REGULAR MEETING
CONSERVATION COMMISSION

1 JUNKINS AVENUE
PORTSMOUTH, NEW HAMPSHIRE
EILEEN DONDERO FOLEY COUNCIL CHAMBERS

4:00 P.M. **April 10, 2024**

AGENDA

I. APPROVAL OF MINUTES

1. March 13, 2024

II. WETLAND CONDITIONAL USE PERMIT APPLICATIONS (OLD BUSINESS)

1. 224 Broad Street, Unit 3
   Perkins Kwoka Joint Revocable Trust, Katelyn E. & Rebecca P. Kwoka Trustees, Owners
   Assessor Map 131, Lot 13

III. WETLAND CONDITIONAL USE PERMIT APPLICATIONS (NEW BUSINESS)

0 Maplewood Avenue
City of Portsmouth, Owner
Assessors Map 124, Lots 2 - 3

IV. STATE WETLAND BUREAU APPLICATIONS (NEW BUSINESS)

1. Dredge and Fill – Major Impact
   Public Service Company of NH, d.b.a Eversource Energy, Owner
   Map 121 Lot 1, Map 165 Lot 14, Map 213 Lot 11, Map 214 Lots 1, 2, and 3, Map 216 Lots 1-10 and 1-11, Map 240 Lot 2-1, Map 259 Lots 1 and 15, Map 278 Lot 1, Map 280 Lot 3, and Map 281 Lot 1

2. Dredge and Fill – Major Impact
   0 Maplewood Avenue
   City of Portsmouth, Owner
   Assessors Map 124, Lots 2 – 3

3. Dredge and Fill- Minor Impact
   333 New Castle Avenue
   Kimberly and Thomas Lyng, Owners
   Assessor Map 207, Lot 2

V. WORK SESSIONS

1. Proposed Redevelopment
   100 Durgin Lane
   Assessor Map 239, Lot 18

VI. OTHER BUSINESS

1. Lonza Volunteer Day

2. Sustainability Fair April 14th

VII. ADJOURNMENT

**Members of the public also have the option to join this meeting over Zoom, a unique meeting ID and password will be provided once you register. To register, click on the link below or copy and paste this into your web browser:*

https://us06web.zoom.us/webinar/register/WN_Y3UY1X_lRDOwjSDqkW7HZQ#/registration

REGULAR MEETING
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1 JUNKINS AVENUE
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EILEEN DONDERO FOLEY COUNCIL CHAMBERS

4:00 P.M. **March 13, 2024**

MINUTES

MEMBERS PRESENT: Chair Samantha Collins; Vice Chair Barbara McMillan; Members; Lynn Vaccaro, Jessica Blasko, Alice Carey, Adam Fitzpatrick; Alternates; Talia Sperduto, Brian Gibb

MEMBERS ABSENT: Stewart Sheppard

ALSO PRESENT: Peter Britz, Director of Planning and Sustainability

I. APPROVAL OF MINUTES

1. February 14, 2024

[5:45] Vice Chair McMillan noted that her name was spelled incorrectly in the beginning of the document. Chair Collins announced that in S. Sheppard's absence, T. Sperduto would be voting for this meeting.

J. Blasko made a motion to approve the minutes from the February meeting. A. Fitzpatrick seconded the motion. The motion passed unanimously (7-0).

II. WORK SESSIONS

1. 50 Clough Drive
City of Portsmouth, Owner
Assessor Map 206, Lot 20

[7:04] Chair Collins introduced this item.

[7:50] Cornelius Murphy (landscape architect) came to present this application with members of the PTA from Little Harbour School. The goal of their project is to redesign the current playground structure at the elementary school while being mindful of the NHDES shoreland buffer and the City's wetland and wetland buffer. Mr. Murphy went on to describe the existing school site and how the latest wetland delineation shows a more significant impact to the site. He introduced some current stormwater issues and how those would be addressed with the new proposed site. They are proposing to remove the asphalt that is within the wetland buffer and

move the proposed play structures into where the asphalt previously was. They will be putting in a bioswale to help control the runoff and have relocated all structures but the hut further from the wetland but still in the buffer. The area between the play structures and the wetland will be lawn. The southwest corner of the wetland buffer will be allowed to grow back and rewild into native wetland vegetation. They are also considering fencing and invasive species monitoring in this area to protect any regrowth.

[17:50] J. Blasko asked about accessibility plans for the design. Mr. Murphy responded that there are new accessibility guidelines that they have done their best to follow. They have reached out to the City for clarification on this and are waiting for a response. They are proposing a universal access path to each piece of equipment.

[20:10] L. Vaccaro asked if they had reached a conclusion on what type of material would be placed under the equipment. Mr. Murphy noted that that was still an outstanding question and they would follow up on it. L. Vaccaro noted that she felt woodchips would be more ecologically sound compared to any plastics suggested. Ashley Blackington, a member of the PTA, noted that woodchips would not be considered an accessible surface.

[22:51] Kate Hayden, a member of the PTA, asked if the commission had any opinions on the pour in place vs. the woodchips for under the structures. L. Vaccaro noted that her preference would be woodchips, Chair Collins mentioned that they may not have a choice if the requirements for playgrounds require the pour in place material. J. Blasko stated that they should try to find a balance for making the area accessible where needed while using woodchips where possible.

Ms. Blackington responded that the current playground as it is does not meet accessibility requirements although it does have wood chips. J. Blasko responded that she supports the plan for an environmentally friendly playground that uses natural elements and is also accessible to all students. Ms. Blackington responded that they had performed a survey of students, teachers and parents on the design of the playground and the students preferred the larger structures while parents tended to enjoy the natural spaces, with teachers really preferring the visibility for keeping track of children. Ms. Hayden added that the School Department had noted concern for trees near the existing asphalt. Chair Collins told the applicants that when they do come back with a full permit, they should note the exact location of the proposed trees.

[26:39] Chair Collins asked if sensory gardens existed currently and what would go into them to make them sensory. They do not exist, and Mr. Murphy noted that they would use plants that purposefully engage the senses such as vibrant colors, aromatic or have texture.

[27:47] A. Carey commended the group for putting together an engaging proposal that includes the natural environment. She then asked if they considered removing more asphalt and shifting the playground back even further. Ms. Blackington noted that there is a basketball court there that is important for the kids who play four square and kickball. A. Carey noted that this would be the opportunity to remove the blacktop and she would like to see it reduced if they can. A discussion continued about the importance of the existing basketball court, the financial impacts of removing asphalt and the accessibility.

[31:46] A. Carey asked how they would be phasing this project. Ms. Blackington responded that it would need to be phased, especially due to the funding aspect of the project. The initial thought is to have the larger play pieces installed first.

[33:53] Chair Collins stated that it would be important to have groundcover and plantings put in during this time to promote infiltration and reduce erosion and drainage issues caused by the installation of structures. Ms. Blackington responded that it was a great point and their goal would be to try and do this in the summer when kids are not there.

[35:10] Vice Chair McMillan asked if the existing fence with phragmites would get some invasive species management. It would. Vice Chair McMillan suggested that maybe some tall trees along that area would help to shade out the phragmites. Ms. Blackington noted that if they do not have the opportunity to plant trees within the playground space then they could do it along that edge to create a barrier and shade the playground. Vice Chair McMillan also mentioned that the applicants will need to bring a maintenance plan when they come for a full application and that would be critical for the success of the space.

[37:47] L. Vaccaro stated that it would be nice to build an adaptive maintenance plan that addresses the changing areas on site over time, considering precipitation changes and wetland changes. Ms. Blackington responded that their plan is to create the playground while keeping in mind the future and future impacts.

[39:47] Ms. Hayden asked what would be considered playground maintenance in the future compared to having to come to get more permits. P. Britz responded that any ground disturbance, the addition or removal of new structures or things like removing pavement would need a permit. Things like new plantings and invasive species management would not need a permit. A discussion continued about the permitting process and timelines for approval and work, along with what to include in a final application for a City permit.

III. WETLAND CONDITIONAL USE PERMIT APPLICATIONS (OLD BUSINESS)

1. **REQUEST FOR POSTPONEMENT**
   224 Broad Street, Unit 3
   Perkins Kwoka Joint Revocable Trust, Katelyn E. & Rebecca P. Kwoka Trustees, Owners
   Assessor Map 131, Lot 13

[45:03] Chair Collins introduced this application and noted that there was a request for postponement. J. Blasko made a motion to postpone the application until the April meeting, Vice Chari McMillan seconded the motion. The motion passed unanimously (7-0).

IV. WETLAND CONDITIONAL USE PERMIT APPLICATIONS (NEW BUSINESS)

110 Aldrich Road
Edward R. Raynolds, Owner

Assessor Map 153, Lot 3
[45:28] Chair Collins introduced this application.

Ned Raynolds, the property owner, came to present this application. Mr. Raynolds noted that he was applying for the construction of a two-story, two-car garage with an accessory dwelling unit on the second floor. He noted that his project is 744 s.f., which is just under the accessory dwelling unit limit of 750 s.f. and with 552 s.f. of the proposed building within the wetland buffer. The wetland currently sits at the back of his property and the rear of the proposed building would be 76 feet from the wetland. Mr. Raynolds noted that he had hoped that the Commission would not postpone his application as the nine recommendations from staff he considered to be relatively minor and he is prepared to respond to them. He is agreeable to all conditions except for moving the building further up towards the front of the lot and away from the wetland. He went on to describe why his proposed placement is preferred. He described a new curved driveway that will be added to accommodate trailers and backing up a trailer. Mr. Raynolds went on to respond to all conditions in the staff memo – including plans for a crushed stone drainage swale, wetland boundary markers will be installed, the existing asphalt driveway will be replaced with permeable pavers, a maintenance plan for the driveway will be created, native wetland buffer plantings will be added, especially towards the rear of the property and the debris will be removed from the buffer. The proposed garage will also be well insulated and will have solar panels installed on the roof.

[1:03:45] Vice Chair McMillan commented on the suggestion for a postponement of the application and stated that it could be a little difficult to not postpone based on some of the information and details that they would need to see in the application that are missing. She went on to address all of the conditions from staff that she would prefer to see more information on. Mr. Raynolds responded that these were all relatively simple and small conditions that he could meet. He had hoped that the Commission would move small homeowner applicants like himself through the process if things are minor and are committed to.

[1:09:00] B. Gibb agreed with Vice Chair McMillan in stating that postponement may be necessary. He noted that many of the conditions were also stated during the site walk.

[1:10:50] A. Carey asked if this application could move forward, would it be possible for the applicant to submit updated site plans before any construction started? Chair Collins noted that some applications in the past could have conditions be met and approved by staff before going forward to Planning Board. P. Britz also mentioned that staff tries to make it so that the Commission is the last stop before the application gets to the Planning Board, not staff. Staff can review prior to sending to Planning Board if the Commission is comfortable with that.

[1:13:20] J. Blasko asked the applicant if they could clarify what the space between the existing house and proposed structure would include, and whether it would be all permeable pavers. Mr. Raynolds responded saying that his intent was to replace the entire existing driveway with permeable pavers and the plastic grid pavers would arc off the existing driveway into current lawn.

[1:14:46] A. Fitzpatrick asked what the plans were for the strip between the driveway and the

edge of the proposed building. Mr. Raynolds responded that there would be 18-24" of permeable aggregate stone, with the roof sloping towards the rear with most runoff falling there. Chair Collins asked if there would be plantings there. Mr. Raynolds noted that it could be a nice spot for plantings along the side there, or even planters.

[1:17:18] L. Vaccaro asked if there would be an underdrain and if so, where would it go. Mr. Raynolds said that he felt an underdrain would be over-engineering it. While the cross-section of the permeable driveway shows an underdrain, he will not include that and will just have infiltration. A discussion continued about the existing runoff and options for different runoff and filtration scenarios.

[1:20:20] Chair Collins asked if the existing house had any roof runoff that currently runs into the driveway. Mr. Raynolds responded that there are currently gutters and a downspout on the northeast corner that dispenses into the ground in the front of the house into a stone swale.

[1:21:36] J. Blasko made a motion to recommend approval of the application with the following stipulations:

1. Applicant shall provide a clear delineation of the proposed driveways and their surfaces; including the proposed permeable paver driveway and the plastic-reinforced driveway. Specifications on the driveways should include any edging and/or plantings, and a cross-section of each driveway surface type shall be provided which should include the substrate material and its proposed depth.

2. Applicant shall provide a maintenance plan for the proposed driveway material and a maintenance plan for the plastic-reinforced driveway material.

3. Applicant shall include information in the final site plan for any drainage swales and/or drip edges proposed for drainage off the new garage roof. For the proposed drip edges,, please include a cross-section of the proposed drip edge construction, along with the substrate material and its proposed area and depth.

4. Applicant shall provide a planting plan that includes the location, size and species of the proposed plantings within the 25' vegetative buffer. This should include at least 10 shrubs of a native species.

5. In accordance with Section 10.1018.40 of the Zoning Ordinance, applicant shall install permanent wetland boundary markers. We suggest that these markers are placed along the 25' vegetative buffer at intervals of every 50 feet. These must be installed prior to the start of any construction. These can be purchased through the City of Portsmouth Planning and Sustainability Department.

6. Applicant shall remove all debris/trash from the wetland and 25' vegetative buffer, including the wood decking/pallet structure.

[1:24:29] A. Fitzpatrick seconded the motion. A. Fitzpatrick commented that he could certainly

see why a homeowner would struggle to provide exact engineered or architectural drawings at the time of permitting and he noted the difficulty of making a decision without all of the information. He noted his favor for including conditions on an approval for things that can only be figured out later in the process. Vice Chair McMillan commented that this application was difficult because it would be a lot of work for staff to make decisions on and review. She encouraged applicants to always provide more information and details than what they think they need; this will make the process easier for getting to the Planning Board. She acknowledged the difficulty of this process for homeowners. Chair Collins noted her appreciation for the applicant's response to the issues raised at the site walk and his commitment to making the site more environmentally friendly. L. Vaccaro noted that the applicant's property is unique and if he was able to take the first 25' of the wetland buffer and not mow it but include shrubs, it would go a long way to protect the wetland. A. Fitzpatrick made a note for future applications that perhaps the Commission and staff need to be more clear in what is expected within an application submission, during site walks as well.

[1:32:37] Chair Collins called the vote. The motion passed 6-1 with Vice Chair McMillan voting against.

V. STATE WETLAND BUREAU APPLICATIONS (NEW BUSINESS)

1. Dredge and Fill- Minor Impact
   333 Borthwick Avenue
   HCA Health Services of New Hampshire, Owner
   Assessor Map 240, Lot 2-1

[1:33:00] Chair Collins announced that Vice Chair McMillan would be recusing herself from this application and that B. Gibb would be voting.

[1:33:21] Brenden Walden of Gove Environmental Services came to present this application. He explained that this was an after the fact standard dredge and fill permit for the hospital's oncology wing expansion, which had already been constructed. He noted that at the time of permitting, the engineers did not know they needed a wetland permit for impacts to a man made wetland. There are permanent impacts of 200 square feet. They had previously done a site walk with NHDES which had recommended the after the fact permit process. They are still awaiting review from NH Fish and Game on the Blanding's Turtle that had been observed in the vicinity.

[1:34:57] Chair Collins asked if anything had been changed from their original City Wetland Conditional Use Permit compared to this after the fact permit. Mr. Walden responded that there were no changes, it had been built as proposed.

[1:35:43] J. Blasko made a motion to recommend approval of the application to the NHDES. A. Carey seconded the motion.

L. Vaccaro asked if they had also done the City's permitting process. P. Britz responded that they had.

1:36:25] The motion passed unanimously [7-0].

2. Dredge and Fill – Major Impact
53 Green Street
Stone Creek Realty, LLC, Owner
Assessor Map 119, Lot 2

[1:36:33] Chair Collins introduced this application.

Neil Hansen of Tighe and Bond, came to represent this project. It had previously received a Wetland Conditional Use Permit from the Commission and Planning Board back in 2021 but the project had been appealed and held up for the last few years. Now they are back, hoping to get closer to getting construction started. The project has not changed compared to what was originally approved. He then proceeded to give a quick overview of the project, an existing L-shaped building along the North Mill Pond off of Green Street, and the proposed building will have 45 residential units with parking on the ground floor along with retail space. The building had been situated to be pulled back further from the pond compared to where the original building sat. The plan proposed removing the currently maintained lawn and putting plantings in. The proposed project also collects, detains and filters all stormwater on site, where none was controlled before. There is proposed to be porous asphalt pathways and they have submitted through wetland and shoreland approvals from the NHDES.

[1:40:44] Chair Collins noted that in their previous approval from April 2021, they had given the project four conditions with its approval. She wanted clarification on whether those conditions had been addressed before it had gone to the Planning Board previously. Mr. Hansen responded that condition #1, 3 and 4 from that original approval were included in the final Planning Board package. The second condition had been agreed to by the applicants originally and the Planning Board included it within their final decision as a memorialized stipulation.

[1:41:40] Chair Collins asked how snow removal would be dealt with on this site, with the original approval saying it would be hauled off site. Mr. Hansen noted that there would be no extra space for snow storage so all snow will have to be hauled off site. Chair Collins followed up with a question about how the existing dock floats would be stored in the winter. Mr. Hansen guessed that when the project would be built, they likely would not want the floats stored on the site anyways.

[1:43:34] Vice Chair McMillan noted that on page C-501 under Vegetation, there is mention of fertilizer use. She would like to see that section removed as they are not allowed to use fertilizer in the buffer and shorelands. Mr. Hansen responded that they would update that for the Wetland Conditional Use Permit submission. Vice Chair McMillan followed up with a question about the building to the West of the site. Mr. Hansen responded that the building is the AC Hotel. Vice Chair McMillan expressed concern for the plantings proposed between the two buildings and the lack of sunlight access there. Mr. Hansen responded that there will be some open air space for sunlight in the narrow strip there.

[1:46:50] J. Blasko made a motion to recommend approval of the NHDES permit with the following stipulation:

1. Sheet C-501 in the plan set shall be updated under the vegetation section to remove the use of fertilizer.

Vice Chair McMillan seconded the motion. Chair Collins noted that it was okay for some of the newest Commission members not to vote if they felt uncomfortable voting on something that some older Commissioners had already seen and voted on but they had not. T. Sperduto expressed that she would not be comfortable voting and B. Gibb also noted that he would not feel comfortable voting.

[1:48:22] L. Vaccaro asked if the applicant would be willing to give a very short overview of the project and its footprint impacts to help inform her vote. P. Britz and Chair Collins noted that it would be a reduction in impervious surface, the footprint was being pulled further from the wetland but not completely out of the buffer, it would connect to the upcoming greenway trail system, it was providing plantings where only lawn existed before, and it was providing stormwater treatment where there were none before. This project was able to get an additional story in height due to the expansion of space that is being set aside for community space which will grant public access to the back of the site and to the trail.

[1:50:38] A. Carey asked if they could consider if anything significant had changed since 2021 in terms of if the Commission would consider anything else now that they didn't the first time around. Chair Collins and P. Britz noted that she didn't think anything had changed in the area significantly. A. Carey mentioned that with changes such as sea level rise, they may consider that differently now than they did back then.

[1:52:14] The vote was unanimous, with T. Sperduto abstaining (6-0).

3. Dredge and Fill – Major Impact
Public Service Company of NH, d.b.a Eversource Energy, Owner
Map 121 Lot 1, Map 165 Lot 14, Map 213 Lot 11, Map 214 Lots 1, 2, and 3, Map 216 Lots 1-10 and 1-11, Map 240 Lot 2-1, Map 259 Lots 1 and 15, Map 278 Lot 1, Map 280 Lot 3, and Map 281 Lot 1

[1:52:36] Chair Collins introduced this item but noted that the applicant was not in the audience. Nobody was on Zoom.

[1:53:50] J. Blasko made a motion to postpone the application until the April meeting. L. Vaccaro seconded the motion. The motion passed unanimously (7-0).

VI. OTHER BUSINESS

1. Earth Day 2024

[1:54:30] Chair Collins introduced this item and noted that for Earth Day, the Commission's role

may be best suited in supporting the Sustainability Fair unless anyone had an activity that they'd really like to organize. Last year, the Commission hosted a trail cleanup but it required planning and organization ahead of time. The Commissioner's agreed that this was how they would support Earth Day.

2. Sustainability Fair (April 14th, 2024 12-3 p.m.)

The Conservation Commission will have a table at the fair that L. Vaccaro has volunteered to be at, and she is looking for one more volunteer. J. Blasko mentioned that there would be at least one group already at the fair that she knew about who would be covering the topic of native plants, so the Commission's table did not have to. P. Britz offered to help with materials such as putting together a wetland buffer diagram or poster. L. Vaccaro also wants the focus to be on what the Commission does and general wetland and mapping information for the City.

J. Blasko noted that the fair would include free food and drinks, the City Arborist would be giving out tree saplings and a clothing/textile drive is in the works.

3. Swap Shop

[1:58:25] Chair Collins introduced this topic and explained the purpose of swap shops. The goal of such a shop would be to limit what is going into the landfill and limit the purchase of new things while fostering a sense of community and keeping things local. This is a pretty common thing to see in New Hampshire and they're usually in transfer or recycling stations, but they do not have to be. Back in 2008, the community was interested in setting up a swap shop in town but the issue at the time was lack of space in the recycling center, labor and the cost was too much. Chair Collins intends to speak with DPW to see if anything has changed that would allow for a new consideration of a swap shop but she is really interested in doing this as a community-driven project that maybe is located somewhere outside of the recycling center that could be in partnership with other organizations. She asked if anyone was interested in getting something like that off the ground, then they can reach out and she will try and give progress updates as they come in.

[2:01:03] J. Blasko mentioned that the Sustainability Committee has been talking about a similar idea and has similar interests in keeping in touch with DPW about upcoming changes to the transfer station. Chair Collins said that she had sent an email to the Chair of that committee, Bert Cohen, earlier in the day to ask for any updates or plans currently in place. P. Britz noted that space and funding is still a problem for the transfer station.

[2:02:10] B. Gibb expressed interest in the topic and noted that he is involved with a number of local non-profits and this made him think about how a number of residents involved in these non-profits may be in need of something and it had him wondering if there was an opportunity to work with those groups in the creation of a swap shop. Chair Collins responded that groups like Gather, which B. Gibb is a part of, have the pantry market on Fridays so perhaps there could be a joint market space where they can partner to have everything in one space on the same day with public access. They will both connect to brainstorm ideas for the swap shop.

[2:04:19] Vice Chair McMillan mentioned that she would email more information on this, but the NH Association of Conservation Commissions (NHACC) has an annual meeting coming up in November in Pembroke that is a great opportunity, especially for new members. Additionally,

the UNH Cooperative Extension is doing a two-day workshop on landscaping for water quality in Sunapee, NH for those interested. If any commission members were interested in attending, the Commission's annual budget could cover attendance costs. This workshop is designed for conservation commissioners and landscapers. This will be April 4-5th.

[2:05:43] L. Vaccaro mentioned that a woman from the UNH Cooperative Extension met with herself and Vice Chair McMillan and expressed interest in wanting to do a workshop with the Commission on sustainable lawn care. They have settled on a date for the workshop, which will be April 19th, and it will be hosted at the Great Bay National Estuarine Research Reserve where L. Vaccaro works and she feels it would be great to promote it through the Sustainability Fair. This could act like a pilot program for potential to have a similar workshop tailored towards Portsmouth in the future.

VII. ADJOURNMENT

The meeting adjourned at 6:00 p.m.

Memo

TO: Conservation Commission Members
FROM: Kate Homet, Associate Environmental Planner
CC: Peter Britz, Planning & Sustainability Director
DATE: April 5, 2024
SUBJ: April 10, 2024 Conservation Commission Meeting

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0 Maplewood Avenue
City of Portsmouth, Owner
Assessor Map 124, Lot 2, Map 125 Lot 19, Map 157 Lot 2-1 and Map 164 Lot 4

According to *Article 10 Section 10.1017.650* the applicant must satisfy the following conditions for approval of this utility project.

1. The proposed project is in the public interest.

This is part of an overall project to separate the existing combined sewer overflow systems in downtown Portsmouth and provide additional capacity for stormwater in the downtown. This separation is in the public interest as it will be separating stormwater principally originating from the Fleet, Congress and Vaughn Areas from entering the sewer lines, which will reduce the likelihood of sewer overflow into tidal waters during heavy precipitation and storm events. The term combined sewer system overflow means that when there is a large enough storm, the stormwater flow is too much for the combined system and the system overflows combined sewer and stormwater flow into the river and into the South Mill Pond. With separated systems, the likelihood of this combined overflow flowing into the tidal waters would now be much lower during heavy storm events. In addition, the additional capacity will provide protection from future heavy rainfall flooding events.

2. Design, construction, and maintenance methods will utilize best management practices to minimize any detrimental impact of such use upon the wetland and will include restoration of the site as nearly as possible to its original grade condition and vegetated state.

The use of erosion control measures where excavation is proposed along with the use of silt booms within the pond will help to mitigate any sediment and debris entering the pond. The restoration of the bank through a living shoreline project including expanded saltmarsh areas will help restore the nearby marsh population while working to protect that shoreline. The long-term success of this restoration area is crucial to the safety of that bank and the historic graveyard just beyond it.

3. No alternative feasible route exists which does not cross or alter a wetland or have a less detrimental impact on a wetland.

This overflow system has been in place since the 1970's and is directly connected to an existing system of properties and drain manholes that exist all over the downtown. The best placement for the addition

of an upgraded line is parallel to the existing line. The applicants are proposing to offset the permanent impacts to the wetland (outfall headwall and stone riprap) with the planting of salt marsh species to strengthen the bank.

4. Alterations of natural vegetation or managed woodland will occur only to the extent necessary to achieve construction goals.

To construct the new line, existing pavement, lawn, dirt and marsh areas will be disturbed to dig the trench and construct the infrastructure. Maintenance and replacement of the line in the future will likely require that no trees or large vegetation be planted directly over the piping. If possible, all areas disturbed within the buffer that is not marsh should be replanted with a wetland buffer seed mix.

Recommendation: Staff recommends **approval** of this wetland conditional use permit to the Planning Board with the following stipulations:

1. In accordance with Section 10.1018.40 of the Zoning Ordinance, applicant shall install permanent wetland boundary markers. We suggest that these markers are placed along the 25' vegetative buffer at intervals of every 50'along the City-owned property. These must be installed prior to the start of any construction. These can be purchased through the City of Portsmouth Planning and Sustainability Department.

2. A long-term maintenance schedule and plan be included in the permit application and submitted to the Planning & Sustainability Department that commits to long-term maintenance of the marsh restoration area and a commitment to ensuring a marsh migration pathway for marsh needs on City-owned land.

3. A note will be added to the plans stating that all soil and plant material excavated on site shall be removed and disposed of off-site, as recommended by the Environmental Services report.

4. All necessary approvals from involved property owners will be acquired prior to the issuance of a City building permit and prior to any associated approvals from the New Hampshire Department of Environmental Services.

PERKINS KWOKA JOINT REV TST
KWOKA REBECCA P & KATELYN E
TRUSTEES
224 Broad St.
Portsmouth, NH 03801

Samantha Collins, Chair
Conservation Commission
City of Portsmouth

October 19, 2023

Dear Mrs. Collins:

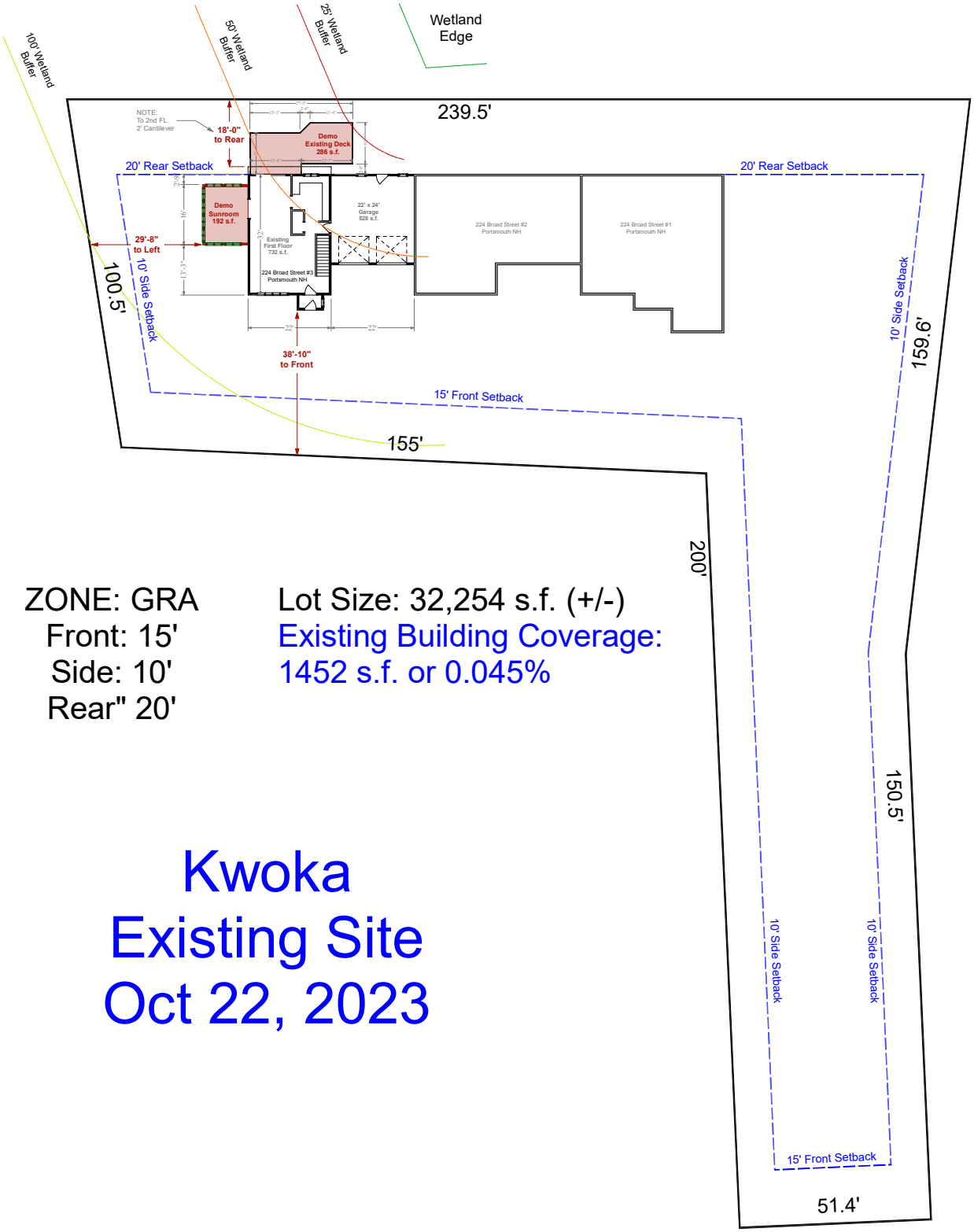
Attached are the plans for some landscaping improvements and an addition to our primary home. The intent is to replace a sunroom which has rotted due to the very wet ground, and to help the surface water from our yard drain properly into the wetland. We have small children and the yard is hard to use, as it has a large grade and the water is trapped in our yard. We hope to install appropriate drainage and plantings to help some surface water to be retained for plantings, and other surface water to be filtered as it drains towards the wetland.

As you will note, we intend to plant microclover as a native plantings and to avoid all use of pesticide and herbicide. We will install extensive plantings and improve the grade of the space, adding a pollinator garden and additional drainage. The open aggregate drainage strip is designed to slow surface water flow and encourage filtration back into the soil. You will also note that our proposed deck is at ¾" spacing with crushed stone underneath to filter runoff surface water.

We look forward to discussing these plans with you.

Thank you,

Katelyn Kwoka

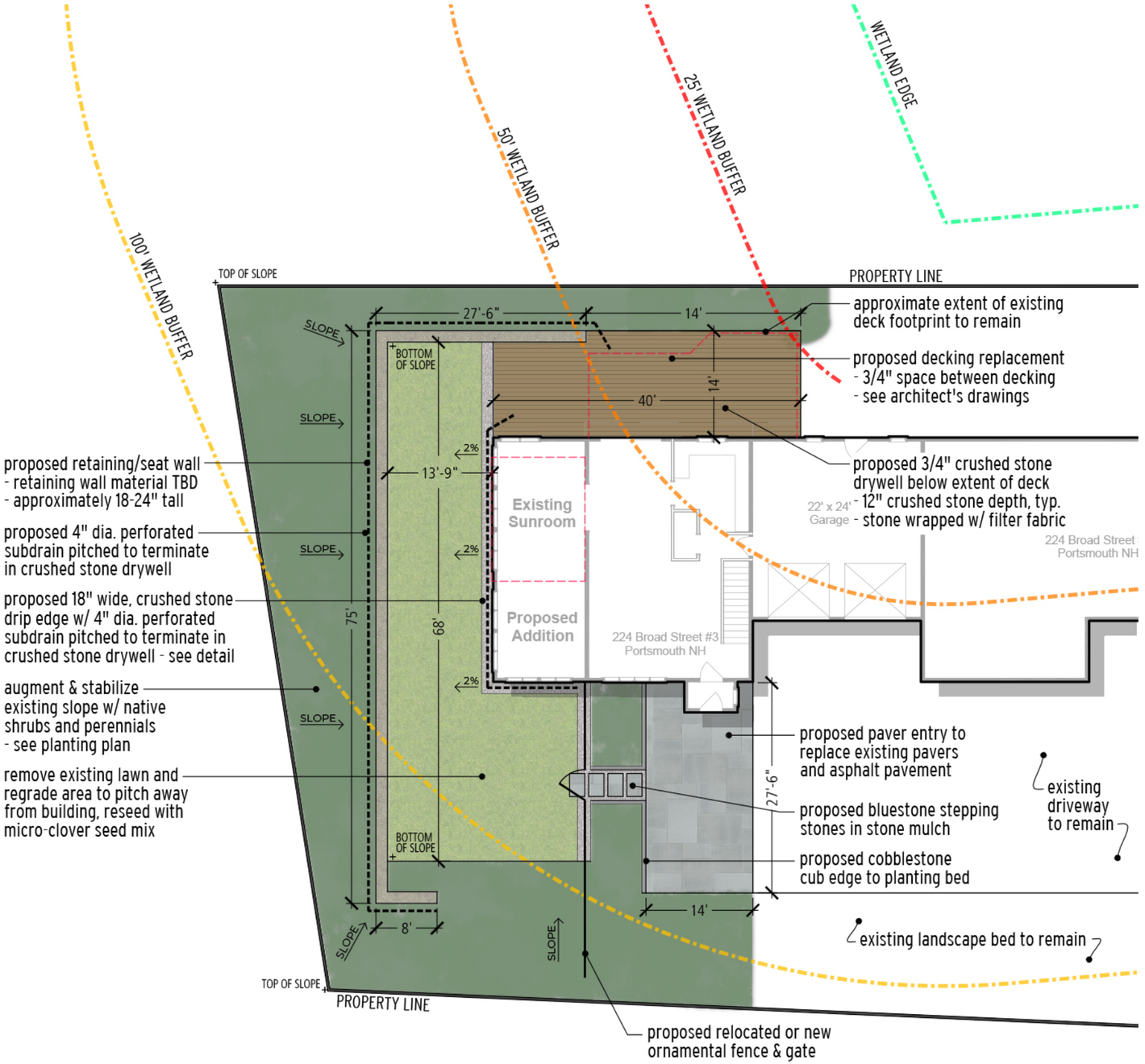


ZONE: GRA
Front: 15'
Side: 10'
Rear" 20'

Lot Size: 32,254 s.f. (+/-)
Existing Building Coverage:
1452 s.f. or 0.045%

Kwoka
Existing Site
Oct 22, 2023

Scale: 1" = 40'-0"
(On Letter)

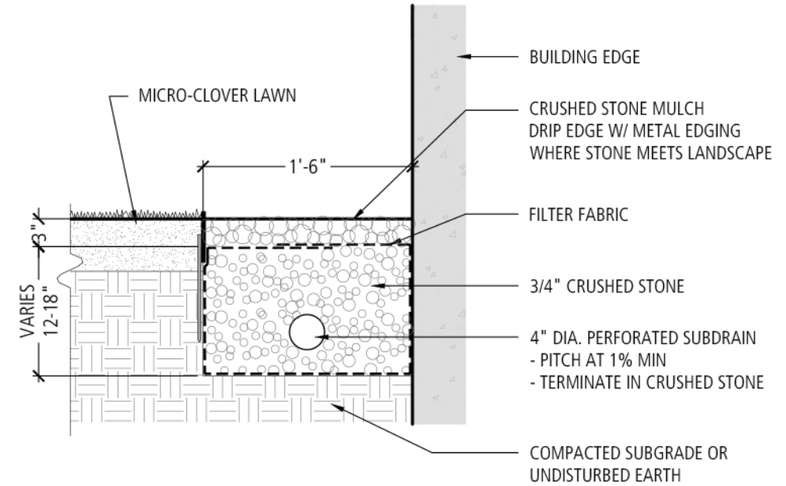


Proposed Landscape Plan

Existing to be Removed	Area
Existing Sunroom	192 SF
Existing Pavement (pavers/asphalt)	491 SF

Proposed Improvements	Area
Proposed Sunroom Addition	384 SF
Proposed Deck Expansion	200 SF
Proposed Pavement (pavers)	401 SF
Proposed Planting Bed	2,385 SF
Proposed Micro-clover Lawn	1,115 SF

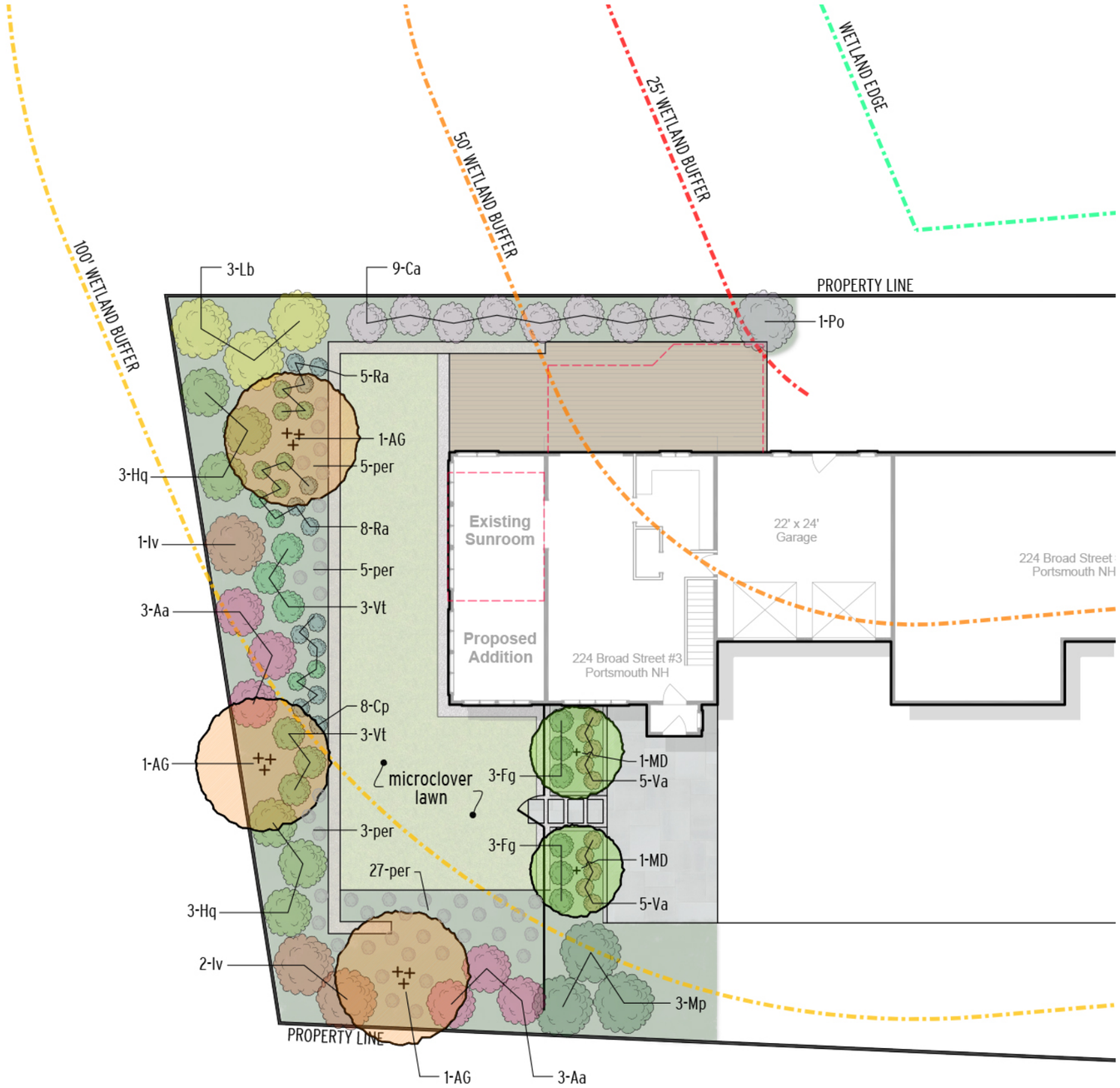
Table: Existing to be Removed Area & Proposed Improvements Area



Detail: Proposed Crushed Stone Drip Edge w/ Perforated Subdrain

Scale: Not to Scale

NOT FOR CONSTRUCTION



Proposed Planting Plan

Trees

Quantity	Symbol	Size	Scientific Name	Common Name	Size & Comments
3	**AG**	7-8'	Amelanchier grandiflora 'Autumn Brilliance'	Serviceberry	15-25' - native, white flowers, edible fruit, brilliant red-orange fall foliage
2	**MD**	2.5 CAL	Malus domestica 'Gala'	Apple Tree	15-20' - white flowers spring, deep green foliage, apples in fall

Shrubs

Quantity	Symbol	Size	Scientific Name	Common Name	Size & Comments
6	**Aa**	3 GAL	Aronia melanocarpa	Black Chokeberry	5' - native, white flowers spring, edible fruit, brillaint autumn foliage
8	**Cp**	1 GAL	Comptonia peregina	Sweet Fern	4' - native, colonizing deciduous shrub with fragrant fern-like leaves
10	**Ca**	3 GAL	Clethera alnifolia	Summersweet	6' - native, fragrant white flowers
6	**Fg**	3 GAL	Fothergilla gardenii	Dwarf Fothergilla	3' - native, compact, fragrant white flowers, multicolor autumn foliage
6	**Hq**	3 GAL	Hydrangea quercifolia 'Alice'	Oakleaf Hydrangea	6' - native, compact ,abundant large white flowers turn pink with maturity
3	**Iv**	3 GAL	Ilex verticillata 'Winter Red'	Winterberry	6' - native, heavy fruiting, large, intense red berries, dark green foliage
3	**Lb**	3 GAL	Lindera benzoin	Spicebush	8' - native, light green leaves turn yellow autumn, yellow flowers
3	**Mp**	3 GAL	Morella pensylvanica	Northern Bayberry	8-10' - native, wide, upright, glossy green aromatic foliage
1	**Po**	3 GAL	Physocarpus opulifolius	Common Ninebark	6-10' - native, upright, exfoliating bark, purple foliage with white flowers
13	**Ra**	1 GAL	Rhus aromatica 'Gro-Low'	Sumac	2-3' - native, green leaves, scarlet-orange autumn, aromatic yellow flowers
10	**Va**	1 GAL	Vaccinium angustifolium	Lowbush blueberry	12" - native, groundcover, edible fruit, red deciduous autumn foliage
6	**Vt**	3 GAL	Viburnum trilobum 'Bailey Compact'	American Cranberrybush	5' - native, green leaves, white flowers, edible fruit, brilliant red autumn foliage

Perennials & Groundcovers

Quantity	Symbol	Size	Scientific Name	Common Name	Size & Comments
40	**per**				
5	**ah**	1 GAL	Amsonia hubrechtii	Blue Star	36" - native, bluer flowers, dark green needle foliage, yellow autumn
5	**an**	1 GAL	Aster novae-angliae 'Purple Dome'	New England Aster	18" - native, dwarf, semidouble bright purple flowers, heavy bloomer
10	**dp**	1 GAL	Dennstaedtia punctilobula	Hay Scented Fern	20" - native, fast growing groundcover, lacy fragrant fronds
5	**ep**	1 GAL	Echinacea purpurea 'Kims Knee High'	Coneflower	18" - native, dwarf, clear pink flowers
5	**ls**	1 GAL	Liatris spicata 'Kobold'	Gayfeather	24" - native, spikes of lilac-mauve flowers
5	**md**	1 GAL	Monarda didyma 'Rasberry Wine'	Wild Bergamot	3-4' - native, clear wine-ed flowers, mildew resistant
5	**rf**	1 GAL	Rudbeckia fulgida 'Fulgida'	Black-eyed Susan	2-3' - hnative, deep yellow daisy like flowers w/ black centers

Proposed Plant List

NOT FOR CONSTRUCTION

groundswell landscape DESIGN CONSULT MANAGE

January 8, 2024

Conservation Commission Notes

Prepared for Client:
Kwoka Residence
224 Broad Street
Portsmouth, NH 03801

Notes on items per email 12/8/23:

#1 – Wetland boundary markers will be purchased and installed for the 25-foot buffer. Exact locations of boundary markers TBD.

#2 – Perforated 4-inch diameter drainage pipe will be installed behind the base of proposed retaining wall. Pipe shall be pitched at 2%, in order to slowly move water downslope. Daylighting of pipe will occur before the terminus of retaining wall closest to resource area. From end of pipe @ daylight, water will have approximately 20 feet to flow on-grade, at a very shallow slope. This should allow water to infiltrate soil before arriving at resource area.

#3 – Planting Palette and General Locations:
All new plantings will occur within the area of Dark Green – as shown on plan dated 10/13/23. Generally, the plantings will layer up from groundcovers, perennials, woody shrubs, to a selection of ornamental and fruiting trees. Plant palette shall be further developed by determination of soil type, sun exposure, and feedback from the Conservation Commission. Exact plant locations will be determined by working around existing roots, stumps, and large rocks, while considering slope, erosion control, and spacing for a healthy plant community.

Working Plant Palette – Woody Native:

Amelanchier canadensis	Aronia melanocarpa	Ilex verticillata
Amelanchier x grandiflora	Clethra alnifolia	Myrica pensylvanica
Apple – Fruit	Comptonia peregrina	Rhus aromatica
Cherry – Fruit	Cornus sericea	Sambucus canadensis
Pear - Fruit	Hamamelis virginiana	Viburnum dentatum

Working Plant Palette – Perennial Native:

Achillea	Cimicifuga racemose	Monarda fistulosa	Strawberry
Arctostaphylos uva-ursi	Fern ‘Hayscented’	Sporobolus heterolepis	Blueberry
Aster symphyotrichum	Iris versicolor	Thyme	Raspberry

groundswell landscape DESIGN CONSULT MANAGE

#4 – Paver Stones to Replace Asphalt Area:
Process of paver stone installation shall include the removal of approximately 375 SF of existing concrete pavers and asphalt.
Base materials for new paver stone installation shall include permeable aggregate (4-6 inches) of ¾" crushed stone mixed with stone dust.
Setting bed (on top of base materials) shall be 1-inch of stone dust OR angular sand.
Paver stones shall be Granite Cobblestones OR Reclaimed Granite 'Bars', set dry into permeable setting bed. Joints shall be filled with permeable stone dust OR angular sand.

During the meeting scheduled for 1/10/24 @ 3:30 pm, I will be available to answer any questions about the design and overall construction process.

Regards,

Shane Mahoney, ASLA
Owner | Manager
Groundswell Landscape, LLC
4 4th Street
Amesbury, MA 01913

p. 978-273-0870
e. shane@thegroundswelldesign.com

civil &
environmental
engineering

UNDERWOOD
engineers

2542.12

March 27, 2024

Ms. Samatha Collins, Chair
City of Portsmouth Conservation Commission
1 Junkins Avenue
Portsmouth, NH 03801

Re: ***Conditional Use Permit Application Submittal***
Maplewood Avenue Drainage Improvements – North Mill Pond Outfall
Portsmouth, NH

Dear Ms. Collins:

On behalf of the City of Portsmouth, we are applying for a Conditional Use Permit (Wetland Impacts) for proposed improvements to one of the existing outfall on North Mill Pond (behind the cemetaries). This work is required as part of the City's ongoing efforts to continue sewer separation in the Fleet Street Area of downtown and capacity upgrades are required at the outfall to accomodate additional storm drain flows resulting from the separation work.

We have completed the City's permitting submittal process on the website and enclosed for the Commission's consideration and use is one (1) hard copy of documents submitted electronically as required.

The intent is to be included on the April 10th meeting agenda to present the project and application to the Commission so that recommendation can be obtained for planning board approval during their May meeting.

Please feel free to contact me if any additional information is required in advance of the meeting.

Very truly yours,

UNDERWOOD ENGINEERS, INC.

Daniel J Rochette, P.E (NH)
Project Manager

Encl.
cc: Dave Desfosses, City of Portsmouth (via e-mail)

ph 603.436.6192
fx 603.431.4733
25 Vaughan Mall
Portsmouth, NH 03801
underwoodengineers.com

NARRATIVE STATEMENT
MAPLEWOOD AVENUE DRAINAGE INTERCEPTOR
PORTSMOUTH, NEW HAMPSHIRE

BACKGROUND AND PURPOSE

The City of Portsmouth has been mandated by an EPA Administrative Order to mitigate combined sewer overflows (CSO's) around the City. The next project identified on the City's priority list is to complete sewer separation in the Fleet Street drainage area. Separation of stormwater from the sewer system will increase flows within the existing system. Hydraulic calculations show that once separation of the Fleet Street area is complete existing downstream drainage systems will be overwhelmed and capacities need to be increased.

PROJECT DESCRIPTION

Currently, a new drainage interceptor along Maplewood Avenue ultimately discharging next to the existing outfall at North Mill Pond is being proposed to provide the additional capacity desired to accommodate additional stormwater flows resulting from the separation work Approximately 1,200 LF of 42" and 48" diameter RCP pipe is proposed along with a stormwater treatment unit.

New drainage piping also crosses below existing railroad tracks which will require trenchless installation methods so that existing tracks are not disturbed. The method of installation anticipated for the railroad crossing will be jack and bore to place a steel sleeve beneath the tracks for the drainage pipe to be inserted to.

Typical installations methods for the balance of the work will be open excavation with a trench width expected be vary between 6' and 8' wide dependent on pipe size and depth. Normal installations methods also include back filling excavations at the end of each work day.

ARCHITECTURAL AND ARCHAEOLOGICAL RESOURCES

In general, the impact areas will be contained to the area immediately surrounding the proposed work. Installation of new drainage piping will be linear in nature. Proposed alignments fall within existing roadways (Maplewood Avenue) or in locations previously disturbed by urban development (railroad access area).

Buildings abutting the road and sidewalks adjacent to the project area are all newer construction and have either been built within the last 20 years.

It is noted that work is proposed adjacent to the existing Old North Cemetery which is a known historic area. Existing conditions limited potential alignments for the proposed pipe. However, it is aligned so that the center of the pipe is approximately 19 feet (or more) from the existing fence line to the cemetery.

Where outfall improvements are proposed within jurisdictional wetland areas, impacts are generally limited to areas that have already been disturbed either by previous drainage system installations in the 1970's. Any excavation work completed beyond to existing outfall to place a stone apron and construct a permitted stabilized discharge will be limited to a depth of 2'.

Visual effects due to construction of the sewer line will be temporary in nature, as the infrastructure will be below ground and the area will be restored to existing conditions.

File Review

A file review was conducted using the EMMIT Database Search Tool on January 18, 2023.

The following files were found for an area where the project is being constructed:

- Eastern Railroad Linear Eastern District
    - **Impacts** – Proposed piping is being installed along the paved driveway to railroad access area. Impacts will consist of linear trench excavation as described above up to 8' in width and up to 13' depth. Upon completion the driveway will be paved and restored in kind.

The following files were found near the project area, but not within it:

- Old North Cemetery (POR149)
- Portsmouth Downtown historic District (POR0174
- Col. George Boyd Tomb (POR1024)

Previous Land Uses

No other previous uses are known.

Other Known Or Suspected Archaeological Resources Within The Project Area

No known or suspected archaeological resources within the project area.

Plan View of Photo Location and Direction

NORTH MILL POND

P1 P2 P3 P4

SHORELINE BUFFER

TIDAL BUFFER ZONE

DEER ST.

MAPLEWOOD AVE

HANOVER ST.

SEE FLEET STREET RECONSTRUCTION PROJECT

DMH #BA

ISSUE FOR
BIDDING — By — Date —
CONSTRUCTION — By — Date —
RECORD DRAWING — By — Date —

NO.	REVISIONS	APP'D

Drawn/Chk. RMG
Designed PDM
Checked —
Approved —
Date 1/5/2022
Book No. —
Project No. 2542
Dwg. ID 2542_ptsss_M
Scale

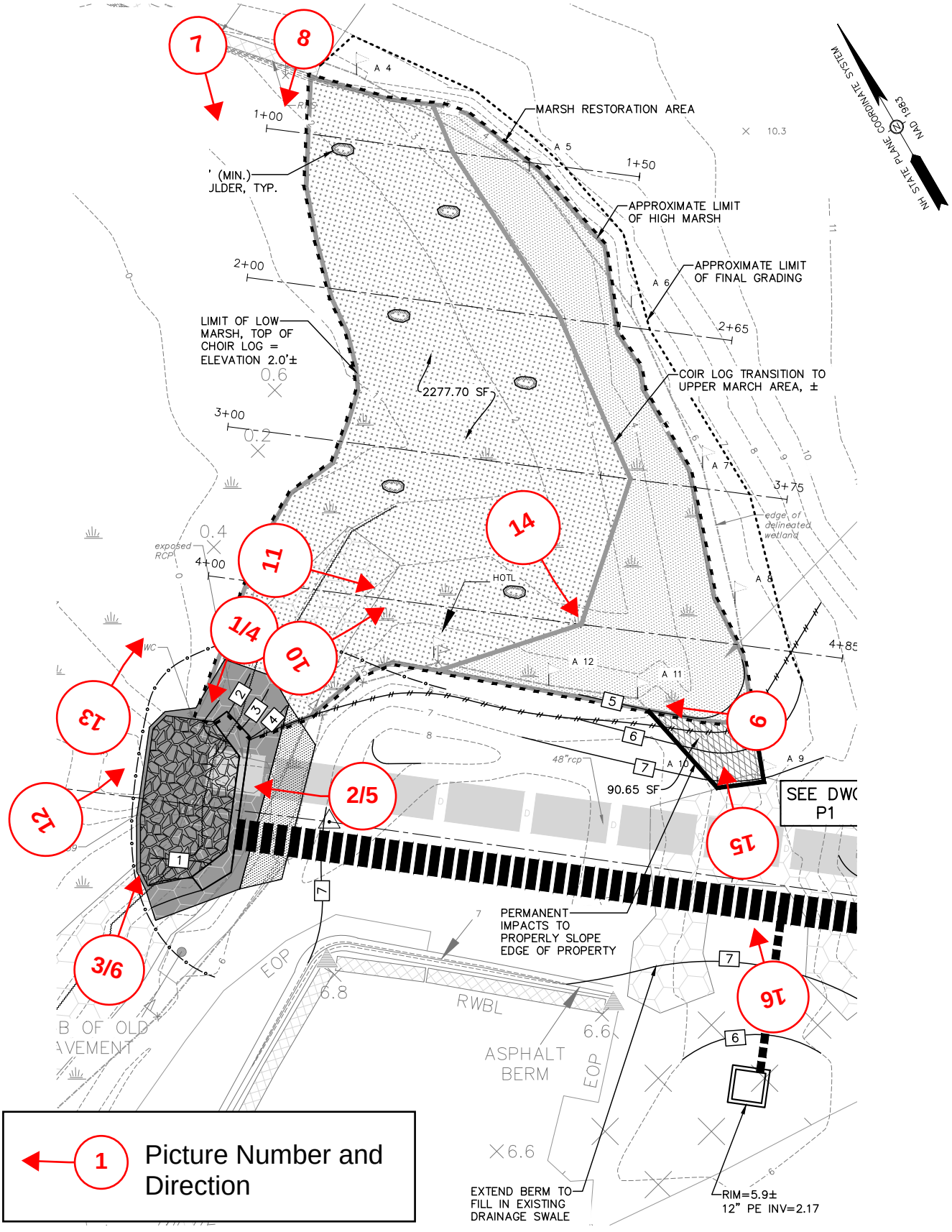
FOR REVIEW
JAN. 2023
NOT FOR CONSTRUCTION

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

PLAN INDEX

MAPLEWOOD AVE – DRAINAGE INTERCEPT
CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

DWG NO	SHEET
G2	3 OF 14



DATE		Photo index	FIG.
3-6-24	UNDERWOOD engineers	Outfall Improvements and Marsh Restoration	3.1
PROJECT 2542	25 Vaughan Mall, Portsmouth, N.H. 03801 Tel. 603-436-6192 Fax. 603-431-4733	Portsmouth, New Hampshire	

Project Area Photos
Maplewood Avenue Outfall Improvements
Portsmouth, NH

Photo 1 – Existing outfall headwall, exposed 48" RCP pipe, and tidal embankment looking west at approximate high tide. Taken 9/28/22

Photo 2 – Existing outfall headwall and exposed 48" RCP pipe looking northwest at approximate high tide. Taken 9/28/22

Photo 3 – Existing outfall headwall, exposed 48" RCP pipe, and tidal embankment looking east at approximate high tide. Taken 9/28/22

Photo 4 – Existing outfall headwall, exposed 48" RCP pipe, and tidal embankment looking west at approximate low tide. Taken 9/29/22

Photo 5 – Existing outfall headwall and exposed 48" RCP pipe looking northwest at approximate low tide. Taken 9/29/22

Photo 6 – Existing outfall headwall, exposed 48" RCP pipe, and tidal embankment looking east at approximate low tide. Taken 9/29/22

Photo 7 – Mitigation area, looking south at approximate low tide. Taken 3/20/24

Photo 8 – Mitigation area, looking southeast at approximate low tide. Note existing large rocks to be stockpiled for use on stabilized slope and ice breakers. Taken 3/20/24

Photo 9 – Small existing marsh area in mitigation area looking northwest at approximate low tide. Note proposed grading will work to include within the proposed high marsh area. Taken 3/20/24

Photo 10 – Mitigation area looking east at approximate low tide. Note undercut embankment below cemetery. Marsh restoration will provide revetement. Trees and vegetation on embankment to remain, tree canopy to be trimmed up approximately 20' from ground surface. Taken 3/20/24

Photo 11 – Small existing marsh area in mitigation area looking northwest at approximate low tide. Note proposed grading will work to include within the proposed high marsh area. Taken 3/20/24

Photo 12 – Existing outfall headwall with mitigation area in background looking east at approximate low tide. Taken 3/20/24

Photo 13 – Approximate location of proposed stabilized marsh sill, looking northeast at approximate low tide. Taken 3/20/24

Photo 14 – Eroded channel in mitigation area at outlet of drainage swale (to be eliminated), looking south at approximate low tide. Taken 3/20/24

Photo 15 – Existing drainage swale outlet (to be eliminated) and erosion in mitigation area looking north at approximate low tide. Taken 3/20/24

Photo 16 – Existing drainage swale (to be eliminated) looking north at approximate low tide. Taken 3/20/24

Maplewood Avenue Outfall Improvements and Marsh Restoration
Portsmouth, New Hampshire

Work Sequence Narrative

Note: The sequence of work provided below is a typical sequence for the work proposed. Bidding documents will require the contractor to provide a detailed sequence of work based on their preferred method of installation.

Pipe Installation
Temporary and permanent erosion control devices will be installed at the project site prior to the start of construction in accordance to the Contractor's Approved SWPPP. Silt booms will also be installed in accordance with the project plans in the vicinity of the work. It is anticipated that the contractor will complete all installations during low tide and low flow conditions and permanent flow diversions and engineered dewatering systems will not be required. Any trench dewatering that occurs during installation will be discharged to appropriate silt bags or haybale detention ponds.

The trench for the new proposed 48" reinforced concrete pipe will be excavated through the embankment at North Mill Pond in parallel to the existing 48" reinforced concrete pipe. Following the removal of the existing outfall headwall, a new headwall for the existing and proposed 48" pipes will be constructed in the embankment at low tide. The proposed 48" pipe will be installed in the finished trench and dewatering and daily gravel installation measures will be performed as stated on the project plans.

Site restoration efforts after the completion of the pipe installation will include filling excavations and stabilizing the embankment and other disturbed areas within the jurisdictional wetlands. The temporary and permanent erosion control measures will be removed from the site once vegetation is established and all disturbed areas are fully stabilized.

Marsh Restoration
Contractor will ensure the silt boom is installed across the entire marsh restoration area. Sequence his work to complete all grading and fill operation during low tide conditions. Planting shall be scheduled to occur immediately following the completion grading to begin establishing vegetation as soon as possible. Tree limb trimming as described on the drawings shall occur anytime prior to the planting of marsh vegetation

Following planting of vegetation, the marsh area shall be routinely monitored for erosion and vegetation establishment. Weather conditions will also be monitored so that vegetation is to be watered as required during times of drought. Monitoring will also be in place to ensure that geese and other waterfowl are not negatively impacting the newly planted areas. If waterfowl impacts are observed than measured shall be put in place to deter waterfowl until vegetation is established. Long term observation and maintenance will be conducted by a certified wetlands scientist as required by NHDES to ensure long term success of the mitigated area.

TES Environmental Consultants, LLC

March 30, 2021

Ref: TES JN 19-0168

Mr. William Doucet, President
Doucet Survey, Inc.
2 Commerce Drive, Suite 202
Bedford, NH 03110

Re: Environmental Services (Wetland Description and Functions and Values Assessment)
Maplewood Avenue Over North Mill Pond, Portsmouth, New Hampshire
NHDOT Bridge No. 231/103

Dear Mr. Doucet:

TES Environmental Consultants, L.L.C. (TES) has prepared this report to document the physical and biological characteristics of the wetlands and surrounding lands in the vicinity of the proposed replacement of the existing culvert at Maplewood Avenue Over North Mill Pond in Portsmouth, New Hampshire, and to evaluate the functions and values associated with those wetlands. These observations are provided in support of the Survey Scope of Services related to the proposed project.

An on-site investigation was performed by TES on February 28, 2020 to delineate the boundaries of wetlands in the vicinity of the culvert (Figure 1) and to observe the characteristics of the wetlands and the upland portion of the surroundings. The wetland delineation was performed according to the standards of the 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, US Army Corps of Engineers. All wetlands in the survey area consist of coastal resources, therefore the limits of jurisdictional wetlands were identified as the highest observable tide line (HOTL) as defined at Env-Wt 602.23. The observations made during this field effort were during the mid-incoming tide, and together with the following published information, form the basis for this wetland functional assessment:

- USGS Portsmouth, NH-ME Quadrangle, 7.5 minute series topographic map
- Aerial photographs from Google Earth and other sources
- USDA-NRCS Soil Survey of Rockingham County, New Hampshire (via Web Soil Survey)
- National Wetlands Inventory map
- The New Hampshire Department of Environmental Services (NHDES) Wetlands Permit Planning Tool (WPPT)
- NH Natural Heritage Program Datacheck Program
- US Army Corps of Engineers The Highway Methodology Workbook – Supplement

Site Characterization

Uplands. The upland areas in the vicinity of this survey area are primarily in urban residential (to the west) and commercial/industrial use to the east (Figure 2). Essentially no undeveloped land exists in the vicinity of the site, although North Cemetery lies approximately 500 feet to the southeast. Trees exist

only in yards and small roadside spaces, with boxelder (*Acer negundo*) and weeping willow (*Salix babylonica*) predominant, and choke cherry (*Prunus virginiana*), black locust (*Robinia pseudoacacia*), and staghorn sumac (*Rhus typhina*) present as shrub species. Two invasive shrub species are present within the project site: glossy buckthorn (*Frangula alnus*) and multiflora rose (*Rosa multiflora*). Two invasive vines are also present – Oriental bittersweet (*Celastrus orbiculatus*), and black swallowwort (*Cynanchum louiseae*). Herbaceous species present in the upland areas include turf grasses and Canada goldenrod (*Solidago canadensis*).

Upland soils in the vicinity of the survey area are shown in the Soil Survey of Rockingham County as being Urban Land (699) to the east of the culvert, and Urban Land-Canton complex (799) to the west. Canton fine sandy loam is a sandy soil formed in loose glacial till deposits. Urban Land components are developed lands, most likely having soils similar to Canton.

Wetlands. On February 28, 2020 a TES wetland scientist delineated and flagged the boundaries of the HOTL within the project survey area with numbered pink and black striped flags for location by ground survey and depiction on site plans. The principal jurisdictional wetland feature within the survey area consists of North Mill Pond (Figures 3 and 4) which is identified as Estuarine Water on the WPPT, with small, limited fringe areas of Irregularly Flooded (Tidal) Marsh and Tidal Flats in the vicinity of the project area. The project site lies approximately 1,500 feet south of the Piscataqua River at the Sarah Mildred Long Bridge on US Route 1 Bypass. Tidal Flats predominate landward from Maplewood Avenue, and Estuarine Water occupies most of the seaward portion of North Mill Pond.

Under the U.S. Fish and Wildlife Service's Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al., 1979), the Tidal Flats would be classified as Estuarine, Intertidal, Unconsolidated Shore, Mud, Regularly Flooded (E2US3N), and the Estuarine Water portions would be classified as Estuarine, Subtidal, Unconsolidated Bottom, Subtidal (E1UBL). The latter areas have a cobble bottom in the vicinity of the culvert, where tidal currents are strongest, and mud further away. Riprap is present along both sides of the Maplewood Avenue causeway, and rockweed (*Ascophyllum nodosum*) grows on the riprap and other rocky surfaces (Figure 5) in the project vicinity. Salt marsh cordgrass (*Spartina alterniflora*) grows in unconsolidated material (Figure 6) in the intertidal zone in only narrow strips in scattered areas near the project site. No eelgrass beds, shellfish beds, or oyster restoration beds are located near the project area.

No fish were observed within North Mill Pond, although various species such as winter flounder (*Pseudopleuronectes americanus*), juvenile (snapper) bluefish (*Pomatomus saltatrix*), and baitfish such as killifish (*Fundulus* spp.) and common mummichog (*Fundulus heteroclitus*) may be expected to occur seasonally. Various wading birds, shore birds, and waterfowl may also be expected to utilize North Mill Pond and its tidal flats seasonally.

Vernal Pool. No vernal pools were observed within the vicinity of the Maplewood Avenue Over North Mill Pond survey area, applying the following definition and methodologies: New Hampshire Department of Environmental Service definition of vernal pool at Env-Wt 101.106; delineation methods at Env-Wt 301.01(f); and guidelines for identifying and describing vernal pools given in "Identification and Documentation of Vernal Pools in New Hampshire" published by the New Hampshire Fish and Game Department. It is possible that vernal pool habitat is present in the forested floodplain wetlands

further away from the survey corridor, although the depth of floodwaters during the field survey precluded observations in those areas.

Invasive Plant Species. The lands within the survey area for this project were investigated for the potential presence of invasive plants identified in the New Hampshire Department of Transportation (NHDOT) Best Management Practices for Roadside Invasive Plants. Four invasive plant species were observed in the survey area: Oriental bittersweet (*Celastrus orbiculatus*), glossy buckthorn (*Frangula alnus*), multiflora rose (*Rosa multiflora*), and black swallowwort (*Cynanchum louiseae*). Oriental bittersweet, glossy buckthorn, and multiflora rose are common in the uplands in the northwest quadrant of the survey area, and black swallowwort is present all along the north side of Maplewood Avenue. The extensive nature of the colonization of each of these invasive plants, along with the location of many of them on adjacent private property and along the shoreline extending well away from the project site, lead to a recommendation of no attempts to control these invasive species. Soil and plant material removed from this site, however, should not be re-used on site or on other sites, but rather should be disposed of in accordance with the New Hampshire Department of Transportation's Best Management Practices for Roadside Invasive Plants (2008).

Wetland Functional Assessment Methodology

Wetland functions and values, and their significance were evaluated using the US Army Corps Highway Methodology guidelines. The following is a list of the 14 wetland functions and values with a brief description of each.

1. **Groundwater Recharge** should relate to the potential for the wetland to contribute water to an aquifer (often combined with the following).
2. **Groundwater Discharge** should relate to the potential for the wetland to serve as an area where ground water can be discharged to the surface.
3. **Floodflow Alteration:** This function considers the effectiveness of the wetland in reducing flood damage by attenuation of floodwaters for prolonged periods following precipitation events.
4. **Fish and Shellfish Habitat:** This function considers the effectiveness of seasonal or permanent water bodies associated with the wetland in question for fish and shell fish habitat.
5. **Sediment/Toxicant/Pathogen Retention:** This function reduces or prevents degradation of water quality. It relates to the effectiveness of the wetland as a trap for sediments, toxicants or pathogens.
6. **Nutrient Removal/Retention/Transformation:** This function relates to the effectiveness of the wetland to prevent adverse effects of excess nutrients entering aquifers or surface waters such as ponds, lakes, streams, rivers or estuaries.
7. **Production Export:** This function relates to the effectiveness of the wetland to produce food or usable products for humans or other living organisms.
8. **Sediment/Shoreline Stabilization:** This function relates to the effectiveness of a wetland to stabilize stream banks and shorelines against erosion.
9. **Wildlife Habitat:** This function considers the effectiveness of the wetland to provide habitat for various types and populations of animals typically associated with wetlands and the wetland edge. Both resident and or migrating species must be considered.
10. **Recreation:** This value considers the effectiveness of the wetland and associated watercourses to provide recreational opportunities such as canoeing, boating, fishing, hunting and other active or

passive recreational activities. Consumptive opportunities consume or diminish the plants, animals or other resources that are intrinsic to the wetland, whereas non-consumptive opportunities do not.

11. **Educational/Scientific Value:** This value considers the effectiveness of the wetland as a site for an "outdoor classroom" or as a location for scientific study or research.
12. **Uniqueness/Heritage:** This value relates to the effectiveness of the wetland or its associated water bodies to produce certain special values. Special values may include such things as archeological sites, unusual aesthetic quality, historical events, or unique plants, animals, or geological features.
13. **Visual Quality/Aesthetics:** This value relates to the visual and aesthetic qualities of the wetland.
14. **Threatened or Endangered Species Habitat:** This value relates to the effectiveness of the wetland or associated water bodies to support threatened or endangered species.

Wetland Functions and Values in the Survey Area

The functions and values of the wetland resources in the survey area are associated with North Mill Pond and contiguous wetlands landward and seaward from the site.

Of the 14 recognized potential functions and values of wetlands, 8 are considered to be present at some level at the location of this project, of which 4 rise to principal or significant levels within this wetland resource:

- sediment/toxicant retention,
- nutrient removal/transformation,
- sediment/shoreline stabilization, and
- visual quality/aesthetics.

Principal Functions and Values.

Sediment/toxicant retention potential is present at a principal level within the North Mill Pond wetland system due in large part to the low gradient of Pond bottom and extensive mud flats. The slow water flow present in most of the Pond (except at the Maplewood Avenue culvert) during incoming and outgoing tides, along with the Pond sediments, provide potential for settling of sediment and toxicants, as well as binding of toxicants to Pond sediment. Potential sources of sediment and toxicants are present within the Pond watershed.

Nutrient removal/transformation is also considered to be present at a principal level at this location. This function generally follows sediment/toxicant retention, as both require a wetland having a low gradient and slow flowing water. The North Mill Pond does generally lack sufficient vegetation to slow water flow, and to provide significant uptake of excessive nutrients, however. Potential sources of excess nutrients are present within the Pond watershed.

Sediment/shoreline stabilization is a function clearly provided to some degree by the wetlands along the banks of North Mill Pond, although mechanical stabilization including riprap and retaining walls are prominent in the vicinity of the Maplewood Avenue causeway. Stable bank soils contribute to reduced sediment entering downgradient channels with silt, maintaining their ability to convey flows and boat traffic.

Visual quality/aesthetics is a value considered to be present at a significant level at this location due to the presence of expansive surface waters, and a public road elevated above the water offering an open vista. This affords the public opportunities to view the setting while travelling along Maplewood Avenue, the primary public viewing location.

Functions and Values Present at Moderate Levels. Four potential functions and values of wetlands are considered to be present at moderate but not principal levels at this location:

- fish and shellfish habitat,
- production export,
- wildlife habitat, and
- recreation.

Fish and shellfish habitat is considered to be present, or potentially present, at moderate levels within North Mill Pond due to the presence of permanent surface water connected to the Piscataqua River. Some marine or estuarine fish species may inhabit the Pond seasonally at some point in their life cycle, although the minimal submerged and emergent vegetation in the Pond limits potential food and cover. The existing Maplewood Avenue culvert is sufficiently wide to allow fish passage. No fish or shellfish were noted during the field investigation, but some examples of fish that may occur seasonally include winter flounder (*Pseudopleuronectes americanus*), juvenile (snapper) bluefish (*Pomatomus saltatrix*), and baitfish such as killifish (*Fundulus* spp.) and common mummichog (*Fundulus heteroclitus*). The sole tributary to North Mill Pond is Hodgson Brook, and no significant fresh surface waters exist along that drainageway, limiting potential for anadromous or catadromous fish usage.

Production export consists of the transport of vegetation or its decomposing material from a wetland to connected wetlands or surface waters. High potential for wetlands to perform production export is typically exemplified by high levels of vegetative production within a wetland coupled with a broad pathway for that production to be conveyed from that wetland to another wetland or water body. There is minimal vegetative growth with North Mill Pond or in wetlands along its shores, and therefore little export of vegetation occurs here, although a limited amount occurs from the small fringe marsh vegetation (primarily *Spartina alterniflora*) and submerged vegetation such as rockweed (*Ascophyllum nodosum*).

Wildlife habitat is a function related to all of the physical and biological elements of a wetland complex and its surrounding landscapes. The setting of North Mill Pond and associated wetlands within a highly-developed area corridor detracts greatly from its overall habitat potential. However, the significant open water (especially at high tide) provides potential resting areas for migrating waterfowl, and shorebirds and wading birds may find limited foraging habitat along the shore and on exposed mud flats. For the purposes of wetland function and values assessments, the function of wildlife habitat focuses on habitat for wildlife dependent on wetlands for part or all of their life cycles.

Recreation potential related to the wetland resources present at this location relate primarily to potential active recreation (fishing, canoe/kayak use) related to North Mill Pond, and passive recreation potentially provided by viewing the open vista or possibly birding from Maplewood Avenue, which has sidewalks along both sides. The primary limiting factor for both active and passive recreation in this location is the general lack of public access. Metered parallel parking is present off the eastern end of

the survey corridor, although little visual interest is present for passive public recreation. The existing culvert appears to provide sufficient width and overhead clearance for the passage of small craft such as canoes or kayaks, although during peak tidal flow the current may be too strong to paddle against, and at high tide the overhead clearance may be insufficient for passage.

Functions and Values Absent or Present at Negligible Levels. Five potential functions and values of wetlands are considered to be absent or present at negligible levels at this location:

- groundwater recharge and discharge,
- floodflow alteration
- educational/scientific value,
- uniqueness/heritage value, and
- endangered species habitat.

Groundwater recharge and discharge are generally considered insignificant functions in Estuarine environments such as North Mill Pond. Coastal areas may have brackish groundwater, recharged by coastal surface waters. Fresh groundwater from inland areas "pushes" against this brackish groundwater, and the brackish front may push inland during periods of little rainfall, or seaward during periods of heavier rainfall. Over time, rising sea levels may increase saltwater intrusion into coastal aquifers that were previously exclusively or mostly freshwater, rendering that groundwater unpotable at least until freshwater recharge pushes out the salt intrusion. These occurrences are not so much related to the functions of the wetlands as they are to fluctuations, seasonal and long-term, in weather and climate variations.

Floodflow alteration can be considered a significant function in coastal wetlands such as where extensive salt marshes or dunes provide buffers to storm surges. The narrow and discontinuous marsh fringes along North Mill Pond provide negligible protection against storm surges, and constructed barriers such as riprap banks and retaining walls are the principal features providing such protection in the vicinity of Maplewood Avenue.

Potential for educational/scientific value associated with North Mill Pond at this site is limited by the minimal controlled public access to the Pond and adjacent wetlands. A sidewalk along both sides of Maplewood Avenue permits visual access, but physical access is obstructed by retaining walls, steep slopes, and adjacent private property. In general, the potential for limited use of the site as an "outdoor classroom" is present, and the educational opportunity provided by the view of the Pond and adjacent developed land is intriguing, but this value is deemed negligible due to access issues including limited parking and safety issues related to vehicular traffic.

Uniqueness/heritage value was determined to be negligible for this location. Although the area was developed during early colonial times, no historic or archaeological interests associated with the Pond or adjacent wetlands were observed at this location.

Endangered species habitat is a potential value of wetlands. A New Hampshire Natural Heritage Bureau preliminary online datacheck for this location was performed to assess the potential for the presence of threatened or endangered species in the vicinity. This preliminary datacheck resulted in a finding of no

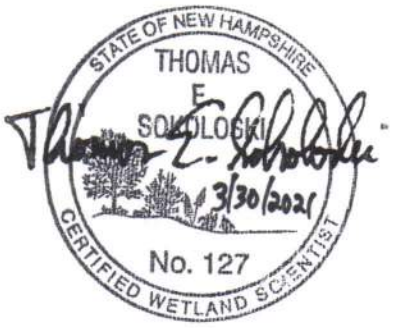
known occurrences of threatened or endangered species or exemplary natural communities in the vicinity of the project. Such datachecks consist of reviews of all known occurrences of such species or communities within one mile of a proposed project, and is subject to change over time as new occurrences are recorded. A complete review of this matter will be required during the New Hampshire wetland permitting process for this project, although it is considered unlikely that the proposed culvert replacement would be found to have an adverse impact on any such sensitive species or habitats.

In general, the proposed project to replace the culvert at Maplewood Avenue over North Mill Pond would not be expected to cause any degradation of the functions and values associated with the Pond and the adjacent wetlands. Continued unrestricted passage of flows, sediment, and movement of fish and wildlife through the area will continue as under the present conditions. With the implementation of best management construction practices, the project would avoid potential construction-phase impacts related to sedimentation and erosion.

Please feel free to contact me with any questions or comments regarding this report.

Sincerely,

Thomas E. Sokoloski
New Hampshire Certified Wetland Scientist #127



1494 Route 3A, Unit 1, Bow, New Hampshire 03304
Phone: 603-856-8925 E-Mail: tom@tesenviro.comcastbiz.net

3/30/2021

Wetland Function-Value Evaluation Form

Total area of wetland 60 acres +/- Human made? No Is wetland part of a wildlife corridor? No or a "habitat island"? No

Adjacent land use Residential, commercial, industrial Distance to nearest roadway or other development 0 feet

Dominant wetland systems present Estuarine 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? Tidal

How many tributaries contribute to the wetland? 1 (Hodgson Brook) Wildlife & vegetation diversity/abundance ~~(see attached list)~~

Wetland I.D. North Mill Pond

Latitude 43.0797 Longitude 70.7655

Prepared by: TES Date 3/27/2021

Wetland Impact: Type TBD Area TBD

Evaluation based on: Office ✓ Field ✓

Corps manual wetland delineation completed? Y ✓ N ____ (OHW)

Function/Value	Occurence Y	Occurence N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge		✓			Absent - tidal resource.
Floodflow Alteration		✓			North Mill Pond has limited flood storage/desynchronization.
Fish and Shellfish Habitat	✓		1,4		Limited known potential; no shellfish beds (WPP)
Sediment/Toxicant Retention	✓		1,2,3,4,8,9	✓	Opportunity present; sediments provide toxicant retention.
Nutrient Removal	✓		1,2,3,4,6,7	✓	Sediment binding potential; minimal vegetative uptake.
Production Export	✓				Limited vegetative production present in Pond overall
Sediment/Shoreline Stabilization	✓		1,2,3,10,11	✓	Much of shoreline at road stabilized by riprap, walls.
Wildlife Habitat	✓		6,12,18		Modest habitat due to minimal vegetation and development.
Recreation	✓		7,9		Limited accessibility and interest on Pond itself.
Educational Scientific Value		✓			Generally inaccessible to public; high disturbance
Uniqueness/Heritage		✓	1,3,13,14,17		No observed unique/significant historic features.
Visual Quality/Aesthetics	✓		2,6,12	✓	Open water, mud flats, viewed from road.
ES Endangered Species Habitat		✓			Preliminary NH NHB datacheck - negative results.
Other					

* Refer to back up list of numbered considerations.

Notes:

FIGURE 1
Arch Culvert at Maplewood Avenue Over North Mill Pond, Portsmouth, View Southwest of Seaward Side of Culvert from Shoreline (2/28/2020)

FIGURE 2
Residential and Commercial/Industrial Development on East Side of Project Site, View East from Western Shoreline of North Mill Pond (2/28/2020)

1494 Route 3A, Unit 1 Bow, NH 03304 Phone 856-8925
Email: Soilsurfer@comcast.net

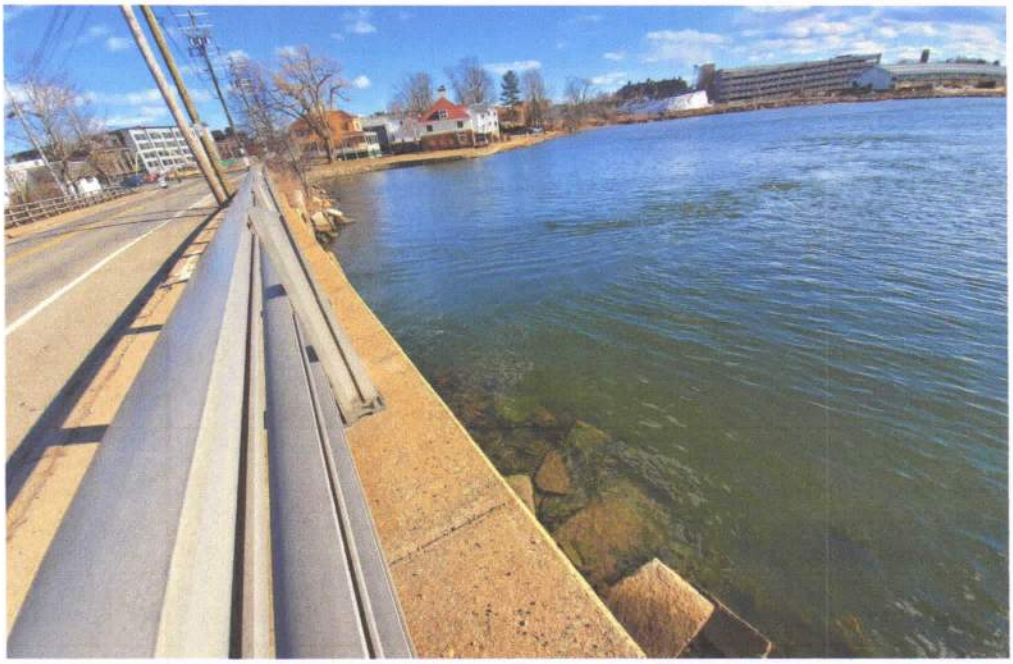


FIGURE 3
North Mill Pond, Landward Side, View Southeast from West Side of Culvert in Maplewood Road, Mid-Incoming Tide (2/28/2020)

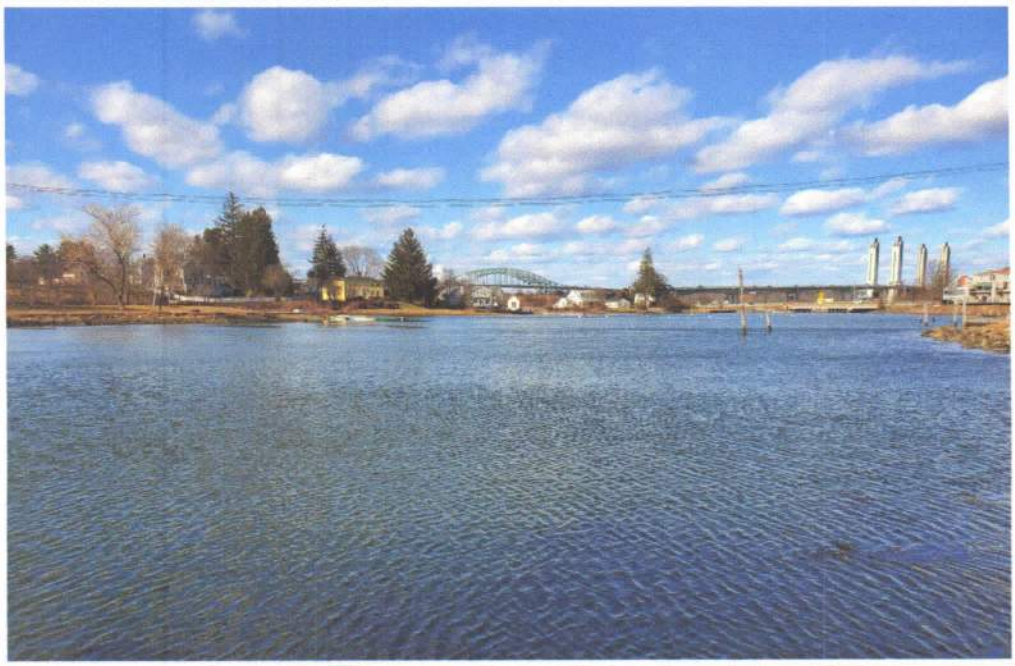


FIGURE 4
North Mill Pond, Seaward Side, View North from East Side of Culvert in Maplewood Road, Mid-Incoming Tide (2/28/2020)

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FIGURE 5
Rockweed Growing on Stones and Riprap in the Subtidal and Lower Intertidal Areas Near the Maplewood Avenue Culvert Site (2/28/2020)

FIGURE 6
Remnants of Salt Marsh Cordgrass Growing within the Intertidal Zone Near the Maplewood Avenue Culvert Site (2/28/2020)

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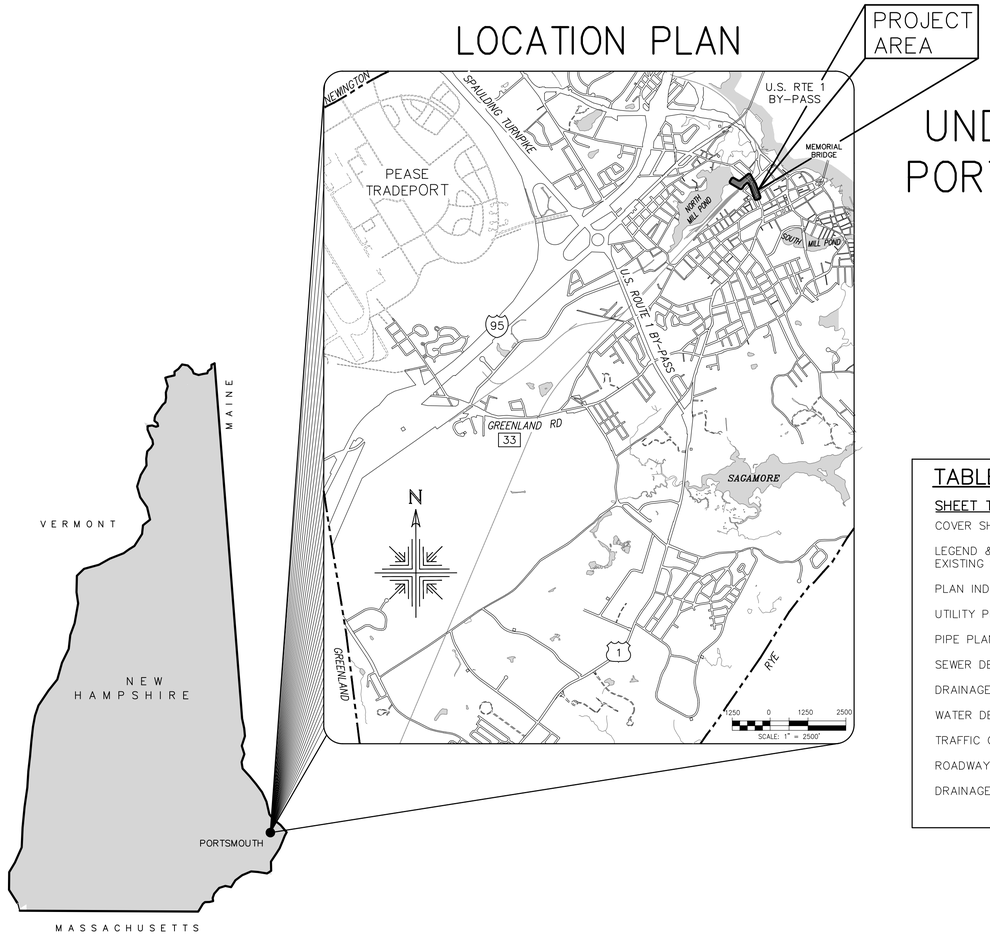
City of Portsmouth, New Hampshire

PERMIT APPLICATION DRAWINGS

MAPLEWOOD AVENUE - DRAINAGE INTERCEPT

LOCATION PLAN

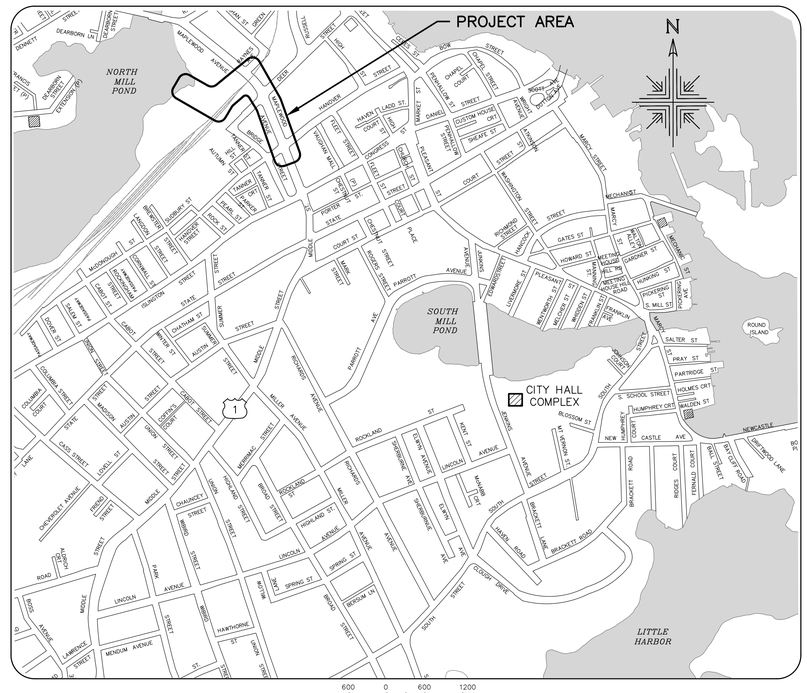


PREPARED BY
UNDERWOOD ENGINEERS, INC.
PORTSMOUTH, NEW HAMPSHIRE
MARCH, 2024

FOR REVIEW
MARCH, 2024
NOT FOR CONSTRUCTION

TABLE OF CONTENTS

VICINITY MAP



UE #2542

UNDERWOOD engineers

H:\Real Numbers\Portsmouth\2542-Fleet Street\CAD\Design Maplewood\Drawings\2542_cover_M.dwg, Layout1, 3/27/2024 11:20:06 AM, mng

LEGEND:

EXISTING	PROPOSED	
		STRUCTURES/BUILDINGS
		APPROXIMATE PROPERTY LINE
		PAVED ROAD/DRIVE
VGC		VERTICAL FACED GRANITE CURB
RWBL		MODULAR BLOCK RETAINING WALL
RWB		MORTARED BRICK RETAINING WALL
RWC		CONCRETE RETAINING WALL
RWG		GRANITE RETAINING WALL
		GRANITE POST
P		PARK METER KIOSK
		PARKING METER
		BOLLARD
		SIGN
		HANDICAP SPACE
		LIGHT POLE
		UTILITY POLE WITH ARM & LIGHT
		UTILITY POLE
PSNH		PUBLIC SERVICE CO. OF NH
E		ELECTRICAL MANHOLE
		ELECTRICAL CONDUIT
E		ELECTRICAL METER/BOX
G		GAS METER
		GAS SHUT OFF
		GAS VALVE
		WATER GATE VALVE
		WATER SHUT OFF VALVE
		HYDRANT
		FIRE CONNECTION
		TEE CONNECTION
		FITTINGS (11.25°, 22.5°, 45°)
		REDUCER
		THRUST BLOCK
		COUPLING
		CATCH BASIN (NEW)
		CATCH BASIN (REMOVE & REPLACE)
D		DRAIN MANHOLE
		ROOF DOWNSPOUT
S		SEWER MANHOLE
		SEWER CLEANOUT
T		TELEPHONE MANHOLE
T		TELEPHONE BOX
C		CABLE MANHOLE
		FIRE ALARM
		DECIDUOUS TREE
		CONIFEROUS SHRUB
		DECIDUOUS SHRUB
OHW		OVERHEAD UTILITIES
W	W	WATER LINE
S	S	SEWER LINE
D		DRAIN LINE
G		GAS LINE
UGE		UNDERGROUND ELECTRIC
UGT		UNDERGROUND COMMUNICATIONS
		CEMENT CONCRETE
		BRICK PAVERS
LA		LANDSCAPED AREA
LAM		MULCHED AREA

LEGEND (cont.):

EXISTING	PROPOSED	
LWN		GRASS COVER
25.4	25.4	SPOT GRADE
27.79		ELEVATION TO MATCH/NOT EXCEED
28	28	2' CONTOUR ELEVATION
30	30	10' CONTOUR ELEVATION
		SIGN – SEE SIGNAGE TABLE
117–45		TAX SHEET – LOT NUMBER
		ROCK
		POLE
		SEWER LATERALS APPROXIMATE LOCATION
A		SEWER LATERALS ASSUMED DIRECTION OF EXIT
		WATER LATERALS APPROXIMATE LOCATION
D		DRAIN LATERALS APPROXIMATE LOCATION
		RAILROAD SIGNAL
		RAILROAD TRACKS
B–101		BORING
R		SUBSURFACE REFUSAL
N/R		SUBSURFACE NO REFUSAL
GW		SUBSURFACE GROUNDWATER
		SILT BOOM
		SILT FENCE

ABBREVIATIONS

AC/ACP	ASPHALT CONCRETE PIPE
CB	CATCH BASIN
CI/CIP	CAST IRON PIPE
CL 52	CLASS 52 PIPE
CMP	CORRUGATED METAL PIPE
DI	DUCTILE IRON PIPE
DMH	DRAIN MANHOLE
GIS	CITY OF PORTSMOUTH GIS SYSTEM
HDPE	HIGH DENSITY POLYETHYLENE PIPE
I	INVERT ELEVATION
PE	POLYETHYLENE PIPE
PVC	POLYVINYL CHLORIDE PIPE
R	RIM ELEVATION
RCP	REINFORCED CONCRETE PIPE
RCRD	ROCKINGHAM COUNTY REGISTRY OF DEEDS
RCSC	ROCKINGHAM COUNTY SUPERIOR COURT
S	SLOPE (PIPE)
SMH	SEWER MANHOLE
UP	UTILITY POLE

SEWER TABLE

SMH# 5
RIM EL= 15.03
TOP OF TANK= 11.4±
(GREASE SEPERATOR)

SMH# 6
RIM EL= 15.02
TOP OF TANK= 11.4±
(GREASE SEPERATOR)

SMH# 1494
RIM EL= 10.62
CL FLOW= –1.16
(48" BRICK TUNNEL)

SMH# 1497
RIM EL= 11.04
(1) INV IN 10"___= 3.51
(2) INV IN 15"___= 2.98
(3) INV IN 8"___= 2.95
(4) INV OUT 15"VCP= 2.91

SMH# 1489
RIM EL= 9.39
(1) INV IN 12"___= 2.04

SMH# 1499
RIM EL= 15.61
(1) INV IN 48" BRICK= –1.84
(2) INV IN ___= –0.99
(3) INV OUT 48" BRICK= –1.94
(48" BRICK TUNNEL)

SMH# 1500
NOT FIELD OBSERVED
(STRUCTURE & LINE ABANDONED
PER PORTSMOUTH DPW)

SMH# 1501
RIM EL= 13.38
(1) INV IN 21"?___= –0.57
(2) INV OUT 24"___= –0.67

SMH# 1503
RIM EL= 15.13
(1) INV IN ___= 0.53
(2) INV OUT ___= ?

SMH# 1519
RIM EL= 13.30
(NO INVERT DATA)

SMH# 1570
RIM EL= 17.30
(1) INV IN 48" BRICK=
(48" BRICK TUNNEL)

SMH# 2746
RIM EL= 14.67
(1) INV IN ___= 5.4±
(2) INV IN ___= 5.3±
(3) INV OUT ___= 5.3±
(STRUCTURE INACTIVE)
(NO FLOW OBSERVED)

DRAIN TABLE

CB# 1352
RIM EL= 12.85
(1) INV IN 12"HDPE= 9.60
(2) INV OUT 12"HDPE= 9.50

CB# 3743
RIM EL= 12.83
(1) INV OUT 12"RCP= 9.58

CB# 3750
RIM EL= 10.91
(1) INV OUT 12"RCP= 7.39

CB# 3761
RIM EL= 10.52
(1) INV OUT 12"RCP= 7.03

CB# 3771
RIM EL= 15.14
(1) 6"PVC (PLUGGED)
(2) INV IN 6"PVC= 12.85
(3) INV OUT 12"RCP= 12.52

CB# 3772
RIM EL= 16.01
(1) INV OUT 12"RCP= 12.08

CB# 3773
RIM EL= 13.64
(1) INVERT INACCESSIBLE

CB# 3774
RIM EL= 13.25
(1) INV OUT 12"RCP= 8.60

CB# 3775
RIM EL= 12.97
(1) INV OUT 12"RCP= 9.87

CB# 3776
RIM EL= 12.93
(1) INV OUT 12"RCP= 8.25

CB# 3777
RIM EL= 12.94
(1) INV OUT 12"RCP= 8.64

CB# 3778
RIM EL= 14.59
(1) INV OUT 12"RCP= 11.09

CB# 3779
RIM EL= 14.51
(1) INV OUT 12"RCP= 11.20

CB# 25172
RIM EL= 15.28
(1) INV OUT 18"HDPE= 10.98

DMH# 6
RIM EL= 13.65
(1) INV IN 18"RCP= 4.25
(2) INV IN 12"HDPE= 5.40
(3) INV OUT 18"RCP= 4.33

DMH# 7
RIM EL= 14.29
(1) INV IN 6"PVC= 6.48
TOP OF CONCRETE WEIR= 9.96
(2) INV OUT 12"HDPE= 6.30

DMH# 8
RIM EL= 13.58
(1) INV IN 6"PVC= 9.83
TOP OF CONCRETE WEIR= 11.30
(2) INV OUT 12"HDPE= 9.68

DMH# 4979 (4'X6' VAULT)
RIM EL= 10.44
CL FLOW 48"RCP= *1.03
*RECORD GIS VALUE

DMH# 4980
RIM EL= 10.58
(1) INV IN 18"RCP= 3.03
(2) NO INVERT DATA
(3) INV OUT ___= 1.46

DMH# 4984
RIM EL= 9.40
(1) INV IN 36"RCP= 4.15

DMH# 5205
RIM EL= 15.81
(1) INV IN 12"RCP= 4.91
(2) INV IN 12"RCP= 12.26
(3) INV IN 18"HDPE= 8.71
(4) INV IN 12"RCP= 11.71
(5) INV OUT 18"RCP= 4.81

DMH# 5206
RIM EL= 13.32
(1) INV IN 12"RCP= 8.47
(2) INV IN 12"RCP= 9.29
(3) INV IN 12"RCP= 5.42
(4) INV OUT 12"RCP= 5.40

DMH# 5207
RIM EL= 13.01
(1) INV IN 12"RCP= 9.62
(2) INV IN 12"RCP= 5.56
(3) INV OUT 12"RCP= 5.56

DMH# 5208
RIM EL= 13.00
(1) INV IN 12"RCP= 7.95
(2) INV IN 12"RCP= 5.78
(3) INV IN 12"RCP= 7.90
(4) INV OUT 12"RCP= 5.77

DMH# 5209
RIM EL= 14.67
(1) INV IN 12"RCP= 10.39
(2) INV IN 12"RCP= 10.54
(3) INV OUT 12"RCP= 7.75

DMH# 5404
RIM EL= 13.35
(1) INV IN 12"RCP= 9.45
(2) INV IN 12"RCP= 9.28
(3) INV OUT 12"RCP= 7.12

DMH# 5438 (4'X6' VAULT)
RIM EL= 12.79
CL FLOW 48"RCP= 1.24

DMH# 5439 (4'X6' VAULT)
RIM EL= 7.21
CL FLOW 48"RCP= 0.76

DMH# 5677
RIM EL= 11.07
(1) INV IN 12"RCP= 6.97
(2) INV IN 10"RCP= 6.47
(3) INV IN 12"RCP= 6.98
(4) INV OUT 12"RCP= 6.37

DMH# 5678
RIM EL= 11.32
(1) INV IN 12"RCP= 6.07
(2) FLOW LINE 36"RCP= 4.60
(3) INV IN 12"RCP= 7.48
(4) INV IN 12"RCP= 6.45
(5) INV IN 12"RCP= 7.88

NO.	REVISIONS	APP'D

ISSUE FOR
BIDDING By –
Date –
CONSTRUCTION By –
Date –
RECORD DRAWING By –
Date –

Drawn/Chk. RMG
Designed PDM
Checked –
Approved –
Date MARCH 2024
Book No. –
Project No. 2542
Dwg. ID 2542_general_M
Scale –

FOR REVIEW
MARCH 2024
NOT FOR CONSTRUCTION

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

LEGEND & ABBREVIATIONS,
EXISTING STRUCTURE TABLES

MAPLEWOOD AVE – DRAINAGE INTERCEPT

CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

DWG NO G1

SHEET 2 OF 14

DWG NO G2

SHEET 3 OF 14

PLAN INDEX

MAPLEWOOD AVE – DRAINAGE INTERCEPT

CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

FOR REVIEW
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Drawn/Chk	RMG
Designed	PDM
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Approved	–
Date	MARCH 2024
Book No.	–
Project No.	2542
Dwg. ID	2542_prbase_M
Scale	

NO.	REVISIONS	APP'D

ISSUE FOR		
BIDDING	Date	By
	–	–
CONSTRUCTION	Date	By
	–	–
RECORD DRAWING	Date	By
	–	–

GENERAL NOTES:

1. THE LINE WORK REPRESENTING THE EXISTING UNDERGROUND STRUCTURES AND PIPES IS BASED ON A FIELD SURVEY, TIE SHEETS, AND OTHER INFORMATION AVAILABLE, INCLUDED IN THE PROJECT MANUAL APPENDIX. THE ENGINEER/SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN ON THE PLANS OR THE PROJECT MANUAL APPENDIX COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE ENGINEER/SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED. IN ADDITION, CONTRACTOR SHALL ANTICIPATE THAT EVERY BUILDING OR UNIT WITHIN THE PROJECT AREA HAS A LEAST ONE GAS, SEWER AND WATER SERVICE EXTENDING FROM THE MAIN IN THE STREET TO THE BUILDING. THEREFORE THE CONTRACTOR SHOULD CONSIDER CONFLICTS, HAND EXCAVATION AND POSSIBLE DELAYS IN CONSTRUCTION, WHEN PREPARING THEIR BID.

2. THE CONTRACTOR IS RESPONSIBLE FOR THE LOCATION, PROTECTION AND REPAIR (IF DAMAGED) OF ALL EXISTING UTILITY MAINS AND SERVICES. THE LOCATIONS OF KNOWN SEWER, WATER AND GAS, MAINS, SHOWN ON THESE DRAWINGS ARE APPROXIMATE. HOWEVER, WATER AND SEWER SERVICE LATERALS ARE NOT SHOWN AND THE CONTRACTOR IS TO ANTICIPATE THEIR EXISTENCE. TIE SHEETS FOR THE KNOWN UTILITIES (INCLUDING GAS AND WATER) ARE PROVIDED IN THE APPENDIX OF THE PROJECT MANUAL. VIDEO LOGS AND SANITARY SURVEYS FOR SEWER LATERALS ARE AVAILABLE FROM THE ENGINEER UPON REQUEST. NOTIFY DIG-SAFE PRIOR TO COMMENCING CONSTRUCTION (1-888-344-7233). CONTRACTOR SHALL GIVE ADEQUATE NOTICE TO THE ENGINEER OF CONFLICTS OF PROPOSED WORK WITH MARKED UTILITIES PRIOR TO CONSTRUCTING THE PROPOSED WORK.

3. ALL CONFLICTS WITH GAS LINES SHALL BE COORDINATED WITH UNITIL, SUBSIDIARY.

4. THE CONTRACTOR SHALL MAINTAIN SINGLE LANE TRAFFIC AND ACCESS TO BUSINESSES AND PROPERTIES AT ALL TIMES DURING WORKING HOURS. TRAFFIC CONTROL WARNING DEVICES SHALL BE IN ACCORDANCE WITH MUTCD (LATEST EDITION) REQUIREMENTS AND SECTION 01570 OF THE PROJECT MANUAL.

5. ALL STREET OPENINGS SHALL BE BACKFILLED AT THE END OF EACH DAYS OPERATIONS TO ENSURE SAFE VEHICULAR AND PEDESTRIAN TRAFFIC. THE CONTRACTOR SHALL MAINTAIN SAFE PASSAGE FOR 2-LANES OF TRAFFIC AT THE END OF EACH WORK DAY. DUST CONTROL OPERATIONS ARE TO BE CONTINUOUS THROUGHOUT CONSTRUCTION AND IS INCIDENTAL TO THE WORK.

6. THE USE OF PLATES TO COVER OPEN EXCAVATIONS IN LIEU OF BACKFILLING WILL NOT BE PERMITTED UNLESS PRIOR APPROVAL HAS BEEN GRANTED BY THE OWNER.

7. A NPDES PERMIT FOR CONSTRUCTION ACTIVITIES IS REQUIRED FOR THIS PROJECT. THE CONTRACTOR IS REQUIRED TO PREPARE A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AND TO SUBMIT A NOTICE OF INTENT (NOI) TO THE EPA TO FULFILL PROJECT REQUIREMENTS. THE SWPPP MUST BE PREPARED IN ACCORDANCE WITH THE EPA'S REQUIREMENTS. NO WORK IS TO PROCEED UNTIL THE SWPPP AND THE NOI IS SUBMITTED AND ACCEPTED BY THE OWNER. A COPY OF THE NOI, SWPPP REQUIREMENTS, AND EXAMPLE SWPPP ARE INCLUDED IN THE PROJECT MANUAL APPENDIX.

8. THIS SET OF PLANS HAS BEEN CREATED TO BE USED IN CONJUNCTION WITH A TECHNICAL SPECIFICATION ENTITLED "PROJECT MANUAL, MAPLEWOOD AVENUE – DRAINAGE INTERCEPT, PORTSMOUTH, NH".

9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL AND DISPOSAL OF ALL SURPLUS EARTHEN MATERIALS, LEDGE, CURB, PIPE, AND SEWER OR DRAIN STRUCTURES EXCAVATED DURING CONSTRUCTION, UNLESS MATERIALS ARE CLAIMED BY THE OWNER OR OTHERWISE INDICATED IN THE PROJECT MANUAL OR THE DRAWINGS.

10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PROPERTY RESTORATION BOTH PUBLIC AND PRIVATE. UTILITIES DAMAGED AS A RESULT OF THE CONTRACTORS OPERATIONS SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

11. PAVING REPAIRS SHALL MAINTAIN EXISTING LINE AND GRADE UNLESS OTHERWISE INDICATED OR DIRECTED.

12. OVERHEAD WIRES AND WIRE DROPS TO BUILDINGS ARE NOT SHOWN IN ENTIRETY. THE CONTRACTOR SHALL ANTICIPATE THEIR EXISTENCE IN ALL OPERATIONS.

13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF ROADWAY SIGNS. ANY SIGN DAMAGED DURING THE COMPLETION OF WORK SHALL BE REPLACED AT NO ADDITIONAL COST TO THE OWNER.

14. 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.

15. CONTRACTOR SHALL NOT USE ANY ADJACENT DRIVEWAYS OR PARKING LOTS WITHOUT WRITTEN PERMISSION FOR PROPERTY OWNER. DAMAGE RESULTING FROM CONSTRUCTION LOADS OUTSIDE PROPOSED LIMITS OF WORK SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO OWNER.

16. EXISTING PROPERTY LINE MONUMENTATION DISTURBED DURING CONSTRUCTION SHALL BE SET OR RESET BY A LICENSED LAND SURVEYOR (LLS), SUBSIDIARY.

REFERENCE PLANS:

1. PORTWALK SITE PLAN, PREPARED BY APPLEDORE ENGINEERS INC., DATE/LAST REVISED 3/5/2010.
2. 195 HANOVER STREET AS BUILT, PREPARED BY S.U.R., DATE/LAST REVISED 7/21/2015.
3. PORTWALK AS BUILT, PREPARED BY MSC, DATE/LAST REVISED 9/15/2015.

SURVEY NOTES:

1. THIS PLAN IS BASED ON A FIELD SURVEY BY JAMES VERRA AND ASSOCIATES, INC. 12/2019-6/2022. ON SITE CONTROL ESTABLISHED USING SURVEY GRADE GPS UNITS.
HORIZONTAL DATUM: NAD 1983 (1986 ADJUSTMENT)
PRIMARY BM: NHDOT 379-0150 (PORTSMOUTH TRAFFIC CIRCLE)
VERTICAL DATUM: NAVD 1988
PRIMARY BM: CITY CONTROL POINT "ALBA"

2. CONTRACTOR TO VERIFY SITE BENCHMARKS BY LEVELING BETWEEN 2 BENCHMARKS PRIOR TO THE SETTING OR ESTABLISHMENT OF ANY GRADES/ELEVATIONS. DISCREPANCIES ARE TO BE REPORTED TO JAMES VERRA AND ASSOC., INC.

3. THE LOCATION OF ALL UNDERGROUND UTILITIES SHOWN HEREON ARE APPROXIMATE AND ARE BASED UPON THE FIELD LOCATION OF ALL VISIBLE STRUCTURES (IE CATCH BASINS, MANHOLES, WATER GATES ETC.) AND INFORMATION COMPILED FROM PLANS PROVIDED BY UTILITY COMPANIES AND GOVERNMENTAL AGENCIES. ALL CONTRACTORS SHOULD NOTIFY, IN WRITING, SAID AGENCIES PRIOR TO ANY EXCAVATION WORK AND CALL DIG-SAFE @ 1-888-DIG-SAFE.

NOTE: VERY LITTLE UNDERGROUND UTILITY MARKING WAS COMPLETED PRIOR TO CONDUCTING THE FIELD SURVEY.

SANITARY SEWER NOTES:

1. ALL NEW SEWER SERVICE LATERALS SHALL BE 6" DIAMETER, UNLESS DIRECTED OTHERWISE. PRIOR TO CONSTRUCTION OF NEW SEWER MAINS IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY EXACT SEWER SERVICE LOCATIONS, SIZES, AND ELEVATIONS, BY VIDEO INSPECTION WITH TRANSMITTER AND LOCATOR, PAY ITEM 1.18. SEWER LATERALS SHALL BE INSTALLED TO THE PROPERTY LINE (UNLESS SHOWN OTHERWISE ON THE DRAWINGS). ANY SERVICE WORK EXTENDING PAST THE PROPERTY LINE SHALL BE APPROVED BY THE PROPERTY OWNER, THE CITY, AND THE ENGINEER PRIOR TO CONSTRUCTION. MIN. SLOPE OF SERVICE PIPE = SHALL BE 0.02 FT/FT.

2. WORK ON PRIVATE PROPERTY SHALL BE COORDINATED WITH THE CITY AND THE PROPERTY OWNER.

3. SEWER CONSTRUCTION SHALL PROCEED FROM THE LOWEST POINT UPWARD UNLESS OTHERWISE APPROVED BY THE ENGINEER.

4. SMH RIMS SHALL BE SET 1/8" TO 1/4" BELOW GRADE WHEN IN PAVEMENT OR GRAVEL ROADS (I.E., PLOWED AREAS). RIMS SHALL BE SET AT GRADE IN NON-PLOWED AREAS UNLESS OTHERWISE INDICATED.

5. ALL EXISTING SEWER STRUCTURES (PIPE AND MANHOLES) TO BE ABANDONED SHALL BE PREPARED AS FOLLOWS:

   MANHOLES – SHALL BE REMOVED TO A MINIMUM DEPTH OF 4' BELOW GRADE. THE BASE OF STRUCTURES SHALL BE FILLED WITH FLOWFILL OR GRAVEL, COMPACTED IN 8" LIFTS, SUBSIDIARY, UNLESS OTHERWISE PAID FOR.
   PIPE – ALL PIPE TO BE ABANDONED IN PLACE AND SHALL BE CUT & PLUGGED AT BOTH ENDS, SUBSIDIARY. PIPES EXCEEDING 12-INCH DIAMETER, TO BE ABANDONED, WILL BE FILLED WITH FLOWABLE FILL (WHERE DIRECTED BY ENGINEER) AND PAID FOR UNDER ITEM 1.11.

6. IN ORDER OF PREFERENCE SEWER SERVICE CLEANOUTS SHALL BE PLACED:
   1) BEHIND CONCRETE SIDEWALKS.
   2) IN BRICK STRIP.
   3) IN CONCRETE SIDEWALKS.

7. ALL SEWER PIPE SHALL BE SDR 35 PVC UNLESS SHOWN OTHERWISE ON THE DRAWINGS.

DRAINAGE SYSTEM NOTES

1. IN GENERAL, NEW CB'S WILL BE SET AT THE LOCATIONS SHOWN. EXISTING CB STRUCTURES ARE TO BE REMOVED. (SUBSIDIARY). ALL FRAMES AND GRATES SHALL BE DELIVERED TO THE PORTSMOUTH DPW (SUBSIDIARY). ALL NEW CATCH BASIN RIMS SHALL BE SET 1/2" BELOW FINISH GRADE ELEVATION. REMOVAL OF CB'S OUTSIDE NORMAL EXCAVATION LIMITS WILL BE PAID AS ITEM 202.5.

2. MANHOLE AND CATCH BASIN BASES, RISERS, CONE SECTIONS, AND SLAB TOPS SHALL BE DESIGNED SUCH THAT THERE EXISTS A MINIMUM 6" PERIPHERY OF MONOLITHIC SOLID WALL SEPARATION BETWEEN OPENINGS (CORINGS AND SECTIONS).

3. ALL CATCH BASINS, DRAIN MANHOLES, & DRAIN LINES SHALL BE CLEANED PRIOR TO ACCEPTANCE.

4. ALL REQUIRED STORM DRAIN SERVICES MAY NOT BE SHOWN ON THE PLANS, AND SHALL BE PROVIDED WHERE DIRECTED BY THE ENGINEER.

5. DMH RIMS SHALL BE SET 1/8" TO 1/4" BELOW GRADE WHEN IN PAVEMENT OR GRAVEL ROADS (I.E., PLOWED AREAS). RIMS SHALL BE SET AT GRADE IN NON-PLOWED AREAS UNLESS OTHERWISE INDICATED.

6. LOCATIONS OF NEW DRAIN SERVICES ARE BASED ON EXISTING ROOF LEADERS OBSERVED. ACTUAL LOCATION AND CONFIGURATION MAY CHANGE BASED ON FINAL REVIEW WITH PROPERTY OWNER DURING CONSTRUCTION.

WATER DISTRIBUTION SYSTEM NOTES:

1. THE CONTRACTOR SHALL MAINTAIN AND PROTECT THE EXISTING WATER SYSTEM AT ALL TIMES. LOCATE AND IDENTIFY ALL EXISTING MAINS AND SERVICE LOCATIONS IN ADVANCE.

2. WATER BOXES, OR OTHER CASTINGS, DISTURBED OR RELOCATED BY CONSTRUCTION ACTIVITIES SHALL BE ADJUSTED TO EXISTING LINE AND GRADE, UNLESS SHOWN OTHERWISE ON THESE PLANS OR AS DIRECTED BY THE ENGINEER (SUBSIDIARY).

CONSTRUCTION SEQUENCE:

PERFORM WORK IN ACCORDANCE WITH APPROVED SCHEDULE, GENERALLY ACCEPTED INDUSTRY ORDER OF OPERATIONS UNLESS OTHERWISE APPROVED IN WRITING BY THE ENGINEER.

1. PRIOR TO THE START OF CONSTRUCTION PROVIDE A WRITTEN NARRATIVE OF THE CONSTRUCTION METHODS TO BE USED AND INCLUDE A PRELIMINARY SCHEDULE OF KEY MILESTONES, INCLUDING COORDINATION OF UTILITY PIPE INSTALLATIONS AND COORDINATION WITH GAS COMPANY, AND OTHER UTILITIES AS APPLICABLE.

2. REFER TO SECTION 01010 (SUMMARY OF WORK) AND SECTION POW (PROSECUTION OF WORK) FOR ADDITIONAL SCHEDULE AND PROJECT REQUIREMENTS.

3. INSTITUTE EXPLORATORY EXCAVATION PROGRAM WITH ENGINEER TO IDENTIFY POTENTIAL CONFLICTS AT UTILITY CROSSINGS. EXPLORATORY EXCAVATION COMPLETED WITHOUT PRIOR APPROVAL FROM THE ENGINEER WILL BE AT NO ADDITIONAL COST TO THE OWNER.

4. INSTALL AND MAINTAIN TEMPORARY AND PERMANENT EROSION CONTROL DEVICES THROUGHOUT THE CONSTRUCTION PERIOD (INCLUDING WINTER SHUT DOWN PERIODS AS REQUIRED) AS SHOWN IN THE APPROVED SWPPP, ON THE DRAWINGS, OR AS APPROVED BY THE ENGINEER.

5. PRE-DRAIN AND/OR DEWATER EXCAVATIONS BEFORE INSTALLING PIPE. INSTALL PIPE ON STABLE BEDDING (IN DRY CONDITIONS) TO THE ELEVATIONS SHOWN ON DRAWINGS.

6. DISPOSE OF SURPLUS AND UNSUITABLE MATERIALS AS THE WORK PROGRESSES, STOCKPILE OF MATERIALS WILL ONLY BE PERMITTED IN AREAS APPROVED BY THE CITY OF PORTSMOUTH, DPW.

7. INSTALL CRUSHED GRAVEL OR RECLAIMED BASE AS SHOWN ON DRAWINGS, IN TRENCH AT END OF EACH DAY. VISUAL INSPECTION, ALIGNMENT TESTS AND DEFLECTION TESTS OF PIPES SHALL BE COMPLETED NO LESS THAN THIRTY (30) DAYS FOLLOWING INSTALLATION. CONSTRUCT PAVEMENT REPAIRS AS SOON AS PRACTICAL, FOLLOWING UTILITY INSTALLATIONS AND TESTING.

8. IMMEDIATELY STABILIZE DISTURBED AREAS AFTER PIPE INSTALLATION AND REESTABLISH TEMPORARY EROSION CONTROL DEVICES MOVED DURING CONSTRUCTION.

9. FINISH GRADING, LOAM AND SEED DISTURBED AREAS AND BACK UP PAVEMENT WITH GRAVEL IMMEDIATELY FOLLOWING PAVEMENT REPAIRS.

10. REMOVE ALL TEMPORARY EROSION CONTROL DEVICES AS SOON AS VEGETATION IS ESTABLISHED AND AREAS ARE STABILIZED.

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	CONSTRUCTION Date – By –	
	BIDDING Date – By –	
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FOR REVIEW
MARCH 2024
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UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

UTILITY PLAN NOTES

MAPLEWOOD AVE – DRAINAGE INTERCEPT

CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

DWG NO G3

SHEET 4 OF 14

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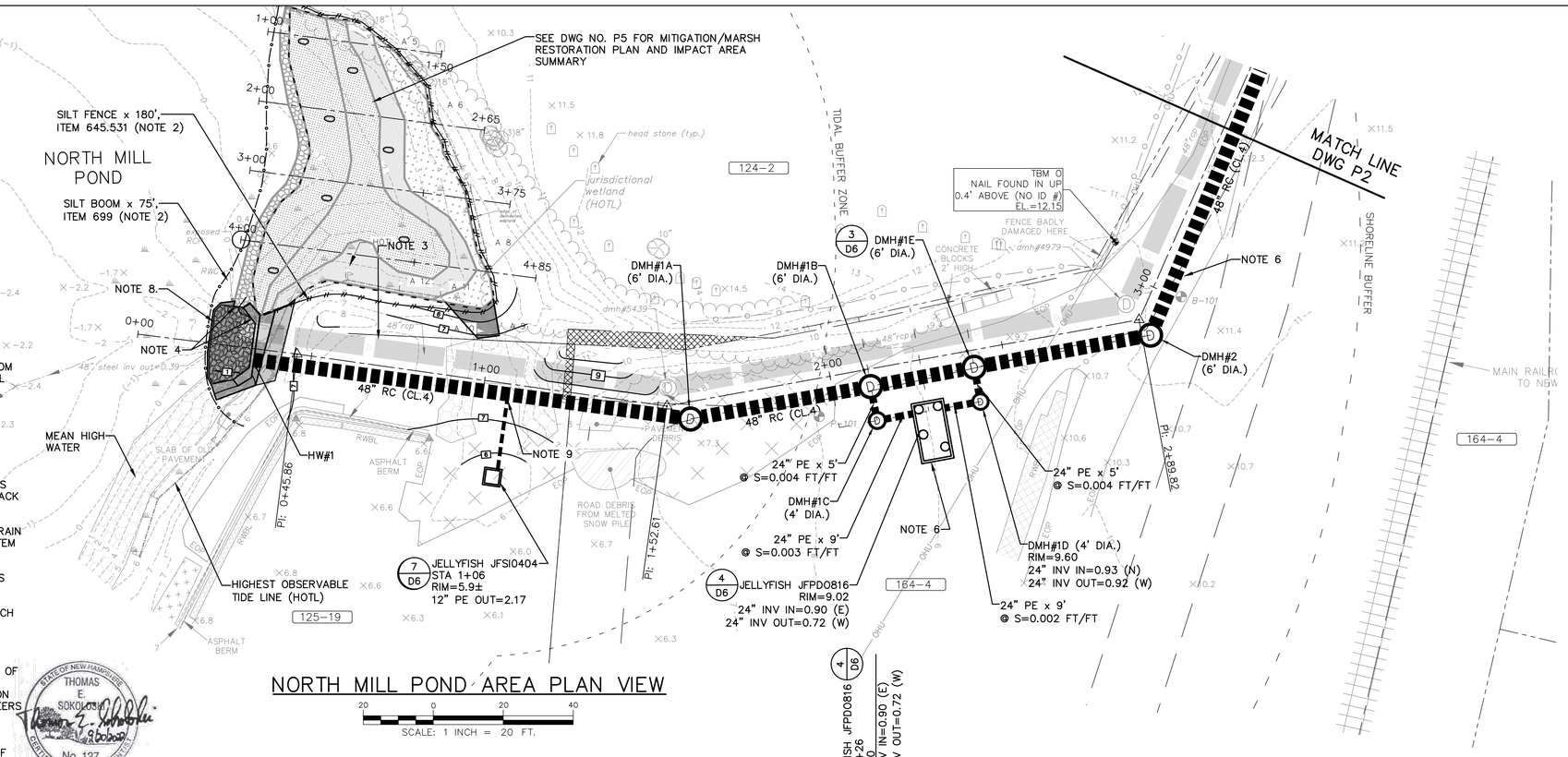
DRAINAGE OUTFALL NOTES:

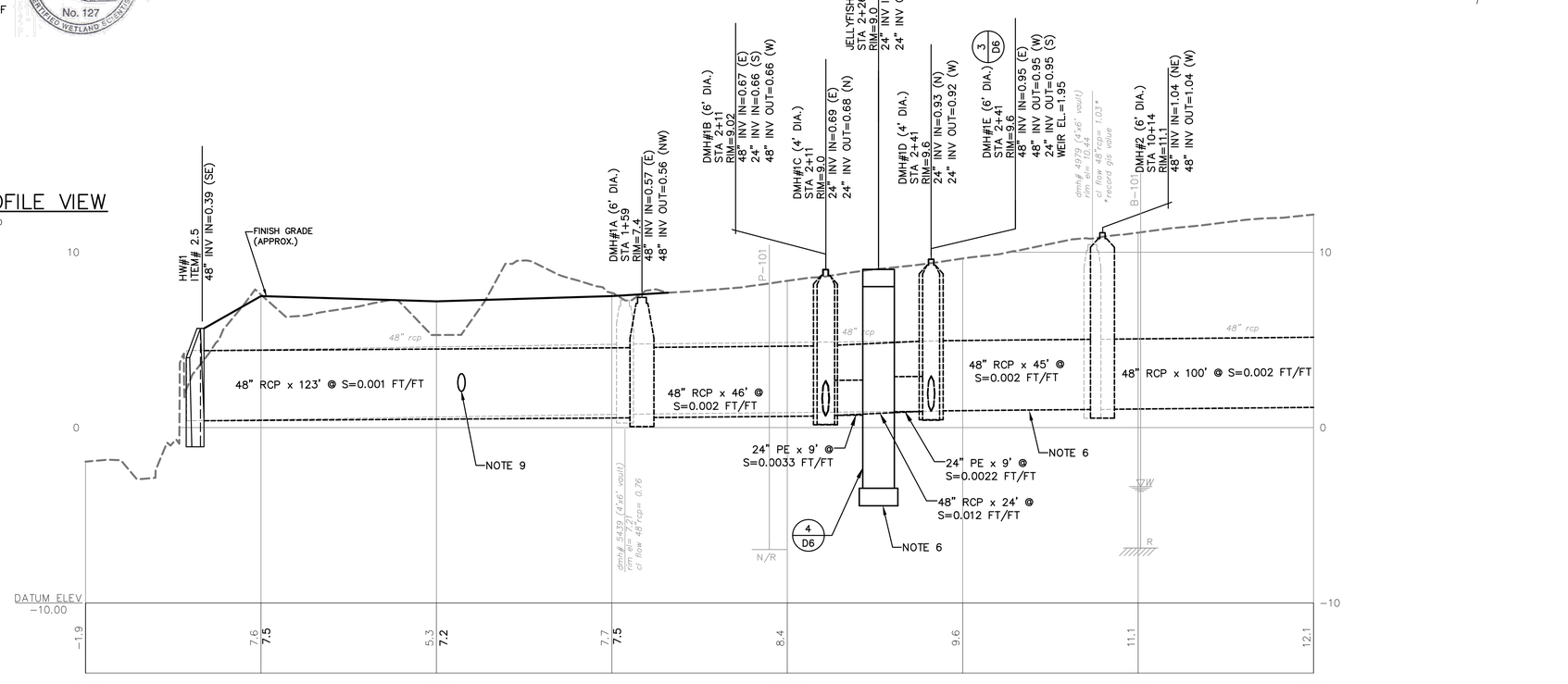
1. CONSTRUCT DRAINAGE OUTFALL AND HEADWALL IN ACCORDANCE WITH PERMIT CONDITIONS, DRAWINGS AND SPECIFICATIONS.
2. INSTALL SILT BOOM AND SET ANCHORS TO KEEP SILT BOOM IN PLACE DURING TIDAL FLUCTUATIONS, ITEM 699. INSTALL SILT FENCE, ITEM 645.531. MAINTAIN EROSION CONTROLS THROUGH CONSTRUCTION, PREVENT DEGRADATION OF DOWNSTREAM PROPERTIES AND TIDAL WETLANDS.
3. MAINTAIN FLOW IN THE EXISTING 48" DRAIN PIPE THROUGHOUT CONSTRUCTION, SUBSIDIARY.
4. REMOVE EXISTING HEADWALL AND INSTALL PRE-CAST HEADWALL DURING LOW WATER AND LOW FLOW CONDITIONS OR INSTALL SHEETING AND PUMP SYSTEM TO CONTROL BACK WATER, PAY AS ITEM 2.5.
5. INSTALL TIDE VALVES AND PREVENT BACK WATER INTO DRAIN PIPES DURING CONSTRUCTION OF DRAIN PIPES, PAY AS ITEM 2.6.
6. MAINTAIN GROUND WATER ELEVATION BELOW PIPE INVERTS AND BOTTOM OF JELLYFISH UNIT SO INSTALLATION IS COMPLETED IN THE DRY. GROUND WATER MAY VARY SEE B-101, APPENDIX A FOR OBSERVED GROUND WATER, MARCH 2022. GROUND WATER DISCHARGE SHALL BE FILTERED THROUGH A CONTROLLED SYSTEM IN ACCORDANCE WITH CONTRACTORS SWPPP, PAY AS ITEM 2.2.
7. THOMAS SOKOLOSKI, CERTIFIED WETLAND SCIENTIST #127, OF TES ENVIRONMENTAL CONSULTANTS, L.L.C. OF BOW, NH, PERFORMED THE WETLAND IDENTIFICATION AND DELINEATION ON JUNE 28, 2022 ACCORDING TO THE 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, US ARMY CORPS OF ENGINEERS.
8. CONSTRUCT STABILIZED OUTLET. SEE DETAILS (DWG D6).
9. CONNECT 12" PE TO 48" RCP WITH INSERT TEE TYPE CONNECTION. 12" PE INVERT=1.97, INCIDENTAL TO ITEM 603.82212.

STATE OF NEW HAMPSHIRE
THOMAS E. SOKOLOSKI
No. 127
CERTIFIED WETLAND SCIENTIST



NORTH MILL POND AREA PLAN VIEW

SCALE: 1 INCH = 20 FT.



NORTH MILL POIND AREA PROFILE VIEW

HORIZ: 1 INCH = 20 FT.
VERT: 1 INCH = 4 FT.

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NORTH MILL POND DRAINAGE OUTFALL
PIPE PLAN AND PROFILES

MAPLEWOOD AVE – DRAINAGE INTERCEPT

CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

DWG NO P1
SHEET 5 OF 14

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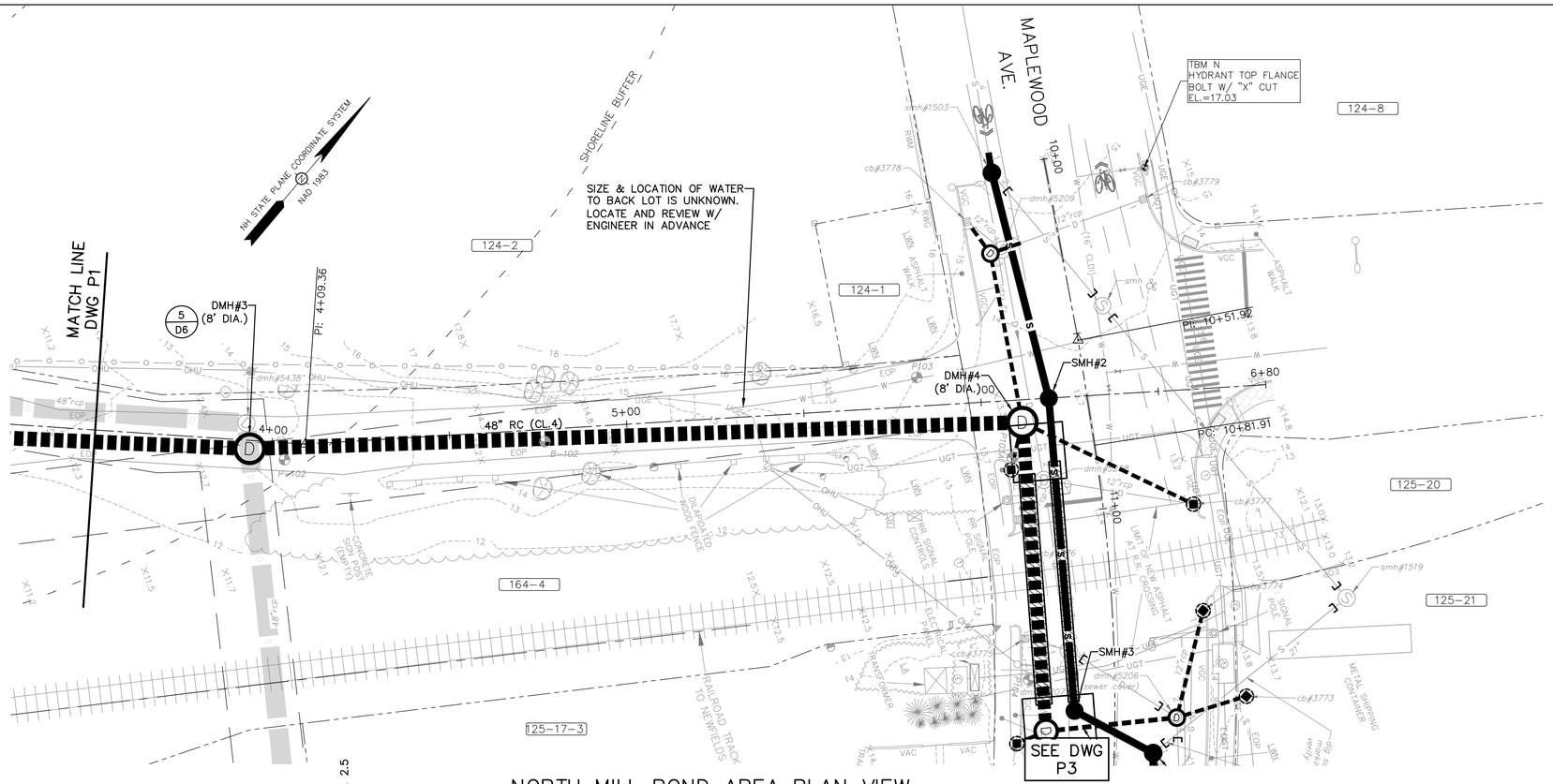
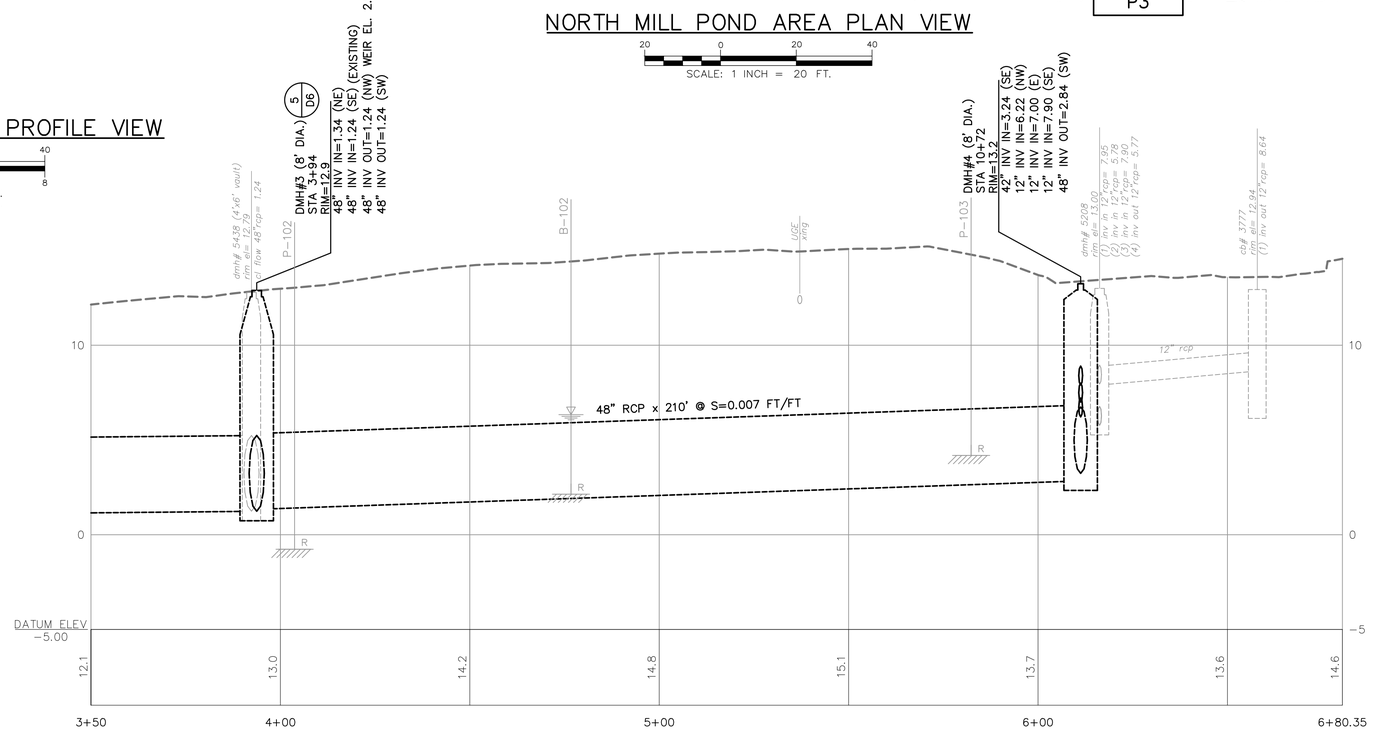


NORTH MILL POND AREA PLAN VIEW

SCALE: 1 INCH = 20 FT.

NORTH MILL POIND AREA PROFILE VIEW

HORIZ: 1 INCH = 20 FT.
VERT: 1 INCH = 4 FT.



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NORTH MILL POND AREA
PIPE PLAN AND PROFILES

MAPLEWOOD AVE – DRAINAGE INTERCEPT

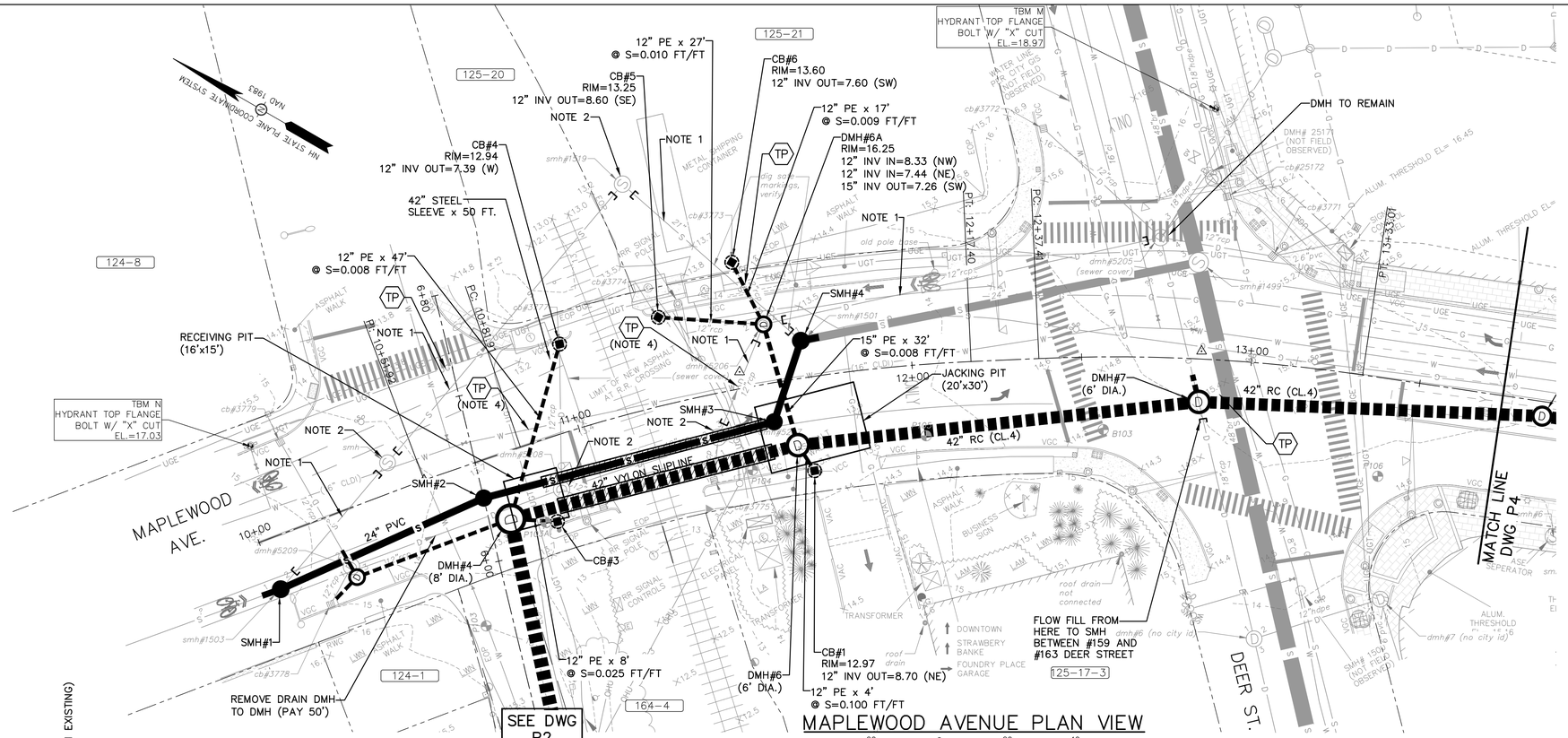
CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

DWG NO P2

SHEET 6 OF 14

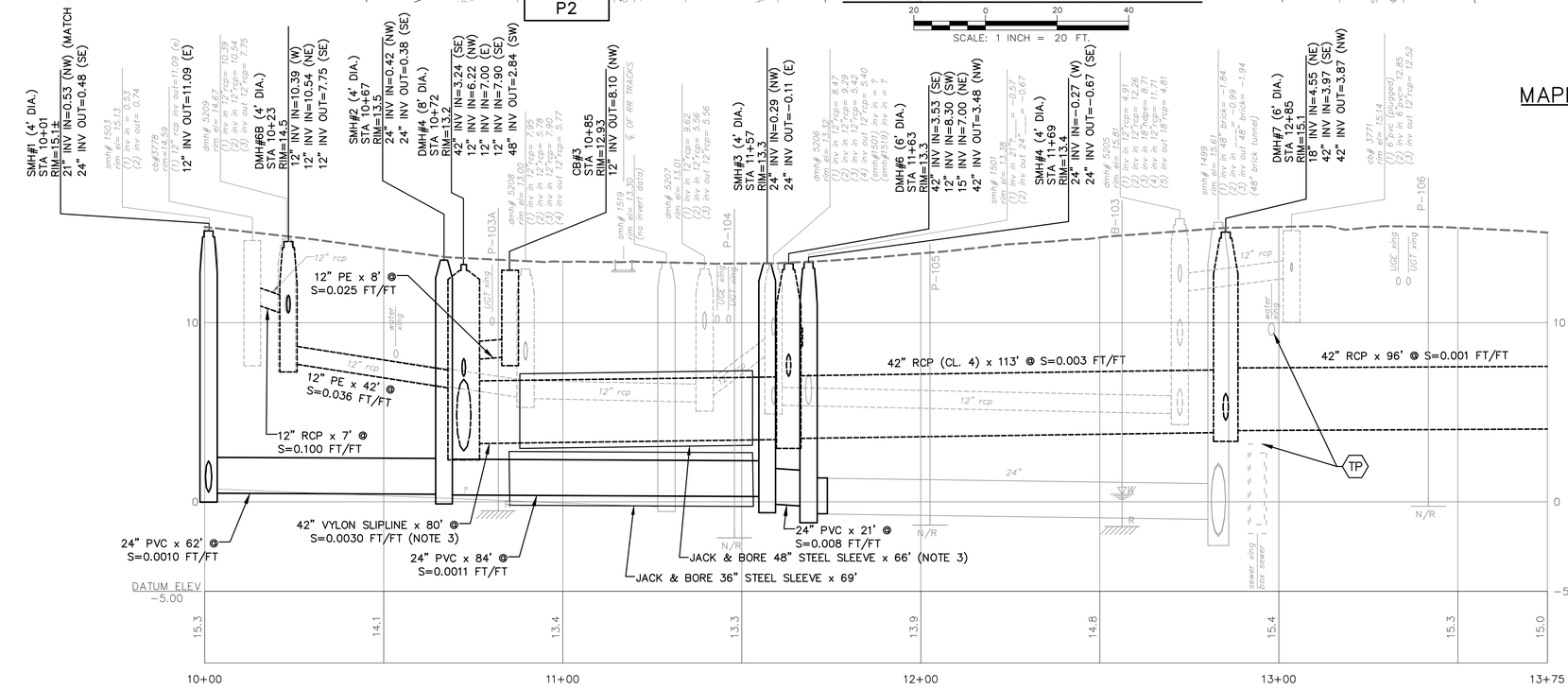
NOTES:

1. ABANDON EXISTING PIPES IN PLACE. PLUG AND CAP PIPE AT MANHOLES AND FILL WITH FLOWABLE FILL.
2. REMOVE EXISTING MANHOLE FOLLOWING INSTALLATION OF NEW SEWER.
3. DURING THE JACKING OPERATION THE FRONT OF THE CASING PIPE SHALL BE PROVIDED WITH MECHANICAL ARRANGEMENTS OR DEVICES THAT WILL POSITIVELY PREVENT THE AUGER FROM LEADING THE PIPE SO THAT NO UNSUPPORTED EXCAVATION IS AHEAD OF THE PIPE. *CSXT PIPELINE SPECS. PAGE 23, ii, (c)*
4. CONTRACTOR TO PERFORM TEST PIT TO CONFIRM LOCATION OF WATER MAIN PRIOR TO JACKING AND RECEIVING PIT EXCAVATION.



MAPLEWOOD AVENUE PLAN VIEW

SCALE: 1 INCH = 20 FT.



MAPLEWOOD AVENUE PROFILE VIEW

HORIZ: 1 INCH = 20 FT.
VERT: 1 INCH = 4 FT.

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MAPLEWOOD AVENUE
PIPE PLAN AND PROFILES

MAPLEWOOD AVE – DRAINAGE INTERCEPT

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SHEET 7 OF 14

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MAPLEWOOD AVENUE PLAN VIEW

SCALE: 1 INCH = 20 FT.

MAPLEWOOD AVENUE PROFILE VIEW

HORIZ: 1 INCH = 20 FT.
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MAPLEWOOD AVENUE PIPE PLAN AND PROFILES

MAPLEWOOD AVE – DRAINAGE INTERCEPT

CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

DWG NO P4

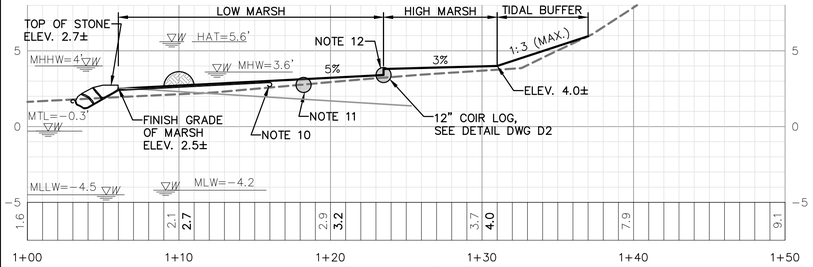
SHEET 8 OF 14

NOTES:

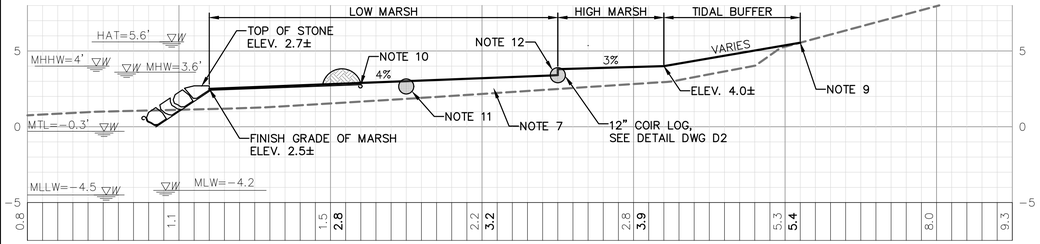
1. CONSTRUCT ROCK STABILIZED 1.5:1 SLOPE. CONTRACTOR SHALL GRADE SLOPE TO THE APPROXIMATE GRADES SHOWN AND PLACE NHDOT CLASS C STONE FILL (18" THICKNESS MIN) ON TOP OF COIR BLANKET (900 GRAM WEIGHT, DOUBLE THICKNESS). CONTRACTOR SHALL USE STOCKPILED STONE FROM SITE TO THE GREATEST EXTENT PRACTICAL, SEE NOTE 2.
2. CONTRACTOR SHALL PRESERVE AND STOCKPILE EXISTING STONE FOUND ON-SITE, AND PREVIOUSLY EXPOSED TO TIDAL ACTION, TO BE USED FOR STONE STABILIZATION AND BOULDERS WHERE SPECIFIED. ON-SITE SOURCES OF STONE ARE THE RANDOM STONES FOUND IN THE MARSH AREA, AND THE EXISTING STONE EMBANKMENT TO THE NORTH OF THE EXISTING OUTFALL.
3. CONTRACTOR SHALL PLACE BOULDERS (24" MIN) IN THE PROPOSED MARSH AREA FOR THE PURPOSE OF BREAKING UP SHEET ICE IN THE WINTER TIME. PLACE BOULDERS RANDOMLY APPROXIMATELY 75' APART.
4. ALL EXISTING TREES TO REMAIN.
5. TRIM TREES TO RAISE THE LOWEST PORTION OF THE CANOPY APPROXIMATELY 20' ABOVE GROUND TO PROMOTE ADDITIONAL SUNLIGHT TO THE MARSH.
6. ALL SHRUB VEGETATION TO REMAIN. PER THE FUNCTIONAL ASSESSMENT COMPLETED AS PART OF THE PERMITTING PROCESS, MUCH OF THIS VEGETATION IS INVASIVE AND SHOULD REMAIN IN PLACE. REMOVAL OF VEGETATION WILL ONLY BE PERMITTED WITH APPROVAL OF THE ENGINEER AND THE CITY ARBORIST. ANY REMOVAL OF INVASIVE SPECIES SHALL BE COMPLETED IN ACCORDANCE TO ALL LOCAL, STATE, AND FEDERAL GUIDELINES.
7. CONTRACTOR SHALL ENDEAVOR TO INCORPORATE AS MUCH SURPLUS SOIL FROM THE OUTFALL IMPROVEMENTS AS POSSIBLE. IMPORTED SOIL USED FOR MARSH GRADING SHALL MEET THE FOLLOWING:

SIZE (mm)	PASSING
12.5	100%
2	90%
0.5	80%
0.1	20%

8. PLANTING WITHIN THE PROPOSED MARSH SHALL BE WITH SPECIES NATIVE TO THE AREA. ALL PLANTINGS SHALL BE NURSERY GROWN, BARE ROOT SEEDLINGS. SEEDING OF THE SITE WILL NOT BE PERMITTED. LOW MARSH AREA SHALL BE PLANTED WITH VEGETATION SHEETS (MATS) AT THE RATE OF ONE MAT PER 1.65 SQ. FT. OF SMOOTH CORDGRASS (SPARTINA ALTERNIFLORA). HIGH MARSH AREA SHALL BE PLANTED WITH VEGETATION SHEETS (MATS) AT THE RATE OF ONE MAT PER 1.65 SQ. FT. OF SALTMEADOW CORDGRASS (SPARTINA PATENS). INCREASE DIVERSITY IN THE HIGH MARSH ZONE BY PLANTING SPIKE GRASS (DISTICHLIS SPICATA), BLACK GRASS (JUNCUS GERARDII), AND SEA LAVENDER (LIMONIUM) AT RANDOM AT A RATE OF ONE PLANT PER 80 SQ FT. THE TIDAL BUFFER ZONE SHALL BE PLANTED WITH BAYBERRY (MYRICA PENSYLVANICA), SHADBUSH (AMELANCHIER CANADENSIS), SWITCHGRASS (PANICUM VIRGATUM), SWEET-FERN (COMPTONIA PEREGRINA), AND SWEET PEPPERBUSH (CLETHRA ALNIFOLIA) AT RANDOM, AT A RATE OF ONE PLANT PER 80 SQ. FT. CERTIFICATION THAT SEEDLING STOCK IS OF SPECIFIED SPECIES SHALL BE PROVIDED BY THE NURSERY OR QUALIFIED PROFESSIONAL. SEE NOTE 13 FOR PLANTING ZONES.
9. LIMIT OF FINAL GRADING WILL BE REVIEWED IN THE FIELD PRIOR TO COMMENCEMENT OF WORK. ACTUAL FINAL LIMIT OF GRADING WILL BE DEPENDANT ON ACTUAL CONDITIONS FOUND ON-SITE AND IMPACTS TO EXISTING VEGETATION AND THE NEED FOR INVASIVE SPECIES REMOVAL.
10. EXTEND COIR BLANKET (SINGLE THICKNESS) 10' ONTO SURFACE OF MARSH IMMEDIATELY FOLLOWING COMPLETION OF GRADING AND PRIOR TO SEEDING.
11. INSTALL 12" COIR LOG BURIED APPROXIMATELY 9" TO SERVE AS AN EROSION BARRIER AND TO AREA FOR ROUTINE INSPECTIONS OF MARSH AREA. SET COIR LOG APPROXIMATELY LEVEL ACROSS A CONTOUR TO PREVENT CONCENTRATION OF WATER. TOP OF LOG ELEVATION = 3.2'±.
12. INSTALL 12" COIR LOG MARSH TRANSITION, TOP OF LOG = ELEV 3.9'±. ELEVATION OF LOW MARSH SHALL BE 3.4'± AND ELEVATION OF HIGH MARSH SHALL BE 3.8'±.
13. PLANTING ZONES SHALL GENERALLY AS FOLLOWS:
    A. LOW MARSH PLANTS BELOW ELEVATION 3.6' (BELOW MHW)
    B. HIGH MARSH PLANTS BETWEEN ELEVATIONS 3.6' AND 4.0' (BETWEEN MHW AND MHHW)
    C. TIDAL BUFFER PLANTINGS ABOVE ELEVATION 4.0' (ABOVE MHHW)



CROSS SECTION 1+00 to 1+50



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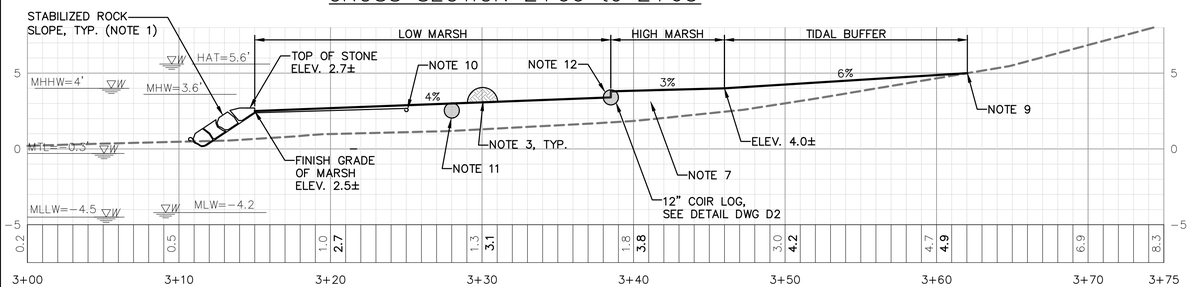
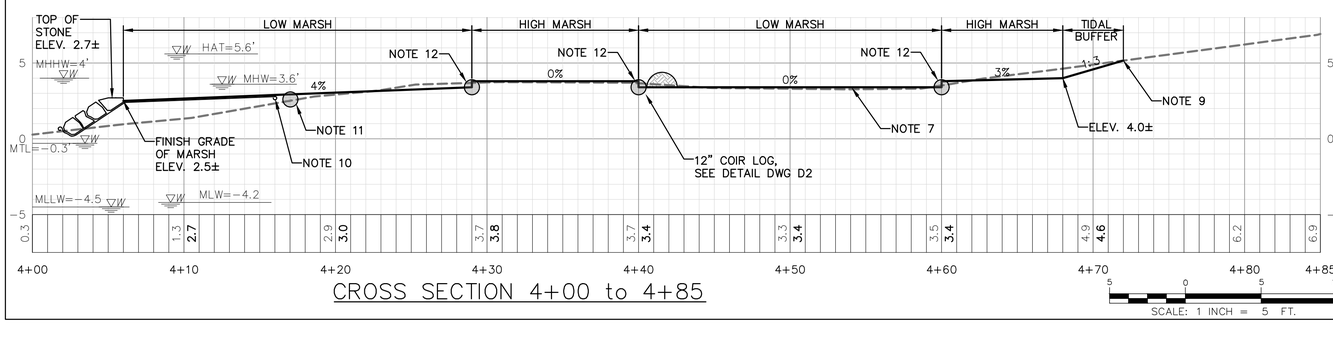


CROSS SECTION 3+00 to 3+75

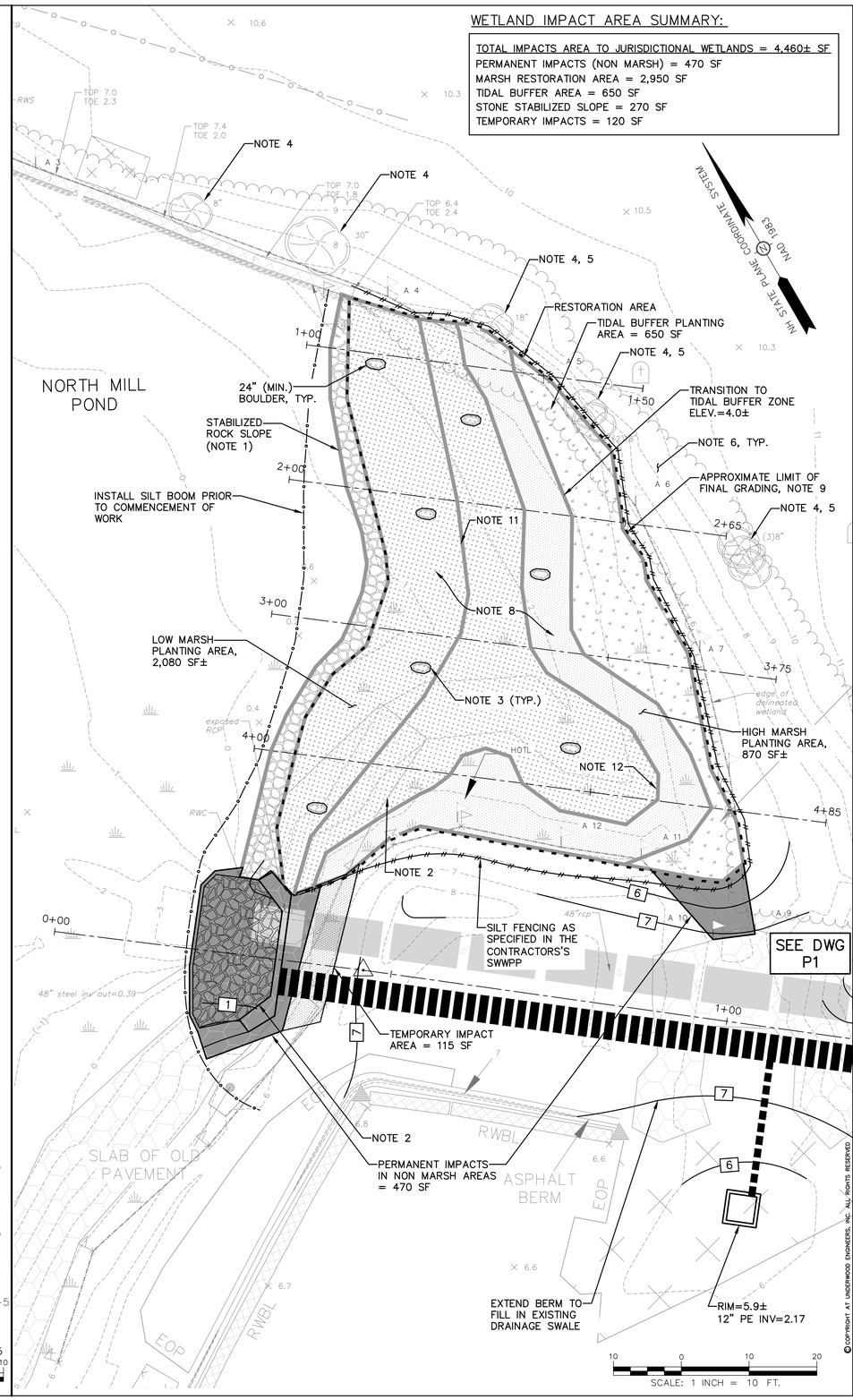


CROSS SECTION 4+00 to 4+85

SCALE: 1 INCH = 5 FT.

WETLAND IMPACT AREA SUMMARY:

TOTAL IMPACTS AREA TO JURISDICTIONAL WETLANDS = 4,460± SF
PERMANENT IMPACTS (NON MARSH) = 470 SF
MARSH RESTORATION AREA = 2,950 SF
TIDAL BUFFER AREA = 650 SF
STONE STABILIZED SLOPE = 270 SF
TEMPORARY IMPACTS = 120 SF



SCALE: 1 INCH = 10 FT.

ISSUE FOR	By	Date
BIDDING	–	–
CONSTRUCTION	–	–
RECORD DRAWING	–	–

NO.	REVISIONS	APP'D

Drawn/Chk RMG
Designed PDM
Checked –
Approved –
Date MARCH 2024
Book No. –
Project No. 2542
Dwg. ID 2542_plates_M
Scale

FOR REVIEW
MARCH 2024
NOT FOR CONSTRUCTION

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

NORTH MILL POND RESTORATION AREA
PLAN AND PROFILES

MAPLEWOOD AVE – DRAINAGE INTERCEPT

CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

DWG NO P5
SHEET ? OF 14

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STANDARD MANHOLE NOTES:

1. GENERAL: SEWER MANHOLES, INCLUDING ALL COMPONENT PARTS, SHALL BE ASSEMBLED OF PRECAST SECTIONS, WITH STEEL REINFORCEMENT. IN ANY APPROVED MANHOLE, THE COMPLETE STRUCTURE SHALL BE OF SUCH MATERIAL AND QUALITY AS TO WITHSTAND LOADS OF 8 TONS (H20 LOADING) WITHOUT FAILURE, AND TO PREVENT LEAKAGE IN EXCESS OF ONE GALLON PER DAY PER VERTICAL FOOT OF MANHOLE, CONTINUOUSLY FOR THE LIFE OF THE STRUCTURE. A PERIOD GENERALLY IN EXCESS OF 25 YEARS IS TO BE UNDERSTOOD IN BOTH CASES.

2. BARRELS AND CONE SECTIONS: SHALL BE PRECAST REINFORCED CONCRETE.

3. PRECAST CONCRETE: BARREL SECTIONS, CONES, AND BASES SHALL CONFORM TO ASTM C478.

4. LEAKAGE TEST: SHALL BE PERFORMED IN ACCORDANCE WITH THE SPECIFICATIONS. INVERT AND SHELF TO BE PRIOR TO BACKFILL PLACED AFTER TESTING.

5. INVERTS AND SHELVES: MANHOLES SHALL HAVE A BRICK PAVED SHELF AND INVERT, CONSTRUCTED TO CONFORM TO THE SIZE OF PIPE AND FLOW. CARE SHALL BE TAKEN TO INSURE THAT THE BRICK INVERT IS A SMOOTH CONTINUATION OF THE SEWER INVERT. INVERT BRICKS SHALL BE LAID ON EDGE. AT CHANGES IN DIRECTION, THE INVERTS SHALL BE LAID OUT IN CURVES OF THE LONGEST POSSIBLE TANGENT TO THE CENTER LINE OF THE SEWER PIPES. SHELVES SHALL BE CONSTRUCTED TO AN ELEVATION OF 1" ABOVE THE HIGHEST PIPE CROWN AND SLOPE TO DRAIN TOWARD THE FLOWING THROUGH CHANNEL. UNDERLAYMENT OF INVERT AND SHELF SHALL CONSIST OF BRICK MASONRY.

6. FRAMES AND COVERS: MANHOLE FRAMES AND COVERS SHALL BE CITY OF PORTSMOUTH STANDARD AND SHALL BE PICKED UP BY THE CONTRACTOR AT PORTSMOUTH DPW.

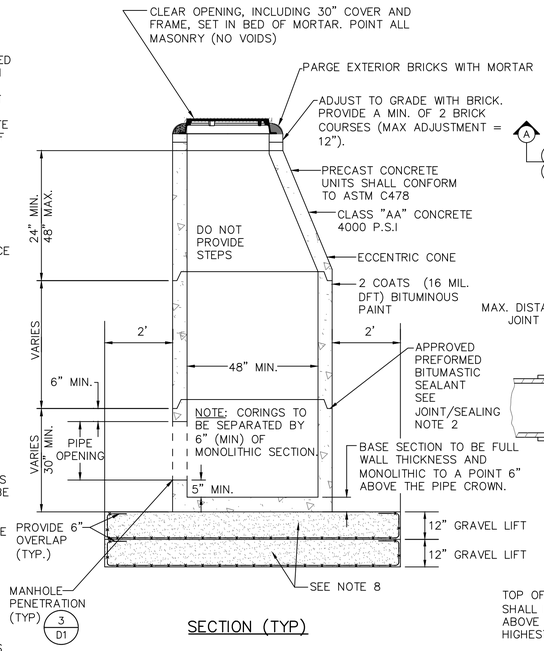
7. BEDDING: SCREENED GRAVEL AND/OR CRUSHED STONE FREE FROM CLAY, LOAM, ORGANIC MATTER AND MEETING ASTM C33. STONE SIZE NO. 67.
   - 100% PASSING 1 INCH SCREEN
   - 90–100% PASSING 3/4 INCH SCREEN
   - 20–55% PASSING 3/8 INCH SCREEN
   - 0–10% PASSING #4 SIEVE
   - 0–5% PASSING #8 SIEVE

8. WHERE THE MATERIAL BELOW MANHOLE STRUCTURE IS SOFT OR YIELDING, AND WHERE DIRECTED BY THE ENGINEER, INSTALL DOUBLE LAYER OF GEOGRID (TENSAR TX160 OR EQUAL). PAY AS ITEM 1.8B (LFx2).

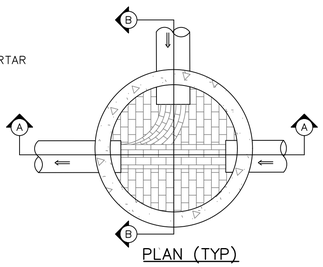
9. SHALLOW MANHOLE: IN LIEU OF A CONE SECTION, WHEN MANHOLE IS LESS THAN 6 FEET, A REINFORCED CONCRETE SLAB COVER HAVING AN ECCENTRIC ENTRANCE AND CAPABLE OF SUPPORTING H–20 LOADS MAY BE USED.

10. FLEXIBLE JOINT: A FLEXIBLE JOINT SHALL BE PROVIDED WITHIN THE FOLLOWING DISTANCES:
RCP AND CI PIPE – ALL SIZES – 48"
AC AND VC PIPE – UP THROUGH 12" DIA. – 18"
AC AND VC PIPE – LARGER THAN 12" DIA. – 36"
DI PIPE – NONE REQUIRED
PVC – UP THROUGH 15" DIA. – NONE REQUIRED
PVC – LARGER THAN 15" DIA. – 48"/60"
ABS (ASTM D2680) – ALL SIZES – SAME AS VC ABOVE.

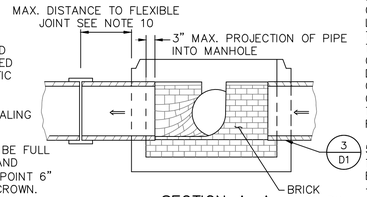
11. SPECIFICATIONS: ADDITIONAL CONSTRUCTION SPECIFICATIONS ARE INCLUDED IN THE CONTRACT DOCUMENTS. THESE STANDARD MANHOLE DRAWINGS ARE NOT COMPLETE WITHOUT THESE SPECIFICATIONS.



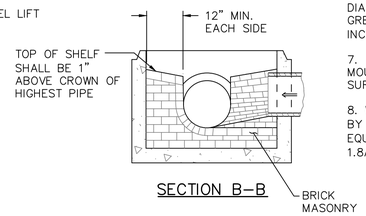
SECTION (TYP)



PLAN (TYP)



SECTION A–A



SECTION B–B

1 D1 SEWER MANHOLE
NOT TO SCALE

GRAVITY SEWER TRENCH NOTES:

1. ORDERED EXCAVATION OF UNSUITABLE MATERIAL BELOW GRADE: BACKFILL AS STATED IN THE TECHNICAL SPECIFICATIONS OR AS SHOWN ON THE DRAWINGS.

2. BEDDING: SEE NOTE 7 OF STANDARD MANHOLE NOTES. WHERE ORDERED BY THE ENGINEER TO STABILIZE THE TRENCH BASE, GRADED SCREENED GRAVEL OR CRUSHED STONE 1/2 INCH TO 1–1/2 INCH AND/OR THE USE OF GEOGRID FABRIC (ITEM 1.8B) MAY BE REQUIRED.

3. SAND BLANKET: CLEAN SAND FREE FROM ORGANIC MATTER, SO GRADED THAT 90–100% PASSES A 1/2 INCH SIEVE AND NOT MORE THAN 15% WILL PASS A #200 SIEVE. BLANKET MAY BE OMITTED FOR CAST–IRON, DUCTILE IRON, AND REINFORCED CONCRETE PIPE PROVIDED HOWEVER, THAT NO STONE LARGER THAN 2" IS IN CONTACT WITH THE PIPE.

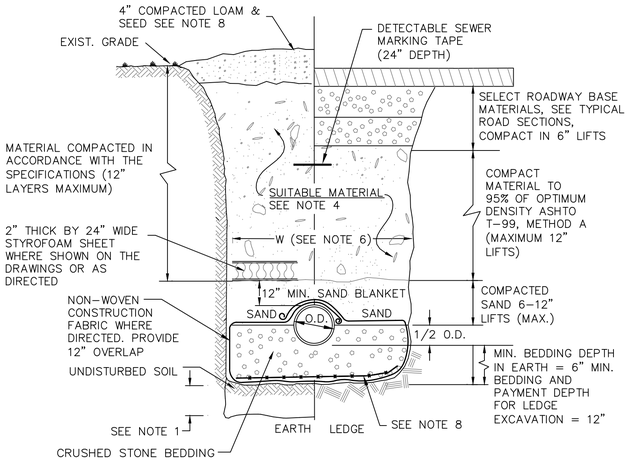
4. SUITABLE MATERIAL: IN ROADS, ROAD SHOULDERS, WALKWAYS AND TRAVELED WAYS, SUITABLE MATERIAL FOR TRENCH BACKFILL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE DEBRIS; PIECES OF PAVEMENT; ORGANIC MATTER; TOP SOIL; ALL WET OR SOFT MUCK, PEAT, OR SOFT CLAY; ALL EXCAVATED LEDGE MATERIAL; ALL ROCKS OVER 6 INCHES IN LARGEST DIMENSION; AND ANY MATERIAL WHICH, AS DETERMINED BY THE ENGINEER, WILL NOT PROVIDE SUFFICIENT SUPPORT OR MAINTAIN THE COMPLETED CONSTRUCTION IN A STABLE CONDITION. IN CROSS–COUNTRY CONSTRUCTION, SUITABLE MATERIAL SHALL BE AS DESCRIBED ABOVE, EXCEPT THAT THE ENGINEER MAY PERMIT THE USE OF TOP SOIL, LOAM, MUCK, OR PEAT, IF HE IS SATISFIED THAT THE COMPLETED CONSTRUCTION WILL BE ENTIRELY STABLE AND PROVIDED THAT EASY ACCESS TO THE SEWER, FOR MAINTENANCE AND POSSIBLY RECONSTRUCTION, WILL BE PRESERVED.

5. BASE COURSE AND PAVEMENT SHALL MEET THE REQUIREMENTS OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S LATEST EDITION OF THE STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES – DIVISIONS 300 AND 400 RESPECTIVELY.

6. W = MAXIMUM ALLOWABLE TRENCH PAYMENT WIDTH FOR ROCK EXCAVATION, FOR ORDERED EXCAVATION BELOW GRADE AND HANDLING OF EXCAVATED CONTAMINATED SOILS. FOR PIPES 15 INCHES NOMINAL DIAMETER OR LESS, W SHALL BE NO MORE THAN 36 INCHES. FOR PIPES GREATER THAN 15 INCHES IN NOMINAL DIAMETER, W SHALL BE 24 INCHES PLUS PIPE OUTSIDE DIAMETER (O.D.)

7. FOR CROSS COUNTRY CONSTRUCTION, BACKFILL OR FILL SHALL BE MOUNDED TO A HEIGHT OF 6 INCHES ABOVE THE ORIGINAL GROUND SURFACE.

8. WHERE TRENCH BOTTOM IS SOFT OR YIELDING, AND WHERE DIRECTED BY THE ENGINEER, INSTALL SINGLE LAYER OF GEOGRID (TX160 OR EQUAL) ACROSS THE ENTIRE WIDTH OF TRENCH BOTTOM. PAY AS ITEM 1.8A (L.F.).

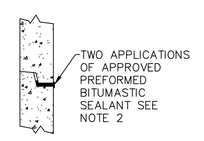


TRENCH SECTION (TYP)

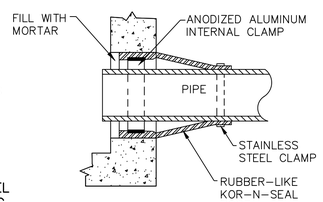
2 D1 TRENCH – GRAVITY SEWER
NOT TO SCALE

NOTES:
DOUBLE WYE BRANCH ONLY TO BE USED WHERE APPROVED BY ENGINEER

7 D1 PVC SEWER SERVICE CHIMNEY WITH WYE
NOT TO SCALE



PRECAST CONC. BARREL
SEALANT – BITUMASTIC



KOR–N–SEAL
JOINT SLEEVE
(OR EQUAL)

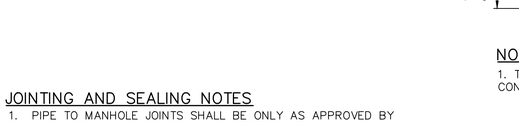
3 D1 MANHOLE PENETRATIONS
NOT TO SCALE

JOINTING AND SEALING NOTES

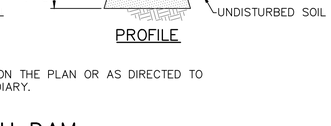
1. PIPE TO MANHOLE JOINTS SHALL BE ONLY AS APPROVED BY THE ENGINEER AND IN GENERAL, WILL DEPEND UPON AN ELASTOMERIC SEALANT FOR WATERTIGHTNESS.

2. FOR BITUMASTIC TYPE JOINTS THE AMOUNT OF SEALANT SHALL BE SUFFICIENT TO FILL AT LEAST 75% OF THE JOINT CAVITY. APPROVED BITUMASTIC SEALANTS: RAM–NEK E Z KENT SEAL NO.2

3. ALL GASKETS, SEALANTS, MORTAR, ETC., SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS WRITTEN INSTRUCTIONS.



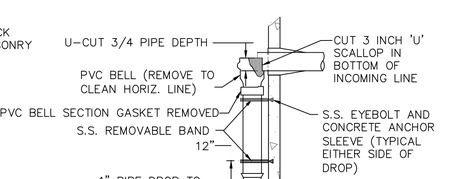
PLAN



PROFILE

NOTES:
1. TRENCH DRAINS TO BE AT LOCATIONS SHOWN ON THE PLAN OR AS DIRECTED TO CONTROL BACK WATER IN STONE BEDDING, SUBSIDIARY.

4 D1 TRENCH DAM
NOT TO SCALE



SIZE GUIDE:
1–8" OR 10" DROP: 4'–0" DIA. M.H.
2–8" OR 10" DROP: 5'–0" DIA. M.H.
1–12" DROP: 5'–0" DIA. M.H.
1–15" DROP: 5'–0" DIA. M.H.

5 D1 DROP MANHOLE
NOT TO SCALE

SERVICE CONNECTION NOTES:

1. SEE DETAILS FOR SERVICE CONNECTION REQUIREMENTS.

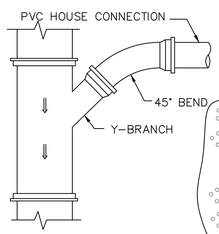
2. SERVICE CONNECTION SHALL BE INSTALLED BELOW WATER MAIN WHERE POSSIBLE.

3. CLEANOUTS SHALL BE INSTALLED AT EACH SERVICE CONNECTION.

4. REBAR SHALL BE PLACED AT SIDE OF CLEANOUT.

5. CLEANOUT SHALL BE USED TO PLUG AND TEST ALL NEW LATERALS WITH MINIMAL INTERRUPTION TO OPERATION OF HOMEOWNER SANITARY SYSTEM.

6. CLEANOUT RISER PIPE AND FITTINGS SHALL BE INCIDENTAL AND SHALL NOT BE CONSIDERED FOR PAYMENT.



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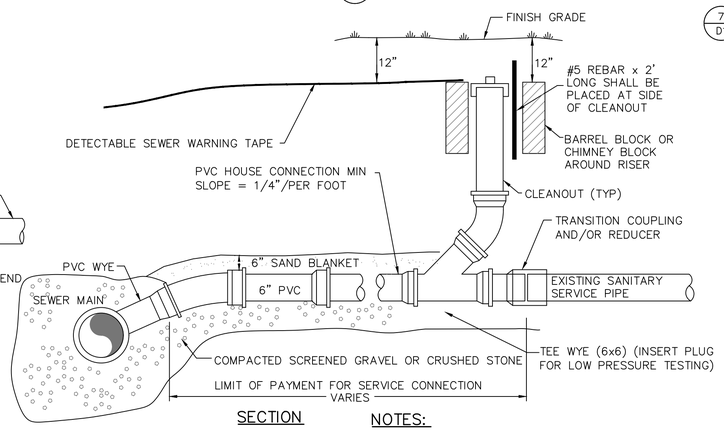

SECTION

6 D1 SERVICE CONNECTION
NOT TO SCALE

NOTES:
1. MAINTAIN 18" SEPARATION BETWEEN NEW SEWER SERVICE AND NEW OR EXISTING WATER MAIN (WATER SHALL BE OVER SEWER).

ISSUE FOR	Date	By
BIDDING	–	–
CONSTRUCTION	–	–
RECORD DRAWING	–	–

REVISIONS	APP'D	NO.

Drawn/Chk RMG
Designed PDM
Checked –
Approved –
Date MARCH 2024
Book No. –
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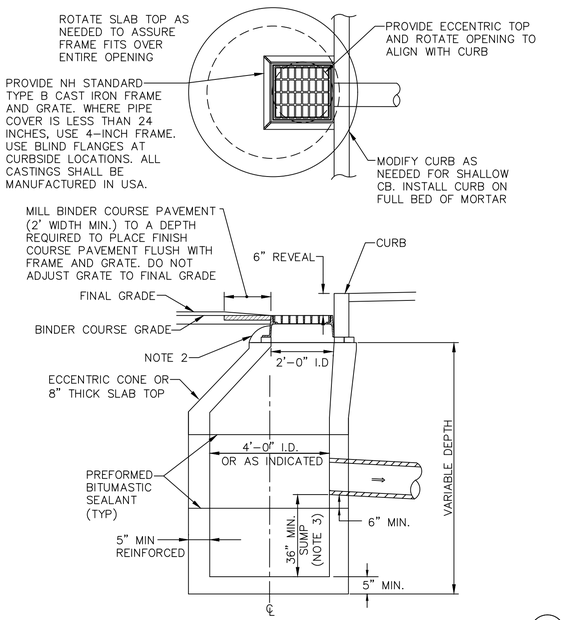
Dwg. ID 2542_details_M
Scale –

FOR REVIEW
MARCH 2024
NOT FOR CONSTRUCTION

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603–436–6192 Fax. 603–431–4733

SEWER DETAILS
MAPLEWOOD AVE – DRAINAGE INTERCEPT
CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

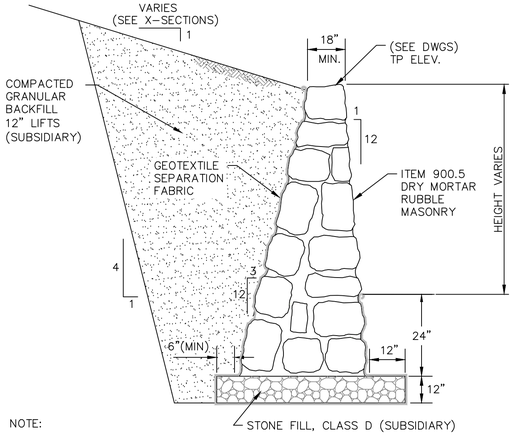
DWG NO D1
SHEET 9 OF 14



1 / D2 CATCH BASIN DETAIL
NOT TO SCALE

CATCH BASIN NOTES:

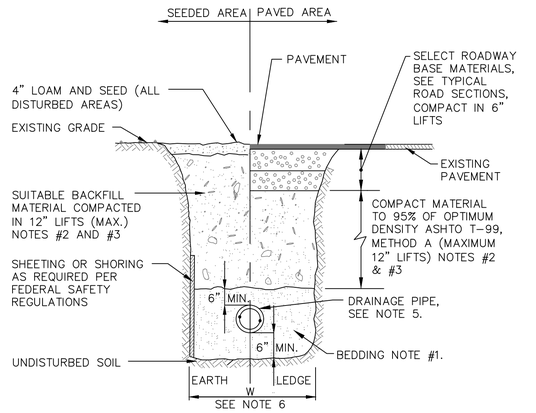
1. ENTIRE STRUCTURE SHALL BE CAPABLE OF WITHSTANDING AN H – 20 LOAD DETAILS OF REINFORCEMENT TO BE FURNISHED BY MANUFACTURER.
2. ADJUST FRAME AND GRATE TO BINDER COURSE ELEVATION, WITH BRICK SET IN A FULL BED OF MORTAR. POINT ALL MASONRY (NO VOIDS) AND PARGE EXTERIOR BRICK WITH MORTAR.
3. WHERE SUMP IS OMITTED PROVIDE MASONRY INVERT PER DETAIL 4 / D2



NOTE:

1. THE CONTRACTOR MAY REUSE GRANITE FROM EXISTING HEAD WALL. RETAIN STABLE SECTIONS OF EXISTING HEADWALLS REVIEW RE-CONSTRUCTION LIMITS WITH THE ENGINEER BEFORE COMMENCING WITH THE WORK.
2. UNSUITABLE MATERIAL SHALL BE REMOVED AND REPLACED WITH STRUCTURAL FILL.
3. IF GROUNDWATER IS ENCOUNTERED, DEWATERING MEASURES WILL BE NECESSARY TO PREVENT DISRUPTANCE OF THE BEARING SOILS. PUMPING EQUIPMENT AND SUMP AREAS SHOULD BE LOCATED OUTSIDE. PUMP DISCHARGE SHALL BE PROPERLY FILTERED TO PREVENT THE DISCHARGE OF SILT TO WETLANDS.
4. WALLS SHALL BLEND INTO EXISTING SLOPES.

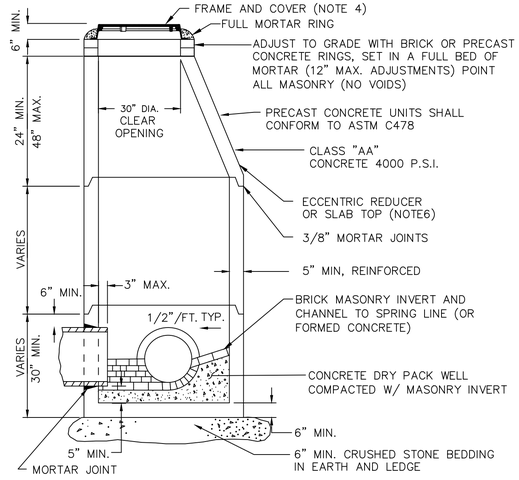
2 / D2 MORTAR RUBBLE MASONRY RETAINING DETAIL
NOT TO SCALE



3 / D2 TRENCH DETAIL – STORM DRAIN
NOT TO SCALE

TRENCH NOTES – STORM DRAIN

1. BEDDING: BEDDING FOR PIPES SHALL CONSIST OF PREPARING THE BOTTOM OF THE TRENCH TO SUPPORT THE ENTIRE LENGTH OF THE PIPE AT A UNIFORM SLOPE AND ALIGNMENT. CRUSHED GRAVEL (NHDOT ITEM 304.3) OR CRUSHED STONE SHALL BE USED TO BED THE PIPE TO THE ELEVATION SHOWN ON THE DRAWINGS.
2. COMPACTION: ALL BACKFILL SHALL BE COMPACTED AT OR NEAR OPTIMUM MOISTURE CONTENT BY PNEUMATIC TAMPERS, VIBRATORY COMPACTORS OR OTHER APPROVED MEANS. BACKFILL BENEATH PAVED SURFACES SHALL BE COMPACTED TO NOT LESS THAN 95 PERCENT OF AASHTO T99, METHOD C.
3. SUITABLE MATERIAL: IN ROADS, ROAD SHOULDERS, WALKWAYS AND TRAVELED WAYS, SUITABLE MATERIAL FOR TRENCH BACKFILL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE DEBRIS; PIECES OF PAVEMENT; ORGANIC MATTER; TOP SOIL; ALL WET OR SOFT MUCK, PEAT, OR CLAY; ALL EXCAVATED LEDGE MATERIAL; ROCKS OVER 6 INCHES IN LARGEST DIMENSION; FROZEN EARTH AND ANY MATERIAL WHICH, AS DETERMINED BY THE ENGINEER, WILL NOT PROVIDE SUFFICIENT SUPPORT OR MAINTAIN THE COMPLETED CONSTRUCTION IN A STABLE CONDITION. IN SEEDED AREAS, SUITABLE MATERIAL SHALL BE AS DESCRIBED ABOVE, EXCEPT THAT THE ENGINEER MAY PERMIT THE USE OF TOP SOIL, LOAM, ROCKS UNDER 12", FROZEN EARTH OR CLAY, IF HE/SHE IS SATISFIED THAT THE COMPLETED CONSTRUCTION WILL BE ENTIRELY STABLE AND PROVIDED THAT EASY ACCESS TO THE PIPE WILL BE PRESERVED.
4. BASE COURSE AND PAVEMENT: SHALL MEET THE REQUIREMENTS OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S LATEST EDITION OF THE STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES – DIVISIONS 300 AND 400 RESPECTIVELY.
5. DRAINAGE PIPE: PIPE MATERIALS SHALL BE EITHER PVC SDR 35 OR POLYETHYLENE (PE).
6. W=MAXIMUM ALLOWABLE TRENCH WIDTH: FOR ROCK EXCAVATION, FOR ORDERED EXCAVATION BELOW GRADE AND HANDLING OF EXCAVATED CONTAMINATED SOILS. FOR PIPES 15 INCHES NOMINAL DIAMETER OR LESS, W SHALL BE NO MORE THAN 36 INCHES. FOR PIPES GREATER THAN 15 INCHES IN NOMINAL DIAMETER, W SHALL BE 24 INCHES PLUS PIPE OUTSIDE DIAMETER (O.D.)



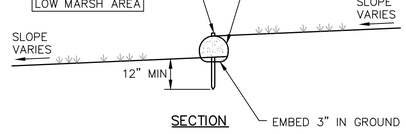
4 / D2 TYPICAL DRAINAGE MANHOLE
NOT TO SCALE

DRAIN MANHOLE NOTES:

1. BARRELS AND CONE SECTIONS SHALL BE PRECAST REINFORCED CONCRETE.
2. PRECAST CONCRETE BARREL SECTIONS, CONES, AND BASES SHALL CONFORM TO ASTM C478.
3. INVERTS AND SHELVES: MANHOLES SHALL HAVE A BRICK PAVED SHELF AND INVERT (OR FORMED CONCRETE), CONSTRUCTED TO CONFORM TO THE SIZE OF PIPE AND FLOW. CARE SHALL BE TAKEN TO INSURE THAT THE BRICK INVERT IS A SMOOTH CONTINUATION OF THE INVERT. INVERT BRICKS SHALL BE LAID ON EDGE. AT CHANGES IN DIRECTION, THE INVERTS SHALL BE LAID OUT IN CURVES OF THE LONGEST POSSIBLE TANGENT TO THE CENTER LINE OF THE PIPES. SHELVES SHALL BE CONSTRUCTED TO AN ELEVATION OF 1/2 THE PIPE DIA. AND SLOPE TO DRAIN TOWARD THE FLOWING THROUGH CHANNEL.
4. FRAMES AND COVERS: MANHOLE FRAMES AND COVERS SHALL BE HINGED, ERGO XL BY EAST JORDON IRON WORKS, AND PROVIDE A 30-INCH (MIN.) CLEAR OPENING. THE WORD "DRAIN", IN 3-INCH LETTERS SHALL BE PLAINLY CAST INTO THE CENTER OF EACH COVER.
5. BEDDING: SCREENED GRAVEL AND/OR CRUSHED STONE FREE FROM CLAY, LOAM, ORGANIC MATTER AND MEETING ASTM C33. STONE SIZE NO. 67.

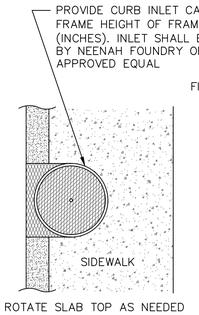
   100% PASSING 1 INCH SCREEN
   90–100% PASSING 3/4 INCH SCREEN
   20– 55% PASSING 3/8 INCH SCREEN
   0–10% PASSING #4 SIEVE
   0– 5% PASSING #8 SIEVE

   WHERE ORDERED BY THE ENGINEER TO STABILIZE THE BASE, SCREENED GRAVEL OR CRUSHED STONE 1–1/2 INCH TO 1/2 INCH OR USE OF GEOGRID FABRIC (ITEM 1.8B) MAY BE REQUIRED.
6. SLAB TOP COVERS: MAY BE APPROVED IN LIEU OF A CONE SECTION, WHEN MANHOLE IS LESS THAN 5 FEET AND FOR LARGE DIAMETER MANHOLES. SLAB TOP COVERS SHALL BE REINFORCED CONCRETE HAVING AN ECCENTRIC ENTRANCE AND CAPABLE OF SUPPORTING H–20 LOADS.



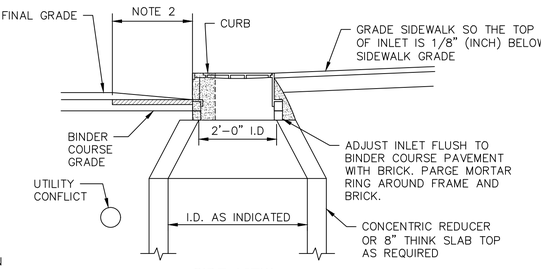
SECTION

7 / D2 COIR LOG DETAIL
NOT TO SCALE

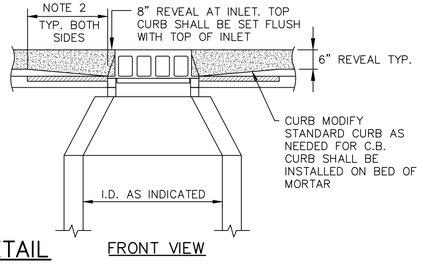


ROTATE SLAB TOP AS NEEDED TO ASSURE FRAME IS ALIGNED WITH PROPOSED CURBING WHEN SET IN OPENING

TOP VIEW



SIDE VIEW



FRONT VIEW

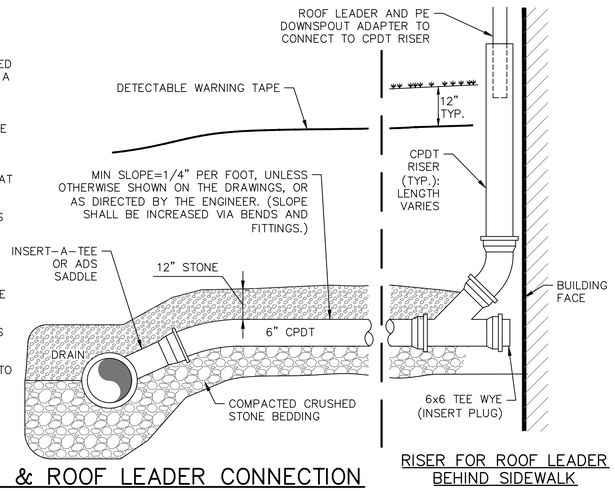
NOTES:

1. ENTIRE STRUCTURE SHALL BE CAPABLE OF WITHSTANDING AN H–20 LOAD DETAILS OF REINFORCEMENT TO BE FURNISHED BY MANUFACTURER.
2. MILL BINDER COURSE PAVEMENT IN FRONT AND TO EACH SIDE OF INLET (2 WIDTH MIN.) TO A DEPTH REQUIRED TO PLACE FINISH COURSE PAVEMENT SO THAT CURB INLET AND CURBING (AT THE INLET) HAS AN 8" REVEAL.
3. DETAIL TO BE USED WHERE NECESSARY TO AVOID UTILITY CONFLICTS OR WHERE DIRECTED.

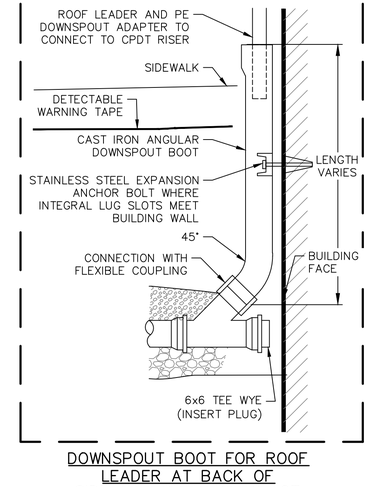
5 / D2 INLET CATCH BASIN FRAME DETAIL
NOT TO SCALE

NOTES:

1. SERVICE LATERALS WILL BE PROVIDED AT EACH DOWNSPOUT AS WELL AS A SEPARATE CLEANOUT FOR EACH PROPERTY TO FACILITATE PRIVATE SUMP PUMP /DRAIN SERVICE CONNECTIONS. CLEANOUTS SHALL BE INSTALLED AT THE PROPERTY LINE FOR EACH SERVICE LATERAL.
2. REBAR OR 2X4 SHALL BE PLACED AT SIDE OF CLEANOUT.
3. CLEANOUT RISER PIPE AND FITTINGS ARE INCIDENTAL AND WILL NOT BE CONSIDERED FOR PAYMENT.
4. SERVICES SHALL BE ORIENTED @ 10:30 OR 1:30 (TYP). UNDER NO CIRCUMSTANCES SHALL SERVICES BE LOCATED BETWEEN 3:00 AND 9:00.
5. LOCATE ROOF LEADER CONNECTIONS AT EXISTING DOWNSPOUTS. AT ADJACENT BUILDING CORNERS, TWO DOWNSPOUTS MAY BE CONNECTED TO ONE LATERAL USING APPROPRIATE WYE (AND OTHER) FITTING(S).



RISER FOR ROOF LEADER BEHIND SIDEWALK



DOWNSPOUT BOOT FOR ROOF LEADER AT BACK OF SIDEWALK OR PARKING LOT

6 / D2 DRAIN LATERAL & ROOF LEADER CONNECTION
NOT TO SCALE

ISSUE FOR	Date	By
BIDDING	–	–
CONSTRUCTION	–	–
RECORD DRAWING	–	–

NO.	REVISIONS	APP'D
1	ADD Details JJ	

Drawn/Chk. RMG
Designed PDM
Checked –
Approved –
Date MARCH 2024
Book No. –
Project No. 2542
Dwg. ID
Scale

FOR REVIEW
MARCH 2024
NOT FOR CONSTRUCTION

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

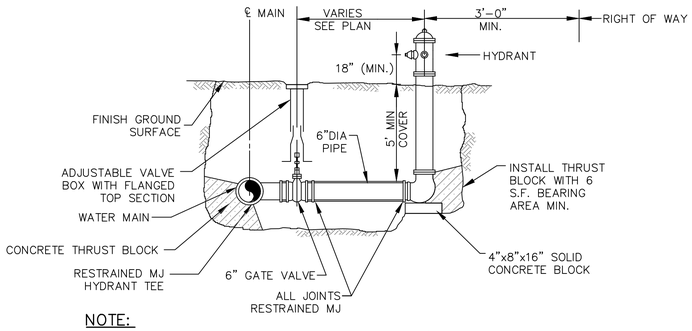
DRAINAGE DETAILS

MAPLEWOOD AVE – DRAINAGE INTERCEPT

CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

DWG NO D2

SHEET 10 OF 14

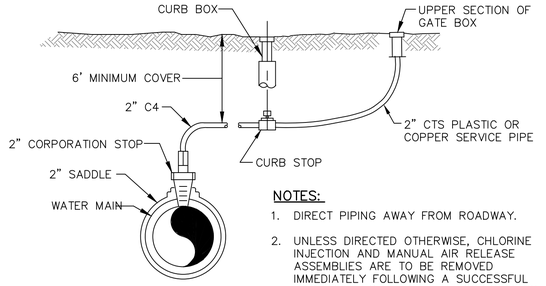


NOTE:

1. HYDRANTS SHALL BE DELIVERED FROM FACTORY W/O DRAIN HOLES.
2. HYDRANT ASSEMBLY INCLUDES MJ HYDRANT TEE.
3. HYDRANT SHALL BE KENNEDY K-81A GUARDIAN, PER CITY OF PORTSMOUTH STANDARDS.
4. LOCATE HYDRANTS A MINIMUM OF 18" BEHIND CURBING UNLESS OTHERWISE DIRECTED. REVIEW HYDRANT LOCATIONS WITH PROJECT REPRESENTATIVE PRIOR TO WATER MAIN INSTALLATIONS.

1 D3 TYPICAL HYDRANT ASSEMBLY SECTION

NOT TO SCALE

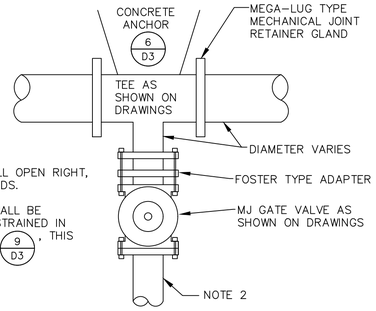


NOTES:

1. DIRECT PIPING AWAY FROM ROADWAY.
2. UNLESS DIRECTED OTHERWISE, CHLORINE INJECTION AND MANUAL AIR RELEASE ASSEMBLIES ARE TO BE REMOVED IMMEDIATELY FOLLOWING A SUCCESSFUL BACTERIA TEST. LEAVE THE CORPORATION STOP AND 12" LENGTH OF TUBING (WITH A CRIMPED END) IN PLACE.

2 D3 TEMPORARY BLOW-OFF TAP ASSEMBLY

NOT TO SCALE

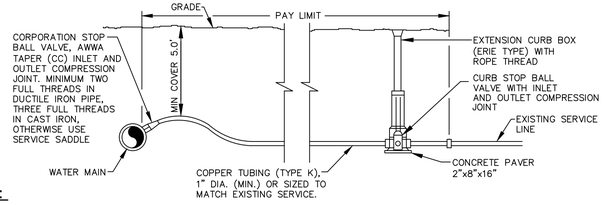


NOTE:

1. GATE VALVES SHALL OPEN RIGHT, PER CITY STANDARDS.
2. BRANCH PIPING SHALL BE MECHANICALLY RESTRAINED IN ACCORDANCE WITH 9 D3, THIS SHEET

5 D3 TEE & GATE VALVE ASSEMBLY DETAIL (TYP.)

NOT TO SCALE

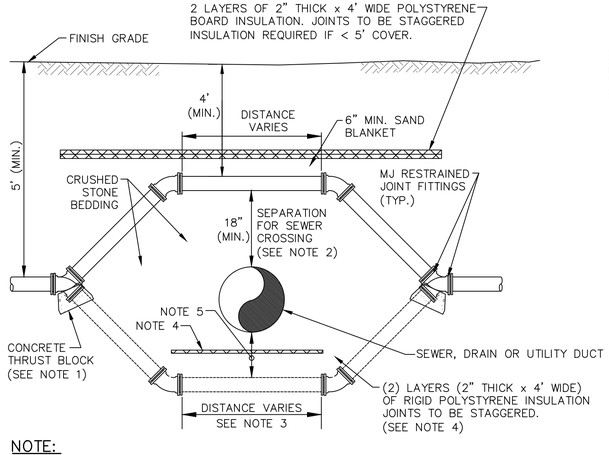


NOTES:

1. PROVIDE NEW LINE USING CONTINUOUS LENGTHS OF COPPER. NO COUPLING ALLOWED IN ROADWAY WITHOUT APPROVAL OF ENGINEER.
2. TAPS TO BE MADE AT APPROX. 2:00 AND 10:00.
3. PROVIDE FOR SERVICE LINE CONTRACTION AND EXPANSION BY INSTALLING "S" IN SERVICE LINE NEAR MAIN.
4. IF SERVICE IS INSTALLED WITH LESS THAN 5' COVER, INSULATE OVER LINE.
5. REMOVE EXISTING CURB STOP (SALVAGE AS IDENTIFIED IN SECT. 01611).
6. CONNECT CURB STOP TO EXISTING SERVICE LINE AT PROPERTY LINE OR AT LOCATION APPROVED BY THE ENGINEER (NO COUPLING WITHOUT APPROVAL OF ENGINEER) AFTER PRESSURE TESTING AND DISINFECTION.
7. SHUT OFF EXISTING CORPORATION AND REMOVE OR ABANDON EXISTING SERVICE LINE.
8. CURB BOX SHALL BE SET IN THE GRASS AREA BETWEEN CURB AND SIDEWALK UNLESS DIRECTED OTHERWISE.
9. 2" SERVICE CONNECTIONS SHALL USE A STAINLESS STEEL SERVICE SADDLE.
10. MAINTAIN 18" SEPARATION BETWEEN THE NEW WATER SERVICE AND THE NEW OR EXISTING SEWER MAIN (WATER SHALL BE OVER SEWER).

4 D3 TYPICAL SERVICE CONNECTION

NOT TO SCALE



NOTE:

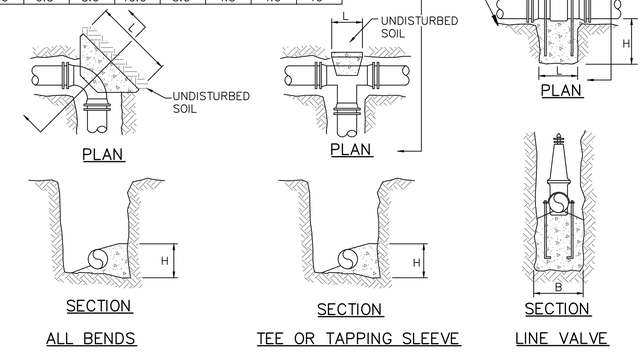
1. INSTALL (4) FOUR 45° MJ BENDS WITH RESTRAINED JOINT FITTINGS.
2. VERTICAL SEPARATION DEPTH BETWEEN WATER AND SEWER SHALL BE AT LEAST 18", WITH WATER ABOVE SEWER, PER NHDES ENV-Wq 704.12. VERTICAL SEPARATION OF LESS THAN 18" ALLOWED ONLY WITH WAIVER FROM NHDES. IF CONSTRUCTION OF WATER MAIN UNDER SEWER MAIN IS UNAVOIDABLE, SEWER MAIN SHALL BE CONSTRUCTED OF C900 PVC PIPE FROM MANHOLE TO MANHOLE.
3. CENTER CROSSING PIPE BETWEEN BELLS. SEWER PIPE JOINT SHALL BE A MINIMUM OF OF 6 FT. HORIZONTALLY FROM THE WATER MAIN.
4. PROVIDE INSULATION IF DRAIN CROSSES OVER WATER MAIN.
5. PROVIDE 8" TO 12" SEPARATION FOR DRAIN OR OTHER UTILITY CROSSINGS.

7 D3 WATER MAIN CONFLICT – CROSSING DETAIL

NOT TO SCALE

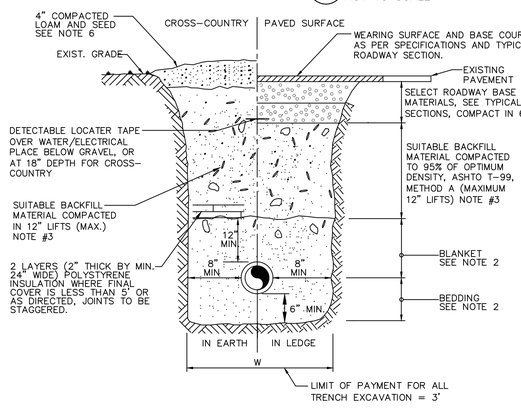
MINIMUM CONCRETE ANCHOR DIMENSIONS								
BENDS, TEES AND LINE VALVES AT 250 PSI								
PIPE SIZE INCHES	TEE OR PLUG FT.		ALL BENDS FT.		ALL LINE VALVES FT.			PIPE SIZE INCHES
	H	L	H	L	H	L	B	
6	1.5	3.0	2.0	3.5	1.5	3.0	2.5	6
8	2.0	4.0	2.5	5.0	2.0	4.0	3.0	8
10	2.5	5.0	3.0	6.0	3.0	4.0	3.0	10
12	3.0	6.0	3.0	8.0	3.0	5.0	4.0	12
16	3.0	6.5	3.0	10.0	3.0	4.5	4.0	16

BASIS: SOIL BEARING CAPACITY OF 2000 PSF AND 5 FEET COVER IN GRANULAR SOIL. HEIGHT OF BLOCK MUST BE LESS THAN 1/2 DEPTH OF TRENCH. 6 MIL THICK POLYETHYLENE SHALL BE PLACED AROUND FITTINGS PRIOR TO CONCRETE PLACEMENT. USE FOR HORIZONTAL OR DOWNWARD THRUST ONLY.



6 D3 CONCRETE ANCHORS

NOT TO SCALE



8 D3 TYPICAL TRENCH DETAIL

NOT TO SCALE

HORIZONTAL BENDS:

Nominal Pipe Diameter	Bend Angle			
	90°	45°	22.5°	11.25°
4"	6'	3'	2'	1'
6"	9'	4'	2'	2'
8"	11'	5'	3'	2'
10"	13'	6'	3'	2'
12"	16'	7'	3'	2'
16"	20'	9'	4'	2'

REDUCERS:

Nom. Diameter of Large Pipe	Nominal Diameter of Small Pipe (Note 4)				
	4"	6"	8"	10"	12"
8"	17'	10'	-	-	-
10"	23'	17'	10'	-	-
12"	29'	24'	18'	10'	-
16"	39'	36'	31'	28'	18'

DEAD ENDS:

Nom. Pipe Diameter	Restarined Length (ft)
4"	13'
6"	18'
8"	23'
10"	28'
12"	33'
16"	43'

TEES:

Nominal Pipe	Nominal Branch Diameter (Note 5)			
	8"	10"	12"	16"
8"	6'	-	-	-
10"	8'	11'	-	-
12"	1'	7'	16'	-
16"	1'	1'	9'	25'

NOTES:

1. ALL FITTINGS SHALL HAVE MECHANICAL RETAINING GLANDS AT ALL ENDS AND A MINIMUM OF ONE JOINT SHALL BE RESTRAINED BEYOND EACH SIDE OF FITTING.
2. PIPE EXTENDING FROM ALL FITTINGS SHALL BE MECHANICALLY RESTRAINED TO THE MINIMUM LENGTHS SHOWN.
3. ALL MINIMUM LENGTHS SHOWN ABOVE WERE CALCULATED USING THE EBAA IRON RESTRAINT LENGTH CALCULATOR VERSION 6.3 USING THE FOLLOWING ASSUMPTIONS: DUCTILE IRON PIPE, TYPE 4 TRENCH, 5 FOOT DEPTH OF BURY, A TEST PRESSURE OF 150 PSI AND SOILS CONSISTING OF WELL GRADED SANDS AND GRAVELLY SANDS WITH LITTLE OR NO FINES.
4. ENGINEER RESERVES THE RIGHT TO MODIFY RESTRAINT LENGTHS REQUIRED BASED ON VARYING TRENCH CONDITIONS, DEPTH OF BURY OR PIPE MATERIALS.
5. FOR REDUCERS, RESTRAIN LENGTH SHOWN IS FOR THE LARGER PIPE.
6. MECHANICALLY RESTRAIN ONE JOINT ON EITHER SIDE OF THE NOMINAL PIPE OF TEE AT A MINIMUM DISTANCE OF 5'.

9 D3 MECHANICAL JOINT RESTRAINT

NOT TO SCALE

STANDARD TRENCH NOTES

1. ORDERED EXCAVATION OF UNSUITABLE MATERIAL BELOW GRADE: BACKFILL AS STATED IN THE TECHNICAL SPECIFICATIONS OR AS SHOWN ON THE DRAWINGS.
2. BEDDING AND BLANKET: CLEAN SAND FREE FROM ORGANIC MATTER (SECTION 02228). BLANKET MAY BE OMITTED FOR DUCTILE IRON AND REINFORCED CONCRETE PIPE, PROVIDED HOWEVER, THAT NO STONE LARGER THAN 2" IS IN CONTACT WITH THE PIPE.
3. BACKFILL MATERIAL: IN ROADS, ROAD SHOULDERS, WALKWAYS AND TRAVELED WAYS, SUITABLE MATERIAL FOR TRENCH BACKFILL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE DEBRIS; PIECES OF PAVEMENT; ORGANIC MATTER; TOP SOIL; ALL WET OR SOFT MUCK, PEAT, OR CLAY; ALL EXCAVATED LEDGE MATERIAL; ALL ROCKS OVER 6 INCHES IN LARGEST DIMENSION; AND ANY MATERIAL WHICH, AS DETERMINED BY THE ENGINEER, WILL NOT PROVIDE SUFFICIENT SUPPORT OR MAINTAIN THE COMPLETED CONSTRUCTION IN A STABLE CONDITION.

IN CROSS-COUNTRY CONSTRUCTION, SUITABLE MATERIAL SHALL BE AS DESCRIBED ABOVE, EXCEPT THAT THE ENGINEER MAY PERMIT THE USE OF TOP SOIL, LOAM, MUCK, OR PEAT, IF ENGINEER IS SATISFIED THAT THE COMPLETED CONSTRUCTION WILL BE ENTIRELY STABLE AND PROVIDED THAT EASY ACCESS TO THE PIPE LINE, FOR MAINTENANCE AND POSSIBLY RECONSTRUCTION, WILL BE PRESERVED.

4. MINIMUM COVER: NOT LESS THAN 5.5 FEET, 7 MAX, EXCEPT TO AVOID SUBSURFACE STRUCTURES.
6. FOR CROSS COUNTRY CONSTRUCTION, BACKFILL OR FILL SHALL BE MOUNDED TO A HEIGHT OF 6 INCHES ABOVE THE ORIGINAL GROUND SURFACE.
7. DRIVEWAYS: CRUSHED GRAVEL IN DRIVEWAYS SHALL MATCH EXISTING WITH A MINIMUM OF 6". EXISTING GRAVEL SHALL BE REMOVED AND REPLACED AND SHALL NOT BE MEASURED FOR PAYMENT.

NO.	REVISIONS	APP'D
2	Addr.	ZAV

ISSUE FOR BIDDING Date - By -
CONSTRUCTION Date - By -
RECORD DRAWING Date - By -

Drawn/Chk. RMG
Designed PDM
Checked -
Approved -
Date MARCH 2024
Book No. -
Project No. 2542
Dwg. ID
Scale

FOR REVIEW
MARCH 2024
NOT FOR CONSTRUCTION

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

WATER DETAILS

MAPLEWOOD AVE – DRAINAGE INTERCEPT

CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

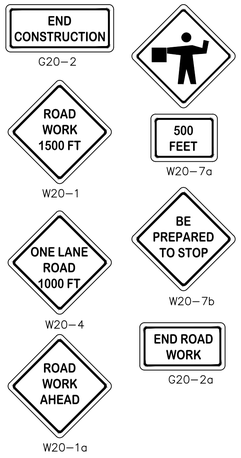
DWG NO D3

SHEET 11 OF 14

TRAFFIC CONTROL NOTES:

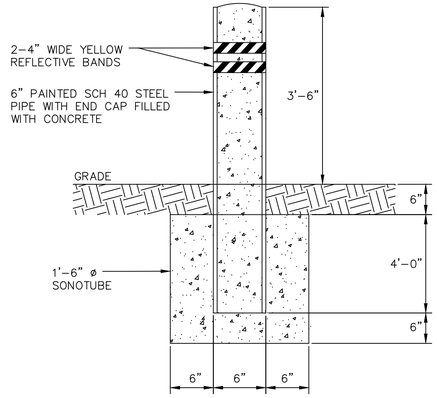
1. TYPICAL SIGN DETAILS ARE BASED ON THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND IS NOT INTENDED AS AN ALL-INCLUSIVE LIST. ALL SIGNAGE AND OTHER TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE MUTCD (LATEST EDITION) AND NHDOT REQUIREMENTS.
2. CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTING THE TRAFFIC CONTROL PLAN AS SHOWN. ANY MODIFICATIONS MUST BE SUBMITTED IN WRITING FOR APPROVAL BY THE ENGINEER, CITY OF PORTSMOUTH AND THE NHDOT. SEE PROJECT MANUAL FOR ADDITIONAL REQUIREMENTS.
3. CONTRACTOR SHALL ERECT ALL DAILY USE SIGNS IN THE MORNING PRIOR TO WORK BEGINNING AND REMOVE ALL DAILY USE SIGNS AT THE END OF EACH DAY.
4. DAILY SIGNS SHALL INCLUDE SIGNAGE NECESSARY TO ENSURE THE SAFETY OF THE PUBLIC (I.E. ROAD CLOSED, FLAGGER AHEAD, ONE LANE TRAFFIC, ETC).
5. DETOUR SIGNS ARE TO BE USED WITH PHASE I CONSTRUCTION (CULVERT INSTALLATION) ONLY. REFER TO PROSECUTION OF WORK ON SHEET G-1)
6. ALL SIGNS SHALL BE ERECTED AND PLACED IN ACCORDANCE WITH MUTCD (LATEST EDITION).

DAILY SIGNS



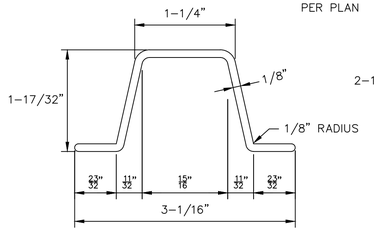
TEMPORARY DETOUR SIGNS

1/D4 TRAFFIC CONTROL SIGNS
NOT TO SCALE

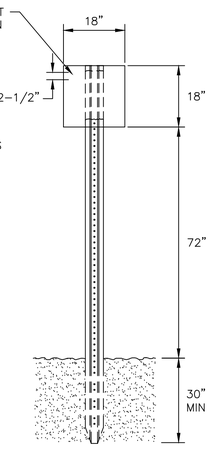


3/D4 STEEL BOLLARD DETAIL
NOT TO SCALE

LENGTH (P2-10): 10'-0"
WEIGHT PER LINEAR FOOT: 2.00 LBS
HOLES: 3/8" DIA., 1" C-C FULL LENGTH
STEEL: SHALL CONFORM TO ASTM A-499 (AISI C1060)
FINISH: SHALL BE PAINTED WITH TWO COATS OF AN APPROVED MED. GREEN, BAKED PAINT OR AIR DRIED, PAINT OF WEATHER-RESISTANT QUALITY, ALL FABRICATION SHALL BE COMPLETED BEFORE PAINTING.



POST SECTION



P2-10 POST

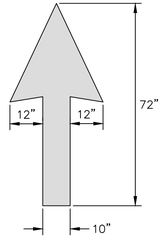
NOTES:

1. POSTS SHALL BE P2-10 AS REQUIRED.
2. POSTS SHALL BE PLUMB; ANY POST BENT OR OTHERWISE DAMAGED SHALL BE REMOVED AND PROPERLY PLACED.
3. POSTS MAY BE SET OR DRIVEN. WHEN POSTS ARE SET, HOLES SHALL BE DUG TO THE PROPER DEPTH; AFTER INSERTING POSTS, THE HOLES SHALL BE BACKFILLED WITH SUITABLE MATERIAL IN LAYERS NOT TO EXCEED 6" DEEP AND THOROUGHLY COMPACTED, CARE BEING TAKEN TO PRESERVE THE ALIGNMENT OF THE POST. WHEN POSTS ARE DRIVEN, A SUITABLE DRIVING CAP SHALL BE USED AND AFTER DRIVING THE TOP OF THE POST; BATTERING HEADS WILL NOT BE ACCEPTED. POST SHALL NOT BE DRIVEN WITH THE SIGN ATTACHED TO THE POST.

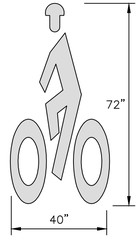
2/D4 SIGN DETAIL
NOT TO SCALE

GENERAL NOTES:

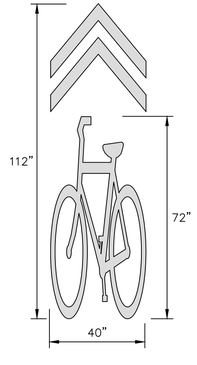
1. ALL WORDS AND SYMBOLS SHALL BE RETROREFLECTIVE WHITE AND SHALL CONFORM TO THE LATEST VERSION OF THE MUTCD.
2. MULTI-WORD MESSAGES SHALL READ "UP"; THAT IS, THE FIRST WORD SHALL BE NEAREST THE APPROACHING DRIVER.
3. THE WORD "ONLY" SHALL NOT BE USED WITH THROUGH OR COMBINATION ARROWS, AND SHALL NOT BE USED ADJACENT TO A BROKEN LANE LINE. A WORD/SYMBOL SHALL PRECEDED THE WORD "ONLY".
4. PREFORMED WORDS AND SYMBOLS SHALL BE PRE-CUT BY THE MANUFACTURER.
5. WRONG-WAY ARROWS SHALL NOT BE SUBSTITUTED FOR THROUGH ARROWS.
6. ALL STOP BARS, WORDS, SYMBOLS AND ARROWS SHALL BE THERMOPLASTIC.



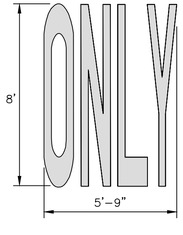
BICYCLE LANE DIRECTIONAL ARROW
PAY QUANTITY = 6.0 FT²



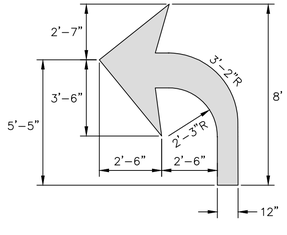
BICYCLE LANE SYMBOL
PAY QUANTITY = 8.1 FT²



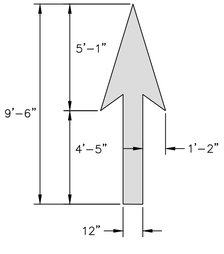
BICYCLE LANE SYMBOL
PAY QUANTITY = 12.8 FT²



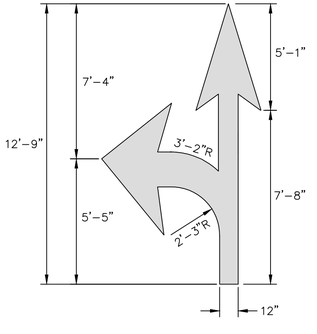
ONLY
PAY QUANTITY = 22.3 FT²



TURN ARROW
(RIGHT TURN OPPOSITE IN KIND)
PAY QUANTITY = 17.0 FT²



THROUGH (STRAIGHT ARROW)
PAY QUANTITY = 12.5 FT²



COMBINATION ARROW
PAY QUANTITY = 28.8 FT²

ITEM 632.32

4/D4 PAVEMENT MARKING - WORD AND SYMBOLS
NOT TO SCALE

ISSUE FOR BIDDING Date - By -
CONSTRUCTION Date - By -
RECORD DRAWING Date - By -

NO.	REVISIONS	APP'D

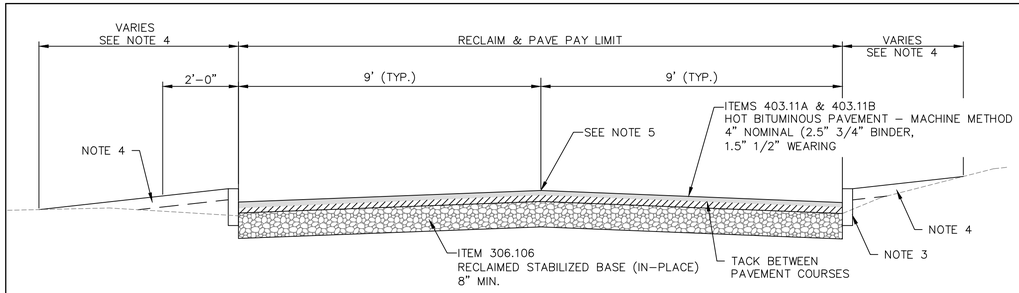
Drawn/Chk. RMG
Designed PDM
Checked -
Approved -
Date MARCH 2024
Book No. -
Project No. 2542
Dwg. ID 2542_details_M
Scale

FOR REVIEW
MARCH 2024
NOT FOR CONSTRUCTION

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

TRAFFIC CONTROL SIGNS & PAVEMENT MARKINGS
MAPLEWOOD AVE - DRAINAGE INTERCEPT
CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

DWG NO D4
SHEET 12 OF 14



ROAD RE-CONSTRUCTION NOTES:

1. SAWCUT DRIVEWAYS AND CONSTRUCT DRIVEWAY APRON FOLLOWING CONSTRUCTION OF PAVEMENT BINDER COURSE (SEE DRIVEWAY APRON DETAILS, THIS DRAWING).
2. GRADE RECLAIM (UNIFORMLY) TO MINIMIZE IMPACTS TO DRIVEWAYS AND SIDE SLOPES. REVIEW GRADING WITH ENGINEER IN ADVANCE OF RECLAIM. RECLAIM AT 10" DEPTH, REMOVE AND DISPOSE OF SURPLUS RECLAIM WHERE DIRECTED TO MINIMIZE GRADING IMPACTS, SUBSIDIARY. TYPICAL CROSS SLOPE = 3% UNLESS DIRECTED OTHERWISE.T, SUBSIDIARY.
3. INSTALL GRANITE CURB (WHERE DIRECTED), ITEM 609.01. SEE DETAIL (6 / D5).
4. LOAM, SEED & MULCH ROADSIDE SLOPES, PAY AS ITEM 912.
5. ALL SEAMS AND JOINTS SHALL BE RAKED AND LUTED PRIOR TO COMPACTION AND ROLLING.

(1 / D5) TYPICAL ROADWAY SECTION - RAILROAD EASEMENT AREA

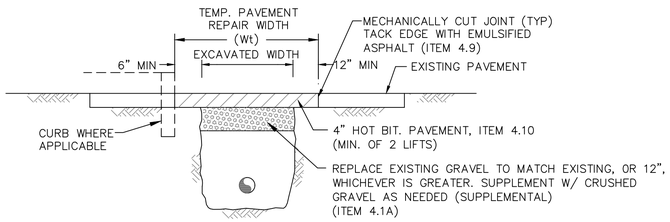
NOT TO SCALE

MINIMUM TRENCH PAVEMENT WIDTHS

PIPE I.D.	Wt (INCHES)	Wp (INCHES)
1-21 INCHES	84	108
24-30 INCHES	96	120
> 30 INCHES	108	132

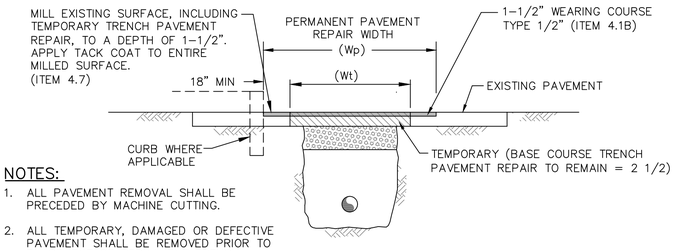
NOTE:

THE DIMENSIONS SHOWN SHALL BE CONSIDERED MAXIMUM PAVEMENT PAYMENT WIDTHS FOR 0-10' DEEP CONSTRUCTION. Wt AND Wp SHALL BE INCREASED BY 4'-0" FOR TRENCHES 10' TO 15' AND BY 8'-0" FOR TRENCHES 15' TO 20' IN DEPTH.



(2 / D-5) TEMPORARY TRENCH PAVEMENT REPAIR

NOT TO SCALE

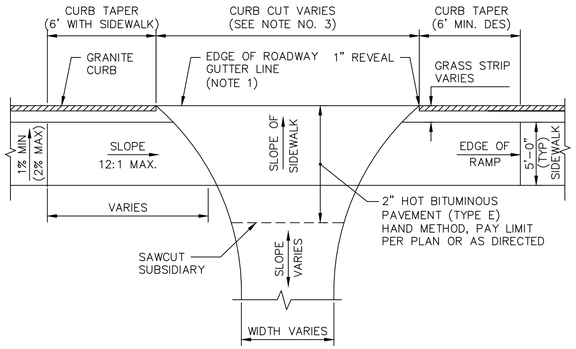


NOTES:

1. ALL PAVEMENT REMOVAL SHALL BE PRECEDED BY MACHINE CUTTING.
2. ALL TEMPORARY, DAMAGED OR DEFECTIVE PAVEMENT SHALL BE REMOVED PRIOR TO PLACEMENT OF PERMANENT TRENCH REPAIRS.
3. SEE TABLE IN "TEMPORARY TRENCH PAVEMENT REPAIRS" FOR MINIMUM TRENCH WIDTHS.

(3 / D-5) PERMANENT TRENCH PAVEMENT REPAIR

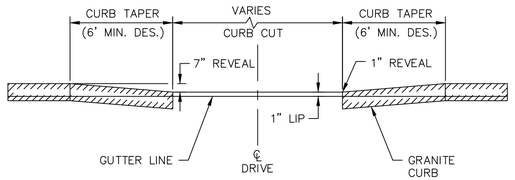
NOT TO SCALE



PLAN VIEW WITH SIDEWALK RAMP

NOTES:

1. ALL PAVEMENT MATCHES AT DRIVEWAY SHALL BE SAWCUT AND KEYED FOR SMOOTH TRANSITION (SUBSIDIARY)



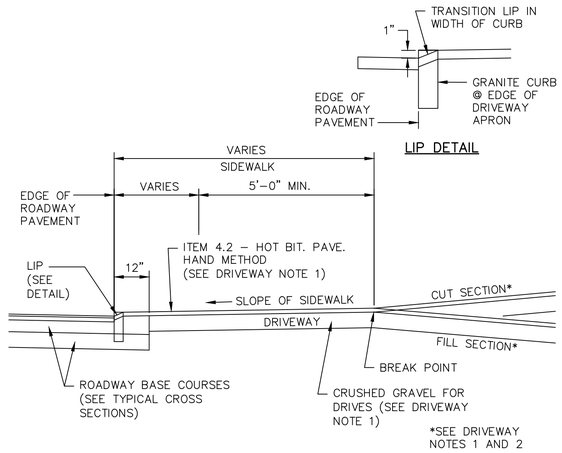
PROFILE

DRIVEWAY NOTES:

1. PAVEMENT & GRAVEL DEPTHS FOR RESIDENTIAL DRIVES SHALL BE 8" CRUSHED GRAVEL WITH 2" H.B.P. (HAND METHOD) SINGLE COURSE.
2. CURBING CAN BE FLARED TO FIT DRIVE RADII IF APPROPRIATE OR ENDED AS DETAILED ABOVE.
3. DRIVEWAY CURB CUTS SHALL MATCH EXISTING APRON WIDTHS UNLESS OTHERWISE DIRECTED.
4. FOR UNPAVED DRIVES, THE PAVED APRON NORMALLY ENDS AT THE RADIUS TANGENT POINT OR BACK OF SIDEWALK, WHICHEVER IS GREATER.

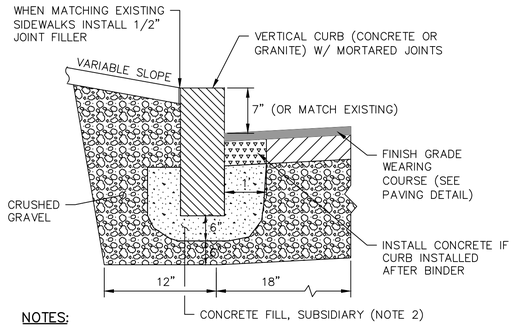
(4 / D5) DRIVEWAY APRON/CURB CUT (FINAL GRADING PLAN)

NOT TO SCALE



(5 / D5) TYPICAL URBAN CURBED DRIVE IN CUT/FILL SECTION

NOT TO SCALE

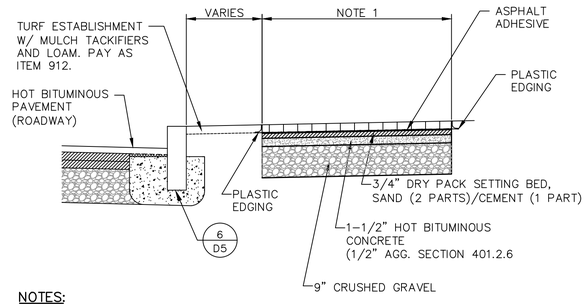


NOTES:

1. DAMAGED OR IMPACTED CURB (WHETHER GRANITE OR CONCRETE) IS TO BE REPLACED AT THE CONTRACTORS OWN EXPENSIVE, UNLESS OTHERWISE NOTED ON PLAN.
2. CLASS AA CONCRETE FILL SHALL BE PLACED IN VOIDS IN FRONT, BEHIND, AND BELOW CURBING PRIOR TO INSTALLATION OF GRAVEL BACKING AND FINISH GRADE WEARING COURSE PAVEMENT.

(6 / D5) VERTICAL CURB (NEW OR RESET) (GRANITE OR CONCRETE)

NOT TO SCALE

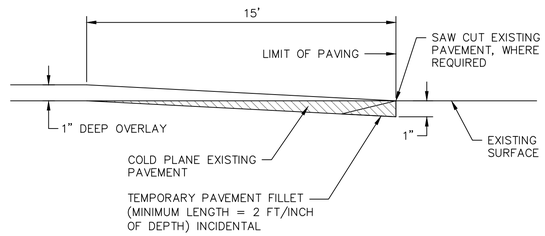


NOTES:

1. RE-CONSTRUCT CURB AND SIDEWALKS IMPACTED FROM CONSTRUCTION OR WHERE DIRECTED. CURB AND SIDEWALKS DAMAGED OUTSIDE TRENCH LIMITS (THREE-FEET FROM OUTSIDE OF PIPE) SHALL BE RESTORED AT CONTRACTOR'S COST AND WILL NOT BE MEASURED FOR PAYMENT.

(7 / D5) BRICK SIDEWALK DETAIL (NEW OR RECONSTRUCT)

NOT TO SCALE



NOTES:

THE LENGTH OF THE TAPER MAY BE ADJUSTED AS ORDERED TO PROVIDE FOR VARYING FIELD CONDITIONS OR CHANGES IN SINGLE COURSE DEPTH.

(8 / D5) OVERLAY PAVEMENT MATCH

NOT TO SCALE

NO.	REVISIONS	APP'D

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CONSTRUCTION Date - By -
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FOR REVIEW
MARCH 2024
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UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

ROADWAY AND SIDEWALK DETAILS

MAPLEWOOD AVE - DRAINAGE INTERCEPT

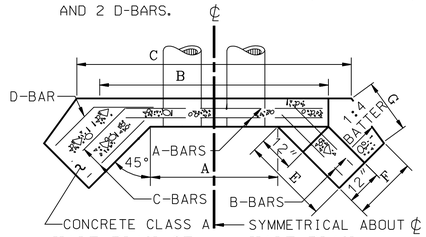
CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

DWG NO D5

SHEET 13 OF 14

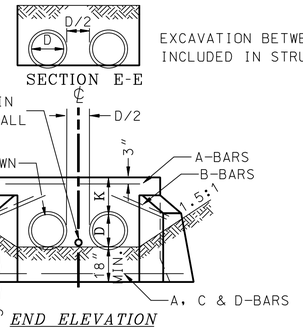
H:\Real Numbers\Portsmouth\2542 Peat Street\CAD\Design Maplewood\Drawings\2542_details_M.dwg D5, 3/27/2024 11:34:32 AM, mrg

NOTE:
ALL LIKE BARS IN EACH HEADWALL ARE THE SAME SIZE. EACH STD. HEADER HAS 4 A, B & C-BARS, AND 2 D-BARS.



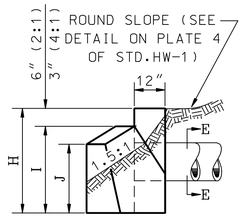
HALF PLAN OF BOTTOM STEEL

HALF PLAN OF TOP STEEL



END ELEVATION

EXCAVATION BETWEEN PIPES INCLUDED IN STRUCTURE EXCAVATION



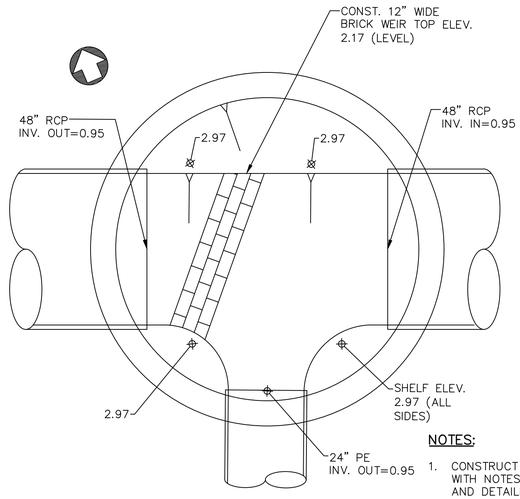
SIDE ELEVATION

2:1 SLOPE

DIA. D INCHES	QUANTITIES PER HEADER CONC. CU. YD.	STEEL LB.	EXC. FOR 1' DEPTH CU. YD.	DIMENSIONS A	B	C	E	F	G	H	I	J	K	D/2	REINFORCING STEEL SIZE	LENGTH A BARS	B BARS	C BARS	D BARS	D-BARS, c	D-BARS, d
24	2.44	46	1.96	6'-0"	8'-10"	10'-0"	3'-0"	1'-11"	2'-3"	5'-0"	4'-6"	3'-10"	1'-6"	1'-0"	#4	8'-6"	3'-2"	3'-0"	4'-8"	2'-5"	2'-3"
30	3.18	53	2.28	7-5	10-3	11-9	3-7	2-0	2-9	5-6	5-0	4-1	1-6	1-3	#4	9-11	3-9	3-7	5-3	2-6	2-9
36	3.99	61	2.69	8-10	11-8	13-7	4-2	2-1	3-3	6-0	5-6	4-4	1-6	1-6	#4	11-4	4-3	4-1	5-10	2-8	3-2
42	5.43	161	3.22	10-3	13-1	15-6	5-1	2-2	4-0	6-9	6-3	4-10	1-9	1-9	#6	12-9	5-3	4-11	7-10	3-10	4-0
48	6.53	180	3.64	11-8	14-6	17-3	5-9	2-3	4-6	7-3	6-9	5-1	1-9	2-0	#6	14-2	5-11	5-7	8-5	3-10	4-7
54	7.76	197	4.00	13-1	15-11	19-1	6-4	2-4	5-0	7-9	7-3	5-4	1-9	2-3	#6	15-7	6-7	6-1	9-2	4-1	5-1
60	9.10	214	4.45	14-6	17-4	20-10	6-11	2-5	5-6	8-3	7-9	5-8	1-9	2-6	#6	17-0	7-1	6-8	9-9	4-1	5-8
66	10.56	232	4.84	15-11	18-9	22-5	7-6	2-6	6-0	8-9	8-3	5-11	1-9	2-9	#6	18-5	7-8	7-3	10-5	4-2	6-3
72	12.28	249	5.25	17'-4"	20'-2"	24'-2"	8'-2"	2'-7"	6'-6"	9'-3"	8'-9"	6'-3"	1'-9"	3'-0"	#6	19'-10"	8'-3"	7'-10"	11'-0"	4'-3"	6'-9"

4:1 SLOPE

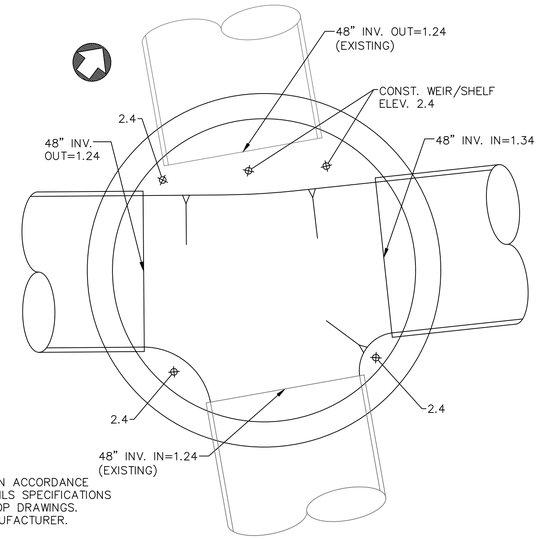
24	3.05	53	2.29	6'-0"	8'-10"	10'-0"	3'-11"	2'-1"	3'-2"	5'-0"	4'-9"	4'-3"	1'-6"	1'-0"	#4	8'-6"	4'-3"	4'-0"	5'-6"	2'-6"	3'-0'
30	3.92	61	2.70	7-5	10-3	11-9	4-8	2-2	3-9	5-6	5-3	4-7	1-6	1-3	#4	9-11	5-0	4-8	6-3	2-8	3-7
36	5.09	70	3.15	8-10	11-8	13-7	5-5	2-3	4-5	6-0	5-9	5-0	1-6	1-6	#4	11-4	5-9	5-4	7-1	2-10	4-3
42	6.97	185	3.78	10-3	13-1	15-6	6-7	2-5	5-4	6-9	6-6	5-6	1-9	1-9	#6	12-9	6-11	6-5	9-3	4-0	5-3
48	8.44	204	4.24	11-8	14-6	17-3	7-4	2-6	6-0	7-3	7-0	5-11	1-9	2-0	#6	14-2	7-8	7-1	10-1	4-2	5-11
54	10.13	225	4.74	13-1	15-11	19-1	8-2	2-7	6-9	7-9	7-6	6-3	1-9	2-3	#6	15-7	8-6	7-10	10-11	4-3	6-8
60	11.90	245	5.23	14-6	17-4	20-10	8-11	2-8	7-4	8-3	8-0	6-7	1-9	2-6	#6	17-0	9-3	8-8	11-9	4-4	7-5
66	13.87	266	5.75	15-11	18-9	22-5	9-8	2-9	8-0	8-9	8-6	7-0	1-9	2-9	#6	18-5	10-0	9-5	12-8	4-7	8-1
72	16.13	283	6.29	17'-4"	20'-2"	24'-2"	10'-6"	2'-10"	8'-8"	9'-3"	9'-0"	7'-4"	1'-9"	3'-0"	#6	19'-10"	10'-10"	9'-9"	13'-5"	4'-8"	8'-9'



(ITEM _____)
3/D6 DMH#1E
NOT TO SCALE

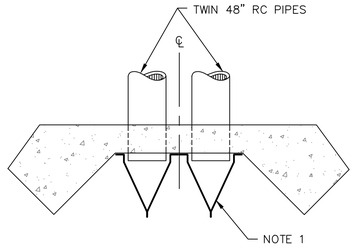
NOTES:

1. CONSTRUCT DMH IN ACCORDANCE WITH NOTES, DETAILS SPECIFICATIONS AND DETAILED SHOP DRAWINGS. PROVIDED BY MANUFACTURER.
2. FORM BRICK CHANNEL TO SPRING LINE AND CONSTRUCT SHELF TO ELEVATIONS PROVIDED.
3. CONST. BRICK WEIR OR REMOVABLE PLATE WEIR TO ELEVATION PROVIDED.



(ITEM _____)
5/D6 DMH#3
NOT TO SCALE

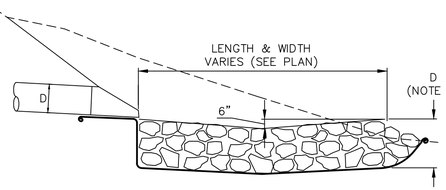
1/D6 CONCRETE HEADWALLS WITH 45° WINGS FOR TWIN R.C. PIPE (48" DIA. W/4:1 SLOPE)
NOT TO SCALE



NOTES:

1. TIDE VALVES SHALL BE TIDE FLEX TF-1 OR APPROVED EQUAL. ATTACH DIRECTLY TO HEADWALL USING THIMBLE PLATE IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS. PROVIDE THIMBLE PLATE INSTALLATION DETAILS OR RECOMMENDED ALTERNATIVE. THE TIDE VALVES WILL BE MOUNTED TO THE HEADWALL

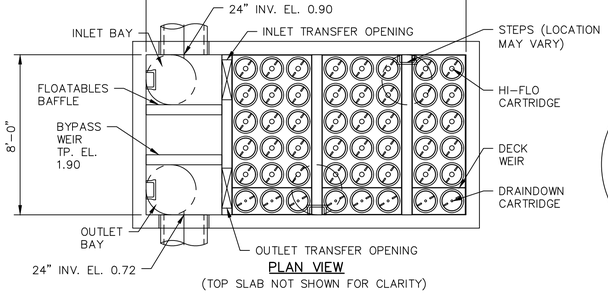
2/D6 TIDE VALVE DETAIL
NOT TO SCALE



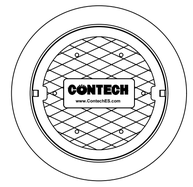
CONSTRUCTION SPECIFICATIONS:

1. THE SUBGRADE FOR THE GEOTEXTILE FABRIC AND STONE FILL SHALL BE PREPARED TO LINES AND GRADES SHOWN ON THE PLANS.
2. GRADATION: CLASS B STONE CONFORMING TO 585.2.1.2 SHALL BE USED. DEPTH OF STONE SHALL BE 18".
3. GEOTEXTILE FABRICS SHALL BE PROTECTED FROM PUNCTURE OR TEARING DURING THE PLACEMENT OF THE RIPRAP. DAMAGED AREAS IN THE FABRIC SHALL BE REPAIRED BY PLACING A PIECE OF FABRIC OVER THE DAMAGED AREA OR BY COMPLETE REPLACEMENT OF THE FABRIC. ALL OVERLAPS REQUIRED FOR REPAIRS OR JOINING TWO PIECES OF FABRIC SHALL BE A MINIMUM OF 18 INCHES.
4. THE RIPRAP MAY BE PLACED BY EQUIPMENT AND SHALL BE CONSTRUCTED TO THE FULL LAYER THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO PREVENT SEGREGATION OF THE STONE SIZES.
5. CONSTRUCT FLARED END SECTIONS (OR HEADWALLS) AS SHOWN ON THE PLANS. MATERIALS AND SIZES SHALL BE CONSISTENT WITH NHDOT STANDARD DETAILS.

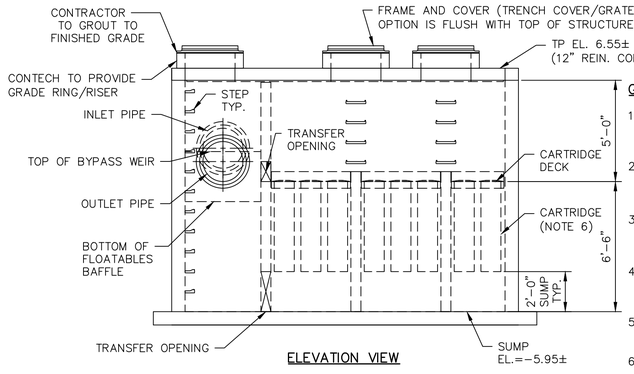
6/D6 STABILIZED DRAIN OUTLET
NOT TO SCALE



PLAN VIEW
(TOP SLAB NOT SHOWN FOR CLARITY)



TOP VIEW
FRAME AND COVER



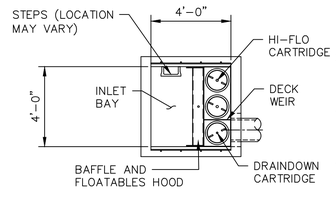
ELEVATION VIEW

GENERAL NOTES:

1. STORMWATER TREATMENT STRUCTURE SHALL BE PROVIDED BY CONTECH OR APPROVED EQUIVALENT.
2. ENTIRE STRUCTURE SHALL MEET OR EXCEED HS-20 RATING (HEAVY LOADING).
3. PROVIDE ANTI-FLOTATION COLLARS (ALL SIDES), TO EXTEND 12" BEYOND WALLS.
4. SET STRUCTURE LEVEL. SEAL ALL JOINTS WITH APPROVED SEALANT OR NON-SHRINK GROUT.
5. INSTALL FLEXIBLE BOOT AT INLET AND OUTLET.
6. CARTRIDGE LENGTH SHALL BE 54", INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

4/D6 JELLYFISH (JFPD0816) DETAILS
NOT TO SCALE

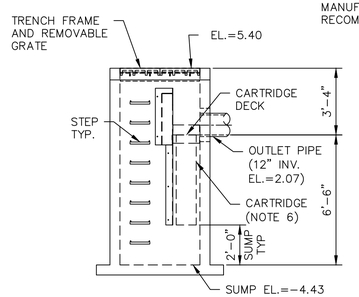
ITEM _____



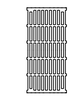
PLAN VIEW
(TOP SLAB NOT SHOWN FOR CLARITY)

GENERAL NOTES:

1. STORMWATER TREATMENT STRUCTURE SHALL BE PROVIDED BY CONTECH OR APPROVED EQUIVALENT.
2. ENTIRE STRUCTURE SHALL MEET OR EXCEED HS-20 RATING (HEAVY LOADING).
3. PROVIDE ANTI-FLOTATION COLLARS (ALL SIDES), TO EXTEND 12" BEYOND WALLS.
4. SET STRUCTURE LEVEL. SEAL ALL JOINTS WITH APPROVED SEALANT OR NON-SHRINK GROUT.
5. INSTALL FLEXIBLE BOOT OUTLET.
6. CARTRIDGE LENGTH SHALL BE 54", INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.



ELEVATION VIEW



24" TRENCH GRATE

7/D6 JELLYFISH (JFSI0404) DETAILS
NOT TO SCALE

ITEM _____

NO.	REVISIONS	APP'D
	ISSUE FOR BIDDING Date - By -	
	CONSTRUCTION Date - By -	
	RECORD DRAWING Date - By -	

Drawn/Chk. RMG
Designed PDM
Checked -
Approved -
Date MARCH 2024
Book No. -
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Dwg. ID 2542_details_M
Scale

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MARCH 2024
NOT FOR CONSTRUCTION

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

DRAINAGE OUTFALL DETAILS
MAPLEWOOD AVE - DRAINAGE INTERCEPT
CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

DWG NO D6
SHEET 14 OF 14

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Eversource Resistance Substation Retirement Project

Town of Greenland and City of Portsmouth

New Hampshire Department of Environmental Services
Wetlands Permit Application

PREPARED BY:

GZA GeoEnvironmental, Inc.
5 Commerce Park North, Suite 201 | Bedford, NH 03110-6984
603-623-3600 www.gza.com

February 2024

File No. 04.0191410.47

NHDES File:_____

USACE File:_____

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NHDES State Wetland Permit Application

FIGURES

APPENDICES

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: Thomas P. & Kimberley S. L **TOWN NAME:** Portsmouth

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): State Endangered and State Threatened ○ NHB Project ID #: 24-0615	◯ 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): • 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): N/A	

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 proposes 370 sq. ft. of permanent impact to tidal wetland and 48 sq. ft. of permanent impact to the previously developed 100' Tidal Buffer Zone for the removal of an existing tidal docking structure and the construction of a new tidal docking structure including a 4' x 12' accessway, a 4' by 20' fixed wood pier, a 3' x 30' gangway, and a 10' x 20' float (overall structure length 82') on 195+/- feet of frontage along the Piscataqua River.

SECTION 3 - PROJECT LOCATION

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

ADDRESS:	333 New Castle Avenue
TOWN/CITY:	Portsmouth
TAX MAP/BLOCK/LOT/UNIT:	Map 207, Lot 2
US GEOLOGICAL SURVEY (USGS) TOPO MAP WATERBODY NAME: ☐ N/A	Piscataqua River
(Optional) LATITUDE/LONGITUDE in decimal degrees (to five decimal places):	X:1,230,314.0948 Y:209,424.8104

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: Thomas P. & Kimberley S. Lyng		
MAILING ADDRESS: 333 New Castle Avenue		
TOWN/CITY: Portsmouth	STATE: NH	ZIP CODE: 03801
EMAIL ADDRESS: trlyng@comcast.net		
FAX:	PHONE: 603-978-5175	

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

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

☐ N/A

LAST NAME, FIRST NAME, M.I.: Boudreau, Jacqueline		
COMPANY NAME: Haley Ward, Inc.		
MAILING ADDRESS: 200 Griffin Road, Unit 14		
TOWN/CITY: Portsmouth	STATE: NH	ZIP CODE: 03801
EMAIL ADDRESS: jboudreau@haleyward.com		
FAX:	PHONE: 603-430-9282	

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

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):

Please see attached narrative.

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: December 5, 2023

(■ 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			☐			☐
	Scrub-shrub Wetland			☐			☐
	Emergent Wetland			☐			☐
	Wet Meadow			☐			☐
	Vernal Pool			☐			☐
	Designated Prime Wetland			☐			☐
	Duly-established 100-foot Prime Wetland Buffer			☐			☐
Surface	Intermittent / Ephemeral Stream			☐			☐
	Perennial Stream or River			☐			☐
	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	48		☐			☐
	Docking - Tidal Water	370		☐			☐
TOTAL		418					

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):	286,502	SF	× $0.40 =	$ 114,600.80
Seasonal docking structure:	290	SF	× $2.00 =	$ 580
Permanent docking structure:	128	SF	× $4.00 =	$ 512
Projects proposing shoreline structures (including docks) add $400 =				$ 400
			Total =	$ 1492
The application fee for minor or major impact is the above calculated total or $400, whichever is greater =				$ 114,600.80

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: KN	To the best of the signer's knowledge and belief, all required notifications have been provided.
Initials: KN	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: KN	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: KN	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:	DATE:
SIGNATURE (APPLICANT, IF DIFFERENT FROM OWNER):	PRINT NAME LEGIBLY:	DATE:
SIGNATURE (AGENT, IF APPLICABLE):	PRINT NAME LEGIBLY: Jacqueline Boudreau	DATE: 2/29/24

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:	DATE:

Keep this checklist for your reference; do not submit with your application.

APPLICATION CHECKLIST

Unless specified, all items below are required. Failure to provide the required items will delay a decision on your project and may result in denial of your application. Please reference statute RSA 482-A, Fill and Dredge in Wetlands, and the Wetland Rules Env-Wt 100-900.

- ☐ The completed, dated, signed, and certified application (Env-Wt 311.03(b)(1)).
- ☐ Correct fee as determined in RSA 482-A:3, I(b) or (c), subject to any cap established by RSA 482-A:3, X (Env-Wt 311.03(b)(2)). Make check or money order payable to "Treasurer – State of NH".
- ☐ The Required Planning actions required by Env-Wt 311.01(a)-(c) and Env-Wt 311.03(b)(3).
- ☐ US Army Corps of Engineers (ACE) "Appendix B, New Hampshire General Permits (GPs), Required Information and Corps Secondary Impacts Checklist" and its required attachments (Env-Wt 307.02). This includes the US Fish and Wildlife Service IPAC review and Section 106 Historic/Archaeological Resource review.
- ☐ Project plans described in Env-Wt 311.05 (Env-Wt 311.03(b)(4)).
- ☐ Maps, or electronic shape files and meta data, and other attachments specified in Env-Wt 311.06 (Env-Wt 311.03(b)(5)).
- ☐ Explanation of the methods, timing, and manner as to how the project will meet standard permit conditions required in Env-Wt 307 (Env-Wt 311.03(b)(7)).
- ☐ If applicable, the information regarding proposed compensatory mitigation specified in Env-Wt 311.08 and Chapter Env-Wt 800 - Permittee Responsible Mitigation Project Worksheet, unless not required under Env-Wt 313.04 (Env-Wt 311.03(b)(8); Env-Wt 311.08; Env-Wt 313.04).
- ☐ Any additional information specific to the **type of resource** as specified in Env-Wt 311.09 (Env-Wt 311.03(b)(9); Env-Wt 311.04(j)).
- ☐ Project specific information required by Env-Wt 500, Env-Wt 600, and Env-Wt 900 (Env-Wt 311.03(b)(11)).
- ☐ A list containing the name, mailing address and tax map/lot number of each abutter to the subject property (Env-Wt 311.03(b)(12)).
- ☐ Copies of certified postal receipts or other proof of receipt of the notices that are required by RSA 482-A:3, I(d) (Env-Wt 311.03(b)(13)).
- ☐ Project design considerations required by Env-Wt 313 (Env-Wt 311.04(j)).
- ☐ Town tax map showing the subject property, the location of the project on the property, and the location of properties of abutters with each lot labeled with the name and mailing address of the abutter (Env-Wt 311.06(a)).
- ☐ Dated and labeled color photographs that:
  - (1) Clearly depict:
    - a. All jurisdictional areas, including but not limited to portions of wetland, shoreline, or surface water where impacts have or are proposed to occur.
    - b. All existing shoreline structures.
  - (2) Are mounted or printed no more than 2 per sheet on 8.5 x 11 inch sheets (Env-Wt 311.06(b)).
- ☐ A copy of the appropriate US Geological Survey map or updated data based on LiDAR at a scale of one inch equals 2,000 feet showing the location of the subject property and proposed project (Env-Wt 311.06(c)).
- ☐ A narrative that describes the work sequence, including pre-construction through post-construction, and the relative timing and progression of all work (Env-Wt 311.06(d)).

lrm@des.nh.gov or (603) 271-2147
29 Hazen Drive, PO Box 95, Concord, NH 03302-0095
des.nh.gov

- ☐ For all projects in the protected tidal zone, a copy of the recorded deed with book and page numbers for the property (Env-Wt 311.06(e)).
- ☐ If the applicant is not the owner in fee of the subject property, documentation of the applicant's legal interest in the subject property, provided that for utility projects in a utility corridor, such documentation may comprise a list that:
  - (1) Identifies the county registry of deeds and book and page numbers of all of the easements or other recorded instruments that provide the necessary legal interest; and
  - (2) Has been certified as complete and accurate by a knowledgeable representative of the applicant (Env-Wt 311.06(f)).
- ☐ The NHB memo containing the NHB identification number and results and recommendations from NHB as well as documentation of any consultation requests made to NHFG, communications and information related to the consultation, with the consultation results and recommendations from NHFG. (Env-Wt 311.06(g)). See Wetlands Permitting: Protected Species and Habitat Fact Sheet.
- ☐ A statement of whether the applicant has received comments from the local conservation commission and, if so, how the applicant has addressed the comments (Env-Wt 311.06(h)).
- ☐ For projects in LAC jurisdiction, a statement of whether the applicant has received comments from the LAC and, if so, how the applicant has addressed the comments (Env-Wt 311.06(i)).
- ☐ If the applicant is also seeking to be covered by the state general permits, a statement of whether comments have been received from any federal agency and, if so, how the applicant has addressed the comments (Env-Wt 311.06(j)).
- ☐ Avoidance and Minimization Written Narrative or the Avoidance and Minimization Checklist, or your own avoidance and minimization narrative (Env-Wt 311.07).
- ☐ For after-the-fact applications: information required by Env-Wt 311.12.
- ☐ Coastal Resource Worksheet for coastal projects as required under Env-Wt 600.
- ☐ Prime Wetlands information required under Env-Wt 700. See WPPT for prime wetland mapping.
- ☐ For non-tidal shoreline structure projects, the length of shoreline frontage per Env-Wt 311.09(b)(1)

Required Attachments for Minor and Major Projects

- ☐ Attachment A: Minor and Major Projects (Env-Wt 313.03).
- ☐ Functional Assessment Worksheet or others means of documenting the results of actions required by Env-Wt 311.10 as part of an application preparation for a standard permit (Env-Wt 311.03(b)(3); Env-Wt 311.03(b)(10)). See Functional Assessments for Wetlands and Other Aquatic Resources Fact Sheet. For shoreline structures, see shoreline structures exemption in Env-Wt 311.03(b)(10)).

Optional Materials

- ☐ Stream Crossing Worksheet which summarizes the requirements for stream crossings under Env-Wt 900.
- ☐ Request for concurrent processing of related shoreland / wetlands permit applications (Env-Wt 313.05).

APPLICANT AND OWNER INFORMATION

APPLICANT NAME

Public Service Company of New Hampshire (dba Eversource Energy)

APPLICANT CONTACT INFORMATION

Eversource Energy
Attn: Kurt Nelson, Specialist – Licensing & Permitting
13 Legends Drive
Hooksett, New Hampshire 03106

Phone: (603) 634-3256
E-mail: kurt.nelson@Eversource.com

EASEMENT INFORMATION

The proposed project crosses 17 parcels through the Town of Greenland and City of Portsmouth. Eversource owns two parcels and holds easements across the remaining 15 parcels within the proposed work area along the existing and maintained 3171 and 3111 Distribution Lines and T13 Transmission Line right-of-ways (ROW) corridor and Resistance Substation. The easements provide Eversource the right to access, construct, and maintain the structures and the ROW. A table has been provided in **Appendix A** containing easement information, including the book (volume) and page number, for the proposed work area along the 3171 and 3111 Distribution Lines and T13 Transmission Line. The easement documentation generally dates back to when the line was first constructed, and therefore property owner names have changed, and parcels may have been divided or combined (see **Appendix A – Eversource Easement Information**).

SITE INFORMATION

SITE LOCATION

The proposed project involves the removal of the existing T13 Transmission Line, installation of a new 339 Distribution Line, replacement of structures along the 3171 and 3111 Distribution Lines, and retirement of the Resistance Substation in portions of Greenland and Portsmouth, New Hampshire. The project spans approximately 5.6 miles in length, beginning on the north side of Ocean Road in Greenland and continues northeasterly direction to the Resistance Substation in Portsmouth, New Hampshire. Existing ROW where the proposed project is located varies in width (100-ft to 350-ft). **See Figure 1 - Site Locus Map** and **Figure 2 – Aerial Overview Plan**.

TAX MAP AND LOT(S)

Eversource either holds easements or owns parcels in fee along the 3171 and 3111 Distribution Lines and T13 Transmission Line where work is planned. Specifically, there are 17 parcels that cross through the work area. **See Figure 3 – Tax Maps** that highlights the Site.

ABUTTERS INFORMATION AND NOTIFICATION

According to Env-Wt 306.06(c), abutter notification shall not be required for "*Utility maintenance or repair projects within a utility right-of-way."* Accordingly, no abutter notifications were issued for this submittal. However, **Appendix B** provides tax map and lot information for the parcels that intersect the 3171/3111 ROW and T13 Transmission Line ROW.

SITE DESCRIPTION

The Site is located primarily through suburban and industrial privately owned areas in the Town of Greenland and the City of Portsmouth within a cleared and maintained ROW. Natural cover within the ROW includes upland shrublands and wetland emergent and scrub-shrub habitats. The 3171/3111 ROW borders Interstate 95N and extends along the Exit 3 off ramp constrained by an active railroad track. The corridor then extends across Route 33 along an existing parking lot. The T13 ROW extends from Schiller Substation and borders Granite Shore Power Schiller Station to the south and east and terminates at Resistance Substation along a railroad track. There are approximately 16 wetlands within the ROWs along the project route, these include one unnamed stream and one named stream, Pickering Brook.

IDENTIFICATION OF NATURAL AND CULTURAL RESOURCES

GZA GeoEnvironmental, Inc. (GZA) has been retained by Public Service Company of New Hampshire doing business as Eversource Energy (Eversource) to provide professional services for this project that relate to natural and cultural resource identification and assessment as well as permit applications for natural resource impacts required to complete the project. GZA has conducted field evaluations and corresponded with the appropriate agencies to identify natural and cultural resources present in the vicinity of the proposed project. Eversource and GZA completed a pre-application meeting with the NHDES, USACE, and EPA on December 5, 2023.

IDENTIFICATION OF JURISDICTIONAL WETLANDS

GZA delineated and classified wetlands, photographed resources, and recorded data relevant to functions and values in November 2022 and February 2023 (see **Figure 5 – Flood Insurance Rate Map**). The wetland delineation was conducted in accordance with the United States Army Corps of Engineers (USACE) Wetlands Delineation Manual using the Routine Determinations Method and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual as required by the New Hampshire Department of Environmental Services (NHDES) Wetlands Bureau and the USACE. As directed by DES, the approximate boundaries of soils mapped as histisols and/or histic epipedon soils have been included on project plans and are referred to below as very poorly drained soils (VPD). The wetland delineation was conducted by GZA's New Hampshire Certified Wetland Scientist (CWS) Mr. James H. Long (CWS No. 007).

GZA identified 16 wetland systems on Site and has assigned this wetland system with alphabetized identification. The identified wetland and assigned classifications are presented in the table below:

Table 1
Wetland Identification Table

Wetland Identification	Classification	Notes
GW-1	PEM1/PSS1/PFO1E,Fg/R2UB	This large wetland system is located in both Greenland and Portsmouth along the project route. Contains Pickering Brook and an unnamed stream, mapped wetland adjacent to tier 3 watercourse, prime wetland and VPD soil.
PW-1	PEM1/PSS1E,Fg	
PW-2	PEM1/PSS1E	
PW-3	PEM1/PSS1E	
PW-4	PEM1/PSS1E	
PW-5	PEM1/PSS1E	
PW-6	PEM1/PSS1E	
PW-7	PEM1/PSS1E,H	Contains potential vernal pool.
PW-8	PEM1/PSS1E	
PW-9	PEM1/PSS1Ex	
PW-10	PSS1Ex	
PW-11	PSS1/PEM1Ex	
PW-12	PEM1/PSS1E	
PW-13	PEM1/PSS1E	
PW-14	PSS1/PEM1E	

(1) Key to classifications:

System
P = palustrine wetland system
SS = scrub-shrub, 1 = broad-leaved deciduous
EM = emergent, 1= persistent
FO = forested, 1 = broad-leaved deciduous, 4 = needle-leaved evergreen
UB = unconsolidated bottom, x = excavated
R = Riverine
2 = Lower Perennial
3 = Upper Perennial
4 = Intermittent

Modifiers
E = nontidal, seasonally flooded/saturated, x=excavated
F = nontidal, semi permanently flooded, g = organic soil
H = permanently flooded
UB = Unconsolidated bottom, 1=cobble-gravel, 2=sand, b=beaver
SB = Streambed, 3=cobble-gravel, 4= sand, 5=Mud

View of ROW facing north toward Line 3171 Structure 82.

View of ROW facing south toward line T13 Structure 3.

The project area includes upland and wetland areas located in primarily suburban wetland and industrial areas. In uplands, the shrub layer contains Goldenrod (*Solidago* spp.), oriental bittersweet (*Celastrus orbiculatus*), red raspberry (*Rubus idaeus*), staghorn sumac (*Rhus hirta*), pin cherry (*Prunus pensylvanica*), and red oak (*Quercus rubra*). Vegetation in the wetlands were dominated by Common reed (*Phragmites australis*), tussock sedge (*Carex stricta*), broad leaved cattail (*Typha latifolia*), lurid sedge (*Carex lurida*), purple loosestrife (*Lythrum salicaria*), glossy buckthorn (*Frangula alnus*), gray birch (*Betula populifolia*), and red maple (*Acer rubrum*).

View of ROW facing east toward T13 Structure 6.

GZA recorded data relevant to functions and values provided by these natural resources within the ROW in November 2022 and February 2023. GZA classified wetlands in accordance with the "Classification of Wetlands and Deepwater Habitats of United States" (Federal Geographic Committee, 2013). GZA completed a wetland function-value assessment in accordance with the Highway Methodology (see **Table 2)**. Below is a summary table of functions and values provided by each wetland system (see **Appendix C – Functional Value Assessment Form**).

A majority of the wetlands in the ROW provide groundwater recharge/discharge, floodflow alteration, sediment/toxicant retention, nutrient removal, production export and wildlife habitat as capable wetland functions. The project has been designed to minimize work and remove an existing distribution line circuit in the highest ranked wetland GW-1, which is a PRA wetland and provides several principal wetland functions including groundwater recharge/discharge, floodflow alteration, fish and shellfish habitat, sediment/toxicant retention, nutrient removal, production export, sediment/shoreline stabilization, wildlife habitat, recreational use, uniqueness/heritage, visual quality/aesthetics and endangered/threatened species habitat.

Table 2
Wetland Function and Value Summary Table

Wetland Identification	Classification (1)	Functions/Values (2)												
		GW	FA	FH	STR	NR	PE	SS	WH	RE	ES	UH	VQ	ESH
GW-1	PEM1/PSS1/PFO1E,Fg/R2UB	P	P	X	P	P	P	P	P	X	X	P	P	X
PW-1	PEM1/PSS1E,Fg	P	P		P	P	P		P		X	X		X
PW-2	PEM1/PSS1E	X	X		P	X	X		X					
PW-3	PEM1/PSS1E	X	X		P	X	X		X					
PW-4	PEM1/PSS1E	X	X		P	X	X		X					
PW-5	PEM1/PSS1E	X	X		P	X	X		X					
PW-6	PEM1/PSS1E	X	X		P	X	X		X					
PW-7	PEM1/PSS1E,H	X	X		P	X	X		P					
PW-8	PEM1/PSS1E	X	X		P	X	X		X					
PW-9	PEM1/PSS1Ex	X	X		P	X	X		X					
PW-10	PSS1Ex	X	X		P	X	X		X					
PW-11	PSS1/PEM1Ex	X	X		P	X	X		X					
PW-12	PEM1/PSS1E	X	X		P	X	X		X					
PW-13	PEM1/PSS1E	X	X		P	X	X		X					
PW-14	PSS1/PEM1E	X	X		P	X	X		X					

(1) Key to functions and values:

GW = groundwater recharge/discharge
RE = recreation
STR = sediment/toxicant retention
VQ = visual quality/aesthetics
ESH = endangered/threatened species habitat
WH = wildlife habitat
FH = fish and shellfish habitat
UH = uniqueness/heritage
PE = production export (nutrient)
SS = sediment/shoreline stabilization
FA = floodflow alteration
ES = educational/scientific value
NR = nutrient removal

Key to function/value occurrence symbols:
Blank space = function/value is not occurring in this system
X = system is capable of performing this function/value though it is not considered principal
P = function/value is occurring in this system and is considered a principal function/value

IDENTIFICATION OF VERNAL POOLS

GZA conducted a preliminary vernal pool evaluation while delineating wetland boundaries in 2022 and identified one potential vernal pool in Portsmouth. Vernal pool areas exist as confined basins and must exhibit vernal pool criteria outlined in the New Hampshire Code of Administrative Rules, Env-Wt 103.64, 104.15, and 104.44. It is typical that potential vernal pools are considered vernal pools for the purposes of impact avoidance and minimization for Eversource maintenance projects.

Table 3
Vernal Pool Habitat Summary

Wetland Identification	Location	Confirmed or Potential
PW-7	Southern portion of the wetland.	Potential

View of ROW facing west toward the potential vernal pool in Wetland PW-7.

IDENTIFICATION OF SURFACE WATERS

Jurisdictional limits of surface waters of the State of New Hampshire were delineated and confirmed by GZA in accordance with their definition in RSA 485-A:2 XIV, 482-A:4 II and rule Env-Wt 104.33. Surface waters include wherever freshwater flows or stands and tidal waters. This includes, but is not limited to, rivers, perennial and intermittent streams, lakes, ponds, marshes, intertidal zones, and tidal waters. In addition, jurisdiction extends to the portion of any bank or shore which borders such surface waters, and to any swamp or bog subject to periodic flooding by fresh water including the surrounding shore. In accordance with Env-Wt 102.15, the limit of jurisdiction for surface water areas is delineated at the limit of bank, where a natural bank occurs or its ordinary high-water mark, or HOTL, where a natural bank is not present. In the City of Portsmouth, surface waters include one named perennial riverine system, Pickering Brook and one unnamed perennial stream. There were no surface waters identified along the project route in the Town of Greenland.

Table 4
Surface Water Summary

Wetland Identification	Surface Water Body	Classification
GW-1	Pickering Brook	PEM1/PSS1/PFO1E,Fg/R2UB
GW-1	Unnamed Lower Perennial Stream	PEM1/PSS1/PFO1E,Fg/R2UB

IDENTIFICATION OF RARE, THREATENED, AND ENDANGERED SPECIES

The Natural Heritage Bureau (NHB) data check tool has identified four protected plant species, American reed (*Phragmites americanus*), great bur-reed (*Sparganium eurycarpum*), hairy-fruited sedge (*Carex* trichocarpa) and tufted yellow-loosestrife (*Lysimachia thyrsiflora*) in the vicinity of the Resistance Substation Retirement project work areas (see **Appendix D** for the NHB Report). Additionally, the NHB data check tool has identified one protected vertebrate

species, a Blanding's turtle (*Emydoidea blandingii*) in the vicinity of the Resistance Substation Retirement project work areas (see **Appendix D** for the NHB Report). A coordination memo was sent to both NHFG and NHB on January 2, 2024 and the team will continue coordination with each agency for recommendations to minimize impact.

Historically, GZA conducted a rare plant survey between proposed 3171/3111 Structures 1 and 14 on August 1, 2023 for hairy-fruited sedge and tufted yellow-loosestrife. There were no observations of either rare species within the proposed work areas within the survey areas and a plant survey report was submitted to NHB on November 3, 2023.

In the IPaC report for the project, the United States Fish and Wildlife Service identified the potential presence of the northern long-eared bat (*Myotis septentrionalis*), Roseate Tern (*Sterna dougallii dougallii),* and monarch butterfly (*Danaus plexippus)* within the vicinity of the Site. The proposed project does not involve cutting trees with greater than 3-inch diameter at breast height (dbh). No records of known roost trees were noted by the NHB near the Site.

IDENTIFICATION OF PRIORITY RESOURCE AREAS

The proposed project was screened for the presence of Priority Resource Areas (PRAs) in accordance with Env-Wt 306.05(2) (see **Figure 5 – Wetland Permit Planning Tool Screening**). Based on review of the Wetland Permit Planning Tool (WPPT), the Site contains a floodplain wetland adjacent to a tier 3 watercourse and prime wetland (GW-1). Access and work areas are required in GW-1 to complete the proposed work.

NHB and NHFG correspondence is referenced in **Appendix D** above and impacts to rare species and communities are not anticipated as a result of this project.

Overview of ROW facing south toward Wetland GW-1 during August 2023.

IDENTIFICATION OF CULTURAL AND HISTORICAL RESOURCES

Phase IA Archeological Sensitivity Assessments along portions of the T-13 Transmission Line were conducted by Independent Archaeological Consulting, LLC (IAC) during 2021. IAC was retained in the summer of 2023 to conduct a Phase IB Intensive Archaeological Investigation for the 3171 and 3111 Distribution Lines and the T-13 Transmission Line for the entirety of six sensitivity areas associated with the proposed pole replacement / removal locations and access for the proposed project. The entirety of the sensitivity areas were cleared through Phase IB survey and no further archeological survey is recommended. GZA submitted a Request for Project Review (RPR) to the New Hampshire Division of Historical Resources (NHDHR) for the proposed project in December 2023 and the NHDHR concurred with

the results and recommendations to use protective measures such as matting and avoid the known sites (See **Appendix E** for the RPR form).

PROJECT DESCRIPTION

Eversource is proposing to remove the existing T-13 Transmission Line, install the new 339 Distribution Line, replace structures along the 3171 and 3111 Distribution Lines, and retire the Resistance Substation. The Site runs through portions of Greenland and Portsmouth, New Hampshire. The maintenance work requires temporary timber matting within wetlands for work pad placement and associated access to each structure (see **Figure 2 – Aerial Permitting Plans)**.

The existing 3171 and 3111 Distribution Line structures are wooden monopole structures and will be replaced with steel equivalent monopole structures. The two existing distribution lines are currently on separate structures and the proposed project will consolidate the two lines by attaching them to the same steel monopole structure centered in the 3171/3111 ROW. The replacement structures are constructed with weathered steel material, so that over time the steel material will weather from an orange color to a dark brown color to blend in with the environment. New structure heights will remain similar to the existing and are typically higher where there are crossings over public roads and distribution lines, as well as ground clearance where there's a shift in topography since new structures are offset from existing locations approximately 5-10-feet. The average height of the 3171 and 3111 Distribution Line structures will remain at 45-feet across the project.

The existing T13 Transmission Line structures are wooden H-frame structures and will be removed and the new 339 Distribution Line circuit will be installed with steel monopoles. The 339 Distribution Line structures are constructed similarly to the 3171/3111 distribution structures with weathered steel material, so that over time the steel material will weather from an orange color to a dark brown color to blend in with the environment. New structure heights will be reduced due to a removal of T13 Transmission Line and installation of the 339 Distribution Line. The average height of the 339 Distribution Line structures will be 40-feet across the project.

Existing wooden Structure 81 on 3171 Distribution Line.

Existing wooden Structure 6 on 393 Distribution Line replaced in 2022.

Weathered steel color progression over time. Photo provided by Eversource.

Due to recent and ongoing correspondence with NHDES and the need for temporary wetland matting in very poorly drained soils during the active growing season, it is not anticipated the proposed project meets the minimum impact criteria Per Env-Wt 521.06 (a). Therefore, the project is anticipated to be classified as a major impact project.

PROJECT NEED

Eversource supplies electrical transmission and distribution services from within their existing, maintained ROWs. Maintenance of Eversource's electrical infrastructure is necessary to ensure the continued safety and reliability of the system. Replacement of the poles prior to significant deterioration to crossarms or the pole itself is of the utmost importance in regard to maintaining service and ensuring safety of the public. Therefore, Resistance Substation retirement along with the other components of this project, including, the removal of the existing T-13 Transmission line, the installation of the new 339 Distribution Line, and the replacement of structures along the 3171 and 3111 Distribution Lines, is beneficial to public health and safety. During an inspection of the 3171 and 3111 Distribution Lines, it was observed that the structures are old and worn and have been subjected to pole splitting, woodpecker damage and rot, and must be replaced due to the state of deterioration.

The proposed project will require temporary impact to place temporary timber matting within wetlands for replacement work areas and associated access. The existing wood structures will be replaced with a new steel counterpart and will require heavy machinery to install. Access and work pad locations in wetlands will be restored as part of required impact minimization.

PROPOSED IMPACTS

Eversource requests a permit from the NHDES Wetlands Bureau for proposed temporary wetland impacts for timber matting within the mapped wetland systems and permanent impacts for installation of the proposed replacement structures along the project area (see **Appendix G – Photo Log**). The project has been designed to minimize impacts to wetlands and surface waters to the extent practicable. Per Env-Wt 307.11 (f), swamp mats are considered temporary impact for new authorizations if they are in place no longer than one growing season and are removed immediately upon completion of work.

WETLAND IMPACTS

The proposed project includes a total of approximately 286,502 square feet (sq. ft.) of wetland impacts associated with construction of a temporary work pads, associated access, and pole replacements. Of the total square footage of wetland impact, approximately 131,567 sq. ft. is temporary wetland impact located within wetland soils classified as very poorly drained wetland soils. It is planned that work will be completed so that matting is in place during one growing season. Lastly, the proposed project requires approximately 825 sq. ft. of permanent wetland impact associated with the replacement utility poles for caisson and pole installation within wetlands, and 375 square feet is within a PRA.

Town	Temporary Wetland Matting Non VPD Soils (sq. ft.)	Temporary Wetland Matting VPD Soils (sq. ft.)	Permanent Pole Replacement Impact (sq. ft.)	Total Impacts (sq. ft.)
Greenland	0	29,533	100	29,633
Portsmouth	154,110	102,034	725	256,869
Total	***154,110***	***131,567***	***825***	***286,502***

The proposed work pads are necessary in order to safely stage equipment during pole replacement activities. Wetland impacts for access and work pad placement are temporary and will be restored upon completion of work by regarding, mulching, and seeding with native seed mix, as necessary.

Where Eversource owns the underlying parcel or where Eversource has obtained written agreements with underlying property owners, Eversource will utilize off-ROW access routes to access the ROW. Off ROW access routes typically provide safer access to utility poles than in-ROW access through steep terrain or may avoid and minimize wetland impacts in ROW.

INVASIVE SPECIES CONTROL

Timber matting will be cleaned of plant debris and soil and evaluated for cleanliness prior to being brought on Site and placed within wetlands in order to prevent the spread of invasive species. In general, matting is typically cleaned through the use of pressurized air and/or sweeping. During monitoring timber mats will be reviewed by the environmental monitor at laydown areas. Matting that is not observed to be clean at the laydown areas will be reported to the site civil contractor who will be directed to clean mats prior to transportation of mats into the ROW and placed within wetlands. Once timber mats are pulled from wetlands, when necessary (e.g. where work occurs in invasive plant locations), matting will be cleaned prior to transportation from the Site to further prevent the spread of invasive plant species. Seed mixes utilized for restoration will consist of native/naturalized plant species (see project schedule and sequence below).

Based on data collection during wetland delineation and confirmation efforts, invasive plant species including reed canary grass and glossy buckthorn were observed and documented in multiple wetland systems. The summary table below indicates which wetlands have documented records of common reed, reed canary grass, glossy buckthorn, purple loosestrife, autumn olive and/or oriental bittersweet.

Wetland Identification	Common Reed	Reed Canary Grass	Glossy Buckthorn	Purple Loosestrife	Autumn Olive	Oriental Bittersweet
GW-1	X		X	X		
PW-1	X	X	X	X		
PW-2	X		X	X	X	
PW-3			X		X	
PW-4			X			X
PW-5				X		
PW-6		X	X	X		X
PW-7	X	X	X	X	X	X
PW-8			X	X		
PW-9	X	X				
PW-10		X		X	X	X
PW-11		X		X	X	X
PW-12	X	X		X		
PW-13						
PW-14	X	X				

DREDGING AND FILLING ACTIVITY CONDITIONS

Dredging activities will occur in the footprint of proposed pole locations within wetlands where drilling is necessary to set a metal caisson at each pole butt. In accordance with Env-Wt 307.10I Erosion and sediment controls are installed concurrent with matting installation. Wetland matting is installed around proposed pole locations in wetlands. Following installation of timber matting in wetlands and construction of a level work pad, a drill rig is utilized to drill out an approximate footprint of a 4-ft diameter hole to install a metal caisson. During caisson installation, dredged material from the wetland will be temporarily held in an excavator bucket, spin-off box, or protected in a hay bale basin lined with fabric. Once a hole is set, typically over the course of a day, the material is then transported to an upland area outside of jurisdiction (e.g. nearby work pad or other construction areas), graded and then stabilized with seed and weed-free hay.

Temporary timber matting will not be in place longer than one growing season and no dredging is proposed within streams, tidal wetlands, ponds or lakes.

PROJECT SCHEDULE AND SEQUENCE

The project construction is proposed to begin May 2024, pending receipt of require regulatory approvals. The following is a description of the anticipated construction sequence for this type of routine work:

1. Conduct a pre-construction meeting with team members to review project permits and conditions.
2. Complete wetland flag refreshing in advance of construction in individual areas.
3. Complete pole spotting and equipment mobilization as work progresses.
4. Install sediment and erosion controls in proposed locations, as shown in **Figure 5**. Perimeter controls are installed in tandem with matting installation for proper installation up to stabilized access roads.
5. Build access routes and work pads utilizing timber matting in wetlands as designated by **Figure 5**.
6. Install check dams along access routes where necessary.
7. Conduct drilling activities, including drilling of approximately 4-ft diameter holes for caisson placement, approximately 7-15 ft below ground surface. Dewatering practices (e.g. dirt bags and temporary sediment basins in uplands) and proper stockpiling will be utilized during drilling. Drill spoils will be properly stabilized in non-jurisdictional areas or within portable basins located on work pads with secondary controls.
8. Conduct structure replacement activities, including installation of new structures, and removal of old structures.
9. Remove temporary timber matting, stabilize exposed soils within the ROW and restore temporarily disturbed wetland areas with appropriate wetland seed mix, as necessary.
10. Remove erosion and sedimentation controls following stabilization.
11. Complete restoration monitoring and reporting as required by project permits.

It is anticipated that final matting removal will occur in December 2024.

AVOIDANCE, MINIMIZATION, AND MITIGATION

AVOIDANCE AND MINIMIZATION OF IMPACTS

Minimization of impacts to jurisdictional wetlands and surface waters were avoided by careful design of the project (see **Appendix H – Avoidance and Minimization Checklist**). Eversource completes routine weekly and bi-weekly meetings during design to minimize and avoid impacts to wetlands, PRAs, archeological features, and protected species areas as directed by NHFG and NHB. In addition, Eversource completes multiple constructability walk downs in the field with consultants, and completes site visits with abutters as requested. This information is compiled and reviewed by Eversource Project Managers, Environmental Specialists, Engineers, Project Services (outreach staff to landowners), and wetland and archeology consultants. In addition, Eversource coordinates reviews with underlying municipalities, and incorporates feedback from Planning and Zoning staff, as well as road agents and DOT district engineers. Data collection and planning for the Resistance Substation Project has been ongoing since 2022. The attached proposal represents the combined feedback of these stakeholders, with a focus on minimizing and avoiding impact.

Although access and work pad placement within wetlands is necessary due to the required engineered span widths between structures, impacts were minimized by avoiding wetlands to the greatest extent possible while continuing to provide safe and adequate work areas for construction and meeting engineering constraints.

Where possible, wetlands were crossed at the narrowest portion of the wetland, access and work pads were avoided in VPD soils, and access was shifted to the side of the ROW with the least amount of wetland crossing impact. Where access and work pads could not be placed in the least impactful location to wetlands, this was the result of engineering requirements for span width between structures, and lack of height clearance for equipment to cross under the lowest height phase wires. The following avoidance and minimization measures were noted:

- Impacts to Wetlands PW-10, PW-11, PW-14, and PW-15 were avoided by shifting access and work pads out of wetlands.

Rather than propose permanent access and permanent fill in wetlands, Eversource proposes temporary impacts to wetlands within the existing ROW in order to access the utility structures and stage equipment on a work pad around the structures to complete the replacement work and will be restored upon completion of work. Individual structures cannot be accessed without temporary access in wetlands. In addition, two-way access is required in ROW stretches that lack frequent road crossings to ensure worker access to emergency services during construction. To minimize proposed temporary impacts, Eversource has identified potential off-ROW access points and coordinated review by underlying landowners. The only permanent impacts are the new utility poles which are similar in size and scope to the existing poles which will be removed, resulting in a similar existing condition.

Exposed wetland soils following completion of work will be seeded with New England Wetmix Seed Mix from New England Wetland Plants, Inc., or equivalent as necessary and mulched with weed free mulch and/or erosion control blankets. Best Management Practices (BMPs) will be implemented on Site to reduce/limit potential effects. Due to similar footprint of the existing structures, it is not anticipated that the project will have adverse impacts on the functions and values of the freshwater wetlands. Wetlands located on Site will continue to provide principal functions and values including groundwater recharge/discharge, floodflow alteration, fish and shellfish habitat, production export, sediment/shoreline stabilization, wildlife habitat, recreation, and uniqueness/heritage.

A table has been included below to summarize wetland impact minimization for each wetland system along the 3171 and 3111 Distribution Lines and T13 Transmission Line.

Wetland Identification	Classification	Wetland Avoidance/Minimization
GW-1	PEM1/PSS1/PFO1E,Fg/R2UB	22 existing 3171 and 3111 structures are located within wetland. Temporary matting cannot be avoided.
PW-1	PEM1/PSS1E,Fg	22 existing 3171 and 3111 structures are located within wetland. Temporary matting cannot be avoided.
PW-2	PEM1/PSS1E	No impact
PW-3	PEM1/PSS1E	No impact
PW-4	PEM1/PSS1E	No impact
PW-5	PEM1/PSS1E	No impact
PW-6	PEM1/PSS1E	Access is proposed through the narrowest portion of wetland. Pole replacements for 339 Structures 3 and 4 were engineered out of wetland areas. The 339 Structure 2 proposed location was engineered due to a steep slope. The large work pad areas are required due to pole replacements.
PW-7	PEM1/PSS1E,H	Access is proposed to buffer the potential vernal pool by 25 feet. Pole replacement at 339 Structure 8 was engineered out of the wetland along the parcel boundary and the large work pad area is required due to pole replacement work.
PW-8	PEM1/PSS1E	No impact

PW-9	PEM1/PSS1Ex	No impact
PW-10	PSS1Ex	No impact
PW-11	PSS1/PEM1Ex	No impact
PW-12	PEM1/PSS1E	Existing T13 Structure 9 is located within the wetland. Access is proposed through the narrowest portion of wetland.
PW-13	PEM1/PSS1E	Work pad area required for pole replacement and wire pulling activities.
PW-14	PSS1/PEM1E	No impact

Where Eversource has obtained written agreements with underlying property owners, Eversource will utilize off-ROW access routes to access the ROW to further avoid and minimize impacts to wetlands within the ROW. Eversource has identified several off ROW access routes and are actively pursuing agreements with underlying property owners. Utilization of these off ROW access routes is entirely dependent on securing an agreement with the property owner, and will not be utilized if an agreement is not secured. Therefore, the proposed project and this application includes in-ROW access and accounts for wetland impacts should off ROW agreements not be secured.

PROPOSED MITIGATION

As previously mentioned, the project team met with NHDES for a pre-application meeting on December 5, 2023. As discussed with DES and the USACE, the project proposes an in-lieu fee payment for wetland mitigation to compensate for permanent impacts for proposed pole replacements within a Priority Resource Area wetland. The proposed Aquatic Resource Mitigation (ARM) fund mitigation fee was based on the current, December 2023 ARM Calculator is summarized in the table below.

Town	Impact Type	Permanent Impact (sq. ft.)	Town Land Value	ARM Fee
Greenland	Pole Replacement	100	$67,802	$728.09
Portsmouth	Pole Replacement	275	$67,802	$2,002.26
			Total Fee	***$ 2,730.35***

Timber matting will not be in place longer than one growing season. Wetland disturbances will be noted and described on a weekly basis, concurrent with the mat tracking. Observations will be recorded on impacts that may remain after matting is removed, such as lack of vegetation regrowth or conditions that prevent adequate regrowth. Temporarily impacted wetlands will continued to be monitored under the five year Standard Dredge & Fill permit timeframe until such time as adequate revegetation has been established and all other performance standards have been met in accordance with the wetlands rules. The project has been designed to avoid impacts to most wetland functions and values. Matting will be installed to maintain hydrologic connectivity across wetland systems and therefore the principal functions of groundwater recharge and flood storage are not anticipated to be impacted. The nutrient and sediment trapping capabilities of a wetland may be slightly reduced while matting and construction activities are occurring in individual wetlands, but it is not expected that these functions would be reduced following completion of construction. Matting to create roads and safe work areas may temporarily decrease the area of a wetland available to wetland dependent wildlife, but since the majority of the ROW will be maintained as early successional habitat, and vernal pool and in-stream impacts are avoided and minimized, there is not expected to be a significant loss of habitat once the project is complete. Vegetation disturbances from matting may temporarily reduce fruiting and flowering plants available to wildlife and insects during construction, but it is expected to be a relatively small area within the

surrounding landscape, which is mostly undeveloped and contains abundant vegetation that will remain undisturbed. Once construction is complete, the ROW will continue to be maintained as scrub-shrub early successional habitat, with no permanent loss of wetland functions and values proposed or anticipated outside of the limited footprint of pole locations. Environmental monitors will take representative photographs of temporary matting and other disturbances throughout all phases of construction. If disturbances are observed, monitors will attempt to quantify those impacts with a GPS receiver or by visually estimating the disturbance as a percentage of the overall wetland within the ROW.

This monitoring process will be performed by, or under the supervision of, a New Hampshire Certified Wetland Scientist (CWS). Subsequent NHDES reporting, the final report, and proposal of any additional compensatory mitigation will also be prepared/reviewed by a CWS.

ALTERNATIVES REVIEW

The existing distribution lines are located within established utility corridors that have been used for decades. A large portion of the 3171/3111 ROW is located in close proximity and parallel to Interstate- 95 and an existing active railroad. Due to the existing location of the 3171/3111 ROW and characteristics of the surrounding area such as large expansive wetlands (i.e. GW-1) there are no alternative right of way solutions which would result in less impact to maintain the existing infrastructure. Conversely the T13 ROW is located within and surrounded by an industrial area, however the ROW is constrained by multiple electric power generation plants such that no alternative site would result in less impact. The proposed project was designed to minimize direct impacts to wetlands and surface water resources to the greatest extent possible, while maximizing safety during construction. Rather than propose permanent access and permanent fill in wetlands, Eversource proposes temporary impacts to wetlands within the existing ROW in order to access the utility structures and stage equipment on a work pad around the structures to complete the replacement work and will be restored upon completion of work. Individual structures cannot be accessed without temporary access in wetlands. In addition, two-way access is required in ROW stretches that lack frequent road crossings to ensure worker access to emergency services during construction. To minimize proposed temporary impacts, Eversource has identified potential off-ROW access points and coordinated review by underlying landowners. The only permanent impacts are the new utility poles which are similar in size and scope to the existing poles which will be removed, resulting in a similar existing condition.

FEDERAL REGULATORY REQUIREMENTS

US ARMY CORPS OF ENGINEERS

The USACE issued a State Programmatic General Permit (SPGP) that allows NHDES to review wetland permit applications and grant wetland impact permits under the Clean Water Act. However, the USACE maintains a supervisory role over State wetland permits. In the case of Major and Minor impact projects, the NHDES wetlands permit is not valid until an USACE permit has also been issued to allow for the USACE to review the project and address any concerns. The applicant may receive a request from the USACE for additional information, modifications to the project as proposed, compensatory mitigation, or an Individual Permit for the project during the course of their review. If an Individual Permit is requested, the USACE has declared that the project is ineligible for a permit under the SPGP. In order to facilitate the USACE review process, GZA has included the USACE checklist and the required 11”x17” plan sheets per the USACE requirement. See **Appendix J – USACE Checklist and 11”x17” Plans**.

The USACE Checklist has been designed to provide a brief overview of items that could be of potential concern to the USACE for any size project. The completion of the USACE Checklist for this project highlighted that the project results in primarily temporary wetland impacts. The proposed project is not anticipated to negatively impact the nearby Pickering Brook. Flood storage is not expected to be significantly impacted by the proposed replacement of the existing

utility structures (see **Figure 6 – FEMA Floodplain Maps**). 15 structures are proposed to be installed in Wetland GW-1 directly adjacent to Pickering Brook. However, to minimize impacts the proposed structures are single pole structures rather than two pole structures requiring only 25 sq. ft. of permanent impact. Additionally, 22 structures are proposed to be removed in Wetland GW-1 resulting in a net removal of 7 structures in Wetland GW-1. The proposed project requires approximately 131,567 sq. ft. of temporary wetland impact in floodplain Wetland GW-1 along Pickering Brook for placement of temporary timber matting for access and work pad placement which will be removed upon completion of construction. Therefore, it is not anticipated flood storage will be significantly impacted by the proposed project.

US FISH AND WILDLIFE SERVICE

According to the IPaC report, there are three endangered species known within the location of the project. These species consist of, Roseate Tern (*Sterna dougalli dougalli),* Northern Long-eared Bat (*Mytosis septentrionalis),* and Monarch Butterfly (*Danaus plexippus).* In addition to this, there are Bald Eagles (*Haliaeetus leucocephalus)* known to be within the project area and are protected under the Bald and Golden Eagle Protection Act as well as the Migratory Bird Treaty Act. There are multiple birds of particular concern within the project area consisting of, American Oystercatcher (*Haematopus palliates),* Black Skimmer (*Rynchops niger),* Black-billed Cuckoo (*Coccyzus erythropthalmus)*, Blue-winged Warbler (*Vermivora pinus),* Bobolink (*Dolichonyx oryzivorus)*, Canada Warbler (*Cardellina canadensis)*, Chimney Swift (*Chaetura pelagica),* Gill-billed Tern (*Gelochelidon nilotica),* Hudsonian Godwit (*Limosa haemastica),* Lesser yellowlegs (*Tringa flavipes),* Pectoral Sandpiper (*Calidris melanotos),* Prairie Warbler (*Dendroica discolor),* Prothonotary Warbler (*Protonotaria citrea),* Purple Sandpiper (*Calidris maritima),* Red-headed Woodpecker (*Melanerpes erythrocephalus),* Ruddy Turnstone (*Arenaria interpres morinella),* Rusty Blackbird (*Euphagus carolinus),* Saltmarsh sparrow (*Ammodramus caudacutus),* Short-billed Dowitcher (*Limnodrom griseus),* Willet (*Tringa semipalmata),* and Wood Thrush (*Hylocichla mustelina).* There are no critical habitats, refuge lands, or fish hatcheries located within the location of the proposed project.

Bird Species	Scientific Name	Habitat	Note
American Oystercatcher	*Haematopus palliates*	Saltmarshes and coastal barrier beaches	N/A – habitat not present within the ROW
Bald Eagle	*Haliaeetus leucocephalus*	Forested areas adjacent to large bodies of water	Not known based on NHB#23-331 and NHB23-332
Black skimmer	*Rynchops niger*	Saltmarshes and coastal sandy beaches	N/A – habitat not present within the ROW
Black-billed Cuckoo	*Coccyzus erthropthalmus*	Dense wooded habitats, and often found in mesic environments that have strong association with water	Breeding season between May- mid October
Blue-winged warbler	*Vermivore pinus*	Along forest-shrub edges and dense thickets	Breeding season between May - mid June
Bobolink	*Dolichonyx oryzivorus*	Hayfields, meadows	N/A – habitat not present within the ROW
Canada Warbler	*Cardellina canadensis*	Forest undergrowth, shady thickets	Breeding season between mid May-mid August
Chimney Swift	*Chaetura pelagica*	Open sky, especially over cities and towns	Breeding season through March-August
Gull-billed tern	*Gelochelidon nilotica*	Saltmarshes and coastal beaches	N/A – habitat not present within the ROW
Hudsonian Godwit	*Limosa haemastica*)	Large open wetlands such as flooded fields, lakes, estuaries, and salt marshes considered important features during migration	N/A – habitat not present within the ROW
Lesser yellowlegs	*Tringa flavipes*)	Flooded fields, marshes, edges of lakes, and brackish mudflats	N/A – habitat not present within the ROW

Bird Species	Scientific Name	Habitat	Note
Pectoral sandpiper	*Calidris melanotos*	Flooded fields, fresh and saltwater marsh	N/A – habitat not present within the ROW
Prairie warbler	*Dendroica discolor*	Shrubland habitat such as early-mid successional forests, scrub-oak stands, and forest edges	Breeding season between April - August
Prothonotary warbler	*Protonotaria citrea*	Forested wetlands and woodlands adjacent to lakes, ponds, and streams	Breeding season between March - July
Purple sandpiper	*Calidris maritima*	Rocky coastline and islands considered important features during migration.	N/A – habitat not present within the ROW
Red-headed woodpecker	*Melanerpes erythrocephalus*	Deciduous woodland habitats, roadsides, forest edges, and grasslands	Breeding season between April - July
Roseate tern	*Sterna dougalli dougalli*	Salt marshes, remote sandy and rocky islands	N/A – habitat not present within the ROW
Ruddy turnstone	*Arenaria interpres morinella*	Rocky coastline and islands considered important features during migration.	N/A – habitat not present within the ROW
Rusty blackbird	*Euphagus carolinus*	Northern coniferous forests adjacent to waterbodies such as bogs. During migration, the Rusty blackbird travels through forested wetlands and rivers with shallow water	Breeding season between April - May
Saltmarsh sparrow	*Ammodramus caudacutus*	Coastal salt marshes with vegetative cover like sedges and grasses	N/A – habitat not present within the ROW
Short-billed dowitcher	*Limnodrom griseus*	Flooded fields, shorelines, and muddy bays and rivers considered important features during migration.	N/A – habitat not present within the ROW
Willet	*Tringa semipalmata*	Rocky coastlines, bay shorelines, and sandy beaches	N/A – habitat not present within the ROW
Wood Thrush	*Hylocichla mustelina*	Mainly deciduous woodlands	N/A – habitat not present within the ROW

STATE REGULATORY REQUIREMENTS

The proposed project requires approval to temporarily impact wetlands using timber matting for the proposed work pads and associated access and permanently impact wetlands for utility pole installation (see **Appendix K – Utility Projects Worksheet**). Per Env-Wt 521.06 (a), the proposed project does not qualify for a minimum impact Statutory Permit by Notification due to impacts to a floodplain wetland adjacent to a tier 3 watercourse and prime wetland. This report describes the proposed project and addresses the regulatory requirements of the State to complete the proposed project. The project proposes to maintain safety and integrity of the distribution line and its infrastructure by minimizing impacts to the extent practicable, and is therefore consistent with the purposes of RSA 482-A. As such, Eversource requests that a permit be issued for the proposed project in order to maintain the safety and reliability of the associated distribution lines and there is not a less-impacting alternative.

ATTACHMENT A WORKSHEET – MINOR AND MAJOR PROJECTS

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 proposed project is located within an existing and maintained utility ROW, and will not expand the footprint of the existing ROW. This project is necessary to allow Eversource to continue to safely and efficiently provide electricity to the public and for maintenance of existing utility lines. The proposed project impacts are minimized by utilizing existing access routes and trails to the extent practicable and proposed use of temporary timber matting for access and work pads within wetlands. In addition and as previously mentioned, the internal project team reviewed each wetland crossing and work pad location to review where impacts to wetlands could be further avoided and minimized. Where possible, Eversource has sought off-ROW agreements to minimize impacts, and is crossing in narrow portions of wetlands where feasible based on grades and line clearances. Due to the location of the existing right-of-way and location of the proposed structures, there is no alternative that would have less adverse impact on the area and environment. The project avoids impacts in new locations by remaining in the footprint of the ROW or pre-existing line alignments to the greatest extent possible, and by avoiding permanent wetland crossings with permanent fill and culverts.

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.** The proposed project does not require any temporary wetland impact to tidal wetland systems for work pad placement or associated access. The majority of the impacts are temporary, with approximately 825 square feet of permanent freshwater impact to erect replacement structures. Based on significant previous experience working in this freshwater system, it is not anticipated that temporary wetland impacts due to timber matting will have long term impacts to the wetlands or the wetland systems ability to provide sources of nutrients to wildlife of significant value.

3. **Describe how the project maintains hydrologic connections between adjacent wetland or stream systems.** The majority of impacts to wetlands are temporary using timber matting for work pads and associated access. Streams in Wetlands GW-1 will be bridged utilizing temporary timber matting to provide for hydrologic connectivity during construction. When necessary, matting crossings are enlarged concurrent with large storm events. Hydrologic connectivity is monitored during construction by both environmental monitors and Eversource construction representatives as part of erosion control monitoring and safety oversight.

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 avoids impacts to vernal pools and protected species habitat. One potential vernal pool was identified as part of data collection and avoided as part of constructability reviews.

   The Natural Heritage Bureau (NHB) data check tool has identified four protected plant species, American reed (*Phragmites americanus*), great bur-reed (*Sparganium eurycarpum*), hairy-fruited sedge (*Carex* trichocarpa) and tufted yellow-loosestrife (*Lysimachia thyrsiflora*) in the vicinity of the Resistance Substation Retirement project work areas (see **Appendix D** for the NHB Report). Additionally, the NHB data check tool has identified one protected vertebrate species, a Blanding's turtle (*Emydoidea blandingii*) in the vicinity of the Resistance Substation Retirement project work areas (see **Appendix D** for the NHB Report). A coordination memo was sent to both NHFG and NHB on January 2, 2024 and the team will continue coordination with each agency for recommendations to minimize impact.

5. **Describe how the project avoids and minimizes impacts that eliminate, depreciate or obstruct public commerce, navigation, or recreation.** The proposed project is located within an existing and maintained utility line corridor

and not within public roadways except for entering and exiting the ROW. Therefore, it is not anticipated the proposed project will have significant impact to public commerce, navigation or recreation.

6. **Describe how the project avoids and minimizes impacts to floodplain wetlands that provide flood storage.** The majority of impact within floodplain wetlands is temporary due to placement of temporary timber matting within wetlands during construction. Along Pickering Brook, given the distance between existing structures and the brook, impacts have been minimized to the greatest extent possible to allow for a safe work environment during construction, and temporary timber matting will be removed upon completion of construction. Therefore it is not anticipated the project will have long term impacts to flood storage.

7. **Describe how the project avoids and minimizes impacts to natural riverine forested wetland systems and scrub-shrub – marsh complexes of high ecological integrity.** As previously mentioned, majority of wetland impacts for the proposed structure replacement are temporary for work pad placement and associated access. Majority of temporary wetland impacts are associated with scrub-shrub that are routinely mowed and an emergent wetland system where the existing distribution lines are located. Within GW-1 Eversource will work within the existing alignment of the 3171/3111 ROW. The least impacting alternative is to utilize the existing ROW and to utilize existing off right-of-way access as authorized by underlying property owners. Where possible, Eversource has scoped access through wetlands at the narrowest crossing or have avoided wetlands by scoping access around them to the greatest extent. For example, Eversource shifted the poles for new 339 Distribution Line Structure 9 northerly out of Wetlands PW-10 and PW-11, 339 Structure 8 easterly out of Wetland PW-7 and 339 Structures 3 and 4 northerly out of Wetland PW-6.

8. **Describe how the project avoids and minimizes impacts to wetlands that would be detrimental to adjacent drinking water supply and groundwater aquifer levels.** The majority of impacts resulting from the proposed project are temporary for access and work pad placement. The footprint of the proposed pole replacement is minimal and is not anticipated to be detriment to adjacent drinking water supply and groundwater aquifer levels. In addition, the Site is not located within mapped GA1 or GAA groundwater resources or within a source water protection area or wellhead protection area. The project does not propose disturbance to a river and therefore there is no proposed detrimental impact to drinking water supply or groundwater aquifer levels.

9. **Describe how the project avoids and minimizes adverse impacts to stream channels and the ability of such channels to handle runoff of waters.** As previously mentioned, timber matting will be used in wetlands crossings to minimize direct wetland impacts. It is not anticipated that stream flows will be restricted as timber mats will be utilized to span streams and therefore ability of stream channels to handle runoff from waters should not be impacted.

10. **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.** Impacts have been minimized to the greatest extent through careful design and use of construction equipment with the least ground disturbance. Timber matting is utilized to minimize and prevent rutting and compaction in wetlands. Prior to the start of work, erosion and sediment controls will be installed to limit and prevent erosion and sedimentation from construction into the wetlands. In addition, exposed soils at the project Site will be stabilized using a seed mix as part of restoration.

11. **Describe how the type of construction proposed is the least intrusive upon the public trust that will ensure safe docking on the frontage.** The proposed project does not involve impacts to shoreline frontage that would impact docking.

12. **Describe how the structures have been designed to avoid and minimize impacts on ability of abutting owners to use and enjoy their properties.** The proposed project is within an existing and maintained transmission line ROW. Eversource holds easements across private properties to maintain the electrical infrastructure. Existing utility poles will be replaced in the same alignment and the ROW corridor will continue to be maintained as an existing, portions of which are routinely mowed ROW. Eversource is not proposing to expand the width of the ROW and no new lines

are proposed to be installed. It is not anticipated that the project will impact abutting property owners' ability to use and enjoy their properties.

13. **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.** The project does not propose direct impact to surface waters which would impact navigation, passage, commerce, and recreation. Therefore, the project does not propose impacts to the public's right to navigation, passage, commerce, and recreation.

14. **Describe how the structures have been designed, located, and configured to avoid impacts to water quality, aquatic vegetation, and wildlife and finfish habitat.** The proposed project has been designed to minimize direct impacts to wetlands and surface waters to the greatest extent. Temporary wetland impacts have been minimized to the extent necessary to safely replace existing structures. Existing access within the ROW has been utilized to the greatest extent, and timber matting will be utilized within wetlands to minimize and prevent rutting and compaction to wetlands and wetland vegetation.

    The proposed project will utilize NHDES Best Management Practices (BMPs) manual for Utility Maintenance in and Adjacent to Wetlands and Waterbodies in New Hampshire (March 2019) and the New Hampshire Stormwater Manual as required as part of the NHDES Alteration of Terrain permit for the project. In addition, the project will prepare a Stormwater Pollution Prevention Plan as part of the EPA Construction General Permit. Eversource will retain an environmental monitor to complete erosion control inspections and advise the team on practices to maintain compliance with water quality.

    Due to outage planning requirements, Eversource cannot avoid construction in the summer months, outside of the typical songbird breeding season. While Eversource recognizes that the Utility BMP manual request seasonal avoidance when possible, seasonal avoidance is not possible for this project due to the number of structures that must be replaced and the requirement by both DES and the USACE to avoid matting installation for more than one growing season. As an alternative, environmental monitors will complete sweeps for wildlife in access routes during erosion control inspections and advise the team on wildlife observations. Where possible, wildlife are avoided or safely re-located just outside of access routes (e.g. amphibians and reptiles) to limit and prevent mortality. Areas adjacent to access routes and work pads are anticipated to continue to provide habitats to a variety of species mammals and birds. During construction, the majority of the ROW continues to provide early successional foraging and nesting habitat to shrubland birds and provide browse to ungulates. Long-term management in the ROW is required to maintain early successional habitats and this is accomplished by Eversource as part of separate vegetation maintenance. In addition, after construction, wetland impacts are restored and upland work pads are reduced to approximate 30 x 60 foot pads as part of upland restoration. Therefore, the project is not anticipated to have long-term impacts on species associated with wetlands given the ROW is managed as a utility corridor.

    In addition, there are no proposed pole replacements within streams and therefore no proposed long-term impacts to finfish habitat.

15. **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.** The proposed structure to be replaced is located within an existing and maintained utility ROW and does not propose removal of trees within shoreland jurisdiction. Timber matting will be utilized within wetlands to provide a stable and safe surface for construction equipment to replace the existing utility pole while buffering wetland vegetation from direct impact. The project does not propose impacts to existing banks or shorelines. Timber matting will be utilized to bridge mat over temporary stream crossings, spanning over the banks.

LOCAL REGULATORY REQUIREMENTS

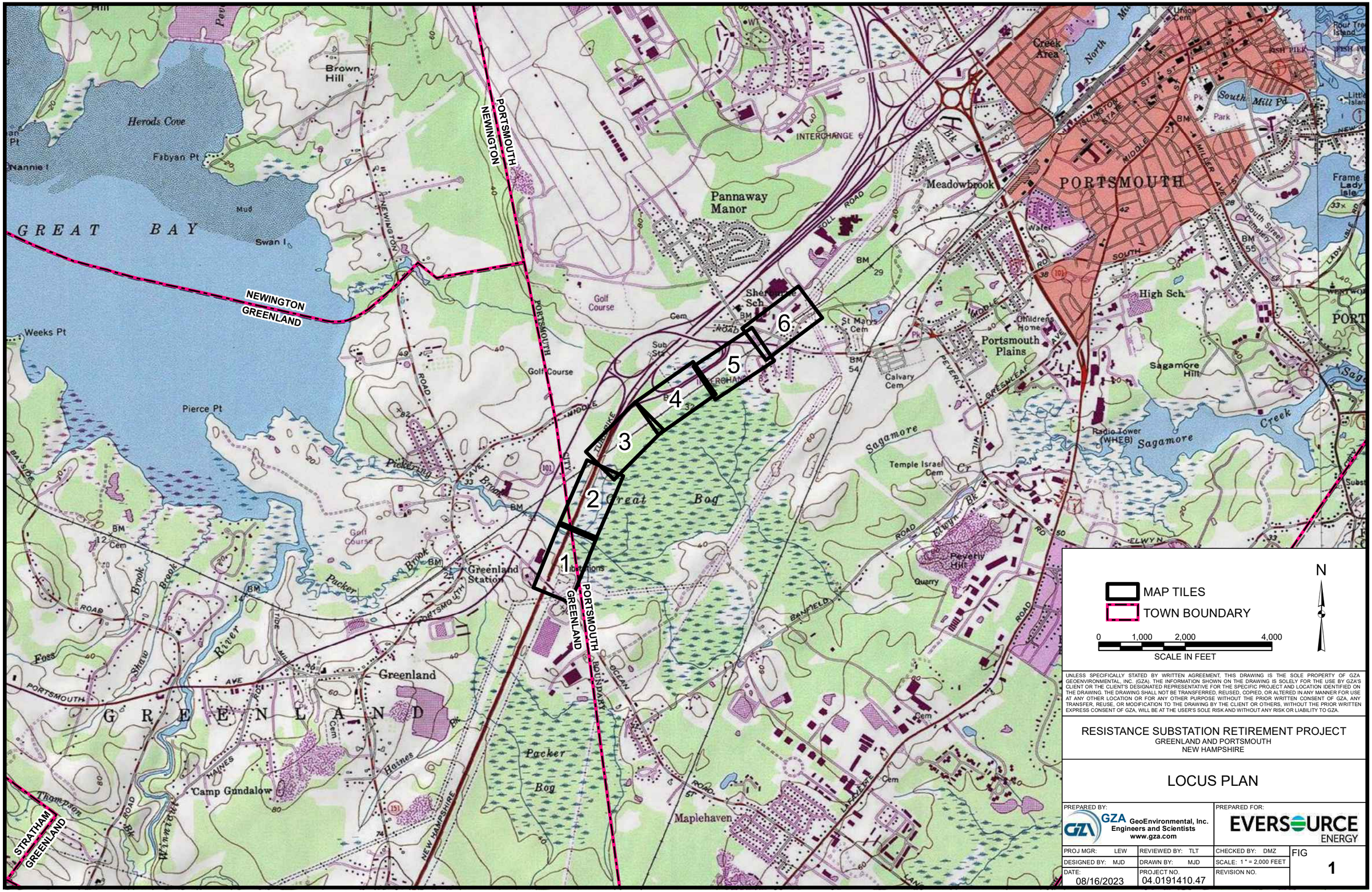
TOWN OF GREENLAND

Eversource and GZA will meet with the Town of Greenland Conservation Commission on January 10, 2024. A conditional use permit application was submitted to the Town with a Planning Board meeting scheduled on February 15, 2024.

CITY OF PORTSMOUTH

Eversource and GZA will meet with the City of Portsmouth Conservation Commission on February 14, 2024. A conditional use permit application was submitted to the City with a Planning Board meeting scheduled on March 21, 2024.

FIGURE 1 – SITE LOCUS MAP



MAP TILES

TOWN BOUNDARY

N

0 1,000 2,000 4,000

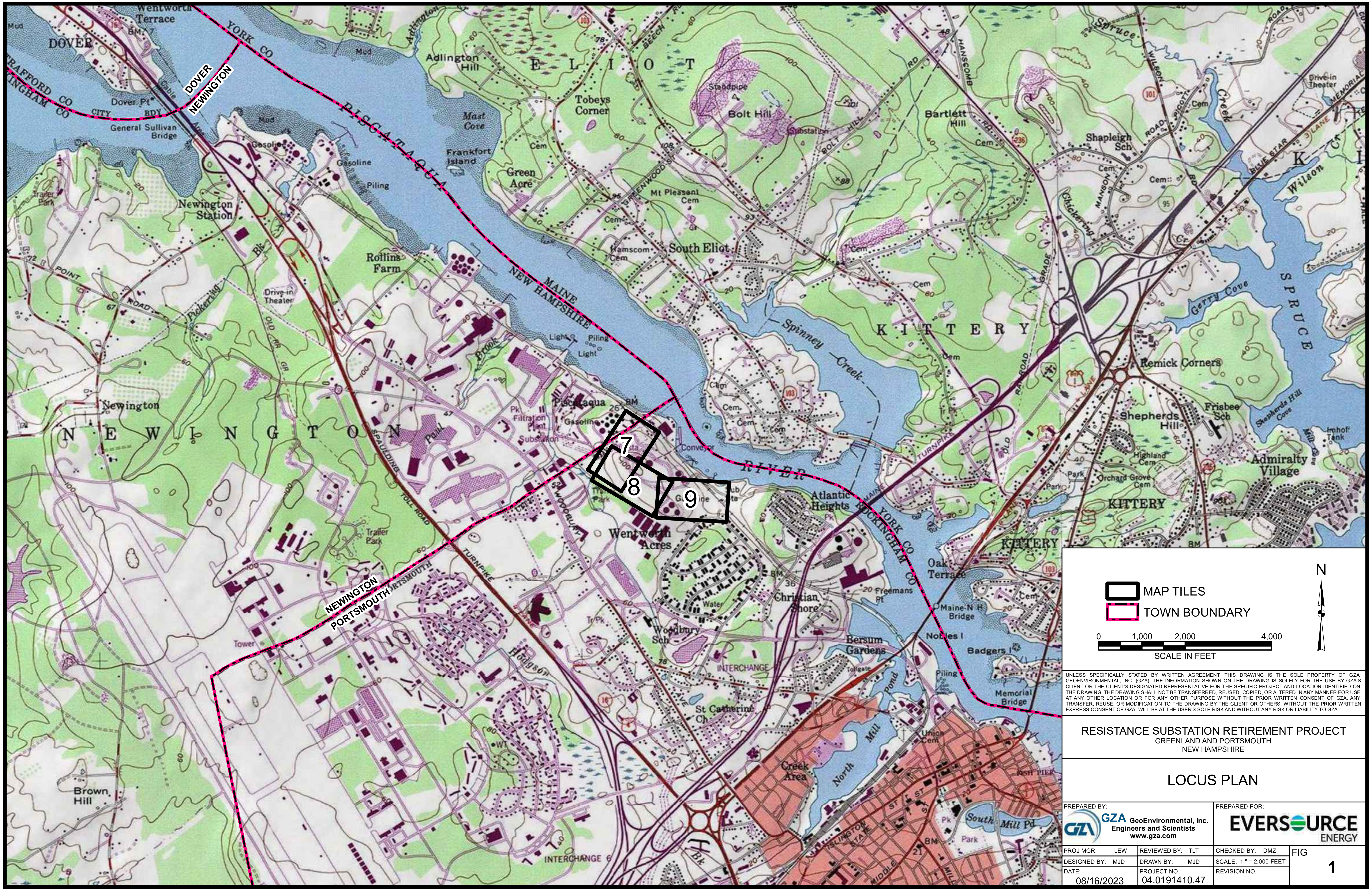
SCALE IN FEET

RESISTANCE SUBSTATION RETIREMENT PROJECT

GREENLAND AND PORTSMOUTH
NEW HAMPSHIRE

LOCUS PLAN

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: EVERSOURCE ENERGY	
PROJ MGR: LEW	REVIEWED BY: TLT	CHECKED BY: DMZ	FIG 1
DESIGNED BY: MJD	DRAWN BY: MJD	SCALE: 1 " = 2,000 FEET	
DATE: 08/16/2023	PROJECT NO. 04.0191410.47	REVISION NO.	



RESISTANCE SUBSTATION RETIREMENT PROJECT
GREENLAND AND PORTSMOUTH
NEW HAMPSHIRE

LOCUS PLAN

PREPARED BY:		PREPARED FOR:	
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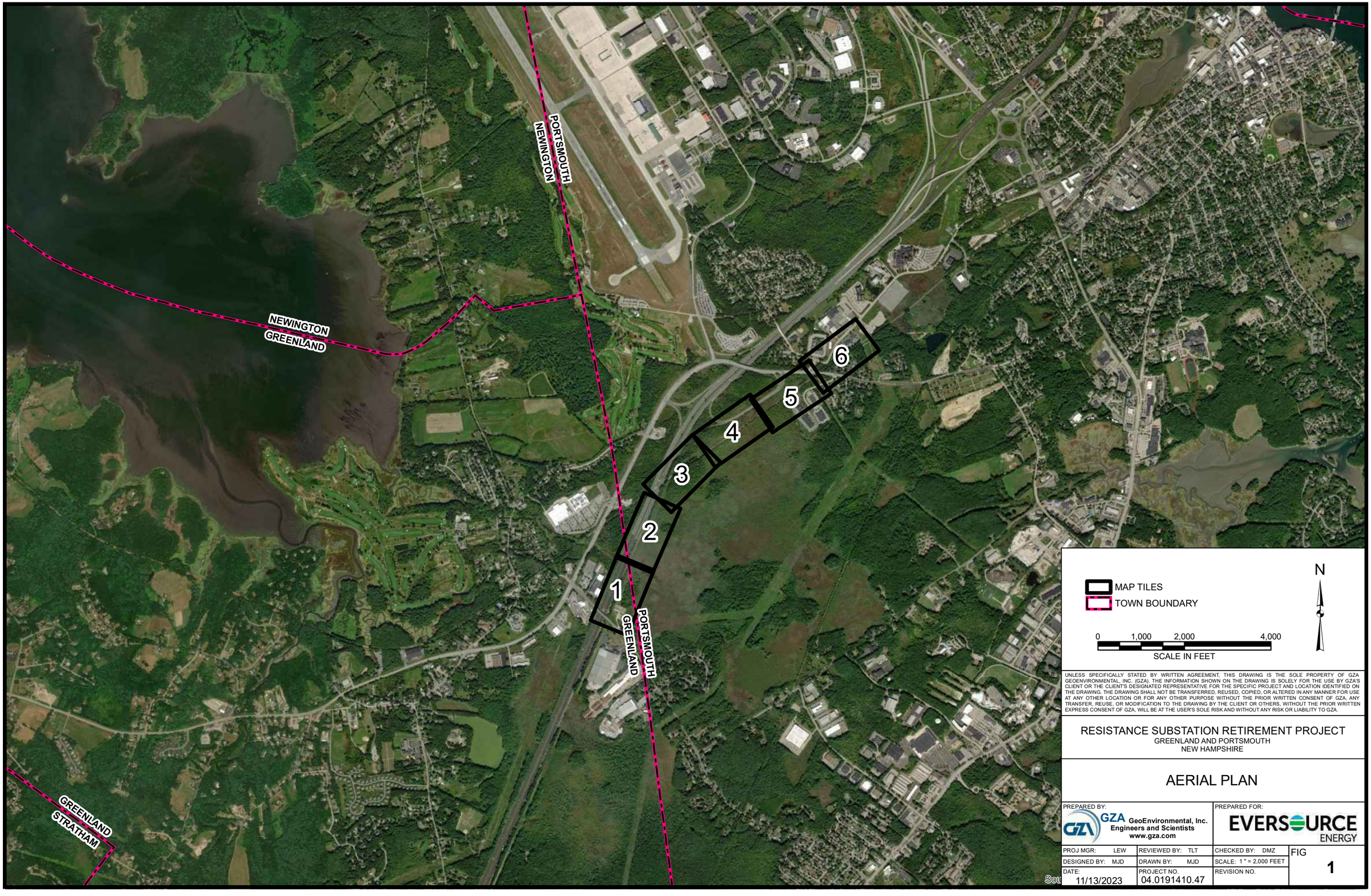
DESIGNED BY: MJD	DRAWN BY: MJD	SCALE: 1 " = 2,000 FEET	
DATE: 08/16/2023	PROJECT NO. 04.0191410.47	REVISION NO.	

FIGURE 2 – AERIAL OVERVIEW PLAN



MAP TILES

TOWN BOUNDARY

N

0 1,000 2,000 4,000

SCALE IN FEET

RESISTANCE SUBSTATION RETIREMENT PROJECT

GREENLAND AND PORTSMOUTH
NEW HAMPSHIRE

AERIAL PLAN

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: EVERSOURCE ENERGY	
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DESIGNED BY: MJD	DRAWN BY: MJD	SCALE: 1 " = 2,000 FEET	
DATE: 11/13/2023	PROJECT NO. 04.0191410.47	REVISION NO.	

DOVER
NEWINGTON

NEWINGTON
PORTSMOUTH

7
8
9

MAP TILES
TOWN BOUNDARY

N

0 1,000 2,000 4,000
SCALE IN FEET

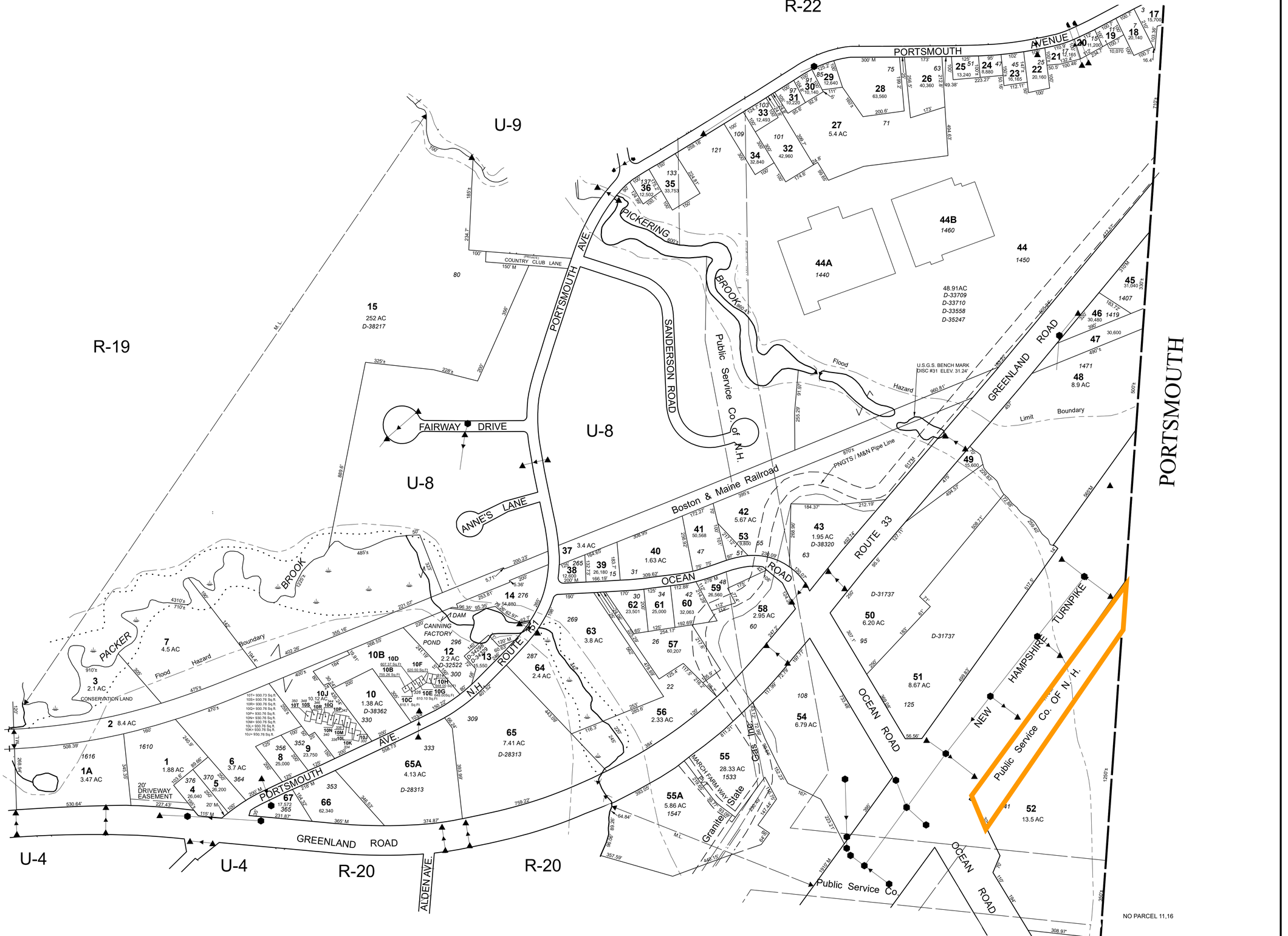
RESISTANCE SUBSTATION RETIREMENT PROJECT

GREENLAND AND PORTSMOUTH
NEW HAMPSHIRE

AERIAL PLAN

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: EVERSOURCE ENERGY	
PROJ MGR: LEW	REVIEWED BY: TLT	CHECKED BY: DMZ	FIG 1
DESIGNED BY: MJD	DRAWN BY: MJD	SCALE: 1 " = 2,000 FEET	
DATE: 11/13/2023	PROJECT NO. 04.0191410.47	REVISION NO.	

FIGURE 3 – TAX MAPS



THIS MAP IS FOR ASSESSMENT PURPOSES. IT IS NOT VALID FOR LEGAL DESCRIPTION OR CONVEYANCE.

THE HORIZONTAL DATUM IS THE NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM, NAD 83.

PREPARED IN 1976 BY PHOTOGRAMMETRIC METHODS BY JOHN E. O'DONNELL & ASSOCIATES, AUBURN, MAINE

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LEGEND

ADJACENT SHEET NO- 12
COMMON OWNERSHIP OR
DEVELOPMENT LOT NO. (2)
SCALED DIMENSION ±

CATCH BASIN
DRAIN PIPE
STREET NO. 1

SCALE: 1" = 200'
FEET 200 100 0 200 400 600
METERS 50 25 0 50 100 150

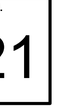
REVISED TO: APRIL 1, 2018

PROPERTY MAPS

GREENLAND

NEW HAMPSHIRE

INDEX DIAGRAM



MAP NO.

R-21

I-95 NORTH

SIMS AVE

1
1.500 ac

2
CURRENT USE: 13.850 ac
NOT IN CURRENT USE: 0.890 ac
TOTAL: 14.740 ac

282-6-22

282-6-19

282-6-18

282-6-17

282-6-16

282-6-14

282-5

Partial Legend

See the cover sheet for the complete legend.

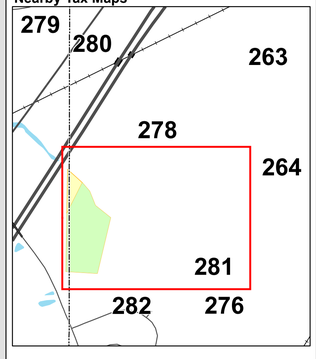
- 7-5A — Lot or lot-unit number
- 2.56 ac — Parcel area in acres (ac) or square feet (sf)
- 25 — Address number
- 233-137 — Parcel number from a neighboring map
- 68' — Parcel line dimension
- SIMS AVE — Street name
- Parcel/Parcel boundary
- Parcel/ROW boundary
- Water boundary
- Structure (1994 data)
- Parcel covered by this map
- Parcel from a neighboring map (see other map for current status)

0 50 100 200 300 Feet

0 20 40 80 Meters

This map is for assessment purposes only. It is not intended for legal description or conveyance.
Parcels are mapped as of April 1.
Building footprints are 2006 data and may not represent current structures.
Streets appearing on this map may be paper (unbuilt) streets.
Lot numbers take precedence over address numbers. Address numbers shown on this map may not represent posted or legal addresses.

Nearby Tax Maps



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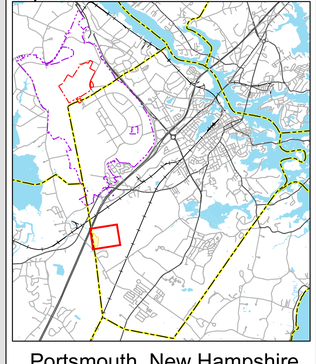

Portsmouth, New Hampshire
2022

Tax Map 281

Partial Legend

See the cover sheet for the complete legend.

7-5A	Lot or lot-unit number
2.56 ac	Parcel area in acres (ac) or square feet (sf)
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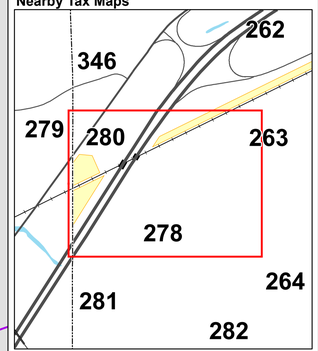
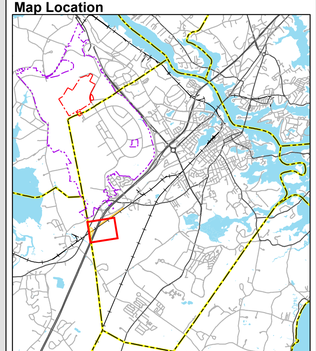
Nearby Tax Maps



Map Location



Portsmouth, New Hampshire
2022

Tax Map 280

Partial Legend

See the cover sheet for the complete legend.

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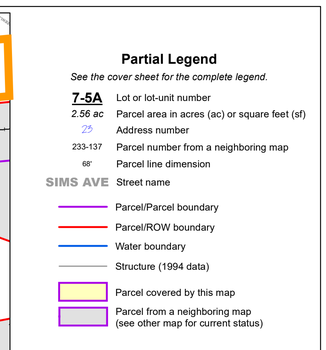

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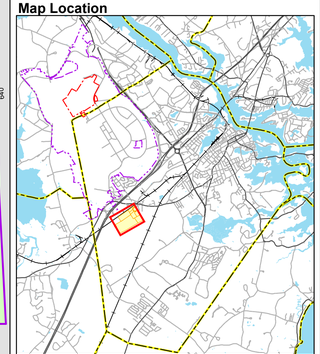

Portsmouth, New Hampshire
2022

Tax Map 263

Partial Legend

See the cover sheet for the complete legend.

7-5A	Lot or lot-unit number
2.56 ac	Parcel area in acres (ac) or square feet (sf)
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SIMS AVE	Street name
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	Structure (1994 data)
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0 50 100 200 300 Feet

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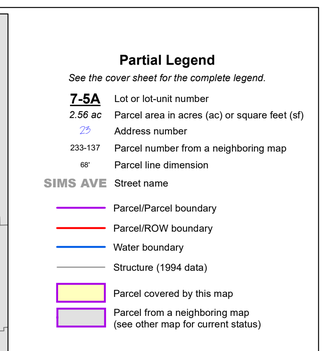
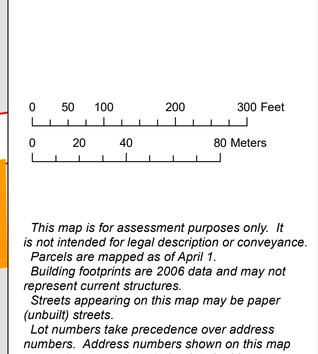


Map Location



Portsmouth, New Hampshire
2022

Tax Map 259

Partial Legend

See the cover sheet for the complete legend.

- **7-5A** Lot or lot-unit number
- *2.56 ac* Parcel area in acres (ac) or square feet (sf)
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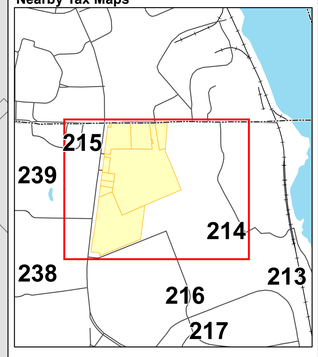
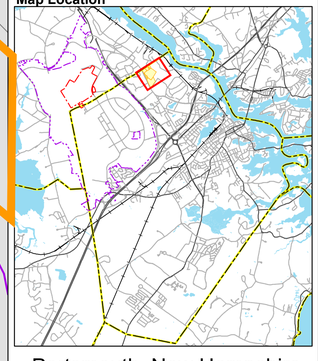
Nearby Tax Maps



Map Location



Portsmouth, New Hampshire
2022

Tax Map 215

Piscataqua River

GOSLING RD

JAMES CT

PORTSMOUTH BLVD

1
64.320 ac

2
26.500 ac

3
38.715 ac

216-1-9

216-1-11

216-1-10

216-1-8

216-1-8A

213-1

213-11

121-1

Partial Legend

See the cover sheet for the complete legend.

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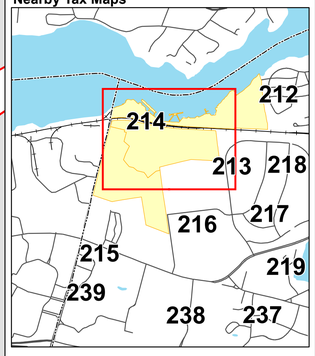
Lot numbers take precedence over address numbers. Address numbers shown on this map may not represent posted or legal addresses.

Nearby Tax Maps



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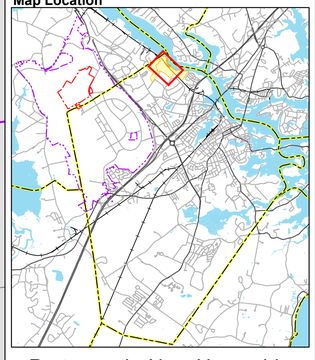
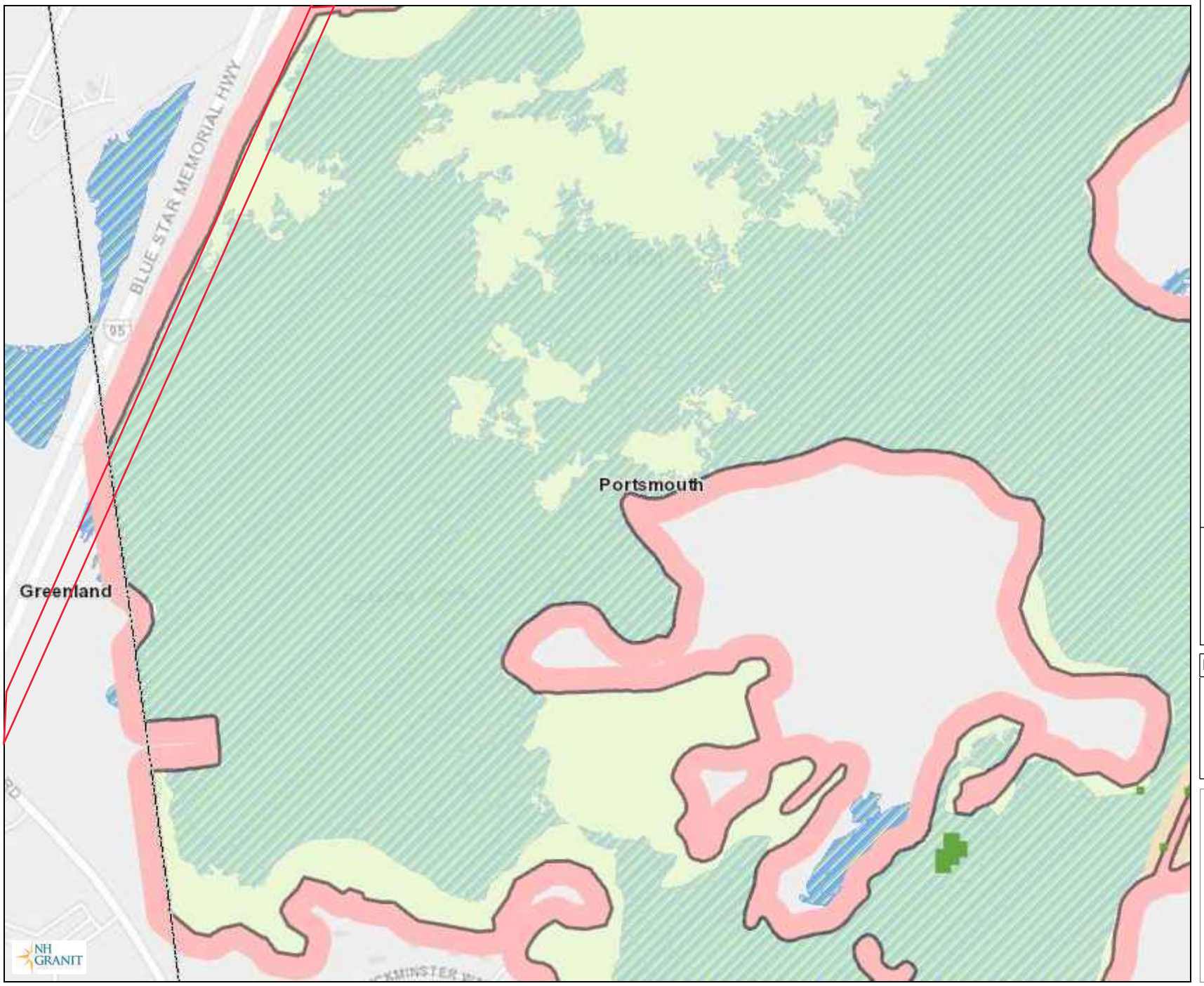


Portsmouth, New Hampshire
2022

Tax Map 214

FIGURE 4 – WETLAND PERMIT PLANNING TOOL SCREENING

P1



Legend

- Dock Registrations
- Active Permits
  - AGRICULT
  - EMERGENCY
  - EXPEDITED
  - PBN
  - ROADWAYREG
  - SHORE-PBN
  - SHORELAND
  - SPN
  - STD APP
  - TRAILS
  - UTILITY
  - WET-PBN
- Additional Lines
- City/Town
- Designated Rivers with a
  - Ammonoosuc
  - Ashuelot
  - Cocheco
  - Cold

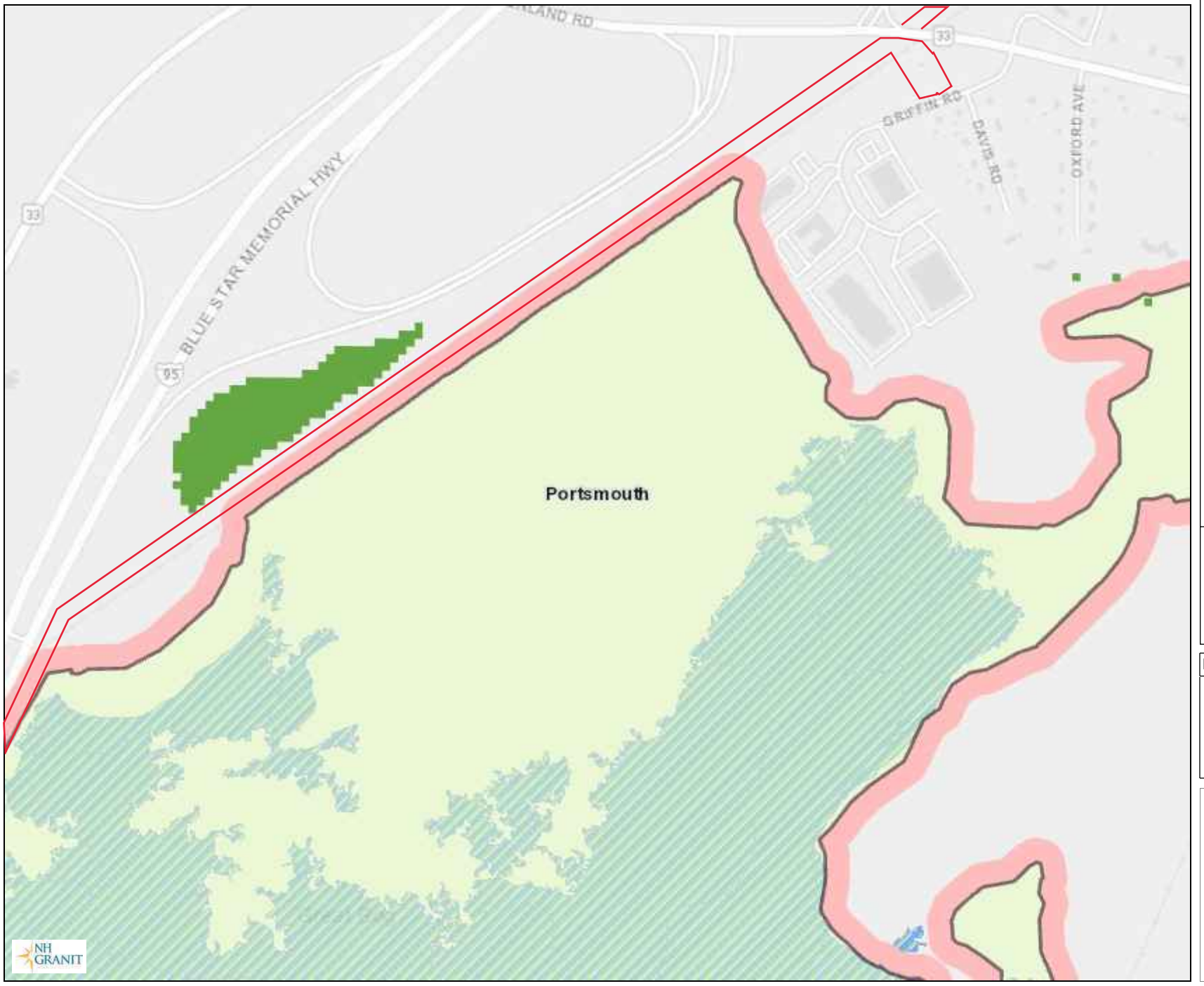
Map Scale

1: 6,494

Map Generated: 11/29/2023

Notes

P2



Legend

- Dock Registrations
- Active Permits
  - AGRICULT
  - EMERGENCY
  - EXPEDITED
  - PBN
  - ROADWAYREG
  - SHORE-PBN
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  - Cold

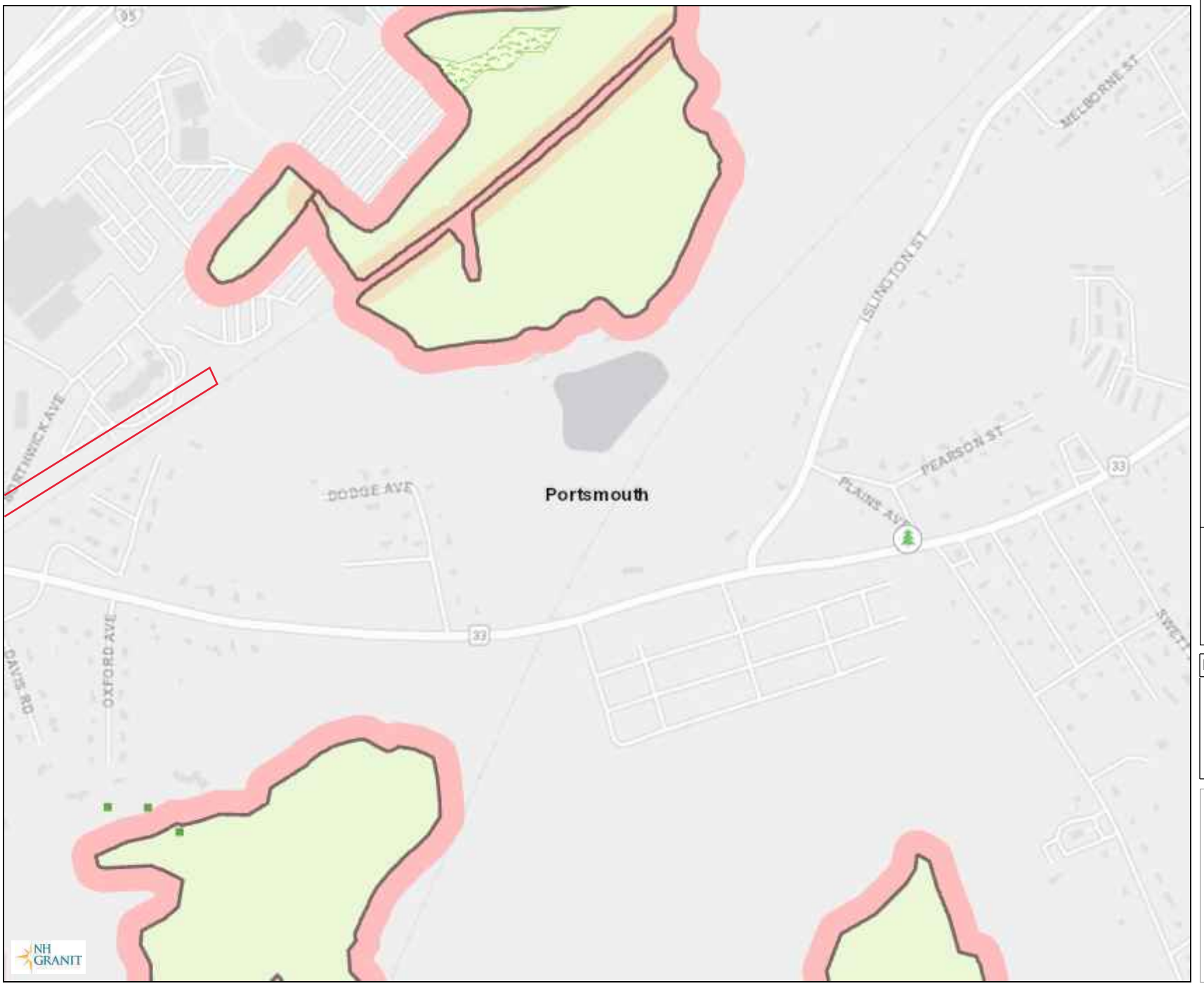
Map Scale

1: 6,494

Map Generated: 11/29/2023

Notes

P3



Legend

- Dock Registrations
- Active Permits
  - AGRICULT
  - EMERGENCY
  - EXPEDITED
  - PBN
  - ROADWAYREG
  - SHORE-PBN
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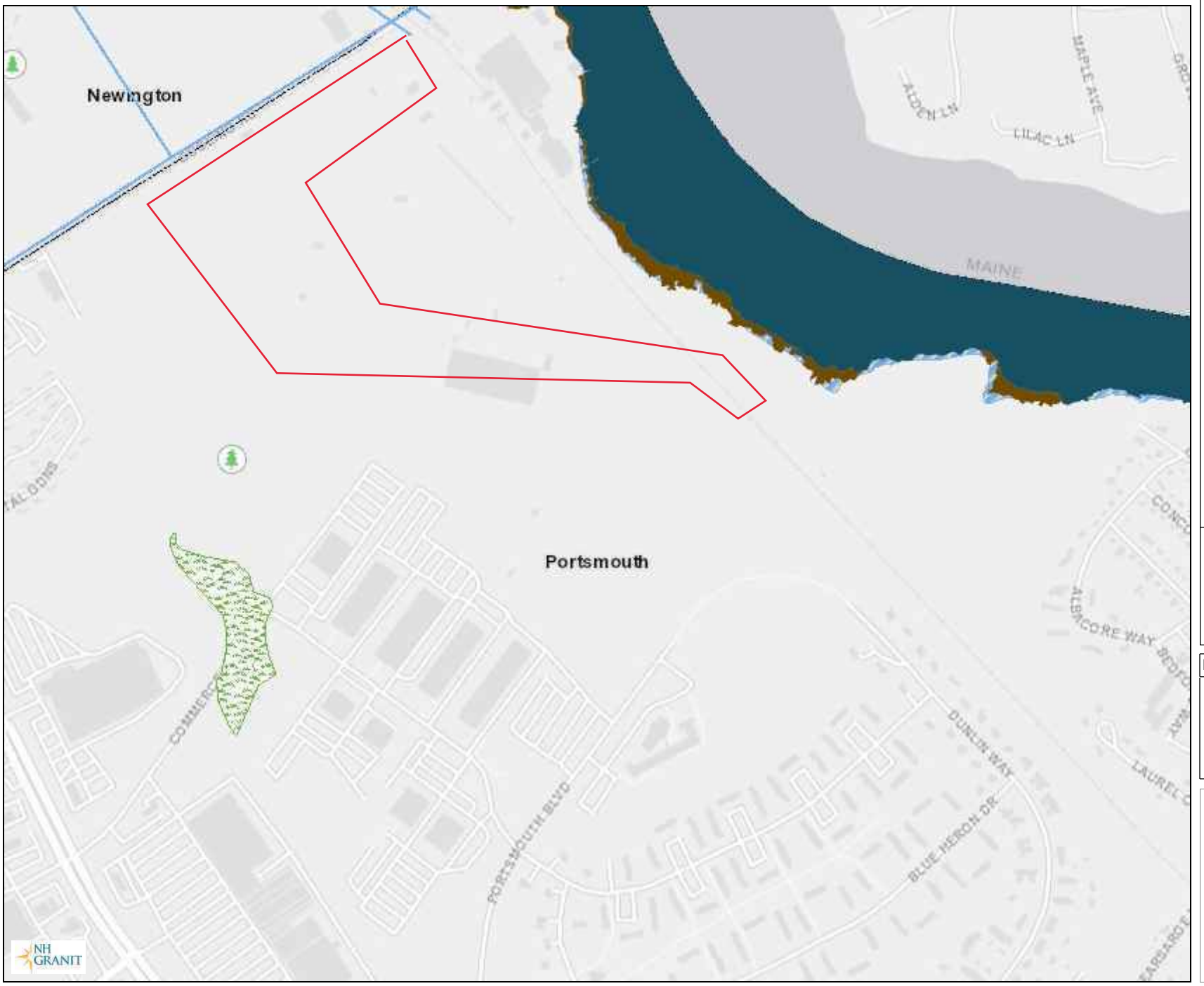
Map Scale

1: 6,494

Map Generated: 11/29/2023

Notes

P4



Legend

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- Active Permits
  - AGRICULT
  - EMERGENCY
  - EXPEDITED
  - PBN
  - ROADWAYREG
  - SHORE-PBN
  - SHORELAND
  - SPN
  - STD APP
  - TRAILS
  - UTILITY
  - WET-PBN
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  - Ashuelot
  - Cocheco
  - Cold

Map Scale

1: 6,494

Map Generated: 11/29/2023

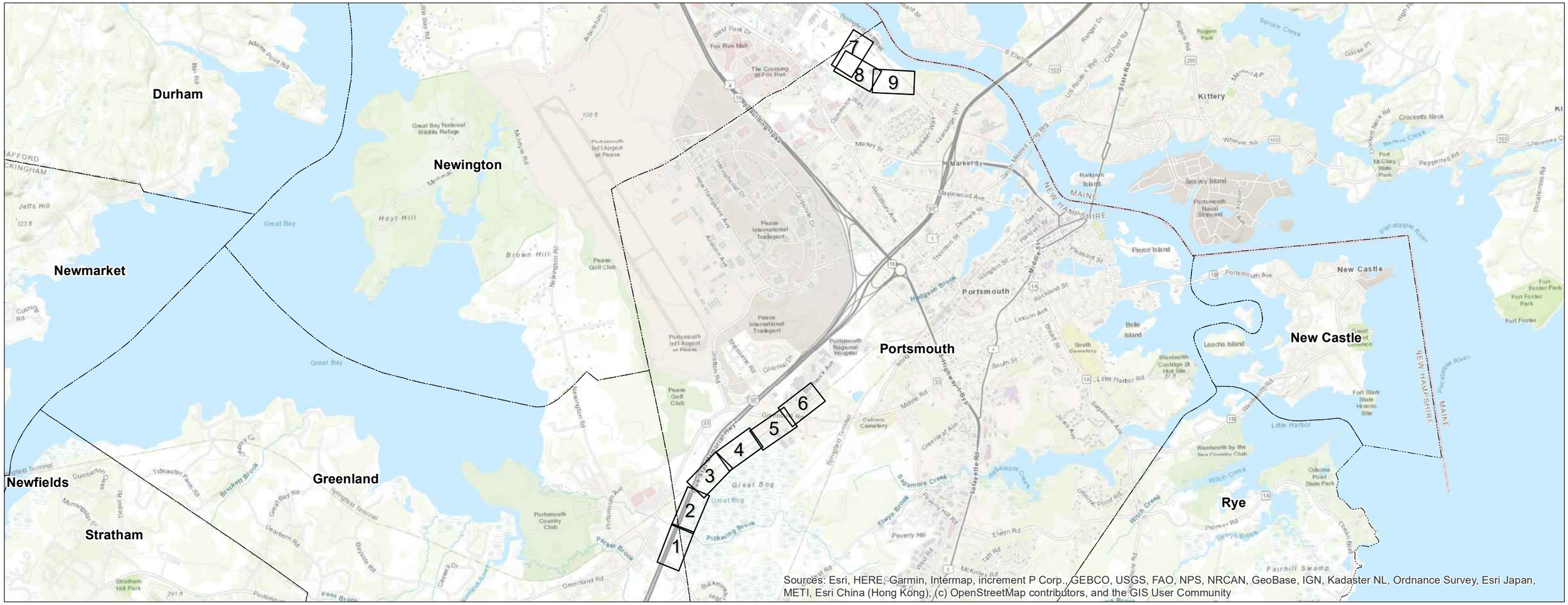
Notes

FIGURE 5 – ACCESS AND PERMITTING PLANS

Resistance Substation Retirement Project

GREENLAND AND PORTSMOUTH, NEW HAMPSHIRE
Environmental Resources Map

Date: November 14, 2023



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

PREPARED FOR:

EVERSOURCE ENERGY

13 Legends Drive
Hooksett, NH 03106

N

0 0.25 0.5 1 Miles

INDEX OF FIGURES

Title Sheet / Index Map
Map Sheets 1-9

NO.	DATE	REVISIONS

PREPARED BY:

GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

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- EXISTING ACCESS
- VERY POORLY DRAINED SOILS IMPACT
- HISTOSOL AND HISTIC EPIPEDON SOILS
- UPLAND MATTING
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- POTENTIAL VERNAL POOL
- PEATLAND HABITAT
- WETLAND
- WETLAND ADJACENT TO TIER 3+
- STONEWALL
- WORK AREA
- DOT ROAD
- TOWN BOUNDARY
- RAILROAD
- 2FT CONTOURS

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1 inch = 100 feet

0 50 100 Feet

NO.	DATE	REVISIONS

EVERSOURCE ENERGY

RESISTANCE SUBSTATION RETIREMENT PROJECT

GREENLAND/PORTSMOUTH, NH | MAP SHEET

Date: November, 2023 | **1 OF 9**

04.0191410.47

Document Path: \\GZABedford\Jobs\04Jobs\0191400s\04.0191410.00 - EE Siting Permitting 2019-2021\04.0191410.47 - T-13, 3171, and Resistance SS, Portsmouth and Greenland NH\Figures\MXD\ResistanceSSPlans.mxd

GREENLAND
PORTSMOUTH

INTERSTATE 95 SOUTH — Interstate 95 South

INTERSTATE 95 NORTH — Interstate 95 North

GW-1
PEM1/PSS1/PFO1E,Fg/R2UB

APPROXIMATE VERY
POORLY DRAINED SOILS
IMPACT: 102,309 SF

5 78 6 93 7 77 92 3171 Line 8 3111 Line 76 3174 Line 91 9 3111 Line 75 90 10 74 11 89 12 73 88

Unnamed Stream

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EVERSOURCE ENERGY

RESISTANCE SUBSTATION RETIREMENT PROJECT

PORTSMOUTH, NH | MAP SHEET

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Interstate 95 South — INTERSTATE 95 SOUTH

I-95 SB Exit 3 On-ramp (NH-33)

SPAULDING TPKE NB EXIT 3 ON-RAMP (WOODBURY AVE)

Spaulding Tpke NB Exit 3 On-ramp (Woodbury Ave)

Crossover

INTERSTATE 95 NORTH — Interstate 95 North

APPROXIMATE VERY POORLY DRAINED SOILS IMPACT: 102,309 SF

APPROXIMATE TEMPORARY NON-VPD WETLAND IMPACT: 139,792 SF

3111 Line

3171 Line

GW-1
PEM1/PSS1/PFO1E,Fg/R2UB

PW-1
PEM1/PSS1E,Fg

Unnamed Stream

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EVERSOURCE ENERGY

RESISTANCE SUBSTATION RETIREMENT PROJECT

PORTSMOUTH, NH

MAP SHEET

Date: November, 2023

04.0191410.47

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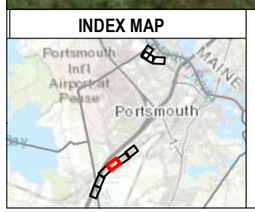

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RESISTANCE SUBSTATION RETIREMENT PROJECT

PORTSMOUTH, NH | MAP SHEET

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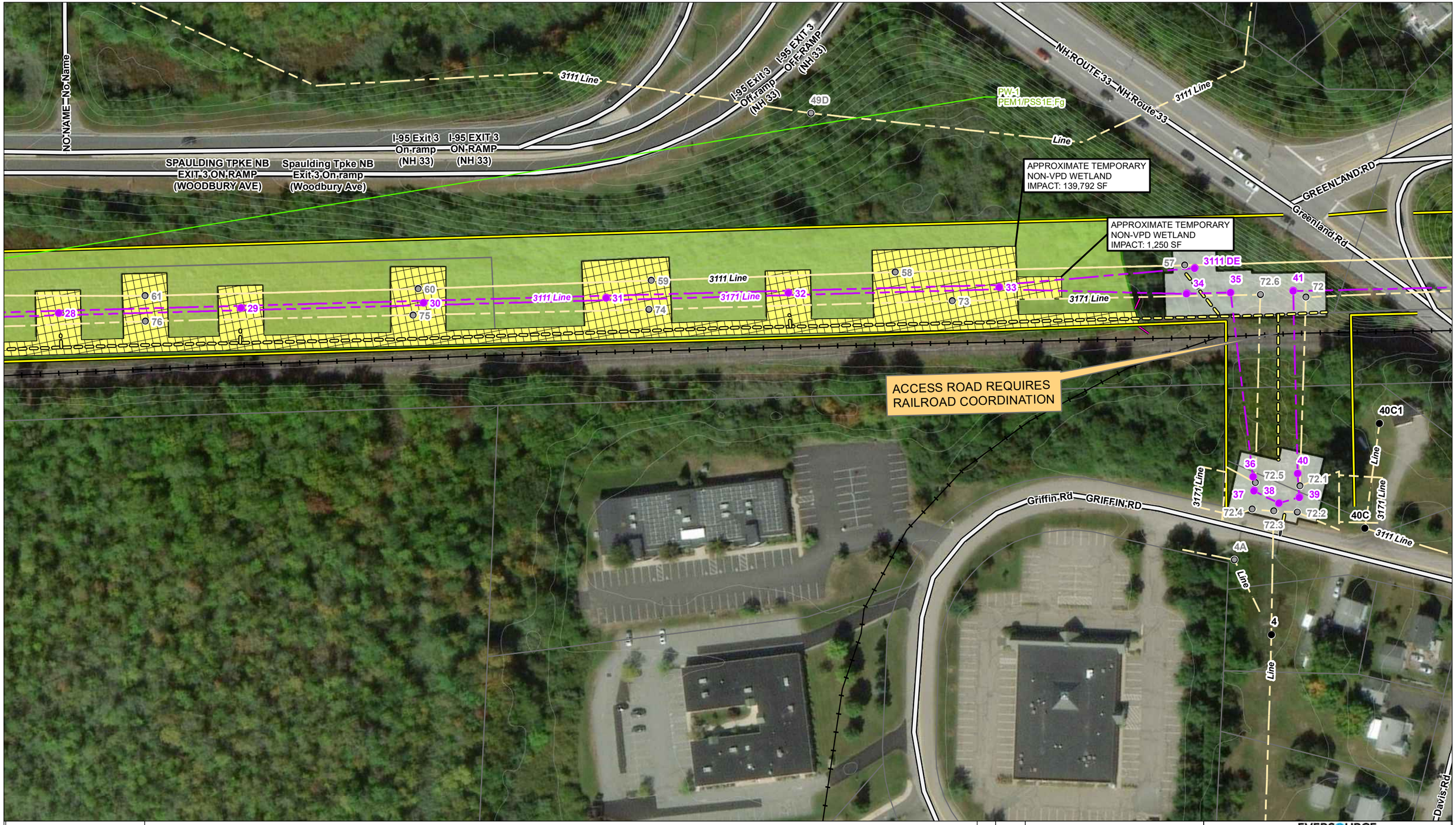

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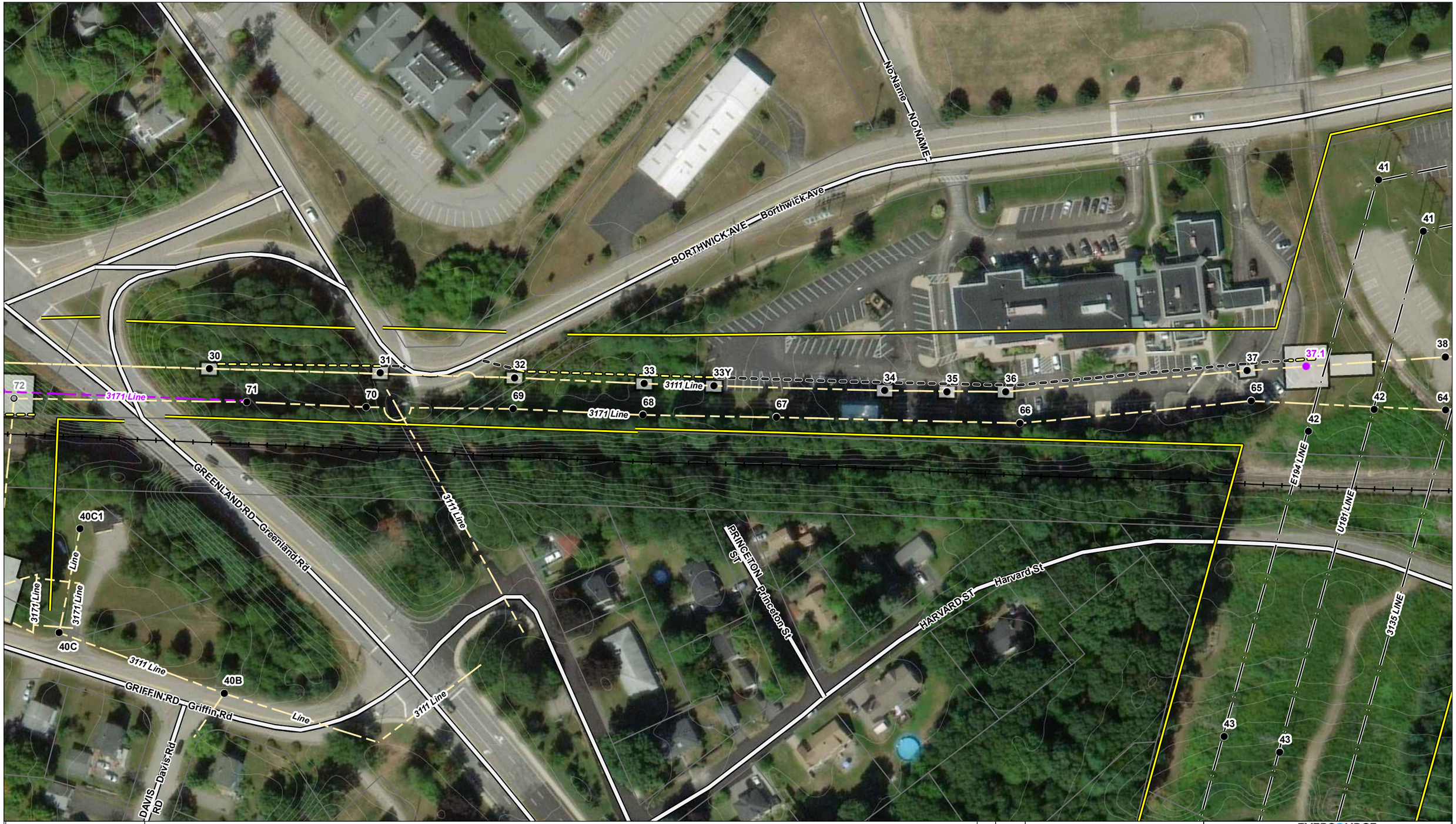

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Schiller S/S
Schiller S/S
Schiller S/S
Schiller S/S
Portsmouth S/S
APPROXIMATE TEMPORARY NON-VPD WETLAND IMPACT: 3,530 SF
NO NAME
No Name
339 Line
Z156 Line
U181 LINE
U181 Line
T13 Line
E194 LINE
E194 Line
3176 Line
PW2A Line
PORTSMOUTH
NEWINGTON
Gosling Rd
GOSLING RD
PW-2 PEM1/PSS1E
PW-3 PEM1/PSS1E
PW-4 PEM1/PSS1E
PW-5 PEM1/PSS1E
PW-6 PEM1/PSS1E

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EVERSOURCE ENERGY

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PORTSMOUTH, NH

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PW-3
PEM1/PSS1E

PW-4
PEM1/PSS1E

PW-5
PEM1/PSS1E

PW-6
PEM1/PSS1E

PW-9
PEM1/PSS1Ex

PW-8
PEM1/PSS1E

PW-7
PEM1/PSS1E;H

3176 Line

E194 LINE - E194 Line

U181 LINE

U181 Line

2156 Line

T13 Line

339 Line

No Name - NO NAME

Portsmouth
S/S

APPROXIMATE TEMPORARY
NON-VPD WETLAND
IMPACT: 3,530 SF

APPROXIMATE TEMPORARY
NON-VPD WETLAND
IMPACT: 1,848 SF

APPROXIMATE TEMPORARY
NON-VPD WETLAND
IMPACT: 241 SF

APPROXIMATE UPLAND
MATTING: 345 SF

APPROXIMATE UPLAND
MATTING: 603 SF

BRIDGE OVER
STONEWALL

APPROXIMATE
UPLAND MATTING:
2,244 SF

APPROXIMATE
UPLAND
MATTING: 9 SF

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RESISTANCE SUBSTATION RETIREMENT PROJECT

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PW-7
PEM1/PSS1E,H

APPROXIMATE TEMPORARY
NON-VPD WETLAND
IMPACT: 1,848 SF

NO NAME

No Name

PW-11
PSS1/PEM1Ex

APPROXIMATE TEMPORARY
NON-VPD WETLAND
IMPACT: 3,416 SF

APPROXIMATE TEMPORARY
NON-VPD WETLAND
IMPACT: 4,483 SF

PW-14
PSS1/PEM1E

T13 Line

339 Line

PW-7
PEM1/PSS1E,H

PW-9
PEM1/PSS1Ex

PW-10
PSS1Ex

PW-12
PEM1/PSS1E

PW-15
PEM1E

Resistance
S/S

REMOVAL FROM
INSIDE FENCE

PW-8
PEM1/PSS1E

APPROXIMATE
TEMPORARY NON-VPD
WETLAND IMPACT: 241 SF

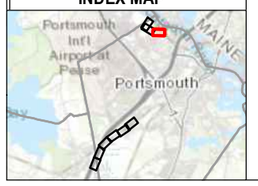
PW-13
PEM1/PSS1E

REMOVAL FROM
INSIDE FENCE

Portsmouth Blvd

PORTSMOUTH BLVD

INDEX MAP



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0 50 100 Feet

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EVERSOURCE ENERGY

RESISTANCE SUBSTATION RETIREMENT PROJECT

PORTSMOUTH, NH

MAP SHEET

Date: November, 2023

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CONSTRUCTION SEQUENCE:

1. WETLAND BOUNDARIES TO BE CLEARLY MARKED PRIOR TO THE START OF CONSTRUCTION.

2. SEDIMENT AND EROSION CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH THE DETAIL PROVIDED, AS NECESSARY, AND CONSISTENT WITH THE NHDES MARCH 2019 BMP MANUAL FOR UTILITY MAINTENANCE.

3. WETLAND IMPACTS ASSOCIATED WITH WETLAND CROSSINGS ARE REQUIRED FOR ACCESS BETWEEN STRUCTURES WITHIN THE RIGHT OF WAY.

4. ADEQUATE PRECAUTION SHALL BE EXERCISED TO AVOID SPILLAGE OF FUEL OILS, CHEMICALS, OR SIMILAR SUBSTANCES; NO FUELS, LUBRICANTS, CHEMICALS OR SIMILAR SUBSTANCES SHALL BE STORED BENEATH TREES OR IN THE VICINITY OF ANY WETLANDS, RIVER, STREAM OR OTHER BODY OF WATER; OR IN THE VICINITY OF NATURAL OR MAN-MADE CHANNELS LEADING THERETO. NO POWER EQUIPMENT SHALL BE STORED, MAINTAINED, OR FUELED IN ANY AREA ADJACENT TO A WETLAND, RIVER, STREAM OR OTHER BODY OF WATER.

5. REMOVE COMPLETELY ALL CONTAMINATION FROM ANY SPILLAGE OF CHEMICALS OR PETROLEUM PRODUCT WITH COMPLETE REHABILITATION OF THE AFFECTED AREA.

6. ACCESS ROUTES HAVE BEEN SELECTED TO PREVENT DEGRADATION OF THE RIGHT-OF-WAY AND MINIMIZE ENVIRONMENTAL IMPACT. OPERATIONS SHALL BE CONFINED TO THE SPECIFIED ACCESS ROUTES WITHIN THE PROPOSED WETLAND IMPACT AREA. ACCESS ROUTES SHALL NOT EXCEED A 16 FOOT-WIDTH.

7. IMPACT TO VEGETATION WITHIN WETLANDS WILL BE LIMITED TO THE EXTENT NECESSARY TO PLACE THE SWAMP MATS WHERE REQUIRED.

8. LOW GROWING VARIETIES OF VEGETATION ADJACENT TO WETLANDS SHALL BE PRESERVED TO THE EXTENT POSSIBLE. STUMPS AND ROCKS SHALL NOT BE REMOVED, AND THERE SHALL BE NO EXCAVATIONS, FILLS OR GRADING DONE ADJACENT TO WETLANDS, UNLESS MINOR EXCAVATIONS IS NEEDED FOR ACCESS.

9. TIMBER MATS AND PERIMETER CONTROLS WILL BE USED ALONG ACCESS ROUTES AND WORK PADS WITHIN WETLAND AREAS. THESE MATS ARE CONSTRUCTED OF HEAVY TIMBERS OR COMPOSITE MATERIAL, BOLTED TOGETHER, AND ARE PLACED END-TO-END IN THE WETLAND TO SUPPORT HEAVY EQUIPMENT. ALL SWAMP MATS SHALL BE PLACED AND REMOVED SO AS NOT TO CAUSE ANY RUTS, CHANNELS OR DEPRESSIONS, OR OTHERWISE CAUSE ANY UNDUE DISTURBANCE TO WETLANDS.

10. IF TIMBER MAT BMP IS NOT SUFFICIENT DUE TO HIGH WATER, ADDITIONAL BMP'S MAY INCLUDE THE PLACEMENT OF GEOTEXTILE FABRIC, 3"-4" STONE, AND GRAVEL TO PROVIDE A SUITABLE ROAD BED. A TEMPORARY CULVERT MAY BE REQUIRED IN AREAS OF HIGH FLOW TO MAINTAIN HYDROLOGIC CONNECTIVITY. ALL MATERIAL WILL BE REMOVED FROM JURISDICTIONAL AREAS AFTER CONSTRUCTION COMPLETION.

11. NO MATERIAL SHALL BE PLACED IN ANY LOCATION OR IN ANY MANNER SO AS TO IMPAIR SURFACE WATER FLOW INTO, THROUGH OR OUT OF ANY WETLAND AREA. NO INSTALLATION SHALL CREATE AN IMPOUNDMENT THAT WILL IMPEDE THE FLOW OF WATER OR CAUSE FLOODING.

12. NO MATERIAL SHALL BE TAKEN FROM THE WETLANDS AREA EXCEPT THAT WHICH MUST NECESSARILY BE REMOVED FOR THE STRUCTURE OR FOUNDATION PLACEMENT OR STABILIZATION. ALL EXCESS MATERIAL TAKEN FROM THE WETLAND WILL BE REMOVED FROM THE SITE.

13. ANY PROPOSED SUPPORT FILLS SHALL BE CLEAN GRAVEL AND STONE, FREE OF WASTE METAL PRODUCTS, ORGANIC MATERIALS AND SIMILAR DEBRIS AND SHALL NOT EXCEED THE AMOUNT PERMITTED. THIS ALLOWABLE FILL IS THE ONLY FILL THAT MAY REMAIN IN THE WETLAND AFTER CONSTRUCTION. ALL CUT AND FILLS SLOPES SHALL BE SEEDED/LOAMED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.

14. INSTALL NEW POLES IN THE LOCATIONS DESIGNATED ON THE PERMITTING PLANS.

15. CABLE INSTALLATION WILL BE PERFORMED IN A MANNER SO AS TO AVOID, OR LIMIT TO THE MAXIMUM EXTENT POSSIBLE, TRAVERSING WETLANDS WITH HEAVY EQUIPMENT. IN SOME CASES, A HELICOPTER MAY BE USED DURING THE INSTALLATION TO MINIMIZE IMPACTS.

16. REMOVAL OF THE OLD POLE WILL OCCUR ONCE THE CABLE HAS BEEN INSTALLED ON THE NEW STRUCTURE. THE OLD STRUCTURES WILL BE REMOVED FROM THE SITE. POLES WILL BE CUT AT THE GROUND SURFACE. FOOTINGS WILL BE ABANDONED IN PLACE TO MINIMIZE IMPACTS.

17. ALL TIMBER MATS, MATERIAL, AND DEBRIS WILL BE REMOVED FROM THE WORK AREA UPON THE COMPLETION OF CONSTRUCTION.

18. UPLAND DISTURBED AREAS SHALL BE RESTORED AND STABILIZED UPON COMPLETION OF CONSTRUCTION. WORK PAD RESTORATION SHOULD INCLUDE REDUCING THE WORK PAD TO A 30 BY 60 FOOT AREA, AND REDUCING SLOPES TO A MAXIMUM OF 25%. STOCKPILED MATERIAL SHOULD BE SPREAD TO REDUCE ANY UNNECESSARY SLOPES. GRAVEL WORK PADS AND SLOPES SHOULD BE SCARIFIED TO A MINIMUM OF 3" BEFORE SPREADING TOPSOIL/LOAM.

19. ALL TEMPORARY WETLAND IMPACTS WILL BE RE-GRADED TO ORIGINAL CONTOURS FOLLOWING CONSTRUCTION. NEW ENGLAND EROSION CONTROL/RESTORATION MIX, AVAILABLE THROUGH NEW ENGLAND WETLAND PLANTS, INC., 820 WEST STREET, AMHERST, MA 01002, 413-548-8000, OR EQUIVALENT SEED MIX SHALL BE APPLIED IN WETLAND AREAS THAT ARE NOT INUNDATED, AS NECESSARY.

20. MULCH USED FOR STABLIZATION SHALL CONSIST OF SEEDLESS STRAW.

21. SEDIMENT AND EROSION CONTROL MEASURES WILL BE EVALUATED AND REMOVED IF NECESSARY UPON THE COMPLETION OF CONSTRUCTION.

22. COMMERCIAL LOAM WILL NOT BE USED AS PART OF RESTORATION. ONLY IN-SITU TOPSOIL WILL BE USED TO RESTORE DISTURBED AREAS.

23. NATURALLY VEGETATED LOCAL WETLAND BUFFER AREAS OUTSIDE OF EXISTING TRAILS MUST BE RESTORED UPON COMPLETION OF WORK.

WINTER CONSTRUCTION NOTES

1. PROP0SED VEGETATED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED. STABILIZATION METHODS SHALL INCLUDE SEEDING AND MULCH, AND INSTALLATION OF EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS.

2. DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE TEMPORARILY STABILIZED WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.

3. AFTER NOVEMBER 15TH, INCOMPLETE ROAD OR PARKING SURFACES, WHERE WORK HAS STOPPED FOR THE WINTER SEASON, SHALL BE PROTECTED WITH A MINIMUM OF 3 INCHES OF CRUSHED GRAVEL (NHDOT 304.3).

GENERAL NOTES:

OWNER: EVERSOURCE ENERGY
13 LEGENDS DRIVE
HOOKSETT, NH 03106

1. BASE PLAN PROVIDED BY EVERSOURCE ENERGY. EVERSOURCE ENERGY PROVIDED THE WETLAND DATA. EVERSOURCE ENERGY PROVIDED THE UTILITY DESIGN.

2. JURISDICTIONAL WETLANDS WERE DELINEATED BY GZA GEOEVIRONMENTAL IN 2022, IN ACCORDANCE WITH THE 1987 U.S. ARMY CORPS OF ENGINEERS' "WETLANDS DELINEATION MANUAL, TECHNICAL REPORT Y-87-1," AND REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTH CENTRAL AND NORTHEAST REGION," NOVEMBER 2022 AND FEBRUARY 2023.

3. GZA GEOENVIRONMENTAL EVALUATED WETLANDS AS POTENTIAL VERNAL POOLS IN 2022 IN ACCORDANCE WITH "IDENTIFICATION AND DOCUMENTATION OF VERNAL POOLS IN NEW HAMPSHIRE," 1997, NEW HAMPSHIRE FISH AND GAME DEPARTMENT, NONGAME AND ENDANGERED WILDLIFE PROGRAM.

4. GZA GEOENVIRONMENTAL COMPLETED WETLANDS FUNCTION AND VALUES ASSESSMENT IN 2022 AND 2023 IN ACCORDANCE WITH THE ACOE'S "HIGHWAY METHODOLOGY WORKBOOK SUPPLEMENT," SEPTEMBER 1999.

5. SITE PLAN IS FOR PERMITTING PURPOSES ONLY AND DOES NOT REPRESENT A PROPERTY BOUNDARY SURVEY.

6. THE PROJECT WILL BE MANAGED IN A MANNER THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES.

7. IN ACCORANCE WITH ENV-WQ 1505.02, THE SMALLEST PRACTICAL AREA SHALL BE DISTURBED DURING CONSTRUCTION, BUT IN NO CASE SHALL EXCEED 5 ACRES AT ANY ONE TIME BEFORE DISTURBED AREAS ARE STABILIZED. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
- A MINIMUM 85 PERCENT VEGETATED GROWTH HAS BEEN ESTABLISHED
- A MINIMUM OF 3 INCHES OF NON-EROSIVE MATERIAL HAS BEEN INSTALLED
- OR, EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.

EROSION CONTROL NOTES:

1. INSTALLATION OF EROSION CONTROL GRINDINGS AND/OR SILT FENCES SHALL BE COMPLETE PRIOR TO THE START OF WORK IN ANY GIVEN AREA. EROSION CONTROLS SHALL BE USED DURING CONSTRUCTION AND REMOVED WHEN ALL SLOPES HAVE A HEALTHY STAND OF VEGETATION COVER. EROSION CONTROL MEASURES SHALL BE INSPECTED ON A WEEKLY BASIS AND AFTER .25" OR GREATER RAINFALL EVENTS.

2. AS REQUIRED, CONSTRUCT TEMPORARY BERMS, SILTATION FENCES, SEDIMENT TRAPS, ETC. TO PREVENT EROSION & SEDIMENTATION OF WETLANDS.

3. THE WORK AREA SHALL BE GRADED AND OTHERWISE SHAPED IN SUCH A MANNER AS TO MINIMIZE SOIL EROSION, SILTATION OF DRAINAGE CHANNELS, DAMAGE TO EXISTING VEGETATION, AND DAMAGE TO PROPERTY OUTSIDE LIMITS OF THE WORK AREA. EROSION CONTROL GRINDINGS WILL BE NECESSARY TO ACCOMPLISH THIS END.

4. ANY STRIPPED TOPSOIL SHALL BE STOCKPILED, WITHOUT COMPACTION, AND STABILIZED WITH BMPS.

5. PERMANENT OR TEMPORARY COVER MUST BE IN PLACE BEFORE THE GROWING SEASON ENDS. WHEN SEEDED AREAS ARE NOT MULCHED, PLANTINGS SHOULD BE MADE FROM EARLY SPRING TO MAY 20 OR FROM AUGUST 15 TO SEPTEMBER 15. NO DISTURBED AREA SHALL BE LEFT EXPOSED DURING WINTER MONTHS, PLANT ANNUAL RYEGRASS PRIOR TO OCTOBER 15TH.

6. EROSION CONTROLS SHALL BE INSPECTED WEEKLY AND AFTER EVERY HALF-INCH OF RAINFALL.

7. EROSION CONTROL MATTING, IF REQUIRED, WILL CONSIST OF JUTE MATTING. MATTING WITH WELDED PLASTIC OR 'BIODEGRADABLE PLASTIC' NETTING OR THREAD WILL BE AVOIDED TO LIMIT UNINTENTIONAL MORTALITY TO SNAKES.

RESISTANCE SUBSTATION RETIREMENT PROJECT

GREENLAND & PORTSMOUTH
NEW HAMPSHIRE

NOTES

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: EVERSOURCE ENERGY	
PROJ MGR: LEW	REVIEWED BY: TLT	CHECKED BY: DMZ	SHEET S1
DESIGNED BY: MJD	DRAWN BY: MJD	SCALE:	
DATE: 08/15/2023	PROJECT NO. 04.0191410.47	REVISION NO.	

Best Management Practices (BMP's) for Straw wattles

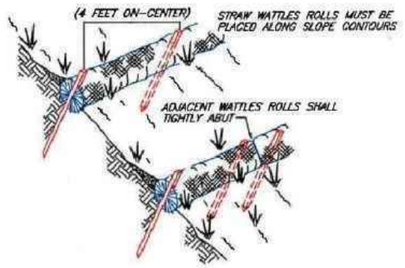
Definition and purpose:
Straw wattles are burlap rolls filled with straw that trap sediment and interrupt water flow by reducing slope lengths.

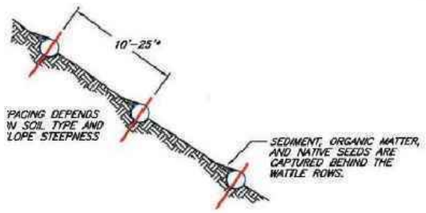
Applications:
* Along erodible or unstablizied slopes
* Spread overland waterflow
* Trap sediment
* Around storm drain inlets to slow water and settle out sediment
* Overlap ends approximately 6 inches

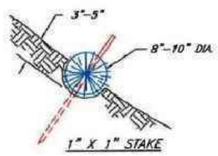
Installation:
Straw wattles are installed parallel to slope contours and perpendicular to sheet flow.

Spacing* - Dependent on slope length, soil steepness and soil type (general range 10 - 25').

Trenching - 2"-5" inch trench
Stacking - at each end and four foot on center (i.e. 25 foot wattle uses 6 stacks)







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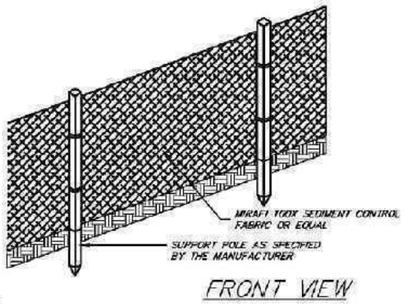
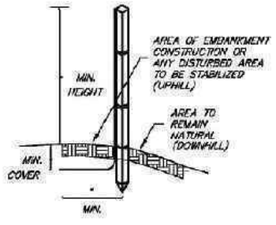
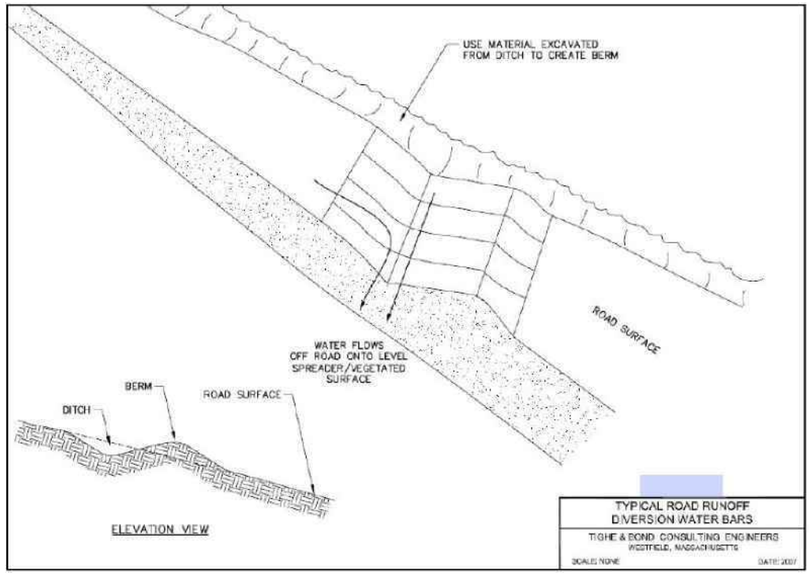


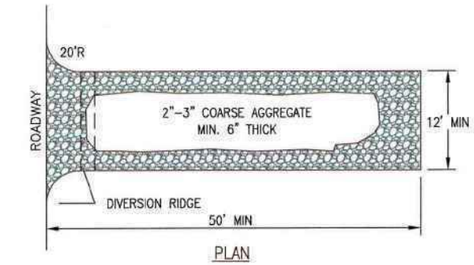
FRONT VIEW



SIDE VIEW

NOTES (SILT FENCE)
1. THE HEIGHT OF THE BARRIER SHALL NOT EXEED 36 INCHES.
2. WHEN JOINTS ARE NECESSARY, FILTER CLOTH SHALL BE SPLICED TOGETHER ONLY AT A SUPPORT POST, WITH A MINIMUM 6—INCH OVERLAP, AND SECURELY SEALED. SEE MANUFACTURER'S RECOMMENDATIONS.
3 POSTS SHALL BE PLACED AT A MAXIMUM OF 10 FEET APART AT THE BARRIER LOCATION AND DRIVEN SECURELY INTO THE GROUND (MINIMUM OF 12 INCHES). WHEN EXTRA STRENGTH FABRIC IS USED WITHOUT THE WIRE SUPPORT FENCE, POST SPACING SHALL BE AS MANUFACTURER RECOMMENDS.
4. A TRENCH SHALL BE EXCAVATED APPROXIMATELY 6 INCHES WIDE AND 6 INCHES DEEP ALONG THE LINE OF POSTS AND UPSLOPE OF THE BARRIER IN ACCORDANCE WITH RECOMMENDATIONS
5. THE FABRIC SHALL NOT EXTEND MORE THAN 36 INCHES ABOVE THE ORIGINAL GROUND SURFACE, AND WILL EXTEND A MINIMUM OF 8 INCHES INTO THE TRENCH. FILTER FABRIC SHALL NOT BE STAPLED TO EXISTING TREES.
6. THE TRENCH SHALL BE BACKFILLED AND THE SOIL COMPACTED OVER THE FILTER FABRIC.
7. FABRIC BARRIERS SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFUL PURPOSE, BUT NOT BEFORE THE UPSLOPE AREA HAS BEEN PERMANENTLY STABILIZED.
8. FILTER BARRIERS SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST ONCE DAILY DURING PROLONGED RAINFALL AND ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.
9. SHOULD THE FABRIC DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE BARRIER STILL BE NECESSARY, THE FABRIC SHALL BE REPLACED PROMPTLY.
10. SEDIMENT DEPOSITS SHOULD BE REMOVED WHEN THEY REACH APPROXIMATELY ONE—HALF THE HEIGHT OF THE BARRIER.
11. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT FENCE OR FILTER BARRIER IS NO LONGER REQUIRED SHALL BE DRESSED TO CONFORM TO THE EXISTING GRADE, PREPARED AND SEEDED.





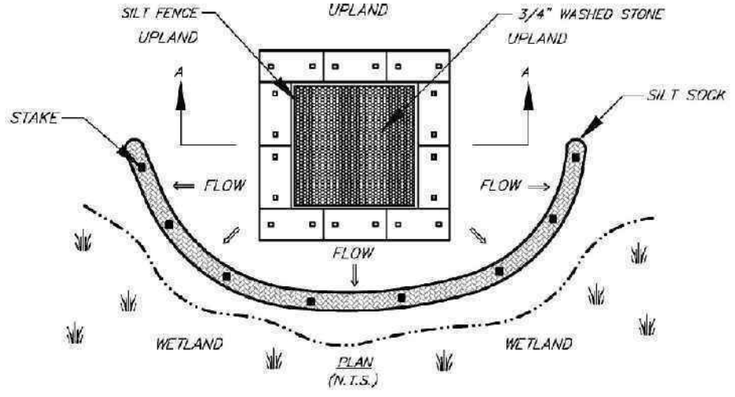
PLAN

NOTES:
1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.

2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.

CONSTRUCTION ENTRANCE

NOT TO SCALE



PLAN
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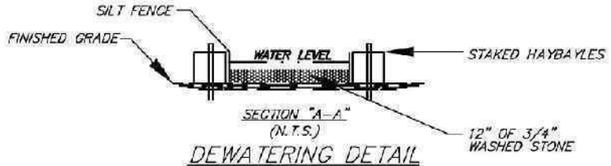


SECTION "A-A"
(N.T.S.)

DEWATERING DETAIL
N.T.S.

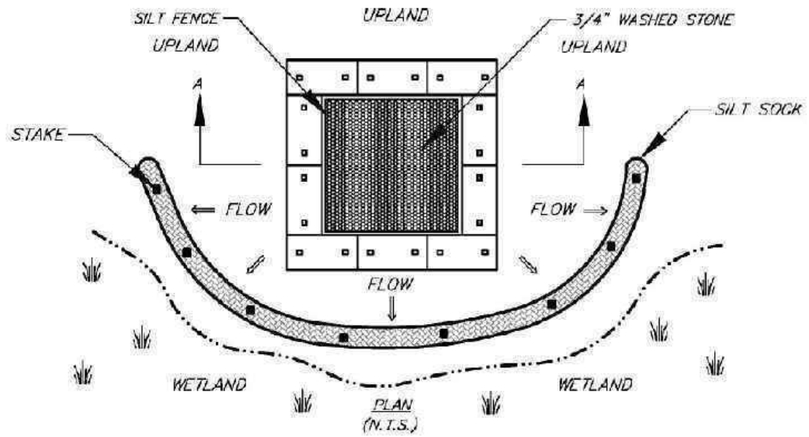
RESISTANCE SUBSTATION RETIREMENT PROJECT
GREENLAND AND PORTSMOUTH
NEW HAMPSHIRE

BMP DETAILS

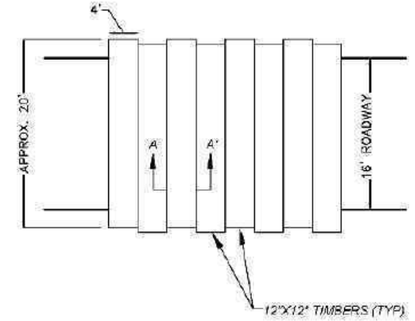
PREPARED BY:
GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR:
EVERSOURCE ENERGY

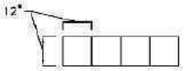
PROJ MGR: LEW	REVIEWED BY: TLT	CHECKED BY: DMZ	SHEET S2
DESIGNED BY: MJD	DRAWN BY: MJD	SCALE:	
DATE: 08/15/2023	PROJECT NO. 04.0191410.47	REVISION NO.	



DEWATERING DETAIL
N.T.S.



TYPICAL SWAMP MAT PLAN VIEW
N.T.S.



TYPICAL MAT SECTION A-A
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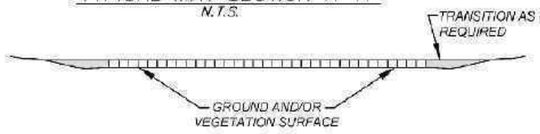

TYPICAL SWAMP MAT SECTION DETAIL
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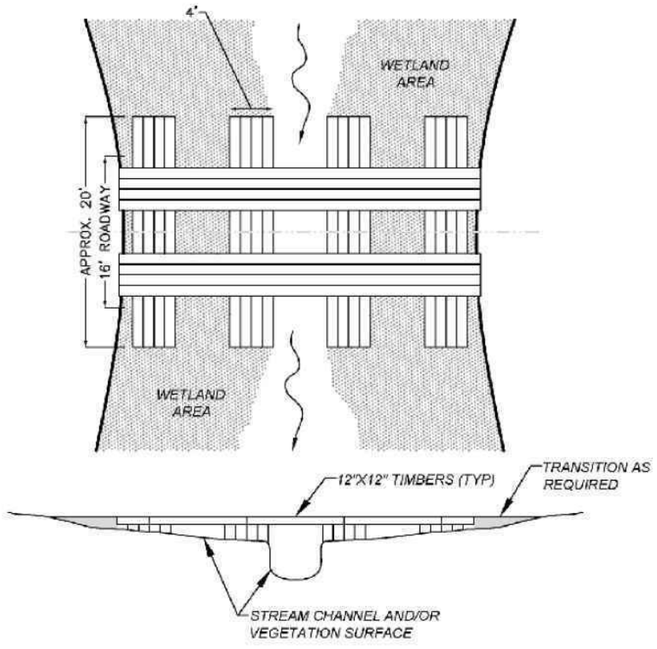

TYPICAL STREAM CROSSING
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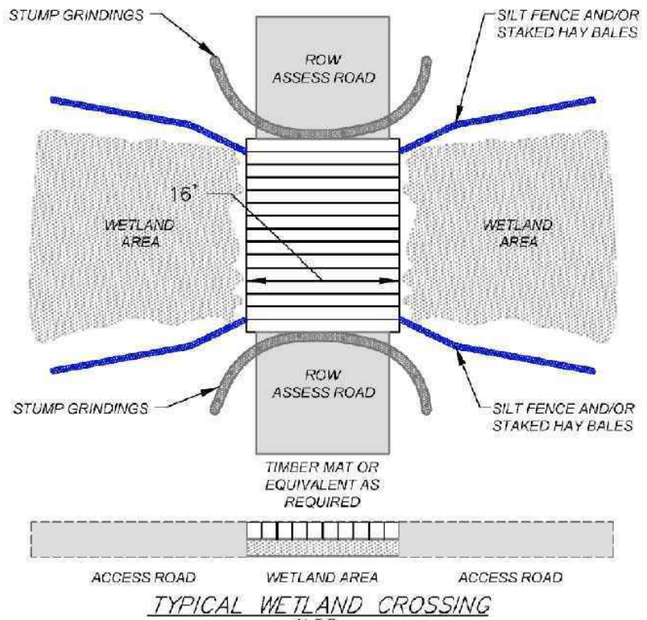

TYPICAL WETLAND CROSSING
N.T.S.

RESISTANCE SUBSTATION RETIREMENT PROJECT

GREENLAND AND PORTSMOUTH
NEW HAMPSHIRE

BMP DETAILS

PREPARED BY:
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DATE: 08/15/2023	PROJECT NO. 04.0191410.47	REVISION NO.	

FIGURE 6 – FEMA FLOODPLAIN MAPS

70°52'30.86"W 43°3'58.21"N

70°48'44.15"W 42°59'46.85"N

FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR DRAFT 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
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM, including historic versions, the current map date for each FIRM panel, how to order products, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at https://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

For community and countywide map dates, refer to 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.

Basemap information shown on this FIRM was provided in digital format by the United States Geological Survey (USGS). The basemap shown is the USGS National Map: Orthoimagery. Last refreshed October, 2020.

This map was exported from FEMA's National Flood Hazard Layer (NFHL) on **11/27/2023 3:41 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. For additional information, please see the Flood Hazard Mapping Updates Overview Fact Sheet at https://www.fema.gov/media-library/assets/documents/118418

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. 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.

SCALE

Map Projection:
GCS, Geodetic Reference System 1980;
Vertical Datum: NAVD88

For information about the specific vertical datum for elevation features, datum conversions, or vertical monuments used to create this map, please see the Flood Insurance Study (FIS) Report for your community at https://msc.fema.gov

N

1 inch = 1,000 feet 1:12,000

0 500 1,000 2,000 3,000 4,000 Feet

0 105 210 420 630 840 Meters

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

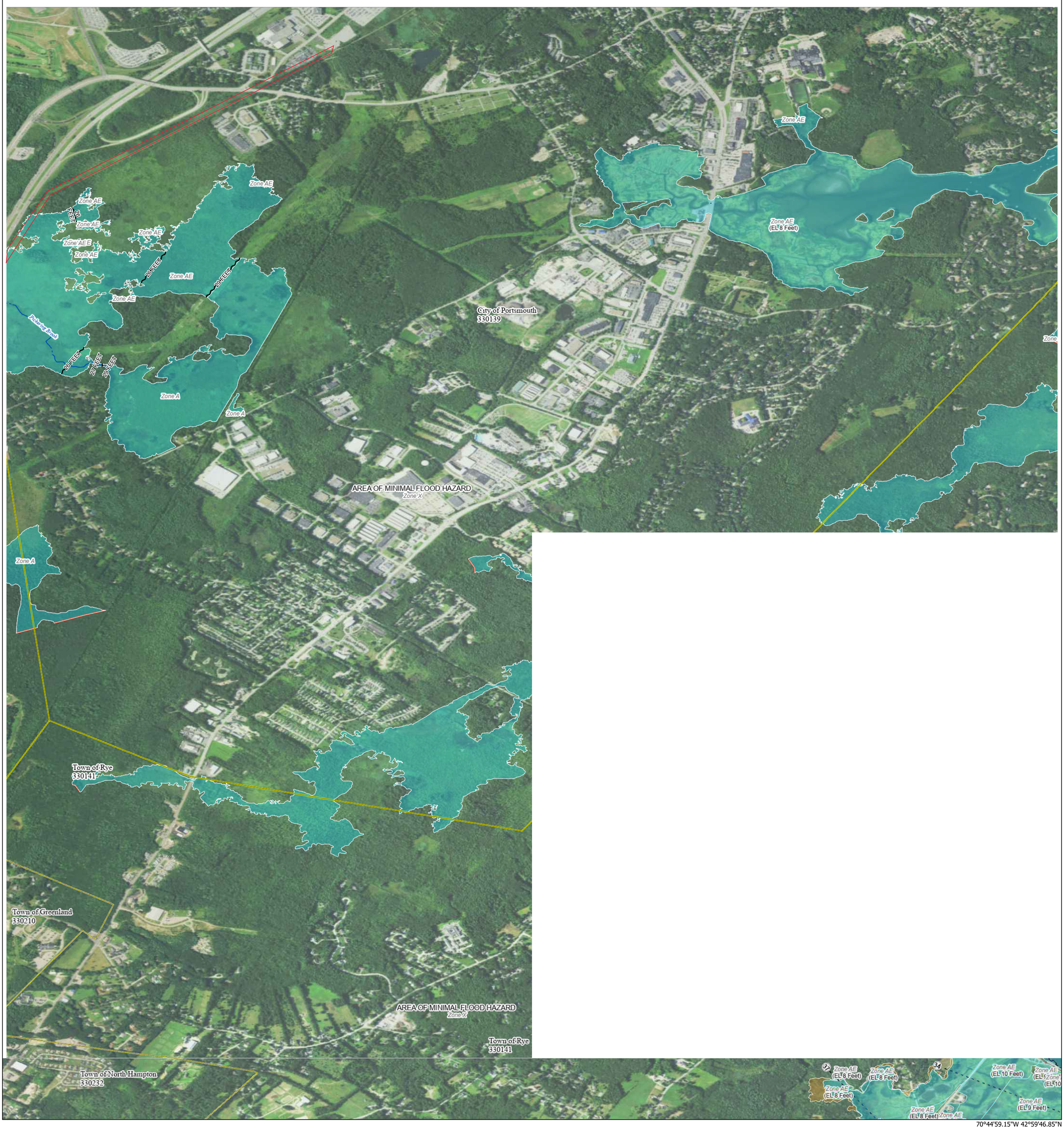
PANEL **265** OF **681**

Panel Contains:

COMMUNITY	NUMBER	PANEL
TOWN OF NORTH HAMPTON	330232	0265
TOWN OF STRATHAM	330197	0265
TOWN OF RYE	330141	0265
TOWN OF GREENLAND	330210	0265
CITY OF PORTSMOUTH	330139	0265
TOWN OF NEWINGTON	330229	0265

MAP NUMBER
33015C0265F
EFFECTIVE DATE
January 29, 2021

70°48'45.86"W 43°3'58.21"N



70°44'59.15"W 42°59'46.85"N

FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR DRAFT 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
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary

NOTES TO USERS

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SCALE

Map Projection:
GCS, Geodetic Reference System 1980;
Vertical Datum: NAVD88

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N

1 inch = 1,000 feet 1:12,000

0 500 1,000 2,000 3,000 4,000 Feet

0 105 210 420 630 840 Meters

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

PANEL **270** OF **681**

Panel Contains:

COMMUNITY	NUMBER	PANEL
TOWN OF NORTH HAMPTON	330232	0270
TOWN OF RYE	330141	0270
TOWN OF GREENLAND	330210	0270
CITY OF PORTSMOUTH	330139	0270

MAP NUMBER
33015C0270F
EFFECTIVE DATE
January 29, 2021

70°49'18.53"W 43°7'32.22"N

70°45'31.82"W 43°3'20.86"N

FLOOD HAZARD INFORMATION

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OTHER AREAS

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- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES

- Channel, Culvert, or Storm Sewer
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OTHER FEATURES

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- 17.5 Water Surface Elevation
- 8 Coastal Transect
- Coastal Transect Baseline
- Profile Baseline
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0 105 210 420 630 840 Meters

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

PANEL **260** OF **681**

Panel Contains:

COMMUNITY	NUMBER	PANEL
CITY OF PORTSMOUTH	330139	0260
TOWN OF NEWINGTON	330229	0260

MAP NUMBER
33015C0260F
EFFECTIVE DATE
January 29, 2021

70°46'52.93"W 43°5'44.12"N

70°44'59.57"W 43°3'38.44"N

FLOOD HAZARD INFORMATION

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FOR DRAFT FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS

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OTHER AREAS

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0 250 500 1,000 1,500 2,000 Feet

0 50 100 200 300 400 Meters

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

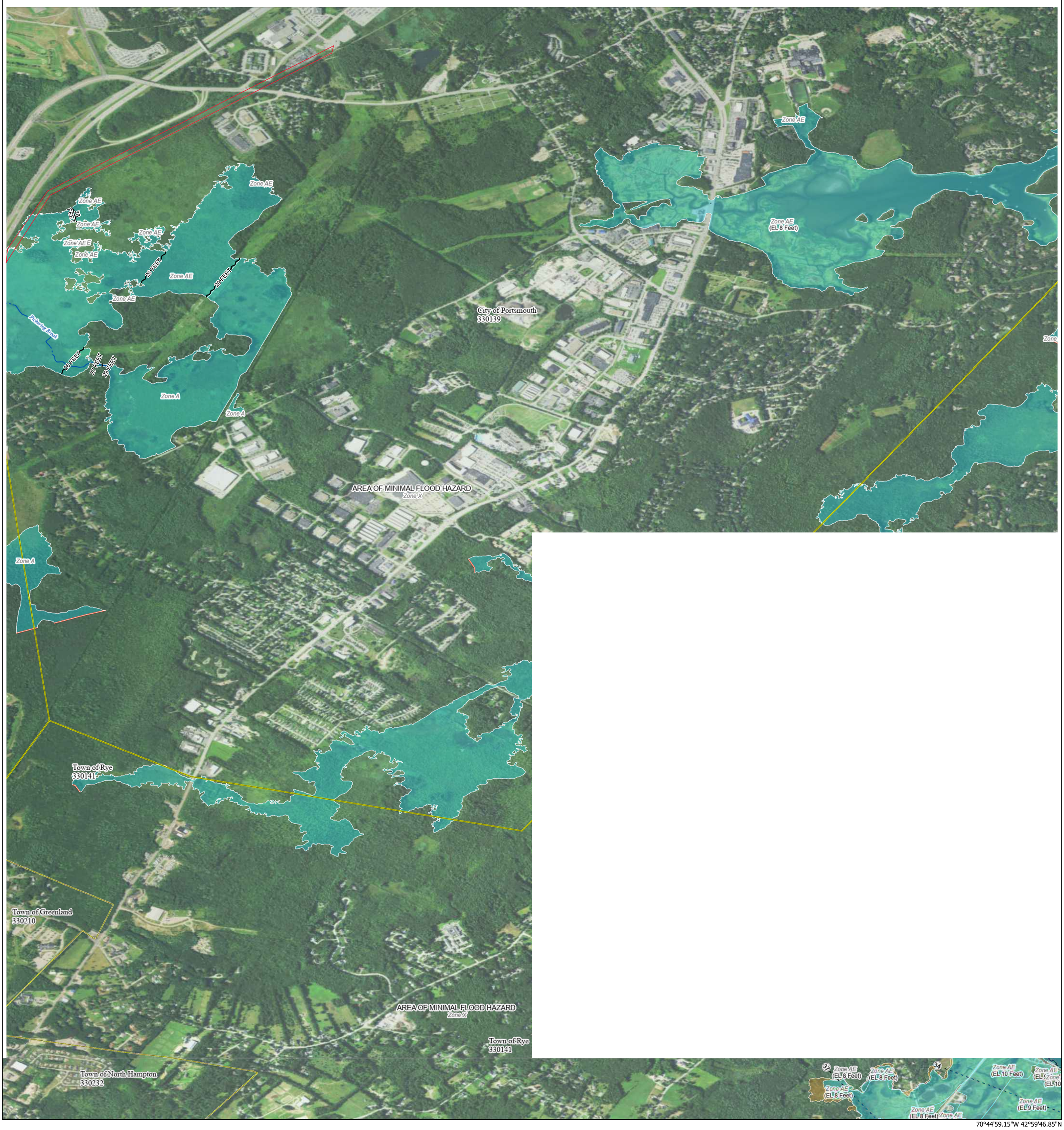
PANEL **259** OF **681**

Panel Contains:

COMMUNITY	NUMBER	PANEL
CITY OF PORTSMOUTH	330139	0259

MAP NUMBER
33015C0259F
EFFECTIVE DATE
January 29, 2021

70°48'45.86"W 43°3'58.21"N



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0 105 210 420 630 840 Meters

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

PANEL **270** OF **681**

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TOWN OF GREENLAND	330210	0270
CITY OF PORTSMOUTH	330139	0270

MAP NUMBER
33015C0270F
EFFECTIVE DATE
January 29, 2021

70°49'18.53"W 43°7'32.22"N

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0 105 210 420 630 840 Meters

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

PANEL **260** OF **681**

Panel Contains:

COMMUNITY	NUMBER	PANEL
CITY OF PORTSMOUTH	330139	0260
TOWN OF NEWINGTON	330229	0260

MAP NUMBER
33015C0260F
EFFECTIVE DATE
January 29, 2021

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NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

PANEL **259** OF **681**

Panel Contains:

COMMUNITY	NUMBER	PANEL
CITY OF PORTSMOUTH	330139	0259

MAP NUMBER
33015C0259F
EFFECTIVE DATE
January 29, 2021

APPENDIX A – EVERSOURCE EASEMENT INFORMATION

Resistance Substation Easement Information

GENERAL INFORMATION				
DOCUMENT NO.	LINE	GRANTEE	VOLUME	PAGE
EAN-262	3111/3171	PSNH	1196	252
DDA-645	3111/3171	PSNH	1790	44
EAA-3200	3111/3171	PSNH	1350	185
EAN-154	3111/3171	PSNH	1255	259
EAN-412	3111/3171	PSNH	1147	98
EAN-414	3111/3171	PSNH	1147	94
EAN-415	3111/3171	PSNH	1147	102
EAN-417	3111/3171	PSNH	1147	106
EAN-431	3111/3171	PSNH	1148	369
GFN -16	3111/3171	PSNH	1147	306
DDA-1186 (1), (2), (3)	T13	PSNH	5887	823
FDA-117	T13	PSNH	N/A	N/A
EAA-1402	T13	PSNH	1150	218

APPENDIX B

ABUTTER LIST

Appendix B - Parcels Intersecting Project Area

Greenland
Tax Map - Lot
R21-052-000

Portsmouth
Tax Map - Lot
0121-0001-0000
0165-0014-0000
0213-0011-0000
0214-0001-0000
0214-0002-0000
0214-0003-0000
0216-0001-0010
0216-0001-0011
0240-0002-0001
0259-0001-0000
0259-0015-0000
0278-0001-0000
0280-0003-0000
0281-0001-0000

APPENDIX C – FUNCTION VALUE ASSESSMENT FORM

3171 & T13 STRUCTURE REPLACEMENT PROJECT
GREENLAND & PORTSMOUTH, NEW HAMPSHIRE

File No: 04.0191410.47	**WETLAND FUNCTION – VALUE EVALUATION FORM**	**Date: 10/20/2023**	
Wetland ID: GW-1 **PEM1/PSS1/PFO1E,Fg/R2UB**		**GZA Personnel: Peter Petkauskos CWS, Tracy Tarr CWS**	

Function/Value	Capability Y	Capability N	Rationale (Reference #)	Summary	Principal Yes/No
Groundwater Recharge/Discharge	Y		1, 2, 4, 7	Wetland hydrology is supported by runoff, a seasonally high-water table and Pickering Brook. The wetland is not directly underlain by an aquifer (see Aquifer Transmissivity Overlay).	Y
Floodflow Alteration	Y		1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 18	The wetland receives and retains overland sheet flow. Pickering Brook flows through the wetland.	Y
Fish and Shellfish Habitat	Y		3, 4, 5, 8, 10, 14, 16, 17	The wetland contains Pickering Brook a perennial stream capable of suitable fish habitat.	N
Sediment/Toxicant Retention	Y		1, 2, 3, 4, 5, 6, 8, 10, 12, 13, 14, 16	The wetland contains dense vegetation suitable for sediment/toxicant detention and retention and accepts runoff from I95 North.	Y
Nutrient Removal	Y		1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 13, 14	Dense vegetation and poorly drained organic soils are present with ponded water and Pickering Brook.	Y
Production Export	Y		1, 2, 4, 5, 7, 10, 12, 13	The wetland contains dense vegetation and export is occurring through wildlife use in the wetland.	Y
Sediment/Shoreline Stabilization	Y		1, 3, 4, 5, 7, 9, 10, 13, 15	Pickering Brook contains a well vegetated bank and is bordered by a large emergent wetland system connected to Great Bog.	Y
Wildlife Habitat	Y		5, 6, 7, 8, 11, 13, 18, 19, 20, 21, 23	The wetland is located in “highest ranked habitat in New Hampshire” (see Wildlife Action Plan overlay) and is part of Great Bog.	Y
Recreation	Y		1, 5, 7	The wetland is located within City of Portsmouth conservation land. However, there are no water-based recreational opportunities present.	N
Educational/Scientific Value	Y		5, 6, 11	The wetland is located on City of Portsmouth conservation land (Great Bog). However, parking suitable for school buses is not present and the wetland is located under an active distribution line adjacent to Interstate 95.	N
Uniqueness/Heritage	Y		4, 7, 11, 16, 17, 19, 22, 26, 27	The wetland contains a Priority Resource Area (PRA) mapped as a Floodplain Wetland Adjacent to a Tier 3+ Watercourse.	Y
Visual Quality/Aesthetics	Y		1, 2, 8, 12	The wetland contains emergent marsh vistas of Great Bog.	Y
ES Endangered Species Habitat	Y		1, 2	NHB does not have records of rare species in the vicinity of this wetland (see NHB memo dated NHB22-3651).	N

Notes:

3171 & T13 STRUCTURE REPLACEMENT PROJECT
GREENLAND & PORTSMOUTH, NEW HAMPSHIRE

File No: 04.0191410.47	**WETLAND FUNCTION – VALUE EVALUATION FORM**	**Date: 10/19/2023**	
Wetland ID: PW-1 **PEM1/PSS1E,Fg**		**GZA Personnel: Peter Petkauskos CWS, Tracy Tarr CWS**	

Function/Value	Capability Y	Capability N	Rationale (Reference #)	Summary	Principal Yes/No
Groundwater Recharge/Discharge	Y		1, 2, 6	Wetland hydrology is supported by runoff and a seasonally high-water table. The wetland is not directly underlain by an aquifer (see Aquifer Transmissivity Overlay).	Y
Floodflow Alteration	Y		3, 4, 5, 6, 7, 8, 9, 18	The wetland receives and retains overland sheet flow. Dense vegetation is present.	Y
Fish and Shellfish Habitat		N	Not Applicable	The wetland is not associated with a watercourse or permanently flooded habitat.	N
Sediment/Toxicant Retention	Y		1, 2, 4, 5, 8	The wetland contains dense vegetation suitable for sediment/toxicant detention and retention and accepts runoff from I95 North.	Y
Nutrient Removal	Y		2, 3, 5, 6, 7, 8, 9, 10	Dense vegetation and poorly drained organic soils are present with ponded water.	Y
Production Export	Y		1, 4, 5, 7, 12	The wetland contains dense vegetation and export is occurring through wildlife use in the wetland.	Y
Sediment/Shoreline Stabilization		N	Not Applicable	No streams or shoreline edges are associated with the wetland.	N
Wildlife Habitat	Y		5, 6, 7, 8, 11, 13, 18, 19, 23	A portion of the wetland is located in “highest ranked habitat in New Hampshire” (see Wildlife Action Plan overlay).	Y
Recreation		N	1, 5	There are no water-based recreational opportunities present.	N
Educational/Scientific Value	Y		5, 6	The wetland is located on City of Portsmouth conservation land (Great Bog). However, parking suitable for school buses is not present and the wetland is located under an active distribution line adjacent to Interstate 95 and an existing rail bed.	N
Uniqueness/Heritage	Y		13, 17, 19	The wetland contains a Priority Resource Area (PRA) mapped Peatland Habitat in the northeast portion of the wetland.	N
Visual Quality/Aesthetics		N	2, 8, 12	The wetland does not contain open water or emergent marsh vistas and is surrounded by Interstate 95 and an existing rail bed.	N
ES Endangered Species Habitat	Y		1, 2	NHB does not have records of rare species in the vicinity of this wetland (see NHB memo dated NHB22-3650).	N

Notes: Plants within the herbaceous layer include reed canary grass, broadleaf cattail, jewel weed, cinnamon fern, sensitive fern, reed canary grass, phragmites, and sphagnum moss. Plants within the shrub/sapling layer include meadowsweet, silky dogwood, glossy buckthorn, red maple, and gray birch.

3171 & T13 STRUCTURE REPLACEMENT PROJECT
GREENLAND & PORTSMOUTH, NEW HAMPSHIRE

File No: 04.0191410.47	WETLAND FUNCTION – VALUE EVALUATION FORM	Date: 10/19/2023	
Wetland ID: PW-2 PEM1/PSS1E		GZA Personnel: Peter Petkauskos CWS, Tracy Tarr CWS	

Function/Value	Capability Y	Capability N	Rationale (Reference #)	Summary	Principal Yes/No
Groundwater Recharge/Discharge	Y		4	Wetland hydrology is supported by runoff and a seasonally high-water table. The wetland is not directly underlain by an aquifer (see Aquifer Transmissivity Overlay).	N
Floodflow Alteration	Y		5, 6, 9	The wetland receives and retains overland sheet flow. Dense vegetation is present.	N
Fish and Shellfish Habitat		N	Not Applicable	The wetland is not associated with a watercourse or permanently flooded habitat.	N
Sediment/Toxicant Retention	Y		1, 2	The wetland contains dense vegetation suitable for sediment/toxicant detention and retention and accepts runoff from Gosling Road.	Y
Nutrient Removal	Y		3, 8, 9	Dense vegetation is present.	N
Production Export	Y		7, 12	The wetland contains dense vegetation and export is occurring through wildlife use in the wetland.	N
Sediment/Shoreline Stabilization		N	Not Applicable	No streams or shoreline edges are associated with the wetland.	N
Wildlife Habitat	Y		7, 8	The wetland contains scrub-shrub cover in a commercial area. Over size limits its capability.	N
Recreation		N	5	There are no water-based recreational opportunities present.	N
Educational/Scientific Value		N	5	The wetland is located on private property and is located under an active transmission line.	N
Uniqueness/Heritage		N	17	The wetland is not known to contain exemplary communities and is not designated as a prime wetland.	N
Visual Quality/Aesthetics		N	8	The wetland does not contain open water or emergent marsh vistas.	N
ES Endangered Species Habitat		N	Not Applicable	NHB does not have records of rare species in the vicinity of this wetland (see NHB memo dated NHB22-3650).	N

Notes:

3171 & T13 STRUCTURE REPLACEMENT PROJECT
GREENLAND & PORTSMOUTH, NEW HAMPSHIRE

File No: 04.0191410.47	WETLAND FUNCTION – VALUE EVALUATION FORM	Date: 10/19/2023	
Wetland ID: PW-3 **PEM1/PSS1E**		**GZA Personnel: Peter Petkauskos CWS, Tracy Tarr CWS**	

Function/Value	Capability Y	Capability N	Rationale (Reference #)	Summary	Principal Yes/No
Groundwater Recharge/Discharge	Y		4	Wetland hydrology is supported by runoff and a seasonally high-water table. The wetland is not directly underlain by an aquifer (see Aquifer Transmissivity Overlay).	N
Floodflow Alteration	Y		5, 6, 9	The wetland receives and retains overland sheet flow. Dense vegetation is present.	N
Fish and Shellfish Habitat		N	Not Applicable	The wetland is not associated with a watercourse or permanently flooded habitat.	N
Sediment/Toxicant Retention	Y		1, 2	The wetland contains dense vegetation suitable for sediment/toxicant detention and retention.	Y
Nutrient Removal	Y		3, 8, 9	Dense vegetation is present.	N
Production Export	Y		7, 12	The wetland contains dense vegetation and export is occurring through wildlife use in the wetland.	N
Sediment/Shoreline Stabilization		N	Not Applicable	No streams or shoreline edges are associated with the wetland.	N
Wildlife Habitat	Y		7, 8	The wetland contains scrub-shrub cover in a commercial area. Over size limits its capability.	N
Recreation		N	5	There are no water-based recreational opportunities present.	N
Educational/Scientific Value		N	5	The wetland is located on private property and is located under an active transmission line.	N
Uniqueness/Heritage		N	17	The wetland is not known to contain exemplary communities and is not designated as a prime wetland.	N
Visual Quality/Aesthetics		N	8	The wetland does not contain open water or emergent marsh vistas.	N
ES Endangered Species Habitat		N	Not Applicable	NHB does not have records of rare species in the vicinity of this wetland (see NHB memo dated NHB22-3650).	N

Notes:

3171 & T13 STRUCTURE REPLACEMENT PROJECT
GREENLAND & PORTSMOUTH, NEW HAMPSHIRE

File No: 04.0191410.47	WETLAND FUNCTION – VALUE EVALUATION FORM	Date: 10/19/2023	
Wetland ID: PW-4 PEM1/PSS1E		GZA Personnel: Peter Petkauskos CWS, Tracy Tarr CWS	

Function/Value	Capability Y	Capability N	Rationale (Reference #)	Summary	Principal Yes/No
Groundwater Recharge/Discharge	Y		4	Wetland hydrology is supported by runoff and a seasonally high-water table. The wetland is not directly underlain by an aquifer (see Aquifer Transmissivity Overlay).	N
Floodflow Alteration	Y		5, 6, 9	The wetland receives and retains overland sheet flow. Dense vegetation is present.	N
Fish and Shellfish Habitat		N	Not Applicable	The wetland is not associated with a watercourse or permanently flooded habitat.	N
Sediment/Toxicant Retention	Y		1, 2	The wetland contains dense vegetation suitable for sediment/toxicant detention and retention.	Y
Nutrient Removal	Y		3, 8, 9	Dense vegetation is present.	N
Production Export	Y		7, 12	The wetland contains dense vegetation and export is occurring through wildlife use in the wetland.	N
Sediment/Shoreline Stabilization		N	Not Applicable	No streams or shoreline edges are associated with the wetland.	N
Wildlife Habitat	Y		7, 8	The wetland contains scrub-shrub cover in a commercial area.	N
Recreation		N	5	There are no water-based recreational opportunities present.	N
Educational/Scientific Value		N	5	The wetland is located on private property and is located under an active transmission line.	N
Uniqueness/Heritage		N	17	The wetland is not known to contain exemplary communities and is not designated as a prime wetland.	N
Visual Quality/Aesthetics		N	8	The wetland does not contain open water or emergent marsh vistas.	N
ES Endangered Species Habitat		N	Not Applicable	NHB does not have records of rare species in the vicinity of this wetland (see NHB memo dated NHB22-3650).	N

Notes:

3171 & T13 STRUCTURE REPLACEMNT PROJECT
GREENLAND & PORTSMOUTH, NEW HAMPSHIRE

File No: 04.0191410.47	WETLAND FUNCTION – VALUE EVALUATION FORM	Date: 10/19/2023	
Wetland ID: PW-5 PEM1/PSS1E		GZA Personnel: Peter Petkauskos CWS, Tracy Tarr CWS	

Function/Value	Capability Y	Capability N	Rationale (Reference #)	Summary	Principal Yes/No
Groundwater Recharge/Discharge	Y		4	Wetland hydrology is supported by runoff and a seasonally high-water table. The wetland is not directly underlain by an aquifer (see Aquifer Transmissivity Overlay).	N
Floodflow Alteration	Y		5, 6, 9	The wetland receives and retains overland sheet flow. Dense vegetation is present.	N
Fish and Shellfish Habitat		N	Not Applicable	The wetland is not associated with a watercourse or permanently flooded habitat.	N
Sediment/Toxicant Retention	Y		1, 2	The wetland contains dense vegetation suitable for sediment/toxicant detention and retention.	Y
Nutrient Removal	Y		3, 8, 9	Dense vegetation is present.	N
Production Export	Y		7, 12	The wetland contains dense vegetation and export is occurring through wildlife use in the wetland.	N
Sediment/Shoreline Stabilization		N	Not Applicable	No streams or shoreline edges are associated with the wetland.	N
Wildlife Habitat	Y		7, 8	The wetland contains scrub-shrub cover in a commercial area.	N
Recreation		N	5	There are no water-based recreational opportunities present.	N
Educational/Scientific Value		N	5	The wetland is located on private property and is located under an active transmission line.	N
Uniqueness/Heritage		N	17	The wetland is not known to contain exemplary communities and is not designated as a prime wetland.	N
Visual Quality/Aesthetics		N	8	The wetland does not contain open water or emergent marsh vistas.	N
ES Endangered Species Habitat		N	Not Applicable	NHB does not have records of rare species in the vicinity of this wetland (see NHB memo dated NHB22-3650).	N

Notes:

3171 & T13 STRUCTURE REPLACEMENT PROJECT
GREENLAND & PORTSMOUTH, NEW HAMPSHIRE

File No: 04.0191410.47	WETLAND FUNCTION – VALUE EVALUATION FORM	Date: 10/19/2023	
Wetland ID: PW-6 PEM1/PSS1E		GZA Personnel: Peter Petkauskos CWS, Tracy Tarr CWS	

Function/Value	Capability Y	Capability N	Rationale (Reference #)	Summary	Principal Yes/No
Groundwater Recharge/Discharge	Y		4	Wetland hydrology is supported by runoff and a seasonally high-water table. The wetland is not directly underlain by an aquifer (see Aquifer Transmissivity Overlay).	N
Floodflow Alteration	Y		5, 6, 7, 9	The wetland receives and retains overland sheet flow. Dense vegetation is present. Some ponded water is present.	N
Fish and Shellfish Habitat		N	Not Applicable	The wetland is not associated with a watercourse or permanently flooded habitat.	N
Sediment/Toxicant Retention	Y		1, 2	The wetland contains dense vegetation suitable for sediment/toxicant detention and retention.	Y
Nutrient Removal	Y		3, 8, 9	Dense vegetation is present.	N
Production Export	Y		7, 12	The wetland contains dense vegetation and export is occurring through wildlife use in the wetland.	N
Sediment/Shoreline Stabilization		N	Not Applicable	No streams or shoreline edges are associated with the wetland.	N
Wildlife Habitat	Y		7, 8	The wetland contains scrub-shrub cover in a commercial area.	N
Recreation		N	5	There are no water-based recreational opportunities present.	N
Educational/Scientific Value		N	5	The wetland is located on private property and is located under an active transmission line.	N
Uniqueness/Heritage		N	17	The wetland is not known to contain exemplary communities and is not designated as a prime wetland.	N
Visual Quality/Aesthetics		N	8	The wetland does not contain open water or emergent marsh vistas.	N
ES Endangered Species Habitat		N	Not Applicable	NHB does not have records of rare species in the vicinity of this wetland (see NHB memo dated NHB22-3650).	N

Notes:

3171 & T13 STRUCTURE REPLACEMENT PROJECT
GREENLAND & PORTSMOUTH, NEW HAMPSHIRE

File No: 04.0191410.47	WETLAND FUNCTION – VALUE EVALUATION FORM	Date: 10/19/2023	
Wetland ID: PW-7 PEM1/PSS1E,H		GZA Personnel: Peter Petkauskos CWS, Tracy Tarr CWS	

Function/Value	Capability Y	Capability N	Rationale (Reference #)	Summary	Principal Yes/No
Groundwater Recharge/Discharge	Y		4	Wetland hydrology is supported by runoff and a seasonally high-water table. The wetland is not directly underlain by an aquifer (see Aquifer Transmissivity Overlay).	N
Floodflow Alteration	Y		5, 6, 7, 9	The wetland receives and retains overland sheet flow. Dense vegetation is present. Some ponded water is present.	N
Fish and Shellfish Habitat		N	Not Applicable	The wetland is not associated with a watercourse or permanently flooded habitat.	N
Sediment/Toxicant Retention	Y		1, 2	The wetland contains dense vegetation suitable for sediment/toxicant detention and retention.	Y
Nutrient Removal	Y		3, 8, 9	Dense vegetation is present.	N
Production Export	Y		7, 12	The wetland contains dense vegetation and export is occurring through wildlife use in the wetland.	N
Sediment/Shoreline Stabilization		N	Not Applicable	No streams or shoreline edges are associated with the wetland.	N
Wildlife Habitat	Y		7, 8, 18	The wetland contains a potential vernal pool and scrub-shrub cover in a commercial area.	Y
Recreation		N	5	There are no water-based recreational opportunities present.	N
Educational/Scientific Value		N	5	The wetland is located on private property and is located under an active transmission line.	N
Uniqueness/Heritage		N	17	The wetland is not known to contain exemplary communities and is not designated as a prime wetland.	N
Visual Quality/Aesthetics		N	8	The wetland does not contain open water or emergent marsh vistas.	N
ES Endangered Species Habitat		N	Not Applicable	NHB does not have records of rare species in the vicinity of this wetland (see NHB memo dated NHB22-3650).	N

Notes:

3171 & T13 STRUCTURE REPLACEMENT PROJECT
GREENLAND & PORTSMOUTH, NEW HAMPSHIRE

File No: 04.0191410.47	**WETLAND FUNCTION – VALUE EVALUATION FORM**	**Date: 10/19/2023**	
Wetland ID: PW-8 **PEM1/PSS1E**		**GZA Personnel: Peter Petkauskos CWS, Tracy Tarr CWS**	

Function/Value	Capability Y	Capability N	Rationale (Reference #)	Summary	Principal Yes/No
Groundwater Recharge/Discharge	Y		4	Wetland hydrology is supported by runoff and a seasonally high-water table. The wetland is not directly underlain by an aquifer (see Aquifer Transmissivity Overlay).	N
Floodflow Alteration	Y		5, 6, 7, 9	The wetland receives and retains overland sheet flow. Dense vegetation is present.	N
Fish and Shellfish Habitat		N	Not Applicable	The wetland is not associated with a watercourse or permanently flooded habitat.	N
Sediment/Toxicant Retention	Y		1, 2	The wetland contains dense vegetation suitable for sediment/toxicant detention and retention. The wetland accepts stormwater from surrounding roads.	Y
Nutrient Removal	Y		3, 8, 9	Dense vegetation is present.	N
Production Export	Y		7, 12	The wetland contains dense vegetation and export is occurring through wildlife use in the wetland.	N
Sediment/Shoreline Stabilization		N	Not Applicable	No streams or shoreline edges are associated with the wetland.	N
Wildlife Habitat	Y		7, 8	The wetland contains scrub-shrub cover in a commercial area.	N
Recreation		N	5	There are no water-based recreational opportunities present.	N
Educational/Scientific Value		N	5	The wetland is located on private property and is located under an active transmission line.	N
Uniqueness/Heritage		N	17	The wetland is not known to contain exemplary communities and is not designated as a prime wetland.	N
Visual Quality/Aesthetics		N	8	The wetland does not contain open water or emergent marsh vistas.	N
ES Endangered Species Habitat		N	Not Applicable	NHB does not have records of rare species in the vicinity of this wetland (see NHB memo dated NHB22-3650).	N

Notes:

3171 & T13 STRUCTURE REPLACEMENT PROJECT
GREENLAND & PORTSMOUTH, NEW HAMPSHIRE

File No: 04.0191410.47	WETLAND FUNCTION – VALUE EVALUATION FORM	Date: 10/19/2023	
Wetland ID: PW-9 PEM1/PSS1Ex		GZA Personnel: Peter Petkauskos CWS, Tracy Tarr CWS	

Function/Value	Capability Y	Capability N	Rationale (Reference #)	Summary	Principal Yes/No
Groundwater Recharge/Discharge	Y		4	Wetland hydrology is supported by runoff and a seasonally high-water table. The wetland is not directly underlain by an aquifer (see Aquifer Transmissivity Overlay).	N
Floodflow Alteration	Y		5, 6, 7, 9	The wetland receives and retains overland sheet flow. Dense vegetation is present.	N
Fish and Shellfish Habitat		N	Not Applicable	The wetland is not associated with a watercourse or permanently flooded habitat.	N
Sediment/Toxicant Retention	Y		1, 2	The wetland contains dense vegetation suitable for sediment/toxicant detention and retention. The wetland accepts stormwater from surrounding roads.	Y
Nutrient Removal	Y		3, 8, 9	Emergent and scrub shrub cover is present.	N
Production Export	Y		7, 12	The wetland contains dense vegetation.	N
Sediment/Shoreline Stabilization		N	Not Applicable	No streams or shoreline edges are associated with the wetland.	N
Wildlife Habitat	Y		7, 8	The wetland contains scrub-shrub cover in a commercial area.	N
Recreation		N	5	There are no water-based recreational opportunities present.	N
Educational/Scientific Value		N	5	The wetland is located on private property and is located under an active transmission line.	N
Uniqueness/Heritage		N	17	The wetland is not known to contain exemplary communities and is not designated as a prime wetland.	N
Visual Quality/Aesthetics		N	8	The wetland does not contain open water or emergent marsh vistas.	N
ES Endangered Species Habitat		N	Not Applicable	NHB does not have records of rare species in the vicinity of this wetland (see NHB memo dated NHB22-3650).	N

Notes:

3171 & T13 STRUCTURE REPLACEMENT PROJECT
GREENLAND & PORTSMOUTH, NEW HAMPSHIRE

File No: 04.0191410.47	WETLAND FUNCTION – VALUE EVALUATION FORM	Date: 10/19/2023	
Wetland ID: PW-10 PSS1Ex		GZA Personnel: Peter Petkauskos, Tracy Tarr	

Function/Value	Capability Y	Capability N	Rationale (Reference #)	Summary	Principal Yes/No
Groundwater Recharge/Discharge	Y		4	Wetland hydrology is supported by runoff and a seasonally high-water table. The wetland is not directly underlain by an aquifer (see Aquifer Transmissivity Overlay).	N
Floodflow Alteration	Y		5, 6, 7, 9	The wetland receives and retains overland sheet flow. Dense vegetation is present.	N
Fish and Shellfish Habitat		N	Not Applicable	The wetland is not associated with a watercourse or permanently flooded habitat.	N
Sediment/Toxicant Retention	Y		1, 2	The wetland contains dense vegetation suitable for sediment/toxicant detention and retention. The wetland accepts stormwater from surrounding roads.	Y
Nutrient Removal	Y		3, 8, 9	Scrub shrub cover is present.	N
Production Export	Y		7, 12	The wetland contains dense vegetation.	N
Sediment/Shoreline Stabilization		N	Not Applicable	No streams or shoreline edges are associated with the wetland.	N
Wildlife Habitat	Y		7, 8	The wetland contains scrub-shrub cover in a commercial area.	N
Recreation		N	5	There are no water-based recreational opportunities present.	N
Educational/Scientific Value		N	5	The wetland is located on private property and is located under an active transmission line.	N
Uniqueness/Heritage		N	17	The wetland is not known to contain exemplary communities and is not designated as a prime wetland.	N
Visual Quality/Aesthetics		N	8	The wetland does not contain open water or emergent marsh vistas.	N
ES Endangered Species Habitat		N	Not Applicable	NHB does not have records of rare species in the vicinity of this wetland (see NHB memo dated NHB22-3650).	N

Notes:

3171 & T13 STRUCTURE REPLACEMENT PROJECT
GREENLAND & PORTSMOUTH, NEW HAMPSHIRE

File No: 04.0191410.47	WETLAND FUNCTION – VALUE EVALUATION FORM	Date: 10/19/2023	
Wetland ID: PW-11 **PSS1/PEM1Ex**		**GZA Personnel: Peter Petkauskos CWS, Tracy Tarr CWS**	

Function/Value	Capability Y	Capability N	Rationale (Reference #)	Summary	Principal Yes/No
Groundwater Recharge/Discharge	Y		4	Wetland hydrology is supported by runoff and a seasonally high-water table. The wetland is not directly underlain by an aquifer (see Aquifer Transmissivity Overlay).	N
Floodflow Alteration	Y		5, 6, 7, 9	The wetland receives and retains overland sheet flow. Dense vegetation is present. Ponded water is present in an existing stormwater basin.	N
Fish and Shellfish Habitat		N	Not Applicable	The wetland is not associated with a watercourse or permanently flooded habitat.	N
Sediment/Toxicant Retention	Y		1, 2	The wetland contains dense vegetation suitable for sediment/toxicant detention and retention. The wetland accepts stormwater from surrounding roads and contains a stormwater basin.	Y
Nutrient Removal	Y		3, 8, 9	Scrub shrub and emergent cover is present.	N
Production Export	Y		7, 12	The wetland contains dense vegetation.	N
Sediment/Shoreline Stabilization		N	Not Applicable	No streams or shoreline edges are associated with the wetland.	N
Wildlife Habitat	Y		7, 8	The wetland contains scrub-shrub cover in a commercial area.	N
Recreation		N	5	There are no water-based recreational opportunities present.	N
Educational/Scientific Value		N	5	The wetland is located on private property and is located under an active transmission line.	N
Uniqueness/Heritage		N	17	The wetland is not known to contain exemplary communities and is not designated as a prime wetland.	N
Visual Quality/Aesthetics		N	8	The wetland does not contain open water or emergent marsh vistas.	N
ES Endangered Species Habitat		N	Not Applicable	NHB does not have records of rare species in the vicinity of this wetland (see NHB memo dated NHB22-3650).	N

Notes:

3171 & T13 STRUCTURE REPLACEMENT PROJECT
GREENLAND & PORTSMOUTH, NEW HAMPSHIRE

File No: 04.0191410.47	WETLAND FUNCTION – VALUE EVALUATION FORM	Date: 10/19/2023	
Wetland ID: PW-12 and PW-13 PEM1/PSS1E		GZA Personnel: Peter Petkauskos CWS, Tracy Tarr CWS	

Function/Value	Capability Y	Capability N	Rationale (Reference #)	Summary	Principal Yes/No
Groundwater Recharge/Discharge	Y		4	Wetland hydrology is supported by runoff and a seasonally high-water table. The wetland is not directly underlain by an aquifer (see Aquifer Transmissivity Overlay).	N
Floodflow Alteration	Y		5, 6, 7, 9	The wetland receives and retains overland sheet flow. Dense vegetation is present.	N
Fish and Shellfish Habitat		N	Not Applicable	The wetland is not associated with a watercourse or permanently flooded habitat.	N
Sediment/Toxicant Retention	Y		1, 2	The wetland contains dense vegetation suitable for sediment/toxicant detention and retention. The wetland accepts stormwater from surrounding roads.	Y
Nutrient Removal	Y		3, 8, 9	Scrub shrub and emergent cover is present.	N
Production Export	Y		7, 12	The wetland contains dense vegetation.	N
Sediment/Shoreline Stabilization		N	Not Applicable	No streams or shoreline edges are associated with the wetland.	N
Wildlife Habitat	Y		7, 8	The wetland contains scrub-shrub cover in a commercial area.	N
Recreation		N	5	There are no water-based recreational opportunities present.	N
Educational/Scientific Value		N	5	The wetland is located on private property and is located under an active transmission line.	N
Uniqueness/Heritage		N	17	The wetland is not known to contain exemplary communities and is not designated as a prime wetland.	N
Visual Quality/Aesthetics		N	8	The wetland does not contain open water or emergent marsh vistas.	N
ES Endangered Species Habitat		N	Not Applicable	NHB does not have records of rare species in the vicinity of this wetland (see NHB memo dated NHB22-3650).	N

Notes:

3171 & T13 STRUCTURE REPLACEMENT PROJECT
GREENLAND & PORTSMOUTH, NEW HAMPSHIRE

File No: 04.0191410.47	WETLAND FUNCTION – VALUE EVALUATION FORM	Date: 10/19/2023	
Wetland ID: PW-14 **PSS1/PEM1E**		**GZA Personnel: Peter Petkauskos CWS, Tracy Tarr CWS**	

Function/Value	Capability Y	Capability N	Rationale (Reference #)	Summary	Principal Yes/No
Groundwater Recharge/Discharge	Y		4	Wetland hydrology is supported by runoff and a seasonally high-water table. The wetland is not directly underlain by an aquifer (see Aquifer Transmissivity Overlay).	N
Floodflow Alteration	Y		5, 6, 7, 9	The wetland receives and retains overland sheet flow. Dense vegetation is present.	N
Fish and Shellfish Habitat		N	Not Applicable	The wetland is not associated with a watercourse or permanently flooded habitat.	N
Sediment/Toxicant Retention	Y		1, 2	The wetland contains dense vegetation suitable for sediment/toxicant detention and retention. The wetland accepts stormwater from surrounding roads.	Y
Nutrient Removal	Y		3, 8, 9	Scrub shrub and emergent cover is present.	N
Production Export	Y		7, 12	The wetland contains dense vegetation.	N
Sediment/Shoreline Stabilization		N	Not Applicable	No streams or shoreline edges are associated with the wetland.	N
Wildlife Habitat	Y		7, 8	The wetland contains scrub-shrub cover in a commercial area.	N
Recreation		N	5	There are no water-based recreational opportunities present.	N
Educational/Scientific Value		N	5	The wetland is located on private property and is located under an active transmission line.	N
Uniqueness/Heritage		N	17	The wetland is not known to contain exemplary communities and is not designated as a prime wetland.	N
Visual Quality/Aesthetics		N	8	The wetland does not contain open water or emergent marsh vistas.	N
ES Endangered Species Habitat		N	Not Applicable	NHB does not have records of rare species in the vicinity of this wetland (see NHB memo dated NHB22-3650).	N

Notes:

APPENDIX D

NHB MEMO

NHB CORRESPONDENCE

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: Lindsey White, GZA GeoEnvironmental
5 Commerce Park North Suite 201
Bedford, NH 03110
lindsey.white@gza.com

From: NHB Review
NH Natural Heritage Bureau
Main Contact: Ashley Litwinenko - nhbreview@dncr.nh.gov

cc: NHFG Review

Date: 11/22/2023 (valid until 11/22/2024)
Re: DataCheck Review by NH Natural Heritage Bureau and NH Fish & Game
Permits: NHDES - Alteration of Terrain Permit, NHDES - Wetland Standard Dredge & Fill - Minor, USACE - General Permit

NHB ID: NHB23-3331

Town: Portsmouth
Location: Eversource Maintained ROW

Project Description: Eversource is proposing to replace, remove and install select utility structures within the existing and maintained 3171 and 3111 ROW.

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 representative photos during the growing season, proposed plans, and proposed project timing.

NHFG Comments: Please refer to NHFG consultation requirements below. Please indicate proposed project timing.

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.

Natural Community	State[1]	Federal	Notes
Herbaceous seepage marsh	--	--	As this wetland is strongly influenced by groundwater seepage, it could be affected by landscape alterations which modify groundwater movement or increase stormwater flow into it.
Red maple - sensitive fern swamp	--	--	These swamps are influenced by groundwater seepage and springs which moderate water fluctuations and maintain conditions favorable for the accumulation of organic matter. The primary threats are changes to the hydrology of the wetland complex, particularly raising or lowering the water levels, and increased nutrient and pollutant input carried in by stormwater runoff.
Swamp white oak basin swamp	--	--	Threats to this community include changes to the wetland's hydrology either through damming or increasing drainage. Significant increases in nutrients and pollutants from stormwater runoff could also have a deleterious effect on the wetland.

Plant species	State[1]	Federal	Notes
American reed (*Phragmites americanus*)	E	--	Threats are primarily alterations to the hydrology of the wetland, such as ditching or tidal restrictions that might affect the sheet flow of tidal waters across the intertidal flat, activities that eliminate plants, and increased input of nutrients and pollutants in storm runoff.
great bur-reed (*Sparganium eurycarpum*)	T	--	Threats to aquatic species include changes in water quality, e.g., due to pollution and stormwater runoff, and significant changes in water level.
hairy-fruited sedge (*Carex trichocarpa*)*	E	--	This species occurs in forested swamps, and would be threatened by changes to local hydrology as well as activities such as logging that opened up the canopy.
tufted yellow-loosestrife (*Lysimachia thyrsiflora*)	T	--	As a resident of peatlands, this species is susceptible to any changes to the wetland's hydrology (especially that which causes pooling), increased

			nutrient input from stormwater runoff, and sedimentation from nearby disturbances.

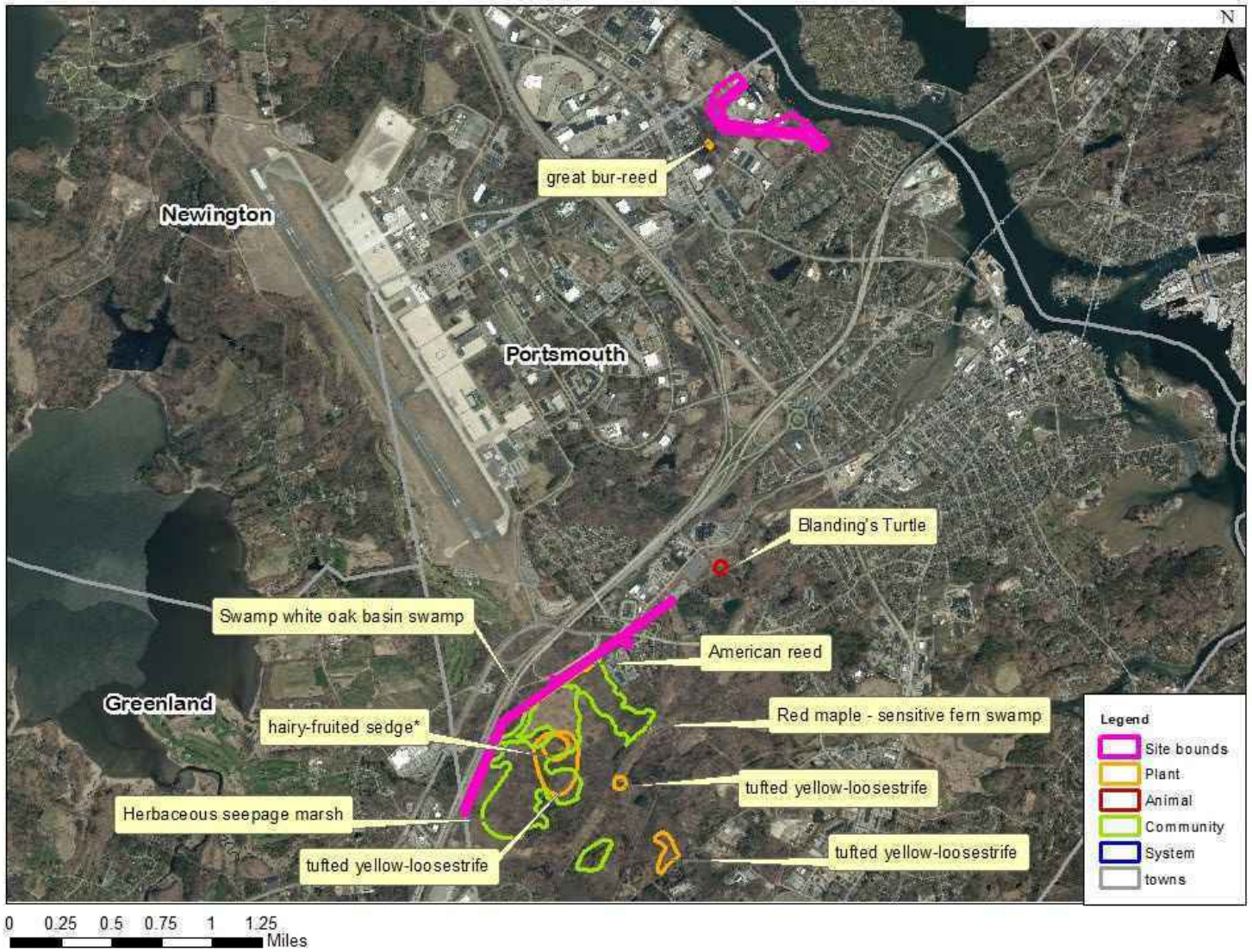
Vertebrate species	**State[1]**	**Federal**	**Notes**
Blanding's Turtle (*Emydoidea blandingii*)	E	--	Contact the NH Fish & Game Dept (see below).

[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.

For all animal reviews, refer to 'IMPORTANT: NHFG Consultation' section above.

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.

NHB23-3331


N
great bur-reed
Newington
Portsmouth
Blanding's Turtle
Swamp white oak basin swamp
American reed
Greenland
hairy-fruited sedge*
Red maple - sensitive fern swamp
tufted yellow-loosestrife
Herbaceous seepage marsh
tufted yellow-loosestrife
tufted yellow-loosestrife
Legend
Site bounds
Plant
Animal
Community
System
towns
0 0.25 0.5 0.75 1 1.25
Miles

NHB23-3331 EOCODE: CP00000103*001*NH

New Hampshire Natural Heritage Bureau - Community Record

Herbaceous seepage marsh

Legal Status	Conservation Status
Federal: Not listed	Global: Not ranked (need more information)
State: Not listed	State: Rare or uncommon

Description at this Location

Conservation Rank: Good quality, condition and landscape context ('B' on a scale of A-D).

Comments on Rank: 2020: A very large seepage marsh in a compromised landscape context.

Detailed Description: 2020: The community has variable composition, with patches of dense narrow-leaved cattail (*Typha angustifolia*) mixed with areas dominated by lake sedge (*Carex lacustris*). Red maple (*Acer rubrum*) saplings are frequent, along with shrub species like speckled alder (*Alnus incana* ssp. *rugosa*), highbush blueberry (*Vaccinium corymbosum*), smooth arrowwood (*Viburnum dentatum* var. *lucidum*), and meadowsweet (*Spiraea alba* var. *latifolia*). Other herb species observed include sensitive fern (*Onoclea sensibilis*), bluejoint (*Calamagrostis canadensis*), royal fern (*Osmunda regalis* var. *spectabilis*), and wrinkle-leaved goldenrod (*Solidago rugosa*). The invasive species purple loosestrife (*Lythrum salicaria*) and common reed (*Phragmites australis*) are both present at moderate levels. 2002: The northern portion of the seepage marsh is characterized by dense swards of *Carex lacustris* (lake sedge) (50%) accompanied by *Typha latifolia* (common cat-tail, 10%), *Toxicodendron radicans* (climbing poison ivy, 5-10%), *Thelypteris palustris* var. *pubescens* (marsh fern, 5-10%), *Onoclea sensibilis* (sensitive fern, 5%), and scattered sapling *Acer rubrum* (red maple, 1-5%). Numerous other herbs are present in low abundance. This area grades further south into sparse woodland areas with more red maple (20-40 ft. tall, including many dead snags), but still more marshy than swampy. A soil sample was very well decomposed muck over silty muck. 1989: The hybrid cattail *Typha* x *Glauca* dominates open areas with extremely abundant *Lysimachia thyrsiflora* (tufted loosestrife). State record *Carex trichocarpa* (hairy-fruited sedge) occurs at the marsh-swamp ecotone.

General Area: 2020: The community is bordered by railroad tracks to the north and I-95 to the west. There is an exemplary ***swamp white oak basin swamp*** adjacent to the northwest, and a ***red maple - sensitive fern swamp*** to the east. 2002: The seepage marsh is the dominant community in the central and western portions of Great Bog, and bounded to the west by the large seepage swamp, to the north by railroad tracks, to the NW by swamp white oak swamp, to the west by the highway and disturbed emergent marsh, and to the south by powerlines and upland areas. While surrounded by development, Great Bog is so large that it is actually one of the largest and least developed tracts of land in Portsmouth. 1989: Borders the red maple swamp forests that the Great Bog largely consists of.

General Comments: 1989: Further field work and a field form is needed.

NHB23-3331 EOCODE: CP00000103*001*NH

Management Comments: --

Location

Survey Site Name: Great Bog
Managed By: Hospital Corporation of America

County: Rockingham
Town(s): Portsmouth
Size: 135.9 acres Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2002: Best approach to portion of site (without pulling over on I-95) is from north via the railroad tracks just south of crossing of Route 33 and I-95. Park in vicinity of Route 33 crossing of railroad tracks, at industrial complex on Griffin Road to south of Route 33 (closest but dense shrub border along railroad track) or at railroad bridge by Greenland and Borthwick Streets just north of Route 33 (easiest). Proceed SW on railroad tracks. The seepage marsh is found past the red maple swamp (open area with few trees ca. 0.45 miles from Route 33).

Dates documented

First reported: 1989-05-30 Last reported: 2020-09-09

NHB23-3331 EOCODE: CP00000094*015*NH

New Hampshire Natural Heritage Bureau - Community Record

Red maple - sensitive fern swamp

Legal Status	Conservation Status
Federal: Not listed	Global: Not ranked (need more information)
State: Not listed	State: Rare or uncommon

Description at this Location

Conservation Rank: Fair quality, condition and/or landscape context ('C' on a scale of A-D).

Comments on Rank: 2020: EO Rank of C+ does not meet threshold for exemplary status for this community type. 2002: This is a fairly mature and very large example in a compromised landscape context. This part of Great Bog is less influenced by hydrologic alterations than portions nearer the outlet to the west.

Detailed Description: 2020: Red maple swamp with lake sedge (*Carex lacustris*) as the dominant species in the herb layer, which also includes sensitive fern (*Onoclea sensibilis*), bluejoint (*Calamagrostis canadensis*), cinnamon fern (*Osmundastrum cinnamomeum*), tussock sedge (*Carex stricta*), skunk-cabbage (*Symplocarpus foetidus*), and spotted touch-me-not (*Impatiens capensis*). Numerous invasive species present, including glossy false buckthorn (*Frangula alnus*), multiflora rose (*Rosa multiflora*), purple loosestrife (*Lythrum salicaria*), and Asian bittersweet (*Celastrus orbiculatus*). Due to invasive infestations and heavily developed landscape, no longer considered exemplary. 2002: Two seepage swamp associations were observed at the north end of the seepage swamp system. Area 1 occurs further east (ie along border of development to the east) and has a denser *Acer rubrum* (red maple) cover (60-70%) and a sparse shrub layer. It is dominated by *Carex stricta* (tussock sedge; 35%), *Calamagrostis canadensis* (blue-joint; 15-20%), and *Onoclea sensibilis* (sensitive fern), with lesser quantities of *Carex lacustris* (lake sedge) and *Toxicodendron radicans* (climbing poison ivy). Area 2 is a classic red maple/lake sedge seepage swamp, with all the species of Area 1 present in lower abundance, less dense red maple (40%), a dominant layer of *Carex lacustris* (lake sedge; 60%) and sensitive fern (5%), and a denser shrub layer consisting mostly of *Vaccinium corymbosum* (highbush blueberry; 30%) and *Ilex verticillata* (winterberry; 5%). *Ulmus americana* (American elm) is occasional in the subcanopy. 1989: *Acer rubrum* (red maple) dominates. Understory dominants include *Carex stricta* (tussock sedge), *Alnus serrulata* (smooth alder), *Onoclea sensibilis* (sensitive fern), *Symplocarpus foetidus* (skunk cabbage). *Lysimachia thyrsiflora* (tufted loosestrife) also occurs here.

General Area: 2020: Community is bordered by railroad tracks to the north and commercial development to the east. Adjacent to exemplary ***herbaceous seepage marsh*** to the west. 2002: The seepage swamp is the dominant community in eastern portion of Great Bog, and bounded to the west by the large seepage marsh, to the north by railroad tracks, to the south by powerlines and upland. While surrounded by development, Great Bog is so large that it is actually one of the largest and least developed tracts of land in Portsmouth.

NHB23-3331 EOCODE: CP00000094*015*NH

General Comments: 1989: Further field work needed.
Management Comments: --

Location

Survey Site Name: Great Bog
Managed By: Griffin

County: Rockingham
Town(s): Portsmouth
Size: 39.2 acres Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2002: Best approach to portion of site (without pulling over on I-95) is from north via the railroad tracks just south of crossing of Route 33 and I-95. Park in vicinity of Route 33 crossing of railroad tracks, at industrial complex on Griffin Road to south of Route 33 (closest but dense shrub border along railroad track) or at railroad bridge by Greenland and Borthwick Streets just north of Route 33 (easiest). Proceed SW on railroad tracks. The seepage marsh is found past the red maple swamp (open area with few trees ca. 0.45 miles from Route 33).

Dates documented

First reported: 1989-05-30 Last reported: 2020-09-09

NHB23-3331 EOCODE: CP00000160*001*NH

New Hampshire Natural Heritage Bureau - Community Record

Swamp white oak basin swamp

Legal Status	Conservation Status
Federal: Not listed	Global: Not ranked (need more information)
State: Not listed	State: Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Fair quality, condition and/or landscape context ('C' on a scale of A-D).

Comments on Rank: 2002: 4-5 acres dominated by swamp white oak, an additional 8-10 acres where it is codominant, and another several acres predicted from air photos (not visited). Mature and fair to good sized example, compromised by proximity of highway, evidence of old ditching at south end of swamp, and a make-shift blue-tarp shelter/tepee.

Detailed Description: 2020: Canopy co-dominated by swamp white oak (*Quercus bicolor*) and red maple (*Acer rubrum*), with average diameter of 12ö dbh. American hornbeam (*Carpinus caroliniana* ssp. *virginiana*) frequent in the understory. Sensitive fern (*Onoclea sensibilis*) is dominant in the herbaceous layer, with other associates including lady fern (*Athyrium angustum*), American hog-peanut (*Amphicarpaea bracteata*), wood horsetail (*Equisetum sylvaticum*), and star sedge (*Carex echinata*). Homeless encampment observed during visit. 2002: This is a nice, mature example of a swamp white oak swamp. About 4-5 acres (eastern half of Area 1) are dominated by *Quercus bicolor* (swamp white oak, 50-60%), with *Acer rubrum* (red maple) codominant (ca. 15%), and *Carpinus caroliniana* var. *virginiana* (musclewood) contributing ca. 25% cover in the understory. The herb layer is sparse, excepting patches of *Onoclea sensibilis* (sensitive fern, ca. 25%), a few other herbs, and *Toxicodendron radicans* (climbing poison ivy). The exotic *Elaeagnus umbellata* (autumn olive) occurs in low abundance (<1%). The western half of Area 1, closer to the railroad tracks and highway, is somewhat drier and swamp white oak is only codominant (ca. 20%) cover along with similar amounts of *Pinus strobus* (white pine), *Betula lenta* (black birch), red maple, and *Tsuga canadensis* (hemlock). As in other swamp white oak swamps, the soil here is a silt loam. Several more acres of swamp white oak swamp (Area 2) are predicted from air photos to occur to the SE beyond a band of red maple swamp.

General Area: 2020: The community is bordered to the north by active railroad tracks and to the west by I-95. Most of the rest of community is bordered by an exemplary ***herbaceous seepage marsh***. 2002: The swamp white oak swamp is bound by railroad tracks to the north, Rte. 95 to the west, and Great Bog to the south and east. There is a band of red maple swamp between swamp white oak patches at Area 1 and Area 2, with the large seepage marsh beyond to the east and south that dominate much of Great Bog.

General Comments: 2002: While compromised by proximity to highway, the swamp may be forever protected from further development by being surrounded by highway, railroad track, and a huge wetland.

NHB23-3331 EOCODE: CP00000160*001*NH

Management Comments: --

Location

Survey Site Name: Great Bog
Managed By: City of Portsmouth Land

County: Rockingham
Town(s): Portsmouth
Size: 11.0 acres Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2002: Best approach to portion of site (without pulling over on I-95) is from north via the railroad tracks just south of crossing of Route 33 and I-95. Park in vicinity of Route 33 crossing of railroad tracks, at industrial complex on Griffin Road to south of Route 33 (closest but dense shrub border along railroad track) or at railroad bridge by Greenland and Borthwick Streets just north of Route 33 (easiest). Proceed SW on railroad tracks. The seepage swamp is located to the south just past the industrial complex (0.25 miles from Route 33); the seepage marsh is found further along past the seepage swamp (open area with few trees ca. 0.45 miles from Route 33); and the swamp white oak swamp is found where trees pick up again south of the RR tracks closer to the highway crossing (0.7 miles from Route 33).

Dates documented

First reported: 2002-09-27 Last reported: 2020-09-09

NHB23-3331 EOCODE: PMPOA4V011*003*NH

New Hampshire Natural Heritage Bureau - Plant Record

American reed (*Phragmites americanus*)

Legal Status	Conservation Status
Federal: Not listed	Global: Demonstrably widespread, abundant, and secure
State: Listed Endangered	State: Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked
Comments on Rank: --

Detailed Description: 2020: 300-500 stems, approximately 5% in fruit. Plants are growing on south-facing embankment of railroad tracks at edge of swamp in a band roughly 50 meters long.

General Area: 2020: South-facing slope below railroad tracks at edge of ***red maple - sensitive fern swamp***. Associates include bluejoint (*Calamagrostis canadensis*), wrinkle-leaved goldenrod (*Solidago rugosa*), meadowsweet (*Spiraea alba* var. *latifolia*), glossy false buckthorn (*Frangula alnus*), northern blackberry (*Rubus flagellaris*), sensitive fern (*Onoclea sensibilis*), lake sedge (*Carex lacustris*), red maple (*Acer rubrum*), Asian bittersweet (*Celastrus orbiculatus*), and autumn-olive (*Elaeagnus umbellata* var. *parvifolia*). A population of common reed (*Phragmites australis*) begins around 20 meters east of this patch of American reed.

General Comments: --
Management Comments: --

Location

Survey Site Name: Great Bog
Managed By:

County: Rockingham
Town(s): Portsmouth
Size: 1.0 acres Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2020: Best approach to portion of site (without pulling over on I-95) is from north via the railroad tracks just south of crossing of Route 33 and I-95. Park in vicinity of Route 33 crossing of railroad tracks, at industrial complex on Griffin Road to south of Route 33 (closest but dense shrub border along railroad track) or at railroad bridge by Greenland and Borthwick Streets just north of Route 33 (easiest). Proceed SW on railroad tracks. The American reed is on the south-facing embankment of the railroad tracks at the edge of the swamp approximately 0.25 miles from Route 33.

NHB23-3331 EOCODE: PMPOA4V011*003*NH

Dates documented

First reported: 2020-09-09 Last reported: 2020-09-09

NHB23-3331 EOCODE: PMSPA01050*026*NH

New Hampshire Natural Heritage Bureau - Plant Record

great bur-reed (*Sparganium eurycarpum*)

Legal Status	**Conservation Status**
Federal: Not listed	Global: Demonstrably widespread, abundant, and secure
State: Listed Threatened	State: Imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked
Comments on Rank: --

Detailed Description: 2022: More than 1,000 plants occurring densely in a large area, many bearing mature fruit.

General Area: 2022: Plants occur in a marsh along a beaver-impounded drainage surrounded by development. The marsh they are in is in good health and the population is robust spread over a large area. In the shallow marsh, associated species include broad-leaved cattail (*Typha latifolia*), water willow (*Decodon verticillatus*), and the invasive plant purple loosestrife (*Lythrum salicaria*). In deeper parts of the marsh, the plants form a monoculture where no other plant species are present.

General Comments: --

Management Comments: 2022: The invasive plant purple loostrife is present

Location

Survey Site Name: Oriental Gardens
Managed By:

County: Rockingham
Town(s): Portsmouth
Size: .2 acres Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2022: Plants are located in a marsh along the beaver-impounded drainage behind oriental gardens. Access is from a path from the northwestern corner of Oriental Gardens. A culvert crosses the stream and the marsh is on the far side of the culvert.

Dates documented

First reported: 2022-07-19 Last reported: 2022-07-19

NHB23-3331 EOCODE: PMCYP03DY0*001*NH

New Hampshire Natural Heritage Bureau - Plant Record

hairy-fruited sedge (*Carex trichocarpa*)

Legal Status		Conservation Status	
Federal:	Not listed	Global:	Apparently secure but with cause for concern
State:	Listed Endangered	State:	Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank:	Fair quality, condition and/or landscape context ('C' on a scale of A-D).
Comments on Rank:	Small population, needs field work.
Detailed Description:	2004: Searched for but not found. 2003: Searched for but not found. 2002: Searched for but not found. 1989: 50-100 budding plants. Rawinski specimen #9001 temporarily in personal herbarium.
General Area:	1989: Red maple swamp. With *Carex rostrata* (beaked sedge), *Acer rubrum* (red maple), *Cornus amomum* (silky dogwood), and *Typha latifolia* (common cat-tail).
General Comments:	2003: The surveyor (Jeremy Bell) has learned to ID this plant without flower or seed, so would like to go back next year to look again. 2002: General reported area was searched, but is all swamp and extremely challenging to cover. Also, original topographic map shows polygons covering extensive area - much of this was searched, but no plants were found. Unknown date: More inventory needed.
Management Comments:	2004: Lots of invasives.

Location

Survey Site Name: Great Bog
Managed By: City of Portsmouth Land

County: Rockingham
Town(s): Portsmouth
Size: 7.7 acres Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: Great Bog. South of railroad, west and north of powerline right-of-way.

Dates documented

First reported: 1989-05-30 Last reported: 1989-05-30

NHB23-3331 EOCODE: PDPRI070S0*003*NH

New Hampshire Natural Heritage Bureau - Plant Record

tufted yellow-loosestrife (*Lysimachia thyrsiflora*)

Legal Status	Conservation Status
Federal: Not listed	Global: Demonstrably widespread, abundant, and secure
State: Listed Threatened	State: Imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank:	Excellent quality, condition and landscape context ('A' on a scale of A-D).
Comments on Rank:	1989: New Hampshire's best population.
Detailed Description:	2023: Area 1: Searched for but not found in ROW. 2018: Area 4: Species observed having approximately 4% cover in 7 of 59 plots. Observed frequently across site outside of plots. 2013: Area 4: Species observed having approximately 1% cover in 2 of 59 plots. 2010: Searched for but not found. 2004: Searched for but not found. 2002: Searched for but not found. 1989: Thousands of budding plants. 1983: 2 small populations, 11-50 individuals. Specimen collected.
General Area:	2018: Area 4: Drainage marsh formerly dominated by common reed (*Phragmites australis*). After invasive control activities, *Phragmites* was reduced to very low abundance. Marsh now dominated by broad-leaved cattail (*Typha latifolia*), along with some narrow-leaved cattail (*Typha angustifolia*) and hybrid cattail. Purple loosestrife (*Lythrum salicaria*) also frequent at lower abundance. Other frequent species include tussock sedge (*Carex stricta*), meadowsweet (*Spiraea alba* var. *latifolia*), royal fern (*Osmunda regalis* var. *spectabilis*), and woolly bulrush (*Scirpus cyperinus*). 1989: SNE seepage marsh. Also in red maple swamp. With *Carex rostrata* (beaked sedge), *Acer rubrum* (red maple), *Typha latifolia* (common cat-tail), and *Osmunda cinnamomea* (cinnamon fern). 1983: Where a powerline crosses a branch of a brook.
General Comments:	1989: Occurs in 2 areas of seepage marsh.
Management Comments:	2018: Area 4: This site was the subject of an intensive invasive species management project to reduce the presence of common reed (*Phragmites australis*), which completely dominated the marsh. Use of herbicides successfully reduces *Phragmites* to low abundance. *Galerucella* beetles were also released to try and control purple loosestrife (*Lythrum salicaria*), with some success. 2004: Lots of exotic species present.

Location

Survey Site Name:	Great Bog
Managed By:	Griffin
County:	Rockingham
Town(s):	Portsmouth
Size:	53.0 acres
Elevation:	

Precision: Within (but not necessarily restricted to) the area indicated on the map.

NHB23-3331 EOCODE: PDPRI070S0*003*NH

Directions: Great Bog. South and east of crook in powerline right-of-way. 2019: Area 4: Banfield Road conservation properties behind Apostolic Church, 500 Banfield Road, Portsmouth. 1989: Areas 2 and 3: Park at railroad crossing of Banfield Road. Access via dirt road heading NW from Banfield Road about 0.2 miles north of the railroad (much of this road was flooded to 18 inches). 1983: Area 1: Great Bog. At crossing of branch of Pickering Brook and the electric line (brook crossing of utility line and service lane).

Dates documented

First reported: 1983-06-16 Last reported: 2018-10

NHB DataCheck Results Letter
NH Natural Heritage Bureau
Please note: maps and NHB record pages are **confidential** and shall be redacted from public documents.

NHB23-3331 EOCODE: ARAAD04010*632*NH

New Hampshire Natural Heritage Bureau - Animal Record

Blanding's Turtle (*Emydoidea blandingii*)

Legal Status	Conservation Status
Federal: Not listed	Global: Apparently secure but with cause for concern
State: Listed Endangered	State: Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked
Comments on Rank: --

Detailed Description: 2011: Area 12906: 1 adult observed.
General Area: 2011: Area 12906: Marsh along railroad tracks.
General Comments: --
Management Comments: --

Location

Survey Site Name: Meadowbrook
Managed By: Hospital Corporation of America

County: Rockingham
Town(s): Portsmouth
Size: 1.9 acres Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2011: Area 12906: Marsh adjacent to 333 Borthwick Avenue, behind Portsmouth Regional Hospital.

Dates documented

First reported: 2011-05-07 Last reported: 2011-05-07

The New Hampshire Fish & Game Department has jurisdiction over rare wildlife in New Hampshire. Please contact them at 11 Hazen Drive, Concord, NH 03301 or at (603) 271-2461.

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: Lindsey White, GZA GeoEnvironmental
5 Commerce Park North Suite 201
Bedford, NH 03110
lindsey.white@gza.com

From: NHB Review
NH Natural Heritage Bureau
Main Contact: Ashley Litwinenko - nhbreview@dncr.nh.gov

cc:

Date: 11/22/2023 (valid until 11/22/2024)
Re: DataCheck Review by NH Natural Heritage Bureau and NH Fish & Game
Permits: NHDES - Alteration of Terrain Permit, NHDES - Wetland Standard Dredge & Fill - Minor, USACE - General Permit, USEPA - Stormwater Pollution Prevention

NHB ID: NHB23-3332

Town: Greenland
Location: Eversource Maintained ROW

Project Description: Eversource is proposing to replace select utility structures within the existing and maintained 3111 ROW.

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 representative photos during the growing season, proposed plans, and proposed project timing.

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.

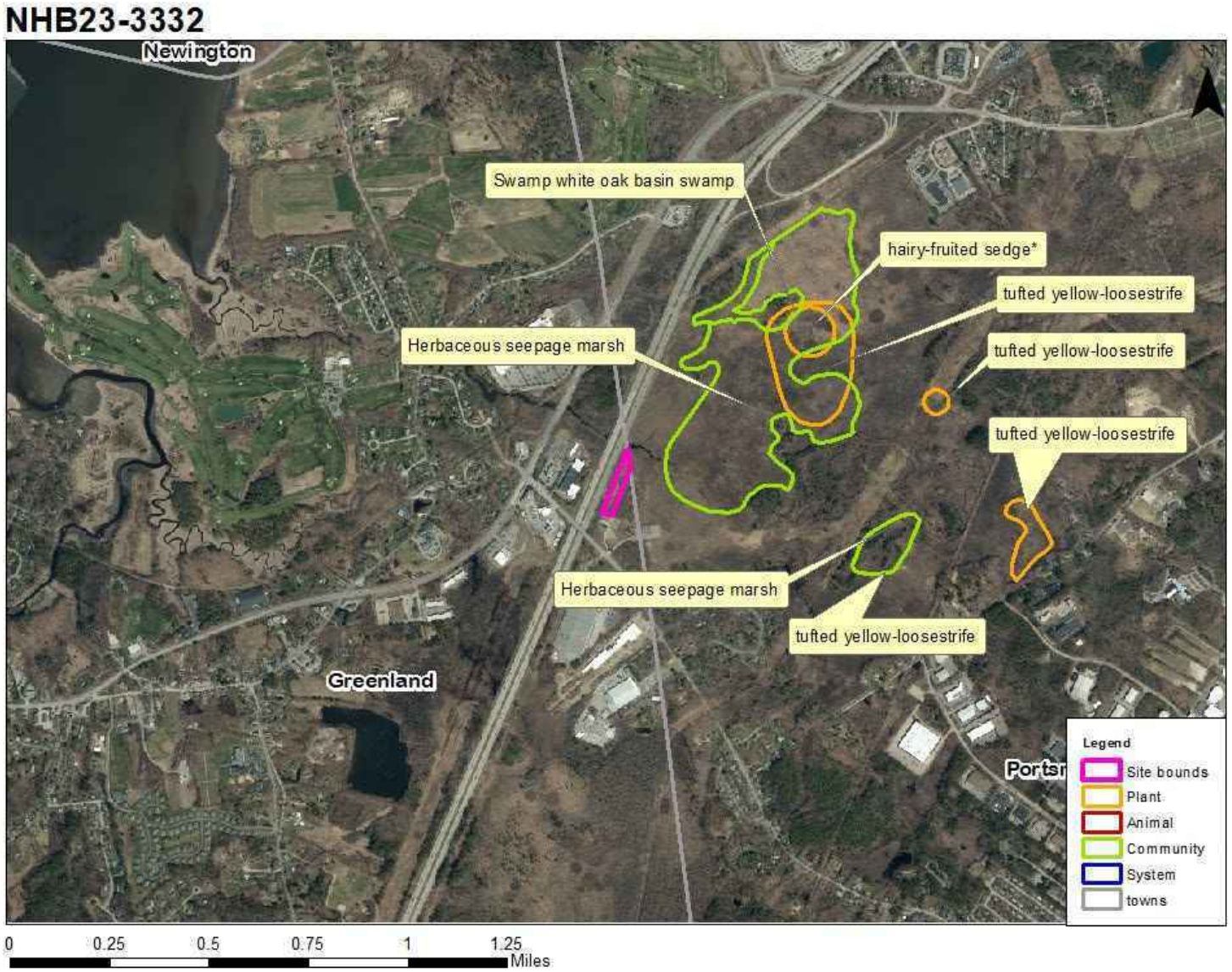
NHB Database Records:
The following record(s) have been documented in the vicinity of the proposed project.
Please see the map and detailed information about the record(s) on the following pages.

Natural Community	**State[1]**	**Federal**	**Notes**
Herbaceous seepage marsh	--	--	As this wetland is strongly influenced by groundwater seepage, it could be affected by landscape alterations which modify groundwater movement or increase stormwater flow into it.
Swamp white oak basin swamp	--	--	Threats to this community include changes to the wetland's hydrology either through damming or increasing drainage. Significant increases in nutrients and pollutants from stormwater runoff could also have a deleterious effect on the wetland.

Plant species	**State[1]**	**Federal**	**Notes**
hairy-fruited sedge (*Carex trichocarpa*)*	E	--	This species occurs in forested swamps, and would be threatened by changes to local hydrology as well as activities such as logging that opened up the canopy.
tufted yellow-loosestrife (*Lysimachia thyrsiflora*)	T	--	As a resident of peatlands, this species is susceptible to any changes to the wetland's hydrology (especially that which causes pooling), increased nutrient input from stormwater runoff, and sedimentation from nearby disturbances.

[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.


NHB23-3332
Newington
Swamp white oak basin swamp
hairy-fruited sedge*
tufted yellow-loosestrife
Herbaceous seepage marsh
tufted yellow-loosestrife
tufted yellow-loosestrife
Herbaceous seepage marsh
tufted yellow-loosestrife
Greenland
Legend
Site bounds
Plant
Animal
Community
System
towns
0
0.25
0.5
0.75
1
1.25
Miles

NHB23-3332 EOCODE: CP00000103*001*NH

New Hampshire Natural Heritage Bureau - Community Record

Herbaceous seepage marsh

Legal Status	Conservation Status
Federal: Not listed	Global: Not ranked (need more information)
State: Not listed	State: Rare or uncommon

Description at this Location

Conservation Rank: Good quality, condition and landscape context ('B' on a scale of A-D).

Comments on Rank: 2020: A very large seepage marsh in a compromised landscape context.

Detailed Description: 2020: The community has variable composition, with patches of dense narrow-leaved cattail (*Typha angustifolia*) mixed with areas dominated by lake sedge (*Carex lacustris*). Red maple (*Acer rubrum*) saplings are frequent, along with shrub species like speckled alder (*Alnus incana* ssp. *rugosa*), highbush blueberry (*Vaccinium corymbosum*), smooth arrowwood (*Viburnum dentatum* var. *lucidum*), and meadowsweet (*Spiraea alba* var. *latifolia*). Other herb species observed include sensitive fern (*Onoclea sensibilis*), bluejoint (*Calamagrostis canadensis*), royal fern (*Osmunda regalis* var. *spectabilis*), and wrinkle-leaved goldenrod (*Solidago rugosa*). The invasive species purple loosestrife (*Lythrum salicaria*) and common reed (*Phragmites australis*) are both present at moderate levels. 2002: The northern portion of the seepage marsh is characterized by dense swards of *Carex lacustris* (lake sedge) (50%) accompanied by *Typha latifolia* (common cat-tail, 10%), *Toxicodendron radicans* (climbing poison ivy, 5-10%), *Thelypteris palustris* var. *pubescens* (marsh fern, 5-10%), *Onoclea sensibilis* (sensitive fern, 5%), and scattered sapling *Acer rubrum* (red maple, 1-5%). Numerous other herbs are present in low abundance. This area grades further south into sparse woodland areas with more red maple (20-40 ft. tall, including many dead snags), but still more marshy than swampy. A soil sample was very well decomposed muck over silty muck. 1989: The hybrid cattail *Typha* x *Glauca* dominates open areas with extremely abundant *Lysimachia thyrsiflora* (tufted loosestrife). State record *Carex trichocarpa* (hairy-fruited sedge) occurs at the marsh-swamp ecotone.

General Area: 2020: The community is bordered by railroad tracks to the north and I-95 to the west. There is an exemplary ***swamp white oak basin swamp*** adjacent to the northwest, and a ***red maple - sensitive fern swamp*** to the east. 2002: The seepage marsh is the dominant community in the central and western portions of Great Bog, and bounded to the west by the large seepage swamp, to the north by railroad tracks, to the NW by swamp white oak swamp, to the west by the highway and disturbed emergent marsh, and to the south by powerlines and upland areas. While surrounded by development, Great Bog is so large that it is actually one of the largest and least developed tracts of land in Portsmouth. 1989: Borders the red maple swamp forests that the Great Bog largely consists of.

General Comments: 1989: Further field work and a field form is needed.

NHB23-3332 EOCODE: CP00000103*001*NH

Management Comments: --

Location

Survey Site Name: Great Bog
Managed By: Hospital Corporation of America

County: Rockingham
Town(s): Portsmouth
Size: 135.9 acres Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2002: Best approach to portion of site (without pulling over on I-95) is from north via the railroad tracks just south of crossing of Route 33 and I-95. Park in vicinity of Route 33 crossing of railroad tracks, at industrial complex on Griffin Road to south of Route 33 (closest but dense shrub border along railroad track) or at railroad bridge by Greenland and Borthwick Streets just north of Route 33 (easiest). Proceed SW on railroad tracks. The seepage marsh is found past the red maple swamp (open area with few trees ca. 0.45 miles from Route 33).

Dates documented

First reported: 1989-05-30 Last reported: 2020-09-09

NHB23-3332 EOCODE: CP00000160*001*NH

New Hampshire Natural Heritage Bureau - Community Record

Swamp white oak basin swamp

Legal Status	Conservation Status
Federal: Not listed	Global: Not ranked (need more information)
State: Not listed	State: Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Fair quality, condition and/or landscape context ('C' on a scale of A-D).

Comments on Rank: 2002: 4-5 acres dominated by swamp white oak, an additional 8-10 acres where it is codominant, and another several acres predicted from air photos (not visited). Mature and fair to good sized example, compromised by proximity of highway, evidence of old ditching at south end of swamp, and a make-shift blue-tarp shelter/tepee.

Detailed Description: 2020: Canopy co-dominated by swamp white oak (*Quercus bicolor*) and red maple (*Acer rubrum*), with average diameter of 12ö dbh. American hornbeam (*Carpinus caroliniana* ssp. *virginiana*) frequent in the understory. Sensitive fern (*Onoclea sensibilis*) is dominant in the herbaceous layer, with other associates including lady fern (*Athyrium angustum*), American hog-peanut (*Amphicarpaea bracteata*), wood horsetail (*Equisetum sylvaticum*), and star sedge (*Carex echinata*). Homeless encampment observed during visit. 2002: This is a nice, mature example of a swamp white oak swamp. About 4-5 acres (eastern half of Area 1) are dominated by *Quercus bicolor* (swamp white oak, 50-60%), with *Acer rubrum* (red maple) codominant (ca. 15%), and *Carpinus caroliniana* var. *virginiana* (musclewood) contributing ca. 25% cover in the understory. The herb layer is sparse, excepting patches of *Onoclea sensibilis* (sensitive fern, ca. 25%), a few other herbs, and *Toxicodendron radicans* (climbing poison ivy). The exotic *Elaeagnus umbellata* (autumn olive) occurs in low abundance (<1%). The western half of Area 1, closer to the railroad tracks and highway, is somewhat drier and swamp white oak is only codominant (ca. 20%) cover along with similar amounts of *Pinus strobus* (white pine), *Betula lenta* (black birch), red maple, and *Tsuga canadensis* (hemlock). As in other swamp white oak swamps, the soil here is a silt loam. Several more acres of swamp white oak swamp (Area 2) are predicted from air photos to occur to the SE beyond a band of red maple swamp.

General Area: 2020: The community is bordered to the north by active railroad tracks and to the west by I-95. Most of the rest of community is bordered by an exemplary ***herbaceous seepage marsh***. 2002: The swamp white oak swamp is bound by railroad tracks to the north, Rte. 95 to the west, and Great Bog to the south and east. There is a band of red maple swamp between swamp white oak patches at Area 1 and Area 2, with the large seepage marsh beyond to the east and south that dominate much of Great Bog.

General Comments: 2002: While compromised by proximity to highway, the swamp may be forever protected from further development by being surrounded by highway, railroad track, and a huge wetland.

NHB23-3332 EOCODE: CP00000160*001*NH

Management Comments: --

Location

Survey Site Name: Great Bog
Managed By: City of Portsmouth Land

County: Rockingham
Town(s): Portsmouth
Size: 11.0 acres Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2002: Best approach to portion of site (without pulling over on I-95) is from north via the railroad tracks just south of crossing of Route 33 and I-95. Park in vicinity of Route 33 crossing of railroad tracks, at industrial complex on Griffin Road to south of Route 33 (closest but dense shrub border along railroad track) or at railroad bridge by Greenland and Borthwick Streets just north of Route 33 (easiest). Proceed SW on railroad tracks. The seepage swamp is located to the south just past the industrial complex (0.25 miles from Route 33); the seepage marsh is found further along past the seepage swamp (open area with few trees ca. 0.45 miles from Route 33); and the swamp white oak swamp is found where trees pick up again south of the RR tracks closer to the highway crossing (0.7 miles from Route 33).

Dates documented

First reported: 2002-09-27 Last reported: 2020-09-09

NHB23-3332 EOCODE: PMCYP03DY0*001*NH

New Hampshire Natural Heritage Bureau - Plant Record

hairy-fruited sedge (*Carex trichocarpa*)

Legal Status		Conservation Status	
Federal:	Not listed	Global:	Apparently secure but with cause for concern
State:	Listed Endangered	State:	Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank:	Fair quality, condition and/or landscape context ('C' on a scale of A-D).
Comments on Rank:	Small population, needs field work.
Detailed Description:	2004: Searched for but not found. 2003: Searched for but not found. 2002: Searched for but not found. 1989: 50-100 budding plants. Rawinski specimen #9001 temporarily in personal herbarium.
General Area:	1989: Red maple swamp. With *Carex rostrata* (beaked sedge), *Acer rubrum* (red maple), *Cornus amomum* (silky dogwood), and *Typha latifolia* (common cat-tail).
General Comments:	2003: The surveyor (Jeremy Bell) has learned to ID this plant without flower or seed, so would like to go back next year to look again. 2002: General reported area was searched, but is all swamp and extremely challenging to cover. Also, original topographic map shows polygons covering extensive area - much of this was searched, but no plants were found. Unknown date: More inventory needed.
Management Comments:	2004: Lots of invasives.

Location

Survey Site Name: Great Bog
Managed By: City of Portsmouth Land

County: Rockingham
Town(s): Portsmouth
Size: 7.7 acres Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: Great Bog. South of railroad, west and north of powerline right-of-way.

Dates documented

First reported: 1989-05-30 Last reported: 1989-05-30

NHB23-3332 EOCODE: PDPRI070S0*003*NH

New Hampshire Natural Heritage Bureau - Plant Record

tufted yellow-loosestrife (*Lysimachia thyrsiflora*)

Legal Status	**Conservation Status**
Federal: Not listed	Global: Demonstrably widespread, abundant, and secure
State: Listed Threatened	State: Imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank:	Excellent quality, condition and landscape context ('A' on a scale of A-D).
Comments on Rank:	1989: New Hampshire's best population.
Detailed Description:	2023: Area 1: Searched for but not found in ROW. 2018: Area 4: Species observed having approximately 4% cover in 7 of 59 plots. Observed frequently across site outside of plots. 2013: Area 4: Species observed having approximately 1% cover in 2 of 59 plots. 2010: Searched for but not found. 2004: Searched for but not found. 2002: Searched for but not found. 1989: Thousands of budding plants. 1983: 2 small populations, 11-50 individuals. Specimen collected.
General Area:	2018: Area 4: Drainage marsh formerly dominated by common reed (*Phragmites australis*). After invasive control activities, *Phragmites* was reduced to very low abundance. Marsh now dominated by broad-leaved cattail (*Typha latifolia*), along with some narrow-leaved cattail (*Typha angustifolia*) and hybrid cattail. Purple loosestrife (*Lythrum salicaria*) also frequent at lower abundance. Other frequent species include tussock sedge (*Carex stricta*), meadowsweet (*Spiraea alba* var. *latifolia*), royal fern (*Osmunda regalis* var. *spectabilis*), and woolly bulrush (*Scirpus cyperinus*). 1989: SNE seepage marsh. Also in red maple swamp. With *Carex rostrata* (beaked sedge), *Acer rubrum* (red maple), *Typha latifolia* (common cat-tail), and *Osmunda cinnamomea* (cinnamon fern). 1983: Where a powerline crosses a branch of a brook.
General Comments:	1989: Occurs in 2 areas of seepage marsh.
Management Comments:	2018: Area 4: This site was the subject of an intensive invasive species management project to reduce the presence of common reed (*Phragmites australis*), which completely dominated the marsh. Use of herbicides successfully reduces *Phragmites* to low abundance. *Galerucella* beetles were also released to try and control purple loosestrife (*Lythrum salicaria*), with some success. 2004: Lots of exotic species present.

Location

Survey Site Name: Great Bog
Managed By: Griffin

County: Rockingham
Town(s): Portsmouth
Size: 53.0 acres Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

NHB23-3332 EOCODE: PDPRI070S0*003*NH

Directions: Great Bog. South and east of crook in powerline right-of-way. 2019: Area 4: Banfield Road conservation properties behind Apostolic Church, 500 Banfield Road, Portsmouth. 1989: Areas 2 and 3: Park at railroad crossing of Banfield Road. Access via dirt road heading NW from Banfield Road about 0.2 miles north of the railroad (much of this road was flooded to 18 inches). 1983: Area 1: Great Bog. At crossing of branch of Pickering Brook and the electric line (brook crossing of utility line and service lane).

Dates documented

First reported: 1983-06-16 Last reported: 2018-10

APPENDIX E – IPAC REPORT

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Rockingham County, New Hampshire

Local office

New England Ecological Services Field Office

(603) 223-2541
(603) 223-0104

70 Commercial Street, Suite 300
Concord, NH 03301-5094

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

2. 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.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Northern Long-eared Bat Myotis septentrionalis Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045	Endangered

Birds

NAME	STATUS
Roseate Tern Sterna dougallii dougallii No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2083	Endangered

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act[1] and the Migratory Bird Treaty Act[2].

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats[3], should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

There are bald and/or golden eagles in your project area.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Oct 15 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read

"Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

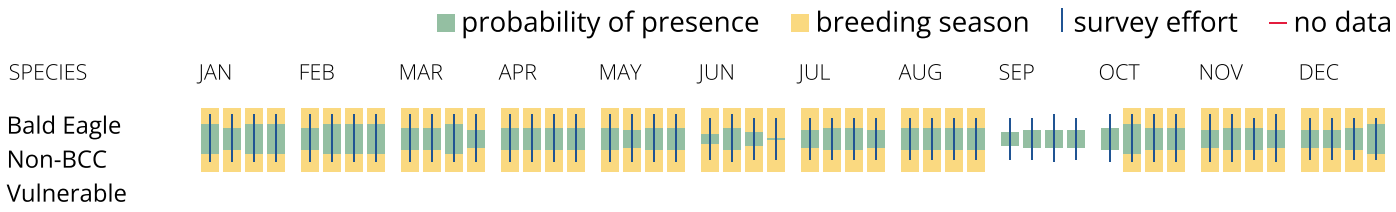
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply). To see a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats[3] should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

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1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON

American Oystercatcher Haematopus palliatus — Breeds Apr 15 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/8935

Bald Eagle Haliaeetus leucocephalus — Breeds Oct 15 to Aug 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Black Skimmer Rynchops niger — Breeds May 20 to Sep 15

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/5234

Black-billed Cuckoo Coccyzus erythropthalmus — Breeds May 15 to Oct 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9399

Blue-winged Warbler Vermivora pinus — Breeds May 1 to Jun 30

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Bobolink Dolichonyx oryzivorus — Breeds May 20 to Jul 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Canada Warbler Cardellina canadensis — Breeds May 20 to Aug 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Chimney Swift Chaetura pelagica — Breeds Mar 15 to Aug 25

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Gull-billed Tern Gelochelidon nilotica — Breeds May 1 to Jul 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9501

Hudsonian Godwit *Limosa haemastica* — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Lesser Yellowlegs *Tringa flavipes* — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9679

Pectoral Sandpiper *Calidris melanotos* — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Prairie Warbler *Dendroica discolor* — Breeds May 1 to Jul 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Prothonotary Warbler *Protonotaria citrea* — Breeds Apr 1 to Jul 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Purple Sandpiper *Calidris maritima* — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Red-headed Woodpecker *Melanerpes erythrocephalus* — Breeds May 10 to Sep 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Ruddy Turnstone *Arenaria interpres morinella* — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Rusty Blackbird *Euphagus carolinus* — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Saltmarsh Sparrow *Ammodramus caudacutus* — Breeds May 15 to Sep 5

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9719

Short-billed Dowitcher Limnodromus griseus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9480	Breeds elsewhere
Willet Tringa semipalmata This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 5
Wood Thrush Hylocichla mustelina This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

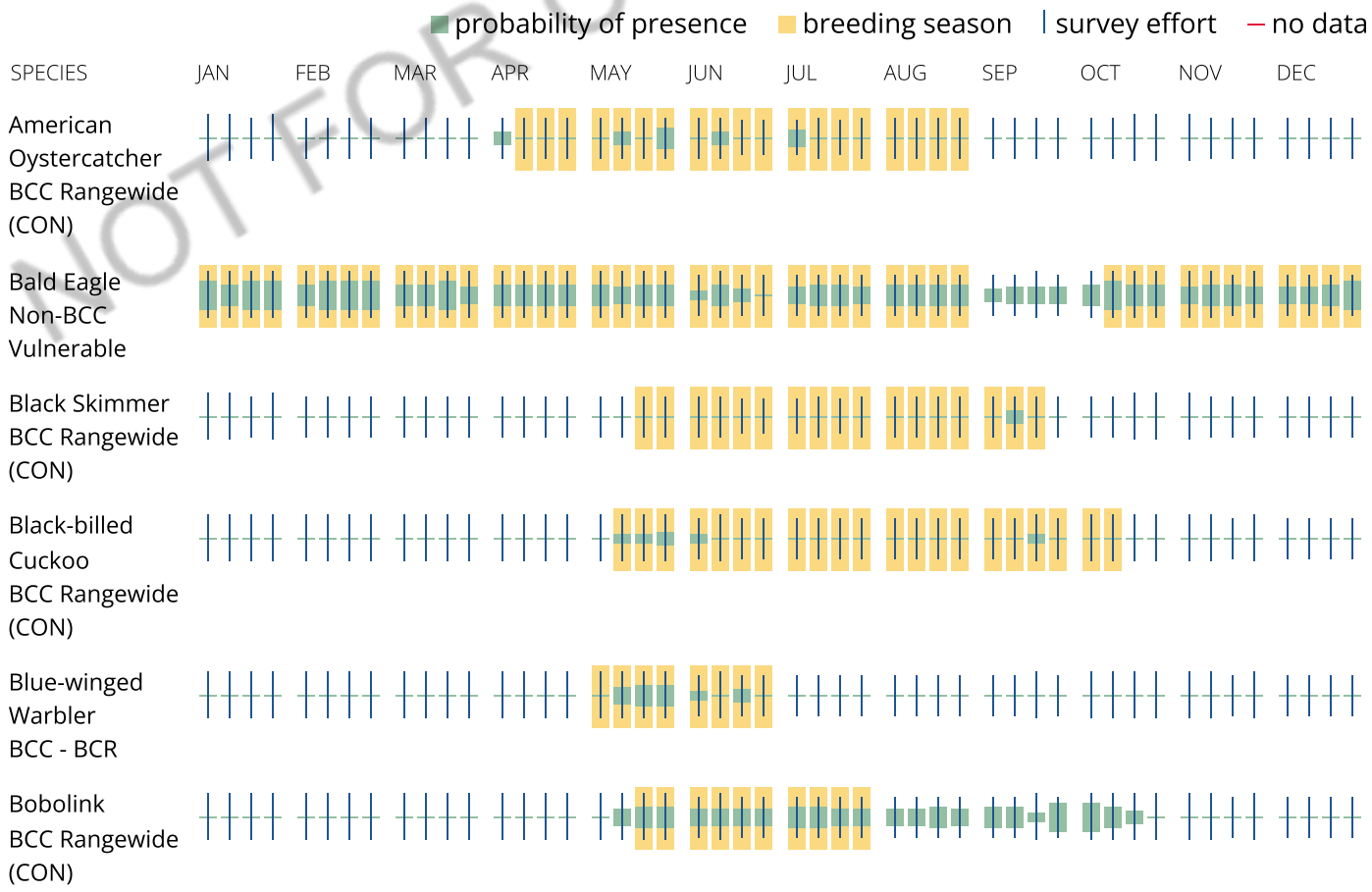
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

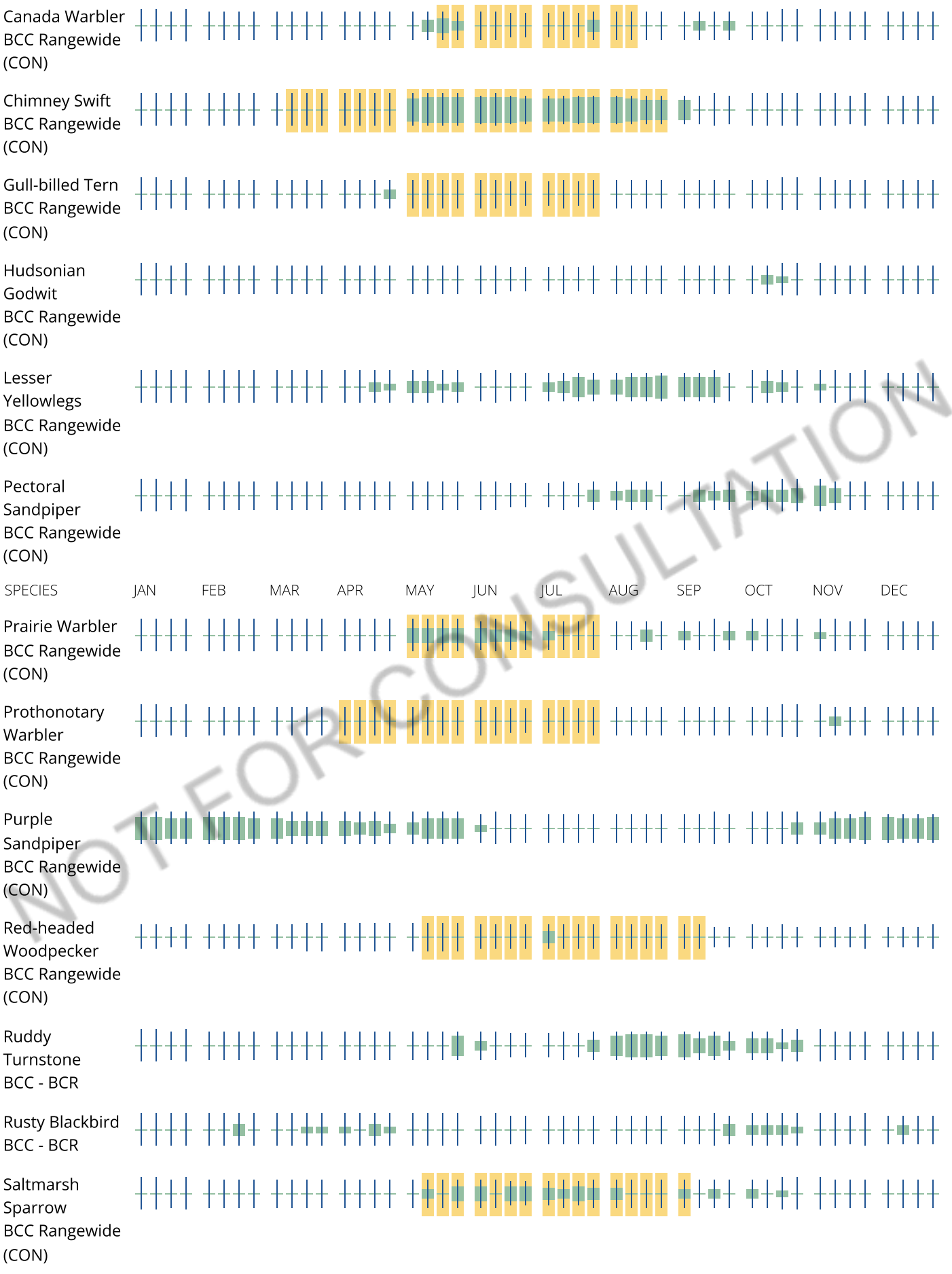
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

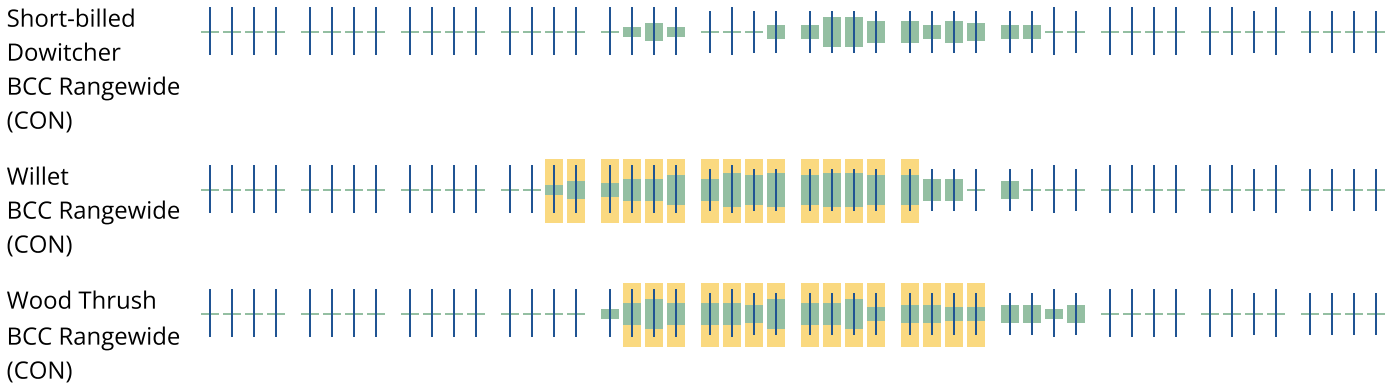
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.







Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

- PEM5E
- PEM1/SS1E
- PEM1E

FRESHWATER FORESTED/SHRUB WETLAND

- PSS1E
- PFO1/SS1E
- PFO1E

A full description for each wetland code can be found at the National Wetlands Inventory website

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and

nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

APPENDIX F – NHDHR REQUEST FOR PROJECT REVIEW

Please mail the completed form and required material to:

New Hampshire Division of Historical Resources
State Historic Preservation Office
Attention: Review & Compliance
172 Pembroke Road, Concord, NH 03301

RECEIVED DEC 01 2023

DHR Use Only	
R&C #	15535
Log In Date	12/1/23
Response Date	12/18/23
Sent Date	12/19/23

Request for Project Review by the New Hampshire Division of Historical Resources

☒ This is a new submittal
☐ This is additional information relating to DHR Review & Compliance (R&C) #:

GENERAL PROJECT INFORMATION

Project Title Resistance Substation Retirement Project, ESNH-2023-029

Project Location Eversource T-13 Transmission Line and 3171 Distribution Line Right-of-Way (ROW)

City/Town Greenland/Portsmouth Tax Map See attached Lot #

NH State Plane - Feet Geographic Coordinates: Easting 1213879 Northing 202663
(See RPR Instructions and R&C FAQs for guidance.)

Lead Federal Agency and Contact *(if applicable)* USACE
(Agency providing funds, licenses, or permits)
Permit Type and Permit or Job Reference # SV

State Agency and Contact *(if applicable)* NHDES

Permit Type and Permit or Job Reference # SPN

APPLICANT INFORMATION

Applicant Name Eversource Energy, Attn: Kurt Nelson

Mailing Address 13 Legends Drive Phone Number 603-634-3256

City Hooksett State NH Zip 03106 Email kurt.nelson@eversource.com

CONTACT PERSON TO RECEIVE RESPONSE

Name/Company GZA GeoEnvironmental, Inc., Attn: Conor E. Madison

Mailing Address 5 Commerce Park North, Suite 201 Phone Number 207-331-6629

City Bedford State NH Zip 03110 Email conor.madison@gza.com

This form is updated periodically. Please download the current form at www.nh.gov/nhdhr/review. *Please refer to the Request for Project Review Instructions for direction on completing this form.* Submit one copy of this project review form for each project for which review is requested. Please include a self-addressed stamped envelope. Project submissions will not be accepted via facsimile or e-mail. This form is required. Review request form must be complete for review to begin. Incomplete forms will be sent back to the applicant without comment. Please be aware that this form may only initiate consultation. For some projects, additional information will be needed to complete the Section 106 review. All items and supporting documentation submitted with a review request, including photographs and publications, will be retained by the DHR as part of its review records. Items to be kept confidential should be clearly identified. For questions regarding the DHR review process and the DHR's role in it, please visit our website at: www.nh.gov/nhdhr/review or contact the R&C Specialist at marika.s.labash@dncr.nh.gov.

PROJECTS CANNOT BE PROCESSED WITHOUT THIS INFORMATION

Project Boundaries and Description

- ☒ Attach the Project Mapping ***using EMMIT or relevant portion of a 7.5' USGS Map.*** *(See RPR Instructions and R&C FAQs for guidance.)*
- ☒ Attach a detailed narrative description of the proposed project.
- ☒ Attach a site plan. The site plan should include the project boundaries and areas of proposed excavation.
- ☒ Attach photos of the project area (overview of project location and area adjacent to project location, and specific areas of proposed impacts and disturbances.) *(Informative photo captions are requested.)*
- ☒ A DHR records search must be conducted to identify properties within or adjacent to the project area. Provide records search results via EMMIT or in **Table 1**. *(Blank table forms are available on the DHR website.)* Please note, using EMMIT Guest View for an RPR records search does not provide the necessary information needed for DHR review.
  EMMIT or in-house records search conducted on 3/14/2023.

Architecture

Are there any buildings, structures (bridges, walls, culverts, etc.) objects, districts or landscapes within the project area? ☐ Yes ☒ No
If no, skip to Archaeology section. If yes, submit all of the following information:

Approximate age(s):

- ☐ Photographs of ***each*** resource or streetscape located within the project area, with captions, along with a mapped photo key. (Digital photographs are accepted. All photographs must be clear, crisp and focused.)
- ☐ If the project involves rehabilitation, demolition, additions, or alterations to existing buildings or structures, provide additional photographs showing detailed project work locations. (i.e. Detail photo of windows if window replacement is proposed.)

Archaeology

Does the proposed undertaking involve ground-disturbing activity? ☒ Yes ☐ No
If yes, submit all of the following information:

- ☒ Description of current and previous land use and disturbances.
- ☒ Available information concerning known or suspected archaeological resources within the project area (such as cellar holes, wells, foundations, dams, etc.)

Please note that for many projects an architectural and/or archaeological survey or other additional information may be needed to complete the Section 106 process.

DHR Comment/Finding Recommendation *This Space for Division of Historical Resources Use Only*

☐ Insufficient information to initiate review. ☐ Additional information is needed in order to complete review.

☐ No Potential to cause Effects ☑ No Historic Properties Affected ☐ No Adverse Effect ☐ Adverse Effect

Comments:

If plans change or resources are discovered in the course of this project, you must contact the Division of Historical Resources as required by federal law and regulation.

Authorized Signature: Nadine Miller, DSHPO Date: 12/18/23

APPENDIX G – PHOTOGRAPHIC LOG

PHOTO LOG
T13/3171, and Resistance SS Project
Portsmouth, and Greenland, New Hampshire
Photos Taken: June and August 2023

Photograph No. 1: Looking north at Wetland GW-1 (PEM1/PSS1/PFO1E.Fg/R2UB) near Structures 97 to 95 on the 3171 Line ROW off Ocean Road, Greenland, NH.

Photograph No. 2: Looking north at Wetland GW-1 (PEM1/PSS1/PFO1E.Fg/R2UB) near Structure 94 on the 3171 Line ROW off Ocean Road, Portsmouth, NH.

PHOTO LOG
T13/3171, and Resistance SS Project
Portsmouth, and Greenland, New Hampshire
Photos Taken: June and August 2023

Photograph No. 3: Looking south at Wetland GW-1 (PEM1/PSS1/PFO1E.Fg/R2UB) near Structure 94 on the 3171 Line ROW off Ocean Road, Greenland, NH.

Photograph No. 4: Looking northeast at Wetland GW-1 (PEM1/PSS1/PFO1E.Fg/R2UB) near Structure 93 on the 3171 Line ROW off Ocean Road, Greenland, NH.

PHOTO LOG
T13/3171, and Resistance SS Project
Portsmouth, and Greenland, New Hampshire
Photos Taken: June and August 2023

Photograph No. 5: Looking east at Wetland GW-1 (PEM1/PSS1/PFO1E.Fg/R2UB) near Structure 92 on the 3171 Line ROW off Ocean Road, Portsmouth, NH.

Photograph No. 6: Looking southwest at Wetland GW-1 (PEM1/PSS1/PFO1E.Fg/R2UB) near Structure 91 on the 3171 Line ROW off Ocean Road, Portsmouth, NH.

PHOTO LOG
T13/3171, and Resistance SS Project
Portsmouth, and Greenland, New Hampshire
Photos Taken: June and August 2023

Photograph No. 7: Looking north at Wetland GW-1 (PEM1/PSS1/PFO1E.Fg/R2UB) near Structure 90 on the 3171 Line ROW off Ocean Road, Portsmouth, NH.

Photograph No. 8: Looking north towards Structure 86 on the 3171 Line ROW off Ocean Road, Portsmouth, NH.

PHOTO LOG
T13/3171, and Resistance SS Project
Portsmouth, and Greenland, New Hampshire
Photos Taken: June and August 2023

Photograph No. 9: Looking east at Structures 85 and 84 on the 3171 Line ROW off NH33, Portsmouth, NH

Photograph No. 10: Looking east at Wetland PW-1 (PEM1/PSS1E.Fg) near Structure 83 on the 3171 Line ROW off NH33, Portsmouth, NH

PHOTO LOG
T13/3171, and Resistance SS Project
Portsmouth, and Greenland, New Hampshire
Photos Taken: June and August 2023

Photograph No. 11: Looking southwest at Wetland PW-1 (PEM1/PSS1E.Fg) near Structure 82 on the 3171 Line ROW off NH33, Portsmouth, NH

Photograph No. 12: Looking west at Wetland PW-1 (PEM1/PSS1E.Fg) near Structure 81 on the 3171 Line ROW off NH33, Portsmouth, NH

PHOTO LOG
T13/3171, and Resistance SS Project
Portsmouth, and Greenland, New Hampshire
Photos Taken: June and August 2023

Photograph No. 13: Looking southwest at Wetland PW-1 (PEM1/PSS1E.Fg) near Structure 80 on the 3171 Line ROW off NH33, Portsmouth, NH

Photograph No. 14: Looking northwest at Wetland PW-1 (PEM1/PSS1E.Fg) near Structure 79 on the 3171 Line ROW off NH33, Portsmouth, NH.

PHOTO LOG
T13/3171, and Resistance SS Project
Portsmouth, and Greenland, New Hampshire
Photos Taken: June and August 2023

Photograph No. 15: Looking west at Wetland PW-1 (PEM1/PSS1E.Fg) near Structures 78 and 77 on the 3171 Line ROW off NH33, Portsmouth, NH.

Photograph No. 16: Looking northeast at Wetland PW-1 (PEM1/PSS1E.Fg) towards Structure 77 to 73 on the 3171 Line ROW off NH33, Portsmouth, NH.

PHOTO LOG
T13/3171, and Resistance SS Project
Portsmouth, and Greenland, New Hampshire
Photos Taken: June and August 2023

Photograph No. 17: Looking northwest towards Structures 72 and 72.6 on the 3171 Line ROW off NH33, Portsmouth, NH.

Photograph No. 18: Looking southeast at Structures 72.1 to 72.5 on the 3171 Line ROW off Griffin Road, Portsmouth, NH.

PHOTO LOG
T13/3171, and Resistance SS Project
Portsmouth, and Greenland, New Hampshire
Photos Taken: June and August 2023

Photograph No. 19: Looking northeast at Structure 1 on the T13 Line ROW off Gosling Road, Portsmouth, NH.

Photograph No. 20: Looking south near Wetland PW-2 (PEM1/PSS1E) on the T13 Line ROW off Gosling Road, Portsmouth, NH.

PHOTO LOG
T13/3171, and Resistance SS Project
Portsmouth, and Greenland, New Hampshire
Photos Taken: June and August 2023

Photograph No. 21: Looking northwest near Wetland PW-3 (PEM1/PSS1E) between Structures 1 and 2 on the T13 Line ROW off Gosling Road, Portsmouth, NH.

Photograph No. 22: Looking southwest at Structure 2 on the T13 Line ROW off Gosling Road, Portsmouth, NH.

PHOTO LOG
T13/3171, and Resistance SS Project
Portsmouth, and Greenland, New Hampshire
Photos Taken: June and August 2023

Photograph No. 23: Looking northwest at Wetland PW-4 (PEM1/PSS1E) near Structure 2 on the T13 Line ROW off Gosling Road, Portsmouth, NH.

Photograph No. 24: Looking south at Structure 3 and Wetlands PW-5 (PEM1/PSS1E) and PW-6 (PEM1/PSS1E) on the T13 Line ROW off Gosling Road, Portsmouth, NH.

PHOTO LOG
T13/3171, and Resistance SS Project
Portsmouth, and Greenland, New Hampshire
Photos Taken: June and August 2023

Photograph No. 25: Looking west at Structure 3.5 and Wetland PW-6 (PEM1/PSS1E) on the T13 Line ROW off Gosling Road, Portsmouth, NH.

Photograph No. 26: Looking southeast at Structure 4 on the T13 Line ROW off Gosling Road, Portsmouth, NH.

PHOTO LOG
T13/3171, and Resistance SS Project
Portsmouth, and Greenland, New Hampshire
Photos Taken: June and August 2023

Photograph No. 27: Looking south at Structure 5 on the T13 Line ROW off Gosling Road, Portsmouth, NH.

Photograph No. 28: Looking east at Structure 6 and Wetland PW-7 (PEM1/PSS1E,H) on the T13 Line ROW off Gosling Road, Portsmouth, NH.

PHOTO LOG
T13/3171, and Resistance SS Project
Portsmouth, and Greenland, New Hampshire
Photos Taken: June and August 2023

Photograph No. 29: Looking east at Wetlands PW-9 (PEM1/PSS1Ex) and PW-8 (PEM1/PSS1E) near Structure 6 on the T13 Line ROW off Gosling Road, Portsmouth, NH.

Photograph No. 30: Looking east at Structure 7 and Wetlands PW-10 (PSS1Ex) and PW-11 (PSS1/PEM1Ex) on the T13 Line ROW off Gosling Road, Portsmouth, NH.

PHOTO LOG
T13/3171, and Resistance SS Project
Portsmouth, and Greenland, New Hampshire
Photos Taken: June and August 2023

Photograph No. 31: Looking east at Wetland PW-11 (PSS1/PEM1Ex) between Structures 7 and 8 on the T13 Line ROW off Gosling Road, Portsmouth, NH

Photograph No. 32: Looking northeast at Structure 9 and Wetland PW-12 (PEM1/PSS1E) on the T13 Line ROW off Gosling Road, Portsmouth, NH.

PHOTO LOG
T13/3171, and Resistance SS Project
Portsmouth, and Greenland, New Hampshire
Photos Taken: June and August 2023

Photograph No. 33: Looking east at Wetland PW-13 (PEM1/PSS1E) and Structure 10 on the T13 Line ROW off Gosling Road, Portsmouth, NH.

Photograph No. 34: Looking southeast at Wetlands PW-13 (PEM1/PSS1E), PW-14 (PSS1/PEM1E), and PW-15 (PEM1E), and at Structures 10 and 11 on the T13 Line ROW off Gosling Road, Portsmouth, NH.

APPENDIX H – AVOIDANCE AND MINIMIZATION CHECKLIST

AVOIDANCE AND MINIMIZATION CHECKLIST

Water Division/Land Resources Management
Wetlands Bureau

Check the Status of your Application

RSA/Rule: RSA 482-A/ Env-Wt 311.07(c)

This checklist can be used in lieu of the written narrative required by Env-Wt 311.07(a) to demonstrate compliance with requirements for Avoidance and Minimization (A/M), pursuant to RSA 482-A:1 and Env-Wt 311.07(c).

For the construction or modification of non-tidal shoreline structures over areas of surface waters without wetland vegetation, complete only Sections 1, 2, and 4 (or the applicable sections in Attachment A: Minor and Major Projects (NHDES-W-06-013).

The following definitions and abbreviations apply to this worksheet:

- "A/M BMPs" stands for Wetlands Best Management Practice Techniques for Avoidance and Minimization dated 2019, published by the New England Interstate Water Pollution Control Commission (Env-Wt 102.18).
- "Practicable" means available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes (Env-Wt 103.62).

SECTION 1 - CONTACT/LOCATION INFORMATION	
APPLICANT LAST NAME, FIRST NAME, M.I.: APPLICANT LAST NAME, FIRST NAME, M.I.: Eversource Energy, Attn: Kurt Nelson	
PROJECT STREET ADDRESS: 3171/3111 Right of Way and T13 Right of Way	PROJECT TOWN: Greenland and Portsmouth
TAX MAP/LOT NUMBER: Various - See Appendix B	

SECTION 2 - PRIMARY PURPOSE OF THE PROJECT		
Env-Wt 311.07(b)(1)	Indicate whether the primary purpose of the project is to construct a water-access structure or requires access through wetlands to reach a buildable lot or the buildable portion thereof.	☐ Yes ☒ No

If you answered "no" to this question, describe the purpose of the "non-access" project type you have proposed:

The proposed project is to retire the Resistance Substation along with the other components, including, the removal of the existing T-13 Transmission line, the installation of the new 339 Distribution lLine, and the replacement of structures along the 3171 and 3111 Distribution Lines by replacing existing wooden poles with steel poles. The project requires temporary freshwater wetland impacts for timber matting access and work pad placement around utility poles, as well as permanent wetland impact for the installation of the proposed replacement structures. Upon completion of work, temporary timber matting will be removed and temporarily impacted wetland areas will be mulched and seeded with a native seed mix, as necessary.

SECTION 3 - A/M PROJECT DESIGN TECHNIQUES

Check the appropriate boxes below in order to demonstrate that these items have been considered in the planning of the project. Use N/A (not applicable) for each technique that is not applicable to your project.

Env-Wt 311.07(b)(2)	For any project that proposes new permanent impacts of more than one acre or that proposes new permanent impacts to a Priority Resource Area (PRA), or both, whether any other properties reasonably available to the applicant, whether already owned or controlled by the applicant or not, could be used to achieve the project's purpose without altering the functions and values of any jurisdictional area, in particular wetlands, streams, and PRAs.	☒ Check ☐ N/A
Env-Wt 311.07(b)(3)	Whether alternative designs or techniques, such as different layouts, construction sequencing, or alternative technologies could be used to avoid impacts to jurisdictional areas or their functions and values.	☒ Check ☐ N/A
Env-Wt 311.07(b)(4) Env-Wt 311.10(c)(1) Env-Wt 311.10(c)(2)	The results of the functional assessment required by Env-Wt 311.03(b)(10) were used to select the location and design for the proposed project that has the least impact to wetland functions.	☒ Check ☐ N/A
Env-Wt 311.07(b)(4) Env-Wt 311.10(c)(3)	Where impacts to wetland functions are unavoidable, the proposed impacts are limited to the wetlands with the least valuable functions on the site while avoiding and minimizing impacts to the wetlands with the highest and most valuable functions.	☒ Check ☐ N/A
Env-Wt 313.01(c)(1) Env-Wt 313.01(c)(2) Env-Wt 313.03(b)(1)	No practicable alternative would reduce adverse impact on the area and environments under the department's jurisdiction and the project will not cause random or unnecessary destruction of wetlands.	☒ Check ☐ N/A
Env-Wt 313.01(c)(3)	The project would not cause or contribute to the significant degradation of waters of the state or the loss of any PRAs.	☒ Check ☐ N/A

Env-Wt 313.03(b)(3) Env-Wt 904.07(c)(8)	The project maintains hydrologic connectivity between adjacent wetlands or stream systems.	☒ Check ☐ N/A
Env-Wt 311.10 A/M BMPs	Buildings and/or access are positioned away from high function wetlands or surface waters to avoid impact.	☐ Check ☒ N/A
Env-Wt 311.10 A/M BMPs	The project clusters structures to avoid wetland impacts.	☐ Check ☒ N/A
Env-Wt 311.10 A/M BMPs	The placement of roads and utility corridors avoids wetlands and their associated streams.	☒ Check ☐ N/A
A/M BMPs	The width of access roads or driveways is reduced to avoid and minimize impacts. Pullouts are incorporated in the design as needed.	☒ Check ☐ N/A
A/M BMPs	The project proposes bridges or spans instead of roads/driveways/trails with culverts.	☒ Check ☐ N/A
A/M BMPs	The project is designed to minimize the number and size of crossings, and crossings cross wetlands and/or streams at the narrowest point.	☒ Check ☐ N/A
Env-Wt 500 Env-Wt 600 Env-Wt 900	Wetland and stream crossings include features that accommodate aquatic organism and wildlife passage.	☐ Check ☒ N/A
Env-Wt 900	Stream crossings are sized to address hydraulic capacity and geomorphic compatibility.	☒ Check ☐ N/A
A/M BMPs	Disturbed areas are used for crossings wherever practicable, including existing roadways, paths, or trails upgraded with new culverts or bridges.	☒ Check ☐ N/A
SECTION 4 - NON-TIDAL SHORELINE STRUCTURES		
Env-Wt 313.03(c)(1)	The non-tidal shoreline structure has been designed to use the minimum construction surface area over surfaces waters necessary to meet the stated purpose of the structure.	☒ Check ☐ N/A
Env-Wt 313.03(c)(2)	The type of construction proposed for the non-tidal shoreline structure is the least intrusive upon the public trust that will ensure safe navigation and docking on the frontage.	☐ Check ☒ N/A
Env-Wt 313.03(c)(3)	The non-tidal shoreline structure has been designed to avoid and minimize impacts on the ability of abutting owners to use and enjoy their properties.	☒ Check ☐ N/A

Env-Wt 313.03(c)(4)	The non-tidal shoreline structure has been designed to avoid and minimize impacts to the public's right to navigation, passage, and use of the resource for commerce and recreation.	☒ Check ☐ N/A
Env-Wt 313.03(c)(5)	The non-tidal shoreline structure has been designed, located, and configured to avoid impacts to water quality, aquatic vegetation, and wildlife and finfish habitat.	☐ Check ☒ N/A
Env-Wt 313.03(c)(6)	The non-tidal shoreline structure has 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.	☒ Check ☐ N/A

APPENDIX I – NHDES ARM FUND SPREADSHEET

NHDES AQUATIC RESOURCE MITIGATION FUND
WETLAND PAYMENT CALCULATION
INSERT AMOUNTS IN YELLOW CELLS

1	**Convert square feet of impact to acres:**		
INSERT SQ FT OF IMPACT	Square feet of impact =	100.00	
		43560.00	
	Acres of impact =	0.0023	
	Total Wetland Credits =	0.0023	
2	**Determine acreage of wetland construction:**		
	Forested wetlands:	0.0034	
	Tidal wetlands:	0.0069	
	All other areas:	0.0034	
3	**Wetland construction cost:**		
	Forested wetlands:	$373.27	
	Tidal Wetlands:	$746.53	
	All other areas:	$373.27	
4	**Land acquisition cost (See land value table):**		
INSERT LAND VALUE FROM TABLE WHICH APPEARS TO THE LEFT. (Insert the amount do not copy and paste.)	Town land value:	67802	
	Forested wetlands:	$233.48	
	Tidal wetlands:	$466.96	
	All other areas:	$233.48	
5	**Construction + land costs:**		
	Forested wetland:	$606.75	
	Tidal wetlands:	$1,213.49	
	All other areas:	$606.75	
6	**NHDES Administrative cost:**		
	Forested wetlands:	$121.35	
	Tidal wetlands:	$242.70	
	All other areas:	$121.35	
**********	**TOTAL ARM PAYMENT**********		
	Forested wetlands:	$728.09	
	Tidal wetlands:	$1,456.19	
	All other areas:	$728.09	

NHDES AQUATIC RESOURCE MITIGATION FUND
WETLAND PAYMENT CALCULATION
INSERT AMOUNTS IN YELLOW CELLS

1	**Convert square feet of impact to acres:**		
INSERT SQ FT OF IMPACT	Square feet of impact =	725.00	
		43560.00	
	Acres of impact =	0.0166	
	Total Wetland Credits =	0.0166	
2	**Determine acreage of wetland construction:**		
	Forested wetlands:	0.0250	
	Tidal wetlands:	0.0499	
	All other areas:	0.0250	
3	**Wetland construction cost:**		
	Forested wetlands:	$2,706.19	
	Tidal Wetlands:	$5,412.37	
	All other areas:	$2,706.19	
4	**Land acquisition cost (See land value table):**		
INSERT LAND VALUE FROM TABLE WHICH APPEARS TO THE LEFT. (Insert the amount do not copy and paste.)	Town land value:	67802	
	Forested wetlands:	$1,692.72	
	Tidal wetlands:	$3,385.43	
	All other areas:	$1,692.72	
5	**Construction + land costs:**		
	Forested wetland:	$4,398.90	
	Tidal wetlands:	$8,797.81	
	All other areas:	$4,398.90	
6	**NHDES Administrative cost:**		
	Forested wetlands:	$879.78	
	Tidal wetlands:	$1,759.56	
	All other areas:	$879.78	
**********	**TOTAL ARM PAYMENT**********		
	Forested wetlands:	$5,278.68	
	Tidal wetlands:	$10,557.37	
	All other areas:	$5,278.68	

APPENDIX J – USACE APPENDIX B CHECKLIST AND 11 X 17 PLANS

US Army Corps of Engineers ®
New England District

Appendix B
New Hampshire General Permits
Required Information and USACE Section 404 Checklist

Required Information

In order for USACE to properly evaluate your application, applicants must submit the following information for all projects along with the NHDES Wetlands Bureau application or permit notification forms. Some projects may require more information. Check with USACE at (978) 318-8832 for project-specific requirements. For your convenience, this Appendix B is also attached to the NHDES Wetlands Bureau application and Permit by Notification forms.

- NHDES Wetlands Permit Application.
- Request for Project Review Form by the NH DHR: https://www.nh.gov/nhdhr/review/rpr.htm.
- Photographs of wetland/waterway to be impacted.
- Purpose of the project.
- Legible, reproducible plans no larger than 11”x17” with bar scale. Provide locus map and plan views of the entire property.
- Typical cross-section views of all wetland and waterway fill areas and wetland replication areas.
- In navigable waters, show MLW and MHW elevations. Show the HTL elevations when fill is involved. In other waters, show the OHW elevation.
- On each plan, show the following for the project:
  - Vertical datum and the NAVD 1988 equivalent with the vertical units as U.S. feet. In coastal waters this may be mean higher high water (MHHW), MHW, MLW, mean lower low water (MLLW) or other tidal datum with the vertical units as U.S. feet. MLLW and MHHW are preferred. Provide the correction factor detailing how the vertical datum (e.g., MLLW) was derived using the latest National Tidal Datum Epoch for that area, typically 1983 - 2001.
  - Horizontal state plane coordinates in U.S. survey feet based on the Traverse Mercator Grid system for the State of New Hampshire (Zone 2800) NAD 83.
  - Project limits with existing and proposed conditions.
  - Limits of any FNP in the vicinity of the project area and horizontal State Plane Coordinates in U.S. survey feet for the limits of the proposed work closest to the FNP.
  - Volume, type, and source of fill material to be discharged into waters and wetlands, including the area(s) (in square feet or acres) of fill in wetlands, below the OHW in inland waters and below the HTL in coastal waters.
  - Delineation of all waterways and wetlands on the project site.
- Use Federal delineation methods and include USACE wetland delineation data sheets (GC 2).
- For activities involving discharges of dredged or fill material into waters of the U.S., include a statement describing how impacts to waters of the U.S. are to be avoided and minimized, and either a statement describing how impacts to waters of the U.S. are to be compensated for (or a conceptual or detailed mitigation plan) or a statement explaining why compensatory mitigation should not be required for the proposed impacts. Please contact USACE for guidance.

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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?	1,125 Sq. Ft. - Existing Poles	
2.7 What is the area of the proposed fill in wetlands?	825 Sq. Ft. - Proposed Poles	
2.8 What % of the overall project sire will be previously and proposed filled wetlands?	0.01%	
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 - Stream crossings temporary with timber matting	
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 - existing and maintained ROW, flood storage loss not anticipated	
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.	N/A - less than 1 acre of permanent impact for proposed project.	
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.

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New England District

Appendix B
New Hampshire General Permits
Required Information and USACE Section 404 Checklist

NHDES Rule Citations

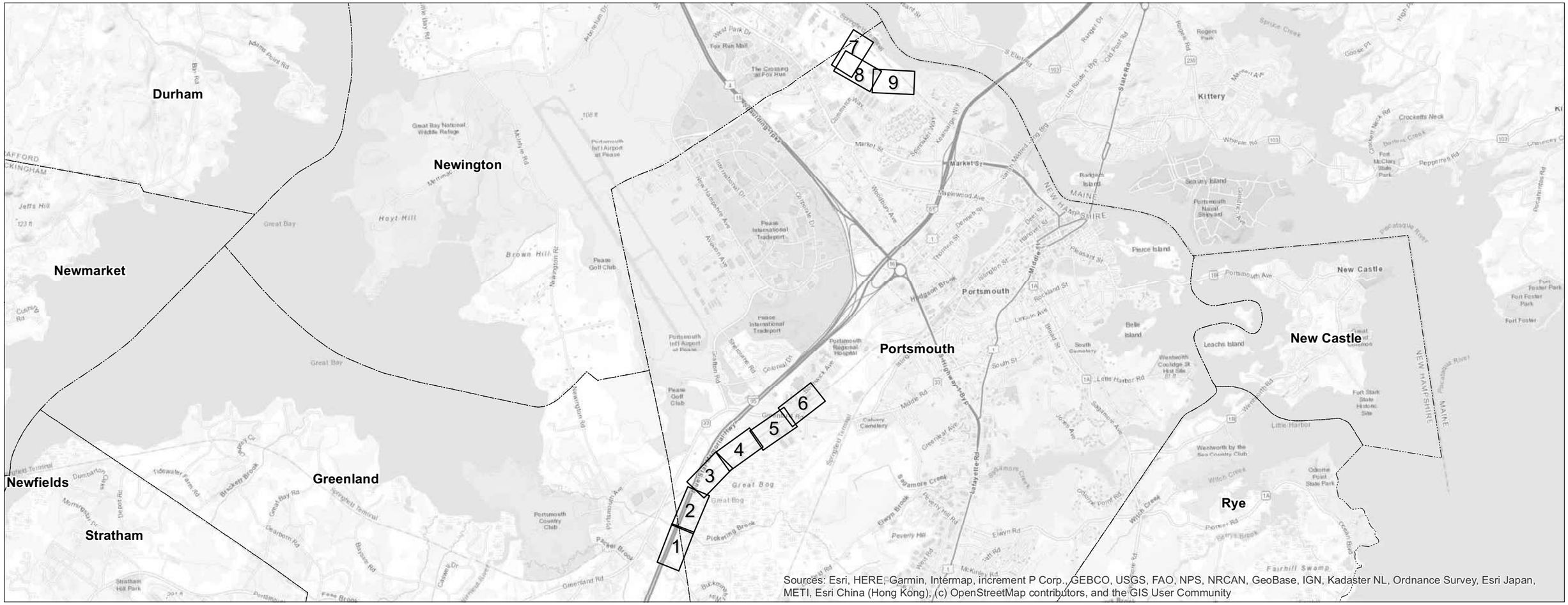
Appendix B Requirements	NHDES Citation	NHDES Resource, Form & BMP
1. Impaired Waters		
1.1	See Env-Wt 307.03 Protection of Water Quality Required & Env-Wt 306.05 a) 7	https://nhdes-surface-water-quality-assessment-site-nhdes.hub.arcgis.com/ https://www.des.nh.gov/water/rivers-and-lakes/water-quality-assessment https://www4.des.state.nh.us/onestopdatamapper/onestopmapper.aspx
2. Wetlands		
2.1	N/A	N/A
2.2	Env 307.06; Env- Wt 311.01(a)(b) (c)	NH Online Forms System - Coastal Resource Worksheet. Version 2.0 Wetlands Permitting: Protected Species and Habitat (nh.gov) Wetlands Permitting: Priority Resource Area (nh.gov) https://www4.des.state.nh.us/NHB-DataCheck/.
2.3	Env-Wt 313.03(b)(3); Env-Wt 313.03(b)4)(7); Env-Wt 307.06	See Chapter 7, Stream & Wetland Crossings: *Wetlands Best Management Practice Techniques for Avoidance and Minimiz* Wetlands-BMP-Manual-2019.pdf (neiwpcc.org) (& Env-Wt 900 for Stream Crossings)
2.4	Env-Wt 604.02 (Tidal buffer zone); Env-Wt 704 (prime buffers)	
2.5	N/A	N/A
2.6	N/A	N/A
2.7	Env-Wt 311.04(g)	Standard application Section 11- NH Online Forms System - Standard Dredge and Fill Wetlands Permit Application . Version 3.5
2.8	N/A	N/A
3. Wildlife		
3.1	Env-Wt 103.69 “Protected species or habitat”; Env-Wt 307.06, 311.01	NHB DataCheck Tool: https://www4.des.state.nh.us/NHB-DataCheck/. Wetlands Permitting: Protected Species and Habitat (nh.gov) Wetlands Permitting: Priority Resource Area (nh.gov)
3.2	Env-Wt 311.02; 313.03(b)(2), (4), (7)(16); Env-Wt 313.03(b)(6) & See Env-Wt 808.19(g), Env-Wt 808.20	Wetlands Permitting: Protected Species and Habitat (nh.gov) Wetlands Permitting: Priority Resource Area (nh.gov)
3.3	N/A	N/A
3.4	NA	N/A
3.5	(Env-Wt 900) Microsoft Word - Env-Wt 900 as of 10-2020.docx (nh.gov)	New Hampshire Stream Crossing Guidelines (nh.gov) (2009 UNH) _ NH Online Forms System - Wetland Permit Application Stream Crossing Worksheet. Version 1.8 Stream Crossing Design (nh.gov) : https://www.nh.gov/dot/org/projectdevelopment/environment/units/program-management/documents/RR_V.9_FINAL_3-14-19.pdf Best Management Practices for Routine Roadway Maintenance Activities in New Hampshire. 2019. New Hampshire Department of Transportation.
4. Flooding/Floodplain Values		
4.1	Env-Wt 311.05; Env-Wt 103.66 517.03(b); 517.06(a)(6);	Wetlands Permitting: Priority Resource Area (nh.gov) NH Online Forms System - Coastal Resource Worksheet. Version 2.0 New Hampshire Coastal Flood Risk Summary | NH Department of

	527.02(e); 527.04(d); Env-Wt 600 Env-Wt 900	Environmental Services (cited in Env-Wt 603.05) NH Online Forms System - Wetland Permit Application Stream Crossing Worksheet. Version 1.8 hydraulic-vulnerability-handout.pdf (nh.gov)
4.2	Env-Wt 527.02 & 527.04 & 313.04 & Env-Wt 800; Wt 605.03 & 605.04	Yes, for permanent impacts to a PRA, impacts from public highway projects, & those projects where flood storage functions are lost when the mitigation threshold is reached. Wetlands Mitigation | NH Department of Environmental Services
5. Historical/Archeological Resources		
5.0	Env-Wt 311.02(f)(6)	
6. Minimal Impact Determination		
6.0	F/V assessment: (Env-Wt 311.10); Env-Wt 603.04 (Coastal Functional Assessment) Alternatives: (Env-Wt 311.07(b)(2))	NH Online Forms System - Wetlands Functional Assessment Worksheet. Version 1.3 NH Online Forms System - Coastal Resource Worksheet. Version 2.0
6.1		Wetlands Permitting: Avoidance, Minimization, and Mitigation (nh.gov)
6.2	Env-Wt 102.12 (“Avoidance”), Env-Wt 102.13 (“Avoidance, minimization, mitigation”), Env-Wt 102.14 (“Avoid and minimize”), Env-Wt 311.01, Env-Wt 313.03 (“Avoidance & Minimization") Env-Wt 311.07	See *Wetlands Best Management Practice Techniques for Avoidance and Minimization* - Wetlands-BMP-Manual-2019.pdf (neiwpcc.org)referenced in Env-Wt 313.03(a); A/M written narrative (NH Online Forms System - Avoidance and Minimization Written Narrative. Version 2.0); Avoidance and Minimization Checklist: NH Online Forms System - Avoidance and Minimization Checklist. Version 3.1
6.3	Env-Wt 311.10, 603.04	See Functional Assessment worksheets above
6.4	Env-Wt 311.02, Env-Wt 312.04. Env-Wt 306.05, 307.06, 311.01	See Protected Species or Habitat (including exemplary natural communities)
6.5	Env-Wt 311.01, Env-Wt 311.07, Env-Wt 311.10 & 313.01 c)1)	See Avoidance & Minimization cites above & BMPs
6.6	(Env-Wt 313.01c) (1) & Env-Wt 311.07(b)(2))	
6.7	Env-Wt 311.10, Env-Wt 103.69, Env-307.06, see Avoidance & minimization cites	NH Online Forms System - Wetlands Functional Assessment Worksheet. Version 1.3; Wetlands Permitting: Priority Resource Area (nh.gov) NH Online Forms System - Coastal Resource Worksheet. Version 2.0
6.8	Env-Wt 102.05 (Water quality BMPs)	Practices to minimize or prevent direct or indirect discharge of sediment or other pollutants into surface waters and wetlands, listed in Env-Wt 307
6.9	Env-Wt 800	

Resistance Substation Retirement Project

GREENLAND AND PORTSMOUTH, NEW HAMPSHIRE
Environmental Resources Map

Date: November 14, 2023



PREPARED FOR:

EVERSOURCE ENERGY

13 Legends Drive
Hooksett, NH 03106

N

0 0.25 0.5 1 Miles

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NO.	DATE	REVISIONS

PREPARED BY:

GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

Interstate 95 South — INTERSTATE 95 SOUTH

Crossover

Interstate 95 North — INTERSTATE 95 NORTH

GW-1
PEM1/PSS1/PFO1E,Fg/R2UB

OCEAN RD–Ocean Rd

0E-3111

3111 Line

82

100/3111

0E-3171

3171 Line

97

1

81

2

96

APPROXIMATE VERY POORLY DRAINED SOILS IMPACT: 29,633 SF

3111 Line

3

80

3171 Line

95

3111 Line

4

79

94

Pickering Brook

APPROXIMATE VERY POORLY DRAINED SOILS IMPACT: 102,309 SF

GREENLAND
PORTSMOUTH

Unnamed Stream

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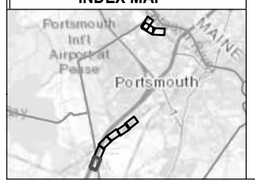

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- EXISTING STRUCTURE TO BE REMOVED
- EXISTING DISTRIBUTION LINE
- PROPOSED DISTRIBUTION LINE
- NHDOT ROADS
- FLOWLINES
- TRANSMISSION LINE
- APPROXIMATE ROW
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- PROPOSED ACCESS
- OFF ROW ACCESS
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- HISTOSOL AND HISTIC EPIPEDON SOILS
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- PARCEL BOUNDARY
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- PEATLAND HABITAT
- WETLAND
- WETLAND ADJACENT TO TIER 3+
- STONEWALL
- WORK AREA
- DOT ROAD
- TOWN BOUNDARY
- RAILROAD
- 2FT CONTOURS

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N

1 inch = 100 feet

0 50 100 Feet

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EVERSOURCE ENERGY

RESISTANCE SUBSTATION RETIREMENT PROJECT

GREENLAND/PORTSMOUTH, NH | MAP SHEET

Date: November, 2023

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GREENLAND
PORTSMOUTH

INTERSTATE 95 SOUTH — Interstate 95 South

INTERSTATE 95 NORTH — Interstate 95 North

GW-1
PEM1/PSS1/PFO1E,Fg/R2UB

APPROXIMATE VERY
POORLY DRAINED SOILS
IMPACT: 102,309 SF

3171 Line

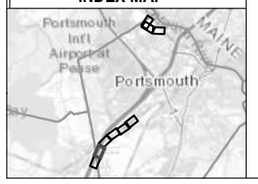
3111 Line

3111 Line

3171 Line

Unnamed Stream

INDEX MAP



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RESISTANCE SUBSTATION RETIREMENT PROJECT

PORTSMOUTH, NH | MAP SHEET

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Interstate 95 South
INTERSTATE 95 SOUTH
I-95 SB Exit 3 On-ramp (NH-33)
Crossover
INTERSTATE 95 NORTH Interstate 95 North
SPAULDING TPKE NB EXIT 3 ON RAMP (WOODBURY AVE)
Spaulding Tpke NB Exit 3 On-ramp (Woodbury Ave)
Unnamed Stream
3111 Line
3171 Line
APPROXIMATE VERY POORLY DRAINED SOILS IMPACT: 102,309 SF
APPROXIMATE TEMPORARY NON-VPD WETLAND IMPACT: 139,792 SF
GW-1 PEM1/PSS1/PFO1E;Fg/R2UB
PW-1 PEM1/PSS1E;Fg
70
16
85
71
15
86
72
14
87
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84
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82
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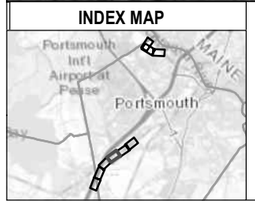

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NO NAME — No Name

3111 Line

I-95 Exit 3 Off-ramp (NH 33)

I-95 EXIT 3 OFF-RAMP (NH 33)

49D

PW-1
PEM1/PSS1E;Fg

NH ROUTE 33 — NH Route 33

3111 Line

Line

SPAULDING TPKE NB EXIT 3 ON RAMP (WOODBURY AVE)

Spaulding Tpke NB Exit 3 On ramp (Woodbury Ave)

I-95 Exit 3 On ramp (NH 33)

I-95 EXIT 3 ON RAMP (NH 33)

APPROXIMATE TEMPORARY NON-VPD WETLAND IMPACT: 139,792 SF

APPROXIMATE TEMPORARY NON-VPD WETLAND IMPACT: 1,250 SF

GREENLAND RD

Greenland Rd

3111 DE

3111 Line

3171 Line

28 61 76 29 60 30 75 31 59 74 32 58 73 33 57 34 35 72.6 41 72

ACCESS ROAD REQUIRES RAILROAD COORDINATION

Griffin Rd — GRIFFIN RD

36 72.5 40 72.1 37 38 39 72.4 72.2 72.3

40C1

40C

3171 Line

3111 Line

4A

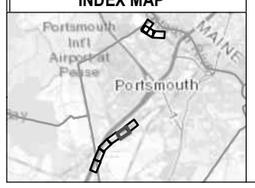
Line

4

Line

Davis Rd

INDEX MAP



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- 2FT CONTOURS

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EVERSOURCE ENERGY

RESISTANCE SUBSTATION RETIREMENT PROJECT

PORTSMOUTH, NH

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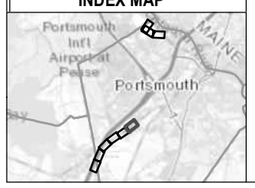

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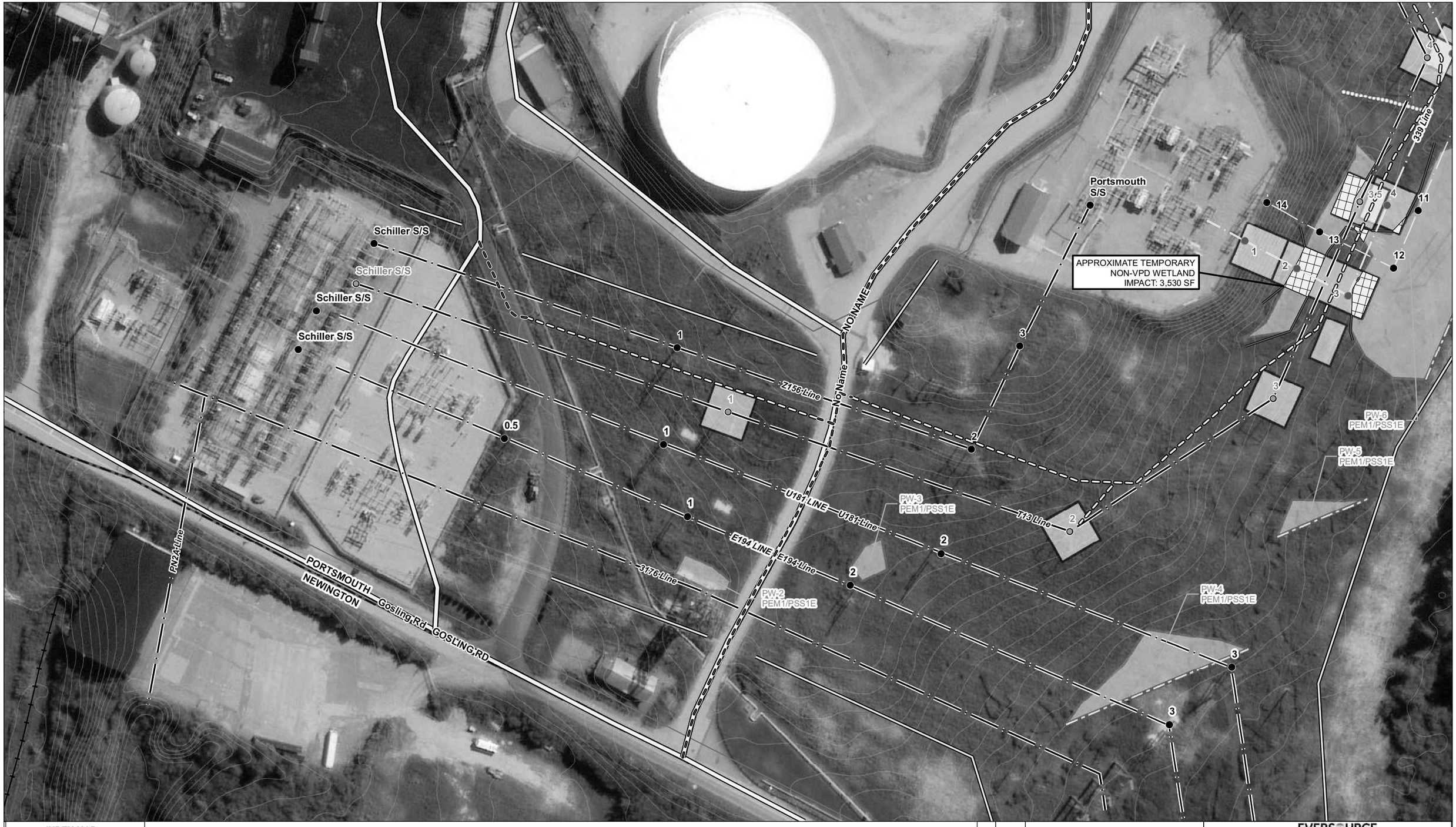

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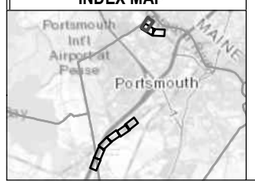

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PW-3
PEM1/PSS1E

317-6 Line

E194 LINE - E194 Line

U181 LINE

Z156 Line

Portsmouth
S/S

No Name NO NAME

PW-4
PEM1/PSS1E

U181 Line

PW-5
PEM1/PSS1E

APPROXIMATE TEMPORARY
NON-VPD WETLAND
IMPACT: 3,530 SF

T13 Line

PW-6
PEM1/PSS1E

PW-9
PEM1/PSS1Ex

PW-8
PEM1/PSS1E

APPROXIMATE TEMPORARY
NON-VPD WETLAND
IMPACT: 1,848 SF

APPROXIMATE TEMPORARY
NON-VPD WETLAND
IMPACT: 241 SF

PW-7
PEM1/PSS1E;H

APPROXIMATE UPLAND
MATTING: 345 SF

APPROXIMATE UPLAND
MATTING: 603 SF

BRIDGE OVER
STONEWALL

APPROXIMATE
UPLAND MATTING:
2,244 SF

339 Line

APPROXIMATE
UPLAND
MATTING: 9 SF

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PW-7
PEM1/PSS1E,H

APPROXIMATE TEMPORARY
NON-VPD WETLAND
IMPACT: 1,848 SF

NO NAME

No-Name

PW-11
PSS1/PEM1Ex

APPROXIMATE TEMPORARY
NON-VPD WETLAND
IMPACT: 3,416 SF

APPROXIMATE TEMPORARY
NON-VPD WETLAND
IMPACT: 4,483 SF

PW-14
PSS1/PEM1E

T13 Line

339 Line

PW-7
PEM1/PSS1E,H

PW-9
PEM1/PSS1Ex

PW-15
PEM1E

PW-10
PSS1Ex

PW-12
PEM1/PSS1E

Resistance
S/S

PW-8
PEM1/PSS1E

APPROXIMATE
TEMPORARY NON-VPD
WETLAND IMPACT: 241 SF

PW-13
PEM1/PSS1E

REMOVAL FROM
INSIDE FENCE

REMOVAL FROM
INSIDE FENCE

Portsmouth Blvd

PORTSMOUTH BLVD

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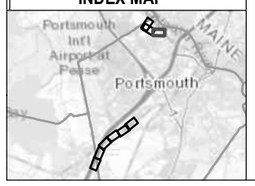

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RESISTANCE SUBSTATION RETIREMENT PROJECT

PORTSMOUTH, NH

MAP SHEET

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CONSTRUCTION SEQUENCE:

1. WETLAND BOUNDARIES TO BE CLEARLY MARKED PRIOR TO THE START OF CONSTRUCTION.

2. SEDIMENT AND EROSION CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH THE DETAIL PROVIDED, AS NECESSARY, AND CONSISTENT WITH THE NHDES MARCH 2019 BMP MANUAL FOR UTILITY MAINTENANCE.

3. WETLAND IMPACTS ASSOCIATED WITH WETLAND CROSSINGS ARE REQUIRED FOR ACCESS BETWEEN STRUCTURES WITHIN THE RIGHT OF WAY.

4. ADEQUATE PRECAUTION SHALL BE EXERCISED TO AVOID SPILLAGE OF FUEL OILS, CHEMICALS, OR SIMILAR SUBSTANCES; NO FUELS, LUBRICANTS, CHEMICALS OR SIMILAR SUBSTANCES SHALL BE STORED BENEATH TREES OR IN THE VICINITY OF ANY WETLANDS, RIVER, STREAM OR OTHER BODY OF WATER; OR IN THE VICINITY OF NATURAL OR MAN-MADE CHANNELS LEADING THERETO. NO POWER EQUIPMENT SHALL BE STORED, MAINTAINED, OR FUELED IN ANY AREA ADJACENT TO A WETLAND, RIVER, STREAM OR OTHER BODY OF WATER.

5. REMOVE COMPLETELY ALL CONTAMINATION FROM ANY SPILLAGE OF CHEMICALS OR PETROLEUM PRODUCT WITH COMPLETE REHABILITATION OF THE AFFECTED AREA.

6. ACCESS ROUTES HAVE BEEN SELECTED TO PREVENT DEGRADATION OF THE RIGHT-OF-WAY AND MINIMIZE ENVIRONMENTAL IMPACT. OPERATIONS SHALL BE CONFINED TO THE SPECIFIED ACCESS ROUTES WITHIN THE PROPOSED WETLAND IMPACT AREA. ACCESS ROUTES SHALL NOT EXCEED A 16 FOOT-WIDTH.

7. IMPACT TO VEGETATION WITHIN WETLANDS WILL BE LIMITED TO THE EXTENT NECESSARY TO PLACE THE SWAMP MATS WHERE REQUIRED.

8. LOW GROWING VARIETIES OF VEGETATION ADJACENT TO WETLANDS SHALL BE PRESERVED TO THE EXTENT POSSIBLE. STUMPS AND ROCKS SHALL NOT BE REMOVED, AND THERE SHALL BE NO EXCAVATIONS, FILLS OR GRADING DONE ADJACENT TO WETLANDS, UNLESS MINOR EXCAVATIONS IS NEEDED FOR ACCESS.

9. TIMBER MATS AND PERIMETER CONTROLS WILL BE USED ALONG ACCESS ROUTES AND WORK PADS WITHIN WETLAND AREAS. THESE MATS ARE CONSTRUCTED OF HEAVY TIMBERS OR COMPOSITE MATERIAL, BOLTED TOGETHER, AND ARE PLACED END-TO-END IN THE WETLAND TO SUPPORT HEAVY EQUIPMENT. ALL SWAMP MATS SHALL BE PLACED AND REMOVED SO AS NOT TO CAUSE ANY RUTS, CHANNELS OR DEPRESSIONS, OR OTHERWISE CAUSE ANY UNDUE DISTURBANCE TO WETLANDS.

10. IF TIMBER MAT BMP IS NOT SUFFICIENT DUE TO HIGH WATER, ADDITIONAL BMP'S MAY INCLUDE THE PLACEMENT OF GEOTEXTILE FABRIC, 3"-4" STONE, AND GRAVEL TO PROVIDE A SUITABLE ROAD BED. A TEMPORARY CULVERT MAY BE REQUIRED IN AREAS OF HIGH FLOW TO MAINTAIN HYDROLOGIC CONNECTIVITY. ALL MATERIAL WILL BE REMOVED FROM JURISDICTIONAL AREAS AFTER CONSTRUCTION COMPLETION.

11. NO MATERIAL SHALL BE PLACED IN ANY LOCATION OR IN ANY MANNER SO AS TO IMPAIR SURFACE WATER FLOW INTO, THROUGH OR OUT OF ANY WETLAND AREA. NO INSTALLATION SHALL CREATE AN IMPOUNDMENT THAT WILL IMPEDE THE FLOW OF WATER OR CAUSE FLOODING.

12. NO MATERIAL SHALL BE TAKEN FROM THE WETLANDS AREA EXCEPT THAT WHICH MUST NECESSARILY BE REMOVED FOR THE STRUCTURE OR FOUNDATION PLACEMENT OR STABILIZATION. ALL EXCESS MATERIAL TAKEN FROM THE WETLAND WILL BE REMOVED FROM THE SITE.

13. ANY PROPOSED SUPPORT FILLS SHALL BE CLEAN GRAVEL AND STONE, FREE OF WASTE METAL PRODUCTS, ORGANIC MATERIALS AND SIMILAR DEBRIS AND SHALL NOT EXCEED THE AMOUNT PERMITTED. THIS ALLOWABLE FILL IS THE ONLY FILL THAT MAY REMAIN IN THE WETLAND AFTER CONSTRUCTION. ALL CUT AND FILLS SLOPES SHALL BE SEEDED/LOAMED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.

14. INSTALL NEW POLES IN THE LOCATIONS DESIGNATED ON THE PERMITTING PLANS.

15. CABLE INSTALLATION WILL BE PERFORMED IN A MANNER SO AS TO AVOID, OR LIMIT TO THE MAXIMUM EXTENT POSSIBLE, TRAVERSING WETLANDS WITH HEAVY EQUIPMENT. IN SOME CASES, A HELICOPTER MAY BE USED DURING THE INSTALLATION TO MINIMIZE IMPACTS.

16. REMOVAL OF THE OLD POLE WILL OCCUR ONCE THE CABLE HAS BEEN INSTALLED ON THE NEW STRUCTURE. THE OLD STRUCTURES WILL BE REMOVED FROM THE SITE. POLES WILL BE CUT AT THE GROUND SURFACE. FOOTINGS WILL BE ABANDONED IN PLACE TO MINIMIZE IMPACTS.

17. ALL TIMBER MATS, MATERIAL, AND DEBRIS WILL BE REMOVED FROM THE WORK AREA UPON THE COMPLETION OF CONSTRUCTION.

18. UPLAND DISTURBED AREAS SHALL BE RESTORED AND STABILIZED UPON COMPLETION OF CONSTRUCTION. WORK PAD RESTORATION SHOULD INCLUDE REDUCING THE WORK PAD TO A 30 BY 60 FOOT AREA, AND REDUCING SLOPES TO A MAXIMUM OF 25%. STOCKPILED MATERIAL SHOULD BE SPREAD TO REDUCE ANY UNNECESSARY SLOPES. GRAVEL WORK PADS AND SLOPES SHOULD BE SCARIFIED TO A MINIMUM OF 3" BEFORE SPREADING TOPSOIL/LOAM.

19. ALL TEMPORARY WETLAND IMPACTS WILL BE RE-GRADED TO ORIGINAL CONTOURS FOLLOWING CONSTRUCTION. NEW ENGLAND EROSION CONTROL/RESTORATION MIX, AVAILABLE THROUGH NEW ENGLAND WETLAND PLANTS, INC., 820 WEST STREET, AMHERST, MA 01002, 413-548-8000, OR EQUIVALENT SEED MIX SHALL BE APPLIED IN WETLAND AREAS THAT ARE NOT INUNDATED, AS NECESSARY.

20. MULCH USED FOR STABLIZATION SHALL CONSIST OF SEEDLESS STRAW.

21. SEDIMENT AND EROSION CONTROL MEASURES WILL BE EVALUATED AND REMOVED IF NECESSARY UPON THE COMPLETION OF CONSTRUCTION.

22. COMMERCIAL LOAM WILL NOT BE USED AS PART OF RESTORATION. ONLY IN-SITU TOPSOIL WILL BE USED TO RESTORE DISTURBED AREAS.

23. NATURALLY VEGETATED LOCAL WETLAND BUFFER AREAS OUTSIDE OF EXISTING TRAILS MUST BE RESTORED UPON COMPLETION OF WORK.

WINTER CONSTRUCTION NOTES

1. PROP0SED VEGETATED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED. STABILIZATION METHODS SHALL INCLUDE SEEDING AND MULCH, AND INSTALLATION OF EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS.

2. DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE TEMPORARILY STABILIZED WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.

3. AFTER NOVEMBER 15TH, INCOMPLETE ROAD OR PARKING SURFACES, WHERE WORK HAS STOPPED FOR THE WINTER SEASON, SHALL BE PROTECTED WITH A MINIMUM OF 3 INCHES OF CRUSHED GRAVEL (NHDOT 304.3).

GENERAL NOTES:

OWNER: EVERSOURCE ENERGY
13 LEGENDS DRIVE
HOOKSETT, NH 03106

1. BASE PLAN PROVIDED BY EVERSOURCE ENERGY. EVERSOURCE ENERGY PROVIDED THE WETLAND DATA. EVERSOURCE ENERGY PROVIDED THE UTILITY DESIGN.

2. JURISDICTIONAL WETLANDS WERE DELINEATED BY GZA GEOEVIRONMENTAL IN 2022, IN ACCORDANCE WITH THE 1987 U.S. ARMY CORPS OF ENGINEERS' "WETLANDS DELINEATION MANUAL, TECHNICAL REPORT Y-87-1," AND REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTH CENTRAL AND NORTHEAST REGION," NOVEMBER 2022 AND FEBRUARY 2023.

3. GZA GEOENVIRONMENTAL EVALUATED WETLANDS AS POTENTIAL VERNAL POOLS IN 2022 IN ACCORDANCE WITH "IDENTIFICATION AND DOCUMENTATION OF VERNAL POOLS IN NEW HAMPSHIRE," 1997, NEW HAMPSHIRE FISH AND GAME DEPARTMENT, NONGAME AND ENDANGERED WILDLIFE PROGRAM.

4. GZA GEOENVIRONMENTAL COMPLETED WETLANDS FUNCTION AND VALUES ASSESSMENT IN 2022 AND 2023 IN ACCORDANCE WITH THE ACOE'S "HIGHWAY METHODOLOGY WORKBOOK SUPPLEMENT," SEPTEMBER 1999.

5. SITE PLAN IS FOR PERMITTING PURPOSES ONLY AND DOES NOT REPRESENT A PROPERTY BOUNDARY SURVEY.

6. THE PROJECT WILL BE MANAGED IN A MANNER THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES.

7. IN ACCORANCE WITH ENV-WQ 1505.02, THE SMALLEST PRACTICAL AREA SHALL BE DISTURBED DURING CONSTRUCTION, BUT IN NO CASE SHALL EXCEED 5 ACRES AT ANY ONE TIME BEFORE DISTURBED AREAS ARE STABILIZED. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
- A MINIMUM 85 PERCENT VEGETATED GROWTH HAS BEEN ESTABLISHED
- A MINIMUM OF 3 INCHES OF NON-EROSIVE MATERIAL HAS BEEN INSTALLED
- OR, EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.

EROSION CONTROL NOTES:

1. INSTALLATION OF EROSION CONTROL GRINDINGS AND/OR SILT FENCES SHALL BE COMPLETE PRIOR TO THE START OF WORK IN ANY GIVEN AREA. EROSION CONTROLS SHALL BE USED DURING CONSTRUCTION AND REMOVED WHEN ALL SLOPES HAVE A HEALTHY STAND OF VEGETATION COVER. EROSION CONTROL MEASURES SHALL BE INSPECTED ON A WEEKLY BASIS AND AFTER .25" OR GREATER RAINFALL EVENTS.

2. AS REQUIRED, CONSTRUCT TEMPORARY BERMS, SILTATION FENCES, SEDIMENT TRAPS, ETC. TO PREVENT EROSION & SEDIMENTATION OF WETLANDS.

3. THE WORK AREA SHALL BE GRADED AND OTHERWISE SHAPED IN SUCH A MANNER AS TO MINIMIZE SOIL EROSION, SILTATION OF DRAINAGE CHANNELS, DAMAGE TO EXISTING VEGETATION, AND DAMAGE TO PROPERTY OUTSIDE LIMITS OF THE WORK AREA. EROSION CONTROL GRINDINGS WILL BE NECESSARY TO ACCOMPLISH THIS END.

4. ANY STRIPPED TOPSOIL SHALL BE STOCKPILED, WITHOUT COMPACTION, AND STABILIZED WITH BMPS.

5. PERMANENT OR TEMPORARY COVER MUST BE IN PLACE BEFORE THE GROWING SEASON ENDS. WHEN SEEDED AREAS ARE NOT MULCHED, PLANTINGS SHOULD BE MADE FROM EARLY SPRING TO MAY 20 OR FROM AUGUST 15 TO SEPTEMBER 15. NO DISTURBED AREA SHALL BE LEFT EXPOSED DURING WINTER MONTHS, PLANT ANNUAL RYEGRASS PRIOR TO OCTOBER 15TH.

6. EROSION CONTROLS SHALL BE INSPECTED WEEKLY AND AFTER EVERY HALF-INCH OF RAINFALL.

7. EROSION CONTROL MATTING, IF REQUIRED, WILL CONSIST OF JUTE MATTING. MATTING WITH WELDED PLASTIC OR 'BIODEGRADABLE PLASTIC' NETTING OR THREAD WILL BE AVOIDED TO LIMIT UNINTENTIONAL MORTALITY TO SNAKES.

RESISTANCE SUBSTATION RETIREMENT PROJECT

GREENLAND & PORTSMOUTH
NEW HAMPSHIRE

NOTES

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: EVERSOURCE ENERGY	
PROJ MGR: LEW	REVIEWED BY: TLT	CHECKED BY: DMZ	SHEET S1
DESIGNED BY: MJD	DRAWN BY: MJD	SCALE:	
DATE: 08/15/2023	PROJECT NO. 04.0191410.47	REVISION NO.	

Best Management Practices (BMP's) for Straw wattles

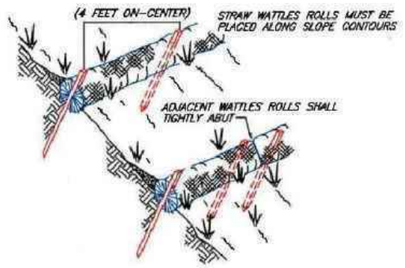
Definition and purpose:
Straw wattles are burlap rolls filled with straw that trap sediment and interrupt water flow by reducing slope lengths.

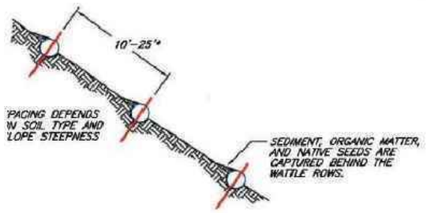
Applications:
* Along erodible or unstablizied slopes
* Spread overland waterflow
* Trap sediment
* Around storm drain inlets to slow water and settle out sediment
* Overlap ends approximately 6 inches

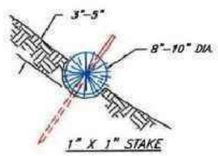
Installation:
Straw wattles are installed parallel to slope contours and perpendicular to sheet flow.

Spacing* - Dependent on slope length, soil steepness and soil type (general range 10 - 25').

Trenching - 2"-5" inch trench
Stacking - at each end and four foot on center (i.e. 25 foot wattle uses 6 stacks)







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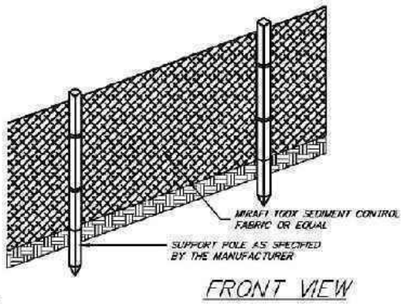
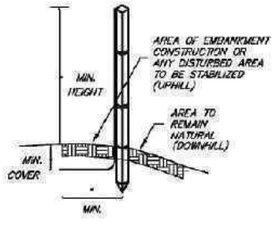
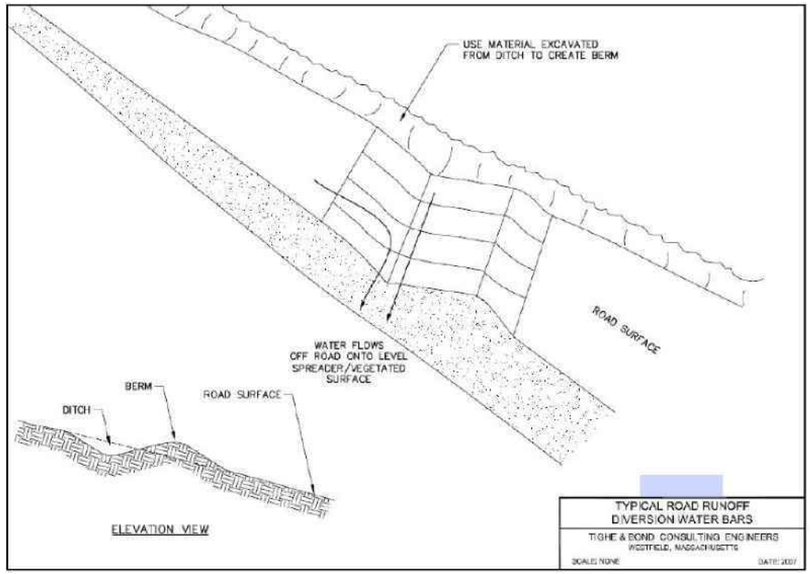


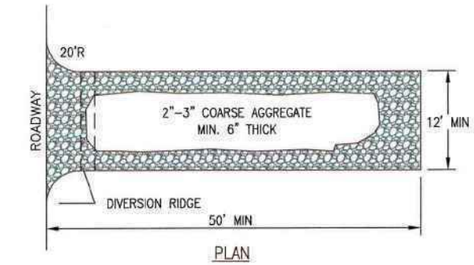
FRONT VIEW



SIDE VIEW

NOTES (SILT FENCE)
1. THE HEIGHT OF THE BARRIER SHALL NOT EXEED 36 INCHES.
2. WHEN JOINTS ARE NECESSARY, FILTER CLOTH SHALL BE SPLICED TOGETHER ONLY AT A SUPPORT POST, WITH A MINIMUM 6—INCH OVERLAP, AND SECURELY SEALED. SEE MANUFACTURER'S RECOMMENDATIONS.
3 POSTS SHALL BE PLACED AT A MAXIMUM OF 10 FEET APART AT THE BARRIER LOCATION AND DRIVEN SECURELY INTO THE GROUND (MINIMUM OF 12 INCHES). WHEN EXTRA STRENGTH FABRIC IS USED WITHOUT THE WIRE SUPPORT FENCE, POST SPACING SHALL BE AS MANUFACTURER RECOMMENDS.
4. A TRENCH SHALL BE EXCAVATED APPROXIMATELY 6 INCHES WIDE AND 6 INCHES DEEP ALONG THE LINE OF POSTS AND UPSLOPE OF THE BARRIER IN ACCORDANCE WITH RECOMMENDATIONS
5. THE FABRIC SHALL NOT EXTEND MORE THAN 36 INCHES ABOVE THE ORIGINAL GROUND SURFACE, AND WILL EXTEND A MINIMUM OF 8 INCHES INTO THE TRENCH. FILTER FABRIC SHALL NOT BE STAPLED TO EXISTING TREES.
6. THE TRENCH SHALL BE BACKFILLED AND THE SOIL COMPACTED OVER THE FILTER FABRIC.
7. FABRIC BARRIERS SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFUL PURPOSE, BUT NOT BEFORE THE UPSLOPE AREA HAS BEEN PERMANENTLY STABILIZED.
8. FILTER BARRIERS SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST ONCE DAILY DURING PROLONGED RAINFALL AND ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.
9. SHOULD THE FABRIC DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE BARRIER STILL BE NECESSARY, THE FABRIC SHALL BE REPLACED PROMPTLY.
10. SEDIMENT DEPOSITS SHOULD BE REMOVED WHEN THEY REACH APPROXIMATELY ONE—HALF THE HEIGHT OF THE BARRIER.
11. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT FENCE OR FILTER BARRIER IS NO LONGER REQUIRED SHALL BE DRESSED TO CONFORM TO THE EXISTING GRADE, PREPARED AND SEEDED.





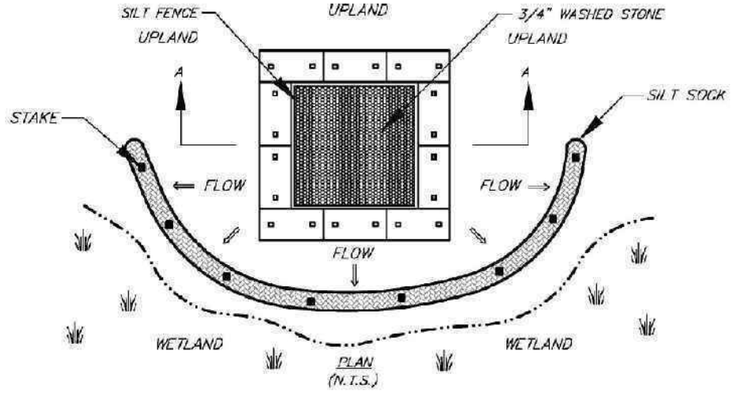
PLAN

NOTES:
1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.

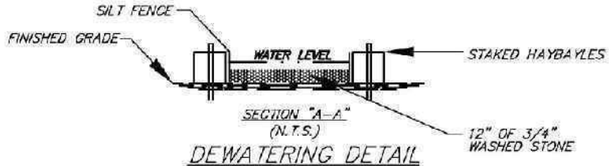
2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.

CONSTRUCTION ENTRANCE

NOT TO SCALE



PLAN
(N.T.S.)



SECTION "A-A"
(N.T.S.)

DEWATERING DETAIL
N.T.S.

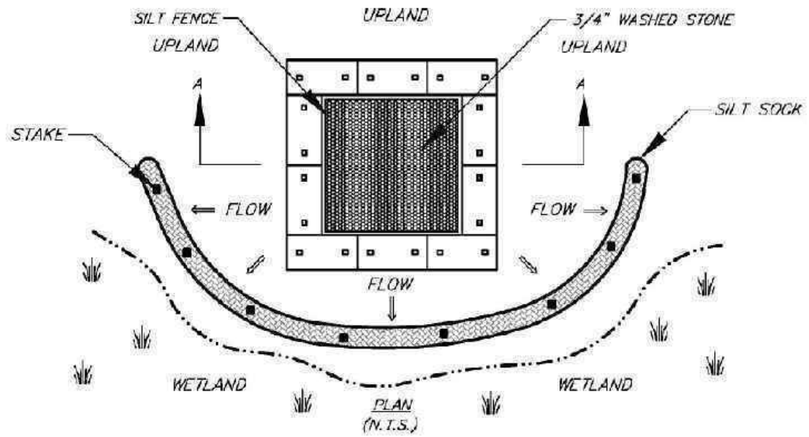
RESISTANCE SUBSTATION RETIREMENT PROJECT
GREENLAND AND PORTSMOUTH
NEW HAMPSHIRE

BMP DETAILS

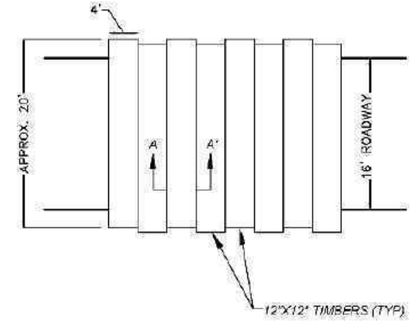
PREPARED BY:
GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR:
EVERSOURCE ENERGY

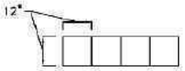
PROJ MGR: LEW	REVIEWED BY: TLT	CHECKED BY: DMZ	SHEET S2
DESIGNED BY: MJD	DRAWN BY: MJD	SCALE:	
DATE: 08/15/2023	PROJECT NO. 04.0191410.47	REVISION NO.	



DEWATERING DETAIL
N.T.S.



TYPICAL SWAMP MAT PLAN VIEW
N.T.S.



TYPICAL MAT SECTION A-A
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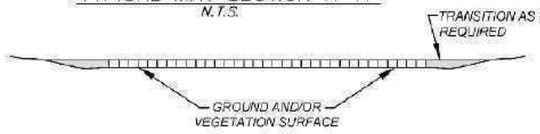

TYPICAL SWAMP MAT SECTION DETAIL
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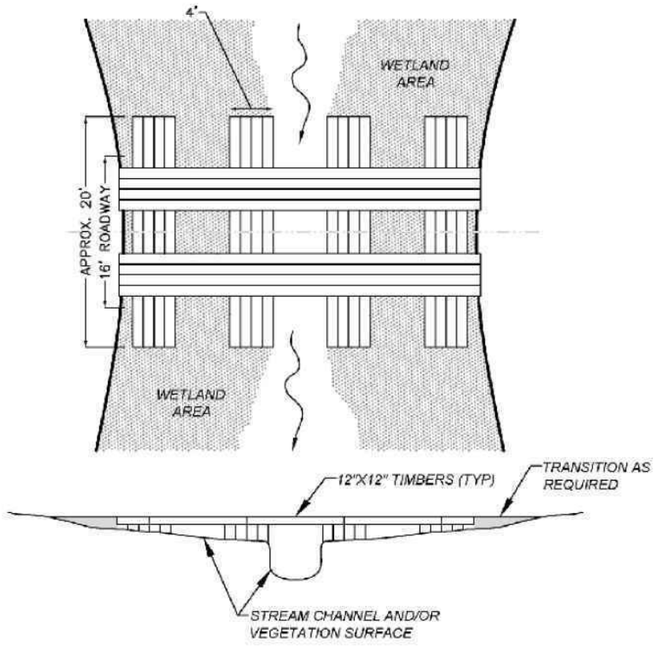

TYPICAL STREAM CROSSING
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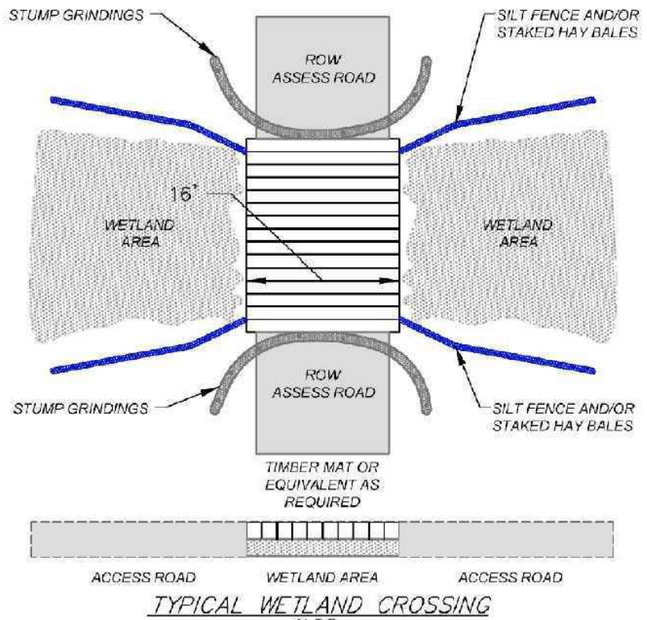

TYPICAL WETLAND CROSSING
N.T.S.

RESISTANCE SUBSTATION RETIREMENT PROJECT

GREENLAND AND PORTSMOUTH
NEW HAMPSHIRE

BMP DETAILS

PREPARED BY:
GZA GeoEnvironmental, Inc.
Engineers and Scientists
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APPENDIX K – UTILITY PROJECTS WORKSHEET FOR STANDARD APPLICATIONS

UTILITY PROJECTS;
PROJECTS IN PUBLIC RIGHT-OF-WAY
PROJECT-SPECIFIC WORKSHEET
FOR STANDARD APPLICATION

Water Division/Land Resources Management
Wetlands Bureau

Check the Status of your Application

RSA/Rule: RSA 482-A/ Env-Wt 521

APPLICANT LAST NAME, FIRST NAME, M.I.: Eversource Energy, Attn: Kurt Nelson

This worksheet summarizes the criteria and requirements for a Standard Permit for "Utility Projects; Projects in the Public Right-of-Way", as outlined in Chapter Env-Wt 500. In addition to the project-specific criteria and requirements on this worksheet, all Standard Applications must meet the criteria and requirements listed in the Standard Dredge and Fill Wetlands Permit Application form (NHDES-W-06-012).

SECTION 1 - APPLICABILITY (Env-Wt 509.02(b); Env-Wt 521.01)

This worksheet is for residential utility projects and other utility projects within a public right-of-way.

Do **not** use this worksheet for utility projects that involve the construction of a substation, parking lot, or storage facility on utility property, which must be reviewed under the standards for commercial projects specified in Env-Wt 524.

Do **not** use this worksheet if the project is located in a coastal (tidal) area.

SECTION 2 - APPROVAL CRITERIA FOR STANDARD UTILITY PERMITS (Env-Wt 521.03)

In addition to meeting the criteria established in Env-Wt 300, an application for a utility project must meet the following approval criteria:

☒ If the project as a whole crosses multiple properties, it is submitted as a single project and is not segmented into multiple proposed projects for the purpose of avoiding eligibility or classification requirements.

☒ The project is, to the greatest extent practicable, within existing rights-of-way and developed areas.

☒ Construction will be undertaken in the least environmentally-impactful manner.

☒ If the project involves greater than one acre of contiguous permanent wetland or watercourse impact, an off-site alternatives analysis is done.

SECTION 3 - APPLICATION REQUIREMENTS FOR UTILITY PROJECTS (Env-Wt 521.04)

An application for a utility project must include the following project-specific information:

A plan showing:

☒ The extent and location of all wetlands and watercourses within the project area.

☒ A wetland delineation, functional assessment, and impact analysis in accordance with Env-Wt 300.

☒ The location of any existing utility corridors and facilities.

☒ The location of the proposed utility corridors and facilities.

☒ The location of any proposed impacts, crossings, construction areas, and clearings.

☒ A recent aerial photograph of the project area overlain by the items specified above.

☒ An invasive species control plan.

☒ A construction sequence plan describing measures proposed to minimize impacts to water quality, impacts to nesting and breeding species, and to prevent compaction of wetlands soils.

☒ The locations of staging areas, off right-of-way access roads, temporary access roads, and new station locations.

A description of the methods, techniques, vehicles, and equipment proposed to access and conduct the project.

Prior to the start of work, perimeter erosion controls (i.e. silt fence and/or straw wattle) will be temporarily installed in uplands to prevent sedimentation into wetlands and protect water quality. In wetlands, replacement of the structures will be completed from temporary work pads constructed using timber mats. Timber matting is utilized to prevent rutting and compaction of wetland soils. A drill rig and crane will be operated from temporary work pads to excavate the new pole locations, install the caisson grounding rings, and erect the structures, respectively. Upon completion of work, exposed soils in impacted areas will be restored to original grades, seeded with native seed mix as necessary, and stabilized using jute erosion control blankets as necessary or loose mulch.

A description of measures proposed to minimize and avoid impacts to wetlands and surface waters.

Impacts to wetlands have been minimized and avoided to the greatest extent by utilizing existing upland access routes where possible, utilizing temporary timber matting to access through wetlands, and adjusting access to cross the narrowest portion of wetlands. Off right-of-way access routes are proposed to further avoid and minimize impacts to wetland but are dependent on securing agreements with underlying property owners. Where agreements are secured, Eversource will utilize off ROW access routes to avoid and minimize wetland impact. Although access and work pad placement within wetlands is necessary due to the required engineered span widths between structures, impacts were minimized by avoiding wetlands to the greatest extent possible while continuing to provide safe and adequate work areas for construction and meeting engineering constraints. Upon completion of construction, timber matting will be removed and temporarily impacted wetland areas will be seeded, as necessary, and mulched for restoration.

SECTION 4 - DESIGN & CONSTRUCTION REQUIREMENTS FOR UTILITY PROJECTS (Env-Wt 521.05)

In addition to the design and construction requirements in Env-Wt 300, the following requirements apply to utility projects:

☒ The project must be designed to avoid and minimize construction access over, or work in or upon, organic soils.

☒ The project must be designed in accordance with Env-Wt 313.03.

☒ Construction access or work shall be prohibited in priority resource areas unless the work:

- Is authorized as an SPN or a project type exception under Env-Wt 407, or
- Causes only temporary impacts.

☒ All project activities must be performed, located, constructed, and maintained in accordance with the Best Management Practices Manual, Utility Maintenance in and Adjacent to Wetlands and Waterbodies in New Hampshire (Utility BMPs).

☒ No project shall cause permanent filling of wetlands in excess of 10,000 square feet unless mitigation is provided in accordance with Env-Wt 800.

☒ Swamp mats shall be:

- Used in any area necessary to provide access,
- Removed as soon as the work is completed, and
- In no case left in place longer than one growing season.

SECTION 5 - MAINTENANCE & REPAIR (Env-Wt 521.07)

☒ Maintenance and repair must be carried out in accordance with the Utility BMPs.

SECTION 6 - UTILITY PROJECT CLASSIFICATION (Env-Wt 521.06)

Refer to Env-Wt 521.06 for project classification.

APPENDIX L – CERTIFIED MAIL RECEIPTS

APPENDIX M - LIMITATIONS

USE OF REPORT

1. GZA GeoEnvironmental, Inc. (GZA) has prepared this report on behalf of, and for the exclusive use of Eversource Energy ("Client") for the stated purpose(s) and location(s) identified in the report. Use of this report, in whole or in part, at other locations, or for other purposes, may lead to inappropriate conclusions; and we do not accept any responsibility for the consequences of such use(s). Further, reliance by any party not identified in the agreement, for any use, without our prior written permission, shall be at that party's risk, and without any liability to GZA.

STANDARD OF CARE

2. GZA's findings and conclusions are based on the work conducted as part of the Scope of Services set forth in the Report and/or proposal, and reflect our professional judgment. These findings and conclusions must be considered not as scientific or engineering certainties, but rather as our professional opinions concerning the data gathered and observations made during the course of our work. Conditions other than described in this report may be found at the subject location(s).

3. GZA's services were performed using the degree of skill and care ordinarily exercised by qualified professionals performing the same type of services, at the same time, under similar conditions, at the same or a similar property. No warranty, expressed or implied, is made.

LIMITS TO OBSERVATIONS

4. Natural resource characteristics are inherently variable. Biological community composition and diversity can be affected by seasonal, annual or anthropogenic influences. In addition, soil conditions are reflective of subsurface geologic materials, the composition and distribution of which vary spatially.

5. The observations described in this report were made on the dates referenced and under the conditions stated therein. Conditions observed and reported by GZA reflect the conditions that could be reasonably observed based upon the visual observations of surface conditions and/or a limited observation of subsurface conditions at the specific time of observation. Such conditions are subject to environmental and circumstantial alteration and may not reflect conditions observable at another time.

6. The conclusions and recommendations contained in this report are based upon the data obtained from a limited number of surveys performed during the course of our work on the site, as described in the Report. There may be variations between these surveys and other past or future surveys due to inherent environmental and circumstantial variability.

RELIANCE ON INFORMATION FROM OTHERS

7. Preparation of this Report may have relied upon information made available by Federal, state and local authorities; and/or work products prepared by other professionals as specified in the report. Unless specifically stated, GZA did not attempt to independently verify the accuracy or completeness of that information.

COMPLIANCE WITH REGULATIONS AND CODES

8. GZA's services were performed to render an opinion on the presence and/or condition of natural resources as described in the Report. Standards used to identify or assess these resources as well as regulatory jurisdiction, if any, are stated in the Report. Standards for identification of jurisdictional resources and regulatory control over them may vary between governmental agencies at Federal, state and local levels and are subject to change over time which may affect the conclusions and findings of this report.

NEW INFORMATION

9. In the event that the Client or others authorized to use this report obtain information on environmental regulatory compliance issues at the site not contained in this report, such information shall be brought to GZA's attention forthwith. GZA will evaluate such information and, on the basis of this work, may modify the conclusions stated in this report.

ADDITIONAL SERVICES

10. GZA recommends that we be retained to provide further investigation, if necessary, which would allow GZA to (1) observe compliance with the concepts and recommendations contained herein; (2) evaluate whether the manner of implementation creates a potential new finding; and (3) evaluate whether the manner of implementation affects or changes the conditions on which our opinions were made.

GZA GeoEnvironmental, Inc.

civil &
environmental
engineering

UNDERWOOD
engineers

2542.12

March 27, 2024

Ms. Samatha Collins, Chair
City of Portsmouth Conservation Commission
1 Junkins Avenue
Portsmouth, NH 03801

Re: ***Conditional Use Permit Application Submittal***
Maplewood Avenue Drainage Improvements – North Mill Pond Outfall
Portsmouth, NH

Dear Ms. Collins:

On behalf of the City of Portsmouth, we are applying for a Conditional Use Permit (Wetland Impacts) for proposed improvements to one of the existing outfall on North Mill Pond (behind the cemetaries). This work is required as part of the City's ongoing efforts to continue sewer separation in the Fleet Street Area of downtown and capacity upgrades are required at the outfall to accomodate additional storm drain flows resulting from the separation work.

We have completed the City's permitting submittal process on the website and enclosed for the Commission's consideration and use is one (1) hard copy of documents submitted electronically as required.

The intent is to be included on the April 10th meeting agenda to present the project and application to the Commission so that recommendation can be obtained for planning board approval during their May meeting.

Please feel free to contact me if any additional information is required in advance of the meeting.

Very truly yours,

UNDERWOOD ENGINEERS, INC.

Daniel J Rochette, P.E (NH)
Project Manager

Encl.
cc: Dave Desfosses, City of Portsmouth (via e-mail)

ph 603.436.6192
fx 603.431.4733
25 Vaughan Mall
Portsmouth, NH 03801
underwoodengineers.com

NHDES Wetlands Permit Application

Table of Contents

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: Thomas P. & Kimberley S. L **TOWN NAME:** Portsmouth

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): ○ NHB Project ID #: 24-0615	◯ 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): • 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): N/A	

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 proposes 370 sq. ft. of permanent impact to tidal wetland and 48 sq. ft. of permanent impact to the previously developed 100' Tidal Buffer Zone for the removal of an existing tidal docking structure and the construction of a new tidal docking structure including a 4' x 12' accessway, a 4' by 20' fixed wood pier, a 3' x 30' gangway, and a 10' x 20' float (overall structure length 82') on 195+/- feet of frontage along the Piscataqua River.

SECTION 3 - PROJECT LOCATION

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

ADDRESS:	333 New Castle Avenue
TOWN/CITY:	Portsmouth
TAX MAP/BLOCK/LOT/UNIT:	Map 207, Lot 2
US GEOLOGICAL SURVEY (USGS) TOPO MAP WATERBODY NAME: ☐ N/A	Piscataqua River
(Optional) LATITUDE/LONGITUDE in decimal degrees (to five decimal places):	X:1,230,314.0948 Y:209,424.8104

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: Thomas P. & Kimberley S. Lyng		
MAILING ADDRESS: 333 New Castle Avenue		
TOWN/CITY: Portsmouth	STATE: NH	ZIP CODE: 03801
EMAIL ADDRESS: trlyng@comcast.net		
FAX:	PHONE: 603-978-5175	
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.: Boudreau, Jacqueline		
COMPANY NAME: Haley Ward, Inc.		
MAILING ADDRESS: 200 Griffin Road, Unit 14		
TOWN/CITY: Portsmouth	STATE: NH	ZIP CODE: 03801
EMAIL ADDRESS: jboudreau@haleyward.com		
FAX:	PHONE: 603-430-9282	
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):

Please see attached narrative.

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 2, 2024

(■ 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			☐			☐
	Scrub-shrub Wetland			☐			☐
	Emergent Wetland			☐			☐
	Wet Meadow			☐			☐
	Vernal Pool			☐			☐
	Designated Prime Wetland			☐			☐
	Duly-established 100-foot Prime Wetland Buffer			☐			☐
Surface	Intermittent / Ephemeral Stream			☐			☐
	Perennial Stream or River			☐			☐
	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	48		☐			☐
	Docking - Tidal Water	370		☐			☐
	TOTAL	418					

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):	SF	× $0.40 =	$
Seasonal docking structure: 290	SF	× $2.00 =	$ 580
Permanent docking structure: 128	SF	× $4.00 =	$ 512
Projects proposing shoreline structures (including docks) add $400 =			$ 400
		Total =	$ 1492
The application fee for minor or major impact is the above calculated total or $400, whichever is greater =			*$*

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:	To the best of the signer's knowledge and belief, all required notifications have been provided.
Initials:	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:	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:	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:	DATE:
SIGNATURE (APPLICANT, IF DIFFERENT FROM OWNER):	PRINT NAME LEGIBLY:	DATE:
SIGNATURE (AGENT, IF APPLICABLE):	PRINT NAME LEGIBLY: Jacqueline Boudreau	DATE: 2/29/24

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:	DATE:

US Army Corps of Engineers ®
New England District

New Hampshire General Permits (GPs)
Appendix B - Corps Secondary Impacts Checklist
(for inland wetland/waterway fill projects in New Hampshire)

1. Attach any explanations to this checklist. Lack of information could delay a Corps 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 5, regarding single and complete projects.
4. Contact the Corps at (978) 318-8832 with any questions.

1. Impaired Waters	Yes	No
1.1 Will any work occur within 1 mile upstream in the watershed of an impaired water? See http://des.nh.gov/organization/divisions/water/wmb/section401/impaired_waters.htm to determine if there is an impaired water in the vicinity of your work area.*	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 SAS, special wetlands. 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://www2.des.state.nh.us/nhb_datacheck/. The book Natural Community Systems of New Hampshire also contains specific information about the natural communities found in NH.		X
2.3 If wetland crossings are proposed, are they adequately designed to maintain hydrology, sediment transport & wildlife passage?	NA	
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?	225 SF	
2.7 What is the area of the proposed fill in wetlands?	3,600 SF	
2.8 What is the % of previously and proposed fill in wetlands to the overall project site?	0.8% Previously 12.6% Proposed	
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://www2.des.state.nh.us/nhb_datacheck/ USFWS IPAC website: https://ecos.fws.gov/ipac/location/index		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 21?	NA	
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?	NA	
5. Historic/Archaeological Resources		
For a minimum, minor or major impact project - a copy of the Request for Project Review (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 11 GC 8(d) of the GP document**	X	

*Although this checklist utilizes state information, its submittal to the Corps is a Federal requirement.
** If your project is not within Federal jurisdiction, coordination with NH DHR is not required under Federal law.

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Rockingham County, New Hampshire

Local office

New England Ecological Services Field Office

(603) 223-2541
(603) 223-0104

70 Commercial Street, Suite 300

Concord, NH 03301-5094

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

---

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

2. 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.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Northern Long-eared Bat Myotis septentrionalis Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045	Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Oct 15 to Aug 31
Black-billed Cuckoo *Coccyzus erythropthalmus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9399	Breeds May 15 to Oct 10
Blue-winged Warbler *Vermivora pinus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds May 1 to Jun 30
Bobolink *Dolichonyx oryzivorus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31
Chimney Swift *Chaetura pelagica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25

Lesser Yellowlegs Tringa flavipes This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Prairie Warbler Dendroica discolor This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
Purple Sandpiper Calidris maritima This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Red-headed Woodpecker Melanerpes erythrocephalus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Rusty Blackbird Euphagus carolinus This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
Short-billed Dowitcher Limnodromus griseus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9480	Breeds elsewhere
Willet Tringa semipalmata This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 5
Wood Thrush Hylocichla mustelina This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

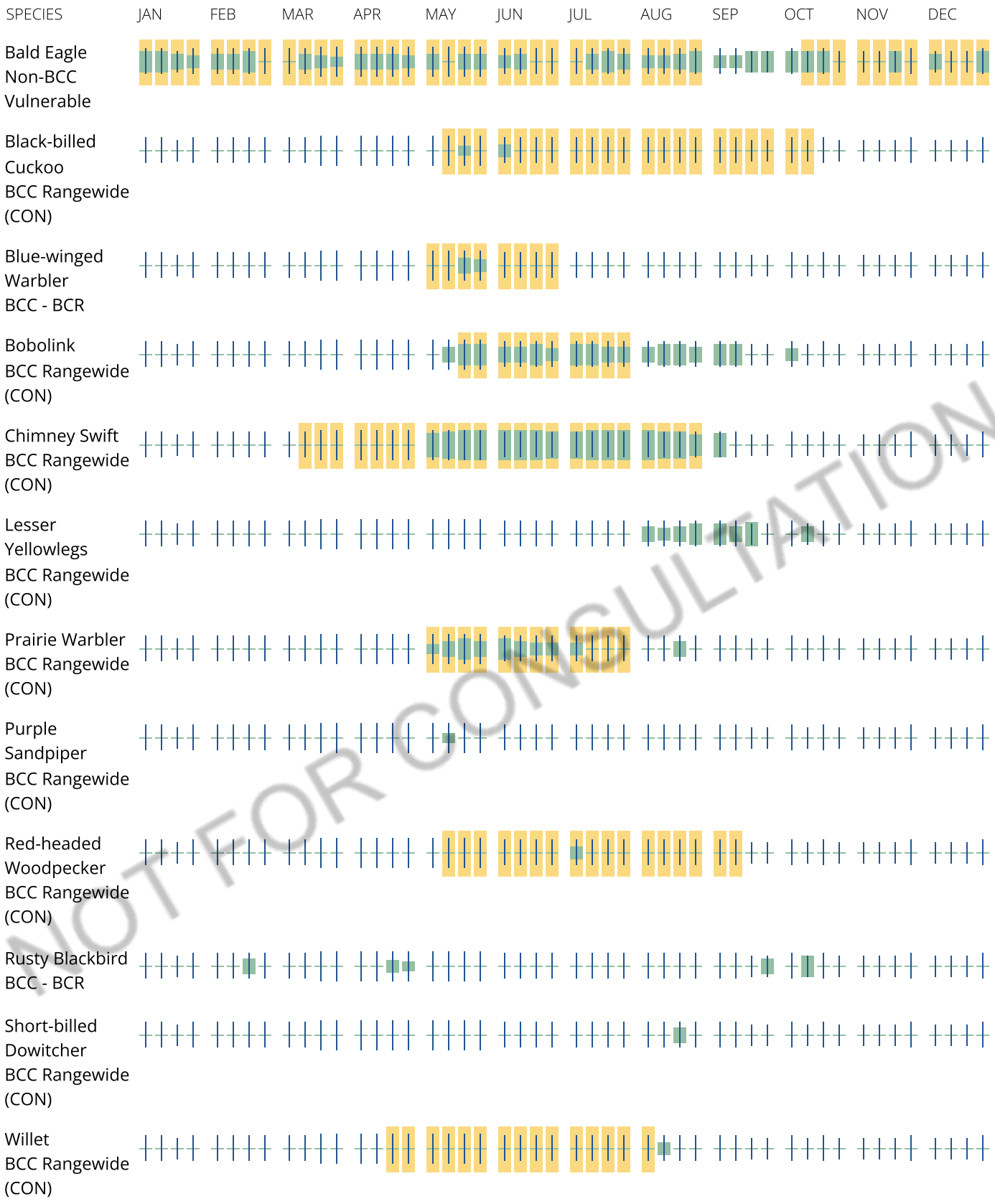
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

▪ probability of presence ▪ breeding season | survey effort – no data



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn

more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Wetland information is not available at this time

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

RECEIVED FEB 09 2023

2542.12

Please mail the completed form and required material to:

New Hampshire Division of Historical Resources
State Historic Preservation Office
Attention: Review & Compliance
19 Pillsbury Street, Concord, NH 03301-3570

DHR Use Only	
R&C #	14678
Log In Date	2/9/23
Response Date	2/16/23
Sent Date	2/21/23

Request for Project Review by the New Hampshire Division of Historical Resources

☒ This is a new submittal
☐ This is additional information relating to DHR Review & Compliance (R&C) #:

GENERAL PROJECT INFORMATION

Project Title Maplewood Avenue Outfall Improvements

Project Location 90 Maplewood Avenue

City/Town Portsmouth Tax Map 125 Lot # 19

RECEIVED FEB 27 2023 UNDERWOOD ENGINEERING PORTSMOUTH, NH

NH State Plane - Feet Geographic Coordinates: Easting 1225377 Northing 211984
(See RPR Instructions and R&C FAQs for guidance.)

Lead Federal Agency and Contact *(if applicable)*
(Agency providing funds, licenses, or permits)
Permit Type and Permit or Job Reference #

State Agency and Contact *(if applicable)* New Hampshire Department of Environmental Services

Permit Type and Permit or Job Reference # Dredge and Fill

APPLICANT INFORMATION

Applicant Name City of Portsmouth

Mailing Address 680 Peverly Hill Road Phone Number 603.427.1530

City Portsmouth State NH Zip 03801 Email NA

CONTACT PERSON TO RECEIVE RESPONSE

Name/Company Zach Cronin

Mailing Address 680 Peverly Hill Road Phone Number 603.610.7304

City Portsmouth State NH Zip 03801 Email NA

This form is updated periodically. Please download the current form at www.nh.gov/nhdhr/review. *Please refer to the Request for Project Review Instructions for direction on completing this form.* Submit one copy of this project review form for each project for which review is requested. Please include a self-addressed stamped envelope. Project submissions will not be accepted via facsimile or e-mail. This form is required. Review request form must be complete for review to begin. Incomplete forms will be sent back to the applicant without comment. Please be aware that this form may only initiate consultation. For some projects, additional information will be needed to complete the Section 106 review. All items and supporting documentation submitted with a review request, including photographs and publications, will be retained by the DHR as part of its review records. Items to be kept confidential should be clearly identified. For questions regarding the DHR review process and the DHR's role in it, please visit our website at: www.nh.gov/nhdhr/review or contact the R&C Specialist at marika.s.labash@dncr.nh.gov or 603.271.3558.

PROJECTS C. NOT BE PROCESSED WITHOUT T. 3 INFORMATION

Project Boundaries and Description

- ☒ Attach the Project Mapping ***using EMMIT or relevant portion of a 7.5' USGS Map.*** *(See RPR Instructions and R&C FAQs for guidance.)*
- ☒ Attach a detailed narrative description of the proposed project.
- ☒ Attach a site plan. The site plan should include the project boundaries and areas of proposed excavation.
- ☒ Attach photos of the project area (overview of project location and area adjacent to project location, and specific areas of proposed impacts and disturbances.) *(Informative photo captions are requested.)*
- ☒ A DHR records search must be conducted to identify properties within or adjacent to the project area. Provide records search results via EMMIT or in **Table 1**. *(Blank table forms are available on the DHR website.)* Please note, using EMMIT Guest View for an RPR records search does not provide the necessary information needed for DHR review.
  EMMIT or in-house records search conducted on 10/6/2022.

Architecture

Are there any buildings, structures (bridges, walls, culverts, etc.) objects, districts or landscapes within the project area? ☒ Yes ☐ No
If no, skip to Archaeology section. If yes, submit all of the following information:

Approximate age(s): 50 years

- ☒ Photographs of ***each*** resource or streetscape located within the project area, with captions, along with a mapped photo key. (Digital photographs are accepted. All photographs must be clear, crisp and focused.)
- ☐ If the project involves rehabilitation, demolition, additions, or alterations to existing buildings or structures, provide additional photographs showing detailed project work locations. (i.e. Detail photo of windows if window replacement is proposed.)

Archaeology

Does the proposed undertaking involve ground-disturbing activity? ☒ Yes ☐ No
If yes, submit all of the following information:

- ☒ Description of current and previous land use and disturbances.
- ☒ Available information concerning known or suspected archaeological resources within the project area (such as cellar holes, wells, foundations, dams, etc.)

Please note that for many projects an architectural and/or archaeological survey or other additional information may be needed to complete the Section 106 process.

DHR Comment/Finding Recommendation *This Space for Division of Historical Resources Use Only*

☐ Insufficient information to initiate review. ☐ Additional information is needed in order to complete review.

☐ No Potential to cause Effects ☑ No Historic Properties Affected ☐ No Adverse Effect ☐ Adverse Effect

Comments: ARCHAEOLOGICAL MONITORING REQUIRED DURING TRENCHING ADJACENT TO OLD NORTH CEMETERY AND THROUGH INTERSECTION OF MAPLEWOOD AVE. & DEER ST. DUE TO PRESENCE OF PREVIOUSLY IDENTIFIED SITES. MONITORING ARCHAEOLOGIST TO HAVE EXPERIENCE IN RECOGNIZING 18TH-CENTURY BURIALS.

If plans change or resources are discovered in the course of this project, you must contact the Division of Historical Resources as required by federal law and regulation.

Authorized Signature: Nadine Miller, DSHPO Date: 2/16/23

civil &
environmental
engineering

UNDERWOOD
engineers

2542.12

February 7, 2023

Ms. Marika Labash, Review and Compliance
NH Division of Historical Resources
19 Pillsbury Street
Concord, NH 03301-3570

Re: RPR Submittal for Review
Maplewood Avenue Drainage Interceptor
Portsmouth, New Hampshire

Dear Ms. Labash:

On behalf of the City of Portsmouth, we are hereby submitting a RPR package for review for the above referenced project.

The proposed project is subject to Standard Dredge and Fill Wetlands Permit Application (Major Impacts) and is being funded by NHDES SRF loan program both of which require the Section 106 Historic/Archaeoligical Resource review

The following information regarding this project area is enclosed:

- RPR form
- Narrative
- EMMIT Mapping with Limits of Work shown
- Summary of EMMIT Database Search Results for resources adjacent to within in the vicinity of the project area
- Relevant plan set sheets
- Photo Key
- Photos

Please call me at (603) 436-6192 if you have any questions or need any additional information.

Very truly yours,

UNDERWOOD ENGINEERS, INC.

Daniel J. Rochette, P.E.
Senior Project Engineer

Encl

cc: Zach Cronin, E.I.T. – Assistant City Engineer, City of Portsmouth (via e-mail)
Dave Desfosses – Project Manager, City of Portsmouth (via e-mail)

ph 603.436.6192
fx 603.431.4733
25 Vaughan Mall
Portsmouth, NH 03801
underwoodengineers.com

Please mail the completed form and required material to:

New Hampshire Division of Historical Resources
State Historic Preservation Office
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19 Pillsbury Street, Concord, NH 03301-3570

DHR Use Only	
R&C #	
Log In Date	___/___/___
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PROJECTS CANNOT BE PROCESSED WITHOUT THIS INFORMATION

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Comments: _____

If plans change or resources are discovered in the course of this project, you must contact the Division of Historical Resources as required by federal law and regulation.

Authorized Signature: _____ Date: _____

NARRATIVE STATEMENT
MAPLEWOOD AVENUE DRAINAGE INTERCEPTOR
PORTSMOUTH, NEW HAMPSHIRE

BACKGROUND AND PURPOSE

The City of Portsmouth has been mandated by an EPA Administrative Order to mitigate combined sewer overflows (CSO's) around the City. The next project identified on the City's priority list is to complete sewer separation in the Fleet Street drainage area. Separation of stormwater from the sewer system will increase flows within the existing system. Hydraulic calculations show that once separation of the Fleet Street area is complete existing downstream drainage systems will be overwhelmed and capacities need to be increased.

PROJECT DESCRIPTION

Currently, a new drainage interceptor along Maplewood Avenue ultimately discharging next to the existing outfall at North Mill Pond is being proposed to provide the additional capacity desired to accommodate additional stormwater flows resulting from the separation work Approximately 1,200 LF of 42" and 48" diameter RCP pipe is proposed along with a stormwater treatment unit.

New drainage piping also crosses below existing railroad tracks which will require trenchless installation methods so that existing tracks are not disturbed. The method of installation anticipated for the railroad crossing will be jack and bore to place a steel sleeve beneath the tracks for the drainage pipe to be inserted to.

Typical installations methods for the balance of the work will be open excavation with a trench width expected be vary between 6' and 8' wide dependent on pipe size and depth. Normal installations methods also include back filling excavations at the end of each work day.

ARCHITECTURAL AND ARCHAEOLOGICAL RESOURCES

In general, the impact areas will be contained to the area immediately surrounding the proposed work. Installation of new drainage piping will be linear in nature. Proposed alignments fall within existing roadways (Maplewood Avenue) or in locations previously disturbed by urban development (railroad access area).

Buildings abutting the road and sidewalks adjacent to the project area are all newer construction and have either been built within the last 20 years.

It is noted that work is proposed adjacent to the existing Old North Cemetery which is a known historic area. Existing conditions limited potential alignments for the proposed pipe. However, it is aligned so that the center of the pipe is approximately 19 feet (or more) from the existing fence line to the cemetery.

Where outfall improvements are proposed within jurisdictional wetland areas, impacts are generally limited to areas that have already been disturbed either by previous drainage system installations in the 1970's. Any excavation work completed beyond to existing outfall to place a stone apron and construct a permitted stabilized discharge will be limited to a depth of 2'.

Visual effects due to construction of the sewer line will be temporary in nature, as the infrastructure will be below ground and the area will be restored to existing conditions.

File Review

A file review was conducted using the EMMIT Database Search Tool on January 18, 2023.

The following files were found for an area where the project is being constructed:

- Eastern Railroad Linear Eastern District
    - **Impacts** – Proposed piping is being installed along the paved driveway to railroad access area. Impacts will consist of linear trench excavation as described above up to 8' in width and up to 13' depth. Upon completion the driveway will be paved and restored in kind.

The following files were found near the project area, but not within it:

- Old North Cemetery (POR149)
- Portsmouth Downtown historic District (POR0174
- Col. George Boyd Tomb (POR1024)

Previous Land Uses

No other previous uses are known.

Other Known Or Suspected Archaeological Resources Within The Project Area

No known or suspected archaeological resources within the project area.

January 18, 2023

1:2,257

0 0.0175 0.035 0.07 mi

0 0.03 0.06 0.12 km

- Individual Properties < 10 acres
- Towns
- National Register Districts
- Historic Districts
- Project Areas
- Counties

Maplewood Avenue Drainage Intercept
Portsmouth, New Hampshire

EMMIT Database Search Results

January 18, 2023

	Inventory #	Property Name	Address	Town	SR Listing Date	NR Listing Date	DOE Date Reviewed	Eligibilities	HABS Year	HAER Year	NH Property Doc Year	Doc Id
12027	POR-SMLP	Sarah Mildred Long Project		Portsmouth				Not reviewed for eligibility				
9346	POR0149	Old North Cemetery	Maplewood Avenue	Portsmouth		3/8/1978						
9371	POR0174	Portsmouth Downtown Historic District	multiple locations	Portsmouth		6/19/2017						
9410	POR1024	Col. George Boyd Tomb	Old North Cemetery	Portsmouth								HABS-0204
12153	ZMT-ERLD	RR Eastern Railroad Linear District/ B&M Eastern Division		zMulti-town				Eligible National Register district				

Plan View of Photo Location and Direction

NORTH MILL POND

P1 P2 P3 P4

SHORELINE BUFFER

TIDAL BUFFER ZONE

DEER ST.

MAPLEWOOD AVE

HANOVER ST.

SEE FLEET STREET RECONSTRUCTION PROJECT

DMH #BA

ISSUE FOR
BIDDING — By — Date —
CONSTRUCTION — By — Date —
RECORD DRAWING — By — Date —

NO.	REVISIONS	APP'D

Drawn/Chk. RMG
Designed PDM
Checked —
Approved —
Date 1/5/2022
Book No. —
Project No. 2542
Dwg. ID 2542_ptsss_M
Scale

FOR REVIEW
JAN. 2023
NOT FOR CONSTRUCTION

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

PLAN INDEX

MAPLEWOOD AVE – DRAINAGE INTERCEPT
CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

DWG NO	SHEET
G2	3 OF 14

Project Area Photos
Maplewood Avenue Outfall Improvements
Portsmouth, NH

Photo 1 – Existing outfall headwall, exposed 48" RCP pipe, and tidal embankment looking west at high tide. Taken 9/28/22

Photo 2 – Existing outfall headwall, exposed 48" RCP pipe, and tidal embankment looking east at high tide. Taken 9/28/22

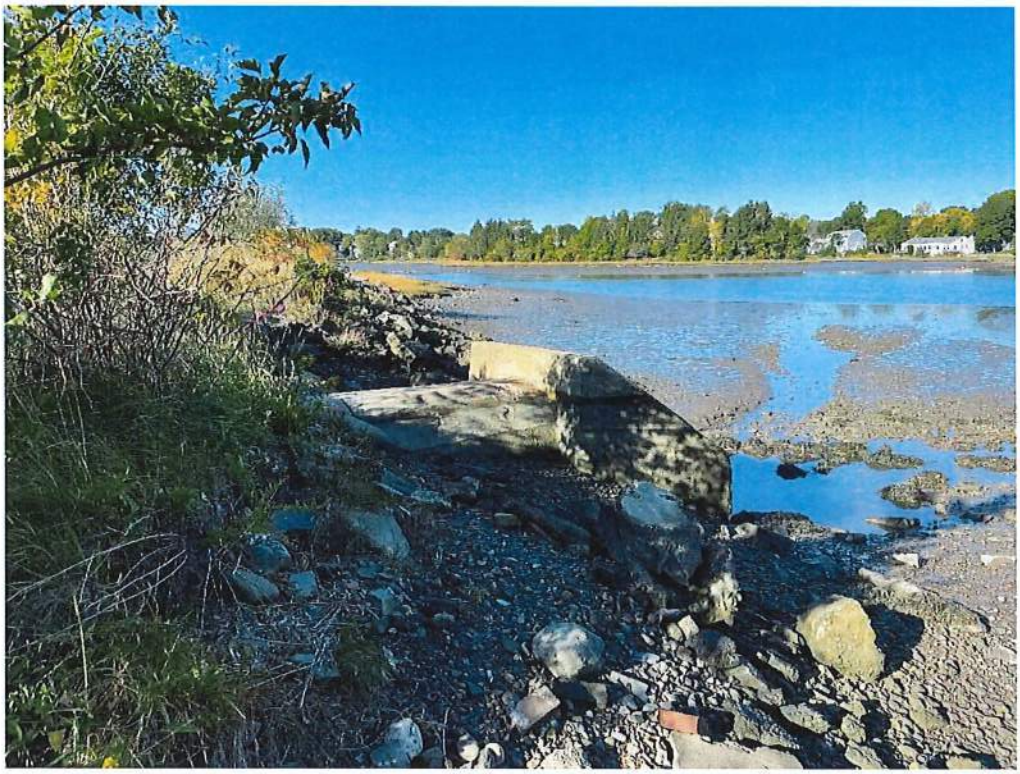


Photo 3 – Existing outfall headwall, exposed 48" RCP pipe, and tidal embankment looking west at low tide. Taken 9/29/22

Photo 4 – Edge of 90 Maplewood Ave LLC lot looking north with existing pipe located parallel to concrete block wall flowing west to outfall. Taken 1/19/23

Project Area Photos
Maplewood Avenue Outfall Improvements
Portsmouth, NH

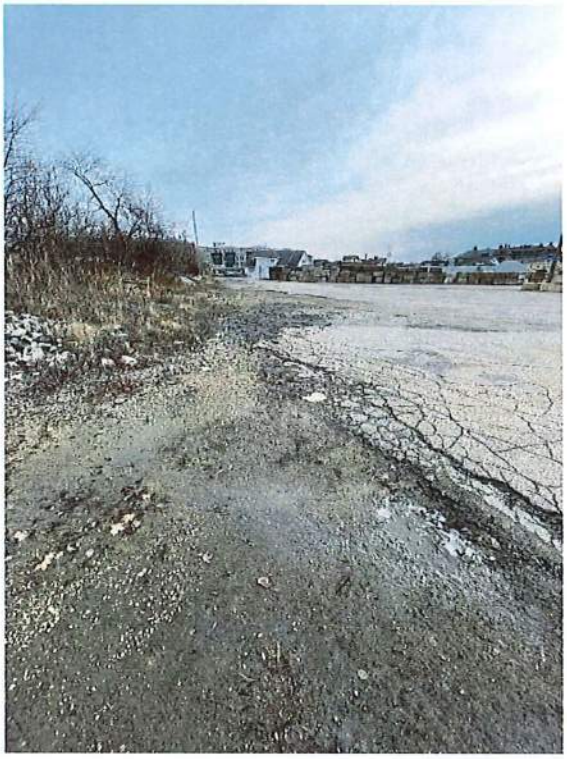


Photo 5 – Edge of concrete block wall at 90 Maplewood Ave LLC lot (right) looking northeast over existing pipe. Taken 1/19/23

Photo 6 – Road between railroad (left) and Old North Cemetery (right) looking west into 90 Maplewood Ave LLC lot. Taken 1/19/23

Photo 7 – Road between railroad (right) and Old North Cemetery (left) looking northeast toward Maplewood Ave. Taken 1/19/23

Photo 8 – Maplewood Ave at Vaughan Street looking southeast down the road between the railroad (left) and Old North Cemetery (right). Taken 1/19/23

Photo 9 – Corner of Maplewood Ave at Vaughan Street and Old North Cemetery (right) looking southeast at Maplewood Ave. Taken 1/19/23

Photo 10 – Maplewood Ave at Deer Street intersection looking northwest at Maplewood Ave. Taken 1/19/23

Photo 11 – Maplewood Ave and Deer Street intersection looking north. Taken 1/19/23

Photo 12 – Maplewood Ave and Deer Street intersection looking east. Taken 1/19/23

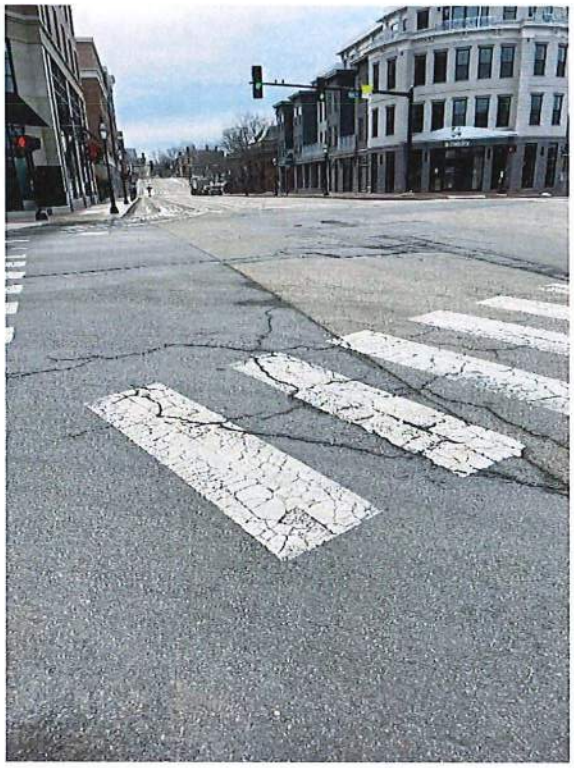


Photo 13 – Maplewood Ave and Deer Street intersection looking south. Taken 1/19/23

Photo 14 – Maplewood Ave at Deer Street intersection looking Southeast at Maplewood Ave. Taken 1/19/23

Photo 15 – Maplewood Ave between Hanover Street and Deer Street looking northwest. Taken 1/19/23

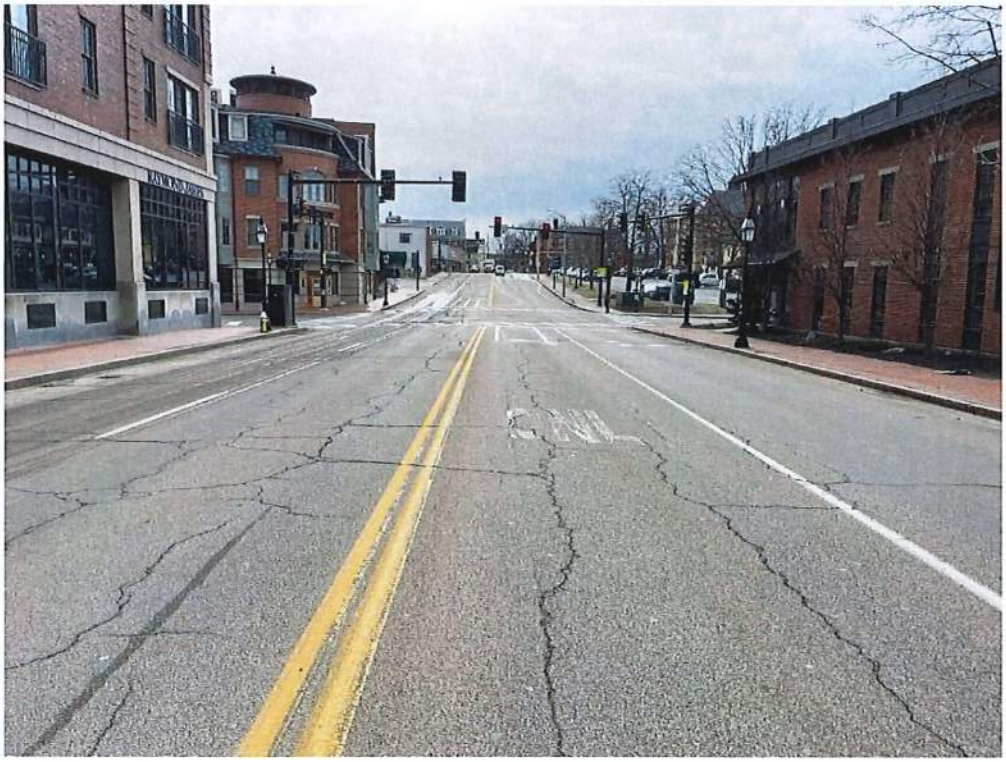


Photo 16 – Maplewood Ave between Hanover Street and Deer Street looking southeast. Taken 1/19/23

Photo 17 – Maplewood Ave at Hanover Street intersection looking northwest at Maplewood Ave. Taken 1/19/23

Photo 18 – Maplewood Ave and Hanover Street intersection looking east. Taken 1/19/23

Photo 19 – Maplewood Ave and Hanover Street intersection looking south. Taken 1/19/23

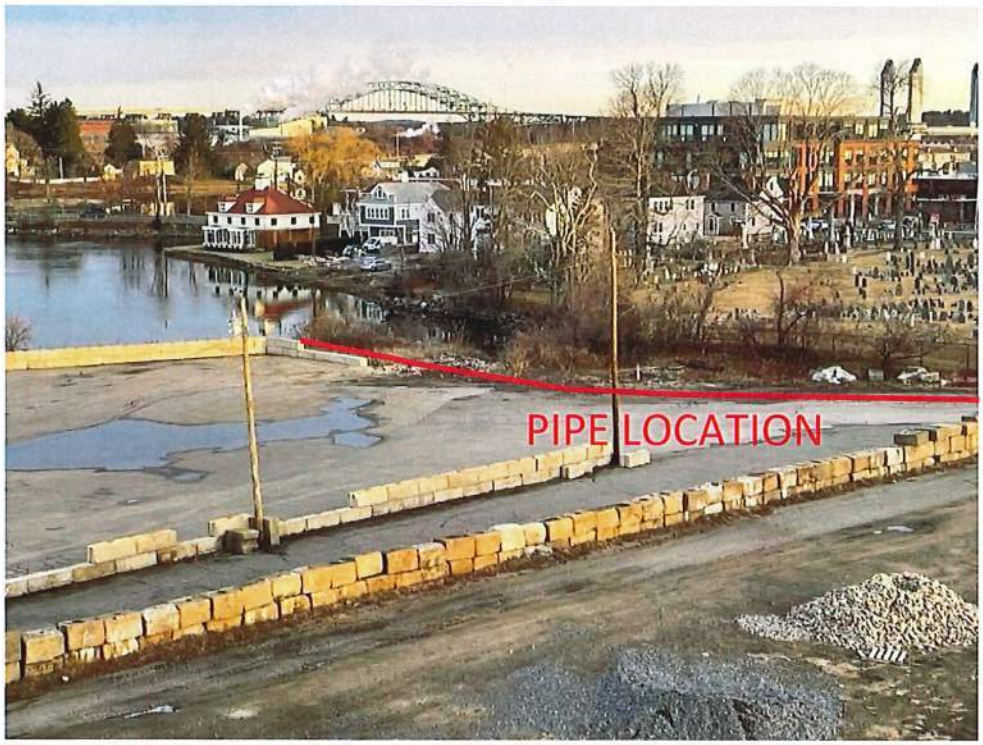


Photo 20 – Looking northwest at outfall and 90 Maplewood Ave LLC lot area (left). Picture taken from Foundry Parking Garage. Taken 1/19/23

Project Area Photos
Maplewood Avenue Outfall Improvements
Portsmouth, NH

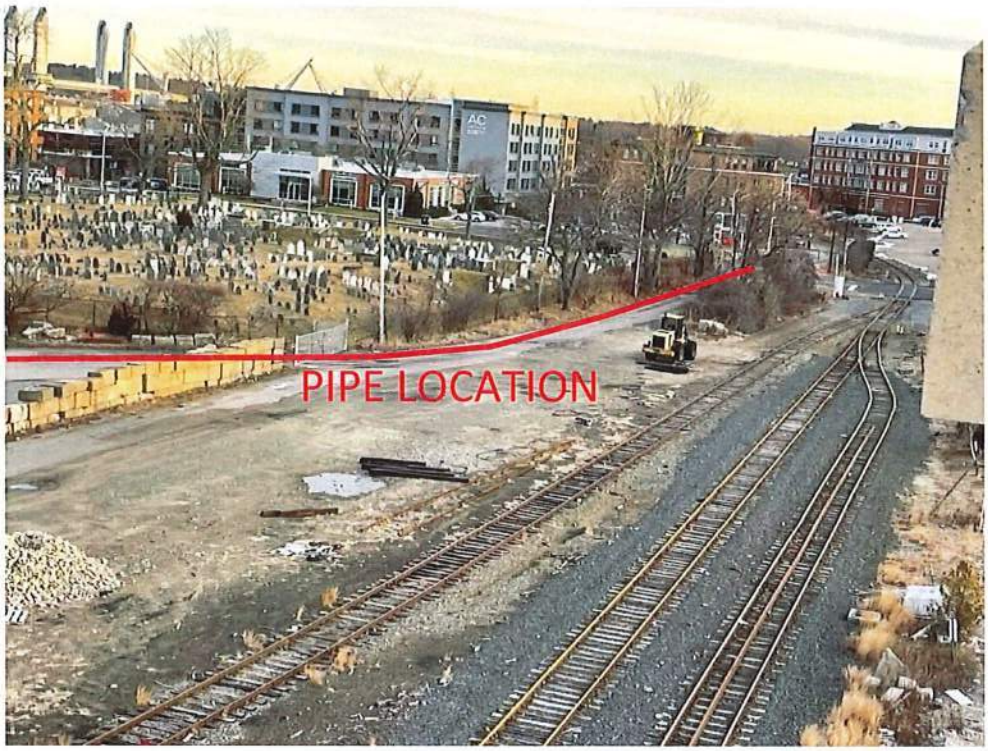


Photo 21 – Looking north at 90 Maplewood Ave LLC lot and road between railroad (right) and Old North Cemetery (left). Picture taken from Foundry Parking Garage. Taken 1/19/23

Photo 22 – Old North Cemetery looking west from Maplewood Ave. Taken 1/19/23

Project Area Photos
Maplewood Avenue Outfall Improvements
Portsmouth, NH

Photo 23 – Sign at Old North Cemetery. Taken 1/19/23

Photo 24 – Railroad tracks looking northeast from Maplewood Ave. Taken 1/19/23

Photo 25 – Railroad tracks looking southwest from Maplewood Ave. Taken 1/19/23

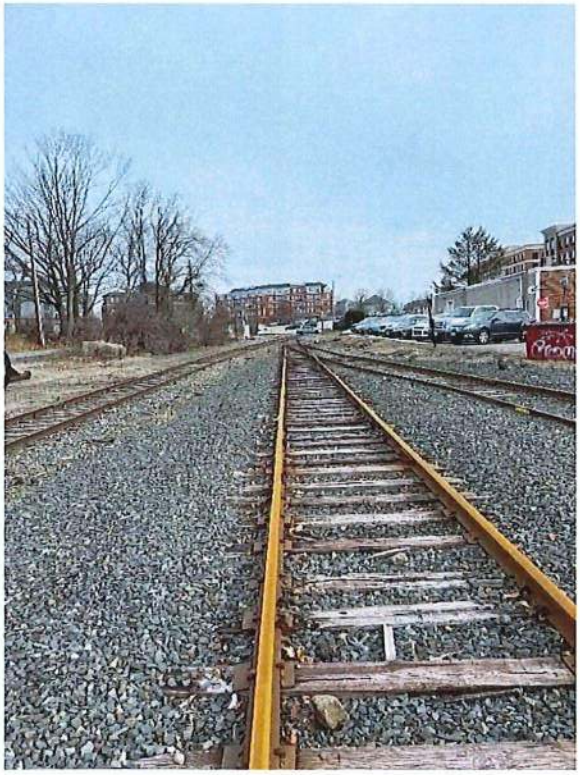


Photo 26 – Railroad tracks looking northwest. Taken 1/19/23

Project Area Photos
Maplewood Avenue Outfall Improvements
Portsmouth, NH

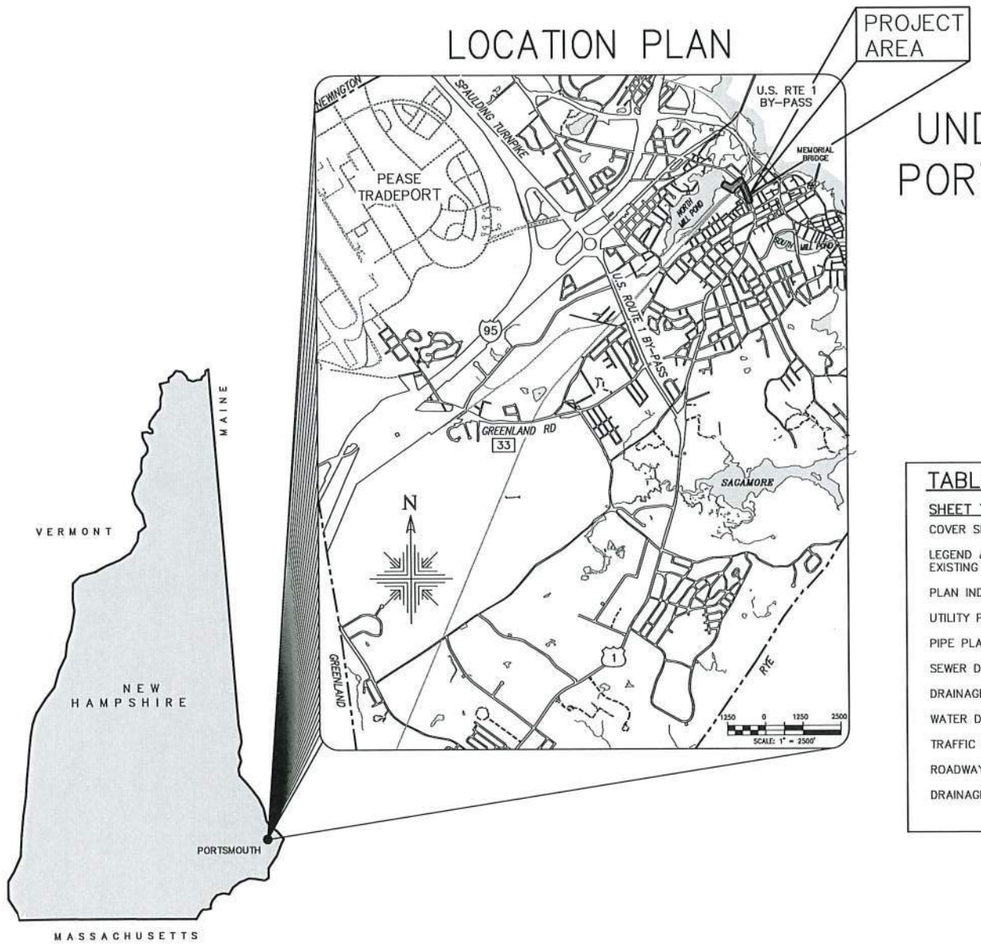
Photo 27 – Railroad tracks looking southwest. Taken 1/19/23

City of Portsmouth, New Hampshire

PERMIT APPLICATION DRAWINGS

MAPLEWOOD AVENUE - DRAINAGE INTERCEPT

LOCATION PLAN

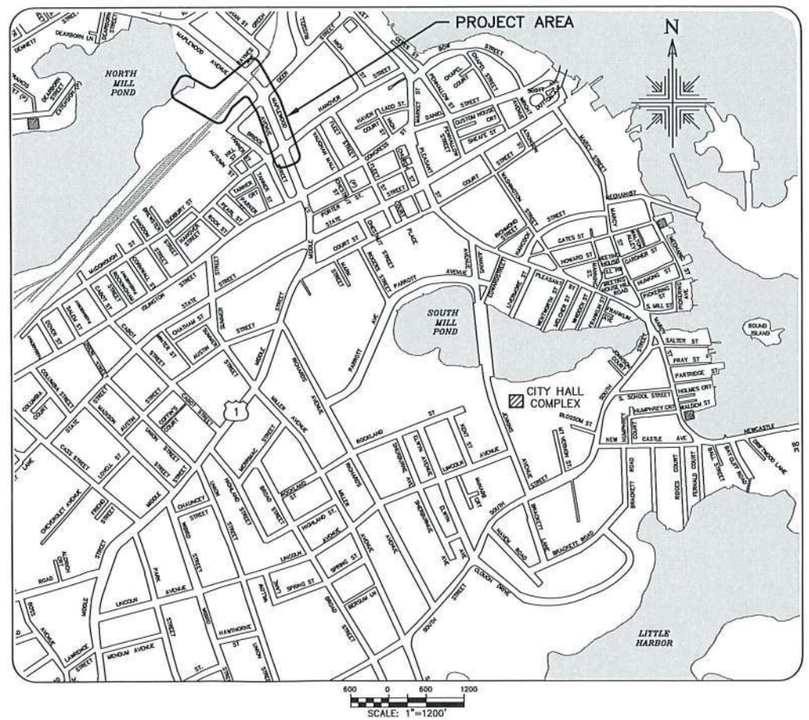


PREPARED BY
UNDERWOOD ENGINEERS, INC.
PORTSMOUTH, NEW HAMPSHIRE
JANUARY, 2023

FOR REVIEW
JANUARY, 2023
NOT FOR CONSTRUCTION

TABLE OF CONTENTS

VICINITY MAP



UE #2542

UNDERWOOD engineers

LEGEND:

EXISTING	PROPOSED	
		STRUCTURES/BUILDINGS
		APPROXIMATE PROPERTY LINE
		PAVED ROAD/DRIVE
VCC		VERTICAL FACED GRANITE CURB
RWBL		MODULAR BLOCK RETAINING WALL
RWB		MORTARED BRICK RETAINING WALL
RWC		CONCRETE RETAINING WALL
RWG		GRANITE RETAINING WALL
		GRANITE POST
		PARK METER KIOSK
		PARKING METER
		BOLLARD
		SIGN
		HANDICAP SPACE
		LIGHT POLE
		UTILITY POLE WITH ARM & LIGHT
		UTILITY POLE
PSNH		PUBLIC SERVICE CO. OF NH
E		ELECTRICAL MANHOLE
E		ELECTRICAL CONDUIT
E		ELECTRICAL METER/BOX
G		GAS METER
		GAS SHUT OFF
		GAS VALVE
		WATER GATE VALVE
		WATER SHUT OFF VALVE
		HYDRANT
		FIRE CONNECTION
		TEE CONNECTION
		FITTINGS (11.25°, 22.5°, 45°)
		REDUCER
		THRUST BLOCK
		COUPLING
		CATCH BASIN (NEW)
		CATCH BASIN (REMOVE & REPLACE)
D		DRAIN MANHOLE
		ROOF DOWNSPOUT
S		SEWER MANHOLE
		SEWER CLEANOUT
T		TELEPHONE MANHOLE
T		TELEPHONE BOX
C		CABLE MANHOLE
		FIRE ALARM
		DECIDUOUS TREE
		CONIFEROUS SHRUB
		DECIDUOUS SHRUB
OHW		OVERHEAD UTILITIES
W	W	WATER LINE
S	S	SEWER LINE
D		DRAIN LINE
G		GAS LINE
UGE		UNDERGROUND ELECTRIC
UGT		UNDERGROUND COMMUNICATIONS
		CEMENT CONCRETE
		BRICK PAVERS
LA		LANDSCAPED AREA
LAM		MULCHED AREA

LEGEND (cont.):

EXISTING	PROPOSED	
LWN		GRASS COVER
X 25.4	25.4	SPOT GRADE
27.78		ELEVATION TO MATCH/NOT EXCEED
28	28	2' CONTOUR ELEVATION
30	30	10' CONTOUR ELEVATION
A		SIGN – SEE SIGNAGE TABLE
117-45		TAX SHEET – LOT NUMBER
		ROCK
		POLE
		SEWER LATERALS APPROXIMATE LOCATION
A		SEWER LATERALS ASSUMED DIRECTION OF EXIT
		WATER LATERALS APPROXIMATE LOCATION
D		DRAIN LATERALS APPROXIMATE LOCATION
		RAILROAD SIGNAL
		RAILROAD TRACKS
B-101		BORING
R		SUBSURFACE REFUSAL
N/R		SUBSURFACE NO REFUSAL
▽W		SUBSURFACE GROUNDWATER
		SILT BOOM
		SILT FENCE

ABBREVIATIONS

AC/ACP	ASPHALT CONCRETE PIPE
CB	CATCH BASIN
CI/CIP	CAST IRON PIPE
CL 52	CLASS 52 PIPE
CMP	CORRUGATED METAL PIPE
DI	DUCTILE IRON PIPE
DMH	DRAIN MANHOLE
GIS	CITY OF PORTSMOUTH GIS SYSTEM
HDPE	HIGH DENSITY POLYETHYLENE PIPE
I	INVERT ELEVATION
PE	POLYETHYLENE PIPE
PVC	POLYVINYL CHLORIDE PIPE
R	RIM ELEVATION
RCP	REINFORCED CONCRETE PIPE
RCRD	ROCKINGHAM COUNTY REGISTRY OF DEEDS
RCSC	ROCKINGHAM COUNTY SUPERIOR COURT
S	SLOPE (PIPE)
SMH	SEWER MANHOLE
UP	UTILITY POLE

SEWER TABLE

SMH# 5
RIM EL= 15.03
TOP OF TANK= 11.4±
(GREASE SEPERATOR)

SMH# 6
RIM EL= 15.02
TOP OF TANK= 11.4±
(GREASE SEPERATOR)

SMH# 1494
RIM EL= 10.62
CL FLOW= -1.16
(48" BRICK TUNNEL)

SMH# 1497
RIM EL= 11.04
(1) INV IN 10"____= 3.51
(2) INV IN 15"____= 2.98
(3) INV IN 8"____= 2.95
(4) INV OUT 15"VCP= 2.91

SMH# 1489
RIM EL= 9.39
(1) INV IN 12"____= 2.04

SMH# 1499
RIM EL= 15.61
(1) INV IN 48" BRICK= -1.84
(2) INV IN ____= -0.99
(3) INV OUT 48" BRICK= -1.94
(48" BRICK TUNNEL)

SMH# 1500
NOT FIELD OBSERVED
(STRUCTURE & LINE ABANDONED
PER PORTSMOUTH DPW)

SMH# 1501
RIM EL= 13.38
(1) INV IN 21"?____= -0.57
(2) INV OUT 24"____= -0.67

SMH# 1503
RIM EL= 15.13
(1) INV IN ____= 0.53
(2) INV OUT ____= ?

SMH# 1519
RIM EL= 13.30
(NO INVERT DATA)

SMH# 1570
RIM EL= 17.30
(1) INV IN 48" BRICK=
(48" BRICK TUNNEL)

SMH# 2746
RIM EL= 14.67
(1) INV IN ____= 5.4±
(2) INV IN ____= 5.3±
(3) INV OUT ____= 5.3±
(STRUCTURE INACTIVE)
(NO FLOW OBSERVED)

DRAIN TABLE

CB# 1352
RIM EL= 12.85
(1) INV IN 12"HDPE= 9.60
(2) INV OUT 12"HDPE= 9.50

CB# 3743
RIM EL= 12.83
(1) INV OUT 12"RCP= 9.58

CB# 3750
RIM EL= 10.91
(1) INV OUT 12"RCP= 7.39

CB# 3761
RIM EL= 10.52
(1) INV OUT 12"RCP= 7.03

CB# 3771
RIM EL= 15.14
(1) 6"PVC (PLUGGED)
(2) INV IN 6"PVC= 12.85
(3) INV OUT 12"RCP= 12.52

CB# 3772
RIM EL= 16.01
(1) INV OUT 12"RCP= 12.08

CB# 3773
RIM EL= 13.64
(1) INVERT INACCESSIBLE

CB# 3774
RIM EL= 13.25
(1) INV OUT 12"RCP= 8.60

CB# 3775
RIM EL= 12.97
(1) INV OUT 12"RCP= 9.87

CB# 3776
RIM EL= 12.93
(1) INV OUT 12"RCP= 8.25

CB# 3777
RIM EL= 12.94
(1) INV OUT 12"RCP= 8.64

CB# 3778
RIM EL= 14.59
(1) INV OUT 12"RCP= 11.09

CB# 3779
RIM EL= 14.51
(1) INV OUT 12"RCP= 11.20

CB# 25172
RIM EL= 15.28
(1) INV OUT 18"HDPE= 10.98

DMH# 6
RIM EL= 13.65
(1) INV IN 18"RCP= 4.25
(2) INV IN 12"HDPE= 5.40
(3) INV OUT 18"RCP= 4.33

DMH# 7
RIM EL= 14.29
(1) INV IN 6"PVC= 6.48
TOP OF CONCRETE WEIR= 9.96
(2) INV OUT 12"HDPE= 6.30

DMH# 8
RIM EL= 13.58
(1) INV IN 6"PVC= 9.83
TOP OF CONCRETE WEIR= 11.30
(2) INV OUT 12"HDPE= 9.68

DMH# 4979 (4'X6' VAULT)
RIM EL= 10.44
CL FLOW 48"RCP= *1.03
*RECORD GIS VALUE

DMH# 4980
RIM EL= 10.58
(1) INV IN 18"RCP= 3.03
(2) NO INVERT DATA
(3) INV OUT ____= 1.46

DMH# 4984
RIM EL= 9.40
(1) INV IN 36"RCP= 4.15

DMH# 5205
RIM EL= 15.81
(1) INV IN 12"RCP= 4.91
(2) INV IN 12"RCP= 12.26
(3) INV IN 18"HDPE= 8.71
(4) INV IN 12"RCP= 11.71
(5) INV OUT 18"RCP= 4.81

DMH# 5206
RIM EL= 13.32
(1) INV IN 12"RCP= 8.47
(2) INV IN 12"RCP= 9.29
(3) INV IN 12"RCP= 5.42
(4) INV OUT 12"RCP= 5.40

DMH# 5207
RIM EL= 13.01
(1) INV IN 12"RCP= 9.62
(2) INV IN 12"RCP= 5.56
(3) INV OUT 12"RCP= 5.56

DMH# 5208
RIM EL= 13.00
(1) INV IN 12"RCP= 7.95
(2) INV IN 12"RCP= 5.78
(3) INV IN 12"RCP= 7.90
(4) INV OUT 12"RCP= 5.77

DMH# 5209
RIM EL= 14.67
(1) INV IN 12"RCP= 10.39
(2) INV IN 12"RCP= 10.54
(3) INV OUT 12"RCP= 7.75

DMH# 5404
RIM EL= 13.35
(1) INV IN 12"RCP= 9.45
(2) INV IN 12"RCP= 9.28
(3) INV OUT 12"RCP= 7.12

DMH# 5438 (4'X6' VAULT)
RIM EL= 12.79
CL FLOW 48"RCP= 1.24

DMH# 5439 (4'X6' VAULT)
RIM EL= 7.21
CL FLOW 48"RCP= 0.76

DMH# 5677
RIM EL= 11.07
(1) INV IN 12"RCP= 6.97
(2) INV IN 10"RCP= 6.47
(3) INV IN 12"RCP= 6.98
(4) INV OUT 12"RCP= 6.37

DMH# 5678
RIM EL= 11.32
(1) INV IN 12"RCP= 6.07
(2) FLOW LINE 36"RCP= 4.60
(3) INV IN 12"RCP= 7.48
(4) INV IN 12"RCP= 6.45
(5) INV IN 12"RCP= 7.88

NO.	REVISIONS	APP'D

ISSUE FOR BIDDING Date – By –
CONSTRUCTION Date – By –
RECORD DRAWING Date – By –

Drawn/Chk. RMG
Designed PDM
Checked –
Approved –
Date 1/5/2022
Book No. –
Project No. 2542
Dwg. ID 2542_general_M
Scale –

FOR REVIEW
JAN. 2023
NOT FOR CONSTRUCTION

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

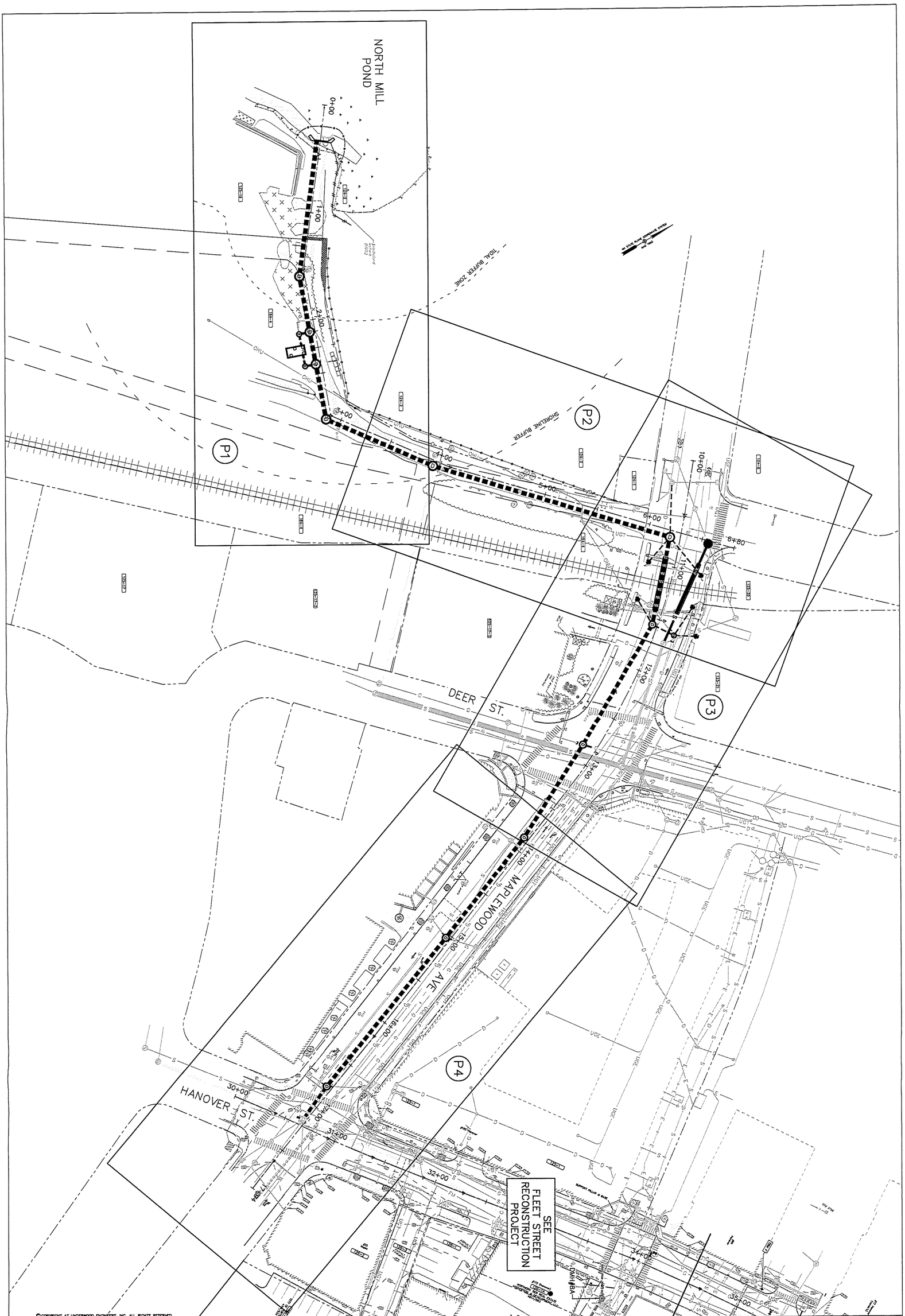
LEGEND & ABBREVIATIONS, EXISTING STRUCTURE TABLES

MAPLEWOOD AVE – DRAINAGE INTERCEPT

CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

DWG NO G1

SHEET 2 OF 14



DWG NO G2

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PLAN INDEX

MAPLEWOOD AVE – DRAINAGE INTERCEPT

CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

FOR REVIEW
JAN. 2023
NOT FOR CONSTRUCTION

Drawn/Chk	RMG
Designed	PDM
Checked	–
Approved	–
Date	1/26/2022
Book No.	–
Project No.	2542
Dwg. ID	2542_prbase_M
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Date	By
–	–
CONSTRUCTION	
Date	By
–	–
RECORD DRAWING	
Date	By
–	–

GENERAL NOTES:

1. THE LINE WORK REPRESENTING THE EXISTING UNOERGROUNO STRUCTURES AND PIPES IS BASEO ON A FIELO SURVEY, TIE SHEETS, ANO OTHER INFORMATION AVAILABLE, INCLUDEO IN THE PROJECT MANUAL APPENDIX. THE ENGINEER/SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGRDUNO UTILITIES SHOWN ON THE PLANS OR THE PROJECT MANUAL APPENDIX CDMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE ENGINEER/SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGRDUND UTILITIES SHDWN ARE IN THE EXACT LOCATION INOICATEO. IN ADDITION, CONTRACTOR SHALL ANTICIPATE THAT EVERY BUILDING OR UNIT WITHIN THE PROJECT AREA HAS A LEAST DNE GAS, SEWER ANO WATER SERVICE EXTENOING FRDM THE MAIN IN THE STREET TO THE BUILDING. THEREFORE THE CONTRACTOR SHOULO CONSIDER CONFLICTS, HAND EXCAVATION ANO POSSIBLE DELAYS IN CDNSTRUCTION, WHEN PREPARING THEIR BID.

2. THE CONTRACTOR IS RESPONSIBLE FOR THE LOCATION, PROTECTION AND REPAIR (IF DAMAGED) OF ALL EXISTING UTILITY MAINS AND SERVICES. THE LOCATIONS DF KNOWN SEWER, WATER AND GAS, MAINS, SHDWN ON THESE DRAWINGS ARE APPROXIMATE. HOWEVER, WATER ANO SEWER SERVICE LATERALS ARE NOT SHOWN AND THE CDNTRACTDR IS TO ANTICIPATE THEIR EXISTENCE. TIE SHEETS FOR THE KNOWN UTILITIES (INCLUDING GAS AND WATER) ARE PROVIDED IN THE APPENOIX OF THE PROJECT MANUAL. VIOEO LOGS AND SANITARY SURVEYS FOR SEWER LATERALS ARE AVAILABLE FROM THE ENGINEER UPON REQUEST. NOTIFY DIG-SAFE PRIOR TO CDMMENCING CONSTRUCTION (1-888-344-7233). CONTRACTOR SHALL GIVE ADEQUATE NOTICE TO THE ENGINEER DF CDNFLICTS OF PROPOSEO WORK WITH MARKED UTILITIES PRIOR TO CONSTRUCTING THE PRDPOSEO WORK.

3. ALL CONFLICTS WITH GAS LINES SHALL BE COORDINATED WITH UNITIL, SUBSIDIARY.

4. THE CONTRACTOR SHALL MAINTAIN SINGLE LANE TRAFFIC AND ACCESS TO BUSINESSES ANO PROPERTIES AT ALL TIMES DURING WORKING HOURS. TRAFFIC CONTROL WARNING DEVICES SHALL BE IN ACCORDANCE WITH MUTCD (LATEST EDITION) REQUIREMENTS ANO SECTION 0157D OF THE PROJECT MANUAL.

5. ALL STREET OPENINGS SHALL BE BACKFILLEO AT THE ENO OF EACH DAYS OPERATIONS TO ENSURE SAFE VEHICULAR AND PEOESTRIAN TRAFFIC. THE CONTRACTOR SHALL MAINTAIN SAFE PASSAGE FOR 2-LANES DF TRAFFIC AT THE ENO DF EACH WDRK DAY. DUST CONTROL OPERATIONS ARE TO BE CONTINUOUS THROUGHOUT CDNSTRUCTION AND IS INCIOENTAL TO THE WORK.

6. THE USE OF PLATES TO COVER OPEN EXCAVATIONS IN LIEU OF BACKFILLING WILL NDT BE PERMITTED UNLESS PRIOR APPROVAL HAS BEEN GRANTED BY THE OWNER.

7. A NPOES PERMIT FOR CONSTRUCTION ACTIVITIES IS REQUIREO FOR THIS PROJECT. THE CONTRACTOR IS REQUIRED TO PREPARE A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) ANO TO SUBMIT A NOTICE OF INTENT (NOI) TO THE EPA TO FULFILL PROJECT REQUIREMENTS. THE SWPPP MUST BE PREPARED IN ACCORDANCE WITH THE EPA'S REQUIREMENTS. NO WORK IS TO PRDCEED UNTIL THE SWPPP AND THE NOI IS SUBMITTED AND ACCEPTED BY THE OWNER. A COPY OF THE NOI, SWPPP REQUIREMENTS, AND EXAMPLE SWPPP ARE INCLUOEO IN THE PROJECT MANUAL APPENDIX.

B. THIS SET OF PLANS HAS BEEN CREATED TO BE USED IN CONJUNCTION WITH A TECHNICAL SPECIFICATION ENTITLED "PROJECT MANUAL, MAPLEWOOO AVENUE - DRAINAGE INTERCEPT, PDRTSMOUTH, NH".

9. THE CONTRACTOR SHALL BE RESPDNSIBLE FOR THE REMOVAL ANO OISPOSAL OF ALL SURPLUS EARTHEN MATERIALS, LEDGE, CURB, PIPE, AND SEWER OR DRAIN STRUCTURES EXCAVATEO OURING CONSTRUCTION, UNLESS MATERIALS ARE CLAIMEO BY THE OWNER OR OTHERWISE INOICATED IN THE PROJECT MANUAL OR THE DRAWINGS.

1D. THE CONTRACTOR SHALL BE RESPDNSIBLE FOR ALL PROPERTY RESTORATION BOTH PUBLIC ANO PRIVATE. UTILITIES DAMAGED AS A RESULT OF THE CDNTRACTORS DPERATIONS SHALL BE REPAIRED BY THE CDNTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

11. PAVING REPAIRS SHALL MAINTAIN EXISTING LINE ANO GRAOE UNLESS OTHERWISE INDICATED OR DIRECTED.

12. OVERHEAO WIRES AND WIRE DROPS TO BUILOINGS ARE NOT SHOWN IN ENTIRETY. THE CONTRACTOR SHALL ANTICIPATE THEIR EXISTENCE IN ALL OPERATIONS.

13. THE CDNTRACTOR SHALL BE RESPDNSIBLE FOR MAINTENANCE OF ROADWAY SIGNS. ANY SIGN DAMAGED DURING THE CDMPLETION OF WORK SHALL BE REPLACEO AT NO ADDITIONAL COST TO THE OWNER.

14. AREAS OUTSIDE THE LIMITS DF PRDPOSED WORK DISTURBED BY THE CDNTRACTOR'S OPERATIONS SHALL BE RESTDRED BY THE CONTRACTOR TO THEIR DRIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.

15. CONTRACTOR SHALL NOT USE ANY ADJACENT ORIVEWAYS OR PARKING LOTS WITHOUT WRITTEN PERMISSION FDR PROPERTY OWNER. OAMAGE RESULTING FRDM CDNSTRUCTION LOADS OUTSIDE PRDPDSED LIMITS OF WORK SHALL BE REPAIREO BY THE CONTRACTOR AT NO ADDITIONAL COST TO OWNER.

16. EXISTING PROPERTY LINE MONUMENTATION DISTURBED DURING CDNSTRUCTION SHALL BE SET OR RESET BY A LICENSED LAND SURVEYOR (LLS), SUBSIOIARY.

REFERENCE PLANS:

1. PORTWALK SITE PLAN, PREPARED BY APPLEOORE ENGINEERS INC., DATE/LAST REVISED 3/5/201D.
2. 195 HANOVER STREET AS BUILT, PREPARED BY S.U.R., OATE/LAST REVISED 7/21/2015.
3. PORTWALK AS BUILT, PREPARED BY MSC, DATE/LAST REVISEO 9/15/2015.

SURVEY NOTES:

1. THIS PLAN IS BASED ON A FIELO SURVEY BY JAMES VERRA AND ASSOCIATES, INC. 12/2019-6/2022. DN SITE CONTROL ESTABLISHED USING SURVEY GRADE GPS UNITS.
HORIZONTAL DATUM: NAD 1983 (1986 AOJUSTMENT)
PRIMARY BM: NHDDT 379-D15D (PORTSMOUTH TRAFFIC CIRCLE)
VERTICAL OATUM: NAVD 1988
PRIMARY BM: CITY CONTROL POINT "ALBA"

2. CONTRACTOR TO VERIFY SITE BENCHMARKS BY LEVELING BETWEEN 2 BENCHMARKS PRIOR TO THE SETTING OR ESTABLISHMENT OF ANY GRADES/ELEVATIONS. DISCREPANCIES ARE TO BE REPORTED TO JAMES VERRA ANO ASSOC., INC.

3. THE LOCATION DF ALL UNOERGROUND UTILITIES SHOWN HEREON ARE APPROXIMATE ANO ARE BASED UPON THE FIELD LDCATION OF ALL VISIBLE STRUCTURES (IE CATCH BASINS, MANHOLES, WATER GATES ETC.) AND INFORMATION COMPILED FROM PLANS PRDVIDED BY UTILITY COMPANIES AND GDVERNMENTAL AGENCIES. ALL CONTRACTDRS SHOULD NOTIFY, IN WRITING, SAID AGENCIES PRIOR TO ANY EXCAVATIDN WORK AND CALL DIG-SAFE @ 1-888-DIG-SAFE.

NOTE: VERY LITTLE UNDERGROUND UTILITY MARKING WAS COMPLETEO PRIOR TO CONDUCTING THE FIELD SURVEY.

SANITARY SEWER NOTES:

1. ALL NEW SEWER SERVICE LATERALS SHALL BE 6" OIAMETER, UNLESS OIRECTED OTHERWISE. PRIOR TO CONSTRUCTION OF NEW SEWER MAINS IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY EXACT SEWER SERVICE LOCATIONS, SIZES, AND ELEVATIDNS, BY VIOEO INSPECTION WITH TRANSMITTER AND LOCATOR, PAY ITEM 1.1B. SEWER LATERALS SHALL BE INSTALLED TO THE PROPERTY LINE (UNLESS SHOWN DTHERWISE ON THE DRAWINGS). ANY SERVICE WORK EXTENOING PAST THE PRDPERTY LINE SHALL BE APPROVEO BY THE PROPERTY OWNER, THE CITY, AND THE ENGINEER PRIOR TO CDNSTRUCTION. MIN. SLOPE OF SERVICE PIPE = SHALL BE 0.02 FT/FT.

2. WORK ON PRIVATE PROPERTY SHALL BE COORDINATED WITH THE CITY AND THE PROPERTY OWNER.

3. SEWER CDNSTRUCTION SHALL PRDCEEO FROM THE LOWEST POINT UPWARO UNLESS OTHERWISE APPRDVEO BY THE ENGINEER.

4. SMH RIMS SHALL BE SET 1/8" TO 1/4" BELOW GRADE WHEN IN PAVEMENT OR GRAVEL ROADS (I.E., PLDWED AREAS). RIMS SHALL BE SET AT GRAOE IN NON-PLOWED AREAS UNLESS DTHERWISE INDICATED.

5. ALL EXISTING SEWER STRUCTURES (PIPE ANO MANHOLES) TO BE ABANDONEO SHALL BE PREPAREO AS FOLLOWS:

MANHOLES - SHALL BE REMOVED TO A MINIMUM OEPTH OF 4' BELOW GRADE. THE BASE OF STRUCTURES SHALL BE FILLED WITH FLOWEILL OR GRAVEL, COMPACTED IN 8" LIFTS, SUBSIOIARY, UNLESS OTHERWISE PAIO FOR.
PIPE - ALL PIPE TO BE ABANOONEO IN PLACE ANO SHALL BE CUT & PLUGGED AT BOTH ENDS, SUBSIDIARY. PIPES EXCEEDING 12-INCH DIAMETER, TO BE ABANDONED, WILL BE FILLEO WITH FLOWABLE FILL (WHERE OIRECTEO BY ENGINEER) ANO PAIO FOR UNOER ITEM 1.11.

6. IN ORDER OF PREFERENCE SEWER SERVICE CLEANOUTS SHALL BE PLACED:
1) BEHIND CDNCRETE SIDEWALKS.
2) IN BRICK STRIP.
3) IN CDNCRETE SIDEWALKS.

7. ALL SEWER PIPE SHALL BE SDR 35 PVC UNLESS SHOWN OTHERWISE ON THE DRAWINGS.

DRAINAGE SYSTEM NOTES

1. IN GENERAL, NEW CB'S WILL BE SET AT THE LOCATIONS SHOWN. EXISTING CB STRUCTURES ARE TO BE REMOVED. (SUBSIDIARY). ALL FRAMES ANO GRATES SHALL BE OELIVERED TO THE PORTSMOUTH DPW (SUBSIOIARY). ALL NEW CATCH BASIN RIMS SHALL BE SET 1/2" BELOW FINISH GRAOE ELEVATION. REMOVAL OF CB'S OUTSIDE NORMAL EXCAVATION LIMITS WILL BE PAIO AS ITEM 202.5.

2. MANHOLE AND CATCH BASIN BASES, RISERS, CONE SECTIONS, AND SLAB TOPS SHALL BE DESIGNED SUCH THAT THERE EXISTS A MINIMUM 6" PERIPHERY OF MONOLITHIC SOLID WALL SEPARATION BETWEEN OPENINGS (CORINGS ANO SECTIONS).

3. ALL CATCH BASINS, DRAIN MANHDLES, & ORAIN LINES SHALL BE CLEANED PRIDR TO ACCEPTANCE.

4. ALL REQUIRED STORM DRAIN SERVICES MAY NOT BE SHOWN ON THE PLANS, AND SHALL BE PRDVIDED WHERE DIRECTED BY THE ENGINEER.

5. OMH RIMS SHALL BE SET 1/8" TO 1/4" BELOW GRAOE WHEN IN PAVEMENT OR GRAVEL ROADS (I.E., PLOWED AREAS). RIMS SHALL BE SET AT GRAOE IN NON-PLOWED AREAS UNLESS OTHERWISE INOICATED.

6. LOCATIONS OF NEW ORAIN SERVICES ARE BASEO ON EXISTING ROOF LEAOERS OBSERVED. ACTUAL LOCATION AND CDNFIGURATION MAY CHANGE BASED ON FINAL REVIEW WITH PRDPERTY OWNER DURING CDNSTRUCTION.

WATER DISTRIBUTION SYSTEM NOTES:

1. THE CONTRACTOR SHALL MAINTAIN AND PROTECT THE EXISTING WATER SYSTEM AT ALL TIMES. LOCATE ANO IDENTIFY ALL EXISTING MAINS ANO SERVICE LDCATIDNS IN AOVANCE.

2. WATER BOXES, OR OTHER CASTINGS, DISTURBED OR RELOCATED BY CDNSTRUCTION ACTIVITIES SHALL BE ADJUSTED TO EXISTING LINE AND GRADE, UNLESS SHOWN OTHERWISE ON THESE PLANS OR AS DIRECTED BY THE ENGINEER (SUBSIDIARY).

CONSTRUCTION SEQUENCE:

PERFDRM WDRK IN ACCORDANCE WITH APPROVED SCHEDULE, GENERALLY ACCEPTED INDUSTRY ORDER OF OPERATIONS UNLESS OTHERWISE APPROVED IN WRITING BY THE ENGINEER.

1. PRIOR TO THE START DF CONSTRUCTION PROVIDE A WRITTEN NARRATIVE OF THE CONSTRUCTION METHODS TO BE USEO ANO INCLUDE A PRELIMINARY SCHEDULE DF KEY MILESTONES, INCLUDING COORDINATION OF UTILITY PIPE INSTALLATIONS ANO COORDINATION WITH GAS COMPANY, ANO OTHER UTILITIES AS APPLICABLE.

2. REFER TO SECTION D101D (SUMMARY OF WDRK) ANO SECTION POW (PRDSECUTION OF WORK) FOR ADDITIONAL SCHEDULE ANO PROJECT REQUIREMENTS.

3. INSTITUTE EXPLORATORY EXCAVATION PROGRAM WITH ENGINEER TO IDENTIFY POTENTIAL CONFLICTS AT UTILITY CROSSINGS. EXPLORATORY EXCAVATION COMPLETED WITHOUT PRIOR APPROVAL FROM THE ENGINEER WILL BE AT NO ADDITIONAL COST TO THE OWNER.

4. INSTALL ANO MAINTAIN TEMPORARY ANO PERMANENT EROSION CONTROL DEVICES THROUGHOUT THE CONSTRUCTION PERIOD (INCLUDING WINTER SHUT DOWN PERIODS AS REQUIRED) AS SHOWN IN THE APPROVED SWPPP, DN THE DRAWINGS, DR AS APPROVED BY THE ENGINEER.

5. PRE-DRAIN AND/OR OEWATER EXCAVATIONS BEFORE INSTALLING PIPE. INSTALL PIPE DN STABLE BEDDING (IN DRY CONDITIONS) TO THE ELEVATIONS SHOWN ON DRAWINGS.

6. DISPOSE DF SURPLUS ANO UNSUITABLE MATERIALS AS THE WORK PROGRESSES. STOCKPILE DF MATERIALS WILL ONLY BE PERMITTED IN AREAS APPROVED BY THE CITY DF PDRTSMOUTH, DPW.

7. INSTALL CRUSHED GRAVEL OR RECLAIMED BASE AS SHOWN ON DRAWINGS, IN TRENCH AT ENO OF EACH DAY. VISUAL INSPECTION, ALIGNMENT TESTS AND DEFLECTION TESTS OF PIPES SHALL BE COMPLETED NO LESS THAN THIRTY (30) DAYS FOLLOWING INSTALLATION. CONSTRUCT PAVEMENT REPAIRS AS SOON AS PRACTICAL, FOLLOWING UTILITY INSTALLATIONS AND TESTING.

B. IMMEDIATELY STABILIZE DISTURBED AREAS AFTER PIPE INSTALLATION ANO REESTABLISH TEMPORARY EROSION CONTROL DEVICES MOVED DURING CONSTRUCTIDN.

9. FINISH GRADING, LOAM AND SEED DISTURBED AREAS ANO BACK UP PAVEMENT WITH GRAVEL IMMEDIATELY FOLLOWING PAVEMENT REPAIRS.

1D. REMOVE ALL TEMPORARY EROSION CONTROL DEVICES AS SOON AS VEGETATIDN IS ESTABLISHED ANO AREAS ARE STABILIZED.

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Checked -
Approved -
Date 1/5/2022
Book No. -
Project No. 2542
Dwg. ID 2542_general_M
Scale -

FOR REVIEW
JAN. 2023
NOT FOR CONSTRUCTION

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

UTILITY PLAN NOTES

MAPLEWOOD AVE - DRAINAGE INTERCEPT

CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

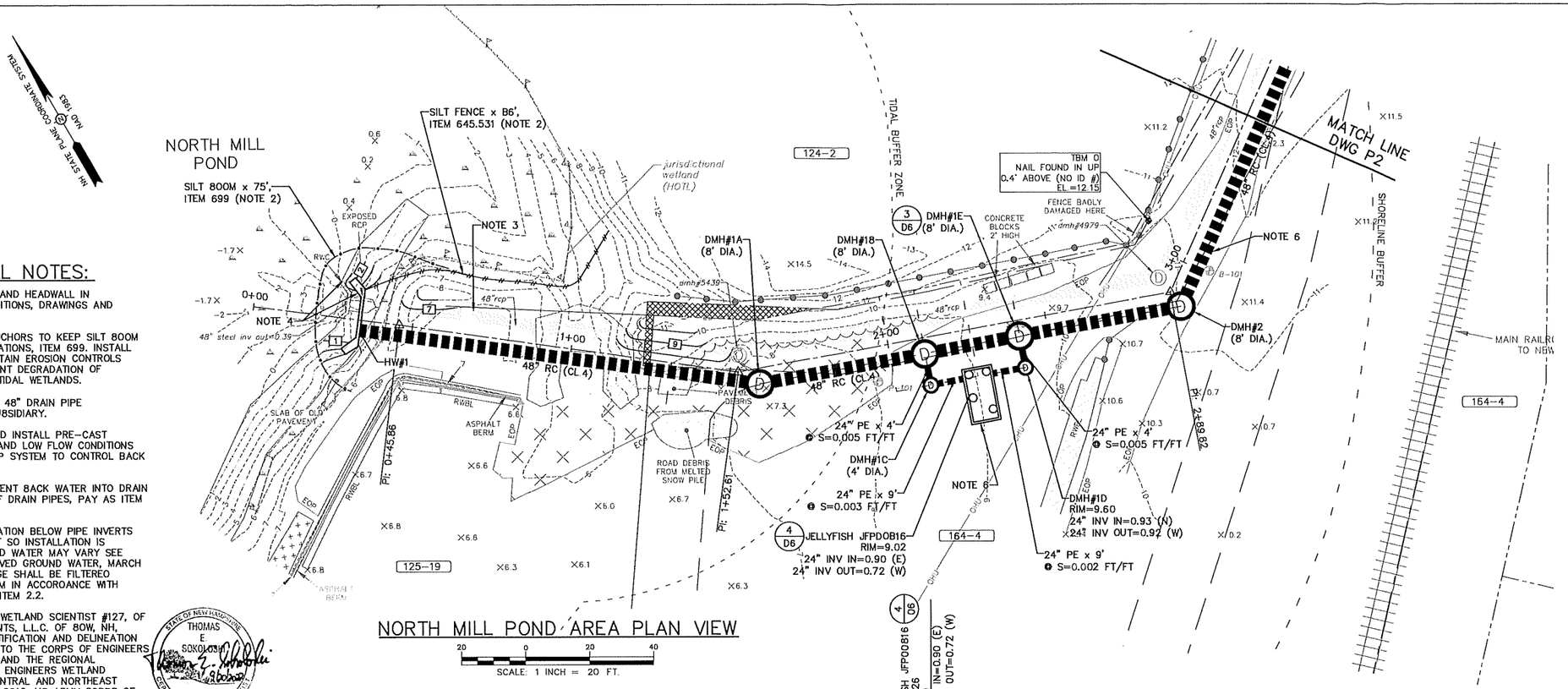
DWG NO G3

SHEET 4 OF 14

DRAINAGE OUTFALL NOTES:

1. CONSTRUCT ORAINAGE OUTFALL AND HEADWALL IN ACCORDANCE WITH PERMIT CONDITIONS, DRAWINGS AND SPECIFICATIONS.
2. INSTALL SILT 8OOM ANO SET ANCHORS TO KEEP SILT 8OOM IN PLACE DURING TIDAL FLUCTUATIONS, ITEM 699. INSTALL SILT FENCE, ITEM 645.531. MAINTAIN EROSION CONTROLS THROUGH CONSTRUCTION, PREVENT DEGRADATION OF DOWNSTREAM PROPERTIES AND TIDAL WETLANDS.
3. MAINTAIN FLOW IN THE EXISTING 48" DRAIN PIPE THROUGHOUT CONSTRUCTION, SUBSIDIARY.
4. REMOVE EXISTING HEAOWALL AND INSTALL PRE-CAST HEAOWALL DURING LOW WATER AND LOW FLOW CONDITIONS OR INSTALL SHEETING AND PUMP SYSTEM TO CONTROL BACK WATER, PAY AS ITEM 2.5.
5. INSTALL TIDE VALVES AND PREVENT 8ACK WATER INTO DRAIN PIPES DURING CONSTRUCTION OF DRAIN PIPES, PAY AS ITEM 2.6.
6. MAINTAIN GROUNO WATER ELEVATION BELOW PIPE INVERTS AND 8OTTOM OF JELLYFISH UNIT SO INSTALLATION IS COMPLETED IN THE DRY. GROUND WATER MAY VARY SEE B-101, APPENDIX A FOR OBSERVED GROUND WATER, MARCH 2022. GROUND WATER DISCHARGE SHALL BE FILTERED THROUGH A CONTROLLED SYSTEM IN ACCOROANCE WITH CONTRACTORS SWPPP, PAY AS ITEM 2.2.
7. THOMAS SOKOLOSKI, CERTIFIED WETLAND SCIENTIST #127, OF TES ENVIRONMENTAL CONSULTANTS, L.L.C. OF 8OW, NH, PERFORMED THE WETLAND IDENTIFICATION AND DELINEATION ON JUNE 28, 2022 ACCORDING TO THE 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, US ARMY CORPS OF ENGINEERS.

STATE OF NEW HAMPSHIRE
THOMAS E SOKOLOSKI
No. 127
CERTIFIED WETLAND SCIENTIST

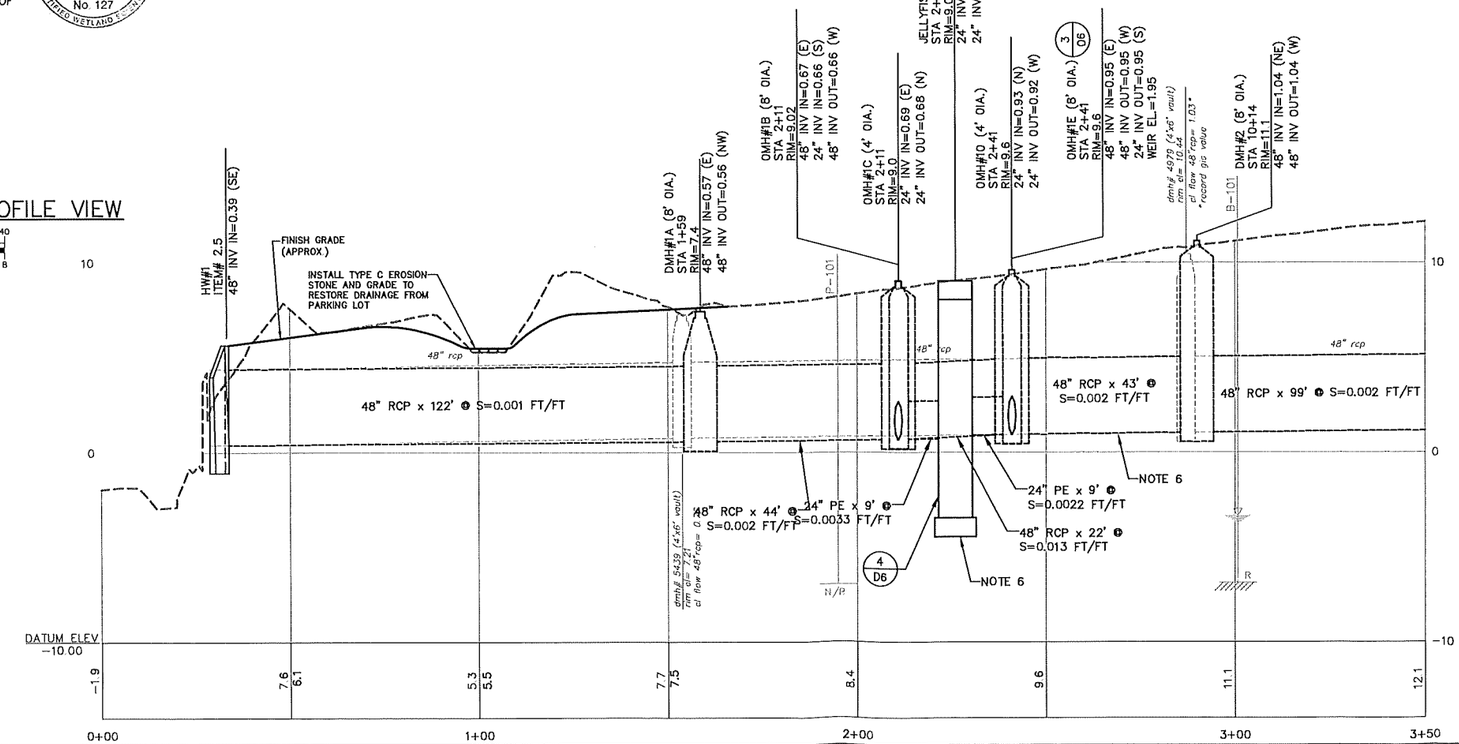


NORTH MILL POND AREA PLAN VIEW

SCALE: 1 INCH = 20 FT.

NORTH MILL POIND AREA PROFILE VIEW

HORIZ: 1 INCH = 20 FT.
VERT: 1 INCH = 4 FT.



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NORTH MILL POND DRAINAGE OUTFALL
PIPE PLAN AND PROFILES

MAPLEWOOD AVE - DRAINAGE INTERCEPT

CITY OF PORTSMOUTH
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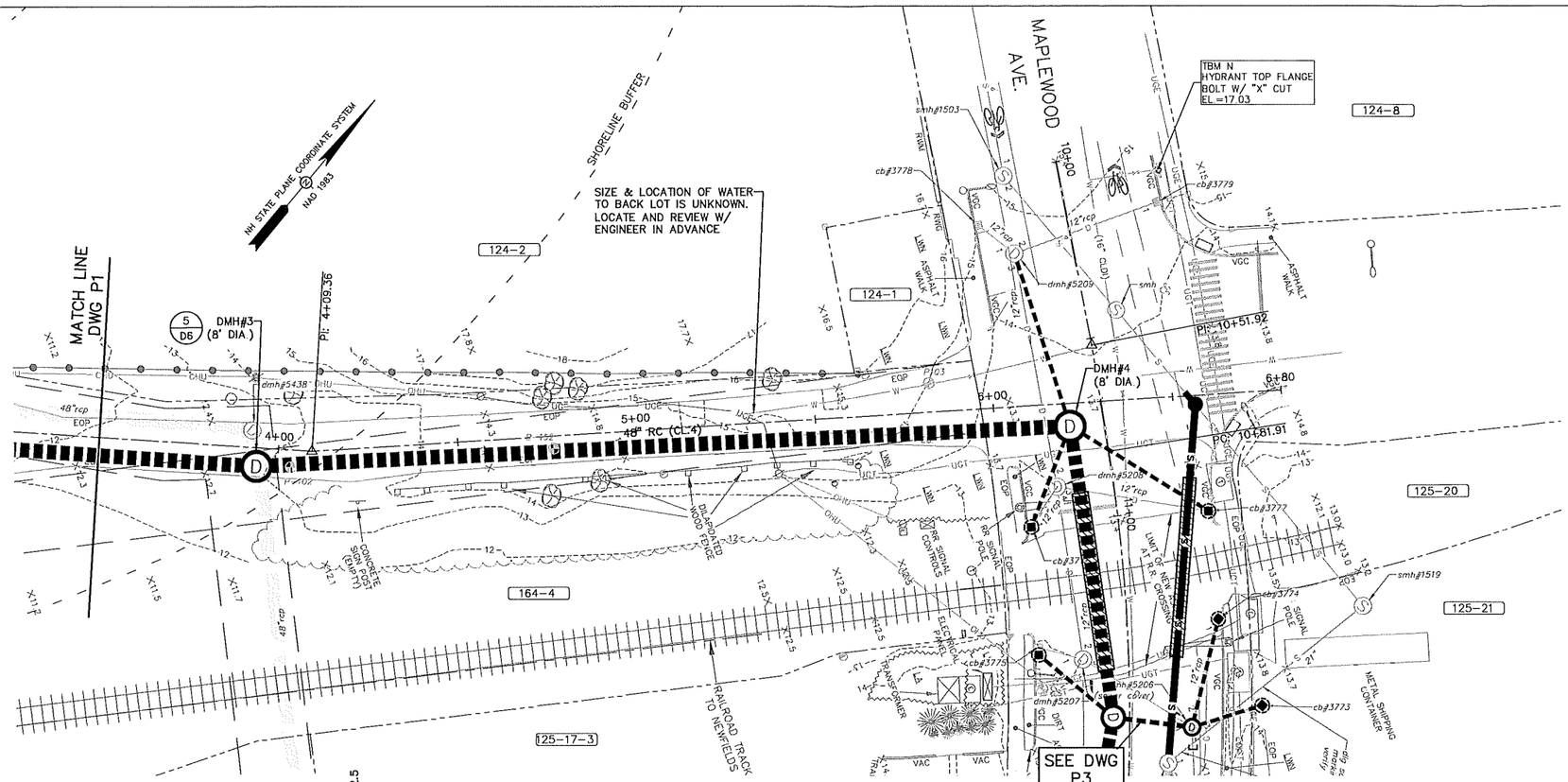
SHEET 5 OF 14



NORTH MILL POND AREA PLAN VIEW

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NORTH MILL POND AREA PROFILE VIEW

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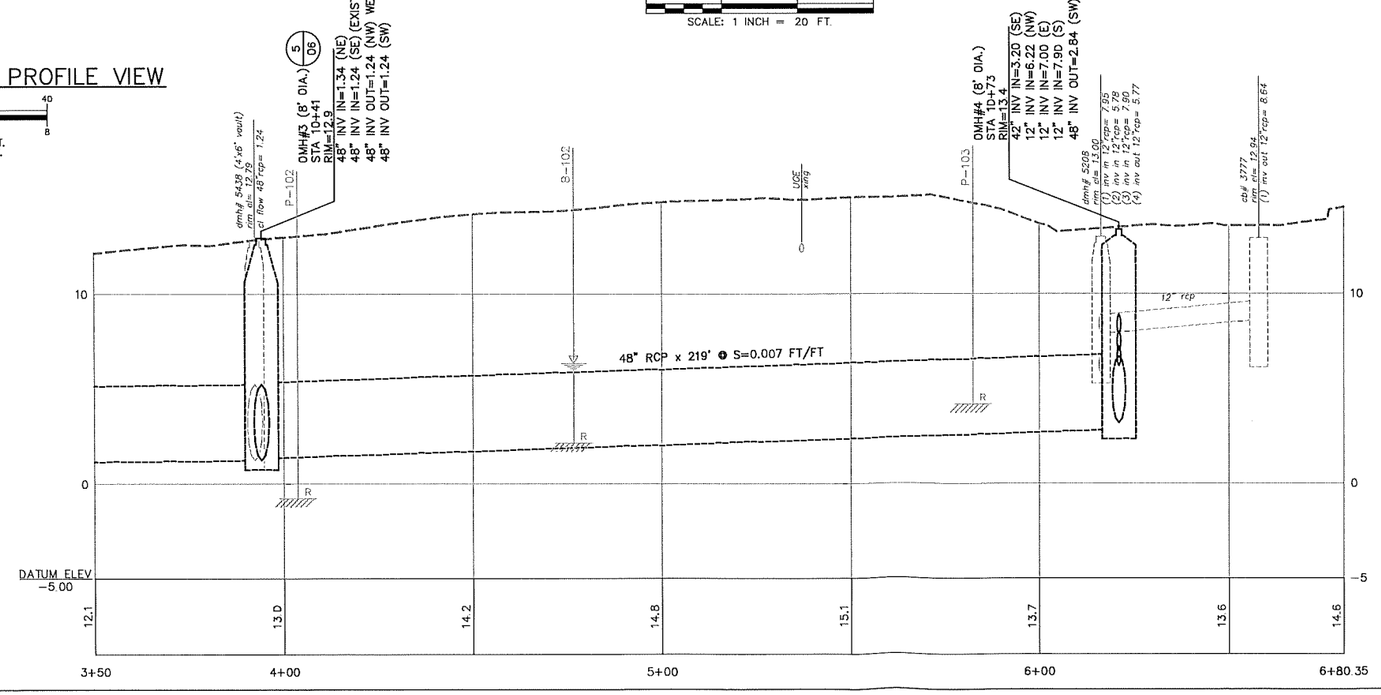
VERT: 1 INCH = 4 FT.



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NORTH MILL POND AREA
PIPE PLAN AND PROFILES

MAPLEWOOD AVE – DRAINAGE INTERCEPT

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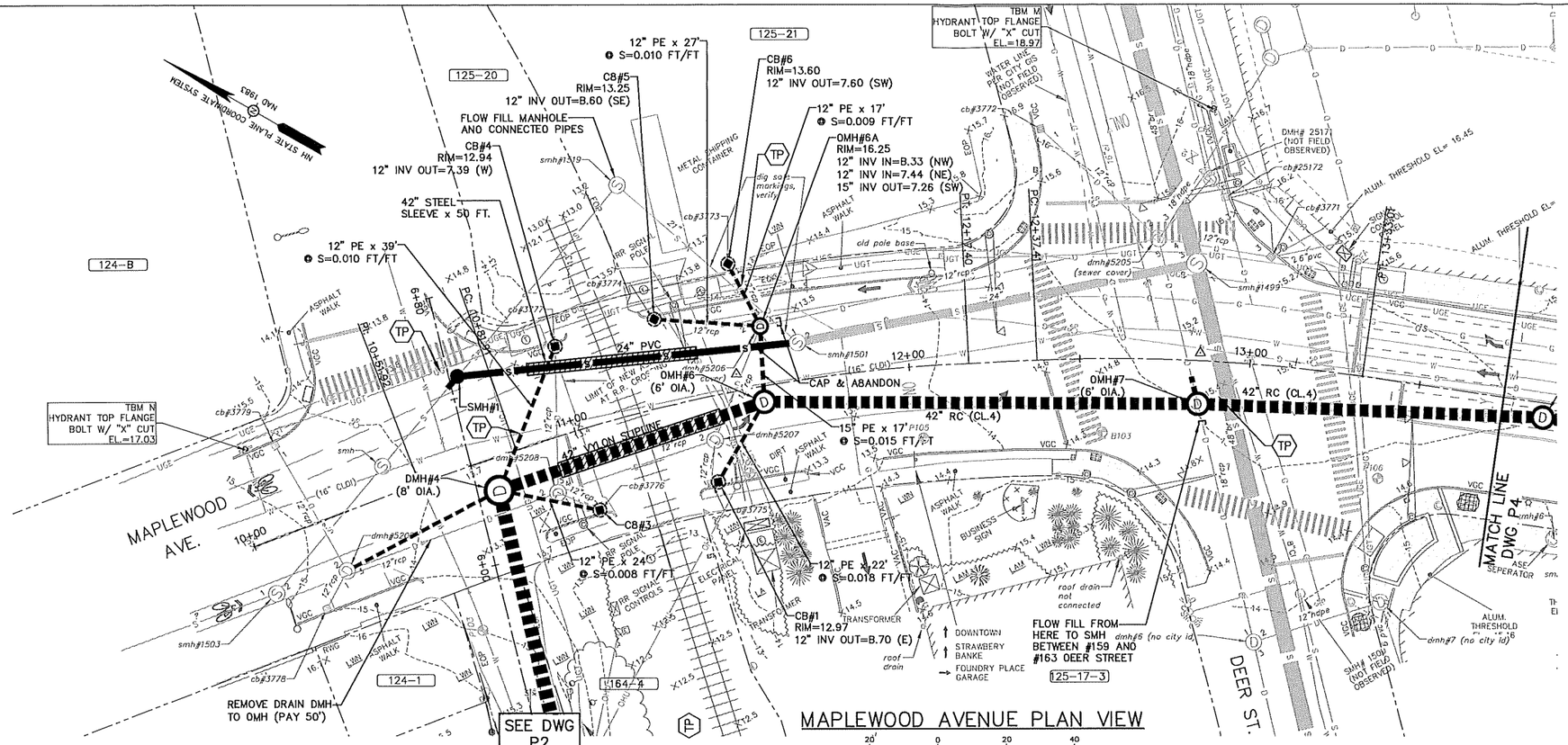
DWG NO P2

SHEET 6 OF 14



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MAPLEWOOD AVENUE
PIPE PLAN AND PROFILES

MAPLEWOOD AVE – DRAINAGE INTERCEPT

CITY OF PORTSMOUTH
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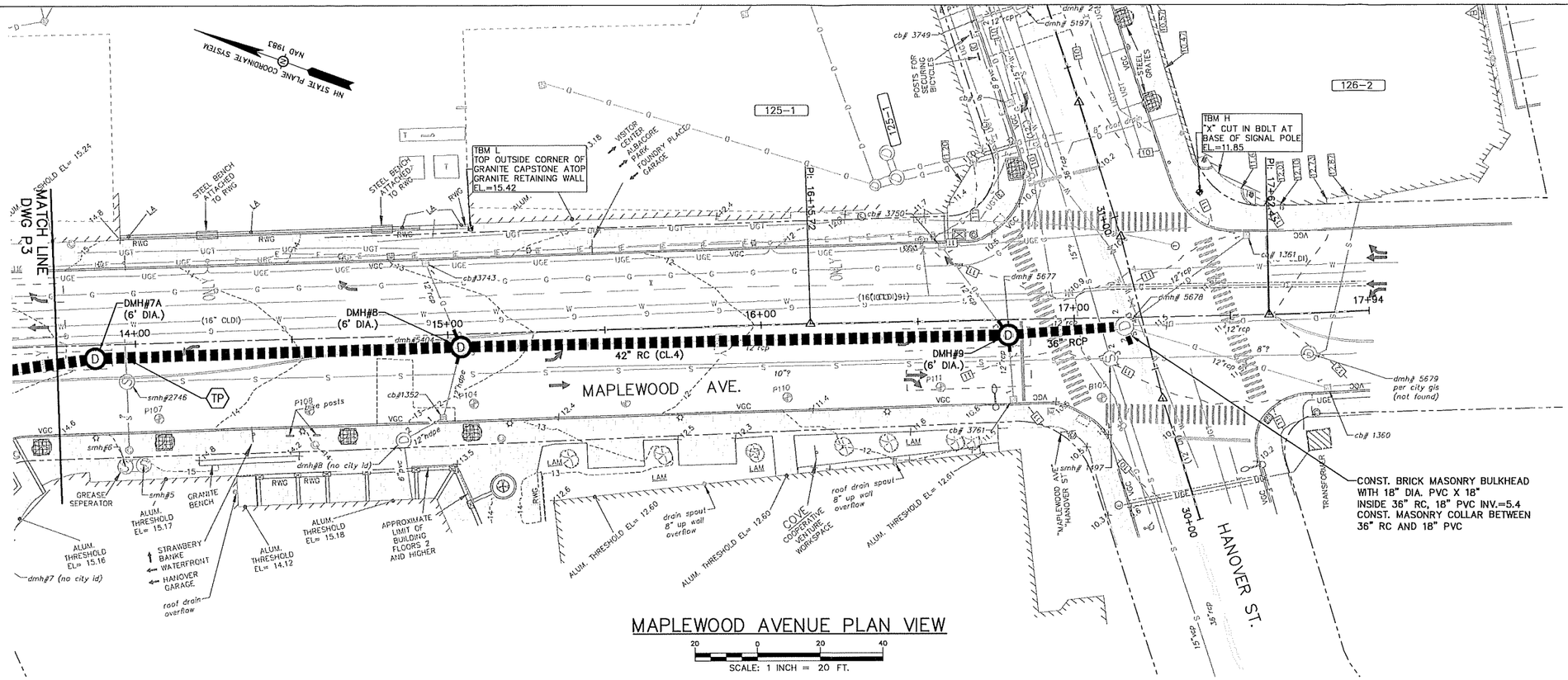
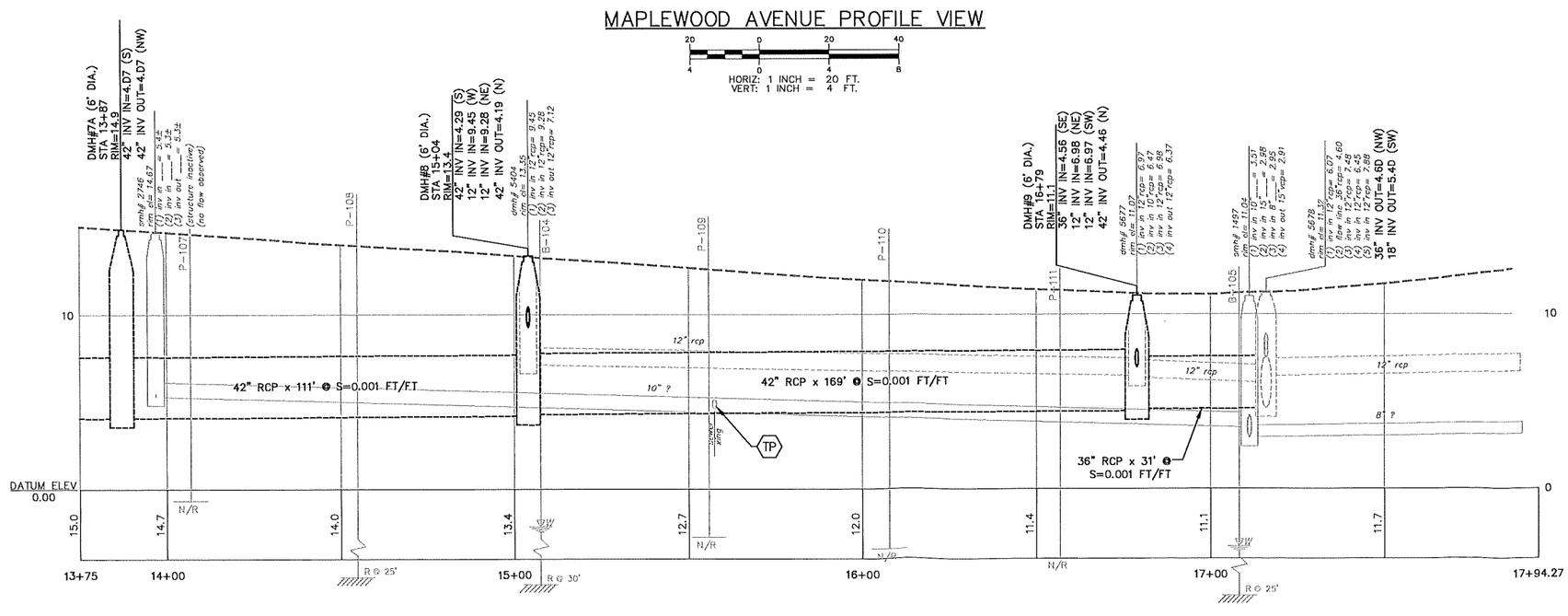
OWG NO P3

SHEET 7 OF 14



MAPLEWOOD AVENUE PLAN VIEW

SCALE: 1 INCH = 20 FT.



MAPLEWOOD AVENUE PROFILE VIEW

HORIZ: 1 INCH = 20 FT.
VERT: 1 INCH = 4 FT.

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MAPLEWOOD AVENUE PIPE PLAN AND PROFILES

MAPLEWOOD AVE – DRAINAGE INTERCEPT

CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

OWG NO	SHEET
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STANDARD MANHOLE NOTES:

1. GENERAL: SEWER MANHOLES, INCLUDING ALL COMPONENT PARTS, SHALL BE ASSEMBLED OF PRECAST SECTIONS, WITH STEEL REINFORCEMENT. IN ANY APPROVED MANHOLE, THE COMPLETE STRUCTURE SHALL BE OF SUCH MATERIAL AND QUALITY AS TO WITHSTAND LOADS OF 8 TONS (H20 LOADING) WITHOUT FAILURE, AND TO PREVENT LEAKAGE IN EXCESS OF ONE GALLON PER DAY PER VERTICAL FOOT OF MANHOLE, CONTINUOUSLY FOR THE LIFE OF THE STRUCTURE. A PERIOD GENERALLY IN EXCESS OF 25 YEARS IS TO BE UNDERSTOOD IN BOTH CASES.

2. BARRELS AND CONE SECTIONS: SHALL BE PRECAST REINFORCED CONCRETE.

3. PRECAST CONCRETE: BARREL SECTIONS, CONES, AND BASES SHALL CONFORM TO ASTM C47B.

4. LEAKAGE TEST: SHALL BE PERFORMED IN ACCORDANCE WITH THE SPECIFICATIONS. INVERT AND SHELF TO BE PRIOR TO BACKFILL PLACED AFTER TESTING.

5. INVERTS AND SHELVES: MANHOLES SHALL HAVE A BRICK PAVED SHELF AND INVERT, CONSTRUCTED TO CONFORM TO THE SIZE OF PIPE AND FLOW. CARE SHALL BE TAKEN TO INSURE THAT THE BRICK INVERT IS A SMOOTH CONTINUATION OF THE SEWER INVERT. INVERT BRICKS SHALL BE LAID ON EDGE. AT CHANGES IN DIRECTION, THE INVERTS SHALL BE LAID OUT IN CURVES OF THE LONGEST POSSIBLE TANGENT TO THE CENTER LINE OF THE SEWER PIPES. SHELVES SHALL BE CONSTRUCTED TO AN ELEVATION OF 1" ABOVE THE HIGHEST PIPE CROWN AND SLOPE TO DRAIN TOWARD THE FLOWING THROUGH CHANNEL. UNDERLAYMENT OF INVERT AND SHELF SHALL CONSIST OF BRICK MASONRY.

6. FRAMES AND COVERS: MANHOLE FRAMES AND COVERS SHALL BE CITY OF PORTSMOUTH STANDARD AND SHALL BE PICKED UP BY THE CONTRACTOR AT PORTSMOUTH DPW.

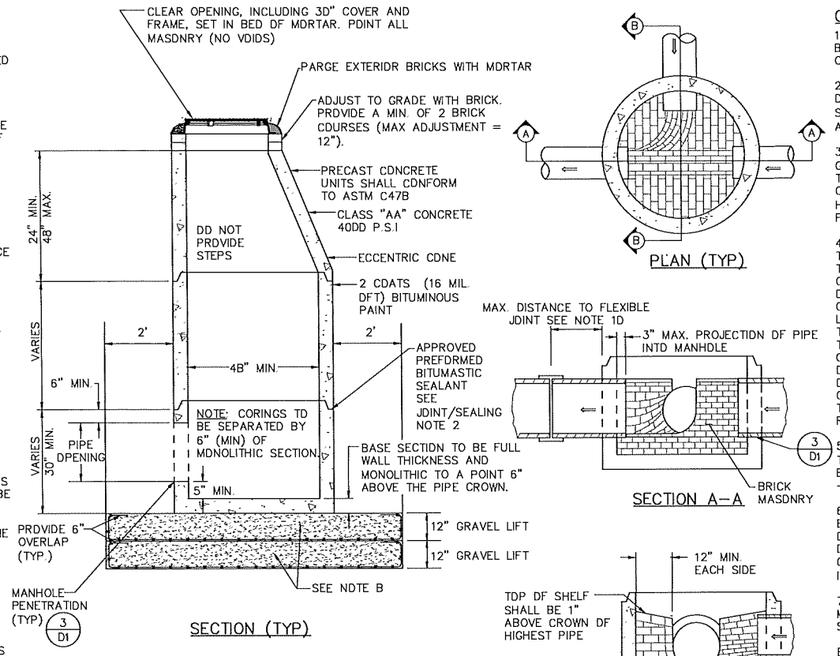
7. BEDDING: SCREENED GRAVEL AND/OR CRUSHED STONE FREE FROM CLAY, LOAM, ORGANIC MATTER AND MEETING ASTM C33. STONE SIZE NO. 67.
   - 1D0% PASSING 1 INCH SCREEN
   - 9D–1D0% PASSING 3/4 INCH SCREEN
   - 2D–55% PASSING 3/8 INCH SCREEN
   - 0–10% PASSING #4 SIEVE
   - 0–5% PASSING #8 SIEVE

8. WHERE THE MATERIAL BELOW MANHOLE STRUCTURE IS SOFT OR YIELDING, AND WHERE DIRECTED BY THE ENGINEER, INSTALL DOUBLE LAYER OF GEOGRID (TENSAR TX16D OR EQUAL). PAY AS ITEM 1.8B (LFx2).

9. SHALLOW MANHOLE: IN LIEU OF A CONE SECTION, WHEN MANHOLE IS LESS THAN 6 FEET, A REINFORCED CONCRETE SLAB COVER HAVING AN ECCENTRIC ENTRANCE AND CAPABLE OF SUPPORTING H–20 LOADS MAY BE USED.

10. FLEXIBLE JOINT: A FLEXIBLE JOINT SHALL BE PROVIDED WITHIN THE FOLLOWING DISTANCES:
RCP AND CI PIPE – ALL SIZES – 4B"
AC AND VC PIPE – UP THROUGH 12" DIA. – 1B"
AC AND VC PIPE – LARGER THAN 12" DIA. – 36"
DI PIPE – NONE REQUIRED
PVC – UP THROUGH 15" DIA. – NONE REQUIRED
PVC – LARGER THAN 15" DIA. – 4B"/6D"
ABS (ASTM D26BD) – ALL SIZES – SAME AS VC ABOVE.

11. SPECIFICATIONS: ADDITIONAL CONSTRUCTION SPECIFICATIONS ARE INCLUDED IN THE CONTRACT DOCUMENTS. THESE STANDARD MANHOLE DRAWINGS ARE NOT COMPLETE WITHOUT THESE SPECIFICATIONS.



1/D1 SEWER MANHOLE
NOT TO SCALE

GRAVITY SEWER TRENCH NOTES:

1. ORDERED EXCAVATION OF UNSUITABLE MATERIAL BELOW GRADE: BACKFILL AS STATED IN THE TECHNICAL SPECIFICATIONS OR AS SHOWN ON THE DRAWINGS.

2. BEDDING: SEE NOTE 7 OF STANDARD MANHOLE NOTES. WHERE ORDERED BY THE ENGINEER TO STABILIZE THE TRENCH BASE, GRADED SCREENED GRAVEL OR CRUSHED STONE 1/2 INCH TO 1–1/2 INCH AND/OR THE USE OF GEOGRID FABRIC (ITEM 1.8B) MAY BE REQUIRED.

3. SAND BLANKET: CLEAN SAND FREE FROM ORGANIC MATTER, SD GRADED THAT 9D–1D0% PASSES A 1/2 INCH SIEVE AND NOT MORE THAN 15% WILL PASS A #2D0 SIEVE. BLANKET MAY BE OMITTED FOR CAST–IRON, DUCTILE IRON, AND REINFORCED CONCRETE PIPE PROVIDED HOWEVER, THAT NO STONE LARGER THAN 2" IS IN CONTACT WITH THE PIPE.

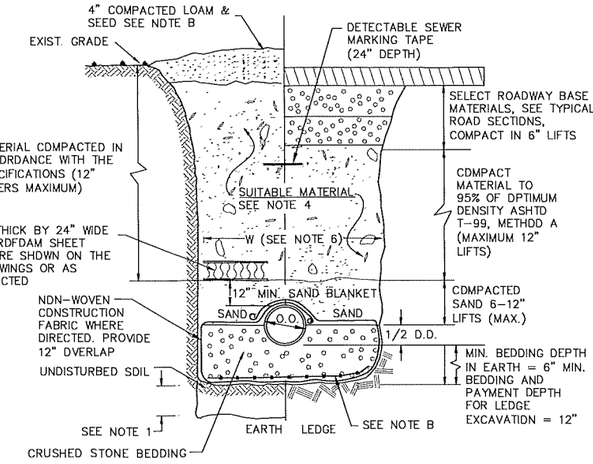
4. SUITABLE MATERIAL: IN ROADS, ROAD SHOULDERS, WALKWAYS AND TRAVELED WAYS, SUITABLE MATERIAL FOR TRENCH BACKFILL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE DEBRIS, PIECES OF PAVEMENT; ORGANIC MATTER, TOP SOIL; ALL WET OR SOFT MUCK, PEAT, OR SOFT CLAY; ALL EXCAVATED LEDGE MATERIAL; ALL ROCKS OVER 6 INCHES IN LARGEST DIMENSION; AND ANY MATERIAL WHICH, AS DETERMINED BY THE ENGINEER, WILL NOT PROVIDE SUFFICIENT SUPPORT OR MAINTAIN THE COMPLETED CONSTRUCTION IN A STABLE CONDITION. IN CROSS–COUNTRY CONSTRUCTION, SUITABLE MATERIAL SHALL BE AS DESCRIBED ABOVE, EXCEPT THAT THE ENGINEER MAY PERMIT THE USE OF TOP SOIL, LOAM, MUCK, OR PEAT, IF HE IS SATISFIED THAT THE COMPLETED CONSTRUCTION WILL BE ENTIRELY STABLE AND PROVIDED THAT EASY ACCESS TO THE SEWER, FOR MAINTENANCE AND POSSIBLY RECONSTRUCTION, WILL BE PRESERVED.

5. BASE COURSE AND PAVEMENT SHALL MEET THE REQUIREMENTS OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S LATEST EDITION OF THE STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES – DIVISIONS 3D0 AND 4D0 RESPECTIVELY.

6. W = MAXIMUM ALLOWABLE TRENCH PAYMENT WIDTH. FOR ROCK EXCAVATION, FOR ORDERED EXCAVATION BELOW GRADE AND HANDLING OF EXCAVATED CONTAMINATED SOILS. FOR PIPES 15 INCHES NOMINAL DIAMETER OR LESS, W SHALL BE NO MORE THAN 36 INCHES. FOR PIPES GREATER THAN 15 INCHES IN NOMINAL DIAMETER, W SHALL BE 24 INCHES PLUS PIPE OUTSIDE DIAMETER (O.D.)

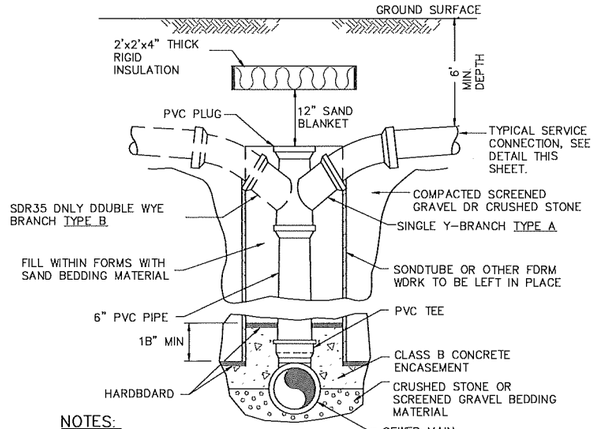
7. FOR CROSS COUNTRY CONSTRUCTION, BACKFILL OR FILL SHALL BE MOUNDED TO A HEIGHT OF 6 INCHES ABOVE THE ORIGINAL GROUND SURFACE.

8. WHERE TRENCH BOTTOM IS SOFT OR YIELDING, AND WHERE DIRECTED BY THE ENGINEER, INSTALL SINGLE LAYER OF GEOGRID (TX16D OR EQUAL) ACROSS THE ENTIRE WIDTH OF TRENCH BOTTOM. PAY AS ITEM 1.8A (L.F.).



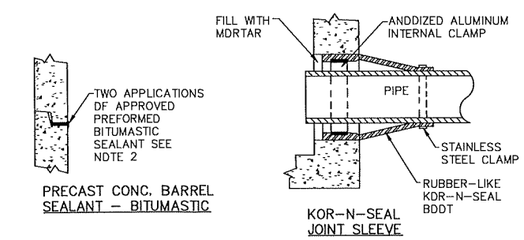
TRENCH SECTION (TYP)

2/D1 TRENCH – GRAVITY SEWER
NOT TO SCALE

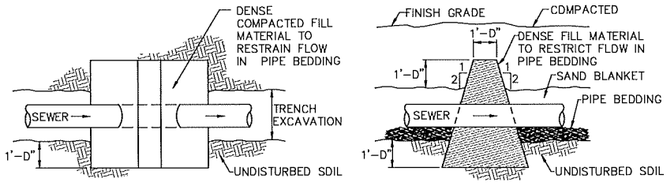


NOTES:
DOUBLE WYE BRANCH ONLY TO BE USED WHERE APPROVED BY ENGINEER

7/D1 PVC SEWER SERVICE CHIMNEY WITH WYE
NOT TO SCALE

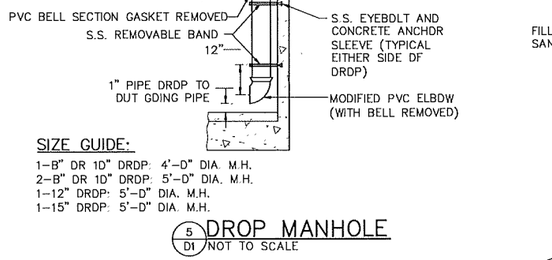


3/D1 MANHOLE PENETRATIONS
NOT TO SCALE



NOTES:
1. TRENCH DRAINS TO BE AT LOCATIONS SHOWN ON THE PLAN OR AS DIRECTED TO CONTROL BACK WATER IN STONE BEDDING, SUBSIDIARY.

4/D1 TRENCH DAM
NOT TO SCALE



SIZE GUIDE:
1–8" OR 10" DROP: 4'–0" DIA. M.H.
2–8" OR 10" DROP: 5'–0" DIA. M.H.
1–12" DROP: 5'–0" DIA. M.H.
1–15" DROP: 5'–0" DIA. M.H.

5/D1 DROP MANHOLE
NOT TO SCALE

JOINTING AND SEALING NOTES

1. PIPE TO MANHOLE JOINTS SHALL BE ONLY AS APPROVED BY THE ENGINEER AND IN GENERAL, WILL DEPEND UPON AN ELASTOMERIC SEALANT FOR WATERTIGHTNESS.

2. FOR BITUMASTIC TYPE JOINTS THE AMOUNT OF SEALANT SHALL BE SUFFICIENT TO FILL AT LEAST 75% OF THE JOINT CAVITY. APPROVED BITUMASTIC SEALANTS: RAM–NEK E Z KENT SEAL NO.2

3. ALL GASKETS, SEALANTS, MORTAR, ETC., SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS WRITTEN INSTRUCTIONS.

SERVICE CONNECTION NOTES:

1. SEE DETAILS FOR SERVICE CONNECTION REQUIREMENTS.

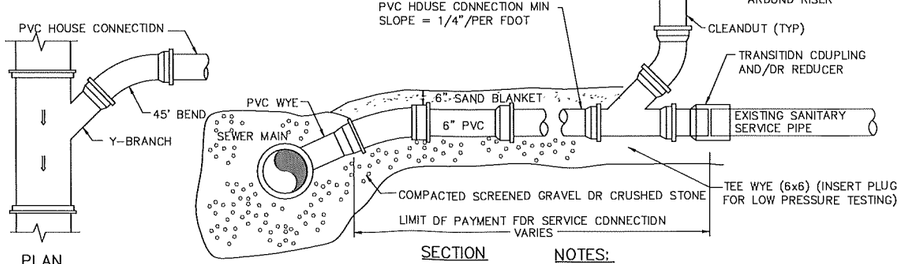
2. SERVICE CONNECTION SHALL BE INSTALLED BELOW WATER MAIN WHERE POSSIBLE.

3. CLEANOUTS SHALL BE INSTALLED AT EACH SERVICE CONNECTION.

4. REBAR SHALL BE PLACED AT SIDE OF CLEANOUT.

5. CLEANOUT SHALL BE USED TO PLUG AND TEST ALL NEW LATERALS WITH MINIMAL INTERRUPTION TO OPERATION OF HOMEOWNER SANITARY SYSTEM.

6. CLEANOUT RISER PIPE AND FITTINGS SHALL BE INCIDENTAL AND SHALL NOT BE CONSIDERED FOR PAYMENT.



6/D1 SERVICE CONNECTION
NOT TO SCALE

NOTES:
1. MAINTAIN 1B" SEPARATION BETWEEN NEW SEWER SERVICE AND NEW OR EXISTING WATER MAIN (WATER SHALL BE OVER SEWER).

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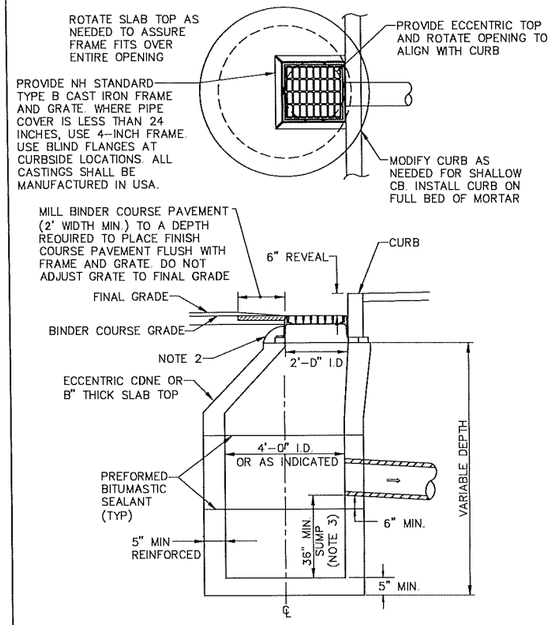
SEWER DETAILS

MAPLEWOOD AVE – DRAINAGE INTERCEPT
CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

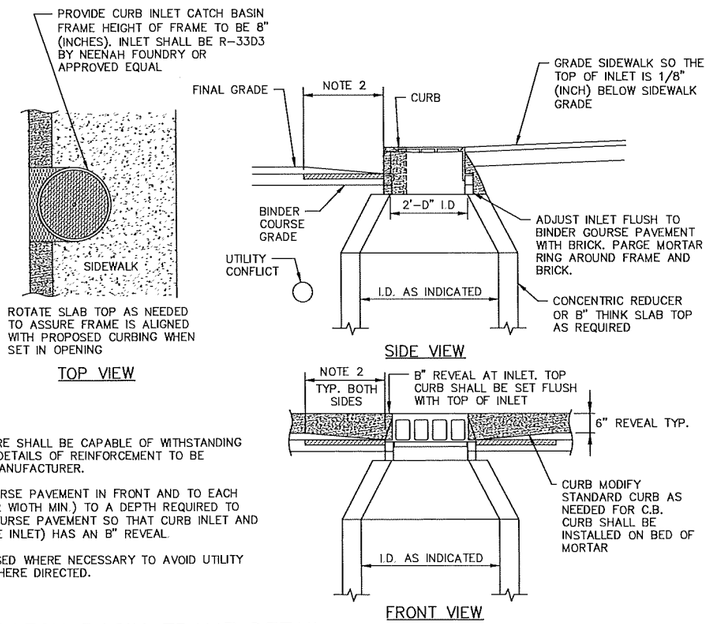
DWG NO D1
SHEET 9 OF 14



1 D2 CATCH BASIN DETAIL
NOT TO SCALE

CATCH BASIN NOTES:

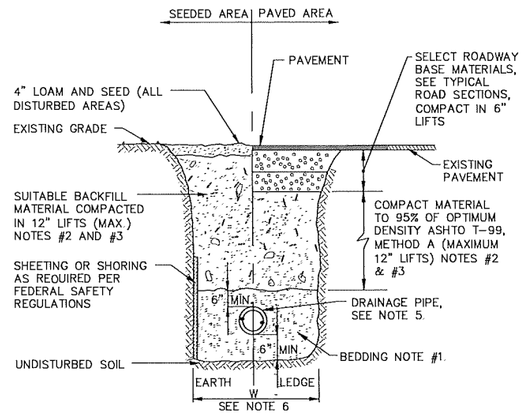
1. ENTIRE STRUCTURE SHALL BE CAPABLE OF WITHSTANDING AN H – 2D LOAD DETAILS OF REINFORCEMENT TO BE FURNISHED BY MANUFACTURER.
2. ADJUST FRAME AND GRATE TO BINDER COURSE ELEVATION, WITH BRICK SET IN A FULL BED OF MORTAR. PDINT ALL MASONRY (NO VOIDS) AND PARGE EXTERIOR BRICK WITH MORTAR.
3. WHERE SUMP IS OMITTED PROVIDE MASONRY INVERT PER DETAIL 4 D2



NOTES:

1. ENTIRE STRUCTURE SHALL BE CAPABLE OF WITHSTANDING AN H–2D LOAD DETAILS OF REINFORCEMENT TO BE FURNISHED BY MANUFACTURER.
2. MILL BINDER COURSE PAVEMENT IN FRONT AND TO EACH SIDE OF INLET (2 WIOTH MIN.) TO A DEPTH REQUIRED TO PLACE FINISH COURSE PAVEMENT SO THAT CURB INLET AND CURBING (AT THE INLET) HAS AN 8" REVEAL.
3. DETAIL TO BE USED WHERE NECESSARY TO AVOID UTILITY CONFLICTS OR WHERE DIRECTED.

5 D2 INLET CATCH BASIN FRAME DETAIL
NOT TO SCALE



3 D2 TRENCH DETAIL – STORM DRAIN
NOT TO SCALE

TRENCH NOTES – STORM DRAIN

1. BEDDING: BEDDING FOR PIPES SHALL CONSIST OF PREPARING THE BOTTOM OF THE TRENCH TO SUPPORT THE ENTIRE LENGTH OF THE PIPE AT A UNIFORM SLOPE AND ALIGNMENT. CRUSHED GRAVEL (NHDOT ITEM 304.3) OR CRUSHED STONE SHALL BE USED TO BED THE PIPE TO THE ELEVATION SHOWN ON THE DRAWINGS.

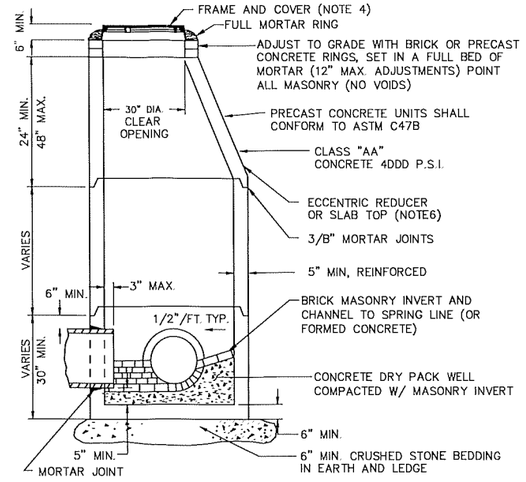
2. COMPACTION: ALL BACKFILL SHALL BE COMPACTED AT OR NEAR OPTIMUM MOISTURE CONTENT BY PNEUMATIC TAMPERS, VIBRATORY COMPACTORS OR OTHER APPROVED MEANS. BACKFILL BENEATH PAVED SURFACES SHALL BE COMPACTED TO NOT LESS THAN 95 PERCENT OF AASHTO T99, METHOD C.

3. SUITABLE MATERIAL: IN ROADS, ROAD SHOULDERS, WALKWAYS AND TRAVELED WAYS, SUITABLE MATERIAL FOR TRENCH BACKFILL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE DEBRIS, PIECES OF PAVEMENT; ORGANIC MATTER; TOP SOIL; ALL WET OR SOFT MUCK, PEAT, OR CLAY; ALL EXCAVATED LEDGE MATERIAL; ROCKS OVER 6 INCHES IN LARGEST DIMENSION; FROZEN EARTH AND ANY MATERIAL WHICH, AS DETERMINED BY THE ENGINEER, WILL NOT PROVIDE SUFFICIENT SUPPORT OR MAINTAIN THE COMPLETED CONSTRUCTION IN A STABLE CONDITION. IN SEEDED AREAS, SUITABLE MATERIAL SHALL BE AS DESCRIBED ABOVE, EXCEPT THAT THE ENGINEER MAY PERMIT THE USE OF TOP SOIL, LOAM, ROCKS UNDER 12", FROZEN EARTH OR CLAY, IF HE/SHE IS SATISFIED THAT THE COMPLETED CONSTRUCTION WILL BE ENTIRELY STABLE AND PROVIDED THAT EASY ACCESS TO THE PIPE WILL BE PRESERVED.

4. BASE COURSE AND PAVEMENT: SHALL MEET THE REQUIREMENTS OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S LATEST EDITION OF THE STANDARD SPECIFICATIDNS FOR HIGHWAYS AND BRIDGES – DIVISIONS 3DO AND 400 RESPECTIVELY.

5. DRAINAGE PIPE: PIPE MATERIALS SHALL BE EITHER PVC SDR 35 OR POLYETHYLENE (PE).

6. W=MAXIMUM ALLOWABLE TRENCH WIDTH: FOR ROCK EXCAVATION, FOR ORDERED EXCAVATION BELOW GRADE AND HANDLING OF EXCAVATED CONTAMINATED SOILS. FOR PIPES 15 INCHES NOMINAL DIAMETER OR LESS, W SHALL BE NO MORE THAN 36 INCHES. FOR PIPES GREATER THAN 15 INCHES IN NOMINAL DIAMETER, W SHALL BE 24 INCHES PLUS PIPE OUTSIDE DIAMETER (O.D.)



4 D2 TYPICAL DRAINAGE MANHOLE
NOT TO SCALE

DRAIN MANHOLE NOTES:

1. BARRELS AND CONE SECTIONS SHALL BE PRECAST REINFORCED CONCRETE.
2. PRECAST CONCRETE BARREL SECTIONS, CONES, AND BASES SHALL CONFORM TO ASTM C478.
3. INVERTS AND SHELVES: MANHOLES SHALL HAVE A BRICK PAVED SHELF AND INVERT (OR FORMED CONCRETE), CONSTRUCTED TO CONFORM TO THE SIZE OF PIPE AND FLOW. CARE SHALL BE TAKEN TO INSURE THAT THE BRICK INVERT IS A SMOOTH CONTINUATION OF THE INVERT. INVERT BRICKS SHALL BE LAID ON EDGE. AT CHANGES IN DIRECTION, THE INVERTS SHALL BE LAID OUT IN CURVES OF THE LONGEST POSSIBLE TANGENT TO THE CENTER LINE OF THE PIPES. SHELVES SHALL BE CONSTRUCTED TO AN ELEVATION OF 1/2 THE PIPE DIA. AND SLOPE TO DRAIN TOWARD THE FLOWING THROUGH CHANNEL.
4. FRAMES AND COVERS: MANHOLE FRAMES AND COVERS SHALL BE HINGED, ERGO XL BY EAST JORDON IRON WORKS, AND PROVIDE A 30-INCH (MIN.) CLEAR OPENING. THE WORD "DRAIN", IN 3-INCH LETTERS SHALL BE PLAINLY CAST INTO THE CENTER OF EACH COVER.
5. BEDDING: SCREENED GRAVEL AND/OR CRUSHED STONE FREE FROM CLAY, LOAM, ORGANIC MATTER AND MEETING ASTM C33. STONE SIZE NO. 67.

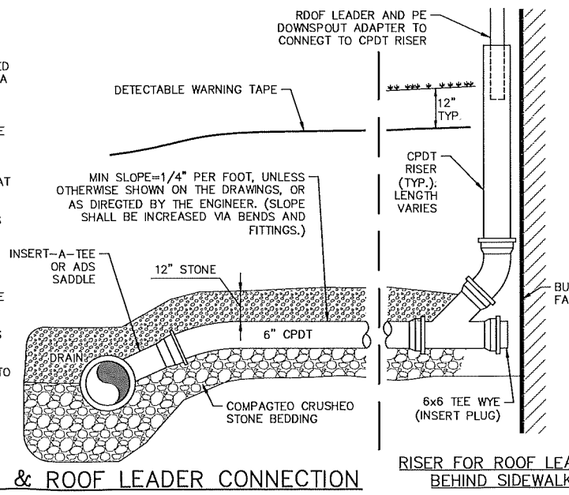
1D0% PASSING 1 INCH SCREEN
9D–10D% PASSING 3/4 INCH SCREEN
2D– 55% PASSING 3/8 INCH SCREEN
D–1D% PASSING #4 SIEVE
D– 5% PASSING #8 SIEVE

WHERE ORDERED BY THE ENGINEER TO STABILIZE THE BASE, SCREENED GRAVEL OR CRUSHED STONE 1–1/2 INCH TO 1/2 INCH OR USE OF GEOGRID FABRIC (ITEM 1.8B) MAY BE REQUIRED.

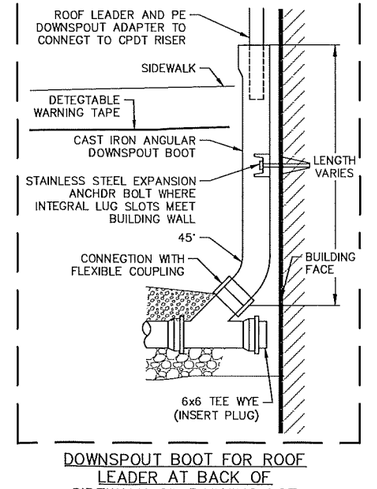
6. SLAB TOP COVERS: MAY BE APPROVED IN LIEU OF A CONE SECTION, WHEN MANHDLE IS LESS THAN 5 FEET AND FOR LARGE DIAMETER MANHOLES. SLAB TOP COVERS SHALL BE REINFORCED CONCRETE HAVING AN ECCENTRIC ENTRANCE AND CAPABLE OF SUPPORTING H–2D LOADS.

NOTES:

1. SERVICE LATERALS WILL BE PROVIDED AT EACH DDWNSPOUT AS WELL AS A SEPARATE CLEANOUT FOR EACH PROPERTY TO FACILITATE PRIVATE SUMP PUMP /DRAIN SERVICE CONNECTIONS. CLEANOUTS SHALL BE INSTALLED AT THE PROPERTY LINE FOR EACH SERVICE LATERAL.
2. REBAR OR 2X4 SHALL BE PLACED AT SIDE OF CLEANOUT.
3. CLEANOUT RISER PIPE AND FITTINGS ARE INCIDENTAL AND WILL NOT BE CONSIDERED FOR PAYMENT.
4. SERVICES SHALL BE ORIENTED @ 10:30 OR 1:3D (TYP). UNDER NO CIRCUMSTANCES SHALL SERVICES BE LOCATED BETWEEN 3:DO AND 9:DO.
5. LOCATE ROOF LEADER GONNECTIONS AT EXISTING DOWNSPOUTS. AT ADJACENT BUILDING GORNERS, TWO DOWNSPOUTS MAY BE CONNEGTED TO ONE LATERAL USING APPROPRIATE WYE (AND OTHER) FITTING(S).



RISER FOR ROOF LEADER BEHIND SIDEWALK



DOWNSPOUT BOOT FOR ROOF LEADER AT BACK OF SIDEWALK OR PARKING LOT

6 D2 DRAIN LATERAL & ROOF LEADER CONNECTION
NOT TO SCALE

ISSUE FOR					
BIDDING	By	–			
	Date	–			
CONSTRUCTION	By	–			
	Date	–			
RECORD DRAWING	By	–			
	Date	–			
REVISIONS					APP'D
NO.					

Drawn/Chk. RMG
Designed PDM
Checked –
Approved –
Date 1/26/2022
Book No. –
Project No. 2542
Dwg. ID
Scale

FOR REVIEW
JAN. 2023
NOT FOR CONSTRUCTION

UNDERWOOD engineers
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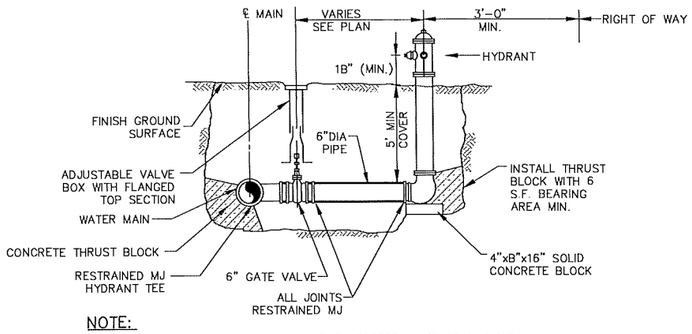
DRAINAGE DETAILS
MAPLEWOOD AVE – DRAINAGE INTERCEPT
CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

DWG NO D2
SHEET 10 OF 14

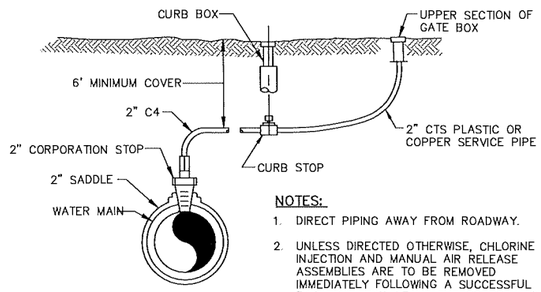


NOTE:

1. HYDRANTS SHALL BE DELIVERED FROM FACTORY W/O DRAIN HOLES.
2. HYDRANT ASSEMBLY INCLUDES MJ HYDRANT TEE.
3. HYDRANT SHALL BE KENNEDY K-81A GUARDIAN, PER CITY OF PORTSMOUTH STANDARDS.
4. LOCATE HYDRANTS A MINIMUM OF 1B" BEHIND CURBING UNLESS OTHERWISE DIRECTED. REVIEW HYDRANT LOCATIONS WITH PROJECT REPRESENTATIVE PRIOR TO WATER MAIN INSTALLATIONS.

1/D3 TYPICAL HYDRANT ASSEMBLY SECTION

1/D3 NOT TO SCALE

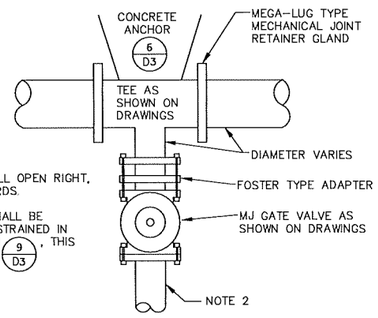


NOTES:

1. DIRECT PIPING AWAY FROM ROADWAY.
2. UNLESS DIRECTED OTHERWISE, CHLORINE INJECTION AND MANUAL AIR RELEASE ASSEMBLIES ARE TO BE REMOVED IMMEDIATELY FOLLOWING A SUCCESSFUL BACTERIA TEST. LEAVE THE CORPORATION STOP AND 12" LENGTH OF TUBING (WITH A CRIMPED END) IN PLACE.

2/D3 TEMPORARY BLOW-OFF TAP ASSEMBLY

2/D3 NOT TO SCALE



NOTE:

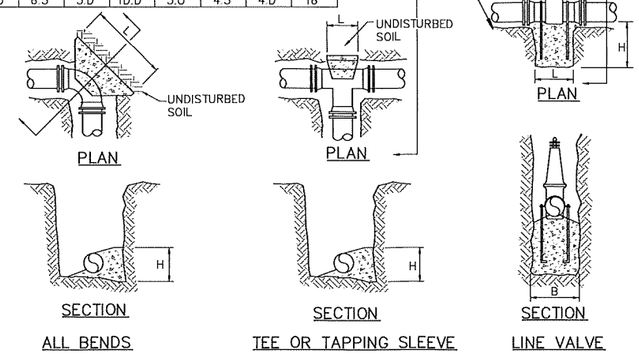
1. GATE VALVES SHALL OPEN RIGHT, PER CITY STANDARDS.
2. BRANCH PIPING SHALL BE MECHANICALLY RESTRAINED IN ACCORDANCE WITH 9/D3, THIS SHEET

5/D3 TEE & GATE VALVE ASSEMBLY DETAIL (TYP.)

NOT TO SCALE

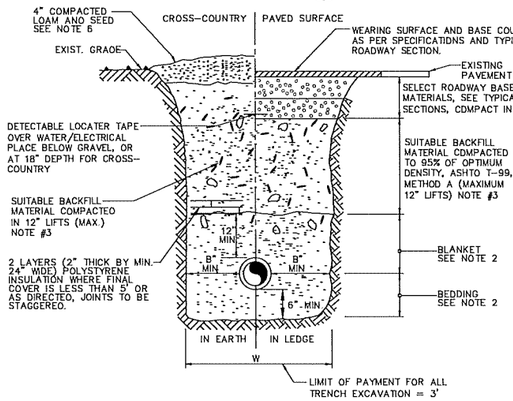
MINIMUM CONCRETE ANCHOR DIMENSIONS								
BENDS, TEES AND LINE VALVES AT 25D PSI								
PIPE SIZE INCHES	TEE OR PLUG FT.		ALL BENDS FT.		ALL LINE VALVES FT.			PIPE SIZE INCHES
	H	L	H	L	H	L	B	
6	1.5	3.0	2.D	3.5	1.5	3.D	2.5	6
B	2.D	4.0	2.5	5.0	2.D	4.0	3.D	B
10	2.5	5.D	3.0	6.0	3.D	4.D	3.0	1D
12	3.D	6.D	3.0	8.D	3.0	5.D	4.D	12
16	3.0	6.5	3.D	1D.D	3.0	4.5	4.D	16

BASIS: SOIL BEARING CAPACITY OF 2D0D PSF AND 5 FEET COVER IN GRANULAR SOIL. HEIGHT OF BLOCK MUST BE LESS THAN 1/2 DEPTH OF TRENCH. 6 MIL THICK POLYETHYLENE SHALL BE PLACED AROUND FITTINGS PRIOR TO CONCRETE PLACEMENT. USE FOR HORIZONTAL OR DOWNWARD THRUST ONLY.



6/D3 CONCRETE ANCHORS

6/D3 NOT TO SCALE



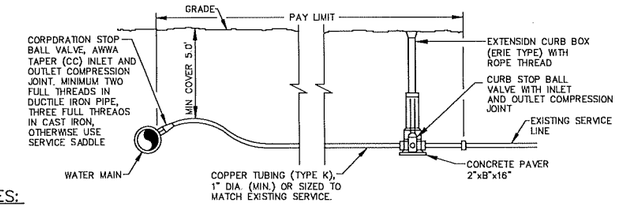
B/D3 TYPICAL TRENCH DETAIL

B/D3 NOT TO SCALE

STANDARD TRENCH NOTES

1. ORDERED EXCAVATION OF UNSUITABLE MATERIAL BELOW GRADE: BACKFILL AS STATED IN THE TECHNICAL SPECIFICATIONS OR AS SHOWN ON THE DRAWINGS.
2. BEDDING AND BLANKET: CLEAN SAND FREE FROM ORGANIC MATTER (SECTION D222B). BLANKET MAY BE OMITTED FOR DUCTILE IRON AND REINFORCED CONCRETE PIPE, PROVIDED HOWEVER, THAT NO STONE LARGER THAN 2" IS IN CONTACT WITH THE PIPE.
3. BACKFILL MATERIAL: IN ROADS, ROAD SHOULDERS, WALKWAYS AND TRAVELED WAYS, SUITABLE MATERIAL FOR TRENCH BACKFILL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE DEBRIS, PIECES OF PAVEMENT, ORGANIC MATTER; TOP SOIL; ALL WET OR SOFT MUCK, PEAT, OR CLAY, ALL EXCAVATED LEDGE MATERIAL; ALL ROCKS OVER 6 INCHES IN LARGEST DIMENSION, AND ANY MATERIAL WHICH, AS DETERMINED BY THE ENGINEER, WILL NOT PROVIDE SUFFICIENT SUPPORT OR MAINTAIN THE COMPLETED CONSTRUCTION IN A STABLE CONDITION.

   IN CROSS-COUNTRY CONSTRUCTION, SUITABLE MATERIAL SHALL BE AS DESCRIBED ABOVE, EXCEPT THAT THE ENGINEER MAY PERMIT THE USE OF TOP SOIL, LOAM, MUCK, OR PEAT, IF ENGINEER IS SATISFIED THAT THE COMPLETED CONSTRUCTION WILL BE ENTIRELY STABLE AND PROVIDED THAT EASY ACCESS TO THE PIPE LINE, FOR MAINTENANCE AND POSSIBLY RECONSTRUCTION, WILL BE PRESERVED.
4. MINIMUM COVER: NOT LESS THAN 5.5 FEET, 7 MAX, EXCEPT TO AVOID SUBSURFACE STRUCTURES.
6. FOR CROSS COUNTRY CONSTRUCTION, BACKFILL OR FILL SHALL BE MOUNDED TO A HEIGHT OF 6 INCHES ABOVE THE ORIGINAL GROUND SURFACE.
7. DRIVEWAYS: CRUSHED GRAVEL IN DRIVEWAYS SHALL MATCH EXISTING WITH A MINIMUM OF 6". EXISTING GRAVEL SHALL BE REMOVED AND REPLACED AND SHALL NOT BE MEASURED FOR PAYMENT.

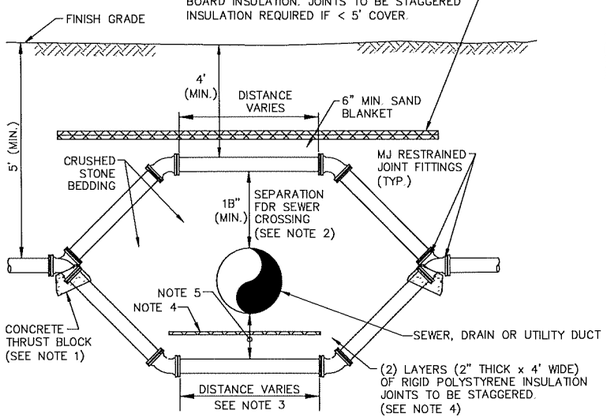


NOTES:

1. PROVIDE NEW LINE USING CONTINUOUS LENGTHS OF COPPER. NO COUPLING ALLOWED IN ROADWAY WITHOUT APPROVAL OF ENGINEER.
2. TAPS TO BE MADE AT APPROX. 2:DD AND 10:DD.
3. PROVIDE FOR SERVICE LINE CONTRACTION AND EXPANSION BY INSTALLING "S" IN SERVICE LINE NEAR MAIN.
4. IF SERVICE IS INSTALLED WITH LESS THAN 5' COVER, INSULATE OVER LINE.
5. REMOVE EXISTING CURB STOP (SALVAGE AS IDENTIFIED IN SECT. 01611).
6. CONNECT CURB STOP TO EXISTING SERVICE LINE AT PROPERTY LINE OR AT LOCATION APPROVED BY THE ENGINEER (NO COUPLING WITHOUT APPROVAL OF ENGINEER) AFTER PRESSURE TESTING AND DISINFECTION.
7. SHUT OFF EXISTING CORPORATION AND REMOVE OR ABANDON EXISTING SERVICE LINE.
8. CURB BOX SHALL BE SET IN THE GRASS AREA BETWEEN CURB AND SIDEWALK UNLESS DIRECTED OTHERWISE.
9. 2" SERVICE CONNECTIONS SHALL USE A STAINLESS STEEL SERVICE SADDLE.
10. MAINTAIN 18" SEPARATION BETWEEN THE NEW WATER SERVICE AND THE NEW OR EXISTING SEWER MAIN (WATER SHALL BE OVER SEWER).

4/D3 TYPICAL SERVICE CONNECTION

4/D3 NOT TO SCALE



NOTE:

1. INSTALL (4) FOUR 45° MJ BENDS WITH RESTRAINED JOINT FITTINGS.
2. VERTICAL SEPARATION DEPTH BETWEEN WATER AND SEWER SHALL BE AT LEAST 1B", WITH WATER ABOVE SEWER, PER NHDES ENV--Wq 7D4.12. VERTICAL SEPARATION OF LESS THAN 1B" ALLOWED ONLY WITH WAIVER FROM NHDES. IF CONSTRUCTION OF WATER MAIN UNDER SEWER MAIN IS UNAVOIDABLE, SEWER MAIN SHALL BE CONSTRUCTED OF C9DD PVC PIPE FROM MANHOLE TO MANHOLE.
3. CENTER CROSSING PIPE BETWEEN BELLS. SEWER PIPE JOINT SHALL BE A MINIMUM OF OF 6 FT. HORIZONTALLY FROM THE WATER MAIN.
4. PROVIDE INSULATION IF DRAIN CROSSES OVER WATER MAIN.
5. PROVIDE B" TO 12" SEPARATION FOR DRAIN OR OTHER UTILITY CROSSINGS.

7/D3 WATER MAIN CONFLICT – CROSSING DETAIL

7/D3 NOT TO SCALE.

HORIZONTAL BENDS:

Nominal Pipe Diameter	8end Angle			
	90°	45°	22.5°	11.25°
4"	6'	3'	2'	1'
6"	9'	4'	2'	2'
8"	11'	5'	3'	2'
1D"	13'	6'	3'	2'
12"	16'	7'	3'	2'
16"	20'	9'	4'	2'

REDUCERS:

Nom. Diameter of Large Pipe	Nominal Diameter of Small Pipe (Note 4)				
	4"	6"	8"	10"	12"
8"	17'	10'	-	-	-
10"	23'	17'	10'	-	-
12"	29'	24'	18'	10'	-
16"	39'	36'	31'	28'	18'

DEAD ENDS:

Nom. Pipe Diameter	Restarined Length (ft)
4"	13'
6"	18'
8"	23'
10"	28'
12"	33'
16"	43'

TEES:

Nominal Pipe	Nominal Branch Diameter (Note 5)			
	8"	10"	12"	16"
8"	6'	-	-	-
10"	8'	11'	-	-
12"	1'	7'	16'	-
16"	1'	1'	9'	25'

NOTES:

1. ALL FITTINGS SHALL HAVE MECHANICAL RETAINING GLANDS AT ALL ENDS AND A MINIMUM OF ONE JOINT SHALL BE RESTRAINED BEYOND EACH SIDE OF FITTING.
2. PIPE EXTENDING FROM ALL FITTINGS SHALL BE MECHANICALLY RESTRAINED TO THE MINIMUM LENGTHS SHOWN.
3. ALL MINIMUM LENGTHS SHOWN ABOVE WERE CALCULATED USING THE EBAA IRON RESTRAINT LENGTH CALCULATOR VERSION 6.3 USING THE FOLLOWING ASSUMPTIONS: DUCTILE IRON PIPE, TYPE 4 TRENCH, 5 FDOT DEPTH OF BURY, A TEST PRESSURE OF 150 PSI AND SOILS CONSISTING OF WELL GRADED SANDS AND GRAVELLY SANDS WITH LITTLE OR NO FINES.
4. ENGINEER RESERVES THE RIGHT TO MODIFY RESTRAINT LENGTHS REQUIRED BASED ON VARYING TRENCH CONDITIONS, DEPTH OF BURY OR PIPE MATERIALS.
5. FOR REDUCERS, RESTRAIN LENGTH SHOWN IS FOR THE LARGER PIPE.
6. MECHANICALLY RESTRAIN ONE JOINT ON EITHER SIDE OF THE NOMINAL PIPE OF TEE AT A MINIMUM DISTANCE OF 5'.

9/D3 MECHANICAL JOINT RESTRAINT

9/D3 NOT TO SCALE

ISSUE FOR	Date	By
BIDDING	–	–
CONSTRUCTION	–	–
RECORD DRAWING	–	–

NO.	REVISIONS	APP'D
1	2X2 MHD-J	

Drawn/Chk RMG
Designed PDM
Checked –
Approved –
Date 1/26/2022
Book No. –
Project No. 2542
Dwg. ID
Scale

FOR REVIEW
JAN. 2023
NOT FOR CONSTRUCTION

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

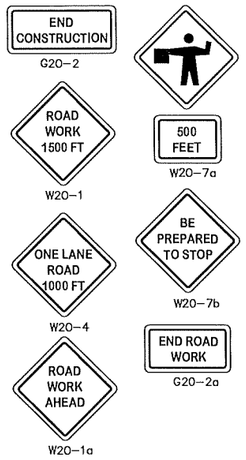
WATER DETAILS
MAPLEWOOD AVE – DRAINAGE INTERCEPT
CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

DWG NO D3
SHEET 11 OF 14

TRAFFIC CONTROL NOTES:

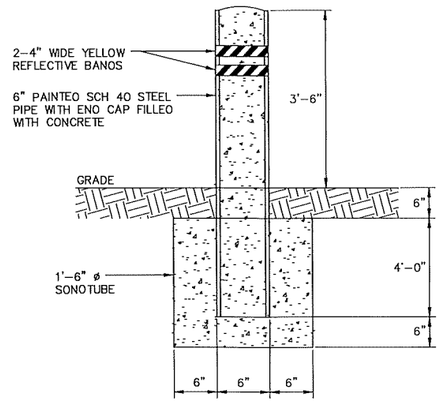
1. TYPICAL SIGN DETAILS ARE BASED ON THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND IS NOT INTENDED AS AN ALL-INCLUSIVE LIST. ALL SIGNAGE AND OTHER TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE MUTCD (LATEST EDITION) AND NHDOT REQUIREMENTS.
2. CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTING THE TRAFFIC CONTROL PLAN AS SHOWN. ANY MODIFICATIONS MUST BE SUBMITTED IN WRITING FOR APPROVAL BY THE ENGINEER, CITY OF PORTSMOUTH AND THE NHDOT. SEE PROJECT MANUAL FOR ADDITIONAL REQUIREMENTS.
3. CONTRACTOR SHALL ERECT ALL DAILY USE SIGNS IN THE MORNING PRIOR TO WORK BEGINNING AND REMOVE ALL DAILY USE SIGNS AT THE END OF EACH DAY.
4. DAILY SIGNS SHALL INCLUDE SIGNAGE NECESSARY TO ENSURE THE SAFETY OF THE PUBLIC (I.E. ROAD CLOSED, FLAGGER AHEAD, ONE LANE TRAFFIC, ETC).
5. DETOUR SIGNS ARE TO BE USED WITH PHASE I CONSTRUCTION (CULVERT INSTALLATION) ONLY. REFER TO PROSECUTION OF WORK ON SHEET G-1)
6. ALL SIGNS SHALL BE ERECTED AND PLACED IN ACCORDANCE WITH MUTCD (LATEST EDITION).

DAILY SIGNS



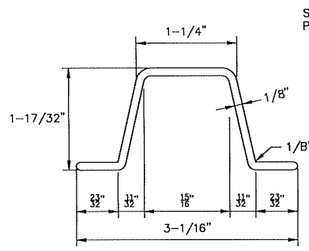
TEMPORARY DETOUR SIGNS

1 D4 TRAFFIC CONTROL SIGNS
NOT TO SCALE

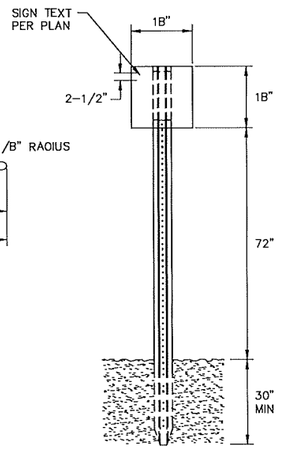


3 D4 STEEL BOLLARD DETAIL
NOT TO SCALE

LENGTH (P2-10): 10'-0"
WEIGHT PER LINEAR FOOT: 2.00 LBS
HOLES: 3/8" DIA., 1" C-C FULL LENGTH
STEEL: SHALL CONFORM TO ASTM A-499 (AISI C1060)
FINISH: SHALL BE PAINTED WITH TWO COATS OF AN APPROVED MFG. GREEN, BAKED PAINT OR AIR DRIED, PAINT OF WEATHER-RESISTANT QUALITY. ALL FABRICATION SHALL BE COMPLETED BEFORE PAINTING.



POST SECTION



P2-10 POST

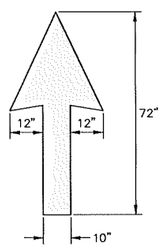
NOTES:

1. POSTS SHALL BE P2-10 AS REQUIRED.
2. POSTS SHALL BE PLUMB; ANY POST BENT OR OTHERWISE DAMAGED SHALL BE REMOVED AND PROPERLY PLACED.
3. POSTS MAY BE SET OR DRIVEN. WHEN POSTS ARE SET, HOLES SHALL BE DUG TO THE PROPER DEPTH; AFTER INSERTING POSTS, THE HOLES SHALL BE BACKFILLED WITH SUITABLE MATERIAL IN LAYERS NOT TO EXCEED 6" DEEP AND THOROUGHLY COMPACTED, CARE BEING TAKEN TO PRESERVE THE ALIGNMENT OF THE POST. WHEN POSTS ARE DRIVEN, A SUITABLE DRIVING CAP SHALL BE USED AND AFTER DRIVING THE TOP OF THE POST; BATTERING HEADS WILL NOT BE ACCEPTED. POST SHALL NOT BE DRIVEN WITH THE SIGN ATTACHED TO THE POST.

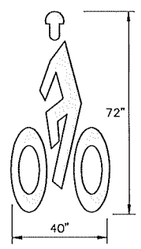
2 D4 SIGN DETAIL
NOT TO SCALE

GENERAL NOTES:

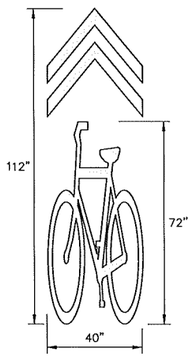
1. ALL WORDS AND SYMBOLS SHALL BE RETROREFLECTIVE WHITE AND SHALL CONFORM TO THE LATEST VERSION OF THE MUTCD.
2. MULTI-WORD MESSAGES SHALL READ "UP"; THAT IS, THE FIRST WORD SHALL BE NEAREST THE APPROACHING DRIVER.
3. THE WORD "ONLY" SHALL NOT BE USED WITH THROUGH OR COMBINATION ARROWS, AND SHALL NOT BE USED ADJACENT TO A BROKEN LANE LINE. A WORD/SYMBOL SHALL PRECEDED THE WORD "ONLY".
4. PREFORMED WORDS AND SYMBOLS SHALL BE PRE-CUT BY THE MANUFACTURER.
5. WRONG-WAY ARROWS SHALL NOT BE SUBSTITUTED FOR THROUGH ARROWS.
6. ALL STOP BARS, WORDS, SYMBOLS AND ARROWS SHALL BE THERMOPLASTIC.



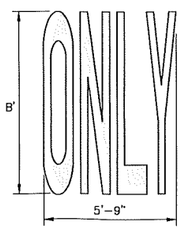
BICYCLE LANE DIRECTIONAL ARROW
PAY QUANTITY = 6.0 FT²



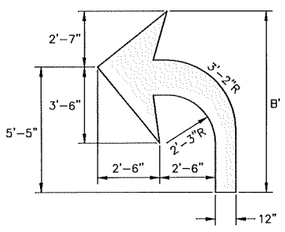
BICYCLE LANE SYMBOL
PAY QUANTITY = 8.1 FT²



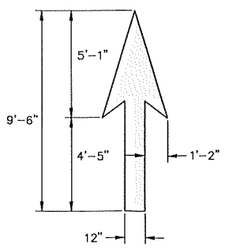
BICYCLE LANE SYMBOL
PAY QUANTITY = 12.8 FT²



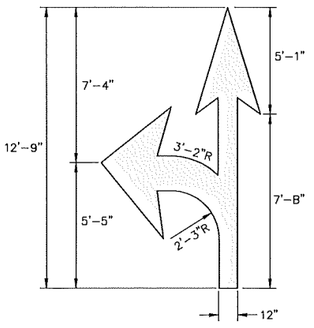
ONLY
PAY QUANTITY = 22.3 FT²



TURN ARROW
(RIGHT TURN OPPOSITE IN KIND)
PAY QUANTITY = 17.0 FT²



THROUGH (STRAIGHT ARROW)
PAY QUANTITY = 12.5 FT²



COMBINATION ARROW
PAY QUANTITY = 28.8 FT²

ITEM 632.32

4 D4 PAVEMENT MARKING - WORD AND SYMBOLS
NOT TO SCALE

ISSUE FOR
BIDDING Date - By -
CONSTRUCTION Date - By -
RECORD DRAWING Date - By -

NO.	REVISIONS	APP'D

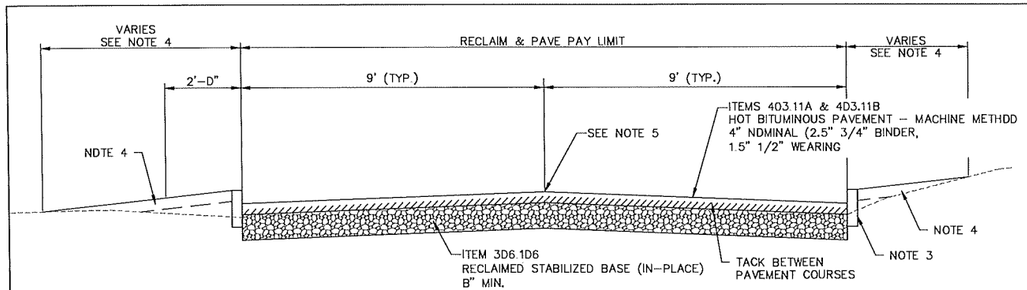
Drawn/Chk. RMG
Designed PDM
Checked -
Approved -
Date 1/28/2022
Book No. -
Project No. 2542
Dwg. ID 2542_details_sj
Scale -

FOR REVIEW
JAN. 2023
NOT FOR CONSTRUCTION

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

TRAFFIC CONTROL SIGNS & PAVEMENT MARKINGS
MAPLEWOOD AVE - DRAINAGE INTERCEPT
CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

OWG NO 04
SHEET 12 OF 14



ROAD RE-CONSTRUCTION NOTES;

1. SAWCUT DRIVEWAYS AND CONSTRUCT DRIVEWAY APRON FDLLOWING CONSTRUCTION DF PAVEMENT BINDER COURSE (SEE DRIVEWAY APRDN DETAILS, THIS DRAWING).
2. GRADE RECLAIM (UNIFORMLY) TO MINIMIZE IMPACTS TO DRIVEWAYS AND SIDE SLOPES. REVIEW GRADING WITH ENGINEER IN ADVANCE OF RECLAIM. RECLAIM AT 1D" DEPTH, REMOVE AND DISPOSE OF SURPLUS RECLAIM WHERE DIRECTED TO MINIMIZE GRADING IMPACTS, SUBSIDIARY. TYPICAL CROSS SLOPE = 3% UNLESS DIRECTED OTHERWISE.T, SUBSIDIARY.
3. INSTALL GRANITE CURB (WHERE DIRECTED), ITEM 6D9.D1. SEE DETAIL (6/D5).
4. LOAM, SEED & MULCH ROADSIDE SLOPES, PAY AS ITEM 912.
5. ALL SEAMS AND JOINTS SHALL BE RAKED AND LUTED PRIDR TO COMPACTION AND RDLLING.

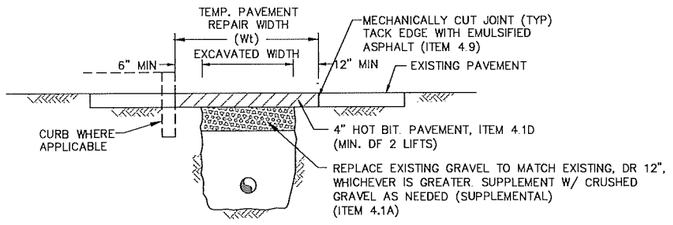
(1/D5) TYPICAL ROADWAY SECTION – RAILROAD EASEMENT AREA

(1/D5) NOT TO SCALE

MINIMUM TRENCH PAVEMENT WIDTHS

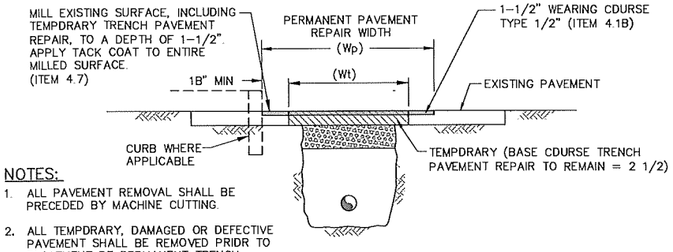
PIPE I.D.	Wt (INCHES)	Wp (INCHES)
1–21 INCHES	B4	1DB
24–3D INCHES	96	120
> 3D INCHES	1DB	132

NOTE:
THE DIMENSIDNS SHOWN SHALL BE CDNSIDERED MAXIMUM PAVEMENT PAYMENT WIDTHS FDR D-1D' DEEP CDNSTRUCTIDN. Wt AND Wp SHALL BE INCREASED BY 4'-D" FOR TRENCHES 10' TO 15' AND BY B'-D" FOR TRENCHES 15' TO 2D' IN DEPTH.



(2/D-5) TEMPORARY TRENCH PAVEMENT REPAIR

(2/D-5) NDT TO SCALE

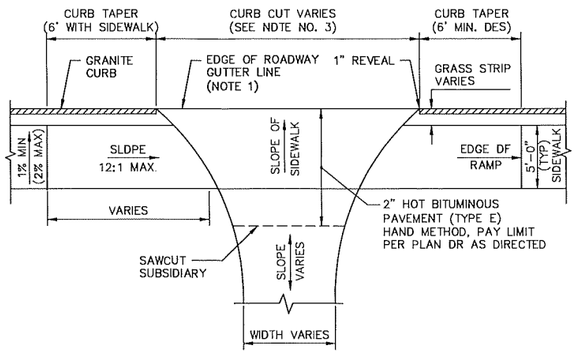


NOTES:

1. ALL PAVEMENT REMOVAL SHALL BE PRECEDED BY MACHINE CUTTING.
2. ALL TEMPDRARY, DAMAGED OR DEFECTIVE PAVEMENT SHALL BE REMOVED PRIDR TO PLACEMENT DF PERMANENT TRENCH REPAIRS.
3. SEE TABLE IN "TEMPDRARY TRENCH PAVEMENT REPAIRS" FOR MINIMUM TRENCH WIDTHS.

(3/D-5) PERMANENT TRENCH PAVEMENT REPAIR

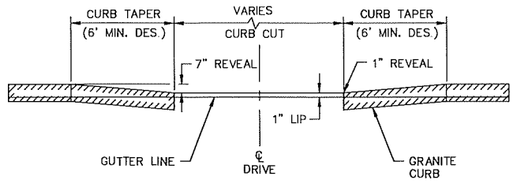
(3/D-5) NOT TO SCALE



PLAN VIEW WITH SIDEWALK RAMP

NOTES;

1. ALL PAVEMENT MATCHES AT DRIVEWAY SHALL BE SAWCUT AND KEYED FDR SMOOTH TRANSITIDN (SUBSIDIARY)



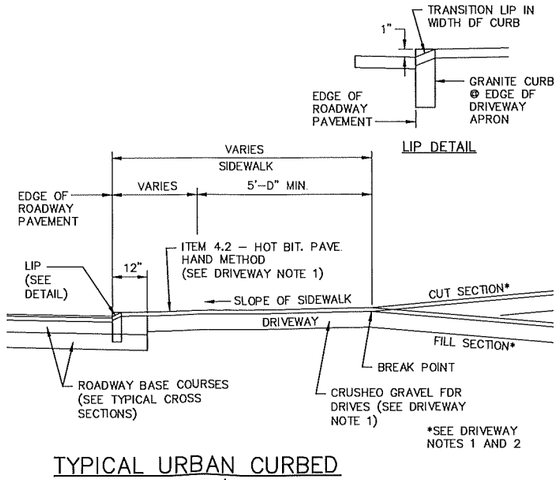
PROFILE

DRIVEWAY NOTES;

1. PAVEMENT & GRAVEL DEPTHS FDR RESIDENTIAL DRIVES SHALL BE B" CRUSHED GRAVEL WITH 2" H.B.P. (HAND METHOD) SINGLE COURSE.
2. CURBING CAN BE FLARED TO FIT DRIVE RADII IF APPROPRIATE OR ENDED AS DETAILED ABOVE.
3. DRIVEWAY CURB CUTS SHALL MATCH EXISTING APRON WIDTHS UNLESS OTHERWISE DIRECTEO.
4. FOR UNPAVED DRIVES, THE PAVED APRON NDRMALLY ENDS AT THE RADIUS TANGENT POINT OR BACK OF SIDEWALK, WHICHEVER IS GREATER.

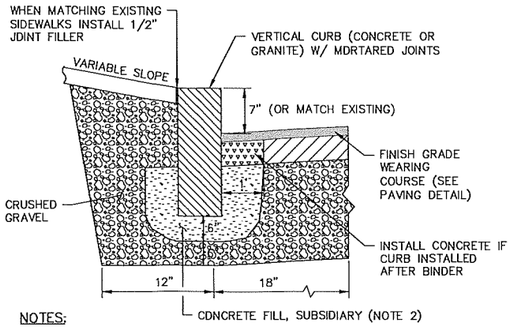
(4/D5) DRIVEWAY APRON/CURB CUT (FINAL GRADING PLAN)

(4/D5) NOT TO SCALE



(5/D5) TYPICAL URBAN CURBED DRIVE IN CUT/FILL SECTION

(5/D5) NOT TO SCALE

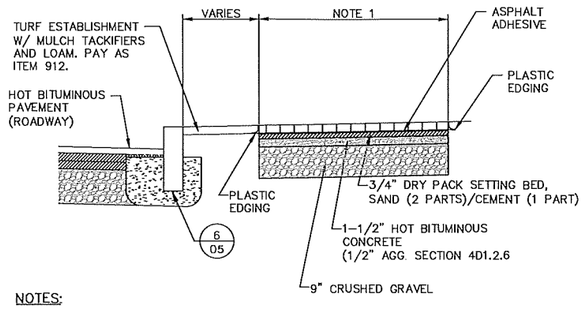


NOTES;

1. DAMAGED DR IMPACTED CURB (WHETHER GRANITE OR CONCRETE) IS TO BE REPLACED AT THE CONTRACTORS OWN EXPENSIVE, UNLESS OTHERWISE NOTED ON PLAN.
2. CLASS AA CONCRETE FILL SHALL BE PLACED IN VOIDS IN FRONT, BEHIND, AND BELOW CURBING PRIOR TO INSTALLATIDN OF GRAVEL BACKING AND FINISH GRADE WEARING COURSE PAVEMENT.

VERTICAL CURB (NEW OR RESET) (GRANITE OR CONCRETE)

(6/D5) NOT TO SCALE

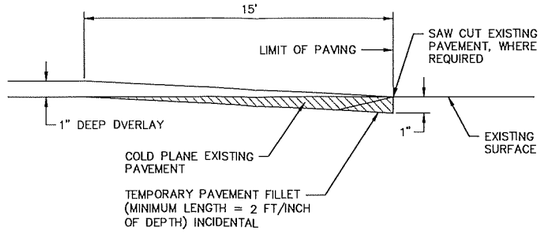


NOTES;

1. RE-CDNSTRUCT CURB AND SIDEWALKS IMPACTED FROM CONSTRUCTIDN OR WHERE DIRECTED. CURB AND SIDEWALKS DAMAGED OUTSIDE TRENCH LIMITS (THREE-FEET FROM OUTSIDE OF PIPE) SHALL BE RESTORED AT CDNTRACTOR'S COST AND WILL NOT BE MEASURED FOR PAYMENT.

(7/D5) BRICK SIDEWALK DETAIL (NEW OR RECONSTRUCT)

(7/D5) NOT TO SCALE



NOTES;

THE LENGTH DF THE TAPER MAY BE ADJUSTED AS ORDERED TO PRDVIDE FDR VARYING FIELD CONDITIONS OR CHANGES IN SINGLE COURSE DEPTH.

(8/D5) OVERLAY PAVEMENT MATCH

(8/D5) NOT TO SCALE

ISSUE FOR	By	Date
BIDDING	–	–
CONSTRUCTION	–	–
RECORD DRAWING	–	–

NO.	REVISIONS	APP'D

Drawn/Chk. RMG
Designed PDM
Checked –
Approved –
Date 1/26/2022
Book No. –
Project No. 2542
Dwg. ID 2542_details_M
Scale –

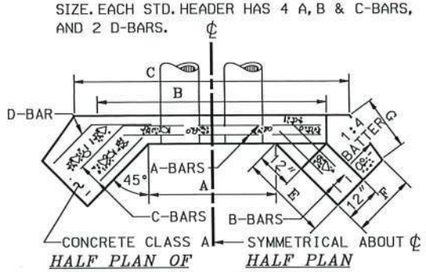
FOR REVIEW
JAN. 2023
NOT FOR CONSTRUCTION

UNDERWOOD engineers
25 Vaughon Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

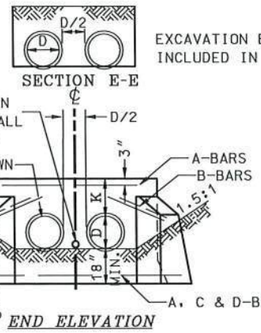
ROADWAY AND SIDEWALK DETAILS
MAPLEWOOD AVE – DRAINAGE INTERCEPT
CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

DWG NO D5
SHEET 13 OF 14

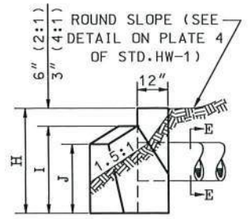
NOTE:
ALL LIKE BARS IN EACH HEADWALL ARE THE SAME SIZE. EACH STD. HEADER HAS 4 A, B & C-BARS, AND 2 D-BARS.



HALF PLAN OF BOTTOM STEEL *HALF PLAN OF TOP STEEL*



END ELEVATION



SIDE ELEVATION

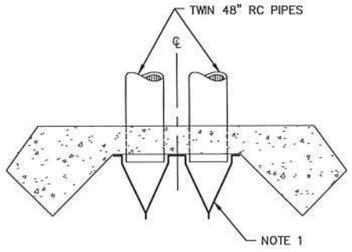
2:1 SLOPE

DIA. D INCHES	QUANTITIES PER HEADER: CONC. CU. YD.	STEEL LB.	EXC. FOR 1' DEPTH CU. YD.	DIMENSIONS: A	B	C	E	F	G	H	I	J	K	D/2	REINFORCING STEEL: SIZE	LENGTH: A BARS	B BARS	C BARS	D BARS	D-BARS: a	b
24	2.44	46	1.96	6'-0"	8'-10"	10'-0"	3'-0"	1'-11"	2'-3"	5'-0"	4'-6"	3'-10"	1'-6"	1'-0"	#4	8'-6"	3'-2"	3'-0"	4'-8"	2'-5"	2'-3"
30	3.18	53	2.28	7-5	10-3	11-9	3-7	2-0	2-9	5-6	5-0	4-1	1-6	1-3	#4	9-11	3-9	3-7	5-3	2-6	2-9
36	3.99	61	2.69	8-10	11-8	13-7	4-2	2-1	3-3	6-0	5-6	4-4	1-6	1-6	#4	11-4	4-3	4-1	5-10	2-8	3-2
42	5.43	161	3.22	10-3	13-1	15-6	5-1	2-2	4-0	6-9	6-3	4-10	1-9	1-9	#6	12-9	5-3	4-11	7-10	3-10	4-0
48	6.53	180	3.64	11-8	14-6	17-3	5-9	2-3	4-6	7-3	6-9	5-1	1-9	2-0	#6	14-2	5-11	5-7	8-5	3-10	4-7
54	7.76	197	4.00	13-1	15-11	19-1	6-4	2-4	5-0	7-9	7-3	5-4	1-9	2-3	#6	15-7	6-7	6-1	9-2	4-1	5-1
60	9.10	214	4.45	14-6	17-4	20-10	6-11	2-5	5-6	8-3	7-9	5-8	1-9	2-6	#6	17-0	7-1	6-8	9-9	4-1	5-8
66	10.56	232	4.84	15-11	18-9	22-5	7-6	2-6	6-0	8-9	8-3	5-11	1-9	2-9	#6	18-5	7-8	7-3	10-5	4-2	6-3
72	12.28	249	5.25	17'-4"	20'-2"	24'-2"	8'-2"	2'-7"	6'-6"	9'-3"	8'-9"	6'-3"	1'-9"	3'-0"	#6	19'-10"	8'-3"	7'-10"	11'-0"	4'-3"	6'-9"

4:1 SLOPE

24	3.05	53	2.29	6'-0"	8'-10"	10'-0"	3'-11"	2'-1"	3'-2"	5'-0"	4'-9"	4'-3"	1'-6"	1'-0"	#4	8'-6"	4'-3"	4'-0"	5'-6"	2'-6"	3'-0'
30	3.92	61	2.70	7-5	10-3	11-9	4-8	2-2	3-9	5-6	5-3	4-7	1-6	1-3	#4	9-11	5-0	4-8	6-3	2-8	3-7
36	5.09	70	3.15	8-10	11-8	13-7	5-5	2-3	4-5	6-0	5-9	5-0	1-6	1-6	#4	11-4	5-9	5-4	7-1	2-10	4-3
42	6.97	185	3.78	10-3	13-1	15-6	6-7	2-5	5-4	6-9	6-6	5-6	1-9	1-9	#6	12-9	6-11	6-5	9-3	4-0	5-3
48	8.44	204	4.24	11-8	14-6	17-3	7-4	2-6	6-0	7-3	7-0	5-11	1-9	2-0	#6	14-2	7-8	7-1	10-1	4-2	5-11
54	10.13	225	4.74	13-1	15-11	19-1	8-2	2-7	6-9	7-9	7-6	6-3	1-9	2-3	#6	15-7	8-6	7-10	10-11	4-3	6-8
60	11.90	245	5.23	14-6	17-4	20-10	8-11	2-8	7-4	8-3	8-0	6-7	1-9	2-6	#6	17-0	9-3	8-8	11-9	4-4	7-5
66	13.87	266	5.75	15-11	18-9	22-5	9-8	2-9	8-0	8-9	8-6	7-0	1-9	2-9	#6	18-5	10-0	9-5	12-8	4-7	8-1
72	16.13	283	6.29	17'-4"	20'-2"	24'-2"	10'-6"	2'-10"	8'-8"	9'-3"	9'-0"	7'-4"	1'-9"	3'-0"	#6	19'-10"	10'-10"	9'-9"	13'-5"	4'-8"	8'-9'

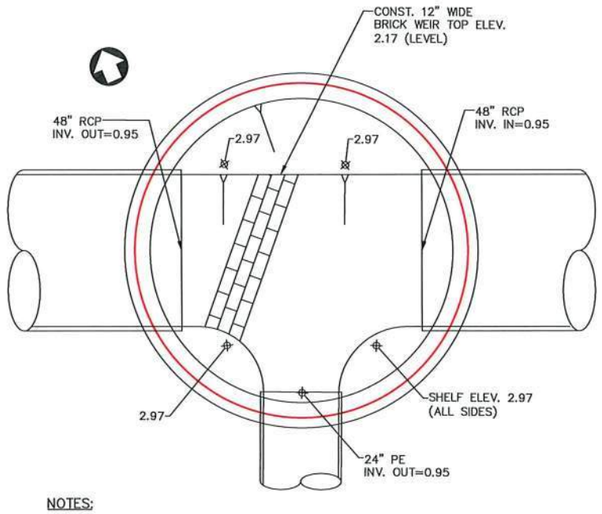
1 D6 CONCRETE HEADWALLS WITH 45° WINGS FOR TWIN R.C. PIPE (48" DIA. W/4:1 SLOPE)
NOT TO SCALE



NOTES:

1. TIDE VALVES SHALL BE TIDE FLEX TF-1 OR APPROVED EQUAL. ATTACH DIRECTLY TO HEADWALL USING THIMBLE PLATE IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS. PROVIDE THIMBLE PLATE INSTALLATION DETAILS OR RECOMMENDED ALTERNATIVE. THE TIDE VALVES WILL BE MOUNTED TO THE HEADWALL

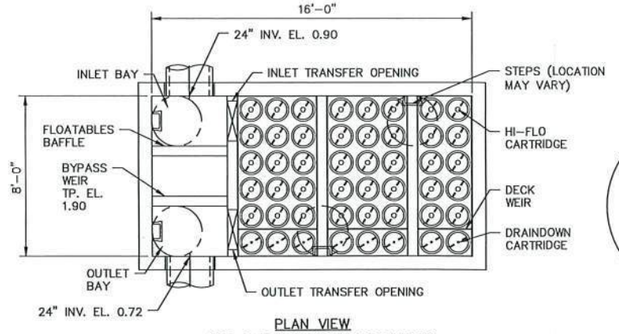
2 D6 TIDE VALVE DETAIL
NOT TO SCALE



NOTES:

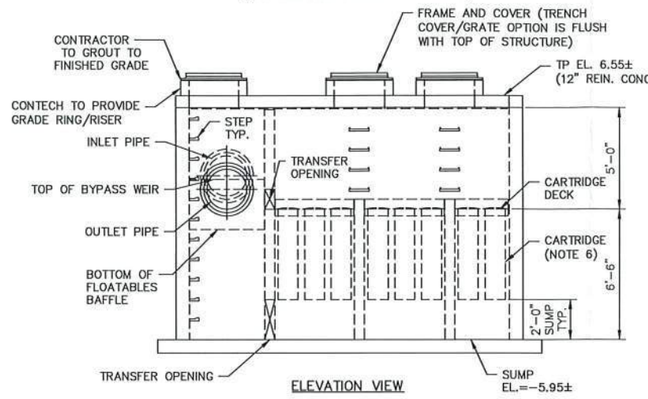
1. CONSTRUCT DMH IN ACCORDANCE WITH NOTES, DETAILS SPECIFICATIONS AND DETAILED SHOP DRAWINGS. PROVIDED BY MANUFACTURER.
2. FORM BRICK CHANNEL TO SPRING LINE AND CONSTRUCT SHELF TO ELEVATIONS PROVIDED.
3. CONST. BRICK WEIR OR REMOVABLE PLATE WEIR TO ELEVATION PROVIDED.

3 D6 DMH#1E – BYPASS STRUCTURE
NOT TO SCALE (ITEM _____)



PLAN VIEW
(TOP SLAB NOT SHOWN FOR CLARITY)

TOP VIEW
FRAME AND COVER



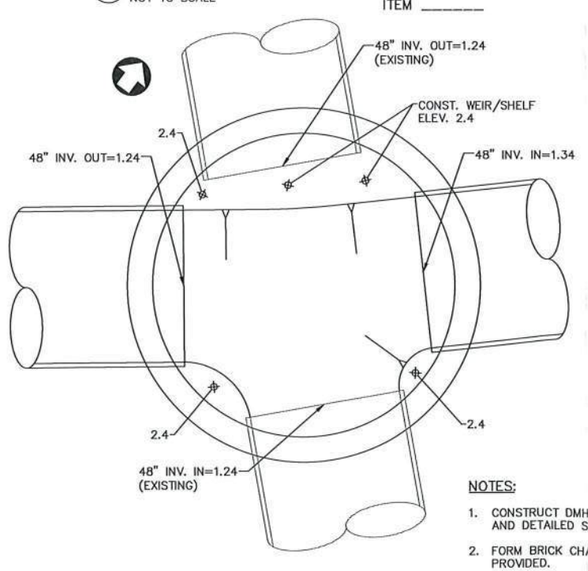
ELEVATION VIEW

GENERAL NOTES:

1. STORMWATER TREATMENT STRUCTURE SHALL BE PROVIDED BY CONTECH OR APPROVED EQUIVALENT.
2. ENTIRE STRUCTURE SHALL MEET OR EXCEED HS-20 RATING (HEAVY LOADING).
3. PROVIDE ANTI-FLOTATION COLLARS (ALL SIDES), TO EXTEND 12" BEYOND WALLS.
4. SET STRUCTURE LEVEL. SEAL ALL JOINTS WITH APPROVED SEALANT OR NON-SHRINK GROUT.
5. INSTALL FLEXIBLE BOOT AT INLET AND OUTLET.
6. CARTRIDGE LENGTH SHALL BE 54", INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

4 D6 JELLYFISH (JFPD0816) DETAILS
NOT TO SCALE

ITEM _____



NOTES:

1. CONSTRUCT DMH IN ACCORDANCE WITH NOTES, DETAILS SPECIFICATIONS AND DETAILED SHOP DRAWINGS. PROVIDED BY MANUFACTURER.
2. FORM BRICK CHANNEL AND CONSTRUCT SHELF TO ELEVATIONS PROVIDED.
3. CONST. BRICK WEIR OR REMOVABLE PLATE WEIR TO ELEVATION PROVIDED.

5 D6 DMH#3 – BYPASS STRUCTURE
NOT TO SCALE (ITEM _____)

ISSUE FOR: BIDDING Date _ By _ | CONSTRUCTION Date _ By _ | RECORD DRAWING Date _ By _

NO.	REVISIONS	APP'D

Drawn/Chk. RMG
Designed PSM
Checked –
Approved –
Date 1/26/2022
Book No. –
Project No. 2542
Dwg. ID 2542_details_M
Scale

FOR REVIEW
JAN. 2023
NOT FOR CONSTRUCTION

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

DRAINAGE OUTFALL DETAILS
MAPLEWOOD AVE – DRAINAGE INTERCEPT
CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

DWG NO D6 | SHEET 14 OF 14

Maplewood Avenue Outfall Improvements
Portsmouth, New Hampshire

Abutter List

September 28, 2022

Tax Map/Lot No.: 124/2
(Maplewood Avenue)
City of Portsmouth
PO Box 628
Portsmouth, NH 03802

Tax Map/Lot No.: 125/19
(90 Maplewood Avenue)
90 Maplewood Avenue LLC
27 Austin Street
Portsmouth, NH 03801

March 2023

City of Portsmouth
PO Box 628
Portsmouth, NH 03802

Tax Map/Lot No.: 124/2

Re: ***Abutter Notification of Standard Dredge and Fill Wetlands Permit Application***
Maplewood Avenue Outfall Improvements
Portsmouth, New Hampshire

Dear Property Owner:

On behalf of the City of Portsmouth, please accept this letter as notification that a Standard Dredge and Fill Wetlands Permit Application is being submitted to the N.H. Department of Environmental Services (DES) Wetlands Bureau for proposed improvements to the outfall at 90 Maplewood Avenue. Under state law RSA 482-A:3 I (d)(1), we are required to notify you about this wetland application, because the City's proposed work abuts your property.

Once the permit is filed, the permit application, including plans of the proposed work will be available for viewing during business hours at the City of Portsmouth's Offices or by scheduling a file review at the NHDES Wetlands Bureau offices by calling (603) 271-2919 or online through the NHDES Public Records Center at the following address:
https://nhdes.govqa.us/WEBAPP/_rs/(S(wd23zfh31mcst04r1jgivddp))/SupportHome.aspx

Please feel free to contact this office if you have any questions concerning this work.

Very truly yours,

UNDERWOOD ENGINEERS, INC.

Daniel J. Rochette, P.E.
Project Manager

Wetlands Impacts area

North Mill Pond

Subject Property
90 Maplewood Avenue, LLC
27 Austin Street
Portsmouth, NH 03801

Abutter
City of Portsmouth
PO Box 628
Portsmouth, NH 03802

Partial Legend

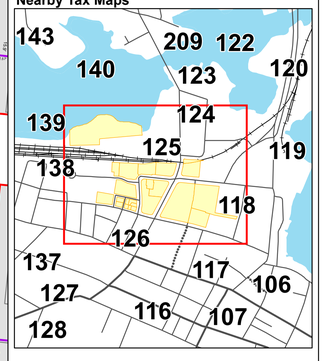
See the cover sheet for the complete legend.

- 7-5A — Lot or lot-unit number
- 2.56 ac — Parcel area in acres (ac) or square feet (sf)
- 25 — Address number
- 233-137 — Parcel number from a neighboring map
- 68' — Parcel line dimension
- SIMS AVE — Street name
- Parcel/Parcel boundary
- Parcel/ROW boundary
- Water boundary
- Structure (1994 data)
- Parcel covered by this map
- Parcel from a neighboring map (see other map for current status)

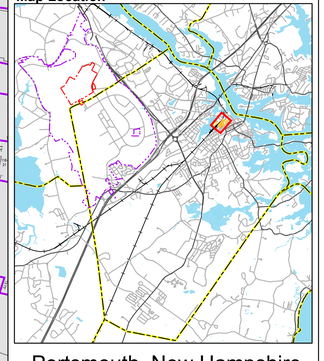
0 50 100 200 Feet
200'-0"
0 20 40 Meters

This map is for assessment purposes only. It is not intended for legal description or conveyance.
Parcels are mapped as of April 1.
Building footprints are 2006 data and may not represent current structures.
Streets appearing on this map may be paper (unbuilt) streets.
Lot numbers take precedence over address numbers. Address numbers shown on this map may not represent posted or legal addresses.

Nearby Tax Maps

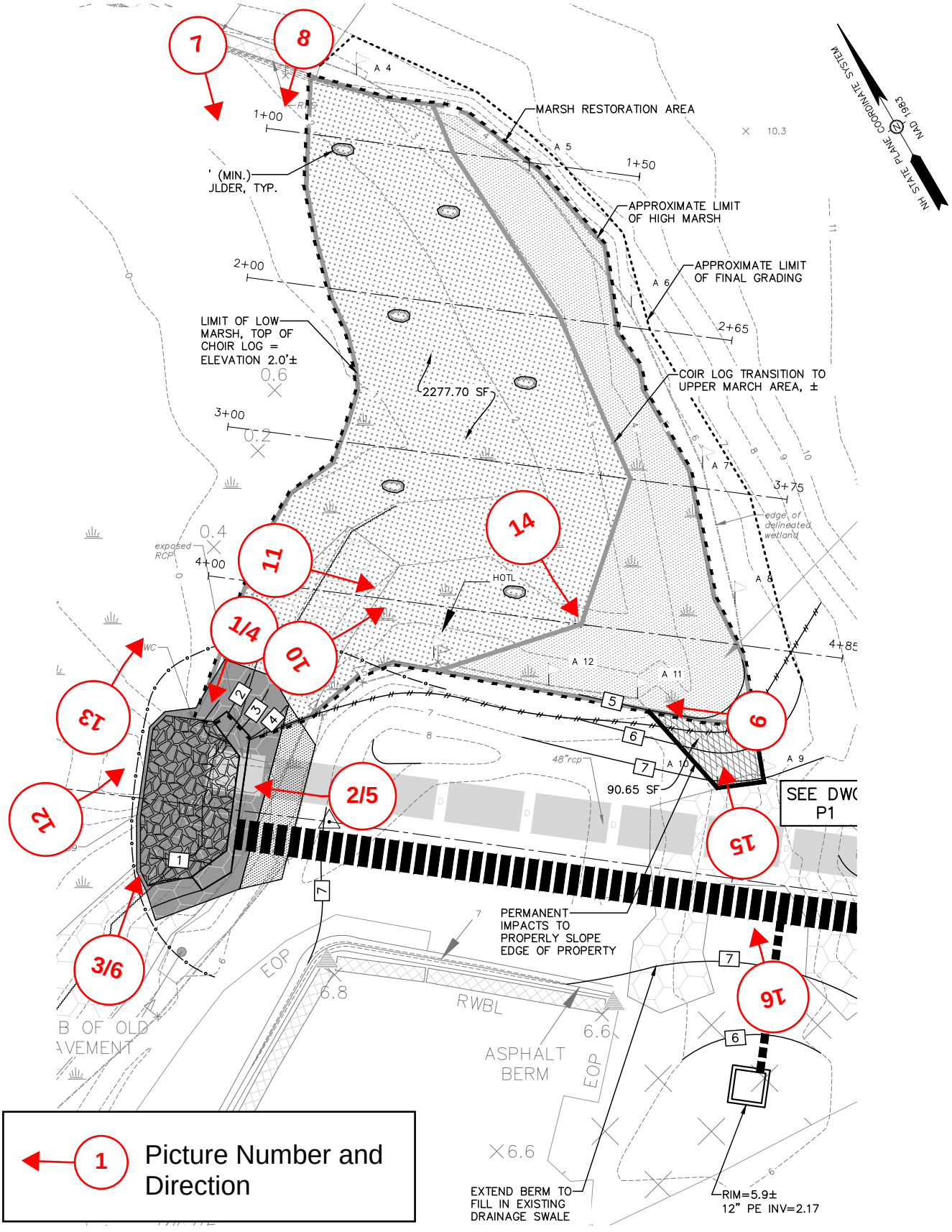


Map Location



Portsmouth, New Hampshire
2021

Tax Map 125



DATE		Photo index	FIG.
3-6-24	UNDERWOOD engineers	Outfall Improvements and Marsh Restoration	3.1
PROJECT 2542	25 Vaughan Mall, Portsmouth, N.H. 03801 Tel. 603-436-6192 Fax. 603-431-4733	Portsmouth, New Hampshire	

Project Area Photos
Maplewood Avenue Outfall Improvements
Portsmouth, NH

Photo 1 – Existing outfall headwall, exposed 48" RCP pipe, and tidal embankment looking west at approximate high tide. Taken 9/28/22

Photo 2 – Existing outfall headwall and exposed 48" RCP pipe looking northwest at approximate high tide. Taken 9/28/22

Photo 3 – Existing outfall headwall, exposed 48" RCP pipe, and tidal embankment looking east at approximate high tide. Taken 9/28/22

Photo 4 – Existing outfall headwall, exposed 48" RCP pipe, and tidal embankment looking west at approximate low tide. Taken 9/29/22

Photo 5 – Existing outfall headwall and exposed 48" RCP pipe looking northwest at approximate low tide. Taken 9/29/22

Photo 6 – Existing outfall headwall, exposed 48" RCP pipe, and tidal embankment looking east at approximate low tide. Taken 9/29/22

Photo 7 – Mitigation area, looking south at approximate low tide. Taken 3/20/24

Photo 8 – Mitigation area, looking southeast at approximate low tide. Note existing large rocks to be stockpiled for use on stabilized slope and ice breakers. Taken 3/20/24

Photo 9 – Small existing marsh area in mitigation area looking northwest at approximate low tide. Note proposed grading will work to include within the proposed high marsh area. Taken 3/20/24

Photo 10 – Mitigation area looking east at approximate low tide. Note undercut embankment below cemetery. Marsh restoration will provide revetement. Trees and vegetation on embankment to remain, tree canopy to be trimmed up approximately 20' from ground surface. Taken 3/20/24

Photo 11 – Small existing marsh area in mitigation area looking northwest at approximate low tide. Note proposed grading will work to include within the proposed high marsh area. Taken 3/20/24

Photo 12 – Existing outfall headwall with mitigation area in background looking east at approximate low tide. Taken 3/20/24

Photo 13 – Approximate location of proposed stabilized marsh sill, looking northeast at approximate low tide. Taken 3/20/24

Photo 14 – Eroded channel in mitigation area at outlet of drainage swale (to be eliminated), looking south at approximate low tide. Taken 3/20/24

Photo 15 – Existing drainage swale outlet (to be eliminated) and erosion in mitigation area looking north at approximate low tide. Taken 3/20/24

Photo 16 – Existing drainage swale (to be eliminated) looking north at approximate low tide. Taken 3/20/24

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

The National Map
OnDemand Topo

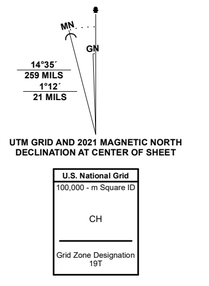
7.5-MINUTE TOPO 1 QUADRANGLE
Custom Extent
7.5-MINUTE TOPO

Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and
1 000-meter grid:Universal Transverse Mercator, Zone 19T

Data is provided by The National Map (TNM), is the best available at the time of map generation, and includes data content from supporting themes of Elevation, Hydrography, Geographic Names, Boundaries, Transportation, Structures, Land Cover, and Orthoimagery. Refer to associated Federal Geographic Data Committee (FGDC) Metadata for additional source data information.

This map is not a legal document. Boundaries may be generalized for this map scale. Private lands within government reservations may not be shown. Obtain permission before entering private lands. Temporal changes may have occurred since these data were collected and some data may no longer represent actual surface conditions.

Learn About The National Map: https://nationalmap.gov



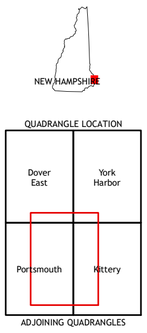
UTM GRID AND 2021 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

U.S. National Grid
100,000 - m Square ID
CH
Grid Zone Designation
19T

SCALE 1:24 000

1 0.5 0 KILOMETERS 1 2
1000 500 0 METERS 1000 2000
1 0.5 0 1
MILES
1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000
FEET

CONTOUR INTERVAL 10 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988
CONTOUR SMOOTHNESS = Medium



ROAD CLASSIFICATION
Expressway
Secondary Hwy
Ramp
Local Connector
Local Road
4WD
Interstate Route
US Route
State Route

7.5-MINUTE TOPO 1, NH
2022

Maplewood Avenue Outfall Improvements and Marsh Restoration
Portsmouth, New Hampshire

Work Sequence Narrative

Note: The sequence of work provided below is a typical sequence for the work proposed. Bidding documents will require the contractor to provide a detailed sequence of work based on their preferred method of installation.

Pipe Installation
Temporary and permanent erosion control devices will be installed at the project site prior to the start of construction in accordance to the Contractor's Approved SWPPP. Silt booms will also be installed in accordance with the project plans in the vicinity of the work. It is anticipated that the contractor will complete all installations during low tide and low flow conditions and permanent flow diversions and engineered dewatering systems will not be required. Any trench dewatering that occurs during installation will be discharged to appropriate silt bags or haybale detention ponds.

The trench for the new proposed 48" reinforced concrete pipe will be excavated through the embankment at North Mill Pond in parallel to the existing 48" reinforced concrete pipe. Following the removal of the existing outfall headwall, a new headwall for the existing and proposed 48" pipes will be constructed in the embankment at low tide. The proposed 48" pipe will be installed in the finished trench and dewatering and daily gravel installation measures will be performed as stated on the project plans.

Site restoration efforts after the completion of the pipe installation will include filling excavations and stabilizing the embankment and other disturbed areas within the jurisdictional wetlands. The temporary and permanent erosion control measures will be removed from the site once vegetation is established and all disturbed areas are fully stabilized.

Marsh Restoration
Contractor will ensure the silt boom is installed across the entire marsh restoration area. Sequence his work to complete all grading and fill operation during low tide conditions. Planting shall be scheduled to occur immediately following the completion grading to begin establishing vegetation as soon as possible. Tree limb trimming as described on the drawings shall occur anytime prior to the planting of marsh vegetation

Following planting of vegetation, the marsh area shall be routinely monitored for erosion and vegetation establishment. Weather conditions will also be monitored so that vegetation is to be watered as required during times of drought. Monitoring will also be in place to ensure that geese and other waterfowl are not negatively impacting the newly planted areas. If waterfowl impacts are observed than measured shall be put in place to deter waterfowl until vegetation is established. Long term observation and maintenance will be conducted by a certified wetlands scientist as required by NHDES to ensure long term success of the mitigated area.

UTILITY EASEMENT DEED

KNOW ALL MEN BY THESE PRESENTS, that 90 Maplewood Avenue LLC with a mailing address of 27 Austin Street, Portsmouth, New Hampshire 03801, County of Rockingham, State of New Hampshire, (herein "Grantor")

FOR CONSIDERATION PAID in the amount of One Dollar ($1.00), receipt of which is hereby acknowledged, grant to the **CITY OF PORTSMOUTH**, its employees, agents, or assigns acting on behalf of the City of Portsmouth, New Hampshire, a municipal body politic, having a mailing address of 1 Junkins Ave, Portsmouth, New Hampshire, 03801, County of Portsmouth, State of New Hampshire (herein referred to as the "Grantee").

WITH QUITCLAIM COVENANTS, the following easement rights with respect to the Grantor's property situated at #90 Maplewood Ave, Portsmouth, Rockingham County, New Hampshire (the "Premises"), Assessor's Map 125, Lot 19. Said easements are further bounded and described as follows:

1. Temporary Easement: Conveying to the Grantee the temporary right and privilege to enter onto the land of the Grantor, for the initial purpose of construction of the drainage pipelines in the area shown on the Easement Plan. The Temporary Easement will expire one year following acceptance of the drainage construction by the City of Portsmouth.

2. Permanent Easement: The Permanent Easement shall be to the limits as they are described on the Easement Plan.

3. Purpose and Rights: It is further agreed that within the described Easements, the Grantor convey to the Grantee the perpetual, permanent, uninterrupted, and unobstructed exclusive easement and right of way in, under, across and over the Easement area for the purpose of installing, operating, maintaining, inspecting, removing, repairing, and replacing: the drain line with their associated pipes, catch basins, manholes, and appurtenances; along the length of the drain line. The Grantee shall have the right to remove pavement, trees, bushes, undergrowth, and other obstructions interfering with the activities authorized herein and to take such other actions as may be reasonably necessary, useful, or convenient for the enjoyment of the easement rights herein granted.

4. Grantee's Responsibility to Restore: Disturbed areas within the Temporary and Permanent Easement areas shall be backfilled and restored along the length of the drain. Pavement will be replaced in kind and other areas disturbed will be loamed and seeded, restored to existing condition, or as otherwise shown on the Easement Plan. Any fences removed will be reset.

5. Grantor's Retained Rights: Grantor retains the right to freely use and enjoy its interest in the Permanent Easement Area insofar as the exercise thereof does not endanger or interfere with the purpose of this instrument. Grantor shall not, however, erect any structure within the Permanent Easement area or substantially change the grade or slope, or otherwise restrict access to the drain operated by the Grantee, without prior written consent of the Grantee.

6. Easement to Run with Land: All rights and privileges, obligations and liabilities created by this instrument shall inure to the benefit of, and be binding upon, the heirs, devises,

administrators, executor, successors and assignees of the Grantee and of the Grantor, the parties hereto and all subsequent owners of the Premises and shall run with the land.

7. Recording of Easement: It is the intention of the grantor and grantee that the easement will be permanently defined with metes and bounds including monumentation following construction of the drainage. The Permanent Easement plan will then be recorded at the Rockingham County Registry of Deeds, at the Grantee's expense.

MEANING AND INTENDING to convey an easement over a portion of the premises conveyed to the within Grantor by deed of 90 Maplewood Avenue LLC dated March 15, 2019, and recorded in Book 5986 Page 661 of the Rockingham County Registry of Deeds.

DATED this _____ day of _____, 2024.

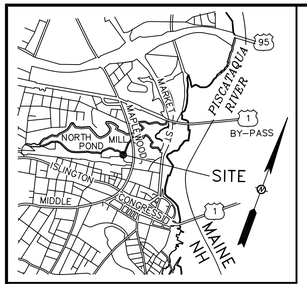
By: _____
Grantor: 90 Maplewood Avenue LLC

STATE OF NEW HAMPSHIRE
COUNTY OF ROCKINGHAM

The foregoing instrument was acknowledged before me this _____ day of _____, 2024 by _____ (Grantor)

_____
Justice of the Peace/Notary Public
Printed Name:

My Commission Expires:



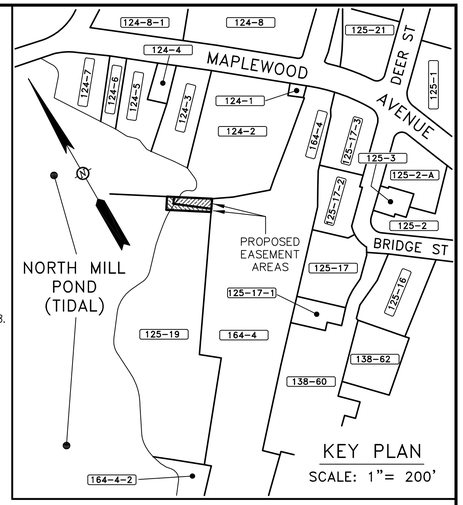
NOTES:

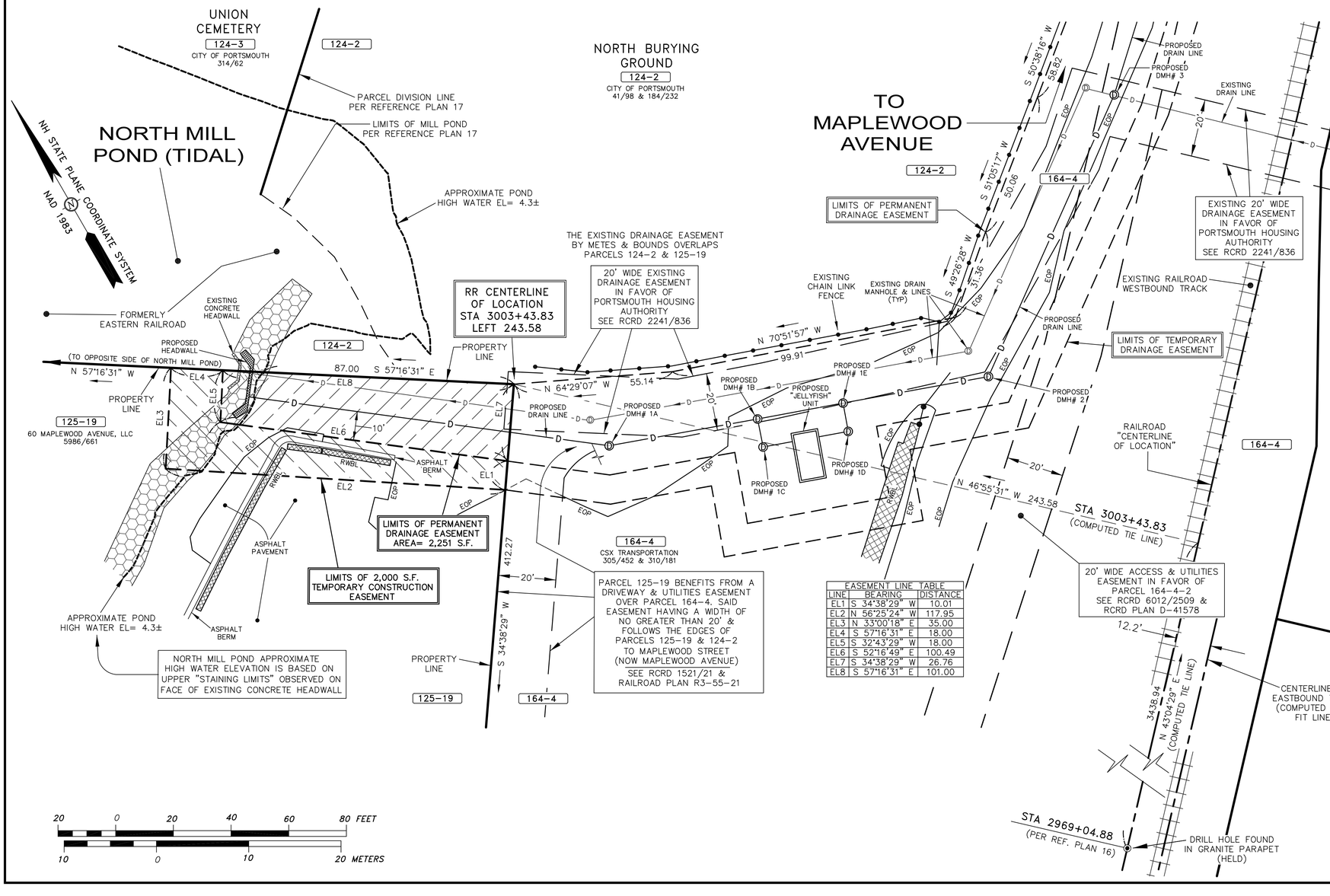
1. OWNER OF RECORD..... **90 MAPLEWOOD AVENUE, LLC**
   ADDRESS..... **27 AUSTIN ST, PORTSMOUTH, NH 03801**
   DEED REFERENCE..... **5986/661**
   TAX SHEET / LOT..... **125-19**
2. THIS PLAN IS BASED ON A FIELD SURVEY BY JAMES VERRA AND ASSOCIATES, INC. 12/2019-6/2022. ON SITE CONTROL ESTABLISHED USING SURVEY GRADE GPS UNITS.
   HORIZONTAL DATUM: NAD 1983 (1986 ADJUSTMENT)
   PRIMARY BM: NHDOT 379-0150 (PORTSMOUTH TRAFFIC CIRCLE)
   VERTICAL DATUM: NAVD 1988
   PRIMARY BM: CITY CONTROL POINT "ALBA"
   UNITS: US SURVEY FOOT
3. THE LOCATION OF ALL UNDERGROUND UTILITIES SHOWN HEREON ARE APPROXIMATE AND ARE BASED UPON THE FIELD LOCATION OF ALL VISIBLE STRUCTURES (IE CATCH BASINS, MANHOLES, WATER GATES ETC.) AND INFORMATION COMPILED FROM PLANS PROVIDED BY UTILITY COMPANIES AND GOVERNMENTAL AGENCIES. ALL CONTRACTORS SHOULD NOTIFY, IN WRITING, SAID AGENCIES PRIOR TO ANY EXCAVATION WORK AND CALL DIG-SAFE @ 1-888-DIG-SAFE.

   NOTE: VERY LITTLE UNDERGROUND UTILITY MARKING WAS COMPLETED PRIOR TO THE FIELD SURVEY.
4. THE RELATIVE ERROR OF CLOSURE WAS LESS THAN 1 FOOT IN 15,000 FEET.

REFERENCE PLANS:

1. VAUGHAN STREET PROJECT, PROJECT NO. R-10, PLAN OF PERIMETER SURVEY, FOR PORTSMOUTH HOUSING AUTHORITY, PORTSMOUTH, N.H., SCALE: 1"= 40', REVISED TO 7/10/1969, BY JOHN W. DURGIN, CIVIL ENGINEER, NOT RECORDED.
2. DISPOSITION MAP, VAUGHAN STREET URBAN RENEWAL PROJECT, N.H. R-10, PORTSMOUTH, N.H., BY ANDERSON-NICHOLS & CO., INC., REVISED TO 11/5/1970, RCRD PLAN D-2408.
3. DISPOSITION MAP, PARCEL 4, VAUGHAN STREET URBAN RENEWAL PROJECT, N.H. R-10, PORTSMOUTH, N.H., BY ANDERSON-NICHOLS & CO., INC., REVISED TO 8/11/1972, RCRD PLAN C-3525.
4. DISPOSITION MAP, PARCEL 4, VAUGHAN STREET URBAN RENEWAL PROJECT, N.H. R-10, PORTSMOUTH, N.H., BY ANDERSON-NICHOLS & CO., INC., DATED 10/1973, RCRD PLAN C-4116.
5. REVISED DISPOSITION MAP, PARCEL 2C, VAUGHAN STREET URBAN RENEWAL PROJECT, N.H. R-10, PORTSMOUTH, N.H., BY ANDERSON-NICHOLS & CO., INC., DATED 7/1974, RCRD PLAN C-4701.
6. SKETCH, RAILROAD PROPERTY LINES - WEST OF DEPOT, PORTSMOUTH, N.H., SCALE: 1"= 30', DATED 4/1938, VAL. SEC. 3, MAP 55 (M222-48), NOT RECORDED.
7. LAND IN PORTSMOUTH, N.H., BOSTON AND MAINE RAILROAD TO CITY CONCRETE CO., INC., SCALE: 1"= 80', RR PLAN: R3-55-21, DATED 1/1955, NOT RECORDED.
8. LAND IN PORTSMOUTH, N.H., BOSTON AND MAINE RAILROAD TO RAYLEEN REALTY COMPANY, RR PLAN: R3-55A-2, DATED 7/1960, RCRD PLAN 03276.
9. LAND IN PORTSMOUTH, N.H., BOSTON AND MAINE RAILROAD TO ALL STATE REALTY CORPORATION, RR PLAN: R3-54-6, DATED 2/1961, RCRD PLAN 00160.
10. LAND IN PORTSMOUTH, N.H., BOSTON AND MAINE RAILROAD TO RAYLEEN REALTY COMPANY, RR PLAN: R3-55-27, DATED 4/1961, RCRD PLAN 03226.
11. BOUNDARY LINE AGREEMENT PLAN & CORRECTIVE PLAN OF LAND FOR THE GAGE COMPANY, DEER STREET ASSOCIATES AND B&M CORPORATION, PORTSMOUTH, N.H., DATED 9/1996, RCRD PLAN D-25007.
12. LOT LINE RELOCATION PLAN, LAND IN PORTSMOUTH, N.H., BOSTON AND MAINE CORPORATION TO DEER STREET ASSOCIATES, BRIDGE, DEER & HILL STREETS, REVISED TO 5/5/2015, RCRD PLAN D-38906.
13. CONSOLIDATION & SUBDIVISION PLAN, DEER STREET ASSOCIATES, BRIDGE, DEER & HILL STREETS, PORTSMOUTH, N.H., REVISED TO 5/18/2016, RCRD PLAN D-39699.
14. LOT LINE RELOCATION PLAN, BOSTON AND MAINE CORPORATION & IRON HORSE PROPERTIES, LLC, PROPERTY LOCATED BETWEEN BARTLETT STREET & MAPLEWOOD AVENUE, PORTSMOUTH, N.H., REVISED TO 5/30/2019, RCRD PLAN D-41570.
15. PROPOSED EASEMENT PLAN, BOSTON & MAINE CORPORATION TO BENEFIT IRON HORSE PROPERTIES, LLC, PROPERTY LOCATED BETWEEN BARTLETT STREET & MAPLEWOOD AVENUE, PORTSMOUTH, N.H., REVISED TO 6/27/2019, RCRD PLAN D-41578.
16. STATION MAP-LANDS, BOSTON AND MAINE RAILROAD, V3NH/SL55, REVISED TO 8/2004.
17. PLAN OF THE NORTH BURYING GROUND, IN THE TOWN OF PORTSMOUTH, DATED 1850, NOT RECORDED, ON FILE AT THE PORTSMOUTH DEPARTMENT OF PUBLIC WORKS.





EASEMENT LINE TABLE		
LINE	BEARING	DISTANCE
EL1	S 34°38'29" W	10.01
EL2	N 56°25'24" W	117.95
EL3	N 33°00'18" E	35.00
EL4	S 57°16'31" E	18.00
EL5	S 32°43'29" W	18.00
EL6	S 52°16'49" E	100.49
EL7	S 34°38'29" W	26.76
EL8	S 57°16'31" E	101.00

20 0 20 40 60 80 FEET
10 0 10 20 METERS

LEGEND:

- 110-5 ..... TAX SHEET - LOT NUMBER
- RCRD ..... ROCKINGHAM COUNTY REGISTRY OF DEEDS
- ..... CHAIN LINK FENCE
- RWBL ..... MODULAR BLOCK RETAINING WALL
- ..... LIGHT POLE
- ..... UTILITY POLE W/TRANSFORMER
- ..... UTILITY POLE
- ..... CATCH BASIN
- ..... DRAIN MANHOLE
- ..... DECIDUOUS TREE
- —D— ..... DRAIN LINE
- ..... CEMENT CONCRETE
- ..... RETAINING WALL
- ..... RIP RAP

STATE OF NEW HAMPSHIRE — NO. 625 — JAMES VERRA — SIGNATURE — LICENSED LAND SURVEYOR

PURSUANT TO RSA 676:18,III AND RSA 672:14

I CERTIFY THAT THIS SURVEY PLAT IS NOT A SUBDIVISION PURSUANT TO THIS TITLE AND THAT THE LINES OF STREETS AND WAYS SHOWN ARE THOSE OF PUBLIC OR PRIVATE STREETS OR WAYS ALREADY ESTABLISHED AND THAT NO NEW WAYS ARE SHOWN.

James Verra — 12/26/2023
JAMES VERRA — DATE

REV. NO.	DATE	DESCRIPTION	APPR'D
3	12/26/2023	REVISE PER PROJECT SURVEYOR COMMENTS	JV
2	12/21/2023	MODIFY BOUNDARY LINE LANGUAGE	JV
1	8/8/2023	MODIFY TEMPORARY CONSTRUCTION EASEMENT PER ENGINEER	JV

EASEMENT PLAN
off MAPLEWOOD AVENUE
PORTSMOUTH, NEW HAMPSHIRE
NORTH MILL POND DRAINAGE OUTFALL
over land of 90 MAPLEWOOD AVENUE, LLC
ASSESSOR'S PARCEL 125-19
for UNDERWOOD ENGINEERS, INC.

JAMES VERRA and ASSOCIATES, INC.
101 SHATTUCK WAY
SUITE 8
NEWINGTON, N.H. 03801-7876
603-436-3557

JV — PROJECT MGR
JCS — DRAWN BY

DATE:	3/16/2023
JOB NO:	23824-2
SCALE:	1" = 20'
DWG NAME:	23824-ESMT
PLAN NO:	23824-ESMT
SHEET:	1 OF 1

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: Dan Rochette, Underwood Engineers
25 Vaughan Mall
Portsmouth, NH 03801
drochette@underwoodengineers.com

From: NHB Review
NH Natural Heritage Bureau
Main Contact: Ashley Litwinenko - nhbreview@dncr.nh.gov

cc: NHFG Review

Date: 02/20/2024 (valid until 02/20/2025)
Re: DataCheck Review by NH Natural Heritage Bureau and NH Fish & Game
Permits: NHDES - Wetland Standard Dredge & Fill - Major

NHB ID: NHB24-0476

Town: Portsmouth
Location: Maplewood Avenue

Project Description: Upgrade and existing drainage outfall at North Mill pond to increase capacity and complete a marsh restoration adjacent to the outfall area

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: No comments at this time.

NHFG Comments: Please refer to NHFG consultation requirements below.

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.

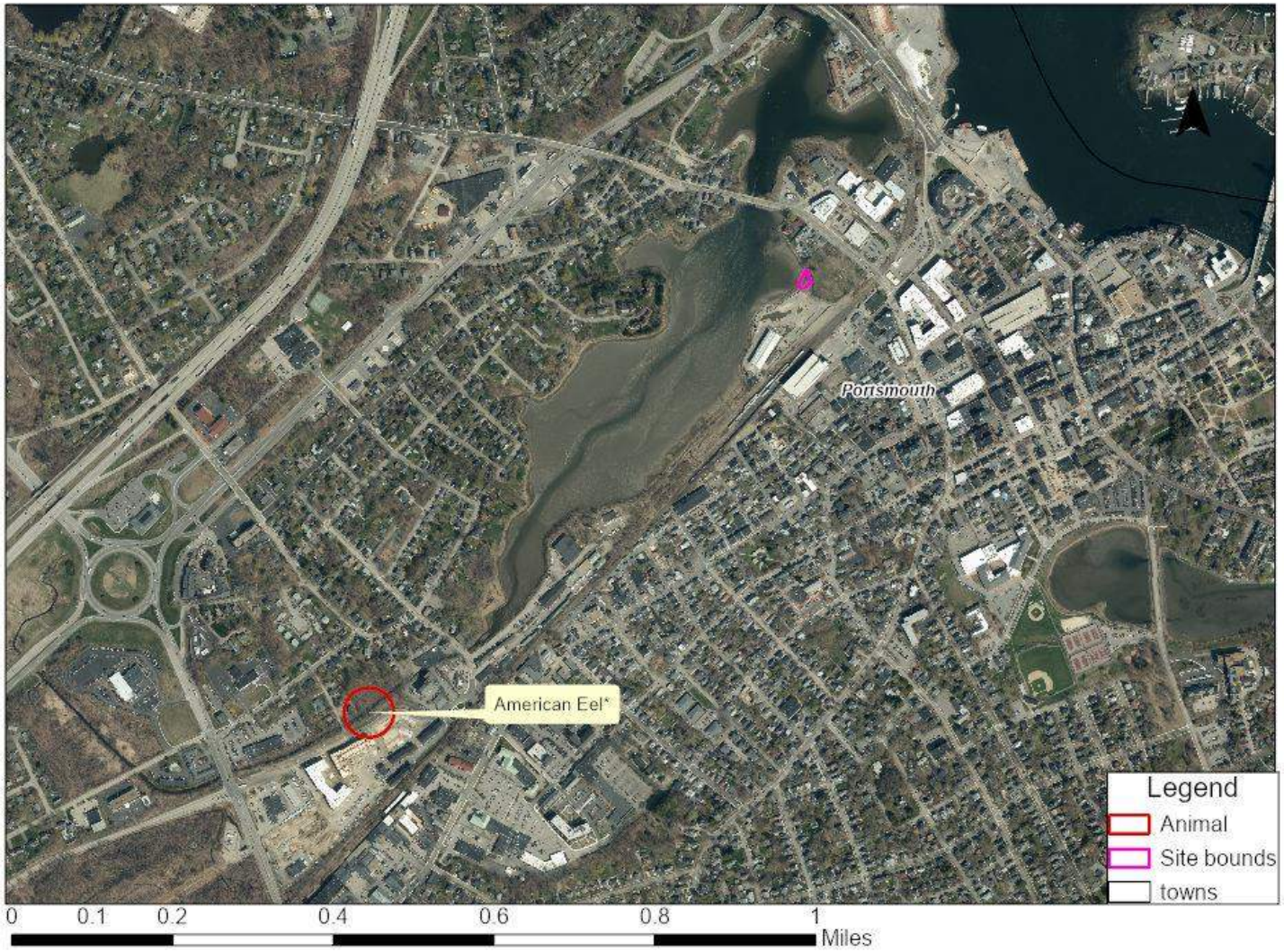
Vertebrate species	State[1]	Federal	Notes
American Eel (*Anguilla rostrata*)*	SC	--	Contact the NH Fish & Game Dept (see above).

[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.

For all animal reviews, refer to 'IMPORTANT: NHFG Consultation' section above.

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.

NHB24-0476


Portsmouth
American Eel*
Legend
Animal
Site bounds
towns
0
0.1
0.2
0.4
0.6
0.8
1
Miles

NHB DataCheck Results Letter
NH Natural Heritage Bureau
Please note: maps and NHB record pages are **confidential** and shall be redacted from public documents.

NHB24-0476 EOCODE: AFCEA01010*004*NH

New Hampshire Natural Heritage Bureau - Animal Record

American Eel (*Anguilla rostrata*)

Legal Status	**Conservation Status**
Federal: Not listed	Global: Apparently secure but with cause for concern
State: Special Concern	State: Rare or uncommon

Description at this Location

Conservation Rank: Not ranked
Comments on Rank: --

Detailed Description: 2000: Area 13217: Not enumerated.
General Area: --
General Comments: --
Management Comments: --

Location

Survey Site Name: Portsmouth Harbor
Managed By:

County: Rockingham
Town(s): Portsmouth
Size: 1.9 acres
Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2000: Hodgson Brook

Dates documented

First reported: 2000 Last reported: 2000

The New Hampshire Fish & Game Department has jurisdiction over rare wildlife in New Hampshire. Please contact them at 11 Hazen Drive, Concord, NH 03301 or at (603) 271-2461.

Daniel Rochette

From: FGC: NHFG review <NHFGreview@wildlife.nh.gov>
Sent: Thursday, March 21, 2024 11:34 AM
To: Daniel Rochette; FGC: NHFG review
Cc: Jacob Stoddard; Sullivan, Kevin
Subject: RE: NHB24-0476 Review need for Consultation

Hi Dan,

Thank you for reaching out. I appreciate your patience while we navigate staffing shortages. You are correct, if the NHB datacheck results letter does not include records of Threatened and/or Endangered species, then consultation with NHFG does is not required to follow Fis rules. However, as you also correctly noted, NHFG consultation is still required for many state permits, including wetlands permit applications. This can make things a bit confusing!

In general, our review of a proposed project follows the same process whether or not a project is required by Fis rules. Depending on the species, some of the recommendations provided by NHFG may be required or strongly recommended in order to avoid impacts to species that may be protected by NH or federal laws (such as migratory birds which have state and federal protection).

You could proceed in two ways. You could provide us with the wetlands pre-application package as a submittal, and we could follow up with you if we have any questions or require additional information. Or, you could submit what you have available currently and request a non-Fis consultation review and provide similar details laid out in Fis 1004. Whatever you decide, you should submit materials via email to NHFGreview@wildlife.nh.gov with the subject line **NHB24-0476 Maplewood Ave, Portsmouth - Env. Review Request**.

We have already assigned you a program review manager for this project. His name is Kevin Sullivan, and his email is kevin.m.sullivan@wildlife.nh.gov if you have specific questions and would like to reach out to him.

I hope this helps clarify things, and please let us know if you have further questions.

Thank you,

Hayley Bibaud
Environmental Review Planner
NH Fish & Game Department
11 Hazen Drive
Concord NH 03301
Phone: (603) 271 - 0467
Email: hayley.a.bibaud@wildlife.nh.gov

New Hampshire Fish and Game requirements for environmental review consultation can be found at: https://gencourt.state.nh.us/rules/state_agencies/fis1000.html. ALL requests for consultation and submittals should be sent via email to NHFGreview@wildlife.nh.gov or can be sent hardcopy by mail. The NHB datacheck results letter number needs to be included in the email subject line to read as **"NHBxx-xxxx_Project Name_FIS 1004 Consultation Submittal".**

The requirements for consultation (Fis 1004) shall not apply to the following: statutory permit by notification, permit by rule, permit by notification, routine roadway registration, docking structure registration, or conditional authorization by rule. Review requests for these projects or other project types should be submitted to NHFGreview@wildlife.nh.gov or can be sent hardcopy by mail – email or mail subject line for these review requests should read **"NHBxx-xxxx_Project Name_ Env. Review Request".**

Please provide shapefiles/KMZ/KMLs of the project site (and relevant features if applicable) with your submittal. Review statements provided in the NHB Datacheck Results letter for additional guidance.

Did you know? New Hampshire Fish and Game protects, conserves, and manages more than 500 species of wildlife and thousands of invertebrates. Learn more at www.wildnh.com/nongame

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From: Daniel Rochette <drochette@underwoodengineers.com>
Sent: Wednesday, February 21, 2024 11:04 AM
To: FGC: NHFG review <NHFGreview@wildlife.nh.gov>
Cc: Jacob Stoddard <jstoddard@underwoodengineers.com>
Subject: NHB24-0476 Review need for Consultation

Good afternoon,

We received the attached NHB24-0476 record review yesterday with a record of an American Eel reported in the vicinity of our project. The project involves upgrading an existing an existing outfall on North Mill Pond in Portsmouth, NH and marsh restoration adjacent to the outfall location as mitigation. As we are working in tidal waters and the wetlands permit will be categorized as a major impact project. I wanted to reach out to ensure we are following the proper procedures with NHF&G as the eel is listed as a 'special concern' species and per the guidance provided, a consultation with NHF&G is not required but coordination is recommended depending on the type of project.

We are currently in the process of scheduling or pre application mitigation meeting with the wetlands bureau and I believe NHF&G is typically a part of that meeting.

Please let me know how to proceed from here or what additional information you may need. I believe we have had other projects in our office with "special concern" results where a formal consultation was not required but some guidance and considerations were provided by NHF&G to be included as part of the construction documents after discussing the project.

Thank You

-Dan

UNDERWOOD engineers

Client service and teamwork for over 40 years!

Daniel J. Rochette, P.E. (NH)
Senior Project Engineer & Technical Leader
Underwood Engineers
Phone: (603) 436-6192
http://www.underwoodengineers.com

AVOIDANCE AND MINIMIZATION WRITTEN NARRATIVE

Water Division/Land Resources Management
Wetlands Bureau

Check the Status of your Application

RSA/ Rule: RSA 482-A/ Env-Wt 311.04(j); Env-Wt 311.07; Env-Wt 313.01(a)(1)b; Env-Wt 313.01(c)

APPLICANT'S NAME: City of Portsmouth **TOWN NAME:** Portsmouth, NH

An applicant for a standard permit shall submit with the permit application a written narrative that explains how all impacts to functions and values of all jurisdictional areas have been avoided and minimized to the maximum extent practicable. This attachment can be used to guide the narrative (attach additional pages if needed). Alternatively, the applicant may attach a completed Avoidance and Minimization Checklist (NHDES-W-06-050) to the permit application.

SECTION 1 - WATER ACCESS STRUCTURES (Env-Wt 311.07(b)(1))

Is the primary purpose of the proposed project to construct a water access structure?

No

SECTION 2 - BUILDABLE LOT (Env-Wt 311.07(b)(1))

Does the proposed project require access through wetlands to reach a buildable lot or portion thereof?

No

SECTION 3 - AVAILABLE PROPERTY (Env-Wt 311.07(b)(2))*

For any project that proposes permanent impacts of more than one acre, or that proposes permanent impacts to a PRA, or both, are any other properties reasonably available to the applicant, whether already owned or controlled by the applicant or not, that could be used to achieve the project's purpose without altering the functions and values of any jurisdictional area, in particular wetlands, streams, and PRAs?

**Except as provided in any project-specific criteria and except for NH Department of Transportation projects that qualify for a categorical exclusion under the National Environmental Policy Act.*

The location selected for outfall improvements is the location of an existing outfall. Using other areas along North Mill pond would require impacts to a new area of shoreline. The area adjacent to the outfall is also previously developed as a paved lot and an old warehouse building. The Embankment stabilization along the cemetery could not occur by making improvements towards the shore as there are burial sites located in close proximity to the top of slope. Therefor any necessary grading or slope stabilization efforts would need to be completed on the seaward side of the embankment. The proposed marsh restoration will serve two functions; 1. provide compensatory mitigation for impacts associated to the outfall, and 2. to provide revetement for the undercut embankment adjacent to the cemetery.

SECTION 4 - ALTERNATIVES (Env-Wt 311.07(b)(3))

Could alternative designs or techniques, such as different layouts, different construction sequencing, or alternative technologies be used to avoid impacts to jurisdictional areas or their functions and values as described in the Wetlands Best Management Practice Techniques For Avoidance and Minimization?

No alternate location was considered for the outfall improvements as adding a parallel pipe to the existing outfall was the simpliest way to increase capacity. The existing location already had select land rights/easements in place for existing infrastructure. Upgrading the existing pipe to provide a single pipe with additional capacity was not an option due to physical constraints with depths and conflicts around other underground utilities. An alternate outfall location for a second pipe while maintaining the existing outfall location would have added an additional outfall location to the pond which would result in additional impacts to natural resources. Also any potential alternate locations to outlet the second pipe would have resulted in longer length of pipe to reach negatively impacting pipe hydraulics as the outlet would have been further below high tide lines than it currently is.

The marsh restoration location was selected as it is directly adjacent to the outfall work. Three separate alternatives were reviewed with NHDES Wetlands bureau and the proposed alternative (marsh with stone armored sill) was selected as the preferred. Other alternatives included reducing the marsh size to reduce the sill height and using timber reimforcement to create tiers with stabilized mudflats and marsh within the same footprint. The alternative selected better meets intent of maximising the marsh restoration.

The work will also include some grading adjacent to the proposed marsh to eliminate surface runoff from the paved parking lot adjacent to to the project area and redirect runoff to a stormwater treatment unit prior to being discharged from the upgraded outfall. The upgraded outfall will also include its own stormwater tretment unit to help maintain water quality in receiving water bodies.

SECTION 5 - CONFORMANCE WITH Env-Wt 311.10(c) (Env-Wt 311.07(b)(4))**

How does the project conform to Env-Wt 311.10(c)?

***Except for projects solely limited to construction or modification of non-tidal shoreline structures only need to complete relevant sections of Attachment A.*

Compensatory mitigation is proposed in the form of the marsh restorations shown on the plan. Approximately 3,600 SF of marsh restoration is proposed to provide compensation for approximately 550 SF of permanent impacts resulting from the outfall work.

Information Required under Env-Wt 903.05(f), Env-Wt 904.07(d), and Env-Wt 603.05

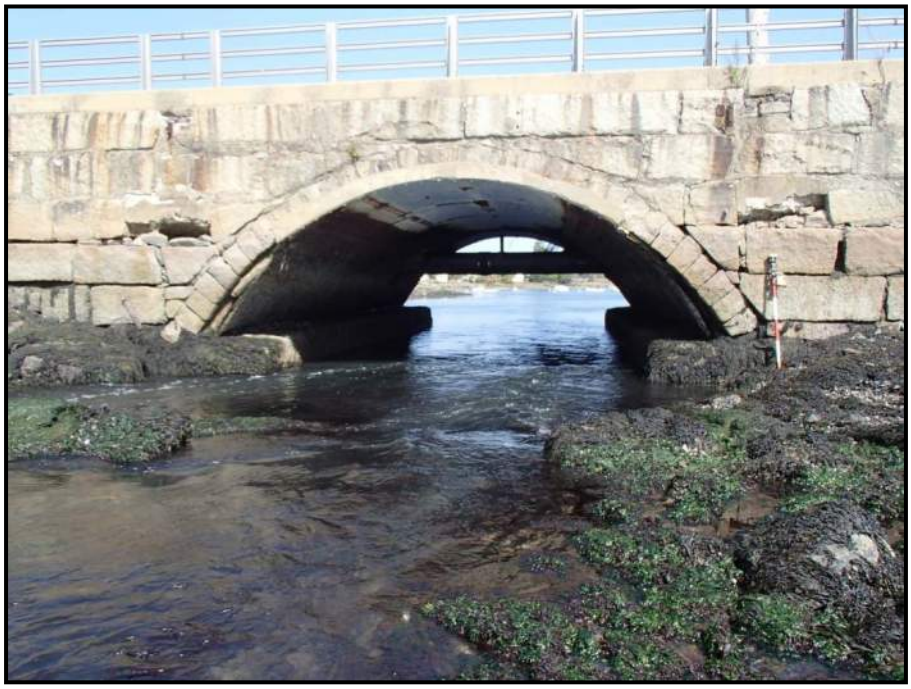
for

Maplewood Avenue over North Mill Pond Bridge Rehabilitation Project

and

North Mill Pond Drainage Outfall Project

Portsmouth, New Hampshire



Prepared For:
Hoyle, Tanner & Associates, Inc.
Pease International Tradeport
100 International Drive, Suite 360
Portsmouth, NH 03801

Prepared by:
Headwaters Consulting, LLC
P.O. Box 744
Littleton, NH 03561

STATE OF NEW HAMPSHIRE
SEAN P. SWEENEY
No. 11053
LICENSED PROFESSIONAL ENGINEER

August 23, 2023

TABLE OF CONTENTS

APPENDICES

A. Introduction

This report describes the hydrologic and hydraulic analyses completed to support a NHDES Wetlands Permit application for the Maplewood Avenue over North Mill Pond Bridge Rehabilitation Project and the North Mill Pond Drainage Outfall Project in Portsmouth, NH. More specifically, this report includes the information required under sections Env-Wt 903.05(f), Env-Wt 904.07(d), and Env-Wt 603.05 of the NHDES administrative rules.

B. Env-Wt 903.05(f)

Env-Wt 903.05(f) requires "a narrative explanation of the effect of the crossing on the tidal hydrograph, and the corresponding effect on the upstream and downstream tidal resource." Since the drainage outfall project does not include a tidal waterway crossing, only the effects of the bridge rehabilitation project on tidal conditions have been evaluated.

Two-dimensional (2D) unsteady flow models which simulate existing (i.e., pre-project) conditions and proposed (i.e., post-project) conditions with the geopolymer liner applied and portions of the existing above-grade concrete footings removed have been developed to evaluate the effect of the proposed bridge rehabilitation work on the tidal hydrograph and North Mill Pond. The models were created using the U.S. Army Corps of Engineers HEC-RAS program (version 6.3). To understand the effects of the proposed bridge rehabilitation work across a range of tidal conditions, pre- and post-project models were developed using two different tide stage hydrographs – one simulating a tide stage crest equal to mean higher-high water (MHHW) and one simulating a tide stage trough equal to mean lower-low water (MLLW). Comparisons between the pre- and post-project models were used to identify changes to maximum and minimum water levels and timing of the high and low tides caused by the rehabilitation work. The following sections describe the development of these models and the analysis results.

B.1. Hydraulic Model Geometry – All Models

The hydraulic models cover an area from a point on Hodgson Brook (a.k.a. Hodgdon Brook) about 1,200 feet southwest (upstream) from Bartlett Street to a point in North Mill Pond approximately 500 feet north of Maplewood Avenue. Model geometry was developed from a combination of field survey data and publicly-available LiDAR data (Coastal New Hampshire - 2014 data set). With the exception of the area in the vicinity of the bridge, the same geometry was used in all of the models.

The LiDAR data does not include below-water ground elevations (i.e., bathymetry), geometry of the corrugated metal arch bridge at Maplewood Avenue, or geometry of the box culvert at Bartlett Street; therefore, this information was field surveyed. Bathymetry of North Mill Pond within the study area was surveyed by Doucet Survey, LLC in late 2019 and early 2020. The Doucet survey also included topography along about 800 feet of Maplewood Avenue, portions of the shoreline north and south of the road, and other above-water areas in the project vicinity. However, it did not include detailed geometry of the existing bridge, bathymetry at the bridge inlet or outlet, geometry of the box culvert at Bartlett Street, or channel bottom elevations at the box culvert inlet or outlet; therefore, this information was field surveyed by Headwaters Consulting, LLC in September 2020. All field survey data was collected relative to NH State Plane coordinates and NAVD88 elevations, which are the same coordinate system and elevation datum the LiDAR data is referenced to (though the LiDAR

data was converted from metric to U.S. customary units). This allowed the field survey data to be merged with the LiDAR data to produce a comprehensive digital elevation model (DEM) of the study area. Figure 1 shows the hydraulic study area DEM with the Doucet field survey area outlined in red and the Headwaters field survey areas outlined in blue. Terrain information in all other areas was generated from LiDAR data.

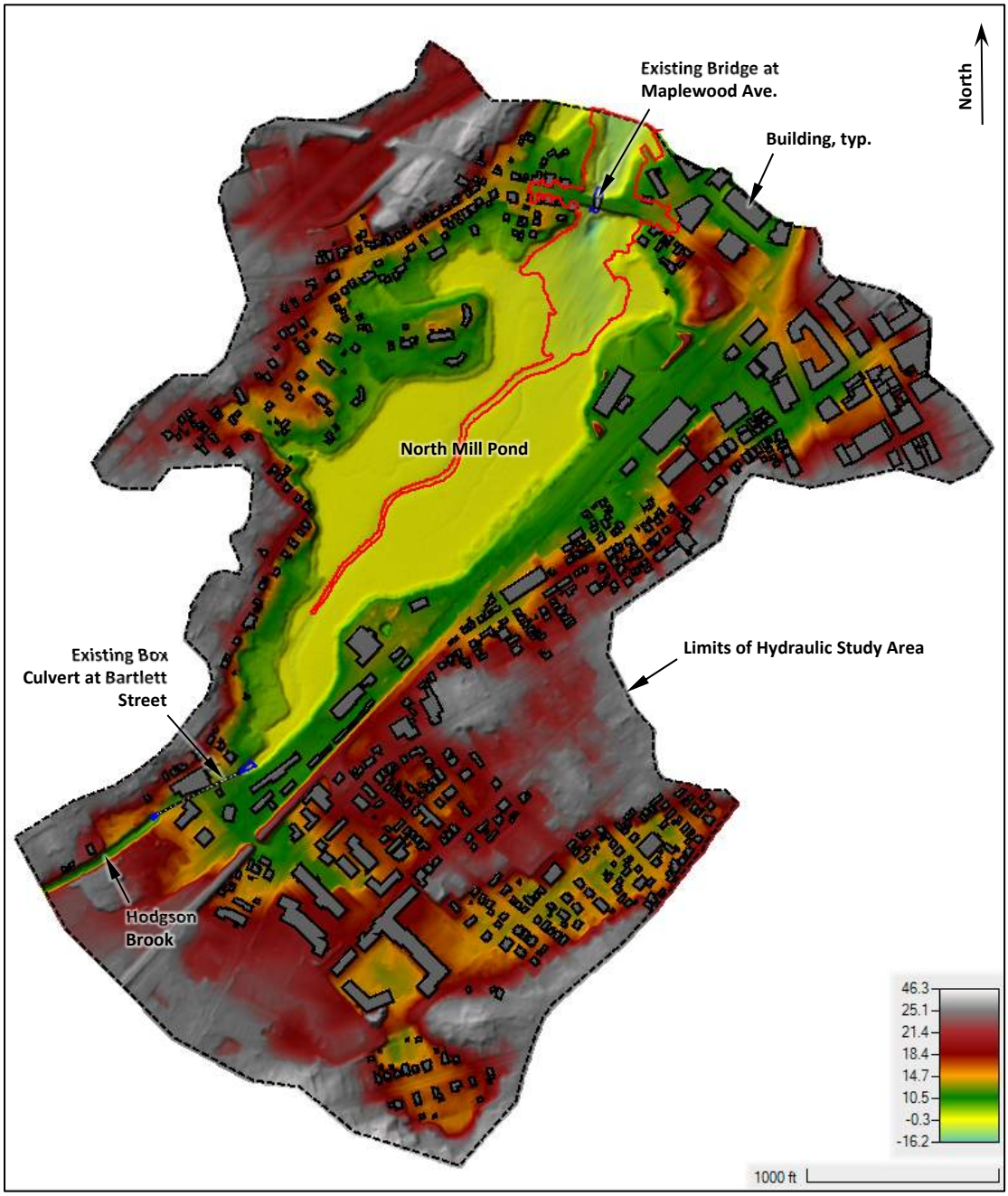


Figure 1 – Existing conditions digital elevation model (DEM) of the hydraulic study area showing areas field surveyed by Doucet Survey, LLC outlined in red and areas field surveyed by Headwaters Consulting, LLC outlined in blue

As shown in Figure 1, there are many buildings within the hydraulic study area. The building footprints were provided by the City of Portsmouth in GIS format and were uniformly assigned

an elevation value of 30 feet in the DEM so that they would be recognized as flow obstructions in the model.

A 2D computational mesh with a 25-foot x 25-foot cell size was overlaid on the DEM. Breaklines were defined along the tops of embankments and other elevated features which obstruct the flow (e.g., Maplewood Avenue) to prevent the model from calculating flow over them before they are actually overtopped. Figure 2 shows the computational mesh layout in the vicinity of Maplewood Avenue for the pre-project hydraulic models.

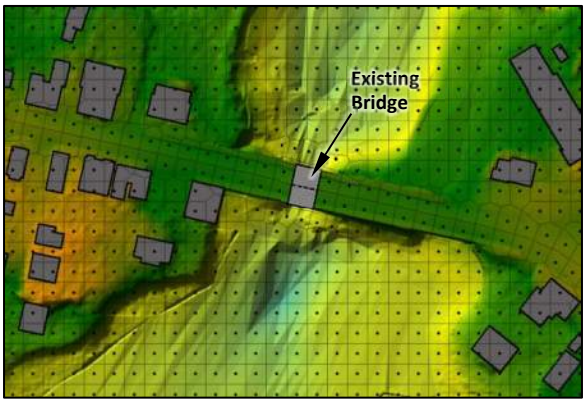


Figure 2 – Computational mesh in the vicinity of Maplewood Avenue used in the pre-project hydraulic models

B.2. Pre-Project Bridge Geometry

Figure 3 shows a photo of the existing bridge inlet and Figures 4 and 5 show cross-sections at the existing bridge inlet and outlet. [Note that although there is bi-directional flow through the bridge, for the purposes of this study the bridge inlet is on the south side of Maplewood Avenue and the bridge outlet is on the north side of the road.] Geometries of the metal arch, concrete footings, and channel bottom are based on field survey data collected by Headwaters Consulting, LLC collected in September 2020. The roadway embankment geometries were determined from the Doucet Survey, LLC survey information.

A 24-inch diameter sanitary sewer main passes through the bridge opening about 15 feet south of the bridge outlet (see Figures 3 and 6). The size, location, and elevation of the sewer main were estimated from a 2009 plan by Haight Engineering, PLLC[1] and superimposed on the existing bridge outlet section (Figure 5).

[1] Existing Profile Plan, Maplewood Ave Culvert Replacement & North Mill Pond Restoration, Portsmouth, NH, prepared by Haight Engineering, PLLC, Sheet C-4, date: 12-30-2009

Figure 3 – View north at the existing bridge inlet (09-23-20)

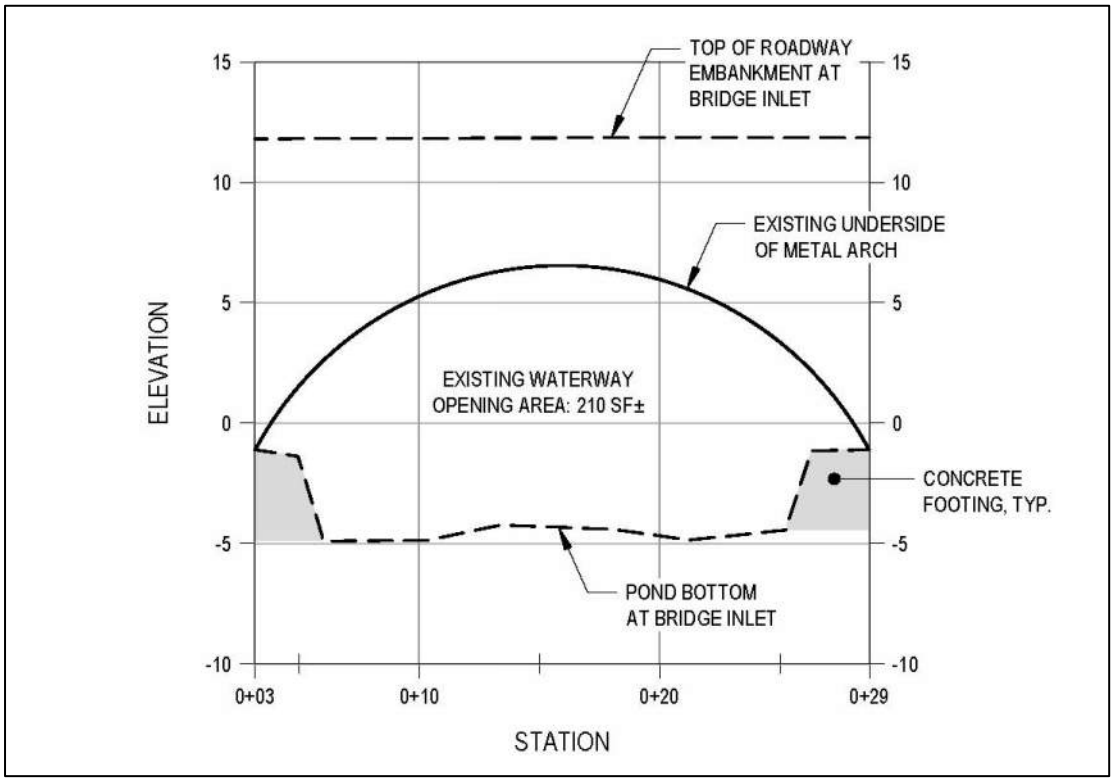


Figure 4 – Existing bridge inlet cross-section

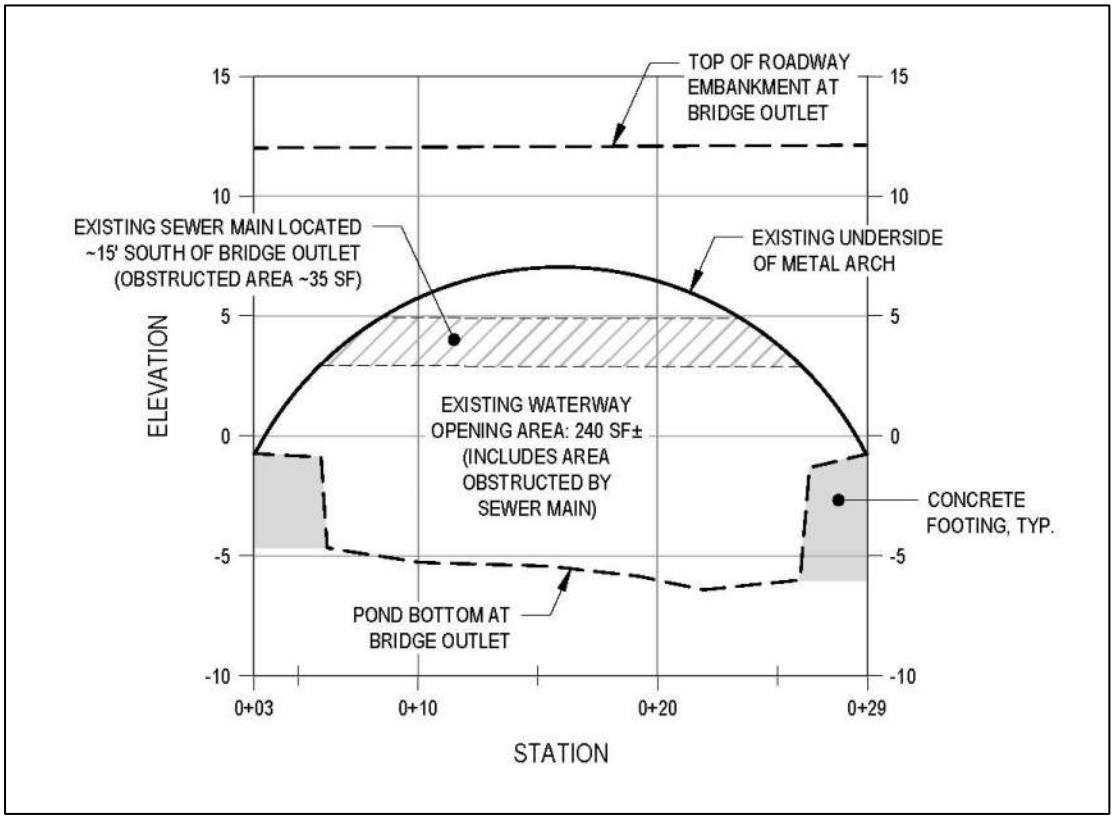


Figure 5 – Existing bridge outlet cross-section

Since the HEC-RAS bridge hydraulics routine computes flow through the bridge only at the inlet and outlet, the true effect of the sewer main cannot be modelled directly. Therefore, in an attempt to estimate its impact, the waterway opening at the bridge outlet was reduced by an area equal to the area obstructed by the sewer main, which is shown to be approximately 35 square feet on the 2009 Haight Engineering plan. Figure 7 shows the bridge outlet section as coded in the pre-project models to account for the sewer main. The waterway opening area at the bridge outlet is approximately 240 square feet when the sewer main obstruction is disregarded. The modeled waterway opening area at the bridge outlet is about 205 square feet.

Figure 6 – View north within the existing bridge opening showing the sewer main (09-23-20)

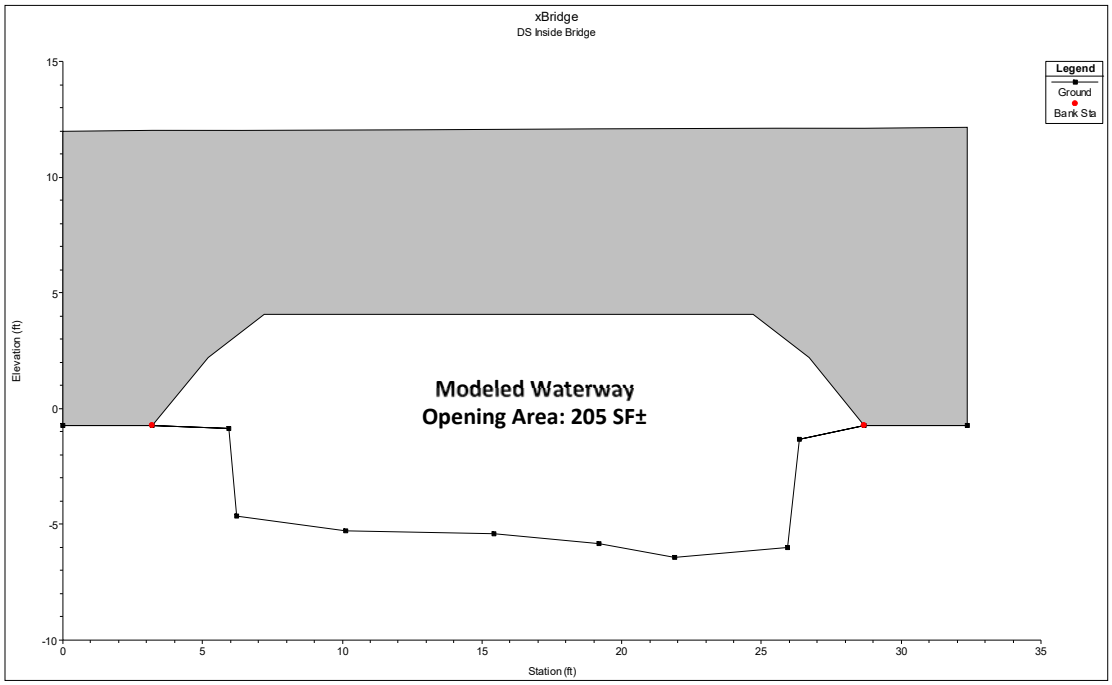


Figure 7 – Existing bridge outlet cross-section as modeled to account for sewer main obstruction

B.3. Post-Project Bridge Geometry

Figure 8 shows a cross-section of the bridge inlet as modeled with the geopolymer liner applied and portions of the concrete footings removed. The existing waterway opening area at the inlet is approximately 210 square feet (see Figure 4). The geopolymer liner would occupy approximately 11 square feet and the concrete footing removal would add about 11 square feet, resulting in no change to the overall waterway opening area at the inlet.

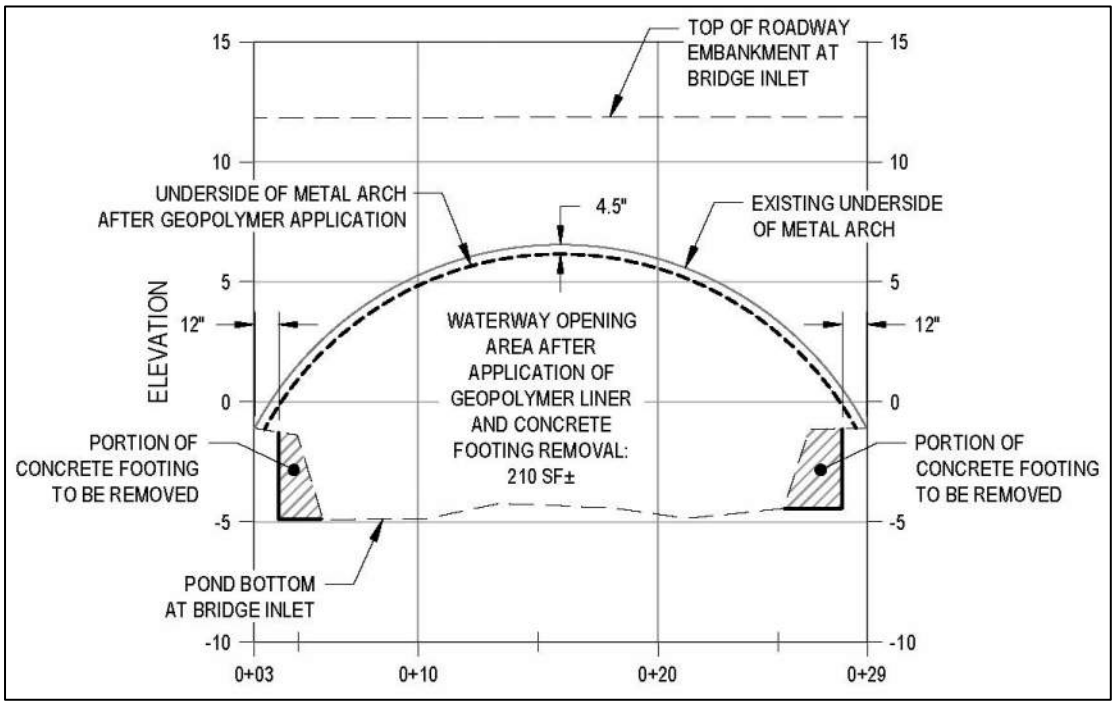


Figure 8 – Post-project bridge inlet cross-section

The waterway opening at the bridge outlet was reduced by an area equal to the sum of the areas obstructed by the geopolymer liner and sanitary sewer main (45 sf) less the area added by removing portions of the concrete footings (15 sf). Figure 9 shows the bridge outlet section defined in the hydraulic models to account for these obstructions and additions which increase the modeled waterway opening area at the bridge outlet from 205 square feet (see Figure 7) to about 210 square feet.

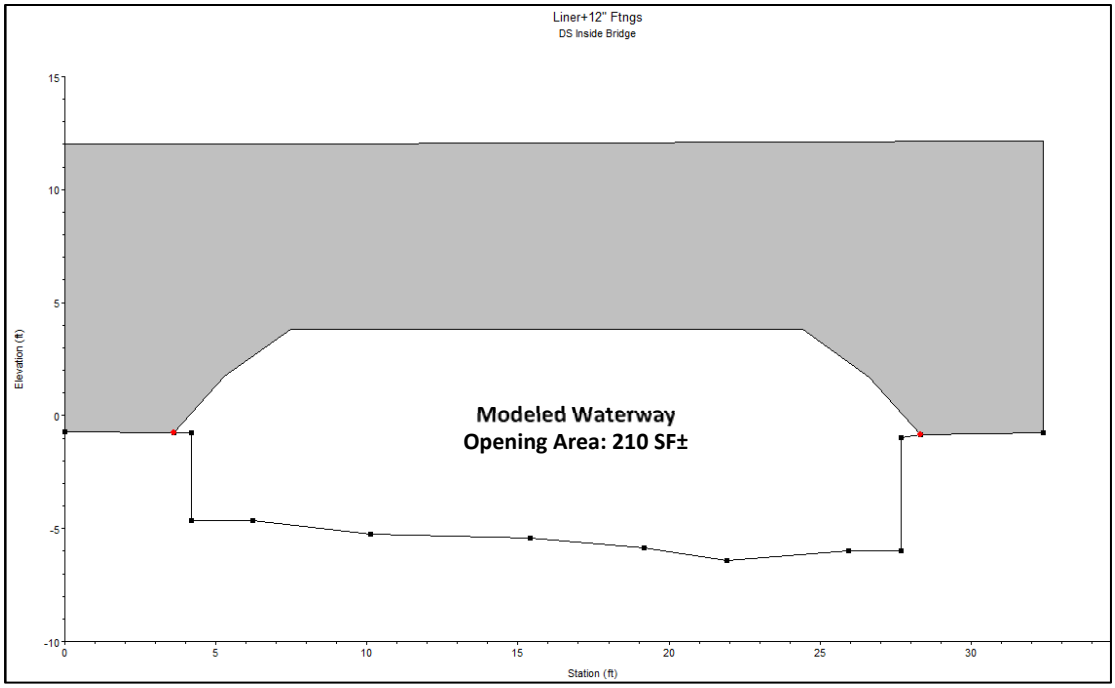


Figure 9 – Post-project bridge outlet cross-section as modeled to account for the areas obstructed by the geopolymer liner and sewer main and the area added by removing portions of the concrete footings

Details for the geopolymer liner at the interface of the metal arch and concrete footings are still being developed and as a result there may be some minor differences between the final proposed waterway opening geometries and those shown in Figures 8 and 9; however, if these result in a diminution of the modeled opening areas, additional concrete footing removal will be incorporated into the details such that the final proposed waterway opening geometries will have the same cross-sectional areas as the modeled waterway openings and the results of these analyses will still be valid.

B.4. Roughness

2017 aerial photography and the “Impervious Surfaces in the Coastal Watershed of NH and Maine, High Resolution – 2015” and "Land Use 2015 - Southeastern New Hampshire" GIS layers downloaded from NHGRANIT were used to map land cover in the hydraulic study area via the creation of GIS land cover polygons. Manning’s n surface roughness coefficients were then assigned to each land cover type for use in the hydraulic modeling. Figure 10 shows the land cover mapping and Table 1 lists the roughness coefficients assigned to the land cover classifications. A full-size copy of the land cover map is included in Appendix 1.

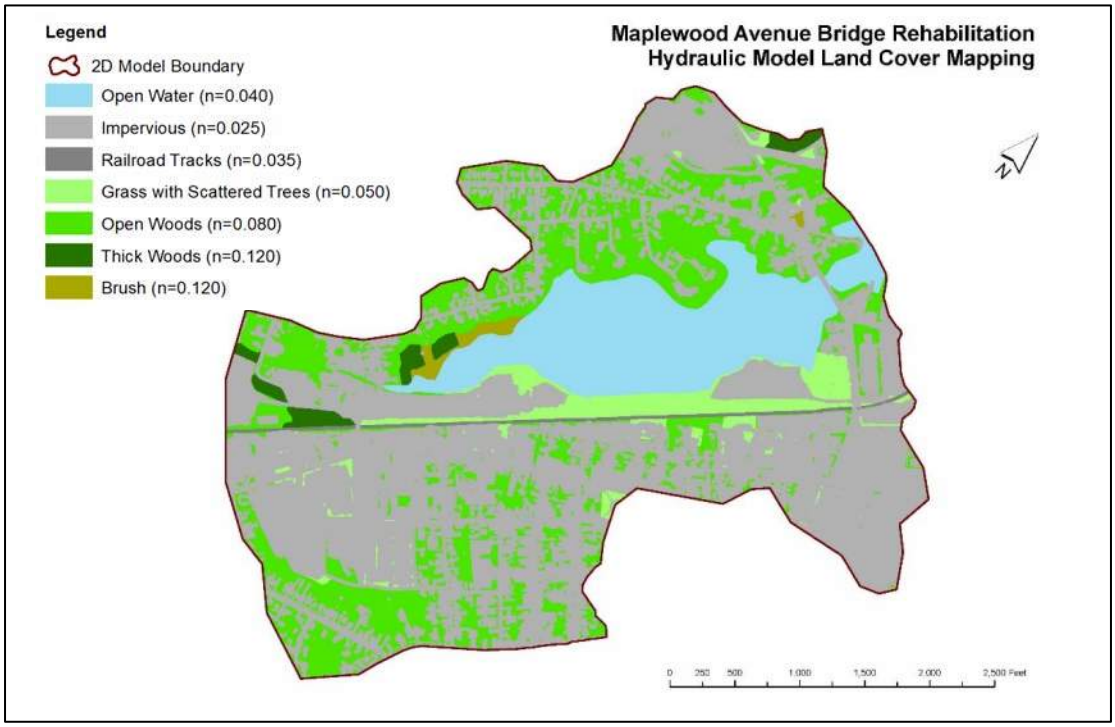


Figure 10 – Land cover mapping

Table 1 – Manning's n roughness coefficients

Land Cover Classification	Manning's n Roughness Coefficient
Open Water	0.040
Impervious Surface	0.025
Railroad Tracks	0.035
Grass with Scattered Trees	0.050
Open Woods	0.080
Thick Woods	0.120
Brush	0.120

Figure 11 shows the hydraulic study area (i.e., 2D model boundary) overlaid on the 2017 aerial photography.

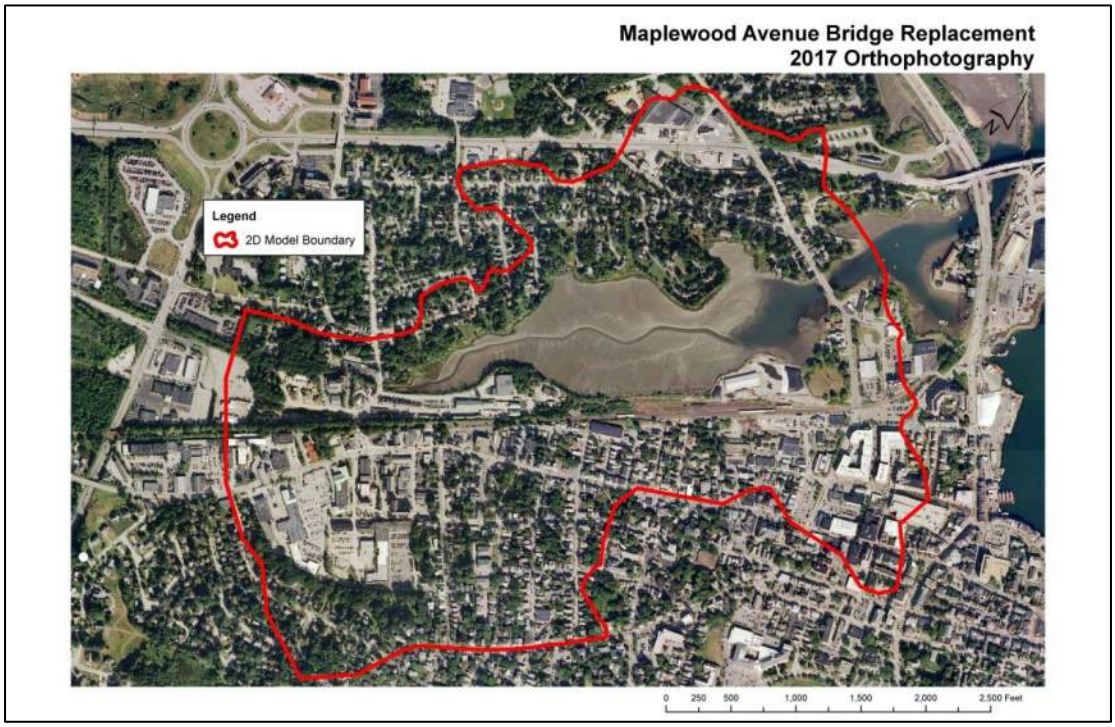


Figure 11 – Hydraulic study area boundary overlaid on 2017 aerial photography

B.5. Boundary Conditions

External boundary conditions were defined at the upstream (south) and downstream (north) limits of the hydraulic study area in each model. These include flow hydrographs at the upstream end of the study area, which represent freshwater inflow to North Mill Pond, and stage hydrographs at the downstream end of the study area to simulate tide fluctuations.

Since Env-Wt 903.05(f) only requires an assessment of project's impact on the tidal hydrograph, the freshwater inflow hydrograph only reflects base flow conditions for Hodgson Brook, which are estimated to be a constant discharge of 2 cfs, which is the approximate flow that is equaled or exceeded 60% of the time predicted by the flow duration regression equations in the web-based USGS StreamStats program[2] (see Appendix 1).

Data from the NOAA Seavey Island tide station (#8419870) were used to develop stage hydrographs for the downstream boundary. The tide station is located at the Portsmouth Naval Shipyard about 1.2 miles due east of the bridge and has operated intermittently between 1926 and present with a cumulative record of approximately 58 years.

Doucet Survey, LLC completed a tidal study In May and June 2022 to relate tide stages on the north side of Maplewood Avenue (i.e., the ocean side) to tide stages measured at the Seavey Island tide station. This involved surveying high and low water elevations at the bridge on three separate occasions, comparing these to the high and low water elevations measured at the tide station, and using the data to calculate tide datums on the north side of the bridge.

[2] 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)

Table 2 summarizes the calculated tidal datums. A summary table from the Doucet tidal study is also included in Appendix 1.

Table 2 – Tide Datums from Doucet Survey Tidal Study

Datum	Description	Maplewood Ave. Bridge (North Side)	Seavey Island Tide Station (#8419870)
HAT	Highest Astronomical Tide	5.6 ft	5.87 ft
MHHW	Mean Higher-High Water	4.0 ft	4.18 ft
MHW	Mean High Water	3.6 ft	3.76 ft
MTL	Mean Tide Level	-0.3 ft	-0.32 ft
MLW	Mean Low Water	-4.2 ft	-4.39 ft
MLLW	Mean Lower-Low Water	-4.5 ft	-4.71 ft
NAVD88	North American Vertical Datum of 1988	0.0 ft	0.00 ft

Tide stage hydrographs used for the downstream boundaries were estimated using water levels measured at the Seavey Island station during tide cycles with crests and troughs equal to MHHW and MLLW, respectively. These occurred most recently at 4:24 AM on July 16, 2021 (higher-high water 4.18 ft) and 6:48 PM on October 26, 2022 (lower-low water -4.71 ft).

Six-minute water level data for 24-hour periods centered on the MHHW and MLLW measurements at the tide station were downloaded from the NOAA website. Per the Doucet tidal study, MHHW on the north side of the bridge is approximately 4.3% lower than MHHW at the tide station and MLLW on the north side of the bridge is approximately 4.5% higher than MLLW at the tide station. The water levels measured at the tide station were lowered and raised by these percentages to generate tide stage hydrogaphs simulating MHHW and MLLW on the north side of the bridge which were used as the downstream boundaries in the models. Figures 12 and 13 show the tide stage hydrographs simulating MHHW and MLLW at the downstream model boundary.

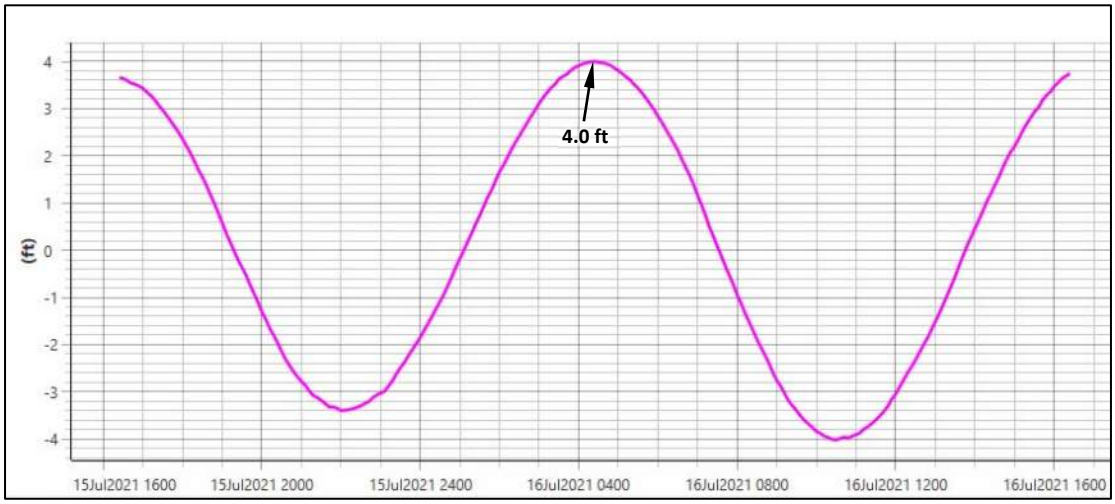


Figure 12 – Tide stage hydrograph simulating MHHW at the downstream model boundary

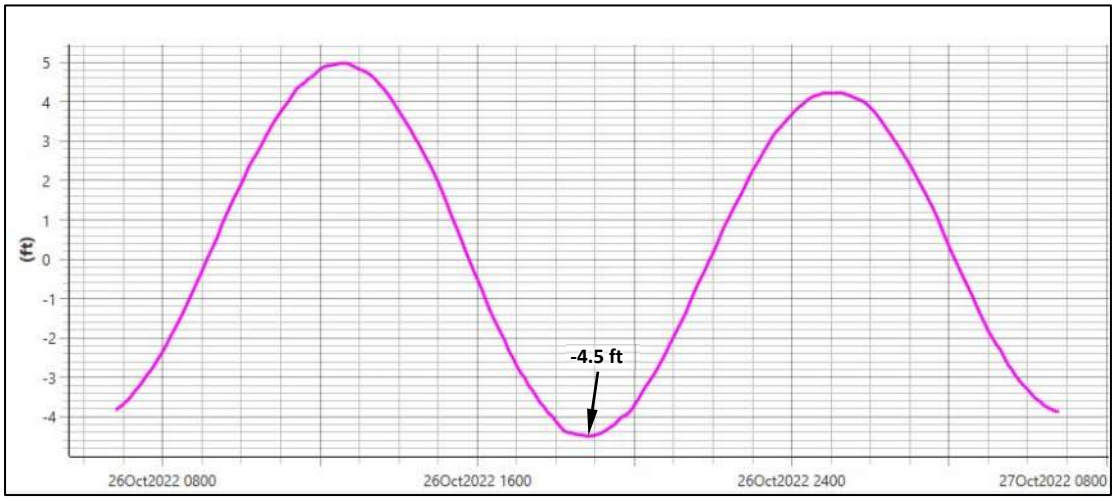


Figure 13 – Tide stage hydrograph simulating MLLW at the downstream model boundary

B.6. Additional Modeling Parameters

All models were run with the full momentum SWE-ELM equation set (i.e., Shallow Water Equations, Eulerian-Lagrangian Method) which is appropriate for tidally-influenced conditions as it is capable of modeling the propagation of dynamic tide cycle waves.

The HEC-RAS program was allowed to adjust the computational time step as needed to produce stable model runs with Courant numbers of about one or less to ensure that flow was not propagating through more than one cell at each time step.

Bridge hydraulics were calculated with the energy-based standard step method for low flow conditions (i.e., open channel flow where the water surface is below the highest point of the bridge low chord) and pressure flow (orifice equations) for high flow conditions when the bridge is submerged. The energy-based method was selected as the low flow computational method because there are no piers and this method accounts for friction losses, changes in geometry through the bridge, and losses due to flow transitions and turbulence. Contraction and expansion coefficients of 0.3 and 0.5, respectively, were used in the energy head loss equation. The pressure flow method was used as the high flow computational method because the bridge deck and roadway are significant flow obstructions which create backwater and result in the bridge opening acting like a pressurized orifice when it is submerged.

B.7. Analysis Results – MHHW

Both the pre- and post-project MHHW models indicate that the peak stage in North Mill Pond south of the bridge is only slightly lower (<0.01 ft) than on the north side of the bridge. Figure 14 shows the inundation area at the MHHW tide stage crest and the centroid of the portion of North Mill Pond south of Maplewood Avenue, which has been selected as a representative location for comparing the pre- and post-project MHHW tidal hydrographs.

Figure 15 shows the pre- and post-project MHHW tide stage hydrographs calculated at the centroid. The analysis shows little change to the tide crest and more substantial changes to the tide trough, which is discussed in Section B.8. Figure 16 shows a zoomed in view of the pre- and post-project stage hydrographs at the tide crest so that the minor changes at the upper end of the tide range projected to result from the bridge rehabilitation project can be seen. As compared to pre-project conditions, the analysis shows no change to the MHHW high water level or duration of the tide crest and that the time to reach the peak stage would be delayed by 1 minute.

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Figure 14 – Inundation area at the MHHW tide stage crest and centroid of the portion of North Mill Pond south of Maplewood Avenue

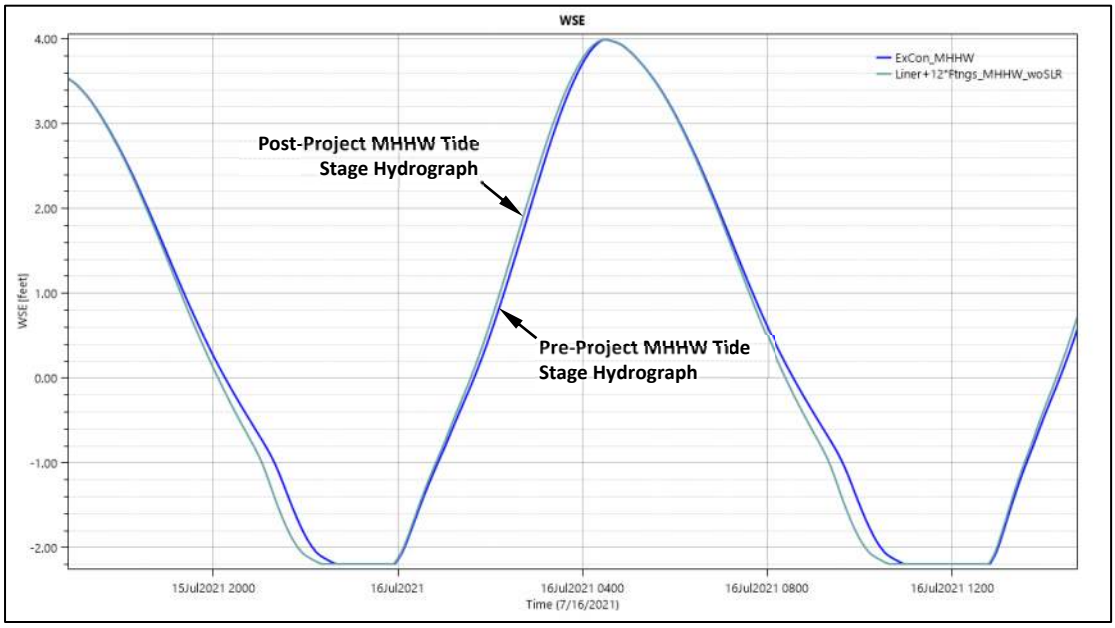


Figure 15 – Pre- and post-project MHHW tide stage hydrographs calculated at the centroid of the portion of North Mill Pond south of Maplewood Avenue

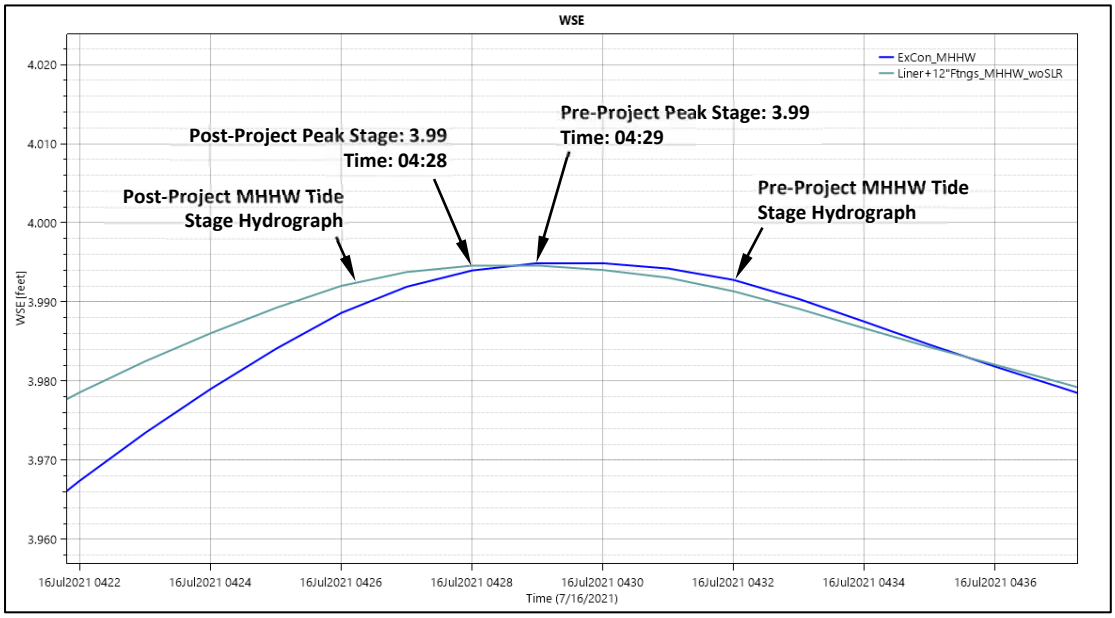


Figure 16 – Crest of the pre- and post-project MHHW tide stage hydrographs calculated at the centroid of the portion of North Mill Pond south of Maplewood Avenue for MHHW

B.8. Analysis Results – MLLW

The pre- and post-project MLLW models indicate that: (1) the project would lower the low water level in the portion of North Mill Pond south of the bridge by 0.10 feet and (2) the lowest stages in North Mill Pond south of the bridge for pre- and post-project conditions are about 1.2 and 1.1 feet higher, respectively, than the lowest water level on the north side of the bridge. Figure 17 shows the pre- and post-project inundation areas at the MLLW tide stage trough in the vicinity of Maplewood Avenue. Blue shading represents the post-project inundation area at MLLW and yellow shading along the periphery of the blue shading indicates the additional areas inundated at MLLW under pre-project conditions. The pre-project MLLW inundation area of the main waterbody south of Maplewood Avenue (i.e., not including isolated areas of ponded water remaining after the tide recedes) is approximately 264,300 square feet (6.067 acres) and the post-project MLLW inundation area of south of the road is about 256,400 square feet (5.886 acres). This is a reduction of approximately 7,900 square feet (0.181 acres) or about 3.0%. Note that at the time steps depicted in

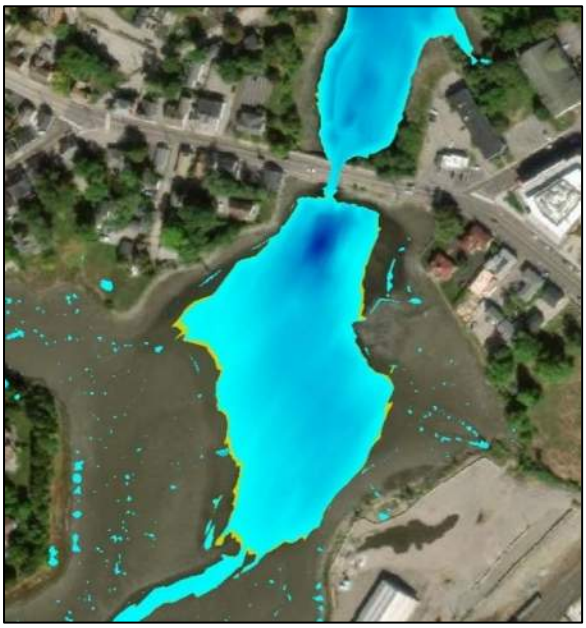


Figure 17 – Inundated areas at the MLLW tide stage trough with blue shading representing the post-project inundation area and yellow shading indicating the additional areas inundated under pre-project conditions

Figure 17, the water level south of Maplewood Avenue has just reached its lowest level, whereas the tide has been rising on the north side of the road for nearly 1½ hours.

Figure 18 – View south from Maplewood Avenue at the grade control feature just upstream from the bridge inlet (09-23-20)

The differences between the water levels on either side of Maplewood Avenue are due to two significant factors: (1) the flow restriction created by the crossing which prevents the pond on the south side of the road from draining as fast as the tide recedes on the north side and (2) what appears to be bedrock grade control on the pond bottom just upstream from the bridge (see Figure 18). The lowest elevation of the grade control was measured at about elevation -3.5 feet (NAVD88). The portion of the pond south of the grade control cannot drain below this elevation even when the water level on the north side of Maplewood Avenue is significantly lower.

Figure 19 shows the pre- and post-project MLLW tide stage hydrographs calculated at a point about 250 feet south of the bridge inlet where the water depth at MLLW is about four feet and Figure 20 shows a detailed view of the hydrographs at the tide cycle trough representing MLLW. The analysis shows that the project would lower the low water level at the tide stage trough by 0.10 feet and reduce the time to reach the low water level by 3 minutes.

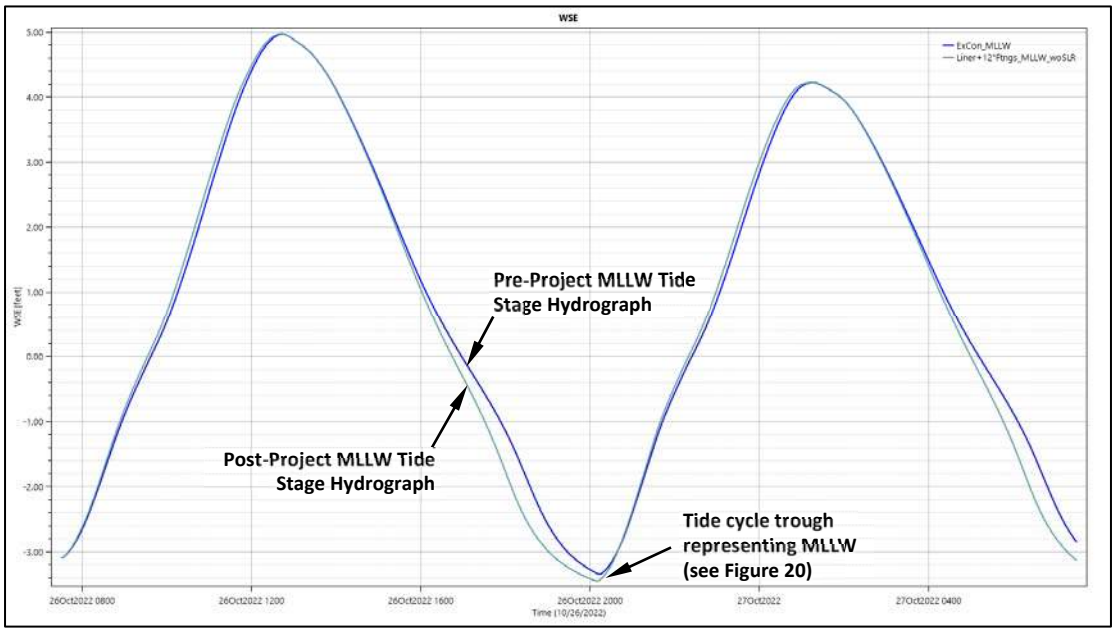


Figure 19 – Pre- and post-project MLLW tide stage hydrographs calculated in North Mill Pond south of Maplewood Avenue

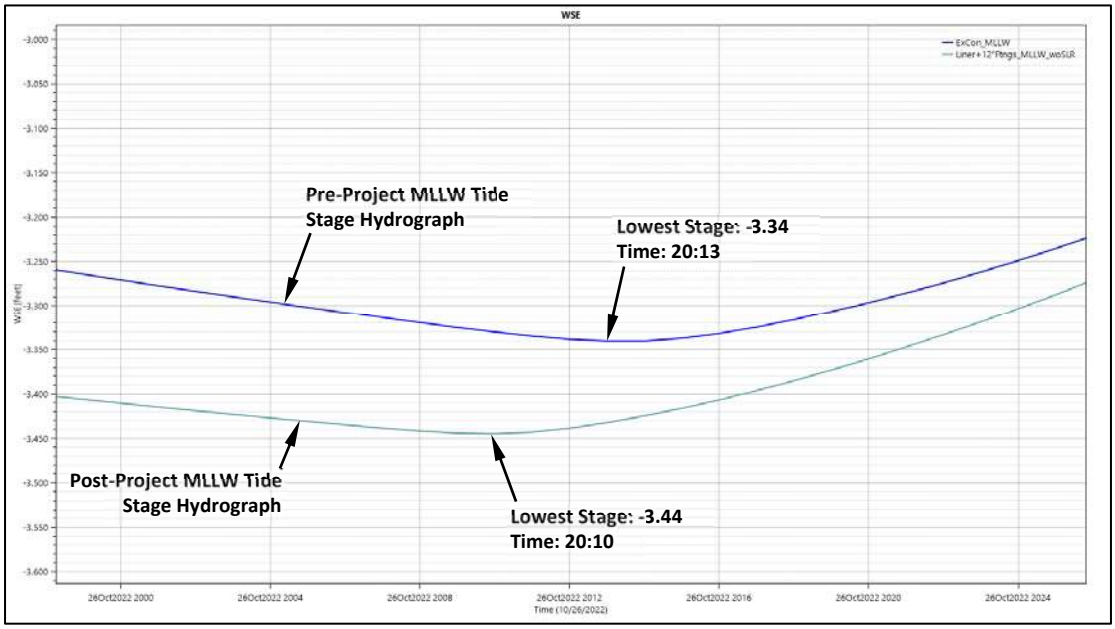


Figure 20 – Troughs of the pre- and post-project MLLW tide stage hydrographs calculated in the portion of North Mill Pond south of Maplewood Avenue

The lower water level, and faster time to reach that level, are explained by the proposed changes to the waterway opening. As compared to the pre-project bridge opening, the post-project opening will be smaller at the top due to the geopolymer liner, but larger at the bottom due to the footing removal. As a result, the bridge will have greater capacity when water levels are low and the portion of the pond on the south side of the road will drain faster as the tide cycle trough approaches. The faster drain time is important as it allows the water level south of the road to reach a lower stage before the water level on the north side of the road rises and the flow reverses.

B.9. Tidal Resource Impact

Because the bridge only restricts flow into and out of the portion of North Mill Pond on the south side of Maplewood Avenue, the project will not affect the tidal hydrograph in the portion of North Mill Pond on the north side of Maplewood Avenue.

Concerning the portion of North Mill Pond south of Maplewood Avenue, the project will not alter the MHHW high water level and changes to the MLLW low water level, inundation area, and water depths are not considered significant enough to adversely affect the tidal resource, particularly in light of the natural water level variability this area experiences due to astronomical tides and local wind and weather patterns.

C. Env-Wt 904.07(d)

Env-Wt 904.07(d) requires that “new, repaired, rehabilitated, or replaced tier 4 stream crossing shall be designed: (1) Based on a hydraulic analysis that accounts for daily fluctuating tides, bidirectional flows, tidal inundation, and coastal storm surge; (2) To prevent creating a restriction on tidal flows; and (3) To account for tidal channel morphology and potential impacts due to sea-level rise.”

The four HEC-RAS 2D flow models described in Section B simulate pre- and post-project conditions under normal astronomical tide conditions (MHHW and MLLW) without sea-level rise (SLR). Twelve additional HEC-RAS 2D flow models were created to analyze the effects of the proposed bridge rehabilitation work under various storm and SLR scenarios. These include:

- MHHW and MLLW with SLR under pre- and post-project conditions;
- 50- and 100-year storms without SLR under pre- and post-project conditions; and
- 50- and 100-year storms with SLR under pre- and post-project conditions.

These models account for fluctuating tides, bidirectional flow, tidal inundation, storm surge, and SLR as required by Env-Wt 904.07(d). All of these models use the same geometry data (including pre- and post-project bridge geometries), roughness, and additional modeling parameters described in Section B. However, each model uses different boundary conditions to simulate the various tide cycle, storm surge, freshwater inflow, and SLR conditions.

The recommended SLR estimate published in Step 3 Table A of NHCFR STAP (2020)[3] for a project with a high tolerance for flood risk and a year 2040 timeframe, which is the timeframe that most closely matches that of the bridge rehabilitation project design life, is 1.0 ft (see Figure 21). For the models which account for SLR, this estimate was used to adjust the present-day tide stage hydrographs to simulate sea-level conditions at the end of the rehabilitated bridge service life. Additional information concerning the projects' flood risk tolerance and timeframe can be found in Section D.3.

STEP 3 TABLE A. RECOMMENDED DECADAL RSLR ESTIMATES (IN FEET ABOVE 2000 LEVELS) BASED ON RCP 4.5, PROJECT TIMEFRAME, AND TOLERANCE FOR FLOOD RISK.

TIMEFRAME	HIGH TOLERANCE FOR FLOOD RISK	MEDIUM TOLERANCE FOR FLOOD RISK	LOW TOLERANCE FOR FLOOD RISK	VERY LOW TOLERANCE FOR FLOOD RISK
	Plan for the following RSLR estimate (ft)* *compared to sea level in the year 2000*			
	Lower magnitude, Higher probability	←	→	Higher magnitude, Lower probability
2030	0.7	0.9	1.0	1.1
2040	1.0	1.2	1.5	1.6
2050	1.3	1.6	2.0	2.3
2060	1.6	2.1	2.6	3.0
2070	2.0	2.5	3.3	3.7
2080	2.3	3.0	3.9	4.5
2090	2.6	3.4	4.6	5.3
2100	2.9	3.8	5.3	6.2
2110	3.3	4.4	6.1	7.3
2120	3.6	4.9	7.0	8.3
2130	3.9	5.4	7.9	9.3
2140	4.3	5.9	8.9	10.5
2150	4.6	6.4	9.9	11.7

Figure 21 – Step 3 Table A from NHCFR STAP (2020)

[3] NH Coastal Flood Risk Science and Technical Advisory Panel (2020). New Hampshire Coastal Flood Risk Summary, Part II: Guidance for Using Scientific Projections. Report published by the University of New Hampshire, Durham, NH.

The 50- and 100-year storm models assume that a tidal storm surge and a freshwater flood on Hodgson Brook occur simultaneously. These are believed to be conservative, but realistic, scenarios as coastal weather systems which generate storm surge also have the potential to produce extreme rainfall. In each storm model the recurrence interval of the tidal storm surge and the freshwater flood are assumed to be equal. For example, the 50-year storm models assume that a 50-year tidal storm surge and a 50-year freshwater flood occur simultaneously. Furthermore, in these models the tide stage hydrographs and the freshwater inflow hydrographs are assumed to peak concurrently so as to simulate near worst-case scenarios wherein the peak inland runoff enters North Mill Pond at the same time the storm tide reaches its maximum level.

Independent hydrology studies to estimate the rate and volume of rainfall runoff into North Mill Pond from various storms have been completed for the bridge rehabilitation project and the drainage outfall project. The hydrology study for the bridge rehabilitation project was performed by Headwaters Consulting and produced estimates of the 50- and 100-year rainfall runoff hydrographs for the entire watershed of North Mill Pond upstream from the bridge which encompasses the watershed of the drainage outfall. The hydrologic analysis for the drainage outfall project was done by Underwood Engineers and included only the watershed of the drainage outfall. For both studies the SCS unit hydrograph method was used with the HydroCAD computer program to estimate the freshwater inflow hydrographs. A complete copy of the Headwaters Consulting hydrology study is included in Appendix 2. Output from the HydroCAD models prepared by Underwood Engineers can be found in Appendices 3 and 4.

The watershed area of the drainage outfall at North Mill Pond (37 acres) represents about 1.4% of the overall watershed area of the pond at Maplewood Avenue (2,628 acres). The drainage outfall project proposes improvements to the stormwater collection system which would increase its maximum flow capacity, but it will not expand the watershed area, add impervious surfaces, or otherwise increase the overall stormwater runoff volume, except that it is designed to accommodate future separation of existing roof drains that are currently connected to the sanitary sewer system but have been incorporated into the outfall's drainage calculations. The pre- and post-project HydroCAD models for the drainage outfall project show no change to the watershed area, runoff curve numbers (CN), or total runoff volume (see Appendices 3 and 4). [Note that the HydroCAD outputs show a minor difference between the pre- and post-project total runoff volumes; however, this is because the two models used different time spans. The pre- and post-project runoff volumes would be identical if the same time span had been used.]

A comparison between the results of the bridge rehabilitation and drainage outfall hydrology studies shows that under both pre- and post-project conditions: (1) peak runoff at the bridge occurs about 7.3 hours after peak runoff from the drainage outfall enters the pond and (2) nearly the entire runoff volume from the drainage outfall watershed enters North Mill Pond by the time peak runoff from the overall watershed occurs. This is due to the small size of the drainage outfall watershed, the absence of any significant floodwater storage areas, and its close proximity to the pond. By contrast, runoff from the hydraulically most distant point of the overall watershed, located at the Portsmouth International Airport, must travel approximately 4.4 miles to the bridge.

Therefore, because the drainage outfall project is not expected to significantly increase the total runoff volume or alter the timing of runoff to North Mill Pond, it is not projected to change the peak flows, runoff volumes, or flow hydrographs calculated for the entire watershed draining to the bridge. Consequently, the same 50- and 100-year flow hydrographs calculated under the

bridge rehabilitation project hydrology study (see Appendix 2) have been used in both the pre- and post-project HEC-RAS 2D flow models which simulate storm conditions.

Detailed descriptions of the boundary conditions used in the models and the analysis results are provided in the following sections.

C.1. Pre- and Post-Project MHHW Models without SLR

These are the same models described in Section B which use the pre- and post-project bridge geometries and the MHHW tidal hydrograph. Additional results from these models are presented in this section to meet the requirements of Env-Wt 904.07(d)(2) relative to tidal flow restriction.

Figures 22 and 23 show the MHHW stage and flow hydrographs at the bridge calculated for pre- and post-project conditions, respectively. The headwater stage is the water level at the bridge inlet on the south side of Maplewood Avenue and the tailwater stage is the water level at the bridge outlet on the north side of the road. Note that when the headwater stage is greater than the tailwater stage flow is from south to north and the flow values are positive. When the tailwater stage is higher than the headwater stage flow is from north to south and the flow values are negative.

The maximum flow through the bridge from south to north during the MHHW tide cycle is 721 cfs for pre-project conditions and 762 cfs for post-project conditions, an increase of 41 cfs, or approximately 5.7%. The maximum flow through the bridge from north to south during the MHHW tide cycle is 960 cfs for pre-project conditions and 946 cfs for post-project conditions, a reduction of 14 cfs, or approximately 1.5%.

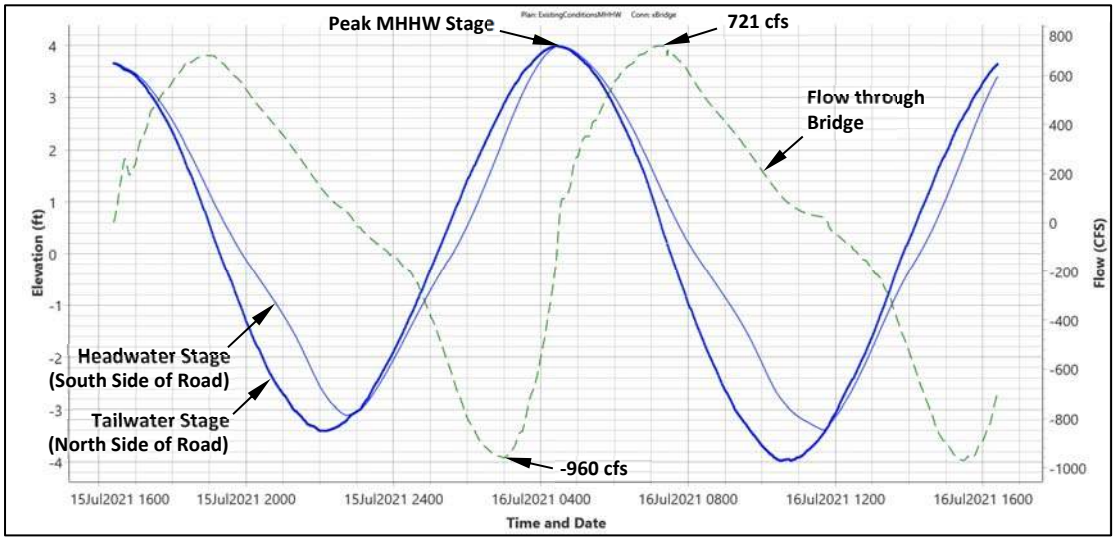


Figure 22 – Pre-project stage and flow hydrographs calculated at the bridge for MHHW without SLR

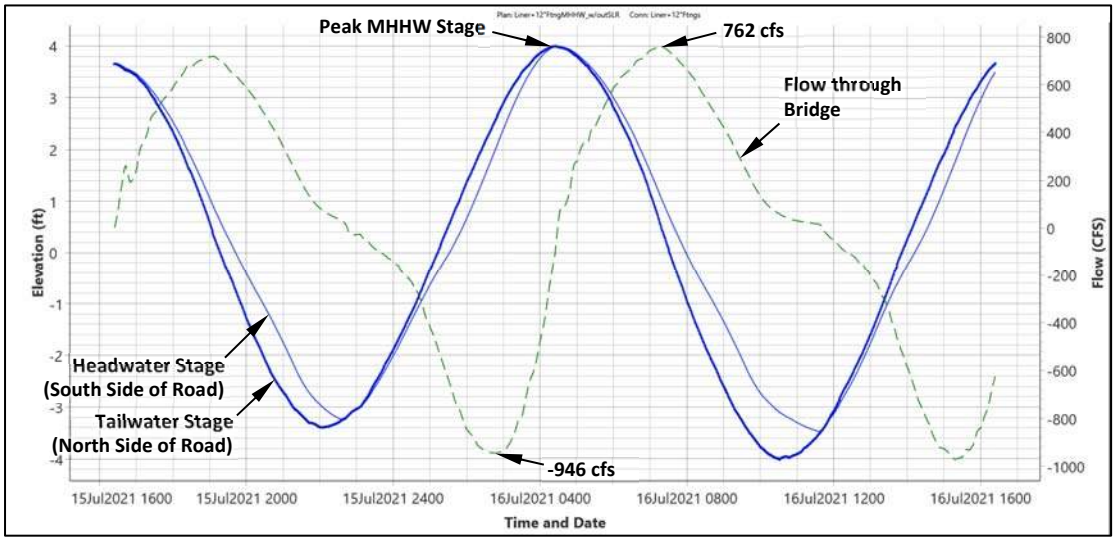


Figure 23 – Post-project stage and flow hydrographs calculated at the bridge for MHHW without SLR

The proposed bridge rehabilitation would result in increased peak flow through the bridge from south to north for the MHHW event, indicating that the project will not restrict tidal flows during the outgoing tide and would in fact reduce the existing flow restriction. The small reduction in peak flows from north to south is explained by the faster rate that the portion of the pond south of Maplewood Avenue would fill during the incoming tide (see Figure 15) which decreases the water level differential on either side of the bridge and reduces the maximum flow rate through it. This also indicates that the project will not restrict tidal flows, even though this decreased differential results in a slightly lower peak flow.

C.2. Pre- and Post-Project MLLW Models without SLR

These are the same models described in Section B which use the pre- and post-project bridge geometries and the MLLW tidal hydrograph. Additional results from these models are presented in this section to meet the requirements of Env-Wt 904.07(d)(2) relative to tidal flow restriction.

Figures 24 and 25 show the MLLW stage and flow hydrographs at the bridge calculated for pre- and post-project conditions, respectively. The maximum flow through the bridge from south to north during the MLLW tide cycle is 858 cfs for pre-project conditions and 895 cfs for post-project conditions, an increase of 37 cfs, or approximately 4.3%. The maximum flow through the bridge from north to south during the MLLW tide cycle is 1,092 cfs for pre-project conditions and 1,097 cfs for post-project conditions, an increase of 5 cfs, or approximately 0.5%.

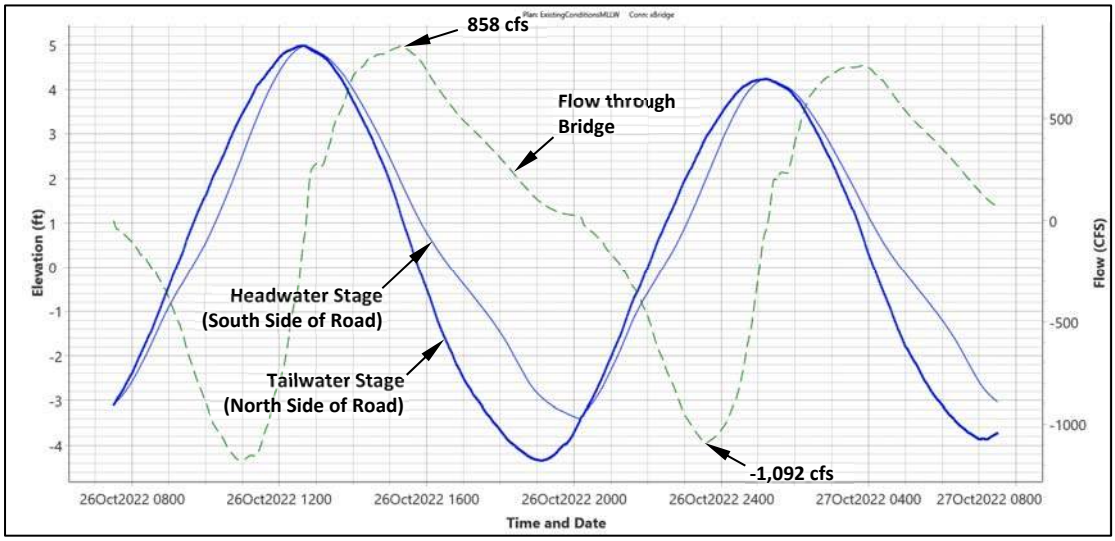


Figure 24 – Pre-project stage and flow hydrographs calculated at the bridge for MLLW without SLR

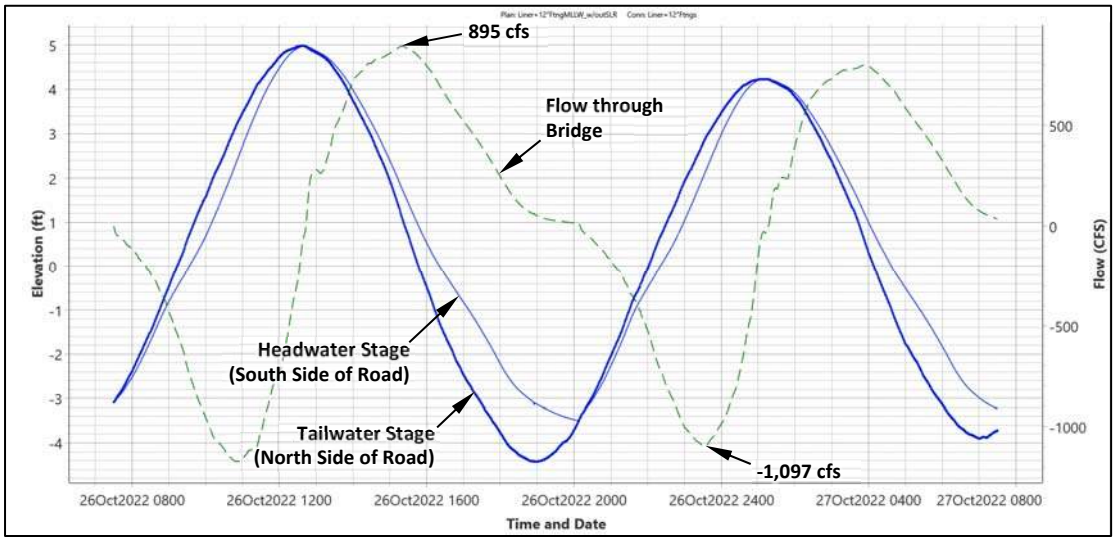


Figure 25 – Post-project stage and flow hydrographs calculated at the bridge for MLLW without SLR

The proposed bridge rehabilitation would increase flow rates through the bridge in both directions during the MLLW event; therefore, the project will not restrict tidal flows for this event under present-day sea-level conditions and would in fact reduce the existing flow restriction.

C.3. Pre- and Post-Project MHHW Models with SLR

The water level at each time step of the present-day MHHW tide stage hydrograph shown in Figure 12 was raised by 1.0 ft to develop an estimate of the MHHW tide stage hydrograph with SLR during the bridge rehabilitation project design life. This results in a MHHW stage of 5.0 ft (NAVD88) on the north side of the bridge. The estimated MHHW tide stage hydrograph with SLR shown in Figure 26 was used as the downstream boundary in the models. The same flow hydrograph used in the MHHW model without SLR, which assumes a constant base flow of 2 cfs in Hodgson Brook, was used as the upstream boundary in the models.

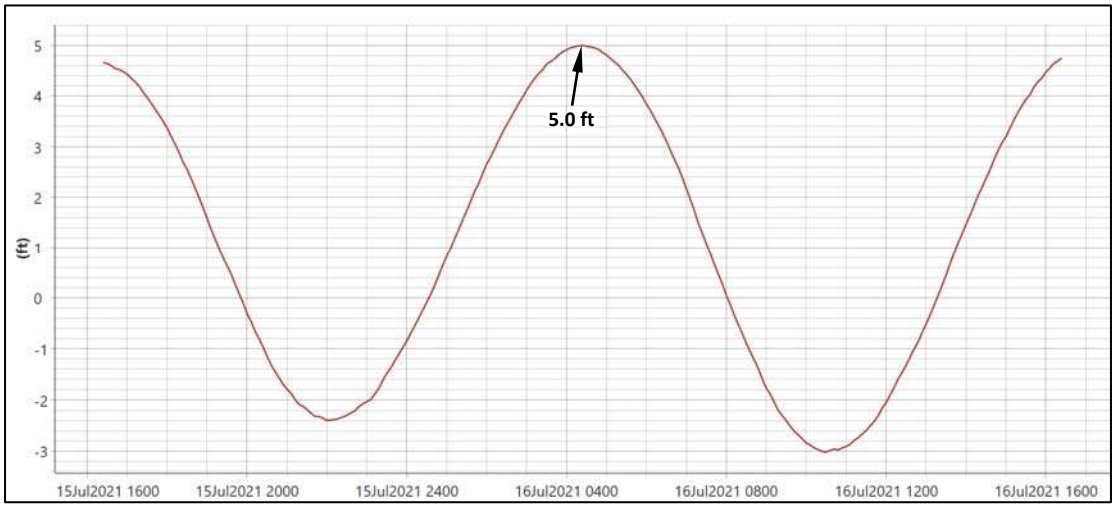


Figure 26 – Tide stage hydrograph simulating MHHW with 1.0' SLR at the downstream model boundary

Both the pre- and post-project MHHW models with SLR indicate that the peak stage in North Mill Pond south of the bridge would be only slightly lower (~0.01 ft) than on the north side of the bridge. Figure 27 shows the inundation area at the MHHW tide stage crest with 1.0 ft SLR for both pre- and post-project conditions.

Figure 27 – Inundation area at the MHHW tide stage crest with 1.0 ft SLR for both pre- and post-project conditions

Figure 28 shows the pre- and post-project MHHW tide stage hydrographs with 1.0 ft SLR calculated at the centroid of the portion of North Mill Pond south of Maplewood Avenue. The analysis shows very little difference in maximum water levels or the timing of the tide stage crest between pre- and post-project conditions. Consequently, the pre- and post-project stage hydrographs near the tide stage crest shown in Figure 28 cannot be distinguished from each other. Therefore, Figure 29 shows a zoomed in view of the hydrographs at the crest stage representing MHHW with 1.0 ft SLR so that the minor changes to the tidal hydrograph resulting from the project can be seen. As compared to pre-project conditions, the analysis shows that the peak stage would increase by less than 0.002 ft and the time to reach the peak stage would be reduced by 1 minute.

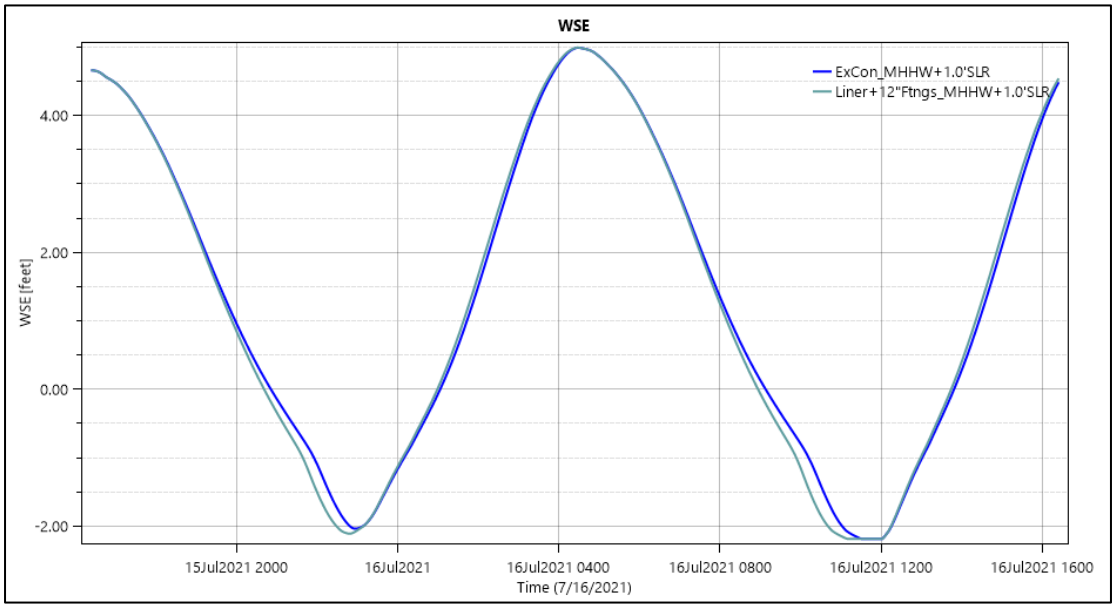


Figure 28 – Pre- and post-project MHHW tide stage hydrographs with 1.0 ft SLR calculated at the centroid of the portion of North Mill Pond south of Maplewood Avenue

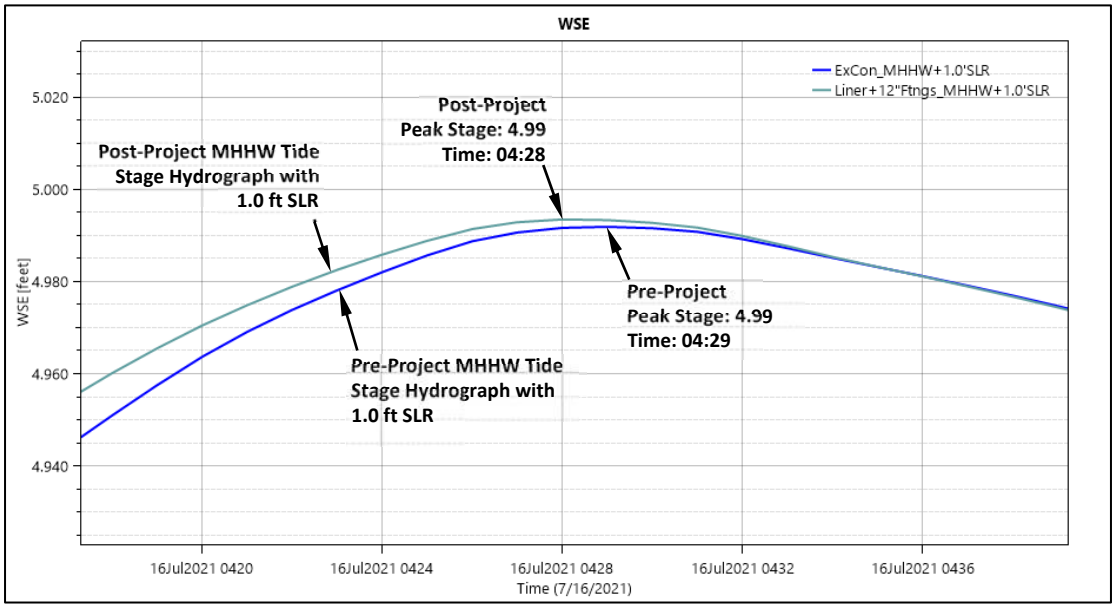


Figure 29 – Crest of the pre- and post-project MHHW tide stage hydrographs with 1.0 ft SLR calculated at the centroid of the portion of North Mill Pond south of Maplewood Avenue for MHHW

Figures 30 and 31 show the MHHW stage and flow hydrographs at the bridge calculated for pre- and post-project conditions with 1.0 ft SLR, respectively. The maximum flow through the bridge from south to north during the MHHW tide cycle with 1.0 ft SLR is 833 cfs for pre-project conditions and 865 cfs for post-project conditions, an increase of 32 cfs, or approximately 3.8%. The maximum flow through the bridge from north to south during the MHHW tide cycle with 1.0 ft SLR is 1,043 cfs for pre-project conditions and 1,035 cfs for post-project conditions, a reduction of 8 cfs, or approximately 0.8%.

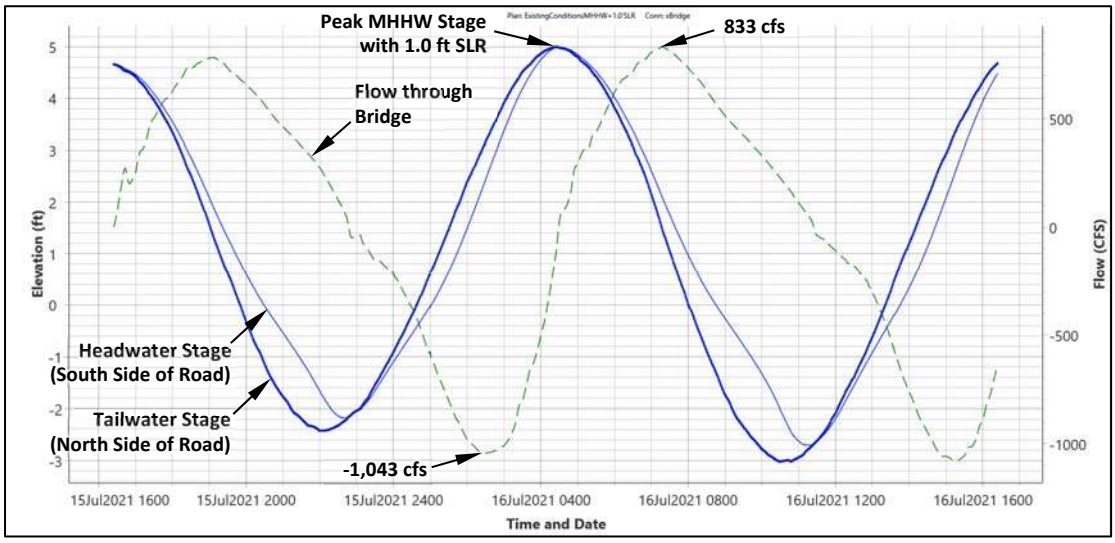


Figure 30 – Pre-project stage and flow hydrographs calculated at the bridge for MHHW with 1.0 ft SLR

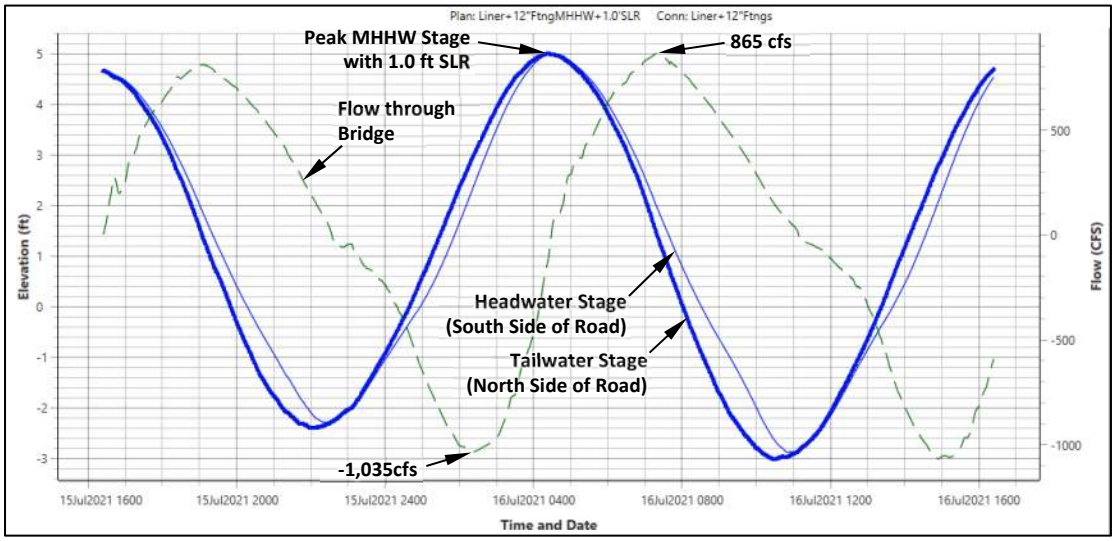


Figure 31 – Post-project stage and flow hydrographs calculated at the bridge for MHHW with 1.0 ft SLR

The models show that the proposed bridge rehabilitation would increase the peak flow rate through the bridge from south to north for the MHHW event with 1.0 ft SLR and therefore would not restrict tidal flows during the outgoing tide, but rather would reduce the existing flow restriction. The small reduction in the peak flow from north to south is due to the faster rate that the pond south of Maplewood Avenue would fill during the flood tide (see Figure 28) which increases the tailwater elevation and reduces the maximum flow rate through the bridge. This is another indication that the project will not restrict tidal flows, even though the faster fill rate and decreased tailwater result in a slightly lower peak flow during the incoming tide.

C.4. Pre- and Post-Project MLLW Models with SLR

The water level at each time step of the present-day MLLW tide stage hydrograph shown in Figure 13 was raised by 1.0 ft to develop an estimate of the MLLW tide stage hydrograph with

SLR during the bridge rehabilitation project design life (see Figure 32). This results in a MLLW stage of -3.5 feet (NAVD88) on the north side of the bridge. The estimated MLLW tide stage hydrograph with SLR shown in Figure 32 was used as the downstream boundary in the models. The same flow hydrograph used in the MLLW model without SLR, which assumes a constant base flow of 2 cfs in Hodgson Brook, was used as the upstream boundary in the models.

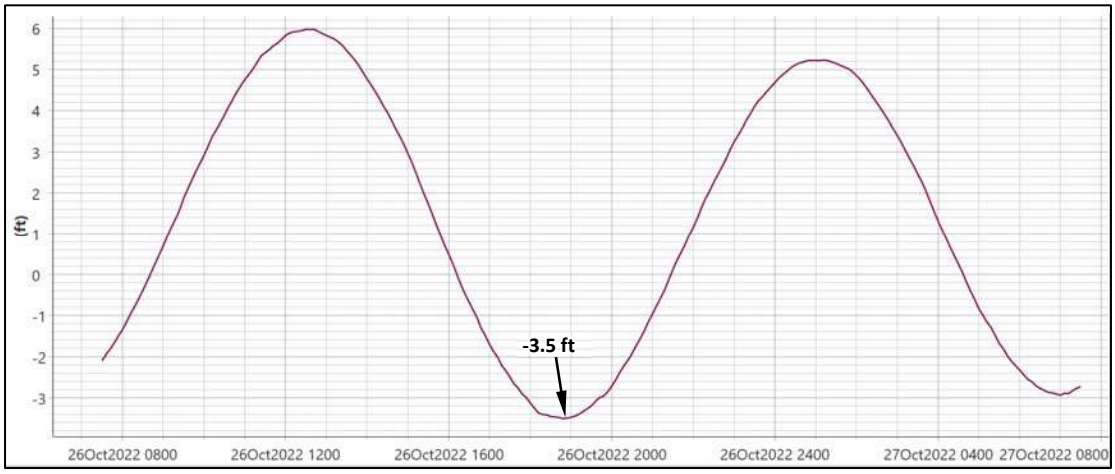


Figure 32 – Tide stage hydrograph simulating MLLW with 1.0' SLR at the downstream model boundary

The pre- and post-project MLLW models with 1.0 ft SLR indicate that the project would lower the low water level in the portion of North Mill Pond south of the bridge by 0.20 feet and reduce the difference between the low water levels on either side of the bridge from 0.65 feet to 0.45 feet. Figure 33 shows the pre- and post-project inundation areas at the MLLW tide stage trough with 1.0 ft SLR in the vicinity of Maplewood Avenue. Blue shading represents the post-project inundation area at MLLW with 1.0 ft SLR and yellow shading along the periphery of the blue shading indicates the additional areas inundated at MLLW with 1.0 ft SLR under pre-project conditions. The pre-project inundation area of the waterbody south of Maplewood Avenue is approximately 307,300 square feet (7.055 acres) and the post-project inundation area of south of the road is about 285,400 square feet (6.552 acres). This is a reduction of approximately 21,900 square feet (0.503 acres) or about 7.1%.

Figure 33 – Inundated areas at the MLLW tide stage trough with 1.0 ft SLR. Blue shading represents the post-project inundation area and yellow shading indicates the additional areas inundated under pre-project conditions

Figure 34 shows the pre- and post-project MLLW tide stage hydrographs with 1.0 ft SLR calculated at point about 250 feet south of the bridge inlet where the water depth at MLLW is approximately 4.5 feet under pre-project conditions and Figure 35 shows a detailed view of the hydrographs at the tide cycle through representing MLLW with 1.0 ft SLR. As compared

to pre-project conditions, the analysis shows that the lowest stage would decrease by 0.20 feet and the time to reach the minimum stage would be reduced by 16 minutes.

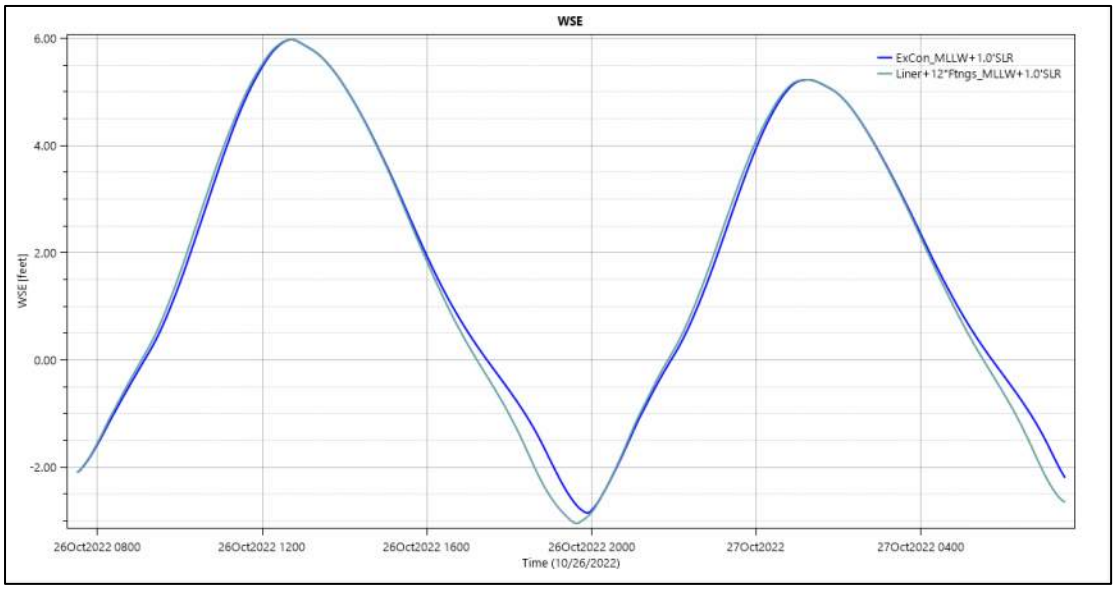


Figure 34 – Pre- and post-project MLLW tide stage hydrographs with 1.0 ft SLR calculated in North Mill Pond south of Maplewood Avenue

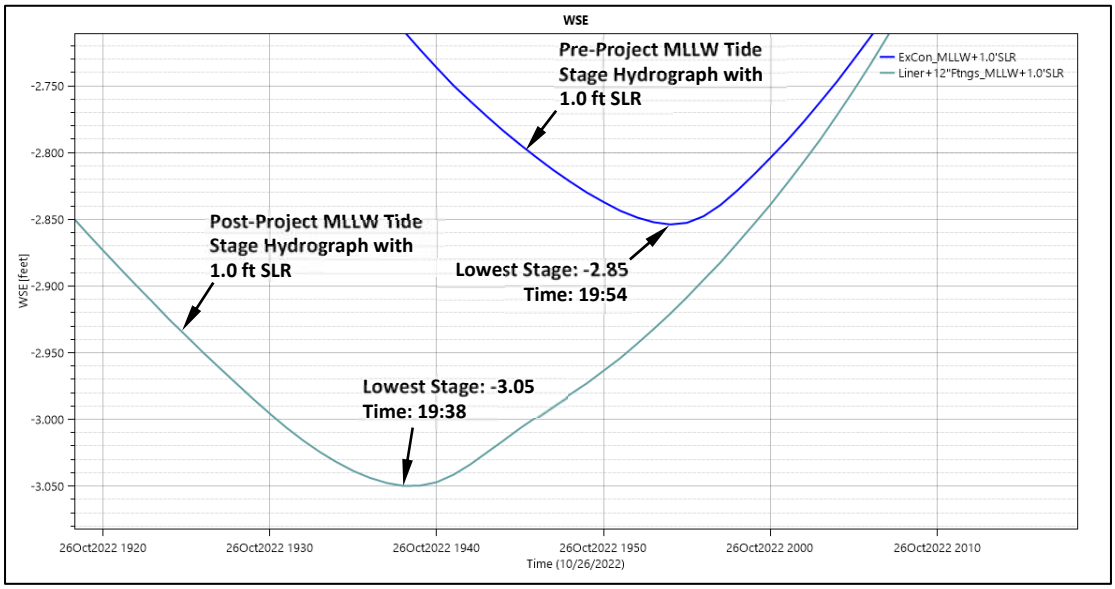


Figure 35 – Troughs of the pre- and post-project MLLW tide stage hydrographs with 1.0 ft SLR calculated in the portion of North Mill Pond south of Maplewood Avenue

The lower MLLW stage and reduced time to reach that stage are due to the proposed waterway opening modifications which would increase the rate that the portion of the pond south of the bridge drains during the ebb tide, allowing the water level south of the road to reach a lower stage before the flow reverses.

Figures 36 and 37 show the MLLW stage and flow hydrographs at the bridge calculated for pre- and post-project conditions with 1.0 ft SLR, respectively. The maximum flow through the bridge from south to north during the MLLW tide cycle with 1.0 ft SLR is 977 cfs for pre-project

conditions and 1,010 cfs for post-project conditions, an increase of 33 cfs, or approximately 3.4%. The maximum flow through the bridge from north to south during the MLLW tide cycle with 1.0 ft SLR is 1,216 cfs for pre-project conditions and 1,195 cfs for post-project conditions, a reduction of 21 cfs, or approximately 1.7%.

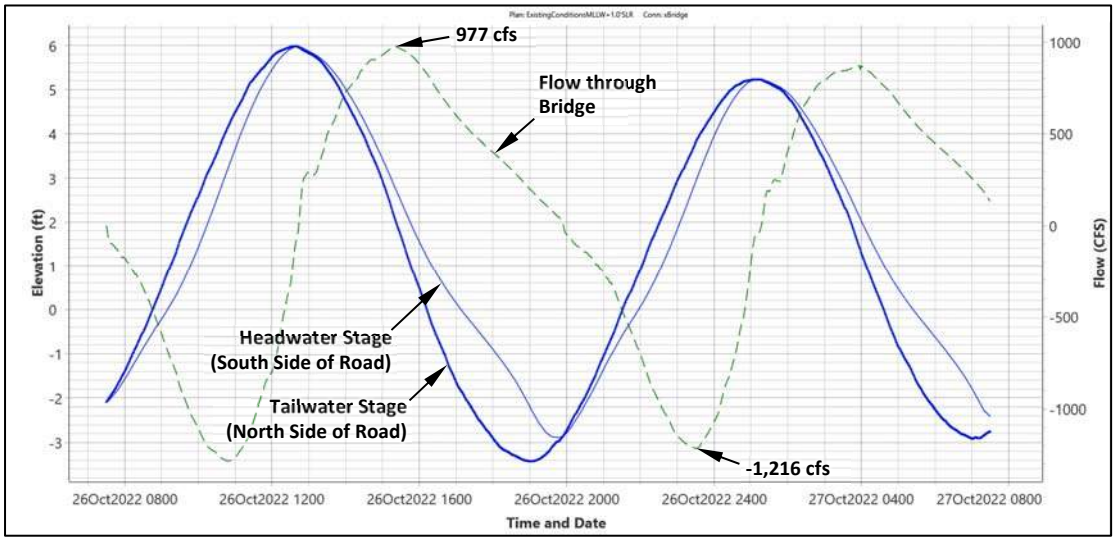


Figure 36 – Pre-project stage and flow hydrographs calculated at the bridge for MLLW with 1.0 ft SLR

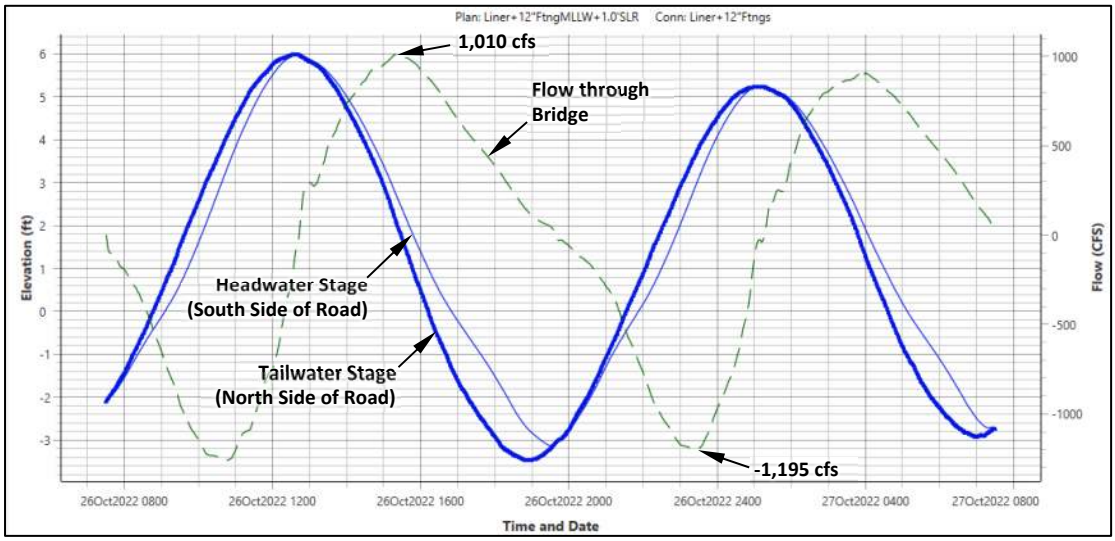


Figure 37 – Post-project stage and flow hydrographs calculated at the bridge for MLLW with 1.0 ft SLR

The models indicate that the proposed bridge rehabilitation would increase the peak flow rate through the bridge from south to north for the MLLW event with 1.0 ft SLR and therefore would not restrict tidal flows, but in fact would reduce the existing flow restriction during the ebb tide. The decreased peak flow rate from north to south during the flood tide also indicates that the project would reduce the existing flow restriction as this decrease is due to the faster rate that the pond south of Maplewood Avenue would fill (see Figure 34) which increases the tailwater elevation and reduces the maximum flow rate through the bridge.

C.5. Boundary Conditions for 50- and 100-year Storm Models

The 50- and 100-year rainfall runoff hydrographs from the Headwaters Consulting hydrology study were used as the upstream boundaries in the pre- and post-project 50- and 100-year storm models both with and without SLR. These are shown in Figures 38 and 39.

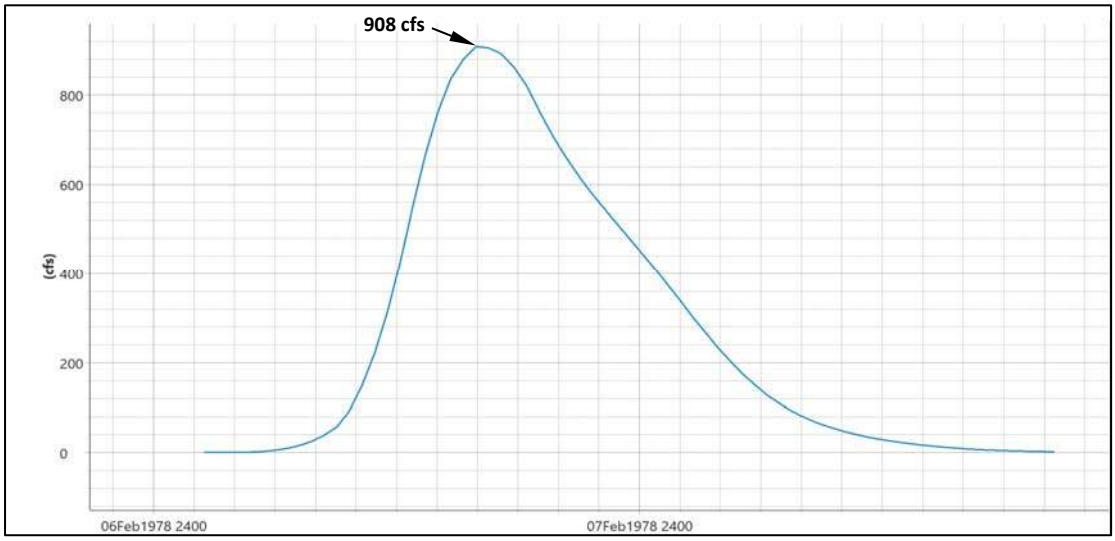


Figure 38 – 50-year rainfall runoff hydrograph used as the upstream boundary in the pre- and post-project 50-year storm models with and without SLR

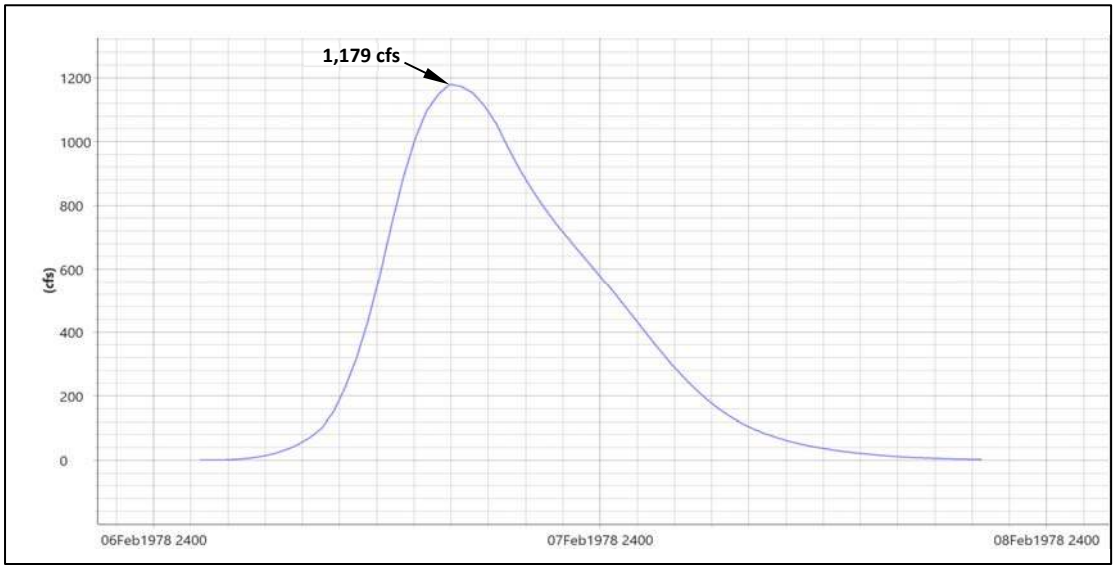


Figure 39 – 100-year rainfall runoff hydrograph used as the upstream boundary in the pre- and post-project 100-year storm models with and without SLR

Stage hydrographs representing the 50- and 100-year tidal storm surge events were used as the downstream boundaries in the storm models. These were developed from water levels measured at the NOAA Seavey Island tide station and the high water level exceedance probability curve published by NOAA for the tide gage (see Figure 40).

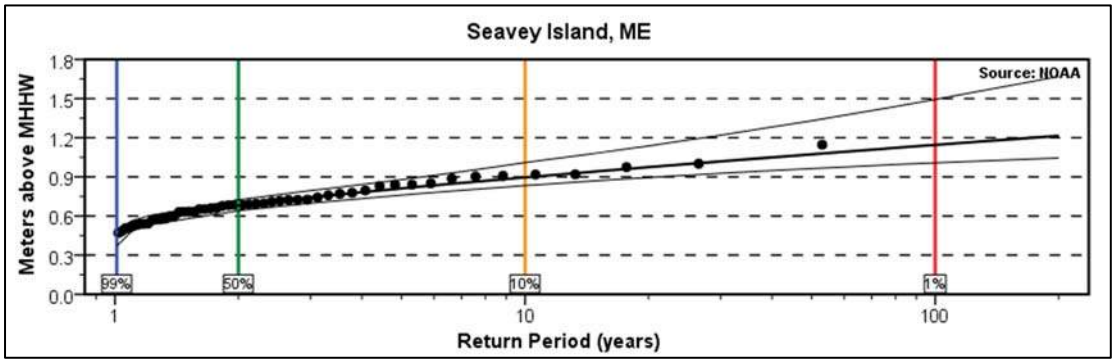


Figure 40 – High water annual exceedance probability curve for the Seavey Island tide station

The exceedance probability curve predicts the 100-year high water level is about 1.14 meters (3.74 ft) above mean higher high water (MHHW) and the 50-year high water level is approximately 1.07 meters (3.51 ft) above MHHW. Datum information for the tide station dated August 8, 2016 lists MHHW at the gage for the tidal epoch ending in 2001 as 4.22 ft above the North American Vertical Datum of 1988 (NAVD88). Adjusting the exceedence probabiliy water level estimates to fixed elevations relative to NAVD88 results in the following peak tidal storm surge water levels.

Table 3 – Peak tidal storm surge water levels predicted at NOAA station 8419870 (Seavey Island, ME)

Recurrence Interval (years)	Peak Storm Surge Water Level (ft, NAVD88)
50	7.73
100	7.96

Section 3.2 of NHCRHC STAP (2014)[4] suggests that present recurrence intervals of New Hampshire tidal storm surges be basesd upon the preliminary FEMA Flood Insurance Rate Maps (FIRMs) for coastal NH. The prelimary FIRM covering the project area (#33015C0259F), dated April 9, 2014, shows the Base Flood Elevation (BFE) at elevation 8 ft (NAVD88) (see Figure 41). The effective FIRM, dated January 29, 2021, also shows the BFE at elevation 8 ft. The BFE, which corresponds to the 1% annual chance, or 100-year, flood level, is only 0.04 ft higher than the 100-year peak tidal storm surge water level predicted from the exceedance probability curve for the Seavey Island tide gage.

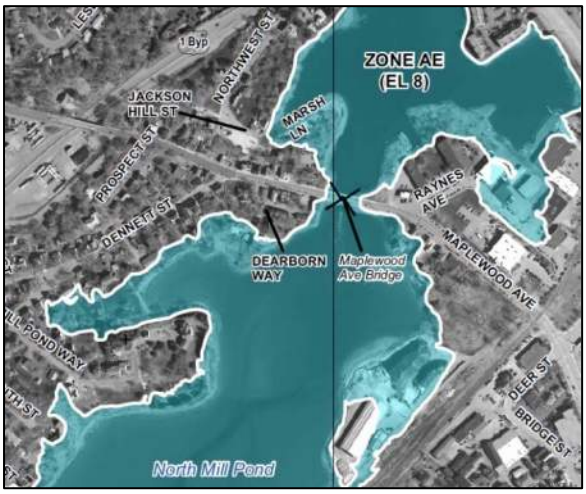


Figure 41 – Preliminary FIRM #33015C0259F

In keeping with the recommendations of NHCRHC STAP (2014), a 100-year peak tidal storm surge elevation of 8.00 ft was used in the pre- and post-project 100-year storm models without SLR. NHCRHC STAP (2014) does not provide guidance relative to 50-year tidal storm

[4] *Sea-level Rise, Storm Surges, and Extreme Precipitation in Coastal New Hampshire: Analysis of Past and Projected Future Trends*. 2014. New Hampshire Coastal Risk and Hazards Commission Science and Technical Advisory Panel (NHCRHC STAP). http://www.nhcrhc.org/wp-content/uploads/2014-STAP-final-report.pdf.

surge water levels and none are published on the FEMA FIRM or in the FEMA Flood Insurance Study (FIS) for Rockingham County. Therefore, the 50-year peak tidal storm surge water level predicted by the exceedance probability curve for the Seavey Island tide gage (7.73 ft) was used in the pre- and post-project 50-year storm models without SLR.

The 50- and 100-year tidal storm surge stage hydrographs used for the downstream boundaries in the pre- and post-project storm models without SLR were estimated using water levels measured during the highest tidal storm surge cycle recorded at the Seavey Island gage. This occurred on February 7, 1978 with a peak elevation of 8.06 ft (NAVD88) (see Figure 42), which is 0.33 ft above the estimated 50-year peak tidal storm surge water level and 0.06 ft above the estimated 100-year peak water level.

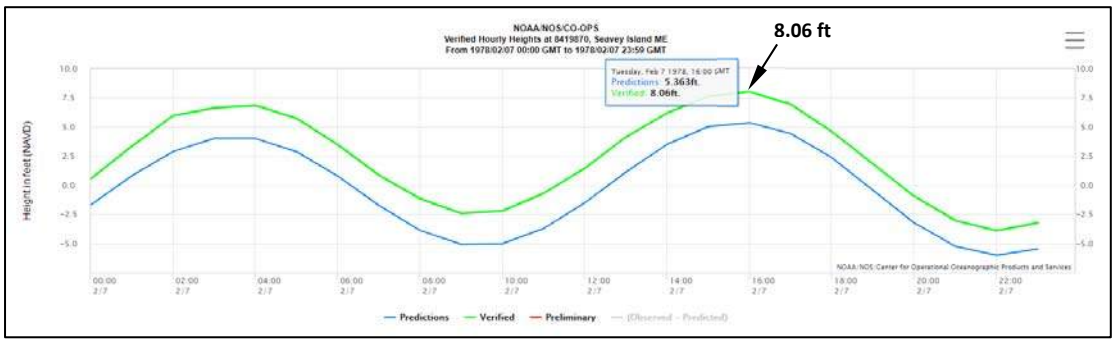


Figure 42 – Stage hydrograph showing water levels measured at the Seavey Island, ME tide gage on February 7, 1978. The green line represents measured water levels and the blue line represents predicted water levels.

Hourly water level data for February 6 through February 8, 1978 were downloaded from the NOAA website. The estimated 50- and 100-year peak tidal storm surge water levels are approximately 95.9% and 99.3% of the peak water level recorded at the gage on February 7, 1978, respectively. The measured water levels were multiplied by these percentages to generate the estimated 50- and 100-year tidal storm surge stage hydrographs used as the downstream boundaries in the storm models without SLR.

The 50- and 100-year freshwater inflow hydrographs have a duration of 42 hours with the peak flow occurring at hour 13.5 of the runoff events. The estimated storm surge stage hydrographs were generated so as to have the same 42-hour duration with peak water levels also occurring at hour 13.5. This results in the freshwater inflow hydrographs and the tidal storm surge stage hydrographs peaking concurrently so as to simulate near worst-case scenarios wherein the peak freshwater runoff enters North Mill Pond at the same time the storm tide reaches its maximum level. Figures 43 and 44 show the estimated 50- and 100-year tidal storm surge stage hydrographs used as the downstream boundaries in the storm models without SLR.

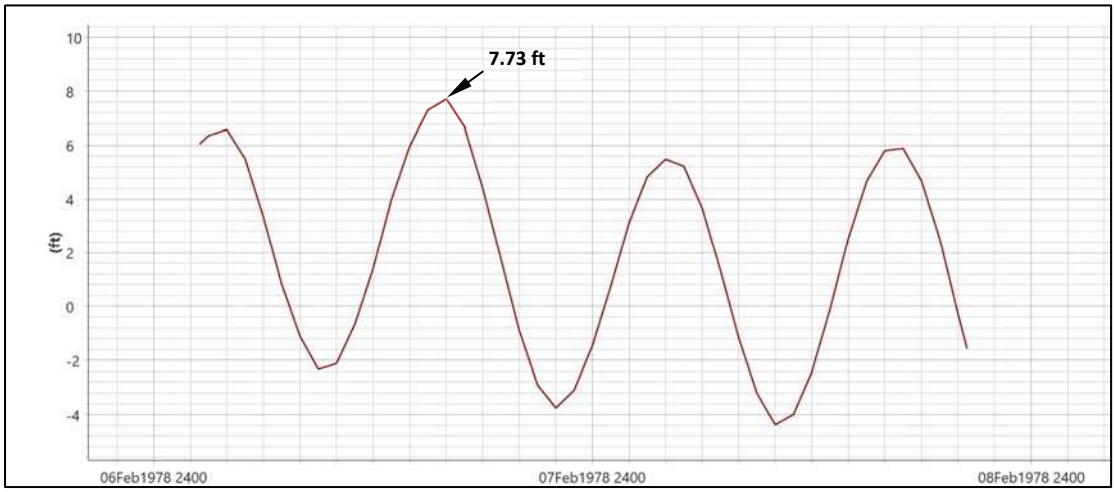


Figure 43 – Estimated 50-year tidal storm surge stage hydrograph used as the downstream boundary in the 50-year storm models without SLR

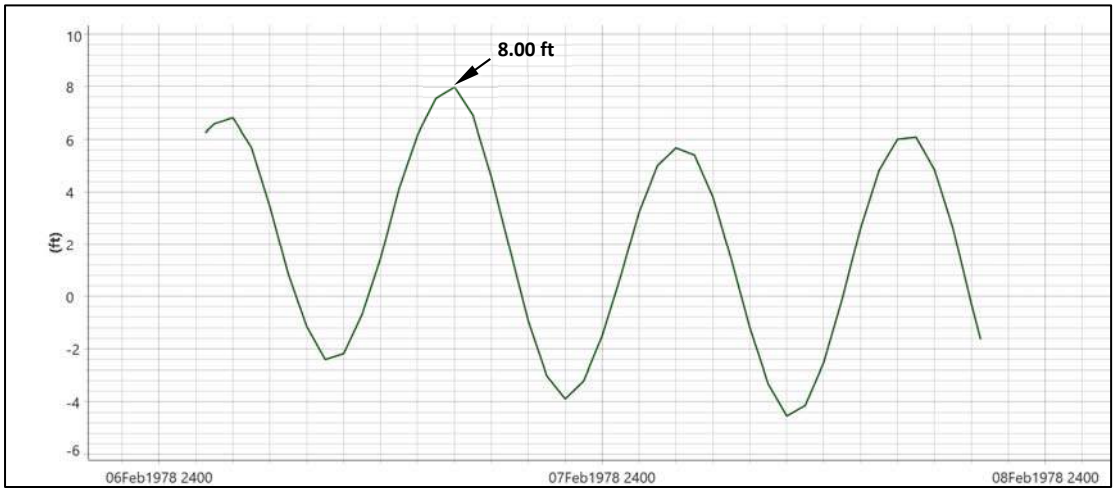


Figure 44 – Estimated 100-year tidal storm surge stage hydrograph used as the downstream boundary in the 100-year storm models without SLR

The 50- and 100-year tidal storm surge stage hydrographs used in the storm models with SLR were developed by adding 1.0 ft to the water level at each time step of the storm surge stage hydrographs used in the storm models without SLR. This results in peak water levels of 8.73 ft for the 50-year storm surge event and 9.00 ft for the 100-year storm surge event. The tidal storm surge stage hydrographs used as the downstream boundaries in the 50- and 100-year storm models with SLR are shown in Figures 45 and 46.

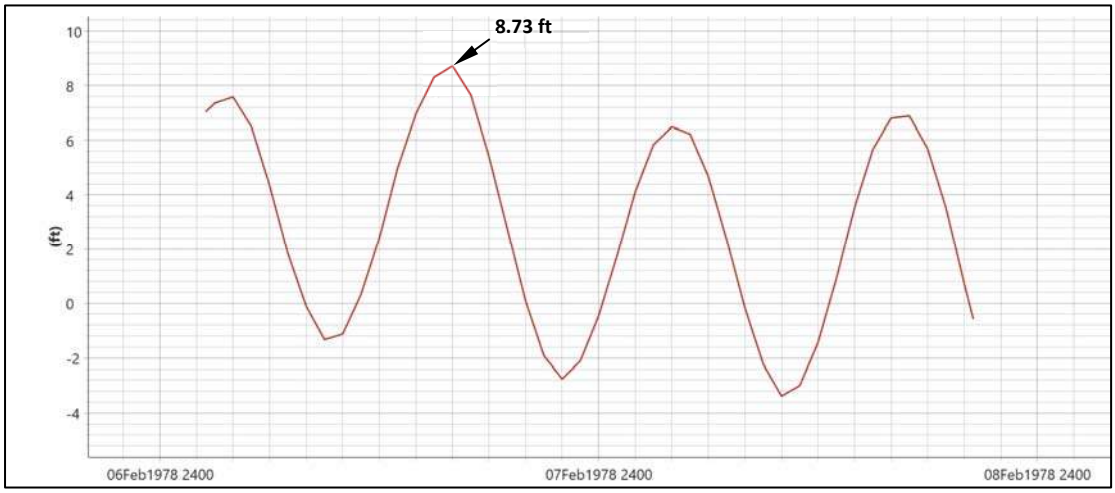


Figure 45 – Estimated 50-year tidal storm surge stage hydrograph used as the downstream boundary in the 50-year storm models with SLR

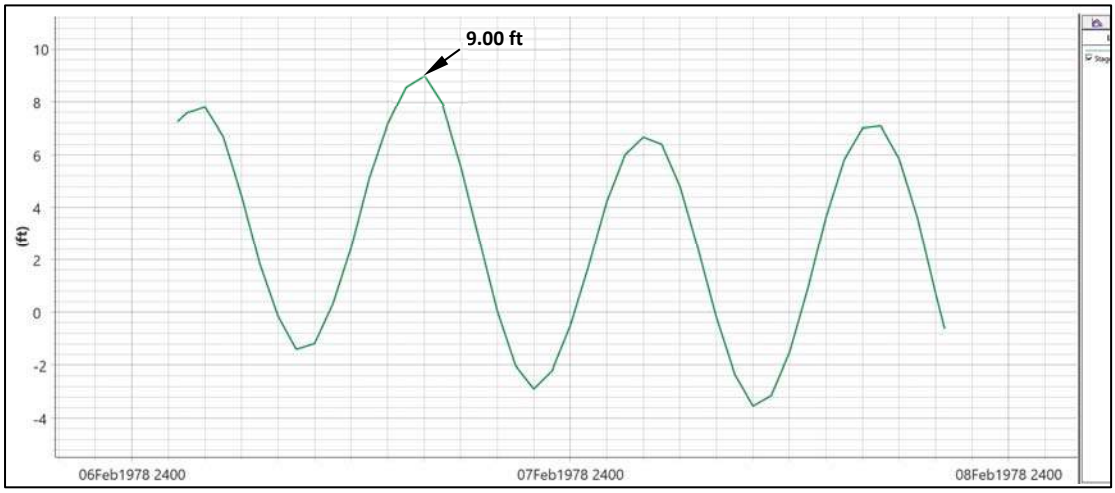


Figure 46 – Estimated 100-year tidal storm surge stage hydrograph used as the downstream boundary in the 100-year storm models with SLR

C.6. Pre- and Post-Project 50-year Storm Models without SLR

The pre-project 50-year storm model without SLR simulates the existing bridge geometry (see Section B.2.), runoff to North Mill Pond from the 50-year rainfall event (see Figure 38), and 50-year tidal storm surge unadjusted for SLR (see Figure 43).

The post-project 50-year storm model without SLR simulates the proposed bridge geometry after application of the geopolymer liner and removal of portions of the concrete footings (see Section B.3.), runoff to North Mill Pond from the 50-year rainfall event (see Figure 38), and 50-year tidal storm surge unadjusted for SLR (see Figure 43).

Table 4 summarizes the peak water levels in the portion of North Mill Pond south of Maplewood Avenue calculated with the pre- and post-project 50-year storm models without SLR. Note that maximum water levels at the south end of the pond below the outlet of the Bartlett Street culvert are slightly higher than in the majority of the pond. Similarly, maximum water levels at the bridge inlet are slightly lower than in the majority of the pond. The peak

water levels listed in Table 4, and in subsequent tables which report maximum water levels, have been calculated at the centroid of the portion of North Mill Pond on the south side of Maplewood Avenue and represent the peak water levels in the majority of the waterbody on the south side of the road.

Table 4 – Peak water levels in the portion of North Mill Pond on the south side of Maplewood Avenue calculated with the pre- and post-project 50-year storm models without SLR

Model	Peak Water Level in the portion of North Mill Pond on the South Side of Maplewood Avenue* (ft, NAVD88)
Pre-Project 50-year Storm Model without SLR	7.96
Post-Project 50-year Storm Model without SLR	7.95

**calculated at the centroid of the waterbody on the south side of Maplewood Ave. (N 211315, E 1224317)*

As shown in Table 4, the maximum water level at the centroid would decrease by 0.01 ft for a storm event which includes a 50-year tidal storm surge and a 50-year freshwater flood occurring simultaneously under present-day sea-level conditions.

Figure 47 shows the inundation area when the calculated water levels are at their maximum. The area shaded light blue represents the post-project inundation area. The pink area along the periphery of the light blue shading, which due to the small water level decrease is unnoticeable at the scale shown in Figure 47, represents the additional area inundated under pre-project conditions. Because the peak water level would decrease, the projects will not exacerbate flooding on properties along the shoreline of North Mill Pond under this storm scenario.

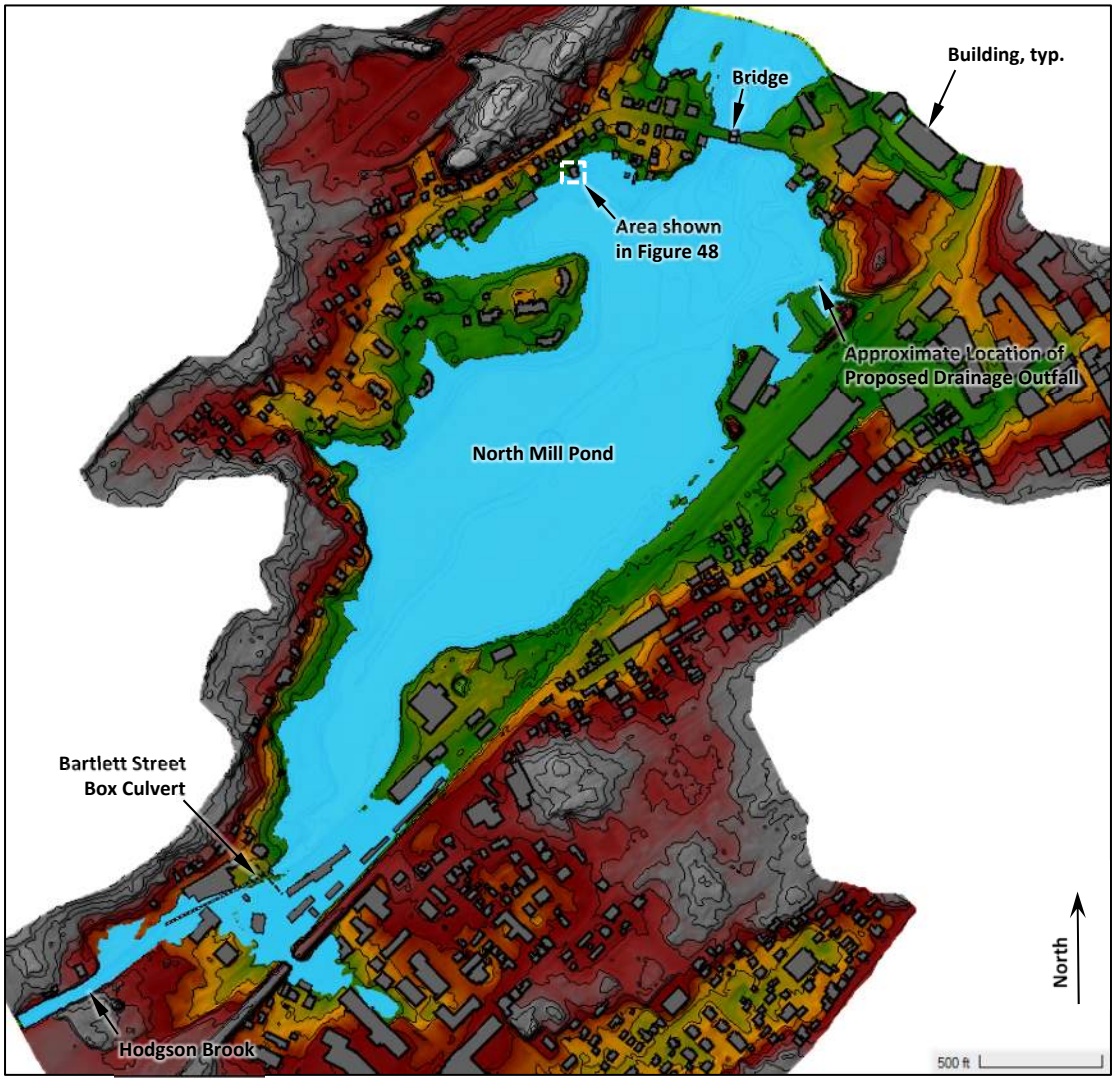


Figure 47 – Inundated areas calculated with the pre- and post-project 50-year storm models without SLR.

In order to visualize the magnitude of the reduced inundation in a typical area along the shoreline of North Mill Pond, Figure 48 shows a detailed view of an area southwest from the bridge.

Figure 48 – Detail view of a portion of the shoreline southwest from the bridge showing the inundated areas at the peak water levels calculated with the pre- and post-project 50-year storm models without SLR. The area shaded blue represents the post-project inundation area. The pink area along the periphery of the blue-shaded area represents the additional area flooded under pre-project conditions.

Figures 49 and 50 show the stage and flow hydrographs at the bridge calculated with the pre- and post-project 50-year storm models without SLR. Note that the maximum stage at the bridge inlet at the crest of each tide cycle is more or less equal to the water level at the bridge outlet except at the coincident peak of the freshwater inflow and tidal storm surge when the stage at the inlet is higher due to the freshwater inflow. Also note that due to the flow constriction created by the bridge and the grade control just south of the bridge inlet, low water levels in North Mill Pond south of the road at the trough of each tide cycle are higher than, and lag behind, low water levels at the bridge outlet with the greatest differences occurring at the tide cycle trough immediately after the coincident inflow and storm surge peaks. These same characteristics are also apparent on the stage hydrographs calculated with the other storm models.

The maximum flow through the bridge is 1,874 cfs for pre-project conditions and 1,907 cfs for post-project conditions. Both occur from south to north about two hours after the coincident inflow and storm surge peaks. Table 5 summarizes the peak flows through the bridge calculated with the pre- and post-project 50-year storm models without SLR.

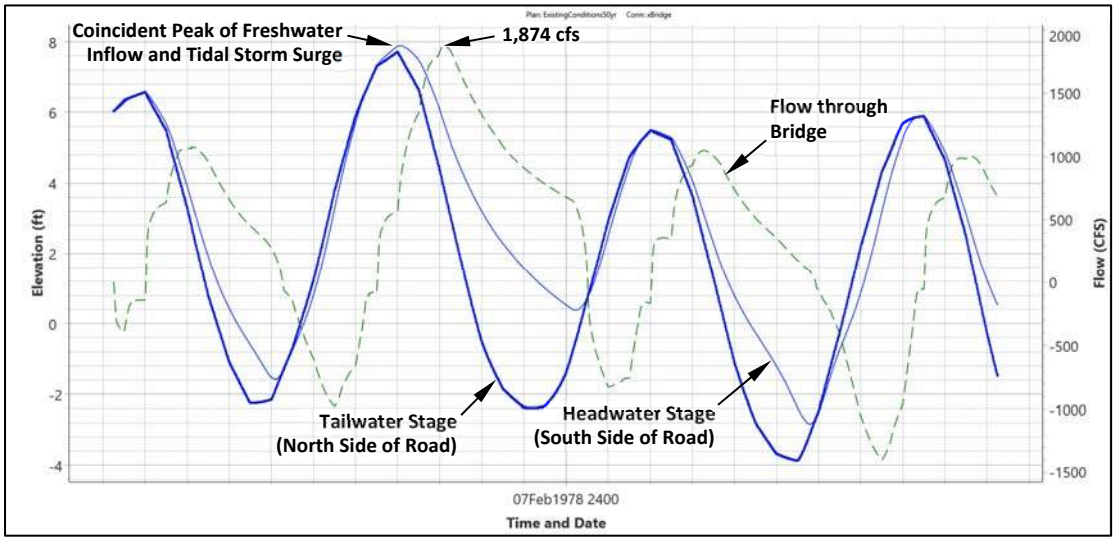


Figure 49 – Stage and flow hydrographs at the bridge calculated with the pre-project 50-year storm model without SLR

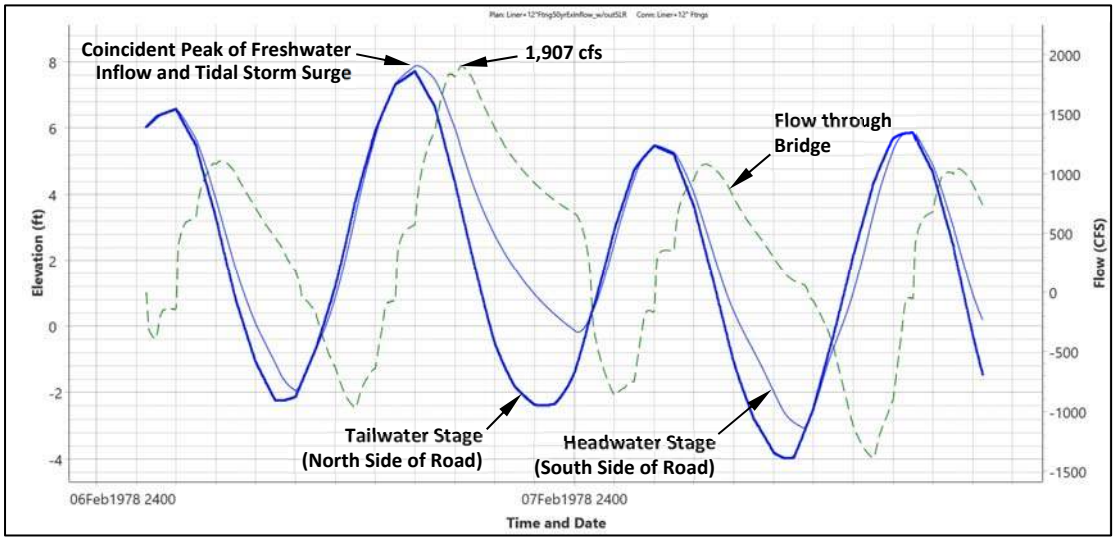


Figure 50 – Stage and flow hydrographs at the bridge calculated with the post-project 50-year storm model without SLR

Table 5 – Peak flows through the bridge calculated with the pre- and post-project 50-year storm models without SLR

Model	Peak Flow through Bridge (cfs)
Pre-Project 50-year Storm Model without SLR	1,874
Post-Project 50-year Storm Model without SLR	1,907

As shown in Table 5, due to the proposed waterway opening modifications, the maximum flow through the bridge would increase by 33 cfs for a storm event which includes a 50-year tidal storm surge and a 50-year freshwater flood occurring simultaneously under present-day sea-level conditions. This is an increase of approximately 1.8% and indicates that the bridge rehabilitation project will not restrict tidal flows as required by Env-Wt 904.07(d)(2).

C.7. Pre- and Post-Project 100-year Storm Models without SLR

The pre-project 100-year storm model without SLR includes the existing bridge geometry (see Section B.2.), runoff to North Mill Pond from the 100-year rainstorm (see Figure 39), and 100-year tidal storm surge unadjusted for SLR (see Figure 44).

The post-project 100-year storm model without SLR includes the proposed bridge geometry with the geopolymer liner applied and portions of the existing concrete footings removed (see Section B.3.), runoff to North Mill Pond from the 100-year rainstorm (see Figure 39), and 100-year tidal storm surge unadjusted for SLR (see Figure 44).

Table 6 lists the peak water levels calculated at the centroid of the portion of North Mill Pond south of Maplewood Avenue with the pre- and post-project 100-year storm models without SLR.

Table 6 – Peak water levels in the portion of North Mill Pond on the south side of Maplewood Avenue calculated with the pre- and post-project 100-year storm models without SLR

Model	Peak Water Level in the portion of North Mill Pond on the South Side of Maplewood Avenue* (ft, NAVD88)
Pre-Project 100-year Storm Model without SLR	8.41
Post-Project 100-year Storm Model without SLR	8.40

**calculated at the centroid of the waterbody on the south side of Maplewood Ave. (N 211315, E 1224317)*

The model results indicate that the maximum water level in the portion of North Mill Pond south of Maplewood Avenue would decrease by 0.01 ft for a storm which includes simultaneous 100-year tidal storm surge and 100-year freshwater flood events under current sea-level conditions.

Figures 51 and 52 show the pre- and post-project inundation areas associated with the calculated peak water levels listed in Table 6. Light blue shading indicates the post-project inundation area. Pink shading along the edge of the light blue-shaded area indicates the additional area flooded under pre-project conditions. Both the maximum water level and inundated area would decrease; therefore, the projects will not increase flooding on properties along the shoreline of North Mill Pond during the 100-year storm.

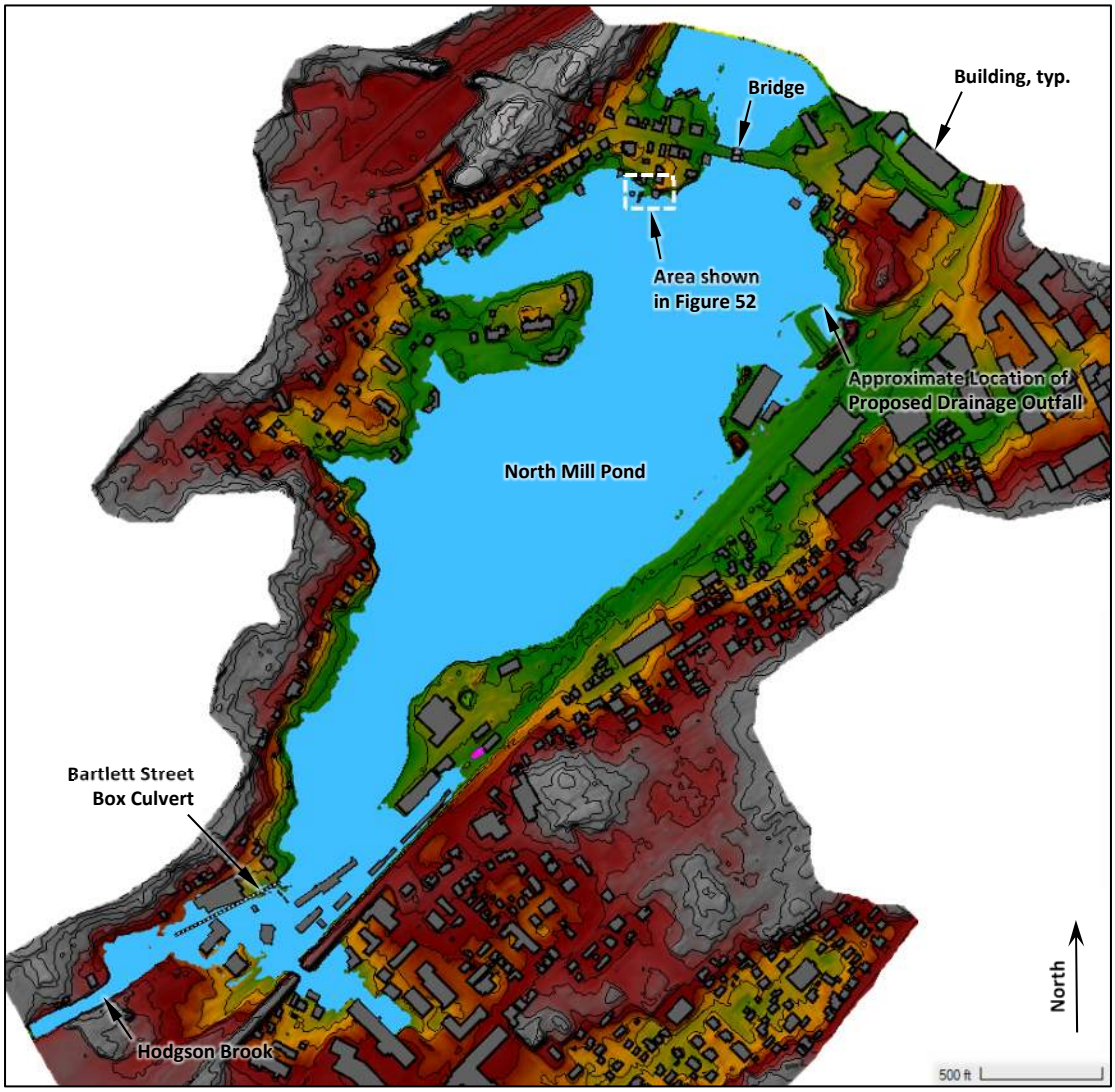


Figure 51 – Inundated areas calculated with the pre- and post-project 100-year storm models without SLR.

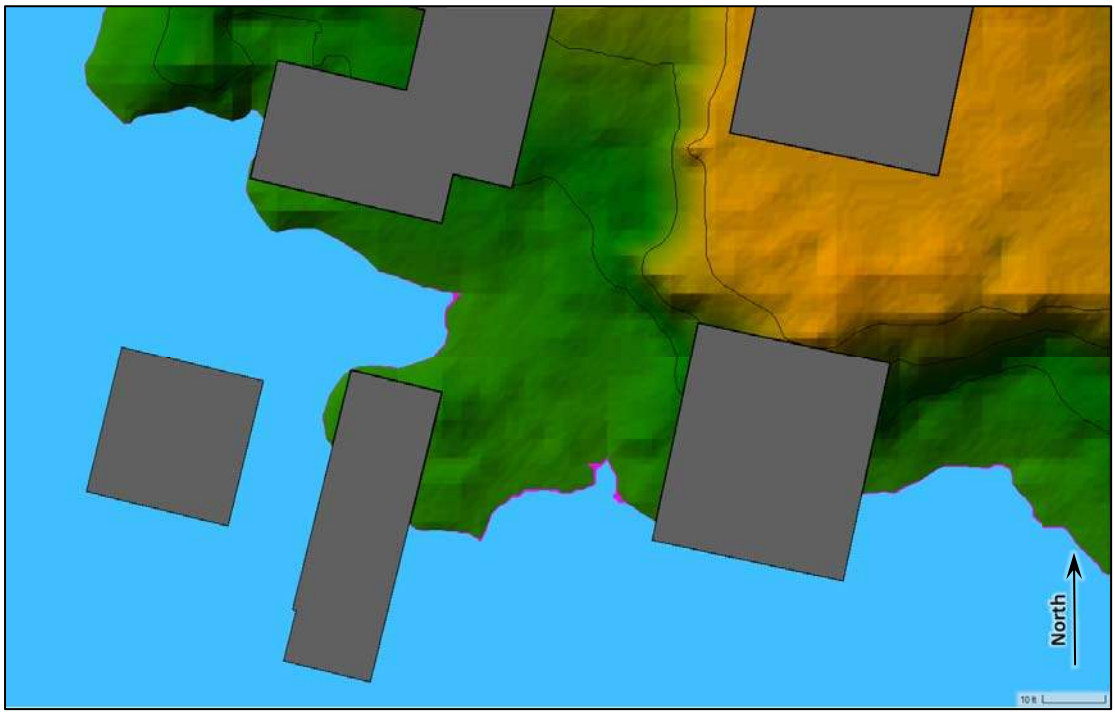


Figure 52 – Detail view of a portion of the North Mill Pond shoreline southwest from the bridge showing the inundated areas calculated with the pre- and post-project 100-year storm models without SLR. The area shaded blue represents the post-project inundation area. The pink area along the periphery of the blue-shaded area represents the additional area flooded under pre-project conditions.

Figures 53 and 54 show the stage and flow hydrographs at the bridge calculated with the pre- and post-project 100-year storm models without SLR and Table 7 summarizes the peak flows through the bridge, which are 2,129 cfs for pre-project conditions and 2,164 cfs for post-project conditions. Both occur from south to north about two hours after the coincident inflow and storm surge peaks.

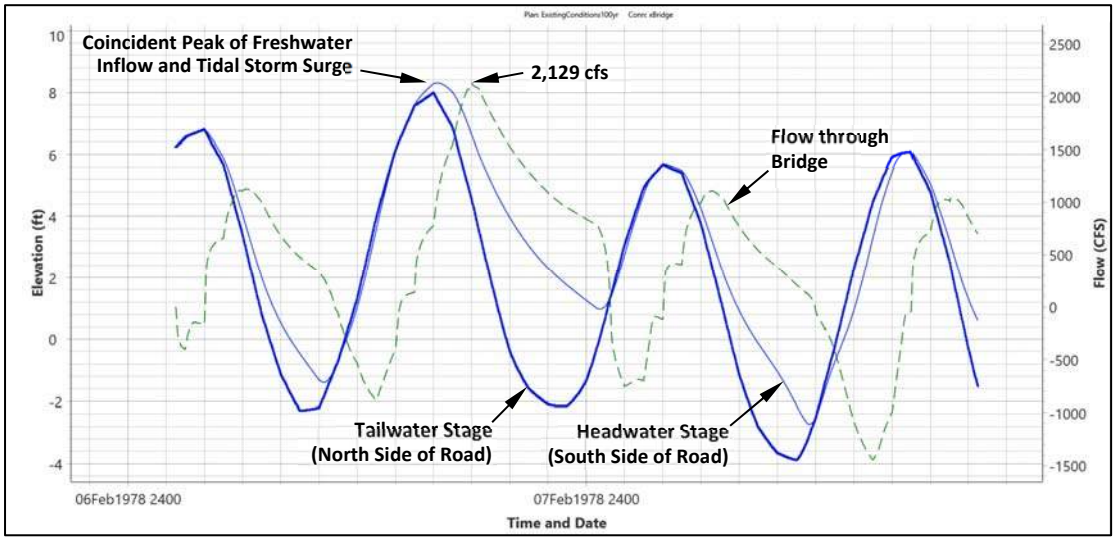


Figure 53 – Stage and flow hydrographs at the bridge calculated with the pre-project 100-year storm model without SLR

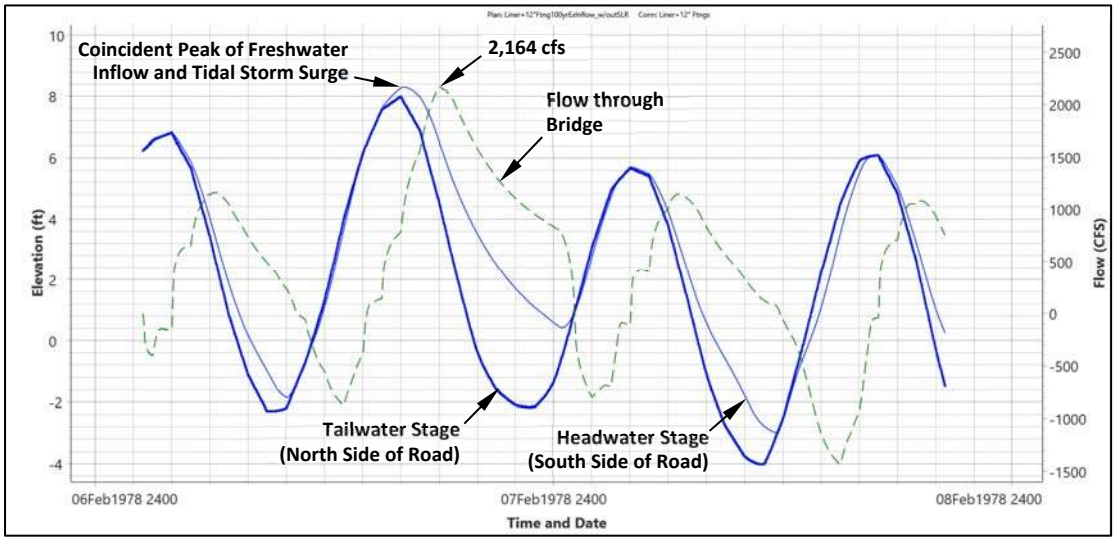


Figure 54 – Stage and flow hydrographs at the bridge calculated with the post-project 100-year storm model without SLR

Table 7 – Peak flows through the bridge calculated with the pre- and post-project 100-year storm models without SLR

Model	Peak Flow through Bridge (cfs)
Pre-Project 100-year Storm Model without SLR	2,129
Post-Project 100-year Storm Model without SLR	2,164

As shown in Table 7, for a storm event which includes a 100-year tidal storm surge and a 100-year freshwater flood occurring simultaneously under present-day sea-level conditions, the calculated peak flow through the bridge would increase by 35 cfs, or approximately 1.6%. The increased peak flow rate indicates that the proposed modifications to the bridge waterway opening will not restrict flows in accordance with Env-Wt 904.07(d)(2).

C.8. Pre- and Post-Project 50-year Storm Models with SLR

The pre-project 50-year storm model with SLR simulates the existing bridge geometry (see Section B.2.), runoff to North Mill Pond from the 50-year rainfall event (see Figure 38), and 50-year tidal storm surge adjusted for 1.0 ft SLR projected to occur during the bridge rehabilitation project design life (see Figure 45).

The post-project 50-year storm model with SLR simulates the proposed bridge geometry after the geopolymer liner has been applied (see Section B.3.), runoff to North Mill Pond from the 50-year rainfall event (see Figure 38), and 50-year tidal storm surge adjusted for 1.0 ft SLR (see Figure 45).

Table 8 summarizes the peak water levels in North Mill Pond south of Maplewood Avenue calculated with the pre- and post-project 50-year storm models with 1.0 ft SLR.

Table 8 – Peak water levels in the portion of North Mill Pond on the south side of Maplewood Avenue calculated with the pre- and post-project 50-year storm models with 1.0 ft SLR

Model	Peak Water Level in the portion of North Mill Pond on the South Side of Maplewood Avenue* (ft, NAVD88)
Pre-Project 50-year Storm Model with SLR	8.95
Post-Project 50-year Storm Model with SLR	8.94

**calculated at the centroid of the waterbody on the south side of Maplewood Ave. (N 211315, E 1224317)*

As shown in Table 8, with 1.0 ft of sea-level rise, the maximum water level in the portion of North Mill Pond south of Maplewood Avenue would decrease by 0.01 ft for a storm event which includes a 50-year tidal storm surge and a 50-year freshwater flood occurring simultaneously. This is the same decrease calculated for the 50-year storm event without SLR, which suggests that in regards to peak water levels, the projects would have more or less the same effect under both present-day sea-levels and those projected at the end of the bridge rehabilitation design life.

Figures 55 and 56 show the inundated areas at the peak water levels calculated with the pre- and post-project 50-year storm models with 1.0 ft SLR. Areas flooded under a scenario with the proposed bridge geometry and 1.0 ft SLR are shaded light blue. Pink shading along the limits of the light blue shading represents the additional areas which would be flooded with the existing bridge opening and 1.0 ft SLR. The models show that both the peak water level and inundation area would decrease; therefore, the projects will not increase flooding on properties along the shoreline of North Mill Pond under this scenario.

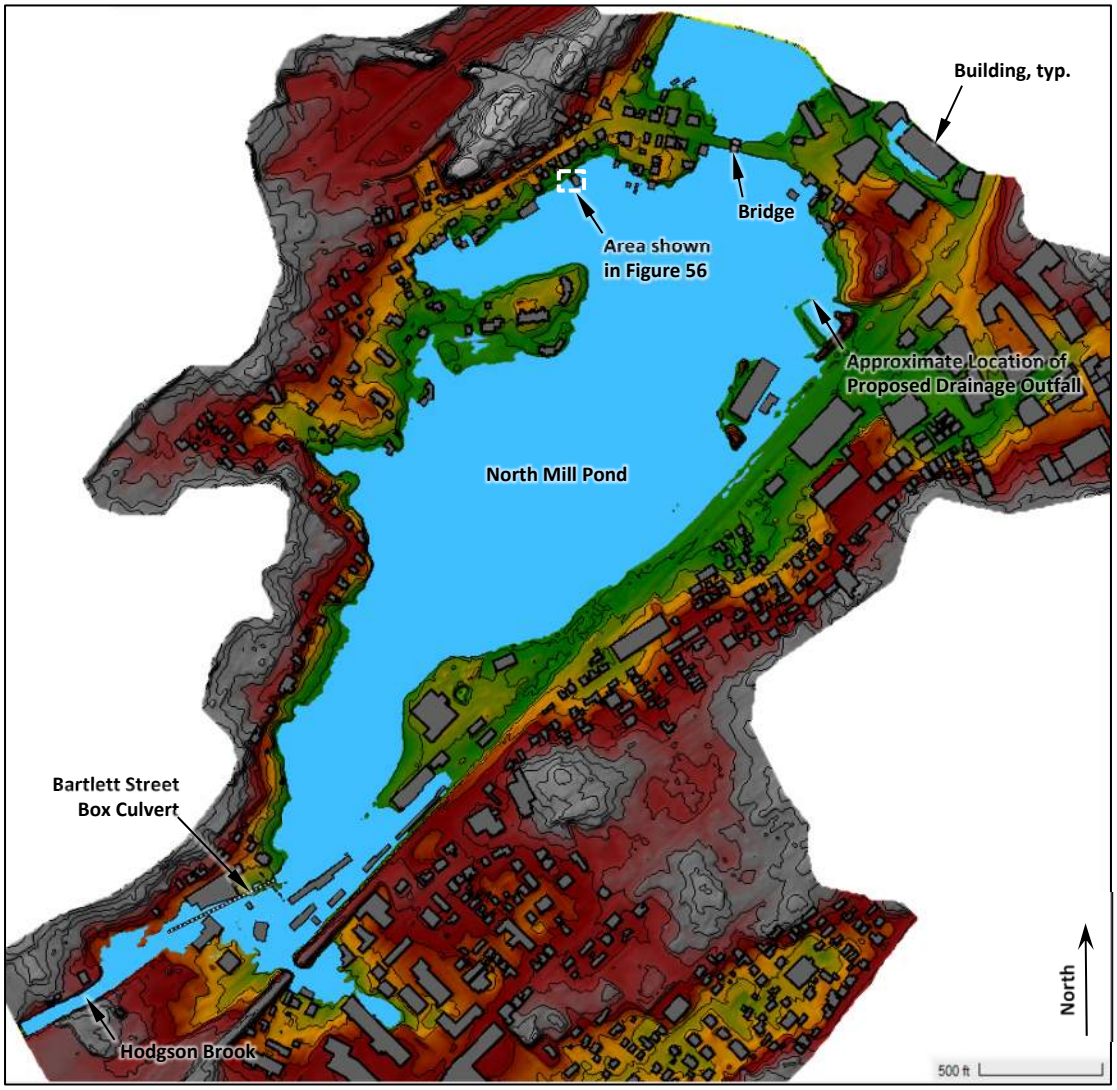


Figure 55 – Inundated areas calculated with the pre- and post-project 50-year storm models with 1.0 ft SLR

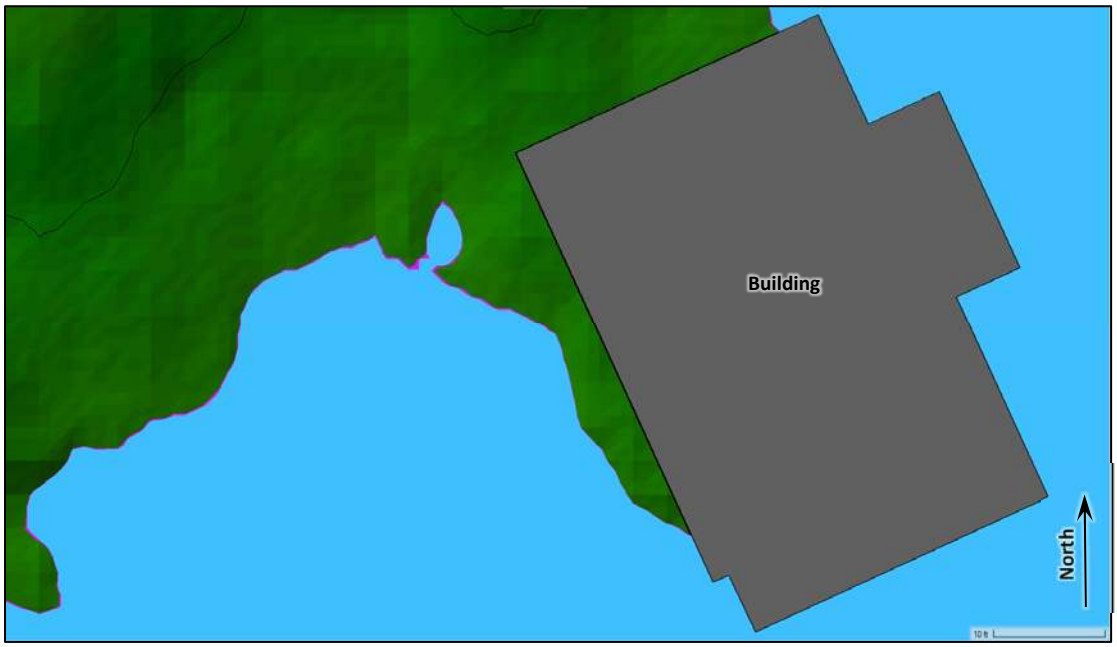


Figure 56 – Detail view of a portion of the shoreline southwest from the bridge showing the inundated areas at the peak water levels calculated with the pre- and post-project 50-year storm models with 1.0 ft SLR. The area shaded blue represents the post-project inundation area. The pink area along the periphery of the blue-shaded area represents the additional area flooded under pre-project conditions.

Figures 57 and 58 show the stage and flow hydrographs calculated at the bridge with the pre- and post-project 50-year storm models with 1.0 ft SLR. Maximum flows through the bridge are 2,016 cfs for pre-project conditions and 2,102 cfs for post-project conditions, both of which occur from south to north about two hours after the coincident freshwater inflow and tidal storm surge peaks. This is an increase of about 4.3% and indicates that the proposed waterway opening modifications would not restrict flows under a scenario which includes simultaneous 50-year tidal storm surge and 50-year freshwater flood events with 1.0 ft SLR.

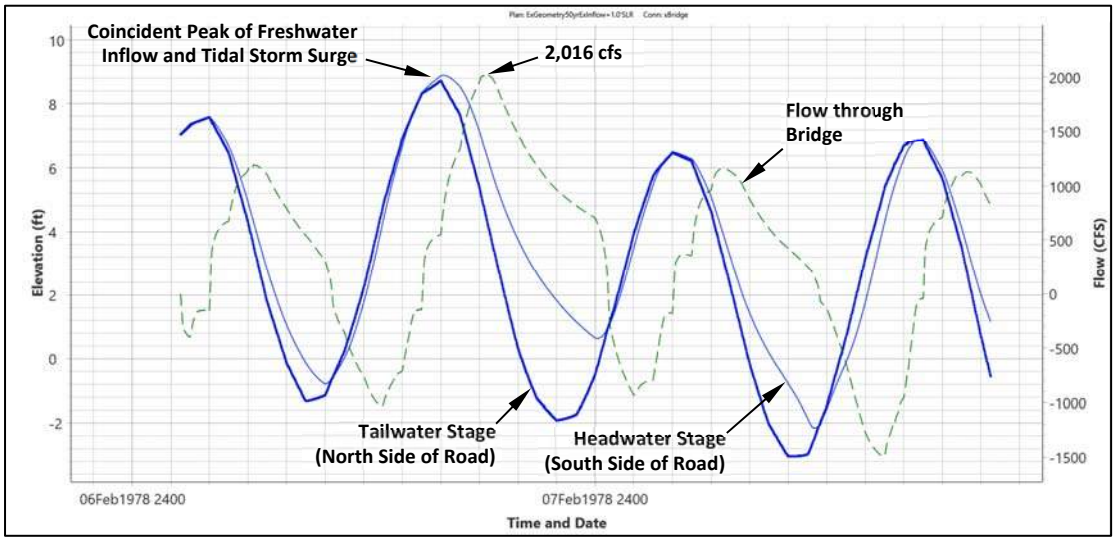


Figure 57 – Stage and flow hydrographs calculated at the bridge with the pre-project 50-year storm model with 1.0 ft SLR

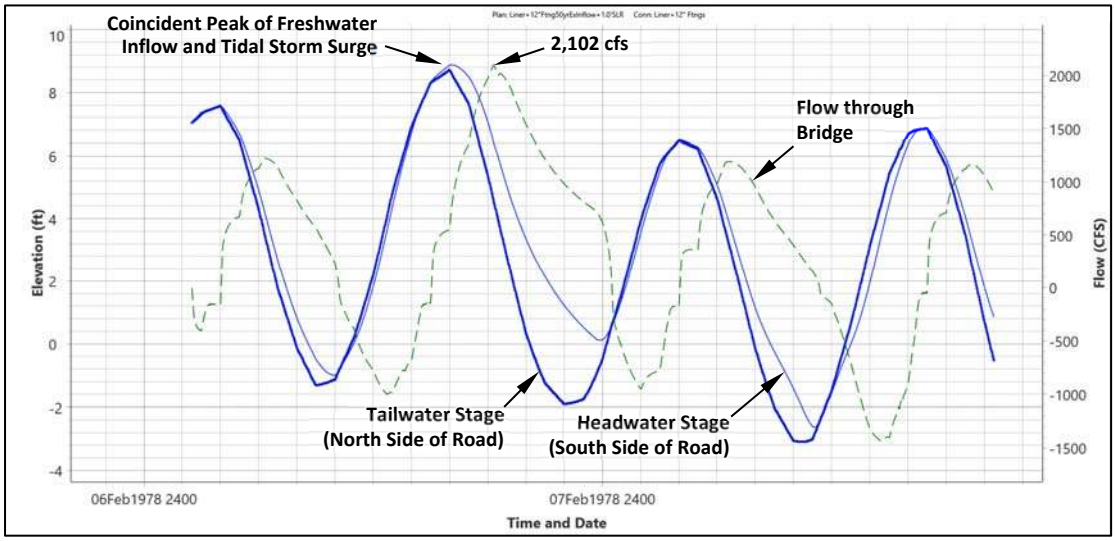


Figure 58 – Stage and flow hydrographs calculated at the bridge with the post-project 50-year storm model with 1.0 ft SLR

Table 9 – Peak flows through the bridge calculated with the pre- and post-project 50-year storm models with 1.0 ft SLR

Model	Peak Flow through Bridge (cfs)
Pre-Project 50-year Storm Model with SLR	2,016
Post-Project 50-year Storm Model with SLR	2,102

C.9. Pre- and Post-Project 100-year Storm Models with SLR

The pre-project 100-year storm model with SLR simulates a scenario which includes the existing bridge geometry (see Section B.2.), runoff to North Mill Pond from the 100-year rainfall event (see Figure 39), and 100-year tidal storm surge adjusted for 1.0 ft SLR projected to occur during the bridge rehabilitation project design life (see Figure 46).

The post-project 100-year storm model with SLR simulates a scenario which includes the proposed bridge geometry after the geopolymer liner has been applied and portions of the existing concrete footings have been removed (see Section B.3.), runoff to North Mill Pond from the 100-year rainfall event (see Figure 39), and 50-year tidal storm surge adjusted for 1.0 ft SLR (see Figure 46).

Table 10 lists the peak water levels calculated in the portion of North Mill Pond south of Maplewood Avenue with the pre- and post-project 100-year storm models with 1.0 ft SLR.

Table 10 – Peak water levels in the portion of North Mill Pond on the south side of Maplewood Avenue calculated with the pre- and post-project 100-year storm models with 1.0 ft SLR

Model	Peak Water Level in the portion of North Mill Pond on the South Side of Maplewood Avenue* (ft, NAVD88)
Pre-Project 100-year Storm Model with SLR	9.40
Post-Project 100-year Storm Model with SLR	9.39

**calculated at the centroid of the waterbody on the south side of Maplewood Ave. (N 211315, E 1224317)*

As indicated in Table 10, the model results show that the maximum water level in the portion of North Mill Pond south of Maplewood Avenue would decrease by 0.01 ft for a storm which includes simultaneous 100-year tidal storm surge and 100-year freshwater flood events under conditions with 1.0 ft of sea-level rise. This is the same decrease calculated for the 100-year storm event without SLR, suggesting that with respect to maximum water levels, the proposed waterway opening modifications would have about the same effect under both present-day sea-levels and elevated sea-levels predicted during the bridge rehabilitation design life.

Figures 59 and 60 show the inundation areas when water levels calculated with the pre- and post-project 100-year storm models with 1.0 ft SLR are at their maximum elevation. Areas shaded light blue are inundated under post-project conditions with 1.0 ft SLR. Pink shading along the edge of the post-project inundation area (see Figure 60) represents the additional area which would be flooded under pre-project conditions with 1.0 ft SLR. The peak water level and inundation area would both decrease; therefore, the projects will not exacerbate flooding on properties along the shoreline of North Mill Pond under this storm and SLR scenario.

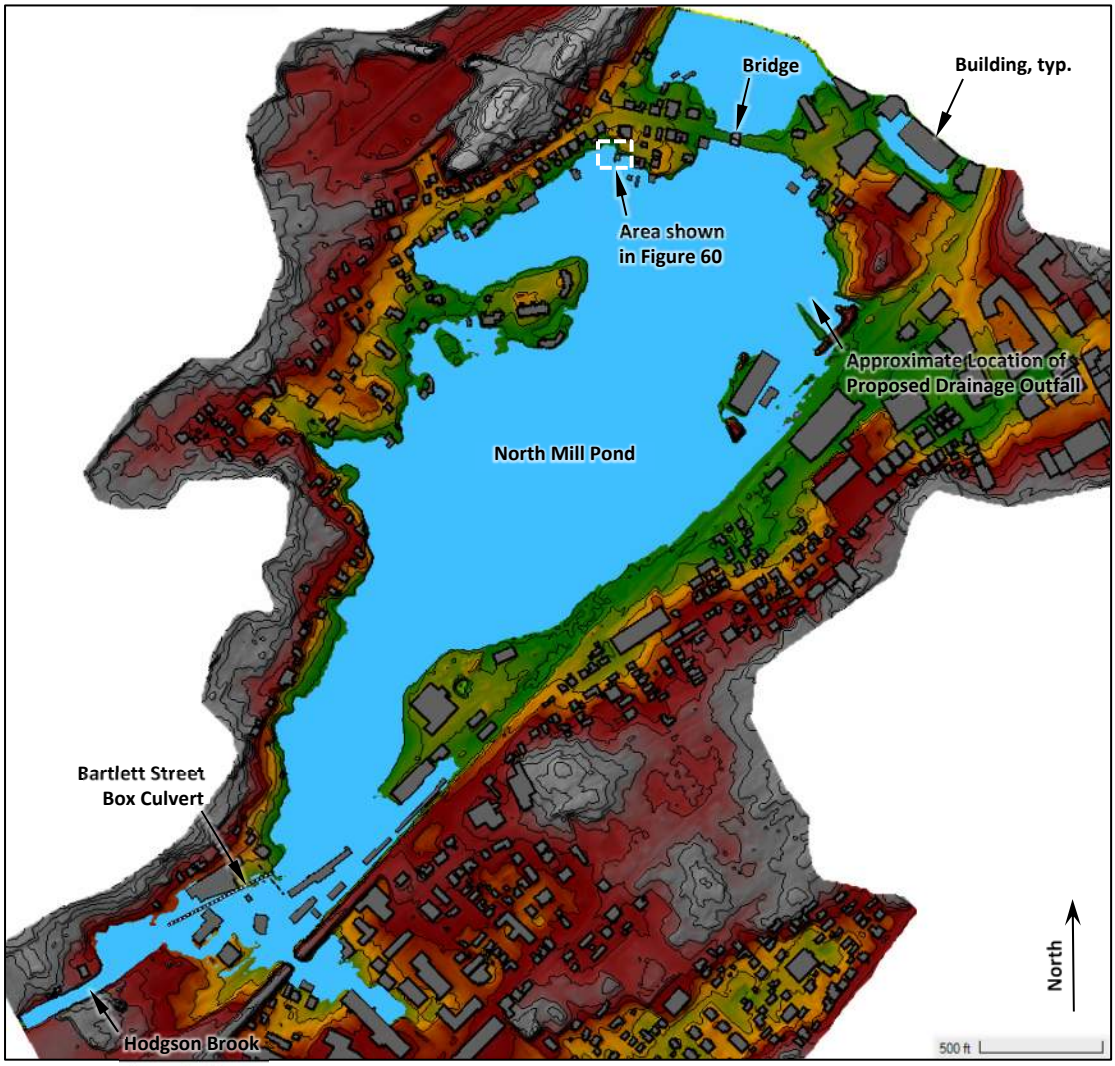


Figure 59 – Inundation areas calculated with the pre- and post-project 100-year storm models with 1.0 ft SLR

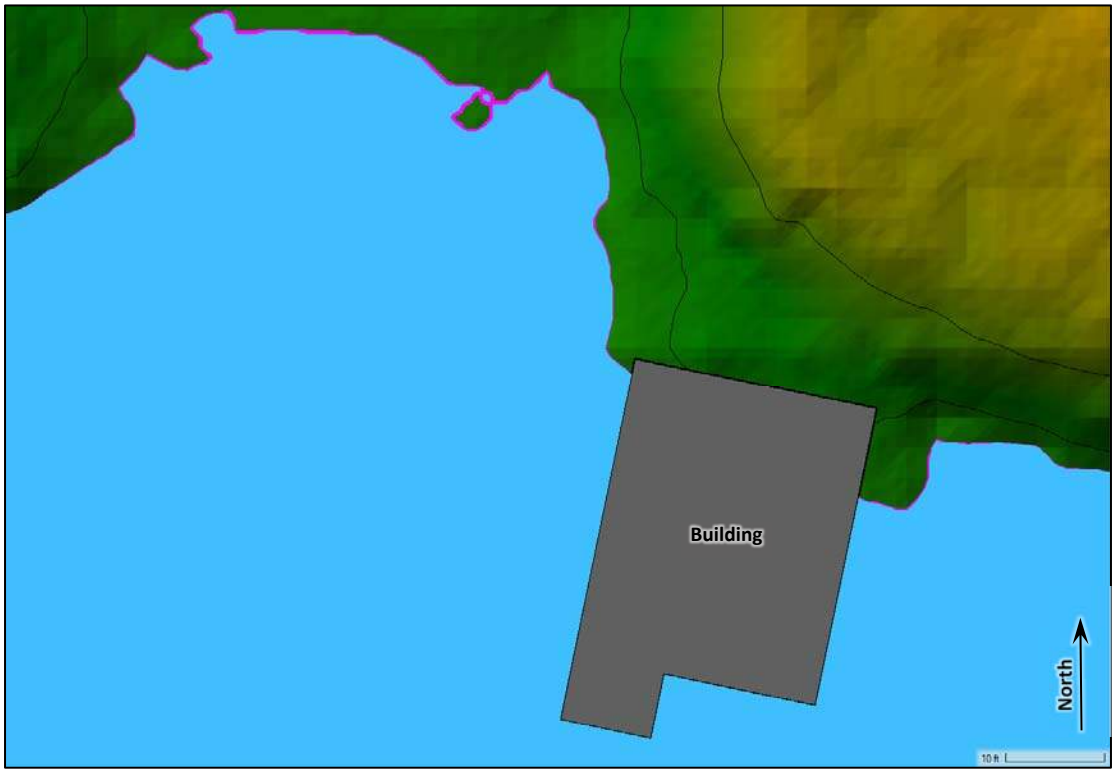


Figure 60 – Detail view of an area along the shore of North Mill Pond southwest from the bridge showing the inundated areas calculated with the pre- and post-project 100-year storm models with 1.0 ft SLR. The area shaded blue represents the post-project inundation area. The pink area along the periphery of the blue-shaded area represents the additional area flooded under pre-project conditions.

Figures 61 and 62 show the stage and flow hydrographs at the bridge calculated with the pre- and post-project 100-year storm models with 1.0 ft SLR. Maximum flows through the bridge are 2,209 cfs for pre-project conditions with 1.0 ft SLR and 2,250 cfs for post-project conditions with 1.0 ft SLR. Peak flows under both scenarios are from south to north and occur about two hours after the coincident freshwater inflow and tidal storm surge peaks.

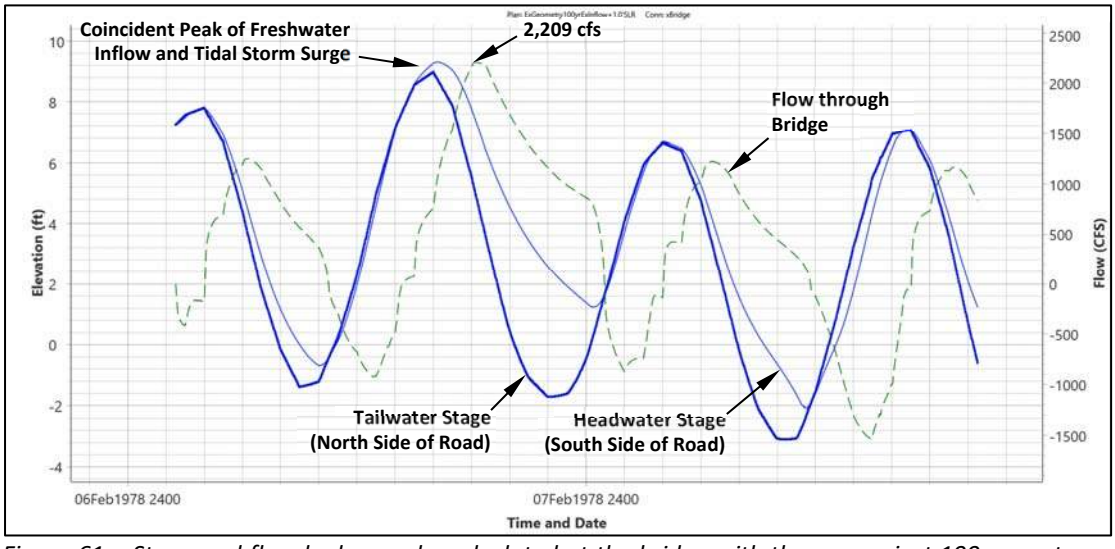


Figure 61 – Stage and flow hydrographs calculated at the bridge with the pre-project 100-year storm model with 1.0 ft SLR

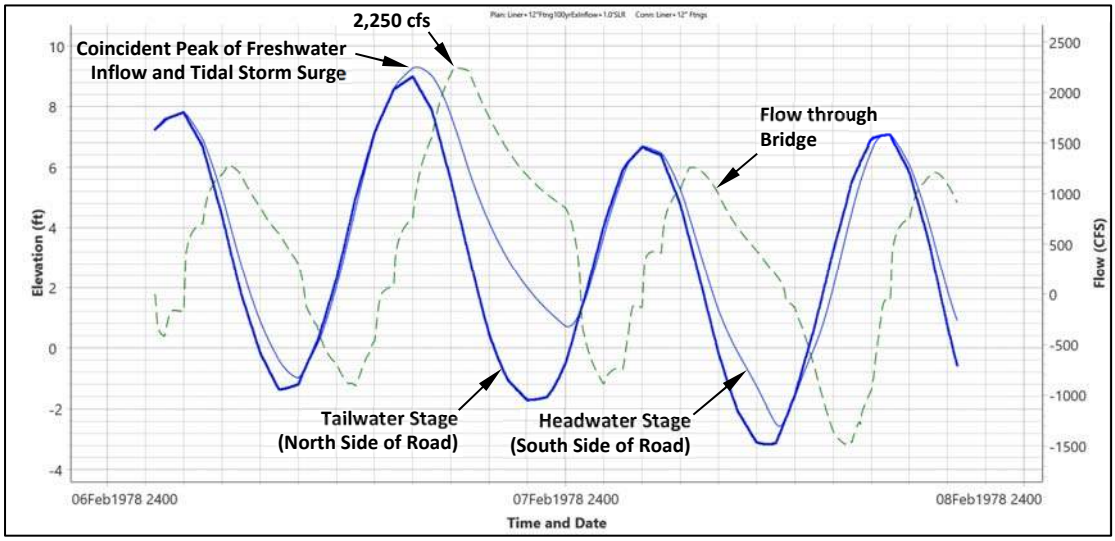


Figure 62 – Stage and flow hydrographs calculated at the bridge with the post-project 100-year storm model with 1.0 ft SLR

Table 11 – Peak flows through the bridge calculated with the pre- and post-project 100-year storm models with 1.0 ft SLR

Model	Peak Flow through Bridge (cfs)
Pre-Project 100-year Storm Model with SLR	2,209
Post-Project 100-year Storm Model with SLR	2,250

The models indicate the maximum flow through the bridge would increase by 41 cfs for a storm event which includes a 100-year tidal storm surge and a 100-year freshwater flood occurring simultaneously under conditions with 1.0 ft SLR. This is an increase of approximately 1.9% and indicates that the proposed modifications to the bridge waterway opening will not restrict flows under this storm and SLR scenario.

D. Env-Wt 603.05 Vulnerability Assessment

Results of the hydraulic analyses completed under Sections B and C have been used to complete a vulnerability assessment per Env-Wt 603.05.

D.1. Env-Wt 603.05(a)

The bridge rehabilitation project is intended to be a temporary repair which will maintain the functionality of the crossing until the structure can be completely replaced. It is expected to be in service for 10 to 20 years. Construction is anticipated to occur in the fall of 2023; therefore, the rehabilitated bridge is projected to be in service from 2023 to sometime between 2033 and 2043.

D.2. Env-Wt 603.05(b)

The corrugated metal arch bridge is a hydraulic structure that has been, and continues to be, frequently submerged since its construction in 1976. Granite block headwalls surround the metal arch at both ends of the structure and bedrock, boulders, and cobble line the pond

bottom at the crossing (see Figures 3 and 18). Therefore, there is little risk for erosion of the roadway embankment or degradation of the pond bottom. Furthermore, because the surface of Maplewood Avenue is about 3 ft higher than the FEMA BFE, there is little risk of the roadway being overtopped during the project design life. The only damage potential is corrosion of the metal arch from regular saltwater exposure, which the geopolymer liner is intended to mitigate. Due to these characteristics, the rehabilitated bridge will have a low sensitivity to inundation and therefore a high tolerance for flood risk per the Step 2 Table (Framework for Determining Project Tolerance for Flood Risk) in NHCFR STAP (2020). Similarly, the drainage outfall is intended to be frequently submerged and will be constructed of erosion and corrosion resistant materials. Consequently, it too has a low sensitivity to inundation and a high tolerance for flood risks.

Although the bridge rehabilitation and drainage outfall projects themselves have a low sensitivity to inundation and a high tolerance for flood risks, the existing residential and commercial properties near the pond have a high sensitivity to inundation and low tolerance for flood risks. As described in Section C, detailed hydraulic analyses have been performed to assess the impact on these properties. These analyses found that the projects will not increase flood levels or flood inundation under any of the modeled storm scenarios, either with or without SLR, and will therefore not increase the flood risks to these properties.

The "SLAMM 2022 – Initial Conditions" layer in the NH Coastal Viewer shows narrow bands of existing salt marsh along most of the west shoreline of North Mill Pond south of Maplewood Avenue and about half of the east shoreline (see Figure 63). These salt marshes were also observed in the field (see Figure 64). Salt marsh migration is driven primarily by changes to ordinary water levels rather than changes to infrequent, storm-induced water levels. Therefore, the results of the hydraulic models which simulate MHHW and MLLW under pre- and post-project conditions with and without SLR are useful for evaluating the likely effect of the projects on these salt marshes. As described in Sections B.7., B.8., C.3., and C.4., the proposed projects will not significantly alter water levels during typical astronomical tide cycles, either with or without SLR. Therefore, the projects are not expected to adversely impact the salt marshes in North Mill Pond. There are no sand dunes or other known valuable coastal resources in the area which could be affected by the projects.

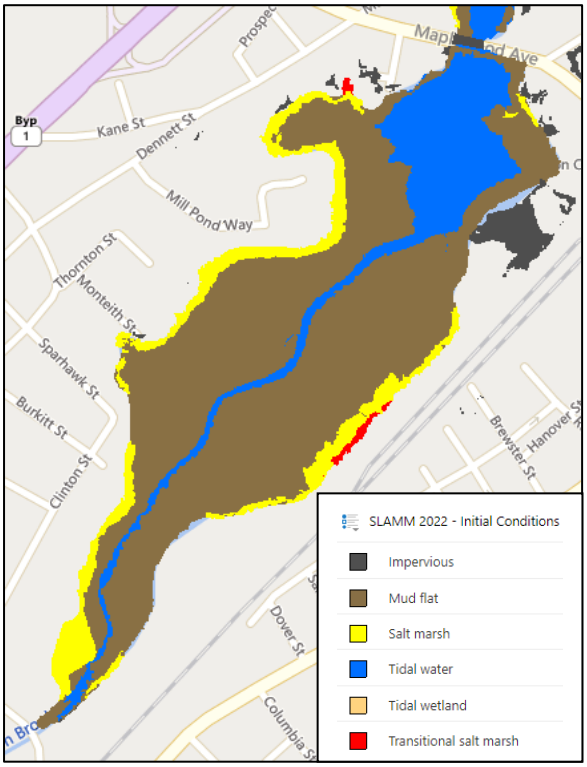


Figure 63 – SLAMM 2022 Initial Conditions layer showing existing salt marshes and other tidal resources in the portion of North Mill Pond south of Maplewood Avenue

Figure 64 – View north from the south end of North Mill Pond showing salt marshes along the shoreline (09-23-20)

D.3. Env-Wt 603.05(c)

NHCFR STAP (2019)[5] states in Section 4.5 (Relative Sea-Level Rise Projections): "For the purposes of this summary report, the preferred RSLR projections for coastal New Hampshire from 2000 to 2050 are based on K14 for the RCP 4.5 scenario (Table 4.2; Figure 4.5)." A copy of Table 4.2 from NHCFR STAP (2019) is shown as Figure 65 below. Per this table, as compared to sea-levels in the year 2000, there is a 67% probability that sea-levels will be between 0.3 and 0.7 ft higher in the year 2030 and between 0.5 and 1.3 ft higher in 2050.

Table 4.2. Projected local sea-level rise (in feet) estimates above 2000 levels for NH based on K14 and the Seavey Island tide-gauge.

Year	RCP	Central Estimate	Likely Range	1-in-20 Chance	1-in-100 Chance	1-in-200 Chance	1-in-1000 Chance
		50% probability SLR meets or exceeds:	67% probability SLR is between:	5% probability SLR meets or exceeds:	1% probability SLR meets or exceeds:	0.5% probability SLR meets or exceeds:	0.1% probability SLR meets or exceeds:
2030	RCP 4.5*	0.5	0.3 - 0.7	0.9	1.0	1.1	1.3
2050	RCP 4.5*	**0.9**	**0.5 - 1.3**	**1.6**	**2.0**	**2.3**	2.9
2100	RCP 2.6	1.4	0.6 - 2.5	3.4	5.0	5.8	8.6
2100	RCP 4.5	**1.9**	**1.0 - 2.9**	**3.8**	**5.3**	**6.2**	8.7
2100	RCP 6.0	2.0	0.9 - 3.3	4.3	5.8	6.8	9.4
2100	RCP 8.5	2.6	1.5 - 3.8	4.9	6.5	7.5	10.0
2150	RCP 2.6	2.0	0.9 - 3.4	5.1	8.6	10.7	17.0
2150	RCP 4.5	**2.7**	**1.2 - 4.6**	**6.4**	**9.9**	**11.7**	18.1
2150	RCP 6.0**	N/A	N/A	N/A	N/A	N/A	N/A
2150	RCP 8.5	4.0	2.6 - 5.8	7.6	11.4	13.4	19.9

Figure 65 – Table 4.2 from NHCFR STAP (2019)

[5] Wake, C., Knott, J., Lippmann, T., Stampone, M., Ballestero, T., Bjerklie, D., Burakowski, E., Glidden, S., Hosseini-Shakib, I., Jacobs, J. (2019). *New Hampshire Coastal Flood Risk Summary – Part I: Science.* Prepared for the New Hampshire Coastal Flood Risk Science and Technical Advisory Panel. Report published by the University of New Hampshire, Durham, NH.

Step 3 Table A from NHCFR STAP (2020) lists recommended SLR estimates based on project design life and flood risk tolerance (see Figure 21). As described in Section D.1, the rehabilitated bridge is anticipated to be in service until sometime between 2033 and 2043. This most closely matches the year 2040 timeframe in Step 3 Table A. As described in Section D.2., the rehabilitated bridge will have a high tolerance for flood risk. Per Step 3 Table A, the recommended SLR estimate for a project with a 2040 timeframe and a high tolerance for flood risk is 1.0 ft relative to sea-levels in the year 2000. The hydraulic models described in Sections B and C which do not account for SLR use tide stage hydrographs simulating MHHW, MLLW, and tidal storm surge which are relative to the the tidal datum based on the 1983-2001 National Tidal Datum Epoch. Water levels at each time step of these stage hydrographs were raised by 1.0 ft to develop estimates of the MHHW, MLLW, and storm surge tide stage hydrographs which account for projected SLR during the bridge rehabilitation project design life. These SLR-adjusted tide stage hydrographs were used in the hydraulic models which account for SLR.

D.4. Env-Wt 603.05(d) and (e)

The area shaded light blue in Figure 66 represents the portion of the hydraulic study area which is currently within the 100-year floodplain. This is the area at and below the FEMA BFE, which is 8.0 ft (NAVD88). Pink shading indicates the additional areas which would be subject to flooding as a result of the projected SLR at the end of the project design life assuming the BFE is raised by 1.0 ft to elevation 9.0 ft.

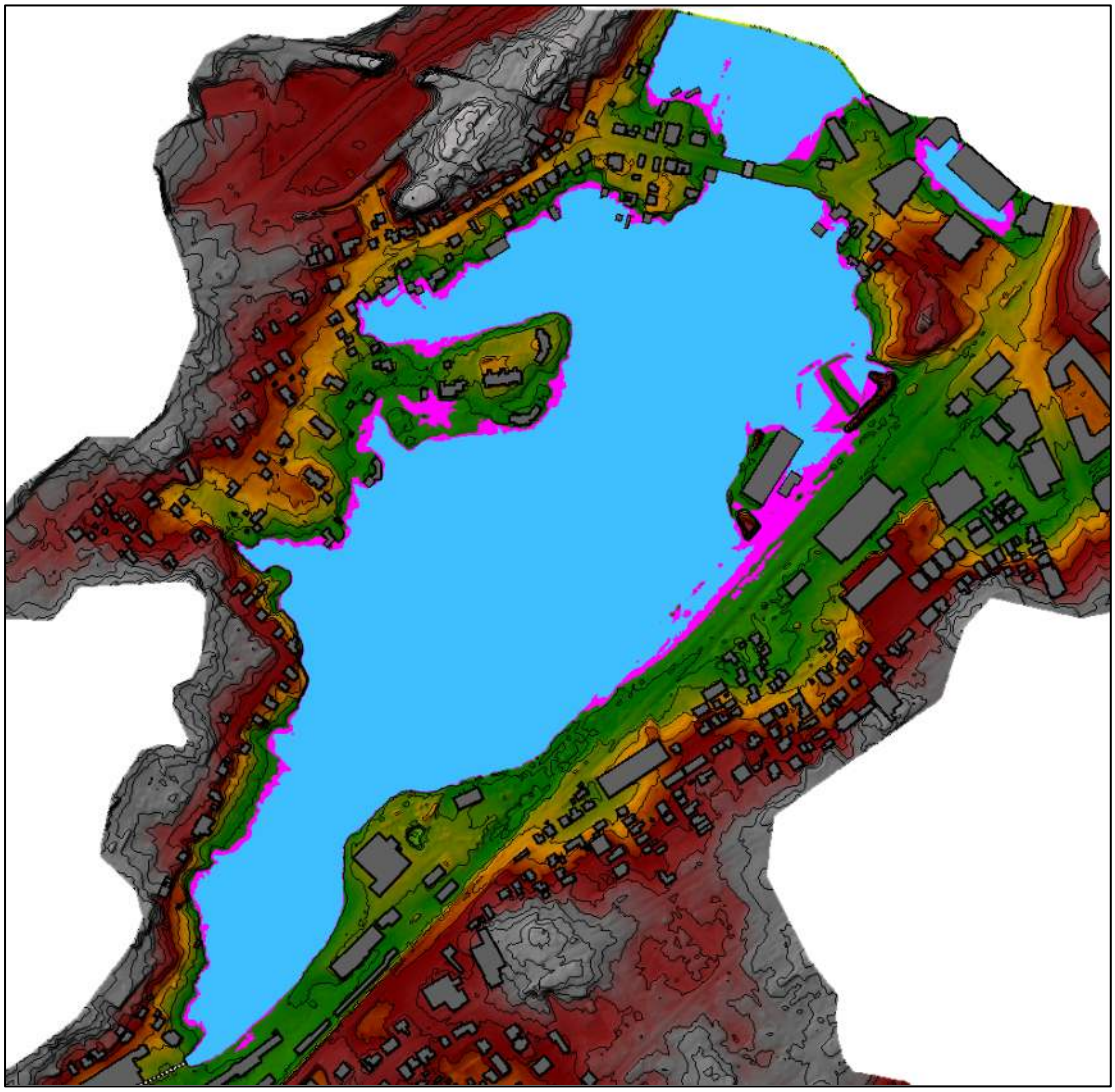


Figure 66 – Existing 100-year floodplain (blue shading, BFE 8.0 ft) and additional area subject to flooding with 1.0 ft SLR (pink shading, BFE 9.0 ft)

D.5. Env-Wt 603.05(f)

Since the bridge and outfall are intended to be submerged and Maplewood Avenue at the crossing would still be about 2 ft higher than the FEMA BFE increased by 1.0 ft to account for SLR (i.e., reasonably safe from flooding), no special design features are needed to accommodate SLR within the project design life. However, as described in Section C, SLR has been considered in the project design by evaluating the combined effects of the projects on flood levels, inundation extents, and bridge discharge capacities under scenarios where sea-levels have risen 1.0 ft.

D.6. Env-Wt 603.05(g)

There are no conflicts between the purpose of the projects and the vulnerability assessment results.

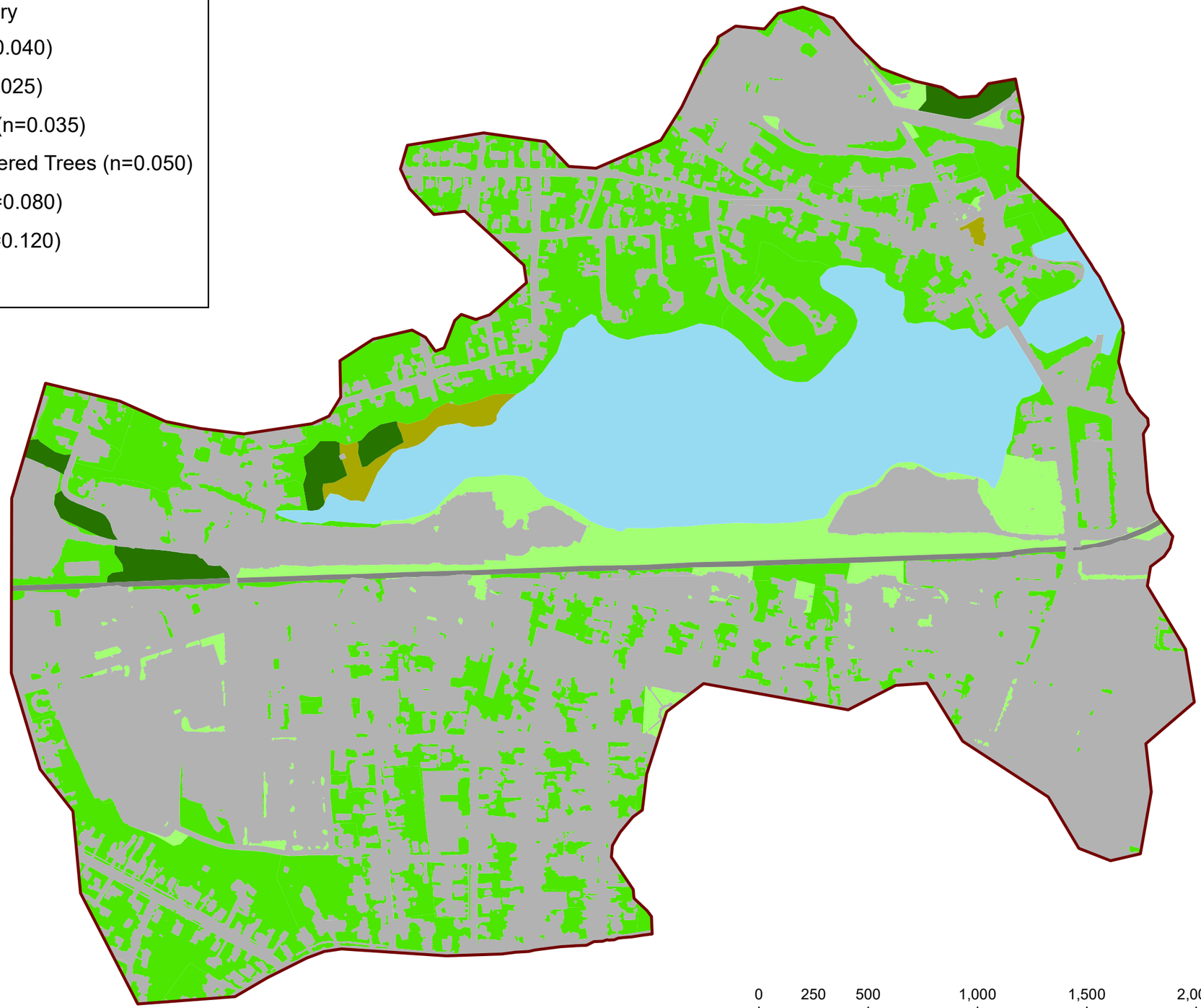
APPENDIX 1

SUPPORTING DOCUMENTATION FOR HYDRAULIC MODELS

Maplewood Avenue Bridge Replacement
Hydraulic Model Land Cover Mapping

Legend

- 2D Model Boundary
- Open Water (n=0.040)
- Impervious (n=0.025)
- Railroad Tracks (n=0.035)
- Grass with Scattered Trees (n=0.050)
- Open Woods (n=0.080)
- Thick Woods (n=0.120)
- Brush (n=0.120)

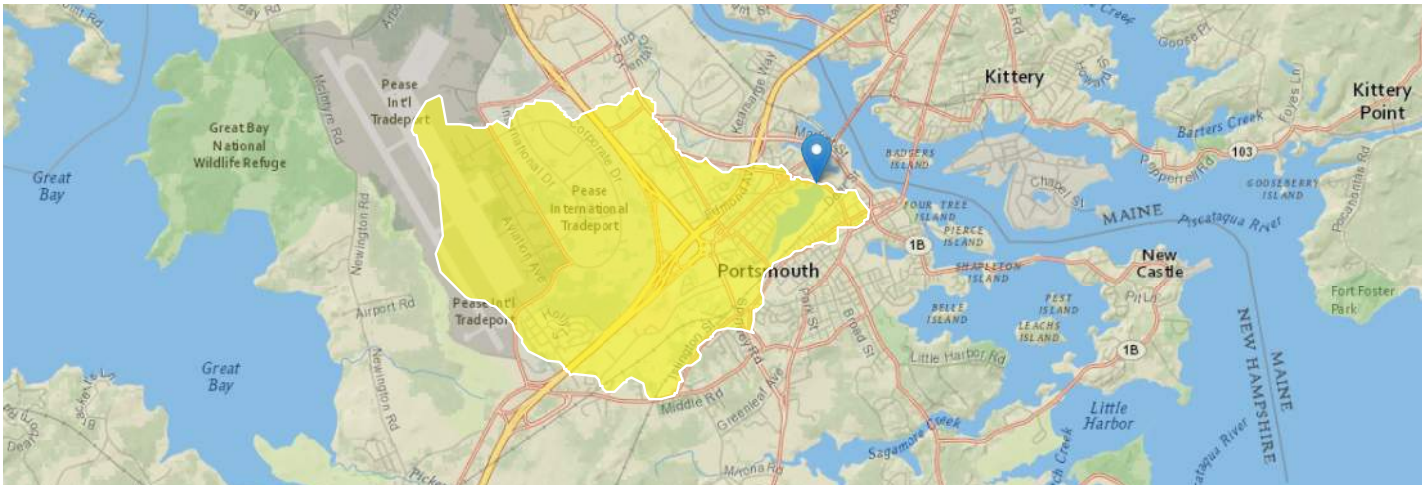


N

0 250 500 1,000 1,500 2,000 2,500 Feet

StreamStats Report - North Mill Pond at Maplewood Ave.

Region ID: NH
Workspace ID: NH20221003123325873000
Clicked Point (Latitude, Longitude): 43.07969, -70.76530
Time: 2022-10-03 08:33:51 -0400



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
APRAVPRE	Mean April Precipitation	4.429	inches
BSLDEM30M	Mean basin slope computed from 30 m DEM	1.47	percent
CONIF	Percentaqe of land surface covered by coniferous forest	6.3785	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	19	feet per mi
DRNAREA	Area that drains to a point on a stream	4.16	square miles
ELEVMAX	Maximum basin elevation	101.072	feet
MIXFOR	Percentage of land area covered by mixed deciduous and coniferous forest	2.2681	percent
PREBC0103	Mean annual precipitation of basin centroid for January 1 to March 15 winter period	9.25	inches
PREG_03_05	Mean precipitation at gaging station location for March 16 to May 31 spring period	9.6	inches
PREG_06_10	Mean precipitation at gaging station location for June to October summer period	17.2	inches
TEMP	Mean Annual Temperature	46.223	degrees F
TEMP_06_10	Basinwide average temperature for June to October summer period	62.036	degrees F
WETLAND	Percentage of Wetlands	7.3067	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	4.16	square miles	0.7	1290
APRAVPRE	Mean April Precipitation	4.429	inches	2.79	6.23
WETLAND	Percent Wetlands	7.3067	percent	0	21.8
CSL10_85	Stream Slope 10 and 85 Method	19	feet per mi	5.43	543

Peak-Flow Statistics Flow Report [Peak Flow Statewide SIR2008 5206]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PII	PIu	ASEp	Equiv. Yrs.
50-percent AEP flood	115	ft^3/s	69.6	190	30.1	3.2
20-percent AEP flood	196	ft^3/s	117	329	31.1	4.7
10-percent AEP flood	266	ft^3/s	155	455	32.3	6.2
4-percent AEP flood	363	ft^3/s	204	644	34.3	8
2-percent AEP flood	445	ft^3/s	243	815	36.4	9
1-percent AEP flood	546	ft^3/s	287	1040	38.6	9.8
0.2-percent AEP flood	799	ft^3/s	386	1650	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/)

Flow-Duration Statistics

Flow-Duration Statistics Parameters [Low Flow Statewide]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.16	square miles	3.26	689
PREG_06_10	Jun to Oct Gage Precipitation	17.2	inches	16.5	23.1
TEMP	Mean Annual Temperature	46.223	degrees F	36	48.7

Flow-Duration Statistics Flow Report [Low Flow Statewide]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PII	PIu	SE	ASEp
60 Percent Duration	1.94	ft^3/s	1.41	2.6	18	18
70 Percent Duration	1.21	ft^3/s	0.84	1.68	20.6	20.6
80 Percent Duration	0.64	ft^3/s	0.388	0.991	28	28
90 Percent Duration	0.289	ft^3/s	0.147	0.509	37.5	37.5
95 Percent Duration	0.164	ft^3/s	0.0741	0.313	44.1	44.1
98 Percent Duration	0.0948	ft^3/s	0.0356	0.203	54.3	54.3

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	4.16	square miles	3.26	689
CONIF	Percent Coniferous Forest	6.3785	percent	3.07	56.2
PREBC0103	Jan to Mar Basin Centroid Precip	9.25	inches	5.79	15.1
BSLDEM30M	Mean Basin Slope from 30m DEM	1.47	percent	3.19	38.1
MIXFOR	Percent Mixed Forest	2.2681	percent	6.21	46.1
PREG_03_05	Mar to May Gage Precipitation	9.6	inches	6.83	11.5
TEMP	Mean Annual Temperature	46.223	degrees F	36	48.7
TEMP_06_10	Jun to Oct Mean Basinwide Temp	62.036	degrees F	52.9	64.4
PREG_06_10	Jun to Oct Gage Precipitation	17.2	inches	16.5	23.1
ELEVMAX	Maximum Basin Elevation	101.072	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	4.67	ft^3/s
Jan to Mar15 70 Percent Flow	3.99	ft^3/s
Jan to Mar15 80 Percent Flow	3.25	ft^3/s
Jan to Mar15 90 Percent Flow	2.3	ft^3/s
Jan to Mar15 95 Percent Flow	1.77	ft^3/s
Jan to Mar15 98 Percent Flow	1.32	ft^3/s
Jan to Mar15 7 Day 2 Year Low Flow	2.95	ft^3/s
Jan to Mar15 7 Day 10 Year Low Flow	1.63	ft^3/s
Mar16 to May 60 Percent Flow	4.82	ft^3/s
Mar16 to May 70 Percent Flow	4.02	ft^3/s
Mar16 to May 80 Percent Flow	4.18	ft^3/s
Mar16 to May 90 Percent Flow	3.76	ft^3/s
Mar16 to May 95 Percent Flow	3.4	ft^3/s
Mar16 to May 98 Percent Flow	2.92	ft^3/s
Mar16 to May 7 Day 2 Year Low Flow	3.39	ft^3/s
Mar16 to May 7 Day 10 Year Low Flow	1.87	ft^3/s
Jun to Oct 60 Percent Flow	0.536	ft^3/s
Jun to Oct 70 Percent Flow	0.381	ft^3/s
Jun to Oct 80 Percent Flow	0.225	ft^3/s
Jun to Oct 90 Percent Flow	0.134	ft^3/s
Jun to Oct 95 Percent Flow	0.0875	ft^3/s
Jun to Oct 98 Percent Flow	0.0703	ft^3/s
Jun to Oct 7 Day 2 Year Low Flow	0.157	ft^3/s
Jun to Oct 7 Day 10 Year Low Flow	0.0492	ft^3/s
Nov to Dec 60 Percent Flow	2.14	ft^3/s
Nov to Dec 70 Percent Flow	1.37	ft^3/s
Nov to Dec 80 Percent Flow	0.814	ft^3/s
Nov to Dec 90 Percent Flow	0.42	ft^3/s
Nov to Dec 95 Percent Flow	0.227	ft^3/s
Nov to Dec 98 Percent Flow	0.107	ft^3/s
Oct to Nov 7 Day 2 Year Low Flow	0.848	ft^3/s
Oct to Nov 7 Day 10 Year Low Flow	0.182	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)

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Statewide]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.16	square miles	3.26	689
TEMP	Mean Annual Temperature	46.223	degrees F	36	48.7
PREG_06_10	Jun to Oct Gage Precipitation	17.2	inches	16.5	23.1

Low-Flow Statistics Flow Report [Low Flow Statewide]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PII	PIu	SE	ASEp
7 Day 2 Year Low Flow	0.154	ft^3/s	0.0553	0.327	55.7	55.7
7 Day 10 Year Low Flow	0.0477	ft^3/s	0.0111	0.125	79.4	79.4

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)

Application Version: 4.10.1
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

MAPLEWOOD AVE BRIDGE IN PORTSMOUTH, NH TIDAL STUDY (DOUCET SURVEY, LLC (DS~6032)) JUNE 16, 2022

KNOWN DATA AT SEAVEY ISLAND, ME STATION 8419870 (CONTROL STATION: 8418150 PORTLAND, ME) EPOCH 1983-2001 (STATUS ACCEPTED DEC. 6, 2021)		
5.87'	HAT	HIGHEST ASTRONOMICAL TIDE - REFERENCE LINE - HOTL
4.18'	MHHW	MEAN HIGHER-HIGH WATER
3.76'	MHW	MEAN HIGH WATER
-0.32'	MTL	MEAN TIDE LEVEL
-0.25'	MSL	MEAN SEA LEVEL
-0.26'	DTL	MEAN DIURNAL TIDE LEVEL
-4.39'	MLW	MEAN LOW WATER
-4.71'	MLLW	MEAN-LOWER-LOW WATER
0.00'	NAVD88	NORTH AMERICAN VERTICAL DATUM OF 1988
-6.98'	STND	STATION DATUM
8.89'	GT	GREAT DIURNAL RANGE
8.16'	MN	MEAN RANGE OF TIDE
0.42'	DHQ	MEAN DIURNAL HIGH WATER INEQUALITY
0.31'	DLQ	MEAN DIURNAL LOW WATER INEQUALITY

PRELIMINARY DATA AT CONTROL STATION, SEAVEY ISLAND, ME STATION 8419870 (DATUM NAVD88)	
DATE: 2022-05-27	
3.65'	HIGH WATER AT 10:12 (GMT TIMEZONE: 14:12)
DATE: 2022-06-02	
3.26'	HIGH WATER AT 14:18 (GMT TIMEZONE: 18:18)
DATE: 2022-06-07	
-3.56'	LOW WATER AT 11:48 (GMT TIMEZONE: 15:48)

SITE DATA AT SUBORDINATE STATION BY NORTHEASTERLY (OCEAN-SIDE) OF MAPLEWOOD BRIDGE, PORTSMOUTH, NH	
DATE: 2022-05-27	
3.51'	HIGH WATER AT 10:48 (GMT TIMEZONE: 14:48)
DATE: 2022-06-02	
3.14'	HIGH WATER AT 14:40 (GMT TIMEZONE: 18:40)
DATE: 2022-06-07	
-3.36'	LOW WATER AT 11:52 (GMT TIMEZONE: 15:52)

FINAL TIDAL STUDY INFORMATION

	MAPLEWOOD AVE BRIDGE	SEAVEY ISLAND
	ELEV.	ELEV.
HAT	5.6'	5.87'
MHHW	4.0'	4.18'
MHW	3.6'	3.76'
MTL	-0.3'	-0.32'
MLW	-4.2'	-4.39'
MLLW	-4.5'	-4.71'
NAVD88	0.0'	0.00'

APPENDIX 2

BRIDGE REHABILITATION PROJECT
HYDROLOGY STUDY REPORT

HEADWATERS
Consulting, LLC

February 1, 2021

Jillian A. Semprini, P.E.
Hoyle, Tanner & Associates, Inc.
Pease International Tradeport
100 International Drive, Suite 360
Portsmouth, NH 03801
(603) 431-2520, ext 28
jsemprini@hoyletanner.com

Subject: **Maplewood Avenue over North Mill Pond Hydrologic Analysis**
Portsmouth, NH

Jillian:

This letter describes the hydrologic analysis we have completed for the Maplewood Avenue over North Mill Pond bridge replacement project in Portsmouth. Methods and results of the hydrology study are described below and supporting plans and calculations are attached.

A. Overview

Our approach to the hydrologic analysis was based on the requirements and recommendations included in the following documents:

- *Bridge Design Manual, Chapter 2, Bridge Selection*. January 2015 – v 2.0 (Revised August 2018). NH Department of Transportation (NHDOT); and

- *Sea-level Rise, Storm Surges, and Extreme Precipitation in Coastal New Hampshire: Analysis of Past and Projected Future Trends*. 2014. New Hampshire Coastal Risk and Hazards Commission Science and Technical Advisory Panel (NHCRHC STAP). http://www.nhcrhc.org/wp-content/uploads/2014-STAP-final-report.pdf.

Maplewood Avenue is classified as a Tier 5 highway (i.e. local road). Per the NHDOT Bridge Design Manual, the design flood for calculating freeboard to the superstructure of bridges on local roads is the 50-year event and the design flood for substructure scour analysis is the 100-year event.

The SCS unit hydrograph method was used with the HydroCAD computer program to estimate runoff hydrographs resulting from the 50-, and 100-year, 24-hour rainfalls. This method, which is an approved hydrologic analysis method listed in the Bridge Design Manual, uses the SCS unit hydrograph (representing the runoff resulting from 1 inch of excess precipitation), synthetic rainfall distribution curve (specifying the distribution of rainfall throughout the storm duration), and the following variables:

- Watershed Area;
- Rainfall depth;
- Runoff Curve Number (measure of the land's capacity to retain precipitation, based on soil and land cover characteristics); and
- Time of Concentration (time required for runoff to travel from the most hydraulically distant point of a watershed to its outlet).

B. <u>Watershed Delineation</u>

The main tributary to North Mill Pond is Hodgson Brook, which enters the southwest end of the pond at the outlet of a stone masonry box culvert beneath Bartlett Street. North Mill Pond also receives runoff from areas immediately north and south of the pond which drain directly to it, rather than to Hodgson Brook.

The following data was used to delineate the area draining to North Mill Pond at Maplewood Avenue:

- Digital elevation model (DEM) generated from 2011 LiDAR data downloaded from NHGRANIT (note that the 2011 LiDAR data is the most recent dataset which covers the entire watershed – more recent data only covers a portion of the watershed);
- Stormwater infrastructure GIS data (storm drains and drainage structures) provided by James McCarty, GIS Manager for the City of Portsmouth;
- 1-foot resolution color orthophotography captured in 2017 and 6-inch resolution color orthophotography captured in 2010; and
- Google Maps Street View.

The watershed includes a significant amount of commercial, industrial, and residential development which has altered the natural drainage patterns. Due to these alterations, the stormwater infrastructure GIS data provided by the City was invaluable in determining the current drainage pathways and watershed boundary. However, this data does not include all of the closed drainage pipes and structures nor does it contain other drainage information such as roof drain connections and parking garage stormwater infrastructure. Where the stormwater infrastructure GIS data was incomplete, the LiDAR DEM, orthophotography, and Google Maps Street View were used to estimate flow pathways and delineate the watershed boundary.

The area draining to North Mill Pond at Maplewood Avenue was determined to be 2,628 acres (4.11 square miles). The watershed boundary is shown on the attached Watershed Relief Map and Drainage Plan.

C. Rainfall

In accordance with the recommendations in NHDRHC STAP (2014), rainfall depths and distributions at the watershed centroid were obtained from the Northeast Regional Climate Center (NRCC) using their "Extreme Precipitation" web tool (http://precip.eas.cornell.edu). Table 1 summarizes the rainfall depths for the analyzed storms and Figure 1 shows the rainfall distribution curves for these events.

Table 1 – NRCC Rainfall Data

Storm Frequency	24-hour Rainfall Depth
50-year	7.39"
100-year	8.86"

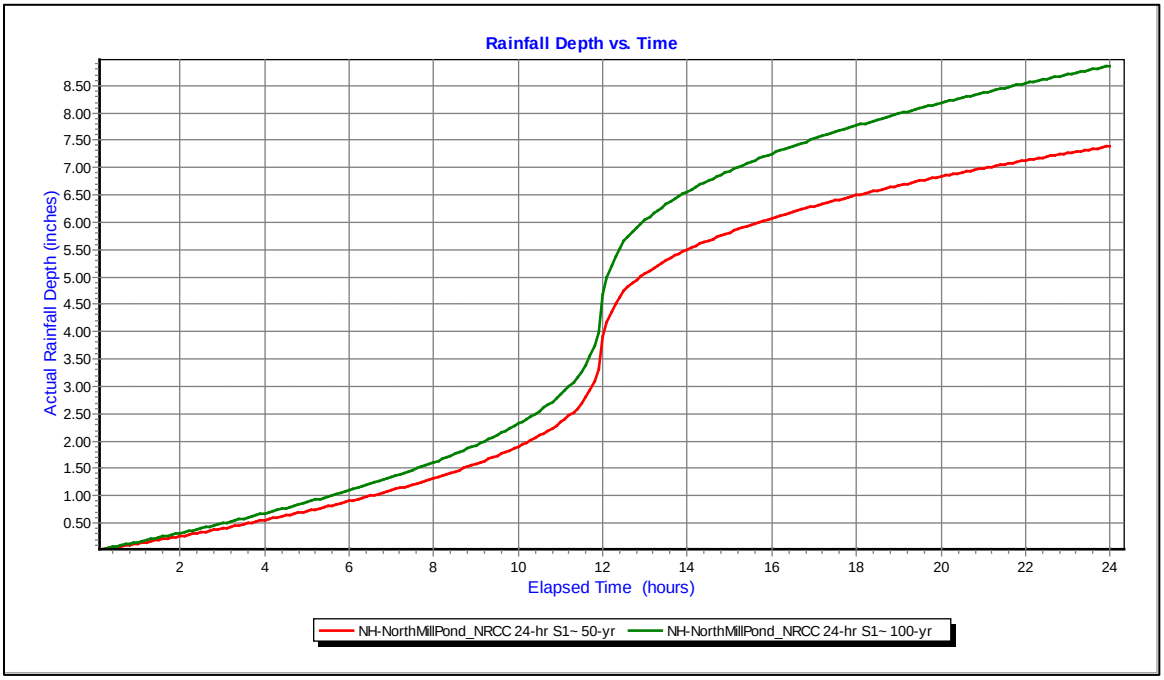


Figure 1 – Rainfall Distribution Curves for 50- and 100-year Storms

D. Runoff Curve Number

The composite runoff curve number (CN) for the watershed was estimated using the following data sources:

- "Impervious Surfaces in the Coastal Watershed of NH and Maine, High Resolution – 2015" GIS layer downloaded from NHGRANIT;
- "Land Use 2015 - Southeastern New Hampshire" GIS layer downloaded from NHGRANIT;
- 1-foot resolution color orthophotography captured in 2017; and

- digital NRCS soil mapping.

The Land Use polygons were clipped to remove those portions covered by the Impervious layer. The remaining portions of the Land Use polygons were then assigned one of the land cover types and conditions listed in Table 2-2 of the SCS Technical Release 55 (TR-55) publication by inspecting the ground cover of these polygons shown on 2017 orthophotography. For example, the orthophotography shows that the Land Use "Electric, gas, and other utilities" polygons, which generally cover utility right-of-ways, support predominantly brush and tall herbaceous vegetation over more than 75 percent of the ground surface, which most closely matches the "Brush, Good" cover type and condition in the TR-55 manual. The attached "North Mill Pond Watershed Land Cover" table summarizes the correlations between the Land Use layers and TR-55 cover types.

Once the land cover mapping was completed for the entire watershed, it was combined with NRCS soil mapping to create soil-land cover polygons for each combination of hydrologic soil group (HSG) and land cover (e.g. Brush, Good, HSG B). Each soil-land cover combination was then assigned a CN from Table 2-2 of the TR-55 manual. The attached "North Mill Pond Watershed Soil – Land Cover Map" shows the soil-land cover polygons and the attached "North Mill Pond Watershed Soil - Land Cover Polygons" table summarizes the areas and CNs for each soil-land cover combination.

This cumulative area of each soil-land cover combination was determined and used to calculate the area-weighted composite CN for the entire watershed. This value was determined to be 73, which suggests a relatively high runoff potential due to the extent of development in the watershed, approximately 36% of which was determined to be covered by impervious surfaces.

E. Time of Concentration

The time of concentration (Tc) – the time for runoff to travel from the hydraulically most distant point of the watershed to the bridge – was estimated using the velocity method. The flow path from the uppermost point of the watershed to the bridge was identified using the DEM and storm drain GIS data and has a total length of 23,320 feet (see attached Drainage Plan). Twenty-six discreet flow segments were delineated – one sheet flow segment and one shallow concentrated flow segment at the upper end of the watershed followed by alternating pipe and channel flow segments as the drainage path crosses multiple roadways on its way to North Mill Pond.

A terrain profile was cut along the flow path and used to identify the start and end of each channel and pipe segment, the invert elevations at these break points, and the length and slope of each segment. The storm drain GIS data included culvert diameter and material attribute information for a few of the pipe runs; however, most of these features did not include this data. For these pipe segments the pipe diameter and material were estimated. A typical cross-section was cut across each channel flow segment and the ground profile from the DEM was used to determine channel geometry for use in calculating travel time. Geometry was measured at an estimated maximum bankfull depth of one foot. The 2017 orthophotography was used to identify land cover along the channel flow segments from which Manning's roughness coefficients were estimated. Most channel segments have brush or forest cover and were

assigned a roughness coefficient of 0.10. The numerous roadway embankments along the flow path likely have restricted outlets which provide floodwater storage and act to increase Tc and lag time between the start of the runoff event and its peak. Although the analysis did not directly account for the storage effects of these manmade basins, the assignment of relatively high roughness coefficients to the channel flow segments does, to some extent, account for these effects.

The total Tc for the watershed was calculated at 564 minutes (9.4 hours). The attached "North Mill Pond Watershed Time of Concentration" table summarizes the data for each flow segment.

F. Rainfall Runoff Simulation

The hydrologic model yielded the following peak discharges at the Maplewood Avenue Bridge.

Table 2 – Peak Discharge Estimates at Maplewood Avenue

Storm Frequency	Peak Discharge (cfs)
50-year	908
100-year	1,179

Output from the HydroCAD model is attached.

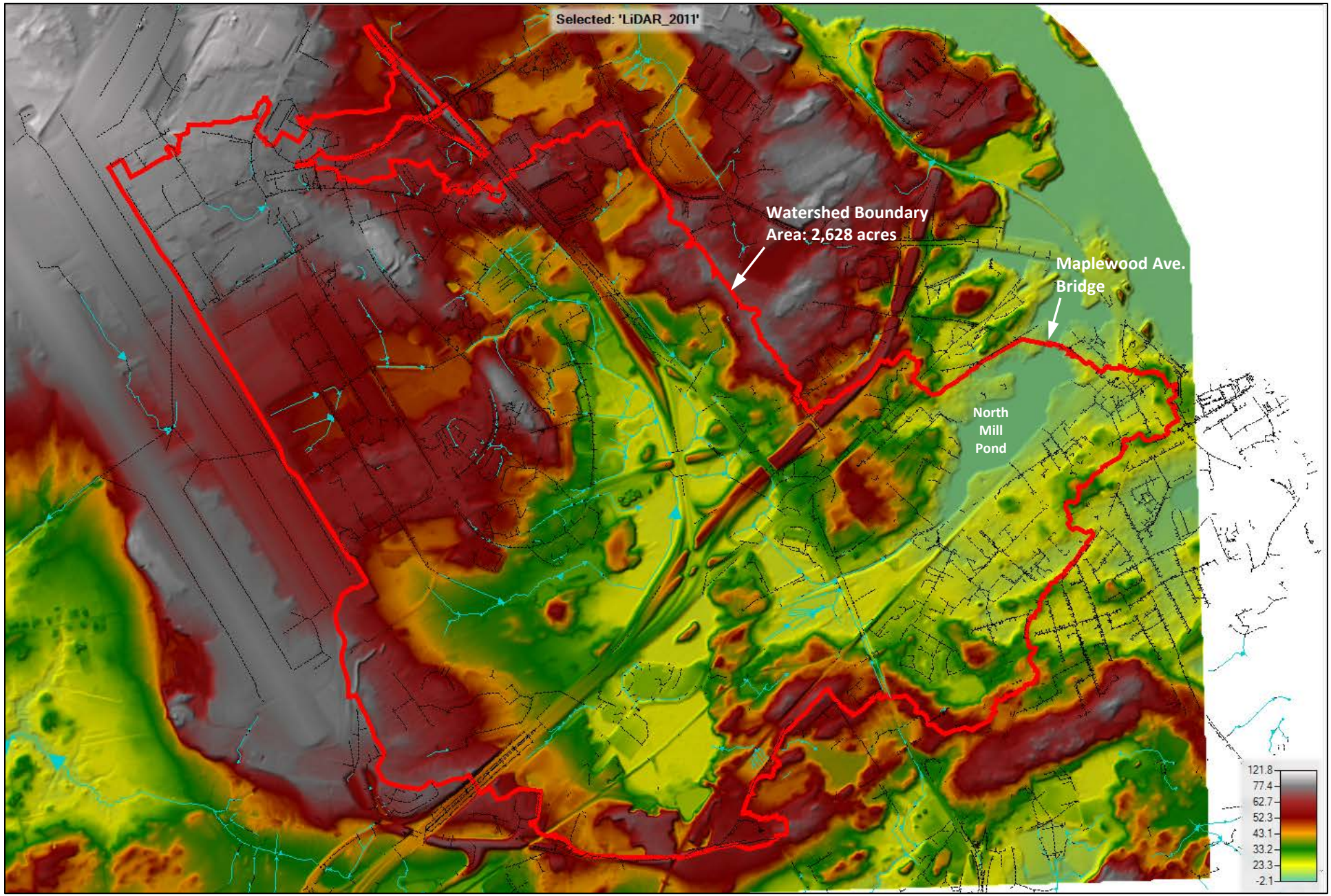
I can be reached at (603) 616-6850 or via email at sean@headwatershydrology.com if you have any questions.

Respectfully submitted,

Sean P. Sweeney, P.E., CWS
Manager
Headwaters Consulting, LLC

Attachments:
- Watershed Relief Map
- Drainage Plan
- NRCC Precipitation Estimates
- Land Cover Table
- Soil – Land Cover Map
- Soil – Land Cover Polygons Table
- Time of Concentration Table
- HydroCAD Report

Maplewood Avenue over North Mill Pond
Watershed Relief Map



MAPLEWOOD AVENUE BRIDGE

NORTH MILL POND

0 300 600 1200

SCALE IN FEET

DATE OF PRINT: 02/01/21

HEADWATERS Consulting, LLC
P.O. Box 744 Littleton, NH 03561 (603) 616-6850

HOYLE, TANNER & ASSOCIATES, INC. MAPLEWOOD AVE. OVER NORTH MILL POND BRIDGE REPLACEMENT

PORTSMOUTH, NH

DRAINAGE PLAN

NO.	REVISION	DATE

DATE: FEB. 2021

PROJECT #: 1920

ENGINEERED BY: ---

DRAWN BY: SPS

SHEET 1 OF 1

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing	No
State	New Hampshire
Location	
Longitude	70.792 degrees West
Latitude	43.074 degrees North
Elevation	0 feet
Date/Time	Mon, 01 Feb 2021 08:12:03 -0500

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.40	0.49	0.66	0.82	1.00	**1yr**	0.70	0.98	1.14	1.58	2.02	2.66	2.92	**1yr**	2.35	2.81	3.22	3.94	4.55	**1yr**
2yr	0.32	0.50	0.61	0.83	1.02	1.21	**2yr**	0.88	1.18	1.40	1.86	2.41	3.21	3.57	**2yr**	2.84	3.43	3.93	4.68	5.32	**2yr**
5yr	0.37	0.57	0.71	0.98	1.24	1.50	**5yr**	1.07	1.46	1.73	2.32	2.96	4.07	4.57	**5yr**	3.60	4.40	5.04	5.93	6.70	**5yr**
10yr	0.42	0.65	0.80	1.12	1.44	1.76	**10yr**	1.25	1.72	2.04	2.73	3.47	4.87	5.53	**10yr**	4.31	5.32	6.08	7.10	7.98	**10yr**
25yr	0.50	0.75	0.94	1.34	1.76	2.18	**25yr**	1.52	2.13	2.53	3.39	4.27	6.17	7.10	**25yr**	5.46	6.83	7.79	9.02	10.06	**25yr**
50yr	0.56	0.85	1.06	1.53	2.06	2.57	**50yr**	1.78	2.51	2.98	3.99	5.01	7.39	8.58	**50yr**	6.54	8.25	9.41	10.81	11.99	**50yr**
100yr	0.64	0.97	1.21	1.75	2.40	3.03	**100yr**	2.07	2.96	3.51	4.71	5.88	8.86	10.38	**100yr**	7.84	9.98	11.36	12.96	14.29	**100yr**
200yr	0.73	1.09	1.38	2.01	2.80	3.57	**200yr**	2.41	3.49	4.13	5.56	6.89	10.62	12.55	**200yr**	9.40	12.07	13.72	15.54	17.05	**200yr**
500yr	0.87	1.29	1.66	2.42	3.44	4.45	**500yr**	2.97	4.35	5.14	6.92	8.52	13.50	16.15	**500yr**	11.95	15.53	17.62	19.78	21.54	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.23	0.36	0.44	0.59	0.73	0.89	**1yr**	0.63	0.87	0.92	1.32	1.66	2.22	2.52	**1yr**	1.97	2.42	2.85	3.15	3.88	**1yr**
2yr	0.31	0.49	0.60	0.81	1.00	1.19	**2yr**	0.86	1.16	1.37	1.82	2.34	3.05	3.46	**2yr**	2.70	3.32	3.82	4.55	5.07	**2yr**
5yr	0.35	0.54	0.67	0.92	1.17	1.40	**5yr**	1.01	1.37	1.61	2.12	2.74	3.79	4.20	**5yr**	3.36	4.04	4.72	5.54	6.25	**5yr**
10yr	0.39	0.59	0.73	1.03	1.32	1.60	**10yr**	1.14	1.56	1.81	2.40	3.07	4.38	4.89	**10yr**	3.88	4.70	5.46	6.43	7.22	**10yr**
25yr	0.44	0.67	0.83	1.19	1.56	1.90	**25yr**	1.35	1.86	2.10	2.77	3.55	4.69	5.93	**25yr**	4.15	5.71	6.68	7.83	8.72	**25yr**
50yr	0.48	0.73	0.91	1.31	1.77	2.17	**50yr**	1.53	2.12	2.35	3.09	3.96	5.30	6.86	**50yr**	4.69	6.60	7.78	9.10	10.07	**50yr**
100yr	0.54	0.81	1.02	1.47	2.01	2.47	**100yr**	1.74	2.42	2.63	3.44	4.39	5.95	7.94	**100yr**	5.26	7.63	9.07	10.58	11.62	**100yr**
200yr	0.59	0.89	1.13	1.64	2.29	2.82	**200yr**	1.97	2.76	2.94	3.82	4.85	6.65	9.18	**200yr**	5.89	8.83	10.56	12.32	13.44	**200yr**
500yr	0.69	1.03	1.32	1.92	2.73	3.37	**500yr**	2.35	3.30	3.41	4.37	5.54	7.73	11.12	**500yr**	6.84	10.69	12.92	15.09	16.27	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.44	0.54	0.72	0.89	1.08	**1yr**	0.77	1.06	1.26	1.75	2.21	3.00	3.14	**1yr**	2.65	3.02	3.58	4.38	5.05	**1yr**
2yr	0.33	0.52	0.64	0.86	1.06	1.26	**2yr**	0.92	1.24	1.48	1.96	2.51	3.43	3.69	**2yr**	3.04	3.55	4.07	4.83	5.64	**2yr**
5yr	0.40	0.61	0.76	1.05	1.33	1.61	**5yr**	1.15	1.58	1.88	2.53	3.24	4.34	4.94	**5yr**	3.84	4.75	5.37	6.35	7.13	**5yr**
10yr	0.47	0.72	0.89	1.24	1.60	1.97	**10yr**	1.38	1.92	2.27	3.10	3.93	5.34	6.17	**10yr**	4.72	5.93	6.77	7.81	8.72	**10yr**
25yr	0.57	0.87	1.08	1.54	2.03	2.55	**25yr**	1.75	2.50	2.94	4.05	5.11	7.81	8.28	**25yr**	6.92	7.96	9.05	10.28	11.36	**25yr**
50yr	0.66	1.01	1.26	1.81	2.44	3.10	**50yr**	2.10	3.03	3.58	4.97	6.25	9.79	10.37	**50yr**	8.66	9.97	11.29	12.65	13.90	**50yr**
100yr	0.78	1.18	1.48	2.13	2.93	3.77	**100yr**	2.53	3.69	4.34	6.11	7.67	12.25	12.97	**100yr**	10.85	12.48	14.08	15.59	17.01	**100yr**
200yr	0.91	1.37	1.74	2.52	3.51	4.60	**200yr**	3.03	4.50	5.30	7.52	9.40	15.38	16.26	**200yr**	13.61	15.63	17.58	19.21	20.82	**200yr**
500yr	1.13	1.68	2.16	3.14	4.46	5.96	**500yr**	3.85	5.83	6.87	9.93	12.33	20.80	21.91	**500yr**	18.41	21.07	23.59	25.31	27.22	**500yr**

Powered by ACIS

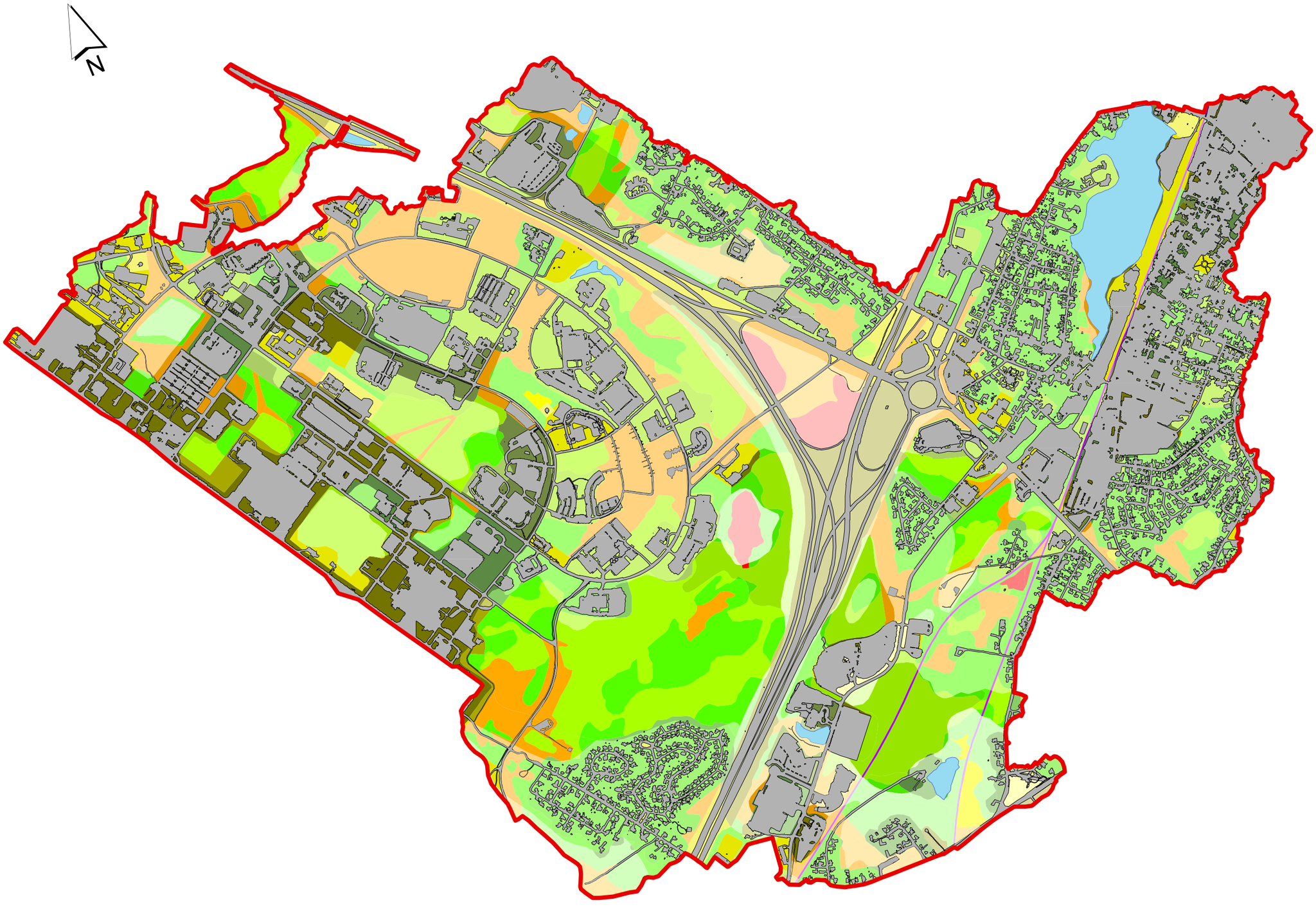
North Mill Pond Watershed Land Cover

categories from NHGRANIT "Land Use 2015 - Southeastern New Hampshire" layer

Note: Impervious areas have been removed from Land Use Category polygons such that the Cover Type applies to the land cover of the remaining polygons outside of impervious areas as estimated from 2017 orthophotography.

NHGRANIT Land Use Category	Cover Type	Condition
Brush or transitional between open & forested	Brush	Good
Electric, gas, and other utilities	Brush	Good
Limited & controlled highway right-of-way	Impervious	n/a
Park & ride lot	Impervious	n/a
Road right-of-way	Impervious	n/a
Agricultural land	Meadow	Good
Water	Open Water	n/a
Rail transportation	Railroad Tracks	n/a
Forest land	Woods	Good
Other transportation, communications, and utilities	Woods	Good
Auxilliary transportation	Woods/Grass 10/90	Good
Cemetaries	Woods/Grass 10/90	Good
Communication	Woods/Grass 10/90	Good
Disturbed land	Woods/Grass 10/90	Fair
Other commercial, services, and institutional	Woods/Grass 10/90	Good
Water and wastewater utilities	Woods/Grass 10/90	Good
Air transportation	Woods/Grass 25/75	Good
Commercial wholesale	Woods/Grass 25/75	Good
Government	Woods/Grass 25/75	Good
Institutional	Woods/Grass 25/75	Good
Lodging	Woods/Grass 25/75	Good
Multi-family (4 or more stories)	Woods/Grass 25/75	Good
Other commercial complexes	Woods/Grass 25/75	Good
Outdoor recreation	Woods/Grass 25/75	Good
Parking structure/lot	Woods/Grass 25/75	Good
Commercial retail	Woods/Grass 40/60	Good
Educational	Woods/Grass 40/60	Good
Multi-family (1-3 stories)	Woods/Grass 40/60	Good
Office park	Woods/Grass 40/60	Good
Other agricultural land	Woods/Grass 40/60	Good
Other industrial complexes	Woods/Grass 40/60	Good
Services	Woods/Grass 40/60	Good
Indoor cultural/ public assembly	Woods/Grass 50/50	Good
Industrial	Woods/Grass 50/50	Good
Other residential	Woods/Grass 50/50	Good
Single family/duplex	Woods/Grass 50/50	Good
Vacant land	Woods/Grass 50/50	Good
Wetlands	Woods/Grass 75/25	Good

North Mill Pond Watershed
Soil - Land Cover Map



Legend

- WatershedBoundary
- Brush_Good_A
- Brush_Good_B
- Brush_Good_C
- Brush_Good_D
- Impervious
- Meadow_Good_A
- Meadow_Good_B
- Meadow_Good_D
- OpenWater
- RxR_Good_A
- RxR_Good_B
- RxR_Good_C
- RxR_Good_D
- Woods_Good_A
- Woods_Good_B
- Woods_Good_C
- Woods_Good_D
- Woods-Grass_75-25_Good_A
- Woods-Grass_75-25_Good_B
- Woods-Grass_75-25_Good_C
- Woods-Grass_75-25_Good_D
- Woods-Grass_50-50_Good_A
- Woods-Grass_50-50_Good_B
- Woods-Grass_50-50_Good_C
- Woods-Grass_50-50_Good_D
- Woods-Grass_40-60_Good_A
- Woods-Grass_40-60_Good_B
- Woods-Grass_40-60_Good_C
- Woods-Grass_40-60_Good_D
- Woods-Grass_25-75_Good_A
- Woods-Grass_25-75_Good_B
- Woods-Grass_25-75_Good_C
- Woods-Grass_25-75_Good_D
- Woods-Grass_10-90_Fair_A
- Woods-Grass_10-90_Fair_B
- Woods-Grass_10-90_Good_A
- Woods-Grass_10-90_Good_B
- Woods-Grass_10-90_Good_C
- Woods-Grass_10-90_Good_D

North Mill Pond Watershed Soil-Land Cover Polygons

Land Cover	Hydrologic Condition	HSG	Area (AC)	CN
Brush	Good	A	58.81	30
Brush	Good	B	179.13	48
Brush	Good	C	32.85	65
Brush	Good	D	20.82	73
Impervious	n/a		930.36	98
Impervious2	n/a		5.67	98
Meadow	Good	A	23.27	30
Meadow	Good	B	1.73	58
Meadow	Good	C	0.00	71
Meadow	Good	D	0.12	78
Open Water	n/a		54.48	100
RxR	Good	A	1.28	76
RxR	Good	B	5.93	85
RxR	Good	C	0.20	89
RxR	Good	D	1.60	91
Woods	Good	A	60.28	30
Woods	Good	B	120.30	55
Woods	Good	C	80.53	70
Woods	Good	D	17.09	77
Woods-Grass 10-90	Fair	A	5.94	48
Woods-Grass 10-90	Fair	B	1.08	68
Woods-Grass 10-90	Fair	C	0.00	78
Woods-Grass 10-90	Fair	D	0.00	84
Woods-Grass 10-90	Good	A	69.10	38
Woods-Grass 10-90	Good	B	33.81	60
Woods-Grass 10-90	Good	C	2.13	74
Woods-Grass 10-90	Good	D	3.07	80
Woods-Grass 25-75	Good	A	5.89	36
Woods-Grass 25-75	Good	B	55.58	60
Woods-Grass 25-75	Good	C	10.22	73
Woods-Grass 25-75	Good	D	70.08	79
Woods-Grass 40-60	Good	A	5.06	33
Woods-Grass 40-60	Good	B	120.91	59
Woods-Grass 40-60	Good	C	7.04	72
Woods-Grass 40-60	Good	D	38.94	79
Woods-Grass 50-50	Good	A	16.68	32
Woods-Grass 50-50	Good	B	250.09	58
Woods-Grass 50-50	Good	C	7.28	72
Woods-Grass 50-50	Good	D	24.38	79
Woods-Grass 75-25	Good	A	16.01	30
Woods-Grass 75-25	Good	B	94.23	57
Woods-Grass 75-25	Good	C	120.21	71
Woods-Grass 75-25	Good	D	76.21	78
			2628.4	

	Curve Number - Good Condition			
Surface Description	A	B	C	D
Open Water	100	100	100	100
Impervious	98	98	98	98
Railroad Tracks	76	85	89	91
Grass	39	61	74	80
Meadow	30	58	71	78
Brush	30	48	65	73
Woods/Grass 10/90	38	60	74	80
Woods/Grass 25/75	36	60	73	79
Woods/Grass 40/60	33	59	72	79
Woods/Grass 50/50	32	58	72	79
Woods/Grass 60/40	31	57	72	78
Woods/Grass 75/25	30	57	71	78
Woods	30	55	70	77

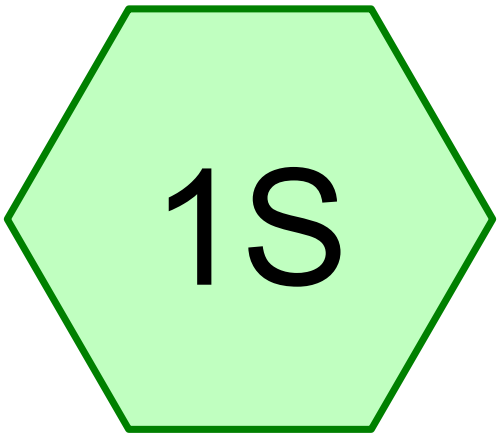
Note: CN values are for "good" hydrologic condition (>75% ground cover)

	Curve Number - Fair Condition			
Surface Description	A	B	C	D
Open Water	100	100	100	100
Impervious	98	98	98	98
Railroad Tracks	76	85	89	91
Grass	49	69	79	84
Meadow	30	58	71	78
Brush	35	56	70	77
Woods/Grass 10/90	48	68	78	84
Woods/Grass 25/75	46	67	78	83
Woods/Grass 40/60	44	65	77	82
Woods/Grass 50/50	43	65	76	82
Woods/Grass 60/40	41	64	75	81
Woods/Grass 75/25	39	62	75	80
Woods	36	60	73	79

Note: CN values are for "fair" hydrologic condition (50-75% ground cover)

North Mill Pond Watershed Time of Concentration

Flow Path Segment	Type	Start Sta	Inv In	End Sta	Inv Out	Dia	A	P	Length	Slope	Surface	Notes
1	sheet	0	97.28	73	96.31	-	-	-	73	0.01329	Pavement	
2	shallow	73	96.31	478	92.55	-	-	-	405	0.00928	Grass	
3	pipe	478	88.55	2389	81.02	15	-	-	1911	0.00394	RCP	pipe size & material estimated and inv in estimated at 4' below ground elevation at grate
4	channel	2389	81.02	3584	75.09	-	41	74	1195	0.00496	Forest	A & P measured at typical section at max depth of 1' (estimated bankfull stage)
5	pipe	3584	75.09	3991	71.71	26	-	-	407	0.00831	RCP	pipe slope estimated as average slope between inlet segment 5 and outlet segment 7
6	pipe	3991	71.71	5936	55.54	36	-	-	1945	0.00831	RCP	pipe slope estimated as average slope between inlet segment 5 and outlet segment 7
7	pipe	5936	55.54	7933	38.95	48	-	-	1997	0.00831	RCP	pipe slope estimated as average slope between inlet segment 5 and outlet segment 7
8	channel	7933	38.95	8243	37.04	-	57	123	310	0.00616	Brush	A & P measured at typical section at max depth of 0.87' (elev. Difference between thalwet & height of land in right overbank)
9	pipe	8243	37.04	8344	37.00	60	-	-	101	0.00040	RCP	pipe size & material estimated
10	channel	8344	37.00	9090	34.40	-	148	210	746	0.00349	Brush	A & P measured at typical section at max depth of 1' (estimated bankfull stage)
11	pipe	9090	34.40	9189	33.76	60	-	-	99	0.00646	RCP	pipe size & material estimated
12	channel	9189	33.76	13125	19.25	-	15	27	3936	0.00369	Brush/Forest	A & P measured at typical section at max depth of 1' (estimated bankfull stage)
13	pipe	13125	19.25	13346	18.58	72	-	-	221	0.00303	RCP	pipe size & material estimated
14	channel	13346	18.58	13858	18.14	-	17	26	512	0.00086	Brush/Forest	A & P measured at typical section at max depth of 1' (estimated bankfull stage)
15	pipe	13858	18.14	14194	17.39	72	-	-	336	0.00223	RCP	pipe size & material estimated
16	channel	14194	17.39	14550	17.04	-	18	29	356	0.00098	Brush/Forest	A & P measured at typical section at max depth of 1' (estimated bankfull stage)
17	pipe	14550	17.04	15234	16.40	96	-	-	684	0.00094	CMP	pipe size & material estimated
18	channel	15234	16.40	15909	15.47	-	17	26	675	0.00138	Brush/Forest	A & P measured at typical section at max depth of 1' (estimated bankfull stage)
19	pipe	15909	15.47	16084	15.41	96	-	-	175	0.00034	CMP	pipe size & material estimated
20	channel	16084	15.41	16960	15.35	-	21	32	876	0.00007	Brush/Forest	A & P measured at typical section at max depth of 1' (estimated bankfull stage)
21	pipe	16960	15.35	17041	15.32	96	-	-	81	0.00037	CMP	pipe size & material estimated
22	channel	17041	15.32	17622	15.31	-	13	22	581	0.00002	Forest	A & P measured at typical section at max depth of 1' (estimated bankfull stage)
23	pipe	17622	15.31	17712	13.54	96	-	-	90	0.01967	CMP	pipe size & material estimated
24	channel	17712	13.54	18977	5.58	-	16	23	1265	0.00629	Forest	A & P measured at typical section at max depth of 1' (estimated bankfull stage)
25	pipe	18977	5.58	19479	3.54	72Hx144W	-	-	502	0.00406	Concrete Box	pipe size & material from field measurements
26	channel	19479	1.05	23320	-3.40	-	32	34	3841	0.00116	Cobble/Gravel	channel inverts from field measurments, channel geometry estimated from aerial photography and are based on a channel bottom width of 30', 2:1 side slopes, and flow depth of 1'
									23320			



North Mill Pond Watershed

Subcat Reach Pond Link

Routing Diagram for NorthMillPond
Prepared by Headwaters Consulting, LLC, Printed 2/1/2021

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	50-yr	NH-NorthMillPond_NRCC 24-hr S1	50-yr	Default	24.00	1	7.39	2
2	100-yr	NH-NorthMillPond_NRCC 24-hr S1	100-yr	Default	24.00	1	8.86	2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1	76	Ballasted RxR Tracks, HSG A (1S)
6	85	Ballasted RxR Tracks, HSG B (1S)
0	89	Ballasted RxR Tracks, HSG C (1S)
2	91	Ballasted RxR Tracks, HSG D (1S)
59	30	Brush, Good, HSG A (1S)
179	48	Brush, Good, HSG B (1S)
33	65	Brush, Good, HSG C (1S)
21	73	Brush, Good, HSG D (1S)
936	98	Impervious (1S)
23	30	Meadow, non-grazed, HSG A (1S)
2	58	Meadow, non-grazed, HSG B (1S)
0	78	Meadow, non-grazed, HSG D (1S)
54	100	Open Water (1S)
60	30	Woods, Good, HSG A (1S)
120	55	Woods, Good, HSG B (1S)
80	70	Woods, Good, HSG C (1S)
17	77	Woods, Good, HSG D (1S)
6	48	Woods/grass 10/90, Fair, HSG A (1S)
1	68	Woods/grass 10/90, Fair, HSG B (1S)
69	38	Woods/grass 10/90, Good, HSG A (1S)
34	60	Woods/grass 10/90, Good, HSG B (1S)
2	74	Woods/grass 10/90, Good, HSG C (1S)
3	80	Woods/grass 10/90, Good, HSG D (1S)
6	36	Woods/grass 25/75, Good, HSG A (1S)
56	60	Woods/grass 25/75, Good, HSG B (1S)
10	73	Woods/grass 25/75, Good, HSG C (1S)
70	79	Woods/grass 25/75, Good, HSG D (1S)
5	33	Woods/grass 40/60, Good, HSG A (1S)
121	59	Woods/grass 40/60, Good, HSG B (1S)
7	72	Woods/grass 40/60, Good, HSG C (1S)
39	79	Woods/grass 40/60, Good, HSG D (1S)
17	32	Woods/grass 50/50, Good, HSG A (1S)
250	58	Woods/grass 50/50, Good, HSG B (1S)
7	72	Woods/grass 50/50, Good, HSG C (1S)
24	79	Woods/grass 50/50, Good, HSG D (1S)
16	30	Woods/grass 75/25, Good, HSG A (1S)
94	57	Woods/grass 75/25, Good, HSG B (1S)
120	71	Woods/grass 75/25, Good, HSG C (1S)
76	78	Woods/grass 75/25, Good, HSG D (1S)
2,628	**73**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
262	HSG A	1S
863	HSG B	1S
260	HSG C	1S
252	HSG D	1S
991	Other	1S
2,628		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
1	6	0	2	0	9	Ballasted RxR Tracks	1S
59	179	33	21	0	292	Brush, Good	1S
0	0	0	0	936	936	Impervious	1S
23	2	0	0	0	25	Meadow, non-grazed	1S
0	0	0	0	54	54	Open Water	1S
60	120	80	17	0	278	Woods, Good	1S
6	1	0	0	0	7	Woods/grass 10/90, Fair	1S
69	34	2	3	0	108	Woods/grass 10/90, Good	1S
6	56	10	70	0	142	Woods/grass 25/75, Good	1S
5	121	7	39	0	172	Woods/grass 40/60, Good	1S
17	250	7	24	0	299	Woods/grass 50/50, Good	1S
16	94	120	76	0	307	Woods/grass 75/25, Good	1S
262	**863**	**260**	**252**	**991**	**2,628**	**TOTAL AREA**	

Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)
1	1S	0.00	0.00	1,911.0	0.0039	0.015	0.0	15.0	0.0
2	1S	0.00	0.00	407.0	0.0083	0.015	0.0	26.0	0.0
3	1S	0.00	0.00	1,945.0	0.0083	0.015	0.0	36.0	0.0
4	1S	0.00	0.00	1,997.0	0.0083	0.015	0.0	48.0	0.0
5	1S	0.00	0.00	101.0	0.0004	0.015	0.0	60.0	0.0
6	1S	0.00	0.00	99.0	0.0065	0.015	0.0	60.0	0.0
7	1S	0.00	0.00	221.0	0.0030	0.015	0.0	72.0	0.0
8	1S	0.00	0.00	336.0	0.0022	0.015	0.0	72.0	0.0
9	1S	0.00	0.00	684.0	0.0009	0.025	0.0	96.0	0.0
10	1S	0.00	0.00	175.0	0.0003	0.025	0.0	96.0	0.0
11	1S	0.00	0.00	81.0	0.0004	0.025	0.0	96.0	0.0
12	1S	0.00	0.00	90.0	0.0197	0.025	0.0	96.0	0.0
13	1S	0.00	0.00	502.0	0.0041	0.015	144.0	72.0	0.0

Summary for Subcatchment 1S: North Mill Pond Watershed

Runoff = 908 cfs @ 19.47 hrs, Volume= 936 af, Depth> 4.27"

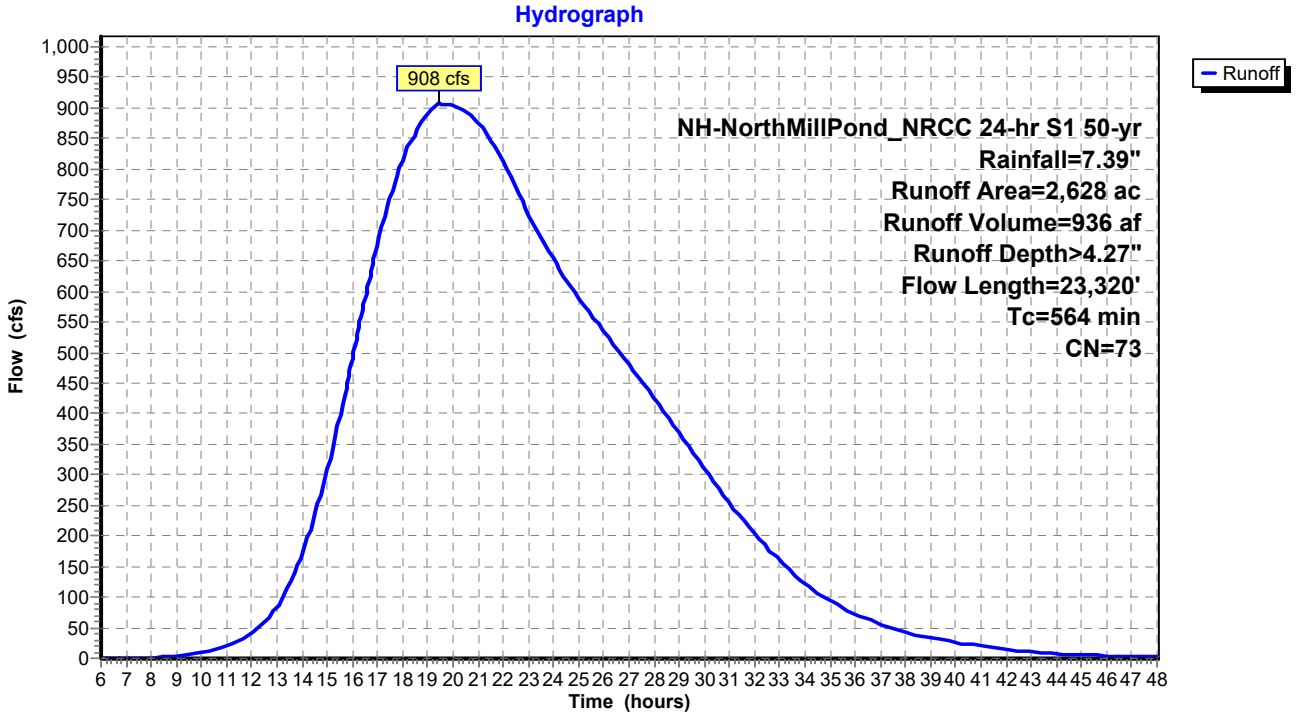
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 6.00-48.00 hrs, dt= 0.05 hrs
NH-NorthMillPond_NRCC 24-hr S1 50-yr Rainfall=7.39"

	Area (ac)	CN	Description
	59	30	Brush, Good, HSG A
	179	48	Brush, Good, HSG B
	33	65	Brush, Good, HSG C
	21	73	Brush, Good, HSG D
*	930	98	Impervious
*	6	98	Impervious
	23	30	Meadow, non-grazed, HSG A
	2	58	Meadow, non-grazed, HSG B
	0	78	Meadow, non-grazed, HSG D
*	54	100	Open Water
*	1	76	Ballasted RxR Tracks, HSG A
*	6	85	Ballasted RxR Tracks, HSG B
*	0	89	Ballasted RxR Tracks, HSG C
*	2	91	Ballasted RxR Tracks, HSG D
	60	30	Woods, Good, HSG A
	120	55	Woods, Good, HSG B
	80	70	Woods, Good, HSG C
	17	77	Woods, Good, HSG D
*	6	48	Woods/grass 10/90, Fair, HSG A
*	1	68	Woods/grass 10/90, Fair, HSG B
*	69	38	Woods/grass 10/90, Good, HSG A
*	34	60	Woods/grass 10/90, Good, HSG B
*	2	74	Woods/grass 10/90, Good, HSG C
*	3	80	Woods/grass 10/90, Good, HSG D
*	6	36	Woods/grass 25/75, Good, HSG A
*	56	60	Woods/grass 25/75, Good, HSG B
*	10	73	Woods/grass 25/75, Good, HSG C
*	70	79	Woods/grass 25/75, Good, HSG D
*	5	33	Woods/grass 40/60, Good, HSG A
*	121	59	Woods/grass 40/60, Good, HSG B
*	7	72	Woods/grass 40/60, Good, HSG C
*	39	79	Woods/grass 40/60, Good, HSG D
*	17	32	Woods/grass 50/50, Good, HSG A
*	250	58	Woods/grass 50/50, Good, HSG B
*	7	72	Woods/grass 50/50, Good, HSG C
*	24	79	Woods/grass 50/50, Good, HSG D
*	16	30	Woods/grass 75/25, Good, HSG A
*	94	57	Woods/grass 75/25, Good, HSG B
*	120	71	Woods/grass 75/25, Good, HSG C
*	76	78	Woods/grass 75/25, Good, HSG D
	2,628	73	Weighted Average
	1,638		62.31% Pervious Area
	991		37.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1	73	0.0133	1.12		**Sheet Flow, Segment 1** Smooth surfaces n= 0.011 P2= 3.33"
5	405	0.0093	1.45		**Shallow Concentrated Flow, Segment 2** Grassed Waterway Kv= 15.0 fps
11	1,911	0.0039	2.85	3.50	**Pipe Channel, Segment 3** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.015 Concrete sewer w/manholes & inlets
28	1,195	0.0050	0.71	29.06	**Channel Flow, Segment 4** Area= 41.0 sf Perim= 74.0' r= 0.55' n= 0.100 Earth, dense brush, high stage
1	407	0.0083	6.00	22.11	**Pipe Channel, Segment 5** 26.0" Round Area= 3.7 sf Perim= 6.8' r= 0.54' n= 0.015 Concrete sewer w/manholes & inlets
4	1,945	0.0083	7.45	52.66	**Pipe Channel, Segment 6** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.015 Concrete sewer w/manholes & inlets
4	1,997	0.0083	9.03	113.42	**Pipe Channel, Segment 7** 48.0" Round Area= 12.6 sf Perim= 12.6' r= 1.00' n= 0.015 Concrete sewer w/manholes & inlets
7	310	0.0062	0.70	39.94	**Channel Flow, Segment 8** Area= 57.0 sf Perim= 123.0' r= 0.46' n= 0.100 Earth, dense brush, high stage
1	101	0.0004	2.30	45.14	**Pipe Channel, Segment 9** 60.0" Round Area= 19.6 sf Perim= 15.7' r= 1.25' n= 0.015 Concrete sewer w/manholes & inlets
18	746	0.0035	0.70	103.04	**Channel Flow, Segment 10** Area= 148.0 sf Perim= 210.0' r= 0.70' n= 0.100 Earth, dense brush, high stage
0	99	0.0065	9.27	181.98	**Pipe Channel, Segment 11** 60.0" Round Area= 19.6 sf Perim= 15.7' r= 1.25' n= 0.015 Concrete sewer w/manholes & inlets
107	3,936	0.0037	0.61	9.16	**Channel Flow, Segment 12** Area= 15.0 sf Perim= 27.0' r= 0.56' n= 0.100 Earth, dense brush, high stage
1	221	0.0030	7.11	201.04	**Pipe Channel, Segment 13** 72.0" Round Area= 28.3 sf Perim= 18.8' r= 1.50' n= 0.015 Concrete sewer w/manholes & inlets
25	512	0.0009	0.34	5.71	**Channel Flow, Segment 14** Area= 17.0 sf Perim= 26.0' r= 0.65' n= 0.100 Earth, dense brush, high stage
1	336	0.0022	6.09	172.16	**Pipe Channel, Segment 15** 72.0" Round Area= 28.3 sf Perim= 18.8' r= 1.50' n= 0.015 Concrete sewer w/manholes & inlets
17	356	0.0010	0.34	6.15	**Channel Flow, Segment 16** Area= 18.0 sf Perim= 29.0' r= 0.62' n= 0.100 Earth, dense brush, high stage
4	684	0.0009	2.83	142.28	**Pipe Channel, Segment 17** 96.0" Round Area= 50.3 sf Perim= 25.1' r= 2.00' n= 0.025 Corrugated metal
27	675	0.0014	0.42	7.12	**Channel Flow, Segment 18** Area= 17.0 sf Perim= 26.0' r= 0.65'

n= 0.100 Earth, dense brush, high stage					
2	175	0.0003	1.63	82.15	**Pipe Channel, Segment 19** 96.0" Round Area= 50.3 sf Perim= 25.1' r= 2.00' n= 0.025 Corrugated metal
130	876	0.0001	0.11	2.36	**Channel Flow, Segment 20** Area= 21.0 sf Perim= 32.0' r= 0.66' n= 0.100
1	81	0.0004	1.89	94.86	**Pipe Channel, Segment 21** 96.0" Round Area= 50.3 sf Perim= 25.1' r= 2.00' n= 0.025 Corrugated metal
93	581	0.0001	0.10	1.36	**Channel Flow, Segment 22** Area= 13.0 sf Perim= 22.0' r= 0.59' n= 0.100 Earth, dense brush, high stage
0	90	0.0197	13.24	665.68	**Pipe Channel, Segment 23** 96.0" Round Area= 50.3 sf Perim= 25.1' r= 2.00' n= 0.025 Corrugated metal
23	1,265	0.0063	0.93	14.82	**Channel Flow, Segment 24** Area= 16.0 sf Perim= 23.0' r= 0.70' n= 0.100
1	502	0.0041	10.07	725.00	**Pipe Channel, Segment 25** 144.0" x 72.0" Box Area= 72.0 sf Perim= 36.0' r= 2.00' n= 0.015 Concrete sewer w/manholes & inlets
52	3,841	0.0012	1.24	39.55	**Channel Flow, Segment 26** Area= 32.0 sf Perim= 34.0' r= 0.94' n= 0.040 Earth, cobble bottom, clean sides
564	23,320	Total			

Subcatchment 1S: North Mill Pond Watershed



Summary for Subcatchment 1S: North Mill Pond Watershed

Runoff = 1,179 cfs @ 19.46 hrs, Volume= 1,221 af, Depth> 5.58"

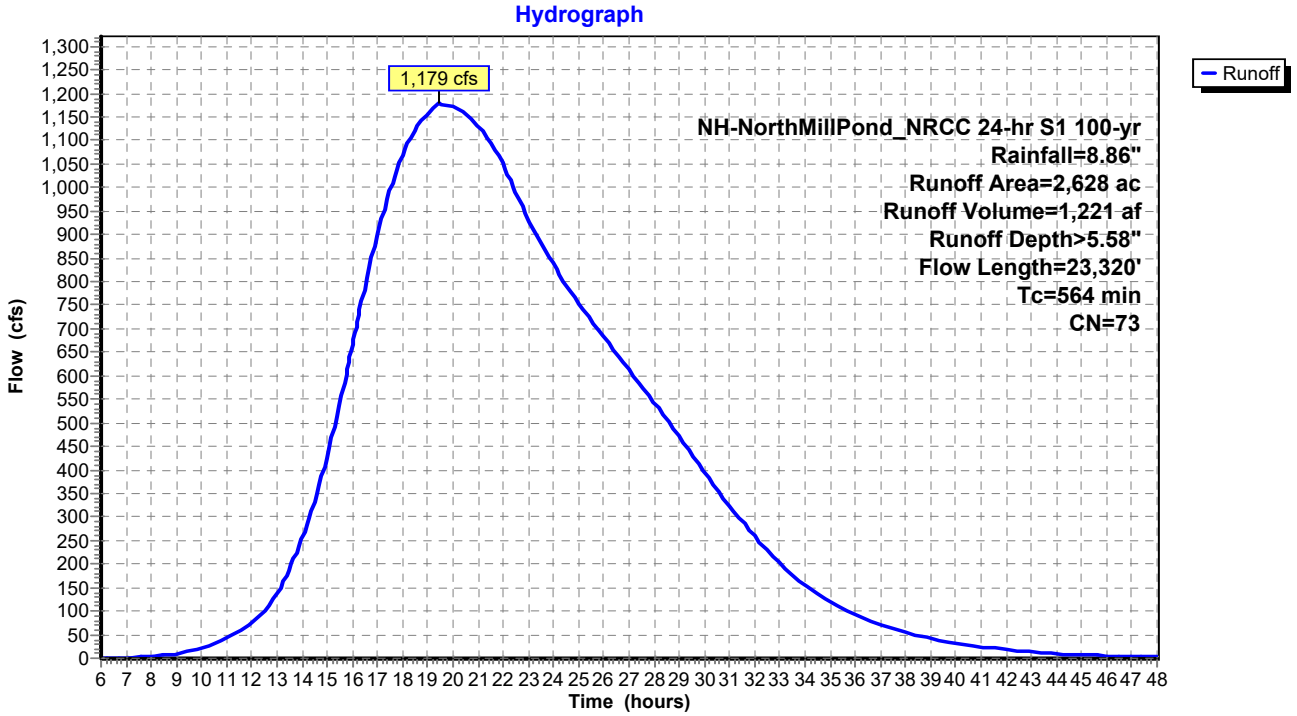
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 6.00-48.00 hrs, dt= 0.05 hrs
NH-NorthMillPond_NRCC 24-hr S1 100-yr Rainfall=8.86"

	Area (ac)	CN	Description
	59	30	Brush, Good, HSG A
	179	48	Brush, Good, HSG B
	33	65	Brush, Good, HSG C
	21	73	Brush, Good, HSG D
*	930	98	Impervious
*	6	98	Impervious
	23	30	Meadow, non-grazed, HSG A
	2	58	Meadow, non-grazed, HSG B
	0	78	Meadow, non-grazed, HSG D
*	54	100	Open Water
*	1	76	Ballasted RxR Tracks, HSG A
*	6	85	Ballasted RxR Tracks, HSG B
*	0	89	Ballasted RxR Tracks, HSG C
*	2	91	Ballasted RxR Tracks, HSG D
	60	30	Woods, Good, HSG A
	120	55	Woods, Good, HSG B
	80	70	Woods, Good, HSG C
	17	77	Woods, Good, HSG D
*	6	48	Woods/grass 10/90, Fair, HSG A
*	1	68	Woods/grass 10/90, Fair, HSG B
*	69	38	Woods/grass 10/90, Good, HSG A
*	34	60	Woods/grass 10/90, Good, HSG B
*	2	74	Woods/grass 10/90, Good, HSG C
*	3	80	Woods/grass 10/90, Good, HSG D
*	6	36	Woods/grass 25/75, Good, HSG A
*	56	60	Woods/grass 25/75, Good, HSG B
*	10	73	Woods/grass 25/75, Good, HSG C
*	70	79	Woods/grass 25/75, Good, HSG D
*	5	33	Woods/grass 40/60, Good, HSG A
*	121	59	Woods/grass 40/60, Good, HSG B
*	7	72	Woods/grass 40/60, Good, HSG C
*	39	79	Woods/grass 40/60, Good, HSG D
*	17	32	Woods/grass 50/50, Good, HSG A
*	250	58	Woods/grass 50/50, Good, HSG B
*	7	72	Woods/grass 50/50, Good, HSG C
*	24	79	Woods/grass 50/50, Good, HSG D
*	16	30	Woods/grass 75/25, Good, HSG A
*	94	57	Woods/grass 75/25, Good, HSG B
*	120	71	Woods/grass 75/25, Good, HSG C
*	76	78	Woods/grass 75/25, Good, HSG D
	2,628	73	Weighted Average
	1,638		62.31% Pervious Area
	991		37.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1	73	0.0133	1.12		**Sheet Flow, Segment 1** Smooth surfaces n= 0.011 P2= 3.33"
5	405	0.0093	1.45		**Shallow Concentrated Flow, Segment 2** Grassed Waterway Kv= 15.0 fps
11	1,911	0.0039	2.85	3.50	**Pipe Channel, Segment 3** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.015 Concrete sewer w/manholes & inlets
28	1,195	0.0050	0.71	29.06	**Channel Flow, Segment 4** Area= 41.0 sf Perim= 74.0' r= 0.55' n= 0.100 Earth, dense brush, high stage
1	407	0.0083	6.00	22.11	**Pipe Channel, Segment 5** 26.0" Round Area= 3.7 sf Perim= 6.8' r= 0.54' n= 0.015 Concrete sewer w/manholes & inlets
4	1,945	0.0083	7.45	52.66	**Pipe Channel, Segment 6** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.015 Concrete sewer w/manholes & inlets
4	1,997	0.0083	9.03	113.42	**Pipe Channel, Segment 7** 48.0" Round Area= 12.6 sf Perim= 12.6' r= 1.00' n= 0.015 Concrete sewer w/manholes & inlets
7	310	0.0062	0.70	39.94	**Channel Flow, Segment 8** Area= 57.0 sf Perim= 123.0' r= 0.46' n= 0.100 Earth, dense brush, high stage
1	101	0.0004	2.30	45.14	**Pipe Channel, Segment 9** 60.0" Round Area= 19.6 sf Perim= 15.7' r= 1.25' n= 0.015 Concrete sewer w/manholes & inlets
18	746	0.0035	0.70	103.04	**Channel Flow, Segment 10** Area= 148.0 sf Perim= 210.0' r= 0.70' n= 0.100 Earth, dense brush, high stage
0	99	0.0065	9.27	181.98	**Pipe Channel, Segment 11** 60.0" Round Area= 19.6 sf Perim= 15.7' r= 1.25' n= 0.015 Concrete sewer w/manholes & inlets
107	3,936	0.0037	0.61	9.16	**Channel Flow, Segment 12** Area= 15.0 sf Perim= 27.0' r= 0.56' n= 0.100 Earth, dense brush, high stage
1	221	0.0030	7.11	201.04	**Pipe Channel, Segment 13** 72.0" Round Area= 28.3 sf Perim= 18.8' r= 1.50' n= 0.015 Concrete sewer w/manholes & inlets
25	512	0.0009	0.34	5.71	**Channel Flow, Segment 14** Area= 17.0 sf Perim= 26.0' r= 0.65' n= 0.100 Earth, dense brush, high stage
1	336	0.0022	6.09	172.16	**Pipe Channel, Segment 15** 72.0" Round Area= 28.3 sf Perim= 18.8' r= 1.50' n= 0.015 Concrete sewer w/manholes & inlets
17	356	0.0010	0.34	6.15	**Channel Flow, Segment 16** Area= 18.0 sf Perim= 29.0' r= 0.62' n= 0.100 Earth, dense brush, high stage
4	684	0.0009	2.83	142.28	**Pipe Channel, Segment 17** 96.0" Round Area= 50.3 sf Perim= 25.1' r= 2.00' n= 0.025 Corrugated metal
27	675	0.0014	0.42	7.12	**Channel Flow, Segment 18** Area= 17.0 sf Perim= 26.0' r= 0.65'

n= 0.100 Earth, dense brush, high stage					
2	175	0.0003	1.63	82.15	**Pipe Channel, Segment 19** 96.0" Round Area= 50.3 sf Perim= 25.1' r= 2.00' n= 0.025 Corrugated metal
130	876	0.0001	0.11	2.36	**Channel Flow, Segment 20** Area= 21.0 sf Perim= 32.0' r= 0.66' n= 0.100
1	81	0.0004	1.89	94.86	**Pipe Channel, Segment 21** 96.0" Round Area= 50.3 sf Perim= 25.1' r= 2.00' n= 0.025 Corrugated metal
93	581	0.0001	0.10	1.36	**Channel Flow, Segment 22** Area= 13.0 sf Perim= 22.0' r= 0.59' n= 0.100 Earth, dense brush, high stage
0	90	0.0197	13.24	665.68	**Pipe Channel, Segment 23** 96.0" Round Area= 50.3 sf Perim= 25.1' r= 2.00' n= 0.025 Corrugated metal
23	1,265	0.0063	0.93	14.82	**Channel Flow, Segment 24** Area= 16.0 sf Perim= 23.0' r= 0.70' n= 0.100
1	502	0.0041	10.07	725.00	**Pipe Channel, Segment 25** 144.0" x 72.0" Box Area= 72.0 sf Perim= 36.0' r= 2.00' n= 0.015 Concrete sewer w/manholes & inlets
52	3,841	0.0012	1.24	39.55	**Channel Flow, Segment 26** Area= 32.0 sf Perim= 34.0' r= 0.94' n= 0.040 Earth, cobble bottom, clean sides
564	23,320	Total			

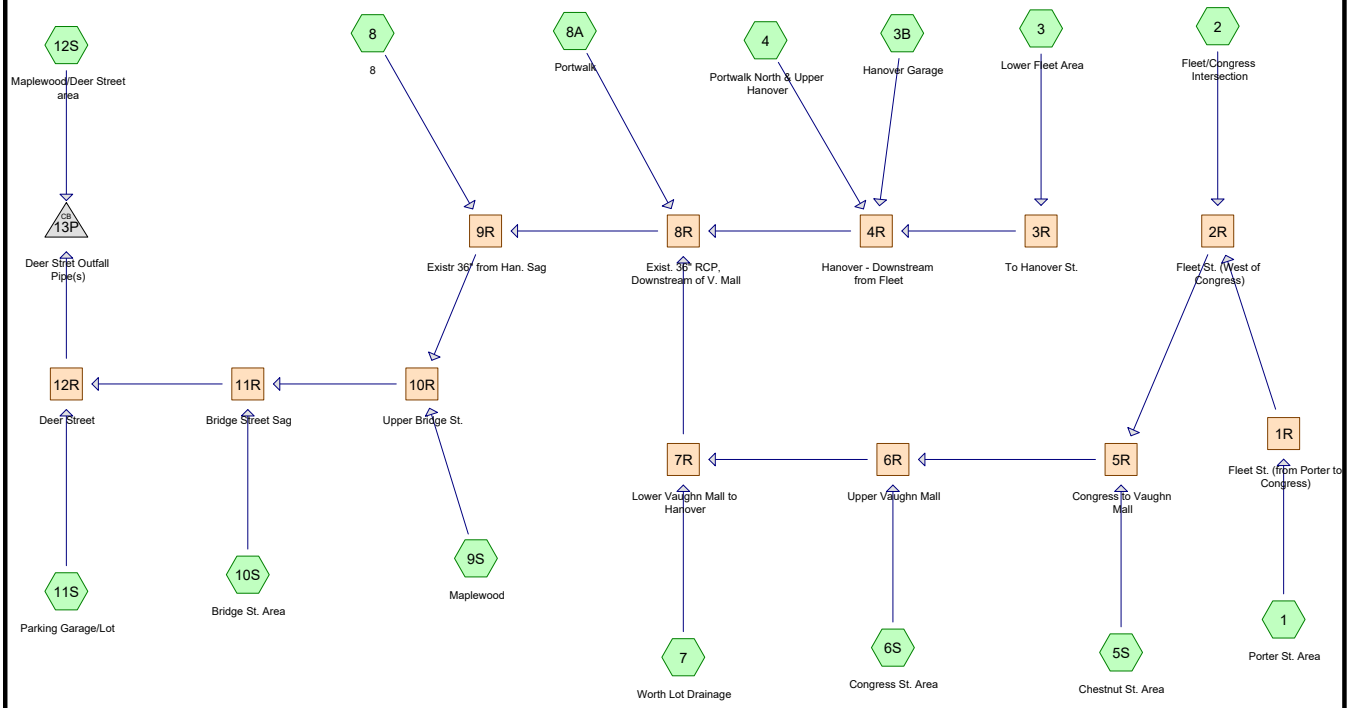
Subcatchment 1S: North Mill Pond Watershed



APPENDIX 3

DRAINAGE OUTFALL PROJECT

PRE-PROJECT HYDROLOGY CALCULATIONS



Subcat Reach Pond Link

Routing Diagram for EXISTING FLOW PATTERN
Prepared by HP Inc., Printed 4/6/2023

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1: Porter St. Area Runoff Area=2.500 ac Runoff Depth>4.06"
Tc=6.0 min CN=94 Runoff=11.47 cfs 0.847 af

Subcatchment2: Fleet/Congress Intersection Runoff Area=1.100 ac Runoff Depth>4.25"
Tc=6.0 min CN=96 Runoff=5.17 cfs 0.390 af

Subcatchment3: Lower Fleet Area Runoff Area=1.300 ac Runoff Depth>4.25"
Tc=6.0 min CN=96 Runoff=6.11 cfs 0.461 af

Subcatchment3B: Hanover Garage Runoff Area=2.700 ac Runoff Depth>4.25"
Tc=6.0 min CN=96 Runoff=12.69 cfs 0.957 af

Subcatchment4: Portwalk North & Upper Hanover Runoff Area=4.100 ac Runoff Depth>3.86"
Tc=8.0 min CN=92 Runoff=17.23 cfs 1.320 af

Subcatchment5S: Chestnut St. Area Runoff Area=2.100 ac Runoff Depth>4.06"
Tc=6.0 min CN=94 Runoff=9.63 cfs 0.711 af

Subcatchment6S: Congress St. Area Runoff Area=1.100 ac Runoff Depth>4.06"
Tc=6.0 min CN=94 Runoff=5.05 cfs 0.373 af

Subcatchment7: Worth Lot Drainage Runoff Area=1.400 ac Runoff Depth>4.06"
Tc=6.0 min CN=94 Runoff=6.42 cfs 0.474 af

Subcatchment8: 8 Runoff Area=1.800 ac Runoff Depth>4.25"
Tc=6.0 min CN=96 Runoff=8.46 cfs 0.638 af

Subcatchment8A: Portwalk Runoff Area=1.200 ac Runoff Depth>3.86"
Tc=6.0 min CN=92 Runoff=5.34 cfs 0.386 af

Subcatchment9S: Maplewood Runoff Area=6.700 ac Runoff Depth>3.46"
Tc=9.0 min CN=88 Runoff=25.08 cfs 1.931 af

Subcatchment10S: Bridge St. Area Runoff Area=4.500 ac Runoff Depth>3.86"
Tc=6.0 min CN=92 Runoff=20.01 cfs 1.449 af

Subcatchment11S: Parking Garage/Lot Runoff Area=2.000 ac Runoff Depth>4.06"
Tc=6.0 min CN=94 Runoff=9.17 cfs 0.677 af

Subcatchment12S: Maplewood/Deer Street area Runoff Area=4.500 ac Runoff Depth>3.07"
Tc=10.0 min CN=84 Runoff=14.80 cfs 1.150 af

Reach 1R: Fleet St. (from Porter to Avg. Flow Depth=1.16' Max Vel=7.86 fps Inflow=11.47 cfs 0.847 af
18.0" Round Pipe n=0.010 L=180.0' S=0.0080 '/' Capacity=12.21 cfs Outflow=11.30 cfs 0.846 af

Reach 2R: Fleet St. (West of Congress) Avg. Flow Depth=1.67' Max Vel=5.84 fps Inflow=16.44 cfs 1.236 af
24.0" Round Pipe n=0.010 L=200.0' S=0.0030 '/' Capacity=16.11 cfs Outflow=15.95 cfs 1.235 af

Reach 3R: To Hanover St. Avg. Flow Depth=1.06' Max Vel=5.51 fps Inflow=6.11 cfs 0.461 af
15.0" Round Pipe n=0.010 L=80.0' S=0.0050 '/' Capacity=5.94 cfs Outflow=6.05 cfs 0.461 af

Reach 4R: Hanover - Downstream from Avg. Flow Depth=1.96' Max Vel=8.62 fps Inflow=35.74 cfs 2.738 af
30.0" Round Pipe n=0.012 L=180.0' S=0.0070 '/' Capacity=37.18 cfs Outflow=35.13 cfs 2.736 af

Reach 5R: Congress to Vaughn Mall Avg. Flow Depth=1.50' Max Vel=10.08 fps Inflow=25.40 cfs 1.946 af
24.0" Round Pipe n=0.012 L=100.0' S=0.0130 '/' Capacity=27.94 cfs Outflow=25.21 cfs 1.946 af

Reach 6R: Upper Vaughn Mall Avg. Flow Depth=1.60' Max Vel=11.19 fps Inflow=30.18 cfs 2.318 af
24.0" Round Pipe n=0.010 L=200.0' S=0.0110 '/' Capacity=30.84 cfs Outflow=29.74 cfs 2.318 af

Reach 7R: Lower Vaughn Mall to Avg. Flow Depth=1.70' Max Vel=12.61 fps Inflow=35.99 cfs 2.792 af
24.0" Round Pipe n=0.010 L=150.0' S=0.0140 '/' Capacity=34.80 cfs Outflow=35.62 cfs 2.791 af

Reach 8R: Exist. 36" RCP, Avg. Flow Depth=2.45' Max Vel=12.22 fps Inflow=75.93 cfs 5.914 af
36.0" Round Pipe n=0.012 L=200.0' S=0.0110 '/' Capacity=75.78 cfs Outflow=74.85 cfs 5.912 af

Reach 9R: Existr 36" from Han. Sag Avg. Flow Depth=2.57' Max Vel=12.76 fps Inflow=82.94 cfs 6.550 af
36.0" Round Pipe n=0.012 L=260.0' S=0.0120 '/' Capacity=79.15 cfs Outflow=81.35 cfs 6.548 af

Reach 10R: Upper Bridge St. Avg. Flow Depth=3.32' Max Vel=9.50 fps Inflow=106.28 cfs 8.478 af
48.0" Round Pipe n=0.012 L=170.0' S=0.0045 '/' Capacity=104.73 cfs Outflow=105.46 cfs 8.475 af

Reach 11R: Bridge Street Sag Avg. Flow Depth=3.34' Max Vel=10.93 fps Inflow=122.72 cfs 9.925 af
48.0" Round Pipe n=0.012 L=160.0' S=0.0060 '/' Capacity=120.54 cfs Outflow=122.01 cfs 9.922 af

Reach 12R: Deer Street Avg. Flow Depth=3.26' Max Vel=11.81 fps Inflow=129.83 cfs 10.599 af
48.0" Round Pipe n=0.012 L=160.0' S=0.0070 '/' Capacity=130.20 cfs Outflow=129.15 cfs 10.596 af

Pond 13P: Deer Stret Outfall Pipe(s) Peak Elev=6.00' Inflow=143.94 cfs 11.746 af
48.0" Round Culvert x 2.00 n=0.012 L=575.0' S=0.0020 '/' Outflow=143.94 cfs 11.746 af

Summary for Subcatchment 1: Porter St. Area

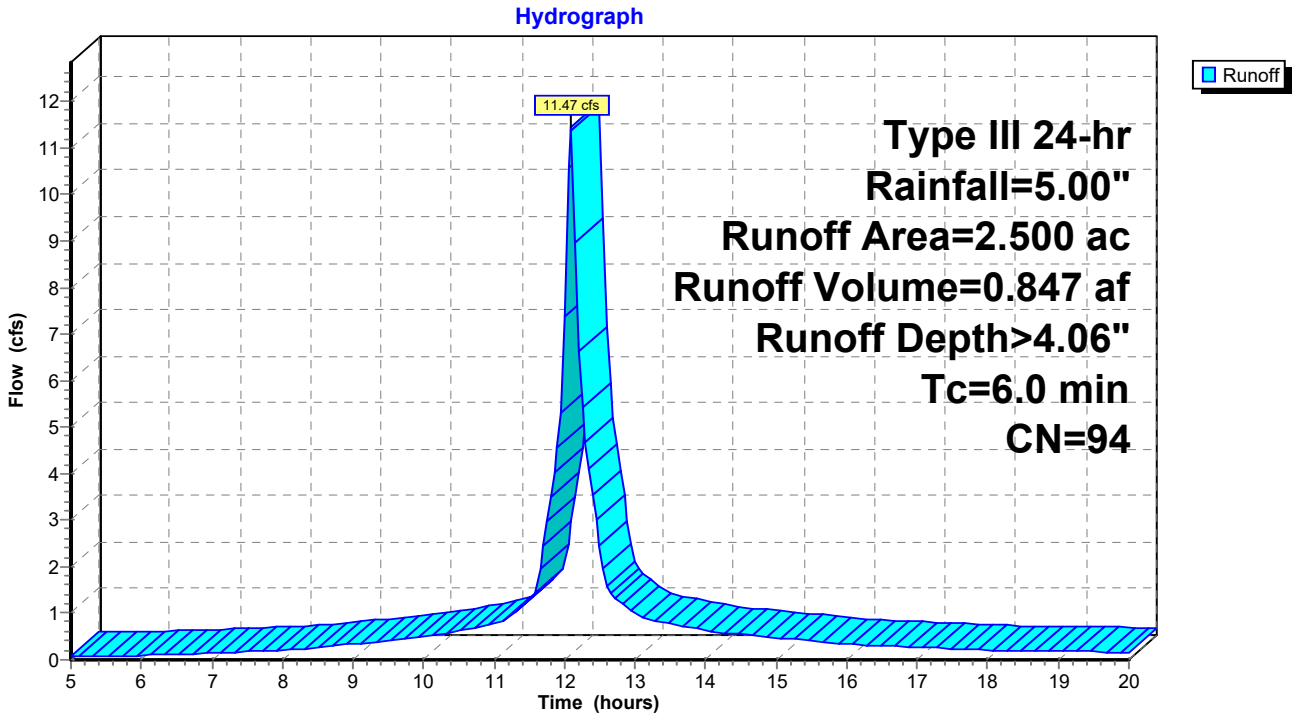
Runoff = 11.47 cfs @ 12.09 hrs, Volume= 0.847 af, Depth> 4.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.00"

	Area (ac)	CN	Description
*	2.500	94	Upper Fleet St

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 1: Porter St. Area



Summary for Subcatchment 2: Fleet/Congress Intersection

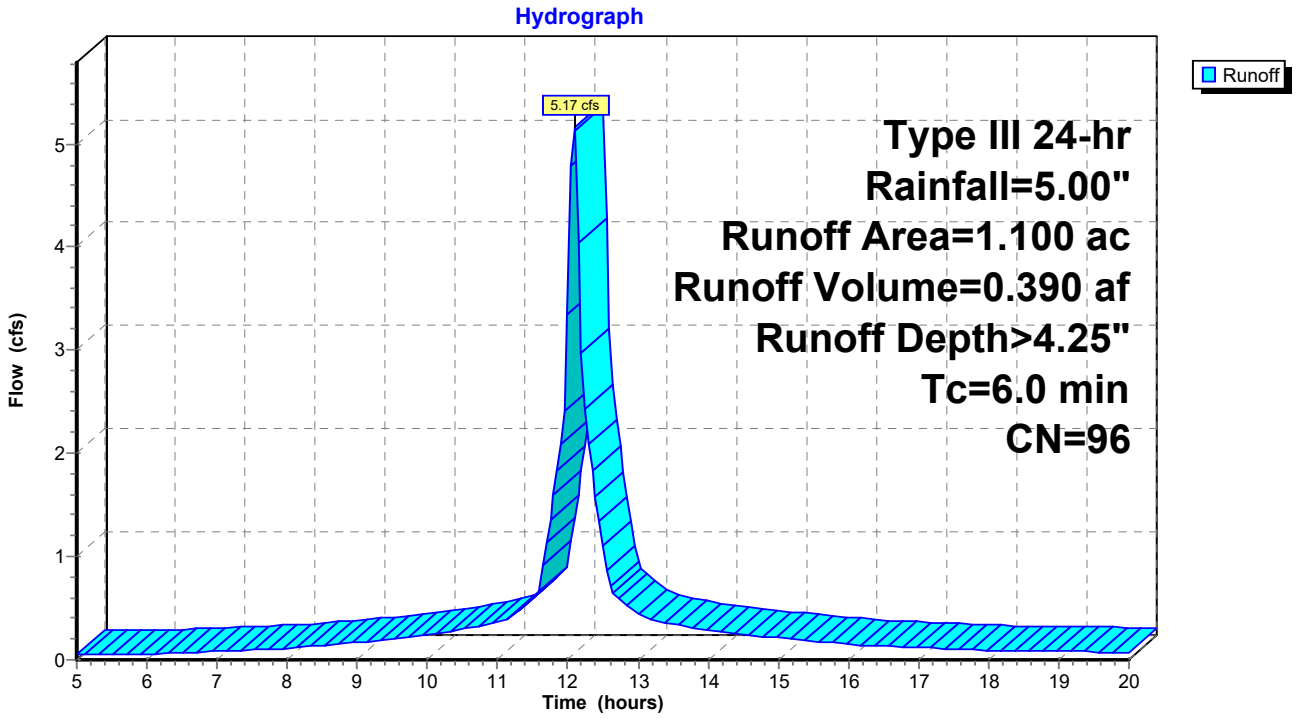
Runoff = 5.17 cfs @ 12.09 hrs, Volume= 0.390 af, Depth> 4.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.00"

	Area (ac)	CN	Description
*	1.100	96	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 2: Fleet/Congress Intersection



Summary for Subcatchment 3: Lower Fleet Area

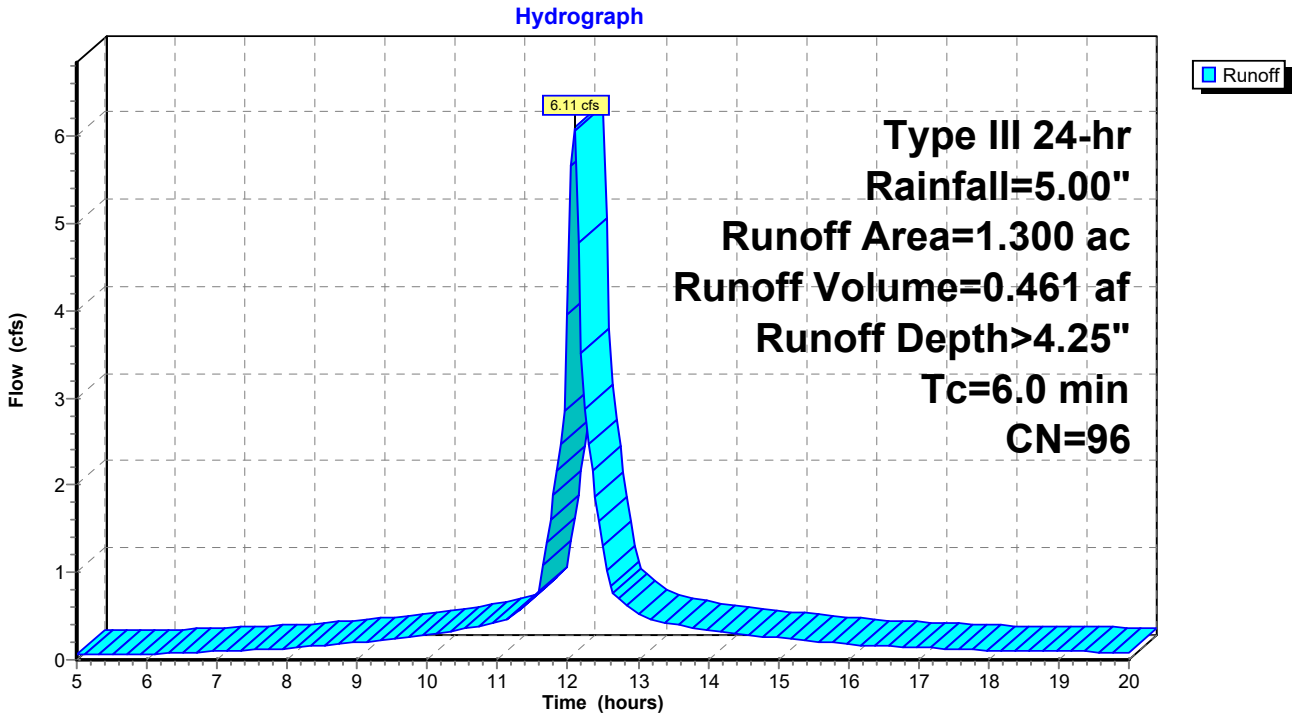
Runoff = 6.11 cfs @ 12.09 hrs, Volume= 0.461 af, Depth> 4.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.00"

	Area (ac)	CN	Description
*	1.300	96	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 3: Lower Fleet Area



Summary for Subcatchment 3B: Hanover Garage

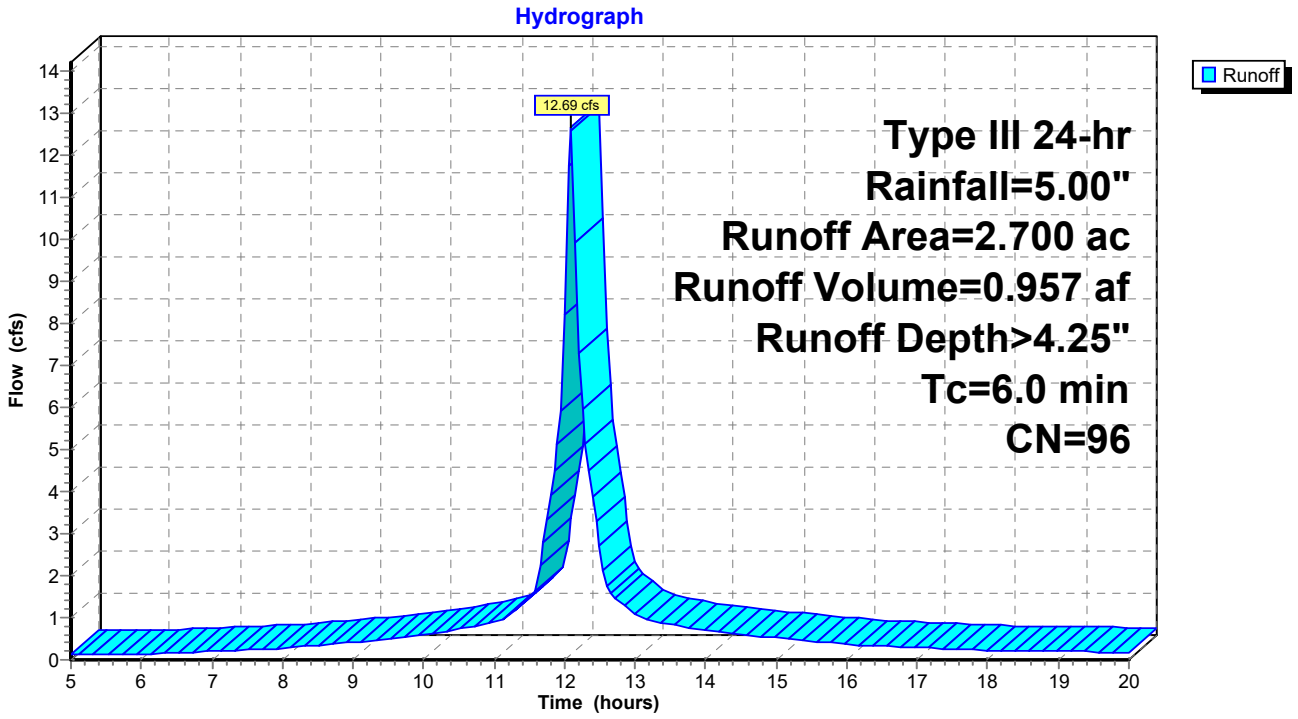
Runoff = 12.69 cfs @ 12.09 hrs, Volume= 0.957 af, Depth> 4.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.00"

	Area (ac)	CN	Description
*	2.700	96	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, minimum**

Subcatchment 3B: Hanover Garage



Summary for Subcatchment 4: Portwalk North & Upper Hanover

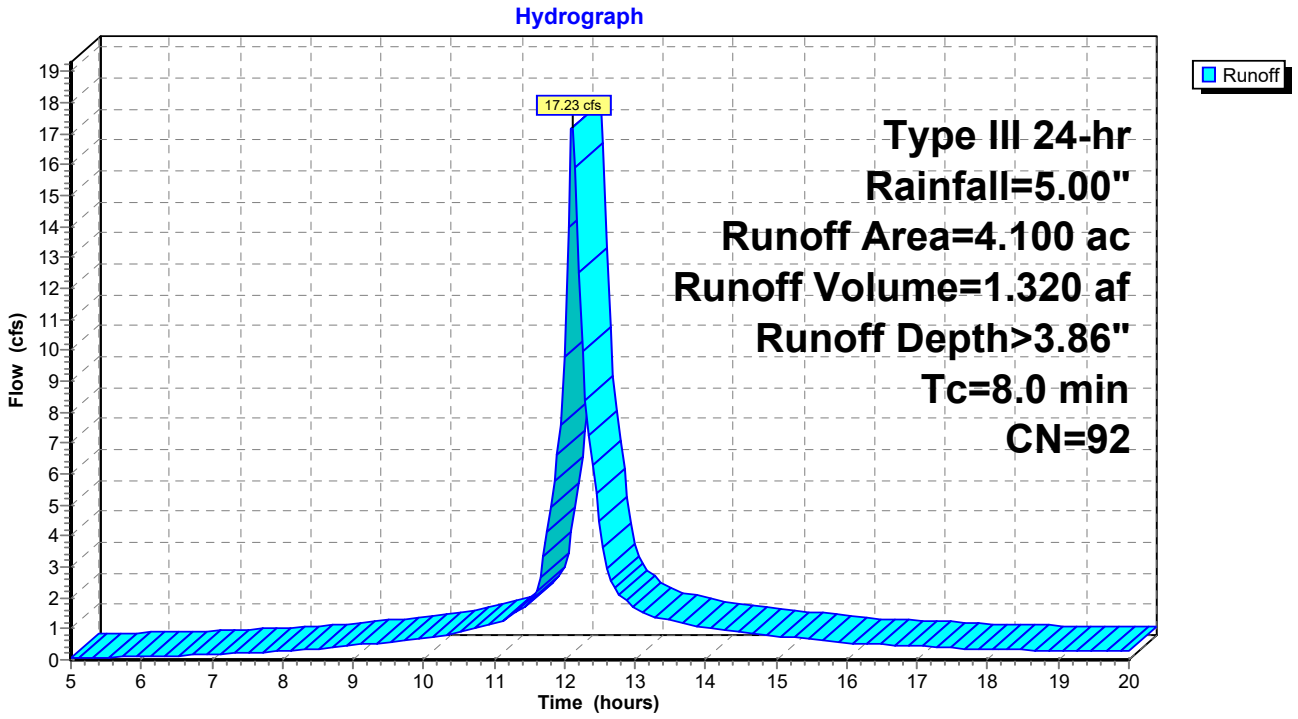
Runoff = 17.23 cfs @ 12.11 hrs, Volume= 1.320 af, Depth> 3.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.00"

	Area (ac)	CN	Description
*	4.100	92	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0					**Direct Entry,**

Subcatchment 4: Portwalk North & Upper Hanover



Summary for Subcatchment 5S: Chestnut St. Area

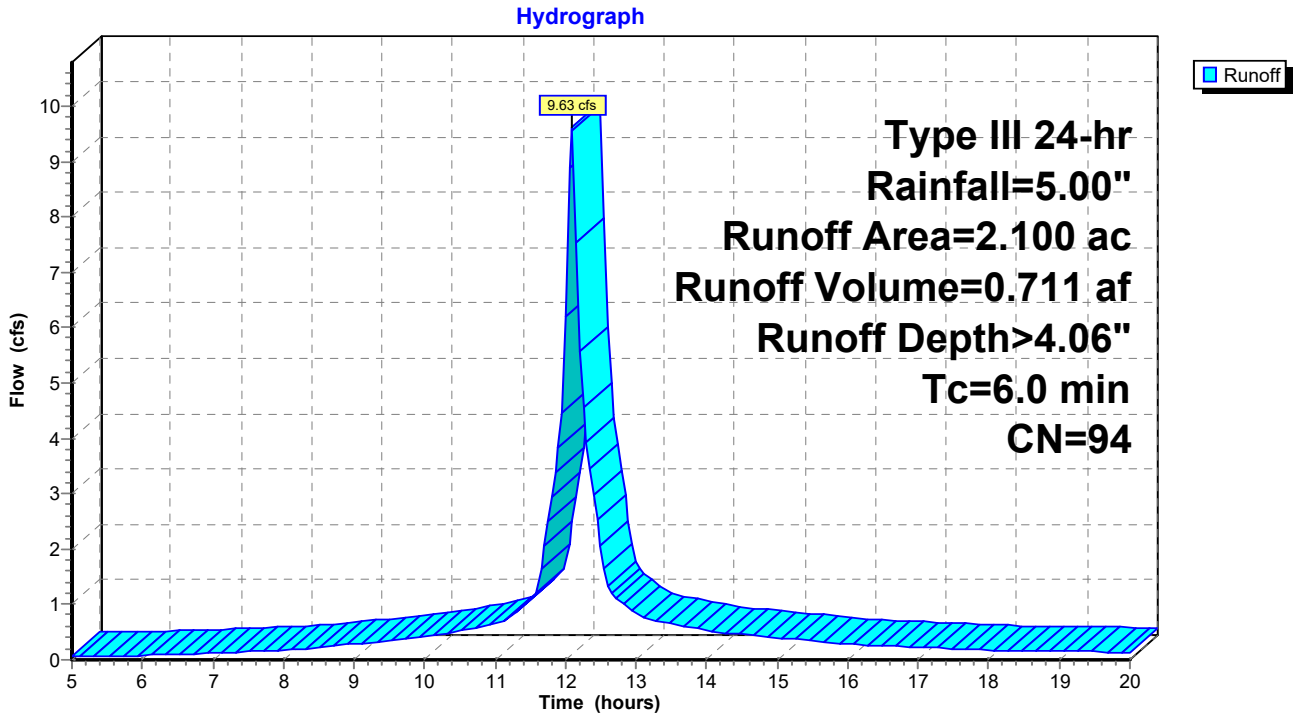
Runoff = 9.63 cfs @ 12.09 hrs, Volume= 0.711 af, Depth> 4.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.00"

	Area (ac)	CN	Description
*	2.100	94	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 5S: Chestnut St. Area



Summary for Subcatchment 6S: Congress St. Area

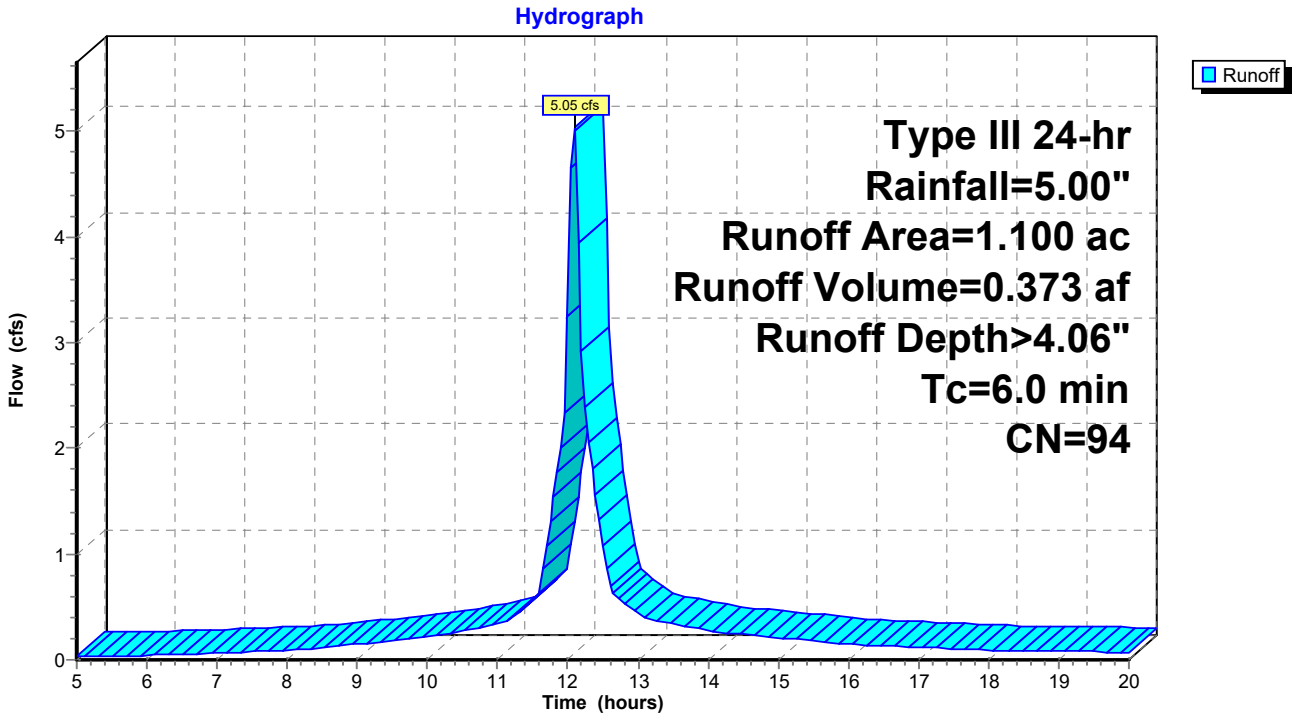
Runoff = 5.05 cfs @ 12.09 hrs, Volume= 0.373 af, Depth> 4.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.00"

	Area (ac)	CN	Description
*	1.100	94	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 6S: Congress St. Area



Summary for Subcatchment 7: Worth Lot Drainage

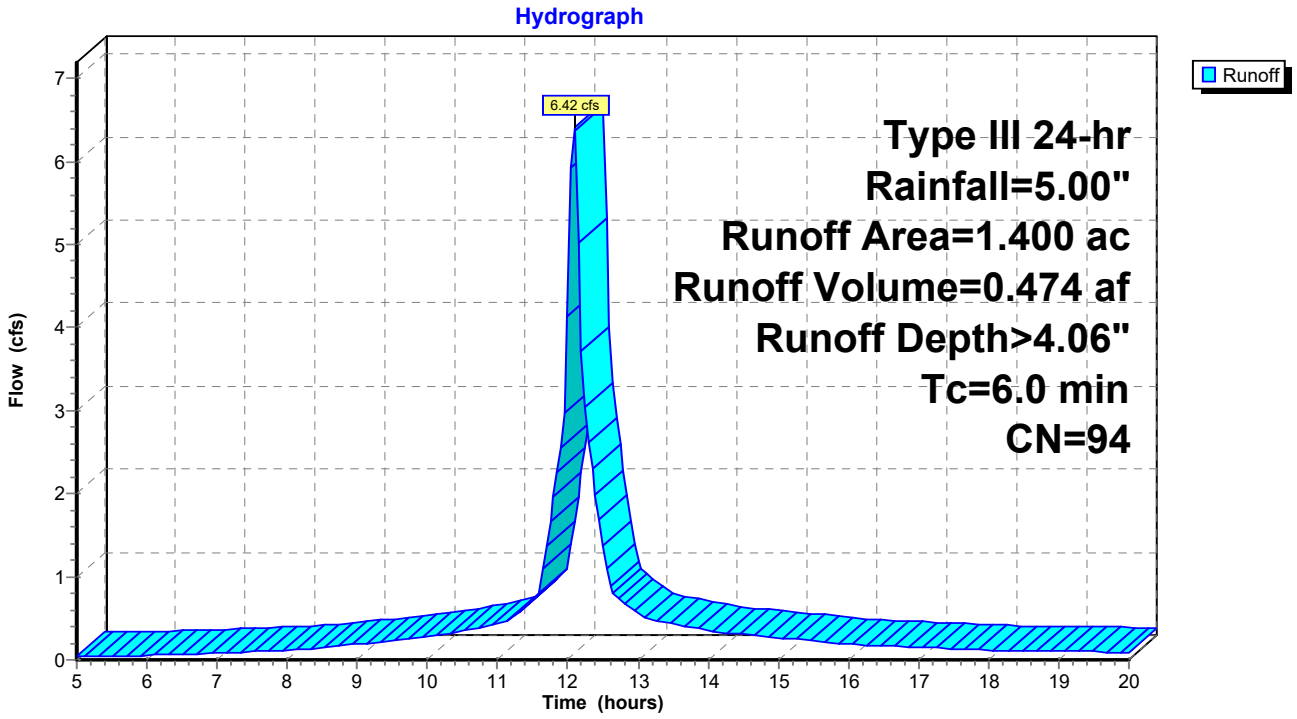
Runoff = 6.42 cfs @ 12.09 hrs, Volume= 0.474 af, Depth> 4.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.00"

	Area (ac)	CN	Description
*	1.400	94	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 7: Worth Lot Drainage



Summary for Subcatchment 8: 8

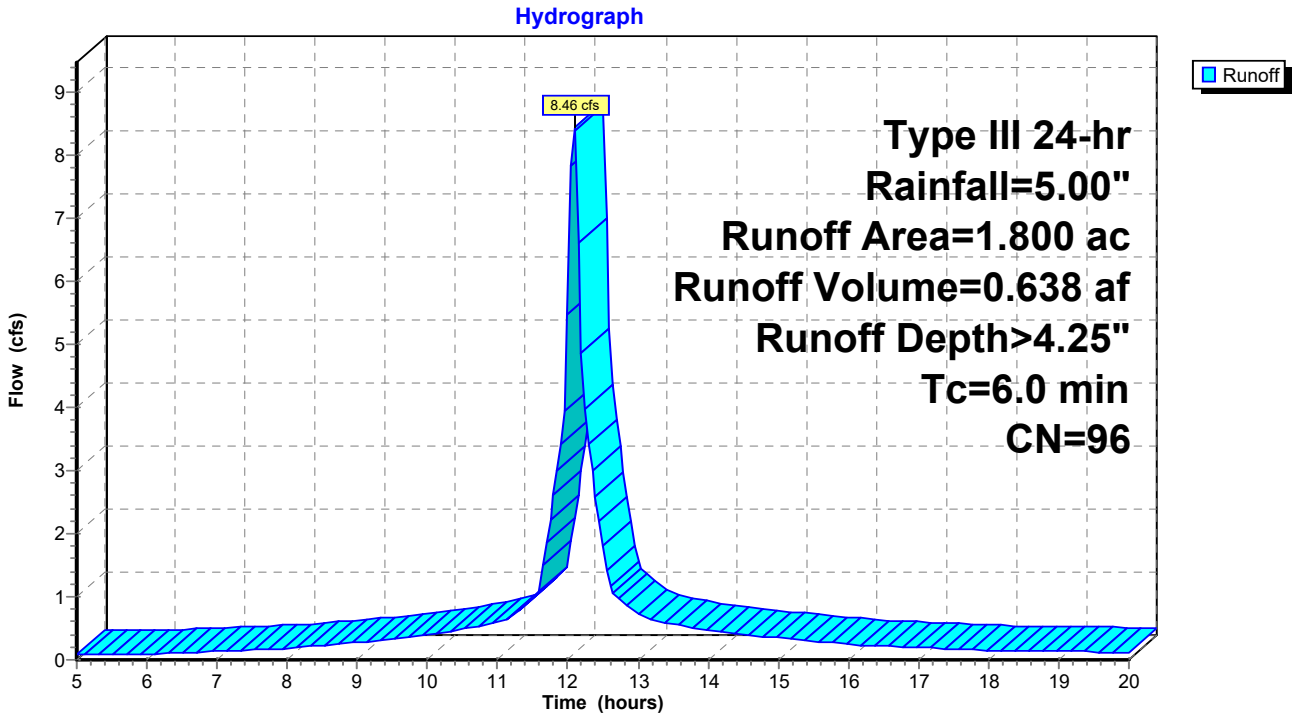
Runoff = 8.46 cfs @ 12.09 hrs, Volume= 0.638 af, Depth> 4.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.00"

	Area (ac)	CN	Description
*	1.800	96	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 8: 8



Summary for Subcatchment 8A: Portwalk

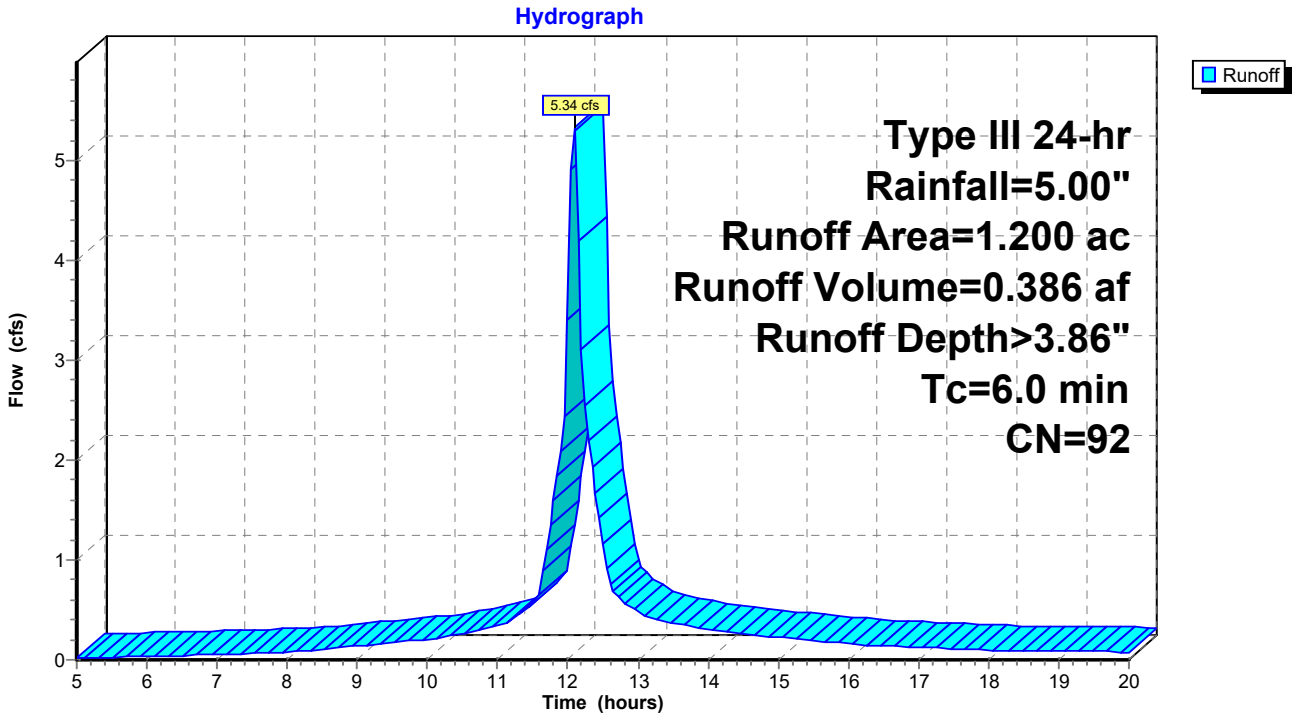
Runoff = 5.34 cfs @ 12.09 hrs, Volume= 0.386 af, Depth> 3.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.00"

	Area (ac)	CN	Description
*	1.200	92	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 8A: Portwalk



Summary for Subcatchment 9S: Maplewood

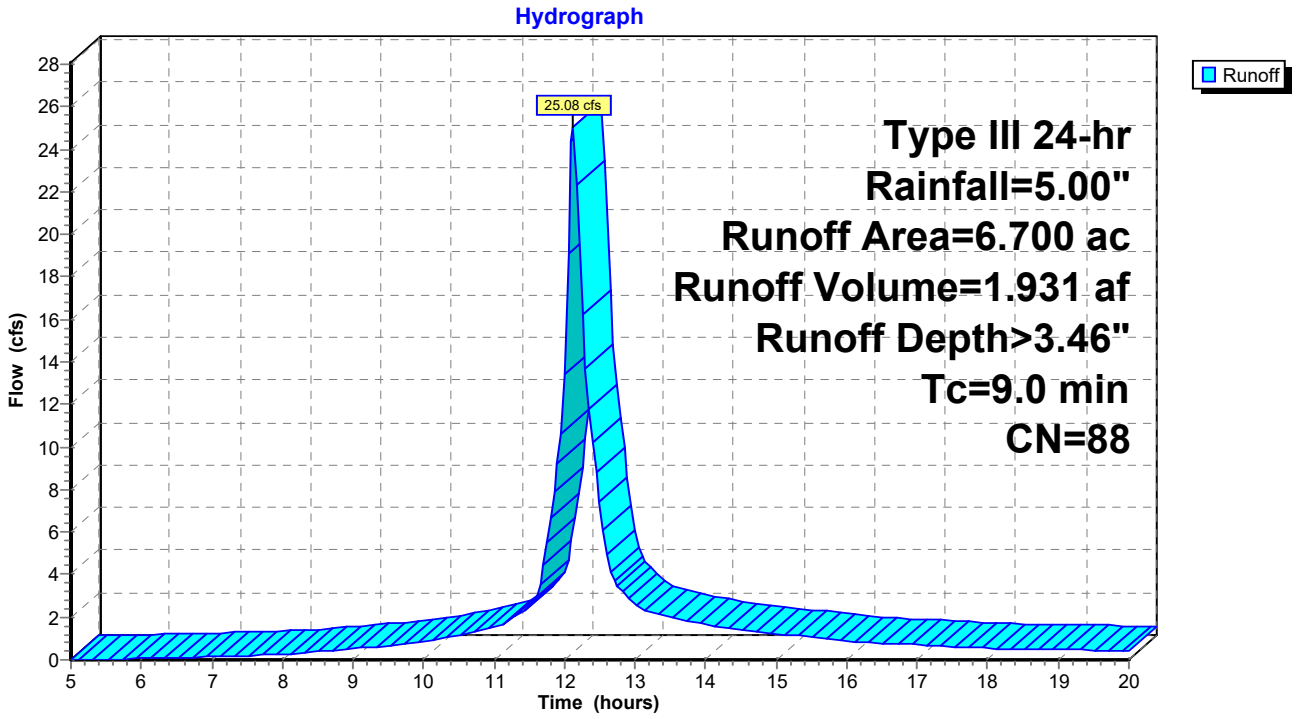
Runoff = 25.08 cfs @ 12.12 hrs, Volume= 1.931 af, Depth> 3.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.00"

	Area (ac)	CN	Description
*	6.700	88	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0					**Direct Entry,**

Subcatchment 9S: Maplewood



Summary for Subcatchment 10S: Bridge St. Area

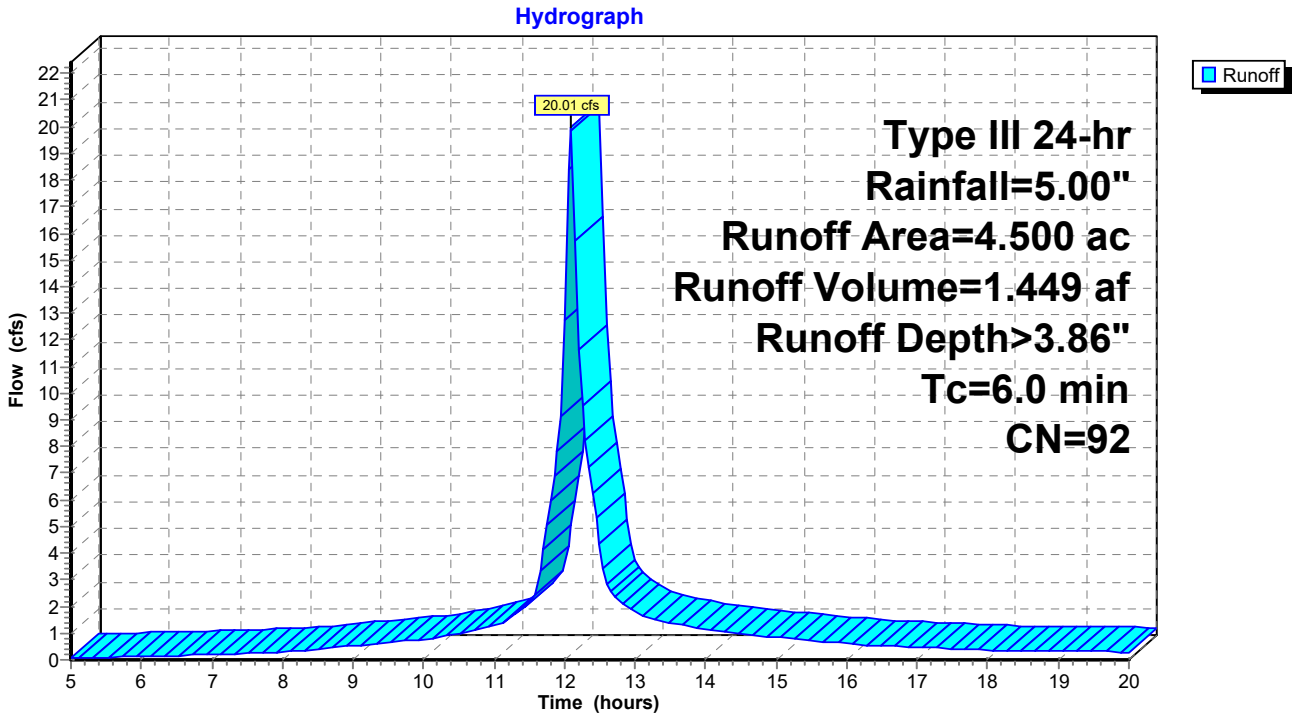
Runoff = 20.01 cfs @ 12.09 hrs, Volume= 1.449 af, Depth> 3.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.00"

	Area (ac)	CN	Description
*	4.500	92	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 10S: Bridge St. Area



Summary for Subcatchment 11S: Parking Garage/Lot

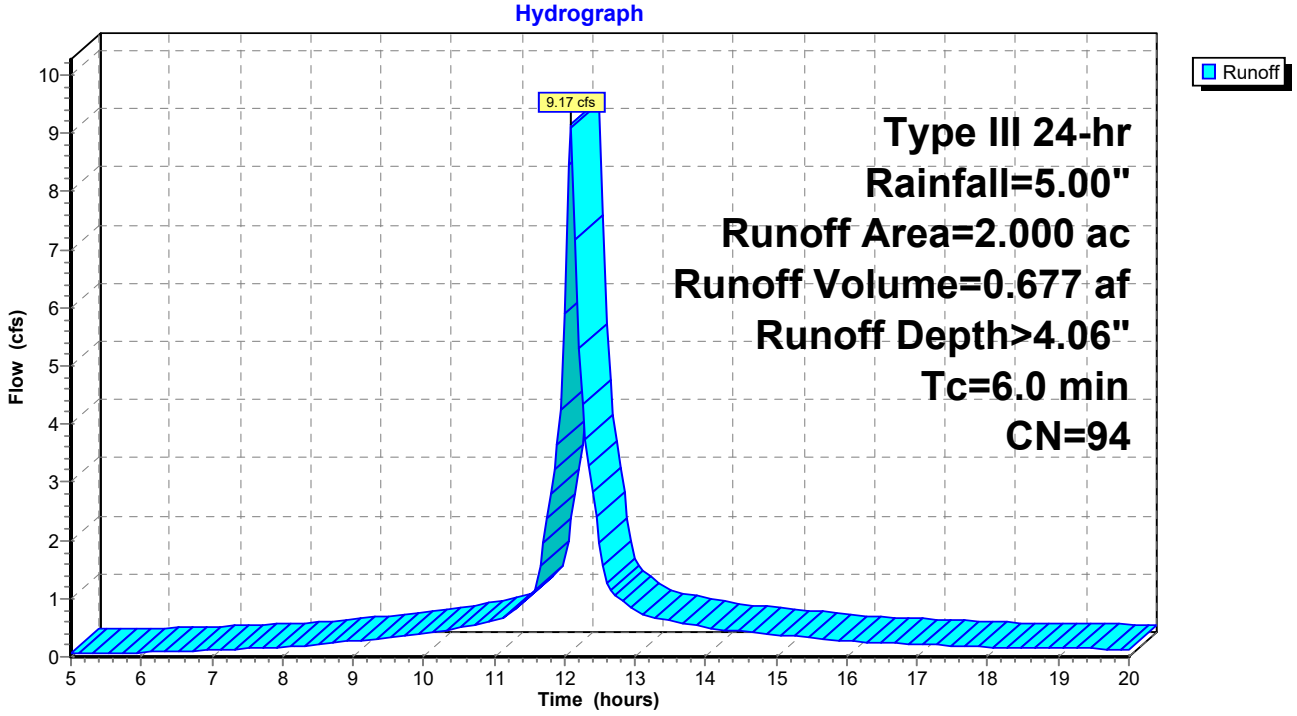
Runoff = 9.17 cfs @ 12.09 hrs, Volume= 0.677 af, Depth> 4.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.00"

	Area (ac)	CN	Description
*	2.000	94	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 11S: Parking Garage/Lot



Summary for Subcatchment 12S: Maplewood/Deer Street area

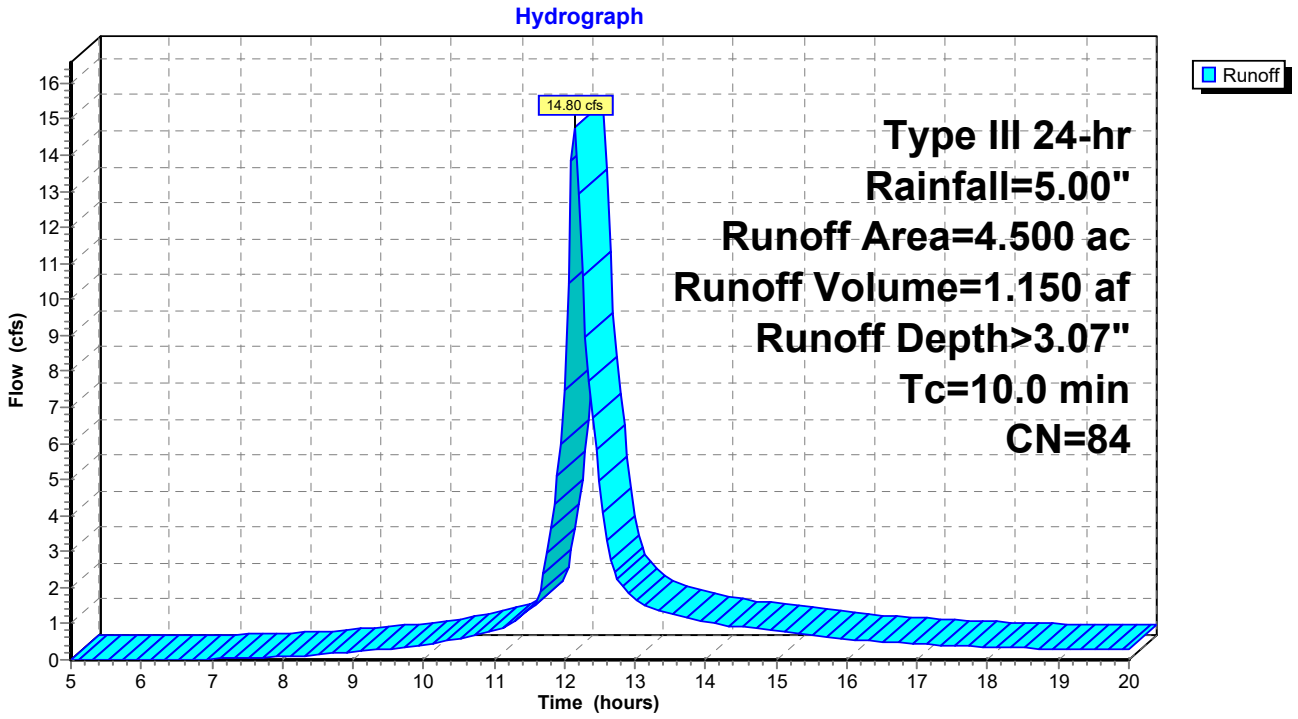
Runoff = 14.80 cfs @ 12.14 hrs, Volume= 1.150 af, Depth> 3.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.00"

	Area (ac)	CN	Description
*	4.500	84	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Subcatchment 12S: Maplewood/Deer Street area



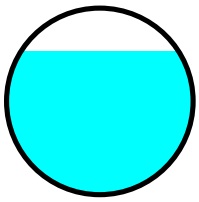
Summary for Reach 1R: Fleet St. (from Porter to Congress)

Inflow Area = 2.500 ac, Inflow Depth > 4.06"
Inflow = 11.47 cfs @ 12.09 hrs, Volume= 0.847 af
Outflow = 11.30 cfs @ 12.10 hrs, Volume= 0.846 af, Atten= 1%, Lag= 0.7 min

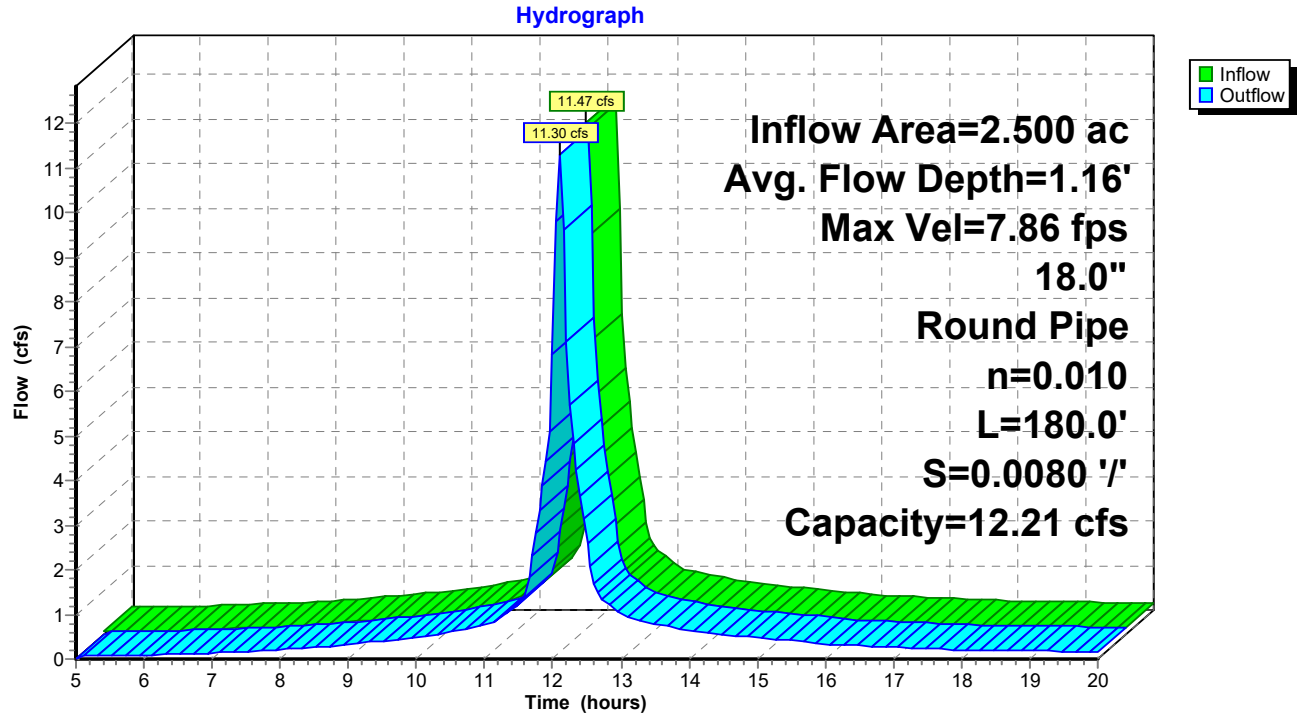
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.86 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 3.19 fps, Avg. Travel Time= 0.9 min

Peak Storage= 263 cf @ 12.09 hrs
Average Depth at Peak Storage= 1.16'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 12.21 cfs

18.0" Round Pipe
n= 0.010
Length= 180.0' Slope= 0.0080 '/'
Inlet Invert= 0.00', Outlet Invert= -1.44'



Reach 1R: Fleet St. (from Porter to Congress)



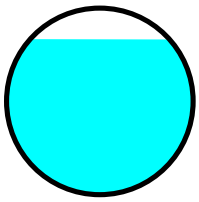
Summary for Reach 2R: Fleet St. (West of Congress)

Inflow Area = 3.600 ac, Inflow Depth > 4.12"
Inflow = 16.44 cfs @ 12.09 hrs, Volume= 1.236 af
Outflow = 15.95 cfs @ 12.11 hrs, Volume= 1.235 af, Atten= 3%, Lag= 1.0 min

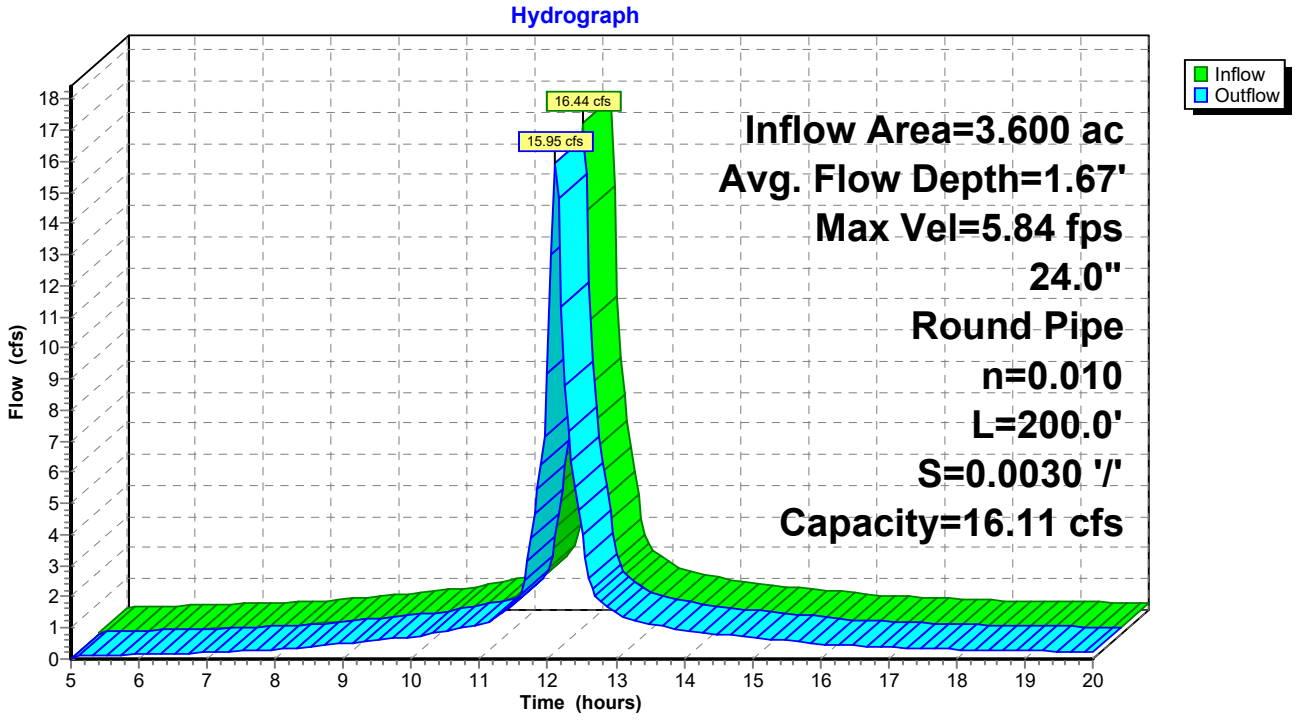
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.84 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 2.45 fps, Avg. Travel Time= 1.4 min

Peak Storage= 559 cf @ 12.10 hrs
Average Depth at Peak Storage= 1.67'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 16.11 cfs

24.0" Round Pipe
n= 0.010
Length= 200.0' Slope= 0.0030 '/'
Inlet Invert= 0.00', Outlet Invert= -0.60'



Reach 2R: Fleet St. (West of Congress)



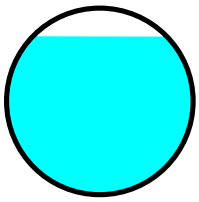
Summary for Reach 3R: To Hanover St.

Inflow Area = 1.300 ac, Inflow Depth > 4.25"
Inflow = 6.11 cfs @ 12.09 hrs, Volume= 0.461 af
Outflow = 6.05 cfs @ 12.09 hrs, Volume= 0.461 af, Atten= 1%, Lag= 0.4 min

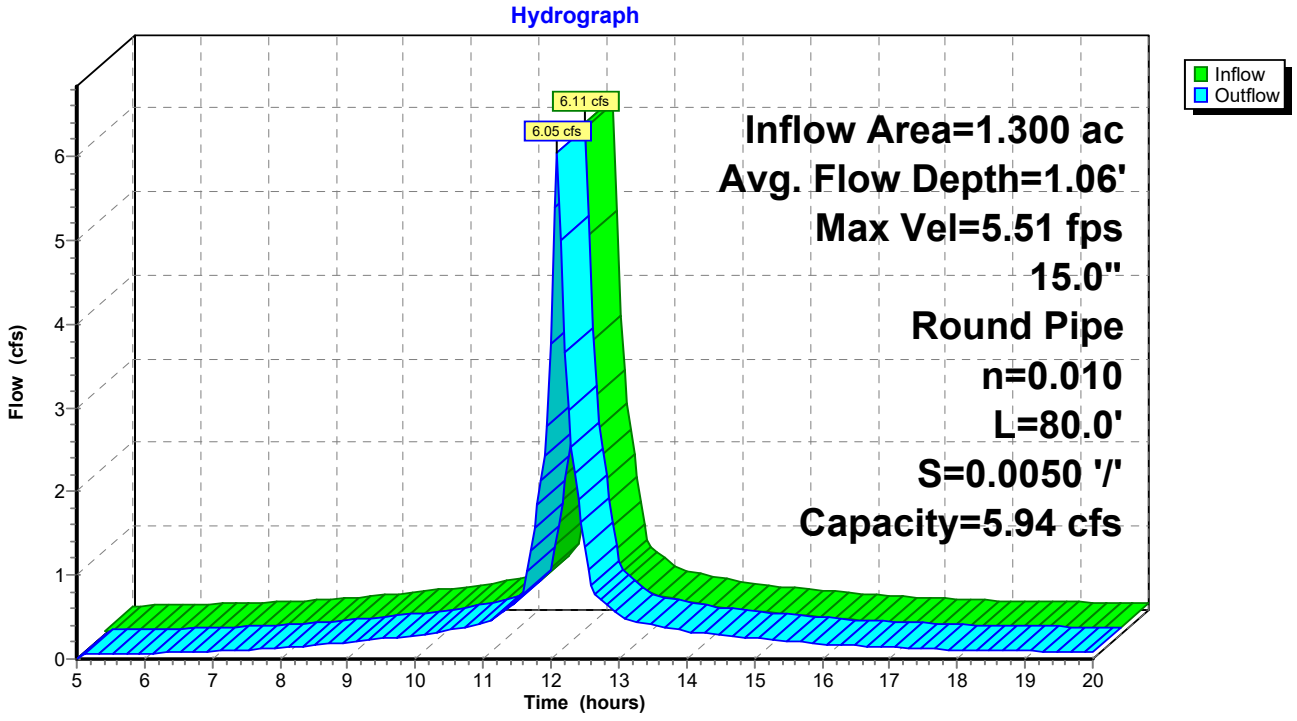
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.51 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.33 fps, Avg. Travel Time= 0.6 min

Peak Storage= 89 cf @ 12.09 hrs
Average Depth at Peak Storage= 1.06'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 5.94 cfs

15.0" Round Pipe
n= 0.010
Length= 80.0' Slope= 0.0050 '/'
Inlet Invert= 0.00', Outlet Invert= -0.40'



Reach 3R: To Hanover St.



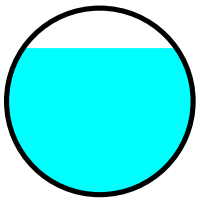
Summary for Reach 4R: Hanover - Downstream from Fleet

Inflow Area = 8.100 ac, Inflow Depth > 4.06"
Inflow = 35.74 cfs @ 12.10 hrs, Volume= 2.738 af
Outflow = 35.13 cfs @ 12.11 hrs, Volume= 2.736 af, Atten= 2%, Lag= 0.6 min

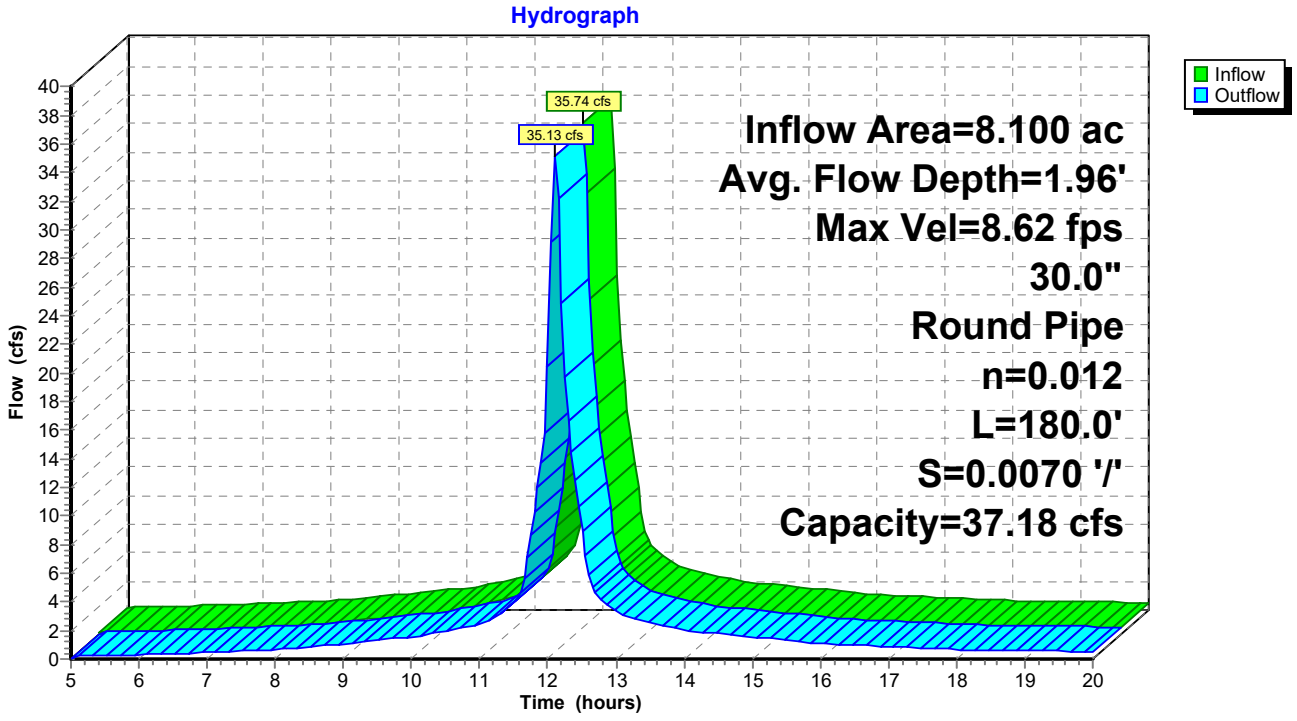
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.62 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 3.57 fps, Avg. Travel Time= 0.8 min

Peak Storage= 744 cf @ 12.10 hrs
Average Depth at Peak Storage= 1.96'
Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 37.18 cfs

30.0" Round Pipe
n= 0.012
Length= 180.0' Slope= 0.0070 '/'
Inlet Invert= 0.00', Outlet Invert= -1.26'



Reach 4R: Hanover - Downstream from Fleet



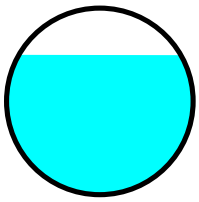
Summary for Reach 5R: Congress to Vaughn Mall

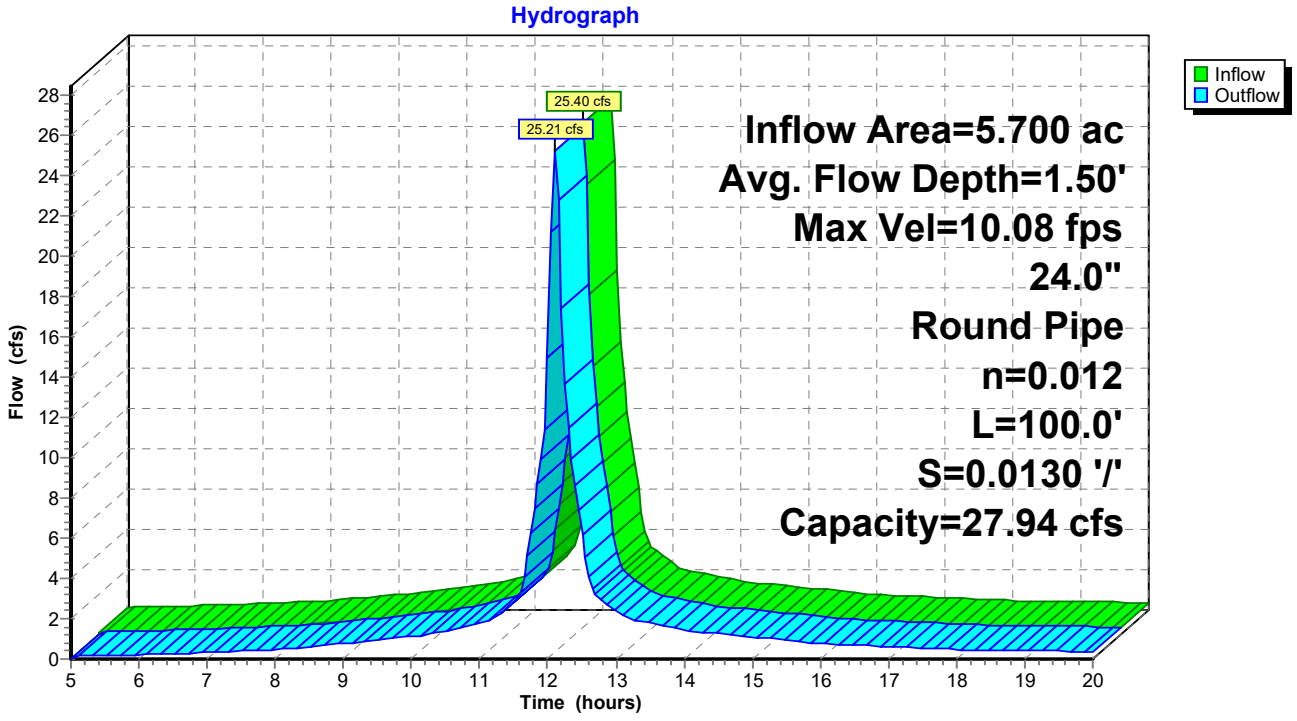
Inflow Area = 5.700 ac, Inflow Depth > 4.10"
Inflow = 25.40 cfs @ 12.10 hrs, Volume= 1.946 af
Outflow = 25.21 cfs @ 12.11 hrs, Volume= 1.946 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.08 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 4.12 fps, Avg. Travel Time= 0.4 min

Peak Storage= 252 cf @ 12.10 hrs
Average Depth at Peak Storage= 1.50'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 27.94 cfs

24.0" Round Pipe
n= 0.012
Length= 100.0' Slope= 0.0130 '/'
Inlet Invert= 0.00', Outlet Invert= -1.30'





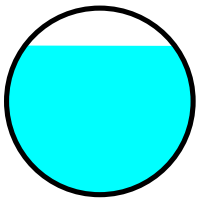
Summary for Reach 6R: Upper Vaughn Mall

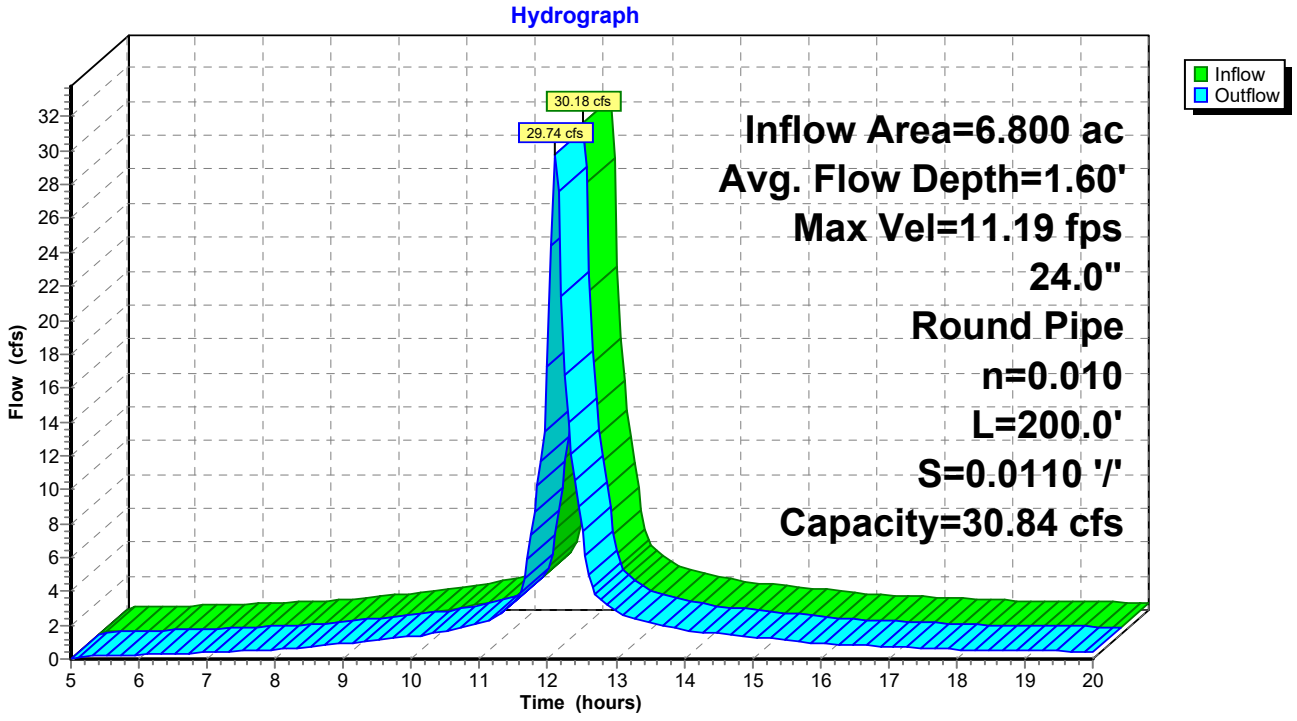
Inflow Area = 6.800 ac, Inflow Depth > 4.09"
Inflow = 30.18 cfs @ 12.10 hrs, Volume= 2.318 af
Outflow = 29.74 cfs @ 12.11 hrs, Volume= 2.318 af, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.19 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 4.65 fps, Avg. Travel Time= 0.7 min

Peak Storage= 538 cf @ 12.11 hrs
Average Depth at Peak Storage= 1.60'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 30.84 cfs

24.0" Round Pipe
n= 0.010
Length= 200.0' Slope= 0.0110 '/'
Inlet Invert= 0.00', Outlet Invert= -2.20'





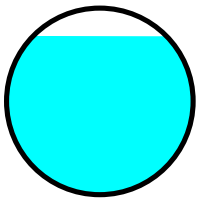
Summary for Reach 7R: Lower Vaughn Mall to Hanover

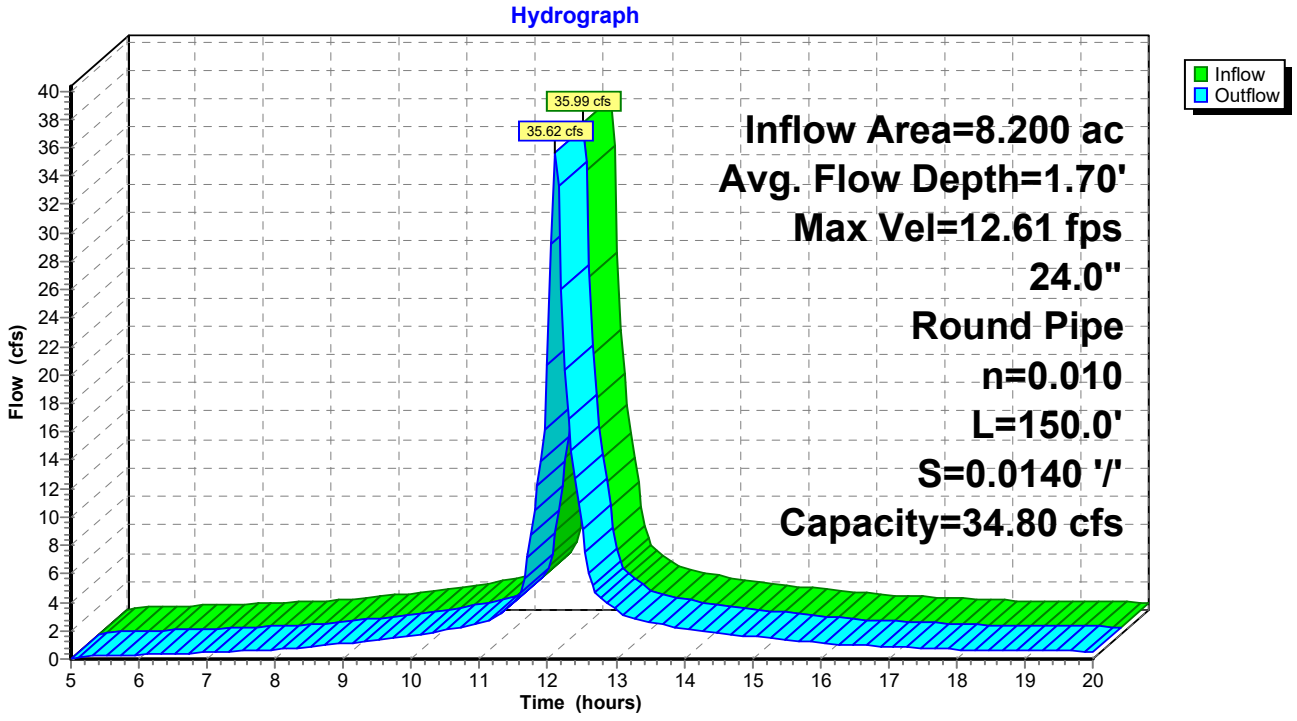
Inflow Area = 8.200 ac, Inflow Depth > 4.09"
Inflow = 35.99 cfs @ 12.11 hrs, Volume= 2.792 af
Outflow = 35.62 cfs @ 12.11 hrs, Volume= 2.791 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 12.61 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 5.35 fps, Avg. Travel Time= 0.5 min

Peak Storage= 427 cf @ 12.11 hrs
Average Depth at Peak Storage= 1.70'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 34.80 cfs

24.0" Round Pipe
n= 0.010
Length= 150.0' Slope= 0.0140 '/'
Inlet Invert= 0.00', Outlet Invert= -2.10'





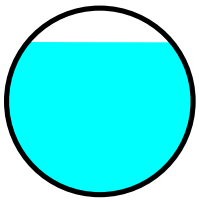
Summary for Reach 8R: Exist. 36" RCP, Downstream of V. Mall

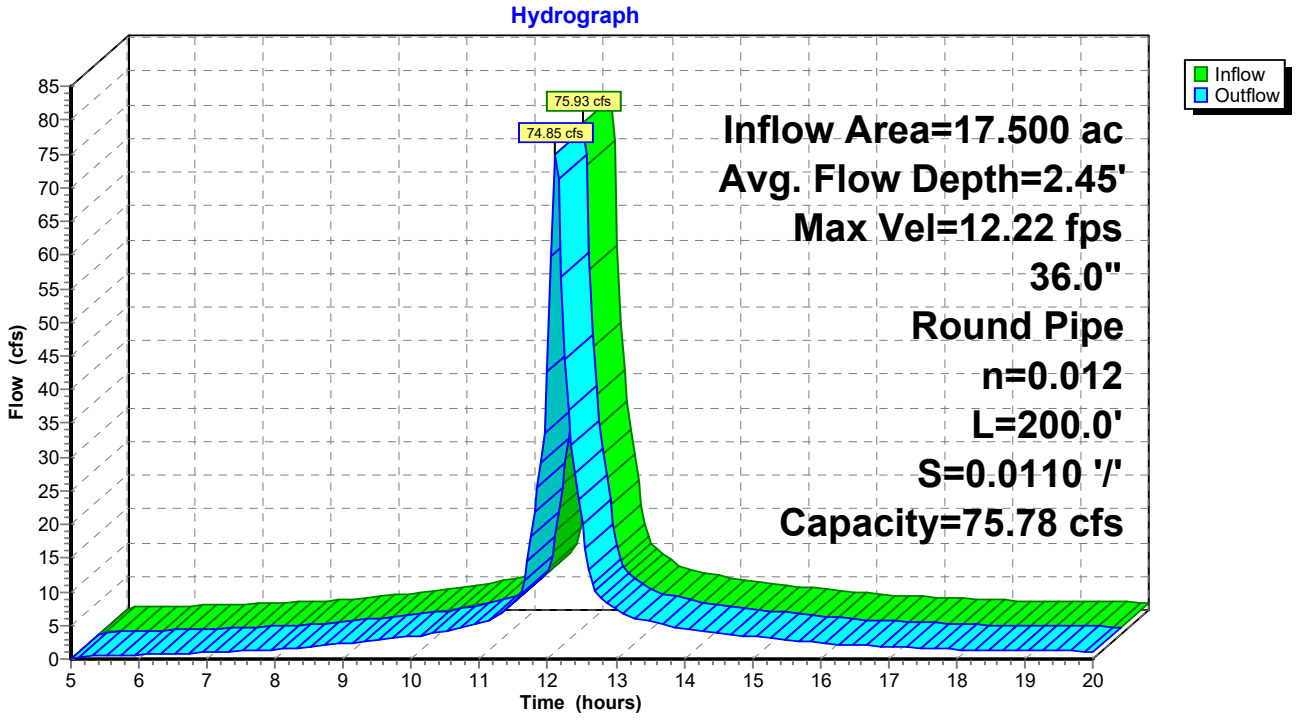
Inflow Area = 17.500 ac, Inflow Depth > 4.06"
Inflow = 75.93 cfs @ 12.11 hrs, Volume= 5.914 af
Outflow = 74.85 cfs @ 12.12 hrs, Volume= 5.912 af, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 12.22 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 5.13 fps, Avg. Travel Time= 0.6 min

Peak Storage= 1,237 cf @ 12.11 hrs
Average Depth at Peak Storage= 2.45'
Bank-Full Depth= 3.00' Flow Area= 7.1 sf, Capacity= 75.78 cfs

36.0" Round Pipe
n= 0.012
Length= 200.0' Slope= 0.0110 '/'
Inlet Invert= 0.00', Outlet Invert= -2.20'





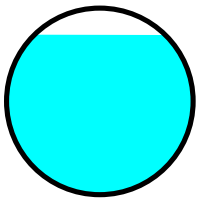
Summary for Reach 9R: Existr 36" from Han. Sag

Inflow Area = 19.300 ac, Inflow Depth > 4.07"
Inflow = 82.94 cfs @ 12.11 hrs, Volume= 6.550 af
Outflow = 81.35 cfs @ 12.13 hrs, Volume= 6.548 af, Atten= 2%, Lag= 0.7 min

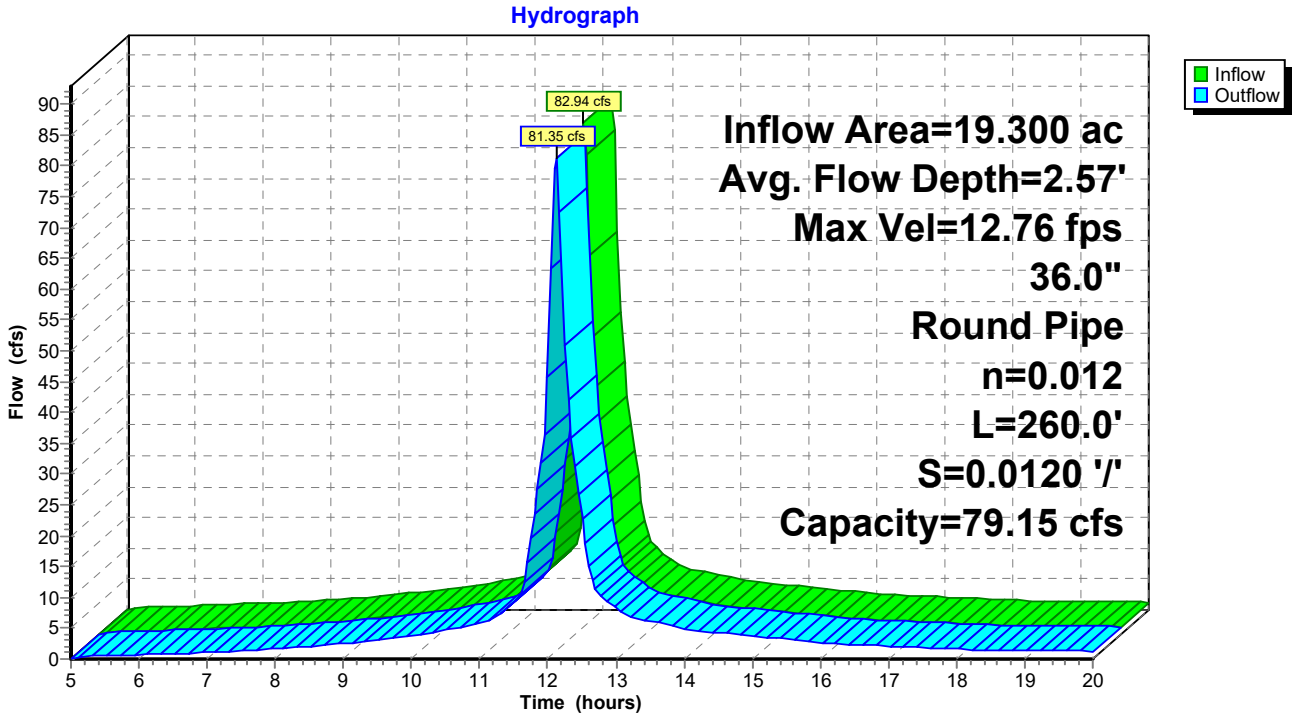
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 12.76 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 5.45 fps, Avg. Travel Time= 0.8 min

Peak Storage= 1,681 cf @ 12.12 hrs
Average Depth at Peak Storage= 2.57'
Bank-Full Depth= 3.00' Flow Area= 7.1 sf, Capacity= 79.15 cfs

36.0" Round Pipe
n= 0.012
Length= 260.0' Slope= 0.0120 '/'
Inlet Invert= 0.00', Outlet Invert= -3.12'



Reach 9R: Existr 36" from Han. Sag



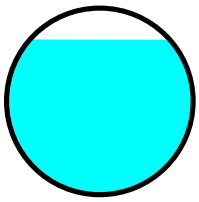
Summary for Reach 10R: Upper Bridge St.

Inflow Area = 26.000 ac, Inflow Depth > 3.91"
Inflow = 106.28 cfs @ 12.13 hrs, Volume= 8.478 af
Outflow = 105.46 cfs @ 12.14 hrs, Volume= 8.475 af, Atten= 1%, Lag= 0.7 min

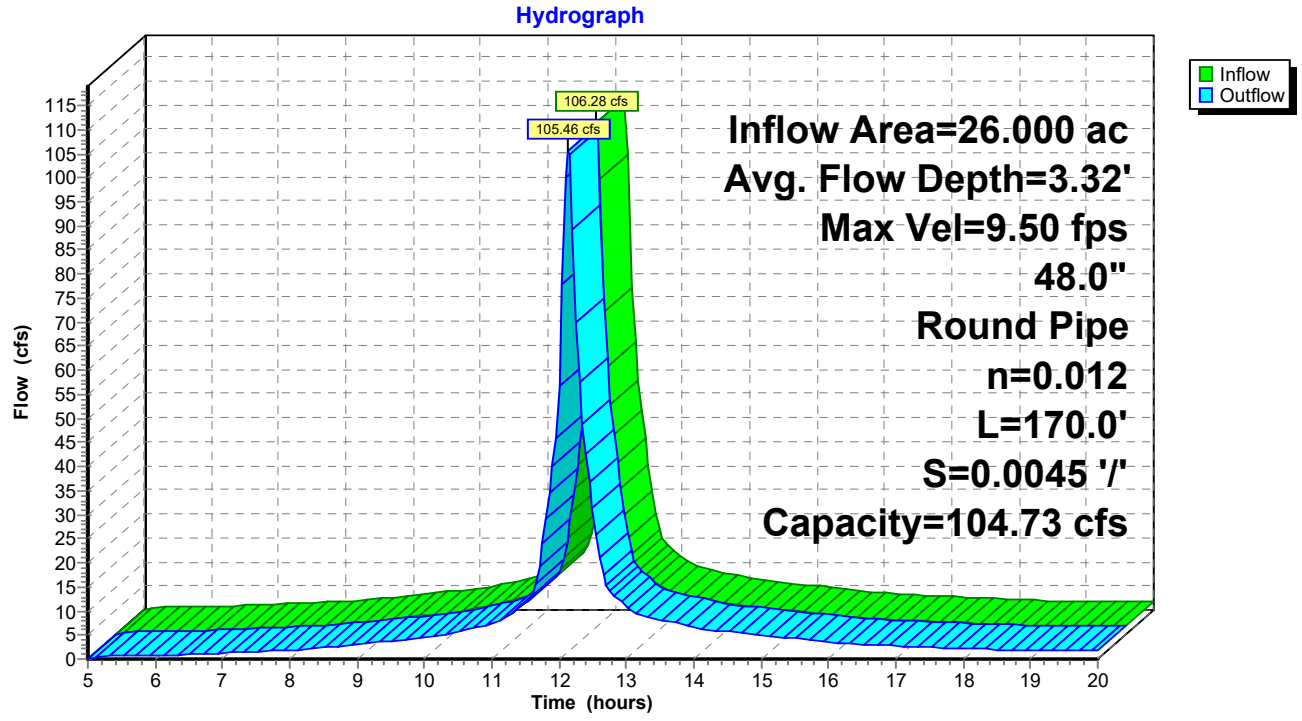
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.50 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 4.01 fps, Avg. Travel Time= 0.7 min

Peak Storage= 1,900 cf @ 12.13 hrs
Average Depth at Peak Storage= 3.32'
Bank-Full Depth= 4.00' Flow Area= 12.6 sf, Capacity= 104.73 cfs

48.0" Round Pipe
n= 0.012
Length= 170.0' Slope= 0.0045 '/'
Inlet Invert= 0.00', Outlet Invert= -0.77'



Reach 10R: Upper Bridge St.



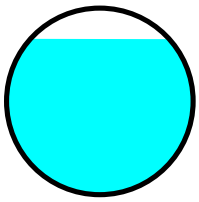
Summary for Reach 11R: Bridge Street Sag

Inflow Area = 30.500 ac, Inflow Depth > 3.90"
Inflow = 122.72 cfs @ 12.13 hrs, Volume= 9.925 af
Outflow = 122.01 cfs @ 12.14 hrs, Volume= 9.922 af, Atten= 1%, Lag= 0.6 min

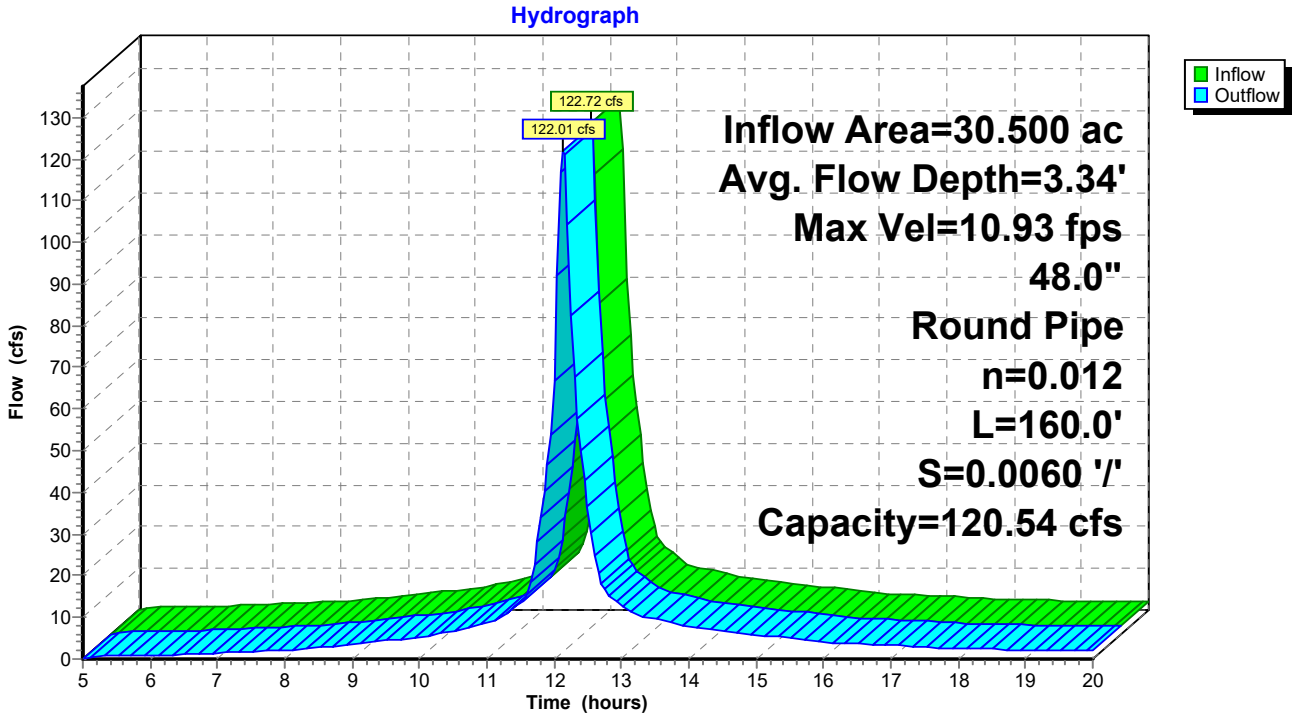
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.93 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 4.63 fps, Avg. Travel Time= 0.6 min

Peak Storage= 1,795 cf @ 12.13 hrs
Average Depth at Peak Storage= 3.34'
Bank-Full Depth= 4.00' Flow Area= 12.6 sf, Capacity= 120.54 cfs

48.0" Round Pipe
n= 0.012
Length= 160.0' Slope= 0.0060 '/'
Inlet Invert= 0.00', Outlet Invert= -0.96'



Reach 11R: Bridge Street Sag



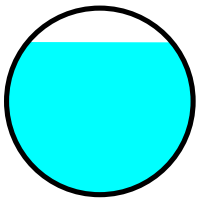
Summary for Reach 12R: Deer Street

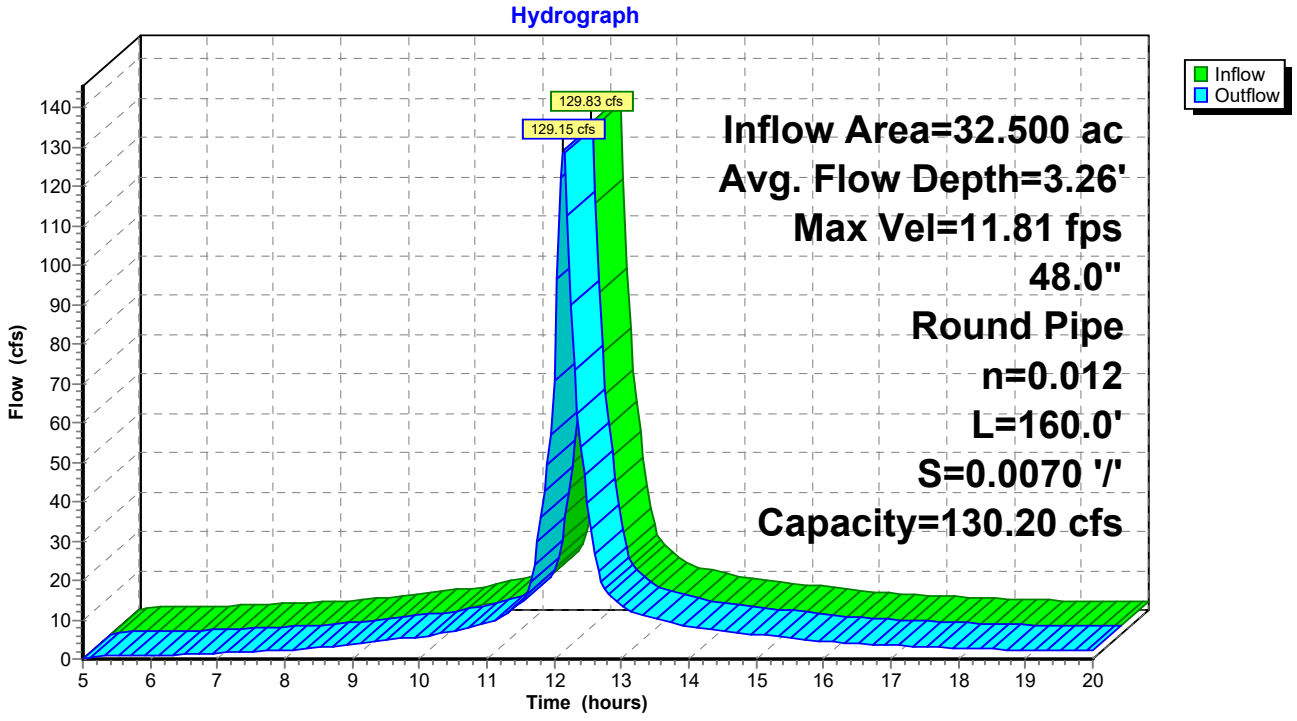
Inflow Area = 32.500 ac, Inflow Depth > 3.91"
Inflow = 129.83 cfs @ 12.13 hrs, Volume= 10.599 af
Outflow = 129.15 cfs @ 12.14 hrs, Volume= 10.596 af, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.81 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 4.98 fps, Avg. Travel Time= 0.5 min

Peak Storage= 1,758 cf @ 12.14 hrs
Average Depth at Peak Storage= 3.26'
Bank-Full Depth= 4.00' Flow Area= 12.6 sf, Capacity= 130.20 cfs

48.0" Round Pipe
n= 0.012
Length= 160.0' Slope= 0.0070 '/'
Inlet Invert= 0.00', Outlet Invert= -1.12'





Summary for Pond 13P: Deer Stret Outfall Pipe(s)

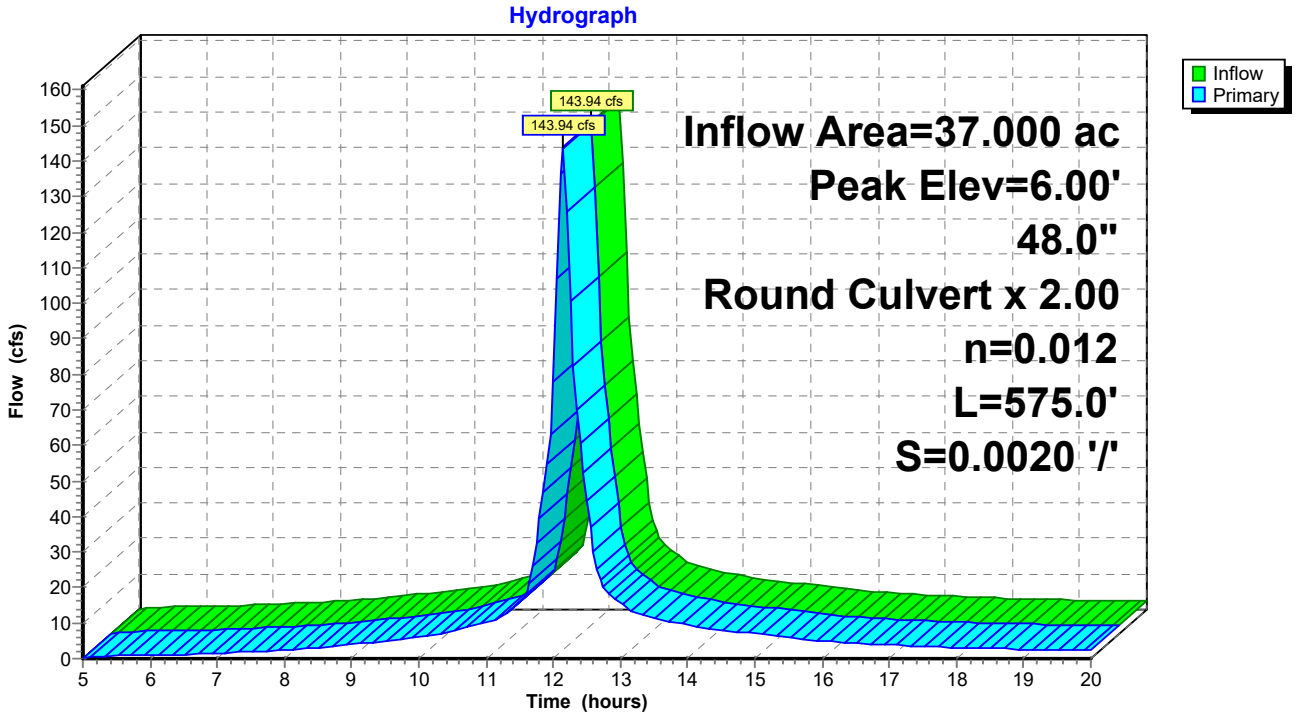
Inflow Area = 37.000 ac, Inflow Depth > 3.81"
Inflow = 143.94 cfs @ 12.14 hrs, Volume= 11.746 af
Outflow = 143.94 cfs @ 12.14 hrs, Volume= 11.746 af, Atten= 0%, Lag= 0.0 min
Primary = 143.94 cfs @ 12.14 hrs, Volume= 11.746 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 6.00' @ 12.14 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**48.0" Round Twin Culverts X 2.00** L= 575.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 0.00' / -1.15' S= 0.0020 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf

Primary OutFlow Max=141.87 cfs @ 12.14 hrs HW=5.94' TW=4.00' (Fixed TW Elev= 4.00')
↑—**1=Twin Culverts** (Outlet Controls 141.87 cfs @ 5.64 fps)

Pond 13P: Deer Stret Outfall Pipe(s)



APPENDIX 4

DRAINAGE OUTFALL PROJECT

POST-PROJECT HYDROLOGY CALCULATIONS

Deer Street Outfall & Fleet Street Drainage Areas
Portsmouth, New Hampshire
~~November 2020~~ Project Conditions October 2022

Lighter colors, similar to the "existing conditions October 2022" created for Phil

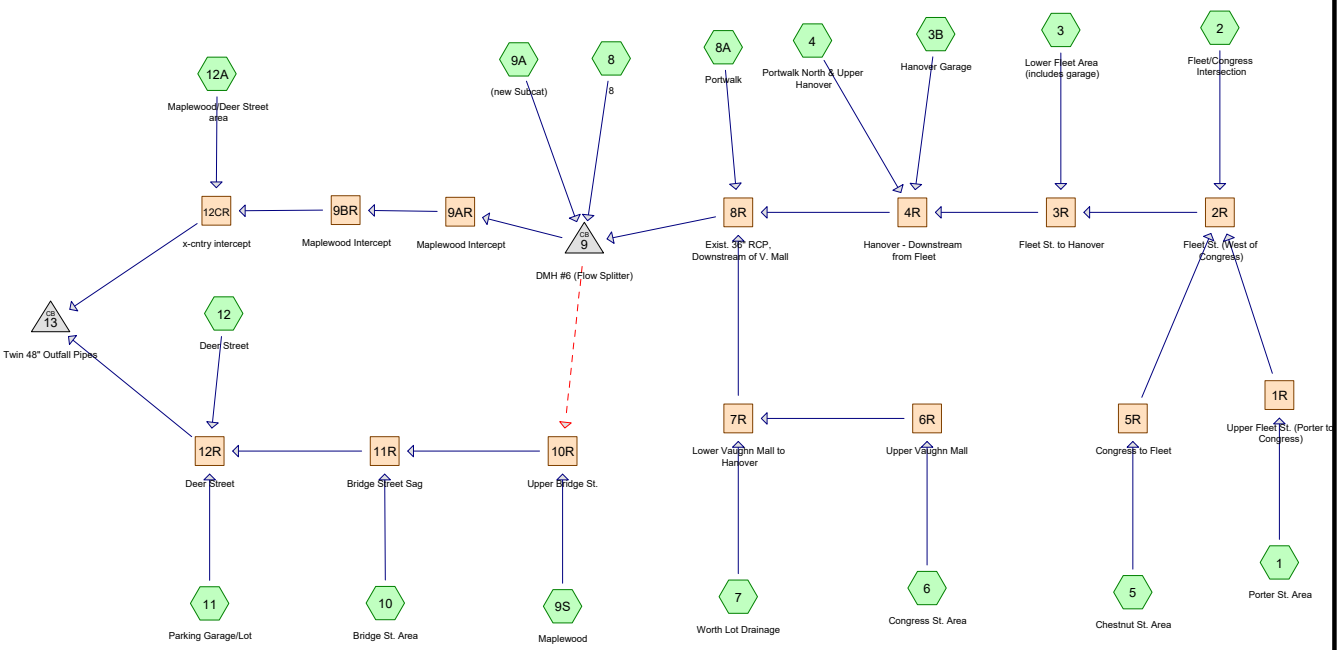
SCALE: 1"=100'

SCALE: 1 INCH = 100 FT.

Post Construction Basin 12A in to Maplewood Pipe

Post Construction Basin 9A into Maplewood pipe

SC1 2.48 ac
SC2 1.1 ac
SC3 1.32 ac
SC3B 2.75 ac
SC4 3.83 ac
SC5 2.9 ac
SC6 0.93 ac
SC7 1.97 ac
SC8 1.87 ac
SC8A 1.18 ac
SC9 5.48 ac
SC10 4.33 ac
SC11 1.94 ac
SC12 1.32 ac
12A 3.39 ac
1.41 ac



Subcat Reach Pond Link

Routing Diagram for PROJECT CONDITIONS
Prepared by HP Inc., Printed 4/6/2023

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1: Porter St. Area Runoff Area=2.500 ac Runoff Depth>4.31"
Tc=6.0 min CN=94 Runoff=11.47 cfs 0.897 af

Subcatchment2: Fleet/Congress Intersection Runoff Area=1.100 ac Runoff Depth>4.53"
Tc=6.0 min CN=96 Runoff=5.17 cfs 0.415 af

Subcatchment3: Lower Fleet Area (includes garage) Runoff Area=1.300 ac Runoff Depth>4.53"
Tc=6.0 min CN=96 Runoff=6.11 cfs 0.491 af

Subcatchment3B: Hanover Garage Runoff Area=2.700 ac Runoff Depth>4.53"
Tc=6.0 min CN=96 Runoff=12.69 cfs 1.019 af

Subcatchment4: Portwalk North & Upper Hanover Runoff Area=4.100 ac Runoff Depth>4.09"
Tc=8.0 min CN=92 Runoff=17.23 cfs 1.396 af

Subcatchment5: Chestnut St. Area Runoff Area=2.100 ac Runoff Depth>4.31"
Tc=6.0 min CN=94 Runoff=9.63 cfs 0.753 af

Subcatchment6: Congress St. Area Runoff Area=1.100 ac Runoff Depth>4.31"
Tc=6.0 min CN=94 Runoff=5.05 cfs 0.395 af

Subcatchment7: Worth Lot Drainage Runoff Area=1.400 ac Runoff Depth>4.31"
Tc=6.0 min CN=94 Runoff=6.42 cfs 0.502 af

Subcatchment8: 8 Runoff Area=1.800 ac Runoff Depth>4.53"
Tc=6.0 min CN=96 Runoff=8.46 cfs 0.679 af

Subcatchment8A: Portwalk Runoff Area=1.200 ac Runoff Depth>4.09"
Tc=6.0 min CN=92 Runoff=5.34 cfs 0.409 af

Subcatchment9A: (new Subcat)
Runoff=0.00 cfs 0.000 af

Subcatchment9S: Maplewood Runoff Area=6.700 ac Runoff Depth>3.66"
Tc=9.0 min CN=88 Runoff=25.08 cfs 2.046 af

Subcatchment10: Bridge St. Area Runoff Area=4.500 ac Runoff Depth>4.09"
Tc=6.0 min CN=92 Runoff=20.01 cfs 1.532 af

Subcatchment11: Parking Garage/Lot Runoff Area=2.000 ac Runoff Depth>4.31"
Tc=6.0 min CN=94 Runoff=9.17 cfs 0.718 af

Subcatchment12: Deer Street Runoff Area=1.500 ac Runoff Depth>3.27"
Tc=6.0 min CN=84 Runoff=5.59 cfs 0.408 af

Subcatchment12A: Maplewood/Deer Street area Runoff Area=3.000 ac Runoff Depth>3.27"
Tc=8.0 min CN=84 Runoff=10.53 cfs 0.817 af

Reach 1R: Upper Fleet St. (Porter to Avg. Flow Depth=1.23' Max Vel=7.37 fps Inflow=11.47 cfs 0.897 af
18.0" Round Pipe n=0.010 L=180.0' S=0.0070 '/' Capacity=11.43 cfs Outflow=11.27 cfs 0.897 af

Reach 2R: Fleet St. (West of Congress) Avg. Flow Depth=1.59' Max Vel=9.54 fps Inflow=25.76 cfs 2.065 af
24.0" Round Pipe n=0.010 L=380.0' S=0.0080 '/' Capacity=26.30 cfs Outflow=24.86 cfs 2.064 af

Reach 3R: Fleet St. to Hanover Avg. Flow Depth=1.72' Max Vel=10.67 fps Inflow=30.71 cfs 2.555 af
24.0" Round Pipe n=0.010 L=100.0' S=0.0100 '/' Capacity=29.41 cfs Outflow=30.45 cfs 2.554 af

Reach 4R: Hanover - Downstream from Avg. Flow Depth=2.42' Max Vel=9.75 fps Inflow=59.96 cfs 4.969 af
36.0" Round Pipe n=0.012 L=180.0' S=0.0070 '/' Capacity=60.45 cfs Outflow=59.02 cfs 4.968 af

Reach 5R: Congress to Fleet Avg. Flow Depth=1.22' Max Vel=6.23 fps Inflow=9.63 cfs 0.753 af
18.0" Round Pipe n=0.010 L=220.0' S=0.0050 '/' Capacity=9.66 cfs Outflow=9.38 cfs 0.753 af

Reach 6R: Upper Vaughn Mall Avg. Flow Depth=0.83' Max Vel=5.82 fps Inflow=5.05 cfs 0.395 af
15.0" Round Pipe n=0.013 L=200.0' S=0.0100 '/' Capacity=6.46 cfs Outflow=4.93 cfs 0.394 af

Reach 7R: Lower Vaughn Mall to Avg. Flow Depth=1.17' Max Vel=5.93 fps Inflow=11.31 cfs 0.897 af
24.0" Round Pipe n=0.013 L=150.0' S=0.0060 '/' Capacity=17.52 cfs Outflow=11.11 cfs 0.896 af

Reach 8R: Exist. 36" RCP, Avg. Flow Depth=2.55' Max Vel=11.65 fps Inflow=75.20 cfs 6.273 af
36.0" Round Pipe n=0.012 L=200.0' S=0.0100 '/' Capacity=72.26 cfs Outflow=74.07 cfs 6.272 af

Reach 9AR: Maplewood Intercept Avg. Flow Depth=2.36' Max Vel=10.93 fps Inflow=65.53 cfs 6.255 af
36.0" Round Pipe n=0.010 L=31.0' S=0.0061 '/' Capacity=67.88 cfs Outflow=65.38 cfs 6.255 af

Reach 9BR: Maplewood Intercept Avg. Flow Depth=2.68' Max Vel=8.14 fps Inflow=65.38 cfs 6.255 af
42.0" Round Pipe n=0.012 L=600.0' S=0.0040 '/' Capacity=68.93 cfs Outflow=62.79 cfs 6.249 af

Reach 10R: Upper Bridge St. Avg. Flow Depth=2.23' Max Vel=7.31 fps Inflow=41.55 cfs 2.742 af
36.0" Round Pipe n=0.012 L=170.0' S=0.0040 '/' Capacity=45.70 cfs Outflow=40.88 cfs 2.741 af

Reach 11R: Bridge Street Sag Avg. Flow Depth=2.61' Max Vel=9.02 fps Inflow=59.33 cfs 4.274 af
36.0" Round Pipe n=0.012 L=160.0' S=0.0060 '/' Capacity=55.97 cfs Outflow=58.29 cfs 4.273 af

Reach 12CR: x-cntry intercept Avg. Flow Depth=3.41' Max Vel=6.31 fps Inflow=72.44 cfs 7.066 af
48.0" Round Pipe n=0.012 L=210.0' S=0.0020 '/' Capacity=69.59 cfs Outflow=71.03 cfs 7.062 af

Reach 12R: Deer Street Avg. Flow Depth=3.39' Max Vel=6.31 fps Inflow=72.39 cfs 5.399 af
48.0" Round Pipe n=0.012 L=160.0' S=0.0020 '/' Capacity=69.59 cfs Outflow=70.96 cfs 5.397 af

Pond 9: DMH #6 (Flow Splitter) Peak Elev=9.69' Inflow=82.02 cfs 6.951 af
Primary=65.53 cfs 6.255 af Secondary=16.49 cfs 0.696 af Outflow=82.02 cfs 6.951 af

Pond 13: Twin 48" Outfall Pipes Peak Elev=6.46' Inflow=140.28 cfs 12.459 af
48.0" Round Culvert x 2.00 n=0.012 L=360.0' S=0.0020 '/' Outflow=140.28 cfs 12.459 af

Summary for Subcatchment 1: Porter St. Area

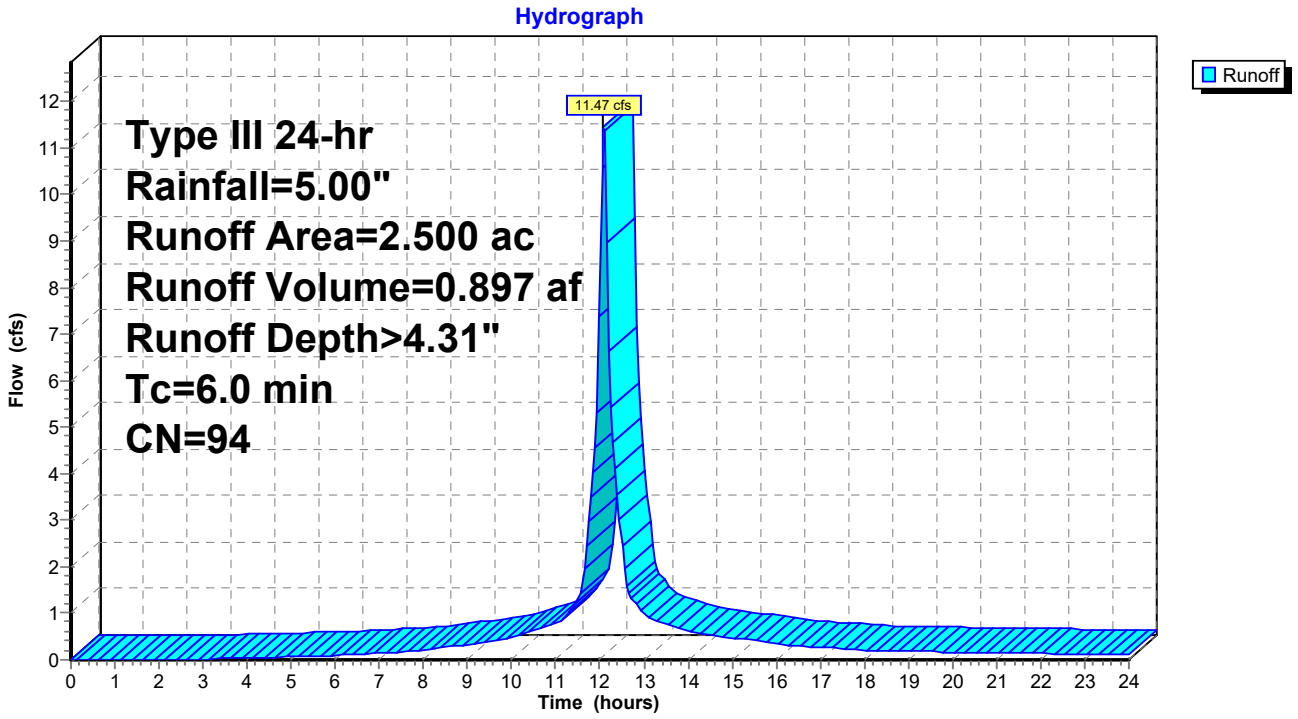
Runoff = 11.47 cfs @ 12.09 hrs, Volume= 0.897 af, Depth> 4.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.00"

	Area (ac)	CN	Description
*	2.500	94	Upper Fleet St

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 1: Porter St. Area



Summary for Subcatchment 2: Fleet/Congress Intersection

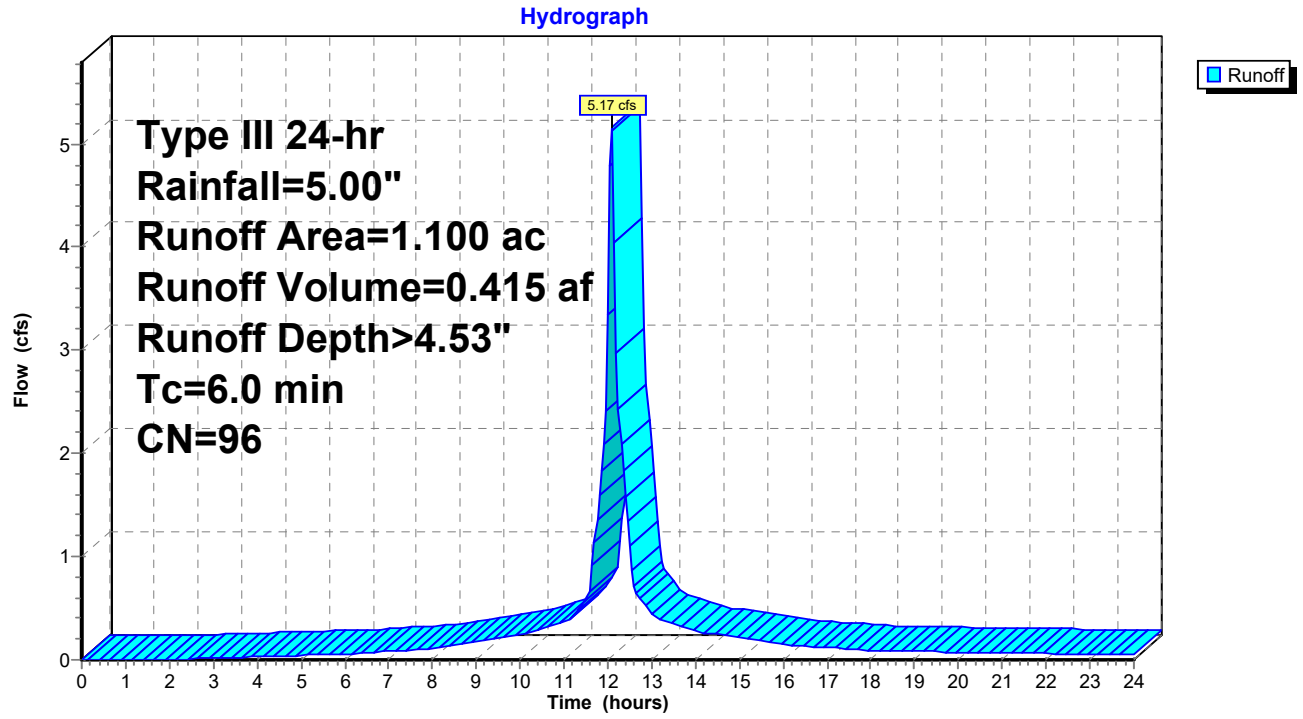
Runoff = 5.17 cfs @ 12.09 hrs, Volume= 0.415 af, Depth> 4.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.00"

	Area (ac)	CN	Description
*	1.100	96	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 2: Fleet/Congress Intersection



Summary for Subcatchment 3: Lower Fleet Area (includes garage)

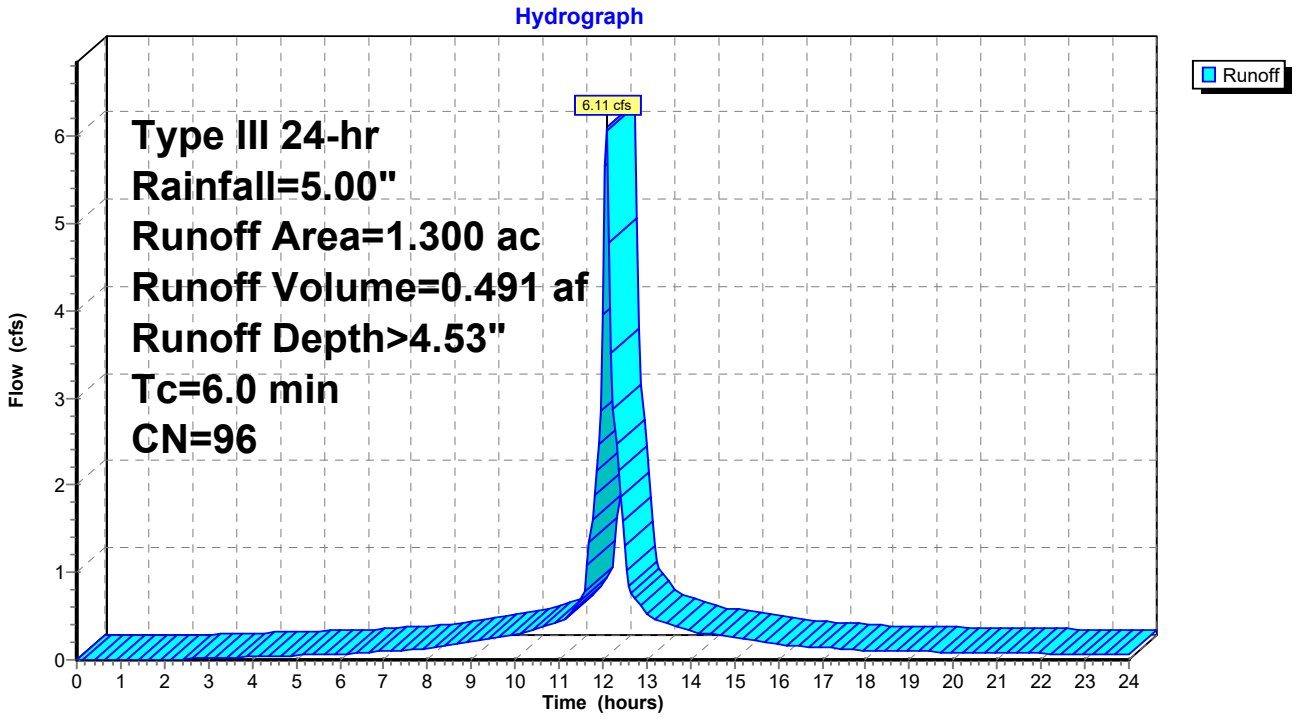
Runoff = 6.11 cfs @ 12.09 hrs, Volume= 0.491 af, Depth> 4.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.00"

	Area (ac)	CN	Description
*	1.300	96	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 3: Lower Fleet Area (includes garage)



Summary for Subcatchment 3B: Hanover Garage

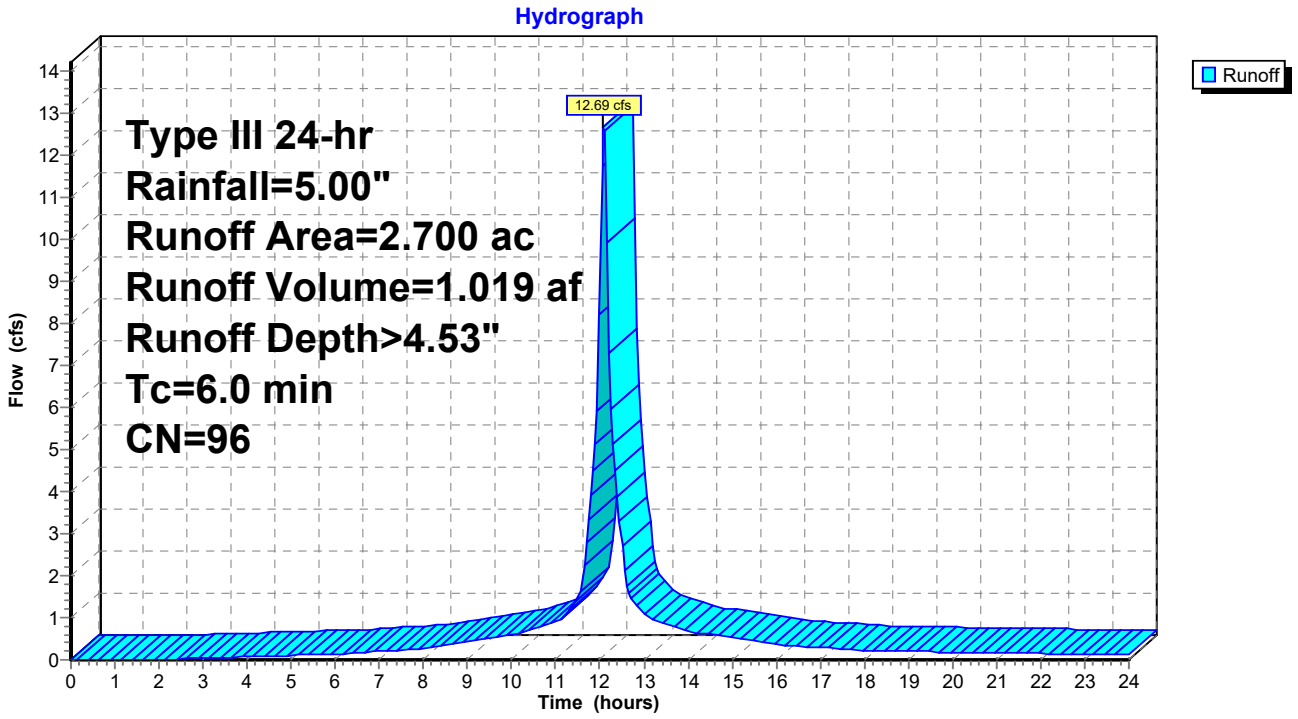
Runoff = 12.69 cfs @ 12.09 hrs, Volume= 1.019 af, Depth> 4.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.00"

	Area (ac)	CN	Description
*	2.700	96	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, minimum**

Subcatchment 3B: Hanover Garage



Summary for Subcatchment 4: Portwalk North & Upper Hanover

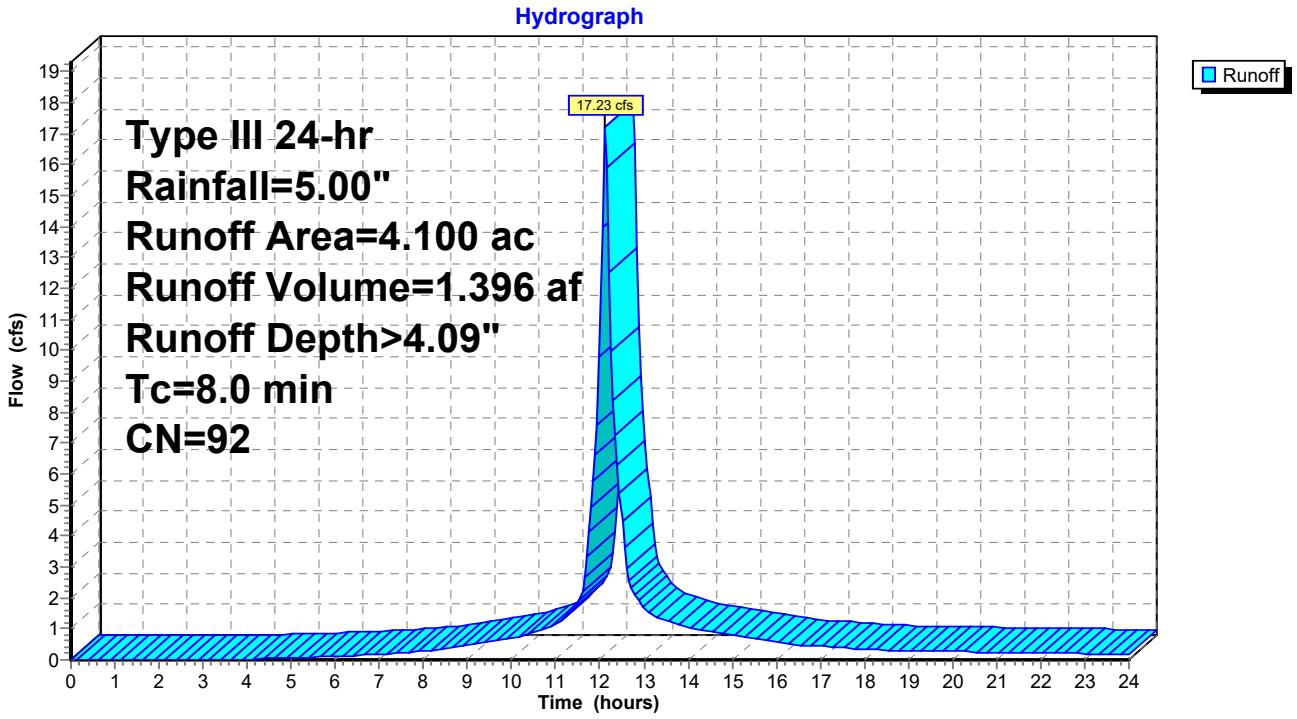
Runoff = 17.23 cfs @ 12.11 hrs, Volume= 1.396 af, Depth> 4.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.00"

	Area (ac)	CN	Description
*	4.100	92	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0					**Direct Entry,**

Subcatchment 4: Portwalk North & Upper Hanover



Summary for Subcatchment 5: Chestnut St. Area

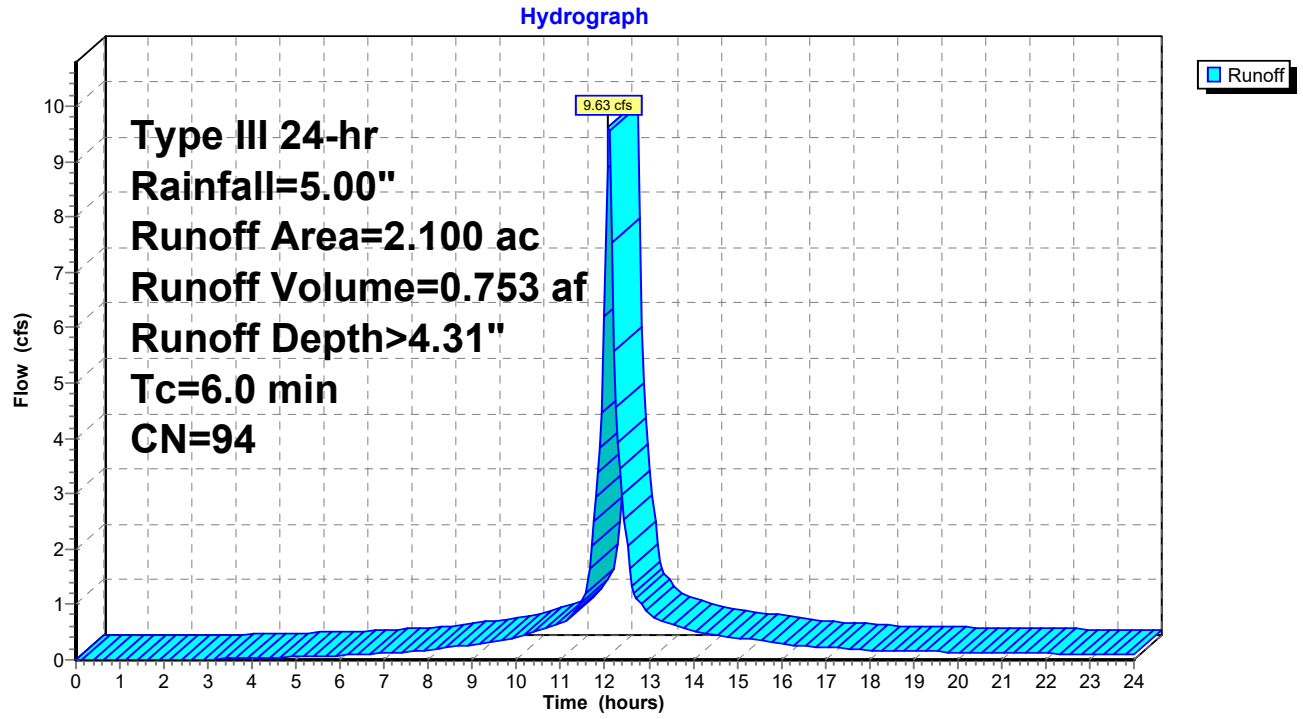
Runoff = 9.63 cfs @ 12.09 hrs, Volume= 0.753 af, Depth> 4.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.00"

	Area (ac)	CN	Description
*	2.100	94	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 5: Chestnut St. Area



Summary for Subcatchment 6: Congress St. Area

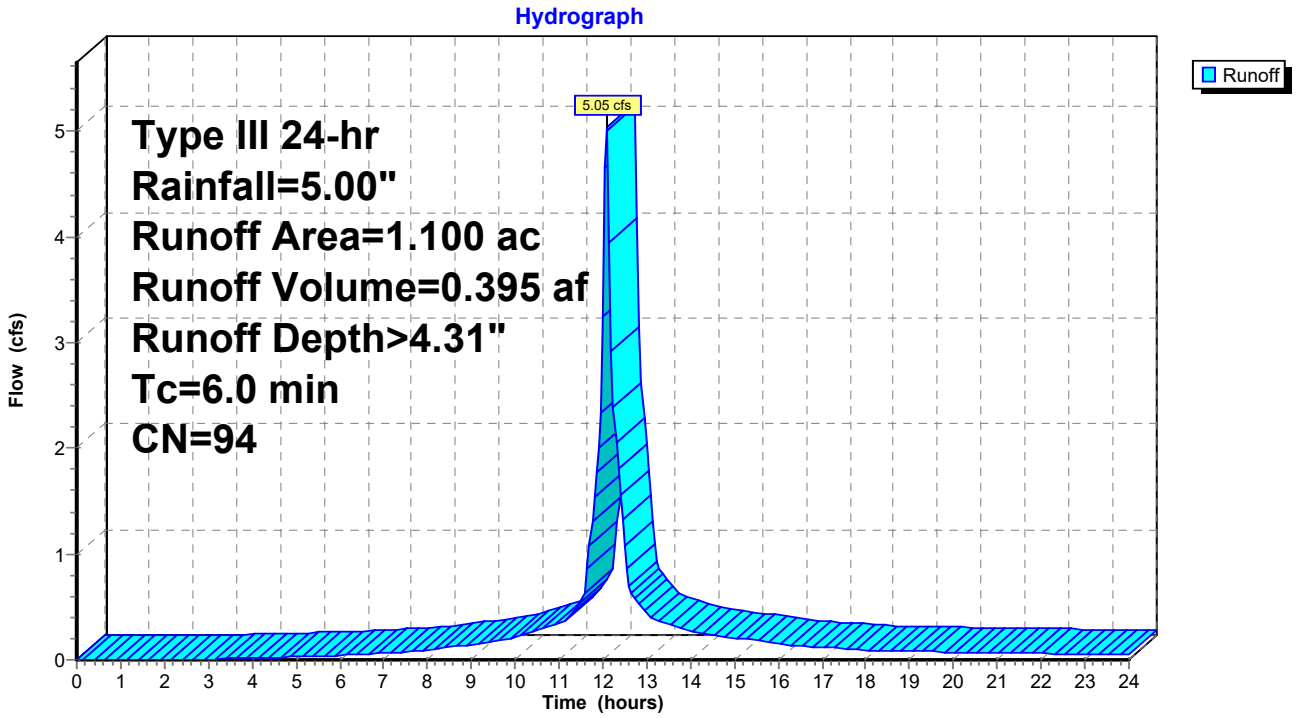
Runoff = 5.05 cfs @ 12.09 hrs, Volume= 0.395 af, Depth> 4.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.00"

	Area (ac)	CN	Description
*	1.100	94	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 6: Congress St. Area



Summary for Subcatchment 7: Worth Lot Drainage

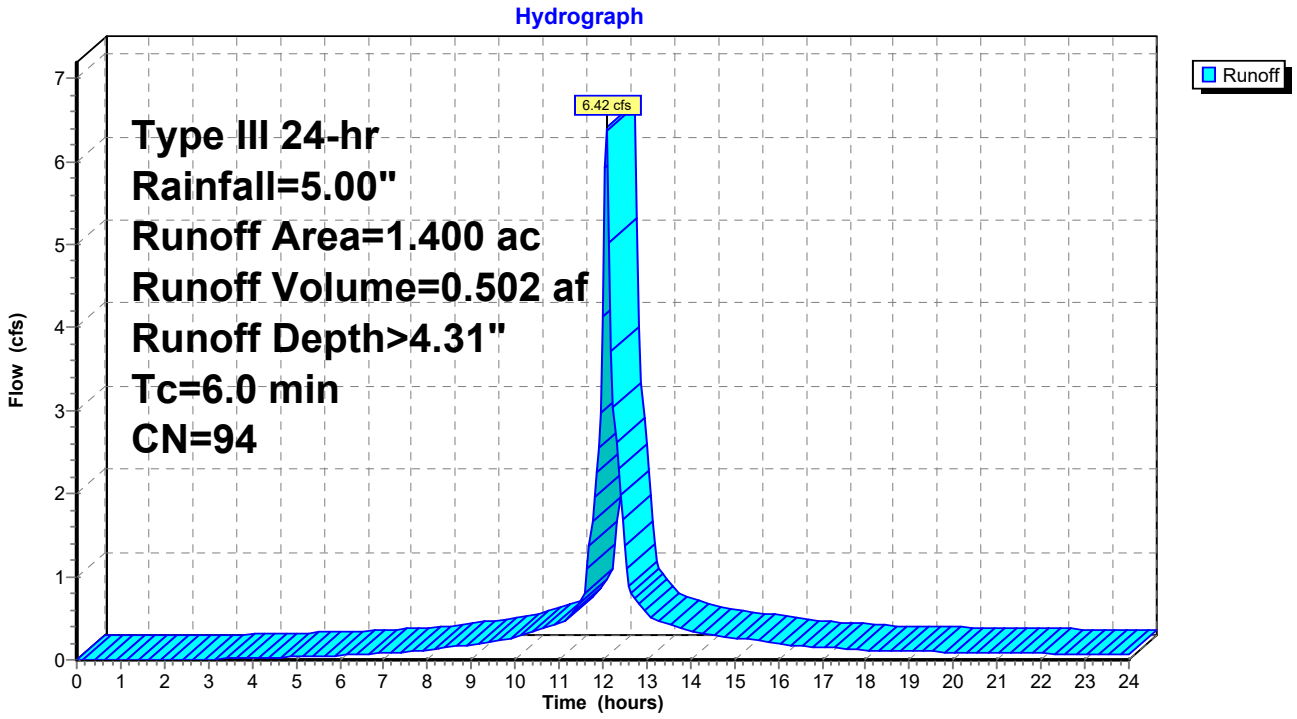
Runoff = 6.42 cfs @ 12.09 hrs, Volume= 0.502 af, Depth> 4.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.00"

	Area (ac)	CN	Description
*	1.400	94	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 7: Worth Lot Drainage



Summary for Subcatchment 8: 8

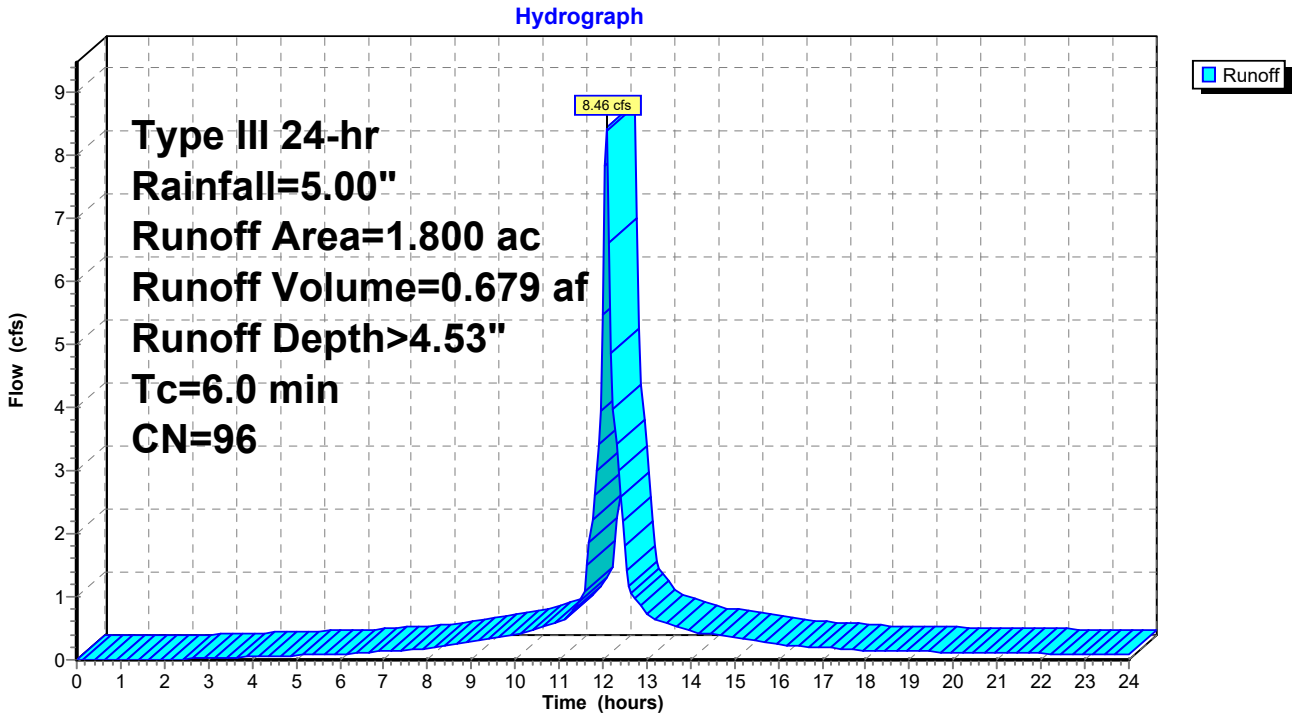
Runoff = 8.46 cfs @ 12.09 hrs, Volume= 0.679 af, Depth> 4.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.00"

	Area (ac)	CN	Description
*	1.800	96	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 8: 8



Summary for Subcatchment 8A: Portwalk

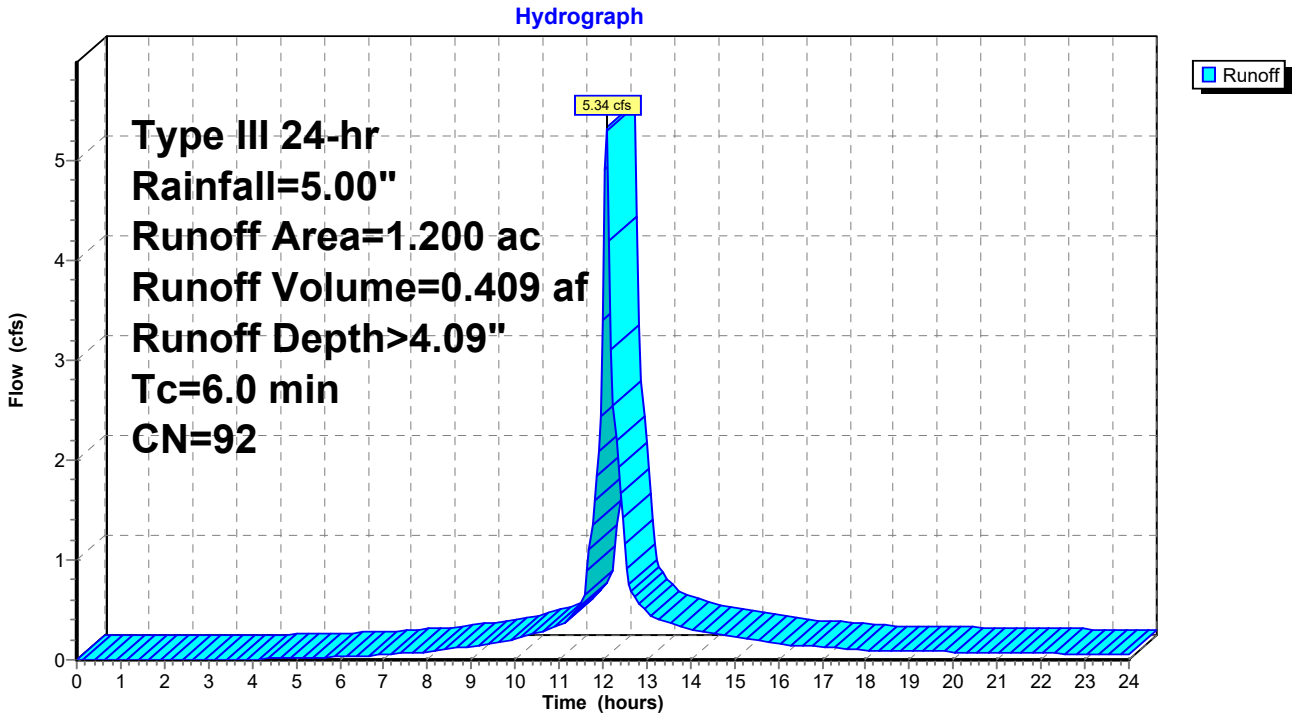
Runoff = 5.34 cfs @ 12.09 hrs, Volume= 0.409 af, Depth> 4.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.00"

	Area (ac)	CN	Description
*	1.200	92	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 8A: Portwalk

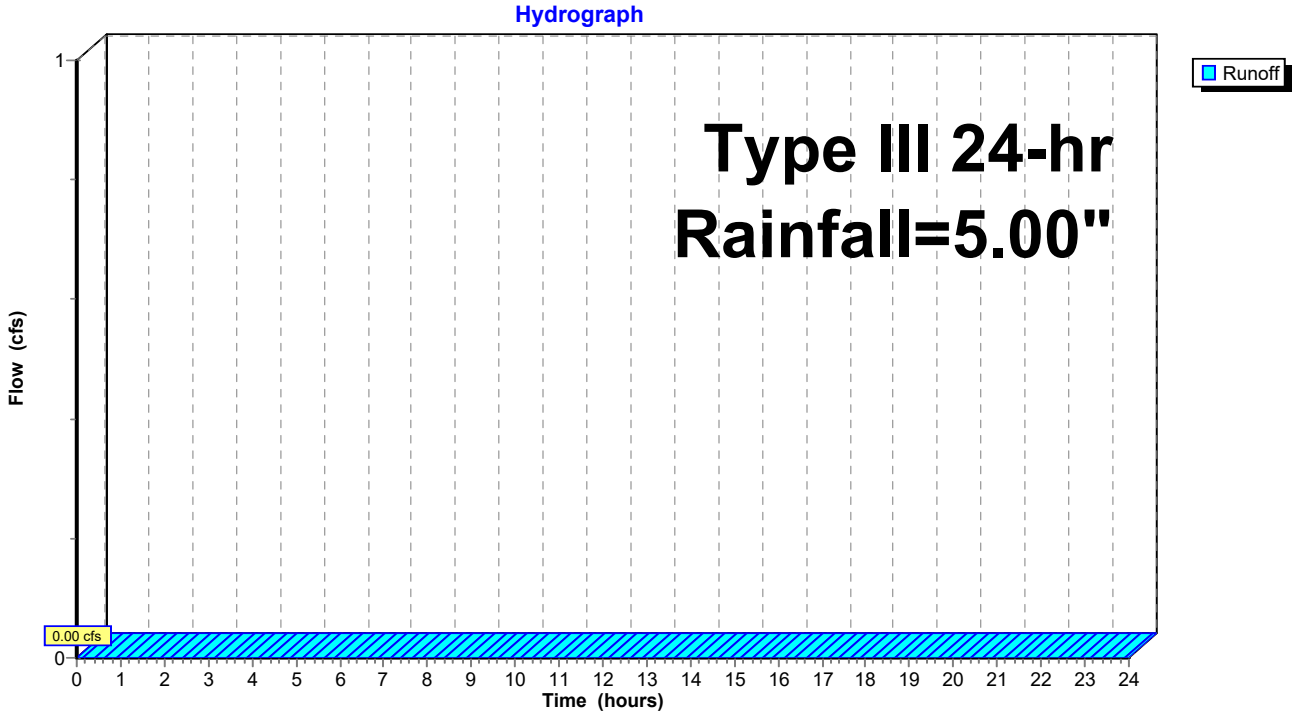


Summary for Subcatchment 9A: (new Subcat)

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.00"

Subcatchment 9A: (new Subcat)



Summary for Subcatchment 9S: Maplewood

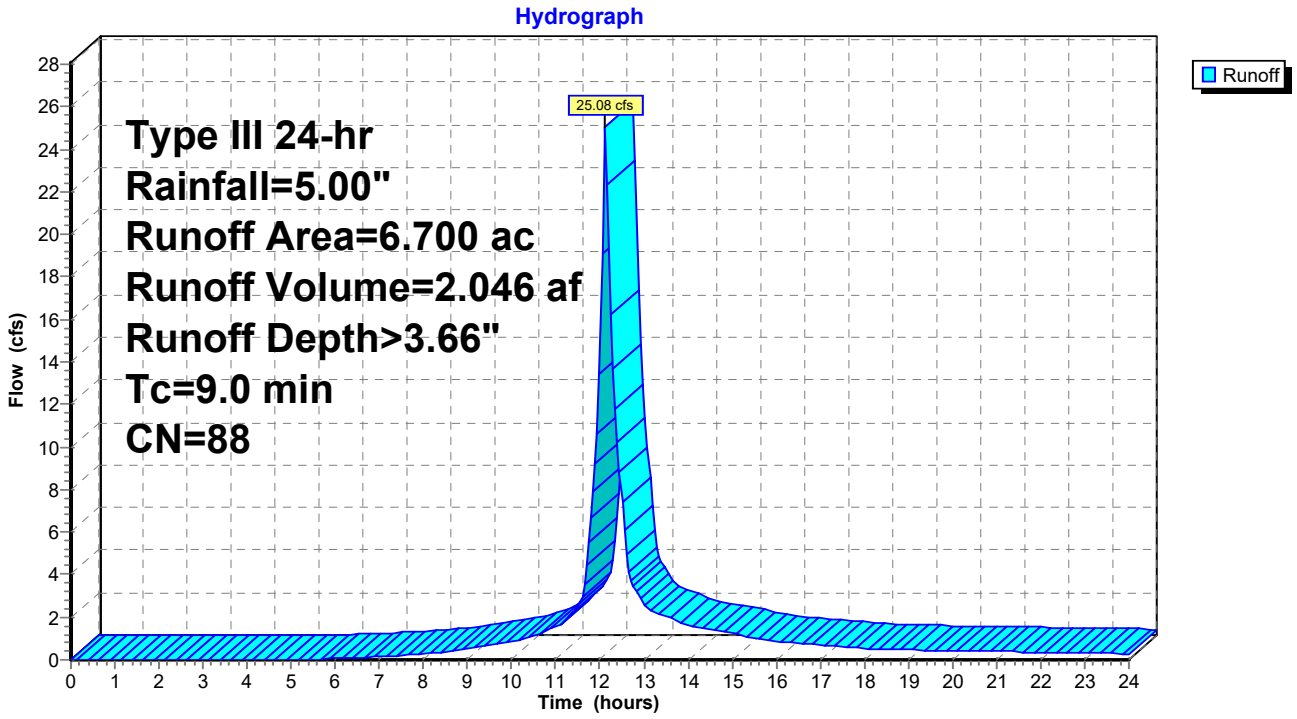
Runoff = 25.08 cfs @ 12.12 hrs, Volume= 2.046 af, Depth> 3.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.00"

	Area (ac)	CN	Description
*	6.700	88	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0					**Direct Entry,**

Subcatchment 9S: Maplewood



Summary for Subcatchment 10: Bridge St. Area

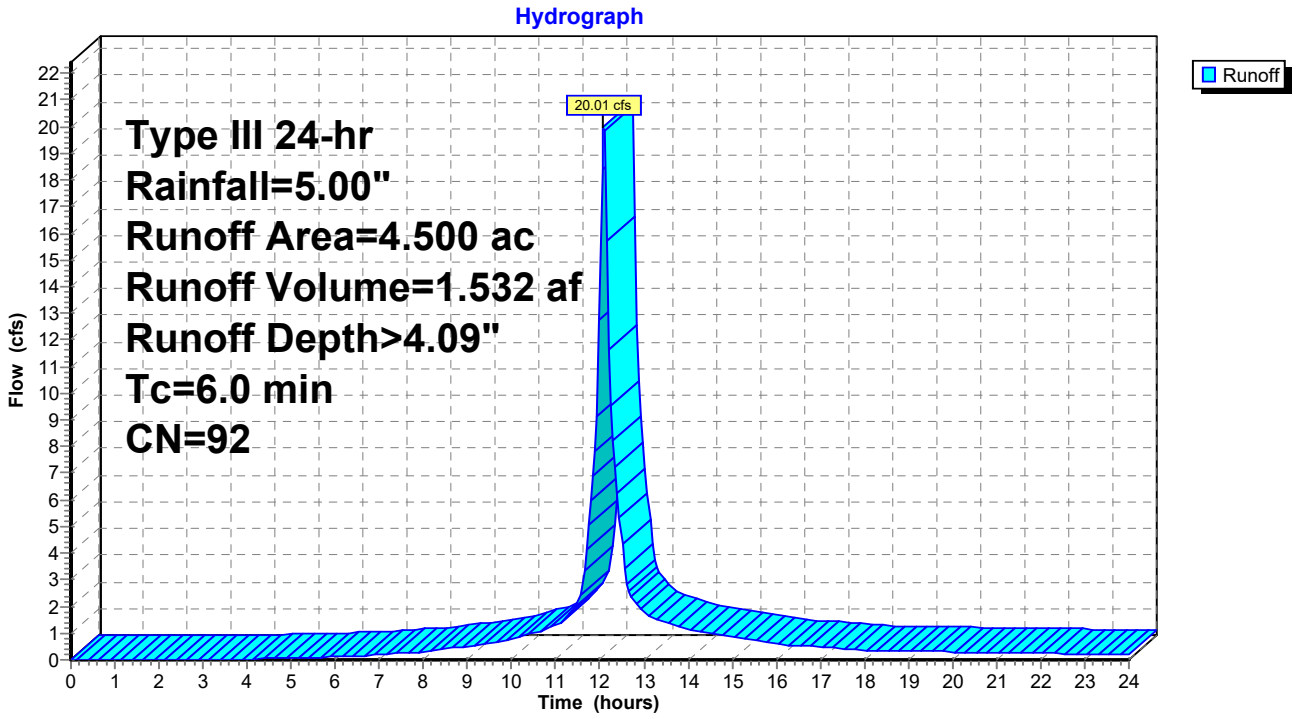
Runoff = 20.01 cfs @ 12.09 hrs, Volume= 1.532 af, Depth> 4.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.00"

	Area (ac)	CN	Description
*	4.500	92	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 10: Bridge St. Area



Summary for Subcatchment 11: Parking Garage/Lot

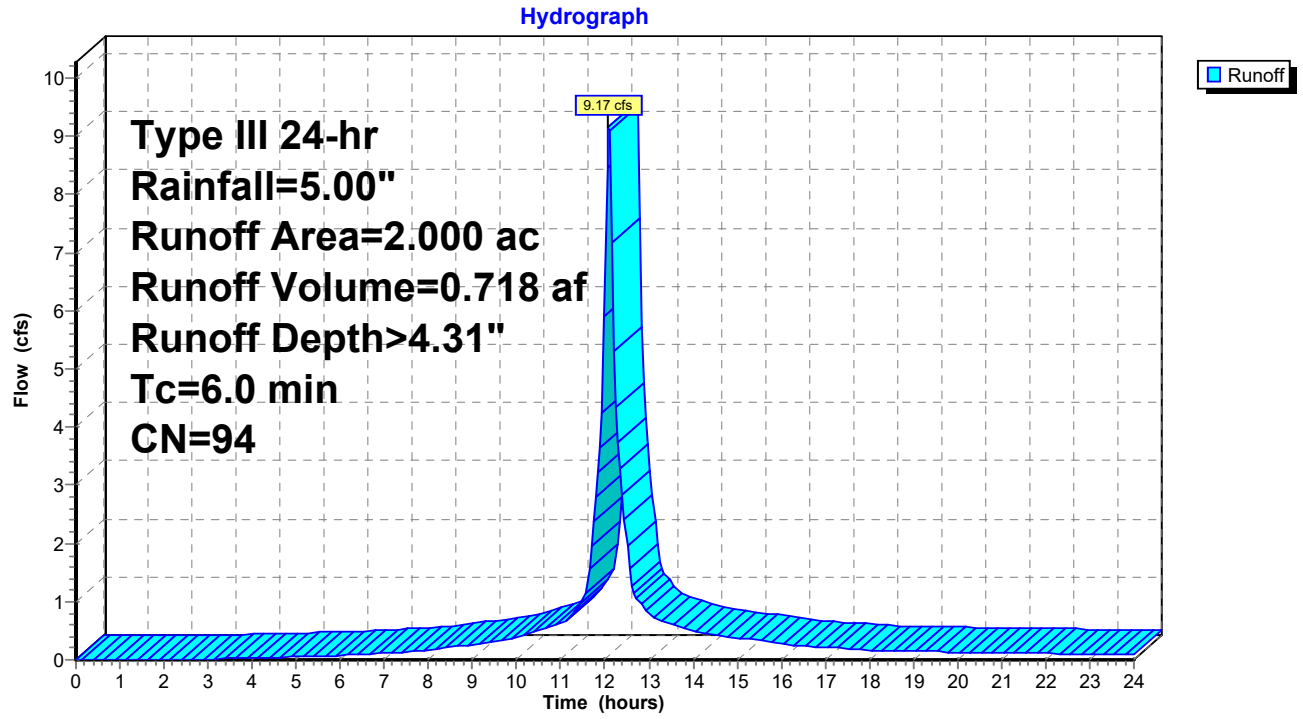
Runoff = 9.17 cfs @ 12.09 hrs, Volume= 0.718 af, Depth> 4.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.00"

	Area (ac)	CN	Description
*	2.000	94	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 11: Parking Garage/Lot



Summary for Subcatchment 12: Deer Street

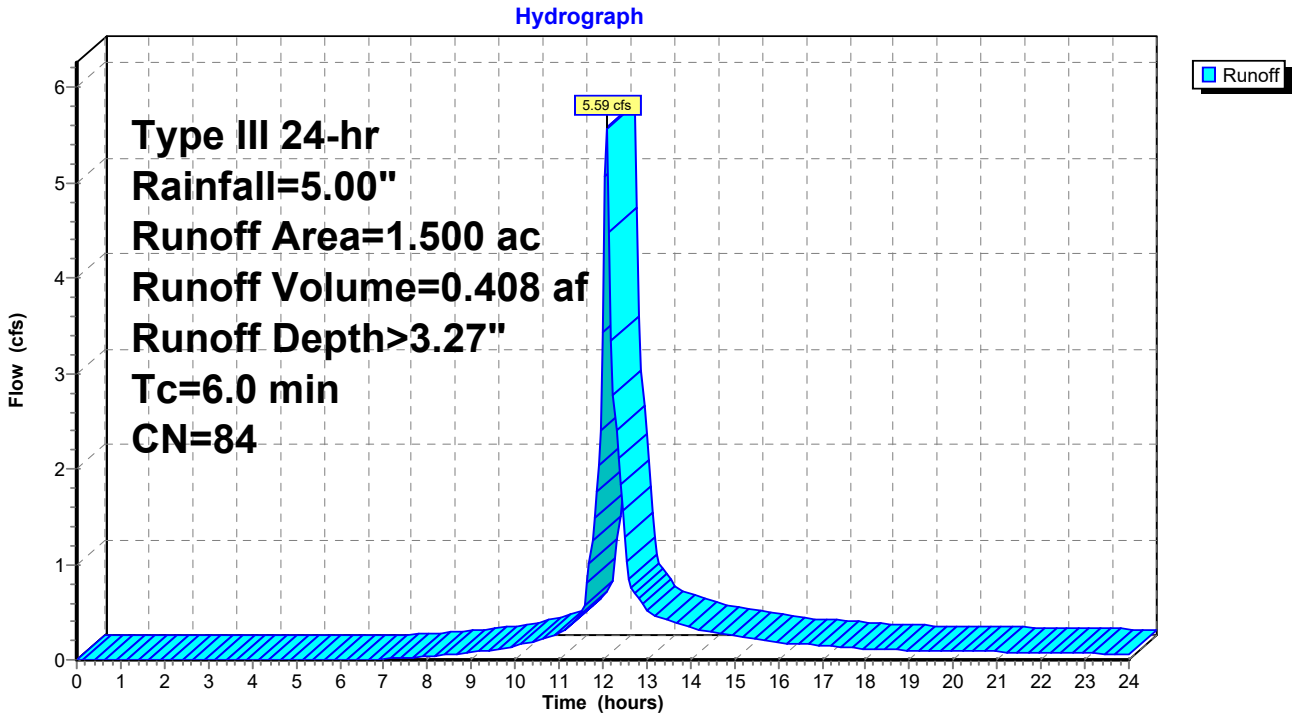
Runoff = 5.59 cfs @ 12.09 hrs, Volume= 0.408 af, Depth> 3.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.00"

	Area (ac)	CN	Description
*	1.500	84	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 12: Deer Street



Summary for Subcatchment 12A: Maplewood/Deer Street area

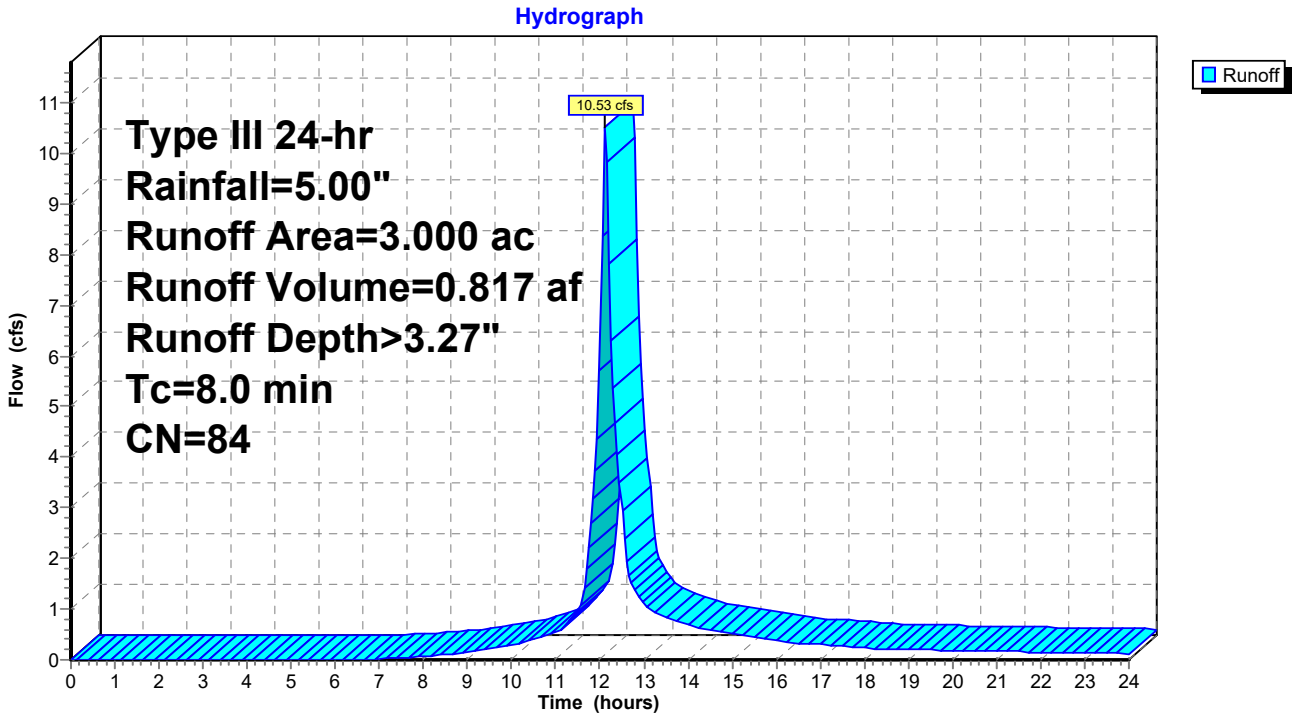
Runoff = 10.53 cfs @ 12.11 hrs, Volume= 0.817 af, Depth> 3.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.00"

	Area (ac)	CN	Description
*	3.000	84	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0					**Direct Entry,**

Subcatchment 12A: Maplewood/Deer Street area



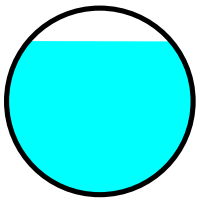
Summary for Reach 1R: Upper Fleet St. (Porter to Congress)

Inflow Area = 2.500 ac, Inflow Depth > 4.31"
Inflow = 11.47 cfs @ 12.09 hrs, Volume= 0.897 af
Outflow = 11.27 cfs @ 12.10 hrs, Volume= 0.897 af, Atten= 2%, Lag= 0.7 min

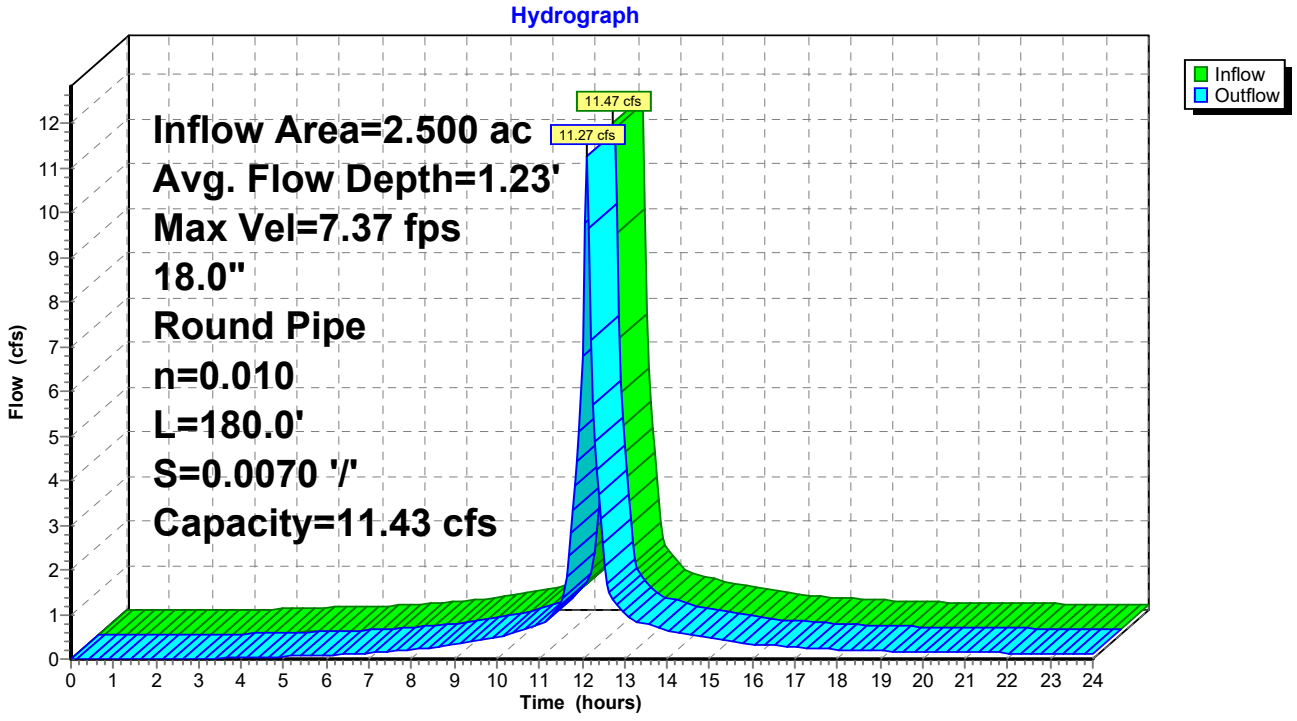
Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.37 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 2.69 fps, Avg. Travel Time= 1.1 min

Peak Storage= 280 cf @ 12.09 hrs
Average Depth at Peak Storage= 1.23'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 11.43 cfs

18.0" Round Pipe
n= 0.010
Length= 180.0' Slope= 0.0070 '/'
Inlet Invert= 0.00', Outlet Invert= -1.26'



Reach 1R: Upper Fleet St. (Porter to Congress)



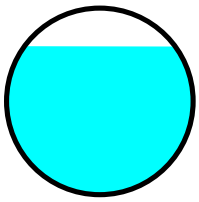
Summary for Reach 2R: Fleet St. (West of Congress)

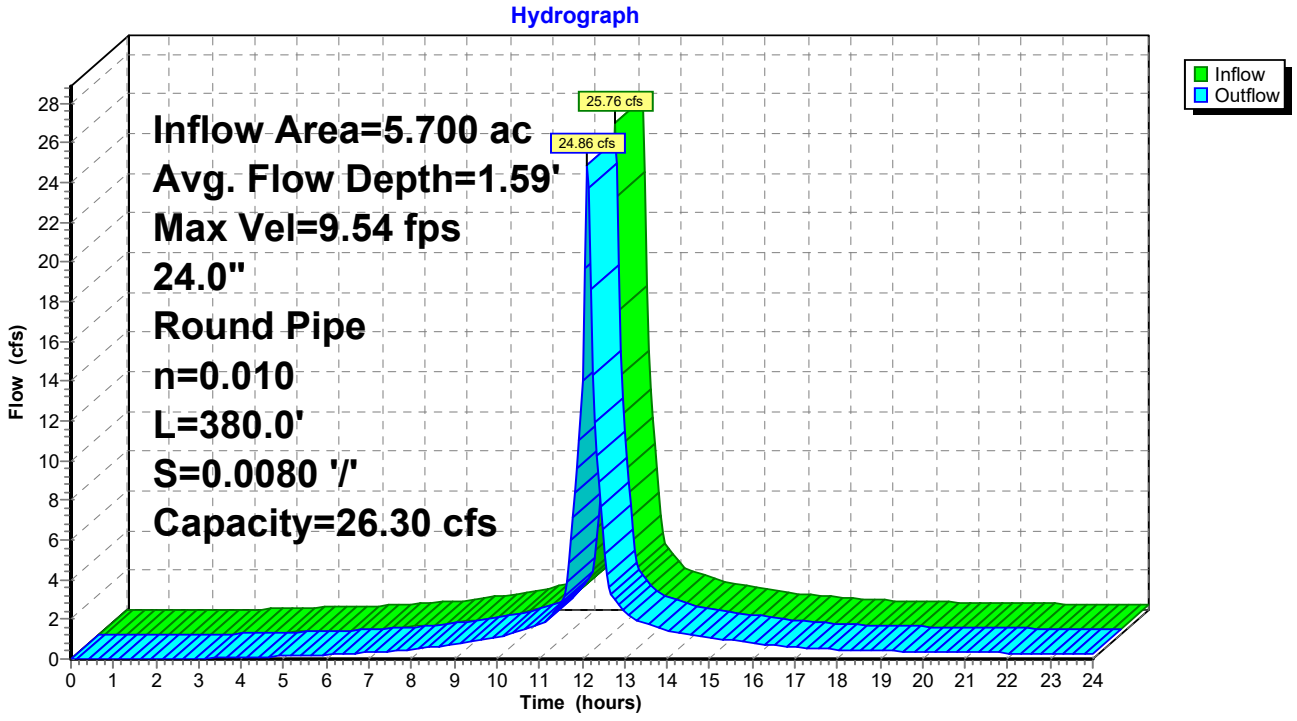
Inflow Area = 5.700 ac, Inflow Depth > 4.35"
Inflow = 25.76 cfs @ 12.10 hrs, Volume= 2.065 af
Outflow = 24.86 cfs @ 12.12 hrs, Volume= 2.064 af, Atten= 4%, Lag= 1.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.54 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 3.40 fps, Avg. Travel Time= 1.9 min

Peak Storage= 1,017 cf @ 12.11 hrs
Average Depth at Peak Storage= 1.59'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 26.30 cfs

24.0" Round Pipe
n= 0.010
Length= 380.0' Slope= 0.0080 '/'
Inlet Invert= 0.00', Outlet Invert= -3.04'





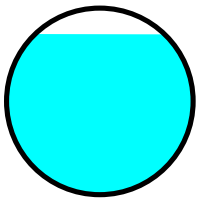
Summary for Reach 3R: Fleet St. to Hanover

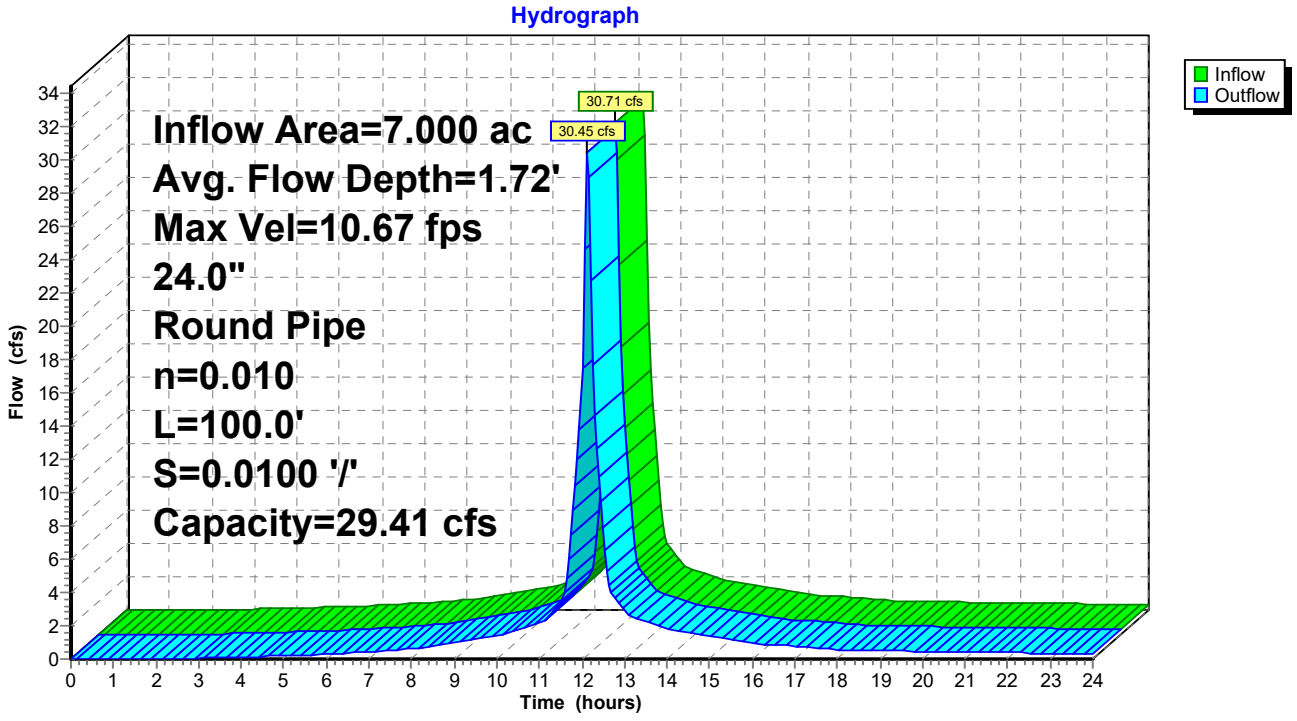
Inflow Area = 7.000 ac, Inflow Depth > 4.38"
Inflow = 30.71 cfs @ 12.11 hrs, Volume= 2.555 af
Outflow = 30.45 cfs @ 12.12 hrs, Volume= 2.554 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.67 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 3.92 fps, Avg. Travel Time= 0.4 min

Peak Storage= 288 cf @ 12.11 hrs
Average Depth at Peak Storage= 1.72'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 29.41 cfs

24.0" Round Pipe
n= 0.010
Length= 100.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -1.00'





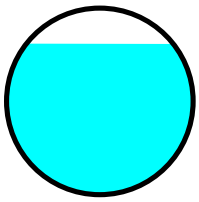
Summary for Reach 4R: Hanover - Downstream from Fleet

Inflow Area = 13.800 ac, Inflow Depth > 4.32"
Inflow = 59.96 cfs @ 12.11 hrs, Volume= 4.969 af
Outflow = 59.02 cfs @ 12.12 hrs, Volume= 4.968 af, Atten= 2%, Lag= 0.6 min

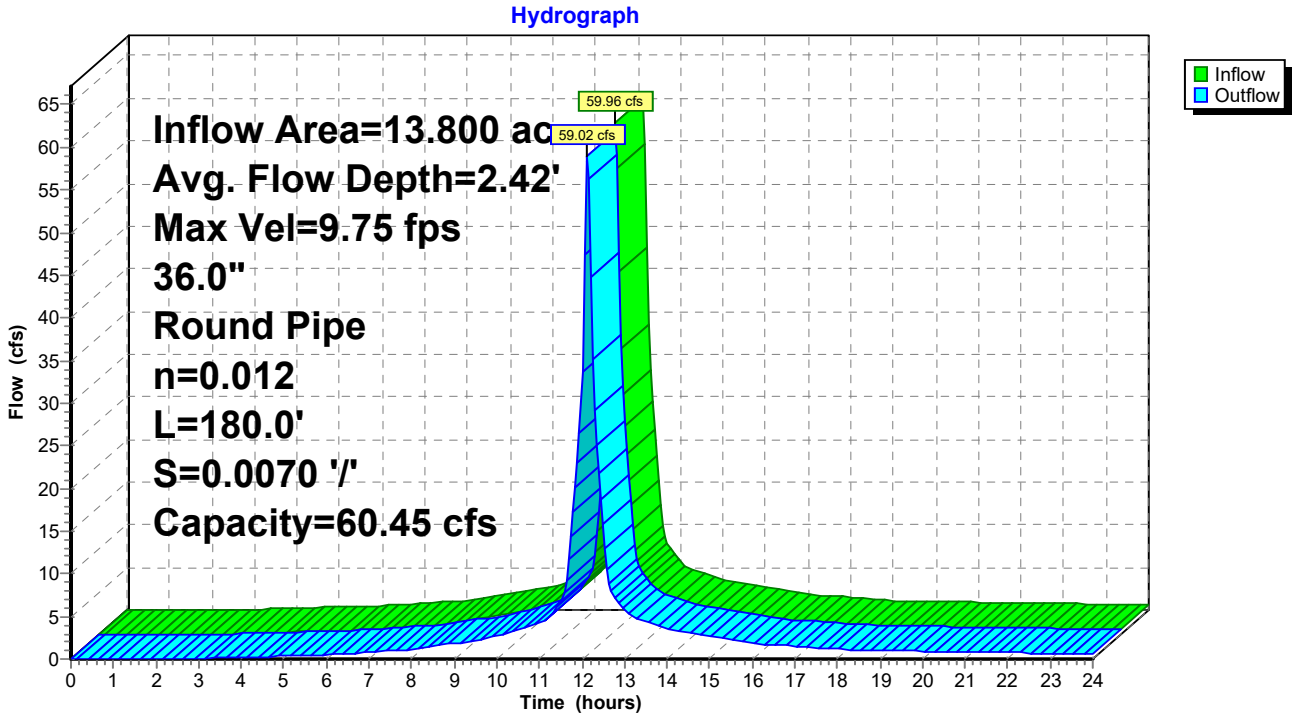
Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.75 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 3.52 fps, Avg. Travel Time= 0.9 min

Peak Storage= 1,102 cf @ 12.11 hrs
Average Depth at Peak Storage= 2.42'
Bank-Full Depth= 3.00' Flow Area= 7.1 sf, Capacity= 60.45 cfs

36.0" Round Pipe
n= 0.012
Length= 180.0' Slope= 0.0070 '/'
Inlet Invert= 0.00', Outlet Invert= -1.26'



Reach 4R: Hanover - Downstream from Fleet



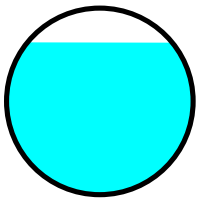
Summary for Reach 5R: Congress to Fleet

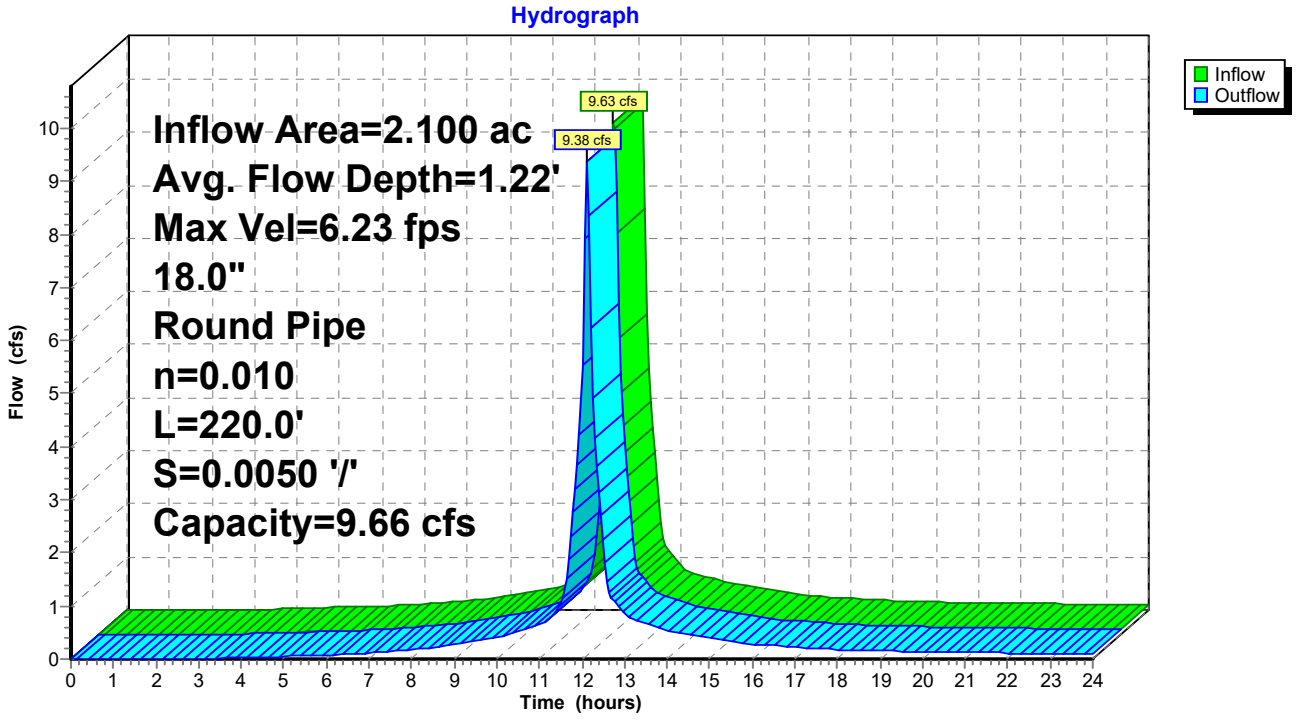
Inflow Area = 2.100 ac, Inflow Depth > 4.31"
Inflow = 9.63 cfs @ 12.09 hrs, Volume= 0.753 af
Outflow = 9.38 cfs @ 12.10 hrs, Volume= 0.753 af, Atten= 3%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.23 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 2.27 fps, Avg. Travel Time= 1.6 min

Peak Storage= 339 cf @ 12.10 hrs
Average Depth at Peak Storage= 1.22'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 9.66 cfs

18.0" Round Pipe
n= 0.010
Length= 220.0' Slope= 0.0050 '/'
Inlet Invert= 0.00', Outlet Invert= -1.10'





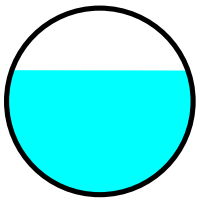
Summary for Reach 6R: Upper Vaughn Mall

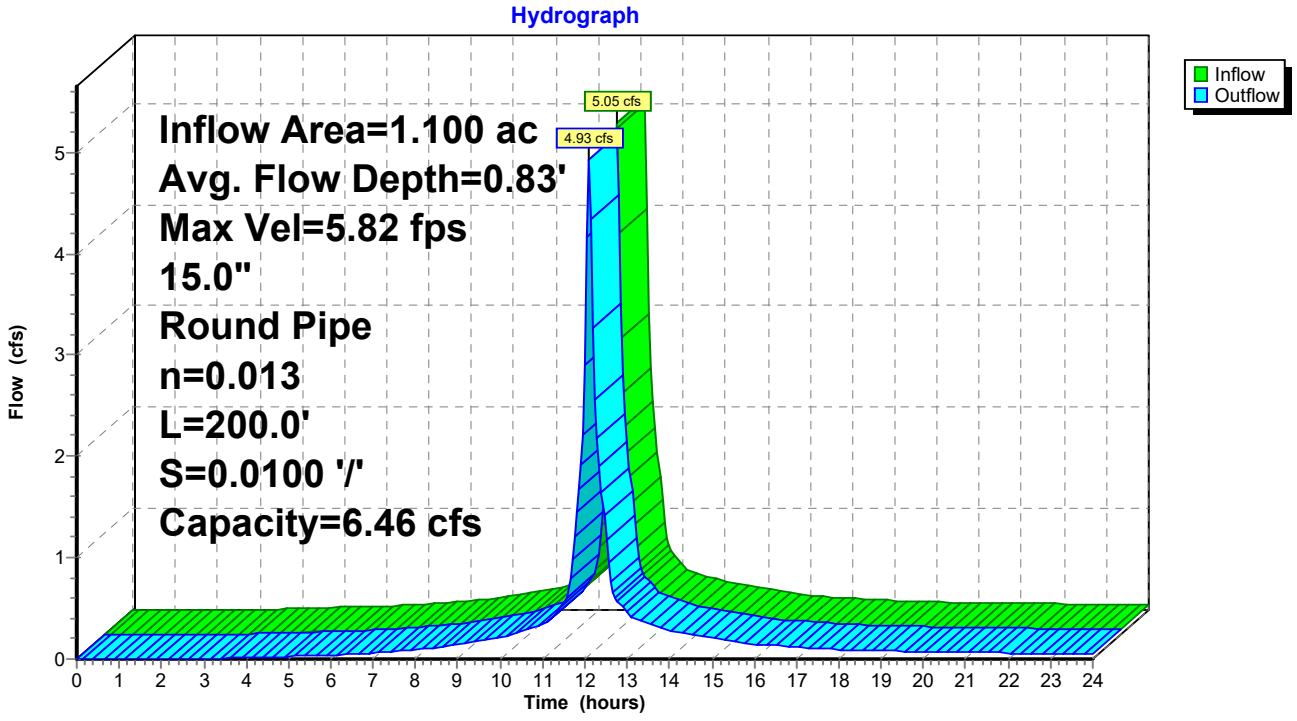
Inflow Area = 1.100 ac, Inflow Depth > 4.31"
Inflow = 5.05 cfs @ 12.09 hrs, Volume= 0.395 af
Outflow = 4.93 cfs @ 12.10 hrs, Volume= 0.394 af, Atten= 2%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.82 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 2.03 fps, Avg. Travel Time= 1.6 min

Peak Storage= 173 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.83'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 6.46 cfs

15.0" Round Pipe
n= 0.013
Length= 200.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -2.00'





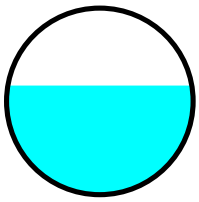
Summary for Reach 7R: Lower Vaughn Mall to Hanover

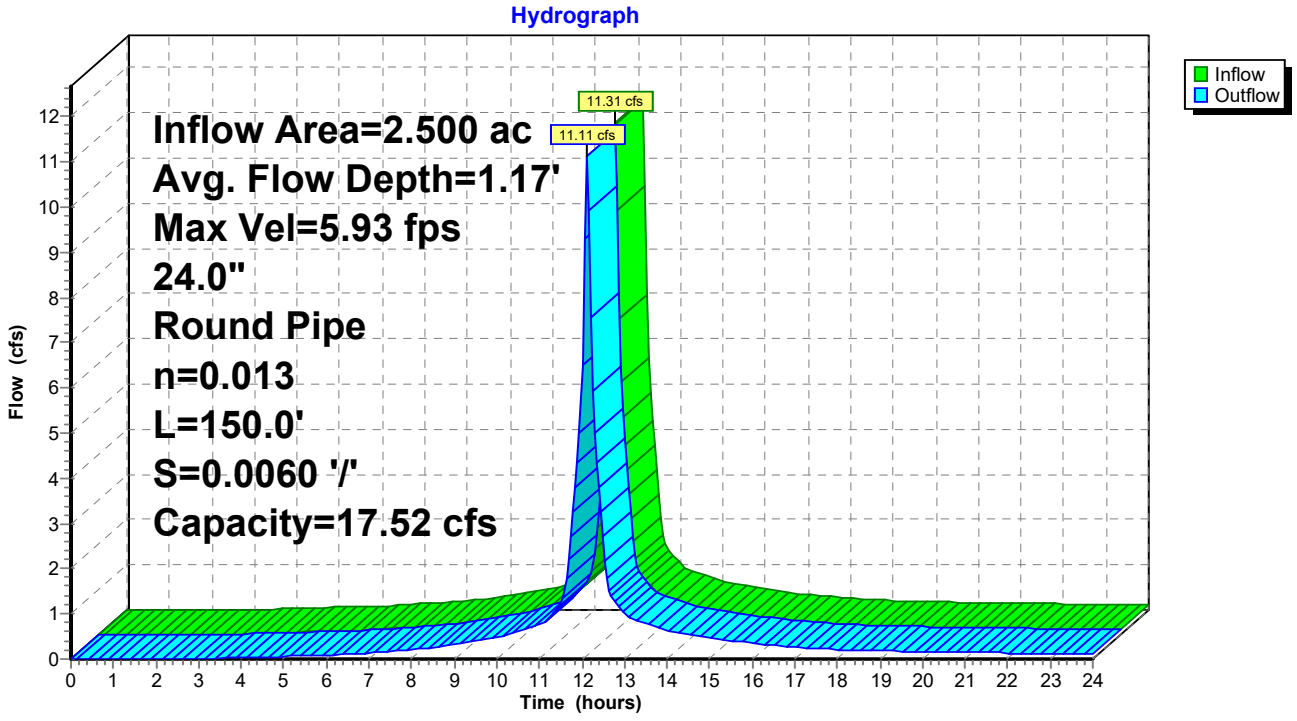
Inflow Area = 2.500 ac, Inflow Depth > 4.30"
Inflow = 11.31 cfs @ 12.09 hrs, Volume= 0.897 af
Outflow = 11.11 cfs @ 12.11 hrs, Volume= 0.896 af, Atten= 2%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.93 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 2.04 fps, Avg. Travel Time= 1.2 min

Peak Storage= 286 cf @ 12.10 hrs
Average Depth at Peak Storage= 1.17'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 17.52 cfs

24.0" Round Pipe
n= 0.013
Length= 150.0' Slope= 0.0060 '/'
Inlet Invert= 0.00', Outlet Invert= -0.90'





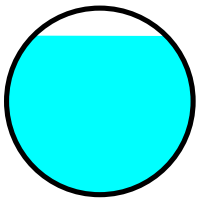
Summary for Reach 8R: Exist. 36" RCP, Downstream of V. Mall

Inflow Area = 17.500 ac, Inflow Depth > 4.30"
Inflow = 75.20 cfs @ 12.11 hrs, Volume= 6.273 af
Outflow = 74.07 cfs @ 12.12 hrs, Volume= 6.272 af, Atten= 2%, Lag= 0.6 min

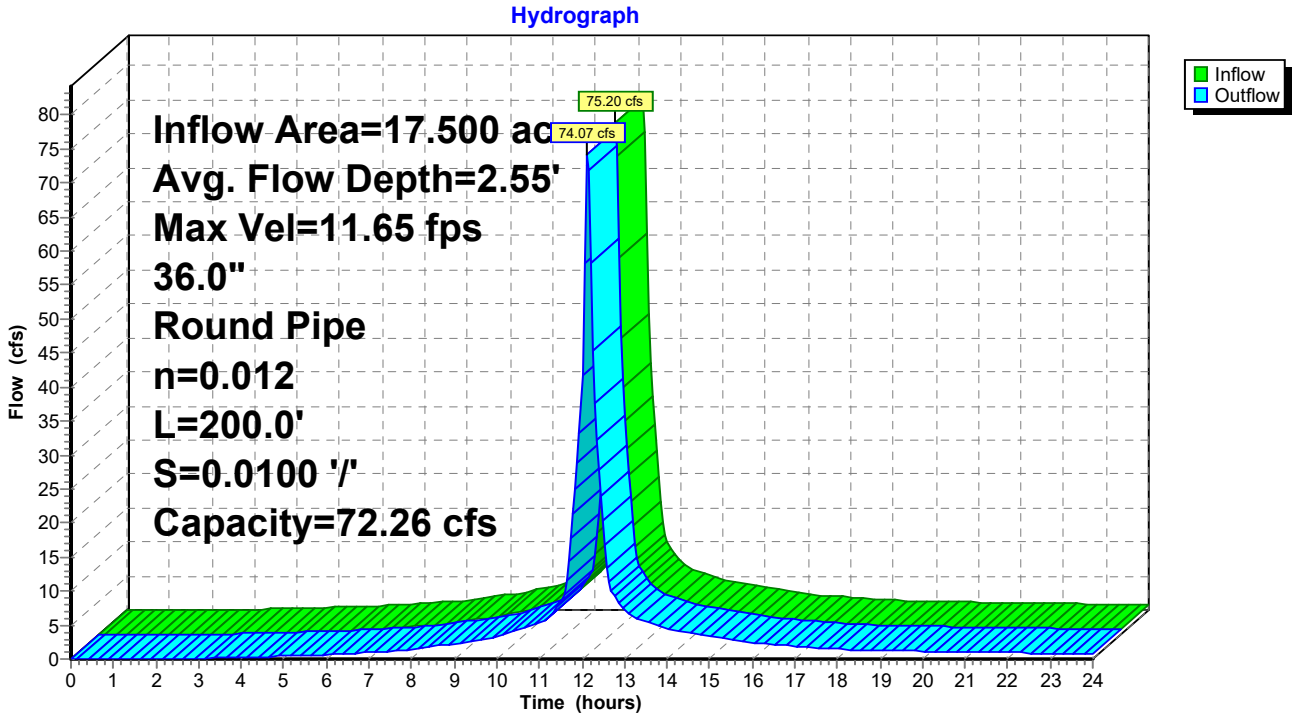
Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.65 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 4.27 fps, Avg. Travel Time= 0.8 min

Peak Storage= 1,285 cf @ 12.12 hrs
Average Depth at Peak Storage= 2.55'
Bank-Full Depth= 3.00' Flow Area= 7.1 sf, Capacity= 72.26 cfs

36.0" Round Pipe
n= 0.012
Length= 200.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -2.00'



Reach 8R: Exist. 36" RCP, Downstream of V. Mall



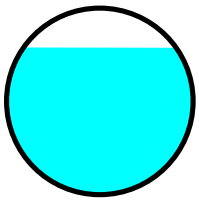
Summary for Reach 9AR: Maplewood Intercept

Inflow Area = 19.300 ac, Inflow Depth > 3.89"
Inflow = 65.53 cfs @ 12.12 hrs, Volume= 6.255 af
Outflow = 65.38 cfs @ 12.12 hrs, Volume= 6.255 af, Atten= 0%, Lag= 0.1 min

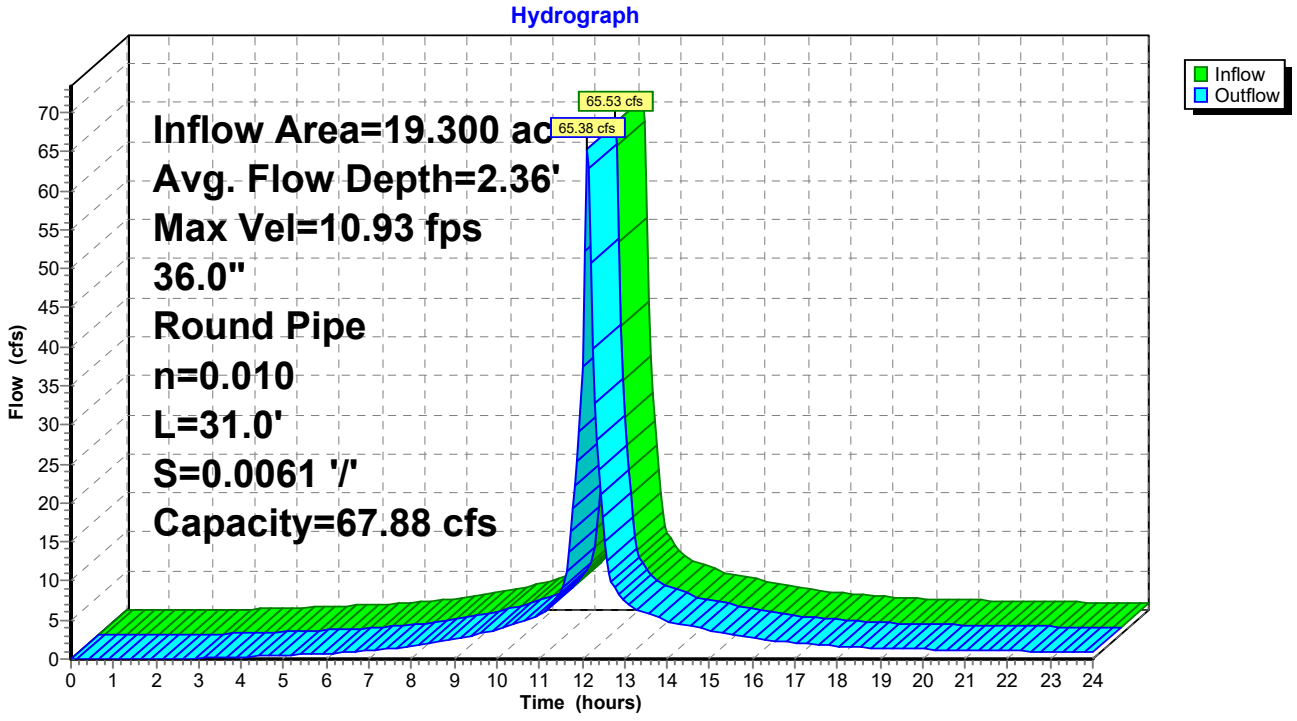
Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.93 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 4.18 fps, Avg. Travel Time= 0.1 min

Peak Storage= 185 cf @ 12.12 hrs
Average Depth at Peak Storage= 2.36'
Bank-Full Depth= 3.00' Flow Area= 7.1 sf, Capacity= 67.88 cfs

36.0" Round Pipe
n= 0.010
Length= 31.0' Slope= 0.0061 '/'
Inlet Invert= 0.00', Outlet Invert= -0.19'



Reach 9AR: Maplewood Intercept



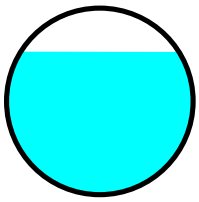
Summary for Reach 9BR: Maplewood Intercept

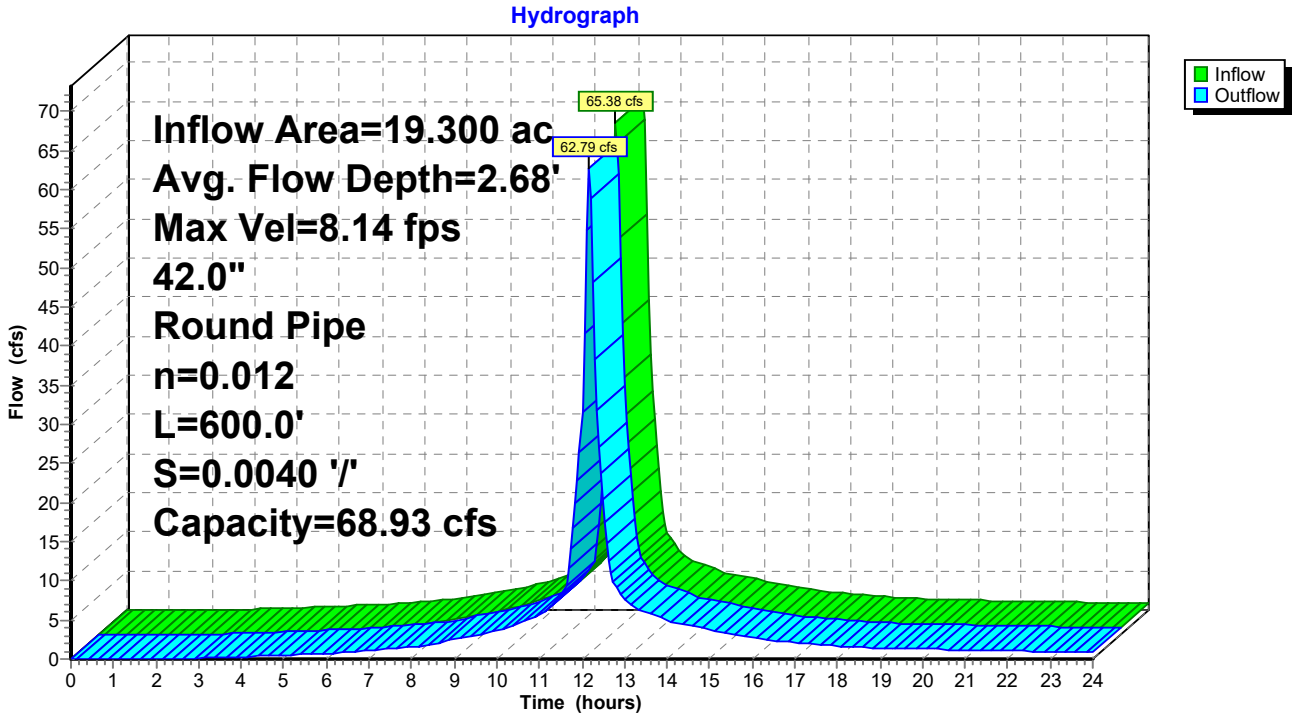
Inflow Area = 19.300 ac, Inflow Depth > 3.89"
Inflow = 65.38 cfs @ 12.12 hrs, Volume= 6.255 af
Outflow = 62.79 cfs @ 12.16 hrs, Volume= 6.249 af, Atten= 4%, Lag= 2.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.14 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 3.10 fps, Avg. Travel Time= 3.2 min

Peak Storage= 4,740 cf @ 12.14 hrs
Average Depth at Peak Storage= 2.68'
Bank-Full Depth= 3.50' Flow Area= 9.6 sf, Capacity= 68.93 cfs

42.0" Round Pipe
n= 0.012
Length= 600.0' Slope= 0.0040 '/'
Inlet Invert= 0.00', Outlet Invert= -2.40'





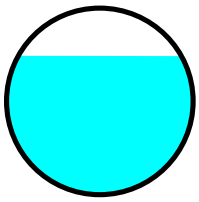
Summary for Reach 10R: Upper Bridge St.

Inflow Area = 6.700 ac, Inflow Depth > 4.91"
Inflow = 41.55 cfs @ 12.12 hrs, Volume= 2.742 af
Outflow = 40.88 cfs @ 12.14 hrs, Volume= 2.741 af, Atten= 2%, Lag= 0.9 min

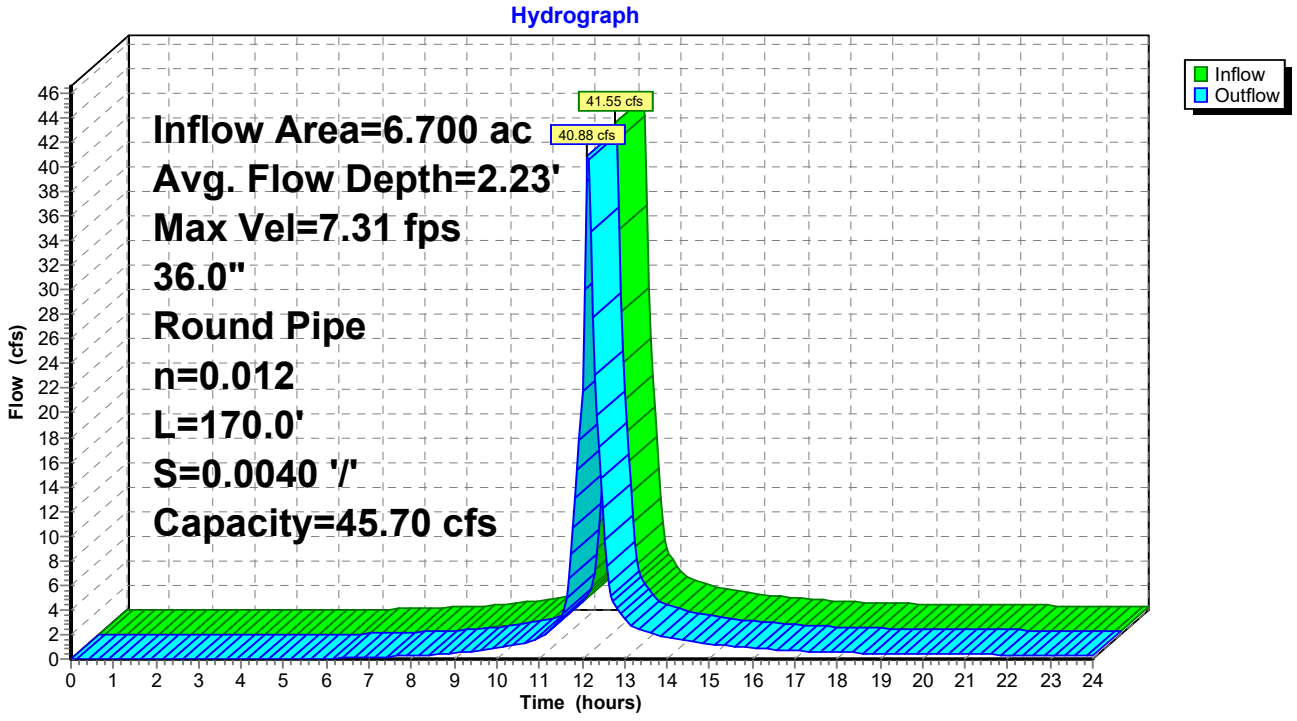
Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.31 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 2.41 fps, Avg. Travel Time= 1.2 min

Peak Storage= 959 cf @ 12.13 hrs
Average Depth at Peak Storage= 2.23'
Bank-Full Depth= 3.00' Flow Area= 7.1 sf, Capacity= 45.70 cfs

36.0" Round Pipe
n= 0.012
Length= 170.0' Slope= 0.0040 '/'
Inlet Invert= 0.00', Outlet Invert= -0.68'



Reach 10R: Upper Bridge St.



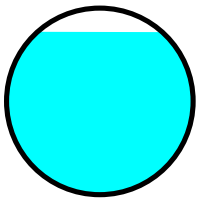
Summary for Reach 11R: Bridge Street Sag

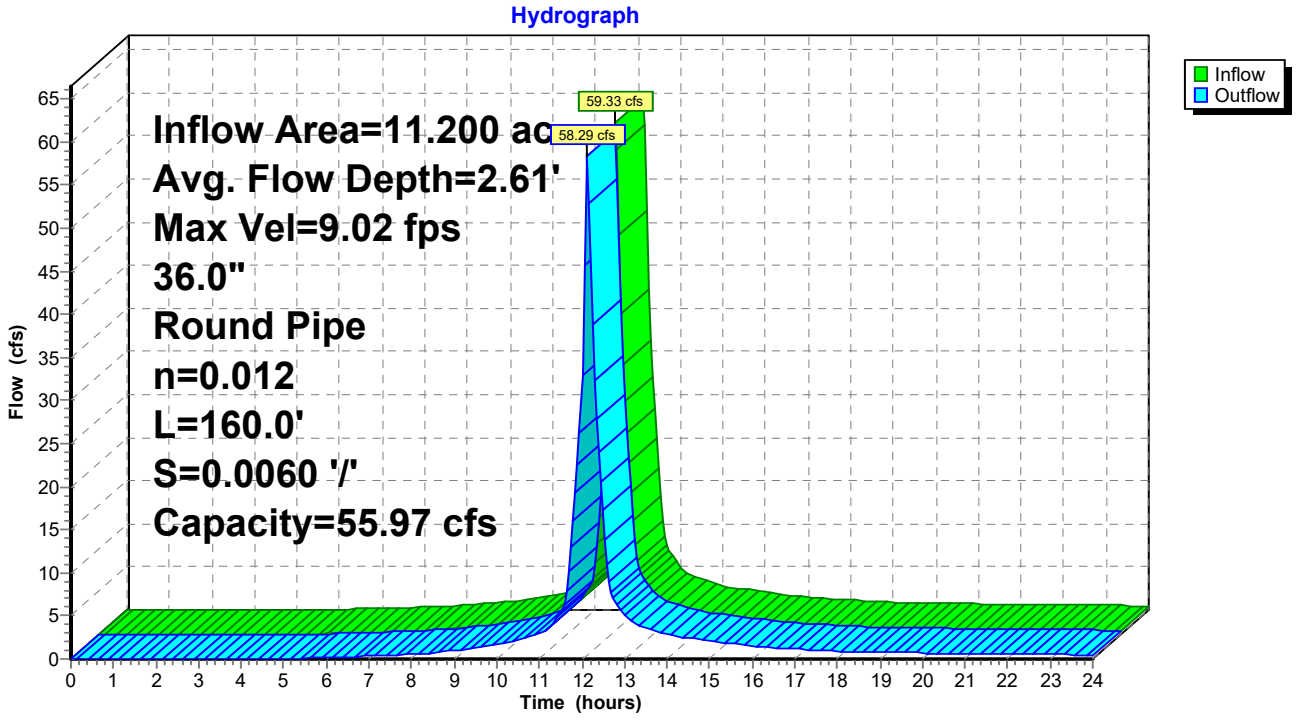
Inflow Area = 11.200 ac, Inflow Depth > 4.58"
Inflow = 59.33 cfs @ 12.12 hrs, Volume= 4.274 af
Outflow = 58.29 cfs @ 12.13 hrs, Volume= 4.273 af, Atten= 2%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.02 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 3.12 fps, Avg. Travel Time= 0.9 min

Peak Storage= 1,049 cf @ 12.12 hrs
Average Depth at Peak Storage= 2.61'
Bank-Full Depth= 3.00' Flow Area= 7.1 sf, Capacity= 55.97 cfs

36.0" Round Pipe
n= 0.012
Length= 160.0' Slope= 0.0060 '/'
Inlet Invert= 0.00', Outlet Invert= -0.96'





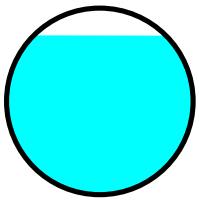
Summary for Reach 12CR: x-cntry intercept

Inflow Area = 22.300 ac, Inflow Depth > 3.80"
Inflow = 72.44 cfs @ 12.15 hrs, Volume= 7.066 af
Outflow = 71.03 cfs @ 12.17 hrs, Volume= 7.062 af, Atten= 2%, Lag= 1.1 min

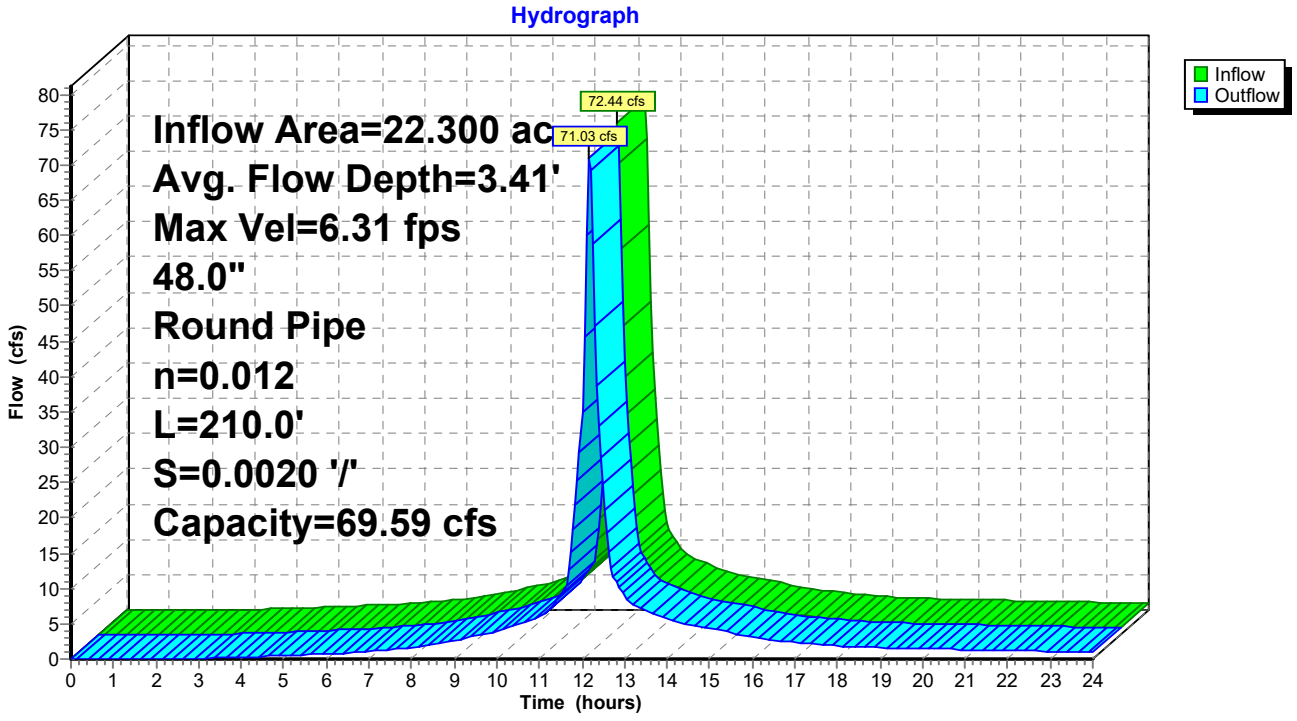
Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.31 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 2.46 fps, Avg. Travel Time= 1.4 min

Peak Storage= 2,400 cf @ 12.16 hrs
Average Depth at Peak Storage= 3.41'
Bank-Full Depth= 4.00' Flow Area= 12.6 sf, Capacity= 69.59 cfs

48.0" Round Pipe
n= 0.012
Length= 210.0' Slope= 0.0020 '/'
Inlet Invert= 0.00', Outlet Invert= -0.42'



Reach 12CR: x-cntry intercept



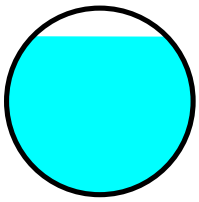
Summary for Reach 12R: Deer Street

Inflow Area = 14.700 ac, Inflow Depth > 4.41"
Inflow = 72.39 cfs @ 12.12 hrs, Volume= 5.399 af
Outflow = 70.96 cfs @ 12.13 hrs, Volume= 5.397 af, Atten= 2%, Lag= 1.0 min

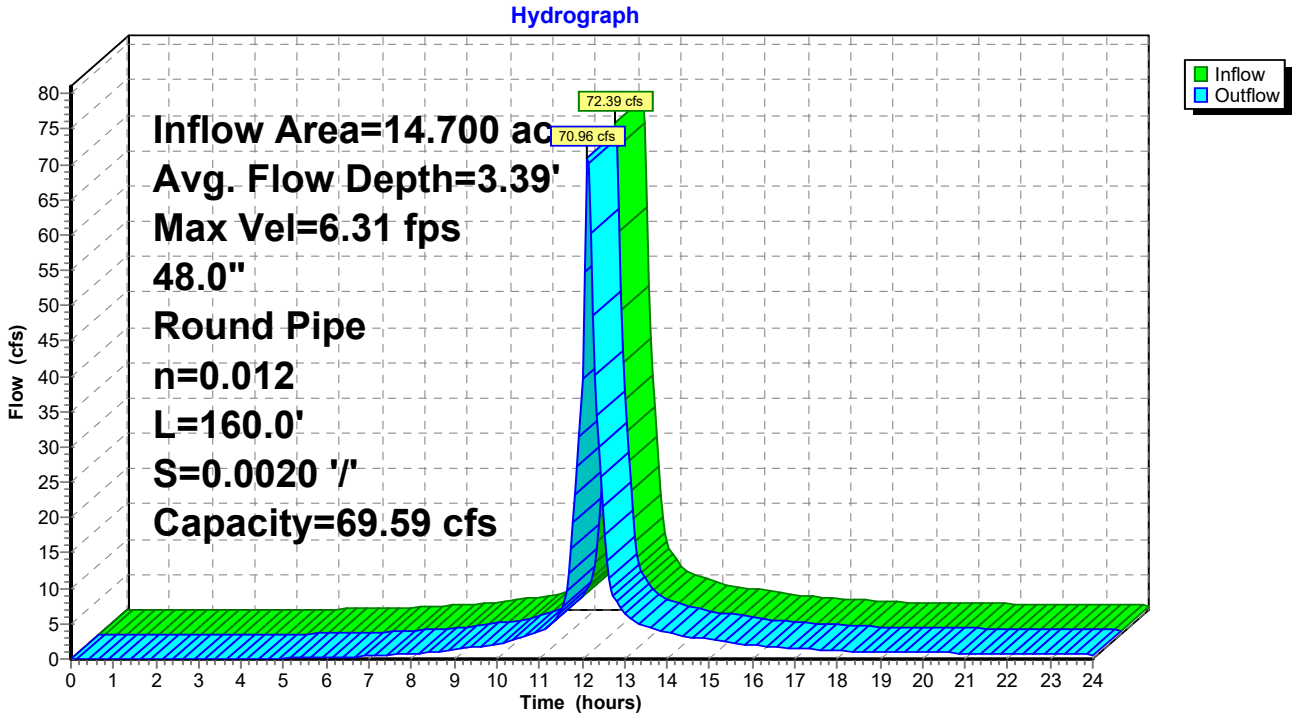
Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.31 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 2.16 fps, Avg. Travel Time= 1.2 min

Peak Storage= 1,823 cf @ 12.12 hrs
Average Depth at Peak Storage= 3.39'
Bank-Full Depth= 4.00' Flow Area= 12.6 sf, Capacity= 69.59 cfs

48.0" Round Pipe
n= 0.012
Length= 160.0' Slope= 0.0020 '/'
Inlet Invert= 0.00', Outlet Invert= -0.32'



Reach 12R: Deer Street



Summary for Pond 9: DMH #6 (Flow Splitter)

Inflow Area = 19.300 ac, Inflow Depth > 4.32"
Inflow = 82.02 cfs @ 12.12 hrs, Volume= 6.951 af
Outflow = 82.02 cfs @ 12.12 hrs, Volume= 6.951 af, Atten= 0%, Lag= 0.0 min
Primary = 65.53 cfs @ 12.12 hrs, Volume= 6.255 af
Secondary = 16.49 cfs @ 12.12 hrs, Volume= 0.696 af

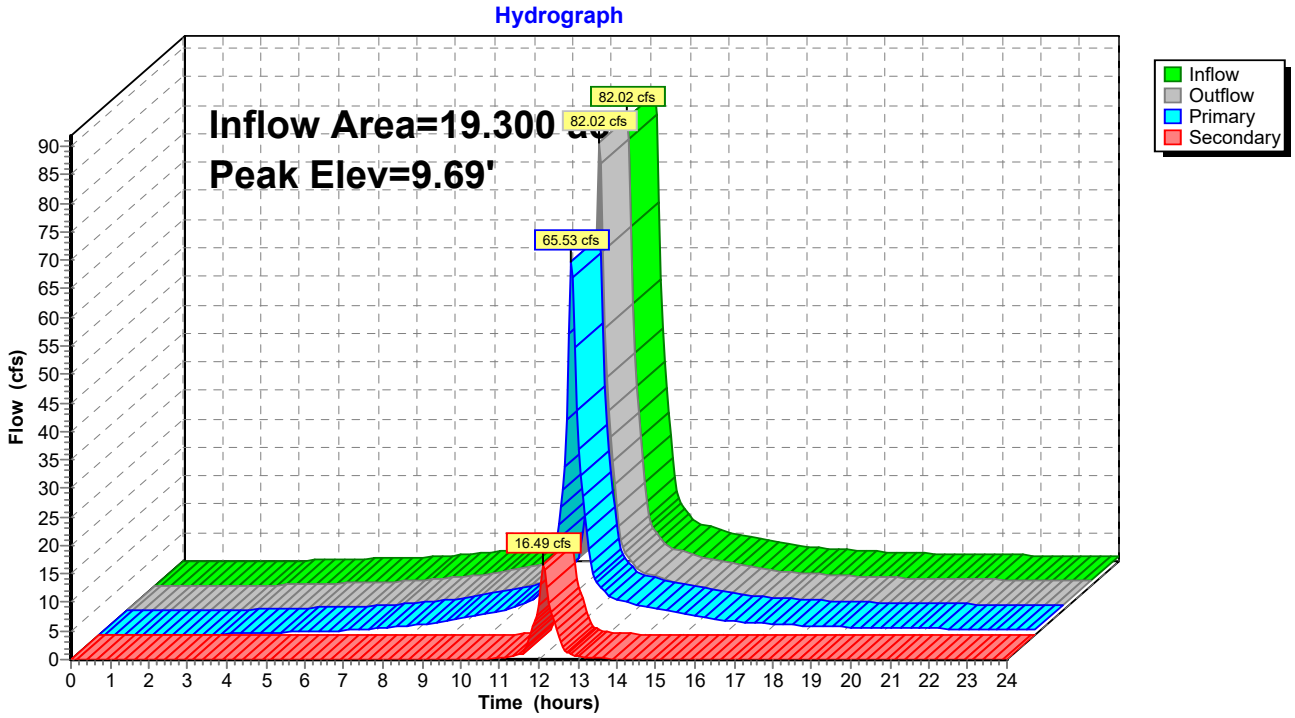
Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 9.69' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	4.50'	**36.0" Vert. Orifice/Grate** C= 0.600
#2	Secondary	5.20'	**18.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=63.94 cfs @ 12.12 hrs HW=9.53' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 63.94 cfs @ 9.05 fps)

Secondary OutFlow Max=16.10 cfs @ 12.12 hrs HW=9.53' (Free Discharge)
└**2=Orifice/Grate** (Orifice Controls 16.10 cfs @ 9.11 fps)

Pond 9: DMH #6 (Flow Splitter)



Summary for Pond 13: Twin 48" Outfall Pipes

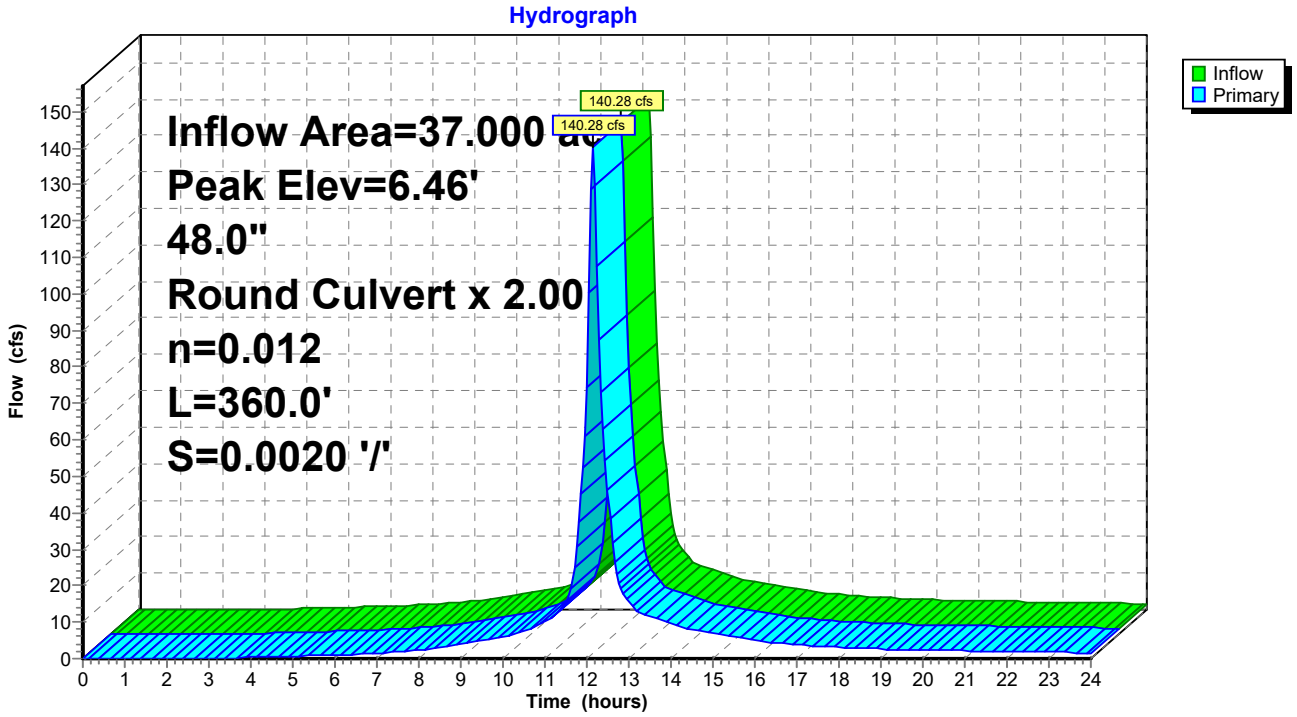
Inflow Area = 37.000 ac, Inflow Depth > 4.04"
Inflow = 140.28 cfs @ 12.15 hrs, Volume= 12.459 af
Outflow = 140.28 cfs @ 12.15 hrs, Volume= 12.459 af, Atten= 0%, Lag= 0.0 min
Primary = 140.28 cfs @ 12.15 hrs, Volume= 12.459 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 6.46' @ 12.15 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	-0.40'	**48.0" Round New 48" X 2.00** L= 360.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= -0.40' / -1.12' S= 0.0020 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf

Primary OutFlow Max=140.08 cfs @ 12.15 hrs HW=6.46' TW=5.00' (Fixed TW Elev= 5.00')
↑—**1=New 48"** (Outlet Controls 140.08 cfs @ 5.57 fps)

Pond 13: Twin 48" Outfall Pipes



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: **City of Portsmouth** **TOWN NAME:** City of Portsmouth

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 ADDITION OF THE NEW PIPE PARALLEL TO THE EXISTING OUTFALL WILL LIMIT IMPACTS TO TIDAL EMBANKMENT WHERE EXISTING UTILITIES ALREADY EXIST. THIS IS MORE DESIREABLE THAN PROPOSING AN OUTFALL IN A NEW LOCATION THAT HAS BEEN PREVIOUSLY UNDISTURBED. THE GENERAL LOCATION OF THE OUTFALL IS ALSO ADJACENT TO A LOCATION THAT HAS BEEN PRE-DEVELOPED (PAVED LOT AND WAREHOUSE OR STABILIZED SHORE LINE). THEREFORE, OF ALL PRACTICABLE ALTERNATIVES, THE PROPOSED ALTERNATIVE WILL HAVE THE LEAST ADVERSE IMPACT ON THE AREA AND ENVIRONMENTS UNDER THE DEPARTMENT'S JURISDICTION.

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.

Proposed mitigation work adjacent to the outfall will re-establish a marsh in an area where they may have been one historically. The WPPT shows some limited marsh just to the east of the impact area and there is evidence of localized high marsh adjacent to the outfall and on the edge of the marsh restoration area. See Photos #9 and #11

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

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

The proposed work will not impact any existing hydrologic connections between adjacent wetland or stream systems.

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 work will be limited to the tidal embankment at North Mill Pond where an outfall currently exists. Per the Natural Heritage Bureau (NHB) data check one instance of the american eel was reported in the vicinity of the project area. A consultation with HFG has been requested to complete their environmental review for the project. Per the WPPT there are no prime wetlands or aquaculture sites in the vicinity of the project area.

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.

Impacts that eliminate, depreciate or obstruct public commerce, navigation, or recreation are not anticipated as a result of this project.

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.

There are no are no floodplains in the project area and impacts to those types or wetlands are not anticipated.

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 WPPT described the impact area as mud flats. Therefore, no impacts to the wetlands categories listed.

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.

There are no drinking water supplies in the vicinity of the project area.

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 area is an outfall to a pond and no stream channels are impacted.

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.

The project will not require construction surface area over surface waters.

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.

North Mill Pond which has no docks is tidal with no water craft access due to the culvert/arch which connnects the pond hydraulically to the Piscataqua River. Therefore, the proposed work will not impact docking on the shoreline.

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.

The proposed drainage improvements are directly adjacent to existing drainage systems already located on abutting properties. The pipe have been placed as far to the edge as practical so that future development is not hindered. Abutting property owners have been provided draft easment documents and preliminary design plans for the outfall improvements and comments have been received. The proposed mitigation work is located within the tidal waters of the state and will not negatively impact future development by abutters.

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.

The project impact area will be limited to the tidal embankment at North Mill Pond and will not cause any impacts to the public's right to navigation, passage, and use of the pond for commerce and recreation. The project is generally located on private property and public right to passge is limited. The project will improve grading at the outfall so that pipes and headwalls are no longer exposed as they are now. The stone apron will also allow for foot traffic (if any) to pass in front of the outfall at low tide rather than through the mud as is currently necessary. The outfall headwall will be relocated further into the bank and protrude less into the pond which will improve navigation of the shoreland for anyone recreating on the pond.

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.

The project impact area will be limited to the tidal embankment at North Mill Pond. Drainage improvements will include stormwater treatment to decrease the amount of nutrient pollutants discharged into North Mill Pond. Protective measures including temporary and permanent erosion control devices will be in place during construction to minimize any potential impacts that may occur. The outfall headwall will be relocated further into the bank and protrude less into the pond which will reduce its impact on the habitat. The proposed mitigation area will increase habitat diversity at the project site by re-establishing a marsh.

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.

Minimal removal of vegetation will be required because the area is already partially developed and existing access points are available via paved driveways. The bank of the shoreline will be restored and stabilized and vegetation will be re-established once the construction of the new pipe and headwall is complete. The proposed mitigation will increase vegetation in the project area.

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: Coastal functional assessment provided as separate attachment.
NAME OF CERTIFIED WETLAND SCIENTIST (FOR NON-TIDAL PROJECTS) OR QUALIFIED COASTAL PROFESSIONAL (FOR TIDAL PROJECTS) WHO COMPLETED THE ASSESSMENT: TOM SOKOLOSKI, NO. 127
DATE OF ASSESSMENT: MARCH 30, 2021
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.

TES Environmental Consultants, LLC

March 30, 2021

Ref: TES JN 19-0168

Mr. William Doucet, President
Doucet Survey, Inc.
2 Commerce Drive, Suite 202
Bedford, NH 03110

Re: Environmental Services (Wetland Description and Functions and Values Assessment)
Maplewood Avenue Over North Mill Pond, Portsmouth, New Hampshire
NHDOT Bridge No. 231/103

Dear Mr. Doucet:

TES Environmental Consultants, L.L.C. (TES) has prepared this report to document the physical and biological characteristics of the wetlands and surrounding lands in the vicinity of the proposed replacement of the existing culvert at Maplewood Avenue Over North Mill Pond in Portsmouth, New Hampshire, and to evaluate the functions and values associated with those wetlands. These observations are provided in support of the Survey Scope of Services related to the proposed project.

An on-site investigation was performed by TES on February 28, 2020 to delineate the boundaries of wetlands in the vicinity of the culvert (Figure 1) and to observe the characteristics of the wetlands and the upland portion of the surroundings. The wetland delineation was performed according to the standards of the 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, US Army Corps of Engineers. All wetlands in the survey area consist of coastal resources, therefore the limits of jurisdictional wetlands were identified as the highest observable tide line (HOTL) as defined at Env-Wt 602.23. The observations made during this field effort were during the mid-incoming tide, and together with the following published information, form the basis for this wetland functional assessment:

- USGS Portsmouth, NH-ME Quadrangle, 7.5 minute series topographic map
- Aerial photographs from Google Earth and other sources
- USDA-NRCS Soil Survey of Rockingham County, New Hampshire (via Web Soil Survey)
- National Wetlands Inventory map
- The New Hampshire Department of Environmental Services (NHDES) Wetlands Permit Planning Tool (WPPT)
- NH Natural Heritage Program Datacheck Program
- US Army Corps of Engineers The Highway Methodology Workbook – Supplement

Site Characterization

Uplands. The upland areas in the vicinity of this survey area are primarily in urban residential (to the west) and commercial/industrial use to the east (Figure 2). Essentially no undeveloped land exists in the vicinity of the site, although North Cemetery lies approximately 500 feet to the southeast. Trees exist

only in yards and small roadside spaces, with boxelder (*Acer negundo*) and weeping willow (*Salix babylonica*) predominant, and choke cherry (*Prunus virginiana*), black locust (*Robinia pseudoacacia*), and staghorn sumac (*Rhus typhina*) present as shrub species. Two invasive shrub species are present within the project site: glossy buckthorn (*Frangula alnus*) and multiflora rose (*Rosa multiflora*). Two invasive vines are also present – Oriental bittersweet (*Celastrus orbiculatus*), and black swallowwort (*Cynanchum louiseae*). Herbaceous species present in the upland areas include turf grasses and Canada goldenrod (*Solidago canadensis*).

Upland soils in the vicinity of the survey area are shown in the Soil Survey of Rockingham County as being Urban Land (699) to the east of the culvert, and Urban Land-Canton complex (799) to the west. Canton fine sandy loam is a sandy soil formed in loose glacial till deposits. Urban Land components are developed lands, most likely having soils similar to Canton.

Wetlands. On February 28, 2020 a TES wetland scientist delineated and flagged the boundaries of the HOTL within the project survey area with numbered pink and black striped flags for location by ground survey and depiction on site plans. The principal jurisdictional wetland feature within the survey area consists of North Mill Pond (Figures 3 and 4) which is identified as Estuarine Water on the WPPT, with small, limited fringe areas of Irregularly Flooded (Tidal) Marsh and Tidal Flats in the vicinity of the project area. The project site lies approximately 1,500 feet south of the Piscataqua River at the Sarah Mildred Long Bridge on US Route 1 Bypass. Tidal Flats predominate landward from Maplewood Avenue, and Estuarine Water occupies most of the seaward portion of North Mill Pond.

Under the U.S. Fish and Wildlife Service's Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al., 1979), the Tidal Flats would be classified as Estuarine, Intertidal, Unconsolidated Shore, Mud, Regularly Flooded (E2US3N), and the Estuarine Water portions would be classified as Estuarine, Subtidal, Unconsolidated Bottom, Subtidal (E1UBL). The latter areas have a cobble bottom in the vicinity of the culvert, where tidal currents are strongest, and mud further away. Riprap is present along both sides of the Maplewood Avenue causeway, and rockweed (*Ascophyllum nodosum*) grows on the riprap and other rocky surfaces (Figure 5) in the project vicinity. Salt marsh cordgrass (*Spartina alterniflora*) grows in unconsolidated material (Figure 6) in the intertidal zone in only narrow strips in scattered areas near the project site. No eelgrass beds, shellfish beds, or oyster restoration beds are located near the project area.

No fish were observed within North Mill Pond, although various species such as winter flounder (*Pseudopleuronectes americanus*), juvenile (snapper) bluefish (*Pomatomus saltatrix*), and baitfish such as killifish (*Fundulus* spp.) and common mummichog (*Fundulus heteroclitus*) may be expected to occur seasonally. Various wading birds, shore birds, and waterfowl may also be expected to utilize North Mill Pond and its tidal flats seasonally.

Vernal Pool. No vernal pools were observed within the vicinity of the Maplewood Avenue Over North Mill Pond survey area, applying the following definition and methodologies: New Hampshire Department of Environmental Service definition of vernal pool at Env-Wt 101.106; delineation methods at Env-Wt 301.01(f); and guidelines for identifying and describing vernal pools given in "Identification and Documentation of Vernal Pools in New Hampshire" published by the New Hampshire Fish and Game Department. It is possible that vernal pool habitat is present in the forested floodplain wetlands

further away from the survey corridor, although the depth of floodwaters during the field survey precluded observations in those areas.

Invasive Plant Species. The lands within the survey area for this project were investigated for the potential presence of invasive plants identified in the New Hampshire Department of Transportation (NHDOT) Best Management Practices for Roadside Invasive Plants. Four invasive plant species were observed in the survey area: Oriental bittersweet (*Celastrus orbiculatus*), glossy buckthorn (*Frangula alnus*), multiflora rose (*Rosa multiflora*), and black swallowwort (*Cynanchum louiseae*). Oriental bittersweet, glossy buckthorn, and multiflora rose are common in the uplands in the northwest quadrant of the survey area, and black swallowwort is present all along the north side of Maplewood Avenue. The extensive nature of the colonization of each of these invasive plants, along with the location of many of them on adjacent private property and along the shoreline extending well away from the project site, lead to a recommendation of no attempts to control these invasive species. Soil and plant material removed from this site, however, should not be re-used on site or on other sites, but rather should be disposed of in accordance with the New Hampshire Department of Transportation's Best Management Practices for Roadside Invasive Plants (2008).

Wetland Functional Assessment Methodology

Wetland functions and values, and their significance were evaluated using the US Army Corps Highway Methodology guidelines. The following is a list of the 14 wetland functions and values with a brief description of each.

1. **Groundwater Recharge** should relate to the potential for the wetland to contribute water to an aquifer (often combined with the following).
2. **Groundwater Discharge** should relate to the potential for the wetland to serve as an area where ground water can be discharged to the surface.
3. **Floodflow Alteration:** This function considers the effectiveness of the wetland in reducing flood damage by attenuation of floodwaters for prolonged periods following precipitation events.
4. **Fish and Shellfish Habitat:** This function considers the effectiveness of seasonal or permanent water bodies associated with the wetland in question for fish and shell fish habitat.
5. **Sediment/Toxicant/Pathogen Retention:** This function reduces or prevents degradation of water quality. It relates to the effectiveness of the wetland as a trap for sediments, toxicants or pathogens.
6. **Nutrient Removal/Retention/Transformation:** This function relates to the effectiveness of the wetland to prevent adverse effects of excess nutrients entering aquifers or surface waters such as ponds, lakes, streams, rivers or estuaries.
7. **Production Export:** This function relates to the effectiveness of the wetland to produce food or usable products for humans or other living organisms.
8. **Sediment/Shoreline Stabilization:** This function relates to the effectiveness of a wetland to stabilize stream banks and shorelines against erosion.
9. **Wildlife Habitat:** This function considers the effectiveness of the wetland to provide habitat for various types and populations of animals typically associated with wetlands and the wetland edge. Both resident and or migrating species must be considered.
10. **Recreation:** This value considers the effectiveness of the wetland and associated watercourses to provide recreational opportunities such as canoeing, boating, fishing, hunting and other active or

passive recreational activities. Consumptive opportunities consume or diminish the plants, animals or other resources that are intrinsic to the wetland, whereas non-consumptive opportunities do not.

11. **Educational/Scientific Value:** This value considers the effectiveness of the wetland as a site for an "outdoor classroom" or as a location for scientific study or research.
12. **Uniqueness/Heritage:** This value relates to the effectiveness of the wetland or its associated water bodies to produce certain special values. Special values may include such things as archeological sites, unusual aesthetic quality, historical events, or unique plants, animals, or geological features.
13. **Visual Quality/Aesthetics:** This value relates to the visual and aesthetic qualities of the wetland.
14. **Threatened or Endangered Species Habitat:** This value relates to the effectiveness of the wetland or associated water bodies to support threatened or endangered species.

Wetland Functions and Values in the Survey Area

The functions and values of the wetland resources in the survey area are associated with North Mill Pond and contiguous wetlands landward and seaward from the site.

Of the 14 recognized potential functions and values of wetlands, 8 are considered to be present at some level at the location of this project, of which 4 rise to principal or significant levels within this wetland resource:

- sediment/toxicant retention,
- nutrient removal/transformation,
- sediment/shoreline stabilization, and
- visual quality/aesthetics.

Principal Functions and Values.

Sediment/toxicant retention potential is present at a principal level within the North Mill Pond wetland system due in large part to the low gradient of Pond bottom and extensive mud flats. The slow water flow present in most of the Pond (except at the Maplewood Avenue culvert) during incoming and outgoing tides, along with the Pond sediments, provide potential for settling of sediment and toxicants, as well as binding of toxicants to Pond sediment. Potential sources of sediment and toxicants are present within the Pond watershed.

Nutrient removal/transformation is also considered to be present at a principal level at this location. This function generally follows sediment/toxicant retention, as both require a wetland having a low gradient and slow flowing water. The North Mill Pond does generally lack sufficient vegetation to slow water flow, and to provide significant uptake of excessive nutrients, however. Potential sources of excess nutrients are present within the Pond watershed.

Sediment/shoreline stabilization is a function clearly provided to some degree by the wetlands along the banks of North Mill Pond, although mechanical stabilization including riprap and retaining walls are prominent in the vicinity of the Maplewood Avenue causeway. Stable bank soils contribute to reduced sediment entering downgradient channels with silt, maintaining their ability to convey flows and boat traffic.

Visual quality/aesthetics is a value considered to be present at a significant level at this location due to the presence of expansive surface waters, and a public road elevated above the water offering an open vista. This affords the public opportunities to view the setting while travelling along Maplewood Avenue, the primary public viewing location.

Functions and Values Present at Moderate Levels. Four potential functions and values of wetlands are considered to be present at moderate but not principal levels at this location:

- fish and shellfish habitat,
- production export,
- wildlife habitat, and
- recreation.

Fish and shellfish habitat is considered to be present, or potentially present, at moderate levels within North Mill Pond due to the presence of permanent surface water connected to the Piscataqua River. Some marine or estuarine fish species may inhabit the Pond seasonally at some point in their life cycle, although the minimal submerged and emergent vegetation in the Pond limits potential food and cover. The existing Maplewood Avenue culvert is sufficiently wide to allow fish passage. No fish or shellfish were noted during the field investigation, but some examples of fish that may occur seasonally include winter flounder (*Pseudopleuronectes americanus*), juvenile (snapper) bluefish (*Pomatomus saltatrix*), and baitfish such as killifish (*Fundulus* spp.) and common mummichog (*Fundulus heteroclitus*). The sole tributary to North Mill Pond is Hodgson Brook, and no significant fresh surface waters exist along that drainageway, limiting potential for anadromous or catadromous fish usage.

Production export consists of the transport of vegetation or its decomposing material from a wetland to connected wetlands or surface waters. High potential for wetlands to perform production export is typically exemplified by high levels of vegetative production within a wetland coupled with a broad pathway for that production to be conveyed from that wetland to another wetland or water body. There is minimal vegetative growth with North Mill Pond or in wetlands along its shores, and therefore little export of vegetation occurs here, although a limited amount occurs from the small fringe marsh vegetation (primarily *Spartina alterniflora*) and submerged vegetation such as rockweed (*Ascophyllum nodosum*).

Wildlife habitat is a function related to all of the physical and biological elements of a wetland complex and its surrounding landscapes. The setting of North Mill Pond and associated wetlands within a highly-developed area corridor detracts greatly from its overall habitat potential. However, the significant open water (especially at high tide) provides potential resting areas for migrating waterfowl, and shorebirds and wading birds may find limited foraging habitat along the shore and on exposed mud flats. For the purposes of wetland function and values assessments, the function of wildlife habitat focuses on habitat for wildlife dependent on wetlands for part or all of their life cycles.

Recreation potential related to the wetland resources present at this location relate primarily to potential active recreation (fishing, canoe/kayak use) related to North Mill Pond, and passive recreation potentially provided by viewing the open vista or possibly birding from Maplewood Avenue, which has sidewalks along both sides. The primary limiting factor for both active and passive recreation in this location is the general lack of public access. Metered parallel parking is present off the eastern end of

the survey corridor, although little visual interest is present for passive public recreation. The existing culvert appears to provide sufficient width and overhead clearance for the passage of small craft such as canoes or kayaks, although during peak tidal flow the current may be too strong to paddle against, and at high tide the overhead clearance may be insufficient for passage.

Functions and Values Absent or Present at Negligible Levels. Five potential functions and values of wetlands are considered to be absent or present at negligible levels at this location:

- groundwater recharge and discharge,
- floodflow alteration
- educational/scientific value,
- uniqueness/heritage value, and
- endangered species habitat.

Groundwater recharge and discharge are generally considered insignificant functions in Estuarine environments such as North Mill Pond. Coastal areas may have brackish groundwater, recharged by coastal surface waters. Fresh groundwater from inland areas "pushes" against this brackish groundwater, and the brackish front may push inland during periods of little rainfall, or seaward during periods of heavier rainfall. Over time, rising sea levels may increase saltwater intrusion into coastal aquifers that were previously exclusively or mostly freshwater, rendering that groundwater unpotable at least until freshwater recharge pushes out the salt intrusion. These occurrences are not so much related to the functions of the wetlands as they are to fluctuations, seasonal and long-term, in weather and climate variations.

Floodflow alteration can be considered a significant function in coastal wetlands such as where extensive salt marshes or dunes provide buffers to storm surges. The narrow and discontinuous marsh fringes along North Mill Pond provide negligible protection against storm surges, and constructed barriers such as riprap banks and retaining walls are the principal features providing such protection in the vicinity of Maplewood Avenue.

Potential for educational/scientific value associated with North Mill Pond at this site is limited by the minimal controlled public access to the Pond and adjacent wetlands. A sidewalk along both sides of Maplewood Avenue permits visual access, but physical access is obstructed by retaining walls, steep slopes, and adjacent private property. In general, the potential for limited use of the site as an "outdoor classroom" is present, and the educational opportunity provided by the view of the Pond and adjacent developed land is intriguing, but this value is deemed negligible due to access issues including limited parking and safety issues related to vehicular traffic.

Uniqueness/heritage value was determined to be negligible for this location. Although the area was developed during early colonial times, no historic or archaeological interests associated with the Pond or adjacent wetlands were observed at this location.

Endangered species habitat is a potential value of wetlands. A New Hampshire Natural Heritage Bureau preliminary online datacheck for this location was performed to assess the potential for the presence of threatened or endangered species in the vicinity. This preliminary datacheck resulted in a finding of no

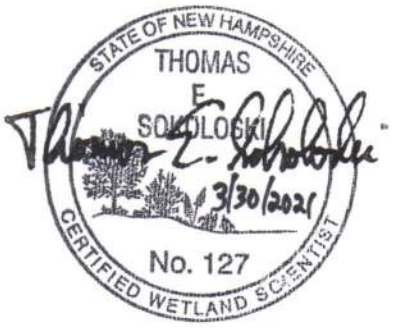
known occurrences of threatened or endangered species or exemplary natural communities in the vicinity of the project. Such datachecks consist of reviews of all known occurrences of such species or communities within one mile of a proposed project, and is subject to change over time as new occurrences are recorded. A complete review of this matter will be required during the New Hampshire wetland permitting process for this project, although it is considered unlikely that the proposed culvert replacement would be found to have an adverse impact on any such sensitive species or habitats.

In general, the proposed project to replace the culvert at Maplewood Avenue over North Mill Pond would not be expected to cause any degradation of the functions and values associated with the Pond and the adjacent wetlands. Continued unrestricted passage of flows, sediment, and movement of fish and wildlife through the area will continue as under the present conditions. With the implementation of best management construction practices, the project would avoid potential construction-phase impacts related to sedimentation and erosion.

Please feel free to contact me with any questions or comments regarding this report.

Sincerely,

Thomas E. Sokoloski
New Hampshire Certified Wetland Scientist #127



1494 Route 3A, Unit 1, Bow, New Hampshire 03304
Phone: 603-856-8925 E-Mail: tom@tesenviro.comcastbiz.net

3/30/2021

Wetland Function-Value Evaluation Form

Total area of wetland 60 acres +/- Human made? No Is wetland part of a wildlife corridor? No or a "habitat island"? No

Adjacent land use Residential, commercial, industrial Distance to nearest roadway or other development 0 feet

Dominant wetland systems present Estuarine 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? Tidal

How many tributaries contribute to the wetland? 1 (Hodgson Brook) Wildlife & vegetation diversity/abundance ~~(see attached list)~~

Wetland I.D. North Mill Pond

Latitude 43.0797 Longitude 70.7655

Prepared by: TES Date 3/27/2021

Wetland Impact: Type TBD Area TBD

Evaluation based on: Office ✓ Field ✓

Corps manual wetland delineation completed? Y ✓ N ____ (OHW)

Function/Value	Occurence Y	Occurence N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge		✓			Absent - tidal resource.
Floodflow Alteration		✓			North Mill Pond has limited flood storage/desynchronization.
Fish and Shellfish Habitat	✓		1,4		Limited known potential; no shellfish beds (WPP)
Sediment/Toxicant Retention	✓		1,2,3,4,8,9	✓	Opportunity present; sediments provide toxicant retention.
Nutrient Removal	✓		1,2,3,4,6,7	✓	Sediment binding potential; minimal vegetative uptake.
Production Export	✓				Limited vegetative production present in Pond overall
Sediment/Shoreline Stabilization	✓		1,2,3,10,11	✓	Much of shoreline at road stabilized by riprap, walls.
Wildlife Habitat	✓		6,12,18		Modest habitat due to minimal vegetation and development.
Recreation	✓		7,9		Limited accessibility and interest on Pond itself.
Educational Scientific Value		✓			Generally inaccessible to public; high disturbance
Uniqueness/Heritage		✓	1,3,13,14,17		No observed unique/significant historic features.
Visual Quality/Aesthetics	✓		2,6,12	✓	Open water, mud flats, viewed from road.
ES Endangered Species Habitat		✓			Preliminary NH NHB datacheck - negative results.
Other					

* Refer to back up list of numbered considerations.

Notes:

FIGURE 1
Arch Culvert at Maplewood Avenue Over North Mill Pond, Portsmouth, View Southwest of Seaward Side of Culvert from Shoreline (2/28/2020)

FIGURE 2
Residential and Commercial/Industrial Development on East Side of Project Site, View East from Western Shoreline of North Mill Pond (2/28/2020)

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Email: Soilsurfer@comcast.net

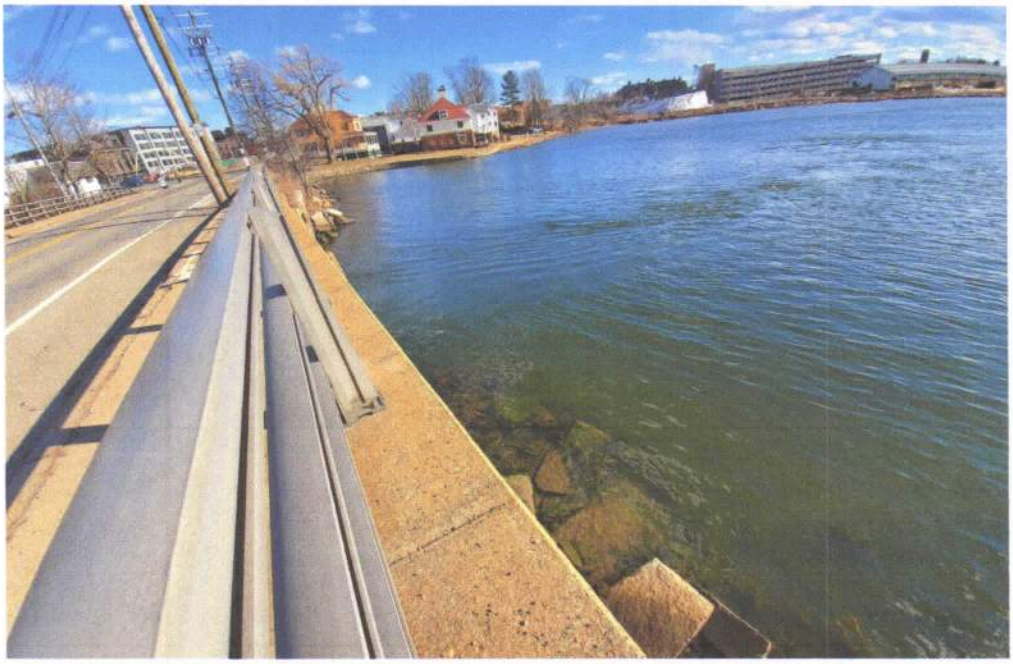

FIGURE 3
North Mill Pond, Landward Side, View Southeast from West Side of Culvert in Maplewood Road, Mid-Incoming Tide (2/28/2020)

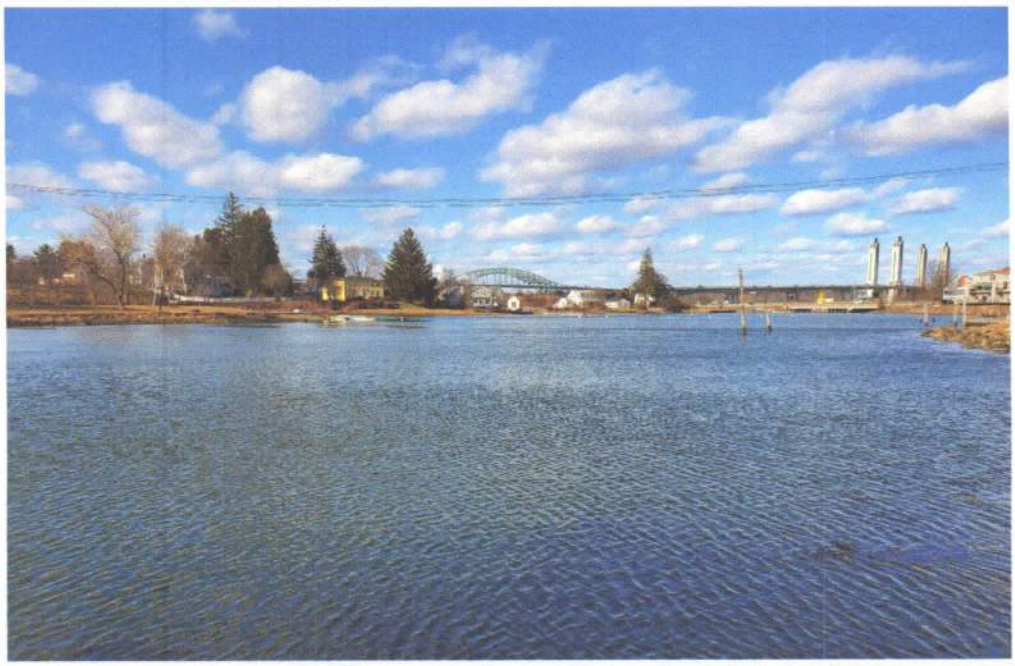

FIGURE 4
North Mill Pond, Seaward Side, View North from East Side of Culvert in Maplewood Road, Mid-Incoming Tide (2/28/2020)

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Email: Soilsurfer@comcast.net

FIGURE 5
Rockweed Growing on Stones and Riprap in the Subtidal and Lower Intertidal Areas Near the Maplewood Avenue Culvert Site (2/28/2020)

FIGURE 6
Remnants of Salt Marsh Cordgrass Growing within the Intertidal Zone Near the Maplewood Avenue Culvert Site (2/28/2020)

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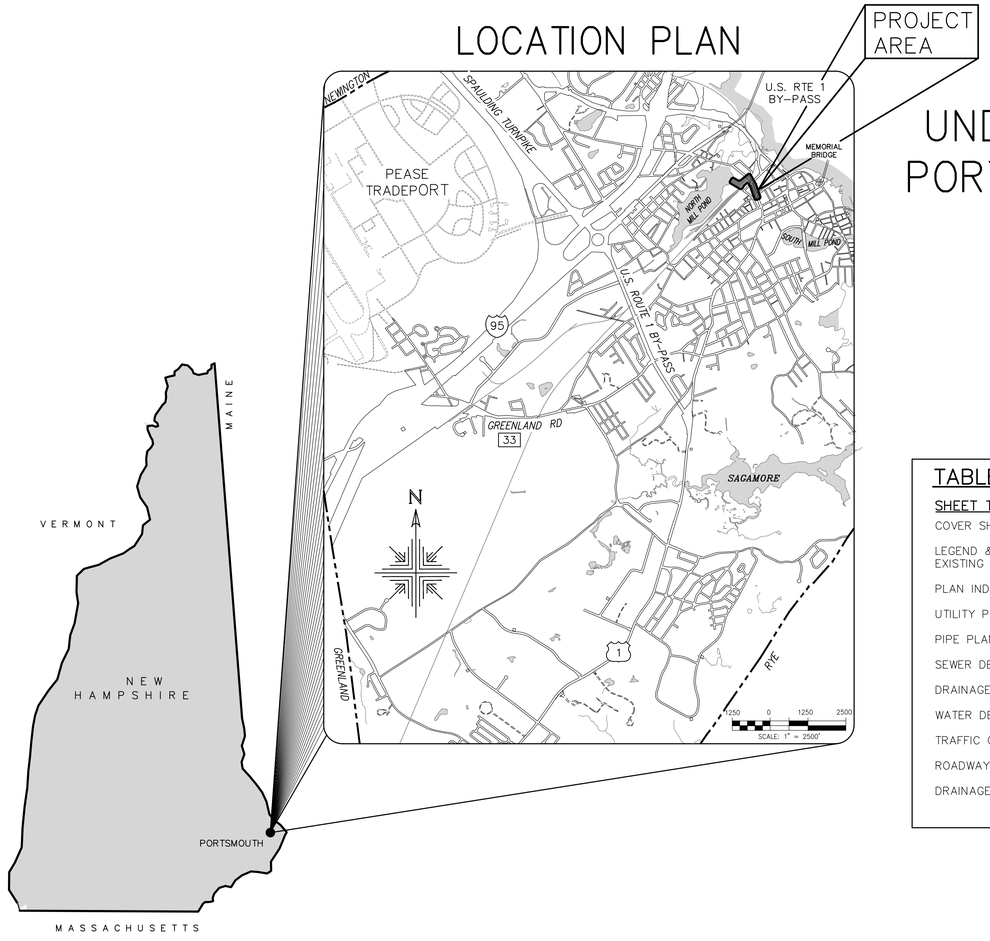
City of Portsmouth, New Hampshire

PERMIT APPLICATION DRAWINGS

MAPLEWOOD AVENUE - DRAINAGE INTERCEPT

LOCATION PLAN



PREPARED BY
UNDERWOOD ENGINEERS, INC.
PORTSMOUTH, NEW HAMPSHIRE
MARCH, 2024

FOR REVIEW
MARCH, 2024
NOT FOR CONSTRUCTION

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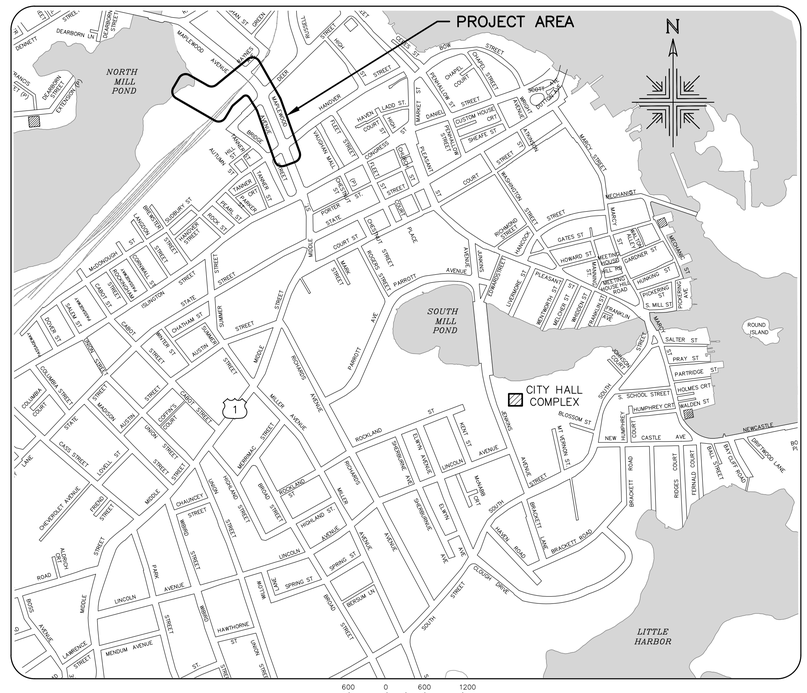
VICINITY MAP



UE #2542

UNDERWOOD engineers

H:\Real Numbers\Portsmouth\2542-Fleet Street\CAD\Design Maplewood\Drawings\2542_cover_M.dwg, Layout1, 3/27/2024 11:20:06 AM, mng

LEGEND:

EXISTING	PROPOSED	
		STRUCTURES/BUILDINGS
		APPROXIMATE PROPERTY LINE
		PAVED ROAD/DRIVE
VGC		VERTICAL FACED GRANITE CURB
RWBL		MODULAR BLOCK RETAINING WALL
RWB		MORTARED BRICK RETAINING WALL
RWC		CONCRETE RETAINING WALL
RWG		GRANITE RETAINING WALL
		GRANITE POST
P		PARK METER KIOSK
		PARKING METER
		BOLLARD
		SIGN
		HANDICAP SPACE
		LIGHT POLE
		UTILITY POLE WITH ARM & LIGHT
		UTILITY POLE
PSNH		PUBLIC SERVICE CO. OF NH
E		ELECTRICAL MANHOLE
		ELECTRICAL CONDUIT
E		ELECTRICAL METER/BOX
G		GAS METER
		GAS SHUT OFF
		GAS VALVE
		WATER GATE VALVE
		WATER SHUT OFF VALVE
		HYDRANT
		FIRE CONNECTION
		TEE CONNECTION
		FITTINGS (11.25°, 22.5°, 45°)
		REDUCER
		THRUST BLOCK
		COUPLING
		CATCH BASIN (NEW)
		CATCH BASIN (REMOVE & REPLACE)
D		DRAIN MANHOLE
		ROOF DOWNSPOUT
S		SEWER MANHOLE
		SEWER CLEANOUT
T		TELEPHONE MANHOLE
T		TELEPHONE BOX
C		CABLE MANHOLE
		FIRE ALARM
		DECIDUOUS TREE
		CONIFEROUS SHRUB
		DECIDUOUS SHRUB
OHW		OVERHEAD UTILITIES
W	W	WATER LINE
S	S	SEWER LINE
D		DRAIN LINE
G		GAS LINE
UGE		UNDERGROUND ELECTRIC
UGT		UNDERGROUND COMMUNICATIONS
		CEMENT CONCRETE
		BRICK PAVERS
LA		LANDSCAPED AREA
LAM		MULCHED AREA

LEGEND (cont.):

EXISTING	PROPOSED	
LWN		GRASS COVER
25.4	25.4	SPOT GRADE
27.79		ELEVATION TO MATCH/NOT EXCEED
28	28	2' CONTOUR ELEVATION
30	30	10' CONTOUR ELEVATION
		SIGN – SEE SIGNAGE TABLE
117–45		TAX SHEET – LOT NUMBER
		ROCK
		POLE
		SEWER LATERALS APPROXIMATE LOCATION
A		SEWER LATERALS ASSUMED DIRECTION OF EXIT
		WATER LATERALS APPROXIMATE LOCATION
D		DRAIN LATERALS APPROXIMATE LOCATION
		RAILROAD SIGNAL
		RAILROAD TRACKS
B–101		BORING
R		SUBSURFACE REFUSAL
N/R		SUBSURFACE NO REFUSAL
GW		SUBSURFACE GROUNDWATER
		SILT BOOM
		SILT FENCE

ABBREVIATIONS

AC/ACP	ASPHALT CONCRETE PIPE
CB	CATCH BASIN
CI/CIP	CAST IRON PIPE
CL 52	CLASS 52 PIPE
CMP	CORRUGATED METAL PIPE
DI	DUCTILE IRON PIPE
DMH	DRAIN MANHOLE
GIS	CITY OF PORTSMOUTH GIS SYSTEM
HDPE	HIGH DENSITY POLYETHYLENE PIPE
I	INVERT ELEVATION
PE	POLYETHYLENE PIPE
PVC	POLYVINYL CHLORIDE PIPE
R	RIM ELEVATION
RCP	REINFORCED CONCRETE PIPE
RCRD	ROCKINGHAM COUNTY REGISTRY OF DEEDS
RCSC	ROCKINGHAM COUNTY SUPERIOR COURT
S	SLOPE (PIPE)
SMH	SEWER MANHOLE
UP	UTILITY POLE

SEWER TABLE

SMH# 5
RIM EL= 15.03
TOP OF TANK= 11.4±
(GREASE SEPERATOR)

SMH# 6
RIM EL= 15.02
TOP OF TANK= 11.4±
(GREASE SEPERATOR)

SMH# 1494
RIM EL= 10.62
CL FLOW= –1.16
(48" BRICK TUNNEL)

SMH# 1497
RIM EL= 11.04
(1) INV IN 10"___= 3.51
(2) INV IN 15"___= 2.98
(3) INV IN 8"___= 2.95
(4) INV OUT 15"VCP= 2.91

SMH# 1489
RIM EL= 9.39
(1) INV IN 12"___= 2.04

SMH# 1499
RIM EL= 15.61
(1) INV IN 48" BRICK= –1.84
(2) INV IN ___= –0.99
(3) INV OUT 48" BRICK= –1.94
(48" BRICK TUNNEL)

SMH# 1500
NOT FIELD OBSERVED
(STRUCTURE & LINE ABANDONED
PER PORTSMOUTH DPW)

SMH# 1501
RIM EL= 13.38
(1) INV IN 21"?___= –0.57
(2) INV OUT 24"___= –0.67

SMH# 1503
RIM EL= 15.13
(1) INV IN ___= 0.53
(2) INV OUT ___= ?

SMH# 1519
RIM EL= 13.30
(NO INVERT DATA)

SMH# 1570
RIM EL= 17.30
(1) INV IN 48" BRICK=
(48" BRICK TUNNEL)

SMH# 2746
RIM EL= 14.67
(1) INV IN ___= 5.4±
(2) INV IN ___= 5.3±
(3) INV OUT ___= 5.3±
(STRUCTURE INACTIVE)
(NO FLOW OBSERVED)

DRAIN TABLE

CB# 1352
RIM EL= 12.85
(1) INV IN 12"HDPE= 9.60
(2) INV OUT 12"HDPE= 9.50

CB# 3743
RIM EL= 12.83
(1) INV OUT 12"RCP= 9.58

CB# 3750
RIM EL= 10.91
(1) INV OUT 12"RCP= 7.39

CB# 3761
RIM EL= 10.52
(1) INV OUT 12"RCP= 7.03

CB# 3771
RIM EL= 15.14
(1) 6"PVC (PLUGGED)
(2) INV IN 6"PVC= 12.85
(3) INV OUT 12"RCP= 12.52

CB# 3772
RIM EL= 16.01
(1) INV OUT 12"RCP= 12.08

CB# 3773
RIM EL= 13.64
(1) INVERT INACCESSIBLE

CB# 3774
RIM EL= 13.25
(1) INV OUT 12"RCP= 8.60

CB# 3775
RIM EL= 12.97
(1) INV OUT 12"RCP= 9.87

CB# 3776
RIM EL= 12.93
(1) INV OUT 12"RCP= 8.25

CB# 3777
RIM EL= 12.94
(1) INV OUT 12"RCP= 8.64

CB# 3778
RIM EL= 14.59
(1) INV OUT 12"RCP= 11.09

CB# 3779
RIM EL= 14.51
(1) INV OUT 12"RCP= 11.20

CB# 25172
RIM EL= 15.28
(1) INV OUT 18"HDPE= 10.98

DMH# 6
RIM EL= 13.65
(1) INV IN 18"RCP= 4.25
(2) INV IN 12"HDPE= 5.40
(3) INV OUT 18"RCP= 4.33

DMH# 7
RIM EL= 14.29
(1) INV IN 6"PVC= 6.48
TOP OF CONCRETE WEIR= 9.96
(2) INV OUT 12"HDPE= 6.30

DMH# 8
RIM EL= 13.58
(1) INV IN 6"PVC= 9.83
TOP OF CONCRETE WEIR= 11.30
(2) INV OUT 12"HDPE= 9.68

DMH# 4979 (4'X6' VAULT)
RIM EL= 10.44
CL FLOW 48"RCP= *1.03
*RECORD GIS VALUE

DMH# 4980
RIM EL= 10.58
(1) INV IN 18"RCP= 3.03
(2) NO INVERT DATA
(3) INV OUT ___= 1.46

DMH# 4984
RIM EL= 9.40
(1) INV IN 36"RCP= 4.15

DMH# 5205
RIM EL= 15.81
(1) INV IN 12"RCP= 4.91
(2) INV IN 12"RCP= 12.26
(3) INV IN 18"HDPE= 8.71
(4) INV IN 12"RCP= 11.71
(5) INV OUT 18"RCP= 4.81

DMH# 5206
RIM EL= 13.32
(1) INV IN 12"RCP= 8.47
(2) INV IN 12"RCP= 9.29
(3) INV IN 12"RCP= 5.42
(4) INV OUT 12"RCP= 5.40

DMH# 5207
RIM EL= 13.01
(1) INV IN 12"RCP= 9.62
(2) INV IN 12"RCP= 5.56
(3) INV OUT 12"RCP= 5.56

DMH# 5208
RIM EL= 13.00
(1) INV IN 12"RCP= 7.95
(2) INV IN 12"RCP= 5.78
(3) INV IN 12"RCP= 7.90
(4) INV OUT 12"RCP= 5.77

DMH# 5209
RIM EL= 14.67
(1) INV IN 12"RCP= 10.39
(2) INV IN 12"RCP= 10.54
(3) INV OUT 12"RCP= 7.75

DMH# 5404
RIM EL= 13.35
(1) INV IN 12"RCP= 9.45
(2) INV IN 12"RCP= 9.28
(3) INV OUT 12"RCP= 7.12

DMH# 5438 (4'X6' VAULT)
RIM EL= 12.79
CL FLOW 48"RCP= 1.24

DMH# 5439 (4'X6' VAULT)
RIM EL= 7.21
CL FLOW 48"RCP= 0.76

DMH# 5677
RIM EL= 11.07
(1) INV IN 12"RCP= 6.97
(2) INV IN 10"RCP= 6.47
(3) INV IN 12"RCP= 6.98
(4) INV OUT 12"RCP= 6.37

DMH# 5678
RIM EL= 11.32
(1) INV IN 12"RCP= 6.07
(2) FLOW LINE 36"RCP= 4.60
(3) INV IN 12"RCP= 7.48
(4) INV IN 12"RCP= 6.45
(5) INV IN 12"RCP= 7.88

NO.	REVISIONS	APP'D

ISSUE FOR
BIDDING By –
Date –
CONSTRUCTION By –
Date –
RECORD DRAWING By –
Date –

Drawn/Chk. RMG
Designed PDM
Checked –
Approved –
Date MARCH 2024
Book No. –
Project No. 2542
Dwg. ID 2542_general_M
Scale –

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LEGEND & ABBREVIATIONS,
EXISTING STRUCTURE TABLES

MAPLEWOOD AVE – DRAINAGE INTERCEPT

CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

DWG NO G1

SHEET 2 OF 14

DWG NO G2

SHEET 3 OF 14

PLAN INDEX

MAPLEWOOD AVE – DRAINAGE INTERCEPT

CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

UNDERWOOD engineers
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Scale	

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ISSUE FOR		
BIDDING	Date	By
	–	–
CONSTRUCTION	Date	By
	–	–
RECORD DRAWING	Date	By
	–	–

GENERAL NOTES:

1. THE LINE WORK REPRESENTING THE EXISTING UNDERGROUND STRUCTURES AND PIPES IS BASED ON A FIELD SURVEY, TIE SHEETS, AND OTHER INFORMATION AVAILABLE, INCLUDED IN THE PROJECT MANUAL APPENDIX. THE ENGINEER/SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN ON THE PLANS OR THE PROJECT MANUAL APPENDIX COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE ENGINEER/SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED. IN ADDITION, CONTRACTOR SHALL ANTICIPATE THAT EVERY BUILDING OR UNIT WITHIN THE PROJECT AREA HAS A LEAST ONE GAS, SEWER AND WATER SERVICE EXTENDING FROM THE MAIN IN THE STREET TO THE BUILDING. THEREFORE THE CONTRACTOR SHOULD CONSIDER CONFLICTS, HAND EXCAVATION AND POSSIBLE DELAYS IN CONSTRUCTION, WHEN PREPARING THEIR BID.

2. THE CONTRACTOR IS RESPONSIBLE FOR THE LOCATION, PROTECTION AND REPAIR (IF DAMAGED) OF ALL EXISTING UTILITY MAINS AND SERVICES. THE LOCATIONS OF KNOWN SEWER, WATER AND GAS, MAINS, SHOWN ON THESE DRAWINGS ARE APPROXIMATE. HOWEVER, WATER AND SEWER SERVICE LATERALS ARE NOT SHOWN AND THE CONTRACTOR IS TO ANTICIPATE THEIR EXISTENCE. TIE SHEETS FOR THE KNOWN UTILITIES (INCLUDING GAS AND WATER) ARE PROVIDED IN THE APPENDIX OF THE PROJECT MANUAL. VIDEO LOGS AND SANITARY SURVEYS FOR SEWER LATERALS ARE AVAILABLE FROM THE ENGINEER UPON REQUEST. NOTIFY DIG-SAFE PRIOR TO COMMENCING CONSTRUCTION (1-888-344-7233). CONTRACTOR SHALL GIVE ADEQUATE NOTICE TO THE ENGINEER OF CONFLICTS OF PROPOSED WORK WITH MARKED UTILITIES PRIOR TO CONSTRUCTING THE PROPOSED WORK.

3. ALL CONFLICTS WITH GAS LINES SHALL BE COORDINATED WITH UNITIL, SUBSIDIARY.

4. THE CONTRACTOR SHALL MAINTAIN SINGLE LANE TRAFFIC AND ACCESS TO BUSINESSES AND PROPERTIES AT ALL TIMES DURING WORKING HOURS. TRAFFIC CONTROL WARNING DEVICES SHALL BE IN ACCORDANCE WITH MUTCD (LATEST EDITION) REQUIREMENTS AND SECTION 01570 OF THE PROJECT MANUAL.

5. ALL STREET OPENINGS SHALL BE BACKFILLED AT THE END OF EACH DAYS OPERATIONS TO ENSURE SAFE VEHICULAR AND PEDESTRIAN TRAFFIC. THE CONTRACTOR SHALL MAINTAIN SAFE PASSAGE FOR 2-LANES OF TRAFFIC AT THE END OF EACH WORK DAY. DUST CONTROL OPERATIONS ARE TO BE CONTINUOUS THROUGHOUT CONSTRUCTION AND IS INCIDENTAL TO THE WORK.

6. THE USE OF PLATES TO COVER OPEN EXCAVATIONS IN LIEU OF BACKFILLING WILL NOT BE PERMITTED UNLESS PRIOR APPROVAL HAS BEEN GRANTED BY THE OWNER.

7. A NPDES PERMIT FOR CONSTRUCTION ACTIVITIES IS REQUIRED FOR THIS PROJECT. THE CONTRACTOR IS REQUIRED TO PREPARE A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AND TO SUBMIT A NOTICE OF INTENT (NOI) TO THE EPA TO FULFILL PROJECT REQUIREMENTS. THE SWPPP MUST BE PREPARED IN ACCORDANCE WITH THE EPA'S REQUIREMENTS. NO WORK IS TO PROCEED UNTIL THE SWPPP AND THE NOI IS SUBMITTED AND ACCEPTED BY THE OWNER. A COPY OF THE NOI, SWPPP REQUIREMENTS, AND EXAMPLE SWPPP ARE INCLUDED IN THE PROJECT MANUAL APPENDIX.

8. THIS SET OF PLANS HAS BEEN CREATED TO BE USED IN CONJUNCTION WITH A TECHNICAL SPECIFICATION ENTITLED "PROJECT MANUAL, MAPLEWOOD AVENUE – DRAINAGE INTERCEPT, PORTSMOUTH, NH".

9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL AND DISPOSAL OF ALL SURPLUS EARTHEN MATERIALS, LEDGE, CURB, PIPE, AND SEWER OR DRAIN STRUCTURES EXCAVATED DURING CONSTRUCTION, UNLESS MATERIALS ARE CLAIMED BY THE OWNER OR OTHERWISE INDICATED IN THE PROJECT MANUAL OR THE DRAWINGS.

10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PROPERTY RESTORATION BOTH PUBLIC AND PRIVATE. UTILITIES DAMAGED AS A RESULT OF THE CONTRACTORS OPERATIONS SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

11. PAVING REPAIRS SHALL MAINTAIN EXISTING LINE AND GRADE UNLESS OTHERWISE INDICATED OR DIRECTED.

12. OVERHEAD WIRES AND WIRE DROPS TO BUILDINGS ARE NOT SHOWN IN ENTIRETY. THE CONTRACTOR SHALL ANTICIPATE THEIR EXISTENCE IN ALL OPERATIONS.

13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF ROADWAY SIGNS. ANY SIGN DAMAGED DURING THE COMPLETION OF WORK SHALL BE REPLACED AT NO ADDITIONAL COST TO THE OWNER.

14. 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.

15. CONTRACTOR SHALL NOT USE ANY ADJACENT DRIVEWAYS OR PARKING LOTS WITHOUT WRITTEN PERMISSION FOR PROPERTY OWNER. DAMAGE RESULTING FROM CONSTRUCTION LOADS OUTSIDE PROPOSED LIMITS OF WORK SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO OWNER.

16. EXISTING PROPERTY LINE MONUMENTATION DISTURBED DURING CONSTRUCTION SHALL BE SET OR RESET BY A LICENSED LAND SURVEYOR (LLS), SUBSIDIARY.

REFERENCE PLANS:

1. PORTWALK SITE PLAN, PREPARED BY APPLEDORE ENGINEERS INC., DATE/LAST REVISED 3/5/2010.
2. 195 HANOVER STREET AS BUILT, PREPARED BY S.U.R., DATE/LAST REVISED 7/21/2015.
3. PORTWALK AS BUILT, PREPARED BY MSC, DATE/LAST REVISED 9/15/2015.

SURVEY NOTES:

1. THIS PLAN IS BASED ON A FIELD SURVEY BY JAMES VERRA AND ASSOCIATES, INC. 12/2019-6/2022. ON SITE CONTROL ESTABLISHED USING SURVEY GRADE GPS UNITS.
HORIZONTAL DATUM: NAD 1983 (1986 ADJUSTMENT)
PRIMARY BM: NHDOT 379-0150 (PORTSMOUTH TRAFFIC CIRCLE)
VERTICAL DATUM: NAVD 1988
PRIMARY BM: CITY CONTROL POINT "ALBA"

2. CONTRACTOR TO VERIFY SITE BENCHMARKS BY LEVELING BETWEEN 2 BENCHMARKS PRIOR TO THE SETTING OR ESTABLISHMENT OF ANY GRADES/ELEVATIONS. DISCREPANCIES ARE TO BE REPORTED TO JAMES VERRA AND ASSOC., INC.

3. THE LOCATION OF ALL UNDERGROUND UTILITIES SHOWN HEREON ARE APPROXIMATE AND ARE BASED UPON THE FIELD LOCATION OF ALL VISIBLE STRUCTURES (IE CATCH BASINS, MANHOLES, WATER GATES ETC.) AND INFORMATION COMPILED FROM PLANS PROVIDED BY UTILITY COMPANIES AND GOVERNMENTAL AGENCIES. ALL CONTRACTORS SHOULD NOTIFY, IN WRITING, SAID AGENCIES PRIOR TO ANY EXCAVATION WORK AND CALL DIG-SAFE @ 1-888-DIG-SAFE.

NOTE: VERY LITTLE UNDERGROUND UTILITY MARKING WAS COMPLETED PRIOR TO CONDUCTING THE FIELD SURVEY.

SANITARY SEWER NOTES:

1. ALL NEW SEWER SERVICE LATERALS SHALL BE 6" DIAMETER, UNLESS DIRECTED OTHERWISE. PRIOR TO CONSTRUCTION OF NEW SEWER MAINS IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY EXACT SEWER SERVICE LOCATIONS, SIZES, AND ELEVATIONS, BY VIDEO INSPECTION WITH TRANSMITTER AND LOCATOR, PAY ITEM 1.18. SEWER LATERALS SHALL BE INSTALLED TO THE PROPERTY LINE (UNLESS SHOWN OTHERWISE ON THE DRAWINGS). ANY SERVICE WORK EXTENDING PAST THE PROPERTY LINE SHALL BE APPROVED BY THE PROPERTY OWNER, THE CITY, AND THE ENGINEER PRIOR TO CONSTRUCTION. MIN. SLOPE OF SERVICE PIPE = SHALL BE 0.02 FT/FT.

2. WORK ON PRIVATE PROPERTY SHALL BE COORDINATED WITH THE CITY AND THE PROPERTY OWNER.

3. SEWER CONSTRUCTION SHALL PROCEED FROM THE LOWEST POINT UPWARD UNLESS OTHERWISE APPROVED BY THE ENGINEER.

4. SMH RIMS SHALL BE SET 1/8" TO 1/4" BELOW GRADE WHEN IN PAVEMENT OR GRAVEL ROADS (I.E., PLOWED AREAS). RIMS SHALL BE SET AT GRADE IN NON-PLOWED AREAS UNLESS OTHERWISE INDICATED.

5. ALL EXISTING SEWER STRUCTURES (PIPE AND MANHOLES) TO BE ABANDONED SHALL BE PREPARED AS FOLLOWS:

   MANHOLES – SHALL BE REMOVED TO A MINIMUM DEPTH OF 4' BELOW GRADE. THE BASE OF STRUCTURES SHALL BE FILLED WITH FLOWFILL OR GRAVEL, COMPACTED IN 8" LIFTS, SUBSIDIARY, UNLESS OTHERWISE PAID FOR.
   PIPE – ALL PIPE TO BE ABANDONED IN PLACE AND SHALL BE CUT & PLUGGED AT BOTH ENDS, SUBSIDIARY. PIPES EXCEEDING 12-INCH DIAMETER, TO BE ABANDONED, WILL BE FILLED WITH FLOWABLE FILL (WHERE DIRECTED BY ENGINEER) AND PAID FOR UNDER ITEM 1.11.

6. IN ORDER OF PREFERENCE SEWER SERVICE CLEANOUTS SHALL BE PLACED:
   1) BEHIND CONCRETE SIDEWALKS.
   2) IN BRICK STRIP.
   3) IN CONCRETE SIDEWALKS.

7. ALL SEWER PIPE SHALL BE SDR 35 PVC UNLESS SHOWN OTHERWISE ON THE DRAWINGS.

DRAINAGE SYSTEM NOTES

1. IN GENERAL, NEW CB'S WILL BE SET AT THE LOCATIONS SHOWN. EXISTING CB STRUCTURES ARE TO BE REMOVED. (SUBSIDIARY). ALL FRAMES AND GRATES SHALL BE DELIVERED TO THE PORTSMOUTH DPW (SUBSIDIARY). ALL NEW CATCH BASIN RIMS SHALL BE SET 1/2" BELOW FINISH GRADE ELEVATION. REMOVAL OF CB'S OUTSIDE NORMAL EXCAVATION LIMITS WILL BE PAID AS ITEM 202.5.

2. MANHOLE AND CATCH BASIN BASES, RISERS, CONE SECTIONS, AND SLAB TOPS SHALL BE DESIGNED SUCH THAT THERE EXISTS A MINIMUM 6" PERIPHERY OF MONOLITHIC SOLID WALL SEPARATION BETWEEN OPENINGS (CORINGS AND SECTIONS).

3. ALL CATCH BASINS, DRAIN MANHOLES, & DRAIN LINES SHALL BE CLEANED PRIOR TO ACCEPTANCE.

4. ALL REQUIRED STORM DRAIN SERVICES MAY NOT BE SHOWN ON THE PLANS, AND SHALL BE PROVIDED WHERE DIRECTED BY THE ENGINEER.

5. DMH RIMS SHALL BE SET 1/8" TO 1/4" BELOW GRADE WHEN IN PAVEMENT OR GRAVEL ROADS (I.E., PLOWED AREAS). RIMS SHALL BE SET AT GRADE IN NON-PLOWED AREAS UNLESS OTHERWISE INDICATED.

6. LOCATIONS OF NEW DRAIN SERVICES ARE BASED ON EXISTING ROOF LEADERS OBSERVED. ACTUAL LOCATION AND CONFIGURATION MAY CHANGE BASED ON FINAL REVIEW WITH PROPERTY OWNER DURING CONSTRUCTION.

WATER DISTRIBUTION SYSTEM NOTES:

1. THE CONTRACTOR SHALL MAINTAIN AND PROTECT THE EXISTING WATER SYSTEM AT ALL TIMES. LOCATE AND IDENTIFY ALL EXISTING MAINS AND SERVICE LOCATIONS IN ADVANCE.

2. WATER BOXES, OR OTHER CASTINGS, DISTURBED OR RELOCATED BY CONSTRUCTION ACTIVITIES SHALL BE ADJUSTED TO EXISTING LINE AND GRADE, UNLESS SHOWN OTHERWISE ON THESE PLANS OR AS DIRECTED BY THE ENGINEER (SUBSIDIARY).

CONSTRUCTION SEQUENCE:

PERFORM WORK IN ACCORDANCE WITH APPROVED SCHEDULE, GENERALLY ACCEPTED INDUSTRY ORDER OF OPERATIONS UNLESS OTHERWISE APPROVED IN WRITING BY THE ENGINEER.

1. PRIOR TO THE START OF CONSTRUCTION PROVIDE A WRITTEN NARRATIVE OF THE CONSTRUCTION METHODS TO BE USED AND INCLUDE A PRELIMINARY SCHEDULE OF KEY MILESTONES, INCLUDING COORDINATION OF UTILITY PIPE INSTALLATIONS AND COORDINATION WITH GAS COMPANY, AND OTHER UTILITIES AS APPLICABLE.

2. REFER TO SECTION 01010 (SUMMARY OF WORK) AND SECTION POW (PROSECUTION OF WORK) FOR ADDITIONAL SCHEDULE AND PROJECT REQUIREMENTS.

3. INSTITUTE EXPLORATORY EXCAVATION PROGRAM WITH ENGINEER TO IDENTIFY POTENTIAL CONFLICTS AT UTILITY CROSSINGS. EXPLORATORY EXCAVATION COMPLETED WITHOUT PRIOR APPROVAL FROM THE ENGINEER WILL BE AT NO ADDITIONAL COST TO THE OWNER.

4. INSTALL AND MAINTAIN TEMPORARY AND PERMANENT EROSION CONTROL DEVICES THROUGHOUT THE CONSTRUCTION PERIOD (INCLUDING WINTER SHUT DOWN PERIODS AS REQUIRED) AS SHOWN IN THE APPROVED SWPPP, ON THE DRAWINGS, OR AS APPROVED BY THE ENGINEER.

5. PRE-DRAIN AND/OR DEWATER EXCAVATIONS BEFORE INSTALLING PIPE. INSTALL PIPE ON STABLE BEDDING (IN DRY CONDITIONS) TO THE ELEVATIONS SHOWN ON DRAWINGS.

6. DISPOSE OF SURPLUS AND UNSUITABLE MATERIALS AS THE WORK PROGRESSES, STOCKPILE OF MATERIALS WILL ONLY BE PERMITTED IN AREAS APPROVED BY THE CITY OF PORTSMOUTH, DPW.

7. INSTALL CRUSHED GRAVEL OR RECLAIMED BASE AS SHOWN ON DRAWINGS, IN TRENCH AT END OF EACH DAY. VISUAL INSPECTION, ALIGNMENT TESTS AND DEFLECTION TESTS OF PIPES SHALL BE COMPLETED NO LESS THAN THIRTY (30) DAYS FOLLOWING INSTALLATION. CONSTRUCT PAVEMENT REPAIRS AS SOON AS PRACTICAL, FOLLOWING UTILITY INSTALLATIONS AND TESTING.

8. IMMEDIATELY STABILIZE DISTURBED AREAS AFTER PIPE INSTALLATION AND REESTABLISH TEMPORARY EROSION CONTROL DEVICES MOVED DURING CONSTRUCTION.

9. FINISH GRADING, LOAM AND SEED DISTURBED AREAS AND BACK UP PAVEMENT WITH GRAVEL IMMEDIATELY FOLLOWING PAVEMENT REPAIRS.

10. REMOVE ALL TEMPORARY EROSION CONTROL DEVICES AS SOON AS VEGETATION IS ESTABLISHED AND AREAS ARE STABILIZED.

NO.	REVISIONS	APP'D
	RECORD DRAWING Date – By –	
	CONSTRUCTION Date – By –	
	BIDDING Date – By –	
	ISSUE FOR	

Drawn/Chk. RMG
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Approved –
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UTILITY PLAN NOTES

MAPLEWOOD AVE – DRAINAGE INTERCEPT

CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

DWG NO G3

SHEET 4 OF 14

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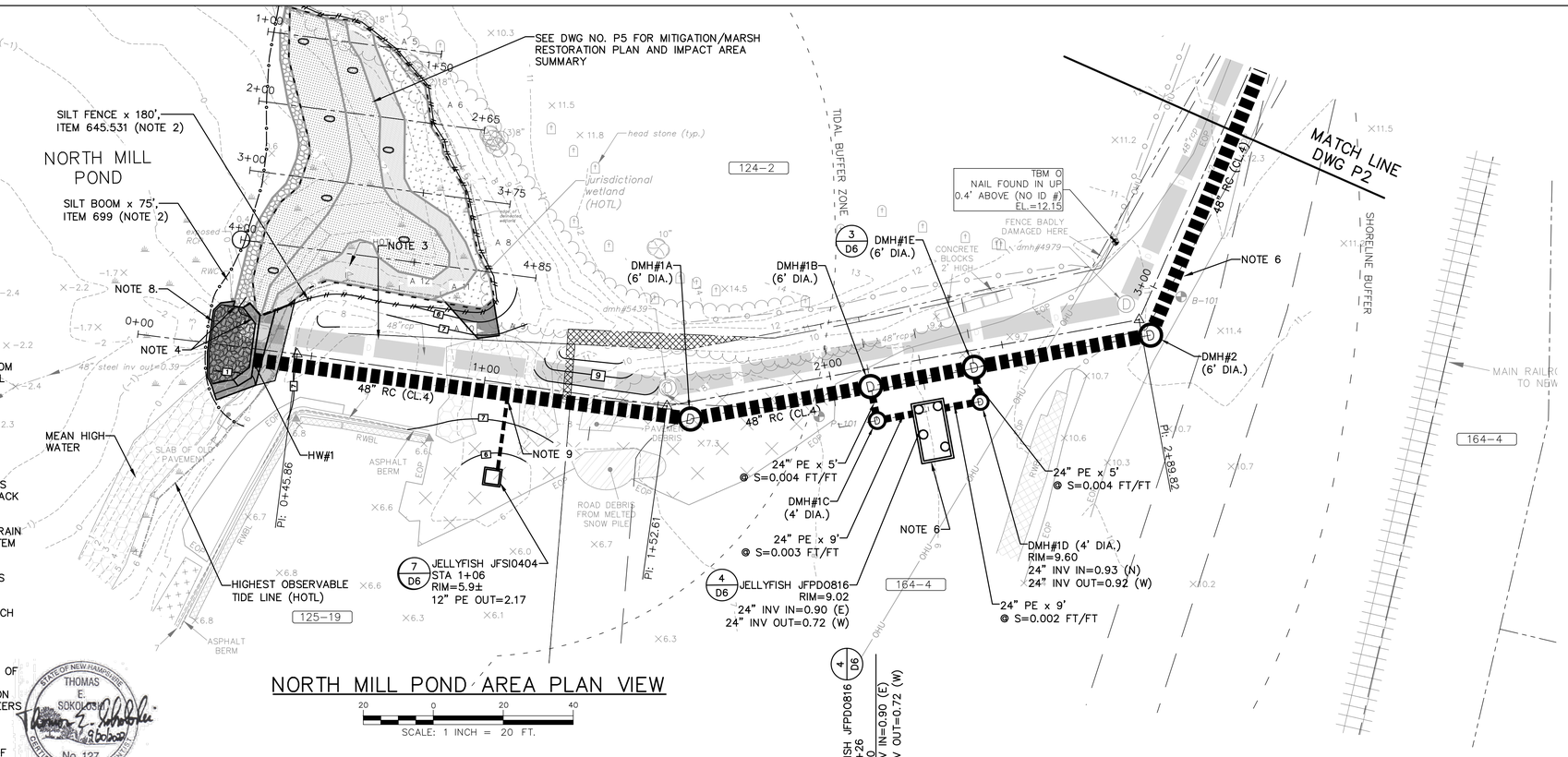
DRAINAGE OUTFALL NOTES:

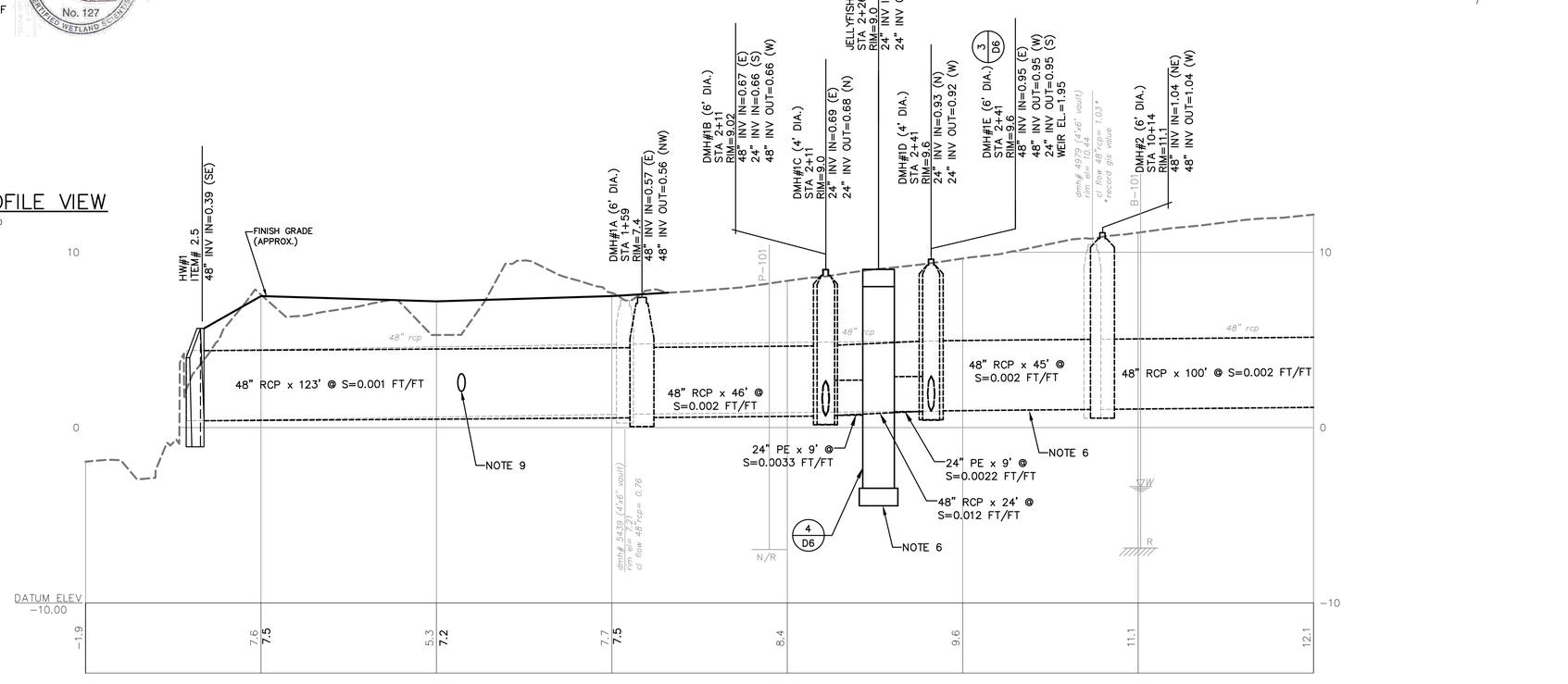
1. CONSTRUCT DRAINAGE OUTFALL AND HEADWALL IN ACCORDANCE WITH PERMIT CONDITIONS, DRAWINGS AND SPECIFICATIONS.
2. INSTALL SILT BOOM AND SET ANCHORS TO KEEP SILT BOOM IN PLACE DURING TIDAL FLUCTUATIONS, ITEM 699. INSTALL SILT FENCE, ITEM 645.531. MAINTAIN EROSION CONTROLS THROUGH CONSTRUCTION, PREVENT DEGRADATION OF DOWNSTREAM PROPERTIES AND TIDAL WETLANDS.
3. MAINTAIN FLOW IN THE EXISTING 48" DRAIN PIPE THROUGHOUT CONSTRUCTION, SUBSIDIARY.
4. REMOVE EXISTING HEADWALL AND INSTALL PRE-CAST HEADWALL DURING LOW WATER AND LOW FLOW CONDITIONS OR INSTALL SHEETING AND PUMP SYSTEM TO CONTROL BACK WATER, PAY AS ITEM 2.5.
5. INSTALL TIDE VALVES AND PREVENT BACK WATER INTO DRAIN PIPES DURING CONSTRUCTION OF DRAIN PIPES, PAY AS ITEM 2.6.
6. MAINTAIN GROUND WATER ELEVATION BELOW PIPE INVERTS AND BOTTOM OF JELLYFISH UNIT SO INSTALLATION IS COMPLETED IN THE DRY. GROUND WATER MAY VARY SEE B-101, APPENDIX A FOR OBSERVED GROUND WATER, MARCH 2022. GROUND WATER DISCHARGE SHALL BE FILTERED THROUGH A CONTROLLED SYSTEM IN ACCORDANCE WITH CONTRACTORS SWPPP, PAY AS ITEM 2.2.
7. THOMAS SOKOLOSKI, CERTIFIED WETLAND SCIENTIST #127, OF TES ENVIRONMENTAL CONSULTANTS, L.L.C. OF BOW, NH, PERFORMED THE WETLAND IDENTIFICATION AND DELINEATION ON JUNE 28, 2022 ACCORDING TO THE 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, US ARMY CORPS OF ENGINEERS.
8. CONSTRUCT STABILIZED OUTLET. SEE DETAILS (DWG D6).
9. CONNECT 12" PE TO 48" RCP WITH INSERT TEE TYPE CONNECTION. 12" PE INVERT=1.97, INCIDENTAL TO ITEM 603.82212.

STATE OF NEW HAMPSHIRE
THOMAS E. SOKOLOSKI
No. 127
CERTIFIED WETLAND SCIENTIST



NORTH MILL POND AREA PLAN VIEW

SCALE: 1 INCH = 20 FT.



NORTH MILL POIND AREA PROFILE VIEW

HORIZ: 1 INCH = 20 FT.
VERT: 1 INCH = 4 FT.

ISSUE FOR	Date	By
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UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

NORTH MILL POND DRAINAGE OUTFALL
PIPE PLAN AND PROFILES

MAPLEWOOD AVE – DRAINAGE INTERCEPT

CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

DWG NO P1
SHEET 5 OF 14

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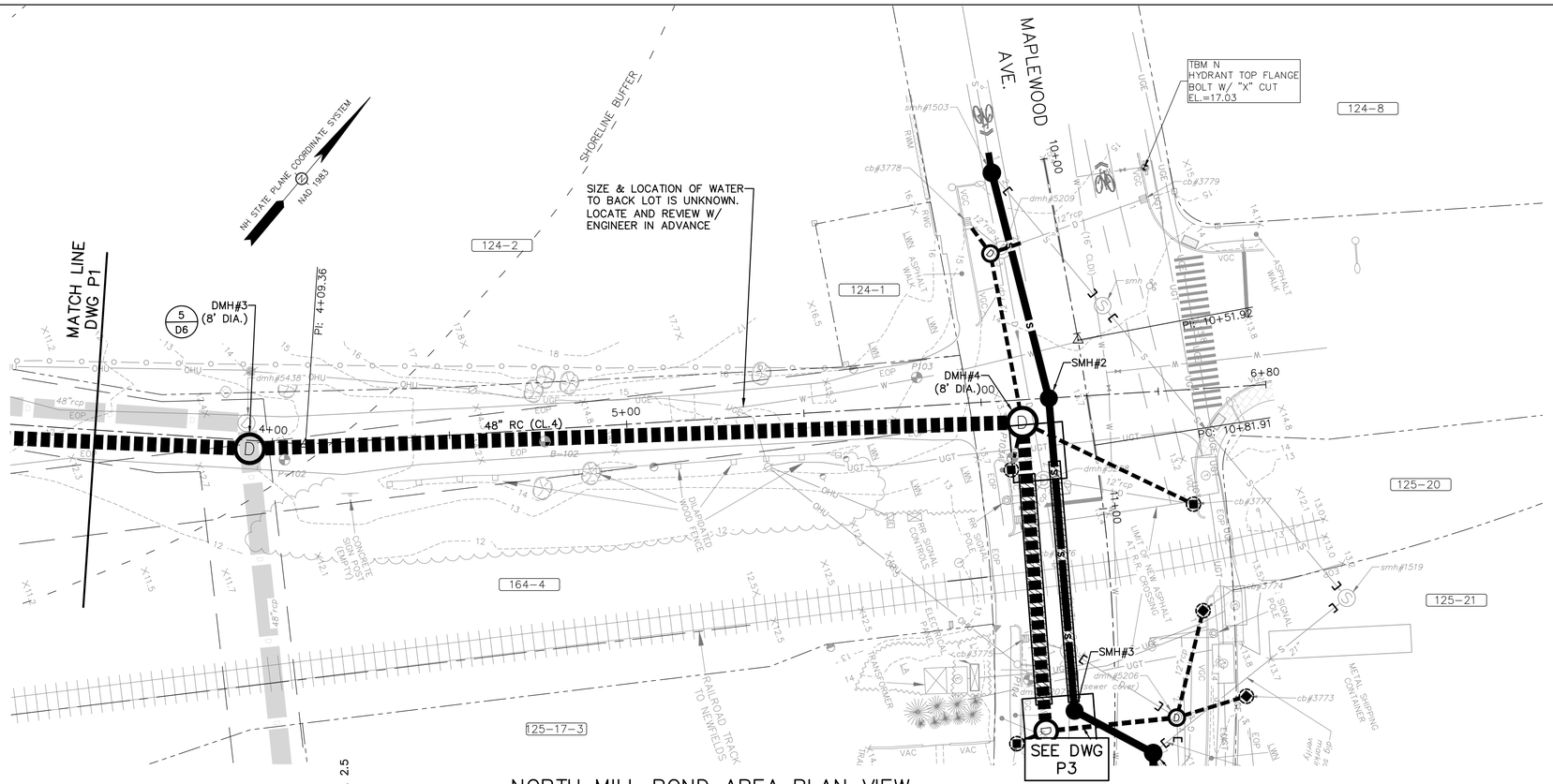
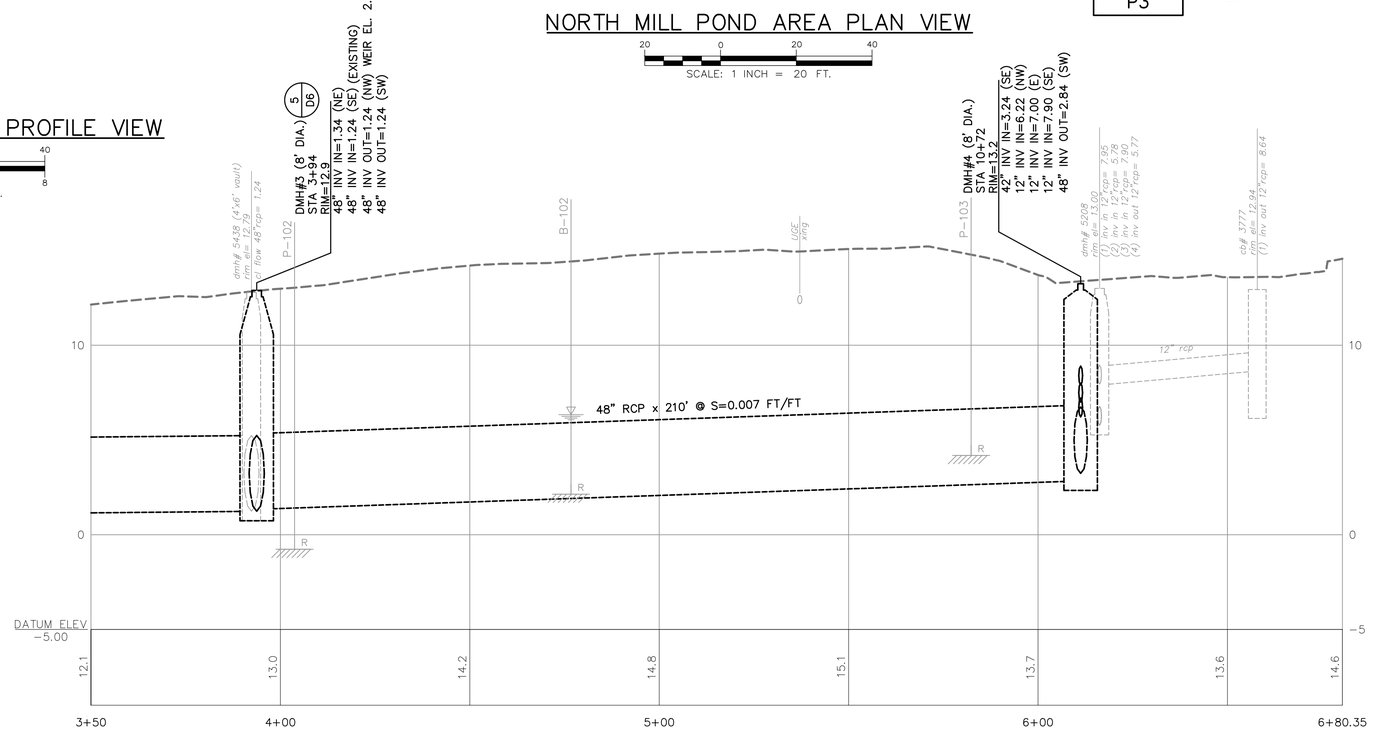


NORTH MILL POND AREA PLAN VIEW

SCALE: 1 INCH = 20 FT.

NORTH MILL POIND AREA PROFILE VIEW

HORIZ: 1 INCH = 20 FT.
VERT: 1 INCH = 4 FT.



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NORTH MILL POND AREA
PIPE PLAN AND PROFILES

MAPLEWOOD AVE – DRAINAGE INTERCEPT

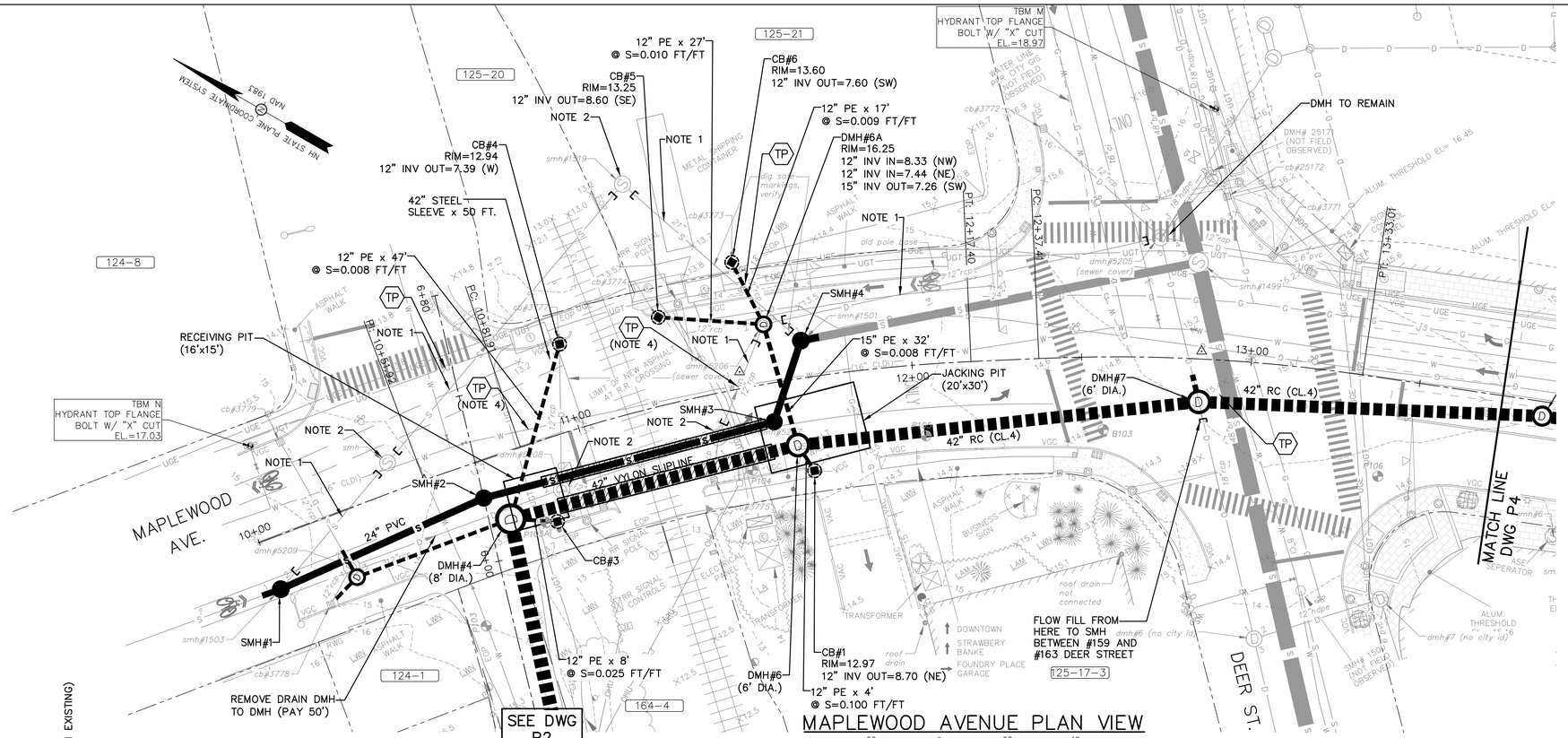
CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

DWG NO P2

SHEET 6 OF 14

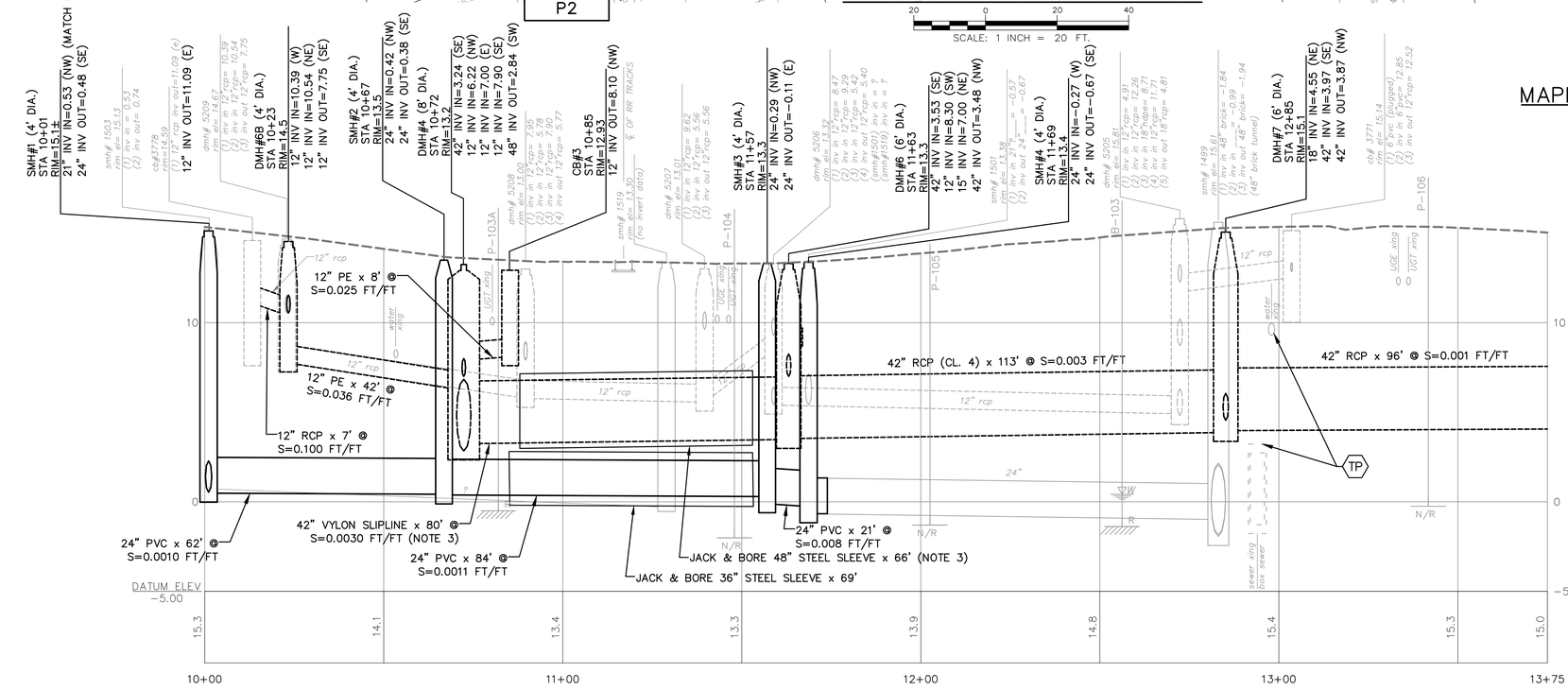
NOTES:

1. ABANDON EXISTING PIPES IN PLACE. PLUG AND CAP PIPE AT MANHOLES AND FILL WITH FLOWABLE FILL.
2. REMOVE EXISTING MANHOLE FOLLOWING INSTALLATION OF NEW SEWER.
3. DURING THE JACKING OPERATION THE FRONT OF THE CASING PIPE SHALL BE PROVIDED WITH MECHANICAL ARRANGEMENTS OR DEVICES THAT WILL POSITIVELY PREVENT THE AUGER FROM LEADING THE PIPE SO THAT NO UNSUPPORTED EXCAVATION IS AHEAD OF THE PIPE. *CSXT PIPELINE SPECS. PAGE 23, ii, (c)*
4. CONTRACTOR TO PERFORM TEST PIT TO CONFIRM LOCATION OF WATER MAIN PRIOR TO JACKING AND RECEIVING PIT EXCAVATION.



MAPLEWOOD AVENUE PLAN VIEW

SCALE: 1 INCH = 20 FT.



MAPLEWOOD AVENUE PROFILE VIEW

HORIZ: 1 INCH = 20 FT.
VERT: 1 INCH = 4 FT.

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MAPLEWOOD AVENUE
PIPE PLAN AND PROFILES

MAPLEWOOD AVE – DRAINAGE INTERCEPT

CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

DWG NO P3

SHEET 7 OF 14

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MAPLEWOOD AVENUE PLAN VIEW

SCALE: 1 INCH = 20 FT.

MAPLEWOOD AVENUE PROFILE VIEW

HORIZ: 1 INCH = 20 FT.
VERT: 1 INCH = 4 FT.

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MAPLEWOOD AVENUE PIPE PLAN AND PROFILES

MAPLEWOOD AVE – DRAINAGE INTERCEPT

CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

DWG NO P4

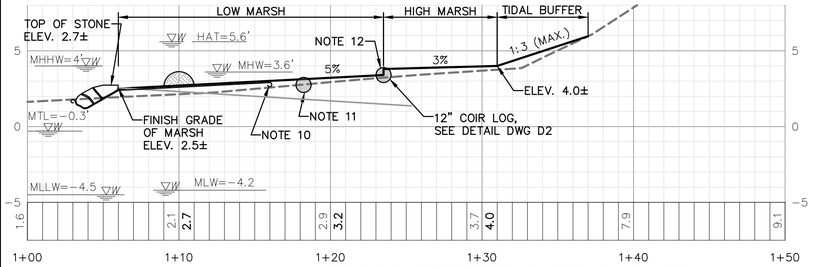
SHEET 8 OF 14

NOTES:

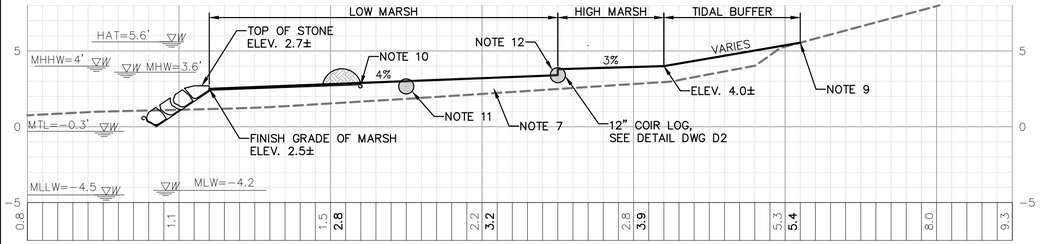
1. CONSTRUCT ROCK STABILIZED 1.5:1 SLOPE. CONTRACTOR SHALL GRADE SLOPE TO THE APPROXIMATE GRADES SHOWN AND PLACE NHDOT CLASS C STONE FILL (18" THICKNESS MIN) ON TOP OF COIR BLANKET (900 GRAM WEIGHT, DOUBLE THICKNESS). CONTRACTOR SHALL USE STOCKPILED STONE FROM SITE TO THE GREATEST EXTENT PRACTICAL, SEE NOTE 2.
2. CONTRACTOR SHALL PRESERVE AND STOCKPILE EXISTING STONE FOUND ON-SITE, AND PREVIOUSLY EXPOSED TO TIDAL ACTION, TO BE USED FOR STONE STABILIZATION AND BOULDERS WHERE SPECIFIED. ON-SITE SOURCES OF STONE ARE THE RANDOM STONES FOUND IN THE MARSH AREA, AND THE EXISTING STONE EMBANKMENT TO THE NORTH OF THE EXISTING OUTFALL.
3. CONTRACTOR SHALL PLACE BOULDERS (24" MIN) IN THE PROPOSED MARSH AREA FOR THE PURPOSE OF BREAKING UP SHEET ICE IN THE WINTER TIME. PLACE BOULDERS RANDOMLY APPROXIMATELY 75' APART.
4. ALL EXISTING TREES TO REMAIN.
5. TRIM TREES TO RAISE THE LOWEST PORTION OF THE CANOPY APPROXIMATELY 20' ABOVE GROUND TO PROMOTE ADDITIONAL SUNLIGHT TO THE MARSH.
6. ALL SHRUB VEGETATION TO REMAIN. PER THE FUNCTIONAL ASSESSMENT COMPLETED AS PART OF THE PERMITTING PROCESS, MUCH OF THIS VEGETATION IS INVASIVE AND SHOULD REMAIN IN PLACE. REMOVAL OF VEGETATION WILL ONLY BE PERMITTED WITH APPROVAL OF THE ENGINEER AND THE CITY ARBORIST. ANY REMOVAL OF INVASIVE SPECIES SHALL BE COMPLETED IN ACCORDANCE TO ALL LOCAL, STATE, AND FEDERAL GUIDELINES.
7. CONTRACTOR SHALL ENDEAVOR TO INCORPORATE AS MUCH SURPLUS SOIL FROM THE OUTFALL IMPROVEMENTS AS POSSIBLE. IMPORTED SOIL USED FOR MARSH GRADING SHALL MEET THE FOLLOWING:

SIZE (mm)	PASSING
12.5	100%
2	90%
0.5	80%
0.1	20%

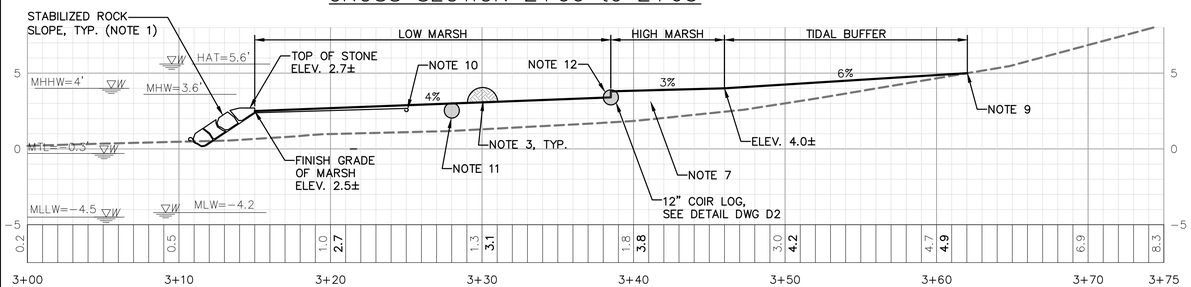
8. PLANTING WITHIN THE PROPOSED MARSH SHALL BE WITH SPECIES NATIVE TO THE AREA. ALL PLANTINGS SHALL BE NURSERY GROWN, BARE ROOT SEEDLINGS. SEEDING OF THE SITE WILL NOT BE PERMITTED. LOW MARSH AREA SHALL BE PLANTED WITH VEGETATION SHEETS (MATS) AT THE RATE OF ONE MAT PER 1.65 SQ. FT. OF SMOOTH CORDGRASS (SPARTINA ALTERNIFLORA). HIGH MARSH AREA SHALL BE PLANTED WITH VEGETATION SHEETS (MATS) AT THE RATE OF ONE MAT PER 1.65 SQ. FT. OF SALTMEADOW CORDGRASS (SPARTINA PATENS). INCREASE DIVERSITY IN THE HIGH MARSH ZONE BY PLANTING SPIKE GRASS (DISTICHLIS SPICATA), BLACK GRASS (JUNCUS GERARDII), AND SEA LAVENDER (LIMONIUM) AT RANDOM AT A RATE OF ONE PLANT PER 80 SQ FT. THE TIDAL BUFFER ZONE SHALL BE PLANTED WITH BAYBERRY (MYRICA PENSYLVANICA), SHADBUSH (AMELANCHIER CANADENSIS), SWITCHGRASS (PANICUM VIRGATUM), SWEET-FERN (COMPTONIA PEREGRINA), AND SWEET PEPPERBUSH (CLETHRA ALNIFOLIA) AT RANDOM, AT A RATE OF ONE PLANT PER 80 SQ. FT. CERTIFICATION THAT SEEDLING STOCK IS OF SPECIFIED SPECIES SHALL BE PROVIDED BY THE NURSERY OR QUALIFIED PROFESSIONAL. SEE NOTE 13 FOR PLANTING ZONES.
9. LIMIT OF FINAL GRADING WILL BE REVIEWED IN THE FIELD PRIOR TO COMMENCEMENT OF WORK. ACTUAL FINAL LIMIT OF GRADING WILL BE DEPENDANT ON ACTUAL CONDITIONS FOUND ON-SITE AND IMPACTS TO EXISTING VEGETATION AND THE NEED FOR INVASIVE SPECIES REMOVAL.
10. EXTEND COIR BLANKET (SINGLE THICKNESS) 10' ONTO SURFACE OF MARSH IMMEDIATELY FOLLOWING COMPLETION OF GRADING AND PRIOR TO SEEDING.
11. INSTALL 12" COIR LOG BURIED APPROXIMATELY 9" TO SERVE AS AN EROSION BARRIER AND TO AREA FOR ROUTINE INSPECTIONS OF MARSH AREA. SET COIR LOG APPROXIMATELY LEVEL ACROSS A CONTOUR TO PREVENT CONCENTRATION OF WATER. TOP OF LOG ELEVATION = 3.2'±.
12. INSTALL 12" COIR LOG MARSH TRANSITION, TOP OF LOG = ELEV 3.9'±. ELEVATION OF LOW MARSH SHALL BE 3.4'± AND ELEVATION OF HIGH MARSH SHALL BE 3.8'±.
13. PLANTING ZONES SHALL GENERALLY AS FOLLOWS:
    A. LOW MARSH PLANTS BELOW ELEVATION 3.6' (BELOW MHW)
    B. HIGH MARSH PLANTS BETWEEN ELEVATIONS 3.6' AND 4.0' (BETWEEN MHW AND MHHW)
    C. TIDAL BUFFER PLANTINGS ABOVE ELEVATION 4.0' (ABOVE MHHW)



CROSS SECTION 1+00 to 1+50



CROSS SECTION 2+00 to 2+65



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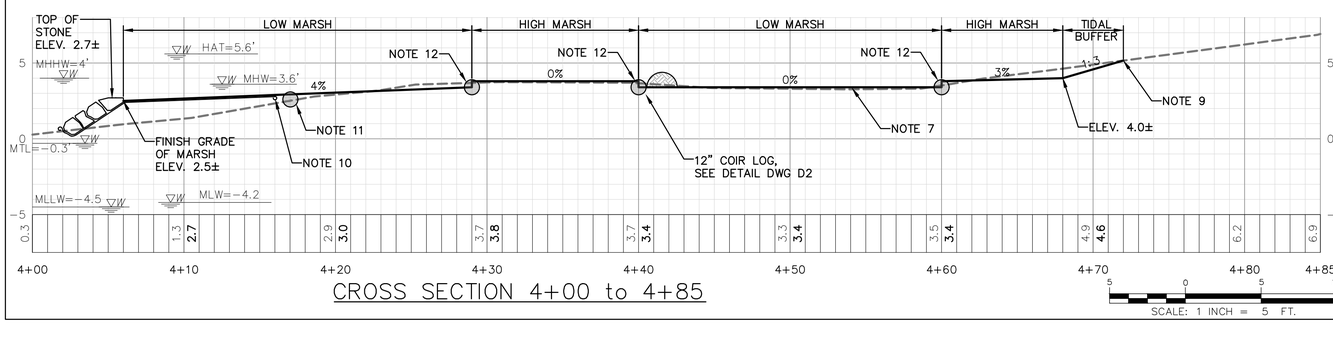
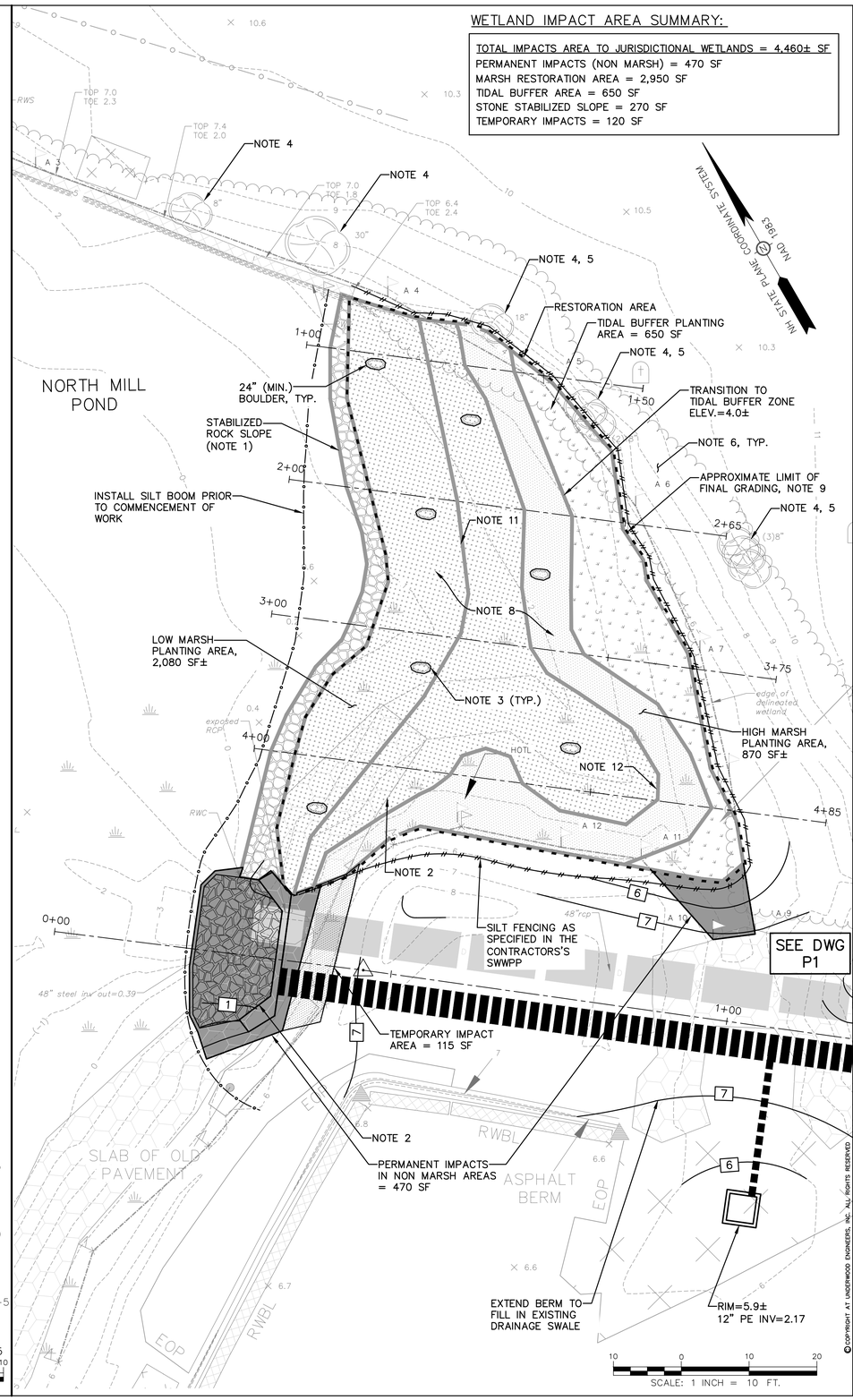


CROSS SECTION 4+00 to 4+85

SCALE: 1 INCH = 5 FT.

WETLAND IMPACT AREA SUMMARY:

TOTAL IMPACTS AREA TO JURISDICTIONAL WETLANDS = 4,460± SF
PERMANENT IMPACTS (NON MARSH) = 470 SF
MARSH RESTORATION AREA = 2,950 SF
TIDAL BUFFER AREA = 650 SF
STONE STABILIZED SLOPE = 270 SF
TEMPORARY IMPACTS = 120 SF



SCALE: 1 INCH = 10 FT.

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25 Vaughan Mall, Portsmouth, N.H. 03801
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NORTH MILL POND RESTORATION AREA
PLAN AND PROFILES

MAPLEWOOD AVE – DRAINAGE INTERCEPT

CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

DWG NO P5
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STANDARD MANHOLE NOTES:

1. GENERAL: SEWER MANHOLES, INCLUDING ALL COMPONENT PARTS, SHALL BE ASSEMBLED OF PRECAST SECTIONS, WITH STEEL REINFORCEMENT. IN ANY APPROVED MANHOLE, THE COMPLETE STRUCTURE SHALL BE OF SUCH MATERIAL AND QUALITY AS TO WITHSTAND LOADS OF 8 TONS (H20 LOADING) WITHOUT FAILURE, AND TO PREVENT LEAKAGE IN EXCESS OF ONE GALLON PER DAY PER VERTICAL FOOT OF MANHOLE, CONTINUOUSLY FOR THE LIFE OF THE STRUCTURE. A PERIOD GENERALLY IN EXCESS OF 25 YEARS IS TO BE UNDERSTOOD IN BOTH CASES.

2. BARRELS AND CONE SECTIONS: SHALL BE PRECAST REINFORCED CONCRETE.

3. PRECAST CONCRETE: BARREL SECTIONS, CONES, AND BASES SHALL CONFORM TO ASTM C478.

4. LEAKAGE TEST: SHALL BE PERFORMED IN ACCORDANCE WITH THE SPECIFICATIONS. INVERT AND SHELF TO BE PRIOR TO BACKFILL PLACED AFTER TESTING.

5. INVERTS AND SHELVES: MANHOLES SHALL HAVE A BRICK PAVED SHELF AND INVERT, CONSTRUCTED TO CONFORM TO THE SIZE OF PIPE AND FLOW. CARE SHALL BE TAKEN TO INSURE THAT THE BRICK INVERT IS A SMOOTH CONTINUATION OF THE SEWER INVERT. INVERT BRICKS SHALL BE LAID ON EDGE. AT CHANGES IN DIRECTION, THE INVERTS SHALL BE LAID OUT IN CURVES OF THE LONGEST POSSIBLE TANGENT TO THE CENTER LINE OF THE SEWER PIPES. SHELVES SHALL BE CONSTRUCTED TO AN ELEVATION OF 1" ABOVE THE HIGHEST PIPE CROWN AND SLOPE TO DRAIN TOWARD THE FLOWING THROUGH CHANNEL. UNDERLAYMENT OF INVERT AND SHELF SHALL CONSIST OF BRICK MASONRY.

6. FRAMES AND COVERS: MANHOLE FRAMES AND COVERS SHALL BE CITY OF PORTSMOUTH STANDARD AND SHALL BE PICKED UP BY THE CONTRACTOR AT PORTSMOUTH DPW.

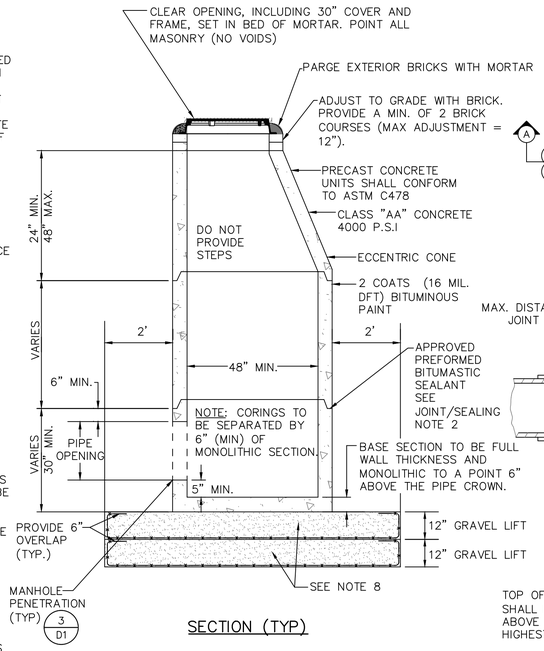
7. BEDDING: SCREENED GRAVEL AND/OR CRUSHED STONE FREE FROM CLAY, LOAM, ORGANIC MATTER AND MEETING ASTM C33. STONE SIZE NO. 67.
   - 100% PASSING 1 INCH SCREEN
   - 90–100% PASSING 3/4 INCH SCREEN
   - 20–55% PASSING 3/8 INCH SCREEN
   - 0–10% PASSING #4 SIEVE
   - 0–5% PASSING #8 SIEVE

8. WHERE THE MATERIAL BELOW MANHOLE STRUCTURE IS SOFT OR YIELDING, AND WHERE DIRECTED BY THE ENGINEER, INSTALL DOUBLE LAYER OF GEOGRID (TENSAR TX160 OR EQUAL). PAY AS ITEM 1.8B (LFx2).

9. SHALLOW MANHOLE: IN LIEU OF A CONE SECTION, WHEN MANHOLE IS LESS THAN 6 FEET, A REINFORCED CONCRETE SLAB COVER HAVING AN ECCENTRIC ENTRANCE AND CAPABLE OF SUPPORTING H–20 LOADS MAY BE USED.

10. FLEXIBLE JOINT: A FLEXIBLE JOINT SHALL BE PROVIDED WITHIN THE FOLLOWING DISTANCES:
RCP AND CI PIPE – ALL SIZES – 48"
AC AND VC PIPE – UP THROUGH 12" DIA. – 18"
AC AND VC PIPE – LARGER THAN 12" DIA. – 36"
DI PIPE – NONE REQUIRED
PVC – UP THROUGH 15" DIA. – NONE REQUIRED
PVC – LARGER THAN 15" DIA. – 48"/60"
ABS (ASTM D2680) – ALL SIZES – SAME AS VC ABOVE.

11. SPECIFICATIONS: ADDITIONAL CONSTRUCTION SPECIFICATIONS ARE INCLUDED IN THE CONTRACT DOCUMENTS. THESE STANDARD MANHOLE DRAWINGS ARE NOT COMPLETE WITHOUT THESE SPECIFICATIONS.



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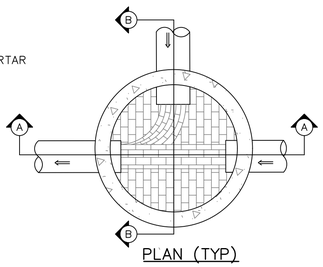
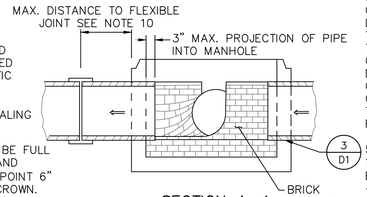
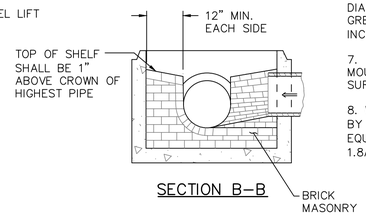


PLAN (TYP)



SECTION A–A



SECTION B–B

1 D1 SEWER MANHOLE
NOT TO SCALE

GRAVITY SEWER TRENCH NOTES:

1. ORDERED EXCAVATION OF UNSUITABLE MATERIAL BELOW GRADE: BACKFILL AS STATED IN THE TECHNICAL SPECIFICATIONS OR AS SHOWN ON THE DRAWINGS.

2. BEDDING: SEE NOTE 7 OF STANDARD MANHOLE NOTES. WHERE ORDERED BY THE ENGINEER TO STABILIZE THE TRENCH BASE, GRADED SCREENED GRAVEL OR CRUSHED STONE 1/2 INCH TO 1–1/2 INCH AND/OR THE USE OF GEOGRID FABRIC (ITEM 1.8B) MAY BE REQUIRED.

3. SAND BLANKET: CLEAN SAND FREE FROM ORGANIC MATTER, SO GRADED THAT 90–100% PASSES A 1/2 INCH SIEVE AND NOT MORE THAN 15% WILL PASS A #200 SIEVE. BLANKET MAY BE OMITTED FOR CAST–IRON, DUCTILE IRON, AND REINFORCED CONCRETE PIPE PROVIDED HOWEVER, THAT NO STONE LARGER THAN 2" IS IN CONTACT WITH THE PIPE.

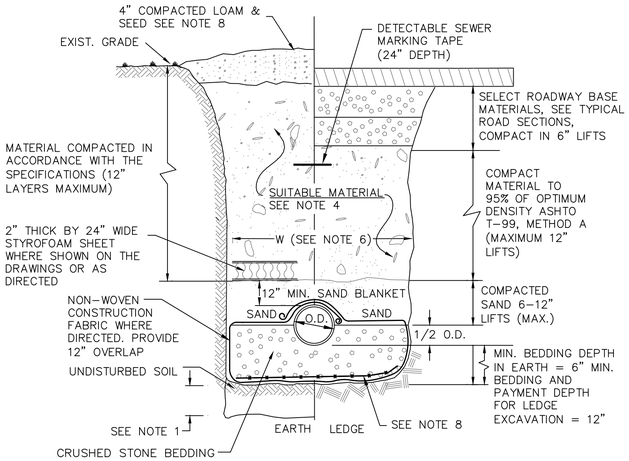
4. SUITABLE MATERIAL: IN ROADS, ROAD SHOULDERS, WALKWAYS AND TRAVELED WAYS, SUITABLE MATERIAL FOR TRENCH BACKFILL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE DEBRIS; PIECES OF PAVEMENT; ORGANIC MATTER; TOP SOIL; ALL WET OR SOFT MUCK, PEAT, OR SOFT CLAY; ALL EXCAVATED LEDGE MATERIAL; ALL ROCKS OVER 6 INCHES IN LARGEST DIMENSION; AND ANY MATERIAL WHICH, AS DETERMINED BY THE ENGINEER, WILL NOT PROVIDE SUFFICIENT SUPPORT OR MAINTAIN THE COMPLETED CONSTRUCTION IN A STABLE CONDITION. IN CROSS–COUNTRY CONSTRUCTION, SUITABLE MATERIAL SHALL BE AS DESCRIBED ABOVE, EXCEPT THAT THE ENGINEER MAY PERMIT THE USE OF TOP SOIL, LOAM, MUCK, OR PEAT, IF HE IS SATISFIED THAT THE COMPLETED CONSTRUCTION WILL BE ENTIRELY STABLE AND PROVIDED THAT EASY ACCESS TO THE SEWER, FOR MAINTENANCE AND POSSIBLY RECONSTRUCTION, WILL BE PRESERVED.

5. BASE COURSE AND PAVEMENT SHALL MEET THE REQUIREMENTS OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S LATEST EDITION OF THE STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES – DIVISIONS 300 AND 400 RESPECTIVELY.

6. W = MAXIMUM ALLOWABLE TRENCH PAYMENT WIDTH FOR ROCK EXCAVATION, FOR ORDERED EXCAVATION BELOW GRADE AND HANDLING OF EXCAVATED CONTAMINATED SOILS. FOR PIPES 15 INCHES NOMINAL DIAMETER OR LESS, W SHALL BE NO MORE THAN 36 INCHES. FOR PIPES GREATER THAN 15 INCHES IN NOMINAL DIAMETER, W SHALL BE 24 INCHES PLUS PIPE OUTSIDE DIAMETER (O.D.)

7. FOR CROSS COUNTRY CONSTRUCTION, BACKFILL OR FILL SHALL BE MOUNDED TO A HEIGHT OF 6 INCHES ABOVE THE ORIGINAL GROUND SURFACE.

8. WHERE TRENCH BOTTOM IS SOFT OR YIELDING, AND WHERE DIRECTED BY THE ENGINEER, INSTALL SINGLE LAYER OF GEOGRID (TX160 OR EQUAL) ACROSS THE ENTIRE WIDTH OF TRENCH BOTTOM. PAY AS ITEM 1.8A (L.F.).

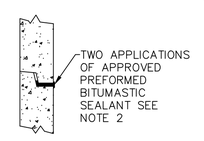


TRENCH SECTION (TYP)

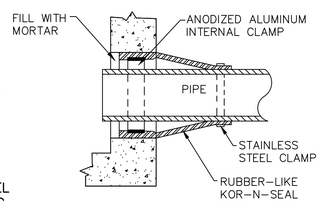
2 D1 TRENCH – GRAVITY SEWER
NOT TO SCALE

NOTES:
DOUBLE WYE BRANCH ONLY TO BE USED WHERE APPROVED BY ENGINEER

7 D1 PVC SEWER SERVICE CHIMNEY WITH WYE
NOT TO SCALE



PRECAST CONC. BARREL
SEALANT – BITUMASTIC



KOR–N–SEAL
JOINT SLEEVE
(OR EQUAL)

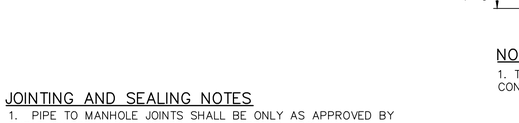
3 D1 MANHOLE PENETRATIONS
NOT TO SCALE

JOINTING AND SEALING NOTES

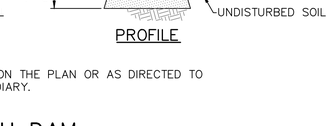
1. PIPE TO MANHOLE JOINTS SHALL BE ONLY AS APPROVED BY THE ENGINEER AND IN GENERAL, WILL DEPEND UPON AN ELASTOMERIC SEALANT FOR WATERTIGHTNESS.

2. FOR BITUMASTIC TYPE JOINTS THE AMOUNT OF SEALANT SHALL BE SUFFICIENT TO FILL AT LEAST 75% OF THE JOINT CAVITY. APPROVED BITUMASTIC SEALANTS: RAM–NEK E Z KENT SEAL NO.2

3. ALL GASKETS, SEALANTS, MORTAR, ETC., SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS WRITTEN INSTRUCTIONS.



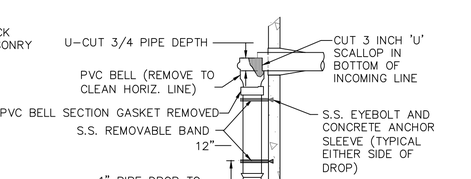
PLAN



PROFILE

NOTES:
1. TRENCH DRAINS TO BE AT LOCATIONS SHOWN ON THE PLAN OR AS DIRECTED TO CONTROL BACK WATER IN STONE BEDDING, SUBSIDIARY.

4 D1 TRENCH DAM
NOT TO SCALE



SIZE GUIDE:
1–8" OR 10" DROP: 4'–0" DIA. M.H.
2–8" OR 10" DROP: 5'–0" DIA. M.H.
1–12" DROP: 5'–0" DIA. M.H.
1–15" DROP: 5'–0" DIA. M.H.

5 D1 DROP MANHOLE
NOT TO SCALE

SERVICE CONNECTION NOTES:

1. SEE DETAILS FOR SERVICE CONNECTION REQUIREMENTS.

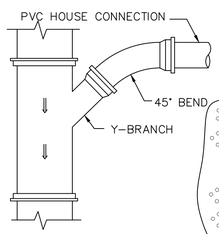
2. SERVICE CONNECTION SHALL BE INSTALLED BELOW WATER MAIN WHERE POSSIBLE.

3. CLEANOUTS SHALL BE INSTALLED AT EACH SERVICE CONNECTION.

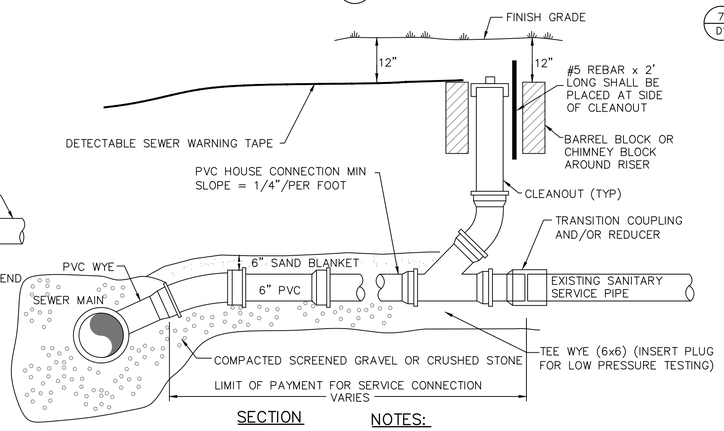
4. REBAR SHALL BE PLACED AT SIDE OF CLEANOUT.

5. CLEANOUT SHALL BE USED TO PLUG AND TEST ALL NEW LATERALS WITH MINIMAL INTERRUPTION TO OPERATION OF HOMEOWNER SANITARY SYSTEM.

6. CLEANOUT RISER PIPE AND FITTINGS SHALL BE INCIDENTAL AND SHALL NOT BE CONSIDERED FOR PAYMENT.



PLAN



SECTION

6 D1 SERVICE CONNECTION
NOT TO SCALE

NOTES:
1. MAINTAIN 18" SEPARATION BETWEEN NEW SEWER SERVICE AND NEW OR EXISTING WATER MAIN (WATER SHALL BE OVER SEWER).

ISSUE FOR	Date	By
BIDDING	–	–
CONSTRUCTION	–	–
RECORD DRAWING	–	–

REVISIONS	APP'D	NO.

Drawn/Chk RMG
Designed PDM
Checked –
Approved –
Date MARCH 2024
Book No. –
Project No. 2542
Dwg. ID 2542_details_M
Scale –

FOR REVIEW
MARCH 2024
NOT FOR CONSTRUCTION

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
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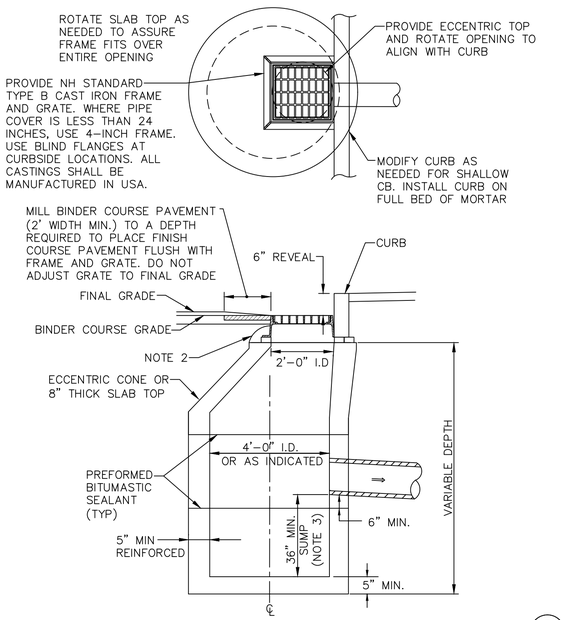
SEWER DETAILS
MAPLEWOOD AVE – DRAINAGE INTERCEPT
CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

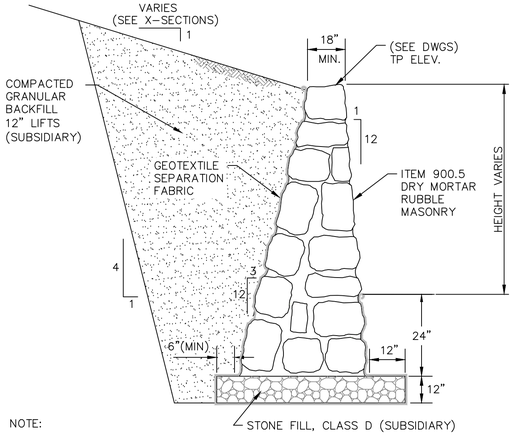
DWG NO D1
SHEET 9 OF 14



1 / D2 CATCH BASIN DETAIL
NOT TO SCALE

CATCH BASIN NOTES:

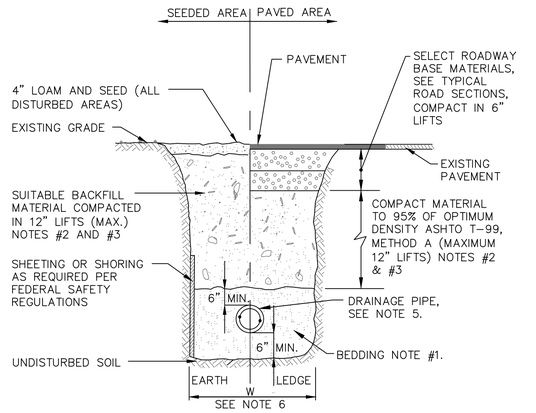
1. ENTIRE STRUCTURE SHALL BE CAPABLE OF WITHSTANDING AN H – 20 LOAD DETAILS OF REINFORCEMENT TO BE FURNISHED BY MANUFACTURER.
2. ADJUST FRAME AND GRATE TO BINDER COURSE ELEVATION, WITH BRICK SET IN A FULL BED OF MORTAR. POINT ALL MASONRY (NO VOIDS) AND PARGE EXTERIOR BRICK WITH MORTAR.
3. WHERE SUMP IS OMITTED PROVIDE MASONRY INVERT PER DETAIL 4 / D2



NOTE:

1. THE CONTRACTOR MAY REUSE GRANITE FROM EXISTING HEAD WALL. RETAIN STABLE SECTIONS OF EXISTING HEADWALLS REVIEW RE-CONSTRUCTION LIMITS WITH THE ENGINEER BEFORE COMMENCING WITH THE WORK.
2. UNSUITABLE MATERIAL SHALL BE REMOVED AND REPLACED WITH STRUCTURAL FILL.
3. IF GROUNDWATER IS ENCOUNTERED, DEWATERING MEASURES WILL BE NECESSARY TO PREVENT DISRUPTANCE OF THE BEARING SOILS. PUMPING EQUIPMENT AND SUMP AREAS SHOULD BE LOCATED OUTSIDE. PUMP DISCHARGE SHALL BE PROPERLY FILTERED TO PREVENT THE DISCHARGE OF SILT TO WETLANDS.
4. WALLS SHALL BLEND INTO EXISTING SLOPES.

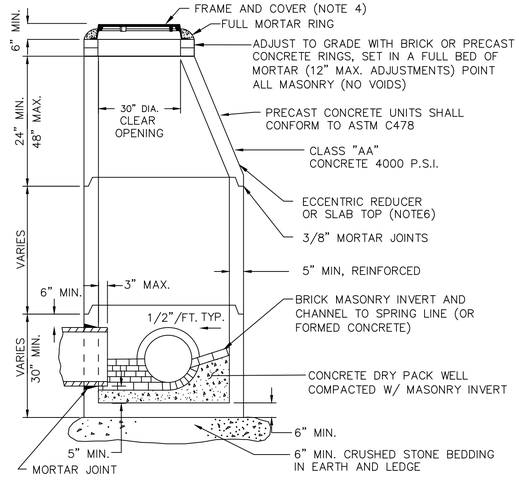
2 / D2 MORTAR RUBBLE MASONRY RETAINING DETAIL
NOT TO SCALE



3 / D2 TRENCH DETAIL – STORM DRAIN
NOT TO SCALE

TRENCH NOTES – STORM DRAIN

1. BEDDING: BEDDING FOR PIPES SHALL CONSIST OF PREPARING THE BOTTOM OF THE TRENCH TO SUPPORT THE ENTIRE LENGTH OF THE PIPE AT A UNIFORM SLOPE AND ALIGNMENT. CRUSHED GRAVEL (NHDOT ITEM 304.3) OR CRUSHED STONE SHALL BE USED TO BED THE PIPE TO THE ELEVATION SHOWN ON THE DRAWINGS.
2. COMPACTION: ALL BACKFILL SHALL BE COMPACTED AT OR NEAR OPTIMUM MOISTURE CONTENT BY PNEUMATIC TAMPERS, VIBRATORY COMPACTORS OR OTHER APPROVED MEANS. BACKFILL BENEATH PAVED SURFACES SHALL BE COMPACTED TO NOT LESS THAN 95 PERCENT OF AASHTO T99, METHOD C.
3. SUITABLE MATERIAL: IN ROADS, ROAD SHOULDERS, WALKWAYS AND TRAVELED WAYS, SUITABLE MATERIAL FOR TRENCH BACKFILL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE DEBRIS; PIECES OF PAVEMENT; ORGANIC MATTER; TOP SOIL; ALL WET OR SOFT MUCK, PEAT, OR CLAY; ALL EXCAVATED LEDGE MATERIAL; ROCKS OVER 6 INCHES IN LARGEST DIMENSION; FROZEN EARTH AND ANY MATERIAL WHICH, AS DETERMINED BY THE ENGINEER, WILL NOT PROVIDE SUFFICIENT SUPPORT OR MAINTAIN THE COMPLETED CONSTRUCTION IN A STABLE CONDITION. IN SEEDED AREAS, SUITABLE MATERIAL SHALL BE AS DESCRIBED ABOVE, EXCEPT THAT THE ENGINEER MAY PERMIT THE USE OF TOP SOIL, LOAM, ROCKS UNDER 12", FROZEN EARTH OR CLAY, IF HE/SHE IS SATISFIED THAT THE COMPLETED CONSTRUCTION WILL BE ENTIRELY STABLE AND PROVIDED THAT EASY ACCESS TO THE PIPE WILL BE PRESERVED.
4. BASE COURSE AND PAVEMENT: SHALL MEET THE REQUIREMENTS OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S LATEST EDITION OF THE STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES – DIVISIONS 300 AND 400 RESPECTIVELY.
5. DRAINAGE PIPE: PIPE MATERIALS SHALL BE EITHER PVC SDR 35 OR POLYETHYLENE (PE).
6. W=MAXIMUM ALLOWABLE TRENCH WIDTH: FOR ROCK EXCAVATION, FOR ORDERED EXCAVATION BELOW GRADE AND HANDLING OF EXCAVATED CONTAMINATED SOILS. FOR PIPES 15 INCHES NOMINAL DIAMETER OR LESS, W SHALL BE NO MORE THAN 36 INCHES. FOR PIPES GREATER THAN 15 INCHES IN NOMINAL DIAMETER, W SHALL BE 24 INCHES PLUS PIPE OUTSIDE DIAMETER (O.D.)



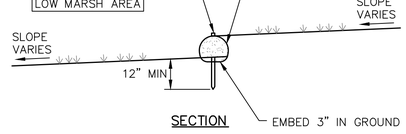
4 / D2 TYPICAL DRAINAGE MANHOLE
NOT TO SCALE

DRAIN MANHOLE NOTES:

1. BARRELS AND CONE SECTIONS SHALL BE PRECAST REINFORCED CONCRETE.
2. PRECAST CONCRETE BARREL SECTIONS, CONES, AND BASES SHALL CONFORM TO ASTM C478.
3. INVERTS AND SHELVES: MANHOLES SHALL HAVE A BRICK PAVED SHELF AND INVERT (OR FORMED CONCRETE), CONSTRUCTED TO CONFORM TO THE SIZE OF PIPE AND FLOW. CARE SHALL BE TAKEN TO INSURE THAT THE BRICK INVERT IS A SMOOTH CONTINUATION OF THE INVERT. INVERT BRICKS SHALL BE LAID ON EDGE. AT CHANGES IN DIRECTION, THE INVERTS SHALL BE LAID OUT IN CURVES OF THE LONGEST POSSIBLE TANGENT TO THE CENTER LINE OF THE PIPES. SHELVES SHALL BE CONSTRUCTED TO AN ELEVATION OF 1/2 THE PIPE DIA. AND SLOPE TO DRAIN TOWARD THE FLOWING THROUGH CHANNEL.
4. FRAMES AND COVERS: MANHOLE FRAMES AND COVERS SHALL BE HINGED, ERGO XL BY EAST JORDON IRON WORKS, AND PROVIDE A 30-INCH (MIN.) CLEAR OPENING. THE WORD "DRAIN", IN 3-INCH LETTERS SHALL BE PLAINLY CAST INTO THE CENTER OF EACH COVER.
5. BEDDING: SCREENED GRAVEL AND/OR CRUSHED STONE FREE FROM CLAY, LOAM, ORGANIC MATTER AND MEETING ASTM C33. STONE SIZE NO. 67.

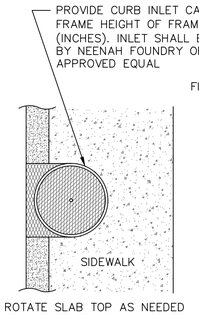
   100% PASSING 1 INCH SCREEN
   90–100% PASSING 3/4 INCH SCREEN
   20– 55% PASSING 3/8 INCH SCREEN
   0–10% PASSING #4 SIEVE
   0– 5% PASSING #8 SIEVE

   WHERE ORDERED BY THE ENGINEER TO STABILIZE THE BASE, SCREENED GRAVEL OR CRUSHED STONE 1–1/2 INCH TO 1/2 INCH OR USE OF GEOGRID FABRIC (ITEM 1.8B) MAY BE REQUIRED.
6. SLAB TOP COVERS: MAY BE APPROVED IN LIEU OF A CONE SECTION, WHEN MANHOLE IS LESS THAN 5 FEET AND FOR LARGE DIAMETER MANHOLES. SLAB TOP COVERS SHALL BE REINFORCED CONCRETE HAVING AN ECCENTRIC ENTRANCE AND CAPABLE OF SUPPORTING H–20 LOADS.



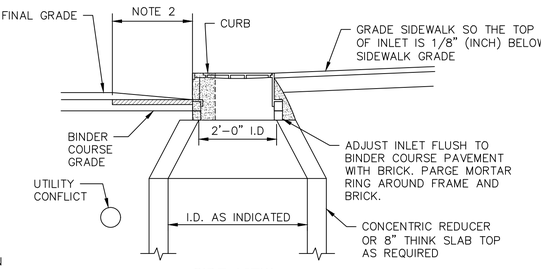
SECTION

7 / D2 COIR LOG DETAIL
NOT TO SCALE

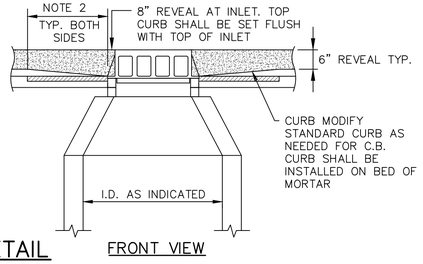


ROTATE SLAB TOP AS NEEDED TO ASSURE FRAME IS ALIGNED WITH PROPOSED CURBING WHEN SET IN OPENING

TOP VIEW



SIDE VIEW



FRONT VIEW

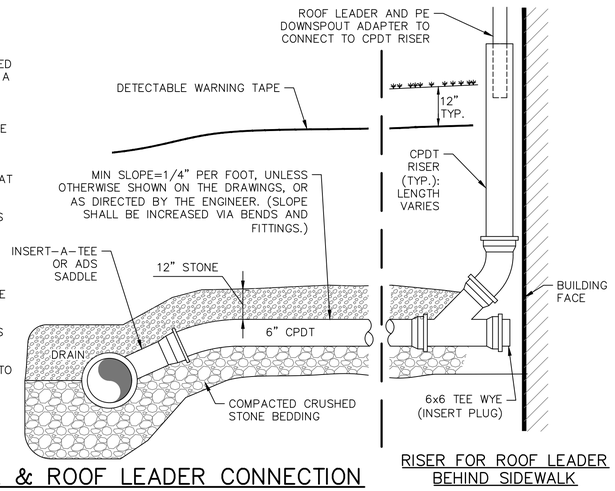
NOTES:

1. ENTIRE STRUCTURE SHALL BE CAPABLE OF WITHSTANDING AN H–20 LOAD DETAILS OF REINFORCEMENT TO BE FURNISHED BY MANUFACTURER.
2. MILL BINDER COURSE PAVEMENT IN FRONT AND TO EACH SIDE OF INLET (2 WIDTH MIN.) TO A DEPTH REQUIRED TO PLACE FINISH COURSE PAVEMENT SO THAT CURB INLET AND CURBING (AT THE INLET) HAS AN 8" REVEAL.
3. DETAIL TO BE USED WHERE NECESSARY TO AVOID UTILITY CONFLICTS OR WHERE DIRECTED.

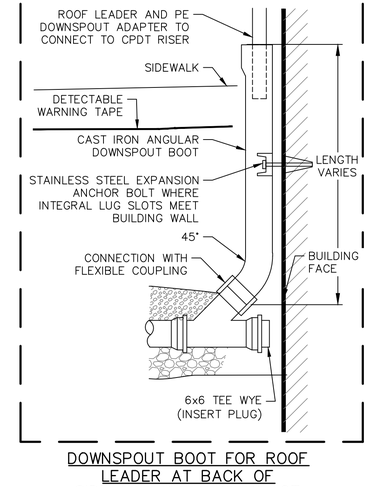
5 / D2 INLET CATCH BASIN FRAME DETAIL
NOT TO SCALE

NOTES:

1. SERVICE LATERALS WILL BE PROVIDED AT EACH DOWNSPOUT AS WELL AS A SEPARATE CLEANOUT FOR EACH PROPERTY TO FACILITATE PRIVATE SUMP PUMP /DRAIN SERVICE CONNECTIONS. CLEANOUTS SHALL BE INSTALLED AT THE PROPERTY LINE FOR EACH SERVICE LATERAL.
2. REBAR OR 2X4 SHALL BE PLACED AT SIDE OF CLEANOUT.
3. CLEANOUT RISER PIPE AND FITTINGS ARE INCIDENTAL AND WILL NOT BE CONSIDERED FOR PAYMENT.
4. SERVICES SHALL BE ORIENTED @ 10:30 OR 1:30 (TYP). UNDER NO CIRCUMSTANCES SHALL SERVICES BE LOCATED BETWEEN 3:00 AND 9:00.
5. LOCATE ROOF LEADER CONNECTIONS AT EXISTING DOWNSPOUTS. AT ADJACENT BUILDING CORNERS, TWO DOWNSPOUTS MAY BE CONNECTED TO ONE LATERAL USING APPROPRIATE WYE (AND OTHER) FITTING(S).



RISER FOR ROOF LEADER BEHIND SIDEWALK



DOWNSPOUT BOOT FOR ROOF LEADER AT BACK OF SIDEWALK OR PARKING LOT

6 / D2 DRAIN LATERAL & ROOF LEADER CONNECTION
NOT TO SCALE

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BIDDING	–	–
CONSTRUCTION	–	–
RECORD DRAWING	–	–

NO.	REVISIONS	APP'D
1	ADD Details JJ	

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Designed PDM
Checked –
Approved –
Date MARCH 2024
Book No. –
Project No. 2542
Dwg. ID
Scale

FOR REVIEW
MARCH 2024
NOT FOR CONSTRUCTION

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

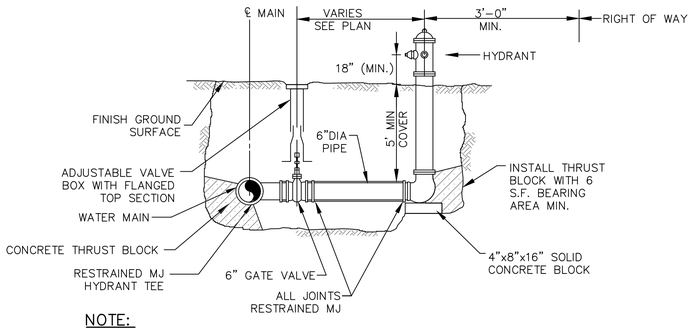
DRAINAGE DETAILS

MAPLEWOOD AVE – DRAINAGE INTERCEPT

CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

DWG NO D2

SHEET 10 OF 14

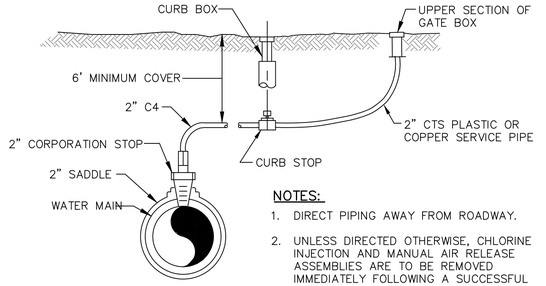


NOTE:

1. HYDRANTS SHALL BE DELIVERED FROM FACTORY W/O DRAIN HOLES.
2. HYDRANT ASSEMBLY INCLUDES MJ HYDRANT TEE.
3. HYDRANT SHALL BE KENNEDY K-81A GUARDIAN, PER CITY OF PORTSMOUTH STANDARDS.
4. LOCATE HYDRANTS A MINIMUM OF 18" BEHIND CURBING UNLESS OTHERWISE DIRECTED. REVIEW HYDRANT LOCATIONS WITH PROJECT REPRESENTATIVE PRIOR TO WATER MAIN INSTALLATIONS.

1 D3 TYPICAL HYDRANT ASSEMBLY SECTION

NOT TO SCALE

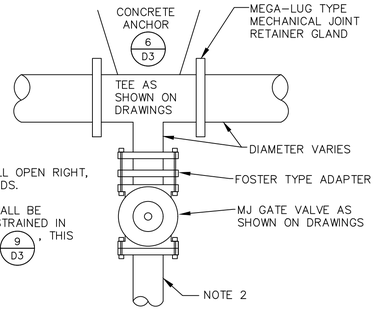


NOTES:

1. DIRECT PIPING AWAY FROM ROADWAY.
2. UNLESS DIRECTED OTHERWISE, CHLORINE INJECTION AND MANUAL AIR RELEASE ASSEMBLIES ARE TO BE REMOVED IMMEDIATELY FOLLOWING A SUCCESSFUL BACTERIA TEST. LEAVE THE CORPORATION STOP AND 12" LENGTH OF TUBING (WITH A CRIMPED END) IN PLACE.

2 D3 TEMPORARY BLOW-OFF TAP ASSEMBLY

NOT TO SCALE

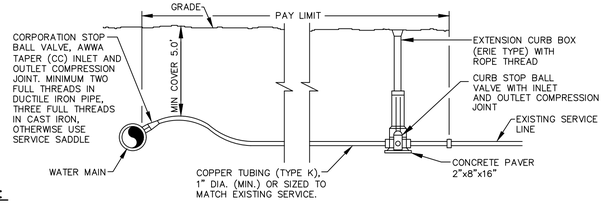


NOTE:

1. GATE VALVES SHALL OPEN RIGHT, PER CITY STANDARDS.
2. BRANCH PIPING SHALL BE MECHANICALLY RESTRAINED IN ACCORDANCE WITH 9 D3, THIS SHEET

5 D3 TEE & GATE VALVE ASSEMBLY DETAIL (TYP.)

NOT TO SCALE

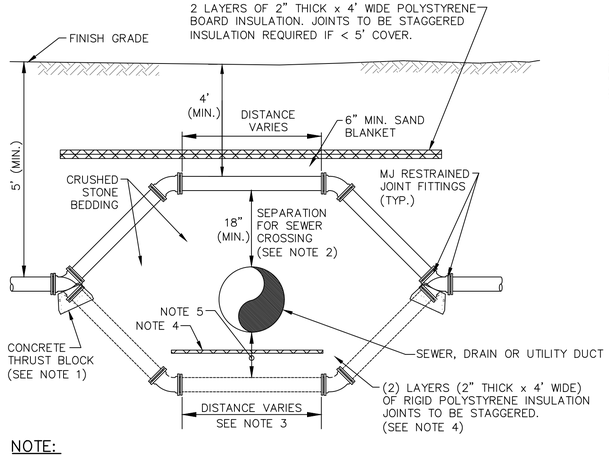


NOTES:

1. PROVIDE NEW LINE USING CONTINUOUS LENGTHS OF COPPER. NO COUPLING ALLOWED IN ROADWAY WITHOUT APPROVAL OF ENGINEER.
2. TAPS TO BE MADE AT APPROX. 2:00 AND 10:00.
3. PROVIDE FOR SERVICE LINE CONTRACTION AND EXPANSION BY INSTALLING "S" IN SERVICE LINE NEAR MAIN.
4. IF SERVICE IS INSTALLED WITH LESS THAN 5' COVER, INSULATE OVER LINE.
5. REMOVE EXISTING CURB STOP (SALVAGE AS IDENTIFIED IN SECT. 01611).
6. CONNECT CURB STOP TO EXISTING SERVICE LINE AT PROPERTY LINE OR AT LOCATION APPROVED BY THE ENGINEER (NO COUPLING WITHOUT APPROVAL OF ENGINEER) AFTER PRESSURE TESTING AND DISINFECTION.
7. SHUT OFF EXISTING CORPORATION AND REMOVE OR ABANDON EXISTING SERVICE LINE.
8. CURB BOX SHALL BE SET IN THE GRASS AREA BETWEEN CURB AND SIDEWALK UNLESS DIRECTED OTHERWISE.
9. 2" SERVICE CONNECTIONS SHALL USE A STAINLESS STEEL SERVICE SADDLE.
10. MAINTAIN 18" SEPARATION BETWEEN THE NEW WATER SERVICE AND THE NEW OR EXISTING SEWER MAIN (WATER SHALL BE OVER SEWER).

4 D3 TYPICAL SERVICE CONNECTION

NOT TO SCALE



NOTE:

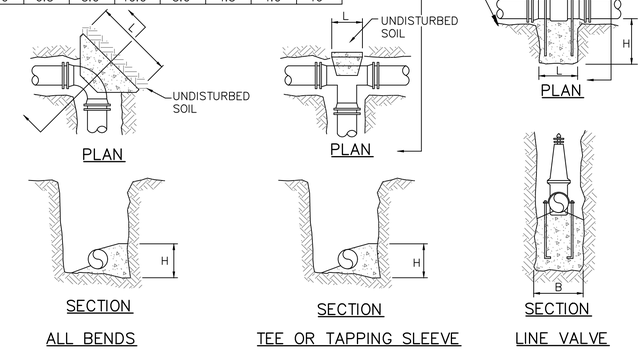
1. INSTALL (4) FOUR 45° MJ BENDS WITH RESTRAINED JOINT FITTINGS.
2. VERTICAL SEPARATION DEPTH BETWEEN WATER AND SEWER SHALL BE AT LEAST 18", WITH WATER ABOVE SEWER, PER NHDES ENV-Wq 704.12. VERTICAL SEPARATION OF LESS THAN 18" ALLOWED ONLY WITH WAIVER FROM NHDES. IF CONSTRUCTION OF WATER MAIN UNDER SEWER MAIN IS UNAVOIDABLE, SEWER MAIN SHALL BE CONSTRUCTED OF C900 PVC PIPE FROM MANHOLE TO MANHOLE.
3. CENTER CROSSING PIPE BETWEEN BELLS. SEWER PIPE JOINT SHALL BE A MINIMUM OF OF 6 FT. HORIZONTALLY FROM THE WATER MAIN.
4. PROVIDE INSULATION IF DRAIN CROSSES OVER WATER MAIN.
5. PROVIDE 8" TO 12" SEPARATION FOR DRAIN OR OTHER UTILITY CROSSINGS.

7 D3 WATER MAIN CONFLICT – CROSSING DETAIL

NOT TO SCALE

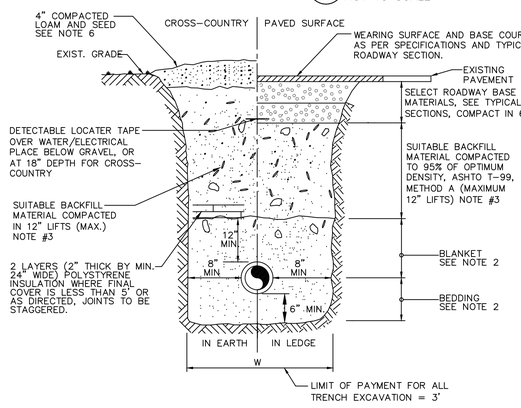
MINIMUM CONCRETE ANCHOR DIMENSIONS								
BENDS, TEES AND LINE VALVES AT 250 PSI								
PIPE SIZE INCHES	TEE OR PLUG FT.		ALL BENDS FT.		ALL LINE VALVES FT.			PIPE SIZE INCHES
	H	L	H	L	H	L	B	
6	1.5	3.0	2.0	3.5	1.5	3.0	2.5	6
8	2.0	4.0	2.5	5.0	2.0	4.0	3.0	8
10	2.5	5.0	3.0	6.0	3.0	4.0	3.0	10
12	3.0	6.0	3.0	8.0	3.0	5.0	4.0	12
16	3.0	6.5	3.0	10.0	3.0	4.5	4.0	16

BASIS: SOIL BEARING CAPACITY OF 2000 PSF AND 5 FEET COVER IN GRANULAR SOIL. HEIGHT OF BLOCK MUST BE LESS THAN 1/2 DEPTH OF TRENCH. 6 MIL THICK POLYETHYLENE SHALL BE PLACED AROUND FITTINGS PRIOR TO CONCRETE PLACEMENT. USE FOR HORIZONTAL OR DOWNWARD THRUST ONLY.



6 D3 CONCRETE ANCHORS

NOT TO SCALE



8 D3 TYPICAL TRENCH DETAIL

NOT TO SCALE

HORIZONTAL BENDS:

Nominal Pipe Diameter	Bend Angle			
	90°	45°	22.5°	11.25°
4"	6'	3'	2'	1'
6"	9'	4'	2'	2'
8"	11'	5'	3'	2'
10"	13'	6'	3'	2'
12"	16'	7'	3'	2'
16"	20'	9'	4'	2'

REDUCERS:

Nom. Diameter of Large Pipe	Nominal Diameter of Small Pipe (Note 4)				
	4"	6"	8"	10"	12"
8"	17'	10'	-	-	-
10"	23'	17'	10'	-	-
12"	29'	24'	18'	10'	-
16"	39'	36'	31'	28'	18'

DEAD ENDS:

Nom. Pipe Diameter	Restarined Length (ft)
4"	13'
6"	18'
8"	23'
10"	28'
12"	33'
16"	43'

TEES:

Nominal Pipe	Nominal Branch Diameter (Note 5)			
	8"	10"	12"	16"
8"	6'	-	-	-
10"	8'	11'	-	-
12"	1'	7'	16'	-
16"	1'	1'	9'	25'

NOTES:

1. ALL FITTINGS SHALL HAVE MECHANICAL RETAINING GLANDS AT ALL ENDS AND A MINIMUM OF ONE JOINT SHALL BE RESTRAINED BEYOND EACH SIDE OF FITTING.
2. PIPE EXTENDING FROM ALL FITTINGS SHALL BE MECHANICALLY RESTRAINED TO THE MINIMUM LENGTHS SHOWN.
3. ALL MINIMUM LENGTHS SHOWN ABOVE WERE CALCULATED USING THE EBAA IRON RESTRAINT LENGTH CALCULATOR VERSION 6.3 USING THE FOLLOWING ASSUMPTIONS: DUCTILE IRON PIPE, TYPE 4 TRENCH, 5 FOOT DEPTH OF BURY, A TEST PRESSURE OF 150 PSI AND SOILS CONSISTING OF WELL GRADED SANDS AND GRAVELLY SANDS WITH LITTLE OR NO FINES.
4. ENGINEER RESERVES THE RIGHT TO MODIFY RESTRAINT LENGTHS REQUIRED BASED ON VARYING TRENCH CONDITIONS, DEPTH OF BURY OR PIPE MATERIALS.
5. FOR REDUCERS, RESTRAIN LENGTH SHOWN IS FOR THE LARGER PIPE.
6. MECHANICALLY RESTRAIN ONE JOINT ON EITHER SIDE OF THE NOMINAL PIPE OF TEE AT A MINIMUM DISTANCE OF 5'.

9 D3 MECHANICAL JOINT RESTRAINT

NOT TO SCALE

STANDARD TRENCH NOTES

1. ORDERED EXCAVATION OF UNSUITABLE MATERIAL BELOW GRADE: BACKFILL AS STATED IN THE TECHNICAL SPECIFICATIONS OR AS SHOWN ON THE DRAWINGS.
2. BEDDING AND BLANKET: CLEAN SAND FREE FROM ORGANIC MATTER (SECTION 02228). BLANKET MAY BE OMITTED FOR DUCTILE IRON AND REINFORCED CONCRETE PIPE, PROVIDED HOWEVER, THAT NO STONE LARGER THAN 2" IS IN CONTACT WITH THE PIPE.
3. BACKFILL MATERIAL: IN ROADS, ROAD SHOULDERS, WALKWAYS AND TRAVELED WAYS, SUITABLE MATERIAL FOR TRENCH BACKFILL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE DEBRIS; PIECES OF PAVEMENT; ORGANIC MATTER; TOP SOIL; ALL WET OR SOFT MUCK, PEAT, OR CLAY; ALL EXCAVATED LEDGE MATERIAL; ALL ROCKS OVER 6 INCHES IN LARGEST DIMENSION; AND ANY MATERIAL WHICH, AS DETERMINED BY THE ENGINEER, WILL NOT PROVIDE SUFFICIENT SUPPORT OR MAINTAIN THE COMPLETED CONSTRUCTION IN A STABLE CONDITION.

IN CROSS-COUNTRY CONSTRUCTION, SUITABLE MATERIAL SHALL BE AS DESCRIBED ABOVE, EXCEPT THAT THE ENGINEER MAY PERMIT THE USE OF TOP SOIL, LOAM, MUCK, OR PEAT, IF ENGINEER IS SATISFIED THAT THE COMPLETED CONSTRUCTION WILL BE ENTIRELY STABLE AND PROVIDED THAT EASY ACCESS TO THE PIPE LINE, FOR MAINTENANCE AND POSSIBLY RECONSTRUCTION, WILL BE PRESERVED.

4. MINIMUM COVER: NOT LESS THAN 5.5 FEET, 7 MAX, EXCEPT TO AVOID SUBSURFACE STRUCTURES.
6. FOR CROSS COUNTRY CONSTRUCTION, BACKFILL OR FILL SHALL BE MOUNDED TO A HEIGHT OF 6 INCHES ABOVE THE ORIGINAL GROUND SURFACE.
7. DRIVEWAYS: CRUSHED GRAVEL IN DRIVEWAYS SHALL MATCH EXISTING WITH A MINIMUM OF 6". EXISTING GRAVEL SHALL BE REMOVED AND REPLACED AND SHALL NOT BE MEASURED FOR PAYMENT.

NO.	REVISIONS	APP'D
2	Addr.	ZAV

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RECORD DRAWING Date - By -

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Designed PDM
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Approved -
Date MARCH 2024
Book No. -
Project No. 2542
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Scale

FOR REVIEW
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UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

WATER DETAILS

MAPLEWOOD AVE – DRAINAGE INTERCEPT

CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

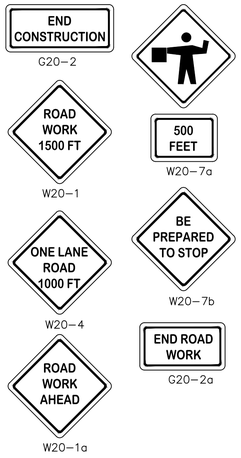
DWG NO D3

SHEET 11 OF 14

TRAFFIC CONTROL NOTES:

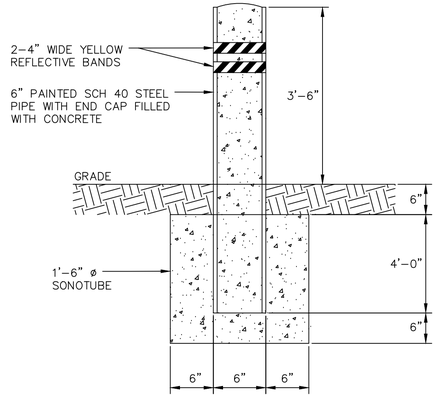
1. TYPICAL SIGN DETAILS ARE BASED ON THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND IS NOT INTENDED AS AN ALL-INCLUSIVE LIST. ALL SIGNAGE AND OTHER TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE MUTCD (LATEST EDITION) AND NHDOT REQUIREMENTS.
2. CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTING THE TRAFFIC CONTROL PLAN AS SHOWN. ANY MODIFICATIONS MUST BE SUBMITTED IN WRITING FOR APPROVAL BY THE ENGINEER, CITY OF PORTSMOUTH AND THE NHDOT. SEE PROJECT MANUAL FOR ADDITIONAL REQUIREMENTS.
3. CONTRACTOR SHALL ERECT ALL DAILY USE SIGNS IN THE MORNING PRIOR TO WORK BEGINNING AND REMOVE ALL DAILY USE SIGNS AT THE END OF EACH DAY.
4. DAILY SIGNS SHALL INCLUDE SIGNAGE NECESSARY TO ENSURE THE SAFETY OF THE PUBLIC (I.E. ROAD CLOSED, FLAGGER AHEAD, ONE LANE TRAFFIC, ETC).
5. DETOUR SIGNS ARE TO BE USED WITH PHASE I CONSTRUCTION (CULVERT INSTALLATION) ONLY. REFER TO PROSECUTION OF WORK ON SHEET G-1)
6. ALL SIGNS SHALL BE ERECTED AND PLACED IN ACCORDANCE WITH MUTCD (LATEST EDITION).

DAILY SIGNS



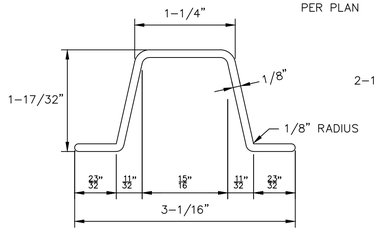
TEMPORARY DETOUR SIGNS

1/D4 TRAFFIC CONTROL SIGNS
NOT TO SCALE

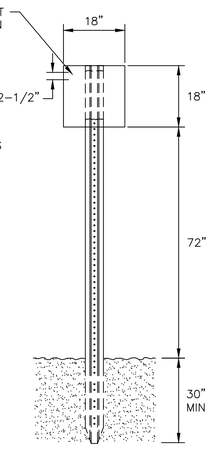


3/D4 STEEL BOLLARD DETAIL
NOT TO SCALE

LENGTH (P2-10): 10'-0"
WEIGHT PER LINEAR FOOT: 2.00 LBS
HOLES: 3/8" DIA., 1" C-C FULL LENGTH
STEEL: SHALL CONFORM TO ASTM A-499 (AISI C1060)
FINISH: SHALL BE PAINTED WITH TWO COATS OF AN APPROVED MED. GREEN, BAKED PAINT OR AIR DRIED, PAINT OF WEATHER-RESISTANT QUALITY, ALL FABRICATION SHALL BE COMPLETED BEFORE PAINTING.



POST SECTION



P2-10 POST

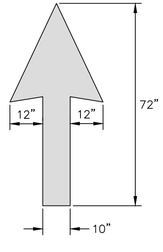
NOTES:

1. POSTS SHALL BE P2-10 AS REQUIRED.
2. POSTS SHALL BE PLUMB; ANY POST BENT OR OTHERWISE DAMAGED SHALL BE REMOVED AND PROPERLY PLACED.
3. POSTS MAY BE SET OR DRIVEN. WHEN POSTS ARE SET, HOLES SHALL BE DUG TO THE PROPER DEPTH; AFTER INSERTING POSTS, THE HOLES SHALL BE BACKFILLED WITH SUITABLE MATERIAL IN LAYERS NOT TO EXCEED 6" DEEP AND THOROUGHLY COMPACTED, CARE BEING TAKEN TO PRESERVE THE ALIGNMENT OF THE POST. WHEN POSTS ARE DRIVEN, A SUITABLE DRIVING CAP SHALL BE USED AND AFTER DRIVING THE TOP OF THE POST; BATTERING HEADS WILL NOT BE ACCEPTED. POST SHALL NOT BE DRIVEN WITH THE SIGN ATTACHED TO THE POST.

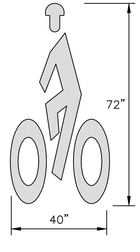
2/D4 SIGN DETAIL
NOT TO SCALE

GENERAL NOTES:

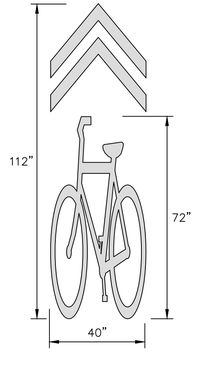
1. ALL WORDS AND SYMBOLS SHALL BE RETROREFLECTIVE WHITE AND SHALL CONFORM TO THE LATEST VERSION OF THE MUTCD.
2. MULTI-WORD MESSAGES SHALL READ "UP"; THAT IS, THE FIRST WORD SHALL BE NEAREST THE APPROACHING DRIVER.
3. THE WORD "ONLY" SHALL NOT BE USED WITH THROUGH OR COMBINATION ARROWS, AND SHALL NOT BE USED ADJACENT TO A BROKEN LANE LINE. A WORD/SYMBOL SHALL PRECEDED THE WORD "ONLY".
4. PREFORMED WORDS AND SYMBOLS SHALL BE PRE-CUT BY THE MANUFACTURER.
5. WRONG-WAY ARROWS SHALL NOT BE SUBSTITUTED FOR THROUGH ARROWS.
6. ALL STOP BARS, WORDS, SYMBOLS AND ARROWS SHALL BE THERMOPLASTIC.



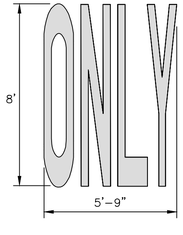
BICYCLE LANE DIRECTIONAL ARROW
PAY QUANTITY = 6.0 FT²



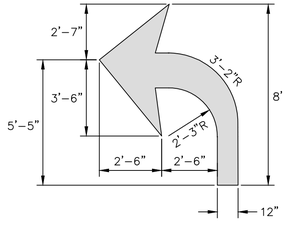
BICYCLE LANE SYMBOL
PAY QUANTITY = 8.1 FT²



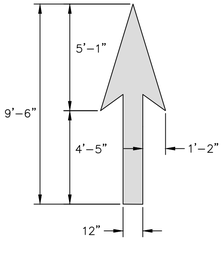
BICYCLE LANE SYMBOL
PAY QUANTITY = 12.8 FT²



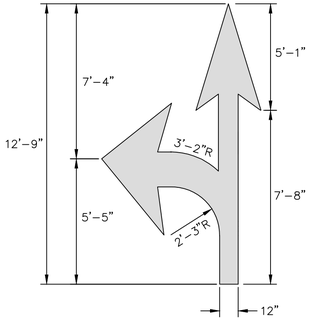
ONLY
PAY QUANTITY = 22.3 FT²



TURN ARROW
(RIGHT TURN OPPOSITE IN KIND)
PAY QUANTITY = 17.0 FT²



THROUGH (STRAIGHT ARROW)
PAY QUANTITY = 12.5 FT²



COMBINATION ARROW
PAY QUANTITY = 28.8 FT²

ITEM 632.32

4/D4 PAVEMENT MARKING - WORD AND SYMBOLS
NOT TO SCALE

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Project No. 2542
Dwg. ID 2542_details_M
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UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
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TRAFFIC CONTROL SIGNS & PAVEMENT MARKINGS
MAPLEWOOD AVE - DRAINAGE INTERCEPT
CITY OF PORTSMOUTH
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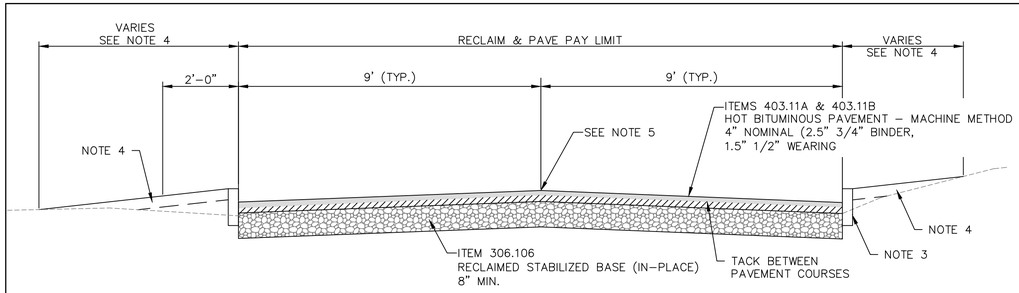
DWG NO D4
SHEET 12 OF 14



ROAD RE-CONSTRUCTION NOTES:

1. SAWCUT DRIVEWAYS AND CONSTRUCT DRIVEWAY APRON FOLLOWING CONSTRUCTION OF PAVEMENT BINDER COURSE (SEE DRIVEWAY APRON DETAILS, THIS DRAWING).
2. GRADE RECLAIM (UNIFORMLY) TO MINIMIZE IMPACTS TO DRIVEWAYS AND SIDE SLOPES. REVIEW GRADING WITH ENGINEER IN ADVANCE OF RECLAIM. RECLAIM AT 10" DEPTH, REMOVE AND DISPOSE OF SURPLUS RECLAIM WHERE DIRECTED TO MINIMIZE GRADING IMPACTS, SUBSIDIARY. TYPICAL CROSS SLOPE = 3% UNLESS DIRECTED OTHERWISE.T, SUBSIDIARY.
3. INSTALL GRANITE CURB (WHERE DIRECTED), ITEM 609.01. SEE DETAIL (6 / D5).
4. LOAM, SEED & MULCH ROADSIDE SLOPES, PAY AS ITEM 912.
5. ALL SEAMS AND JOINTS SHALL BE RAKED AND LUTED PRIOR TO COMPACTION AND ROLLING.

(1 / D5) TYPICAL ROADWAY SECTION - RAILROAD EASEMENT AREA

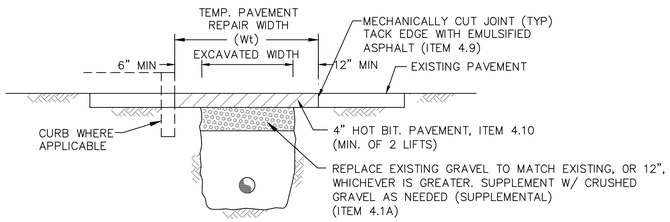
NOT TO SCALE

MINIMUM TRENCH PAVEMENT WIDTHS

PIPE I.D.	Wt (INCHES)	Wp (INCHES)
1-21 INCHES	84	108
24-30 INCHES	96	120
> 30 INCHES	108	132

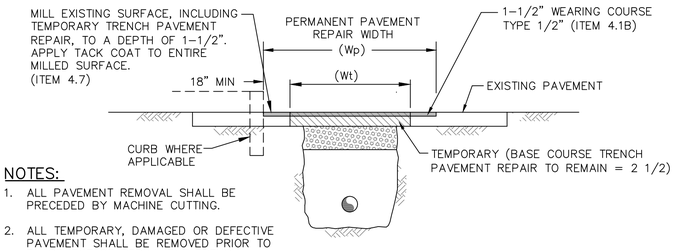
NOTE:

THE DIMENSIONS SHOWN SHALL BE CONSIDERED MAXIMUM PAVEMENT PAYMENT WIDTHS FOR 0-10' DEEP CONSTRUCTION. Wt AND Wp SHALL BE INCREASED BY 4'-0" FOR TRENCHES 10' TO 15' AND BY 8'-0" FOR TRENCHES 15' TO 20' IN DEPTH.



(2 / D-5) TEMPORARY TRENCH PAVEMENT REPAIR

NOT TO SCALE

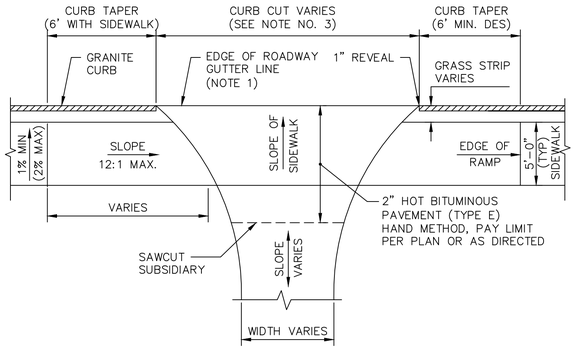


NOTES:

1. ALL PAVEMENT REMOVAL SHALL BE PRECEDED BY MACHINE CUTTING.
2. ALL TEMPORARY, DAMAGED OR DEFECTIVE PAVEMENT SHALL BE REMOVED PRIOR TO PLACEMENT OF PERMANENT TRENCH REPAIRS.
3. SEE TABLE IN "TEMPORARY TRENCH PAVEMENT REPAIRS" FOR MINIMUM TRENCH WIDTHS.

(3 / D-5) PERMANENT TRENCH PAVEMENT REPAIR

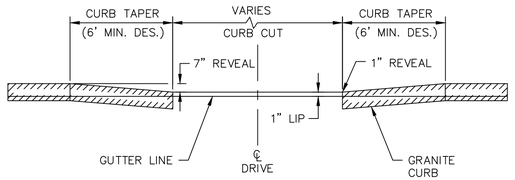
NOT TO SCALE



PLAN VIEW WITH SIDEWALK RAMP

NOTES:

1. ALL PAVEMENT MATCHES AT DRIVEWAY SHALL BE SAWCUT AND KEYED FOR SMOOTH TRANSITION (SUBSIDIARY)



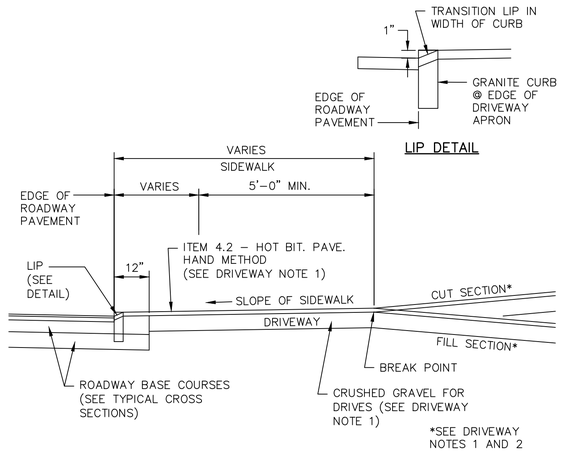
PROFILE

DRIVEWAY NOTES:

1. PAVEMENT & GRAVEL DEPTHS FOR RESIDENTIAL DRIVES SHALL BE 8" CRUSHED GRAVEL WITH 2" H.B.P. (HAND METHOD) SINGLE COURSE.
2. CURBING CAN BE FLARED TO FIT DRIVE RADII IF APPROPRIATE OR ENDED AS DETAILED ABOVE.
3. DRIVEWAY CURB CUTS SHALL MATCH EXISTING APRON WIDTHS UNLESS OTHERWISE DIRECTED.
4. FOR UNPAVED DRIVES, THE PAVED APRON NORMALLY ENDS AT THE RADIUS TANGENT POINT OR BACK OF SIDEWALK, WHICHEVER IS GREATER.

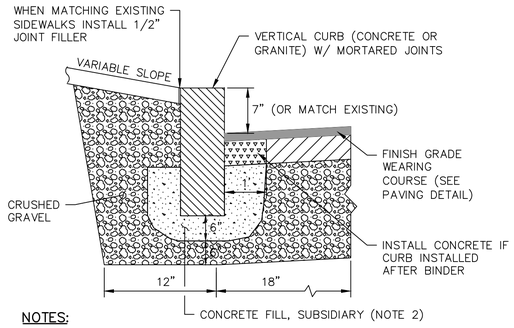
(4 / D5) DRIVEWAY APRON/CURB CUT (FINAL GRADING PLAN)

NOT TO SCALE



(5 / D5) TYPICAL URBAN CURBED DRIVE IN CUT/FILL SECTION

NOT TO SCALE

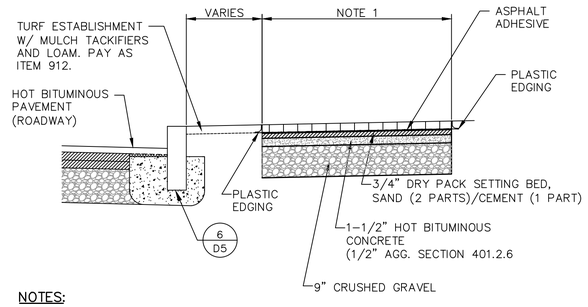


NOTES:

1. DAMAGED OR IMPACTED CURB (WHETHER GRANITE OR CONCRETE) IS TO BE REPLACED AT THE CONTRACTORS OWN EXPENSIVE, UNLESS OTHERWISE NOTED ON PLAN.
2. CLASS AA CONCRETE FILL SHALL BE PLACED IN VOIDS IN FRONT, BEHIND, AND BELOW CURBING PRIOR TO INSTALLATION OF GRAVEL BACKING AND FINISH GRADE WEARING COURSE PAVEMENT.

(6 / D5) VERTICAL CURB (NEW OR RESET) (GRANITE OR CONCRETE)

NOT TO SCALE

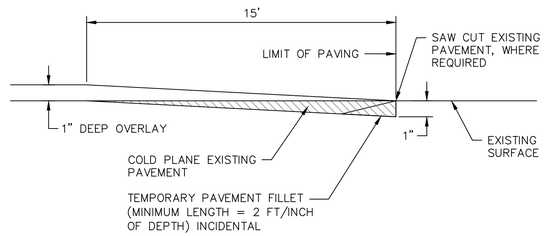


NOTES:

1. RE-CONSTRUCT CURB AND SIDEWALKS IMPACTED FROM CONSTRUCTION OR WHERE DIRECTED. CURB AND SIDEWALKS DAMAGED OUTSIDE TRENCH LIMITS (THREE-FEET FROM OUTSIDE OF PIPE) SHALL BE RESTORED AT CONTRACTOR'S COST AND WILL NOT BE MEASURED FOR PAYMENT.

(7 / D5) BRICK SIDEWALK DETAIL (NEW OR RECONSTRUCT)

NOT TO SCALE



NOTES:

THE LENGTH OF THE TAPER MAY BE ADJUSTED AS ORDERED TO PROVIDE FOR VARYING FIELD CONDITIONS OR CHANGES IN SINGLE COURSE DEPTH.

(8 / D5) OVERLAY PAVEMENT MATCH

NOT TO SCALE

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ROADWAY AND SIDEWALK DETAILS

MAPLEWOOD AVE - DRAINAGE INTERCEPT

CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

DWG NO D5

SHEET 13 OF 14

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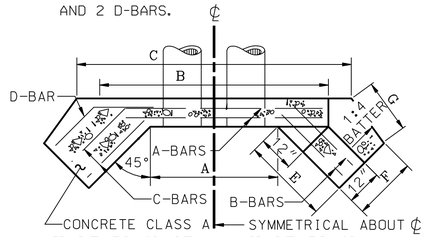
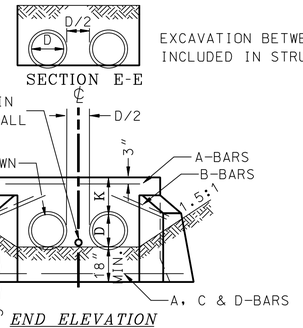
NOTE:
ALL LIKE BARS IN EACH HEADWALL ARE THE SAME SIZE. EACH STD. HEADER HAS 4 A, B & C-BARS, AND 2 D-BARS.



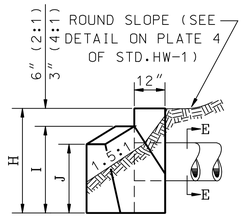
HALF PLAN OF BOTTOM STEEL

HALF PLAN OF TOP STEEL



END ELEVATION

EXCAVATION BETWEEN PIPES INCLUDED IN STRUCTURE EXCAVATION



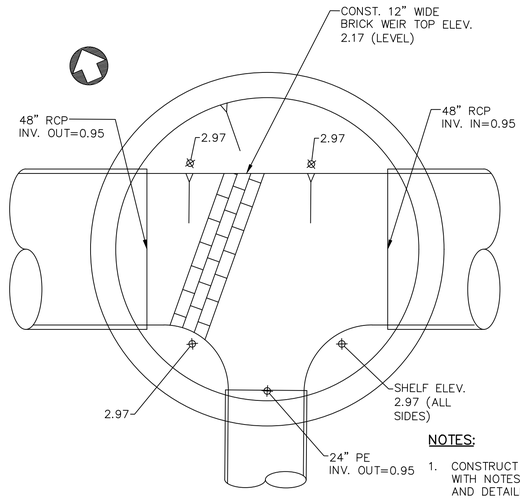
SIDE ELEVATION

2:1 SLOPE

DIA. D INCHES	QUANTITIES PER HEADER CONC. CU. YD.	STEEL LB.	EXC. FOR 1' DEPTH CU. YD.	DIMENSIONS A	B	C	E	F	G	H	I	J	K	D/2	REINFORCING STEEL SIZE	LENGTH A BARS	B BARS	C BARS	D BARS	D-BARS, c	D-BARS, d
24	2.44	46	1.96	6'-0"	8'-10"	10'-0"	3'-0"	1'-11"	2'-3"	5'-0"	4'-6"	3'-10"	1'-6"	1'-0"	#4	8'-6"	3'-2"	3'-0"	4'-8"	2'-5"	2'-3"
30	3.18	53	2.28	7-5	10-3	11-9	3-7	2-0	2-9	5-6	5-0	4-1	1-6	1-3	#4	9-11	3-9	3-7	5-3	2-6	2-9
36	3.99	61	2.69	8-10	11-8	13-7	4-2	2-1	3-3	6-0	5-6	4-4	1-6	1-6	#4	11-4	4-3	4-1	5-10	2-8	3-2
42	5.43	161	3.22	10-3	13-1	15-6	5-1	2-2	4-0	6-9	6-3	4-10	1-9	1-9	#6	12-9	5-3	4-11	7-10	3-10	4-0
48	6.53	180	3.64	11-8	14-6	17-3	5-9	2-3	4-6	7-3	6-9	5-1	1-9	2-0	#6	14-2	5-11	5-7	8-5	3-10	4-7
54	7.76	197	4.00	13-1	15-11	19-1	6-4	2-4	5-0	7-9	7-3	5-4	1-9	2-3	#6	15-7	6-7	6-1	9-2	4-1	5-1
60	9.10	214	4.45	14-6	17-4	20-10	6-11	2-5	5-6	8-3	7-9	5-8	1-9	2-6	#6	17-0	7-1	6-8	9-9	4-1	5-8
66	10.56	232	4.84	15-11	18-9	22-5	7-6	2-6	6-0	8-9	8-3	5-11	1-9	2-9	#6	18-5	7-8	7-3	10-5	4-2	6-3
72	12.28	249	5.25	17'-4"	20'-2"	24'-2"	8'-2"	2'-7"	6'-6"	9'-3"	8'-9"	6'-3"	1'-9"	3'-0"	#6	19'-10"	8'-3"	7'-10"	11'-0"	4'-3"	6'-9"

4:1 SLOPE

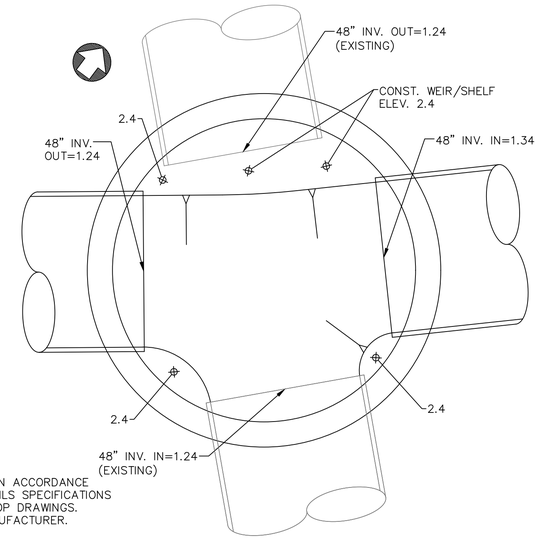
24	3.05	53	2.29	6'-0"	8'-10"	10'-0"	3'-11"	2'-1"	3'-2"	5'-0"	4'-9"	4'-3"	1'-6"	1'-0"	#4	8'-6"	4'-3"	4'-0"	5'-6"	2'-6"	3'-0'
30	3.92	61	2.70	7-5	10-3	11-9	4-8	2-2	3-9	5-6	5-3	4-7	1-6	1-3	#4	9-11	5-0	4-8	6-3	2-8	3-7
36	5.09	70	3.15	8-10	11-8	13-7	5-5	2-3	4-5	6-0	5-9	5-0	1-6	1-6	#4	11-4	5-9	5-4	7-1	2-10	4-3
42	6.97	185	3.78	10-3	13-1	15-6	6-7	2-5	5-4	6-9	6-6	5-6	1-9	1-9	#6	12-9	6-11	6-5	9-3	4-0	5-3
48	8.44	204	4.24	11-8	14-6	17-3	7-4	2-6	6-0	7-3	7-0	5-11	1-9	2-0	#6	14-2	7-8	7-1	10-1	4-2	5-11
54	10.13	225	4.74	13-1	15-11	19-1	8-2	2-7	6-9	7-9	7-6	6-3	1-9	2-3	#6	15-7	8-6	7-10	10-11	4-3	6-8
60	11.90	245	5.23	14-6	17-4	20-10	8-11	2-8	7-4	8-3	8-0	6-7	1-9	2-6	#6	17-0	9-3	8-8	11-9	4-4	7-5
66	13.87	266	5.75	15-11	18-9	22-5	9-8	2-9	8-0	8-9	8-6	7-0	1-9	2-9	#6	18-5	10-0	9-5	12-8	4-7	8-1
72	16.13	283	6.29	17'-4"	20'-2"	24'-2"	10'-6"	2'-10"	8'-8"	9'-3"	9'-0"	7'-4"	1'-9"	3'-0"	#6	19'-10"	10'-10"	9'-9"	13'-5"	4'-8"	8'-9'



(ITEM _____)
3/D6 DMH#1E
NOT TO SCALE

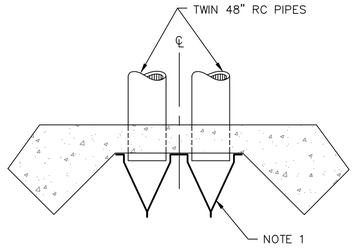
NOTES:

1. CONSTRUCT DMH IN ACCORDANCE WITH NOTES, DETAILS SPECIFICATIONS AND DETAILED SHOP DRAWINGS. PROVIDED BY MANUFACTURER.
2. FORM BRICK CHANNEL TO SPRING LINE AND CONSTRUCT SHELF TO ELEVATIONS PROVIDED.
3. CONST. BRICK WEIR OR REMOVABLE PLATE WEIR TO ELEVATION PROVIDED.



(ITEM _____)
5/D6 DMH#3
NOT TO SCALE

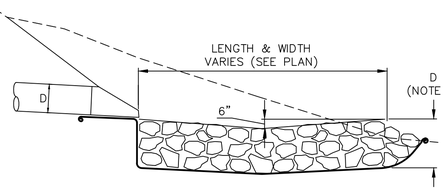
1/D6 CONCRETE HEADWALLS WITH 45° WINGS FOR TWIN R.C. PIPE (48" DIA. W/4:1 SLOPE)
NOT TO SCALE



NOTES:

1. TIDE VALVES SHALL BE TIDE FLEX TF-1 OR APPROVED EQUAL. ATTACH DIRECTLY TO HEADWALL USING THIMBLE PLATE IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS. PROVIDE THIMBLE PLATE INSTALLATION DETAILS OR RECOMMENDED ALTERNATIVE. THE TIDE VALVES WILL BE MOUNTED TO THE HEADWALL

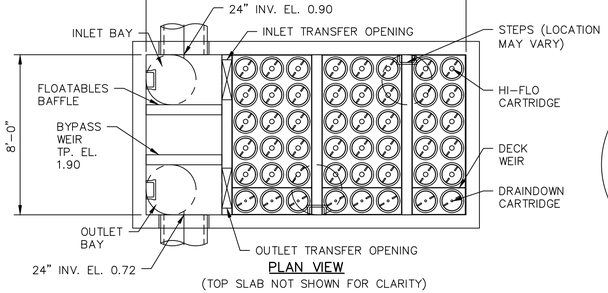
2/D6 TIDE VALVE DETAIL
NOT TO SCALE



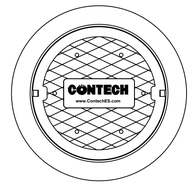
CONSTRUCTION SPECIFICATIONS:

1. THE SUBGRADE FOR THE GEOTEXTILE FABRIC AND STONE FILL SHALL BE PREPARED TO LINES AND GRADES SHOWN ON THE PLANS.
2. GRADATION: CLASS B STONE CONFORMING TO 585.2.1.2 SHALL BE USED. DEPTH OF STONE SHALL BE 18".
3. GEOTEXTILE FABRICS SHALL BE PROTECTED FROM PUNCTURE OR TEARING DURING THE PLACEMENT OF THE RIPRAP. DAMAGED AREAS IN THE FABRIC SHALL BE REPAIRED BY PLACING A PIECE OF FABRIC OVER THE DAMAGED AREA OR BY COMPLETE REPLACEMENT OF THE FABRIC. ALL OVERLAPS REQUIRED FOR REPAIRS OR JOINING TWO PIECES OF FABRIC SHALL BE A MINIMUM OF 18 INCHES.
4. THE RIPRAP MAY BE PLACED BY EQUIPMENT AND SHALL BE CONSTRUCTED TO THE FULL LAYER THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO PREVENT SEGREGATION OF THE STONE SIZES.
5. CONSTRUCT FLARED END SECTIONS (OR HEADWALLS) AS SHOWN ON THE PLANS. MATERIALS AND SIZES SHALL BE CONSISTENT WITH NHDOT STANDARD DETAILS.

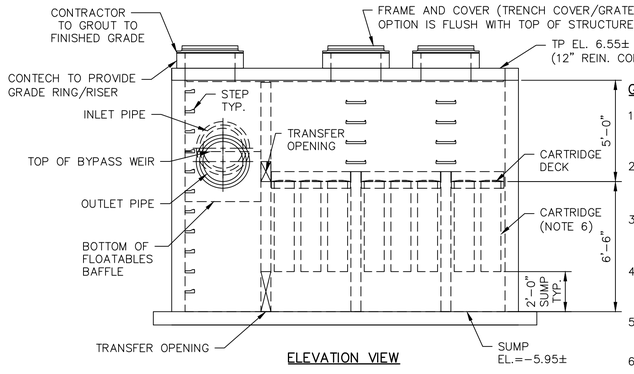
6/D6 STABILIZED DRAIN OUTLET
NOT TO SCALE



PLAN VIEW
(TOP SLAB NOT SHOWN FOR CLARITY)



TOP VIEW
FRAME AND COVER



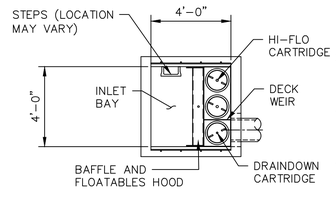
ELEVATION VIEW

GENERAL NOTES:

1. STORMWATER TREATMENT STRUCTURE SHALL BE PROVIDED BY CONTECH OR APPROVED EQUIVALENT.
2. ENTIRE STRUCTURE SHALL MEET OR EXCEED HS-20 RATING (HEAVY LOADING).
3. PROVIDE ANTI-FLOTATION COLLARS (ALL SIDES), TO EXTEND 12" BEYOND WALLS.
4. SET STRUCTURE LEVEL. SEAL ALL JOINTS WITH APPROVED SEALANT OR NON-SHRINK GROUT.
5. INSTALL FLEXIBLE BOOT AT INLET AND OUTLET.
6. CARTRIDGE LENGTH SHALL BE 54", INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

4/D6 JELLYFISH (JFPD0816) DETAILS
NOT TO SCALE

ITEM _____



PLAN VIEW
(TOP SLAB NOT SHOWN FOR CLARITY)

GENERAL NOTES:

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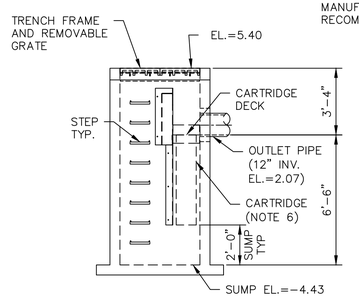
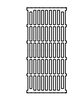
5. INSTALL FLEXIBLE BOOT OUTLET.
6. CARTRIDGE LENGTH SHALL BE 54", INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.



ELEVATION VIEW



24" TRENCH GRATE

7/D6 JELLYFISH (JFSI0404) DETAILS
NOT TO SCALE

ITEM _____

NO.	REVISIONS	APP'D
	ISSUE FOR BIDDING Date - By -	
	CONSTRUCTION Date - By -	
	RECORD DRAWING Date - By -	

Drawn/Chk. RMG
Designed PDM
Checked -
Approved -
Date MARCH 2024
Book No. -
Project No. 2542
Dwg. ID 2542_details_M
Scale

FOR REVIEW
MARCH 2024
NOT FOR CONSTRUCTION

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

DRAINAGE OUTFALL DETAILS
MAPLEWOOD AVE - DRAINAGE INTERCEPT
CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

DWG NO D6
SHEET 14 OF 14

H:\Real Numbers\Portsmouth\2542-Fleet Street\CAD\Design Maplewood\Drawings\2542_details_M.dwg, D6, 3/27/2024 11:34:37 AM, rmg

HALEY WARD
ENGINEERING | ENVIRONMENTAL | SURVEYING

21 March 2024

Wetland Inspector
New Hampshire Department of Environmental Services
Wetlands Bureau
29 Hazen Drive / P.O. Box 95
Concord, New Hampshire 03302

Re: NHDES Major Impact Wetland Permit Application
Tax Map 207, Lot 2
333 New Castle Ave
Portsmouth, New Hampshire 03801

Dear Wetland Inspector:

This letter transmits a New Hampshire Department of Environmental Services (NHDES) Major Impact Wetland Permit Application request to permit 370 sq. ft. of permanent impact to tidal wetland and 48 sq. ft. of permanent impact to the previously developed 100' Tidal Buffer Zone for the removal of an existing tidal docking structure and the construction of a new tidal docking structure including a 4' x 12' accessway, a 4' by 20' fixed wood pier, a 3' x 30' gangway, and a 10' x 20' float (overall structure length 82') on 195+/- feet of frontage along the Piscataqua River..

Attached to this application you will find a "NH DES Permit Plan-C2" which depicts the existing lot, jurisdictional areas, abutting parcels, existing structures, proposed work, and permanent impact areas.

Per Env-Wt 306.05, Steven D. Riker, CWS from Haley Ward, Inc.. classified all jurisdictional areas and identified the predominant functions of all relevant resources. The Highest Observable Tide Line marks the reference line for the 100' TBZ, as well the beginning of Tidal Wetland on the attached plan set. Attached to this application is a Wetland Functions and Values Assessment and Coastal Vulnerability Assessment summarizing these functions; as this project is subject to the requirements of Env-Wt 603.04 and Env-Wt 603.05.

The proposed structure will be constructed on piles within the tidal wetland further reducing permanent impacts to the tidal wetland resource. The project will have no impact on the functions and values of the adjacent tidal wetland. The docking structure

200 Griffin Rd., Unit 14, Portsmouth, NH 03801
T: 603.430.9282 | HALEYWARD.COM

has been designed to allow the adjacent tidal resource to maintain its current functions and values. The docking structure will not contribute to additional storm water or pollution. It is anticipated that there will be no affect on any fish and wildlife species that currently use the site for food, cover, and/or habitat. The tidal docking structure will not impede tidal flow or alter hydrology, it will not deter use by wildlife species that currently use the wetland area, and it will not impede any migrational fish movement. The float and gangway will be temporary docking structures and will be removed during winter months as to not interfere with ice floe.

The docking structure has been designed to provide boating access utilizing the natural grade of the dock location. There is no grading of the shoreline required to construct the dock. There will be no construction activity that will disturb the area adjacent to the use. All work will be performed from a crane barge at low tide. Piles to be driven are above the Mean Low Water (MLW) line and there is no need for erosion control. There will be no water in this location during pile driving and therefore no temporary disturbance associated with construction. The barge floats into position and the piles are driven by the crane equipped with a vibratory hammer. This method eliminates any contact of construction equipment with the protected resource. Portions of the docking structure are pre-fabricated off site and transported to the site via crane barge.

The construction sequence for the proposed structure are as follows:

- Mobilization of a crane barge, push boat, work skiff, materials and prefabricated components such as the gangway and float to the site via the Piscataqua River.
- Mobilization of equipment trucks to the site.
- The barge will be positioned alongside the proposed location of the new dock and waterward of any emergent vegetation to minimize impacts.
- Installation of the sub structure will be performed from a crane barge or skiff to reduce the amount of foot traffic in the intertidal area.
- All work will be performed at low tide to minimize sedimentation.
- Piles will be driven by a vibratory hammer eliminating any excavation for installation of the pilings. Piles are driven to refusal.
- Piles are cut and beam caps are installed and the super structure of the pier is built. Materials are lifted from the barge and set into position by the crane.
- Once the pier is complete, the gangway and float are brought into position and installed.

The project represents the alternative with the least adverse impacts to areas and environments while allowing reasonable use of the property.

Per Env-Wt 603.02(b), attached to this application you will find a plan set which depicts the existing lot, jurisdictional areas, all natural resources in the area, abutting parcels, existing structures, and proposed structures. Also included in this application are maps created in accordance with Env-Wt 603.03 and Env-Wt 603.05.

In order to complete the application package for this project, the DES Wetlands Bureau rules in Chapter Env-Wt 306.05 (a)(2) has been evaluated and addressed below.

(2) a. Contains any documented occurrences of protected species or habitat for such species, using the NHB DataCheck tool;

Attached to this application are the results of the NHB review (NHB24-0615) and Haley Ward will coordinate with NHB and NHF & G regarding the protected species and comments will be forwarded to NH DES upon receipt.

(2) b. Is a bog;

Utilizing the NH DES WPPT, the subject property is not a bog, nor does it contain any portion of a bog.

(2) c. Is a floodplain wetland contiguous to a tier 3 or higher watercourse;

Utilizing the NH DES WPPT, the subject property does contain a floodplain wetland contiguous to a tier 3 or higher watercourse.

(2) d. Does the property contain a designated prime wetlands or a duly established 100-foot buffer; or

The property does not contain a prime wetland or duly established 100 foot buffer.

(2) e. Does the property contain a sand dune, tidal wetland, tidal water, or undeveloped tidal buffer zone;

The property does not contain a sand dune. The property does contain a tidal wetland and tidal waters.

The DES Wetlands Bureau rules in Chapter Env-Wt 306.05 (a)(4) and (a)(7) has been evaluated and addressed below.

(4) a. Is the subject property within LAC jurisdiction;

The property does not fall within an area of LAC jurisdiction.

(4) b. Does the subject property fall within or contain any areas that are subject to time of year restrictions under Env-Wt 307;

The property does not fall within or contain any areas that are subject to time of year restrictions.

(7) Does the project have potential to impact impaired waters, class A waters, or outstanding resource waters;

I do not believe the nature of the proposed project has the potential to impact an impaired water.

The DES Wetlands Bureau rules in Chapter Env-Wt 603.02 (e) & (f) have been evaluated and addressed below.

(e)(1) The project meets the standard conditions in Env-Wt 307;

The project meets the standard conditions in Env-Wt 307 as the proposed docking structure meets the standards of Env-Wq 1000, RSA 483-B and Env-Wq 1400. Sediment and erosion controls will also be used and maintained during the proposed construction ensuring protection of water quality on the site. Since the construction will be conducted during low tide conditions, it is not anticipated that there will be any impacts to fish or shellfish. Under Env-Wt 306.05 (a)(2)a. a NHB review has been performed to ensure there are no impacts to protected species or habitats of such species. The protection of Prime Wetlands or Duly-Established 100 foot buffers does not apply as none exist on or adjacent to the subject lot.

(e)(2) The project meets the approval criteria in Env-Wt 313.01;

The project meets the approval criteria in Env-Wt 313.01 as the project requires a functional assessment (attached), meets the avoidance and minimization requirements specified in Env-Wt 313.03, does not require compensatory mitigation, meets applicable conditions specified in Env-Wt 307 (above), meets project specific criteria listed in Env-Wt 600 (above), and the project is located entirely within the boundary of the applicant's property.

(f)(1) The project design narrative as described in Env-Wt 603.06;

The project design narrative is provided above.

(f)(2) Design plans that meet the requirements of Env-Wt 603.07;

The design plans meet the above standard.

(f)(3) The water depth supporting information required by Env-Wt 603.08;

The design plans provide water depth information.

(f)(4) A statement regarding impact on navigation and passage required by Env-Wt 603.09.

The Permit Plan Set will be provided to the Pease Development Authority, Division of Ports and Harbors, for formal review and comment by the Harbormaster. That documentation will be provided to NH DES upon receipt.

In accordance with New Hampshire Administrative Rule Env-Wt 606.02(a) and 606.06(e), the marine contractor which will be constructing the proposed dock modification utilizes a vibratory hammer to install piles. The vibratory hammer uses vibration to install the pile in the marine sediment, instead of a standard hammer which uses a physical force to drive the pile, and subsequently a much greater noise impact. Using the vibratory hammer is the least impacting alternative to drive piles for dock construction.

Lastly, the proposed structure will use CCA (Chromated Copper Arsenate) treated lumber. The proposed piles will be CCA treated 12" diameter southern yellow pine. Attached to this application is a Safety Data Sheet for CCA treated wood. Per the data

sheet, toxicity is limited to inhalation of wood dust originating from CCA treated lumber. Additionally, per the Safety Data Sheet, 12. Ecological Information (page 12) "The product is not classified as environmentally hazardous. However, this does exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment." The product is also insoluble in water. The marine contractor that will be constructing the proposed docking structure receives the timber piles and lumber pre-treated. The marine contractor does not treat the lumber, and therefore there is no risk of spilling the treatment chemical in or near resource areas.

Please contact me if you have any questions or concerns regarding this application.

Respectfully submitted,

Jacqueline Boudreau
Project Scientist
jboudreau@haleyward.com

8 March, 2024

To Whom It May Concern:

RE: State of New Hampshire DES Wetlands Bureau Standard Dredge and Fill Application for proposed tidal docking structure within the previously developed 100' Tidal Buffer Zone and jurisdictional wetlands for *Kimberley & Thomas Lyng of 333 New Castle Ave Portsmouth, NH 03801*

This letter is to inform the City of Portsmouth in accordance with State Law that the following entities:

Riverside Marine Construction, Inc.
Haley Ward

Are authorized to represent me as my agent in the approval process.
Please feel free to call me if there are any questions regarding this authorization.

Sincerely,

Kimberley Lyng
Thomas Lyng
333 New Castle Ave
Portsmouth, NH 03801

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: Thomas P. & Kimberley S. L **TOWN NAME:** Portsmouth

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? o If yes, species or habitat name(s): o NHB Project ID #: 24-0615	◯ 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): • 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): N/A	

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 proposes 370 sq. ft. of permanent impact to tidal wetland and 48 sq. ft. of permanent impact to the previously developed 100' Tidal Buffer Zone for the removal of an existing tidal docking structure and the construction of a new tidal docking structure including a 4' x 12' accessway, a 4' by 20' fixed wood pier, a 3' x 30' gangway, and a 10' x 20' float (overall structure length 82') on 195+/- feet of frontage along the Piscataqua River.

SECTION 3 - PROJECT LOCATION

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

ADDRESS:	333 New Castle Avenue
TOWN/CITY:	Portsmouth
TAX MAP/BLOCK/LOT/UNIT:	Map 207, Lot 2
US GEOLOGICAL SURVEY (USGS) TOPO MAP WATERBODY NAME: ☐ N/A	Piscataqua River
(Optional) LATITUDE/LONGITUDE in decimal degrees (to five decimal places):	X:1,230,314.0948 Y:209,424.8104

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: Thomas P. & Kimberley S. Lyng		
MAILING ADDRESS: 333 New Castle Avenue		
TOWN/CITY: Portsmouth	STATE: NH	ZIP CODE: 03801
EMAIL ADDRESS: trlyng@comcast.net		
FAX:	PHONE: 603-978-5175	

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.: Boudreau, Jacqueline		
COMPANY NAME: Haley Ward, Inc.		
MAILING ADDRESS: 200 Griffin Road, Unit 14		
TOWN/CITY: Portsmouth	STATE: NH	ZIP CODE: 03801
EMAIL ADDRESS: jboudreau@haleyward.com		
FAX:	PHONE: 603-430-9282	

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):

Please see attached narrative.

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:

(☒ 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			☐			☐
	Scrub-shrub Wetland			☐			☐
	Emergent Wetland			☐			☐
	Wet Meadow			☐			☐
	Vernal Pool			☐			☐
	Designated Prime Wetland			☐			☐
	Duly-established 100-foot Prime Wetland Buffer			☐			☐
Surface	Intermittent / Ephemeral Stream			☐			☐
	Perennial Stream or River			☐			☐
	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	48		☐			☐
	Docking - Tidal Water	370		☐			☐
TOTAL		418					

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):	SF	× $0.40 =	$
Seasonal docking structure: 290	SF	× $2.00 =	$ 580
Permanent docking structure: 128	SF	× $4.00 =	$ 512
Projects proposing shoreline structures (including docks) add $400 =			$ 400
		Total =	$ 1492
The application fee for minor or major impact is the above calculated total or $400, whichever is greater =			*$*

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: JB	To the best of the signer's knowledge and belief, all required notifications have been provided.
Initials: JB	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: JB	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: JB	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:	DATE:
SIGNATURE (APPLICANT, IF DIFFERENT FROM OWNER):	PRINT NAME LEGIBLY:	DATE:
SIGNATURE (AGENT, IF APPLICABLE):	PRINT NAME LEGIBLY: Jacqueline Boudreau	DATE: 2/29/24

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:	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”.

Keep this checklist for your reference; do not submit with your application.

APPLICATION CHECKLIST

Unless specified, all items below are required. Failure to provide the required items will delay a decision on your project and may result in denial of your application. Please reference statute RSA 482-A, Fill and Dredge in Wetlands, and the Wetland Rules Env-Wt 100-900.

- ☐ The completed, dated, signed, and certified application (Env-Wt 311.03(b)(1)).
- ☐ Correct fee as determined in RSA 482-A:3, I(b) or (c), subject to any cap established by RSA 482-A:3, X (Env-Wt 311.03(b)(2)). Make check or money order payable to "Treasurer – State of NH".
- ☐ The Required Planning actions required by Env-Wt 311.01(a)-(c) and Env-Wt 311.03(b)(3).
- ☐ US Army Corps of Engineers (ACE) "Appendix B, New Hampshire General Permits (GPs), Required Information and Corps Secondary Impacts Checklist" and its required attachments (Env-Wt 307.02). This includes the US Fish and Wildlife Service IPAC review and Section 106 Historic/Archaeological Resource review.
- ☐ Project plans described in Env-Wt 311.05 (Env-Wt 311.03(b)(4)).
- ☐ Maps, or electronic shape files and meta data, and other attachments specified in Env-Wt 311.06 (Env-Wt 311.03(b)(5)).
- ☐ Explanation of the methods, timing, and manner as to how the project will meet standard permit conditions required in Env-Wt 307 (Env-Wt 311.03(b)(7)).
- ☐ If applicable, the information regarding proposed compensatory mitigation specified in Env-Wt 311.08 and Chapter Env-Wt 800 - Permittee Responsible Mitigation Project Worksheet, unless not required under Env-Wt 313.04 (Env-Wt 311.03(b)(8); Env-Wt 311.08; Env-Wt 313.04).
- ☐ Any additional information specific to the **type of resource** as specified in Env-Wt 311.09 (Env-Wt 311.03(b)(9); Env-Wt 311.04(j)).
- ☐ Project specific information required by Env-Wt 500, Env-Wt 600, and Env-Wt 900 (Env-Wt 311.03(b)(11)).
- ☐ A list containing the name, mailing address and tax map/lot number of each abutter to the subject property (Env-Wt 311.03(b)(12)).
- ☐ Copies of certified postal receipts or other proof of receipt of the notices that are required by RSA 482-A:3, I(d) (Env-Wt 311.03(b)(13)).
- ☐ Project design considerations required by Env-Wt 313 (Env-Wt 311.04(j)).
- ☐ Town tax map showing the subject property, the location of the project on the property, and the location of properties of abutters with each lot labeled with the name and mailing address of the abutter (Env-Wt 311.06(a)).
- ☐ Dated and labeled color photographs that:
  - (1) Clearly depict:
    - a. All jurisdictional areas, including but not limited to portions of wetland, shoreline, or surface water where impacts have or are proposed to occur.
    - b. All existing shoreline structures.
  - (2) Are mounted or printed no more than 2 per sheet on 8.5 x 11 inch sheets (Env-Wt 311.06(b)).
- ☐ A copy of the appropriate US Geological Survey map or updated data based on LiDAR at a scale of one inch equals 2,000 feet showing the location of the subject property and proposed project (Env-Wt 311.06(c)).
- ☐ A narrative that describes the work sequence, including pre-construction through post-construction, and the relative timing and progression of all work (Env-Wt 311.06(d)).

lrm@des.nh.gov or (603) 271-2147
29 Hazen Drive, PO Box 95, Concord, NH 03302-0095
des.nh.gov

- ☐ For all projects in the protected tidal zone, a copy of the recorded deed with book and page numbers for the property (Env-Wt 311.06(e)).
- ☐ If the applicant is not the owner in fee of the subject property, documentation of the applicant's legal interest in the subject property, provided that for utility projects in a utility corridor, such documentation may comprise a list that:
  - (1) Identifies the county registry of deeds and book and page numbers of all of the easements or other recorded instruments that provide the necessary legal interest; and
  - (2) Has been certified as complete and accurate by a knowledgeable representative of the applicant (Env-Wt 311.06(f)).
- ☐ The NHB memo containing the NHB identification number and results and recommendations from NHB as well as documentation of any consultation requests made to NHFG, communications and information related to the consultation, with the consultation results and recommendations from NHFG. (Env-Wt 311.06(g)). See Wetlands Permitting: Protected Species and Habitat Fact Sheet.
- ☐ A statement of whether the applicant has received comments from the local conservation commission and, if so, how the applicant has addressed the comments (Env-Wt 311.06(h)).
- ☐ For projects in LAC jurisdiction, a statement of whether the applicant has received comments from the LAC and, if so, how the applicant has addressed the comments (Env-Wt 311.06(i)).
- ☐ If the applicant is also seeking to be covered by the state general permits, a statement of whether comments have been received from any federal agency and, if so, how the applicant has addressed the comments (Env-Wt 311.06(j)).
- ☐ Avoidance and Minimization Written Narrative or the Avoidance and Minimization Checklist, or your own avoidance and minimization narrative (Env-Wt 311.07).
- ☐ For after-the-fact applications: information required by Env-Wt 311.12.
- ☐ Coastal Resource Worksheet for coastal projects as required under Env-Wt 600.
- ☐ Prime Wetlands information required under Env-Wt 700. See WPPT for prime wetland mapping.
- ☐ For non-tidal shoreline structure projects, the length of shoreline frontage per Env-Wt 311.09(b)(1)

Required Attachments for Minor and Major Projects

- ☐ Attachment A: Minor and Major Projects (Env-Wt 313.03).
- ☐ Functional Assessment Worksheet or others means of documenting the results of actions required by Env-Wt 311.10 as part of an application preparation for a standard permit (Env-Wt 311.03(b)(3); Env-Wt 311.03(b)(10)). See Functional Assessments for Wetlands and Other Aquatic Resources Fact Sheet. For shoreline structures, see shoreline structures exemption in Env-Wt 311.03(b)(10)).

Optional Materials

- ☐ Stream Crossing Worksheet which summarizes the requirements for stream crossings under Env-Wt 900.
- ☐ Request for concurrent processing of related shoreland / wetlands permit applications (Env-Wt 313.05).

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: **Thomas P. & Kimberley S. Lyng** **TOWN NAME:** Portsmouth

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 PROPOSES 370 SQ. FT. OF PERMANENT IMPACT TO TIDAL WETLAND AND 48 SQ. FT. OF PERMANENT IMPACT TO THE PREVIOUSLY DEVELOPED 100' TIDAL BUFFER ZONE FOR THE REMOVAL OF AN EXISTING TIDAL DOCKING STRUCTURE AND THE CONSTRUCTION OF A NEW TIDAL DOCKING STRUCTURE INCLUDING A 4' X 12' ACCESSWAY, A 4' BY 20' FIXED WOOD PIER, A 3' X 30' GANGWAY, AND A 10' X 20' FLOAT (OVERALL STRUCTURE LENGTH 82') ON 195+/- FEET OF FRONTAGE ALONG THE PISCATAQUA RIVER. SINCE THE PROPOSED TIDAL DOCK WILL SERVE TO PROVIDE A WATER DEPENDENT FUNCTION, PRACTICABLE ALTERNATIVES ALONG THE 195+/-FEET OF SHORELINE ARE SEVERELY REDUCED. THE PROPOSED LOCATION REPRESENTS THE LEAST IMPACTING ALTERNATIVE WHILE PROVIDING SAFE BOATING ACCESS TO THE PISCATAQUA RIVER.

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.

The proposed location represents the least impacting alternative as there are no impacts to salt marshes to construct the proposed dock.

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

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

The proposed docking structure will be constructed on piles within the tidal wetland further reducing permanent impacts to the tidal wetland resource. Since the docking structure will be constructed on piles, the structure will not impede tidal flow or alter hydrology, it will not deter use by wildlife species that currently use the wetland area, and it will not impede any migrational fish movement.

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 project does not propose any impacts to exemplary natural communities or vernal pools. Results per the NHB Review, are currently being proccessed and will be provided to NH DES upon receipt from the NHB. Locations of marsh elder along the shoreline have been identified and depicted on the plan set. The proposed dock does not impact any of the marsh elder populations. Coordination with NHB and NHF & G in regards to the above protected species is expected and comments from those departments will be forwarded to NH DES upon receipt.

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 tidal docking structure has been designed to not impede recreation, public commerce, and navigation. The docking structure does not extend into any federal or local navigation channel.

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.

The project does not propose any impacts to floodplain wetlands as the dock will be constructed on piles therefore providing no significant decrease in flood storage potential.

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 does not propose impacts to riverine forested wetland systems and scrub shrub marsh complexes.

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.

The wetland resources associated with the project site are not hydrologically connected to a groundwater aquifer or drinking water supply.

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 does not propose any impacts to stream channels.

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.

Since the proposed tidal dock will serve to provide a water dependent function, practicable alternatives along the 195+/-feet of shoreline are severely reduced. The proposed location represents the least impacting alternative while providing safe boating access to the Piscataqua River.

The proposed docking structure will be constructed on piles within the tidal wetland further reducing permanent impacts and construction surface area.

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.

All work will be performed at low tide to minimize sedimentation. The proposed structure will be constructed on piles within the tidal wetland further reducing permanent impacts to the tidal wetland resource. Piles will be driven by a vibratory hammer eliminating any excavation for installation of the pilings, pilings are driven to refusal.

The project represents the alternative with the least adverse impacts to areas and environments while allowing reasonable and safe use of the property.

The docking structure has been designed to provide boating access utilizing the natural grade of the dock location. There is no grading of the shoreline required to construct the dock. There will be no construction activity that will disturb the area adjacent to the use. All work will be performed from a crane barge at low tide. Piles to be driven are above the Mean Low Water (MLW) line and there is no need for erosion control. There will be no water in this location during pile driving and therefore no temporary disturbance associated with construction. The barge floats into position and the piles are driven by the crane equipped with a vibratory hammer. This method eliminates any contact of construction equipment with the protected resource. Portions of the docking structure are pre-fabricated off site and transported to the site via crane barge.

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.

The docking structure has been designed to provide boating access utilizing the natural grade of the dock location, as well as for abutting properties to have access to their own docking structures. There is no grading of the shoreline required to construct the dock. There will be no construction activity that will disturb the area adjacent to the use.

Abutting propoerties each have their own docks and access to usage of docks and passageways will not be affecting during construction or otherwise.

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.

The proposed docking structure design complies with Env-Wt 606.03 and Env-Wt 606.06 which ensures that the public's right to navigation is preserved and the commerical and recreational navigation within the resource remains. Additionally, Plan Set will be provided to the Pease Development Authority, Division of Ports and Harbors, for formal review and comment by the Harbormaster. That documentation will be provided to NH DES upon receipt.

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.

The construction activities have been designed to require no grading activities associated with the proposed dock construction which will have no impacts on water quality, aquatic vegetation and wildlife habitat.

The marine contractor which will be constructing the proposed dock modification, utilizes a vibratory hammer to install piles. The vibratory hammer uses vibration to install the pile in the marine sediment, instead of a standard hammer which uses a physical force to drive the pile. Using the vibratory hammer is the least impacting alternative to drive piles for dock construction.

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.

The design of the proposed docking structure has been implemented without the need for any grading activies. Additonally, portions of the docking structure will be pre-built/pre-fabricated offsite and then transported to the site via a barge without the need to access points through the wetland or over a bank, ensurnig shoreline stability.

All work will be performed from a crane barge at low tide. The barge floats into position and the piles are driven by the crane equipped with a vibratory hammer. This method eliminates any contact of construction equipment with the protected resource. Portions of the docking structure are pre-fabricated off site and transported to the site via crane barge.

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: Wetland functions and values were assessed using the Highway Methodology Workbook, Wetland Functions and Values: A Descriptive Approach. U.S. Army Corps of Engineers. 1999. The Highway Methodology Workbook Supplement, Wetland Functions and Values: A Descriptive Approach. U.S. Army Corps of Engineers. New England Division. 32pp. NAEEP-360-1-30a.
NAME OF CERTIFIED WETLAND SCIENTIST (FOR NON-TIDAL PROJECTS) OR QUALIFIED COASTAL PROFESSIONAL (FOR TIDAL PROJECTS) WHO COMPLETED THE ASSESSMENT: JACQUELINE M. BOUDREAU, PROJECT SCIENTIST
DATE OF ASSESSMENT: 11/02/2023
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.

COASTAL RESOURCE WORKSHEET

Water Division/Land Resources Management
Wetlands Bureau

Check the Status of your Application

RSA/Rule: RSA 482-A/ Env-Wt 600

APPLICANT LAST NAME, FIRST NAME, M.I.: Lyng, Thomas, P. & Kimberley

This worksheet may be used to present the information required for projects in coastal areas, in addition to the information required for Lower-Scrutiny Approvals, Expedited Permits, and Standard Permits under Env-Wt 603.01.

Please refer to Env-Wt 605.03 for impacts requiring compensatory mitigation.

SECTION 1 - REQUIRED INFORMATION (Env-Wt 603.02; Env-Wt 603.06; Env-Wt 603.09)

The following information is required for projects in coastal areas.

Describe the purpose of the proposed project, including the overall goal of the project, the core project purpose consisting of a concise description of the facilities and work that could impact jurisdictional areas, and the intended project outcome. Specifically identify all natural resource assets in the area proposed to be impacted and include maps created through a data screening in accordance with Env-Wt 603.03 (refer to Section 2) and Env-Wt 603.04 (refer to Section 3) as attachments.

THE PROJECT PROPOSES 370 SQ. FT. OF PERMANENT IMPACT TO TIDAL WETLAND AND 48 SQ. FT. OF PERMANENT IMPACT TO THE PREVIOUSLY DEVELOPED 100' TIDAL BUFFER ZONE FOR THE REMOVAL OF AN EXISTING TIDAL DOCKING STRUCTURE AND THE CONSTRUCTION OF A NEW TIDAL DOCKING STRUCTURE INCLUDING A 4' X 12' ACCESSWAY, A 4' BY 20' FIXED WOOD PIER, A 3' X 30' GANGWAY, AND A 10' X 20' FLOAT (OVERALL STRUCTURE LENGTH 82') ON 195+/- FEET OF FRONTAGE ALONG THE PISCATAQUA RIVER. SINCE THE PROPOSED TIDAL DOCK WILL SERVE TO PROVIDE A WATER DEPENDENT FUNCTION, PRACTICABLE ALTERNATIVES ALONG THE 195+/-FEET OF SHORELINE ARE SEVERELY REDUCED. . The proposed structure has been placed to provide the intended function and provide safe navigation to and from the proposed float location.

For standard permit projects, provide:

☒ A Coastal Functional Assessment (CFA) report in accordance with Env-Wt 603.04 (refer to Section 3).

☒ A vulnerability assessment in accordance with Env-Wt 603.05 (refer to Section 4).

Explain all recommended methods and other considerations to protect the natural resource assets during and as a result of project construction in accordance with Env-Wt 311.07, Env-Wt 313, and Env-Wt 603.04.

A Coastal Functional Assessment and a Coastal Vulnerability Assessment is attached to this application per Env-Wt 603.04. An Avoidance & Minimization Form is attached to this application, and also described in the attached narrative letter per Env-Wt 311.07 and Env-Wt 313.

Provide a narrative showing how the project meets the standard conditions in Env-Wt 307 and the approval criteria in Env-Wt 313.01.

The project plan set, specifically the Details-Sheet D1 includes all notes demonstrating compliance with Env-Wt 307 and Env-Wt 313.01.

Provide a project design narrative that includes the following:

☒ A discussion of how the proposed project:

- Uses best management practices and standard conditions in Env-Wt 307;
- Meets all avoidance and minimization requirements in Env-Wt 311.07 and Env-Wt 313.03;
- Meets approval criteria in Env-Wt 313.01;
- Meets evaluation criteria in Env-Wt 313.01(c);
- Meets CFA requirements in Env-Wt 603.04; and
- Considers sea-level rise and potential flooding evaluated pursuant to Env-Wt 603.05;

☒ A construction sequence, erosion/siltation control methods to be used, and a dewatering plan; and

☒ A discussion of how the completed project will be maintained and managed.

The completed project will result in a permanent fixed wood pier, with an attached gangway and associated float. The gangway and float are/will be seasonal structures and will be removed in the non-boating season. Other than removal and re-installation, there is no maintenance or management of the tidal docking structure over its expected life span, which is 50-100 years.

☒ Provide design plans that meet the requirements of Env-Wt 603.07 (refer to Section 5);

☒ Provide water depth supporting information required by Env-Wt 603.08 (refer to Section 6); and

☒ For any major project that proposes to construct a structure in tidal waters/wetlands or to extend an existing structure seaward, provide a statement from the Pease Development Authority Division of Ports and Harbors (DP&H) chief harbormaster, or designee, for the subject location relative to the proposed structure's impact on navigation. If the proposed structure might impede existing public passage along the subject shoreline on foot or by non-motorized watercraft, the applicant shall explain how the impediments have been minimized to the greatest extent practicable.

Review and comment by the Pease Development Authority will be provided to NH DES upon receipt.

SECTION 2 - DATA SCREENING (Env-Wt 603.03, in addition to Env-Wt 306.05)

Please use the Wetland Permit Planning Tool, or any other database or source, to indicate the presence of:

☒ Existing salt marsh and salt marsh migration pathways;

☒ Eelgrass beds;

☒ Documented shellfish sites;

☒ Projected sea-level rise; and

☒ 100-year floodplain.

Conduct data screening as described to identify documented essential fish habitat, and tides and currents that may be impacted by the proposed project, by using the following links:

☒ National Oceanic and Atmospheric Administration (NOAA) Tides & Currents; and

☒ NOAA Essential Fish Habitat Mapper.

☒ Verify or correct the information collected from the data screenings by conducting an on-site assessment of the subject property in accordance with Env-Wt 406 and Env-Wt 603.04.

SECTION 3 - COASTAL FUNCTIONAL ASSESSMENT/ AVOIDANCE AND MINIMIZATION (Env-Wt 603.04; Env-Wt 605.01; Env-Wt 605.02; Env-Wt 605.03)

Projects in coastal areas shall:

☒ Not impair the navigation, recreation, or commerce of the general public; and

☒ Minimize alterations in prevailing currents.

An applicant for a permit for work in or adjacent to tidal waters/wetlands or the tidal buffer zone shall demonstrate that the following have been avoided or minimized as required by Env-Wt 313.04:

☒ Adverse impacts to beach or tidal flat sediment replenishment;

☒ Adverse impacts to the movement of sediments along a shore;

☒ Adverse impacts on a tidal wetland's ability to dissipate wave energy and storm surge; and

☒ Adverse impacts of project runoff on salinity levels in tidal environments.

For standard permit applications submitted for minor or major projects:

☒ Attach a CFA based on the data screening information and on-site evaluation required by Env-Wt 603.03. The CFA for tidal wetlands or tidal waters shall be:

- Performed by a qualified coastal professional; and
- Completed using one of the following methods:

  a. The US Army Corps of Engineers (USACE) Highway Methodology Workbook, dated 1993, together with the USACE New England District *Highway Methodology Workbook Supplement*, dated 1999; or

  b. An alternative scientifically-supported method with cited reference and the reasons for the alternative method substantiated.

For any project that would impact tidal wetlands, tidal waters, or associated sand dunes, the applicant shall:

☒ Use the results of the CFA to select the location of the proposed project having the least impact to tidal wetlands, tidal waters, or associated sand dunes;

☒ Design the proposed project to have the least impact to tidal wetlands, tidal waters, or associated sand dunes;

☒ Where impact to wetland and other coastal resource functions is unavoidable, limit the project impacts to the least valuable functions, avoiding and minimizing impact to the highest and most valuable functions; and

☒ Include on-site minimization measures and construction management practices to protect coastal resource areas.

Projects in coastal areas shall use results of this CFA to:

☒ Minimize adverse impacts to finfish, shellfish, crustacean, and wildlife;

☒ Minimize disturbances to groundwater and surface water flow;

☒ Avoid impacts that could adversely affect fish habitat, wildlife habitat, or both; and

☒ Avoid impacts that might cause erosion to shoreline properties.

SECTION 4 - VULNERABILITY ASSESSMENT (Env-Wt 603.05)

Refer to the New Hampshire Coastal Flood Risk Summary Part 1: Science and New Hampshire Coastal Flood Risk Summary Part II: Guidance for Using Scientific Projections or other best available science to:

Determine the time period over which the project is designed to serve.

A Coastal Vulnerability Assessment is attached to this appication.

Identify the project's relative risk tolerance to flooding and potential damage or loss likely to result from flooding to buildings, infrastructure, salt marshes, sand dunes and other valuable coastal resource areas.

See attached CVA

Reference the projected sea-level rise (SLR) scenario that most closely matches the end of the project design life and the project's tolerance to risk or loss.

See attached CVA

Identify areas of the proposed project site subject to flooding from SLR.

See attached CVA

Identify areas currently located within the 100-year floodplain and subject to coastal flood risk.

See attached CVA

Describe how the project design will consider and address the selected SLR scenario within the project design life, including in the design plans.

See attached CVA

Where there are conflicts between the project's purpose and the vulnerability assessment results, schedule a pre-application meeting with the department to evaluate design alternatives, engineering approaches, and use of the best available science.

☐ Pre-application meeting date held: **N/A**

SECTION 5 - DESIGN PLANS (Env-Wt 603.07, in addition to Env-Wt 311)

Submit design plans for the project in both plan and elevation views that clearly depict and identify all required elements.

The plan view shall depict the following:

☒ The engineering scale used, which shall be no larger than one inch equals 50 feet;

☒ The location of tidal datum lines depicted as lines with the associated elevation noted, based on North American Vertical Datum of 1988 (NAVD 88), derived from https://tidesandcurrents.noaa.gov/datum_options.html, as described in Section 6.

☒ An imaginary extension of property boundary lines into the waterbody and a 20-foot setback from those property line extensions;

☒ The location of all special aquatic sites at or within 100 feet of the subject property;

☒ Existing bank contours;

☒ The name and license number, if applicable, of each individual responsible for the plan, including:

a. The agent for tidal docking structures who determined elevations represented on plans; and

b. The qualified coastal professional who completed the CFA report and located the identified resources on the plan;

☒ The location and dimensions of all existing and proposed structures and landscape features on the property;

☒ Tidal datum(s) with associated elevations noted, based on NAVD 88; and

☒ Location of all special aquatic sites within 100-feet of the property.

The elevation view shall depict the following:

☒ The nature and slope of the shoreline;

☒ The location and dimensions of all proposed structures, including permanent piers, pilings, float stop structures, ramps, floats, and dolphins; and

☒ Water depths depicted as a line with associated elevation at highest observable tide, mean high tide, and mean low tide, and the date and tide height when the depths were measured. Refer to Section 6 for more instructions regarding water depth supporting information.

See specific design and plan requirements for certain types of coastal projects:

- Overwater structures (Env-Wt 606).
- Dredging activities (Env-Wt 607).
- Tidal beach maintenance (Env-Wt 608).
- Tidal shoreline stabilization (Env-Wt 609).
- Protected tidal zone (Env-Wt 610).
- Sand Dunes (Env-Wt 611).

SECTION 6 - WATER DEPTH SUPPORTING INFORMATION REQUIRED (Env-Wt 603.08)

Using current predicted NOAA tidal datum for the location, and tying field measurements to NAVD 88, field observations of at least three tide events, including at least one minus tide event, shall be located to document the range of the tide in the proposed location showing the following levels:

☒ Mean lower low water;

☒ Mean low water;

☒ Mean high water;

☒ Mean tide level;

☒ Mean higher high water;

☒ Highest observable tide line; and

☒ Predicted sea-level rise as identified in the vulnerability assessment in Env-Wt 603.05.

The following data shall be presented in the application project narrative to support how water depths were determined:

☒ The date, time of day, and weather conditions when water depths were recorded; and

☒ The name and license number of the licensed land surveyor who conducted the field measurements.

For tidal stream crossing projects, provide:

☒ Water depth information to show how the tier 4 stream crossing is designed to meet Env-Wt 904.07(c) and (d).

For repair, rehabilitation or replacement of tier 4 stream crossings:

☒ Demonstrate how the requirements of Env-Wt 904.09 are met.

SECTION 7 - GENERAL CRITERIA FOR TIDAL BEACHES, TIDAL SHORELINE, AND SAND DUNES (Env-Wt 604.01)

Any person proposing a project in or on a tidal beach, tidal shoreline, or sand dune, or any combination thereof, shall evaluate the proposed project based on:

☒ The standard conditions in Env-Wt 307;

☒ The avoidance and minimization requirements in Env-Wt 311.07 and Env-Wt 313.03;

☒ The approval criteria in Env-Wt 313.01;

☒ The evaluation criteria in Env-Wt 313.05;

☒ The project specific criteria in Env-Wt 600;

☒ The CFA required by Env-Wt 603.04; and

☒ The vulnerability assessment required by Env-Wt 603.05.

New permanent impacts to sand dunes that provide coastal storm surge protection for protected species or habitat shall not be allowed except:

☒ To protect public safety; and

☒ Only if constructed by a state agency, coastal resiliency project, or for a federal homeland security project.

Projects in or on a tidal beach, tidal shoreline, or sand dune shall support integrated shoreline management that:

☒ Optimizes the natural function of the shoreline, including protection or restoration of habitat, water quality, and self-sustaining stability to flooding and storm surge; and

☒ Protects upland infrastructure from coastal hazards with a preference for living shorelines over hardened shoreline practices.

SECTION 8 - GENERAL CRITERIA FOR TIDAL BUFFER ZONES (Env-Wt 604.02)

The 100-foot statutory limit on the extent of the tidal buffer zone shall be measured horizontally. Any person proposing a project in or on an undeveloped tidal buffer zone shall evaluate the proposed project based on:

☒ The standard conditions in Env-Wt 307;

☒ The avoidance and minimization requirements in Env-Wt 311.07 and Env-Wt 313.03;

☒ The approval criteria in Env-Wt 313.01;

☒ The evaluation criteria in Env-Wt 313.05;

☒ The project specific criteria in Env-Wt 600;

☒ The CFA required by Env-Wt 603.04; and

☒ The vulnerability assessment required by Env-Wt 603.05.

Projects in or on a tidal buffer zone shall preserve the self-sustaining ability of the buffer area to:

☒ Provide habitat values;

☒ Protect tidal environments from potential sources of pollution;

☒ Provide stability of the coastal shoreline; and

☒ Maintain existing buffers intact where the lot has disturbed area defined under RSA 483-B:4, IV.

SECTION 9 - GENERAL CRITERIA FOR TIDAL WATERS/WETLANDS (Env-Wt 604.03)

Except as allowed under Env-Wt 606, permanent new impacts to tidal wetlands shall be allowed only to protect public safety or homeland security. Evaluation of impacts to tidal wetlands and tidal waters shall be based on:

☒ The standard conditions in Env-Wt 307;

☒ The avoidance and minimization requirements in Env-Wt 311.07 and Env-Wt 313.03;

☒ The approval criteria in Env-Wt 313.01;

☒ The evaluation criteria in Env-Wt 313.05;

☒ The project specific criteria in Env-Wt 600;

☒ The CFA required by Env-Wt 603.04; and

☒ The vulnerability assessment required by Env-Wt 603.05.

Projects in tidal surface waters or tidal wetlands shall:

☒ Optimize the natural function of the tidal wetland, including protection or restoration of habitat, water quality, and self-sustaining stability to storm surge;

☒ Be designed with a preference for living shorelines over hardened stabilization practices; and

☒ Be limited to public infrastructure or restoration projects that are in the interest of the general public, including a road, a bridge, energy infrastructure, or a project that addresses predicted sea-level rise and coastal flood risk.

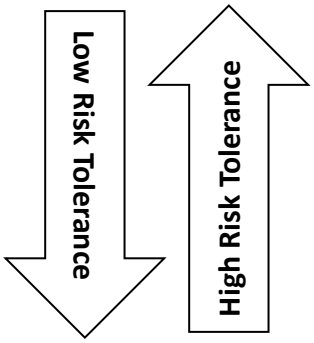
SECTION 10 – GUIDANCE

Your application must follow the New Hampshire Coastal Risk and Hazards Commission's Guiding Principles or other best available science. Below are some of these guidance principles:

- Incorporate science-based coastal flood risk projections into planning;
- Apply risk tolerance* to assessment, planning, design, and construction;
- Protect natural resources and public access;
- Create a bold vision, start immediately, and respond incrementally and opportunistically as projected coastal flood risks increase over time; and
- Consider the full suite of actions including effectiveness and consequences of actions.

*Risk tolerance is a project's willingness to accept a higher or lower probability of flooding impacts. The diagram below gives examples of project with lower and higher risk tolerance:

Critical infrastructures, historic sites, essential ecosystems, and high value assets typically have lower risk tolerance, and thus should be planned, designed, and constructed using higher coastal flood risk projections.



Sheds, pathways, and small docks typically have higher risk tolerance and thus may be planned, designed, and constructed using less protective coastal flood risk projections.

AVOIDANCE AND MINIMIZATION WRITTEN NARRATIVE

Water Division/Land Resources Management

Wetlands Bureau

Check the Status of your Application

RSA/ Rule: RSA 482-A/ Env-Wt 311.04(j); Env-Wt 311.07; Env-Wt 313.01(a)(1),b; Env-Wt 313.01(c)

APPLICANT LAST NAME, FIRST NAME, M.I.: Lyng, Thomas, P. & Kimberley S.

An applicant for a standard permit shall submit with the permit application a written narrative that explains how all impacts to functions and values of all jurisdictional areas have been avoided and minimized to the maximum extent practicable. This attachment can be used to guide this narrative (attach additional pages if needed). Alternatively, the applicant may attach a completed Avoidance and Minimization Checklist (NHDES-W-06-050) to the permit application.

SECTION 1 - WATER ACCESS STRUCTURES (Env-Wt 311.07(b)(1))

Is the primary purpose of the proposed project to construct a water access structure?

Yes. The project proposes to construct a tidal docking structure for boating access.

SECTION 2 - BUILDABLE LOT (Env-Wt 311.07(b)(1))

Does the proposed project require access through wetlands to reach a buildable lot or portion thereof?

No. This is not applicable.

SECTION 3 - AVAILABLE PROPERTY (Env-Wt 311.07(b)(2))

For any project that proposes permanent impacts of more than one acre or that proposes permanent impacts to a PRA, or both, are any other properties reasonably available to the applicant, whether already owned or controlled by the applicant or not, that could be used to achieve the project's purpose without altering the functions and values of any jurisdictional area, in particular wetlands, streams, and PRAs?

Since the proposal includes the construction of a tidal docking structure, providing a water dependent function, this is not applicable.

SECTION 4 - ALTERNATIVES (Env-Wt 311.07(b)(3))

Could alternative designs or techniques, such as different layouts, different construction sequencing, or alternative technologies be used to avoid impacts to jurisdictional areas or their functions and values on the subject property or on other property that is reasonably available to the applicant as described in the *Wetlands Best Management Practice Techniques for Avoidance and Minimization*?

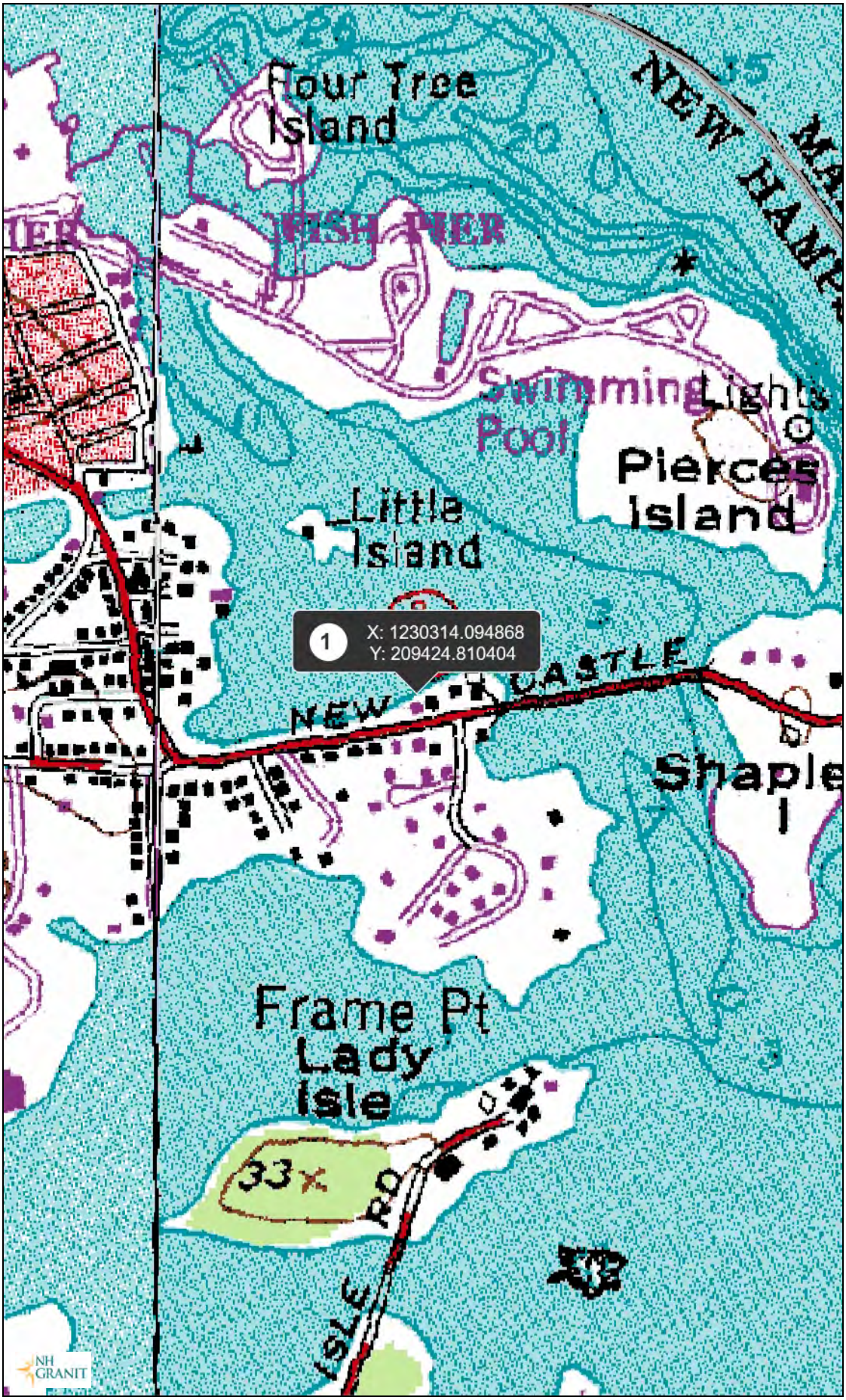
The project proposes 370 sq. ft. of permanent impact to tidal wetland and 48 sq. ft. of permanent impact to the previously developed 100' Tidal Buffer Zone for the removal of an existing tidal docking structure and the construction of a new tidal docking structure including a 4' x 12' accessway, a 4' by 20' fixed wood pier, a 3' x 30' gangway, and a 10' x 20' float (overall structure length 82') on 195+/- feet of frontage along the Piscataqua River. Since the proposed tidal dock will serve to provide a water dependent function, practicable alternatives along the 195+/-feet of shoreline are severely reduced. The proposed location represents the least impacting alternative while providing safe boating access to the Piscataqua River.

SECTION 5 - CONFORMANCE WITH Env-Wt 311.10(c) (Env-Wt 311.07(b)(4))

How does the project conform to Env-Wt 311.10(c)? Please note that for a minimum impact project, the applicant may replace this explanation with a certification signed by a certified wetland scientist that the project is located and designed to minimize impacts to wetlands functions and values.

The proposed docking structure will be constructed on piles within the tidal wetland further reducing permanent impacts to the tidal wetland resource. The docking structure has been designed to allow the adjacent tidal resource to maintain its current functions and values. The tidal docking structure will not impede tidal flow or alter hydrology, it will not deter use by wildlife species that currently use the wetland area, and it will not impede any migrational fish movement. As a result, The project will have no impact on the functions and values of the adjacent tidal wetland. A Wetland Functions and Values Assessment is attached to this application.

Map by NH GRANIT



Legend

- State
- County
- City/Town

Map Scale

1: 6,494

Map Generated: 2/29/2024

Notes

USGS Topo Map

Tax Map Lyng

Property Information

Property ID	0207-0002-0000
Location	333 NEW CASTLE AVE
Owner	LYNG THOMAS P

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

City of Portsmouth, NH makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated 08/24/2023
Data updated 3/9/2022

Print map scale is approximate. Critical layout or measurement activities should not be done using this resource.

Ambit Engineering Abutter Research

Name	*Lyng*
Address	*333 Newcastle*
City, State	*Portsmouth, NH*

Date	*2/29/2024*	**Job #**	*3402.1*
Job Name	*Lyng*		
Town	*Portsmouth*		
Research by	*SDR*		

Applicant/Owner(s)

Map	Lot	Deed	Owner (s) First/Trust	Owner(s) Last, Trustee	Mailing Address	City	State	Zip	Street Address
207	*2*	*5496/2709*	*Thomas*	*Lyng*	*333 Newcastle Avenue*	*Portsmouth*	*NH*	*03801*	

Engineer			**Ambit Engineering Civil Engineers & Land Surveyors**		**200 Griffin Road, Unit #3**	**Portsmouth**	**NH**	**03801**

Other Consultants

Abutters

Job Name	Lyng	Job #	3402.1						
Map	**Lot**	**Deed**	**Owner (s) First/Trust**	**Owner(s) Last, Trustee**	**Mailing Address**	**City**	**State**	**Zip**	**Street Address**
207	3	5941/1052	Sarah	J Mason Living Trust	363 New Castle Avenue	Portsmouth	NH	03801	

AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.

21 March, 2024

Sarah J. Mason Living Trust
363 New Castle Ave
Portsmouth, NH 03801

RE: New Hampshire DES Wetland Application for proposed existing tidal docking structure removal and re-construction of new tidal docking structure for Thomas P. Lyng, 333 New Castle Drive, Portsmouth, NH.

Dear Property Owner,

Under NH RSA 482-A this letter is to inform you in accordance with State Law that a NH DES Wetland Permit will be filed with the New Hampshire Department of Environmental Services (DES) Wetlands Bureau for a permit to **impact the 100' Tidal Buffer Zone** on behalf of your abutter, **Thomas P. Lyng.** This letter is sent to inform you as an abutter to the above-referenced property (according to local Municipal records) that **Thomas P. Lyng,** proposes a project that requires construction in the 100' Tidal Buffer Zone, a jurisdictional area.

Plans are on file at this office, and once the application is filed, plans that show the proposed project and wetland and other jurisdictional impacts will be available for viewing at the office of the **Portsmouth** clerk, **town offices** during their normal business hours, or once received by DES, at the offices of the DES Wetlands Bureau, (8 a.m. to 4 p.m.) (603) 271-2147. It is suggested that you call ahead to the appropriate office to ensure the application is available for review.

Please feel free to call if you have any questions or comments.

Sincerely,

Jacqueline Boudreau
Project Scientist
jboudreau@haleyward.com

CERTIFIED MAIL/Return Receipt Requested

200 Griffin Rd., Unit 3, Portsmouth, NH 03801
T: 603.430.9282 | HALEYWARD.COM

9589 0710 5270 1015 8318 60

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at *www.usps.com®*.

OFFICIAL USE

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Extra Services & Fees *(check box, add fee as appropriate)*
- ☐ Return Receipt (hardcopy) $ ____
- ☐ Return Receipt (electronic) $ ____
- ☐ Certified Mail Restricted Delivery $ ____
- ☐ Adult Signature Required $ ____
- ☐ Adult Signature Restricted Delivery $ ____

Postage
$

Total Postage and Fees
$

PORTSMOUTH NH 03801
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MAR 21 2024
USPS

Sent To
SARAH J. MASON LIVING TRUST
Street and Apt. No., or PO Box No.
303 NEW CASTLE AVENUE
City, State, ZIP+4®
PORTSMOUTH, NH 03801

PS Form 3800, January 2023 PSN 7530-02-000-9047 See Reverse for Instructions

NH DES-Wetlands Bureau Application
333 New Castle Ave, Portsmouth, NH 03801
Proposed Tidal Docking Structure

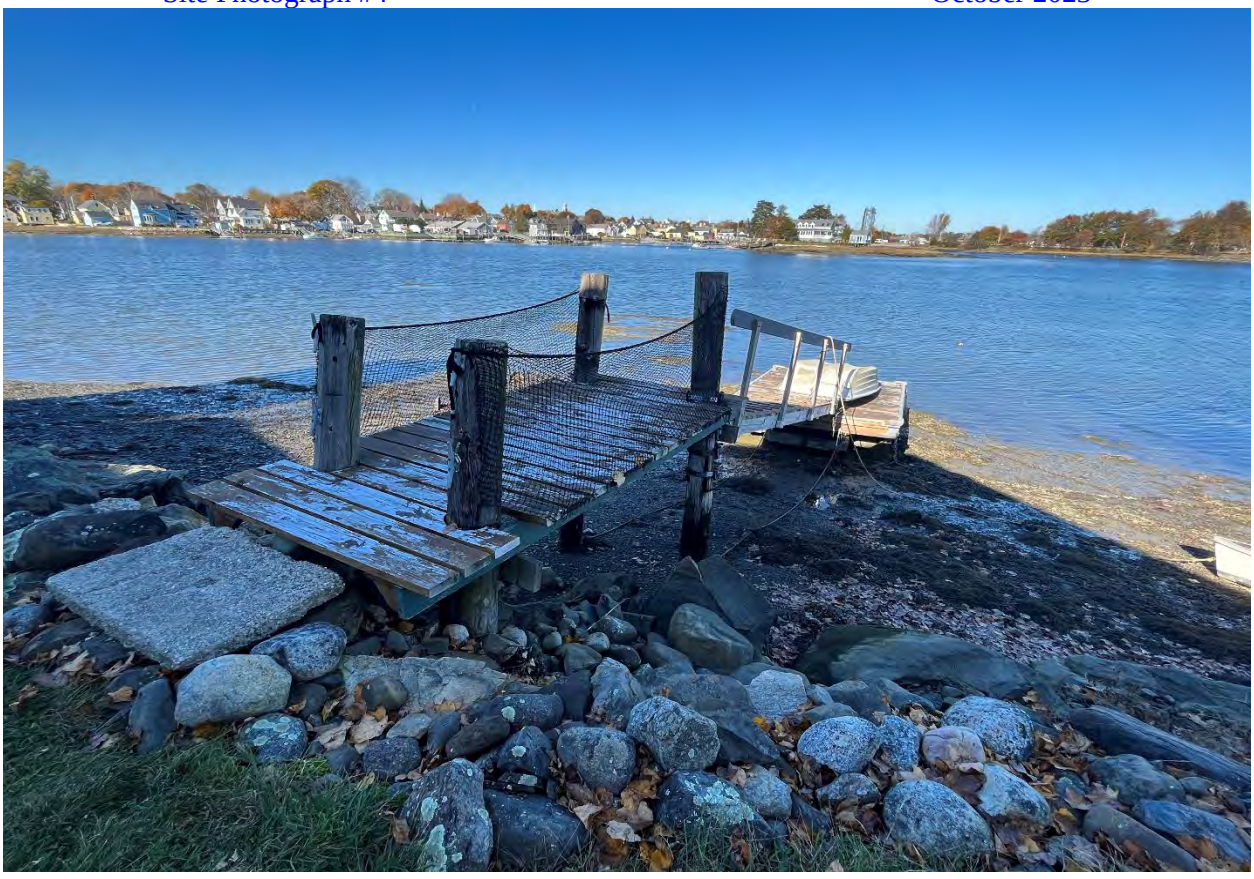
SITE PHOTOGRAPHS
Portsmouth, NH

Site Photograph #1 October 2023

Site Photograph #2 October 2023

Site Photograph #3 October 2023

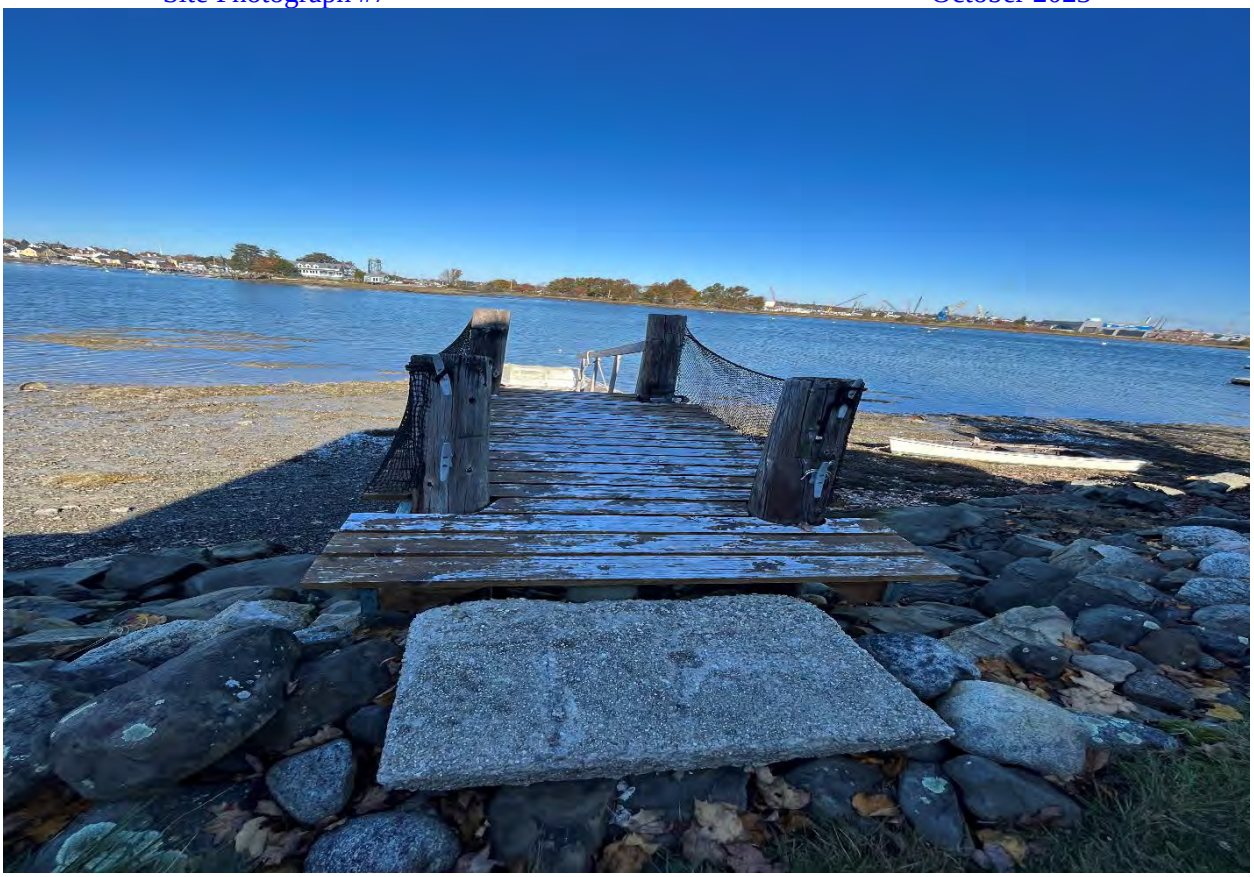
Site Photograph #4 October 2023



Site Photograph #5 October 2023

Site Photograph #6 October 2023

Site Photograph #7 October 2023



Site Photograph #8 October 2023

Site Photograph #9 October 2023

Site Photograph #10 October 2023

Site Photograph #11 October 2023

Site Photograph #12 October 2023

Map by NH GRANIT

Legend

2021
Coastal 2019 1-foot RGB

Map Scale

1: 6,494

Map Generated: 1/23/2024

Notes

Eelgrass 2021

333 New Castle Ave
Portsmouth, NH 03801

Map by NH GRANIT

Legend

- State
- County
- City/Town

WAP 2020: Highest Ranked Wildlife Habitat

- 1 Highest Ranked Habitat in NH
- 2 Highest Ranked Habitat in Regior
- 3 Supporting Landscape

Coastal 2019 1-foot RGB

Map Scale

1: 3,247

Map Generated: 11/14/2023

Notes

Lyng
333 New Castle Ave
Portsmouth, NH 03801

Map by NH GRANIT

Legend

Current Shellfish Beds
- Blue Mussel
- Oyster
- Razor Clam
- Softshell Clam
- Surf Clam

Coastal 2019 1-foot RGB
World Imagery
Low Resolution 15m Imager
High Resolution 60cm Image
High Resolution 30cm Image
Citations
1.2m Resolution Metadata

Map Scale

1: 3,247

Map Generated: 11/14/2023

Notes

333 New Castle Ave
Portsmouth, NH 03801

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: Jacqueline Boudreau
200 Griffin Rd Unit 3
Portsmouth, NH 03801
jboudreau@haleyward.com

From: NHB Review
NH Natural Heritage Bureau
Main Contact: Ashley Litwinenko - nhbreview@dncr.nh.gov

cc: NHFG Review, Anthony Tur

Date: 03/07/2024 (valid until 03/07/2025)
Re: DataCheck Review by NH Natural Heritage Bureau and NH Fish & Game
Permits: NHDES - Wetland Standard Dredge & Fill - Major

NHB ID: NHB24-0615

Town: Portsmouth
Location: 333 New Castle Avenue

Project Description: The project proposes the removal of an existing tidal docking structure and the re-construction of a new tidal docking structure including a 4’ x 5’ accessway, a 4' by 20' fixed pier, a 3' x 30' gangway, and a 8’ x 20’ landing float and an 10’ x 30’ landing float (overall structure length 112.5’) on 555+/- feet of frontage along the Piscataqua River-back channel.

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 shoreline proposed to be impacted.

NHFG Comments: Please refer to NHFG consultation requirements below.

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.

C/H
L-CHIP
ROA230915

061179

2013 NOV 22 PM 1:48

ROCKINGHAM COUNTY
REGISTRY OF DEEDS

WARRANTY DEED

KNOW ALL PERSONS BY THESE PRESENTS that we, **Donald W. Lane and Patricia A. Lane**, husband and wife, of 333 New Castle Avenue, Portsmouth, New Hampshire 03801, for consideration paid, do hereby grant to **Thomas P. Lyng and Kimberley S. Lyng**, of 319 Lincoln Avenue, Portsmouth, New Hampshire, with **Warranty Covenants, as Joint Tenants with Rights of Survivorship**, the following parcel of land:

A certain parcel of land with any buildings or other improvements thereon, located on the northerly side of New Castle Avenue, Portsmouth, New Hampshire, being depicted on a plan entitled "Lot Line Relocation/Boundary Line Agreement Plan, Tax Map 207 - Lots 2 & 3, Donald & Patricia Lane and the Estate of James H. Wicks, Sr., 333 and 363 New Castle Avenue, City of Portsmouth, County of Rockingham, State of New Hampshire; prepared by Ambit Engineering Inc., dated 12/19/2012, recorded at the Rockingham County Registry of Deeds as Plan 37556, said parcel being bounded and described as follows: Beginning at an iron rod set in the northerly sideline of New Castle Avenue thence running N 03° 20' 37" E a distance of 40.86 feet to an iron rod set; thence turning and running N 02E E 33' 07" E a distance of 48.00 feet to an iron rod set; thence continuing along the same course 8 feet, more or less to the mean high water line of the Piscataqua River Back Channel; thence running westerly along the mean high water line of the Piscataqua River Back Channel a distance of 254 feet, more or less, to a point at the northerly sideline of New Castle Avenue; thence turning and running S 85° 30' 00" E along the sideline of New Castle Avenue a distance of 26 feet more or less to a point; thence continuing along the same course and the sideline of New Castle Avenue a distance of 154.22 feet, more or less, to the point of beginning. Said parcel contains approximately 12,895 square feet of land, more or less. The above described parcel is further identified as Tax Parcel 207/2.

Meaning and intending to convey a portion of the property described in the deed from Patricia A. Lane to Donald W. Lane and Patricia A. Lane, recorded at the Rockingham County Registry of Deeds, at Book 4221, Page 91.

Dated this 21st day of November, 2013.

Donald W. Lane

Patricia A. Lane

State of New Hampshire
County of Rockingham

Personally appeared Donald W. Lane and Patricia A. Lane and acknowledged that they executed the above Warranty Deed, this 21st day of November, 2013, before me

Notary Public
My Commission Expires: 9/19/17

SCOTT D. JUMPER NOTARY PUBLIC NEW HAMPSHIRE

SAFETY DATA SHEET

1. Identification

Product identifier CCA Treated Wood

Other means of identification

SDS number 92-KPC

Recommended use Preservative Treated Wood for various weather protected and exterior uses.

Recommended restrictions None known.

Manufacturer/Importer/Supplier/Distributor information

Company Name Koppers Performance Chemicals Inc.

Address 1016 Everee Inn Rd., Griffin, GA 30224

Telephone number 770-233-4200

Contact person Regulatory Manager, KPC Inc.

Emergency Telephone Number CHEMTREC 1-800-424-9300

E-mail KPCmgrsds@koppers.com

2. Hazard(s) identification

Physical hazards Not classified.

Health hazards Carcinogenicity (inhalation) Category 1A

OSHA defined hazards Combustible dust

Label elements

Signal word Danger

Hazard statement May cause cancer by inhalation. May form combustible dust concentrations in air.

Precautionary statement

Prevention Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Keep container tightly closed. Wear protective gloves/protective clothing/eye protection/face protection. Prevent dust accumulation to minimize explosion hazard. Observe good industrial hygiene practices.

Response If exposed or concerned: Get medical advice/attention. Take off contaminated clothing and wash before reuse. In case of fire: Use water fog, foam, carbon dioxide, dry chemical for extinction. Collect spillage.

Storage Store away from incompatible materials.

Disposal Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC) None known.

3. Composition/information on ingredients

Mixtures

Chemical name	CAS number	%
Arsenic Pentoxide	1303-28-2	<3
Copper Oxide	1317-39-1	<1.5
Trivalent Chromium	1308-38-9	<3.5
Wood	N/A	<85

Composition comments	All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume. Components not listed are either non-hazardous or are below reportable limits. Depending on the additives applied to the treating solution, this wood may also contain <1 % of mold inhibitors, <1% of a non-hazardous oil emulsion, and <% of a colorant.

4. First-aid measures

Inhalation	Move to fresh air. If breathing is difficult, give oxygen. Get medical attention immediately. Some species may cause allergic respiratory reactions with asthma-like symptoms in sensitized individuals.
Skin contact	Remove contaminated clothing. Wash skin thoroughly with soap and water for several minutes. Prolonged contact with treated wood and/or treated wood dust, especially when freshly treated at the plant, may cause irritation to the skin. Abrasive handling or rubbing of the treated wood may increase skin irritation. Some wood species, regardless of treatment, may cause dermatitis or allergic skin reactions in sensitized individuals. In case of rashes, wounds or other skin disorders: Seek medical attention and bring along these instructions.
Eye contact	Do not rub eye. Immediately flush eye(s) with plenty of water. Remove any contact lenses and open eyelids wide apart. If irritation persists get medical attention.
Ingestion	Rinse mouth thoroughly if dust is ingested. Get medical attention if any discomfort continues.
Most important symptoms/effects, acute and delayed	Wood dust: May cause nasal dryness, irritation and mucostasis. Coughing, wheezing, sneezing, sinusitis and prolonged colds have also been reported. Depending on wood species may cause respiratory sensitization and/or irritation. Symptoms can include irritation, redness, scratching of the cornea, and tearing. May cause eczema-like skin disorders (dermatitis). Airborne treated or untreated wood dust may cause nose, throat, or lung irritation and other respiratory effects.
Indication of immediate medical attention and special treatment needed	If one ounce of treated wood dust per 10 lbs. of body weight are ingested, acute arsenic intoxication is a possibility.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media	Water fog. Foam. Carbon dioxide (CO2). Dry chemical powder. Apply extinguishing media carefully to avoid creating airborne dust.
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	Explosion hazard: Avoid generating dust; fine dust dispersed in air in sufficient concentrations and in the presence of an ignition source is a potential dust explosion hazard. Depending on moisture content, and more importantly, particle diameter and airborne concentration, wood dust in a contained area may explode in the presence of an ignition source. Wood dust may similarly deflagrate (combustion without detonation like an explosion) if ignited in an open or loosely contained area. An airborne concentration of 40 grams (40,000 mg) of dust per cubic meter of air is often used as the LEL for wood dusts. Reference NFPA Standards- 654 and 664 for guidance. Toxic vapors from wood and preservative may be given off in a fire. Ash will contain free arsenic and chromium and may be toxic.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	In case of fire and/or explosion do not breathe fumes. Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	May form combustible dust concentrations in air.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Use only non-sparking tools. Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Dust deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration. Wear appropriate protective equipment and clothing during clean-up. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Take precautionary measures against static discharge. Use only non-sparking tools. Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air). Stop the flow of material, if this is without risk.

Large Spills: Wet down with water and dike for later disposal. Shovel the material into waste container. Following product recovery, flush area with water.

Small Spills: Sweep up or vacuum up spillage and collect in suitable container for disposal.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

Environmental precautions

Avoid release to the environment. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground. Inform appropriate managerial or supervisory personnel of all environmental releases.

7. Handling and storage

Precautions for safe handling

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Minimize dust generation and accumulation. Avoid significant deposits of material, especially on horizontal surfaces, which may become airborne and form combustible dust clouds and may contribute to secondary explosions. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Explosion-proof general and local exhaust ventilation. Avoid prolonged exposure. Wear appropriate personal protective equipment. Avoid release to the environment. Do not burn preserved wood. Do not use preserved wood as Mulch. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities

Keep away from heat, spark, open flames and other sources of ignition. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

U.S. - OSHA

Components	Type	Value	Form
Wood Dust (CAS N/A)	PEL	5 mg/m3	Respirable dust.
		15 mg/m3	Total fraction.

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
Trivalent Chromium (CAS 1308-38-9)	PEL	0.5 mg/m3

ACGIH

Components	Type	Value	Form
Wood Dust (CAS N/A)	TWA	1 mg/m3	Inhalable fraction.

US. ACGIH Threshold Limit Values

Components	Type	Value
Arsenic Pentoxide (CAS 1303-28-2)	TWA	0.01 mg/m3
Trivalent Chromium (CAS 1308-38-9)	TWA	0.5 mg/m3

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value	Form
Arsenic Pentoxide (CAS 1303-28-2)	Ceiling	0.002 mg/m3	

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value	Form
Copper Oxide (CAS 1317-39-1)	TWA	1 mg/m3	Dust and mist.
Trivalent Chromium (CAS 1308-38-9)			
Wood Dust (CAS N/A)	TWA	0.5 mg/m3	
	TWA	1 mg/m3	Dust.

Biological limit values

ACGIH Biological Exposure Indices

Components	Value	Determinant	Specimen	Sampling Time
Arsenic Pentoxide (CAS 1303-28-2)	35 µg/l	Inorganic arsenic, plus methylated metabolites, as As	Urine	*

* - For sampling details, please see the source document.

Appropriate engineering controls
Explosion-proof general and local exhaust ventilation. Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

Eye/face protection
Wear dust-resistant safety goggles with side shields where there is danger of eye contact.

Skin protection

Hand protection
When handling wood, wear leather or fabric gloves.

Other
Wear suitable protective clothing. Use of an impervious apron is recommended.

Respiratory protection
If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. Use a NIOSH-approved respirator if there is a potential for exposure to dust exceeding exposure limits (See 29 CRF 1910.134, respiratory protection standard).

Thermal hazards
Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations
If wood dust contacts the skin, workers should wash the affected areas with soap and water. Clothing contaminated with wood dust should be removed, and provisions should be made for the safe removal of the chemical from the clothing. Persons laundering the clothes should be informed of the hazardous properties of wood dust. A worker who handles wood dust should thoroughly wash hands, forearms, and face with soap and water before eating, using tobacco products, using toilet facilities, applying cosmetics, or taking medication. Workers should not eat, drink, use tobacco products, apply cosmetics, or take medication in areas where wood dust is handled, or processed.

9. Physical and chemical properties

Appearance

Physical state
Solid.

Form
Solid.

Color
Yellow/green.

Odor
Wood odor.

Odor threshold
Not available.

pH
Not applicable.

Melting point/freezing point
Not available.

Initial boiling point and boiling range
Not available.

Flash point
Not available.

Evaporation rate
Not available.

Flammability (solid, gas)
Combustible solid.

Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	Not applicable.
Vapor density	Not applicable.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Highly insoluble.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not applicable.
Other information	
Density	As wood.

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Keep away from heat, sparks and open flame. Minimize dust generation and accumulation. Contact with incompatible materials.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	Toxic vapors from wood and preservative may be given off in a fire. Ash will contain free arsenic and chromium and may be toxic.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Wood dust, treated or untreated, is irritating to the nose, throat and lungs. Prolonged or repeated inhalation of wood dusts may cause respiratory irritation, recurrent bronchitis and prolonged colds. Some species may cause allergic respiratory reactions with asthma-like symptoms in sensitized individuals. Prolonged exposure to wood dusts by inhalation has been reported to be associated with nasal and paranasal cancer.
Skin contact	Handling may cause splinters. Prolonged contact with treated wood and/or treated wood dust, especially when freshly treated at the plant, may cause irritation to the skin. Abrasive handling or rubbing of the treated wood may increase skin irritation. Some wood species, regardless of treatment, may cause dermatitis or allergic skin reactions in sensitized individuals.
Eye contact	Dust may irritate the eyes.
Ingestion	Not likely, due to the form of the product. However, ingestion of dusts generated during working operations may cause nausea and vomiting. If one ounce of treated wood dust per 10 lbs. of body weight are ingested, acute arsenic intoxication is a possibility. Certain species of wood and their dusts may contain natural toxins, which can have adverse effects in humans.
Symptoms related to the physical, chemical and toxicological characteristics	Wood dust: May cause nasal dryness, irritation and mucostasis. Coughing, wheezing, sneezing, sinusitis and prolonged colds have also been reported. Depending on wood species may cause respiratory sensitization and/or irritation. Symptoms can include irritation, redness, scratching of the cornea, and tearing. May cause eczema-like skin disorders (dermatitis). Airborne treated or untreated wood dust may cause nose, throat, or lung irritation and other respiratory effects.

Information on toxicological effects

Acute toxicity	Not expected to be acutely toxic.
Skin corrosion/irritation	Dust may irritate skin.
Serious eye damage/eye irritation	Dust may irritate the eyes.

Respiratory or skin sensitization

ACGIH Sensitization

Wood (CAS N/A)	Dermal sensitization Respiratory sensitization

Respiratory sensitization Exposure to wood dusts can result in hypersensitivity,

Skin sensitization Exposure to wood dust can result in the development of contact dermatitis. The primary irritant dermatitis resulting from skin contact with wood dusts consist of erythema, blistering, and sometimes erosion and secondary infections occur.

Germ cell mutagenicity No component of this product present at levels greater than or equal to 0.1% is identified as a mutagen by OSHA.

Carcinogenicity May cause cancer by inhalation.
This classification is based on an increased incidence of nasal and paranasal cancers in people exposed to wood dusts.

IARC Monographs. Overall Evaluation of Carcinogenicity

Arsenic Pentoxide (CAS 1303-28-2)	1 Carcinogenic to humans.
Trivalent Chromium (CAS 1308-38-9)	3 Not classifiable as to carcinogenicity to humans.
Wood (CAS N/A)	1 Carcinogenic to humans.

NTP Report on Carcinogens

Arsenic Pentoxide (CAS 1303-28-2)	Known To Be Human Carcinogen.
Wood Dust (CAS N/A)	Known To Be Human Carcinogen.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Arsenic Pentoxide (CAS 1303-28-2)	Cancer

Reproductive toxicity This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure Not classified.

Specific target organ toxicity - repeated exposure Not classified.

Aspiration hazard Not likely, due to the form of the product.

Chronic effects Chronic exposure to wood dusts can result in pneumonitis, and coughing, wheezing, fever and the other signs and symptoms associated with chronic bronchitis. Individuals with pre-existing disease in or a history of ailments involving the skin, kidney, liver, respiratory tract, eyes, or nervous system are at a greater than normal risk of developing adverse effects from woodworking operations with this product.

Further information The effects of industrial exposure to the chrome-copper-arsenic preservative used to treat CCA wood has been evaluated in three independent epidemiology studies. In each case the authors concluded that workers exposed on a daily basis to these preservatives were at no increased risk of death or disease as a result of their exposure.
Recreational exposure to children using CCA treated wood playground equipment has been evaluated. The results of this study indicate that the amount of arsenic transferred from the wood surface to the child is within the normal variation of total arsenic exposure to children and that the maximum risks of skin cancer associated with the exposure approximates the skin cancer risk from the sunlight experienced during play periods. Leaf, stem, and fruit of grape plants grown adjacent to CCA treated wood poles did not take up preservative components from the poles above background levels (limit of detection 0.2 and 0.05 ppm for chrome and arsenic, respectively).

12. Ecological information

Ecotoxicity The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Persistence and degradability No data is available on the degradability of this product.

Bioaccumulative potential No data available on bioaccumulation.

Mobility in soil The product is insoluble in water.

Mobility in general The product is not volatile but may be spread by dust-raising handling.

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. DO NOT BURN! Ash may be toxic and a hazardous waste; combustion vapors may be toxic. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations Dispose in accordance with all applicable regulations.

Hazardous waste code The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

US RCRA Hazardous Waste P List: Reference

Arsenic Pentoxide (CAS 1303-28-2) P011

Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are listed on or exempt from the U.S. EPA TSCA Inventory List.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Arsenic Pentoxide (CAS 1303-28-2)	Cancer
	Liver
	Skin
	Respiratory irritation
	Nervous system
	Acute toxicity

CERCLA Hazardous Substance List (40 CFR 302.4)

Arsenic Pentoxide (CAS 1303-28-2)	LISTED
Copper Oxide (CAS 1317-39-1)	LISTED
Trivalent Chromium (CAS 1308-38-9)	LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories
Immediate Hazard - No
Delayed Hazard - Yes
Fire Hazard - Yes
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Chemical name	CAS number	Reportable quantity (pounds)	Threshold planning quantity (pounds)	Threshold planning quantity, lower value (pounds)	Threshold planning quantity, upper value (pounds)
Arsenic Pentoxide	1303-28-2	1		100	10000

SARA 311/312 Hazardous chemical Yes

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
Arsenic Pentoxide	1303-28-2	<3
Copper Oxide	1317-39-1	<1.5
Trivalent Chromium	1308-38-9	<3.5

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Arsenic Pentoxide (CAS 1303-28-2)
Trivalent Chromium (CAS 1308-38-9)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

US state regulations

US. Massachusetts RTK - Substance List

Arsenic Pentoxide (CAS 1303-28-2)
Trivalent Chromium (CAS 1308-38-9)

US. New Jersey Worker and Community Right-to-Know Act

Arsenic Pentoxide (CAS 1303-28-2)
Copper Oxide (CAS 1317-39-1)
Trivalent Chromium (CAS 1308-38-9)
Wood Dust (CAS N/A)

US. Pennsylvania Worker and Community Right-to-Know Law

Arsenic Pentoxide (CAS 1303-28-2)
Trivalent Chromium (CAS 1308-38-9)
Wood Dust (CAS N/A)

US. Rhode Island RTK

Arsenic Pentoxide (CAS 1303-28-2)
Copper Oxide (CAS 1317-39-1)
Trivalent Chromium (CAS 1308-38-9)

US. California Proposition 65

WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance

Wood Dust (CAS N/A)

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date 05-April-2015
Revision date 01-June-2015
Version # 02

Further information

HMIS® is a registered trade and service mark of the NPCA.
E - Safety Glasses, Gloves, Dust Respirator

PERCENTAGE OF HAZARDOUS INGREDIENTS COMPONENT %:

0.25 pcf
Arsenic Pentoxide 0.3%, Copper Oxide 0.15%, Chromium Trioxide 0.4%, Wood Dust* 84.28%
0.4 pcf
Arsenic Pentoxide 0.4%, Copper Oxide 0.2%, Chromium Trioxide 0.6%, Wood Dust* 83.98%
0.6 pcf
Arsenic Pentoxide 0.6%, Copper Oxide 0.3%, Chromium Trioxide 0.9%, Wood Dust* 83.47%
1.0 pcf
Arsenic Pentoxide 1.0%, Copper Oxide 0.6%, Chromium Trioxide 1.4%, Wood Dust* 82.45%
2.5 pcf
Arsenic Pentoxide 2.6%, Copper Oxide 1.3%, Chromium Trioxide 3.3%, Wood Dust* 78.88%

* This represents the maximum amount of wood dust that could be generated if the wood was completely machined.

The above percentages are based on the applicable retention, a wood density of 32 pcf., and a moisture contact of 15%, the above values may vary due to the variability of treatment and the natural variability of wood.

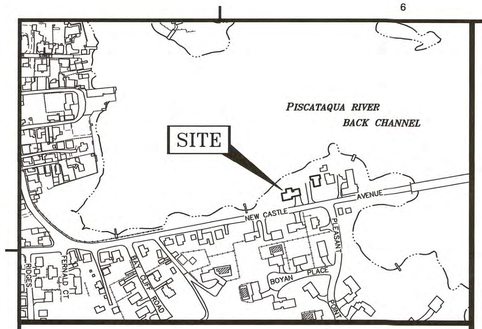
HMIS® ratings

Health: 1*
Flammability: 1
Physical hazard: 0
Personal protection: E

NFPA ratings

Disclaimer

Koppers Performance Chemicals Inc. cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.



LOCATION MAP SCALE: 1" = 300'

PLAN REFERENCE:

1) LOT LINE RELOCATION / BOUNDARY LINE AGREEMENT PLAN TAX MAP 207 – LOTS 2 & 3, DONALD & PATRICIA LANE & JAMES & VALERIE WICKS, 333 & 363 NEW CASTLE AVENUE, CITY OF PORTSMOUTH, COUNTY OF ROCKINGHAM, STATE OF NEW HAMPSHIRE, SCALE: 1" = 20', DATED NOVEMBER 2012, PREPARED BY AMBIT ENGINEERING, INC., RCRD D–37556.

LEGEND:

N/F	NOW OR FORMERLY
RP	RECORD OF PROBATE
RCRD	ROCKINGHAM COUNTY REGISTRY OF DEEDS
11/21	MAP 11 / LOT 21
RR SPK FND	RAILROAD SPIKE FOUND
IR FND	IRON ROD FOUND
IR SET	IRON ROD SET
IP FND	IRON PIPE FOUND
DH FND	DRILL HOLE FOUND
BND w/DH	BOUND w/ DRILL HOLE
ST BND w/DH	STONE BOUND w/DRILL HOLE
	OVERHEAD ELECTRIC/WIRES
	MEAN HIGH WATER LINE
	FEMA FLOOD HAZARD ZONE
	PROPERTY LINE
	PROPERTY LINE EXTENDED
	HIGHEST OBSERVABLE TIDE LINE
	EDGE OF PAVEMENT

ABUTTERS

207/3
N/F
SARAH J. MASON LIVING TRUST
SARAH J. MASON, TRUSTEE
363 NEW CASTLE AVENUE
PORTSMOUTH, NH 03801
5941/1052
D–37556

207/35
N/F
PAUL E. HARVEY JR.
320 NEW CASTLE AVENUE
PORTSMOUTH, NH 03801
2565/1143

207/34
N/F
ROBERT W. BRYANT
330 NEW CASTLE AVENUE
PORTSMOUTH, NH 03801
3681/460

207/33
N/F
PAMELA S. HALL REVOCABLE TRUST
PAMELA S. HALL, TRUSTEE
4 PLEASANT POINT DRIVE
PORTSMOUTH, NH 03801
3458/328

WETLAND NOTES:

1) HIGHEST OBSERVABLE TIDE LINE DELINEATED BY STEVEN D. RIKER, CWS ON 10/19/23 IN ACCORDANCE WITH THE FOLLOWING STANDARDS:
   - A) U.S. ARMY CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL. TECHNICAL REPORT Y–87–1 (JAN. 1987). AND REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, VERSION 2.0, JANUARY 2012.
   - B) FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, VERSION 8.2, USDA–NRCS, 2018 AND (FOR DISTURBED SITES) FIELD INDICATORS FOR IDENTIFYING HYDRIC SOILS IN NEW ENGLAND, VERSION 4. NEIWPCC WETLANDS WORK GROUP (2019).
   - C) NATIONAL LIST OF PLANT SPECIES THAT OCCUR IN WETLANDS: NORTHEAST (REGION 1). USFWS (MAY 1988).
   - D) CLASSIFICATION OF WETLANDS AND DEEPWATER HABITATS OF THE UNITED STATES. USFW MANUAL FWS/OBS–79/31 (1997).
   - E) ''IDENTIFICATION AND DOCUMENTATION OF VERNAL POOLS IN NEW HAMPSHIRE'' (1997). NEW HAMPSHIRE FISH AND GAME DEPARTMENT.

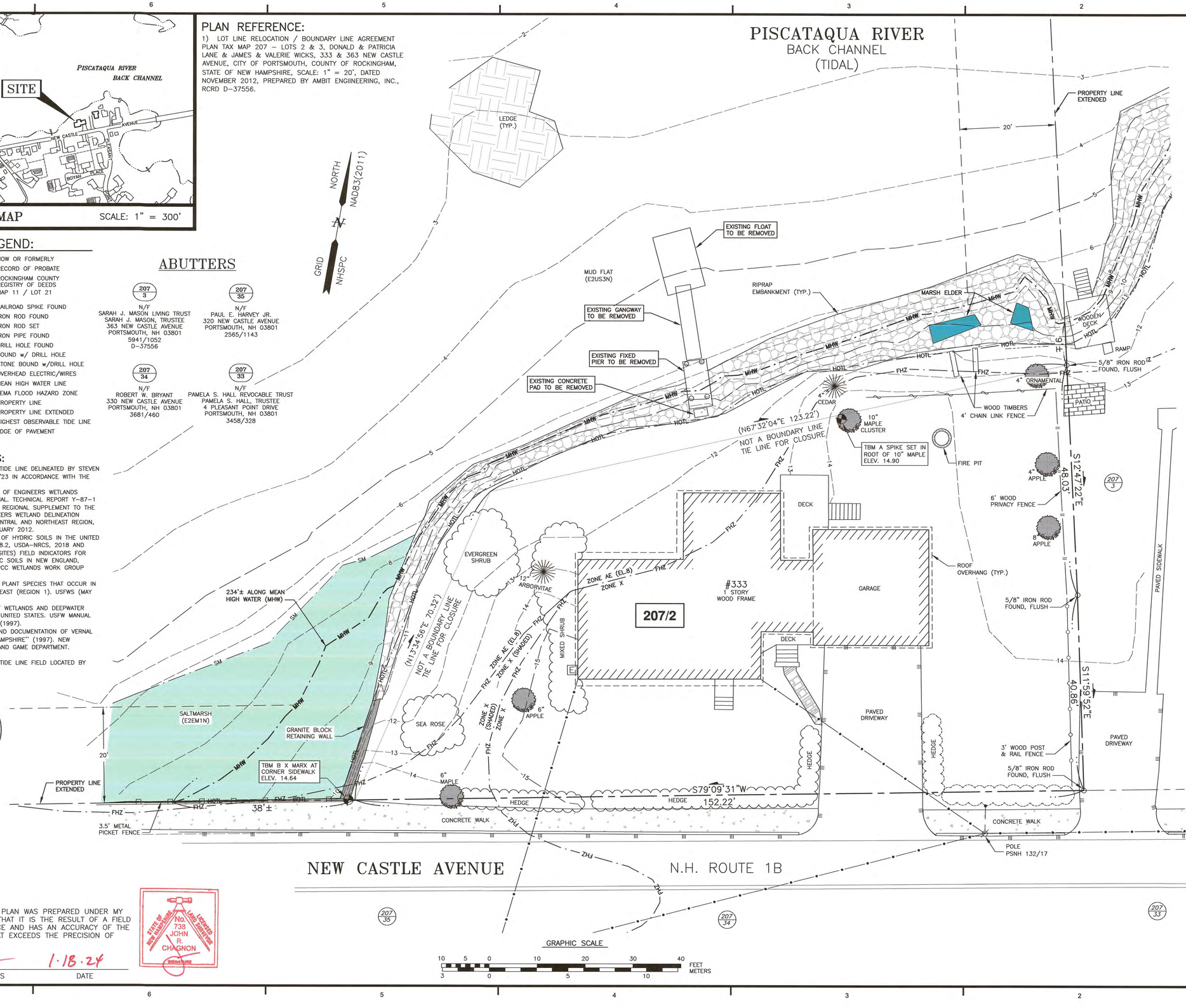
2) HIGHEST OBSERVABLE TIDE LINE FIELD LOCATED BY AMBIT ENGINEERING, INC.

STATE OF NEW HAMPSHIRE STEVEN D. RIKER 1/18/24 CERTIFIED WETLAND SCIENTIST No. 219

''I CERTIFY THAT THIS PLAN WAS PREPARED UNDER MY DIRECT SUPERVISION, THAT IT IS THE RESULT OF A FIELD SURVEY BY THIS OFFICE AND HAS AN ACCURACY OF THE CLOSED TRAVERSE THAT EXCEEDS THE PRECISION OF 1:15,000.''

JOHN R. CHAGNON, LLS — DATE 1.18.24

STATE OF NEW HAMPSHIRE No. 738 JOHN R. CHAGNON LICENSED LAND SURVEYOR



NOTES:

1) PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 207 AS LOT 2.

2) OWNERS OF RECORD:
   THOMAS P. LYNG
   KIMBERLEY S. LYNG
   333 NEW CASTLE AVENUE
   PORTSMOUTH, NH 03801
   5496/2709
   D–37556

3) A PORTION OF THE PARCEL IS IN A SPECIAL FLOOD HAZARD AREA (ZONE AE EL. 8–NAVD88) AS SHOWN ON FIRM PANEL 33015C0278F. EFFECTIVE DATE JANUARY 29, 2021.

4) EXISTING LOT AREA:
   13,084 S.F. ± (TO MHW)
   0.3004 ACRES ± (TO MHW)

5) PARCEL IS LOCATED IN SINGLE RESIDENCE B AND HISTORIC OVERLAY DISTRICT.

6) DIMENSIONAL REQUIREMENTS:

MIN. LOT AREA:		15,000 S.F.
FRONTAGE:		100 FEET
SETBACKS:	FRONT	30 FEET
	SIDE	10 FEET
	REAR	30 FEET
MAXIMUM STRUCTURE HEIGHT:		35 FEET
MAXIMUM BUILDING COVERAGE:		20%
MINIMUM OPEN SPACE:		40%

7) THE PURPOSE OF THIS PLAN IS TO SHOW THE EXISTING CONDITIONS ON A PORTION OF ASSESSORS MAP 207 LOT 2 IN THE CITY OF PORTSMOUTH.

8) VERTICAL DATUM IS MEAN LOWER LOW WATER (MLLW). MLLW REFERENCED TO NOAA STATION 8419870 SEAVEY ISLAND, PORTSMOUTH HARBOR, ME., WHERE MLLW IS 4.62' BELOW NAVD88 ELEVATION 0.00.

No.	DATE	DESCRIPTION	BY	CHK.
0	2024.01.18	ISSUED FOR COMMENT	OMS	JRC

DRAWING ISSUE STATUS

PERMIT PLANS

AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.
200 Griffin Road, Unit 3
Portsmouth, NH 03801
603.430.9282
WWW.HALEYWARD.COM

PROJECT

LYNG RESIDENCE
333 NEW CASTLE AVENUE, PORTSMOUTH, NH

TITLE

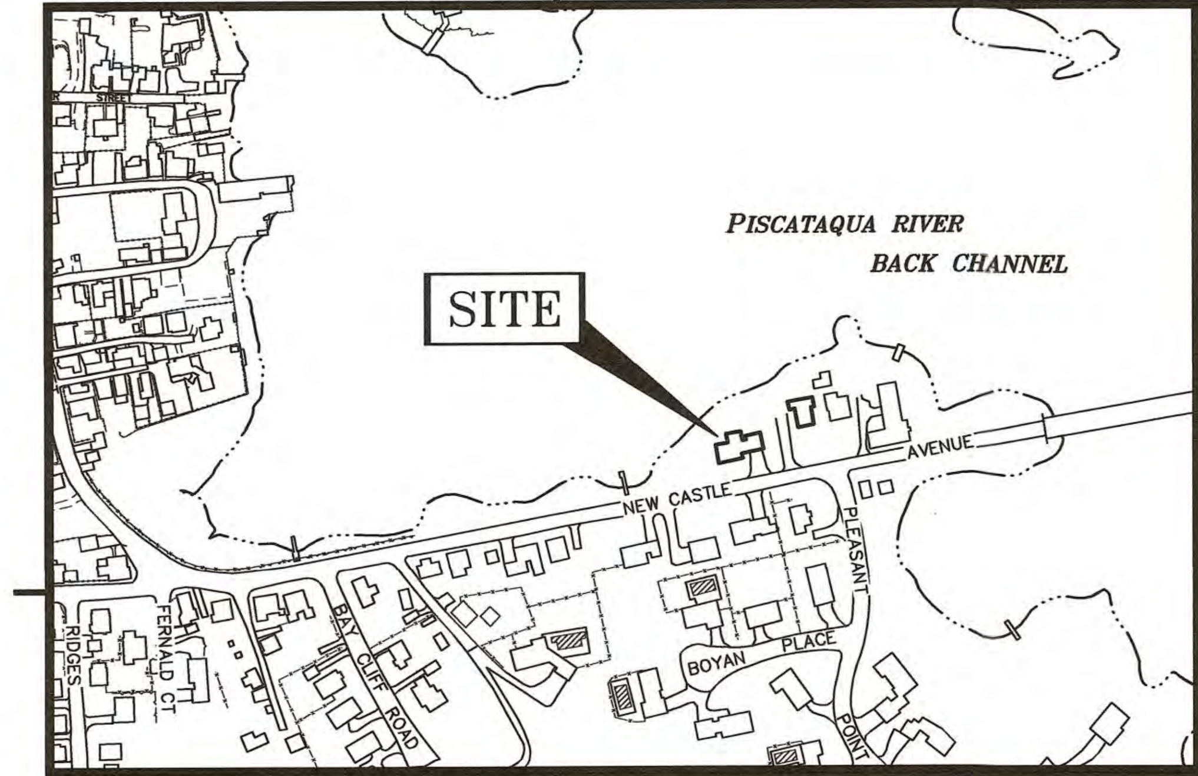
EXISTING CONDITIONS & DEMOLITION PLAN

DATE	SCALE
DECEMBER 2023	1"= 10'
DRAWN BY: OMS	DESIGNED BY: —	CHECKED BY: JRC

PROJECT No. 180.3402.01 FB 472 PG 1

SHEET No. SHEET 1 — DWG No. C1

P:\01\180180–Riverside_N_Pickering\3402\01 Plans & Specs\Site\3402_01 Permit 2023.dwg, 1/30/2024 11:53:51 PM, Portsmouth Richter Canon TX9000iiiPrinter.pc3



LEGEND:

N/F	NOW OR FORMERLY
RP	RECORD OF PROBATE
RCRD	ROCKINGHAM COUNTY REGISTRY OF DEEDS
11 / 21	MAP 11 / LOT 21
RR SPK FND	RAILROAD SPIKE FOUND
IR FND	IRON ROD FOUND
IR SET	IRON ROD SET
IP FND	IRON PIPE FOUND
DH FND	DRILL HOLE FOUND
BND w/DH	BOUND w/ DRILL HOLE
ST BND w/DH	STONE BOUND w/DRILL HOLE
	OVERHEAD ELECTRIC/WIRES
	MEAN HIGH WATER LINE
	FEMA FLOOD HAZARD ZONE
	PROPERTY LINE
	PROPERTY LINE EXTENDED
	HIGHEST OBSERVABLE TIDE LINE
	EDGE OF PAVEMENT

ABUTTERS

207/3
N/F
SARAH J. MASON LIVING TRUST
SARAH J. MASON, TRUSTEE
363 NEW CASTLE AVENUE
PORTSMOUTH, NH 03801
5941/1052
D-37556

207/35
N/F
PAUL E. HARVEY JR.
320 NEW CASTLE AVENUE
PORTSMOUTH, NH 03801
2565/1143

207/34
N/F
ROBERT W. BRYANT
330 NEW CASTLE AVENUE
PORTSMOUTH, NH 03801
3681/460

207/33
N/F
PAMELA S. HALL REVOCABLE TRUST
PAMELA S. HALL, TRUSTEE
4 PLEASANT POINT DRIVE
PORTSMOUTH, NH 03801
3458/328

WETLAND NOTES:

1) HIGHEST OBSERVABLE TIDE LINE DELINEATED BY STEVEN D. RIKER, CWS ON 10/19/23 IN ACCORDANCE WITH THE FOLLOWING STANDARDS:
   A) U.S. ARMY CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL, TECHNICAL REPORT Y-87-1 (JAN. 1987), AND REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, VERSION 2.0, JANUARY 2012.
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   E) "IDENTIFICATION AND DOCUMENTATION OF VERNAL POOLS IN NEW HAMPSHIRE" (1997). NEW HAMPSHIRE FISH AND GAME DEPARTMENT.

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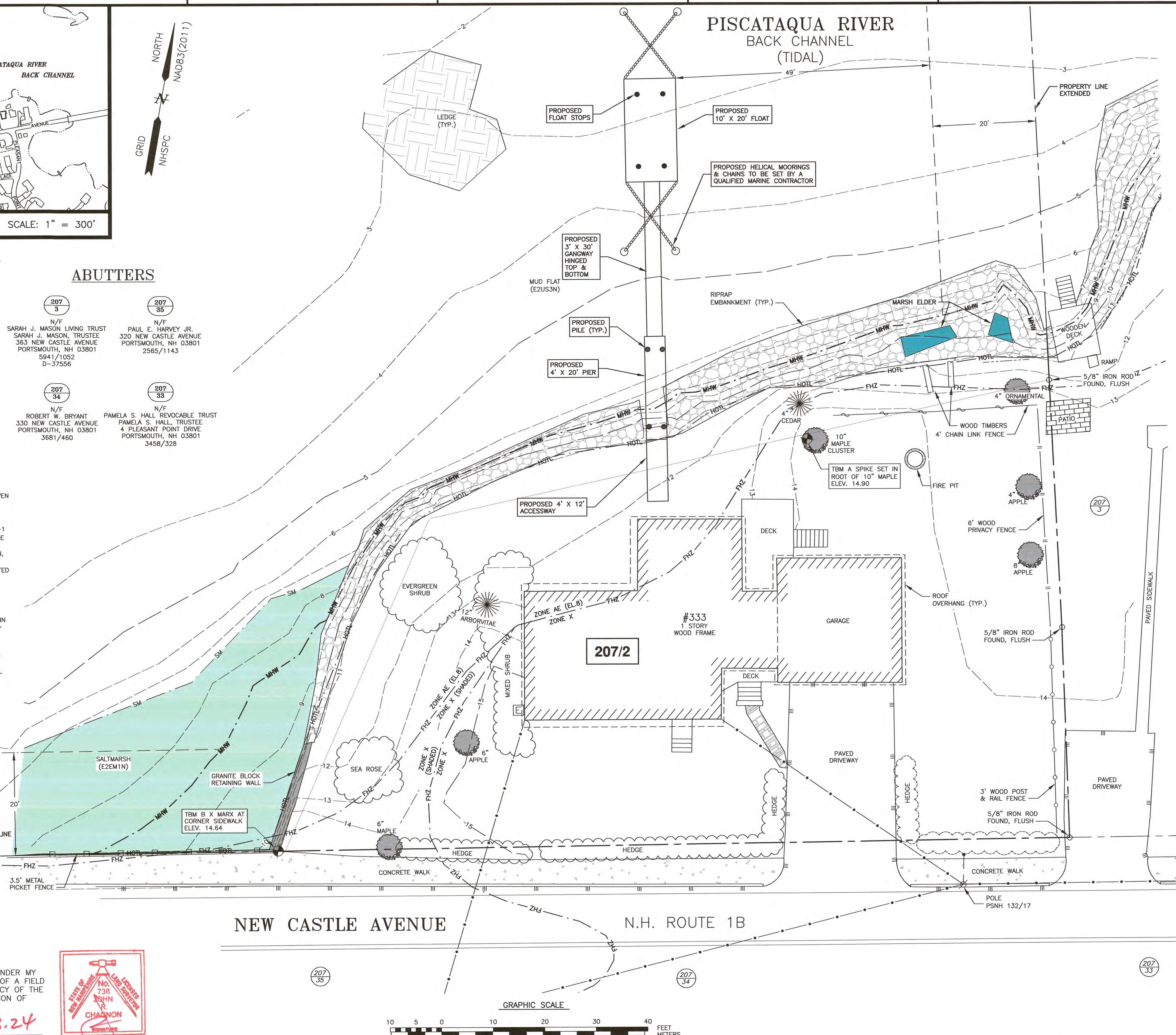
STATE OF NEW HAMPSHIRE STEVEN D. RIKER No. 219 CERTIFIED WETLAND SCIENTIST 1/3/24



"I CERTIFY THAT THIS PLAN WAS PREPARED UNDER MY DIRECT SUPERVISION, THAT IT IS THE RESULT OF A FIELD SURVEY BY THIS OFFICE AND HAS AN ACCURACY OF THE CLOSED TRAVERSE THAT EXCEEDS THE PRECISION OF 1:15,000."

JOHN R. CHAGNON, LLS — DATE 1.18.24

STATE OF NEW HAMPSHIRE JOHN R. CHAGNON No. 738 LICENSED LAND SURVEYOR

NOTES:

1) PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 207 AS LOT 2.

2) OWNERS OF RECORD:
THOMAS P. LYNG
KIMBERLEY S. LYNG
333 NEW CASTLE AVENUE
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No.	DATE	DESCRIPTION	BY	CHK
0	2024.01.18	ISSUED FOR COMMENT	OMS	JRC

DRAWING ISSUE STATUS: PERMIT PLANS

AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.
200 Griffin Road, Unit 3
Portsmouth, NH 03801
603.430.9282
WWW.HALEYWARD.COM

PROJECT: LYNG RESIDENCE
333 NEW CASTLE AVENUE, PORTSMOUTH, NH

TITLE: NHDES PERMIT PLAN

STATE OF NEW HAMPSHIRE JOHN R. CHAGNON No. 8951 LICENSED PROFESSIONAL ENGINEER

DATE	SCALE
DECEMBER 2023	1"= 10'

DRAWN BY	DESIGNED BY	CHECKED BY
OMS	—	JRC

PROJECT No. 180.3402.01 FB 472 PG 1

SHEET No. SHEET 2 — DWG No. C2

SEQUENCE OF CONSTRUCTION

1) MOBILIZATION OF A CRANE BARGE, PUSH BOAT, WORK SKIFF, MATERIALS AND PREFABRICATED COMPONENTS SUCH AS THE GANGWAY AND FLOAT TO THE SITE VIA APPROVED ACCESS.
2) MOBILZATION OF EQUIPMENT TRUCKS TO THE SITE.
3) THE BARGE WILL BE POSITIONED ALONGSIDE THE PROPOSED LOCATION OF THE NEW DOCK AND WATERWARD OF ANY EMERGENT VEGETATION TO MINIMIZE IMPACTS
4) INSTALLATION OF THE SUB STRUCTURE WILL BE PERFORMED FROM A CRANE BARGE OR SKIFF TO REDUCE THE AMOUNT OF FOOT TRAFFIC IN THE INTERTIDAL AREA.
5) ALL WORK WILL BE PERFORMED AT LOW TIDE TO MINIMIZE SEDIMENTATION.
6) PILINGS WILL BE MECHANICALLY DRIVEN BY A CRANE ELIMINATING ANY EXCAVATION FOR INSTALLATION OF THE PILINGS. PILING ARE DRIVEN TO REFUSAL.
7) PILINGS ARE CUT AND BEAM CAPS ARE INSTALLED AND THE SUPER STRUCTURE OF THE PIER IS BUILT. MATERIALS ARE LIFTED FROM THE BARGE AND SET INTO POSITION BY THE CRANE.
8) ONCE THE PIER IS COMPLETE, THE GANGWAY AND FLOAT ARE BROUGHT INTO POSITION AND INSTALLED.

DISCHARGES, AVOIDANCE, MINIMIZATION AND MITIGATION

DISCHARGES OF DREDGED OR FILL MATERIAL INTO WATERS OF THE U.S. AND ANY SECONDARY IMPACTS SHALL BE AVOIDED AND MINIMIZED TO THE MAXIMUM EXTENT PRACTICABLE. PERMITTEES MAY ONLY FILL THOSE JURISDICTIONAL WETLANDS AND WATERWAYS THAT THE CORP AND NHDES AUTHORIZES TO BE FILLED AND IMPACT THOSE AREAS THAT THE CORPS AND AND NHDES AUTHORIZES AS SECONDARY IMPACTS. IF NOT SPECIFICALLY AUTHORIZED BY USACOE AND AND NHDES, ANY UNAUTHORIZED FILL OR SECONDARY IMPACT TO WETLANDS MAY BE CONSIDERED AS A VIOLATION OF THE CWA.

- UNLESS SPECIFICALLY AUTHORIZED USACOE AND AND NHDES, NO WORK SHALL DRAIN A WATER OF THE U.S. BY PROVIDING A CONDUIT FOR WATER ON OR BELOW THE SURFACE.

HEAVY EQUIPMENT IN FRESH WATER WETLANDS

HEAVY EQUIPMENT OTHER THAN FIXED EQUIPMENT (DRILL RIGS, FIXED CRANES, ETC.) WORKING IN WETLANDS SHALL NOT BE STORED, MAINTAINED OR REPAIRED IN WETLANDS, UNLESS IT IS LESS ENVIRONMENTALLY DAMAGING OTHERWISE, AND AS MUCH AS POSSIBLE SHALL NOT BE OPERATED WITHIN THE INTERTIDAL ZONE. WHERE CONSTRUCTION REQUIRES HEAVY EQUIPMENT OPERATION IN WETLANDS, THE EQUIPMENT SHALL EITHER HAVE LOW GROUND PRESSURE (<3 PSI), OR SHALL NOT BE LOCATED DIRECTLY ON WETLAND SOILS AND VEGETATION; IT SHALL BE PLACED ON SWAMP MATS THAT ARE ADEQUATE TO SUPPORT THE EQUIPMENT IN SUCH A WAY AS TO MINIMIZE DISTURBANCE OF WETLAND SOIL AND VEGETATION. SWAMP MATS ARE TO BE PLACED IN THE WETLAND FROM THE UPLAND OR FROM EQUIPMENT POSITIONED ON SWAMP MATS IF WORKING WITHIN A WETLAND. DRAGGING SWAMP MATS INTO POSITION IS PROHIBITED. OTHER SUPPORT STRUCTURES THAT ARE LESS IMPACTING AND ARE CAPABLE OF SAFELY SUPPORTING EQUIPMENT MAY BE USED WITH WRITTEN CORPS AND NHDES AUTHORIZATION. SIMILARLY, NOT USING MATS DURING FROZEN, DRY OR OTHER CONDITIONS MAY BE ALLOWED WITH WRITTEN CORPS AND NHDES AUTHORIZATION. AN ADEQUATE SUPPLY OF SPILL CONTAINMENT EQUIPMENT SHALL BE MAINTAINED ON SITE. CORDUROY ROADS AND SWAMP/CONSTRUCTION MATS ARE CONSIDERED AS FILL WHETHER THEY'RE INSTALLED TEMPORARILY OR PERMANENTLY.

TIME OF YEAR WORK WINDOW AND NOISE RESTRICTIONS

I. PILES INSTALLED IN-THE-DRY DURING LOW WATER OR IN-WATER BETWEEN NOV. 15TH – MARCH 15TH, OR
II. MUST BE DRILLED AND PINNED TO LEDGE, OR
III. VIBRATORY HAMMERS USED TO INSTALL ANY SIZE AND QUANTITY OF WOOD, CONCRETE OR STEEL PILES, OR
IV. IMPACT HAMMERS LIMITED TO ONE HAMMER AND <50 PILES INSTALLED/DAY WITH THE FOLLOWING: WOOD PILES OF ANY SIZE, CONCRETE PILES ≤18-INCHES DIAMETER, STEEL PILES 12-INCHES DIAMETER IF THE HAMMER IS ≤3000 LBS. AND A WOOD CUSHION IS USED BETWEEN THE HAMMER AND STEEL PILE.

FOR II-IV ABOVE:
I. IN-WATER NOISE LEVELS SHALL NOT >187dB SEL RE $I_\mu Pa$ OR 206dB PEAK RE $I_\mu Pa$ AT A DISTANCE >10M FROM THE PILE BEING INSTALLED, AND
II. IN-WATER NOISE LEVELS >155dB PEAK RE $I_\mu Pa$ SHALL NOT EXCEED 12 CONSECUTIVE HOURS ON ANY GIVEN DAY AND A 12 HOUR RECOVERY PERIOD (I.E., IN-WATER NOISE BELOW 155dB PEAK RE $I_\mu Pa$) MUST BE PROVIDED BETWEEN WORK DAYS.

WORK SITE RESTORATION

1, UPON COMPLETION OF CONSTRUCTION, ALL DISTURBED WETLAND AREAS SHALL BE PROPERLY STABILIZED. ANY SEED MIX SHALL CONTAIN ONLY PLANT SPECIES NATIVE TO NEW ENGLAND.
2. THE INTRODUCTION OR SPREAD OF INVASIVE PLANT SPECIES IN DISTURBED AREAS IS PROHIBITED.
3. IN AREAS OF AUTHORIZED TEMPORARY DISTURBANCE, IF TREES ARE CUT THEY SHALL BE CUT AT GROUND LEVEL AND NOT UPROOTED IN ORDER TO PREVENT DISRUPTION TO THE WETLAND SOIL STRUCTURE AND TO ALLOW STUMP SPROUTS TO REVEGETATE THE WORK AREA, UNLESS OTHERWISE AUTHORIZED.
4. WETLAND AREAS WHERE PERMANENT DISTURBANCE IS NOT AUTHORIZED SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AND ELEVATION, WHICH UNDER NO CIRCUMSTANCES SHALL BE HIGHER THAN THE PRE-CONSTRUCTION ELEVATION. ORIGINAL CONDITION MEANS CAREFUL PROTECTION AND/OR REMOVAL OF EXISTING SOIL AND VEGETATION, AND REPLACEMENT BACK TO THE ORIGINAL LOCATION SUCH THAT THE ORIGINAL SOIL LAYERING AND VEGETATION SCHEMES ARE APPROXIMATELY THE SAME, UNLESS AUTHORIZED.

SEDIMENTATION AND EROSION CONTROL

ADEQUATE SEDIMENTATION AND EROSION CONTROL MANAGEMENT MEASURES, PRACTICES AND DEVICES, SUCH AS PHASED CONSTRUCTION, VEGETATED FILTER STRIPS, GEOTEXTILE SILT FENCES, STORMWATER DETENTION AND INFILTRATION SYSTEMS, SEDIMENT DETENTION BASINS, OR OTHER DEVICES SHALL BE INSTALLED AND PROPERLY MAINTAINED TO REDUCE EROSION AND RETAIN SEDIMENT ON-SITE DURING AND AFTER CONSTRUCTION. THEY SHALL BE CAPABLE OF PREVENTING EROSION, OF COLLECTING SEDIMENT, SUSPENDED AND FLOATING MATERIALS, AND OF FILTERING FINE SEDIMENT. THE DISTURBED AREAS SHALL BE STABILIZED AND THESE DEVICES SHALL BE REMOVED UPON COMPLETION OF WORK. THE SEDIMENT COLLECTED BY THESE DEVICES SHALL BE REMOVED AND PLACED AT AN UPLAND LOCATION, IN A MANNER THAT WILL PREVENT ITS LATER EROSION INTO A WATERWAY OR WETLAND. ALL EXPOSED SOIL AND OTHER FILLS SHALL BE PERMANENTLY STABILIZED AT THE EARLIEST PRACTICABLE DATE.

SPAWNING AREAS.

DISCHARGES OF DREDGED OR FILL MATERIAL, AND/OR SUSPENDED SEDIMENT PRODUCING ACTIVITIES IN FISH AND SHELLFISH SPAWNING OR NURSERY AREAS, OR AMPHIBIAN AND MIGRATORY BIRD BREEDING AREAS, DURING SPAWNING OR BREEDING SEASONS SHALL BE AVOIDED. IMPACTS TO THESE AREAS SHALL BE MINIMIZED TO THE MAXIMUM EXTENT PRACTICABLE DURING ALL TIMES OF THE YEAR. INFORMATION ON SPAWNING HABITAT FOR SPECIES MANAGED UNDER THE MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT (I.E., EFH FOR SPAWNING ADULTS) CAN BE OBTAINED FROM THE NMFS WEBSITE AT: WWW.NERO.NOAA.GOV/HCD.

STORAGE OF SEASONAL STRUCTURES.

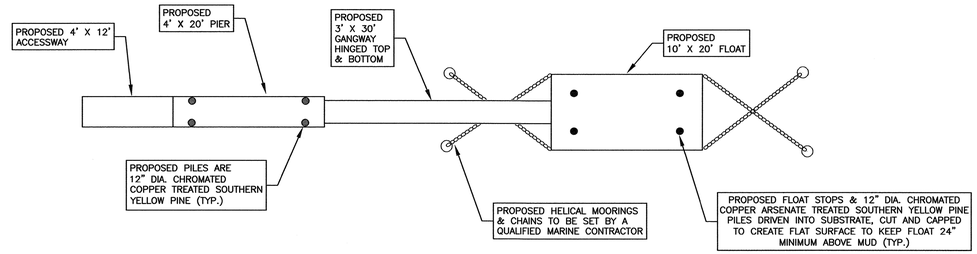
COASTAL STRUCTURES SUCH AS PIER SECTIONS, FLOATS, ETC., THAT ARE REMOVED FROM THE WATERWAY FOR A PORTION OF THE YEAR (OFTEN REFERRED TO AS SEASONAL STRUCTURES) SHALL BE STORED IN AN UPLAND LOCATION, LOCATED ABOVE HIGHEST OBSERVABLE TIDE LINE (HOTL) AND NOT IN TIDAL WETLANDS. THESE SEASONAL STRUCTURES MAY BE STORED ON THE FIXED, PILE-SUPPORTED PORTION OF THE STRUCTURE THAT IS SEAWARD OF HOTL. THIS IS INTENDED TO PREVENT STRUCTURES FROM BEING STORED ON THE MARSH SUBSTRATE AND THE SUBSTRATE SEAWARD OF MHW.

ENVIRONMENTAL FUNCTIONS AND VALUES

THE PERMITTEE SHALL MAKE EVERY REASONABLE EFFORT TO 1) CARRY OUT THE CONSTRUCTION OR OPERATION OF THE WORK AUTHORIZED BY USACOE AND NHDES HEREIN IN A MANNER THAT MINIMIZES ADVERSE IMPACTS ON FISH, WILDLIFE AND NATURAL ENVIRONMENTAL VALUES, AND 2) PROHIBIT THE ESTABLISHMENT OR SPREAD OF PLANT SPECIES IDENTIFIED AS NON-NATIVE INVASIVE SPECIES BY ANY FEDERAL OR STATE AGENCY. SEE THE SECTION ON INVASIVE SPECIES AT HTTP://WWW.NAE.USACE.ARMY.MIL/REGULATORY/ FOR CONTROL METHODS.

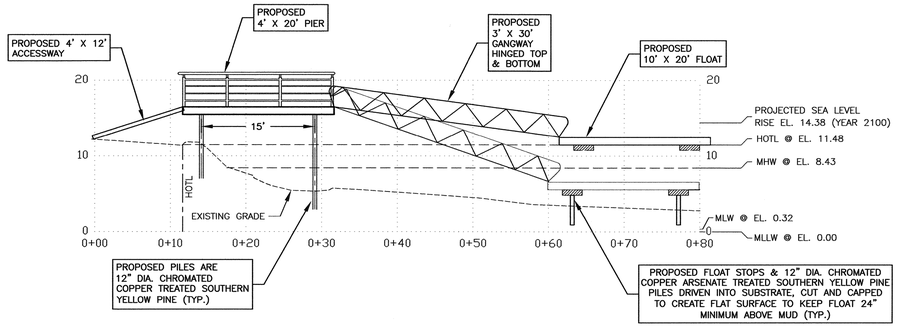
INSPECTIONS

THE PERMITTEE SHALL ALLOW THE CORPS AND NHDES TO MAKE PERIODIC INSPECTIONS AT ANY TIME DEEMED NECESSARY IN ORDER TO ENSURE THAT THE WORK IS BEING OR HAS BEEN PERFORMED IN ACCORDANCE WITH THE TERMS AND CONDITIONS OF THIS PERMIT. THE CORPS AND NHDES MAY ALSO REQUIRE POST-CONSTRUCTION ENGINEERING DRAWINGS FOR COMPLETED WORK, AND POST-DREDGING SURVEY DRAWINGS FOR ANY DREDGING WORK.



PROPOSED DOCK PLAN

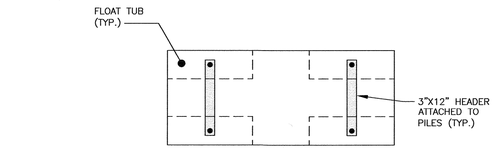
SCALE: 1" = 10'



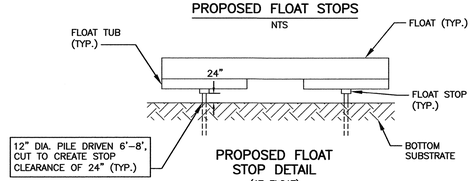
PROPOSED DOCK ELEVATION

SCALE: HORIZONTAL/VERTICAL-1" = 10'

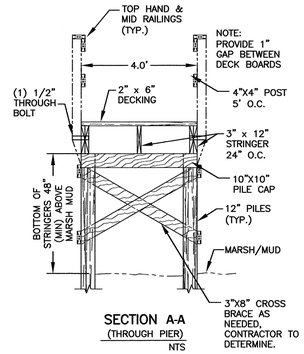
PROPOSED PIER, GANGWAY & FLOAT w/ PILES



PROPOSED FLOAT STOPS
NTS



PROPOSED FLOAT STOP DETAIL
(AT FLOAT)
NTS



SECTION A-A
(THROUGH PIER)
NTS

PROPOSED PIER DETAIL
NTS

GRAPHIC SCALE

10 5 0 10 20 30 40 FEET
3 0 5 10 METERS

NOTES:

1) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1-888-DIG-SAFE (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY.
2) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.
3) CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION. (NHDES DECEMBER 2008).
4) NUMBER OF PILES TO BE DRIVEN FOR DOCKING STRUCTURE NOT TO EXCEED 8 AS DEPICTED ON PROPOSED DOCK ELEVATION. ALSO NOTE TIME OF YEAR AND NOISE RESTRICTIONS FOR DRIVING OF PILES.

No.	DATE	DESCRIPTION	BY	CHK.
0	2024.01.18	ISSUED FOR COMMENT	OMS	JRC

DRAWING ISSUE STATUS

PERMIT PLANS

AMBIT ENGINEERING, INC.
A DIVISION OF HALEY WARD, INC.
200 Griffin Road, Unit 3
Portsmouth, NH 03801
603.430.9282
WWW.HALEYWARD.COM

PROJECT

LYNG RESIDENCE
333 NEW CASTLE AVENUE, PORTSMOUTH, NH

TITLE

DOCK DETAILS

JOHN R. CHAMPION No. 9751 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

DATE	SCALE
DECEMBER 2023	AS SHOWN
DRAWN BY: OMS	DESIGNED BY: —	CHECKED BY: JRC

PROJECT No. 180.3402.01 FB 472 PG 1

SHEET No. **SHEET 3** DWG No. D1

E5071-001
March 27, 2024

Mr. Peter Britz, Director of Planning & Sustainability
City of Portsmouth Planning & Sustainability Department
1 Junkins Avenue
Portsmouth, New Hampshire 03801

Re: **Request for Conservation Commission Work Session**
100 Durgin Lane – Proposed Redevelopment

Dear Peter:

On behalf of 100 Durgin Lane Owner, LLC (applicant) we are pleased to submit one (1) set of hard copies and one electronic file (.pdf) of the following information to support a request to meet with the Conservation Commission ("ConCom") at their next scheduled Work Session for the above referenced project:

- Site Plan Set, dated March 5, 2024;
- Wetland Delineation Report, dated February 28, 2024;
- Community Space Exhibit, dated March 5, 2024;
- Impervious Surface Exhibit, dated March 5, 2024;
- Wetland Buffer Exhibit, dated March 5, 2024;
- Fire Truck Turning Exhibit, dated March 5, 2024;
- Landscape Zones and Character Exhibit, dated March 19, 2024;
- Preliminary Water & Sewer Demand Analysis, dated March 5, 2024;
- Preliminary Trip Generation Summary;
- Signed Authorization, dated January 29, 2024;

The proposed project is located at 100 Durgin Lane and includes lots identified as Map 239 Lots 16, 16 & 18 on the City of Portsmouth Tax Maps. The site was previously home to Christmas Tree Shops and Bed, Bath and Beyond locations which are no longer in operation. The properties are a combined 26.1 acres of land and are located in the Gateway District (G1) and also lies within the Highway Noise Overlay District. The property is bound to the west by Route 16, to the north by the Motel 6 property and Gosling Road, to the south by the Hampton Inn and Home Depot properties, and to the east by an Eversource easement, Pep Boys and Durgin Plaza.

The proposed project consists of the demolition of the existing Christmas Tree Shops and Bed, Bath and Beyond building and the construction of approximately 360 rental housing units in a mix of 3-story and 4-story buildings. The proposed project will include a community building and associated site improvements such as parking, pedestrian access, community spaces, utilities, stormwater management, lighting, and landscaping. The proposed project also includes a reduction in overall impervious surface on the development lot.

The proposed project will also be providing 10% community space as required under the Development Site Conditional Use Permit for have more than one principal building on a single lot. Based on the lot area the required community spaces will likely exceed 2 acres and may

include a public dog park, recreation areas, community walking trails, pocket parks, bicycle paths, and open/green space. The proposed project plan submitted as part of the work session package exceeds the minimum required community space area. The proposed project may also include multimodal connections that link the project site and neighboring commercial properties and exploring the potential of expanding the existing bus network.

At this time, we anticipate that the proposed project will require the following site related approvals from the Planning Board:

- Site Plan Review Permit
- Lot Line Revision
- Wetland Conditional Use Permit
- Development Site Conditional Use Permit
- Highway Noise Overlay District Conditional Use Permit

The applicant respectfully requests to meet with the Conservation Commission at their next scheduled Work Session on April 10th, 2024. If you have any questions or need any additional information, please contact me by phone at (603) 769-9471 or by email at NAHansen@tighebond.com.

Sincerely,

TIGHE & BOND, INC.

Patrick M. Crimmins, PE
Vice President

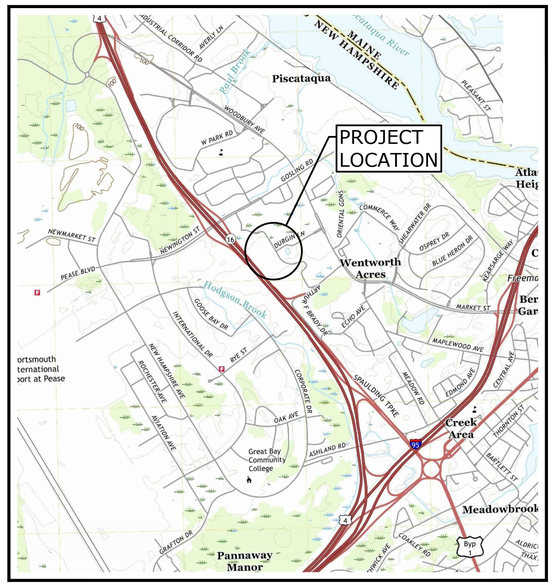
Neil A. Hansen, PE
Project Manager

Enclosures
Copy: 100 Durgin Lane Owner, LLC
John K. Bosen, Bosen & Associates
Utile, Inc Architects
Aceto Landscape Architecture

PROPOSED MULTI-FAMILY DEVELOPMENT

100 DURGIN LANE
PORTSMOUTH, NEW HAMPSHIRE
MARCH 5, 2024

LIST OF DRAWINGS		
SHEET NO.	SHEET TITLE	LAST REVISED
	COVER SHEET	3/5/2024
C-101	GENERAL NOTES AND LEGEND	3/5/2024
C-201	DEMOLITION PLAN	3/5/2024
C-301	SITE PLAN	3/5/2024
C-401	GRADING, DRAINAGE, AND EROSION CONTROL PLAN	3/5/2024
C-501	UTILITIES PLAN	3/5/2024
C-601	EROSION CONTROL NOTES AND DETAILS SHEET	3/5/2024
C-602	DETAILS SHEET	3/5/2024
C-603	DETAILS SHEET	3/5/2024
C-604	DETAILS SHEET	3/5/2024
C-605	DETAILS SHEET	3/5/2024
C-606	DETAILS SHEET	3/5/2024
C-607	DETAILS SHEET	3/5/2024



LOCATION MAP
SCALE: 1" = 2000'

PREPARED BY:
Tighe&Bond
177 CORPORATE DRIVE
PORTSMOUTH, NEW HAMPSHIRE 03801
603-433-8818

OWNER:
100 Durgin Lane Owner LLC
ONE MARINA PARK DRIVE, SUITE 1500
BOSTON, MA 02210

SURVEYOR:
HOLDEN ENGINEERING & SURVEYING, INC.
56 OLD SUNCOOK ROAD, PO BOX 480
CONCORD, NH 03302

CONCOM WORK SESSION SET
COMPLETE SET (13) SHEETS

T & B PROJECT NO: E-5071-001

GENERAL NOTES:

1. THE LOCATIONS OF UNDERGROUND UTILITIES ARE APPROXIMATE AND THE LOCATIONS ARE NOT GUARANTEED BY THE OWNER OR THE ENGINEER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL UTILITIES, ANTICIPATE CONFLICTS, REPAIR EXISTING UTILITIES AND RELOCATE EXISTING UTILITIES REQUIRED TO COMPLETE THE WORK.
2. COORDINATE ALL WORK WITHIN PUBLIC RIGHT OF WAYS WITH THE CITY OF PORTSMOUTH.
3. THE CONTRACTOR SHALL EMPLOY A NEW HAMPSHIRE LICENSED LAND SURVEYOR TO DETERMINE ALL LINES AND GRADES.
4. THE CONTRACTOR SHALL VERIFY LOCATION OF ALL EXISTING UTILITIES. CALL DIG SAFE AT LEAST 72 HOURS PRIOR TO THE COMMENCEMENT OF ANY DEMOLITION/CONSTRUCTION ACTIVITIES.
5. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FAMILIARIZE THEMSELVES AND COMPLY WITH THE CONDITIONS OF ALL OF THE PERMIT APPROVALS.
6. THE CONTRACTOR SHALL OBTAIN AND PAY FOR AND COMPLY WITH ADDITIONAL PERMITS, NOTICES AND FEES NECESSARY TO COMPLETE THE WORK AND ARRANGE FOR AND PAY FOR NECESSARY INSPECTIONS AND APPROVALS FROM THE AUTHORITIES HAVING JURISDICTION.
7. THE CONTRACTOR SHALL PHASE DEMOLITION AND CONSTRUCTION AS REQUIRED TO PROVIDE CONTINUOUS SERVICE TO EXISTING BUSINESSES AND HOMES THROUGHOUT THE CONSTRUCTION PERIOD. EXISTING BUSINESS AND HOME SERVICES INCLUDE, BUT ARE NOT LIMITED TO ELECTRICAL, COMMUNICATION, FIRE PROTECTION, DOMESTIC WATER AND SEWER SERVICES. TEMPORARY SERVICES, IF REQUIRED, SHALL COMPLY WITH ALL FEDERAL, STATE, LOCAL AND UTILITY COMPANY STANDARDS. CONTRACTOR SHALL PROVIDE DETAILED CONSTRUCTION SCHEDULE TO OWNER PRIOR TO ANY DEMOLITION/CONSTRUCTION ACTIVITIES AND SHALL COORDINATE TEMPORARY SERVICES TO ABUTTERS WITH THE UTILITY COMPANY AND AFFECTED ABUTTER.
8. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM WITH APPLICABLE FEDERAL, STATE, AND LOCAL CODES & SPECIFICATIONS.
9. ALL WORK SHALL CONFORM TO THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS, STANDARD SPECIFICATIONS AND WITH THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION, "STANDARD SPECIFICATIONS OF ROAD AND BRIDGE CONSTRUCTION", CURRENT EDITION.
10. CONTRACTOR TO SUBMIT AS-BUILT PLANS IN DIGITAL FORMAT (.DWG AND .PDF FILES) ON DISK TO THE OWNER AND ENGINEER UPON COMPLETION OF THE PROJECT. AS-BUILTS SHALL BE PREPARED AND CERTIFIED BY A NEW HAMPSHIRE LICENSED LAND SURVEYOR.
11. CONTRACTOR SHALL THOROUGHLY CLEAN ALL CATCH BASINS AND DRAIN LINES, WITHIN THE LIMIT OF WORK, OF SEDIMENT IMMEDIATELY UPON COMPLETION OF CONSTRUCTION.
12. SEE EXISTING CONDITIONS PLAN FOR BENCH MARK INFORMATION.

DEMOLITION NOTES:

1. EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO THE START OF ANY CLEARING OR DEMOLITION ACTIVITIES.
2. ALL MATERIALS SCHEDULED TO BE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS OTHERWISE SPECIFIED. THE CONTRACTOR SHALL DISPOSE OF ALL MATERIALS OFF-SITE IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS, ORDINANCES AND CODES.
3. COORDINATE REMOVAL, RELOCATION, DISPOSAL OR SALVAGE OF UTILITIES WITH THE OWNER AND APPROPRIATE UTILITY COMPANY.
4. ANY EXISTING WORK OR PROPERTY DAMAGED OR DISRUPTED BY CONSTRUCTION/ DEMOLITION ACTIVITIES SHALL BE REPLACED OR REPAIRED TO MATCH ORIGINAL EXISTING CONDITIONS BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
5. SAW CUT AND REMOVE PAVEMENT ONE (1) FOOT OFF PROPOSED EDGE OF PAVEMENT OR EXISTING CURB LINE IN ALL AREAS WHERE PAVEMENT TO BE REMOVED ABUTS EXISTING PAVEMENT OR CONCRETE TO REMAIN.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEMOLITION AND OFF-SITE DISPOSAL OF MATERIALS REQUIRED TO COMPLETE THE WORK, EXCEPT FOR WORK NOTED TO BE COMPLETED BY OTHERS.
7. UTILITIES SHALL BE TERMINATED AT THE MAIN LINE PER UTILITY COMPANY AND TOWN OF PORTSMOUTH STANDARDS. THE CONTRACTOR SHALL REMOVE ALL ABANDONED UTILITIES LOCATED WITHIN THE LIMITS OF WORK UNLESS OTHERWISE NOTED.
8. CONTRACTOR SHALL VERIFY ORIGIN OF ALL DRAINS AND UTILITIES PRIOR TO REMOVAL/TERMINATION TO DETERMINE IF DRAINS OR UTILITY IS ACTIVE, AND SERVICES ANY ON OR OFF-SITE STRUCTURE TO REMAIN. THE CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY OF ANY SUCH UTILITY FOUND AND SHALL MAINTAIN THESE UTILITIES UNTIL PERMANENT SOLUTION IS IN PLACE.
9. PAVEMENT REMOVAL LIMITS ARE SHOWN FOR CONTRACTOR'S CONVENIENCE. ADDITIONAL PAVEMENT REMOVAL MAY BE REQUIRED DEPENDING ON THE CONTRACTOR'S OPERATION. CONTRACTOR TO VERIFY FULL LIMITS OF PAVEMENT REMOVAL PRIOR TO BID.
10. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL EXISTING STRUCTURES, CONCRETE PADS, UTILITIES AND PAVEMENT WITHIN THE WORK LIMITS SHOWN UNLESS SPECIFICALLY IDENTIFIED TO REMAIN. ITEMS TO BE REMOVED INCLUDE BUT ARE NOT LIMITED TO: CONCRETE, PAVEMENT, CURBS, LIGHTING, MANHOLES, CATCH BASINS, UNDER GROUND PIPING, POLES, STAIRS, SIGNS, FENCES, RAMPS, WALLS, BOLLARDS, BUILDING SLABS, FOUNDATION, TREES AND LANDSCAPING.
11. REMOVE TREES AND BRUSH AS REQUIRED FOR COMPLETION OF WORK. CONTRACTOR SHALL GRUB AND REMOVE ALL STUMPS WITHIN LIMITS OF WORK AND DISPOSE OF OFF SITE IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS.
12. CONTRACTOR SHALL PROTECT ALL PROPERTY MONUMENTATION THROUGHOUT DEMOLITION AND CONSTRUCTION OPERATIONS. SHOULD ANY MONUMENTATION BE DISTURBED BY THE CONTRACTOR, THE CONTRACTOR SHALL EMPLOY A NEW HAMPSHIRE LICENSED SURVEYOR TO REPLACE DISTURBED MONUMENTS.
13. PROVIDE INLET PROTECTION BARRIERS AT ALL CATCH BASINS/CURB INLETS WITHIN CONSTRUCTION LIMITS AS WELL AS CATCH BASINS/CURB INLETS THAT RECEIVE RUNOFF FROM CONSTRUCTION ACTIVITIES. INLET PROTECTION BARRIERS SHALL BE MAINTAINED FOR THE DURATION OF THE PROJECT. INLET PROTECTION BARRIERS SHALL BE "HIGH FLOW SILT SACK" BY ACF ENVIRONMENTAL OR EQUAL. INSPECT BARRIERS WEEKLY AND AFTER EACH RAIN EVENT OF 0.25 INCHES OR GREATER. CONTRACTOR SHALL COMPLETE A MAINTENANCE INSPECTION REPORT AFTER EACH INSPECTION. SEDIMENT DEPOSITS SHALL BE REMOVED AFTER EACH STORM EVENT OR MORE OFTEN IF THE FABRIC BECOMES CLOGGED OR SEDIMENT HAS ACCUMULATED TO 1/3 THE DESIGN DEPTH OF THE BARRIER.
14. SEE ROADWAY IMPROVEMENT PLANS FOR OFF-SITE DEMOLITION.
15. THE CONTRACTOR SHALL PAY ALL COSTS NECESSARY FOR TEMPORARY PARTITIONING, BARRICADING, FENCING, SECURITY AND SAFETY DEVICES REQUIRED FOR THE MAINTENANCE OF A CLEAN AND SAFE CONSTRUCTION SITE.
16. SAW CUT AND REMOVE PAVEMENT AND CONSTRUCT PAVEMENT TRENCH PATCH FOR ALL UTILITIES TO BE REMOVED AND PROPOSED UTILITIES LOCATED IN EXISTING PAVEMENT AREAS TO REMAIN.
17. THE CONTRACTOR SHALL REMOVE AND SALVAGE EXISTING GRANITE CURB FOR REUSE.

SITE NOTES:

1. PAVEMENT MARKINGS SHALL BE INSTALLED AS SHOWN, INCLUDING PARKING SPACES, STOP BARS, ADA SYMBOLS, PAINTED ISLANDS, FIRE LANES, CROSS WALKS, ARROWS, LEGENDS AND CENTERLINES. ALL MARKINGS EXCEPT CENTERLINE AND MEDIAN ISLANDS TO BE CONSTRUCTED USING WHITE PAVEMENT MARKINGS. ALL THERMOPLASTIC PAVEMENT MARKINGS INCLUDING LEGENDS, ARROWS, CROSSWALKS AND STOP BARS SHALL MEET THE REQUIREMENTS OF AASHTO M249. ALL PAINTED PAVEMENT MARKINGS INCLUDING CENTERLINES, LANE LINES AND PAINTED MEDIANS SHALL MEET THE REQUIREMENTS OF AASHTO M248 TYPE "F".
2. ALL PAVEMENT MARKINGS AND SIGNS TO CONFORM TO "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS", AND THE AMERICANS WITH DISABILITIES ACT REQUIREMENTS, LATEST EDITIONS.
3. SEE DETAILS FOR PAVEMENT MARKINGS, ADA SYMBOLS, SIGNS AND SIGN POSTS.
4. CENTERLINES SHALL BE FOUR (4) INCH WIDE YELLOW LINES.
5. PAINTED ISLANDS SHALL BE FOUR (4) INCH WIDE DIAGONAL LINES AT 3'-0" O.C. BORDERED BY FOUR (4) INCH WIDE LINES.
6. STOP BARS SHALL BE EIGHTEEN (18) INCHES WIDE, WHITE THERMOPLASTIC AND CONFORM TO CURRENT MUTCD STANDARDS.
7. CLEAN AND COAT VERTICAL FACE OF EXISTING PAVEMENT AT SAW CUT LINE WITH RS-1 EMULSION IMMEDIATELY PRIOR TO PLACING NEW BITUMINOUS CONCRETE.
8. SEE ARCHITECTURAL/BUILDING DRAWINGS FOR ALL CONCRETE PADS & SIDEWALKS ADJACENT TO BUILDING.
9. COORDINATE ALL OFF-SITE SITE WORK WITH ROADWAY IMPROVEMENT PLANS.
10. CONTRACTOR TO PROVIDE BACKFILL AND COMPACTION AT CURB LINE AFTER CONCRETE FORMS FOR SIDEWALKS AND PADS HAVE BEEN STRIPPED. COORDINATE WITH BUILDING CONTRACTOR.
11. ALL LIGHT POLE BASES NOT PROTECTED BY A RAISED CURB SHALL BE PAINTED YELLOW.
12. COORDINATE ALL WORK ADJACENT TO BUILDING WITH BUILDING CONTRACTOR.
13. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING RETAINING WALL DESIGN FROM STRUCTURAL ENGINEER AND/OR WALL MANUFACTURER. CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS AND EQUIPMENT REQUIRED TO CONSTRUCT WALL IN ACCORDANCE WITH DESIGN APPROVED BY THE ENGINEER. RETAINING WALL SHALL BE SEGMENTAL BLOCK WALL SYSTEM AS OUTLINED IN THE DETAILS.
14. ALL DIMENSIONS ARE TO THE FACE OF CURB UNLESS OTHERWISE NOTED.

GRADING AND DRAINAGE NOTES:

1. COMPACTION REQUIREMENTS:

BELOW PAVED OR CONCRETE AREAS	95%
TRENCH BEDDING MATERIAL AND SAND BLANKET BACKFILL	95%
BELOW LOAM AND SEED AREAS	90%

* ALL PERCENTAGES OF COMPACTION SHALL BE OF THE MAXIMUM DRY DENSITY AT THE OPTIMUM MOISTURE CONTENT AS DETERMINED AND CONTROLLED IN ACCORDANCE WITH ASTM D-1557, METHOD C FIELD DENSITY TESTS SHALL BE MADE IN ACCORDANCE WITH ASTM D-1556 OR ASTM-2922.

2. ALL STORM DRAINAGE PIPES SHALL BE HIGH DENSITY POLYETHYLENE (HANCOR HI-Q, ADS N-12 OR EQUAL) OR RCP CLASS IV, UNLESS OTHERWISE SPECIFIED.
3. ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE.
4. CONTRACTOR SHALL PROVIDE A FINISH PAVEMENT SURFACE AND LAWN AREAS FREE OF LOW SPOTS AND PONDING AREAS. CRITICAL AREAS INCLUDE BUILDING ENTRANCES, EXITS, RAMPS AND LOADING DOCK AREAS ADJACENT TO THE BUILDING.
5. ALL DISTURBED AREAS NOT TO BE PAVED OR OTHERWISE TREATED SHALL RECEIVE 6" LOAM, SEED FERTILIZER AND MULCH.
6. ALL STORM DRAIN CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE NHDOT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, LATEST EDITION.
7. ALL PROPOSED CATCH BASINS SHALL BE EQUIPPED WITH OIL/GAS SEPARATOR HOODS AND 4' SUMPS.

EROSION CONTROL NOTES:

1. SEE SHEET C-501 FOR GENERAL EROSION CONTROL NOTES AND DETAILS.

UTILITY NOTES:

1. COORDINATE ALL UTILITY WORK WITH APPROPRIATE UTILITY COMPANY.
   - NATURAL GAS - UNITIL
   - WATER - CITY OF PORTSMOUTH
   - SEWER - CITY OF PORTSMOUTH
   - ELECTRIC - EVERSOURCE
   - COMMUNICATIONS - CONSOLIDATED COMM/FAIRPOINT/COMCAST
2. ALL WATER MAIN INSTALLATIONS SHALL BE CLASS 52, CEMENT LINED DUCTILE IRON PIPE.
3. ALL WATER MAIN INSTALLATIONS SHALL BE PRESSURE TESTED AND CHLORINATED AFTER CONSTRUCTION PRIOR TO ACTIVATING THE SYSTEM. CONTRACTOR SHALL COORDINATE CHLORINATION AND TESTING WITH THE CITY OF PORTSMOUTH WATER DEPARTMENT.
4. ALL SEWER PIPE SHALL BE PVC SDR 35 UNLESS OTHERWISE STATED.
5. CONNECTION TO EXISTING WATER MAIN SHALL BE CONSTRUCTED TO CITY OF PORTSMOUTH STANDARDS.
6. EXISTING UTILITIES TO BE REMOVED SHALL BE CAPPED AT THE MAIN AND MEET THE DEPARTMENT OF PUBLIC WORKS STANDARDS FOR CAPPING OF WATER AND SEWER SERVICES.
7. ALL ELECTRICAL MATERIAL WORKMANSHIP SHALL CONFORM TO THE NATIONAL ELECTRIC CODE, LATEST EDITION, AND ALL APPLICABLE STATE AND LOCAL CODES.
8. THE EXACT LOCATION OF NEW UTILITY SERVICES AND CONNECTIONS SHALL BE COORDINATED WITH THE BUILDING DRAWINGS AND THE APPLICABLE UTILITY COMPANIES.
9. ALL UNDERGROUND CONDUITS SHALL HAVE NYLON PULL ROPES TO FACILITATE PULLING CABLES.
10. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL MANHOLES, BOXES, FITTINGS, CONNECTORS, COVER PLATES, AND OTHER MISCELLANEOUS ITEMS NOT NECESSARILY DETAILED ON THESE DRAWINGS TO RENDER INSTALLATION OF UTILITIES COMPLETE AND OPERATIONAL.
11. CONTRACTOR SHALL PROVIDE EXCAVATION, BEDDING, BACKFILL AND COMPACTION FOR NATURAL GAS SERVICES.
12. A 10-FOOT MINIMUM EDGE TO EDGE HORIZONTAL SEPARATION SHALL BE PROVIDED BETWEEN ALL WATER AND SANITARY SEWER LINES. AN 18-INCH MINIMUM OUTSIDE TO OUTSIDE VERTICAL SEPARATION SHALL BE PROVIDED AT ALL WATER/SANITARY SEWER CROSSINGS.
13. SAW CUT AND REMOVE PAVEMENT AND CONSTRUCT PAVEMENT TRENCH PATCH FOR ALL PROPOSED UTILITIES LOCATED IN EXISTING PAVEMENT AREAS TO REMAIN
14. HYDRANTS, GATE VALVES, FITTINGS, ETC. SHALL MEET THE REQUIREMENTS OF THE CITY OF PORTSMOUTH.
15. COORDINATE TESTING OF SEWER CONSTRUCTION WITH THE CITY OF PORTSMOUTH.
16. ALL SEWER PIPE WITH LESS THAN 6' OF COVER IN PAVED AREAS OR LESS THAT 4' OF COVER IN UNPAVED AREAS SHALL BE INSULATED.
17. CONTRACTOR SHALL COORDINATE ALL ELECTRIC WORK INCLUDING BUT NOT LIMITED TO: CONDUIT CONSTRUCTION, MANHOLE CONSTRUCTION, UTILITY POLE CONSTRUCTION, OVERHEAD WIRE RELOCATION, AND TRANSFORMER CONSTRUCTION WITH POWER COMPANY.
18. SITE LIGHTING SPECIFICATIONS, CONDUIT LAYOUT AND CIRCUITRY FOR PROPOSED SITE LIGHTING AND SIGN ILLUMINATION SHALL BE PROVIDED BY THE PROJECT ELECTRICAL ENGINEER.
19. CONTRACTOR SHALL CONSTRUCT ALL UTILITIES AND DRAINS TO WITHIN 10' OF THE FOUNDATION WALLS AND CONNECT THESE TO SERVICE STUBS FROM THE BUILDING.

EXISTING CONDITIONS PLAN NOTES:

1. EXISTING CONDITIONS ARE BASED ON A FIELD SURVEY BY HOLDEN ENGINEERING AND SURVEYING, INC. DATED 8/10/2023, LAST REVISED 2/13/2024.
2. WETLAND DELINEATION BY _____, ON _____, AND FIELD LOCATED BY _____, ON _____.

LEGEND

- APPROXIMATE LIMIT OF SAWCUT
- LIMIT OF WORK
- APPROXIMATE LIMIT OF PAVEMENT TO BE REMOVED
- EXISTING TREES TO BE REMOVED
- EXISTING BUILDING TO BE REMOVED
- LOCATION OF PROPOSED BUILDING
- PROPOSED GRAVEL PAVEMENT SECTION
- PROPOSED PAVEMENT SECTION
- PROPOSED WOOD CHIP TRAIL
- PROPOSED CONCRETE
- PROPOSED PATIO PAVERS
- PROPERTY LINE
- EXISTING EASEMENT
- EXISTING STONE WALL
- FLAGGED WETLAND
- PROPOSED EDGE OF PAVEMENT
- PROPOSED CURB
- PROPOSED MAJOR CONTOUR LINE (25)
- PROPOSED MINOR CONTOUR LINE (24)
- CATCH BASIN
- DRAIN MANHOLE
- ELECTRIC BOX
- LIGHT POLE
- REBAR OR RAILROAD SPIKE
- DRILL HOLE
- POST
- SIGN
- SEWER MANHOLE
- UTILITY POLE OR BRACE POLE
- WATER SHUT-OFF
- HYDRANT
- ELECTRIC METER
- GAS METER
- FLAG POLE
- GAS SHUT-OFF
- BORING
- WETLAND FLAG LOCATION
- PROPOSED DRAIN MANHOLE
- PROPOSED CATCH BASIN
- PROPOSED INLET PROTECTION BARRIER
- PROPOSED DRAINLINE
- PROPOSED SEWER MANHOLE
- PS — PROPOSED SEWER LINE
- PG — PROPOSED GAS LINE
- PW — PROPOSED WATER LINE
- PROPOSED WATER VALVE
- PROPOSED THRUST BLOCK
- PE — PROPOSED UNDERGROUND ELECTRIC LINE
- PC&T — PROPOSED UNDERGROUND TELECOMS
- T — PROPOSED TRANSFORMER
- 100' WETLAND BUFFER
- 50' LIMITED CUT BUFFER
- 25' VEGETATIVE BUFFER

ABBREVIATIONS

AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY & TRANSPORTATION OFFICIALS
AC	ACRES
ADA	AMERICANS WITH DISABILITIES ACT
AGGR	AGGREGATE
BLDG	BUILDING
BC	BOTTOM OF CURB
CB	CATCH BASIN
CONST	CONSTRUCT
COORD	COORDINATE
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DMH	DRAINAGE MANHOLE
DWG	DRAWING
ELEV	ELEVATION
EP	EDGE OF PAVEMENT
EV	ELECTRIC VEHICLE
FF	FINISHED FLOOR
FGC	FLUSH GRANITE CURB
HDPE	HIGH DENSITY POLYETHYLENE
HMA	HOT MIX ASPHALT
HYD	HYDRANT
ID	INSIDE DIAMETER
INV	INVERT
L	LENGTH
LF	LINEAR FEET
MAX	MAXIMUM
MIN	MINIMUM
OC	ON CENTER
PCB	PROPOSED CATCH BASIN
PDMH	PROPOSED DRAINAGE MANHOLE
POS	PROPOSED OUTLET STRUCTURE
PROP	PROPOSED
PSMH	PROPOSED SEWER MANHOLE
PVC	POLYVINYL CHLORIDE
PVMT	PAVEMENT
R	RADIUS
RCP	REINFORCED CONCRETE PIPE
ROW	RIGHT OF WAY
SGC	SLOPED GRANITE CURB
SF	SQUARE FEET
STD	STANDARD
TBR	TO BE REMOVED
TC	TOP OF CURB
TYP	TYPICAL
UD	UNDERDRAIN
W	WIDTH
W/	WITH
YD	YARD DRAIN

Tighe&Bond

THIS DOCUMENT IS INCOMPLETE AND IS RELEASED TEMPORARILY FOR PROGRESS REVIEW ONLY. IT IS NOT INTENDED FOR BIDDING OR CONSTRUCTION PURPOSES.

PROPOSED MULTI-FAMILY DEVELOPMENT

100 DURGIN LANE OWNER, LLC

100 DURGIN LANE
PORTSMOUTH,
NEW HAMPSHIRE

MARK	DATE	DESCRIPTION

PROJECT NO:	E5071-001
DATE:	3/5/2024
FILE:	E5071-001-C-DSGN.dwg
DRAWN BY:	BKC
DESIGNED/CHECKED BY:	NAH
APPROVED BY:	PMC

GENERAL NOTES AND LEGENDS

SCALE: AS SHOWN

C-101

SPAULDING TURNPIKE – PUBLIC

SPAULDING TURNPIKE – NORTHBOUND OFFRAMP – PUBLIC

SPAULDING TURNPIKE – NORTHBOUND OFFRAMP – PUBLIC

PROPERTY LINE (TYP.)

APPROXIMATE LIMIT OF WORK (TYP.)

EXISTING PAVEMENT TO BE REMOVED (TYP.)

BEGIN SILT SOCK

EXISTING BUILDING TO BE REMOVED

MAP 239 LOT 18
16.74 ACRES
729,279 SF

100' WETLAND BUFFER

MAP 239 LOT 13

PROPERTY LINE (TYP.)

APPROXIMATE LIMIT OF WORK (TYP.)

MAP 239 LOT 13-2
6.33 ACRES
275,630 SF

24'-WIDE ACCESS EASEMENT

AMENDED ACCESS EASEMENT

SLOPE AND LANDSCAPE EASEMENT

PROPERTY LINE (TYP.)

APPROXIMATE LIMIT OF WORK (TYP.)

MAP 239 LOT 15

SEWER EASEMENT

END SILT SOCK

REAL ESTATE OPERATION AGREEMENT EASEMENT

50' LIMITED CUT BUFFER

25' VEGETATED BUFFER

BEGIN SILT SOCK

EXISTING PAVEMENT TO BE REMOVED (TYP.)

PROPOSED SILT SOCK (TYP.)

30'-WIDE UTILITY & ACCESS EASEMENT

AMENDED ACCESS EASEMENT

20'-WIDE UTILITY EASEMENT

ALL EXISTING DRAINAGE STRUCTURES, PIPES, AND UTILITIES WITHIN THE LIMITS OF WORK SHALL BE REMOVED UNLESS SPECIFICALLY IDENTIFIED TO REMAIN (TYP.)

EXISTING PAVEMENT TO BE REMOVED (TYP.)

CITY OF PORTSMOUTH CONSERVATION EASEMENT

ACCESS EASEMENT THROUGH LOT 13-2

MAP 239 LOT 16
3.08 ACRES
134,252 SF

EXISTING PAVEMENT TO BE REMOVED (TYP.)

MAP 238 LOT 20

100' WETLAND BUFFER

300'-WIDE UTILITY EASEMENT

50' LIMITED CUT BUFFER

25' VEGETATED BUFFER

25' VEGETATED BUFFER

50' LIMITED CUT BUFFER

PROPOSED SILT SOCK (TYP.)

AMENDED ACCESS EASEMENT

30'-WIDE ACCESS & DRAINAGE EASEMENT

300'-WIDE UTILITY EASEMENT

APPROXIMATE LIMIT OF WORK (TYP.)

EXISTING PAVEMENT TO BE REMOVED (TYP.)

MAP 239 LOT 8

END SILT SOCK

30'-WIDE ACCESS AND DRAINAGE EASEMENTS

PROPOSED SILT SOCK (TYP.)

APPROXIMATE LIMIT OF WORK (TYP.)

MAP 239 LOT 7

PROPERTY LINE (TYP.)

END SILT SOCK

BEGIN SILT SOCK

DURGIN LANE – PUBLIC

SEE SHEET C-101 FOR DEMOLITION PLAN NOTES & LEGEND

0 60' 120'
GRAPHIC SCALE

Tighe&Bond

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PROPOSED MULTI-FAMILY DEVELOPMENT

100 DURGIN LANE OWNER, LLC

100 DURGIN LANE
PORTSMOUTH,
NEW HAMPSHIRE

MARK	DATE	DESCRIPTION

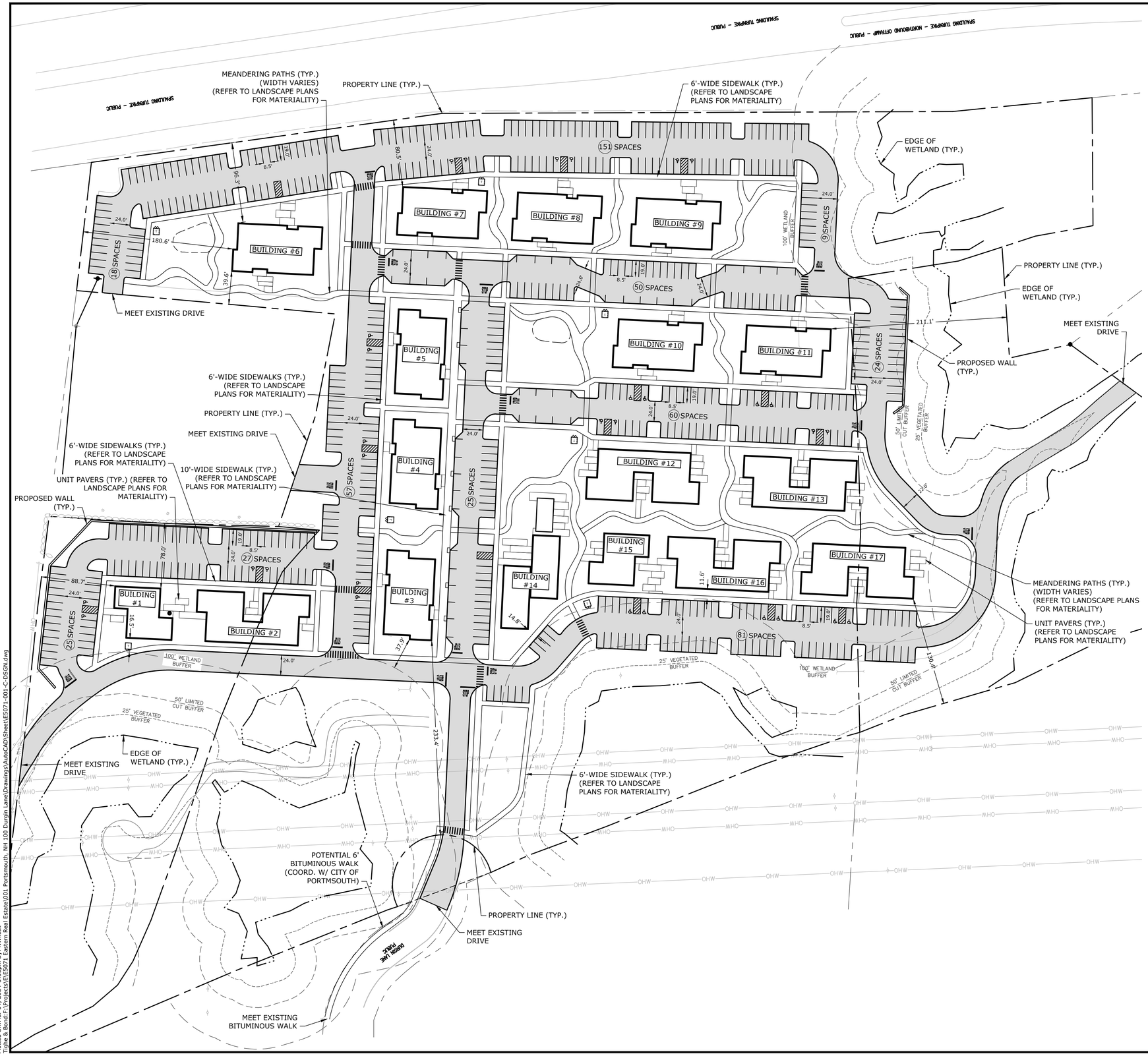
PROJECT NO:	E5071-001
DATE:	3/5/2024
FILE:	E5071-001-C-DSGN.dwg
DRAWN BY:	BKC
DESIGNED/CHECKED BY:	NAH
APPROVED BY:	PMC

DEMOLITION PLAN

SCALE: AS SHOWN

C-201

Last Saved: 3/4/2024
Printed On: Mar 04, 2024-10:28am By: BCurcio
Tighe & Bond:\\tighebond.com\data\Data\Projects\E\E5071 Eastern Real Estate\001 Portsmouth, NH 100 Durgin Lane\Drawings\AutoCAD\Sheet\E5071-001-C-DSGN.dwg



SITE DATA:

LOCATION: TAX MAP 239, LOT 13-2, MAP 239 LOT 16, MAP 239 LOT 18
OWNER: 100 DURGIN LANE OWNER LLC
ONE MARINA PARK DRIVE, SUITE 1500
BOSTON, MA 02210

ZONING DISTRICT: GATEWAY NEIGHBORHOOD MIXED USE CORRIDOR (G1)
HIGHWAY NOISE OVERLAY DISTRICT

PROPOSED USE: MULTI-FAMILY RESIDENTIAL DEVELOPMENT
EXISTING LOT SIZE: ±1,139,161 SF / 26.15 ACRES (MAP 239 LOT 13-2, LOT 16, LOT 18)

DEVELOPMENT STANDARDS

GENERAL RESIDENTIAL DEVELOPMENT (10.5B42.30)	REQUIRED	PROPOSED
MINIMUM SITE DEVELOPMENT AREA:	10,000 SF	±1,139,161 SF
MINIMUM SITE WIDTH:	75 FT	>75 FT
MINIMUM SITE LENGTH:	100 FT	>100 FT
MINIMUM PERIMETER BUFFER:	N/A	-
MAXIMUM DEVELOPMENT BLOCK DIMS:		
BLOCK LENGTH:	500 FT	<500 FT
BLOCK PERIMETER:	1,500 FT	<1,500 FT
MAXIMUM BUILDING COVERAGE:	50%	8.6%
MINIMUM OPEN SPACE COVERAGE:	20%	63%

APARTMENT BUILDING (10.5B34.40)	REQUIRED	PROPOSED
MINIMUM LOT DEPTH:	NR	-
MINIMUM STREET FRONTAGE:	50 FT	200.5 FT
FRONT YARD SETBACK:	10-30 FT	±130.4 FT(1)
MIN. SIDE YARD SETBACK	15 FT	>15 FT
MIN. REAR YARD SETBACK	20 FT	>20 FT
DWELLING UNITS PER BUILDING	4-24	XXX
MAXIMUM DWELLING UNIT SIZE	NR	-
MAXIMUM BUILDING HEIGHT	4 STORIES OR 50 FT	<50 FT
MINIMUM STREET-FACING FACADE HEIGHT	24 FT	>24 FT
MAX. FINISH FLOOR ABOVE SIDEWALK	36"	<36"
MAXIMUM BUILDING COVERAGE	50%	8.1%
MAXIMUM BUILDING FOOTPRINT	NR	-
MAXIMUM FACADE MODULATION LENGTH	50 FT	<50 FT
MINIMUM STREET FACING FACADE GLAZING	20% GROUND FLOOR	>20%
MAXIMUM STREET FACING ENTRANCE SPACING	NR	-
ALLOWED ROOF TYPES	ALL	XXXX
ALLOWED FACADE TYPES		
FORECOURT, RECESSED, ENTRY, DOORYARD, STEP, PORCH		XXXX

COMMUNITY BUILDING (10.5B34.100)	REQUIRED	PROPOSED
MINIMUM LOT DEPTH:	NR	-
MINIMUM STREET FRONTAGE:	50 FT	200.5 FT
FRONT YARD SETBACK:	10-40 FT	233.4 FT(1)
MIN. SIDE YARD SETBACK	15 FT	>15 FT
MIN. REAR YARD SETBACK	20 FT	>20 FT
DWELLING UNITS PER BUILDING	NR	-
MAXIMUM DWELLING UNIT SIZE	NR	-
MAXIMUM BUILDING HEIGHT	3 STORIES OR 45 FT	<45 FT
MINIMUM STREET-FACING FACADE HEIGHT	18 FT	>18 FT
FINISH FLOOR GRADE ABOVE SIDEWALK	2 FT - 6FT	2 FT
MAXIMUM BUILDING COVERAGE	NR	-
MAXIMUM BUILDING FOOTPRINT	NR	-
MAXIMUM FACADE MODULATION LENGTH	100 FT	<100 FT
MINIMUM STREET FACING FACADE GLAZING	30% GROUND FLOOR	>30%
MAXIMUM STREET FACING ENTRANCE SPACING	NR	-
ALLOWED ROOF TYPES	ALL	XXXX
ALLOWED FACADE TYPES		
DOORYARD, FORECOURT, STOOP, RECESSED, ENTRY, STEP, PORCH, TERRACE, GALLERY, ARCADE		XXXX

(1) - RELIEF FROM "FRONT BUILDING SETBACK FROM LOT LINE" UNDER SECTIONS 10.5B34.40 AND 10.5B34.100 REQUESTED UNDER THE CONDITIONAL USE PERMIT APPLICATION FOR THE DEVELOPMENT SITE.

COMMUNITY SPACE:	REQUIRED	PROPOSED
	10%	11.6%
	113,916 SF	132,792 SF

PARKING REQUIREMENTS

RESIDENTIAL UNITS (>750 SF)	360 UNITS x 1.3 SPACES	468 SPACES
VISITOR SPACES	1 SPACE / 5 UNITS	72 SPACES
TOTAL MINIMUM PARKING SPACES REQUIRED =		540 SPACES

PARKING SPACES	REQUIRED	PROPOSED
	540 SPACES	574 SPACES

ADA PARKING SPACES	REQUIRED(2)	PROPOSED
	25 SPACES	30 SPACES

(2) - PER THE AMERICANS WITH DISABILITIES ACT (ADA) STANDARDS, LATEST EDITION.

PARKING SPACE DIMENSIONAL REQUIREMENTS:		
STANDARD 90° STALL :		
WIDTH	8.5 FT MIN	8.5 FT
LENGTH	19 FT MIN	19 FT
STANDARD 0° STALL :		
WIDTH	8.5 FT MIN	8.5 FT
LENGTH	20 FT MIN	20 FT
DRIVE AISLE WIDTH:		
90° (2-WAY TRAFFIC)	24 FT	24 FT
0° (2-WAY TRAFFIC)	24 FT	24 FT

BICYCLE SPACES	REQUIRED	PROPOSED
1 BICYCLE SPACE / 10 PARKING SPACES:	30 SPACES (MAX.)	>58 SPACES

(INDOOR BIKE STORAGE WILL BE PROVIDED THAT MEETS OR EXCEEDS REQUIRED.)

SEE SHEET C-101 FOR SITE PLAN NOTES & LEGEND

N

0 60' 120'
GRAPHIC SCALE

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PROPOSED MULTI-FAMILY DEVELOPMENT

100 DURGIN LANE OWNER, LLC

100 DURGIN LANE
PORTSMOUTH,
NEW HAMPSHIRE

MARK	DATE	DESCRIPTION

PROJECT NO:	E5071-001
DATE:	3/5/2024
FILE:	E5071-001-C-DSGN.dwg
DRAWN BY:	BKC
DESIGNED/CHECKED BY:	NAH
APPROVED BY:	PMC

SITE PLAN

SCALE: AS SHOWN

C-301

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POTENTIAL RAIN GUARDIAN FOXHOLE INLET (TYP.)
POTENIAL RAIN GARDEN AREA
POTENTIAL RAIN GUARDIAN FOXHOLE INLET (TYP.)
POTENIAL RAIN GARDEN AREA
POTENTIAL TREE FILTER SYSTEM (TYP.)
POTENIAL RAIN GARDEN AREA
POTENTIAL RAIN GUARDIAN FOXHOLE INLET (TYP.)
MEET EXISTING DRAINAGE OUTLET
F.F.=68.00
F.F.=67.00
F.F.=66.75
F.F.=67.00
(56.96)
POTENIAL RAIN GARDEN AREA
F.F.=67.00
F.F.=65.50
F.F.=64.00
PROPOSED WALL (TYP.)
POTENIAL RAIN GARDEN AREA
PROPOSED DRAIN MANHOLE (TYP.)
PROPOSED DRAIN LINE (TYP.)
50' LIMITED CUT BUFFER
25' VEGETATED BUFFER
F.F.=65.50
F.F.=63.50
F.F.=62.50
POTENTIAL TREE FILTER SYSTEM (TYP.)
PROPOSED WALL (TYP.)
F.F.=67.00
F.F.=67.00
F.F.=64.50
F.F.=62.50
F.F.=62.50
F.F.=62.50
F.F.=61.50
PROPOSED CATCH BASIN (TYP.)
PROPOSED DRAIN MANHOLE (TYP.)
MEET EXISTING DRAINAGE STRUCTURE
POTENIAL RAIN GARDEN AREA
50' WETLAND BUFFER
50' LIMITED CUT BUFFER
(58.59)
(52.19)
MEET EXISTING DRAINAGE OUTLET
POTENTIAL RAIN GUARDIAN TURRET (TYP.)
POTENTIAL RECONSTRUCTION OF EXISTING RAIN GARDEN
MEET EXISTING DRAINAGE OUTLET
POTENIAL RAIN GARDEN AREA
PROPOSED CATCH BASIN (TYP.)

SEE SHEET C-101 FOR GRADING, DRAINAGE, AND EROSION CONTROL PLAN NOTES & LEGEND

0 50' 100'
GRAPHIC SCALE

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PORTSMOUTH,
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APPROVED BY:	PMC

GRADING, DRAINAGE, AND EROSION CONTROL PLAN

SCALE: AS SHOWN

C-401

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PROPOSED COMMUNICATION JUNCTION MANHOLE (TYP.)

PROPOSED ELECTRICAL JUNCTION MANHOLE (TYP.)

PROPOSED SECONDARY ELECTRICAL DUCT BANK (TYP.)

PROPOSED PRIMARY ELECTRICAL AND COMMUNICATIONS DUCT BANK (TYP.)

PROPOSED TRANSFORMER (TYP.)

PROPOSED UTILITY POLE W/ SERVICE RISERS (COORD. W/ EVERSOURCE)

PROPOSED OVERHEAD SERVICE CONNECTION FROM EXISTING (COORD. W/ EVERSOURCE)

RECONSTRUCT OVERHEAD UTILITIES AS NEEDED FOR NEW ELECTRICAL SERVICES (COORD. W/ EVERSOURCE)

APPROXIMATE EXISTING UTILITY POLE (TYP. OF 2)

PROPOSED COMMUNICATIONS DUCT BANK (TYP.)

PROPOSED SECONDARY ELECTRICAL DUCT BANK (TYP.)

PROPOSED SEWER MANHOLE (TYP). (CONNECT TO EXISTING 8" PVC)

CONNECT TO EXISTING 6" CLDI WATER LINE

PROPOSED TRANSFORMER (TYP.)

PROPOSED PRIMARY ELECTRICAL DUCT BANK (TYP.)

PROPOSED WATER LINE (TYP.)

PROPOSED SEWER MANHOLE (TYP.)

PROPOSED SEWER LINE (TYP.)

PROPOSED RISER CONNECTION TO EXISTING OVERHEAD SERVICE (COORD. W/ UTILITY COMPANY)

MEET EXISTING 12" WATER MAIN

PROPOSED PRIMARY ELECTRICAL AND COMMUNICATIONS DUCT BANK (TYP.)

PROPOSED ELECTRICAL JUNCTION MANHOLE (TYP.)

PROPOSED SEWER MANHOLE (TYP.) (MEET EXISTING 10" PVC LINE)

PROPOSED COMMUNICATIONS DUCT BANK (TYP.)

CONNECT TO EXISTING FORCE MAIN

CONNECT TO EXISTING 6" WATER MAIN (TYP.) (COORD. W/ CITY OF PORTSMOUTH)

PROPOSED GATE VALVE (TYP.)

PROPOSED SEWER FORCE MAIN

100' WETLAND BUFFER

50' LIMITED CUT BUFFER

25' VEGETATED BUFFER

SEE SHEET C-101 FOR UTILITIES PLAN NOTES & LEGEND

GRAPHIC SCALE 0 60' 120'

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PROPOSED MULTI-FAMILY DEVELOPMENT

100 DURGIN LANE OWNER, LLC

100 DURGIN LANE
PORTSMOUTH,
NEW HAMPSHIRE

MARK	DATE	DESCRIPTION

PROJECT NO:	E5071-001
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APPROVED BY:	PMC

UTILITIES PLAN

SCALE: AS SHOWN

C-501

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GENERAL PROJECT INFORMATION

PROJECT APPLICANT: 100 DURGIN LANE OWNER, LLC

PROJECT NAME: PROPOSED MIXED USE DEVELOPMENT
PROJECT MAP / LOT: MAP 239 / LOT 18
MAP 239 / LOT 16
MAP 239 / LOT 13
PROJECT ADDRESS: DURGIN LANE
PORTSMOUTH, NH 03801
PROJECT LATITUDE: 43°-04'-43" N
PROJECT LONGITUDE: 70°-45'-41" W

PROJECT DESCRIPTION

THE PROJECT CONSISTS OF THE CONSTRUCTION OF AN OFFICE BUILDING AND TWO MIXED USE RESIDENTIAL BUILDINGS WITH ASSOCIATED SITE IMPROVEMENTS.

DISTURBED AREA

THE TOTAL AREA TO BE DISTURBED IS APPROXIMATELY 2.1 ACRES.

SOIL CHARACTERISTICS

BASED ON THE USCS WEB SOIL SURVEY THE SOILS ON SITE CONSIST OF URBAN LAND WHICH IS EXCESSIVELY DRAINED SOILS WITH A HYDROLOGIC SOIL GROUP RATING OF X.

NAME OF RECEIVING WATERS

THE STORMWATER RUNOFF FROM THE SITE WILL BE DISCHARGED VIA A CLOSED DRAINAGE SYSTEM TO THE CITY OF PORTSMOUTH'S CLOSED DRAINAGE SYSTEM WHICH ULTIMATELY FLOWS TO NORTH MILL POND THEN TO THE PISCATAQUA RIVER OR DIRECTLY TO THE PISQUATAQUA RIVER.

CONSTRUCTION SEQUENCE OF MAJOR ACTIVITIES:

1. CUT AND CLEAR TREES.
2. CONSTRUCT TEMPORARY AND PERMANENT SEDIMENT, EROSION AND DETENTION CONTROL FACILITIES. EROSION, SEDIMENT AND DETENTION MEASURES SHALL BE INSTALLED PRIOR TO ANY EARTH MOVING OPERATIONS THAT WILL INFLUENCE STORMWATER RUNOFF SUCH AS:
   - NEW CONSTRUCTION
   - CONTROL OF DUST
   - CONSTRUCTION DURING LATE WINTER AND EARLY SPRING
3. ALL PERMANENT DITCHES, SWALES, DETENTION, RETENTION AND SEDIMENTATION BASINS TO BE STABILIZED USING THE VEGETATIVE AND NON-STRUCTURAL BMPS PRIOR TO DIRECTING RUNOFF TO THEM.
4. CLEAR AND DISPOSE OF DEBRIS.
5. CONSTRUCT TEMPORARY CULVERTS AND DIVERSION CHANNELS AS REQUIRED.
6. GRADE AND GRAVEL ROADWAYS AND PARKING AREAS - ALL ROADS AND PARKING AREA SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
7. BEGIN PERMANENT AND TEMPORARY SEEDING AND MULCHING. ALL CUT AND FILL SLOPES SHALL BE SEEDED AND MULCHED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
8. DAILY, OR AS REQUIRED, CONSTRUCT TEMPORARY BERMS, DRAINS, DITCHES, PERIMETER EROSION CONTROL MEASURES, SEDIMENT TRAPS, ETC., MULCH AND SEED AS REQUIRED.
9. SEDIMENT TRAPS AND/OR BASINS SHALL BE USED AS NECESSARY TO CONTAIN RUNOFF UNTIL SOILS ARE STABILIZED.
10. FINISH PAVING ALL ROADWAYS AND PARKING LOTS.
11. INSPECT AND MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES.
12. COMPLETE PERMANENT SEEDING AND LANDSCAPING.
13. REMOVE TRAPPED SEDIMENTS FROM COLLECTOR DEVICES AS APPROPRIATE AND THEN REMOVE TEMPORARY EROSION CONTROL MEASURES.

SPECIAL CONSTRUCTION NOTES:

1. THE CONSTRUCTION SEQUENCE MUST LIMIT THE DURATION AND AREA OF DISTURBANCE.
2. THE PROJECT IS TO BE MANAGED IN A MANNER THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES.

EROSION CONTROL NOTES:

1. ALL EROSION CONTROL MEASURES AND PRACTICES SHALL CONFORM TO THE "NEW HAMPSHIRE STORMWATER MANUAL VOLUME 3: EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION" PREPARED BY THE NHDES.
2. PRIOR TO ANY WORK OR SOIL DISTURBANCE, CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR EROSION CONTROL MEASURES AS REQUIRED IN THE PROJECT MANUAL.
3. CONTRACTOR SHALL INSTALL TEMPORARY EROSION CONTROL BARRIERS, INCLUDING HAY BALES, SILT FENCES, MULCH BERMS, SILT SACKS AND SILT SOCKS AS SHOWN IN THESE DRAWINGS AS THE FIRST ORDER OF WORK.
4. SILT SACK INLET PROTECTION SHALL BE INSTALLED IN ALL EXISTING AND PROPOSED CATCH BASIN INLETS WITHIN THE WORK LIMITS AND BE MAINTAINED FOR THE DURATION OF THE PROJECT.
5. PERIMETER CONTROLS INCLUDING SILT FENCES, MULCH BERM, SILT SOCK, AND/OR HAY BALE BARRIERS SHALL BE MAINTAINED FOR THE DURATION OF THE PROJECT UNTIL NON-PAVED AREAS HAVE BEEN STABILIZED.
6. THE CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ALL TEMPORARY EROSION CONTROL DEVICES UPON COMPLETION OF CONSTRUCTION.
7. ALL DISTURBED AREAS NOT OTHERWISE BEING TREATED SHALL RECEIVE 6" LOAM, SEED AND FERTILIZER.
8. INSPECT ALL INLET PROTECTION AND PERIMETER CONTROLS WEEKLY AND AFTER EACH RAIN STORM OF 0.25 INCH OR GREATER. REPAIR/MODIFY PROTECTION AS NECESSARY TO MAXIMIZE EFFICIENCY OF FILTER. REPLACE ALL FILTERS WHEN SEDIMENT IS 1/3 THE FILTER HEIGHT.
9. CONSTRUCT EROSION CONTROL BLANKETS ON ALL SLOPES STEEPER THAN 3:1.

STABILIZATION:

1. AN AREA SHALL BE CONSIDERED STABLE WHEN 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" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIPRAP HAS BEEN INSTALLED;
   D. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.;
   E. IN AREAS TO BE PAVED, "STABLE" MEANS THAT BASE COURSE GRAVELS MEETING THE REQUIREMENTS OF NHDOT STANDARD FOR ROAD AND BRIDGE CONSTRUCTION, 2016, ITEM 304.2 HAVE BEEN INSTALLED.
2. WINTER STABILIZATION PRACTICES:
   A. ALL PROPOSED VEGETATED AREAS THAT DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS;
   B. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS;
   C. AFTER OCTOBER 15, INCOMPLETE ROAD OR PARKING SURFACES, WHERE WORK HAS STOPPED FOR THE WINTER SEASON, SHALL BE PROTECTED WITH A MINIMUM OF 3 INCHES OF CRUSHED GRAVEL PER NHDOT ITEM 304.3, OR IF CONSTRUCTION IS TO CONTINUE THROUGH THE WINTER SEASON BE CLEARED OF ANY ACCUMULATED SNOW AFTER EACH STORM EVENT;
3. STABILIZATION SHALL BE INITIATED ON ALL LOAM STOCKPILES, AND DISTURBED AREAS, WHERE CONSTRUCTION ACTIVITY SHALL NOT OCCUR FOR MORE THAN TWENTY-ONE (21) CALENDAR DAYS BY THE FOURTEENTH (14TH) DAY AFTER CONSTRUCTION ACTIVITY HAS PERMANENTLY OR TEMPORARILY CEASED IN THAT AREA. STABILIZATION MEASURES TO BE USED INCLUDE:
   A. TEMPORARY SEEDING;
   B. MULCHING.
4. ALL AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.
5. WHEN CONSTRUCTION ACTIVITY PERMANENTLY OR TEMPORARILY CEASES WITHIN 100 FEET OF NEARBY SURFACE WATERS OR DELINEATED WETLANDS, THE AREA SHALL BE STABILIZED WITHIN SEVEN (7) DAYS OR PRIOR TO A RAIN EVENT. ONCE CONSTRUCTION ACTIVITY CEASES PERMANENTLY IN AN THESE AREAS, SILT FENCES, MULCH BERMS, HAY BALE BARRIERS AND ANY EARTH/DIKES SHALL BE REMOVED ONCE PERMANENT MEASURES ARE ESTABLISHED.
6. DURING CONSTRUCTION, RUNOFF WILL BE DIVERTED AROUND THE SITE WITH EARTH DIKES, PIPING OR STABILIZED CHANNELS WHERE POSSIBLE. SHEET RUNOFF FROM THE SITE WILL BE FILTERED THROUGH SILT FENCES, MULCH BERMS, HAY BALE BARRIERS, OR SILT SOCKS. ALL STORM DRAIN BASIN INLETS SHALL BE PROVIDED WITH FLARED END SECTIONS AND TRASH RACKS. THE SITE SHALL BE STABILIZED FOR THE WINTER BY OCTOBER 15.

DUST CONTROL:

1. THE CONTRACTOR SHALL BE RESPONSIBLE TO CONTROL DUST THROUGHOUT THE CONSTRUCTION PERIOD.
2. DUST CONTROL METHODS SHALL INCLUDE, BUT BE NOT LIMITED TO SPRINKLING WATER ON EXPOSED AREAS, COVERING LOADED DUMP TRUCKS LEAVING THE SITE, AND TEMPORARY MULCHING.
3. DUST CONTROL MEASURES SHALL BE UTILIZED SO AS TO PREVENT THE MIGRATION OF DUST FROM THE SITE TO ABUTTING AREAS.

STOCKPILES:

1. LOCATE STOCKPILES A MINIMUM OF 50 FEET AWAY FROM CATCH BASINS, SWALES, AND CULVERTS.
2. ALL STOCKPILES SHOULD BE SURROUNDED WITH TEMPORARY EROSION CONTROL MEASURES PRIOR TO THE ONSET OF PRECIPITATION.
3. PERIMETER BARRIERS SHOULD BE MAINTAINED AT ALL TIMES, AND ADJUSTED AS NEEDED TO ACCOMMODATE THE DELIVERY AND REMOVAL OF MATERIALS FROM THE STOCKPILE. THE INTEGRITY OF THE BARRIER SHOULD BE INSPECTED AT THE END OF EACH WORKING DAY.
4. PROTECT ALL STOCKPILES FROM STORMWATER RUN-OFF USING TEMPORARY EROSION CONTROL MEASURES SUCH AS BERMS, SILT SOCK, OR OTHER APPROVED PRACTICE TO PREVENT MIGRATION OF MATERIAL BEYOND THE IMMEDIATE CONFINES OF THE STOCKPILES.

OFF SITE VEHICLE TRACKING:

1. THE CONTRACTOR SHALL CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE(S) PRIOR TO ANY EXCAVATION ACTIVITIES.

VEGETATION:

1. TEMPORARY GRASS COVER:
   A. SEEDBED PREPARATION:
      a. APPLY FERTILIZER AT THE RATE OF 600 POUNDS PER ACRE OF 10-10-10. APPLY LIMESTONE (EQUIVALENT TO 50 PERCENT CALCIUM PLUS MAGNESIUM OXIDE) AT A RATE OF THREE (3) TONS PER ACRE;
   B. SEEDING:
      a. UTILIZE ANNUAL RYE GRASS AT A RATE OF 40 LBS/ACRE;
      b. WHERE THE SOIL HAS BEEN COMPACTED BY CONSTRUCTION OPERATIONS, LOOSEN SOIL TO A DEPTH OF TWO (2) INCHES BEFORE APPLYING FERTILIZER, LIME AND SEED;
      c. APPLY SEED UNIFORMLY BY HAND, CYCLONE SEEDER, OR HYDROSEEDER (SLURRY INCLUDING SEED AND FERTILIZER). HYDROSEEDINGS, WHICH INCLUDE MULCH, MAY BE LEFT ON SOIL SURFACE. SEEDING RATES MUST BE INCREASED 10% WHEN HYDROSEEDING;
   C. MAINTENANCE:
      a. TEMPORARY SEEDING SHALL BE PERIODICALLY INSPECTED. AT A MINIMUM, 95% OF THE SOIL SURFACE SHOULD BE COVERED BY VEGETATION. IF ANY EVIDENCE OF EROSION OR SEDIMENTATION IS APPARENT, REPAIRS SHALL BE MADE AND OTHER TEMPORARY MEASURES USED IN THE INTERIM (MULCH, FILTER BARRIERS, CHECK DAMS, ETC.).
2. VEGETATIVE PRACTICE:
   A. FOR PERMANENT MEASURES AND PLANTINGS:
      a. LIMESTONE SHALL BE THOROUGHLY INCORPORATED INTO THE LOAM LAYER AT A RATE OF THREE (3) TONS PER ACRE IN ORDER TO PROVIDE A PH VALUE OF 5.5 TO 6.5;
      b. FERTILIZER SHALL BE SPREAD ON THE TOP LAYER OF LOAM AND WORKED INTO THE SURFACE. FERTILIZER APPLICATION RATE SHALL BE 800 POUNDS PER ACRE OF 10-20-20 FERTILIZER;
      c. SOIL CONDITIONERS AND FERTILIZER SHALL BE APPLIED AT THE RECOMMENDED RATES AND SHALL BE THOROUGHLY WORKED INTO THE LOAM. LOAM SHALL BE RAKED UNTIL THE SURFACE IS FINELY PULVERIZED, SMOOTH AND EVEN, AND THEN COMPACTED TO AN EVEN SURFACE CONFORMING TO THE REQUIRED LINES AND GRADES WITH APPROVED ROLLERS WEIGHING BETWEEN 4-1/2 POUNDS AND 5-1/2 POUNDS PER INCH OF WIDTH;
      d. SEED SHALL BE SOWN AT THE RATE SHOWN BELOW. SOWING SHALL BE DONE ON A CALM, DRY DAY, PREFERABLY BY MACHINE, BUT IF BY HAND, ONLY BY EXPERIENCED WORKMEN. IMMEDIATELY BEFORE SEEDING, THE SOIL SHALL BE LIGHTLY RAKED. ONE HALF THE SEED SHALL BE SOWN IN ONE DIRECTION AND THE OTHER HALF AT RIGHT ANGLES TO THE ORIGINAL DIRECTION. IT SHALL BE LIGHTLY RAKED INTO THE SOIL TO A DEPTH NOT OVER 1/4 INCH AND ROLLED WITH A HAND ROLLER WEIGHING NOT OVER 100 POUNDS PER LINEAR FOOT OF WIDTH;
      e. HAY MULCH SHALL BE APPLIED IMMEDIATELY AFTER SEEDING AS INDICATED ABOVE;
      f. THE SURFACE SHALL BE WATERED AND KEPT MOIST WITH A FINE SPRAY AS REQUIRED, WITHOUT WASHING AWAY THE SOIL, UNTIL THE GRASS IS WELL ESTABLISHED. ANY AREAS WHICH ARE NOT SATISFACTORILY COVERED WITH GRASS SHALL BE RESEEDED, AND ALL NOXIOUS WEEDS REMOVED;
      g. THE CONTRACTOR SHALL PROTECT AND MAINTAIN THE SEEDED AREAS UNTIL ACCEPTED;
      h. A GRASS SEED MIXTURE CONTAINING THE FOLLOWING SEED REQUIREMENTS SHALL BE APPLIED AT THE INDICATED RATE:

SEED MIX	APPLICATION RATE
CREEPING RED FESCUE	20 LBS/ACRE
TALL FESCUE	20 LBS/ACRE
REDTOP	2 LBS/ACRE

IN NO CASE SHALL THE WEED CONTENT EXCEED ONE (1) PERCENT BY WEIGHT. ALL SEED SHALL COMPLY WITH STATE AND FEDERAL SEED LAWS. SEEDING SHALL BE DONE NO LATER THAN SEPTEMBER 15. IN NO CASE SHALL SEEDING TAKE PLACE OVER SNOW.

3. DORMANT SEEDING (SEPTEMBER 15 TO FIRST SNOWFALL):
   A. FOLLOW PERMANENT MEASURES SLOPE, LIME, FERTILIZER AND GRADING REQUIREMENTS. APPLY SEED MIXTURE AT TWICE THE INDICATED RATE. APPLY MULCH AS INDICATED FOR PERMANENT MEASURES.

CONCRETE WASHOUT AREA:

1. THE FOLLOWING ARE THE ONLY NON-STORMWATER DISCHARGES ALLOWED. ALL OTHER NON-STORMWATER DISCHARGES ARE PROHIBITED ON SITE:
   A. THE CONCRETE DELIVERY TRUCKS SHALL, WHENEVER POSSIBLE, USE WASHOUT FACILITIES AT THEIR OWN PLANT OR DISPATCH FACILITY;
   B. IF IT IS NECESSARY, SITE CONTRACTOR SHALL DESIGNATE SPECIFIC WASHOUT AREAS AND DESIGN FACILITIES TO HANDLE ANTICIPATED WASHOUT WATER;
   C. CONTRACTOR SHALL LOCATE WASHOUT AREAS AT LEAST 150 FEET AWAY FROM STORM DRAINS, SWALES AND SURFACE WATERS OR DELINEATED WETLANDS;
   D. INSPECT WASHOUT FACILITIES DAILY TO DETECT LEAKS OR TEARS AND TO IDENTIFY WHEN MATERIALS NEED TO BE REMOVED.

ALLOWABLE NON-STORMWATER DISCHARGES:

1. FIRE-FIGHTING ACTIVITIES;
2. FIRE HYDRANT FLUSHING;
3. WATERS USED TO WASH VEHICLES WHERE DETERGENTS ARE NOT USED;
4. WATER USED TO CONTROL DUST;
5. POTABLE WATER INCLUDING UNCONTAMINATED WATER LINE FLUSHING;
6. ROUTINE EXTERNAL BUILDING WASH DOWN WHERE DETERGENTS ARE NOT USED;
7. PAVEMENT WASH WATERS WHERE DETERGENTS ARE NOT USED;
8. UNCONTAMINATED AIR CONDITIONING/COMPRESSOR CONDENSATION;
9. UNCONTAMINATED GROUND WATER OR SPRING WATER;
10. FOUNDATION OR FOOTING DRAINS WHICH ARE UNCONTAMINATED;
11. UNCONTAMINATED EXCAVATION DEWATERING;
12. LANDSCAPE IRRIGATION.

WASTE DISPOSAL:

1. WASTE MATERIAL:
   A. ALL WASTE MATERIALS SHALL BE COLLECTED AND STORED IN SECURELY LIDDED RECEPTACLES. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE SHALL BE DEPOSITED IN A DUMPSTER;
   B. NO CONSTRUCTION WASTE MATERIALS SHALL BE BURIED ON SITE;
   C. ALL PERSONNEL SHALL BE INSTRUCTED REGARDING THE CORRECT PROCEDURE FOR WASTE DISPOSAL BY THE SUPERINTENDENT.
2. HAZARDOUS WASTE:
   A. ALL HAZARDOUS WASTE MATERIALS SHALL BE DISPOSED OF IN THE MANNER SPECIFIED BY LOCAL OR STATE REGULATION OR BY THE MANUFACTURER;
   B. SITE PERSONNEL SHALL BE INSTRUCTED IN THESE PRACTICES BY THE SUPERINTENDENT.
3. SANITARY WASTE:
   A. ALL SANITARY WASTE SHALL BE COLLECTED FROM THE PORTABLE UNITS A MINIMUM OF ONCE PER WEEK BY A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR.

SPILL PREVENTION:

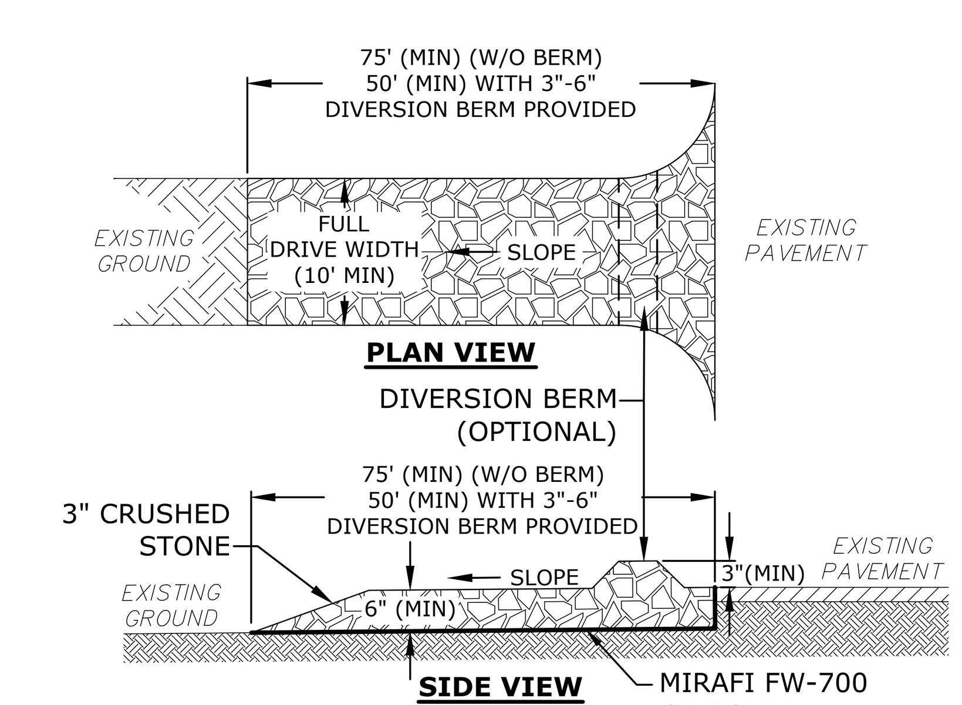
1. CONTRACTOR SHALL BE FAMILIAR WITH SPILL PREVENTION MEASURES REQUIRED BY LOCAL, STATE AND FEDERAL AGENCIES. AT A MINIMUM, CONTRACTOR SHALL FOLLOW THE BEST MANAGEMENT SPILL PREVENTION PRACTICES OUTLINED BELOW.
2. THE FOLLOWING ARE THE MATERIAL MANAGEMENT PRACTICES THAT SHALL BE USED TO REDUCE THE RISK OF SPILLS OR OTHER ACCIDENTAL EXPOSURE OF MATERIALS AND SUBSTANCES DURING CONSTRUCTION TO STORMWATER RUNOFF:
   A. GOOD HOUSEKEEPING - THE FOLLOWING GOOD HOUSEKEEPING PRACTICE SHALL BE FOLLOWED ON SITE DURING CONSTRUCTION:
      a. ONLY SUFFICIENT AMOUNTS OF PRODUCTS TO DO THE JOB SHALL BE STORED ON SITE;
      b. ALL REGULATED MATERIALS STORED ON SITE SHALL BE STORED IN A NEAT, ORDERLY MANNER IN THEIR PROPER (ORIGINAL IF POSSIBLE) CONTAINERS AND, IF POSSIBLE, UNDER A ROOF OR OTHER ENCLOSURE, ON AN IMPERVIOUS SURFACE;
      c. MANUFACTURER'S RECOMMENDATIONS FOR PROPER USE AND DISPOSAL SHALL BE FOLLOWED;
      d. THE SITE SUPERINTENDENT SHALL INSPECT DAILY TO ENSURE PROPER USE AND DISPOSAL OF MATERIALS;
      e. SUBSTANCES SHALL NOT BE MIXED WITH ONE ANOTHER UNLESS RECOMMENDED BY THE MANUFACTURER;
      f. WHENEVER POSSIBLE ALL OF A PRODUCT SHALL BE USED UP BEFORE DISPOSING OF THE CONTAINER.
      g. THE TRAINING OF ON-SITE EMPLOYEES AND THE ON-SITE POSTING OF RELEASE RESPONSE INFORMATION DESCRIBING WHAT TO DO IN THE EVENT OF A SPILL OF REGULATED SUBSTANCES.
   B. HAZARDOUS PRODUCTS - THE FOLLOWING PRACTICES SHALL BE USED TO REDUCE THE RISKS ASSOCIATED WITH HAZARDOUS MATERIALS:
      a. PRODUCTS SHALL BE KEPT IN THEIR ORIGINAL CONTAINERS UNLESS THEY ARE NOT RESEALABLE;
      b. ORIGINAL LABELS AND MATERIAL SAFETY DATA SHALL BE RETAINED FOR IMPORTANT PRODUCT INFORMATION;
      c. SURPLUS PRODUCT THAT MUST BE DISPOSED OF SHALL BE DISCARDED ACCORDING TO THE MANUFACTURER'S RECOMMENDED METHODS OF DISPOSAL.
   C. PRODUCT SPECIFIC PRACTICES - THE FOLLOWING PRODUCT SPECIFIC PRACTICES SHALL BE FOLLOWED ON SITE:
      a. PETROLEUM PRODUCTS:
      i. ALL ON SITE VEHICLES SHALL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTIVE MAINTENANCE TO REDUCE LEAKAGE;
      ii. PETROLEUM PRODUCTS SHALL BE STORED IN TIGHTLY SEALED CONTAINERS WHICH ARE CLEARLY LABELED. ANY ASPHALT BASED SUBSTANCES USED ON SITE SHALL BE APPLIED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.
      iii. SECURE FUEL STORAGE AREAS AGAINST UNAUTHORIZED ENTRY;
      iv. INSPECT FUEL STORAGE AREAS WEEKLY;
      v. WHEREVER POSSIBLE, KEEP REGULATED CONTAINERS THAT ARE STORED OUTSIDE MORE THAN 50 FEET FROM SURFACE WATER AND STORM DRAINS, 75 FEET FROM PRIVATE WELLS, AND 400 FEET FROM PUBLIC WELLS;
      vi. COVER REGULATED CONTAINERS IN OUTSIDE STORAGE AREAS;
      vii. SECONDARY CONTAINMENT IS REQUIRED FOR CONTAINERS CONTAINING REGULATED SUBSTANCES STORED OUTSIDE, EXCEPT FOR ON PREMISE USE HEATING FUEL TANKS, OR ABOVEGROUND OR UNDERGROUND STORAGE TANKS OTHERWISE REGULATED.
      viii. THE FUEL HANDLING REQUIREMENTS SHALL INCLUDE:
         (1) EXCEPT WHEN IN USE, KEEP CONTAINERS CONTAINING REGULATED SUBSTANCES CLOSED AND SEALED;
         (2) PLACE DRIP PANS UNDER SPIGOTS, VALVES, AND PUMPS;
         (3) HAVE SPILL CONTROL AND CONTAINMENT EQUIPMENT READILY AVAILABLE IN ALL WORK AREAS;
         (4) USE FUNNELS AND DRIP PANS WHEN TRANSFERRING REGULATED SUBSTANCES;
         (5) PERFORM TRANSFERS OF REGULATED SUBSTANCES OVER AN IMPERVIOUS SURFACE.
      ix. FUELING AND MAINTENANCE OF EXCAVATION, EARTHMOVING AND OTHER CONSTRUCTION RELATED EQUIPMENT SHALL COMPLY WITH THE REGULATIONS OF THE NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES THESE REQUIREMENTS ARE SUMMARIZED IN WD-DWGB-22-6 BEST MANAGEMENT PRACTICES FOR FUELING AND MAINTENANCE OF EXCAVATION AND EARTHMOVING EQUIPMENT, OR ITS SUCCESSOR DOCUMENT. HTTPS://WWW.DES.NH.GOV/ORGANIZATION/COMMISSIONER/PIP/FACTSHEETS/DWGB/DOCUMENTS/DWGB-22-6.PDF
      b. FERTILIZERS:
      i. FERTILIZERS USED SHALL BE APPLIED ONLY IN THE MINIMUM AMOUNTS DIRECTED BY THE SPECIFICATIONS;
      ii. ONCE APPLIED FERTILIZER SHALL BE WORKED INTO THE SOIL TO LIMIT EXPOSURE TO STORMWATER;
      iii. STORAGE SHALL BE IN A COVERED SHED OR ENCLOSED TRAILERS. THE CONTENTS OF ANY PARTIALLY USED BAGS OF FERTILIZER SHALL BE TRANSFERRED TO A SEALABLE PLASTIC BIN TO AVOID SPILLS.
      c. PAINTS:
      i. ALL CONTAINERS SHALL BE TIGHTLY SEALED AND STORED WHEN NOT REQUIRED FOR USE;
      ii. EXCESS PAINT SHALL NOT BE DISCHARGED TO THE STORM SEWER SYSTEM;
      iii. EXCESS PAINT SHALL BE DISPOSED OF PROPERLY ACCORDING TO MANUFACTURER'S INSTRUCTIONS OR STATE AND LOCAL REGULATIONS.
   D. SPILL CONTROL PRACTICES - IN ADDITION TO GOOD HOUSEKEEPING AND MATERIAL MANAGEMENT PRACTICES DISCUSSED IN THE PREVIOUS SECTION, THE FOLLOWING PRACTICES SHALL BE FOLLOWED FOR SPILL PREVENTION AND CLEANUP:
      a. MANUFACTURER'S RECOMMENDED METHODS FOR SPILL CLEANUP SHALL BE CLEARLY POSTED AND SITE PERSONNEL SHALL BE MADE AWARE OF THE PROCEDURES AND THE LOCATION OF THE INFORMATION AND CLEANUP SUPPLIES;
      b. MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEANUP SHALL BE KEPT IN THE MATERIAL STORAGE AREA ON SITE. EQUIPMENT AND MATERIALS SHALL INCLUDE BUT NOT BE LIMITED TO BROOMS, DUSTPANS, MOPS, RAGS, GLOVES, GOGGLES, KITTY LITTER, SAND, SAWDUST AND PLASTIC OR METAL TRASH CONTAINERS SPECIFICALLY FOR THIS PURPOSE;
      c. ALL SPILLS SHALL BE CLEANED UP IMMEDIATELY AFTER DISCOVERY;
      d. THE SPILL AREA SHALL BE KEPT WELL VENTILATED AND PERSONNEL SHALL WEAR APPROPRIATE PROTECTIVE CLOTHING TO PREVENT INJURY FROM CONTACT WITH A HAZARDOUS SUBSTANCE;
      e. SPILLS OF TOXIC OR HAZARDOUS MATERIAL SHALL BE REPORTED TO THE APPROPRIATE LOCAL, STATE OR FEDERAL AGENCIES AS REQUIRED;
      f. THE SITE SUPERINTENDENT RESPONSIBLE FOR DAY-TO-DAY SITE OPERATIONS SHALL BE THE SPILL PREVENTION AND CLEANUP COORDINATOR.
   E. VEHICLE FUELING AND MAINTENANCE PRACTICE:
      a. CONTRACTOR SHALL MAKE AN EFFORT TO PERFORM EQUIPMENT/VEHICLE FUELING AND MAINTENANCE AT AN OFF-SITE FACILITY;
      b. CONTRACTOR SHALL PROVIDE AN ON-SITE FUELING AND MAINTENANCE AREA THAT IS CLEAN AND DRY;
      c. IF POSSIBLE THE CONTRACTOR SHALL KEEP AREA COVERED;
      d. CONTRACTOR SHALL KEEP A SPILL KIT AT THE FUELING AND MAINTENANCE AREA;
      e. CONTRACTOR SHALL REGULARLY INSPECT VEHICLES FOR LEAKS AND DAMAGE;
      f. CONTRACTOR SHALL USE DRIP PANS, DRIP CLOTHS, OR ABSORBENT PADS WHEN REPLACING SPENT FLUID.

EROSION CONTROL OBSERVATIONS AND MAINTENANCE PRACTICES

1. THIS PROJECT EXCEEDS ONE (1) ACRE OF DISTURBANCE AND THUS REQUIRES A SWPPP. THE SWPPP SHALL BE PREPARED BY THE CONTRACTOR. THE CONTRACTOR SHALL BE FAMILIAR WITH THE SWPPP AND KEEP AN UPDATED COPY OF THE SWPPP ONSITE AT ALL TIMES.
2. THE FOLLOWING REPRESENTS THE GENERAL OBSERVATION AND REPORTING PRACTICES THAT SHALL BE FOLLOWED AS PART OF THIS PROJECT:
   A. OBSERVATIONS OF THE PROJECT FOR COMPLIANCE WITH THE SWPPP SHALL BE MADE BY THE CONTRACTOR AT LEAST ONCE A WEEK OR WITHIN 24 HOURS OF A STORM 0.25 INCHES OR GREATER;
   B. AN OBSERVATION REPORT SHALL BE MADE AFTER EACH OBSERVATION AND DISTRIBUTED TO THE ENGINEER, THE OWNER, AND THE CONTRACTOR;
   C. A REPRESENTATIVE OF THE SITE CONTRACTOR, SHALL BE RESPONSIBLE FOR MAINTENANCE AND REPAIR ACTIVITIES;
   D. IF A REPAIR IS NECESSARY, IT SHALL BE INITIATED WITHIN 24 HOURS OF REPORT.

BLASTING NOTES:

1. CONTRACTOR SHALL CONTACT THE NHDES PRIOR TO COMMENCING ANY BLASTING ACTIVITIES
2. FOR ANY PROJECT FOR WHICH BLASTING OF BEDROCK IS ANTICIPATED, THE APPLICANT SHALL SUBMIT:
   A. A BLASTING PLAN THAT IDENTIFIES:
      a. WHERE THE BLASTING ACTIVITIES ARE ANTICIPATED TO OCCUR;
      b. THE ESTIMATED QUANTITY OF BLAST ROCK IN CUBIC YARDS; AND
      c. SITE-SPECIFIC BLASTING BEST MANAGEMENT PRACTICES.
3. IF MORE THAN 5000 CUBIC YARDS OF BLAST ROCK WILL BE GENERATED AND THERE ARE ONE OR MORE PUBLIC DRINKING WATER WELLS WITHIN 2000 FEET OF THE BLASTING ACTIVITIES, A PLAN TO MONITOR GROUNDWATER TO DETECT ANY CONTAMINATION IN SUFFICIENT TIME TO PROTECT THE WATER SUPPLY WELLS SHALL BE PROVIDED TO THE NHDES. THE GROUNDWATER MONITORING PLAN SHALL INCLUDE:
   A. MONITORING FOR NITRATE AND NITRITE EITHER IN THE DRINKING WATER SUPPLY WELLS OR IN OTHER WELLS THAT ARE REPRESENTATIVE OF THE DRINKING WATER SUPPLY WELLS IN THE AREA:
      a. THE GROUNDWATER SAMPLING PROGRAM MUST BE IMPLEMENTED ONCE APPROVED BY THE NHDES.
   B. THE FOLLOWING BEST MANAGEMENT PROCEDURES FOR BLASTING SHALL BE COMPLIED WITH:
      a. LOADING PRACTICES - THE FOLLOWING BLASTHOLE LOADING PRACTICES TO MINIMIZE ENVIRONMENTAL EFFECTS SHALL BE FOLLOWED:
   - DRILLING LOGS SHALL BE MAINTAINED BY THE DRILLER AND COMMUNICATED DIRECTLY TO THE BLASTER. THE LOGS SHALL INDICATE DEPTHS AND LENGTHS OF VOIDS, CAVITIES, AND FAULT ZONES OR OTHER WEAK ZONES ENCOUNTERED AS WELL AS GROUNDWATER CONDITIONS;
   - EXPLOSIVE PRODUCTS SHALL BE MANAGED ON-SITE SO THAT THEY ARE EITHER USED IN THE BOREHOLE, RETURNED TO THE DELIVERY VEHICLE, OR PLACED IN SECURE CONTAINERS FOR OFF-SITE DISPOSAL;
   - SPILLAGE AROUND THE BOREHOLE SHALL EITHER BE PLACED IN THE BOREHOLE OR CLEANED UP AND RETURNED TO AN APPROPRIATE VEHICLE FOR HANDLING OR PLACEMENT IN SECURED CONTAINERS FOR OFF-SITE DISPOSAL;
   - LOADED EXPLOSIVES SHALL BE DETONATED AS SOON AS POSSIBLE AND SHALL NOT BE LEFT IN THE BLASTHOLES OVERNIGHT, UNLESS WEATHER OR OTHER SAFETY CONCERNS REASONABLY DICTATE THAT DETONATION SHOULD BE POSTPONED;
   - LOADING EQUIPMENT SHALL BE CLEANED IN AN AREA WHERE WASTEWATER CAN BE PROPERLY CONTAINED AND HANDLED IN A MANNER THAT PREVENTS RELEASE OF CONTAMINANTS TO THE ENVIRONMENT;
   - EXPLOSIVES SHALL BE LOADED TO MAINTAIN GOOD CONTINUITY IN THE COLUMN LOAD TO PROMOTE COMPLETE DETONATION. INDUSTRY ACCEPTED LOADING PRACTICES FOR PRIMING, STEMMING, DECKING AND COLUMN RISE NEED TO BE ATTENDED TO.
      b. EXPLOSIVE SELECTION - THE FOLLOWING BMPS SHALL BE FOLLOWED TO REDUCE THE POTENTIAL FOR GROUNDWATER CONTAMINATION WHEN EXPLOSIVES ARE USED:
   - EXPLOSIVE PRODUCTS SHALL BE SELECTED THAT ARE APPROPRIATE FOR SITE CONDITIONS AND SAFE BLAST EXECUTION;
   - EXPLOSIVE PRODUCTS SHALL BE SELECTED THAT HAVE THE APPROPRIATE WATER RESISTANCE FOR THE SITE CONDITIONS PRESENT TO MINIMIZE THE POTENTIAL FOR HAZARDOUS EFFECT OF THE PRODUCT UPON GROUNDWATER
   - PREVENTION OF MISFIRES. APPROPRIATE PRACTICES SHALL BE DEVELOPED AND IMPLEMENTED TO PREVENT MISFIRES.
   - MUCK PILES MANAGEMENT - MUCK PILES (THE BLASTED PIECES OF ROCK) AND ROCK PILES SHALL BE MANAGED IN A MANNER TO REDUCE THE POTENTIAL FOR CONTAMINATION BY IMPLEMENTING THE FOLLOWING MEASURES:
   - REMOVE THE MUCK PILE FROM THE BLAST AREA AS SOON AS REASONABLY POSSIBLE;
   - MANAGE THE INTERACTION OF BLASTED ROCK PILES AND STORMWATER TO PREVENT CONTAMINATION OF WATER SUPPLY WELLS OR SURFACE WATER.
   C. SPILL PREVENTION AND SPILL MITIGATION MEASURES SHALL BE IMPLEMENTED TO PREVENT THE RELEASE OF FUEL AND OTHER RELATED SUBSTANCES TO THE ENVIRONMENT DURING BLASTING OPERATIONS. THE MEASURES TO PREVENT SUCH RELEASES SHALL BE DETAILED IN THE GROUNDWATER MONITORING REPORT AND COMPLY WITH THE MEASURES AND BEST MANAGEMENT PRACTICES LISTED ON THIS SHEET.



NOTE:
1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OF SEDIMENT FROM THE SITE. WHEN WASHING IS REQUIRED, IT SHALL BE DONE SO RUNOFF DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING STORM DRAINS, DITCHES, OR WATERWAYS

STABILIZED CONSTRUCTION EXIT

NO SCALE

Tighe&Bond

THIS DOCUMENT IS INCOMPLETE AND IS RELEASED TEMPORARILY FOR PROGRESS REVIEW ONLY. IT IS NOT INTENDED FOR BIDDING OR CONSTRUCTION PURPOSES.

PROPOSED MULTI-FAMILY DEVELOPMENT

100 DURGIN LANE OWNER, LLC

100 DURGIN LANE
PORTSMOUTH, NEW HAMPSHIRE

MARK	DATE	DESCRIPTION

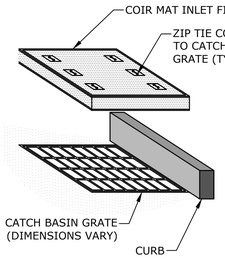
PROJECT NO:	E5071-001
DATE:	3/5/2024
FILE:	E5071-001-C-DTLS.dwg
DRAWN BY:	BKC
DESIGNED/CHECKED BY:	NAH
APPROVED BY:	PMC

EROSION CONTROL NOTES AND DETAILS SHEET

SCALE: AS SHOWN

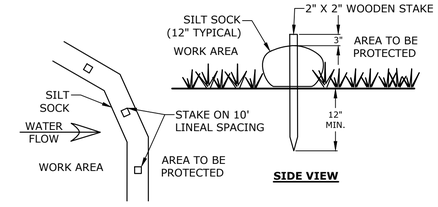
C-601

Last Saved: 3/4/2024
Plotted On:Mar 04, 2024-10:41am By: BCurcio
Tighe & Bond:\\tighebond.com\data\Data\Projects\E\E5071 Eastern Real Estate\001 Portsmouth, NH 100 Durgin Lane\Drawings\AutoCAD\Sheet\E5071-001-C-DTLS.dwg



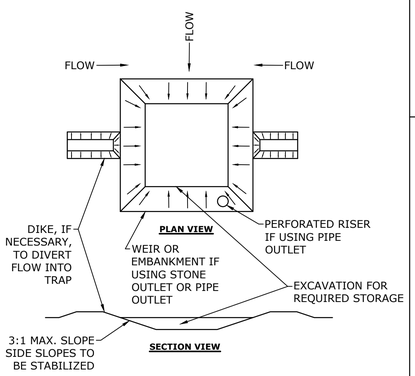
NOTES:
1. COIR MAT INLET FILTER SHALL BE STORM WATER INLET FILTER BY BLOCKSOM & CO. OR APPROVED EQUAL.
2. INSTALL AND MAINTAIN INLET PROTECTION IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

INLET PROTECTION
NO SCALE



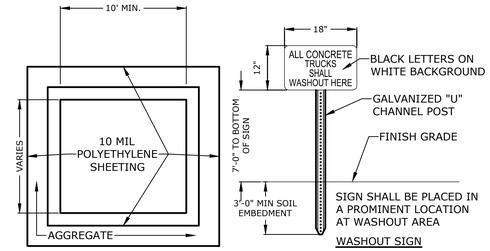
NOTES:
1. SILT SOCK SHALL BE SILT SOXX BY FILTREXX OR APPROVED EQUAL.
2. INSTALL SILT SOCK IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

SILT SOCK
NO SCALE

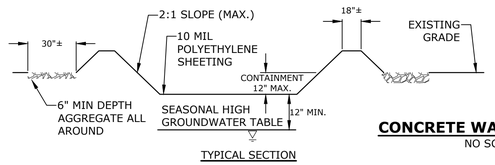


NOTES:
1. THE TRAP SHALL BE INSTALLED AS CLOSE TO THE DISTURBED AREA AS POSSIBLE.
2. THE MAXIMUM CONTRIBUTING AREA TO A SINGLE TRAP SHALL BE LESS THAN 5 ACRES.
3. THE MINIMUM VOLUME OF THE TRAP SHALL BE 3,600 CUBIC FEET OF STORAGE FOR EACH ACRE OF DRAINAGE AREA.
4. TRAP OUTLET SHALL BE MINIMUM OF ONE FOOT BELOW THE CREST OF THE TRAP.
5. TRAP SHALL DISCHARGE TO A STABILIZED AREA.
6. TRAP SHALL BE CLEANED WHEN 50 PERCENT OF THE ORIGINAL VOLUME IS FILLED.
7. MATERIALS REMOVED FROM THE TRAP SHALL BE PROPERLY DISPOSED OF AND STABILIZED.
8. SEDIMENT TRAPS MUST BE USED AS NEEDED TO CONTAIN RUNOFF UNTIL SOILS ARE STABILIZED.

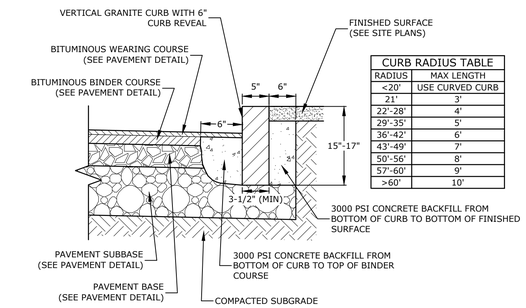
SEDIMENT TRAP
NO SCALE



NOTES:
1. CONTAINMENT MUST BE STRUCTURALLY SOUND AND LEAK FREE AND CONTAIN ALL LIQUID WASTES.
2. CONTAINMENT DEVICES MUST BE OF SUFFICIENT QUANTITY OR VOLUME TO COMPLETELY CONTAIN THE LIQUID WASTES GENERATED.
3. WASHOUT MUST BE CLEANED OR NEW FACILITIES CONSTRUCTED AND READY TO USE ONCE WASHOUT IS 75% FULL.
4. WASHOUT AREA(S) SHALL BE INSTALLED IN A LOCATION EASILY ACCESSIBLE BY CONCRETE TRUCKS.
5. ONE OR MORE AREAS MAY BE INSTALLED ON THE CONSTRUCTION SITE AND MAY BE RELOCATED AS CONSTRUCTION PROGRESSES.
6. AT LEAST WEEKLY REMOVE ACCUMULATION OF SAND AND AGGREGATE AND DISPOSE OF PROPERLY.



CONCRETE WASHOUT AREA
NO SCALE



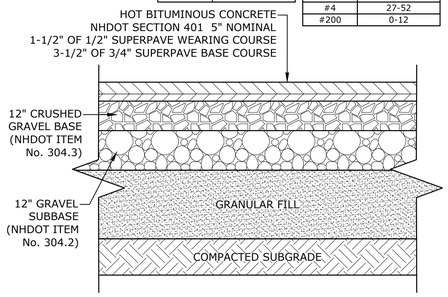
CURB RADIUS TABLE	
RADIUS	MAX LENGTH
<20'	USE CURVED CURB
21'	3'
22'-28'	4'
29'-35'	5'
36'-42'	6'
43'-49'	7'
50'-56'	8'
57'-60'	9'
>60'	10'

NOTES:
1. SEE SITE PLAN(S) FOR LIMITS OF VERTICAL GRANITE CURB (VGC).
2. ADJOINING STONES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH.
3. MINIMUM LENGTH OF STRAIGHT CURB STONES = 3'
4. MAXIMUM LENGTH OF STRAIGHT CURB STONES = 10'
5. MAXIMUM LENGTH OF STRAIGHT CURB STONES LAID ON CURVES (SEE TABLE).
6. ALL RADII 20 FEET AND SMALLER SHALL BE CONSTRUCTED USING CURVED SECTIONS.
7. JOINTS BETWEEN STONES SHALL HAVE A MAXIMUM SPACING OF 1/2" AND SHALL BE MORTARED.

VERTICAL GRANITE CURB
NO SCALE

NHDOT ITEM No. 304.2 (GRAVEL)	
SIEVE SIZE	% PASSING
6"	100
#4	25-70
#200	0-12

NHDOT ITEM No. 304.3 (CRUSHED GRAVEL)	
SIEVE SIZE	% PASSING
3"	100
2"	95-100
1"	55-85
#4	27-52
#200	0-12

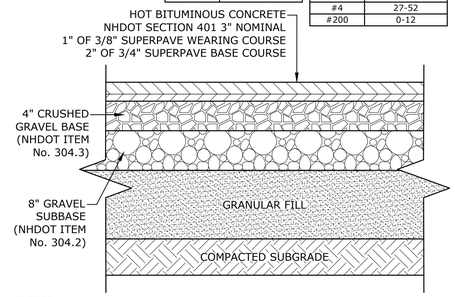


NOTES:
1. SEE SITE PLAN FOR PAVEMENT WIDTH AND LOCATION.
2. SEE GRADING, DRAINAGE AND EROSION CONTROL PLAN FOR PAVEMENT SLOPE AND CROSS-SLOPE.
3. A TACK COAT SHALL BE PLACED ON TOP OF BINDER COURSE PAVEMENT PRIOR TO PLACING WEARING COURSE.
4. REFER TO CITY SPECIFICATIONS FOR ASPHALT MIX DESIGN.

CITY RIGHT-OF-WAY PAVEMENT SECTION
NO SCALE

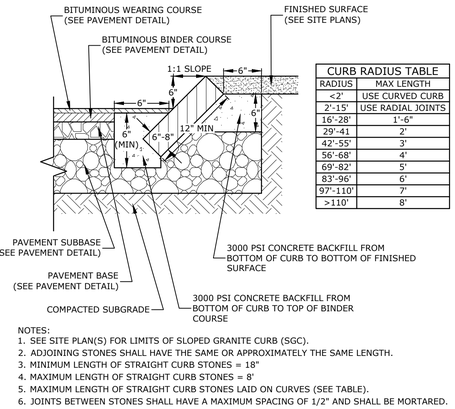
NHDOT ITEM No. 304.2 (GRAVEL)	
SIEVE SIZE	% PASSING
6"	100
#4	25-70
#200	0-12

NHDOT ITEM No. 304.3 (CRUSHED GRAVEL)	
SIEVE SIZE	% PASSING
3"	100
2"	95-100
1"	55-85
#4	27-52
#200	0-12



NOTES:
1. SEE SITE PLAN FOR PAVEMENT WIDTH AND LOCATION.
2. SEE GRADING, DRAINAGE AND EROSION CONTROL PLAN FOR PAVEMENT SLOPE AND CROSS-SLOPE.
3. A TACK COAT SHALL BE PLACED ON TOP OF BINDER COURSE PAVEMENT PRIOR TO PLACING WEARING COURSE.
4. REFER TO CITY SPECIFICATIONS FOR ASPHALT MIX DESIGN.

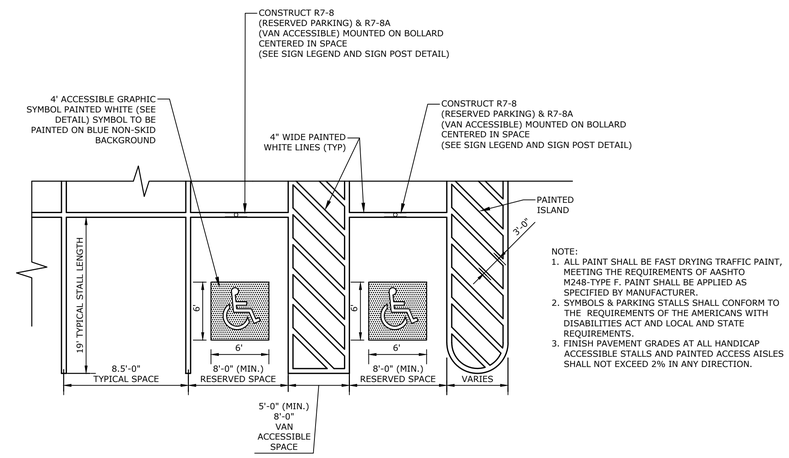
ON-SITE PAVEMENT SECTION
NO SCALE



CURB RADIUS TABLE	
RADIUS	MAX LENGTH
<2'	USE CURVED CURB
2'-15'	USE RADIAL JOINTS
16'-28'	1'-6"
29'-41	2'
42'-55'	3'
56'-68'	4'
69'-82'	5'
83'-96'	6'
97'-110'	7'
>110'	8'

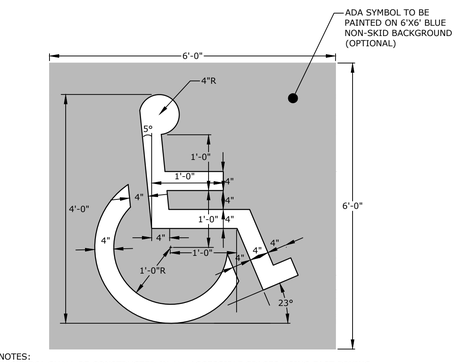
NOTES:
1. SEE SITE PLAN(S) FOR LIMITS OF SLOPED GRANITE CURB (SGC).
2. ADJOINING STONES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH.
3. MINIMUM LENGTH OF STRAIGHT CURB STONES = 18"
4. MAXIMUM LENGTH OF STRAIGHT CURB STONES = 8'
5. MAXIMUM LENGTH OF STRAIGHT CURB STONES LAID ON CURVES (SEE TABLE).
6. JOINTS BETWEEN STONES SHALL HAVE A MAXIMUM SPACING OF 1/2" AND SHALL BE MORTARED.

SLOPED GRANITE CURB
NO SCALE



NOTE:
1. ALL PAINT SHALL BE FAST DRYING TRAFFIC PAINT, MEETING THE REQUIREMENTS OF AASHTO M248-TYPE F. PAINT SHALL BE APPLIED AS SPECIFIED BY MANUFACTURER.
2. SYMBOLS & PARKING STALLS SHALL CONFORM TO THE REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT AND LOCAL AND STATE REQUIREMENTS.
3. FINISH PAVEMENT GRADES AT ALL HANDICAP ACCESSIBLE STALLS AND PAINTED ACCESS AISLES SHALL NOT EXCEED 2% IN ANY DIRECTION.

STALL STRIPING - SINGLE STRIPE
NO SCALE



NOTES:
1. SYMBOL SHALL BE CONSTRUCTED IN ALL ACCESSIBLE SPACES USING FAST DRYING TRAFFIC PAINT, MEETING THE REQUIREMENTS OF AASHTO M248-TYPE F. PAINT SHALL BE APPLIED AS SPECIFIED BY MANUFACTURER.

OR

1. SYMBOL SHALL BE CONSTRUCTED IN ALL ACCESSIBLE SPACES USING WHITE THERMOPLASTIC, REFLECTORIZED PAVEMENT PARKING MATERIAL MEETING THE REQUIREMENTS OF ASTM D 4505.
2. SYMBOL SHALL BE CONSTRUCTED TO THE LATEST ADA, STATE AND LOCAL REQUIREMENTS.

ACCESSIBLE SYMBOL
NO SCALE

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PROPOSED MULTI-FAMILY DEVELOPMENT

100 DURGIN LANE OWNER, LLC

100 DURGIN LANE
PORTSMOUTH,
NEW HAMPSHIRE

MARK	DATE	DESCRIPTION

PROJECT NO:	E5071-001
DATE:	3/5/2024
FILE:	E5071-001-C-DTLS.dwg
DRAWN BY:	BKC
DESIGNED/CHECKED BY:	NAH
APPROVED BY:	PMC

DETAILS SHEET

SCALE: AS SHOWN

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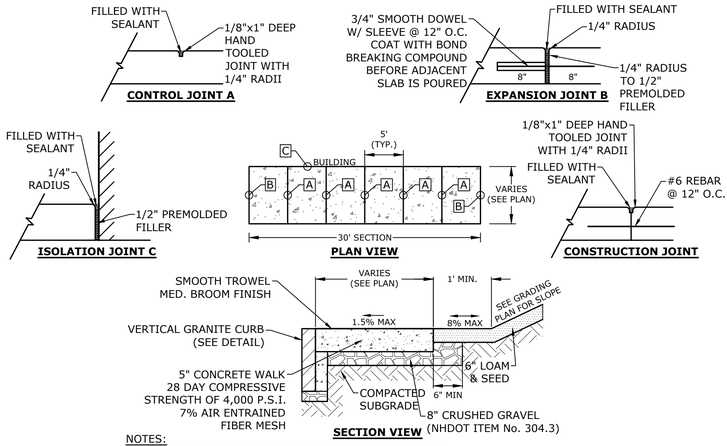
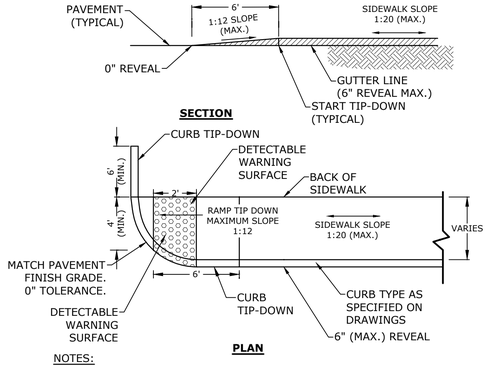


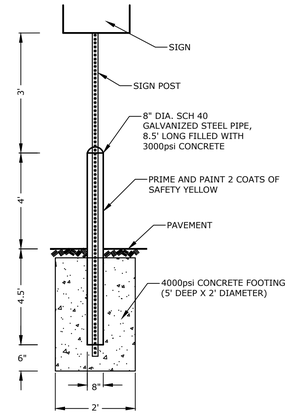
NOTES:
1. SEE SITE PLAN FOR SIDEWALK WIDTH AND LOCATIONS.
2. SEE GRADING, DRAINAGE & EROSION CONTROL PLAN FOR WALK AND SIDE SLOPE GRADES.
3. ISOLATION JOINTS ADJACENT TO BUILDING SHALL BE COORDINATED WITH BUILDING DRAWINGS.

CONCRETE SIDEWALK WITH GRANITE CURB
NO SCALE



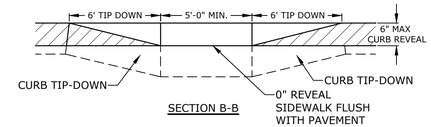
NOTES:
1. RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE AMERICANS WITH DISABILITIES ACT AND LOCAL AND STATE REQUIREMENTS.
2. PROVIDE 8" COMPACTED CRUSHED GRAVEL BASE BENEATH RAMPS.
3. DETECTABLE WARNING STRIP SHALL BE ADA SOLUTIONS, INC. CAST IN PLACE RAMP. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.

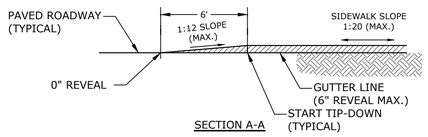
CONCRETE SIDEWALK TIP-DOWN RAMP WITH DETECTABLE WARNING PANEL
NO SCALE

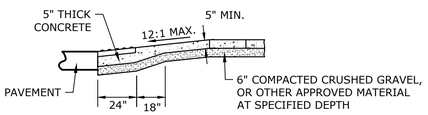


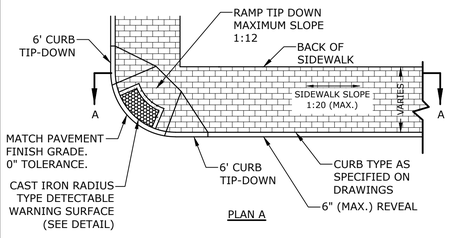
BOLLARD MOUNTED SIGN DETAIL
NO SCALE

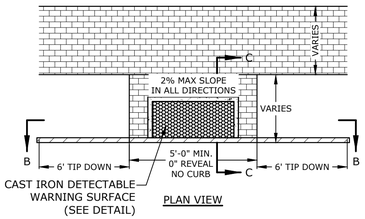
NHDOT ITEM No. 304.3 (CRUSHED GRAVEL)	
SIEVE SIZE	% PASSING
3"	100
2"	95-100
1"	55-85
#4	27-52
#200	0-12





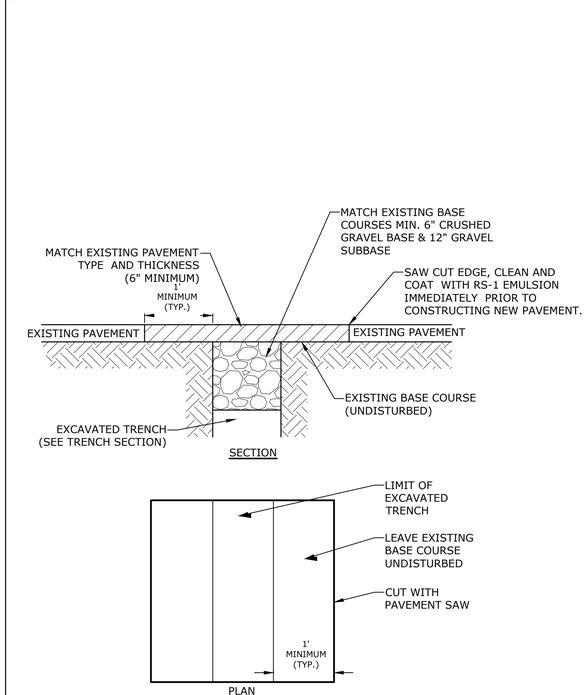






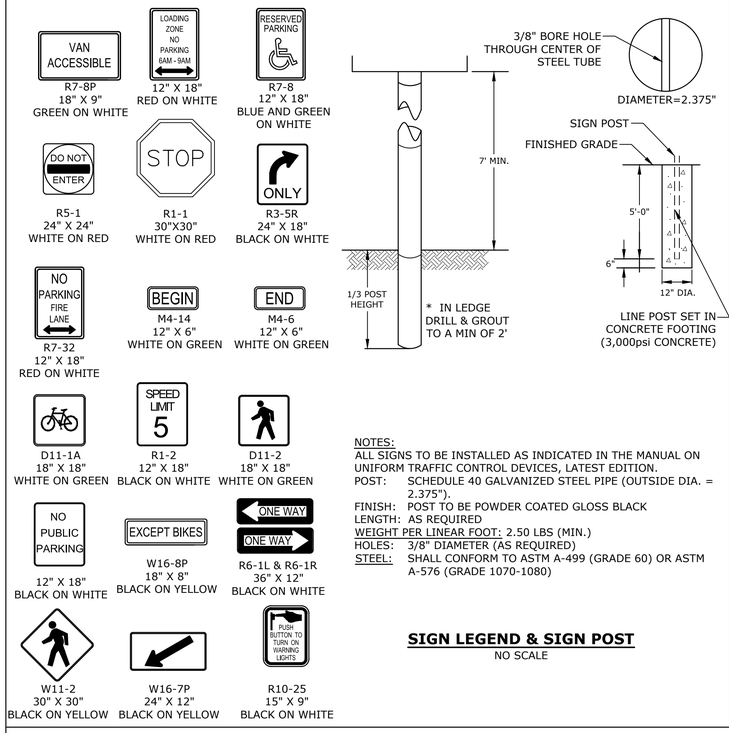
NOTES:
1. RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE AMERICANS WITH DISABILITIES ACT AND LOCAL AND STATE REQUIREMENTS.
2. A 6" COMPACTED CRUSHED GRAVEL BASE (NHDOT ITEM No. 304.3) SHALL BE PROVIDED BENEATH RAMPS.
3. DETECTABLE WARNING PANEL SHALL BE CAST IRON SET IN CONCRETE (SEE DETAIL.)
4. PROVIDE DETECTABLE WARNING SURFACES ANYTIME THAT A CURB RAMP, BLENDED TRANSITION, OR LANDING CONNECTS TO A STREET.
5. LOCATE THE DETECTABLE WARNING SURFACES AT THE BACK OF THE CURB ALONG THE EDGE OF THE LANDING.
6. THE MAXIMUM RUNNING SLOPE OF ANY SIDEWALK CURB RAMP IS 12:1, THE MAXIMUM CROSS SLOPE IS 2%. THE SLOPE OF THE LANDING SHALL NOT EXCEED 2% IN ANY DIRECTION.
7. TRANSITIONS SHALL BE FLUSH AND FREE OF ABRUPT CHANGES. ROADWAY SHOULDER SLOPES ADJOINING SIDEWALK CURB RAMPS SHALL BE A MAXIMUM OF 5% (FULL WIDTH) FOR A DISTANCE OF 2 FT. FROM THE ROADWAY CURBLINE.
8. THE BOTTOM OF THE SIDEWALK CURB RAMP OR LANDING, EXCLUSIVE OF THE FLARED SIDES, SHALL BE WHOLLY CONTAINED WITHIN THE CROSSWALK MARKINGS.
9. DETECTABLE WARNING PANELS SHALL BE A MINIMUM OF 2 FEET IN DEPTH. THE ROWS OF TRUNCATED DOMES SHALL BE ALIGNED PERPENDICULAR TO THE GRADE BREAK BETWEEN THE RAMP, BLENDED TRANSITION, OR LANDING AND THE STREET.
10. THE TEXTURE OF THE DETECTABLE WARNING FEATURE MUST CONTRAST VISUALLY WITH THE SURROUNDING SURFACES (EITHER LIGHT-ON-DARK OR DARK-ON-LIGHT).

CONCRETE WHEELCHAIR ACCESSIBLE RAMP
NO SCALE



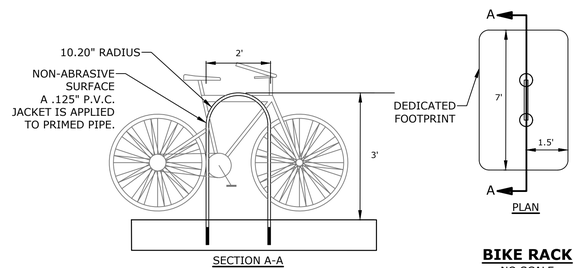
NOTE:
1. COORDINATE AND OBTAIN APPROVAL FOR ALL TRENCHING AND PATCHING WITHIN CITY RIGHT OF WAY WITH CITY OF PORTSMOUTH DPW PRIOR TO COMMENCING WORK.

ROADWAY TRENCH PATCH
NO SCALE



NOTES:
ALL SIGNS TO BE INSTALLED AS INDICATED IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.
POST: SCHEDULE 40 GALVANIZED STEEL PIPE (OUTSIDE DIA. = 2.375").
FINISH: POST TO BE POWDER COATED GLOSS BLACK
LENGTH: AS REQUIRED
WEIGHT PER LINEAR FOOT: 2.50 LBS (MIN.)
HOLES: 3/8" DIAMETER (AS REQUIRED)
STEEL: SHALL CONFORM TO ASTM A-499 (GRADE 60) OR ASTM A-576 (GRADE 1070-1080)

SIGN LEGEND & SIGN POST
NO SCALE



BIKE RACK
NO SCALE

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PROPOSED MULTI-FAMILY DEVELOPMENT

100 DURGIN LANE OWNER, LLC

100 DURGIN LANE
PORTSMOUTH,
NEW HAMPSHIRE

MARK	DATE	DESCRIPTION

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DRAWN BY:	BKC
DESIGNED/CHECKED BY:	NAH
APPROVED BY:	PMC

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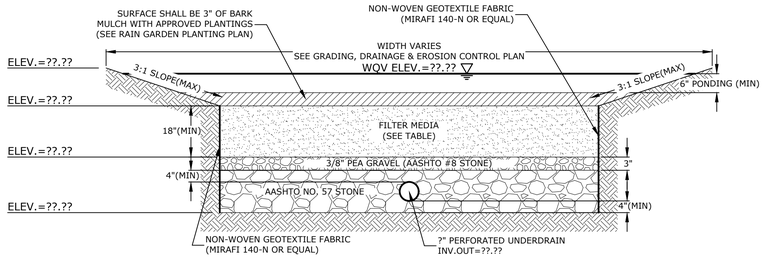


SECTION VIEW

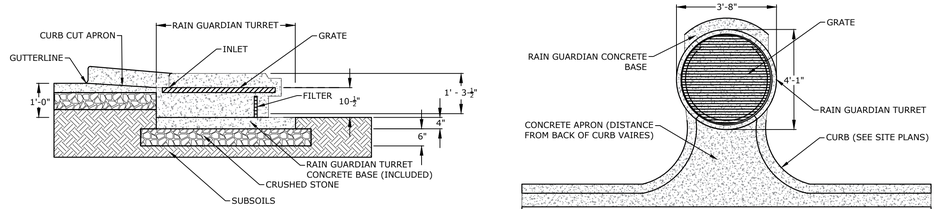
FILTER MEDIA COMPOSITION:

COMPONENT MATERIAL	PERCENT OF MIXTURE BY VOLUME	GRADATION OF MATERIAL SIEVE NO.	PERCENT PASSING
ASTM C-33 CONCRETE SAND	50-55	SEE NOTE #5	
LOAMY SAND TOPSOIL	20-30	200	15-25
MODERATELY FINE SHREDDED BARK OR WOOD FIBER MULCH	20-30	200	5 MAX

NOTES:
1. BARK MULCH SHALL BE AGED A MINIMUM OF 12 MONTHS AND SHALL NOT FLOAT.
2. RAIN GARDENS SHALL NOT BE PLACED INTO SERVICE UNTIL THE PRACTICE HAS BEEN PLANTED AND ITS CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.
3. DO NOT TRAFFIC EXPOSED SOIL SURFACES WITH CONSTRUCTION EQUIPMENT. CONTRACTOR SHALL KEEP ALL EXCAVATION EQUIPMENT OUTSIDE OF THE LIMIT OF THE RAIN GARDEN.
4. SEE GRADING, DRAINAGE & EROSION CONTROL PLAN FOR LOCATIONS, LAYOUTS, AND ELEVATIONS.
5. THE SAND PORTION OF THE FILTER MEDIA SHALL MEET THE FOLLOWING GRADATION (ASTM C-33):

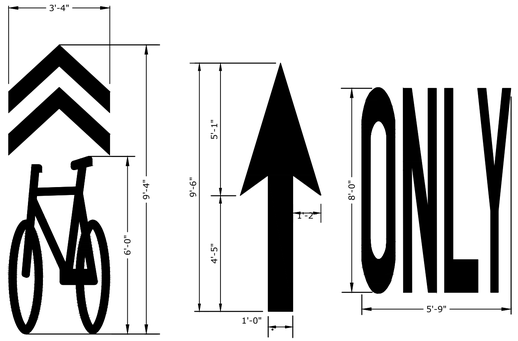
SIEVE SIZE	PERCENT PASSING
3/8"	100
#4	95-100
#8	80-100
#16	50-85
#30	25-60
#50	5-30
#100	0-10

RAIN GARDEN
NO SCALE

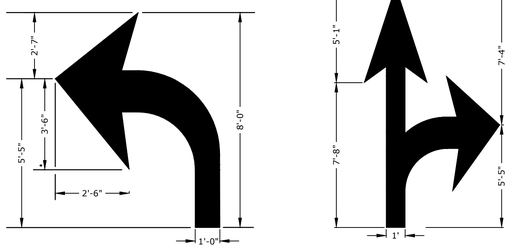


NOTES:
1. RAIN GUARDIAN OR APPROVED EQUAL.
2. CURB INLET SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURE RECOMMENDATION.

RAIN GUARDIAN TURRET
NO SCALE



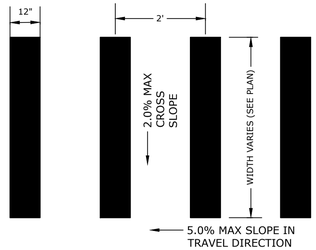
SHARROW **STRAIGHT ARROW** **ONLY**



TURN ARROW **COMBINATION ARROW**

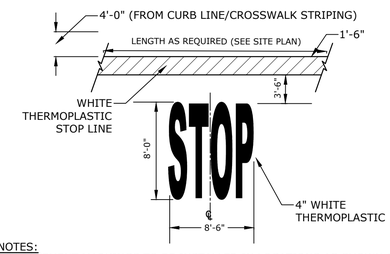
NOTES:
1. ALL WORDS AND SYMBOLS SHALL BE RETROREFLECTIVE WHITE AND SHALL CONFORM TO THE LATEST VERSION OF THE MUTCD.
2. MULTI-WORD MESSAGES SHALL READ "UP"; THAT IS, THE FIRST WORD SHALL BE NEAREST THE APPROACHING DRIVER.
3. THE WORD "ONLY" SHALL NOT BE USED WITH THROUGH OR COMBINATION ARROWS, AND SHALL NOT BE USED ADJACENT TO A BROKEN LANE LINE. A WORD/SYMBOL SHALL PRECEED THE WORD "ONLY".
4. COMBINATION ARROWS MAY BE COMPRISED OF 2 SINGLE ARROWS (e.g. TURN AND THROUGH ARROWS). HOWEVER, THE SHAFTS OF THE ARROWS SHALL COINCIDE AS SHOWN.
5. PREFORMED WORDS AND SYMBOLS SHALL BE PRE-CUT BY THE MANUFACTURER.
6. WRONG-WAY ARROWS SHALL NOT BE SUBSTITUTED FOR THROUGH ARROWS.
7. ALL STOP BARS, WORDS, SYMBOLS AND ARROW SHALL BE THERMOPLASTIC.

PAVEMENT MARKINGS
NO SCALE



NOTE:
1. STRIPING SHALL BE CONSTRUCTED USING WHITE THERMO PLASTIC, REFLECTERIZED PAVEMENT MARKING MATERIAL MEETING THE REQUIREMENTS OF ASTM D 4505

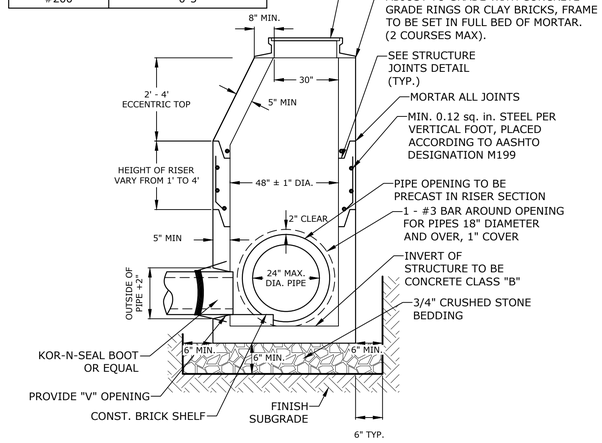
CROSSWALK STRIPING
NO SCALE



NOTES:
1. PAVEMENT MARKINGS TO BE INSTALLED IN LOCATIONS AS SHOWN ON SITE PLAN.
2. STRIPING SHALL BE CONSTRUCTED USING WHITE THERMO PLASTIC, REFLECTERIZED PAVEMENT MARKING MATERIAL MEETING THE REQUIREMENTS OF ASTM D 4505

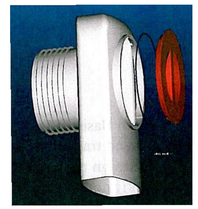
STOP BAR AND LEGEND
NO SCALE

NHDOT ITEM No. 304.4 (CRUSHED STONE - FINE)	
SIEVE SIZE	% PASSING
2"	100
1-1/2"	85-100
3/4"	45-75
#4	10-45
#200	0-5



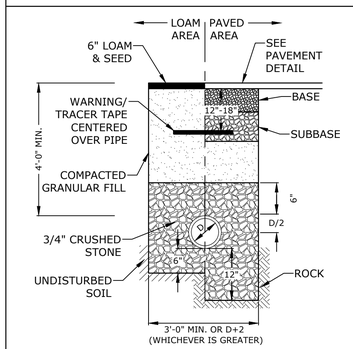
NOTES:
1. ALL SECTIONS SHALL BE 4,000 PSI CONCRETE.
2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQUARE INCHES PER LINEAR FOOT IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL.
3. THE TONGUE AND THE GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQUARE INCHES PER LINEAR FOOT.
4. THE STRUCTURES SHALL BE DESIGNED FOR H20 LOADING.
5. CONSTRUCT CRUSHED STONE BEDDING AND BACKFILL UNDER (6" MINIMUM THICKNESS)
6. THE TONGUE AND GROOVE JOINT SHALL BE SEALED WITH ONE STRIP OF BUTYL RUBBER SEALANT.
7. PIPE ELEVATIONS SHOWN ON PLANS SHALL BE FIELD VERIFIED PRIOR TO PRECASTING.
8. OUTSIDE EDGES OF PIPES SHALL PROJECT NO MORE THAN 3" BEYOND INSIDE WALL OF STRUCTURE.
9. PRECAST SECTIONS SHALL HAVE A TONGUE AND GROOVE JOINT 4" HIGH AT AN 11° ANGLE CENTERED IN THE WIDTH OF THE WALL AND SHALL BE ASSEMBLED USING AN APPROVED FLEXIBLE SEALANT IN JOINTS.
10. ALL STRUCTURES WITH MULTIPLE PIPES SHALL HAVE A MINIMUM OF 12" OF INSIDE SURFACE BETWEEN HOLES, NO MORE THAN 75% OF A HORIZNTAL CROSS SECTION SHALL BE HOLES, AND THERE SHALL BE NO HOLES CLOSER THAN 3" TO JOINTS.

4' DIAMETER DRAIN MANHOLE
NO SCALE



NOTES:
1. ALL CATCH BASIN OUTLETS TO HAVE "ELIMINATOR" OIL AND FLOATING DEBRIS TRAP MANUFACTURED BY KLEANSTREAM (NO EQUAL)
2. INSTALL DEBRIS TRAP TIGHT TO INSIDE OF STRUCTURE.
3. 1/4" HOLE SHALL BE DRILLED IN TOP OF DEBRIS TRAP

"ELIMINATOR" OIL FLOATING DEBRIS TRAP



NOTES:
1. CRUSHED STONE BEDDING AND BACKFILL FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW PIPE IN EARTH AND 12" BELOW PIPE IN ROCK UP TO 6" ABOVE TOP OF PIPE.
2. ALL UTILITIES SHALL BE INSTALLED PER THE INDIVIDUAL UTILITY COMPANY STANDARDS. COORDINATE ALL INSTALLATIONS WITH INDIVIDUAL UTILITY COMPANIES AND THE CITY OF PORTSMOUTH.

STORM DRAIN TRENCH
NO SCALE

Tighe&Bond

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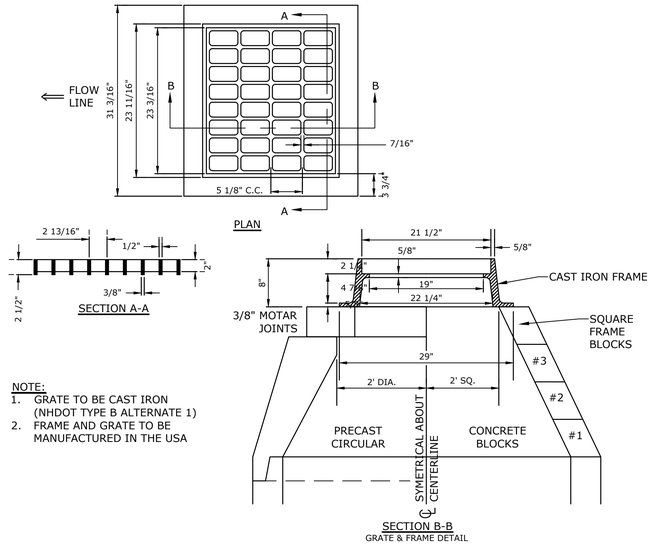
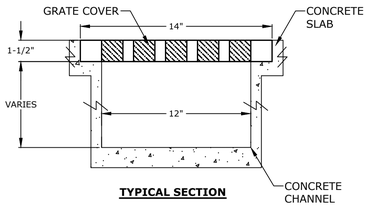
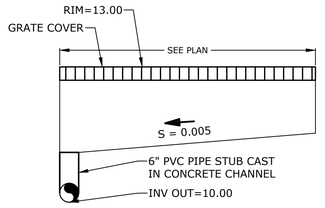


NOTE:
1. GRATE TO BE CAST IRON (NHDOT TYPE B ALTERNATE 1)
2. FRAME AND GRATE TO BE MANUFACTURED IN THE USA

CATCH BASIN FRAME & GRATE
NO SCALE



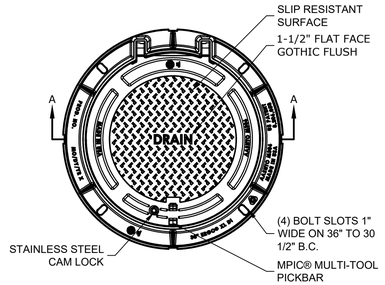
TYPICAL SECTION

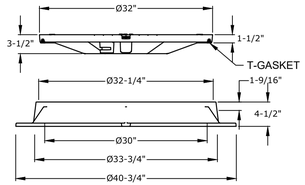


TYPICAL TRENCH DRAIN PROFILE

NOTES:
1. TRENCH DRAIN FRAME AND GRATE SHALL BE MULTIDRAIN ECONODRAIN SERIES #12 OR EQUAL.

TRENCH DRAIN
NO SCALE

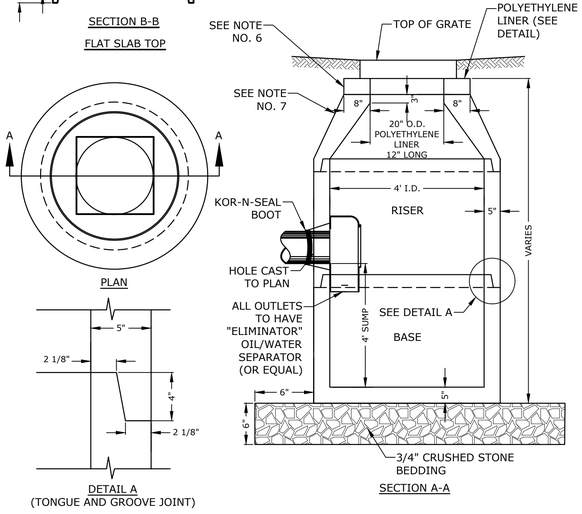




SECTION A-A

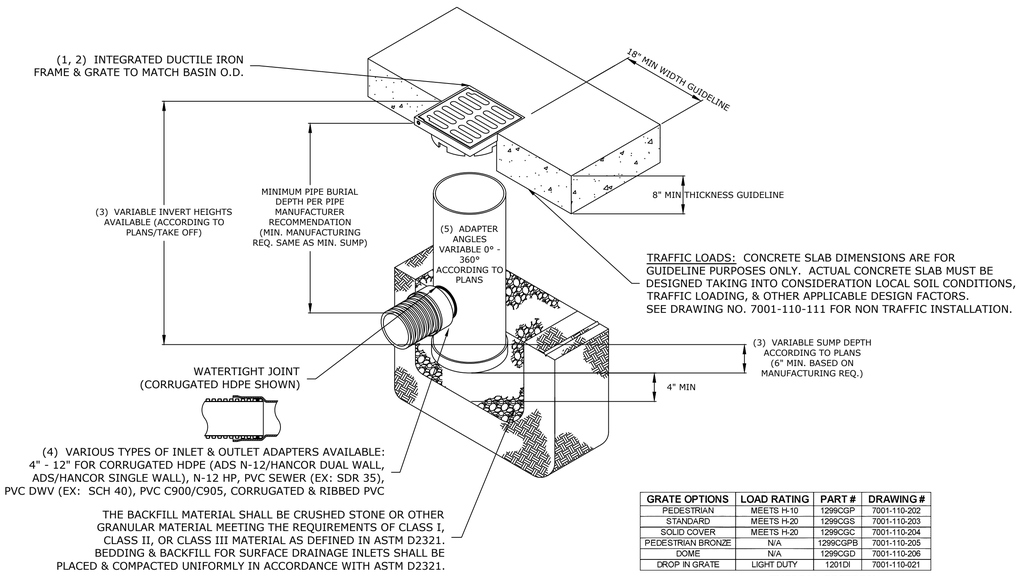
NOTES:
1. MANHOLE FRAME AND COVER SHALL BE 32" HINGED ERGO XL BY EJ CO.
2. ALL DIMENSIONS ARE NOMINAL.
3. FRAMES USING NARROWER DIMENSIONS FOR THICKNESS ARE ALLOWED PROVIDED:
   A. THE FRAMES MEET OR EXCEED THE SPECIFIED LOAD RATING.
   B. THE INTERIOR PERIMETER (SEAT AREA) DIMENSIONS OF THE FRAMES REMAIN THE SAME TO ALLOW CONTINUED USE OF EXISTING GRATES/COVERS AS THE EXISTING FRAMES ALLOW, WITHOUT SHIMS OR OTHER MODIFICATIONS OR ACCOMMODATIONS.
   C. ALL OTHER PERTINENT REQUIREMENTS OF THE SPECIFICATIONS ARE MET.
4. LABEL TYPE OF MANHOLE WITH 3" HIGH LETTERS IN HE CENTER OF THE COVER.

DRAIN MANHOLE FRAME & COVER
NO SCALE



NOTES:
1. ALL SECTIONS SHALL BE CONCRETE CLASS AA(4000 psi).
2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQ.IN. PER LINEAR FT. IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL.
3. THE TONGUE AND GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQ. IN. PER LINEAR FT.
4. RISERS OF 1', 2', 3' & 4' CAN BE USED TO REACH DESIRED DEPTH.
5. THE STRUCTURES SHALL BE DESIGNED FOR H20 LOADING.
6. FITTING FRAME TO GRADE MAY BE DONE WITH PREFABRICATED ADJUSTMENT RINGS OR CLAY BRICKS (2 COURSES MAX.).
7. CONE SECTIONS MAY BE EITHER CONCENTRIC OR ECCENTRIC, OR FLAT SLAB TOPS MAY BE USED WHERE PIPE WOULD OTHERWISE ENTER INTO THE CONE SECTION OF THE STRUCTURE AND WHERE PERMITTED.
8. PIPE ELEVATIONS SHOWN ON PLANS SHALL BE FIELD VERIFIED PRIOR TO PRECASTING.
9. OUTSIDE EDGES OF PIPES SHALL PROJECT NO MORE THAN 3" BEYOND INSIDE WALL OF STRUCTURE.
10. PRECAST SECTIONS SHALL HAVE A TONGUE AND GROOVE JOINT 4" HIGH AT AN 11° ANGLE CENTERED IN THE WIDTH OF THE WALL AND SHALL BE ASSEMBLED USING AN APPROVED FLEXIBLE SEALANT IN JOINTS.
11. THE TONGUE AND GROOVE JOINT SHALL BE SEALED WITH ONE STRIP OF BUTYL RUBBER SEALANT.
12. "ELIMINATOR" OIL/WATER SEPARATOR SHALL BE INSTALLED TIGHT TO INSIDE OF CATCHBASIN.

4' DIAMETER CATCHBASIN
NO SCALE

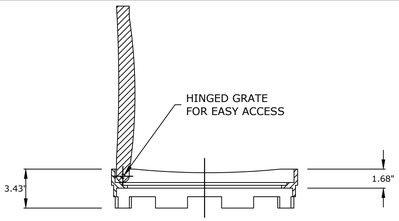


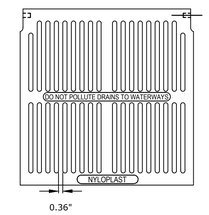
GRATE OPTIONS	LOAD RATING	PART #	DRAWING #
PEDESTRIAN	MEETS H-10	1299CGP	7001-110-202
STANDARD	MEETS H-20	1299CGS	7001-110-203
SOLID COVER	MEETS H-20	1299CGC	7001-110-204
PEDESTRIAN BRONZE	N/A	1299CGPB	7001-110-205
DOME	N/A	1299CGD	7001-110-206
DROP IN GRATE	LIGHT DUTY	1201DI	7001-110-021

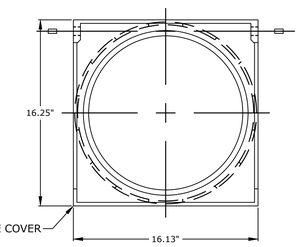
TYPICAL SECTION

NOTES:
1 - GRATES/SOLID COVER SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05, WITH THE EXCEPTION OF THE BRONZE GRATE.
2 - FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
3 - DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTRICTIONS. SEE DRAWING NO. 7001-110-065
4 - DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL), N-12 HP, & PVC SEWER.
5 - ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012.

YARD DRAIN
NO SCALE







NOTES:
1. NYLOPLAST MODEL 1299CGPBL OR EQUAL.

YARD DRAIN FRAME AND GRATE
NO SCALE

Tighe&Bond

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PROPOSED MULTI-FAMILY DEVELOPMENT

100 DURGIN LANE OWNER, LLC

100 DURGIN LANE
PORTSMOUTH,
NEW HAMPSHIRE

MARK	DATE	DESCRIPTION

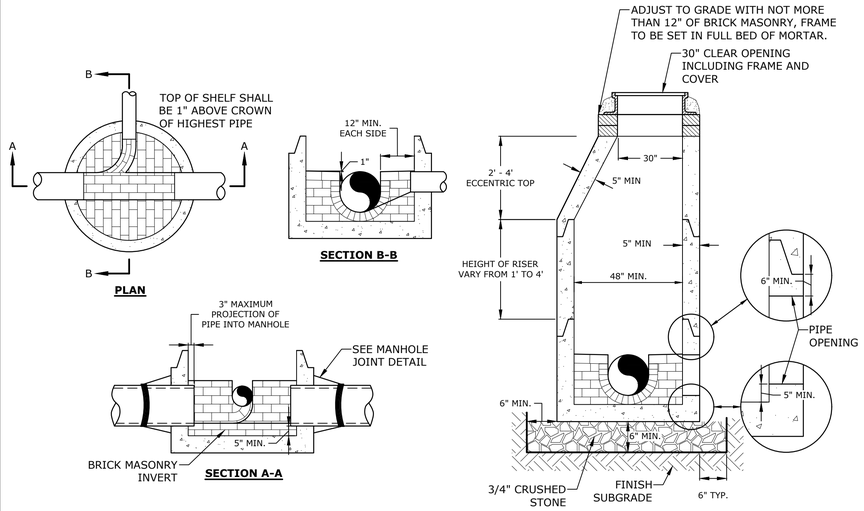
PROJECT NO:	E5071-001
DATE:	3/5/2024
FILE:	E5071-001-C-DTLS.dwg
DRAWN BY:	BKC
DESIGNED/CHECKED BY:	NAH
APPROVED BY:	PMC

DETAILS SHEET

SCALE: AS SHOWN

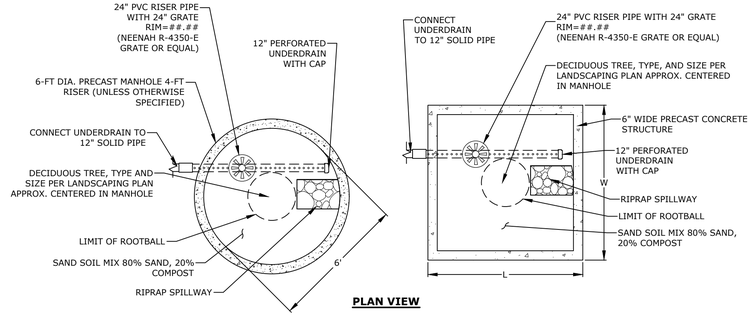
C-605

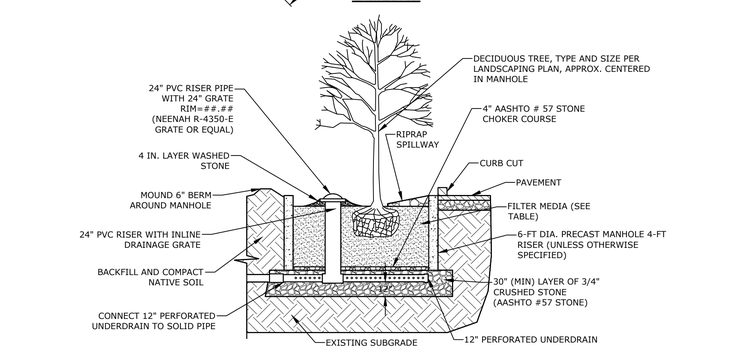
Last Saved: 3/4/2024
Plotted: Mar 04, 2024-10:42am By: RCorcio
Tighe & Bond:\\tighebond.com\data\Data\Projects\E\E5071 Eastern Real Estate\001 Portsmouth, NH 100 Durgin Lane\Drawings\AutoCAD\Sheet\E5071-001-C-DTLS.dwg



NOTES:
1. INVERT AND SHELF TO BE PLACED AFTER EACH LEAKAGE TEST.
2. CARE SHALL BE TAKEN TO INSURE THAT THE BRICK INVERT IS A SMOOTH CONTINUATION OF THE SEWER INVERT.
3. INVERT BRICKS SHALL BE LAID ON EDGE.
4. TWO (2) COATS OF BITUMINOUS WATERPROOF COATING SHALL BE APPLIED TO ENTIRE EXTERIOR OF MANHOLE.
5. FRAMES AND COVERS: MANHOLE FRAMES AND COVERS WITHIN CITY RIGHT OF WAY SHALL BE CITY STANDARD HINGE COVERS MANUFACTURED BY EJ. FRAMES AND COVERS WILL BE PURCHASED FROM THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS. ALL OTHER MANHOLE FRAMES AND COVERS SHALL BE OF HEAVY DUTY DESIGN AND PROVIDE A 30-INCH CLEAR OPENING. A 3-INCH (MINIMUM HEIGHT) WORD "SEWER" SHALL BE PLAINLY CAST INTO THE CENTER OF EACH COVER.
6. HORIZONTAL JOINTS SHALL BE SEALED FOR WATER TIGHTNESS USING A DOUBLE ROW OF ELASTOMERIC OR MASTIC-LIKE SEALANT.
7. BARREL AND CONE SECTIONS SHALL BE PRECAST REINFORCED CONCRETE DESIGNED FOR H20 LOADING, AND CONFORMING TO ASTM C478-06.

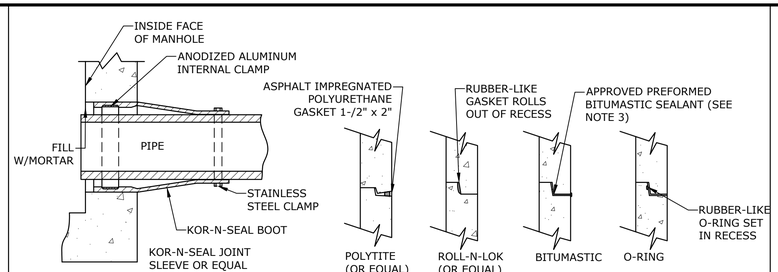
SEWER MANHOLE
NO SCALE





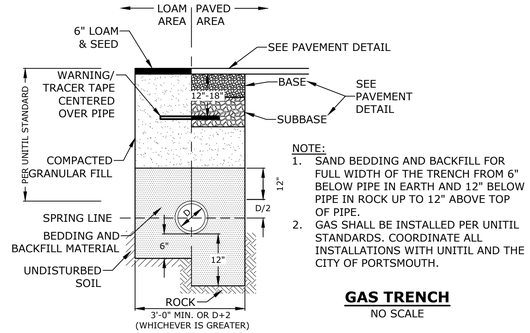
NOTES:
1. DO NOT DISCHARGE SEDIMENT-LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUNOFF, WATER FROM EXCAVATIONS) TO THE TREE BOX FILTER DURING ANY STAGE OF CONSTRUCTION.
2. DO NOT TRAFFIC OR COMPACT EXPOSED SOIL SURFACE WITHIN THE AREA OF THE FILTER WITH CONSTRUCTION EQUIPMENT. PERFORM EXCAVATION FOR THE CONSTRUCTION OF THIS BMP WITH EQUIPMENT POSITIONED OUTSIDE THE LIMITS OF THE SYSTEM.

TREE BOX FILTER
NO SCALE



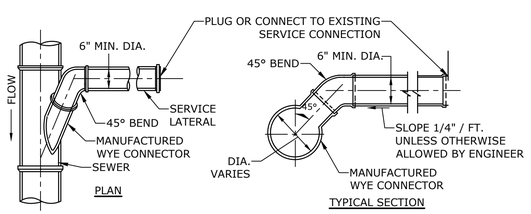
NOTES:
1. HORIZONTAL JOINTS BETWEEN THE SECTIONS OF PRECAST CONCRETE BARRELS SHALL BE PER CITY OF PORTSMOUTH DPW STANDARD AND SHALL BE SEALED FOR WATERTIGHTNESS USING A DOUBLE ROW ELASTOMERIC OR MASTIC-LIKE GASKET.
2. PIPE TO MANHOLE JOINTS SHALL BE PER CITY OF PORTSMOUTH STANDARD.
3. FOR BITUMASTIC TYPE JOINTS THE AMOUNT OF SEALANT SHALL BE SUFFICIENT TO FILL AT LEAST 75% OF THE JOINT CAVITY.
4. ALL GASKETS, SEALANTS, MORTAR, ETC. SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' WRITTEN INSTRUCTIONS.

MANHOLE JOINTS
NO SCALE

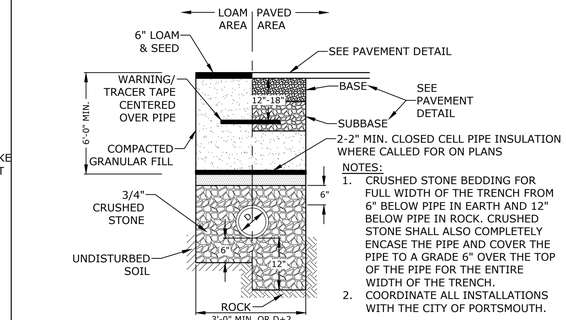


NOTE:
1. SAND BEDDING AND BACKFILL FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW PIPE IN EARTH AND 12" BELOW PIPE IN ROCK UP TO 12" ABOVE TOP OF PIPE.
2. GAS SHALL BE INSTALLED PER UNITIL STANDARDS. COORDINATE ALL INSTALLATIONS WITH UNITIL AND THE CITY OF PORTSMOUTH.

GAS TRENCH
NO SCALE

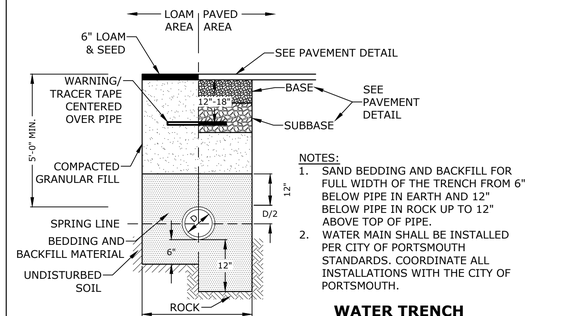


STANDARD SERVICE LATERAL CONNECTION
NO SCALE



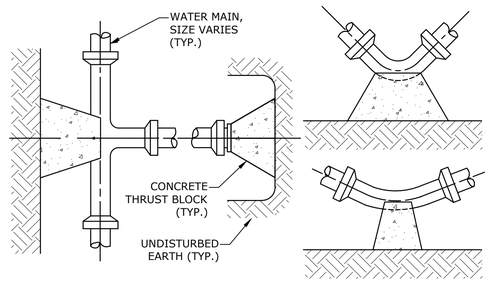
NOTES:
1. CRUSHED STONE BEDDING FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW PIPE IN EARTH AND 12" BELOW PIPE IN ROCK. CRUSHED STONE SHALL ALSO COMPLETELY ENCASE THE PIPE AND COVER THE PIPE TO A GRADE 6" OVER THE TOP OF THE PIPE FOR THE ENTIRE WIDTH OF THE TRENCH.
2. COORDINATE ALL INSTALLATIONS WITH THE CITY OF PORTSMOUTH.

SEWER SERVICE TRENCH
NO SCALE



NOTES:
1. SAND BEDDING AND BACKFILL FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW PIPE IN EARTH AND 12" BELOW PIPE IN ROCK UP TO 12" ABOVE TOP OF PIPE.
2. WATER MAIN SHALL BE INSTALLED PER CITY OF PORTSMOUTH STANDARDS. COORDINATE ALL INSTALLATIONS WITH THE CITY OF PORTSMOUTH.

WATER TRENCH
NO SCALE



TEST PRESSURE = 200psi	SQUARE FEET OF CONCRETE THRUST BLOCKING BEARING ON UNDISTURBED MATERIAL				
REACTION TYPE	PIPE SIZE				
	4"	6"	8"	10"	12"
A 90°	0.89	2.19	3.82	11.14	17.24
B 180°	0.65	1.55	2.78	8.38	12.00
C 45°	0.48	1.19	2.12	6.02	9.32
D 22-1/2°	0.25	0.60	1.06	3.08	4.74
E 11-1/4°	0.13	0.30	0.54	1.54	2.38

NOTES:
1. POUR THRUST BLOCKS AGAINST UNDISTURBED MATERIAL, WHERE TRENCH WALL HAS BEEN DISTURBED, EXCAVATE LOOSE MATERIAL AND EXTEND THRUST BLOCK TO UNDISTURBED MATERIAL. NO JOINTS SHALL BE COVERED WITH CONCRETE.
2. ON BENDS AND TEES, EXTEND THRUST BLOCKS FULL LENGTH OF FITTING.
3. PLACE BOARD IN FRONT OF ALL PLUGS BEFORE POURING THRUST BLOCKS.
4. WHERE M.J. PIPE IS USED, M.J. PLUG WITH RETAINER GLAND MAY BE SUBSTITUTED FOR END BLOCKINGS.
5. INSTALLATION AND STANDARD DIMENSIONAL REQUIREMENTS SHALL BE WITH CITY OF PORTSMOUTH WATER DEPARTMENT STANDARDS.

THRUST BLOCKING DETAIL
NO SCALE

Tighe&Bond

PROPOSED MULTI-FAMILY DEVELOPMENT

100 DURGIN LANE OWNER, LLC

100 DURGIN LANE
PORTSMOUTH,
NEW HAMPSHIRE

MARK	DATE	DESCRIPTION

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DRAWN BY:	BKC
DESIGNED/CHECKED BY:	NAH
APPROVED BY:	PMC

DETAILS SHEET

SCALE: AS SHOWN

C-606

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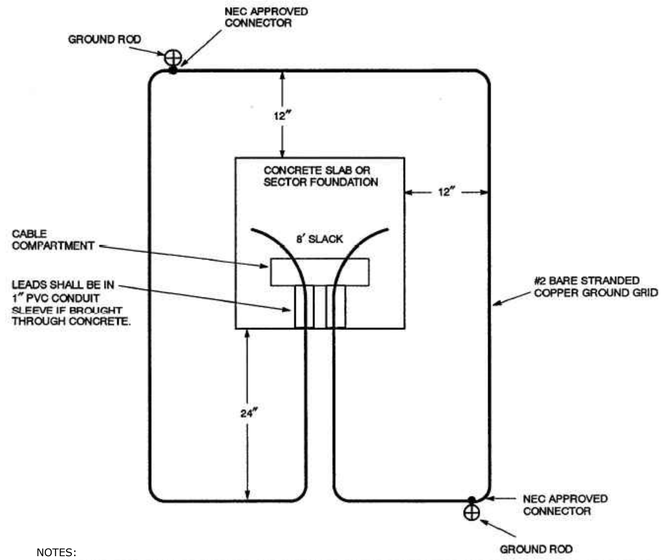
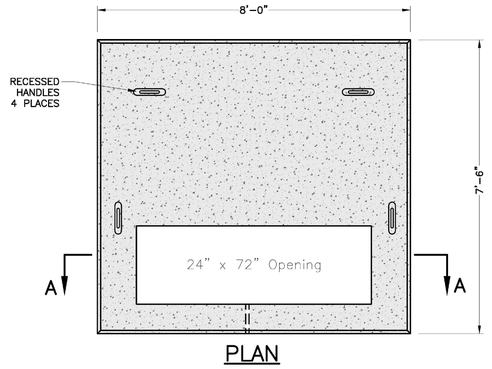
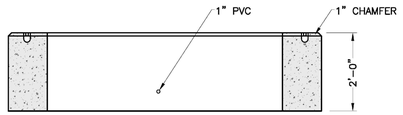


NOTES:
THE GROUND GRID SHALL BE SUPPLIED AND INSTALLED BY THE CONTRACTOR AND IS TO BE BURIED AT LEAST 12 INCHES BELOW GRADE. EIGHT FEET OF EXTRA WIRE FOR EACH GROUND GRID LEG SHALL BE LEFT EXPOSED IN THE CABLE COMPARTMENT TO ALLOW FOR THE CONNECTION TO THE TRANSFORMER. THE TWO 8-FOOT GROUND RODS MAY BE EITHER GALVANIZED STEEL OR COPPERWELD AND THEY SHALL BE CONNECTED TO THE GRID WITH NEC APPROVED CONNECTORS.

PAD-MOUNTED EQUIPMENT GROUNDING GRID DETAIL
NO SCALE



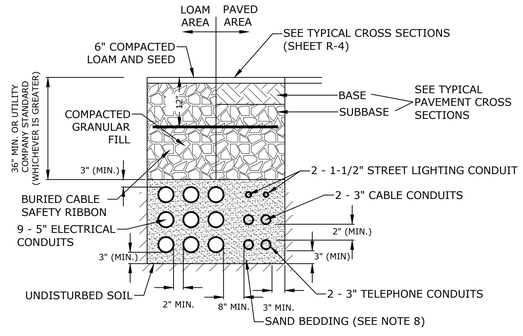
PLAN



SECTION A–A

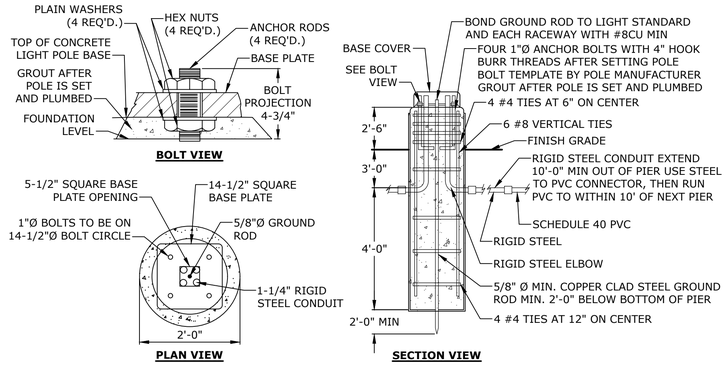
NOTES:
1. DIMENSIONS SHOWN REPRESENT TYPICAL REQUIREMENTS. MANHOLE LOCATIONS AND REQUIREMENTS SHALL BE COORDINATED WITH EVERSOURCE PRIOR TO CONSTRUCTION
2. CONCRETE MINIMUM STRENGTH - 4,000 PSI @ 28 DAYS
3. STEEL REINFORCEMENT - ASTM A615, GRADE 60
4. PAD MEETS OR EXCEEDS EVERSOURCE SPECIFICATIONS

3-PHASE TRANSFORMER PAD
NO SCALE



NOTES:
1. NUMBER, MATERIAL, AND SIZE OF UTILITY CONDUITS TO BE DETERMINED BY LOCAL UTILITY OR AS SHOWN ON ELECTRICAL DRAWINGS. CONTRACTOR TO PROVIDE ONE SPARE CONDUIT FOR EACH UTILITY TO BUILDING.
2. DIMENSIONS SHOWN REPRESENT OWNERS MINIMUM REQUIREMENTS. ACTUAL DIMENSIONS MAY BE GREATER BASED ON UTILITY COMPANY STANDARDS, BUT SHALL NOT BE LESS THAN THOSE SHOWN.
3. NO CONDUIT RUN SHALL EXCEED 360 DEGREES IN TOTAL BENDS.
4. A SUITABLE PULLING STRING, CAPABLE OF 200 POUNDS OF PULL, MUST BE INSTALLED IN THE CONDUIT BEFORE UTILITY COMPANY IS NOTIFIED TO INSTALL CABLE. THE STRING SHOULD BE BLOWN INTO THE CONDUIT AFTER THE RUN IS ASSEMBLED TO AVOID BONDING THE STRING TO THE CONDUIT.
5. UTILITY COMPANY MUST BE GIVEN THE OPPORTUNITY TO INSPECT THE CONDUIT PRIOR TO BACKFILL. THE CONTRACTOR IS RESPONSIBLE FOR ALL REPAIRS SHOULD THE UTILITY COMPANY BE UNABLE TO INSTALL ITS CABLE IN A SUITABLE MANNER.
6. ALL CONDUIT INSTALLATIONS MUST CONFORM TO THE CURRENT EDITION OF THE NATIONAL ELECTRIC SAFETY CODE, STATE AND LOCAL CODES AND ORDINANCES, AND, WHERE APPLICABLE, THE NATIONAL ELECTRIC CODE.
7. ALL 90° SWEEPS WILL BE MADE USING RIGID GALVANIZED STEEL. SWEEPS WITH A 36 TO 48 INCH RADIUS.
8. SAND BEDDING TO BE REPLACED WITH CONCRETE ENCASEMENT WHERE COVER IS LESS THAN 3 FEET, WHEN LOCATED BELOW PAVEMENT, OR WHERE SHOWN ON THE UTILITIES PLAN.

ELECTRICAL AND COMMUNICATION CONDUIT
NO SCALE



NOTES
1. PAINT BASE SAFETY YELLOW (UNLESS PROTECTED BY CURBED ISLAND).
2. CONCRETE TO BE CLASS A, 4000 PSI, AIR ENTRAINED STEEL TO BE 60 KSI
3. REFER TO ELECTRICAL PLANS FOR WIRING DETAILS.
4. LIGHT POLE BASE DETAIL FOR BIDDING PURPOSES ONLY. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL, TO INCLUDE PERFORMANCE SPECIFICATIONS, CALCULATIONS AND NH LICENSED STRUCTURAL ENGINEER'S STAMP FOR LIGHT POLE FOUNDATION.

TYPICAL LIGHT POLE BASE
NO SCALE

Tighe&Bond

PROPOSED MULTI-FAMILY DEVELOPMENT

100 DURGIN LANE OWNER, LLC

100 DURGIN LANE
PORTSMOUTH,
NEW HAMPSHIRE

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APPROVED BY:	PMC

DETAILS SHEET

SCALE: AS SHOWN

C-607

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WETLAND DELINEATION REPORT

100 Durgin Lane
Portsmouth, NH
February 28, 2024

As requested, I am pleased to provide the following report documenting the wetland delineation performed by Gove Environmental Services, Inc. in connection with the above referenced property. The work was conducted on three lots, referenced on the City of Portsmouth assessors' maps as lots 239-13-2, 239-16, and 239-18 which together total approximately 26.15 acres (the Site). The resource areas discussed in this report are depicted on the enclosed sketch.

WETLAND DELINEATION

The delineation work was performed on November 11, 2023 by Brendan Quigley utilizing the following standards:

1. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region,* (Version 2.0) January 2012, U.S. Army Corps of Engineers.
2. *Field Indicators of Hydric Soils in the United States, A Guide for Identifying and Delineating Hydric Soils*, Version 8.2. United States Department of Agriculture (2018).
3. *New England Hydric Soils Technical Committee. 2019 Version 4, Field Indicators for Identifying Hydric Soils in New England.* New England Interstate Water Pollution Control Commission, Lowell, MA.
4. *U.S. Army Corps of Engineers National Wetland Plant List, version 3.5.* (2020)

The central part of the Site is a developed commercial property consisting of a large retail building, associated parking areas, and a connector road running between Gosling Road and Arthur Brady Drive. The developed portions of the Site are generally well defined from the surrounding vegetated areas which are a mix of forest, dense early successional shrub growth, and emergent wetland. Wetlands were identified in three main areas east and north of the developed portion of the Site. These were demarcated with seven (7) series of consecutively numbered pink "WETLAND DELINEATION" flagging as shown on the attached sketch. The following table provides a description of each wetland area.

Table 1—Wetland Descriptions

Wetland ID	Cowardin Class[1]	Description/Notes
A and C	PSS1B	These two wetlands occupy the area under the power lines in the southeast corner of the Site. They are scrub shrub wetlands with a saturated hydrology, dominated by silky dogwood, willow, and glossy buckthorn. The wetlands are isolated from one another and surrounded by development or roadway. At the time of the delineation timber mats and stabilized access had been installed in and adjacent to the wetlands for power line maintenance activities.
B	PSS1Kh	This small wetland occupies a portion of a constructed stormwater basin. It is otherwise similar to Wetlands A and C.
#1-62	PSS1E/PFO1E PEM1/5E	This wetland lies on the west side of the connector road north of the existing development. Much of the wetland lies off-site and is predominantly a cattail/phragmites marsh. The edges of this emergent wetland that lie on the Site are a mix of scrub shrub and forested wetland dominated by speckled alder, common and glossy buckthorn, and red maple. Hydrology of the wetland is seasonally flooded /saturated. The wetland also contains a shallow pond and an old weir structure that appear to be components of legacy drainage system, now nearly indistinguishable from the larger wetland. The wetland drains into Wetland E via a culvert under the connector road.
D & E	PSS1E/PFO1E PEM1/5E	These two series of flags define two on-site portions of a larger wetland situated under the power lines and extending off-site to the north and east. Like the wetland defined by flags #1-62, to which this area is connected, this is predominantly a cattail and Phragmites marsh with a limited forested and scrub shrub edge.
F	PEM1/5B	This small wetland is essentially the same as D&E but appears to have been purposely separated from the main wetland by construction of a dyke and weir like the one contained in the #1-62 wetland. Though its intended function is not clear this is also likely part of a legacy drainage system.

[1] *Classification of Wetlands and Deepwater Habitats of the United States*. USFW Manual FWS/OBS–79/31 (1979)

OTHER REGULATED WETLAND RESOURCES

The NHDES' web-based Wetlands Permit and Planning Tool (WPPT) was used to identify the presence of other regulated wetland resources such as protected shoreland, prime wetland, and other Priority Resource Areas as defined by NH Administrative Rule Env-Wt 103.66. The planning tool indicates that no such areas are present on the property. A copy of the WPPT map is attached.

The field work for the delineation was conducted in late fall so no formal vernal pool survey was conducted. The large cattail and phragmites marsh wetland (D, E, F, 1-62) that constitutes most of the wetlands on the site is not typically suitable vernal pool habitat. The smaller scrub-shrub wetland (A, B, & C) do not appear to have the topography to maintain a pool. Furthermore, all the wetland on the site exist in a highly developed area with very minimal supporting upland habitat necessary to support vernal pool species. It is therefore very unlikely that any of the wetlands identified on the Site contain vernal pools. This should be verified during the vernal pool breeding season.

PORTSMOUTH WETLAND PROTECTION ORDINANCE

Section 10.1010 of the Portsmouth Zoning Ordinance regulates wetland resource areas including vegetated wetlands, vernal pools, tidal areas, streams, other surface water, and specific buffers to these resources. The Site only contains inland freshwater wetlands which are regulated under the Ordinance if they are 10,000 square feet in size or greater[2]. Wetlands B and F are 4,594 square feet and 2,442 square feet respectively, so these two small wetlands are not regulated under the Ordinance. Note, however, that these areas are still jurisdictional wetlands subject to state and federal regulation. All other wetlands identified on the Site, and a 100-foot buffer from these areas, are regulated under the Ordinance.

[2] Section 10.1013.10

HOLDEN ENGINEERING & SURVEYING, inc.

56 Old Suncook Road
PO Box 480 Concord, NH 03302
(603) 225-6449

9 Constitution Drive
Bedford, NH 03110
(603) 472-2078

TOPOGRAPHIC SURVEY PREPARED FOR

100 DURGIN LANE OWNER LLC

100 DURGIN LANE, PORTSMOUTH, ROCKINGHAM COUNTY, NEW HAMPSHIRE

	Date:	Revisions Description	Dr. By	Chk. By
1	11-10-23	REVISED PER CLIENT COMMENTS	DS	LR
2	02-13-24	MINOR UTILITY EDITS	DS	PH
3				
4				
5				

Book | Page

Date: 08-10-23
Scale: 1"=40'
Dr. By: DS Ck By: LR
Job No. 2320547
Sheet no 8 of 8

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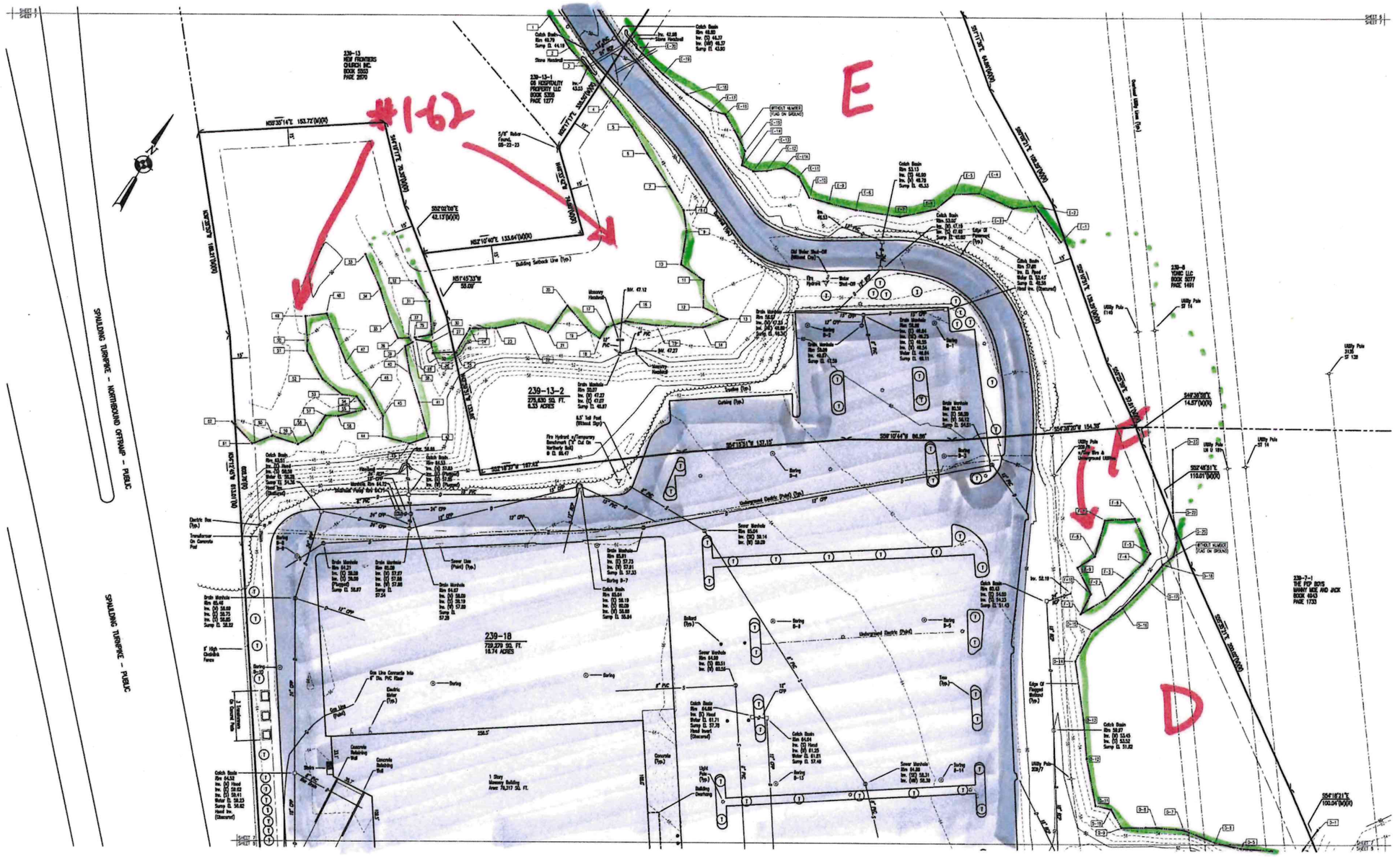
SHEETS-6-7-8



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Job No. 2320547
Sheet no 7 of 8

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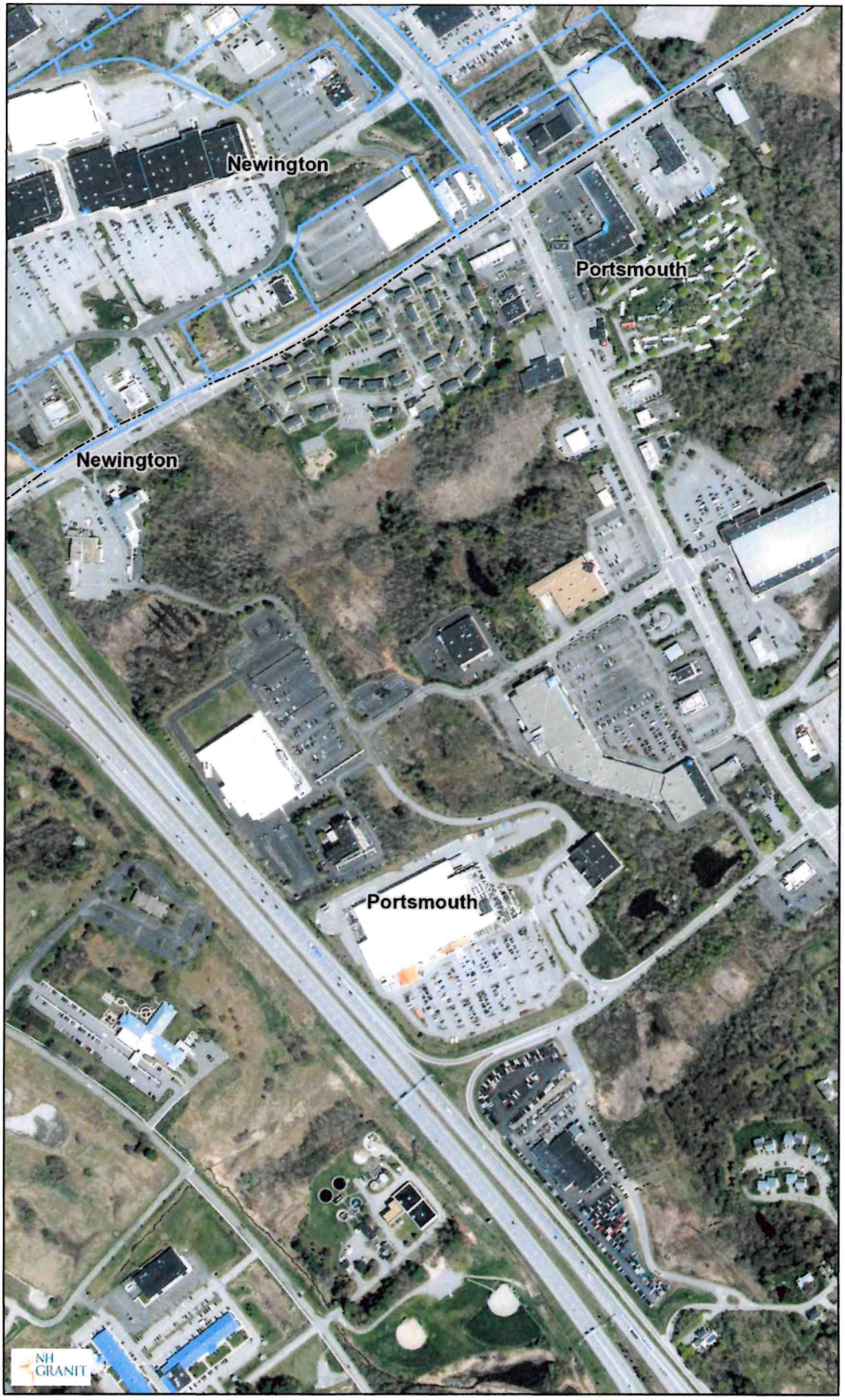
SHEETS-6-7-8

Durgin Lane
WPPT



Legend

- Additional Lines
- City/Town
- Prime Wetlands
- Prime Wetlands with 100
- Peatland
- Flood Plain Wetlands Adj
- Marsh-Scrub / Shrub Wet
- Dunes
  - backdune
  - foredune
  - interdune
  - other

Map Scale
1: 6,494

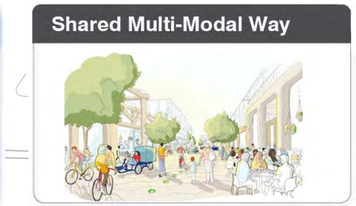
Map Generated: 2/29/2024

Notes

PROPOSED MULTI-FAMILY DEVELOPMENT
DURGIN LANE
PORTSMOUTH, NEW HAMPSHIRE

COMMUNITY SPACE EXHIBIT

POTENTIAL COMMUNITY SPACE



PROPOSED COMMUNITY SPACE:

		REQUIRED	PROVIDED
	POTENTIAL RESIDENTIAL SOCIAL SPACES		
	POTENTIAL COMMUNITY SPACE	113,915 SF (10%) (2.62 ACRES)	132,792 SF (11.6%) (3.05 ACRES)
	TOTAL DEVELOPMENT LOT 1,139,156 SF (26.15 ACRES)		
TOTAL COMMUNITY SPACE AREA		113,915 SF (2.62 ACRES)	132,792 SF (11.6%) (3.05 ACRES)

N

0 60' 120'
GRAPHIC SCALE

Tighe&Bond

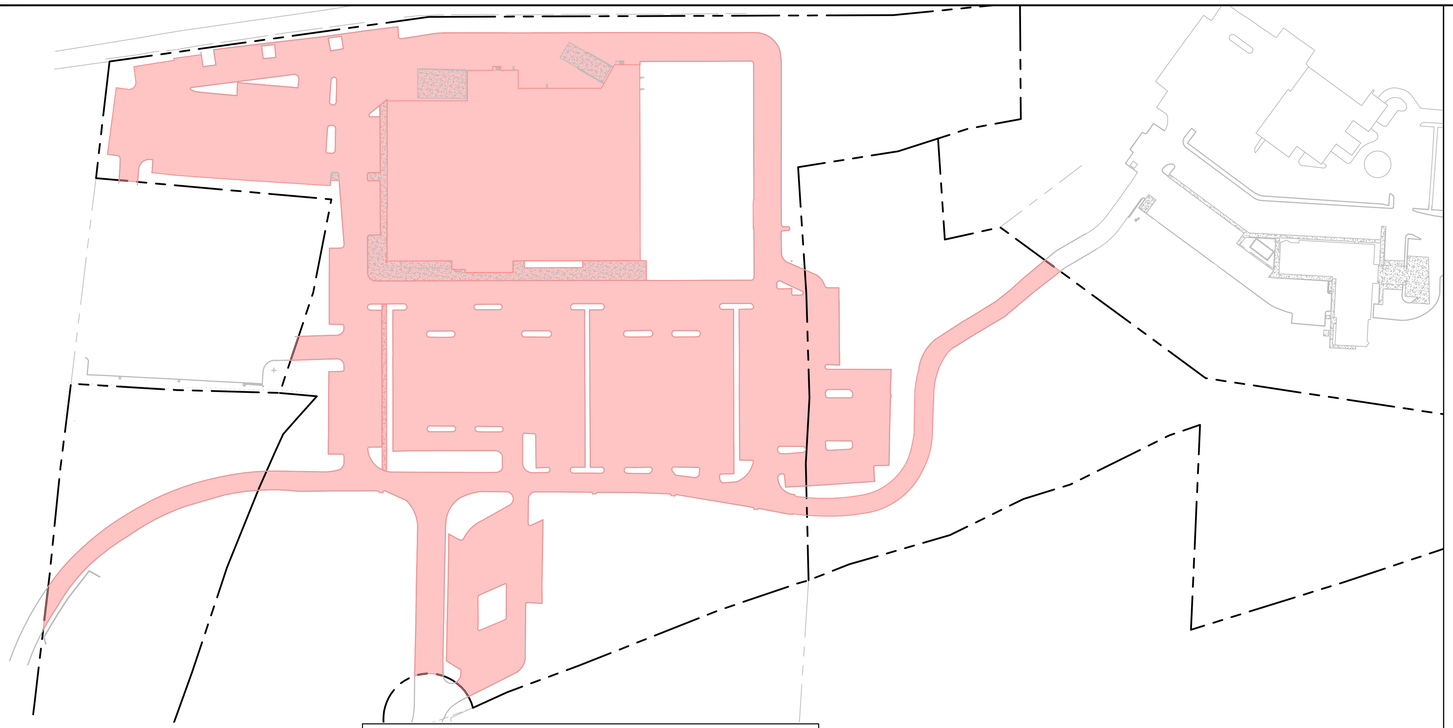
ACETO LANDSCAPE ARCHITECTURE + URBAN DESIGN

MARCH 5, 2024
E5071-001-FIGS.dwg

Last Save Date: March 4, 2024 10:04 AM By: BCURCIO
Plot Date: Monday, March 04, 2024 Plotted By: Benjamin Curcio
File Location: \\tighebond.com\data\Data\Projects\E5071 Eastern Real Estate\001 Portsmouth, NH 100 Durgin Lane\Drawings\AutoCAD\Sheet\E5071-001-FIGS.dwg Layout Tab: COMM

PROPOSED MULTI-FAMILY DEVELOPMENT
DURGIN LANE
PORTSMOUTH, NEW HAMPSHIRE

IMPERVIOUS SURFACE REDUCTION EXHIBIT



EXISTING IMPERVIOUS SURFACES
SCALE 1" = 100'

PROPOSED IMPERVIOUS SURFACES
SCALE 1" = 100'

Impervious Surface Within Site	
Existing Conditions	434,787 sf
Proposed Development	422,487 sf
Net Impervious Cover	-12,300 sf

N

0 100' 200'
GRAPHIC SCALE

Tighe&Bond

MARCH 5, 2024
E5071-001-FIGS.dwg

PROPOSED MULTI-FAMILY DEVELOPMENT
DURGIN LANE
PORTSMOUTH, NEW HAMPSHIRE

WETLAND BUFFER IMPERVIOUS SURFACE EXHIBIT

EXISTING WETLAND BUFFER IMPERVIOUS SURFACE
SCALE 1" = 100'

PROPOSED WETLAND BUFFER IMPERVIOUS SURFACE
SCALE 1" = 100'

Impervious Surface Within Buffer Area		
Local Wetland Buffer Setback	Impervious Surface	
	Existing Condition	Proposed Development
0 - 25 FT	3,114 SF	2,467 SF
25 - 50 FT	12,156 SF	9,769 SF
50 - 100 FT	45,974 SF	51,476 SF
Total Impervious Surface	**61,244 SF**	**63,712 SF**
Net Impervious Sruface	**2,468 SF**	

N

0 100' 200'
GRAPHIC SCALE

Tighe&Bond

MARCH 5, 2024
E5071-001-FIGS.dwg

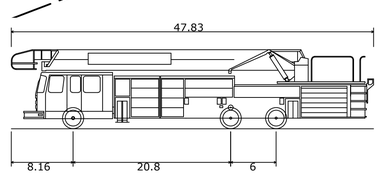
Last Save Date: March 4, 2024 9:54 AM By: BCURCIO
Plot Date: Monday, March 04, 2024 Plotted By: Benjamin Curcio
Xref File Location: \\tighebond.com\data\Data Projects\E\E5071 Eastern Real Estate\001 Portsmouth, NH 100 Durgin Lane\Drawings\AutoCAD\Sheet\E5071-001-FIGS.dwg Layout Tab: WETL-COMP

PROPOSED MULTI-FAMILY DEVELOPMENT
DURGIN LANE
PORTSMOUTH, NEW HAMPSHIRE

FIRE TRUCK TURNING EXHIBIT 1

VEHICLE WHEEL BASE

VEHICLE OVERHANG



LEGEND

FORWARD VEHICLE WHEEL BASE

FORWARD VEHICLE OVERHANG

Portsmouth Fire Truck	
Overall Length	47.830ft
Overall Width	8.500ft
Overall Body Height	10.432ft
Min Body Ground Clearance	0.862ft
Track Width	8.000ft
Lock-to-lock time	6.00s
Max Steering Angle (Virtual)	38.00°

0 50' 100'
GRAPHIC SCALE

Tighe&Bond

MARCH 5, 2024
E5071-001-FIGS.dwg

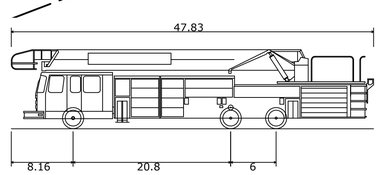
Last Save Date: February 28, 2024 5:42 PM By: NWILCOX
Plot Date: Monday, March 04, 2024 Plotted By: Benjamin Curcio
File Location: \\tighebond.com\data\Data\Projects\E5071 Eastern Real Estate\001 Portsmouth, NH 100 Durgin Lane\Drawings\AutoCAD\Sheet\E5071-001-FIGS.dwg Layout Tab: FIRE 1

PROPOSED MULTI-FAMILY DEVELOPMENT
DURGIN LANE
PORTSMOUTH, NEW HAMPSHIRE

FIRE TRUCK TURNING EXHIBIT 2

VEHICLE WHEEL BASE

VEHICLE OVERHANG



LEGEND

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FORWARD VEHICLE OVERHANG

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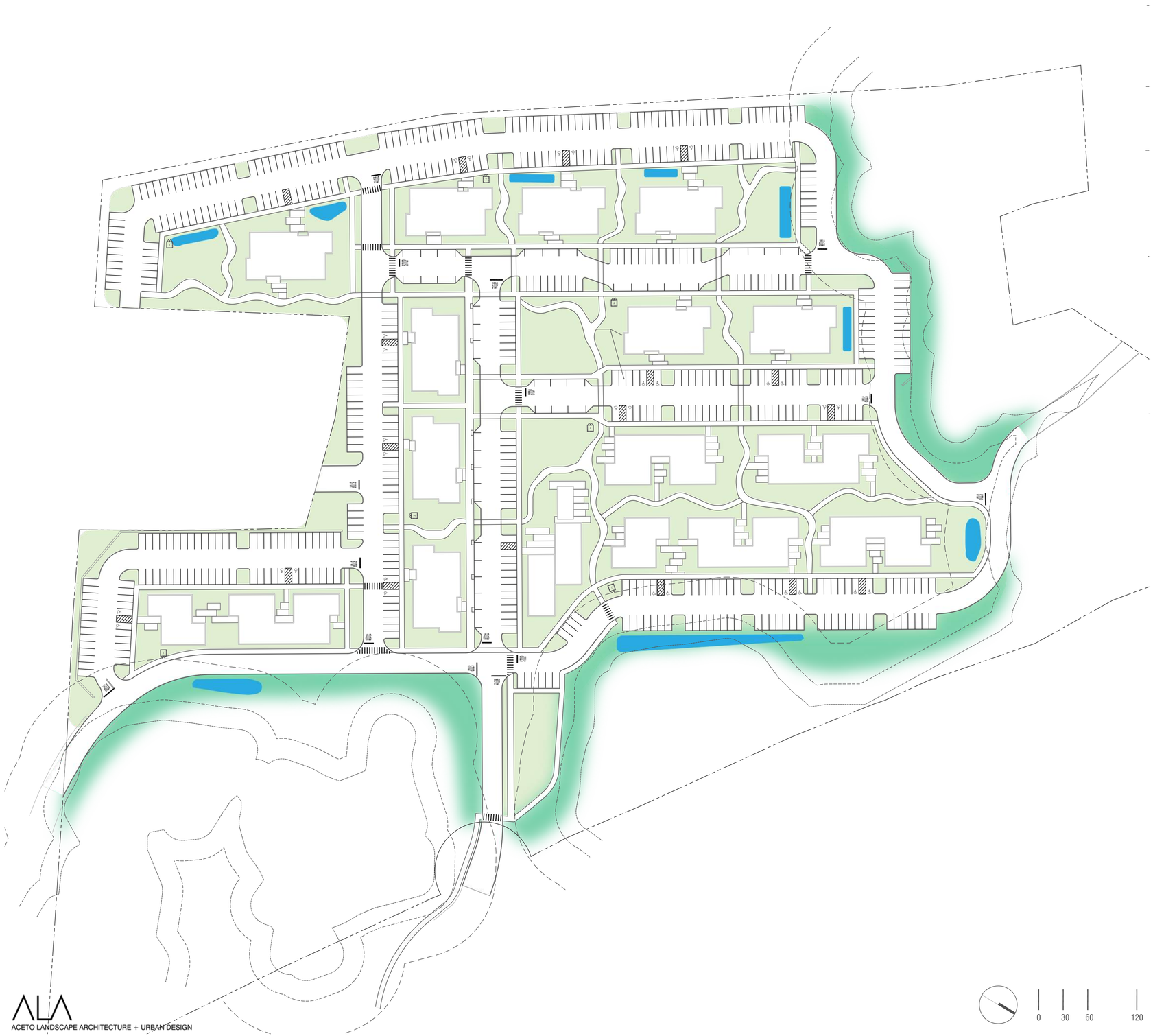
0 50' 100'
GRAPHIC SCALE

N

Tighe&Bond

MARCH 5, 2024
E5071-001-FIGS.dwg

100 DURGIN LANE |LANDSCAPE ZONES AND CHARACTER



ALA
ACETO LANDSCAPE ARCHITECTURE + URBAN DESIGN

LANDSCAPE ZONE CHARACTER

NATIVE WETLAND MEADOW BUFFER




RAIN GARDENS

INTERIOR SITE PLANTING




100 Durgin Lane Multi-family Redevelopment
Preliminary Water and Wastewater Demand Analysis

TO: City of Portsmouth, Technical Advisory Committee
FROM: Neil A. Hansen, PE
Patrick M. Crimmins, PE
COPY: 100 Durgin Lane Owner, LLC
DATE: March 5, 2024

The following memo is to provide an estimate of the average daily water and wastewater flows anticipated for the above-mentioned project for the purpose of allowing city staff to review capacity of the existing system. The flows have been calculated as a total development area.

The proposed project is located at 100 Durgin Lane and includes lots identified as Map 239 Lots 16, 16 & 18 on the City of Portsmouth Tax Maps. The site was previously home to Christmas Tree Shops and Bed, Bath and Beyond locations which are no longer in operation. The proposed project consists of the demolition of the existing Christmas Tree Shops and Bed, Bath and Beyond building and the construction of approximately 360 rental housing units in a mix of 3-story and 4-story buildings. The proposed sewer connection will be connected to the existing sewer manhole in Durgin Lane which has a 10" PVC outlet pipe.

As depicted in the table below, the average daily flow in gallons per day (GPD) has been calculated for the proposed project in accordance with Table 3-3: of Metcalf and Eddy, "Wastewater Engineering Treatment and Resource Reuse" as required under NHDES Env-Wq 700.

Overall Net Proposed Peak Gal/Day Design

Use	Design Unit	Unit Design Flow (GPD)	Design Flow
Proposed:			
Studio Apartment	63 Units	120 GPD/Bdrm	7,560 GPD
1 Brdm Apartment	163 Units	120 GPD/Bdrm	19,560 GPD
2 Brdm Apartment	134 Units	120 GPD/Bdrm	32,160 GPD
Community Building	5,000 SF	5 GPD/100 SF	250 GPD
	5 Employees	10 GPD/Employee	50 GPD
		Total Proposed:	**59,580 GPD**
Existing, To Be Removed:			
Shopping Center	632 Parking Spaces	2 GPD/Parking Space	1,264 GPD
	70 Employees	10 GPD/Employee	700 GPD
		Total, To Be Removed	**1,964 GPD**
		Total Net Flow	**57,616 GPD**

Site Vehicle Trip Generation Summary

- Reductions in vehicular trips across weekdays and Saturdays
- Slight increase in weekday mornings only
- Overall net reduction in vehicular trips

Existing - 78,317 SF Retail Space Peak Hour Period	Enter	Exit	LUC 821 Total
Weekday Morning	84	51	135
Weekday Afternoon	199	207	406
Saturday Midday	253	234	487
Weekday	2,644	2,644	5,288
Saturday	3,175	3,174	6,349

Proposed - 360 Units Residential Peak Hour Period	Enter	Exit	LUC 221 Total
Weekday Morning	34	113	147
Weekday Afternoon	86	55	141
Saturday Midday	74	71	145
Weekday	817	817	1,634
Saturday	823	822	1,645

Net Vehicular Trips (Proposed minus Existing Occupied Demand) Peak Hour Period	Enter	Exit	Total
Weekday Morning	**-50**	**62**	**12**
Weekday Afternoon	**-113**	**-152**	**-265**
Saturday Midday	**-179**	**-163**	**-342**
Weekday	**-1,827**	**-1,827**	**-3,654**
Saturday	**-2,352**	**-2,352**	**-4,704**

Source: Institute of Transportation Engineers, Trip Generation, 11th Edition, 2021
Land Use - 221 [Residential - Multifamily Housing (Mid-Rise)]
Land Use - 821 [Shopping Plaza (40-150k)]

The State of New Hampshire
Department of Environmental Services

Robert R. Scott, Commissioner

March 26, 2024

PORTSMOUTH MUNICIPAL CLERK/CONSERVATION COMMISSION
1 JUNKINS AVE
PORTSMOUTH NH 03801

Re: Received Standard Dredge and Fill Wetlands Permit Application (RSA 482-A)
NHDES File Number: 2024-00792
Subject Property: 333 New Castle Ave, Portsmouth, Tax Map #207, Lot #2

Dear Sir or Madam:

On March 26, 2024, the New Hampshire Department of Environmental Services (NHDES) Wetlands Bureau received the above-referenced Standard Dredge and Fill Wetlands Permit Application (Application). On March 26, 2024, NHDES determined the Application was administratively complete in accordance with RSA 482-A:3, XIV. *Please note this letter is **not** a permit or authorization to begin work.*

Pursuant to RSA 482-A:11, III, if notification by a local conservation commission, local river management advisory committee, or the New Hampshire Rivers Council pursuant to this paragraph is not received by the department within 14 days (**April 4, 2024**) following the date the notice is filed with the municipal clerk, the department shall not suspend its normal action, but shall proceed as if no notification has been made. Please include the NHDES file number on the written notification.

Please provide a copy of this letter to all local level departments, boards, and commissions. Pursuant to current state laws and regulations, NHDES is not authorized to consider local zoning and regulatory issues pertaining to a project. These issues must be addressed at the local level.

If you have any questions, please contact the Wetlands Bureau at (603) 271-2147.

Sincerely,

Brandy Holmes
Application Receipt Center, Wetlands Bureau
Land Resources Management, Water Division

The State of New Hampshire

Department of Environmental Services

Robert R. Scott, Commissioner

March 26, 2024

PORTSMOUTH MUNICIPAL CLERK/CONSERVATION COMMISSION
1 JUNKINS AVE
PORTSMOUTH NH 03801

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Sincerely,

Brandy Holmes

Brandy Holmes
Application Receipt Center, Wetlands Bureau
Land Resources Management, Water Division

The State of New Hampshire
Department of Environmental Services

Robert R. Scott, Commissioner

March 29, 2024

MR JOHN (JACK) GARDNER
50 ODIORNE POINT ROAD
PORTSMOUTH NH 03801

Re: Restoration Plan Approval
Land Resources Management File Number: 2024-00153
Subject Property: 50 Odiorne Point Road, Portsmouth, Tax Map #224, Lot #3

Dear Mr. Gardner:

On March 14, 2024, the New Hampshire Department of Environmental Services (NHDES) Land Resources Management Program received a proposed site restoration plan (Restoration Plan) for the above-referenced property (Property). NHDES hereby approves the Restoration Plan as submitted, subject to the following specific conditions. If there is a conflict between the Restoration Plan and this Restoration Plan Approval, this Restoration Plan Approval will control.

1. **By September 30, 2024**, approximately 4,572 square feet of the 100-foot previously developed upland tidal buffer zone, 100-foot prime wetland buffer, freshwater wetlands, and Protected Shoreland shall be restored, monitored, and managed in accordance with the Restoration Plan and all project descriptive details submitted to NHDES on March 14, 2024, by Normandeau Associates, Inc.
2. The restoration shall be conducted according to the Restoration Plan and as conditioned by this Restoration Plan Approval. Any changes or alterations to the Restoration Plan must be requested in writing and approved in writing by NHDES prior to implementing any such changes or alterations.
3. All persons involved in restoration activities on the Property shall have read and become familiar with the provisions of the Restoration Plan and this Restoration Plan Approval prior to beginning the activities. A copy of the Restoration Plan and this Restoration Plan Approval shall be kept posted at the Property during the restoration activities.
4. A certified wetland scientist (CWS), horticultural professional, or qualified professional shall supervise the restoration activities within RSA 482-A jurisdiction on the Property to ensure that the restoration is accomplished pursuant to this Restoration Plan Approval.
5. Siltation, erosion, and turbidity controls shall be installed prior to restoration, shall be maintained during restoration activities, and shall remain until the area is stabilized.
6. All steps shall be taken to ensure that no water quality violations occur on the Property during restoration activities.
7. Silt fence and hay bales shall not be used across streams, channels, swales, ditches, or other drainage ways.
8. Within three days following the last activity in the restoration area or where restoration activities are suspended for more than three days, all exposed soils shall be stabilized by seeding and mulching. In accordance with Env-Wt 307.12(d), mulch used within RSA 482-A jurisdiction shall be natural straw or equivalent non-toxic, non-seedbearing organic material.
9. No machinery shall be used within undisturbed NHDES jurisdictional areas on the Property during the restoration unless vegetation and soil is not disturbed.
10. All material removed during restoration activities shall be placed out of NHDES' jurisdiction.

David Price
Land Resource Management Program
Department of Environmental Services
222 International Drive Suite 175
Portsmouth, NH 03801

Should you have any questions, please contact me at David.Price@des.nh.gov or (603) 559-1514.

Sincerely,

David Price
East Region Supervisor
Land Resources Management Program
Water Division

cc: Portsmouth Conservation Commission
Portsmouth Planning Department
Normandeau Associates, Inc.

THE STATE OF NEW HAMPSHIRE
WETLANDS COUNCIL

APPEAL OF SAGAMORE LANDING CONDOMINIUM ASSOCIATION AND DAVID AND MARGARET WITHAM

NOTICE OF APPEAL
(NHDES Wetlands Permit No 2018-03677)

NOW COMES Sagamore Landing Condominium Association for itself and as agent for all the unit owners of Sagamore Landing Condominium Association, and David and Margaret Witham, Individually and as Trustee of the David C. Witham Revocable Trust of 2009 (together "Appellants"), by and through their attorneys, Sheehan Phinney Bass & Green, PA, and files this Petition for Appeal ("Petition") of the New Hampshire Department of Environmental Services ("Department") dated February 21, 2024 ("Decision") to approve a major impact project on Sagamore Creek proposed by Jon and Joan Dickinson ("Permitees"). This Petition is filed pursuant to RSA 21-O:14 and RSA 482-A:10.

A. Name and Address of Appellants

Sagamore Landing Condominium Association for itself and as agent for all the unit owners of Sagamore Landing Condominium Association
c/o Danielle Megliola, President
284 Walker Bungalow Road
Portsmouth, NH 03801
(917) 940-6604
danielle.megliola@gmail.com

David and Margaret Witham, Individually and as Trustees of the David C. Witham Revocable Trust of 2009
238 Walker Bungalow Road
Portsmouth, NH 03801
(603) 498-9084
withamarchitecture@gmail.com

B. Counsel for Appellants

John-Mark Turner
1000 Elm Street, 17th Floor
Manchester, NH 03101
(603) 627-8143
jturner@sheehan.com

C. Standing

Unit Owners of Sagamore Landing Condominium Association ("SLCA") are abutting landowners to a major tidal docking structure project proposed on abutting frontage. The SLCA has seven (7) unit owners. SLCA and unit owners were entitled to be noticed in accordance with RSA 482-A:9. David and Margaret Witham are the nearest abutters and are persons aggrieved by the Department decision in accordance with RSA 21-O:14 I-a and were entitled to be noticed in accordance with RSA 482-A:9.

D. Land Description

The land involved in the Decision is located at 220 Walker Bungalow Road in Portsmouth, New Hampshire and is a shorefront parcel on Sagamore Creek. The land is designated as Tax Map 223, Lot 20 and is referred to in the warranty deed to Jon and Joan Dickinson dated September 24, 2017, recorded October 30, 2017 at Rockingham County Registry of Deeds Book 5866, Page 1780.

E. Decision Being Appealed

On February 25, 2019, the Wetlands Bureau granted a permit to the Dickinsons to permanently impact a total of 760 square feet to construct a new tidal docking structure. The proposed structure consisted of a 4 foot x 10 foot access way connecting to a 4 foot x 100 foot fixed pier connecting to a 3 foot x 40 foot ramp connecting to a 10 foot x 20 foot float. The

overall structure length would be 150 feet. Because of the type and classification of this project, it also must be approved by the Governor and Executive Council.

The Appellants appealed that permit to this Council. That appeal is docketed at 19-04 WtC. At the July 24, 2019 pre-hearing conference in that matter, DES representatives said the agency had made a mistake by permitting the dock even though no abutting property line extension had been shown on the plans provided with the application. Since that time, the case has been stayed by July 24, 2019 order and subsequent additional orders following status reports by the parties.

On August 26, 2022, the applicant, submitted a new dock proposal to the Department. The Department treated the proposal as a request for a permit amendment under Env-Wt 314.07. The proposed dock was shorter than the original proposal and consists of a 4 foot x 5 foot access way connecting to a 4 foot x 20 foot fixed pier, connect to a 3 foot x 30 foot ramp connecting to a 20 foot x 10 foot float.

On February 21, 2024, the Department issued the attached decision (Exhibit A), approving the modified dock proposal.

F. Facts and Grounds for Appeal

1. SLCA unit owners own the Association property as tenants in common.
2. David Witham is Trustee of the David C. Witham Revocable Trust of 2009, which owns 238 Walker Bungalow Road. Margaret Witham is the Beneficiary of the David C. Witham Revocable Trust of 2009. Both David and Margaret Witham live at 238 Walker Bungalow Road.
3. The abutting lot that is the subject of this appeal was previously owned by the Ciotti family, Permitees' predecessor in title, who purchased the lot in 1962. The Ciottis

purchased 220 Walker Bungalow Road from a lobsterman and the house included a boat, traps, and a dock. The dock was likely constructed in the early 60s and was +/- 32 feet long. This roughly 32 foot long dock served the needs of a lobsterman, and the Ciotti family after that. Over time, the Ciotti's dock broke. In 2010, the Ciottis applied for a wetlands permit to install rip-rap and construct a tidal docking structure with an overall length of 55 feet, providing one slip on 53 feet of frontage on Sagamore Creek. *See* File #: 2010-3326, which is hereby incorporated by reference in its entirety. Ultimately, the Ciotti family never built this approved proposed dock.

4. The Witham's home is a year-round home. In the summer, the Withams and their children participate in frequent recreational activities directly out their backyard on Sagamore Creek, such as boating, kayaking, and swimming. In addition, the Witham family highly values the remaining view they have of Sagamore Creek.
5. The six (6) other families in SLCA also live in their Sagamore Creek homes year-round. They also use the Association's dock for boating, kayaking, paddle boarding, canoeing, and swimming.
6. Prior to issuance of the 2019 Permit Permittees did not in any way depict Appellants' abutting property line on plans submitted to the Department, even though such lines and their extensions are required by Env-Wt 603.07(b), and even though RSA 482-A:3, XIII(b) and Env-Wt 513.10(d)(2), prohibits boats from extending over the extension of an abutter's property line.
7. The recently issued permit is based on February 12, 2023 plans authored by Ambit Engineering. They are attached as Exhibit B. Unlike the 2019 plans, the 2023 plans do show an extended line on the eastern side of the Dickisons' parcel. However, the depicted

line is not an extension of the abutting property line. Instead, the line is shot from an arbitrary point along the boundary between the abutters' property and the mean high water line. In other words, the line is drawn from the boundary (at an arbitrary point) between the Appellants' property and the State's property.

8. The Appellants provided an expert opinion to DES by Steve Nix, who located the correct placement of the property line extension. Mr. Nix's report is attached as Exhibit C.

G. Statement of Relief Sought

Appellants request that the Wetlands Council, pursuant to RSA 482-A:10, VI, remand to the Department the Decision along with a Council determination that the Decision was unlawful and unreasonable, on the following grounds:

1. The decision was unlawful and unreasonable because the approved dock violates RSA 482-A:3, XII and Env-Wt 513.10(d)(2). The property line extension is correctly shown by Mr. Nix. The extension runs across the permitted dock such that no boat could tie up without extending over the extension line. The Department's decision erroneously and unreasonably relied on a property line extension that was not an extension of the abutting property line. Because the abutters have not consented to the encroachment on the property line extension, the permit cannot issued under the statute and rule.
2. The Decision was unlawful and unreasonable because the Department failed to convene a public hearing under RSA 482-A:8 for this major tidal wetlands project by erroneously concluding that the project was not of substantial public interest and would not have a significant impact on or adversely affect Sagamore Creek's resources.

3. The Decision was unlawful and unreasonable because the Department failed to apply Env Wt 513.10(e), which requires an applicant to explain, with reference to the factors in 513.10(d)(1), why they are deviating from a standard parallel docking configuration.
4. The Decision was unlawful and unreasonable because it erroneously failed to consider or make sufficient findings with regard to practicable alternatives that would have less adverse impact on the area and environments under the Department's jurisdiction.
    a. A mooring would have less adverse impact than a dock.
    b. The owner prior to the Ciottis used and maintained a +/- 32 foot long dock that was sufficient for his use as a lobsterman.
    c. The Department failed to consider or make appropriate findings on other practicable and available alternatives with less adverse impact on the area and abutters, and unlawfully and unreasonably issued a permit for a major docking structure. *See* Env-Wt 313.03
5. The Decision was unlawful and unreasonable because it failed to adequately consider or address potential impacts of the proposed project on public navigation and recreation and instead relied upon the earlier 2019 limited review of navigational impacts to the federally designated navigation channel without distinguishing between high, mid, and low tides, or addressing potential impacts on recreational activities outside the federal channel.
    a. Numerous property owners along Sagamore Creek use the creek for kayaking, canoeing, paddle boarding, swimming, and similar recreational activities.
    b. The Department only considered Pease Development Authority, Division of Ports and Harbors opinion, submitted by Permittees, that it would have "no

negative effect on navigation in the [federal] channel." PDA's only considered the earlier dock configuration not the modified proposal.

c. The Department failed to include any findings on the impact the dock would have on the recreational opportunities on the creek, or the navigation by kayaks and other low draft and/or non-motorized vessels at mid to low tides.

6. The Decision was unlawful and unreasonable because the permitted dock unreasonably interferes with the ability of abutting owners to use and enjoy their properties:

   a. The Decision includes no Findings on the visual impact to Appellants' current view, which would unreasonably affect Appellants' property values and use and enjoyment of their properties. RSA 482-A:11 and Env-Wt Parts 300 and 400.

7. The Department unreasonably and unlawfully approved the project in contravention of Env-Wt 513.11, requiring that an applicant with less than 75' of shoreline frontage cannot have a docking structure larger than 4 feet x 24 feet.

   a. The Department recognized the lot at 220 Walker Bungalow Road as having 53' of shoreline frontage when granting approval to the Ciottis in 2010.

   b. The tax map of 220 Walker Bungalow Road indicates the property has somewhere between 50' and 60' of shoreline frontage.

WHEREFORE, Appellants hereby request the Wetlands Council to:

A. Remand the Decision to the Department with instructions to deny the permit application; and

B. Order such other relief deemed just and proper.

Respectfully submitted,

SAGAMORE LANDING CONDOMINIUM ASSOCIATION AND DAVID AND MARGARET WITHAM

By Its Attorneys,

SHEEHAN PHINNEY BASS & GREEN, PA

Dated: March 22, 2024

By: */s/ John-Mark Turner*
John Mark Turner (NH Bar #15610)
1000 Elm Street, PO Box 3701
Manchester, NH 03105
(603) 627-8143; jturner@sheehan.com

CERTIFICATION

I certify that a copy of the foregoing was on this date emailed and/or mailed this Notice pursuant to Ec-Wet 201.03 and 203.01(d), to the Director of the Water Division, the other parties to the department decision, Department c/o Collis Adams, New Hampshire Department of Environmental Services, the Portsmouth City Council, Planning Board and Conservation Commission, and the abutters as required by Env-WtC 203.02(a)(12).

Dated: March 22, 2024

By: */s/ John-Mark Turner*
John-Mark Turner

The State of New Hampshire
Department of Environmental Services

Robert R. Scott, Commissioner

February 21, 2024

JOAN/JON DICKINSON
137 ELWYN AVE
PORTSMOUTH NH 03801

Re: Approved Standard Dredge and Fill Wetlands Permit Application (RSA 482-A)
NHDES File Number: 2018-03677
Subject Property: 220 Walker Bungalow Rd, Portsmouth, Tax Map #223, Lot #20

Dear Owner:

On February 21, 2024, the New Hampshire Department of Environmental Services (NHDES) Wetlands Bureau approved the above-referenced application to impact a total of 390 square feet (SF), 20 SF of permanent impact to the previously developed upland tidal buffer zone and 370 SF of permanent impact to tidal wetlands, to construct a new tidal docking structure. The structure consists of a 4 foot by 5 foot access way connecting to a 4 foot by 20 foot fixed pier connecting to a 3 foot by 30 foot ramp connecting to a 10 foot by 20 foot float. The overall structure length seaward of the highest observable tide line is 52 feet, providing one slip on 128 feet of frontage on Sagamore Creek.

In accordance with RSA 482-A:10, RSA 21-O:14, and Rules Env-WtC 100-200, **any person aggrieved by this decision may file a Notice of Appeal directly with the NH Wetlands Council (Council) within 30 days of the decision date, February 21, 2024**. Every ground claiming the decision is unlawful or unreasonable must be fully set forth in the Notice of Appeal. Only the grounds set forth in the Notice of Appeal are considered by the Council. Information about the Council, including Council Rules, is available at https://www.nhec.nh.gov/wetlands-council/about. For appeal related issues, contact the Council Appeals Clerk at (603) 271-6072.

In accordance with RSA 482-A:3, II(a) and Env-Wt 313.02(b), as your project is a major project located in a great pond or in public waters of the state, your application must also be approved by the Governor and the Executive Council. Upon expiration of the appeal period, a redacted copy of the file is submitted to the Governor and the Executive Council for their consideration. Information about the Governor and the Executive Council is available at https://www.nh.gov/council/.

Sincerely,

Philip Trowbridge, P.E., Manager
Land Resources Management, Water Division

Enclosure: Copy of Decision

cc: Agent
Municipal Clerk/Conservation Commission
Abutters
ec: Assistant Administrator, Wetlands Bureau

FILE #2018-03677
JOAN/JON DICKINSON
PORTSMOUTH

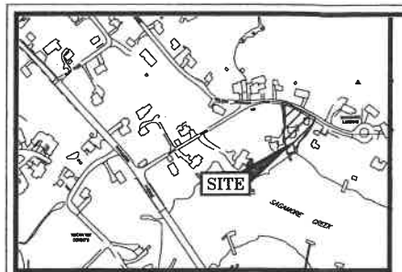
DECISION DATE:
February 21, 2024

DECISION:
Impact a total of 390 square feet (SF), 20 SF of permanent impact to the previously developed upland tidal buffer zone and 370 SF of permanent impact to tidal wetlands, to construct a new tidal docking structure. The structure consists of a 4 foot by 5 foot access way connecting to a 4 foot by 20 foot fixed pier connecting to a 3 foot by 30 foot ramp connecting to a 10 foot by 20 foot float. The overall structure length seaward of the highest observable tide line is 52 feet, providing one slip on 128 feet of frontage on Sagamore Creek.

CONDITIONS:
AMENDED CONDITIONS
1. All work shall be in accordance with plans by Ambit Engineering Inc. dated August 2022, and revised through February 13, 2023, last received by the NH Department of Environmental Services (NHDES) on February 16, 2023.
2. Not less than 5 state business days prior to starting work authorized by this permit, the permittee shall notify the NHDES Wetlands Bureau Pease office and the local conservation commission in writing of the date on which work under this permit is expected to start.
3. This permit shall not be effective until recorded at the Rockingham County Registry of Deeds Office by the permittee. A copy of the recorded permit shall be submitted to the NHDES Wetlands Bureau prior to construction.
4. Any future work in jurisdiction as specified in RSA 482-A on this property will require a new application and approval by the NHDES Wetlands Bureau.
5. No person undertaking any activity shall cause or contribute to, or allow the activity to cause or contribute to, any violations of the surface water quality standards in RSA 485-A and New Hampshire Administrative Rule Env-Wq 1700.
6. This tidal docking structure shall be the only docking structure on this water frontage.
7. All work shall be conducted in compliance with RSA 483-B.
8. Construction of the dock shall occur from a barge equipped with a crane, at low tide, to reduce potential impacts to the river bank and the estuarine intertidal and subtidal wetlands.
9. Pile driving or pile removal work shall be done during low tide to the maximum extent practicable.
10. Decking shall have at least 3/4-inch spacing between the decking planks to provide sufficient sunlight penetration and rainfall to underlying vegetation.
11. Appropriate siltation/erosion/turbidity controls shall be in place prior to construction, shall be maintained during construction, and shall remain in until the area is stabilized.
12. Work shall be conducted in a manner so as to minimize turbidity and sedimentation to surface waters and wetlands.
13. Work shall be conducted in a manner that avoids excessive discharges of sediments to fish spawning areas.
14. The seasonal structures, including but not limited to the ramp and float, shall be removed during the non-boating season and stored on the existing pier or in an upland location.
15. All construction-related debris shall be properly disposed of outside of the areas subject to RSA 482-A.
16. Within three days of final grading or temporary suspension of work in an area that is in or adjacent to wetlands or surface waters, all exposed soil areas shall be stabilized by seeding and mulching during the growing season, or if not within the growing season, by mulching with tack or netting and pinning on slopes steeper than 3:1.

FINDINGS:
1. This is a Major Project per New Hampshire Administrative Rule Env-Wt 303.04(a), projects located tidal wetlands, except for repair of existing structures.

2. The applicant has provided evidence which demonstrates that this proposal is the alternative with the least adverse impact to areas and environments under the department's jurisdiction per New Hampshire Administrative Rule Env-Wt 302.03.
3. The proposed dock is the minimum length necessary to provide access at this location for the duration of the tidal cycle and designed in such a way as to prevent the float from sitting on the mud at low tide.
4. The decking of the proposed dock will have a minimum of 3/4-inch spacing between the decking planks and the bottom of the pier will be a minimum of 4 feet above the substrate to provide adequate ambient light levels to support the underlying salt marsh community.
5. The permittee's contractor will be utilizing a barge and crane to complete construction of the dock from the water to minimize impacts to the tidal wetland resource.
6. The applicant has demonstrated by plan and example that each factor listed in New Hampshire Administrative Rule Env-Wt 302.04(a) and (c), Requirements for Application Evaluation, has been considered in the design of the project.
7. The Natural Heritage Bureau (NHB) report submitted with the application package (NHB18-3657) stated that although there was record of sensitive species in the vicinity, no impacts to rare or endangered species or exemplary natural communities are expected as a result of the project.
8. Other NHDES permits associated with this site include: 2018-01656 and 2018-02479 (issued August 21 and September 14, 2018, respectively) for impacts to the protected Shoreland and the previously-developed upland tidal buffer zone for redevelopment of the residential property; 2010-03326 (issued February 08, 2011) to replace a deteriorated timber bulk head with 187 linear feet of riprap stabilization, and; 1993-01664 (issued November 16, 1993) for impacts to the previously-developed upland tidal buffer zone for installation of a replacement septic system.
9. In accordance with RSA 482-A:8, NHDES finds that the requirements for a public hearing do not apply as the permitted project is not of substantial public interest, and will not have a significant impact on or adversely affect the values of the estuarine resource, as identified under RSA 482-A:1.
10. NHDES staff field inspection on February 22, 2019 found that the site is accurately represented in the application.
11. In correspondence dated December 26, 2018, the Pease Development Authority, Division of Ports and Harbors, determined that the project would have no negative effect on navigation in the channel.
12. In correspondence dated July 31, 2018, signed authorization was provided by the applicant to allow their agent to act on their behalf throughout the permitting process.
13. In correspondence dated February 19, 2019, the applicant requested a waiver to NH Administrative Rule Env-Wt 606.03(b), Piers, Docks, Wharves and Floats Criteria, to allow for less than 12 feet of separation between the two seaward pairs of proposed piles. As proposed, 8 sets of piles are structurally sufficient and strict adherence to the rule would require 9 sets of piles to be driven.
14. In accordance with New Hampshire Administrative Rule Env-Wt 204.04, a waiver will be granted if the project will not have an adverse impact to the environment or natural resources of the state, public health, or public safety, and the strict compliance with the rule will provide no benefit to the public and will cause an operational or economic hardship to the applicant.
15. Consistent with New Hampshire Administrative Rule Env-Wt 204.04, the Department finds that strict adherence to the rule would result in more impact to the environment and not benefit the public. Therefore, the Department waives the requirements set forth by New Hampshire Administrative Rules Env-Wt 606.03(b).
16. Per Rule Env-Wt 314.07(a) and subject to Env-Wt 314.07(b), the permittee has requested an amendment to the approved permit on February 16, 2023. The amended plan includes reducing the size of the docking structure from 760 square feet to 390 square feet.
17. The NHDES original approval of this docking structure was appealed by an abutter on May 10, 2019. Since that time, the parties requested and were granted a motion to stay by the Wetlands Council in order for the parties to try to reach agreement. While agreement has not been reached, the permittee submitted an amendment to NHDES requesting approval for a much smaller docking structure in order to resolve the appellants concerns.
18. In accordance with RSA-482-A:3, XIV.(e), the request does not constitute a "significant amendment".



LOCATION MAP SCALE 1"=300'

LEGEND:

EXISTING

N/F		NOW OR FORMERLY
RP		RECORD OF PROBATE
RCRD		ROCKINGHAM COUNTY REGISTRY OF DEEDS
11/17		MAP 11 / LOT 21
RR SPK FND	RR SPK SET	RAILROAD SPIKE FOUND/SET
IR FND	IR SET	IRON ROD FOUND/SET
IP FND	IP SET	IRON PIPE FOUND/SET
DH FND	DH SET	DRILL HOLE FOUND/SET
NHHB FND		NHDOT BOUND FOUND
TB FND		TOWN BOUND FOUND
BND w/DH	BND w/DH	BOUND w/ DRILL HOLE
ST BND w/DH	ST BND w/DH	STONE BOUND w/DRILL HOLE
		UNDERGROUND ELECTRIC
		OVERHEAD ELECTRIC/WIRES
100		CONTOUR
		EDGE OF PAVEMENT (EP)
		WOODS / TREE LINE

PREVIOUS DES PERMIT APPROVALS:

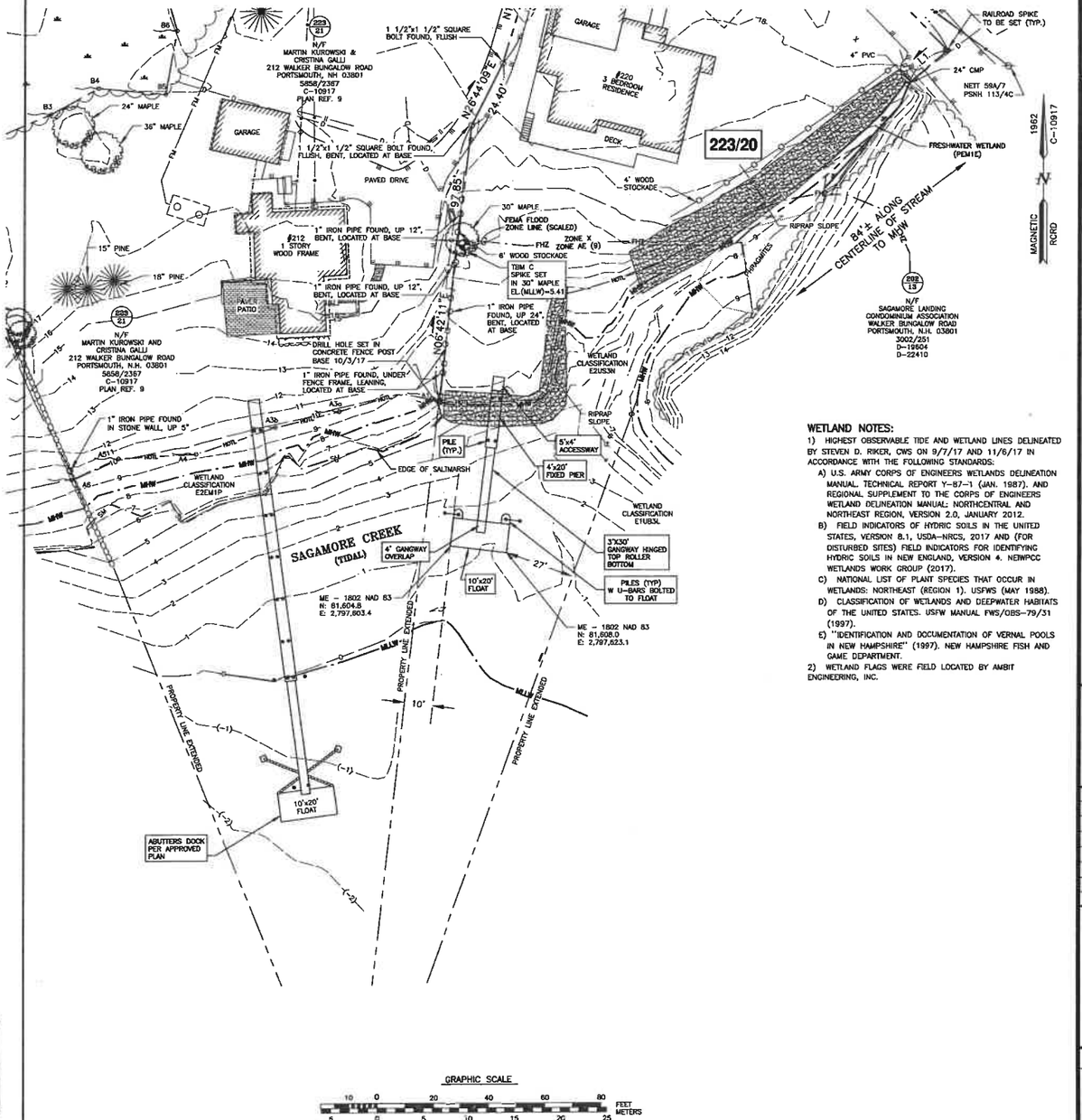
NH DES WETLANDS: 93-01664
NH DES WETLANDS: 2010-03326
NH DES WETLANDS: 2018-02479
NH DES SHORELAND: 2018-01656

I CERTIFY THAT THIS PLAN WAS PREPARED UNDER MY DIRECT SUPERVISION, THAT IT IS THE RESULT OF A FIELD SURVEY BY THIS OFFICE AND HAS AN ACCURACY OF THE CLOSED TRAVERSE THAT EXCEEDS THE PRECISION OF 1:15,000.

JOHN R. CHAGNON, LLS #738

DATE 2.13.23

STATE OF NEW HAMPSHIRE LAND SURVEYOR JOHN R. CHAGNON 738



WETLAND NOTES:

1) HIGHEST OBSERVABLE TIDE AND WETLAND LINES DELINEATED BY STEVEN D. RIKER, CWS ON 9/7/17 AND 11/6/17 IN ACCORDANCE WITH THE FOLLOWING STANDARDS:
   A) U.S. ARMY CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL. TECHNICAL REPORT Y-87-1 (JAN. 1987). AND REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, VERSION 2.0, JANUARY 2012.
   B) FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, VERSION 8.1, USDA-NRCS, 2017 AND (FOR DISTURBED SITES) FIELD INDICATORS FOR IDENTIFYING HYDRIC SOILS IN NEW ENGLAND, VERSION 4. NEWPCC WETLANDS WORK GROUP (2017).
   C) NATIONAL LIST OF PLANT SPECIES THAT OCCUR IN WETLANDS: NORTHEAST (REGION 1). USFWS (MAY 1988).
   D) CLASSIFICATION OF WETLANDS AND DEEPWATER HABITATS OF THE UNITED STATES. USFW MANUAL FWS/OBS-79/31 (1997).
   E) "IDENTIFICATION AND DOCUMENTATION OF VERNAL POOLS IN NEW HAMPSHIRE" (1997). NEW HAMPSHIRE FISH AND GAME DEPARTMENT.
2) WETLAND FLAGS WERE FIELD LOCATED BY AMBIT ENGINEERING, INC.

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road – Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315

NOTES:

1) PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 223 AS LOT 20.

2) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1-888-DIG-SAFE (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY.

3) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.

4) CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION. (NHDES DECEMBER 2008).

5) THE LIMIT OF WORK IS TO BE CLEARLY UNDERSTOOD WITHIN THE JURISDICTIONAL AREAS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.

6) THE PURPOSE OF THIS PLAN IS TO SHOW A PROPOSED DOCK ON MAP 223 LOT 20 IN THE CITY OF PORTSMOUTH.

7) VERTICAL DATUM: MEAN LOWER LOW WATER (MLLW). BASIS OF VERTICAL DATUM IS NH DOT DISC 397-0990, REDUCTION FROM NAVD88 TO MLLW BASED ON NOAA STATION 8419870, SEAVEY ISLAND. MLLW BEING 4.82' LOWER THAN 0.00 NAVD88. MHW LINE AS SHOWN IS AT ELEV. 8.43 MLLW.

8) WESTERLY BOUNDARY LINE OF THE PARCEL IS REFERRED TO AS A PRIVATE ROAD IN PRECEDING DEEDS FOR THE PROPERTY TO THE WEST (SEE 1024/241). THE DEED FOR THE SUBJECT PARCEL REFERS TO THIS LINE AS A PRIVATE ROAD (SEE 5866/1780). EASTERLY BOUNDARY LINE IS REFERRED TO AS THE CENTERLINE OF A DITCH OR SMALL STREAM LEADING NORTHERLY FROM SAGAMORE CREEK. OWNERSHIP ONLY EXTENDS TO THE CENTERLINE OF THE CREEK IN THE AREA ABOVE MEAN HIGH WATER.

9) UPDATED SITE CONSTRUCTION ON TAX MAP 223 LOTS 20 & 21 IS NOT SHOWN HEREON.

DICKINSON DOCK
220 WALKER BUNGALOW ROAD
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
3	SHORTEN DOCK LENGTH	2/13/23
2	DOCK LAYOUT	8/12/22
1	ADD NOTE 8	2/19/19
0	ISSUED FOR COMMENT	12/7/18

REVISIONS

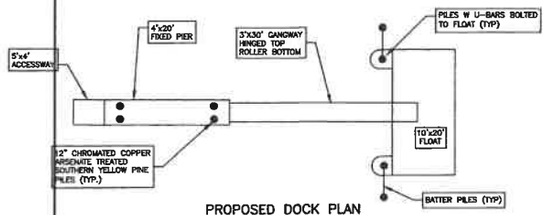
STATE OF NEW HAMPSHIRE JOHN R. CHAGNON 738 LICENSED PROFESSIONAL ENGINEER

STEVEN D. RIKER No. 219 WETLAND SCIENTIST

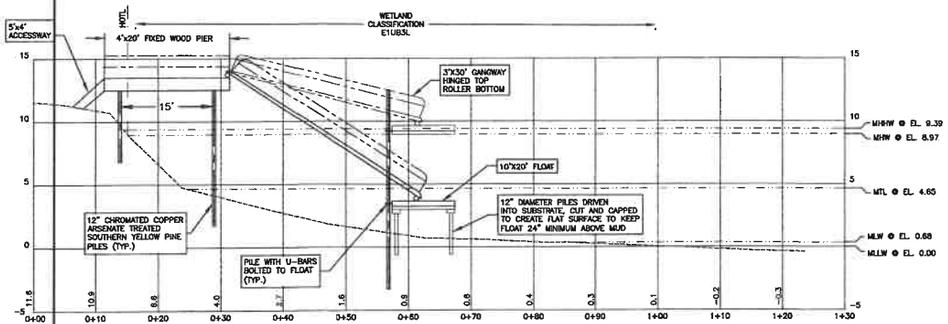
SCALE 1"=20' AUGUST 2022

NHDES DOCK PERMIT PLAN C2

FB 256 PG 69 2552.38



PROPOSED DOCK PLAN



PROPOSED DOCK ELEVATION

SCALE: 1" = 10' (HOR.)
1" = 5' (VERT.)

PROPOSED PIER, GANGWAY & FLOAT w/ PILES

GRAPHIC SCALE
10 5 0 10 20 30 40 FEET
3 0 5 10 METERS

SEQUENCE OF CONSTRUCTION

1) MOBILIZATION OF A CRANE BARGE, PUSH BOAT, WORK SKIFF, MATERIALS AND PREFABRICATED COMPONENTS SUCH AS THE GANGWAY AND FLOAT TO THE SITE VIA APPROVED ACCESS.
2) MOBILIZATION OF EQUIPMENT TRUCKS TO THE SITE.
3) THE BARGE WILL BE POSITIONED ALONGSIDE THE PROPOSED LOCATION OF THE NEW DOCK AND WATERWARD OF ANY EMERGENT VEGETATION TO MINIMIZE IMPACTS
4) INSTALLATION OF THE SUB STRUCTURE WILL BE PERFORMED FROM A CRANE BARGE OR SKIFF TO REDUCE THE AMOUNT OF FOOT TRAFFIC IN THE INTERTIDAL AREA.
5) ALL WORK WILL BE PERFORMED AT LOW TIDE TO MINIMIZE SEDIMENTATION.
6) PILINGS WILL BE MECHANICALLY DRIVEN BY A CRANE ELIMINATING ANY EXCAVATION FOR INSTALLATION OF THE PILINGS. PILING ARE DRIVEN TO REFUSAL.
7) PILINGS ARE CUT AND BEAM CAPS ARE INSTALLED AND THE SUPER STRUCTURE OF THE PIER IS BUILT. MATERIALS ARE LIFTED FROM THE BARGE AND SET INTO POSITION BY THE CRANE.
8) ONCE THE PIER IS COMPLETE, THE GANGWAY AND FLOAT ARE BROUGHT INTO POSITION AND INSTALLED.

DISCHARGES, AVOIDANCE, MINIMIZATION AND MITIGATION

DISCHARGES OF DREDGED OR FILL MATERIAL INTO WATERS OF THE U.S. AND ANY SECONDARY IMPACTS SHALL BE AVOIDED AND MINIMIZED TO THE MAXIMUM EXTENT PRACTICABLE. PERMITTEES MAY ONLY FILL THOSE JURISDICTIONAL WETLANDS AND WATERWAYS THAT THE CORP AND NHDES AUTHORIZES TO BE FILLED AND IMPACT THOSE AREAS THAT THE CORPS AND AND NHDES AUTHORIZES AS SECONDARY IMPACTS. IF NOT SPECIFICALLY AUTHORIZED BY USACOE AND AND NHDES, ANY UNAUTHORIZED FILL OR SECONDARY IMPACT TO WETLANDS MAY BE CONSIDERED AS A VIOLATION OF THE CWA.
* UNLESS SPECIFICALLY AUTHORIZED USACOE AND AND NHDES, NO WORK SHALL DRAIN A WATER OF THE U.S. BY PROVIDING A CONDUIT FOR WATER ON OR BELOW THE SURFACE.

HEAVY EQUIPMENT IN WETLANDS

HEAVY EQUIPMENT OTHER THAN FIXED EQUIPMENT (DRILL RIGS, FIXED CRANES, ETC.) WORKING IN WETLANDS SHALL NOT BE STORED, MAINTAINED OR REPAIRED IN WETLANDS, UNLESS IT IS LESS ENVIRONMENTALLY DAMAGING OTHERWISE, AND AS MUCH AS POSSIBLE SHALL NOT BE OPERATED WITHIN THE INTERTIDAL ZONE. WHERE CONSTRUCTION REQUIRES HEAVY EQUIPMENT OPERATION IN WETLANDS, THE EQUIPMENT SHALL EITHER HAVE LOW GROUND PRESSURE (<3 PSI), OR SHALL NOT BE LOCATED DIRECTLY ON WETLAND SOILS AND VEGETATION; IT SHALL BE PLACED ON SWAMP MATS THAT ARE ADEQUATE TO SUPPORT THE EQUIPMENT IN SUCH A WAY AS TO MINIMIZE DISTURBANCE OF WETLAND SOIL AND VEGETATION. SWAMP MATS ARE TO BE PLACED IN THE WETLAND FROM THE UPLAND OR FROM EQUIPMENT POSITIONED ON SWAMP MATS IF WORKING WITHIN A WETLAND. DRAGGING SWAMP MATS INTO POSITION IS PROHIBITED. OTHER SUPPORT STRUCTURES THAT ARE LESS IMPACTING AND ARE CAPABLE OF SAFELY SUPPORTING EQUIPMENT MAY BE USED WITH WRITTEN CORPS AND NHDES AUTHORIZATION. SIMILARLY, NOT USING MATS DURING FROZEN, DRY OR OTHER CONDITIONS MAY BE ALLOWED WITH WRITTEN CORPS AND NHDES AUTHORIZATION. AN ADEQUATE SUPPLY OF SPILL CONTAINMENT EQUIPMENT SHALL BE MAINTAINED ON SITE. CORDUROY ROADS AND SWAMP/CONSTRUCTION MATS ARE CONSIDERED AS FILL WHETHER THEY'RE INSTALLED TEMPORARILY OR PERMANENTLY.

TIME OF YEAR WORK WINDOW AND NOISE RESTRICTIONS

A. PILES INSTALLED IN-THE-DRY DURING LOW WATER OR IN-WATER BETWEEN NOV. 01ST – APR. 9TH, OR
II. MUST BE DRILLED AND PINNED TO LEDGE, OR
III. VIBRATORY HAMMERS USED TO INSTALL ANY SIZE AND QUANTITY OF WOOD, CONCRETE OR STEEL PILES, OR
IV. IMPACT HAMMERS LIMITED TO ONE HAMMER AND ≤50 PILES INSTALLED/DAY WITH THE FOLLOWING: WOOD PILES OF ANY SIZE, CONCRETE PILES ≤18-INCHES DIAMETER, STEEL PILES 12-INCHES DIAMETER IF THE HAMMER IS ≤3000 LBS. AND A WOOD CUSHION IS USED BETWEEN THE HAMMER AND STEEL PILE.

FOR II–IV ABOVE:
I. IN-WATER NOISE LEVELS SHALL NOT >187dB SEL RE 1μPa OR 206dB PEAK RE 1μPa AT A DISTANCE >10M FROM THE PILE BEING INSTALLED, AND
II. IN-WATER NOISE LEVELS >155dB PEAK RE 1μPa SHALL NOT EXCEED 12 CONSECUTIVE HOURS ON ANY GIVEN DAY AND A 12 HOUR RECOVERY PERIOD (I.E., IN-WATER NOISE BELOW 155dB PEAK RE 1μPa) MUST BE PROVIDED BETWEEN WORK DAYS.

WORK SITE RESTORATION

[] UPON COMPLETION OF CONSTRUCTION, ALL DISTURBED WETLAND AREAS SHALL BE PROPERLY STABILIZED. ANY SEED MIX SHALL CONTAIN ONLY PLANT SPECIES NATIVE TO NEW ENGLAND.
[] THE INTRODUCTION OR SPREAD OF INVASIVE PLANT SPECIES IN DISTURBED AREAS IS PROHIBITED.
[] IN AREAS OF AUTHORIZED TEMPORARY DISTURBANCE, IF TREES ARE CUT THEY SHALL BE CUT AT GROUND LEVEL AND NOT UPROOTED IN ORDER TO PREVENT DISRUPTION TO THE WETLAND SOIL STRUCTURE AND TO ALLOW STUMP SPROUTS TO REVEGETATE THE WORK AREA, UNLESS OTHERWISE AUTHORIZED.
[] WETLAND AREAS WHERE PERMANENT DISTURBANCE IS NOT AUTHORIZED SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AND ELEVATION, WHICH UNDER NO CIRCUMSTANCES SHALL BE HIGHER THAN THE PRE-CONSTRUCTION ELEVATION. ORIGINAL CONDITION MEANS CAREFUL PROTECTION AND/OR REMOVAL OF EXISTING SOIL AND VEGETATION, AND REPLACEMENT BACK TO THE ORIGINAL LOCATION SUCH THAT THE ORIGINAL SOIL LAYERING AND VEGETATION SCHEMES ARE APPROXIMATELY THE SAME, UNLESS OTHERWISE AUTHORIZED.

SEDIMENTATION AND EROSION CONTROL

ADEQUATE SEDIMENTATION AND EROSION CONTROL MANAGEMENT MEASURES, PRACTICES AND DEVICES, SUCH AS PHASED CONSTRUCTION, VEGETATED FILTER STRIPS, GEOTEXTILE SILT FENCES, STORMWATER DETENTION AND INFILTRATION SYSTEMS, SEDIMENT DETENTION BASINS, OR OTHER DEVICES SHALL BE INSTALLED AND PROPERLY MAINTAINED TO REDUCE EROSION AND RETAIN SEDIMENT ON-SITE DURING AND AFTER CONSTRUCTION. THEY SHALL BE CAPABLE OF PREVENTING EROSION, OF COLLECTING SEDIMENT, SUSPENDED AND FLOATING MATERIALS, AND OF FILTERING FINE SEDIMENT. THE DISTURBED AREAS SHALL BE STABILIZED AND THESE DEVICES SHALL BE REMOVED UPON COMPLETION OF WORK. THE SEDIMENT COLLECTED BY THESE DEVICES SHALL BE REMOVED AND PLACED AT AN UPLAND LOCATION, IN A MANNER THAT WILL PREVENT ITS LATER EROSION INTO A WATERWAY OR WETLAND. ALL EXPOSED SOIL AND OTHER FILLS SHALL BE PERMANENTLY STABILIZED AT THE EARLIEST PRACTICABLE DATE.

SPAWNING AREAS.

DISCHARGES OF DREDGED OR FILL MATERIAL, AND/OR SUSPENDED SEDIMENT PRODUCING ACTIVITIES IN FISH AND SHELLFISH SPAWNING OR NURSERY AREAS, OR AMPHIBIAN AND MIGRATORY BIRD BREEDING AREAS, DURING SPAWNING OR BREEDING SEASONS SHALL BE AVOIDED. IMPACTS TO THESE AREAS SHALL BE MINIMIZED TO THE MAXIMUM EXTENT PRACTICABLE DURING ALL TIMES OF THE YEAR. INFORMATION ON SPAWNING HABITAT FOR SPECIES MANAGED UNDER THE MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT (I.E., EFH FOR SPAWNING ADULTS) CAN BE OBTAINED FROM THE NMFS WEBSITE AT: WWW.NERO.NOAA.GOV/HCD.

STORAGE OF SEASONAL STRUCTURES.

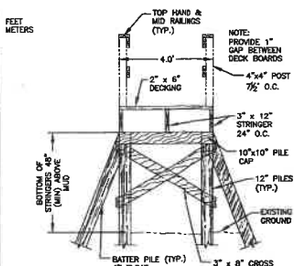
COASTAL STRUCTURES SUCH AS PIER SECTIONS, FLOATS, ETC., THAT ARE REMOVED FROM THE WATERWAY FOR A PORTION OF THE YEAR (OFTEN REFERRED TO AS SEASONAL STRUCTURES) SHALL BE STORED IN AN UPLAND LOCATION, LOCATED ABOVE HIGHEST OBSERVABLE TIDE LINE (HOTL) AND NOT IN TIDAL WETLANDS. THESE SEASONAL STRUCTURES MAY BE STORED ON THE FIXED, PILE-SUPPORTED PORTION OF THE STRUCTURE THAT IS SEAWARD OF HOTL. THIS IS INTENDED TO PREVENT STRUCTURES FROM BEING STORED ON THE MARSH SUBSTRATE AND THE SUBSTRATE SEAWARD OF MHW.

ENVIRONMENTAL FUNCTIONS AND VALUES

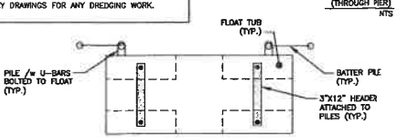
THE PERMITTEE SHALL MAKE EVERY REASONABLE EFFORT TO 1) CARRY OUT THE CONSTRUCTION OR OPERATION OF THE WORK AUTHORIZED BY USACOE AND NHDES HEREIN IN A MANNER THAT MINIMIZES ADVERSE IMPACTS ON FISH, WILDLIFE AND NATURAL ENVIRONMENTAL VALUES, AND 2) PROHIBIT THE ESTABLISHMENT OR SPREAD OF PLANT SPECIES IDENTIFIED AS NON-NATIVE INVASIVE SPECIES BY ANY FEDERAL OR STATE AGENCY. SEE THE SECTION ON INVASIVE SPECIES AT HTTP://WWW.NAE.USACE.ARMY.MIL/REGULATORY/ FOR CONTROL METHODS.

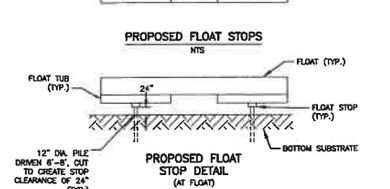
INSPECTIONS

THE PERMITTEE SHALL ALLOW THE CORPS AND NHDES TO MAKE PERIODIC INSPECTIONS AT ANY TIME DEEMED NECESSARY IN ORDER TO ENSURE THAT THE WORK IS BEING OR HAS BEEN PERFORMED IN ACCORDANCE WITH THE TERMS AND CONDITIONS OF THIS PERMIT. THE CORPS AND NHDES MAY ALSO REQUIRE POST-CONSTRUCTION ENGINEERING DRAWINGS FOR COMPLETED WORK, AND POST-DREDGING SURVEY DRAWINGS FOR ANY DREDGING WORK.



SECTION A-A (THROUGH PIER)
NTS





PROPOSED FLOAT STOPS
NTS

PROPOSED FLOAT STOP DETAIL (AT FLOAT)
NTS

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road – Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315

NOTES:

1) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1-888-DIG-SAFE (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY.
2) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.
3) CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION. (NHDES DECEMBER 2008).
4) NUMBER OF PILES TO BE DRIVEN FOR DOCKING STRUCTURE NOT TO EXCEED 12 AS DEPICTED ON PROPOSED DOCK ELEVATION. ALSO NOTE TIME OF YEAR AND NOISE RESTRICTIONS FOR DRIVING OF PILES
5) VERTICAL DATUM: MEAN LOWER LOW WATER (MLLW). BASIS OF VERTICAL DATUM IS NH DOT DISC 397-0990, REDUCTION FROM NAVD88 TO MLLW BASED ON NOAA STATION 8419870, SEAVEY ISLAND. MLLW BEING 4.62' LOWER THAN 0.00 NAVD88. MHW LINE AS SHOWN IS AT ELEV. 8.43 MLLW.

DICKINSON DOCK
220 WALKER
BUNGALOW ROAD
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
3	SHORTEN DOCK LENGTH	2/13/23
2	DOCK, GANGWAY	8/12/22
1	RECONFIGURE DOCK	2/18/20
0	ISSUED FOR COMMENT	12/07/18

REVISIONS

JOHN R. CAMERON No. 9851 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

STEVEN D. RIKER No. 210 LICENSED WETLAND SCIENTIST STATE OF NEW HAMPSHIRE

SCALE: AS SHOWN DECEMBER 2018

NHDES DOCK DETAILS

C3

FB 256 & PG 69

2552.38

STEPHAN T. NIX
ATTORNEY AT LAW
LICENSED LAND SURVEYOR
25 COUNTRY CLUB ROAD, SUITE 502
GILFORD, NH 03249
603-524-4963, (fax 603-524-1978)
snix@metrocast.net

March 3, 2023

John-Mark Turner, Esq.
Sheehan Phinney Bass & Green PA
1000 Elm Street, 17th Floor
Manchester, NH 03101

Re: David and Margaret Witham
Sagamore Landing Condominium Association
Portsmouth, New Hampshire
NHDES Wetlands Council Appeal No. 19-04 WtC
Our file number: 6046

Dear Attorney Turner:

This letter is in response to your request to me regarding DES Wetlands file 2018-03677, for Jon and Joan Dickenson that includes the proposed construction into Sagamore Creek of a fixed pier with a gangway leading to a float secured by piles located off 220 Walker Bungalow Road, Portsmouth, N.H. The DES original application was originally filed in 2018 requesting approval of a longer docking structure. It is my understanding that the original application was appealed to the Wetlands Council, which was stayed.

The property abuts the Sagamore Landing Condominium ("Sagamore Condo") to the west. The most westerly standalone condominium Unit is owned by David and Margaret Witham. You represent David and Margaret Witham.

I provided a report dated July 22, 2019, discussing the location of the extension of the common property line between the Dickenson property and the Sagamore Landing Condominium. The July 22, 2019, report is made a part hereof ("*STN 2019 Report*").

In 2019, you requested that I review the plans in relation to *N.H. Code of Admin. R. Env-Wt* 304.04 Setback From Property Lines, that states:

> (a) The department shall limit the location of a project to at least 20 feet from an abutting property line or imaginary extension thereof over surface water unless it receives written agreement from the affected abutter concurring with any impact that may result relative to the abutter's interests.
> *Id.*

In preparing this amended report I reviewed the documents listed in the STN 2019 Report and the following additional documents.[1]

1. February 16, 2023, filing to DES by Ambit Engineering amending the 2018 submittal;
2. February 13, 2023, plans by Ambit Engineering depicting the amended (shortened) dock and a representation of the property line extension into Sagamore Creek. ("*2023 Ambit Plan*").
3. Letter dated August 24, 2022, from Ambit Engineering, Inc. to the New Hampshire Wetland Council outlining the theory supporting the extension of the property line depicted on the *2023 Ambit Plan*. (the "*Ambit Letter*").

Question Presented: Does the *2023 Ambit Plan* supported by the *Ambit Letter* accurately depict the extension of the boundary line between the Dickenson property and the Sagamore Landing Condominium?

Discussion

The history of the deed conveyancing and historic plans are discussed at length in the *STN 2019 Report* and the *Ambit Letter,* to which reference is made as background for this report. Reference is made to a plan entitled "Dickinson Dock 220 Walker Bungalow Road, Portsmouth, N.H." by Amit Engineering, Inc. last amended date August 12, 2022, attached to the *Ambit Letter* (page 18 of the *Ambit Letter* pdf file), (the "*2022 Ambit Plan*").

Ambit Letter reviews the deed description history and cites the *STN 2019 Report* that states the rule of tidal boundaries in New Hampshire as "title to the waters of the State of New Hampshire and that the boundary line between private property and the public trust is set by common law at the mean high tide or mean high water line. *We agree that that is settled law.*" *Ambit Letter at 3,* (italics in original).

The *STN 2019* Report opined that "the imaginary extension of the common property line into Sagamore Creek is the extension of the angle of the unnamed brook where it intersects with the Mean High Water mark." *STN 2019 Report at 3*. See also *STN 2019 Report Ex. G* (depicting the extended line in red). Ambit disagrees. *Ambit Letter at 3-4.*

Relying on the principal that "[w]hen interpreting deeds, the general rule is to determine the intent of the parties at the time of the conveyance in light of the surrounding circumstances." *Chao v. Richey Co.*, 122 N.H. 1115, 1117, (1982), Ambit opines:

> This is a well established rule of land survey boundary determination and this clearly demonstrates that the dividing line between the properties is located along the brook or creek to the point where the brook or creek flows into Sagamore Creek.

[1] This letter is limited to a review of existing plans and documents available from the public record and did not include a site inspection.

Ambit Letter at 2.

Ambit later opines:

> The intent of the parties was to create a division line between the properties *that went to Sagamore Creek* and therefore we must follow the mean high water line along the Sagamore Landing Condo – Witham property as it travels along the mean high water line until it reaches Sagamore Creek and then extend the line from there. This is clearly a case where the actual conveyance of the property to the center of the creek was not possible due to the nature of the state's interest below mean high water. However the intent of the deed cannot be overruled by the party's misunderstandings regarding the nature of this unnamed creek and title thereto.
> *Ambit Letter at 4* (italics in original), (underline added for emphasis).

The Ambit line is depicted on Dock Permit Plan Sheet C2 attached to the *Ambit Letter*.

Env-Wt 304.04 states in pertinent part that the project [dock] must be "at least 20 feet from an abutting property line or imaginary extension thereof over surface water ..." *Id.* (emphasis added).

"When we interpret a statute, we ascribe the plain and ordinary meaning to the words used. ... We do not look beyond the language of the statute to determine legislative intent if the language is clear and unambiguous. ... Nor will we consider what the legislature might have said or add words the legislature did not include." *Appeal of Town of Seabrook*, 163 N.H. 635, 644, (2012), (citations and quotes omitted).

The plain meaning of "abut" is "to border on: to touch along an edge, 'Their property abuts our land.' *Merriam-Webster Dictionary*, https://www.merriam-webster.com/dictionary/abut.

The Ambit theory fails in that the extension of the property line depicted in the Ambit Letter exhibit is not the extension a common line between Dickenson and Sagamore Landing Condominium (abutting properties) over surface waters. It is an impossibility for an *abutting* property line to exist in a location where the properties do not physically abut.

There is no language in *Env-Wt* 304.04 authorizing the intent of the parties to the private deeds to control the language of the rule. Applying the intent of the parties to the private deeds adds language to the rule that DES did not include.

Env-Wt 104.33 defines "Surface water" means those portions of waters of the state that have standing or flowing water at or on the surface of the ground. The term includes but is not limited to watercourses, lakes, ponds, marshes, and tidal waters." *Id.* (emphasis added). The *2023 Ambit Plan* depicts the mean high water line and the centerline of the brook. The mean high water line is the boundary between the private party and the State. The centerline of the brook is the private common boundary between Dickenson and Sagamore Landing

Condominium. These boundaries are not disputed. The waters on the State side of the mean high water line are "Surface Waters".

Pursuant to the plain language of *Env-Wt* 304.04, the imaginary extension of the common property line into Sagamore Creek is the extension of the angle of the unnamed brook where it intersects with the mean high water mark.

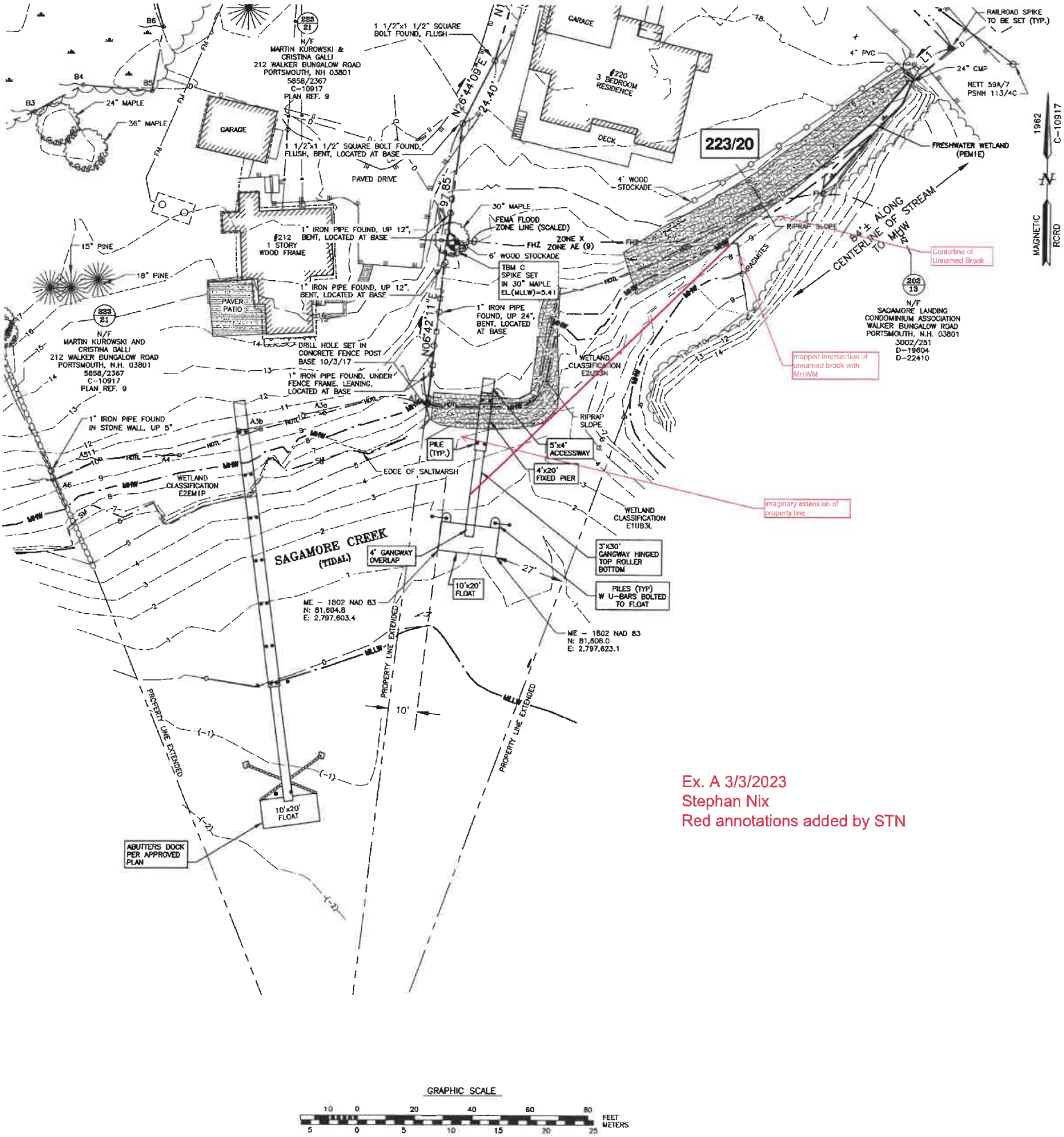
Conclusion.

As depicted on Ex. A 3/3/2023 is the extension of the common property line between the properties (the centerline of the unnamed brook) and where it intersects the proposed Dickinson dock.[2]

Sincerely,

Stephan Nix

[2] The location of the mean high water line is slightly different on the *2023 Ambit Plan* compared to the 2018 Ambit Plan. The line on Ex. A 3/3/2023 is created using a visual best fit based on the 9' contour line at brook centerline with the MHW line at the centerline of the brook. A more detailed survey cross section of this area could provide better definition. The information provided indicates that more detail will have little impact on the outcome possibly shifting the line by only a few degrees with the proposed dock remaining within the extension.



Ex. A 3/3/2023
Stephan Nix
Red annotations added by STN

THE STATE OF NEW HAMPSHIRE
WETLANDS COUNCIL

APPEAL OF SAGAMORE LANDING CONDOMINIUM ASSOCIATION AND DAVID AND MARGARET WITHAM

NOTICE OF APPEAL SERVICE LIST
(NHDES Wetlands Permit No 2018-03677)

Portsmouth Municipal Clerk
1 Junkins Avenue
Portsmouth, NH 03801

Portsmouth Conservation Commission
1 Junkins Avenue
Portsmouth, NH 03801

David and Margaret Witham
238 Walker Bungalow Road
Portsmouth, NH 03801

Jon and Joan Dickinson (*through counsel via email)*
1242 Ocean Boulevard
Rye, NH 03870

Mary Ann Tilton, Wetlands Assistant Bureau Administrator (*via email)*
NH Department of Environmental Services
29 Hazen Drive, P.O. Box 95
Concord, NH 03302-0095

Rene Pelletier, Director of Water Division
Wetlands Bureau Administrator
NH Department of Environmental Services
29 Hazen Drive, P.O. Box 95
Concord, NH 03302-0095

Michelle A. Doucette (*via email*)
Appeals Clerk
New Hampshire Wetlands Council
29 Hazen Drive, P.O. Box 95
Concord, NH 03302-0095

Sagamore Landing Condominium Assoc.
c/o Danielle Megliola
284 Walker Bungalow Road
Portsmouth, NH 03801

Martin & Cristina Kurowski
212 Walker Bungalow Road
Portsmouth, NH 03801

THE STATE OF NEW HAMPSHIRE
WETLANDS COUNCIL

APPEAL OF SAGAMORE LANDING CONDOMINIUM ASSOCIATION AND DAVID AND MARGARET WITHAM

NOTICE OF APPEARANCE
(NHDES Wetlands Permit No 2018-03677)

A. Name and Address of Appellants

Sagamore Landing Condominium Association for itself and as agent for all the unit owners of Sagamore Landing Condominium Association
c/o Danielle Megliola, President
284 Walker Bungalow Road
Portsmouth, NH 03801
(917) 940-6604
danielle.megliola@gmail.com

David and Margaret Witham, Individually and as Trustees of the David C. Witham Revocable Trust of 2009
238 Walker Bungalow Road
Portsmouth, NH 03801
(603) 498-9084
withamarchitecture@gmail.com

B. Counsel for Appellants

John-Mark Turner, N.H. Bar 15610
1000 Elm Street, 17th Floor
Manchester, NH 03101
(603) 627-8143
jturner@sheehan.com

Respectfully submitted,

SAGAMORE LANDING CONDOMINIUM ASSOCIATION AND DAVID AND MARGARET WITHAM

By Its Attorneys,

SHEEHAN PHINNEY BASS & GREEN, PA

Dated: March 22, 2024

By: */s/ John-Mark Turner*
John Mark Turner (NH Bar #15610)
1000 Elm Street, PO Box 3701
Manchester, NH 03105
(603) 627-8143; jturner@sheehan.com

CERTIFICATION

I certify that a copy of the foregoing was on this date emailed and/or mailed this Notice pursuant to Ec-Wet 201.03 and 203.01(d), to the Director of the Water Division, the other parties to the department decision, Department c/o Collis Adams, New Hampshire Department of Environmental Services, the Portsmouth City Council, Planning Board and Conservation Commission, and the abutters as required by Env-WtC 203.02(a)(12).

Dated: March 22, 2024

By: */s/ John-Mark Turner*
John-Mark Turner

THE STATE OF NEW HAMPSHIRE
WETLANDS COUNCIL

APPEAL OF SAGAMORE LANDING CONDOMINIUM ASSOCIATION
AND DAVID AND MARGARET WITHAM

Docket no. 24-06 WtC

NOTICE OF APPEARANCE

A. NAME AND ADDRESS OF PERMITTEES:

Jon and Joan Dickinson
220 Walker Bungalow Road
Portsmouth NH 03801
joan.dickinson@comcast.net

B. COUNSEL FOR PERMITTEES:

John K. Bosen, Esquire
Bosen & Associates, PLLC
266 Middle Street
Portsmouth NH 03801
603-427-5500 ext. 111
jbosen@bosenandassociates.com

Respectfully submitted,
Jon and Joan Dickinson, Permittees
By their attorneys,
Bosen & Associates, PLLC

Date: March 26, 2024

By: /s/John K. Bosen, Esquire
NH Bar #8129
266 Middle Street
Portsmouth NH 03801
603-427-5500 ext. 111
jbosen@bosenandassociates.com

CERTIFICATION

I certify that a copy of the foregoing Appearance has, this date, been emailed and/or mailed to the parties on the attached Service List.

Date: March 26, 2024

By: /s/John K. Bosen, Esquire

SERVICE LIST

Michelle A. Doucette (via email)
Appeals Clerk -Department of Justice
NH Wetlands Council
PO Box 95
Concord NH 03302-0095
appeals@des.nh.gov

David and Margaret Witham and
Sagamore Landing Condominium Association
through their counsel (via email):
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Sheehan Phinney Bass & Green PA
PO Box 3701
Manchester NH 03105-3701
jturner@sheehan.com

Mary Ann Tilton, Wetlands Assistant Bureau Administrator (via email)
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Rene Pelletier, Director of Water Division
Wetlands Bureau Administrator
NH Department of Environmental Services
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