



December 30, 2016

Boxford Conservation Commission
Attn: Ross Povenmire, Director of Conservation
7A Spofford Road
Boxford, MA 01921

Subject: Abbreviated Notice of Resource Area Delineation- Peer Review
Map 6, Block 2, Lot 2.2
DEP File Number 114-1235

Dear Commission Members,

Our office was hired by your Commission to conduct a peer review of the Abbreviated Notice of Resource Area Delineation, (ANRAD), prepared by Wetlands Preservation Inc., (WPI), for the above referenced property. Information reviewed included:

- ANRAD Submittal, prepared by WPI, on behalf of the applicant, Price Family, LLC, dated September 22, 2016.
- ANRAD Plan Set prepared by Christiansen & Sergi, Inc., sheets 1-10, dated: August 23, 2016.
- ANRAD Plan Set prepared by Christiansen & Sergi, Inc., sheets 1-10, dated: August 23, 2016, revised: December 8, 2016, December 21, 2016.
- E-Mail from Joseph H. Orzel, WPI, dated: December 12, 2016
- E-Mail from Joseph H. Orzel, WPI, dated: December 21, 2016

The WPA Form 4, Abbreviated Notice of Resource Area Delineation and supporting Wetland Delineation Report prepared by WPI identified the following resource areas on the subject property:

- Riverfront Area, (RA);
- Bordering Vegetated Wetlands, (BVW);
- Bordering Land Subject to Flooding, (BLSF);
- Inland Bank;
- Vernal Pool;
- Land Under Water, (LUW).

Riverfront Area

The Riverfront Area shown on the submitted plan set is associated with the Parker River which is listed as a major river in 310 CMR 10.58(2)1.e. and as a river that is presumed to have RA in §375-58 B.(2)(f) of the Town of Boxford Wetlands Protection Regulations. It is our understanding that no attempt is being made to overcome the presumption that the Parker River is perennial.

The Wetlands Delineation Report prepared by WPI describes significant impact by beaver activity and states that for the purposes of the "Riverfront Area" the Parker River channel was added to the plan using aerial photos (pre-beaver occupation) per correspondence and agreement with the MADEP. It is our understanding that at the time of the delineation the beaver activity made it difficult to determine the mean annual high water associated with the Parker River.

This statement was confirmed in an e-mail from Joseph H. Orzel, dated December 12, 2016, where he stated that the river as shown on the current ANRAD plan is based on a 1965 (pre-beaver) aerial photograph that clearly shows the channel location and that the river was added to the plan by the project engineers through a best fit overlay based on objects on survey plans that were visible in the aerial photo. It is also our understanding that StreamStats was used to determine the Bankfull width of the stream and that a width of 26 feet was determined to be the average width of the river in the reach that flows through the subject property.

During our site visit with WPI on December 11, 2016 and again on December 27, 2017 we observed beaver activity in three main locations along the subject reach of the Parker River: to the north of the breached earthen berm near wetland flag M13, to the north of wetland flag L26 and to the west of wetland flag Z12. The flooding associated with the beaver dam closest to wetland flag Z12 stretched back as far as wetland flag Z1.

We recognize the challenges that beavers present and that in certain instances it may be necessary to use a methodology other than field indicators of bankfull conditions; however, with the exception of the area below wetland flag Z1, and even though the banks were poorly defined in many locations, it appeared that the mean annual high water associated with the river could have been delineated using bankfull field indicators such as visible markings, changes in slope, changes in vegetation, stain lines, changes in bank materials, bank undercuts and evidence of flow. Although StreamStats is a very useful tool for estimating bankfull geometry it is our opinion that Bankfull field indicators, such as those described in 310 CMR 10.58(2)(a)2., would yield a more accurate result. In addition, attempting to align an aerial photograph from 1965 using a best fit overlay based on objects on survey plans that were visible in the aerial photo presents its own challenges.

We would agree with the aerial photo methodology for the reach below wetland flag Z1; however, we question whether or not a more recent aerial photograph should be used instead of a photo from 1965. For instance, the 2016 ortho image available on MassGIS shows a fairly well defined channel below wetland flag Z1 to the property boundary that isn't too much different than the 1990 ortho that is also available on MassGIS.

The reach of the Parker River above wetland flag M12 is flooded due to a beaver dam that exists to the north of wetland flag M13. Observations made during our site visit showed flow within the ponded area. The plan shows the river tailing away to the west of the BVW edge; however, field observations show the edge of water running parallel with the BVW edge. If the beaver dam is

staying, and the current conditions are to remain, it would appear that the ponded area is more riverine than BLSF and that the mean annual high water in this reach would be coincident with the BVW boundary or just below it. This reach is not identified on the USGS map as a lake, pond or reservoir and based on our observation it appears that the ponded area has primarily riverine characteristics. Unidirectional flow was also observed during our site visit on November 11, 2016 by looking at vegetation under the water.

WPI returned to the site following our November 11, 2016 site visit to flag 14 locations in the field where the stream channel was apparent, primarily based on presence or absence of vegetation and indication of flowing water. Orange flags labeled RB-1 through RB-13 were hung in the field.

It is our understanding that these flags were located by survey and are the flags that are shown on the revised plan set dated: December 21, 2016, prepared by Christiansen & Sergi, Inc.

On December 27, 2016 we returned to the site to investigate flags RB-1 through RB-13. It is important to note that these flags were placed along the reach that we felt could have been delineated using bankfull field indicators.

As mentioned above, the river boundary shown on the original plan set submitted with the ANRAD was widened to provide a width of 26 feet as recommended by StreamStats. When we laid the revised plan over the original plan it became evident that widening the river from the original centerline to a width of 26 feet would have missed almost all of the RB flags hung in the field by WPI. The boundary of the river shown on the revised plan had to be manipulated to hit the RB flags hung in the field. This reinforces our stance that bankfull field indicators should be used between wetland flags M15 and Z1 and that basing the mean annual high water on StreamStats and an aerial photograph from 1965 is not accurate enough.

In addition we observed an oxbow in the vicinity of wetland flags M28 and M30 that comes within 10 feet of the BVW boundary and another oxbow in the vicinity of wetland flags N5 – N9. We would recommend that WPI take another look in those areas. The oxbows do not appear to be a result of beaver activity and flow was observed in each, (see attached photos).

In summary we are recommending classifying the ponded area above the beaver dam at wetland flag M13 as primarily riverine, delineating the reach from M13 to Z1 using Bankfull field indicators and using WPI's methodology from Z1 to the property boundary; however with a more recent photo.

Bordering Vegetated Wetlands, (BVW)

During our November 11, 2016 site visit with WPI we made the following revisions to the BVW boundary:

- L50A was added between L50 & L51;
- B6A was added between B6 & B7;
- B9A was added between B9 & B10;
- B18A was added between B18 & B19;
- B-19A was added between B19 & B20, (B19 was eliminated and the line now goes from B18A-B19A-B20);
- Z11R was added up-slope of Z11 and replaces Z11;

- Z13A was added between Z13 & Z14.

During our site visit on November 11, 2016 there were missing wetland flags in the vicinity of Wetland Flags W122 & W125. WPI agreed to arrange to have the flags re-installed by survey and on December 27, 2016 we returned to the property to inspect the missing flags and recommend the following revisions:

- Move W122 up-slope 8 feet;
- Move W121 up-slope 4 feet;
- Add a new flag W124EE, 26.5 feet from Wetland flag W124E and 27 feet from W124F.

No other BVW's were observed on site and other than the revisions referenced above are all accurately depicted on the revised plan set.

Bordering Land Subject to Flooding, (BLSF)

The Wetland Delineation Report points out that there is a FEMA mapped 100 Year Flood Plain associated with the Parker River on the subject property and that it is a Zone AE with an elevation ranging from 88 to 88.5 feet. The report goes on to say that because a detailed topographic mapping has yet to be performed on the subject property that the BLSF is not part of the ANRAD. This is confirmed by a note on Sheet 1 of 10 of the plan set that states that the elevations contours shown are the USGS 3-Meter contours taken from the MassGIS website, with labels converted to feet. The contours are included to show the general topography of the project site and should be considered approximate only.

We would recommend a finding that makes it clear that the subject property contains BLSF and that the Commission has not been asked to confirm its boundary.

Inland Bank

The original plan set showed Inland Bank flags, (R1 – R50 & C5 – C42), under the Bylaw only. These flags were observed in the field but were not reviewed by us. The Inland Bank flags have been removed from the revised plan set and it is our understanding that they are no longer part of the ANRAD.

Vernal Pools

During our November 11, 2016 site visit with WPI we reviewed the delineated boundaries of the vernal pools and agreed with the flag locations. We questioned whether or not an impoundment in the vicinity of wetland flags L13-L15 was a vernal pool, (see attached photo). We have not heard back from the applicant's representative regarding this area.

The plan set has been revised to show the delineated vernal pool boundaries.

Page 3 of the Wetland Delineation Report states that the Boxford By-Law and/or its Regulations cite that a vernal pool: "shall include a confined basin depression of any size which, at least in most years, holds water for a minimum of two continuous months during March through August, which is free of

naturally occurring fish populations and which contains evidence of breeding by obligate vernal pool species as recognized by Massachusetts Natural Heritage and Endangered Species Program”.

It should be noted that both the Boxford Bylaw and Boxford Wetlands Protection Regulations do not include the requirement to hold water for a minimum of two continuous months during March through August.

Land Under Water, (LUW)

We agree with WPI's interpretation of LUW with respect to the Boxford By-Law and WPA Regulations; however, on page 4 of the Wetland Delineation Report it states that “a” portion of the Parker River at the property also has LUW under both the WPA and Boxford By-Law. It should be revised to state that the entire reach of the Parker River on the subject property contains LUW.

Page 1 of the Wetland Delineation Report describes an active beaver flowage with two open water components (separated by two beaver dams) that extend from the southern boundary line (along route 133) into the center of the tract.

During our site visit on November 11, 2016 a culvert was observed in the middle of the dam that is closest to route 133 and there are access roads on top of each dam. Without knowing the history of the site we were not able to determine if the dams are beaver dams or earthen berms constructed as part of the farm. The stability of the dams for vehicular traffic and the culvert, or culverts, is evidence of human enhancements. It should be clarified if the dam to the north has a culvert or not.

§ 375-5 A.(1)(b) describes the minimum plan requirements for plans submitted with an ANRAD. It is important to note that this same section gives the Commission the discretion to relax the requirements for small projects. Given the size of the parcel it may be prudent to relax specific plan requirements; however, at the very least we would recommend showing the applicable no-disturb zones, no-build zones and any culverts that exist.

If you should have any questions regarding this information please do not hesitate to contact our office. We look forward to presenting this information at the continued public hearing.

Sincerely,

WILLIAMS & SPARAGES, LLC



Greg J. Hochmuth, RS, PWS, CWS
Ecological Division Manager

cc: Joseph H. Orzel, Wetlands Preservation Inc.
MA DEP, Northeast Region



Photo of potential Vernal Pool in the Vicinity of Wetland Flags L13 – L15



Oxbow Near Wetland Flag N8



Oxbow Near Wetland Flag M28



Ponded Area of Parker River Above Beaver Dam At Wetland Flag M13