April 5, 2023

Ms. Breeka Lí Goodlander, Agent
Town of Franklin Conservation Commission
355 East Central Street
Franklin, MA 02038

Re: 121 Grove Street - Franklin, MA
MassDEP File No. 159-1261
Abbreviated Notice of Resource Area Delineation Peer Review #2

Dear Ms. Goodlander,

BETA Group, Inc. (BETA) is pleased to provide continued peer review services for the Abbreviated Notice of Resource Area Delineation (ANRAD) submitted for the parcels located at **121 Grove Street, further identified as the Town of Franklin Assessor's Parcel IDs: Map 295, Lot 1 and Map 294, Lot 7 in Franklin, Massachusetts** (the Site). This letter provides BETA's peer review findings and comments as they relate to the Massachusetts Wetlands Protection Act (M.G.L. ch.131, §40) and its implementing regulations at 310 CMR 10.00 (collectively "the Act") and the Town of Franklin Wetlands Protection Bylaw (Chapter 181) and its implementing regulations (collectively "the Bylaw").

The Applicant provided revised materials and written comment responses pursuant to BETA's January 6, 2023 peer review letter. BETA's original comments from the January 6, 2023 peer review letter are included in plain text. Comment responses prepared by Lucas Environmental, LLC (LE) are prefaced with "*LE:*". BETA's most recent responses are prefaced with "**BETA2:**".

BETA's most recent responses also consider the supplemental letter issued by LE on April 4, 2023 following the March 31, 2023 Site visit attended by LE, the Applicant, BETA, members of the Conservation Commission, and the Conservation Agent. LE's letter generally summarizes the discussions held during this Site visit and is referenced in this letter where appropriate and relevant.

DOCUMENTS REVIEWED

The following supplemental documents were received by BETA and will form the basis of review:

- Letter entitled ***Notice of Intent—Response Letter #1***; prepared by Lucas Environmental, LLC; dated January 23, 2023.
- Letter entitled ***Notice of Intent—Response Letter #2***; prepared by Lucas Environmental, LLC; dated April 4, 2023.
- Plan entitled ***Existing Conditions Site Plan 121 Grove Street Franklin Massachusetts***; prepared by Guerriere & Halnon, Inc.; dated May 20, 2022; stamped and signed by Robert E. Constantine, II, MA PLS No. 49611; revised through April 3, 2023.
- Plan entitled ***Existing Conditions Plan***; prepared by Alpha Survey Group; dated January 13, 2022.

Review by BETA included the above items along with the following, as applicable:

- Site visits on December 19, 2022; December 21, 2022; and March 31, 2023
- ***Massachusetts Wetlands Protection Act 310 CMR 10.00***; effective October 24, 2014
- ***Town of Franklin Wetland Protection Bylaw (Chapter 181)***; effective August 20, 1997

SCOPE SUMMARY

The Applicant is requesting the Conservation Commission confirm the following Resource Area boundaries, as noted in the application materials and as delineated and depicted on the ANRAD plan:

- 6,818 linear feet of Bordering Vegetated Wetlands (BVW)
- 467 linear feet of Isolated Vegetated Wetlands (IVW); and
- 4,345 linear feet of Bank (to intermittent streams).

The Applicant is also requesting that the Conservation Commission confirm the following:

- That the three (3) intermittent streams delineated as BF1, BF2, and BF3 are classified as intermittent;
- That Riverfront Area does not exist at the Site; and
- That there are no other Resource Areas located at the Site beyond what has been identified in the ANRAD application.

ADMINISTRATIVE REQUIREMENTS

The following provides an assessment of the plans in light of generally accepted existing conditions plan standards and the applicable plan requirements under Section 7.18 of the Bylaw Regulations:

Table 1 – ANRAD Plan Requirements (As of April 5, 2023)

Plan Requirements	Yes	No
North Arrow (with reference)	✓	
Registered PLS Stamp	✓	
Assessors' Reference	**BETA2:** ✓	
Abutting Property Assessors' Reference	✓	
Survey Benchmark	**BETA2:** ✓	
Existing Conditions and Topography Sourced with date of survey	✓	
Topography/Contours	✓	
Lot Line Surveyed	✓	
Accurate Plan Scale	✓	
Resource Areas Identified and Labeled (including Buffer Zones)	**BETA2:** ✓	

EXISTING CONDITIONS AND ONSITE RESOURCES

The 31.44-acre Site consists of the two (2) parcels identified above along the western limit of Grove Street. The Site is bounded to the north and west by Franklin State Forest, to the east by Grove Street, and to the south by an electric transmission line right-of-way. A walking path associated with Franklin State Forest bisects the northern portion of the Site. Improvements located within the eastern portion of the Site along Grove Street include a single-family dwelling, accessory buildings, gravel and paved driveways, and lawn areas. The remainder of the Site consists of mixed hardwood uplands vegetated with species including Eastern white pine (*Pinus strobus*), American beech (*Fagus grandifolia*), and red oak (*Quercus rubra*); palustrine and emergent wetland complexes; and maintained fields. Topographic relief at the Site generally follows a west-to-east orientation.

MassGIS environmental data layers mapped within or near the Site include the following:

Table 3 – GIS-Mapped Areas

Mapped Resource On or Within Proximity to the Survey Area	Yes	No
Area of Critical Environmental Concern		✓
NHESP Certified Vernal Pool		✓
NHESP Potential Vernal Pool		✓
NHESP Estimated Habitat of Rare Wildlife		✓
NHESP Priority Habitat of Rare Species		✓
Outstanding Resource Waters		✓
FEMA Floodplain		✓
Surface Water Protection Area (Zone A, B, or C)		✓
Interim Wellhead Protection Area		✓
Zone I Wellhead Protection Area		✓
Zone II Wellhead Protection Area	✓	

As depicted on the plan, and as described in the ANRAD application, the following Resource Areas exist within 100 feet of the Site:

- Bordering Vegetated Wetland (BVW);
- Isolated Vegetated Wetland[1] (IVW) *(Comment W8)*; and
- Bank (to intermittent stream).

Table 3 further details these Resource Areas.

Table 3 – Resource Areas and Act/Bylaw Jurisdiction *(As identified by the Applicant as of April 5, 2023)*

Resource Area	Flag Series	Act	Bylaw
BVW / Freshwater Wetland	A-1 to A-146	✓	✓
BVW / Freshwater Wetland	B-1 to B-92	✓	✓
Freshwater Wetland (IVW)	C-1 to C-16		✓
BETA2: Freshwater Wetland (IVW)	**BETA2: D-1 to D-9**		**BETA2: ✓**
Bank (to intermittent stream)	BF1-1 to BF1-41	✓	✓
Bank (to intermittent stream)	BF1-100 to BF1-110	✓	✓
Bank (to intermittent stream)	BF2-1 to BF2-118	✓	✓
Bank (to intermittent stream)	BF3-1 to BF3-13	✓	✓

The above-referenced Resource Areas and Site conditions were reviewed by BETA outside of the normal growing season; however, no snow cover was present and frozen ground conditions were not encountered.

[1] IVWs are protected under the Bylaw as Freshwater Wetlands.

COMMENTS

W1. BETA provides the following administrative and plan comments after conducting a review of the submitted application and plan set:

a) Provide a survey benchmark with a referenced NAVD88 elevation.

b) Provide Assessor References for all abutting properties.

c) Depict all Act and Bylaw Buffer Zones associated with the delineated Resource Areas.

d) Include a note stating that Buffer Zones associated with offsite Resource Areas not assessed during the ANRAD process may constrain the Site.

LE: The attached Existing Conditions Site Plan prepared by Guerriere & Halnon, Inc., dated May 20, 2022 and revised through January 19, 2023, was updated to include the following:

a. A survey benchmark with a referenced NAVD88 Elevation
b. Assessor References for all abutting properties
c. Buffer zones
d. The off-site resource areas that may constrain the site are limited to the New England Power Company parcel, identified as Map 294, Lot 6, to the south of the subject property. These resource areas will be identified and/or approximated on any future permitting plans. The Applicant is amenable to a Special Condition or Fact-of Finding in the Order of Resource Area Delineation (ORAD) to note this.

BETA2: Comment W1 has been resolved with the exception of W1.d).; this note is not included on the plans. BETA defers to the Commission on whether this should be added to the plans or if LE's recommendation for inclusion as a Finding of Fact is appropriate.

W2. As indicated by the Applicant, United States Geological Survey (USGS) topographic maps do not depict the onsite streams delineated with flagging series BF1, BF2, and BF3, nor does the USGS StreamStats tool indicate that they are associated with drainage areas large enough to be classified as perennial streams. Therefore, BETA concurs with the Applicant's assertion that the onsite streams are intermittent, and Riverfront Area does not exist at the Site.

LE: BETA state that they concur that the on-site streams are intermittent, and that Riverfront Area does not exist on the property. No further response required.

BETA2: No further response required.

W3. The Banks associated with the onsite intermittent streams identified by the BF1-, BF2-, and BF3-Series flagging appeared to be accurately delineated and were generally characterized by an observable break in slope. In accordance with the definition of Bank under the Bylaw, the Applicant delineated the Bank along the mean annual flood level where present upgradient of the first observable break in slope.

LE: BETA state that they concur with the delineation of the intermittent streams BF1, BF2, and BF3. No further response required.

BETA2: No further response required.

W4. BETA observed groundwater seeps with observable flow interior of both the WFA-Series and WFB-Series BVWs at the following locations:

- North of flag BF2-74;

- East of BF2-2;
- East of flag WFA-69 and south of flag BF1-104;
- East of flag WFA-65;
- South of flag WFA-109; and
- East of flag WFB-64

These groundwater seeps meet the definition of intermittent streams per 310 CMR 10.04 with jurisdictional Bank due to the presence of a defined channel and hydraulic gradient. It is recommended that the Applicant delineate and survey locate these Banks for inclusion in the ANRAD, as these constitute additional Resource Areas not discussed in the ANRAD. The centerline of several of these features appear to have already been survey located.

Should the Applicant elect to not delineate these additional streams within BVWs, BETA recommends that a note be added to the plans indicating that interior intermittent streams within A and B Series BVW are present but were not subject to review under this ANRAD. In addition, the findings of the Order of Resource Area Delineation (ORAD) could reflect this.

LE: LE disagrees with BETA's contention that six additional groundwater seeps meet the definition of intermittent stream per 310 CMR 10.04 of the Wetlands Protection Act (WPA). The WPA defines "Stream" as the following:

A body of running water, including brooks and creeks, which moves in a definite channel in the ground due to a hydraulic gradient, and which flows within, into or out of an Area Subject to Protection under M.G.L. c. 131, 40.

Unlike BF1, BF2, and BF3, which have defined channels and were flagged by LE as intermittent streams, these additional six areas in question should not be classified as streams as there are no definitive channels present. Due to the rolling topography of the land, a hydraulic gradient is present and water will flow downhill through these areas; however, as a definite channel is lacking, LE would not consider these six additional areas as jurisdictional streams.

BETA2: BETA maintains the position that these are defined channels within BVW subject to intermittent flow along a hydraulic gradient and are therefore regulated as intermittent streams. Flow was observed during the December 19 and 21, 2022 Site visits and evidence of a defined channel was present including scoured leaf litter and a slightly concave shape. Should the Commission concur with BETA's assessment of these intermittent streams, their presence could be noted as a Finding of Fact; however, the Banks were not delineated. Therefore, their boundaries could not be confirmed as part of the ANRAD process.

W5. BETA concurs with the Applicant's delineation of the WFB-Series BVW boundary based on an assessment of hydrophytic vegetation, hydric soils, and indicators of hydrology. Where the BVW boundary exists within disturbed / mowed areas (i.e., east of WFB-16), the Applicant appears to have accurately assessed hydric soils to determine the location of the BVW boundary. However, BETA recommends that the BVW boundary be extended due west of WFB-49 towards the drillhole in the stone wall to complete the delineation on the Site.

LE: BETA concurs with LE's delineation of the BVW WFB series and recommends extending the delineation from WFB-49 towards the drillhole in the stone wall. The Existing Conditions Site Plan has been updated to reflect this revision.

BETA2: The BVW boundary has been extended as requested and the plans have been updated accordingly. The updated delineation on the Plan appears accurate based on previous field observations. Comment resolved.

W6. As noted in the ANRAD narrative, standing water approximately three (3) to four (4) inches in depth was observed within the WFB-Series BVW along the electric transmission right-of-way on December 19, 2022. BETA concurs with the Applicant's statement that the area is likely too shallow to support breeding habitat of vernal pool indicator species; however, a vernal pool survey was not conducted due to the time of year and the scope of the ANRAD.

LE: BETA concurs that the area within the WFB series (previously identified by LE near flags WFB-72 to WFB-76) are likely too shallow to support breeding habitat of vernal pool indicator species. No further response required.

BETA2: No further response required.

W7. BVW flags WFA-46 and WFA-47 were missing in the field; however, their location could be discerned and assessed as accurate by reviewing the existing conditions information provided by the Applicant. The remainder of the WFA-Series BVW boundary appeared to have been accurately delineated based on observations of hydrophytic vegetation, hydric soils, and indicators of hydrology. Where the BVW boundary exists within disturbed / mowed areas (i.e., east of WFA-24), the Applicant appears to have accurately assessed hydric soils to determine the location of the boundary, with the exception of the area south of flags WFA-29 through WFA-31 *(Comment W8 below)*.

LE: BETA concurs with LE's delineation of the BVW WFA series, except for the area south of flags WFA-29 to WFA-31 noted in BETA's letter and discussed further in Comment #8. No further response required; however, LE notes that the area in question was verified between flags WFA-30 & 31 and WFC-5 & 6, not flag WFA-29 per the discussion during the site walk conducted on December 21, 2022 with BETA and the Conservation Agent.

BETA2: BETA concurs with LE's correction regarding the area of study being upgradient of flags WFA-30 and 31 rather than flag WFA-29. Further discussion on this matter is provided below in the BETA2 response to Comment W8.

W8. The Applicant appears to have accurately identified the extent of wetland indicators from flags WFC-1 to WFC-3 and WFC-6 through WFC-11. However, BETA observed a continuation of wetland indicators beyond the northern extent of this Resource Area from flags WFC-4 through WFC-5 to the boundary of the WFA-Series BVW, connecting the WFC Series wetland to the WFA series BVW. BETA offers the following comments:

a) In accordance with MassDEP publication entitled *Delineating Bordering Vegetated Wetlands under the Wetlands Protection Act (1995),* the U.S. Army Corps of Engineers (USACE) publication entitled *1987 Corps Delineation Manual* (as well as its associated regional supplement), and 310 CMR 10.55(2)(c)3.[2], particular attention was given to soils when evaluating this area due to the vegetation being disturbed by ongoing mowing.

[2] Where an area has been disturbed (e.g. by cutting, filling, or cultivation), the boundary is the line within which there are indicators of saturated or inundated conditions sufficient to support a predominance of wetland indicator plants, a predominance of wetland indicator plants, or credible evidence from a competent source that the area supported or would support under undisturbed conditions a predominance of wetland indicator plants prior to the disturbance.

b) BETA conducted over a dozen hand auger soil probes between the WFA- and WFC-Series wetlands. Generally, the soil profile consisted of an approximately six (6) to eight (8)-inch A-Horizon with a dark matrix color (10YR 3/1) containing at least a 15% coverage by redoximorphic features that were partially masked by organic matter. Sparse matrix depletions were observed within the A-Horizon in a portion of the test holes. A high-chroma (bright) soil horizon with significant redoximorphic concentrations and organic streaking was observed below the A-Horizon. Refusal was present at or around approximately 12 inches, and groundwater wept into the test holes at around six (6) inches below grade.

The soil profile within this area meets the criteria of Hydric Soil Indicator F6 (Redox Dark Surface)[3], which is described as follows:

> *A layer that is at least 10 cm (4 inches) thick, starting at a depth ≤20 cm (8 inches) from the mineral soil surface, and has: a. Matrix value of 3 or less and chroma of 1 or less and 2 percent or more distinct or prominent redox concentrations occurring as soft masses or pore linings, or b. Matrix value of 3 or less and chroma of 2 or less and 5 percent or more distinct or prominent redox concentrations occurring as soft masses or pore linings.*
>
> *User Notes: This is a very common indicator used to delineate wetland soils that have a dark surface layer. Redox concentrations in mineral soils with a high content of organic matter and a dark surface layer are commonly small and difficult to see (figs. 30, 31, and 32). The organic matter masks some or all of the concentrations that may be present. Careful examination is required to see what are commonly brownish redox concentrations in the darkened materials. If the soil is saturated at the time of sampling, it may be necessary to let it dry at least to a moist condition for redox features to become visible. Soils that are wet because of ponding or have a shallow, perched layer of saturation may have any color below the dark surface. It is recommended that delineators evaluate the hydrologic source and examine and describe the layer below the dark colored surface layer when applying this indicator.*

Although the publications referenced in Comment W8a. above caution against reliance on indicators of hydrology such as high groundwater levels outside of the growing season, the presence of redoximorphic features and organic streaking below the A-Horizon exhibits signs of a fluctuating high water table and anaerobic conditions within the soil.

c) Although a close soils analysis was performed due to the disturbed state of vegetation and the review occurring outside of the growing season, BETA observed hydrophytic vegetation between the flagged WFA- and WFC-Series wetlands that appeared to include rough-stemmed golden (*Solidago rugosa*) and swamp dewberry (*Rubus hispidus*); however, definitive plant identification should occur during the growing season. In addition, a photograph of Site conditions taken during the growing season depicted dense sensitive fern (*Onoclea sensibilis*) between the flagged wetland boundaries.

d) While Chapter 4 of MassDEP's BVW delineation guidance generally requires the presence of an underlying depleted matrix color, BETA notes that this guidance is intended as a tool to assist delineators in the field and does not constitute a regulatory requirement. The Act Regulations at 310 CMR 10.55(2)(c)2. state that when vegetation alone is not presumed to accurately delineate the BVW boundary, the Conservation Commission may also consider

[3] This indicator is described in the publication entitled *Field Indicators of Hydric Soils in the United States, A Guide for Identifying and Delineating Hydric Soils, Version 8.2, 2018*.

evidence of saturated / inundated conditions sufficient to support wetland indicator plants. 310 CMR 10.55(2)(c)2. states that these conditions shall be determined by presence of one or more of the following:

- Groundwater, including the capillary fringe, within a major portion of the root zone;
- Observation of prolonged or frequent flowing or standing surface water; and
- Characteristics of hydric soils.

BETA observed root zones within the capillary fringe as indicated by the presence of redoximorphic features, as well as the presence of a hydric soil indicator.

BETA recommends that the Applicant re-delineate this portion of the Site to include the WFC-Series wetland as part of the WFA-Series BVW.

LE: BETA concurs with LE's delineation of wetland WFC-1 to 3 and WFC-6 to 11; however, has questioned the areas between flags WFA-30 & 31 and WFC-5 & 6. LE respectfully disagrees with BETA's assessment and summary of said area based upon the following points of fact.

LE has inspected this area numerous times on April 20th, April 21st, October 27th, and December 21st, 2022, and January 19th, 2023. LE staff included two Professional and Certified Wetland Scientists (PWS/CWS) and Registered Professional Soil Scientists (RPSS). Mr. Thomas Liddy, PWS, CWS, RPSS, and CESSWI delineated and inspected this area in April and October. I delineated this area with Mr. Liddy in April, and was present for all subsequent inspections. In addition to being an RPSS, I also have a Master's Degree in Soil Science from UMASS – Amherst. LE staff resumes are attached.

Wetlands on-site were delineated in accordance with the Massachusetts Department of Environmental Protection (MassDEP) publication "Delineating Bordering Vegetated Wetlands" under the Massachusetts Wetlands Protection Act (1995) (Delineation Manual).

As the review before this Commission is subject to the Wetlands Protection Act, LE has followed the criteria for identification of wetlands per the state's requirements. As the field is mowed and vegetation is disturbed, LE has conducted a detailed and through assessment of the soils and groundwater in the area in question.

BETA has not demonstrated that this area meets any of the MassDEP criteria required for hydric soils identification (see below). BETA's assessment uses the federal indicators associated with delineations for Waters of the U.S. subject to the Clean Water Act.

LE does not concur with the designation of Hydric Soil Indicator F6 for Redox Dark Surfaces using this methodology. LE disagrees with BETA's conclusion and average soil profile through the area in question. LE has conducted at least two dozen auger holes through this area and notes the following typical profile. LE did observe one hole that generally aligns with BETA's comment; however, this was located approximately two feet upgradient of flag WFA-31.

Depth	*Matrix Color*	*Redox*
0-3"	*10YR 3/1 and 10YR 3/2*	*limited to no redox*
3-6"	*10YR 3/2*	*variable redox of 1% to 5%*
6-12"	*10YR 4/4, 10YR 5/4, 10YR 5/6*	*variable redox 12-R/18" 10YR 4/4, 10YR 5/4, 10YR 5/6 10-20% redox *R=Refusal at variable depths of 14-18"*

The MassDEP Delineation Manual states that when evaluating mineral soils for low-chroma colors or other evidence of saturation, look for indicators directly below the A-horizon and within the top 12 inches of the soil surface [emphasis added]. Four soil criteria listed by MassDEP that were analyzed for this site include the following (there are other indicators; however this site did not include any histosols, histic epipedons, sulfidic material or gleyed soils):

• Soils with a matrix chroma of 0 or 1 and values of 4 or higher within 12 inches from the bottom of the O-horizon. The soils observed have a chroma of 1 or 2, and values of 3 and less, therefore the soils would not classify as hydric per this criterion.

• Within 12 inches from the bottom of the O-horizon, soils with a chroma of 2 or less and values of 4 or higher in the matrix, and mottles with a chroma of 3 or higher. The soils observed have a chroma of 1 or 2, and values of 3 and less, OR chroma 4 or higher and values of 4 or higher, and therefore would not classify as hydric per this criterion.

• Within 12 inches from the bottom of the O-horizon, soils with a matrix chroma of 3 and values of 4 or higher, with 10 percent or more low-chroma mottles, as well as indicators of saturation (i.e., mottles, oxidized rhizospheres, concretions, nodules) within 6 inches of the soil surface. The soils observed have a chroma of 1 or 2, and values of 3 and less, therefore the soils would not classify as hydric per this criterion.

• A-horizons that are thick and very dark. A-horizons greater than or equal to 12 inches thick with values less than 3 and chroma of 2 or less are difficult to analyze because indicators of saturation are difficult to see. Therefore, look directly below the A-horizon for a matrix chroma of 1 or less and values of 4 or higher. If the matrix color directly below the thick and dark A-horizon is chroma 2 and value 4 or higher, other indicators of saturation need to be present in the soil directly below the A-horizon. In uncommon situations, it may be necessary to dig deeper to evaluate colors below the A-horizon. The A horizon is not 12 inches thick at this location; however, the principal applies to look directly below the A horizon. The soils observed have a chroma 4 or higher and values of 4 or higher, and therefore would not classify as hydric per this criterion. For comparison, evaluation of the soils within Wetland A and Wetland C show a depleted matrix, or low chromas of 1 and values of 6 with significant redox of approximately 40% directly below the A horizon, which are indicative of hydric soils and influenced by a high groundwater table. This is not present in the area in question.

Furthermore, LE rebuts BETA's opinion that a high groundwater table exists sufficient to create anaerobic conditions within this area. The Delineation Manual states the following in relation to the evaluation of groundwater: some of these hydrologic indicators can be affected by recent heavy rain or seasons with above average amounts of precipitation. Conversely, these indicators may not be present during the entire year or may be absent during prolonged periods of drought.

LE has attached rainfall data for April, October, and December for Franklin, obtained from the National Weather Service (https://www.weather.gov/wrh/Climate?wfo=box). LE did not observe groundwater in this area above 18 inches during the October and January site visits. LE evaluated the rainfall data and notes that there was no precipitation in the 11 days prior to the October 27th site visit, and less than a total of one inch the two weeks preceding that site visit.

There was 1.62 inches of rainfall in the two (2) days preceding BETA's site inspection in December, and a total of approximately 2.88 inches of rainfall in the two weeks preceding BETA's site walk. It is expected that water would be at or near the surface following these rain events outside the growing season. Groundwater must be analyzed closely, and if there was a high groundwater table in this area, lower chroma and higher value soils would be observed below the A horizon.

LE included April data to demonstrate that rainfall was close to normal the month the wetlands were delineated. LE was on-site after rain events and considered the rain in assessing groundwater in consideration of the 1.75 inches prior to the initial delineation.

In conclusion of the groundwater discussion, the observation of hydrology by BETA was very likely influenced by the storm events that preceded the December site walk and should not be used as a basis for concluding wetland hydrology exists at this location.

BETA2: Following the Site visit conducted on March 31, 2023, and a review of LE's response above, BETA offers the following remarks:

- **Several additional soil test pits were hand-dug with Dutch-style augers by both BETA and LE during the March 31, 2023 Site visit. As previously noted in BETA's original comment, all soils assessed within the area in question exhibited properties consistent with the federal hydric soil indicator F6 (Redox Dark Surface). BETA is of the opinion that the soil profile noted by LE above is not consistent with what was observed in the field; the A-horizon was observed to be 10YR 3/1 in color; at least four (4) inches thick (in some cases, close to 10 inches thick); and at least 2 – 5% coverage of redoximorphic concentrations were observed throughout the entire A-horizon. While partially masked by organic matter, BETA is of the opinion that these redoximorphic concentrations constitute "distinct" or "prominent"[4].**
- **Although a bright-chroma B-horizon underlies the A-horizon, there is no B-horizon matrix color requirement to meet this indicator. The F6 indicator is commonly encountered when saturated conditions are more prevalent within the upper extents of the soil profile (per the reference in Footnote 1). Rather, the B-horizon is simply considered for indications of anaerobic processes occurring within the A-horizon. Redoximorphic concentrations and organic streaking were observed in the B-horizon.**
- **Although intended to be a guidance document, the updated Massachusetts Handbook for Delineation of Bordering Vegetated Wetlands dated September 2022 and published March 2023 (the Updated Handbook) now includes federal soil indicators. When discussing indicator F6, the guidance notes that this can be a difficult indicator to assess; however, it does note the following:**

  > ***Soils that are wet because of ponding or that have shallow perched water may have any color below the dark surface. This morphology has been observed in soils that have been compacted by tillage and other means.***

  The area in question is disturbed by ongoing mowing, is generally compacted, and has shallow refusal in the form of dense rock within 12 inches of the surface.

  As previously stated by BETA, and notwithstanding the questions raised by LE regarding the applicability of federal soil indicators to the delineation of BVW under the Act, 310 CMR 10.55(2)(c)2. notes that BVW can be delineated based on "hydric soil indicators". BETA is of the opinion that using federal USDA hydric soil indicators (which are now incorporated into the Updated Handbook) is an appropriate application of best available scientific data to apply the regulatory definition of BVW.

[4] Per Table A1. in the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region

Based on the Site and soil conditions between the C- and A-Series wetlands, this area meets the definition of a wetland. Accordingly, the C-series wetland should be considered part of the A-Series BVW. Comment remains.

W9. BETA observed standing water at the location of test pit TP-6. Upon further investigation, BETA observed a soil profile consisting of several inches of organic material underlain by a soil horizon with a depleted matrix (chroma 2 or less) with approximately 15% coverage by prominent redoximorphic concentrations. Groundwater filled the entirety of the hole immediately upon investigation. Sparse vegetation was present in this area due to the disturbance caused by machinery; however, BETA observed sweet pepperbush (*Clethra alnifolia*) and several Eastern white pines with stressed/shallow root systems.

Groundwater levels at the ground surface were also observed north of test pit TP-6 within a dense stand of sweet pepperbush and highbush blueberry (*Vaccinium corymbosum*). Several dead, mature trees were also observed to be exclusive to this area. It appeared that an upland plant community was present between these two (2) areas.

Based on these observations, it appears that these areas meet the definition of Freshwater Wetland (i.e., IVW) due to a predominance of hydrophytic vegetation, hydric soils meeting hydric soil indicators referenced by MassDEP and USACE, and evidence of hydrology including saturated soils and stressed/dead vegetation. The Applicant should reevaluate these areas and document their findings on MassDEP Wetland Data Forms.

LE: BETA noted potential areas of isolated wetland near test pit TP-6; however, the location reviewed in the field during the December site visit with BETA is actually TP-16. Three Professional/Certified Wetland Scientists inspected this area during the April delineation and did not identify sufficient hydrophytic vegetation or hydric soils to delineate this area. Although there is a hydric profile identified in one small area adjacent to the test pit, the vegetation in and surrounding this area is not greater than 50% hydrophytic vegetation.

The vegetation primarily consists of northern red oak (Quercus rubra) – FACU, eastern white pine (Pinus strobus) – FACU, American beech (Fagus grandifolia) – FACU, American witch hazel (Hamamelis virginiana) – FACU, sassafras (Sassafras albidum) – FACU, black cherry (Prunus serotina) – FACU, and princess pine (Dendrolycopodium obscurum) – FACU. The overstory consists of red oak and white pine with a few red maple (Acer rubrum) – FAC observed. Highbush blueberry (Vaccinium corymbosum) – FACW and sweet pepperbush (Clethra alnifolia) – FAC were also observed in a few locations.

LE conducted numerous soils plugs throughout this area, and found the A horizon to be on average, 6-8 inches deep, with soils consisting of a 10YR 5/6 below. Redox was not present or less than 1-2% were observed below 12 inches. Based upon LE's assessment of this area, it does not contain sufficient hydrophytic vegetation or development of hydric soils to be classified as wetland per the MassDEP Delineation Manual or federal criteria.

BETA2: BETA concurs with LE's correction that the area in questions was test pit TP-16 and not test pit TP-6. The IVW surrounding test pit TP-16 was accurately delineated by LE during the March 31, 2023 Site visit and has been depicted on the updated plans. Wetland data forms documenting this IVW have also been submitted. LE has also performed the due diligence and assessment required to demonstrate that, although high groundwater was observed, the area north of TP-16 would not meet the definition of a wetland based on soils and the vegetative community. Comment resolved.

Additional comment made by Lucas Environmental LLC.

LE: As one final point, the site has a history of previous wetland delineations that demonstrate Wetland C is isolated. The Draft Existing Conditions Plan, prepared by Alpha Survey Group, dated, January 13, 2022, is attached. The wetlands identified were delineated by LEC Environmental Consultants, Inc. (LEC) in August 2021, with many flags still visible during the recent site inspections. LEC is a reputable firm known for peer review work through the Commonwealth. Their delineation shows a smaller IVW than LE's and no connection to the currently delineated Wetland A. LEC did not identify wetlands in the vicinity of TP-16. This plan is submitted to demonstrate another perspective on these two areas in dispute.

BETA2: BETA assessed this portion of the Site based on current-day conditions, focusing on the presence of hydric soils and other indicators of hydrology. No further comment.

Review Summary

Based on our review of the ANRAD submittal and plan, and the existing conditions at the Site, it is BETA's opinion that the Commission has sufficient information to deliberate on the issuance of an ORAD. However, at this time, the ANRAD plans do not accurately depict the classification of the C-Series wetland as BVW; the presence of contiguous BVW between the A-Series and C-Series flagging; or the presence of additional intermittent streams interior to the onsite BVW complexes.

If we can be of any further assistance regarding this matter, please contact us at our office.

Very truly yours,
BETA Group, Inc.

Jonathan Niro
Project Scientist

Laura Krause
Project Manager