

Karon Catrone

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**From:** Brian Donahoe <bdonahoe@goldmanenvironmental.com>  
**Sent:** Monday, January 04, 2021 12:16 PM  
**To:** Karon Catrone  
**Subject:** FW: additional review material  
**Attachments:** Combined Attachments Reduced.pdf

Hi Karon, I sent this to you on December 14. If u are OK with it then its final. Please call with any questions. The bottom line is the plan still doesn't reflect the true set back and boundary line.

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**From:** Brian Donahoe  
**Sent:** Monday, December 14, 2020 2:23 PM  
**To:** [kcatrone@townhall.westwood.ma.us](mailto:kcatrone@townhall.westwood.ma.us)  
**Subject:** additional review material

GEC has continued its review of the materials submitted after the initial documentation was submitted. We are aware that some additional plans may or are being submitted soon that were expected to be submitted for the Commission's last hearing in December. The follow up hearing has been continued until January 2021.

The original plan submitted with the application was resubmitted to address the apparent scale discrepancy. There are additional finding discussed below regarding the review of the plan. Attachments to this email report are noted above.

Attachment A is Figure 6 from the original report in January 2016 show the Brook following a channel for more than 140 feet south into the area of the 'pond' and therefore extends the bank of the perennial stream for that distance. The corresponding river front setbacks will also change due to that condition. The second attachment, B, shows the concrete dam and the dry stream channel in October 2020. Debris of the beaver dam can be seen upstream of the concrete dam. Also note the stream channel in the foreground is approximately 35-40 feet wide. The bank of this channel seems to be shown on the submitted plan following contour 184 whereas the channel that was measured is only 5 feet wide. (See Attachment I) This changes the riverfront setback by about 25 feet closer to the proposed house. The third attachment, C, shows the channel flowing at the same time the concrete dam was dry indicating that it now is the likely perennial stream due to the beaver dam. These two photos were taken during an official drought monitoring period. (see attachment G) The fourth photo D, shows the same channel on December 2 2020 after a 2.5 inch rain fall event from December 1. The fifth picture E, shows the same channel looking downstream. Based on this picture the level of the water at the main channel is approximately elevation 188 using the plan of record. This further expands the point of the perennial stream edge, 25 +/- feet closer to the project site because the edge if the perennial stream is the annual high water mark per the regulations. We continue to maintain as well that this stream is the perennial stream due to the changed condition of the beaver dam and the resulting pathway for the water is this channel as documented here. See attachment J. Furthermore based on this information the Commission has the right to consider the pond to not exist if it is not named on the u USGS plan and if the characteristic of the steam can be documented through the impoundment. Attachment F is the latest FEMA flood map for the 100- and 500- year elevations from the MASS GIS system. Note that the entire site is within the 100 year flood plain including the house location. In fact the entire lot as shown is within the 100 year flood plain.

Attachment H is marked up from the plan of record. We note that the access road to the house is not from the owners lot but from the interior of the abutters lot. The only access from the Right of way is in the proposed location of the force main. This will cause additional wetland impacts to cross the stream located there. The last attachment is some background regarding the relationship of beavers with the intestinal disease known as Giardia for reference.

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*The Attorney General has determined that email correspondences are public records unless the content of the email falls with one of the stated exemptions under the Public Records Laws*

## List of Attachments

- A. Figure 6 from original report – indicating the stream channel flows approximately 140 feet through a vegetated wetland before entering the ‘pond’.
- B. Main concrete dam and channel October 2020 during drought. Note stream bed is 30 -40 feet wide not 5 feet wide.
- C. Spillway channel in earthen dam flowing during drought on same day as main channel was dry.
- D. Same spillway on 12/1 2020 after 2.6 inches of rain confirm that this is the main river and should be treated as such in association with ~~number 10~~ below  
Letter E
- E. Looking downstream of channel indicating annual high water level of 1888 feet not 184 feet per regulations 10.58 2 (2)
- F. Current 100- and 500-year floodplain per FEMA FIRM from Mass GIS - entire site is in floodplain
- G. Fall 2020 Drought monitor plan indicating extensive drought condition
- H. Plan of land submitted with application indicating the proposed access location is not from the Right of way but within abutter’s property
- I. Plan of land indicating the stream channel width (5 feet) used to establish riverfront setback rather than the channel shown on the plan adjusted per the annual high water elevation of 188 feet.
- J. Regulation 10.58 2 (1) h describing when a pond can be a river which seems to apply to this area and would extend the river front setback.
- K. Background on beavers and the high incidence of Giardia, a contagious disease.



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**











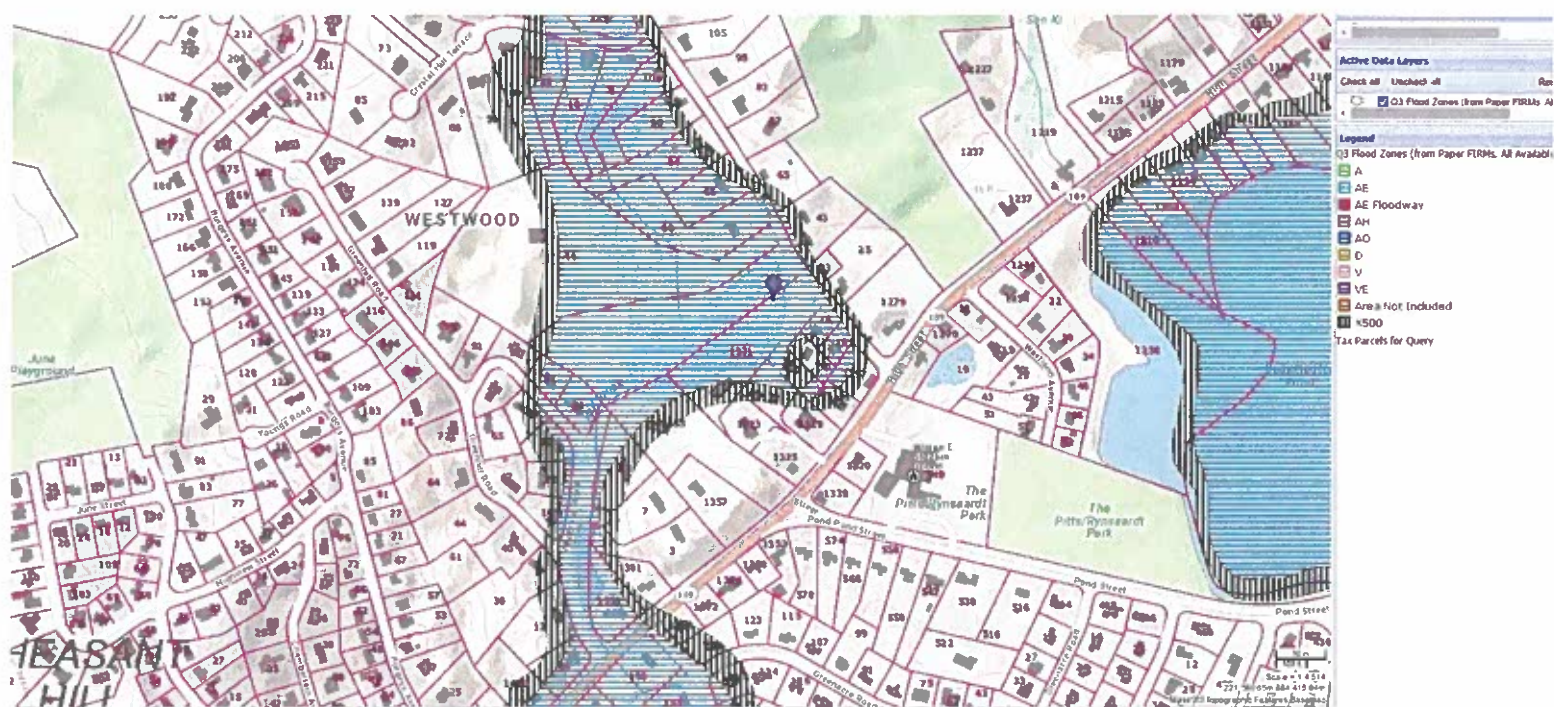






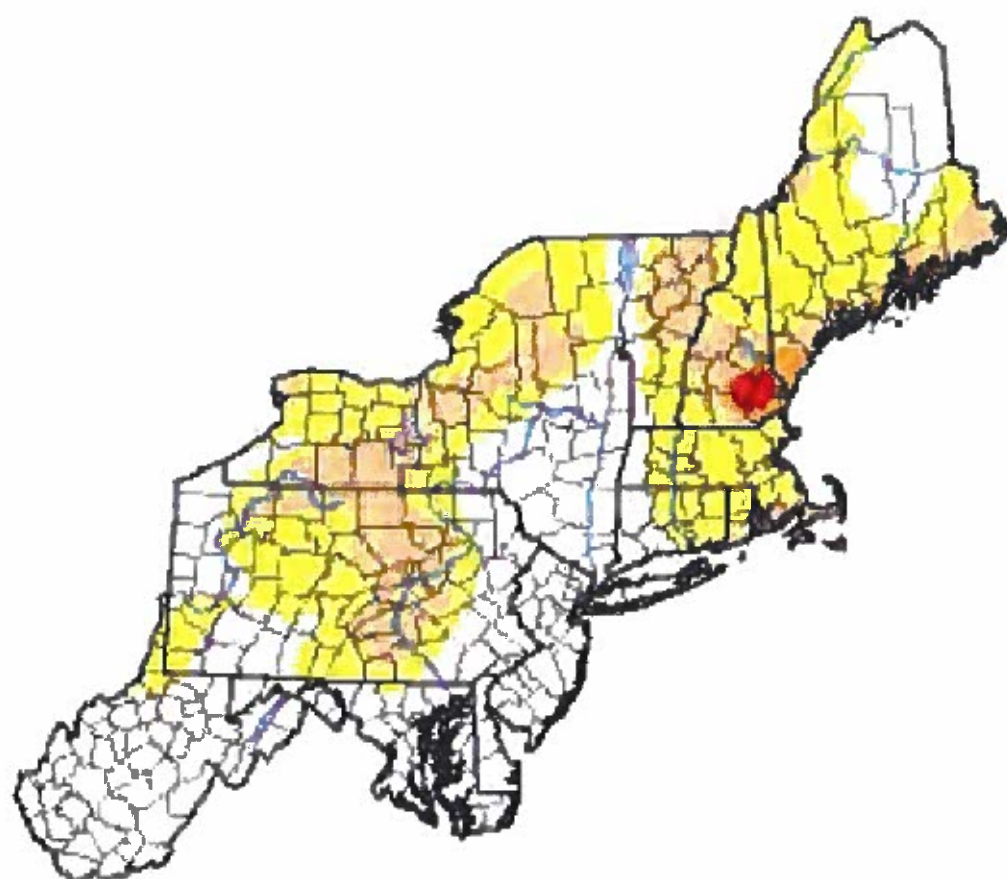






# U.S. Drought Monitor Northeast

**December 1, 2020**  
(Released Thursday, Dec. 3, 2020)  
Valid 7 a.m. EST



## Intensity:

-  None
-  D0 Abnormally Dry
-  D1 Moderate Drought
-  D2 Severe Drought
-  D3 Extreme Drought
-  D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor go to <https://droughtmonitor.unl.edu> and external sites.

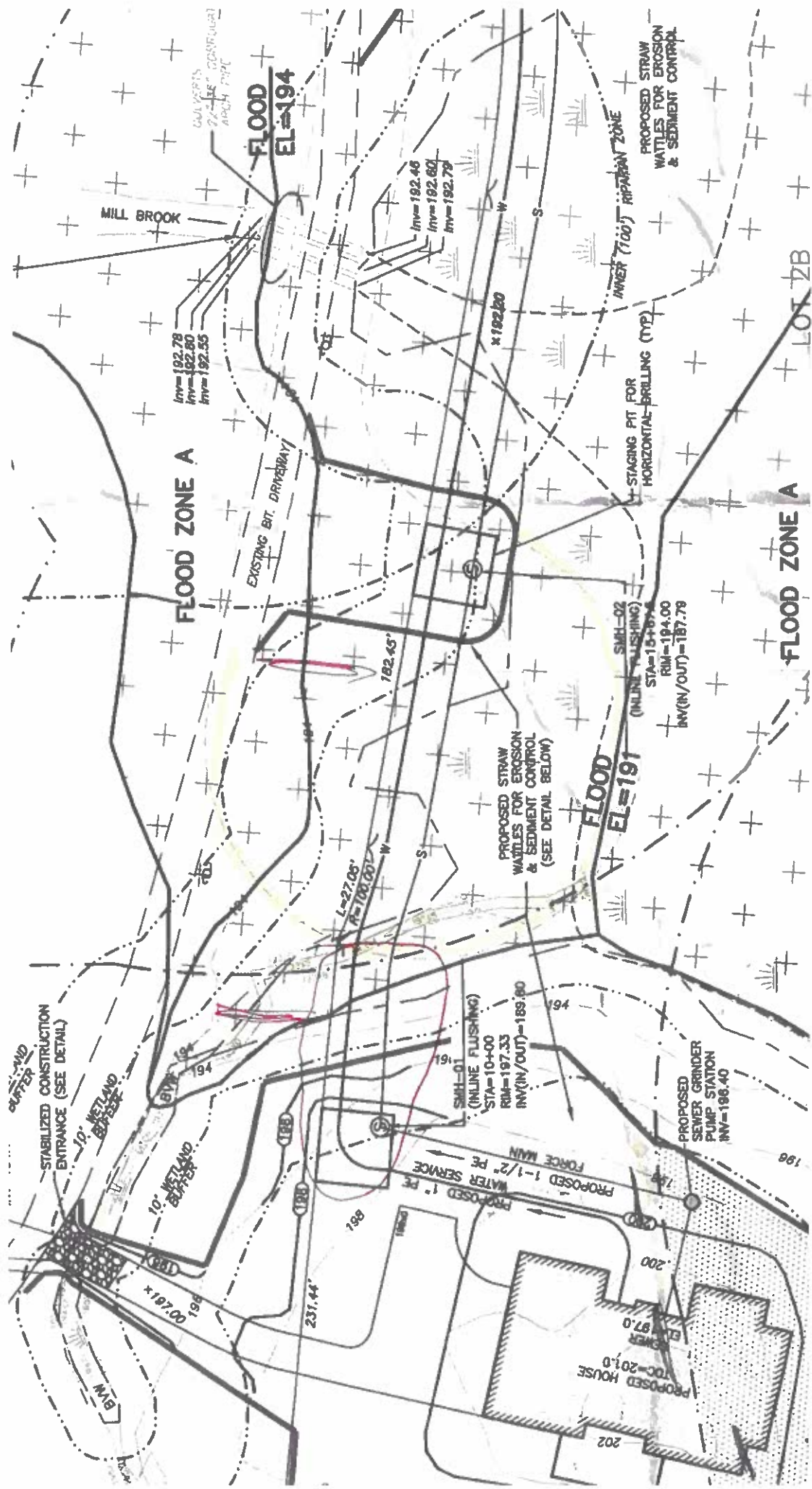
## Author:

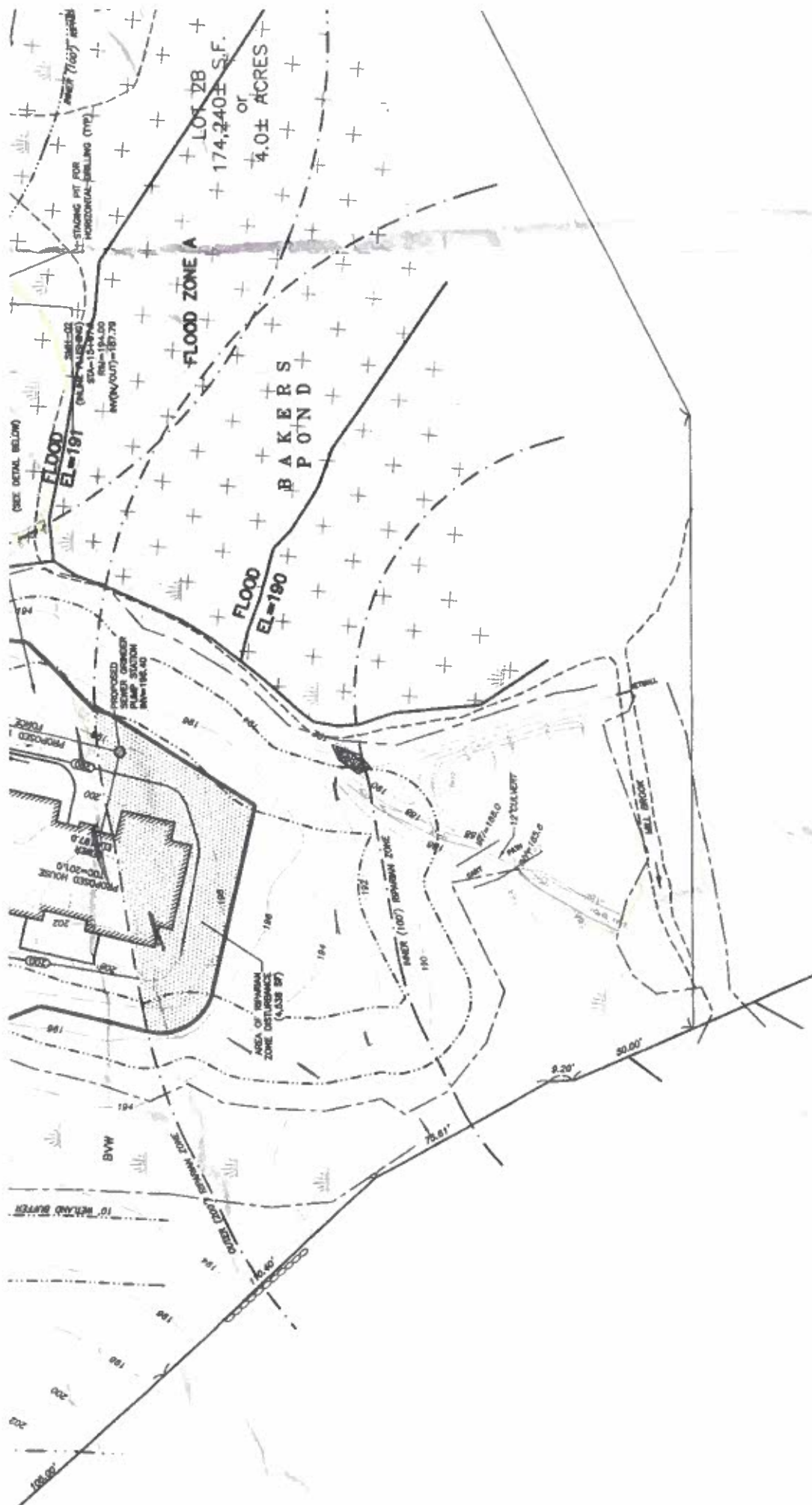
Reynold A. Higgins  
NCEI/SDAA



[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)









10.58: continued

2(2) h.

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 undercuts.

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



***Giardia* and Wildlife**  
*SCWDS Briefs*, July 1998, 14.2

Intestinal infection with the protozoan parasite *Giardia lamblia* is the second leading cause of outbreaks of waterborne disease in people in the United States. This one-celled parasite is common world-wide and occurs in humans, domestic animals, and wildlife. Although some people and domestic animals carry *G. lamblia* with no symptoms, others may develop severe debilitating diarrhea. Disease in free-ranging wildlife has not been reported.

*Giardia* cysts are shed in feces and are infective immediately when ingested in contaminated water or food, although symptoms may not appear for 7-10 days. The infective cysts are very susceptible to desiccation and heat; however, they may survive for 2 to 3 months in cool water. Once ingested, cysts release trophozoite stages in the intestine, and the cycle is repeated.

The role of wildlife in transmitting *Giardia* to humans has been controversial. A variety of *Giardia* species have been isolated from wild mammals, birds, amphibians, and reptiles. Beavers are the most well known wildlife host for *Giardia*, to the extent that waterborne outbreaks of human giardiasis have sometimes been called "beaver fever." Experimental studies clearly show that beavers can become infected with *Giardia* of human origin, and beavers shedding *Giardia* cysts were found upstream of contaminated municipal water supplies. However, it still is not clear what species of *Giardia* infects beavers in the wild.

Wildlife other than beavers also have been suspect, but new information has relieved some concerns. DNA analyses recently has disclosed that muskrats and voles are carriers of *G. microti*, a species which does not affect humans. Wading birds such as herons and egrets were once thought to be potential sources of water contamination. Again, genetic analyses have shown that they actually harbor *G. ardeae*, another distinct non-human species. Researchers have found that amphibians and reptiles also carry species distinctly different from the human *G. lamblia* and are not important in causing human giardiasis.

No one can say whether beavers originally contracted *Giardia* from humans or if beavers harbor *Giardia* naturally. Either way, all blame for human giardiasis cannot be focused on the beaver because there is a plethora of important non-wildlife sources that may be of the *G. lamblia* type. Wilderness areas can be heavily contaminated due to improper disposal of human feces. Furthermore, genetic studies have shown that domestic dogs, cats, cattle, and sheep are also capable hosts of *Giardia* similar to that of human origin.

The most important factor in preventing *G. lamblia* infection is avoiding contaminated water. Large-scale waterborne outbreaks of human giardiasis usually occur due to the lack of water filtration or a breakdown in the filtration system. Conventional water treatment plants that use coagulation-sedimentation-filtration methods should prevent waterborne giardiasis outbreaks, regardless of the presence of *Giardia* cysts in the source water. Higher concentrations of chlorine and longer contact times are required to inactivate *Giardia* cysts compared to most other intestinal pathogens, especially in cold water. Boiling water easily inactivates cysts, as the thermal death point of cysts is 130-140° Fahrenheit. Reduction of contamination in streams and wells will depend upon a conscientious effort to dispose of





human and domestic animal feces. Because of the possibility of *G. lamblia* contamination by humans, domestic animals, or beavers, one should never assume that surface water, even in remote areas, is safe to drink without boiling or filtration. (Prepared by Dr. Joe Gaydos)