LEBANON CONSERVATION COMMISSION
JUNE 12, 2025 - 6:30 PM
COUNCIL CHAMBERS, CITY HALL OR
REMOTE VIA VIRTUAL PLATFORM
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1. Call to Order

A. To participate in this meeting, please join live via Microsoft Teams or call 929-229-5356 (access code: 235 959 611#). If you have trouble accessing this meeting, please email Mark Goodwin

2. Approval of Minutes

A. March 13, 2025

B. April 3, 2025 Site Walk

C. April 10, 2025

D. May 8, 2025 Special Meeting

E. May 8, 2025

F. May 22, 2025

3. Open to the Public

4. Permit Review

A. **Saxon Real Estate Partners, LLC, 0 Mount Support Rd (Tax Map 24, Lot 1, Plot 100)** - Pursuant to Section 401.5 of the Lebanon Zoning Ordinance, review and comment of a Zoning Board Special Exception Application for construction of a new 3-building, 4-story residential apartment complex with podium and surface parking, amenties,0 Mt Support Rd - The Marek (20 mins)

B. **Brickyard One Nominee Trust c/o Richard Marchese, LLC, 0, 174 Hanover St Ext & 238 Hanover St (Tax Map 48, Lots 1, 2 and 4 and Tax Map 63, Lot 1)** - Review and Comment on NHDES Wetland Major Impact Application for construction of a new multi-family planned unit residential development with associated parking, stormwater management, utilities, landscaping, and pedestrian/vehicular access. A total of approximately 1,931 SF of temporary impacts and 2,417 SF of permanent impacts are proposed by the project development. CC2025-04 No DES #2025-01128. Pursuant to Section 401.5 of the Lebanon Zoning Ordinance, this project requires approval of a Special Exception from the Lebanon Zoning Board of Adjustment (ZBA), as such, the Conservation Commission will be providing comment to the ZBA as part of the application review. (30 minutes for DES review, 15 minutes for ZBA review)

5. Study Items

A. Review and Comment on the Environmental Justice Report (30 minutes)

6. Committee Reports

A. Biodiversity Group (Invasives)

B. Stewardship
- Ranger
-Trail Coordinator
-Monitors and Stewards

C. Wild about Lebanon

D. Amphibian Crossings

E. LUCT/Current Use

F. Other Subcommittees

7. Other Business

A. FYIs

B. Follow Up

C. Workshops and Educational Opportunities

8. Future Agenda Items

9. Adjournment

The order of agenda items is subject to change.

Meetings are open for in-person and remote attendance. Members of the public who wish to attend remotely may do so by going to LebanonNH.gov/Live where you will find instructions on how to enter the meeting. Members of the public will be able to participate and ask questions through the City's virtual platform or by phone. Please note: Should technical difficulties occur during the meeting that disrupt virtual or phone connection(s), the meeting will continue without remote access capabilities.
Any person with a disability who wishes to attend this public meeting and needs additional accommodation, please contact the ADA coordinator at City Hall by calling 603-448-4220 at least 72 hours in advance so that the City can make any necessary arrangements.

DRAFT

LEBANON CONSERVATION COMMISSION
REGULAR MEETING MINUTES
Remote Via Microsoft Teams
LebanonNH.gov/Live
March 13, 2025
6:30 PM

MEMBERS PRESENT: **Sarah Riley (Chair), Bruce James, (Vice Chair), Erling Heistad, Barbara Hirai, Chris Johnson, Ernst Oidtmann**

MEMBERS ABSENT: **Don Lacey, Susan Almy (Alt.), Sean Dittrich (Alt.), Travis Talbert (Alt.)**

STAFF PRESENT: **Mark Goodwin (GIS Coordinator), Nate Reichert, Director, Planning & Development, Brian Vincent, City Engineer**

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1. CALL TO ORDER: Chair Riley called the meeting to order at 6:31 PM.

2. APPROVAL OF MINUTES:

A. February 13, 2025

Mr. Erling Heistad MOVED* to approve February 13, 2025 Minutes. The motion was *Seconded by Ernst Oidtmann.

**** The vote on the MOTION was approved unanimously (6-0)***

3. OPEN TO THE PUBLIC:

4. PERMIT REVIEW:

A. Re: The City of Lebanon , 28 S. Main St/Rt 12A & 0 Railroad Ave. (Tax Map 86-18, 72-5, and 86-57) -Review and Comment on NHDES Wetland Minor Impact Application to replace the two-lane vehicle bridge (NH Rt. 12A/South Main St) which passes over the Northern Railroad, realignment of the road immediately south of the bridge , and improvement to the incorporated access road connecting Rt 12A to the railroad underpass in West Lebanon, NH. **CC2025-02 (40 minutes)**

The old Westborough rail yard would become a commercial and recreational space in the future.

Mr. Tyson Morrill, Environmental Scientist and Wildlife Biologist with D&K joined the conversation to help address any questions on this project.

Chair Riley stated that she wants to address these 2 areas separately starting with the bridge and the associated road widening/access road, and then discuss the wetland impacts because these are two separate projects. She inquired about the impacts to the existing wetland on the east side of the road, and how much of the slope on that east side of the road is going to be impacted, if it's going to be cut and how many trees will be removed from that side of the road?

Mr. Morrill started by talking about the slope and the pocket pond and referenced sheet number 104 of the documents provided (and included in the Agenda Packet). The stormwater is being captured by the pocket pond where it then settles and can infiltrate through the ground, to then be recharged into the ground below. No surface water is being discharged directly into that wetland. That pocket pond is offset from the road a bit due to the required slope from the shoulder simply based on not having a guardrail along that shoulder to allow for continued maintenance to the pocket pond (requires a decrease in the slope).

The trees on the hillside are moderate (size of a paper towel roll) in size and a majority are hardwood. That area has been impacted for a long time because of the area being developed for the railroad. Many invasive plants are here and have resulted in poor quality wetlands. This area will be restored using native vegetation seed mixes and controlling the invasive plants upon destabilization.

Chair Riley asked for a visual of how much of the hillside they are cutting away in order to create the pocket pond and how much of the tree canopy is being removed there, since those trees serve a role.

Mr. Morrill referred them to the map; it shows level of cutting or grading and also shows (5' behind that) that it is limited clearing being proposed.

Ms. Hirai said that the water there has historically been good drinking water. She also said that just because this area currently has invasives, it is still valuable. Mr. Morrill said that this spring is being recognized as a resource, and this has been documented and will be reviewed by DES to determine the function and value of the wetland itself. He encouraged her to provide comments on this if it is something she feels is impactful for the wetland impact here.

They looked at more maps (sheet 83) of the cuts and discussed changed in the grade, contour of the land, and other variables to try and determine the scale.

Ms. Hirai asked about the design and installation of the drains and if they provide for optimal safe crossing for both amphibians and other wildlife that would go through here. Mr. Morrill answered that there will be no outlet drop, and that the outlet itself will be comprised of some larger stone to prevent scouring and allow for safe crossing (referenced page 82). It will be a large (24") corrugated plastic; he stated that it is more than adequate.

Mr. Heistad said that culverts that are open at the bottom get more flow through without having to raise them. Chair Riley said that it was agreed that one of the things that the Con Com is trying to do Citywide is to encourage more resilience in our culverts and more wildlife friendliness in our culverts, what Mr. Heistad spoke about. She wondered if open bottoms could be used here. It was agreed by Mr. Morrill that better connectivity between the two would result in a healthier system. He said even turtles can cross here. Mr. Vincent stated that they are meeting all State standards while considering costs feasibility as well. He encourage the Con Com to provide any comments to the Wetland board.

Sheet 48 details drainage and utility and the direction of flow into the pocket pond.

Next, they discussed the wetland impacts and the riparian impacts caused by the proposed changes to the access road. Mr. Tyson Morrill said it is very limited to traffic or any further use, and this requires stabilization downslope. They viewed at sheet number 94. Mr. Vincent said that the road is driven by the City's desire to have a recreational park area near the river and by the New Hampshire Department of Transportation for future commerce. He thinks the City and the State are having difficulty coming to an agreement on this land.

Chair Riley confirmed with Mr. Vincent that the access road is not needed for the dry bridge project itself.

Ms. Hirai asked why this is being included in this project; why not wait until an agreement is reached between the City and State (for the ball fields and recreation area)?

Mr. Morrill said that his involvement in the project was to evaluate the existing conditions of these wetlands in the stream and the impacts to those with the infrastructure that is planned. He said this is all part of one permit application; he referred them to the map showing the proposed permanent impact.

The reason the road curves as planned was determined based on potential use and allowing adequate room for vehicles to turn (DOT request), and also for a guardrail here. Chair Riley is concerned that this engineering will allow for more erosion on the north side of the stream, in an area that has contaminants.

Mr. Morrill said that the Department of Environmental Services will look at to evaluate based on the stream itself and the proposed impact.

Mr. James said that based on the uncertainty about the impacts and about the railyard, and about the *need* for this access road, he recommends that the Conservation Commission recommend to the DES that this part of the project be segregated away as it seems it could be counterproductive to the design for the bridge, and the design of the wetlands and the pocket pond along the road. He thinks it would be better to leave the zone to the West of the road and toward the rail yard as it. He suggested that the City could revisit this at a later time in a different project. He is most concerned about the Connecticut River.

Mr. Morrill will pass this along to DES. Mr. Vincent said that the State of New Hampshire is paying for approximately 50% of this project. Chair Riley stated that it would be for a smaller project though. Mr. Vincent concurred.

Mr. Heistad reiterated that this project will be much more expensive in the future.

Mr. Morrill said that the two wetlands and the stream impacts combined do not meet the threshold for mitigation of paying into the ARM fund. Separating this as its own individual project is even more limited on a scale of extent of impacts that the State views as reasonable.

Chair Riley acknowledged this but said that she sees a contrast between the attempts to improve stormwater treatment and slowdown and this project, where she does not see it. She has concerns. And she understands that there would not be any mitigation. She is looking at what is best for West Lebanon and for the Connecticut River, and she would hope that the City and the State would take better care of this particular stream than what this seems to be doing.

Vice Chair James said that this area is recovering from disturbance in the past, and he does not feel that he or the Con Com have enough information. Chair Riley said that their job is to make a recommendation to DES to approve or deny this application and they can provide concerns, questions, and comments.

Mr. Vincent said that the water that is generated by the access road is treated, Also, all the work they are doing is to prevent erosion, not cause it. Regarding wetlands, one of the reasons the retaining wall is there is to avoid having to grade into a stream or cross the stream. This is the reason why the plan is as presented.

Mr. Goodwin reminded them that the DES is a team of professionals that will be looking at this including materials being used, the project design, etc. and Con Com's role is to highlight things that there might be a high probability of DES missing. Vice Chair James concurred.

A MOTION was made by Vice Chair James to recommends approval on the application with the following conditions:
Seconded by Mr. Erling Heistad

The vote on the MOTION was approved 5 Yay, 1 abstained (Mr. Ernst Oidtmann), 0 Nay

Related to the wetland impacts along S. Main Street

The Conservation Commission recommends that the DES approve the wetland minor impact application by the City of Lebanon at 28 S. Main Street/Route 12A and 0 Railroad Ave., West Lebanon, NH with the following conditions:

1. Encourage NH DES to review potential impacts to the historical spring that exists on the east side of S. Main Street (West Lebanon) as noted on one of the plan sheets.
2. Encourage NH DES to assess opportunities to utilize "aquatic passage or wildlife friendly: culvert design.
3. To ensure a minimization of grading and clearing of the bank on the east side of S. Main Street.

Related to the wetland impacts in the railyard area

1. To be mindful of an opportunity to completely avoid impacts by removing the proposed access road from the project if it is determined that there is no current intended use, or a high degree of uncertainty.
2. The Conservation Commission has numerous concerns related to the proposed impacts on the linear frontage of the stream resource.
3. If the project moves forward, the Con Com encourages DES to look for opportunities to minimize impacts in that area (e.g. stream linear frontage), including design alternatives. Design alternatives that are in concert with previous NRCS restoration projects that occurred in this general area.

B. Proposed Wetland Impact – Concept Review 0 Labombard Rd. (Map 64, Lot 34) (**20 minutes)**

Mr. Tom D'Aguiar, Civil Engineer and Jake Tinus with VHB along with Mr. Keith Skorupski, General Manager and Mr. Benjamin Blunt. Operations Manager, Dartmouth Coach, were here to discuss 4,156 square feet of wetlands and their need to expand parking. The reason is that their current lots are regularly full and exceed capacity.

Mr.Skorupski started by saying that they have pursued other properties adjacent to theirs, but did not work out. He said they have exhausted all options that they have at their disposal. This request has the smallest impact given their options.

Vice Chair James stated that his biggest concern is that this request would be paving a wetland. Have they considered the possibility of turning the current overflow lot into a parking garage with an additional level. He asked if they could keep to the impermeable surface that exists to the West without any further wetland impact.

Mr. Ben Blunt said that the economics of parking garages make this really challenging for them. When they last specked out a parking garage, the cost per space was $50,000, which make this cost prohibitive. That would put the cost of this at around $10 million dollars.

Mr. Oidtmann said that over ten years ago, he suggested a parking garage. He said the environment comes first, and the cost would be too much.

Mr. Blunt stated that every car that parks here is off the road and environmentally positive. Mr. Oidtmann said that the destruction to the environment is more important.

Ms. Hirai said that the Con Com's job is to protect the environment, no matter how worthy the cause.

Chair Riley said there are many parking lots throughout the area that are underutilized, and she would like to see more collaboration with these places. Also consider having more people consider parking in Hanover or New London. Consider having people take an Uber for the last leg to Dartmouth Coach. She encouraged them to look at all these options rather than paving a wetland here.

Mr. Blunt said that New London's car park is typically full as well. He reiterated that every car that parks in their lots is a car that is not spewing emissions between Lebanon, NH and Boston, MA. He said a motorcoach can get up to 300 passenger miles to the gallon, better than airplanes and trains. The parking lot helps facilitate that. They have already checked with nearby businesses and have already been able to work with the Elk Club.

Mr. Johnson said that even if they were to be able to build this proposed lot on a wetland, they would exceed capacity quickly. He encouraged them to look long term as he thinks a parking garage could be more economically feasible in the long term for Dartmouth Coach.

Mr. James asked if they could expand on the south and the southwest side. Mr. Tinus said that those areas are higher value wetlands. It is about 20' x 200' in size, and so also too small. Based on the highway methodology, in comparison to the proposed wetland, the one proposed in more environmentally friendly.

Ms. Hirai said that this serves the entire Upper Valley, but Lebanon is bearing the burden of all. She asked if they have gone back to other communities to see if they can help meet some of Dartmouth Coach's parking needs. Mr. Blunt said they did not, because other stops would be involved, the local transit system, etc., which is beyond their scope.

Chair Riley asked them to consider innovative marketing campaigns, encouraging people park at friend's houses, raise the parking fees to say $10 daily, etc. She said she thinks residents would prefer this over seeing another wetland filled in for parking.

Mr. Blunt said they already do many of these, including emails to riders, raising the rates, etc. Mr. James asked if they could have a parking lot in Hanover, since he sees many riders from there. Mr. Blunt said Lebanon and this parking lot is a watershed for the area, given its proximity to I-89. Mr. James, the same could be said for I-91.

5. STUDY ITEMS:

- **A.** Goals and Funding for 2025 (continued)) (60 minutes) - none
- **B.** Consideration and possible action on zoning change recommendations

Mr. Goodwin was asked for the Conservation Commission to expound on their motion on zoning change Amendment #20 and 21; they were considered weak.

#20 - The property owner had approached the City asking to have the property in questions rezoned to GC1, the same as across the street, so that every time they do something, it does not become non-conforming. This is a resident driven amendment.

Mr. Goodwin proposed the following:

The Conservation Commission is neither in favor nor opposed to proposed zoning amendment #20 as the subject parcel is an existing developed area and the proposal does not have any bearing on natural resources.

A MOTION was made by Mr. Erling Heistand to approve this statement.
Seconded by Vice Chair James

**** The MOTION was approved unanimously***

#21 –This was an amendment brought forward saying if the City is going to expand GC1 industrial light areas, then the owner wanted this property included in that same proposal.

Mr. Goodwin brought of a map showing the areas in question.

Mr. James said that he thinks the zoning was an error by Planning**.** He said the zoning should be RL3, as proposed by staff back in 2017, and in accordance with the City Master Plan, not INDL.

Wording proposed:

The Conservation Commission recommends that the City Council not approve Proposed Amendment #21.

The Northern Lebanon Community Plan (NLCP) called for expanding the width and breadth of protected lands for wildlife corridors in the area by expanding land protection and creating a Wildlife Corridor Passage Overlay District. Proposed amendment #21 does the opposite. It would have you rezone 67-69 Etna Road (M/L 26-2) from IND-L and RL-3 to GC-1, a move in the wrong direction.

This is an area of significant natural resources, including steep slopes and surface and groundwater, and Proposed Amendment #21 would have an adverse effect on the wildlife corridor that runs through the area and negatively impact the abutting Nicole S. Cormen Memorial Nature Preserve at Rix Ledges.

We recommend that the City Council rezone the northwest portion of this property from Industrial Light to Rural Lands3. This would be identical to the zoning change proposed by staff in 2017 as depicted on the Master Plan Future Land Use Map, which represents much hard work and considerable public feedback.

A MOTION was made by Mr. Johnson to extend the meeting by 10 minutes.
Seconded by Ms. Hirai

MOTION was passed unanimously

6. COMMITTEE REPORTS: none

A. Biodiversity Group (Invasives)
B. Stewardship
-Ranger
-Trail Coordinator
-Monitors and Stewards
C. Wild about Lebanon
D. Amphibian Crossings
E. LUCT/Current Use
F. Other Subcommittees

7. OTHER BUSINESS: none

A. FYIs

B. Follow Up

C. Workshops and Educational Opportunities

8. FUTURE AGENDA ITEMS: none

9. ADJOURNMENT

A MOTION was made by Chair Riley to make this the Conservation Commission statement on amendment #21, to the City Council
Seconded by Ms. Hirai

MOTION approved unanimously

Meeting ended at 9:11PM

Respectfully submitted,
Cinda Mersel
Recording Secretary

DRAFT - Minutes

CITY OF LEBANON
CONSERVATION COMMISSION

April 3, 2025

Marek South (Mount Support Rd; Tax Map 24, Lot 1-100), pending DES Major Wetland Impact review – Site Walk

MEMBERS PRESENT: Sarah Riley (Chair), Erling Heistad, , Barbara Hirai, Donald Lacey, Bruce James (Vice Chair)

MEMBERS ABSENT: Chris Johnson; Susan Almy; Ernst Oidtman

OTHERS PRESENT: Dave Fenesterbacher (VHB); Jake (?) (wetland scientist); Sylvia Driver (Saxon Partners)

STAFF PRESENT: Mark Goodwin (Senior Planner / GIS Coordinator)

The group initiated the site walk at 12:00 pm. The group walked from east to west up the steep bank located behind the existing Marek multi-family building and visually inspected the wetlands proposed to be impacted as part of the Marek South project. The site walk concluded at approximately 1:17 pm.

Respectfully submitted,
Mark Goodwin
Senior Planner / GIS Coordinator

DRAFT

LEBANON CONSERVATION COMMISSION
REGULAR MEETING MINUTES
Remote Via Microsoft Teams
LebanonNH.gov/Live
April 10, 2025
6:30 PM

MEMBERS PRESENT: **Sarah Riley (Chair), Bruce James, (Vice Chair), Erling Heistad, Barbara Hirai, Chris Johnson, Donald Lacey, Ernst Oidtmann**

MEMBERS ABSENT: **Susan Almy (Alt.), Sean Dittrich (Alt.), Travis Talbert (Alt.)**

STAFF PRESENT: **Mark Goodwin (GIS Coordinator),**

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1. CALL TO ORDER: Chair Riley called the meeting to order at 6:33 PM.

2. APPROVAL OF MINUTES:

None

3. OPEN TO THE PUBLIC:

4. PERMIT REVIEW:

A. **Review & Comment to NH DES and Lebanon Zoning Board of Adjustment: Saxon Real Estate Partners, LLC, 0 Mount Support Rd (Tax Map 24, Lot 1, Plot 100) –** Review and Comment on NH DES Wetland Major Impact Application and the Zoning Board Wetlands Special Exception Application for construction of a new 3-building, 4-story residential apartment complex with podium and surface parking , amenities, and landscape improvements. A total of approximately 106 SF of temporary impacts and 12,623 SF of permanent impacts are proposed by the project development. CC2025-03 DES #2025-00567 (45 minutes)

The following field team joined this Con Com meeting virtually: Ms. Sylvia Driver, Mr. Dave Fenstermacher, and Mr. Brenden Gilmore and Mr. Jake Tinus. They shared maps of the proposed project including building, parking lots, and impacted wetlands.

Vice Chair James went on the site walk on April 3, 2025 (along with a majority of the Conservation Commission members), hosted by the field team. As a result of this, he prepared a document citing his observations and concerns about this project. Mr. Goodwin subsequently shared this with all Commission members as well as the team representing this project. Vice Chair, James, commended the field team for the detail they presented. He read his written statement as follows:

"My comments and suggestions are based on a review of the documents presented by the applicant to the Conservation Commission and on my understanding and observations of the soils, wetlands and hydrology of the site. The latter are based on the site walk, sponsored by the applicant on April 3, 2025, and on my professional experience as a soil and environmental scientist.

My overall impressions: the proposed building site is situated on soils that are shallow to bedrock (see figure 1), consist principally of the Bernardston soil series, 80% of the land area; these soils have impermeable layers, glacial till and bedrock, one to two feet from the surface and at the surface in places. As a result, water likely percolates down to these layers and flows horizontally and downslope, to a small drainage drain behind the recently built apartment complex. This micro catchment also drains a contiguous larger wetlands to the west of the proposed building site that is not presently being planned for development. As a result, the proposed building site is sandwiched between this larger relatively undisturbed wetland upslope and the previously disturbed landscape building and soils downslope (figure 2).

The fact that the proposed project would be positioned between the undisturbed watershed to the west and the buildings to the east presents a situation in which it may be difficult to predict the affects of further disturbance of the hillside on waterflows and wetland functions. This may be particularly important during extreme rainfall events when large volumes of water flow from the uplands of the landmark lands to the west of the site to the large area between Mt. Support Road and Route 120. The applicant indicated during the site walk and it was reiterated in the documents presented, that an alteration of terrain application is being prepared as related to roadways to be built and the filling of the steep ravine, incised into the land's surface just to the west of the existing apartment buildings. More details are needed on how the terrain would be altered. The Bernardston soil is very stony with 15-25% slopes and very limited possibilities of tank absorption fields, shallow excavations, dwellings with or without basements, local roads and streets, and landscaping. Given that landscape alteration and an AOT will be needed to develop this site on such soils and in this wetland watershed complex, I recommend that this wetland permit application and zoning board adjustment be rejected. Any further disturbance of this site with land alteration and buildings is ill advised. There are too many unknown and possibly unpredictable interactions on and off the site between hydrology soils, wetlands, and existing buildings downslope to proceed with this project as proposed."

Mr. James also provided four questions pertaining to the above that are included in his document. These questions were not provided in this meeting.

Chair Riley stated that she agreed with Mr. James' points and added some of her concerns and issues for this project starting with the fact that she and others observed water flowing over the surface on this proposed project site, specifically the southern section of the area that is to be impacted acknowledging that this was ephemeral water after a rainfall event. They saw water flowing on the surface, consistent with the definition that DES has for ephemeral stream. Furthermore, they also saw and heard water flowing under the surface and witnessed puddles. These extend beyond the areas delineated on the wetland map and causes concern about the hydrologic connection between systems. Reference 31303-B3 in statement to DES. She thinks this provides examples of the complications of the wetlands on this site. This project is attempting to put too much on this site. Therefore, she also hesitates to recommend the approval of this project at this time.

Mr. Lacey stated that this is one more of a continuum of projects on Mt. Support Rd. that are having cumulative impact on the wetlands in this area.

Ms. Hirai said that the field team has done a reasonable job to try and avoid surface wetlands. Her concern is the subsurface hydrology and when they were on the site visit, it was not clear how the subsurface water would be addressed.

She and the Commission will be happy to review a revision of this project at some point in the future, once the above issues are addressed.

Mr. Dave Fenstermacher asked that before the Con Com makes a motion/statement to DES to be allowed to come back and present more. He said his company is committed to the City of Lebanon and further protection of wetlands. He also requested that this project team delay going to the ZBA until June, and meeting with Con Com on this matter in May.

Chair Riley said that she appreciates these comments, but that today, the Conservation Commission is required to address this application with the DES.

Ms. Hirai said that Con Com simply does not have enough information to approve this project. Chair Riley agreed and said that avoidance and minimization hasn't been met completely addressed, reiterating that this project is simply too large for this site. Mr. Heistad concurred.

Mr. Brenden Gilmore asked for the opportunity to address this with Con Com and the board as the owner of this project and discuss the potential of this project both now and in the future. He doesn't think they have had this opportunity. Mr. Goodwin said mitigation could be discussed with Con Com. Mr. Gilmore explained that there would be wetlands dedicated into perpetuity, similar to what they have done previously at on Mt. Support Road, with wetland corridors. It was agreed that the ZBA item is being withdrawn for today, and that they will present it for discussion for the May 8, 2025 Con Com meeting.

The Lebanon Conservation Commission recommends that the NH Department of Environmental Services (DES) not approve the following application:

Saxon Real Estate Partners, LLC, 0 Mount Support Rd (Tax Map 24, Lot 1, Plot 100) – Major Impact Application, for construction of a new 3-building, 4-story residential apartment complex with podium and surface parking, amenities, and landscape improvements that would include 106 SF of temporary impacts and 12,623 SF of permanent impacts CC2025-03 DES #2025-00567

The following reasoning is provided to support the recommendation for not granting approval:

Given that landscape alteration and an Alteration of Terrain (AOT) will be needed to develop this site on the Bernardston soils and in this wetland watershed complex, the plan as proposed with land alteration and building is ill-advised. There are too many unknown and possibly unpredictable, interactions on and off the Site between hydrology, soils, wetlands, and existing buildings downslope to proceed with this project as proposed. During the site visit water was observed flowing above and below the surface beyond the areas delineated on the wetland map. Additional shallow pools of standing water and ephemeral streams were observed within the proposed build of disturbed area that were not mapped.

Mr. Bruce James MOVED to have the Conservation Commission request DES not approve the application for this project. Con Com will provide the above statement to submit to DES.
Seconded by Mr. Ernst Oidtmann

****The MOTION was approved unanimously***

5. STUDY ITEMS:

Item D * was discussed first out of consideration for the people attending in person, including Mr. Jerry Rutter, the landowner gifting land to the City of Lebanon, and Mr. Craig Privett, Conservation Project Manager, representing the Upper Valley Land Trust, and Ms. Peg Merrens, Vice President, Conservation (attending remotely).

A. **Food Truck Task Force –** Proposed Zoning Amendment (7 minutes)

B. **Care & Treatment of Animals –** Proposed Zoning Amendment (7 minutes)

C. **Hotels in General Commercial One (GC-1) –** Proposed Zoning Amendment (7 minutes)

"The Conservation Commission is neither in favor of nor opposed to proposed zoning amendments Food Truck Task Force, Care & Treatment of Animals and Hotels in General Commercial One (GC-1), as the proposed use or use change does not have any impact on natural resources."

Chair Riley MOVED to approve the above comment.
Seconded by Mr. Ernst Oidtmann

****The MOTION was approved unanimously***
Mr. Don Lacey had stepped out of the chamber, so he did not vote

D. ***Upper Valley Land Trust (UVLT) Conservation Project –** Signal Hill lowlands Conservation Project (45 minutes)

Mr. Privett stated that UVLT uses Land Protection Tools, via both Fee Ownership and Conservation Easement. They work to protect working farm and forest lands, as well as lands with significant water resources, wildlife habitat, scenic values and recreational opportunities. He is at this Con Com meeting because UVLT was offered a generous gift of land (22.8 +/- Acres Stevens Road) from Mr. Jerry & Mrs. Sally Rutter.

This is a hybrid project whereby it will include the gift of land to the Upper Valley Land Trust. And then UVLT is seeking to have the City of Lebanon accept the fee ownership of the land gifted from UVLT subject to a conservation easement which would be held and monitored and stewarded by the Upper Valley Land Trust into perpetuity.

Consequently, UVLT is seeking two approvals, one for the Rutter land to be taken in fee interest from the City and added and managed with its Signal Hill conservation area across the street. The second would be the approval of lost funds to cover transaction costs as well as the contribution to the endowment.

This land is worthy of such protection because it offers wetland, wildlife habitat, it has been identified as a significant ecological area, open land habitat, and it offers highly scenic (more than 2,000 feet of frontage) along Stevens Rd. He provided slides and details of the land.

A contribution from the Lebanon Conservation Fund (LOST Fund) could support the transaction costs and long-term stewardship of this gift.

This is a significant land protection opportunity for the City and an inexpensive means of funding and encouraging conservation. Use of LOST funds may be approved by the Conservation Commission following a public hearing. This is a common practice in other Upper Valley towns (Plainfield, Cornish, Orford, Thetford, Hartford, Hartland, Weathersfield, etc.).

They have estimated the project value to be approximately $20,920, which would include the cost of both the fee conveyance to the City and the stewardship endowment. The UVLT will steward and monitor the land. It will have an open meadow feature but could also require periodic mowing.

The Conservation Commission will set the public hearing for May 8, 2025 (their next meeting), as is customary. Mr. Rutter will be available to attend the May meeting.

Mr. Heistad thanked the entire Rutter family for this gift. Mr. Rutter said that he and his wife Sally feel it is incumbent upon them to do this.

Mr. Ernst Oidtmann recused himself from any voting, since he is a trustee on the UVLT. As a private citizen he highly recommended that the Conservation Commission accept this donation and use the LOST fund account to finance these transactions.

Ms. Peg Merrens, Vice President Conservation, of the UVLT said that it would be ideal to have these two transactions happen in close proximity, that being the transfer from the Rutters to the land trust and then the transfer from the land trust to the City to happen close in time (within a matter of days), with the goal to have the transactions completed sometime in the Fall of 2025.

Mr. Mark Goodwin commented on what a fabulous project this is and the amount of frontage and scenic is exactly the type of scenario that the City desires.

Mr. Donald Lacey MOVED to have the Lebanon Conservation Commission schedule a Public Hearing to be held Thursday, May 8, 2025 at 5:30 PM, City Hall Chambers, for consideration of the expenditure of approximately $21,920 from the LOST fund, toward the conservation of the Rutter Signal Hill property in conjunction with the Upper Valley Land Trust (costs breakout details were provided).
Seconded by Mr. Erling Heistad

****The MOTION passed unanimously***
Mr. Ernst Oidtmann recused himself since he is a trustee of the UVLT

D. **Goals and Funding for 2025** (continued) (60 minutes)

Regarding funding, the Con Com needs to move money from the LOST funds to the 8 accounts covering a variety of activities that they are responsible for (reference ConCom Budget Master spreadsheet in Agenda Packet) totaling $10,120 for 2025. ConCom can move other funds later this year if needed. It was noted that it is important to use these funds in 2025, since ConCom will lose any unused funds to a City of Lebanon account.

Mr. Chris Johnson MOVED that the City administration move $10,120 from the LOST fund to the General fund to be used for the Conservation Commission operating expenses as detailed in the spreadsheet (included in the Agenda Packet) and shared during the meeting.
Seconded by Mr. Ernst Oidtmann

****The MOTION was approved unanimously***

Regarding ConCom Goals for 2025, Mr. Oidtmann first addressed Education Outreach (hosting Mascoma River cleanup) needs to be corrected to biennial rather than bi-annual.

Regarding Property Stewardship, Vice James said that if they are not going to have a Ranger this year, he thinks their work will need to revert to relying on volunteers, so he suggested that ConCom maintain the current list in the hope that in a future year ConCom will have a Ranger again. Mr. Goodwin stated that the position is still posted but that they have not had applicants.

It was agreed that the three *statements written by Mr. Goodwin will be included in the Strategic Plan for ConCom, which will involve working with DPW (see page 171 under Miscellaneous)

• Continue advocate for the inclusion of green infrastructure to the max extent possible for the pending Exit 18 project. **

• Incorporate aquatic passage and wildlife friendly designs into culvert replacement projects city-wide in line with NH Stream Crossing Initiative. (MP 5.2.22 MP) **

• Work with DPW to reduce road salt use near sensitive habitat areas. **

6. COMMITTEE REPORTS:

A. Biodiversity Group (Invasives)

April 22, 2025 - There is a public event screening at the Nugget Theatre in Hanover about "A National Park in Your Backyard", along with an expert Q&A session. Sustainable Lebanon is co-sponsoring it along with other organizations.

D-Map is the deer management option and the opportunity to get additional doe permits in order to reduce the pressure of the deer on the landscape. Hanover already does this. Lebanon could get permits for this as well however, there is an application due by no later than July 1, 2025. The application is straightforward, however it would require a team of people to complete it. There are hunters in Lebanon, interested in helping reduce the deer population. Chair Riley said that the City of Lebanon owns enough land to make sufficient land available to hunters. The requirement is a minimum of 640 acres.

Mr. Lacey spoke about Bakers Crossing and he offered to put a line of stakes in at the mowed area to allow for more grasses to grow and also allow for more riparian, along with signage so that the public better understands this area. He said that the land there looks good.

Mr. Lacey will send Mr. Johnson an email, and together, they will coordinate with the person from the Yachting Club, to facilitate continued communications with Conservation Commission.

B. Stewardship

May 3 and 4, 2025, ConCom has blueberry workdays at Jackson, and ask ConCom members to sign up to participate if they are interested.

April 24, 2025, 10AM – 2PM - Ms. Hirai said that Hypertherm will work at Two Rivers, releasing the crabapple trees and continuing to work on clearing up the trails and removing invasives.

C. Wild About Lebanon

April 25, 2025 4:00PM Starr Hill (Earth Week)

May 2025 (exact date not stated)to coincide with the crabapples blooming. These trees are incredibly valuable to wildlife, and it is a learning opportunity for the public.

D. Amphibian Crossings

Mr. Johnson had the opportunity to observe 17 peepers near the Hanover Street Ext. dead end back on March 31, 2025. Mr. Lacey had a siting recently near the vernal pool at Sunset Rock Rd of a frenzy of wood frogs; he will send a link to a video for other ConCom members to enjoy.

Chair Riley said that soon, there will be solar powered digital signs for ConCom to use (smaller and portable) and the plan to use these at some crossing sites.

E. LUCT/Current Use

Chair Riley is continuing to investigate if/how ConCom can invest the LOST fund money differently. She is talking with the City Finance staff.

F. Other Subcommittees

7. OTHER BUSINESS:

A. FYIs

Liberty Utilities – Wilder Dam – no comments at this time

B. Follow Up

C. Workshops and Educational Opportunities

8. FUTURE AGENDA ITEMS: None

9. ADJOURNMENT

No MOTION

***The meeting was adjourned at 9:00 PM by Chair Riley.**

Respectfully submitted,
Cinda Mersel
Recording Secretary

DRAFT

LEBANON CONSERVATION COMMISSION
SPECIAL MEETING MINUTES
Remote Via Microsoft Teams
LebanonNH.gov/Live
May 8, 2025
5:30 PM

MEMBERS PRESENT: **Sarah Riley (Chair), Bruce James, (Vice Chair), Susan Almy, Erling Heistad, Barbara Hirai, Chris Johnson, Donald Lacey**

MEMBERS ABSENT: **Sean Dittrich (Alt.), Ernst Oidtmann***

STAFF PRESENT: **Mark Goodwin (GIS Coordinator)**

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1. CALL TO ORDER:

A. Chair Riley called the meeting to order at 5:35 PM.

*Mr. Ernst Oidtmann, Con Com member, is an audience member today. He has recused himself from his Con Com role today, due to his involvement with the U.V.L.T.

2. PUBLIC HEARING ITEMS:

A. Public hearing for the purposed of discussing the appropriation of $21,000 from the Lebanon Open Space Trust Fund (L.O.S.T.) to support the purchase of an approximately 22-acre property located on Stevens Road, Lebanon, New Hampshire, Tax Map 28, Lot 14, Lebanon, New Hampshire. The acquisition effort is being led by the Upper Valley Land Trust (U.V.L.T.), with the property to be subject to a permanent conservation easement held by U.V.L.T.

This land is being donated by Sally & Jerry Rutter.

Mr. Craig Privett, Conservation Project Manager, representing the Upper Valley Land Trust, provided some background information about U.V.L.T. as well as this specific land being donated by Mr. & Mrs. Jerry Rutter. He shared a Power Point presentation with maps of the land being donated (Phase 1) detailing that this land is a Significant Ecological Area (SEA), including wildlife habitat, connectivity to other protected lands, wildlife corridor information, scenic benefits to the Public (over 2,000 feet of frontage on Stevens Road), etc. This is also a substantial land protection opportunity for the City of Lebanon.

To help with the costs associated with this transaction, they are seeking contribution from the Lebanon LOST fund. This requires approval of the Lebanon Conservation Commission along with a public hearing.

Ms. Hirai thanked the Rutters, and the U.V.L.T. for their generous gift and for the work that the trust is doing.

Mr. Lacey also thanked the Rutters for this wonderful gift.

Mr. Rutter said there is an archeological site (a barn) on this site. Mr. Rutter taught archeology at Dartmouth College.

Mr. Goodwin also conveyed his appreciation to the Rutters, for their generous donation of this important open space.

Mrs. Sally Rutter shared a story about this land. Many years ago, this land was put up for sale. As soon as she saw the for-sale sign, she rushed home and told her husband Jerry that they had to buy this land, since she knew that there was a big developer wanting to build another big condominium complex there. The Rutters wanted to keep this land "raw". So, they purchased it and have maintained their vision.

Mr. Donald Lacey MOVED to authorize the expenditure of up to $21,000 from the Lebanon Open Space Trust (L.O.S.T.) Fund, as a contribution towards the Upper Valley Land Trust's purchase and permanent protection of the property located on Stevens Road, Lebanon, New Hampshire, Tax Map 29, Lot 14, Lebanon, New Hampshire.

The expenditure is conditional upon documenting the transaction within a money transfer services agreement signed by the City Manager and the Upper Valley Land Trust.
Seconded by Ms. Barbara Hirai.

****The MOTION was approved unanimously***

Chair Riley again thanked Mr. Privett, and Mr. & Mrs. Rutter.

Mr. Goodwin explained the next steps of this process will be to have the Conservation Commission request the City Council have a meeting to take the acquisition of this land via a public meeting (Phase 2). It was agreed this will likely be in the fall 2025. Mr. Privett will keep them abreast of the progress of the first phase.

3. ADJOURNMENT
Ms. Susan Almy MOVED to adjourn the meeting
Seconded by Ms. Barbara Harai

****The Vote on the MOTION was approved unanimously***

The meeting was adjourned at 5:54 PM by Chair Riley.

Respectfully submitted,
Cinda Mersel
Recording Secretary

DRAFT

LEBANON CONSERVATION COMMISSION
REGULAR MEETING MINUTES
Remote Via Microsoft Teams
LebanonNH.gov/Live
May 8, 2025
6:30 PM

MEMBERS PRESENT: **Sarah Riley (Chair), Bruce James, (Vice Chair), Susan Almy (Alt.), Erling Heistad, Barbara Hirai, Chris Johnson, Donald Lacey, Ernst Oidtmann**

MEMBERS ABSENT: **Sean Dittrich (Alt.), Travis Talbert (Alt.)**

STAFF PRESENT: **Mark Goodwin (GIS Coordinator), Nate Reichert, Director, Planning & Development**

1.CALL TO ORDER:

A. Chair Riley called the meeting to order at 6:30 PM.

2. APPROVAL OF MINUTES:

A. April 10, 2025
B. March 13, 2025

Both approvals postponed until later in this meeting and later in this meeting they were postponed until next regular meeting.

3.OPEN TO THE PUBLIC:

Mr. Mark Goodwin stated the preamble to the Public.

4. PERMIT REVIEW:

A. None

5. STUDY ITEMS:

A. **Proposed Monitoring Well on Two Rivers Conservation Area -** Groundwater Production Well Project

Mr. Rod Finley, City Engineer, started by saying that the City is trying to find another primary water source, to supplement Mascoma Lake or possibly take over as the primary source.

Wright-Pierce is the consulting firm they have been working with on this project.

They have installed a large diameter ground water test well which has the capacity to pump 2,800 gallons per minute (more than the current daily usage rate in Lebanon). The City Council approved $1.44M (12/2024) to move this project forward. A fifth monitoring well, if approved, will be installed by Wright

Pearce, utilizing a sub-contractor with Dennis L. Mayer Company (MA company). The majority of the funds is for expenditure on the actual well.

Mr. Finley shared a map of the site location and plan, access routes, etc. along with pictures of the area. This area is behind Target and what was JoAnn Fabrics. This area is kept mowed by Mr. Don Lacey. Much of this area was cleared previously by Con Com board members and others.

Only water will be used to install the well. The test wells will be left as is and could be used for future testing. The City would like to install this well within the next three months and complete the testing also. Then they will start the permitting process through the State of New Hampshire; it is anticipated this could take one year +/-. Once permitted, they will then have to treat the water, and this will be coordinated with Twin State.

Chair Riley asked about the impacts of the larger well on Mascoma and whether during the installation, public access will still be allowed. Mr. Finley said that during the actual drilling period, it will be closed off to the public, due to concerns for public safety. She is concerned about the trees in this flood plane forest that will be cut down because of this project. A forest like exists here is uncommon.

She stated that the sooner this project has a public hearing, the better. Ms. Hirai asked what impact this would have on flooding. She also commented on the beautiful pictures Mr. Finley shared of this site.

Chair Riley MOVED to state that the Lebanon Conservation Commission has no objective to the City drilling this test well as shown on the map, as long as the Upper Valley Land Trust has no objections and that there are no impact fees on what was discussed this evening.

****The MOTION was approved unanimously (no one seconded)***

Chair Riley also stated that a site walk would be encouraged for both the City Council and for the public and users of this area, so that they are informed. Also, ideally pertinent information will be posted at this site.

B. **Review and Comment Proposed Zoning Amendment –** 24 Labombard Rd. (map change: RL-3 to GC-1) 45 minutes ("the environmental overlay")

Mr. Nate Reichert started this discussion by saying that this has been a study for 1 ½ years and has resulted in the writing of a first draft of the environmental overlay. That is what is before the Conservation Commission tonight.

He wants to discuss the draft today, with a focus on the overlay map and what is going to be covered, the wildlife crossing corridor, the steep slopes areas, and a discussion of the potential enhancements of the wetlands. He referenced a document dated May, 1, 2025 to the Lebanon Zoning Board of Adjustment included in the packet provided in advance to all Con Com members.

Chair Riley asked if he could add the additional information from the attorney. Mr. Reichert put that up on the room screen. She also inquired if this has to go to the voters in March. Mr. Reichert said that overlays do not constitute a need for public referendum. Lastly, she noted that the DHMC lands and Centerra areas are not on these maps. Mr. Reichert said that they had a lot of discussion about this topic, and this will be part of the conversation he wants to have.

Vice Chair James was part of these meetings and said that Mr. Reichert did a good job listening to everyone and that what he is presenting is a credible presentation of what is involved.

Mr. Goodwin said that this highlights an amendment of the zoning process and that a legal opinion does not fall under Con Com responsibilities, rather their policy is to think big picture.

Mr. Barry Schuster, member from the public Ward 3, recommended that Con Com take no action since more work is needed on this. He said that many wetlands were not included, and he asked these not be taken out (for "political reasons"). He said he is not aware of any public input (Mr. Reichert addressed this a bit later and said that the landowners were invited to these public meetings. They held multiple meetings, small and large, different dates and times, to be all inclusive). Mr. Schuster also said that the 1000' easement is too restrictive, and this will eliminate any development along Etna Rd and other areas impacted by the 1000" easement proposal. He said there needs to be a balance between conserving land and business development. He said business owners should have been allowed to explain what their growth plans are. He said that while this is a good start, there is extensive overreach with this proposal and that much more study is needed and suggested they look at individual parcels. He said that this current proposal is not fair to other landowners not included in this study and that these individual landowners should be actively involved with this. Mr. Reichert said that they go out of their way to get the word out to the public, and this is why they are also directly engaging with business owners to become involved. Mr. Schuster said that he did attend a meeting, and that the environmental overlay was never in the discussion.

Chair Riley said that this overlay is a recommendation from what came out of the "final" plan. This is the City's attempt to "catch up" and to bring both sides to this conversation again. Now is the time for public comment.

Vice Chair James said that there has been a change in the perception of wetlands, and where they used to be of little to no value, they are now viewed as a positive thing for our environment. He said that there group was very balanced and is now including the public in these conversations as they move forward.

A second man from the public spoke next, Mr. James Hampian (?), Etna, NH said that the recommendations put forth in this draft were not what was put forth in the recommendations from the prior study. 100' wildlife crossing was what was recommended, not 1,000'. He also said that many recommendations from the original study, such as signage, speed controls, etc., were left out of this draft. He posed that fewer and more directed crossings were in the original study. The current proposal includes setbacks include entire buildings, such as a hotel, and the recently built climbing gym. He also said that it constitutes the taking of property and needs to be redesigned with a fair balance.

Chair Riley said they need to make a recommendation to bring this back to the City Council.

Vice Chair James asked if it would be possible for Con Com to have a Special meeting or 2 meetings, to further discuss public comments from tonight, Nate's feedback, etc. which could help inform the Conservation Commission, and then compile a more comprehensive document for the City Council, realizing that they will be too late for the June 4th City Council meeting.

Chair Riley asked if they could have a show of hands of who is available to meet with Con Com again within the next two weeks. It appears that they will have a quorum for the date of May 22, 2025 at 5:30PM. Mr. Don Lacey will be away on vacation. He will provide his comments before he leaves.

Vice Chair James offered to author a first draft for them to review on May 22, 2025, by 9:AM, and it will be included in the Agenda Packet for the meeting that day. What is currently needed is a broader

document and evaluation, that will represent the Conservation Commission, as to why they are considering what is being considered and also try to weave in some key public comments. This will be for the audience of the City Council.

Ms. Hirai MOVED to have a Special Meeting on Thursday, May 22, 2025 at 5:30PM.
Seconded by Mr. Lacey.

****The MOTION was approved unanimously***

Mr. Oidtmann MOVED to extend the meeting until 9:10PM.
Seconded by Chair Riley

****The MOTION was approved unanimously***

6. COMMITTEE REPORTS:

A. Biodiversity Group (Invasives)

Chair Riley has talked with a lady Lynn Fisher, Lebanon, who might be available to help advance the application for dMAP (depopulating deer) as she and her partner are interested in this (additional permits for doe hunting). Then whether or not it gets processed in time will depend on the bandwidth in the Planning Department as well as whether City Council will be able to hear and handle the administration of the project.

Regarding the taking action for wildlife program and perhaps get assistance for the vernal pool protection ordinance and should know sometime in May or June whether or not that assistance will become available to the City of Lebanon.

B. Stewardship

Mr. Lacey spoke about Baker's Crossing and about the Dartmouth Outing Club having a successful outing kayak race on the 26th of April. A cooperative student named Asa Bell was very helpful, and several students helped clean up. Mr. Lacey placed stakes in the area to slightly narrow it, and to increase the width of the riparian corridor, and he put up an education sign as well citing the different types of usage that people have there.

Chair Riley saw the sign and encouraged other Con Com members to go see it as well.

Vice Chair James said that two gates were inadvertently left at the site, gates 17 & 18. Mr. Johnson has a meeting with a club leader tomorrow and will let them know this and will mention Karen Zook's property issue as well (they agreed to discuss this after the meeting ended, due to time constraints.

Ms. Hirai said that on April 24th, approximately twenty-two people from Hypertherm came and worked at Two Rivers conservation area from 10-2 and primarily worked on releasing the crabapple trees, cleared around some elm trees and some trail work as well. They will go back out there again.

C. Wild About Lebanon

Chair Riley said they had a small group of people on Friday, April 25th, and they will have another meeting next week on Friday, May 16, 2025, at Two Rivers, 10-noon. There will be some focus on crabapples.

D. Amphibian Crossings

Mr. Johnson has offered to update the hotspot map, and Mr. Goodwin will assist by providing him information to accomplish this.

Chair Riley said that soon, there will be solar powered digital signs for ConCom to use (smaller and portable) and the plan to use these at some crossing sites.

E. LUCT/Current Use **None**

F. Other Subcommittees

Chair Riley said that it is important to have Con Com representation on the Housing Task Force and be part of this process. Chair Riley welcomes another member to attend, but if no volunteers, then she will attend these.

Ms. Almy had updates from Concord and said that most items that were on the table have been passed. Driveway permits will be for State roads. Going forward, once the Governor signs off, there will be only 60 days from the completed application for the town to decide what they want to do with it. SB153 is the bill number. Ms. Almy does not think this involves Con Com at this point in time.

7. OTHER BUSINESS:

A. FYIs

Liberty Utilities – Wilder Dam – no comments at this time

B. Follow Up

C. Workshops and Educational Opportunities

8. FUTURE AGENDA ITEMS:

The Brickyard has submitted a wetland application, and this will be on their June 12th meeting agenda. Chair Riley would like for Con Com to have a site visit. It will likely be on a Monday.

9. ADJOURNMENT

No MOTION

***The meeting was adjourned at 9:10 PM by Chair Riley.**

Respectfully submitted,
Cinda Mersel
Recording Secretary

DRAFT

LEBANON CONSERVATION COMMISSION
SPECIAL MEETING MINUTES
Remote Via Microsoft Teams
LebanonNH.gov/Live
May 22, 2025
5:30 PM

MEMBERS PRESENT: **Sarah Riley (Chair), Bruce James, (Vice Chair), Susan Almy (Alt.), Erling Heistad, Barbara Hirai, Chris Johnson, Donald Lacey, Ernst Oidtmann**

MEMBERS ABSENT: **Sean Dittrich (Alt.)**

STAFF PRESENT: **Mark Goodwin (GIS Coordinator), Mr. Nathan Reichert, Director, Planning and Development**

Note that there was no video to see the Conservation Commission members.

1. **CALL TO ORDER:**

A. Chair Riley called the meeting to order at 5:33 PM.

2. **STUDY ITEMS:**

A. **Review & Comment on Proposed Zoning Amendment –** Route 120 Environment Overlay District (link provided to May 8, 2025 agenda materials)

Ms. Hirai said that the current proposal still does not provide the Dartmouth area map that she had requested at their prior meeting. Mr. Nate Reichert suggested they direct their comments (about the missing map area) to the City Council.

Ms. Riley began today's meeting by making the following statement:
"This overlay has been drafted by City staff, with input from both the Conservation Commission Chair and Vice Chair, and the Planning Board Chair and Vice Chair. This was at the direction earlier this year, of City Council, and just like any other draft Zoning amendment, the public has and will have the same opportunity to comment as well as any other draft Zoning amendment. This overlay is focused on a part of the City that is being called North Lebanon and the reason this overlay is focused on that area of the City is entirely because it is in response to the North Lebanon Community Plan, and the draft amendments that the City crafted immediately following the completion of that step. For no other reason, this overlay is focused on the same geographical area. The overlay is an attempt to protect some of the ecological functions in that area, in the face of increased development that will occur, if the other zoning amendments move forward. This overlay, while not perfect, is a good thing."

Regarding additional wetland protections, which are one of the key components of this overlay…

Some of what Chair Riley spoke about next came from The Planners Guide to Wetland Buffers for Local Governments by the Environmental Law Institute. It is a little dated but has good nuggets in it.

"Wetland buffers enable local communities like ours to protect themselves from known hazards associated with climate change. Climate change is resulting in more extreme storm events. This changes the infiltration patterns, the conveyance capacity of both human made storm water systems and natural wetland systems. As the volume and timing of snowmelt changes, groundwater supplies will be affected. This can result in drought effects. This can make healthy wetland function even more critical for water supply and watershed resilience. Protecting wetland buffers will moderate the effects of both drought and extreme precipitation events and will protect private and public property. The functions and services that wetlands provide may diminish, if wetlands are surrounded by parking lots, buildings, and other land uses that reduce the hydrological functions of the wetlands, that alter the vegetation of those wetlands, and their wetland buffers."

Quoting from the publication, Chair Riley continued "Relying on regulations and conservation measures that deal only with the wetland, is like trying to operate a municipal swimming pool without any attention to the pipes, to the deck, to the lifeguard stations, or the condition of the areas that drain into the pool. Such an approach is like operating a roadway with no shoulders, no sidewalks, no signals, no managements of the right of way, and no provision for the water sheeting on the road surface."

Chair Riley said she thinks we need to think about wetlands and their buffers in those kinds of context, not just the wetlands (not just the pool, not just the road, etc.). It is the surrounding infrastructure or buffer as well.

"The upland area surrounding a wetland is essential for the survival and the functionality of that wetland. If a wetland cannot absorb the stormwater that it normally absorbs, chances of flooding will increase downstream. If the wetland cannot serve as a home for wetland species, wetland vegetation, community values and quality of life will be impacted. Local governments that have wetlands in their boundaries, have the opportunity and the responsibility to conserve these resources, and to control or compensate for activities and development that might impair their benefits for the community and for the environment."

Chair Riley is advocating for better wetland buffer protections, and that is one thing that the overlay for North Lebanon is attempting to do, beyond the wildlife corridor protections, steep slope protections, and buffers to natural areas.

Vice Chair James spoke next and referenced the draft document he prepared in advance of this evening's meeting. Additionally, after attending another public meeting at the Co-Op on Tuesday evening, it triggered something else he wants to address today.

Mr. Mark Goodwin displayed the maps detailing the areas Vice Chair James was discussing. Vice Chair James went on to share what he describes as an "alternative overlay" which includes a wildlife corridor, defines wetlands, steep slopes, etc. It shows DHMC, SR 120, Mount Support Road, etc. He said this encompasses three (3) micro watersheds making up the Northern Lebanon development area. The first in the upper left corner is Dartmouth Hitchcock Medical Center, a watershed that has been extensively disturbed. The wetlands within that area mostly drain to the north, to Hanover and into the Connecticut River (red arrow, upper left).

The 2nd micro wetland is on the East side, outside the red line. He refers to this as the "Etna Road watershed", East of Rix Ledges, West of Signal Hill, and these drain down through some truncated wetlands, into the Mascoma River and in this case, there is a lot of light industry there now, so it has been

developed and has undergone a lot of changes over the years, with a lot of human use, principally commercial. Both of these micro wetlands have been extensively disturbed.

Looking then at what he referred to as the 3rd micro wetland, or "Mount Support/Rix Ledges wetland/watershed", he said these three wetlands are distinct and different from each other, not one uniform watershed. **He does not believe that one type of zoning should apply to all three.**

His proposal is that the two watersheds to the East and West would not be included in the environmental overlay; rather they would be governed in terms of zoning, by existing regulations and processes. DHMC is a classic case of so much disturbance already, and the same for Etna Road, with lots of chopping up of the wetlands in that area.

In the center, there is a zone that has been minimally disturbed, and this area is downslope of Centerra where most of the new development for Northern Lebanon is going to take place, and so with that new development, he proposes a different map, that addresses steep slopes, wetlands, vegetation, relationship to Centerra, etc. It is an integral part of the area, but clearly very different from the other two Wetlands.

The red line on the right-side map is an approximation of the Alternative North Lebanon Environmental Overlay (aka James Map).

Chair Riley reminded them that in the areas that are already heavily developed it can be as important or more important to protect wetland buffers than in other areas, such as protecting the city from flooding or other water related issues.

Ms. Almy requested clarification for the map, asking where Mt Support Road is and the large apartment complex in that area – where they are on this map? She then asked if there is anything that can be done about these developments that have already been built. She referenced 1968, a time when her parents lived there. Vice Chair James explained that there is a very different type of development now than in past decades.

Chair Riley asked if there are any comments or questions about the overlay maps or about A through D? Mr. Goodwin put the actual proposed amendment up on their screen for all to see – Section 411 Northern Lebanon Environmental Overlay District (see Agenda Packet).

Mr. Goodwin asked if there are any issues with the 4 items in question – A through D?

A verbal poll of Commission members was taken by Chair Riley; she asked if they have any useful, or specific feedback on the texts? There was none.

Purpose A? Thumbs up

Purpose B? Thumbs up

Purpose C? Thumbs up

Purpose D? Thumbs up

Chair Riley said that they are talking about a 1000' wetland buffer, but it was determined that they are talking about a 100' buffer for most of today's discussion.

There was discussion about the 100' buffer – see an example in 411.6 Enhanced Regulatory Requirements where a 100' buffer was referenced; Mr. Goodwin said that the 100' distance that they came up with back in 2012 was informed by much scientific research noting that it is as much of an art as it is a science, and that 100' is a standard buffer if you are trying to protect the uplands around it. Mr. Lacey said many studies recommend quite a bit more and that this is a compromise around vernal pools for salamanders, some types of frogs, etc. Mr. Goodwin and Vice Chair James indicated that 100' is fairly common.

Vice Chair James said there are many variables, like vegetation and slopes, for example.

Chair Riley asked for any discussion for permitted uses. There were no comments. A conditional use permit would be required to do anything in any of the areas that are either in the wildlife corridor, the wetlands, a buffer, or the steep slopes.

Mr. Reichert said there is a nuance to that and referenced them 411.4. Minor changes less than 500 square feet are allowed. Anything larger than this required administrative approval; it is not cumulative.

411.5 Conditional Use Permits was discussed next. This requires a higher level of scrutiny and A-D is a more streamlined approach. Mr. Reichert also explained the nuances of wording and what is typical on the Planning and Zoning Boards side such as "adverse impact", hazard or nuance. Many are governed by State law. Chair Riley asked about hazard or nuisance and why these words are being used. Mr. Reichert noted that B wording is much broader that A, which is more of a direct impact.

Chair Riley asked if they should change B wording to "does not have a hazard effect". After further discussion and input, it was decided to leave this wording alone. Mr. Goodwin reminded them that they will not get every single word to speak to every situation. **What's important is to be sure the ecological integrity of Northern Lebanon Environmental Overlay will be protected.**

Mr. Johnson said that while looking at each word has some value, he feels like they are getting into the weeds, and losing site of the big picture. And he wants to be sure that the public has time to speak as well. Their time is limited. Chair Riley responded that she wants to be sure that everyone on the Commission understands what is on the Overlay, it is not just a map. She wants to be sure that all questions get answered.

Chair Riley asked for any input on C,D or E. Mr. Oidtmann asked how they identify the travel pathways, for example, for deer. Mr. Reichert said that these are identified and there are studies that have been done that will continue to be utilized. If they are aware of any deer pathways, they definitely want signage in these areas, explaining that specific area. For example, deer or bear pathways.

Ms. Almy asked if permanent signs are allowed at the start and end of this overlay? Mr. Reichert said that Zoning does not have authority, but the State and the City can work with Zoning on signage, whomever controls the road.

There were no questions or comments on 411.7 and 411.8.

Chair Riley suggested they weigh in on the text that Mr. Goodwin prepared during their meeting to see if this is what they want to advance. Also, how large of an area, the entire yellow area, or the map as presented in their May Agenda Packet, or a modified extent somewhat modified by the red line. Vice Chair James has a more detailed map, and he has that readily available to all interested.

Mr. Heistad likes Vice Chair Jame's approach and thinks it more accurately reflects the current amount of water flowing. There is not as much constant flow as there used to be.

Vice Chair James said there is a good map that shows this red area being similar to a "bowl". The red line captures the wildlife corridor, steeps slopes and wetlands. Centerra is the area that needs protection and it will drastically change as it gets developed. Mr. Goodwin clarified that those steep slopes are still RL-3 and still have the steep slope protections.

Mr. Oidtmann asked why Vice Chair James omitted the wetlands along Etna Road and South of there. Vice Chair James said that Rix Ledges is a critical top land, so the drainage patterns are different, and the development is different. Other existing protections would still apply, but not under the Overlay district. Vice Chair James drove and walked all these areas and is confident with this new Overlay district map.

Mr. Lacey said that what Vice Chair James is presenting is very much in context with the excellent maps that were presented in their November meeting.

Chair Riley invited any members of the public to speak.

Mr. Barry Schuster, Ward 3, started by saying he appreciates the Conservation Commission's time and their work. He said they are facing significant challenges. The Northern area is the most critical for growth. Speaking on behalf of Johanna Cicotte, he said that referring to the letter from City attorney Matthew Decker raised a number of proposed changes and these tracked changes are substantial. These comments are intended to help the City and Commissions to make informed decisions.

He also said that 100' is not a typographical error for this Northern corridor.

Also, he referenced a letter written by Johanna Cicotte, President, Miller Auto Group, demonstrating that this is too challenging of a project and it makes no sense to rush into any decision, based on a deadline imposed by the City Council. There are significant concerns about adding more restrictions and layers on top of already extensive guidelines and layers. Much of what is proposed will have significant costs and effectively prevent development in the very area that the City is looking to development.

If the City of Lebanon is trying to encourage development, they need to find a balanced approach and review this in tandem. He commented that Vice Chair Jame's proposed overlay deserves consideration; it is informed and thoughtful. The current proposal is overreach in his opinion. He too noted that none of the DHMC map is shown in these maps and thinks it should be. This requires more study and professional review. A rushed decision at this point in time could have unintended consequences.

Chair Riley asked if he would also recommend that the Council pause and not take any action on the other community plans (e.g. Amendment 4). He said that he thinks this artificial yellow line omits so much. Overall, he thinks this April 7, 2025 Overlay plan might be too broad, and they need to look at the details of the entire plan very closely.

Ms. Hirai MOVED to extend the meeting until 8:00PM.
No one seconded

****MOTION to extend was unanimous***

Mr. Dan Luker, Attorney & Director with Preti Flaherty, representing Hypertherm spoke next.

He thanked the Conservation Commission for their hard work. He thinks the Zoning redo should happen first, and then ConCom conduct more study. They are very concerned about this proposed overlay on Etna Road. The setbacks are unnecessary and could pose problems in the future for the four Etna Road locations, owned by Hypertherm and their associates. There was an extensive, thorough study done on this area in 2012 and a 75' setback was deemed appropriate. It is unnecessary to extend this buffer across these four existing properties. He commented that Vice Chair Jame's red line revised Overlay map make more sense. He thinks that Zoning should move forward but that the overlay needs to be studied more closely. He noted that Hypertherm has been a good neighbor for Lebanon for many decades. He reiterated that hese proposed changes are unnecessary steps.

Mr. Jay Campion spoke next; he is the 3rd largest landowner in this study area, behind only the Land Trust and Dartmouth Hitchcock. He has attended every meeting of the original study area, and none of the recommendations that are in the current overlay district were part of those original recommendations. When it comes to the specifics of the Zoning changes, he supports this. Their intentions are clear, to try and add to the housing stock. The current overlay has severe and adverse impact on existing development. For example, Hypertherm that was just discussed. Also, many other locations are currently conforming, and they would become non-conforming under this new overlay (April 2025). These are two separate things, so if there is to be an overlay district, it should apply to whatever the zoning is, that it is protecting.

Ms. Hirai reiterated that at the end of the last meeting, it was agreed that City Attorney Decker's changes be sent to ConCom, but they have not yet been provided. She cannot make a decision without seeing his suggestions.

Vice Chair James said that he thinks they should tell City Council that the Conservation Commission has a lot of concerns and so does the public, and that they need time to refine and review all of this. Resident input has to be coupled with environmental issues and economic ones as well. Much thought needs to be given to the culture of the City of Lebanon, also, what is the expectation along Route 120? Do they want to see lots of development or lots of trees? This all has to be woven into this, and it cannot happen quickly. This is a big decision for the direction of Lebanon, and he is asking that much more thought be given to this.

Mr. Reichert and Mr. Brooks have been in discussion, and are anticipating having a public hearing, possibly the 2nd City Council meeting in July. Mr. Reichert concurred that the question "Is this ready?" is valid. One next step is to get the map defined, down to the parcel level. They need to clarify what the ask is.

He also noted that Dartmouth Health was not on the map as that was addressed back in 1989 and is "established law".

He agrees that Vice Chair Jame's proposed overlay map needs to be considered, and significantly impacts the plans, and it impacts less property/people.

He will have a discussion with Mr. David Brooks.

If the Council agrees to it, this could be brought back in the Fall 2025. Discussions are ongoing about this, at a staff level.

Chair Riley asked for a show of hands of who wants to see a refined map from Vice Chair James, before making any recommendation. All except Chair Riley raised their hands. Vice Chair James will provide this map.

Chair Riley does not want to decouple what they received in the earlier May meeting.

The revised packet needs to include Attorney Decker's legal opinion in his red lined document, Vice Chair Jame's detailed and revised Red Line Overlay map, as well as the tweaked text of the overlay district agreed to in today's meeting. **

Mr. Goodwin reminded them to stay focused on the concept of the project.

Mr. Lacey asked if this discussion should be happening here or in front of the City Council or somebody else? Mr. Goodwin said the Public should discuss this in front of the City Council as well, and that the public should have that opportunity.

Mr. Lacey moved to extend the meeting for 15 minutes
Seconded by Ms. Hirai

****The MOTION was approved unanimously***

Mr. Heistad stated that Vice Chair James map warrants expanding the conversation and considers it a viable alternative worth looking at.

Chair Riley read the following statement to see if there is consensus.

The Conservation Commission is generally in support of the intent of the North Lebanon Environmental Overlay, as described in the text.** We do not have consensus for the overlay map.

Vice Chair James said that this is all so very compressed, on something so very important.

Vice Chair James MOVED for the Conservation Commission to accept the following text (see page 8 of 8) for the overlay as discussed, this evening *
Seconded by Mr. Don Lacey

Yay 6 - Nay 1

****The MOTION was approved***

Vice Chair James MOVED to state that the Conservation Commission needs more time to discuss the James proposal for an alternate shape of the overlay district map.
Seconded by Mr. Heistad

****The MOTION was approved unanimously***

ADJOURNMENT:

Chair Riley MOVED to adjourn the meeting
Seconded by Mr. Don Lacey

****The MOTION was approved unanimously***

The meeting was adjourned at 8:09 PM by Chair Riley.

Respectfully submitted,
Cinda Mersel
Recording Secretary

** Conservation Commission statement as follows:

A. The proposed project does not have an adverse impact on the free movement of wildlife through the corridor.
B. The proposed project does not create a hazard or nuisance to the wildlife corridor, wildlife crossings, wetlands, water flow, vernal pools, steep slopes, or essential ecosystem interconnectivity within the Northern Lebanon Environmental Overlay District.

1. No net expansion of impervious surface shall be permitted for existing developed lots. Within the Northern Lebanon Environmental Overlay District, there shall exist a 100- foot buffer around any and all wetlands, within which the density of impervious coverage shall in no area exceed 100 square feet per 500 contiguous square feet.

2. The use of low impact design principles for stormwater management shall be employed.

3. Stormwater treatment must conform to Enhanced Wetland Buffer Standards as set out in SPR 6, unless waived by the Planning Board during the site plan review process.

4. Retention of natural vegetation and/or establishment of vegetation and plantings, as required by the Planning Board in the site plan review process, in order to protect water quality and enhance the riparian and wetland habitats.

March 10, 2025

Ref: 52980.00

City of Lebanon Zoning Board of Adjustments
51 North Park St
Lebanon, NH 03766

Re: Wetland Special Exception Application
Saxon Partners, 0 Mount Support Road
Tax Map 24 Lot 1-100

Dear City of Lebanon Zoning Board of Adjustments,

Project Description

On behalf of Saxon Partners (Owner), VHB is submitting the enclosed application package for a Wetlands Special Exception as related to a potential residential project located at 0 Mount Support Rd (Tax Map 24 Lot 1-100). Enclosed please find the following in support of the application:

- Signed Application
- Support Statement
- Certified Abutters List
- Application Fee
- Copy of NHDES application

Project Location / Existing Conditions

The proposed project involves the construction of three, 4-story residential apartment complex buildings with podium and surface parking, amenities, and landscaping, known as The Marek Phase 2 Project ("Project") at 0 Mount Support Road, adjacent to 343 Mt. Support Road, in Lebanon, New Hampshire. The Project is westerly adjacent to a previously permitted residential project (NHDES File #2020-01638). The development parcel ("Site") is located approximately 1 mile south of the Dartmouth-Hitchcock Medical Center and approximately 3 miles south of Dartmouth College. The Project is targeted to serve employees of the medical center and other local residents. The Site is identified as Parcel 1 on Tax Map 24 Lot 1-100, is zoned for residential development, and is owned by SPNH Mount Support, LLC. In total, the Site encompasses approximately 58 acres, which was subdivided from a larger 75-acre parcel.

The parcel consists of sloping elevations on mostly forested land. The proposed development area is smaller and focused on approximately 6 acres. The Site is currently undeveloped, but it was previously logged at various times, and rock quarrying and earthen material removal activities also occurred. The proposed development would share an entrance drive to an adjacent residential development located at 343 Mt. Support Road. Several multi-family

complexes and apartment buildings are present in the general area. Other properties to the west are forested (zoned as rural lands) and have many hiking trails, including trails to the top of Quarry Hill to the south of the Site.

Wetland Impacts

Due to the constraints on site, which includes zoning restrictions, steep slopes, previously dedicate wildlife corridors, and existing wetlands/natural resources, the development will require impacts to existing wetlands. The project is sited in a way to protect larger, higher valued, wetlands, as to only impact smaller isolated wetlands.

Agency Coordination

The project was presented to the Lebanon Conservation Commission as a conceptual review. At that time the applicant received comments related to potential mitigation measures that will be discussed as part of the Special Exception process. The intent is to attend a formal second hearing as part of this process.

The applicant also had a pre-application meeting with NHDES ahead of the formal application. The applicant shared the initial threatened and endangered species feedback, which requires an additional review in the spring for listed plant.

The project is submit to NHDES Alteration of Terrain Permit, as such will implement the NHDES stormwater requirements, in addition to the City of Lebanon requirements. This permit will also cover construction sequencing and erosion and sediment control measures.

Thank you for your time and consideration of the project.

Sincerely,

Dave Fenstermacher, PE
Managing Director

CITY OF LEBANON
ZONING BOARD OF APPEALS
APPLICATION

SPECIAL EXCEPTION	☐	☐	BUILDING CODE BOARD OF APPEALS
WETLANDS SPECIAL EXCEPTION	☒	☐	APPEAL OF AN ADMIN DECISION
VARIANCE	☐	☐	REHEARING REQUEST
EQUITABLE WAIVER	☐	☐	

PROPERTY OWNER (APPLICANT):

NAME: SPNH Mount Support, LLC [redacted]

MAILING ADDRESS [redacted]

E-MAIL ADDRESS: [redacted]

CO-APPLICANT, AGENT, OR LESSEE:

NAME: TEL.#:

MAILING ADDRESS:

E-MAIL ADDRESS:

PROJECT LOCATION:

TAX MAP #: 24 LOT#: 1-100 PLOT #: ZONE: R-1 and RL-3

STREET ADDRESS: 343 Mt. Support Road

IS THIS PROPERTY LOCATED IN THE: **WETLANDS** ☒ YES ☐ NO **HISTORIC DISTRICT** ☐ YES ☒ NO

FLOOD PLAIN ☐ YES ☒ NO

REQUEST DESCRIPTION:

The Applicant is proposing to construct a new 3-building, 4-story residential apartment complex with podium and surface parking, amenities, and landscaping, known as The Marek Phase 2 Project ("Project") at 343 Mount Support Road in Lebanon, New Hampshire. The Project is westerly adjacent to a previously permitted residential project (NHDES File #2020-01638).

USE TYPE:

EXISTING: ☒ VACANT ☐ ONE FAMILY ☐ TWO FAMILY ☐ MULTI-FAMILY ☐ COMMERCIAL ☐ INDUSTRIAL

PROPOSED: ☐ VACANT ☐ ONE FAMILY ☐ TWO FAMILY ☒ MULTI-FAMILY ☐ COMMERCIAL ☐ INDUSTRIAL

If use is **COMMERCIAL** OR **INDUSTRIAL** please note specific use: _____

SIGNATURE BLOCK:

I, the undersigned, hereby submit this application on the date noted below with the knowledge and understanding that the Planning Board shall determine if the submitted application is complete according to its regulations at its next regularly scheduled meeting on April 7, 2025, unless I personally request, in writing, that the Board delay its determination of completeness to a later date.

Owner Signature: _____ DATE: 3/10/2025

Donald S. Smith, Manager

NOTE: IF, AS OWNER, YOU WISH TO DESIGNATE AN AGENT TO ACT ON YOUR BEHALF, PLEASE READ THE FOLLOWING AND SIGN BELOW: I hereby designate the person listed above as my agent for the purpose of procuring the necessary local permits for the proposed work as described herein. Representations made by my agent may be accepted as though made by me personally, and I understand that I am bound by any official decision made on the basis of such representation.

Owner Signature: _____ DATE: _____

DATE RECEIVED: 3/10/2025 **APPLICATION #:** ZB2025-07-SE

Memorandum

To: City of Lebanon Zoning Board of Adjustment
51 North Park St
Lebanon, NH 03766

Date: March 10, 2025

Project #: 52980.00

From: VHB
Dave Fenstermacher, PE
2 Bedford Farms Drive
Bedford, NH 03110

Re: Support Statement
Wetlands Special Exception Application
Saxon Partners, 0 Mount Support Road
Tax Map 24 Lot 1-100

On behalf of Saxon Partners (Owner), VHB hereby requests a Wetlands Special Exception pursuant to Article IV, §401.5 of the Zoning Ordinance for the property located at 0 Mount Support Road (adjacent to 343 Mt. Support Road). The project is not located within the High and Very High Value Wetlands.

Upon application to the Zoning Board of Adjustment, a special exception may be requested to permit the erection of a structure; the construction of streets, roads, and other access ways; for pipelines, powerlines, and other transmission lines; and the construction of fences, footbridges, catwalks and docks within the Wetlands Conservation District, provided that all of the following conditions are found to exist:

A. *The use for which the exception is sought cannot feasibly, after consideration of all alternatives, be carried out on a portion or portions of the lot which are outside the Wetlands Conservation District; and*

   Through multiple iterations of potential site design options, it was determined that there were no alternative site designs that would not impact wetlands. Design alternatives such as reworked building size/shape, access road relocations, and smaller but taller buildings were all considered. All of the design alternatives were all considered when implementing the current site design as shown in the attached site plans to minimize wetland impacts while complying with zoning and topographical constraints. Due to the location, shape, and size of the wetlands, along with the topography of the site, avoidance of the wetlands was not feasible within this portion of the property. The location of the proposed site within the parcel is desirable due to its proximity to Phase 1 (343 Mount Support Road), available utility infrastructure, availability public transportation and multimodal path, and proximity to major employers in Lebanon. This location limits overall disturbance as the site access between the two properties will be shared.

B. *Due to the provisions of the Wetlands Conservation District, as applied to the particular characteristics, setting and environment of the property, the lot cannot reasonably be used for any of the uses permitted or allowed by special exception, without some form of special exception under this section; and*

   Other permitted uses in the R-1 zoning district include one/two/multi-family dwelling, home business, and public use facilities. One- or two-family dwelling uses could potentially fit on site in a few select locations while avoiding wetland impacts but the cost for access and utility (sewer, water, drainage) connection for these single unit's homes would make the construction of them not feasible. The only development project that would be financially feasible to construction access and utility connections would have wetland impacts on site.

C. *The design and construction of the proposed use is consistent with the purpose and intent of Section 401.1 (A), (B) and (C) of this Ordinance (see 401.1 below), and adequate conservation measures shall be taken to mitigate*

the detrimental effects of the proposed use on the natural function of the wetlands. Such measures may include but are not limited to wetland restoration or enhancement, wetland preservation, or the construction and maintenance of new wetland areas adjacent to the proposed use to replace those portions of the natural wetland affected by the proposed use; and

Similar to the adjacent project on 343 Mount Support Road, the project team will work with NHDES to determine the appropriate measures moving forward to meet the above references criteria. Stormwater treatment will be conducted on site which will mitigate any increase in runoff from the developed site.

The impacted wetlands on site are isolated in nature. The proposed site design will retain the larger wetland systems that aids in groundwater recharge as well as ensure habitat for wetland-dependent wildlife is retained.

D. *The proposed construction design of pipelines, powerlines and other transmission lines shall include provisions for restoration of the site as closely as possible to its original grade and conditions; and*

N/A

E. *The proposed use shall not create a hazard to individual or public health, safety and welfare due to the loss of wetland, the contamination of ground water, or any other reason; and*

The project and use will not crease a hazard to individuals or public health, safety, and welfare.

F. *All required Federal and State wetlands permits have been applied for. Note: A zoning permit shall not be issued until all such permits have been granted.*

State Wetland permits have been applied for through NHDES. See attached for application.

G. *The project is capable of conforming to all existing best management practices, as referenced in Appendix A, and will be implemented in a way which conforms to those practices, and which complies with any other conditions imposed by the Zoning Board of Adjustment.*

The project is capable and will meet all existing best management practices as referenced in Appendix A. Standard erosion and sedimentation control measures along with construction standards will be applied to protect all natural resources. As seen on the Erosion and Sediment Control Plan, silt fence (along with double row silt fence) will be installed on site to protect all downhill and natural resources. A stabilized construction entrance/exit will be utilized to prevent vehicles from transporting dirt/soil off-site. Inlet protection will also be used.

801.3 Special Exceptions.

A. To hear and decide special exceptions to the terms of this Ordinance upon matters which the Board is required to pass under this Ordinance. In passing upon any application for a special exception, the Board shall make each of the following findings:

1. *That the special exception is specifically authorized by a provision of this Ordinance.*

   Section 401.5 of the Lebanon Zoning Ordinance authorizes special exceptions for the construction within the identified wetlands.

2. *That all special conditions required of the special exception have been met.*

The special conditions presented in Section 401.5 for a Wetlands Special Exception are addressed above.

3. *That there are no existing violations of this Ordinance on the property that the granting of this special exception would not remedy.*

   The site is currently underdeveloped and there are no known violations of the Ordinance on the property.

4. *That the character of the area shall not be adversely affected.*

   Only a portion of the wetlands on the overall site are proposed to be disturbed. The majority of the site will be undisturbed as part of the proposed work. The impact of the local, isolated wetlands will not adversely affect the overall wetland system of the character of the surrounding land.

5. *That no hazard or nuisance will be created.*

   No hazard or nuisance will be created as part of the impact to the wetlands. Stormwater design in compliance with all NHDES standards will be implemented to ensure all downstream wetland/land is not adversely affected.

6. *That the capacity of existing or planned community facilities and services (including streets and highways) will not be adversely impacted.*

   The proposed project will use the existing curb cut at 343 Mount Support Road. Traffic from the site will be analyzed to confirm all existing and planned community facilities and services will not be adversely impacted. Sewer and water will connect to existing facilities on site. Stormwater will be designed to mitigate any existing increase in runoff rates.

7. *That granting the special exception will not result in undue municipal expense.*

   The project is consistent with surrounding developments that have demonstrated positive fiscal impacts.

8. *That the proposed special exception will be developed in a manner compatible with the spirit and intent of the Ordinance.*

   The proposed special exception has been submitted in a manner compatible with the spirit and intent of the Ordinance. The project has been reviewed for possible design alternatives to minimize wetland impacts. The project team is willing to discuss further design alternatives with the conservation commission in an effort to ensure the proposed special exception is compatible with the spirit and intent of the Ordinance.

9. *That the general welfare of the City will be protected.*

   The general welfare of the City will be protected as no hazards are to be constructed as part of the project.

CERTIFIED NOTIFICATION LIST

Notice shall be sent by certified mail to the Owner; Applicant, if different from Owner; Abutters; Holders of conservation, preservation, or agricultural preservation restrictions (as defined under RSA 477:45) on the subject property; the holders of easements, rights-of-way, and other restrictions; and every engineer, architect, land surveyor, or soil or wetlands scientist whose seal appears on any plan submitted to the Board; and any other persons required by RSA 676:4, I(d). The names and mailing addresses shall be furnished by the Applicant.

672:3 Abutter. – "Abutter" means any person whose property is located in New Hampshire and adjoins or is directly across the street or stream from the land under consideration by the local land use board. For purposes of receiving testimony only, and not for purposes of notification, the term "abutter" shall include any person who is able to demonstrate that his land will be directly affected by the proposal under consideration. For purposes of receipt of notification by a municipality of a local land use board hearing, in the case of an abutting property being under a condominium or other collective form of ownership, the term abutter means the officers of the collective or association, as defined in RSA 356-B:3, XXIII. For purposes of receipt of notification by a municipality of a local land use board hearing, in the case of an abutting property being under a manufactured housing park form of ownership as defined in RSA 205-A:1, II, the term "abutter" includes the manufactured housing park owner and the tenants who own manufactured housing which adjoins or is directly across the street or stream from the land under consideration by the local land use board.
Source. 1983, 447:1. 1986, 33:2. 2002, 216:1, eff. July 15, 2002.

PLEASE PROVIDE NAMES & MAILING ADDRESSES FOR ALL PERSONS LISTED ABOVE.

Map & Lot Number: 24-1-100 (Owner)	**Map & Lot Number:**
Property Owner: SPNH Mount Support, LLC 25 Recreation Park Dr, Suite 204 Hingham, MA 02043	Applicant, Co-Applicant, Agent, or Lessee:
Map & Lot Number: 24-4, 24-2, 76-10	**Map & Lot Number:** 24-11
DARTMOUTH COLLEGE TRUSTEES PO BOX 5188 HANOVER, NH 03755	AUDUBON TIMBERWOOD LLC 535 BOYLSTON ST BOSTON, MA 02116
Map & Lot Number: 24-1	**Map & Lot Number:** 24-9
MAREK LEBANON LLC 25 RECREATION PARK DR HINGHAM, MA 02043	SPNH LEBANON NORTH LLC 25 RECREATION PARK DR HINGHAM, MA 02043

Map & Lot Number: 48-11	**Map & Lot Number:**
LEBANON QUARRY HILL LLC PO BOX 1051 NORWICH, VT 05055	VHB C/O Dave Fenstermacher, PE 2 Bedford Farms Dr, Suite 200 Bedford, NH, 03110
Map & Lot Number:	**Map & Lot Number:**
VHB C/O Jacob Tinus, CWS 2 Bedford Farms Dr, Suite 200 Bedford, NH, 03110	
Map & Lot Number:	**Map & Lot Number:**
Map & Lot Number:	**Map & Lot Number:**
Map & Lot Number:	**Map & Lot Number:**
Map & Lot Number:	**Map & Lot Number:**
Map & Lot Number:	**Map & Lot Number:**

(Revised 2/8/2024)

FEE SCHEDULE
ZONING BOARD OF ADJUSTMENT

SPECIAL EXCEPTION:

		TOTALS
FILING FEE	$300.00	$300.00
ADVERTISING FEE	$100.00	$100.00
CERTIFIED NOTIFICATION FEE*	$5.54 x 7 notices	$ 38.78
TOTAL DUE		$ $ 438.78

VARIANCE:

		TOTALS
FILING FEE	$300.00	$300.00
ADVERTISING FEE	$100.00	$100.00
CERTIFIED NOTIFICATION FEE*	$5.54 x_____notices	
TOTAL DUE		$

APPEAL OF ADMINISTRATIVE DECISION:

		TOTALS
FILING FEE	$300.00	$300.00
ADVERTISING FEE	$100.00	$100.00
CERTIFIED NOTIFICATION FEE*	$5.54 x_____notices	
TOTAL DUE		$

REHEARING REQUEST:

*Per section 802.5 of the Zoning Ordinance

		TOTALS
FILING FEE	$100.00	$100.00
ADVERTISING FEE	$100.00	$100.00
CERTIFIED NOTIFICATION FEE*	$5.54 x_____notices	
TOTAL DUE		$

Memorandum

To: Conservation Commission
City of Lebanon

Date: June 5, 2025

Project #: 52980.00

From: Dave Fenstermacher

Re: 0 Mt Support – Conservation Commission Additional Materials

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In advance of our meeting on June 12th, we wanted to provide some additional information about the wildlife corridors on the subject parcels that we would like to discuss at the meeting.

As part of the permitting of the current apartment buildings at 343 Mount Support, the applicant considered the project's impact on the wildlife corridor very carefully. That development followed the recommendations of the City 2016 Wildlife Corridor Analysis, which suggested a 300' corridor be deed restricted on the north edge of the parcel. That location lines up with the undeveloped land just north of the Timberwood Commons apartment complex. In addition, the applicant provided an second 300'-wide corridor on the south edge of our property, which lines up with the undeveloped land just south of the Timberwood Commons complex.

As part of the permitting of the apartment development at 402 Mount Support, the applicant will be providing the same deed restriction on over 7 acres of that site.

The current proposal for additional housing behind the current apartments at 343 Mount Support Road has been designed to stay outside the limits of identified wildlife corridor, and, as part of the approval process, we could expand the existing conservation restrictions to include a large swath of the remaining land.

Attached is the page from the Wildlife Corridor Analysis that relates to Mount Support Road together with an aerial picture with the wildlife corridors highlighted.

We look forward to meeting with you and discussing the potential for expansion of the wildlife corridor on June 12th.

B. Mount Support

Deed restricted corridor exceeds this width.

Location: Along Mt. Support Rd N of Timberwood Devel. **Lat/Long of Centrum:** 43.668324/ -72.260448

Direction of Travel: W – E **Width of Roadway Opening:** 45 ft **Width of Corridor:** 375 ft

Legis. Class of Road: V **Surface Type:** paved**Surface Width:** 22 ft (plus bike path of 9 ft)

2014 AADT: 4602 **TV level:** 4 **Maintenance:** local

Major Wildlife Species Found: deer, coyote, red fox (bear during NRI)

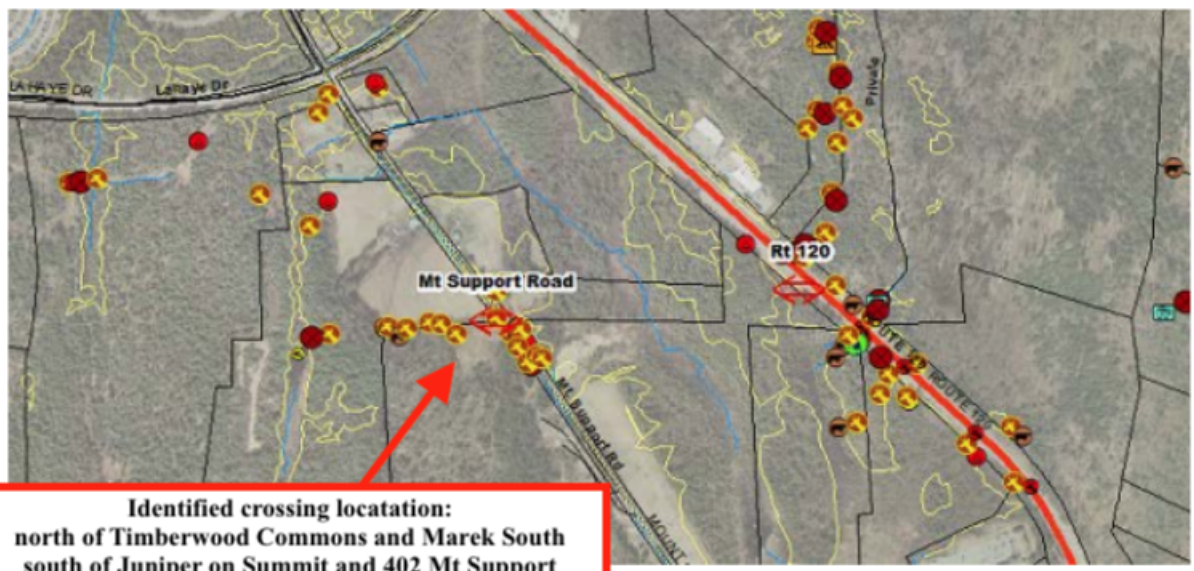
Unfragmented Blocks: **South / West:** Landmark Lands (3077 ac. plus 195 ac. in Hanover)
North / East: Mt. Support Rd East (123 ac.)

General Description: This was one of three study sites in 2013, but was resurveyed in 2015 to determine the efficacy of the crossing "improvements" that had taken place as a result of the 2013 study. Large rock rip-rap was still found on the banks of the Dartmouth College land, and the iron fence was still present along the north sideline of the Timberwood Development. Game trails were becoming more concentrated because of these features, and the installation of the sidewalk/bike path was a further limiting feature. This crossing connects to the Route 120 crossing and provides the best passage opportunity between the Landmark Lands and the unfragmented forest blocks to the east and north.

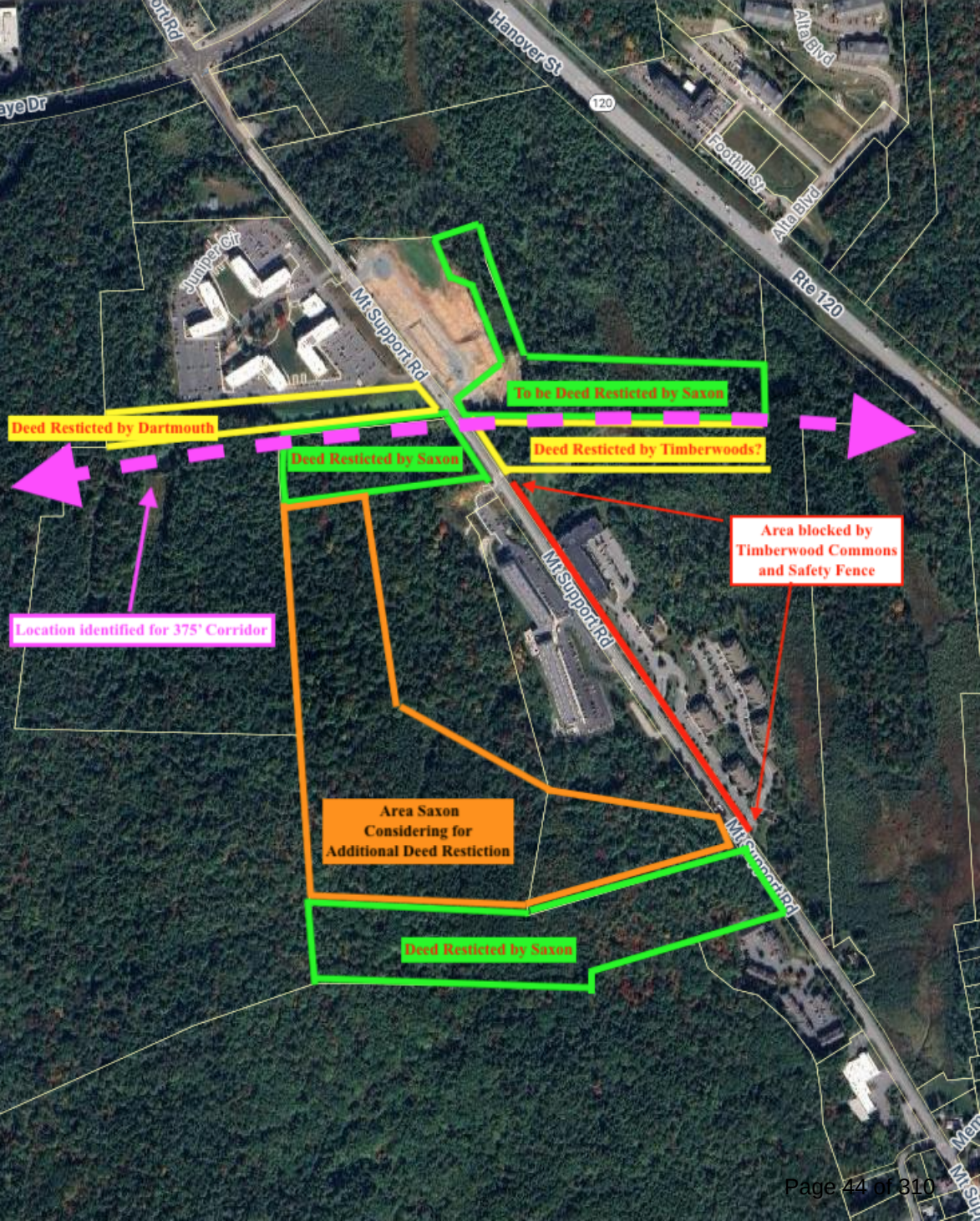
300' provided as suggested, plus additional 300' provided on south

Recommended Improvements:

- **Remove the large rip-rap for at least 50 feet adjacent to the Dartmouth College field**
- **Permanently protect the parcel 24-10 & secure development rights for parcels 24-2 and 24-3 on the west side of Mt. Support Rd and parcel 24-8 to the east next to Rt 120**
- **Secure a protective easement for the north 300 feet of the West parcel**
- **Improve the single intermittent stream culvert next to Timberwood by replacing with a 4-foot box culvert and removing 50 more feet of iron fence on the east side of Mt. Support Rd**



Identified crossing locatation:
north of Timberwood Commons and Marek South
south of Juniper on Summit and 402 Mt Support


Hanover St
120
Alta Blvd
Foothill St
Alta Blvd
Rte 120
Juniper Cir
Mt Support Rd
To be Deed Restricted by Saxon
Deed Restricted by Dartmouth
Deed Restricted by Saxon
Deed Restricted by Timberwoods?
Area blocked by Timberwood Commons and Safety Fence
Mt Support Rd
Location identified for 375' Corridor
Area Saxon Considering for Additional Deed Restriction
Mt Support Rd
Deed Restricted by Saxon

Brickyard Development

Lebanon, New Hampshire

PREPARED FOR

Brickyard One Nominee Trust
Richard M. Marchese, Trustee
P.O. Box 720, Middleton, MA 01949

PREPARED BY

2 Bedford Farms Drive, Suite 200
Bedford, NH 03110
603.391.3900

April 2025

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STANDARD DREDGE AND FILL WETLANDS PERMIT APPLICATION

Water Division / Land Resources Management

Check the Status of your Application

RSA/Rule: RSA 482-A/Env-Wt 100-900

APPLICANT'S NAME: **Brickyard One Nominee Trust** **TOWN NAME:** Lebanon

Administrative Use Only	Administrative Use Only	Administrative Use Only	File No.:
			Check No.:
			Amount:
			Initials:

A person may request a waiver of the requirements in Rules Env-Wt 100-900 to accommodate situations where strict adherence to the requirements would not be in the best interest of the public or the environment but is still in compliance with RSA 482-A. A person may also request a waiver of the standards for existing dwellings over water pursuant to RSA 482-A:26, III(b). For more information, please consult the Waiver Request Form.

SECTION 1 - REQUIRED PLANNING FOR ALL PROJECTS (Env-Wt 306.05; RSA 482-A:3, I(d)(2))

Please use the Wetland Permit Planning Tool (WPPT), the Natural Heritage Bureau (NHB) DataCheck Tool, the Aquatic Restoration Mapper, or other sources to assist in identifying key features such as: Priority Resource Areas (PRAs), protected species or habitats, coastal areas, designated rivers, or designated prime wetlands.

Has the required planning been completed?	(●) Yes ( ) No
Does the property contain a PRA? If yes, provide the following information:	(●) Yes ( ) No
• Does the project qualify for an Impact Classification Adjustment (e.g. NH Fish and Game Department (NHFG) and NHB agreement for a classification downgrade) or a Project-Type Exception (e.g. Maintenance or Statutory Permit-by-Notification (SPN) project)? See Env-Wt 407.02 and Env-Wt 407.04.	( ) Yes (●) No
• Protected species or habitat? ○ If yes, species or habitat name(s): *Geum fragariodes, Carex cristatella, Hydrophyllum virginianum, Hackelia virginiana* ○ NHB Project ID #: NHB24-2748	(●) Yes ( ) No
• Bog?	( ) Yes (●) No
• Floodplain wetland contiguous to a tier 3 or higher watercourse?	(●) Yes ( ) No
• Designated prime wetland or duly-established 100-foot buffer?	( ) Yes (●) No
• Sand dune, tidal wetland, tidal water, or undeveloped tidal buffer zone?	( ) Yes (●) No
Is the property within a Designated River corridor? If yes, provide the following information: • Name of Local River Management Advisory Committee (LAC): N/A • A copy of the application was sent to the LAC on Month: Day: Year:	( ) Yes (●) No

For dredging projects, is the subject property contaminated? • If yes, list contaminant:	○ Yes ◉ No
Is there potential to impact impaired waters, class A waters, or outstanding resource waters?	○ Yes ◉ No
For stream crossing projects, provide watershed size (see WPPT or Stream Stats): 774 Acres	

SECTION 2 - PROJECT DESCRIPTION (Env-Wt 311.04(i))

Provide a description of the project and the purpose of the project, the need for the proposed impacts to jurisdictional areas, an outline of the scope of work to be performed, and whether impacts are temporary or permanent.

The Project Applicant proposes to construct a new multi-family planned unit residential development with associated parking, stormwater management, utilities, landscaping, and pedestrian/vehicular access within the former Densmore Brickyard site located at 174 Hanover Street Extension and 238 Hanover Street (Map 48 Lots 1, 2, & 4 and Map 63 Lot 1) in Lebanon, New Hampshire. Of the 133.5 total site acreage, the proposed development will be confined to approximately 13.5 acres closest to Hanover Street. The Project Site is proximate to I-89 access, the Hanover Street School and Lebanon High School, and is within two miles of Dartmouth Hitchcock Medical Center. The Project has been carefully designed to avoid & minimize wetland impacts in accordance with Env-Wt 311.07 and Env-Wt 313.03 on the developable portion of the property with a goal of helping address the critical need for housing in the Upper Valley area.

Temporary and permanent wetland impacts are proposed as a result of construction of the Project. Additionally, impacts to a Tier 3 perennial stream will result from the installation of two new crossings to permit circular vehicular access to the proposed development. Finally, although not necessary to facilitate project construction, the Project Applicant has chosen to address three abandoned debilitated culverts existing on site through their removal and restoration of associated stream and wetland resource areas.

Refer to Section 11 of this Application Form for proposed impacts and the Application Narrative attached for further detail regarding the proposed project.

SECTION 3 - PROJECT LOCATION

Separate wetland permit applications must be submitted for each municipality within which wetland impacts occur.

ADDRESS:	174 Hanover Street Extension & 238 Hanover Street
TOWN/CITY:	Lebanon
TAX MAP/BLOCK/LOT/UNIT:	Map 48, Lots 1,2, and 4; Map 63, Lot 1
US GEOLOGICAL SURVEY (USGS) TOPO MAP WATERBODY NAME: ☐ N/A	Unnamed Perennial Stream & Densmore Pond
(Optional) LATITUDE/LONGITUDE in decimal degrees (to five decimal places):	

SECTION 4 - APPLICANT (DESIRED PERMIT HOLDER) INFORMATION (Env-Wt 311.04(a))

If the applicant is a trust or a company, then complete with the trust or company information.

NAME: Brickyard One Nominee Trust c/o Richard Marchese		
MAILING ADDRESS: P.O. Box 720		
TOWN/CITY: Middleton	STATE: MA	ZIP CODE: 01949
EMAIL ADDRESS: marchese@gmail.com		
FAX:	PHONE: 617-834-4441	

ELECTRONIC COMMUNICATION: By initialing here, I hereby authorize NHDES to communicate all matters relative to this application electronically.

SECTION 5 - AUTHORIZED AGENT INFORMATION (Env-Wt 311.04(c))

☐ N/A

LAST NAME, FIRST NAME, M.I.: Gilberto Aleixo Filho		
COMPANY NAME:		
MAILING ADDRESS: P.O. Box 720		
TOWN/CITY: Middleton	STATE: MA	ZIP CODE: 01949
EMAIL ADDRESS: gilaleixo@gmail.com		
FAX:	PHONE: 603-349-0470	

ELECTRONIC COMMUNICATION: By initialing here, I hereby authorize NHDES to communicate all matters relative to this application electronically.

SECTION 6 - PROPERTY OWNER INFORMATION (IF DIFFERENT THAN APPLICANT) (Env-Wt 311.04(b))

If the owner is a trust or a company, then complete with the trust or company information.

■ Same as applicant

NAME:		
MAILING ADDRESS:		
TOWN/CITY:	STATE:	ZIP CODE:
EMAIL ADDRESS:		
FAX:	PHONE:	

ELECTRONIC COMMUNICATION: By initialing here, I hereby authorize NHDES to communicate all matters relative to this application electronically.

SECTION 7 - RESOURCE-SPECIFIC CRITERIA ESTABLISHED IN Env-Wt 400, Env-Wt 500, Env-Wt 600, Env-Wt 700, OR Env-Wt 900 HAVE BEEN MET (Env-Wt 313.01(a)(3))

Describe how the resource-specific criteria have been met for each chapter listed above (please attach information about stream crossings, coastal resources, prime wetlands, or non-tidal wetlands and surface waters):

Jurisdictional areas within the site were delineated by Goddard Consulting LLC in July 2023 in accordance with the requirements of Env-Wt 400. In addition to Goddard Consulting's delineation, VHB NH Certified Wetland Scientist, Nicole Martin (CWS #316), conducted a site walk on September 24, 2024, to spot check the prior delineation line work, take natural resource and general site photos, and collect adequate natural resource notes to support this permitting effort.

The proposed project is classified as a Major Impact Project per Env-Wt 903.01(g)(1) since it involves two new Tier 3 stream crossings. The project has been design to avoid and minimize impacts to wetlands and streams to the greatest extent possible. The project also complies with the project specific requirements outlined in Env-Wt 524 (Residential, Commercial, and Industrial Development Projects), and Env-Wt 900 (Stream Crossings). Refer to the Application Narrative for details.

Env-Wt 600 and Env-Wt 700 are not applicable to the proposed project, as there are no coastal lands or tidal waters/wetlands or prime wetlands within or near the Project Site.

SECTION 8 - AVOIDANCE AND MINIMIZATION

Impacts within wetland jurisdiction must be avoided to the maximum extent practicable (Env-Wt 313.03(a)).* Any project with unavoidable jurisdictional impacts must then be minimized as described in the Wetlands Best Management Practice Techniques For Avoidance and Minimization and the Wetlands Permitting: Avoidance, Minimization and Mitigation fact sheet. For minor or major projects, a functional assessment of all wetlands on the project site is required (Env-Wt 311.03(b)(10)).*

Please refer to the application checklist to ensure you have attached all documents related to avoidance and minimization, as well as functional assessment (where applicable). Use the Avoidance and Minimization Checklist, the Avoidance and Minimization Narrative, or your own avoidance and minimization narrative.

**See Env-Wt 311.03(b)(6) and Env-Wt 311.03(b)(10) for shoreline structure exemptions.*

SECTION 9 - MITIGATION REQUIREMENT (Env-Wt 311.02)

If unavoidable jurisdictional impacts require mitigation, a mitigation pre-application meeting must occur at least 30 days but not more than 90 days prior to submitting this Standard Dredge and Fill Permit Application.

Mitigation Pre-Application Meeting Date: Month: Day: Year: April 17, 2025

(☐ N/A - Mitigation is not required)

SECTION 10 - THE PROJECT MEETS COMPENSATORY MITIGATION REQUIREMENTS (Env-Wt 313.01(a)(1)c)

Confirm that you have submitted a compensatory mitigation proposal that meets the requirements of Env-Wt 800 for all permanent unavoidable impacts that will remain after avoidance and minimization techniques have been exercised to the maximum extent practicable: ■ I confirm submittal.

(☐ N/A – Compensatory mitigation is not required)

SECTION 11 - IMPACT AREA (Env-Wt 311.04(g))

For each jurisdictional area that will be/has been impacted, provide square feet (SF) and, if applicable, linear feet (LF) of impact, and note whether the impact is after-the-fact (ATF; i.e., work was started or completed without a permit).

For intermittent and ephemeral streams, the linear footage of impact is measured along the thread of the channel. *Please note, installation of a stream crossing in an ephemeral stream may be undertaken without a permit per Rule Env-Wt 309.02(d), however other dredge or fill impacts should be included below.*

For perennial streams/rivers, the linear footage of impact is calculated by summing the lengths of disturbances to the channel and banks.

Permanent (PERM.) impacts are impacts that will remain after the project is complete (e.g., changes in grade or surface materials).

Temporary (TEMP.) impacts are impacts not intended to remain (and will be restored to pre-construction conditions) after the project is completed.

JURISDICTIONAL AREA		PERM. SF	PERM. LF	PERM. ATF	TEMP. SF	TEMP. LF	TEMP. ATF
Wetlands	Forested Wetland	195		☐	70		☐
	Scrub-shrub Wetland	423		☐	183		☐
	Emergent Wetland	213		☐			☐
	Wet Meadow			☐			☐
	Vernal Pool			☐			☐
	Designated Prime Wetland			☐			☐
	Duly-established 100-foot Prime Wetland Buffer			☐			☐
Surface	Intermittent / Ephemeral Stream			☐			☐
	Perennial Stream or River	1,586	396	☐	1,678	408	☐
	Lake / Pond			☐			☐
	Docking - Lake / Pond			☐			☐
	Docking - River			☐			☐
Banks	Bank - Intermittent Stream			☐			☐
	Bank - Perennial Stream / River			☐			☐
	Bank / Shoreline - Lake / Pond			☐			☐
Tidal	Tidal Waters			☐			☐
	Tidal Marsh			☐			☐
	Sand Dune			☐			☐
	Undeveloped Tidal Buffer Zone (TBZ)			☐			☐
	Previously-developed TBZ			☐			☐
	Docking - Tidal Water			☐			☐
TOTAL		2,417	396		1,931	408	

SECTION 12 - APPLICATION FEE (RSA 482-A:3, I)

☐ **MINIMUM IMPACT FEE**: Flat fee of $400.

☐ **NON-ENFORCEMENT RELATED, PUBLICLY-FUNDED AND SUPERVISED RESTORATION PROJECTS, REGARDLESS OF IMPACT CLASSIFICATION:** Flat fee of $400 (refer to RSA 482-A:3, 1(c) for restrictions).

☒ **MINOR OR MAJOR IMPACT FEE:** Calculate using the table below:

Permanent and temporary (non-docking): 4,348	SF	× $0.40 =	$ **1,739.20**
Seasonal docking structure:	SF	× $2.00 =	$
Permanent docking structure:	SF	× $4.00 =	$
Projects proposing shoreline structures (including docks) add $400 =			$
		Total =	$**1,739.20**
The application fee for minor or major impact is the above calculated total or $400, whichever is greater =			$**1,739.20**

SECTION 13 - PROJECT CLASSIFICATION (Env-Wt 306.05) Indicate the project classification.		
☐ Minimum Impact Project	☐ Minor Project	■ Major Project

SECTION 14 - REQUIRED CERTIFICATIONS (Env-Wt 311.11)	
Initial each box below to certify:	
Initials: R.M; G.A.F.	To the best of the signer's knowledge and belief, all required notifications have been provided.
Initials: R.M; G.A.F.	The information submitted on or with the application is true, complete, and not misleading to the best of the signer's knowledge and belief.
Initials: R.M; G.A.F.	The signer understands that: • The submission of false, incomplete, or misleading information constitutes grounds for NHDES to: 1. Deny the application. 2. Revoke any approval that is granted based on the information. 3. If the signer is a certified wetland scientist, licensed surveyor, or professional engineer licensed to practice in New Hampshire, refer the matter to the joint board of licensure and certification established by RSA 310-A:1.
Initials: R.M; G.A.F.	If the applicant is not the owner of the property, each property owner signature shall constitute certification by the signer that he or she is aware of the application being filed and does not object to the filing.

SECTION 15 - REQUIRED SIGNATURES (Env-Wt 311.04(d); Env-Wt 311.11)		
SIGNATURE (OWNER):	PRINT NAME LEGIBLY: Richard M. Marchese	DATE: 04/24/2025
SIGNATURE (APPLICANT, IF DIFFERENT FROM OWNER):	PRINT NAME LEGIBLY:	DATE:
SIGNATURE (AGENT, IF APPLICABLE):	PRINT NAME LEGIBLY: Gilberto Aleixo Filho	DATE: 04/24/2025

SECTION 16 - TOWN / CITY CLERK SIGNATURE (Env-Wt 311.04(f))	
As required by RSA 482-A:3, I(a)(1), I hereby certify that the applicant has filed four application forms, four detailed plans, and four USGS location maps with the town/city indicated below.	
TOWN/CITY CLERK SIGNATURE:	PRINT NAME LEGIBLY:
TOWN/CITY: Lebanon	DATE:

DIRECTIONS FOR TOWN/CITY CLERK:
Per RSA 482-A:3, I(a)(1)

1. IMMEDIATELY sign the original application form and four copies in the signature space provided above.
2. Return the signed original application form and attachments to the applicant so that the applicant may submit the application form and attachments to NHDES by mail or hand delivery.
3. IMMEDIATELY distribute a copy of the application with one complete set of attachments to each of the following bodies: the municipal Conservation Commission, the local governing body (Board of Selectmen or Town/City Council), and the Planning Board.
4. Retain one copy of the application form and one complete set of attachments and make them reasonably accessible for public review.

DIRECTIONS FOR APPLICANT:
Submit the original permit application form bearing the signature of the Town/City Clerk, additional materials, and the application fee to NHDES by mail or hand delivery at the address at the bottom of this page. Make check or money order payable to “Treasurer – State of NH”.

STANDARD DREDGE AND FILL WETLANDS PERMIT APPLICATION ATTACHMENT A: MINOR AND MAJOR PROJECTS

Water Division/Land Resources Management

Wetlands Bureau

Check the Status of your Application

RSA/ Rule: RSA 482-A/ Env-Wt 311.10; Env-Wt 313.01(a)(1); Env-Wt 313.03

APPLICANT'S NAME: **Brickyard One Nominee Trust** **TOWN NAME:** Lebanon

Attachment A is required for *all minor and major projects*, and must be completed *in addition* to the Avoidance and Minimization Narrative or Checklist that is required by Env-Wt 307.11.

For projects involving construction or modification of non-tidal shoreline structures over areas of surface waters having an absence of wetland vegetation, only Sections I.X through I.XV are required to be completed.

PART I: AVOIDANCE AND MINIMIZATION

In accordance with Env-Wt 313.03(a), the Department shall not approve any alteration of any jurisdictional area unless the applicant demonstrates that the potential impacts to jurisdictional areas have been avoided to the maximum extent practicable and that any unavoidable impacts have been minimized, as described in the Wetlands Best Management Practice Techniques For Avoidance and Minimization.

SECTION I.I - ALTERNATIVES (Env-Wt 313.03(b)(1))

Describe how there is no practicable alternative that would have a less adverse impact on the area and environments under the Department's jurisdiction.

The project parcels total approximately 133.5 acres and are characterized by undeveloped forested slopes ascending to Quarry Hill in the west, overgrown gravel pathways and vegetated areas mixed with several small abandoned structures in the south, residential property containing a house and associated outbuildings in the north, and Hanover Street and abutting residential properties in the east. In the eastern central portion of the site lies Densmore Pond, an unnamed perennial stream, and associated wetlands.

When siting the development footprint, numerous factors were considered in its final location including site topography, the preservation of undeveloped undisturbed areas, minimization and avoidance of on-site natural resources (pond, stream, and wetlands), and utilization of previously disturbed areas associated with the former Densmore Brick Company operations.

The final and proposed footprint of development was selected as it confines disturbance to approximately 10% of the total site acreage (13.5 acres) and favors previously disturbed areas closest to existing adjacent residential development, Hanover Street, Interstate 89, and the Lebanon High School. It also entirely avoids impacts to Densmore Pond, a central feature of the Project site and wetlands directly bordering the pond. Vehicular access to the Site was also designed to be situated to the north and south of the pond and at the narrowest portions of on-site wetlands to avoid and minimize impacts. Lastly, site development in its current proposed location has also provided an opportunity to incorporate 12 acres of dedicated open space with public access as part of this Project. This open space is divided into two areas at the southern and northern end of the Project site and will also function equally to preserve wildlife crossings ensuring continued connectivity between existing corridors that are mapped through these areas of the Project site.

Design alternatives consist of siting the development footprint on other portions of the project parcels further west and/or south. This would have resulted in greater tree clearing, more significant site grading due to Site topography, and impacts to undisturbed, undeveloped and more natural areas associated with Quarry Hill. Shifting site development to the south would also have led to greater impacts to Wetland W-1, a large multi-class wetland located on-site. Finally, these alternatives would have also impacted the Project's ability to accommodate an Open Space Plan and maintain/preserve wildlife crossings.

SECTION I.II - MARSHES (Env-Wt 313.03(b)(2))

Describe how the project avoids and minimizes impacts to tidal marshes and non-tidal marshes where documented to provide sources of nutrients for finfish, crustacean, shellfish, and wildlife of significant value.

This section is not applicable to the proposed Project, as there are no known tidal or non-tidal marshes within or near the Project Site that provide sources of nutrients for finfish, crustacean, shellfish, and wildlife of significant value. The project requires impacts to PFO, PEM, and PSS wetland cover types commonly encountered in New Hampshire.

SECTION I.III - HYDROLOGIC CONNECTION (Env-Wt 313.03(b)(3))

Describe how the project maintains hydrologic connections between adjacent wetland or stream systems.

Project site drainage and overland flows generally move from west to east towards Densmore Pond and Hanover Street from the ridge associated with Quarry Hill on the western side of the Project site. Stormwater generated by the Project will be treated in accordance with NHDES AoT Rules. Runoff from the remaining areas outside of the development footprint will generally maintain their existing flow patterns to Densmore Pond and the outlet at the existing culvert under Hanover Street.

VHB completed a field geomorphic assessment and desktop hydrologic analysis based on the NHDES Stream Crossing Rules to understand existing site hydrology and model the proposed stream crossings to comply with FEMA and NHDES regulations. Final design of the two proposed Tier 3 stream crossings results in an improvement in existing hydraulic capacity and ability to accommodate the 100-year 24-hour design storm. The proposed hydraulic analysis predicts that water surface elevations will decrease for the 100-year 24-hour design storm. The two proposed crossing structures will be open-bottom culverts, with a design 19-foot channel including 2-foot wide overbanks for 15-foot bankfull width and wildlife crossing.

The Project also proposes to provide 75 linear feet stream bed and 150 linear feet of stream bank restoration by removing two abandoned debilitated culverts and restoring the stream bed to a 15-foot bankfull width to match upstream and downstream reaches. Finally, the project proposes to remove a partially functioning culvert conveying drainage from Wetland W-1 to the unnamed perennial stream and restoring the area with a naturally vegetated wetland swale. As such, the Project will both enhance and restore hydrologic connections between existing wetland and stream systems on-site while maintaining current flow patterns necessary to preserve the functions and values of on-site wetlands and bordering riparian areas.

SECTION I.IV - JURISDICTIONAL IMPACTS (Env-Wt 313.03(b)(4))

Describe how the project avoids and minimizes impacts to wetlands and other areas of jurisdiction under RSA 482-A, especially those in which there are exemplary natural communities, vernal pools, protected species and habitat, documented fisheries, and habitat and reproduction areas for species of concern, or any combination thereof.

The proposed project is consistent with above references rules. Minimization and avoidance measures were carefully considered during the project planning and design phase as further outlined in this Application while still complying with all required local and state development setbacks and professional engineering standards. Wetland impacts have been confined to the narrowest portions of Wetlands W-2 and W-3 required to install two new stream crossings, a narrow swale portion of Wetland W-1 to allow for culvert removal and wetland restoration, and edge impacts along an isolated roadside wetland resulting from installation of a pedestrian sidewalk; a requirement being driven by the City of Lebanon.

Impacts to Densmore Pond, wider more intact areas of Wetland W-2 and W-3 directly bordering Densmore Pond, and the majority of the large wetland complex (Wetland W-1) at the southern end of the Project site have been avoided. Additionally, the project incorporates the removal of three abandoned and debilitated culverts and resultant stream and wetland restoration which will improve natural channel flow, wetland drainage patterns, and overall hydrological connectivity between wetland and stream resources across the Project site.

No impacts are proposed to exemplary natural communities, vernal pools, protected species habitat, documented fisheries, and habitat and reproductions area for species of concern.

SECTION I.V - PUBLIC COMMERCE, NAVIGATION, OR RECREATION (Env-Wt 313.03(b)(5))

Describe how the project avoids and minimizes impacts that eliminate, depreciate or obstruct public commerce, navigation, or recreation.

The proposed project is located on privately owned land and therefore will not impact existing public commerce, navigation or recreation. Although no public recreation currently exists, opportunity to incorporate 12 acres of dedicated open space with public access is being proposed as part of this Project. The open space is divided into two areas at the southern and northern end of the Project site (8.3 acres and 3.7 acres, respectively) and may include trails, recreation (both active and passive) and future underground utility buildout. Further development such as streets, parking areas, residential or non-residential structures will not be permitted in these areas. Refer to the Open Space Plan included as part of the Project Plans in Appendix E of this Application.

SECTION I.VI - FLOODPLAIN WETLANDS (Env-Wt 313.03(b)(6))

Describe how the project avoids and minimizes impacts to floodplain wetlands that provide flood storage.

Federal Emergency Management Agency (FEMA) Mapped 100-Year Floodplain associated with Densmore Pond is mapped within the Project site. Additionally, FEMA mapped 100-year floodplain associated with a large wetland complex is located across Hanover Street (to the east and south) outside of the Project site. The NHDES WPPT identifies Densmore Pond as a Floodplain Wetland Adjacent to a Tier 3 Stream (Refer to Figure 2). Though this feature was delineated in the field as a fresh water pond (PUB3H), no impacts to this mapped PRA are proposed as part of this project. Delineated wetland resources bordering Densmore Pond and an associated unnamed Tier 3 stream are not included as part of the PRA mapping depicted on the WPPT. According to Env-Wt 103.68(c), a PRA is a jurisdictional area that is a floodplain wetland contiguous to a Tier 3 or higher watercourse. By interpretation of this rule, delineated Wetlands W-2 and W-3 bordering the unnamed Tier 3 stream and located within the hydrologic floodplain would be considered PRAs. Both temporary and permanent impacts are proposed to the narrowest segments of these wetlands bordering the unnamed Tier 3 stream at the locations of the two proposed culvert installations, however the project is considered a net positive as it will result in an improvement in existing hydraulic capacity and the ability of the watercourse to accommodate the 100-year 24-hour design storm event for FEMA and NHDES requirements. The proposed hydraulic analysis predicts that water surface elevations will decrease for the 100-year 24-hour design storm.

Additionally, the Project incorporates stream and wetland restoration through the removal of three abandoned debilitated culverts existing between Proposed New Tier 3 Crossing #1 and Hanover Street. These culverts currently represent significant obstruction to natural stream flow and wetland drainage patterns and through their removal, further enhancement of existing stream and wetland hydrology will be achieved.

SECTION I.VII - RIVERINE FORESTED WETLAND SYSTEMS AND SCRUB-SHRUB – MARSH COMPLEXES (Env-Wt 313.03(b)(7))

Describe how the project avoids and minimizes impacts to natural riverine forested wetland systems and scrub-shrub – marsh complexes of high ecological integrity.

The Project will not result in any impacts to natural riverine forested wetland systems as none exist within the Project site. Wetlands W-1, W-2 and W-4 proposed to be temporarily and permanently impacted do contain scrub-shrub (PSS) vegetative cover, however these wetlands exhibit common plant species and characteristics typical of previously disturbed and/or roadside wetlands in New Hampshire. These wetlands are not considered marsh complexes of high ecological integrity based on field observations due to the lack of semi permanent or permanent water saturation, lack of histic soil development, and lack of ecological integrity (lack of diversity and presence of invasive species).

SECTION I.VIII - DRINKING WATER SUPPLY AND GROUNDWATER AQUIFER LEVELS (Env-Wt 313.03(b)(8))

Describe how the project avoids and minimizes impacts to wetlands that would be detrimental to adjacent drinking water supply and groundwater aquifer levels.

Wetlands W-1 and W-4, as well as the lower segment of the unnamed perennial Tier 3 Stream (S-1) located on-site are partially underlain by the Middle Connecticut Aquifer with a transmissivity of <2,000 SF/day.

Only temporary impacts to restore a portion of Wetland W-1 that is currently being impacted by an existing debilitated, abandoned culvert are proposed. The culvert will be removed and the impacted portion of the wetland will be restored to a naturally vegetated wetland swale. Temporary impacts to Wetland W-1 are seen as beneficial at this location.

Minimal edge impact is proposed along the eastern side of Wetland W-4 in order to install a pedestrian sidewalk along Hanover Street. Wetland W-4 is small, isolated and exhibits characteristics typical of a roadside wetland including partial ditching and invasive species. Installation of the proposed sidewalk and resultant impact is also being driven by City of Lebanon's requirement at this location. By implementing a 1:1 slope with 2-foot shoulder in this area, the project design was able to further minimize impacts to Wetland W-4 to the maximum extent possible (from 615 square feet to 426 square feet).

Impacts to the unnamed Tier 3 perennial stream channel (S-1) will result from the installation of two new crossings to permit circular vehicular access to the proposed development. The two new crossings have been designed in accordance with the criteria outlined within the NHDES Stream Crossing Rules for Tier 3 crossings. Additionally, the project proposes to remove two abandoned deblitated culverts along this stream and restore approximately 75 feet of stream bed and associated banks to match upstream and downstream reaches. The two new stream crossings coupled with the restoration work will improve overall site hydrology, restore channel connectivity, and further stabilize the watercourse which will have a positive impact on the channel's water quality functions.

SECTION I.IX - STREAM CHANNELS (Env-Wt 313.03(b)(9))

Describe how the project avoids and minimizes adverse impacts to stream channels and the ability of such channels to handle runoff of waters.

The Project includes two new crossings over the unnamed perennial stream (S-1) that traverses from north to south through the Project Site. VHB completed a field geomorphic assessment and desktop hydrologic analysis based on the NHDES Stream Crossing Rules to understand existing site hydrology and model the proposed stream crossings to comply with FEMA and NHDES regulations. The two proposed crossing structures will be open-bottom culverts, with a design 19-foot channel including 2-food wide overbanks for 15-foot bankfull width and wildlife crossing. Final design of the two proposed Tier 3 stream crossings results in an improvement in existing hydraulic capacity and ability to accommodate the 100-year 24-hour design storm. The proposed hydraulic analysis predicts that water surface elevations will decrease for the 100-year 24-hour design storm (by up to 2.3 feet).

Additionally, the project incorporates the removal of three abandoned and debilitated culverts and resultant stream and wetland restoration which will improve natural channel flow, wetland drainage patterns, and overall hydrological connectivity between wetland and stream resources across the Project site.

SECTION I.X - SHORELINE STRUCTURES - CONSTRUCTION SURFACE AREA (Env-Wt 313.03(c)(1))

Describe how the project has been designed to use the minimum construction surface area over surface waters necessary to meet the stated purpose of the structures.

Not applicable - this Project does not propose any shoreline structures.

SECTION I.XI - SHORELINE STRUCTURES - LEAST INTRUSIVE UPON PUBLIC TRUST (Env-Wt 313.03(c)(2))

Describe how the type of construction proposed is the least intrusive upon the public trust that will ensure safe docking on the frontage.

Not applicable - this Project does not propose any shoreline structures.

SECTION I.XII - SHORELINE STRUCTURES – ABUTTING PROPERTIES (Env-Wt 313.03(c)(3))

Describe how the structures have been designed to avoid and minimize impacts on ability of abutting owners to use and enjoy their properties.

Not applicable - this Project does not propose any shoreline structures.

SECTION I.XIII - SHORELINE STRUCTURES – COMMERCE AND RECREATION (Env-Wt 313.03(c)(4))

Describe how the structures have been designed to avoid and minimize impacts to the public's right to navigation, passage, and use of the resource for commerce and recreation.

Not applicable - this Project does not propose any shoreline structures.

SECTION I.XIV - SHORELINE STRUCTURES – WATER QUALITY, AQUATIC VEGETATION, WILDLIFE AND FINFISH HABITAT (Env-Wt 313.03(c)(5))

Describe how the structures have been designed, located, and configured to avoid impacts to water quality, aquatic vegetation, and wildlife and finfish habitat.

Not applicable - this Project does not propose any shoreline structures

SECTION I.XV - SHORELINE STRUCTURES – VEGETATION REMOVAL, ACCESS POINTS, AND SHORELINE STABILITY (Env-Wt 313.03(c)(6))

Describe how the structures have been designed to avoid and minimize the removal of vegetation, the number of access points through wetlands or over the bank, and activities that may have an adverse effect on shoreline stability.

Not applicable - this Project does not propose any shoreline structures

PART II: FUNCTIONAL ASSESSMENT
REQUIREMENTS Ensure that project meets the requirements of Env-Wt 311.10 regarding functional assessment (Env-Wt 311.04(j); Env-Wt 311.10).
FUNCTIONAL ASSESSMENT METHOD USED: Functions and value assessments were inventoried and documented based on a descriptive, best professional judgement approach, with reference to the methodology recommended by the U.S. Army Corps of Engineers New England District- USACE Highway Methodology Workbook, dated 1993, together with the USACE New England District Highway Method Workbook Supplement, dated 1999
NAME OF CERTIFIED WETLAND SCIENTIST (FOR NON-TIDAL PROJECTS) OR QUALIFIED COASTAL PROFESSIONAL (FOR TIDAL PROJECTS) WHO COMPLETED THE ASSESSMENT: KRIS WILKES (NH CWS #288)
DATE OF ASSESSMENT: MARCH 2025
Check this box to confirm that the application includes a NARRATIVE ON FUNCTIONAL ASSESSMENT: ☒
For minor or major projects requiring a standard permit without mitigation, the applicant shall submit a wetland evaluation report that includes completed checklists and information demonstrating the RELATIVE FUNCTIONS AND VALUES OF EACH WETLAND EVALUATED. Check this box to confirm that the application includes this information, if applicable: ☒ Note: The Wetlands Functional Assessment worksheet can be used to compile the information needed to meet functional assessment requirements.

Application Narrative

1

Introduction

On behalf of Brickyard One Nominee Trust ("the Applicant"), this Wetlands Permit Application was prepared by VHB pursuant to the New Hampshire Revised Statutes Annotated (RSA) Chapter 482-A, Fill and Dredge in Wetlands, and Wetland Bureau Code of Administrative Rules, Chapters Env-Wt 100 through Env-Wt 900. This project is being submitted as a Major Impact Standard Dredge and Fill Wetlands Permit Application per Env-Wt 903.01(g)(1) since it involves two new Tier 3 stream crossings.

The applicant proposes to construct a new multi-family planned unit residential development ("the Project") with associated parking, stormwater management, utilities, landscaping, and pedestrian/vehicular access within the former Densmore Brickyard site located at 174 Hanover Street Extension and 238 Hanover Street (Map 48 Lots 1, 2, & 4 and Map 63 Lot 1) in Lebanon, New Hampshire. Refer to **Figure 1** attached for site location. The proposed development will be confined to approximately 13.5 acres near Hanover Street and will include five four-story residential apartment buildings over vehicular parking, totaling 422 units, and 51 townhomes arranged in six groupings. An additional building is proposed at the northeast corner of the Project site, which is anticipated to contain the development's leasing office and maintenance shop, while one residential unit for the on-site property manager is also proposed at the southern end of the site.

2

Site Description and Existing Conditions

The Project site is located within Lots 1, 2 and 4 on Lebanon Tax Map 48 and within Lot 1 on Lebanon Tax Map 63 located at 174 Hanover Street Extension and 238 Hanover Street in Lebanon, New Hampshire. All four parcels total approximately 133.5 acres; however, Project development will be confined to an approximate 13.5 acre area to the north, south, and west of Densmore Pond, which is located on the site and was created from previous brick manufacturing activities associated with the former Densmore Brick Company's mining and manufacturing facility. West of the Project site is mapped as hemlock-hardwood forest that ascends in elevation to Quarry Hill, while the southern boundary of the Project site abuts a commercially developed property, Interstate 89 and an existing overhead electric transmission line right-of-way. The northern boundary of the Project site abuts several developed residential parcels and more undeveloped forest, while the eastern boundary of the Project site abuts Hanover Street with Lebanon High School located across the street. The overall property that the Project site is situated within includes four local zoning districts; however, all work is proposed within Lebanon's Residential 1 (R-1), Residential 3 (R-3), and Residential Office 1 (RO-1) districts.

The area proposed for development is forested with rocky outcroppings and boulder fields surrounded by scattered materials associated with the discontinued brick company operations. The southwestern-most portion of the Project site consists of overgrown gravel pathways and several small, abandoned structures interspersed with grassy vegetated areas. The northeastern-most portion of the Project site contains a residential house at 238 Hanover Street, along with several outbuildings. Project site topography includes significant grade changes, generally sloping down from west to east. Densmore Pond, an unnamed associated perennial stream, and wetland resource areas are situated at the low point of the Project site near Hanover Street. A trail system is present north and northwest of the Project site. The Project site is proximate to I-89 access, the Hanover Street School and Lebanon High School, and is within two miles of Dartmouth Hitchcock Medical Center.

2.1 Natural Resource Desktop Review

The following information is based on a review of the NHDES Wetlands Permit Planning Tool (WPPT).

Priority Resource Areas

The WPPT identifies Densmore Pond as a Floodplain Wetland Adjacent to a Tier 3 Stream (Refer to **Figure 2**). Though this feature was delineated in the field as a fresh water pond (PUB3H), no impacts to this mapped PRA are proposed as part of this project. Delineated wetland resources bordering Densmore Pond and an associated unnamed Tier 3 stream are not included as part of the PRA mapping depicted on the WPPT. According to Env-Wt 103.68(c), a PRA is a jurisdictional area that is a floodplain wetland contiguous to a Tier 3 or higher watercourse. By interpretation of this rule, delineated Wetlands W-2 and W-3 bordering the unnamed Tier 3 stream and located within the hydrologic floodplain would be considered PRAs. Both temporary and permanent impacts are proposed to the narrowest segments of these wetlands bordering the unnamed Tier 3 stream at the locations of the two proposed culvert installations, however the project is considered a net positive as it will result in an improvement in existing hydraulic capacity and the ability of the watercourse to accommodate the 100-year 24-hour design storm event for FEMA and NHDES requirements.

Further details regarding impacts are included in **Section 3.6** and **Section 4** of this **Application Narrative**.

Conservation Lands

There are no conservation or public lands within the vicinity of the Project site.

Impaired Waters

There are no listed impaired waters within close proximity of the Project site.

Designated Rivers

There are no Designated Rivers or associated quarter mile buffers that intersect or abut the Project site. Therefore, no coordination with a Local River Advisory Committee is required.

Floodplains

Federal Emergency Management Agency (FEMA) Mapped 100-Year Floodplain associated with Densmore Pond is mapped within the Project site. Additionally, FEMA mapped 100-year floodplain associated with a large wetland complex is located across Hanover Street (to the east and south) outside of the Project site. Refer to **Figure 3**.

Ranked Wildlife Habitat - Wildlife Action Plan

The NH Fish & Game Department (NHF&G) has developed the New Hampshire Wildlife Action Plan (WAP) to assist with conserving and protecting wildlife species and habitat types throughout the State. The WAP identifies ranked habitat tiers that recognize the highest quality habitats in the state. Habitat tiers were created by the NHF&G Department using biological data, landscape data, and human influence information. Habitat tiers are separated into three rankings, which are 1) *Highest Ranked Habitat in the State*, 2) *Highest Ranked Habitat in Biological Region*, and 3) *Supporting Landscape*. There are no mapped occurrences of Highest Ranked Habitat in NH or the Region within the Project site; however, portions of the site to the west and southwest of Densmore Pond intersect mapped Supporting Landscape. Refer to **Figure 4.**

NHF&G Mapped Habitat Types intersecting and surrounding the Project site primarily consist of Developed Impervious or Developed/Barren Land to the north, east and south, and hemlock-hardwood pine to the west. Hemlock-hardwood-pine is the most common mapped forest type in New Hampshire. Refer to **Figure 5**. NHFG Mapped Wildlife Terrestrial and Riparian Corridors also intersect the Project site to the south of Densmore Pond.

2.2 Delineated Natural Resources

Jurisdictional wetlands within the site were delineated by Goddard Consulting LLC in July 2023. Wetland delineations were performed in accordance with the procedures and standards outlined in the *1987 Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region,* Version 2.0 (January 2012). Hydric soil indicators, vegetation changes, hydrological indicators, and topography were all considered for delineation purposes. For more information regarding the on-site wetland delineation, see Goddard Consulting's **Wetland Border Report** provided in ***Appendix A***. In addition to Goddard Consulting's delineation, VHB NH Certified Wetland Scientist, Nicole Martin (CWS #316), conducted a site walk on September 24, 2024, to spot check the prior delineation linework, take natural resource and general site photos, and collect adequate natural resource notes to support this permitting effort. Those notes are summarized in the narrative below.

Delineation field work included four wetlands, two segments of a perennial stream, and one pond as depicted on the **Delineated Natural Resources Overview Figure** provided as **Figure 6**. **Representative Site Photographs** of these features are provided in ***Appendix B***.

2.2.1 Wetlands

Wetland 1

Wetland 1 (W-1) is located within the southern portion of the site and is classified mainly as Palustrine, Scrub-Shrub, Broad-Leaved Deciduous, Seasonally Flooded/Saturated (PSS1E) with some areas of Palustrine, Forested, Broad-Leaved Deciduous/Needle-Leaved Evergreen, Seasonally Flooded/Saturated (PFO1/4E) due to tree canopy overhang. This wetland consists of a large expansive area within an abutting distribution utility right-of-way along the southern edge of the site, while the northern portions of this wetland are comprised of a network of overgrown linear swales. Dominant vegetation observed within Wetland 1 includes sensitive fern (*Onoclea sensibilis*), marsh fern (*Thelypteris palustris*), narrowleaf cattail (*Typha angustifolia*), wool grass (*Scirpus cyperinus*), hop sedge (*Carex lupulina*), jewelweed (*Impatiens capensis*), soft rush (*Juncus effusus*), speckled alder (*Alnus incana*), silky dogwood (*Cornus amomum*), white meadowsweet (*Spiraea alba*), and a species of willow (*Salix* sp.), along with the invasive glossy buckthorn (*Frangula alnus*), purple loosestrife (*Lythrum salicaria*), multiflora rose (*Rosa multiflora*), common reed (*Phragmites australis*), and a species of honeysuckle (*Lonicera* sp.). Soils sampled within Wetland 1 met the depleted matrix (F3) hydric soil indicator, with some gleyed soil present as well. Observed indicators of wetland hydrology include surface water (A1), saturation (A3), water-stained leaves (B9), drainage patterns (B10), and geomorphic position (D2). An existing abandoned, debilitated five foot (60 inch) corrugated metal pipe culvert exists along the northern side of easternmost swale of Wetland W-1 closest to Hanover Street and conveys wetland drainage to the unnamed perennial stream located to the north.

Wetland 2

Wetland 2 (W-2) borders Densmore Pond and the unnamed Tier 3 stream and is classified as PSS1E. Dominant vegetation observed within Wetland 2 includes sensitive fern, marsh fern, wool grass, soft rush, hop sedge, fringed sedge (*Carex crinita*), silky dogwood, and speckled alder, along with the invasive glossy buckthorn and purple loosestrife. Black highly saturated hydric soils were sampled within Wetland 2 that consisted of a mucky loam texture. Observed indicators of wetland hydrology include surface water (A1), high water table (A2), saturation (A3), drainage patterns (B10), and geomorphic position (D2).

Wetland 3

Wetland 3 (W-3) borders the unnamed Tier 3 stream in the northern portion of the Project site (north of Densmore Pond) and is classified as Palustrine, Forested, Broad-Leaved Deciduous/Needle-Leaved Evergreen, Seasonally Flooded (PFO1/4C). This wetland, as delineated, contains faint drainages amidst upland humps along the unnamed stream channel. Dominant vegetation observed within Wetland 3 includes cinnamon fern (*Osmundastrum cinnamomeum*), sensitive fern, speckled alder, some Christmas fern (*Polystichum acrostichoides*) and American hazelnut (*Corylus americana*), along with the invasive glossy buckthorn. Soils sampled within Wetland 3 met the redox dark surface (F6) hydric soil indicator. Observed indicators of wetland hydrology include saturation (A3), water-stained leaves (B9), drainage patterns (B10), and geomorphic position (D2). Some potential vernal pool habitat was observed to be present within the northern portion of Wetland 3 outside of the project footprint during VHB's site visit.

Wetland 4

Wetland 4 (W-4) borders Hanover Street in the northern portion of the Project site (northeast of Densmore Pond) and is classified as Palustrine, Emergent, Persistent, Seasonally Saturated / Palustrine Scrub-Scrub, Broad-Leaved Deciduous, Seasonally Saturated (PEM1B/PSS1B). Dominant vegetation observed within Wetland 4 includes sensitive fern, jewelweed, bittersweet nightshade (*Solanum dulcamara*), New England aster (*Symphyotrichum novae-angliae*), and silky dogwood, along with the invasive Japanese knotweed (*Reynoutria japonica*) and glossy buckthorn. Soils sampled within Wetland 4 met the depleted matrix (F3) and redox dark surface (F6) hydric soil indicators. Observed indicators of wetland hydrology include saturation (A3) and geomorphic position (D2), as this wetland is likely saturated at wetter times of year.

2.2.2 Waterbodies

Densmore Pond

Densmore Pond is a central feature of the Project site, comprising approximately 5 acres and abutting Hanover Street to the west. The pond is classified as Palustrine, Unconsolidated Bottom, Mud, Permanently Flooded (PUB3H). The pond is approximately 260 feet at its widest point and approximately 830 feet long and once served the former Densmore Brickyard which operated from 1883 until the early 1970's. Pond banks are densely vegetated with woody shrubs and saplings including invasive plant species at the north and south end of the pond with larger tree associated with intact forest along the pond's western side. Bordering palustrine scrub-shrub, emergent and forested wetlands as described above are also present along the pond's edge.

Unnamed Perennial Stream (S-1)

An unnamed perennial stream channel, identified as S-1, flows into and out of Densmore Pond as it traverses from north to south through the Project site. Delineated upper and lower segments of the stream to the north and south of Densmore Pond are classified as Riverine, Upper Perennial, Unconsolidated Bottom, Cobble-Gravel, Excavated (R3UB1x). Average stream width ranges from ten to twenty feet and dominant substrate consists of cobble-gravel. The watershed area of the unnamed stream is approximately 1.2 square miles (774 acres) according to USGS StreamStats and thus the channel is classified as a Tier 3 stream according to the NHDES Stream Crossing Rules (Chapter Env-Wt 900). VHB's geomorphic assessment of this stream found that the channel is a Type C3 stream under the Rosgen Classification (Applied River Morphology, Rosgen, 1996). Refer to the **Stream Crossing Worksheets** included as part of the **Brickyard Hydraulics Memorandum** in as ***Appendix C*** for more information.

Two abandoned and debilitated culverts exist along the southern delineated segment of the unnamed stream before it outlets underneath Hanover Street. Debilitated existing culvert #1 is a 56-foot long 5-foot diameter re-used chimney. Debilitated existing culvert #2 is a 19-foot long 4.5-foot diameter corrugated metal pipe with granite blocks for headwalls. Both culverts represent significant current obstructions to natural channel flow. Additionally, a third abandoned, debilitated 5-foot diameter corrugated metal pipe culvert is located along the southern/western bank of the stream channel and conveys drainage to the stream channel from Wetland W-1 located to the south.

2.2.3 Functional Assessment

Functions and values for wetlands proposed to be impacted were assessed using data collected in the field by VHB Environmental Scientist, Nicole Martin (NH CWS #316), in accordance with the *U.S. Army Corps of Engineers New England District - The Highway Methodology Workbook Supplement: Wetland Functions and Values - A Descriptive Approach* (1999). Although not proposed to be impacted, Densmore Pond was also included in the assessment due to its central location on the project site. Thirteen wetland functions and values are recognized under the USACE methodology. Additionally, a fourteenth (Ecological Integrity) is called out in NHDES rules and evaluated through the *University of New Hampshire Cooperate Extension's Method for Inventorying and Evaluating Freshwater Wetlands in New Hampshire* (December 2015). Function and values are as follows:

- Groundwater Recharge/Discharge (GW)
- Floodflow Alteration (Storage & Desynchronization) (FA)
- Fish and Shellfish Habitat (FS)
- Sediment/Toxicant Pathogen Retention(SR)
- Nutrient Removal/Retention/Transformation(NR)
- Production Export (Nutrient)(PE)
- Sediment/Shoreline Stabilization(SS)
- Wildlife Habitat(WH)
- Recreation (Consumptive & Non-Consumptive)(RE)
- Educational/Scientific Value(ED)
- Uniqueness/Heritage(UH)
- Visual Quality/Aesthetics(VQ)
- Threatened or Endangered Species Habitat (ES)
- Ecological Integrity (EI) (***NHDES Rule Requirement**)

The USACE Highway Methodology provides a list of considerations and qualifiers that are used to assess the occurrence of each function or value, followed by a subjective determination of Principal Functions and Values, with documentation of supporting rationale on standard forms. Refer to the **Wetland Function-Value Evaluation Forms** provided in ***Appendix D***.

The NH Method evaluates twelve wetland functions, including Ecological Integrity, through a series of datasheets that result in assigned average scores for each function.

In accordance with the USACE Highway Methodology practices, functions are either assigned a P for Principal Function provided by the wetland, an X for function provided by the wetland, or left blank to indicate that the function is not provided by the wetland. The results of these assessments are displayed in **Table 1** below.

Table 1 Wetland Functions and Values

Wetland ID	Approximate Total Wetland Area (acres)[1]	Cowardin Class	GW	FA	FS	SR	NR	PE	SS	WH	RE	ED	UH	VQ	ES
W-1	1.6	PSS1E/PFO1/4E	P	P	-	P	P	X	-	P	-	-	-	-	-
W-2	0.43	PSS1E	X	P	P	P	P	X	X	P	-	-	-	-	-
W-3	0.57	PFO1/4C	X	P	X	X	X	X	P	P	-	-	-	-	-
W-4	0.23	PEM1B/PSS1B	X	-	-	X	X	-	-	P	-	-	-	-	-
Densmore Pond	4.9	PUB3H	P	P	P	P	P	X	-	P	X	X	X	-	-
Unnamed Perennial Stream S-1	N/A	R3UB1x	X	X	X	-	-	X	-	P	-	-	-	-	-

1 Wetland area represents the delineated extent of the wetland with respect to the project area.

The NH Method evaluates twelve wetland functions, including Ecological Integrity, through a series of datasheets that result in assigned average scores for each function. Average scores for Ecological Integrity for each resource are further outlined in **Table 2** below.

Table 2 NH Method Ecological Integrity Score

Wetland ID	W-1	W-2	W-3	W-4	Unnamed Perennial Stream	Densmore Pond
Evaluation Question 1	5	5	5	5	5	5
Evaluation Question 2	5	10	10	5	5	10
Evaluation Question 3	10	10	10	10	10	10
Evaluation Question 4	10	10	10	10	10	10
Evaluation Question 5	10	10	10	10	5	10
Evaluation Question 6	1	1	1	1	1	5
Evaluation Question 7	1	1	5	1	1	5
Evaluation Question 8	1	1	1	1	1	1
Evaluation Question 9	1	1	1	1	1	1
Evaluation Question 10	5	10	10	5	1	5
Average Score	**4.9**	**5.9**	**6.3**	**4.9**	**4**	**6.2**

2.3 Watersheds, Floodplains, and Hydraulics

The proposed project includes two new crossings over the unnamed perennial stream (S-1) described in **Part 2.2** of this **Application Narrative**. The proposed design of these crossings is not required to comply with New Hampshire Department of Transportation (NHDOT) standards, however, NHDOT Bridge Design Manual Chapter 2.7 was used to provide analysis guidance and best practices.

The watershed area of the unnamed stream was calculated at 1.2 square miles (774 acres) according to USGS StreamStats and thus the channel is classified as a Tier 3 stream according to the NHDES Stream Crossing Rules (Chapter Env-Wt 900). As such, the proposed stream crossings are subject to all criteria within the NHDES Stream Crossing Rules for Tier 3 crossings. The NHDES Stream Crossing Rules for Tier 3 crossings state that structures must accommodate the 100-year 24-hour design storm, have an entrenchment ratio greater than 2.2 (for this Rosgen Channel Type - Type 3C), and provide a bridge span, open-bottom culvert, or closed bottom culvert with stream simulation. Accommodating the 100-year 24-hour design storm is interpreted as providing conveyance of the 100-year design flow while under normal flow, not pressure flow.

The proposed development is located within the Federal Emergency Management Agency (FEMA) Special Flood Hazard Area, Zone A of the unnamed perennial stream with no established base flood elevations and discharges to the Mascoma River. The hydraulic analysis complies with the FEMA Zone A (FEMA 44 CFR 60.3(c)(10)) requirements by confirming that the proposed development will not increase the water surface elevation of the base flood by more than one foot (water surface elevations will in fact decrease by up to 2.3 feet for the 100-year 24-hour design storm).

For further details regarding the hydraulic analysis performed for the project, please refer to the **Brickyard Hydraulics Memorandum** completed by Annique Fleurock, P.E., included as ***Appendix C.***

2.4 Upland Areas of the Site

Upland portions of the Project site are dominantly forested. Typical upland vegetation observed within forested portions of the Project site include wintergreen (*Gaultheria procumbens*), common witch hazel (*Hamamelis virginiana*), eastern hemlock (*Tsuga canadensis*), sugar maple (*Acer saccharum*), red oak (*Quercus rubra*), American beech (*Fagus grandifolia*), various species of goldenrod (*Solidago sp*.), eastern white pine (*Pinus strobus*), and glossy buckthorn (*Frangula alnus*).The forest contains mature trees (dominated by eastern hemlock) with a very sparse and in some areas absent understory with many scattered rocks and boulders. Approximately 11.68 acres of upland tree clearing is proposed as part of this project.

2.5 Property Ownership and Abutters

The proposed project will be contained within parcels identified as Lots 1, 2, and 4 on Lebanon Tax Map 48 and Lot 1 identified on Lebanon Tax Map 63. Property lines are included in the **Project Plans** provided in ***Appendix E*** as required**.**

Abutter Notification

In accordance with Env-Wt 306.06(a), all abutting property owners have been notified via certified mail. Refer to ***Appendix F*** for a map and list of abutting properties, sample abutter notification letter, and certified mail receipts.

3

Project Description and Avoidance & Minimization

The Project involves a new multi-family planned unit residential development with associated parking, stormwater management, utilities, landscaping, and pedestrian/vehicular access within the former Densmore Brickyard site located at 174 Hanover Street Extension and 238 Hanover Street (Map 48 Lots 1, 2, & 4 and Map 63 Lot 1) in Lebanon, New Hampshire. Of the 133.5 total site acreage, the proposed development will be confined to approximately 13.5 acres closest to Hanover Street and will include five four-story residential apartment buildings over vehicular parking, totaling 422 units, and 51 townhomes arranged in six groupings. An additional building is proposed at the northeast corner of the Project site, which is anticipated to contain the development's leasing office and maintenance shop, while one residential unit for the on-site property manager is also proposed at the southern end of the site. Refer the **Project Plans** provided in ***Appendix E*** for detailed information.

The proposed buildings associated with project development are arranged south, west and north of the existing waterbody on the property, Densmore Pond. The five four-story residential apartment buildings are proposed at the south end of the development, with expanses of surface parking surrounding the structures. The six groupings of 51 townhomes are proposed to be situated in two parallel rows north of the multi-family buildings. A paved access drive and townhome parking are proposed between the rows of townhouses. One additional building, known as the Maintenance Building, is located at the northeast corner of the Project site. Additional site improvements include a looped driveway accessed via Hanover Street at both ends of the proposed development, additional surface parking throughout the Project site, and parking below the five apartment buildings.

Multiple existing buildings on-site associated with the former Densmore Brickyard and primarily located in the southeastern portion of the site will be razed and demolished as part of project construction. Existing kilns associated with the former brickyard are situated south of the proposed development and

are to be preserved as-is. All other affiliated structures within the Project site limits are to be demolished, along with a residential property at 238 Hanover Street, located at the northeast corner of the site.

3.1 Stormwater Management

The project is subject to an NHDES Alteration of Terrain (AoT) Permit due to land disturbance in excess of 100,000 square feet. As part of the AoT permit process, stormwater design and management in compliance with NHDES Rules have been developed for the Project site.

Site drainage and overland flows generally move from west to east towards Densmore Pond and Hanover Street from the ridge associated with Quarry Hill on the western side of the site. The site is southeast of the Landmark Tract/Boston Lot and sees flows coming off of the elevated areas of the lot. Slopes are generally in excess of 3:1 once west of Densmore Pond on the site.

The development is proposing the construction of one surface basin and two subsurface chamber systems to provide stormwater treatment and peak rate mitigation. Infiltration will be utilized where possible. The development has been designed to direct the stormwater runoff from most of the site's impervious areas to provide stormwater treatment and peak rate attenuation. Runoff around the site is directed to catch basins and enters underground infiltration systems or bioretention area for the proper treatment. Runoff from the remaining areas within the study area will generally maintain their existing flow patterns to Densmore Pond and the outlet at the existing culvert under Hanover Street.

The proposed development increases the amount of impervious area from that of the existing conditions; as a result, the runoff curve numbers will increase for the proposed conditions. The higher curve numbers will increase the calculated stormwater runoff rate from that of the existing site, therefore, stormwater detention chambers and basins have been proposed for this project. This detention volume will mitigate the increased stormwater runoff rates by using outlet control structures to reduce the proposed stormwater discharge rates from the site. Additionally, one of the detention chambers has been designed to permit infiltration, which will provide stormwater treatment for the majority of the proposed development's stormwater runoff by percolating runoff through soils, removing pollutants and sediment. The other subsurface detention system includes a sand filter beneath the chambers to provide water quality treatment.

The Stormwater Management System contains several Best Management Practices (BMPs) that will provide treatment of site generated stormwater runoff. The proposed BMPs include a bioretention basin system with sediment forebay, a subsurface infiltration basin using chambers, and a subsurface filter system using a sand filter.

By implementing standard stormwater management techniques, the proposed development will successfully mitigate its impacts on peak stormwater runoff rates. Furthermore, stormwater quality issues will be addressed through the proposed implementation of standard practices (infiltration basins, etc.) that are accepted by the both the City of Lebanon and the NHDES AoT Bureau. The Project complies with the minimum groundwater recharge requirement, water quality volume requirements, and treatment rates via the utilization of bioretention basins and the subsurface infiltration basins.

3.2 Best Management Practices

Prior to the start of construction, the selected contractor shall be responsible for the installation of wildlife friendly erosion and sediment perimeter controls in accordance with permitting plans and details, NHDES permit conditions, and the New Hampshire Stormwater Manual (February 2025). Additional temporary erosion control BMPs will be implemented as needed throughout the duration of construction in order to prevent off-site tracking and waterborne loss of earth sediment and debris. The specific measures proposed as part of the Project are depicted on the Erosion and Sediment Control Plans (Sheets C4.1, C4.2, C5.0, C5.1, C5.2, C5.3) included in the **Project Plans** in ***Appendix E***.

All equipment and material laydown/temporary staging areas required during construction will be confined to uplands well outside the jurisdictional limits of existing delineated natural resources on-site. Designated stockpiling/storage locations will be established at the commencement of construction and will be contained using appropriate wildlife friendly perimeter controls. Soils to be stockpiled or other areas to remain exposed for a period of more than 30 days shall be temporarily seeded and mulched. Additionally, perimeter controls (silt fence) shall be installed surrounding soil stockpiles. Fugitive dust generated from on-site soil disturbance will be controlled through the use of water. The location and design of temporary sediment basins to control stormwater runoff and dewatering practices during the construction period shall meet NHDES requirements and be approved by the Project Engineer prior to installation.

All ditches, swales and drainage basins shall be stabilized prior to directing runoff to them. All roadways and parking lots shall be stabilized within 72 hours of achieving finished grade. All cut and fill slopes shall be loamed and seeded within 72 hours of achieving finished grade. Erosion control blankets shall be installed on all slopes that are greater than 3 feet horizontal and 1 foot vertical (3:1).

Erosion controls will be inspected daily by the contractor, and weekly and after 0.25" of rainfall by a qualified monitor to ensure that the controls are maintained and are properly functioning throughout the duration of construction.

Upon the completion of the proposed work, all disturbed and graded areas located upslope of the erosion control measures will be permanently stabilized by one or more of the following measures:

- Access: Driveways and access roads will be stabilized with bituminous concrete pavement or the applicable surface cover.
- Landscaped Areas: All disturbed areas, not permanently stabilized by pavement or buildings, will be covered with bark mulch, stone, sod or a minimum of six (6) inches of topsoil and seeded.
- Pipe Outlets: Scour protection (riprap) shall be constructed at the headwall outlet to prevent scouring.

Additionally, depending on the timing of construction, other measures specific to over-winter stabilization, such as the implementation of non-vegetative stabilization (the application of wood mulch or an erosion control seed mix) and an increase in application rates of temporary cover may be recommended. After October 15th, incomplete parking areas where active construction has stopped for the winter shall be protected with a minimum 3-inch layer of base course gravels.

Upon completion of construction and establishment of permanent site stabilization, erosion control measures will be removed and installed drainage and sewer systems will be inspected to ensure that they are free of sediment and debris prior to site demobilization.

3.3 Construction Sequencing/Project Schedule

Construction sequencing will ensure that disturbed soils are exposed for a minimum amount of time before they are covered, seeded, or otherwise stabilized to prevent erosion. The smallest practical area shall be disturbed during construction, but at no time shall the total unstabilized area on-site be greater than 5 acres in accordance with NHDES AoT Rules.

As such and in accordance with NHDES AoT Rules, the project will be completed in two phases. Phase 1 of the Project is expected to commence in 2025 and extend into 2026 and will involve installation of erosion controls, demolition of existing buildings associated with the former Densmore Brickyard, tree clearing, and construction of utilities, roadway and stormwater infrastructure. Phase 2 of the Project is slated for 2026 through 2030 and will involve construction of the four apartment buildings, 51 townhomes, maintenance building, and the one residential unit for the on-site property manager.

3.4 Invasive Species Management

Several invasive plants are known to occur within the Project site based on observations made by VHB. Species include glossy buckthorn (*Frangula alnus*), a species of honeysuckle (*Lonicera* spp.), multiflora rose (*Rosa multiflora*), purple loosestrife (*Lythrum salicaria*), Japanese knotweed (*Reynoutria japonica*), Japanese barberry (*Berberis thunbergii*), Autumn olive (*Elaeagnus umbellata*), and common reed (*Phragmites australis*). Invasive species management during construction will adhere to guidance provided in NHDOT's *Best Management Practices for Roadside Invasive Plants Manual* (2008) and *Best Management Practices for the Control of Invasive and Noxious Plant Species* (2018).

Only clean equipment that is free of plant material and debris shall be delivered to the Site and utilized during construction. All machinery entering and leaving any area containing invasive plants will be inspected for foreign plant matter (i.e., stems, flowers, and roots) and soil embedded in the tracks or wheels. If foreign plant matter or soil is present, the operator shall remove the plant material and soil from the machine using hand tools to minimize the spread of invasive species from one area to another.

3.5 Impact Analysis & Avoidance and Minimization

The proposed project has been carefully designed to avoid and minimize wetland impacts in accordance with Env-Wt 311.07 and Env-Wt 313.03 on the developable portion of the property with a goal of helping address the critical need for housing in the Upper Valley area. The proposed development footprint utilizes only ten percent of the total project parcel acreage (13.5 acres out of a total of 133.5 acres) and has been sited within areas of the site previously disturbed by the former Densmore Brickyard. Additionally, the development has been situated within the eastern half of the project parcels closest to existing adjacent residential development, Hanover Street, Interstate 89 and the Lebanon High School while entirely avoiding impacts to Densmore Pond and wetlands directly bordering the pond.

Additionally, no permanent impacts are proposed to Wetland W-1, a large multiclass wetland located at the southern end of the Project site.

Siting the development footprint in its current location has also provided opportunity to incorporate 12 acres of dedicated open space with public access as part of this Project. The open space is divided into two areas at the southern and northern end of the Project site (8.3 acres and 3.7 acres, respectively) and may include trails, recreation (both active and passive) and future underground utility buildout. Further development such as streets, parking areas, and residential or non-residential structures will not be permitted in these areas. More importantly, this open space will also function equally to preserve wildlife crossings ensuring continued connectivity between existing corridors that are mapped through these areas of the Project site. Refer to the Open Space Plan included as part of the **Project Plans** in ***Appendix E***.

3.5.1 Wetland Impacts

Proposed wetland impacts have been minimized to the maximum extent practicable and include the following:

- Temporary (205 square feet) and permanent impacts (405 total square feet) are proposed to narrow bordering wetland areas (Wetlands W-2 & W-3) present at the two proposed Tier 3 Stream Crossings. By designing these stream crossings at the narrowest portions of Wetlands W-2 and W-3 will preserve the wider more intact portions of these wetlands directly bordering Densmore Pond. Installation of these crossings have been designed in accordance with the NHDES Stream Crossing Rules and will result in positive hydraulic benefits through the Project site by decreasing water surface elevations by up to 2.3 feet for the 100-year 24-hour design storm, providing a span of 1.3 times the bankfull width, and constructing 2-foot benches on either side of the channel for wildlife crossings at both locations. The net benefits of enhanced hydrological connectivity coupled with the preservation of wildlife movement between on-site wetlands, the unnamed perennial stream, and adjacent uplands are seen as outweighing the minor amount of wetland impacts proposed.
- Minor temporary impact (48 SF) is proposed to the easternmost swale portion of Wetland W-1 in order to remove an abandoned and debilitated five foot (60-inch) diameter culvert that partially conveys drainage from Weland W-1 to the unnamed perennial stream located to the north. Removal of the culvert will provide improved hydrological connectivity between the wetland and the stream through creation and restoration of a naturally vegetated wetland swale in replacement of the old non-functioning culvert.
- Minimal edge impact is proposed along the eastern side of Wetland W-4 in order to install a pedestrian sidewalk along Hanover Street. Wetland W-4 is small, isolated and exhibits characteristics typical of a roadside wetland including partial ditching and invasive species. Installation of the proposed sidewalk and resultant impact is also being driven by City of Lebanon's requirement at this location. By implementing a 1:1 slope with 2-foot shoulder in this area, the project design was able to further minimize impacts to Wetland W-4 to the maximum extent possible (from 615 square feet to 426 square feet).

Table 2 Wetland Impact Summary

Resource ID	Cowardin Classification	Proposed Activity Resulting in Impact	Type of Impact	Amount of Impact (SF)
W-1	PSS1E	Culvert Removal and Wetland Restoration	Temporary Impact	48 SF
W-2	PSS1E	New Tier 3 Stream Crossing Installation	Temporary Wetland	135 SF
			Permanent Wetland	210 SF
W-3	PFO1/4C	New Tier 3 Stream Crossing Installation	Temporary Wetland	70 SF
			Permanent Wetland	195 SF
W-4	PEM1B/PSS1B	Sidewalk Installation (City Requirement)	Permanent Wetland	426 SF
		TOTAL:	**Temporary:**	**253 SF**
			Permanent:	**831 SF**

3.5.2 Stream Impacts

Impacts to an unnamed Tier 3 perennial stream channel (S-1) will result from the installation of two new crossings to permit circular vehicular access to the proposed development. The two new crossings have been designed in accordance with the criteria outlined within the NHDES Stream Crossing Rules for Tier 3 crossings which is further described in **Section 5: Project Specific Requirements** below. Temporary and permanent bed and bank impacts to the unnamed Tier 3 Stream have been calculated at each crossing location as outlined in **Table 3** below.

Table 3 Stream Impact Summary

Resource ID	Cowardin Classification	Proposed Activity	Impact Location	Impact Type	Impact Quantity (SF/LF)
Perennial Stream S-1	R3UB1x	New Tier 3 Stream Crossing #1	Bed	Temporary	334 SF / 20 LF
			Bank	Temporary	47 LF
			Bed	Permanent	974 SF/68 LF
			Bank	Permanent	136 LF
Perennial Stream S-1	R3UB1x	New Tier 3 Stream Crossing #2	Bed	Temporary	740 SF/50 LF
			Bank	Temporary	100 LF
			Bed	Permanent	612 SF/ 64 LF
			Bank	Permanent	128 LF
		TOTALS:	**Bed**	**Temporary**	**1,074 SF / 70 LF**
			Bank	**Temporary**	**147 LF**
			Bed	**Permanent**	**1,586 SF / 132 LF**
			Bank	**Permanent**	**264 LF**

3.5.3 Restoration Impacts

Although stream and wetland impacts are proposed, the Project Applicant has further demonstrated a commitment to minimizing impacts while providing net benefit through the incorporation of stream and wetland restoration as a component of this Project. Although not necessary to facilitate project construction, the Project Applicant has chosen to address three abandoned debilitated culverts existing between Proposed New Tier 3 Crossing #1 and Hanover Street. Debilitated existing culvert #1 is a 56-foot long 5-foot diameter re-used chimney, debilitated existing culvert #2 is a 19-foot long 4.5-foot diameter corrugated metal pipe with granite blocks for headwalls, and debilitated existing culvert #3 is a 5-foot diameter corrugated metal pipe.

Culverts #1 and 2 currently represent significant obstruction to natural channel flow and through removal, further enhancement of existing stream and wetland hydrology will be achieved. The removal of these two culverts will be coupled with restoration at both locations to stabilize the streambed and restore bankfull width to 15 feet to tie into upstream and downstream reaches. In order to complete the culvert removal and stream bed restoration work, temporary impacts are proposed to the perennial stream bed and banks at both locations as further outlined in **Table 4** below.

Culvert #3 currently represents a partially functioning pipe that conveys drainage from Wetland W-1 to the unnamed perennial stream located to the north. Removal of the culvert will provide improved hydrological connectivity between the wetland and the stream through creation and restoration of a naturally vegetated wetland swale in replacement of the old non-functioning culvert. In order to

complete the culvert removal and wetland restoration work, a small amount of temporary impact to Wetland W-1 is proposed, as well as temporary stream bed and bank impact as further outlined in **Table 4** below.

Table 4 Stream and Wetland Restoration Impact Summary

Resource ID	Cowardin Classification	Proposed Activity	Impact Location	Impact Type	Impact Quantity (SF/LF)
Perennial Stream S-1	R3UB1x	Culverts 1 & 2 Removal and Restoration	Bed	Temporary	512 SF / 40 LF
			Bank	Temporary	131 LF
Wetland W-1 & Perennial Stream S-1	PSS1E & R3UB1x	Culvert 3 Removal and Restoration	Bed	Temporary	92 SF / 10 LF
			Bank	Temporary	10 LF
			Wetland	Temporary	48 SF

4

Mitigation

Compensatory mitigation is required in accordance with Env-Wt 313.04 and Env-Wt 524 since total permanent impacts resulting from the Project exceed 200 linear feet of stream impact and impacts to wetlands adjacent to a Tier 3 Stream (NHDES Priority Resource Area) are proposed. Compensatory mitigation for a total of approximately 264 linear feet of permanent stream bank impact, 132 linear feet of permanent stream bed impact, and 405 square feet of permanent PRA impact, is proposed in the form of an in-lieu fee payment to the Aquatic Resources Mitigation (ARM) fund. Based on the 2025 ARM Fund In-Lieu Fee Payment Calculator, an ARM Fund payment was calculated to be $148,132.46 ($2,673.74 for PRA impacts; $145,458.72 for stream impacts). Refer to the **Mitigation Documentation** provided in ***Appendix G.***

When reviewing and finalizing the mitigation package and resultant ARM Fund Payment, it is VHB's opinion that restoration of the subject unnamed perennial stream S-1 through the removal of two abandoned, debilitated culverts located between proposed New Tier 3 Stream Crossing #1 and Hanover Street should be taken into consideration. Although not necessary to facilitate project construction, the Project Applicant has chosen to conduct this work which will result in the restoration of natural stream flow through this channel reach and enhanced site hydrological connectivity. The culvert removal work will restore approximately 75 feet of stream bed (by removing 19-foot long and 56-foot long culverts), and 150 feet of stream bank (75'x2) to a natural condition and bankfull width matching upstream and downstream reaches. ***On behalf of the Project Applicant, VHB recommends that the proposed stream restoration components of this Project be credited towards total and final compensatory mitigation required for the Project. The suggested adjusted mitigation payment is outlined in Table 5 below.***

Table 5 Proposed Adjusted Compensatory Mitigation

Resource ID	Cowardin Classification	Proposed Impact	Adjusted Impact	Proposed ARM Fund Payment	Adjusted ARM Fund Payment
Perennial Stream S-1	R3UB1x	264 LF Bank / 132 LF Bed	114 LF Bank / 57 LF Bed	$145,091.40	$65,485.46

5

Rare, Threatened, and Endangered Species

The following is a discussion of rare, threatened, and endangered species identified within the vicinity of the Site by the NH Natural Heritage Bureau (NHB) DataCheck tool and US Fish and Wildlife Service's (USFWS) Information for Planning and Consultation (IPaC) system.

Natural Heritage Bureau

A search for the occurrence of rare plant, animal, or natural communities associated with this Project was completed using the NHB online DataCheck tool. The NHB DataCheck Results Letter (NHB24-2748) dated September 13, 2024, identified four records of sensitive species within the vicinity of the Site, as listed below:

- Appalachian barren-strawberry (*Geum fragarioides*) – State-Listed Threatened
- Crested sedge (*Carex cristatella*) – State-Listed Endangered
- Eastern waterleaf (*Hydrophyllum virginianum*) – State-Listed Threatened
- Virginia stickseed (*Hackelia virginiana*) – State-Listed Threatened

VHB further consulted with the NHB following the DataCheck Letter Results which included a site visit to obtain requested photographs. NHB responded on November 4, 2024, indicating that the Site mainly consists of coniferous habitat, which is not suitable for the rare species listed. They further expressed that since the rare plants listed are either historic specimen records or over a half mile away, and there is not a strong likelihood that suitable habitat is present within the Site, they did not recommend surveys. Consequently, NHB had no further concerns regarding NHB24-2748. Since the NHB DataCheck Results Letter did not identify any animal records, coordination with NHF&G Department is not required. Refer to **Appendix H** for the NHB DataCheck Letter Results NHB24-2748 and documentation of follow up consultation.

US Fish and Wildlife Service

The Project site was reviewed for the presence of federally listed or proposed, threatened, or endangered species, designated critical habitat, or other natural resources concerning the USFWS IPaC System. Results dated January 23, 2025, indicate the potential presence of the proposed endangered tricolored bat (*Perimyotis subflavus*) and proposed threatened monarch butterfly (*Danaus plexippus*) within the vicinity of the Project site.

The USFWS Determination Key (DKey) for the tricolored bat was completed and resulted in a "may affect" determination for this species. Since both the tricolored bat and monarch butterfly are still proposed for listing, they are not currently protected under the Endangered Species Act. The USFWS IPaC Results Letter and DKey Results Letter dated March 12, 2025, are included as **Appendix I** to further inform the U.S Army Corps of Engineers (lead federal permitting agency) during their review of the Project under Section 404 of the Clean Water Act.

6

Federal Agency and Local Coordination

US Army Corps of Engineers

The proposed work will result in wetland and stream impacts subject to US Army Corps of Engineers Section 404 jurisdiction through New Hampshire General Permit No. NAE-2022-00849. As such, Appendix B – Corps Secondary Impacts Checklist has been completed and included as **Appendix J** of this application.

NH Division of Historical Resources

A Request for Project Review (RPR) was submitted on November 13, 2024, to the NH Division of Historical Resources (NHDHR) to initiate Section 106 consultation under the National Historic Preservation Act (16 U.S.C. 470)] and with federal Advisory Council on Historic Preservation regulations, Protection of Historic Properties (36 CFR Part 800). A Phase 1A Archeological Sensitivity Assessment was completed and while the Project site includes the site of the brickyard that operated during 1806 through the early 1970s as well as evidence of quarrying at the north end, no intact archaeological resources are expected to occur in the Project site due to extensive subsurface soil disturbance, dense vegetation, rocky conditions, and limited interpretive value. In addition, there are no previously recorded archaeological sites in or near the Project site. Therefore, no further archaeological study is recommended.

A file review conducted by VHB on September 27, 2024, revealed two aboveground properties determined eligible for listing in the National Register of Historic Places (National Register) within one half mile of the Project site. One additional property was previously determined eligible and subsequently demolished. Consultation with NHDHR regarding these properties remains ongoing.

Lebanon Conservation Commission

As part of local site plan review and approval, the Conservation Commission reviewed the Project and issued comments on October 11, 2024. A response letter was prepared by the Project Applicant and VHB

and submitted to the City of Lebanon Planning Board on December 4, 2024. The Project received Site Plan approval from the City of Lebanon on December 17, 2024.

In accordance with Env-Wt 311.06(h) and RSA 482-A:3(I)(a)(1), the Conservation Commission will receive a complete copy of this application concurrent with the NHDES submission to provide them with the opportunity to review and comment. We will provide any comments received from the Conservation Commission along with our responses to the NHDES Wetlands Bureau when we receive them, if applicable.

7

Project Specific Requirements (Env-Wt 500)

7.1 Env-Wt 524.02: Approval Criteria for Residential, Commercial, and Industrial Development Projects

Per Env-Wt 524.02 regarding Approval Criteria for Residential, Commercial, and Industrial Development Projects: In addition to the criteria established in Env-Wt 300, the department shall not approve an application for a residential, commercial, or industrial development project unless the following criteria are met:

(a) An off-site alternatives analysis is conducted for any project that will result in more than one acre of permanent wetland impacts;

Not applicable. This project does not propose greater than one acre of permanent wetland impact.

(b) The project avoids and minimizes impacts to wetlands, watercourses, and sensitive and valuable wetlands in accordance with Env-Wt 311.07 and Env-Wt 313.03;

The proposed project is consistent with the above referenced rules. Minimization and avoidance measures were carefully considered during the project planning and design phase as outlined in **Section 3** of this Application while still complying with all required local and state development setbacks and professional engineering standards. Wetland impacts have been confined to the narrowest portions of Wetlands W-2 and W-3 required to install two new stream crossings, a narrow swale portion of Wetland W-1 to allow for culvert removal and wetland restoration, and edge impacts along an isolated roadside wetland resulting from installation of a pedestrian sidewalk; a requirement being driven by the City of Lebanon.

Impacts to Densmore Pond, wider more intact areas of Wetland W-2 and W-3 directly bordering Densmore Pond, and the majority of the large wetland complex (Wetland W-1) at the southern end of the Project site have been avoided. Additionally, the project incorporates the removal of three abandoned and debilitated culverts and resultant stream and wetland restoration which will improve natural channel flow, wetland drainage patterns, and overall hydrological connectivity between wetland and stream resources across the Project site.

(c) The project complies with the design criteria specified in Env-Wt 524.04 and the construction criteria specified in Env-Wt 524.05; and

This Project complies with Env-Wt 524.04 as further detailed in **Section 7.2** below. Additionally, in accordance with Env-Wt 524.05, a notice will be filed with the department at least 48 hours prior to commencing work and all work will be conducted in accordance with the approved plans and permits.

d) ***Compensatory mitigation is provided for any new residential, commercial, or industrial development in a PRA.***

Temporary and permanent impacts are proposed to narrow bordering wetland areas (portions of Wetlands W-2 and W-3) along the unnamed Tier 3 stream (S-1) at the location of the two proposed new crossings to permit vehicular access as part of the proposed development. It is VHB's understanding that the proposed permanent wetland impacts at these locations would be considered impacts to a NHDES PRA, defined as "floodplain wetlands adjacent to Tier 3 Streams." As such, the Project Applicant is proposing to mitigate for these impacts in the form of an in-lieu fee payment to the Aquatic Resources Mitigation (ARM) fund as previously outlined in **Section 4** of this Application Narrative. Refer to the **Mitigation Documentation** provided in ***Appendix G***.

7.2 Env-Wt 524.04: Design Requirements for Residential, Commercial, and Industrial Development Projects

(a) The project complies with all applicable requirements of Env-Wt 400, Env-Wt 700, Env-Wt 800, Env-Wt 900, and other applicable project-specific criteria in this chapter;

The Project complies with all applicable requirements. All natural resources within and adjacent to the proposed limits of work were delineated by Goddard Consultants, LLC and classified in accordance with the criteria in Chapter Env-Wt 400. Chapter Env-Wt 700 is not applicable to this Project as there are no prime wetlands within the vicinity of the Project site. The Project complies with all the requirements of Chapter Env-Wt 800 with regards to compensatory mitigation as described in Section 4 of this Application Narrative. Lastly, the Project complies with all the requirements of Chapter Env-Wt 900 with regard to stream crossing design as further detailed in **Section 8** below and depicted in the **Project Plans** provided as ***Appendix E***.

(b) The project does not use wetlands or surface waters to serve as stormwater or water quality treatment;

The Project does not use wetlands and surface waters to serve as stormwater or water quality treatment. Under existing conditions, untreated stormwater runoff currently flows overland towards the east to Hanover Street. Densmore Pond and associated wetlands are located towards the east of the Project site and eventually direct runoff south and east toward Hanover Street.

As detailed in the Stormwater Report included as part of the NHDES AoT application submittal for this Project, the proposed development has been designed to direct the stormwater runoff from most of the site's impervious areas to provide stormwater treatment and peak rate attenuation. Runoff around the Project site is directed to catch basins and enters underground infiltration systems or bioretention areas for the proper treatment. Runoff from the remaining areas within the study area will generally maintain their existing flow patterns to Densmore Pond and the outlet at the culvert under Hanover Street.

As part of the NHDES AoT permit process, NHDES will review the stormwater design to confirm compliance with all applicable regulations.

(c) The project provides setbacks and water quality protection measures sufficient to protect private and public drinking water supplies, source water protection areas, and fisheries;

The Project is subject to a NHDES AoT Permit and thus has been designed in accordance with the land development standards and requirements outlined in Env-Wt 1500. Additionally, the Project has been designed in compliance with the City of Lebanon's Site Plan Regulations (January 23, 2023) and Zoning Ordinance (April 3, 2024) to the maximum extent practicable and has undergone local Site Plan review and approval (12/17/2024). Through conformance with local and state regulations and associated permitting, the Project has demonstrated compliance with setbacks and water quality protection measures sufficient to protect private and public drinking water supplies and source water protections areas. There are no fisheries within proximity to the Project site; the closest one is the New Hampshire Fish Hatchery located approximately 43 miles to the east in New Hampton.

(d) The project maintains or restores hydrologic connections to maintain flows necessary to preserve adjacent wetland and riparian functions;

Project site drainage and overland flows generally move from west to east towards Densmore Pond and Hanover Street from the ridge associated with Quarry Hill on the western side of the Project site. Stormwater generated by the Project will be treated in accordance with NHDES AoT Rules as previously described in **Section 3.1** of this Application Narrative. Runoff from the remaining areas outside of the development footprint will generally maintain their existing flow patterns to Densmore Pond and the outlet at the existing culvert under Hanover Street.

Annique Fleurock, P.E., completed a field geomorphic assessment and desktop hydrologic analysis based on the NHDES Stream Crossing Rules to understand existing site hydrology and model the proposed stream crossings to comply with FEMA and NHDES regulations. Final design of the two proposed Tier 3 stream crossings results in an improvement in existing hydraulic capacity and ability to accommodate the 100-year 24-hour design storm. The proposed hydraulic analysis predicts that water surface elevations will decrease for the 100-year 24-hour design storm.

The two proposed crossing structures will be open-bottom culverts, with a design 19-foot channel including 2-foot wide overbanks for 15-foot bankfull width and wildlife crossing. Additionally, the Project proposes to provide 75 linear feet stream bed and 150 linear feet of stream bank restoration by removing two abandoned debilitated culverts and restoring the stream bed to a 15-foot bankfull width to match upstream and downstream reaches. Additionally, the project proposes to remove a partially functioning culvert conveying drainage from Wetland W-1 to the unnamed perennial stream and restore the area with a naturally vegetated wetland swale. As such, the Project will both enhance

and restore hydrologic connections while maintaining current flow patterns necessary to preserve the functions and values of on-site wetlands and bordering riparian areas.

(e) The project maintains existing fishery spawning, feeding, or cover habitat and fish passage necessary to maintain fishery or habitat or populations; and

With respect to fisheries, the Project does propose two new crossings over an unnamed Tier 3 perennial stream which flows in and out of Densmore Pond. According to NHFG's Wildlife Action Plan, the unnamed perennial stream is mapped as a predicted cold water fishery based on data compiled by the Nature Conservancy focusing on biophysical settings in terms of stream size, gradient, geology and expected water temperature regime. However, the upper reach of this stream flowing into Densmore Pond (where proposed crossing #2 is located) appears to dry out periodically as observed during VHB's field visit in September 2024 and therefore is not expected to support fish populations. The characteristics of Densmore Pond (size and depth) make it suitable to support fish, however the presence of fish in the pond is unknown. The downstream reach of the unnamed perennial stream where proposed crossing #1 is located is less suitable given the presence of the two abandoned and debilitated culverts which represent current obstructions to fish passage and natural channel flow.

The Project will preserve Densmore Pond (no direct impacts proposed) and enhance fish habitat through the installation of two 3-sided open bottom culverts with natural stream simulation in accordance with the NHDES Stream Crossing Rules, and removal of two abandoned debilitated culverts and restoration of approximately 75 linear feet of stream channel to match existing upstream and downstream reaches.

(f) The project maintains existing wetland-dependent wildlife habitat and its associated migratory pathways, reproductive sites, and associated wetland complex or wetland community system.

The Project has been designed to avoid and minimize impacts to on-site wetlands which provide wildlife habitat as a principal function by siting two new access crossings at the narrowest points of Wetlands W-2 and W-3 and avoiding the wider more valuable segments of these wetland areas directly bordering Densmore Pond. The Project also avoids impacts to Densmore Pond with minimal temporary impacts associated with wetland restoration proposed to the largest wetland complex abutting the Project site in the south, identified as Wetland W-1.

The Project also incorporates two-foot wildlife shelves at each crossing location in accordance with the NHDES Stream Crossing Rules to preserve small mammal and amphibian movement across the Project site. Additionally, the Project removes two abandoned debilitated culverts representing obstructions to natural stream flow and restores approximately 75 feet of stream bed and associated banks. The Project also removes a third abandoned debilitated culvert and replaces it with a naturally vegetated wetland swale which is seen as beneficial to wildlife.

Finally, the Project has provided opportunity to incorporate 12 acres of dedicated open space divided into two areas at the southern and northern end of the Project site (8.3 acres and 3.7 acres, respectively). Further development such as streets, parking areas, and residential or non-residential structures will not be permitted in these areas. This open space will function to preserve wildlife crossings ensuring continued connectivity between existing corridors that are mapped by the NHFG WAP through these areas of the Project site. Refer to the Open Space Plan included in the **Project Plans** in ***Appendix E***.

8

Project Specific Requirements for Stream Crossings (Env-Wt 900)

8.1 Env-Wt 903.04: Information Required for All Stream Crossing Standard Permit Applications

In addition to the information required by Env-Wt 311, the applicant shall submit the following for all stream crossing projects that require a standard permit:

(a) On the USGS map or updated data based on LiDAR required by Env-Wt 311.06, the following:

1) The approximate boundaries of the contributing watershed;

2) The size of the contributing watershed; and

3) Identification of the stream tier based on watershed size;

Refer to the Watershed Map (Figure 1) and the USGS Stream Stats Report included as part of the **Brickyard Hydraulics Memorandum** provided in ***Appendix C.***

(b) Plans showing the following:

1) The scale, a north arrow, and at least 3 cross-sections outside of the construction disturbance area that are representative of the stream system away from the area of direct influence by the crossing;

Refer to the HEC-RAS Model Layout (Figure 2) of the **Brickyard Hydraulics Memorandum** provided in ***Appendix C***.

2) Clearing limits showing all proposed work areas;

3) ***For both the existing structure, if any, and the proposed structure, the following:***

   a. ***Location;***

   b. ***Type;***

   c. ***Dimensions; and***

   d. ***Inlet and outlet invert elevations;***

4) ***The extent of channel excavation and filling;***

5) ***Road locations, including road edges, centerline, and boundaries of the right-of-way;***

6) ***Proposed channel work including bank erosion control features, grade control, and channel linings; and***

   For Items 2 through 6, refer to the **Project Plans** included as ***Appendix E***.

7) ***For the proposed structure, cross-sections showing the water surface elevation resulting from the applicable design storm, with bed material and backfill zones;***

   Refer to Sheet C3.1 - Stream Crossing Plan and Profile 1 and Sheet C3.2 - Stream Crossing Plan and Profile 2 included as part of the **Project Plans** in ***Appendix E***. Also refer to the HEC-RAS Profile Results, and HEC-RAS Cross Section Results included as part of the **Brickyard Hydraulics Memorandum** in ***Appendix C***.

(c) Existing crossing metrics, including:

1) ***Existing riparian zone, including the extent and type of existing vegetation surrounding or in the stream bank; and***

2) ***Existing tailwater control, including its location and materials, and pool configuration;***

   There are no existing crossings at the proposed stream crossing locations, therefore, no metrics to report. The proposed crossings are located along the existing unnamed perennial stream which is highly impacted due to the historic use of the site. The subject reach appears to have been straightened in the past.

   The tailwater of the stream through the Project site is driven by the hydraulic condition of the wetland downstream of the Hanover Street crossing. This is modeled within the HEC-RAS model and described in the **Brickyard Hydraulics Memorandum** provided in ***Appendix C***.

(d) The dewatering system, as follows:

1) ***Estimates of the maximum flow anticipated during construction, including any summer storm estimates;***

2) ***The hydraulic calculation for the bypass pipe or channel size, length, and gradient;***

3) ***Location, height, and width of the diversion dam;***

4) ***Sump locations, including estimate of necessary flow and sump capacity;***

5) ***Backwater prevention method; and***

6) Sediment treatment plan with methods, release point, and extent;

Refer to Sheet C4.1 – Erosion and Sediment Control Plan 1, Sheet C4.2 – Erosion and Sediment Control Plan 2 and associated Cofferdam and Water Diversion Notes included as part of the **Project Plans** in ***Appendix E***.

(e) Erosion and pollution controls, as follows:

1) Any additional methods of controlling erosion;

2) A soil stabilization plan, including but not limited to where to cover stockpiles and place straw bales; and

3) Pollution control methods for pumps, fuel stations, and equipment storage;

Refer to **Section 3.3** of the **Application Narrative** which describes anticipated erosion and sediment control BMPs related to site construction. Additionally, refer to Sheets C5.0 – C5.3 Erosion Control Plans related to overall site construction, as well as Sheets C4.1 and C4.2 related to erosion and sediment control during installation of the two stream crossings included as part of the **Project Plans** in ***Appendix E***.

(f) The number and location of footings, if any, and the following for each:

1) Estimate of bearing capacity;

2) Dimensions of each footing; and

3) Footing depth;

The proposed culverts are designed below the span tolerance of precast three-sided concrete culverts and are designed to provide a natural stream bed with stable material. The final culvert thickness, foot dimensions, and footing base material will be provided by the culvert fabricator for approval prior to construction. Foot protection will be determined through VHB's scour analysis following this permit submission. The proposed material through the stream crossings will be sized for stability, not cause erosion, aggradation, or scouring based on grab sample obtained in April 2025.

(g) A narrative explaining why the cross-sections identified pursuant to (b)(7), above, are representative;

The cross-sections identified in (b)(7) above provide existing condition topographic and bathymetric data for the corresponding locations to calculate the hydraulic variables within the stream and inform the proposed design sizing, alignment, and material.

(h) The design features used to improve aquatic organism passage and the expected distance, in linear feet, of downstream and upstream improvement for aquatic organism passage or fish passage;

The design of the proposed two new crossings provides a 19-foot wide channel with a low flow 5-point cross-section and 2-foot wide overbanks for the 15-foot bankfull width and wildlife crossing. The design also meets the NHDES Stream Crossing Rules for a Tier 3 stream by providing open-bottom culvert structures.

Additionally, the project proposes to remove two abandoned, debilitated culverts along the perennial stream subject to the two new crossings. These culverts represent a significant obstruction to aquatic organism passage. Removal of these culverts will result in restoration to a bankfull width of 15 feet at

these locations and approximately 75 linear feet of associated stream bed restoration to match upstream and downstream reaches.

(i) The hydraulic capacity of the proposed crossing, in terms of flood frequency event, and of the existing crossing, if any; and

(j) The following channel information at the crossing and for the reference reach:

1) ***The classification of the stream using the Rosgen classification system as described in Applied River Morphology by Dave Rosgen, 1996, available as noted in Appendix B, at the crossing and upstream and downstream of the crossing;***
2) ***Bankfull width;***
3) ***Bankfull depth;***
4) ***Entrenchment ratio;***
5) ***Sinuosity; and***
6) ***Flood-prone width.***

For Items (i) and (j), please refer to the **Brickyard Hydraulics Memorandum** provided as ***Appendix C*** and the NHDES Wetlands Permit Application Stream Crossing Worksheets included as part of that memorandum.

8.2 Env-Wt 903.06: Hydraulic Capacity Report

The applicant shall submit a hydraulic capacity report that includes drainage calculations and a narrative to demonstrate that the proposed stream crossing has sufficient hydraulic capacity to meet the applicable design standard with any application for:

(a) A new tier 3 or tier 4 stream crossing for which an alternative design is being submitted pursuant to Env-Wt 904.10; or

Refer to the **Brickyard Hydraulics Memorandum** provided in ***Appendix C***. An Alternative Design Report (ADR) has been prepared in accordance with Env-Wt 904.10 to address adherence to the entrenchment ratio requirement. The ADR Report is included as ***Appendix K***.

(b) A replacement tier 3 or tier 4 stream crossing for which the existing stream crossing cannot accommodate the design storm flow.
Not Applicable – the Project does involve a replacement crossing.

8.3 Env-Wt 904.01: General Design Considerations

(a) All stream crossings, whether over tidal or non-tidal waters, shall be designed and constructed so as to:

1) ***Not be a barrier to sediment transport;***

The two new proposed Tier 3 stream crossings will not be a barrier to sediment transport. The crossings will result in improved hydraulic capacity while minimizing bank and bed impacts to the extent practical through the installation of open bottom culvert structures with stream simulation proposed. The subject stream channel is not proposed to be reshaped, the crossings will match existing channel slopes, and there will be no impact to the ordinary water volume. Therefore, the ability of the stream to transport sediment post-construction will match the existing conditions at these two locations. Additionally, two abandoned, debilitated culverts will be removed eliminating current obstructions to natural channel flow and sediment transport downstream.

2) Not restrict high flows and maintain existing low flows;

The proposed design meets the FEMA requirements of improved hydraulic capacity and will not increase the water surface elevation for the 100-year 24-hour design storm. In fact, the proposed hydraulic analysis predicts that water surface elevations will decrease by up to 2.3 feet for the 100-year 24-hour design storm. The design also meets the NHDES Stream Crossing Rules for Tier 3 crossings and provides open-bottom culvert structures with natural stream simulation. The proposed crossings are designed with the inclusion of a wildlife bench and a 5 point trapezoidal channel with a low flow channel at the thalweg to accommodate existing low flows.

3) Not obstruct or otherwise substantially disrupt the movement of aquatic organisms indigenous to the waterbody beyond the actual duration of construction;

Aside from temporary partial obstructions or disruptions resulting from proposed culvert installation and removal activities (i.e., in-stream cofferdams and water diversion), the existing capacity of the perennial stream at the proposed crossings for aquatic organism passage will be maintained with enhancement downstream as a result of the proposed removal of the two abandoned debilitated culverts and associated stream restoration.

4) Not cause an increase in the frequency of flooding or overtopping of banks;

As previously mentioned, the proposed crossings have been designed to convey the 100-year 24-hour storm event, and in fact, the hydraulic analysis predicts that with the removal of the two abandoned, debilitated culverts which represent existing channel obstructions, water surface elevations will decrease by up to 2.3 feet for the 100-year 24-hour design storm.

5) Maintain or enhance geomorphic compatibility by:

a) Minimizing the potential for inlet obstruction by sediment, wood, or debris; and

b) Preserving the natural alignment of the stream channel;

VHB's geomorphic assessment of the subject stream found that the stream is a Type C3 channel under the Rosgen Classification (Applied River Morphology, Rosgen, 1996). The proposed culvert design will maintain the existing geomorphic capability of the stream by meeting existing channel geometry including bankfull width, bankfull depth, and channel slope, while preserving natural channel alignment. An Alternate Design Request (ADR) is included in ***Appendix K*** to address adherence to the entrenchment ratio (>2.2) requirement for a Type C3 stream. Given that the proposed hydraulic analysis predicts water surface elevations to decrease by up to 2.3 feet for the 100-year 24-hour design storm, and the project proposes to remove two abandoned, debilitated

culverts with associated stream restoration, the hydraulic benefit of providing an entrenchment ratio of 2.2 does not outweigh the increase in cost and project complexity.

Since open bottom culverts have been incorporated in the crossing design, the potential for channel obstruction is minimized through the exclusion of in-stream components for dead wood or other river debris to get caught up on. Additionally, the Project proposes removal of two abandoned debilitated culverts which currently represent opportunities for channel obstruction downstream by sediment, wood, or debris.

6) Preserve watercourse connectivity where it currently exists;

The two new culvert crossings will preserve and maintain existing hydrologic connectivity between upper and lower reaches of the subject stream as well as connectivity between the subject stream and Densmore Pond.

7) Restore watercourse connectivity where:

a) Connectivity previously was disrupted as a result of human activity(ies); and

b) Restoration of connectivity will benefit aquatic organisms upstream or downstream of the crossing, or both;

The Project will restore channel connectivity and improve overall site hydrology through the removal of two abandoned debilitated culverts and restoration of approximately 75 feet of associated stream channel downstream of the proposed two new culvert crossings. The culverts proposed for removal include a 56-foot long 5-foot diameter re-used chimney and a 19-foot long 4.5-foot diameter corrugated metal pipe with a granite block headwall. Through removal of these current channel obstructions, aquatic organism passage will be enhanced between upstream and downstream reaches within the Project site.

8) Not cause erosion, aggradation, or scouring upstream or downstream of the crossing; and

The proposed two new culvert crossings will not cause erosion, aggradation, or scouring upstream or downstream of the crossing locations, as the crossings have been designed as open bottom culverts that are sized sufficiently to accommodate the 100-year design storm flows. The stream bed associated with the two proposed crossings will be stabilized with approximately 2-feet of proposed natural stream bed material underlain by fill material to be determined following VHB's scour analysis. Additionally, removal of the two abandoned debilitated culverts located downstream is expected to further minimize erosion, aggradation and scouring currently resulting from these two present obstructions. Approximately 75 linear feet of stream bed will be restored and stabilized with 2 feet of natural streambed material, coupled with staked coir logs and erosion control mats along the stream bank.

9) Not cause water quality degradation.

The proposed culvert installation and removal work will not cause water quality degradation post-construction and erosion controls will be implemented throughout the duration of construction to preserve water quality. The removal of the two abandoned, debilitated culverts is expected to have a positive influence on water quality by removing two current channel obstructions.

8.4 Env-Wt 904.05: Tier 3 Stream Crossings

(a) ***Subject to (b), below, a tier 3 stream crossing shall be a crossing located:***

1) ***On a watercourse where the contributing watershed is 640 acres or greater;***
2) ***Within a designated river corridor, unless:***
    a) ***The crossing would be a tier 1 stream based on the contributing watershed size; or***
    b) ***The structure does not create a direct surface water connection to the designated river as depicted on the national hydrography dataset as found on GRANIT;***
3) ***Within a 100-year flood plain;***
4) ***In a jurisdictional area having any protected species or habitat; or***
5) ***In a prime wetlands or within a duly-established 100-foot buffer, unless a waiver has been granted pursuant to RSA 482-A:11, IV(b) and Env-Wt 706.***

The unnamed perennial stream flowing through the Project site and subject to this application is classified as a Tier 3 stream based on the size of the contributing watershed which is 1.2 square miles (774 acres).

(b) ***The applicant for a project in which a stream crossing is categorized as tier 3 based solely on being in a 100-year floodplain may request that the crossing be categorized as a tier 1 or tier 2 stream crossing, as applicable based on watershed size, if the impacts to the floodplain are specifically mitigated in accordance with Env-Wt 800.***

Not applicable.

(c) ***If an applicant for a project in which a stream crossing is categorized as tier 3 based solely in a jurisdictional area having any protected species or habitat may request that the crossing be categorized as tier 1 or tier 2 based on watershed size, provided:***

1) ***The applicant consults with NHB to determine whether any protected plant species or habitat would be impacted;***
2) ***The applicant consults with NHF&G to determine whether any protected species or habitat is impacted; and***
3) ***The NHB, NHF&G, or both, as applicable, recommend(s) such a downgrade to the department in writing.***

Not applicable.

(d) ***A tier 3 stream crossing shall be a span structure or an open-bottomed culvert with stream simulation, not a closed-bottom culvert or pipe arch.***
The proposed project includes two open-bottomed culverts with stream simulation.

(e) ***The applicant shall use an alternative design by submitting a request as specified in Env-Wt 904.10.***
An Alternative Design Request (ADR) is included as ***Appendix K*** in order to address adherence to the entrenchment ratio requirement under the NHDES Stream Crossing Rules. The design exceeds the minimum span requirement based on the stream geomorphic assessment data, and it meets the Tier 3-specific design criteria (i.e., span structure).

(f) ***Compensatory mitigation shall not be required for:***

1) ***Any new tier 3 stream crossing that:***
    a) ***Meets the general design criteria in Env-Wt 904.01 and the tier-specific criteria of Env-Wt 904.07;***
    b) ***Is self-mitigating; and***
    c) ***Improves aquatic organism passage, connectivity, and hydraulics; or***
2) ***Any replacement of a crossing that met all applicable requirements when originally installed but is in a location that results in the crossing being classified as tier 3 under these rules, provided the proposed stream crossing meets the requirements of Env-Wt 904.09***

As detailed in **Section 5.2** of this **Application Narrative**, the Project requires mitigation in accordance with Env-Wt 313.04 and Env-Wt 524 since total permanent impacts resulting from the Project exceed 200 linear feet of stream impact and impacts to wetlands adjacent to a Tier 3 Stream (NHDES Priority Resource Area) are proposed. When reviewing and finalizing the mitigation package, it is VHB's opinion that restoration of the subject unnamed perennial stream S-1 through the removal of two abandoned, debilitated culverts located between proposed New Tier 3 Stream Crossing #1 and Hanover Street should be credited towards the final required mitigation payment (In-Lieu Fee ARM Fund Payment).

(g) ***Plans for a tier 3 stream crossing shall be dated and bear the signature of the professional engineer who prepared or had responsibility for and approved them, as required by RSA 310-A:18.***

Refer to the **Project Plans** included as ***Appendix E*** which have been stamped and signed by Annique Fleurock, licensed NH Professional Engineer #16725.

8.5 Env-Wt 904.07: Design Criteria for Tier 2, Tier 3, and Tier 3 Stream Crossings

The unnamed perennial stream is classified as a Tier 3 watercourse based on the size of the contributing watershed.

a) Unless otherwise specified, all design criteria in this section shall apply to new and replacement tier 2, tier 3, and tier 4 stream crossings.

Noted throughout this Application Narrative.

b) Tier 2 and tier 3 stream crossings shall be designed in accordance with the NH stream crossing guidelines, available as noted in Appendix B;

The proposed two new Tier 3 stream crossings have been designed in accordance with the NH Stream Crossing Guidelines as detailed throughout this Application Narrative. Also refer to the **Project Plans** included as ***Appendix E*** and the **Brickyard Hydraulics Memorandum** provided in ***Appendix C*** which also includes the NHDES Wetlands Permit Application Stream Crossing Worksheets.

c) Tier 2, tier 3, and tier 4 stream crossings shall be designed:

1) To meet the general design considerations specified in Env-Wt 904.01;

The Project's compliance with Env-Wt 904.01 is detailed in **Section 8.3** of this **Application Narrative**.

2) Of sufficient size to accommodate the greater of:

a. The 100-year 24-hour design storm;

b. Flows sufficient to:

1. Prevent an increase in flooding on upstream and downstream properties; and

2. Not affect flows and sediment transport characteristics in a way that could adversely affect channel stability; or

c. Applicable federal, state, or local requirements;

As outlined previously, the proposed design meets the FEMA requirements of improved hydraulic capacity and will not increase the water surface elevation for the 100-year 24-hour design storm. In fact, the proposed hydraulic analysis predicts that water surface elevations will decrease by up to 2.3 feet for the 100-year 24-hour design storm. The design also meets the NHDES Stream Crossing Guidance for Tier 3 crossings and provides open-bottom culvert structures.

3) With the bed forms and streambed characteristics necessary to cause water depths and velocities within the crossing structure at a variety of flows to be comparable to those found in the natural channel upstream and downstream of the stream crossing;

The proposed crossings will consist of open bottom culverts with simulated streambed material. Refer to the **Project Plans** in ***Appendix E.*** The required stream geomorphic assessments and NHDES Stream Crossing Worksheets were completed by VHB to ensure that the designed crossings incorporated similar characteristics to those found along the reference reach. Water depths and flow velocities at the proposed crossings will be comparable to pre-construction conditions.

4) To provide a vegetated bank on both sides of the watercourse or to provide a wildlife shelf of suitable substrate and access to allow for wildlife passage;

Due to 3-sided box culverts being proposed at each crossing, it is not possible to provide vegetated banks on both sides of the stream through the crossing. However, the design crossings do incorporate 2-foot wide wildlife shelves on either side of the channel through the culvert crossing. The shelves will either be "washed in" or covered with soil material to make them suitable for terrestrial wildlife passage.

5) To preserve the natural alignment and gradient of the stream channel, so as to accommodate natural flow regimes and the functioning of the natural floodplain;

The natural alignment and channel gradient of the unnamed perennial stream will be preserved to accommodate natural flow regimes and floodplain function. The proposed crossings are

compliant with the NHDES Stream Crossing Rules Design Criteria, making them compatible crossings for the subject stream.

6) To simulate a natural stream channel;

Simulated streambed material will be incorporated into the proposed design for the two new crossings. The proposed gradation plan will be finalized during the next phase of the project following the streambed grab sample, obtained in April 2025. Additionally, simulated streambed material has been incorporated into the stream restoration plan post removal of the two abandoned debilitated culverts located downstream of the two new proposed crossings.

7) So as not to alter sediment transport competence; and

The proposed crossings will not alter the sediment transport competence of the unnamed perennial stream. Refer to the response to Env-Wt 904.01(a)(1) in **Section 8.3** above for more information.

8) To avoid and minimize impacts to the stream in accordance with Env-Wt 313.03.

Avoidance and minimization of impacts to the unnamed perennial stream have been addressed in **Section 3.5** of this **Application Narrative**.

Appendix A: Goddard Consulting's Wetland Border Report

Wetland Border Report

Site Locus: 174 Hanover Street Lebanon, NH, 03766
Prepared For: Richard Marchese
Prepared by: Goddard Consulting LLC, 291 Main St, Suite 8, Northborough MA 01532
Date: 4/26/2024

INTRODUCTION

In July 2023, the wetland resources were delineated for Richard Marchese on land located on or near 174 Hanover Street, Lebanon, NH, 03766 (refer to enclosed locus maps). The wetland border was flagged using the 1987 Army Corps of Engineers Wetland Delineation Manual and the 2012 Regional Supplement for the North Central and Northeast regions. Hydric soil indicators, vegetation changes, hydrological indicators, and topography were all considered for delineation purposes.

The titles of attached documents are as follows:

- Wetland Delineation Data Form GC A39 - Northcentral and Northeast Region
- Soil Map – Grafton County, New Hampshire, NRCS – Accessed 4/26/2024
- FEMA Flood Map - Accessed 4/26/2024
- Orthophoto View of Site, Goddard Consulting LLC, 1/16/2024
- USGS of Site, Goddard Consulting LLC, 1/16/2024

SUMMARY OF FINDINGS

Several jurisdictional wetland resources were identified on the subject site. In the northeastern portion of the site, the western side of a freshwater pond and associated freshwater forested /shrub wetland was flagged with series GCA1-GCA170. The National Wetlands Index (NWI) classifies the pond as Freshwater Pond Habitat (PUBHh). A mapped perennial stream flows into the northern portion of the pond. The eastern bank of the stream was flagged with series GCSD 1 – GCSD20. This line was extended with flag series GCSF1- GCSF11. The western bank of the stream was flagged with series GCSC 1- GCSC 30. The National Wetlands Index (NWI) classifies the stream as Riverine habitat (R4SBC). In the northeastern portion of the site, the eastern side of the freshwater pond and freshwater forested/shrub wetland associated with the perennial stream was flagged with GCC1-GCC32. This line was extended with wetland flag series GCE1- GCE11. In the northeastern portion of the site adjacent to Hanover Street, a freshwater forested/shrub wetland was flagged with series GCD1-GCD33. In the northwestern portion of the site, an isolated wetland was flagged with series GCI1-GCI7. A perennial stream flows southeast of the pond. The stream flows through several dilapidated culverts before it flows under Hanover Street. The day lit portions of this perennial stream was flagged with series GCSA1-GCSA20, GCSB1-GCSB14 and GCSC-GCSC14. The National Wetlands Index (NWI) classifies the stream as Riverine habitat (R4SBC). Finally, in the southern portion of the site, a freshwater forested/shrub wetland was flagged with series GCB1-GCB220. The sampling point for the ACOE wetland determination took place near flag GC A39, located within the wetland system associated with the pond.

Vegetation upgradient of the documented wetland line was dominant in red pine/*Pinus resinosa* (FACU), paper birch/*Betula papyrifera* (FACU), glossy buckthorn/*Frangula alnus* (FAC), barberry/*Berberis thunbergia* (FACU), honeysuckle/*Lonicera japonica* (FACU), autumn olive/*Elaeagnus angustifolia* (FACU), and lawn grass/*Gramineae sp.* (FACU). Vegetation downgradient of the delineated wetland edge was dominant in glossy buckthorn/*Frangula alnus* (FAC) and sedges/*Carex sp.* (FACW).

Soils identified on the property include rock outcrops, fine sandy loams, loamy sand, and silt loams, consistent with the NRCS soil maps for the site. In the wetland soil sample, an A layer was found from 0-12" with the consistency of silty loam. This layer had a matrix colored 10YR2/2 (60%). Additional colors in the sample consisted of brick (20%), and a loamy sand colored 5G7/2 (20%). A restrictive layer was found at 12+". In the upland soil sample, an A layer with the consistency of fine sandy loam (matrix color 10YR3/2) was found from 0-8". From 8-14", fine sandy loam (matrix color 7.5YR4/2) was pulled from soil horizon B. A restrictive layer was found from 14+". The soils matched a topographical incline from the wetlands, as well as a shift in documented vegetation. More detailed information about soils is included in the attached NRCS Soil Map and the ACOE Wetland Determination Forms.

The resource areas outlined above on-site are protected under NH RSA 482-A.

DESCRIPTION OF REGULATED INLAND RESOURCE AREA

The table below provides the regulatory jurisdiction, flag numbers/colors, and wetland types and locations for the resource areas delineated.

Wetland Types and Locations	Flag Numbers	Flag Type	Description
Perennial Stream (Riverine)	GCSD1 – GCSD20 GCSF1 – GCSF11	[Pink Wetland Flags]	Western bank of perennial stream in the northeastern portion of the site.
Perennial Stream (Riverine)	GCSC1 – GCSC20	[Pink Wetland Flags]	Eastern bank of perennial stream in the northeastern portion of the site.
Perennial Stream (Riverine)	GCSA1 – GCSA20 GCSB1 – GCSB14 GCSC1 – GCSC14	[Pink Wetland Flags]	Bank of daylit portion of the perennial stream in the southern portion of the site.
Freshwater Pond, Forest/Shrub Wetland	GCA1 – GCA170	[Blue Wetland Flags]	The western side of the freshwater pond and associated forested/shrub wetland.
Freshwater Pond/Freshwater Wetland	GCC1 – GCC32 GCE1 – GCE11	[Blue Wetland Flags]	The eastern side of the freshwater pond and freshwater wetland associated with the perennial stream.
Isolated Freshwater Forested/Shrub Wetland	GCD1 – GCD33	[Blue Wetland Flags]	Isolated wetland boundary was flagged in the northeastern portion of the site, adjacent to Hanover Street.
Isolated Vegetated Wetland (IVW)	GCI1 – GCI17	[Blue Wetland Flags]	Isolated wetland boundary was flagged in the northwestern portion of the site.
Freshwater Forested/Shrub Wetland	GCB1 – GCB220	[Blue Wetland Flags]	The wetland boundary was flagged in the southern portion of the site.

SITE PHOTOS



Photo 1. Wetland Soil Cross-Section displaying non-natural color for area.



Photo 2. Another view of Wetland Soil Cross-Section.



Photo 3. Water present in the test hole.



Photo 4. Abnormal soil (5G 7/2) found in soil cross-section.

Sincerely,

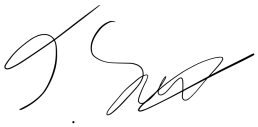
Goddard Consulting, LLC



Scott Goddard, PWS, CWS
Principal and Wetland Specialist

Andrew Thibault

Andrew Thibault, WPIT, WSA
Environmental Scientist



Tom Schutz, WPIT, WSA
Wetland Scientist

WETLAND DELINEATION DATA FORM - Northcentral and Northeast Region

Upgradient

Project/Site: **174 Hanover St** City/County: **Lebanon, NH** Sampling Data:

Applicant/Owner: **Richard Marchese** State: **NH** Sampling Point: **GCA 39**

Investigator(s): **Goddard Consulting LLC** Section, Township, Range:

Landform (hillslope, terrace, etc.): **Valley** Local relief (concave, convex, none): **None**

Slope (%): **10** Lat: **43.65186 N** Long: **72.25292 W** Datum:

Soil Map Unit Name: **Cardigan-Kearsarge-Rock outcrop complex** NWI classification: **Forest/Shrub Wetland**

Are climatic / hydrologic conditions on the site typical for this time of year? Yes **x** No (If no, explain in Remarks.)

Are Vegetation , Soil **X** , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes **x** No

Are Vegetation **X** , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	No **x**	**Is the Sampled Area**		
Hydric Soil Present?	Yes	No **x**	**Within a Wetland?**	**Yes**	**No x**
Wetland Hydrology Present?	Yes	No **x**	If yes, optional Wetland Site ID:		

Remarks: (Explain alternative procedures here or in a separate report.)

Soil Disturbance - historic grading, bricks; Problematic Vegetation - abundant invasives (Buckthorn, Barberry, Multiflora Rose, Honeysuckle, & Autumn Olive); 50-degrees, sunny.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)
- Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- Marl Deposits (B15)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Seconary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- Drainage Patterns (B10)
- Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- Geomorphic Position (D2)
- Shallow Aquitard (D3)
- Microtopographic Relief (D4)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	No **x**	Depth (inches):
Water Table Present?	Yes	No **x**	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	No **x**	Depth (inches):

Wetland Hydrology Present? **Yes** **No x**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial Photos, Site Inspections, Soil Auger Samples

Remarks:

VEGETATION *Upgradient*

Sampling Point: **GCA 39**

	Common Name	Scientific Name	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30)					
1.	Red Pine	*Pinus resinosa*	10.5	yes	FACU
2.	Paper Birch	*Betula papyrifera*	10.5	yes	FACU
3.					
4.					
5.					
6.					
7.					
			21	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)					
1.	Glossy Buckthorn	*Frangula alnus*	20.5	yes	FAC
2.	Barberry	*Berberis thunbergii*	10.5	yes	FACU
3.	Honeysuckle	*Lonicera japonica*	10.5	yes	FACU
4.	Autumn Olive	*Elaeagnus angustifolia*	10.5	yes	FACU
5.					
6.					
7.					
			52	= Total Cover	
Herb Stratum (Plot size: 15)					
1.	Lawn Grass	*Gramineae sp.*	38	yes	FACU
2.	Tall Goldenrod	*Solidago altissima*	10.5	no	FACU
3.	Dewberry	*Rubus flagellaris*	10.5	no	FACU
4.	Heath Speedwell	*Veronica officinalis*	3	no	FACU
5.	Bracken Fern	*Pteridium aquilinum*	3	no	FACU
6.	Red Clover	*Trifolium pratense*	3	no	FACU
7.					
8.					
9.					
10.					
11.					
12.					
			68	= Total Cover	
Woody Vine Stratum (Plot size: 5)					
1.					
2.					
3.					
4.					
			0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	120.5	x 4 =	482
UPL species	0	x 5 =	0
Column Totals:	120.5	(A)	482 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

___ Dominance Test is >50%

___ Prevalence Index is ≤ 3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL ***Upgradient***

Sampling Point: **GCA 39**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
A 0-8"	10YR 3/2	100					Fine Sanc	Dry, Fine Sandy Loam
B 8-14"	7.5YR 4/2	75		25	Brick		Fine Sanc	Dry, Fine Sandy Loam

[1]Type: C=Concentration, D=Depletion, RM=Redox Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M-Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Brick, Rock, Gravel

Depth (inches): 14"

Hydric Soil Present? **Yes** ___ **No** x

Remarks:

WETLAND DELINEATION DATA FORM - Northcentral and Northeast Region

Downgradient

Project/Site: **174 Hanover St** City/County: **Lebanon, NH** Sampling Data:

Applicant/Owner: **Richard Marchese** State: **NH** Sampling Point: **GCA 39**

Investigator(s): **Goddard Consulting LLC** Section, Township, Range:

Landform (hillslope, terrace, etc.): **Valley** Local relief (concave, convex, none):

Slope (%): **10** Lat: **43.65186 N** Long: **72.25292 W** Datum:

Soil Map Unit Name: **Cardigan-Kearsarge-Rock outcrop complex** NWI classification: **Forested/Shrub Wetland**

Are climatic / hydrologic conditions on the site typical for this time of year? Yes **X** No (If no, explain in Remarks.)

Are Vegetation , Soil **X** , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes **x** No

Are Vegetation **X** , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes **x**	No	**Is the Sampled Area**
Hydric Soil Present?	Yes **x**	No	**Within a Wetland?** **Yes x** **No**
Wetland Hydrology Present?	Yes **x**	No	If yes, optional Wetland Site ID:

Remarks: (Explain alternative procedures here or in a separate report.)

Soil Disturbance - historic grading, bricks; Problematic Vegetation - abundant invasives (Buckthorn, Barberry, Multiflora Rose, Honeysuckle, & Autumn Olive); 50-degrees, sunny.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- **x** Surface Water (A1)
- **x** High Water Table (A2)
- **x** Saturation (A3)
- **x** Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- **x** Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)
- **x** Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- Marl Deposits (B15)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- **x** Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- **x** Drainage Patterns (B10)
- Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- **x** Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- Geomorphic Position (D2)
- Shallow Aquitard (D3)
- **x** Microtopographic Relief (D4)
- **x** FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes **x**	No	Depth (inches): Surface
Water Table Present?	Yes **x**	No	Depth (inches): Surface
Saturation Present? (includes capillary fringe)	Yes **x**	No	Depth (inches): Surface

Wetland Hydrology Present? **Yes x** **No**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Orthophoto, Site Inspection, Soil auger pits

Remarks:

VEGETATION *Downgradient*

Sampling Point: **GCA 39**

	Common Name	Scientific Name	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30)					
1.					
2.					
3.					
4.					
5.					
6.					
7.					
			0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)					
1.	Glossy Buckthorn	*Frangula alnus*	38	yes	FAC
2.	Silky Dogwood	*Cornus amomum*	10.5	no	FACW
3.	Multiflora Rose	*Rosa multiflora*	3	no	FACU
4.					
5.					
6.					
7.					
			51.5	= Total Cover	
Herb Stratum (Plot size: 5)					
1.	Sedges	*Carex sp.*	38	yes	FACW
2.	Purple Loosestrife	*Lythrum salicaria*	10.5	no	OBL
3.	Sensitive Fern	*Onoclea sensibilis*	10.5	no	FACW
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
			59	= Total Cover	
Woody Vine Stratum (Plot size:)					
1.					
2.					
3.					
4.					
			0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	3	x 4 =	12
UPL species	0	x 5 =	0
Column Totals:	3	(A)	12 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

___ Dominance Test is >50%

___ Prevalence Index is ≤ 3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** **X**

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL *Downgradient*

Sampling Point: **GCA 39**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
A 0-12"	10YR 2/2	60	5G 7/2 (non-natural co	20			Silty Loan	GW seeped into hole 6" below the surface
				20	Brick			

[1]Type: C=Concentration, D=Depletion, RM=Redox Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M-Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- x Stratified Layers (A5)
- x Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- x Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- x Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

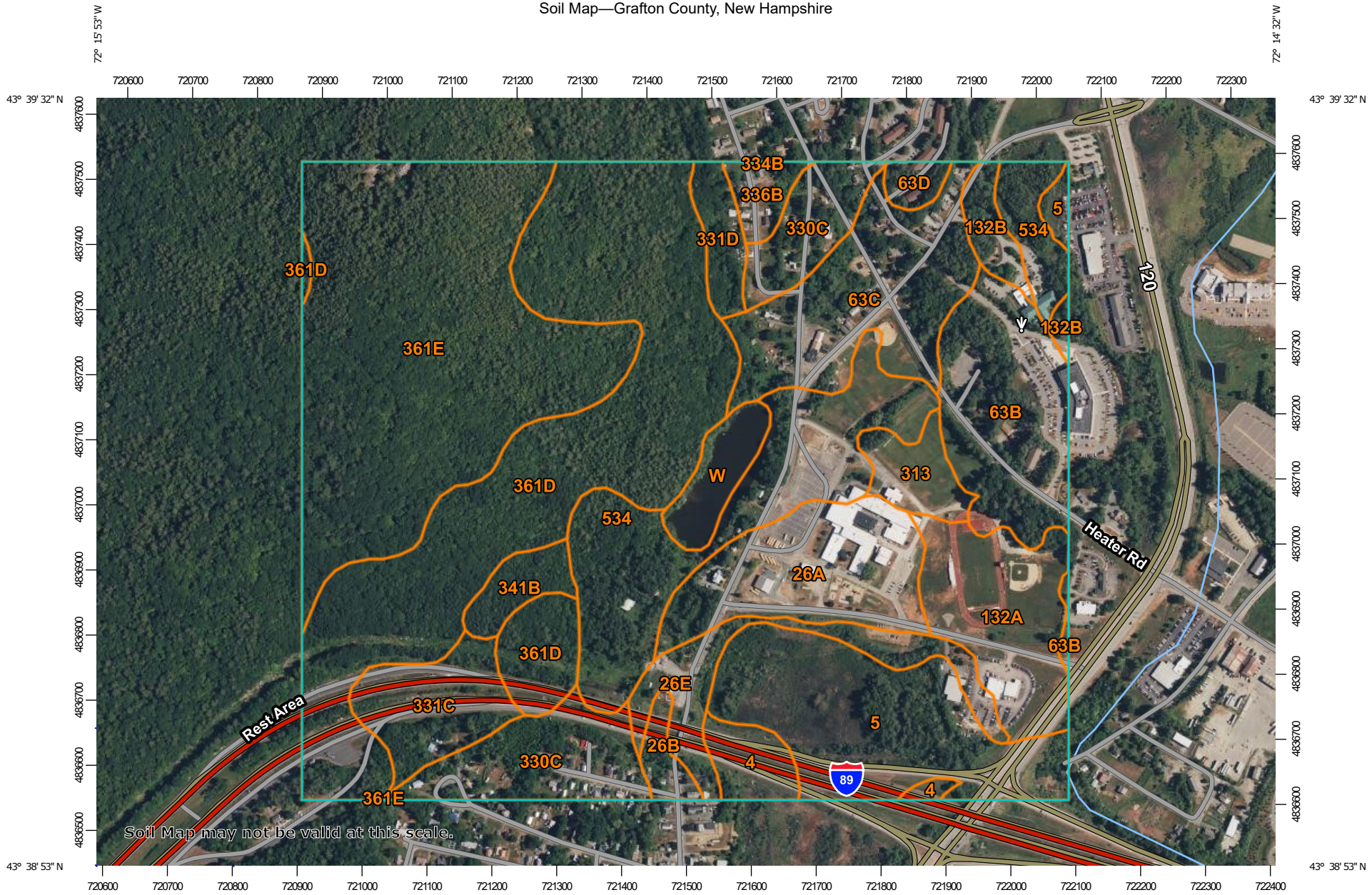
Restrictive Layer (if observed):

Type: ___

Depth (inches): 12"

Hydric Soil Present? **Yes** x **No** ___

Remarks:



Map Scale: 1:8,310 if printed on A landscape (11" x 8.5") sheet.

N

0 100 200 400 600 Meters

0 400 800 1600 2400 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Grafton County, New Hampshire
Survey Area Data: Version 27, Aug 22, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 27, 2020—Sep 16, 2020

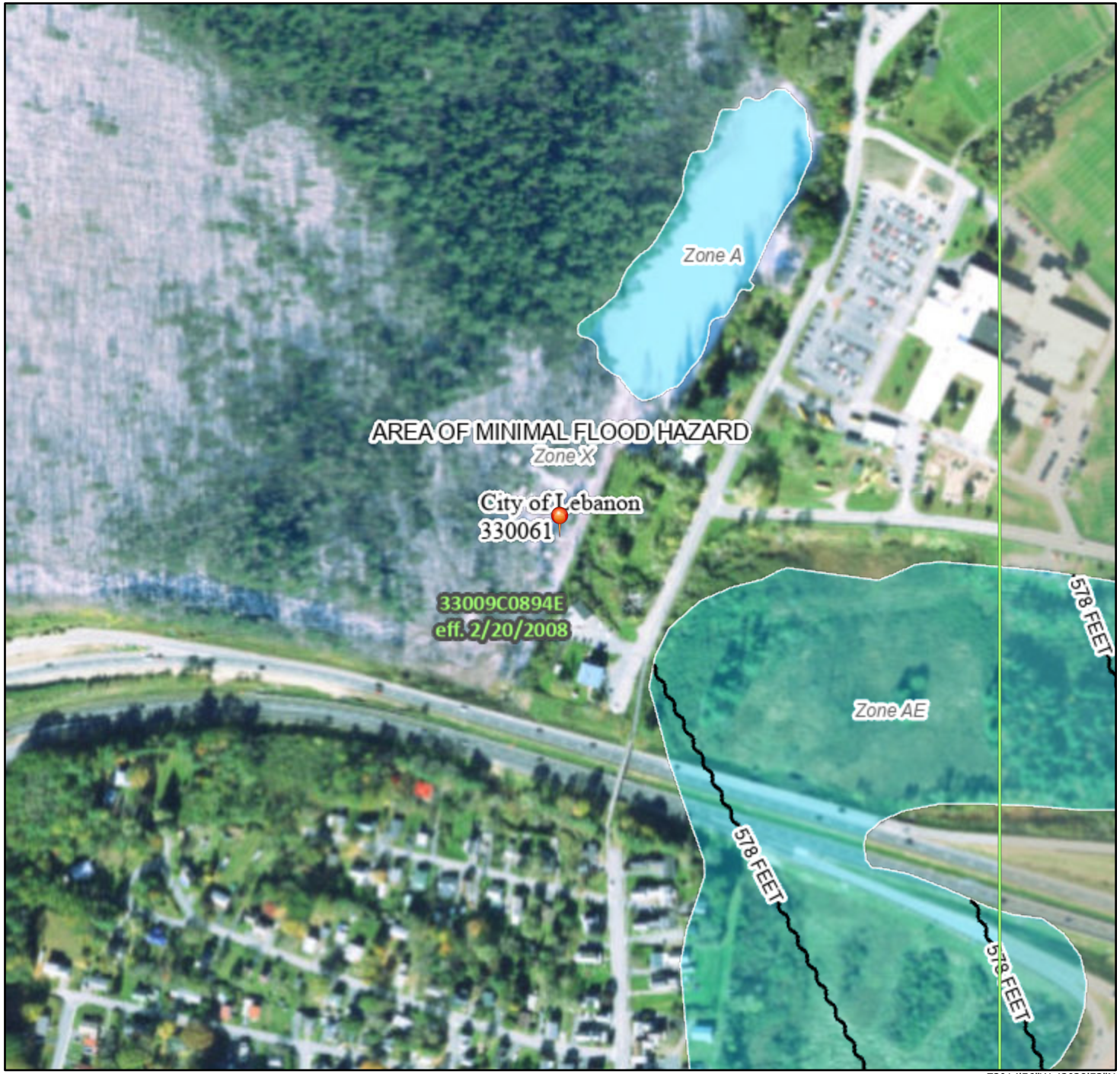
The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
4	Pootatuck very fine sandy loam	4.0	1.4%
5	Rippowam fine sandy loam	23.7	8.3%
26A	Windsor loamy sand, 0 to 3 percent slopes	15.3	5.3%
26B	Windsor loamy sand, 3 to 8 percent slopes	2.0	0.7%
26E	Windsor loamy sand, 15 to 60 percent slopes	8.6	3.0%
63B	Charlton fine sandy loam, 3 to 8 percent slopes, very stony	16.8	5.9%
63C	Charlton fine sandy loam, 8 to 15 percent slopes, very stony	18.9	6.6%
63D	Charlton fine sandy loam, 15 to 25 percent slopes, very stony	1.5	0.5%
132A	Dartmouth silt loam, 0 to 3 percent slopes	13.8	4.8%
132B	Dartmouth silt loam, 3 to 8 percent slopes	3.2	1.1%
313	Deerfield loamy fine sand, 0 to 3 percent slopes	4.2	1.5%
330C	Bernardston silt loam, 8 to 15 percent slopes	15.9	5.5%
331C	Bernardston silt loam, 8 to 15 percent slopes, very stony	8.5	3.0%
331D	Bernardston silt loam, 15 to 25 percent slopes, very stony	3.4	1.2%
334B	Pittstown loam, 3 to 8 percent slopes	0.0	0.0%
336B	Pittstown loam, 3 to 8 percent slopes, very stony	2.5	0.9%
341B	Stissing silt loam, 3 to 8 percent slopes, very stony	3.3	1.1%
361D	Cardigan-Kearsarge-Rock outcrop complex, 15 to 25 percent slopes	57.6	20.0%
361E	Cardigan-Kearsarge-Rock outcrop complex, 25 to 60 percent slopes	53.3	18.6%
534	Binghamville silt loam	26.5	9.2%
W	Water	4.3	1.5%
Totals for Area of Interest		**287.5**	**100.0%**

National Flood Hazard Layer FIRMette

72°15'34"W 43°39'19"N



72°14'56"W 43°38'53"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

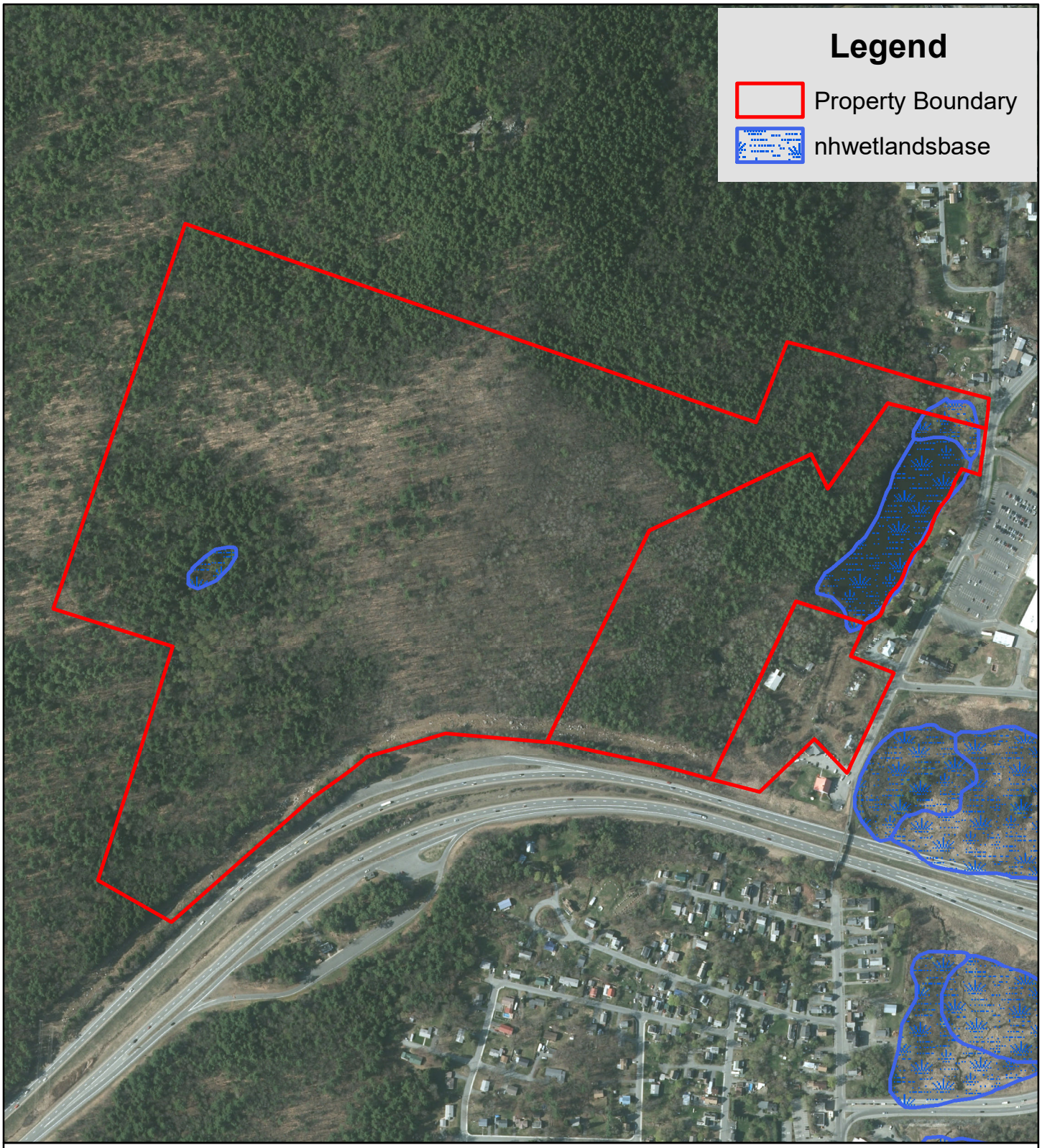
N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/26/2024 at 1:23 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



Orthophoto View of Site with Wetland Resource Areas

174 Hanover Street - Lebanon, NH

(Map: 48, Lots 1, 2, 4:)

N

Date:

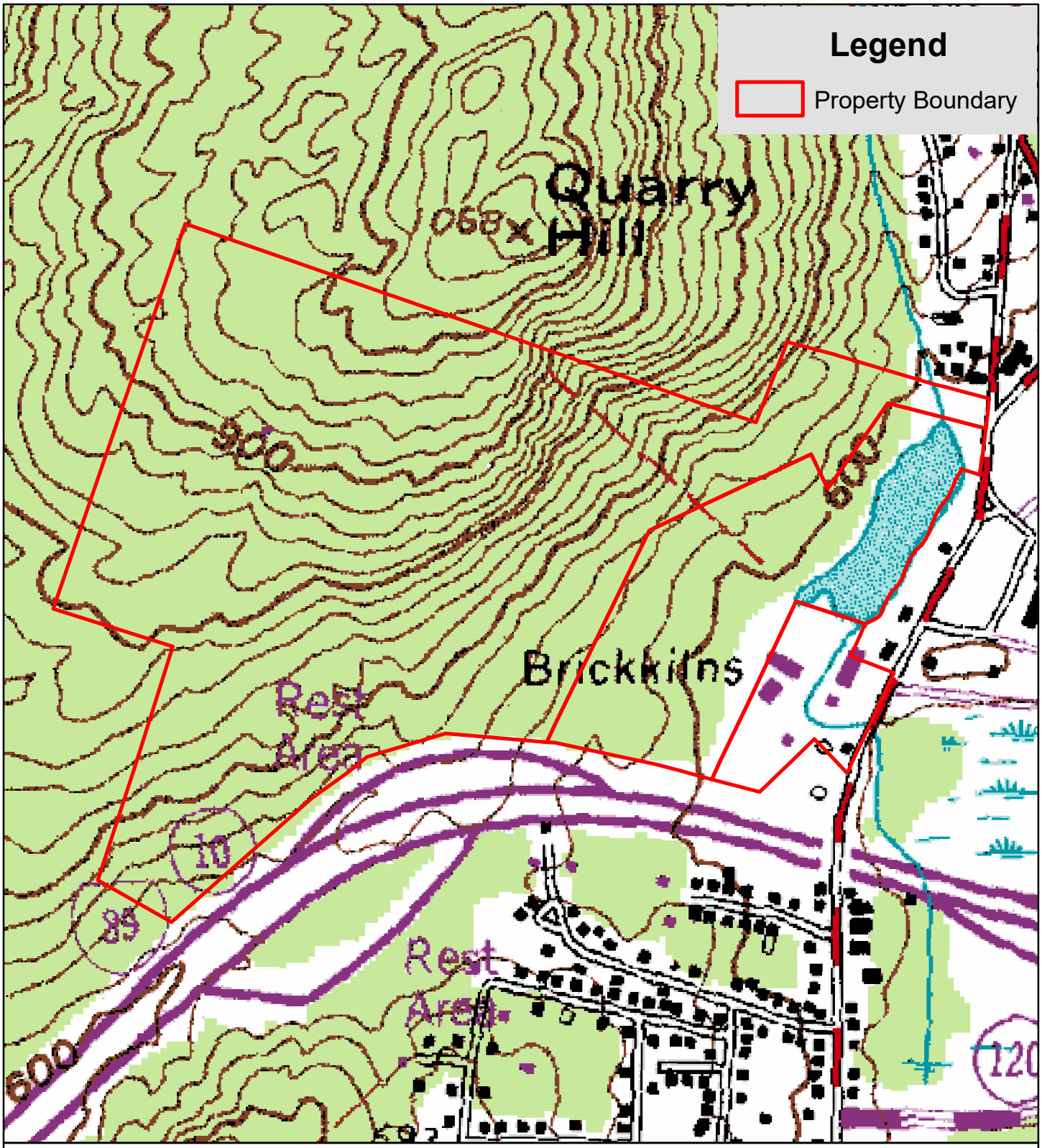
Feet

0 275 550

1 inch = 550 feet

GIS Data Source: “Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, MassIT”

GODDARD CONSULTING LLC
Strategic Wetland Permitting



USGS of Site

174 Hanover Street - Lebanon, NH

(Map: 48, Lots 1, 2, 4:)

N

Date: 12/16/2021

Feet

0 275 550

1 inch = 550 feet

GIS Data Source: "Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, MassIT"

GODDARD CONSULTING LLC
Strategic Wetland Permitting

Appendix B: Representative Site Photographs

Representative Site Photographs
Brickyard Development - Lebanon, NH



Photo 1: View southwest from the edge of Hanover Street at Wetland 4 within the northern portion of the property where minimal edge impacts are proposed a result of grading for installation of a City required sidewalk. 9/24/2024.



Photo 2: Another view east of Wetland 4 within the northern portion of the property, facing towards Hanover Street. 9/24/2024.



Photo 3: View north of the unnamed perennial stream S-1 and bordering Wetland W-3 located to the north of Densmore Pond. The stream was dry at the time of observation on 9/24/2024.



Photo 4: View northeast at unnamed perennial stream S-1 and bordering Wetland W-3 where proposed new Tier 3 Stream Crossing #2 is proposed to the north of Densmore Pond. April 7, 2025.



Photo 5: Western view of Wetland W-3 (PFO1/4C). 9/24/2024.



Photo 6: View east of the center of Densmore Pond, facing towards Hanover Street. 9/24/2024.



Photo 7: Representative view of the upland forested landscape in the central portion of the Project site. 9/24/2024.



Photo 8: Representative view of the upland forested landscape in the southern portion of the Project site. 9/24/2024.



Photo 9: View southeast of the large multi-class Wetland W-1 at the southern end of the Project site abutting Interstate 89. 9/24/2024.



Photo 10: Representative view of the wetland ditch with standing water comprising the northern end of Wetland W-1 which conveys drainage to the unnamed perennial stream. 9/24/2024.



Photo 11: View northwest of forested portions of Wetland W-1 in the southern portion of the Project site. 9/24/2024.



Photo 12: Northern view of Wetland W-2. 9/24/2024.



Photo 13: View west of the unnamed perennial stream (S-1) and bordering Wetland W-2 located south of Densmore Pond, taken near Hanover Street. Photo depicts abandoned, debilitated wetland Culvert #3 proposed for removal and restoration. 9/24/2024.



Photo 14: View northeast of the unnamed perennial stream (S-1) located south of Densmore Pond, facing towards the pond. 9/24/2024.



Photo 15: View north of Densmore Pond, taken from the southern end. 9/24/2024.



Photo 16: View southwest at unnamed perennial stream S-1 and location of proposed new Tier 3 Stream Crossing #1 to the south of Densmore Pond. December 5, 2024.



Photo 17: View east at outlet of abandoned, debilitated Culvert #1 proposed for removal and stream restoration. November 7, 2022.



Photo 18: View south of inlet of abandoned, debilitated Culvert #1 proposed for removal and stream restoration. November 7, 2022.



Photo 19: View south of abandoned, debilitated Culvert #2 proposed for removal and stream restoration. December 5, 2024.



Photo 20: Another view south at abandoned, debilitated Culvert #2 proposed for removal and stream restoration. September 24, 2024.



Photo 21: View northeast at inlet of abandoned, debilitated Culvert #3 conveying wetland drainage from Wetland W-1 to the unnamed perennial stream. This culvert is also proposed for removal and wetland restoration.

Appendix C: Brickyard Hydraulics Memorandum

Memorandum

To: Emmanuel Uwizeye, Regional Reviewer (West)
NHDES Wetlands Bureau
29 Hazen Drive, PO Box 95
Concord, NH 03302-0095

Date: March 31, 2025

Project #: 52933.00

From: Annique Fleurock, PE

Re: Brickyard Residential Development:
Unnamed Stream Hydraulic Analysis

Hydraulic Design Report

1. Requirements

The proposed Brickyard Residential Development project is situated on four parcels, a total of 133.5 acres, located at 174 Hanover Street Extension Lebanon, New Hampshire. Approximately 13.5 acres of the site will be disturbed as part of construction activities associated with the development. This report describes the analysis of two stream crossings proposed as part of this development.

The development includes two new crossings over the Unnamed Stream, which are on the private development and will remain under private ownership following the completion of construction. For this reason, the proposed design is not required to comply with New Hampshire Department of Transportation (NHDOT) standards, however, NHDOT Bridge Design Manual Chapter 2.7 was used to provide analysis guidance and best practices.

The watershed area of the Unnamed Stream is 1.2 square miles (774 acres) and thus is classified as a Tier 3 stream according to the New Hampshire Code of Administrative Rules Chapter Env-Wt 900 (NHDES Stream Crossing Regulations). As such, the proposed stream crossings are subject to all criteria within the NHDES Stream Crossing Regulations for Tier 3 crossings. The NHDES Stream Crossing Regulations for Tier 3 crossings state that structures must accommodate the 100-year 24-hour design storm, have an entrenchment ratio greater than 2.2, as well as provide a bridge span, open-bottom culvert, or closed bottom culvert with stream simulation. Accommodating the 100-year 24-hour design storm is interpreted as providing conveyance of the 100-year design flow while under normal flow, not pressure flow.

The proposed development is located within the Federal Emergency Management Agency (FEMA) Special Flood Hazard Area, Zone A of an Unnamed Stream with no established base flood elevations and discharges to the Mascoma River. The hydraulic analysis complies with the FEMA Zone A (FEMA 44 CFR 60.3(c)(10)) requirements by confirming that the proposed development will not increase the water surface elevation of the base flood by more than one foot.

In summary, the hydraulics for the crossings aim to meet the following design requirements:

NHDES

- Accommodate the 100-year 24-hour design storm
- Entrenchment ratio greater than 2.2
- Proposed Structure: bridge span, open-bottom culvert, or closed-bottom culvert with stream simulation

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FEMA

- Improving the existing hydraulic capacity
- Not increase the water surface elevation by more than one foot for the 100-year 24-hour design storm.

2. Analysis

VHB completed the hydrologic analysis based on the NHDES Stream Crossing Regulations while also using the NHDOT Bridge Design Manual Chapter 2.7 as guidelines.

2.1. Hydrology

There is no stream gauge data available at this location. The project drainage area falls within the required range for the USGS 2008 Regression Equation (also known as StreamStats) for New Hampshire at 1.2 square miles or 769 acres. VHB also checked these values against the Federal Highway Administration (FHWA) Report No. FHWA-RD-77-159, 1977 Runoff Estimates for Small Rural Watersheds and Development and a project-specific TR-55 Hydrologic Analysis.

The TR-55 analysis for the Unnamed Stream inputs includes the overall watershed area, time of concentration, and runoff curve number. The TR-55 analysis is a very conservative estimate for the Unnamed Stream watershed peak flow because there are numerous upstream storage areas that would result in reduced peak rates at the proposed stream crossings that the analysis is unable to account for without significantly more inputs. Specifically, storage from upstream wetlands, forested areas, and assumed upstream culverts beneath Mount Support Road and State Route 120 would provide notable storage that is not accounted for in the analysis. TR-55 is an applicable analysis for the stormwater analysis of the specific development area because it is a significantly smaller watershed undergoing development and will have much less complex storage. This approach, however, is not applicable for the overall Unnamed Stream watershed.

The FHWA, 1977 estimates are also notably higher than the USGS NH Regression Equations. VHB completed a sensitivity analysis using the hydraulic model to compare the water surface elevation results at the Hanover Street 5-foot diameter corrugated metal pipe (CMP) culvert. This culvert has a full flow capacity of less than 25 cfs and no notable history of flooding. The lack of flooding reports here shows that the FWHA and TR-55 flow predictions are not accurate.

There is also a small tributary from the southwest entering the Unnamed Stream 160 feet upstream of the Hanover Street crossing. The watershed to the tributary is not available in USGS StreamStats and when delineated is approximately 37 acres, which falls below the 448-acre minimum watershed area requirement for the New Hampshire Regression Equations. Modeling the hydrology of this area using the TR-55 methodology would be overly conservative as the watershed is mostly undeveloped and has wetland, forest, and culvert storage. The watershed area for this tributary is approximately 5% of the overall Unnamed Stream watershed area. To account for the tributary inflow while not being overly conservative, the model includes a flow increase of 5% at the tributary location. **Table 1** below provides the selected peak discharge rates and the peak discharge with the additional 5% added for the tributary. The attached appendix provides additional calculation data and **Figure 1 – Watershed Map**.

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Table 1: Peak Rate Discharges (CFS)

24-Hour Design Storm	2-Year	10-Year	50-Year	100-Year	500-Year
	50% AEP	10% AEP	2% AEP	1% AEP	0.2% AEP
Selected:	**25**	**56**	**75**	**111**	**159**
USGS NH StreamStats Regression Equations					
TR-55	133	301	512	612	-
FHWA, 1977	65	160	262	304	401
Final Discharge including Tributary	**26**	**58**	**79**	**117**	**167**

AEP: Annual Exceedance Probability
PI: Prediction Interval

2.2. Hydraulics

VHB utilized the industry standard, and NHDOT-approved, step-backwater analysis program: HEC-RAS, River Analysis System Version 6.6 by the US Army Corp of Engineers (USACE). This program was used to model hydraulics at the site location for existing design conditions and then compared to the proposed design conditions to aid in the development of an appropriate stream crossing design. The HEC-RAS model utilized data collected during the geomorphic site visit conducted on December 4, 2024, and the topographic and bathymetric survey collected by VHB from the fall of 2022 through the fall of 2024. Water surface profiles for the Unnamed Stream during the 50%, 10%, 2%, 1%, and 0.2% AEP flood events were estimated in a manner consistent with the standards used to develop water surface profiles under the National Flood Insurance Program (NFIP). All flood simulations are 1-dimensional steady state step-backwater analyses executed using a subcritical flow regime.

The existing conditions HEC-RAS model was developed using a detailed survey of the project site and supplemented with 2015-2016 USGS/FEMA Lidar: Connecticut River Watershed, NH (LiDAR) for some limited overbanks and cross sections downstream of the Hanover Street crossing.

The model parameters such as channel and overbank roughness coefficients (Manning's 'n') were developed based on the geomorphic site visit conducted on December 4, 2024. **Table 2** presents the selected Manning's roughness coefficients for this study.

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Table 2:Manning's Roughness

Land Use/Cover	Manning's 'n'
Upland Overbanks: Medium/dense trees and brush	0.07 - 0.09
Floodplain Overbanks: Light trees and brush	0.05 - 0.06
Upstream Channel: Clean, winding, some pools and shoals, some weeds and stones	0.04
Downstream Channel: Clean, straight, no rifts or deep pools	0.03

The contraction and expansion coefficients of 0.1 and 0.3, respectively, were used everywhere but in the cross sections immediately upstream and downstream of the existing bridge. Contraction and expansion coefficients of 0.3 and 0.5, respectively, were used at these locations to model the abrupt transition caused by the culvert constriction.

VHB assigned permanent ineffective flow areas to portions of the model cross-sections which are impacted by the existing crossing constriction. These areas can store flow but provide no active conveyance. The ineffective areas were placed in portions of the channel immediately upstream and downstream from the crossing beyond the opening.

The various culvert crossings were modeled using the deck and roadway data editor based on the base plan survey provided for the project. The energy method was utilized for the two existing crossings on site. The Hanover Street crossing utilized energy and the pressure methods for high flow scenarios; the results from the pressure method were more stable because the model predicts water surface elevations between the low and high chord during larger storm events.

The downstream boundary condition was set to normal depth based on the stream channel profile. VHB verified the downstream boundary condition assumption with a sensitivity analysis that consisted of testing additional slopes for the normal depth boundary condition as well as a known water surface elevation boundary condition. **Figure 2** provides the model layout for the HEC-RAS analysis.

3. Hydraulic Results

The proposed analysis was performed by revising the existing condition model, adding the proposed crossings based on the proposed project design and adjusting the inverts, channel depths, and structure sizes to comply with the FEMA and NHDES regulations. The two abandoned, debilitated existing crossings between the proposed downstream crossing and the Hanover Street crossing were removed to improve overall hydraulic conveyance.

The peak discharges, boundary conditions, and cross-section locations from the existing model were not changed for the proposed condition model.

The geomorphic assessment of this stream found that the channel is a type C3 stream under Rosgen Classification. The NHDES Stream Crossing Regulations for type C3 and Tier 3 crossing require structures to have an entrenchment ratio greater than 2.2. Based on the bankfull width of 15 feet, the proposed crossings would require a span of at least 33 feet to meet this requirement. The 33-foot span would eliminate the ability to utilize a precast structure and would

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require a full structural bridge design. This would significantly increase design and construction costs. The proposed structures

are designed to be constructed using precast material, provide a span of 1.27 times the bankfull width, and provide 2-foot benches on either side of the channel for wildlife crossings. The project is also providing at least 75 linear feet of stream restoration by removing the two abandoned, debilitated culverts. Given that the proposed hydraulic analysis predicts the water surface elevations to decrease by up to 2.3 feet for the 100-year 24-hour design storm, as shown in **Table 3** below, and the project is proposing stream restoration at the two abandoned, debilitated culverts, the hydraulic benefit of providing an entrenchment ratio of 2.2, does not outweigh the increase in cost and project complexity. Please see the Alternative Design Report attached to the project's permit submission for further details. The proposed crossing geometry is provided in **Table 3** below.

Table 3:Proposed Crossing Geometry

	Dimensions (FT)									
	Width	Height	Length	Openness Ratio	Entrenchment Ratio	Upstream Invert	Downstream Invert	Upstream Low Chord	Downstream Low Chord	Slope
Proposed Crossing #1: Southern Crossing	19	4	62.5	1.2	1.3	577.1	577.1	581.1	581.1	0%
Proposed Crossing #2: Northern Crossing	19	6.5	58.7	2.1	1.3	599.1	595.8	605.6	602.3	6%

Table 4 provides the results for the 100-year 24-hour design storm to show improvement in the existing hydraulic capacity and the ability to accommodate the event for FEMA and NHDES requirements. The Env-Wt-900 Stream Crossing Worksheet for each proposed crossing are provided in the Appendix.

Table 4: 100-Year 24-Hour Design Storm Water Surface Elevation Results (feet)

HEC-RAS River Station	Existing Condition	Proposed Design	
	WSE	WSE	Δ
2274	618.5	618.5	*0.0*
2134	611.7	611.7	*0.0*
2082	606.5	606.5	*0.0*
2065	605.2	605.2	*0.0*
2005	602.3	602.3	*0.0*
1963		Proposed Crossing #2	
1923	597.0	597.0	*0.0*
1831	589.7	589.7	*0.0*
1767	585.3	585.3	*0.0*
1725	583.4	583.4	*0.0*
1683	582.6	582.6	*0.0*
1627	581.9	580.7	*-1.2*
1606	581.9	580.7	*-1.2*
1475	581.9	580.7	*-1.2*
1371	581.9	580.7	*-1.2*
1247	581.9	580.7	*-1.2*
1141	581.9	580.7	*-1.2*
1020	581.9	580.7	*-1.2*
798	581.9	580.6	*-1.3*
760	581.9	580.6	*-1.3*
679	581.9	580.6	*-1.3*
644	581.9	580.3	*-1.5*
620	581.9	580.3	*-1.5*
571	581.9	580.2	*-1.6*
531		Proposed Crossing #1	
465	581.9	580.1	*-1.8*
420	Debilitated Existing Culvert #1		
385	581.8	579.6	*-2.3*
362	581.8	579.7	*-2.2*
268	581.8	579.5	*-2.3*
258	Debilitated Existing Culvert #2		
243	579.5	579.5	*0.0*
201	579.5	579.5	*0.0*
160	579.5	579.5	*0.0*
12		Hanover Street Crossing	
76	576.5	576.5	*0.0*
55	576.0	576.0	*0.0*
1	575.8	575.8	*0.0*

1: Cross Section 2065 and 620 are the locations analyzed to confirm the 100-year design storm can be conveyed through the proposed crossing

Δ: Difference between Alternative and Existing Conditions

WSE: Water Surface Elevation

3.1. Proposed Stream Restoration

The proposed project also includes the removal of two abandoned, debilitated culverts between Proposed Crossing #1 and the Hanover Street crossing. Debilitated existing culvert #1 is a 56-foot long 5-foot diameter re-used chimney and debilitated existing culvert #2 is a 19-foot long 4.5-foot diameter corrugated metal pipe with granite blocks for headwalls. This project will remove both of the abandoned crossings and will restore the streambed with a bankfull width of approximately 15 feet while matching the bankfull widths upstream and downstream.

4. Conclusions

The following summarizes the VHB's proposed design based on the results of the hydrologic and hydraulic analyses:

- The design provides a 19-foot channel with a low flow 5-point cross-section and 2-foot wide overbanks for the 15-foot bankfull width and wildlife crossing.
- The model results indicate the proposed design:
    - meets the FEMA requirements of improved hydraulic capacity and not increasing the water surface elevation for the 100-year 24-hour design storm; and
    - meets the NHDES stream crossing guidance for Tier 3 crossings by:
        - accommodating the 100-year 24-hour design storm
        - and providing proposed open-bottom culvert structures.
- The NHDES Rules require type C3, Tier 3 crossings to have an entrenchment ratio greater than 2.2. Based on the bankfull width of 15 feet, the proposed crossings would require a span of at least 33 feet to meet this requirement. The proposed structures are designed to be constructed using precast material, provide a span of 1.3 times the bankfull width, and provide 2-foot benches on either side of the channel for wildlife crossings. The project is also providing at least 75 linear feet of stream restoration by removing the two abandoned, debilitated culverts. Given that the proposed hydraulic analysis predicts the water surface elevations to decrease by up to 2.3 feet for the 100-year 24-hour design storm, and the project is proposing stream restoration at the two abandoned, debilitated culverts, the hydraulic benefit of providing an entrenchment ratio of 2.2, does not out way the increase in cost and project complexity. Please see the Alternative Design Report attached to the project's permit submission for further details.
- Following this permit submission, VHB will complete a scour analysis for each crossing to determine the appropriate culvert footing protection. The project's design development will also include calculations for stable streambed material to be provided within each crossing and the stream restoration segments.

Figures

- Figure 1 – Watershed Map
- Figure 2 – Model Layout

Figure 1 - Watershed Map

Lebanon Brickyard Development | Lebanon, New Hampshire



N

0 300 600 1,200 1,800 2,400 Feet

Legend

- Un-named Stream Watershed
- Approximate Project Limits
- Un-named Stream Flow Path

Source: Google Imagery, USGS StreamStats

Figure 2 - HEC-RAS Model Layout

Lebanon Brickyard Development | Lebanon, New Hampshire



Legend

- Un-named River Centerline
- Model Cross Sections

N

0 100 200 400 600 800 Feet

Path: \\vhb\gis\proj\Bedford\52933.00 Lebanon Brickyard Develo\Project\Brickyard Collector.aprx

Path: \\vhb\gis\proj\Bedford\52933.00 Lebanon Brickyard Develo\Project\Brickyard Collector.aprx (afleurock, 2/26/2025)

Source: Google Imagery, USGS StreamStats

Appendix

- Hydrology Summary
- USGS StreamStats Report
- FEMA Flood Insurance Rate Map
- NHDES-W-06-071 Stream Crossing Worksheet – Proposed Crossing #1
- NHDES-W-06-071 Stream Crossing Worksheet – Proposed Crossing #2
- HEC-RAS Profile Results
- HEC-RAS Standard Results Table – Existing Condition
- HEC-RAS Standard Results Table – Proposed Condition
- HEC-RAS Cross Section Results – Existing Condition
- HEC-RAS Cross Section Results – Proposed Condition

Regression Analysis: Multiple Methods

Project Name: Brickyard
Project Location: Lebanon, NH
Proj. No.: 52933.00
Date: 12/20/2024
Calculated by: AHF

Peak Runoff Rate Estimates (cfs)

AEP (%)	50%	43%	20%	10%	4%	2%	1%	0.5%	0.2%
Return Period (yr)	2	2.33	5	10	25	50	100	200	500
y(i)	0.37	0.58	1.50	2.25	3.20	3.90	4.60	5.30	6.21
USGS (StreamStats)	25		42	56	75	91	111		159
USGS Vermont	27	30	43	56	74	90	106	125	152
FHWA	65	76	122	160	218	262	304	346	401
HydroCAD - Atlas 14	133			301	420	512	612		
HydroCAD - NRCC	125			279	412	540	696		
Selected Q	**25**		**42**	**56**	**75**	**91**	**111**		**159**
Inflow Trib - 5% Sensitivity Test	**1**		**2**	**3**	**4**	**5**	**6**		**8**
Inflow Trib - 5% Sensitivity Test	**26**		**44**	**58**	**79**	**96**	**117**		**167**

Note: Round results/extrapolations to two significant figures for hydraulic design

Brickyard hydrology selection

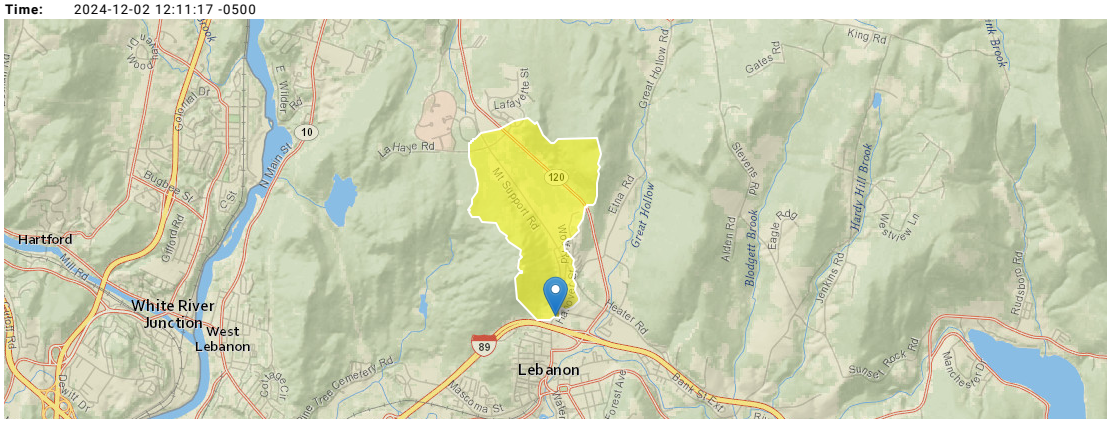
- Site development flows are flashier and have less storage that the overall stream watershed

- TR 55 does not account for upstream storage within wetlands resulting from roadway culverts.

- The 5-ft diam Hanover St culvert does not have a history of flooding. This culvert full flow capacity is less than 25 cfs. The lack of flooding reports here show that the TR-55 flows are not accurate.

StreamStats Report

Region ID: NH
Workspace ID: NH20241202171054124000
Clicked Point (Latitude, Longitude): 43.65132, -72.25290
Time: 2024-12-02 12:11:17 -0500



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
APRAVPRE	Mean April Precipitation	3.093	inches
BSLDEM30M	Mean basin slope computed from 30 m DEM	10.785	percent
CONIF	Percentage of land surface covered by coniferous forest	25.4	percent
CSL10_85	Change in elevation divided by length between points 10 and 85 percent of distance along main channel to basin divide - main channel method not known	133	feet per mi
DRNAREA	Area that drains to a point on a stream	1.21	square miles
ELEVMAX	Maximum basin elevation	1068.519	feet
MINTEMP_W	Mean winter minimum air temperature over basin surface area	11.817	degrees F
MIXFOR	Percentage of land area covered by mixed deciduous and coniferous forest	36.4333	percent
PREBC0103	Mean annual precipitation of basin centroid for January 1 to March 15 winter period	6.46	inches
PREBC_1112	Mean annual precipitation of basin centroid for November 1 to December 31 period	6.81	inches
PRECIPCENT	Mean Annual Precip at Basin Centroid	38.9	inches
PRECIPOUT	Mean annual precip at the stream outlet (based on annual PRISM precip data in inches from 1971-2000)	39.1	inches
PREG_03_05	Mean precipitation at gaging station location for March 16 to May 31 spring period	8	inches
PREG_06_10	Mean precipitation at gaging station location for June to October summer period	17.7	inches
SNOFALL	Mean Annual Snowfall	73.749	inches
TEMP	Mean Annual Temperature	44.12	degrees F
TEMP_06_10	Basinwide average temperature for June to October summer period	60.832	degrees F
WETLAND	Percentage of Wetlands	10.6872	percent

Peak-Flow Statistics

Peak-Flow Statistics Parameters [Peak Flow Statewide SIR2008 5206]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.21	square miles	0.7	1290
APRAVPRE	Mean April Precipitation	3.093	inches	2.79	6.23
WETLAND	Percent Wetlands	10.6872	percent	0	21.8
CSL10_85	Stream Slope 10 and 85 Method	133	feet per mi	5.43	543

Peak-Flow Statistics Flow Report [Peak Flow Statewide SIR2008 5206]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR^2: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	PIL	PIU	ASEp	Equiv. Yrs.
50-percent AEP flood	25.3	ft^3/s	15.3	41.9	30.1	3.2
20-percent AEP flood	41.8	ft^3/s	24.9	70.3	31.1	4.7
10-percent AEP flood	55.7	ft^3/s	32.4	95.8	32.3	6.2
4-percent AEP flood	75.2	ft^3/s	42.2	134	34.3	8
2-percent AEP flood	91.4	ft^3/s	49.6	168	36.4	9
1-percent AEP flood	111	ft^3/s	58.1	212	38.6	9.8
0.2-percent AEP flood	159	ft^3/s	76.3	331	44.1	11

Peak-Flow Statistics Citations

Olson, S.A.,2009, Estimation of flood discharges at selected recurrence intervals for streams in New Hampshire: U.S.Geological Survey Scientific Investigations Report 2008-5206, 57 p. (http://pubs.usgs.gov/sir/2008/5206/)

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Statewide]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.21	square miles	3.26	689
TEMP	Mean Annual Temperature	44.12	degrees F	36	48.7
PREG_06_10	Jun to Oct Gage Precipitation	17.7	inches	16.5	23.1

Low-Flow Statistics Disclaimers [Low Flow Statewide]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Low-Flow Statistics Flow Report [Low Flow Statewide]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.0477	ft^3/s
7 Day 10 Year Low Flow	0.0137	ft^3/s

Low-Flow Statistics Citations

Flynn, R.H. and Tasker, G.D.,2002, Development of Regression Equations to Estimate Flow Durations and Low-Flow-Frequency Statistics in New Hampshire Streams: U.S.Geological Survey Scientific Investigations Report 02-4298, 66 p. (http://pubs.water.usgs.gov/wrir02-4298)

Flow-Duration Statistics

Flow-Duration Statistics Parameters [Low Flow Statewide]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.21	square miles	3.26	689
PREG_06_10	Jun to Oct Gage Precipitation	17.7	inches	16.5	23.1
TEMP	Mean Annual Temperature	44.12	degrees F	36	48.7

Flow-Duration Statistics Disclaimers [Low Flow Statewide]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Flow-Duration Statistics Flow Report [Low Flow Statewide]

Statistic	Value	Unit
60 Percent Duration	0.547	ft^3/s
70 Percent Duration	0.357	ft^3/s
80 Percent Duration	0.192	ft^3/s
90 Percent Duration	0.0895	ft^3/s
95 Percent Duration	0.0518	ft^3/s
98 Percent Duration	0.0298	ft^3/s

Flow-Duration Statistics Citations

Flynn, R.H. and Tasker, G.D.,2002, Development of Regression Equations to Estimate Flow Durations and Low-Flow-Frequency Statistics in New Hampshire Streams: U.S.Geological Survey Scientific Investigations Report 02-4298, 66 p. (http://pubs.water.usgs.gov/wrir02-4298)

Seasonal Flow Statistics

Seasonal Flow Statistics Parameters [Low Flow Statewide]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.21	square miles	3.26	689
CONIF	Percent Coniferous Forest	25.4	percent	3.07	56.2
PREBC0103	Jan to Mar Basin Centroid Precip	6.46	inches	5.79	15.1
BSLDEM30M	Mean Basin Slope from 30m DEM	10.785	percent	3.19	38.1
MIXFOR	Percent Mixed Forest	36.4333	percent	6.21	46.1
PREG_03_05	Mar to May Gage Precipitation	8	inches	6.83	11.5
TEMP	Mean Annual Temperature	44.12	degrees F	36	48.7
TEMP_06_10	Jun to Oct Mean Basinwide Temp	60.832	degrees F	52.9	64.4
PREG_06_10	Jun to Oct Gage Precipitation	17.7	inches	16.5	23.1
ELEVMAX	Maximum Basin Elevation	1068.519	feet	260	6290

Seasonal Flow Statistics Disclaimers [Low Flow Statewide]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Seasonal Flow Statistics Flow Report [Low Flow Statewide]

Statistic	Value	Unit
Jan to Mar15 60 Percent Flow	0.565	ft^3/s
Jan to Mar15 70 Percent Flow	0.467	ft^3/s
Jan to Mar15 80 Percent Flow	0.414	ft^3/s

Statistic	Value	Unit
Jan to Mar15 90 Percent Flow	0.313	ft^3/s
Jan to Mar15 95 Percent Flow	0.25	ft^3/s
Jan to Mar15 98 Percent Flow	0.214	ft^3/s
Jan to Mar15 7 Day 2 Year Low Flow	0.428	ft^3/s
Jan to Mar15 7 Day 10 Year Low Flow	0.225	ft^3/s
Mar16 to May 60 Percent Flow	2.56	ft^3/s
Mar16 to May 70 Percent Flow	2.01	ft^3/s
Mar16 to May 80 Percent Flow	1.49	ft^3/s
Mar16 to May 90 Percent Flow	1.05	ft^3/s
Mar16 to May 95 Percent Flow	0.769	ft^3/s
Mar16 to May 98 Percent Flow	0.533	ft^3/s
Mar16 to May 7 Day 2 Year Low Flow	0.665	ft^3/s
Mar16 to May 7 Day 10 Year Low Flow	0.349	ft^3/s
Jun to Oct 60 Percent Flow	0.123	ft^3/s
Jun to Oct 70 Percent Flow	0.0868	ft^3/s
Jun to Oct 80 Percent Flow	0.0671	ft^3/s
Jun to Oct 90 Percent Flow	0.0399	ft^3/s
Jun to Oct 95 Percent Flow	0.0255	ft^3/s
Jun to Oct 98 Percent Flow	0.0216	ft^3/s
Jun to Oct 7 Day 2 Year Low Flow	0.0463	ft^3/s
Jun to Oct 7 Day 10 Year Low Flow	0.0133	ft^3/s
Nov to Dec 60 Percent Flow	1.07	ft^3/s
Nov to Dec 70 Percent Flow	0.783	ft^3/s
Nov to Dec 80 Percent Flow	0.566	ft^3/s
Nov to Dec 90 Percent Flow	0.345	ft^3/s
Nov to Dec 95 Percent Flow	0.21	ft^3/s
Nov to Dec 98 Percent Flow	0.121	ft^3/s
Oct to Nov 7 Day 2 Year Low Flow	0.558	ft^3/s
Oct to Nov 7 Day 10 Year Low Flow	0.2	ft^3/s

Seasonal Flow Statistics Citations

Flynn, R.H. and Tasker, G.D.,2002, Development of Regression Equations to Estimate Flow Durations and Low-Flow-Frequency Statistics in New Hampshire Streams: U.S.Geological Survey Scientific Investigations Report 02-4298, 66 p. (http://pubs.water.usgs.gov/wrir02-4298)

Bankfull Statistics

Bankfull Statistics Parameters [Appalachian Highlands D Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.21	square miles	0.07722	940.1535

Bankfull Statistics Parameters [New England P Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.21	square miles	3.799224	138.999861

Bankfull Statistics Parameters [USA Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.21	square miles	0.07722	59927.7393

Bankfull Statistics Flow Report [Appalachian Highlands D Bieger 2015]

Statistic	Value	Unit
Bieger_D_channel_width	16.4	ft
Bieger_D_channel_depth	1.18	ft
Bieger_D_channel_cross_sectional_area	19.7	ft^2

Bankfull Statistics Disclaimers [New England P Bieger 2015]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Bankfull Statistics Flow Report [New England P Bieger 2015]

Statistic	Value	Unit
Bieger_P_channel_width	26.7	ft
Bieger_P_channel_depth	1.43	ft
Bieger_P_channel_cross_sectional_area	38.1	ft^2

Bankfull Statistics Flow Report [USA Bieger 2015]

Statistic	Value	Unit
Bieger_USA_channel_width	13.2	ft
Bieger_USA_channel_depth	1.26	ft

Statistic	Value	Unit
Bieger_USA_channel_cross_sectional_area	18.9	ft^2

Bankfull Statistics Flow Report [Area-Averaged]

Statistic	Value	Unit
Bieger_D_channel_width	16.4	ft
Bieger_D_channel_depth	1.18	ft
Bieger_D_channel_cross_sectional_area	19.7	ft^2
Bieger_P_channel_width	26.7	ft
Bieger_P_channel_depth	1.43	ft
Bieger_P_channel_cross_sectional_area	38.1	ft^2
Bieger_USA_channel_width	13.2	ft
Bieger_USA_channel_depth	1.26	ft
Bieger_USA_channel_cross_sectional_area	18.9	ft^2

Bankfull Statistics Citations

Bieger, Katrin; Rathjens, Hendrik; Allen, Peter M.; and Arnold, Jeffrey G.,2015, Development and Evaluation of Bankfull Hydraulic Geometry Relationships for the Physiographic Regions of the United States, Publications from USDA-ARS / UNL Faculty, 17p. (https://digitalcommons.unl.edu/usdaarsfacpub/1515?utm_source=digitalcommons.unl.edu%2Fusdaarsfacpub%2F1515&utm_medium=PDF&utm_campaign=PDFCoverPages)

Recharge Statistics

Recharge Statistics Parameters [Groundwater Recharge Statewide 2004 5019]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
PRECIPOUT	Mean Annual Precip at Gage	39.1	inches	35.83	53.11
TEMP	Mean Annual Temperature	44.12	degrees F	36.05	48.69
MINTEMP_W	Mean Winter Min Temperature	11.817	degrees F	0.8	19.88
CONIF	Percent Coniferous Forest	25.4	percent	3.07	56.18
PREG_03_05	Mar to May Gage Precipitation	8	inches	6.83	11.54
SNOFALL	Mean Annual Snowfall	73.749	inches	54.46	219.07
PREG_06_10	Jun to Oct Gage Precipitation	17.7	inches	16.46	23.11
MIXFOR	Percent Mixed Forest	36.4333	percent	6.21	46.13
PREBC_1112	Nov to Dec Basin Centroid Precip	6.81	inches	6.57	15.2
PRECIPCENT	Mean Annual Precip at Basin Centroid	38.9	inches	37.44	75.91

Recharge Statistics Flow Report [Groundwater Recharge Statewide 2004 5019]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR^2: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	ASEp
GW_Recharge_Jan_to_Mar15	3.71	in	15.5
GW_Recharge_Mar16_to_May	6.73	in	12.4
GW_Recharge_Jun_to_Oct	2.61	in	26.5
GW_Recharge_Nov_to_Dec	2.54	in	15.8
GW_Recharge_Ann	16.5	in	12.4

Recharge Statistics Citations

Flynn, R.H. and Tasker, G.D.,2004, Generalized Estimates from Streamflow Data of Annual and Seasonal Ground-Water-Recharge Rates for Drainage Basins in New Hampshire, U.S. Geological Survey Scientific Investigations Report 2004-5019, 67 p. (http://pubs.usgs.gov/sir/2004/5019/)

Maximum Probable Flood Statistics

Maximum Probable Flood Statistics Parameters [Crippen Bue Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.21	square miles	0.1	10000

Maximum Probable Flood Statistics Flow Report [Crippen Bue Region 1]

Statistic	Value	Unit
Maximum Flood Crippen Bue Regional	3890	ft^3/s

Maximum Probable Flood Statistics Citations

Crippen, J.R. and Bue, Conrad D.1977, Maximum Floodflows in the Conterminous United States, Geological Survey Water-Supply Paper 1887, 52p. (https://pubs.usgs.gov/wsp/1887/report.pdf)

USGS Data Disclaimer: Unless otherwise stated, all data, metadata and related materials are considered to satisfy the quality standards relative to the purpose for which the data were collected. Although these data and associated metadata have been reviewed for accuracy and completeness and approved for release by the U.S. Geological Survey (USGS), no warranty expressed or implied is made regarding the display or utility of the data for other purposes, nor on all computer systems, nor shall the act of distribution constitute any such warranty.

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Application Version: 4.24.0
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' National Geodetic Vertical Datum of 1929 (NGVD 29). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was New Hampshire State Plane 2800. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the National Geodetic Vertical Datum of 1929. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

Spatial Reference System Division
National Geodetic Survey, NOAA
Silver Spring Metro Center
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit its website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was derived from U.S. Geological Survey Digital Orthophoto Quadrangles produced at a scale of 1:12,000 from photography dated 1998 or later. These images were recast by the New Hampshire Geographically Referenced Analysis and Information Transfer System (NH GRANIT) onto the New Hampshire State Plane coordinate system.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://www.msc.fema.gov.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	1% annual chance floodplain boundary
	0.2% annual chance floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the National Geodetic Vertical Datum of 1929

A — A	Cross section line
23 — 23	Transect line
87°07'45", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
2476000mN	1000-meter Universal Transverse Mercator grid values, zone 18
600000 FT	5000-foot grid ticks: New Hampshire State Plane coordinate system, FIPSZONE 2800, Transverse Mercator projection
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
● M1.5	River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
FEBRUARY 20, 2008

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0894E

FIRM
FLOOD INSURANCE RATE MAP

GRAFTON COUNTY, NEW HAMPSHIRE
(ALL JURISDICTIONS)

PANEL 894 OF 1185

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
LEBANON, CITY OF	330061	0894	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
33009C0894E

EFFECTIVE DATE
FEBRUARY 20, 2008

Federal Emergency Management Agency

BRICKYARD - PROPOSED CROSSING #1

WETLANDS PERMIT APPLICATION
STREAM CROSSING WORKSHEET
Water Division/Land Resources Management
Wetlands Bureau

RSA/Rule RSA 482-A/ Env-Wt-900

This worksheet can be used to accompany Wetlands Permit Applications when proposing stream crossings.

SECTION 1 - TIER CLASSIFICATIONS

Determine the contributing watershed size at USGS StreamStats.

Note: Plans for tier 2 and 3 crossings shall be designed and stamped by a professional engineer who is licensed under RSA 310-A to practice in New Hampshire.

Size of contributing watershed at the crossing location: 768 acres

☐ **Tier 1**: A tier 1 stream crossing is a crossing located on a watercourse where the contributing watershed size is less than or equal to 200 acres.

☐ **Tier 2**: A tier 2 stream crossing is a crossing located on a watercourse where the contributing watershed size is greater than 200 acres and less than 640 acres.

☒ **Tier 3**: A tier 3 stream crossing is a crossing that meets **any** of the following criteria:

- ☒ On a watercourse where the contributing watershed is more than 640 acres.
- ☐ Within a designated river corridor unless:
  a. The crossing would be a tier 1 stream based on contributing watershed size, or
  b. The structure does not create a direct surface water connection to the designated river as depicted on the national hydrography dataset as found on GRANIT.
- ☒ Within a 100-year floodplain (see Section 2 below).
- ☐ In a jurisdictional area having any protected species or habitat (NHB DataCheck).
- ☐ In a prime wetland or within a duly-established 100-foot buffer, unless a waiver has been granted pursuant to RSA 482-A:11, IV(b) and Env-Wt 706. Review the Wetlands Permit Planning Tool (WPPT) for town prime wetland and prime wetland buffer maps to determine if your project is within these areas.

☐ **Tier 4**: A tier 4 stream crossing is a crossing located on a tidal watercourse.

SECTION 2 - 100-YEAR FLOODPLAIN

Use the FEMA Map Service Center to determine if the crossing is located within a 100-year floodplain. Please answer the questions below:

☐ **No**: The proposed stream crossing *is not* within the FEMA 100-year floodplain.

☒ **Yes**: The proposed project *is* within the FEMA 100-year floodplain. Zone = A

Elevation of the 100-year floodplain at the inlet: Modeled = 581.9 feet (FEMA El. or Modeled El.)

SECTION 3 - CALCULATING PEAK DISCHARGE

Existing 100-year peak discharge (Q) calculated in cubic feet per second (CFS): 110 CFS	Calculation method: USGS NH StreamStats
Estimated bankfull discharge at the crossing location: 25 CFS	Calculation method: USGS NH StreamStats

➡ ***Note: If tier 1, then skip to Section 10*** ⬅

SECTION 4 - PREDICTED CHANNEL GEOMETRY BASED ON REGIONAL HYDRAULIC CURVES *For **tier 2**, **tier 3** and **tier 4** crossings only.*	
Bankfull Width: 15 feet	Mean Bankfull Depth: 1.2 feet
Bankfull Cross Sectional Area: 19.4 square feet (SF)	

SECTION 5 - CROSS SECTIONAL CHANNEL GEOMETRY: MEASUREMENTS OF THE EXISTING STREAM WITHIN A REFERENCE REACH *For **tier 2**, **tier 3** and **tier 4** crossings only.*				
Describe the reference reach location: Upstream of Project Area along same Unnamed Stream				
Reference reach watershed size: 621 acres				
Parameter	**Cross Section 1** Describe bed form Riffle (*e.g. pool, riffle, glide*)	**Cross Section 2** Describe bed form Glide (*e.g. pool, riffle, glide*)	**Cross Section 3** Describe bed form N/A Use NH Reg. Eq. (*e.g. pool, riffle, glide*)	**Range**
Bankfull Width	14 feet	17 feet	13.2 feet	13-17 feet
Bankfull Cross Sectional Area	15 SF	19.5 SF	18.9 SF	15-20 SF
Mean Bankfull Depth	1.0 feet	1.4 feet	1.3 feet	1-1.4 feet
Width to Depth Ratio	20.9	15.7	10.5	11-21
Max Bankfull Depth	1.4 feet	1.6 feet	n/a feet	1-2 feet
Flood Prone Width	83 feet	60 feet	n/a feet	60-83 feet
Entrenchment Ratio	5.9	3.5	n/a	3.5-5.9

*Use **Figure 1** below to determine the measurements of the Reference Reach Attributes*

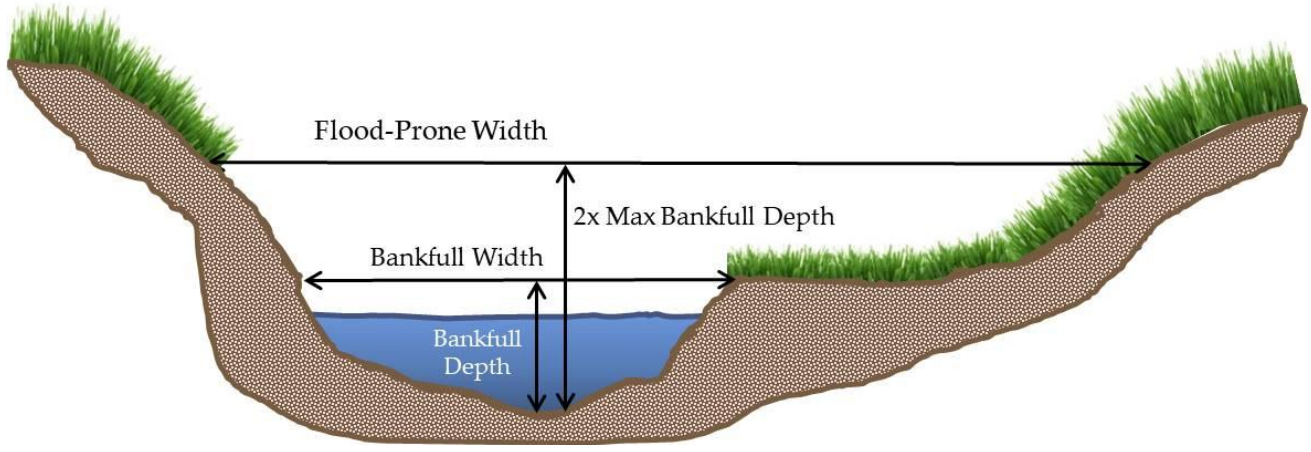


Figure 1: Determining the Reference Reach Attributes.

SECTION 6 - LONGITUDINAL PARAMETERS OF THE REFERENCE REACH AND CROSSING LOCATION *For **tier 2**, **tier 3** and **tier 4** crossings only.*
Average Channel Slope of the Reference Reach: 3.3%
Average Channel Slope at the Crossing Location: -0.08%

SECTION 7 - PLAN VIEW GEOMETRY Note: Sinuosity is measured a distance of at least 20 times bankfull width, or 2 meander belt widths. *For **tier 2**, **tier 3** and **tier 4** crossings only.*
Sinuosity of the Reference Reach: 1.0
Sinuosity of the Crossing Location: 1.0

SECTION 8 - SUBSTRATE CLASSIFICATION BASED ON FIELD OBSERVATIONS *For **tier 2, tier 3** and **tier 4** crossings only.*	
% of reach that is bedrock:	**19** %
% of reach that is boulder:	**20** %
% of reach that is cobble:	**25** %
% of reach that is gravel:	**25** %
% of reach that is sand:	**10** %
% of reach that is silt:	**1** %
SECTION 9 - STREAM TYPE OF REFERENCE REACH *For **tier 2, tier 3** and **tier 4** crossings only.*	
Stream Type of Reference Reach:	C3

*Refer to Rosgen Classification Chart (**Figure 2**) below:*

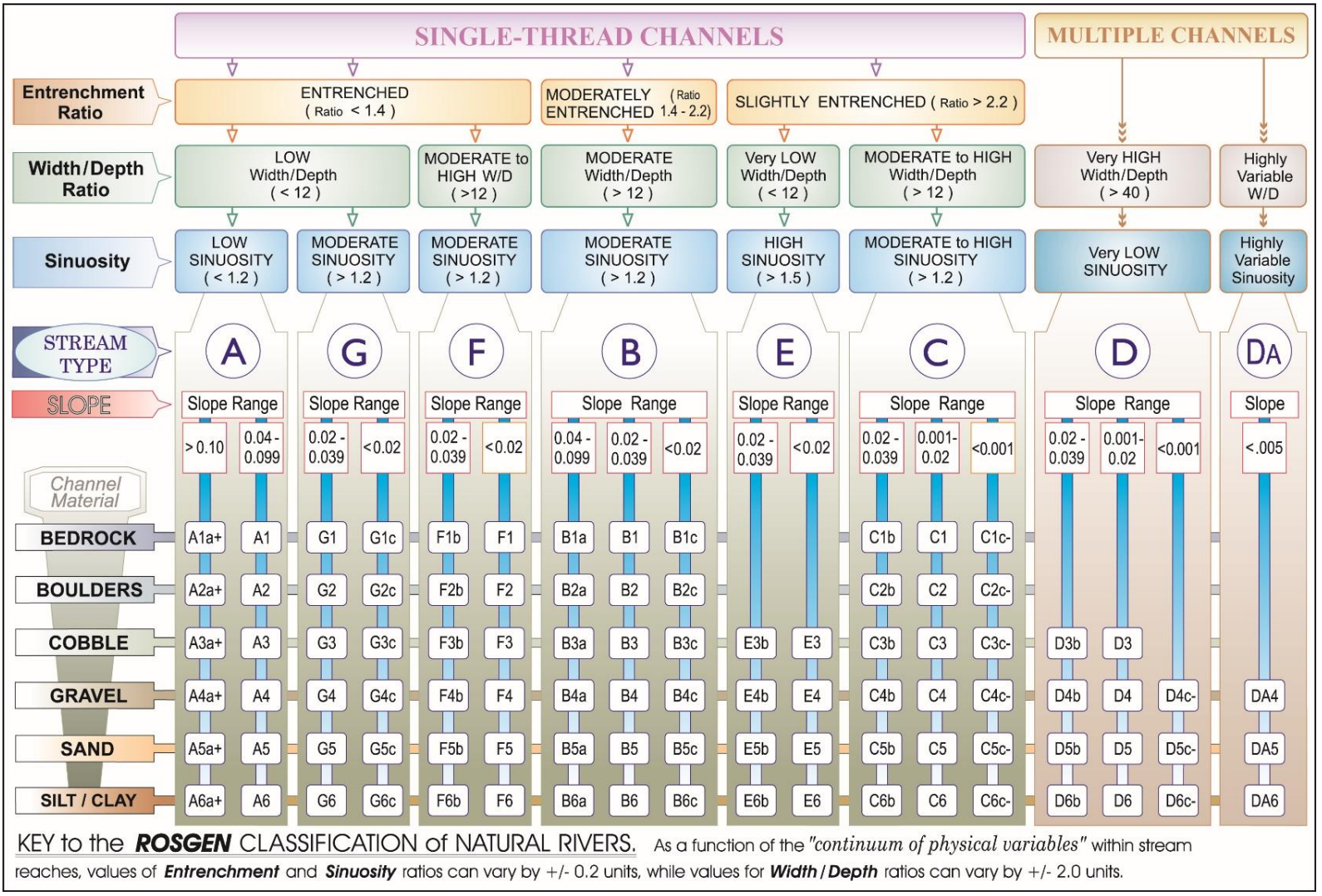


Figure 2: Reference from Applied River Morphology, Rosgen, 1996.

SECTION 10 - CROSSING STRUCTURE METRICS

Existing Conditions

Existing Structure Type:
- ☐ Bridge span
- ☐ Pipe arch
- ☐ Open-bottom culvert
- ☐ Closed-bottom culvert
- ☐ Closed-bottom culvert with stream simulation
- ☒ Other: No existing structure

Existing Crossing Span: *(perpendicular to flow)* N/a feet	**Culvert Diameter:** N/a feet **Inlet Elevation:** El. N/a feet
Existing Crossing Length: *(parallel to flow)* N/a feet	**Outlet Elevation:** El. N/a feet **Culvert Slope:** N/a

Proposed Conditions

Proposed Structure Type:	**Tier 1**	**Tier 2**	**Tier 3**	**Alternative Design**
Bridge Span	☐	☐	☐	☐
Pipe Arch	☐	☐		☐
Closed-bottom Culvert	☐	☐		☐
Open-bottom Culvert	☐	☐	☒	☒
Closed-bottom Culvert with stream simulation	☐	☐	☐	☐

Proposed Structure Span: 19 feet *(perpendicular to flow)*	**Culvert Diameter:** 4 Height feet **Inlet Elevation:** El. 577.1 feet
Proposed Structure Length: 62.5 feet *(parallel to flow)*	**Outlet Elevation:** El. 577.1 feet **Culvert Slope:** 0

Proposed Entrenchment Ratio:* 1.3

*For **Tier 2**, **Tier 3** and **Tier 4** Crossings Only. To accommodate the entrenchment ratio, floodplain drainage structures may be utilized.*

** Note: Proposed Entrenchment Ratio must meet the minimum ratio for each stream type listed in **Figure 3**, otherwise the applicant must address the Alternative Design criteria listed in Env-Wt 904.10.*

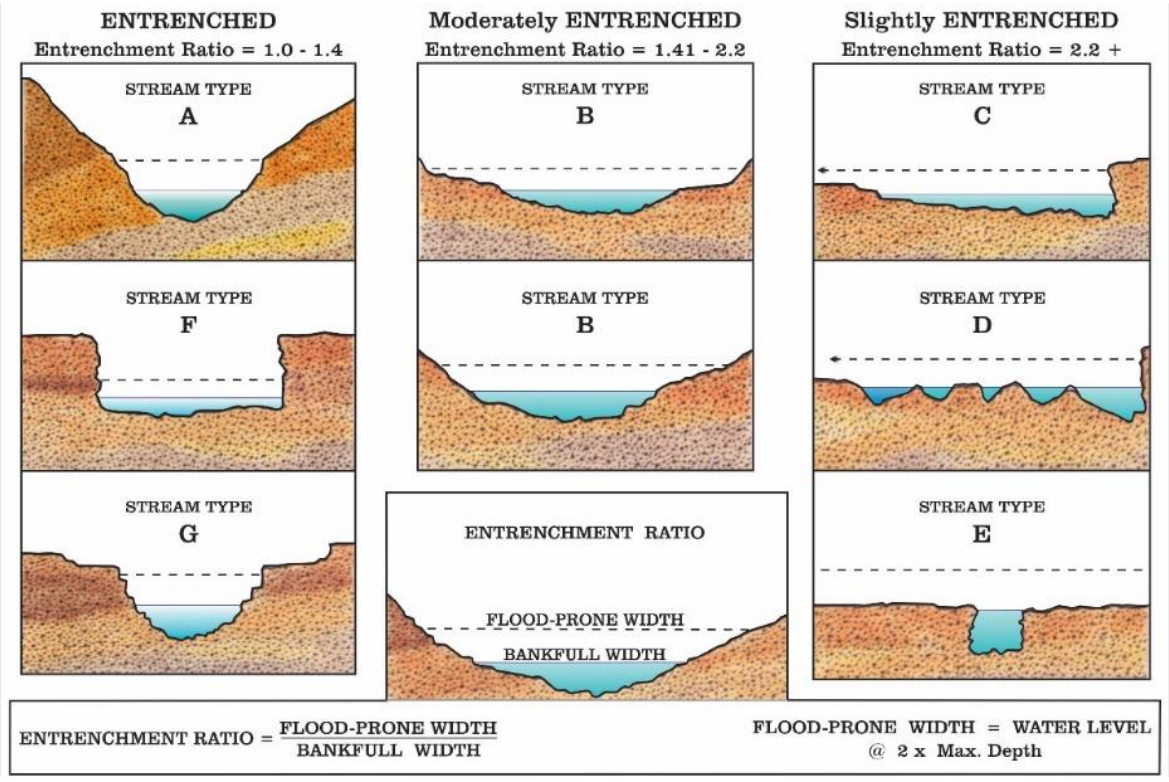


Figure 3: Reference from Applied River Morphology, Rosgen, 1996.

SECTION 11 - CROSSING STRUCTURE HYDRAULICS		
	Existing	**Proposed**
100 year flood stage elevation at inlet:	581.9	580.4
Flow velocity at outlet in feet per second (FPS):	1.4	3.4
Calculated 100 year peak discharge (Q) for the *proposed* structure in CFS:		110
Calculated 50 year peak discharge (Q) for the *proposed* structure in CFS:		74

SECTION 12 - CROSSING STRUCTURE OPENNESS RATIO

*For **tier 2**, **tier 3** and **tier 4** crossings only.*

Crossing Structure Openness Ratio* = 1.2

* Openness box culvert = (height x width)/length
Openness round culvert = (3.14 x radius^2)/length

SECTION 13 - GENERAL DESIGN CONSIDERATIONS

Env-Wt 904.01 requires all stream crossings to be designed and constructed according to the following requirements. Check each box if the project meets these general design considerations.

All stream crossings shall be designed and constructed so as to:

☒ Not be a barrier to sediment transport.

☒ Prevent the restriction of high flows and maintain existing low flows.

☒ Not obstruct or otherwise substantially disrupt the movement of aquatic life indigenous to the waterbody beyond the actual duration of construction.

☒ Not cause an increase in the frequency of flooding or overtopping of banks.

☒ Maintain or enhance geomorphic compatibility by:

a. Minimizing the potential for inlet obstruction by sediment, wood, or debris, and

b. Preserving the natural alignment of the stream channel.

☒ Preserve watercourse connectivity where it currently exists.

☒ Restore watercourse connectivity where:

a. Connectivity previously was disrupted as a result of human activity(ies), and

b. Restoration of connectivity will benefit aquatic life upstream or downstream of the crossing, or both.

☒ Not cause erosion, aggradation, or scouring upstream or downstream of the crossing.

☒ Not cause water quality degradation.

SECTION 14 - TIER-SPECIFIC DESIGN CRITERIA

Stream crossings must be designed in accordance with the tier specific design criteria listed in Part Env-Wt 904.

☐ The proposed project meets the tier specific design criteria listed in Part Env-Wt 904 and each requirement has been addressed in the plans and as part of the wetland application.

SECTION 15 - ALTERNATIVE DESIGN

NOTE: If the proposed crossing does not meet all of the general design considerations, the tier specific design criteria, or the minimum entrenchment ratio for each given stream type listed in **Figure 3**, then an alternative design plan and associated requirements must be addressed pursuant to Env-Wt 904.10.

☒ I have submitted an alternative design and addressed each requirement listed in Env-Wt 904.10.

BRICKYARD - PROPOSED CROSSING #2

WETLANDS PERMIT APPLICATION
STREAM CROSSING WORKSHEET
Water Division/Land Resources Management
Wetlands Bureau

RSA/Rule RSA 482-A/ Env-Wt-900

This worksheet can be used to accompany Wetlands Permit Applications when proposing stream crossings.

SECTION 1 - TIER CLASSIFICATIONS

Determine the contributing watershed size at USGS StreamStats.

Note: Plans for tier 2 and 3 crossings shall be designed and stamped by a professional engineer who is licensed under RSA 310-A to practice in New Hampshire.

Size of contributing watershed at the crossing location: 768 acres

☐ **Tier 1**: A tier 1 stream crossing is a crossing located on a watercourse where the contributing watershed size is less than or equal to 200 acres.

☐ **Tier 2**: A tier 2 stream crossing is a crossing located on a watercourse where the contributing watershed size is greater than 200 acres and less than 640 acres.

☒ **Tier 3**: A tier 3 stream crossing is a crossing that meets **any** of the following criteria:

- ☒ On a watercourse where the contributing watershed is more than 640 acres.
- ☐ Within a designated river corridor unless:
  a. The crossing would be a tier 1 stream based on contributing watershed size, or
  b. The structure does not create a direct surface water connection to the designated river as depicted on the national hydrography dataset as found on GRANIT.
- ☒ Within a 100-year floodplain (see Section 2 below).
- ☐ In a jurisdictional area having any protected species or habitat (NHB DataCheck).
- ☐ In a prime wetland or within a duly-established 100-foot buffer, unless a waiver has been granted pursuant to RSA 482-A:11, IV(b) and Env-Wt 706. Review the Wetlands Permit Planning Tool (WPPT) for town prime wetland and prime wetland buffer maps to determine if your project is within these areas.

☐ **Tier 4**: A tier 4 stream crossing is a crossing located on a tidal watercourse.

SECTION 2 - 100-YEAR FLOODPLAIN

Use the FEMA Map Service Center to determine if the crossing is located within a 100-year floodplain. Please answer the questions below:

☐ **No**: The proposed stream crossing *is not* within the FEMA 100-year floodplain.

☒ **Yes**: The proposed project *is* within the FEMA 100-year floodplain. Zone = A

Elevation of the 100-year floodplain at the inlet: Modeled = 581.9 feet (FEMA El. or Modeled El.)

SECTION 3 - CALCULATING PEAK DISCHARGE

Existing 100-year peak discharge (Q) calculated in cubic feet per second (CFS): 110 CFS	Calculation method: USGS NH StreamStats
Estimated bankfull discharge at the crossing location: 25 CFS	Calculation method: USGS NH StreamStats

Note: If tier 1, then skip to Section 10

SECTION 4 - PREDICTED CHANNEL GEOMETRY BASED ON REGIONAL HYDRAULIC CURVES *For **tier 2**, **tier 3** and **tier 4** crossings only.*	
Bankfull Width: 15 feet	Mean Bankfull Depth: 1.2 feet
Bankfull Cross Sectional Area: 19.4 square feet (SF)	

SECTION 5 - CROSS SECTIONAL CHANNEL GEOMETRY: MEASUREMENTS OF THE EXISTING STREAM WITHIN A REFERENCE REACH *For **tier 2**, **tier 3** and **tier 4** crossings only.*
Describe the reference reach location: Upstream of Project Area along same Unnamed Stream
Reference reach watershed size: 621 acres

Parameter	**Cross Section 1** Describe bed form Riffle (*e.g. pool, riffle, glide*)	**Cross Section 2** Describe bed form Glide (*e.g. pool, riffle, glide*)	**Cross Section 3** Describe bed form N/A Use NH Reg. Eq. (*e.g. pool, riffle, glide*)	**Range**
Bankfull Width	14 feet	17 feet	13.2 feet	13-17 feet
Bankfull Cross Sectional Area	15 SF	19.5 SF	18.9 SF	15-20 SF
Mean Bankfull Depth	1.0 feet	1.4 feet	1.3 feet	1-1.4 feet
Width to Depth Ratio	20.9	15.7	10.5	11-21
Max Bankfull Depth	1.4 feet	1.6 feet	n/a feet	1-2 feet
Flood Prone Width	83 feet	60 feet	n/a feet	60-83 feet
Entrenchment Ratio	5.9	3.5	n/a	3.5-5.9

*Use **Figure 1** below to determine the measurements of the Reference Reach Attributes*

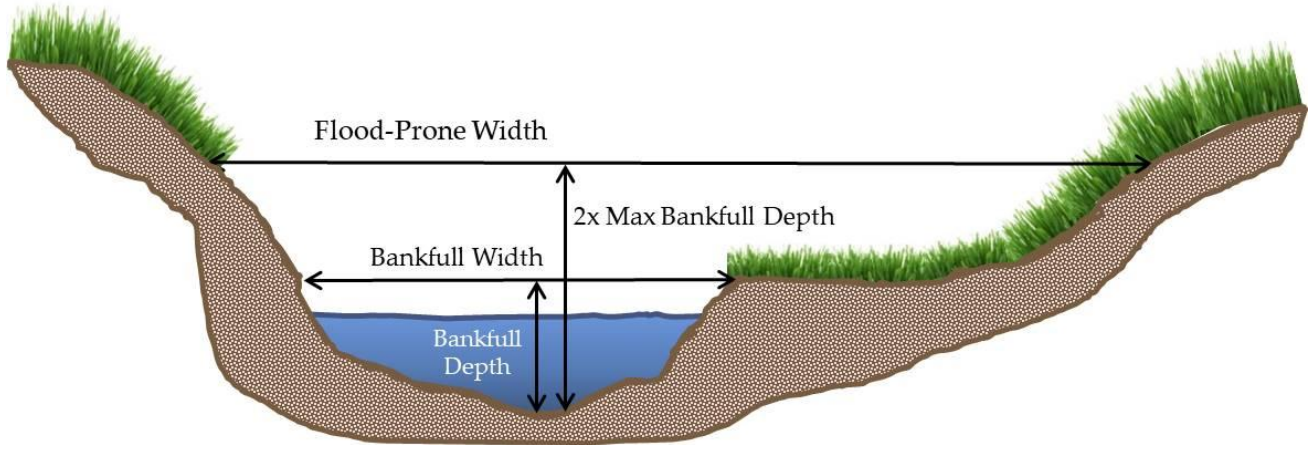


Figure 1: Determining the Reference Reach Attributes.

SECTION 6 - LONGITUDINAL PARAMETERS OF THE REFERENCE REACH AND CROSSING LOCATION *For **tier 2**, **tier 3** and **tier 4** crossings only.*
Average Channel Slope of the Reference Reach: 3.3%
Average Channel Slope at the Crossing Location: 6%

SECTION 7 - PLAN VIEW GEOMETRY Note: Sinuosity is measured a distance of at least 20 times bankfull width, or 2 meander belt widths. *For **tier 2**, **tier 3** and **tier 4** crossings only.*
Sinuosity of the Reference Reach: 1.0
Sinuosity of the Crossing Location: 1.1

SECTION 8 - SUBSTRATE CLASSIFICATION BASED ON FIELD OBSERVATIONS *For **tier 2, tier 3** and **tier 4** crossings only.*	
% of reach that is bedrock:	**19** %
% of reach that is boulder:	**20** %
% of reach that is cobble:	**25** %
% of reach that is gravel:	**25** %
% of reach that is sand:	**10** %
% of reach that is silt:	**1** %
SECTION 9 - STREAM TYPE OF REFERENCE REACH *For **tier 2, tier 3** and **tier 4** crossings only.*	
Stream Type of Reference Reach:	C3

*Refer to Rosgen Classification Chart (**Figure 2**) below:*

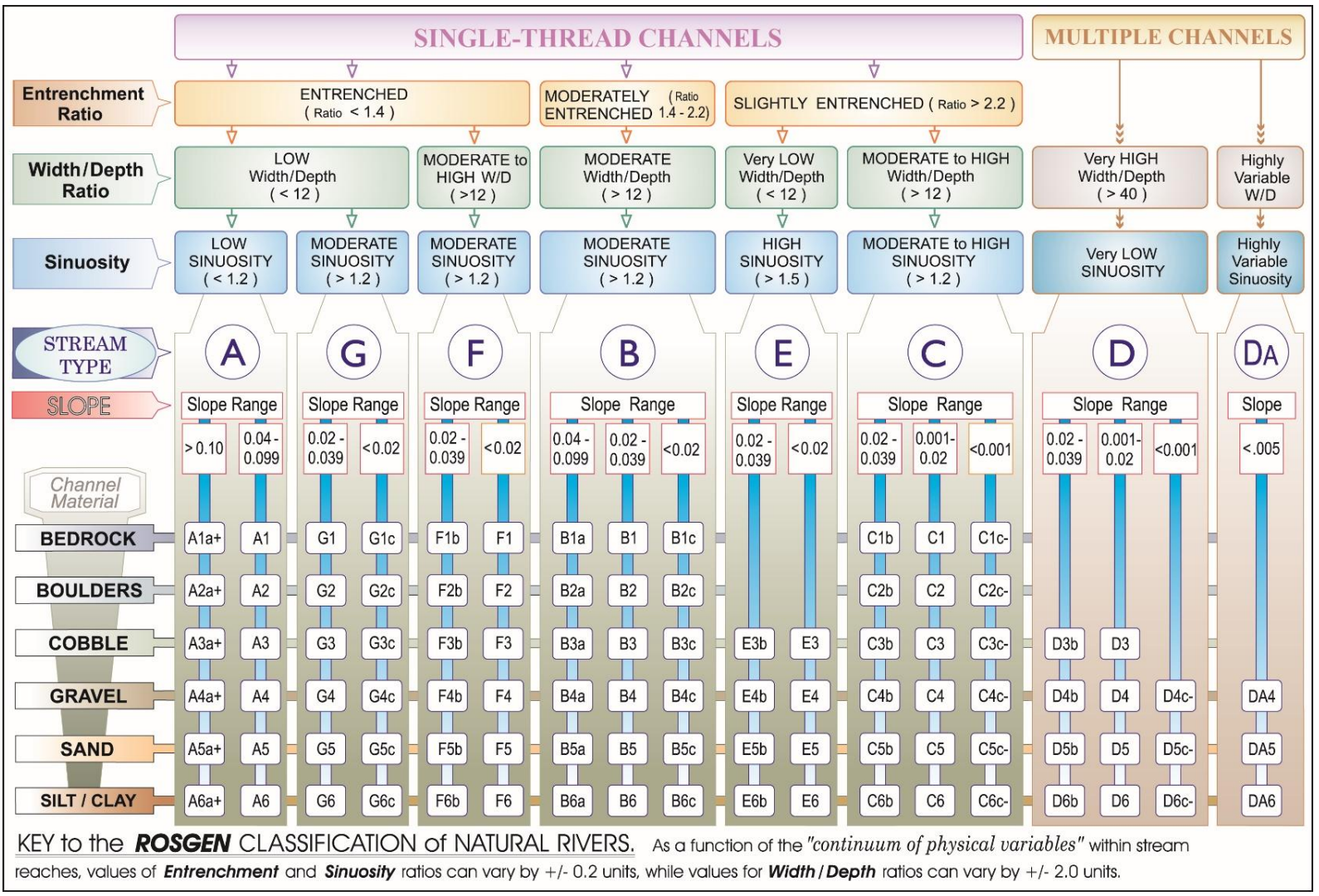


Figure 2: Reference from Applied River Morphology, Rosgen, 1996.

SECTION 10 - CROSSING STRUCTURE METRICS

Existing Conditions

Existing Structure Type:
- ☐ Bridge span
- ☐ Pipe arch
- ☐ Open-bottom culvert
- ☐ Closed-bottom culvert
- ☐ Closed-bottom culvert with stream simulation
- ☒ Other: No existing structure

Existing Crossing Span: *(perpendicular to flow)* N/a feet	**Culvert Diameter:** N/a feet **Inlet Elevation:** El. N/a feet
Existing Crossing Length: *(parallel to flow)* N/a feet	**Outlet Elevation:** El. N/a feet **Culvert Slope:** N/a

Proposed Conditions

Proposed Structure Type:	**Tier 1**	**Tier 2**	**Tier 3**	**Alternative Design**
Bridge Span	☐	☐	☐	☐
Pipe Arch	☐	☐		☐
Closed-bottom Culvert	☐	☐		☐
Open-bottom Culvert	☐	☐	☒	☒
Closed-bottom Culvert with stream simulation	☐	☐	☐	☐

Proposed Structure Span: 19 feet *(perpendicular to flow)*	**Culvert Diameter:** 6.5 Height feet **Inlet Elevation:** El. 599.1 feet
Proposed Structure Length: 58.7 feet *(parallel to flow)*	**Outlet Elevation:** El. 595.8 feet **Culvert Slope:** 6%

Proposed Entrenchment Ratio:* 1.3

*For **Tier 2**, **Tier 3** and **Tier 4** Crossings Only. To accommodate the entrenchment ratio, floodplain drainage structures may be utilized.*

** Note: Proposed Entrenchment Ratio must meet the minimum ratio for each stream type listed in **Figure 3**, otherwise the applicant must address the Alternative Design criteria listed in Env-Wt 904.10.*

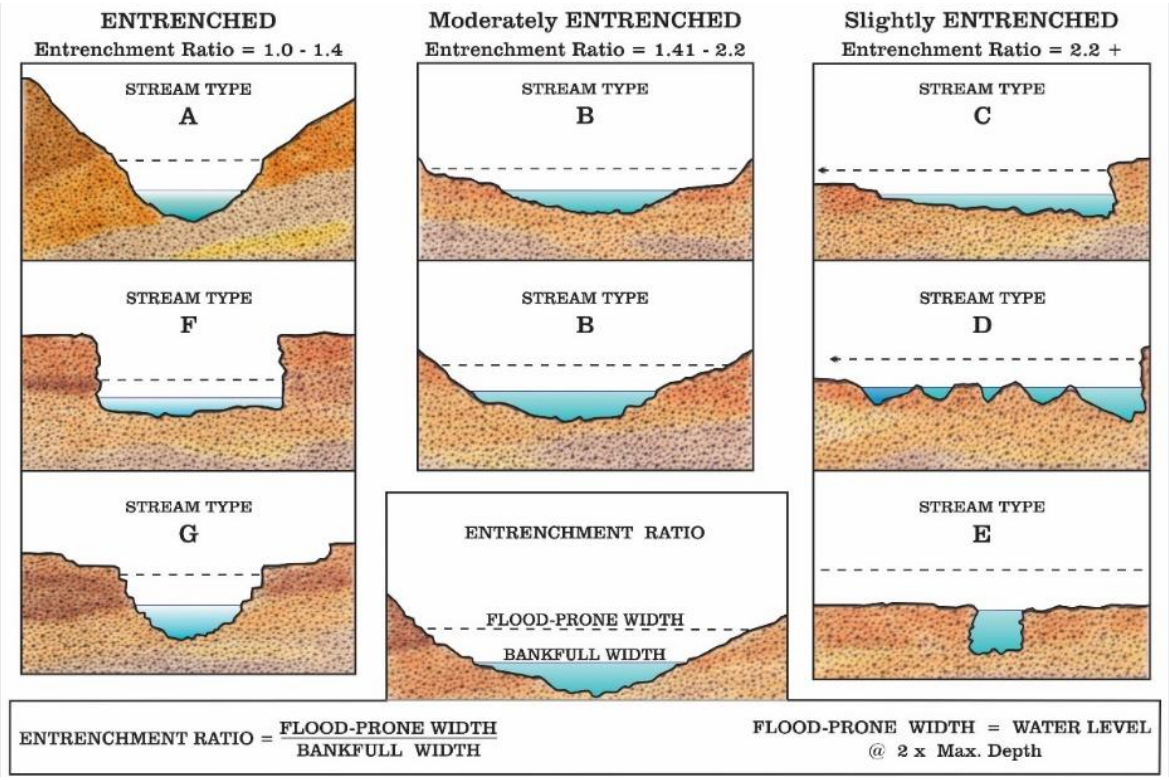


Figure 3: Reference from Applied River Morphology, Rosgen, 1996.

SECTION 11 - CROSSING STRUCTURE HYDRAULICS		
	Existing	**Proposed**
100 year flood stage elevation at inlet:	605.2	605.2
Flow velocity at outlet in feet per second (FPS):	7.1	7.1
Calculated 100 year peak discharge (Q) for the *proposed* structure in CFS:		110
Calculated 50 year peak discharge (Q) for the *proposed* structure in CFS:		74

SECTION 12 - CROSSING STRUCTURE OPENNESS RATIO

*For **tier 2**, **tier 3** and **tier 4** crossings only.*

Crossing Structure Openness Ratio* = 2.1

* Openness box culvert = (height x width)/length
Openness round culvert = (3.14 x radius^2)/length

SECTION 13 - GENERAL DESIGN CONSIDERATIONS

Env-Wt 904.01 requires all stream crossings to be designed and constructed according to the following requirements. Check each box if the project meets these general design considerations.

All stream crossings shall be designed and constructed so as to:

☒ Not be a barrier to sediment transport.

☒ Prevent the restriction of high flows and maintain existing low flows.

☒ Not obstruct or otherwise substantially disrupt the movement of aquatic life indigenous to the waterbody beyond the actual duration of construction.

☒ Not cause an increase in the frequency of flooding or overtopping of banks.

☒ Maintain or enhance geomorphic compatibility by:

a. Minimizing the potential for inlet obstruction by sediment, wood, or debris, and

b. Preserving the natural alignment of the stream channel.

☒ Preserve watercourse connectivity where it currently exists.

☒ Restore watercourse connectivity where:

a. Connectivity previously was disrupted as a result of human activity(ies), and

b. Restoration of connectivity will benefit aquatic life upstream or downstream of the crossing, or both.

☒ Not cause erosion, aggradation, or scouring upstream or downstream of the crossing.

☒ Not cause water quality degradation.

SECTION 14 - TIER-SPECIFIC DESIGN CRITERIA

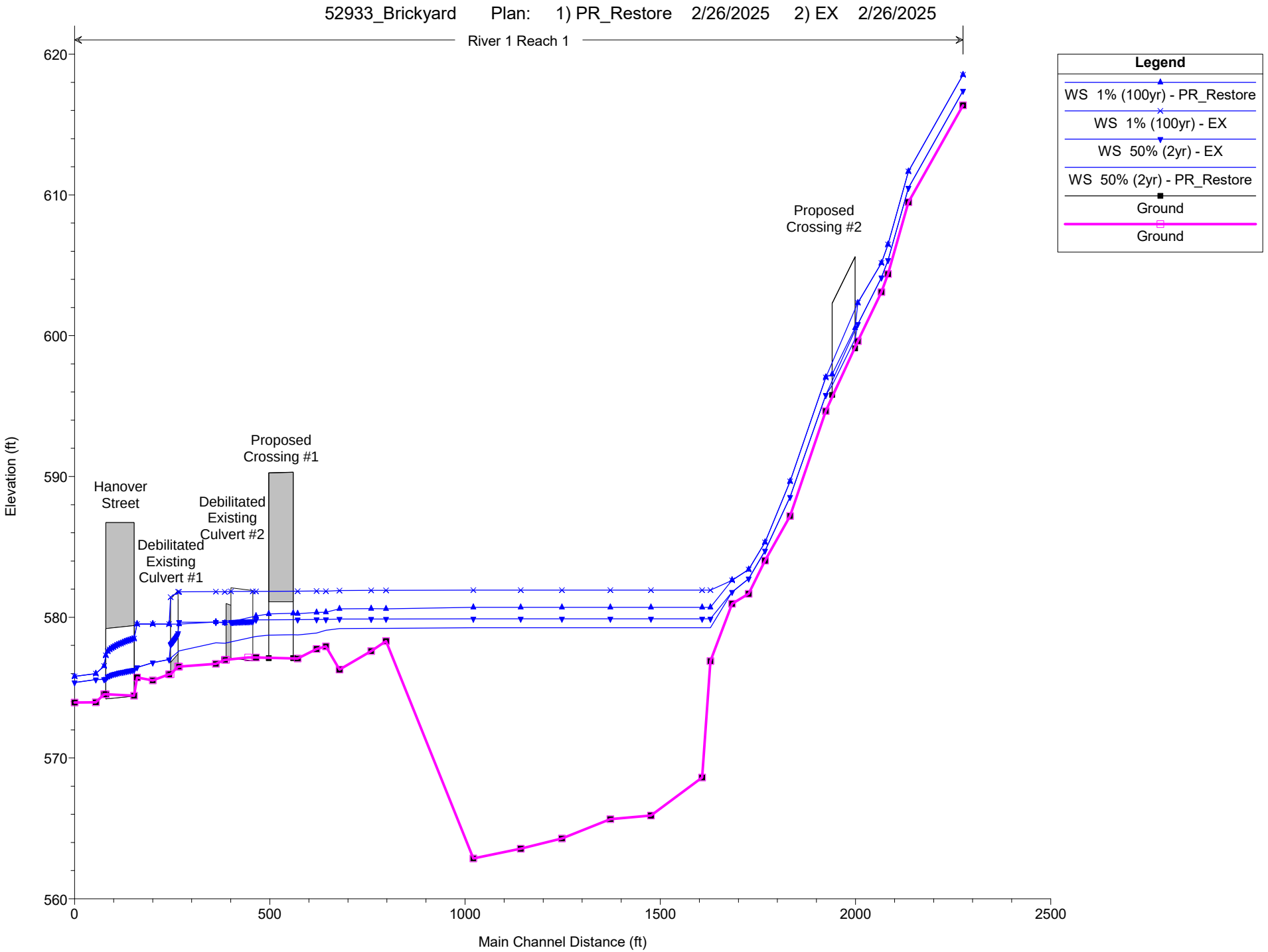
Stream crossings must be designed in accordance with the tier specific design criteria listed in Part Env-Wt 904.

☐ The proposed project meets the tier specific design criteria listed in Part Env-Wt 904 and each requirement has been addressed in the plans and as part of the wetland application.

SECTION 15 - ALTERNATIVE DESIGN

NOTE: If the proposed crossing does not meet all of the general design considerations, the tier specific design criteria, or the minimum entrenchment ratio for each given stream type listed in **Figure 3**, then an alternative design plan and associated requirements must be addressed pursuant to Env-Wt 904.10.

☒ I have submitted an alternative design and addressed each requirement listed in Env-Wt 904.10.

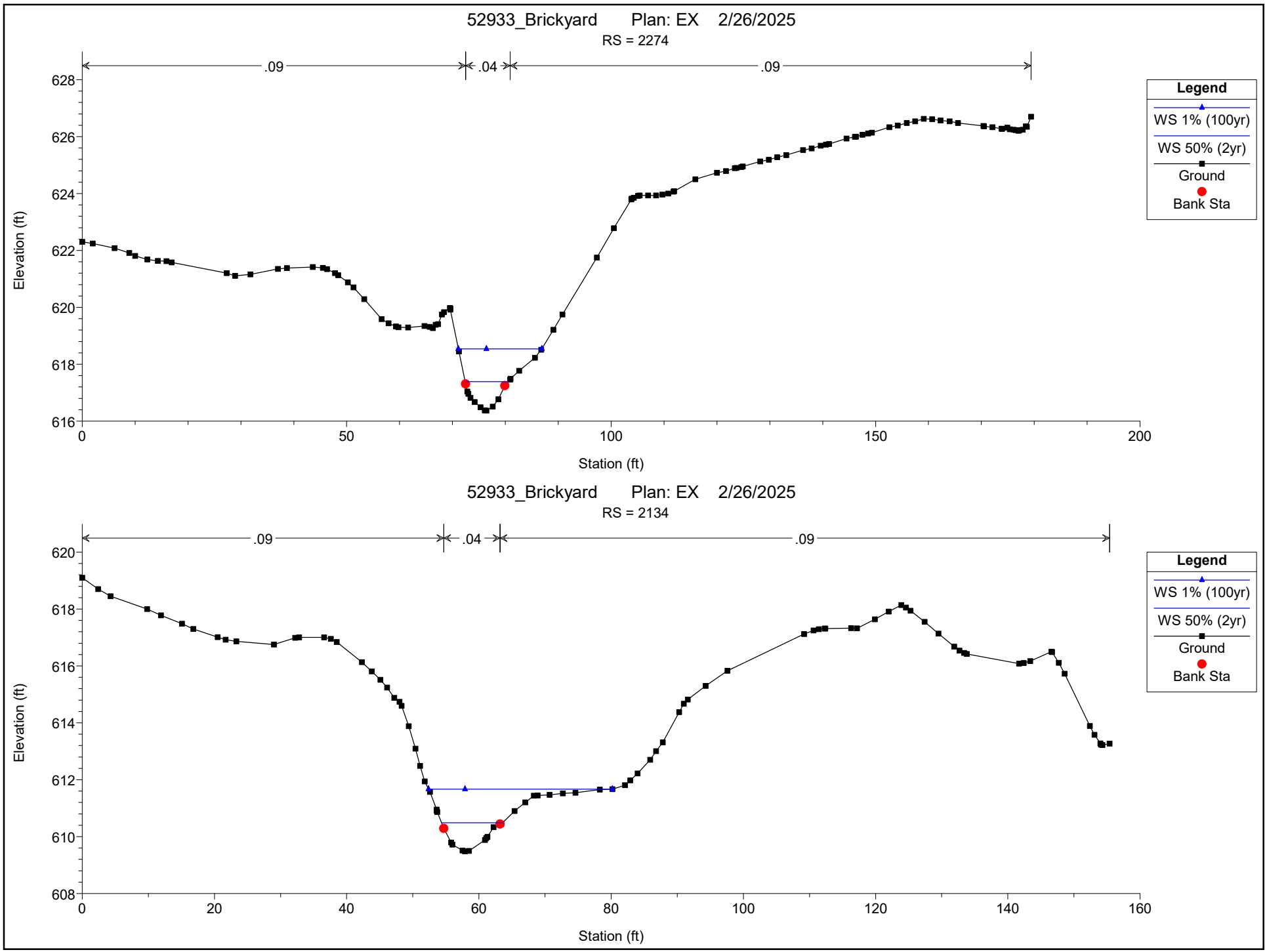

52933_Brickyard Plan: 1) PR_Restore 2/26/2025 2) EX 2/26/2025
River 1 Reach 1
Legend
WS 1% (100yr) - PR_Restore
WS 1% (100yr) - EX
WS 50% (2yr) - EX
WS 50% (2yr) - PR_Restore
Ground
Ground
Proposed Crossing #2
Proposed Crossing #1
Hanover Street
Debilitated Existing Culvert #2
Debilitated Existing Culvert #1
Elevation (ft)
620
610
600
590
580
570
560
0
500
1000
1500
2000
2500
Main Channel Distance (ft)

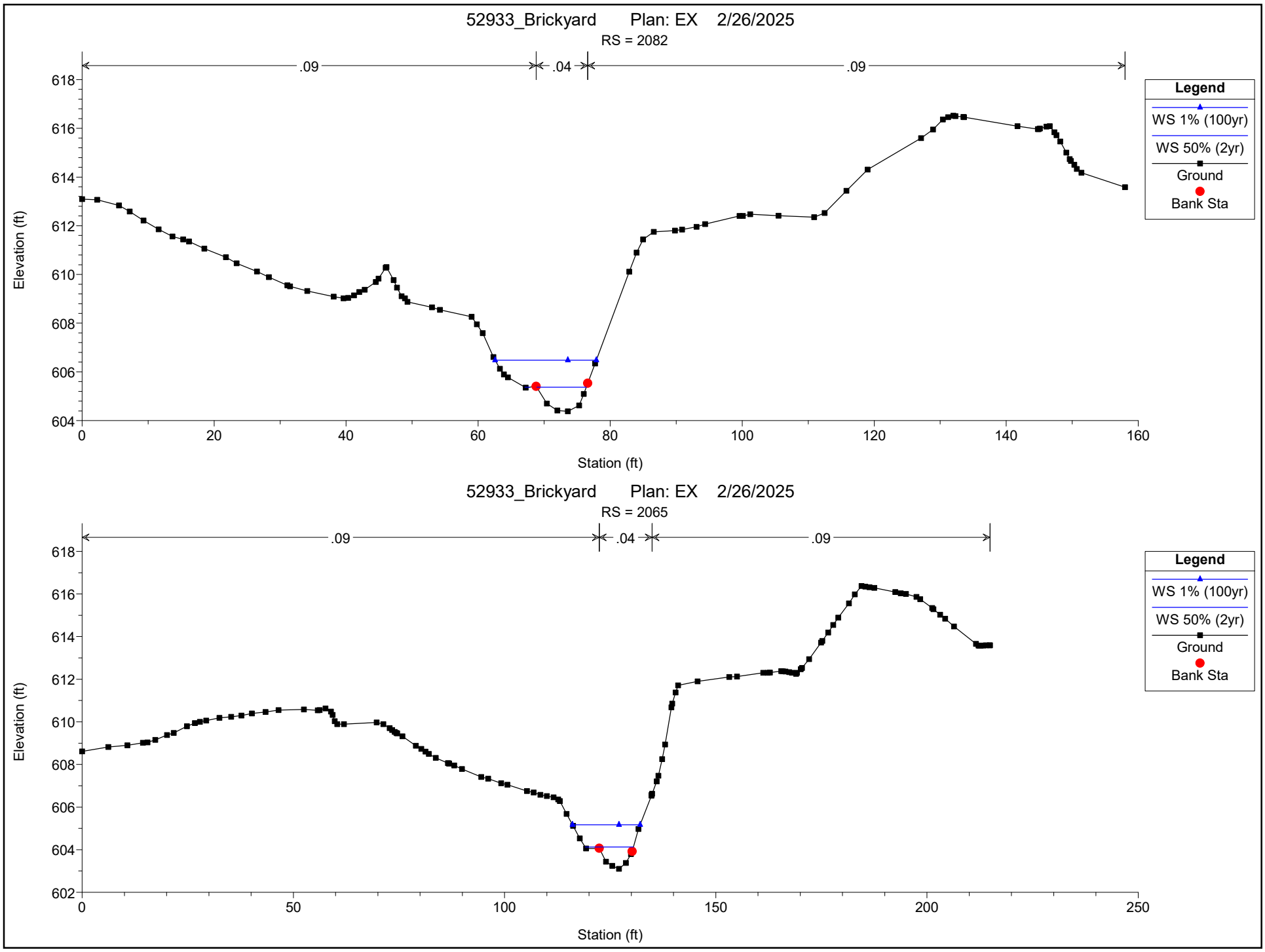
HEC-RAS Plan: EX River: River 1 Reach: Reach 1 Profile: 1% (100yr)

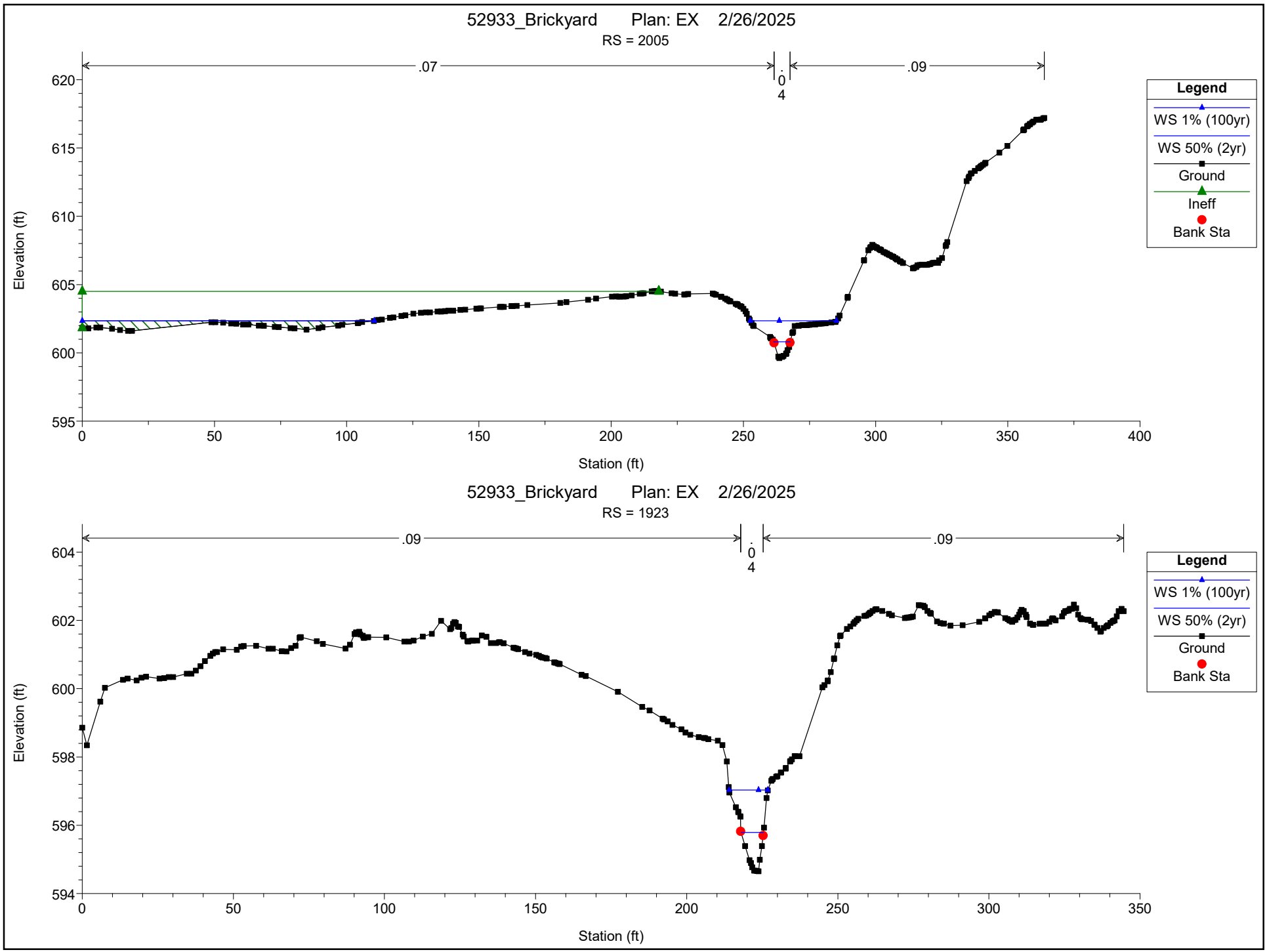
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach 1	2274	1% (100yr)	111.00	616.37	618.54	618.54	619.26	0.017284	7.18	19.15	15.79	0.93
Reach 1	2134	1% (100yr)	111.00	609.48	611.67	611.67	612.33	0.015160	6.70	22.24	27.82	0.87
Reach 1	2082	1% (100yr)	111.00	604.38	606.48	606.48	607.22	0.018958	7.23	19.56	15.32	0.95
Reach 1	2065	1% (100yr)	111.00	603.10	605.17	605.17	605.87	0.018350	7.13	20.05	16.04	0.95
Reach 1	2005	1% (100yr)	111.00	599.62	602.35	602.35	602.91	0.011294	6.55	26.72	142.99	0.76
Reach 1	1923	1% (100yr)	111.00	594.65	597.03	597.03	597.87	0.018183	7.47	17.03	12.83	0.95
Reach 1	1831	1% (100yr)	111.00	587.20	589.66	589.66	590.45	0.019640	7.31	16.44	11.42	0.96
Reach 1	1767	1% (100yr)	111.00	584.03	585.32	585.32	585.73	0.021481	5.24	24.32	34.04	0.95
Reach 1	1725	1% (100yr)	111.00	581.67	583.40	583.40	583.78	0.017497	5.63	32.58	44.11	0.89
Reach 1	1683	1% (100yr)	111.00	580.96	582.63	582.63	582.98	0.014721	5.61	39.06	57.15	0.83
Reach 1	1627	1% (100yr)	111.00	576.89	581.92		581.92	0.000003	0.18	654.86	207.55	0.02
Reach 1	1606	1% (100yr)	111.00	568.62	581.92		581.92	0.000000	0.05	2272.11	273.81	0.00
Reach 1	1475	1% (100yr)	111.00	565.91	581.92		581.92	0.000000	0.04	2863.18	291.64	0.00
Reach 1	1371	1% (100yr)	111.00	565.66	581.92		581.92	0.000000	0.03	3358.15	273.88	0.00
Reach 1	1247	1% (100yr)	111.00	564.28	581.92		581.92	0.000000	0.03	3449.28	263.69	0.00
Reach 1	1141	1% (100yr)	111.00	563.56	581.92		581.92	0.000000	0.03	3475.37	285.55	0.00
Reach 1	1020	1% (100yr)	111.00	562.86	581.92		581.92	0.000000	0.03	3627.48	322.52	0.00
Reach 1	798	1% (100yr)	111.00	578.30	581.91		581.92	0.000089	0.92	221.34	149.09	0.09
Reach 1	760	1% (100yr)	111.00	577.59	581.91		581.92	0.000045	0.77	248.81	136.09	0.07
Reach 1	679	1% (100yr)	111.00	576.29	581.90		581.91	0.000056	0.94	157.73	77.76	0.08
Reach 1	644	1% (100yr)	111.00	577.93	581.85		581.91	0.000330	1.94	74.78	38.30	0.19
Reach 1	620	1% (100yr)	111.00	577.75	581.86		581.89	0.000225	1.60	105.50	71.95	0.16
Reach 1	571	1% (100yr)	111.00	577.06	581.86		581.88	0.000159	1.41	136.59	135.93	0.13
Reach 1	465	1% (100yr)	111.00	577.14	581.84	579.07	581.86	0.000151	1.41	163.66	156.04	0.13
Reach 1	420 EX1		Culvert									
Reach 1	385	1% (100yr)	111.00	576.97	581.81		581.85	0.000235	1.78	108.66	124.35	0.16
Reach 1	362	1% (100yr)	117.00	576.69	581.82		581.84	0.000103	1.17	146.87	148.38	0.11
Reach 1	268	1% (100yr)	117.00	576.49	581.81	578.44	581.83	0.000087	1.15	166.70	165.69	0.10
Reach 1	258 EX2		Culvert									
Reach 1	243	1% (100yr)	117.00	575.95	579.51		579.66	0.001048	3.37	48.65	29.56	0.34
Reach 1	201	1% (100yr)	117.00	575.52	579.51		579.60	0.000476	2.45	60.16	27.42	0.23
Reach 1	160	1% (100yr)	117.00	575.72	579.52	577.11	579.57	0.000255	1.82	74.68	25.83	0.17
Reach 1	121 EX3		Culvert									
Reach 1	76	1% (100yr)	117.00	574.53	576.54	576.41	576.97	0.006875	5.59	26.46	23.51	0.77
Reach 1	55	1% (100yr)	117.00	573.96	575.99	575.99	576.69	0.012701	6.70	17.65	61.40	1.00
Reach 1	1	1% (100yr)	117.00	573.94	575.80	575.77	575.91	0.005004	3.77	82.95	451.69	0.62

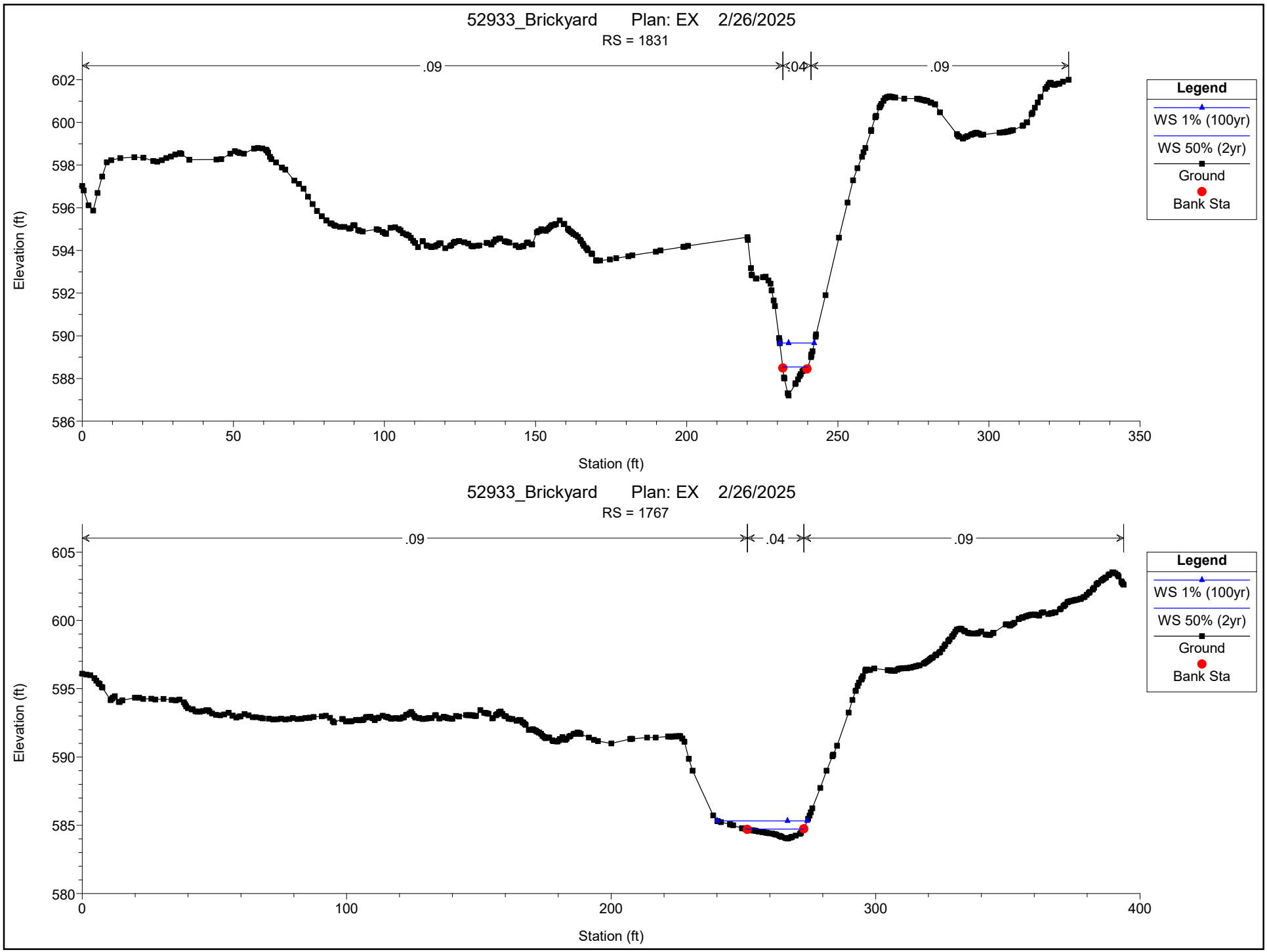
HEC-RAS Plan: PR_Restore River: River 1 Reach: Reach 1 Profile: 1% (100yr)

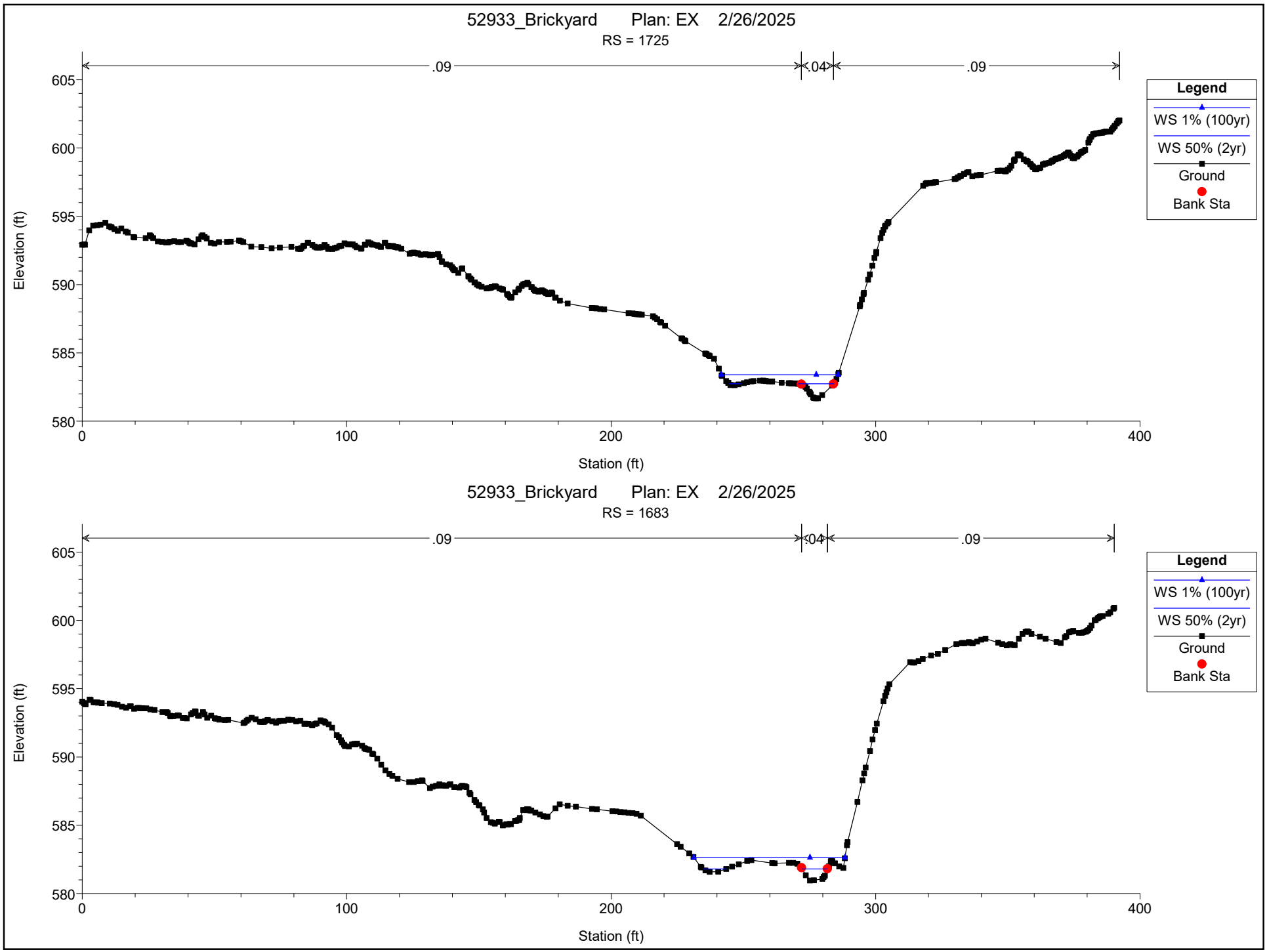
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach 1	2274	1% (100yr)	111.00	616.37	618.54	618.54	619.26	0.017284	7.18	19.15	15.79	0.93
Reach 1	2134	1% (100yr)	111.00	609.48	611.67	611.67	612.33	0.015160	6.70	22.24	27.82	0.87
Reach 1	2082	1% (100yr)	111.00	604.38	606.48	606.48	607.22	0.018958	7.23	19.56	15.32	0.95
Reach 1	2065	1% (100yr)	111.00	603.10	605.17	605.17	605.87	0.018350	7.13	20.05	16.04	0.95
Reach 1	2005	1% (100yr)	111.00	599.62	602.33	602.33	602.81	0.010194	6.18	25.86	129.13	0.72
Reach 1	1963 PR2		Bridge									
Reach 1	1923	1% (100yr)	111.00	594.65	597.04	597.04	597.81	0.017700	7.23	16.63	11.79	0.92
Reach 1	1831	1% (100yr)	111.00	587.20	589.66	589.66	590.40	0.018672	7.12	16.42	11.41	0.94
Reach 1	1767	1% (100yr)	111.00	584.03	585.32	585.32	585.73	0.021512	5.24	24.35	34.06	0.95
Reach 1	1725	1% (100yr)	111.00	581.67	583.39	583.39	583.78	0.017405	5.63	32.55	44.08	0.89
Reach 1	1683	1% (100yr)	111.00	580.96	582.63	582.63	582.98	0.014380	5.58	39.24	57.15	0.82
Reach 1	1627	1% (100yr)	111.00	576.89	580.70		580.70	0.000010	0.28	405.67	195.65	0.03
Reach 1	1606	1% (100yr)	111.00	568.62	580.70		580.70	0.000000	0.06	1944.81	261.57	0.00
Reach 1	1475	1% (100yr)	111.00	565.91	580.70		580.70	0.000000	0.04	2541.02	247.44	0.00
Reach 1	1371	1% (100yr)	111.00	565.66	580.70		580.70	0.000000	0.04	3027.87	266.86	0.00
Reach 1	1247	1% (100yr)	111.00	564.28	580.70		580.70	0.000000	0.04	3133.14	255.91	0.00
Reach 1	1141	1% (100yr)	111.00	563.56	580.70		580.70	0.000000	0.04	3143.31	263.11	0.00
Reach 1	1020	1% (100yr)	111.00	562.86	580.70		580.70	0.000000	0.03	3256.88	292.35	0.00
Reach 1	798	1% (100yr)	111.00	578.30	580.60		580.69	0.001430	2.50	51.43	93.14	0.35
Reach 1	760	1% (100yr)	111.00	577.59	580.61		580.65	0.000355	1.60	78.38	92.85	0.19
Reach 1	679	1% (100yr)	111.00	576.29	580.59		580.63	0.000231	1.47	77.42	37.87	0.15
Reach 1	644	1% (100yr)	111.00	577.93	580.35		580.59	0.002994	3.88	29.76	21.50	0.51
Reach 1	620	1% (100yr)	111.00	577.75	580.34		580.50	0.002208	3.30	38.65	32.40	0.44
Reach 1	571	1% (100yr)	111.00	577.06	580.26	579.19	580.41	0.001544	3.11	38.23	27.38	0.38
Reach 1	531 PR1		Bridge									
Reach 1	465	1% (100yr)	111.00	577.14	580.09		580.26	0.001980	3.38	33.50	21.85	0.42
Reach 1	385	1% (100yr)	111.00	576.97	579.58		579.96	0.005314	4.92	22.58	13.25	0.66
Reach 1	362	1% (100yr)	117.00	576.69	579.67		579.81	0.002105	3.03	38.57	23.84	0.42
Reach 1	268	1% (100yr)	117.00	576.49	579.51		579.66	0.001378	3.20	39.59	20.70	0.37
Reach 1	243	1% (100yr)	117.00	575.95	579.51		579.62	0.000654	2.67	48.84	29.70	0.27
Reach 1	201	1% (100yr)	117.00	575.52	579.52		579.59	0.000342	2.10	60.57	27.54	0.20
Reach 1	160	1% (100yr)	117.00	575.72	579.52	577.11	579.57	0.000244	1.79	74.92	25.87	0.17
Reach 1	121 EX3		Culvert									
Reach 1	76	1% (100yr)	117.00	574.53	576.54	576.41	576.97	0.006875	5.59	26.46	23.51	0.77
Reach 1	55	1% (100yr)	117.00	573.96	575.99	575.99	576.69	0.012701	6.70	17.65	61.40	1.00
Reach 1	1	1% (100yr)	117.00	573.94	575.80	575.77	575.91	0.005004	3.77	82.95	451.69	0.62

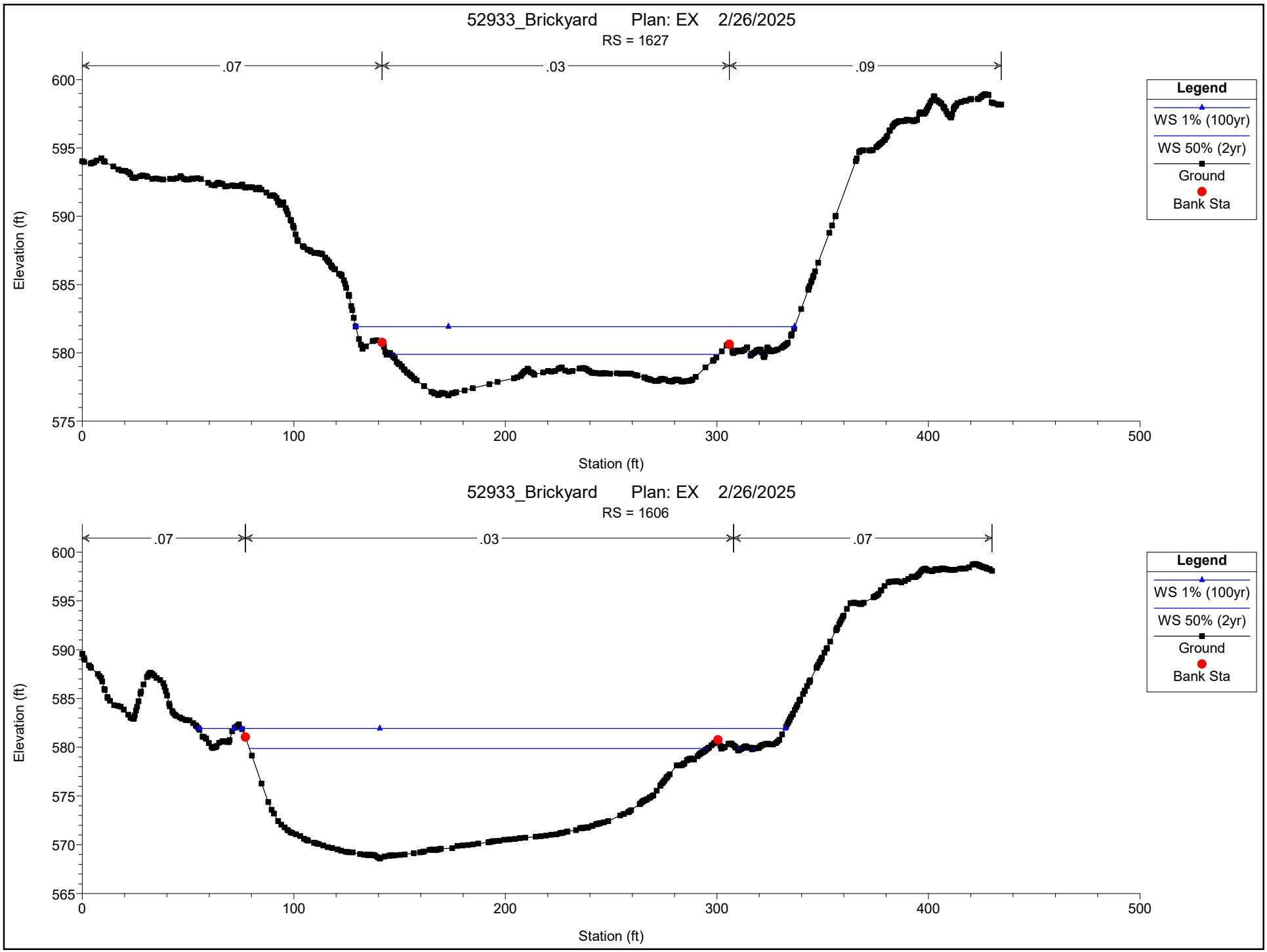

52933_Brickyard Plan: EX 2/26/2025
RS = 2274
.09
.04
.09
Elevation (ft)
628
626
624
622
620
618
616
0
50
100
150
200
Station (ft)
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Bank Sta
52933_Brickyard Plan: EX 2/26/2025
RS = 2134
.09
.04
.09
Elevation (ft)
620
618
616
614
612
610
608
0
20
40
60
80
100
120
140
160
Station (ft)
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Bank Sta

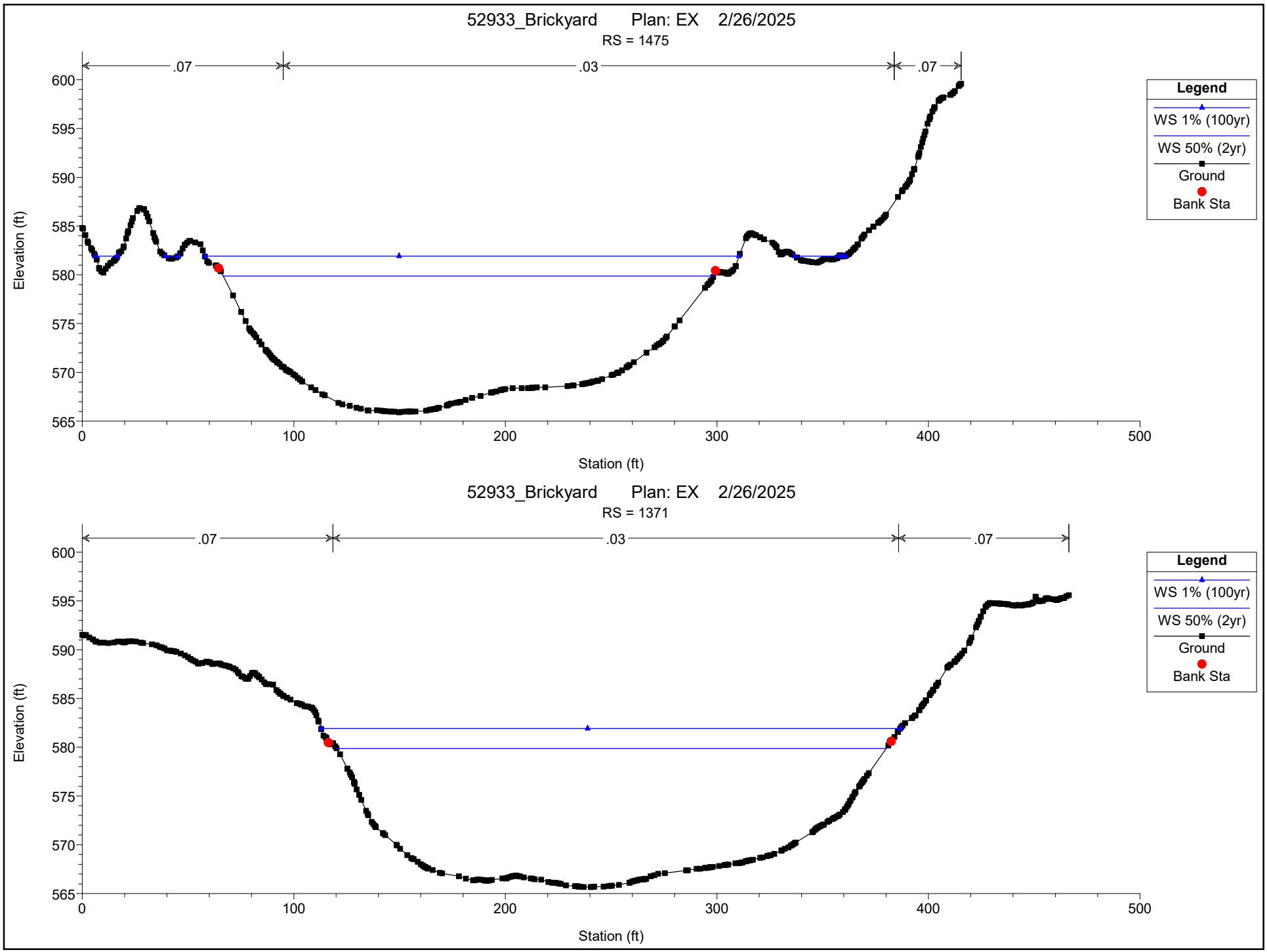

52933_Brickyard Plan: EX 2/26/2025
RS = 2082
.09
.04
.09
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Bank Sta
Elevation (ft)
Station (ft)
52933_Brickyard Plan: EX 2/26/2025
RS = 2065
.09
.04
.09
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Bank Sta
Elevation (ft)
Station (ft)

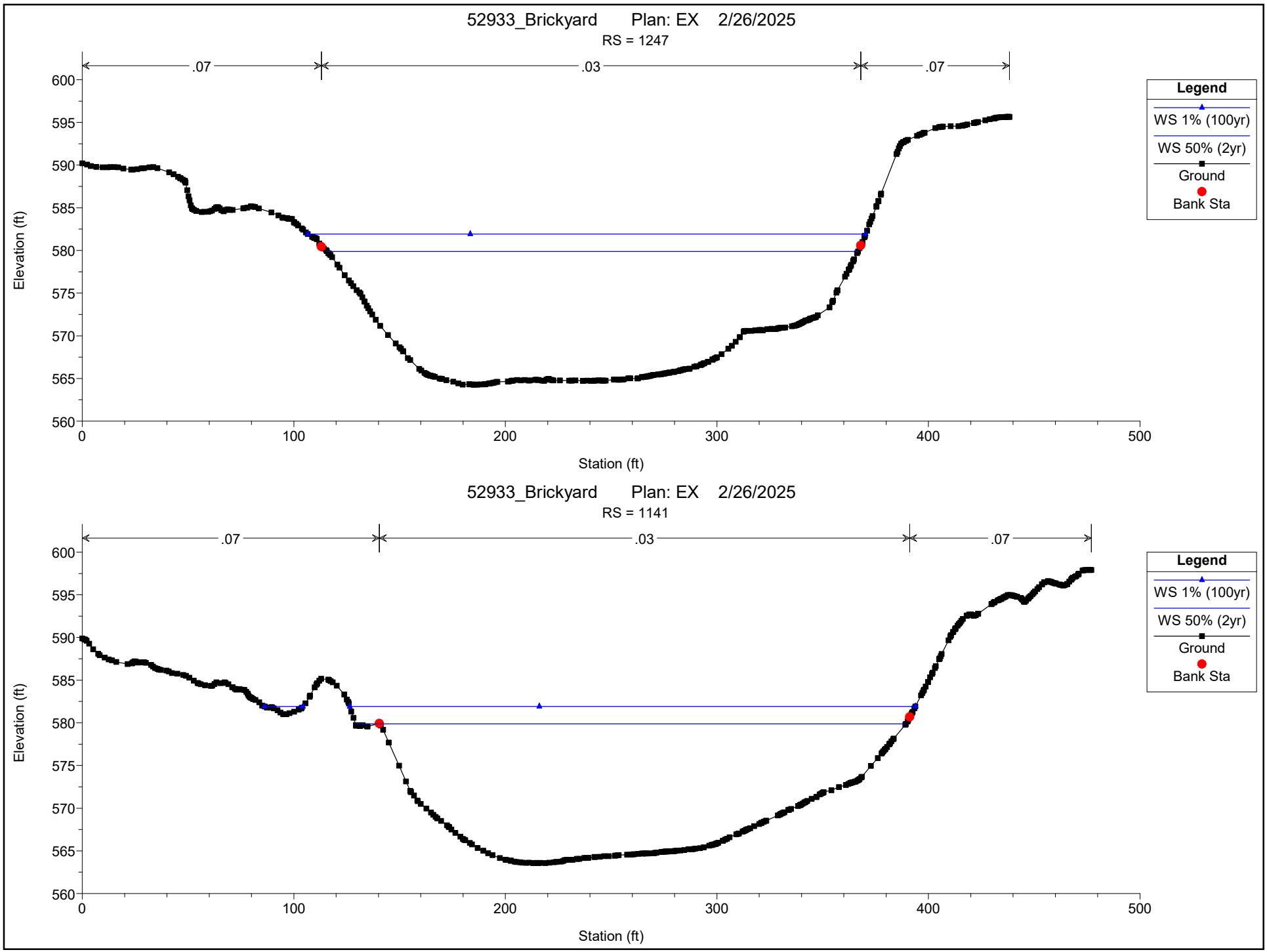

52933_Brickyard Plan: EX 2/26/2025
RS = 2005
.07
.04
.09
Elevation (ft)
Station (ft)
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Ineff
Bank Sta
52933_Brickyard Plan: EX 2/26/2025
RS = 1923
.09
.04
.09
Elevation (ft)
Station (ft)
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Bank Sta

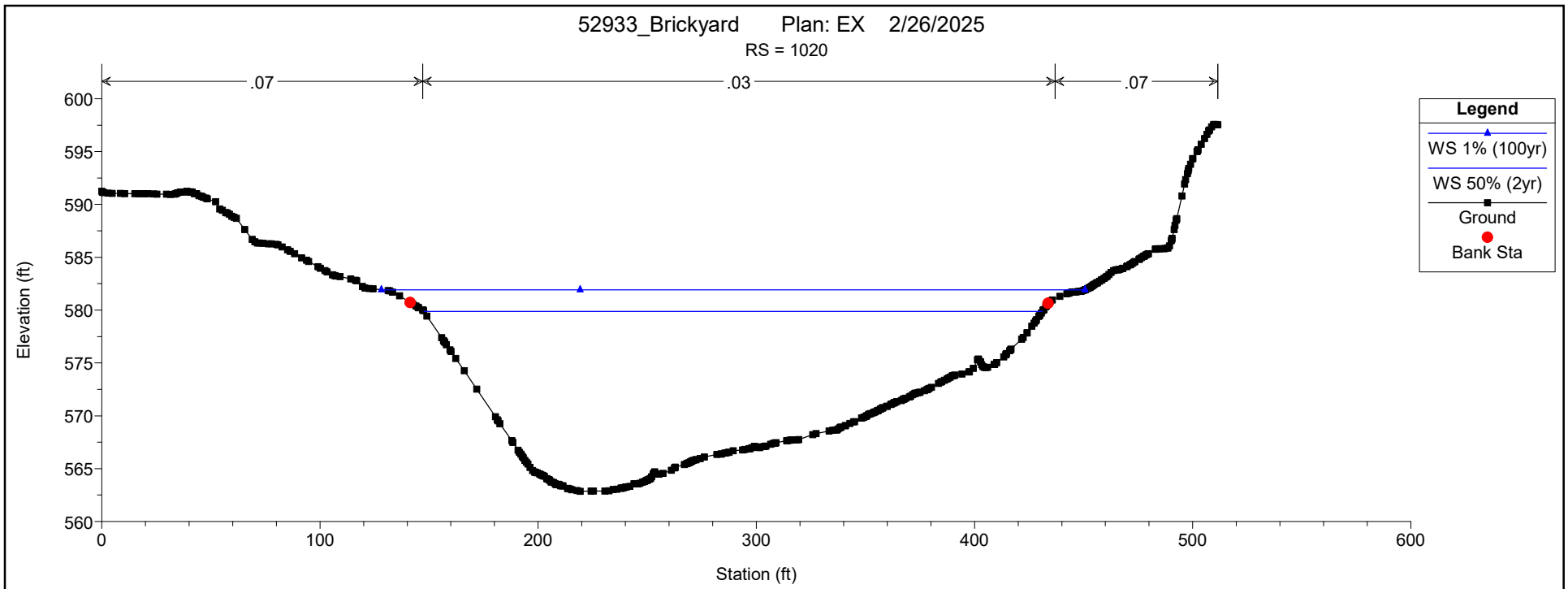

52933_Brickyard Plan: EX 2/26/2025
RS = 1831
.09
.04
.09
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Bank Sta
Elevation (ft)
Station (ft)
52933_Brickyard Plan: EX 2/26/2025
RS = 1767
.09
.04
.09
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Bank Sta
Elevation (ft)
Station (ft)

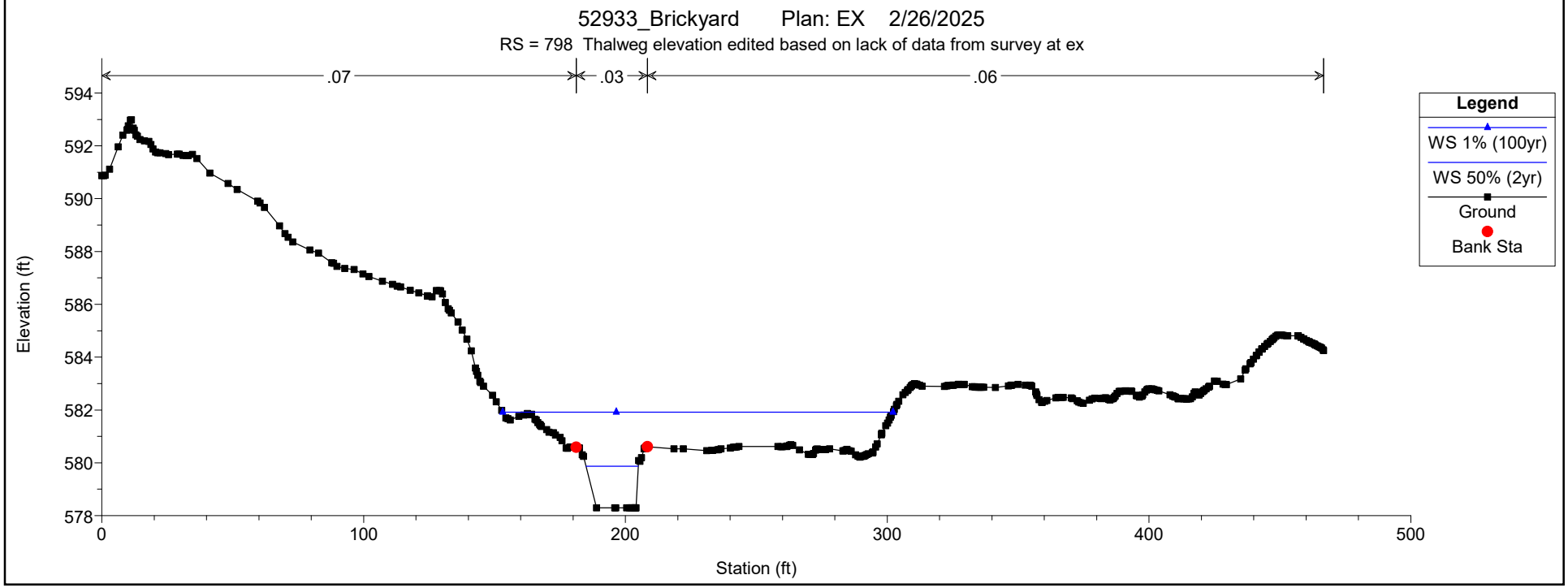

52933_Brickyard Plan: EX 2/26/2025
RS = 1725
.09
.04
.09
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Bank Sta
Elevation (ft)
Station (ft)
52933_Brickyard Plan: EX 2/26/2025
RS = 1683
.09
.04
.09
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Bank Sta
Elevation (ft)
Station (ft)

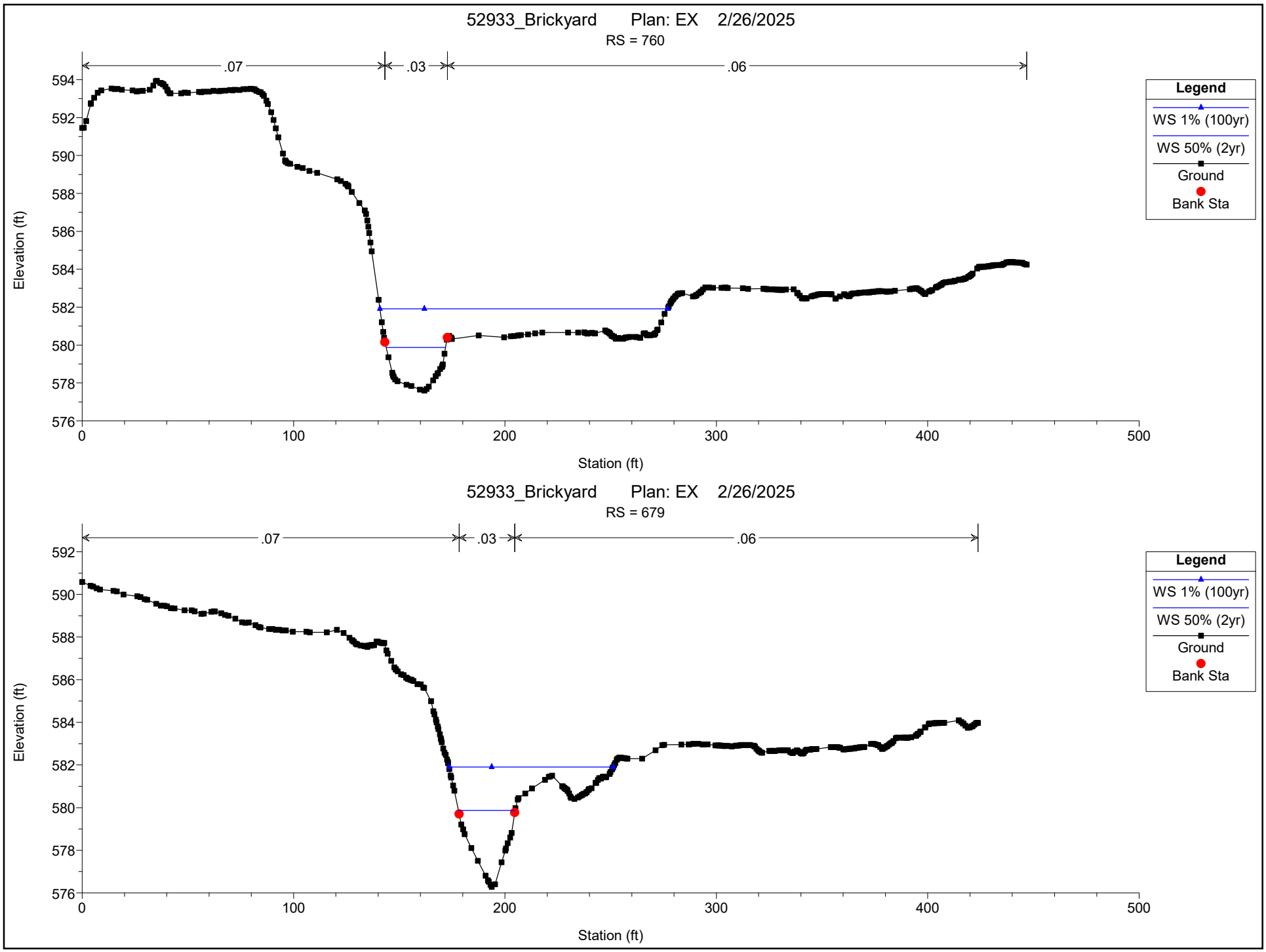

52933_Brickyard Plan: EX 2/26/2025
RS = 1627
.07
.03
.09
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Bank Sta
Elevation (ft)
Station (ft)
52933_Brickyard Plan: EX 2/26/2025
RS = 1606
.07
.03
.07
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Bank Sta
Elevation (ft)
Station (ft)

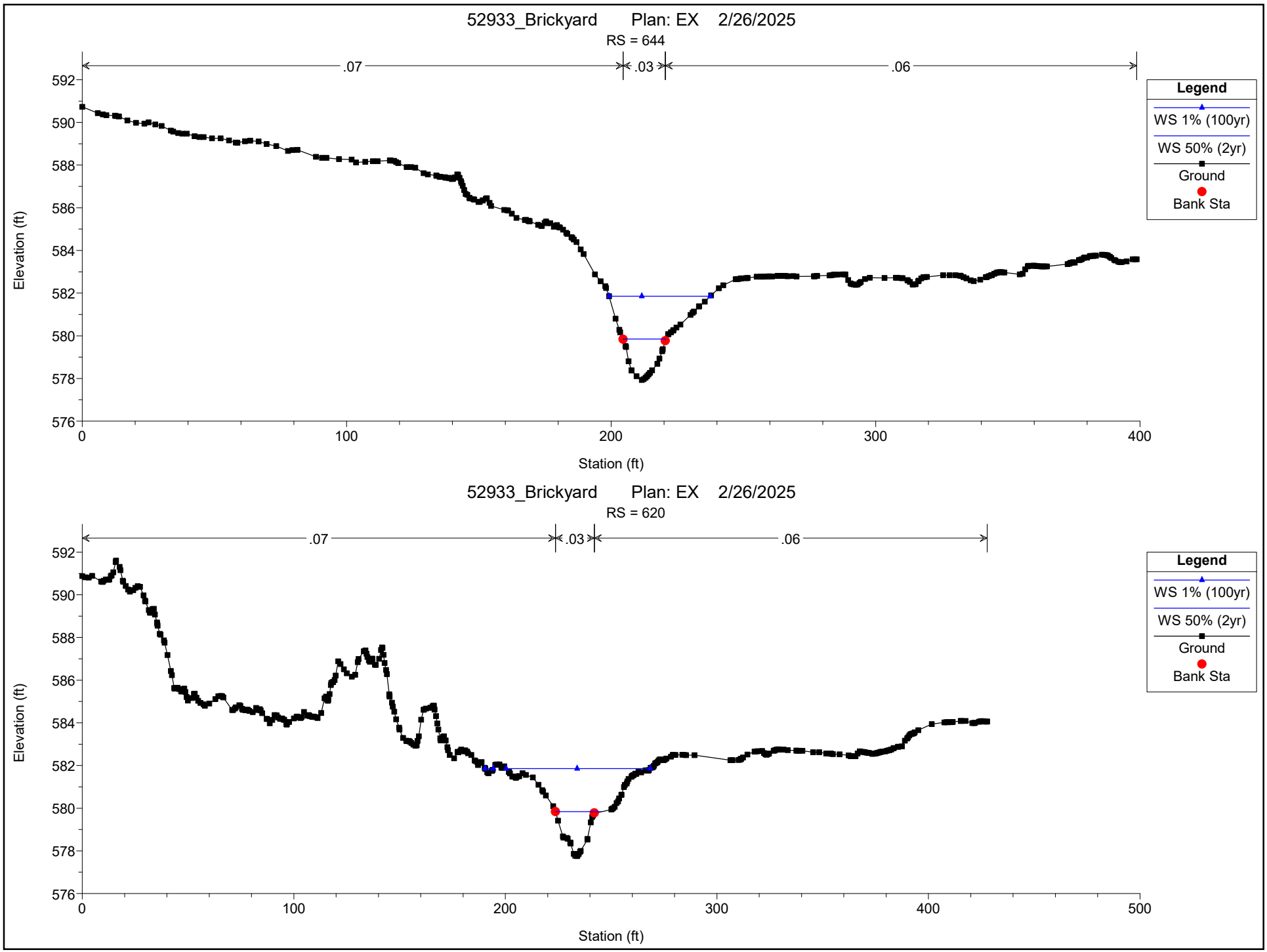

52933_Brickyard Plan: EX 2/26/2025
RS = 1475
.07
.03
.07
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Bank Sta
Elevation (ft)
Station (ft)
52933_Brickyard Plan: EX 2/26/2025
RS = 1371
.07
.03
.07
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Bank Sta
Elevation (ft)
Station (ft)

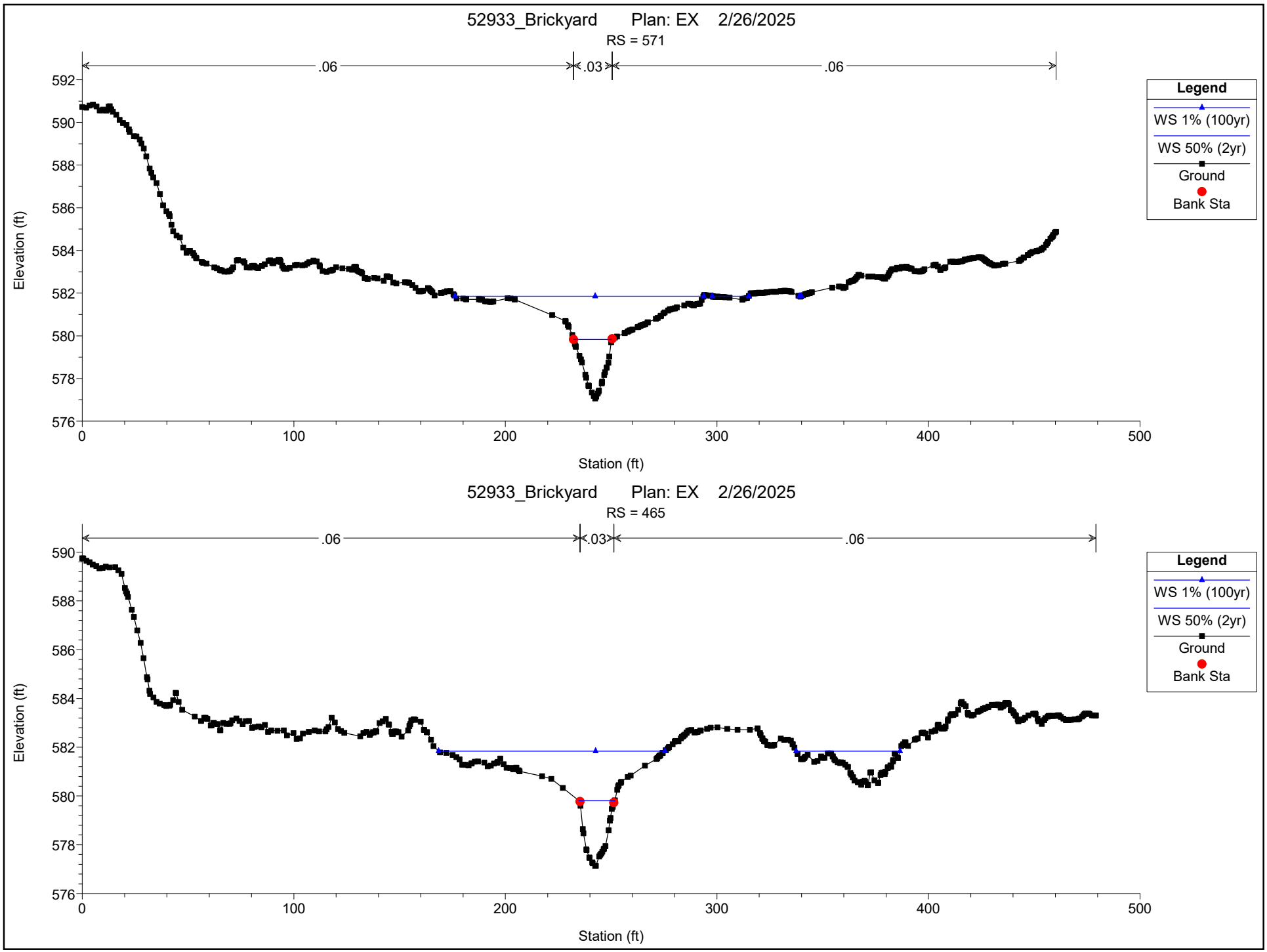

52933_Brickyard Plan: EX 2/26/2025
RS = 1247
.07
.03
.07
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Bank Sta
Elevation (ft)
Station (ft)
52933_Brickyard Plan: EX 2/26/2025
RS = 1141
.07
.03
.07
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Bank Sta
Elevation (ft)
Station (ft)

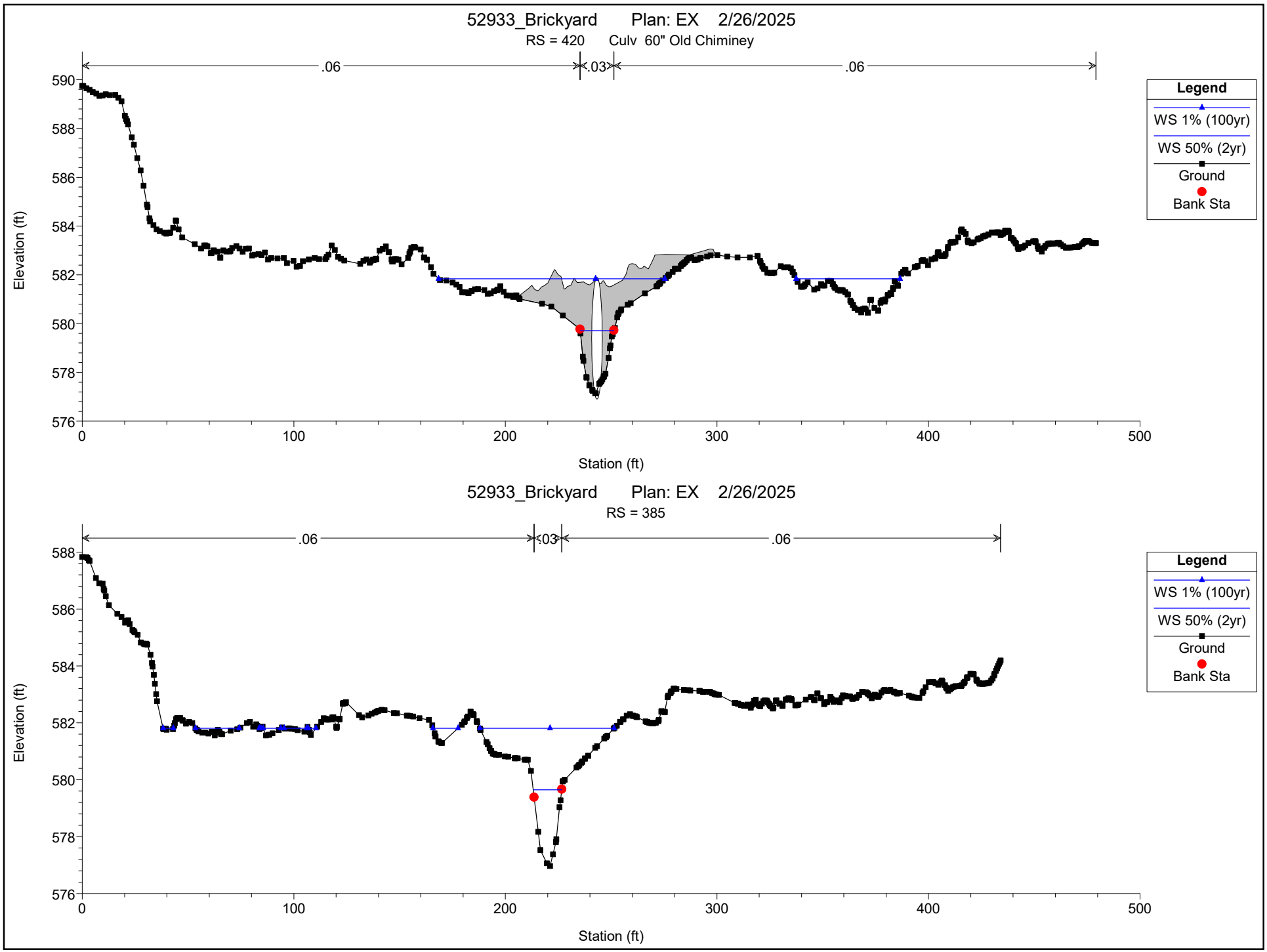

52933_Brickyard Plan: EX 2/26/2025
RS = 1020
.07
.03
.07
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Bank Sta
Elevation (ft)
600
595
590
585
580
575
570
565
560
0
100
200
300
400
500
600
Station (ft)

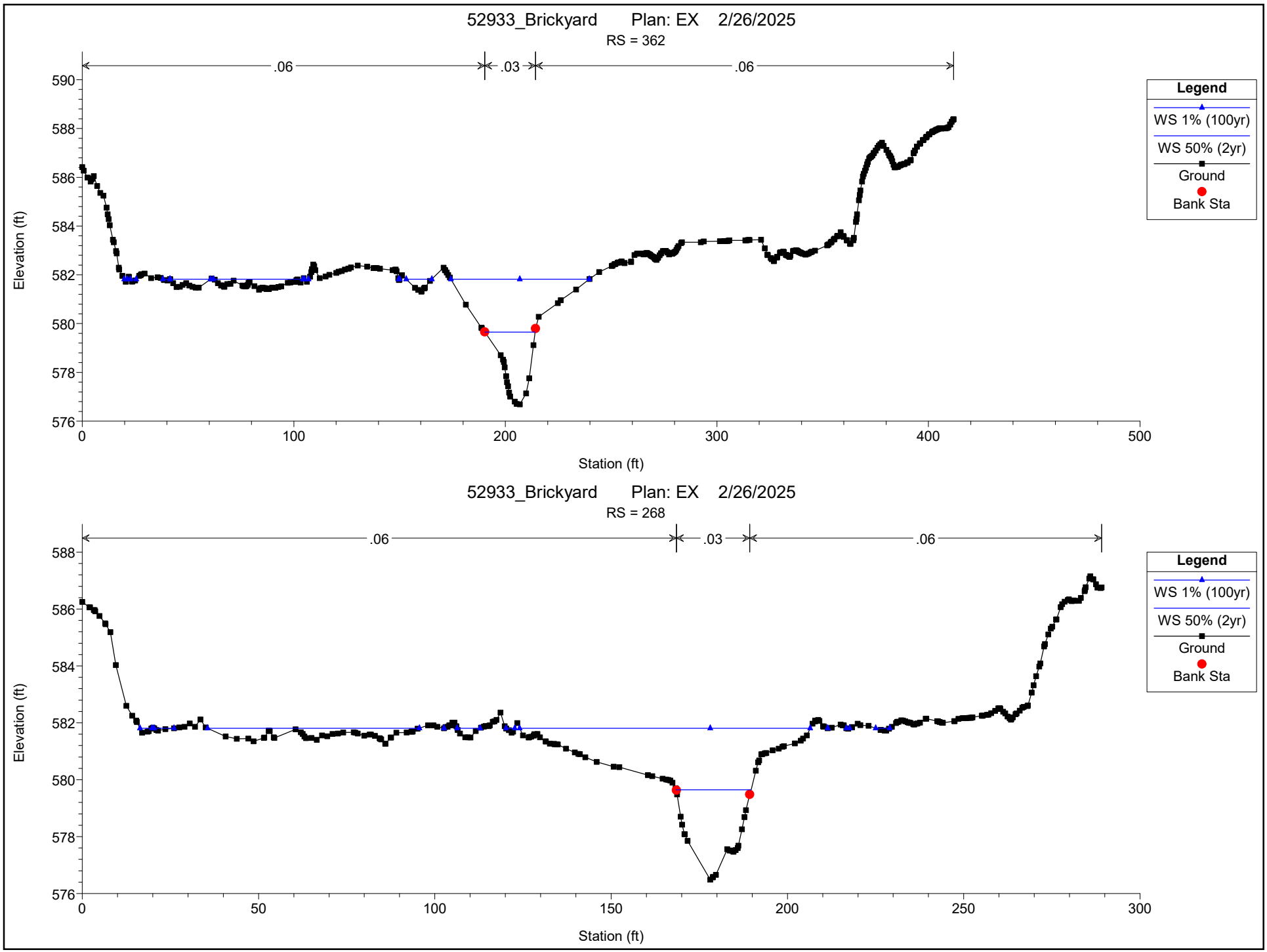

52933_Brickyard Plan: EX 2/26/2025
RS = 798 Thalweg elevation edited based on lack of data from survey at ex
.07
.03
.06
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Bank Sta
Elevation (ft)
594
592
590
588
586
584
582
580
578
0
100
200
300
400
500
Station (ft)

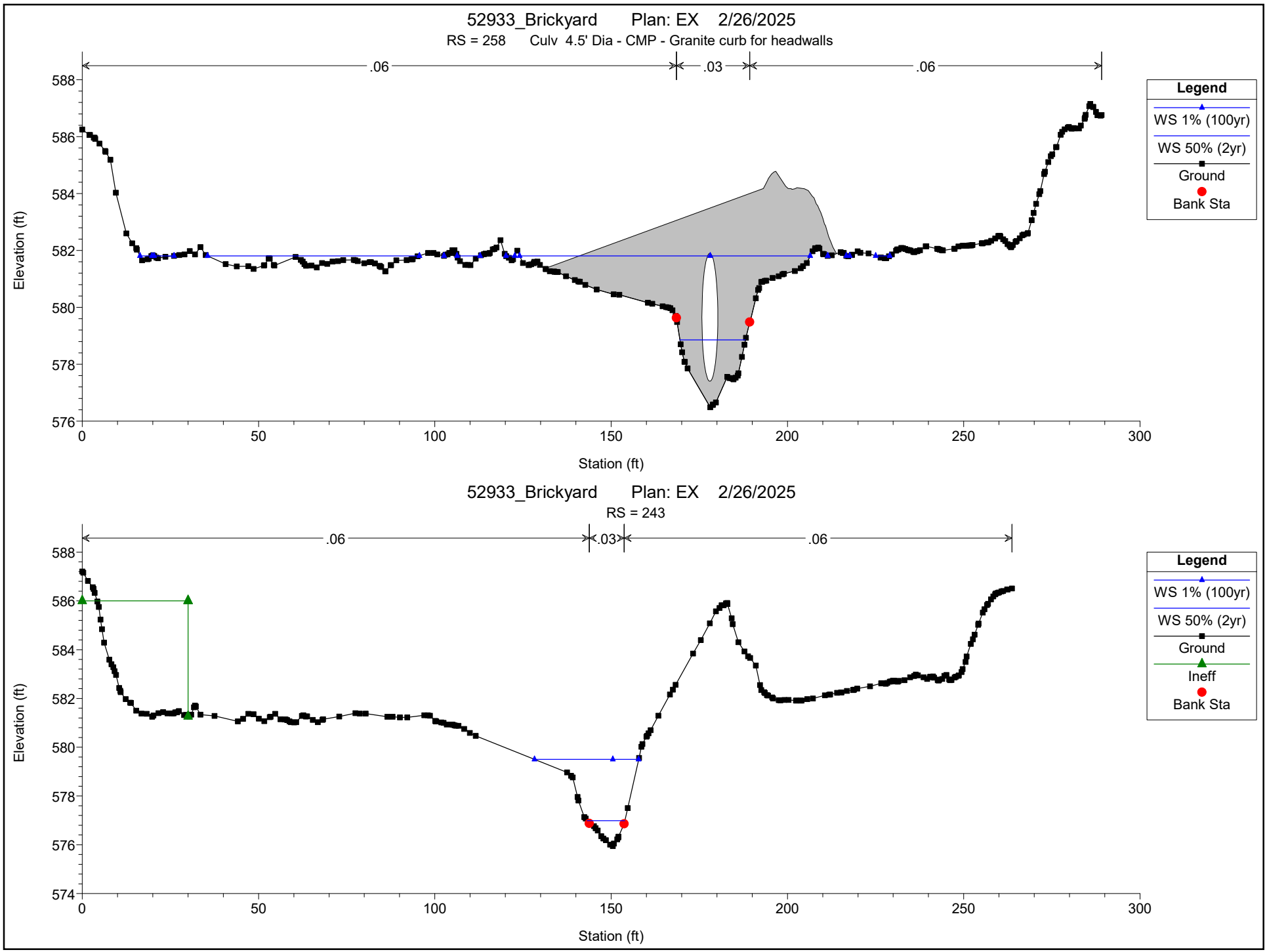

52933_Brickyard Plan: EX 2/26/2025
RS = 760
.07
.03
.06
Elevation (ft)
Station (ft)
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Bank Sta
52933_Brickyard Plan: EX 2/26/2025
RS = 679
.07
.03
.06
Elevation (ft)
Station (ft)
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Bank Sta

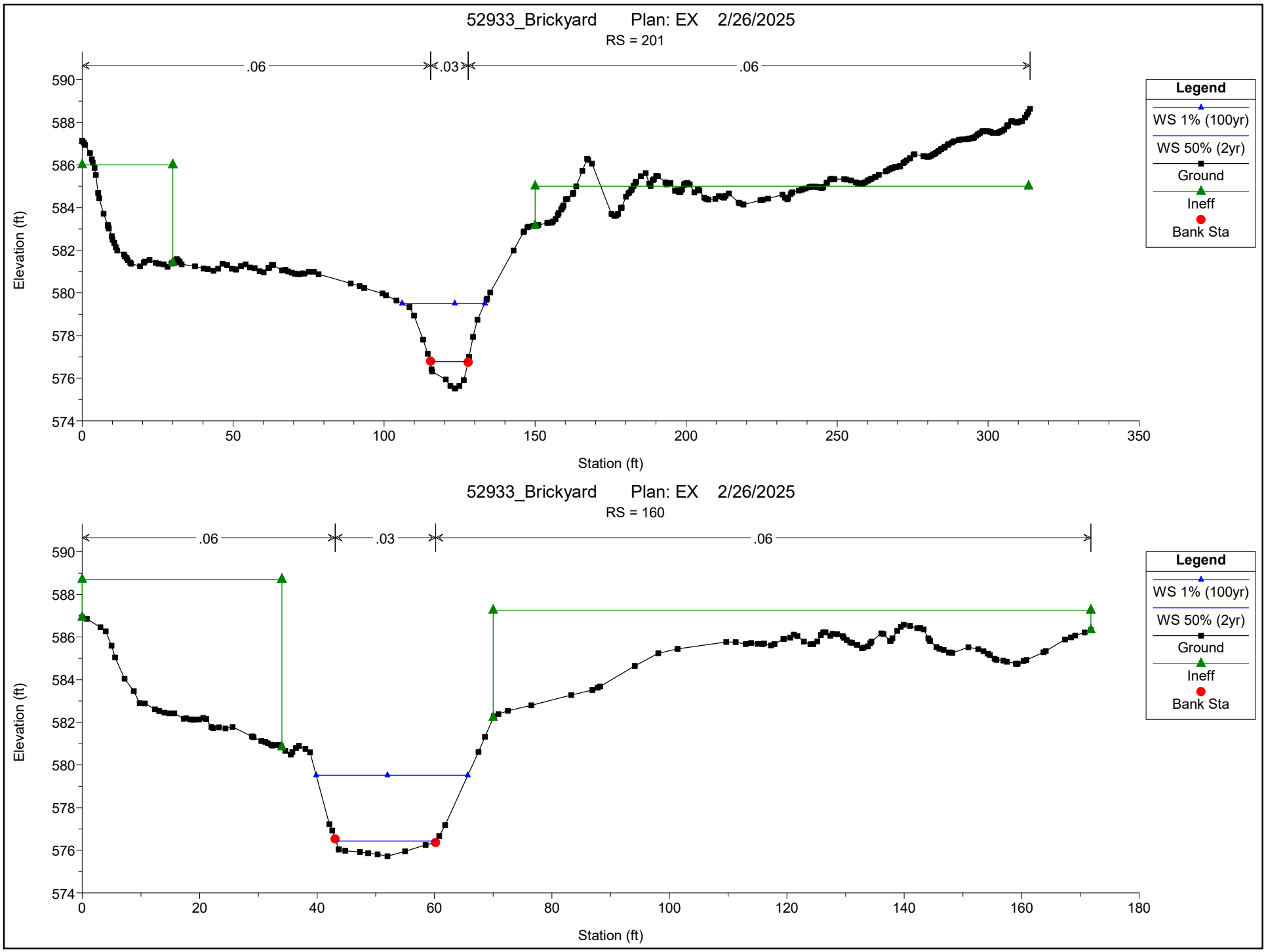

52933_Brickyard Plan: EX 2/26/2025
RS = 644
.07
.03
.06
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Bank Sta
Elevation (ft)
Station (ft)
52933_Brickyard Plan: EX 2/26/2025
RS = 620
.07
.03
.06
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Bank Sta
Elevation (ft)
Station (ft)

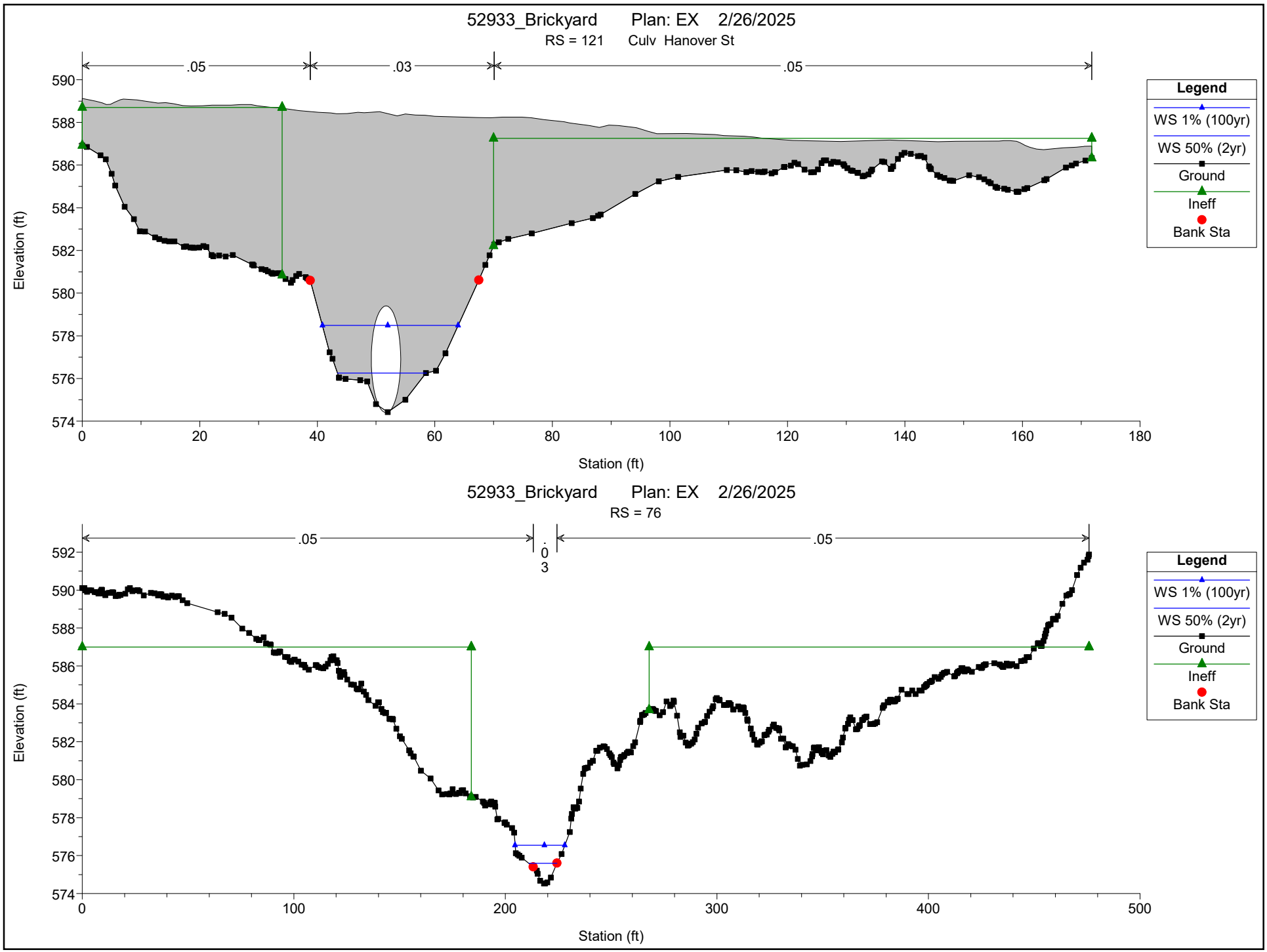

52933_Brickyard Plan: EX 2/26/2025
RS = 571
.06
.03
.06
592
590
588
586
584
582
580
578
576
Elevation (ft)
0
100
200
300
400
500
Station (ft)
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Bank Sta
52933_Brickyard Plan: EX 2/26/2025
RS = 465
.06
.03
.06
590
588
586
584
582
580
578
576
Elevation (ft)
0
100
200
300
400
500
Station (ft)
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Bank Sta

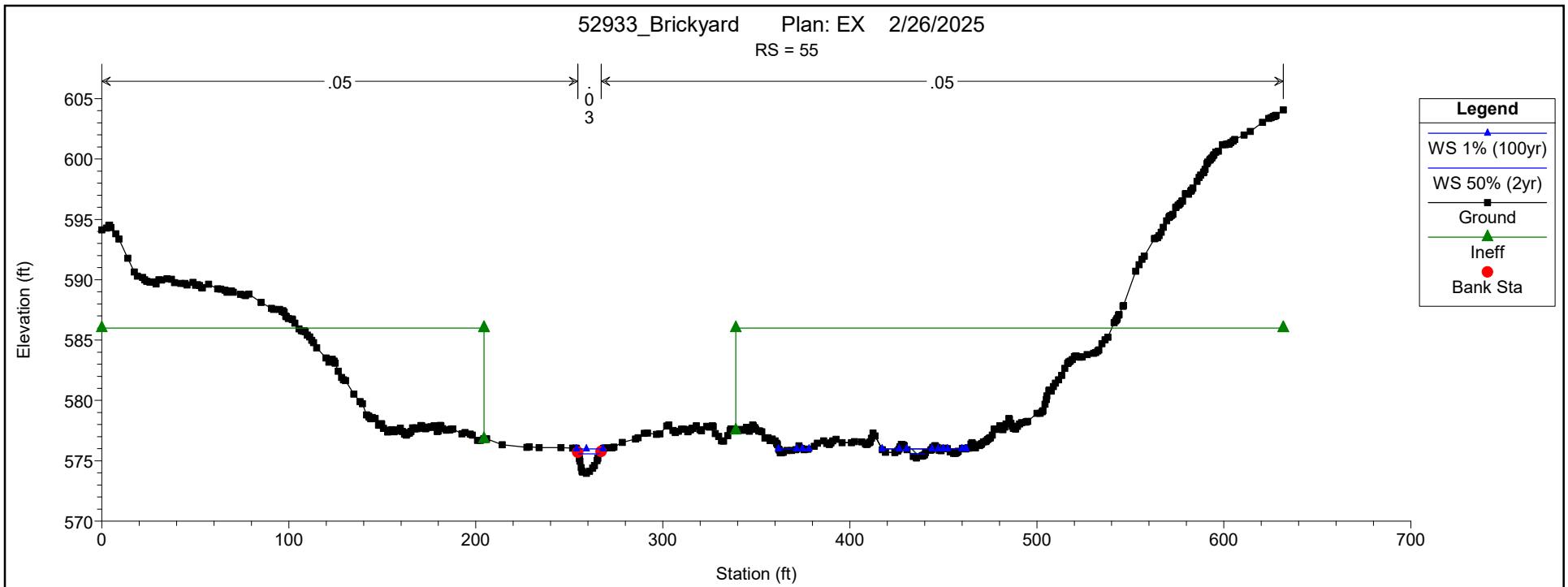

52933_Brickyard Plan: EX 2/26/2025
RS = 420 Culv 60" Old Chiminey
.06
.03
.06
590
588
586
584
582
580
578
576
Elevation (ft)
0
100
200
300
400
500
Station (ft)
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Bank Sta
52933_Brickyard Plan: EX 2/26/2025
RS = 385
.06
.03
.06
588
586
584
582
580
578
576
Elevation (ft)
0
100
200
300
400
500
Station (ft)
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Bank Sta

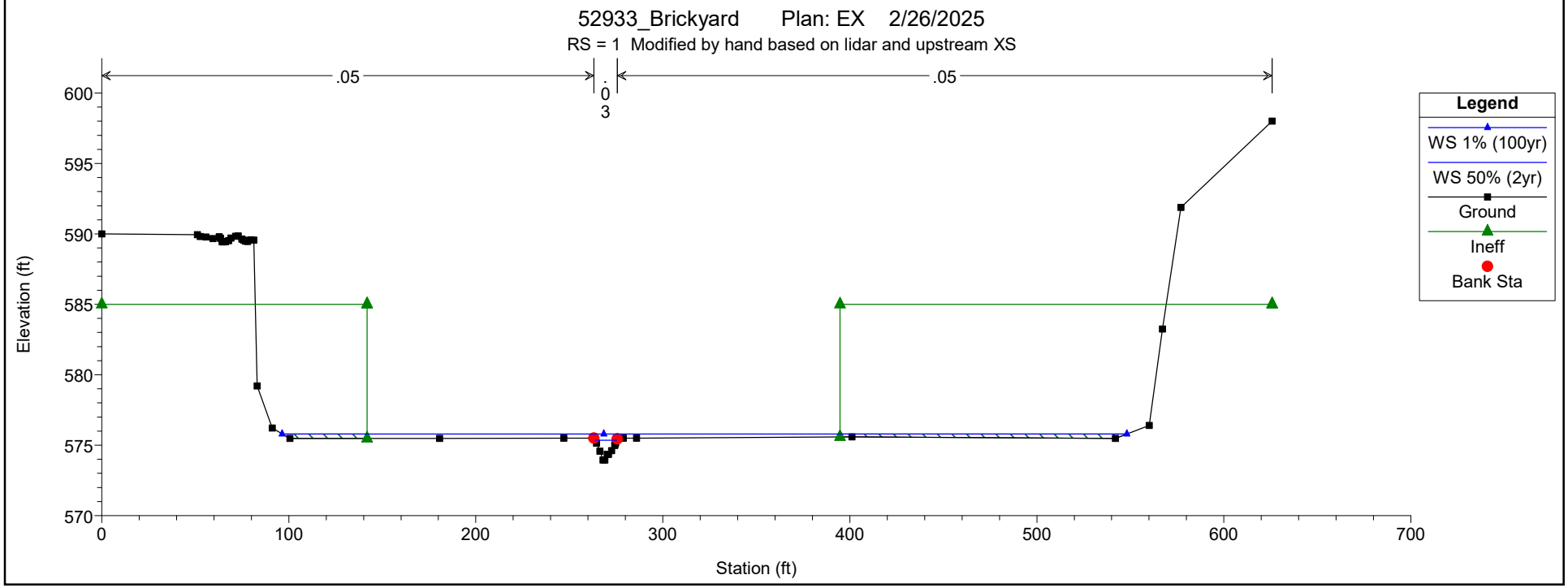

52933_Brickyard Plan: EX 2/26/2025
RS = 362
.06
.03
.06
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Bank Sta
Elevation (ft)
590
588
586
584
582
580
578
576
0
100
200
300
400
500
Station (ft)
52933_Brickyard Plan: EX 2/26/2025
RS = 268
.06
.03
.06
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Bank Sta
Elevation (ft)
588
586
584
582
580
578
576
0
50
100
150
200
250
300
Station (ft)

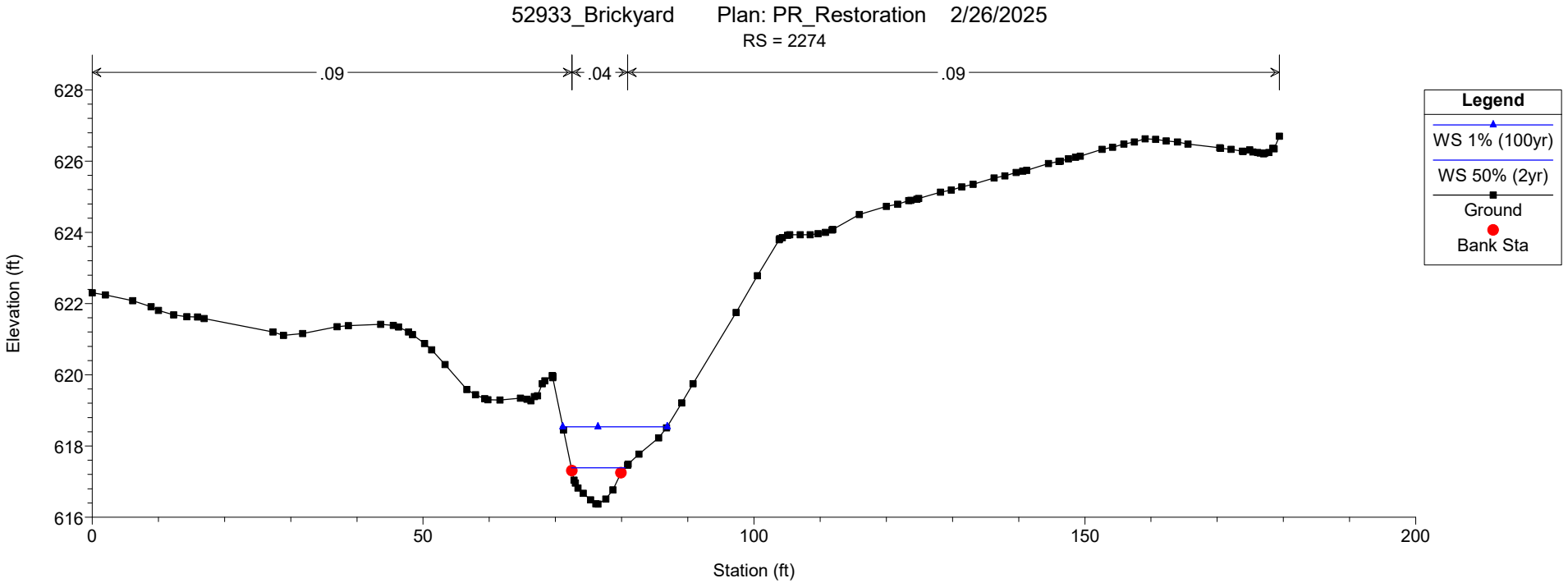

52933_Brickyard Plan: EX 2/26/2025
RS = 258 Culv 4.5' Dia - CMP - Granite curb for headwalls
.06
.03
.06
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Bank Sta
Elevation (ft)
Station (ft)
52933_Brickyard Plan: EX 2/26/2025
RS = 243
.06
.03
.06
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

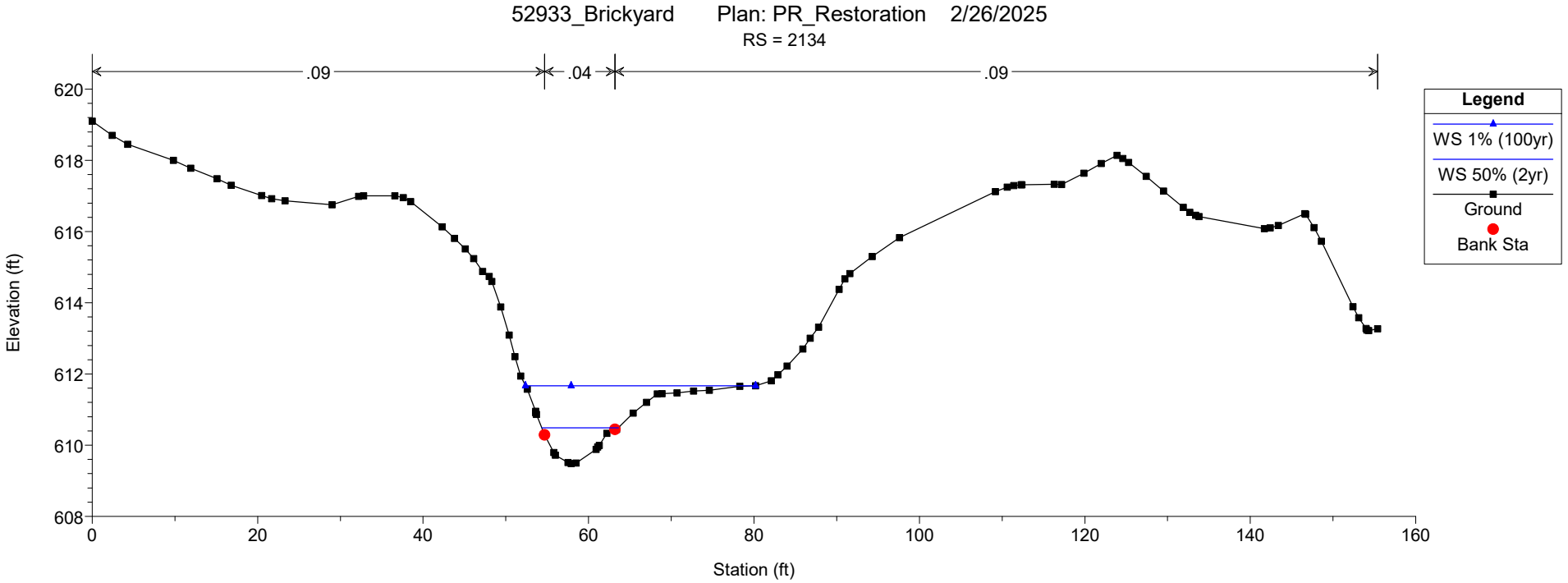

52933_Brickyard Plan: EX 2/26/2025
RS = 201
.06
.03
.06
Elevation (ft)
Station (ft)
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Ineff
Bank Sta
52933_Brickyard Plan: EX 2/26/2025
RS = 160
.06
.03
.06
Elevation (ft)
Station (ft)
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Ineff
Bank Sta

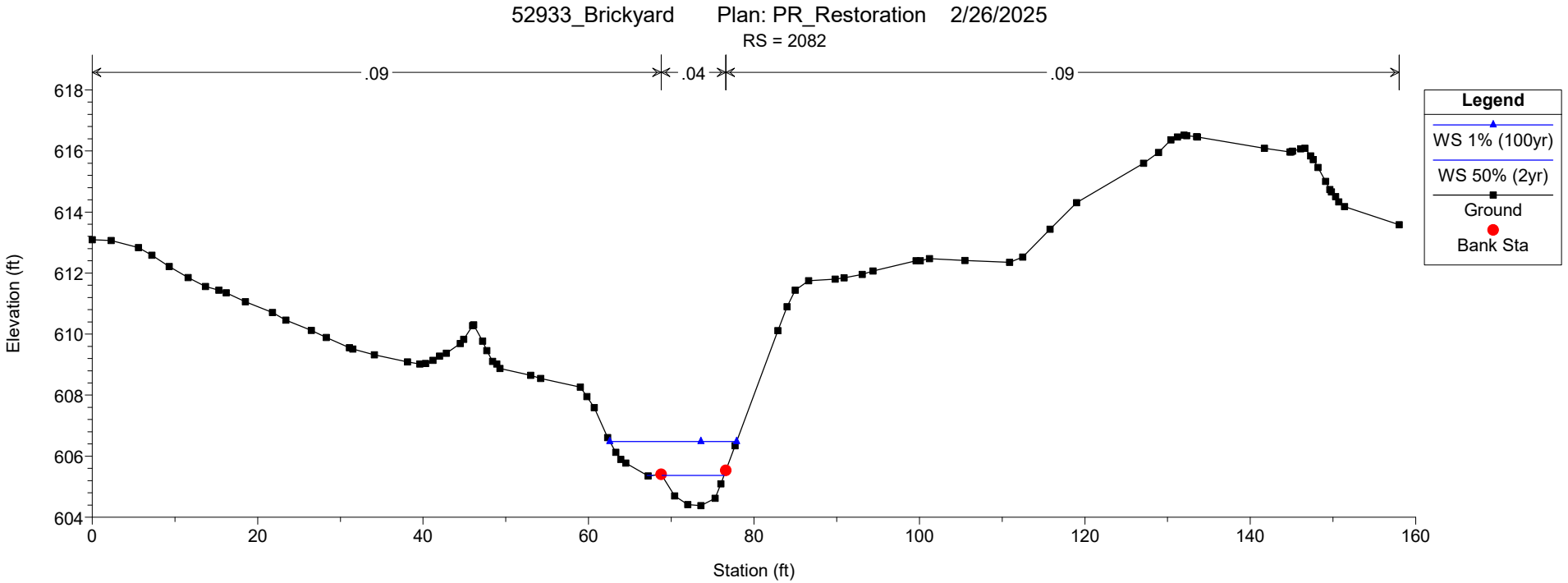

52933_Brickyard Plan: EX 2/26/2025
RS = 121 Culv Hanover St
.05
.03
.05
Elevation (ft)
Station (ft)
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Ineff
Bank Sta
52933_Brickyard Plan: EX 2/26/2025
RS = 76
.05
.03
.05
Elevation (ft)
Station (ft)
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Ineff
Bank Sta

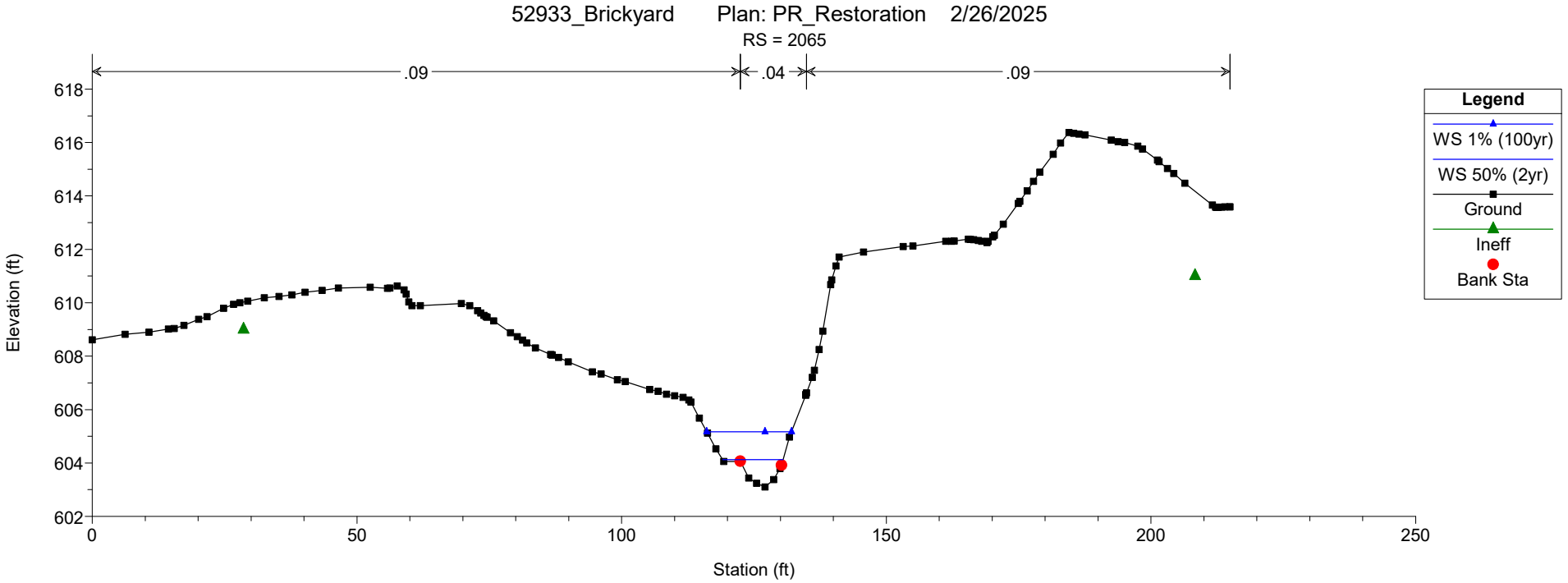

52933_Brickyard Plan: EX 2/26/2025
RS = 55
.05
.03
.05
Elevation (ft)
Station (ft)
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Ineff
Bank Sta

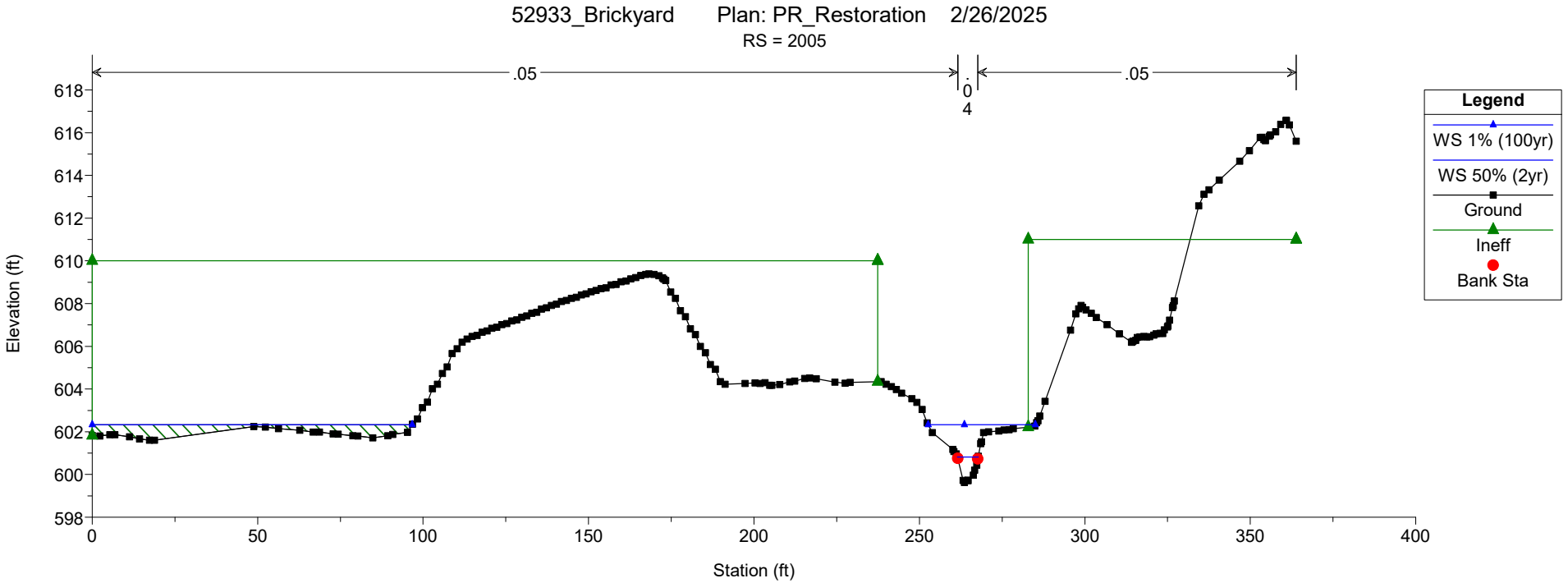

52933_Brickyard Plan: EX 2/26/2025
RS = 1 Modified by hand based on lidar and upstream XS
.05
.03
.05
Elevation (ft)
Station (ft)
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Ineff
Bank Sta

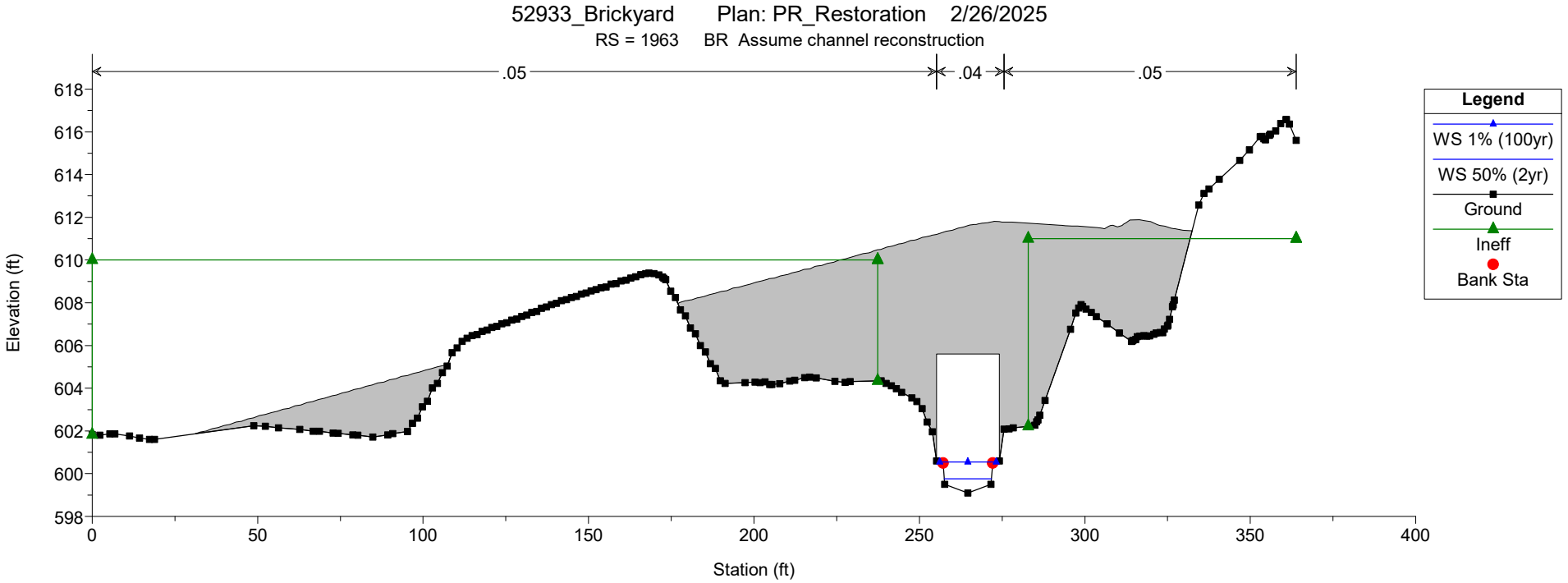

52933_Brickyard Plan: PR_Restoration 2/26/2025
RS = 2274
.09
.04
.09
Elevation (ft)
628
626
624
622
620
618
616
0
50
100
150
200
Station (ft)
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Bank Sta

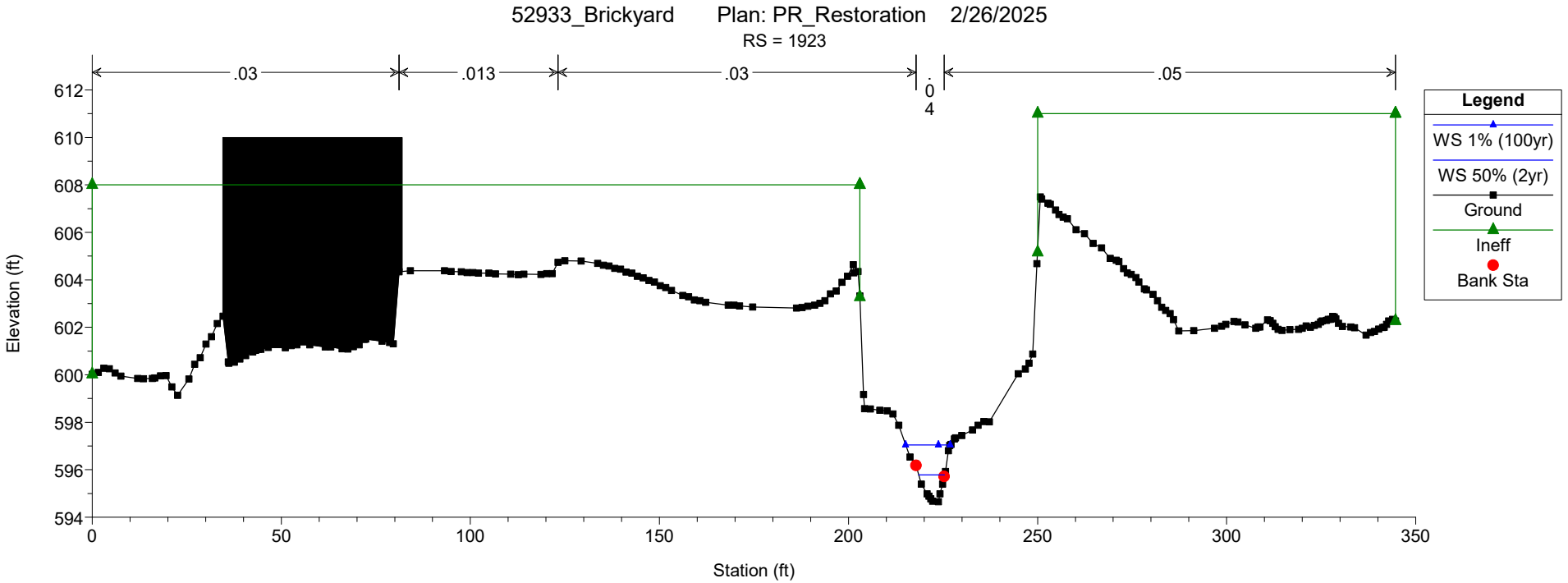

52933_Brickyard Plan: PR_Restoration 2/26/2025
RS = 2134
.09
.04
.09
Elevation (ft)
620
618
616
614
612
610
608
0
20
40
60
80
100
120
140
160
Station (ft)
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Bank Sta

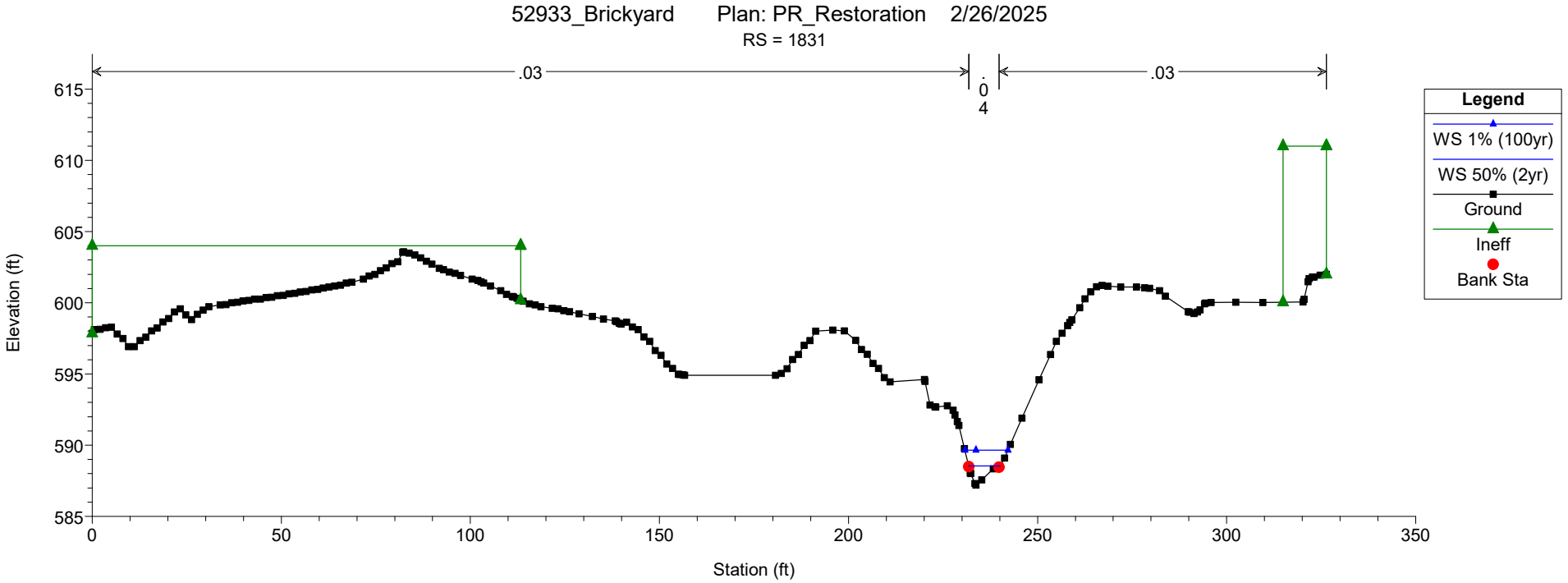

52933_Brickyard Plan: PR_Restoration 2/26/2025
RS = 2082
.09
.04
.09
Elevation (ft)
Station (ft)
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Bank Sta

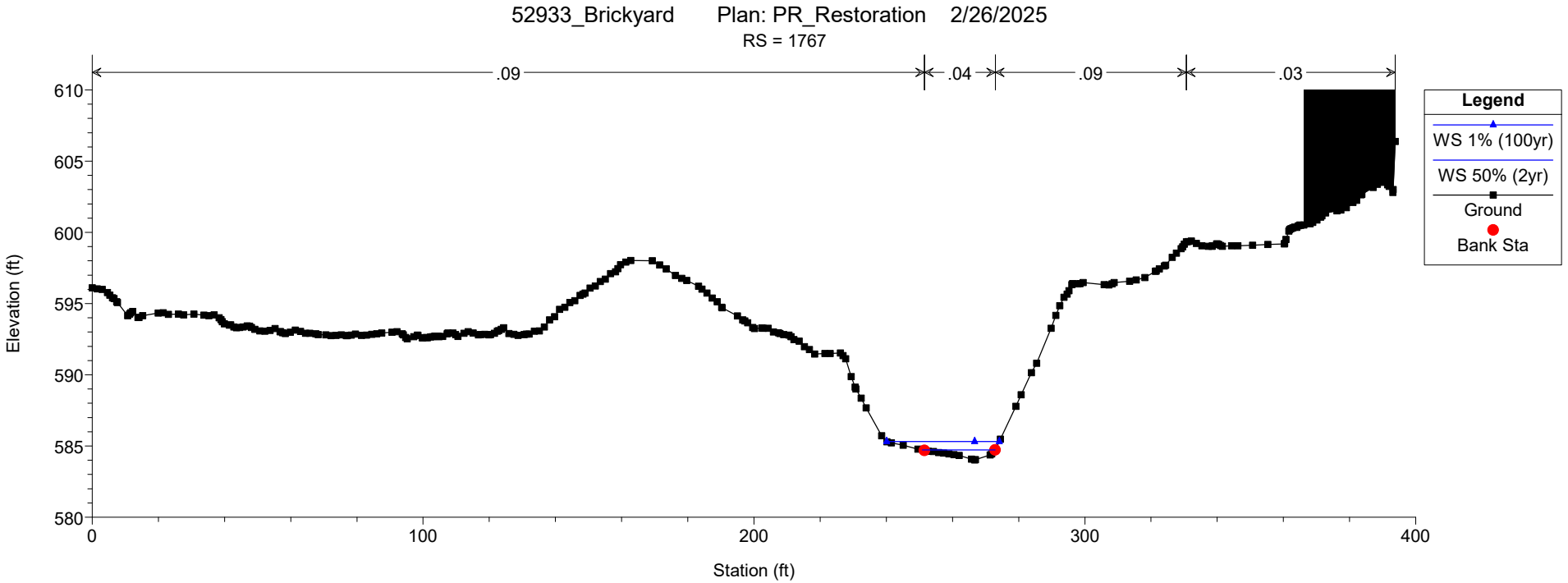

52933_Brickyard Plan: PR_Restoration 2/26/2025
RS = 2065
.09
.04
.09
Elevation (ft)
Station (ft)
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Ineff
Bank Sta

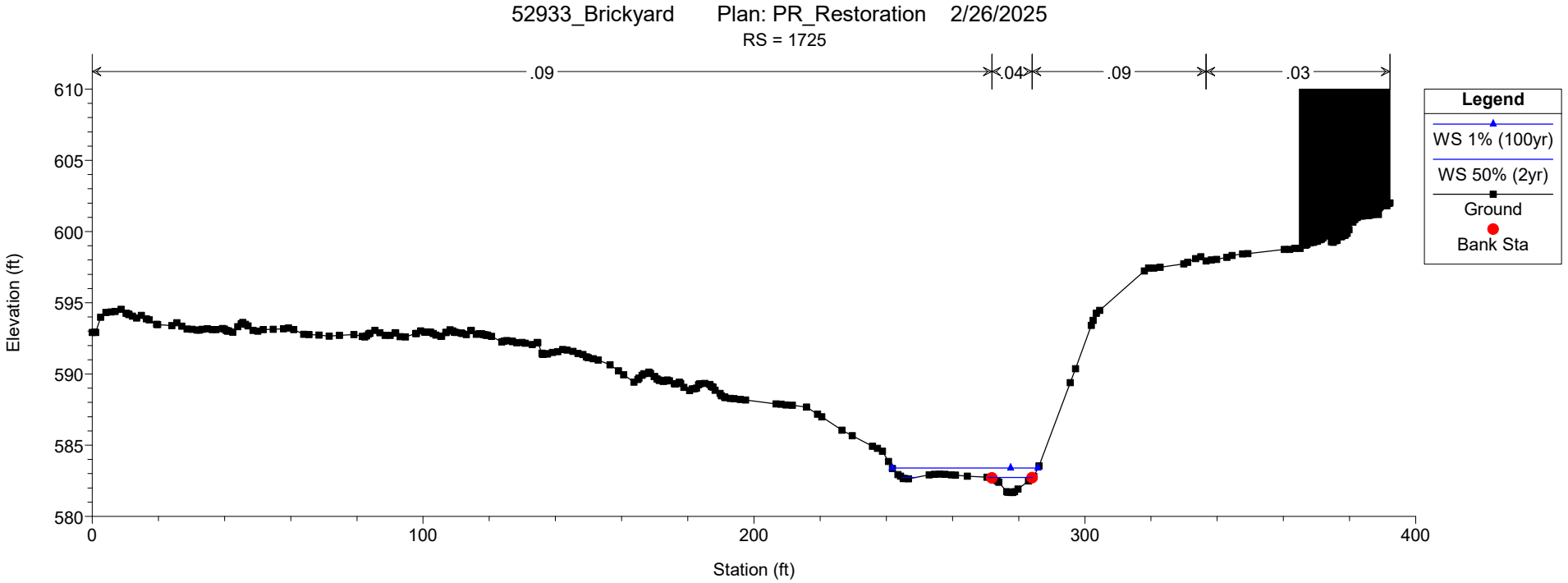

52933_Brickyard Plan: PR_Restoration 2/26/2025
RS = 2005
.05
.04
.05
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

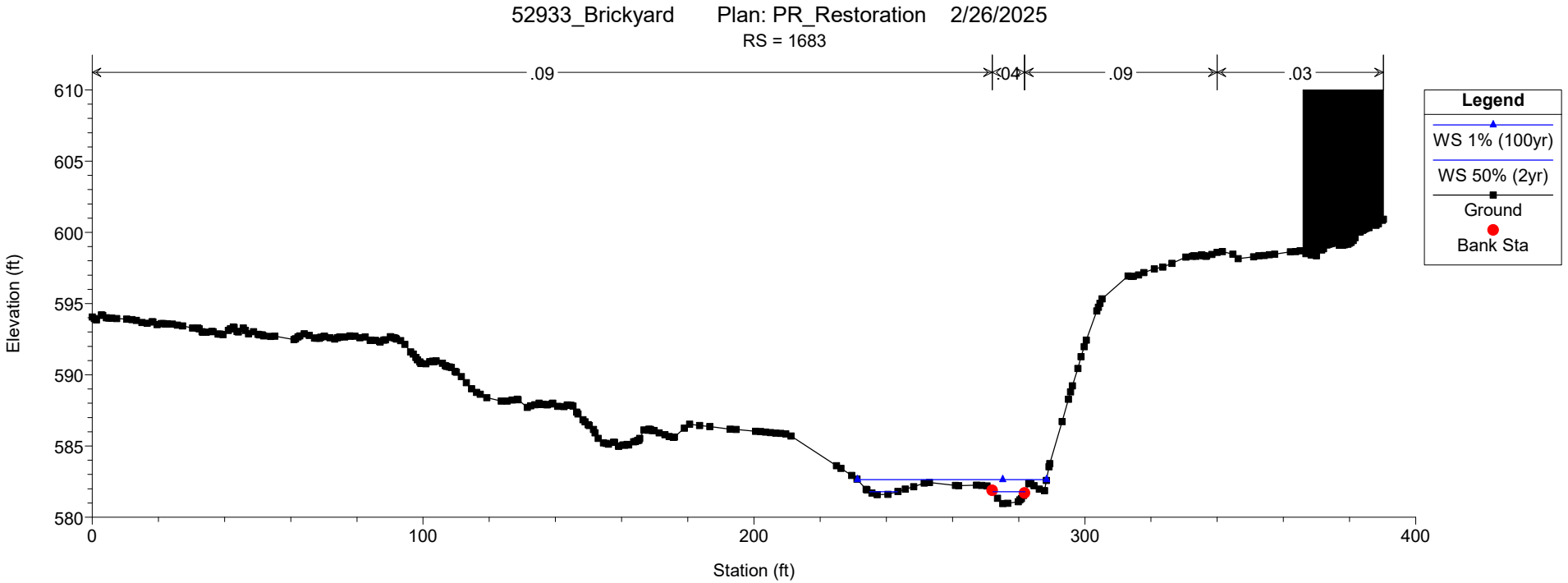

52933_Brickyard Plan: PR_Restoration 2/26/2025
RS = 1963 BR Assume channel reconstruction
.05
.04
.05
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

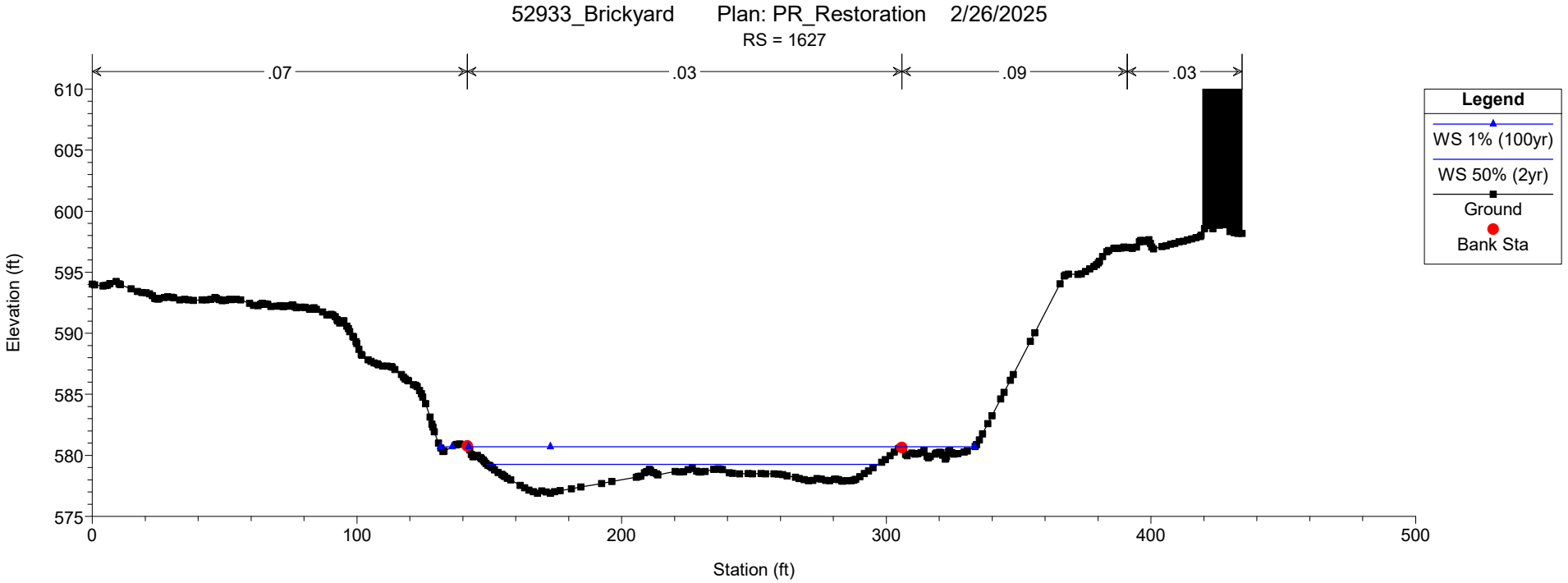

52933_Brickyard Plan: PR_Restoration 2/26/2025
RS = 1923
.03
.013
.03
.04
.05
Elevation (ft)
Station (ft)
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Ineff
Bank Sta

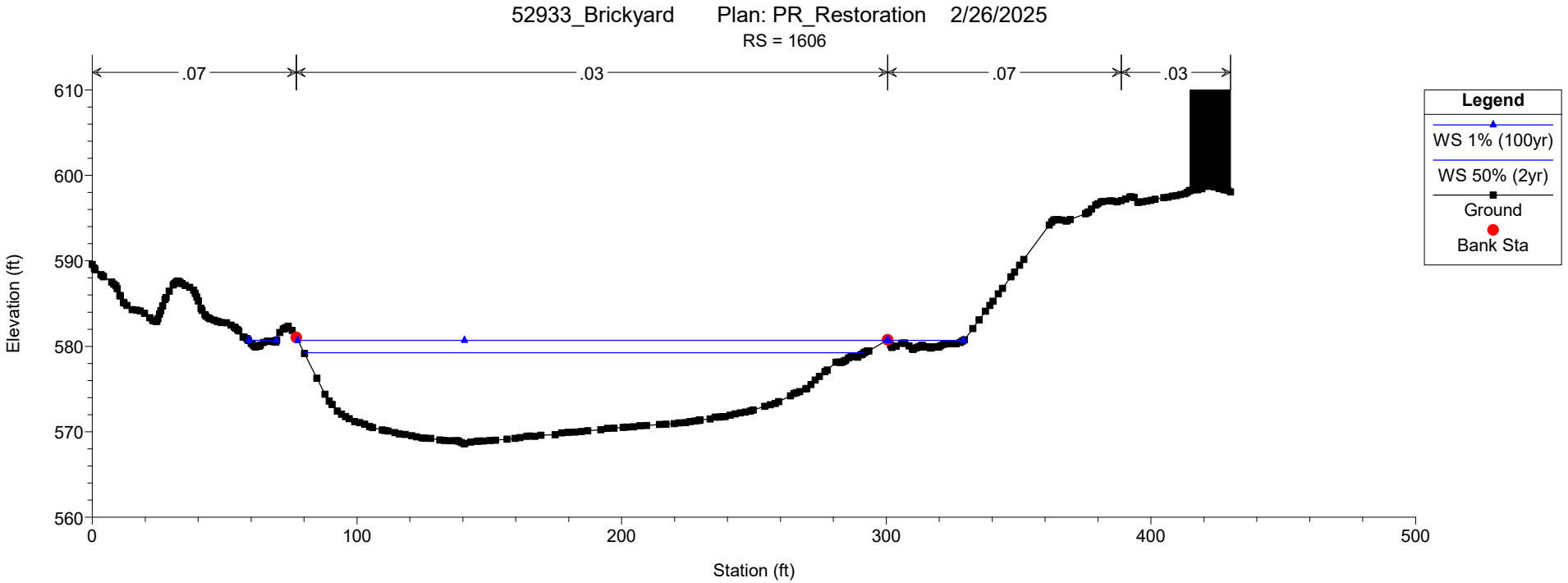

52933_Brickyard Plan: PR_Restoration 2/26/2025
RS = 1831
.03
.04
.03
Elevation (ft)
Station (ft)
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Ineff
Bank Sta

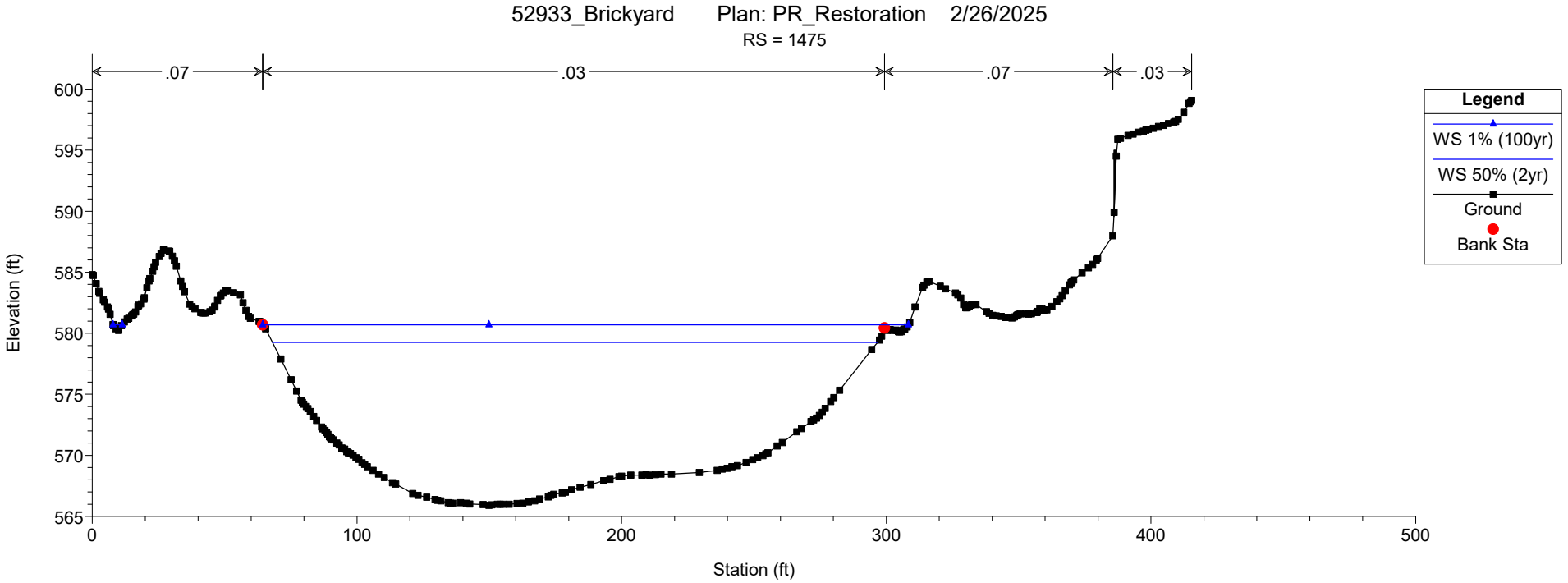

52933_Brickyard Plan: PR_Restoration 2/26/2025
RS = 1767
.09
.04
.09
.03
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Bank Sta
Elevation (ft)
610
605
600
595
590
585
580
0
100
200
300
400
Station (ft)

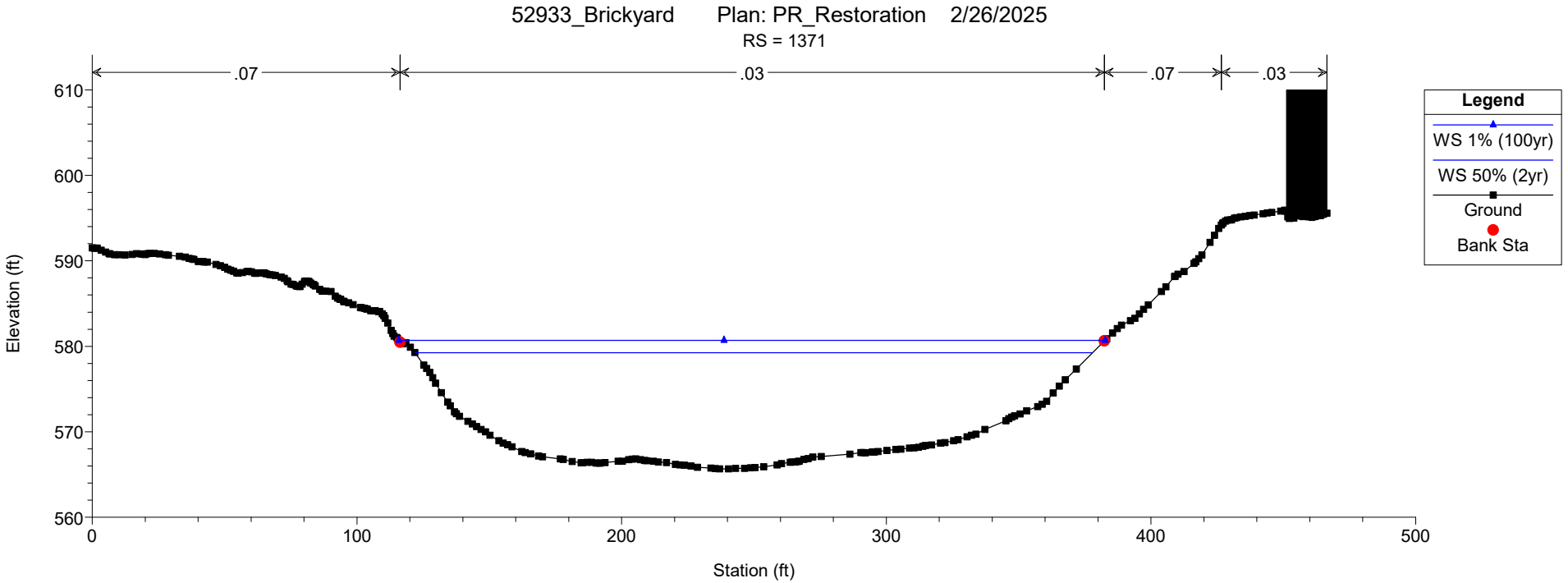

52933_Brickyard Plan: PR_Restoration 2/26/2025
RS = 1725
.09
.04
.09
.03
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Bank Sta
Elevation (ft)
610
605
600
595
590
585
580
0
100
200
300
400
Station (ft)

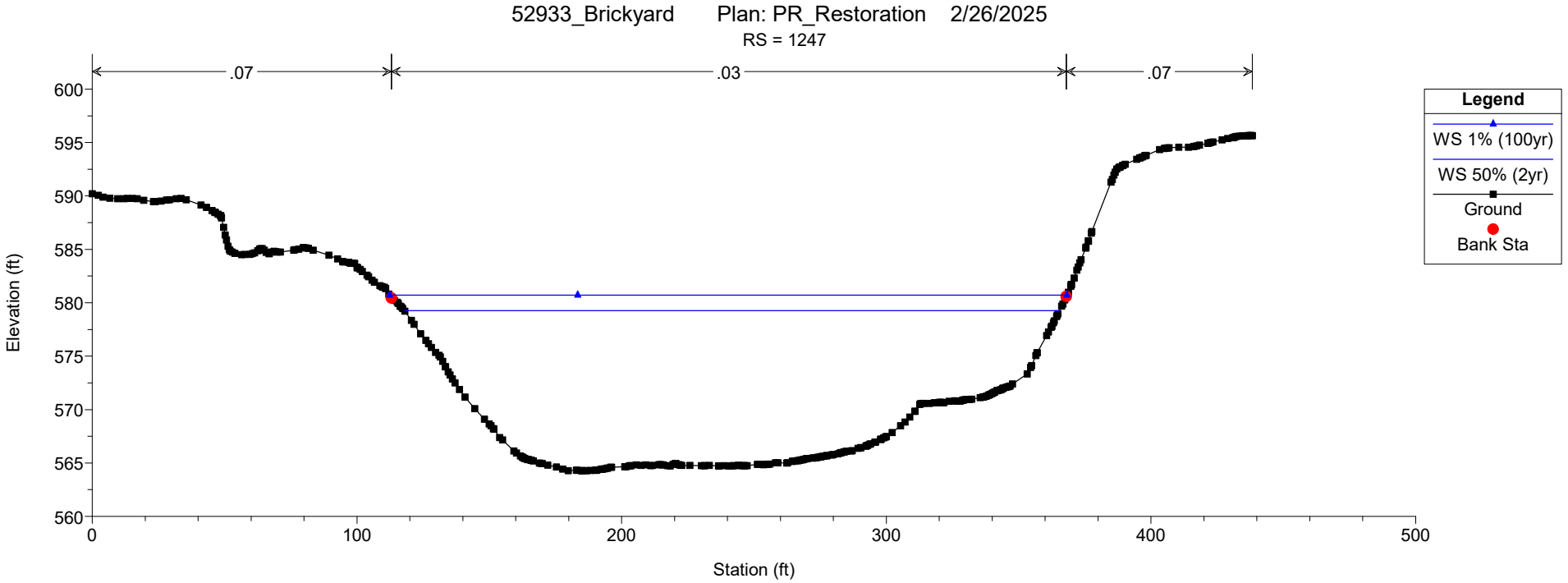

52933_Brickyard Plan: PR_Restoration 2/26/2025
RS = 1683
.09
.04
.09
.03
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Bank Sta
Elevation (ft)
610
605
600
595
590
585
580
0
100
200
300
400
Station (ft)

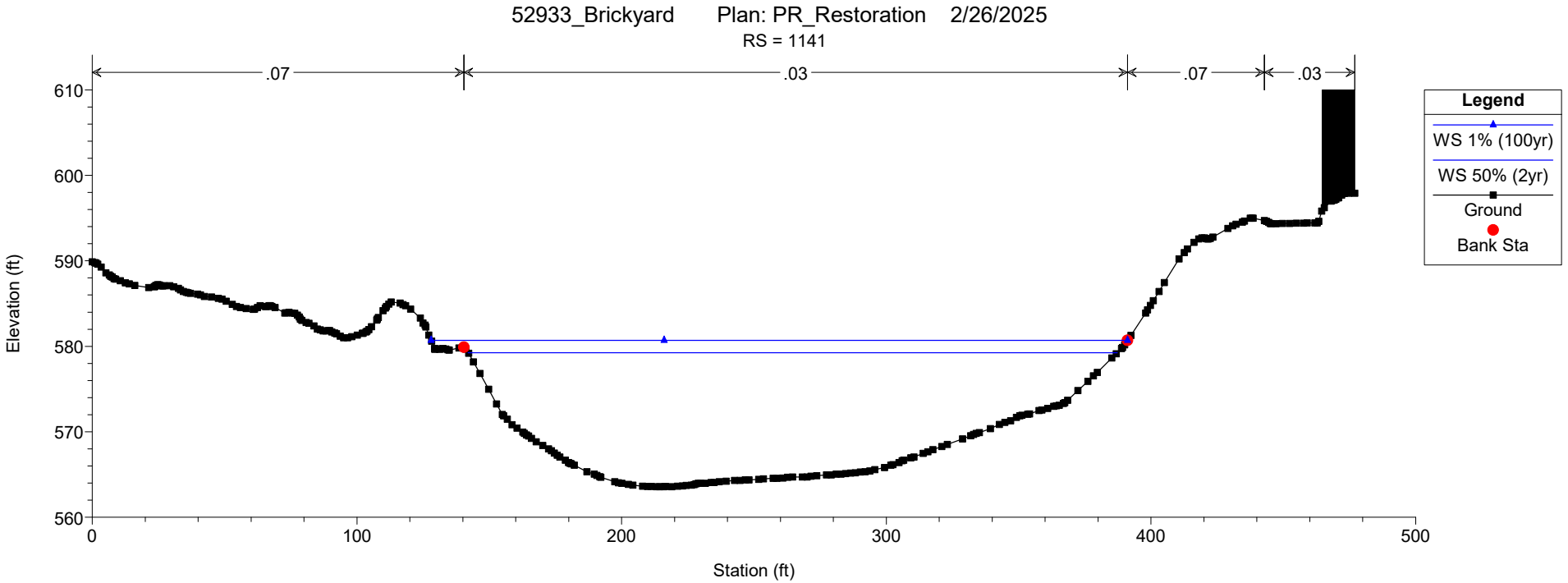

52933_Brickyard Plan: PR_Restoration 2/26/2025
RS = 1627
.07
.03
.09
.03
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Bank Sta
Elevation (ft)
610
605
600
595
590
585
580
575
0
100
200
300
400
500
Station (ft)

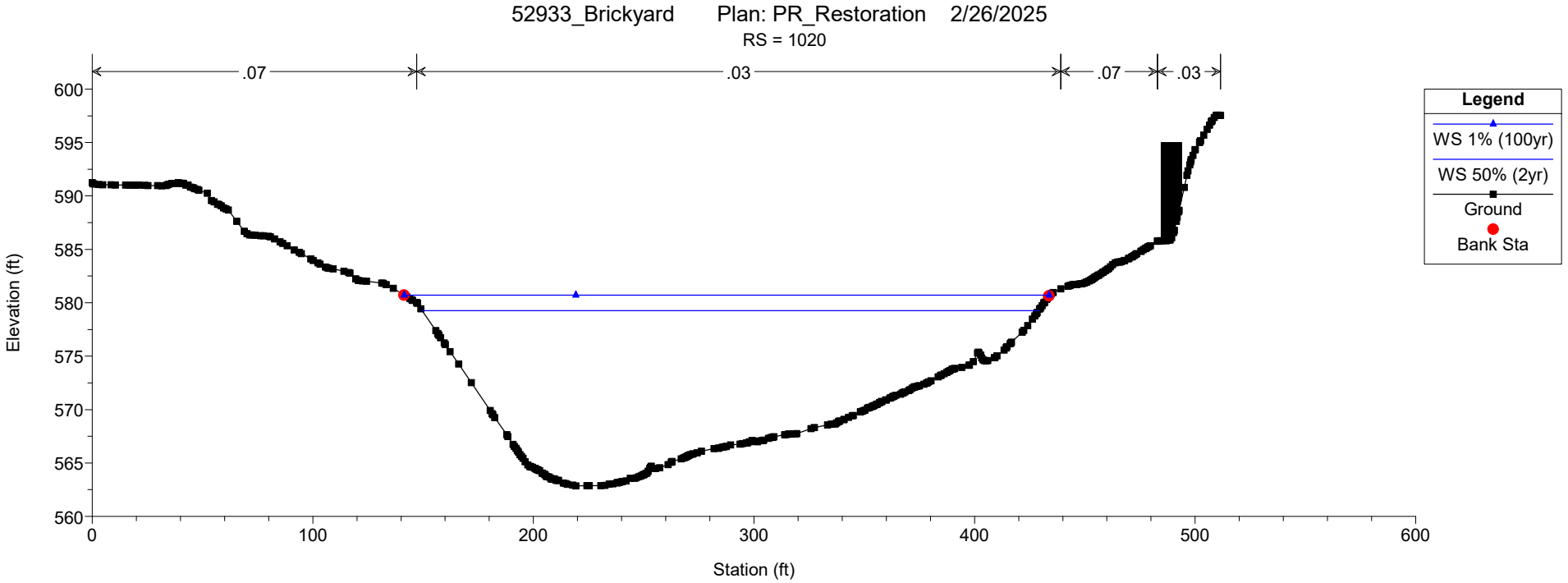

52933_Brickyard Plan: PR_Restoration 2/26/2025
RS = 1606
.07
.03
.07
.03
610
600
590
580
570
560
0
100
200
300
400
500
Elevation (ft)
Station (ft)
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Bank Sta

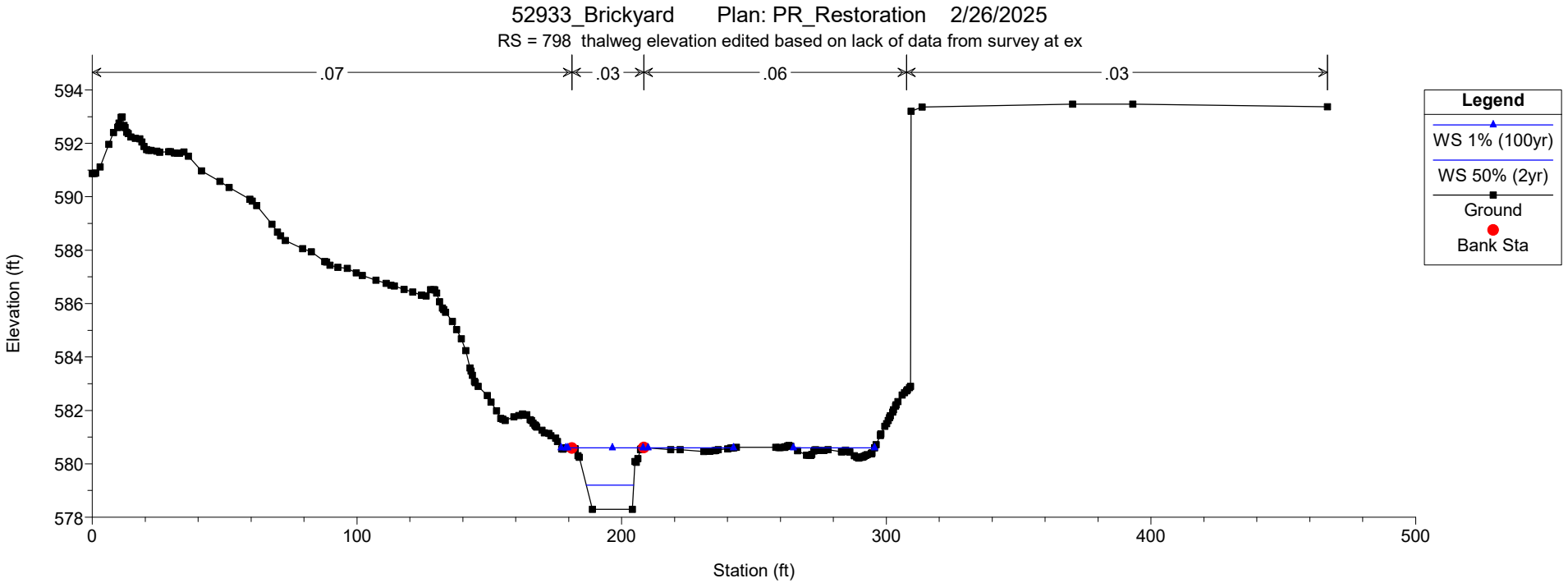

52933_Brickyard Plan: PR_Restoration 2/26/2025
RS = 1475
.07
.03
.07
.03
600
595
590
585
580
575
570
565
0
100
200
300
400
500
Elevation (ft)
Station (ft)
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Bank Sta

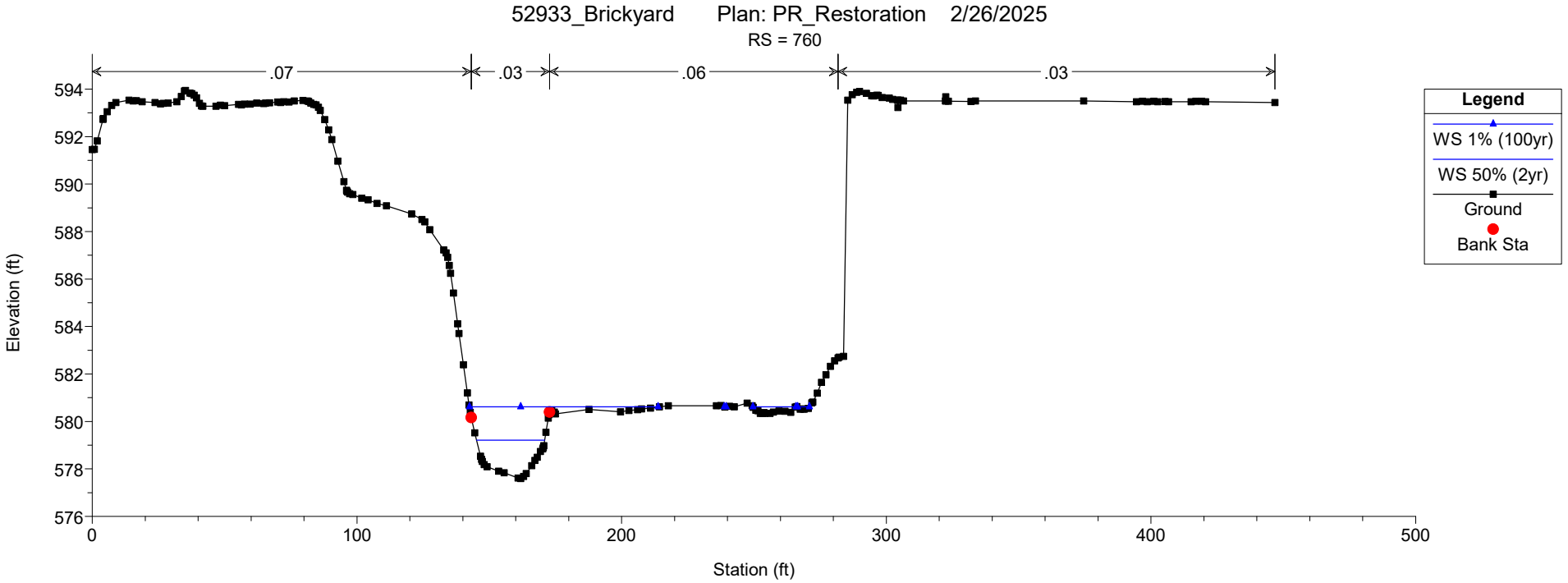

52933_Brickyard Plan: PR_Restoration 2/26/2025
RS = 1371
.07
.03
.07
.03
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Bank Sta
Elevation (ft)
Station (ft)
610
600
590
580
570
560
0
100
200
300
400
500

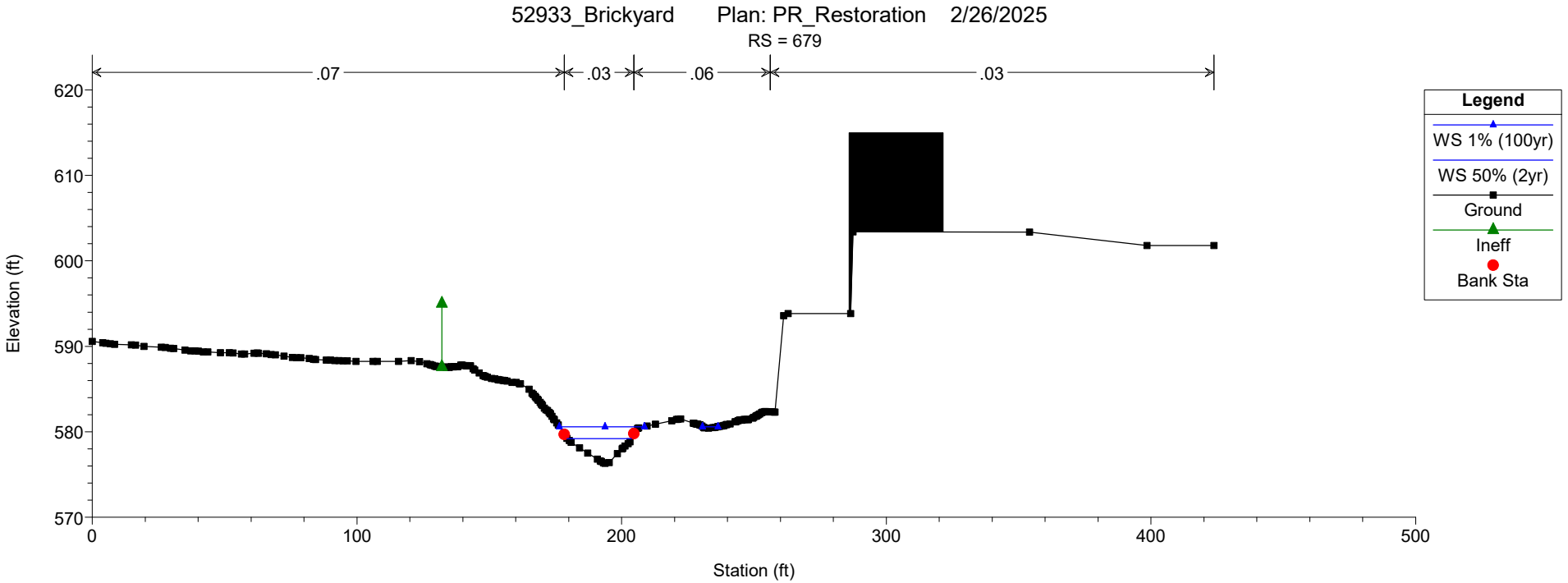

52933_Brickyard Plan: PR_Restoration 2/26/2025
RS = 1247
.07
.03
.07
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Bank Sta
Elevation (ft)
Station (ft)
600
595
590
585
580
575
570
565
560
0
100
200
300
400
500

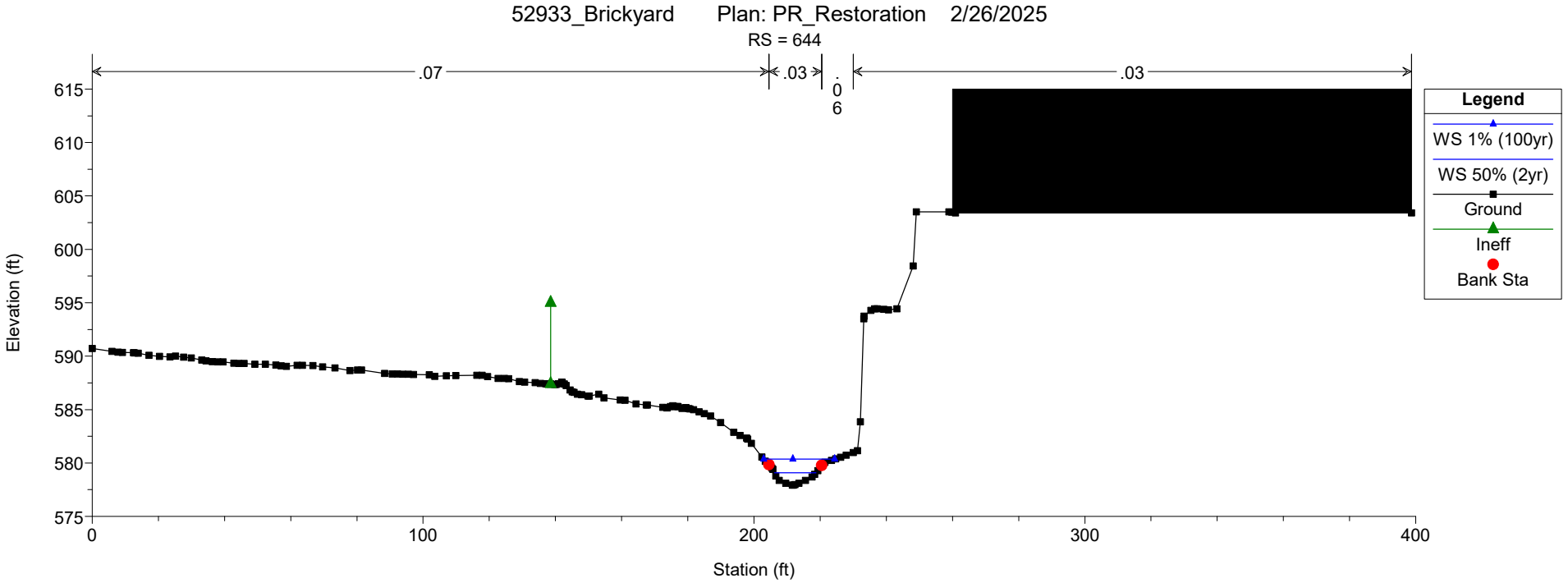

52933_Brickyard Plan: PR_Restoration 2/26/2025
RS = 1141
.07
.03
.07
.03
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Bank Sta
Elevation (ft)
610
600
590
580
570
560
0
100
200
300
400
500
Station (ft)

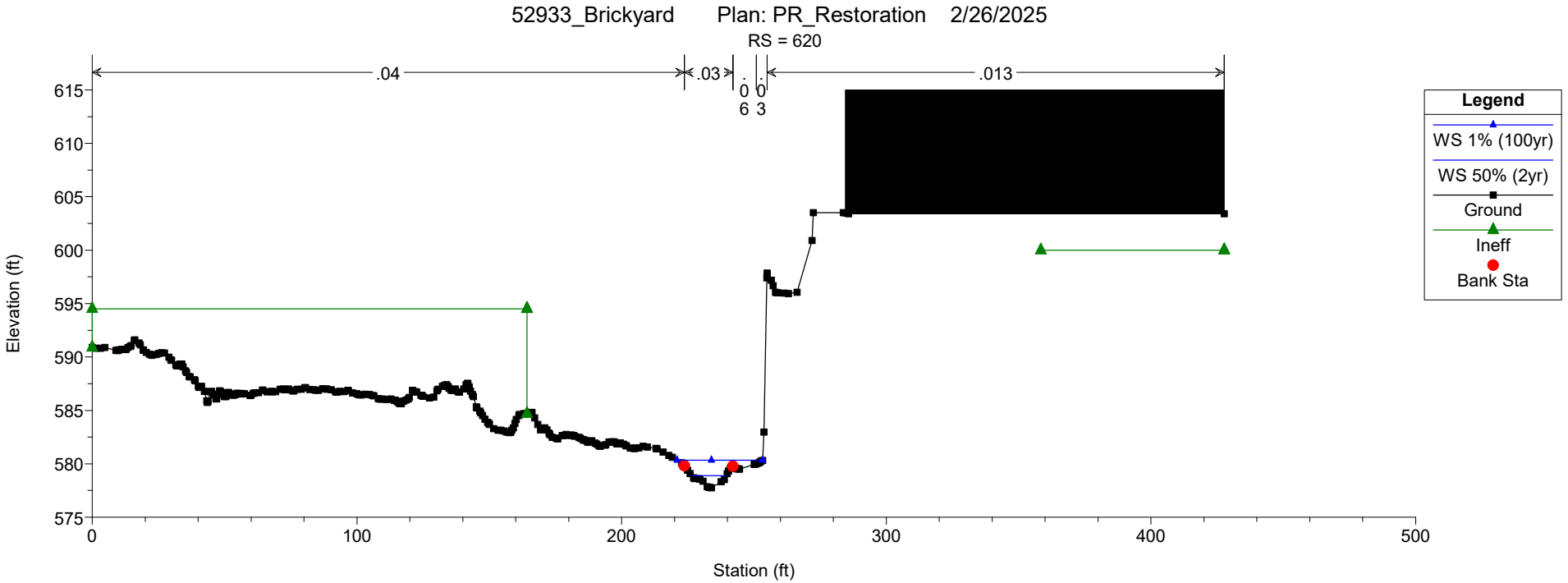

52933_Brickyard Plan: PR_Restoration 2/26/2025
RS = 1020
.07
.03
.07
.03
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Bank Sta
Elevation (ft)
600
595
590
585
580
575
570
565
560
0
100
200
300
400
500
600
Station (ft)

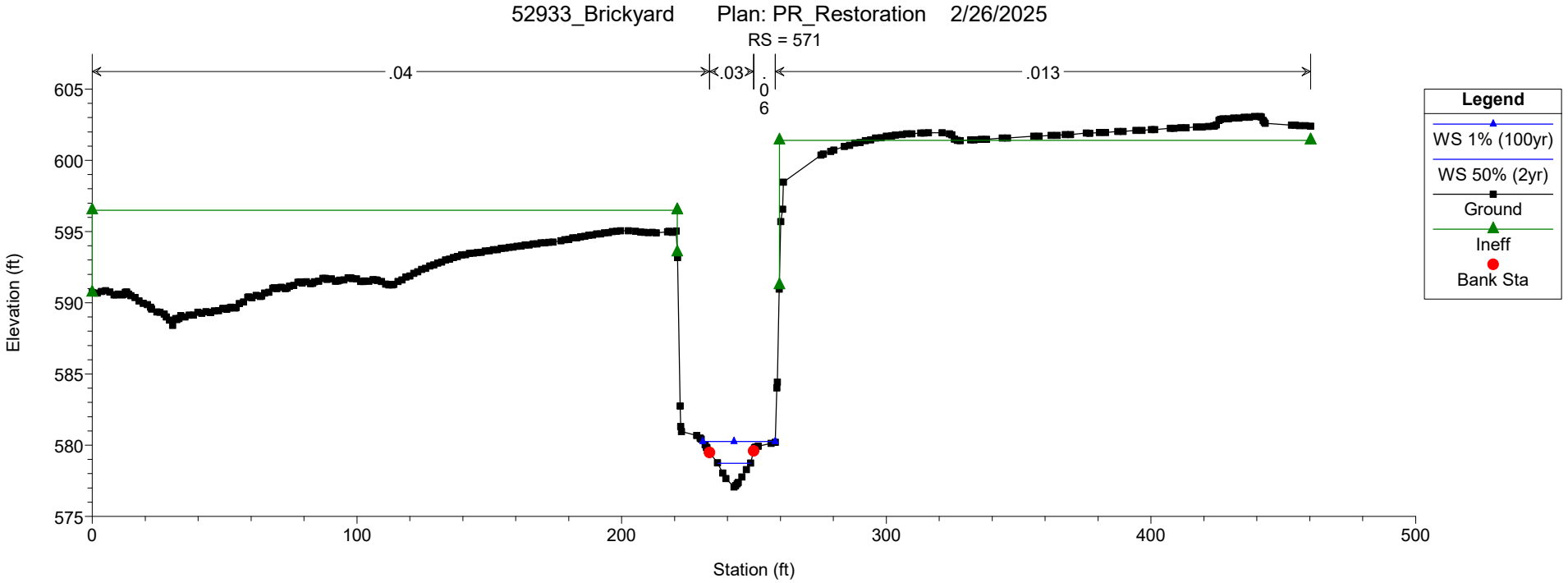

52933_Brickyard Plan: PR_Restoration 2/26/2025
RS = 798 thalweg elevation edited based on lack of data from survey at ex
.07
.03
.06
.03
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Bank Sta
Elevation (ft)
Station (ft)
578
580
582
584
586
588
590
592
594
0
100
200
300
400
500

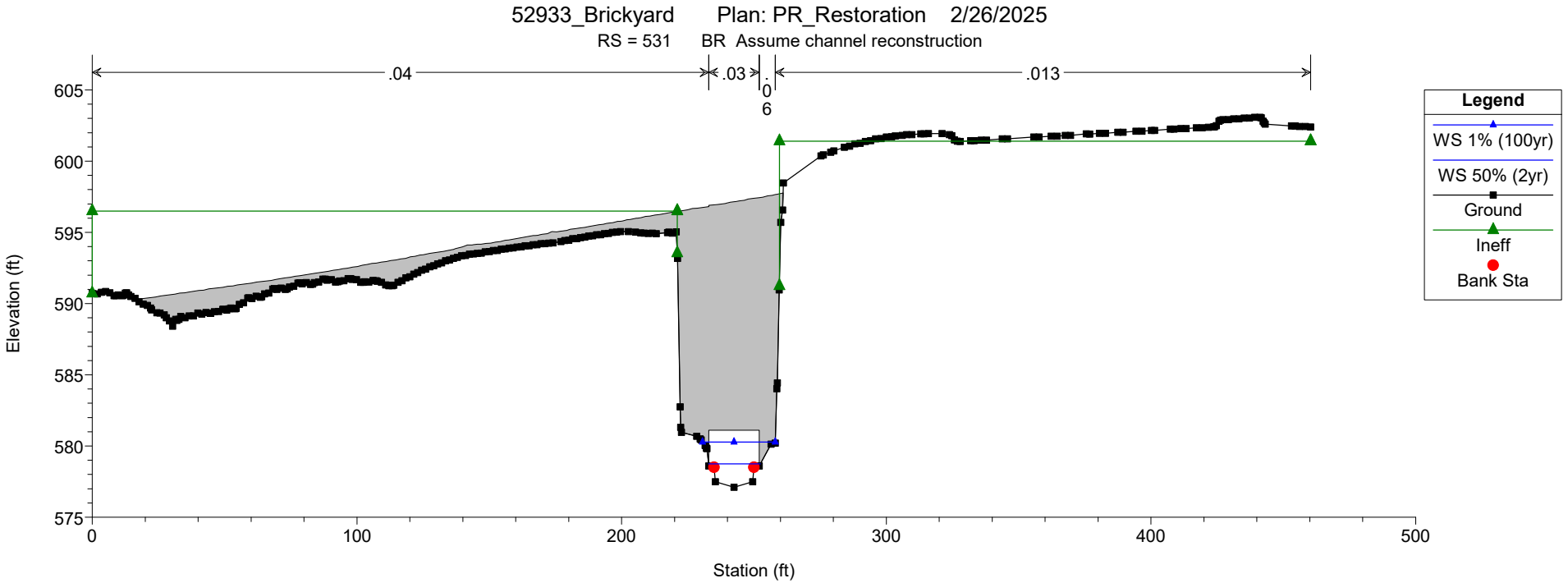

52933_Brickyard Plan: PR_Restoration 2/26/2025
RS = 760
.07
.03
.06
.03
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Bank Sta
Elevation (ft)
Station (ft)
576
578
580
582
584
586
588
590
592
594
0
100
200
300
400
500

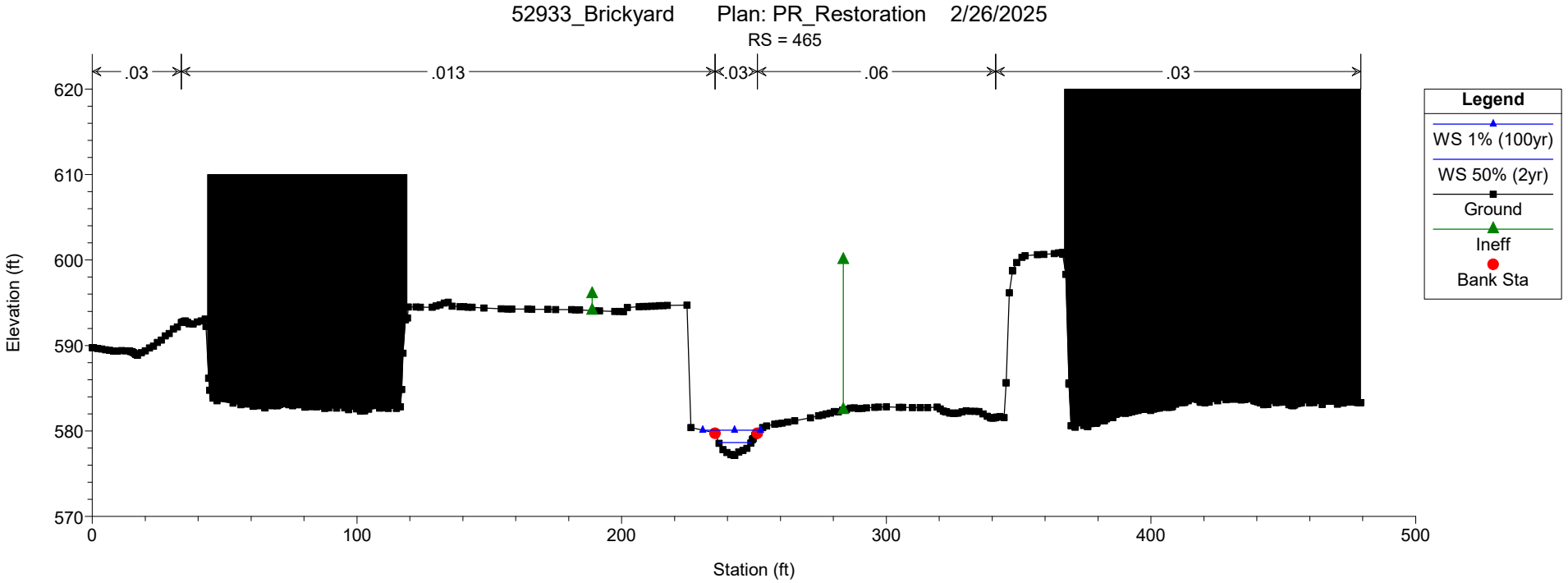

52933_Brickyard Plan: PR_Restoration 2/26/2025
RS = 679
.07
.03
.06
.03
Elevation (ft)
620
610
600
590
580
570
0
100
200
300
400
500
Station (ft)
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Ineff
Bank Sta

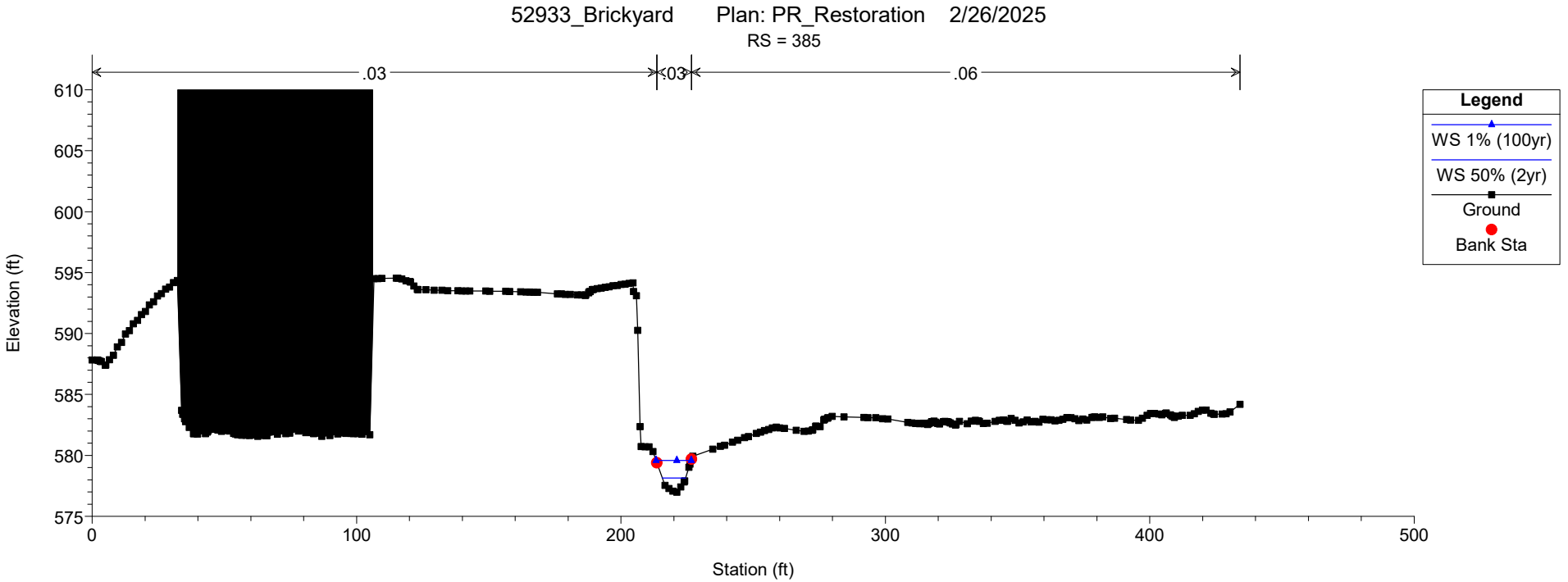

52933_Brickyard Plan: PR_Restoration 2/26/2025
RS = 644
.07
.03
.06
.03
Elevation (ft)
615
610
605
600
595
590
585
580
575
0
100
200
300
400
Station (ft)
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Ineff
Bank Sta

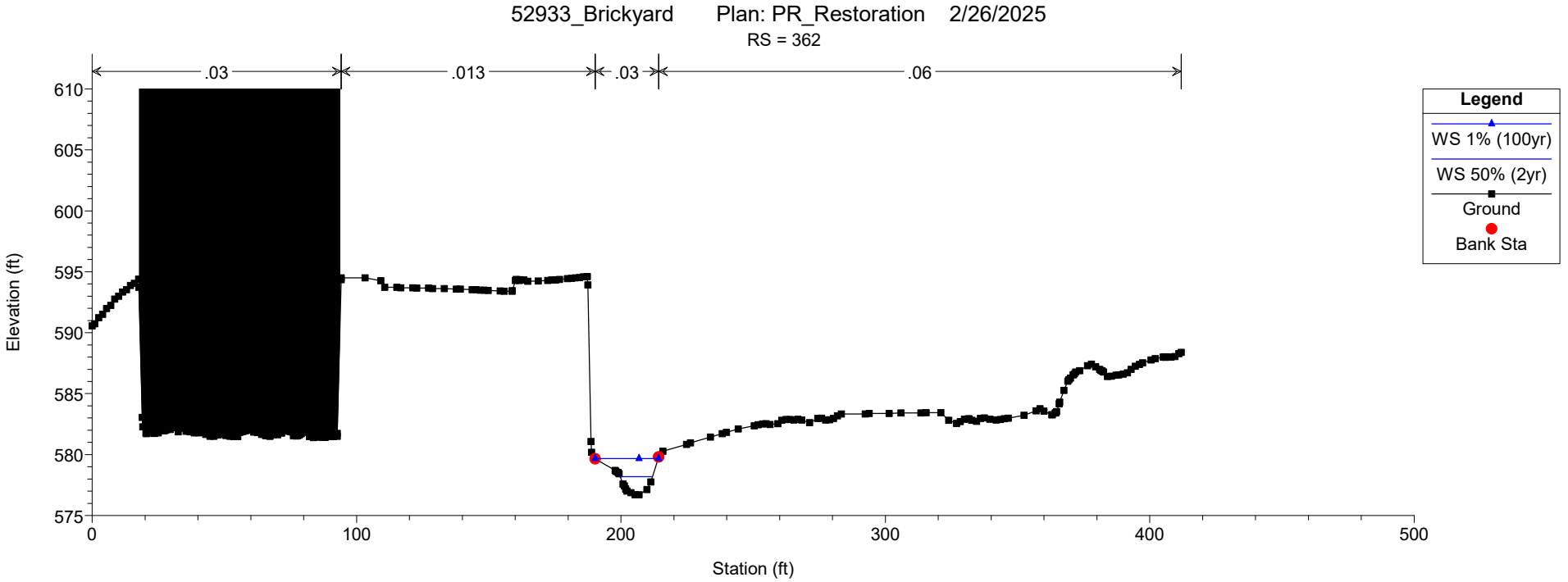

52933_Brickyard Plan: PR_Restoration 2/26/2025
RS = 620
.04
.03
.013
.06
.03
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Ineff
Bank Sta
Elevation (ft)
615
610
605
600
595
590
585
580
575
0
100
200
300
400
500
Station (ft)

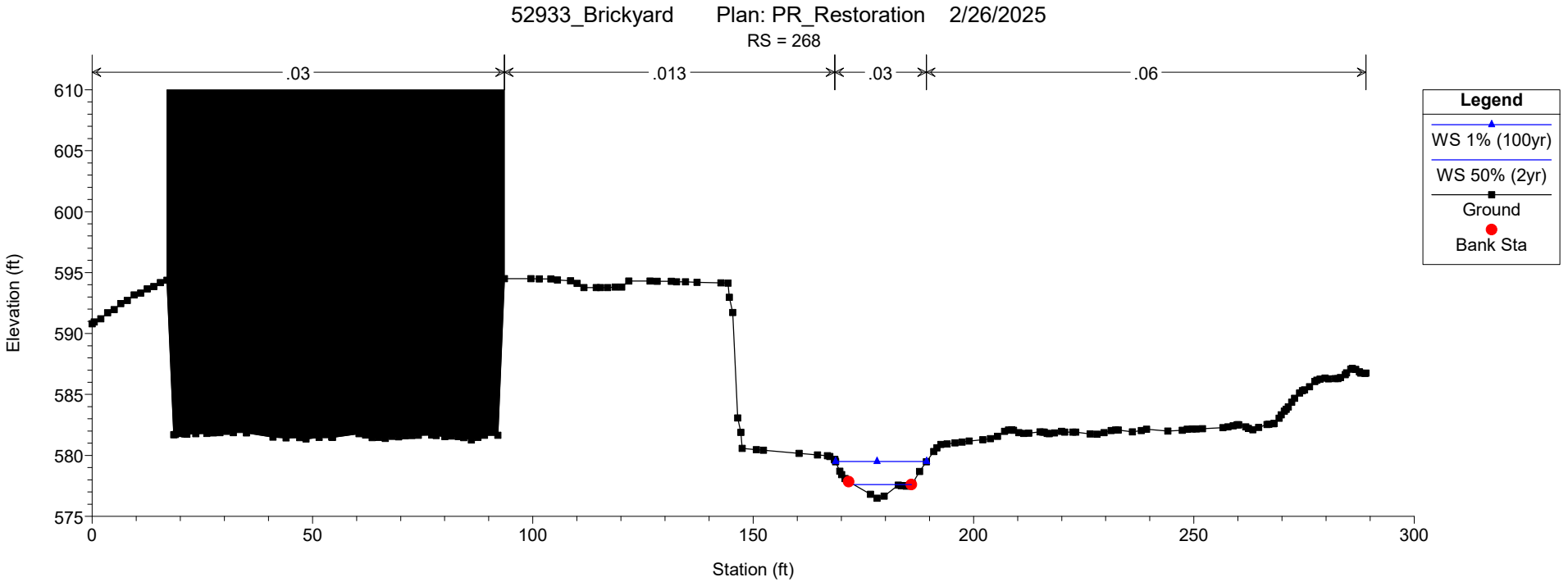

52933_Brickyard Plan: PR_Restoration 2/26/2025
RS = 571
.04
.03
.013
.06
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Ineff
Bank Sta
Elevation (ft)
605
600
595
590
585
580
575
0
100
200
300
400
500
Station (ft)

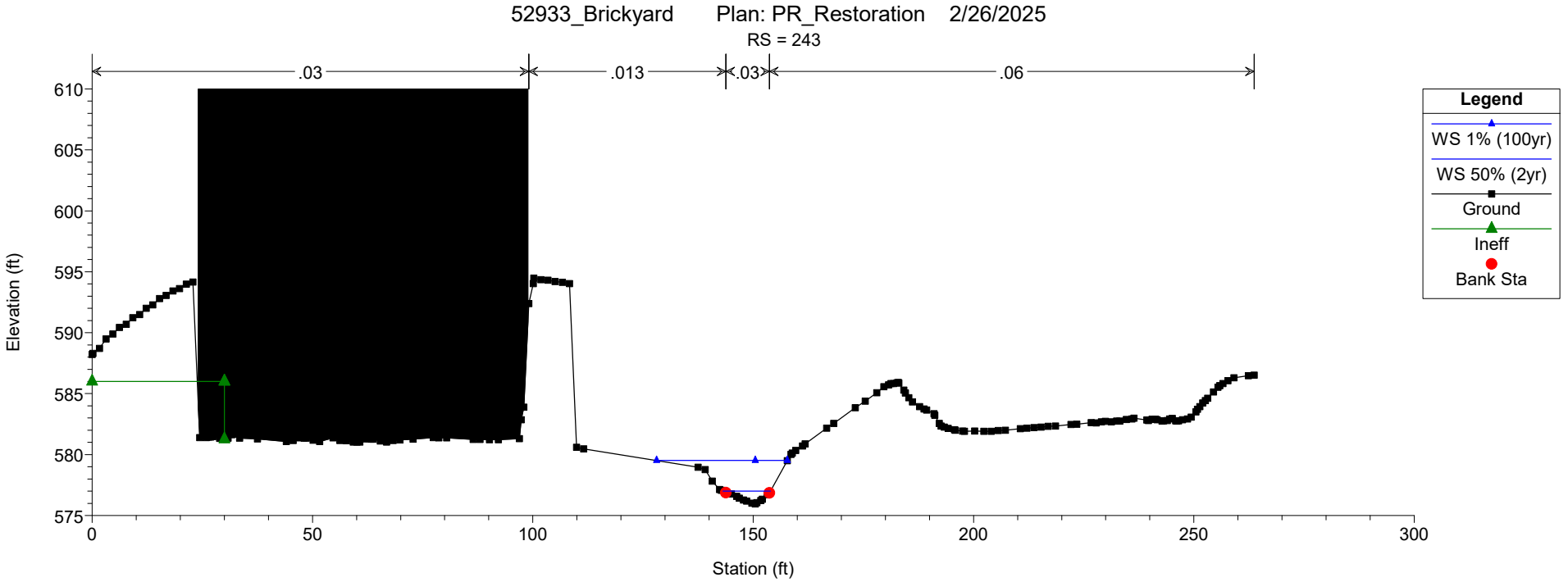

52933_Brickyard Plan: PR_Restoration 2/26/2025
RS = 531 BR Assume channel reconstruction
.04
.03
.013
Elevation (ft)
Station (ft)
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Ineff
Bank Sta

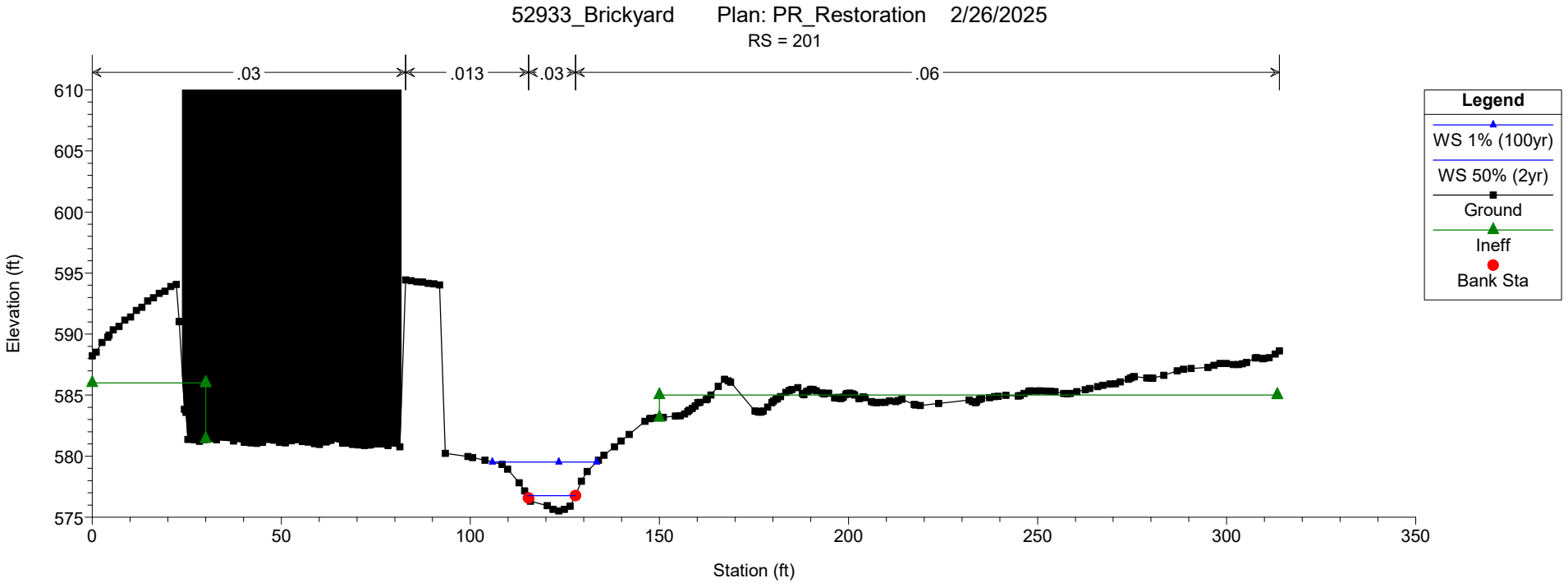

52933_Brickyard Plan: PR_Restoration 2/26/2025
RS = 465
.03
.013
.03
.06
.03
Elevation (ft)
Station (ft)
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Ineff
Bank Sta

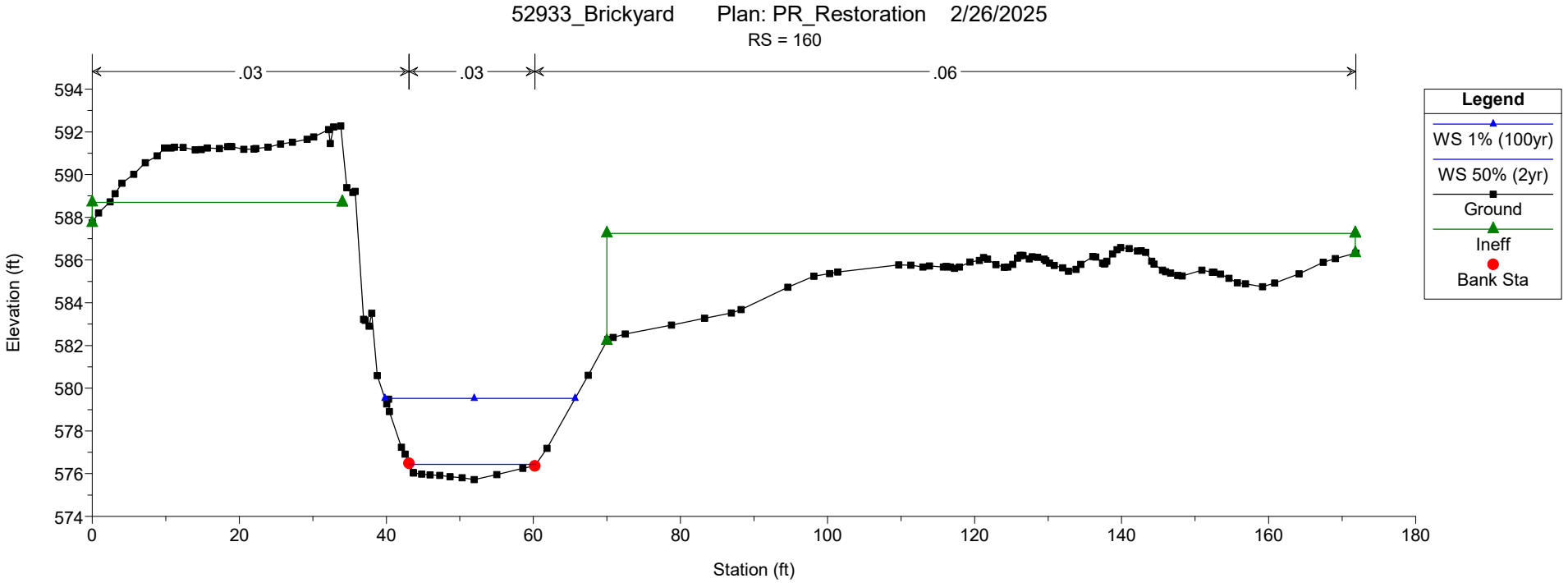

52933_Brickyard Plan: PR_Restoration 2/26/2025
RS = 385
.03
.03
.06
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Bank Sta
Elevation (ft)
610
605
600
595
590
585
580
575
0
100
200
300
400
500
Station (ft)

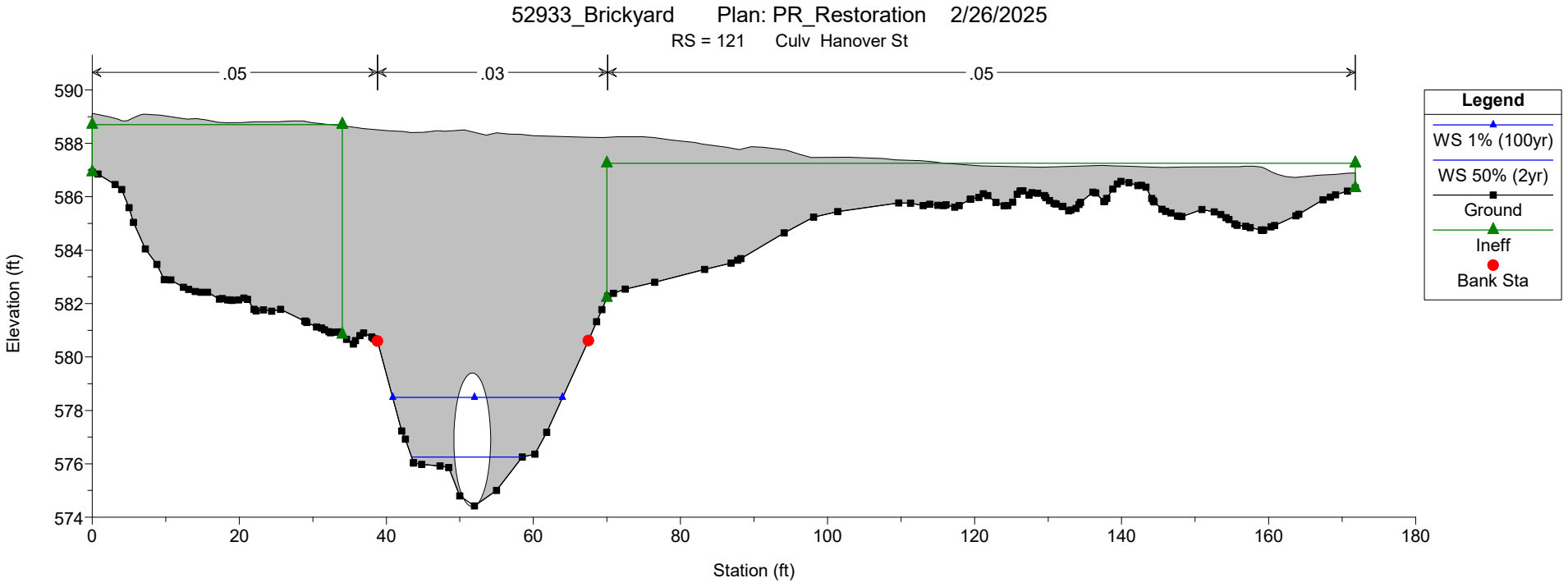

52933_Brickyard Plan: PR_Restoration 2/26/2025
RS = 362
.03
.013
.03
.06
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Bank Sta
Elevation (ft)
610
605
600
595
590
585
580
575
0
100
200
300
400
500
Station (ft)

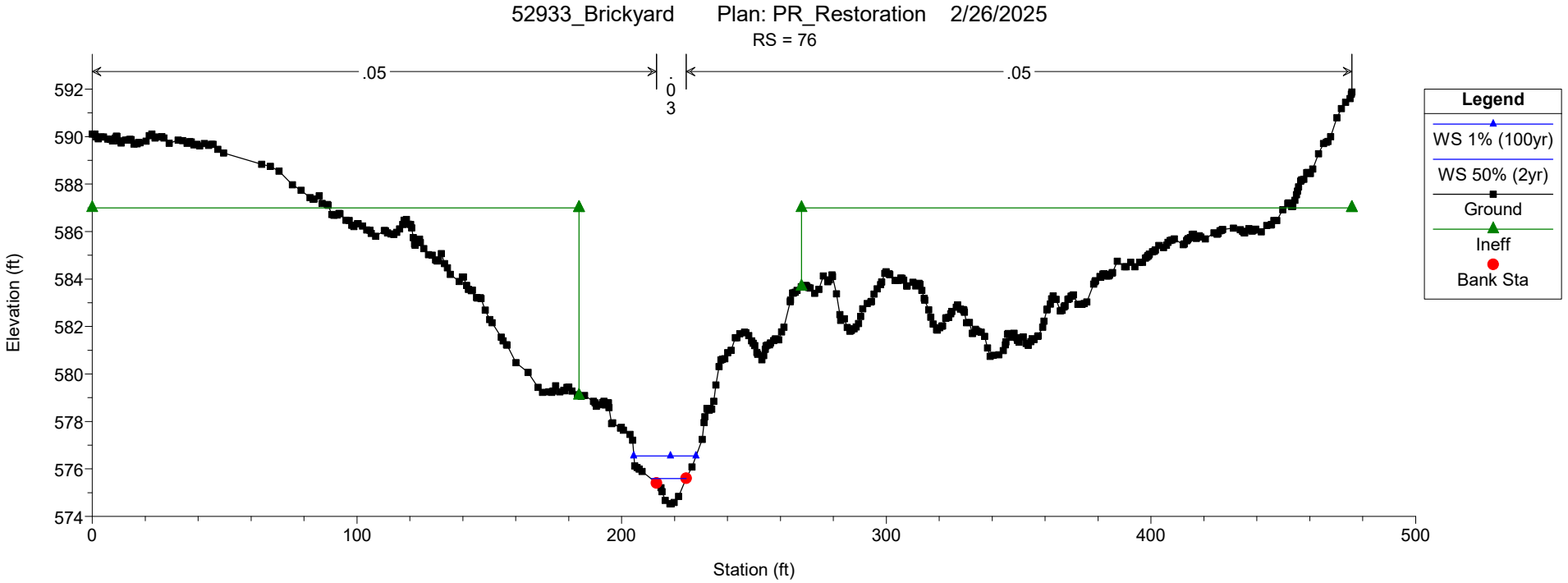

52933_Brickyard Plan: PR_Restoration 2/26/2025
RS = 268
.03
.013
.03
.06
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Bank Sta
Elevation (ft)
Station (ft)
610
605
600
595
590
585
580
575
0
50
100
150
200
250
300

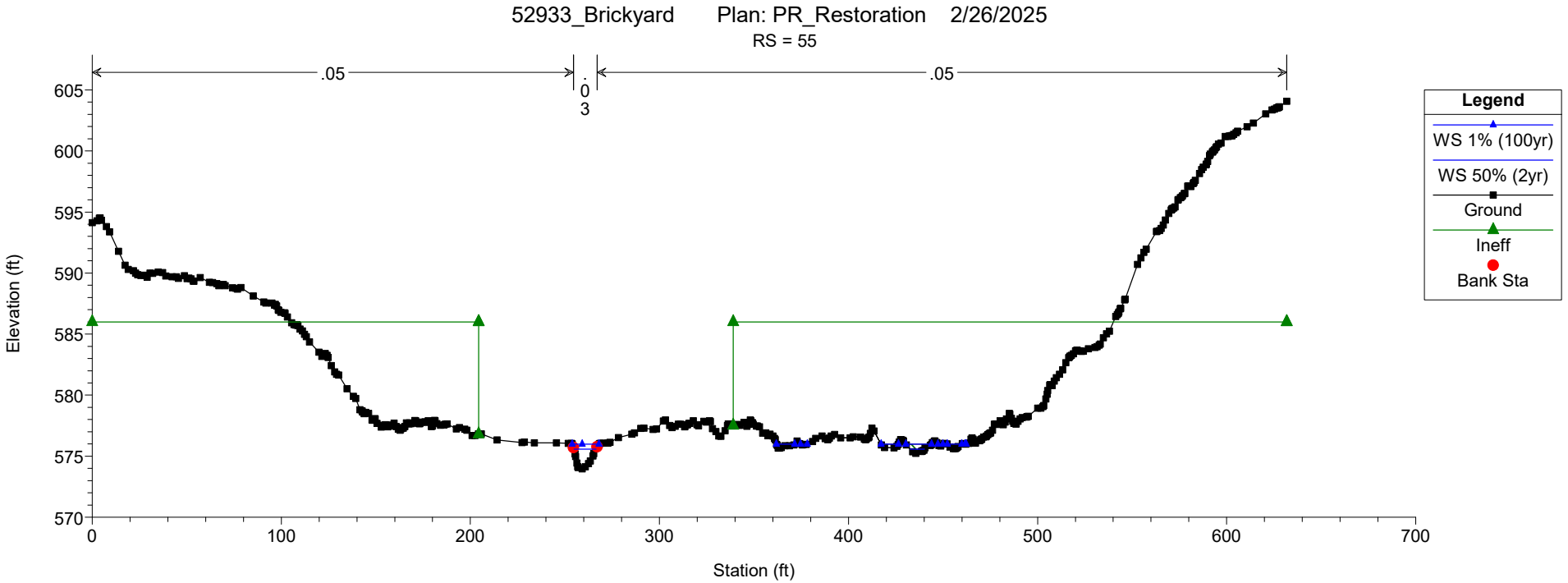

52933_Brickyard Plan: PR_Restoration 2/26/2025
RS = 243
.03
.013
.03
.06
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
610
605
600
595
590
585
580
575
0
50
100
150
200
250
300

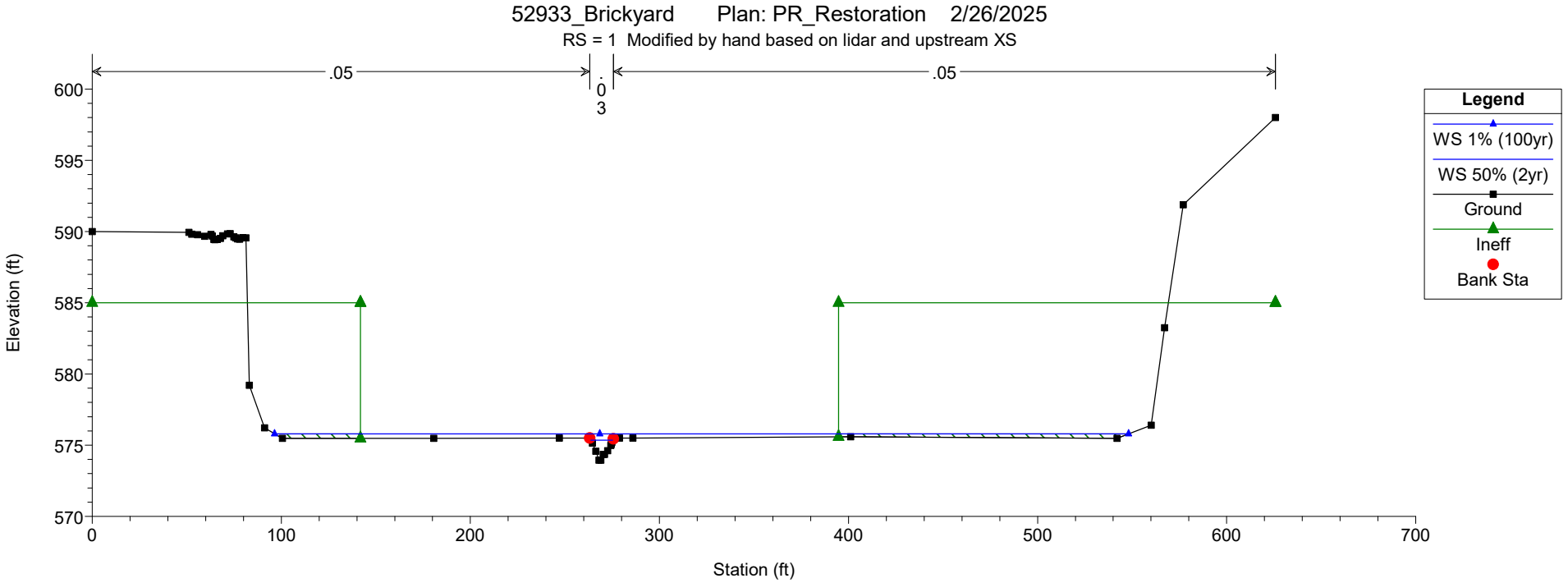

52933_Brickyard Plan: PR_Restoration 2/26/2025
RS = 201
.03
.013
.03
.06
Elevation (ft)
Station (ft)
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Ineff
Bank Sta


52933_Brickyard Plan: PR_Restoration 2/26/2025
RS = 160
.03
.03
.06
Elevation (ft)
Station (ft)
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Ineff
Bank Sta


52933_Brickyard Plan: PR_Restoration 2/26/2025
RS = 121 Culv Hanover St
.05
.03
.05
Elevation (ft)
590
588
586
584
582
580
578
576
574
0
20
40
60
80
100
120
140
160
180
Station (ft)
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Ineff
Bank Sta


52933_Brickyard Plan: PR_Restoration 2/26/2025
RS = 76
.05
.03
.05
Elevation (ft)
592
590
588
586
584
582
580
578
576
574
0
100
200
300
400
500
Station (ft)
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Ineff
Bank Sta


52933_Brickyard Plan: PR_Restoration 2/26/2025
RS = 55
.05
.03
.05
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
605
600
595
590
585
580
575
570
0
100
200
300
400
500
600
700


52933_Brickyard Plan: PR_Restoration 2/26/2025
RS = 1 Modified by hand based on lidar and upstream XS
.05
.03
.05
Legend
WS 1% (100yr)
WS 50% (2yr)
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
600
595
590
585
580
575
570
0
100
200
300
400
500
600
700

Appendix D: Wetland Function-Value Evaluation Forms

Wetland Function-Value Evaluation Form

Total area of wetland 1.6 ac Human made? No Is wetland part of a wildlife corridor? Yes or a "habitat island"? No

Adjacent land use Forested, Roadway, Developed Distance to nearest roadway or other development 58'

Dominant wetland systems present PSS1E / PFO1/4E Contiguous undeveloped buffer zone present Yes

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? Middle

How many tributaries contribute to the wetland? 1 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. W-1

Latitude _____ Longitude _____

Prepared by: KW Date 3/11/2025

Wetland Impact:
Type Temporary Area 48 SF

Evaluation based on:
Office X Field X

Corps manual wetland delineation completed? Y X N _____

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	Y	2,3,7,9,10,15	X	Large wetland partially outlets to stream via 60" CMP. Drainage impacted by culvert condition. Wetland partially intersected by Middle Connecticut Aquifer.
Floodflow Alteration	Y	3,5,6,7,8,9,10,13,15,18	X	Captures drainage from upland areas north & west via network of overgrown swales and extends into expansive area to the south within utility ROW.
Fish and Shellfish Habitat	N	1		Wetland does not contain or border a watercourse, rather it intermittently drains to unnamed perennial stream to the north. No suitable habitat present.
Sediment/Toxicant Retention	Y	1,2,4,13,14,15,16	X	Wetland captures run-off & drainage from utility ROW which abuts Interstate 89. Captures and conveys drainage through network of swales in the north & west.
Nutrient Removal	Y	3,5,7,8,9,13	X	Contains dense vegetation and network of wetland swales; contains outlet to perennial stream to the north.
Production Export	Y	1,7,10, 12		This wetland vegetation is dense and contains a variety of flowering plants. Contains permanent outlet and network of drainage swales.
Sediment/Shoreline Stabilization	N	-----		Wetland does directly border a watercourse.
Wildlife Habitat	Y	5,6,7,8,9,13,19,21	X	Large multi-cover class wetland with scrub-shrub and forested areas. Extends into expansive area of overhead utility ROW. Other wetlands and pond nearby.
Recreation	N	5,12		No recreational opportunities - wetland located on private property and existing overhead transmission line ROW. No existing public access.
Educational/Scientific Value	N	5,9		Wetland is located on private property and extends into existing overhead transmission line ROW. No existing public access.
Uniqueness/Heritage	N	2,12,13,22		Wetland abuts Hanover Street and Interstate 89. Intersected by cleared and continuously maintained utility ROW. Not unique.
Visual Quality/Aesthetics	N	1,8		Wetland abuts Hanover Street and Interstate 89. Intersected by cleared and continuously maintained utility ROW.
ES Endangered Species Habitat	N	----		No RTE species have been documented in this wetland by NHB nor during site survey.
Other				

Notes:

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland 0.43 ac Human made? No Is wetland part of a wildlife corridor? Yes or a "habitat island"? No

Adjacent land use Forested, Interstate, Developed Distance to nearest roadway or other development 15'

Dominant wetland systems present PSS1E Contiguous undeveloped buffer zone present Yes

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? Middle

How many tributaries contribute to the wetland? 1 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. W-2

Latitude 43.65264 Longitude -72.25349

Prepared by: TD Date 3/11/2025

Wetland Impact:
Type Permanent/Temp Area 210 /135 sf

Evaluation based on:
Office X Field X

Corps manual wetland delineation completed? Y X N

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	Y	2,6,7,9,15		Wetland borders Densmore Pond & is also associated with perennial stream that drains from the pond. The soils are shallow to bedrock/ledge.
Floodflow Alteration	Y	5,6,7,8,9,10,11,13,15,18	X	Wetland borders Densmore Pond & is also associated with perennial stream that drains from the pond. Has capacity to receive and store overflow.
Fish and Shellfish Habitat	Y	1,4,5,8,10,14,16,17	X	This wetland with the associated stream and pond has the potential to provide fish and/or shellfish habitat.
Sediment/Toxicant Retention	Y	2,3,4,5,7,10,13,16	X	Wetland borders Densmore Pond & associated perennial stream. Dense vegetation and saturated soils exist. Potential toxicant source = former brickyard
Nutrient Removal	Y	2,3,4,5,7,8,9	X	Though this wetland is associated with a watercourse, some of the soils are saturated and poorly drained.
Production Export	Y	1,5,7,10,12		This wetland provides a variety of flowering plants, potential wildlife habitat and is associated with Densmore Pond and perennial stream.
Sediment/Shoreline Stabilization	Y	2,3,7,12,13,15	X	Wetland directly borders Densmore Pond and perennial stream. Dense scrub-shrub vegetation helps stabilize the shoreline.
Wildlife Habitat	Y	2,5,6,7,8,9,14,15,19,20,21	X	Wetland borders Densmore Pond and perennial stream that provides permanent water sources for wildlife along with dense vegetative communities.
Recreation	N	5,8,9		This wetland is associated with a pond, but the abundance of fish is unknown, and access is restricted due to it being on private property.
Educational/Scientific Value	N	5,10		Wetland is located within proximity to high school however is not readily accessible (on private property).
Uniqueness/Heritage	N	2,3,19		Wetland does not contain viewing areas; not particularly unique in the context of the surrounding landscape. Contains invasive plants; not readily accessible.
Visual Quality/Aesthetics	N	8		Understory vegetation and terrain limits viewing areas of this wetland, plant diversity is low, and invasive/non-native species are present.
ES Endangered Species Habitat	N			No RTE species have been documented in this wetland by NHB nor during site survey.
Other				

Notes:

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland 0.57 ac Human made? No Is wetland part of a wildlife corridor? Yes or a "habitat island"? No

Adjacent land use Forested, Interstate, Developed Distance to nearest roadway or other development 58'

Dominant wetland systems present PFO1C/ PFO4C Contiguous undeveloped buffer zone present Yes

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? Middle

How many tributaries contribute to the wetland? 1 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. W-3

Latitude 43.65473 Longitude 72.25235

Prepared by: TD Date 3/11/2025

Wetland Impact:
Type Permanent & Temp Area 195 / 70 sf

Evaluation based on:
Office X Field X

Corps manual wetland delineation completed? Y X N

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	Y	2,6,7,15		Wetland borders Densmore Pond & is also associated with perennial stream that outlets to the pond. The soils are shallow to bedrock/ledge.
Floodflow Alteration	Y	5,7,8,9,10,11,13	X	Wetland borders Densmore Pond, also associated with stream that flows into the pond. Capacity to receive & store overflow; reduce floodwater downstream.
Fish and Shellfish Habitat	Y	1,4,8,11,17		This segment of the stream experiences variable water levels and did not contain flow during late fall survey.It is associated with a constructed pond that may
Sediment/Toxicant Retention	Y	2,6,9,10,12		Wetland borders Densmore Pond and is associated with stream channel. Forested cover present, making it less ideal for sediment/toxicant trapping.
Nutrient Removal	Y	3,4,5		Though this wetland is associated with a watercourse, shallow soils do not provide dense stands of understory vegetation, and water flow varies seasonally
Production Export	Y	1,2,10,12		Forested wetland associated with a watercourse.
Sediment/Shoreline Stabilization	Y	1,2,4,7,8,14	X	Wetland directly borders pond and stream. Evidence of high flows seasonally within this wetland, but vegetative community (forested) is not dense.
Wildlife Habitat	Y	3,4,5,6,7,8,12,19,20,21	X	This wetland edge is currently undeveloped, abuts a stream and pond, has overland access to other wetlands, and contains flowering vegetation.
Recreation	N	5,8,9		This wetland is associated with a pond, but the abundance of fish is unknown, and access is restricted due to it being on private property.
Educational/Scientific Value	N	5,10		Local high school is within close proximity, however this wetland is not readily accessible (on private property).
Uniqueness/Heritage	N	2,3,19		Wetland does not contain viewing areas; not particularly unique in the context of the surrounding landscape. Contains invasive plants; not readily accessible.
Visual Quality/Aesthetics	N	8		Forested wetland - viewing/open areas and overall diversity low. Not easily accessible.
ES Endangered Species Habitat	N			No RTE species have been documented in this wetland by NHB nor during site survey.
Other				

Notes:

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland 0.23 ac Human made? No Is wetland part of a wildlife corridor? Yes or a "habitat island"? No

Adjacent land use Forested, Developed, Roadway Distance to nearest roadway or other development Directly Adj.

Dominant wetland systems present PEM1B/PSS1B Contiguous undeveloped buffer zone present Yes

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? Middle

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. W-4

Latitude 43.65473 Longitude 72.25235

Prepared by: TD Date 3/14/2025

Wetland Impact:
Type Permanent Area

Evaluation based on:
Office X Field X

Corps manual wetland delineation completed? Y X N

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	Y	2,3,5		Small isolated wetland receives drainage from adjacent road and other areas upslope. Partially underlain by Middle CT Aquifer (transmissivity <2,000 SF/day)
Floodflow Alteration	N	5,6,9		Wetland receives some runoff from adj. areas upslope, but is small and isolated not making it suitable for flood storage. Southern end of wetland ditched.
Fish and Shellfish Habitat	N	1		Wetland hydrology is saturated, does not contain pooling, flowing or open water to provide fish or shellfish habitat.
Sediment/Toxicant Retention	Y	1,2		Some suitability due to roadside location and presence of drainage ditch and dense vegetation.
Nutrient Removal	Y	3,4,8,9		Some suitability due to dense emergent/scrub shrub plant community.
Production Export	N	1,7,12		Potential wildlife food sources; dense mix of woody & herbaceous vegetation. Wetland is small, isolated, and does not contain surface water, fish or shellfish.
Sediment/Shoreline Stabilization	N	---		Wetland is small, isolated and roadside; does not border a watercourse.
Wildlife Habitat	Y	7,8,13,15,19	X	Contains dense mix of woody & herbaceous plants; suitable for smaller mammals or insects. Size, isolation and roadside position makes it less valuable
Recreation	N	----		Wetland is small, on private property, and immediately downslope of a roadway. No recreation opportunity/value.
Educational/Scientific Value	N	3,9		Wetland is across the street from the high school, but it is not unique and.or provide educational value. Also directly adj to roadway making safety a concern
Uniqueness/Heritage	N	8, 12, 13		Wetland contains scrub-shrub and emergent cover types, however viewing location is roadway (not safe) and wetland is degraded by invasives.
Visual Quality/Aesthetics	N	1		Wetland small, isolated and roadside. Disturbed with invasive plants present.
ES Endangered Species Habitat	N			No RTE species have been documented in this wetland by NHB nor during site survey.
Other				

Notes:

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland N/A Human made? No Is wetland part of a wildlife corridor? Yes or a "habitat island"? No

Adjacent land use Forested, Developed, Open Water, Roadway Distance to nearest roadway or other development Variable

Dominant wetland systems present R2UB1X Contiguous undeveloped buffer zone present No

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? Middle

How many tributaries contribute to the wetland? 1 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. Unnamed Perennial Stream

Latitude _____ Longitude _____

Prepared by: KW Date 3/21/2025

Wetland Impact:
Type Perm & Temp Area See Plans

Evaluation based on:
Office X Field X

Corps manual wetland delineation completed? Y X N _____

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	Y	2,3,5,7,9,15		Perennial stream; lower segment partially underlain by Middle CT Aquifer (transmissivity <2,000 SF/day). Small channel with variable flow.
Floodflow Alteration	Y	2,5,7,8,9,10,13,15		Stream receives and conveys runoff from surrounding upland and developed areas. Retention is non-existent however.
Fish and Shellfish Habitat	Y	1,4,8,17		Stream is contiguous to Densmore Pond. Lower reach south of pond better suited; upper reach dries out at certain points in the year (late fall).
Sediment/Toxicant Retention	N	2,6,8,10,13		Small stream with variable channelized flow. Limited retention opportunity.
Nutrient Removal	N	4		Small stream with variable channelized flow. Limited retention opportunity.
Production Export	Y	7,10		Dense vegetation along banks. Stream has permanent outlet suitable for potential export/transport.
Sediment/Shoreline Stabilization	N	---		Specific to wetlands along watercourse banks.
Wildlife Habitat	Y	6,7,8,18,19	X	Stream provides habitat for various species and may act as a travel corridor
Recreation	N	5,6		Small perennial channel with variable flow through private property. No recreation opportunity/value.
Educational/Scientific Value	N	5		Local high school within proximity, however small perennial stream does not provide education value with no suitable access present.
Uniqueness/Heritage	N	7		Small channel with common characteristics, not considered unique. No suitable access.
Visual Quality/Aesthetics	N	1		Small stream traverses through densely vegetated areas, not easily visible or accessed.
ES Endangered Species Habitat	N			No RTE species have been documented in this wetland by NHB nor during site survey.
Other				

Notes:

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland 4.9 ac Human made? Yes Is wetland part of a wildlife corridor? No or a "habitat island"? No

Adjacent land use Forested, Roadway, Developed Distance to nearest roadway or other development 70'

Dominant wetland systems present PUB3H Contiguous undeveloped buffer zone present Yes

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? Middle

How many tributaries contribute to the wetland? 1 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. Densmore Pond

Latitude _____ Longitude _____

Prepared by: KW Date 3/21/2025

Wetland Impact:
Type None Area N/A

Evaluation based on:
Office X Field X

Corps manual wetland delineation completed? Y X N _____

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	Y	2,3,5,7,9,15	X	Pond contains approximate 5 acres of open water and is permanently flooded. Pond is partially underlain by Middle Connecticut Aquifer (<2,000 sf/per day).
Floodflow Alteration	Y	3,5,6,7,9,10,11,13,15,16	X	Pond is located a low point within the site with slopes increasing to the west. Pond receives flow from perennial stream and run-off from surrounding areas.
Fish and Shellfish Habitat	Y	1,4,5,6,8,10,14	X	Pond is of sufficient size and depth to support fish habitat. Hydrology is persistent (permanently flooded) and pond is associated with perennial stream.
Sediment/Toxicant Retention	Y	1,2,3,4,5,8,10,12	X	Pond appears to have long water retention time & fine grained soils, receives flow from stream & run-off from surrounding areas. Adj. to former brickyard.
Nutrient Removal	Y	2,3,4,5,7,13,14	X	Pond appears to have long water retention time and fine grained soils, receives flow from perennial stream and run-off from surrounding areas.
Production Export	Y	2,5,6,10		Pond contains permanent outlet draining to perennial stream.
Sediment/Shoreline Stabilization	N	-----		Open water pond.
Wildlife Habitat	Y	5,6,7,8,9,19,20	X	Open water pond with bordering wetland and associated perennial stream channel. Large tracts of undeveloped forest located to the west.
Recreation	Y	5,9		Open water which could accommodate canoe, however restricted access (private property) and no parking.
Educational/Scientific Value	Y	5,9,10,12		Located within proximity to local high school; however on private property with no public access.
Uniqueness/Heritage	Y	6, 8,11,16,17,23		Pond is associated with former Densmore Brickyard Facility which operated from 1886 to the early 1970's. Pond located on private property with no public access
Visual Quality/Aesthetics	N	2,3,6		Open water visible, but pond is on private property with no public access.
ES Endangered Species Habitat	N	----		No RTE species identified by NHB or observed during site survey work.
Other				

Notes:

* Refer to backup list of numbered considerations.

Ecological Integrity Scores for Brickyard						
Wetland ID	**W-1**	**W-2**	**W-3**	**W-4**	**Stream**	**D. Pond**
Evaluation Question 1	5	5	5	5	5	5
Evaluation Question 2	5	10	10	5	5	10
Evaluation Question 3	10	10	10	10	10	10
Evaluation Question 4	10	10	10	10	10	10
Evaluation Question 5	10	10	10	10	5	10
Evaluation Question 6	1	1	1	1	1	5
Evaluation Question 7	1	1	5	1	1	5
Evaluation Question 8	1	1	1	1	1	1
Evaluation Question 9	1	1	1	1	1	1
Evaluation Question 10	5	10	10	5	1	5
Average Score for Ecological Integrity	**4.9**	**5.9**	**6.3**	**4.9**	**4**	**6.2**

Derived from Method for Inventorying and Evaluating Freshwater Wetlands in New Hampshire (December, 2015 - Updated with Mapping Tools, April 2023) published by the University of New Hampshire Cooperative Extension

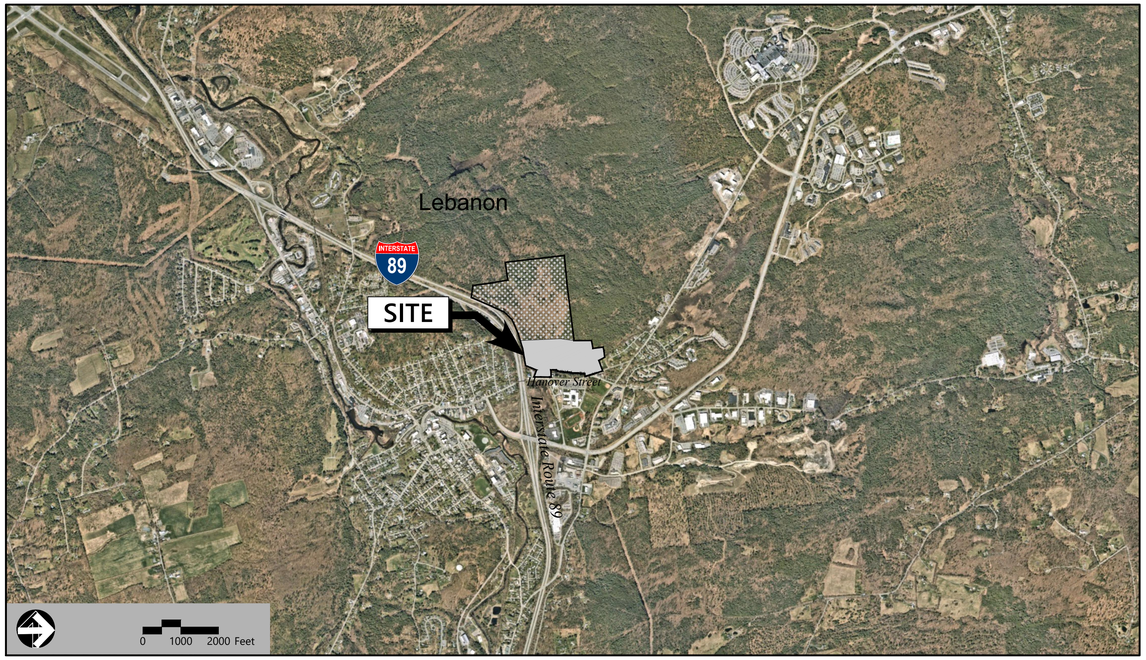
Appendix E: Project Plans (attached separately)

Site Plans

Issued for	**Permitting**
Date Issued	**March 28, 2025**
Latest Issue	**March 28, 2025**

The Brickyard Residential Development

174 Hanover Street Extension
Lebanon, New Hampshire



vhb.com

vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Civil Engineer (VHB)
David Fenstermacher, P.E.
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Landscape Architect (VHB)
Erik Bednarek, RLA
101 Walnut Street
PO Box 9151
Watertown, MA 02471
617.924.1770

Surveyor (VHB)
Mike Hammer, L.L.S
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Architect
Studio Integrate
73 Commercial Street,
London E1, England
0203.722.7358

Wetland Scientist (Goddard)
Scott G. Goddard
291 Main Street
Suite 8
Northborough, MA 01532

Applicant/Owner

Brickyard One Nominee Trust
Richard M. Marchese, Trustee
P.O. Box 720, Middleton, MA 01949

Assessor's Map/Lot:

Map 48 Lots 01, 02, & 04
Map 63 Lot 01

Sheet Index

No.	Drawing Title	Latest Issue
C1.0	Legend and Notes	March 28, 2025
C2.0	Wetland Impact Plan	March 28, 2025
C2.1	Wetland Impact Plan 1	March 28, 2025
C2.2	Wetland Impact Plan 2	March 28, 2025
C3.1	Stream Crossing Plan and Profile 1	March 28, 2025
C3.2	Stream Crossing Plan and Profile 2	March 28, 2025
C4.1	Erosion and Sediment Control Plan 1	March 28, 2025
C4.2	Erosion and Sediment Control Plan 2	March 28, 2025

Reference Drawings

No.	Drawing Title	Latest Issue
Sv-1	Boundary Plan of Land	December 10, 2024
Sv-2	Existing Conditions Plan of Land	December 10, 2024
Sv-3	Existing Conditions Plan of Land	December 10, 2024
C1.2	Open Space Plan	December 11, 2024
C5.0	Overall Erosion Control Plan	December 11, 2024
C5.1	Erosion Control Plan 1	December 11, 2024
C5.2	Erosion Control Plan 2	December 11, 2024
C5.3	Erosion Control Plan 3	February 6, 2024

\\VHB.COM\GBL\PRO\BEDFORD\52933.00 LEBANON BRICKYARD DEVELOY\CAD\LD\PLANSET\WL IMPACTS\52933.00-COV 22 April 2025

VHB Project : 52933.00 The Brickyard Residential Development
Issued for : Permitting

Legend

Exist.	Prop.	
		PROPERTY LINE
		PROJECT LIMIT LINE
		RIGHT-OF-WAY/PROPERTY LINE
		EASEMENT
		BUILDING SETBACK
		PARKING SETBACK
10+00	10+00	BASELINE
		CONSTRUCTION LAYOUT
		ZONING LINE
		TOWN LINE
		LIMIT OF DISTURBANCE
		WETLAND LINE WITH FLAG
		FLOODPLAIN
BLSF	BLSF	BORDERING LAND SUBJECT TO FLOODING
BZ	BZ	WETLAND BUFFER ZONE
NDZ	NDZ	NO DISTURB ZONE
200'RA	200'RA	200' RIVERFRONT AREA
		GRAVEL ROAD
EOP	EOP	EDGE OF PAVEMENT
BB	BB	BITUMINOUS BERM
BC	BC	BITUMINOUS CURB
CC	CC	CONCRETE CURB
CG	CG	CURB AND GUTTER
ECC	ECC	EXTRUDED CONCRETE CURB
MCC	MCC	MONOLITHIC CONCRETE CURB
PCC	PCC	PRECAST CONC. CURB
SGE	SGE	SLOPED GRAN. EDGING
VGC	VGC	VERT. GRAN. CURB
		LIMIT OF CURB TYPE
		SAWCUT
		BUILDING
	EN	BUILDING ENTRANCE
	LD	LOADING DOCK
		BOLLARD
D	D	DUMPSTER PAD
		SIGN
		DOUBLE SIGN
		STEEL GUARDRAIL
		WOOD GUARDRAIL
		PATH
		APPROXIMATE LIMIT OF CLEARING
		WIRE FENCE
		FENCE
		STOCKADE FENCE
		STONE WALL
		RETAINING WALL
		POND
		STREAM / WATER COURSE
		FLOODZONE A
		HAY BALES
		SILT FENCE
		SILT SOCK / STRAW WATTLE
4	4	MINOR CONTOUR
20	20	MAJOR CONTOUR
10	10	PARKING COUNT
	C10	COMPACT PARKING STALLS
DYL	DYL	DOUBLE YELLOW LINE
SL	SL	STOP LINE
		CROSSWALK
		ACCESSIBLE CURB RAMP
		ACCESSIBLE PARKING
VAN	VAN	VAN-ACCESSIBLE PARKING

Exist.	Prop.	
		CONCRETE
		HEAVY DUTY PAVEMENT
		BUILDINGS
		RIPRAP
		CONSTRUCTION EXIT
27.35 TC×	27.35 TC×	TOP OF CURB ELEVATION
26.85 BC×	26.85 BC×	BOTTOM OF CURB ELEVATION
132.75 ×	132.75 ×	SPOT ELEVATION
45.0 TW× 38.5 BW×	45.0 TW× 38.5 BW×	TOP & BOTTOM OF WALL ELEVATION
		BORING LOCATION
		TEST PIT LOCATION
MW	MW	MONITORING WELL
UD	UD	UNDERDRAIN
12"D	12"D	DRAIN
6"RD	6"RD	ROOF DRAIN
12"S	12"S	SEWER
FM	FM	FORCE MAIN
OHW	OHW	OVERHEAD WIRE
6"W	6"W	WATER
4"FP	4"FP	FIRE PROTECTION
	2"DW	DOMESTIC WATER
3"G	G	GAS
E	E	ELECTRIC
STM	STM	STEAM
T	T	TELEPHONE
FA	FA	FIRE ALARM
CATV	CATV	CABLE TV
		CATCH BASIN CONCENTRIC
		CATCH BASIN ECCENTRIC
		DOUBLE CATCH BASIN CONCENTRIC
		DOUBLE CATCH BASIN ECCENTRIC
		GUTTER INLET
		DRAIN MANHOLE CONCENTRIC
		DRAIN MANHOLE ECCENTRIC
TD		TRENCH DRAIN
E	E	PLUG OR CAP
CO	CO	CLEANOUT
		FLARED END SECTION
		HEADWALL
S	S	SEWER MANHOLE CONCENTRIC
S	S	SEWER MANHOLE ECCENTRIC
CS	CS	CURB STOP & BOX
WV	WV	WATER VALVE & BOX
TSV	TSV	TAPPING SLEEVE, VALVE & BOX
		FIRE DEPARTMENT CONNECTION
HYD	HYD	FIRE HYDRANT
WM	WM	WATER METER
PIV	PIV	POST INDICATOR VALVE
W	W	WATER WELL
GC	GC	GAS GATE
GM	GM	GAS METER
EMH	EMH	ELECTRIC MANHOLE
EM	EM	ELECTRIC METER
		LIGHT POLE
TMH	TMH	TELEPHONE MANHOLE
T	T	TRANSFORMER PAD
		UTILITY POLE
		GUY POLE
		GUY WIRE & ANCHOR
HH	HH	HAND HOLE
PB	PB	PULL BOX
		MATCHLINE

Abbreviations

General

ABAN	ABANDON
ACR	ACCESSIBLE CURB RAMP
ADJ	ADJUST
APPROX	APPROXIMATE
BIT	BITUMINOUS
BS	BOTTOM OF SLOPE
BWLL	BROKEN WHITE LANE LINE
CONC	CONCRETE
DYCL	DOUBLE YELLOW CENTER LINE
EL	ELEVATION
ELEV	ELEVATION
EVC	ELECTRIC VEHICLE CAPABLE PARKING SPACE
EVR	ELECTRIC VEHICLE READY PARKING SPACE
EX	EXISTING
FDN	FOUNDATION
FFE	FIRST FLOOR ELEVATION
GRAN	GRANITE
GFE	GARAGE FLOOR ELEVATION
GTD	GRADE TO DRAIN
LA	LANDSCAPE AREA
LOD	LIMIT OF DISTURBANCE
MAX	MAXIMUM
MIN	MINIMUM
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
PERF	PERFORATED
PROP	PROPOSED
REM	REMOVE
RET	RETAIN
R&D	REMOVE AND DISPOSE
R&R	REMOVE AND RESET
SWEL	SOLID WHITE EDGE LINE
SWLL	SOLID WHITE LANE LINE
TS	TOP OF SLOPE
TYP	TYPICAL

Utility

AD	AREA DRAIN
CB	CATCH BASIN
CMP	CORRUGATED METAL PIPE
CO	CLEANOUT
DCB	DOUBLE CATCH BASIN
DMH	DRAIN MANHOLE
CIP	CAST IRON PIPE
COND	CONDUIT
DIP	DUCTILE IRON PIPE
DW	DRYWELL
FA	FIRE ALARM
FES	FLARED END SECTION
FM	FORCE MAIN
F&G	FRAME AND GRATE
F&C	FRAME AND COVER
GI	GUTTER INLET
GT	GREASE TRAP
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HH	HANDHOLE
HW	HEADWALL
HYD	HYDRANT
INV	INVERT ELEVATION
I=	INVERT ELEVATION
LP	LIGHT POLE
MES	METAL END SECTION
PIV	POST INDICATOR VALVE
PWW	PAVED WATER WAY
PVC	POLYVINYLCHLORIDE PIPE
RCP	REINFORCED CONCRETE PIPE
R=	RIM ELEVATION
RIM=	RIM ELEVATION
SMH	SEWER MANHOLE
TSV	TAPPING SLEEVE, VALVE AND BOX
UG	UNDERGROUND
UGE/T	UNDERGROUND ELECTRIC/TELECOM

Notes

General

1. THE PURPOSE OF THESE SITE PLANS ARE TO SHOW A PROPOSED SITE DESIGN FOR THE PERMITTING OF A PLANNED UNIT RESIDENTIAL PROJECT.
2. CONTRACTOR SHALL NOTIFY "DIG-SAFE" (1-888-344-7233) AT LEAST 72 HOURS BEFORE EXCAVATING.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SECURITY AND JOB SAFETY. CONSTRUCTION ACTIVITIES SHALL BE IN ACCORDANCE WITH OSHA STANDARDS AND LOCAL REQUIREMENTS.
4. ACCESSIBLE ROUTES, PARKING SPACES, RAMPS, SIDEWALKS AND WALKWAYS SHALL BE CONSTRUCTED IN CONFORMANCE WITH THE FEDERAL AMERICANS WITH DISABILITIES ACT AND WITH STATE AND LOCAL LAWS AND REGULATIONS (WHICHEVER ARE MORE STRINGENT).
5. AREAS DISTURBED DURING CONSTRUCTION AND NOT RESTORED WITH IMPERVIOUS SURFACES (BUILDINGS, PAVEMENTS, WALKS, ETC.) SHALL RECEIVE 6-INCHES LOAM AND SEED.
6. WITHIN THE LIMITS OF THE BUILDING FOOTPRINT, THE SITE CONTRACTOR SHALL PERFORM EARTHWORK OPERATIONS REQUIRED UP TO SUBGRADE ELEVATIONS.
7. WORK WITHIN THE LOCAL RIGHTS-OF-WAY SHALL CONFORM TO LOCAL MUNICIPAL STANDARDS. WORK WITHIN STATE RIGHTS-OF-WAY SHALL CONFORM TO THE LATEST EDITION OF THE STATE HIGHWAY DEPARTMENTS STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES.
8. UPON AWARD OF CONTRACT, CONTRACTOR SHALL MAKE NECESSARY CONSTRUCTION NOTIFICATIONS AND APPLY FOR AND OBTAIN NECESSARY PERMITS, PAY FEES, AND POST BONDS ASSOCIATED WITH THE WORK INDICATED ON THE DRAWINGS, IN THE SPECIFICATIONS, AND IN THE CONTRACT DOCUMENTS. DO NOT CLOSE OR OBSTRUCT ROADWAYS, SIDEWALKS, AND FIRE HYDRANTS, WITHOUT APPROPRIATE PERMITS.
9. TRAFFIC SIGNAGE AND PAVEMENT MARKINGS SHALL CONFORM TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
10. AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.
11. IN THE EVENT THAT SUSPECTED CONTAMINATED SOIL, GROUNDWATER, AND OTHER MEDIA ARE ENCOUNTERED DURING EXCAVATION AND CONSTRUCTION ACTIVITIES BASED ON VISUAL, OLFACTORY, OR OTHER EVIDENCE, THE CONTRACTOR SHALL STOP WORK IN THE VICINITY OF THE SUSPECT MATERIAL TO AVOID FURTHER SPREADING OF THE MATERIAL, AND SHALL NOTIFY THE OWNER IMMEDIATELY SO THAT THE APPROPRIATE TESTING AND SUBSEQUENT ACTION CAN BE TAKEN.
12. CONTRACTOR SHALL PREVENT DUST, SEDIMENT, AND DEBRIS FROM EXITING THE SITE AND SHALL BE RESPONSIBLE FOR CLEANUP, REPAIRS AND CORRECTIVE ACTION IF SUCH OCCURS.
13. DAMAGE RESULTING FROM CONSTRUCTION LOADS AND ACTIVITIES SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO OWNER.
14. CONTRACTOR SHALL CONTROL STORMWATER RUNOFF DURING CONSTRUCTION TO PREVENT ADVERSE IMPACTS TO OFF SITE AREAS, AND SHALL BE RESPONSIBLE TO REPAIR RESULTING DAMAGES, IF ANY, AT NO COST TO OWNER.
15. THIS PROJECT DISTURBS MORE THAN ONE ACRE OF LAND AND FALLS WITHIN THE NPDES CONSTRUCTION GENERAL PERMIT (CGP) PROGRAM AND EPA JURISDICTION. PRIOR TO THE START OF CONSTRUCTION CONTRACTOR IS TO FILE A CGP NOTICE OF INTENT WITH THE EPA AND PREPARE A STORMWATER POLLUTION PREVENTION PLAN IN ACCORDANCE WITH THE NPDES REGULATIONS. CONTRACTOR SHALL CONFIRM THE OWNER HAS ALSO FILED A NOTICE OF INTENT WITH THE EPA.
16. SNOW STORAGE LOCATIONS SHOWN ON LAYOUT AND MATERIALS PLAN. FUTURE SNOW REMOVAL AT THE FACILITY WILL FOLLOW THE CURRENT SNOW MANAGEMENT PLAN TO REMOVE SNOW TO REMOTE LOCATIONS AS NECESSARY.
17. TREE CLEARING SHALL NOT BE CONDUCTED DURING JUNE 1 TO JULY 31 IN ORDER TO MINIMIZE ADVERSE IMPACTS TO THE NORTHERN LONG EARED BAT.
18. CONTRACTOR TO FOLLOW STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (NHDOT) AND GUIDE FOR THE DEVELOPMENT OF BICYCLE FACILITIES (AASHTO) FOR CONSTRUCTIONS STANDARDS.

Utilities

1. THE UTILITY COMPANIES SERVICING THE PROJECT AREA ARE:
   - A. WATER: CITY OF LEBANON
   - B. SEWER: CITY OF LEBANON
   - C. ELECTRIC: LIBERTY UTILITIES
   - D. TELEPHONE: CONSOLIDATED COMMUNICATIONS
   - E. CABLE TV: COMCAST
   - F. GAS: NONE
2. THE LOCATIONS, SIZES, AND TYPES OF EXISTING UTILITIES ARE SHOWN AS AN APPROXIMATE REPRESENTATION ONLY. THE OWNER OR IT'S REPRESENTATIVE(S) HAVE NOT INDEPENDENTLY VERIFIED THIS INFORMATION AS SHOWN ON THE PLANS. THE UTILITY INFORMATION SHOWN DOES NOT GUARANTEE THE ACTUAL EXISTENCE, SERVICEABILITY, OR OTHER DATA CONCERNING THE UTILITIES, NOR DOES IT GUARANTEE AGAINST THE POSSIBILITY THAT ADDITIONAL UTILITIES MAY BE PRESENT THAT ARE NOT SHOWN ON THE PLANS. PRIOR TO ORDERING MATERIALS AND BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL VERIFY AND DETERMINE THE EXACT LOCATIONS, SIZES, AND ELEVATIONS OF THE POINTS OF CONNECTIONS TO EXISTING UTILITIES AND, SHALL CONFIRM THAT THERE ARE NO INTERFERENCES WITH EXISTING UTILITIES AND THE PROPOSED UTILITY ROUTES, INCLUDING ROUTES WITHIN THE PUBLIC RIGHTS OF WAY.
3. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, OR EXISTING CONDITIONS DIFFER FROM THOSE SHOWN SUCH THAT THE WORK CANNOT BE COMPLETED AS INTENDED, THE LOCATION, ELEVATION, AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED IN WRITING TO THE OWNER'S REPRESENTATIVE FOR THE RESOLUTION OF THE CONFLICT AND CONTRACTOR'S FAILURE TO NOTIFY PRIOR TO PERFORMING ADDITIONAL WORK RELEASES OWNER FROM OBLIGATIONS FOR ADDITIONAL PAYMENTS WHICH OTHERWISE MAY BE WARRANTED TO RESOLVE THE CONFLICT. COORDINATE WITH CITY OF LEBANON FOR PUBLIC UTILITY INSTALLATION AND CONNECTION.
4. SET CATCH BASIN RIMS, AND INVERTS OF SEWERS, DRAINS, AND DITCHES IN ACCORDANCE WITH ELEVATIONS ON THE GRADING AND UTILITY PLANS.
5. RIM ELEVATIONS FOR DRAIN AND SEWER MANHOLES, WATER VALVE COVERS, GAS GATES, ELECTRIC AND TELEPHONE PULL BOXES, AND MANHOLES, AND OTHER SUCH ITEMS, ARE APPROXIMATE AND SHALL BE SET/RESET AS FOLLOWS:
   - A. PAVEMENTS AND CONCRETE SURFACES: FLUSH
   - B. ALL SURFACES ALONG ACCESSIBLE ROUTES: FLUSH
   - C. LANDSCAPE, LOAM AND SEED, AND OTHER EARTH SURFACE AREAS: ONE INCH ABOVE SURROUNDING AREA AND TAPER EARTH TO THE RIM ELEVATION.
6. THE LOCATION, SIZE, DEPTH, AND SPECIFICATIONS FOR CONSTRUCTION OF PROPOSED PRIVATE UTILITY SERVICES SHALL BE INSTALLED ACCORDING TO THE REQUIREMENTS PROVIDED BY, AND APPROVED BY, THE RESPECTIVE UTILITY COMPANY (GAS, TELEPHONE, ELECTRIC, FIRE ALARM, ETC.). FINAL DESIGN LOADS AND LOCATIONS TO BE COORDINATED WITH OWNER AND ARCHITECT. COORDINATE WITH CITY OF LEBANON FOR PUBLIC UTILITY INSTALLATION AND CONNECTION.
7. CONTRACTOR SHALL MAKE ARRANGEMENTS FOR AND SHALL BE RESPONSIBLE FOR PAYING FEES FOR POLE RELOCATION AND FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE, FIRE ALARM, AND ANY OTHER PRIVATE UTILITIES, WHETHER WORK IS PERFORMED BY CONTRACTOR OR BY THE UTILITIES COMPANY.
8. UTILITY PIPE MATERIALS SHALL BE AS FOLLOWS, UNLESS OTHERWISE NOTED ON THE PLAN:
   - A. WATER PIPES SHALL BE CEMENT LINED DUCTILE IRON CLASS 52.
   - B. SANITARY SEWER PIPES SHALL BE POLYVINYL CHLORIDE (PVC) SEWER PIPE SDR 35.
   - C. STORM DRAINAGE PIPES SHALL BE SMOOTH INTERIOR DUAL WALL HIGH DENSITY POLYETHYLENE (HDPE).
9. CONTRACTOR SHALL COORDINATE WITH ELECTRICAL CONTRACTOR AND SHALL FURNISH EXCAVATION, INSTALLATION, AND BACKFILL OF ELECTRICAL FURNISHED SITEWORK RELATED ITEMS SUCH AS PULL BOXES, CONDUITS, DUCT BANKS, LIGHT POLE BASES, AND CONCRETE PADS. SITE CONTRACTOR SHALL FURNISH CONCRETE ENCASEMENT OF DUCT BANKS IF REQUIRED BY THE UTILITY COMPANY AND AS INDICATED ON THE DRAWINGS.
10. CONTRACTOR SHALL EXCAVATE AND BACKFILL TRENCHES FOR GAS IN ACCORDANCE WITH GAS COMPANY'S REQUIREMENTS.
11. ALL DRAINAGE AND SANITARY STRUCTURE INTERIOR DIAMETERS (4' MIN.) SHALL BE DETERMINED BY THE MANUFACTURER BASED ON THE PIPE CONFIGURATIONS SHOWN ON THESE PLANS AND LOCAL MUNICIPAL STANDARDS. FOR MANHOLES THAT ARE 20 FEET IN DEPTH AND GREATER, THE MINIMUM DIAMETER SHALL BE 5 FEET.
12. CONTRACTOR TO NOTIFY ENGINEER IN ADVANCE OF ANY INSTALLATION OF UNDERGROUND DETENTION, INFILTRATION OR FILTERING SYSTEMS. A LETTER SIGNED BY A QUALIFIED ENGINEER MUST BE PROVIDED TO DES STATING THAT THE INDIVIDUAL OBSERVED ANY UNDERGROUND DETENTION, INFILTRATION, OR FILTERING SYSTEMS PRIOR TO BACKFILLING, AND WHETHER, IN HIS OR HER PROFESSIONAL OPINION, THE SYSTEM(S) CONFORM TO THE APPROVED PLANS AND SPECIFICATIONS.

Layout and Materials

1. DIMENSIONS ARE FROM THE FACE OF CURB, FACE OF BUILDING, FACE OF WALL, AND CENTER LINE OF PAVEMENT MARKINGS, UNLESS OTHERWISE NOTED.
2. CURB RADII ARE 3 FEET UNLESS OTHERWISE NOTED.
3. CURBING SHALL BE PRECAST CONCRETE (PCC) WITHIN THE SITE UNLESS OTHERWISE INDICATED ON THE PLANS.
4. IN ADDITION TO THE INFORMATION PROVIDED HEREIN, SEE ARCHITECTURAL DRAWINGS FOR EXACT BUILDING DIMENSIONS AND DETAILS FOR FEATURES THAT ARE CONTIGUOUS TO THE BUILDING, INCLUDING BUILDING ENTRANCES, UTILITY PENETRATIONS, CONCRETE DOOR PADS, COMPACTOR PAD, LOADING DOCKS, BOLLARDS, ETC.
5. PROPOSED BOUNDS AND ANY EXISTING PROPERTY LINE MONUMENTATION DISTURBED DURING CONSTRUCTION SHALL BE SET OR RESET BY A LICENSED LAND SURVEYOR (LLS).
6. PRIOR TO START OF CONSTRUCTION, CONTRACTOR SHALL VERIFY EXISTING PAVEMENT ELEVATIONS AT INTERFACE WITH PROPOSED PAVEMENTS, AND EXISTING GROUND ELEVATIONS ADJACENT TO DRAINAGE OUTLETS TO ASSURE PROPER TRANSITIONS BETWEEN EXISTING AND PROPOSED FACILITIES.

Demolition

1. CONTRACTOR SHALL REMOVE AND DISPOSE OF EXISTING MANMADE SURFACE FEATURES WITHIN THE LIMIT OF WORK INCLUDING BUILDINGS, STRUCTURES, PAVEMENTS, SLABS, CURBING, FENCES, UTILITY POLES, SIGNS, ETC. UNLESS INDICATED OTHERWISE ON THE DRAWINGS. REMOVE AND DISPOSE OF EXISTING UTILITIES, FOUNDATIONS AND UNSUITABLE MATERIAL BENEATH AND FOR A DISTANCE OF 10 FEET BEYOND THE PROPOSED BUILDING FOOTPRINT INCLUDING EXTERIOR COLUMNS.
2. EXISTING UTILITIES SHALL BE TERMINATED, UNLESS OTHERWISE NOTED, IN CONFORMANCE WITH LOCAL, STATE AND INDIVIDUAL UTILITY COMPANY STANDARD SPECIFICATIONS AND DETAILS. THE CONTRACTOR SHALL COORDINATE UTILITY SERVICE DISCONNECTS WITH THE UTILITY REPRESENTATIVES.
3. CONTRACTOR SHALL DISPOSE OF DEMOLITION DEBRIS IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS, ORDINANCES AND STATUTES.
4. THE CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING THE DETAILED SCOPE OF DEMOLITION BEFORE SUBMITTING ITS BID/PROPOSAL TO PERFORM THE WORK AND SHALL MAKE NO CLAIMS AND SEEK NO ADDITIONAL COMPENSATION FOR CHANGED CONDITIONS OR UNFORESEEN OR LATENT SITE CONDITIONS RELATED TO ANY CONDITIONS DISCOVERED DURING EXECUTION OF THE WORK.
5. UNLESS OTHERWISE SPECIFICALLY PROVIDED ON THE PLANS OR IN THE SPECIFICATIONS, THE ENGINEER HAS NOT PREPARED DESIGNS FOR AND SHALL HAVE NO RESPONSIBILITY FOR THE PRESENCE, DISCOVERY, REMOVAL, ABATEMENT OR DISPOSAL OF HAZARDOUS MATERIALS, TOXIC WASTES OR POLLUTANTS AT THE PROJECT SITE. THE ENGINEER SHALL NOT BE RESPONSIBLE FOR ANY CLAIMS OF LOSS, DAMAGE, EXPENSE, DELAY, INJURY OR DEATH ARISING FROM THE PRESENCE OF HAZARDOUS MATERIAL AND CONTRACTOR SHALL INDEMNIFY AND HOLD HARMLESS THE ENGINEER FROM ANY CLAIMS MADE IN CONNECTION THEREWITH. MOREOVER, THE ENGINEER SHALL HAVE NO ADMINISTRATIVE OBLIGATIONS OF ANY TYPE WITH REGARD TO ANY CONTRACTOR AMENDMENT INVOLVING THE ISSUES OF PRESENCE, DISCOVERY, REMOVAL, ABATEMENT OR DISPOSAL OF ASBESTOS OR OTHER HAZARDOUS MATERIALS.

Existing Conditions Information

1. BASE PLAN: THE EXISTING CONDITIONS SHOWN ON THIS PLAN ARE BASED UPON AN ACTUAL ON-THE-GROUND INSTRUMENT SURVEY PERFORMED BY VHB IN SEPTEMBER TO NOVEMBER 2022, AND APRIL 2023.
   - A. DELINEATION OF THE WETLANDS AND PLACEMENT OF THE FLAGS WAS PERFORMED BY GODDARD CONSULTING, LLC IN NOVEMBER, 2022.
   - B. FLAGS MARKING THE WETLANDS WERE LOCATED BY FIELD SURVEY BY VHB IN NOVEMBER, 2022.
2. TOPOGRAPHY: ELEVATIONS ARE BASED ON NAVD 1988.

Document Use

1. THESE PLANS AND CORRESPONDING CADD DOCUMENTS ARE INSTRUMENTS OF PROFESSIONAL SERVICE, AND SHALL NOT BE USED, IN WHOLE OR IN PART, FOR ANY PURPOSE OTHER THAN FOR WHICH IT WAS CREATED WITHOUT THE EXPRESSED, WRITTEN CONSENT OF VHB. ANY UNAUTHORIZED USE, REUSE, MODIFICATION OR ALTERATION, INCLUDING AUTOMATED CONVERSION OF THIS DOCUMENT SHALL BE AT THE USER'S SOLE RISK WITHOUT LIABILITY OR LEGAL EXPOSURE TO VHB.
2. CONTRACTOR SHALL NOT RELY SOLELY ON ELECTRONIC VERSIONS OF PLANS, SPECIFICATIONS, AND DATA FILES THAT ARE OBTAINED FROM THE DESIGNERS, BUT SHALL VERIFY LOCATION OF PROJECT FEATURES IN ACCORDANCE WITH THE PAPER COPIES OF THE PLANS AND SPECIFICATIONS THAT ARE SUPPLIED AS PART OF THE CONTRACT DOCUMENTS.
3. SYMBOLS AND LEGENDS OF PROJECT FEATURES ARE GRAPHIC REPRESENTATIONS AND ARE NOT NECESSARILY SCALED TO THEIR ACTUAL DIMENSIONS OR LOCATIONS ON THE DRAWINGS. THE CONTRACTOR SHALL REFER TO THE DETAIL SHEET DIMENSIONS, MANUFACTURERS' LITERATURE, SHOP DRAWINGS AND FIELD MEASUREMENTS OF SUPPLIED PRODUCTS FOR LAYOUT OF THE PROJECT FEATURES.

New Hampshire Fish and Game

1. ALL OBSERVATIONS OF THREATENED OR ENDANGERED SPECIES SHALL BE REPORTED IMMEDIATELY TO THE NEW HAMPSHIRE FISH AND GAME DEPARTMENT NONGAME AND ENDANGERED WILDLIFE ENVIRONMENTAL REVIEW PROGRAM BY PHONE AT 603-271-2461 AND BY EMAIL AT NHFGreview@wildlife.nh.gov. EMAIL SUBJECT LINE:
2. PHOTOGRAPHS OF THE OBSERVED SPECIES AND NEARBY ELEMENTS OF HABITAT OR AREAS OF LAND DISTURBANCE SHALL BE PROVIDED TO NHF&G IN DIGITAL FORMAT AT THE ABOVE EMAIL ADDRESS FOR VERIFICATION AS FEASIBLE.
3. IN THE EVENT A THREATENED OR ENDANGERED SPECIES IS OBSERVED ON THE PROJECT SITE DURING THE TERM OF THE PERMIT, THE SPECIES SHALL NOT BE DISTURBED, HANDLED, OR HARMED IN ANY WAY PRIOR TO CONSULTATION WITH NHF&G AND IMPLEMENTATION OF CORRECTIVE ACTIONS RECOMMENDED BY NHF&G, IF ANY, TO ENSURE THE PROJECT DOES NOT APPRECIABLY JEOPARDIZE THE CONTINUED EXISTENCE OF THREATENED AND ENDANGERED SPECIES AS DEFINED IN Fis 1002.04.
4. THE NHF&G, INCLUDING ITS EMPLOYEES AND AUTHORIZED AGENTS, SHALL HAVE ACCESS TO THE PROPERTY DURING THE TERM OF THE PERMIT.
5. ENV-WQ 1506.15 REQUIRES THAT:
   - 5.1. ALL MANUFACTURED EROSION AND SEDIMENT CONTROLS PRODUCTS, EXCEPT FOR SILT FENCE INSTALLATED IN ACCORDANCE WITH ENV-WQ 1506.04, UTILIZED FOR, BUT NOT LIMITED TO , SLOPE PROTECTION, RUNOFF DIVERSION, SLOPE INTERRUPTION, PERIMETER CONTROL, INLET PROTECTION, CHECK DAMS, AND SEDIMENT TRAPS SHALL NOT CONTAIN WELDED PLASTIC, PLASTIC, OR MULTI-FILAMENT OR MONOFILAMENT POLYPROPYLENE NETTING OR MESH WITH AN OPENING SIZE OF GREATER THAN 1/8 INCH
   - 5.2. TURF REINFORCEMENT MATS SHALL BE COVERED WITH SOIL TO PREVENT EXPOSURE OF THE MATS TO THE SURFACE.

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The Brickyard Residential Development

174 Hanover Street Extension
Lebanon, New Hampshire 03766

No.	Revision	Date	Appvd.

Designed by DJB | Checked by AHF

Issued for: **Permitting** | Date: **March 28, 2025**

Not Approved for Construction

Drawing Title: **Legend and General Notes**

Drawing Number: **C1.0**

Sheet 1 of 8

Project Number: **52933.00**

Saved Thursday, March 20, 2025 4:39:54 PM DBOSWORTH Plotted Tuesday, March 25, 2025 4:57:35 PM Derek Bosworth

Wetland Classification Codes:

PSS1E - Palustrine Scrub-Shrub, Broad-Leaved Deciduous, Seasonally Flooded/Saturated

PSS1E / PFO1/4E - Palustrine, Scrub-Shrub, Broad-Leaved Deciduous, Seasonally Flooded/Saturated / Palustrine, Forested, Broad-Leaved/Needle-Leaved Evergreen, Seasonally Flooded/Saturated

PEM1B/PSS1B - Palustrine, Emergent, Persistent, Saturated / Palustrine, Scrub-Shrub, Broad-Leaved Deciduous, Saturated

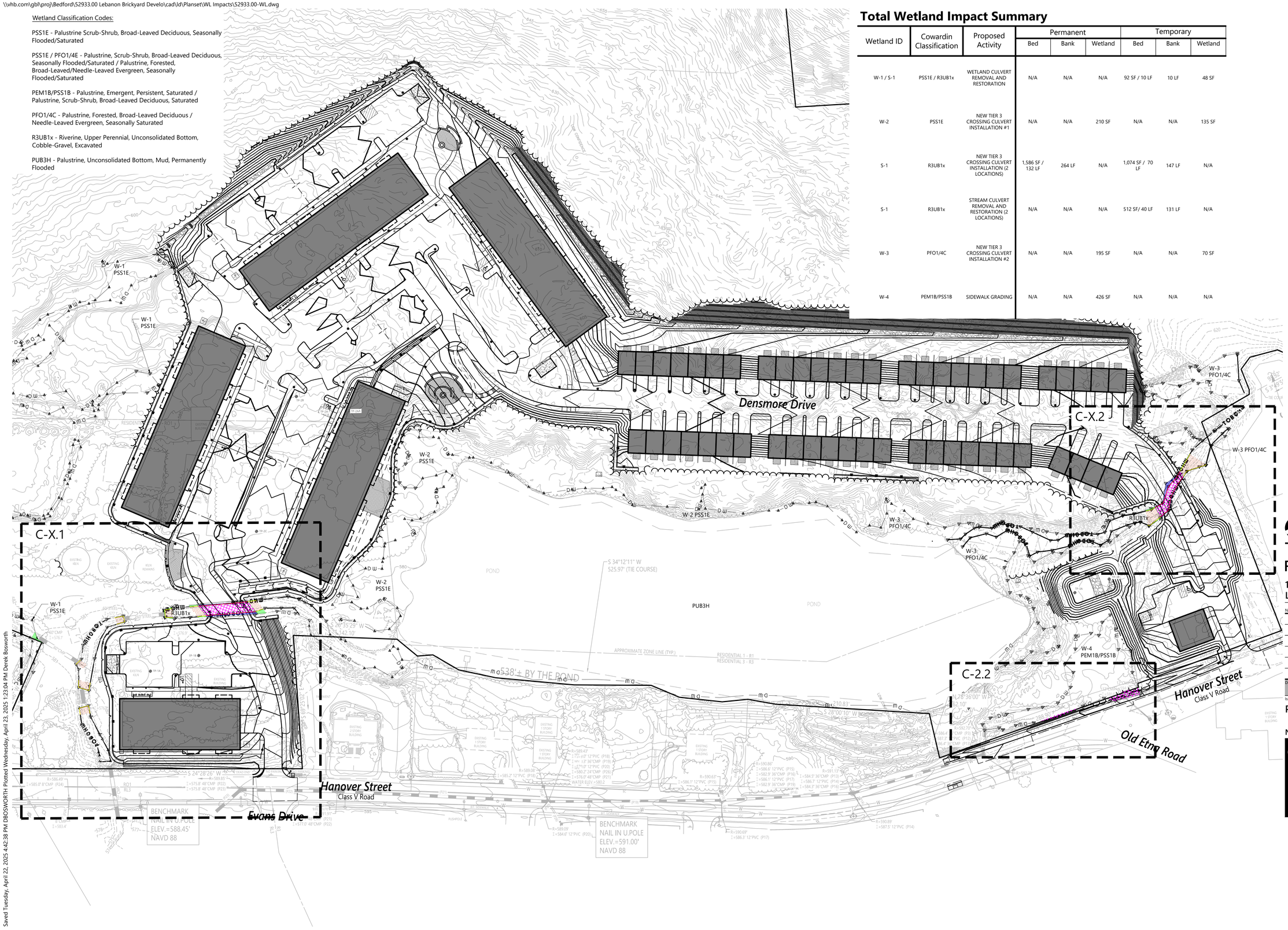
PFO1/4C - Palustrine, Forested, Broad-Leaved Deciduous / Needle-Leaved Evergreen, Seasonally Saturated

R3UB1x - Riverine, Upper Perennial, Unconsolidated Bottom, Cobble-Gravel, Excavated

PUB3H - Palustrine, Unconsolidated Bottom, Mud, Permanently Flooded

Total Wetland Impact Summary

Wetland ID	Cowardin Classification	Proposed Activity	Permanent			Temporary		
			Bed	Bank	Wetland	Bed	Bank	Wetland
W-1 / S-1	PSS1E / R3UB1x	WETLAND CULVERT REMOVAL AND RESTORATION	N/A	N/A	N/A	92 SF / 10 LF	10 LF	48 SF
W-2	PSS1E	NEW TIER 3 CROSSING CULVERT INSTALLATION #1	N/A	N/A	210 SF	N/A	N/A	135 SF
S-1	R3UB1x	NEW TIER 3 CROSSING CULVERT INSTALLATION (2 LOCATIONS)	1,586 SF / 132 LF	264 LF	N/A	1,074 SF / 70 LF	147 LF	N/A
S-1	R3UB1x	STREAM CULVERT REMOVAL AND RESTORATION (2 LOCATIONS)	N/A	N/A	N/A	512 SF/ 40 LF	131 LF	N/A
W-3	PFO1/4C	NEW TIER 3 CROSSING CULVERT INSTALLATION #2	N/A	N/A	195 SF	N/A	N/A	70 SF
W-4	PEM1B/PSS1B	SIDEWALK GRADING	N/A	N/A	426 SF	N/A	N/A	N/A



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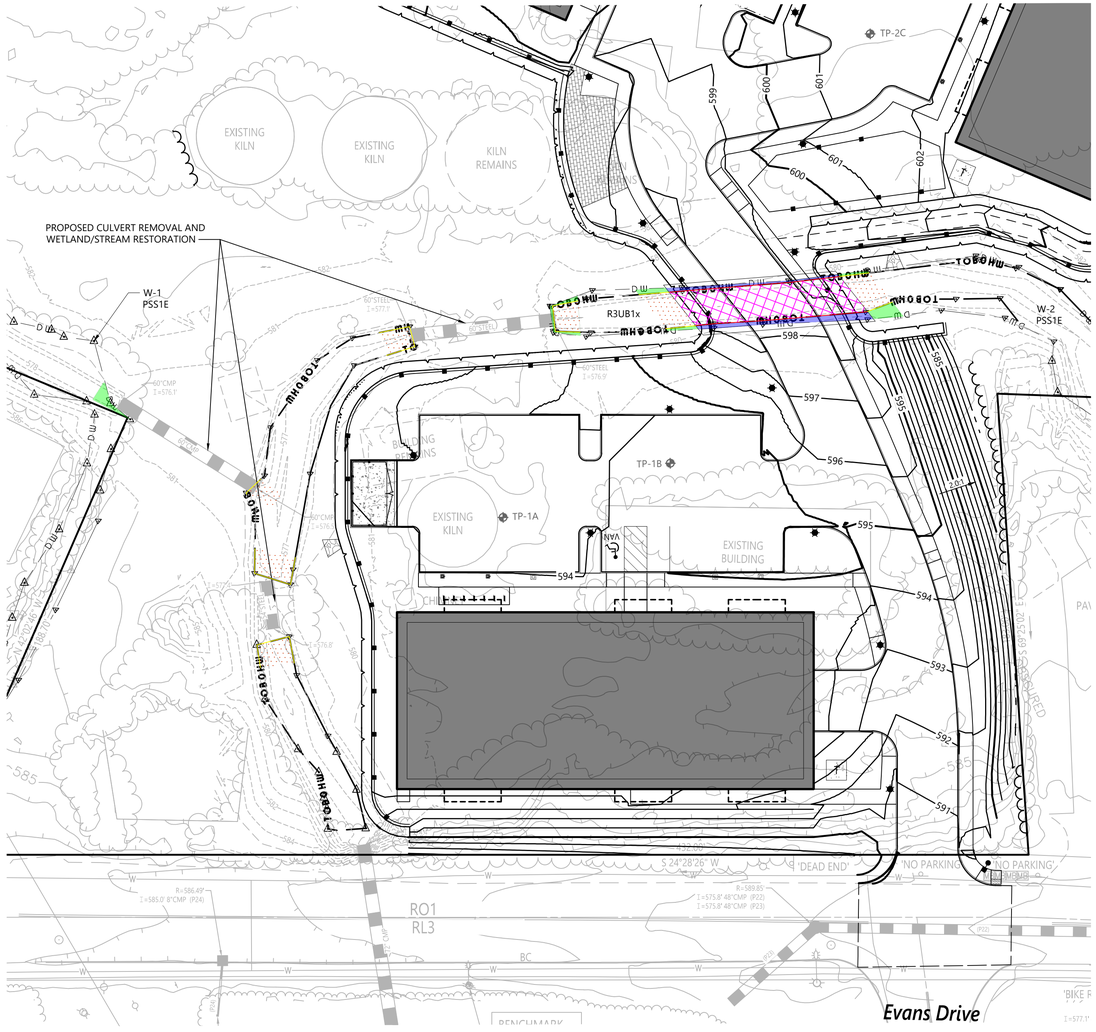
Drawing Title
Overall Wetland Impact Plan

Drawing Number
C2.0

Sheet 2 of 8

Project Number
52933.00

Saved Tuesday, April 22, 2025 4:42:38 PM DBOSWORTH Plotted Wednesday, April 23, 2025 1:23:04 PM Derek Bosworth



Legend

- DELINEATED WETLAND
- DELINEATED TOP OF BANK & ORDINARY HIGH WATER
- PERMANENT BANK IMPACT
- TEMPORARY BANK IMPACT
- PERMANENT BED IMPACT
- PERMANENT WETLAND IMPACT
- TEMPORARY BED IMPACT
- TEMPORARY WETLAND IMPACT

Wetland Impact Summary

Wetland ID	Cowardin Classification	Proposed Activity	Permanent			Temporary		
			Bed	Bank	Wetland	Bed	Bank	Wetland
W-1 / S-1	PSS1E / R3UB1x	WETLAND CULVERT REMOVAL AND RESTORATION	N/A	N/A	N/A	92 SF / 10 LF	10 LF	48 SF
W-2	PSS1E	NEW TIER 3 CROSSING CULVERT INSTALLATION #1	N/A	N/A	210 SF	N/A	N/A	135 SF
S-1	R3UB1x	NEW TIER 3 CROSSING CULVERT INSTALLATION #1	974 SF / 68 LF	136 LF	N/A	334 SF / 20 LF	47 LF	N/A
S-1	R3UB1x	CULVERT REMOVAL AND RESTORATION	N/A	N/A	N/A	512 SF / 40 LF	131 LF	N/A

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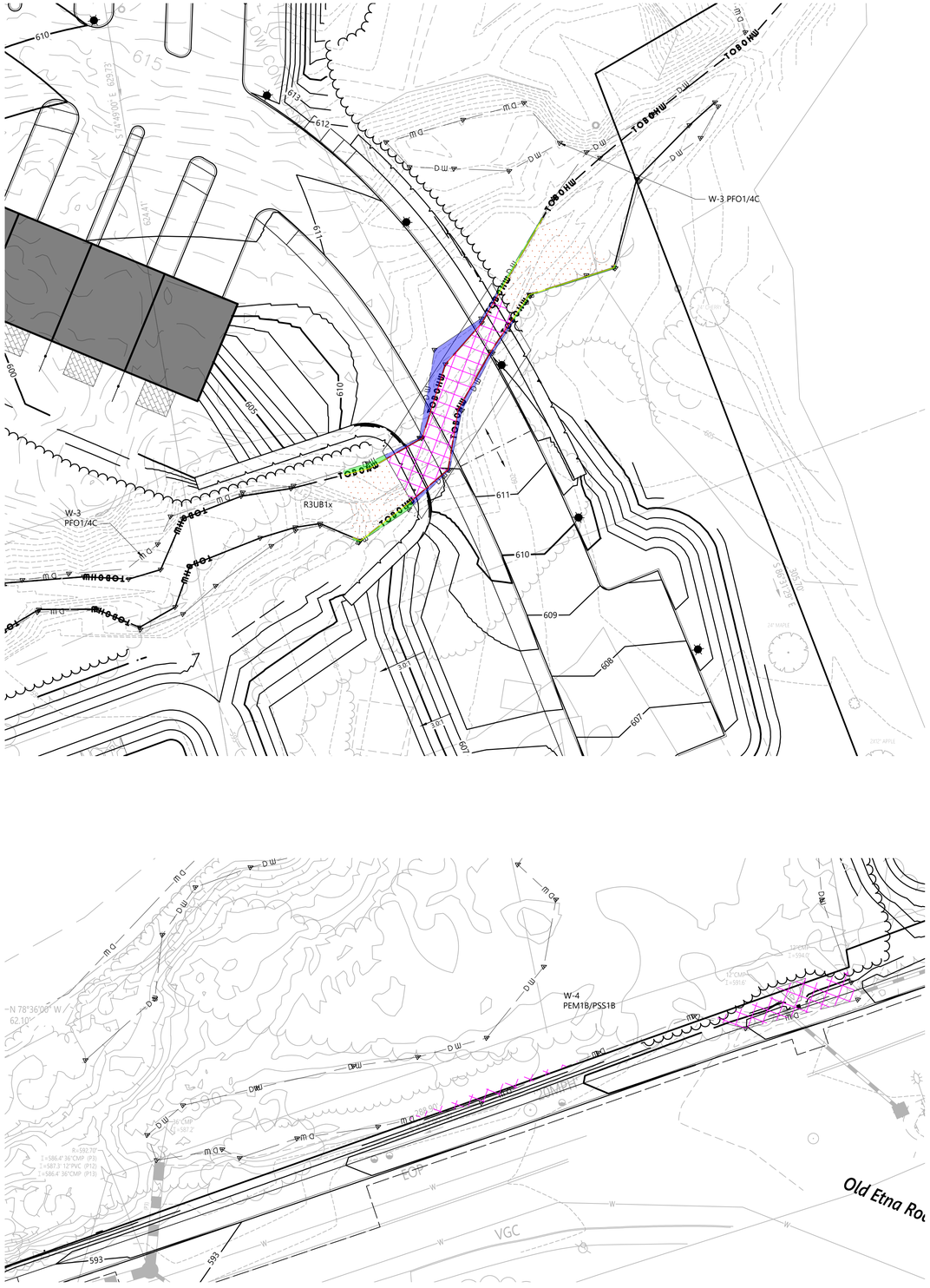
Drawing Title: Wetland Impact Plan 1

Drawing Number: C2.1

Sheet 3 of 8

Project Number: 52933.00

Saved Tuesday, April 22, 2025 4:42:38 PM DBOSWORTH Plotted Wednesday, April 23, 2025 1:23:23 PM Derek Bosworth



Legend

- DELINEATED WETLAND
- DELINEATED TOP OF BANK & ORDINARY HIGH WATER
- PERMANENT BANK IMPACT
- TEMPORARY BANK IMPACT
- PERMANENT BED IMPACT
- PERMANENT WETLAND IMPACT
- TEMPORARY BED IMPACT
- TEMPORARY WETLAND IMPACT

Wetland Impact Summary

Wetland ID	Cowardin Classification	Proposed Activity	Permanent			Temporary		
			Bed	Bank	Wetland	Bed	Bank	Wetland
W-3	PFO1/4C	NEW TIER 3 CROSSING CULVERT INSTALLATION #2	N/A	N/A	195 SF	N/A	N/A	70 SF
S-1	R3UB1x	NEW TIER 3 CROSSING CULVERT INSTALLATION #2	612 SF / 64 LF	128 LF	N/A	740 SF / 50 LF	100 LF	N/A
W-4	PEM1B/PSS1B	SIDEWALK GRADING	N/A	N/A	426 SF	N/A	N/A	N/A

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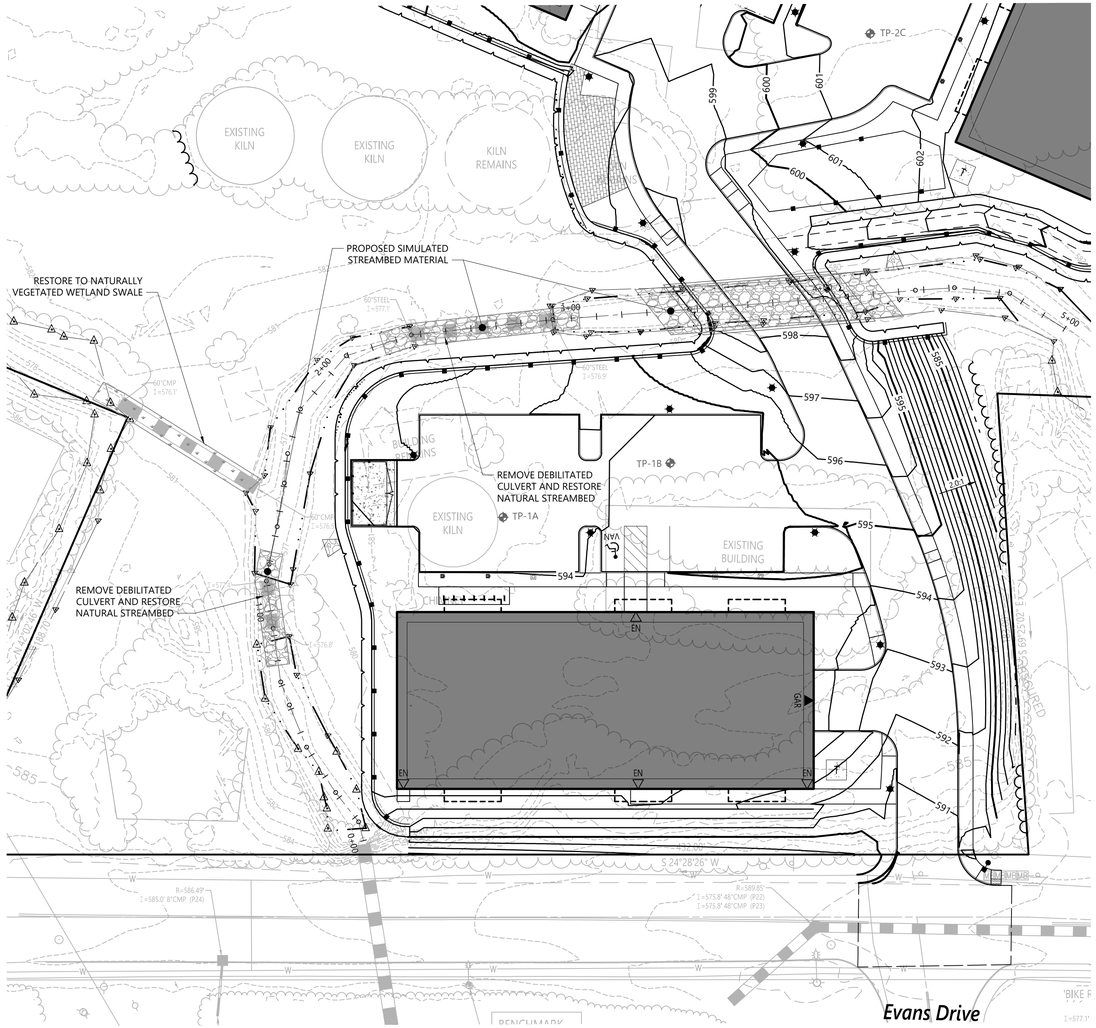
Drawing Title
Wetland Impact Plan 2

Drawing Number
C2.2

Sheet 4 of 8

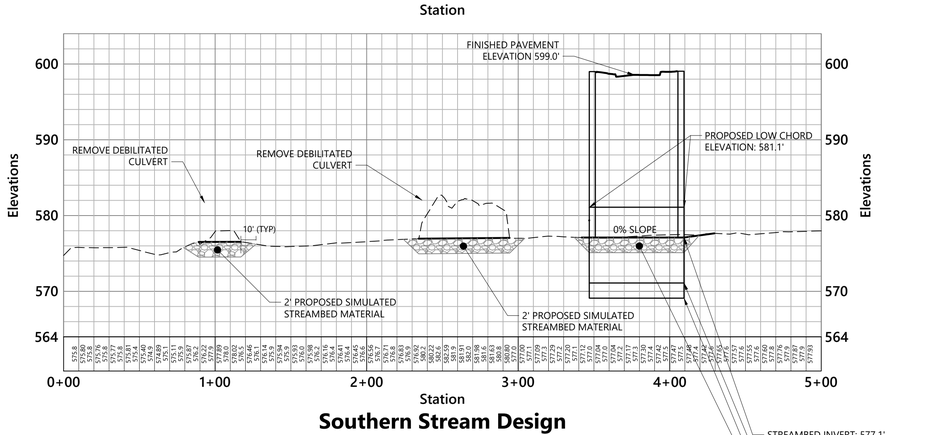
Project Number
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Saved Tuesday, April 22, 2025 10:42:35 AM DBOSWORTH Plotted Tuesday, April 22, 2025 11:26:38 AM Derek Bosworth



PLAN VIEW

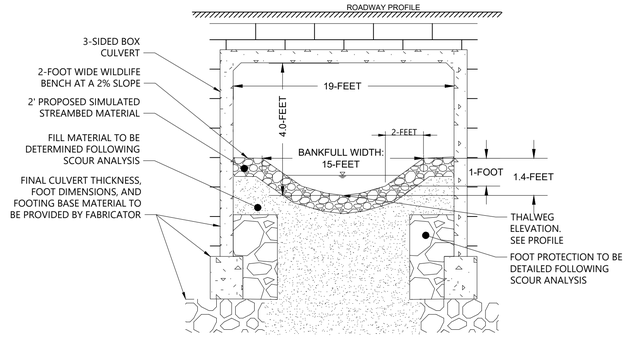
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Southern Stream Design

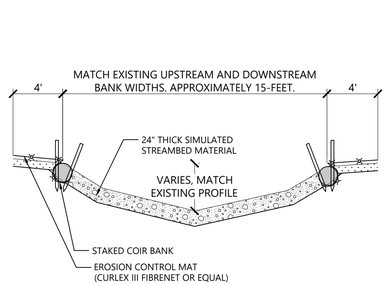
PROFILE VIEW

Vert. 0 5 10 20 Feet
Horiz. 0 25 50 100Feet

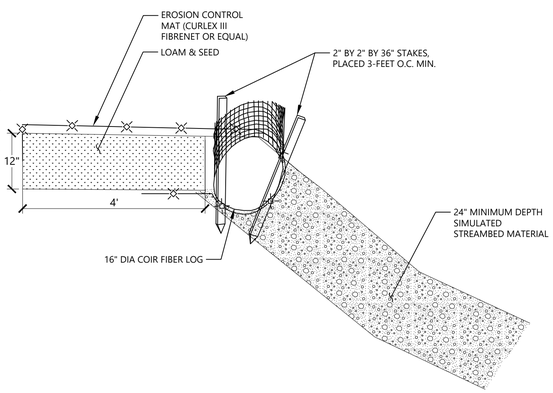


PROPOSED CROSSING ELEVATION VIEW

NOTES:
1. THE PROPOSED SIMULATED STREAMBED MATERIAL WILL BE A STABLE MATERIAL CALCULATED DURING THE NEXT PHASE OF DESIGN.



Natural Streambed Restoration 08/23
N.T.S. Source: VHB EV_1105



Coir Log Bank 08/23
N.T.S. Source: VHB EV_1104

WETLAND SWALE RESTORATION PLANTING PLAN:

1. MAINTAIN EXISTING GRADES THROUGH RESTORED WETLAND SWALE. APPLY NEW ENGLAND WETLAND PLANTS, INC. NEW ENGLAND WETMIX (OR APPROVED SIMILAR) IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS. ENSURE 75% GROUND COVER AFTER TWO FULL GROWING SEASONS.
2. PLANT 18"-24" SPECKLED ALDER (*ALNUS INCANA*), 18"-24" SILK DOGWOOD (*CORNUS AMOMUM*), AND 18"-24" BEBB'S WILLOW (*SALIX BEBBIANA*) THROUGH SWALE IN ACCORDANCE WITH NURSERIES SPACING REQUIREMENTS TO PROVIDE ADEQUATE WOODY SHRUB LAYER COUPLED WITH APPROVED SEED MIX.

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Drawing Title
Stream Crossing Plan and Profile 1

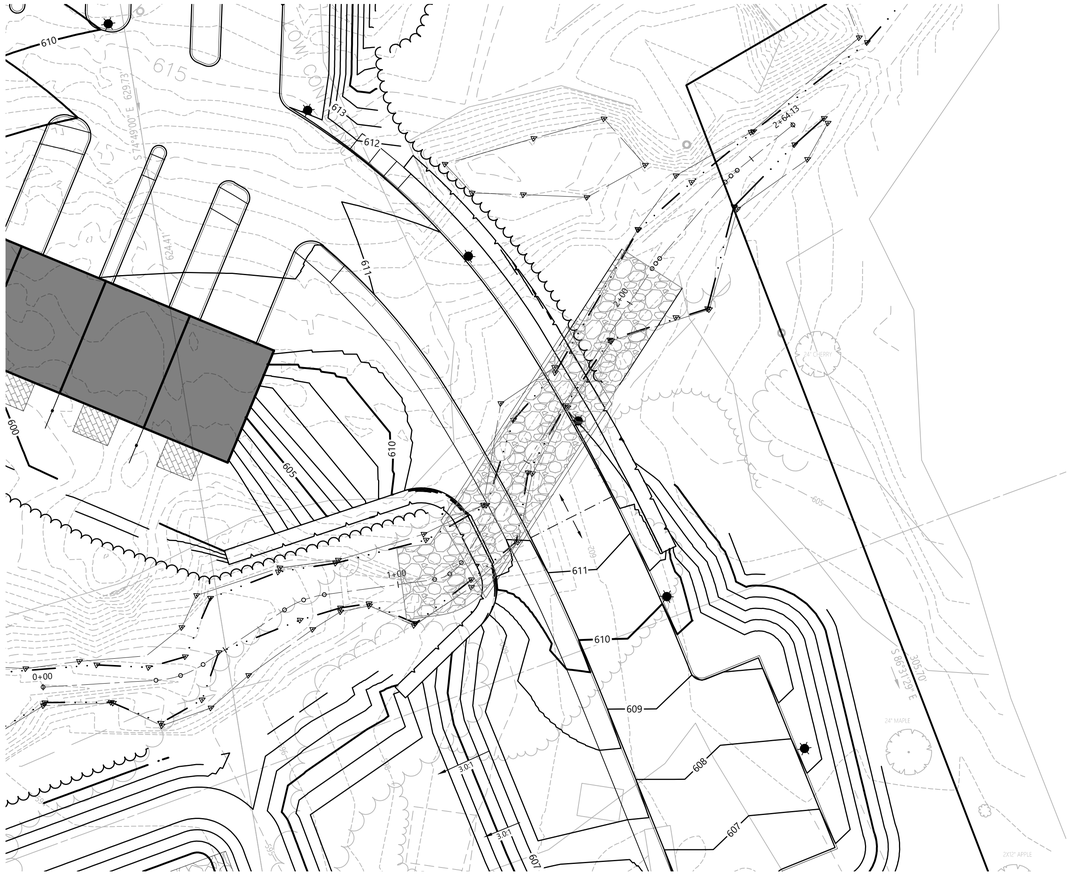
Drawing Number
C3.1



Sheet 5 of 8

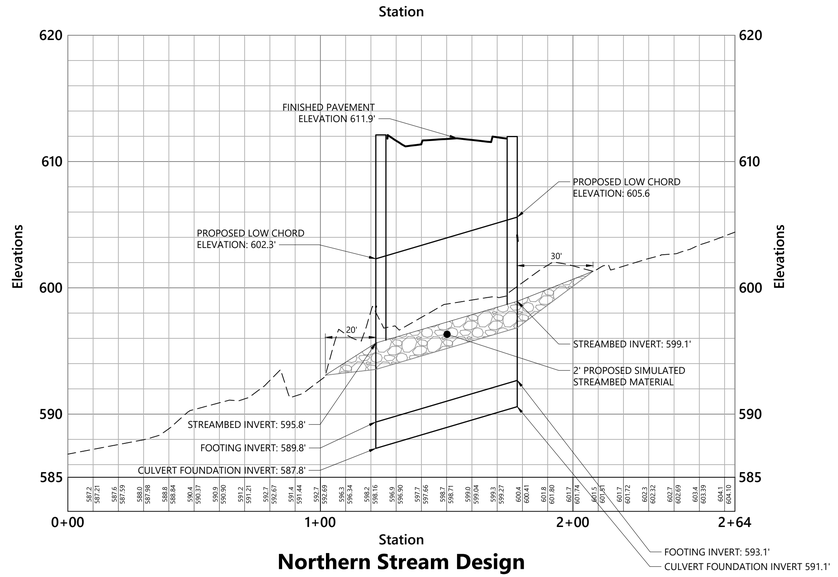
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PLAN VIEW

0 10 20 40 Feet

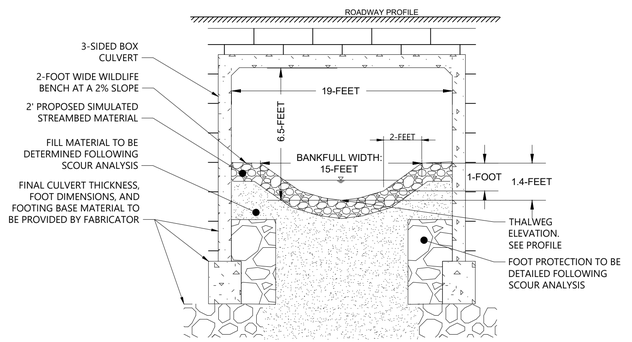


Northern Stream Design

PROFILE VIEW

Vert. 0 3 6 12 Feet

Horiz. 0 15 30 60 Feet



PROPOSED CROSSING ELEVATION VIEW

NOTES:

1. THE PROPOSED SIMULATED STREAMBED MATERIAL WILL BE A STABLE MATERIAL CALCULATED DURING THE NEXT PHASE OF DESIGN.

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Issued for: Permitting — Date: March 28, 2025

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Drawing Title

Stream Crossing Plan and Profile 2

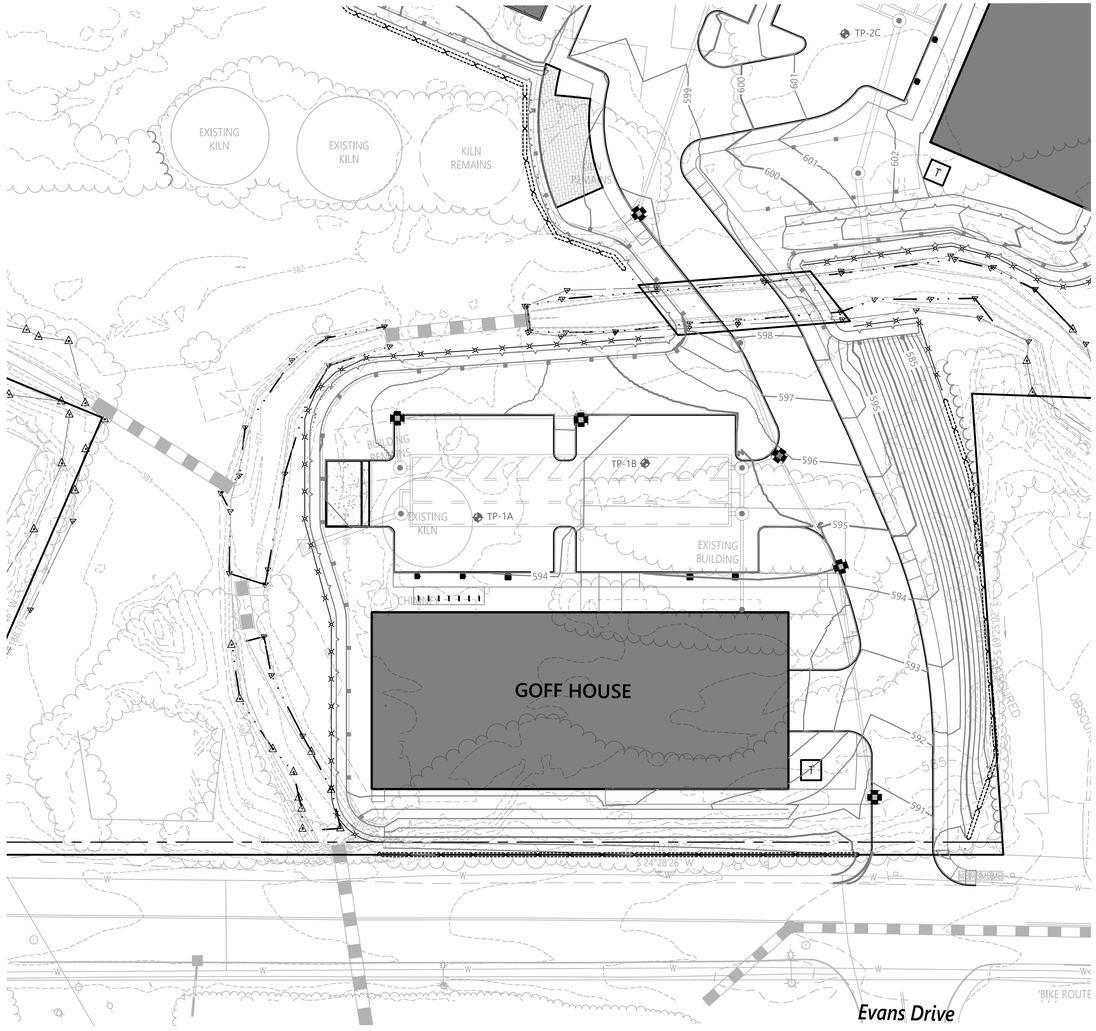
Drawing Number: C3.2

STATE OF NEW HAMPSHIRE
ANNIQUE HELEN FLEUROCK
No. 16726
LICENSED PROFESSIONAL ENGINEER

Sheet 6 of 8

Project Number: 52933.00

Saved Thursday, April 10, 2025 10:45:15 AM DBOSWORTH Plotted Thursday, April 10, 2025 10:48:50 AM Derek Bosworth



COFFERDAM AND WATER DIVERSION NOTES

1. THIS WATER DIVERSION PLAN IS PROVIDED FOR GENERAL INFORMATION ONLY. THE CONTRACTOR SHALL MODIFY AS NECESSARY TO ACHIEVE REQUIRED WATER HANDLING DURING CONSTRUCTION OF THE CULVERT. THE FINAL DIVERSION PLAN IS SUBJECT TO REVIEW AND APPROVAL BY THE ENGINEER.
2. THE FINAL WATER DIVERSION SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW HAMPSHIRE. THE CONTRACTOR SHALL SUBMIT STAMPED WORKING DRAWINGS SHOWING WATER DIVERSION STRUCTURE LOCATION, COFFERDAMS, CONSTRUCTION METHOD AND SEQUENCE, AND DEWATERING METHOD, FOR REVIEW AND DOCUMENTATION.
3. WATER DIVERSION AND CONSTRUCTION ACTIVITIES IN CHANNEL SHALL BE SCHEDULED DURING A PERIOD OF LOW FLOW. IF THERE IS FLOWING WATER DURING CONSTRUCTION THE FLOW SHALL BE DIVERTED AROUND THE WORK SITE IN A STABLE MANNER USING METHODS APPROVED BY THE ENGINEER. SUCH METHODS WOULD LIKELY INCLUDE USE OF COFFERDAMS.
4. THE TWO-YEAR FLOW (Q2) IS ESTIMATED TO BE 25 CFS AT THIS LOCATION. TO ACCOMMODATE THIS MAXIMUM FLOW, THE COFFERDAMS SHALL BE SET AT ELEV. 580.0-FT.
5. CULVERT CROSSING TO BE INSTALLED IN TWO PHASES. COFFERDAMS TO BE INSTALLED AND REMOVED AT ONE SIDE OF THE STREAM AT A TIME AS THE WATER IS BEING DIVERTED TO THE OPPOSITE SIDE.

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0 15 30 60 Feet

The Brickyard Residential Development

174 Hanover Street Extension
Lebanon, New Hampshire 03766

No.	Revision	Date	Appvd.

Designed by DJB | Checked by DHF

Issued for: **Permitting** | Date: **March 28, 2025**

Not Approved for Construction

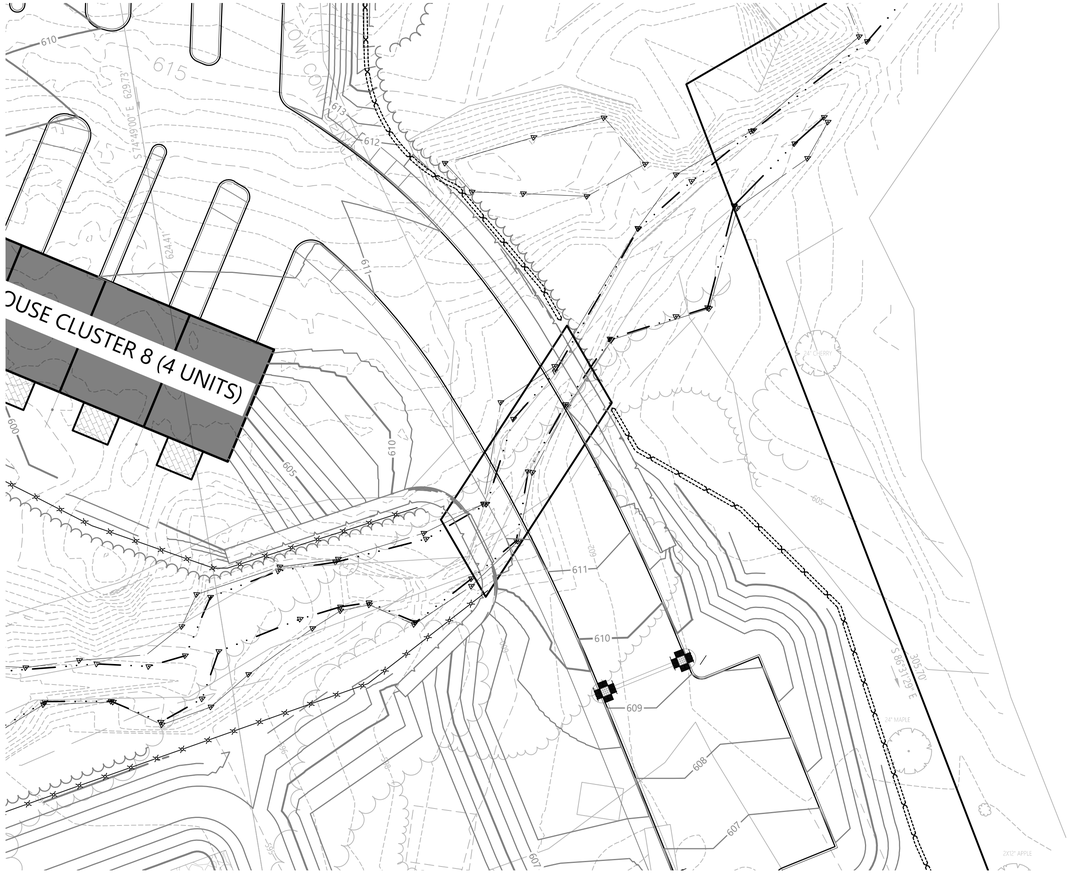
Drawing Title
Erosion and Sediment Control Plan 1

Drawing Number
C4.1

Sheet 7 of 8

Project Number
52933.00

Saved Tuesday, March 25, 2025 5:28:08 PM DBOSWORTH Plotted Monday, March 31, 2025 2:37:33 PM Derek Bosworth



COFFERDAM AND WATER DIVERSION NOTES

1. THIS WATER DIVERSION PLAN IS PROVIDED FOR GENERAL INFORMATION ONLY. THE CONTRACTOR SHALL MODIFY AS NECESSARY TO ACHIEVE REQUIRED WATER HANDLING DURING CONSTRUCTION OF THE CULVERT. THE FINAL DIVERSION PLAN IS SUBJECT TO REVIEW AND APPROVAL BY THE ENGINEER.
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5. CULVERT CROSSING TO BE INSTALLED IN TWO PHASES. COFFERDAMS TO BE INSTALLED AND REMOVED AT ONE SIDE OF THE STREAM AT A TIME AS THE WATER IS BEING DIVERTED TO THE OPPOSITE SIDE.

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0 10 20 40 Feet

The Brickyard Residential Development

174 Hanover Street Extension
Lebanon, New Hampshire 03766

No.	Revision	Date	Appvd.

Designed by DJB | Checked by DHF

Issued for: **Permitting** — Date: **March 28, 2025**

Not Approved for Construction

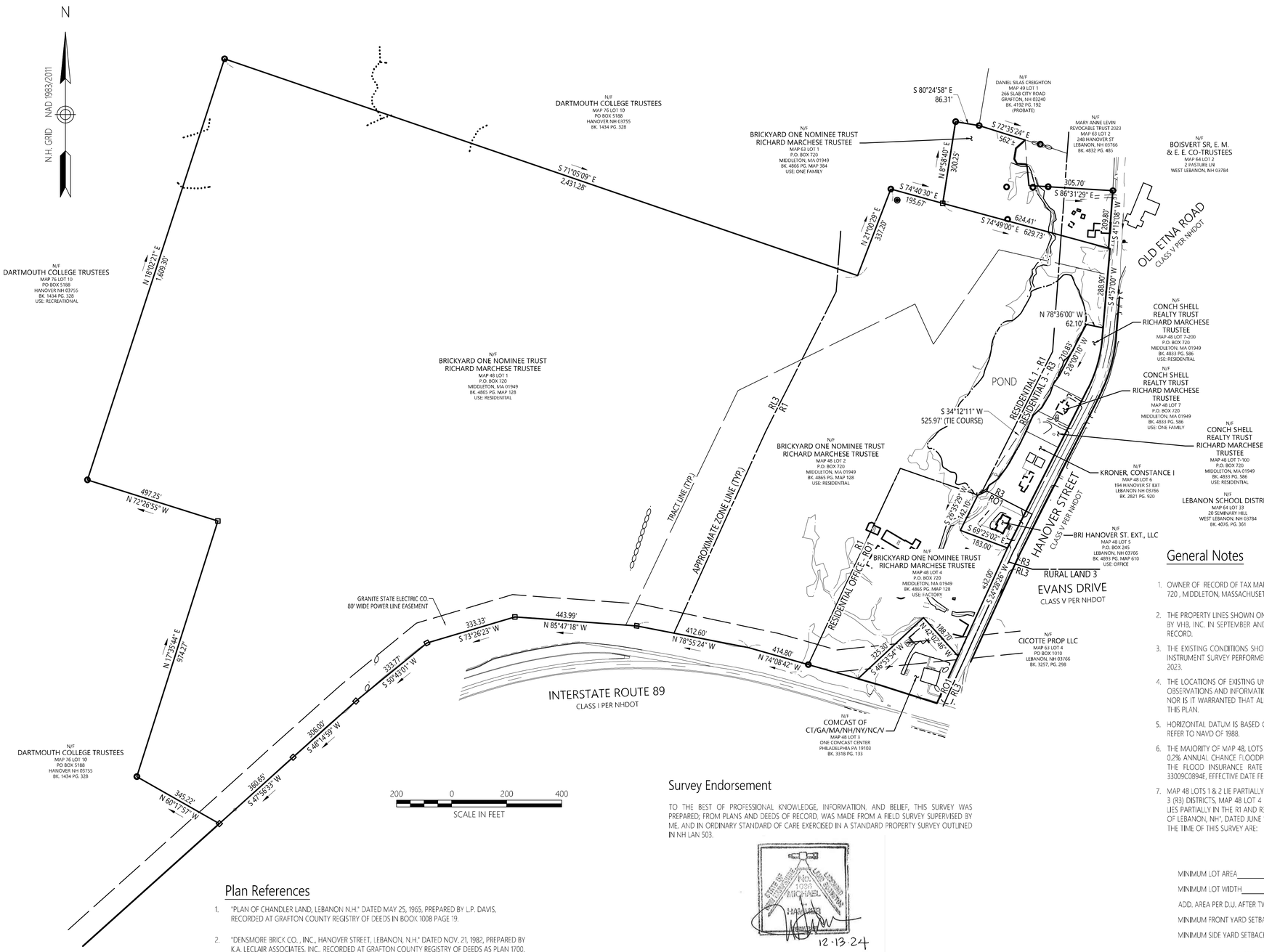
Drawing Title
Erosion and Sediment Control Plan 2

Drawing Number
C4.2

Sheet 8 of 8

Project Number
52933.00

Saved Thursday, March 20, 2025 4:40:51 PM DBOSWORTH Plotted Tuesday, March 25, 2025 5:01:02 PM Derek Bosworth



Plan References

1. "PLAN OF CHANDLER LAND, LEBANON N.H." DATED MAY 25, 1965, PREPARED BY L.P. DAVIS, RECORDED AT GRAFTON COUNTY REGISTRY OF DEEDS IN BOOK 1008 PAGE 19.
2. "DENSMORE BRICK CO., INC., HANOVER STREET, LEBANON, N.H." DATED NOV. 21, 1982, PREPARED BY K.A. LECLAIR ASSOCIATES, INC., RECORDED AT GRAFTON COUNTY REGISTRY OF DEEDS AS PLAN 1700.
3. "DENSMORE BRICK CO., INC., HANOVER STREET, LEBANON, N.H." DATED NOV. 21, 1982, REVISED OCT. 4, 1983, PREPARED BY K.A. LECLAIR ASSOCIATES, INC., RECORDED AT GRAFTON COUNTY REGISTRY OF DEEDS AS PLAN 2089.
4. "DENSMORE BRICK CO., INC., HANOVER STREET, LEBANON, N.H." DATED NOV. 21, 1982, REVISED APRIL 24, 1984, PREPARED BY K.A. LECLAIR ASSOCIATES, INC., RECORDED AT GRAFTON COUNTY REGISTRY OF DEEDS AS PLAN 2934.
5. "HODGES DEVELOPMENT CORP., HANOVER STREET, GRAFTON COUNTY, LEBANON, N.H." DATED APRIL 4, 1986, REVISED THROUGH 5/4/89, PREPARED BY K.A. LECLAIR ASSOCIATES, INC., RECORDED AT GRAFTON COUNTY REGISTRY OF DEEDS AS PLAN 5625.
6. "ELBTHAL REALTY TRUST, LEBANON, N.H." DATED JULY 3, 1980, PREPARED BY K.A. LECLAIR ASSOCIATES, INC., RECORDED AT GRAFTON COUNTY REGISTRY OF DEEDS AS PLAN 6453.
7. "STATE OF NEW HAMPSHIRE DEPARTMENT OF PUBLIC WORKS, PLANS OF PROPOSED FEDERAL AID PROJECT, I 89-1(45)53, N.H. PROJECT NO. P-3821-B" UNDATED, ON FILE WITH NHDOT AS PLAN P5821 B.

Survey Endorsement

TO THE BEST OF PROFESSIONAL KNOWLEDGE, INFORMATION, AND BELIEF, THIS SURVEY WAS PREPARED; FROM PLANS AND DEEDS OF RECORD, WAS MADE FROM A FIELD SURVEY SUPERVISED BY ME, AND IN ORDINARY STANDARD OF CARE EXERCISED IN A STANDARD PROPERTY SURVEY OUTLINED IN NH LAN 503.

Wetland Endorsement

THIS IS TO CERTIFY THAT THE WETLANDS HAVE BEEN DELINEATED IN ACCORDANCE WITH THE PROCEDURES OUTLINED IN THE 1987 CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL (TECHNICAL REPORT Y-87-1)



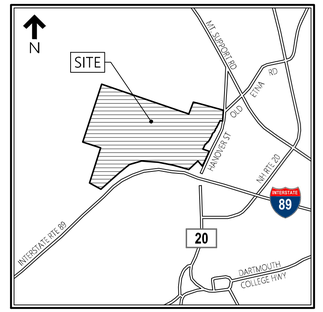
General Notes

1. OWNER OF RECORD OF TAX MAP 48 LOTS 1, 2, AND 4 IS BRICKYARD ONE NOMINEE TRUST, P.O. BOX 720 , MIDDLETON, MASSACHUSETTS 01949, GCRD BOOK 4865 PAGE 128.
2. THE PROPERTY LINES SHOWN ON THIS PLAN ARE BASED UPON AN ACTUAL FIELD SURVEY CONDUCTED BY VHB, INC. IN SEPTEMBER AND OCTOBER OF 2022, APRIL 2023, AND FROM DEEDS AND PLANS OF RECORD.
3. THE EXISTING CONDITIONS SHOWN ON THIS PLAN ARE BASED UPON AN ACTUAL ON-THE-GROUND INSTRUMENT SURVEY PERFORMED BY VHB, INC. FROM SEPTEMBER THRU NOVEMBER, 2022, AND APRIL 2023.
4. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES SHOWN ON THIS PLAN ARE BASED ON FIELD OBSERVATIONS AND INFORMATION OF RECORD. THEY ARE NOT WARRANTED TO BE EXACTLY LOCATED NOR IS IT WARRANTED THAT ALL UNDERGROUND UTILITIES OR OTHER STRUCTURES ARE SHOWN ON THIS PLAN.
5. HORIZONTAL DATUM IS BASED ON NH GRID SYSTEM, NAD 1983. ELEVATIONS SHOWN ON THIS PLAN REFER TO NAVD OF 1988.
6. THE MAJORITY OF MAP 48, LOTS 1, 2 & 4 LIES WITHIN ZONE X (UNSHADED) (AREAS TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) WITH THE EXCEPTION OF THE POND (ZONE A) AS SHOWN ON THE FLOOD INSURANCE RATE MAP FOR GRAFTON COUNTY, NEW HAMPSHIRE, MAP NUMBER 33009C0894E, EFFECTIVE DATE FEBRUARY 20, 2008.
7. MAP 48 LOTS 1 & 2 LIE PARTIALLY WITHIN THE RURAL LAND 3 (RL3), RESIDENTIAL 1 (R1) AND RESIDENTIAL 3 (R3) DISTRICTS, MAP 48 LOT 4 LIES ENTIRELY WITHIN THE RESIDENTIAL OFFICE 1 (RO1), MAP 63 LOT 1 LIES PARTIALLY IN THE R1 AND R3 DISTRICTS AS SHOWN ON THE "OFFICIAL ZONING MAP OF THE CITY OF LEBANON, NH", DATED JUNE 1, 2020. DIMENSIONAL REQUIREMENTS FOR THE ZONING DISTRICTS AT THE TIME OF THIS SURVEY ARE:

	RL3	R1 & RO1 (CLASS 1)	R1 & RO1 (CLASS 2)	R1 & RO1 (CLASS 3)
MINIMUM LOT AREA_____10 AC.		10K SF	15K SF	40K SF
MINIMUM LOT WIDTH_____N/A		75 FT	75 FT	100 FT
ADD. AREA PER D.U. AFTER TWO____N/A		3K SF	5K SF	15K SF
MINIMUM FRONT YARD SETBACK____50 FT		20 FT	20 FT	25 FT
MINIMUM SIDE YARD SETBACK_____50 FT		15 FT	15 FT	25 FT
MINIMUM REAR YARD SETBACK_____50 FT		20 FT	20 FT	30 FT
MAXIMUM BUILDING HEIGHT_____35 FT		45 FT*	45 FT*	45 FT*
MAXIMUM BUILDING COVERAGE____%		25%	20%	15%

* WITHIN THE R1 DISTRICT, THE BUILDING HEIGHT MAY BE INCREASED TO 55 FT TO ACCOMMODATE A PARKING STRUCTURE UNDERNEATH OR WITHIN THE PROPOSED BUILDING (SEE SECTION 308.4).

7) THE WETLANDS SHOWN ON THIS PLAN WERE FLAGGED BY GODDARD CONSULTING, LLC AND LOCATED IN NOVEMBER 2022.
8) THE TREE SYMBOL OUTLINE SHOWN ON THIS PLAN DOES NOT REPRESENT THE ACTUAL TREE CANOPY.
9) FOOT TRAILS WERE OBSERVED CROSSING THE NORTH AND WEST LOT LINES AS SHOWN. NO DOCUMENTS WERE FOUND AT THE GCRD PROVIDING RIGHTS OF ACCESS OR USE.
10) THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A CURRENT TITLE REPORT AND MAY BE SUBJECT TO ADDITIONAL INFORMATION DISCLOSED IN SUCH.



Locus Map
(NOT TO SCALE)

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Legend

- DRAIN MANHOLE
- CATCH BASIN
- SEWER MANHOLE
- ELECTRIC MANHOLE
- TELEPHONE MANHOLE
- MANHOLE
- HAND HOLE
- WATER GATE
- FIRE HYDRANT
- GAS GATE
- BOLLARD
- STREET SIGN
- LIGHT POLE
- UTILITY POLE
- GUY POLE
- GUY WIRE
- MONITORING WELL
- FLOOD LIGHT
- PEDESTRIAN SIGNAL
- MAST ARM
- FLASHING SIGNAL
- WELL
- MARSH
- F.F.E.=45.27' FINISHED FLOOR ELEVATION
- DYL DOUBLE YELLOW LINE
- DWL DASHED WHITE LINE
- EOP EDGE OF PAVEMENT
- VGC VERTICAL GRANITE CURB
- SGE SLOPED GRANITE EDGE
- GUARD RAIL
- CHAIN LINK FENCE
- DRAINAGE LINE
- SEWER LINE
- OHW OVERHEAD WIRE
- E UNDERGROUND ELECTRIC
- T TELEPHONE LINE
- G GAS LINE
- W WATER LINE
- STONE WALL
- TREE LINE
- BF=100 LIMIT OF BANK
- WF=100 VEGETATED WETLAND BOUNDARY
- EDGE OF WATER (AERIAL PHOTOGRAMMETRY)

The Brickyard

Hanover Street
Lebanon, Grafton County, N.H.

No.	Revision	Date	Appvd.
1	RESPONSE TO COMMENTS UPDATE	8/06/2024	MJH
2	RESPONSE TO CITY COMMENTS	12/10/2024	MJH

Designed by | Checked by

Issued for | Date

April 1, 2024

Drawing Title

Boundary Plan of Land

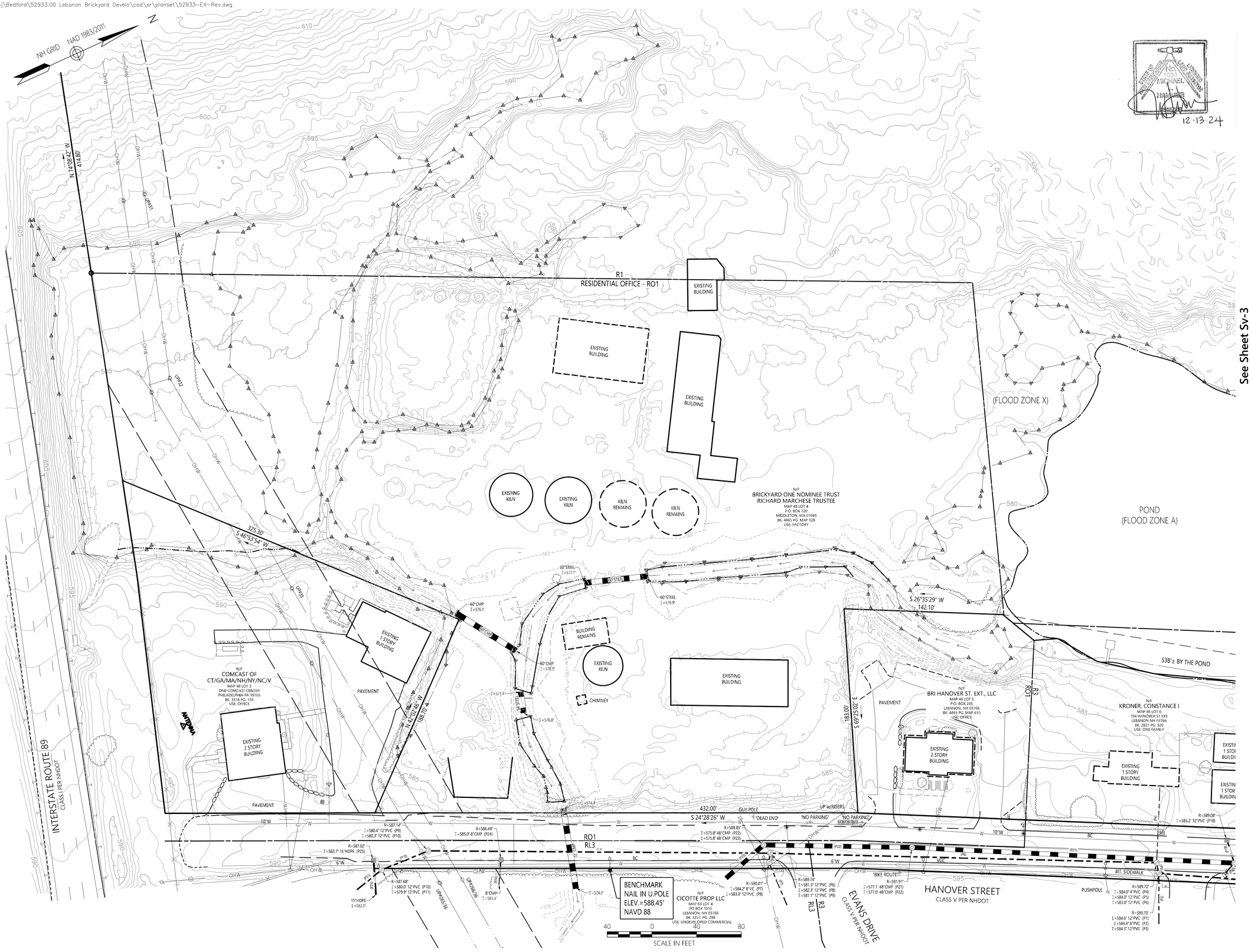
Drawing Number

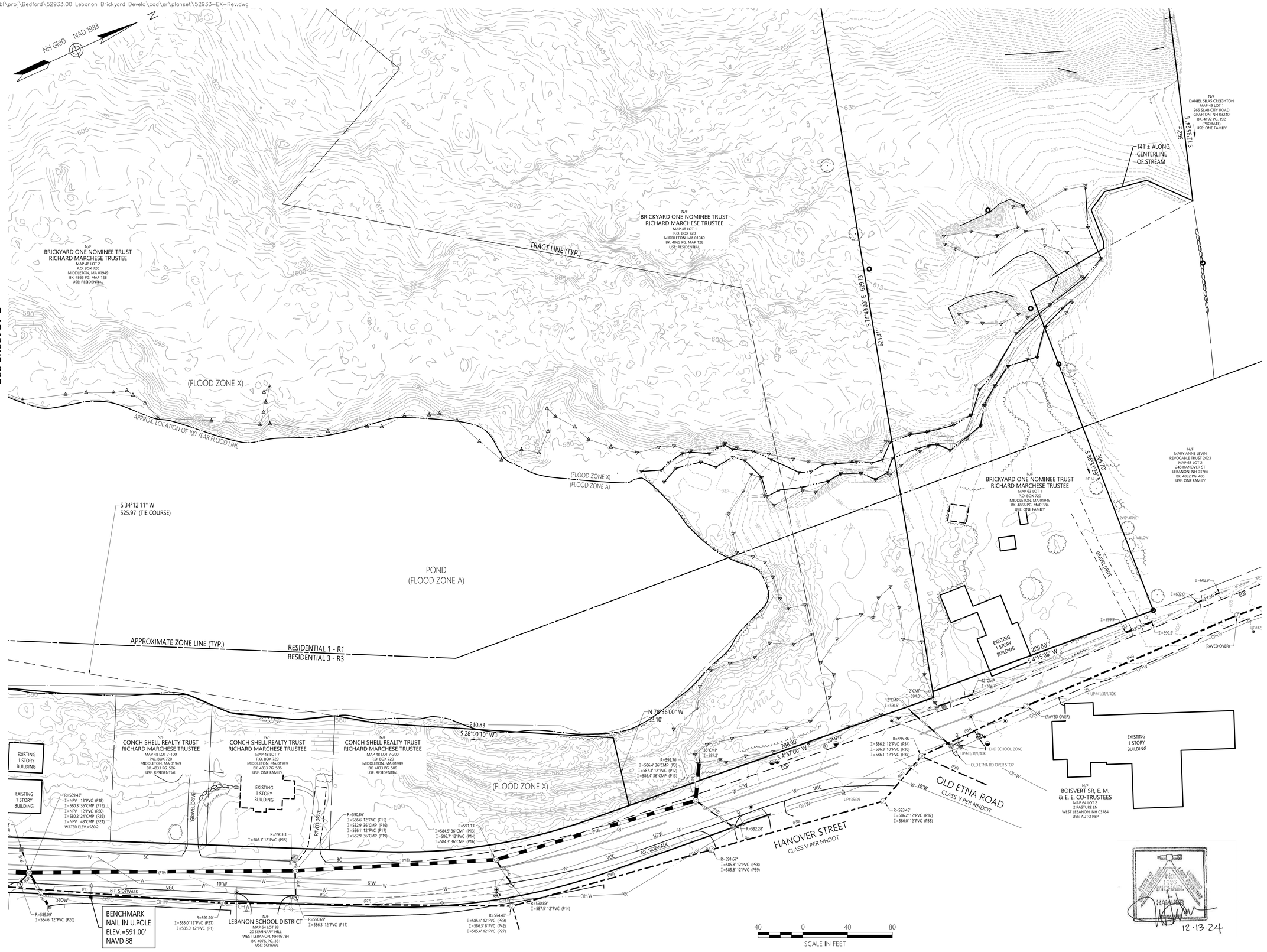
Sv-1

Sheet 40 of 50

Project Number

52933.00


NH GRID
NAD 1983/2011
N
R1
RESIDENTIAL OFFICE - RO1
EXISTING BUILDING
EXISTING BUILDING
EXISTING BUILDING
EXISTING KILN
EXISTING KILN
KILN REMAINS
KILN REMAINS
N/F
BRICKYARD ONE NOMINEE TRUST
RICHARD MARCHESE TRUSTEE
MAP 48 LOT 4
P.O. BOX 720
MIDDLETON, MA 01949
BK. 4865 PG. MAP 328
USE: FACTORY
(FLOOD ZONE X)
POND
(FLOOD ZONE A)
See Sheet Sv-3
N 74°08'42" W
414.80'
S 46°53'54" W
325.30'
N 42°02'46" W
188.70'
S 24°28'26" W
432.00'
S 69°25'02" E
183.00'
S 26°35'29" W
142.10'
538'± BY THE POND
60"STEEL
I=577.7'
60"STEEL
I=576.9'
60"CMP
I=576.1'
60"CMP
I=576.5'
I=577.4'
I=576.8'
I=574.4'
I=574.2'
BUILDING REMAINS
EXISTING 1 STORY BUILDING
EXISTING 2 STORY BUILDING
CHIMNEY
PAVEMENT
N/F
COMCAST OF
CT/GA/MA/NH/NY/NC/V
MAP 48 LOT 3
ONE COMCAST CENTER
PHILADELPHIA PA 19103
BK. 3318 PG. 133
USE: OFFICE
ANTENNA
INTERSTATE ROUTE 89
CLASS I PER NHDOT
N/F
BRI HANOVER ST. EXT., LLC
MAP 48 LOT 5
P.O. BOX 245
LEBANON, NH 03766
BK. 4893 PG. MAP 610
USE: OFFICE
N/F
KRONER, CONSTANCE I
MAP 48 LOT 6
194 HANOVER ST EXT
LEBANON NH 03766
BK. 2821 PG. 920
USE: ONE FAMILY
EXISTING 2 STORY BUILDING
EXISTING 1 STORY BUILDING
R3
LOT1
RO1
RL3
R3
RL3
GUY POLE
'DEAD END'
'NO PARKING'
'NO PARKING'
UP w/RISERS
'BIKE ROUTE'
BENCHMARK
NAIL IN U.POLE
ELEV.=588.45'
NAVD 88
N/F
CICOTTE PROP LLC
MAP 63 LOT 4
PO BOX 1010
LEBANON, NH 03766
BK. 3251/, PG. 298
USE: UNDEVELOPED COMMERCIAL
HANOVER STREET
CLASS V PER NHDOT
EVANS DRIVE
CLASS V PER NHDOT
BIT. SIDEWALK
PUSHPOLE
15"HDPE
I=582.0'
8"CMP
I=583.4'
UP#26596
UP#26595
UP#25
UP#31
UP#32
UP#33
UP#34
UP#35
UP#36
UP#37
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UP#68
UP#69
UP#70



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Legend

- DRAIN MANHOLE
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- ELECTRIC MANHOLE
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The Brickyard

Hanover Street
Lebanon, Grafton County, N.H.

No.	Revision	Date	Appvd.
1	RESPONSE TO COMMENTS UPDATE	8/06/2024	MJH
2	RESPONSE TO CITY COMMENTS	12/10/2024	MJH

Designed by | Checked by

Issued for | Date

April 1, 2024

Drawing Title

Existing Conditions Plan of Land

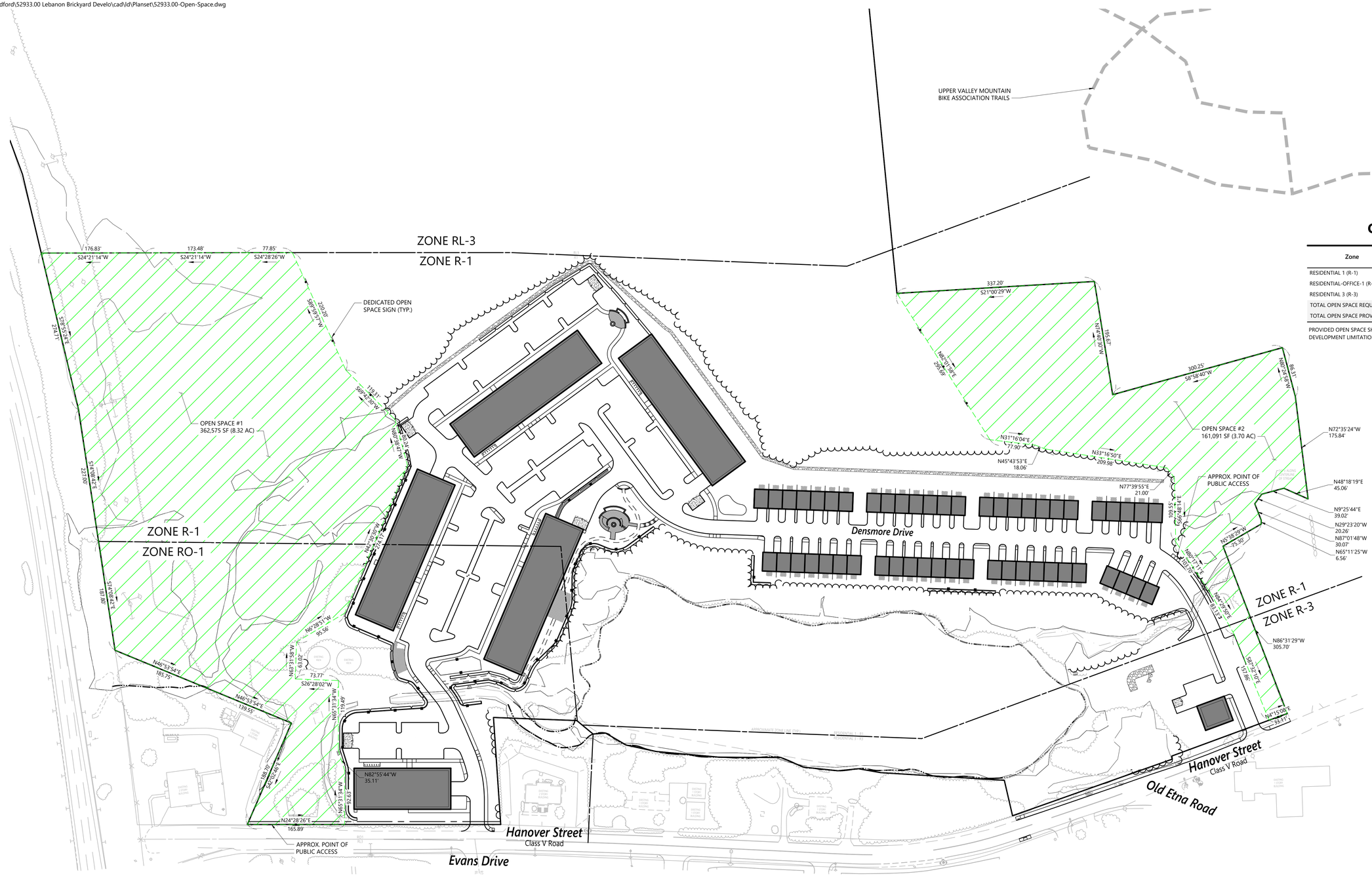
Drawing Number

Sv-3

Sheet 42 of 50

Project Number

52933.00



Notes

1. OPEN SPACE USES MAY INCLUDE TRAILS, RECREATION (BOTH ACTIVE AND PASSIVE), AND FUTURE UNDERGROUND UTILITY BUILDOUT. STREETS, PARKING AREAS, RESIDENTIAL AND NON-RESIDENTIAL STRUCTURES ARE NOT PERMITTED IN THE OPEN SPACE.
2. UNDER A CONDOMINIUM FORM OF OWNERSHIP, THE CONTROL AND MAINTENANCE OF THE OPEN SPACE WILL BE HELD BY AN OWNER'S ASSOCIATION ESTABLISHED BY THE APPLICANT FOR THE BENEFIT AND ENJOYMENT OF THE RESIDENTS AND/OR USERS OF THE DEVELOPMENT.
3. THE PROTECTION OF THE OPEN SPACE WILL BE ASSURED BY THE PLANNING BOARD'S CONDITIONS OF APPROVAL FOR THE DEVELOPMENT SO THAT THE SPACE REMAINS UNDEVELOPED AND ANY ENVIRONMENTALLY SENSITIVE CONDITIONS ARE PROTECTED AND PRESERVED. ADDITIONALLY, VESTING THE MANAGEMENT AND CONTROL OF THE OPEN SPACE IN AN OWNERS' ASSOCIATION WILL ASSURE THAT IT IS MAINTAINED AS INTENDED.
4. METES AND BOUND FOR OPEN SPACE ARE PROVIDED ON THIS PLAN AND WOODEN DEDICATED OPEN SPACE SIGNS ARE TO BE LOCATED AT THE ACCESS POINTS TO THESE AREAS.
5. THE PLAN WILL BE RECORDED PRIOR TO THE ISSUANCE OF ANY CERTIFICATE OF OCCUPANCY.
6. THE DEDICATED OPEN SPACE IS AVAILABLE AND OPEN TO THE PUBLIC FOR USE.

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Open Space Calculations

Zone	Total Area (SF)	% Required	Open Space Required
RESIDENTIAL 1 (R-1)	1,252,605	30	375,782 SF (8.62 AC)
RESIDENTIAL-OFFICE-1 (R-O-1)	286,532	30	85,960 SF (1.97 AC)
RESIDENTIAL 3 (R-3)	123,849	50	61,925 SF (1.42 AC)
TOTAL OPEN SPACE REQUIRED			523,666 SF (12.02 AC)
TOTAL OPEN SPACE PROVIDED			523,666 SF (12.02 AC)

PROVIDED OPEN SPACE SHOULD MATCH OR SLIGHTLY EXCEED REQUIRED SO THAT IT IS NOT A FUTURE DEVELOPMENT LIMITATION.

0 40 80 160 Feet

The Brickyard Residential Development

174 Hanover Street Extension
Lebanon, New Hampshire 03766

No.	Revision	Date	Appvd.
1	Completeness Review Comments	07/02/24	DF
2	Response to Comments Update	08/06/24	DF
3	Revised Layout Resubmission	10/24/24	DF
4	Response to Comments Rev 2	12/04/24	DF
5	Response to City Comments	12/11/24	DF

Designed by TMD | Checked by MJV

Issued for: Permitting

Date: May 10, 2024

Not Approved for Construction

Drawing Title: Open Space Plan

Drawing Number: C1.2

Sheet 3 of 50

Project Number: 52933.00

STATE OF NEW HAMPSHIRE – DAVID H. FENSTERMACHER No. 13382 LICENSED PROFESSIONAL ENGINEER

Saved Thursday, December 12, 2024 4:24:13 PM DBOSWORTH Plotted Monday, February 3, 2025 3:11:00 PM Derek Bosworth

Erosion Control

1. PRIOR TO STARTING ANY OTHER WORK ON THE SITE, THE CONTRACTOR SHALL NOTIFY APPROPRIATE AGENCIES AND SHALL INSTALL EROSION CONTROL MEASURES AS SHOWN ON THE PLANS AND AS IDENTIFIED IN FEDERAL, STATE, AND LOCAL APPROVAL DOCUMENTS PERTAINING TO THIS PROJECT.
2. CONTRACTOR SHALL INSPECT AND MAINTAIN EROSION CONTROL MEASURES, AND REMOVE SEDIMENT THEREFROM ON A WEEKLY BASIS AND WITHIN TWELVE HOURS AFTER EACH STORM EVENT (0.5" OF RAINFALL OR GREATER) AND DISPOSE OF SEDIMENTS IN AN UPLAND AREA SUCH THAT THEY DO NOT ENCUMBER OTHER DRAINAGE STRUCTURES AND PROTECTED AREAS.
3. CONTRACTOR SHALL BE FULLY RESPONSIBLE TO CONTROL CONSTRUCTION SUCH THAT SEDIMENTATION SHALL NOT AFFECT REGULATORY PROTECTED AREAS, WHETHER SUCH SEDIMENTATION IS CAUSED BY WATER, WIND, OR DIRECT DEPOSIT.
4. CONTRACTOR SHALL PERFORM CONSTRUCTION SEQUENCING SUCH THAT EARTH MATERIALS ARE EXPOSED FOR A MINIMUM OF TIME BEFORE THEY ARE COVERED, SEEDED, OR OTHERWISE STABILIZED TO PREVENT EROSION.
5. UPON COMPLETION OF CONSTRUCTION AND ESTABLISHMENT OF PERMANENT GROUND COVER, CONTRACTOR SHALL REMOVE AND DISPOSE OF EROSION CONTROL MEASURES AND CLEAN SEDIMENT AND DEBRIS FROM ENTIRE DRAINAGE AND SEWER SYSTEMS.
6. AREAS REMAINING UNSTABILIZED FOR A PERIOD OF MORE THAN 30 DAYS SHALL BE TEMPORARILY SEEDED AND MULCHED. STRAW MULCH SHALL BE APPLIED AT A MINIMUM RATE OF 1-1/2 TONS/ACRE.
7. PERMANENT SEEDING SHALL OCCUR BETWEEN APRIL 1 AND JUNE 1, AND/OR BETWEEN AUGUST 15 AND OCTOBER 15. ALL SEEDING FROM SEPTEMBER 15 SHALL BE STRAW MULCHED.
8. DUST SHALL BE CONTROLLED THROUGH THE USE OF WATER.
9. SOILS TO BE STOCKPILED FOR A PERIOD OF MORE THAN 30 DAYS SHALL BE TEMPORARILY SEEDED AND MULCHED. CONTRACTOR SHALL INSTALL SILT FENCING ALONG DOWNHILL SIDE OF STOCKPILES.
10. CONTRACTOR SHALL PROVIDE TEMPORARY SEDIMENTATION BASINS TO CONTROL SEDIMENTATION AND STORMWATER RUNOFF DURING THE CONSTRUCTION PERIOD. THE CONTRACTOR SHALL SUBMIT PROPOSED BASIN LOCATIONS, DESIGNS, ETC. TO THE ENGINEER FOR REVIEW PRIOR TO CONSTRUCTION. TEMPORARY SEDIMENTATION BASINS SHALL MEET NHDES REQUIREMENTS.
11. CONTRACTOR SHALL PROVIDE NECESSARY EROSION CONTROL MEASURES TO INSURE THAT SURFACE WATER RUN-OFF FROM UNSTABILIZED AREAS DOES NOT CARRY SILT, SEDIMENT, AND OTHER DEBRIS OUTSIDE OF THE LIMITS OF WORK.
12. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
    A. BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
    B. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
    C. A MINIMUM OF 3-IN OF NON-EROSIVE MATERIAL, SUCH AS STONE OR RIPRAP, HAS BEEN INSTALLED;
    D. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
13. THE SMALLEST PRACTICAL AREA SHALL BE DISTURBED DURING CONSTRUCTION, BUT AT NO TIME SHALL THE TOTAL UNSTABILIZED DISTURBED AREA ON-SITE BE GREATER THAN (5) FIVE ACRES. [NHDES ALLOWS FOR MORE THAN 5 AC ON CERTAIN SITES IF CERTAIN PROVISIONS ARE PROVIDED]
14. ALL DITCHES, SWALES, AND DRAINAGE BASINS SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
15. ALL ROADWAYS AND PARKING LOTS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
16. ALL CUT AND FILL SLOPES SHALL BE LOAMED AND SEEDED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
17. ALL PERMANENT AND TEMPORARY SEEDING SHALL BE AS FOLLOWS (UNLESS OTHERWISE NOTED):

PERMANENT SEEDING	PROPORTION	GERMINATION MINIMUM	PURITY MINIMUM
LAWNS:			
CREEPING RED FESCUE	50%	85%	95%
KENTUCKY BLUEGRASS	40%	85%	90%
MANHATTAN PERENNIAL RYE	10%	90%	95%

TEMPORARY SEEDING*	% WEIGHT	GERMINATION MINIMUM
WINTER RYE	80% MIN.	85%
RED FESCUE (CREEPING)	4% MIN.	80%
PERENNIAL RYE GRASS	3% MIN.	90%
RED CLOVER	3% MIN.	90%
OTHER CROP GRASS	0.5% MAX.	
NOXIOUS WEED SEED	0.5% MAX.	
INERT MATTER	1.0% MAX.	

* TEMPORARY SEED FOR LAWNS SHALL ONLY BE PLANTED WHEN PERMANENT GRASSES CANNOT BE PLANTED DUE TO THE GROWING SEASON.

18. NO-MOW PLANTING MIX (FOR AREAS INDICATED ON LANDSCAPE PLAN)

    THE NO-MOW PLANTING MIX" SHALL BE THE "NEW ENGLAND CONSERVATION WILDLIFE MIX' AS MANUFACTURED BY NEW ENGLAND WETLAND PLANTS, INC.

19. DETENTION BASIN PLANTING MIX (FOR BOTTOM OF DETENTION BASIN)

    THE DETENTION BASIN PLANTING MIX SHALL BE THE "NEW ENGLAND EROSION-CONTROL / RESTORATION MIX (FOR DETENTION BASINS AND MOIST SITES) AS MANUFACTURED BY NEW ENGLAND WETLAND PLANTS, INC., AMHERST, MA. (413) 256-1752

20. EROSION CONTROL BLANKETS SHALL BE INSTALLED ON ALL SLOPES THAT ARE STEEPER THAN 3-FT HORIZONTAL AND 1-FT VERTICAL (3:1). EROSION CONTROL BLANKETS SHALL BE NORTH AMERICAN GREEN SC150BN, OR APPROVED EQUAL.
21. THE PROJECT SHALL BE MANAGED IN A MANNER THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES.

C-5.2

C-5.1

C-5.3

Densmore Drive

Hanover Street
Class V Road

Evans Drive

Old Etna Road

0 30 60 120Feet

vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

The Brickyard Residential Development

174 Hanover Street Extension
Lebanon, New Hampshire 03766

No.	Revision	Date	Appvd.
1	Response to Comments Update	08/06/24	DF
2	Revised Layout Resubmission	10/24/24	DF
3	Response to Comments Rev 2	12/04/24	DF
4	Response to City Comments	12/11/24	DF

Designed by: TMD
Checked by: MJV
Issued for: Permitting
Date: May 10, 2024

Not Approved for Construction

Drawing Title: Overall Erosion Control Plan

Drawing Number: C5.0

Sheet 19 of 50

Project Number: 52933.00

STATE OF NEW HAMPSHIRE · DAVID M. FENSTERMACHER No. 13032 LICENSED PROFESSIONAL ENGINEER

Saved Wednesday, March 5, 2025 11:29:59 AM DBOSWORTH Plotted Friday, March 7, 2025 8:34:42 AM Derek Bosworth

\\vhb.com\gbl\proj\Bedford\52933.00 Lebanon Brickyard Develo\cad\ld\Planset\52933.00-ER.dwg



vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 15 30 60 Feet

The Brickyard Residential Development

174 Hanover Street Extension
Lebanon, New Hampshire 03766

No.	Revision	Date	Appvd.
1	Response to Comments Update	08/06/24	DF
2	Revised Layout Resubmission	10/24/24	DF
3	Response to Comments Rev 2	12/04/24	DF
4	Response to City Comments	12/11/24	DF

Designed by TMD
Checked by MJV
Issued for
Permitting
Date
May 10, 2024

Not Approved for Construction

Drawing Title
Erosion Control Plan 1

Drawing Number
C5.1

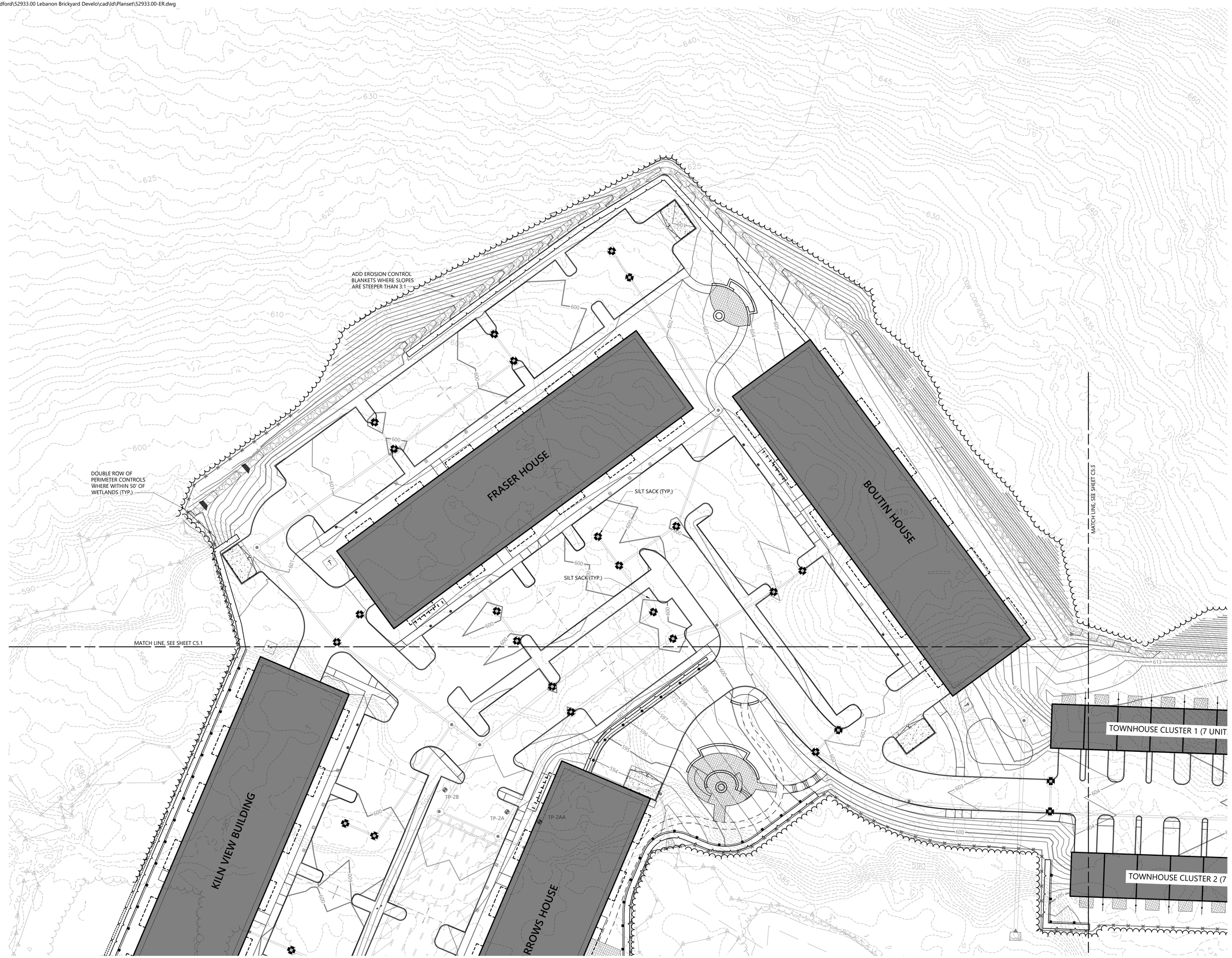
Sheet 20 of 50

Project Number
52933.00

DAVID H. FEINSTEIN-MACHER No. 13382 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

Saved Wednesday, March 5, 2025 11:29:59 AM DBOSWORTH Plotted Friday, March 7, 2025 8:35:12 AM Derek Bosworth

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0 15 30 60 Feet

The Brickyard Residential Development

174 Hanover Street Extension
Lebanon, New Hampshire 03766

No.	Revision	Date	Appvd.
1	Response to Comments Update	08/06/24	DF
2	Revised Layout Resubmission	10/24/24	DF
3	Response to Comments Rev 2	12/04/24	DF
4	Response to City Comments	12/11/24	DF

Designed by: TMD
Checked by: MJV
Issued for: Permitting
Date: May 10, 2024

Not Approved for Construction

Drawing Title
Erosion Control Plan 2

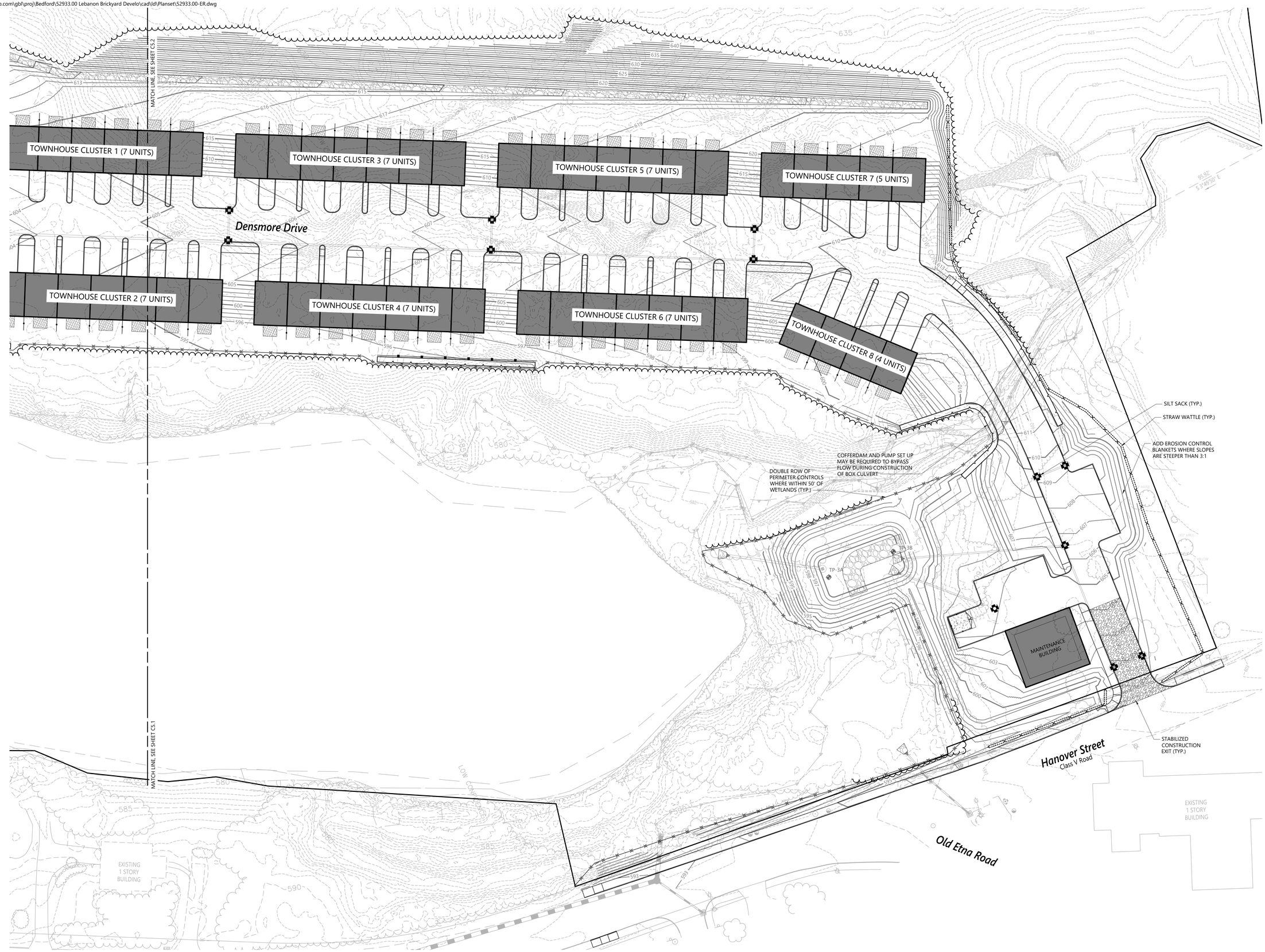
Drawing Number
C5.2

Sheet 21 of 50

Project Number
52933.00

DAVID N. FENSTERMACHER No. 13082 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

Saved Monday, March 3, 2025 2:54:09 PM DBOSWORTH Plotted Wednesday, March 5, 2025 10:24:53 AM Derek Bosworth



vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 15 30 60 Feet

The Brickyard Residential Development

174 Hanover Street Extension
Lebanon, New Hampshire 03766

No.	Revision	Date	Appvd.
1	Response to Comments Update	08/06/24	DF
2	Revised Layout Resubmission	10/24/24	DF
3	Response to Comments Rev 2	12/04/24	DF
4	Response to City Comments	12/11/24	DF
5	Conditions of Approval	02/06/2025	DF

Designed by: TMD
Checked by: MJV
Issued for: Permitting
Date: May 10, 2024

Not Approved for Construction

Drawing Title
Erosion Control Plan 3

Drawing Number
C5.3

Sheet 22 of 50

Project Number
52933.00

DAVID M. FENSTERMACHER No. 13032 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

Saved Monday, March 3, 2025 2:54:09 PM DBOSWORTH Plotted Wednesday, March 5, 2025 10:25:26 AM Derek Bosworth

Appendix F: Abutter Information

Brickyard Development Abutting Properties - Lebanon, NH



Legend

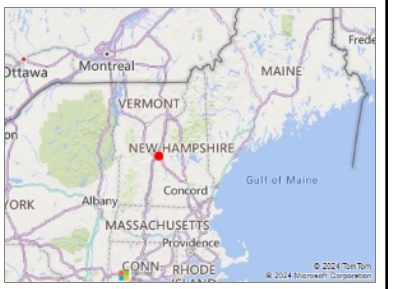
- Parcels
- State
- County
- City/Town
- Parcel Owned by Applicant

Map Scale
1: 5,926

© NH GRANIT, www.granit.unh.edu

Map Generated: 11/21/2024

Notes



Brickyard Development - Lebanon NH
Abutters List

Count	Tax Map	Lot	Owner Name	Owner Mailing Address, Part 1	Owner Mailing Address, Part 2
1	48	3	Comcast of CT/GA/MA/NH/NY/NC/V	One Comcast Center	Philadelphia, PA 19103
2	48	5	Bri Hanover St Ext LLC (Loney, David & Georgia)	PO Box 245	Lebanon, NH 03766
3	48	6	Kroner, Constance I	194 Hanover St Ext	Lebanon, NH 03766
4	63	2	Levin Mary Annettee TTEE	248 Hanover St Ext	Lebanon, NH 03767
5	76	1	Dartmouth College Trustees	PO Box 5188	Hanover, NH 03755
6	49	1	Creighton, Daniel Silas	266 Slab City Road	Grafton, NH 03240
Applicant - No Notification Needed	48	7	Brickyard Two LLC (Marchese Richard TTEE)	PO Box 720	Middleton, MA 01949
		7-100			
		7-200			
Applicant - No Notification Needed	48	4	Marchese Richard TTEE	PO Box 720	Middleton, MA 01949
		1			
		2			
Applicant - No Notification Needed	63	1	Marchese Richard TTEE	PO Box 720	Middleton, MA 01949

Data accessed from the Derry Parcel Selection App on March 28, 2023.

April 29, 2025

Ref: 52933.00

Re: NHDES Standard Dredge and Fill Wetlands Permit Application
Brickyard Development - Lebanon, New Hampshire

Dear Property Owner:

On behalf of Brickyard One Nominee Trust ("the Applicant"), VHB has prepared a NH Department of Environmental Services' (NHDES) Standard Dredge and Fill Wetlands Permit Application for the construction of a new multi-family planned unit residential development ("the Project") with associated parking, stormwater management, utilities, landscaping, and pedestrian/vehicular access within the former Densmore Brickyard site located at 174 Hanover Street Extension and 238 Hanover Street (Map 48 Lots 1, 2, & 4 and Map 63 Lot 1) in Lebanon, New Hampshire. Refer to the attached USGS Site Location Map.

The proposed development will be confined to approximately 13.5 acres of the total site acreage (133.5 acres) near Hanover Street and will include five four-story residential apartment buildings over vehicular parking, and 51 townhomes arranged in six groupings. An additional building is proposed at the northeast corner of the site, which is anticipated to contain the development's leasing office and maintenance shop, while one residential unit for the on-site property manager is also proposed at the southern end of the site. The proposed buildings associated with project development are arranged south, west and north of the existing waterbody on the property, Densmore Pond. Additionally, the proposed project has been carefully designed to avoid and minimize wetland and stream impacts in accordance with NHDES Wetland Rules on the developable portion of the property. Erosion and sediment control measures, such as silt fence or silt sock, will be installed around the limits of disturbance prior to the start of construction in order to reduce soil erosion and to minimize the risk of sediment laden stormwater run-off to surrounding areas. All disturbed soils will be properly stabilized upon completion of the proposed work.

In accordance with the procedure for submitting a Standard Dredge and Fill Wetlands Permit Application to NHDES, you are receiving this notification in accordance with RSA 482-A:3(I)(e)(1) for the proposed project because your property abuts the project parcels or otherwise meets the definition of an "abutting property" specified in Env-Wt 102.04. A copy of the submitted wetlands permit application will be on file at the City of Lebanon Clerk's Office for public review by early May. Please do not hesitate to contact me if you have questions at (603) 391-3944 or kwilkes@vhb.com.

Sincerely,

Kristopher Wilkes, CWS, CPESC
VHB Natural Sciences Team Leader

Attachment: USGS Site Location Map

cc: Brickyard One Nominee Trust c/o Richard Marchese
NHDES Wetlands Bureau

www.vhb.com

Engineers | Scientists | Planners | Designers

2 Bedford Farms Drive
Suite 200
Bedford, New Hampshire 03110
P 603.391.3900
F 603.518.7495

Appendix G: Mitigation Documentation

From:	Kristopher Wilkes
To:	Mary Ann Tilton (mary.a.tilton@des.nh.gov); emmanuel. uwizeye (emmanuel.uwizeye@des.nh.gov)
Cc:	Tom D"Aguiar
Subject:	NHDES Pre-Application Meeting Notes - Brickyard Development Project, Lebanon NH (PA25-00083 [Filed 17 Apr 2025 12:14]
Date:	Thursday, April 17, 2025 12:13:55 PM
Attachments:	image001.png image002.png image003.png image004.png image005.png

Good Afternoon,

Thanks again for your time this morning, 4/17, to discuss the Brickyard Development Project in Lebanon, NH. I appreciate the questions and conversation regarding the project. Brief compiled notes from the meeting are below and I would kindly request your review and comment if there's anything significant that I've missed.

4/17/2025 NHDES Pre-Application Meeting Notes – Brickyard Development Project, Lebanon NH (PA25-00083)
Attendance:

NHDES:
Mary Ann Tilton – Wetlands Assistant Bureau Administrator
Emmanuel Uwizeye – Wetlands Bureau Regional Permit Reviewer
Amy Clark – Alteration of Terrain (attended briefly but departed around 10:40 due to no anticipated AOT questions)
VHB: Kris Wilkes (Natural Sciences Team Leader – Bedford, NH), Tom D'Aguiar (Project Civil Engineer)

Key Takeaways/Comments Provided:

- Kris asked about NHDES PRAs and whether or not on-site wetlands (Wetlands W-2 and W-3) bordering Densmore Pond and an unnamed perennial stream should be assumed as PRAs. Mary Ann provided clarification and some links through the meeting chat. VHB confirmed based on information provided, observations in the field, and the Tier class of the on-site stream that they will be treated as PRAs.

- Kris discussed proposed compensatory mitigation via in-lieu fee payment to the ARM Fund. Mary Ann expressed that there has been some changes in process of confirming mitigation and the ARM Fund payment. The NHDES Approval Letter no longer includes a confirmed dollar amount, but that will come afterwards with payment required just before construction. This process change accounts for ever so changing costs related to construction, land values, etc. that the calculator is based on.

- Mary Ann highlighted a few new forms (in the meeting chat) including the Wetland Impact Tracking Form, Wetland Functional Assessments and related FAQs.

- Kris asked whether the stream and wetland restoration components of the project would be taken into consideration as a credit against the final mitigation payment. Mary Ann indicated that this has been successfully achieved on other recent projects (Cemetery Brook), but every project is different so she could not definitely provide an answer at this time. Mary Ann suggested highlighting the restoration components in the mitigation section of the Application Narrative and pitching the credit based on impacts vs. calculation of restored areas.

- Mary Ann suggested reaching out to the Corps (Stephanie Morrison) with copy to Emily Nichols, Emmanual, Mary Ann and Amanda Barker Jobin to introduce project, mitigation and restoration components ahead of NHDES Permit Application Submittal since the Corps was not able to make this pre-application meeting call. Kris indicated intent to do so.

- Emmanuel asked about local review (Lebanon Con Comm) and Kris responded that the project has been reviewed by the Lebanon Conservation Commission as part of local Site Plan Approval which was issued on December 17, 2024. As part of their review, they issued a comment letter to which the Project Applicant and VHB has responded to as part of the local process.

Thank you,

Kristopher Wilkes, CWS, CPESC
Natural Sciences and Energy Team Leader

P 603.391.3944
www.vhb.com

2 Bedford Farms Drive
Suite 200
Bedford NH 03110-6532

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Vanasse Hangen Brustlin, Inc. | info@vhb.com

Aquatic Resource Mitigation (ARM) Fund In-Lieu Fee Payment Calculator

Submission HQC-1PE8-AATP8 **Revision** 1 **Form Version** 2.0

Review

This step allows you to review the form to confirm the form is populated completely and accurately, prior to certification and submission.

Please note: Any work you perform filling out a form will not be accessible by the State of New Hampshire staff. In order to complete the submission of the form, you will need to click the 'Certify & Submit' button at the bottom of the page. At the time of submission, it will be securely transmitted to the State of New Hampshire agency that manages the form.

GENERAL INFORMATION

Does this project include impacts?

Both Wetland and Stream Impacts

Purpose of calculator:

This is just for planning purposes

NHDES File Number

None Specified

Army Corps of Engineers File Number (enter N/A or unknown if needed)

None Specified

Do you want to show instructions from the landing page?

NO

WETLAND CALCULATOR

1
Lebanon

Show Calculations?

No

Square feet of Impact: Enter square feet of permanent jurisdictional wetlands and eligible priority resource area impacts that will occur as a result of project.

405

Resource Type

All Other Jurisdictional Areas

Town Select

Lebanon

ESTIMATED ARM Payment for this Wetlands Entry

2,673.74

Use the buttons below if you need to add another Wetland Calculator. This will not overwrite what you've entered above.

STREAM CALCULATOR

Perennial streams: channels and bank impacts are calculated individually and the ILF payment is based on the sum of impacts.
Intermittent Streams: a single channel measurement is used to calculate ILF payment
Rule Reference: Env-Wt 407.03(c)

Perennial streams, enter linear feet of impact to both banks and channel.
Rule Reference: Env-Wt 407.03(c)

RIGHT BANK Perennial Stream Impact in linear feet.

132.00

LEFT BANK Perennial Stream Impact in linear feet.

132.00

CHANNEL Perennial Stream Impact in linear feet.

132.00

Intermittent or other non-perennial streams, enter linear feet of impacts as a single measurement.
Rule Reference: Env-Wt 407.03(c)

CHANNEL Intermittent Stream Impact in linear feet.

0.00

Total Linear Feet of Impact
396

Stream Impact Cost
121,215.60

RSA 482-A:31: An administrative assessment fee of 20% of the total cost is added as part of the calculation method.

NHDES Administrative Cost (Stream Impact Cost * 0.2)
24,243.12

ESTIMATED ARM Payment for this Stream Impact
145,458.72

ESTIMATED PAYMENT

Estimated Total Payment for Wetlands
2,673.74

Estimated Total Payment for Streams
145,458.72

TOTAL ESTIMATED PAYMENT
148,132.46

Disclaimer: The ARM Fund In-Lieu Fee (ILF) Payment Calculator is provided as a tool to estimate the ILF compensatory mitigation payment amount required to offset project specific impacts triggering mitigation based on state law. NHDES calculates the required NH ILF payment based on the total resource impact amounts in combination with construction costs, land values, and interest rates. When a NH wetlands permit is approved and issued, the permittee is provided instructions for satisfying mitigation requirements.

ADJUSTED AS PROPOSED IN TABLE 5 OF APPLICATION NARRATIVE (REFER TO PAGE 18).

Aquatic Resource Mitigation (ARM) Fund In-Lieu Fee Payment Calculator

Submission HQC-1PM8-APWH5 **Revision** 1 **Form Version** 2.0

Review

This step allows you to review the form to confirm the form is populated completely and accurately, prior to certification and submission.

Please note: Any work you perform filling out a form will not be accessible by the State of New Hampshire staff. In order to complete the submission of the form, you will need to click the 'Certify & Submit' button at the bottom of the page. At the time of submission, it will be securely transmitted to the State of New Hampshire agency that manages the form.

GENERAL INFORMATION

Does this project include impacts?

Both Wetland and Stream Impacts

Purpose of calculator:

This is just for planning purposes

NHDES File Number

None Specified

Army Corps of Engineers File Number (enter N/A or unknown if needed)

None Specified

Do you want to show instructions from the landing page?

NO

WETLAND CALCULATOR

1
Lebanon

Show Calculations?

No

Square feet of Impact: Enter square feet of permanent jurisdictional wetlands and eligible priority resource area impacts that will occur as a result of project.

405

Resource Type

All Other Jurisdictional Areas

Town Select

Lebanon

ESTIMATED ARM Payment for this Wetlands Entry

2,673.74

Use the buttons below if you need to add another Wetland Calculator. This will not overwrite what you've entered above.

STREAM CALCULATOR

Perennial streams: channels and bank impacts are calculated individually and the ILF payment is based on the sum of impacts.
Intermittent Streams: a single channel measurement is used to calculate ILF payment
Rule Reference: Env-Wt 407.03(c)

Perennial streams, enter linear feet of impact to both banks and channel.
Rule Reference: Env-Wt 407.03(c)

RIGHT BANK Perennial Stream Impact in linear feet.

57.00

LEFT BANK Perennial Stream Impact in linear feet.

57.00

CHANNEL Perennial Stream Impact in linear feet.

57.00

Intermittent or other non-perennial streams, enter linear feet of impacts as a single measurement.
Rule Reference: Env-Wt 407.03(c)

CHANNEL Intermittent Stream Impact in linear feet.

0.00

Total Linear Feet of Impact
171

Stream Impact Cost
52,343.10

RSA 482-A:31: An administrative assessment fee of 20% of the total cost is added as part of the calculation method.

NHDES Administrative Cost (Stream Impact Cost * 0.2)
10,468.62

ESTIMATED ARM Payment for this Stream Impact
62,811.72

ESTIMATED PAYMENT

Estimated Total Payment for Wetlands
2,673.74

Estimated Total Payment for Streams
62,811.72

TOTAL ESTIMATED PAYMENT
65,485.46

Disclaimer: The ARM Fund In-Lieu Fee (ILF) Payment Calculator is provided as a tool to estimate the ILF compensatory mitigation payment amount required to offset project specific impacts triggering mitigation based on state law. NHDES calculates the required NH ILF payment based on the total resource impact amounts in combination with construction costs, land values, and interest rates. When a NH wetlands permit is approved and issued, the permittee is provided instructions for satisfying mitigation requirements.

Appendix H: NHNHB DataCheck Results and Consultation

NHB DataCheck Results Letter
NH Natural Heritage Bureau
Please note: maps and NHB record pages are **confidential** and shall be redacted from public documents.

To: Nicole Martin, VHB, Inc.
2 Bedford Farms Drive Suite 200
Bedford, NH 03110
nmartin@vhb.com

From: NHB Review
NH Natural Heritage Bureau
Main Contact: Maddie Severance - nhbreview@dncr.nh.gov

cc:

Date: 09/13/2024 (valid until 09/13/2025)
Re: DataCheck Review by NH Natural Heritage Bureau and NH Fish & Game
Permits: MUNICIPAL POR - Lebanon Site Plan Review, NHDES - Alteration of Terrain Permit, NHDES - Standard Dredge & Fill - Major, USACE - General Permit, USEPA - Stormwater Pollution Prevention

NHB ID: NHB24-2748

Town: Lebanon
Location: 174 Hanover Street Extension and 238 Hanover Street

Project Description: The applicant proposes to construct a new Brickyard Multi-Family Planned Unit Residential Development (PURD) located at 174 Hanover Street Extension and 238 Hanover Street (Map 48 Lots 1, 2, & 4 and Map 63 Lot 1). The proposed limit of work only comprises about 35 acres near Hanover St (not the entirety of the four combined parcels). This development would include ten four story apartment buildings (totaling about 473 units) and associated vehicular parking. Two stream crossings are expected for driveway access off Hanover Street and tree clearing would be required. Despite prior DataChecks for this project (such as NHB23-2953), no consultation with NHB has occurred to date.

Next Steps for Applicant:

NHB's database has been searched for records of rare species and exemplary natural communities. Please carefully read the comments and consultation requirements below.

NHB Comments: Please send NHB proposed plans and representative photos during the growing season of the proposed impact areas including any forested areas and wetlands proposed to be impacted.

NHFG Comments: No comments at this time.

NHB Consultation

If this NHB DataCheck letter includes records of rare plants and/or natural communities/systems, please contact NHB and provide any requested supplementary materials by emailing nhbreview@dncr.nh.gov.

If this NHB DataCheck letter DOES NOT include any records of rare plants and/or natural communities/systems, no further consultation with NHB is required.

NH Fish and Game Department Consultation

If this NHB DataCheck letter DOES NOT include ANY wildlife species records, then, based on the information submitted, no further consultation with the NH Fish and Game Department pursuant to Fis 1004 is required.

If this NHB DataCheck letter includes a record for a threatened (T) or endangered (E) wildlife species, consultation with the New Hampshire Fish and Game Department under Fis 1004 may be required. To review the Fis 1000 rules (effective February 3, 2022), please go to https://www.wildlife.nh.gov/wildlife-and-habitat/nongame-and-endangered-species/environmental-review. All requests for consultation and submittals should be sent via email to NHFGreview@wildlife.nh.gov or can be sent by mail, and **must include the NHB DataCheck results letter number and "Fis 1004 consultation request" in the subject line**.

If the NHB DataCheck response letter does not include a threatened or endangered wildlife species but includes other wildlife species (e.g., Species of Special Concern), consultation under Fis 1004 is not required; however, some species are protected under other state laws or rules, so coordination with NH Fish & Game is highly recommended or may be required for certain permits. While some permitting processes are exempt from required consultation under Fis 1004 (e.g., *statutory permit by notification, permit by rule, permit by notification, routine roadway registration, docking structure registration, or conditional authorization by rule*), coordination with NH Fish & Game may still be required under the rules governing those specific permitting processes, and it is recommended you contact the applicable permitting agency. For projects not requiring consultation under Fis 1004, but where additional coordination with NH Fish and Game is requested, please email NHFGreview@wildlife.nh.gov, and include the NHB DataCheck results letter number and "review request" in the email subject line.
Contact NH Fish & Game at (603) 271-0467 with questions.

NHB Database Records:
The following record(s) have been documented in the vicinity of the proposed project.
Please see the map and detailed information about the record(s) on the following pages.

Plant species	State[1]	Federal	Notes
Appalachian barren-strawberry (*Geum fragarioides*)*	T	--	Occurs in sandplains, disturbed openings, mesic forests, dry forests, and thin woods. Threats include development, logging activities, recreational activities, trail development, and exotic species invasions.
crested sedge (*Carex cristatella*)*	E	--	This wetland species, which occurs in bogs, fens, seeps, and wet meadows, would be threatened by changes to local hydrology, including increased nutrient input from stormwater runoff, and sedimentation from nearby disturbance.
eastern waterleaf (*Hydrophyllum virginianum*)	T	--	This plant's habitat is typically in forested, moist areas. Canopy removal could threaten the plants by allowing other, shade-intolerant species to become established. Trampling could also damage the relatively fragile soils.
Virginia stickseed (*Hackelia virginiana*)	T	--	This species is found in moist or dry woods, including floodplain forests. Threats would primarily be major alterations to their habitat.

[1]Codes: "E" = Endangered, "T" = Threatened, "SC" = Special Concern, "--" = an exemplary natural community, or a rare species tracked by NH Natural Heritage that has not yet been added to the official state list.
An asterisk (*) indicates that the most recent report for that occurrence was 20 or more years ago.

Disclaimer: NHB's database can only tell you of known occurrences that have been reported to NHFG/NHB. Known occurrences are based on information gathered by qualified biologists or members of the public, reported to our offices, and verified by NHB/NHFG.
However, many areas have never been surveyed, or have only been surveyed for certain species.
NHB recommends surveys to determine what species/natural communities are present onsite.

From:	DNCR: NHB Review
To:	Nicole Martin
Cc:	Richard Whitehouse; Tom D"Aguiar; Dave Fenstermacher; Deana Hutcheson
Subject:	[External] RE: NHB24-2748 Consultation – Proposed Brickyard Development, Lebanon, NH
Date:	Monday, November 4, 2024 9:18:54 AM
Attachments:	image001.png image002.png image003.png image004.png image005.png

---

Hi Nicole,

Thank you for providing plans, representative photos, and a detailed description of the site for the proposed project.

Based on the photos, description, and aerials I have available, it appears that the majority of the site does not contain suitable habitat for any of the rare species listed on the DataCheck Letter as it is mostly coniferous and likely not rich.

There is a small area of potentially suitable habitat in the southwest portion of the project area that is primarily deciduous and could be rich based on historic information in our database.

Because the rare plants listed on the DataCheck Letter are either historic specimen records or over a half mile away, and there is not a strong likelihood that suitable habitat is present within the proposed project area, NHB does not recommend surveys.

NHB has no further concerns regarding NHB24-2748.

I do have one note separate from this review. During research while reviewing this project, a note was discovered that somewhere west of the project area was a state endangered plant that is considered historical and has not been seen in NH in over 100 years. Although it is unlikely this plant is still present, this area in general could be of interest to NHB. This property (Tax Map 48, Lot 1) appears to be owned by the same landowner for the proposed project. I wanted to check if to your knowledge the landowner was interested in natural resources and could be interested in NHB visiting the site at some point to assess it for rare plants. Note that this would not impact the proposed project at all and would only be to collect information. If you don't think the landowner would be interested then that is no problem at all, but if it seems they are agreeable to it we would be interested in being sent their contact information to get in touch and seek permission to access the property at some point.

Best,

Madeline (Maddie) Severance (*she/her/hers*)
Environmental Reviewer
New Hampshire Natural Heritage Bureau (NHB)

Division of Forests & Lands
N.H. Department of Natural & Cultural Resources
172 Pembroke Rd
Concord, NH 03301
(603)-271-2834 (note the new number)
nhbreview@dncr.nh.gov
nhdfl.dncr.nh.gov
NHB DataCheck Tool

From: Nicole Martin <nmartin@vhb.com>
Sent: Wednesday, October 30, 2024 4:00 PM
To: DNCR: NHB Review <nhbreview@dncr.nh.gov>
Cc: Richard Whitehouse <RWhitehouse@VHB.com>; Tom D'Aguiar <tdaguiar@vhb.com>; Dave Fenstermacher <DFenstermacher@VHB.com>; Deana Hutcheson <dhutcheson@vhb.com>
Subject: NHB24-2748 Consultation – Proposed Brickyard Development, Lebanon, NH

EXTERNAL: Do not open attachments or click on links unless you recognize and trust the sender.

To Whom This May Concern,

As requested in the NHB DataCheck Results Letter, please refer to the compiled attachments which include the NHB DataCheck Results Letter (NHB24-2748), a delineated natural resources figure, select project plan sheets, and representative site photos.

This site was delineated by Goddard Consulting, LLC in July 2023 but they did not collect site photos at that time. VHB performed a site visit on September 24, 2024, to obtain the requested site photos, gather wetlands data necessary for upcoming permitting, and spot check the delineation linework. Although this was a bit late in the year, this site visit still occurred within the growing season as defined by the US Army Corps of Engineers in their New Hampshire General Permit (May 1 – October 1); therefore, we hope that you will find these photos acceptable. The photos display the overall site conditions including the wetlands, streams, the pond, and upland forested areas to document the different habitat areas throughout the site.

As noted in the initial project description, the applicant proposes to construct a multi-family development within this former brickyard property. "The Site" consists of an approximate 40-acre area north, south, and west of the pond, within which the development is proposed, as depicted in the attached delineated natural resources figure and project plan sheets. You will also notice from the plans that there are various existing remnant buildings from this previous land use, along with scattered debris and brick remains throughout the property.

The proposed wetland impacts for this project will be minimal and likely limited to just two stream crossings for vehicular driveway access – one at the southern end of the property and another at the northern end of the property connecting to Hanover Street. Most of the proposed development will be confined to the forested land west of and abutting the pond. Typical upland vegetation observed within the forested portion of the Site includes wintergreen (*Gaultheria procumbens*), common witch hazel (*Hamamelis virginiana*), eastern hemlock (*Tsuga canadensis*), sugar maple (*Acer saccharum*), red oak (*Quercus rubra*), American beech (*Fagus grandifolia*), various species of goldenrod (*Solidago* sp.), eastern white pine (*Pinus strobus*), glossy buckthorn (*Frangula alnus*), and many scattered rocks and boulders. The forest contains mature trees (dominated by eastern hemlock) with a very sparse and in some areas absent understory.

None of the species listed on the NHB DataCheck Results Letter were observed during the September 2024 site

visit. Since wetland impacts will be kept to a minimum for this project and may be limited to stream crossings, adverse impacts to the crested sedge (if present) are not anticipated. Sufficient erosion control best management practices will be implemented during construction to protect the surrounding habitat areas.

Let us know if you have any additional questions about this project and please advise on any conservation recommendations you may have relative to the species listed on the NHB DataCheck Results Letter.
Thank you,

Nicole Martin, CWS
Environmental Scientist

P 603.391.3889
www.vhb.com

2 Bedford Farms Drive
Suite 200
Bedford NH 03110-6532

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Appendix I: USFWS IPaC Results

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104

In Reply Refer To: 01/23/2025 16:51:26 UTC
Project Code: 2025-0020421
Project Name: Brickyard Site Development

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

Updated 4/12/2023 - Please review this letter each time you request an Official Species List, we will continue to update it with additional information and links to websites may change.

About Official Species Lists

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Federal and non-Federal project proponents have responsibilities under the Act to consider effects on listed species.

The enclosed species list identifies threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested by returning to an existing project's page in IPaC.

Endangered Species Act Project Review

Please visit the "**New England Field Office Endangered Species Project Review and Consultation**" website for step-by-step instructions on how to consider effects on listed

species and prepare and submit a project review package if necessary:

https://www.fws.gov/office/new-england-ecological-services/endangered-species-project-review

NOTE Please do not use the **Consultation Package Builder** tool in IPaC except in specific situations following coordination with our office. Please follow the project review guidance on our website instead and reference your **Project Code** in all correspondence.

Northern Long-eared Bat - (**Updated 4/12/2023**) The Service published a final rule to reclassify the northern long-eared bat (NLEB) as endangered on November 30, 2022. The final rule went into effect on March 31, 2023. You may utilize the **Northern Long-eared Bat Rangewide Determination Key** available in IPaC. More information about this Determination Key and the Interim Consultation Framework are available on the northern long-eared bat species page:

https://www.fws.gov/species/northern-long-eared-bat-myotis-septentrionalis

For projects that previously utilized the 4(d) Determination Key, the change in the species' status may trigger the need to re-initiate consultation for any actions that are not completed and for which the Federal action agency retains discretion once the new listing determination becomes effective. If your project was not completed by March 31, 2023, and may result in incidental take of NLEB, please reach out to our office at newengland@fws.gov to see if reinitiation is necessary.

Additional Info About Section 7 of the Act
Under section 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to determine whether projects may affect threatened and endangered species and/or designated critical habitat. If a Federal agency, or its non-Federal representative, determines that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Federal agency also may need to consider proposed species and proposed critical habitat in the consultation. 50 CFR 402.14(c)(1) specifies the information required for consultation under the Act regardless of the format of the evaluation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

https://www.fws.gov/service/section-7-consultations

In addition to consultation requirements under Section 7(a)(2) of the ESA, please note that under sections 7(a)(1) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species. Please contact NEFO if you would like more information.

Candidate species that appear on the enclosed species list have no current protections under the ESA. The species' occurrence on an official species list does not convey a requirement to

consider impacts to this species as you would a proposed, threatened, or endangered species. The ESA does not provide for interagency consultations on candidate species under section 7, however, the Service recommends that all project proponents incorporate measures into projects to benefit candidate species and their habitats wherever possible.

Migratory Birds

In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see:

https://www.fws.gov/program/migratory-bird-permit

https://www.fws.gov/library/collections/bald-and-golden-eagle-management

Please feel free to contact us at **newengland@fws.gov** with your **Project Code** in the subject line if you need more information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat.

Attachment(s): Official Species List

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
(603) 223-2541

PROJECT SUMMARY

Project Code: 2025-0020421
Project Name: Brickyard Site Development
Project Type: Residential Construction
Project Description: The applicant proposes to construct a new Brickyard Multi-Family Planned Unit Residential Development (PURD) located at 174 Hanover Street Extension and 238 Hanover Street (Map 48 Lots 1, 2, & 4 and Map 63 Lot 1) in Lebanon, New Hampshire. The proposed limit of work only comprises about 35 acres near Hanover St (not the entirety of the four combined parcels). This development would include ten four story apartment buildings (totaling about 473 units) and associated vehicular parking. Two stream crossings are expected for driveway access off Hanover Street and tree clearing would be required.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@43.6536035,-72.2542955542096,14z



Counties: Grafton County, New Hampshire

ENDANGERED SPECIES ACT SPECIES

There is a total of 2 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Tricolored Bat *Perimyotis subflavus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/9743	Proposed Threatened

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

Agency: VHB, Inc.
Name: Nicole Martin
Address: 2 Bedford Farms Drive
Address Line 2: Suite 200
City: Bedford
State: NH
Zip: 03110
Email nmartin@vhb.com
Phone: 6033913900

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Army Corps of Engineers

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104

In Reply Refer To: 03/12/2025 20:01:55 UTC
Project code: 2025-0020421
Project Name: Brickyard Site Development

Federal Nexus: yes
Federal Action Agency (if applicable): Army Corps of Engineers

Subject: Technical assistance for 'Brickyard Site Development'

Dear Trent Delehanty:

This letter records your determination using the Information for Planning and Consultation (IPaC) system provided to the U.S. Fish and Wildlife Service (Service) on March 12, 2025, for 'Brickyard Site Development' (here forward, Project). This project has been assigned Project Code 2025-0020421 and all future correspondence should clearly reference this number. **Please carefully review this letter. Your Endangered Species Act (Act) requirements are not complete.**

Ensuring Accurate Determinations When Using IPaC

The Service developed the IPaC system and associated species' determination keys in accordance with the Endangered Species Act of 1973 (ESA; 87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) and based on a standing analysis. All information submitted by the Project proponent into IPaC must accurately represent the full scope and details of the Project. **Failure to accurately represent or implement the Project as detailed in IPaC or the Northern Long-eared Bat and Tricolored Bat Range-wide Determination Key (Dkey), invalidates this letter.**

Determination for the Northern Long-Eared Bat and Tricolored Bat

Based on your IPaC submission and a standing analysis completed by the Service, you determined the proposed Project will have the following effect determinations:

Species	Listing Status	Determination
Tricolored Bat (*Perimyotis subflavus*)	Proposed Endangered	May affect

Other Species and Critical Habitat that May be Present in the Action Area

The IPaC-assisted determination key for the northern long-eared bat and tricolored bat does not apply to the following ESA-protected species and/or critical habitat that also may occur in your Action area:

- Monarch Butterfly *Danaus plexippus* Proposed Threatened

You may coordinate with our Office to determine whether the Action may cause prohibited take of the species listed above.

Conclusion

Consultation with the Service is not complete. Further consultation or coordination with the Service is necessary for those species or designated critical habitats with a determination of "May Affect." A "May Affect" determination in this key indicates that the project, as entered, is not consistent with the questions in the key. Not all projects that reach a "May Affect" determination are anticipated to result in adverse impacts to listed species. These projects may result in a "No Effect", "May Affect, Not Likely to Adversely Affect", or "May Affect, Likely to Adversely Affect" determination depending on the details of the project. Please contact our New England Ecological Services Field Office to discuss methods to avoid or minimize potential adverse effects to those species or designated critical habitats.

Federal agencies must consult with U.S. Fish and Wildlife Service under section 7(a)(2) of the Endangered Species Act (ESA) when an action *may affect* a listed species. Tricolored bat is proposed for listing as endangered under the ESA, but not yet listed. For actions that may affect a proposed species, agencies cannot consult, but they can *confer* under the authority of section 7(a)(4) of the ESA. Such conferences can follow the procedures for a consultation and be adopted as such if and when the proposed species is listed. Should the tricolored bat be listed, agencies must review projects that are not yet complete, or projects with ongoing effects within the tricolored bat range that previously received a NE or NLAA determination from the key to confirm that the determination is still accurate. Projects that receive a may affect determination for tricolored bat through the key, should contact the appropriate Ecological Services Field Office if they want to conference on this species.

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

Brickyard Site Development

2. Description

The following description was provided for the project 'Brickyard Site Development':

> The applicant proposes to construct a new Brickyard Multi-Family Planned Unit Residential Development (PURD) located at 174 Hanover Street Extension and 238 Hanover Street (Map 48 Lots 1, 2, & 4 and Map 63 Lot 1) in Lebanon, New Hampshire. The proposed limit of work only comprises about 35 acres near Hanover St (not the entirety of the four combined parcels). This development would include ten four story apartment buildings (totaling about 473 units) and associated vehicular parking. Two stream crossings are expected for driveway access off Hanover Street and tree clearing would be required.

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@43.6536035,-72.2542955542096,14z



DETERMINATION KEY RESULT

Based on the answers provided, the proposed Action is consistent with a determination of “may affect” for a least one species covered by this determination key.

QUALIFICATION INTERVIEW

1. Does the proposed project include, or is it reasonably certain to cause, intentional take of listed bats or any other listed species?

   Note: Intentional take is defined as take that is the intended result of a project. Intentional take could refer to research, direct species management, surveys, and/or studies that include intentional handling/encountering, harassment, collection, or capturing of any individual of a federally listed threatened, endangered or proposed species?

   No

2. Is the action area wholly within Zone 2 of the year-round active area for northern long-eared bat and/or tricolored bat?

   Automatically answered
   No

3. Does the action area intersect Zone 1 of the year-round active area for northern long-eared bat and/or tricolored bat?

   Automatically answered
   No

4. Does any component of the action involve leasing, construction or operation of wind turbines? Answer 'yes' if the activities considered are conducted with the intention of gathering survey information to inform the leasing, construction, or operation of wind turbines.

   Note: For federal actions, answer ‘yes’ if the construction or operation of wind power facilities is either (1) part of the federal action or (2) would not occur but for a federal agency action (federal permit, funding, etc.).

   No

5. Is the proposed action authorized, permitted, licensed, funded, or being carried out by a Federal agency in whole or in part?

   Yes

6. Is the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), or Federal Transit Administration (FTA) funding or authorizing the proposed action, in whole or in part?

   No

7. Are you an employee of the federal action agency or have you been officially designated in writing by the agency as its designated non-federal representative for the purposes of Endangered Species Act Section 7 informal consultation per 50 CFR § 402.08?

   Note: This key may be used for federal actions and for non-federal actions to facilitate section 7 consultation and to help determine whether an incidental take permit may be needed, respectively. This question is for information purposes only.

   No

8. Is the lead federal action agency the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC)? Is the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC) funding or authorizing the proposed action, in whole or in part?

   No

9. Is the lead federal action agency the Federal Energy Regulatory Commission (FERC)?

   No

10. [Semantic] Is the action area located within 0.5 miles of a known bat hibernaculum?

    Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.

    Automatically answered
    No

11. Does the action area contain any winter roosts or caves (or associated sinkholes, fissures, or other karst features), mines, rocky outcroppings, or tunnels that could provide habitat for hibernating bats?

    No

12. Does the action area contain (1) talus or (2) anthropogenic or naturally formed rock shelters or crevices in rocky outcrops, rock faces or cliffs?

    No

13. Will the action cause effects to a bridge?

    Note: Covered bridges should be considered as bridges in this question.

    No

14. Will the action result in effects to a culvert or tunnel at any time of year?

    No

15. Are trees present within 1000 feet of the action area?

    Note: If there are trees within the action area that are of a sufficient size to be potential roosts for bats answer "Yes". If unsure, additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    Yes

16. Does the action include the intentional exclusion of bats from a building or structure?

    Note: Exclusion is conducted to deny bats' entry or reentry into a building. To be effective and to avoid harming bats, it should be done according to established standards. If your action includes bat exclusion and you are unsure whether northern long-eared bats or tricolored bats are present, answer "Yes." Answer "No" if there are no signs of bat use in the building/structure. If unsure, contact your local Ecological Services Field Office to help assess whether northern long-eared bats or tricolored bats may be present. Contact a Nuisance Wildlife Control Operator (NWCO) for help in how to exclude bats from a structure safely without causing harm to the bats (to find a NWCO certified in bat standards, search the Internet using the search term "National Wildlife Control Operators Association bats"). Also see the White-Nose Syndrome Response Team's guide for bat control in structures.

    No

17. Does the action involve removal, modification, or maintenance of a human-made structure (barn, house, or other building) **known or suspected to contain roosting bats?**

    No

18. Will the action cause construction of one or more new roads open to the public?

    For federal actions, answer 'yes' when the construction or operation of these facilities is either (1) part of the federal action or (2) would not occur but for an action taken by a federal agency (federal permit, funding, etc.).

    No

19. Will the action include or cause any construction or other activity that is reasonably certain to increase average daily traffic permanently or temporarily on one or more existing roads?

    Note: For federal actions, answer 'yes' when the construction or operation of these facilities is either (1) part of the federal action or (2) would not occur but for an action taken by a federal agency (federal permit, funding, etc.). .

    Yes

20. Will the increased vehicle traffic occur on any road that lies between any two areas of contiguous forest that are each greater than or equal to 10 acres in extent and are separated by less than 1,000 feet? Bats may cross a road by flying between forest patches that are up to 1,000 feet apart.

    Note: "Contiguous forest" of 10 acres or more may includes areas where multiple forest patches are separated by less than 1,000 feet of non-forested area if the forested patches, added together, comprise at least 10 acres.

    No

21. Will the proposed Action involve the creation of a new water-borne contaminant source (e.g., leachate pond, pits containing chemicals that are not NSF/ANSI 60 compliant)?

    Note: For information regarding NSF/ANSI 60 please visit https://www.nsf.org/knowledge-library/nsf-ansi-standard-60-drinking-water-treatment-chemicals-health-effects

    No

22. Will the proposed action involve the creation of a new point source discharge from a facility other than a water treatment plant or storm water system?

    No

23. Will the action include drilling or blasting?

    Yes

24. Will the drilling or blasting produce noise or vibrations above existing background levels that will affect suitable summer habitat for northern long-eared bats and/or tricolored bats?

    Note: Additional information defining suitable suitable summer habitat for the northern long-eared bat and/or tricolored bat, can be found in Appendix A in the USFWS' Range-wide Indiana Bat and Northern long-eared Bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines

    Yes

25. Will the action involve military training (e.g., smoke operations, obscurant operations, exploding munitions, artillery fire, range use, helicopter or fixed wing aircraft use)?

    No

26. Will the proposed action involve the use of herbicides or other pesticides other than herbicides (e.g., fungicides, insecticides, or rodenticides)?

    No

27. Will the action include or cause activities that are reasonably certain to cause chronic or intense nighttime noise (above current levels of ambient noise in the area) in suitable summer habitat for the northern long-eared bat or tricolored bat during the active season?

    Chronic noise is noise that is continuous or occurs repeatedly again and again for a long time. Sources of chronic or intense noise that could cause adverse effects to bats may include, but are not limited to: road traffic; trains; aircraft; industrial activities; gas compressor stations; loud music; crowds; oil and gas extraction; construction; and mining.

    Note: Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    No

28. Does the action include, or is it reasonably certain to cause, the use of permanent or temporary artificial lighting within 1000 feet of suitable northern long-eared bat or tricolored bat roosting habitat?

    Note: Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    Yes

29. Will the action cause an increase in the extent of suitable forested habitat exposed to artificial lighting?

    No

30. Will the action include tree cutting or other means of knocking down or bringing down trees, tree topping, or tree trimming?

    Yes

31. Will the proposed action occur exclusively in an already established and currently maintained utility right-of-way?

    No

32. Does the action include emergency cutting or trimming of hazard trees in order to remove an imminent threat to human safety or property? See hazard tree note at the bottom of the key for text that will be added to response letters

    Note: A "hazard tree" is a tree that is an immediate threat to lives, public health and safety, or improved property.

    No

33. Does the project intersect with the 0- 9.9% forest density category?

    Automatically answered
    No

34. Does the project intersect with the 10.0- 19.9% forest density category map?

    Automatically answered
    No

35. Does the project intersect with the 20.0- 29.9% forest density category map?

    Automatically answered
    No

36. Does the project intersect with the 30.0- 100% forest density category map?

    Automatically answered
    Yes

37. Will the action cause trees to be cut, knocked down, or otherwise brought down across an area greater than 100 acres in total extent?

    No

38. Will the proposed action result in the use of prescribed fire?

    Note: If the prescribed fire action includes other activities than application of fire (e.g., tree cutting, fire line preparation) please consider impacts from those activities within the previous representative questions in the key. This set of questions only considers impacts from flame and smoke.

    No

39. Does the action area intersect the tricolored bat species list area?

    Automatically answered
    Yes

40. [Semantic] Is the action area located within 0.25 miles of a culvert that is known to be occupied by northern long-eared or tricolored bats?

    Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.

    Automatically answered
    No

41. Has a presence/probable absence bat survey targeting the tricolored bat and following the Service's Range-wide Indiana Bat and Northern Long-Eared Bat Survey Guidelines been conducted within the project area?

    No

42. Is suitable summer habitat for the tricolored bat present within 1000 feet of project activities?
    (If unsure, answer ""Yes."")

    Note: If there are trees within the action area that may provide potential roosts for tricolored bats (e.g., clusters of leaves in live and dead deciduous trees, Spanish moss (Tillandsia usneoides), clusters of dead pine needles of large live pines) answer ""Yes."" For a complete definition of suitable summer habitat for the tricolored bat, please see Appendix A in the Service's Range-wide Indiana Bat and Northern long-eared Bat Survey Guidelines.

    Yes

43. Do you have any documents that you want to include with this submission?
No

PROJECT QUESTIONNAIRE

Enter the extent of the action area (in acres) from which trees will be removed - round up to the nearest tenth of an acre. For this question, include the entire area where tree removal will take place, even if some live or dead trees will be left standing.

IPAC USER CONTACT INFORMATION

Agency: Private Entity
Name: Trent Delehanty
Address: 2 Bedford Farms Drive, Suite #200
City: Bedford
State: NH
Zip: 03110
Email tdelehanty@vhb.com
Phone: 6033913853

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Army Corps of Engineers

Appendix J: USACE Appendix B Checklist

US Army Corps of Engineers ®
New England District

Appendix B
New Hampshire General Permits
Required Information and USACE Section 404Checklist

USACE Section 404 Checklist

1. Attach any explanations to this checklist. Lack of information could delay a USACE permit determination.
2. All references to "work" include all work associated with the project construction and operation. Work includes filling, clearing, flooding, draining, excavation, dozing, stumping, etc.
3. See GC 3 for information on single and complete projects.
4. Contact USACE at (978) 318-8832 with any questions.
5. The information requested below is generally required in the NHDES Wetland Application. See page 61 for NHDES references and Admin Rules as they relate to the information below.

1. Impaired Waters	Yes	No
1.1 Will any work occur within 1 mile upstream in the watershed of an impaired water? See the following to determine if there is an impaired water in the vicinity of your work area. * https://nhdes-surface-water-quality-assessment-site-nhdes.hub.arcgis.com/ https://www.des.nh.gov/water/rivers-and-lakes/water-quality-assessment https://www4.des.state.nh.us/onestopdatamapper/onestopmapper.aspx		X
2. Wetlands	Yes	No
2.1 Are there are streams, brooks, rivers, ponds, or lakes within 200 feet of any proposed work?	X	
2.2 Are there proposed impacts to tidal SAS, prime wetlands, or priority resource areas? Applicants may obtain information from the NH Department of Resources and Economic Development Natural Heritage Bureau (NHB) DataCheck Tool for information about resources located on the property at https://www4.des.state.nh.us/NHB-DataCheck/.	X	
2.3 If wetland crossings are proposed, are they adequately designed to maintain hydrology, sediment transport & wildlife passage?	X	
2.4 Would the project remove part or all of a riparian buffer? (Riparian buffers are lands adjacent to streams where vegetation is strongly influenced by the presence of water. They are often thin lines of vegetation containing native grasses, flowers, shrubs and/or trees that line the stream banks. They are also called vegetated buffer zones.)		X
2.5 The overall project site is more than 40 acres?		X
2.6 What is the area of the previously filled wetlands?	Unknown	
2.7 What is the area of the proposed fill in wetlands?	831 SF	
2.8 What % of the overall project site will be previously and proposed filled wetlands?	Unknown	
3. Wildlife	Yes	No
3.1 Has the NHB & USFWS determined that there are known occurrences of rare species, exemplary natural communities, Federal and State threatened and endangered species and habitat, in the vicinity of the proposed project? (All projects require an NHB ID number & a USFWS IPAC determination.) NHB DataCheck Tool: https://www4.des.state.nh.us/NHB-DataCheck/. USFWS IPAC website: https://ipac.ecosphere.fws.gov/		X

3.2 Would work occur in any area identified as either "Highest Ranked Habitat in N.H." or "Highest Ranked Habitat in Ecological Region"? (These areas are colored magenta and green, respectively, on NH Fish and Game's map, "2010 Highest Ranked Wildlife Habitat by Ecological Condition.") Map information can be found at: • PDF: https://wildlife.state.nh.us/wildlife/wap-high-rank.html. • Data Mapper: www.granit.unh.edu. • GIS: www.granit.unh.edu/data/downloadfreedata/category/databycategory.html.		X
3.3 Would the project impact more than 20 acres of an undeveloped land block (upland, wetland/waterway) on the entire project site and/or on an adjoining property(s)?		X
3.4 Does the project propose more than a 10-lot residential subdivision, or a commercial or industrial development?		X
3.5 Are stream crossings designed in accordance with the GC 31?	X	
4. Flooding/Floodplain Values	Yes	No
4.1 Is the proposed project within the 100-year floodplain of an adjacent river or stream?		X
4.2 If 4.1 is yes, will compensatory flood storage be provided if the project results in a loss of flood storage?		N/A
5. Historic/Archaeological Resources		
For a minimum, minor or major impact project - a copy of the RPR Form (www.nh.gov/nhdhr/review) with your DES file number shall be sent to the NH Division of Historical Resources as required on Page 37 GC 14(d) of the GP document**	X	
6. Minimal Impact Determination (for projects that exceed 1 acre of permanent impact)	Yes	No
Projects with greater than 1 acre of permanent impact must include the following: • Functional assessment for aquatic resources in the project area. • On and off-site alternative analysis. • Provide additional information and description for how the below criteria are met.	Not Applicable	
6.1 Will there be complete loss of aquatic resources on site?		
6.2 Have the impacts to the aquatic resources been avoided and minimized to the greatest extent practicable?		
6.3 Will all aquatic resource function be lost?		
6.4 Does the aquatic resource (s) have regional significance (watershed or ecoregion)?		
6.5 Is there an on-site alternative with less impact?		
6.6 Is there an off-site alternative with less impact?		
6.7 Will there be a loss to a resource dependent species?		
6.8 Are indirect impacts greater than 1 acre within and adjacent to the project area?		
6.9 Does the proposed mitigation replace aquatic resource function for direct, indirect, and cumulative impacts?		

*Although this checklist utilizes state information, its submittal to USACE is a federal requirement.
** If your project is not within Federal jurisdiction, coordination with NH DHR is not required under Federal law.

2.1 Densmore Pond is a central feature of the Project site, comprising approximately 5 acres and abutting Hanover Street to the west. The pond is classified as Palustrine, Unconsolidated Bottom, Mud, Permanently Flooded (PUB3H). The pond is approximately 260 feet at its widest point and approximately 830 feet long and once served the former Densmore Brickyard which operated from 1883 until the early 1970's. Pond banks are densely vegetated with woody shrubs and saplings including invasive plant species at the north and south end of the pond with larger tree associated with intact forest along the pond's western side. Bordering palustrine scrub-shrub, emergent and forested wetlands as described above are also present along the pond's edge.

An unnamed perennial stream channel, identified as S-1, flows into and out of Densmore Pond as it traverses from north to south through the Project site. Delineated upper and lower segments of the stream to the north and south of Densmore Pond are classified as Riverine, Upper Perennial, Unconsolidated Bottom, Cobble-Gravel, Excavated (R3UB1x). Average stream width ranges from ten to twenty feet and dominant substrate consists of cobble-gravel. The watershed area of the unnamed stream is approximately 1.2 square miles (774 acres) according to USGS StreamStats and thus the channel is classified as a Tier 3 stream according to the NHDES Stream Crossing Rules (Chapter Env-Wt 900). VHB's geomorphic assessment of this stream found that the channel is a Type C3 stream under the Rosgen Classification (Applied River Morphology, Rosgen, 1996).

2.2 The NHDES Wetland Permit Planning Tool (WPPT) identifies Densmore Pond as a Floodplain Wetland Adjacent to a Tier 3 Stream. Though this feature was delineated in the field as a fresh water pond (PUB3H), no impacts to this mapped PRA are proposed as part of this project. Delineated wetland resources bordering Densmore Pond and an associated unnamed Tier 3 stream are not included as part of the PRA mapping depicted on the WPPT. According to Env-Wt 103.68(c), a PRA is a jurisdictional area that is a floodplain wetland contiguous to a Tier 3 or higher watercourse. By interpretation of this rule, delineated Wetlands W-2 and W-3 bordering the unnamed Tier 3 stream and located within the hydrologic floodplain would be considered PRAs. Both temporary and permanent impacts are proposed to the narrowest segments of these wetlands bordering the unnamed Tier 3 stream at the locations of the two proposed culvert installations, however the project is considered a net positive as it will result in an improvement in existing hydraulic capacity and the ability of the watercourse to accommodate the 100-year 24-hour design storm event for FEMA and NHDES requirements.

2.3 Impacts to an unnamed Tier 3 perennial stream channel (S-1) will result from the installation of two new crossings to permit circular vehicular access to the proposed development. The two new crossings have been designed in accordance with the criteria outlined within the NHDES Stream Crossing Rules for Tier 3 crossings. Additionally, although not necessary to facilitate project construction, the Project Applicant has chosen to address three abandoned debilitated culverts existing between Proposed New Tier 3 Crossing #1 and Hanover Street. Culverts #1 and 2 currently represent significant obstruction to natural channel flow and through removal, further enhancement of existing stream and wetland hydrology will be achieved. The removal of these two culverts will be coupled with restoration at both locations to stabilize the streambed and restore bankfull width to 15 feet to tie into upstream and downstream reaches. Culvert #3 currently represents a partially functioning pipe that conveys drainage from Wetland W-1 to the unnamed perennial stream located to the north. Removal of the culvert will provide improved hydrological connectivity between

the wetland and the stream through creation and restoration of a naturally vegetated wetland swale in replacement of the old non-functioning culvert.

2.7 Permanent impacts (405 total square feet) are proposed to narrow bordering wetland areas (Wetlands W-2 & W-3) present at the two proposed Tier 3 Stream Crossings. Additionally, minimal edge impact (426 SF) is proposed along the eastern side of Wetland W-4 in order to install a pedestrian sidewalk along Hanover Street.

3.1 The NHB DataCheck Results Letter (NHB24-2748) dated September 13, 2024, identified four records of sensitive species within the vicinity of the Site, including Appalachian barren-strawberry (*Geum fragarioides*), crested sedge (*Carex cristatella*), eastern waterleaf (*Hydrophyllum virginianum*), and Virginia stickseed (*Hackelia virginiana*). VHB further consulted with the NHB following the DataCheck Letter Results which included a site visit to obtain requested photographs. NHB responded on November 4, 2024, indicating that the site mainly consists of coniferous habitat, which is not suitable for the rare species listed. They further expressed that since the rare plants listed are either historic specimen records or over a half mile away, and there is not a strong likelihood that suitable habitat is present within the site, they did not recommend surveys. Consequently, NHB had no further concerns regarding NHB24-2748. Since the NHB DataCheck Results Letter did not identify any animal records, coordination with NHF&G Department is not required.

USFWS IPaC results dated January 23, 2025, indicate the potential presence of the proposed endangered tricolored bat (*Perimyotis subflavus*) and proposed threatened monarch butterfly (*Danaus plexippus*) within the vicinity of the Project site. The USFWS Determination Key (DKey) for the tricolored bat was completed and resulted in a "may affect" determination for this species. Since both the tricolored bat and monarch butterfly are still proposed for listing, they are not currently protected under the Endangered Species Act. The USFWS IPaC Results Letter and DKey Results Letter dated March 12, 2025, are included as Appendix I of this Permit Application.

3.5 The project proposed two new Tier 3 stream crossings which have been designed in accordance with the NH Stream Crossing Guidelines as detailed throughout this Application Narrative. Also refer to the Project Plans included as *Appendix E* and the Brickyard Hydraulics Memorandum provided in *Appendix C* which also includes the NHDES Wetlands Permit Application Stream Crossing Worksheets.

5.0 A Request for Project Review (RPR) was submitted on November 13, 2024, to the NH Division of Historical Resources (NHDHR) to initiate Section 106 consultation under the National Historic Preservation Act (16 U.S.C. 470)] and with federal Advisory Council on Historic Preservation regulations, Protection of Historic Properties (36 CFR Part 800). A Phase 1A Archeological Sensitivity Assessment was completed and while the Project site includes the site of the brickyard that operated during 1806 through the early 1970s as well as evidence of quarrying at the north end, no intact archaeological resources are expected to occur in the Project site due to extensive subsurface soil disturbance, dense vegetation, rocky conditions, and limited interpretive value. In addition, there are no previously recorded archaeological sites in or near the Project site. Therefore, no further archaeological study is recommended.

A file review conducted by VHB on September 27, 2024, revealed two aboveground properties determined eligible for listing in the National Register of Historic Places (National Register) within one half mile of the Project site. One additional property was previously determined eligible and subsequently demolished. Consultation with NHDHR regarding these properties remains ongoing.

Appendix K: Alternative Design Request

Memorandum

To: Emmanuel Uwizeye, Regional Reviewer (West)
NHDES Wetlands Bureau29 Hazen Drive, PO Box 95
Concord, NH 03302

Date: April 24, 2025

Project #: 52933.00

From: Annique Fleurock, PE
VHB Water Resources Engineer

Re: Env-Wt 904.10 Alternative Design Report
Brickyard Residential Development:
Unnamed Stream

This memorandum serves as an Alternative Design Report in accordance with New Hampshire Code of Administrative Rules Env-Wt 904.10, for two stream crossings proposed as part of Brickyard Residential Development project located at 174 Hanover Street Extension and 238 Hanover Street in Lebanon, New Hampshire. The unnamed stream is designated as a Tier 3 stream per the NHDES Stream Crossing Regulations. Rule Env-Wt 904.10 is outlined below with each criterion individually addressed.

The proposed stream crossings convey the entry/exits for the 13.5 acre residential development. The proposed 19-foot, 3-sided pre-cast culverts meet the NHDES Env-Wt 900 Stream Crossing requirements with the exception of Section 10, the entrenchment ratio. The proposed project meets the required hydraulic capacity, passing the 100-year design storm and improves the overall stream crossings as compared to existing conditions. Please see the ***Brickyard Residential Development: Unnamed Stream Hydraulic Analysis Memorandum*** for more details.

Env-Wt 904.10: Alternative Designs

(a) If the applicant can demonstrate that installing the structure specified in the applicable rule is not practicable, as that term is defined in Env-Wt 103, the applicant may propose an alternative design in accordance with this section.

The section below addresses the criteria for approval of an alternative design.

(b) To request approval of an alternative design, the applicant shall submit a written request to the department, accompanied by a technical report that:

1) Clearly explains how the proposed alternative meets the criteria for approval specified in (c) or (d), below, as applicable; and

2) Has been prepared by:

b. A professional engineer for a Tier 3 stream crossing.

See the information provided below, which provides the information required by Env-Wt 904.10(d). This report has been prepared by a professional engineer - Ms. Annique Fleurock, VHB, NH Professional Engineer #16725.

(c) The department shall approve an alternative design for a Tier 3 or 4 stream crossing if:

1) The report submitted pursuant to (b), above, demonstrates that adhering to the stated requirements is not practicable, by providing:

a. A detailed financial comparison of the costs of a structure that complies with all applicable design requirements, the proposed structure, and a structure that requires fewer waivers than the proposed structure, with a range of cost estimates for each;

A structure that complies with all applicable design requirements must provide a minimum 33-foot clear span, which is beyond the typical precast concrete box or 3-sided frame sizes in production. Spans of this magnitude could include a large span precast concrete arch or a short span bridge structure. Structures of these types range from $750,000 to $900,000 depending on foundation elements.

A structure that provides a 19-foot clear span requires waivers but accommodates standard precast concrete box or 3-sided frame sizes range in cost from $250,000 to $400,000. Therefore, a fully compliant structure with no waivers increases overall cost by $350,000 to $650,000.

b. A detailed description of the physical limitations of the site; and

c. A hydraulic analysis to show that the proposed stream crossing can accommodate the applicable design storm or that the crossing, together with the associated roadway and roadway embankment, can safely accommodate overtopping flows; and

Refer to the ***Brickyard Residential Development: Unnamed Stream Hydraulic Analysis Memorandum*** for Items (b) and (c) above.

2) The proposed alternative meets:

a. The general design criteria specified in Env-Wt 904.01; and

b. The applicable design criteria established in Env-Wt 904.07 to the maximum extent practicable.

The proposed 19-foot, 3-sided crossings meet the NHDES Env-Wt 900 Stream Crossing requirements to the maximum extent practicable. The crossings do not meet the entrenchment ratio requirement of Section 10. The proposed project meets the required hydraulic capacity, passing the 100-year design storm and improves the overall stream crossings as compared to existing conditions.

The geomorphic assessment of this stream found that the channel is a type C3 stream under Applied River Morphology, Rosgen, 1996 Classification. The NHDES Stream Crossing Regulations for type C3 and Tier 3 crossing require structures to have an entrenchment ratio greater than 2.2. Based on the bankfull width of 15 feet, the proposed crossings would require a span of at least 33 feet to meet this requirement. The 33-foot span would eliminate the ability to utilize a precast structure and would require a full structural bridge design. As described above, this would significantly increase the design scope and more than double the construction costs. The proposed structures are designed to be built using precast material, provide a span of 1.27 times the bankfull width, and provide 2-foot benches on either side of the channel for wildlife crossings. The project also provides approximately 75 linear feet of stream restoration by removing the two abandoned, debilitated culverts currently creating hydraulic and aquatic organism passage obstructions between Densmore Pond located on the Project site and the Hanover Street culvert located downstream. Given the current proposed hydraulic benefit, and meeting all other NHDES Stream Crossing Regulation requirements, it is VHB's opinion that the benefit of providing an entrenchment ratio of 2.2 for two 33-ft bridge spans, does not outweigh the increase in cost and project complexity. As a result of the limitations listed above, bridge design was rejected as impractical to avoid more than doubling the costs by requiring structural design and construction for two bridges.

(d) The department shall approve an alternative design for a new Tier 1 or 2 stream crossing if:

1) The report submitted pursuant to (b), above, demonstrates that adhering to the rules is not practicable;

2) The proposed alternative design meets:

a. The general design criteria established in Env-Wt 904.01; and

b. The applicable design criteria, established in Env-Wt 904.03(b) for tier 1 stream crossings and in Env-Wt 904.07 for tier 2 stream crossings, to the maximum extent practicable; and

3) A hydraulic analysis shows that the proposed stream crossing can accommodate the applicable design storm or that the crossing, together with the associated roadway and roadway embankment, can safely accommodate overtopping flows.

This section is not applicable, as the referenced crossings are new Tier 3 crossings.

May 12, 2025

Ref: 52933.00

Zoning Board of Adjustment
City of Lebanon
51 N. Park Street, 5th Floor
Lebanon, NH 03766

Re: City of Lebanon's Request for Special Exception Application Support Statement
Proposed Brickyard Residential Development, Lebanon New Hampshire

To Whom it May Concern:

On behalf of Brickyard One Nominee Trust (the Project Applicant), VHB is submitting this Application for Special Exception in support of the construction of a new multi-family planned unit residential development ("the Project") with associated parking, stormwater management, utilities, landscaping, and pedestrian/vehicular access within the former Densmore Brickyard site located at 174 Hanover Street Extension and 238 Hanover Street (Map 48 Lots 1, 2, & 4 and Map 63 Lot 1) in Lebanon, New Hampshire. The proposed development will be confined to approximately 13.5 acres near Hanover Street and will include five four-story residential apartment buildings over vehicular parking, totaling 422 units, and 51 townhomes arranged in six groupings. An additional building is proposed at the northeast corner of the Project site, which is anticipated to contain the development's leasing office and maintenance shop, while one residential unit for the on-site property manager is also proposed at the southern end of the site.

Wetland impacts subject to this Special Exception Application as well as a response to Criteria A through G under Section 401.05 of the City's Zoning Ordinance is further outlined below for the Board's consideration.

Wetland Impact Description

The proposed project has been carefully designed to avoid and minimize wetland impacts. The proposed development footprint utilizes only ten percent of the total project parcel acreage (13.5 acres out of a total of 133.5 acres) and has been sited within areas of the site previously disturbed by the former Densmore Brickyard. Additionally, the development has been situated within the eastern half of the project parcels closest to existing adjacent residential development, Hanover Street, Interstate 89 and the Lebanon High School while entirely avoiding impacts to Densmore Pond and wetlands directly bordering the pond. Additionally, no permanent impacts are proposed to Wetland W-1, a large multiclass wetland located at the southern end of the Project site.

Temporary (205 square feet) and permanent impacts (405 total square feet) are proposed to narrow bordering wetland areas (Wetlands W-2 & W-3) present at two proposed stream crossings associated with the development's driveway access. These stream crossings were designed at the narrowest portions of Wetlands W-2 and W-3 in order to preserve the wider more intact portions of these wetlands directly bordering Densmore Pond. These crossings have been designed in accordance with the NHDES Stream Crossing Rules and will result in positive hydraulic benefits through the Project site by decreasing water surface elevations by up to 2.3 feet for the 100-year 24-hour design

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storm, providing a span of 1.3 times the bankfull width, and constructing 2-foot benches on either side of the channel for wildlife crossings at both locations. The net benefits of enhanced hydrological connectivity coupled with the preservation of wildlife movement between on-site wetlands, the unnamed perennial stream, and adjacent uplands are seen as outweighing the minor amount of wetland impacts proposed at these locations.

Minor temporary impact (48 SF) is proposed to the easternmost swale portion of Wetland W-1 in order to remove an abandoned and debilitated five foot (60-inch) diameter culvert that partially conveys drainage from Weland W-1 to the unnamed perennial stream located to the north. Removal of the culvert will provide improved hydrological connectivity between the wetland and the stream through creation and restoration of a naturally vegetated wetland swale in replacement of the old non-functioning culvert.

Finally, minimal edge impact is proposed along the eastern side of Wetland W-4 in order to install a pedestrian sidewalk along Hanover Street. Wetland W-4 is small, isolated and exhibits characteristics typical of a roadside wetland including partial ditching and invasive species. Installation of the proposed sidewalk and resultant impact is also being driven by City of Lebanon's requirement at this location. By implementing a 1:1 slope with 2-foot shoulder in this area, the project design was able to further minimize impacts to Wetland W-4 to the maximum extent possible (from 615 square feet to 426 square feet).

In total, the project proposes 831 square feet of permanent wetland impact, and 253 square feet of temporary wetland impact for a grand total of 1,084 square feet.

Section 401.05 (A-G)

Demonstration that the Project adheres to the Conditions under Section 401.05 A through G, in lieu of the findings required under Section 801.3, are outlined below:

A. The use for which the exception is sought cannot feasibly, after consideration of all alternatives, be carried out on a portion or portions of the lot which are outside the Wetlands Conservation District; and

The project parcels total approximately 133.5 acres and are characterized by undeveloped forested slopes ascending to Quarry Hill in the west, overgrown gravel pathways and vegetated areas mixed with several small abandoned structures in the south, residential property containing a house and associated outbuildings in the north, and Hanover Street and abutting residential properties in the east. In the eastern central portion of the site lies Densmore Pond, an unnamed perennial stream, and associated wetlands. When siting the development footprint, numerous factors were considered in its final location including site topography, the preservation of undeveloped undisturbed areas, minimization and avoidance of on-site natural resources (pond, stream, and wetlands), and utilization of previously disturbed areas associated with the former Densmore Brick Company operations.

The final and proposed footprint of development was selected as it confines disturbance to approximately 10% of the total site acreage (13.5 acres) and favors previously disturbed areas closest to existing adjacent residential development, Hanover Street, Interstate 89, and the Lebanon High School. It also entirely avoids impacts to Densmore Pond, a central feature of the Project site and wetlands directly bordering the pond. Vehicular access to the site was also designed to be situated to the north and south of the pond and at the narrowest portions of on-site wetlands to avoid and minimize impacts. Lastly, the selected development

footprint provides an opportunity to incorporate 12 acres of dedicated open space with public access as part of this Project. This open space is divided into two areas at the southern and northern end of the Project site and will also function equally to preserve wildlife crossings ensuring continued connectivity between existing corridors that are mapped through these areas of the Project site.

Design alternatives consist of siting the development footprint on other portions of the project parcels further west and/or south. This would have resulted in greater tree clearing, more significant site grading due to site topography, and impacts to undisturbed, undeveloped and more natural areas associated with Quarry Hill. Shifting site development to the south would also have led to greater impacts to Wetland W-1, a large multi-class wetland located on-site. Finally, these alternatives would have also impacted the Project's ability to accommodate an Open Space Plan and maintain/preserve wildlife crossings.

B. ***Due to the provisions of the Wetlands Conservation District, as applied to the particular characteristics, setting and environment of the property, the lot cannot reasonably be used for any of the uses permitted or allowed by special exception, without some form of special exception under this section; and***

Construction of the proposed vehicular driveway necessary to provide access to the residential development would not be possible without the granting of a special exception as permitted under Section 401.05. The proposed driveway layout was constrained due to the presence of Densmore Pond and associated wetlands within the central portion of the project lots, the presence of a large wetland complex (Wetland W-1) at the southern end of the project lots, the presence of forested wetland at the northern end of the project lots, abutting parcels located along Hanover Street in front of the proposed development, and steep slopes located within western portions of the project lots.

C. ***The design and construction of the proposed use is consistent with the purpose and intent of Section 401.1 (A), (B) and (C) of this Ordinance, and adequate conservation measures shall be taken to mitigate the detrimental effects of the proposed use on the natural function of the wetlands. Such measures may include but are not limited to wetland restoration or enhancement, wetland preservation, or the construction and maintenance of new wetland areas adjacent to the proposed use to replace those portions of the natural wetland affected by the proposed use; and***

The proposed project is consistent with the purpose and intent of Section 401.1 (A), (B), and (C) of the City's Zoning ordinance with respect to the preservation of wetland functions and values including water quality functions such as floodflow storage, sediment/toxicant retention, nutrient removal/transformation and groundwater recharge/discharge.

Minimization and avoidance measures were carefully considered during the project planning and design phase while still complying with all required local and state development setbacks and professional engineering standards. Wetland impacts have been confined to the narrowest portions of Wetlands W-2 and W-3 required to install two new stream crossings, a narrow swale portion of Wetland W-1 to allow for culvert removal and wetland restoration, and edge impacts along an isolated roadside wetland resulting from installation of a pedestrian sidewalk; a requirement being driven by the City of Lebanon. Impacts to Densmore

Pond, wider more intact areas of Wetland W-2 and W-3 directly bordering Densmore Pond, and the majority of the large wetland complex (Wetland W-1) at the southern end of the Project site have been avoided.

Although minimal temporary and permanent impacts are proposed to the narrowest segments of on-site wetlands where two new stream crossings are proposed, the project is considered a net positive as it will result in an improvement in existing hydraulic capacity and the ability of the watercourse to accommodate the 100-year 24-hour design storm event for FEMA and NHDES requirements. Finally, the project incorporates the removal of three abandoned and debilitated culverts and resultant stream and wetland restoration which will improve natural channel flow, wetland drainage patterns, and overall hydrological connectivity between wetland and stream resources across the Project site. The two new stream crossings coupled with the restoration work and the project's stormwater management plan will contribute positively to water quality.

Prior to the start of project construction, the selected contractor shall be responsible for the installation of wildlife friendly erosion and sediment perimeter controls in accordance with permitting plans and details, NHDES conditions, and the New Hampshire Stormwater Manual (February 2025). Additional temporary erosion control BMPs will be implemented as needed throughout the duration of construction in order to prevent off-site tracking and waterborne loss of earth sediment and debris which poses a risk to adjacent wetlands and streams. Upon the completion of the proposed work, all disturbed and graded areas located upslope of the erosion control measures will be permanently stabilized with appropriate cover dependent upon the location.

D. ***The proposed construction design of pipelines, powerlines and other transmission lines shall include provisions for restoration of the site as closely as possible to its original grade and conditions; and***

Not applicable – the project does not involve construction of pipelines, powerlines and other transmission lines.

E. ***The proposed use shall not create a hazard to individual or public health, safety and welfare due to the loss of wetland, the contamination of ground water, or any other reason; and***

The Project will clean up and replace the defunct and abandoned former Densmore Brickyard property comprised of old scattered materials, abandoned structures and buildings interspersed with overgrown gravel pathways and densely vegetated areas with a new multi-family planned unit residential development comprised of parking, stormwater management, utilities, landscaping, pedestrian/vehicular access and preserved open space. Although the project is a private development, proposed improvement of the property will result in positive impacts to public health, safety and welfare by eliminating safety concerns associated with the current property and providing additional housing which is critically needed in the Upper Valley area.

The project proposes negligible wetland impacts distributed over several wetland resource areas and will not result in significant permanent alteration to any one wetland area that could impact groundwater or prevent the impacted wetlands from effectively providing their associated function and values following project completion. Finally, the Project has proactively incorporated wetland and stream restoration

components into the site design through the removal of old debilitated culverts which present current hydrologic obstructions and degradation of wetland and stream habitat. Through their removal, stream and wetland habitat will be restored in these areas and hydrologic connectivity between resources on-site will be enhanced. Site specific stormwater management will also provide for treatment and infiltration of stormwater through practices accepted by both the City of Lebanon and the NHDES AoT Bureau which does not exist on-site today.

F. ***The project is capable of complying with all State and Federal wetlands and wetlands permitting requirements. Note: Applications for required Federal and State wetland permits need not have been applied for, but a zoning permit shall not be issued until all such permits have been granted.***

In compliance with NH RSA 482-A and Section 404 of the Clean Water Act, an application to the NHDES Wetlands Bureau and US Army Corps of Engineers has been submitted to address the Project's proposed wetland impacts at the state and federal level, respectively. The application is currently under review by these agencies.

G. ***The project is capable of conforming to all existing best management practices, as referenced in Appendix A, and will be implemented in a way which conforms to those practices, and which complies with any other conditions imposed by the Zoning Board of Adjustment.***

As previously outlined under Criterion C, prior to the start of construction, the selected contractor shall be responsible for the installation of wildlife friendly erosion and sediment perimeter controls in accordance with permitting plans and details, NHDES approved permit conditions, and the New Hampshire Stormwater Manual (February 2025). Additional temporary erosion control BMPs will be implemented as needed throughout the duration of construction in order to prevent off-site tracking and waterborne loss of earth sediment and debris. The specific measures proposed as part of the Project are depicted on the Erosion and Sediment Control Plans (Sheets C4.1, C4.2, C5.0, C5.1, C5.2, C5.3) included in the Project Permitting Plans submitted with the NHDES Wetlands Permit Application (enclosed).

All equipment and material laydown/temporary staging areas required during construction will be confined to uplands well outside the jurisdictional limits of existing delineated natural resources on-site. Designated stockpiling/storage locations will be established at the commencement of construction and will be contained using appropriate wildlife friendly perimeter controls. Soils to be stockpiled or other areas to remain exposed for a period of more than 30 days shall be temporarily seeded and mulched. Additionally, perimeter controls (silt fence) shall be installed surrounding soil stockpiles. Fugitive dust generated from on-site soil disturbance will be controlled through the use of water. The location and design of temporary sediment basins to control stormwater runoff and dewatering practices during the construction period shall meet NHDES requirements and be approved by the Project Engineer prior to installation.

All ditches, swales and drainage basins shall be stabilized prior to directing runoff to them. All roadways and parking lots shall be stabilized within 72 hours of achieving finished grade. All cut and fill slopes shall be loamed and seeded within 72 hours of achieving finished grade. Erosion control blankets shall be installed on all slopes that are greater than 3 feet horizontal and 1 foot vertical (3:1).

Erosion controls will be inspected daily by the contractor, and weekly and after 0.25" of rainfall by a qualified monitor to ensure that the controls are maintained and are properly functioning throughout the duration of construction.

Upon the completion of the proposed work, all disturbed and graded areas located upslope of the erosion control measures will be permanently stabilized by one or more of the following measures:

- Access: Driveways and access roads will be stabilized with bituminous concrete pavement or the applicable surface cover.
- Landscaped Areas: All disturbed areas, not permanently stabilized by pavement or buildings, will be covered with bark mulch, stone, sod or a minimum of six (6) inches of topsoil and seeded.
- Pipe Outlets: Scour protection (riprap) shall be constructed at the headwall outlet to prevent scouring.

Additionally, depending on the timing of construction, other measures specific to over-winter stabilization, such as the implementation of non-vegetative stabilization (the application of wood mulch or an erosion control seed mix) and an increase in application rates of temporary cover may be recommended. After October 15th, incomplete parking areas where active construction has stopped for the winter shall be protected with a minimum 3-inch layer of base course gravels.

Upon completion of construction and establishment of permanent site stabilization, erosion control measures will be removed and installed drainage and sewer systems will be inspected to ensure that they are free of sediment and debris prior to site demobilization.

Sincerely,

Rich Whitehouse, Jr., ENV SP
VHB Project Manager

Enclosure
cc: Brickyard One Nominee Trust c/o Richard Marchese
Gil Aleixo Filho

Attachments:

City of Lebanon Zoning Board of Appeals Application Form – Wetlands Special Exception
Certified Notification List
Project Permitting Plans (Submitted as part of the NHDES Wetlands Permit Application)

CITY OF LEBANON
ZONING BOARD OF APPEALS
APPLICATION

SPECIAL EXCEPTION	☐	☐	BUILDING CODE BOARD OF APPEALS
WETLANDS SPECIAL EXCEPTION	☒	☐	APPEAL OF AN ADMIN DECISION
VARIANCE	☐	☐	REHEARING REQUEST
EQUITABLE WAIVER	☐	☐	

PROPERTY OWNER (APPLICANT):

NAME: Brickyard One Nominee Trust c/o Richard Marchese [redacted]

MAILING ADDRESS [redacted]

E-MAIL ADDRESS:

CO-APPLICANT, AGENT, OR LESSEE:

NAME: David Fenstermacher, VHB TEL.#: 603-391-3929

MAILING ADDRESS: 2 Bedford Farms Drive, Suite 200

E-MAIL ADDRESS: dfenstermacher@vhb.com

PROJECT LOCATION:

TAX MAP #: Map 48; Map 63 LOT#: Lots 1,2, 4; Lot 1 PLOT #: N/A ZONE: R1, RO1,R3

STREET ADDRESS: 174 Hanover Street Extension & 238 Hanover Street

IS THIS PROPERTY LOCATED IN THE: **WETLANDS** ☑ YES ☐ NO **HISTORIC DISTRICT** ☐ YES ☑ NO

FLOOD PLAIN ☑ YES ☐ NO

REQUEST DESCRIPTION:

Under Section 401.5 (Wetland Conservation District) of the City of Lebanon's Zoning Ordinance, the Project Applicant is seeking a Special Exception to impact wetlands to construct a vehicular access driveway and pedestrian sidewalk associated with the Brickyard Development Project. Additionally, a minor amount of wetland impact is proposed in order to remove an old abandoned culvert and restore wetland.

USE TYPE:

EXISTING: ☐ VACANT ☐ ONE FAMILY ☐ TWO FAMILY ☐ MULTI-FAMILY ☐ COMMERCIAL ☑ INDUSTRIAL

PROPOSED: ☐ VACANT ☐ ONE FAMILY ☐ TWO FAMILY ☑ MULTI-FAMILY ☐ COMMERCIAL ☐ INDUSTRIAL

If use is **COMMERCIAL** OR **INDUSTRIAL** please note specific use: Former brick manufacturing facility

SIGNATURE BLOCK:

I, the undersigned, hereby submit this application on the date noted below with the knowledge and understanding that the Planning Board shall determine if the submitted application is complete according to its regulations at its next regularly scheduled meeting on JUNE 2, 2025, unless I personally request, in writing, that the Board delay its determination of completeness to a later date.

Owner Signature: _____ DATE: May 12, 2025

NOTE: IF, AS OWNER, YOU WISH TO DESIGNATE AN AGENT TO ACT ON YOUR BEHALF, PLEASE READ THE FOLLOWING AND SIGN BELOW: I hereby designate the person listed above as my agent for the purpose of procuring the necessary local permits for the proposed work as described herein. Representations made by my agent may be accepted as though made by me personally, and I understand that I am bound by any official decision made on the basis of such representation.

Owner Signature: _____ DATE: _____

DATE RECEIVED: **APPLICATION #:**

CERTIFIED NOTIFICATION LIST

Notice shall be sent by certified mail to the Owner; Applicant, if different from Owner; Abutters; Holders of conservation, preservation, or agricultural preservation restrictions (as defined under RSA 477:45) on the subject property; the holders of easements, rights-of-way, and other restrictions; and every engineer, architect, land surveyor, or soil or wetlands scientist whose seal appears on any plan submitted to the Board; and any other persons required by RSA 676:4, I(d). The names and mailing addresses shall be furnished by the Applicant.

672:3 Abutter. – "Abutter" means any person whose property is located in New Hampshire and adjoins or is directly across the street or stream from the land under consideration by the local land use board. For purposes of receiving testimony only, and not for purposes of notification, the term "abutter" shall include any person who is able to demonstrate that his land will be directly affected by the proposal under consideration. For purposes of receipt of notification by a municipality of a local land use board hearing, in the case of an abutting property being under a condominium or other collective form of ownership, the term abutter means the officers of the collective or association, as defined in RSA 356-B:3, XXIII. For purposes of receipt of notification by a municipality of a local land use board hearing, in the case of an abutting property being under a manufactured housing park form of ownership as defined in RSA 205-A:1, II, the term "abutter" includes the manufactured housing park owner and the tenants who own manufactured housing which adjoins or is directly across the street or stream from the land under consideration by the local land use board.
Source. 1983, 447:1. 1986, 33:2. 2002, 216:1, eff. July 15, 2002.

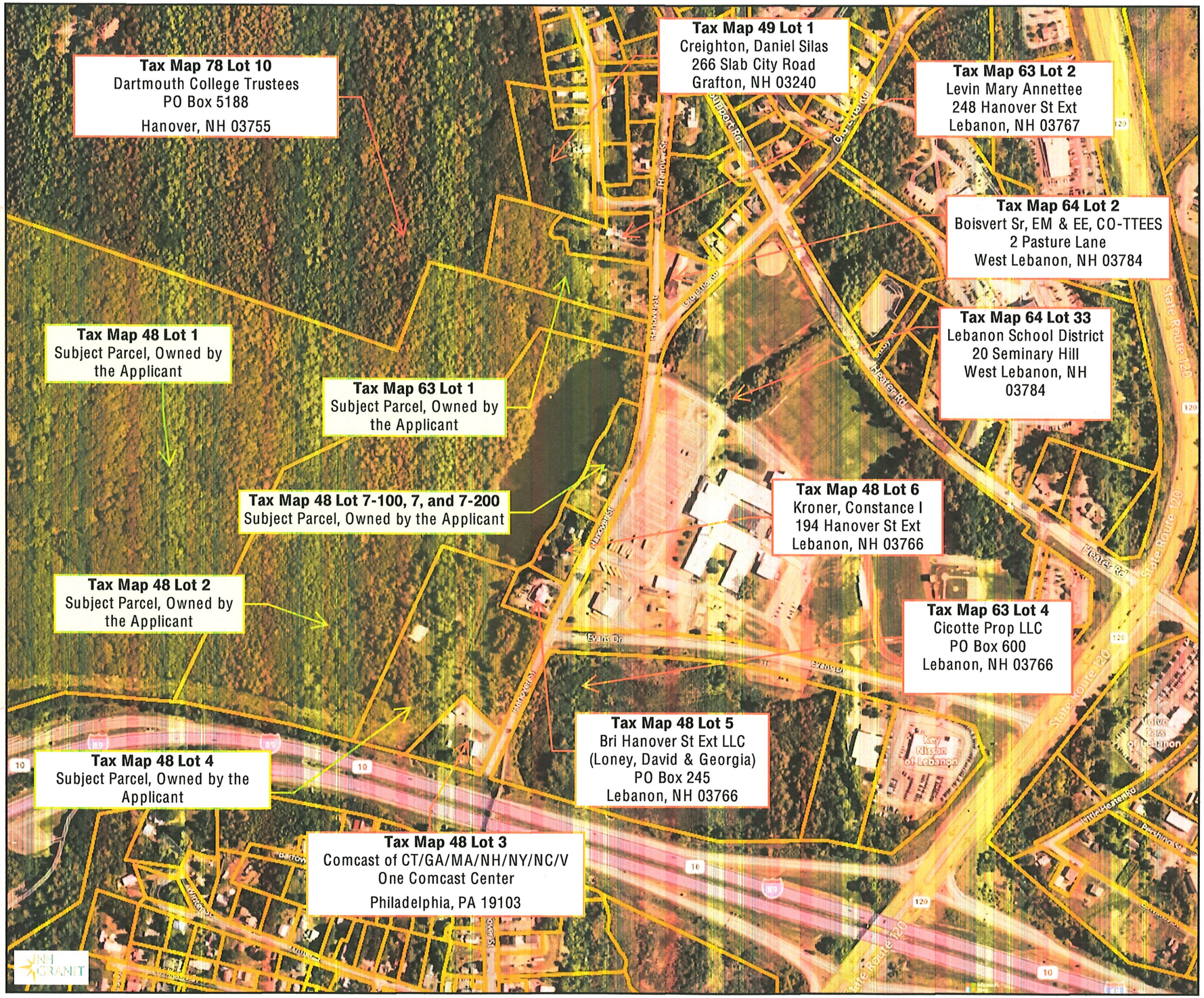
PLEASE PROVIDE NAMES & MAILING ADDRESSES FOR ALL PERSONS LISTED ABOVE.

Map & Lot Number: Map 48, Lots 1,2,4; Map 63,Lot 1	**Map & Lot Number:** Same as Owner
Property Owner: Brickyard One Nominee Trust c/o Richard Marchese PO Box 720 Middleton, MA 01949	**Applicant, Co-Applicant, Agent, or Lessee:** Gilberto Aleixo Filho (Agent) PO Box 720 Middleton, MA 01949
Map & Lot Number: Project Engineer	**Map & Lot Number:** Project Surveyor
David Fenstermacher, VHB 2 Bedford Farms Drive, Suite 200 Bedford, NH 03110	Michael Hammer, VHB 2 Bedford Farms Drive, Suite 200 Bedford, NH 03110
Map & Lot Number: Project Engineer	**Map & Lot Number:** NH Certified Wetland Scientist
Annique Fleurock, VHB 2 Bedford Farms Drive, Suite 200 Bedford, NH 03110	Scott Goddard 291 Main Street, Suite 8 Northborough, MA 01532

Map & Lot Number: Tax Map 48, Lot 3	**Map & Lot Number: Tax Map 48, Lot 5**
Comcast of CT/GA/MA/NH/NY/NC/V One Comcast Center Philadelphia, PA 19103	Bri Hanover St Ext LLC (Loney, David & Georgia) PO Box 245 Lebanon, NH 03766
Map & Lot Number Tax Map 48, Lot 6:	**Map & Lot Number: Tax Map 63, Lot 2**
Kroner, Constance I 194 Hanover St Ext Lebanon, NH 03766	Levin Mary Annettee 248 Hanover St Ext Lebanon, NH 03767
Map & Lot Number: Tax Map 49, Lot 1	**Map & Lot Number: Tax Map 78, Lot 10**
Creighton, Daniel Silas 266 Slab City Road Grafton, NH 03240	Dartmouth College Trustees PO Box 5188 Hanover, NH 03755
Map & Lot Number: Tax Map 63, Lot 4	**Map & Lot Number: Tax Map 64, Lot 33**
Cicotte Prop LLC PO Box 600 Lebanon, NH 03766	Lebanon School District 20 Seminary Hill West Lebanon, NH 03784
Map & Lot Number: Tax Map 64, Lot 2	**Map & Lot Number:**
Boisvert Sr, EM & EE, CO-TTEES 2 Pasture Lane West Lebanon, NH 03784	
Map & Lot Number:	**Map & Lot Number:**
Map & Lot Number:	**Map & Lot Number:**

(Revised 2/8/2024)

Brickyard Development Abutting Properties - Lebanon, NH



Legend

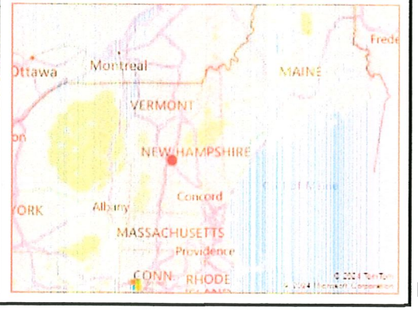
- Parcels
- State
- County
- City/Town
- Parcel Owned by Applicant

Map Scale
1: 5,926

© NH GRANIT, www.granit.unh.edu

Map Generated: 11/21/2024

Notes

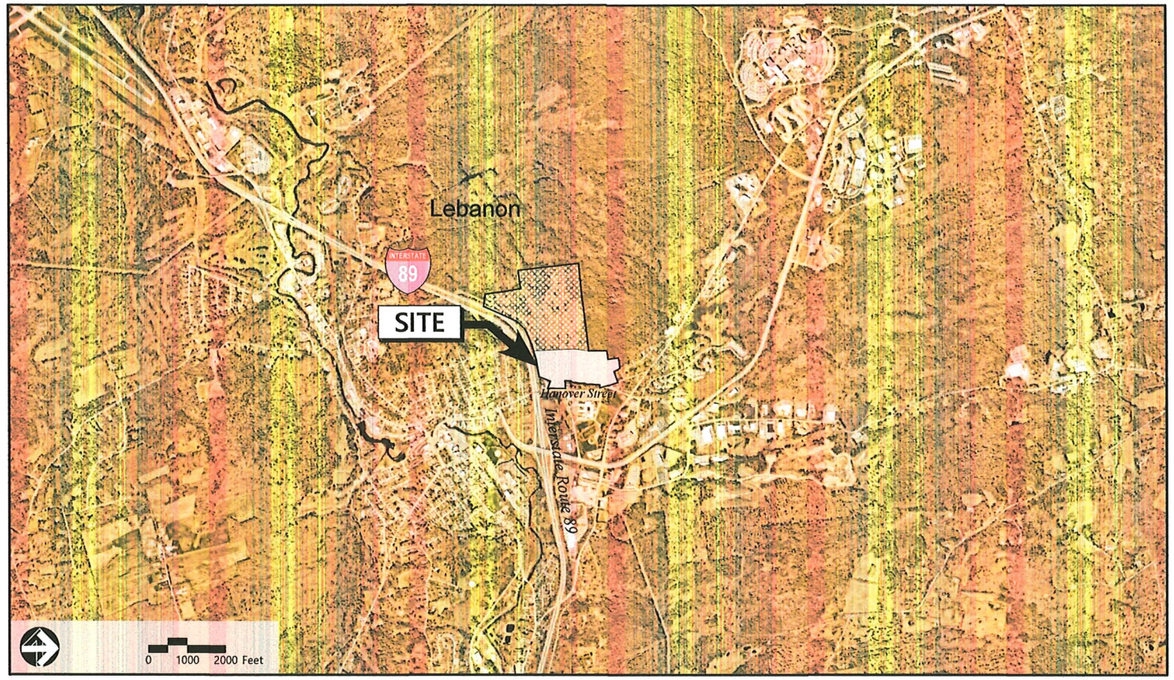


Site Plans

Issued for	**Permitting**
Date Issued	**March 28, 2025**
Latest Issue	**March 28, 2025**

The Brickyard Residential Development

174 Hanover Street Extension
Lebanon, New Hampshire



vhb.com

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Applicant/Owner

Brickyard One Nominee Trust
Richard M. Marchese, Trustee
P.O. Box 720, Middleton, MA 01949

Assessor's Map/Lot:

Map 48 Lots 01, 02, & 04
Map 63 Lot 01

Sheet Index

No.	Drawing Title	Latest Issue
C1.0	Legend and Notes	March 28, 2025
C2.0	Wetland Impact Plan	March 28, 2025
C2.1	Wetland Impact Plan 1	March 28, 2025
C2.2	Wetland Impact Plan 2	March 28, 2025
C3.1	Stream Crossing Plan and Profile 1	March 28, 2025
C3.2	Stream Crossing Plan and Profile 2	March 28, 2025
C4.1	Erosion and Sediment Control Plan 1	March 28, 2025
C4.2	Erosion and Sediment Control Plan 2	March 28, 2025

Reference Drawings

No.	Drawing Title	Latest Issue
Sv-1	Boundary Plan of Land	December 10, 2024
Sv-2	Existing Conditions Plan of Land	December 10, 2024
Sv-3	Existing Conditions Plan of Land	December 10, 2024
C1.2	Open Space Plan	December 11, 2024
C5.0	Overall Erosion Control Plan	December 11, 2024
C5.1	Erosion Control Plan 1	December 11, 2024
C5.2	Erosion Control Plan 2	December 11, 2024
C5.3	Erosion Control Plan 3	February 6, 2024

Civil Engineer (VHB)
David Fenstermacher, P.E.
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Surveyor (VHB)
Mike Hammer, L.L.S
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Landscape Architect (VHB)
Erik Bednarek, RLA
101 Walnut Street
PO Box 9151
Watertown, MA 02471
617.924.1770

Architect
Studio Integrate
73 Commercial Street,
London E1, England
0203.722.7358

Wetland Scientist (Goddard)
Scott G. Goddard
291 Main Street
Suite 8
Northborough, MA 01532

\\VHB.COM\GBL\PRO\BEDFORD\52933.00 LEBANON BRICKYARD DEVELOV\CAD\LD\PLANSET\WL IMPACTS\52933.00-COV 22 April 2025

VHB Project : 52933.00 The Brickyard Residential Development
Issued for : Permitting

\\vhb.com\gbl\proj\Bedford\52933.00 Lebanon Brickyard Develo\cad\ld\Planset\WL Impacts\52933.00-LG.dwg

Legend

Exist.	Prop.	
		PROPERTY LINE
		PROJECT LIMIT LINE
		RIGHT-OF-WAY/PROPERTY LINE
		EASEMENT
		BUILDING SETBACK
		PARKING SETBACK
123+00	10+00	BASELINE
		CONSTRUCTION LAYOUT
		ZONING LINE
		TOWN LINE
		LIMIT OF DISTURBANCE
		WETLAND LINE WITH FLAG
		FLOODPLAIN
BLSF		BORDERING LAND SUBJECT TO FLOODING
BZ		WETLAND BUFFER ZONE
NDZ		NO DISTURB ZONE
200'RA		200' RIVERFRONT AREA
		GRAVEL ROAD
EOP		EDGE OF PAVEMENT
BB		BITUMINOUS BERM
BC		BITUMINOUS CURB
CC		CONCRETE CURB
CG		CURB AND GUTTER
ECC		EXTRUDED CONCRETE CURB
MCC		MONOLITHIC CONCRETE CURB
PCC		PRECAST CONC. CURB
SGE		SLOPED GRAN. EDGING
VGC		VERT. GRAN. CURB
		LIMIT OF CURB TYPE
		SAWCUT
	EN	BUILDING ENTRANCE
	LD	LOADING DOCK
		BOLLARD
	D	DUMPSTER PAD
		SIGN
		DOUBLE SIGN
		STEEL GUARDRAIL
		WOOD GUARDRAIL
		PATH
		APPROXIMATE LIMIT OF CLEARING
		WIRE FENCE
		FENCE
		STOCKADE FENCE
		STONE WALL
		RETAINING WALL
		POND
		STREAM / WATER COURSE
		FLOODZONE A
		HAY BALES
		SILT FENCE
		SILT SOCK / STRAW WATTLE
	4	MINOR CONTOUR
	20	MAJOR CONTOUR
10		PARKING COUNT
C10		COMPACT PARKING STALLS
	DYL	DOUBLE YELLOW LINE
	SL	STOP LINE
		CROSSWALK
		ACCESSIBLE CURB RAMP
		ACCESSIBLE PARKING
	VAN	VAN-ACCESSIBLE PARKING

Exist.	Prop.	
		CONCRETE
		HEAVY DUTY PAVEMENT
		BUILDINGS
		RIPRAP
		CONSTRUCTION EXIT
27.35 TC×	27.35 TC×	TOP OF CURB ELEVATION
26.85 BC×	26.85 BC×	BOTTOM OF CURB ELEVATION
132.75×	132.75×	SPOT ELEVATION
45.0 TW× 38.5 BW×	45.0 TW× 38.5 BW×	TOP & BOTTOM OF WALL ELEVATION
		BORING LOCATION
TP		TEST PIT LOCATION
MW	MW	MONITORING WELL
UD	UD	UNDERDRAIN
12"D	12"D	DRAIN
6"RD	6"RD	ROOF DRAIN
12"S	12"S	SEWER
FM	FM	FORCE MAIN
OHW	OHW	OVERHEAD WIRE
6"W	6"W	WATER
4"FP	4"FP	FIRE PROTECTION
2"DW	2"DW	DOMESTIC WATER
G	G	GAS
E	E	ELECTRIC
STM	STM	STEAM
T	T	TELEPHONE
FA	FA	FIRE ALARM
CATV	CATV	CABLE TV
		CATCH BASIN CONCENTRIC
		CATCH BASIN ECCENTRIC
		DOUBLE CATCH BASIN CONCENTRIC
		DOUBLE CATCH BASIN ECCENTRIC
		GUTTER INLET
		DRAIN MANHOLE CONCENTRIC
		DRAIN MANHOLE ECCENTRIC
		TRENCH DRAIN
	C	PLUG OR CAP
	CO	CLEANOUT
		FLARED END SECTION
		HEADWALL
		SEWER MANHOLE CONCENTRIC
		SEWER MANHOLE ECCENTRIC
CS	CS	CURB STOP & BOX
WV	WV	WATER VALVE & BOX
TSV	TSV	TAPPING SLEEVE, VALVE & BOX
		FIRE DEPARTMENT CONNECTION
HYD	HYD	FIRE HYDRANT
WM	WM	WATER METER
PIV	PIV	POST INDICATOR VALVE
W	W	WATER WELL
GS	GS	GAS GATE
GM	GM	GAS METER
EMH	EMH	ELECTRIC MANHOLE
EM	EM	ELECTRIC METER
		LIGHT POLE
TMH	TMH	TELEPHONE MANHOLE
T	T	TRANSFORMER PAD
		UTILITY POLE
		GUY POLE
		GUY WIRE & ANCHOR
HH	HH	HAND HOLE
PB	PB	PULL BOX
		MATCHLINE

Abbreviations

General

ABAN	ABANDON
ACR	ACCESSIBLE CURB RAMP
ADJ	ADJUST
APPROX	APPROXIMATE
BIT	BITUMINOUS
BS	BOTTOM OF SLOPE
BWLL	BROKEN WHITE LANE LINE
CONC	CONCRETE
DYCL	DOUBLE YELLOW CENTER LINE
EL	ELEVATION
ELEV	ELEVATION
EVC	ELECTRIC VEHICLE CAPABLE PARKING SPACE
EVR	ELECTRIC VEHICLE READY PARKING SPACE
EX	EXISTING
FDN	FOUNDATION
FFE	FIRST FLOOR ELEVATION
GRAN	GRANITE
GFE	GARAGE FLOOR ELEVATION
GTD	GRADE TO DRAIN
LA	LANDSCAPE AREA
LOD	LIMIT OF DISTURBANCE
MAX	MAXIMUM
MIN	MINIMUM
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
PERF	PERFORATED
PROP	PROPOSED
REM	REMOVE
RET	RETAIN
R&D	REMOVE AND DISPOSE
R&R	REMOVE AND RESET
SWEL	SOLID WHITE EDGE LINE
SWLL	SOLID WHITE LANE LINE
TS	TOP OF SLOPE
TYP	TYPICAL

Utility

AD	AREA DRAIN
CB	CATCH BASIN
CMP	CORRUGATED METAL PIPE
CO	CLEANOUT
DCB	DOUBLE CATCH BASIN
DMH	DRAIN MANHOLE
CIP	CAST IRON PIPE
COND	CONDUIT
DIP	DUCTILE IRON PIPE
DW	DRYWELL
FA	FIRE ALARM
FES	FLARED END SECTION
FM	FORCE MAIN
F&G	FRAME AND GRATE
F&C	FRAME AND COVER
GI	GUTTER INLET
GT	GREASE TRAP
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HH	HANDHOLE
HW	HEADWALL
HYD	HYDRANT
INV	INVERT ELEVATION
I=	INVERT ELEVATION
LP	LIGHT POLE
MES	METAL END SECTION
PIV	POST INDICATOR VALVE
PWW	PAVED WATER WAY
PVC	POLYVINYLCHLORIDE PIPE
RCP	REINFORCED CONCRETE PIPE
R=	RIM ELEVATION
RIM=	RIM ELEVATION
SMH	SEWER MANHOLE
TSV	TAPPING SLEEVE, VALVE AND BOX
UG	UNDERGROUND
UGE/T	UNDERGROUND ELECTRIC/TELECOM

Notes

General

1. THE PURPOSE OF THESE SITE PLANS ARE TO SHOW A PROPOSED SITE DESIGN FOR THE PERMITTING OF A PLANNED UNIT RESIDENTIAL PROJECT.
2. CONTRACTOR SHALL NOTIFY "DIG-SAFE" (1-888-344-7233) AT LEAST 72 HOURS BEFORE EXCAVATING.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SECURITY AND JOB SAFETY. CONSTRUCTION ACTIVITIES SHALL BE IN ACCORDANCE WITH OSHA STANDARDS AND LOCAL REQUIREMENTS.
4. ACCESSIBLE ROUTES, PARKING SPACES, RAMPS, SIDEWALKS AND WALKWAYS SHALL BE CONSTRUCTED IN CONFORMANCE WITH THE FEDERAL AMERICANS WITH DISABILITIES ACT AND WITH STATE AND LOCAL LAWS AND REGULATIONS (WHICHEVER ARE MORE STRINGENT).
5. AREAS DISTURBED DURING CONSTRUCTION AND NOT RESTORED WITH IMPERVIOUS SURFACES (BUILDINGS, PAVEMENTS, WALKS, ETC.) SHALL RECEIVE 6-INCHES LOAM AND SEED.
6. WITHIN THE LIMITS OF THE BUILDING FOOTPRINT, THE SITE CONTRACTOR SHALL PERFORM EARTHWORK OPERATIONS REQUIRED UP TO SUBGRADE ELEVATIONS.
7. WORK WITHIN THE LOCAL RIGHTS-OF-WAY SHALL CONFORM TO LOCAL MUNICIPAL STANDARDS. WORK WITHIN STATE RIGHTS-OF-WAY SHALL CONFORM TO THE LATEST EDITION OF THE STATE HIGHWAY DEPARTMENTS STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES.
8. UPON AWARD OF CONTRACT, CONTRACTOR SHALL MAKE NECESSARY CONSTRUCTION NOTIFICATIONS AND APPLY FOR AND OBTAIN NECESSARY PERMITS, PAY FEES, AND POST BONDS ASSOCIATED WITH THE WORK INDICATED ON THE DRAWINGS, IN THE SPECIFICATIONS, AND IN THE CONTRACT DOCUMENTS. DO NOT CLOSE OR OBSTRUCT ROADWAYS, SIDEWALKS, AND FIRE HYDRANTS, WITHOUT APPROPRIATE PERMITS.
9. TRAFFIC SIGNAGE AND PAVEMENT MARKINGS SHALL CONFORM TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
10. AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.
11. IN THE EVENT THAT SUSPECTED CONTAMINATED SOIL, GROUNDWATER, AND OTHER MEDIA ARE ENCOUNTERED DURING EXCAVATION AND CONSTRUCTION ACTIVITIES BASED ON VISUAL, OLFACTORY, OR OTHER EVIDENCE, THE CONTRACTOR SHALL STOP WORK IN THE VICINITY OF THE SUSPECT MATERIAL TO AVOID FURTHER SPREADING OF THE MATERIAL, AND SHALL NOTIFY THE OWNER IMMEDIATELY SO THAT THE APPROPRIATE TESTING AND SUBSEQUENT ACTION CAN BE TAKEN.
12. CONTRACTOR SHALL PREVENT DUST, SEDIMENT, AND DEBRIS FROM EXITING THE SITE AND SHALL BE RESPONSIBLE FOR CLEANUP, REPAIRS AND CORRECTIVE ACTION IF SUCH OCCURS.
13. DAMAGE RESULTING FROM CONSTRUCTION LOADS AND ACTIVITIES SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO OWNER.
14. CONTRACTOR SHALL CONTROL STORMWATER RUNOFF DURING CONSTRUCTION TO PREVENT ADVERSE IMPACTS TO OFF SITE AREAS, AND SHALL BE RESPONSIBLE TO REPAIR RESULTING DAMAGES, IF ANY, AT NO COST TO OWNER.
15. THIS PROJECT DISTURBS MORE THAN ONE ACRE OF LAND AND FALLS WITHIN THE NPDES CONSTRUCTION GENERAL PERMIT (CGP) PROGRAM AND EPA JURISDICTION. PRIOR TO THE START OF CONSTRUCTION CONTRACTOR IS TO FILE A CGP NOTICE OF INTENT WITH THE EPA AND PREPARE A STORMWATER POLLUTION PREVENTION PLAN IN ACCORDANCE WITH THE NPDES REGULATIONS. CONTRACTOR SHALL CONFIRM THE OWNER HAS ALSO FILED A NOTICE OF INTENT WITH THE EPA.
16. SNOW STORAGE LOCATIONS SHOWN ON LAYOUT AND MATERIALS PLAN. FUTURE SNOW REMOVAL AT THE FACILITY WILL FOLLOW THE CURRENT SNOW MANAGEMENT PLAN TO REMOVE SNOW TO REMOTE LOCATIONS AS NECESSARY.
17. TREE CLEARING SHALL NOT BE CONDUCTED DURING JUNE 1 TO JULY 31 IN ORDER TO MINIMIZE ADVERSE IMPACTS TO THE NORTHERN LONG EARED BAT.
18. CONTRACTOR TO FOLLOW STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (NHDOT) AND GUIDE FOR THE DEVELOPMENT OF BICYCLE FACILITIES (AASHTO) FOR CONSTRUCTIONS STANDARDS.

Utilities

1. THE UTILITY COMPANIES SERVICING THE PROJECT AREA ARE:
   - A. WATER: CITY OF LEBANON
   - B. SEWER: CITY OF LEBANON
   - C. ELECTRIC: LIBERTY UTILITIES
   - D. TELEPHONE: CONSOLIDATED COMMUNICATIONS
   - E. CABLE TV: COMCAST
   - F. GAS: NONE
2. THE LOCATIONS, SIZES, AND TYPES OF EXISTING UTILITIES ARE SHOWN AS AN APPROXIMATE REPRESENTATION ONLY. THE OWNER OR IT'S REPRESENTATIVE(S) HAVE NOT INDEPENDENTLY VERIFIED THIS INFORMATION AS SHOWN ON THE PLANS. THE UTILITY INFORMATION SHOWN DOES NOT GUARANTEE THE ACTUAL EXISTENCE, SERVICEABILITY, OR OTHER DATA CONCERNING THE UTILITIES, NOR DOES IT GUARANTEE AGAINST THE POSSIBILITY THAT ADDITIONAL UTILITIES MAY BE PRESENT THAT ARE NOT SHOWN ON THE PLANS. PRIOR TO ORDERING MATERIALS AND BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL VERIFY AND DETERMINE THE EXACT LOCATIONS, SIZES, AND ELEVATIONS OF THE POINTS OF CONNECTIONS TO EXISTING UTILITIES AND, SHALL CONFIRM THAT THERE ARE NO INTERFERENCES WITH EXISTING UTILITIES AND THE PROPOSED UTILITY ROUTES, INCLUDING ROUTES WITHIN THE PUBLIC RIGHTS OF WAY.
3. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, OR EXISTING CONDITIONS DIFFER FROM THOSE SHOWN SUCH THAT THE WORK CANNOT BE COMPLETED AS INTENDED, THE LOCATION, ELEVATION, AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED IN WRITING TO THE OWNER'S REPRESENTATIVE FOR THE RESOLUTION OF THE CONFLICT AND CONTRACTOR'S FAILURE TO NOTIFY PRIOR TO PERFORMING ADDITIONAL WORK RELEASES OWNER FROM OBLIGATIONS FOR ADDITIONAL PAYMENTS WHICH OTHERWISE MAY BE WARRANTED TO RESOLVE THE CONFLICT. COORDINATE WITH CITY OF LEBANON FOR PUBLIC UTILITY INSTALLATION AND CONNECTION.
4. SET CATCH BASIN RIMS, AND INVERTS OF SEWERS, DRAINS, AND DITCHES IN ACCORDANCE WITH ELEVATIONS ON THE GRADING AND UTILITY PLANS.
5. RIM ELEVATIONS FOR DRAIN AND SEWER MANHOLES, WATER VALVE COVERS, GAS GATES, ELECTRIC AND TELEPHONE PULL BOXES, AND MANHOLES, AND OTHER SUCH ITEMS, ARE APPROXIMATE AND SHALL BE SET/RESET AS FOLLOWS:
   - A. PAVEMENTS AND CONCRETE SURFACES: FLUSH
   - B. ALL SURFACES ALONG ACCESSIBLE ROUTES: FLUSH
   - C. LANDSCAPE, LOAM AND SEED, AND OTHER EARTH SURFACE AREAS: ONE INCH ABOVE SURROUNDING AREA AND TAPER EARTH TO THE RIM ELEVATION.
6. THE LOCATION, SIZE, DEPTH, AND SPECIFICATIONS FOR CONSTRUCTION OF PROPOSED PRIVATE UTILITY SERVICES SHALL BE INSTALLED ACCORDING TO THE REQUIREMENTS PROVIDED BY, AND APPROVED BY, THE RESPECTIVE UTILITY COMPANY (GAS, TELEPHONE, ELECTRIC, FIRE ALARM, ETC.). FINAL DESIGN LOADS AND LOCATIONS TO BE COORDINATED WITH OWNER AND ARCHITECT. COORDINATE WITH CITY OF LEBANON FOR PUBLIC UTILITY INSTALLATION AND CONNECTION.
7. CONTRACTOR SHALL MAKE ARRANGEMENTS FOR AND SHALL BE RESPONSIBLE FOR PAYING FEES FOR POLE RELOCATION AND FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE, FIRE ALARM, AND ANY OTHER PRIVATE UTILITIES, WHETHER WORK IS PERFORMED BY CONTRACTOR OR BY THE UTILITIES COMPANY.
8. UTILITY PIPE MATERIALS SHALL BE AS FOLLOWS, UNLESS OTHERWISE NOTED ON THE PLAN:
   - A. WATER PIPES SHALL BE CEMENT LINED DUCTILE IRON CLASS 52.
   - B. SANITARY SEWER PIPES SHALL BE POLYVINYL CHLORIDE (PVC) SEWER PIPE SDR 35.
   - C. STORM DRAINAGE PIPES SHALL BE SMOOTH INTERIOR DUAL WALL HIGH DENSITY POLYETHYLENE (HDPE).
9. CONTRACTOR SHALL COORDINATE WITH ELECTRICAL CONTRACTOR AND SHALL FURNISH EXCAVATION, INSTALLATION, AND BACKFILL OF ELECTRICAL FURNISHED SITEWORK RELATED ITEMS SUCH AS PULL BOXES, CONDUITS, DUCT BANKS, LIGHT POLE BASES, AND CONCRETE PADS. SITE CONTRACTOR SHALL FURNISH CONCRETE ENCASEMENT OF DUCT BANKS IF REQUIRED BY THE UTILITY COMPANY AND AS INDICATED ON THE DRAWINGS.
10. CONTRACTOR SHALL EXCAVATE AND BACKFILL TRENCHES FOR GAS IN ACCORDANCE WITH GAS COMPANY'S REQUIREMENTS.
11. ALL DRAINAGE AND SANITARY STRUCTURE INTERIOR DIAMETERS (4' MIN.) SHALL BE DETERMINED BY THE MANUFACTURER BASED ON THE PIPE CONFIGURATIONS SHOWN ON THESE PLANS AND LOCAL MUNICIPAL STANDARDS. FOR MANHOLES THAT ARE 20 FEET IN DEPTH AND GREATER, THE MINIMUM DIAMETER SHALL BE 5 FEET.
12. CONTRACTOR TO NOTIFY ENGINEER IN ADVANCE OF ANY INSTALLATION OF UNDERGROUND DETENTION, INFILTRATION OR FILTERING SYSTEMS. A LETTER SIGNED BY A QUALIFIED ENGINEER MUST BE PROVIDED TO DES STATING THAT THE INDIVIDUAL OBSERVED ANY UNDERGROUND DETENTION, INFILTRATION, OR FILTERING SYSTEMS PRIOR TO BACKFILLING, AND WHETHER, IN HIS OR HER PROFESSIONAL OPINION, THE SYSTEM(S) CONFORM TO THE APPROVED PLANS AND SPECIFICATIONS.

Layout and Materials

1. DIMENSIONS ARE FROM THE FACE OF CURB, FACE OF BUILDING, FACE OF WALL, AND CENTER LINE OF PAVEMENT MARKINGS, UNLESS OTHERWISE NOTED.
2. CURB RADII ARE 3 FEET UNLESS OTHERWISE NOTED.
3. CURBING SHALL BE PRECAST CONCRETE (PCC) WITHIN THE SITE UNLESS OTHERWISE INDICATED ON THE PLANS.
4. IN ADDITION TO THE INFORMATION PROVIDED HEREIN, SEE ARCHITECTURAL DRAWINGS FOR EXACT BUILDING DIMENSIONS AND DETAILS FOR FEATURES THAT ARE CONTIGUOUS TO THE BUILDING, INCLUDING BUILDING ENTRANCES, UTILITY PENETRATIONS, CONCRETE DOOR PADS, COMPACTOR PAD, LOADING DOCKS, BOLLARDS, ETC.
5. PROPOSED BOUNDS AND ANY EXISTING PROPERTY LINE MONUMENTATION DISTURBED DURING CONSTRUCTION SHALL BE SET OR RESET BY A LICENSED LAND SURVEYOR (LLS).
6. PRIOR TO START OF CONSTRUCTION, CONTRACTOR SHALL VERIFY EXISTING PAVEMENT ELEVATIONS AT INTERFACE WITH PROPOSED PAVEMENTS, AND EXISTING GROUND ELEVATIONS ADJACENT TO DRAINAGE OUTLETS TO ASSURE PROPER TRANSITIONS BETWEEN EXISTING AND PROPOSED FACILITIES.

Demolition

1. CONTRACTOR SHALL REMOVE AND DISPOSE OF EXISTING MANMADE SURFACE FEATURES WITHIN THE LIMIT OF WORK INCLUDING BUILDINGS, STRUCTURES, PAVEMENTS, SLABS, CURBING, FENCES, UTILITY POLES, SIGNS, ETC. UNLESS INDICATED OTHERWISE ON THE DRAWINGS. REMOVE AND DISPOSE OF EXISTING UTILITIES, FOUNDATIONS AND UNSUITABLE MATERIAL BENEATH AND FOR A DISTANCE OF 10 FEET BEYOND THE PROPOSED BUILDING FOOTPRINT INCLUDING EXTERIOR COLUMNS.
2. EXISTING UTILITIES SHALL BE TERMINATED, UNLESS OTHERWISE NOTED, IN CONFORMANCE WITH LOCAL, STATE AND INDIVIDUAL UTILITY COMPANY STANDARD SPECIFICATIONS AND DETAILS. THE CONTRACTOR SHALL COORDINATE UTILITY SERVICE DISCONNECTS WITH THE UTILITY REPRESENTATIVES.
3. CONTRACTOR SHALL DISPOSE OF DEMOLITION DEBRIS IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS, ORDINANCES AND STATUTES.
4. THE CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING THE DETAILED SCOPE OF DEMOLITION BEFORE SUBMITTING ITS BID/PROPOSAL TO PERFORM THE WORK AND SHALL MAKE NO CLAIMS AND SEEK NO ADDITIONAL COMPENSATION FOR CHANGED CONDITIONS OR UNFORESEEN OR LATENT SITE CONDITIONS RELATED TO ANY CONDITIONS DISCOVERED DURING EXECUTION OF THE WORK.
5. UNLESS OTHERWISE SPECIFICALLY PROVIDED ON THE PLANS OR IN THE SPECIFICATIONS, THE ENGINEER HAS NOT PREPARED DESIGNS FOR AND SHALL HAVE NO RESPONSIBILITY FOR THE PRESENCE, DISCOVERY, REMOVAL, ABATEMENT OR DISPOSAL OF HAZARDOUS MATERIALS, TOXIC WASTES OR POLLUTANTS AT THE PROJECT SITE. THE ENGINEER SHALL NOT BE RESPONSIBLE FOR ANY CLAIMS OF LOSS, DAMAGE, EXPENSE, DELAY, INJURY OR DEATH ARISING FROM THE PRESENCE OF HAZARDOUS MATERIAL AND CONTRACTOR SHALL INDEMNIFY AND HOLD HARMLESS THE ENGINEER FROM ANY CLAIMS MADE IN CONNECTION THEREWITH. MOREOVER, THE ENGINEER SHALL HAVE NO ADMINISTRATIVE OBLIGATIONS OF ANY TYPE WITH REGARD TO ANY CONTRACTOR AMENDMENT INVOLVING THE ISSUES OF PRESENCE, DISCOVERY, REMOVAL, ABATEMENT OR DISPOSAL OF ASBESTOS OR OTHER HAZARDOUS MATERIALS.

Existing Conditions Information

1. BASE PLAN: THE EXISTING CONDITIONS SHOWN ON THIS PLAN ARE BASED UPON AN ACTUAL ON-THE-GROUND INSTRUMENT SURVEY PERFORMED BY VHB IN SEPTEMBER TO NOVEMBER 2022, AND APRIL 2023.
   - A. DELINEATION OF THE WETLANDS AND PLACEMENT OF THE FLAGS WAS PERFORMED BY GODDARD CONSULTING, LLC IN NOVEMBER, 2022.
   - B. FLAGS MARKING THE WETLANDS WERE LOCATED BY FIELD SURVEY BY VHB IN NOVEMBER, 2022.
2. TOPOGRAPHY: ELEVATIONS ARE BASED ON NAVD 1988.

Document Use

1. THESE PLANS AND CORRESPONDING CADD DOCUMENTS ARE INSTRUMENTS OF PROFESSIONAL SERVICE, AND SHALL NOT BE USED, IN WHOLE OR IN PART, FOR ANY PURPOSE OTHER THAN FOR WHICH IT WAS CREATED WITHOUT THE EXPRESSED, WRITTEN CONSENT OF VHB. ANY UNAUTHORIZED USE, REUSE, MODIFICATION OR ALTERATION, INCLUDING AUTOMATED CONVERSION OF THIS DOCUMENT SHALL BE AT THE USER'S SOLE RISK WITHOUT LIABILITY OR LEGAL EXPOSURE TO VHB.
2. CONTRACTOR SHALL NOT RELY SOLELY ON ELECTRONIC VERSIONS OF PLANS, SPECIFICATIONS, AND DATA FILES THAT ARE OBTAINED FROM THE DESIGNERS, BUT SHALL VERIFY LOCATION OF PROJECT FEATURES IN ACCORDANCE WITH THE PAPER COPIES OF THE PLANS AND SPECIFICATIONS THAT ARE SUPPLIED AS PART OF THE CONTRACT DOCUMENTS.
3. SYMBOLS AND LEGENDS OF PROJECT FEATURES ARE GRAPHIC REPRESENTATIONS AND ARE NOT NECESSARILY SCALED TO THEIR ACTUAL DIMENSIONS OR LOCATIONS ON THE DRAWINGS. THE CONTRACTOR SHALL REFER TO THE DETAIL SHEET DIMENSIONS, MANUFACTURERS' LITERATURE, SHOP DRAWINGS AND FIELD MEASUREMENTS OF SUPPLIED PRODUCTS FOR LAYOUT OF THE PROJECT FEATURES.

New Hampshire Fish and Game

1. ALL OBSERVATIONS OF THREATENED OR ENDANGERED SPECIES SHALL BE REPORTED IMMEDIATELY TO THE NEW HAMPSHIRE FISH AND GAME DEPARTMENT NONGAME AND ENDANGERED WILDLIFE ENVIRONMENTAL REVIEW PROGRAM BY PHONE AT 603-271-2461 AND BY EMAIL AT NHFGreview@wildlife.nh.gov. EMAIL SUBJECT LINE:
2. PHOTOGRAPHS OF THE OBSERVED SPECIES AND NEARBY ELEMENTS OF HABITAT OR AREAS OF LAND DISTURBANCE SHALL BE PROVIDED TO NHF&G IN DIGITAL FORMAT AT THE ABOVE EMAIL ADDRESS FOR VERIFICATION AS FEASIBLE.
3. IN THE EVENT A THREATENED OR ENDANGERED SPECIES IS OBSERVED ON THE PROJECT SITE DURING THE TERM OF THE PERMIT, THE SPECIES SHALL NOT BE DISTURBED, HANDLED, OR HARMED IN ANY WAY PRIOR TO CONSULTATION WITH NHF&G AND IMPLEMENTATION OF CORRECTIVE ACTIONS RECOMMENDED BY NHF&G, IF ANY, TO ENSURE THE PROJECT DOES NOT APPRECIABLY JEOPARDIZE THE CONTINUED EXISTENCE OF THREATENED AND ENDANGERED SPECIES AS DEFINED IN Fis 1002.04.
4. THE NHF&G, INCLUDING ITS EMPLOYEES AND AUTHORIZED AGENTS, SHALL HAVE ACCESS TO THE PROPERTY DURING THE TERM OF THE PERMIT.
5. ENV-WQ 1506.15 REQUIRES THAT:
   - 5.1. ALL MANUFACTURED EROSION AND SEDIMENT CONTROLS PRODUCTS, EXCEPT FOR SILT FENCE INSTALLATED IN ACCORDANCE WITH ENV-WQ 1506.04, UTILIZED FOR, BUT NOT LIMITED TO , SLOPE PROTECTION, RUNOFF DIVERSION, SLOPE INTERRUPTION, PERIMETER CONTROL, INLET PROTECTION, CHECK DAMS, AND SEDIMENT TRAPS SHALL NOT CONTAIN WELDED PLASTIC, PLASTIC, OR MULTI-FILAMENT OR MONOFILAMENT POLYPROPYLENE NETTING OR MESH WITH AN OPENING SIZE OF GREATER THAN 1/8 INCH TURF REINFORCEMENT MATS SHALL BE COVERED WITH SOIL TO PREVENT EXPOSURE OF THE MATS TO THE SURFACE.
   - 5.2.

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No.	Revision	Date	Appvd.

Designed by DJB | Checked by AHF
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Drawing Title
Legend and General Notes

Drawing Number
C1.0

Sheet 1 of 8

Project Number 52933.00

Saved Thursday, March 20, 2025 4:39:54 PM DBOSWORTH Plotted Tuesday, March 25, 2025 4:57:35 PM Derek Bosworth

Wetland Classification Codes:

PSS1E - Palustrine Scrub-Shrub, Broad-Leaved Deciduous, Seasonally Flooded/Saturated

PSS1E / PFO1/4E - Palustrine, Scrub-Shrub, Broad-Leaved Deciduous, Seasonally Flooded/Saturated / Palustrine, Forested, Broad-Leaved/Needle-Leaved Evergreen, Seasonally Flooded/Saturated

PEM1B/PSS1B - Palustrine, Emergent, Persistent, Saturated / Palustrine, Scrub-Shrub, Broad-Leaved Deciduous, Saturated

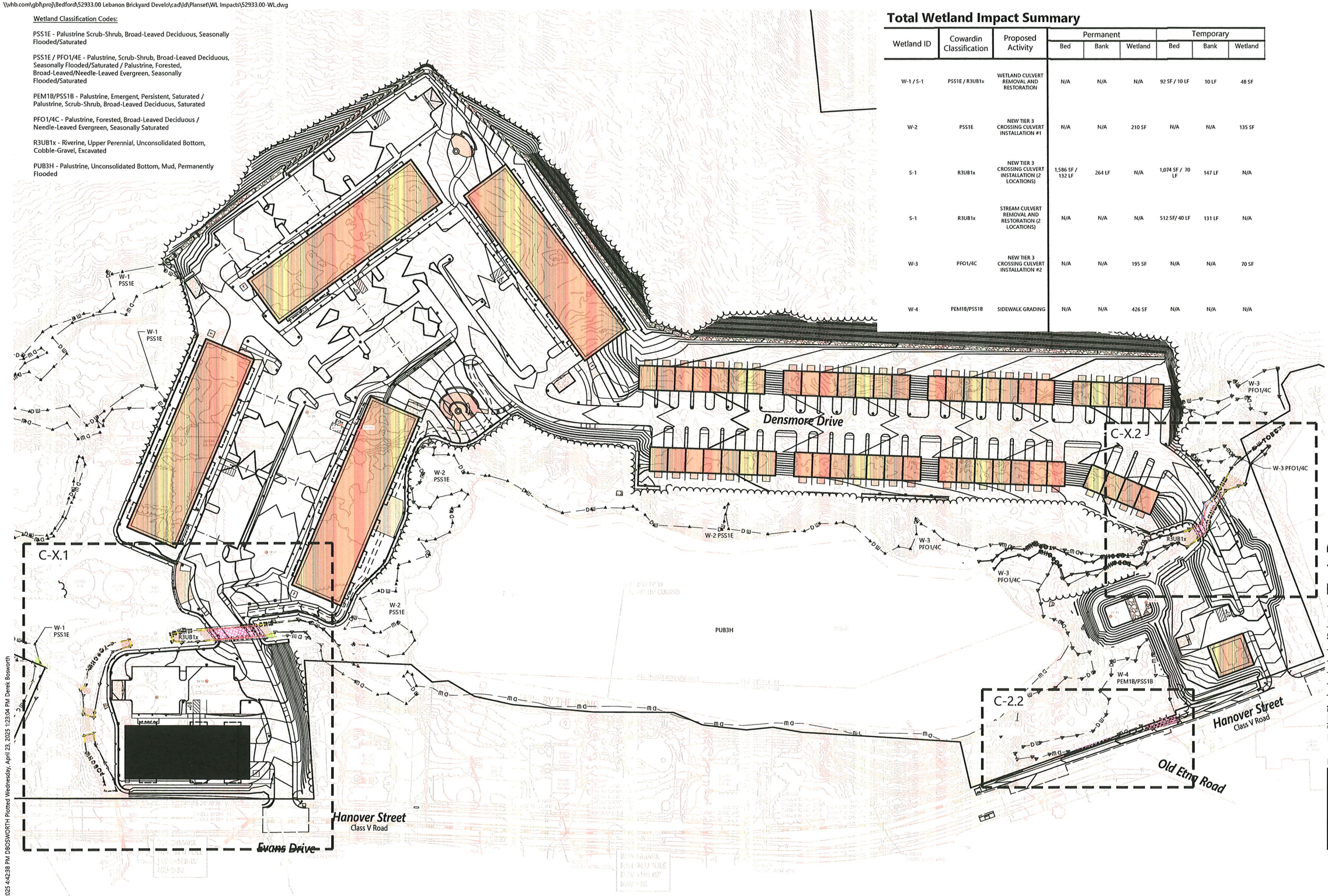
PFO1/4C - Palustrine, Forested, Broad-Leaved Deciduous / Needle-Leaved Evergreen, Seasonally Saturated

R3UB1x - Riverine, Upper Perennial, Unconsolidated Bottom, Cobble-Gravel, Excavated

PUB3H - Palustrine, Unconsolidated Bottom, Mud, Permanently Flooded

Total Wetland Impact Summary

Wetland ID	Cowardin Classification	Proposed Activity	Permanent			Temporary		
			Bed	Bank	Wetland	Bed	Bank	Wetland
W-1 / S-1	PSS1E / R3UB1x	WETLAND CULVERT REMOVAL AND RESTORATION	N/A	N/A	N/A	92 SF / 10 LF	10 LF	48 SF
W-2	PSS1E	NEW TIER 3 CROSSING CULVERT INSTALLATION #1	N/A	N/A	210 SF	N/A	N/A	135 SF
S-1	R3UB1x	NEW TIER 3 CROSSING CULVERT INSTALLATION (2 LOCATIONS)	1,586 SF / 132 LF	264 LF	N/A	1,074 SF / 70 LF	147 LF	N/A
S-1	R3UB1x	STREAM CULVERT REMOVAL AND RESTORATION (2 LOCATIONS)	N/A	N/A	N/A	512 SF/ 40 LF	131 LF	N/A
W-3	PFO1/4C	NEW TIER 3 CROSSING CULVERT INSTALLATION #2	N/A	N/A	195 SF	N/A	N/A	70 SF
W-4	PEM1B/PSS1B	SIDEWALK GRADING	N/A	N/A	426 SF	N/A	N/A	N/A



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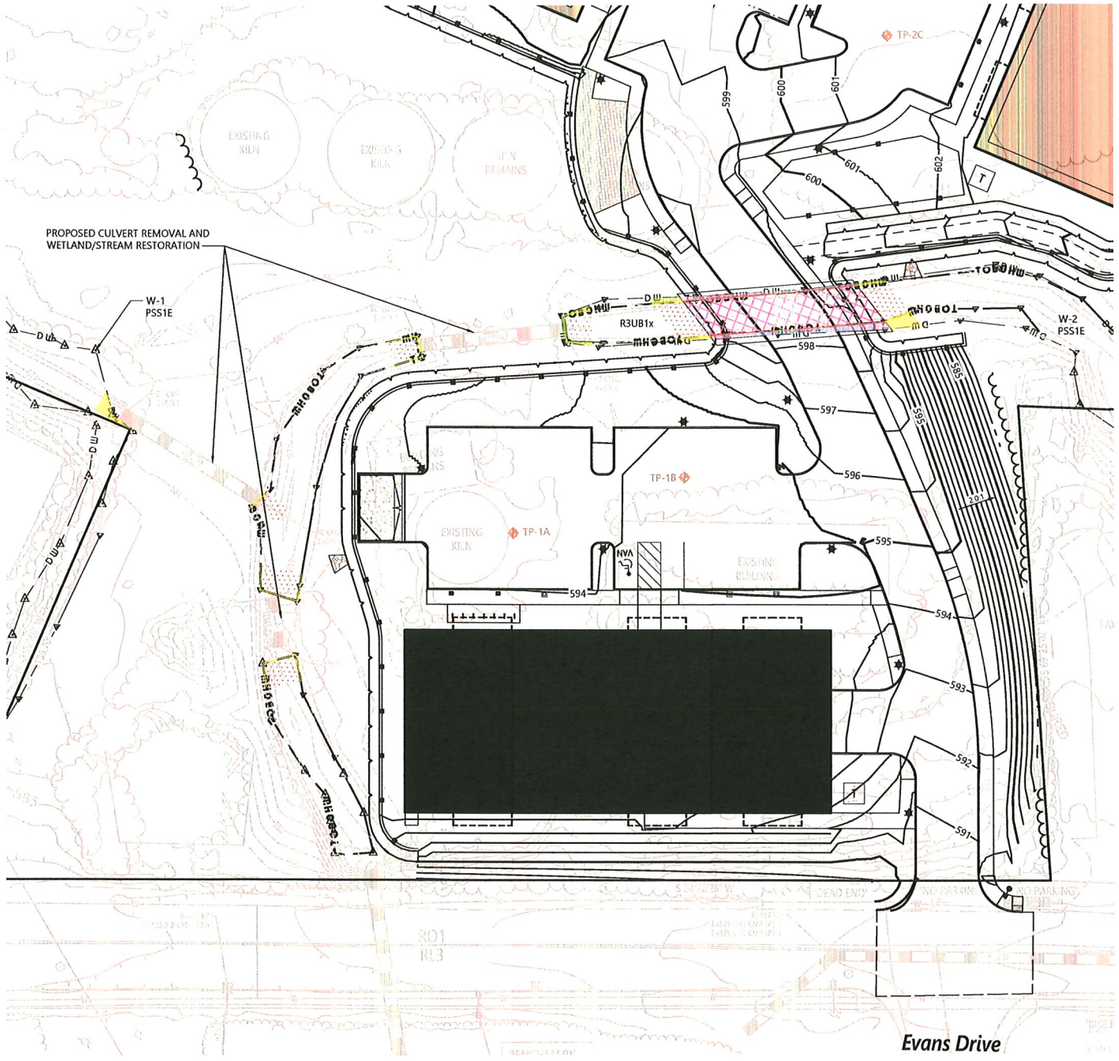
Drawing Title: Overall Wetland Impact Plan

Drawing Number: C2.0

Sheet 2 of 8

Project Number 52933.00

Saved Tuesday, April 22, 2025 4:42:38 PM DBOSWORTH Plotted Wednesday, April 23, 2025 1:23:04 PM Derek Bosworth



Legend

- DW — DELINEATED WETLAND
- TOBOHW — DELINEATED TOP OF BANK & ORDINARY HIGH WATER
- PERMANENT BANK IMPACT
- TEMPORARY BANK IMPACT
- PERMANENT BED IMPACT
- PERMANENT WETLAND IMPACT
- TEMPORARY BED IMPACT
- TEMPORARY WETLAND IMPACT

Wetland Impact Summary

Wetland ID	Cowardin Classification	Proposed Activity	Permanent			Temporary		
			Bed	Bank	Wetland	Bed	Bank	Wetland
W-1 / S-1	PSS1E / R3UB1x	WETLAND CULVERT REMOVAL AND RESTORATION	N/A	N/A	N/A	92 SF / 10 LF	10 LF	48 SF
W-2	PSS1E	NEW TIER 3 CROSSING CULVERT INSTALLATION #1	N/A	N/A	210 SF	N/A	N/A	135 SF
S-1	R3UB1x	NEW TIER 3 CROSSING CULVERT INSTALLATION #1	974 SF / 68 LF	136 LF	N/A	334 SF / 20 LF	47 LF	N/A
S-1	R3UB1x	CULVERT REMOVAL AND RESTORATION	N/A	N/A	N/A	512 SF / 40 LF	131 LF	N/A

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Drawing Title: Wetland Impact Plan 1

Drawing Number: C2.1

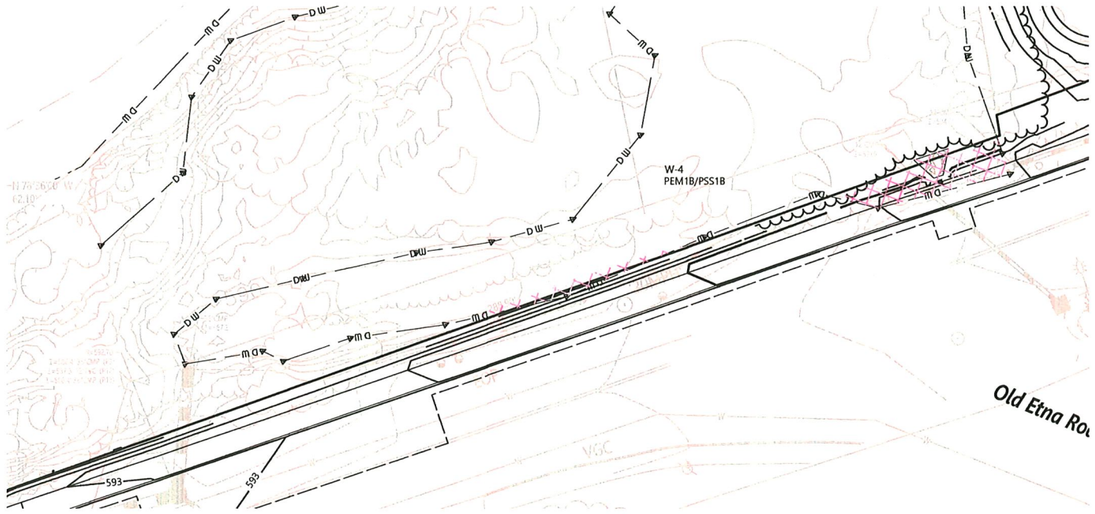
Sheet 3 of 8

Project Number: 52933.00

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Legend

- DW — DELINEATED WETLAND
- TOBOHW — DELINEATED TOP OF BANK & ORDINARY HIGH WATER
- PERMANENT BANK IMPACT
- TEMPORARY BANK IMPACT
- PERMANENT BED IMPACT
- PERMANENT WETLAND IMPACT
- TEMPORARY BED IMPACT
- TEMPORARY WETLAND IMPACT

Wetland Impact Summary

Wetland ID	Cowardin Classification	Proposed Activity	Permanent			Temporary		
			Bed	Bank	Wetland	Bed	Bank	Wetland
W-3	PFO1/4C	NEW TIER 3 CROSSING CULVERT INSTALLATION #2	N/A	N/A	195 SF	N/A	N/A	70 SF
S-1	R3UB1x	NEW TIER 3 CROSSING CULVERT INSTALLATION #2	612 SF / 64 LF	128 LF	N/A	740 SF / 50 LF	100 LF	N/A
W-4	PEM1B/PSS1B	SIDEWALK GRADING	N/A	N/A	426 SF	N/A	N/A	N/A

0 10 20 40 Feet

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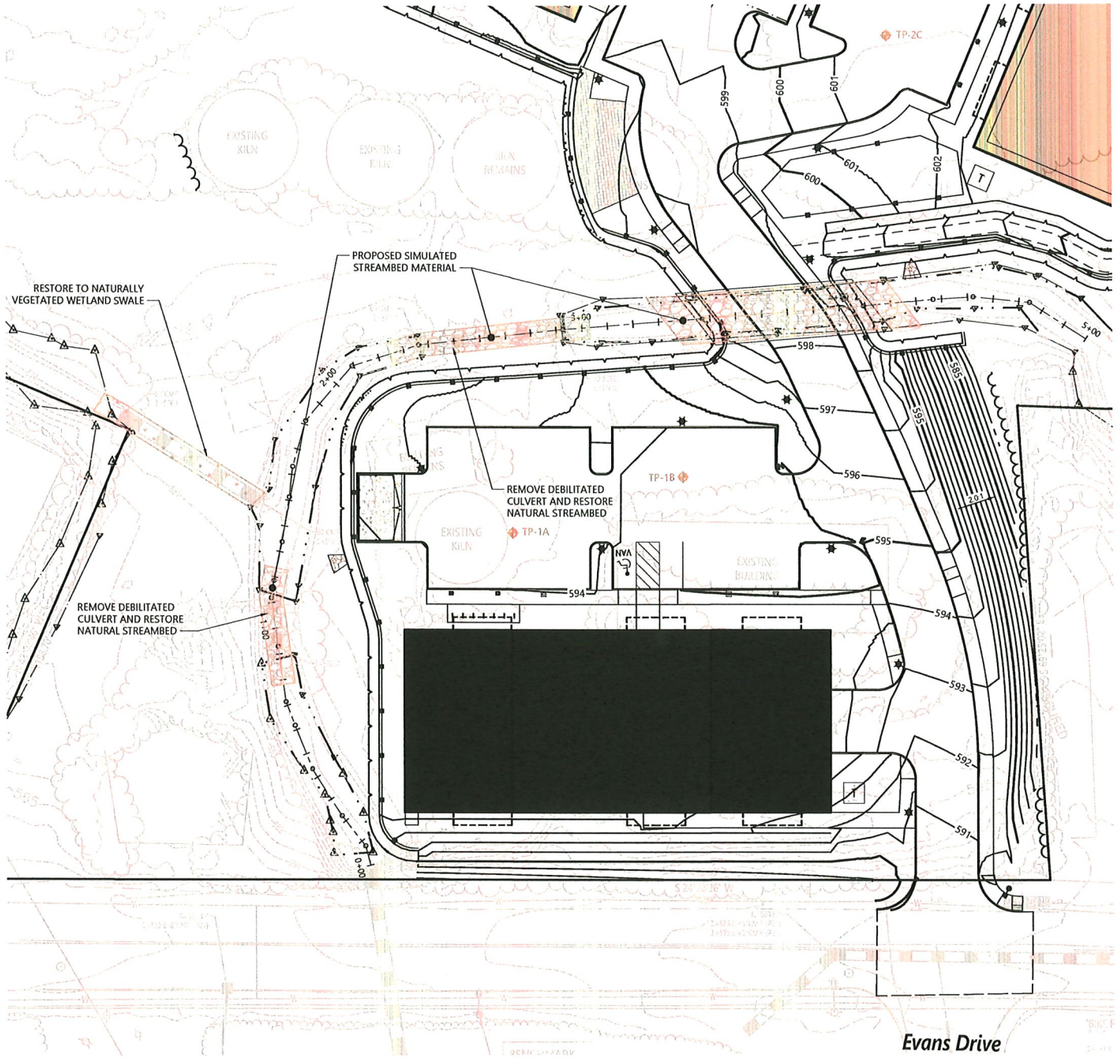
Drawing Title: Wetland Impact Plan 2

Drawing Number: C2.2

Sheet 4 of 8

Project Number 52933.00

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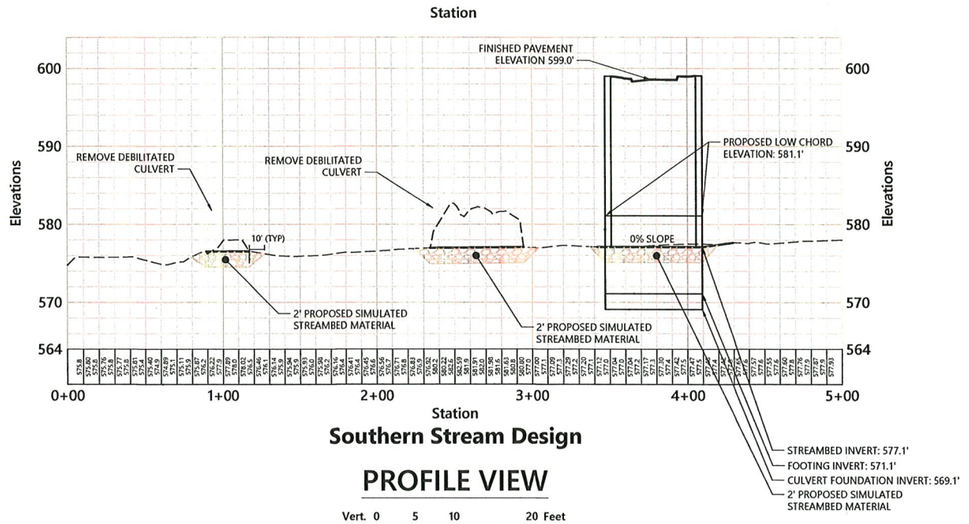
PLAN VIEW

0 15 30 60 Feet

WETLAND SWALE RESTORATION PLANTING PLAN:

1. MAINTAIN EXISTING GRADES THROUGH RESTORED WETLAND SWALE. APPLY NEW ENGLAND WETLAND PLANTS, INC. NEW ENGLAND WETMIX (OR APPROVED SIMILAR) IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS. ENSURE 75% GROUND COVER AFTER TWO FULL GROWING SEASONS.

2. PLANT 18"-24" SPECKLED ALDER (*ALNUS INCANA*), 18"-24" SILK DOGWOOD (*CORNUS AMOMUM*), AND 18"-24" BEBB'S WILLOW (*SALIX BEBBIANA*) THROUGH SWALE IN ACCORDANCE WITH NURSERIES SPACING REQUIREMENTS TO PROVIDE ADEQUATE WOODY SHRUB LAYER COUPLED WITH APPROVED SEED MIX.

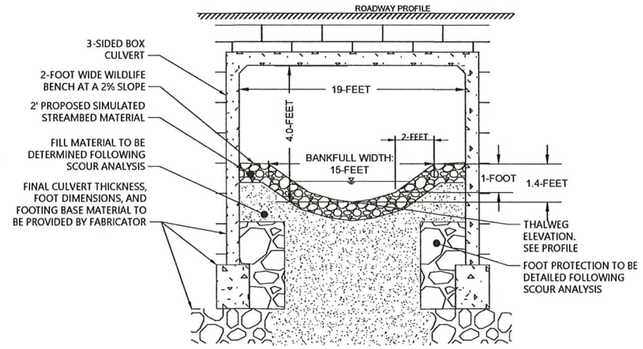


Southern Stream Design

PROFILE VIEW

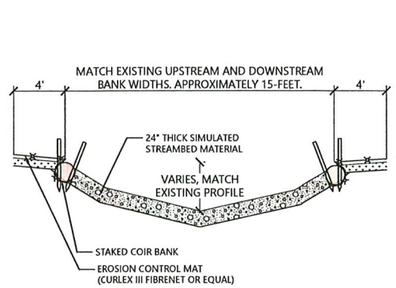
Vert. 0 5 10 20 Feet

Horiz. 0 25 50 100 Feet



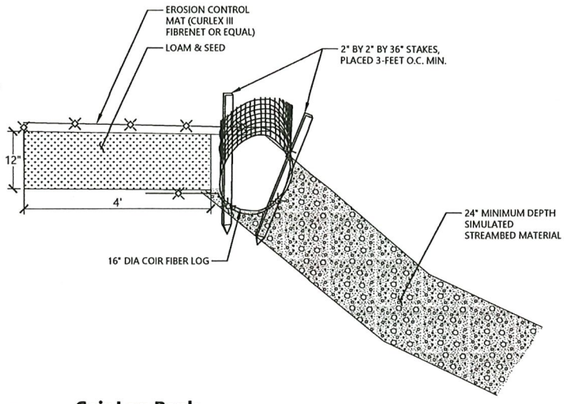
PROPOSED CROSSING ELEVATION VIEW

NOTES:
1. THE PROPOSED SIMULATED STREAMBED MATERIAL WILL BE A STABLE MATERIAL CALCULATED DURING THE NEXT PHASE OF DESIGN.



Natural Streambed Restoration 08/23

N.T.S. Source: VHB EV_1105



Coir Log Bank 08/23

N.T.S. Source: VHB EV_1104

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Drawing Title

Stream Crossing Plan and Profile 1

Drawing Number

C3.1

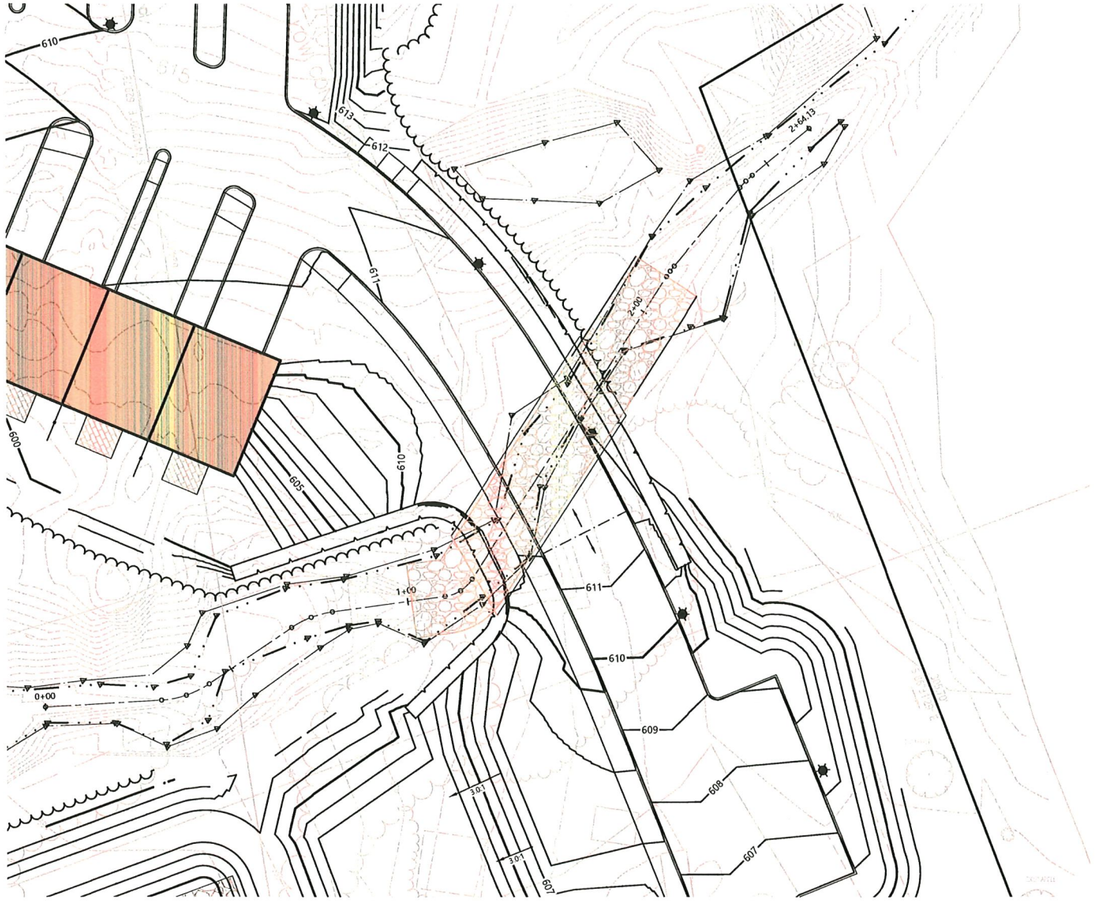
Sheet 5 of 8

Project Number 52933.00

STATE OF NEW HAMPSHIRE ANNIQUE HELEN FLEUROCK No. 16725 LICENSED PROFESSIONAL ENGINEER

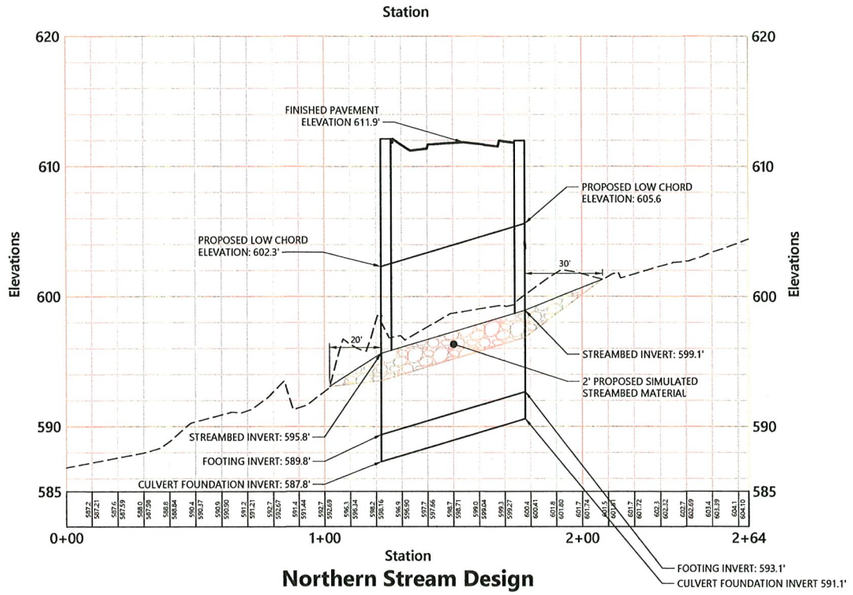
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PLAN VIEW

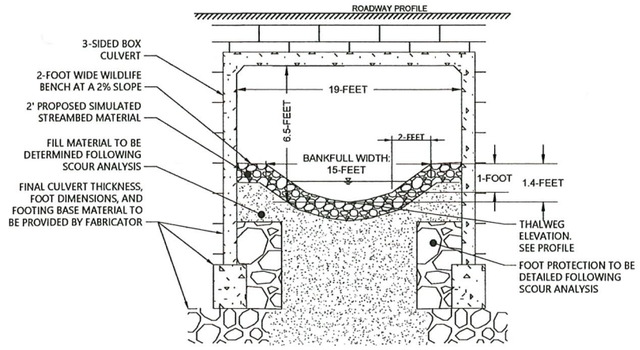
0 10 20 40 Feet



Northern Stream Design

PROFILE VIEW

Vert. 0 3 6 12 Feet
Horiz. 0 15 30 60 Feet



PROPOSED CROSSING ELEVATION VIEW

NOTES:
1. THE PROPOSED SIMULATED STREAMBED MATERIAL WILL BE A STABLE MATERIAL CALCULATED DURING THE NEXT PHASE OF DESIGN.

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Drawing Title
Stream Crossing Plan and Profile 2

Drawing Number C3.2

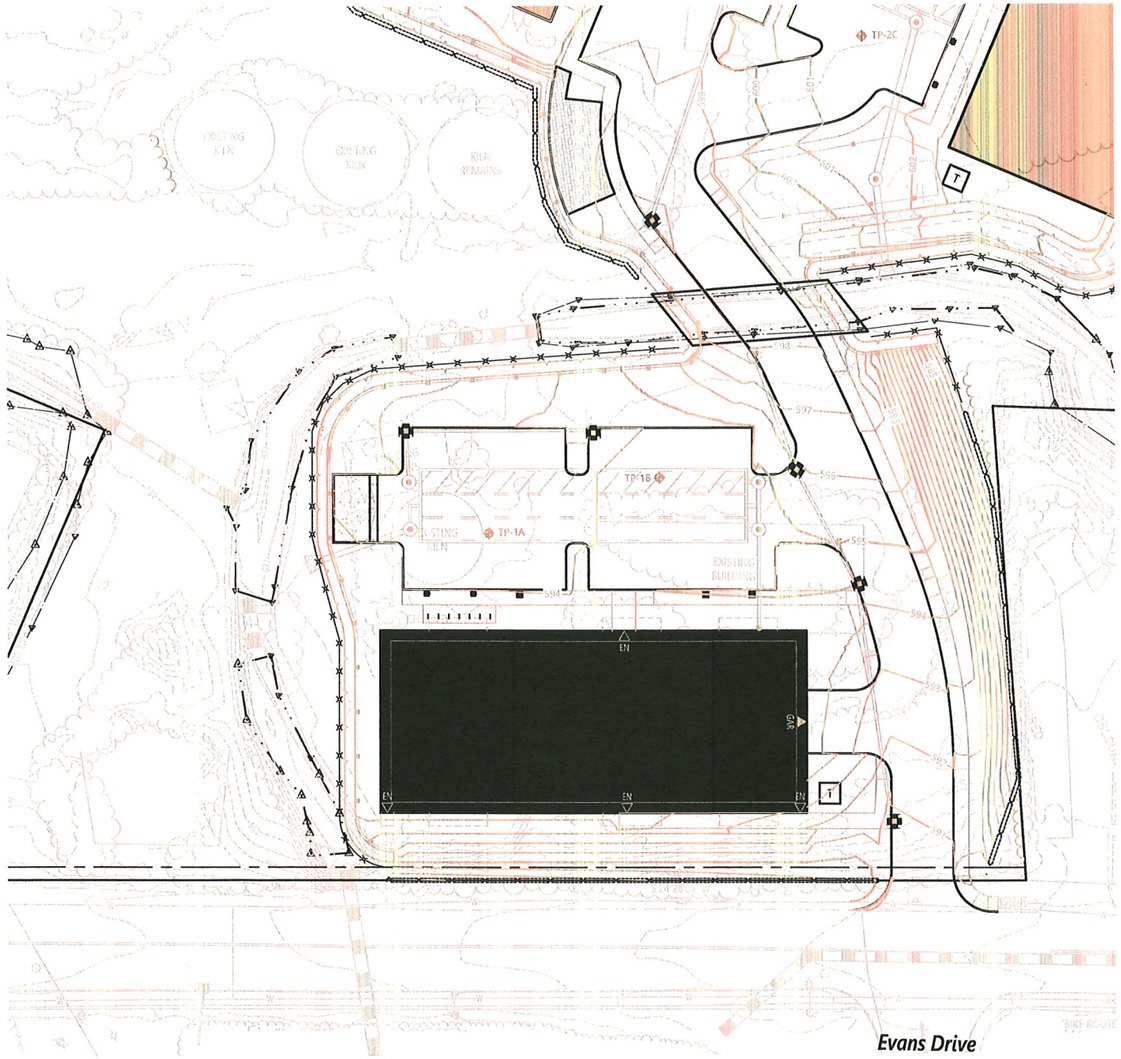
Sheet 6 of 8

Project Number 52933.00

STATE OF NEW HAMPSHIRE ANNIQUE HELEN FLEUROCK No. 16725 LICENSED PROFESSIONAL ENGINEER

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COFFERDAM AND WATER DIVERSION NOTES

1. THIS WATER DIVERSION PLAN IS PROVIDED FOR GENERAL INFORMATION ONLY. THE CONTRACTOR SHALL MODIFY AS NECESSARY TO ACHIEVE REQUIRED WATER HANDLING DURING CONSTRUCTION OF THE CULVERT. THE FINAL DIVERSION PLAN IS SUBJECT TO REVIEW AND APPROVAL BY THE ENGINEER.
2. THE FINAL WATER DIVERSION SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW HAMPSHIRE. THE CONTRACTOR SHALL SUBMIT STAMPED WORKING DRAWINGS SHOWING WATER DIVERSION STRUCTURE LOCATION, COFFERDAMS, CONSTRUCTION METHOD AND SEQUENCE, AND DEWATERING METHOD, FOR REVIEW AND DOCUMENTATION.
3. WATER DIVERSION AND CONSTRUCTION ACTIVITIES IN CHANNEL SHALL BE SCHEDULED DURING A PERIOD OF LOW FLOW. IF THERE IS FLOWING WATER DURING CONSTRUCTION THE FLOW SHALL BE DIVERTED AROUND THE WORK SITE IN A STABLE MANNER USING METHODS APPROVED BY THE ENGINEER. SUCH METHODS WOULD LIKELY INCLUDE USE OF COFFERDAMS.
4. THE TWO-YEAR FLOW (Q2) IS ESTIMATED TO BE 25 CFS AT THIS LOCATION. TO ACCOMMODATE THIS MAXIMUM FLOW, THE COFFERDAMS SHALL BE SET AT ELEV. 580.0-FT.
5. CULVERT CROSSING TO BE INSTALLED IN TWO PHASES. COFFERDAMS TO BE INSTALLED AND REMOVED AT ONE SIDE OF THE STREAM AT A TIME AS THE WATER IS BEING DIVERTED TO THE OPPOSITE SIDE.

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No.	Revision	Date	Appvd

Designed by DJB | Checked by DHF

Issued for Permitting | Date March 28, 2025

Not Approved for Construction

Drawing Title
Erosion and Sediment Control Plan 1

Drawing Number
C4.1

Sheet 7 of 8

Project Number 52933.00

Saved Tuesday, March 25, 2025 5:28:08 PM DBOSWORTH Plotted Monday, March 31, 2025 2:37:33 PM Derek Bosworth

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COFFERDAM AND WATER DIVERSION NOTES

1. THIS WATER DIVERSION PLAN IS PROVIDED FOR GENERAL INFORMATION ONLY. THE CONTRACTOR SHALL MODIFY AS NECESSARY TO ACHIEVE REQUIRED WATER HANDLING DURING CONSTRUCTION OF THE CULVERT. THE FINAL DIVERSION PLAN IS SUBJECT TO REVIEW AND APPROVAL BY THE ENGINEER.
2. THE FINAL WATER DIVERSION SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW HAMPSHIRE. THE CONTRACTOR SHALL SUBMIT STAMPED WORKING DRAWINGS SHOWING WATER DIVERSION STRUCTURE LOCATION, COFFERDAMS, CONSTRUCTION METHOD AND SEQUENCE, AND DEWATERING METHOD, FOR REVIEW AND DOCUMENTATION.
3. WATER DIVERSION AND CONSTRUCTION ACTIVITIES IN CHANNEL SHALL BE SCHEDULED DURING A PERIOD OF LOW FLOW. IF THERE IS FLOWING WATER DURING CONSTRUCTION THE FLOW SHALL BE DIVERTED AROUND THE WORK SITE IN A STABLE MANNER USING METHODS APPROVED BY THE ENGINEER. SUCH METHODS WOULD LIKELY INCLUDE USE OF COFFERDAMS.
4. THE TWO-YEAR FLOW (Q2) IS ESTIMATED TO BE 25 CFS AT THIS LOCATION. TO ACCOMMODATE THIS MAXIMUM FLOW, THE COFFERDAMS SHALL BE SET AT ELEV. 603.0-FT.
5. CULVERT CROSSING TO BE INSTALLED IN TWO PHASES. COFFERDAMS TO BE INSTALLED AND REMOVED AT ONE SIDE OF THE STREAM AT A TIME AS THE WATER IS BEING DIVERTED TO THE OPPOSITE SIDE.

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The Brickyard Residential Developmen

174 Hanover Street Extension
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No.	Revision	Date	Appvd

Designed by DJB | Checked by DHF

Issued for: Permitting — Date: March 28, 2025

Not Approved for Construction

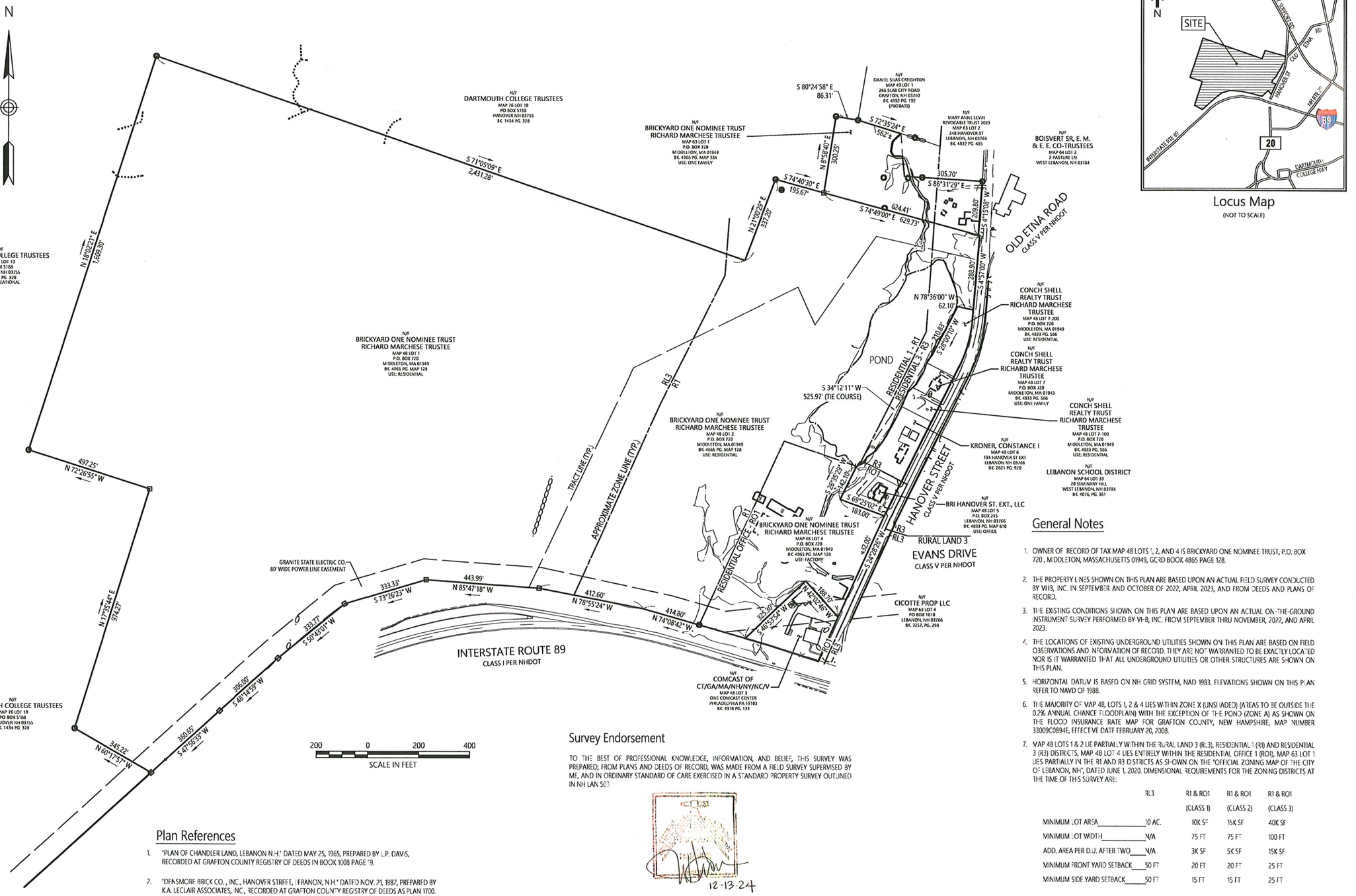
Drawing Title
Erosion and Sediment Control Plan 2

Drawing Number
C4.2

Sheet 8 of 8

Project Number
52933.00

Saved Thursday, March 20, 2025 4:40:51 PM DBOSWORTH Plotted Tuesday, March 25, 2025 5:01:02 PM Derek Bosworth



Locus Map
(NOT TO SCALE)

Plan References

1. "PLAN OF CHANDLER LAND, LEBANON N.H." DATED MAY 25, 1965, PREPARED BY L.P. DAVIS, RECORDED AT GRAFTON COUNTY REGISTRY OF DEEDS IN BOOK 1008 PAGE 19.
2. "DENSMORE BRICK CO., INC., HANOVER STREET, LEBANON, N.H." DATED NOV. 21, 1980, PREPARED BY K.A. LECLAIR ASSOCIATES, INC., RECORDED AT GRAFTON COUNTY REGISTRY OF DEEDS AS PLAN 1700.
3. "DENSMORE BRICK CO., INC., HANOVER STREET, LEBANON, N.H." DATED NOV. 21, 1982, REVISED OCT. 4, 1983, PREPARED BY K.A. LECLAIR ASSOCIATES, INC., RECORDED AT GRAFTON COUNTY REGISTRY OF DEEDS AS PLAN 2089.
4. "DENSMORE BRICK CO., INC., HANOVER STREET, LEBANON, N.H." DATED NOV. 21, 1982, REVISED APRIL 24, 1984, PREPARED BY K.A. LECLAIR ASSOCIATES, INC., RECORDED AT GRAFTON COUNTY REGISTRY OF DEEDS AS PLAN 2934.
5. "HODGES DEVELOPMENT CORP., HANOVER STREET, GRAFTON COUNTY, LEBANON, N.H." DATED APRIL 4, 1986, REVISED THROUGH 5/4/89, PREPARED BY K.A. LECLAIR ASSOCIATES, INC., RECORDED AT GRAFTON COUNTY REGISTRY OF DEEDS AS PLAN 5625.
6. "ELBITHAL REALTY TRUST, LEBANON, N.H." DATED JULY 3, 1980, PREPARED BY K.A. LECLAIR ASSOCIATES, INC., RECORDED AT GRAFTON COUNTY REGISTRY OF DEEDS AS PLAN 6453.
7. "STATE OF NEW HAMPSHIRE DEPARTMENT OF PUBLIC WORKS, PLANS OF PROPOSED FEDERAL AID PROJECT, I 89-1(65)53, N.H. PROJECT NO. P-3821-B" UNDATED, ON FILE WITH NHDOT AS PLAN P5821-B.

Survey Endorsement

TO THE BEST OF PROFESSIONAL KNOWLEDGE, INFORMATION, AND BELIEF, THIS SURVEY WAS PREPARED; FROM PLANS AND DEEDS OF RECORD, WAS MADE FROM A FIELD SURVEY SUPERVISED BY ME, AND IN ORDINARY STANDARD OF CARE EXERCISED IN A STANDARD PROPERTY SURVEY OUTLINED IN NH LAN 503.

12.13.24

Wetland Endorsement

THIS IS TO CERTIFY THAT THE WETLANDS HAVE BEEN DELINEATED IN ACCORDANCE WITH THE PROCEDURES OUTLINED IN THE 1987 CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL (TECHNICAL REPORT Y-87-1)

STATE OF NEW HAMPSHIRE SCOTT G. GODDARD No. 023 CERTIFIED WETLAND SCIENTIST

General Notes

1. OWNER OF RECORD OF TAX MAP 48 LOTS 1, 2, AND 4 IS BRICKYARD ONE NOMINEE TRUST, P.O. BOX 220, MIDDLETON, MASSACHUSETTS 01949, GCRD BOOK 4865 PAGE 128.
2. THE PROPERTY LINES SHOWN ON THIS PLAN ARE BASED UPON AN ACTUAL FIELD SURVEY CONDUCTED BY VHB, INC. IN SEPTEMBER AND OCTOBER OF 2022, APRIL 2023, AND FROM DEEDS AND PLANS OF RECORD.
3. THE EXISTING CONDITIONS SHOWN ON THIS PLAN ARE BASED UPON AN ACTUAL ON-THE-GROUND INSTRUMENT SURVEY PERFORMED BY VHB, INC. FROM SEPTEMBER THRU NOVEMBER, 2022, AND APRIL 2023.
4. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES SHOWN ON THIS PLAN ARE BASED ON FIELD OBSERVATIONS AND INFORMATION OF RECORD. THEY ARE NOT WARRANTED TO BE EXACTLY LOCATED NOR IS IT WARRANTED THAT ALL UNDERGROUND UTILITIES OR OTHER STRUCTURES ARE SHOWN ON THIS PLAN.
5. HORIZONTAL DATUM IS BASED ON NH GRID SYSTEM, NAD 1983. ELEVATIONS SHOWN ON THIS PLAN REFER TO NAVD OF 1988.
6. THE MAJORITY OF MAP 48, LOTS 1, 2 & 4 LIES WITHIN ZONE X (UNSHADED) (AREAS TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) WITH THE EXCEPTION OF THE POND (ZONE A) AS SHOWN ON THE FLOOD INSURANCE RATE MAP FOR GRAFTON COUNTY, NEW HAMPSHIRE, MAP NUMBER 33009C0894E, EFFECTIVE DATE FEBRUARY 20, 2008.
7. MAP 48 LOTS 1 & 2 LIE PARTIALLY WITHIN THE RURAL LAND 3 (RL3), RESIDENTIAL 1 (R1) AND RESIDENTIAL 3 (R3) DISTRICTS, MAP 48 LOT 4 LIES ENTIRELY WITHIN THE RESIDENTIAL OFFICE 1 (RO1), MAP 63 LOT 1 LIES PARTIALLY IN THE R1 AND R3 DISTRICTS AS SHOWN ON THE "OFFICIAL ZONING MAP OF THE CITY OF LEBANON, NH", DATED JUNE 1, 2020. DIMENSIONAL REQUIREMENTS FOR THE ZONING DISTRICTS AT THE TIME OF THIS SURVEY ARE:

	RL3	R1 & RO1 (CLASS 1)	R1 & RO1 (CLASS 2)	R1 & RO1 (CLASS 3)
MINIMUM LOT AREA	10 AC.	10K SF	15K SF	40K SF
MINIMUM LOT WIDTH	N/A	75 FT	75 FT	100 FT
ADD. AREA PER D.U. AFTER TWO	N/A	3K SF	5K SF	15K SF
MINIMUM FRONT YARD SETBACK	50 FT	20 FT	20 FT	25 FT
MINIMUM SIDE YARD SETBACK	50 FT	15 FT	15 FT	25 FT
MINIMUM REAR YARD SETBACK	50 FT	20 FT	20 FT	30 FT
MAXIMUM BUILDING HEIGHT	35 FT	45 FT*	45 FT*	45 FT*
MAXIMUM BUILDING COVERAGE	1%	25%	20%	15%

* WITHIN THE R1 DISTRICT, THE BUILDING HEIGHT MAY BE INCREASED TO 55 FT TO ACCOMMODATE A PARKING STRUCTURE UNDERNEATH OR WITHIN THE PROPOSED BUILDING (SEE SECTION 308.4).

7) THE WETLANDS SHOWN ON THIS PLAN WERE FLAGGED BY GODDARD CONSULTING, LLC AND LOCATED IN NOVEMBER 2022.
8) THE TREE SYMBOL OUTLINE SHOWN ON THIS PLAN DOES NOT REPRESENT THE ACTUAL TREE CANOPY.
9) FOOT TRAILS WERE OBSERVED CROSSING THE NORTH AND WEST LOT LINES AS SHOWN. NO DOCUMENTS WERE FOUND AT THE GCRD PROVIDING RIGHTS OF ACCESS OR USE.
10) THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A CURRENT TITLE REPORT AND MAY BE SUBJECT TO ADDITIONAL INFORMATION DISCLOSED IN SUCH.

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Legend

- DRAIN MANHOLE
- CATCH BASIN
- SEWER MANHOLE
- ELECTRIC MANHOLE
- TELEPHONE MANHOLE
- MANHOLE
- HH HAND HOLE
- WATER GATE
- FIRE HYDRANT
- GAS GATE
- BOLLARD
- STREET SIGN
- LIGHT POLE
- UTILITY POLE
- GUY POLE
- GUY WIRE
- MONITORING WELL
- FLOOD LIGHT
- PD PEDESTRIAN SIGNAL
- MAST ARM
- FLASHING SIGNAL
- W WELL
- MARSH
- F.F.E.=45.27' FINISHED FLOOR ELEVATION
- DYL DOUBLE YELLOW LINE
- DWL DASHED WHITE LINE
- 10.2 VGC EDGE OF PAVEMENT
- VERTICAL GRANITE CURB
- SGE SLOPED GRANITE EDGE
- GUARD RAIL
- CHAIN LINK FENCE
- DRAINAGE LINE
- SEWER LINE
- OHW OVERHEAD WIRE
- E UNDERGROUND ELECTRIC
- T TELEPHONE LINE
- G GAS LINE
- W WATER LINE
- STONE WALL
- TREE LINE
- 8.3'-5.0' LIMIT OF BANK
- WF1-100 VEGETATED WETLAND BOUNDARY
- EDGE OF WATER (AERIAL PHOTOGRAMMETRY)

The Brickyard

Hanover Street
Lebanon, Grafton County, N.H.

No.	Revision	Date	Appvd.
1	RESPONSE TO COMMENTS UPDATE	8/06/2024	MJH
2	RESPONSE TO CITY COMMENTS	12/10/2024	MJH

Designed by | Checked by
Issued for | Date
April 1, 2024

Drawing Title
Boundary Plan of Land

Drawing Number
Sv-1

40 50

Project Number
52933.00

The Brickyard

Hanover Street
Lebanon, Grafton County, N.H.

No.	Revision	Date	Appvd.
1	RESPONSE TO COMMENTS UPDATE	8/06/2024	MJH
2	RESPONSE TO CITY COMMENTS	12/10/2024	MJH

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Issued for	Date
April 1, 2024	

Drawing Title

Existing Conditions Plan of Land

Drawing Number

Sv-2

41 50

Project Number
52933.00

SCALE IN FEET
0 40 80

BENCHMARK
NAIL IN U.POLE
ELEV.=588.45'
NAVD 88

HANOVER STREET
CLASS V PER NHDOT

EVANS DRIVE
CLASS V PER NHDOT

INTERSTATE ROUTE 89
CLASS 1 PER NHDOT

RESIDENTIAL OFFICE - R01

(FLOOD ZONE A)

(FLOOD ZONE X)

POND

See Sheet Sv-3

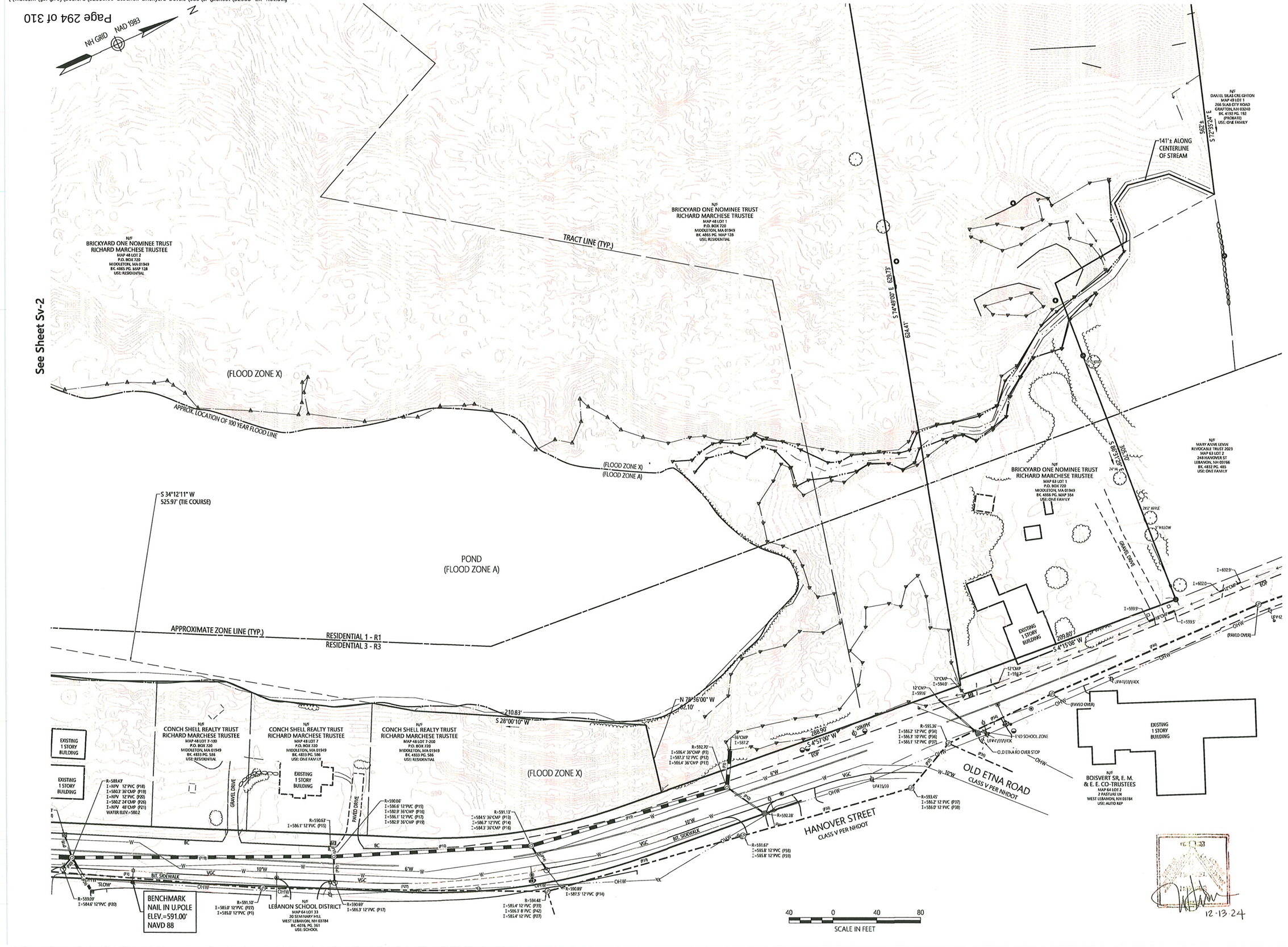
NH GRID NAD 1983/2011

Legend

- DRAIN MANHOLE
- CATCH BASIN
- SEWER MANHOLE
- ELECTRIC MANHOLE
- TELEPHONE MANHOLE
- MANH-O.C.
- HH□ HAND HOLE
- WATER GATE
- FIRE HYDRANT
- GAS GATE
- BOLLARD
- STREET SIGN
- ULIGHT POLE
- UTILITY POLE
- GUY POLE
- GUY WIRE
- MONITORING WELL
- FLOOD LIGHT
- PEDESTRIAN SIGNAL
- MAST ARM
- FLASHING SIGNAL
- WELL
- MARSH
- F.F.E.=45.27' FIN SHED FLOOR ELEVATION
- DVL DOUBLE YELLOW LINE
- DWL DASHED WHITE LINE
- EDGE OF PAVEMENT
- VERTICAL GRANITE CURB
- S.CURVED GRANITE EDGE
- GUARD RAIL
- CHAIN LINK FENCE
- DRAINAGE LINE
- SEWER L.N.E
- OVER-HEAD WIRE
- UNDERGROUND ELECTRIC
- TELEPHONE LINE
- GAS L.N.E
- WATER L.N.E
- TREE LINE
- STONE WALL
- LIMIT OF BANK
- VEGETATED WETLAND BOUNDARY
- EDGE OF WATER (AERIAL PHOTOGRAMMETRY)

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The Brickyard

Hanover Street
Lebanon, Grafton County, N.H.

No.	Revision	Date	Appvd.
1	RESPONSE TO COMMENTS UPDATE	8/06/2024	MJH
2	RESPONSE TO CITY COMMENTS	12/10/2024	MJH

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April 1, 2024

Drawing Title

Existing Conditions Plan of Land

Drawing Number

Sv-3

42 50

Project Number
52933.00

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Open Space Calculations

Zone	Total Area (SF)	% Required	Open Space Required
RESIDENTIAL 1 (R-1)	1,252,605	30	375,782 SF (8.62 AC)
RESIDENTIAL-OFFICE-1 (R-O-1)	286,532	30	85,960 SF (1.97 AC)
RESIDENTIAL 3 (R-3)	123,849	50	61,925 SF (1.42 AC)
TOTAL OPEN SPACE REQUIRED			523,666 SF (12.02 AC)
TOTAL OPEN SPACE PROVIDED			523,666 SF (12.02 AC)

PROVIDED OPEN SPACE SHOULD MATCH OR SLIGHTLY EXCEED REQUIRED SO THAT IT IS NOT A FUTURE DEVELOPMENT LIMITATION.

Notes

1. OPEN SPACE USES MAY INCLUDE TRAILS, RECREATION (BOTH ACTIVE AND PASSIVE), AND FUTURE UNDERGROUND UTILITY BUILDOUT. STREETS, PARKING AREAS, RESIDENTIAL AND NON-RESIDENTIAL STRUCTURES ARE NOT PERMITTED IN THE OPEN SPACE.
2. UNDER A CONDOMINIUM FORM OF OWNERSHIP, THE CONTROL AND MAINTENANCE OF THE OPEN SPACE WILL BE HELD BY AN OWNER'S ASSOCIATION ESTABLISHED BY THE APPLICANT FOR THE BENEFIT AND ENJOYMENT OF THE RESIDENTS AND/OR USERS OF THE DEVELOPMENT.
3. THE PROTECTION OF THE OPEN SPACE WILL BE ASSURED BY THE PLANNING BOARD'S CONDITIONS OF APPROVAL FOR THE DEVELOPMENT SO THAT THE SPACE REMAINS UNDEVELOPED AND ANY ENVIRONMENTALLY SENSITIVE CONDITIONS ARE PROTECTED AND PRESERVED. ADDITIONALLY, VESTING THE MANAGEMENT AND CONTROL OF THE OPEN SPACE IN AN OWNERS' ASSOCIATION WILL ASSURE THAT IT IS MAINTAINED AS INTENDED.
4. METES AND BOUND FOR OPEN SPACE ARE PROVIDED ON THIS PLAN AND WOODEN DEDICATED OPEN SPACE SIGNS ARE TO BE LOCATED AT THE ACCESS POINTS TO THESE AREAS.
5. THE PLAN WILL BE RECORDED PRIOR TO THE ISSUANCE OF ANY CERTIFICATE OF OCCUPANCY.
6. THE DEDICATED OPEN SPACE IS AVAILABLE AND OPEN TO THE PUBLIC FOR USE.

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No.	Revision	Date	Appvd.
1	Completeness Review Comments	07/02/24	DF
2	Response to Comments Update	08/06/24	DF
3	Revised Layout Resubmission	10/24/24	DF
4	Response to Comments Rev 2	12/04/24	DF
5	Response to City Comments	12/11/24	DF

Designed by TMD | Checked by MJV
Issued for: Permitting | Date: May 10, 2024

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Drawing Title: Open Space Plan

Drawing Number: C1.2

Sheet 3 of 50

STATE OF NEW HAMPSHIRE DAVID M FEINSTEIN-MACHEN No. 13503 LICENSED PROFESSIONAL ENGINEER

Project Number: 52933.00

Saved Thursday, December 12, 2024 4:24:13 PM DROSWORTH Plotted Monday, February 3, 2025 3:11:00 PM Derek Bosworth

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Erosion Control

1. PRIOR TO STARTING ANY OTHER WORK ON THE SITE, THE CONTRACTOR SHALL NOTIFY APPROPRIATE AGENCIES AND SHALL INSTALL EROSION CONTROL MEASURES AS SHOWN ON THE PLANS AND AS IDENTIFIED IN FEDERAL, STATE, AND LOCAL APPROVAL DOCUMENTS PERTAINING TO THIS PROJECT.
2. CONTRACTOR SHALL INSPECT AND MAINTAIN EROSION CONTROL MEASURES, AND REMOVE SEDIMENT THEREFROM ON A WEEKLY BASIS AND WITHIN TWELVE HOURS AFTER EACH STORM EVENT (0.5" OF RAINFALL OR GREATER) AND DISPOSE OF SEDIMENTS IN AN UPLAND AREA SUCH THAT THEY DO NOT ENCUMBER OTHER DRAINAGE STRUCTURES AND PROTECTED AREAS.
3. CONTRACTOR SHALL BE FULLY RESPONSIBLE TO CONTROL CONSTRUCTION SUCH THAT SEDIMENTATION SHALL NOT AFFECT REGULATORY PROTECTED AREAS, WHETHER SUCH SEDIMENTATION IS CAUSED BY WATER, WIND, OR DIRECT DEPOSIT.
4. CONTRACTOR SHALL PERFORM CONSTRUCTION SEQUENCING SUCH THAT EARTH MATERIALS ARE EXPOSED FOR A MINIMUM OF TIME BEFORE THEY ARE COVERED, SEEDED, OR OTHERWISE STABILIZED TO PREVENT EROSION.
5. UPON COMPLETION OF CONSTRUCTION AND ESTABLISHMENT OF PERMANENT GROUND COVER, CONTRACTOR SHALL REMOVE AND DISPOSE OF EROSION CONTROL MEASURES AND CLEAN SEDIMENT AND DEBRIS FROM ENTIRE DRAINAGE AND SEWER SYSTEMS.
6. AREAS REMAINING UNSTABILIZED FOR A PERIOD OF MORE THAN 30 DAYS SHALL BE TEMPORARILY SEEDED AND MULCHED. STRAW MULCH SHALL BE APPLIED AT A MINIMUM RATE OF 1-1/2 TONS/ACRE.
7. PERMANENT SEEDING SHALL OCCUR BETWEEN APRIL 1 AND JUNE 1, AND/OR BETWEEN AUGUST 15 AND OCTOBER 15. ALL SEEDING FROM SEPTEMBER 15 SHALL BE STRAW MULCHED.
8. DUST SHALL BE CONTROLLED THROUGH THE USE OF WATER.
9. SOILS TO BE STOCKPILED FOR A PERIOD OF MORE THAN 30 DAYS SHALL BE TEMPORARILY SEEDED AND MULCHED. CONTRACTOR SHALL INSTALL SILT FENCING ALONG DOWNHILL SIDE OF STOCKPILES.
10. CONTRACTOR SHALL PROVIDE TEMPORARY SEDIMENTATION BASINS TO CONTROL SEDIMENTATION AND STORMWATER RUNOFF DURING THE CONSTRUCTION PERIOD. THE CONTRACTOR SHALL SUBMIT PROPOSED BASIN LOCATIONS, DESIGNS, ETC. TO THE ENGINEER FOR REVIEW PRIOR TO CONSTRUCTION. TEMPORARY SEDIMENTATION BASINS SHALL MEET NHDES REQUIREMENTS.
11. CONTRACTOR SHALL PROVIDE NECESSARY EROSION CONTROL MEASURES TO INSURE THAT SURFACE WATER RUN-OFF FROM UNSTABILIZED AREAS DOES NOT CARRY SILT, SEDIMENT, AND OTHER DEBRIS OUTSIDE OF THE LIMITS OF WORK.
12. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
    - A. BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
    - B. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
    - C. A MINIMUM OF 3-IN OF NON-EROSIVE MATERIAL, SUCH AS STONE OR RIPRAP, HAS BEEN INSTALLED;
    - D. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
13. THE SMALLEST PRACTICAL AREA SHALL BE DISTURBED DURING CONSTRUCTION, BUT AT NO TIME SHALL THE TOTAL UNSTABILIZED DISTURBED AREA ON-SITE BE GREATER THAN (5) FIVE ACRES. [NHDES ALLOWS FOR MORE THAN 5 AC ON CERTAIN SITES IF CERTAIN PROVISIONS ARE PROVIDED]
14. ALL DITCHES, SWALES, AND DRAINAGE BASINS SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
15. ALL ROADWAYS AND PARKING LOTS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
16. ALL CUT AND FILL SLOPES SHALL BE LOAMED AND SEEDED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
17. ALL PERMANENT AND TEMPORARY SEEDING SHALL BE AS FOLLOWS (UNLESS OTHERWISE NOTED):

PERMANENT SEEDING	PROPORTION	GERMINATION MINIMUM	PURITY MINIMUM
LAWNS:			
CREEPING RED FESCUE	50%	85%	95%
KENTUCKY BLUEGRASS	40%	85%	90%
MANHATTAN PERENNIAL RYE	10%	90%	95%

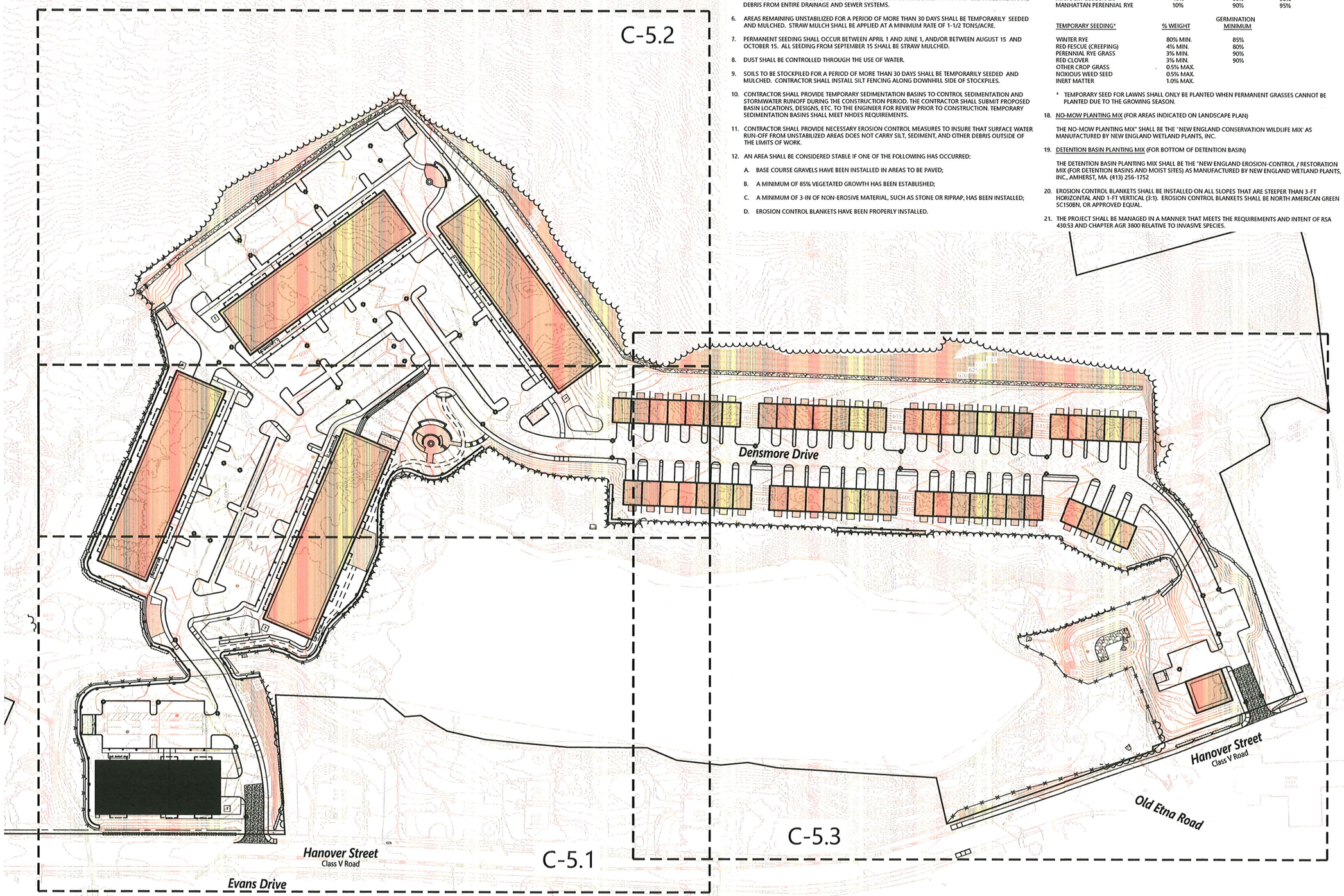
TEMPORARY SEEDING*	% WEIGHT	GERMINATION MINIMUM
WINTER RYE	80% MIN.	85%
RED FESCUE (CREEPING)	4% MIN.	80%
PERENNIAL RYE GRASS	3% MIN.	90%
RED CLOVER	3% MIN.	90%
OTHER CROP GRASS	0.5% MAX.	
NOXIOUS WEED SEED	0.5% MAX.	
INERT MATTER	1.0% MAX.	

* TEMPORARY SEED FOR LAWNS SHALL ONLY BE PLANTED WHEN PERMANENT GRASSES CANNOT BE PLANTED DUE TO THE GROWING SEASON.

18. NO-MOW PLANTING MIX (FOR AREAS INDICATED ON LANDSCAPE PLAN)

    THE NO-MOW PLANTING MIX* SHALL BE THE 'NEW ENGLAND CONSERVATION WILDLIFE MIX' AS MANUFACTURED BY NEW ENGLAND WETLAND PLANTS, INC.
19. DETENTION BASIN PLANTING MIX (FOR BOTTOM OF DETENTION BASIN)

    THE DETENTION BASIN PLANTING MIX SHALL BE THE "NEW ENGLAND EROSION-CONTROL / RESTORATION MIX (FOR DETENTION BASINS AND MOIST SITES) AS MANUFACTURED BY NEW ENGLAND WETLAND PLANTS, INC., AMHERST, MA. (413) 256-1752
20. EROSION CONTROL BLANKETS SHALL BE INSTALLED ON ALL SLOPES THAT ARE STEEPER THAN 3-FT HORIZONTAL AND 1-FT VERTICAL (3:1). EROSION CONTROL BLANKETS SHALL BE NORTH AMERICAN GREEN SC150BN, OR APPROVED EQUAL.
21. THE PROJECT SHALL BE MANAGED IN A MANNER THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES.



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The Brickyard Residential Development

174 Hanover Street Extension
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No.	Revision	Date	Appvd.
1	Response to Comments Update	08/06/24	DF
2	Revised Layout Resubmission	10/24/24	DF
3	Response to Comments Rev 2	12/04/24	DF
4	Response to City Comments	12/11/24	DF

Designed by TMD | Checked by MJV

Issued for: Permitting | Date: May 10, 2024

Not Approved for Construction

Drawing Title: Overall Erosion Control Plan

Drawing Number: C5.0

Sheet 19 of 50



Project Number: 52933.00

Saved Wednesday, March 5, 2025 11:29:59 AM DBOSWORTH Plotted Friday, March 7, 2025 8:34:42 AM Derek Bosworth

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Saved Wednesday, March 5, 2025 11:29:59 AM DBOSWORTH Plotted Friday, March 7, 2025 8:35:12 AM Derek Bosworth

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The Brickyard Residential Development

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No.	Revision	Date	Apprvd.
1	Response to Comments Update	08/06/24	DF
2	Revised Layout Resubmission	10/24/24	DF
3	Response to Comments Rev 2	12/04/24	DF
4	Response to City Comments	12/11/24	DF

Designed by TMD | Checked by MJV

Issued for: Permitting | Date: May 10, 2024

Not Approved for Construction

Drawing Title: Erosion Control Plan 1

Drawing Number: C5.1

Sheet 20 of 50

Project Number: 52933.00

STATE OF NEW HAMPSHIRE
DAVID H FEINSTEIN-MACHER
No. 13593
LICENSED PROFESSIONAL ENGINEER

\\vhb.com\gbl\proj\Bedford\52933.00 Lebanon Brickyard Develo\cad\dt\Planset\52933.00-ER.dwg



vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

0 15 30 60 Feet

The Brickyard Residential Development

174 Hanover Street Extension
Lebanon, New Hampshire 03766

No.	Revision	Date	Appvd.
1	Response to Comments Update	08/06/24	DF
2	Revised Layout Resubmission	10/24/24	DF
3	Response to Comments Rev 2	12/04/24	DF
4	Response to City Comments	12/11/24	DF

Designed by TMD | Checked by MJV

Issued for: Permitting | Date: May 10, 2024

Not Approved for Construction

Drawing Title: Erosion Control Plan 2

Drawing Number: C5.2

Sheet 21 of 50

STATE OF NEW HAMPSHIRE DAVID H EINSTEINMACHER No. 13303 LICENSED PROFESSIONAL ENGINEER

Project Number 52933.00

Saved Monday, March 3, 2025 2:54:09 PM DBOSWORTH Plotted Wednesday, March 5, 2025 10:24:53 AM Derek Bosworth

\\vhb.com\gbl\proj\Bedford\52933.00 Lebanon Brickyard Develo\cad\ld\Planset\52933.00-ER.dwg

vhb.com
vhb
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

MATCH LINE, SEE SHEET C5.2

TOWNHOUSE CLUSTER 1 (7 UNITS)

TOWNHOUSE CLUSTER 3 (7 UNITS)

TOWNHOUSE CLUSTER 5 (7 UNITS)

TOWNHOUSE CLUSTER 7 (5 UNITS)

Densmore Drive

TOWNHOUSE CLUSTER 2 (7 UNITS)

TOWNHOUSE CLUSTER 4 (7 UNITS)

TOWNHOUSE CLUSTER 6 (7 UNITS)

TOWNHOUSE CLUSTER 8 (4 UNITS)

SILT SACK (TYP.)

STRAW WATTLE (TYP.)

ADD EROSION CONTROL BLANKETS WHERE SLOPES ARE STEEPER THAN 3:1

COFFERDAM AND PUMP SET UP MAY BE REQUIRED TO BYPASS FLOW DURING CONSTRUCTION OF BOX CULVERT

DOUBLE ROW OF PERIMETER CONTROLS WHERE WITHIN 50' OF WETLANDS (TYP.)

MAINTENANCE BUILDING

STABILIZED CONSTRUCTION EXIT (TYP.)

Hanover Street
Class V Road

Old Etna Road

MATCH LINE, SEE SHEET C5.1

EXISTING 1 STORY BUILDING

EXISTING 1 STORY BUILDING

0 15 30 60 Feet

The Brickyard Residential Development

174 Hanover Street Extension
Lebanon, New Hampshire 03766

No.	Revision	Date	Appvd.
1	Response to Comments Update	08/06/24	DF
2	Revised Layout Resubmission	10/24/24	DF
3	Response to Comments Rev 2	12/04/24	DF
4	Response to City Comments	12/11/24	DF
5	Conditions of Approval	02/06/2025	DF

Designed by TMD | Checked by MJV

Issued for: Permitting | Date: May 10, 2024

Not Approved for Construction

Drawing Title: Erosion Control Plan 3

Drawing Number: C5.3

Sheet 22 of 50

STATE OF NEW HAMPSHIRE · DAVID H ENGELMACHER No. 13703 · LICENSED PROFESSIONAL ENGINEER

Project Number: 52933.00

Saved Monday, March 3, 2025 2:54:09 PM DBOSWORTH Plotted Wednesday, March 5, 2025 10:25:26 AM Derek Bosworth

Responsible Governance and the Environment

or

City Projects Serve All Residents

Environmental Justice report - City of Lebanon

Introduction

In the fall of 2023, the City Council approved a Strategic Plan that mandated (a) the definition of and (b) the development of a plan regarding environmental justice as it relates to the operations of the City of Lebanon. Members of the DEI Commission, Tree Advisory Board, Sustainable Lebanon, and Conservation Commission have worked since that time to fulfil that mandate, meeting with City officials and departmental staff, and seeking input from external experts and members of the public, including some of the City's most vulnerable residents, with the result being the following report.

The report begins with an Executive Summary that includes the definition of "environmental justice" as it pertains to the city, then breaks down recommendations into six Focus Areas: Shelter, Access to Nature, Environmental Quality, Ecological Protections, Community Resiliency, and Transportation. Within each Category are several Priority Recommendations, as well as Additional Recommendations, all of which together serve to improve the quality of life of the City's residents and community members, helping us to better live in harmony with the natural and built environments and each other.

While the specifics of implementation are and should be up to the members of the City Council, we, the authors of this report, stand by these recommendations, and believe that they will lead to a fairer and better City of Lebanon for those that live and work here, today and into the future.

Executive Summary

For the purposes of this report, the City of Lebanon defines "environmental justice" as follows:

> *Environmental justice is the fair treatment and meaningful involvement of all Lebanon community members—regardless of race, skin color, national or ethnic origin, cultural group, language, gender identity or expression, sexual orientation, mental or physical ability, age, religious or political opinion or activity, economic status, immigration status, or housing status—in decisions that affect their access to and quality of interaction with the natural environment. For environmental justice to be achieved, three aspects must be considered: (1) distribution of environmental risks, (2) access to environmental benefits, and (3) involvement in the policy, investment, and advocacy decisions made affecting or related to environmental issues. Protection from environmental risks and access to environmental benefits should be fair and equitable, and the decision-making processes surrounding environmental issues should meaningfully involve those who stand to be affected.*

The distribution of environmental risks refers to how the negative effects of environmental hazards—such as pollution, climate change, toxic waste, or harmful chemical exposure—are spread across different communities, particularly those that are socioeconomically disadvantaged or belong to minoritized groups and are thus least able to afford the costs of these negative effects.

This issue is crucial because when certain communities face higher exposure to pollution, industrial waste, or climate-related disasters like flooding or heat waves, often due to their geographic location or work conditions, it deepens social and health disparities. Achieving environmental justice involves addressing these inequities and ensuring that every group is equally protected from environmental harm.

Access to environmental benefits refers to ensuring that all communities can enjoy the positive aspects of a healthy environment, such as clean air, clean water, green spaces, renewable energy, and a resilient ecosystem. Often, wealthier or more privileged communities have better access to these benefits, while disadvantaged groups face limited resources, fewer parks, polluted air, or unsafe water. This also includes access to public resources including the funding to make improvements in the environment.

Having access to these benefits is crucial for people's well-being. It improves physical health, such as reducing respiratory problems from polluted air, and supports mental health by providing stress relief through exposure to green spaces. Achieving environmental justice means guaranteeing that everyone, regardless of their socioeconomic background, has equal access to these positive environmental outcomes

Involvement in Policy, Investment, and Advocacy Decisions emphasizes the importance of participatory decision-making in environmental matters. It calls for the inclusion of communities—particularly those most affected by environmental issues—in the processes where policies are made, investments are directed, and advocacy efforts are planned. This includes not just being consulted, but actively shaping decisions about environmental regulations, land use, energy infrastructure, and climate adaptation strategies.

Historically, marginalized communities have often been excluded from decision-making processes about environmental issues that directly impact them. They may lack representation in government bodies, have limited influence over corporate decisions, or struggle to advocate for their own interests. True environmental justice cannot be achieved without the voices of these communities being heard and valued in decisions that affect their lives.

This report consists of six Focus Areas, each of which is a vital component of environmental justice as defined above and each of which will be discussed in the following pages, alongside recommendations to help the City move toward that vision.

Of all the Focus Areas, one that invites special attention is **Shelter**. In the absence of adequate shelter, every so-called “environmental issue” becomes a deeply personal issue. When the “natural environment” is a person’s daily environment, inconveniences like heat, cold, rain, and snow can become life-threatening. For this reason, these recommendations have been placed first.

The rest of the Focus Areas have been presented in no particular order. **Access to Nature** focuses on the ability of all of the City’s residents to not only enjoy the natural environment, but to benefit from it. Recommendations include green space access via public transit and enshrining the development-to-nature ratio in the city’s future plans.

Environmental Quality focuses on the quality of both the indoor and outdoor environments, with recommendations concerning contaminants like lead and radon as well as limitations on harmful particulate matter in the air.

Ecological Protections focuses on the ways the City's residents interact with the natural environment, with recommendations aimed at maintaining that environment for present and future generation of Lebanonians to enjoy and benefit from.

Community Resiliency focuses on the intersection of human needs and the changing environment, and the recommendations in this section are aimed at strengthening Lebanon's communities against real and potential harms.

Finally, **Transportation** affects so many of the above Focus Areas that it deserved its own. Transportation affects not only the ability of community members to access the environment, but also contributes to the quality of that environment in many overlapping ways. Recommendations concerning both private and public transportation are covered in this section.

A final note of some importance: the City of Lebanon is best able to serve its communities when it can establish strong policies and regulations; thus, a central recommendation of this report is that **green space protections and environmental impact regulations must be developed in such a way that they may be enforced**. Without this power, Lebanon cannot guarantee that it will be able to pursue these goals and recommendations and must rely on the mere aspiration that other private entities will voluntarily support and adhere to them.

A list of institutional stakeholders and potential partners is provided at the conclusion of each Focus Area.

Shelter

Shelter is the most tangible way in which people interact with environmental risks, as it provides protection from harmful elements of the environment. While a comprehensive analysis of housing equity is beyond the scope of this report, there are some actions that may be considered to expand environmental justice in the area of shelter.

Priority Areas

- Create a full minimum housing code with inspections; a minimum housing officer and staff for enforcement; and a switch from a reactionary posture to an active and preventative effort to maintain the quality of housing units in the city
- Create more robust tenant protections, to allow tenants to feel safe in reporting unsafe housing without threat of displacement
- Repeal the camping ban, City Code §49
- Provide accessible shelter options for unhoused people, including:
    - a permanent, year-round shelter
    - micro-dwellings as transitional solutions



Additional Recommendations

- Eliminate regulations requiring a minimum number of parking spaces for dwellings close to transit stops to facilitate affordable housing development, improved air quality, and access to public transportation
- Create policies and initiatives to protect the belongings of unhoused people, especially vital records required to access services and access employment, such as supervised storage sites and distribution of waterproof document bags, backpacks, etc.
- Establish standard and widely-publicized hours for warming and cooling spaces for vulnerable persons
- Establish and implement a “cumulative effect” rule for FEMA regulations, to avoid the situation where developers repeatedly replace less than 50% of a site, until a whole building is functionally replaced but still noncompliant with modern housing standards

Institutional Stakeholders and Potential Partners: *City Planning and Development Dept., Fire Department, City Human Services, The Upper Valley Haven, Grafton County Senior Citizens Council*

Access to Nature

A just society seeks to ensure all people have access to environmental benefits. Natural resources are among the major attractions of the Upper Valley, and communities should strive to ensure those resources are accessible to all.

Priority Areas

- Create and maintain accessibility to green spaces via public transit stops, for disabled people, and for unhoused people
- Ensure that the planning goal for development to be limited to 20% of Lebanon's area, with the remaining 80% preserved as open space, remains in the master plan

Additional Recommendations



- Research the construction of a trail from the river near the water treatment facility up to South Main Street, in the area of Romano circle. Access could be increased for fishing/hiking/biking. (A trail would also be beneficial for treatment plant staff to access a sewer line.)
- Plan a new site for public access to the connecticut river, if they do go ahead with the well
- Add the creation of a more comprehensive citywide Dark Skies Policy to the City's Strategic Plan

Institutional Stakeholders and Potential Partners: *City Conservation Commission, City Water and Waste Water Treatment Departments, City Planning and Development Dept., City Recreation, Arts and Parks Department, Planning Board*

Environmental Quality

Environmental justice includes ensuring protections for the natural environment. Contaminants can cause significant harm to vulnerable populations and often are not distributed evenly among different groups.

Priority Areas



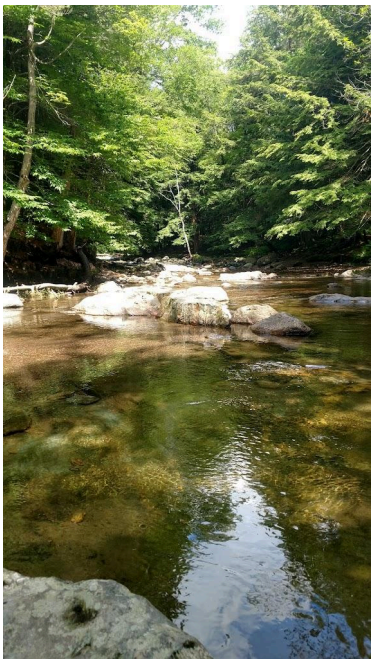
- Mitigate or phase out the use of small, gas-powered internal combustion engine devices (e.g., yard trimmers, snow blowers/throwers, lawn mowers, etc.) by City Departments, in favor of sustainable alternatives.
- Take steps to make lead-licensed contractors easier to find for owners of older buildings
- Implement stronger oversight and disclosure for mold, lead, radon, and other contaminants in older residential dwellings, as well as required disclosure by landlords in residential rental units.
- Make free/cheap soil testing kits available to test garden soils for lead levels, and promote education including hosting a soilSHOP event with the NHDES APPLETREE team

Additional Recommendations

- Create a policy to limit City use of leaf blowers when healthier alternatives exist.
- Recommend the creation of plans to mitigate or phase out the use of small, gas-powered internal combustion engine devices in the city (e.g., yard trimmers, leaf blowers, snow blowers/throwers, lawn mowers, etc.), such as incentive/disincentive schemes, and promote sustainable alternatives
- Increase education about the ecological and human wellness harms of using leaf blowers, to preserve soil health and air quality.
- Continue to focus on PFAS detection / mitigation steps already underway
- Since majority of local PFAS contamination comes from household products, inform households of ways to avoid releasing PFAS into the water

Institutional Stakeholders and Potential Partners: *City Public Works Dept., City Recreation, Arts and Parks, City Planning and Development Dept.*

Ecological Protections



In order for community members to benefit from and enjoy continued access to the natural environment, that environment must be managed and maintained sustainably, even as the City of Lebanon continues to develop.

Priority Areas

- When making efforts to secure a secondary water source, do so in the most environmentally friendly way possible.
- Create wildlife corridor protections in Zoning Ordinance and Site Plan Review Regulations, as well as the Complete Streets Program. (Currently the only mention of "wildlife corridors" is in Section 501.1.E.1.a.i of the Zoning Ordinance, requiring that planned unit developments (PUDs) conditional use permit (CUP) applications contain a site or subdivision plan that delineates wildlife corridors, as "environmentally sensitive areas of high resource value.")
- Determine the best ways to create safe and effective wildlife crossings, including widening culverts under busy roads such as 120, and implement them as soon as possible. part of any further development of the area.

Institutional Stakeholders and Potential Partners

City Public Works Dept., City Planning and Development Dept., Conservation Commission

Community Resiliency

When systems fail to meet the needs of a population, those with the least privilege are typically the first to experience harm. Thus, environmental justice should seek to ensure communities are adequately able to address those needs.

Priority Areas

- Continue to work with the LEAC Lebanon Energy Savings Subcommittee to facilitate the access by residential households, especially those experiencing high energy burden, to federal and state rebates and incentives for switching from using fossil fuels to more efficient, cost saving, electric heating and appliances, as well as weatherization programs.
- Implement and incentivize, where applicable, diversion of recyclables and organic waste from the landfill, including requirements for landlords to provide recycling and composting options



Additional Recommendations

- Create a city-run solid waste pickup solution for low-income, disabled, and non-driving residents. Ideally, this would be universal curbside pickup, but at the very least a pilot program for people who cannot get rid of their solid waste themselves. An alternative could consist of occasional additional dropoff locations for rubbish and/or recycling.
- Prioritize infill development near existing stops on transit routes whenever possible to prevent sprawl.
- Re-examine water rates for multi-unit buildings as a way to potentially help lower-income households
- Create an emergency infrastructure repair fund so that high-cost sudden repairs (e.g., major washouts) don't use up funds necessary to provide regular maintenance
- Create policies in which retrofitting older neighborhoods more easily triggers regulatory review, to better tackle increased risks of flash flooding
- Explore potential subsidies for residential water infrastructure upgrades to protect against lead and other contaminants.

Institutional Stakeholders and Potential Partners: *Lebanon Energy Advisory Committee, City Planning and Development Dept., City Public Works, LISTEN Community Services, Cover Home Repair, City Manager's Office, Vital Communities*

Transportation

Access to both the benefits of the environment and protection from environmental harms requires transportation. This area includes not only private vehicles but also public transit, bicycle paths, and pedestrian infrastructure. These resources should be equitably maintained to ensure broad access is available.

Priority Areas

- Commission a study, with a goal of potential implementation, of microtransit to allow for public transportation in areas not served by fixed routes.
- Add new shade trees and bus stop shelters along pedestrian routes, and update Site Plan Review Regulations Section 6.2.E to include mandatory shading requirements specifically for disabled parking spots
- Create a comprehensive e-bike policy for the City, with input from Planning, Ped-Bike, and DEI Commission, to expand equitable adoption, charging access, and route safety (for cyclists and pedestrians alike)
- Prioritize public transit and multimodal transport over single-occupant vehicles to reduce pollution and traffic congestion, including pilot projects converting some existing rights of way into limited access ROWs to give priority to pedestrians, cyclists, and public transit.
- Create restrictions on idling internal combustion engine vehicles



Additional Recommendations

- Establish additional multimodal transport paths in the City
- Continue work with the LEAC EV Subcommittee to expand access to EV charging sites for renters and low-income households
- Establish parking fees in high-demand areas to reduce parking scarcity and decrease driving-around time
- Research and potentially implement ways that the Airport could incentivize airplane owners to switch away from leaded aviation fuel ahead of the FAA's EAGLE (Eliminate Aviation Gasoline Lead Emissions) goal of 2030
- Create programs to support and encourage car-sharing, public transit, and alternative transportation

Institutional Stakeholders and Potential Partners: *City Planning and Development Dept., City Planning Board, Pedestrian and Bicyclist Advisory Committee, Upper Valley Lake Sunapee Regional Planning Commission, Tree Advisory Board, Advance Transit, Lebanon Energy Advisory Committee Electric Vehicle Subcommittee, Lebanon Municipal Airport, Vital Communities*