

ABBREVIATED NOTICE OF RESOURCE AREA DELINEATION

**121 Grove Street
Map 295, Lot 1 & Map 294, Lot 7
Franklin, Massachusetts**



SUBMITTED TO:

Town of Franklin
Conservation Commission
355 East Central Street
Franklin, Massachusetts 02038

PREPARED FOR:

Fairfield Residential Company LLC
5 Burlington Woods
Suite 203
Burlington, Massachusetts 01803

PREPARED BY:

Lucas Environmental, LLC
500A Washington Street
Quincy, Massachusetts 02169

IN ASSOCIATION WITH:

SHIPE Consulting
RJO'Connell & Associates, Inc.

REPORT DATE: November 18, 2022





500A Washington Street, Quincy, MA 02169

November 18, 2022

Town of Franklin
Conservation Commission
355 East Central Street
Franklin, Massachusetts 02038

Re: Notice of Intent
121 Grove Street
Map 295, Lot 1 & Map 294, Lot 7
Franklin, Massachusetts 02038

Members of the Franklin Conservation Commission:

On behalf of Fairfield Residential Company LLC, and in association with SHIPE Consulting and RJO'Connell & Associates, Inc., LLC, Lucas Environmental, LLC is pleased to submit this Abbreviated Notice of Resource Area Delineation (ANRAD) to confirm the delineation and identification of wetland resource areas for the subject property located at 121 Grove Street (Map 295, Lot 1 & Map 294, Lot 7) in Franklin, Massachusetts. This ANRAD is submitted in order to confirm the boundaries of wetland resource areas on the site that are regulated under the Massachusetts Wetlands Protection Act (WPA; M.G.L. Ch. 131, Section 40) and implementing regulations (310 CMR 10.00 et seq.), and the Town of Franklin Wetlands Protection Bylaw (Chapter 181).

Enclosed please find one (1) original and one (1) copy of the ANRAD submittal and full-size plan, and six (6) copies of the reduced 11x17 plans. The ANRAD application package includes the WPA Form 4A, existing conditions narrative, figures, photographic documentation, abutter notification, filing fees, MassDEP data forms, and Existing Conditions Site Plan (1 sheet). A link to an electronic copy of the pdf file of the ANRAD application and supporting documentation will be provided concurrently with this submittal via email. We respectfully request that you place this matter on your agenda for the December 8, 2022, Public Hearing.

If you have any questions, please do not hesitate to contact me at 617.405.4140 or cml@lucasenviro.com. Thank you for your consideration in this matter.

Sincerely,
LUCAS ENVIRONMENTAL, LLC

Christopher M. Lucas, PWS, CWS, RPSS
Environmental Consultant/Wetland & Soil Scientist

cc: Bryn Smith – Owner (electronic copy)
Fairfield Residential Company LLC – Applicant (electronic copy)
R.J. O'Connell & Associates, Inc. (electronic copy)
MassDEP – CERO

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SECTION I – FORMS



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
**WPA Form 4A – Abbreviated Notice of
Resource Area Delineation**

Provided by MassDEP:

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

MassDEP File Number

Document Transaction Number

Franklin
City/Town

A. General Information

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

<u>121 Grove Street</u>	<u>Franklin</u>	<u>02038</u>
a. Street Address	b. City/Town	c. Zip Code
<u>Latitude and Longitude:</u>	<u>42° 4' 36.5" N</u>	<u>71° 25' 21.55" W</u>
	d. Latitude	e. Longitude
<u>Map 294 & 295</u>	<u>Lots 7 & 1</u>	
f. Assessors Map/Plat Number	g. Parcel /Lot Number	

2. Applicant:

<u>Robert</u>	<u>Hewitt</u>	
a. First Name	b. Last Name	
<u>Fairfield Residential Company LLC</u>		
c. Organization		
<u>5 Burlington Woods, Suite 203</u>		
d. Mailing Address		
<u>Burlington</u>	<u>MA</u>	<u>01803</u>
e. City/Town	f. State	g. Zip Code
<u>781.572.7712</u>	<u>rhewitt@ffres.com</u>	
h. Phone Number	i. Fax Number	
	j. Email Address	

3. Property owner (if different from applicant):

<u>Bryn</u>	<u>Smith</u>	<input type="checkbox"/> Check if more than one owner (attach additional sheet with names and contact information)
a. First Name	b. Last Name	
<u></u>		
c. Organization		
<u>106 Mendon Street</u>		
d. Mailing Address		
<u>Bellingham</u>	<u>MA</u>	<u>02019</u>
e. City/Town	f. State	g. Zip Code
<u>508.523.3496</u>	<u>bryn@thenicecompany.com</u>	
h. Phone Number	i. Fax Number	
	j. Email Address	

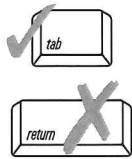
4. Representative (if any):

<u>Christopher</u>	<u>Lucas</u>	
a. Contact Person First Name	b. Contact Person Last Name	
<u>Lucas Environmental, LLC</u>		
c. Organization		
<u>500A Washington Street</u>		
d. Mailing Address		
<u>Quincy</u>	<u>MA</u>	<u>02169</u>
e. City/Town	f. State	g. Zip Code
<u>617.405.4140</u>	<u>617.405.4465</u>	<u>cml@lucasenviro.com</u>
h. Phone Number	i. Fax Number	j. Email Address

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

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

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.

Fees will be calculated for online users.



Massachusetts Department of Environmental Protection
 Bureau of Resource Protection - Wetlands
WPA Form 4A – Abbreviated Notice of
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B. Area(s) Delineated

1. Bordering Vegetated Wetland (BVW) 6,818
Linear Feet of Boundary Delineated

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

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

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

<u>Inland Bank of Intermittent Streams</u>	<u>4,345</u>
a. Resource Area	b. Linear Feet Delineated
<u>Isolated Vegetated Wetland - Local Only</u>	<u>253</u>
c. Resource Area	d. Linear Feet Delineated

C. Additional Information

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

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

Existing Conditions Site Plan, prepared by Guerriere & Halnon, Inc. dated November 16, 2022

D. Fees



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

Provided by MassDEP:

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

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

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

3844 _____

2. Municipal Check Number

3845 _____

4. State Check Number

Lucas Environmental, LLC _____

6. Payor name on check: First Name

November 17, 2022 _____

3. Check date

November 17, 2022 _____

5. Check date

7. Payor name on check: Last Name

E. Signatures

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



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

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Franklin
City/Town

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 *[Signature]*

3. Signature of Property Owner (if different) *[Signature]*

5. Signature of Representative (if any) *Christopher M. Lucas*

2. Date 11/16/22

4. Date 11/15/22

6. Date November 16, 2022

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:

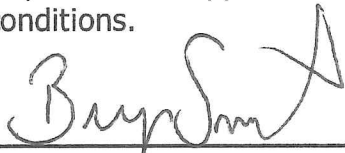
One copy of the completed Abbreviated Notice of Resource Area Delineation (Form 4A), including supporting plans and documents; one copy of the ANRAD Wetland Fee Transmittal Form; and a copy of the state fee payment must be sent to the MassDEP Regional Office (see Instructions) by certified mail or hand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

Town of Franklin Conservation Commission

PROPERTY ACCESS SIGNATURE FORM

I hereby request that the Franklin Conservation Commission review this ANRAD application. I (we) grant authority to the Franklin Conservation Commission members and agents to go onto my (our) property solely for purposes directly related to the inspection and approval of this application and for follow-up compliance with the permit conditions.



Signature of Property Owner



Date



SECTION II – NARRATIVE



EXISTING CONDITIONS NARRATIVE

1.0 INTRODUCTION

On behalf of Fairfield Residential Company LLC, and in association with SHIPE Consulting and RJO'Connell & Associates, Inc. (RJO), LLC, Lucas Environmental, LLC (LE) is pleased to submit this Abbreviated Notice of Resource Area Delineation (ANRAD) to confirm the delineation and identification of wetland resource areas for the subject property located at 121 Grove Street (Map 295, Lot 1 & Map 294, Lot 7) in Franklin, Massachusetts. This ANRAD is submitted in order to confirm the boundaries of wetland resource areas on the site that are regulated under the Massachusetts Wetlands Protection Act (WPA; M.G.L. Ch. 131, Section 40) and implementing regulations (310 CMR 10.00 et seq.), and the Town of Franklin Wetlands Protection Bylaw (Chapter 181).

Professional Wetland Scientists (PWS) and Registered Professional Soil Scientists (RPSS) from Lucas Environmental, LLC (LE) conducted site investigations at the property located at 121 Grove Street in Franklin, Massachusetts on April 12th, 20th, and 21st, 2022. An additional site inspection was conducted by two PWS/RPSS on October 27, 2022.

The wetland investigation was completed in accordance with the Massachusetts Wetlands Protection Act (M.G.L. Ch. 131, § 40) and regulations (310 CMR 10.00 et seq.); Section 404 of the Clean Water Act (33 U.S.C. 1344); Massachusetts Department of Environmental Protection (MassDEP) publication "Delineating Bordering Vegetated Wetlands" under the Massachusetts Wetlands Protection Act (1995); the U.S. Army Corp of Engineers (USACE) Wetland Delineation Manual (1987); the Northcentral and Northeast Regional Supplement (2012); and the Town of Franklin Wetlands Protection Bylaw and Regulations.

The site inspection identified the following wetland resource areas at the site:

- Two Bordering Vegetated Wetland (BVW);
- One Isolated Vegetated Wetland (IVW); and
- Inland Bank to three Intermittent Streams.

2.0 EXISTING CONDITIONS

The Study Area is comprised of two parcels totaling approximately 31.2 acres of land at 121 Grove Street in Franklin, Massachusetts (See Figure 1 – USGS and Figure 2 – Aerial Map). The parcels are identified as follows:

- 121 Grove Street (Parcel ID 295-001-000-000 or Map 295, Lot 1) totaling approximately 26.26 acres of land. The parcel is partially developed and contains a three-family house, parking areas, sheds, fields, woodlands, and wetlands.
- 0 Grove Street (Parcel ID 294-007-000-000 or Map 294, Lot 7) is an undeveloped, approximate 4.96-acre parcel located south of the 121 Grove Street parcel.

EXISTING CONDITIONS NARRATIVE

The Study Area is bounded by electric transmission right-of-way (ROW) to the south, Grove Street to the east, and the Franklin State Forest to the west and north. Typical tree species within forested upland areas of the site include red oak (*Quercus rubra*), white oak (*Quercus alba*), black cherry (*Prunus serotina*), white pine (*Pinus strobus*), and sassafras (*Sassafras albidum*). Common upland shrubs include witch hazel (*Hamamelis virginiana*), multiflora rose (*Rosa multiflora*), glossy buckthorn (*Frangula alnus*), and shrub forms of the overstory. Common herbaceous species in the upland include Canada mayflower (*Maianthemum canadense*), poison ivy (*Toxicodendron radicans*), teaberry (*Gaultheria procumbens*), bracken fern (*Pteridium aquilinum*), and seedlings of the overstory.

The remainder of the Study Area consists of lawn areas, mowed fields, meadows, and older apple and pear trees. Common vegetation within the fields includes graminoids, goldenrods (*Solidago sp.*), autumn olive (*Elaeagnus umbellata*), multiflora rose, Oriental bittersweet (*Celastrus orbiculatus*), and wild onion (*Allium canadense*).

According to the July 17, 2012 FEMA Flood Insurance Rate Map (FIRM) for Norfolk County, Massachusetts, Map Number 25021C0308E, the Study Area is located within Zone X, which is classified as *areas determined to be outside the 0.2% annual chance floodplain* (500-year floodplain). Therefore, Bordering Land Subject to Flooding (100-year floodplain) does not exist within the Study Area (See Figure 3).

A review of the current MassGIS data layer for the Massachusetts Natural Heritage Atlas (effective August 1, 2021) under the Natural Heritage and Endangered Species Program (NHESP) indicates that no portion of the site is located within Estimated Habitat of Rare Wildlife or Priority Habitat of Rare Species. No Certified or Potential Vernal Pools under the jurisdiction of the Wetlands Protection Act Regulations (310 CMR 10.00 et seq.) or the Massachusetts Endangered Species Act (321 CMR 10.00 et seq.) occur within the Study Area (See Figure 4 – NHESP Map).

The Study Area is not located within an Area of Critical Environmental Concern (ACEC), Outstanding Resource Water (ORW), or Watershed Protection Area. The northeast corner of the Study Area is located within an approved MassDEP Zone II Wellhead Protection Area, which is considered a Critical Area under 310 CMR 10.04 and the Massachusetts Stormwater Management Standards.

3.0 ENVIRONMENTAL RESOURCE AREAS

Wetland resource areas delineated within the Study Area include two separate areas of Bordering Vegetated Wetlands (BVW) associated with three separate intermittent streams, and a small Isolated Vegetated Wetland (IVW).

The site investigation was limited to wetland areas within 100 feet and perennial streams within 200 feet of the parcel boundaries (i.e., Study Area). Off-site areas were not delineated.

Wetland resource areas are described below. Resource areas are identified on the attached Existing Conditions Site Plan prepared by Guerriere & Halnon, Inc., dated May 20, 2022. Photographic documentation (Appendix A) has been included for the wetland resource areas described below. MassDEP Wetland Delineation Field Data Forms are included in Appendix D.

EXISTING CONDITIONS NARRATIVE

The following data sources were examined prior to the site investigation:

- Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps;
- United States Geological Survey Topographic Quadrangle;
- MassGIS MassDEP Wetland and Hydrography Datalayers;
- MassGIS Natural Heritage Atlas Datalayers; and
- United States Department of Agriculture, Natural Resources Conservation Service (USDA-NRCS) Soil Survey.

Under the Massachusetts Wetlands Protection Act and Bylaw, the wetlands near the site are regulated as described below.

3.1 Inland Bank – 310 CMR 10.54

Section 310 CMR 10.54 of the WPA defines a Bank as *the portion of the land surface which normally abuts and confines a water body. It occurs between a water body and a vegetated bordering wetland and adjacent flood plain, or, in the absence of these, it occurs between a water body and an upland. The upper boundary of a Bank is the first observable break in the slope or the mean annual flood level, whichever is lower. The lower boundary of a Bank is the mean annual low flow level.*

Under the Bylaw, Bank is defined as *the land area which normally abuts and confines a water body; the lower boundary being the mean annual low flow level, and the upper boundary being the first observable break in the slope or the mean annual flood level, whichever is higher.*

The Inland Bank associated with the unnamed intermittent streams are further described below.

3.2 Bordering Vegetated Wetlands – 310 CMR 10.55

Section 310 CMR 10.55 of the WPA defines BVW as *freshwater wetlands which border on creeks, rivers, streams, ponds and lakes. The types of freshwater wetlands are wet meadows, marshes, swamps and bogs. Bordering Vegetated Wetlands are areas where the soils are saturated and/or inundated such that they support a predominance of wetland indicator plants. The boundary of Bordering Vegetated Wetlands is the line within which 50% or more of the vegetational community consists of wetland indicator plants and saturated or inundated conditions exist. Wetland indicator plants are also those classified in the indicator categories of Facultative, Facultative+, Facultative Wetland-, Facultative Wetland, Facultative Wetland+, or Obligate Wetland in the National List of Plant Species That Occur in Wetlands: Massachusetts (Fish & Wildlife Service, U.S. Department of the Interior, 1988) or plants exhibiting physiological or morphological adaptations to life in saturated or inundated conditions.*

The delineated BVWs are described below.

3.3 Resource Area Descriptions

Wetland resource areas field delineated include two areas of BVW identified as Wetlands A and B. The IVW is identified as Wetland C. The stream segments are identified as Streams 1, 2, and 3. Each is described below. Note that a wetland was not delineated off-site to the south, within 100 feet of the property line.

Wetland A

Wetland A is a large BVW associated with an intermittent stream, described as "Stream 2" below. The wetland bisects the Study Area from west to east and was delineated with pink survey tape numbered sequentially from WFA-1 to WFA-146. Wetland A is a large, forested Palustrine Forested Wetland (PFO) vegetated with red maple (*Acer rubrum*), sweet pepperbush (*Clethra alnifolia*), highbush blueberry (*Vaccinium corymbosum*), sensitive fern (*Onoclea sensibilis*), and skunk cabbage (*Symplocarpus foetidus*). The portions of wetland within the field area are also vegetated with gray birch (*Betula populifolia*), speckled alder (*Alnus rugosa*), pussy willow (*Salix discolor*), soft rush (*Juncus effusus*), and stepplebush (*Spirea tomentosa*). Common vegetation in the adjacent upland includes American beech (*Fagus grandifolia*), red oak, white oak, white pine, multiflora rose, autumn olive, crab apple (*Malus* sp.), and Japanese barberry (*Berberis thunbergii*).

Soils within the wetland are sandy loam with deep dark A-horizon and a depleted matrix with redoximorphic features. The wetland/upland boundary corresponds with a topographic break in slope or the transition to a non-hydrophytic plant community and absence of hydric soils/wetland hydrology. Indicators of wetland hydrology include shallow saturation and drainage patterns.

Wetland B

Wetland B is a BVW located along the southern portion of the Study Area and was delineated with pink survey tape numbered sequentially from WFB-1 to WFB-48; WFB-49 to WFB-69; and WFB-70 to WFB-92. Wetland B is a forested wetland (PFO) associated with an intermittent stream, described as "Stream 1" below. Portions of the wetland extend into the mowed field area (i.e. WFB-1 to WFB-24) where indicators of wetland hydrology (saturation to the surface), and hydric soil indicators were used to delineate the wetland boundary. Common vegetation within the wetland includes red maple, yellow birch (*Betula alleghaniensis*), black tupelo (*Nyssa sylvatica*), sweet pepperbush, highbush blueberry, and skunk cabbage.

Soils within the wetland are sandy loam with deep dark A-horizon and a depleted matrix with redoximorphic features. The wetland/upland boundary corresponds with a topographic break in slope or the transition to a non-hydrophytic plant community and absence of hydric soils/wetland hydrology. Indicators of wetland hydrology include drainage patterns, shallow soil saturation and inundation.

Portions of Wetland B near flags WFB-72 to WFB-76 were ponded with approximately four to six inches of water during the site visit. The area was investigated to determine if the area was being used as breeding habitat by vernal pool indicator species on April 12th and April 20th. No evidence of breeding by vernal pool indicator species was observed on either date, and the area appears too shallow to support a breeding amphibian population.

EXISTING CONDITIONS NARRATIVE

Wetland C

Wetland C is an IVW located within the mowed field area and was delineated with pink survey tape numbered sequentially from WFC-1 to WFC-16. Wetland C is a small emergent wet meadow wetland (PEM)/groundwater seep area within a mowed field. It does not have well defined topography and does not contain or store surface or groundwater. Common vegetation within the wetland includes sensitive fern, soft rush, woolgrass (*Scirpus cyperinus*), and some grasses that could not be identified due to the seasonal constraints.

Soils within the wetland are altered and contain a depleted matrix with redoximorphic features. The wetland/upland boundary is diffuse and not well defined. Indicators of wetland hydrology include shallow surface saturation.

IVWs are not regulated under the WPA *per se*. However, if an IVW ponds a sufficient volume of water, it would be regulated under the WPA as Isolated Land Subject to Flooding (ILSF). The WPA defines ILSF as *an area which at least once a year confines standing water to a volume of at least 1/4 acre-feet and to an average depth of at least six inches*. Based upon field observations, Wetland C would not meet the definition of ILSF due to its small size and it does not have the physical characteristic of being a confined basin capable of storing surface water.

Stream 1 – Unnamed Intermittent Stream

Stream 1 is an unnamed intermittent stream which is not shown on the current USGS Topographic Map. Stream 1 was delineated with blue survey tape numbered sequentially from BF1-1 to BF1-41. The stream originates in Wetland B and appears to have been excavated or ditched in order to drain surface flows and groundwater to a catch basin on Grove Street. The stream channel measures approximately two to four feet wide at the upper portions of the channel. As the stream flows downgradient, it enters a maintained field area where the channel is more diffuse, poorly defined, and lacks typical stream bed and bank morphology. There was approximately four to six inches of water flowing at the time of the site visits.

Stream 2 – Unnamed Intermittent Stream

Stream 2 is an unnamed intermittent stream which is not shown on the current USGS Topographic Map and was delineated with blue survey tape numbered sequentially from BF2-1 to BF2-118. The stream originates as a headwater seep in Wetland A at an old possible well, and flows east, and then northward where it continues off-site. A small secondary channel ties into the upper portion of Stream 2 delineated with blue survey tape numbered sequentially from BF1-100 to BF1-110. A portion of the stream is culverted within the mowed field. The stream channel measures approximately two to four feet wide at the upper portions of the channel. The Banks are well vegetated with a mix of herbaceous vegetation such as skunk cabbage, speckled alder, pussy willow, multiflora rose, highbush blueberry, and sweet pepperbush.

Stream 3 – Unnamed Intermittent Stream

Stream 3 is an unnamed intermittent stream which is not shown on the current USGS Topographic Map and was delineated with blue survey tape numbered sequentially from BF3-1 to BF3-13. The stream is located within Wetland B and is very narrow and contains minimal flows.

Stream Status

The streams identified in the Study Area are not shown on the current USGS map. Per Section 310 CMR 10.58(2)(a)1.c. of the WPA, “a stream shown as intermittent on the current USGS map...that has a watershed size of less than one square mile is characterized under the State Wetlands Protection Act as “intermittent” unless the stream has a watershed size of at least one-half square mile and has a predicted flow rate greater than or equal to 0.01 cubic feet per second (cfs) at the 99% flow duration using the USGS StreamStats method...”.

The WPA employs the USGS StreamStats model to determine affected watershed area jurisdiction.

The watershed area for the reach of the stream within Stream 1 was determined using required regulatory methods to be 0.03 square miles. The StreamStats program could not calculate the 99% flow duration due to the small size of the watershed.

The watershed area for the reach of Stream 2 was determined using required regulatory methods to be 0.11 square miles. The StreamStats program could not calculate the 99% flow duration due to the small size of the watershed. This is well below the threshold values required to show that a stream with less than one square mile watershed shown as intermittent by USGS is actually perennial: a 0.5 square mile and 0.01 cubic feet per second flow rate at the 99% flow duration.

Stream 3 was not evaluated due to the visual observations and extremely small length of the channel, as it clearly does not convey perennial flows.

Therefore, all three streams are confirmed as intermittent, and no Riverfront Area occurs within the Study Area. StreamStats documentation is included in Appendix E.

4.0 SUMMARY

The Applicant is seeking to confirm the accuracy of the characterization and delineation of the wetland resource areas delineated within the Study Area. The Applicant requests confirmation of the resource areas as shown on the Existing Conditions Site Plan, which include:

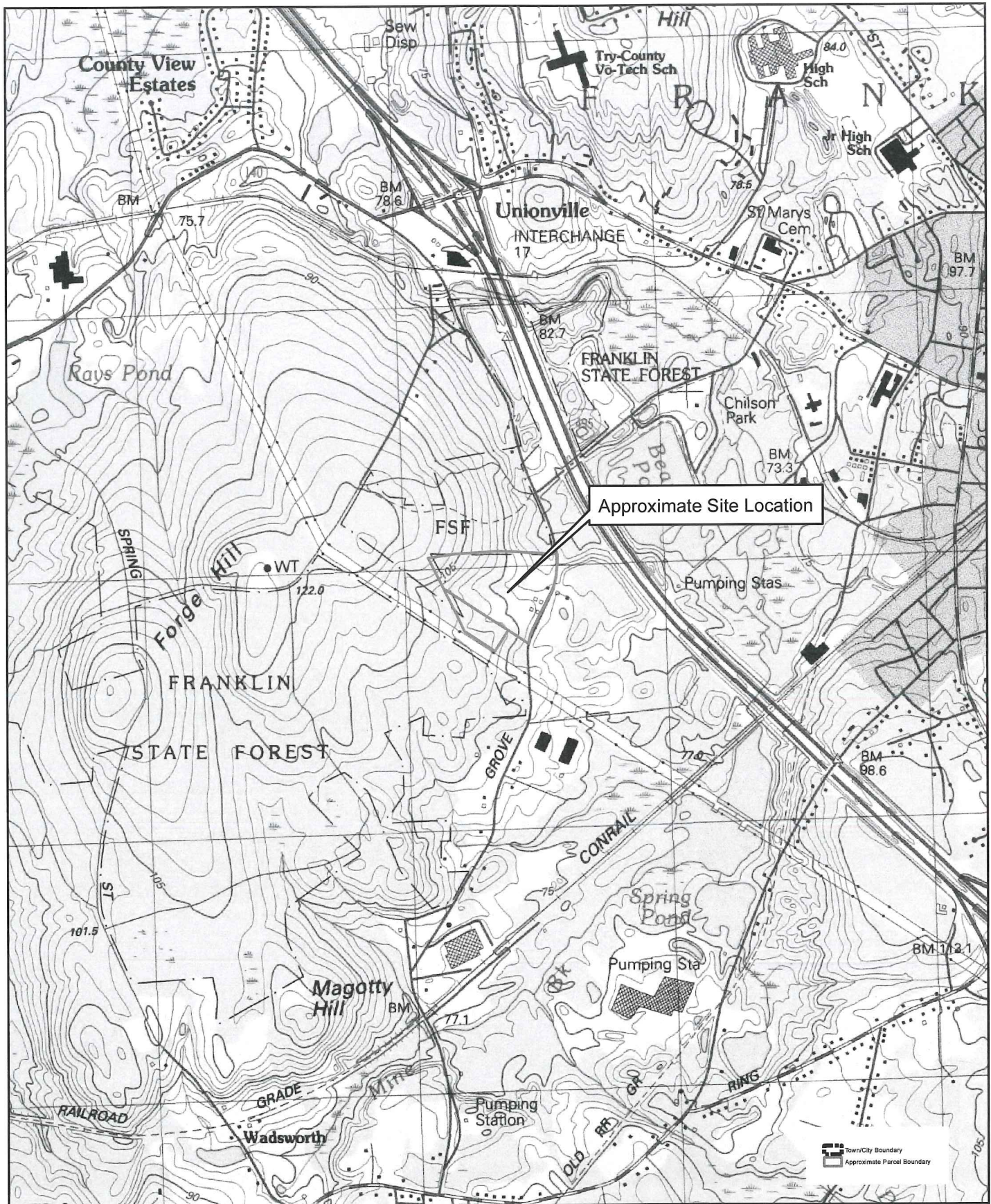
- Inland Bank as delineated by flags BF1-1 to BF1-41, BF2-1 to BF2-118, BF1-100 to BF1-110, and BF3-1 to BF3-13;
- Confirmation that the three intermittent streams (BF1, 2 & 3) are not perennial, and Riverfront Area does not exist on the site;

EXISTING CONDITIONS NARRATIVE

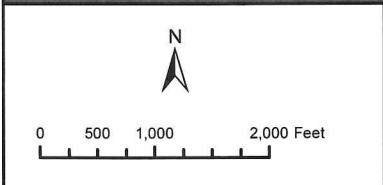
- Bordering Vegetated Wetlands as delineated by flags WFA-1 through WFA-146, and WFB-1 to WFB-48; WFB-49 to WFB-69; and WFB-70 to WFB-92;
- Isolated Vegetated Wetland C as delineated by flags WFC-1 to WFC-16; and
- No other resource areas are present on the site.

The Applicant respectfully requests that the Conservation Commission issue an Order of Resource Area Delineation under the Wetlands Protection Act and the Town of Franklin Wetlands Protection Bylaw confirming the accuracy of the characterization and delineation of the areas noted above as described in this ANRAD application and shown on accompanying Existing Conditions Site Plan.

SECTION III – FIGURES



Source: Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs; USGS 7.5' Topographic Quadrangle



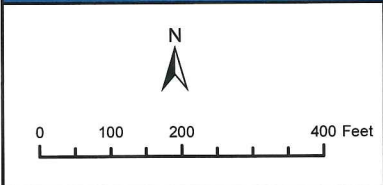
USGS Map
ANRAD
121 Grove Street
Franklin, MA

FIGURE 1

LUCAS
 ENVIRONMENTAL, LLC



Source: Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs, USGS Color Ortho Imagery - 15cm (2021)

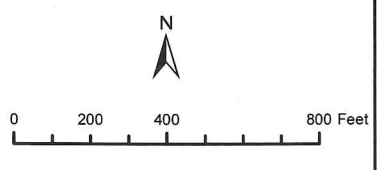


Aerial Map
ANRAD
121 Grove Street
Franklin, MA

FIGURE 2
 **LUCAS**
 ENVIRONMENTAL, LLC



Source: Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs; USGS Color Ortho Imagery - 15cm (2021)



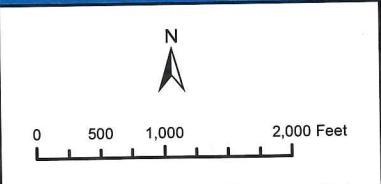
FEMA Map
ANRAD
121 Grove Street
Franklin, MA

FIGURE 3

LUCAS
 ENVIRONMENTAL, LLC



Source: Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs; USGS Color Ortho Imagery - 15cm (2021)



NHESP Map
ANRAD
121 Grove Street
Franklin, MA

FIGURE 4





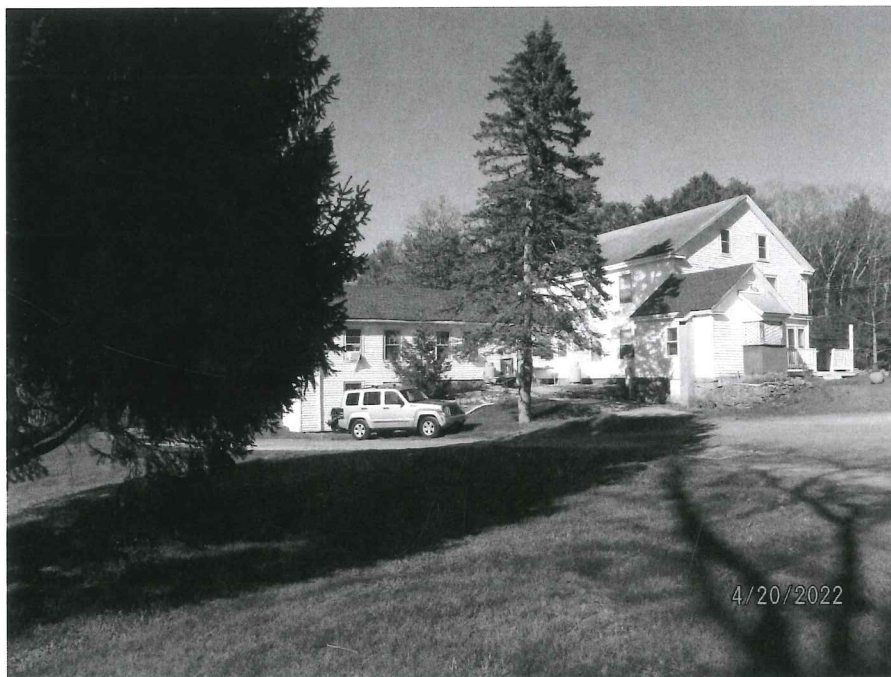
SECTION IV – APPENDICES



PHOTOGRAPHIC DOCUMENTATION

PHOTOGRAPHIC DOCUMENTATION

DATE: April 20, 2022



Photograph 1: Existing building on the site, taken from the edge of the field.



Photograph 2: Typical view of upland agricultural fields.



Photograph 3: Wetland A, near flag WFA-20, facing east.



Photograph 4: Wetland A/Stream 2, near flag WFA-35 and BF2-38, showing 90° bend in stream channel, facing north.

PHOTOGRAPHIC DOCUMENTATION

DATE: April 20, 2022



Photograph 5: Wetland A/Stream 2, near flag WFA-49 and BF2-48, facing east.



Photograph 6: Wetland A/Stream 2, near flag WFA-98 and BF2-63/64, showing possible old well with seepage at start of Stream 2, facing south.



Photograph 7: Wetland A, near flag WFA-138, showing wetland hydrology.



Photograph 8: Wetland A/Stream 2 at the property line, near flag BF2-1/118, facing south.

PHOTOGRAPHIC DOCUMENTATION

DATE: April 20, 2022



Photograph 9: Wetland B/Stream 1, near flag BF1-5, facing west.



Photograph 10: Wetland B/Stream 1, near flag WFB-6, showing hydrology and intermittent flows, facing east.

PHOTOGRAPHIC DOCUMENTATION

DATE: April 20, 2022



Photograph 11: Wetland B/Stream 1, near Grove Street, showing hydrology and intermittent flows, facing northwest.



Photograph 12: View of off-site ROW near flag WFB-69, showing saturated ground conditions, facing southeast.

PHOTOGRAPHIC DOCUMENTATION

DATE: April 20, 2022



Photograph 13: Isolated Wetland C, near flag WFC-9, facing north.



Photograph 14: Isolated Wetland C, near flag WFC-9, showing saturated surface, facing west.

ABUTTER INFORMATION

Town of Franklin Conservation Commission

NOTIFICATION TO ABUTTERS

Under the Massachusetts Wetlands Protection Act And The Franklin Wetlands Protection Bylaw

In accordance with the second paragraph of Massachusetts General Laws Chapter 131, Section 40, you are hereby notified of the following proposed project:

Fairfield Residential Company LLC has filed an Abbreviated Notice of Resource Area Delineation with the Franklin Conservation Commission for the **121 Grove Street (Map 295, Lot 1 & Map 294, Lot 7) in Franklin, Massachusetts** on **November 22, 2022**, under the Wetlands Protection Act (M.G.L c.131 §40).

Copies of the Abbreviated Notice of Resource Area Delineation may be obtained from **the Applicant's representative: Lucas Environmental, LLC by calling 617.405.4140 or email at cml@lucasenviro.com. An administrative fee may be applied for providing hard copies of the ANRAD and plans.**

Copies may also be examined by contacting the Franklin Conservation Department located at 355 East Central Street, Franklin, MA, (508) 520-4929.

Notice of the public hearing including the date, time, and place will be published at least five (5) days in advance in the Milford Daily News.

Notice of the public hearing including the date, time, and place will be posted in the Franklin Town Hall at least forty eight (48) hours in advance of the public hearing.

The public hearing will be held on Thursday, **December 8, 2022**, at **7:00 pm**, via Zoom, and can be accessed through the Conservation Commission agenda for that night, which will be posted on the Town's website 48 hours prior to the meeting. Please call the Conservation Department at (508) 520-4929 if you have any questions.

You may also contact the Massachusetts Department of Environmental Protection, Central Regional Office, Worcester, MA at (508) 792-7650.

NOTE: To preserve your appeal rights you must submit comments/concerns in writing. Notification provided pursuant to the above requirement does not automatically confer standing to the recipient to request Departmental Action for the underlying matter. See 310 CMR 10.05(7)(a)4.



119997

Abutter's List Request Form

Status: Active

Date Created: Nov 8, 2022

Applicant

Christopher Lucas
cml@lucasenviro.com
Lucas Environmental, LLC
500A Washington Street
QUINCY, MA 02169
6174054140

Primary Location

121 GROVE ST
FRANKLIN, MA 02038

Owner:

SMITH BRYN
106 MENDON ST BELLINGHAM, MA 02019

Abutter's List Request Form

Which Board/Commission is requiring this list?

Conservation Commission

What is the purpose for the request?

ANRAD Filing

How would you like to receive this abutters list?

Emailed

What email address should we use to send you the abutters list?

cml@lucasenviro.com

General Parcel Information

Assessor's Parcel ID

295-001-000-000

Property Street Address

121 Grove Street

Assessor's Parcel ID

294-007-000-000

Property Street Address

Grove Street

Property Owner Information

Property Owner

Smith Bryn

Property Owner's Mailing Address

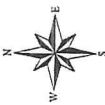
106 Mendon Street

Town/City

Bellingham

Zip/Postal Code

02019



121 GROVE ST [294-007 & 295-001] - 300' ABUTTERS

Franklin, MA

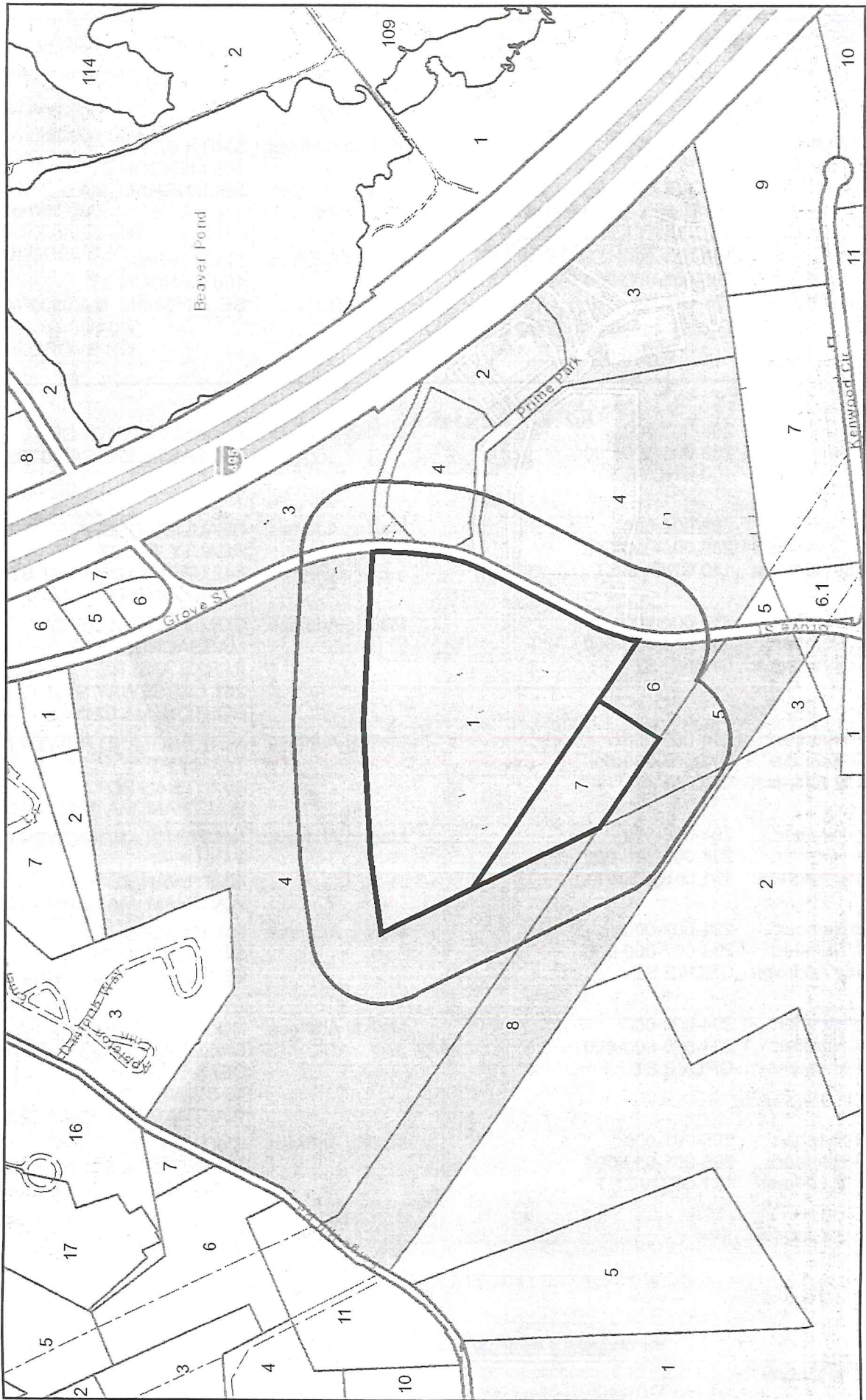
November 14, 2022



www.cai-tech.com



CAI Technologies
Precision Mapping. Geospatial Software.



This information is believed to be correct but is subject to change and is not warranted.



300 foot Abutters List Report

Franklin, MA
November 14, 2022

Subject Properties:

Parcel Number: 294-007-000
CAMA Number: 294-007-000-000
Property Address: GROVE ST

Mailing Address: SMITH BRYN
106 MENDON ST
BELLINGHAM, MA 02019

Parcel Number: 295-001-000
CAMA Number: 295-001-000-000
Property Address: 121 GROVE ST

Mailing Address: SMITH BRYN
106 MENDON ST
BELLINGHAM, MA 02019

Abutters:

Parcel Number: 288-003-000
CAMA Number: 288-003-000-000
Property Address: 100 GROVE ST

Mailing Address: FRANKLIN TOWN OF
355 EAST CENTRAL STREET
FRANKLIN, MA 02038

Parcel Number: 288-004-000
CAMA Number: 288-004-000-000
Property Address: 120 GROVE ST

Mailing Address: BEAULIEU DEBRA A TR MEL-DINA
REALTY TRUST
842 UPPER UNION ST STE 8
FRANKLIN, MA 02038

Parcel Number: 289-004-000
CAMA Number: 289-004-000-000
Property Address: GROVE ST

Mailing Address: COMMONWEALTH OF
MASSACHUSETTS DIVISION OF STATE
PARKS AND RE
251 CAUSEWAY ST, STE 600
BOSTON, MA 02114

Parcel Number: 294-005-000
CAMA Number: 294-005-000-000
Property Address: GROVE ST

Mailing Address: NEW ENGLAND POWER CO PROPERTY
TAX DEPT
40 SYLVAN RD
WALTHAM, MA 02451-2286

Parcel Number: 294-006-000
CAMA Number: 294-006-000-000
Property Address: 131 GROVE ST

Mailing Address: NEW ENGLAND POWER CO PROPERTY
TAX DEPT
40 SYLVAN RD
WALTHAM, MA 02451-2286

Parcel Number: 294-007-000
CAMA Number: 294-007-000-000
Property Address: GROVE ST

Mailing Address: SMITH BRYN
106 MENDON ST
BELLINGHAM, MA 02019

Parcel Number: 294-008-000
CAMA Number: 294-008-000-000
Property Address: GROVE ST

Mailing Address: HUGHES STEPHEN V JR NEW
ENGLAND POWER CO PROPERTY TAX
DEPT
40 SYLVAN RD
WALTHAM, MA 02451-2286

Parcel Number: 295-001-000
CAMA Number: 295-001-000-000
Property Address: 121 GROVE ST

Mailing Address: SMITH BRYN
106 MENDON ST
BELLINGHAM, MA 02019



www.cai-tech.com

This information is believed to be correct but is subject to change and is not warranted.



300 foot Abutters List Report

Franklin, MA
November 14, 2022

Parcel Number: 295-002-000
CAMA Number: 295-002-000-000
Property Address: 122 GROVE ST

Mailing Address: AMEGO INC
33 PERRY AVE
ATTLEBORO, MA 02703

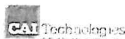
Parcel Number: 295-003-000
CAMA Number: 295-003-000-000
Property Address: 124 GROVE ST

Mailing Address: FRANKLIN OAKS EQUITY PARTNERS,
C/O AEGEAN CAPITAL LLC
150 EAST 58TH ST - 23RD FLOOR
NEW YORK, NY 10155

Parcel Number: 295-004-000
CAMA Number: 295-004-000-000
Property Address: 126 GROVE ST

Mailing Address: KEY BOSTON INC
126 GROVE ST BOX 247
FRANKLIN, MA 02038

Kevin M. Doyle, 11-14-2022



www.cai-tech.com

This information is believed to be correct but is subject to change and is not warranted.

11/14/2022

Page 2 of 2

AMEGO INC
33 PERRY AVE
ATTLEBORO, MA 02703

BEAULIEU DEBRA A TR
MEL-DINA REALTY TRUST
842 UPPER UNION ST STE 8
FRANKLIN, MA 02038

COMMONWEALTH OF
MASSACHUS
DIVISION OF STATE PARKS A
251 CAUSEWAY ST, STE 600
BOSTON, MA 02114

FRANKLIN OAKS EQUITY PART
C/O AEGEAN CAPITAL LLC
150 EAST 58TH ST - 23RD FLOOR
NEW YORK, NY 10155

FRANKLIN TOWN OF
355 EAST CENTRAL STREET
FRANKLIN, MA 02038

HUGHES STEPHEN V JR
NEW ENGLAND POWER CO PROP
40 SYLVAN RD
WALTHAM, MA 02451-2286

KEY BOSTON INC
126 GROVE ST BOX 247
FRANKLIN, MA 02038

NEW ENGLAND POWER CO
PROPERTY TAX DEPT
40 SYLVAN RD
WALTHAM, MA 02451-2286

SMITH BRYN
106 MENDON ST
BELLINGHAM, MA 02019

FILING FEE INFORMATION



CALCULATED FILING FEE STATEMENT

The Applicant is seeking confirmation of wetland resource areas. No work activity is proposed at this time. Confirmation of resource area boundaries is included under Category 6 of the WPA Wetlands Filing Fees and #4. of the Town of Franklin Conservation Commission Local Filing Fee Calculation Worksheet.

Wetlands Protection Act Fees:

Category 6: *The linear delineation (e.g. bordering vegetated wetland, riverfront area, bordering land subject to flooding) of each resource area under an Abbreviated Notice of Resource Area Delineation constitutes a separate activity. The fee associated with each resource area delineation proposed under an Abbreviated Notice of Resource Area Delineation shall be determined by adding the fees for each type of resource area delineation.* The fee for Category 6 is as follows:

Total WPA Filing Fee from ANRAD Wetland Fee Transmittal Form = \$2,000.00

State Share of WPA Filing Fee: $(\$2,000.00/2) - \$12.50 = \$987.50$

Town Share of WPA Filing Fee: $(\$2,000.00/2) + \$12.50 = \$1,012.50$

Local Bylaw Fees:

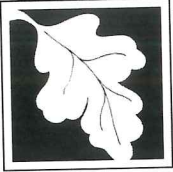
See attached Local Filing Fee Calculation Worksheet

Local Filing Fee = \$5,708.00

Checks

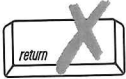
Check Payable to: Commonwealth of Massachusetts for \$987.50

Check Payable to: Town of Franklin for \$6,720.50 (includes Bylaw & WPA Fee)



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

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



A. Applicant Information

1. Location of Project:

121 Grove Street _____ Franklin _____
 a. Street Address b. City/Town
 \$987.50 _____ 3845 _____
 c. Fee amount d. Check number

2. Applicant:

Robert _____ Hewitt _____ Fairfield Residential Co LLC _____
 a. First Name b. Last Name c. Company
 5 Burlington Woods, Suite 203 _____
 d. Mailing Address
 Burlington _____ MA _____ 01803 _____
 e. City/Town f. State g. Zip Code
 781.572.7712 _____
 h. Phone Number

3. Property Owner (if different):

Bryn _____ Smith _____ _____
 a. First Name b. Last Name c. Company
 106 Mendon Street _____
 d. Mailing Address
 Bellingham _____ MA _____ 02019 _____
 e. City/Town f. State g. Zip Code
 508.523.3496 _____
 h. Phone Number

B. Fees

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

Bordering Vegetated Wetland Delineation Fee:

Online users: check box if fee exempt.

1. <input type="checkbox"/> single family house project	_____	x \$2.00 =	_____
	a. feet of BVW		b. Fee for BVW
2. <input checked="" type="checkbox"/> all other projects	6,818	\$13,636.00	\$13,636.00
	a. feet of BVW	x \$2.00 =	b. Fee for BVW

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

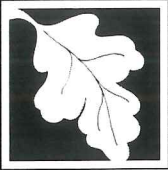
3. <input type="checkbox"/> single family house project	_____	x \$2.00 =	_____
	a. linear feet		b. Fee
4. <input checked="" type="checkbox"/> all other projects	4,345	\$8,960.00	\$8,960.00
	a. linear feet	x \$2.00 =	b. Fee

Total Fee for all Resource Areas: _____

State share of filing fee: _____

City/Town share of filing fee: _____

Fee
 \$987.50
 5. 1/2 of total fee less \$12.50
 \$1,012.50
 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.)

Town of Franklin Conservation Commission

LOCAL FILING FEE CALCULATION WORKSHEET

1. NOTICE OF INTENT (NOI)

1.1. New Individual Single Family Home (SFH) \$200.00 _____
This includes all projects associated with a SFH

1.2. Work Associated with Existing Residential Property \$50.00 _____
Above-ground pools, fences or other incidental projects involving land disturbance that are not covered by the MBZA

1.3. Control of Nuisance Vegetation \$50.00 _____
This category shall not apply to any non-natural deposition of material e.g. vegetative debris

1.4. Subdivisions

Base Fee \$600.00 _____
Infrastructure in Buffer Zone **or** Resource Area
Roads _____ linear feet x \$2.00 = _____
*Drainage Structures _____ X \$10.00 each = _____
Wetland Resource Area Disturbed _____ square feet x \$0.50 = _____

(If single family homes are proposed as part of a subdivision application, for each house in jurisdiction, individual NOI fees will apply.)

1.5. Multifamily Dwellings, including Condominium Units:
_____ MFDU x \$100.00 _____

1.6. Commercial/Industrial

Base Fee \$600.00 _____
Infrastructure in Buffer Zone **or** Resource Area
Roads _____ linear feet x \$2.00 = _____
*Drainage Structures _____ X \$10.00 each = _____
Wetland Resource Area Disturbed _____ square feet x \$0.50 = _____
Buildings _____ X \$125 each = _____
All Accessory Improvements \$100.00 = _____

2. **REQUEST FOR DETERMINATION (RDA)** \$100.00

3. **MINOR BUFFER ZONE ACTIVITY (MBZA)** \$50.00

4. **ABBREVIATED NOTICE OF RESOURCE AREA DETERMINATION (ANRAD)**

\$0.50/11,416 linear foot/resource area: = \$5,708.00

5. **OTHER PERMITS/SERVICES**

Order of Conditions Extension	\$50.00	_____
Certificate of Compliance Request	\$50.00	_____
Certificate Re-Inspection	\$50.00	_____
Status Letter for Financial Institution	\$100.00	_____
Permit Amendment	\$100.00	_____

6. **FILING FEE CALCULATION**

Town Share of State Fees (See NOI Wetland Fee Transmittal Form) \$ 1,012.50

Local Filing Fee Calculated Above \$ 5,708.00

TOTAL Due Town of Franklin (Check No.1) \$ 6,720.50

State Share of Filing Fee (See NOI Wetland Fee Transmittal Form)

TOTAL Due DEP (Check No. 2) \$ 978.50

7. **ADVERTISING FEE (Check No. 3)** **TBD**

The fee will be the exact amount the newspaper charges for that specific advertisement. Once the advertisement is placed with the paper, by the Conservation Commission, the applicant will be notified of the cost and will be expected to submit a check for that exact amount, payable to the Town of Franklin, to the Conservation Department prior to the first hearing.

*Drainage structures: catch basins, manholes, leaching basins, gutter inlet or any other man-made structure (other than a pipe) for purposes of controlling drainage.



LUCAS ENVIRONMENTAL, LLC
 500A WASHINGTON STREET
 QUINCY, MA 02169

Citizens Bank

5-7017/2110

11/17/2022

PAY TO THE ORDER OF Town of Franklin \$ **6,720.50

Six Thousand Seven Hundred Twenty and 50/100***** DOLLAR

Town of Franklin

Christopher M. Lee



AUTHORIZED SIGNATURE

MEMO

ANRAD Filing Fee - 121 Grove Street

THIS DOCUMENT CONTAINS HEAT SENSITIVE INK. TOUCH OR PRESS HERE - RED IMAGE DISAPPEARS WITH HEAT.

LUCAS ENVIRONMENTAL, LLC

Town of Franklin

ANRAD Filing Fee - 121 Grove Street

11/17/2022

6,720.50

38

Citizens Checking

ANRAD Filing Fee - 121 Grove Street

6,720.50



LUCAS ENVIRONMENTAL, LLC
 500A WASHINGTON STREET
 QUINCY, MA 02169

Citizens Bank

5-7017/2110

11/17/2022

PAY TO THE ORDER OF Commonwealth of Massachusetts \$ **987.50

Nine Hundred Eighty-Seven and 50/100***** DOLLAR

MEMO



AUTHORIZED SIGNATURE

ANRAD Filing Fee - 121 Grove Street, Franklin, MA

THIS DOCUMENT CONTAINS HEAT SENSITIVE INK. TOUCH OR PRESS HERE - RED IMAGE DISAPPEARS WITH HEAT.

LUCAS ENVIRONMENTAL, LLC

Commonwealth of Massachusetts

11/17/2022

ANRAD Filing Fee - 121 Grove Street, Franklin, MA

38

987.50

Citizens Checking

ANRAD Filing Fee - 121 Grove Street, Franklin,

987.50

WETLAND DELINEATION FIELD DATA FORMS



WETLAND DELINEATION FIELD DATA FORM

Transect Number: WET-1

Observation Plot Number: WFA-44

Applicant: Fairfield Residential Prepared by: Lucas Environmental, LLC Project Location: 121 Grove Street, Franklin

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

SECTION I. VEGETATION

Date of Delineation: April 20, 2022

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
--	-------------------------------------	----------------------	----------------------------------	-----------------------------------

<u>Tree</u> Red Maple (<i>Acer rubrum</i>)	85.5%	100%	Yes	FAC*
---	-------	------	-----	------

Saplings

<u>Shrubs</u> Multiflora rose (<i>Rosa multiflora</i>)	10.5%	20.4%	Yes	FACU
Sweet pepperbush (<i>Clethra alnifolia</i>)	38.0%	73.7%	Yes	FAC*
Black birch (<i>Betula lenta</i>)	3.0%	5.8%	No	FACU

Herbaceous

Skunk cabbage (<i>Symplocarpus foetidus</i>)	38.0	34.1%	Yes	FACW*
Sphagnum moss (<i>Sphagnum</i> sp.)	63.0	56.5%	Yes	OBL*
Marsh blue violet (<i>Viola cucullata</i>)	10.5	9.4%	No	OBL*

Vines

None

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

Vegetation conclusion:

Number of dominant wetland indicator plants: 4 Number of dominant non-wetland indicator plants: 1
 Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: YES NO

Abbreviated Notice of Resource Area Delineation

121 Grove Street
Franklin, Massachusetts



LUCAS
ENVIRONMENTAL, LLC

WETLAND DELINEATION FIELD DATA FORM

Observation Plot Number: WFA-44

Transect Number: WET-1

SECTION II. INDICATORS OF HYDROLOGY

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? YES NO

Title/Date: Custom Soil Resource Report for Norfolk and Suffolk Counties, Massachusetts. (GIS Data from the Soil Survey Geographic - SSURGO data base produced by the USDA, NRCs) Accessed online April 5, 2022

Map Number/Soil Type Mapped:

71B – Ridgebury fine sandy loam, 3-8% slopes, extremely stony;
103B – Charlton-Urban land-Hollis complex, 3-8% slopes;
103C – Charlton-Urban land-Hollis complex, 8-15% slopes

Hydric Soil Inclusions: Yes

Are field observations consistent with soil survey? YES NO

Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	0-4"	10YR 2/1	
B	4-13"	10YR 5/1	

Remarks:

3. Other:

Conclusion: Is soil hydric? YES NO

Other Indicators of Hydrology:

- Site inundated: _____
- Depth to free water in observation hole: _____
- Depth to soil saturation in observation hole: Surface

Water marks: _____

Drift lines: _____

Sediment deposits: _____

Drainage patterns in BVW: _____

Oxidized rhizospheres: _____

Water-stained leaves: _____

Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____

Other: Buttressed tree roots

Vegetation and Hydrology Conclusion

	YES	NO
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Hydric soils present	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Other indicators of hydrology present	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sample location is in BVW	<input checked="" type="checkbox"/>	<input type="checkbox"/>



WETLAND DELINEATION FIELD DATA FORM

Observation Plot Number: WFA-44
Transect Number: UPL-1
Applicant: Fairfield Residential Prepared by: Lucas Environmental, LLC Project Location: 121 Grove Street, Franklin

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

SECTION I. VEGETATION

Date of Delineation: April 20, 2022

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Tree				
Red Oak (<i>Quercus velutina</i>)	63.0	62.2%	Yes	NL
White Pine (<i>Pinus strobus</i>)	38.0	37.8%	Yes	FACU
Saplings				
American Beech (<i>Fagus grandifolia</i>)	10.5	50.0%	Yes	FACU
White Oak (<i>Quercus alba</i>)	10.5	50.0%	Yes	FACU
Shrubs				
Herbaceous				
Princess Pine (<i>Lycopodium obscurum</i>)	10.5	50.0%	Yes	FACU
Canada Mayflower (<i>Maianthemum canadensis</i>)	10.5	50.0%	Yes	FACU

Vines
None

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

Vegetation conclusion:
 Number of dominant wetland indicator plants: **0** Number of non-wetland indicator plants: **6**
 Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: YES NO



WETLAND DELINEATION FIELD DATA FORM

Transect Number: UPL-1

Observation Plot Number: WFA-44

SECTION II. INDICATORS OF HYDROLOGY

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? YES NO

Title/Date: **Custom Soil Resource Report for Norfolk and Suffolk Counties, Massachusetts. (GIS Data from the Soil Survey Geographic - SSURGO data base produced by the USDA, NRCs) Accessed online April 5, 2022**

Map Number/Soil Type Mapped:

**71B – Ridgebury fine sandy loam, 3-8% slopes, extremely stony;
103B – Charlton-Urban land-Hollis complex, 3-8% slopes;
103C – Charlton-Urban land-Hollis complex, 8-15% slopes**

Hydric Soil Inclusions: Yes

Are field observations consistent with soil survey? YES NO

Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	0-10"	10YR 2/2	
B	10-15"	10YR 5/6	

Remarks:

3. Other:

Conclusion: Is soil hydric? YES NO

Other Indicators of Hydrology:

- Site inundated: _____
- Depth to free water in observation hole: _____
- Depth to soil saturation in observation hole: _____
- Water marks: _____
- Drift lines: _____
- Sediment deposits: _____
- Drainage patterns in BVW: _____
- Oxidized rhizospheres: _____
- Water-stained leaves: _____
- Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____

Other: _____

Vegetation and Hydrology Conclusion

	YES	NO
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Hydric soils present	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other indicators of hydrology present	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Sample location is in BVW	<input type="checkbox"/>	<input checked="" type="checkbox"/>



WETLAND DELINEATION FIELD DATA FORM

Transect Number: WET-1

Observation Plot Number: WFB-60

Applicant: Fairfield Residential Prepared by: Lucas Environmental, LLC Project Location: 121 Grove Street, Franklin

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

SECTION I. VEGETATION

Date of Delineation: August 1, 2017

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
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<u>Tree</u>				
Yellow Birch (<i>Betula alleghaniensis</i>)	63.0	51.2%	Yes	FAC*
White Oak (<i>Quercus alba</i>)	38.0	31.2%	Yes	FACU
Red maple (<i>Acer rubrum</i>)	20.5	16.8%	No	FAC*

Saplings

Shrubs

Herbaceous

Vines None

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

Vegetation conclusion:

Number of dominant wetland indicator plants: 1

Number of non-wetland indicator plants: 1

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: YES NO

Abbreviated Notice of Resource Area Delineation

121 Grove Street
Franklin, Massachusetts



WETLAND DELINEATION FIELD DATA FORM

Transect Number: WET-1

Observation Plot Number: WFB-60

SECTION II. INDICATORS OF HYDROLOGY

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? YES NO

Title/Date: Custom Soil Resource Report for Norfolk and Suffolk Counties, Massachusetts. (GIS Data from the Soil Survey Geographic - SSURGO data base produced by the USDA, NRCs) Accessed online April 5, 2022

Map Number/Soil Type Mapped:

71B - Ridgebury fine sandy loam, 3-8% slopes, extremely stony;
103B - Charlton-Urban land-Hollis complex, 3-8% slopes;
103C - Charlton-Urban land-Hollis complex, 8-15% slopes

Hydric Soil Inclusions: Yes

Are field observations consistent with soil survey? YES NO

Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	0-8"	10YR 2/1	
B	8-13"	10YR 2/3	

Remarks:

3. Other:

Conclusion: Is soil hydric? YES NO

Other Indicators of Hydrology:

Site inundated: _____

Depth to free water in observation hole: _____

Depth to soil saturation in observation hole: 4"

Water marks: _____

Drift lines: _____

Sediment deposits: _____

Drainage patterns in BVW: _____

Oxidized rhizospheres: _____

Water-stained leaves: _____

Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____

Other: _____

Vegetation and Hydrology Conclusion

	YES	NO
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Hydric soils present	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Other indicators of hydrology present	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sample location is in BVW	<input checked="" type="checkbox"/>	<input type="checkbox"/>



WETLAND DELINEATION FIELD DATA FORM

Observation Plot Number: WFB-60

Transect Number: UPL-1

Applicant: Fairfield Residential Prepared by: Lucas Environmental, LLC Project Location: 121 Grove Street, Franklin

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

SECTION I. VEGETATION

Date of Delineation: April 20, 2022

A. Sample Layer and Plant Species (by common/scientific name)

B. Percent Cover (or basal area)

C. Percent Dominance

D. Dominant Plant (yes or no)

E. Wetland Indicator Category*

Tree

- Yellow Birch (Betula alleghaniensis)
White Pine (Pinus strobus)
Red maple (Acer rubrum)

38.0
20.5
10.5

Yes
Yes
No

FAC*
FACU
FAC*

Saplings

Shrubs

- Black Birch (Betula lenta)

10.5

Yes

FACU

Herbaceous

- Canada Mayflower (Maianthemum canadensis)

10.5

Yes

FACU

Vines

None

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

Vegetation conclusion:

Number of dominant wetland indicator plants: 1

Number of non-wetland indicator plants: 3

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: YES [] NO [x]



WETLAND DELINEATION FIELD DATA FORM

Observation Plot Number: WFB-60

Transect Number: UPL-1

SECTION II. INDICATORS OF HYDROLOGY

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? YES NO

Title/Date: **Custom Soil Resource Report for Norfolk and Suffolk Counties, Massachusetts. (GIS Data from the Soil Survey Geographic - SSURGO data base produced by the USDA, NRCs) Accessed online April 5, 2022**

Map Number/Soil Type Mapped:

- 71B – Ridgebury fine sandy loam, 3-8% slopes, extremely stony;
- 103B – Charlton-Urban land-Hollis complex, 3-8% slopes;
- 103C – Charlton-Urban land-Hollis complex, 8-15% slopes

Hydric Soil Inclusions: **Yes**

Are field observations consistent with soil survey? YES NO

Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	0-7"	10YR 4/2	
B	7-14"	10YR 5/6	

Remarks:

3. Other:

Conclusion: Is soil hydric? YES NO

Other Indicators of Hydrology:

- Site inundated: _____
- Depth to free water in observation hole: _____
- Depth to soil saturation in observation hole: _____
- Water marks: _____
- Drift lines: _____
- Sediment deposits: _____
- Drainage patterns in BVW: _____
- Oxidized rhizospheres: _____
- Water-stained leaves: _____
- Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____

Other: _____

Vegetation and Hydrology Conclusion

	YES	NO
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Hydric soils present	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other indicators of hydrology present	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Sample location is in BVW	<input type="checkbox"/>	<input checked="" type="checkbox"/>



WETLAND DELINEATION FIELD DATA FORM

Observation Plot Number: WFC-8

Transect Number: WET-1

Applicant: Fairfield Residential Prepared by: Lucas Environmental, LLC Project Location: 121 Grove Street, Franklin

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

SECTION I. VEGETATION

Date of Delineation: April 20, 2022

A. Sample Layer and Plant Species (by common/scientific name) B. Percent Cover (or basal area) C. Percent Dominance D. Dominant Plant (yes or no) E. Wetland Indicator Category*

Tree

Saplings

Shrubs

Multiflora rose (*Rosa multiflora*)

10.5

100.0%

Yes

FACU

Herbaceous

Sensitive Fern (*Onoclea sensibilis*)

85.5

80.0%

Yes

FACW*

Sedge (*Carex* sp.)

20.5

20.0%

Yes

FACW/OBL*

Vines

None

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

Vegetation conclusion:

Number of dominant wetland indicator plants: **2**

Number of non-wetland indicator plants: **1**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: **YES** **NO**

Abbreviated Notice of Resource Area Delineation

121 Grove Street
Franklin, Massachusetts



WETLAND DELINEATION FIELD DATA FORM

Transect Number: WET-1

Observation Plot Number: WFC-8

SECTION II. INDICATORS OF HYDROLOGY

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? YES NO

Title/Date: Custom Soil Resource Report for Norfolk and Suffolk Counties, Massachusetts. (GIS Data from the Soil Survey Geographic - SSURGO data base produced by the USDA, NRCs) Accessed online April 5, 2022

Map Number/Soil Type Mapped:

71B - Ridgebury fine sandy loam, 3-8% slopes, extremely stony;
103B - Charlton-Urban land-Hollis complex, 3-8% slopes;
103C - Charlton-Urban land-Hollis complex, 8-15% slopes

Hydric Soil Inclusions: Yes

Are field observations consistent with soil survey? YES NO

Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A1	0-4"	10YR 2/2	
A2	4-8"	10YR 3/2	10% 5/8
B	8-18"	10YR 3/1	30-40%
Bg	18-30"	10YR 6/3	50%

Remarks:

3. Other:

Conclusion: Is soil hydric? YES NO

Other Indicators of Hydrology:

- Site inundated: _____
- Depth to free water in observation hole: 3"
- Depth to soil saturation in observation hole: _____
- Water marks: _____
- Drift lines: _____
- Sediment deposits: _____
- Drainage patterns in BVW: _____
- Oxidized rhizospheres: _____
- Water-stained leaves: _____
- Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____

Other: _____

Vegetation and Hydrology Conclusion

	YES	NO
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Hydric soils present	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Other indicators of hydrology present	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sample location is in BVW	<input checked="" type="checkbox"/>	<input type="checkbox"/>



WETLAND DELINEATION FIELD DATA FORM

Observation Plot Number: WFC-8

Transect Number: UPL-1

Applicant: Fairfield Residential Prepared by: Lucas Environmental, LLC Project Location: 121 Grove Street, Franklin

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

SECTION I. VEGETATION

Date of Delineation: April 20, 2022

A. Sample Layer and Plant Species (by common/scientific name) B. Percent Cover (or basal area) C. Percent Dominance D. Dominant Plant (yes or no) E. Wetland Indicator Category*

Tree

Saplings

Table with 5 columns: Plant Species, Percent Cover, Percent Dominance, Dominant Plant, Wetland Indicator Category. Rows include Multiflora rose, Autumn Olive, Herbaceous Wild onion, and Canada goldenrod.

Vines

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

Vegetation conclusion:

Number of dominant wetland indicator plants: 1 Number of non-wetland indicator plants: 3
Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: YES NO



WETLAND DELINEATION FIELD DATA FORM

Transect Number: UPL-1

Observation Plot Number: WFC-8

SECTION II. INDICATORS OF HYDROLOGY

Hydric Soil Interpretation

1. Soil Survey Title/Date: Custom Soil Resource Report for Norfolk and Suffolk Counties, Massachusetts. (GIS Data from the Soil Survey Geographic - SSURGO data base produced by the USDA, NRCs) Accessed online April 5, 2022

Map Number/Soil Type Mapped: 71B - Ridgebury fine sandy loam, 3-8% slopes, extremely stony; 103B - Charlton-Urban land-Hollis complex, 3-8% slopes; 103C - Charlton-Urban land-Hollis complex, 8-15% slopes

Hydric Soil Inclusions: Yes

Are field observations consistent with soil survey? YES [checked] NO []

Table with 4 columns: Soil Description Horizon, Depth, Matrix Color, Mottles Color. Rows A, B, R.

Remarks:

3. Other:

Conclusion: Is soil hydric? YES [] NO [checked]

Other Indicators of Hydrology:

- Site inundated:
Depth to free water in observation hole:
Depth to soil saturation in observation hole:
Water marks:
Drift lines:
Sediment deposits:
Drainage patterns in BVW:
Oxidized rhizospheres:
Water-stained leaves:
Recorded data (stream, lake, or tidal gauge; aerial photo; other):
Other:

Table with 3 columns: Vegetation and Hydrology Conclusion, YES, NO. Rows: Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants, Hydric soils present, Other indicators of hydrology present, Sample location is in BVW.

STREAMSTATS DOCUMENTATION

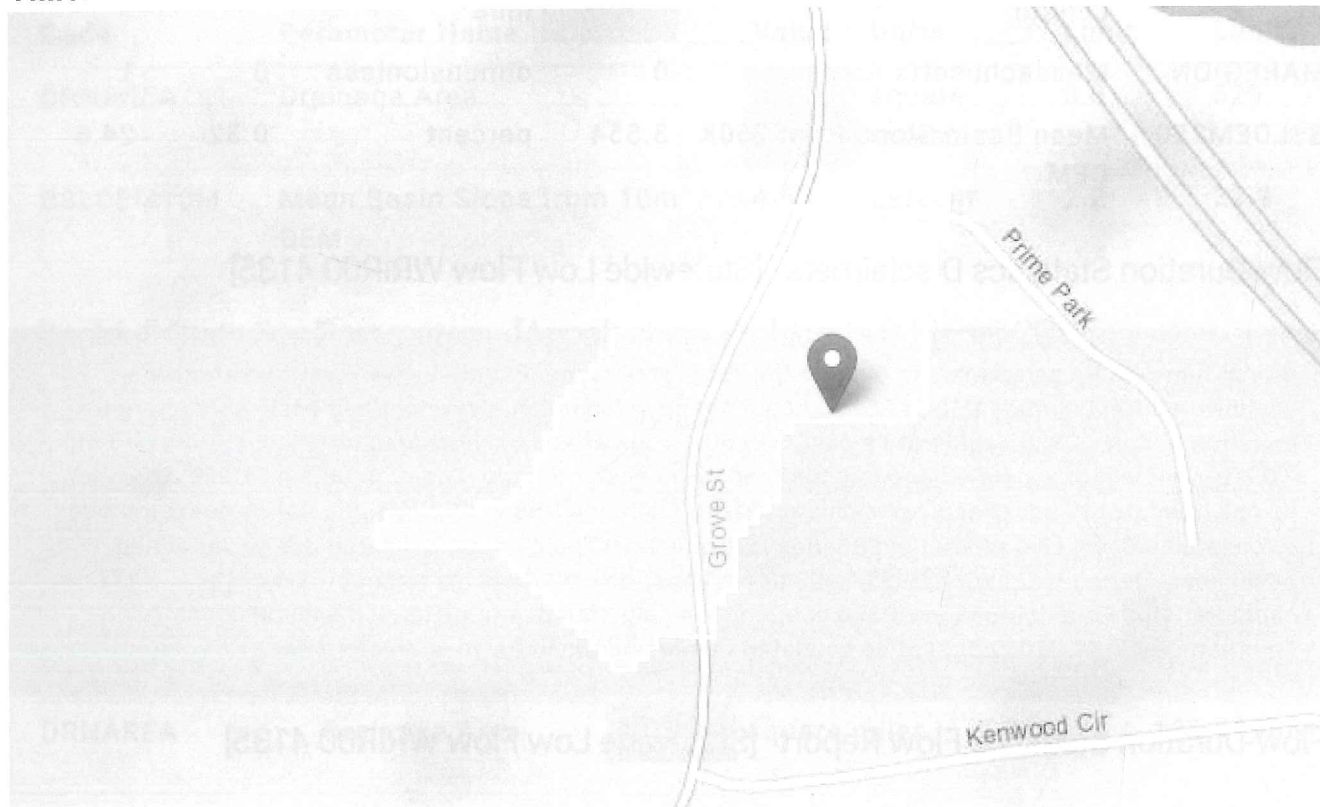
StreamStats Report - Stream 1

Region ID: MA

Workspace ID: MA20220512134456186000

Clicked Point (Latitude, Longitude): 42.07497, -71.42195

Time: 2022-05-12 09:45:17 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BSLDEM10M	Mean basin slope computed from 10 m DEM	4.58	percent
BSLDEM250	Mean basin slope computed from 1:250K DEM	3.554	percent
DRFTPERSTR	Area of stratified drift per unit of stream length	-100000	square mile per mile
DRNAREA	Area that drains to a point on a stream	0.0365	square miles
MAREGION	Region of Massachusetts 0 for Eastern 1 for Western	0	dimensionless

Statistic	Value	Unit
Bankfull Streamflow	2.18	ft ³ /s

Bankfull Statistics Disclaimers [Appalachian Highlands D Bieger 2015]

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

Bankfull Statistics Flow Report [Appalachian Highlands D Bieger 2015]

Statistic	Value	Unit
Bieger_D_channel_width	3.85	ft
Bieger_D_channel_depth	0.433	ft
Bieger_D_channel_cross_sectional_area	1.68	ft ²

Bankfull Statistics Disclaimers [New England P Bieger 2015]

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

Bankfull Statistics Flow Report [New England P Bieger 2015]

Statistic	Value	Unit
Bieger_P_channel_width	10	ft
Bieger_P_channel_depth	0.664	ft
Bieger_P_channel_cross_sectional_area	6.4	ft ²

Bankfull Statistics Disclaimers [USA Bieger 2015]

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

Bankfull Statistics Flow Report [USA Bieger 2015]

Statistic	Value	Unit
Bieger_USA_channel_width	3.86	ft
Bieger_USA_channel_depth	0.596	ft
Bieger_USA_channel_cross_sectional_area	2.86	ft ²

Bankfull Statistics Flow Report [Area-Averaged]

Statistic	Value	Unit
Bankfull Width	3.78	ft
Bankfull Depth	0.345	ft
Bankfull Area	1.28	ft ²
Bankfull Streamflow	2.18	ft ³ /s
Bieger_D_channel_width	3.85	ft
Bieger_D_channel_depth	0.433	ft
Bieger_D_channel_cross_sectional_area	1.68	ft ²
Bieger_P_channel_width	10	ft
Bieger_P_channel_depth	0.664	ft
Bieger_P_channel_cross_sectional_area	6.4	ft ²
Bieger_USA_channel_width	3.86	ft
Bieger_USA_channel_depth	0.596	ft
Bieger_USA_channel_cross_sectional_area	2.86	ft ²

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/>)

Bieger, Katrin; Rathjens, Hendrik; Allen, Peter M.; and Arnold, Jeffrey G., 2015, Development and Evaluation of Bankfull Hydraulic Geometry Relationships for the Physiographic Regions of the United States, Publications from USDA-ARS / UNL Faculty, 17p. (https://digitalcommons.unl.edu/usdaarsfacpub/1515?utm_source=digitalcommons.unl.edu%2Fusdaarsfacpub%2F1515&utm_medium=PDF&utm_can)

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Application Version: 4.8.1

StreamStats Services Version: 1.2.22

NSS Services Version: 2.1.2

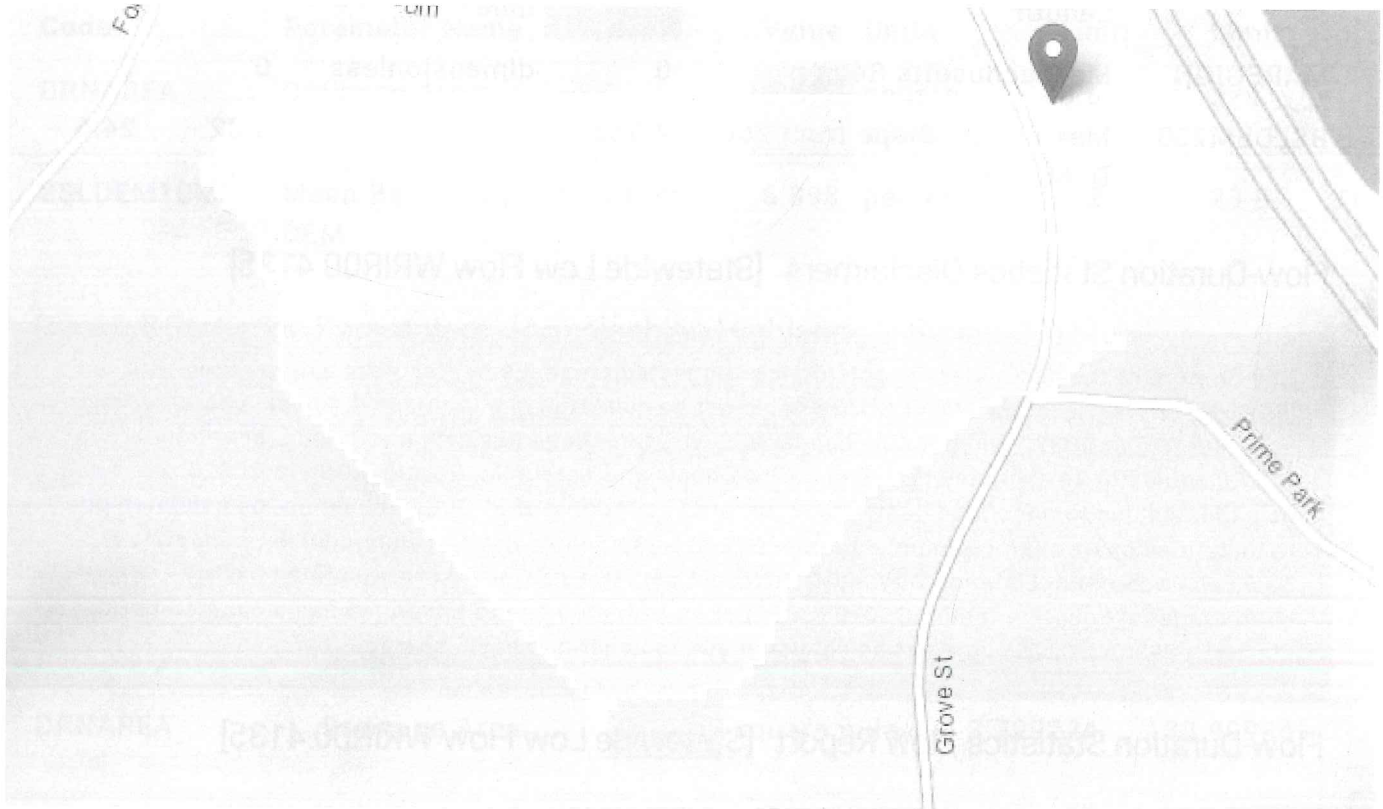
StreamStats Report - Stream 2

Region ID: MA

Workspace ID: MA20220512133914161000

Clicked Point (Latitude, Longitude): 42.07895, -71.42210

Time: 2022-05-12 09:39:34 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BSLDEM10M	Mean basin slope computed from 10 m DEM	6.898	percent
BSLDEM250	Mean basin slope computed from 1:250K DEM	4.965	percent
DRFTPERSTR	Area of stratified drift per unit of stream length	-100000	square mile per mile
DRNAREA	Area that drains to a point on a stream	0.11	square miles
MAREGION	Region of Massachusetts 0 for Eastern 1 for Western	0	dimensionless

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

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.11	square miles	1.61	149
DRFTPERSTR	Stratified Drift per Stream Length	-100000	square mile per mile	0	1.29
MAREGION	Massachusetts Region	0	dimensionless	0	1
BSLDEM250	Mean Basin Slope from 250K DEM	4.965	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. Equation D60 in GC320 could not be calculated due to undefined basin characteristic. Equation D70 in GC320 could not be calculated due to undefined basin characteristic. Equation D75 in GC320 could not be calculated due to undefined basin characteristic. Equation D80 in GC320 could not be calculated due to undefined basin characteristic. Equation D85 in GC320 could not be calculated due to undefined basin characteristic. Equation D90 in GC320 could not be calculated due to undefined basin characteristic. Equation D95 in GC320 could not be calculated due to undefined basin characteristic. Equation D98 in GC320 could not be calculated due to undefined basin characteristic. Equation D99 in GC320 could not be calculated due to undefined basin characteristic.

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

Statistic	Value	Unit
50 Percent Duration	0.101	ft ³ /s
60 Percent Duration	undefined	ft ³ /s
70 Percent Duration	undefined	ft ³ /s
75 Percent Duration	undefined	ft ³ /s
80 Percent Duration	undefined	ft ³ /s
85 Percent Duration	undefined	ft ³ /s
90 Percent Duration	undefined	ft ³ /s
95 Percent Duration	undefined	ft ³ /s
98 Percent Duration	undefined	ft ³ /s
99 Percent Duration	undefined	ft ³ /s

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	0.11	square miles	0.6	329
BSLDEM10M	Mean Basin Slope from 10m DEM	6.898	percent	2.2	23.9

Bankfull Statistics Parameters [Appalachian Highlands D Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.11	square miles	0.07722	940.1535

Bankfull Statistics Parameters [New England P Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.11	square miles	3.799224	138.999861

Bankfull Statistics Parameters [USA Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.11	square miles	0.07722	59927.7393

Bankfull Statistics Disclaimers [Bankfull Statewide SIR2013 5155]

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

Bankfull Statistics Flow Report [Bankfull Statewide SIR2013 5155]

Statistic	Value	Unit
Bankfull Width	6.27	ft
Bankfull Depth	0.501	ft
Bankfull Area	3.09	ft ²

Statistic	Value	Unit
Bankfull Streamflow	6.85	ft ³ /s

Bankfull Statistics Flow Report [Appalachian Highlands D Bieger 2015]

Statistic	Value	Unit
Bieger_D_channel_width	6.08	ft
Bieger_D_channel_depth	0.595	ft
Bieger_D_channel_cross_sectional_area	3.65	ft ²

Bankfull Statistics Disclaimers [New England P Bieger 2015]

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

Bankfull Statistics Flow Report [New England P Bieger 2015]

Statistic	Value	Unit
Bieger_P_channel_width	13.6	ft
Bieger_P_channel_depth	0.846	ft
Bieger_P_channel_cross_sectional_area	11.2	ft ²

Bankfull Statistics Flow Report [USA Bieger 2015]

Statistic	Value	Unit
Bieger_USA_channel_width	5.69	ft
Bieger_USA_channel_depth	0.753	ft
Bieger_USA_channel_cross_sectional_area	5.19	ft ²

Bankfull Statistics Flow Report [Area-Averaged]

Statistic	Value	Unit
Bankfull Width	6.27	ft
Bankfull Depth	0.501	ft
Bankfull Area	3.09	ft ²
Bankfull Streamflow	6.85	ft ³ /s
Bieger_D_channel_width	6.08	ft

Statistic	Value	Unit
Bieger_D_channel_depth	0.595	ft
Bieger_D_channel_cross_sectional_area	3.65	ft^2
Bieger_P_channel_width	13.6	ft
Bieger_P_channel_depth	0.846	ft
Bieger_P_channel_cross_sectional_area	11.2	ft^2
Bieger_USA_channel_width	5.69	ft
Bieger_USA_channel_depth	0.753	ft
Bieger_USA_channel_cross_sectional_area	5.19	ft^2

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/>)

Bieger, Katrin; Rathjens, Hendrik; Allen, Peter M.; and Arnold, Jeffrey G.,2015, Development and Evaluation of Bankfull Hydraulic Geometry Relationships for the Physiographic Regions of the United States, Publications from USDA-ARS / UNL Faculty, 17p. (https://digitalcommons.unl.edu/usdaarsfacpub/1515?utm_source=digitalcommons.unl.edu%2Fusdaarsfacpub%2F1515&utm_medium=PDF&utm_can)

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