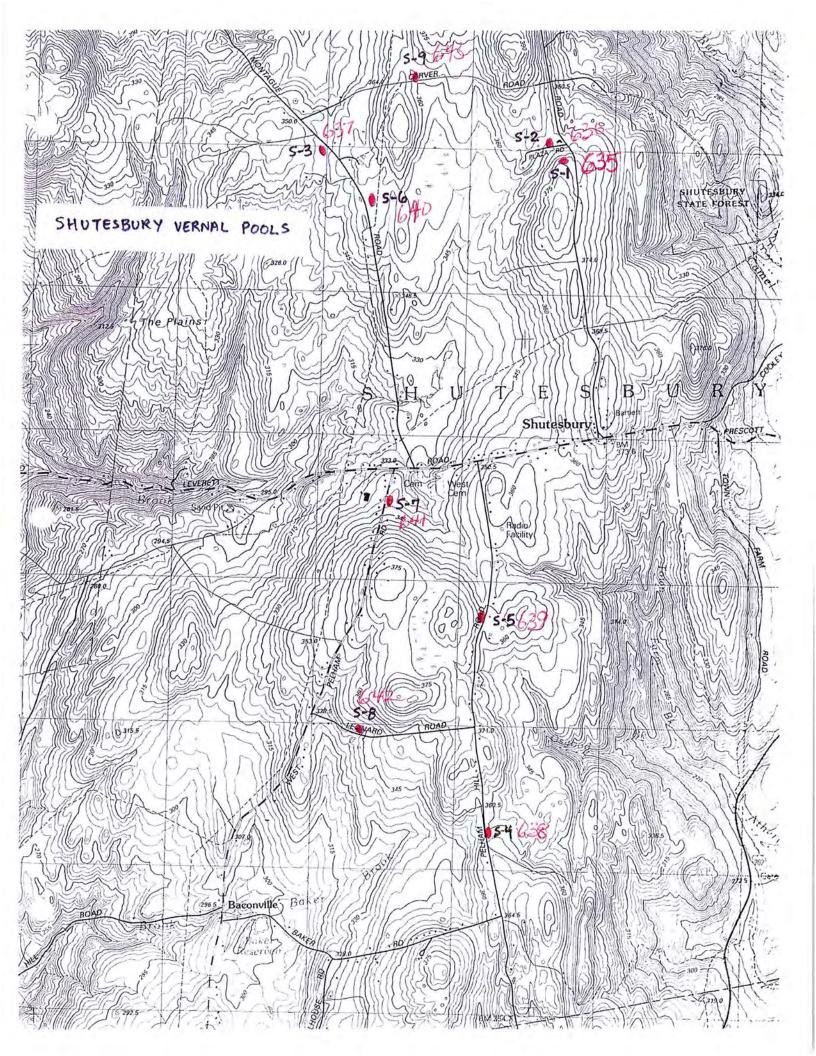
Cert	ified Pool Number <u>643</u>
Town/City: SHUTESBURY	Date of Certification: 9-9-94
USGS topographic	Date Documentation
map name: SHUTESBURY	Submitted: <u>4-28-94</u>
Date Conservation Commission an	d DEP notified: 9-12-94
Directions to site: N SIDE OF C LAST HOUSE (CZERWONKA) ON CARVE	ARVER RD, APPROXIMATELY 1500' E FROM 2ND AND R RD (NEAR MONTAGUE RD)
Name of property owner(s) as in	dicated on assessor's map: LOT #D-67
The following items are being a	ttached to this form
	ing location of the vernal pool
XX Assessor's map (or other	property map) showing location of the pool ances to the pool from permanent landmarks
	00 scale topographic map showing location
Professional survey showi	of the pool
XX Sketch map or description	of the immediate vicinity of the pool
Documented Biological Indicator	s Accepted by NHESP
XX Obligate amphibian specie	s (mole salamanders/wood frogs)
Obligate invertebrate spe Facultative amphibian/rep	cies (fairy shrimp)
Facultative invertebrate	species
Other wildlife	
XX Obligate amphibian specie Obligate invertebrate spe Facultative amphibian/rep Facultative invertebrate Other wildlife Wetland plants	
	of the presence of rare state-listed wildlife itat.
Wetland Resource Area Information	on (to be determined by Conservation Commission)
Land Subject to Flooding	(100-year floodplain)
Isolated Land Subject to	Flooding
Bordering Vegetated Wetla Land Under Water Body (pe	na rmanent nond)
Coastal Dune/Barrier Beac	h
Town Wetland Bylaw	
Land Subject to Flooding Isolated Land Subject to Bordering Vegetated Wetla Land Under Water Body (pe Coastal Dune/Barrier Beac Town Wetland Bylaw No jurisdiction	

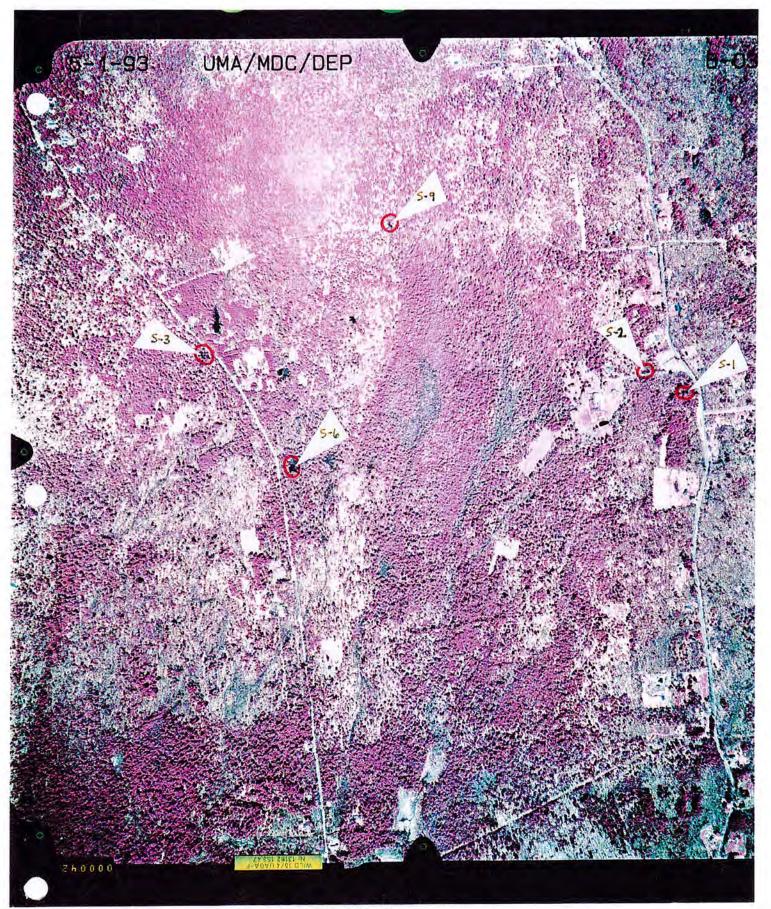
### VERNAL POOL FIELD OBSERVATION FORM

IMPORTANT: This form <u>must</u> be signed on the back	prior to submittal.
Observer's name: Junice S. Stone	Qualifications of observer
Address: III Montagne Rd	<pre>(check all that apply) Amateur naturalist</pre>
Shutesbury , MA 01012	Yrs. of experience: Attended MA Audubon Soc. vernal pool training session Biology/science teacher
Telephone number:  Observation date(s): 5-7-93 4-10-99  Town/City containing vernal pool: Shutesbury	Environmental consultant Conserv. Comm. member Bachelor's in Biology Master's in Biology Ph. D. in Biology Other (specify below) Researched UPs for Mastheses
Name and address of landowner (if indicated on a W.D. Cowls?   w+ # 27	assessor's map):
Which of the following are you submitting in add a USGS 7-1/2' topographical map which shows the  Distance and direction to the pool from at  Aerial photograph  Professional survey	dition to an assessor's map and location of the vernal pool:
Optional material being submitted:  Sketch map or description of area in immedi	ate vicinity of vernal pool
What evidence are you presenting for the exister  Photograph of pool of standing water Sinder  Photograph of confined basin depression lace  Statement of direct observation (sign approximately that on 5-7-93+4-20  I hereby certify that on 5-7-93+4-20  standing water without an above-ground outly vernal pool. (signature)	# 18 king standing water priate statement below): -44 enter date) I observed a pool of et at the location of this proposed
I hereby certify that on( lacking standing water at the location of t clearly contained a confined basin depressi (signature)	
Which of the following biological/physical crite Obligate vernal pool-breeding amphibians (see Fairy shrimp (obligate species) Facultative vernal pool amphibians/turtles/i (see guidelines for complete list of accept Facultative vernal pool mollusks/plants + ca (see guidelines for complete list of accept	e species list on back) nvertebrates able species)

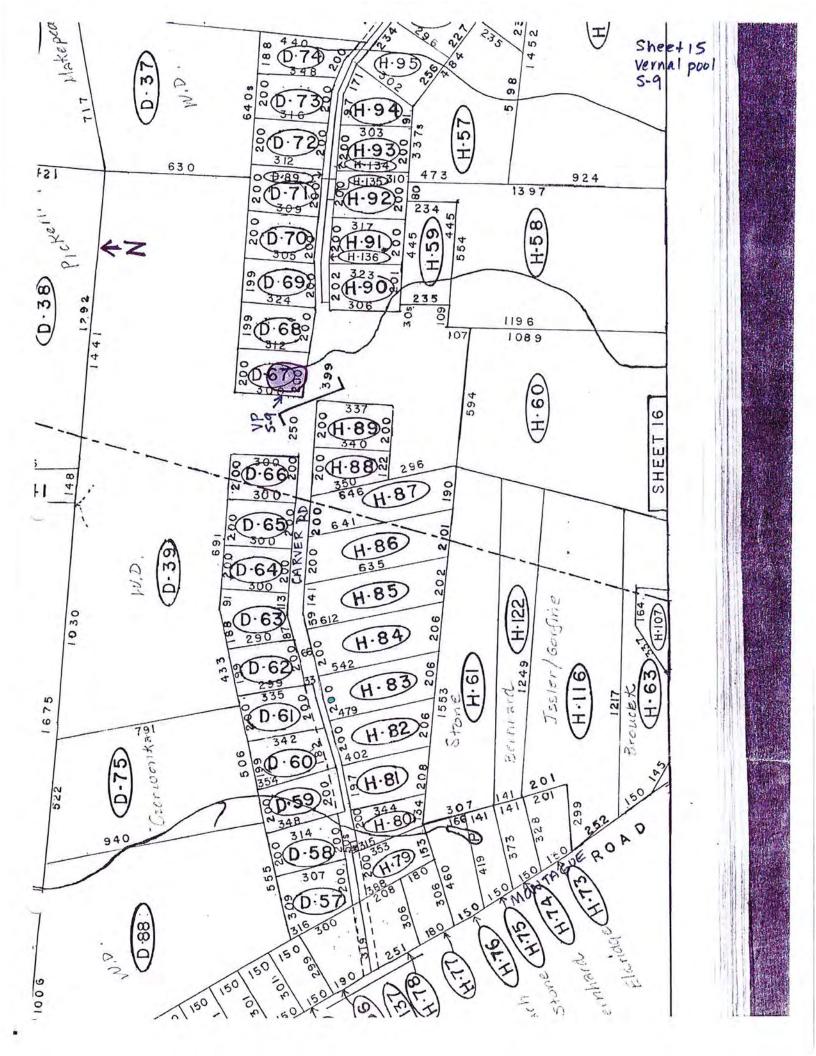
Photograph(s) (Preferred met Videotape recording Tape recording of frog breed Detailed description(s) Field notes (limited to biol Herbarium specimen(s) (plant Other (specify)	ling chorus ogists competent in speci	es identification)
How did you confirm that the propopulations (not required if evi I observed that the pool areI am submitting a photographOther (specify):	dence of obligate vernal pea was dry on	pool species is presente (indicate date)
Obligate vernal pool-breeding amphibian species observed:  Wood Frog Spotted Salamander Jefferson Salamander Blue-spotted Salamander Silvery Salamander Tremblay's Salamander Marbled Salamander Unidentified mole salamander If obligate vernal pool species that you observed in the propose	were not observed, list t	Breeding criteria: 1. Breeding chorus 2. Mated pairs 3. Courting adults 4. Spermatophores 5. Egg masses 6. Frog tadpoles 7. Salamander larvae 8. Transforming juveniles he facultative species
40		
I hereby certify under pains and contained in this report is true Signature	e and complete to the best	t the information of my knowledge.

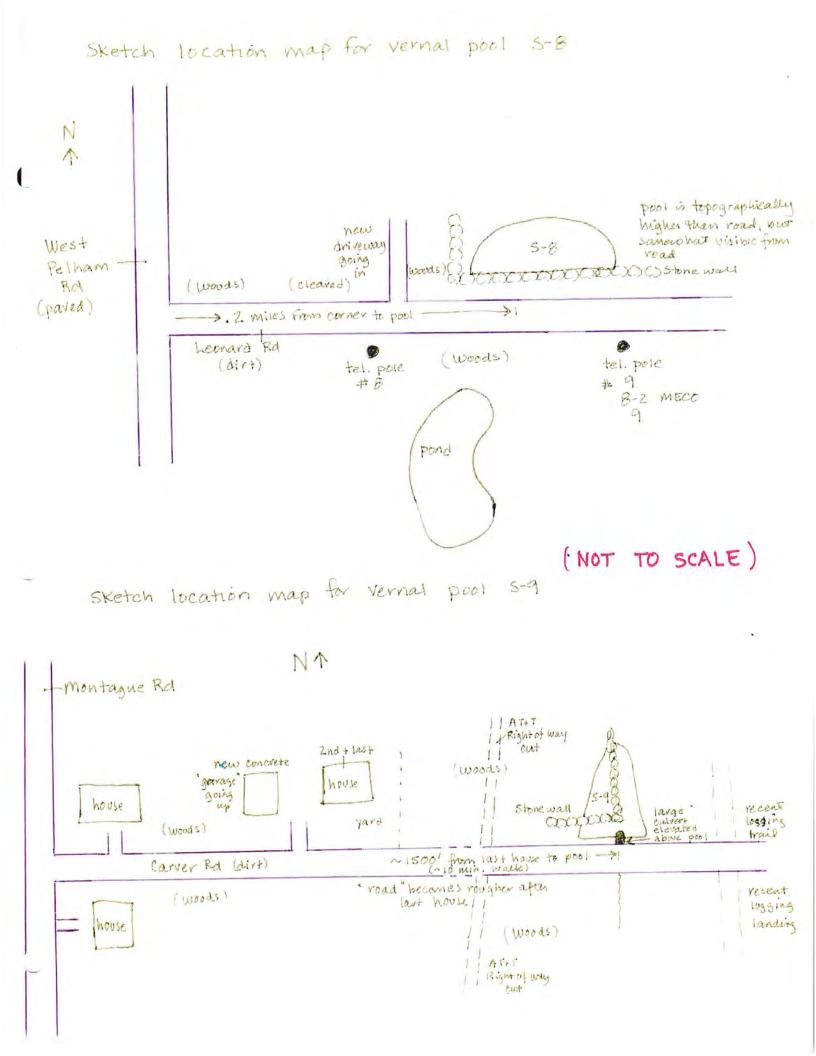
Vernal Pool Certification
Natural Heritage and Endangered Species Program
MA Division of Fisheries and Wildlife
100 Cambridge Street
Boston, MA 02202
617-727-9194





SHUTESBURY VERNAL POOLS
1:12,000 Scale CIR
Photo
taken 5-1-93





Vernal Pool S-9 detailed map A red maple tre NA 0 1993 spotted salamander egg masses (SEM) X 1993 wood frog egg masses (WFEM)(1 0 1994 SEM (2) Store Wall OCOOC X 00 black cutvert carver Rd Suspended above pool

Not a Auto

# ATTACHMENT E Additional Vernal Pool Photographs



Photograph: 1

Date: 4/29/2020

Direction: South

Description:

Typical conditions observed in vernal pool VP1. Several egg masses can be seen in this photo. Approximately eight egg masses were in the vernal pool, and they were all likely wood frog eggs.



Photograph: 2

Date: 4/17/2020

Direction: N/A

Description:

Wood frog egg mass in vernal pool VP1.





Photograph: 3

Date: 4/29/2020

Direction: North

Description:

Typical conditions observed in vernal pool VP2. A couple egg masses can be seen in this photo. There were approximately five egg masses that were likely all spotted salamander.



Photograph: 4

Date: 4/29/2020

Direction: North

Description:

Egg mass in vernal pool VP2. The egg mass is likely a spotted salamander mass.





Photograph: 5

Date: 4/29/2020

Direction: North

Description:

Typical conditions observed in vernal pool VP3. Several egg masses can be seen in this photo. Approximately four egg masses were found in vernal pool VP3 and were likely all spotted salamander.



Photograph: 6

Date: 4/29/2020

Direction: East

Description:

Typical conditions observed in vernal pool VP4. Multiple egg masses can be seen in this photo. Approximately 55 egg masses were found in vernal pool VP4 consisting primarily of spotted salamander egg masses and several wood frog egg masses.





Photograph: 7

Date: 4/29/2020

Direction: North

Description:

A clump of multiple spotted salamander egg masses in vernal pool VP4 can be seen in this photo.



Photograph: 8

Date: 4/29/2020

Direction: North

Description:

Typical conditions observed in vernal pool VP5. A clump of multiple egg masses can be seen in this photo.
Approximately 28 egg masses were found in vernal pool VP5 mostly consisting of spotted salamander egg masses and several wood frog egg masses.





# ATTACHMENT F Abutter Information (Certified Abutter List, Abutter Map & Abutter Notification)

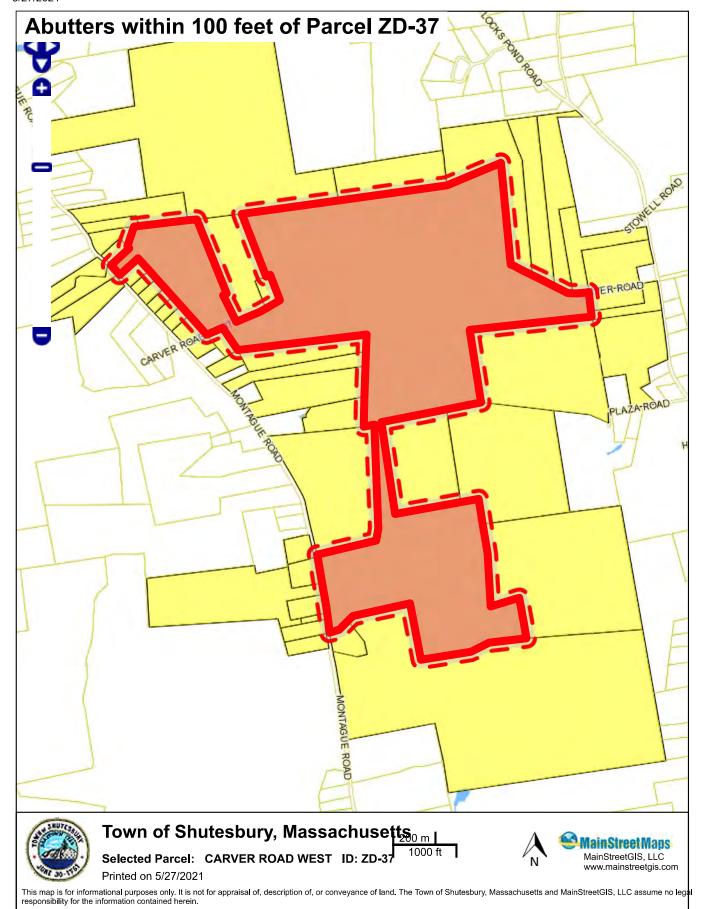


MAP	LOT	OWNER	MAILING ADDRESS	CITY	STATE	ZIP	LOCATION
D	27	ROGALSKI, STEPHEN J & ROGALSKI, MICHELE	429 MONTAGUE ROAD	SHUTESBURY	MA	01072	429 MONTAGUE ROAD
D	36	DOWNEY, JACQUELYN V	24 WILMETTE AVENUE	ORMOND BEACH	FL	32174	15 CARVER ROAD EAST
D	38	PICKERING, TIMOTHY A	829 MAIN STREET	AMHERST	MA	01002	CARVER ROAD WEST
D	42	MAKEPEACE, JUDITH A c/o MAKEPEACE-O'NEIL, MELISSA	P.O. BOX 215	SHUTESBURY	MA	01072	35 LADYSLIPER LANE
D	43	MAKEPEACE-O'NEIL, MELISSA	315 WEST PELHAM ROAD	SHUTESBURY	MA	01072	30 LADYSLIPPER LANE
D	44	DEMETRE, CAROLE A	P.O. BOX 678	SHUTESBURY	MA	01072	14 LADYSLIPPER LANE
D	47	CROWE, MICHAEL	140 LOVEFIELD STREET	EASTHAMPTON	MA	01027	401 MONTAGUE ROAD
D	48	FITZPATRICK, GREGORY & FITZPATRICK, ANDREA	397 MONTAGUE ROAD	SHUTESBURY	MA	01072	397 MONTAGUE ROAD
		c/o PERCIVAL, TYLER J & MCINTIRE, ALISON M					
D	50	DEVINE, DAVID RII	387 MONTAGUE ROAD	SHUTESBURY	MA	01072	387 MONTAGUE ROAD
D	51	ALDRICH, SARAH M & ALDRICH, MICHAEL R	383 MONTAGUE ROAD	SHUTESBURY	MA	01072	383 MONTAGUE ROAD
D	52	CAMBELL, MELISSA	375 MONTAGUE ROAD	SHUTESBURY	MA	01072	375 MONTAGUE ROAD
D	53	HOHOLIK, AARON P & GARCIA, MONICA	367 MONTAGUE ROAD	SHUTESBURY	MA	01072	367 MONTAGUE ROAD
D	54	JELLERETTE, TERU	361 MONTAGUE ROAD	SHUTESBURY	MA	01072	361 MONATGUE ROAD
D	55	FONTOS, CARLOS I c/o FONTES FAMILY TRUST	359 MONTAGUE ROAD	SHUTESBURY	MA	01072	359 MONTAGUE ROAD
D	56	SEMLER, MICHAEL G	6 CARVER ROAD WEST	SHUTESBURY	MA	01072	6 CARVER ROAD WEST
D	61	CZWEWONKA, KAREN (CUSTODIAN)	40 CARVER ROAD WEST	SHUTESBURY	MA	01072	CARVER ROAD WEST
		CZERWONKA, LEONARD & LYNDA			1		
D	94	MCGRATH, CHRISTINE	423 MONTAGUE ROAD	SHUTESBURY	MA	01072	421-423 MONTAGUE ROAD
F	26	KELLOGG, JEREMY G & RASKEVITZ, WENDY A	194 MONTAGUE ROAD	SHUTESBURY	MA	01072	194 MONTAGUE ROAD
F	73	KELLOG, JEREMY	194 MONTAGUE ROAD	SHUTESBURY	MA	01072	MONTAGUE ROAD
F	74	WALTER, JOHN F & WALTER, ALICIA	216 MONTAGUE ROAD	SHUTESBURY	MA	01072	216 MONTAGUE ROAD
F	79	BROSTROM, CARA E & OCKERBERG, CHRISTOPHER B	398 MONTAGUE ROAD	SHUTESBURY	MA	01072	398 MONTAGUE ROAD
F	80	SMITH, LESLEY A & REDONNET, EDWARD C	180 MONTAGUE ROAD	SHUTESBURY	MA	01072	180 MONTAGUE ROAD
	80	TRUSTEES, THE EDWARD REDONNET REVOCABLE TRUST	180 WICH TAGUE ROAD	SHUTESBURT	IVIA	01072	180 WONTAGUE ROAD
F	81	GURLEY, NORA L	196 MONTAGUE ROAD	SHUTESBURY	MA	01072	196 MONTAGUE ROAD
F	83	STONE, JANICE G	1523 LAIRD STREET	KEY WEST	FL	33040	390 MONTAGUE ROAD
-	63	TRUSTEE, JONES FAMILY TRUST	1323 LAIRD STREET	KLT WLST	I L	33040	350 WONTAGUE ROAD
F	93	MONTTI, ROGER & REIL, JENNIFER L	226 MONTAGUE ROAD	SHUTESBURY	MA	01072	226 MONTAGUE ROAD
F	97	DONTA, CHRISTOPHER & JAMIE	204 MONTAGUE ROAD	SHUTESBURY	MA	01072	204 MONTAGUE ROAD
Н	102	NOONAN, ELIZABETH E & NOONAN, MARY K	6 CARVER ROAD EAST	SHUTESBURY	MA	01072	6 CARVER ROAD EAST
Н	107	BROUCEK, JOHN C	297 MONTAGUE ROAD	SHUTESBURY	MA	01072	297 MONTAGUE ROAD
Н	116	WAHL, LARA	305 MONTAGUE ROAD	SHUTESBURY	MA	01072	305 MONTAGUE ROAD
Н	118	CAREY, KEVIN L & CAREY, KATHRYN A	P.O. BOX 21	SHUTESBURY	MA	01072	39 PLAZA ROAD
Н	125				-	19107	
		STEVEN 168 LLC	222 NORTH CAMAC STREET	PHILADELPHIA	PA		16 CARVER ROAD EAST
H	167	RICHARD, RENEE A	P.O. BOX 14	SHUTESBURY	MA	01072	175 MONTAGUE ROAD
H	45	CAREY, KEVIN L & CAREY, KATHRYN A	P.O. BOX 21	SHUTESBURY	MA	01072	WENDELL ROAD
H	50	COOK, THOMAS J	13 EMERSON COURT	AMHERST	MA	01002	MONTAGUE ROAD
H	52	CAREY, KEVIN L & CAREY, KATHRYN A	P.O. BOX 21	SHUTESBURY	MA	01072	PLAZA ROAD
H	53	HAYES, JOHANNA C/O HAYES, JOHANNA LIFE ESTATE	P.O. BOX 133	SHUTESBURY	MA	01072	PLAZA ROAD
H	56	PLAZA, NAME M & PLAZA, JANE L	P.O. BOX 511	SHUTESBURY	MA	01072	314 WENDELL ROAD
H	61	STONE, RANDALL & STONE, JANICE	321 MONTAGUE ROAD	SHUTESBURY	MA	01072	MONTAGUE ROAD
H	76	VLACH, PAUL A & VLACH, MARI L	325 MONTAGUE ROAD	SHUTESBURY	MA	01072	325 MONTAGUE ROAD
Н	78	MCKENZIE, JOSEPH L & TRAVIS J.	330 COLEBROOK ROAD	FREDERICKSBVERG	VA	22405	341 MONTAGUE ROAD
		MCKENZIE, MOLLY J	<u> </u>				1
H	79	KORZA, EDWARD JR	12 FOXGLOVE LANE	AMHERST	MA	01002	MONTAGUE ROAD
ZD	25	MILLER, HEATHER C	16 HILLS ROAD	AMHERST	MA	01002	MONTAGUE ROAD
ZD	37	W D COWLS INC	P.O. BOX 97677	NORTH AMHERST	MA	01059	CARVER ROAD WEST
ZD	59	CZERWONKA, KAREN L	40 CARVER ROAD WEST	SHUTESBURY	MA	01072	40 CARVER ROAD WEST
		TRUSTEE, CZERWONK, WILLIAM T & KAREN L			1		
ZD	80	LUCAS, TYLER B & FOGG, TANIA F	37 CARVER ROAD EAST	SHUTESBURY	MA	01072	37 CARVER ROAD EASR
ZF	82	SAPORITO, JOHN A & TIGHE-SAPORITO, MARGARET	394 MONTAGUE ROAD	SHUTESBURY	MA	01072	394 MONTAGUE ROAD
ZH	36	RICHTER, SCOTT S & RICHTER, VERONICA A	153 MONTAGUE ROAD	SHUTESBURY	MA	01072	153 MONTAGUE ROAD
ZH	74	BERNHARD JOHN GARY, TRUSTEE	315 MONTAGUE ROAD	SHUTESBURY	MA	01072	315 MONTAGUE ROAD
		JOHN GARY BERNHARDF DECLARATION OF TRUST					

100 FT ABUTTERS LIST TO PARCEL ZD-37 PREPARED FOR MOLLY LENNON

Kevin Rudden Administrative Assessor

Hen N. Peller 5/27/2021



1/1

## 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: <u>W.D. Cowls, Inc.</u>
C.	The address/lot number of the land where the activity is proposed: <u>Carver Road West, Shutesbury, MA (Parcel ID: ZD-37)</u>
D.	The proposed activity is: Review of delineated wetland resources.
E.	A Public Hearing regarding this ANRAD will be held on: October 14, 2021
F.	Information on the meeting location will be available here:
	https://www.mytowngovernment.org/01072

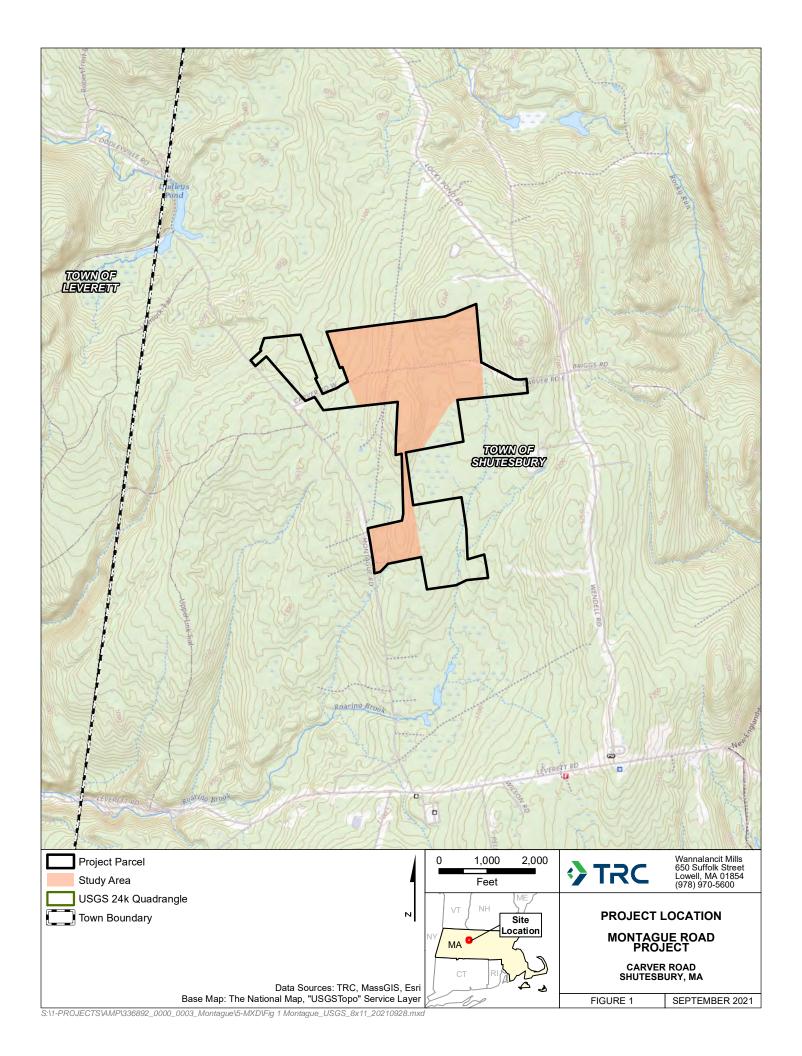
G. The ANRAD may be examined on the Shutesbury Conservation Commission website: shutesbury.org/concom. A paper copy may be obtained, for a fee, from the Shutesbury Town Clerk: townclerk@shutesbury.org or 413.259.1204. Copies may also be obtained from the applicant or the applicant's representative.

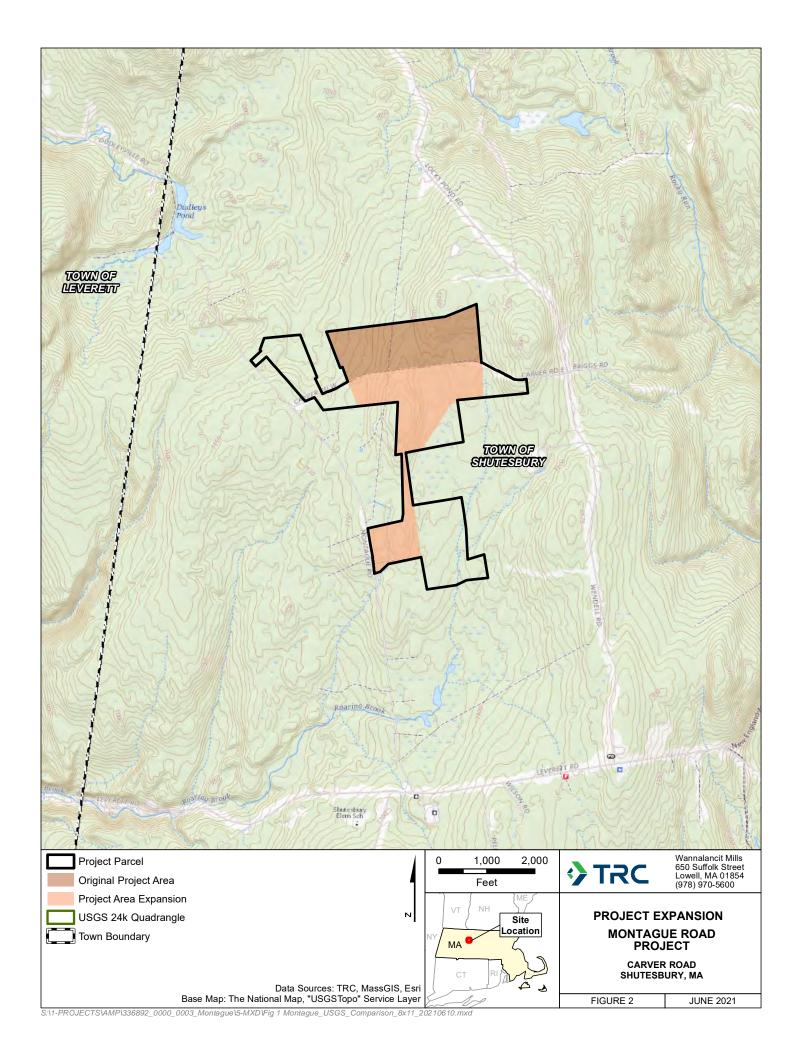
Notice of the public hearing, including date, time, and place will be published at least five business days in advance in <u>Greenfield Recorder</u> or the <u>Hampshire Daily Gazette</u>.

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.

### ATTACHMENT G Locus Maps (June & September 2021)

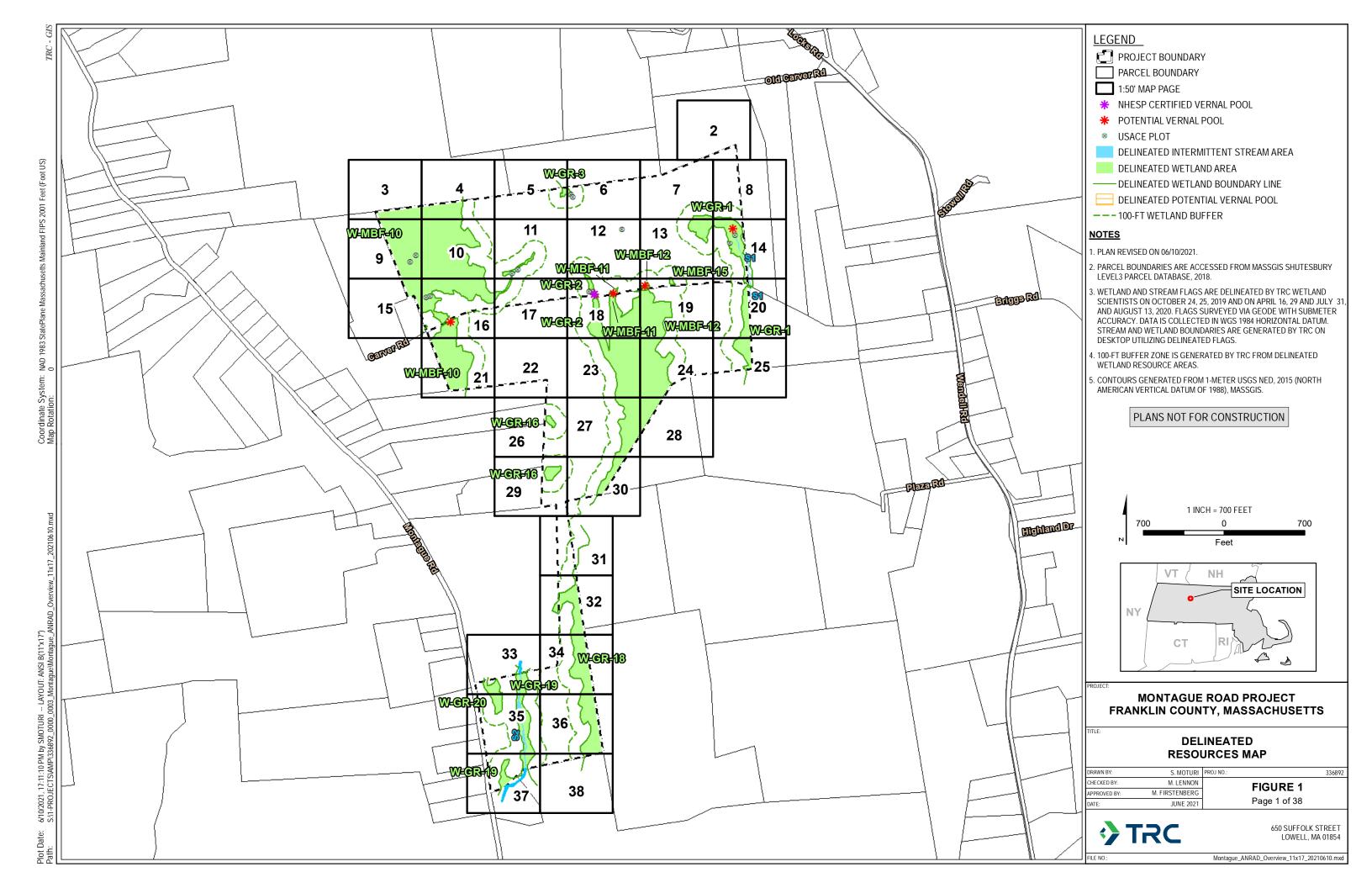


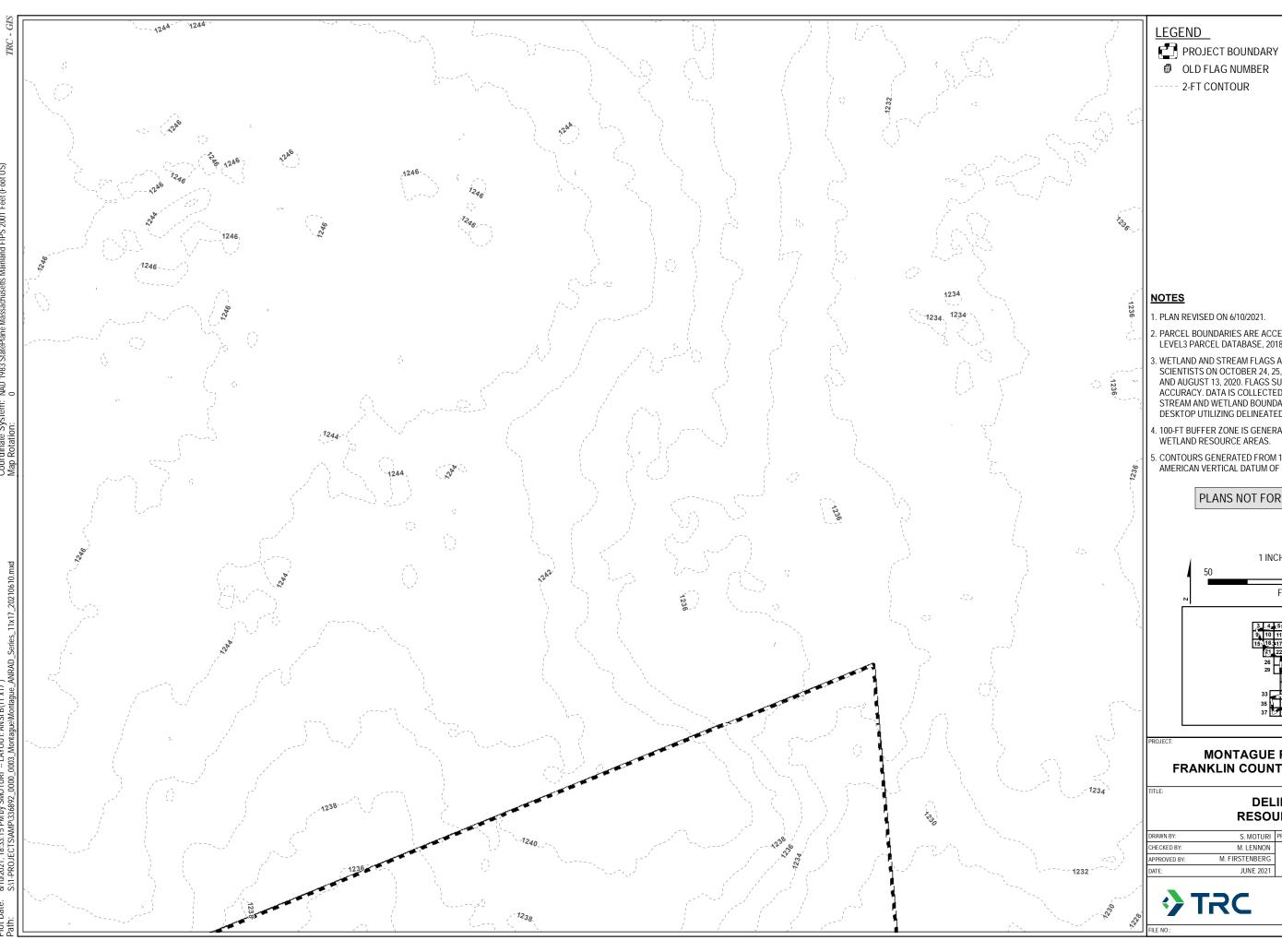




# ATTACHMENT H Figure 1: Delineated Resources Map (June 2021)





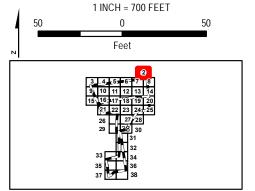


OLD FLAG NUMBER

2-FT CONTOUR

- 1. PLAN REVISED ON 6/10/2021.
- 2. PARCEL BOUNDARIES ARE ACCESSED FROM MASSGIS SHUTESBURY LEVEL3 PARCEL DATABASE, 2018.
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- 4. 100-FT BUFFER ZONE IS GENERATED BY TRC FROM DELINEATED WETLAND RESOURCE AREAS.
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#### PLANS NOT FOR CONSTRUCTION



MONTAGUE ROAD PROJECT FRANKLIN COUNTY, MASSACHUSETTS

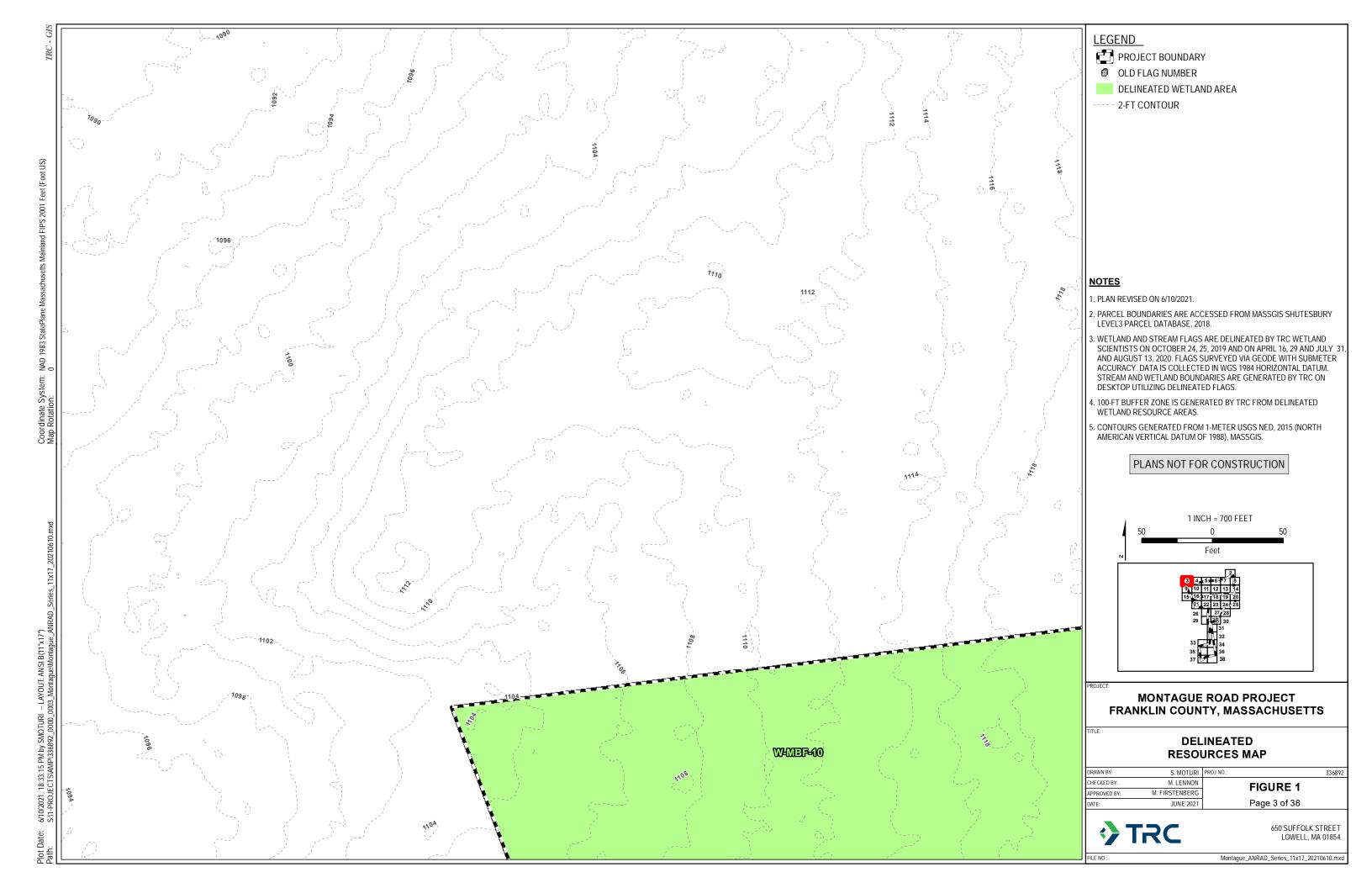
#### **DELINEATED RESOURCES MAP**

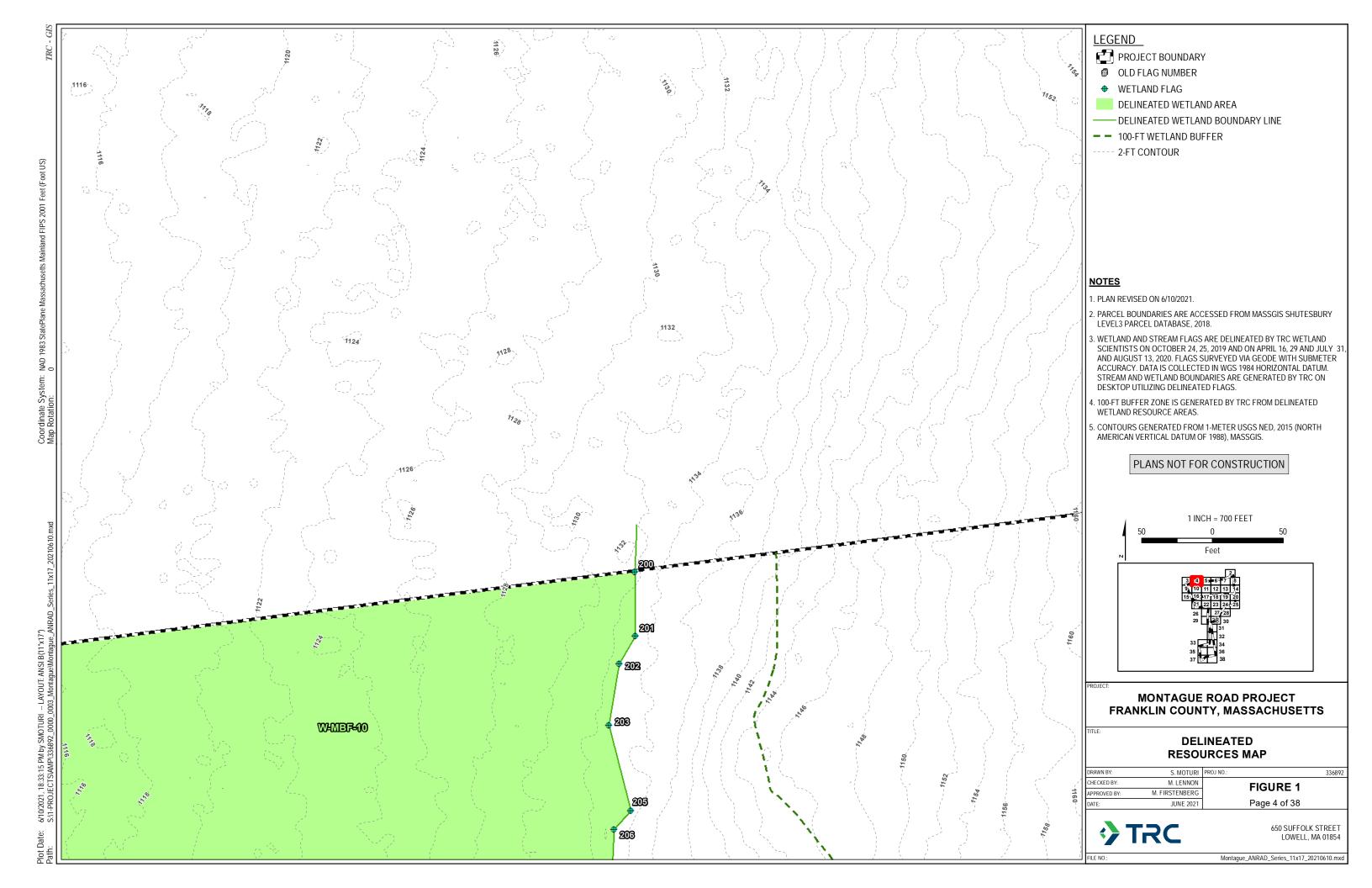
DRAWN BY:	S. MOTURI	Р
CHECKED BY:	M. LENNON	
APPROVED BY:	M. FIRSTENBERG	
DATE:	JUNE 2021	

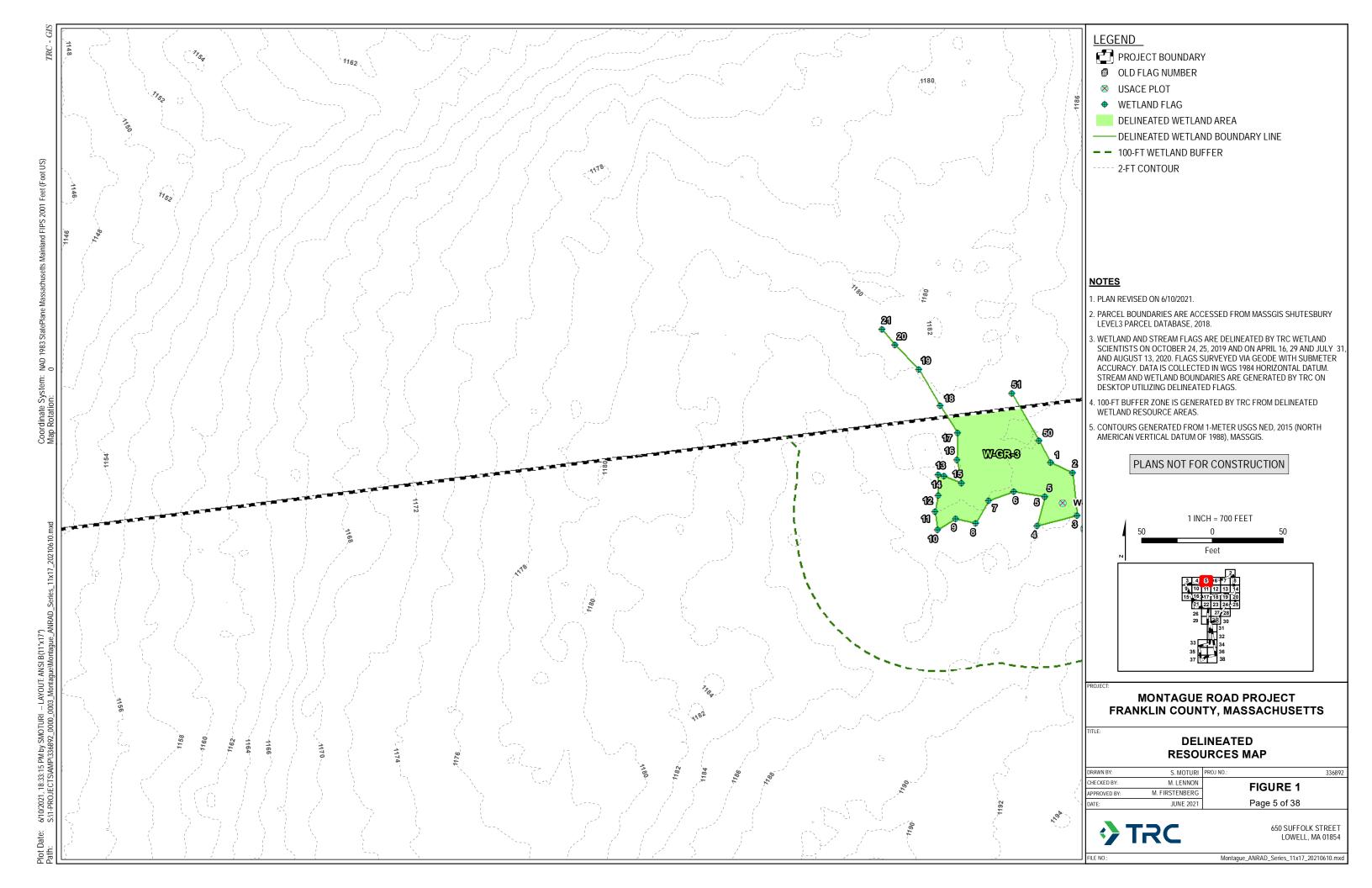
FIGURE 1 Page 2 of 38

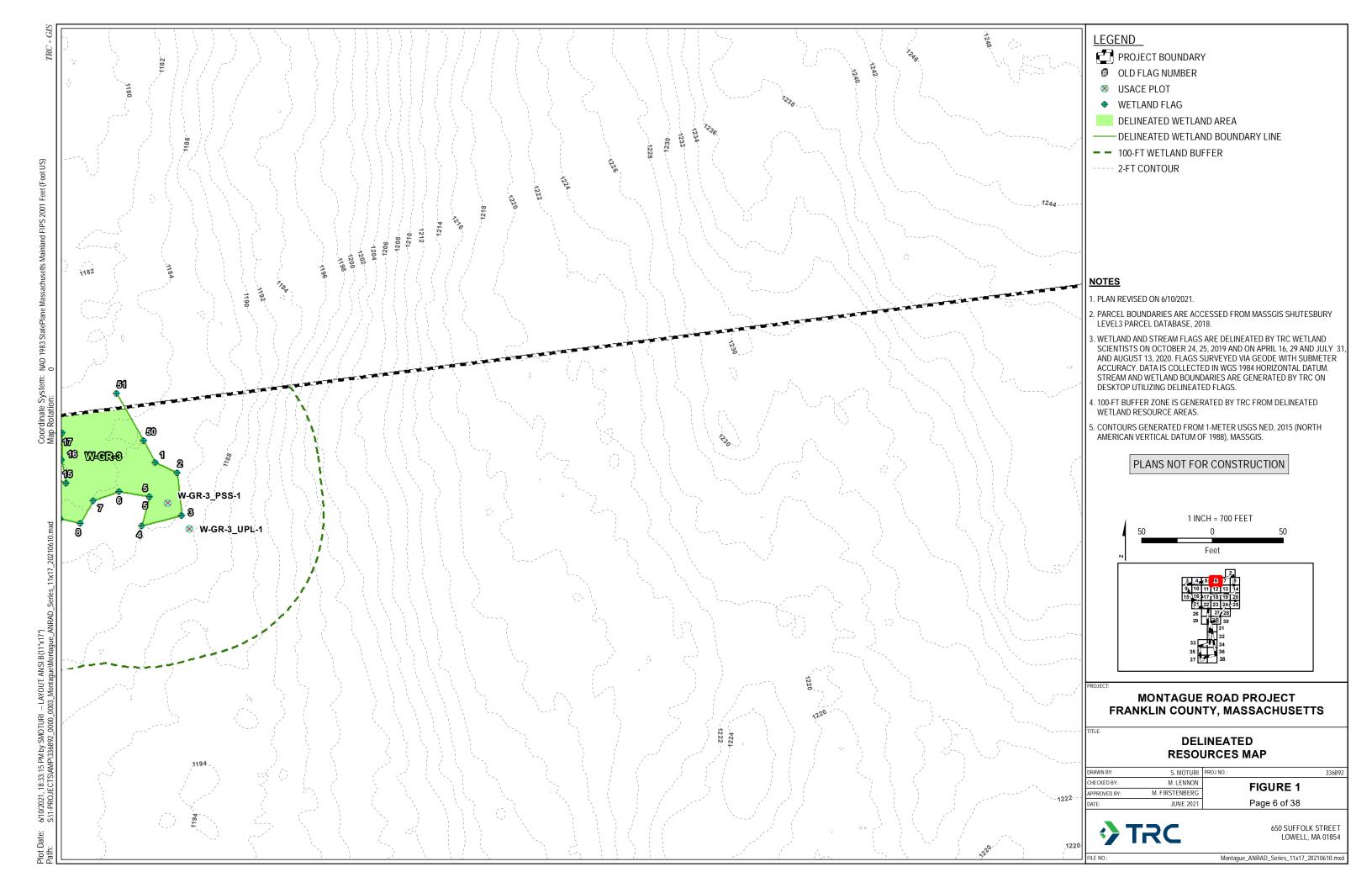
650 SUFFOLK STREET LOWELL, MA 01854

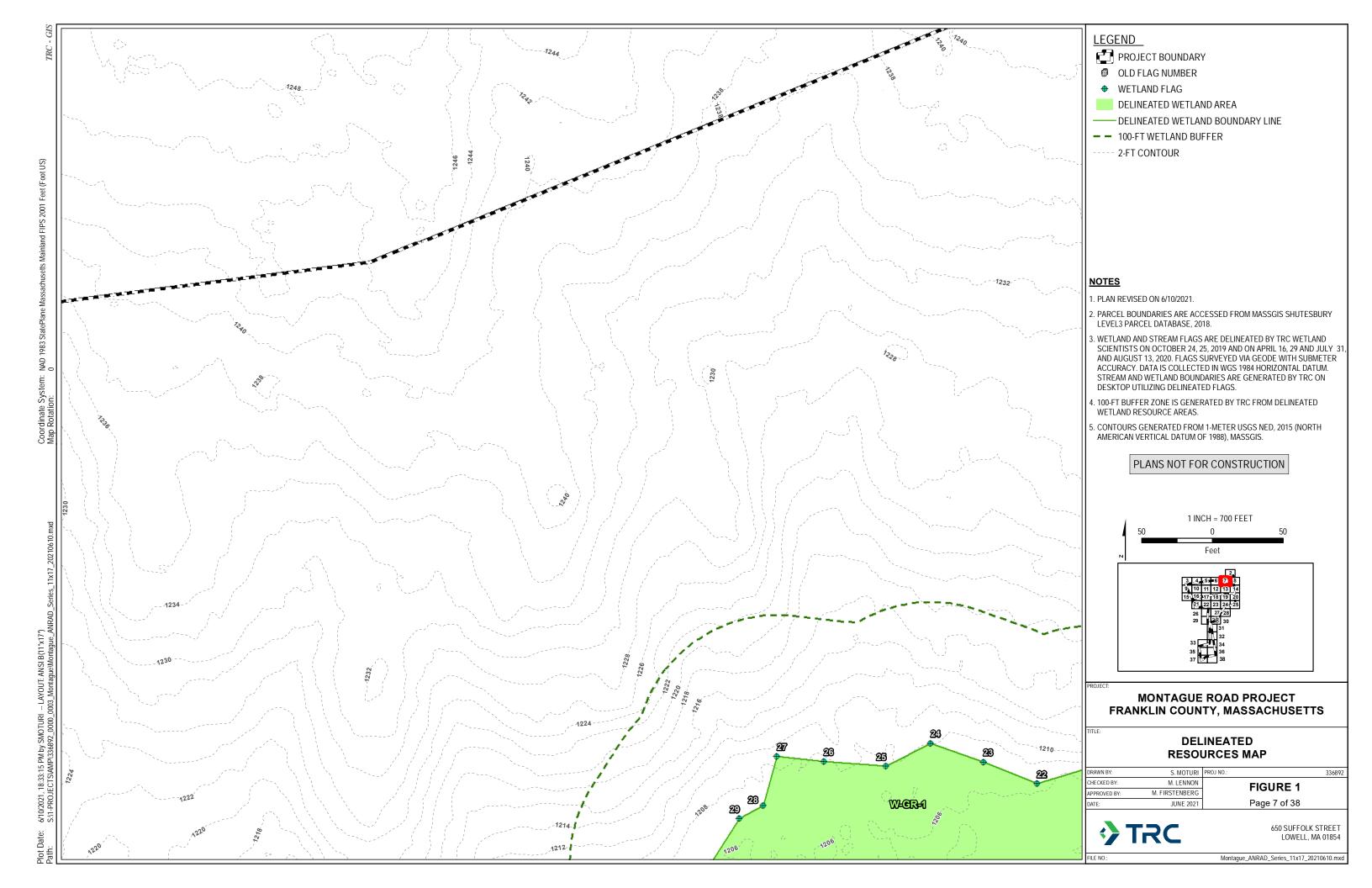
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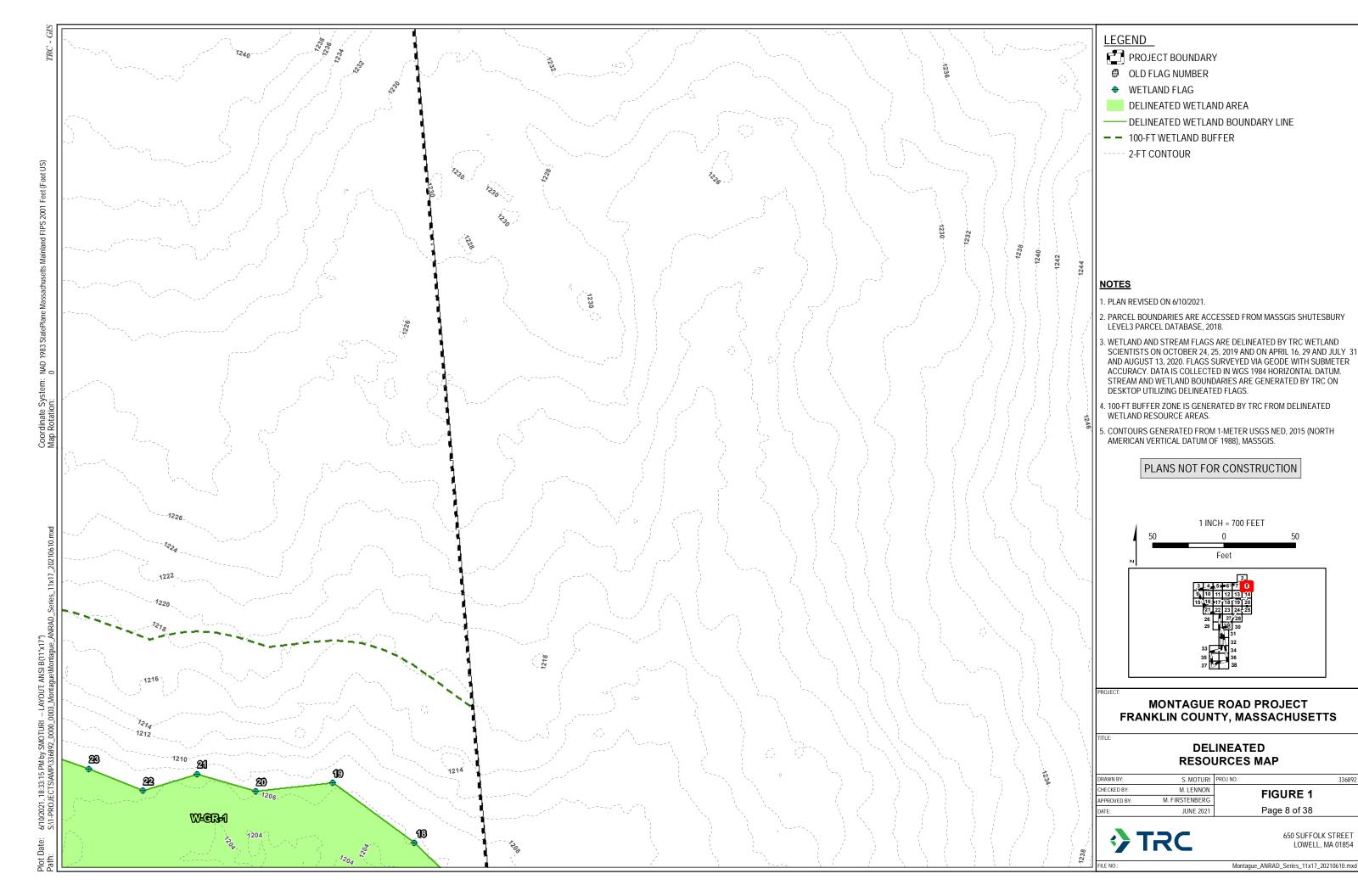


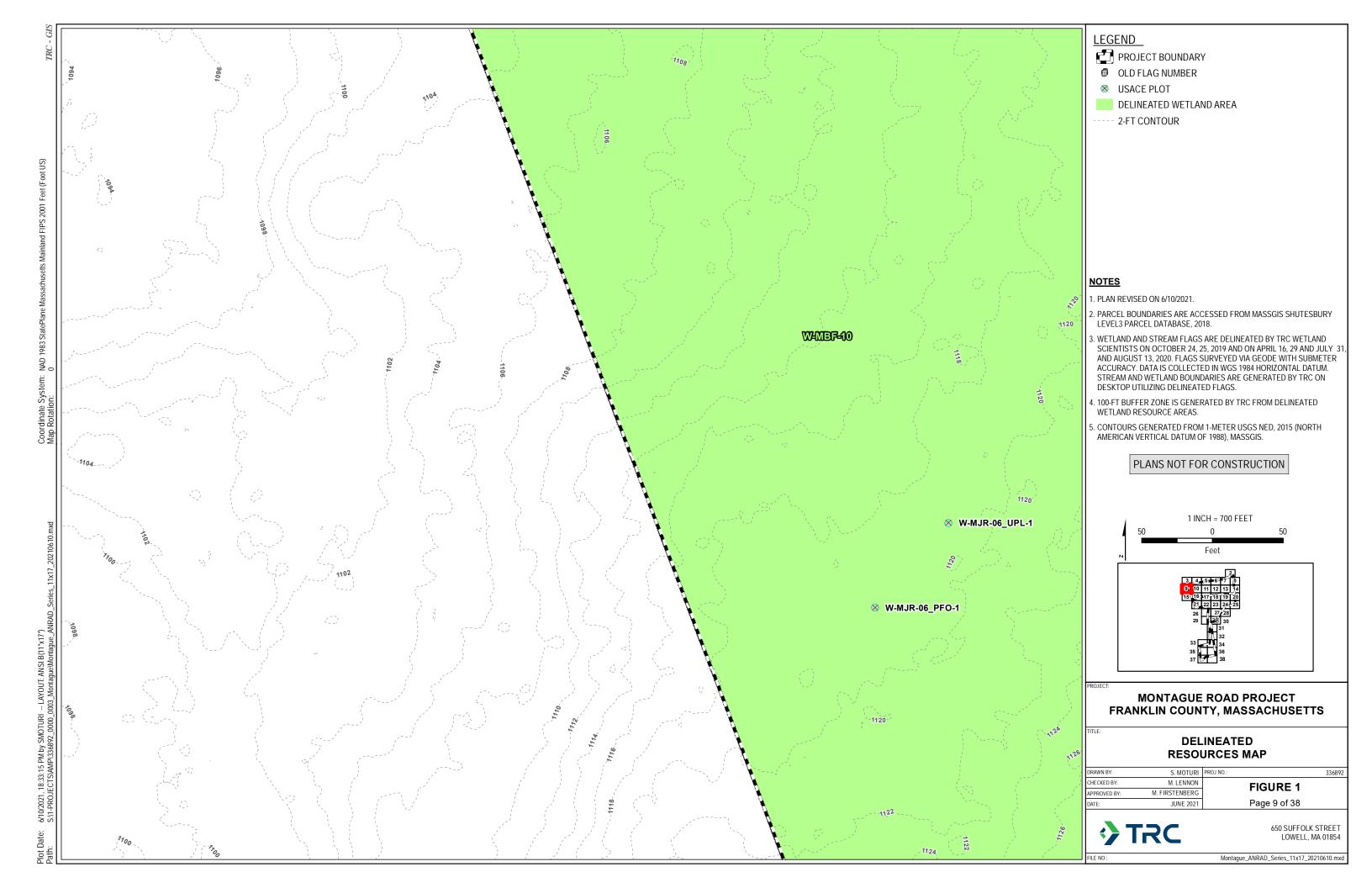


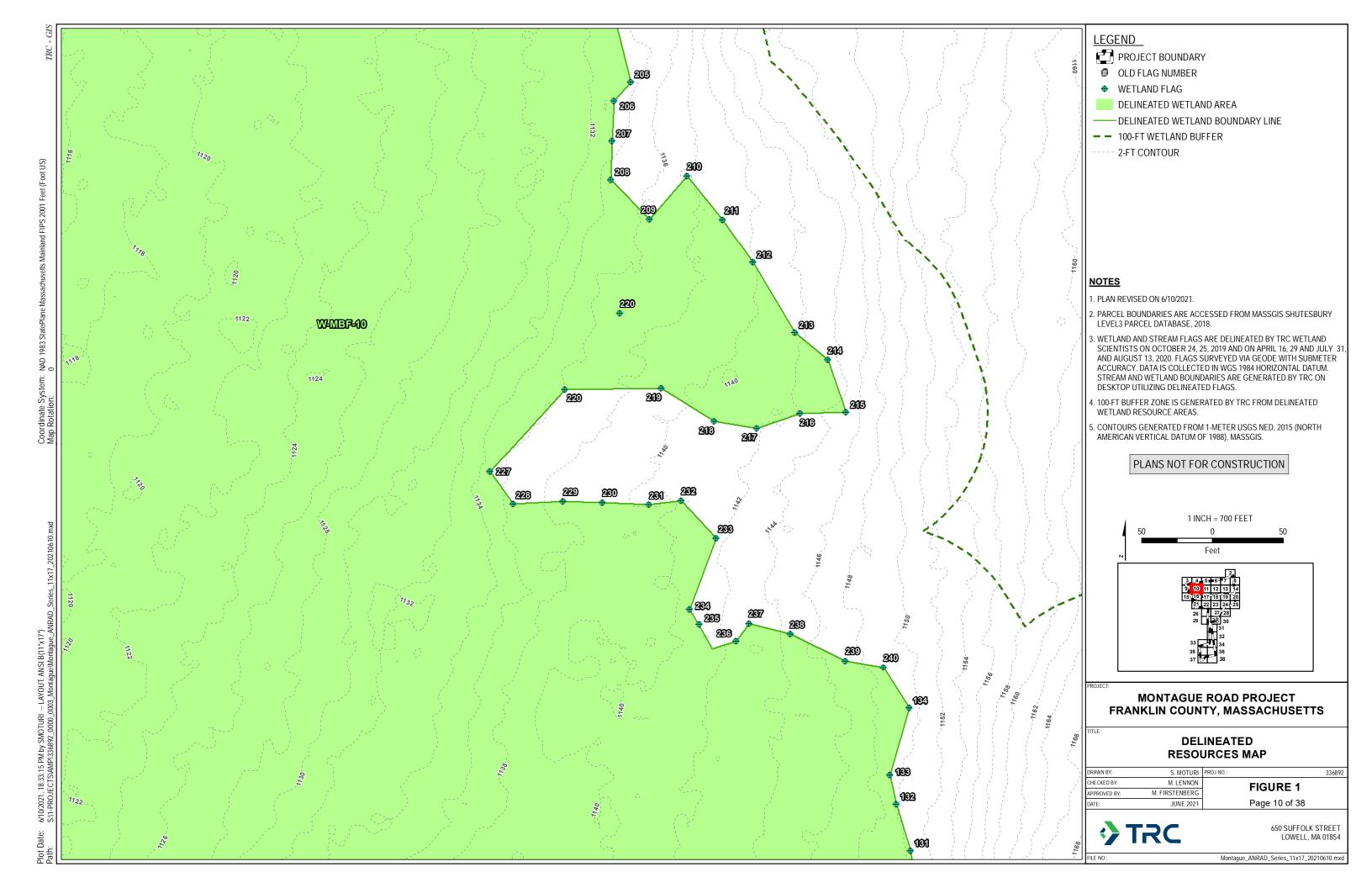


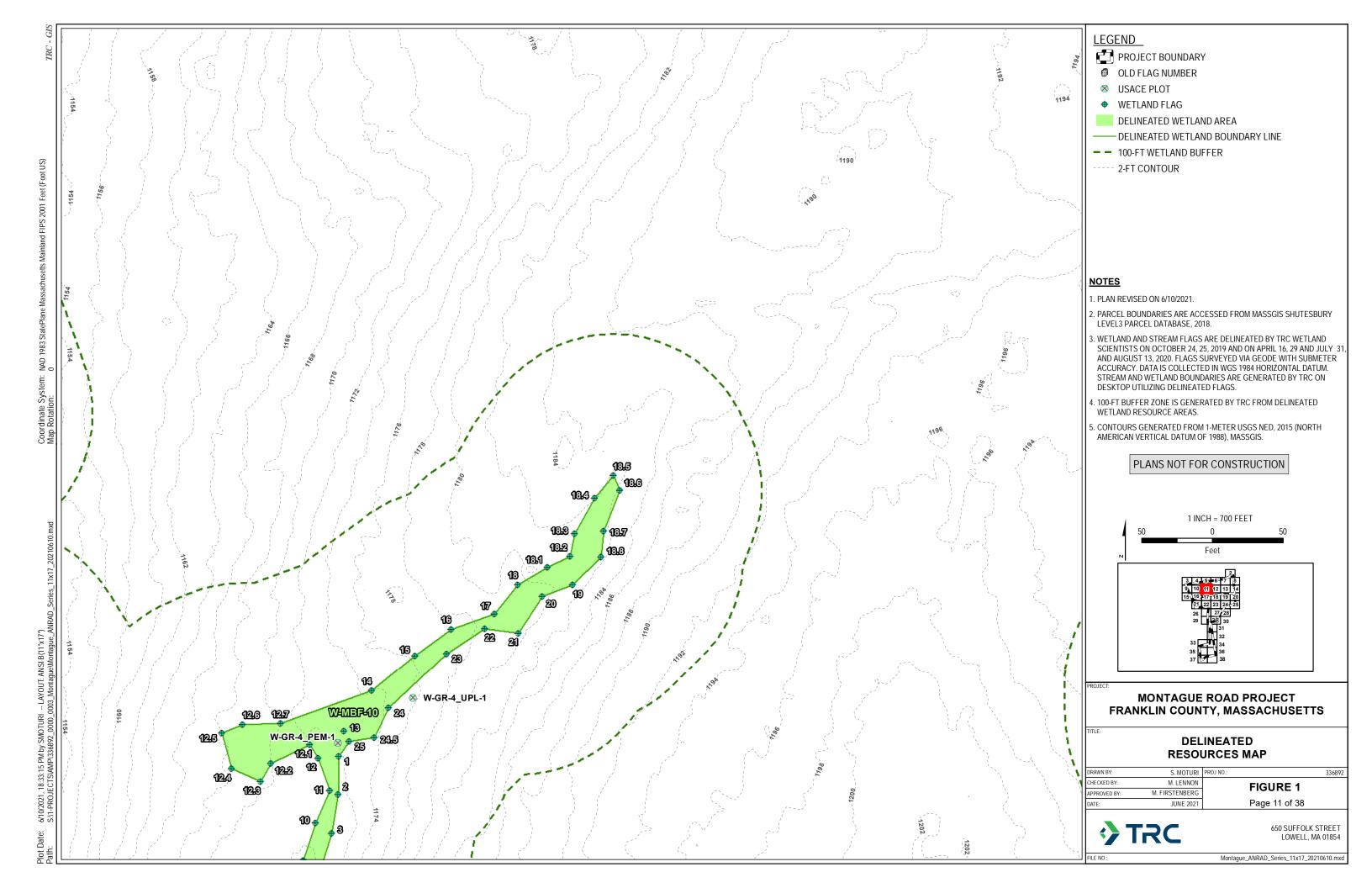


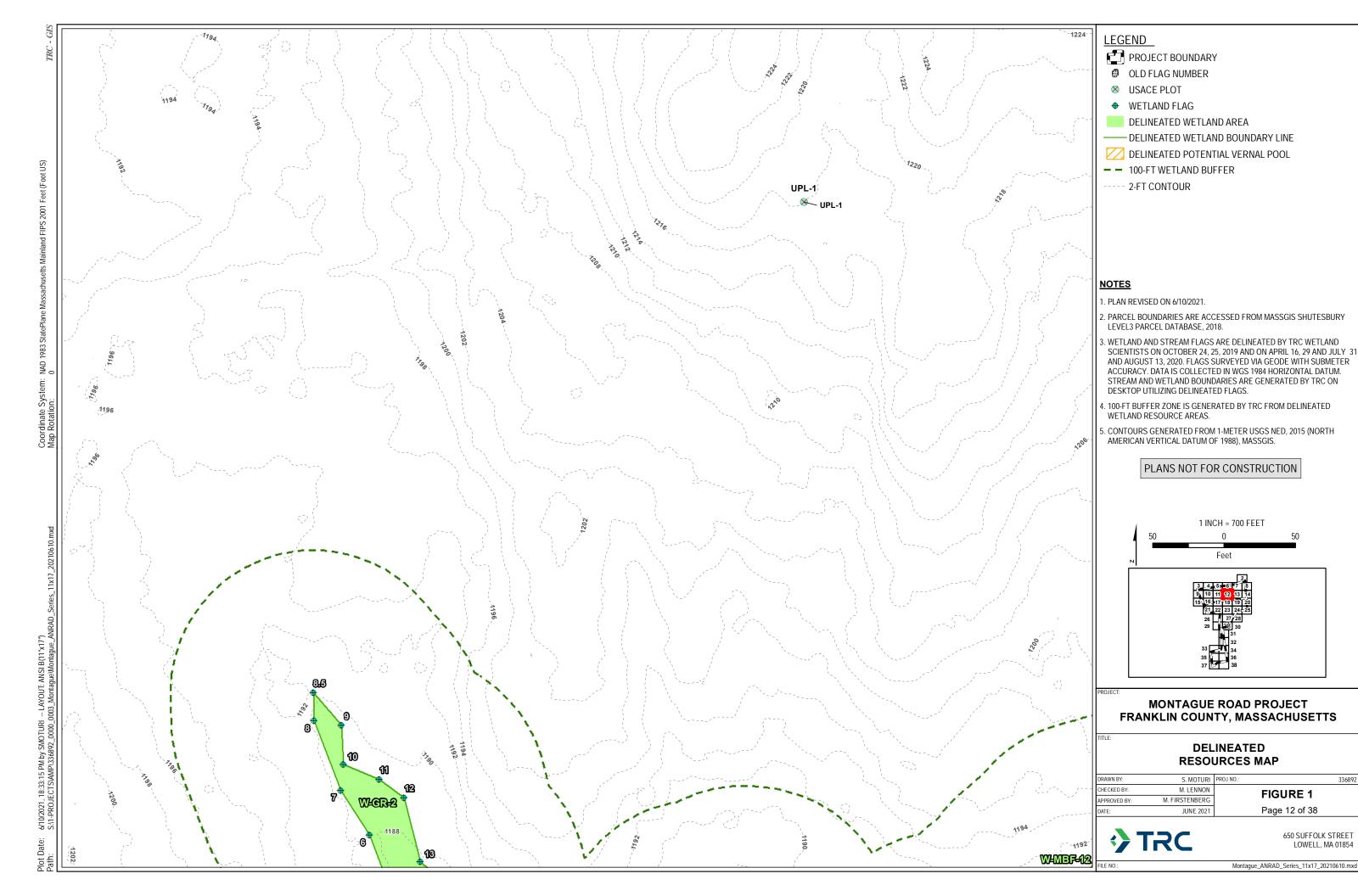


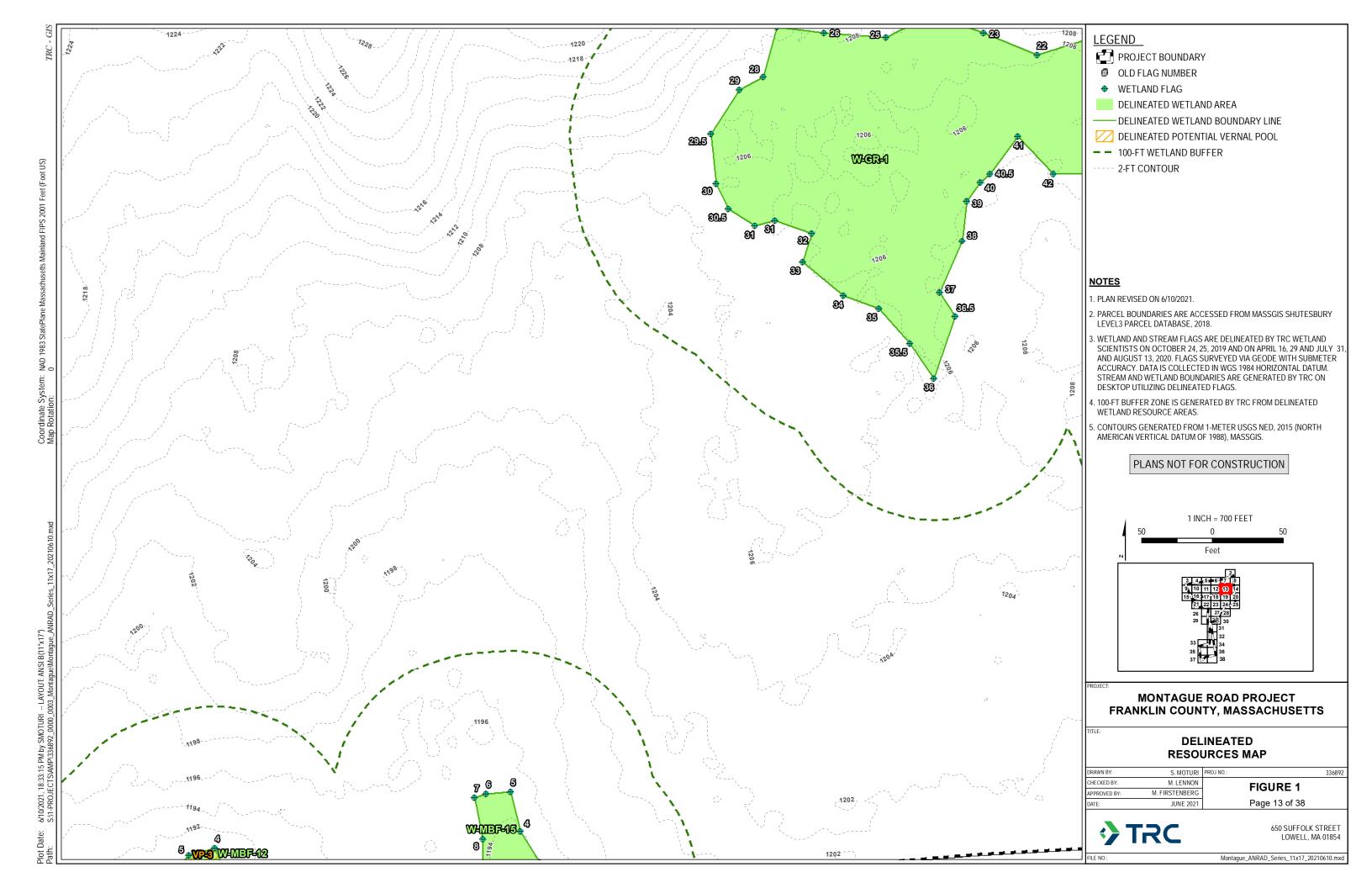


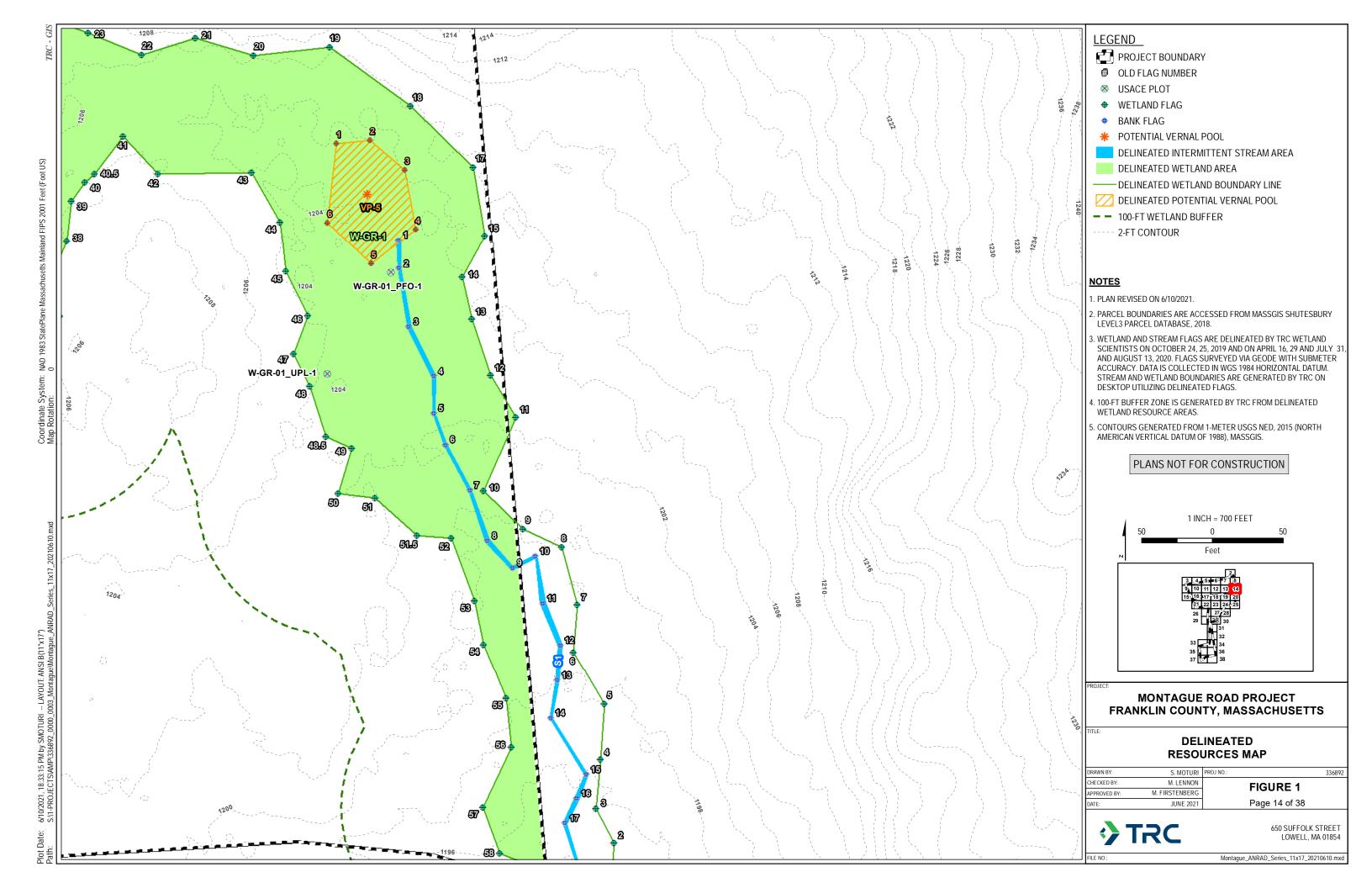


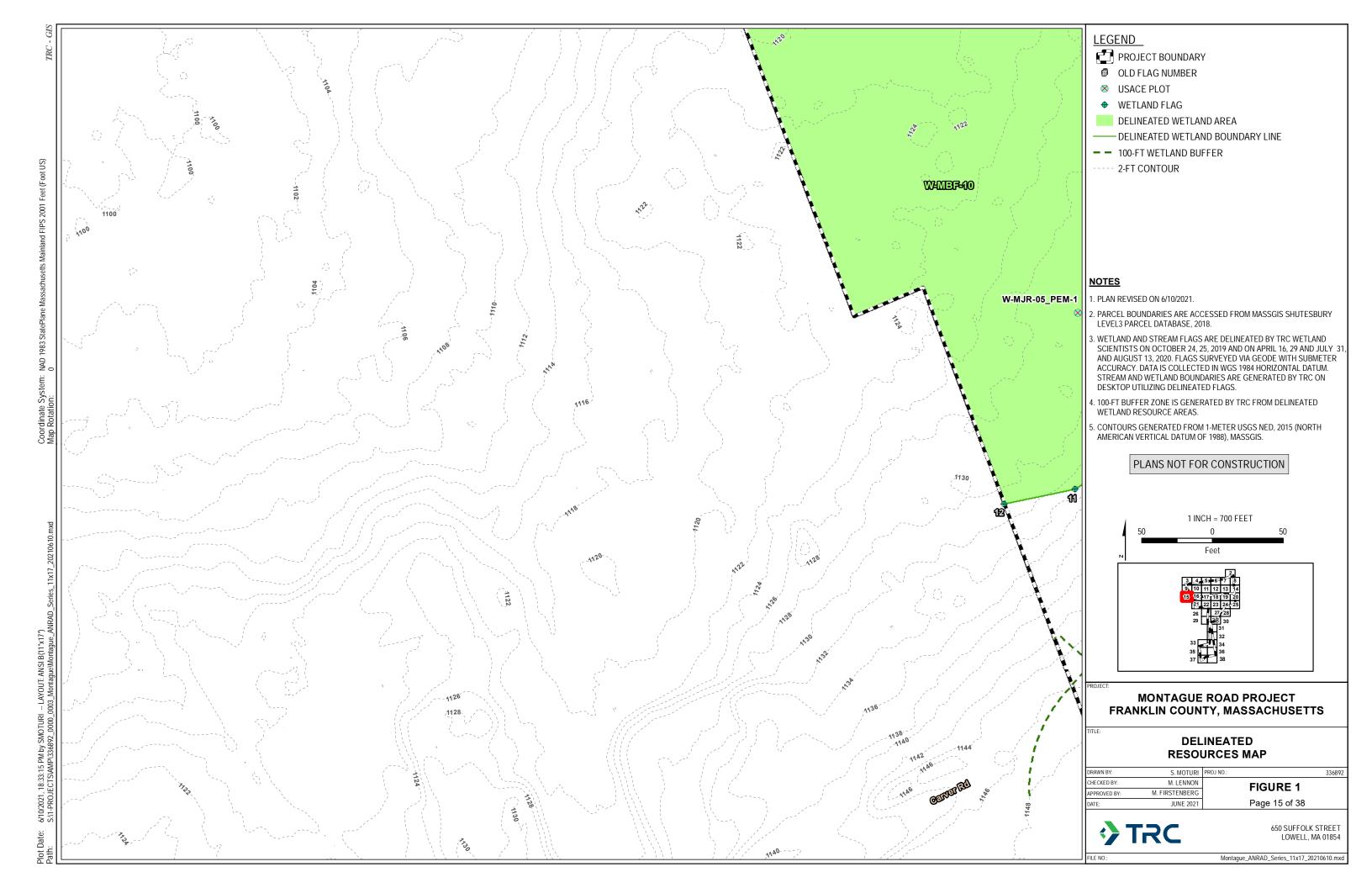


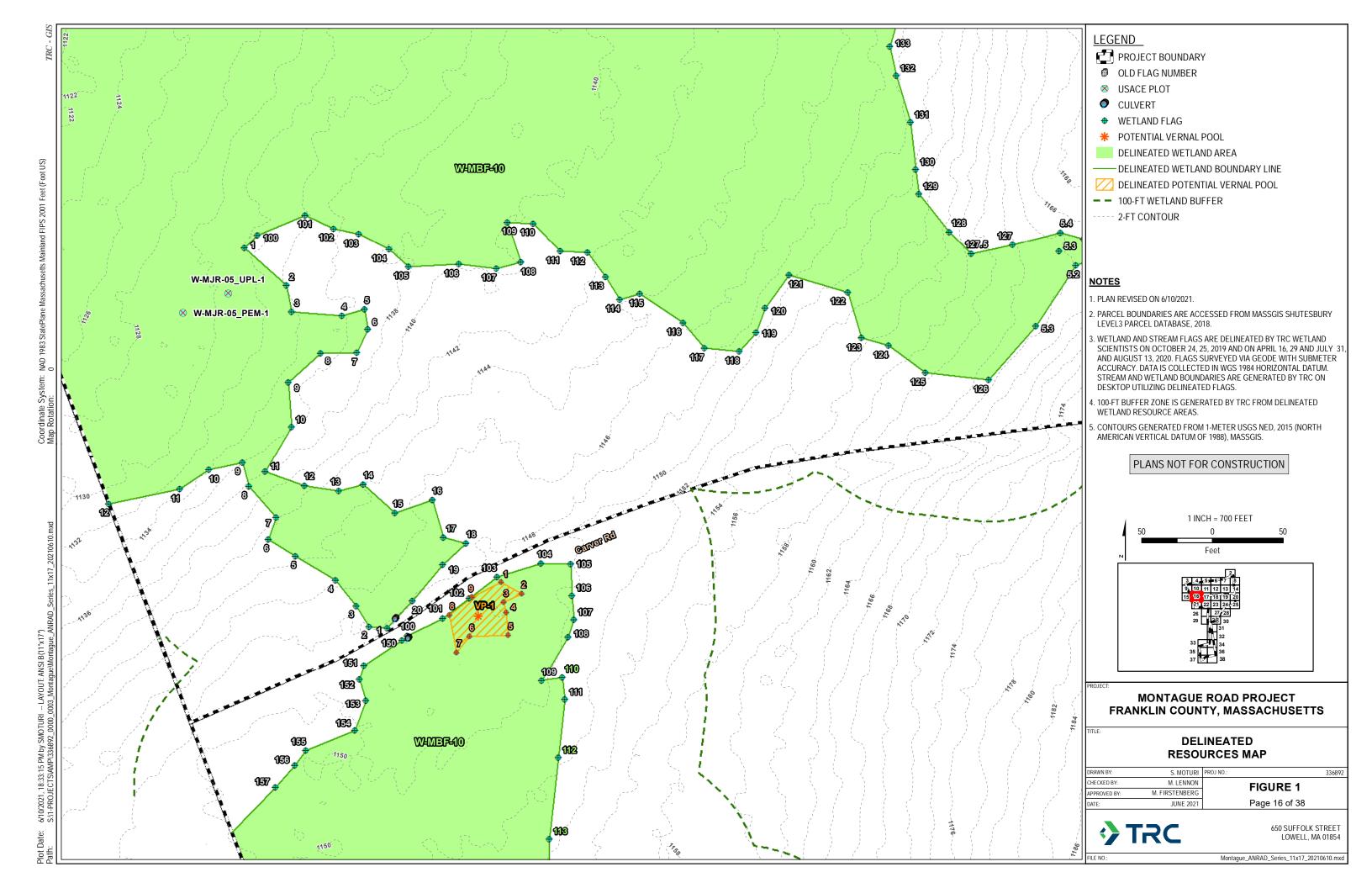


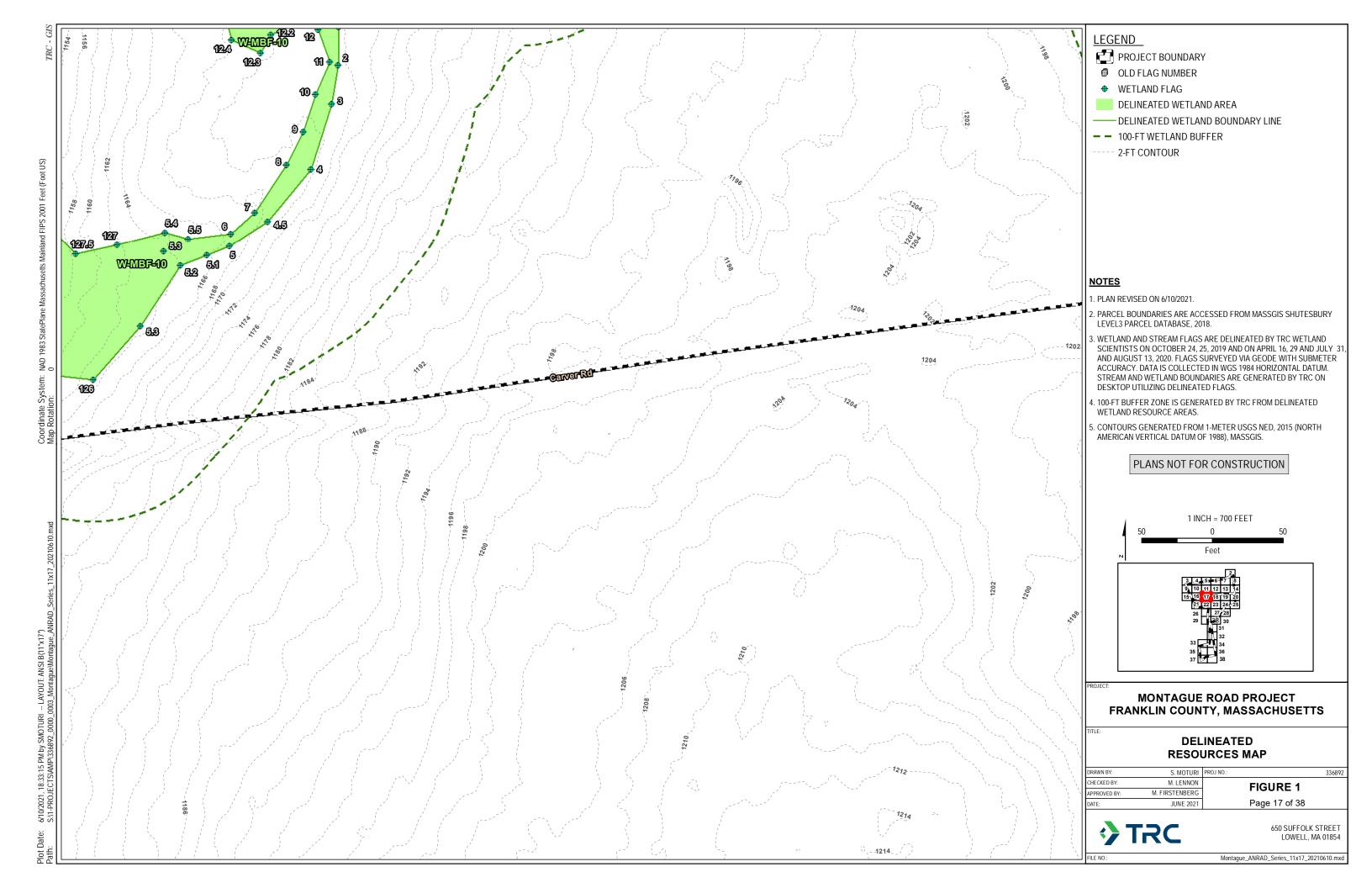


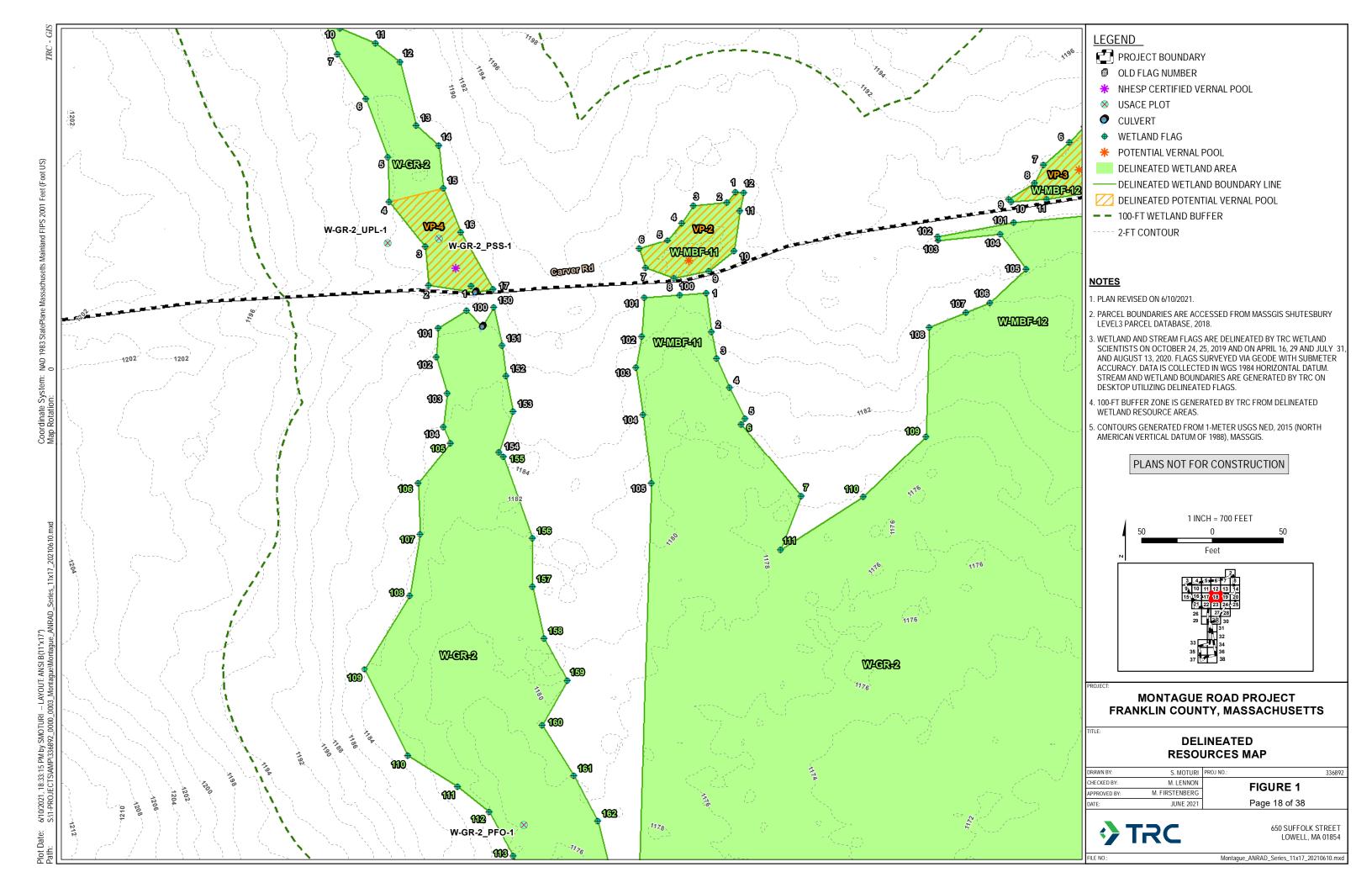


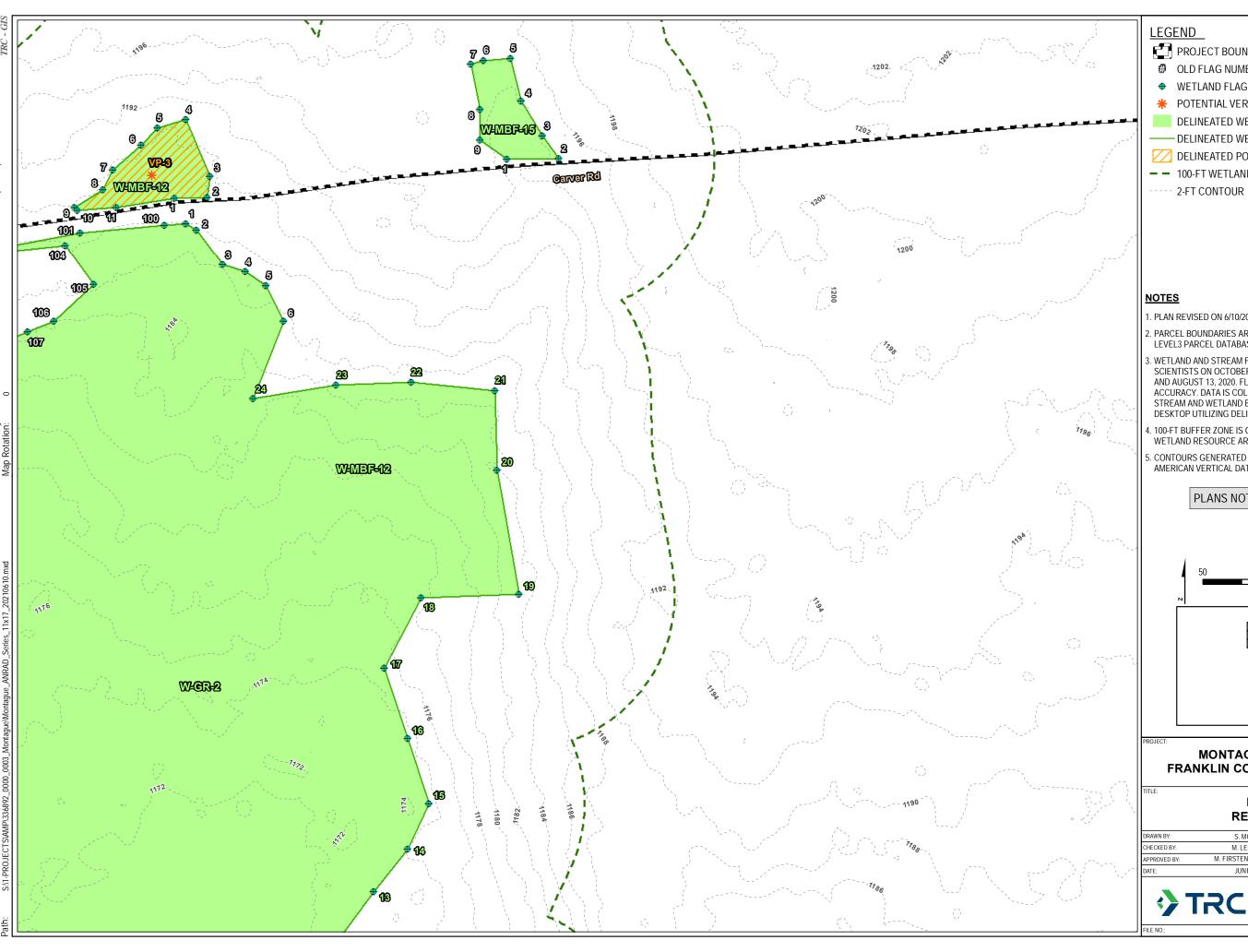








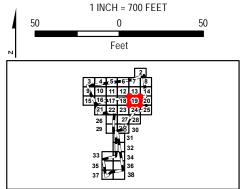




- PROJECT BOUNDARY
- OLD FLAG NUMBER
- WETLAND FLAG
- **\*** POTENTIAL VERNAL POOL
- DELINEATED WETLAND AREA
- DELINEATED WETLAND BOUNDARY LINE
- DELINEATED POTENTIAL VERNAL POOL
- ─ 100-FT WETLAND BUFFER
- ---- 2-FT CONTOUR

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# PLANS NOT FOR CONSTRUCTION



MONTAGUE ROAD PROJECT FRANKLIN COUNTY, MASSACHUSETTS

## **DELINEATED RESOURCES MAP**

DRAWN BY:	S. MOTURI	F
CHECKED BY:	M. LENNON	
APPROVED BY:	M. FIRSTENBERG	1
 DATE:	IIINE 2021	1

FIGURE 1

Page 19 of 38

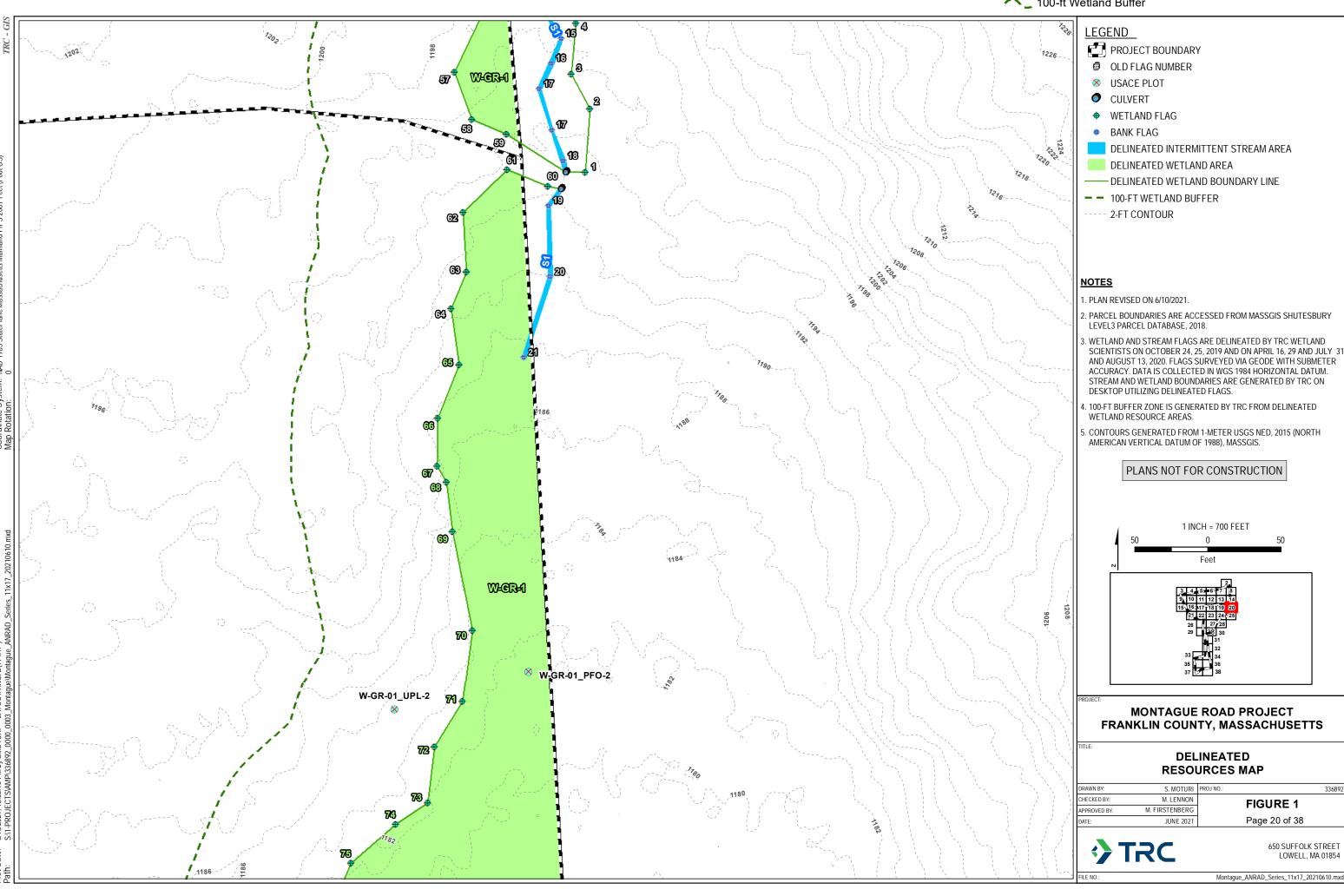
650 SUFFOLK STREET LOWELL, MA 01854

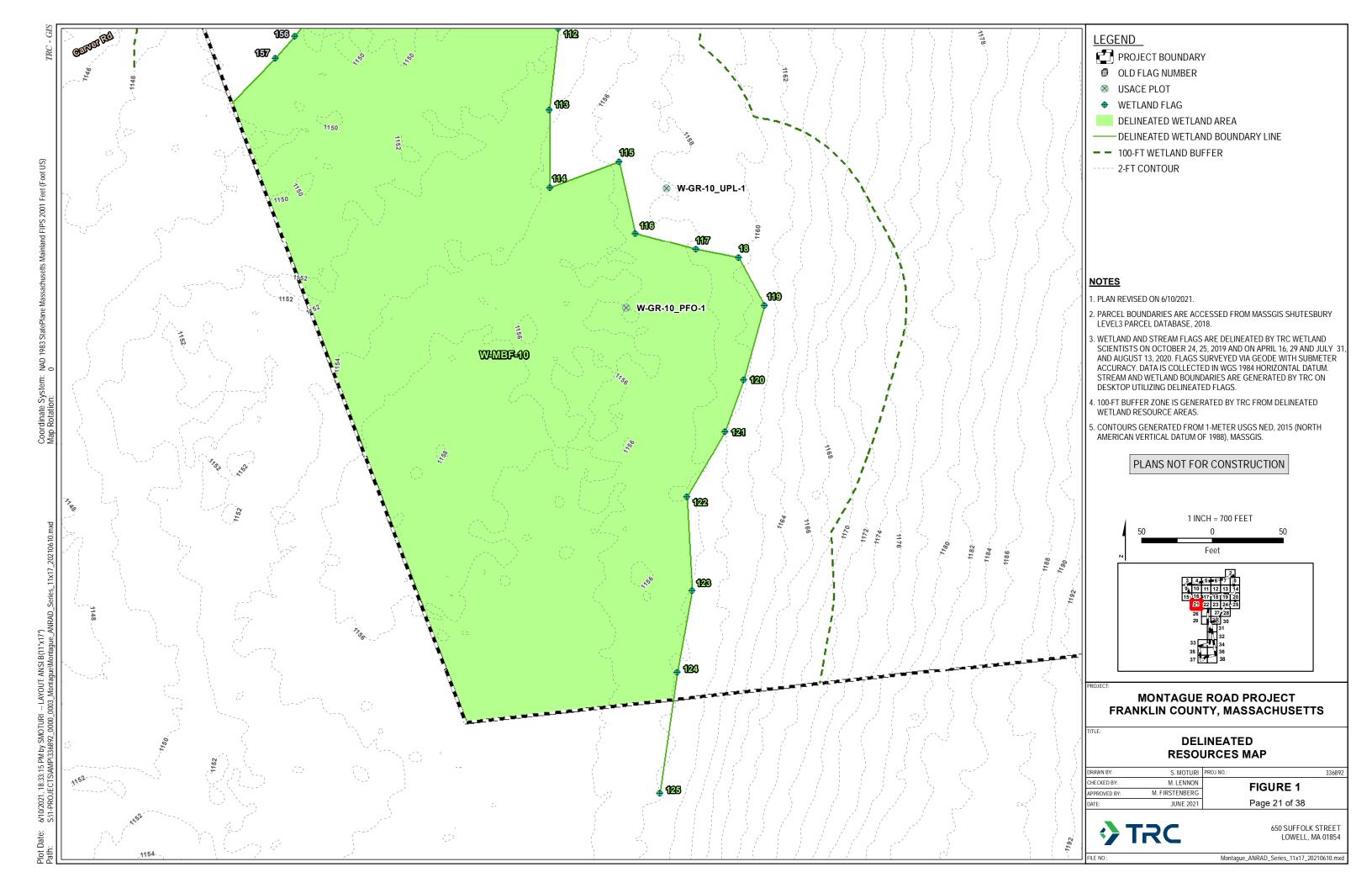
FIGURE 1

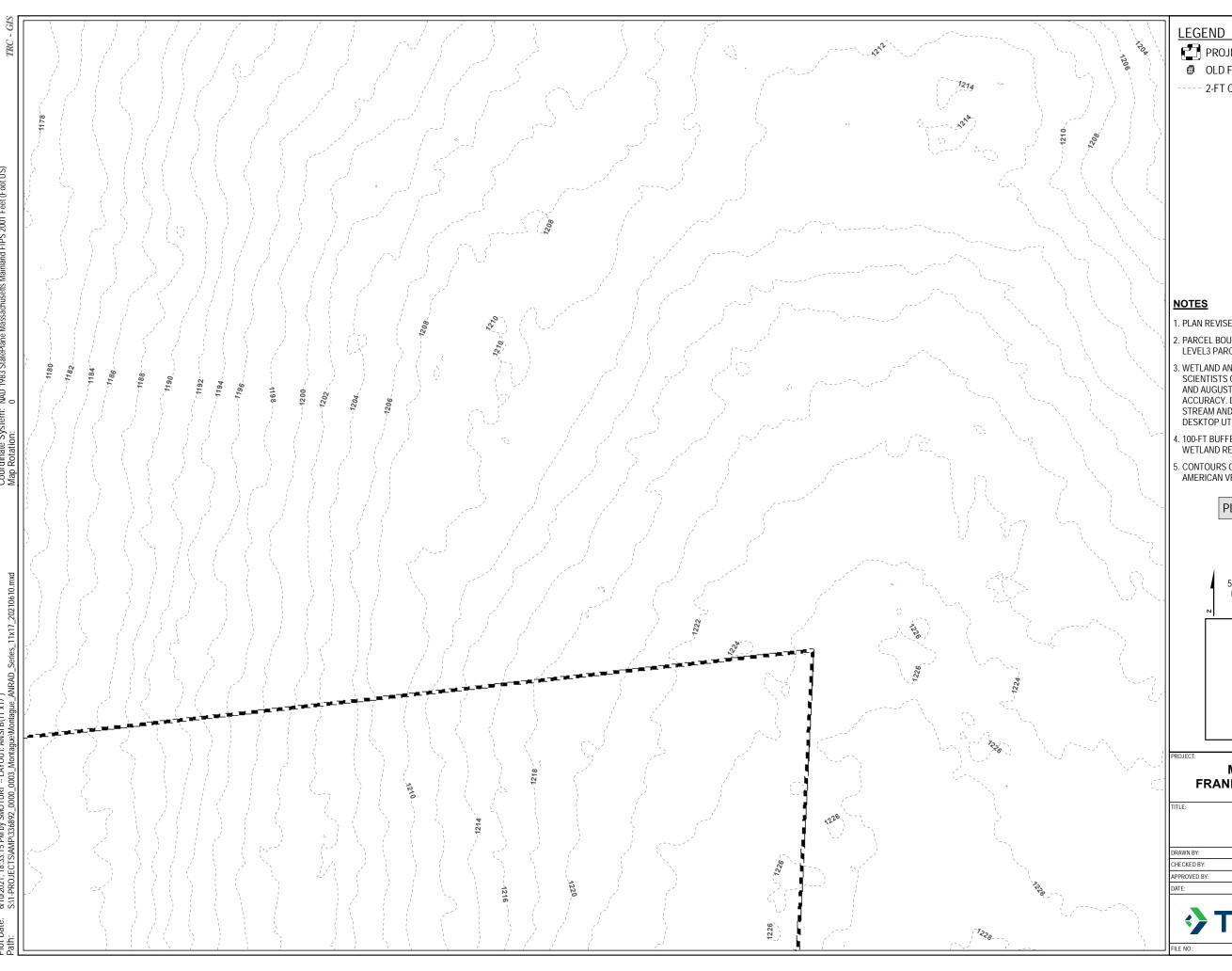
Page 20 of 38

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650 SUFFOLK STREET LOWELL, MA 01854







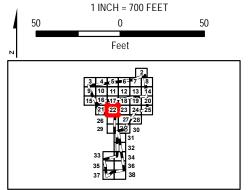
PROJECT BOUNDARY

OLD FLAG NUMBER

2-FT CONTOUR

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# PLANS NOT FOR CONSTRUCTION



**MONTAGUE ROAD PROJECT** FRANKLIN COUNTY, MASSACHUSETTS

## **DELINEATED RESOURCES MAP**

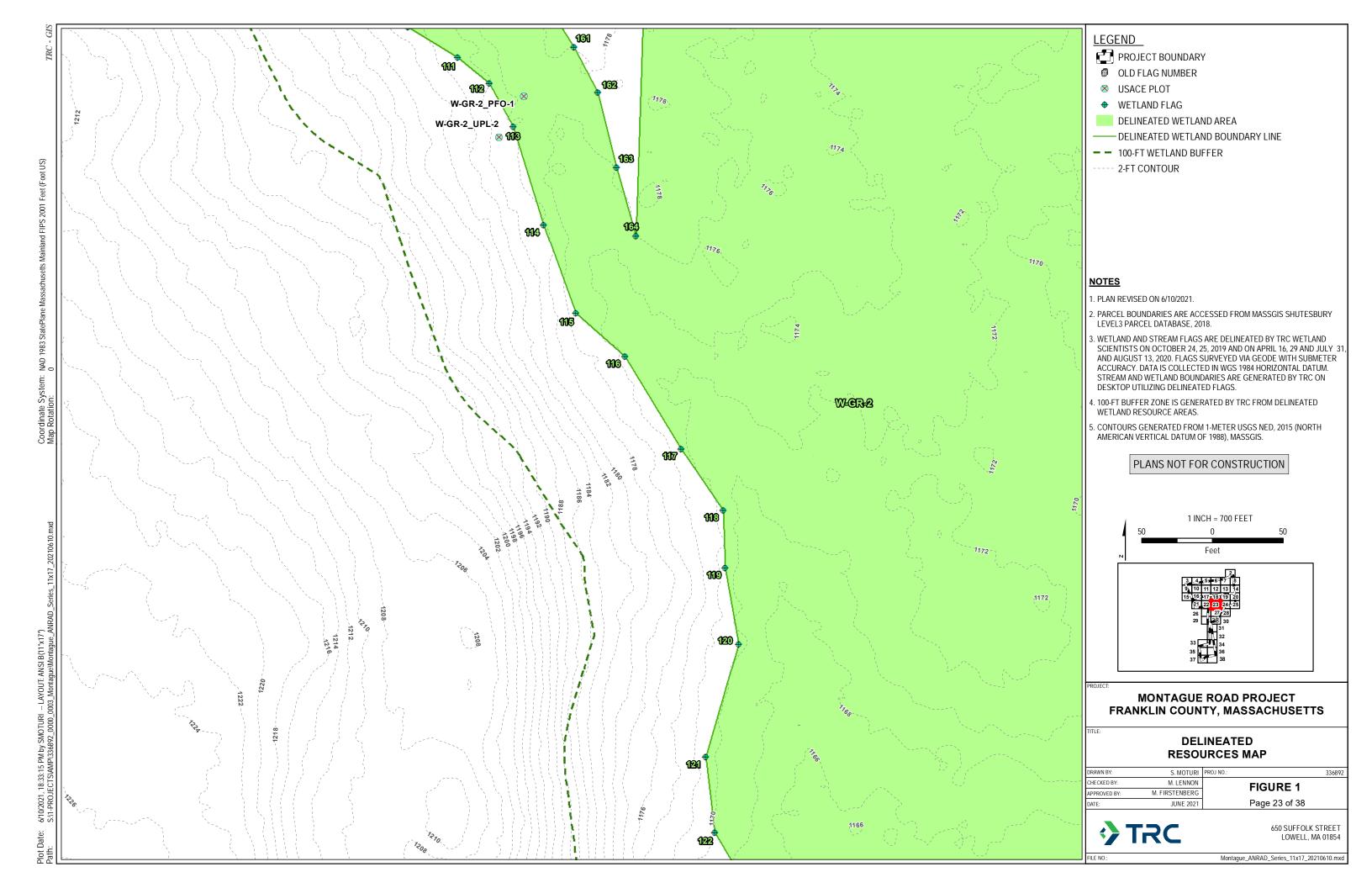
AFFROVED B1.	WI.T INSTENDENT
APPROVED BY:	M. FIRSTENBERG
CHECKED BY:	M. LENNON
DRAWN BY:	S. MOTURI

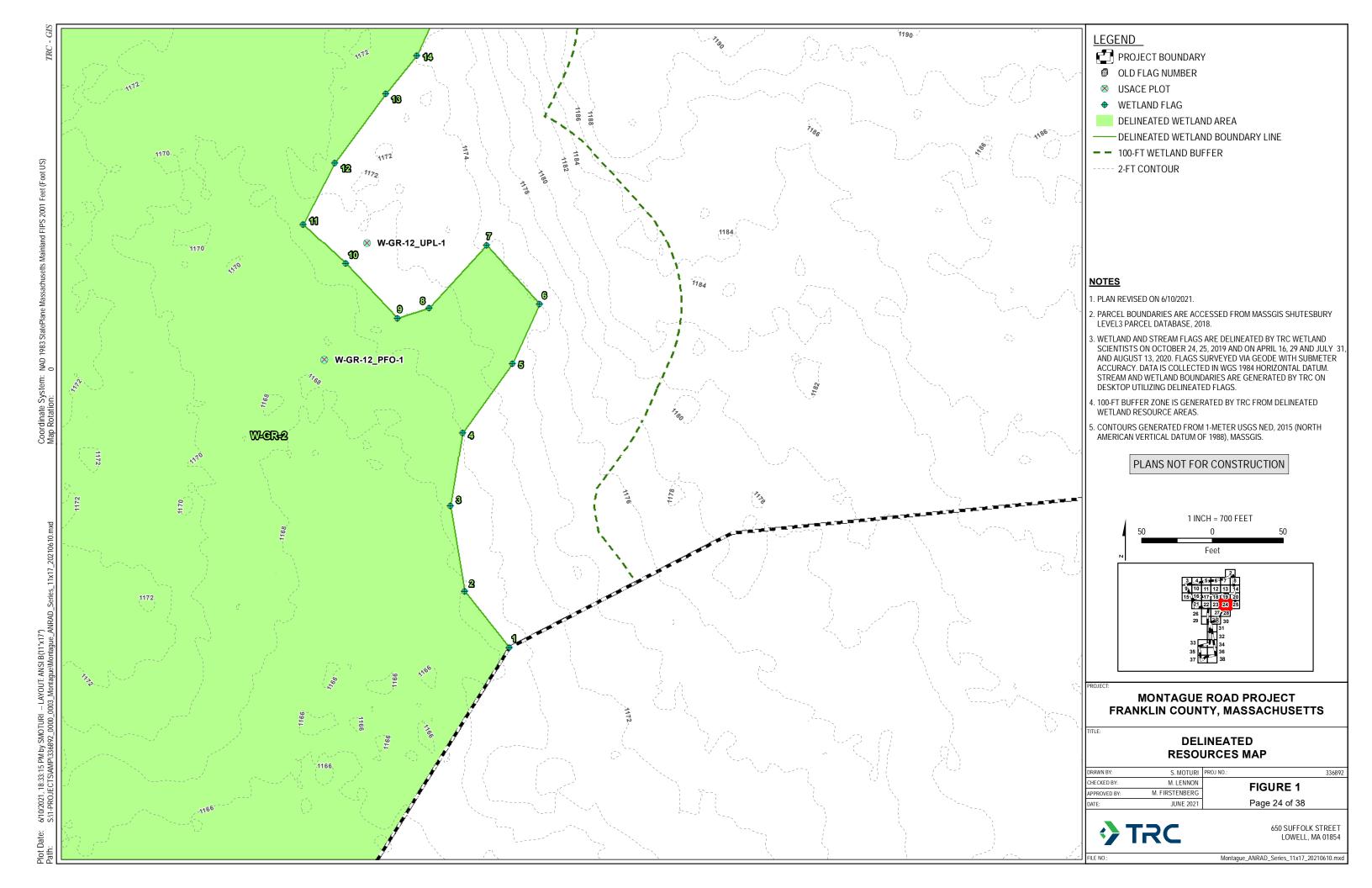
FIGURE 1

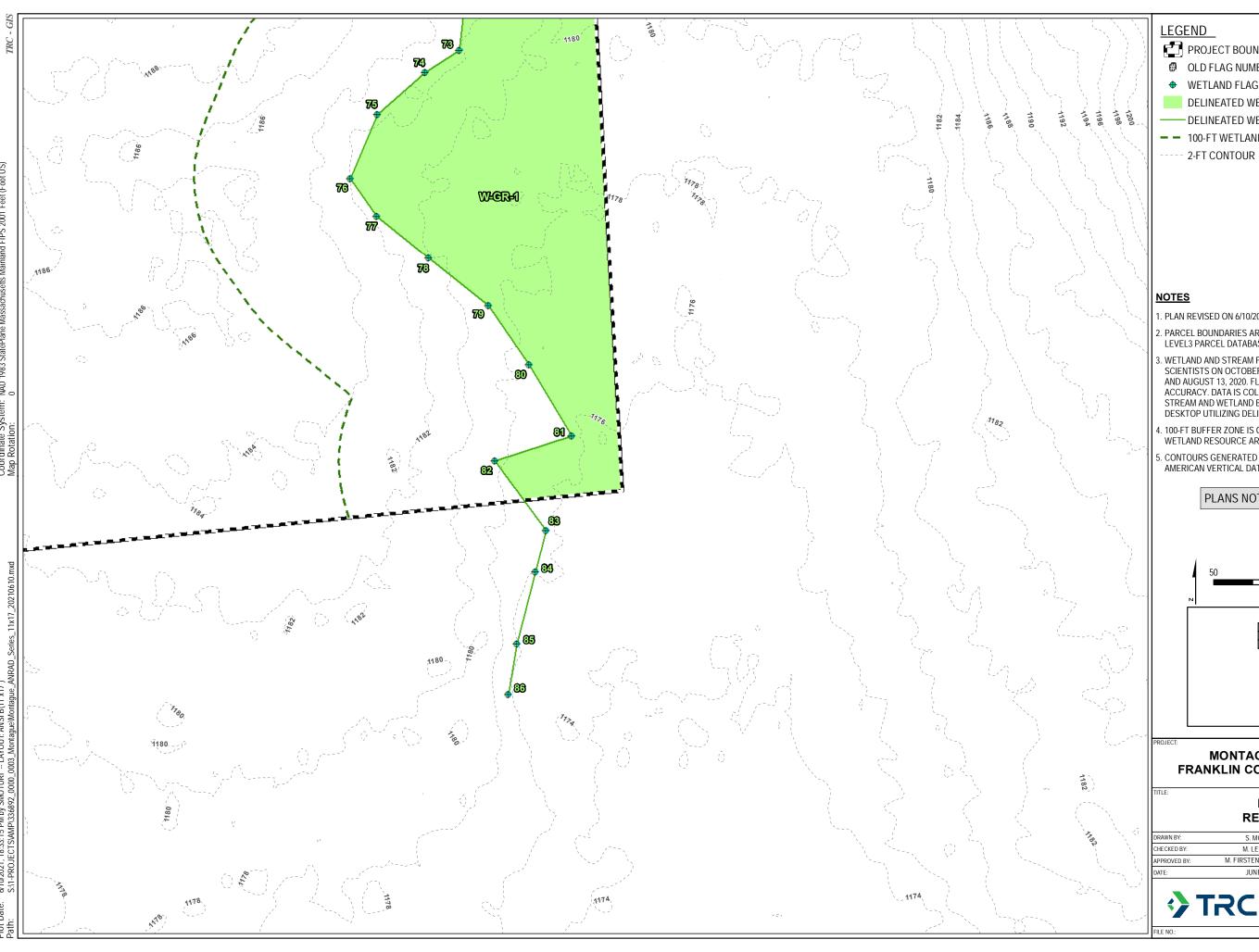
Page 22 of 38

**♦** TRC

650 SUFFOLK STREET LOWELL, MA 01854







PROJECT BOUNDARY

OLD FLAG NUMBER

WETLAND FLAG

DELINEATED WETLAND AREA

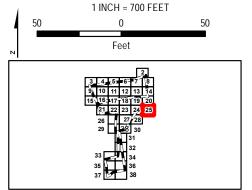
— DELINEATED WETLAND BOUNDARY LINE

**− −** 100-FT WETLAND BUFFER

---- 2-FT CONTOUR

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# PLANS NOT FOR CONSTRUCTION



MONTAGUE ROAD PROJECT FRANKLIN COUNTY, MASSACHUSETTS

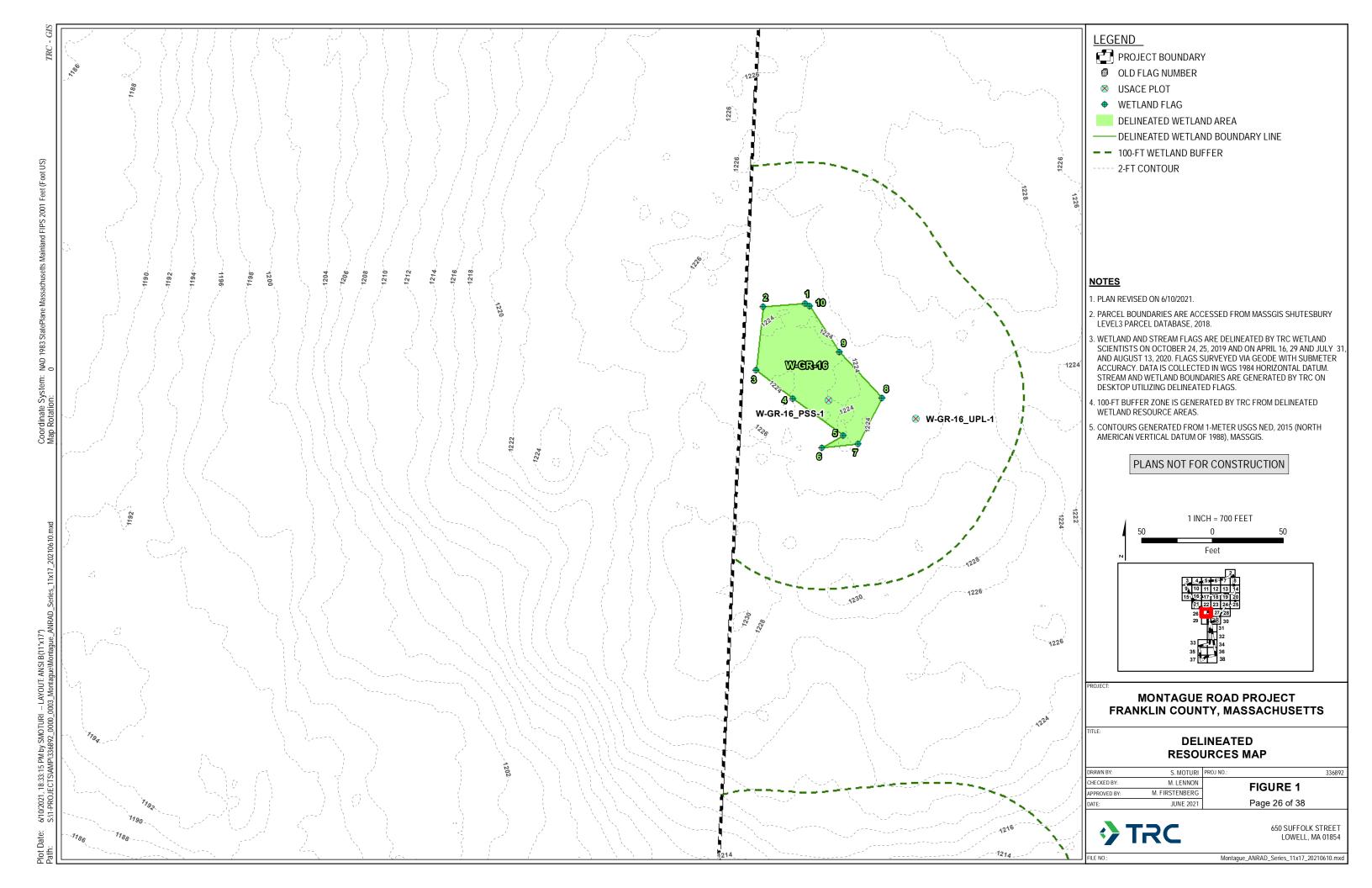
## **DELINEATED RESOURCES MAP**

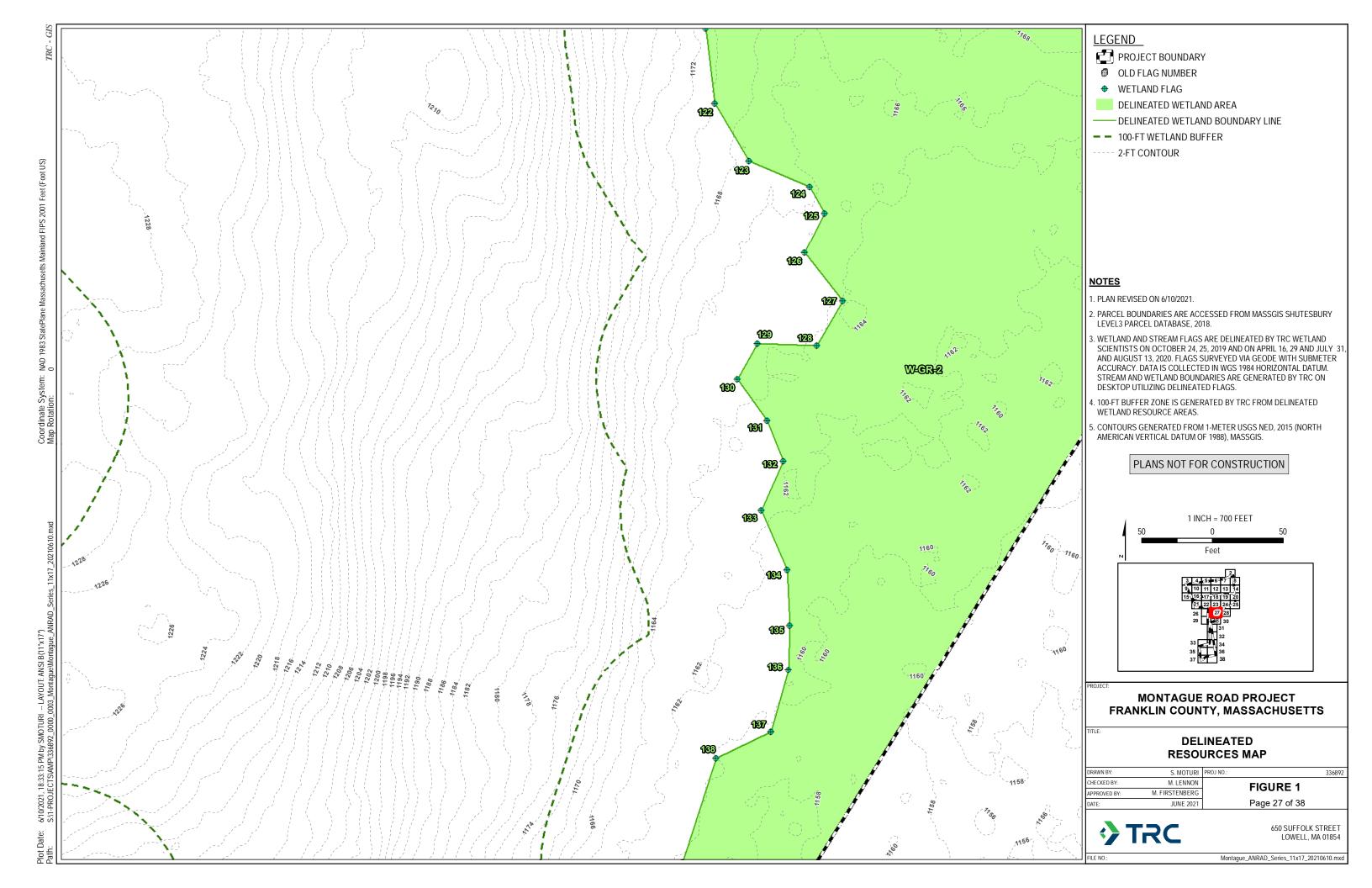
DRAWN BY:	S. MOTURI
CHECKED BY:	M. LENNON
APPROVED BY:	M. FIRSTENBERG
 DATE:	JUNE 2021

FIGURE 1

Page 25 of 38

650 SUFFOLK STREET LOWELL, MA 01854





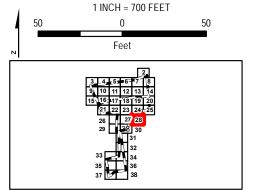


OLD FLAG NUMBER

DELINEATED WETLAND AREA

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# PLANS NOT FOR CONSTRUCTION



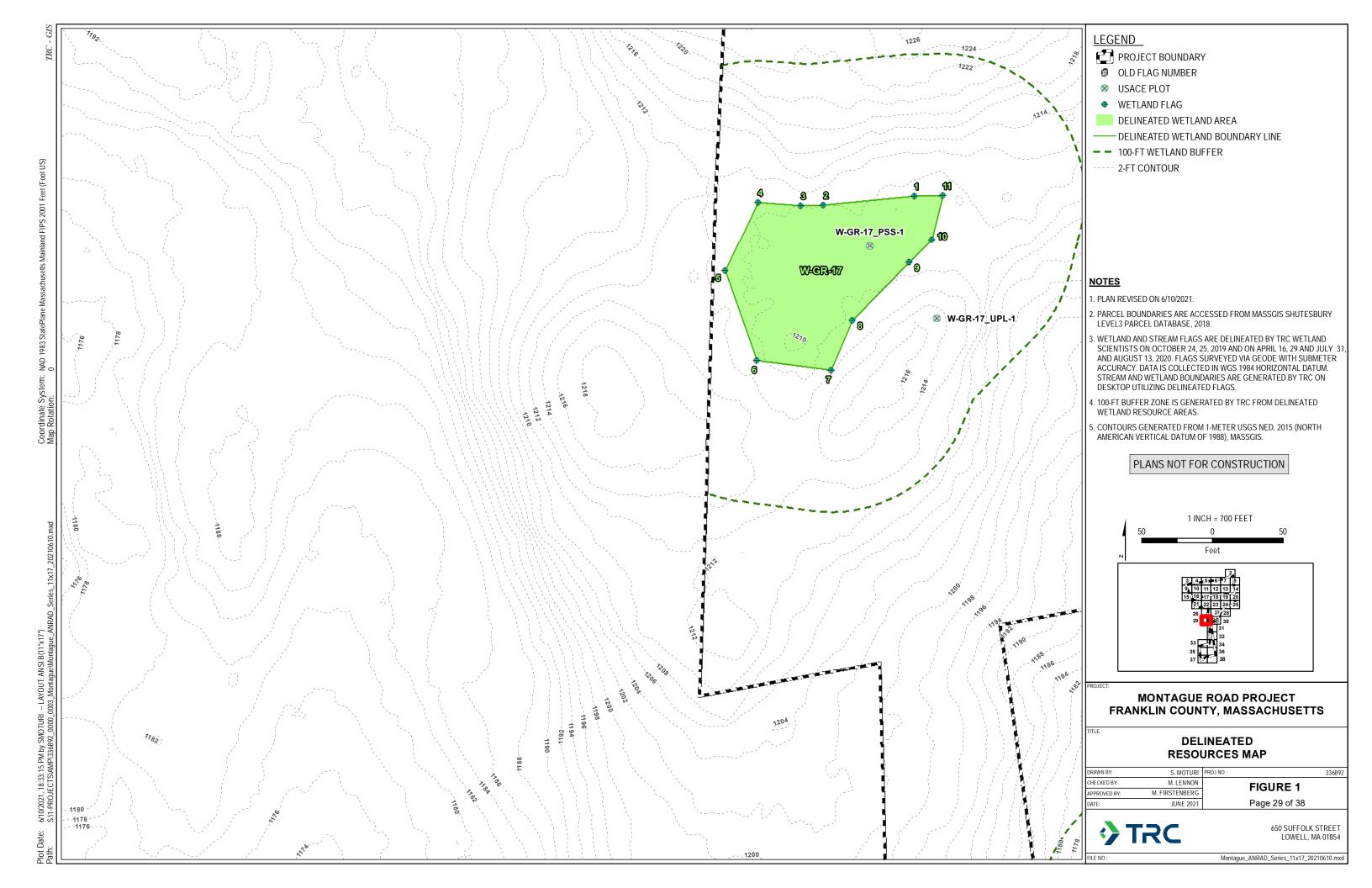
MONTAGUE ROAD PROJECT FRANKLIN COUNTY, MASSACHUSETTS

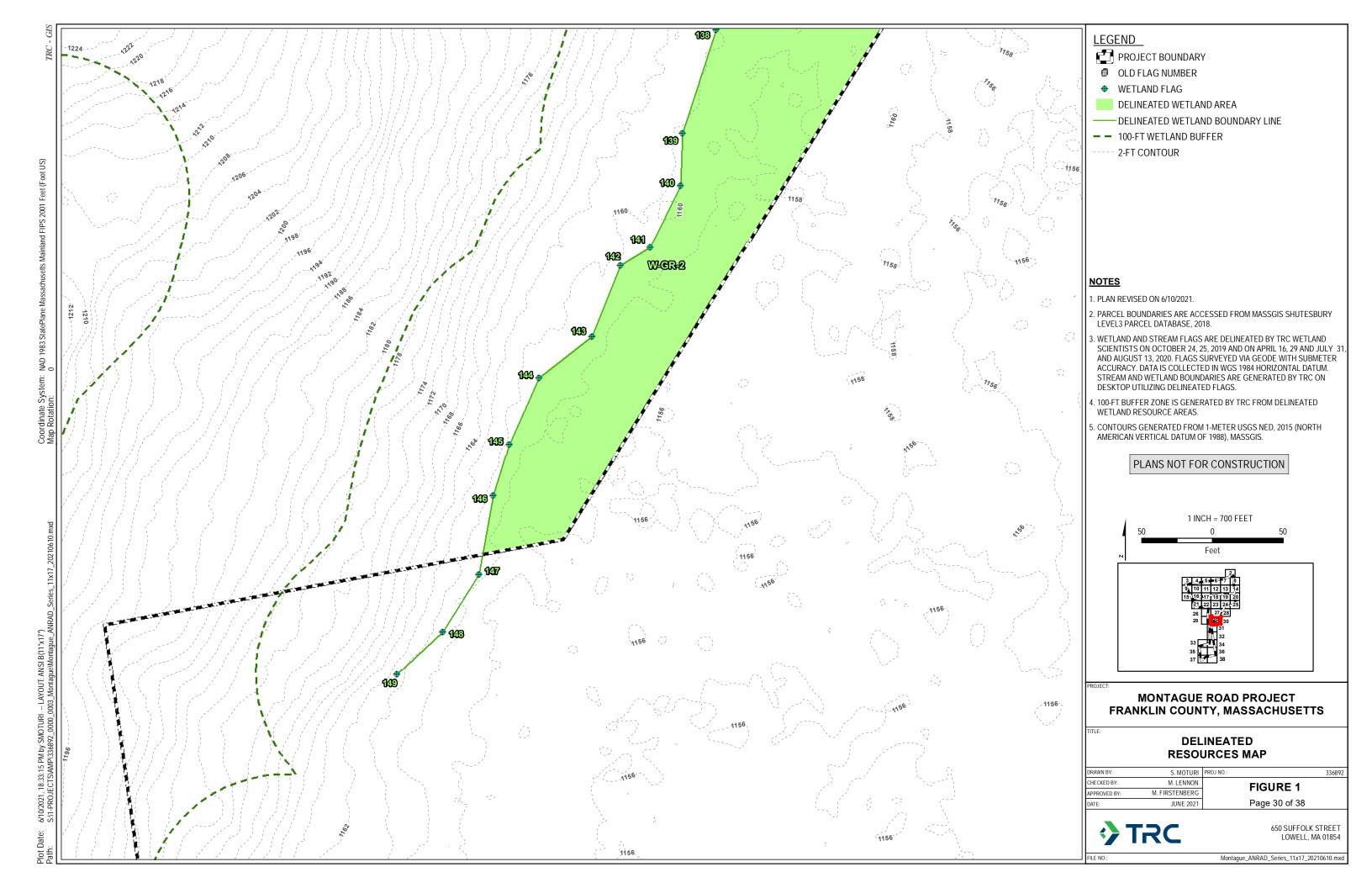
## **DELINEATED RESOURCES MAP**

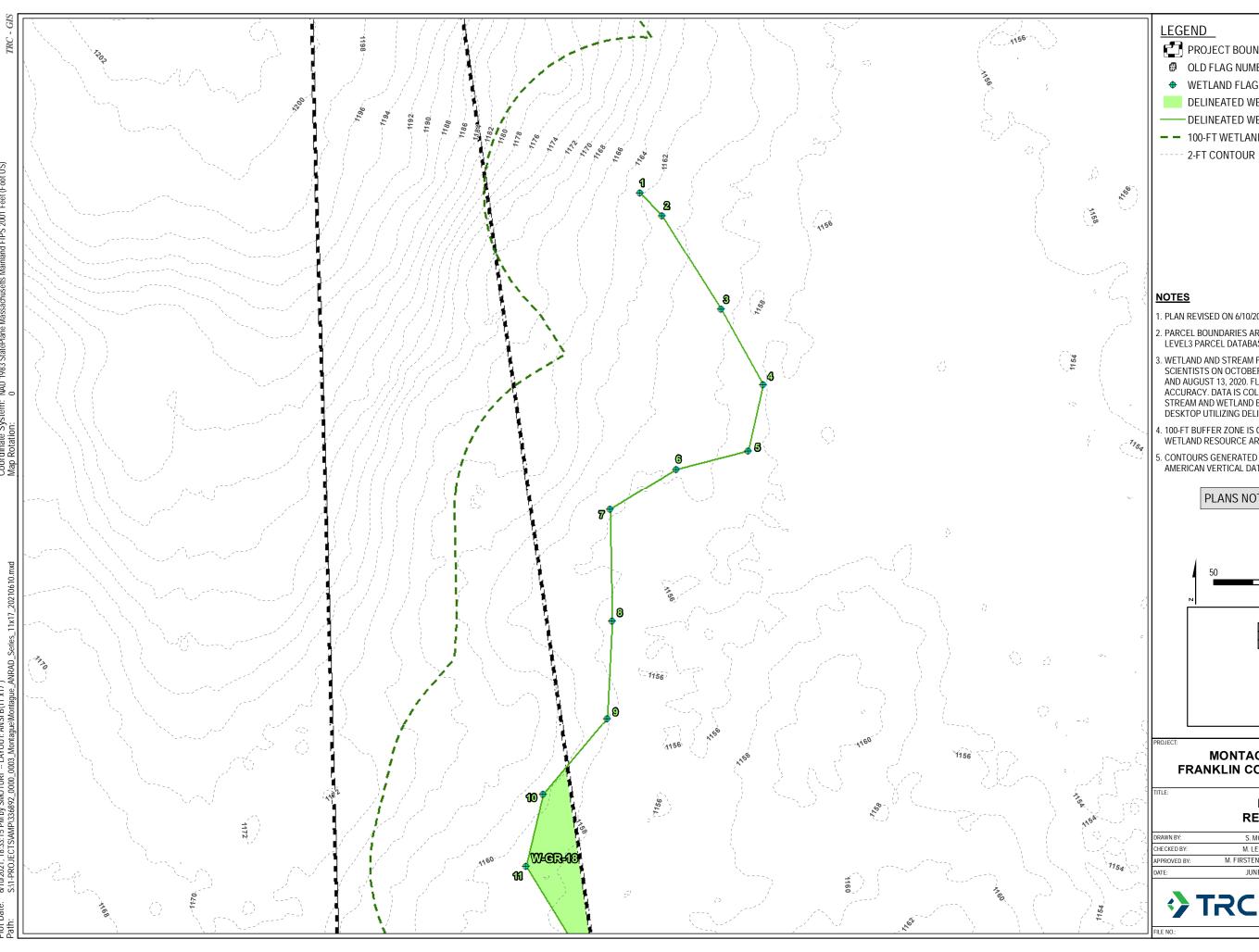
DRAWN BY:	S. MOTURI	PROJ NO.: 336892
CHECKED BY:	M. LENNON	FIGURE 1
APPROVED BY:	M. FIRSTENBERG	IIGURLI
DATE:	JUNE 2021	Page 28 of 38



650 SUFFOLK STREET LOWELL, MA 01854



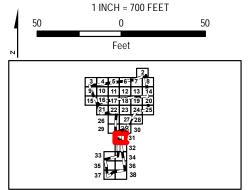




- PROJECT BOUNDARY
- OLD FLAG NUMBER
- WETLAND FLAG
- DELINEATED WETLAND AREA
- —— DELINEATED WETLAND BOUNDARY LINE
- **–** 100-FT WETLAND BUFFER
- ---- 2-FT CONTOUR

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# PLANS NOT FOR CONSTRUCTION



MONTAGUE ROAD PROJECT FRANKLIN COUNTY, MASSACHUSETTS

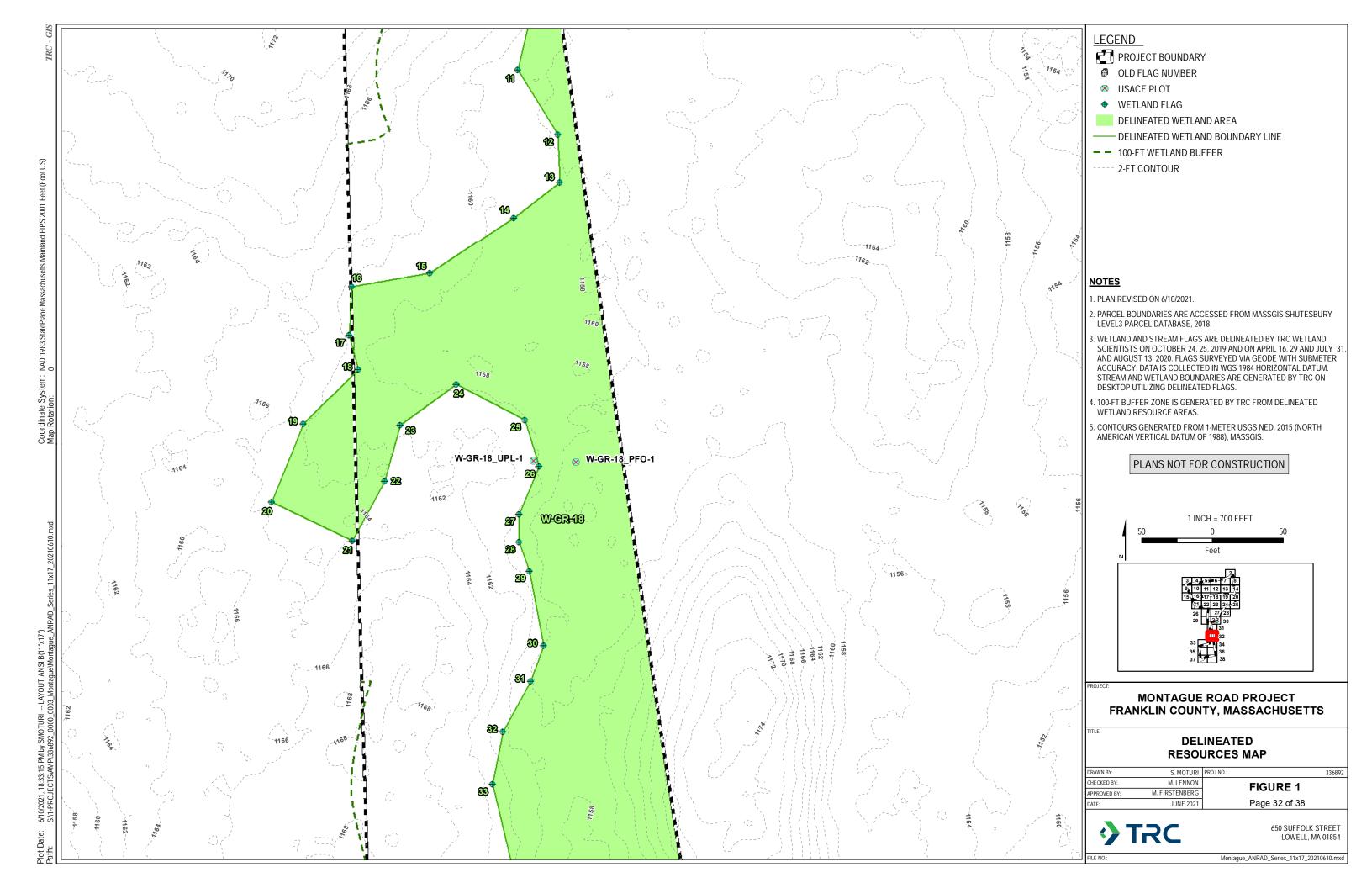
## **DELINEATED RESOURCES MAP**

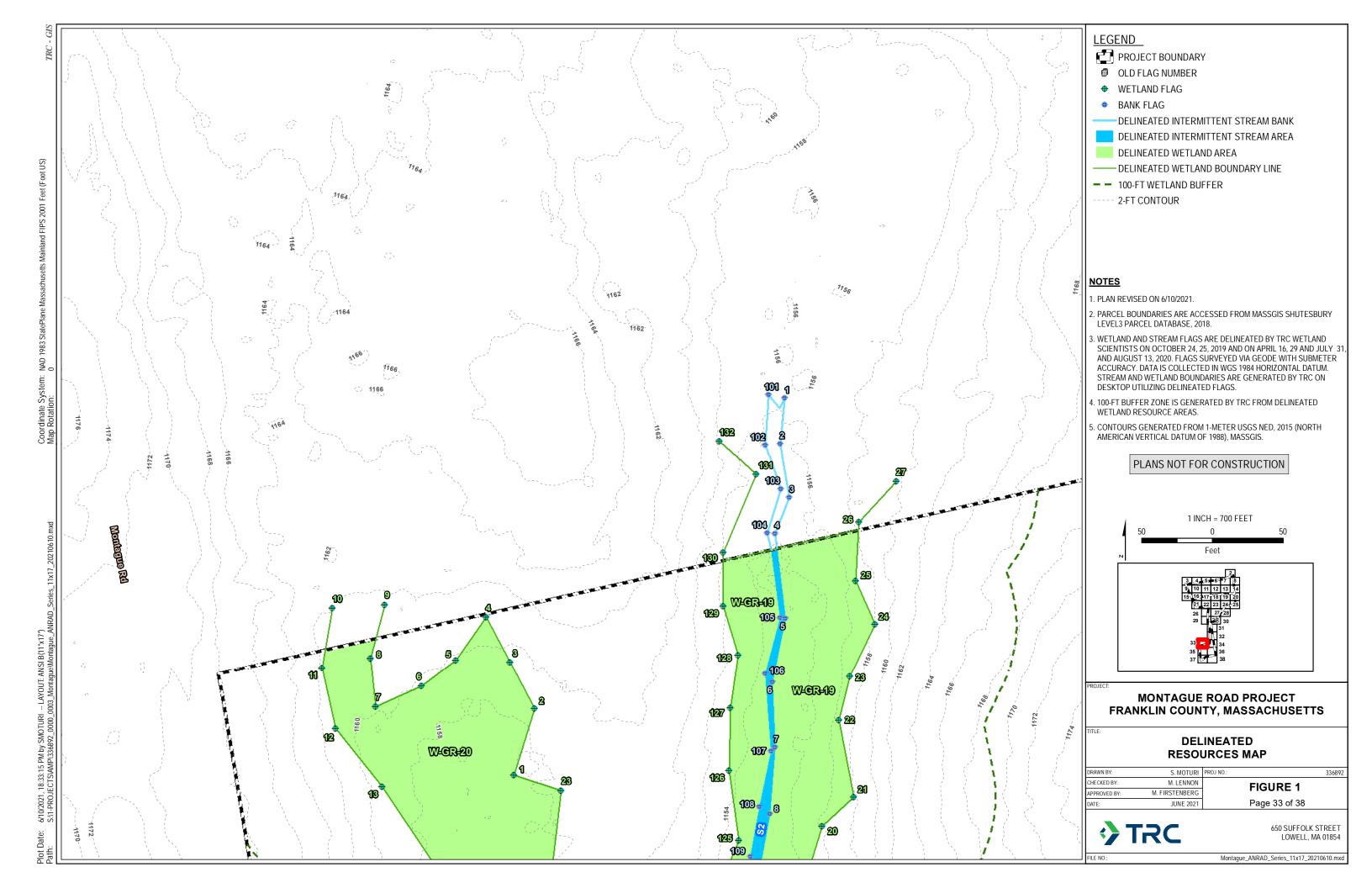
1	DRAWN BY:	S. MOTURI	PROJ NO.:
1	CHECKED BY:	M. LENNON	
4	APPROVED BY:	M. FIRSTENBERG	
١	DATE:	ILINE 2021	

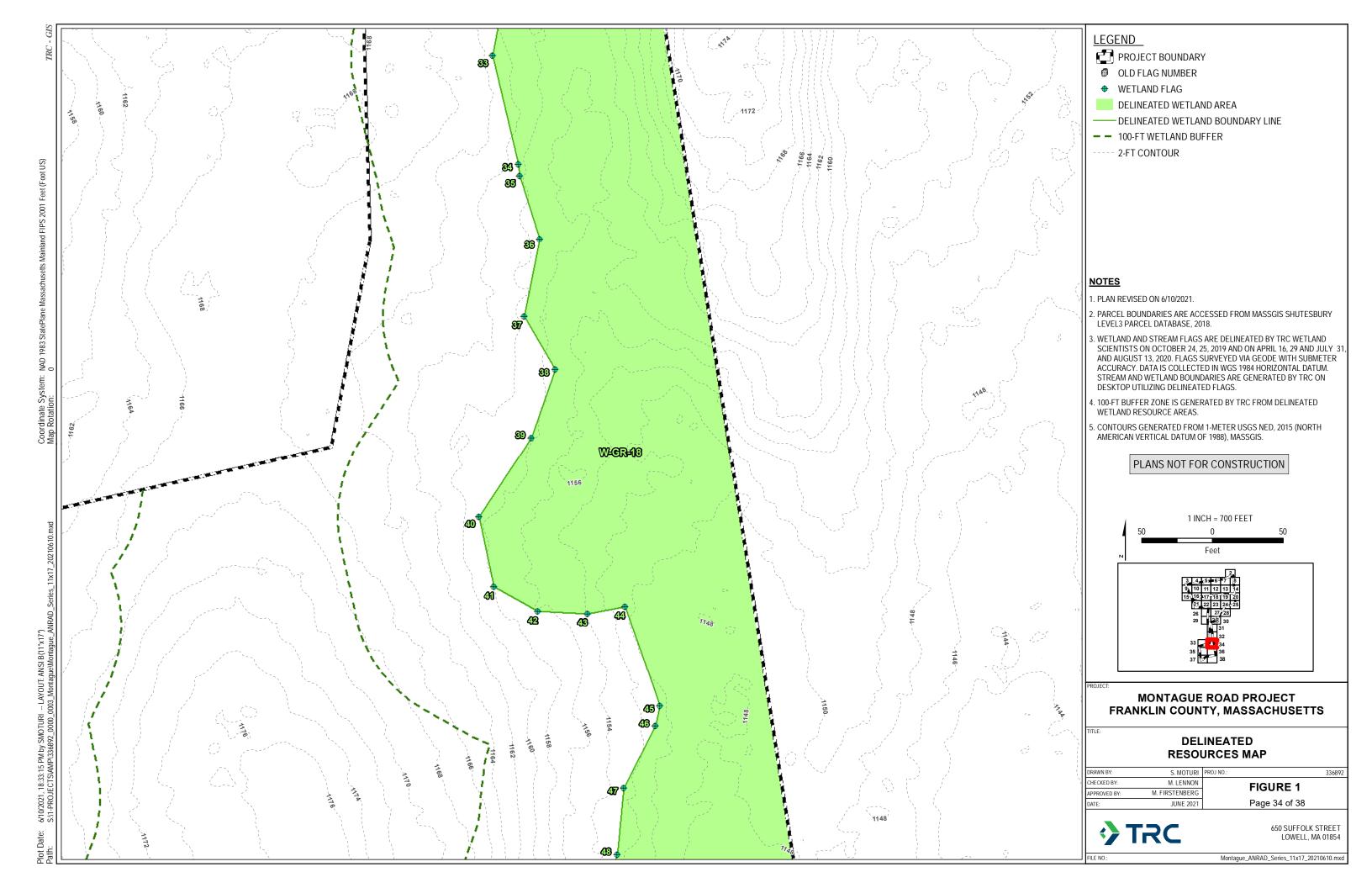
FIGURE 1

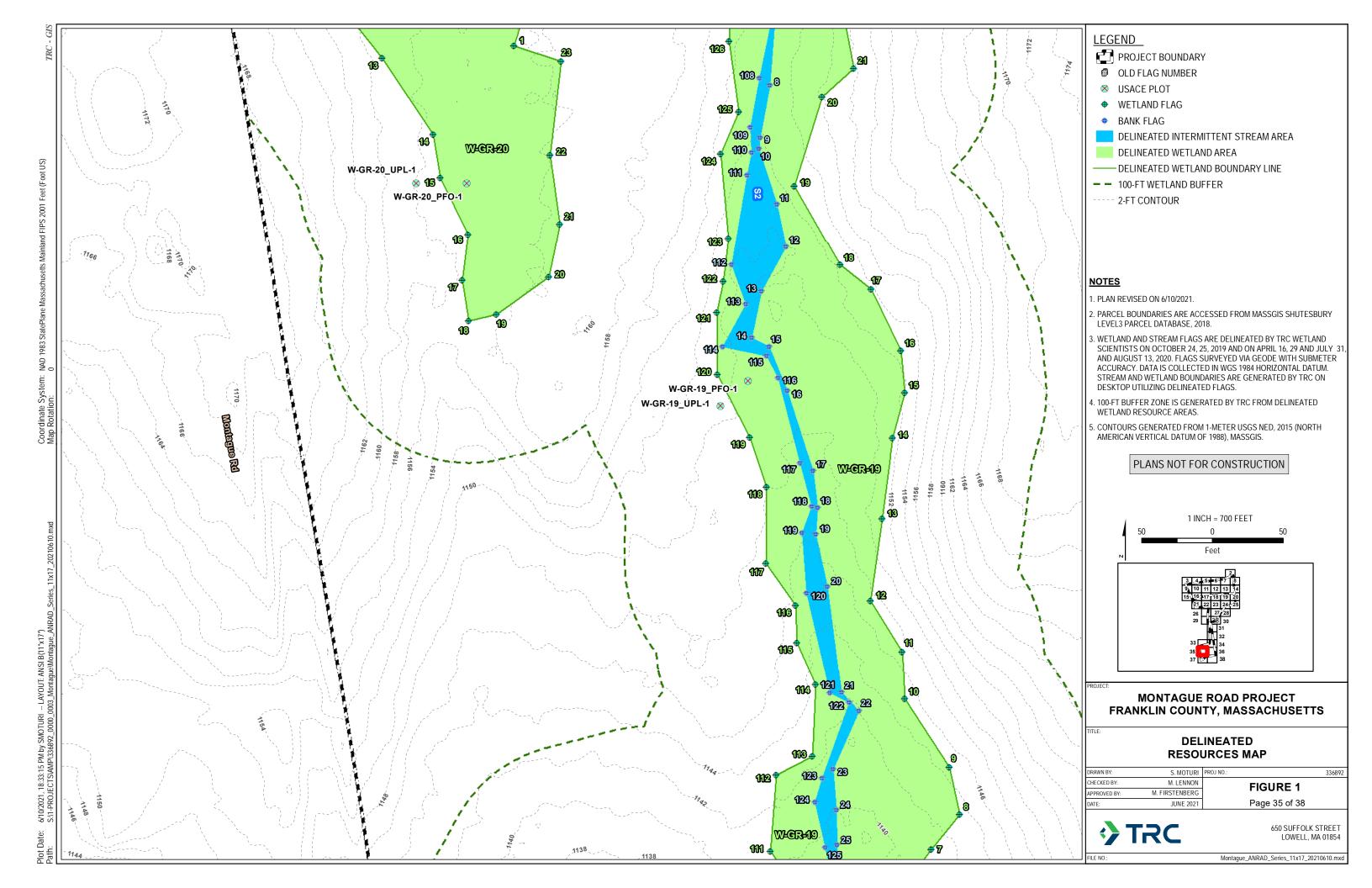
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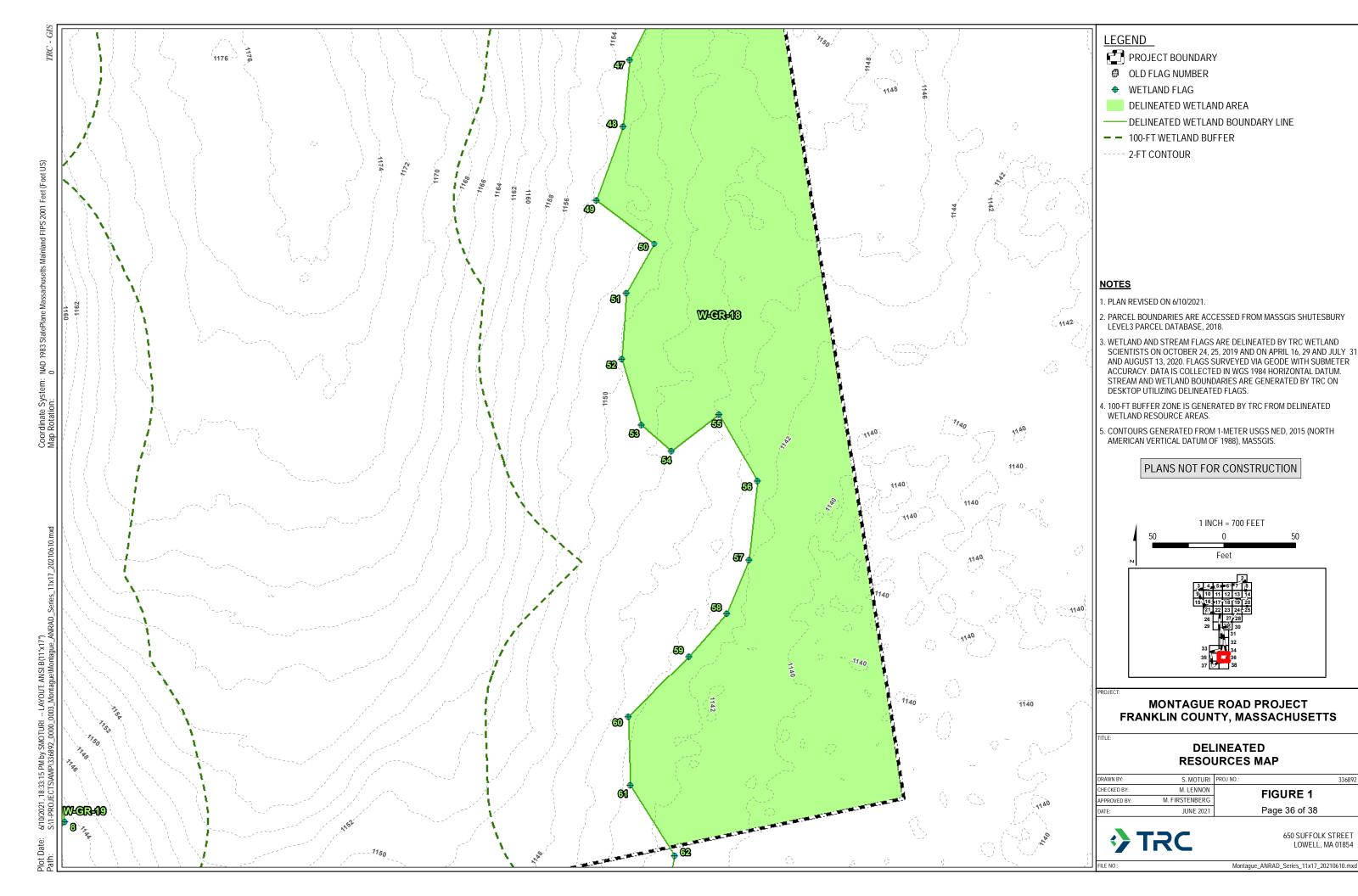
650 SUFFOLK STREET LOWELL, MA 01854

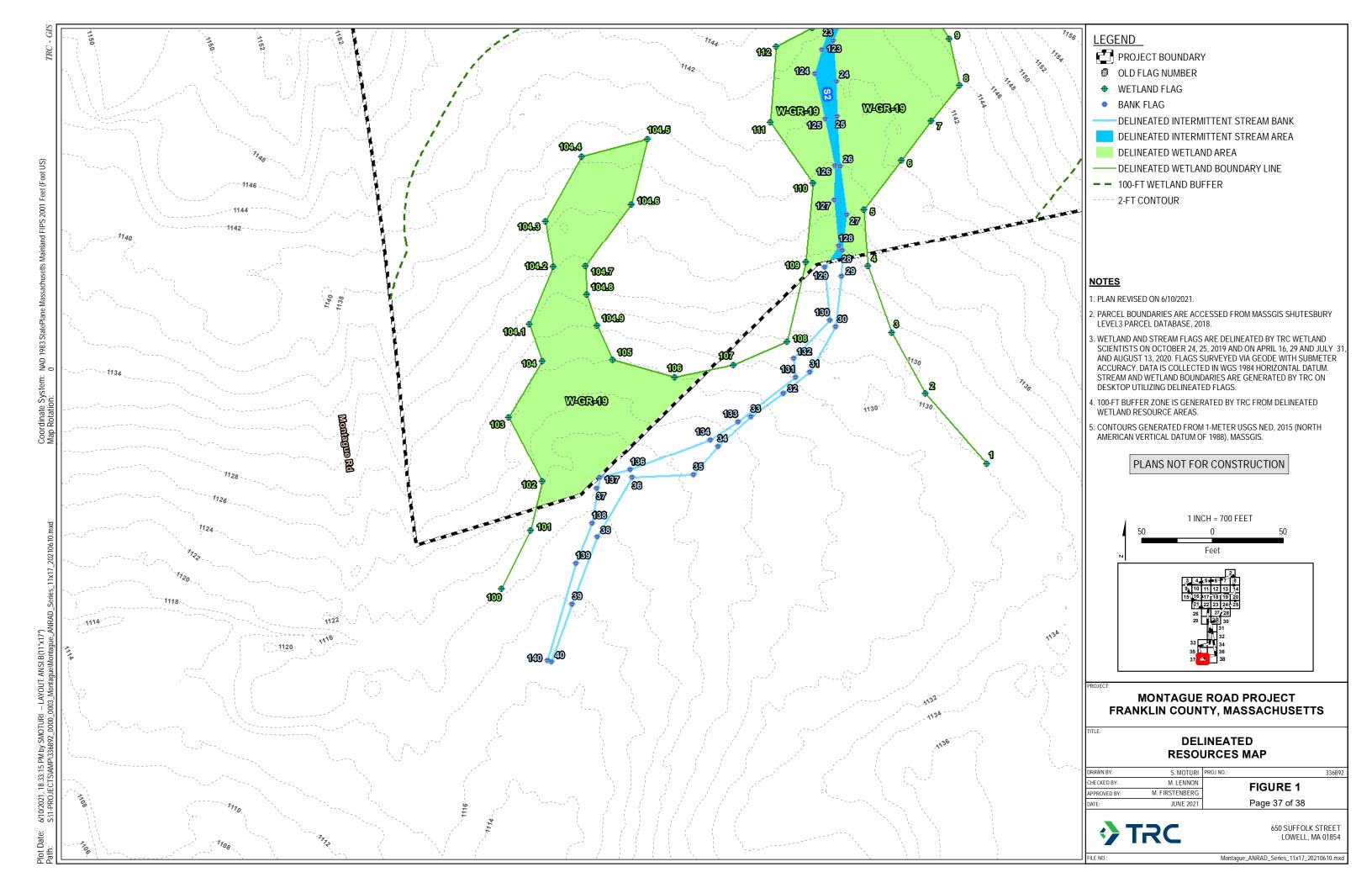


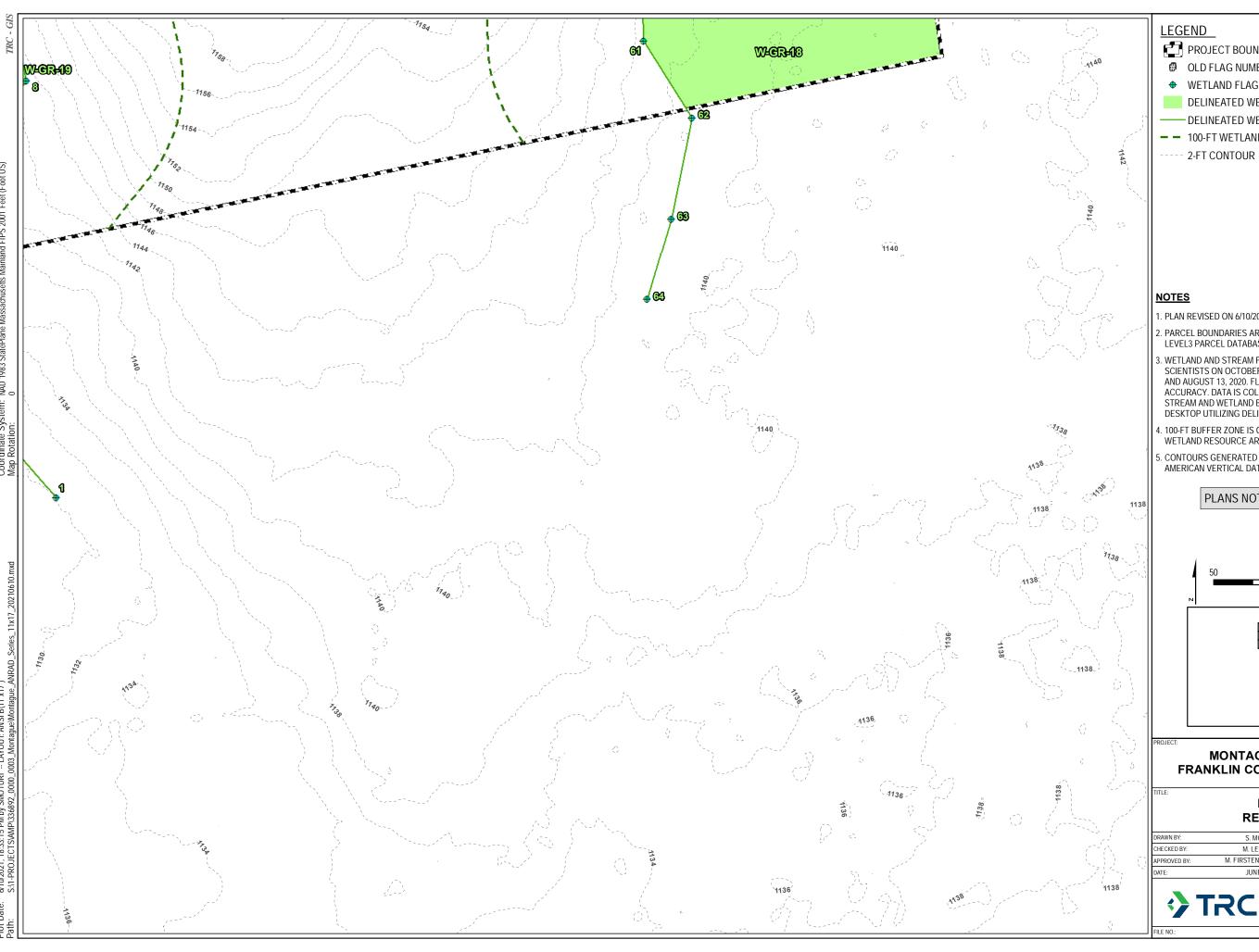








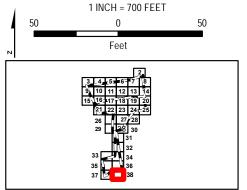




- PROJECT BOUNDARY
- OLD FLAG NUMBER
- WETLAND FLAG
- DELINEATED WETLAND AREA
- DELINEATED WETLAND BOUNDARY LINE
- **− −** 100-FT WETLAND BUFFER
- ---- 2-FT CONTOUR

- 1. PLAN REVISED ON 6/10/2021.
- 2. PARCEL BOUNDARIES ARE ACCESSED FROM MASSGIS SHUTESBURY LEVEL3 PARCEL DATABASE, 2018.
- 3. WETLAND AND STREAM FLAGS ARE DELINEATED BY TRC WETLAND SCIENTISTS ON OCTOBER 24, 25, 2019 AND ON APRIL 16, 29 AND JULY 31 ACCURACY. DATA IS COLLECTED IN WGS 1984 HORIZONTAL DATUM. STREAM AND WETLAND BOUNDARIES ARE GENERATED BY TRC ON DESKTOP UTILIZING DELINEATED FLAGS.
- 4. 100-FT BUFFER ZONE IS GENERATED BY TRC FROM DELINEATED WETLAND RESOURCE AREAS.
- 5. CONTOURS GENERATED FROM 1-METER USGS NED, 2015 (NORTH AMERICAN VERTICAL DATUM OF 1988), MASSGIS.

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**MONTAGUE ROAD PROJECT** FRANKLIN COUNTY, MASSACHUSETTS

## **DELINEATED RESOURCES MAP**

	DRAWN BY:	S. MOTURI
	CHECKED BY:	M. LENNON
	APPROVED BY:	M. FIRSTENBERG
`\'		

FIGURE 1

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650 SUFFOLK STREET LOWELL, MA 01854