

# Abbreviated Notice of Resource Area Delineation

**650 & 680 Route 15  
Sturbridge, MA 01566**

*Prepared for:*

Landing Rock, LLC  
15 Baldwin Drive  
Hampden, MA 01036

June 26, 2019

**McCLURE**

ENGINEERING, INC

119 Worcester Rd., Charlton, Massachusetts 01507 – 508.248.2005

**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 #:  
eDEP Transaction #:1117074  
City/Town:STURBRIDGE

**A. General Information**

**1. Project Location:**

a. Street Address	650 & 680 RT 15	c. Zip Code	01566
b. City/Town	STURBRIDGE	e. Longitude	72.13166 W
d. Latitude	42.03892 N (e.g. 41.01981)	g. Parcel/Lot #	04753-650 / 05032-680
f. Map/Plat #	552		

**2. Applicant:**

Individual  Organization

a. First Name		b. Last Name	
c. Organization	LANDING ROCK LLC		
d. Mailing Address	15 BALDWIN DRIVE		
e. City/Town	HAMPDEN	f. State	MA
g. Zip Code			01036
h. Phone Number	8016482513	i. Fax	
j. Email			mark@landingrockllc.com

**3. Property Owner:**

More than one owner

a. First Name		b. Last Name	
c. Organization	LANDING ROCK LLC		
d. Mailing Address	15 BALDWIN DRIVE		
e. City/Town	HAMPDEN	f. State	MA
g. Zip Code			01036
h. Phone Number	8016482513	i. Fax	
j. Email			mark@landingrockllc.com

**4. Representative:**

a. First Name	PETER	b. Last Name	ENGLE
c. Organization	MCCLURE ENGINEERING INC		
d. Mailing Address	119 WORCESTER RD		
e. City/Town	CHARLTON	f. State	MA
g. Zip Code			01507
h. Phone Number	5082482005	i. Fax	
j. Email			pengle@mcclureengineers.com

**5. Total WPA Fee Paid (Automatically inserted from ANRAD Wetland Fee Transmittal Form):**

a. Total Fee Paid \$	2000.00	b. State Fee Paid \$	987.50	c. City/Town Fee Paid \$	1012.50
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**B. Area(s) Delineated**

**1. Bordering Vegetated Wetland (BVW)** 4160

Linear Feet of Boundary Delineated

**2. Check all methods used to delineate the Bordering Vegetated Wetland (BVW) bound2. Check all methods used to delineate the Bordering Vegetated Wetland (BVW) boundary:**

- a.  MassDEP BVW Field Data Form (attached)
- b.  Other Methods for Determining the BVW boundary (attach documentation):

**Massachusetts Department of Environmental Protection**  
 Bureau of Resource Protection - Wetlands  
**WPA Form 4A**

Provided by MassDEP:  
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1.  50% or more wetland indicator plants
2.  Saturated/inundated conditions exist
3.  Groundwater indicators
4.  Direct observation
5.  Hydric soil indicators
6.  Credible evidence of conditions prior to disturbance

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

LEADMINE BROOK - PERENNIAL STREAM	2100
a. Resource Area	b. Linear Feet Delineated
c. Resource Area	d. Linear Feet Delineated

**C. Additional Information**

Application must include the following plans with this Abbreviated Notice of Resource Area Delineation. See instructions for details.

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

<b>a. Plan Title:</b>	<b>b. Plan Prepared By:</b>	<b>c. Plan Signed/Stamped By:</b>	<b>c. Revised Final Date:</b>	<b>e. Scale:</b>
RESOURCE AREA DELINEATION PLAN	PETER ENGLE, PE	CHRIS MCCLURE, PE	6.26.19	1"=30'

**Massachusetts Department of Environmental Protection**  
Bureau of Resource Protection - Wetlands  
**WPA Form 4A**

Provided by MassDEP:  
MassDEP File #:  
eDEP Transaction #:1117074  
City/Town:STURBRIDGE

**Abbreviated Notice of Resource Area Delineation**  
Massachusetts Wetlands Protection Act M.G.L. c 131, § 40  
**D. Signatures and Submittal Requirements**

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.

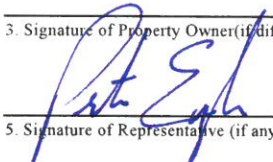
I acknowledge that failure to comply with these certification requirements is grounds for the Conservation Commission or the Department to take enforcement action.

  
\_\_\_\_\_  
1. Signature of Applicant

6/26/2019  
\_\_\_\_\_  
2. Date

\_\_\_\_\_  
3. Signature of Property Owner (if different)

\_\_\_\_\_  
4. Date

  
\_\_\_\_\_  
5. Signature of Representative (if any)

6-26-19  
\_\_\_\_\_  
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.)

**Other:**

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

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



**Massachusetts Department of Environmental Protection**

Bureau of Resource Protection - Wetlands

**WPA Form 4A**

**ANRAD Wetland Fee Transmittal Form**

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

Provided by MassDEP:  
 MassDEP File #:  
 eDEP Transaction #:1117074  
 City/Town:STURBRIDGE

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

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

**Fees**

The fee is calculated as follows for each resource area delineation included in the ANRAD (check applicable project type):

Bordering Vegetated Wetland:

1.  Single family house project

a. linear feet	x \$2.00 =	b. Total fee to exceed \$200
4160	2.00	8320.00

2.  All other projects

a. linear feet	x \$2.00 =	b. Total fee to exceed \$200

Other resource area (e.g. Bank, Riverfront area, etc.):

3.  Single family house project

\$ \$

4.  All other projects

a. linear feet	x \$2.00 =	b. Total fee to exceed \$200
2100	\$2.00	\$4200.00

a. linear feet	x \$2.00 =	b. Total fee to exceed \$200

Total Project Fee (not to exceed \$200 for projects on single-family house lots and not to exceed \$2,000 for all other projects): \$2000.00

5. Total fee  
 State share of filing fee (\*): \$987.50

6. 1/2 of total fee less \$12.50  
 City/Town share of filing fee: \$1012.50

7. 1/2 of total fee plus \$12.50

(\*) = You may not pay by credit card if the State share of the Fee is \$1000 or greater, however you will be able to pay by ACH and Check.



# Town of Sturbridge

## Conservation Commission

### Filing Fee Worksheet

Under M.G.L. c 131, § 40 and the Town of Sturbridge Wetland Bylaw

Applicant Landing Rock, LLC

Applicant Representative McClure Engineering Inc.

Project location 650 & 680 Route 15

#### TOTAL STATE FEE REQUIRED FOR PROJECT

(Only subject to NOI and ANRAD filings—See Wetland Fee Transmittal Form):

State Fee Category(s) ANRAD

Total State Fee for project (include Riverfront Area adjustment if applicable) \$2000

State share of State Fee \$987.50

Local share of State Fee \$1012.50

#### TOTAL ADDITIONAL LOCAL FEE REQUIRED FOR PROJECT\*:

(See Sturbridge Wetland Bylaw Regulations Section 4.17)

- Standard NOI Fee = \$50.00 \_\_\_\_\_ (check if applicable)
- Standard RDA Fee = \$25.00 \_\_\_\_\_ (check if applicable)
- Standard ANRAD Fee = \$00.10 per foot for resource area delineation ✓ (check if applicable).  
# feet 6,260 x \$00.10 = \$ 626.00
- Standard DELINEATION Fee = \$00.10 per foot for resource area delineation \_\_\_\_\_ (for all projects).  
# feet \_\_\_\_\_ x \$00.10 = \$ \_\_\_\_\_
- (for all projects that do not include an approved wetland delineation boundary by the Commission within 3 years prior to application submittal)
- REPLICATION Monitoring Fee = \$200.00 \_\_\_\_\_ (check if applicable)  
(for all projects that include wetland alteration and wetland replication)

#### CUMULATIVE TOTAL FEES:

Total State Fee: \$2000

Total Town Share of State Fee: \$1012.50

Total Local Fee: \$626.00

#### \*Please Note:

For each NOI and ANRAD filing, please submit two (2) checks to the Town of Sturbridge, one for the town's portion of the state fee and one for the local fee(s). RDA filings only have a Local Fee at this time.

The advertising fee is not included in the calculation. The Applicant will pay the Southbridge News directly.



# Town of Sturbridge

*Barbara A. Barry, Finance Director*

Department/Board/Committee: Conservation Commission

Please verify outstanding tax/fee status for the following property owner:

Property Owner: Landing Rock LLC

Property Location: 650 & 680 Route 15

- 
- The license/permit may be released.
  - The license/permit may not be released.

\_\_\_\_\_  
Finance Director

\_\_\_\_\_  
Date



# Town of Sturbridge

## Conservation Commission

### STURBRIDGE CONSERVATION COMMISSION AFFIDAVIT OF SERVICE

Under the Massachusetts Wetlands Protection Act and the Town of Sturbridge Wetland Bylaws I, Kevin Pelissier, hereby certify under the pains and penalties of perjury that on (date) 6/26/19, I gave notification to abutters in compliance with the second paragraph of the Massachusetts General Laws Chapter 131, § 40, and the DEP Guide to Abutter Notification as well as the Town of Sturbridge Wetland Bylaws, in connection with the following matter:

- A Notice of Intent OR
- A Request for Determination OR
- An Abbreviated Notice of Resource Area Delineation

was filed under the Massachusetts Wetlands Protection Act and the Town of Sturbridge Bylaws, by McClure Engineering Inc. with the Sturbridge Conservation Commission on (date) 6.26.19 for the property located at 650 & 680 Route 15, Sturbridge, MA.

The form of the Notification and a list of abutters to whom it was given and their addresses are included in the application file.

 6-26-19  
(signature of applicant) (date)

Kevin Pelissier  
(name of applicant-printed or typed)

F:\Home\CONSERVATION\Forms\Affidavit of Service.doc



# Town of Sturbridge

## Conservation Commission

### Notification to Abutters under the MA Wetlands Protection Act and the Town of Sturbridge Wetland Bylaw Regulations

In accordance with the second paragraph of Massachusetts General Laws, Chapter 131, § 40, as well as the Town of Sturbridge Wetland Bylaws, you are hereby notified of the following permit application for work within a wetland resource area and/or within the 200-foot buffer zone to a resource area:

- A. The name of the applicant is: Landing Rock, LLC
- B. The address of the lot(s) where the activity is proposed is: 650 & 680 Route 15
- C. The nature of the activity proposed includes: ANRAD
- D. The applicant has filed the following in accordance with the Wetlands Protection Act (MGL c. 131, § 40), and/or the Town of Sturbridge Wetland Bylaws.
- Notice of Intent seeking permission to conduct work within a wetland, water body or resource area
  - Request for Determination seeking permission to conduct work within a buffer zone to a wetland, waterbody or resource area
  - Abbreviated Notice of Resource Area Delineation seeking to confirm the wetland resource area boundaries.
  - Request to amend an existing Order of Conditions for DEP File #300-\_\_\_\_\_
- E. Copies of the application may be examined at the Sturbridge Conservation Department, 301 Main Street, Center Office Building, Sturbridge, MA between the hours of **9:00 a.m. – 3:30 p.m. Monday through Friday**. Additional times may available by appointment. Please call ahead to check for availability. (508) 347-2506
- F. Copies of the application may be obtained from either  the applicant: \_\_\_\_\_ or  the applicant's representative: McClure Engineering Inc, by calling telephone # 508-248-2005 on the following days of the week: M-F between the hours of 8 a.m. and 4:30 p.m.

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**The Public Hearing for this application will be held in the Center Office Building, 301 Main Street, 2nd Floor on July 16, 2019 at 6:00 pm.**

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**PLEASE NOTE: Notice of this Public Hearing will be published as follows:**

- In The Southbridge Evening News at least five days in advance of the hearing
- In the Town Hall at the Town Clerks office, not less than 48 hours in advance of the hearing
- On the Town's Meeting Calendar not less than 48 hours in advance of the hearing ([www.town.sturbridge.ma.us](http://www.town.sturbridge.ma.us))
- On the Conservation Commission webpage not less than 48 hours in advance of the hearing

You may contact the Sturbridge Conservation Commission Office (508) 347-2506 or the Department of Environmental Protection Central Regional Office at 508-792-7650 with questions in regards to the Notice of Intent application process or the Wetlands Protection Act.

Parcel ID	Owner	Owner Address	City	State	Zip	Property Address
655-04733-005	BYRON DIANA S	5 VINTON ROAD	STURBRIDGE	MA	01566	5 VINTON ROAD
552-04744-648	COMMONWEALTH OF MASS	100 CAMBRIDGE ST	BOSTON	MA	02202	648 ROUTE 15
655-04722-027	FARR REGINALD	PO BOX 291	FISKDALE	MA	01518	27 VINTON ROAD
655-04722-035	KRAUSE LOU ANN J	35 VINTON ROAD	STURBRIDGE	MA	01566	35 VINTON ROAD
655-04722-019	RIEL DAVID A	19 VINTON ROAD	STURBRIDGE	MA	01566	19 VINTON ROAD
	BOARD OF ASSESSORS					
Above persons listed are record owners as they appear on the most recent applicable tax list.						
Assessors are not responsible for errors or omissions. RE: M.G.L. - Chapter 40A, Section 11						
Abutters List - Conservation Commission - 200'						
RE: 650 & 680 ROUTE 15						
Certified Copy						
Assessor: <i>Don P. Murphy</i>						
Date: 6-18-19						

**TOWN OF HOLLAND  
ASSESSOR'S OFFICE**

27 Sturbridge Road Holland, MA 01521  
Tel 413-245-7108  
Fax 413-245-7037

June 19, 2019

To Whom It May Concern:

**Re: Certified List of Abutters**

The attached is a certified list of abutters for: VERDANT GROVE LLC

**MBLU: PROPERTY IN STURBRIDGE 552-04753-650**

Property location: **650 ROUTE 15, STURBRIDGE, MA 01566**

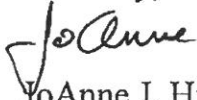
as requested by: Pete Engle of McClure Engineering

For filing with the TOWN OF STURBRIDGE CONSERVATION COMMISSION

Abutters are actual abutters and abutters to the abutters within 100 feet

According to assessment information as of January 1, 2019, current owners are provided if known.

Sincerely,



JoAnne J. Higgins MAA  
Principal Assessor

Enc



## 2 foot Abutters List Report

Holland, MA  
June 19, 2019

### ~~Subject Property:~~

Parcel Number: 7-C-2  
CAMA Number: 7-C-2  
Property Address: BUTTERWORTH RD

Mailing Address: *Landing Rock LLC  
15 Baldwin Drive  
Hampden, MA 01036*

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### Abutters:

Parcel Number: 5-C-1  
CAMA Number: 5-C-1  
Property Address: 33 BUTTERWORTH RD

Mailing Address: SANTOS RHONDA J  
33 BUTTERWORTH RD  
HOLLAND, MA 01521

Parcel Number: 7-C-2.9  
CAMA Number: 7-C-2.9  
Property Address: BUTTERWORTH RD

Mailing Address: *Verdant Grove LLC  
1330 Lagoon Ave 4<sup>th</sup> Fl  
Minneapolis, MN. 55408*



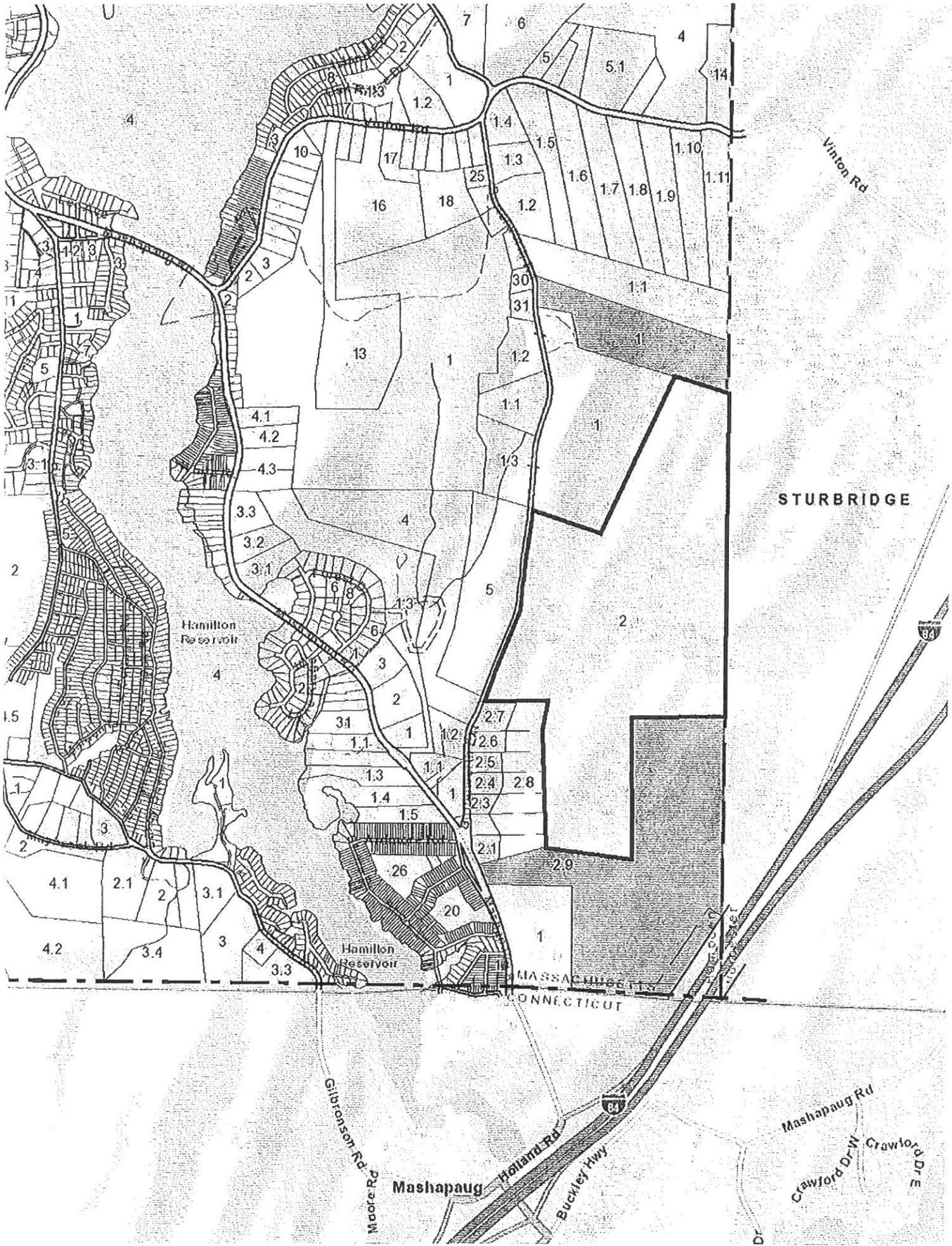
www.cai-tech.com

6/19/2019

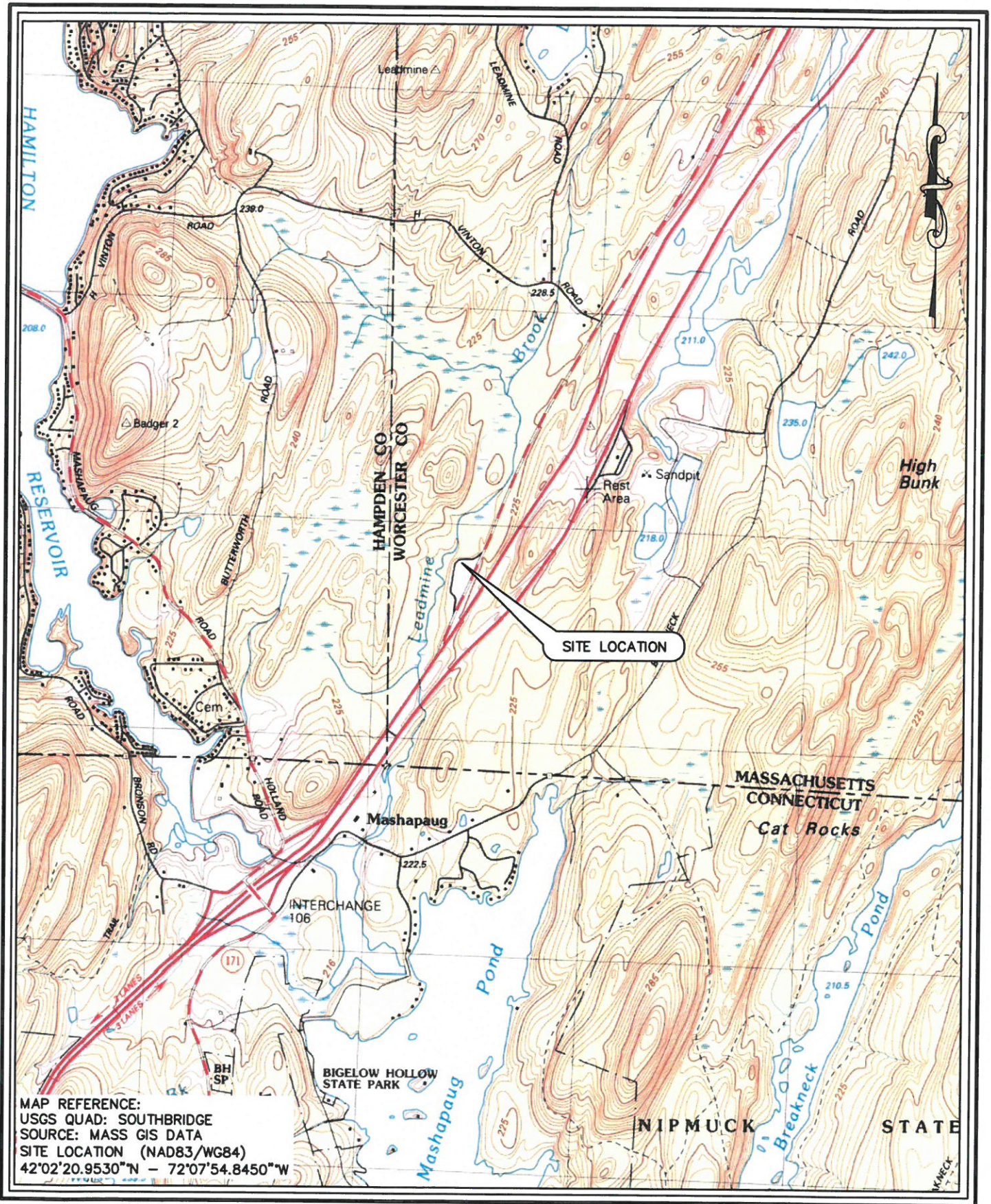
Data shown on this report is provided for planning and informational purposes only. The municipality and CAI Technologies are not responsible for any use for other purposes or misuse or misrepresentation of this report.

Page 1 of 1









DATE:	6/25/2019
DRAWN BY:	PE
APPROVED BY:	CMP
SCALE:	
	SCALE: 1"=2000'
	0 1000' 2000'

**McCLURE**  
 ENGINEERING, INC

119 Worcester Road  
 Charlton, MA 01507  
 Email: chris@mcclureengineers.com

Tel: (508) 248-2005  
 Fax: (508) 248-4887

**USGS SITE LOCATION**  
 #650 & #680 ROUTE 15  
 STURBRIDGE, MA, 01566  
 PREPARED FOR  
 LANDING ROCK, LLC

PROJ. NO. 287-1930-K  
 DWG. GIS

**FIG**  
**1**



Wetlands Delineation Report for:  
680 Rte. 15: Leadmine Brook, Sturbridge, MA  
Three Oaks Environmental

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## Three Oaks Environmental

P.O. Box 404 Hubbardston, MA 01452

(978) 855-3180

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April 26, 2019

Peter Engle  
McClure Associates  
119 Worcester Rd  
Charlton, MA 01507

re: Delineation 680 Rt. 15 Sturbridge  
April 16, 50°F, partly sunny, 2.5 inches of rain  
over the previous three days

I was tasked with delineating all wetland resource areas on the above-referenced parcel as well as the western side of Leadmine Brook in an effort to locate a future brook crossing with the least impacts to resource areas. The upland property at 680 Route 15 is predominantly an old, abandoned paved surface with a steep slope down to Leadmine Brook. There is a finger of offsite wetland within the northern Rte. 15 right-of-way strip that was also delineated as it causes a buffer zone (under state law and local bylaw) to extend onto the parcel in question.

Leadmine Brook is a perennial stream with a 200-foot wide Riverfront Area measured from the top of bank. Due to heavy spring rains and snow melt the mean annual high water level was clearly evident along the brook for accurately determining the top of bank. I flagged the bank with blue flagging beginning downstream on the east bank with flag R-1 and headed north along the bank past the northern property line to R-43 before crossing to the other side of the river. Some steep stretches of bank had wetland vegetation below the top of bank so only the bank was flagged. In other areas there was a Bordering Vegetated Wetland (BVW) that extended beyond the bank which I marked with pink flags beginning with A-1. At flag R-14 there is BVW at the riverbend where the pink flags follow the toe-of-slope and the river bank flags follow the bend in the river. Plant on the upland bank include: japanese barberry, sugar maple, christmas fern, and burning bush. Plants in the BVW next to the bank include skunk cabbage and tussock sedge.

The river returns to the toe of the steep upland slope at flag R-19. Here the bank and BVW are at the same elevation. The BVW line then follows a finger of wetland up to a seep at flag A-12.

I analyzed the soils in this area to accurately determine the boundary of the BVW. The upland soils above flag A-15 had an A horizon 5 inches thick of 10YR 3/2 and a B horizon of 10YR 3 /4, with seasonal high groundwater greater than 10 inches below the surface. The wetland soils had an inch of a mucky O horizon with a 4-inch A horizon of 10YR 3/1 and the B horizon 2 inches thick of 10YR 2/1 with high chroma mottles of

10YR 3/4. Beneath the B horizon was a buried O horizon. This is indicative of a floodplain soil where the wetland is inundated during less frequent flood events.

Flag A-21 is the last BVW flag since the bank steepens at R-26 and continues without wetland vegetation above the bank. There is a wire fence across the river at flag R-30. This area appears to be the narrowest location to cross, between here and the northern limit of flagging.

The riverbank flagging picks up on the opposite side of the brook with flag R-44. There is only bank from here to flag R-66 where there is BVW present to flag R-70 where a large tributary stream flows into the brook from the northwest. Since the intent of the delineation was to locate an acceptable area to cross the brook I flagged the bank (no BVW present) only a short way up this stream and back down to Leadmine Brook at flag R-80. At Flag R-83 the bank flags follow an oxbow off of the main channel. This represents the furthest extent of the riverfront area into the upland. There is a large upland island between the oxbow and the main stem that I did not separate from the wetland/bank line since it is unnecessary for the project purpose. At flag R-94 I included a wider BVW as part of the bank flagging since it is a flat by the river that likely floods annually. The riverbank flagging ends at R-96 approximately opposite flag R-1.

The Rte 15 right-of-way wetland to the north of the parcel is highly degraded due to years of dumping. There is a culvert and headwall present at the head of the wetland that likely receives drainage off of Rte 15. The boundary of this BVW closest to the parcel was flagged with pink flags numbered B-1 to B-7. Soils and plants were analyzed to determine the edge of the BVW.

Vegetation observed in the BVW included: red maple, highbush blueberry, sweet pepperbush, skunk cabbage, eastern hemlock, and cinnamon fern.

Soil analysis in the wetland: > 8" muck = histic epipedon

Vegetation observed within the upland portion of the site included: red oak, white pine, red maple, mountain laurel, wintergreen, princess pine club moss and black cherry.


Soil analysis in the upland: O horizon 0-2" 10YR 2/1, A horizon 2-10" 10 YR 4/4, too rocky below 10" to auger.

There are pits and mounds along the wetland boundary. I included areas in the BVW where the pits exceeded the extent of the mounds and where the soils were hydric. The NRCS soils map depicts the upland soils on the site to be either disturbed (paved) udorthents or Woodbridge fine sandy loam. The wetland soil along the brook is Ridgebury fine sandy loam. The NRCS soils map and soil descriptions are attached to this report.

MassGIS data-layer research indicates that the site is not located within an ACEC (Area of Critical Environmental Concern) or an ORW (Outstanding Resource Water). No rare species habitat or certified vernal pools are depicted on the site or within 100 feet of the property lines (see attached). Bordering Land Subject to Flooding (FEMA 100-year floodplain) and a floodway are present along Leadmine Brook. The narrowest floodplain and floodway are located at the northern end of the property where the banks are the steepest. The floodplain elevation was determined by FEMA at cross-section D to be 709.4 ft. on the attached FIR Mette.

Please do not hesitate to contact me if you have any questions regarding this report.

Sincerely,



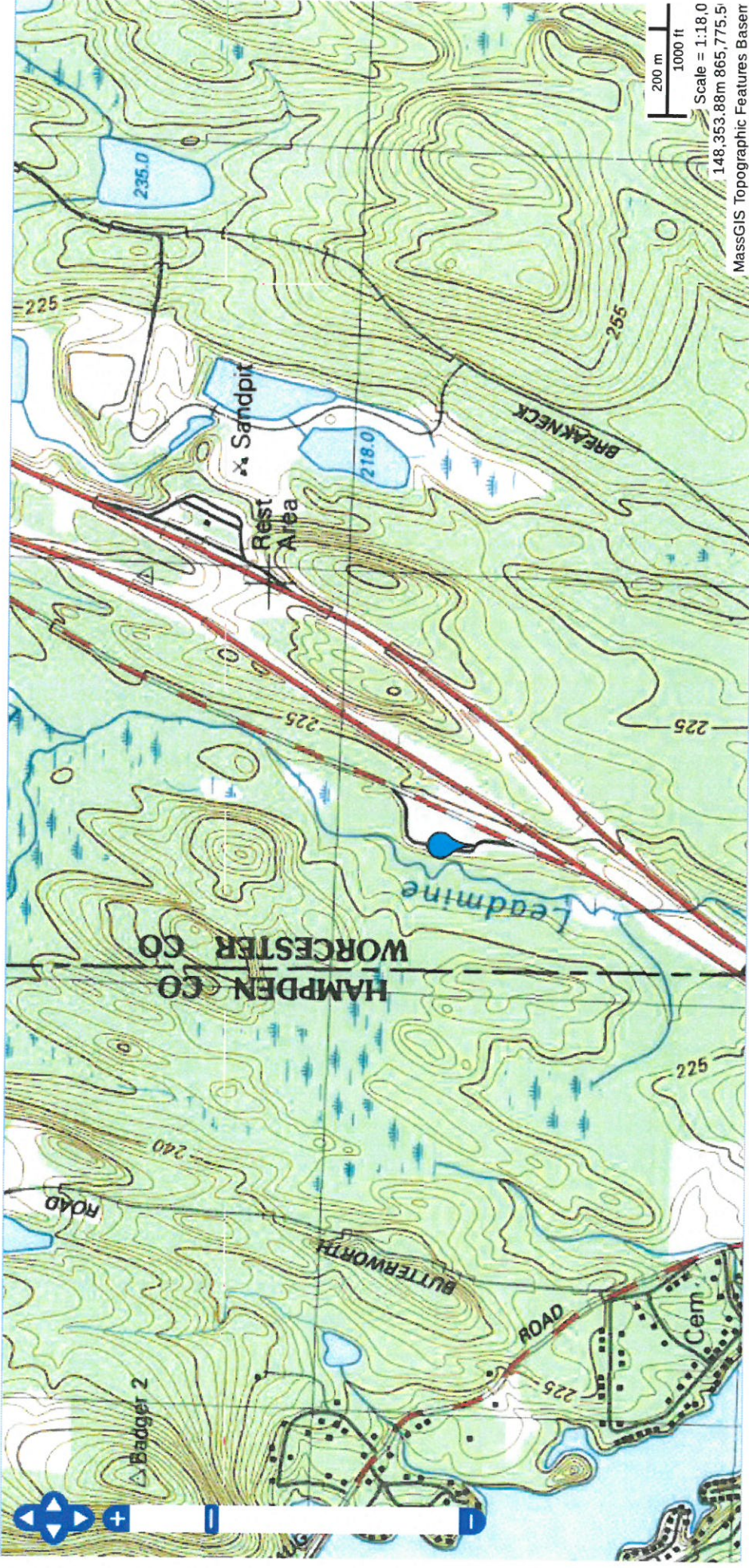
MaryAnn DiPinto, PWS #0227  
[threeoaksenvironmental@gmail.com](mailto:threeoaksenvironmental@gmail.com)  
encl.





680 Rte. 15 Sturbridge

Zoom to a town



0 m

Basemap:



680 Mashapaug Rd. Sturbridge

Zoom to a town



0 m

Basemap:



660 Mashapaug Rd. Sturbridge

Zoom to a town



0 m

Basemaps

**Available Data Layers**

Search data layers

- Coastal and Marine Features
- Conservation / Recreation
- Cultural Resources
- Environmental Monitoring (freshwater/marine)

**Active Data Layers**

Check all    Uncheck all

- NHESP Estimated Habitats of Rare W
- NHESP Certified Vernal Pools
- Outstanding Resource Waters

**Legend**

- NHESP Estimated Habitats of Rare Wildlife
- NHESP Certified Vernal Pools
- Outstanding Resource Waters
- PUBLIC WATER SUPPLY CONTRIBUTOR FOR ACEC
- ORW FOR ACEC
- ORW FOR BOTH WATER SUPPLY AND DEP Wetlands
- DEP Wetlands Arcs
- SHORELINE
- HYDROLOGIC CONNECTION
- MEAN WATER LINE
- APPARENT WETLAND LIMIT



680 Mashapaug Rd. Sturbridge

Zoom to a town



**Available Data Layers**

Search data layers

- DEP 2002 Integrated List of Waters 305b
- DEP 2010 Integrated List of Waters 305b
- DEP 2012 Integrated List of Waters 305b

**Active Data Layers**

Check all Uncheck all

- FEMA National Flood Hazard Layer P
- DEP Wetlands
- DEP Wetlands Arcs

**Legend**

**FEMA National Flood Hazard Layer Polygons**

- A: 1% Annual Chance of Flooding, n
- AE: 1% Annual Chance of Flooding,
- AE: Regulatory Floodway
- AH: 1% Annual Chance of 1-3ft Pon
- AO: 1% Annual Chance of 1-3ft She
- VE: High Risk Coastal Area
- D: Possible But Undetermined Haza
- X: 0.2% Annual Chance of Flooding
- X: 1% Drainage Area < 1 Sq. Mi.
- X: Reduced Flood Risk due to Levee
- Area Not Included
- Area with no DFIRM - Paper FIRMs it

DEP Wetlands

Basemaps

DEP Wetlands Arcs

0 m



# National Flood Hazard Layer FIRMette



42°2'38.89"N



## Legend

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

	Without Base Flood Elevation (BFE) <i>Zone A, V, A99</i>
	With BFE or Depth <i>Zone AE, AO, AH, VE, AR</i>
	Regulatory Floodway
	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile <i>Zone X</i>
	Future Conditions 1% Annual Chance Flood Hazard <i>Zone X</i>
	Area with Reduced Flood Risk due to Levee. See Notes. <i>Zone X</i>
	Area with Flood Risk due to Levee <i>Zone D</i>
	Area of Minimal Flood Hazard <i>Zone X</i>
	Effective LOMRs
	Area of Undetermined Flood Hazard <i>Zone D</i>
	Channel, Culvert, or Storm Sewer
	Levee, Dike, or Floodwall
	Cross Sections with 1% Annual Chance Water Surface Elevation
	Coastal Transect
	Base Flood Elevation Line (BFE)
	Limit of Study
	Jurisdiction Boundary
	Coastal Transect Baseline
	Profile Baseline
	Hydrographic Feature
	Digital Data Available
	No Digital Data Available
	Unmapped

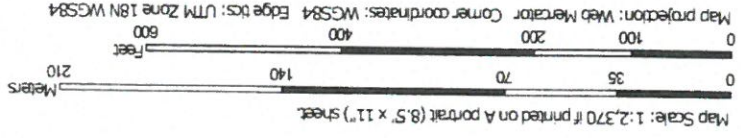
The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards.

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/15/2019 at 7:58:06 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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





## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
71B	Ridgebury fine sandy loam, 3 to 8 percent slopes, extremely stony	6.9	26.2%
255B	Windsor loamy sand, 3 to 8 percent slopes	1.0	4.0%
307B	Paxton fine sandy loam, 0 to 8 percent slopes, extremely stony	0.0	0.1%
307C	Paxton fine sandy loam, 8 to 15 percent slopes, extremely stony	0.1	0.3%
312B	Woodbridge fine sandy loam, 0 to 8 percent slopes, extremely stony	7.7	29.5%
422B	Canton fine sandy loam, 0 to 8 percent slopes, extremely stony	0.8	2.9%
651	Udorthents, smoothed	9.7	36.9%
<b>Totals for Area of Interest</b>		<b>26.3</b>	<b>100.0%</b>



## Worcester County, Massachusetts, Southern Part

### 312B—Woodbridge fine sandy loam, 0 to 8 percent slopes, extremely stony

#### Map Unit Setting

*National map unit symbol:* 2t2qs  
*Elevation:* 0 to 1,580 feet  
*Mean annual precipitation:* 36 to 71 inches  
*Mean annual air temperature:* 39 to 55 degrees F  
*Frost-free period:* 140 to 240 days  
*Farmland classification:* Not prime farmland

#### Map Unit Composition

*Woodbridge, extremely stony, and similar soils:* 82 percent  
*Minor components:* 18 percent  
*Estimates are based on observations, descriptions, and transects of  
the mapunit.*

#### Description of Woodbridge, Extremely Stony

##### Setting

*Landform:* Ground moraines, drumlins, hills  
*Landform position (two-dimensional):* Backslope, footslope, summit  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Concave  
*Across-slope shape:* Linear  
*Parent material:* Coarse-loamy lodgment till derived from gneiss,  
granite, and/or schist

##### Typical profile

*Oe - 0 to 2 inches:* moderately decomposed plant material  
*A - 2 to 9 inches:* fine sandy loam  
*Bw1 - 9 to 20 inches:* fine sandy loam  
*Bw2 - 20 to 32 inches:* fine sandy loam  
*Cd - 32 to 67 inches:* gravelly fine sandy loam

##### Properties and qualities

*Slope:* 0 to 8 percent  
*Percent of area covered with surface fragments:* 9.0 percent  
*Depth to restrictive feature:* 20 to 43 inches to densic material  
*Natural drainage class:* Moderately well drained  
*Runoff class:* Medium  
*Capacity of the most limiting layer to transmit water (Ksat):* Very  
low to moderately low (0.00 to 0.14 in/hr)  
*Depth to water table:* About 19 to 27 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 4.0 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 7s

*Hydrologic Soil Group:* C/D

*Hydric soil rating:* No

### Minor Components

#### Paxton, extremely stony

*Percent of map unit:* 10 percent

*Landform:* Ground moraines, drumlins, hills

*Landform position (two-dimensional):* Shoulder, backslope, summit

*Landform position (three-dimensional):* Crest, side slope

*Down-slope shape:* Convex, linear

*Across-slope shape:* Convex, linear

*Hydric soil rating:* No

#### Ridgebury, extremely stony

*Percent of map unit:* 8 percent

*Landform:* Ground moraines, depressions, drumlins,  
drainageways, hills

*Landform position (two-dimensional):* Toeslope

*Landform position (three-dimensional):* Head slope, base slope

*Down-slope shape:* Concave

*Across-slope shape:* Concave

*Hydric soil rating:* Yes

## Data Source Information

Soil Survey Area: Worcester County, Massachusetts, Southern Part

Survey Area Data: Version 11, Sep 11, 2018

## Worcester County, Massachusetts, Southern Part

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

#### Map Unit Setting

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

#### Map Unit Composition

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

#### Description of Ridgebury, Extremely Stony

##### Setting

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

##### Typical profile

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

##### Properties and qualities

*Slope:* 3 to 8 percent  
*Percent of area covered with surface fragments:* 9.0 percent  
*Depth to restrictive feature:* 15 to 35 inches to densic material  
*Natural drainage class:* Poorly drained  
*Runoff class:* Very high  
*Capacity of the most limiting layer to transmit water (Ksat):* Very  
low to moderately low (0.00 to 0.14 in/hr)  
*Depth to water table:* About 0 to 6 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Salinity, maximum in profile:* Nonsaline (0.0 to 1.9 mmhos/cm)  
*Available water storage in profile:* Low (about 3.0 inches)



### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 7s

*Hydrologic Soil Group:* D

*Hydric soil rating:* Yes

### Minor Components

#### Woodbridge, extremely stony

*Percent of map unit:* 10 percent

*Landform:* Drumlins, hills, ground moraines

*Landform position (two-dimensional):* Footslope, summit, backslope

*Landform position (three-dimensional):* Crest, side slope

*Down-slope shape:* Convex

*Across-slope shape:* Linear

*Hydric soil rating:* No

#### Whitman, extremely stony

*Percent of map unit:* 8 percent

*Landform:* Depressions

*Down-slope shape:* Concave

*Across-slope shape:* Concave

*Hydric soil rating:* Yes

#### Paxton, extremely stony

*Percent of map unit:* 2 percent

*Landform:* Hills, ground moraines, drumlins

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

*Landform position (three-dimensional):* Crest, side slope

*Down-slope shape:* Convex, linear

*Across-slope shape:* Convex, linear

*Hydric soil rating:* No

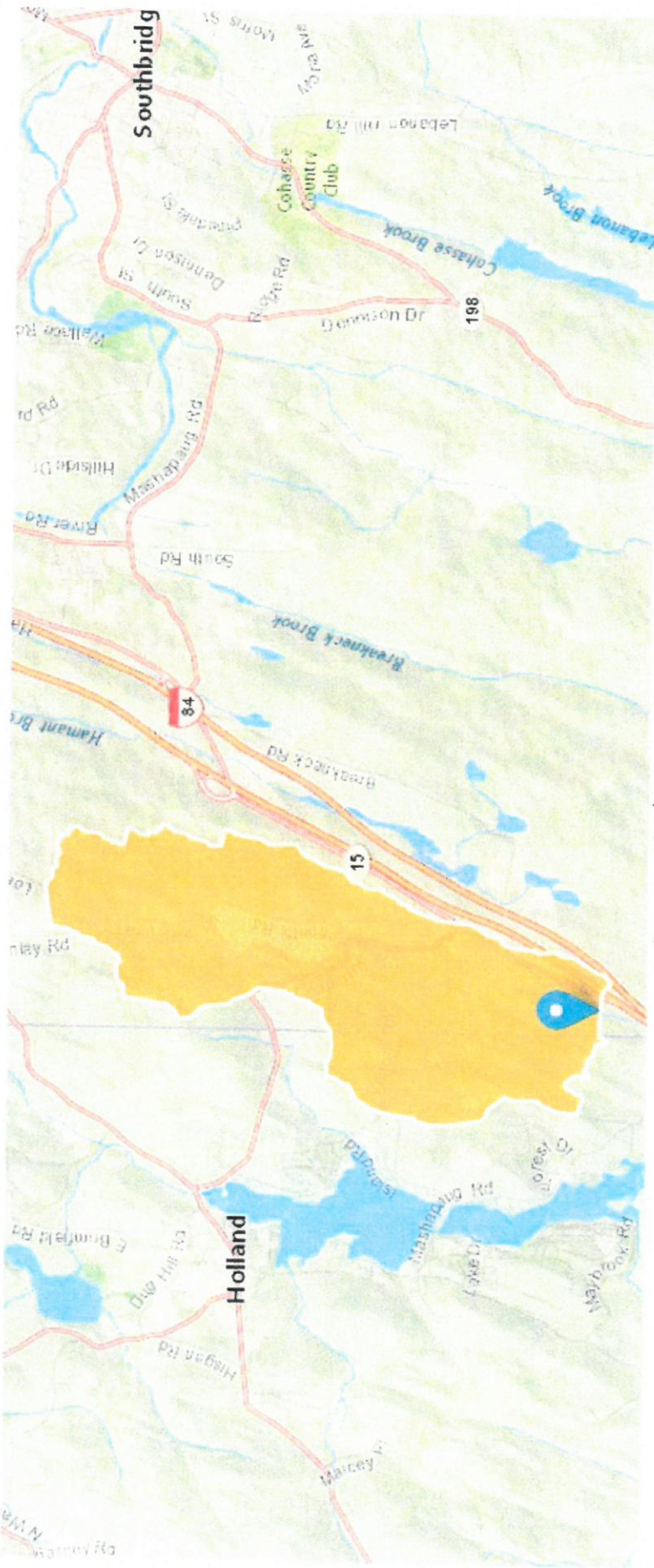
## Data Source Information

Soil Survey Area: Worcester County, Massachusetts, Southern Part

Survey Area Data: Version 11, Sep 11, 2018

# StreamStats Report - 680 Mashapaug Rd. Sturbridge

Region ID: MA  
 Workspace ID: MA20190415232919906000  
 Clicked Point (Latitude, Longitude): 42.03710, -72.13304  
 Time: 2019-04-15 19:29:33 -0400



*Watershed to site*

## Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	2.73	square miles
PCTSNDGRV	Percentage of land surface underlain by sand and gravel deposits	0	percent

Parameter Code	Parameter Description	Value	Unit
FOREST	Percentage of area covered by forest	80.36	percent
MAREGION	Region of Massachusetts 0 for Eastern 1 for Western	0	dimensionless

Probability Statistics Parameters [Perennial Flow Probability]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	2.73	square miles	0.01	1.99
PCTSDNGRV	Percent Underlain By Sand And Gravel	0	percent	0	100
FOREST	Percent Forest	80.36	percent	0	100
MAREGION	Massachusetts Region	0	dimensionless	0	1

Probability Statistics Disclaimers [Perennial Flow Probability]

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

Probability Statistics Flow Report [Perennial Flow Probability]

Statistic	Value	Unit
Probability Stream Flowing Perennially	0.873	dim

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](http://pubs.usgs.gov/sir/2006/5031/pdfs/SIR_2006-5031rev.pdf))



# StreamStats Report

Region ID: MA

Workspace ID: MA20190625132642292000

Clicked Point (Latitude, Longitude): 42.03842, -72.13312

Time: 2019-06-25 09:27:04 -0400



WATERSHED TO INTERMITTENT STREAM

## Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	0.12	square miles
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	0	dimensionless
BSLDEM250	Mean basin slope computed from 1:250K DEM	1.883	percent
ELEV	Mean Basin Elevation	755	feet
LC06STOR	Percentage of water bodies and wetlands determined from the NLCD 2006	47.87	percent

Parameter Code	Parameter Description	Value	Unit
BSLDEM10M	Mean basin slope computed from 10 m DEM	5.923	percent
PCTSNDGRV	Percentage of land surface underlain by sand and gravel deposits	0	percent
FOREST	Percentage of area covered by forest	59.74	percent

#### General Disclaimers

Parameter values have been edited, computed flows may not apply.

#### Flow-Duration Statistics Parameters<sup>[Statewide Low Flow WRIR00 4135]</sup>

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.12	square miles	1.61	149
DRFTPERSTR	Stratified Drift per Stream Length	0	square mile per mile	0	1.29
MAREGION	Massachusetts Region	0	dimensionless	0	1
BSLDEM250	Mean Basin Slope from 250K DEM	1.883	percent	0.32	24.6

#### Flow-Duration Statistics Disclaimers<sup>[Statewide Low Flow WRIR00 4135]</sup>

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors  
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#### Flow-Duration Statistics Flow Report<sup>[Statewide Low Flow WRIR00 4135]</sup>

Statistic	Value	Unit
50 Percent Duration	0.11	ft <sup>3</sup> /s
60 Percent Duration	0.062	ft <sup>3</sup> /s



Statistic	Value	Unit
70 Percent Duration	0.0276	ft <sup>3</sup> /s
75 Percent Duration	0.0191	ft <sup>3</sup> /s
80 Percent Duration	0.0123	ft <sup>3</sup> /s
85 Percent Duration	0.0078	ft <sup>3</sup> /s
90 Percent Duration	0.00443	ft <sup>3</sup> /s
95 Percent Duration	0.00213	ft <sup>3</sup> /s
98 Percent Duration	0.00128	ft <sup>3</sup> /s
99 Percent Duration	0.000819	ft <sup>3</sup> /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/>)**

Peak-Flow Statistics Parameters [Peak Statewide 2016 5156]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.12	square miles	0.16	512
ELEV	Mean Basin Elevation	755	feet	80.6	1948
LC06STOR	Percent Storage from NLCD2006	47.87	percent	0	32.3

Peak-Flow Statistics Disclaimers [Peak Statewide 2016 5156]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors  
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Peak-Flow Statistics Flow Report [Peak Statewide 2016 5156]

Statistic	Value	Unit
2 Year Peak Flood	3.05	ft <sup>3</sup> /s

Statistic	Value	Unit
5 Year Peak Flood	5.37	ft <sup>3</sup> /s
10 Year Peak Flood	7.36	ft <sup>3</sup> /s
25 Year Peak Flood	10.3	ft <sup>3</sup> /s
50 Year Peak Flood	12.7	ft <sup>3</sup> /s
100 Year Peak Flood	15.4	ft <sup>3</sup> /s
200 Year Peak Flood	18.2	ft <sup>3</sup> /s
500 Year Peak Flood	22.3	ft <sup>3</sup> /s

*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>)**

Bankfull Statistics Parameters<sup>[Bankfull Statewide SIR2013 5155]</sup>

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.12	square miles	0.6	329
BSLDEM10M	Mean Basin Slope from 10m DEM	5.923	percent	2.2	23.9

Bankfull Statistics Disclaimers<sup>[Bankfull Statewide SIR2013 5155]</sup>

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

Bankfull Statistics Flow Report<sup>[Bankfull Statewide SIR2013 5155]</sup>

Statistic	Value	Unit
Bankfull Width	6.32	ft
Bankfull Depth	0.503	ft
Bankfull Area	3.12	ft <sup>2</sup>

<b>Statistic</b>	<b>Value</b>	<b>Unit</b>
Bankfull Streamflow	6.51	ft <sup>3</sup> /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/>)**

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Application Version: 4.3.8