



Guerriere & Halnon, Inc.

ENGINEERING & LAND SURVEYING
www.gandhengineering.com

Est. 1972

Milford Office
333 West Street, P. O. Box 235
Milford, MA 01757-0235
(508) 473-6630/Fax (508) 473-8243

Franklin Office
55 West Central Street
Franklin, MA 02038-2101
(508) 528-3221/Fax (508) 528-7921

Whitinsville Office
1029 Providence Road
Whitinsville, MA 01588-2121
(508) 234-6834/Fax (508) 234-6723

F-4471

January 24, 2023

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

RE: Review Comments from Beta Group, Inc: Franklin Heights, Parcel B, 0 Lincoln Street Dated December 29, 2022

Dear Members of the Commission:

On behalf of our client, Oliver Crossing Realty Trust, Guerriere & Halnon, Inc. has prepared the following information to address comments received from Beta Group dated December 29, 2022 associated with the Stormwater and Notice of Intent Application for the above referenced project.

Beta's findings, comments and recommendations are shown in *italics* followed by our response in **bold**. Comments that have been addressed in a separate comment response letter prepared by Creative Land & Water Engineering, LLC will be identified as "**Addressed by CLAWE**".

PLAN AND GENERAL COMMENTS AND RECOMMENDATIONS

A6. *Provide a detail of the proposed retaining wall at the stream/BVW crossing.*

CLAWE: The wall will be Shea Concrete block wall and will be provided for construction.

BETA2: The typical retaining wall detail requested to corroborate the proposed work with the reported impacts has not been provided - comment remains.

GH2: Addressed by CLAWE

A7. *Revise the WPA Form 3 to detail all temporary and permanent impacts to BVW, Bank, and LUW.*

CLAWE: The WPA Form 3 is updated as requested.

BETA2: Comment remains. The WPA Form 3 does not appear to include temporary

Bank impacts associated with the crossing/retaining wall installation. It is also unclear if temporary LUW impacts have been included.

GH2: Addressed by CLAWE

RESOURCE AREA BOUNDARY COMMENTS AND RECOMMENDATIONS

BETA conducted a Site visit on October 25, 2022 to assess existing conditions, particularly with regards to the proposed stream crossing and adjacent BVW replication area. BETA observed numerous wetland flags in the field and considered their location when reviewing the proposed BVW replication area.

W1. BVW boundaries were previously approved under the ORAD; however, it is unclear whether the boundaries of Bank and the intermittent status of the associated stream were approved. BETA generally observed the Bank flagging in the field to accurately delineate the top of Bank where flags were present, i.e., the first observable break in slope/mean annual flood level. Based on information accessed through the Massachusetts Geographic Information Systems (MassGIS) website and the United States Geologic Survey (USGS) StreamStats tool, the stream does not appear on USGS topographic maps and is not associated with a drainage area greater than 0.50 square miles; therefore, the stream qualifies as intermittent.

CLAWE: All wetland and streambank delineation has been approved by the ORAD at the crossing.

BETA2: BETA defers to the Commission on the scope of the previously issued ORAD. In the event that Bank boundaries were not confirmed within the ORAD, BETA observed an accurate Bank delineation during the October 25, 2022 Site visit.

GH2: Addressed by CLAWE

W3. Provide calculations to demonstrate whether the IVWs at the Site have the water holding capacity to qualify as ILSF and be afforded protection under the Act.

CLAWE: The ILSF calculations had been provided during the ANRAD review. The two IVWs have area of 2520 Sf and 7887 Sf with less than 1 ft depth, respectively. So, the total volume is less than 1.25 ac-ft, which disqualify them as ILSF according to 310 CMR 10.57 (2) (b) 1. The only issue remain with IVW is the potential VP concern, which should not be an issue as no alteration is proposed to the IVW. Based on the depth of the IVW, it is our professional opinion that these two IVW is unlikely a vernal pool.

BETA2: The IVWs do not meet the definition of ILSF – comment resolved. BETA has not assessed the IVWs for potential vernal pool indicators and defers to the Commission on their status as vernal pools.

GH2: Addressed by CLAWE

CONSTRUCTION COMMENTS AND RECOMMENDATIONS

W4. The Project will result in approximately 9.6 acres of clearing and grubbing. Provide a phasing plan to supplement the erosion control plan that limits the total area of disturbance at the Site at a one time. The proposed single line of perimeter erosion

controls is anticipated to be insufficient for the large area of clearing where soils are associated with high runoff volumes.

CLAWE: We will phase the project in five phases. See Plan sheet 3 for details. It will require a temporary crossing as we did with soil testing for erosion control installation.

BETA2: The Applicant provided a phasing plan which did not include additional erosion controls at the toe of the slope or timelines for stabilization. It is also unclear if permanent stormwater BMPs will be used for construction-period stormwater management, as the notes indicate that basins will be cleaned in Phase V but also state that temporary sediment basins will be used for construction-period stormwater control. The Applicant should clarify construction period stormwater management and stabilization phasing and provide consistency with the G&H response to Comment SW28. Use of permanent infiltration BMPs for construction-period stormwater management is not recommended.

GH2: Addressed by CLAWE

W5. The Erosion Control Plan indicates that the Site will be cleared following construction of the construction entrance and installation of erosion controls. Clarify whether the construction entrance will include full construction of the stream/BVW crossing, or if a temporary crossing is required. Should a temporary crossing be required, provide construction details.

CLAWE: A temporary crossing for soil testing has been granted. We would request that the same or similar method of temporary crossing can be used for clearing and Erosion Control installation without soil disturbance.

BETA2: The requested detail for a temporary crossing has not been provided. Comment remains.

GH2: Addressed by CLAWE

W8. The proposed 2V:1H slope at the west side of the site will be stabilized as “designed by others”. Provide the method(s) and timing of both temporary and permanent slope stabilization to prevent sedimentation of the downgradient BVW. The Applicant should consider use of native seed mixes with wildlife habitat / pollinator habitat value for permanent stabilization where within Buffer Zone.

CLAWE: The 2V:1H slope at the west side of the site will be constructed and stabilized as spelled out on sheet 3 of the plan entitled “Construction phasing and slope stabilization plan” by CLAWE.

BETA2: The above-referenced slope stabilization plan is not anticipated to be sufficient given the length and pitch of the slope, as well as its proximity to Resource Areas. BETA notes the following:

- Stabilization, even if only temporary, should be completed along lower portions of the slope as it is constructed. A phased stabilization plan would reduce the area of soils exposed at any given time.*
- A “berm” of onsite loam tailing with an upgradient stone trench and*

underdrain will be constructed at the top of the slope to prevent uncontrolled runoff from flowing down the slope. However, precipitation falling on the slope itself will not be captured by the trench and is anticipated to erode the loam layer from the slope if left unprotected.

- *The above-referenced “berm” is pitched in two (2) directions, which will likely result in sediment accumulation occurring within the stone trench. This trench is not shown on the drainage plans. The Applicant should clarify whether this trench is temporary, and depict it on the Erosion Control Plan, including its discharge point if applicable.*
- *As noted in Comment W4, it is recommended that the perimeter erosion controls be doubled in locations where high runoff is anticipated, i.e., the toe of this proposed slope. A mulch berm, if feasible, could be considered for this area.*

GH2: Addressed by CLAWE

W9. *Provide a plan that depicts all Resource Area impacts associated with the Project, as the Stream Crossing and Wetland Replication Plan does not accurately disclose all impacts. It appears that temporary impacts are anticipated to be required for the following:*

- a. *Stream water control (if applicable);*
- b. *Construction of the stream/BVW crossing and retaining walls;*
- c. *Construction of the BVW replication area; and*
- d. *Installation of erosion controls along/over the BVW boundary between flags B30A/B34AN and B40AN/B44A.*

CLAWE: a. Crossing work will be preferably done during dry season if time allows to avoid dewater issue. If it needs to work during flowing season, we have devised a dewater plan for Conservation Commission to review and approval. b. The retaining wall will be provided by Shea Concrete for the crossing c. Compost tube should be adequate for the replication area given fairly flat area with little contribution watershed. D. A line of boulders can be used to shore up the bottom slope in area upgradient of flags B30A to B34AN and B40AN to B44A. The updated plan showed all resource area alteration associated with the wetland and stream crossing.

BETA2: It is recommended the information requested below be provided to the Conservation Commission by the Applicant in order to accurately permit the Project through an Order of Conditions.

GH2: Addressed by CLAWE

- a. *BETA concurs with the Applicant’s preference to conduct the work during low-flow conditions; however, it is assumed that groundwater dewatering will be required for deep utility installation regardless of the time of year. The dewatering detail should be revised as follows:*
 - i. *Remove reference to hay bales.*
 - ii. *Clarify whether the 4 – 6-inch high-density polyethylene (HPDE) pipe is intended to divert streamflow through the work area during utility and culvert construction.*

- iii. *Relocate dewatering pump inlet to the work area within the crossing/utility trenches.*
 - iv. *Depict locations of utility lines*
 - v. *Quantify impacts to LUW associated with dewatering*
 - vi. *Clarify the need for the swale and sediment basin on upstream side of culvert. The Applicant may want to consider relocation of the dewatering area to the downstream side of the culvert.*
 - vii. *Provide Buffer Zone restoration for the dewatering area if dewatering is conducted.*
- b. *The Applicant has quantified temporary impacts to BVW associated with the construction of the retaining wall; however, a wall detail has not been provided and the quantification of temporary Bank/LUW impacts is unclear. Permanent and temporary Bank and LUW impacts should be depicted on the plans.*
 - c. *Comment remains - Temporary impacts associated with the erosion controls along the BVW boundary downgradient of the BVW replication area have not been quantified. Restoration details for this area have not been provided.*
 - d. *Comment remains – temporary impacts are likely to occur along the wetland boundary and should be quantified, depicted, and restored.*

GH2: Addressed by CLAWE

W10. *Erosion controls consisting of siltation fencing and compost filter tubes are proposed to be installed across the stream as depicted on the Wetland Replication & Stream Crossing Plan, which is not a typical method of in-water erosion, sedimentation, and/or turbidity control. Clarify what time of year the crossing work will occur, what erosion controls will be used for in-water work, and how water will be controlled during construction of the crossing. To comply with the Section 404 Massachusetts General Permit, in-water controls should only be in place while required to complete the crossing work. Based on BETA's experience with the Franklin Conservation Commission, the Commission may wish to clarify if they would prefer the use of alternative erosion controls.*

CLAWE: See response to W9. If time allows, we prefer to do the work during now flow summer and fall. If dewater is required, a dewater plan is provided on the plan detail sheet to assure no flowing water will coming through the construction section of the crossing.

BETA2: See BETA 2.a. response to Comment W9.

GH2: Addressed by CLAWE

W11. *To apprise the Conservation Commission of federal permitting requirements, the Project will be required to obtain U.S. Army Corps of Engineers (USACE) approval under the Section 404 Massachusetts General Permit prior to commencing construction.*

CLAWE: We agree and will start with USACE permitting when we reached a definitive consensus with the Commission review.

BETA2: Acknowledged.

GH2: Addressed by CLAWE

MITIGATION COMMENTS AND RECOMMENDATIONS

The mitigation comments and recommendations for the Project are primarily related to the proposed BVW replication area. BVW replication area comments consider the Massachusetts Inland Wetland Replication Guidelines and generally accepted wetland science/construction procedures.

W12. If available, the BVW replication area should be backfilled initially with native hydric soils, with creating a soil blend having high organic content as a way to supplement native soils. The Applicant should estimate the volume of hydric soils that can be reused from the permanent BVW impact area associated with the crossing. Based on hand auger soil sampling conducted during BETA's Site visit, soils within the proposed replication area consist of shallow refusal and gravelly A- and B-layers. Onsite soils used for a supplemental hydric soil blend should be assessed for appropriate composition, and compost used for the supplemental hydric soil blend should consist of clean leaf mulch. It is recommended that the contractor target 50% organic matter by volume when creating supplemental hydric soils; therefore, additional compost will be required beyond the 1/3 composition indicated on the plans.

BETA recommends revising the Wetland Replication & Stream Crossing plan notes to reference the items above.

CLAWE: There 2140 SF of wetland replication, which contains about 8" good high organic loam. With the additional transferring of about 12" wetland soil from the filled 947 SF wetland, we estimated about 20 Cu. yard of compost organic materials will be needed to achieve the 50% organic matter content soil for wetland plants as specified in the note.

BETA2: It is recommended that the note referenced above also include a requirement for the contractor to cover all stockpiled hydric soils and keep them moist until their eventual reuse.

GH2: Addressed by CLAWE

W16. Depict supplemental erosion controls directly upgradient of the BVW replication area on the Stream Crossing and Wetland Replication Plan.

CLAWE: Temporary access is demarcated on the plan for replication access. In addition to the compost tube erosion control, other erosion control may be used if needed per the contractor and the wetland scientist, which include but not limited to woodchip/grindings mulch or check dam.

BETA2: Comment remains. Provide supplemental erosion controls.

GH2: Addressed by CLAWE

W17. Provide a narrative describing how Buffer Zone temporarily impacted by the Project will be restored following construction. Based on the provided plans, wooded areas will be cleared to access the BVW replication area and conduct grading, but no Buffer Zone replanting is depicted on the plans.

CLAWE: The temporary access is marked on the plan with restoration note. In practice, we will try to find a path without or minimum tree removal. In any case, the access path will be restored with loam and New England Erosion Control seed mix or as approved by FCC.

BETA2: Access for wetland replication construction will likely require clearing of woody vegetation. The Applicant should provide an appropriate restoration plan with native woody species to reestablish the existing Buffer Zone functions upgradient of the wetland replication area.

GH2: Addressed by CLAWE

W18. *Provide a method for restoring temporary BVW/Bank/LUW impact areas and describe how Banks under the crossing will be graded and permanently stabilized and include notes pertaining to Resource Area restoration on the plan set.*

CLAWE: Field survey of the stream channel has been conducted and recorded and analyzed. The information of the channel morphology is presented in the plan for reference in case channel restoration is needed. A 8-ft steel plate will be used to cover the channel that can fit inside of the 12-ft open bottom culvert. In section of utility installation, the channel will be restored with the channel width and depth as surveyed with 1:1 slope and the saved root rich bank materials plus some 12" anchoring stones extending 6" below the bottom elevation. This is added to our special notes.

BETA2: A restoration planting plan should be provided for temporary BVW and Bank impacts associated with the crossing, and measures to stabilize the entirety of the Banks under the crossing should be provided. The Applicant may consider placement of coir logs along the Banks.

GH2: Addressed by CLAWE

WPA PERFORMANCE STANDARDS COMMENTS AND RECOMMENDATIONS

The Project, according to the WPA Form 3, proposes 947 square feet of BVW impacts. However, the Applicant is required to quantify all temporary and permanent Resource Area impacts and demonstrate how the applicable Performance Standards are met. The submitted NOI does not provide information on compliance with Performance Standards. Additional information is also required to document compliance with the Massachusetts Stream Crossing Standards.

Bank (310 CMR 10.54)

W19. *Depict all temporary and permanent Bank impacts associated with the construction of the crossing. It is anticipated that a Wildlife Habitat Evaluation for Bank impacts will not be required pursuant to 310 CMR 10.54(4)(a)6.*

CLAWE: Per the design, an open bottom box culvert is used for the stream crossing, most of the 35-ft wide stream channel will be protected during construction except for an 8" sewer line installation, which will impact about 4-5 ft section of the channel. The existing channel geometry is surveyed and will be used for restoration as we noted under W18 and in the special notes 4. We agreed that the project as designed will not significantly impact the wildlife habitat function. "Notwithstanding the requirement

of 310 CMR 10.54(4)(a)5., the impact on bank caused by the installation of a stream crossing is exempt from the requirement to perform a habitat evaluation in accordance with the procedures contained in 310 CMR 10.60.”

BETA2: Temporary Bank impacts associated with the construction of the crossing are unclear –comment remains.

GH2: Addressed by CLAWE

W20. *Provide a narrative to demonstrate compliance with the Performance Standards at 310 CMR 10.54(4).*

CLAWE: As we presented in the stream and wetland crossing design, the design meets all required standards for stream crossing with the preferred style of culvert. The stream section of crossing has less than 6” loose organic substrate due to reversed slope and stony underlay. The design will allow to keep the most of the existing channel intact. The water carry capacity is calculated based on the contributing watershed that is very consistent with the observed stream channel morphology. The stream and bank function will not be significantly impacted according to the design for channel stability, flow carrying capacity, and wildlife habitat.

BETA2: Quantification and restoration details for temporary Bank impacts, as well as the stabilization of all Banks under the culvert, should be provided to demonstrate compliance with the Performance Standards.

GH2: Addressed by CLAWE

Bordering Vegetated Wetland (310 CMR 10.55)

W22. *Provide a narrative describing the “Avoid/Minimize/Mitigate” considerations that were assessed during the design of the Project.*

CLAWE: The site is surrounded by wetlands and there is no alternative access that can avoid wetland alteration. The project has designed the crossing to meet all public safety and zoning requirement with retaining wall and open bottom culvert to minimize the impact meeting all crossing and replication ratio for mitigation.

BETA2: BETA defers to the Commission to determine whether this is sufficient to demonstrate that the Applicant has minimized unavoidable impacts. BETA notes that sufficient restoration details for temporary wetland and buffer zone alteration areas have not been provided.

GH2: Addressed by CLAWE

Land Under Water (310 CMR 0.56)

W25. *Depict all temporary and permanent LUW impacts associated with the construction of the crossing.*

CLAWE: As discussed above, the construction will be preferably conducted during no flow time. If timing dictates work during flowing time. Dewatering plan is devised to route the water bypassing the construction section. Given that most of the channel will be kept intact. The LUW will not be impacted significantly. Any alteration will be restored to the documented existing condition.

BETA2: Comment remains. As previously noted, it is unclear whether temporary LUW impacts have been considered. These should be depicted on the plans and quantified.

GH2: Addressed by CLAWE

W26. *Provide a narrative demonstrating compliance with 310 CMR 10.56(4).*

CLAWE: As we showed, the design will maintain the existing stream channel geometry and substrate by using large open bottom box culvert to meet and exceed all stream crossing standard that are in compliance with 310 CMR 10.56(4):

- 1. Analysis shows that the channel water capacity and other hydraulic pattern will be maintained as existing condition.*
- 2. No significant ground and surface water is expected to be altered for the water body.*
- 3. The capacity of said land under water will be significantly the same as the existing condition to provide breeding habitat, escape cover. No fish presence is expected for this intermittent stream.*
- 4. The crossing will temporarily alter less than 200 sq ft of LUW in an existing used old car path section, which will unlikely adversely impact any significant wildlife habitat function with the preferred crossing method.*
- 5. The proposed work on the stream crossing shall be presumed to meet the performance standard set forth in 310 CMR 10.56(4)(a) given that the work is performed in compliance with the Massachusetts Stream Crossing Standards by consisting of a span or embedded culvert in which, at a minimum, the bottom of a span structure or the upper surface of an embedded culvert is above the elevation of the top of the bank, and the structure spans the channel width by a minimum of 1.2 times the bankfull width. This presumption is rebuttable and may be overcome by the submittal of credible evidence from a competent source. Notwithstanding the requirements of 310 CMR 10.56(4)(a)4., the impact on Land under Water Bodies and Waterways caused by the installation of a stream crossing is exempt from the requirement to perform a habitat evaluation in accordance with the procedures established under 310 CMR 10.60.*

BETA2: Temporary LUW impacts should be quantified, and a restoration plan should be provided to comply with the Performance Standards.

GH2: Addressed by CLAWE

STORMWATER MANAGEMENT REVIEW

The stormwater management design proposes to collect stormwater runoff into two new infiltration basins, one located on the northern side of the Site, and one located on the western side of the Site. Conveyance to these systems is provided via a new closed drainage system consisting of catch basins and drain manholes. Overflow from basin #1 will be directed to basin #2. Overflow from Basin #2 will be discharged to the west, just beyond the limits of the stream, via a new outfall.

As detailed below, the currently proposed iteration of the stormwater management system does not adequately comply with the Standards and the design requirements of the Handbook. Of note, discrepancies between the observed groundwater elevations and those used to design Basin #2 results in the floor of this basin being situated within the groundwater table under proposed conditions. BETA is also recommending that the stormwater analysis be revisited to confirm that stormwater runoff at the Site is accurately modeled.

GENERAL

SW1. *The 100-year flood is defined by MassDEP as the anticipated water surface elevation resulting from 7.0” of rainfall in a 24-hour period. Revise calculations accordingly.*

G&H: Volume 3, Chapter 1 (Documenting Compliance) of the Stormwater Handbook, in the Standard 2: PEAK RATE ATTENUATION section, points to the “Hydrology Handbook for Conservation Commissioners” for all required computations and demonstrations. In the hydrology handbook, TP-40 is specified as the required rainfall data atlas. Appendix F-1 of the Hydrology Handbook specifies the 100 year 24-hr design storm as 6.7” for Norfolk County. This concurs with the TP-40 Rainfall table within the HydroCAD software. Accordingly, the 100-year design storm rainfall depth has not been revised.

BETA2: In accordance with the Wetlands Protection Act, the definition of Bordering Land Subject to Flooding (the 100-year Elevation), states that the applicant shall:

“determine the boundary of Bordering Land Subject to Flooding by engineering calculations which shall be:

- a. based upon a design storm of seven inches of precipitation in 24 hours (i.e., a Type III Rainfall, as defined by the U.S. Soil Conservation Service);”*

Thus, the Act defines the 100-year storm as seven (7) inches of rainfall in 24 hours. Comment remains.

GH2: The 100-year design storm has been revised accordingly.

SW2. *BETA recommends that the design engineer review the proposed grades around Basin #1. As shown on the detail on sheet 11 of 12, the top of the embankment is Elevation 153.50. The grading, as shown on Sheet 5 of 12, has the crest at Elevation 153.0 with a top width of 0.0’. BETA recommends that the width of the embankment at the crest be a minimum of 4’.*

G&H: A minimum embankment crest width of 4’ has been provided as requested.

BETA2: The grades along the southeastern edge of the detention basin do not depict a crest width as noted. Comment remains.

GH2: A 4' wide berm crest width has been provided for Basin #1 as requested. See dimensions on sheet 5 of the revised site plan set.

SW3. *In accordance with Volume 2, Chapter 2 of the Stormwater Handbook, an emergency low level dewatering device is required and should be provided at each basin.*

G&H: An emergency low level dewatering device detail has been added to both basin profiles as requested.

BETA2: This is only required on the infiltration basin, and it should be gated as opposed to capped. Revise accordingly.

GH2: The emergency low level dewatering device detail for infiltration basin #2 has been revised to propose a gated outlet as requested.

SW5. *The design calculations for the piping from the stormwater collection system assume free discharge. However, based upon the HYDRO-CAD calculations, this system will be submerged by ponding in the basins during the 10-year storm. BETA recommends that the inverts into the basin be raised sufficiently to avoid surcharging the inlet pipe into the basin at the peak of the 10-year storm.*

G&H: The invert into Basin #2 has been raised to avoid surcharging as requested.

BETA2: The invert was not raised; it is the same invert elevation from the original filing. In accordance with the calculations, the water surface elevation in the basin at the peak of the 10- year storm is elevation 251.59 feet. The inlet pipe is an 18-inch reinforced concrete pipe (RCP) with an invert elevation of 249.0 feet. Accordingly, this inlet will be entirely submerged during the 10-year storm.

Test Pit 1-2 indicates that estimated seasonal high groundwater is at elevation 248.8 feet. The bottom of the basin in the calculations is now listed as elevation 248.5 feet with the low-level outlet at invert elevation 248.0 feet. The outlet is only a 2-inch diameter orifice below the floor of the basin, which is depicted as being within the groundwater table. In accordance with Volume 2 Chapter 2 of the handbook, the floor of the detention basin shall be a minimum of 12 inches above groundwater. The Basin #2 design should be revised accordingly.

GH2: Basin #1, which will be a dry detention pond and proposed to be constructed with a 30-mil impermeable liner, does not have an infiltration component, and detention basins are not required to observe a minimum separation to the estimated groundwater table. Basin #2, which is an infiltration basin, satisfies the required 2-foot separation to groundwater in accordance with the handbook. Therefore, no further adjustments to Basin #2 are proposed.

MASSDEP STORMWATER STANDARDS

The project is subject to the Massachusetts Stormwater Standards (310 CMR 10.05(6)(k-m)) as outlined by MassDEP. Compliance with these Standards is outlined below:

NO UNTREATED STORMWATER (STANDARD NUMBER 1): No new stormwater conveyances (e.g., outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth. The Project proposes one new outfall which will discharge stormwater runoff to an area immediately upgradient of the nearby stream. The discharge location is within the 25-foot wetland buffer zone. A riprap apron is proposed to mitigate erosion potential. Stormwater runoff from the Project area will be treated by subsurface infiltration systems prior to discharge.

SW7. Provide calculations for sizing of riprap apron.

G&H: Calculations for riprap apron have been provided as requested, see sheet 12 of the revised plan set.

BETA2: The detail provided addresses this comment; however, the source of the data indicated in the detail should be noted.

GH2: The source of the data on Sheet 12 has been updated accordingly.

POST-DEVELOPMENT PEAK DISCHARGE RATES (STANDARD NUMBER 2): Stormwater management systems must be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates. The Project proposes an increase in impervious area and changes to Site hydrology. Stormwater runoff will further be mitigated via new infiltration basins. Calculations indicate a decrease in peak discharge rate and runoff volume to all watersheds.

SW9. Based upon the contours shown, runoff from the two isolated wetlands along the southerly property line does not flow towards the culvert beneath the driveway into 611 Lincoln Street. These should be treated as a separate and distinct analysis points for both existing and proposed conditions.

G&H: A New sub catchment area and second analysis point have added to plans and stormwater report as requested.

BETA2: The watershed areas have been corrected; however, there is a discrepancy with the total areas. The existing conditions analysis yields a total runoff area of 20.807 acres. The total runoff area under the proposed conditions is only 20.360 acres. In addition, the expansion of PR-2 watershed to include the driveway entrance on the east side of the culvert crossing is not included in the existing runoff area. The watershed areas should be equal.

GH2: The watershed areas have been updated accordingly.

SW10. Indicate existing conditions flowpath on the watershed plans and provide calculations to determine time of concentration. Woodland conditions combined with a long flow path length will result in a time of concentration greater than the 6-minute minimum used in the model.

G&H: Existing Condition flowpaths have been added to plan. Calculations for the time of concentration have been updated in the revised Hydro-cad report.

BETA2: The flow paths have been added; however, they should not be a straight line but rather perpendicular to the contours. In addition, the initial sheet flow should be 50 feet. There are no restrictions or indications of channelization at the top of each

of the watersheds. In addition, for watershed EX-1, the flow path is approximately 1090 feet, yet the calculations account for only 400 feet. The flow path for PR-4 is not shown and the length is greater than that which is existing. Each of these items should be corrected.

GH2: Request clarification from BETA at our meeting.

SW14. Clarify method of routing building roofs to stormwater BMPs. As no roof leaders are proposed, roofs must be sloped towards the road to match proposed routing.

G&H: The proposed catchment areas have been revised to accurately represent roof runoff routing. 3 Cultec chamber systems are proposed to capture and infiltrate the entirety of the runoff associated with the 100 year storm from the rear of the roofs for units 23-42, and 61-62.

BETA2: *The roof runoff from Units 1-23 is not being treated in accordance with the Handbook. This runoff must be routed through a BMP that provides at least 80% TSS removal. In addition, the Cultec chamber systems referenced in the G&H response above do not meet the BVW boundary setback distance of 50 feet, and the infiltration rate used is not consistent with the test pit results.*

GH2: Request clarification from BETA regarding roof runoff treatment requirements for Units 1-23.

The Cultec chamber systems are not included in our total infiltration calculations and are proposed to perform as dry wells, which do not have a minimum setback distance to BVW boundaries.

RECHARGE TO GROUNDWATER (STANDARD NUMBER 3): *Loss of annual recharge to groundwater should be minimized through the use of infiltration measures to maximum extent practicable. NRCS soil maps indicate that soil in the area of proposed modifications is predominantly Woodbridge Fine Sandy Loam with HSGR C/D (low infiltration when unsaturated, very low when saturated), Paxton Fine Sandy Loam with HSGR C, Whitman Fine Sandy Loam with HSGR D, and Ridgebury Fine Sandy Loam with HSGR D.*

Test pits conducted at the Site by the Applicant indicate that underlying soils are predominantly Very Fine Sand beneath Sandy Loam with depth to groundwater ranging from 13" to 36" below grade.

Recharge is proposed via a new two new infiltration basins which will capture runoff from the majority of impervious areas. The proposed system will provide a recharge volume in excess of what is required. Drawdown calculations indicate that basins will drain within 72 hours.

SW16. In accordance with the Stormwater Handbook, two test pits in the footprint of each stormwater basin are required. Test pits in the vicinity of each basin (TP 10, 11, 12, and 20) show variable groundwater depth. Based upon the depth to groundwater indicated in the adjacent test pits to each basin, it appears that the bottom of each basin will be less than 2' above groundwater. Additional test pits will clarify actual ESHGW elevations required for the design.

G&H: Additional test pits were excavated November 4, 2022. Two were excavated in

Basin #1 and three in Basin #2. The ESHGW was determined and verifies that both basins meet the minimum ground water separation. The soil information has been added to the Plan set.

BETA2: See comment SW5 above. Comment remains.

GH2: See response to comment SW5 above

SW20. *Revise basins to include at least 1' of freeboard between the 100-year peak elevation and the top of the basin.*

G&H: The stormwater basins have been revised to provide 1' of freeboard between the 100-year peak elevation and the top of the basins, as requested.

BETA2: The label for Pond 2 on Sheet 5 states that the Top of Pond elevation is set at 246.0 feet, while calculations indicate 246.5 feet, which is required to provide freeboard. There is sufficient width to maintain the elevation of 246.5 feet. Revise the note accordingly.

GH2: Note has been revised accordingly.

SW21. *Provide a minimum setback between infiltration basin and building foundations – 10 ft when downslope and 100 ft when upslope. The designer must demonstrate that infiltration basins will not adversely impact downslope building foundations, e.g. those buildings with slab elevations located below the basin bottom elevation. The slab elevations should be raised to be above the bottom elevation of infiltration basin #1 (Elev. 248.5').*

G&H: The stormwater basins have been revised to provide a minimum of 10' of separation between nearby basements. Stormwater basin #1 has been revised to a conventional detention basin with an impervious liner, eliminating the possibility of recharging water impacting downslope building foundations.

BETA2: The liner is not indicated or labeled on the plans.

GH2: The liner has been labeled on Sheet 5 of 12.

SW22. *Basin 2 is located within 50' of the wetlands and should be reshaped to provide this minimum setback required by Table 3 of VIC1 of the Stormwater Handbook.*

G&H: Basin #2 has been reshaped as requested and per the guidance provided by BETA on interpretation of the setback.

BETA2: The basin meets the setbacks from the Resource Area; however, the basin grades have been increased to 2.5H:1V on the inside face and 2H:1V on the outside face. In accordance with Volume 2, Chapter 2 of the Handbook:

“Design the side slopes of the basin to be no steeper than 3:1 (horizontal: vertical) to allow for proper vegetative, stabilization, easier mowing, easier access, and better public safety.”

The basin design should be modified accordingly.

GH2: Grading for basin 2 has been revised to the minimum 3:1 slopes as required. 2' boulder retaining walls have been added prevent a reduction in pond storage capacity.

TOTAL SUSPENDED SOLIDS (STANDARD NUMBER 4): For new development, stormwater management systems must be designed to remove 80% of the annual load of Total Suspended Solids (TSS). The Project includes treatment of pavement areas via deep sump catch basins, sediment forebays, and infiltration basins. The resulting TSS removal rate is between 80% and 98%. The proposed infiltration basins will treat a water quality volume in excess of what is required.

As a Project with a rapid infiltration rate (>2.4 in/hr), the Project is required to treat the 1.0 inch water quality volume and provide at least 44% TSS removal prior to discharge to an infiltration BMP.

SW24. The impervious area tributary to five of the proposed catch basins exceeds 0.25 acres. In accordance with Volume 2, Chapter 2 of the Stormwater Handbook.

“The contributing drainage area to any deep sump catch basin should not exceed ¼ acre of impervious cover.”

These basins will no longer provide the 25% TSS Removal assumed in the analysis. BETA recommends that additional basins be added to meet this design requirement.

G&H: Street drainage sub catchment areas have been reconfigured. All catch basin sub catchment areas are now meeting this requirement.

BETA2: BETA recommends that the design engineer review the calculations. The roof is impervious and should be considered in this determination. Comment remains.

GH2: A portion of the runoff from the roofs contributing to the catchment of the catch basins is now routed directly to drainage manholes to reduce the contributing impervious area to the over-capacity catch basins. Accordingly, all catch basins now provide the 25% TSS removal noted in the TSS worksheets.

SW25. The treatment provided by the deep sump catch basin is part of the pretreatment requirement and cannot be counted in conjunction with the final TSS removal calculation of Basin 2. The outfall from Basin 1 is routed through Basin 2, therefore, the 80% TSS Removal rate of Basin 2 should be included in the final treatment train for Basin 1.

G&H: TSS work sheets have been revised per this comment and reflect the change in the design of detention basin #1.

BETA2: See BETA2 response to Comment SW24 above. Comment remains.

GH2: See GH2 response to Comment SW24 above.

EROSION AND SEDIMENT CONTROLS (STANDARD NUMBER 8): Erosion and sediment controls must be implemented to prevent impacts during construction or land disturbance activities. As the Project proposes to disturb greater than one acre of land, it will be required to file a Notice of Intent with EPA and develop a Stormwater Pollution Prevention Plan (SWPPP). Erosion control measures are depicted on the plans including silt fence, mulch sock, catch basin inlet protection, stabilized construction entrance, and temporary sedimentation basins.

SW28. *Revise construction sequencing plan to clarify that temporary sedimentation basins will not be removed but rather reconfigured into permanent infiltration basins.*

G&H: the temporary basins are located in different areas than the proposed basins. Accordingly, the note will remain as is. References to the basins use as temporary basins have been removed from the basin profile details.

BETA2: Temporary basins have been relocated. It is recommended that details and calculations for the basins be provided to demonstrate compliance with the sizing requirements of the 2022 EPA Construction General Permit.

GH2: Please refer to response to comment W4 prepared by CLAWE under a separate cover.

If you have any further questions or concerns, please contact our office.

Sincerely,
Guerriere & Halnon, Inc.

Michael Hassett
Project Engineer