

GEC Project No. 1826-5010

**SUMMARY REPORT OF WETLAND EVALUATION &
REQUEST FOR DETERMINATION OF APPLICABILITY
42 MILL STREET
WESTWOOD, MASSACHUSETTS**

January 27, 2016



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TABLE OF CONTENTS

<u>SECTION</u>		<u>PAGE</u>
1.0	INTRODUCTION/BACKGROUND	1
2.0	SITE VISIT AND REGULATORY EVALUATION	1
3.0	FINDINGS	2
4.0	CONCLUSIONS.....	5
5.0	LIMITATIONS AND CONDITIONS	5

FIGURES

- Figure 1:** USGS Topo Map
- Figure 2:** Photo
- Figure 3:** Photo
- Figure 4:** Photo
- Figure 5:** Photo
- Figure 6:** Google Earth Aerial Photo
- Figure 7:** Google Earth Aerial Photo
- Figure 8:** Plan – Revised Wetland Boundary & Resource Area

APPENDICES

- Appendix A:** Wetlands Protection Act, Riverfront Area, 310 CMR 10.58, pages 222-225
- Appendix B:** USGS Streamstats Report
- Appendix C:** Massachusetts Drought Management Plan Information
- Appendix D:** DEP - Phase 1 Site Assessment Map

1.0 INTRODUCTION

The Westwood Conservation Commission (WCC) retained Goldman Environmental Consultants Inc. (GEC) as an environmental consultant by contract signed July 21, 2015. The purpose of this effort was to assist the Commission in the review of a Request for Determination of Applicability (RDA) for property located at 42 Mill Street in Westwood. The Commission had concerns that the findings of the applicant's consultant were not supported by the Commission's evaluation of the site and its wetland characteristics and the State and Town bylaw wetlands regulations. GEC agreed to review the information submitted, review the field conditions and research and review additional information pertinent to the regulatory aspects that apply to the site. GEC then evaluated this information and made a determination regarding the wetlands resources that exist thereon and how the regulations should be applied. The results provided in this report were presented by GEC at the public hearing scheduled and held on October 21, 2015 to the WCC for deliberation and action. At this meeting, several abutters and citizens voiced their opposition to any project on this site. The WCC accepted the findings of GEC and issued a ruling to deny the application and wetlands limits under the state regulations and town bylaw.

The site is located on the west side of Mill Road and the owners of record are the Vinci's. A paved driveway straddles the northern property boundary and provides access to an existing house approximately 800 feet west of Mill Road. Please refer to the original application submitted to the WCC for background.

2.0 SITE VISIT AND REGULATORY EVALUATION

The initial site visit was scheduled for September 4, 2015. GEC was represented by Brian Donahoe VP and wetlands consultant. In addition, present at the site visit were Scott Goddard, a wetlands consultant representing the applicant and Karon Skinner-Catrone the conservation agent for the Town of Westwood. A second site visit was held on October 7, 2015 to review additional wetlands flags that were missing on the first trip and to finalize the site evaluation accordingly.

The approach to the evaluation focused mainly on the wetlands identified toward the inner or western portion of the site. This area had some upland with possible development potential whereas the eastern portion of the site immediately off Mill Road was adjacent to a large marsh/pond area that was created by a small earthen dam and

stone spillway dam also located on the property. The dam was in some disrepair and did not completely contain the volume of water original intended based on our review of historical aerial photographs. The dam appears to be about 60 years old based on a review of historic USGS maps available on-line. GEC recommends that the Town of Westwood investigate dam safety issues related to this dam structure as it pertains to the potential for damage to downstream river property and infrastructure due to possible dam failure. Since this is a privately owned dam the responsibility for maintenance and repairs lie with the owner. However, a catastrophic dam failure as the result of a flood or other reason could damage several public roadways, water lines, as well as private residential property and life. GEC mentioned this issue at the hearing and several downstream abutters expressed concern to this issue and related flooding problems in the past.

The plan of record called a ‘Wetland Delineation Plan’ dated October 27, 2014 submitted with the RDA prepared by GLM Engineering of Hopkinton. This plan was used as the basis for evaluating and locating the wetlands boundaries as determined by the consultant as well as other physical features on the site so as to accurately revise any wetland boundaries or resource areas after the site work was completed. These features include, for example, the roadways and property boundaries, the dam features, the location of Mill Brook, etc. GEC noted during the first site walk that flags were missing in the rear of the property which were subsequently replaced as well as other apparent wetland flagging that were not placed by the applicant team.

3.0 FINDINGS/REGULATORY DETERMINATION

GEC initially reviewed the submittal package and noted the following issues and discrepancies that were made by the applicant. One issue was that Mill Brook was not a perennial stream based on the observation and photographic documentation of four days with no stream flow in September 2014. In another document, the stream was an unnamed stream based on their review of USGS mapping based information and written in the November 2014 submittal cover letter. GEC has determined that Mill Brook is identified on the most recent USGS maps as perennial. (See Figure 1) The definition of a perennial stream is defined in the wetland regulations at 310 CMR 58.00. In particular, several criteria are used to determine the perennial stream determination. The regulatory language of these sections is attached as Appendix A and pertinent language highlighted for clarity. One basic criterion is that the stream be shown as perennial on the most recent USGS map. As noted above, that information is found in Figure 1. The USGS map for the site clearly indicates a perennial stream with the solid line representing the stream and

the associated name for Mill Brook shown. A second criterion requires that the stream have a watershed of adequate size, greater than 0.5 square miles, as indicated by the USGS Streamstats report. This information also supports the perennial stream finding and is listed in Appendix B.

A third criterion is used to redefine a perennial stream as intermittent if the stream can be documented to have no flow four separate days within a year. However, this method also requires that the period of documentation not be in a period of drought nor can the stream be impacted by impoundments or withdrawals as well as other man-made effects. This wetland/stream system has two dammed impoundments immediately upstream as well as the Interim Wellhead Protection Zone for a Town of Westwood municipal well crossing the site. These impoundments are shown on Figure 6 and 7. The regulated water withdrawal well and wellhead protection zones are shown in Appendix D. The period of record described in the application in September 2014 was identified by both the Massachusetts and Federal drought monitoring agencies as being within a drought advisory as stipulated in the regulations and eliminate the ability to change the perennial stream to intermittent. These data are provided in Appendix B.

The observation made in September 2015 by GEC almost exactly a year after the observations made by the applicant indicated that Mill Brook was nearly dry yet had a very low stream flow that was separated by rocky outcrops of exposed streambed. This observation was made during a similar and actually more severe drought advisory. However, GEC observed intermittent flow in and out of a very rocky streambed. This does not constitute a dry river condition. (See Figures 2-5) We suspect that the photographs and observation may have had similar characteristics of flow in 2014. The regulations stipulate at 10.58 2(a) 1 that, 'when surface water is present in contiguous and connected pool/riffle systems it shall be determined to be flowing.'

In addition to the discussion above, the regulations also state that if the pond, lake or impoundment formed by the perennial stream is not named on a USGS map then the riverfront regulations continue through the impoundment. In addition, if riverine characteristic are observed, meaning observable flow, through the impoundment, then the perennial stream also is deemed to continue through the impoundment. In both cases, this is what was observed and identified on mapping by GEC.

The discussion above addresses the last perennial stream definition requirements described in the regulations and pertinent to this matter. All regulatory determinations made by GEC clearly indicated that Mill Brook whether flowing or not must be

continued to be regulated as a perennial stream. This assessment and analysis means that Mill Brook is regulated under the Rivers Protection Act provisions of the Massachusetts Wetlands Regulations and invokes the 100 and 200 foot River front setback boundaries. It also requires the application of the standards of new development within these boundaries, which are strict for a site not previously developed.

Statements were made in the submittal that no estimated priority habitats or vernal pools were located on or near the site. GEC finds that the latest estimated habitat map indicates a number of potential vernal pools both up and downstream of the site the closest within 400 feet. (See Appendix D) Several exist in Mill Brook upstream of the site. Furthermore, after the site review by GEC two additional potential vernal pools exist on the site in areas identified as an intermittent stream and bordering vegetated wetlands by the applicant. These potential vernal pools are within the BVW boundaries but are devoid of any vegetation and clearly present as natural depressions with evidence of seasonal flooding. These pools should be further reviewed by the WCC since that determination carries additional wetland protection regulatory oversight as well as from the Natural Heritage Program of the Department of Fish and Wildlife.

The wetlands flagging was reviewed in the field on two occasions as noted above. Generally, the applicant's base flag locations were in agreement with the review by GEC with some notable exceptions. Please refer to the GEC revised wetland plan shown as Figure 8. This plan notes the modification of the wetland boundary based on the location of the applicants flagging. Along the dam shoreline there is general agreement as well as on the far western boundary of the property. However below the dam and along the driveway GEC observed an extension of both an intermittent stream and additional streams that are part of the normal perennial stream flow through Mill Brook and the dam spillways. These extensions were supported by the identification bordering wetlands vegetation, the observance of hydric soil conditions and in the case of the stream channels below the dam of perennial characteristics. It is important to note the main stream channel below the main dam outlet was dry and the two stream channels associated with the emergency spillways were both flowing. The intermittent stream channel that runs along the driveway had hydric soil found up to a point indicated on the revised GEC plan. (See Figure 5) The wetlands vegetation comprised mostly of red maple, sweet pepperbush and ferns as well as skunk cabbage, sedges, jewelweed and rushes along the lower 140 feet of the channel. This channel shown on the revised plan by the applicant recently submitted connected to the north with the wetlands boundaries shown on the applicant plan.

Below the dam spillway, the wetland boundaries were also relocated in response to the observation of wetland vegetation mainly red maple, sweet pepperbush, northern arrowood, cinnamon fern and some royal fern. Flow from the dam emergency outlet spillway and the main stream's channel supported this wetland.

4.0 CONCLUSIONS

GEC has determined based on a review of the submitted ANRAD application and a review of available supporting documentation and field observations the following:

- The wetlands boundaries for the site should be modified in accordance with the revised plan submitted herein.
- The status of Mill Brook is that of a perennial stream and any development on this site should reflect the application of the rules found under the Massachusetts Rivers Protection Act regulations and the Westwood Wetlands Town bylaw, specifically the 100 and 200 foot riverfront setbacks provisions,
- The WCC should investigate the identification of two or three potential vernal pools this spring to determine if they can be certified and regulated as such,
- The existing masonry, concrete and earthen dam should be evaluated by the Town of Westwood for dam safety concerns

5.0 LIMITATIONS AND CONDITIONS

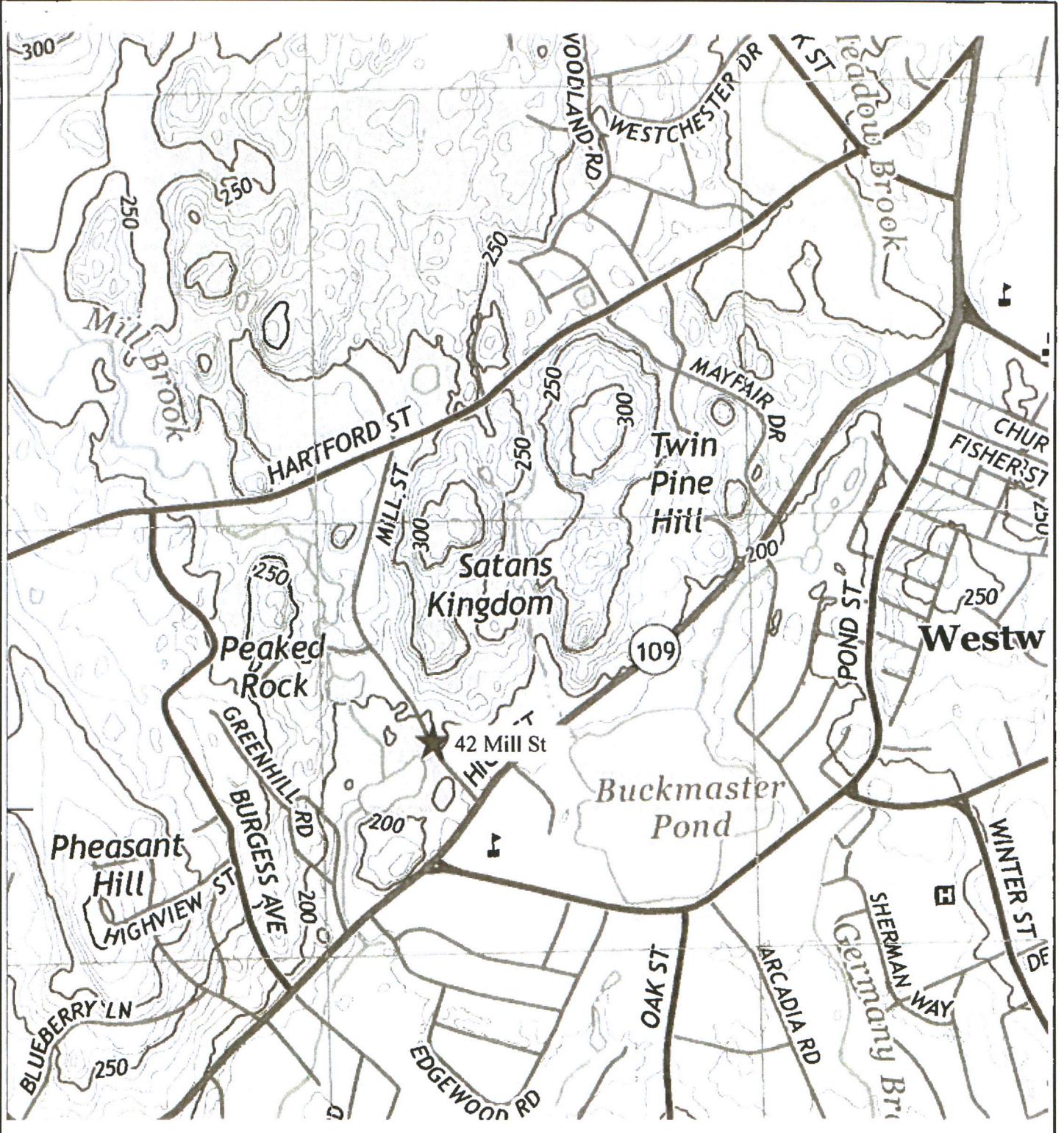
The conclusions contained in this report are based on the information readily available to GEC as of January 27, 2016.

Respectfully submitted,
Goldman Environmental Consultants, Inc.



Brian Donahoe
Vice President, Environmental Services

FIGURES



USGS Map, 2015—Norwood Quad

Scale 1:31,680



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Figure 1





Figure 2 Mill Brook October 7, 2015 during drought advisory. Note intermittent flow upstream due to stream bed rock, classic riffle characteristic, that is deeper than the near brook area. Interim flow in and out of riverbed meets perennial stream criteria.



Figure 3 Mill Brook at entrance of pond/marsh looking downstream. Note deep boulder strewn area that is characteristic of the upper stream area and masks the low stream flow.



Figure 4 Mill Brook further upstream from the roadway crossing looking north. Note flow and riffle characteristics.



Figure 5 Intermittent stream and bordering vegetated wetland found alongside the driveway the flows from west to east into the pond wetland. Clear hydrology indicator, stream bank and associated wetland vegetation and hydric soils found.



Google Earth Imagery date 4/9/2008

Pond at Mill Brook behind old dam. Note riverine characteristics flowing through the area from north to southwest.



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Figure 6





Google Earth Imagery date 4/9/2008

Manmade impoundments upstream of Mill Brook and 42 Mill Rd Site.

GEC



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Figure 7



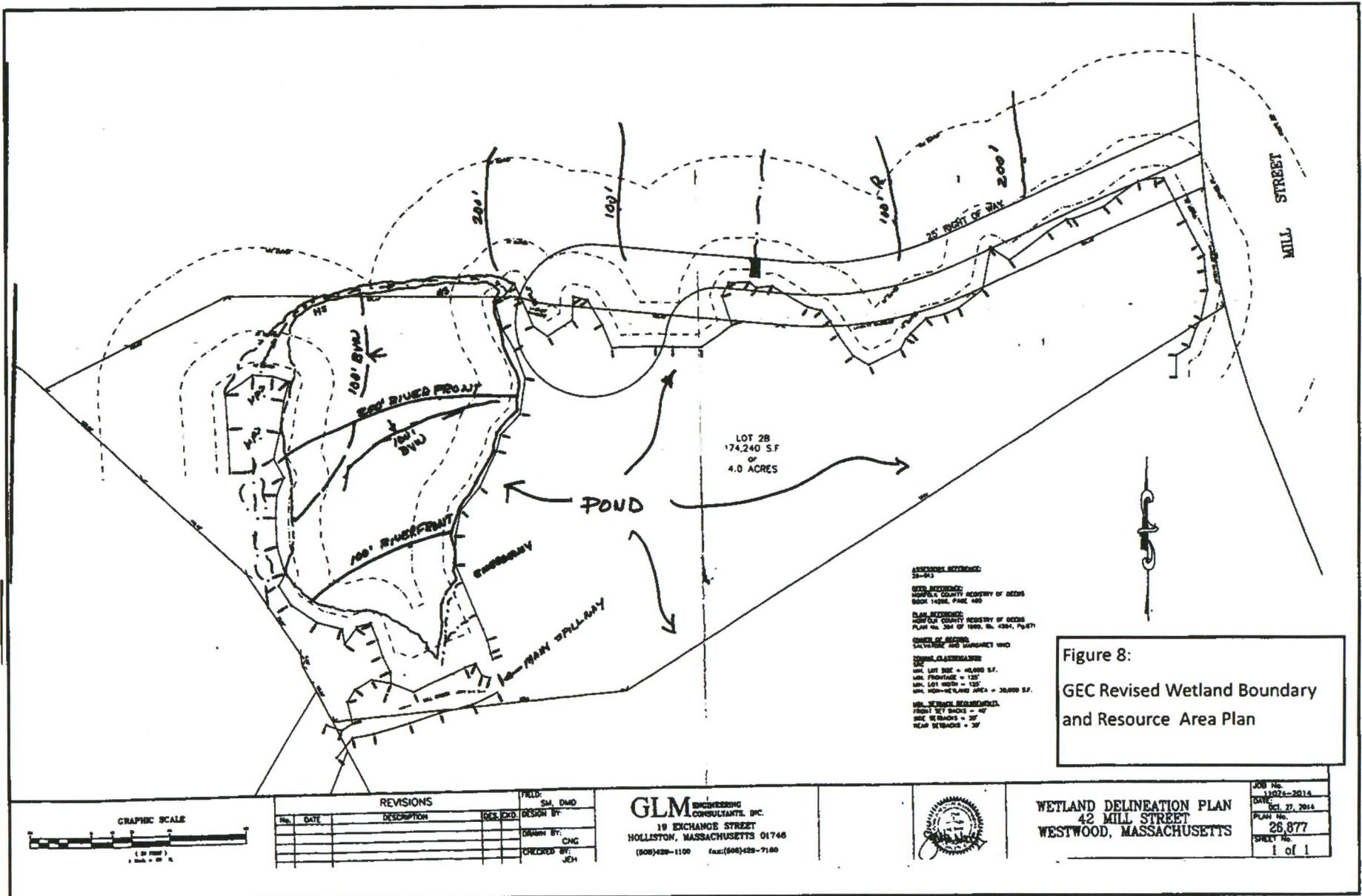


Figure 8:
**GEC Revised Wetland Boundary
and Resource Area Plan**

APPENDICES

310 CMR: DEPARTMENT OF ENVIRONMENTAL PROTECTION

pools. Reptiles, especially turtles, often require areas along rivers to lay their eggs. Since amphibians and reptiles are less mobile than mammals and birds, maintaining integrity of their habitat is critical.

In those portions so extensively altered by human activity that their important wildlife habitat functions have been effectively eliminated, riverfront areas are not significant to the protection of important wildlife habitat and vernal pool habitat.

(2) Definitions, Critical Characteristics and Boundaries.

(a) A Riverfront Area is the area of land between a river's mean annual high water line and a parallel line measured horizontally. The riverfront area may include or overlap other resource areas or their buffer zones. The riverfront area does not have a buffer zone.

10.58: continued

1. A river is any natural flowing body of water that empties to any ocean, lake, pond, or other river and which flows throughout the year. Rivers include streams (see 310 CMR 10.04: Stream) that are perennial because surface water flows within them throughout the year. Intermittent streams are not rivers as defined herein because surface water does not flow within them throughout the year. When surface water is not flowing within an intermittent stream, it may remain in isolated pools or it may be absent. When surface water is present in contiguous and connected pool/riffle systems, it shall be determined to be flowing. Rivers begin at the point an intermittent stream becomes perennial or at the point a perennial stream flows from a spring, pond, or lake. Downstream of the first point of perennial flow, a stream normally remains a river except where interrupted by a lake or pond. Upstream of the first point of perennial flow, a stream is normally intermittent.
 - a. A river or stream shown as perennial on the current United States Geological Survey (USGS) or more recent map provided by the Department is perennial.
 - b. A river or stream shown as intermittent or not shown on the current USGS map or more recent map provided by the Department, that has a watershed size greater than or equal to one square mile, is perennial.
 - c. A stream shown as intermittent or not shown on the current USGS map or more recent map provided by the Department, that has a watershed size less than one square mile, is intermittent unless:
 - i. The stream has a watershed size of at least $\frac{1}{2}$ (0.50) square mile and has a predicted flow rate greater than or equal to 0.01 cubic feet per second at the 99% flow duration using the USGS Stream Stats method. The issuing authority shall find such streams to be perennial; or
 - ii. When the USGS StreamStats method cannot be used because the stream does not have a mapped and digitized centerline (including but not limited to streams located in the following basins: North Coastal Basin, Taunton Basin, Buzzards Bay Basin, Cape Cod and Islands Basin, and that portion of the South Coastal Basin that is south of the Jones River sub-basin), and the stream has a watershed size of at least $\frac{1}{2}$ (0.50) square mile, and the surficial geology of the contributing drainage area to the stream at the project site contains 75% or more stratified drift, the issuing authority shall find such streams to be perennial. Stratified drift shall mean sand and gravel deposits that have been layered and sorted by glacial meltwater streams. Areal percentages of stratified drift may be determined using USGS surficial geologic maps, USGS Hydrological Atlases, Massachusetts Geographical Information System (MassGIS) surficial geology data layer, or other published or electronic surficial geological information from a credible source.
 - d. Notwithstanding 310 CMR 10.58(2)(a)1.a. through c., the issuing authority shall find that any stream is intermittent based upon a documented field observation that the stream is not flowing. A documented field observation shall be made by a competent source and shall be based upon an observation made at least once per day, over four days in any consecutive 12 month period, during a non-drought period on a stream not significantly affected by drawdown from withdrawals of water supply wells, direct withdrawals, impoundments, or other human-made flow reductions or diversions. Field observations made after December 20, 2002 shall be documented by field notes and by dated photographs or video. Field observations made prior to December 20, 2002 shall be documented by credible evidence. All field observations shall be submitted to the issuing authority with a statement signed under the penalties

310 CMR: DEPARTMENT OF ENVIRONMENTAL PROTECTION

of perjury attesting to the authenticity and veracity of the field notes, photographs or video and other credible evidence. Department staff, conservation commissioners, and conservation commission staff are competent sources; issuing authorities may consider evidence from other sources that are determined to be competent.

e. Rivers include the entire length and width to the mean annual high-water line of the major rivers (Assabet, Blackstone, Charles, Chicopee, Concord, Connecticut, Deerfield, Farmington, French, Hoosic, Housatonic, Ipswich, Merrimack, Millers, Nashua, Neponset, Parker (Essex County), Quinebaug, Shawsheen, Sudbury, Taunton, Ten Mile, and Westfield).

10.58: continued

- f. Rivers include perennial streams that cease to flow during periods of extended drought. Periods of extended drought for purposes of 310 CMR 10.00 shall be those periods, in those specifically identified geographic locations, determined to be at the "Advisory" or more severe drought level by the Massachusetts Drought Management Task Force, as established by the Executive Office of Energy and Environmental Affairs and the Massachusetts Emergency Management Agency in 2001, in accordance with the Massachusetts Drought Management Plan (MDMP). Rivers and streams that are perennial under natural conditions but are significantly affected by drawdown from withdrawals of water supply wells, direct withdrawals, impoundments, or other human-made flow reductions or diversions shall be considered perennial.
 - g. Human-made canals (*e.g.*, the Cape Cod Canal and canals diverted from rivers in Lowell and Holyoke) and mosquito ditches associated with coastal rivers do not have riverfront areas.
 - h. Where rivers flow through lakes or ponds, the Riverfront Area stops at the inlet and begins again at the outlet. A water body identified as a lake, pond, or reservoir on the current USGS map or more recent map provided by the Department, is a lake or pond, unless the issuing authority determines that the water body has primarily riverine characteristics. When a water body is not identified as a lake, pond, or reservoir on the current USGS map or more recent map provided by the Department, the water body is a river if it has primarily riverine characteristics. Riverine characteristics may include, but are not limited to, unidirectional flow that can be visually observed or measured in the field. In addition, rivers are characterized by horizontal zonation as opposed to the vertical stratification that is typically associated with lakes and ponds. Great Ponds (*i.e.*, any pond which contained more than ten acres in its natural state, as calculated based on the surface area of lands lying below the natural high water mark; a list is available from the Department) are never rivers.
2. Mean Annual High-water Line of a river is the line that is apparent from visible markings or changes in the character of soils or vegetation due to the prolonged presence of water and that distinguishes between predominantly aquatic and predominantly terrestrial land. Field indicators of bankfull conditions shall be used to determine the mean annual high-water line. Bankfull field indicators include but are not limited to: changes in slope, changes in vegetation, stain lines, top of pointbars, changes in bank materials, or bank undercutts.
- a. In most rivers, the first observable break in slope is coincident with bankfull conditions and the mean annual high-water line.
 - b. In some river reaches, the mean annual high-water line is represented by bankfull field indicators that occur above the first observable break in slope, or if no observable break in slope exists, by other bankfull field indicators. These river reaches are characterized by at least two of the following features: low gradient, meanders, oxbows, histosols, a low-flow channel, or poorly-defined or nonexistent banks.
 - c. In tidal rivers, the mean annual high-water line is coincident with the mean high water line determined under 310 CMR 10.23.
3. The Riverfront Area is the area of land between a river's mean annual high-water line measured horizontally outward from the river and a parallel line located 200 feet away, except that the parallel line is located:
- a. 25 feet away in Boston, Brockton, Cambridge, Chelsea, Everett, Fall River, Lawrence, Lowell, Malden, New Bedford, Somerville, Springfield, Winthrop, and

StreamStats Version 3.0

Flow Statistics Ungaged Site Report

Date: Wed Jan 27, 2016 1:07:52 PM GMT-5

Study Area: Massachusetts

NAD 1983 Latitude: 42.2059 (42 12 21)

NAD 1983 Longitude: -71.2402 (-71 14 25)

Drainage Area: 1.44 mi²

Low Flows Basin Characteristics			
100% Statewide Low Flow WRIR00 4135 (1.44 mi ²)			
Parameter	Value	Regression Equation Valid Range	
		Min	Max
Drainage Area (square miles)	1.44 (below min value 1.61)	1.61	149
Mean Basin Slope from 250K DEM (percent)	2.384	0.32	24.6
Stratified Drift per Stream Length (square mile per mile)	0.055	0	1.29
Massachusetts Region (dimensionless)	0	0	1

Warning: Some parameters are outside the suggested range. Estimates will be extrapolations with unknown errors.

Probability of Perennial Flow Basin Characteristics			
100% Perennial Flow Probability (1.44 mi ²)			
Parameter	Value	Regression Equation Valid Range	
		Min	Max
Drainage Area (square miles)	1.44	0.01	1.99
Percent Underlain By Sand And Gravel (percent)	9.79	0	100
Percent Forest (percent)	63.83	0	100
Massachusetts Region (dimensionless)	0	0	1

Bankfull Flows Basin Characteristics			
100% Bankfull Statewide SIR2013 5155 (1.44 mi ²)			
Parameter	Value	Regression Equation Valid Range	
		Min	Max
Drainage Area (square miles)	1.44	0.6	329
Mean Basin Slope from 10m DEM (percent)	6.747	2.2	23.9

Statistic	Value	Unit	Low Flows Statistics		90-Percent Prediction Interval	
			Prediction Error (percent)	Equivalent years of record	Min	Max
D50	1.39	ft ³ /s				
D60	0.89	ft ³ /s				
D70	0.46	ft ³ /s				
D75	0.34	ft ³ /s				
D80	0.24	ft ³ /s				
D85	0.17	ft ³ /s				

D90	0.11	ft3/s					
D95	0.0594	ft3/s					
D98	0.0367	ft3/s					
D99	0.0256	ft3/s					
M7D2Y	0.0668	ft3/s					
AUGD50	0.18	ft3/s					
M7D10Y	0.0212	ft3/s					

<http://pubs.usgs.gov/wri/wri004135/> (<http://pubs.usgs.gov/wri/wri004135/>)

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.

Probability of Perennial Flow Statistics							
Statistic	Value	Unit	Prediction Error (percent)	Equivalent years of record	90-Percent Prediction Interval		
					Min	Max	
PROBPEREN	0.86	dim	0.3		0.57	0.81	

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

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.

Bankfull Flows Statistics							
Statistic	Value	Unit	Prediction Error (percent)	Equivalent years of record	90-Percent Prediction Interval		
					Min	Max	
BFWDTH	17.2	ft	21				
BFDPTH	1.05	ft	20				
BFAREA	17.8	ft ²	29				
BFFLOW	46.9	ft ³ /s	55				

<http://pubs.usgs.gov/sir/2013/5155/> (<http://pubs.usgs.gov/sir/2013/5155/>)

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.

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URL: http://streamstatsags.cr.usgs.gov/v3_beta/FTreport.htm

Page Contact Information: StreamStats Help

Page Last Modified: 11/24/2015 14:32:58 (Web1)

Streamstats Status [News](#)



StreamStats Version 3.0

Basin Characteristics Ungaged Site Report

Date: Wed Jan 27, 2016 1:04:53 PM GMT-5

Study Area: Massachusetts

NAD 1983 Latitude: 42.2059 (42 12 21)

NAD 1983 Longitude: -71.2402 (-71 14 25)

Label	Value	Units	Definition
DRNAREA	1.44	square miles	Area that drains to a point on a stream
STRMTOT	2.67	miles	Total length of mapped streams in basin
DRFTPERSTR	0.055	square mile per mile	Area of stratified drift per unit of stream length
MAREGION	0	dimensionless	Region of Massachusetts 0 for Eastern 1 for Western
FOREST	63.83	percent	Percentage of area covered by forest
CRSDFT	9.79	percent	Percentage of area of coarse-grained stratified drift
BSLDEM10M	6.747	percent	Mean basin slope computed from 10 m DEM
BSLDEM250	2.384	percent	Mean basin slope computed from 1:250K DEM
ACRSDFT	0.15	square miles	Area underlain by stratified drift
LC11IMP	4.29	percent	Percentage of impervious area determined from NLCD 2011 impervious dataset
LC11DEV	19.9	percent	Percentage of land-use from NLCD 2011 classes 21-24
ELEV	276	feet	Mean Basin Elevation
PRECPRIS00	47.8	inches	Basin average mean annual precipitation for 1971 to 2000 from PRISM
LAKEAREA	0.29	percent	Percentage of Lakes and Ponds
OUTLETX	221445	State plane coordinates	Basin outlet horizontal (x) location in state plane coordinates
OUTLETY	883975	State plane coordinates	Basin outlet vertical (y) location in state plane coordinates
MAXTEMPC	15.1	degrees	Mean annual maximum air temperature over basin area, in degrees Centigrade
WETLAND	13.26	percent	Percentage of Wetlands
CENTROIDX	220776.7	State plane coordinates	Basin centroid horizontal (x) location in state plane coordinates
CENTROIDY	885397.6	State plane coordinates	Basin centroid vertical (y) location in state plane units

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URL: http://streamstatsags.cr.usgs.gov/v3_beta/BCreport.htm

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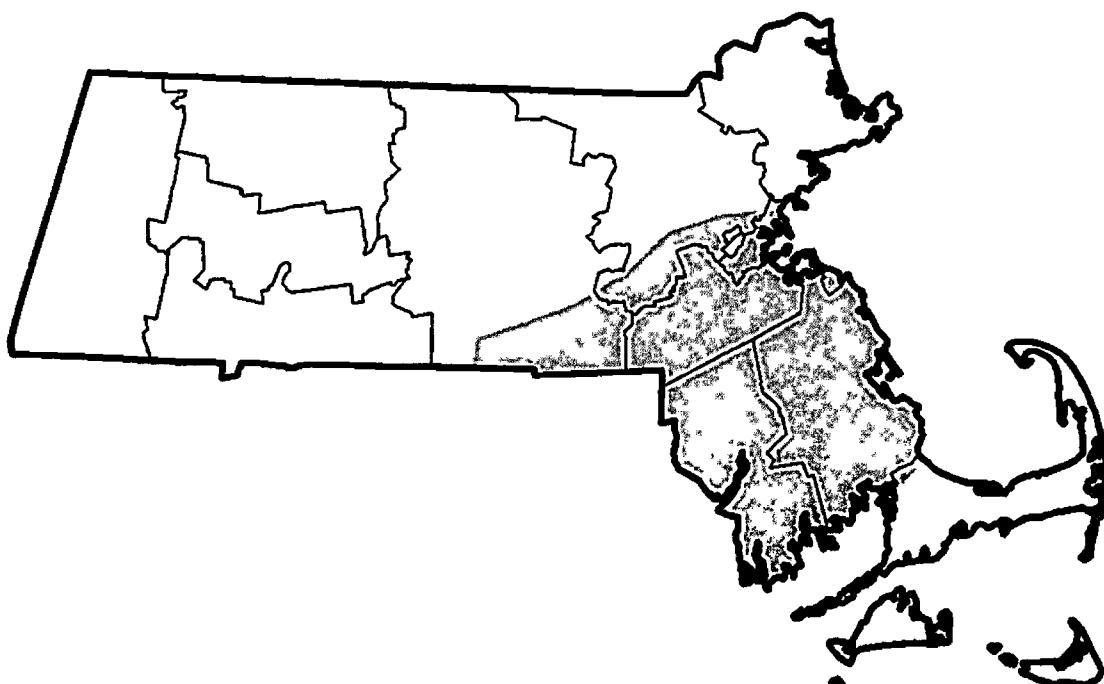
Page Last Modified: 01/26/2016 11:44:09 (Web1)

Streamstats Status: 



U.S. Drought Monitor

Massachusetts



September 30, 2014
(Released Thursday, Oct. 2, 2014)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	32.83	67.17	26.58	0.00	0.00	0.00
Last Week 9/23/2014	39.08	60.92	26.85	0.00	0.00	0.00
3 Months Ago 7/1/2014	58.79	41.21	0.00	0.00	0.00	0.00
Start of Calendar Year 12/31/2013	0.00	100.00	54.05	0.00	0.00	0.00
Start of Water Year 10/1/2013	63.74	36.26	0.00	0.00	0.00	0.00
One Year Ago 10/1/2013	63.74	36.26	0.00	0.00	0.00	0.00

Intensity:

- D0 Abnormally Dry
- D3 Extreme Drought
- D1 Moderate Drought
- D4 Exceptional Drought
- D2 Severe Drought

The Drought Monitor focuses on broad-scale conditions.
Local conditions may vary. See accompanying text summary
for forecast statements.

Author:
Richard Heim
NCDC/NOAA



MassDEP - Bureau of Waste Site Cleanup

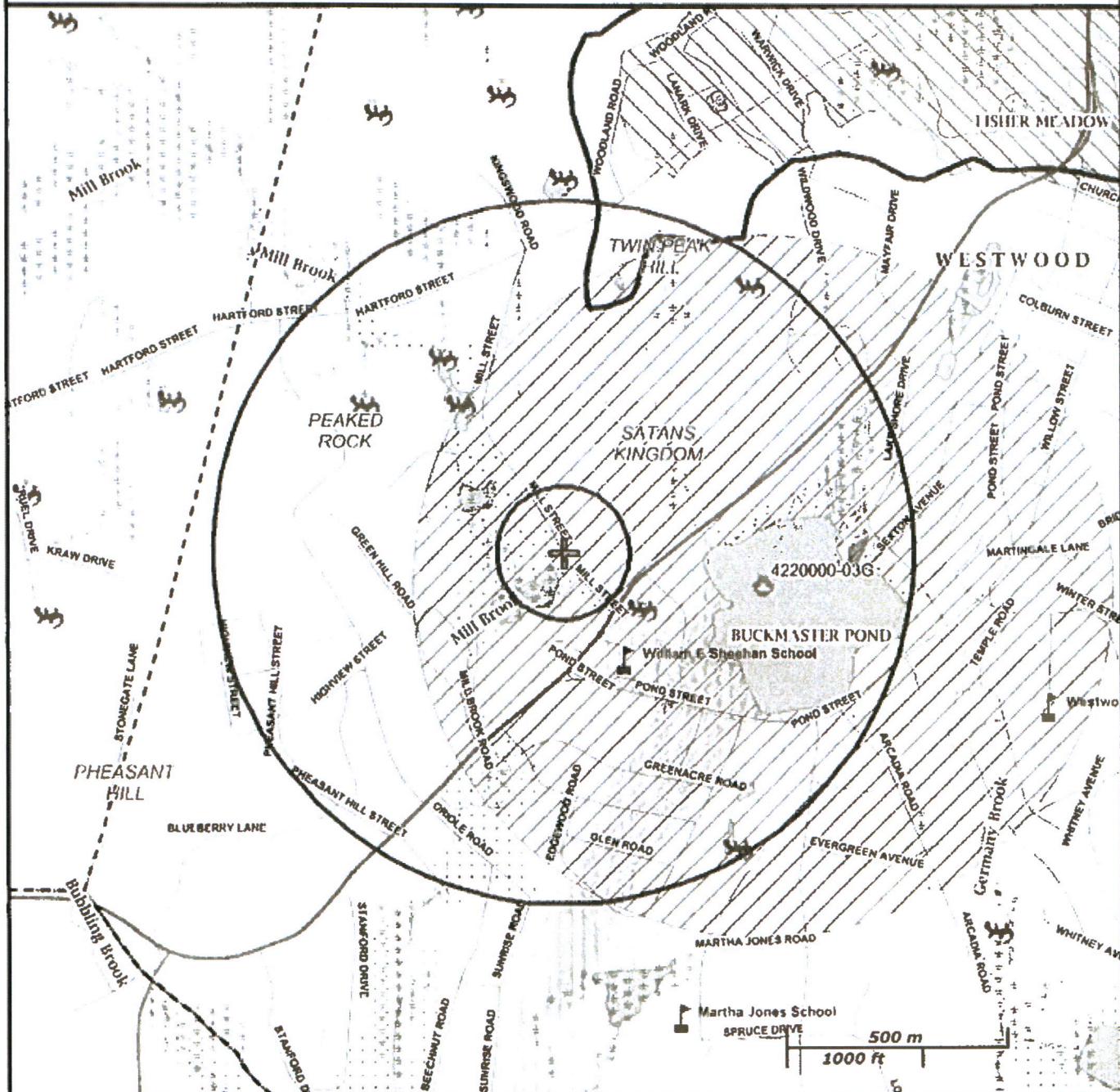
Phase 1 Site Assessment Map: 500 feet & 0.5 Mile Radii

Site Information:
 42 MILL ST WESTWOOD, MA
 NAD83 UTM Meters:
 4675491mN , 315256mE (Zone: 19)
 January 27, 2016

The information shown is the best available at the date of printing. However, it may be incomplete. The responsible party and LSP are ultimately responsible for ascertaining the true conditions surrounding the site. Metadata for data layers shown on this map can be found at:
<http://www.mass.gov/mgis/>



MassDEP
 Commonwealth of Massachusetts
 Department of Environmental Protection



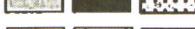
Roads Limited Access, Divided, Other Hwy, Major Road, Minor Road, Track, Trail

PWS Protection Areas: Zone II, ICPA, Zone A



Boundaries Town, County, DEP Region, Train, Powerline, Pipeline, Aqueduct

Hydrology: Open Water, PWS Reservoir, Tidal Flat



Basins: Major, PWS, Streams Perennial, Intermittent, Man Made Shore, Dam

Wetlands Freshwater, Saltwater, Cranberry Bog



Aquifers: Medium Yield, High Yield, EPA Sole Source.....

FEMA 100yr Floodplain; Protected Open Space; ACEC



Non Potential Drinking Water Source Area: Medium, High (Yield)...

Est. Rare Wetland Wildlife Hab; Vernal Pool: Cert, Potential



Solid Waste Landfill, PWS: Com.GW, SW, Emerg, Non-Com

Solid Waste Landfill, PWS: Com.GW, SW, Emerg, Non-Com





Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

ATTACHMENT B

Department of Environmental Protection

Northeast Regional Office • 205B Lowell Street, Wilmington MA 01887 • 978-694-3200

Charles D. Baker
Governor

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Secretary

Karyn E. Polito
Lieutenant Governor

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Commissioner

August 25, 2016

Anthony Delapa
Delapa Properties
511 Washington Street
Norwood, MA 02062

RE: WETLANDS/WESTWOOD
DEP File# 338-0594
42 Mill Street
**Superseding Order of
Resource Area Delineation**

Dear Mr. Delapa:

The Northeast Regional Office of the Massachusetts Department of Environmental Protection, Wetlands Program (MassDEP), has completed its review of the above-referenced file in preparation to issuing a Superseding Order of Resource Area Delineation. Pursuant to the provisions of Massachusetts General Laws, Chapter 131, Section 40, MassDEP is issuing the attached Superseding Order of Resource Area Delineation (SORAD), confirming the delineated wetland boundaries on the site as inaccurate based upon a review of the information contained in the file and observations made during site evaluations. In addition, Mill Brook is determined to be a perennial stream.

The Westwood Conservation Commission (WCC) issued an Order of Resource Area Delineation (ORAD) on November 9, 2015, finding the delineation of the Bordering Vegetated Wetland (BVW) as inaccurate and also finding Mill Brook as a perennial stream. The WCC also indicated that there might be a potential vernal pool on the site.

On November 20, 2015, you appealed the ORAD claiming that the WCC had no basis in fact to make their decision. Your claim that Mill Brook is intermittent is based on four photographs covering the dates of September 1-4, 2014 showing a dry stream bed at the outlet below the dam of the impoundment. No photographs were taken of the impoundment and its inlet at this time. You also claim that a portion of the intermittent stream channel along the driveway to the 44 Mill Street residence is not a BVW and therefore not jurisdictional.

On December 16, 2015, MassDEP conducted a site inspection and met with your consultant and representatives of the WCC. At this time, water was observed in the impoundment and Mill

Westwood, 42 Mill Street

DEP File # 338-0594

Superseding Order of Resource Area Delineation

Page 2

Brook. Additionally, two more site visits were made with this group to confirm wetland boundaries at the site using soils and vegetation.

The undeveloped site contains approximately half of a 2.55 acre shallow impoundment of Mill Brook and both wooded upland and BVW. An existing driveway from Mill Street to 44 Mill Street is parallel to the 42 Mill Street property line. An intermittent stream channel that was probably originally dug for drainage runs alongside the driveway on the 42 Mill Street property and joins Mill Brook. The intermittent stream flows through a small, partially-blocked culvert under what appeared to be a vehicle crossing from the driveway. Flowing water was not observed in the intermittent stream channel during any of the site visits.

The Riverfront regulations at 310 CMR 10.58(2) define a perennial stream using different criteria depending on the information known about the stream and its watershed. Specific criteria include the following: the stream is shown as perennial on a USGS topographic map, has a watershed size greater than or equal to one square mile, has a watershed area of at least one-half (0.50) square miles and a predicted flow rate greater than or equal to 0.01 cfs at the 99% flow duration using the USGS StreamStats program, and is perennial under natural conditions. This definition is further refined by 10.58(2)(a)1.d. which specifies that streams significantly affected by drawdown from withdrawals of water supply wells, direct withdrawals, impoundments, or other man-made flow reductions or diversions, then it shall be considered perennial.

Mill Brook is shown as a perennial stream on the 1985 Norwood Mass USGS Quadrangle and is within the Neponset River watershed. There are three impoundments on Mill Brook which includes the impoundment on the site. Two of the impoundments are located above the site impoundment. Historically, based on a 1941 USGS Norwood topographic quadrangle, there is no impoundment at 42 Mill Street but just the brook flowing through a wetland area. Furthermore, there is only one impoundment located along Mill Brook on this map.

The USGS StreamStats program calculated the drainage area of Mill Brook to be 1.36 square miles from the dam outlet on the site. The predicted flow rate was calculated at 0.0241 cubic feet per second at the 99% flow duration. Mill Brook enters the impoundment through a shallow channel of wetland vegetation and then flows approximately 400 feet through the impoundment to the dam outlet.

A significant portion of Mill Brook including the impoundment at the site is within the Interim Wellhead Protection Area of a Public Water Supply (PWS) well at Buckmaster Pond in Westwood. In the absence of an approved Zone II recharge area, DEP has adopted the Interim Wellhead Protection Area (IWPA) as the primary, protected recharge area for PWS groundwater sources. The IWPA radius for the PWS well at Buckmaster Pond is 0.5 miles.

Although not a declared drought during the period of time that the photographs were taken of a dry channel below the dam, the region was experiencing a dry period as evidenced by low stream flows and groundwater tables. Data from the USGS for the Water Year 2014 that ran from

Westwood, 42 Mill Street

DEP File # 338-0594

Superseding Order of Resource Area Delineation

Page 3

October 1, 2013 to September 30, 2014 showed very low flows for the Neponset River and low groundwater levels at a USGS Norfolk well during September of 2014. The US Drought Monitor showed the region that includes Mill Brook and its watershed as being abnormally dry on September 2, 2014.

Based on the above information that Mill Brook is shown as a perennial stream on a USGS topographic map with a watershed area greater than one square mile, a predicted flow rate greater than 0.01 cfs, is within the recharge area of a PWS, has two impoundments above the site, and observations were made during an abnormally dry season with below average stream flows and groundwater levels in the area, it is MassDEP's opinion that Mill Brook is a perennial stream subject to the Riverfront regulations pursuant to 310 CMR 10.58.

It is also MassDEP's contention that the impoundment at 42 Mill Street is a run-of-the river impoundment and has primarily riverine characteristics based on its extremely shallow depth (estimated average depth of about 2 feet), small impoundment size compared with its watershed (341 times smaller than the watershed), the short distance between the brook inlet and the dam outlet (approximately 400 feet) which effectively short-circuits the impoundment; and the 1941 USGS quad shows a channel through a wetland area with no impoundment on the site. Therefore, it is MassDEP's opinion that the impoundment is subject to the riverfront regulations at 310 CMR 10.58.

The intermittent channel begins in a wetland area designated by flag D6 on the revised plan dated June 13, 2016 and continues to wetland flag GC52-1 (note that the intermittent channel from D6 to GC54 is located outside of the site's property line). The intermittent stream channel banks were examined for hydric soils and wetland vegetation. Hydric soils were found as well as wetland vegetation along the entire channel with the exception of a short section approximately 10 feet long where the channel lost its definition and then picked up again at its confluence with Mill Brook. It was clear, however, that the entire channel from D6 to its confluence with Mill Brook conveys water during large storm events along its entire length. It is MassDEP's opinion that the intermittent stream channel has bank with BVW.

Concerning vernal pools on the site, there are no confirmed potential or designated vernal pools registered by the Natural Heritage Program.

Please be advised that it is MassDEP's responsibility to address only those interests identified in the Wetlands Protection Act, M.G.L. Chapter 131, Section 40. However, the MassDEP reserves the right, should there be further proceedings in this case, to raise additional issues and present further evidence as may be appropriate. Should any party dispute these findings, please consult the language in the SORAD that specifies your rights and procedures for appeal.

If you have any questions concerning this SORAD, please do not hesitate to contact Gary Bogue at 978-694-3372.

**Westwood, 42 Mill Street
DEP File # 338-0594
Superseding Order of Resource Area Delineation
Page 4**

Sincerely,



Rachel Freed, Deputy Regional Director
Bureau of Water Resources

cc: Westwood Conservation Commission, 50 Carby Street, Westwood, MA 02090
Scott Goddard, Goddard Consulting, 291 Main Street, Suite 8, Northborough, MA 01532
Brian Donahoe, Goldman Environmental Consultants, 60 Brooks Drive, Braintree, MA 02184