CITY OF DOVER

DOVER CONSERVATION COMMISSION – AGENDA

Meeting Type: Regular Meeting
Meeting Location: City Council Conference Room - 288 Central Avenue Dover NH
Meeting Date: Monday, September 8, 2025
Meeting Time: **5:30 pm**

1. **CALL TO ORDER AND ROLL CALL**

2. **CITIZEN'S FORUM**

3. **APPROVAL OF THE PRIOR MEETING MINUTES** – August 11, 2025

4. **OLD BUSINESS**

5. **NEW BUSINESS**

   A. City of Dover Conditional Use Permit for City of Dover, c/o Tighe & Bond and Dover School District. Assessor's Map H, Lot 12, zoned R-20, located at 25 Alumni Drive. Proposal seeks to allow relief from the Secondary Groundwater Protection District for development that creates more than 20% impervious surface for the renovation of the Dover High School Athletic Complex.

   B. City of Dover Expedited Wetlands Permit for Regional Family Revocable Trust of 2016. Assessor's Map 7, Lot 6, zoned R-20, located at 13 ½ Boston Harbor Road. Proposal is to raise the existing home that would result in 869 SF of temporary impacts within the Conservation District.

6. **REPORT FROM THE CHAIR**
   A. Review of Correspondence Received from NH Department of Environmental Services

7. **OTHER BUSINESS**
   A. Update from Forest Management Subcommittee
   B. Handbook

8. **ADJOURNMENT**

CITY OF DOVER

DOVER CONSERVATION COMMISSION – MINUTES

Meeting Type:	Regular Meeting
Meeting Location:	City Council Conference Room - 288 Central Avenue, Dover, NH
Meeting Date:	Monday August 11, 2025
Meeting Time:	**5:30 pm**

MEMBERS PRESENT: Bill Hunt (Chair), Russ Warnock, Steve Fellows (Vice Chair), Abigail Lyon, Brendan Mulhall (Alternate)
Absent (Excused): Kristen Murphy, Brianna Group (Alternate), Robert Atwood (Secretary)
Absent (Unexcused):
STAFF PRESENT: Makayla Edgecomb (Conservation Planner), Erin Bassegio (City Planner), Chris Parker (Deputy City manager)
OTHERS PRESENT:

1. **CALL TO ORDER AND ROLL CALL**
The meeting was convened at 5:30 PM.

2. **CITIZENS' FORUM**
R. Warnock spoke as an abutter to the 141 Sixth St proposal (G). He spoke in opposition to the proposal and gave details about why he is in opposition. He recused himself from any voting on this parcel.

A few other abutters made comments regarding their concern for this proposal.

A Dowaliby Ct abutter to the 141 Sixth St proposal spoke about the concerns she has about the wetness of the land and the possibility of added high groundwater with added development.

Norm Fracassa, Chair of CWDAC spoke about item C and noted the request has the full approval of the CWDA committee and encouraged the Commission to accept and approve the CUP requested.

3. **APPROVAL OF THE PRIOR MEETING MINUTES** – July 14, 2025
R. Warnock moved to approve the minutes of July 14, 2025. S. Fellows seconded. Vote: 3 in favor with 2 abstaining.

4. **OLD BUSINESS**

5. **NEW BUSINESS**
A. Sixth Street Culvert- signature needed
Jillian Semprini spoke about the item to give the Commission some information.
Chair Hunt read the NHDES letter.
Members asked some clarifying questions which were addressed by staff.
The Commission members clarified with staff that the item will be fully reviewed by the Commission after/ as part of the permit process.

R. Warnock moved to hear item F (G) next. A. Lyon seconded. Vote: U/A

G. City of Dover Conditional Use Permit for The Stabile Companies. Assessor's Map 35, Lot 64, zoned R-12, located at 141 Sixth Street. Proposal seeks to allow 35.15% impervious where 20% max is allowed within the secondary groundwater for the construction of a residential development. *Eight (8) units were approved through Transfer of Development Rights (TDR) for a proposed total of twenty units, where twelve units are allowed by right.*

R. Warnock recused himself from the item.
Christopher Berry, Berry Survey and Engineering represented the item and explained the request for CUP for impervious surfaces within the secondary groundwater. He addressed the requirements for CUP which are met.

DRAFT

The Planning Board has reviewed the project for TDR and the applicant explained even without the use of TDR a subdivision of 10-12 units includes nearly the identical amount of coverage.

The soils on site were explained along with drainage proposals and porous material proposals. NHDES permits are required for Alteration of Terrain and storm water infiltration calculations are required for that. These were explained. Additional storm water details were provided.

Mr. Berry clarified additional information for the members including location of the parcel, site info, roadways/connections, layout of the subdivision- 10 buildings/ 20 units, proposed roadway layout, high point and flow of runoff, drainage/ rain gardens, storm water treatment on site, projected run off before and after the proposed project (less than or equal to), secondary groundwater is the entirety of the parcel, CUP requirements for units allowed by right, and changes to the plan that resulted due to TRC meetings.

The members discussed their thoughts and opinions about the item request. There was consensus among those who spoke that it is not an easy plan to review, but the applicant has met the criteria necessary. Also, though there is a regulation for no more than 20%, the site will actually be improved in this area after the proposal is complete.

A. Lyon moved to endorse the CUP as presented. S. Fellows seconded. Vote: 4 in favor (1 recused)

B. Conditional Use Permit for Tina M. Sawtelle Assessor's Map B, Lot 1-C, zoned R-40, located at 476 Sixth Street. Proposal seeks to allow wetland buffer impacts and conservation district impacts for the expansion of an existing single-family home with approx. 216 s.f. of permanent wetland buffer impacts and approx. 150 s.f. of temporary buffer disturbance. There are no direct wetland impacts proposed.

Tina Sawtelle, owner represented the item and explained the details and reasons for the request. The proposed addition is for a bump out using existing footings.
Ms. Sawtelle gave additional details to the members about the proposed project, slope of the property and permanent impacts.

S. Fellows moved to endorse the CUP as presented. R. Warnock seconded. Vote U/A

C. City of Dover Conditional Use Permit for City of Dover, c/o Cathartes and Tighe & Bond. Assessor's Map 22, Lot 1-7, zoned CWD (Cochecho Waterfront District) located at 40 River St. Proposal seeks to allow wetland buffer impacts as part of a Site Plan Amendment for the construction of the Cochecho Waterfront Development Building F. Proposed permanent buffer impacts are 587 s.f. with temporary buffer impacts proposed at 2,674 s.f.

Rob Simmons, Cathartes represented the item and explained the portion of the waterfront project for tonight's review is for phase II of the project, building F, which contains 43 condominium units, 42 covered parking spaces, and 29 surface spaces on one acre.
The revised plans were presented to the CWDAC and were approved. The project went before TRC for review.

Colter Krzcuik, Tighe & Bond explained the details of the plan explaining the existing conditions on site, NHDES permit approvals and protected areas from human disturbance after completion.
Lucas Acaba, Tighe & Bond scientist addressed the wetlands impacts and reviewed the standards for CUP and how the proposed design meets the criteria.

DRAFT

The members reviewed photos of the site.

Chris Parker, Deputy City Manager noted the portions of area that will remain natural. He gave historical information about the previous uses of the site.

Representatives addressed questions from the members relating to pre-construction measurements of run off.

S. Fellows moved to endorse the CUP as presented. A. Lyon seconded. Vote: U/A

D. City of Dover Conditional Use Permit for City of Dover, c/o Tighe & Bond and Dover School District. Assessor's Map H, Lot 12, zoned R-20, located at 25 Alumni Drive. Proposal seeks to allow for temporary and permanent impacts to the wetland buffer for the renovation of the Dover High School Athletic Complex. Proposed permanent buffer impacts of 378 s.f. and proposed temporary buffer impacts of 1,230 s.f.

E. City of Dover Conditional Use Permit for City of Dover, c/o Tighe & Bond and Dover School District. Assessor's Map H, Lot 12, zoned R-20, located at 25 Alumni Drive. Proposal seeks to allow relief from the Secondary Groundwater Protection District for development that creates more than 20% impervious surface for the renovation of the Dover High School Athletic Complex.

Councilor Fergus Cullen represented the items together. He explained the existing track area and the proposed renovations. A retaining wall will be required which will incur the permanent and temporary impacts listed above.

NHDES Alteration of Terrain permit will be required.

He addressed the criteria for CUP requirements for secondary groundwater which is also provided in the packet.

He addressed questions and discussion from the members relating to the reduced size of the proposed grandstand, percentage of impervious surface, (members would like to know the existing impervious surface % and the proposed % to know the increase/decrease [this information was not available during the meeting]), and timeline goals for the next steps of the process.

After members expressed concerns about not having enough information about the existing percentage of coverage of the parcel and proposed percentage coverage of the parcel (one field still TBD on materials), Mr. Cullen again highlighted the criteria for CUP in relation to the proposal.

E Bassegio provided some impervious surface numbers.

A. Lyon moved to endorse the CUP for impacts to the buffer with the inclusion of a section of grass as indicated to be classified permanent buffer impacts unless otherwise stated by an engineer. S. Fellows seconded. Vote U/A

A Lyon moved to table the other item to the September meeting (8th) to allow for further information including:.

- Current impervious cover and proposed impervious cover
- Having an engineer present to answer specific questions.
- Scenarios (calculations) with the baseball field area as both natural grass and turf

R. Warnock seconded. Vote: U/A

DRAFT

F. Conceptual Conditional use Permit for Liberty Mutual, c/o Brady Sullivan properties, LLC. Assessor's Map E, Lot 24, zoned IT located at 50/100/150 Liberty Way. Proposal is to consider conceptual environmental impacts on a yield plan. *Yield plan will be used to determine density for future development.*

Tom Zajac, civil engineer, Hayner/Swanson (IMEG), FX Bruton, Bruton and Berube, and Chris Lewis, Brady Sullivan represented the item and explained they are seeking a conceptual CUP. This will be for feedback on phase I which is the repurposing of the building located at 150 Liberty Way. The plan will come back before the Commission when there is a plan to present.

Much discussion occurred clarifying what is before the Commission tonight, how the applicant has come to this step and what the next steps will be.

The applicants presented their plans including the proposal to change the use of 150 Liberty Way to 248 residential units with commercial space on the lower floor, the development area of the parcel, proposed repurposing of the building and parking areas, anticipated impacts (therefore removed from the development area), updated survey, and proposed roadways.

Staff and applicants addressed comments and questions relating to use of the other two buildings if the third is proposed as residential and the related calculations. Discussion ensued about the yield process and maximum allowable residential units for the entire parcel.

A. Lyon moved to endorse the conceptual CUP as presented. S. Fellows seconded. Vote: U/A

6. REPORT FROM THE CHAIR

A. Review of Correspondence Received from NH Department of Environmental Services
None

7. OTHER BUSINESS

A. Update from Forest Management Subcommittee

- Monday August 18th for next meeting
- Marketing ideas for next Ash tree walk

B. Conservation Commission Training Assessment: Abigail Lyon

- Years ago developed workshop for how volunteer boards talk to wetland scientists etc
- Planning to revive the series
- Survey to find out what topics are wanted

C. Conversation with DBIDA- Tentative Meeting August 14th

- Due to Conservation Commission concerns about development plans in areas zoned industrial, but with high conservation value

8. ADJOURNMENT

A. Lyon moved and S. Fellows seconded to adjourn. Vote: U/A
The meeting was adjourned at 8:50 PM.

DRAFT

PERMIT SNAPSHOT REPORT COND-2025-0020
FOR CITY OF DOVER, N.H.

Permit Type	Conditional Use	**Project:**		**App Date:**	08/05/2025
Work Class:	Environmental	**District:**	None	**Exp Date:**	NOT AVAILABLE
Status:	In Review	**Square Feet:**	0.00	**Completed:**	NOT COMPLETED
Valuation:	$0.00	**Assigned To:**	Blonigen, Rachel	**Approval Expire Date:**	
Description:	Groundwater Protection District				

Parcel:	H0012-000000 Main	**Address:**	25 Alumni Dr Dover, 03820 Main	**Zone:**	R-20(Residential - Low Density)

Plan Preparer
Craig Langton
177 Corporate Drive
Portsmouth, NH 03801
Business: (603) 294-9231

Owner
Michael Joyal
Business: (603) 516-6008

Permit Custom Fields

Select Permit Type	Groundwater Protection	General Purpose	Alteration / Addition	Project Zone	Residential
New Change in Impervious/Paved Area (sq ft)	0	Work	Drainage design for the proposed project meets the requirements of Section 170-33 of the City of Dover Zoning Ordinance.,		

Attachment File Name	Added On	Added By	Attachment Group	Notes
Permit Snapshot Report.pdf	08/05/2025 14:57	Service, EnerGov		Attached by IO - ATTACH: Initial Permit Snapshot
2025.09.09_PlanningBoard.Agenda.pdf	08/28/2025 12:29	Blonigen, Rachel		PB Agenda
2025.09.09_PlanningBoard.Agenda.Rev.pdf	08/28/2025 12:57	Blonigen, Rachel		Revised PB Agenda

Invoice No.	Fee	Fee Amount	Amount Paid
NOT INVOICED	Planning General Application Fee	$200.00	$0.00
	Total for Invoice NOT INVOICED	$200.00	$0.00
	Grand Total for Permit	**$200.00**	**$0.00**

Submittal Name	Status	Received Date	Due Date	Complete Date	Resubmit	Completed
Conditional Use Review v.1	In Review	08/05/2025	08/08/2025		No	No

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Planning	Planning	Edgecomb, Makayla	In Review	08/05/2025	09/02/2025	

Workflow Step / Action Name	Action Type	Start Date	End Date
Review v.1		08/05/2025 15:09	
Confirm application complete v.1	Generic Action		08/05/2025 15:09
Conditional Use Review v.1	Receive Submittal	08/05/2025 0:00	
Planning Board v.1			
Planning Board Agenda v.1	Task		
Invoice for Notices v.1	Task		
Send Notices v.1	Task		
Planner Creates Staff Recommendations v.1	Permit Activity		
Distribute Planning Board Materials v.1	Task		
Planning Board Hearing v.1	Hold Hearing		

Planning Board Decision v.1	Permit Activity
NOD Sent to Applicant v.1	Create Report
Issue Permit v.1	
Verify Fees Prior to Permit v.1	Generic Action
Issue and Review Permit v.1	Generic Action
Print and Email Permit v.1	Generic Action
Plans uploaded to Treeno v.1	Generic Action
Internal Notification of Plan Completion v.1	Generic Action
Recording v.1	Task

City of Dover, New Hampshire
CONDITIONAL USE PERMIT APPLICATION

[Revision Date: October 19, 2020]

Office Use Only	Project #:		Date Received:	
	Amount Paid:		Time Received:	

APPLICANT AND OWNER INFORMATION

Name of Applicant: Dover School District, SAU 11 Telephone # (603) 516-6800

Address of Applicant: 61 Locust Street, Suite 409

E-Mail Address: _____

Name of Property Owner (if different from applicant): City of Dover Telephone # _____

Address of Property Owner: 288 Central Ave, Dover, NH 03820

PROPERTY INFORMATION

Assessor's Map # H-12 Lot(s) # 0

Address of Property: 25 Alumni Drive

Zoning District(s) R-20 Overlay District(s) _____

Existing Use of Property: High School

CONDITIONAL USE PERMIT INFORMATION

Type of Conditional Use Permit (Check All That Apply):

☐ Conservation District	☐ RCM Use Overlay District	☐ Gateway District
☒ Groundwater Protection	☐ Off-Street Parking and Loading	☐ Alternative Treatment Center
☒ Wetland Protection District	☐ Central Business District	☐ Heritage Residential District

Describe Proposed Use or Activity That Requires Conditional Use Permit and Describe Any Impacts:

See enclosed Cover Letter

List Any Associated State or Federal Permits That Have Been or Will Be Applied For and Indicate Their Status: NHDES AoT, NHDES Sewer Connection,NHDES Shoreland Permit, NPDES Construction General Permit, City of Dover Site Plan Review Permit

Name of Professional That Prepared Plans: Neil A Hansen, PE | Tighe & Bond

Address 177 Corporate Drive, Portsmouth, NH 03801 Telephone #: 603-433-8818

Professional License #: 15227 E-mail address: NAHansen@tighebond.com

SIGNATURES

I/We hereby submit this application to the City of Dover Planning Board and attest that to the best of my knowledge all of the information on this application form and in the accompanying application materials and documentation is true and accurate. As applicant or as agent, I attest that I am duly authorized to act in this capacity.

Signature of Property Owner: _____ Date: 8/5/25

Signature of Applicant (if different from owner): _____ Date: 8/1/25

FERGUS CULLEN, CHAIR, DOVER ATHLETIC JOINT BUILDING COMMITTEE

Signature of Agent: _____ Date: _____

AUTHORIZATION TO ENTER SUBJECT PROPERTY

I, and my successors, hereby authorize members of the Dover Planning Board, Planning Department and other pertinent City Departments and boards to enter my property for the purpose of evaluating this application, including performing inspections during the application phase, post-approval phase, construction phase and occupancy phase. It is understood that these individuals must use all reasonable care, courtesy, and diligence when on the property.

Signature of Property Owner: _____ Date: 8/5/25

(PROPERTY IS OWNED BY CITY OF DOVER)

CITY OF DOVER CONDITIONAL USE
LIST OF ABUTTERS

Pursuant to RSA 676:4, the State Law of New Hampshire, the City of Dover is required to notify the applicant, abutters (including holders of conservation easements), and any professional whose seal is on the plan, of the public hearing by certified mail, return receipt requested. Staff will provide the abutter information, while the applicant must provide accurate contact information for the owner, applicant and professional agents representing the project.

Owner:

TAX MAP	LOT #	PROPERTY OWNER	MAILING ADDRESS
		City of Dover	288 Central Ave, Dover, NH 03820

Applicant (if different from owner):

APPLICANT NAME	APPLICANT COMPANY	MAILING ADDRESS
Fergus Cullen	Dover School District, SAU 11	61 Locust Street, Suite 409, Dover, NH 03820

Surveyor and/or Engineer/Professional Agent:

NAME	COMPANY	MAILING ADDRESS
Neil Hansen	Tighe & Bond	177 Corporate Drive, Portsmouth, NH 03801

Conservation Easement Holder:

TAX MAP	LOT #	NAME OF EASEMENT HOLDER	MAILING ADDRESS

D5085-001
August 5, 2025

Ms. Donna Benton, AICP
Director of Planning and Community Development
City of Dover Planning and Community Development
288 Central Avenue
Dover, New Hampshire 03820

Re: Wetland Conditional Use Permit Application
Dover High School Athletic Complex
25 Alumni Drive, Dover, NH

Dear Donna:

On behalf of the City of Dover (owner) and Dover School District, SAU #11 (applicant), we are pleased to submit electronic file (.pdf) of the following supplemental information to support a request for a Wetland Conditional Use Permit (CUP) for the above referenced project:

- CUP Site Plan Set, last revised August 5, 2025; ***(revised)***
- Wetland & Groundwater Protection Conditional Use Permit Application, last revised August 5, 2025; ***(revised)***
- Wetland and Jurisdictional Resource Area Assessment, dated July 16, 2024;
- Wetland Buffer Impact Exhibit, dated August 1, 2025;
- CUP Drainage Analysis, dated August 5, 2025 ***(supplemental)***

The applicant is pleased to provide the enclosed information which has been prepared to summarize how the Project complies with the standards for a conditional use permit allowed under Section 170-28.F of the City of Dover Zoning Ordinance.

Additionally, as the proposed project is within the Secondary Groundwater Protection District supplemental materials relative to the proposed stormwater management system are being provided to demonstrate that the drainage design for the proposed project meets the requirements of Section 170-33 of the City of Dover Zoning Ordinance.

Project Background

The proposed project includes the renovation and replacement of Dunaway Football Field, the existing rubberized asphalt running track, field event spaces (LJ, TJ, PV, HJ and throws), the existing baseball field, the home and away grandstands and the light towers. Several amenities are proposed, as well, including bathrooms, concessions, a press box, storage, scoreboards, sound system, and equipment. There is additional parking proposed as well to provide accessible parking spaces and access for team busses. Lastly, landscape/site improvements including tree plantings in the stadium entry plaza area are proposed including special paving, fencing, and seating.

The site is a 78-acre parcel of land located at 25 Alumni Drive in Dover, New Hampshire. The site is currently developed with an approximately 178,000 square-foot (sf) high school and an approximately 9,000 sf Animal Sciences Building on the eastern portion of the site, and an approximately 2,000 sf maintenance building on the northeastern portion of the site. The western portion of the site is developed as athletic fields, including a football and baseball field, a rubberized running track surrounding the football field, batting cages, prefabricated

metal storage buildings, scoreboards, bleachers, and associated parking areas. The area northwest of the existing athletic fields is an undeveloped woodland, surrounded by residential structures.

Wetlands Protection District – Conditional Use Permit

A portion of the proposed northern bleachers and retaining wall are located within 50 feet of the wetland. As such, the project is subject to jurisdiction of the City of Dover Zoning Ordinance, §170-28 Wetlands Protection District. As outlined in the City of Dover Zoning Ordinance 170-28.F(1), the Planning Board may grant the construction of structures within the 50' wetland buffer provided the proposed construction complies with sections 170-28.F(1)(a) through 170-28.F(1)(f). The following addresses how the proposed project complies with the conditional use approval standards.

(a) Practicable alternative. There is no practicable alternative that would have a less adverse impact on the area.

The proposed Dover High School Athletic Complex aims to provide the high school with a centralized athletic complex that allows for the use of multiple sports. The existing track and field space is narrow and does not properly allow for the use of multiple sports. The proposed complex expands beyond the existing field limits into the wooded areas north of the existing facility. As a result, minimal impacts are proposed within the 50-foot wetland buffer. Most of the associated buffer impacts are temporary due to regrading and seeding. As a result, the proposed project represents the most practicable alternative to provide Dover High School's athletic teams with a centralized athletic complex with varying purposes.

(b) Avoidance. The potential impacts have been avoided to the maximum extent practicable. The applicant will demonstrate by plan and example that the proposed construction represents the least impacting alternative.

The proximity of the proposed track and field upgrades to the wetlands has been minimized to the maximum extent practicable within the site constraints. Several alternatives were considered to minimize potential impacts. The City of Dover's goal is to have a central athletic complex, providing a space for several sports. One alternative considered orienting the track along Bellamy Road. This alternative, though, is not ideal as it cuts out the baseball field from the overall "complex". Therefore, the alternative chosen provides minimized impacts to the nearby wetlands to the maximum extent practicable while also providing a centralized facility that can be shared.

(c) Minimization. Any unavoidable impacts have been minimized. No reasonable alternative to the proposed construction exists which does not impact a wetland or which has less detrimental impact on a wetland. Design, construction and maintenance methods will be prepared by a registered engineer to minimize detrimental impacts to the wetlands and will include restoration of the site as nearly as possible to its original grade.

The proposed design of the athletic complex includes a stormwater management system that will capture and treat runoff from the parking lot, walkways, and field. The remaining areas will be restored with loam and seeded with a conservation wildlife seed mix comprised of native species within the 50 foot wetland buffer. The proposed design minimizes disturbance and construction within the buffer

zone and minimizes the discharge of untreated stormwater to the maximum extent practicable resulting in an improvement over the existing conditions of the buffer zone.

Erosion control barriers consisting of compost filter tubers or other similarly effective devices will be used to protect the wetlands throughout the duration of construction. These protective measures will be inspected after significant precipitation events and repaired or replaced as necessary. The proposed design includes a retaining wall along with a fence separating the field and bleachers from Wetland 1/2 to prevent access to the wetland and resultant disturbance.

(d) Mitigation. If the applicant is required by state rules to prepare a compensatory mitigation plan, the applicant shall provide the Conservation Commission and Planning Board with one copy each of said plan for their review.

The project is not required by state or federal regulations to include a compensatory mitigation plan.

(e) Approval for the wetlands impact has been received from the New Hampshire Department of Environmental Services Wetlands Bureau pursuant to Section G(3) below.

The proposed project does not result in any direct impacts to wetlands and therefore does not require a NHDES Wetland Permit.

(f) To assess and summarize the wetlands' functions and values as denoted in the NH Method and § 170-28B(2).

A wetland functions and values assessment was completed as part of the wetland delineation conducted on June 19 and July 2, 2024 and is further outlined in the Wetland and Jurisdictional Resource Area Assessment.

Secondary Groundwater Protection District – Conditional Use Permit

As the western portion of the site lies within the Secondary Groundwater Protection District, the project requires a Conditional Use Permit in accordance with Section 170-33 of the City of Dover Zoning Ordinance. As demonstrated in the supplemental CUP Drainage Analysis, the proposed stormwater management design aligns with the intent of the district for the protection of groundwater resources. This is achieved through the use of a Bioretention System (Rain Garden) for the treatment and infiltration of stormwater runoff.

Additionally, the project has been designed in compliance with the New Hampshire Department of Environmental Services (NHDES) Alteration of Terrain (AoT) regulations (Env-Wq 1500), which complement the City's groundwater protection standards. We believe the project is consistent with the goals of the ordinance and respectfully submit it for your review and recommendation.

Conclusion

We trust the above-mentioned and enclosed materials and additional supplemental materials address the criteria to grant a Conditional Use Permit for the proposed project for work withing the Wetlands Protection District and Secondary Groundwater Protection District. The applicant respectfully requests to be placed on the Conservation Commission regular meeting agenda for August 11, 2025. If you have any questions or need any additional information, please contact Neil Hansen by phone at (603) 294-9213 or by email at nahansen@tighebond.com.

Sincerely,
TIGHE & BOND, INC.



Neil A. Hansen, PE
Project Manager



Joseph Persechino, PE
Vice President

Copy: City of Dover, SAU 11
City of Dover

F:\Projects\D\D5085 Dover School District\0001 High School Athletic Complex\Reports\Applications\City of Dover\Wetland CUP App\Word Docs\20250801_D5085-001 Wetland CUP Letter.docx

City of Dover, New Hampshire
CONDITIONAL USE PERMIT APPLICATION

[Revision Date: October 19, 2020]

Office Use Only	Project #:		Date Received:	
	Amount Paid:		Time Received:	

APPLICANT AND OWNER INFORMATION

Name of Applicant: Dover School District, SAU 11 Telephone # (603) 516-6800

Address of Applicant: 61 Locust Street, Suite 409

E-Mail Address: _____

Name of Property Owner (if different from applicant): City of Dover Telephone # _____

Address of Property Owner: 288 Central Ave, Dover, NH 03820

PROPERTY INFORMATION

Assessor's Map # H-12 Lot(s) # 0

Address of Property: 25 Alumni Drive

Zoning District(s) R-20 Overlay District(s) _____

Existing Use of Property: High School

CONDITIONAL USE PERMIT INFORMATION

Type of Conditional Use Permit (Check All That Apply):

☐ Conservation District	☐ RCM Use Overlay District	☐ Gateway District
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Describe Proposed Use or Activity That Requires Conditional Use Permit and Describe Any Impacts:

See enclosed Cover Letter

List Any Associated State or Federal Permits That Have Been or Will Be Applied For and Indicate Their Status: NHDES AoT, NHDES Sewer Connection,NHDES Shoreland Permit, NPDES Construction General Permit, City of Dover Site Plan Review Permit

Name of Professional That Prepared Plans: Neil A Hansen, PE | Tighe & Bond

Address 177 Corporate Drive, Portsmouth, NH 03801 Telephone #: 603-433-8818

Professional License #: 15227 E-mail address: NAHansen@tighebond.com

SIGNATURES

I/We hereby submit this application to the City of Dover Planning Board and attest that to the best of my knowledge all of the information on this application form and in the accompanying application materials and documentation is true and accurate. As applicant or as agent, I attest that I am duly authorized to act in this capacity.

Signature of Property Owner: _____ Date: _____

Signature of Applicant (if different from owner): _____ Date: 8/1/25

FERGUS CULLEN, CHAIR, DOVER ATHLETIC JOINT BUILDING COMMITTEE

Signature of Agent: _____ Date: _____

AUTHORIZATION TO ENTER SUBJECT PROPERTY

I, and my successors, hereby authorize members of the Dover Planning Board, Planning Department and other pertinent City Departments and boards to enter my property for the purpose of evaluating this application, including performing inspections during the application phase, post-approval phase, construction phase and occupancy phase. It is understood that these individuals must use all reasonable care, courtesy, and diligence when on the property.

Signature of Property Owner: _____ Date: _____

(PROPERTY IS OWNED BY CITY OF DOVER)

CITY OF DOVER CONDITIONAL USE
LIST OF ABUTTERS

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		City of Dover	288 Central Ave, Dover, NH 03820

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APPLICANT NAME	APPLICANT COMPANY	MAILING ADDRESS
Fergus Cullen	Dover School District, SAU 11	61 Locust Street, Suite 409, Dover, NH 03820

Surveyor and/or Engineer/Professional Agent:

NAME	COMPANY	MAILING ADDRESS
Neil Hansen	Tighe & Bond	177 Corporate Drive, Portsmouth, NH 03801

Conservation Easement Holder:

TAX MAP	LOT #	NAME OF EASEMENT HOLDER	MAILING ADDRESS

DOVER HIGH SCHOOL ATHLETICS FACILITY PROJECT

DOVER, NEW HAMPSHIRE

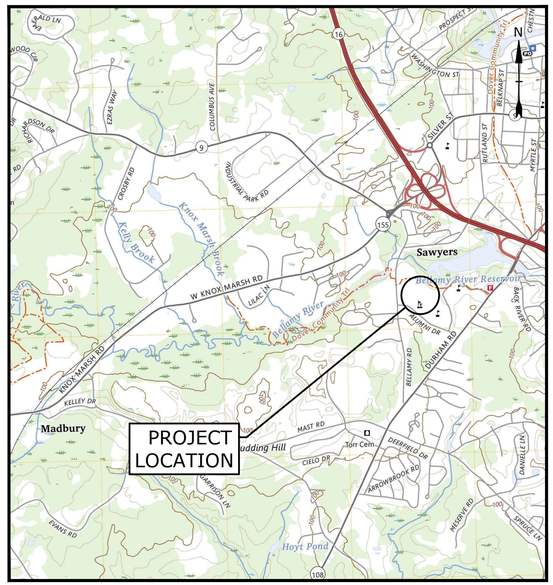
WETLAND & GROUNDWATER PROTECTION

CONDITIONAL USE PERMIT DRAWINGS

AUGUST 1, 2025

LAST REVISED: AUGUST 5, 2025

LIST OF DRAWINGS		
SHEET NO.	SHEET TITLE	LAST REVISED
	COVER SHEET	08/05/2025
C-101	OVERALL EXISTING CONDITIONS / DEMOLITION PLAN	08/05/2025
C-102	OVERALL SITE PLAN	08/05/2025
C-103	OVERALL GRADING, DRAINAGE & EROSION CONTROL PLAN	08/05/2025
C-103.1	GRADING, DRAINAGE & EROSION CONTROL PLAN	08/05/2025
C-103.2	GRADING, DRAINAGE & EROSION CONTROL PLAN	08/05/2025
C-501	EROSION CONTROL NOTES & DETAILS SHEET	08/05/2025
C-502	DETAILS SHEET	08/05/2025
C-503	DETAILS SHEET	08/05/2025



LOCATION MAP
SCALE: 1" = 2,000'

PREPARED BY:

Tighe&Bond
177 Corporate Drive
Portsmouth, NH 03801
(603) 433-8818

STATE OF NEW HAMPSHIRE
NEIL A. HANSEN
No. 15227
LICENSED PROFESSIONAL ENGINEER
8/5/2025

PREPARED FOR:

The Dover School District, SAU #11
61 Locust Street, Suite 409
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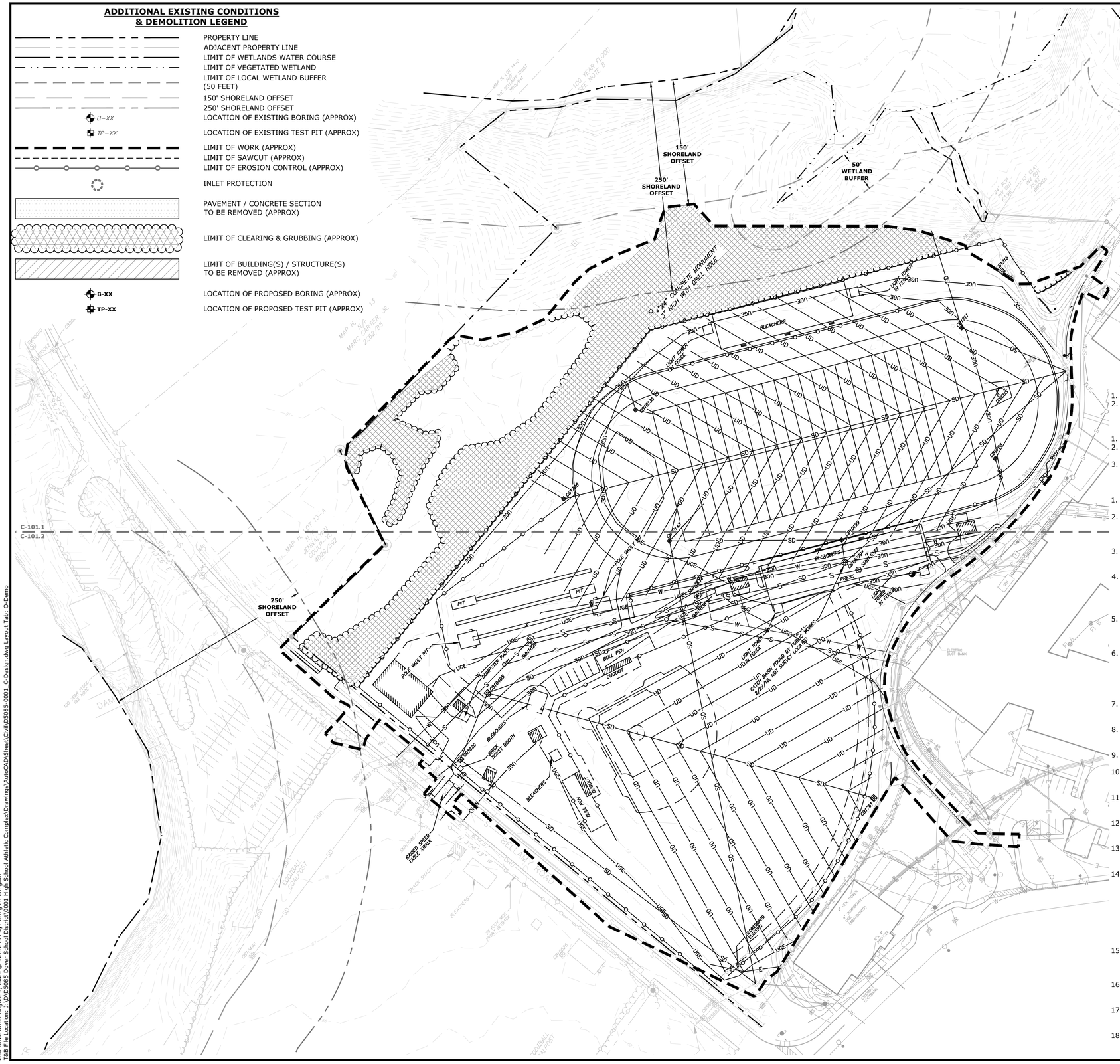
SUPPLEMENTAL CUP SUBMISSION
COMPLETE SET 9 SHEETS

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Last Save Date: August 5, 2025 12:56 AM By: CML
Plot Date: Tuesday, August 05, 2025 Plotted By: Craig M. Langton
T&B File Location: J:\D\D5085 Dover School District\0001 High School Athletic Complex\Drawings\AutoCAD\Sheet\Civil\D5085-0001_CS.dwg Layout Tab: CS-CUP

ADDITIONAL EXISTING CONDITIONS & DEMOLITION LEGEND

- PROPERTY LINE
- ADJACENT PROPERTY LINE
- LIMIT OF WETLANDS WATER COURSE
- LIMIT OF VEGETATED WETLAND
- LIMIT OF LOCAL WETLAND BUFFER (50 FEET)
- 150' SHORELAND OFFSET
- 250' SHORELAND OFFSET
- LOCATION OF EXISTING BORING (APPROX) — B–XX
- LOCATION OF EXISTING TEST PIT (APPROX) — TP–XX
- LIMIT OF WORK (APPROX)
- LIMIT OF SAWCUT (APPROX)
- LIMIT OF EROSION CONTROL (APPROX)
- INLET PROTECTION
- PAVEMENT / CONCRETE SECTION TO BE REMOVED (APPROX)
- LIMIT OF CLEARING & GRUBBING (APPROX)
- LIMIT OF BUILDING(S) / STRUCTURE(S) TO BE REMOVED (APPROX)
- LOCATION OF PROPOSED BORING (APPROX) — B-XX
- LOCATION OF PROPOSED TEST PIT (APPROX) — TP-XX



EXISTING CONDITIONS PLAN NOTES:

1. EXISTING CONDITIONS ARE BASED ON REFERENCE PLANS #1 AND #2.
2. JURISDICTIONAL WETLAND DELINEATION AND FILED LOCATED BY TIGHE & BOND, ON JUNE 19 AND JULY 2, 2024.

REFERENCE PLANS:

1. "BOUNDRY SURVEY" PREPARED BY SEBAGO TECHNICS, DATED MARCH 3, 2016.
2. "DOVER HIGH SCHOOL AS-BUILT DRAWINGS" PREPARED BY S.U.R. CONSTRUCTION INC., DATED NOVEMBER 3, 2019.
3. "DOVER HIGH SCHOOL & CAREER TECHNICAL CENTER" PREPARED BY NOBIS ENGINEERING, INC., AND HMFH ARCHITECTS, DATED AUGUST 12, 2016.

DEMOLITION NOTES:

1. EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO THE START OF ANY CLEARING OR DEMOLITION ACTIVITIES.
2. THE CONTRACTOR IS RESPONSIBLE FOR SUPPORT OF EXISTING UTILITIES AND REPAIR OR REPLACEMENT COSTS OF UTILITIES DAMAGED DURING CONSTRUCTION, WHETHER ABOVE OR BELOW GRADE. REPLACE DAMAGED UTILITIES IMMEDIATELY AT NO ADDITIONAL COST TO THE OWNER AND AT NO COST TO THE PROPERTY OWNER.
3. 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.
4. CONTRACTOR SHALL VERIFY ORIGIN OF ALL DRAINS AND UTILITIES PRIOR TO REMOVAL/TERMINATION TO DETERMINE IF DRAINS OR UTILITY ARE 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.
5. 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.
6. 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.
7. 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.
8. 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.
9. THE CONTRACTOR SHALL COORDINATE REMOVAL, RELOCATION, DISPOSAL OR SALVAGE OF UTILITIES WITH THE OWNER AND APPROPRIATE UTILITY COMPANY.
10. UTILITIES SHALL BE TERMINATED AT THE MAIN LINE PER UTILITY COMPANY STANDARDS. THE CONTRACTOR SHALL REMOVE ALL ABANDONED UTILITIES LOCATED WITHIN THE LIMITS OF WORK.
11. 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.
12. 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.
13. 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.
14. 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.
15. THE 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.
16. 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.
17. BOLD LINETYPES AND OBJECTS SHOWN WITHIN THE LIMITS OF WORK INDICATE SITE FEATURES TO BE REMOVED, WHILE FADED LINETYPES AND FEATURES ARE TO REMAIN, UNLESS SPECIFICALLY IDENTIFIED OTHERWISE.
18. THE CONTRACTOR SHALL COORDINATE WITH THE CITY OF DOVER COMMUNITY SERVICES DEPARTMENT FOR THE REMOVAL OR SALVAGE AND REUSE OF EXISTING GRANITE CURB WITHIN THE CITY RIGHT OF WAY.

Tighe&Bond

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STATE OF NEW HAMPSHIRE – NEIL A. HANSEN No. 15227 LICENSED PROFESSIONAL ENGINEER
8/5/2025

SCALE IN FEET
0 60' 120'
GRAPHIC SCALE

Dover High School Athletic Facility Project

Dover School District, SAU #11

25 Alumni Drive
Dover, New Hampshire

MARK	DATE	DESCRIPTION
B	8/5/2025	Supplemental CUP
A	8/1/2025	Wetland CUP Submission

PROJECT NO:	D5085-0001
DATE:	8/1/2025
FILE:	D5085-0001_C-DESIGN.DWG
DRAWN BY:	C. LANGTON
DESIGNED BY:	C. LANGTON
CHECKED BY:	N. HANSEN
APPROVED BY:	J. PERSECHINO

OVERALL EXISTING CONDITIONS / DEMOLITION PLAN

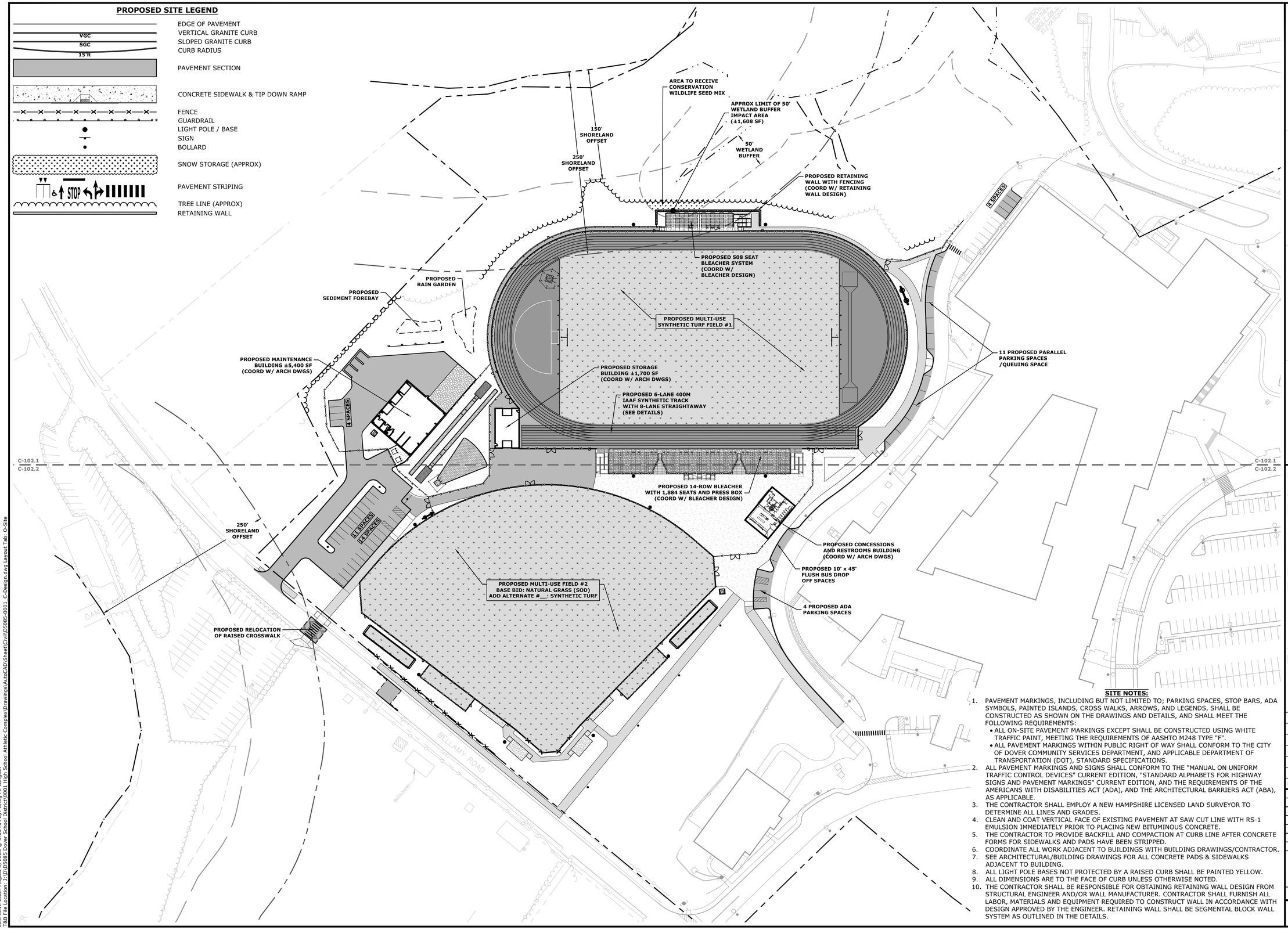
SCALE: AS SHOWN

C-101

Plot Date: Tuesday, August 05, 2025 Plotted By: Craig M. Langton
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T&B File Location: J:\D\D5085 Dover School District\0001 High School Athletic Complex\Drawings\AutoCAD\Sheet\Civil\D5085-0001_C-Design.dwg Layout Tab: O-Demo

PROPOSED SITE LEGEND

- EDGE OF PAVEMENT
- VGC — VERTICAL GRANITE CURB
- SGC — SLOPED GRANITE CURB
- 15'R — CURB RADIUS
- PAVEMENT SECTION
- CONCRETE SIDEWALK & TIP DOWN RAMP
- FENCE
- GUARDRAIL
- LIGHT POLE / BASE
- SIGN
- BOLLARD
- SNOW STORAGE (APPROX)
- PAVEMENT STRIPING
- TREE LINE (APPROX)
- RETAINING WALL



SITE NOTES:

1. PAVEMENT MARKINGS, INCLUDING BUT NOT LIMITED TO; PARKING SPACES, STOP BARS, ADA SYMBOLS, PAINTED ISLANDS, CROSS WALKS, ARROWS, AND LEGENDS, SHALL BE CONSTRUCTED AS SHOWN ON THE DRAWINGS AND DETAILS, AND SHALL MEET THE FOLLOWING REQUIREMENTS:
   - ALL ON-SITE PAVEMENT MARKINGS EXCEPT SHALL BE CONSTRUCTED USING WHITE TRAFFIC PAINT, MEETING THE REQUIREMENTS OF AASHTO M248 TYPE "F".
   - ALL PAVEMENT MARKINGS WITHIN PUBLIC RIGHT OF WAY SHALL CONFORM TO THE CITY OF DOVER COMMUNITY SERVICES DEPARTMENT, AND APPLICABLE DEPARTMENT OF TRANSPORTATION (DOT), STANDARD SPECIFICATIONS.
2. ALL PAVEMENT MARKINGS AND SIGNS SHALL CONFORM TO THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" CURRENT EDITION, "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS" CURRENT EDITION, AND THE REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT (ADA), AND THE ARCHITECTURAL BARRIERS ACT (ABA), AS APPLICABLE.
3. THE CONTRACTOR SHALL EMPLOY A NEW HAMPSHIRE LICENSED LAND SURVEYOR TO DETERMINE ALL LINES AND GRADES.
4. CLEAN AND COAT VERTICAL FACE OF EXISTING PAVEMENT AT SAW CUT LINE WITH RS-1 EMULSION IMMEDIATELY PRIOR TO PLACING NEW BITUMINOUS CONCRETE.
5. THE CONTRACTOR TO PROVIDE BACKFILL AND COMPACTION AT CURB LINE AFTER CONCRETE FORMS FOR SIDEWALKS AND PADS HAVE BEEN STRIPPED.
6. COORDINATE ALL WORK ADJACENT TO BUILDINGS WITH BUILDING DRAWINGS/CONTRACTOR.
7. SEE ARCHITECTURAL/BUILDING DRAWINGS FOR ALL CONCRETE PADS & SIDEWALKS ADJACENT TO BUILDING.
8. ALL LIGHT POLE BASES NOT PROTECTED BY A RAISED CURB SHALL BE PAINTED YELLOW.
9. ALL DIMENSIONS ARE TO THE FACE OF CURB UNLESS OTHERWISE NOTED.
10. THE 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.

Tighe&Bond

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STATE OF NEW HAMPSHIRE
NEIL A. HANSEN
No. 15227
LICENSED PROFESSIONAL ENGINEER
8/5/2025

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OVERALL SITE PLAN

SCALE: AS SHOWN

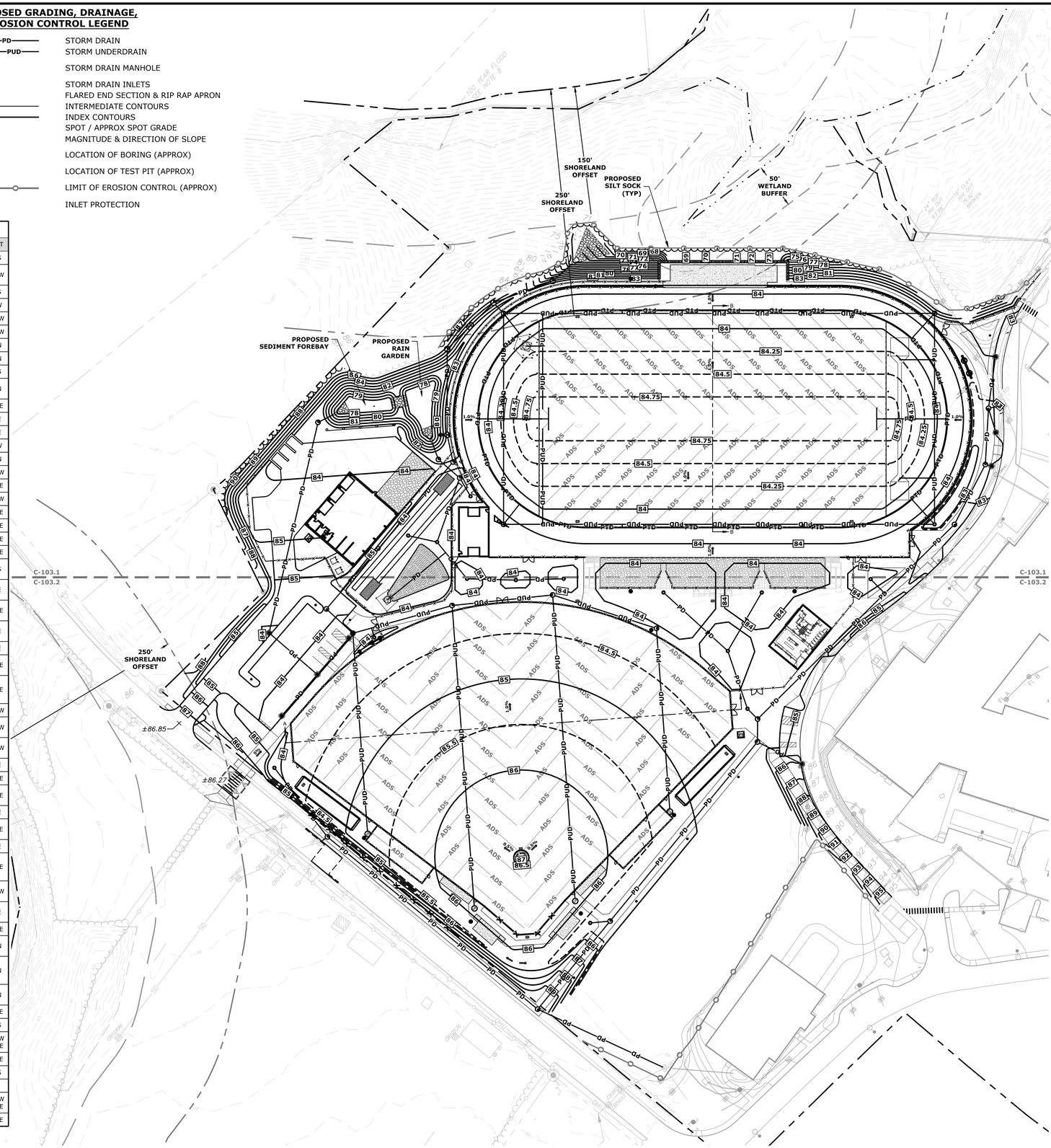
C-102

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PROPOSED GRADING, DRAINAGE, & EROSION CONTROL LEGEND

PD PD PD PD — STORM DRAIN
PUD PUD PUD PUD — STORM UNDERDRAIN
STORM DRAIN MANHOLE
STORM DRAIN INLETS
FLARED END SECTION & RIP RAP APRON
8 — INTERMEDIATE CONTOURS
10 — INDEX CONTOURS
44.45 — SPOT / APPROX SPOT GRADE
2% — MAGNITUDE & DIRECTION OF SLOPE
B-XX — LOCATION OF BORING (APPROX)
TP-XX — LOCATION OF TEST PIT (APPROX)
LIMIT OF EROSION CONTROL (APPROX)
INLET PROTECTION

STRUCTURE TABLE			
STRUCTURE	RIM	INV. IN	INV. OUT
PAD-01	84.00	77.55 NE	77.45 S
PAD-02	83.60	78.00 N 78.00 E	77.90 SW
PAD-03	83.50		78.50 S
PAD-04	83.50		78.50 W
PAD-05	83.75		81.75 NW
PAD-06	83.80	81.50 SE	81.40 NW
PAD-07	83.75	81.15 SE	81.05 N
PAD-08	83.90		80.90 N
PAD-09	83.95		80.95 S
PCB-01	83.45	79.75 W 79.75 E	79.65 N
PCB-02	83.85	79.35 S	79.25 NE
PCB-04	83.85	78.20 SW	78.10 E
PCB-05	83.40		80.05 E
PCB-06	83.45		80.05 W
PCB-07	85.65		80.65 N
PCB-08	82.75		72.65 NW
PCB-09	82.75		77.75 NE
PCB-10	82.50		77.60 SW
PCO-01	84.75		78.50 NE
PCO-02	86.05		78.50 NE
PCO-03	86.05		78.50 NE
PCO-04	84.75		78.50 NE
PDMH-01	86.35	80.20 W 77.65 N	77.70 S
PDMH-02	89.60	76.30 N 78.80 S	74.20 E
PDMH-03	85.20	72.40 W 80.40 S	72.30 NE
PDMH-04	84.25	77.35 N 72.20 SW	72.10 E
PDMH-05	83.70	70.70 W	70.60 E
PDMH-06	83.30	70.25 W 72.60 SE	70.15 NE
PDMH-07	83.60	77.60 SW 69.85 SW 77.30 NE	69.75 SE
PDMH-08	84.55	78.50 SW	78.50 NW
PDMH-09	84.95	78.50 SE 78.50 SW	78.50 NW
PDMH-10	84.95	78.50 SE 78.50 SW	78.50 NW
PDMH-11	84.25	78.30 S	78.20 E
PDMH-12	84.05	77.25 W	77.15 NE
PDMH-13	83.50	77.00 SW 75.20 NW	75.10 NE
PDMH-14	85.00	74.65 SW	74.55 E
PDMH-15	85.00	74.20 W 76.90 S	74.10 SE
PDMH-16	82.00	73.75 NW	73.65 E
PDMH-17	83.25	80.90 N 77.00 SE 80.65 E	77.00 NE
PDMH-18	83.55	80.05 SW 80.20 W	77.00 NW
PDMH-19	85.35	73.65 W 80.05 NW	73.55 E
PDMH-20	83.90	80.05 S	78.85 NE
PDMH-21	83.90	80.80 S 80.35 SW	80.25 N
POS-01	83.00	77.00 SE 80.65 S 77.00 SW	77.00 N
POS-02	84.50	78.50 SW 78.50 SE	78.50 N
POS-03	81.00		75.25 SE
PYD-01	83.50		78.50 S
PYD-02	82.50	80.15 N	77.00 NW 80.05 NE
PYD-03	83.75		79.00 NE
PYD-04	83.65		72.30 S
PYD-05	83.85	80.45 SE	
PYD-06	83.75	80.80 S	80.60 NW 80.70 NE
PYD-07	85.15		80.15 SE



GRADING AND DRAINAGE NOTES:

1. GENERAL 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. SEE UTILITY PLAN FOR ALL SITE UTILITY INFORMATION.
4. ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE.
5. THE 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.
6. PROVIDE SITE GRADING AT ACCESSIBLE SIDEWALK RAMPS, SIDEWALKS, AND BUILDING ENTRANCES THAT IS CONSISTENT WITH THE RELEVANT ACCESS REQUIREMENTS OF THE ARCHITECTURAL BARRIERS ACT (ABA), THE AMERICANS WITH DISABILITIES ACT (ADA). SMALL CHANGES IN GRADE OVER RELATIVELY SHORT DISTANCES (E.G. AT PARKING SPACES, ACCESSIBLE ROUTES, AND RAMPS) MIGHT NOT BE CLEARLY DEPICTED WITHIN THE CONTOUR INTERVAL SHOWN. COMPLY WITH THE CRITERIA IN THESE STANDARDS. SELECT MAXIMUM SLOPE CRITERIA ARE REPRODUCED BELOW:
   - ACCESSIBLE PARKING STALLS AND PASSENGER LOADING ZONES (IN ANY DIRECTION) SHALL BE < 2.0%
   - LONGITUDINAL SLOPE ALONG ACCESSIBLE ROUTES SHALL BE < 5.0%
   - CROSS SLOPE ALONG ACCESSIBLE ROUTES SHALL BE < 2.0%
7. THE CONTRACTOR SHALL THOROUGHLY CLEAN ALL CATCH BASINS AND DRAIN LINES, WITHIN THE LIMIT OF WORK, OF SEDIMENT IMMEDIATELY UPON COMPLETION OF CONSTRUCTION.
8. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM WITH APPLICABLE FEDERAL, STATE AND LOCAL CODES.
9. ALL DISTURBED AREAS NOT TO BE PAVED OR OTHERWISE TREATED SHALL RECEIVE 6" LOAM, SEED FERTILIZER AND MULCH.
10. ALL PROPOSED CATCH BASINS SHALL BE EQUIPPED WITH OIL/GAS SEPARATOR HOODS AND 4' SUMPS.
11. THE CONTRACTOR SHALL VERIFY INVERTS OF EXISTING DRAIN LINES AND STRUCTURES AT PROPOSED DRAINAGE CONNECTION LOCATIONS PRIOR TO CONSTRUCTION AND IMMEDIATELY NOTIFY ENGINEER OF ANY DISCREPANCIES.

GENERAL EROSION CONTROL NOTES:

1. ALL EROSION CONTROL MEASURES AND PRACTICES SHALL CONFORM TO THE "NEW HAMPSHIRE STORMWATER MANUAL, LATEST EDITION.
2. SEE SHEET C-501 AND C-502 FOR ADDITIONAL EROSION CONTROL REQUIREMENTS AND DETAILS.
3. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ALL EROSION AND SEDIMENT CONTROL MEASURES FOR APPROVAL.
4. AS THE FIRST ORDER OF WORK, PRIOR TO ANY EARTH DISTURBANCE, THE CONTRACTOR SHALL INSTALL ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES INCLUDING BUT NOT LIMITED TO; INLET PROTECTION BARRIERS, SILT SOCKS, SILT FENCES, MULCH BERMS, AND STABILIZED CONSTRUCTION EXITS AS SHOWN ON THE DRAWINGS, AND AS REQUIRED BY ALL STATE AND LOCAL PERMITS AND APPROVALS.
5. INLET PROTECTION BARRIERS SHALL BE INSTALLED AT ALL EXISTING AND PROPOSED CATCH BASINS/CURB INLETS AND YARD DRAINS WITHIN THE LIMITS OF WORK AS WELL AS ANY CATCH BASINS/CURB INLETS AND YARD DRAINS THAT RECEIVE RUNOFF FROM ANY CONSTRUCTION ACTIVITIES. THESE MEASURES SHALL BE FULLY MAINTAINED FOR THE DURATION OF THE PROJECT.
6. PERIMETER CONTROLS INCLUDING SILT FENCES, MULCH BERM, SILT SOCK, AND/OR HAY BALE BARRIERS SHALL BE MAINTAINED FOR THE DURATION OF THE PROJECT UNTIL ALL NON-PAVED AREAS HAVE BEEN STABILIZED.
7. THE CONTRACTOR SHALL INSTALL EROSION CONTROL BLANKETS ON ALL STEEP SLOPE AREA (3:1 OR GREATER).
8. DURING CONSTRUCTION THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTROLLING DUST AND WIND EROSION THROUGHOUT THE CONSTRUCTION PERIOD. DUST CONTROL MEASURES INCLUDE, BUT NOT LIMITED TO; MOISTEN EXPOSED SOIL SURFACES PERIODICALLY WITH ADEQUATE WATER TO CONTROL DUST, MECHANICAL SWEEPERS ON PAVED SURFACES, AND COVERING SURFACES WITH CRUSHED STONE OR COARSE GRAVEL.
9. THE CONTRACTOR SHALL HAVE ALL EROSION AND SEDIMENT CONTROL MEASURES INCLUDING, BUT NOT LIMITED TO, INLET PROTECTION BARRIERS, PERIMETER SEDIMENT CONTROLS, AND STEEP SLOPE EROSION CONTROL BLANKETS INSPECTED BY A QUALIFIED PERSON AT LEAST ONCE A WEEK OR WITHIN 24 HOURS AFTER A RAIN EVENT OF 0.25 INCHES OR GREATER. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE ADJUSTED, REPAIRED, MODIFIED, OR ADDITIONAL MEASURES INSTALLED AS NECESSARY TO ADDRESS EVOLVING CONDITIONS DURING CONSTRUCTION.
10. SEDIMENT CONTROL FILTER MEASURES SHALL BE REPLACED WHEN SEDIMENT REACHES 1/3 THE HEIGHT OF THE FILTER.
11. THE CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ALL TEMPORARY EROSION CONTROL DEVICES UPON COMPLETION OF CONSTRUCTION.
12. ALL DISTURBED AREAS NOT OTHERWISE BEING TREATED SHALL RECEIVE 6" LOAM, SEED AND FERTILIZER.
13. ALL CATCH BASIN SUMPS AND PIPING SHALL BE THOROUGHLY CLEANED TO REMOVE ALL SEDIMENT AND DEBRIS AFTER THE PROJECT HAS BEEN FULLY STABILIZED.
14. TEMPORARY SOIL STOCKPILE SHALL BE SURROUNDED WITH SEDIMENT CONTROLS AND SHALL BE STABILIZED BY TEMPORARY EROSION CONTROL SEEDING. STOCKPILE AREAS TO BE LOCATED AS FAR AS POSSIBLE FROM THE DELINEATED EDGE OF WETLANDS. STOCKPILES OVER 10 FEET SHALL HAVE SAFETY FENCING PROVIDED AROUND THE STOCKPILES.
15. IF NECESSARY CONCRETE TRUCKS WILL BE REQUIRED TO WASHOUT THE SHOOTS. THIS ACTIVITY SHALL ONLY BE DONE WITHIN A DESIGNATED CONCRETE WASHOUT FACILITY ON-SITE.
16. IF NECESSARY TEMPORARY SEDIMENT TRAPS SHALL BE PROVIDED FOR GENERAL EXCAVATION DEWATERING PRACTICES PRIOR TO DIRECTING FLOW TO ANY OTHER EROSION AND SEDIMENT CONTROL MEASURES.
17. THE CONTRACTOR SHALL BE FAMILIAR WITH SPILL PREVENTION MEASURES REQUIRED BY ALL LOCAL, STATE, AND FEDERAL REGULATIONS.

Tighe&Bond

STATE OF NEW HAMPSHIRE
NEIL A. HANSEN
No. 15227
LICENSED PROFESSIONAL ENGINEER
8/5/2025

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GRAPHIC SCALE

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PROJECT NO:	D5085-0001
DATE:	8/1/2025
FILE:	D5085-0001_C-DESIGN.DWG
DRAWN BY:	C. LANGTON
DESIGNED BY:	C. LANGTON
CHECKED BY:	N. HANSEN
APPROVED BY:	J. PERSECHINO

OVERALL GRADING, DRAINAGE, & EROSION CONTROL PLAN

SCALE: AS SHOWN

C-103

Plot Date: Tuesday, August 05, 2025 Plotted By: Craig M. Langton
Last Saved By: CLANGTON On: 8/5/2025 2:42 PM By: Craig M. Langton
T&B File Location: J:\D\D5085 Dover School District\0001 High School Athletic Complex\Drawings\AutoCAD\Sheet\Civil\D5085-0001_C-Design.dwg Layout Tab: O-Grade

Tighe&Bond

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STATE OF NEW HAMPSHIRE
NEIL
K.
HANSEN
No. 15227
LICENSED
PROFESSIONAL ENGINEER
8/5/2025

SCALE IN FEET
0 40' 80'
GRAPHIC SCALE

Dover High School Athletic Facility Project

Dover School District, SAU #11

25 Alumni Drive
Dover, New Hampshire

MARK	DATE	DESCRIPTION
A	8/5/2025	Supplemental CUP

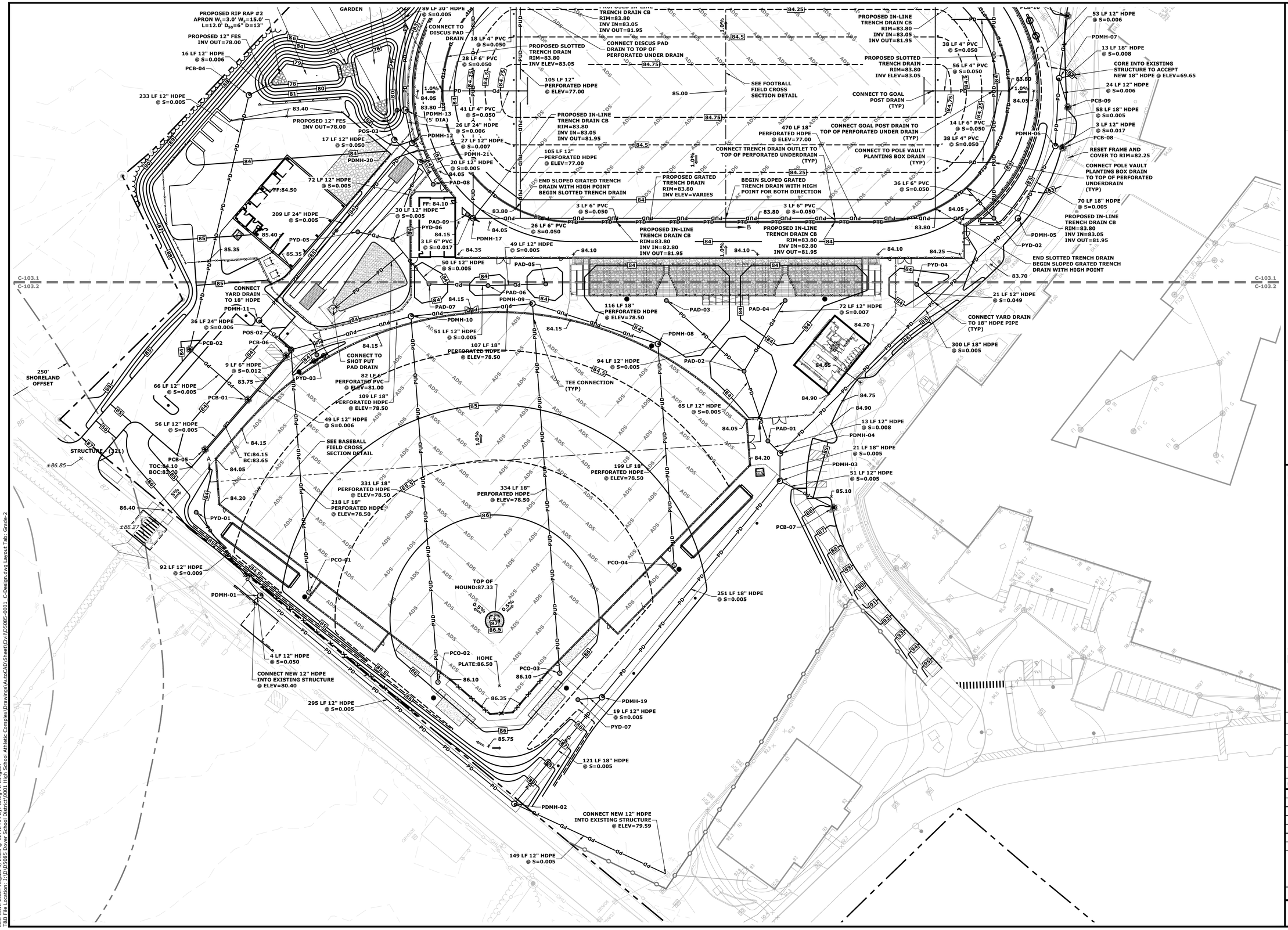
PROJECT NO:	D5085-0001
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CHECKED BY:	N. HANSEN
APPROVED BY:	J. PERSECHINO

GRADING, DRAINAGE, & EROSION CONTROL PLAN

SCALE: AS SHOWN

C-103.1

Plot Date: Tuesday, August 05, 2025 Plotted By: Craig M. Langton
Last Saved By: Craig M. Langton on Tuesday, August 05, 2025 7:42 AM
T&B File Location: J:\D\D5085 Dover School District\0001 High School Athletic Complex\Drawings\AutoCAD\SheetCivil\D5085-0001_C-Design.dwg Layout Tab: Grade-1



Tighe&Bond

NEIL A. HANSEN No. 15227 LICENSED PROFESSIONAL ENGINEER - STATE OF NEW HAMPSHIRE -
8/5/2025

Dover High School Athletic Facility Project

Dover School District, SAU #11

25 Alumni Drive
Dover, New Hampshire

MARK	DATE	DESCRIPTION
A	8/5/2025	Supplemental CUP

PROJECT NO:	D5085-0001
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DRAWN BY:	C. LANGTON
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CHECKED BY:	N. HANSEN
APPROVED BY:	J. PERSECHINO

GRADING, DRAINAGE, & EROSION CONTROL PLAN

SCALE: AS SHOWN

C-103.2

Plot Date: Tuesday, August 05, 2025 Plotted By: Craig M. Langton
Last Saved By: Craig M. Langton Last Saved: Tuesday, August 05, 2025 7:22 AM By: Craig M. Langton
T&B File Location: J:\D\D5085 Dover School District\0001 High School Athletic Complex\Drawings\AutoCAD\Sheet\Civil\D5085-0001_C-Design.dwg Layout Tab: Grade-2

GENERAL PROJECT INFORMATION

PROJECT OWNER: THE DOVER SCHOOL DISTRICT, SAU #11
25 ALUMNI DRIVE
DOVER, NEW HAMPSHIRE
PROJECT NAME: DOVER HIGH SCHOOL ATHLETICS FACILITY PROJECT
PROJECT ADDRESS: 25 ALUMNI DRIVE
DOVER, NEW HAMPSHIRE
PROJECT MAP / LOT: MAP H-2 / LOT 12
PROJECT LATITUDE: 43°10'40.3"N
PROJECT LONGITUDE: 70°53'18.9"W

PROJECT DESCRIPTION

THE PROJECT CONSISTS OF THE CONSTRUCTION OF A TWO (2) NEW SPORTS FIELD FOR HIGH SCHOOL FOOTBALL, BASEBALL, SOCCER, WITH ASSOCIATED SITE IMPROVEMENTS. THE WORK IS ANTICIPATED TO START IN FALL OF 2026, AND BE COMPLETED BY WINTER OF 2027.

DISTURBED AREA

THE TOTAL AREA TO BE DISTURBED IS APPROXIMATELY 12.4 ACRES.

SOIL CHARACTERISTICS

BASED ON THE NRCS WEB SOIL SURVEY FOR STRAFFORD COUNTY - NEW HAMPSHIRE, THE SOILS ON SITE CONSIST OF BUXTON SILT LOAM, HOLLIS-CHARLTON, SUFFIELD, AND WINDSOR SOILS WHICH ARE MODERATELY WELL, WELL, WELL, AND WELL DRAINED SOILS RESPECTIVELY WITH HYDROLOGIC SOIL GROUP RATINGS OF C, D, C, AND A RESPECTFULLY.

NAME OF RECEIVING WATERS

THE STORMWATER RUNOFF FROM THE SITE WILL BE DISCHARGED VIA OVERLAND FLOW, TO A CLOSED DRAINAGE SYSTEM, THEN TO AN UNNAMED WETLAND, AND ULTIMATELY FLOWS TO THE BELLAMY RIVER.
(STATE WATERBODY ID:NHRIV600030903-09).

CONSTRUCTION SEQUENCE PLAN OF MAJOR ACTIVITIES:

1. CONSTRUCT TEMPORARY AND PERMANENT PERIMETER EROSION CONTROLS, SEDIMENT CONTROLS AND DETENTION MEASURES, PRIOR TO ANY EARTH MOVING OPERATIONS THAT MAY AFFECT STORMWATER RUNOFF SUCH AS:
   - DISPOSAL OF SEDIMENT SPOIL, STUMP AND OTHER SOLID WASTE
   - CONTROL OF DUST
   - CONSTRUCTION ROADWAYS, DRIVES, AND PARKING AREAS
   - INSTALLATION OF UTILITIES AND BUILDING CONSTRUCTION
   - NEARNESS OF CONSTRUCTION SITE TO RECEIVING WATERS
   - CONSTRUCTION DURING LATE WINTER AND EARLY SPRING
2. CUT AND CLEAR TREES. GRUBBING SHALL NOT OCCUR UNTIL AFTER THE INSTALLATION OF PERIMETER CONTROLS.
3. CLEAR AND DISPOSE OF DEBRIS.
4. CONSTRUCT TEMPORARY WATER DIVERSION (SWALES, BASINS, ETC.) AS NECESSARY UNTIL AREAS ARE STABILIZED.
5. CONSTRUCT PONDS AND SWALES BEFORE ROUGH GRADING THE SITE.
6. ALL PERMANENT SWALES, DETENTION, RETENTION AND SEDIMENTATION BASINS TO BE STABILIZED USING THE VEGETATIVE AND NON-STRUCTURAL BMPS PRIOR TO DIRECTING RUNOFF TO THEM.
7. CONSTRUCT REQUIRED UTILITIES AND BUILDING(S)
8. GRADE IN ROADWAYS, DRIVES, AND PARKING AREAS.
9. BEGIN PERMANENT AND TEMPORARY SEEDING, LOAMING AND MULCHING.
10. DAILY, OR AS REQUIRED, CONSTRUCT TEMPORARY BERMS, DRAINS, DITCHES, PERIMETER EROSION CONTROL MEASURES, SEDIMENT TRAPS, ETC., MULCH AND SEED AS REQUIRED.
11. SEDIMENT TRAPS AND/OR BASINS SHALL BE USED AS NECESSARY TO CONTAIN RUNOFF UNTIL SOILS ARE STABILIZED.
12. FINISH PAVING ALL DRIVES AND PARKING LOTS.
13. INSPECT AND MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES.
14. COMPLETE PERMANENT SEEDING AND LANDSCAPING.
15. 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. THE AREA OF DISTURBANCE SHALL ONLY EXCEED FIVE (5) ACRES AT ANY ONE TIME BEFORE DISTURBED AREAS ARE STABILIZED IF AN ENVIRONMENTAL MONITOR IS EMPLOYED DURING CONSTRUCTION IN ACCORDANCE WITH Env-Wq 1505.03 AND AS DESCRIBED UNDER THE "ENVIRONMENTAL MONITORING NOTES" SECTION ON THIS SHEET.
2. THE PROJECT IS TO BE MANAGED IN A MANNER THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:51-57 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES. ANY INVASIVE OR NOXIOUS PLANT SPECIES ENCOUNTERED DURING CONSTRUCTION SHALL BE CONTROLLED IN ACCORDANCE WITH THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION, "ENV 1, MANUAL 1 - BEST MANAGEMENT PRACTICES FOR CONTROL OF INVASIVE AND NOXIOUS PLANT SPECIES", CURRENT EDITION.

ENVIRONMENTAL MONITORING NOTES:

1. INSPECT THE PROJECT SITE AT LEAST ONCE EACH WEEK FROM THE START OF TERRAIN ALTERATION ACTIVITIES UNTIL ALL TERRAIN ALTERATION ACTIVITIES ARE COMPLETED AND THE SITE IS STABILIZED.
2. IN ADDITION TO REGULAR WEEKLY INSPECTIONS, INSPECT THE PROJECT SITE DURING ANY RAIN EVENT IN WHICH 0.25 INCH OF PRECIPITATION OR MORE FALLS WITHIN A 24 HOUR PERIOD, PROVIDED THAT IF THE ENVIRONMENTAL MONITOR IS UNABLE TO BE PRESENT DURING SUCH A STORM, THE MONITOR SHALL INSPECT THE SITE WITHIN 24 HOURS OF THE RAIN EVENT.
3. SUBMIT A WRITTEN REPORT, STAMPED BY A QUALIFIED ENGINEER OR A CPESC SPECIALIST, TO THE DEPARTMENT WITHIN 24 HOURS OF EACH INSPECTION THAT:
   A. DESCRIBES THE PROGRESS OF THE PROJECT, INCLUDING WHETHER ALL CONDITIONS OF THE PERMIT ARE BEING MET AND, IF NOT, WHICH REQUIREMENTS ARE NOT BEING MET;
   B. IF ANY REQUIREMENTS ARE NOT BEING MET, AN EXPLANATION OF THE CORRECTIVE ACTION(S) THAT WILL BE OR ARE BEING TAKEN TO BRING THE PROJECT INTO COMPLIANCE WITH APPLICABLE REQUIREMENTS AND THE DEADLINE BY WHICH SUCH ACTIONS WILL BE COMPLETED; AND
   C. INCLUDES PHOTOGRAPHS OF THE SITE THAT ARE REPRESENTATIVE OF THE PROJECT AND;
4. RETAIN A COPY OF THE REPORT PREPARED PURSUANT TO (3), ABOVE, ON-SITE FOR REVIEW DURING SITE INSPECTIONS BY FEDERAL, STATE, AND LOCAL OFFICIALS.

EROSION CONTROL NOTES:

1. ALL EROSION CONTROL MEASURES AND PRACTICES SHALL CONFORM TO THE "NEW HAMPSHIRE STORMWATER MANUAL, LATEST EDISTION.
2. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ALL EROSION AND SEDIMENT CONTROL MEASURES FOR APPROVAL.
3. AS THE FIRST ORDER OF WORK, PRIOR TO ANY EARTH DISTURBANCE, THE CONTRACTOR SHALL INSTALL ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES INCLUDING BUT NOT LIMITED TO; INLET PROTECTION BARRIERS, SILT SOCKS, SILT FENCES, MULCH BERMS, AND STABILIZED CONSTRUCTION EXITS AS SHOWN ON THE DRAWINGS, AND AS REQUIRED BY ALL STATE AND LOCAL PERMITS AND APPROVALS.
4. INLET PROTECTION BARRIERS SHALL BE INSTALLED AT ALL EXISTING AND PROPOSED CATCH BASINS/CURB INLETS AND YARD DRAINS WITHIN THE LIMITS OF WORK AS WELL AS ANY CATCH BASINS/CURB INLETS AND YARD DRAINS THAT RECEIVE RUNOFF FROM ANY CONSTRUCTION ACTIVITIES. THESE MEASURES SHALL BE FULLY 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 ALL NON-PAVED AREAS HAVE BEEN STABILIZED.
6. CONTRACTOR SHALL INSTALL EROSION CONTROL BLANKETS ON ALL STEEP SLOPE AREA (3:1 OR GREATER).
7. DURING CONSTRUCTION THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTROLLING DUST AND WIND EROSION THROUGHOUT THE CONSTRUCTION PERIOD. DUST CONTROL MEASURES INCLUDE, BUT NOT LIMITED TO; MOISTEN EXPOSED SOIL SURFACES PERIODICALLY WITH ADEQUATE WATER TO CONTROL DUST, MECHANICAL SWEEPERS ON PAVED SURFACES, AND COVERING SURFACES WITH CRUSHED STONE OR COARSE GRAVEL.
8. THE CONTRACTOR SHALL HAVE ALL EROSION AND SEDIMENT CONTROL MEASURES INCLUDING, BUT NOT LIMITED TO, INLET PROTECTION BARRIERS, PERIMETER SEDIMENT CONTROLS, AND STEEP SLOPE EROSION CONTROL BLANKETS INSPECTED BY A QUALIFIED PERSON AT LEAST ONCE A WEEK OR WITHIN 24 HOURS AFTER A RAIN EVENT OF 0.25 INCHES OR GREATER. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE ADJUSTED, REPAIRED, MODIFIED, OR ADDITIONAL MEASURES INSTALLED AS NECESSARY TO ADDRESS EVOLVING CONDITIONS DURING CONSTRUCTION.
9. SEDIMENT CONTROL FILTER MEASURES SHALL BE REPLACED WHEN SEDIMENT REACHES 1/3 THE HEIGHT OF THE FILTER.
10. THE CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ALL TEMPORARY EROSION CONTROL DEVICES UPON COMPLETION OF CONSTRUCTION.
11. ALL DISTURBED AREAS NOT OTHERWISE BEING TREATED SHALL RECEIVE 6" LOAM, SEED AND FERTILIZER.

EROSION CONTROL OBSERVATIONS AND MAINTENANCE PRACTICES

1. THIS PROJECT EXCEEDS ONE (1) ACRE OF DISTURBANCE AND THUS REQUIRES A STORM WATER POLLUTION PREVENTION PLAN (SWPPP). THE SWPPP SHALL BE PREPARED BY A QUALIFIED PERSON. 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 A SWPPP:
   A. OBSERVATIONS OF THE PROJECT FOR COMPLIANCE WITH THE SWPPP SHALL BE MADE BY A QUALIFIED PERSON AT LEAST ONCE A WEEK OR WITHIN 24 HOURS AFTER A RAIN EVENT OF 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.

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;
      a. IN AREAS TO BE PAVED, "STABLE" MEANS THAT BASE COURSE GRAVELS MEETING THE REQUIREMENTS OF NHDOT STANDARD FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION, ITEM 304.2 HAVE BEEN INSTALLED.
   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.
2. ALL CUT AND FILL SLOPES SHALL BE SEEDED AND LOAMED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
3. ALL ROADS, DRIVES AND PARKING AREA SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
4. WINTER STABILIZATION PRACTICES:
   A. ALL PROPOSED VEGETATED AREAS THAT DO NOT EXHIBIT A MINIMUM OF 85% 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 DRIVES 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;
   D. FOR OVER-WINTER PROTECTION, A DOUBLE ROW OF SEDIMENT BARRIERS (SILT FENCE BACKED WITH HAY BALES OR EROSION CONTROL MIX, ETC.) SHALL BE PLACED WITHIN 75 FEET OF A PROTECTED NATURAL RESOURCE AREA.
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. 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 EXIT(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. 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 CONCRETE DELIVERY TRUCKS SHALL, WHENEVER POSSIBLE, USE WASHOUT FACILITIES AT THEIR OWN PLANT OR DISPATCH FACILITY;
2. IF IT IS NECESSARY, SITE CONTRACTOR SHALL DESIGNATE SPECIFIC WASHOUT AREAS AND DESIGN FACILITIES TO HANDLE ANTICIPATED WASHOUT WATER;
3. CONTRACTOR SHALL LOCATE WASHOUT AREAS AT LEAST 150 FEET AWAY FROM STORM DRAINS, SWALES AND SURFACE WATERS OR DELINEATED WETLANDS;
4. INSPECT WASHOUT FACILITIES DAILY TO DETECT LEAKS OR TEARS AND TO IDENTIFY WHEN MATERIALS NEED TO BE REMOVED.

ALLOWABLE NON-STORMWATER DISCHARGES:

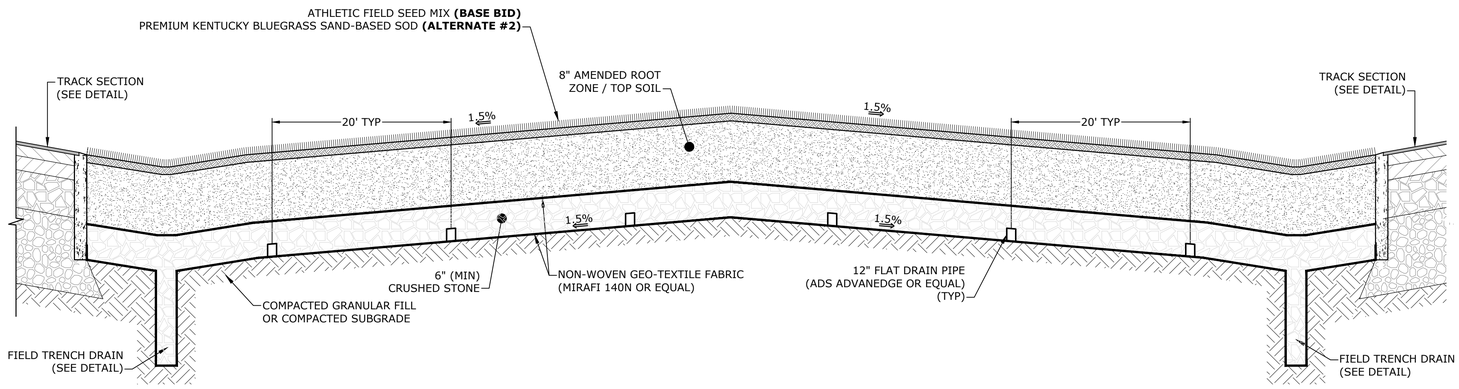
1. THE FOLLOWING ARE THE ONLY STORMWATER DISCHARGES ALLOWED. ALL OTHER NON-STORMWATER DISCHARGES ARE PROHIBITED ON SITE:
   A. FIRE-FIGHTING ACTIVITIES;
   B. FIRE HYDRANT FLUSHING;
   C. WATERS USED TO WASH VEHICLES WHERE DETERGENTS ARE NOT USED;
   D. WATER USED TO CONTROL DUST;
   E. POTABLE WATER INCLUDING UNCONTAMINATED WATER LINE FLUSHING;
   F. ROUTINE EXTERNAL BUILDING WASH DOWN WHERE DETERGENTS ARE NOT USED;
   G. PAVEMENT WASH WATERS WHERE DETERGENTS ARE NOT USED;
   H. UNCONTAMINATED AIR CONDITIONING/COMPRESSOR CONDENSATION;
   I. UNCONTAMINATED GROUND WATER OR SPRING WATER;
   J. FOUNDATION OR FOOTING DRAINS WHICH ARE UNCONTAMINATED;
   K. UNCONTAMINATED EXCAVATION DEWATERING;
   L. 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.

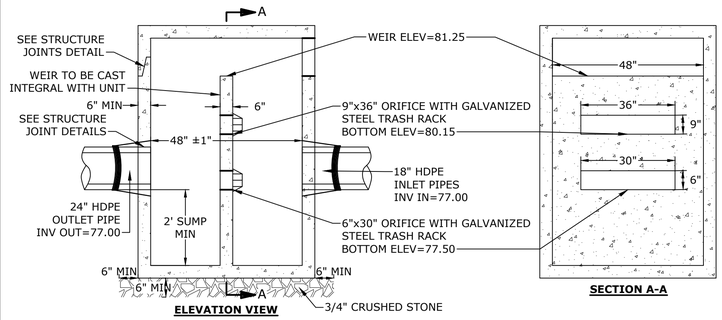
SPILL PREVENTION:

1. CONTRACTOR SHALL BE FAMILIAR WITH SPILL PREVENTION MEASURES REQUIRED BY ALL LOCAL, STATE AND FEDERAL REGULATIONS. 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:
         - ALL ON SITE VEHICLES SHALL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTIVE MAINTENANCE TO REDUCE LEAKAGE;
         - 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.
         - SECURE FUEL STORAGE AREAS AGAINST UNAUTHORIZED ENTRY;
         - INSPECT FUEL STORAGE AREAS WEEKLY;
         - 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;
         - COVER REGULATED CONTAINERS IN OUTSIDE STORAGE AREAS;
         - 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.
         - 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.
         - 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/sites/g/files/ehbemt341/files/documents/2020-01/dwgb-22-6.pdf
      b. FERTILIZERS:
         - FERTILIZERS USED SHALL BE APPLIED ONLY IN THE MINIMUM AMOUNTS DIRECTED BY THE SPECIFICATIONS;
         - ONCE APPLIED FERTILIZER SHALL BE WORKED INTO THE SOIL TO LIMIT EXPOSURE TO STORMWATER;
         - 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.
         - PAINTS:
         - ALL CONTAINERS SHALL BE TIGHTLY SEALED AND STORED WHEN NOT REQUIRED FOR USE;
         - EXCESS PAINT SHALL NOT BE DISCHARGED TO THE STORM SEWER SYSTEM;
         - 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



NOTES
1. AMENDED ROOT ZONE / TOP SOIL SHALL BE A HOMOGENEOUS MIXTURE COMPRISED WITH A MINIMUM OF 30% SAND.

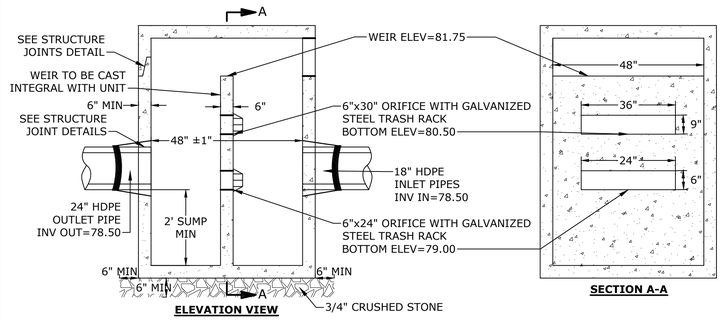
TYPICAL NATURAL SOD MULTI-USE FIELD #2 SECTION
BASE BID
NO SCALE



ELEVATION VIEW **SECTION A-A**

NOTES
1. ALL SECTIONS SHALL BE 4,000 PSI CONCRETE (TYPE II CEMENT).
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 OR 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. ALL JOINTS ON THE STRUCTURE AND PIPING SHALL BE WATERTIGHT

PROPOSED OUTLET STRUCTURE-01 (POS-01)
NO SCALE

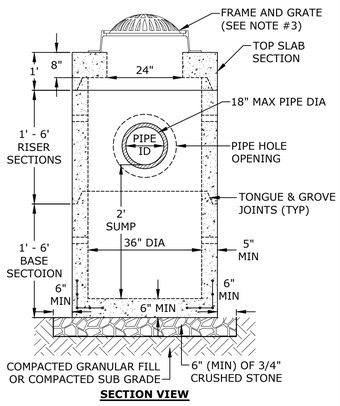


ELEVATION VIEW **SECTION A-A**

NOTES
1. ALL SECTIONS SHALL BE 4,000 PSI CONCRETE (TYPE II CEMENT).
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 OR 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. ALL JOINTS ON THE STRUCTURE AND PIPING SHALL BE WATERTIGHT

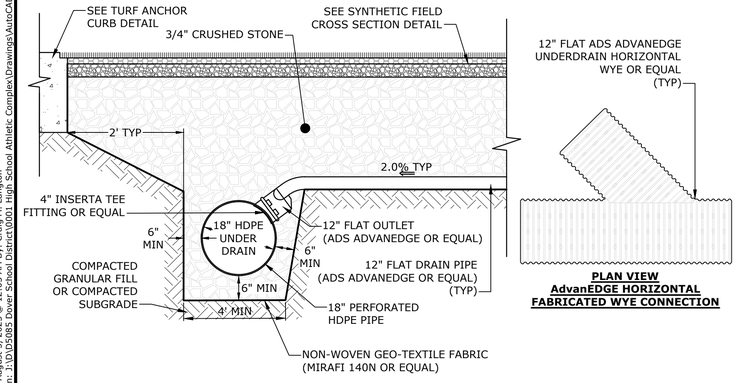
PROPOSED OUTLET STRUCTURE-02 (POS-02)
NO SCALE

NOTES
1. ALL PRECAST SECTIONS SHALL BE 4,000 PSI (MIN) CONCRETE DESIGNED FOR AASHTO H-20 LOADING CONFORMING TO ASTM C-478 AND AASHTO M-199.
2. STEEL REINFORCEMENT SHALL BE 0.12-IN^2/LF AND 0.12-IN^2 (BOTH WAYS) BASE BOTTOM CONFORMING TO ASTM A-615 AND ASTM A-185.
3. YARD / AREA DRAIN FRAME AND GRATES SHALL BE AS FOLLOWS:
   - NEENAH FOUNDRY R-2561 FRAME, WITH BEEHIVE GRATE (±1.2 SF OPEN AREA OR EQUAL), FOR DRAINS LOCATED IN GRASSED AREAS;
   - NEENAH FOUNDRY R-2569 FRAME & GRATE TYPE Q, (±0.6 SF OPEN AREA OR EQUAL), FOR DRAINS LOCATED IN AREAS THAT REQUIRE ADA ACCESSIBILITY;
   - NEENAH FOUNDRY R-2556 FRAME & GRATE TYPE G (±1.5 SF OPEN AREA OR EQUAL), FOR STRUCTURES USED AS OVERFLOW DEVICES.
6. ADJUSTING FRAMES AND COVERS TO FINISHED GRADE SHALL BE DONE USING PRECAST REINFORCED CONCRETE GRADE RINGS OR CLAY BRICKS.
7. HORIZONTAL SECTION JOINTS SHALL BE TONGUE AND GROOVE JOINTS SEALED WITH ONE (1) STRIP OF FLEXIBLE BUTYL RUBBER JOINT SEALANT CONFORMING TO ASTM C-990.
   - JOINT SEALANT SHALL BE CONSEAL CS-102 (OR EQUAL)
8. PIPE TO MANHOLE CONNECTION JOINTS SHALL BE FLEXIBLE SLEEVE CONFORMING TO ASTM C-923.
   - FLEXIBLE SLEEVES SHALL BE KOR-N-SEAL (OR EQUAL).
9. PIPE HOLE OPENING(S) WITHIN PRECAST SECTIONS VARIES DEPENDING ON PIPE SIZE. PIPE OPENING SIZES SHALL BE COORDINATED WITH PRECASTER AND FLEXIBLE PIPE SLEEVE MANUFACTURERS
10. PRECAST CONCRETE YARD / AREA DRAINS SHALL BE PHOENIX PRECAST PRODUCTS - 3' DIA CATCH BASIN (OR EQUAL).



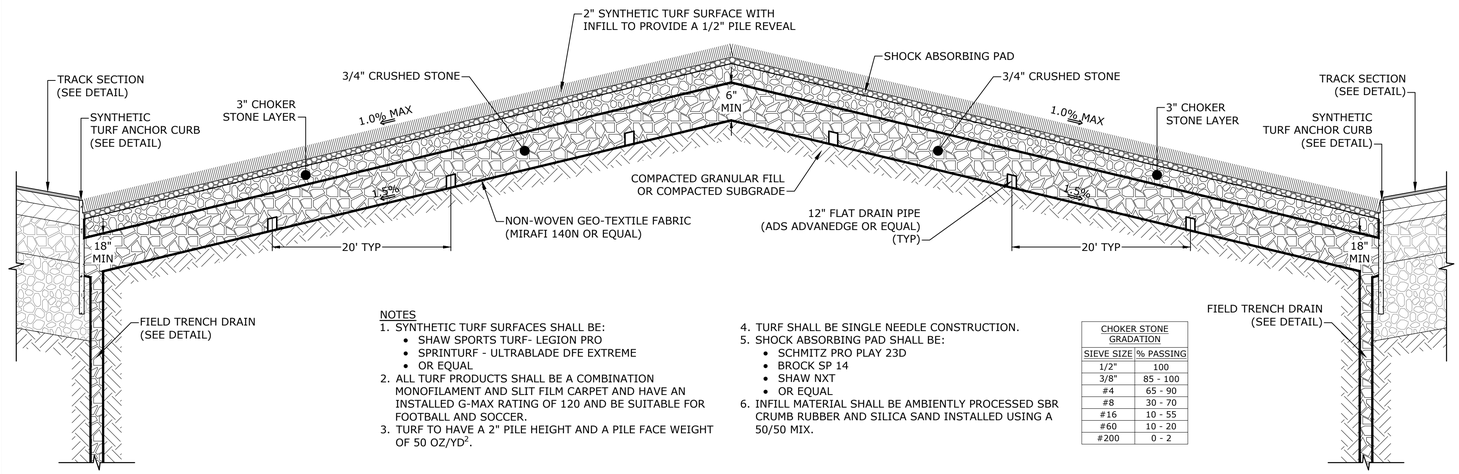
SECTION VIEW

TYPICAL PRECAST CONCRETE YARD / AREA DRAIN
NO SCALE



PLAN VIEW
AdvanEDGE HORIZONTAL FABRICATED WYE CONNECTION

TYPICAL FIELD TRENCH DRAIN
NO SCALE



NOTES
1. SYNTHETIC TURF SURFACES SHALL BE:
   - SHAW SPORTS TURF- LEGION PRO
   - SPRINTURF - ULTRABLADE DFE EXTREME
   - OR EQUAL
2. ALL TURF PRODUCTS SHALL BE A COMBINATION MONOFILAMENT AND SLIT FILM CARPET AND HAVE AN INSTALLED G-MAX RATING OF 120 AND BE SUITABLE FOR FOOTBALL AND SOCCER.
3. TURF TO HAVE A 2" PILE HEIGHT AND A PILE FACE WEIGHT OF 50 OZ/YD^2.
4. TURF SHALL BE SINGLE NEEDLE CONSTRUCTION.
5. SHOCK ABSORBING PAD SHALL BE:
   - SCHMITZ PRO PLAY 23D
   - BROCK SP 14
   - SHAW NXT
   - OR EQUAL
6. INFILL MATERIAL SHALL BE AMBIENTLY PROCESSED SBR CRUMB RUBBER AND SILICA SAND INSTALLED USING A 50/50 MIX.

CHOKER STONE GRADATION	
SIEVE SIZE	% PASSING
1/2"	100
3/8"	85 - 100
#4	65 - 90
#8	30 - 70
#16	10 - 55
#60	10 - 20
#200	0 - 2

TYPICAL SYNTHETIC MULTI-USE FIELD #1 SECTION
NO SCALE

Tighe&Bond

STATE OF NEW HAMPSHIRE - NEIL A. HANSEN No. 15227 LICENSED PROFESSIONAL ENGINEER
8/5/2025

Dover High School Athletic Facility Project

Dover School District, SAU #11

25 Alumni Drive
Dover, New Hampshire

MARK	DATE	DESCRIPTION
A	8/5/2025	Supplemental CUP

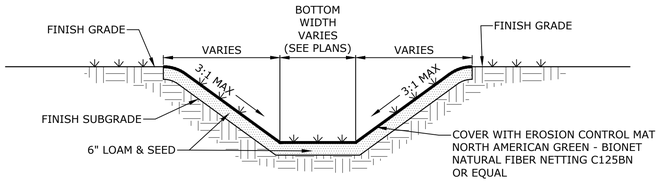
PROJECT NO:	D5085-0001
DATE:	8/5/2025
FILE:	D5085-0001_C-DETAILS.DWG
DRAWN BY:	C. LANGTON
DESIGNED BY:	C. LANGTON
CHECKED BY:	N. HANSEN
APPROVED BY:	J. PERSECHINO

DETAILS SHEET

SCALE: AS SHOWN

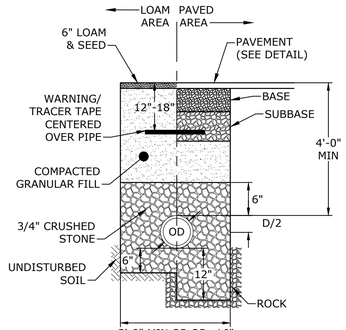
C-502

Plot Date: Tuesday, August 05, 2025 Plotted By: Craig M. Langton
Last Saved By: Craig.Langton Last Saved: 7/31/2025 7:36 AM
T&B File Location: J:\D\D5085 Dover School District\0001 High School Athletic Complex\Drawings\AutoCAD\Sheet\Civil\D5085-0001_C-Details.dwg Layout Tab: C-502



NOTES
1. THE FOUNDATION AREA OF THE WATERWAY SHALL BE CLEARED AND GRUBBED OF ALL TREES, BRUSH, STUMPS, AND OTHER OBJECTIONABLE MATERIAL. MATERIALS REMOVED SHALL BE DISPOSED OF SO THEY WILL NOT INTERFERE WITH THE CONSTRUCTION OR PROPER FUNCTIONING OF THE WATERWAY.
2. THE WATERWAY SHALL BE EXCAVATED OR SHAPED TO LINE, GRADE AND CROSS-SECTION AS REQUIRED TO MEET THE DESIGN CRITERIA. THE WATERWAY SHALL BE FREE OF IRREGULARITIES WHICH WILL IMPEDE NORMAL FLOW.
3. EARTH FILLS REQUIRED TO MEET SUBGRADE REQUIREMENTS BECAUSE OF OVER EXCAVATION OR TOPOGRAPHY SHALL BE COMPACTED TO THE SAME DENSITY AS THE SURROUNDING SOIL TO PREVENT UNEQUAL SETTLEMENT THAT COULD CAUSE DAMAGE TO THE COMPLETED WATERWAY. EARTH REMOVED AND NOT NEEDED IN CONSTRUCTION SHALL BE SPREAD OR DISPOSED OF SO IT WILL NOT INTERFERE WITH THE FUNCTIONING OF THE WATERWAY.
4. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER AS TO MINIMIZE EROSION AND AIR AND WATER POLLUTION. ALL APPROPRIATE STATE AND LOCAL LAWS AND REGULATIONS SHALL BE COMPLIED WITH FOR INSTALLATION.
5. VEGETATION SHALL BE ESTABLISHED IN THE SWALE PRIOR TO ALLOWING STORMWATER RUNOFF TO FLOW THROUGH THE SWALE.
6. MAINTENANCE OF THE VEGETATION IN THE GRASSED WATERWAY IS EXTREMELY IMPORTANT IN ORDER TO PREVENT RILLING, EROSION, AND FAILURE OF THE WATERWAY. MOWING SHOULD BE DONE FREQUENTLY ENOUGH TO CONTROL ENCROACHMENT OF WEEDS AND WOODY VEGETATION AND TO KEEP THE GRASSES IN A VIGOROUS CONDITION. THE VEGETATION SHOULD NOT BE MOWED TOO CLOSELY SO AS TO REDUCE THE EROSION RESISTANCE IN THE WATERWAY.
7. THE WATERWAY SHOULD BE INSPECTED PERIODICALLY AND AFTER EVERY MAJOR STORM TO DETERMINE THE CONDITION OF THE WATERWAY. RILLS AND DAMAGED AREAS SHOULD BE PROMPTLY REPAIRED AND REVEGETATED AS NECESSARY TO PREVENT FURTHER DETERIORATION.

GRASSED LINED SWALE
NO SCALE

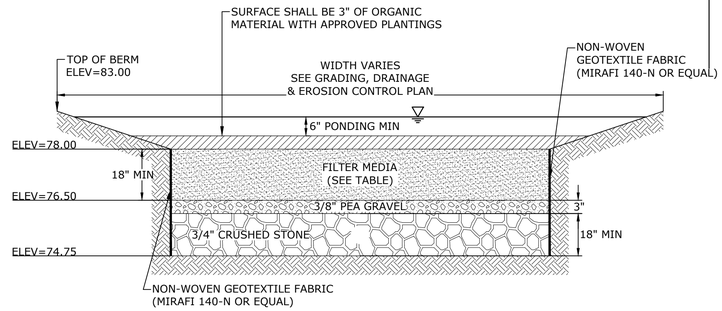


NOTES
1. 3/4" CRUSHED STONE BEDDING AND BACKFILL MATERIAL FOR FULL WIDTH OF THE TRENCH FROM MINIMUM 6" BELOW PIPE IN EARTH AND 12" BELOW PIPE IN ROCK UP TO MINIMUM OF 6" OVER THE TOP OF THE PIPE.
2. STORM DRAINS SHALL BE INSTALLED PER THE CITY OF DOVER COMMUNITY SERVICES DEPARTMENT. COORDINATE ALL INSTALLATIONS WITH THE CITY OF DOVER COMMUNITY SERVICES DEPARTMENT.

STORM DRAIN TRENCH
NO SCALE

RAIN GARDEN INSPECTION/MAINTENANCE REQUIREMENTS

INSPECTION / MAINTENANCE	FREQUENCY	ACTION
MONITOR TO ENSURE THAT RAIN GARDENS FUNCTION EFFECTIVELY AFTER STORMS	TWO (2) TIMES ANNUALLY AND AFTER ANY RAINFALL EVENT EXCEEDING 2.5" IN A 24-HR PERIOD	• TRASH AND DEBRIS TO BE REMOVED • ANY REQUIRED MAINTENANCE SHALL BE ADDRESSED
INSPECT VEGETATION	ANNUALLY	• INSPECT THE CONDITION OF ALL RAIN GARDEN VEGETATION • PRUNE BACK OVERGROWTH • REPLACE DEAD VEGETATION • REMOVE ANY INVASIVE SPECIES
INSPECT DRAWDOWN TIME: • THE SYSTEM SHALL DRAWDOWN WITHIN 48-HOURS FOLLOWING A RAINFALL EVENT.	ANNUALLY	• ASSESS THE CONDITION OF THE FACILITY TO DETERMINE MEASURES REQUIRED TO RESTORE THE FILTRATION FUNCTION, INCLUDING BUT NOT LIMITED TO REMOVAL OF ACCUMULATED SEDIMENTS OR RECONSTRUCTION OF THE FILTER



SECTION VIEW

FILTER MEDIA COMPOSITION:

COMPONENT MATERIAL	PERCENT OF MIXTURE BY VOLUME	GRADATION OF MATERIAL SIEVE #	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

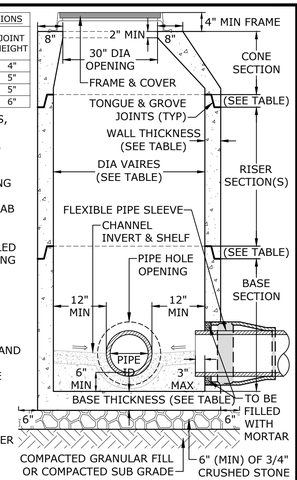
NOTES
1. BARK MULCH SHALL BE AGED A MINIMUM OF 12 MONTHS AND SHALL NOT FLOAT.
2. RAIN GARDENS SHALL NOT BE PLACED INTO SERVICE UNTIL THE PRACTICE HAS BEEN PLANTED AND ITS CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.
3. DO NOT TRAFFIC EXPOSED SOIL SURFACES WITH CONSTRUCTION EQUIPMENT. CONTRACTOR SHALL 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 SECTION
NO SCALE

NOTES
1. ALL PRECAST SECTIONS SHALL BE 4,000 PSI (MIN) CONCRETE DESIGNED FOR AASHTO H-20 LOADING CONFORMING TO ASTM C-478 AND AASHTO M-199.
2. STEEL REINFORCEMENT SHALL BE 0.12-IN^2/LF AND 0.12-IN^2 (BOTH WAYS) BASE BOTTOM CONFORMING TO ASTM A-615 AND ASTM A-185.
3. FRAMES AND COVERS SHALL BE AS FOLLOWS:
   - PER THE CITY OF DOVER COMMUNITY SERVICES DEPARTMENT STANDARDS, FOR ALL MANHOLES WITHIN PUBLIC RIGHT OF WAYS OR EASEMENTS.
   - CAST IRON, DESIGNED FOR AASHTO H-20 LOADING, HAVING A 30" CLEAR OPENING, WITH THE WORD "DRAIN" IN A 3" LETTERING CAST INTO THE CENTER OF EACH COVER, FOR ALL MANHOLES WITHIN THE PROJECT SITE.
4. ADJUSTING FRAMES AND COVERS TO FINISHED GRADE SHALL BE DONE USING PRECAST REINFORCED CONCRETE GRADE RINGS OR CLAY BRICKS.
5. CONE SECTIONS MAY BE EITHER CONCENTRIC OR ECCENTRIC (TYP). FLAT SLAB TOPS MAY BE USED WHERE PIPE WOULD OTHERWISE ENTER INTO THE CONE SECTION OF THE STRUCTURE.
6. HORIZONTAL SECTION JOINTS SHALL BE TONGUE AND GROOVE JOINTS SEALED WITH ONE (1) STRIP OF FLEXIBLE BUTYL RUBBER JOINT SEALANT CONFORMING TO ASTM C-990.
   - JOINT SEALANT SHALL BE CONSEAL CS-102 (OR EQUAL).
5. PIPE TO MANHOLE CONNECTION JOINTS SHALL BE FLEXIBLE SLEEVE CONFORMING TO ASTM C-923.
   - FLEXIBLE SLEEVES SHALL BE KOR-N-SEAL (OR EQUAL).
6. PIPE HOLE OPENING(S) WITHIN PRECAST SECTIONS VARIES DEPENDING ON PIPE SIZE. PIPE OPENING SIZES SHALL BE COORDINATED WITH PRECASTER AND FLEXIBLE PIPE SLEEVE MANUFACTURERS.
7. MANHOLES WITH MULTIPLE PIPES SHALL HAVE A MINIMUM OF 12" OF INSIDE SURFACE BETWEEN HOLES, NO MORE THAN 75% OF HORIZONTAL CROSS SECTION SHALL BE HOLES, AND THERE SHALL BE NO HOLES WITHIN 3" OF HORIZONTAL SECTION JOINTS.
8. CHANNEL INVERT SHALL BE A SMOOTH CONTINUATION OF THE DRAIN LINE INVERT(S). ALL CHANNEL INVERTS AND SHELVES SHALL BE CONSTRUCTED PER THE CITY OF DOVER COMMUNITY SERVICES DEPARTMENT STANDARDS.

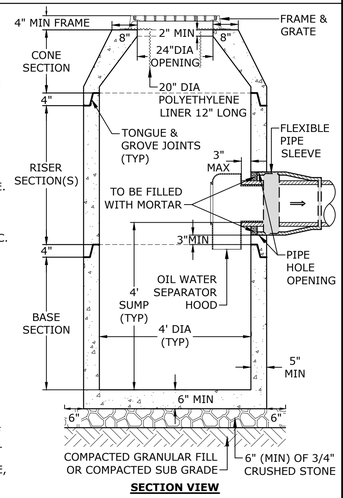
MANHOLE DIMENSIONS			
DIA	WALL & BASE THICKNESS		JOINT HEIGHT
	WALL	BASE	
4'	5"	6"	4"
5'	6"	8"	5"
6'	7"	8"	5"
8'	9"	10"	6"



SECTION VIEW

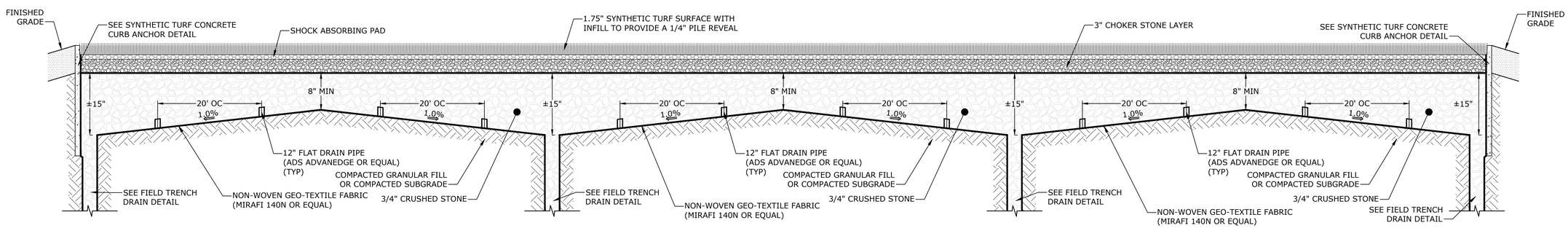
TYPICAL DRAIN MANHOLE
NO SCALE

NOTES
1. ALL PRECAST SECTIONS SHALL BE 4,000 PSI (MIN) CONCRETE DESIGNED FOR AASHTO H-20 LOADING CONFORMING TO ASTM C-478 AND AASHTO M-199.
2. STEEL REINFORCEMENT SHALL BE 0.12-IN^2/LF AND 0.12-IN^2 (BOTH WAYS) BASE BOTTOM CONFORMING TO ASTM A-615 AND ASTM A-185.
3. FRAME AND GRATES SHALL BE AS FOLLOWS:
   - PER THE TOWN/CITY OF _____, DEPARTMENT OF PUBLIC WORKS STANDARDS, FOR ALL CATCH BASINS WITHIN PUBLIC RIGHT OF WAYS OR EASEMENTS.
   - NHDOT TYPE "B" FRAME AND GRATE (NHDOT ITEM No. 604.72) (OR EQUAL), FOR ALL CATCH BASINS WITHIN THE PROJECT SITE.
4. ADJUSTING FRAMES AND GRATES TO FINISHED GRADE SHALL BE DONE USING PRECAST REINFORCED CONCRETE GRADE RINGS OR CLAY BRICKS.
5. CONE SECTIONS MAY BE EITHER CONCENTRIC (TYP) OR ECCENTRIC. FLAT SLAB TOPS MAY BE USED WHERE PIPE WOULD OTHERWISE ENTER INTO THE CONE SECTION OF THE STRUCTURE.
6. HORIZONTAL SECTION JOINTS SHALL BE TONGUE AND GROOVE JOINTS SEALED WITH ONE (1) STRIP OF FLEXIBLE BUTYL RUBBER JOINT SEALANT CONFORMING TO ASTM C-990.
   - JOINT SEALANT SHALL BE CONSEAL CS-102 (OR EQUAL).
7. PIPE TO CATCH BASIN CONNECTION JOINTS SHALL BE FLEXIBLE SLEEVE CONFORMING TO ASTM C-923.
   - FLEXIBLE SLEEVES SHALL BE KOR-N-SEAL (OR EQUAL).
8. PIPE HOLE OPENING(S) WITHIN PRECAST SECTIONS VARIES DEPENDING ON PIPE SIZE (MAX 24" DIA PIPE FOR 4' DIA STRUCTURE). PIPE OPENING SIZES SHALL BE COORDINATED WITH PRECASTER AND FLEXIBLE PIPE SLEEVE MANUFACTURERS.
9. CATCH BASINS WITH MULTIPLE PIPES SHALL HAVE A MINIMUM OF 12" OF INSIDE SURFACE BETWEEN HOLES, NO MORE THAN 75% OF HORIZONTAL CROSS SECTION SHALL BE HOLES, AND THERE SHALL BE NO HOLES WITHIN 3" OF HORIZONTAL SECTION JOINTS.
10. OIL WATER SEPARATOR HOODS SHALL BE GROUND WATER RESCUE, INC. "THE ELIMINATOR" (OR EQUAL).



SECTION VIEW

TYPICAL DEEP SUMP CATCH BASIN
NO SCALE



NOTES
1. SYNTHETIC TURF SURFACES SHALL BE:
   - SHAW SPORTS TURF - B1K TRUHUP
   - OR EQUAL
2. ALL TURF PRODUCTS SHALL BE A COMBINATION MONOFILAMENT AND SLIT FILM CARPET AND HAVE AN INSTALLED G-MAX RATING OF 120 AND BE SUITABLE FOR SOCCER AND BASEBALL.
3. TURF TO HAVE A 1.75" PILE HEIGHT AND A PILE FACE WEIGHT OF 52 OZ/YD^2.
4. TURF SHALL BE SINGLE NEEDLE CONSTRUCTION.
5. SHOCK ABSORBING PAD SHALL BE:
   - SCHMITZ PRO PLAY 23D
   - BROCK SP 14
   - SHAW NXT
   - OR EQUAL
6. INFILL MATERIAL SHALL BE AMBIENTLY PROCESSED SBR CRUMB RUBBER AND SILICA SAND INSTALLED USING A 50/50 MIX.

CHOKER STONE GRADATION	
SIEVE SIZE	% PASSING
1/2"	100
3/8"	85 - 100
#4	65 - 90
#8	30 - 70
#16	10 - 55
#60	10 - 20
#200	0 - 2

TYPICAL SYNTHETIC MULTI-USE FIELD #2 SECTION ALLTERNATE
NO SCALE

Tighe&Bond

NEIL A. HANSEN No. 15227 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE
8/5/2025

Dover High School Athletic Facility Project

Dover School District, SAU #11

25 Alumni Drive
Dover, New Hampshire

MARK	DATE	DESCRIPTION
A	8/5/2025	Supplemental CUP

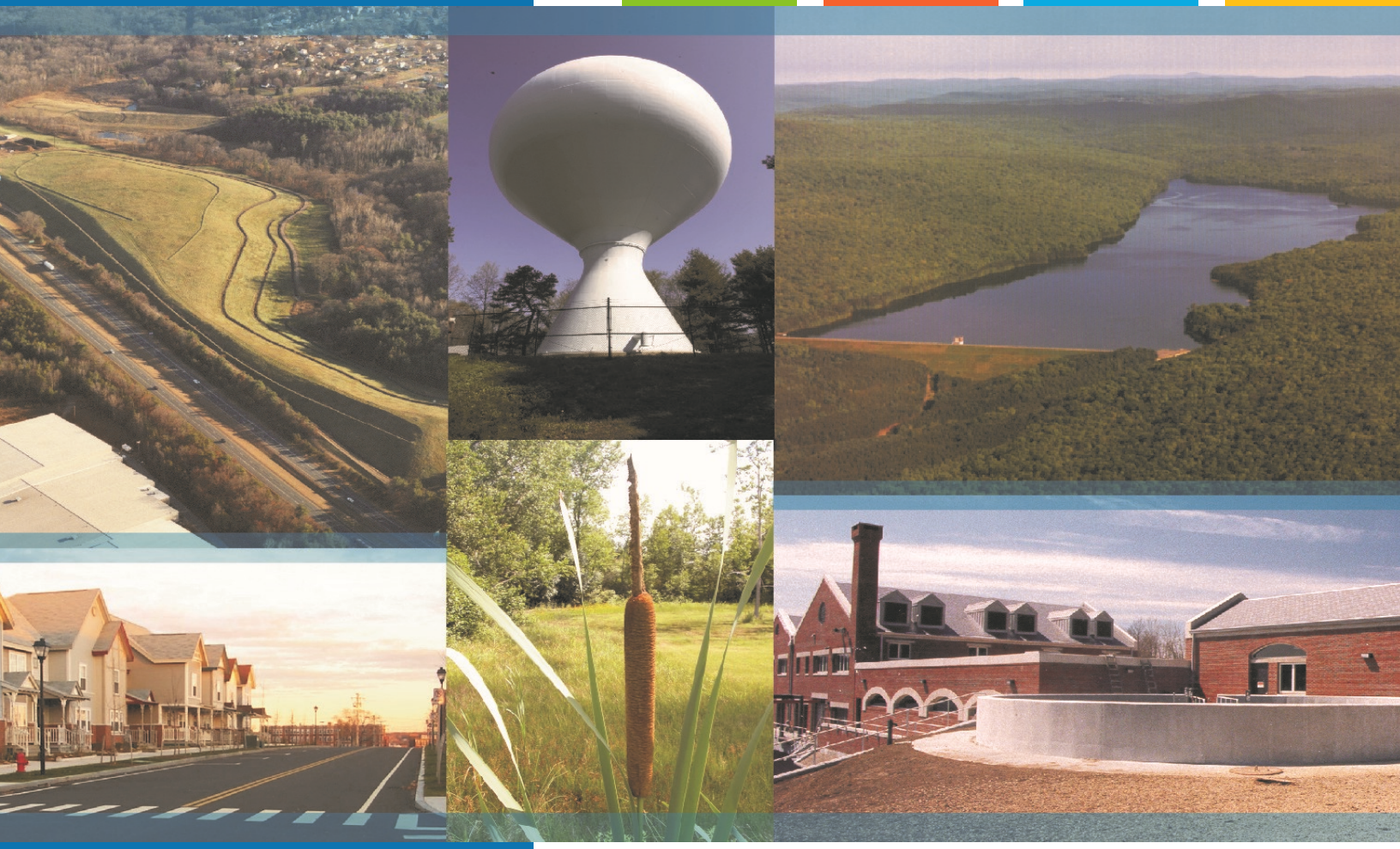
PROJECT NO:	D5085-0001
DATE:	8/5/2025
FILE:	D5085-0001_C-DETAILS.DWG
DRAWN BY:	C. LANGTON
DESIGNED BY:	C. LANGTON
CHECKED BY:	N. HANSEN
APPROVED BY:	J. PERSECHINO

DETAILS SHEET

SCALE: AS SHOWN

C-503

Plot Date: Tuesday, August 05, 2025 Plotted By: Craig M. Langton
Last Saved By: Craig M. Langton Save Time: 8/5/2025 2:03 PM By: Craig M. Langton
T&B File Location: J:\D\D5085 Dover School District\0001 High School Athletic Complex\Drawings\AutoCAD\Sheet\Civil\D5085-0001_C-Details.dwg Layout Tab: C-503

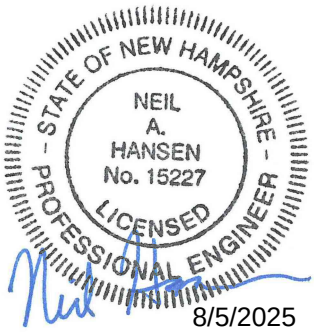


Dover High School Athletics Facility Project
25 Alumni Drive Dover, New Hampshire

CUP DRAINAGE ANALYSIS

Dover School District, SAU #11

August 5, 2025



8/5/2025

Tighe&Bond

100% Recyclable

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Appendices

A Extreme Precipitation Tables
B Site Specific Soil Survey Reports (from prior AoT permit for the site)
C Infiltration Rate for Native Materials (from prior AoT permit for the site)
D Historic Boring Data (from prior AoT permit for the site)
E NRCS Web Soil Survey Report
F NHDES – BMP Worksheets
G Rip Rap Sizing Calculations

J:\D\D5085 Dover School District\0001 High School Athletic Complex\Reports\Applications\City of Dover\CUP App\Supplemental Docs\CUP Drainage Analysis.docx

Section 1 Drainage Analysis

The proposed project includes the renovation and replacement of Dunway Football Field, the existing rubberized asphalt running track, field event spaces (LJ, TJ, PV, HJ and throws), the existing baseball field, the home and away grandstands and the light towers. Several amenities are proposed, as well, including bathrooms, concessions, team rooms, a press box, storage, scoreboards, sound system, and equipment. There is additional parking proposed as well to provide accessible parking spaces and access for team busses. Lastly, landscape/site improvements including tree plantings in the stadium entry plaza area are proposed including special paving, fencing, and seating.

The site is a 78-acre parcel of land located at 25 Alumni Drive in Dover, New Hampshire. The site is currently developed with an approximately 178,000 square-foot (sf) high school and an approximately 9,000 sf Animal Sciences Building on the eastern portion of the site, and an approximately 2,000 sf maintenance building on the northeastern portion of the site. The western portion of the site is developed as athletic fields, including a football and baseball field, a rubberized running track surrounding the football field, batting cages, prefabricated metal storage buildings, scoreboards, bleachers, and associated parking areas. The area northwest of the existing athletic fields is an undeveloped woodland, surrounded by residential structures.

The proposed Stormwater Management System has been designed in accordance with the requirements of the New Hampshire Department of Environmental Services (NHDES) Alteration of Terrain (AoT) rules and regulations (Env-Wq 1500). The system includes deep sump catch basins equipped with oil separator hoods and a sediment forebay to provide pretreatment of stormwater runoff. In addition, a Low Impact Development (LID) Bioretention System (Rain Garden) is incorporated into the design to provide treatment and infiltration. This system has been sized to meet both the Water Quality Volume (WQV) and Groundwater Recharge Volume (GRV) requirements set forth under the AoT regulations.

1.1 Calculation Methods

The design storms analyzed in this study are the 2-year, 10-year, 25-year, and 50-year, 24-hour Type III duration storm events. The stormwater modeling system, HydroCAD 10.0 was utilized to predict the peak runoff rates from these storm events. A Type III storm pattern was used in the model. The rainfall data for these storm events was obtained from the data published by the Northeast Regional Climate Center (NRCC) at Cornell University, with an additional 15% added factor of safety as required by Env-Wq 1503.08(l) and shown in Table 1.1.

TABLE 1.1 – EXTREME PRECIPITATION ESTIMATES (NRCC)

YEAR	24-hr Estimate (inches)	+ 15% (inches)
2	3.15	3.62
10	4.75	5.46
25	6.01	6.91
50	7.18	8.26

The time of concentration was computed using the TR-55 Method, which provides a means of determining the time for an entire watershed to contribute runoff to a specific location via sheet flows, shallow concentrated flow, and channel flow. Runoff curve numbers were calculated by estimating the coverage areas and then summing the curve number for the coverage area as a percent of the entire watershed.

References:

1. HydroCAD Stormwater Modeling System, by HydroCAD Software Solutions LLC, Chocorua, New Hampshire.

2. New Hampshire Stormwater Management Manual, current edition.

3. "Extreme Precipitation in New York & New England." Extreme Precipitation in New York & New England by Northeast Regional Climate Center (NRCC), 26 June 2012.

1.2 Pre-Development Conditions

To analyze the Pre-Development condition, the site has been modeled a single catchment area (PRE-1) with a distinct point of analysis, which is an unnamed wetland adjacent to the Bellamy River. A visual representation of the pre-development watershed routing model is depicted on the enclosed plan entitled "Pre-Development Watershed Plan", Sheet C-801.

1.2.1 Pre-Development Watershed Plan

LEGEND

PRE-DEVELOPMENT WATERSHED BOUNDARY

SITE SPECIFIC SOIL SURVEY BOUNDARIES

LONGEST FLOW PATH

PRE 1.0 — PRE DEVELOPMENT WATERSHED AREA DESIGNATION

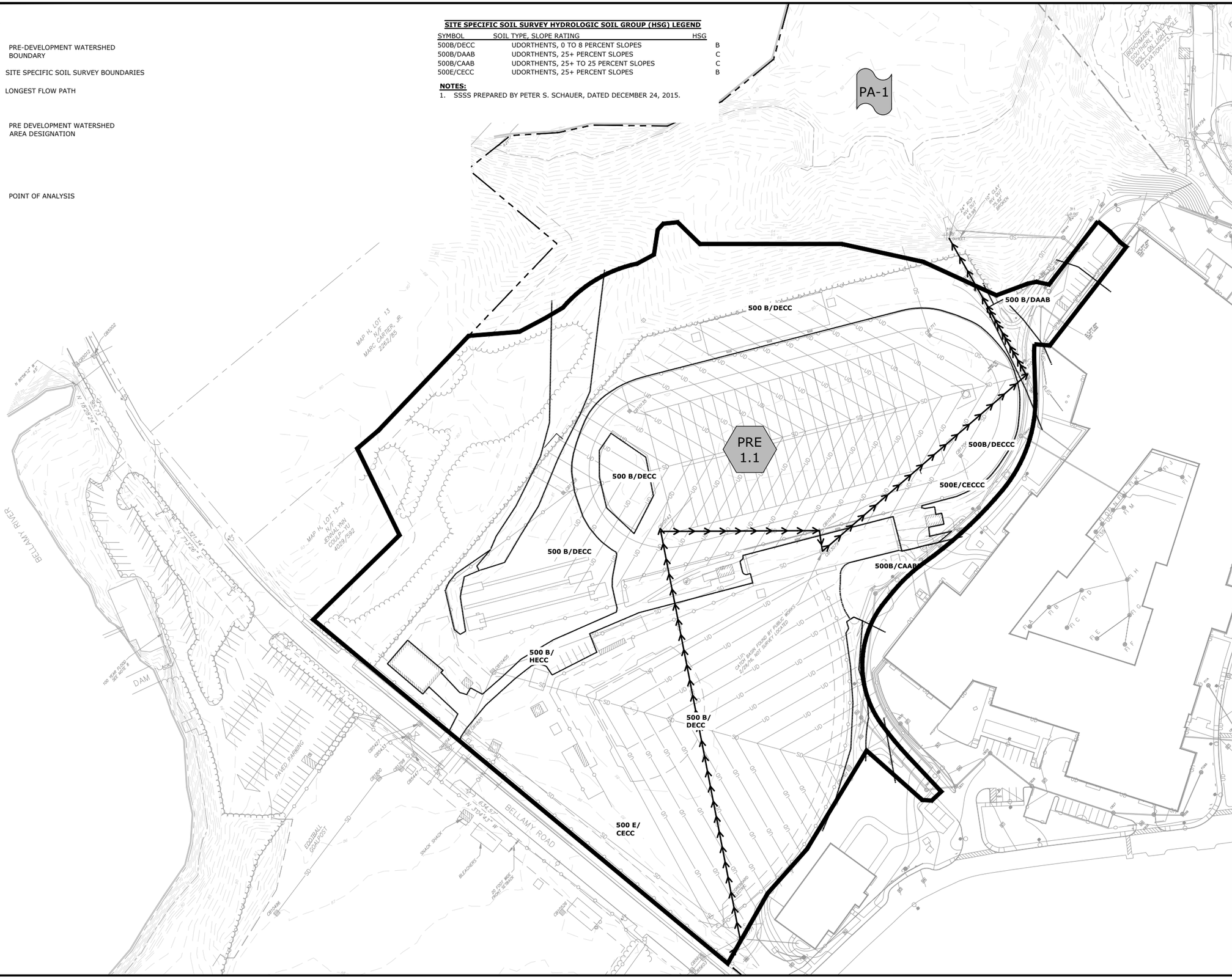
PA-1 — POINT OF ANALYSIS

SITE SPECIFIC SOIL SURVEY HYDROLOGIC SOIL GROUP (HSG) LEGEND

SYMBOL	SOIL TYPE, SLOPE RATING	HSG
500B/DECC	UDORTHENTS, 0 TO 8 PERCENT SLOPES	B
500B/DAAB	UDORTHENTS, 25+ PERCENT SLOPES	C
500B/CAAB	UDORTHENTS, 25+ TO 25 PERCENT SLOPES	C
500E/CECC	UDORTHENTS, 25+ PERCENT SLOPES	B

NOTES:

1. SSSS PREPARED BY PETER S. SCHAUER, DATED DECEMBER 24, 2015.



Tighe&Bond

Dover High School Athletic Facility Project

Dover School District, SAU #11

25 Alumni Drive
Dover, New Hampshire

MARK	DATE	DESCRIPTION
A	8/5/2025	Supplemental CUP

PROJECT NO:	D5085-0001
DATE:	8/5/2025
FILE:	D5085-0001_C-HYDRO.DWG
DRAWN BY:	C. LANGTON
DESIGNED BY:	C. LANGTON
CHECKED BY:	N. HANSEN
APPROVED BY:	P. CRIMMINS

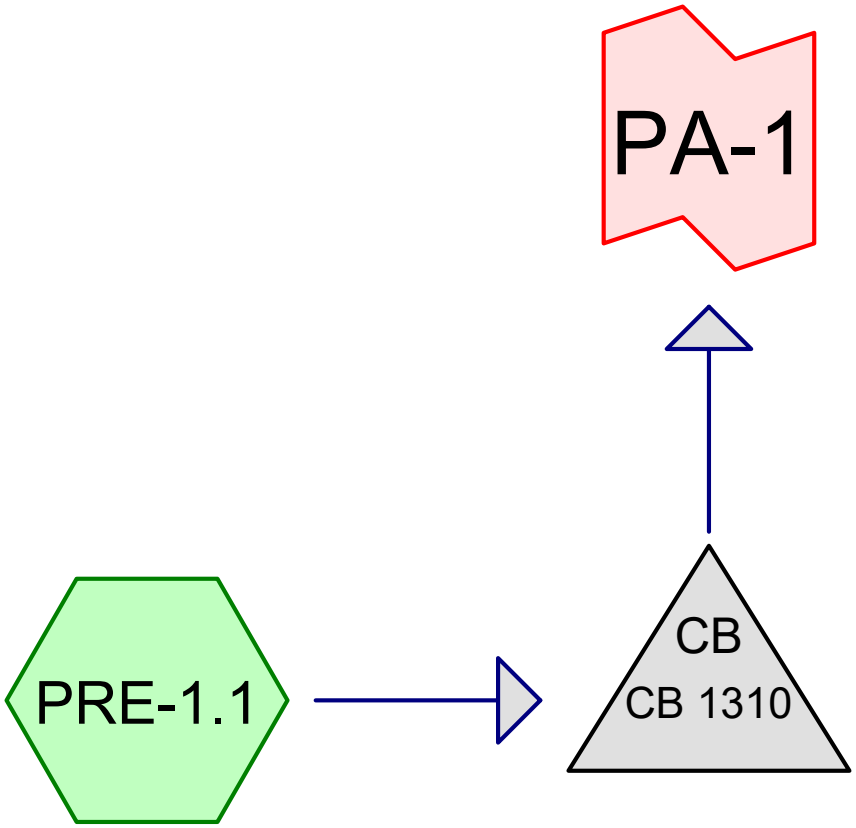
PRE-DEVELOPMENT WATERSHED PLAN

SCALE: AS SHOWN

C-801

Plot Date: Monday, August 04, 2025 Plotted By: Craig M. Langton
Last Saved By: Craig M. Langton Last Saved: 7/28/2025 11:21 PM By: Craig M. Langton
T&B File Location: J:\D\D5085 Dover School District\D001 High School Athletic Complex\Drawings\AutoCAD\Sheet\Civil\D5085-0001_C-Hydro.dwg Layout Tab: PRE WSHED

1.2.2 Pre-Development Calculation



Subcat Reach Pond Link

Routing Diagram for D5085-0001_PRE
Prepared by Tighe & Bond, Printed 8/5/2025
HydroCAD® 10.20-4c s/n 03437 © 2024 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.208	61	>75% Grass cover, Good, HSG B (PRE-1.1)
4.533	74	>75% Grass cover, Good, HSG C (PRE-1.1)
4.249	74	>75% Grass cover, Good, HSG C (Field Area) (PRE-1.1)
1.728	98	Paved parking, HSG C (PRE-1.1)
1.547	70	Woods, Good, HSG C (PRE-1.1)
12.265	**77**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.208	HSG B	PRE-1.1
12.057	HSG C	PRE-1.1
0.000	HSG D	
0.000	Other	
12.265		**TOTAL AREA**

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 Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentPRE-1.1: Runoff Area=534,276 sf 14.09% Impervious Runoff Depth>1.39"
Flow Length=1,274' Tc=5.1 min CN=77 Runoff=33.45 cfs 1.420 af

Pond CB 1310: Peak Elev=73.58' Inflow=33.45 cfs 1.420 af
24.0" Round Culvert n=0.012 L=203.0' S=0.0185 '/' Outflow=33.45 cfs 1.420 af

Link PA-1: Inflow=33.45 cfs 1.420 af
Primary=33.45 cfs 1.420 af

Total Runoff Area = 12.265 ac Runoff Volume = 1.420 af Average Runoff Depth = 1.39"
85.91% Pervious = 10.537 ac 14.09% Impervious = 1.728 ac

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 Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentPRE-1.1: Runoff Area=534,276 sf 14.09% Impervious Runoff Depth>2.79"
Flow Length=1,274' Tc=5.1 min CN=77 Runoff=65.76 cfs 2.848 af

Pond CB 1310: Peak Elev=90.78' Inflow=65.76 cfs 2.848 af
24.0" Round Culvert n=0.012 L=203.0' S=0.0185 '/' Outflow=65.76 cfs 2.848 af

Link PA-1: Inflow=65.76 cfs 2.848 af
Primary=65.76 cfs 2.848 af

Total Runoff Area = 12.265 ac Runoff Volume = 2.848 af Average Runoff Depth = 2.79"
85.91% Pervious = 10.537 ac 14.09% Impervious = 1.728 ac

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 Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentPRE-1.1: Runoff Area=534,276 sf 14.09% Impervious Runoff Depth>3.98"
Flow Length=1,274' Tc=5.1 min CN=77 Runoff=92.40 cfs 4.073 af

Pond CB 1310: Peak Elev=115.00' Inflow=92.40 cfs 4.073 af
24.0" Round Culvert n=0.012 L=203.0' S=0.0185 '/' Outflow=92.40 cfs 4.073 af

Link PA-1: Inflow=92.40 cfs 4.073 af
Primary=92.40 cfs 4.073 af

Total Runoff Area = 12.265 ac Runoff Volume = 4.073 af Average Runoff Depth = 3.98"
85.91% Pervious = 10.537 ac 14.09% Impervious = 1.728 ac

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 Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentPRE-1.1: Runoff Area=534,276 sf 14.09% Impervious Runoff Depth>5.14"
Flow Length=1,274' Tc=5.1 min CN=77 Runoff=117.51 cfs 5.258 af

Pond CB 1310: Peak Elev=145.31' Inflow=117.51 cfs 5.258 af
24.0" Round Culvert n=0.012 L=203.0' S=0.0185 '/' Outflow=117.51 cfs 5.258 af

Link PA-1: Inflow=117.51 cfs 5.258 af
Primary=117.51 cfs 5.258 af

Total Runoff Area = 12.265 ac Runoff Volume = 5.258 af Average Runoff Depth = 5.14"
85.91% Pervious = 10.537 ac 14.09% Impervious = 1.728 ac

1.3 Post-Development Conditions

To analyze the Post-Development condition, the site has been modeled using the same point of analysis as the pre-development condition. However, in order to properly size and design the proposed BMPs and outlet structures need for the required retention, treatment, and infiltration of stormwater runoff, the site was divided into seven (sub-catchment areas. A visual representation of the post-development watershed routing model is depicted on the plan entitled "Post-Development Watershed Plan", Sheet C-802.

1.3.1 Post-Development Watershed Plan

LEGEND

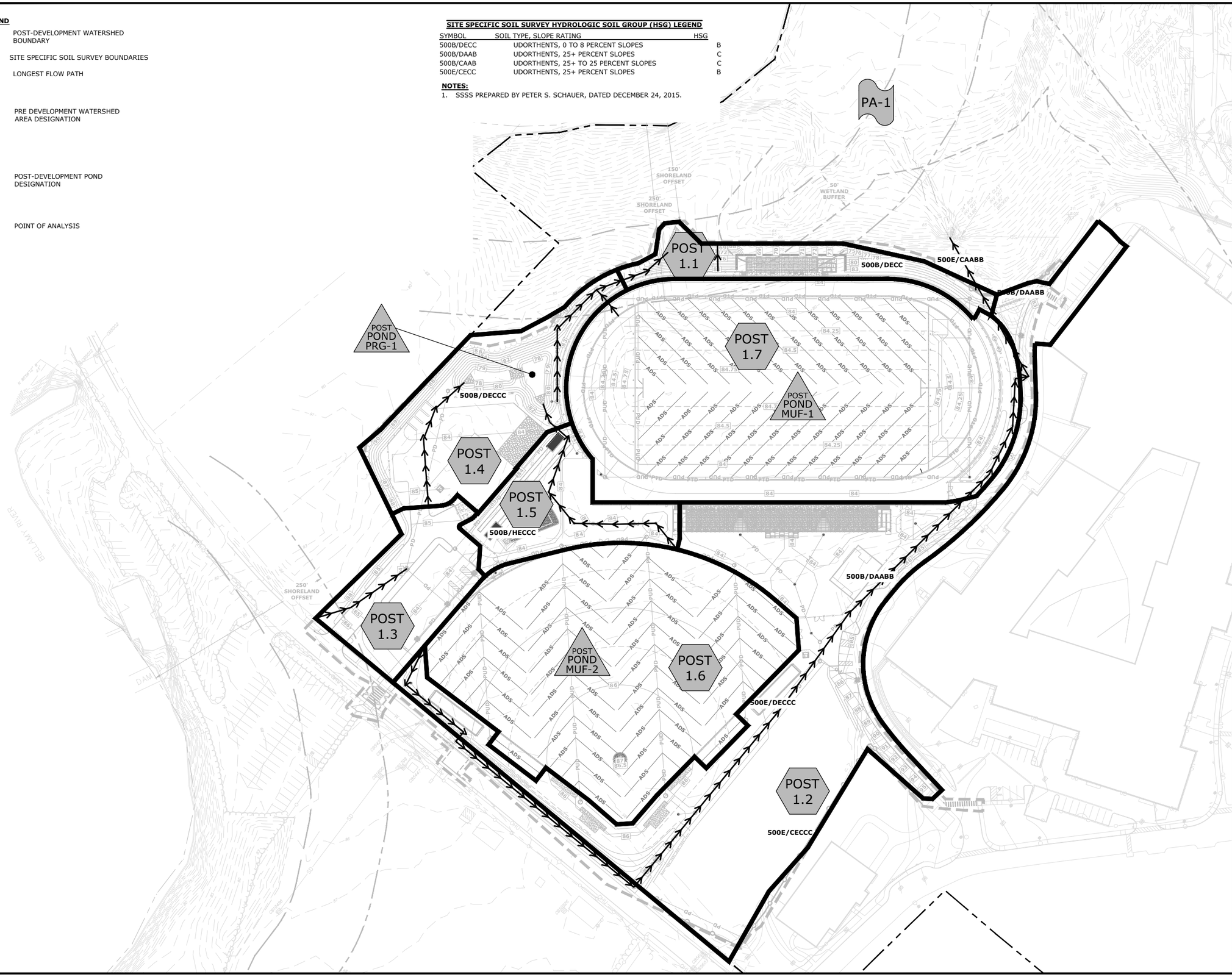
- POST-DEVELOPMENT WATERSHED BOUNDARY
- SITE SPECIFIC SOIL SURVEY BOUNDARIES
- LONGEST FLOW PATH
- POST 1.0 — PRE DEVELOPMENT WATERSHED AREA DESIGNATION
- POST POND 1 — POST-DEVELOPMENT POND DESIGNATION
- PA-1 — POINT OF ANALYSIS

SITE SPECIFIC SOIL SURVEY HYDROLOGIC SOIL GROUP (HSG) LEGEND

SYMBOL	SOIL TYPE, SLOPE RATING	HSG
500B/DECC	UDORTHENTS, 0 TO 8 PERCENT SLOPES	B
500B/DAAB	UDORTHENTS, 25+ PERCENT SLOPES	C
500B/CAAB	UDORTHENTS, 25+ TO 25 PERCENT SLOPES	C
500E/CECC	UDORTHENTS, 25+ PERCENT SLOPES	B

NOTES:

1. SSSS PREPARED BY PETER S. SCHAUER, DATED DECEMBER 24, 2015.



SCALE IN FEET
0 60' 120'
GRAPHIC SCALE

Dover High School Athletic Facility Project

Dover School District, SAU #11

25 Alumni Drive
Dover, New Hampshire

MARK	DATE	DESCRIPTION
A	8/5/2025	Supplemental CUP

PROJECT NO:	D5085-0001
DATE:	8/5/2025
FILE:	D5085-0001_C-HYDRO.DWG
DRAWN BY:	C. LANGTON
DESIGNED BY:	C. LANGTON
CHECKED BY:	N. HANSEN
APPROVED BY:	P. CRIMMINS

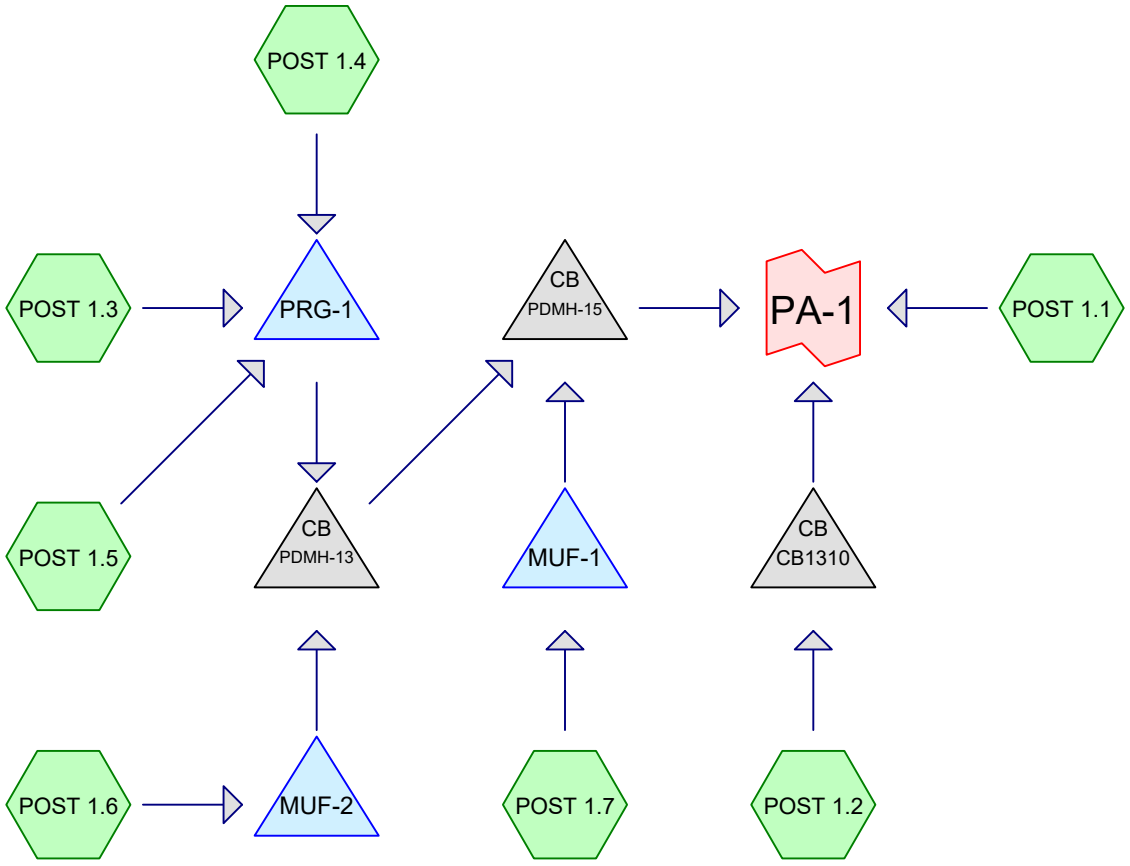
POST-DEVELOPMENT WATERSHED PLAN

SCALE: AS SHOWN

C-802

Plot Date: Monday, August 04, 2025 Plotted By: Craig M. Langton
Last Saved By: Craig M. Langton on 8/5/2025 11:21 PM By: Craig M. Langton
T&B File Location: J:\D\D5085 Dover School District\0001 High School Athletic Complex\Drawings\AutoCAD\Sheet\Civil\D5085-0001_C-Hydro.dwg Layout Tab: POST WSHED

1.3.2 Post-Development Calculation



Subcat Reach Pond Link

Routing Diagram for D5085-0001_POST
Prepared by Tighe & Bond, Printed 8/5/2025
HydroCAD® 10.20-4c s/n 03437 © 2024 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.091	61	>75% Grass cover, Good, HSG B (POST 1.2)
3.185	74	>75% Grass cover, Good, HSG C (POST 1.1, POST 1.2, POST 1.3, POST 1.4, POST 1.5, POST 1.6, POST 1.7)
4.668	98	Field Surface (POST 1.6, POST 1.7)
4.322	98	Paved parking, HSG C (POST 1.1, POST 1.2, POST 1.3, POST 1.4, POST 1.5, POST 1.7)
12.265	**91**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.091	HSG B	POST 1.2
7.507	HSG C	POST 1.1, POST 1.2, POST 1.3, POST 1.4, POST 1.5, POST 1.6, POST 1.7
0.000	HSG D	
4.668	Other	POST 1.6, POST 1.7
12.265		**TOTAL AREA**

Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentPOST 1.1: Runoff Area=20,444 sf 35.57% Impervious Runoff Depth=1.96"
Flow Length=36' Slope=0.5000 '/' Tc=4.0 min CN=83 Runoff=1.13 cfs 0.077 af

SubcatchmentPOST 1.2: Runoff Area=145,187 sf 46.76% Impervious Runoff Depth=2.12"
Flow Length=1,517' Tc=11.4 min CN=85 Runoff=6.89 cfs 0.589 af

SubcatchmentPOST 1.3: Runoff Area=26,853 sf 67.90% Impervious Runoff Depth=2.56"
Flow Length=443' Tc=4.7 min CN=90 Runoff=1.85 cfs 0.132 af

SubcatchmentPOST 1.4: Runoff Area=46,025 sf 39.45% Impervious Runoff Depth=1.96"
Flow Length=150' Tc=4.0 min CN=83 Runoff=2.55 cfs 0.173 af

SubcatchmentPOST 1.5: Runoff Area=25,949 sf 57.29% Impervious Runoff Depth=2.38"
Flow Length=195' Tc=4.0 min CN=88 Runoff=1.73 cfs 0.118 af

SubcatchmentPOST 1.6: Runoff Area=114,435 sf 99.20% Impervious Runoff Depth=3.39"
Tc=4.0 min CN=98 Runoff=9.72 cfs 0.741 af

SubcatchmentPOST 1.7: Runoff Area=155,388 sf 97.60% Impervious Runoff Depth=3.27"
Tc=4.0 min CN=97 Runoff=13.03 cfs 0.973 af

Pond CB1310: Peak Elev=68.87' Inflow=6.89 cfs 0.589 af
24.0" Round Culvert n=0.012 L=203.0' S=0.0185 '/' Outflow=6.89 cfs 0.589 af

Pond MUF-1: Peak Elev=79.44' Storage=6,170 cf Inflow=13.03 cfs 0.973 af
Discarded=0.98 cfs 0.554 af Primary=7.82 cfs 0.419 af Outflow=8.79 cfs 0.973 af

Pond MUF-2: Peak Elev=80.58' Storage=5,523 cf Inflow=9.72 cfs 0.741 af
Discarded=0.81 cfs 0.456 af Primary=5.71 cfs 0.285 af Outflow=6.51 cfs 0.741 af

Pond PDMH-13: Peak Elev=76.26' Inflow=5.71 cfs 0.285 af
30.0" Round Culvert n=0.013 L=172.0' S=0.0055 '/' Outflow=5.71 cfs 0.285 af

Pond PDMH-15: Peak Elev=75.57' Inflow=13.52 cfs 0.704 af
36.0" Round Culvert n=0.013 L=90.0' S=0.0067 '/' Outflow=13.52 cfs 0.704 af

Pond PRG-1: Peak Elev=80.19' Storage=8,315 cf Inflow=6.13 cfs 0.422 af
Discarded=0.77 cfs 0.405 af Primary=0.00 cfs 0.000 af Outflow=0.77 cfs 0.405 af

Link PA-1: Inflow=21.08 cfs 1.370 af
Primary=21.08 cfs 1.370 af

Total Runoff Area = 12.265 ac Runoff Volume = 2.802 af Average Runoff Depth = 2.74"
26.71% Pervious = 3.276 ac 73.29% Impervious = 8.990 ac

Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentPOST 1.1: Runoff Area=20,444 sf 35.57% Impervious Runoff Depth=3.59"
Flow Length=36' Slope=0.5000 '/' Tc=4.0 min CN=83 Runoff=2.06 cfs 0.141 af

SubcatchmentPOST 1.2: Runoff Area=145,187 sf 46.76% Impervious Runoff Depth=3.80"
Flow Length=1,517' Tc=11.4 min CN=85 Runoff=12.18 cfs 1.054 af

SubcatchmentPOST 1.3: Runoff Area=26,853 sf 67.90% Impervious Runoff Depth=4.32"
Flow Length=443' Tc=4.7 min CN=90 Runoff=3.05 cfs 0.222 af

SubcatchmentPOST 1.4: Runoff Area=46,025 sf 39.45% Impervious Runoff Depth=3.59"
Flow Length=150' Tc=4.0 min CN=83 Runoff=4.64 cfs 0.316 af

SubcatchmentPOST 1.5: Runoff Area=25,949 sf 57.29% Impervious Runoff Depth=4.11"
Flow Length=195' Tc=4.0 min CN=88 Runoff=2.93 cfs 0.204 af

SubcatchmentPOST 1.6: Runoff Area=114,435 sf 99.20% Impervious Runoff Depth=5.22"
Tc=4.0 min CN=98 Runoff=14.74 cfs 1.143 af

SubcatchmentPOST 1.7: Runoff Area=155,388 sf 97.60% Impervious Runoff Depth=5.11"
Tc=4.0 min CN=97 Runoff=19.90 cfs 1.518 af

Pond CB1310: Peak Elev=69.36' Inflow=12.18 cfs 1.054 af
24.0" Round Culvert n=0.012 L=203.0' S=0.0185 '/' Outflow=12.18 cfs 1.054 af

Pond MUF-1: Peak Elev=80.70' Storage=8,498 cf Inflow=19.90 cfs 1.518 af
Discarded=1.26 cfs 0.722 af Primary=13.95 cfs 0.795 af Outflow=15.21 cfs 1.518 af

Pond MUF-2: Peak Elev=81.31' Storage=6,628 cf Inflow=14.74 cfs 1.143 af
Discarded=0.96 cfs 0.594 af Primary=11.37 cfs 0.549 af Outflow=12.33 cfs 1.143 af

Pond PDMH-13: Peak Elev=76.91' Inflow=11.37 cfs 0.549 af
30.0" Round Culvert n=0.013 L=172.0' S=0.0055 '/' Outflow=11.37 cfs 0.549 af

Pond PDMH-15: Peak Elev=76.30' Inflow=25.27 cfs 1.344 af
36.0" Round Culvert n=0.013 L=90.0' S=0.0067 '/' Outflow=25.27 cfs 1.344 af

Pond PRG-1: Peak Elev=81.56' Storage=15,643 cf Inflow=10.61 cfs 0.742 af
Discarded=0.89 cfs 0.725 af Primary=0.00 cfs 0.000 af Outflow=0.89 cfs 0.725 af

Link PA-1: Inflow=38.40 cfs 2.539 af
Primary=38.40 cfs 2.539 af

Total Runoff Area = 12.265 ac Runoff Volume = 4.598 af Average Runoff Depth = 4.50"
26.71% Pervious = 3.276 ac 73.29% Impervious = 8.990 ac

Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentPOST 1.1: Runoff Area=20,444 sf 35.57% Impervious Runoff Depth=4.94"
Flow Length=36' Slope=0.5000 '/' Tc=4.0 min CN=83 Runoff=2.80 cfs 0.193 af

SubcatchmentPOST 1.2: Runoff Area=145,187 sf 46.76% Impervious Runoff Depth=5.17"
Flow Length=1,517' Tc=11.4 min CN=85 Runoff=16.37 cfs 1.435 af

SubcatchmentPOST 1.3: Runoff Area=26,853 sf 67.90% Impervious Runoff Depth=5.73"
Flow Length=443' Tc=4.7 min CN=90 Runoff=3.99 cfs 0.295 af

SubcatchmentPOST 1.4: Runoff Area=46,025 sf 39.45% Impervious Runoff Depth=4.94"
Flow Length=150' Tc=4.0 min CN=83 Runoff=6.31 cfs 0.435 af

SubcatchmentPOST 1.5: Runoff Area=25,949 sf 57.29% Impervious Runoff Depth=5.51"
Flow Length=195' Tc=4.0 min CN=88 Runoff=3.86 cfs 0.273 af

SubcatchmentPOST 1.6: Runoff Area=114,435 sf 99.20% Impervious Runoff Depth=6.67"
Tc=4.0 min CN=98 Runoff=18.69 cfs 1.460 af

SubcatchmentPOST 1.7: Runoff Area=155,388 sf 97.60% Impervious Runoff Depth=6.55"
Tc=4.0 min CN=97 Runoff=25.28 cfs 1.948 af

Pond CB1310: Peak Elev=69.88' Inflow=16.37 cfs 1.435 af
24.0" Round Culvert n=0.012 L=203.0' S=0.0185 '/' Outflow=16.37 cfs 1.435 af

Pond MUF-1: Peak Elev=81.23' Storage=9,467 cf Inflow=25.28 cfs 1.948 af
Discarded=1.38 cfs 0.827 af Primary=20.26 cfs 1.121 af Outflow=21.64 cfs 1.948 af

Pond MUF-2: Peak Elev=81.85' Storage=7,460 cf Inflow=18.69 cfs 1.460 af
Discarded=1.08 cfs 0.682 af Primary=14.57 cfs 0.778 af Outflow=15.65 cfs 1.460 af

Pond PDMH-13: Peak Elev=77.40' Inflow=14.57 cfs 0.864 af
30.0" Round Culvert n=0.013 L=172.0' S=0.0055 '/' Outflow=14.57 cfs 0.864 af

Pond PDMH-15: Peak Elev=76.85' Inflow=34.83 cfs 1.985 af
36.0" Round Culvert n=0.013 L=90.0' S=0.0067 '/' Outflow=34.83 cfs 1.985 af

Pond PRG-1: Peak Elev=82.21' Storage=20,024 cf Inflow=14.15 cfs 1.003 af
Discarded=0.96 cfs 0.901 af Primary=2.02 cfs 0.085 af Outflow=2.98 cfs 0.986 af

Link PA-1: Inflow=52.31 cfs 3.613 af
Primary=52.31 cfs 3.613 af

Total Runoff Area = 12.265 ac Runoff Volume = 6.040 af Average Runoff Depth = 5.91"
26.71% Pervious = 3.276 ac 73.29% Impervious = 8.990 ac

Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentPOST 1.1: Runoff Area=20,444 sf 35.57% Impervious Runoff Depth=6.23"
Flow Length=36' Slope=0.5000 '/' Tc=4.0 min CN=83 Runoff=3.49 cfs 0.244 af

SubcatchmentPOST 1.2: Runoff Area=145,187 sf 46.76% Impervious Runoff Depth=6.46"
Flow Length=1,517' Tc=11.4 min CN=85 Runoff=20.27 cfs 1.795 af

SubcatchmentPOST 1.3: Runoff Area=26,853 sf 67.90% Impervious Runoff Depth=7.06"
Flow Length=443' Tc=4.7 min CN=90 Runoff=4.85 cfs 0.363 af

SubcatchmentPOST 1.4: Runoff Area=46,025 sf 39.45% Impervious Runoff Depth=6.23"
Flow Length=150' Tc=4.0 min CN=83 Runoff=7.86 cfs 0.548 af

SubcatchmentPOST 1.5: Runoff Area=25,949 sf 57.29% Impervious Runoff Depth=6.82"
Flow Length=195' Tc=4.0 min CN=88 Runoff=4.73 cfs 0.339 af

SubcatchmentPOST 1.6: Runoff Area=114,435 sf 99.20% Impervious Runoff Depth=8.02"
Tc=4.0 min CN=98 Runoff=22.36 cfs 1.756 af

SubcatchmentPOST 1.7: Runoff Area=155,388 sf 97.60% Impervious Runoff Depth=7.90"
Tc=4.0 min CN=97 Runoff=30.28 cfs 2.348 af

Pond CB1310: Peak Elev=70.50' Inflow=20.27 cfs 1.795 af
24.0" Round Culvert n=0.012 L=203.0' S=0.0185 '/' Outflow=20.27 cfs 1.795 af

Pond MUF-1: Peak Elev=81.63' Storage=10,198 cf Inflow=30.28 cfs 2.348 af
Discarded=1.47 cfs 0.910 af Primary=26.12 cfs 1.439 af Outflow=27.58 cfs 2.349 af

Pond MUF-2: Peak Elev=82.16' Storage=7,931 cf Inflow=22.36 cfs 1.756 af
Discarded=1.14 cfs 0.752 af Primary=19.66 cfs 1.004 af Outflow=20.80 cfs 1.756 af

Pond PDMH-13: Peak Elev=78.16' Inflow=19.79 cfs 1.252 af
30.0" Round Culvert n=0.013 L=172.0' S=0.0055 '/' Outflow=19.79 cfs 1.252 af

Pond PDMH-15: Peak Elev=77.55' Inflow=45.81 cfs 2.691 af
36.0" Round Culvert n=0.013 L=90.0' S=0.0067 '/' Outflow=45.81 cfs 2.691 af

Pond PRG-1: Peak Elev=82.42' Storage=21,529 cf Inflow=17.43 cfs 1.250 af
Discarded=0.98 cfs 0.985 af Primary=5.57 cfs 0.248 af Outflow=6.55 cfs 1.233 af

Link PA-1: Inflow=67.29 cfs 4.730 af
Primary=67.29 cfs 4.730 af

Total Runoff Area = 12.265 ac Runoff Volume = 7.393 af Average Runoff Depth = 7.23"
26.71% Pervious = 3.276 ac 73.29% Impervious = 8.990 ac

1.4 Peak Rate Comparisons

The following table summarizes and compares the pre- and post-development peak runoff rates from the 2-year, 10-year, 25-year, and 50-year storm events at the analysis.

Table 1.4.1 – Comparison of Pre- and Post-Development Flows (CFS)

Point of Analysis	2-Year Storm	10-Year Storm	25-Year Storm	50-Year Storm
Pre-Development Watershed (PA-1)	33.45	65.76	92.40	117.51
Post-Development Watershed (PA-1)	21.08	38.40	52.31	67.29

Table 1.4.2 – Comparison of Pre- and Post-Development Volumes (acre-feet)

Point of Analysis	2-Year Storm	10-Year Storm	25-Year Storm	50-Year Storm
Pre-Development Watershed (PA-1)	1.420	2.848	4.073	5.258
Post-Development Watershed (PA-1)	1.370	2.539	3.613	4.730

As shown in Table 1.4.1 and 1.4.2 the Post-Development flows and volumes do not increase from the Pre-Development conditions.

1.5 Mitigation Description

1.5.1 Mitigation Calculations

The proposed project area has been evaluated to treat the required water quality volume (WQV) per the requirements of Env-Wq 1500. These calculations have been provided in appendices of this analysis.

1.5.2 Pre-Treatment Methods for Protecting Water Quality

Pre-treatment methods for protecting water quality on this site include deep sump catch basins equipped with oil separator hoods and a sediment forebay.

Table 1.5 – Pollutant Removal Efficiencies

BMP	Total Suspended Solids	Total Phosphorus	Total Nitrogen
Deep Sump Catch Basin w/Hood[1]	15%	5%	5%
Sedimentation Forebay[2]	25%	N/A	N/A

1. Pollutant removal efficiencies from NH Stormwater Manual Volume 2, Appendix B.

2. Massachusetts Stormwater Handbook Vol 2, Ch 2, Stormwater Best Management Practices.

1.5.3 Treatment Methods for Protecting Water Quality

Stormwater runoff on-site that requires treatment is directed to the proposed Bioretention System (Rain Garden)

Table 1.5.1 below, shows design pollutant removal efficiency for the proposed Rain Garden.

Table 1.5.1 – Pollutant Removal Efficiencies

BMP	Total Suspended Solids	Total Phosphorus	Total Nitrogen
Rain Garden[1]	90%	65%	60%

1. Pollutant removal efficiencies from NH Stormwater Manual Volume 2, Appendix B.

APPENDIX A

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Metadata for Point	
Smoothing	Yes
State	New Hampshire
Location	New Hampshire, United States
Latitude	43.178 degrees North
Longitude	70.888 degrees West
Elevation	20 feet
Date/Time	Tue Jul 15 2025 10:42:32 GMT-0400 (Eastern Daylight Time)

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	0.50	0.65	0.81	1.03	**1yr**	0.70	0.98	1.20	1.54	2.00	2.60	2.86	**1yr**	2.30	2.75	3.15	3.88	4.45	**1yr**
2yr	0.32	0.49	0.61	0.81	1.01	1.29	**2yr**	0.88	1.17	1.50	1.91	2.45	3.15	3.50	**2yr**	2.78	3.36	3.86	4.59	5.22	**2yr**
5yr	0.37	0.57	0.72	0.96	1.23	1.58	**5yr**	1.06	1.44	1.85	2.38	3.07	3.98	4.48	**5yr**	3.52	4.31	4.93	5.80	6.56	**5yr**
10yr	0.40	0.63	0.80	1.09	1.42	1.85	**10yr**	1.22	1.69	2.18	2.82	3.66	4.75	5.41	**10yr**	4.20	5.20	5.93	6.93	7.79	**10yr**
25yr	0.46	0.74	0.94	1.29	1.72	2.27	**25yr**	1.48	2.09	2.69	3.52	4.61	6.01	6.93	**25yr**	5.32	6.67	7.59	8.76	9.79	**25yr**
50yr	0.52	0.83	1.06	1.48	2.00	2.66	**50yr**	1.72	2.46	3.18	4.18	5.49	7.18	8.38	**50yr**	6.35	8.06	9.14	10.47	11.65	**50yr**
100yr	0.58	0.94	1.20	1.70	2.32	3.12	**100yr**	2.00	2.89	3.74	4.95	6.53	8.59	10.12	**100yr**	7.60	9.73	11.02	12.52	13.86	**100yr**
200yr	0.64	1.05	1.36	1.95	2.69	3.67	**200yr**	2.32	3.40	4.42	5.89	7.79	10.27	12.24	**200yr**	9.09	11.77	13.28	14.98	16.50	**200yr**
500yr	0.75	1.24	1.62	2.35	3.29	4.53	**500yr**	2.84	4.21	5.49	7.37	9.82	13.02	15.73	**500yr**	11.53	15.12	17.02	18.99	20.79	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.24	0.37	0.45	0.60	0.74	0.90	**1yr**	0.64	0.88	0.91	1.26	1.57	2.10	2.47	**1yr**	1.86	2.37	2.89	3.33	4.02	**1yr**
2yr	0.31	0.49	0.60	0.81	1.00	1.18	**2yr**	0.86	1.16	1.36	1.83	2.36	3.04	3.39	**2yr**	2.69	3.26	3.74	4.46	5.05	**2yr**
5yr	0.35	0.54	0.67	0.91	1.16	1.40	**5yr**	1.00	1.37	1.61	2.15	2.78	3.71	4.12	**5yr**	3.28	3.96	4.60	5.41	6.11	**5yr**
10yr	0.38	0.59	0.73	1.02	1.31	1.60	**10yr**	1.13	1.56	1.81	2.44	3.13	4.27	4.78	**10yr**	3.78	4.60	5.32	6.25	7.02	**10yr**
25yr	0.44	0.66	0.82	1.18	1.55	1.91	**25yr**	1.34	1.87	2.11	2.84	3.65	4.96	5.79	**25yr**	4.39	5.57	6.48	7.56	8.44	**25yr**
50yr	0.48	0.73	0.91	1.31	1.76	2.19	**50yr**	1.52	2.14	2.35	3.20	4.10	5.67	6.69	**50yr**	5.01	6.43	7.53	8.74	9.68	**50yr**
100yr	0.54	0.81	1.01	1.47	2.01	2.50	**100yr**	1.73	2.45	2.63	3.58	4.58	6.46	7.71	**100yr**	5.72	7.42	8.75	10.09	11.10	**100yr**
200yr	0.59	0.89	1.13	1.64	2.29	2.86	**200yr**	1.97	2.80	2.93	4.00	5.11	7.36	8.90	**200yr**	6.51	8.56	10.16	11.66	12.74	**200yr**
500yr	0.69	1.03	1.33	1.93	2.74	3.45	**500yr**	2.36	3.37	3.40	4.64	5.94	8.72	10.73	**500yr**	7.71	10.32	12.37	14.13	15.24	**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	0.43	0.53	0.71	0.87	1.08	**1yr**	0.75	1.05	1.24	1.74	2.21	2.87	3.07	**1yr**	2.54	2.95	3.42	4.21	4.80	**1yr**
2yr	0.33	0.51	0.62	0.85	1.04	1.25	**2yr**	0.90	1.22	1.48	1.95	2.51	3.28	3.61	**2yr**	2.90	3.47	3.99	4.74	5.43	**2yr**
5yr	0.39	0.60	0.75	1.03	1.31	1.58	**5yr**	1.13	1.55	1.86	2.50	3.20	4.24	4.83	**5yr**	3.75	4.65	5.26	6.21	6.98	**5yr**
10yr	0.46	0.70	0.87	1.21	1.57	1.92	**10yr**	1.35	1.88	2.23	3.05	3.86	5.21	6.03	**10yr**	4.61	5.80	6.62	7.63	8.51	**10yr**
25yr	0.55	0.84	1.05	1.50	1.97	2.48	**25yr**	1.70	2.42	2.88	3.97	4.96	7.06	8.10	**25yr**	6.25	7.79	8.84	10.04	11.09	**25yr**
50yr	0.64	0.97	1.21	1.74	2.35	2.99	**50yr**	2.03	2.92	3.49	4.83	6.02	8.72	10.14	**50yr**	7.72	9.75	11.03	12.34	13.56	**50yr**
100yr	0.75	1.13	1.41	2.04	2.80	3.61	**100yr**	2.41	3.53	4.24	5.92	7.32	10.78	12.70	**100yr**	9.54	12.21	13.75	15.20	16.59	**100yr**
200yr	0.86	1.30	1.65	2.38	3.33	4.38	**200yr**	2.87	4.28	5.15	7.24	8.88	13.37	15.92	**200yr**	11.83	15.31	17.15	18.71	20.33	**200yr**
500yr	1.06	1.57	2.02	2.94	4.18	5.63	**500yr**	3.60	5.50	6.65	9.47	11.51	17.78	21.47	**500yr**	15.74	20.65	23.00	24.65	26.61	**500yr**

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APPENDIX B

TES ENVIRONMENTAL CONSULTANTS, L.L.C.

Environmental Planning and Permitting
Soil and Wetlands Investigation

SITE-SPECIFIC SOIL SURVEY REPORT

performed at

Dover High School
Bellamy Road
Dover, New Hampshire

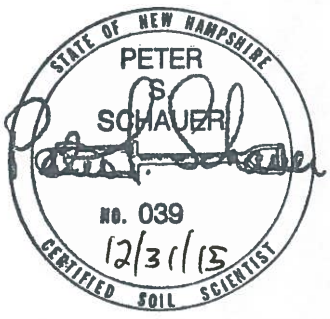
prepared for

Nobis Engineering, Inc.
18 Chenell Drive
Concord, NH 03301

TES Project # 15-0127

1494 Route 3A, Unit 1
Bow, NH 03304
(603) 856-8925

tom@tesenviro.comcastbiz.net



December 31, 2015

Ms. Erin Lambert, P.E.
Nobis Engineering, Inc.
18 Chenell Drive
Concord, NH 03301

RE: Site Specific Soil Map
Dover High School, Bellamy Road, Dover, NH

Dear Ms. Lambert:

On December 24, 2015 I performed field work on a portion of the above-referenced site located in Dover, New Hampshire for a Site Specific Soil Survey as you requested. The soil survey was limited to the portion of the site depicted on a site plan provided by your office, consisting of approximately 35 acres of land, most of which consists of previously-developed surfaces including buildings, parking lots and athletic fields.

This Site Specific Soil Survey was completed utilizing SSSNNE Special Publication No. 3; Site Specific Soil Mapping Standards for New Hampshire and Vermont, Version 4.0, February 2011. The soil legend used for this soil map conforms to the New Hampshire State-Wide Numerical Soils Legend, Issue #10, January 2011 established and maintained by the Natural Resources Conservation Service.

Field work for this survey included the examination of numerous soil profiles using a spade and soil auger to examine soil profiles around the investigation area. Test boring data prepared within a portion of the site by McPhail Associates, LLC were examined to provide information on the site soils and geological deposits, and the USDA-NRCS soil mapping of Strafford County, New Hampshire was examined for similar purposes. Boundaries of New Hampshire Wetlands Bureau-jurisdictional wetlands within the mapping area were previously identified and delineated by others, and together with site development features were utilized as control points for this soil survey.

The following report includes a Site Specific Soil Map Key and attached soil map unit descriptions. The general surface conditions on the site consist of nearly-level to gently sloping developed land, with adjacent areas having natural or disturbed soil surfaces with varying slopes. Site soils mostly have a mantle of artificial fill over silty clay marine deposits, although small portions of the site have dense, loamy glacial till deposits beneath shallow fill or fill over 5 feet deep. A small area of exposed bedrock near the school administration building indicates that bedrock may be found at shallow depths in the immediate vicinity.

If you have any questions regarding the soils on this site and the accompanying report please contact our office.

Very truly yours,

Peter S. Schauer

Peter S. Schauer
Certified Soil Scientist #39

STATE OF NEW HAMPSHIRE
PETER S. SCHAUER
NO. 039
12/31/15
CERTIFIED SOIL SCIENTIST

SITE SPECIFIC SOIL MAP UNIT KEY

Symbol*	Map Unit	Slope Class	Drainage Class	HISS Symbol	Hydrologic Soil Group
32B	Boxford silt loam	0-8%	Moderately well	343BH	C
32C	Boxford silt loam	0-15%	Moderately well	343CH	C
32D	Boxford silt loam	15-25%	Moderately well	343DH	C
32E	Boxford silt loam	25% +	Moderately well	343EH	C
33B	Scitico silt loam	0-8%	Poorly	543BH	C
500B/caabb	Udorthents, loamy	0-8%	Well	261BH	B
500D/caabb	Udorthents, loamy	15-25%	Well	261DH	B
500E/caabb	Udorthents, loamy	25% +	Well	261EH	B
500B/ccccc	Udorthents, loamy	0-8%	Well	263BH	C
500C/ccccc	Udorthents, loamy	8-15%	Well	263CH	C
500B/ceccc	Udorthents, loamy	0-8%	Well	263BH	C
500C/ceccc	Udorthents, loamy	8-15%	Well	263CH	C
500D/ceccc	Udorthents, loamy	15-25%	Well	263DH	C
500E/ceccc	Udorthents, loamy	25% +	Well	263EH	C
500B/daabb	Udorthents, loamy	0-8%	Moderately well	361BH	B
500E/daabb	Udorthents, loamy	25% +	Moderately well	361EH	B
500B/deccc	Udorthents, loamy	0-8%	Moderately well	363BH	C
500C/deccc	Udorthents, loamy	8-15%	Moderately well	363CH	C
500D/deccc	Udorthents, loamy	15-25%	Moderately well	363DH	C
500E/deccc	Udorthents, loamy	25% +	Moderately well	363EH	C
500B/eeccc	Udorthents, loamy	0-8%	Somewhat poorly	463BH	C
500B/fdccc	Udorthents, loamy	0-8%	Poorly	563BH	C
500B/heccc	Udorthents, loamy	0-8%	Well**	763BH	C**
536B	Suffield silt loam	0-8%	Well	243BH	C
536C	Suffield silt loam	8-15%	Well	243CH	C
536D	Suffield silt loam	15-25%	Well	243DH	C
536E	Suffield silt loam	25% +	Well	243EH	C

* Refer to accompanying report for 5-unit supplemental symbol explanation.

** Assumed to be similar to surrounding soils without impervious surfaces.

This detailed Site-Specific Soil Map, performed on 12/24/2015 by Peter S. Schauer, Certified Soil Scientist #039 of Schauer Environmental Consultants, L.L.C. in Loudon, New Hampshire, conforms to the standards of SSSNNE Publication No. 3, as amended, "Site-Specific Soil Mapping Standards for New Hampshire and Vermont". This map has been prepared to comply with soil mapping requirements of RSA 485 A: 17 and NHDES Env-Wq 1500, Alteration of Terrain.

Supplemental Symbols

The five components of the Disturbed Soil Mapping Unit Supplement are as follows:

Symbol 1: Drainage Class
a-Excessively Well Drained
b-Somewhat Excessively Drained
c-Well Drained
d-Moderately Well Drained
e-Somewhat Poorly Drained
f-Poorly Drained
g-Very Poorly Drained
h-Not Determined

Symbol 2 -: Parent Material (of naturally formed soil only, if present)
a-No natural soil within 60"
b-Glaciofluvial Deposits (outwash/terraces of sand or sand and gravel)
c-Glacial Till Material (active ice)
d-Glaciolacustrine very fine sand and silt deposits (glacial lakes)
e-Loamy/sandy over silt/clay deposits
f-Marine Silt and clay deposits (ocean waters)
g-Alluvial Deposits (floodplains)
h-Organic Materials-Fresh water Bogs, etc
i- Organic Materials-Tidal Marsh

Symbol 3: Restrictive/Impervious Layers
a-None
b-Bouldery surface with more than 15% of the surface covered with boulders
c-Mineral restrictive layer(s) are present in the soil profile less than 40 inches below the soil surface such as hardpan, platy structure or clayey texture with consistence of at least firm, i.e. more than 20 newtons. For other examples of soil characteristics that qualify for restrictive layer, see "Soil Manual for Site evaluations in NH" 2nd Ed., page 3-17, figure 2-14
d-Bedrock in the soil profile 0-20 inches
e-Bedrock in the soil profile 20-60 inches
f-Areas where depth to bedrock is so variable that a single soil type cannot be applied, will be mapped as a complex of soil types
g-Subject to Flooding
h –man-made impervious surface including pavement, concrete, or built-up surfaces (i.e. buildings) with no morphological restrictive layer within control section

Symbol 4 Estimated Ksat* (most restrictive layer excluding symbol 3h above).
a- High
b-Moderate
c-Low
d-Not determined
*See "Guidelines for Ksat Class Placement" in Chapter 3 of the Soil Survey Manual, USDA

Symbol 5: Hydrologic Soil Group*
a-Group A
b-Group B
c-Group C
d-Group D
e-Not determined

*excluding man-made impervious/restrictive layers

SITE SPECIFIC SOIL MAP UNIT DESCRIPTIONS

Map Unit Symbol: 32

Map Unit Name: Boxford silt loam

Landscape Settings: Lower slopes of forested or cleared settings in coastal region

Surface Features: None

Drainage Class: Moderately well

Parent Material: Glacio-marine silt and clay deposits

Complex: Yes ( ) No (X)

Nature of Dissimilar Inclusions, Locations and Estimated Percent:

Additional Notes:

SITE SPECIFIC SOIL MAP UNIT DESCRIPTIONS

Map Unit Symbol: 33

Map Unit Name: Scitico silt loam

Landscape Settings: Low-lying areas in forested or cleared settings in coastal region

Surface Features: None

Drainage Class: Poorly

Parent Material: Glacio-marine silt and clay deposits

Complex: Yes ( ) No (X)

Nature of Dissimilar Inclusions, Locations and Estimated Percent:

Additional Notes:

SITE SPECIFIC SOIL MAP UNIT DESCRIPTIONS

Map Unit Symbol: 500B-E/caabb

Map Unit Name: Udorthents, loamy

Landscape Settings: Excavated, regraded or filled land surfaces

Surface Features: Fill material

Drainage Class: Well

Parent Material: Deep (over 60") artificial fill

Complex: Yes ( ) No (**X**)

Nature of Dissimilar Inclusions, Locations and Estimated Percent:

Additional Notes:

SITE SPECIFIC SOIL MAP UNIT DESCRIPTIONS

Map Unit Symbol: 500B-C/ccccc

Map Unit Name: Udorthents, loamy

Landscape Settings: Excavated, regraded or filled land surfaces

Surface Features: Fill material

Drainage Class: Well

Parent Material: Artificial fill over dense glacial till deposits

Complex: Yes ( ) No (**X**)

Nature of Dissimilar Inclusions, Locations and Estimated Percent:

Additional Notes:

SITE SPECIFIC SOIL MAP UNIT DESCRIPTIONS

Map Unit Symbol: 500B-E/ceccc

Map Unit Name: Udorthents, loamy

Landscape Settings: Excavated, regraded or filled land surfaces

Surface Features: Fill material

Drainage Class: Well

Parent Material: Artificial fill over glacio-marine silt and clay deposits

Complex: Yes ( ) No (**X**)

Nature of Dissimilar Inclusions, Locations and Estimated Percent:

Additional Notes:

SITE SPECIFIC SOIL MAP UNIT DESCRIPTIONS

Map Unit Symbol: 500B-E/daabb

Map Unit Name: Udorthents, loamy

Landscape Settings: Excavated, regraded or filled land surfaces

Surface Features: Fill material

Drainage Class: Moderately well

Parent Material: Deep (over 60") artificial fill

Complex: Yes ( ) No (**X**)

Nature of Dissimilar Inclusions, Locations and Estimated Percent:

Additional Notes:

SITE SPECIFIC SOIL MAP UNIT DESCRIPTIONS

Map Unit Symbol: 500B-E/deccc

Map Unit Name: Udorthents, loamy

Landscape Settings: Excavated, regraded or filled land surfaces

Surface Features: Fill material

Drainage Class: Moderately well

Parent Material: Artificial fill over glacio-marine silt and clay deposits

Complex: Yes ( ) No (**X**)

Nature of Dissimilar Inclusions, Locations and Estimated Percent:

Additional Notes:

SITE SPECIFIC SOIL MAP UNIT DESCRIPTIONS

Map Unit Symbol: 500B/eeccc

Map Unit Name: Udorthents, loamy

Landscape Settings: Excavated, regraded or filled land surfaces

Surface Features: Fill material

Drainage Class: Somewhat poorly

Parent Material: Artificial fill over glacio-marine silt and clay deposits

Complex: Yes ( ) No (**X**)

Nature of Dissimilar Inclusions, Locations and Estimated Percent:

Additional Notes:

SITE SPECIFIC SOIL MAP UNIT DESCRIPTIONS

Map Unit Symbol: 500B/fdccc

Map Unit Name: Udorthents, loamy

Landscape Settings: Excavated, regraded or filled land surfaces

Surface Features: Fill material

Drainage Class: Poorly

Parent Material: Artificial fill over glacio-marine silt and clay deposits

Complex: Yes ( ) No (**X**)

Nature of Dissimilar Inclusions, Locations and Estimated Percent:

Additional Notes:

SITE SPECIFIC SOIL MAP UNIT DESCRIPTIONS

Map Unit Symbol: 500B/heccc

Map Unit Name: Udorthents, loamy

Landscape Settings: Developed land

Surface Features: Buildings, pavement, other impervious surfaces

Drainage Class: Well (assumed similar to adjacent soils)

Parent Material: Artificial fill over glacio-marine silt and clay deposits

Complex: Yes ( ) No (**X**)

Nature of Dissimilar Inclusions, Locations and Estimated Percent:

Additional Notes:

SITE SPECIFIC SOIL MAP UNIT DESCRIPTIONS

Map Unit Symbol: 536

Map Unit Name: Suffield silt loam

Landscape Settings: Higher or steeper forested or cleared slopes in coastal region

Surface Features: None

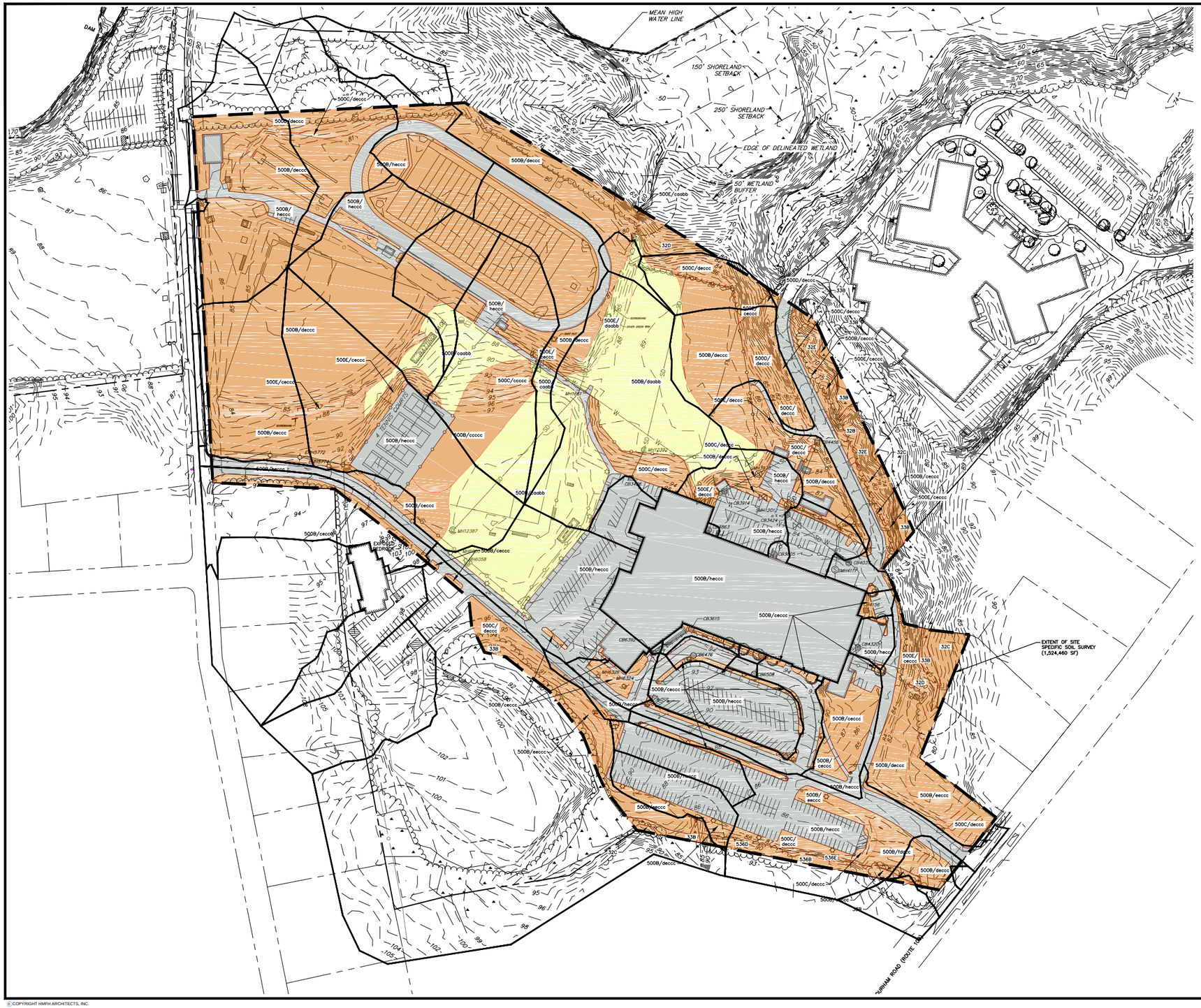
Drainage Class: Well

Parent Material: Glacio-marine silt and clay deposits, usually with a sandy loam mantle

Complex: Yes ( ) No (X)

Nature of Dissimilar Inclusions, Locations and Estimated Percent:

Additional Notes:



NOTES:

1. THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOIL SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, PRODUCED BY A CERTIFIED SOIL SCIENTIST AND NOT A PRODUCT OF THE USDA NATURAL RESOURCES CONSERVATION SERVICE. THERE IS A NARRATIVE REPORT THAT ACCOMPANIES THIS MAP AND MAP KEY.
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3. THIS MAPPING WAS PERFORMED ACCORDING TO THE STANDARDS OF THE "SITE-SPECIFIC SOIL MAPPING STANDARDS FOR NEW HAMPSHIRE AND VERMONT, VERSION 4.0, FEBRUARY 2011. THE SOCIETY OF SOIL SCIENTIST OF NORTHERN NEW ENGLAND, SPECIAL PUBLICATION NO. 3 PUBLISHES THESE STANDARDS.

SSSNNE SOIL MAP LEGEND

- HYDROLOGIC SOIL GROUP - B
- HYDROLOGIC SOIL GROUP - C
- IMPERVIOUS COVER

SOIL SERIES LEGEND:

SYMBOL	DESCRIPTION
32B	BOXFORD SILT LOAM, 0-8 PERCENT SLOPES, MODERATELY WELL DRAINED
32C	BOXFORD SILT LOAM, 0-15 PERCENT SLOPES, MODERATELY WELL DRAINED
32D	BOXFORD SILT LOAM, 15-25 PERCENT SLOPES, MODERATELY WELL DRAINED
32E	BOXFORD SILT LOAM, 25+ PERCENT SLOPES, MODERATELY WELL DRAINED
33B	SCITICO SILT LOAM, 0-8 PERCENT SLOPES, POORLY DRAINED
500B/CAABB	UDORTHENTS, LOAMY, 0-8 PERCENT SLOPES, WELL DRAINED
500D/CAABB	UDORTHENTS, LOAMY, 15-25 PERCENT SLOPES, WELL DRAINED
500E/CAABB	UDORTHENTS, LOAMY, 25+ PERCENT SLOPES, WELL DRAINED
500B/CCCCC	UDORTHENTS, LOAMY, 0-8 PERCENT SLOPES, WELL DRAINED
500C/CCCCC	UDORTHENTS, LOAMY, 8-15 PERCENT SLOPES, WELL DRAINED
500B/CECCC	UDORTHENTS, LOAMY, 0-8 PERCENT SLOPES, WELL DRAINED
500C/CECCC	UDORTHENTS, LOAMY, 8-15 PERCENT SLOPES, WELL DRAINED
500D/CECCC	UDORTHENTS, LOAMY, 15-25 PERCENT SLOPES, WELL DRAINED
500E/CECCC	UDORTHENTS, LOAMY, 25+ PERCENT SLOPES, WELL DRAINED
500B/DAABB	UDORTHENTS, LOAMY, 0-8 PERCENT SLOPES, MODERATELY WELL DRAINED
500E/DAABB	UDORTHENTS, LOAMY, 25+ PERCENT SLOPES, MODERATELY WELL DRAINED
500B/DECCC	UDORTHENTS, LOAMY, 0-8 PERCENT SLOPES, MODERATELY WELL DRAINED
500C/DECCC	UDORTHENTS, LOAMY, 8-15 PERCENT SLOPES, MODERATELY WELL DRAINED
500D/DECCC	UDORTHENTS, LOAMY, 15-25 PERCENT SLOPES, MODERATELY WELL DRAINED
500E/DECCC	UDORTHENTS, LOAMY, 25+ PERCENT SLOPES, MODERATELY WELL DRAINED
500B/EECCC	UDORTHENTS, LOAMY, 0-8 PERCENT SLOPES, SOMEWHAT POORLY DRAINED
500B/FDCCC	UDORTHENTS, LOAMY, 0-8 PERCENT SLOPES, POORLY DRAINED
500B/HECCC	UDORTHENTS, LOAMY, 0-8 PERCENT SLOPES, WELL DRAINED
536B	SUFFIELD SILT LOAM, 0-8 PERCENT SLOPES, WELL DRAINED
536C	SUFFIELD SILT LOAM, 8-15 PERCENT SLOPES, WELL DRAINED
536D	SUFFIELD SILT LOAM, 15-25 PERCENT SLOPES, WELL DRAINED
536E	SUFFIELD SILT LOAM, 25+ PERCENT SLOPES, WELL DRAINED

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PLAN NORTH
SCALE: 1" = 100'

Dover HS / CTC
Dover, NH
SSSNNE SOIL MAP
PRE-DEVELOPMENT

DRAWN BY: EC
CHECKED BY: ERL

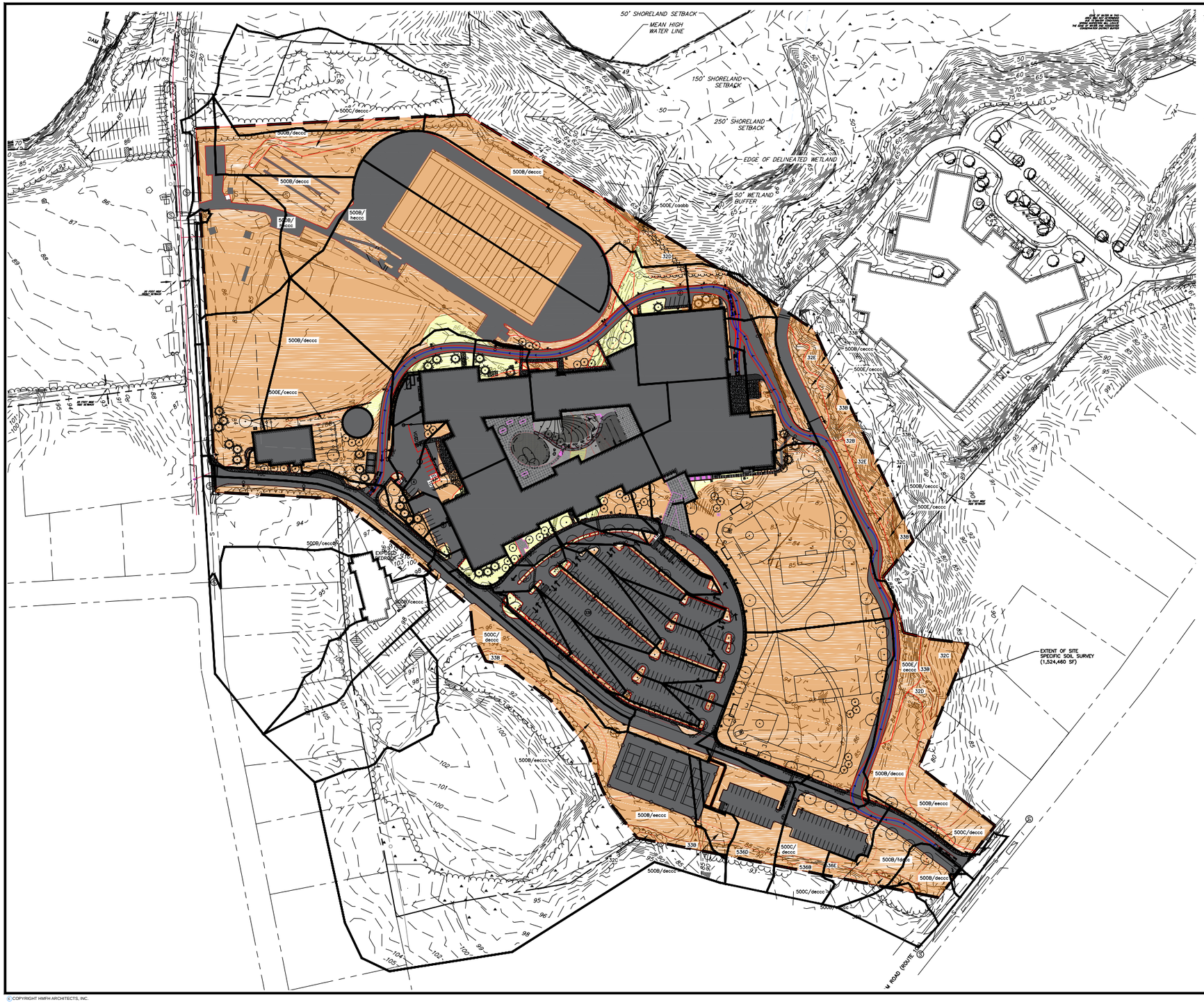
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FIG. 3

JOB NUMBER 89120.01

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SSSNNE SOIL MAP LEGEND

- HYDROLOGIC SOIL GROUP - B
- HYDROLOGIC SOIL GROUP - C
- IMPERVIOUS COVER

SOIL SERIES LEGEND:

SYMBOL	DESCRIPTION
32B	BOXFORD SILT LOAM, 0-8 PERCENT SLOPES, MODERATELY WELL DRAINED
32C	BOXFORD SILT LOAM, 0-15 PERCENT SLOPES, MODERATELY WELL DRAINED
32D	BOXFORD SILT LOAM, 15-25 PERCENT SLOPES, MODERATELY WELL DRAINED
32E	BOXFORD SILT LOAM, 25+ PERCENT SLOPES, MODERATELY WELL DRAINED
33B	SCITICO SILT LOAM, 0-8 PERCENT SLOPES, POORLY DRAINED
500B/CAABB	UDORTHENTS, LOAMY, 0-8 PERCENT SLOPES, WELL DRAINED
500D/CAABB	UDORTHENTS, LOAMY, 15-25 PERCENT SLOPES, WELL DRAINED
500E/CAABB	UDORTHENTS, LOAMY, 25+ PERCENT SLOPES, WELL DRAINED
500B/CCCCC	UDORTHENTS, LOAMY, 0-8 PERCENT SLOPES, WELL DRAINED
500C/CCCCC	UDORTHENTS, LOAMY, 8-15 PERCENT SLOPES, WELL DRAINED
500B/CECCC	UDORTHENTS, LOAMY, 0-8 PERCENT SLOPES, WELL DRAINED
500C/CECCC	UDORTHENTS, LOAMY, 8-15 PERCENT SLOPES, WELL DRAINED
500D/CECCC	UDORTHENTS, LOAMY, 15-25 PERCENT SLOPES, WELL DRAINED
500E/CECCC	UDORTHENTS, LOAMY, 25+ PERCENT SLOPES, WELL DRAINED
500B/DECCC	UDORTHENTS, LOAMY, 0-8 PERCENT SLOPES, MODERATELY WELL DRAINED
500C/DECCC	UDORTHENTS, LOAMY, 8-15 PERCENT SLOPES, MODERATELY WELL DRAINED
500D/DECCC	UDORTHENTS, LOAMY, 15-25 PERCENT SLOPES, MODERATELY WELL DRAINED
500E/DECCC	UDORTHENTS, LOAMY, 25+ PERCENT SLOPES, MODERATELY WELL DRAINED
500B/EECCC	UDORTHENTS, LOAMY, 0-8 PERCENT SLOPES, SOMEWHAT POORLY DRAINED
500B/FDCCC	UDORTHENTS, LOAMY, 0-8 PERCENT SLOPES, POORLY DRAINED
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536E	SUFFIELD SILT LOAM, 25+ PERCENT SLOPES, WELL DRAINED

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PLAN NORTH
GRID NORTH

Dover HS / CTC
Dover, NH
SSSNNE SOIL MAP
POST-DEVELOPMENT
SCALE: 1" = 100'
DRAWN BY: EC
CHECKED BY: ERL

REVISIONS NO.	DATE	REMARKS	BY

DRAWING NUMBER
FIG. 4

DOVER PLAN NO. P16-12
JOB NUMBER 89120.01

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APPENDIX C

Report—Physical Soil Properties

Physical Soil Properties–Strafford County, New Hampshire														
Map symbol and soil name	**Depth**	**Sand**	**Silt**	**Clay**	**Moist bulk density**	**Saturated hydraulic conductivity**	**Available water capacity**	**Linear extensibility**	**Organic matter**	**Erosion factors**			**Wind erodibility group**	**Wind erodibility index**
										Kw	**Kf**	**T**		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
BzB—Buxton silt loam, 3 to 8 percent slopes														
Buxton	0-10	-15-	-60-	20-25- 40	1.05-1.15 -1.25	1.41-2.82-4.23	0.16-0.20-0. 24	0.0- 1.5- 2.9	2.0- 4.0- 6.0	.32	.32	5		
	10-28	-15-	-48-	25-38- 50	1.20-1.33 -1.45	0.42-0.92-1.41	0.15-0.19-0. 22	0.0- 1.5- 2.9	—					
	28-43	-15-	-43-	35-43- 50	1.40-1.50 -1.60	0.42-0.92-1.41	0.13-0.14-0. 15	3.0- 4.5- 5.9	—					
DeB—Deerfield loamy sand, 3 to 8 percent slopes														
Deerfield	0-16	-80-	-16-	2- 5- 7	1.00-1.10 -1.20	42.33-91.72-14 1.11	0.07-0.10-0. 13	0.0- 1.5- 2.9	1.0- 2.5- 4.0	.15	.15	5		
	16-29	-80-	-16-	1- 4- 7	1.20-1.33 -1.45	42.33-91.72-14 1.11	0.01-0.07-0. 13	0.0- 1.5- 2.9	—					
	29-40	-90-	- 8-	0- 3- 5	1.40-1.45 -1.50	141.11-141.11- 705.00	0.01-0.05-0. 08	0.0- 1.5- 2.9	—					

Physical Soil Properties–Strafford County, New Hampshire														
Map symbol and soil name	**Depth**	**Sand**	**Silt**	**Clay**	**Moist bulk density**	**Saturated hydraulic conductivity**	**Available water capacity**	**Linear extensibility**	**Organic matter**	**Erosion factors**			**Wind erodibility group**	**Wind erodibility index**
										Kw	**Kf**	**T**		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
HcB—Hollis-Charlton fine sandy loams, 3 to 8 percent slopes														
Hollis	0-14	-65-	-29-	3- 7- 10	1.10-1.25 -1.40	4.23-23.28-42.33	0.12-0.16-0.20	0.0- 1.5- 2.9	2.0- 3.5- 5.0	.24	.24	1		
	14-18	—	—	—	—	—	—	—	—					
Charlton	0-13	-65-	-31-	1- 5- 8	0.90-1.05 -1.20	14.11-28.22-42.33	0.11-0.15-0.19	0.0- 1.5- 2.9	1.0- 3.5- 6.0	.24	.24	5		
	13-36	-65-	-31-	1- 5- 8	1.20-1.35 -1.50	14.11-28.22-42.33	0.09-0.13-0.17	0.0- 1.5- 2.9	—					
	36-40	-80-	-18-	0- 3- 5	1.30-1.40 -1.50	42.33-91.72-141.11	0.04-0.06-0.08	0.0- 1.5- 2.9	—					
HcD—Hollis-Charlton fine sandy loams, 15 to 25 percent slopes														
Hollis	0-14	-65-	-29-	3- 7- 10	1.10-1.25 -1.40	4.23-23.28-42.33	0.12-0.16-0.20	0.0- 1.5- 2.9	2.0- 3.5- 5.0	.24	.24	1		
	14-18	—	—	—	—	—	—	—	—					
Charlton	0-13	-65-	-31-	1- 5- 8	0.90-1.05 -1.20	14.11-28.22-42.33	0.11-0.15-0.19	0.0- 1.5- 2.9	1.0- 3.5- 6.0	.24	.24	5		
	13-36	-65-	-31-	1- 5- 8	1.20-1.35 -1.50	14.11-28.22-42.33	0.09-0.13-0.17	0.0- 1.5- 2.9	—					
	36-40	-80-	-18-	0- 3- 5	1.30-1.40 -1.50	42.33-91.72-141.11	0.04-0.06-0.08	0.0- 1.5- 2.9	—					

Physical Soil Properties–Strafford County, New Hampshire														
Map symbol and soil name	**Depth**	**Sand**	**Silt**	**Clay**	**Moist bulk density**	**Saturated hydraulic conductivity**	**Available water capacity**	**Linear extensibility**	**Organic matter**	**Erosion factors**			**Wind erodibility group**	**Wind erodibility index**
										Kw	**Kf**	**T**		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
Sb—Saugatuck loamy sand														
Saugatuck	0-4	-80-	-13-	2- 7- 12	1.20-1.35 -1.50	42.33-91.72-14 1.11	0.10-0.11-0. 12	0.0- 1.5- 2.9	2.0- 6.0-10. 0	.10	.10	5		
	4-7	-90-	- 7-	2- 3- 12	1.30-1.43 -1.55	42.33-91.72-14 1.11	0.06-0.07-0. 08	0.0- 1.5- 2.9	0.0- 0.3- 0.5	.15	.15			
	7-26	-80-	-16-	2- 4- 12	1.75-1.88 -2.00	4.23-9.17-14.11	0.06-0.07-0. 08	0.0- 1.5- 2.9	0.5- 1.8- 3.0	.20	.20			
	26-42	-90-	- 7-	2- 3- 12	1.50-1.58 -1.65	42.33-91.72-14 1.11	0.04-0.05-0. 06	0.0- 1.5- 2.9	0.0- 0.3- 0.5	.10	.15			
ScA—Scantic silt loam, 0 to 3 percent slopes														
Scantic	0-13	-15-	-60-	10-25- 40	1.05-1.15 -1.25	1.41-7.76-14.11	0.15-0.20-0. 25	0.0- 1.5- 2.9	2.0- 4.5- 7.0	.32	.32	5		
	13-23	-15-	-48-	20-38- 55	1.40-1.55 -1.70	0.42-2.33-4.23	0.12-0.17-0. 22	3.0- 4.5- 5.9	—					
	23-40	-10-	-43-	35-48- 60	1.50-1.63 -1.75	0.00-0.71-1.41	0.09-0.12-0. 15	3.0- 4.5- 5.9	—					
SfE—Suffield silt loam, 15 to 35 percent slopes														
Suffield	0-19	-15-	-75-	2-10- 18	1.00-1.13 -1.25	4.23-9.17-14.11	0.16-0.20-0. 24	0.0- 1.5- 2.9	1.0- 4.5- 8.0	.37	.37	4		
	19-28	-15-	-71-	2-15- 27	1.30-1.45 -1.60	4.23-9.17-14.11	0.14-0.18-0. 22	0.0- 1.5- 2.9	—					
	28-41	-15-	-45-	35-45- 55	1.40-1.55 -1.70	0.00-0.71-1.41	0.11-0.15-0. 18	3.0- 4.5- 5.9	—					

Physical Soil Properties–Strafford County, New Hampshire														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
WfB—Windsor loamy fine sand, clay subsoil variant, 0 to 8 percent slopes														
Windsor variant	0-26	-80-	-18-	1- 2- 3	1.00-1.10 -1.20	42.33-91.72-14 1.11	0.08-0.10-0. 12	0.0- 1.5- 2.9	2.0- 3.0- 4.0	.20	.20	5		
	26-30	-80-	-19-	0- 2- 3	1.30-1.43 -1.55	42.33-91.72-14 1.11	0.02-0.07-0. 12	0.0- 1.5- 2.9	—					
	30-42	-20-	-60-	5-20- 35	1.30-1.45 -1.60	1.41-2.82-4.23	0.15-0.18-0. 20	0.0- 1.5- 2.9	—					
WfC—Windsor loamy fine sand, clay subsoil variant, 8 to 15 percent slopes														
Windsor variant	0-26	-80-	-18-	1- 2- 3	1.00-1.10 -1.20	42.33-91.72-14 1.11	0.08-0.10-0. 12	0.0- 1.5- 2.9	2.0- 3.0- 4.0	.20	.20	5		
	26-30	-80-	-19-	0- 2- 3	1.30-1.43 -1.55	42.33-91.72-14 1.11	0.02-0.07-0. 12	0.0- 1.5- 2.9	—					
	30-42	-20-	-60-	5-20- 35	1.30-1.45 -1.60	1.41-2.82-4.23	0.15-0.18-0. 20	0.0- 1.5- 2.9	—					

Data Source Information

Soil Survey Area: Strafford County, New Hampshire
Survey Area Data: Version 15, Sep 18, 2015

APPENDIX D

The proposed site improvements incorporate one area of infiltration – an underground chamber gallery within the northwest corner of the existing school building footprint. Due to the nature of the on-site soils and perched groundwater, infiltration is not feasible on the majority of the site. Therefore, the proposed bioretention areas will be installed with underdrain.

I. Boring Locations

Subsurface exploration (for the purposes of building foundation design) consisting of a total of twenty-one borings was performed at the site in May, September, and October 2015 by McPhail Associates, LLC. The borings are identified as B-1 through B-8 and B-101 through B-113. Refer to the attached Subsurface Exploration Plan.

II. Groundwater and Bedrock Elevations

B-1: Existing Surface Elevation = 89.8
GW = 78.8
Bedrock = 75.3
Deepest Elevation of Boring = 69.4

B-2: Existing Surface Elevation = 89.7
GW = 85.7
Bedrock = 75.8
Deepest Elevation of Boring = 75.8

B-3: Existing Surface Elevation = 92.1
GW = 77.1
Bedrock = 76.7
Deepest Elevation of Boring = 76.7

B-4: Existing Surface Elevation = 97.4
GW = 88.9
Bedrock = 83.1
Deepest Elevation of Boring = 83.1

B-5: Existing Surface Elevation = 98.5
GW = not found
Bedrock = 89.3
Deepest Elevation of Boring = 89.3

B-6: Existing Surface Elevation = 95.1
GW = 69.1
Bedrock = not found
Deepest Elevation of Boring = 45.1

B-7: Existing Surface Elevation = 97.2
GW = not found
Bedrock = 93.0
Deepest Elevation of Boring = 93.0

B-8: Existing Surface Elevation = 97.4
GW = not found
Bedrock = 89.2
Deepest Elevation of Boring = 89.2

B-101: Existing Surface Elevation = 98.9
GW = not found
Bedrock = 87.4
Deepest Elevation of Boring = 87.4

B-102: Existing Surface Elevation = 93.1
GW = 74.0
Bedrock = 74.0
Deepest Elevation of Boring = 74.0

B-103: Existing Surface Elevation = 89.4
GW = 77.4
Bedrock = 76.4
Deepest Elevation of Boring = 76.4

B-104: Existing Surface Elevation = 90.8
GW = 82.8
Bedrock = 66.3
Deepest Elevation of Boring = 66.3

B-105: Existing Surface Elevation = 95.4
GW = not found
Bedrock = 87.8
Deepest Elevation of Boring = 87.8

B-106: Existing Surface Elevation = 89.5
GW = 81.5
Bedrock = 81.0
Deepest Elevation of Boring = 81.0

B-107: Existing Surface Elevation = 88.3
GW = 78.3
Bedrock = 62.2
Deepest Elevation of Boring = 62.2

B-108: Existing Surface Elevation = 88.9
GW = 73.9
Bedrock = 73.3
Deepest Elevation of Boring = 73.3

B-109: Existing Surface Elevation = 88.7
GW = 84.7
Bedrock = 71.2
Deepest Elevation of Boring = 71.2

B-110: Existing Surface Elevation = 88.6
GW = 83.6
Bedrock = 79.1
Deepest Elevation of Boring = 79.1

B-111: Existing Surface Elevation = 86.2
GW = 78.2
Bedrock = 52.7
Deepest Elevation of Boring = 52.7

B-112: Existing Surface Elevation = 82.3
GW = 67.3
Bedrock = 64.7
Deepest Elevation of Boring = 64.7

B-113: Existing Surface Elevation = 81.9
GW = 71.9
Bedrock = 70.7
Deepest Elevation of Boring = 70.7

III. Profile Descriptions

See attached boring logs (B-1 through B-8 and B-101 through B-113) for soil profile descriptions.

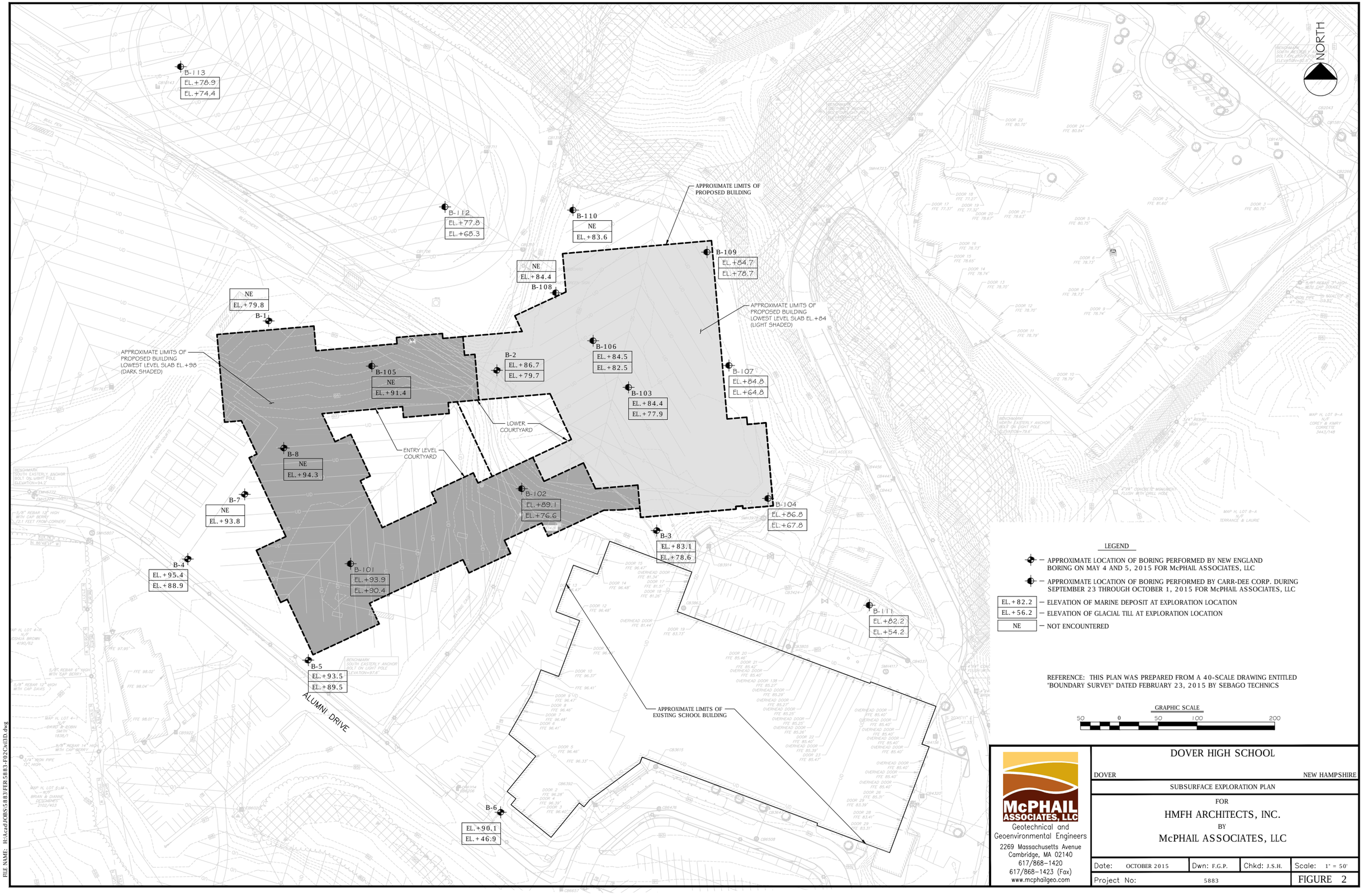
IV. Soils

Refer to the “Site Specific Soil Survey Report” for detailed soil information.

V. Summary of Data Used to Determine the Infiltration Rate

The location of the proposed infiltration gallery was identified as a viable infiltration site due to the depth of the existing building foundation (to be removed) and footing drains. Based on the existing finish floor elevation of 84 in this area of the building, footing drains (and therefore SHWT) are

assumed to be at elevation 80. The bottom of the stone under the proposed chambers is at elevation 83, providing 3 feet of separation to SHWT. Removal of the existing building foundation (to elevation 80) will require that fill be imported under the gallery. This material will be well-drained structural fill or crushed stone with a minimum infiltration rate of 3 inches per hour (to be verified prior to placement). Due to the likelihood of restrictive soils surrounding the gallery subgrade, underdrain is proposed at the bottom of the imported stone section to facilitate drainage of any stormwater that does not infiltrate.



LEGEND

- — APPROXIMATE LOCATION OF BORING PERFORMED BY NEW ENGLAND BORING ON MAY 4 AND 5, 2015 FOR McPHAIL ASSOCIATES, LLC
- — APPROXIMATE LOCATION OF BORING PERFORMED BY CARR-DEE CORP. DURING SEPTEMBER 23 THROUGH OCTOBER 1, 2015 FOR McPHAIL ASSOCIATES, LLC

EL.+82.2	— ELEVATION OF MARINE DEPOSIT AT EXPLORATION LOCATION
EL.+56.2	— ELEVATION OF GLACIAL TILL AT EXPLORATION LOCATION
NE	— NOT ENCOUNTERED

REFERENCE: THIS PLAN WAS PREPARED FROM A 40-SCALE DRAWING ENTITLED "BOUNDARY SURVEY" DATED FEBRUARY 23, 2015 BY SEBAGO TECHNICS

GRAPHIC SCALE

50 0 50 100 200

McPHAIL ASSOCIATES, LLC
Geotechnical and Geoenvironmental Engineers
2269 Massachusetts Avenue
Cambridge, MA 02140
617/868-1420
617/868-1423 (Fax)
www.mcphailgeo.com

DOVER HIGH SCHOOL

DOVER NEW HAMPSHIRE

SUBSURFACE EXPLORATION PLAN

FOR

HMFH ARCHITECTS, INC.

BY

McPHAIL ASSOCIATES, LLC

Date: OCTOBER 2015	Dwn: F.G.P.	Chkd: J.S.H.	Scale: 1" = 50'
Project No: 5883			FIGURE 2

FILE NAME: H:\Acad\JOBS\5883\FER\5883-F02Cw\3D.dwg

Project: Dover High School
Location: 25 Alumni Drive
City/State: Dover, New Hampshire

Job #: 5883.2.00
Date Started: 9-29-15
Date Finished: 9-29-15

Boring No. B-112

Contractor: Carr-Dee
Driller/Helper: Steve and Frank
Logged By/Reviewed By: M. Sachs
Surface Elevation (ft): 82.3

Casing Type/Depth (ft): 2.25" HSA
Casing Hammer (lbs)/Drop (in): N/A
Sampler Size/Type: 1 3/8 in Split Spoon
Sampler Hammer (lbs)/Drop (in): 140 lb/30 in

Groundwater Observations

Date	Depth	Elev.	Notes
9-29-15	15	67.3	

Depth (ft)	Elev. (ft)	Symbol	Depth/EL to Strata Change (ft)	Stratum	Sample N-Value	Sample No.	Sample Pen./Rec. (in)	Sample Depth (ft)	Sample Blows Per 6"	Sample Description and Boring Notes
0	82									
1	81				16	S1	24/18	0.0-2.0	6 8 8 11	S1: Compact, brown, coarse SAND and GRAVEL, some silt, trace clay, trace, roots. (FILL)
2	80			FILL						
3	79									
4	78		4.5 / 77.8							
5	77				23	S2	24/20	5.0-7.0	10 9 14 20	S2: Very stiff, brown-gray, silty CLAY. (MARINE DEPOSIT)
6	76									
7	75									
8	74									
9	73			MARINE DEPOSIT						
10	72				28	S3	24/24	10.0-12.0	8 12 16 16	S3: Very stiff, brown-gray, silty CLAY. (MARINE DEPOSIT)
11	71									
12	70									
13	69									
14	68		14.0 / 68.3							
15	67				70	S4	24/10	15.0-17.0	32 36 34 28	S4: Very dense, brown, silty SAND and GRAVEL, some cobbles, trace clay. (GLACIAL TILL)
16	66			GLACIAL TILL						
17	65		17.6 / 64.7							
18	64			Bottom of borehole at 17.6 feet. Auger refusal at 17.6 feet. Possible bedrock.						
19	63									
20	62									
21	61									
22	60									

GRANULAR SOILS	
BLOWS/FT.	DENSITY
0-4	V.LOOSE
4-10	LOOSE
10-30	COMPACT
30-50	DENSE
>50	V.DENSE

COHESIVE SOILS	
BLOWS/FT.	CONSISTENCY
<2	V.SOFT
2-4	SOFT
4-8	FIRM
8-15	STIFF
15-30	V.STIFF
>30	HARD

SOIL COMPONENT

DESCRIPTIVE TERM	PROPORTION OF TOTAL
"TRACE"	0-10%
"SOME"	10-20%
"ADJECTIVE" (eg SANDY, SILTY)	20-35%
"AND"	35-50%

SOIL CONTAINING THREE COMPONENTS EACH OF WHICH COMPRISE AT LEAST 25% OF THE TOTAL ARE CLASSIFIED AS "A WELL-GRADED MIXTURE OF"

Notes:

Weather: Cloudy

McPHAIL ASSOCIATES, LLC
2269 MASSACHUSETTS AVENUE
CAMBRIDGE, MA 02140
TEL: 617-868-1420
FAX: 617-868-1423

Project:	Dover High School	**Job #:**	5883.2.00
Location:	25 Alumni Drive	**Date Started:**	9-29-15
City/State:	Dover, New Hampshire	**Date Finished:**	9-29-15

Boring No.

B-113

Contractor: Carr-Dee
Driller/Helper: Steve and Frank
Logged By/Reviewed By: M. Sachs
Surface Elevation (ft): 81.9

Casing Type/Depth (ft): 2.25" HSA
Casing Hammer (lbs)/Drop (in): N/A
Sampler Size/Type: 1 3/8 in Split Spoon
Sampler Hammer (lbs)/Drop (in): 140 lb/30 in

Groundwater Observations

Date	Depth	Elev.	Notes
9-29-15	10	71.9	

Depth (ft)	Elev. (ft)	Symbol	Depth/EL to Strata Change (ft)	Stratum	Sample N-Value	Sample No.	Sample Pen./Rec. (in)	Sample Depth (ft)	Sample Blows Per 6"	Sample Description and Boring Notes
1	81			FILL	14	S1	24/23	0.0-2.0	7 6 8 12	S1: Compact, silty SAND and CLAY, trace roots. (FILL)
2	80									
3	79		3.0 / 78.9							
4	78			MARINE DEPOSIT						
5	77									
6	76				8	S2	24/24	5.0-7.0	3 4 4 7	S2: Firm to stiff, yellow-brown, silty CLAY, sand lenses. (MARINE DEPOSIT)
7	75		7.5 / 74.4							
8	74			GLACIAL TILL						
9	73									
10	72									
11	71		11.2 / 70.7		33	S3	14/12	10.0-11.2	11 22 100/2"	S3: Compact, brown, silty SAND, some clay, some gravel and cobbles. (GLACIAL TILL)
12	70			Bottom of borehole at 11.2 feet. Auger and spoon refusal at 11.2 feet. Possible bedrock.						
13	69									
14	68									
15	67									
16	66									
17	65									
18	64									
19	63									
20	62									
21	61									
22	60									

GRANULAR SOILS	
BLOWS/FT.	DENSITY
0-4	V.LOOSE
4-10	LOOSE
10-30	COMPACT
30-50	DENSE
>50	V.DENSE

COHESIVE SOILS	
BLOWS/FT.	CONSISTENCY
<2	V.SOFT
2-4	SOFT
4-8	FIRM
8-15	STIFF
15-30	V.STIFF
>30	HARD

SOIL COMPONENT

DESCRIPTIVE TERM	PROPORTION OF TOTAL
"TRACE"	0-10%
"SOME"	10-20%
"ADJECTIVE" (eg SANDY, SILTY)	20-35%
"AND"	35-50%

SOIL CONTAINING THREE COMPONENTS EACH OF WHICH COMPRISE AT LEAST 25% OF THE TOTAL ARE CLASSIFIED AS "A WELL-GRADED MIXTURE OF"

Notes:

Weather: Cloudy

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FAX: 617-868-1423

Tighe&Bond

APPENDIX E

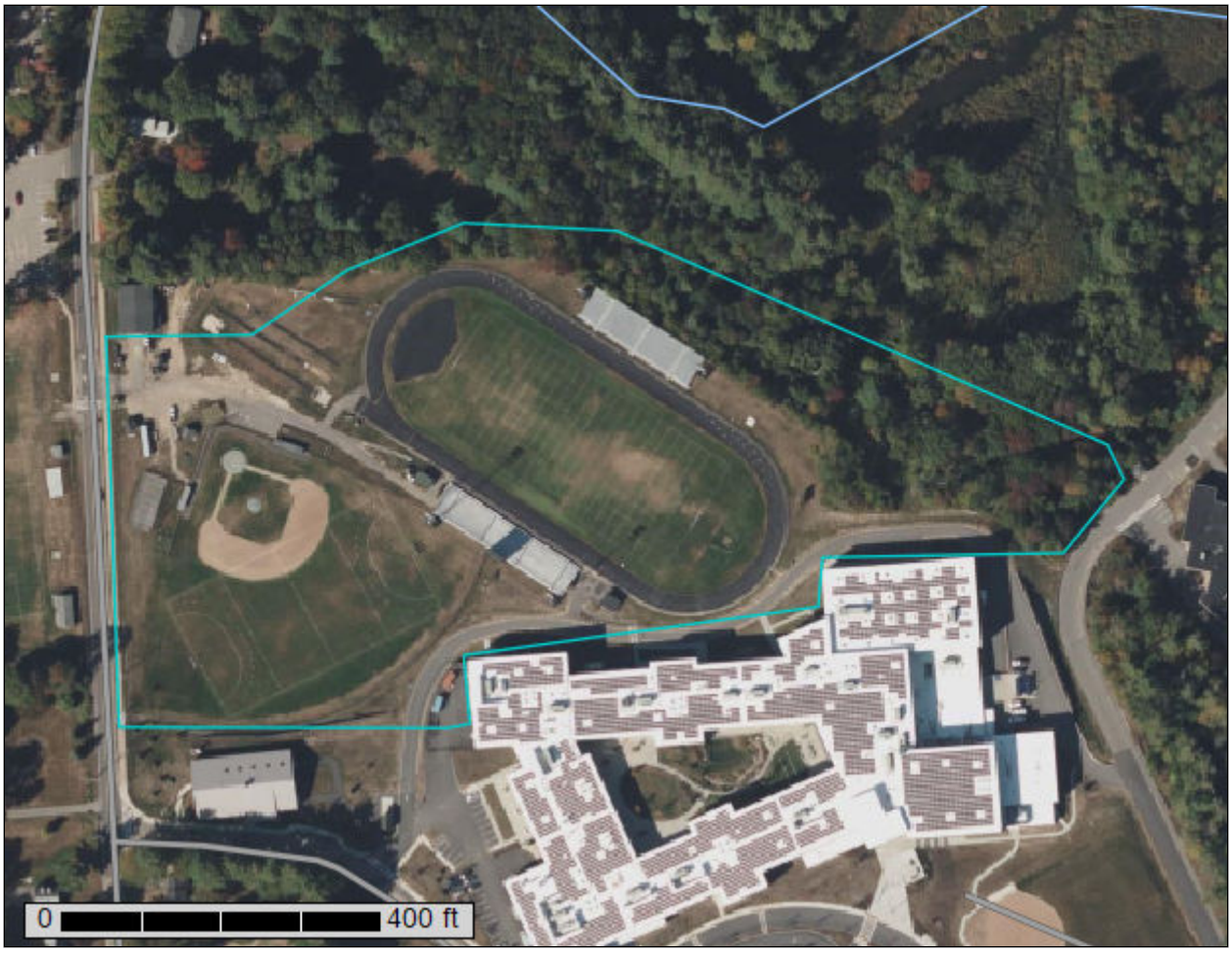
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Strafford County, New Hampshire



July 8, 2025

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.


70° 53' 24" W
70° 53' 4" W
43° 10' 46" N
43° 10' 36" N
346380
346430
346480
346530
346580
346630
346680
346730
346780
346830
4782470
4782420
4782370
4782320
4782270
4782220
4782170
WfB
SfE
BzB
HcD
WfC
HcD
HcB
Soil Map may not be valid at this scale.
N
Map Scale: 1:2,140 if printed on A landscape (11" x 8.5") sheet.
Meters
0 30 60 120 180
Feet
0 100 200 400 600
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Strafford County, New Hampshire
Survey Area Data: Version 25, Sep 3, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 19, 2020—Sep 20, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BzB	Buxton silt loam, 3 to 8 percent slopes	6.8	56.1%
HcB	Hollis-Charlton fine sandy loams, 3 to 8 percent slopes	0.0	0.0%
HcD	Hollis-Charlton fine sandy loams, 15 to 25 percent slopes	2.2	17.9%
SfE	Suffield silt loam, 15 to 35 percent slopes	1.3	11.0%
WfB	Windsor loamy fine sand, clay subsoil variant, 0 to 8 percent slopes	1.7	14.4%
WfC	Windsor loamy fine sand, clay subsoil variant, 8 to 15 percent slopes	0.1	0.6%
Totals for Area of Interest		**12.0**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit

descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Strafford County, New Hampshire

BzB—Buxton silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9d6p
Elevation: 0 to 260 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Buxton and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Buxton

Setting

Parent material: Glaciomarine

Typical profile

H1 - 0 to 10 inches: silt loam
H2 - 10 to 28 inches: silty clay loam
H3 - 28 to 43 inches: silty clay

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C/D
Ecological site: F145XY006CT - Semi-Rich Moist Lake Plain
Hydric soil rating: No

Minor Components

Elmwood

Percent of map unit: 10 percent
Hydric soil rating: No

Not named

Percent of map unit: 5 percent
Hydric soil rating: No

HcB—Hollis-Charlton fine sandy loams, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9d7j
Elevation: 0 to 1,020 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 120 to 240 days
Farmland classification: Farmland of local importance

Map Unit Composition

Hollis and similar soils: 55 percent
Charlton and similar soils: 35 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hollis

Setting

Parent material: Till

Typical profile

H1 - 0 to 14 inches: fine sandy loam
H2 - 14 to 18 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: F144AY033MA - Shallow Dry Till Uplands
Hydric soil rating: No

Description of Charlton

Setting

Parent material: Till

Typical profile

H1 - 0 to 13 inches: fine sandy loam

H2 - 13 to 36 inches: fine sandy loam
H3 - 36 to 40 inches: gravelly loamy sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: A
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Not named

Percent of map unit: 5 percent
Hydric soil rating: No

Buxton

Percent of map unit: 5 percent
Hydric soil rating: No

HcD—Hollis-Charlton fine sandy loams, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 9d7l
Elevation: 0 to 1,000 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 120 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Hollis and similar soils: 55 percent
Charlton and similar soils: 35 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hollis

Setting

Parent material: Till

Typical profile

H1 - 0 to 14 inches: fine sandy loam
H2 - 14 to 18 inches: bedrock

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: F144AY033MA - Shallow Dry Till Uplands
Hydric soil rating: No

Description of Charlton

Setting

Parent material: Till

Typical profile

H1 - 0 to 13 inches: fine sandy loam
H2 - 13 to 36 inches: fine sandy loam
H3 - 36 to 40 inches: gravelly loamy sand

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Not named

Percent of map unit: 10 percent
Hydric soil rating: No

SfE—Suffield silt loam, 15 to 35 percent slopes

Map Unit Setting

National map unit symbol: 9d8w
Elevation: 0 to 210 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Suffield and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Suffield

Typical profile

H1 - 0 to 19 inches: silt loam
H2 - 19 to 28 inches: silt loam
H3 - 28 to 41 inches: silty clay

Properties and qualities

Slope: 15 to 35 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: F144AY017NH - Well Drained Lake Plain
Hydric soil rating: No

Minor Components

Not named
Percent of map unit: 14 percent
Hydric soil rating: No

Rock outcrop
Percent of map unit: 1 percent
Hydric soil rating: No

WfB—Windsor loamy fine sand, clay subsoil variant, 0 to 8 percent slopes

Map Unit Setting
National map unit symbol: 9d9b
Elevation: 0 to 280 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition
Windsor variant and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Windsor Variant

Typical profile
H1 - 0 to 26 inches: loamy fine sand
H2 - 26 to 30 inches: loamy sand
H3 - 30 to 42 inches: silt loam

Properties and qualities
Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 24 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.1 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash

Hydric soil rating: No

Minor Components

Not named

Percent of map unit: 15 percent
Hydric soil rating: No

WfC—Windsor loamy fine sand, clay subsoil variant, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9d9c
Elevation: 0 to 230 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Windsor variant and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Windsor Variant

Typical profile

H1 - 0 to 26 inches: loamy fine sand
H2 - 26 to 30 inches: loamy sand
H3 - 30 to 42 inches: silt loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 24 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Minor Components

Not named

Percent of map unit: 15 percent
Hydric soil rating: No

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.



Map Scale: 1:2,140 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 30 60 120 180

Feet
0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Strafford County, New Hampshire
Survey Area Data: Version 25, Sep 3, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 19, 2020—Sep 20, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BzB	Buxton silt loam, 3 to 8 percent slopes	C/D	6.8	56.1%
HcB	Hollis-Charlton fine sandy loams, 3 to 8 percent slopes	D	0.0	0.0%
HcD	Hollis-Charlton fine sandy loams, 15 to 25 percent slopes	D	2.2	17.9%
SfE	Suffield silt loam, 15 to 35 percent slopes	C	1.3	11.0%
WfB	Windsor loamy fine sand, clay subsoil variant, 0 to 8 percent slopes	A	1.7	14.4%
WfC	Windsor loamy fine sand, clay subsoil variant, 8 to 15 percent slopes	A	0.1	0.6%
Totals for Area of Interest			**12.0**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

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APPENDIX F

GROUNDWATER RECHARGE VOLUME (GRV)
(Env-Wq 1504.12)

-	ac	Area of HSG A soil that was replaced by impervious cover	0.40"
0.12	ac	Area of HSG B soil that was replaced by impervious cover	0.25"
7.14	ac	Area of HSG C soil that was replaced by impervious cover	0.10"
-	ac	Area of HSG D soil or impervious cover that was replaced by impervious cover	0.0"
0.10	inches	Rd = Weighted groundwater recharge depth	
0.7437	ac-in	GRV = AI * Rd	
2,699	cf	GRV conversion (ac-in x 43,560 sf/ac x 1ft/12”)	
	← Y/N	Is a stage-storage table attached showing that the GRV can be stored below the lowest invert of the outlet structure (if applicable)? Multiple stormwater control measures may be used to meet the GRV requirements.	

Provide calculations/discussion below showing that the project meets the groundwater recharge requirements (Env-Wq 1507.04):

Stage-Area-Storage for Pond PRG-1: (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
78.91	6,703	3,663	79.43	7,254	5,341
78.92	6,713	3,693	79.44	7,265	5,376
78.93	6,722	3,722	79.45	7,276	5,412
78.94	6,732	3,752	79.46	7,287	5,447
78.95	6,742	3,782	79.47	7,298	5,482
78.96	6,751	3,812	79.48	7,308	5,518
78.97	6,761	3,842	79.49	7,319	5,554
78.98	6,771	3,872	79.50	7,330	5,589
78.99	6,780	3,903	79.51	7,341	5,625
79.00	6,790	3,933	79.52	7,352	5,661
79.01	6,801	3,963	79.53	7,362	5,697
79.02	6,812	3,994	79.54	7,373	5,734
79.03	6,822	4,025	79.55	7,384	5,770
79.04	6,833	4,055	79.56	7,395	5,806
79.05	6,844	4,086	79.57	7,406	5,843
79.06	6,855	4,117	79.58	7,416	5,879
79.07	6,866	4,149	79.59	7,427	5,916
79.08	6,876	4,180	79.60	7,438	5,953
79.09	6,887	4,211	79.61	7,449	5,990
79.10	6,898	4,243	79.62	7,460	6,027
79.11	6,909	4,274	79.63	7,470	6,064
79.12	6,920	4,306	79.64	7,481	6,102
79.13	6,930	4,338	79.65	7,492	6,139
79.14	6,941	4,370	79.66	7,503	6,177
79.15	6,952	4,402	79.67	7,514	6,214
79.16	6,963	4,434	79.68	7,524	6,252
79.17	6,974	4,466	79.69	7,535	6,290
79.18	6,984	4,498	79.70	7,546	6,328
79.19	6,995	4,531	79.71	7,557	6,366
79.20	7,006	4,563	79.72	7,568	6,404
79.21	7,017	4,596	79.73	7,578	6,442
79.22	7,028	4,628	79.74	7,589	6,480
79.23	7,038	4,661	79.75	7,600	6,519
79.24	7,049	4,694	79.76	7,611	6,557
79.25	7,060	4,727	79.77	7,622	6,596
79.26	7,071	4,761	79.78	7,632	6,635
79.27	7,082	4,794	79.79	7,643	6,674
79.28	7,092	4,827	79.80	7,654	6,713
79.29	7,103	4,861	79.81	7,665	6,752
79.30	7,114	4,894	79.82	7,676	6,791
79.31	7,125	4,928	79.83	7,686	6,831
79.32	7,136	4,962	79.84	7,697	6,870
79.33	7,146	4,996	79.85	7,708	6,910
79.34	7,157	5,030	79.86	7,719	6,949
79.35	7,168	5,064	79.87	7,730	6,989
79.36	7,179	5,098	79.88	7,740	7,029
79.37	7,190	5,133	79.89	7,751	7,069
79.38	7,200	5,167	79.90	7,762	7,109
79.39	7,211	5,202	79.91	7,773	7,149
79.40	7,222	5,237	79.92	7,784	7,190
79.41	7,233	5,271	79.93	7,794	7,230
79.42	7,244	5,306	79.94	7,805	7,270

FILTRATION PRACTICE DESIGN CRITERIA
(Env-Wq 1508.08)

Type/Node Name: **PROPOSED RAIN GARDEN - 01**

Enter the type of filtration practice (e.g., bioretention system) and the node name in the drainage analysis, if applicable.

X		Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.08(a).	
2.27	ac	A = Area draining to the practice	
1.18	ac	A_I = Impervious area draining to the practice	
0.52	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.52	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
1.17	ac-in	WQV= 1" x Rv x A	
4,256	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
1,064	cf	25% x WQV (check calc for sediment forebay volume)	
3,192	cf	75% x WQV (check calc for surface sand filter volume)	
FOREBAY		Method of Pretreatment? (not required for clean or roof runoff)	
2,594	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	**≥ 25%WQV**
Calculate time to drain if system IS NOT underdrained:			
1,249	sf	A_{SA} = Surface area of the practice	
3.00	iph	$Ksat_{DESIGN}$ = Design infiltration rate[1]	
		If Ksat (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?	
NO	Yes/No	(Use the calculations below)	
13.6	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	**≤ 72-hrs**
Calculate time to drain if system IS underdrained:			
79.11	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
0.39	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
6.06	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	**≤ 72-hrs**
74.75	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
71.90	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
70.70	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
74.75	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	**≥ 1'**
4.05	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	**≥ 1'**
2.85	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	**≥ 1'**
82.42	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
83.00	ft	Elevation of the top of the practice	
YES		50 peak elevation ≤ Elevation of the top of the practice	**← yes**
If a surface sand filter or underground sand filter is proposed:			
YES	ac	Drainage Area check.	**< 10 ac**
N/A	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ 75%WQV**
N/A	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course specification.	
N/A	Yes/No	Access grate provided?	**← yes**

If a bioretention area is proposed:			
YES	ac	Drainage Area no larger than 5 ac?	**← yes**
24,782	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ WQV**
18.0	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course specification	
3.0	:1	Pond side slopes	**≥ 3:1**
Sheet		Note what sheet in the plan set contains the planting plans and surface cover	
If porous pavement is proposed:			
N/A		Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.)	
N/A	acres	A_{SA} = Surface area of the pervious pavement	
#VALUE!	:1	Ratio of the contributing area to the pervious surface area	**≤ 5:1**
N/A	inches	D_{FC} = Filter course thickness	**12", or 18" if within GPA mod. 304.1 (see spec)**
Sheet	N/A	Note what sheet in the plan set contains the filter course spec.	

1. Rate of the limiting layer (either the filter course or the underlying soil). $Ksat_{design}$ includes factor of safey. See Env-Wq 1504.14 for guidance on determining the infiltration rate.

2. See lines 34, 40 and 48 for required depths of filter media.

3. Volume without depending on infiltration. The volume includes the storage above the filter (but below the invert of the outlet stucture, if any), the filter media voids, and the pretreatment area. The storage above the filter media shall not include the volume above the outlet structure, if any.

Designer's Notes:

Summary for Pond PRG-1:

Inflow Area = 2.269 ac, 51.86% Impervious, Inflow Depth = 8.19" for 100-yr event
Inflow = 21.35 cfs @ 12.06 hrs, Volume= 1.548 af
Outflow = 12.49 cfs @ 12.17 hrs, Volume= 1.531 af, Atten= 41%, Lag= 6.6 min
Discarded = 1.01 cfs @ 12.17 hrs, Volume= 1.075 af
Primary = 11.49 cfs @ 12.17 hrs, Volume= 0.456 af
Routed to Pond PDMH-13 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 82.68' @ 12.17 hrs Surf.Area= 15,783 sf Storage= 23,533 cf
Flood Elev= 83.00' Surf.Area= 16,311 sf Storage= 26,155 cf

Plug-Flow detention time= 174.9 min calculated for 1.531 af (99% of inflow)
Center-of-Mass det. time= 167.6 min (945.7 - 778.0)

Volume	Invert	Avail.Storage	Storage Description
#1	78.00'	2,594 cf	**Forebay (Prismatic)** Listed below (Recalc)
#2	78.00'	3,548 cf	**Rain Garden (Prismatic)** Listed below (Recalc)
#3	80.00'	18,640 cf	**Additional Ponding Area (Prismatic)** Listed below (Recalc)
#4	76.50'	562 cf	**Filter Media (Prismatic)** Listed below (Recalc) 1,874 cf Overall x 30.0% Voids
#5	76.25'	62 cf	**Pea Stone (Prismatic)** Listed below (Recalc) 312 cf Overall x 20.0% Voids
#6	74.75'	749 cf	**Reservoir Course (Prismatic)** Listed below (Recalc) 1,874 cf Overall x 40.0% Voids
		26,155 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
78.00	826	0	0
79.00	1,283	1,055	1,055
80.00	1,796	1,540	2,594

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
78.00	1,249	0	0
79.00	1,760	1,505	1,505
80.00	2,327	2,044	3,548

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
80.00	4,186	0	0
81.00	5,531	4,859	4,859
82.00	6,795	6,163	11,022
83.00	8,441	7,618	18,640

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
76.50	1,249	0	0
78.00	1,249	1,874	1,874

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
76.25	1,249	0	0
76.50	1,249	312	312

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
74.75	1,249	0	0
76.25	1,249	1,874	1,874

Device	Routing	Invert	Outlet Devices
#1	Primary	75.25'	**18.0" Round Culvert** L= 11.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 75.25' / 75.15' S= 0.0091 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Discarded	74.75'	**3.000 in/hr Exfiltration over Surface area above 74.75'** Excluded Surface area = 1,249 sf
#3	Device 1	82.00'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=1.01 cfs @ 12.17 hrs HW=82.66' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 1.01 cfs)

Primary OutFlow Max=11.10 cfs @ 12.17 hrs HW=82.66' TW=80.08' (Dynamic Tailwater)
└**1=Culvert** (Passes 11.10 cfs of 13.68 cfs potential flow)
└**3=Orifice/Grate** (Weir Controls 11.10 cfs @ 2.66 fps)

Tighe&Bond

APPENDIX G

Tighe&Bond

Engineers | Environmental Specialists

Project: Dover High School Athletic Facility
Location: Dover, NH
T&B #: D5085-001
Calculations By: CML
Checked By: NAH
Date: 8/4/2025

APRON DESIGN

Terms: FES 1

length of apron (ft.)	L_a	
discharge from pipe (cfs)	Q	(10 YR STORM EVENT)
pipe dia. or channel width (ft.)	Do	
tailwater depth (ft.)	T_w	
width of apron (at outlet)(ft)	W1	
width of apron (downstream)(ft)	W2	
median stone diameter (ft.)	d_{50}	

Equations Used:

Length of Apron (L_a)

when Tw < .5*Do $L_a = \frac{1.8(Q)}{Do^{(3/2)}} + 7Do$

when Tw >= .5*Do $L_a = \frac{3(Q)}{Do^{(3/2)}} + 7Do$

Width of Apron (W1)

$W1 = 3Do$

Width of Apron (W2)

when Tw < .5*Do $W2 = 3Do + La$

when Tw >= .5*Do $W2 = 3Do + 0.4La$

Median Diameter $d_{50} = \frac{0.02 * Q^{(1.3)}}{(Tw * Do)}$

Input:		
Q (cfs)	25.58	cfs
Do (ft.)	3.00	ft
T_w (ft.)	1.20	ft

Output:		
Width of Apron (W1)	9	ft.
Width of Apron (W2)	39	ft.
Length of Apron (L_a)	30	ft.
Median Diameter	0.50	ft.
Riprap min. depth	1.13	ft.

Tighe&Bond

Engineers | Environmental Specialists

Project: Dover High School Athletic Facility
Location: Dover, NH
T&B #: D5085-001
Calculations By: CML
Checked By: NAH
Date: 8/4/2025

APRON DESIGN

Terms: FES 2

length of apron (ft.)	L_a	
discharge from pipe (cfs)	Q	(10 YR STORM EVENT)
pipe dia. or channel width (ft.)	Do	
tailwater depth (ft.)	T_w	
width of apron (at outlet)(ft)	W1	
width of apron (downstream)(ft)	W2	
median stone diameter (ft.)	d_{50}	

Equations Used:

Length of Apron (L_a)

when Tw < .5*Do $L_a = \frac{1.8(Q)}{Do^{(3/2)}} + 7Do$

when Tw >= .5*Do $L_a = \frac{3(Q)}{Do^{(3/2)}} + 7Do$

Width of Apron (W1)

$W1 = 3Do$

Width of Apron (W2)

when Tw < .5*Do $W2 = 3Do + La$

when Tw >= .5*Do $W2 = 3Do + 0.4La$

Median Diameter $d_{50} = \frac{0.02 * Q^{(1.3)}}{(Tw * Do)}$

Input:		
Q (cfs)	3.05	cfs
Do (ft.)	1.00	ft
T_w (ft.)	0.40	ft

Output:		
Width of Apron (W1)	3	ft.
Width of Apron (W2)	15	ft.
Length of Apron (L_a)	12	ft.
Median Diameter	0.50	ft.
Riprap min. depth	1.13	ft.

Tighe&Bond

Engineers | Environmental Specialists

Project: Dover High School Athletic Facility
Location: Dover, NH
T&B #: D5085-001
Calculations By: CML
Checked By: NAH
Date: 8/4/2025

APRON DESIGN

Terms: FES 2

length of apron (ft.)	L_a	
discharge from pipe (cfs)	Q	(10 YR STORM EVENT)
pipe dia. or channel width (ft.)	Do	
tailwater depth (ft.)	T_w	
width of apron (at outlet)(ft)	W1	
width of apron (downstream)(ft)	W2	
median stone diameter (ft.)	d_{50}	

Equations Used:

Length of Apron (L_a)

when Tw < .5*Do $L_a = \frac{1.8(Q)}{Do^{(3/2)}} + 7Do$

when Tw >= .5*Do $L_a = \frac{3(Q)}{Do^{(3/2)}} + 7Do$

Width of Apron (W1)

$W1 = 3Do$

Width of Apron (W2)

when Tw < .5*Do $W2 = 3Do + La$

when Tw >= .5*Do $W2 = 3Do + 0.4La$

Median Diameter $d_{50} = \frac{0.02 * Q^{(1.3)}}{(Tw * Do)}$

Input:		
Q (cfs)	2.93	cfs
Do (ft.)	1.00	ft
T_w (ft.)	0.40	ft

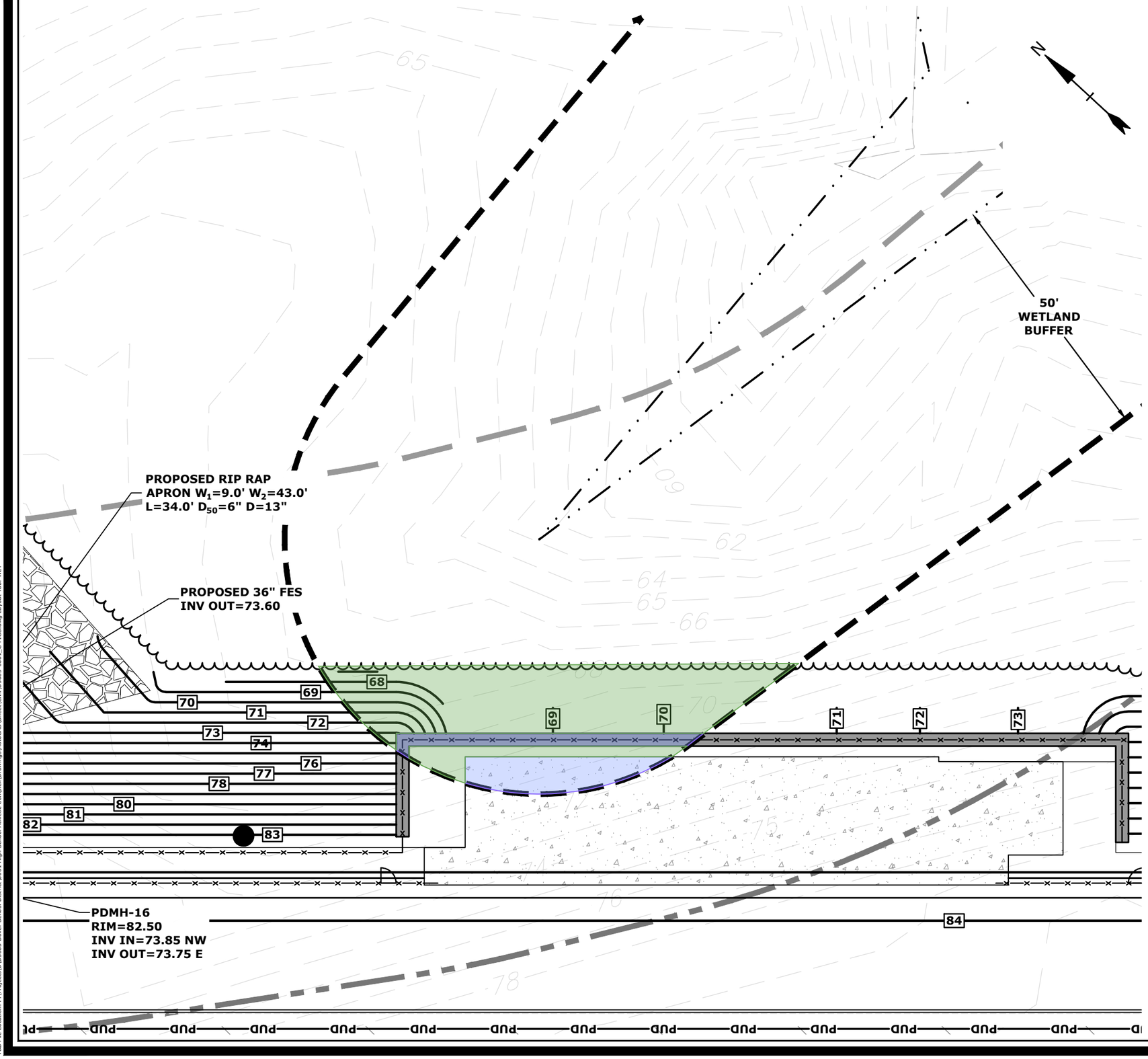
Output:		
Width of Apron (W1)	3	ft.
Width of Apron (W2)	15	ft.
Length of Apron (L_a)	12	ft.
Median Diameter	0.50	ft.
Riprap min. depth	1.13	ft.

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100% Recyclable

DOVER HIGH SCHOOL ATHLETIC COMPLEX
DOVER, NH

WETLAND BUFFER IMPACT EXHIBIT



LEGEND

- 50' WETLAND BUFFER
- PROPOSED PERMANENT WETLAND BUFFER IMPACT (378 SF)
- PROPOSED TEMPORARY WETLAND BUFFER IMPACT (1,230 SF)

0 20' 40'

GRAPHIC SCALE

Tighe&Bond

Engineers | Environmental Specialists

August 1, 2025
D5085-0001_C-FIGS.dwg

Last Save Date: July 28, 2025 10:32 AM By: JBOWMAN
Plot Date: Monday, July 28, 2025 Plotted By: Julia Bowman
Xref File Location: I:\Projects\D5085 Dover School District\0001 High School Athletic Complex\Drawings\AutoCAD\Sheet\Civil\D5085-0001_C-FIGS.dwg Layout Tab: WET

Dover High School Athletic Complex Wetland Delineation

Tax Map H / Lot 12, Dover, NH

TO: Dover School District, City of Dover, NH

FROM: Jeremy Degler, PWS, CWS, Tighe and Bond; Rick Lipinski, Tighe and Bond

DATE: July 16, 2024

On June 19 and July 2, 2024, Tighe & Bond conducted a wetland delineation within the limits of the existing Dover High School Athletic Complex, located directly north of the Dover High School at 25 Alumni Drive in Dover, NH.

Methods

The wetland delineation was completed in accordance with the procedures outlined in the *U.S. Army Corps of Engineers Wetlands Delineation Manual*, Technical Report Y-87-1 (January 1987), and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region* (Version 2.0, January 2012), as well as followed the methodologies outlined in NH Administrative Rule Env-Wt 406. Wetlands were classified following *Classification of Wetlands and Deepwater Habitats of the United States* (Federal Geographic Data Committee, Second Edition; 2013). Sequentially numbered flagging was used to demarcate wetland boundaries, which were located using an Arrow sub-meter GPS unit. Below is a description of the jurisdictional areas. A site map, photographic log, and supporting documentation are provided in Attachments A through D.

Jurisdictional Area Descriptions

Two wetlands and two streams were delineated within the limits of the project area (Photographs 3-7).

Wetland 1

Wetland 1 is a mapped National Wetlands Inventory (NWI) feature situated northeast of the existing running track within the floodplain of the Bellamy River (Photograph 3). The wetland boundary was marked in the field with wetland flags 4A-1 to 4A-22. This area contains moderately decomposed black organic soils (10YR 2/1) situated over a depleted matrix (10YR 4/2) with redoximorphic features (7.5 YR 5/6). The wetland hydrology indicators observed at the time of the site visit included standing surface water, soil saturation, water-stained leaves, and geomorphic position. The hydrophytic plant community was dominated by sensitive fern (*Onoclea sensibilis*; FACW), jewelweed (*Impatiens capensis*; FACW), cinnamon fern (*Osmunda cinnamomea*; FACW), skunk cabbage (*Symplocarpus foetidus*; OBL), alder buckthorn (*Frangula alnus*; FAC). This wetland is classified as a mix of palustrine emergent and persistent as well as palustrine scrub-shrub and broad-leaved deciduous, with a seasonally flooded/saturated hydroperiod (PEM1/SS1E).

Wetland 2

Wetland 2 is a small wet ditch that drains to the east, into Wetland 1 and eventually into the Bellamy River (Photograph 4). This feature is dominated by the same soils as Wetland 1 but with a thinner black organic layer. The wetland hydrology indicators observed at the time of the site visit included standing surface water, soil saturation, sediment deposits, water-stained leaves, drainage patterns, and geomorphic position. The hydrophytic plant community was dominated by jewelweed, several sedge species (*Carex* spp.), bittersweet nightshade (*Solanum dulcamara*; FAC), poison ivy (*Toxicodendron radicans*; FAC), brambles (*Rubus* spp.), multiflora rose (*Rosa multiflora*; FACU), and alder buckthorn. This wetland is classified as palustrine forested and broad-leaved deciduous, with a seasonally flooded/saturated hydroperiod (PFO1E).

Stream 1

Stream 1 is a small intermittent tributary to the Bellamy River, which is located northeast of the project area, outside of the existing athletic complex (Photograph 5). This stream flows to the north, into Wetland 1 and eventually into the Bellamy River. The limits of the stream channel were delineated by the Ordinary High Water Mark (OHWM) in accordance with Env-Wt 406.04, which was evidenced by physical characteristics such as a clear, natural line impressed on the immediate bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, and the presence of litter and debris.

Stream 2 (The Bellamy River)

Stream 2 is the Bellamy River, which is located north of the project area and generally flows to the east (Photographs 6 and 7). This river is classified as perennial on the latest U.S. Geologic Survey (USGS) topographic maps. The floodplain of the Bellamy River is predominantly steep and forested. The southern bank was approximately 3-4 feet tall and comprised of fine sand, gravel, and woody debris. The stream bed was dominated by cobble and gravel, with a well-developed pool and riffle complex. The OHWM generally coincided with the upper limit of the bank (i.e., the "top of bank") and was evidenced by a defined break in slope, a change from fine sand and gravel on the bank to course mineral and organic (forest-floor) substrate, and persistent woody vegetation at the top of bank. The Bellamy River in the vicinity of the project site is not located within a Designated River Corridor, though it is a fourth order stream, and is therefore subject to RSA 483-B, the Shoreland Water Quality Protection Act, which establishes a protected shoreland area extending 250-feet from the OHWM (i.e., the reference line).

Wetland Functions and Values

Functions and values for this area were assessed based on our review of field observations, site photographs, and available GIS data. Assessment criteria were based on the *US Army Corps of Engineers, New England District, Highway Methodology Workbook Supplement - Wetland Functions and Values: A Descriptive Approach* (NAEEP-360-1-30a; September 1999).

Ten functions and values were identified as "suitable" for Wetland 1, including: Groundwater Recharge/ Discharge, Floodflow Alteration (principal function), Sediment/Toxicant Retention, Nutrient Removal, Production Export, Sediment/Shoreline Stabilization (principal function), Wildlife Habitat (principal function), Recreation, Educational Value, and Visual Quality/Aesthetics. Due to its small size, two functions were identified as "suitable" for Wetland 2 (Floodflow Alteration and Groundwater Recharge/Discharge). The data sheets for this functional assessment are included in the attachments to this report.

Rare, Threatened, and Endangered Species and Critical Habitat

The NH Wildlife Action Plan (WAP) ranks wildlife habitat by the highest ranked habitat in NH (Tier 1), highest ranked habitat in the biological region (Tier 2), and supporting landscapes (Tier 3). There are no areas of Tier 1 or Tier 2 highest ranked wildlife habitat within the project area; though the area surrounding the project is ranked as Tier 3, supporting landscape. The Bellamy River is identified by the NH WAP as Seacoast Anadromous Fish Habitat; including species of special concern: alewife (*Alosa pseudoharengus*) and blueback herring (*Alosa aestivalis*). A datacheck report has been filed with the New Hampshire Natural Heritage Bureau (NHB; NHB24-2063) to determine any known occurrences of state listed rare, threatened, or endangered (RTE) plant and animal species or exemplary natural communities in the vicinity of the project. A response was received on July 12, 2024, resulting in the expectation that rare wildlife/plants will not be impacted by the proposed project.

Endangered Species Act (ESA) listed species and designated critical habitat(s) under the jurisdiction of the United States Fish and Wildlife Service (USFWS), as identified through the USFWS Information for Planning and Consultation (IPaC) website accessed on June 17, 2024, include the Northern Long-Eared Bat (*Myotis septentrionalis*, Endangered), Tricolored Bat (*Perimyotis subflavus*, Proposed Endangered), and the Monarch Butterfly (*Danaus plexippus*, Candidate). There are currently no ESA Section 7 requirements for candidate species and there is no critical habitat designated for the Monarch Butterfly or for the Tricolored Bat. Based on the June 17, 2024 IPaC determination key, a preliminary "No Effect" determination has been reached for the Northern Long-Eared Bat.

According to the National Oceanic and Atmospheric Administration (NOAA) Greater Atlantic Fisheries Office, Endangered Species Act Section 7 Consultation mapping application (ESA S7 Mapper), there are endangered Atlantic Sturgeon (*Acipenser oxyrinchus oxyrinchus*) and short-nose sturgeon (*Acipenser brevirostrum*) within one mile of the study area. The Bellamy River is not identified by NOAA National Marine Fisheries Service (NMFS) as Essential Fish Habitat (EFH).

The project should be designed to avoid jeopardizing the continued existence of state and federally-listed RTE plant and animal species, critical habitats, and exemplary natural communities; and the above-referenced reviews and determinations should be updated through the USFWS, NOAA NMFS, and the NH NHB as the full scope and timing of the project develops.

Vernal Pools

During the wetland delineation, the project area was assessed for characteristic vernal pool features (e.g., closed, depressional landform, direct observation of primary or secondary indicator species) in accordance with *"Identification and Documentation of Vernal Pools in New Hampshire"* (3rd Ed., 2016, published by the New Hampshire Fish and Game Department, Nongame and Endangered Wildlife Program) and the New Hampshire Department of Environmental Services' Administrative Rule Env-Wt 104.46.

Based on the survey conducted by Tighe and Bond Environmental Scientists on June 19 and July 2, 2024, no characteristic vernal pool features were observed, and it is unlikely that any vernal pools are present within the project area.

Priority Resource Areas

Wetland 1 is contiguous to the Bellamy River (a Tier 3 stream per New Hampshire Administrative Rule Chapter Env-Wt 904.05) and located within the FEMA-mapped 100-year floodplain. Additionally, preliminary results of the NHB Datacheck include the potential presence of RTE species or exemplary natural communities in the vicinity of the project area. Therefore, this feature is classified as a "*priority resource area*" (PRA) per New Hampshire Administrative Rule Chapter Env-Wt 103.68. An official Datacheck has been filed, and although there was an NHB record present in the project vicinity, it is expected that it will not be impacted by the proposed project.

Conclusion

In summary, two wetlands and two streams were delineated within the Dover High School Athletic Complex project area. These areas are subject to federal, state, and local jurisdiction. The site contains features classified by the New Hampshire Department of Environmental Services as "priority resource areas"; and the project should be designed to avoid and minimize impact to these features as much as possible. The Bellamy River is also considered a Public Water, and therefore subject to the Shoreland Water Quality Protection Act.



FIGURE 1
AERIAL SITE PLAN

LEGEND

- Wetland Flag
- Bank Flag
- Delineated Wetland Boundary
- Delineated Bank
- 250-Foot Protected Shoreland (RSA 483-B)
- Parcel
- 100-Year Flood Zone
- 500-Year Flood Zone

LOCUS MAP



N

0 125 250
Feet
1:3,000

NOTES

1. Aerial basemap courtesy of Nearmap (2024), set to 10% transparency.
2. 2023 parcel data (approximate) courtesy of NH GRANIT.

Dover High School
Athletic Complex
Dover, New Hampshire

July 2024

Tighe&Bond

G:\GIS\NH\SiteLocus\Dover\Wetlands_DoverHSAthleticComplex_Landscape.mxd [Exported By: MHarris, 7/9/2024, 10:26:53 AM]

D-5085

Wetland Delineation - Photographic Log

Client: Dover School District, City of Dover, NH **Job Number:** D-5085-001

Site: Dover High School Athletic Complex

Photograph No.: 1	**Date:** 06/19/2024	**Direction Taken:** South

Description: Southern view of the forested area directly north of the existing athletic complex.



Photograph No.: 2	**Date:** 06/19/2024	**Direction Taken:** East

Description: View of a trail leading into the forested area north of the existing athletic complex, eventually leading to the Bellamy River.



Wetland Delineation - Photographic Log

Client: Dover School District, City of Dover, NH **Job Number:** D-5085-001

Site: Dover High School Athletic Complex

Photograph No.: 3	**Date:** 07/02/2024	**Direction Taken:** East
Description: View of Wetland 1, to the northeast of the existing Dover High School athletic complex.		



Photograph No.: 4	**Date:** 06/19/2024	**Direction Taken:** Southeast
Description: View of Wetland 2, a ditch that drains into Wetland 1 and the Bellamy River.		



Wetland Delineation - Photographic Log

Client: Dover School District, City of Dover, NH **Job Number:** D-5085-001

Site: Dover High School Athletic Complex

Photograph No.: 5	**Date:** 06/19/2024	**Direction Taken:** North

Description: View of Stream 1A, originating from a culvert and flowing to the north, towards the Bellamy River.



Photograph No.: 6	**Date:** 06/19/2024	**Direction Taken:** Northwest

Description: Upstream view of Stream 2A, showing the Bellamy River to the northeast of the project area.



Wetland Delineation - Photographic Log

Client: Dover School District, City of Dover, NH **Job Number:** D-5085-001

Site: Dover High School Athletic Complex

Photograph No.: 7	**Date:** 06/19/2024	**Direction Taken:** West
Description: View of the Stream 2B, showing the Bellamy River to the northwest of the project area. Photo taken from a pedestrian bridge overlooking the river.		



Wetland Function-Value Evaluation Form

Total area of wetland >1,5 acres Human made? No Is wetland part of a wildlife corridor? Yes or a "habitat island"? No

Adjacent land use Forested/School Distance to nearest roadway or other development 175 feet

Dominant wetland systems present PEM, PSS Contiguous undeveloped buffer zone present Yes

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? Abutting Stream Floodplain

How many tributaries contribute to the wetland? 2 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. Wetland Area 1

Latitude 43.17899 Longitude -70.88572

Prepared by: Rick Lipinski Date 07/09/2024

Wetland Impact:
Type TBD Area TBD

Evaluation based on:
Office X Field X

Corps manual wetland delineation completed? Y X N

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	Y	7,12		The wetland is directly connected to the stream, within the floodplain; providing holding capacity and recharge potential, plus discharge potential to maintain baseflows in the stream.
Floodflow Alteration	Y	3,5,6,7,10,13,18	X	The wetland is directly connected to the Bellamy River, with ready access to the floodplain and holding potential flood water.
Fish and Shellfish Habitat	N			The wetland is not suitable for providing habitat for fish or shellfish
Sediment/Toxicant Retention	Y	3,6,9,10,13,14,16	X	The wetland is effective as a trap for sediments, toxicants, or pathogens in runoff to adjacent waterbodies due to its high density, contignuity to the Bellamy River, and diffuse water tflow
Nutrient Removal	Y	8,11,14		The wetland is effective as a trap for nutrients in runoff water from surrounding uplands or contiguous wetlands.
Production Export	Y	7,8,10		The wetland has a diverse vegetative community; detritus and food for living organisms are likely to be directly exported into the Bellamy River.
Sediment/Shoreline Stabilization	Y	6,7,9,12		The wetland is effective as to stabilize streambanks and shorelines against erosion due to its ability to diffuse flow between the wetland and the Bellamy River.
Wildlife Habitat	Y	6,9,13,14,15,19	X	The wetland is suitable for wildlife habitat as it contains dense vegetation and multiple classes.
Recreation	Y	5,9		The wetland is contiguous to the Bellamy River, which is a wildlife habitat and deep enough to be used recreationally.
Educational/Scientific Value	Y	3,9,11		The wetland is directly abutting a school and is contiguous to the Bellamy River.
Uniqueness/Heritage	N			Historical due dilligence review underway, although no observed cellar holes or archaelogical features
Visual Quality/Aesthetics	Y	1,3,5,7		This wetland has unique visual qualities of exhibiting multiple classes in one viewing area and a diverse vegetative community..
ES Endangered Species Habitat	N			Details TBD, NHB datacheck is underway for the project area.
Other	N			

Notes:

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland 0.02 acres Human made? No Is wetland part of a wildlife corridor? Yes or a "habitat island"? No

Adjacent land use Forested/School Distance to nearest roadway or other development 100 feet

Dominant wetland systems present PFO Contiguous undeveloped buffer zone present Yes

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? Floodplain

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

Wetland I.D. Wetland 2

Latitude 43.17884 Longitude -70.88678

Prepared by: Rick Lipinski Date 07/10/2024

Wetland Impact:
Type TBD Area TBD

Evaluation based on:
Office X Field X

Corps manual wetland delineation completed? Y X N

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	Y	7,9	X	The wetland is directly connected to a stream, within the floodplain, providing holding capacity and recharge potential, plus discharge potential to maintain baseflow in the stream.
Floodflow Alteration	Y	3,9,13		The wetland is directly connected to a stream, with ready access to its floodplain.
Fish and Shellfish Habitat	N			The wetland is not suitable for providing habitat for fish or shellfish.
Sediment/Toxicant Retention	N			The wetland is not effectice as a trap for sediments, toxicants, or pathogens in runoff to adjacent waterbodies.
Nutrient Removal	N			The wetland is not effective as a trap for nutrients in runoff water from surrounding uplands or contiguous wetlands.
Production Export	N			The wetland is not effective as to produce food or usable products for humans or other living organisms.
Sediment/Shoreline Stabilization	N			The wetland is not effective as to stabilize streambanks and shorelines against erosion.
Wildlife Habitat	N			The wetland is not suitable for wildlife habitat as it is a degraded ditch.
Recreation	N			The wetland is not suitable for potential walking, hiking, fishing, or boating.
Educational/Scientific Value	N			The wetland has no signs of wildlife and is not a location for scientific research.
Uniqueness/Heritage	N			Historical due diligence review underway, although no observed cellar holes or archaeological features.
Visual Quality/Aesthetics	N			The wetland is densely forested and does not have any unique visual qualities.
ES Endangered Species Habitat	N			Details TBD, NHB Datacheck currently underway for the project site.
Other	N			

Notes:

* Refer to backup list of numbered considerations.

NH DIVISION OF
FORESTS AND LANDS

NHB Review Pending - 07/09/2024

Request for NHB Review of Potential Impacts from the NHB DataCheck Tool

NHB ID # NHB24-2063

Date Submitted: 07/01/2024

Applicant: Rick Lipinski
177 Corporate Drive
Portsmouth NH 03801

Landowner: Dover School District
25 Alumni Drive
Dover NH 03801

Project Location: Tax Map: 900
Tax Lot#: R20
Address: 25 Alumni Drive
Town: Dover

Payment Information. These fields MUST be filled out.

Check, Money Order or Voucher Number: _____

(Make out to "Treasurer - State of NH")

Account Name: _____

(As printed on the check, money order or voucher)

Enclose this completed form with a check, money order or voucher for $25.00, made out to "Treasurer, State of NH".

Send the check, money order or voucher and the completed form to the following address:

Dept. of Natural and Cultural Resources
Attn: NHB Reviews
172 Pembroke Road
Concord, NH 03301

NHB reviews will be completed 5-20 working days from payment, depending on permit type.

IMPORTANT: your submission is considered complete if all of the following is included/filled out:

1. This completed form;
2. A $25 check that is completely filled out (including a signature, date, payable to Treasurer of NH, and the NHB ID # in the memo); and
3. The envelope is addressed Attn: NHB Reviews.

NHB is unable to process incomplete submissions.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104

In Reply Refer To: 06/17/2024 03:18:46 UTC
Project Code: 2024-0104544
Project Name: Dover High School athletic Center Renovation

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

Updated 4/12/2023 - Please review this letter each time you request an Official Species List, we will continue to update it with additional information and links to websites may change.

About Official Species Lists

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Federal and non-Federal project proponents have responsibilities under the Act to consider effects on listed species.

The enclosed species list identifies threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested by returning to an existing project's page in IPaC.

Endangered Species Act Project Review

Please visit the "**New England Field Office Endangered Species Project Review and Consultation**" website for step-by-step instructions on how to consider effects on listed

species and prepare and submit a project review package if necessary:

https://www.fws.gov/office/new-england-ecological-services/endangered-species-project-review

NOTE Please do not use the **Consultation Package Builder** tool in IPaC except in specific situations following coordination with our office. Please follow the project review guidance on our website instead and reference your **Project Code** in all correspondence.

Northern Long-eared Bat - (**Updated 4/12/2023**) The Service published a final rule to reclassify the northern long-eared bat (NLEB) as endangered on November 30, 2022. The final rule went into effect on March 31, 2023. You may utilize the **Northern Long-eared Bat Rangewide Determination Key** available in IPaC. More information about this Determination Key and the Interim Consultation Framework are available on the northern long-eared bat species page:

https://www.fws.gov/species/northern-long-eared-bat-myotis-septentrionalis

For projects that previously utilized the 4(d) Determination Key, the change in the species' status may trigger the need to re-initiate consultation for any actions that are not completed and for which the Federal action agency retains discretion once the new listing determination becomes effective. If your project was not completed by March 31, 2023, and may result in incidental take of NLEB, please reach out to our office at newengland@fws.gov to see if reinitiation is necessary.

Additional Info About Section 7 of the Act
Under section 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to determine whether projects may affect threatened and endangered species and/or designated critical habitat. If a Federal agency, or its non-Federal representative, determines that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Federal agency also may need to consider proposed species and proposed critical habitat in the consultation. 50 CFR 402.14(c)(1) specifies the information required for consultation under the Act regardless of the format of the evaluation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

https://www.fws.gov/service/section-7-consultations

In addition to consultation requirements under Section 7(a)(2) of the ESA, please note that under sections 7(a)(1) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species. Please contact NEFO if you would like more information.

Candidate species that appear on the enclosed species list have no current protections under the ESA. The species' occurrence on an official species list does not convey a requirement to

consider impacts to this species as you would a proposed, threatened, or endangered species. The ESA does not provide for interagency consultations on candidate species under section 7, however, the Service recommends that all project proponents incorporate measures into projects to benefit candidate species and their habitats wherever possible.

Migratory Birds

In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see:

https://www.fws.gov/program/migratory-bird-permit

https://www.fws.gov/library/collections/bald-and-golden-eagle-management

Please feel free to contact us at **newengland@fws.gov** with your **Project Code** in the subject line if you need more information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat.

Attachment(s): Official Species List

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

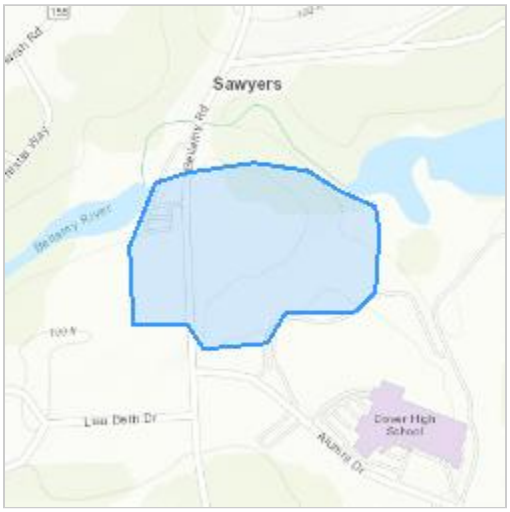
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
(603) 223-2541

PROJECT SUMMARY

Project Code: 2024-0104544
Project Name: Dover High School athletic Center Renovation
Project Type: Recreation - New Construction
Project Description: The following is our understanding of the proposed project:
• Renovation and/or replacement of Dunaway Football Field. The resulting field is expected to be used by six varsity teams: boys' and girls' soccer; boys and girls lacrosse; football; and field hockey.
• Renovation and/or replacement of the existing rubberized asphalt running track, and field event spaces (LJ, TJ, PV, HJ, and throws).
• Renovation and possible replacement of the existing baseball field.
• Review and analysis of multiple field surfaces including natural grass and synthetic turf.
• Replacement of the home and away grandstands.
• Replacement of the light towers.
• Amenities including bathrooms, concessions, locker rooms, a press box, storage, scoreboards, sound system, equipment, and other items to be identified.
• Parking considerations, including handicapped access and team buses.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@43.178273149999995,-70.88860779372014,14z



Counties: Strafford County, New Hampshire

ENDANGERED SPECIES ACT SPECIES

There is a total of 3 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Endangered
Tricolored Bat *Perimyotis subflavus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

Agency: Tighe and Bond
Name: Rick Lipinski
Address: 177 Corporate Drive
City: Portsmouth
State: NH
Zip: 03801
Email rlipinski@tighebond.com
Phone: 5856268329

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104

In Reply Refer To: 06/17/2024 03:22:04 UTC
Project code: 2024-0104544
Project Name: Dover High School athletic Center Renovation

Federal Nexus: yes
Federal Action Agency (if applicable):

Subject: Record of project representative's no effect determination for 'Dover High School athletic Center Renovation'

Dear Rick Lipinski:

This letter records your determination using the Information for Planning and Consultation (IPaC) system provided to the U.S. Fish and Wildlife Service (Service) on June 17, 2024, for 'Dover High School athletic Center Renovation' (here forward, Project). This project has been assigned Project Code 2024-0104544 and all future correspondence should clearly reference this number. **Please carefully review this letter.**

Ensuring Accurate Determinations When Using IPaC

The Service developed the IPaC system and associated species' determination keys in accordance with the Endangered Species Act of 1973 (ESA; 87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) and based on a standing analysis. All information submitted by the Project proponent into IPaC must accurately represent the full scope and details of the Project.

Failure to accurately represent or implement the Project as detailed in IPaC or the Northern Long-eared Bat Rangewide Determination Key (Dkey), invalidates this letter. ***Answers to certain questions in the DKey commit the project proponent to implementation of conservation measures that must be followed for the ESA determination to remain valid.***

Determination for the Northern Long-Eared Bat

Based upon your IPaC submission and a standing analysis, your project has reached the determination of "No Effect" on the northern long-eared bat. To make a no effect determination, the full scope of the proposed project implementation (action) should not have any effects (either positive or negative), to a federally listed species or designated critical habitat. Effects of the action are all consequences to listed species or critical habitat that are caused by the proposed

action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action. (See § 402.17).

Under Section 7 of the ESA, if a federal action agency makes a no effect determination, no consultation with the Service is required (ESA §7). If a proposed Federal action may affect a listed species or designated critical habitat, formal consultation is required except when the Service concurs, in writing, that a proposed action "is not likely to adversely affect" listed species or designated critical habitat [50 CFR §402.02, 50 CFR§402.13].

Other Species and Critical Habitat that May be Present in the Action Area

The IPaC-assisted determination for the northern long-eared bat does not apply to the following ESA-protected species and/or critical habitat that also may occur in your Action area:

- Monarch Butterfly *Danaus plexippus* Candidate
- Tricolored Bat *Perimyotis subflavus* Proposed Endangered

You may coordinate with our Office to determine whether the Action may affect the animal species listed above and, if so, how they may be affected.

Next Steps

Based upon your IPaC submission, your project has reached the determination of “No Effect” on the northern long-eared bat. If there are no updates on listed species, no further consultation/ coordination for this project is required with respect to the northern long-eared bat. However, the Service recommends that project proponents re-evaluate the Project in IPaC if: 1) the scope, timing, duration, or location of the Project changes (includes any project changes or amendments); 2) new information reveals the Project may impact (positively or negatively) federally listed species or designated critical habitat; or 3) a new species is listed, or critical habitat designated. If any of the above conditions occurs, additional coordination with the Service should take place to ensure compliance with the Act.

If you have any questions regarding this letter or need further assistance, please contact the New England Ecological Services Field Office and reference Project Code 2024-0104544 associated with this Project.

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

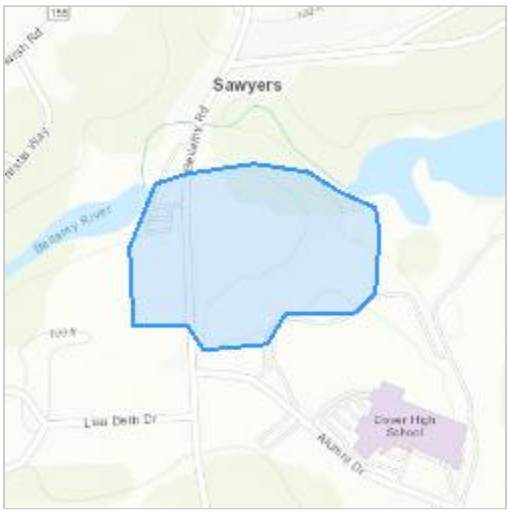
Dover High School athletic Center Renovation

2. Description

The following description was provided for the project 'Dover High School athletic Center Renovation':

> The following is our understanding of the proposed project:
> • Renovation and/or replacement of Dunaway Football Field. The resulting field is expected to be used by six varsity teams: boys' and girls' soccer; boys and girls lacrosse; football; and field hockey.
> • Renovation and/or replacement of the existing rubberized asphalt running track, and field event spaces (LJ, TJ, PV, HJ, and throws).
> • Renovation and possible replacement of the existing baseball field.
> • Review and analysis of multiple field surfaces including natural grass and synthetic turf.
> • Replacement of the home and away grandstands.
> • Replacement of the light towers.
> • Amenities including bathrooms, concessions, locker rooms, a press box, storage, scoreboards, sound system, equipment, and other items to be identified.
> • Parking considerations, including handicapped access and team buses.

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@43.178273149999995,-70.88860779372014,14z



DETERMINATION KEY RESULT

Based on the information you provided, you have determined that the Proposed Action will have no effect on the Endangered northern long-eared bat (Myotis septentrionalis). Therefore, no consultation with the U.S. Fish and Wildlife Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (87 Stat. 884, as amended 16 U.S.C. 1531 *et seq.*) is required for those species.

QUALIFICATION INTERVIEW

1. Does the proposed project include, or is it reasonably certain to cause, intentional take of the northern long-eared bat or any other listed species?

   Note: Intentional take is defined as take that is the intended result of a project. Intentional take could refer to research, direct species management, surveys, and/or studies that include intentional handling/encountering, harassment, collection, or capturing of any individual of a federally listed threatened, endangered or proposed species?

   No

2. The proposed action does not intersect an area where the northern long-eared bat is likely to occur, based on the information available to U.S. Fish and Wildlife Service as of the most recent update of this key. If you have data that indicates that northern long-eared bats are likely to be present in the action area, answer "NO" and continue through the key.

   Do you want to make a no effect determination?

   No

3. The action area does not overlap with an area for which U.S. Fish and Wildlife Service currently has data to support the presumption that the northern long-eared bat is present. Are you aware of other data that indicates that northern long-eared bats (NLEB) are likely to be present in the action area?

   Bat occurrence data may include identification of NLEBs in hibernacula, capture of NLEBs, tracking of NLEBs to roost trees, or confirmed NLEB acoustic detections. Data on captures, roost tree use, and acoustic detections should post-date the year when white-nose syndrome was detected in the relevant state. With this question, we are looking for data that, for some reason, may have not yet been made available to U.S. Fish and Wildlife Service.

   No

4. Does any component of the action involve construction or operation of wind turbines?

   Note: For federal actions, answer ‘yes’ if the construction or operation of wind power facilities is either (1) part of the federal action or (2) would not occur but for a federal agency action (federal permit, funding, etc.).

   No

5. Is the proposed action authorized, permitted, licensed, funded, or being carried out by a Federal agency in whole or in part?

   Yes

6. Is the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), or Federal Transit Administration (FTA) funding or authorizing the proposed action, in whole or in part?

   No

7. Are you an employee of the federal action agency or have you been officially designated in writing by the agency as its designated non-federal representative for the purposes of Endangered Species Act Section 7 informal consultation per 50 CFR § 402.08?

   Note: This key may be used for federal actions and for non-federal actions to facilitate section 7 consultation and to help determine whether an incidental take permit may be needed, respectively. This question is for information purposes only.

   No

8. Is the lead federal action agency the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC)? Is the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC) funding or authorizing the proposed action, in whole or in part?

   No

9. Is the lead federal action agency the Federal Energy Regulatory Commission (FERC)?

   No

10. Have you determined that your proposed action will have no effect on the northern long-eared bat? Remember to consider the effects of any activities that would not occur but for the proposed action.

    If you think that the northern long-eared bat may be affected by your project or if you would like assistance in deciding, answer “No” below and continue through the key. If you have determined that the northern long-eared bat does not occur in your project’s action area and/or that your project will have no effects whatsoever on the species despite the potential for it to occur in the action area, you may make a “no effect” determination for the northern long-eared bat.

    Note: Federal agencies (or their designated non-federal representatives) must consult with USFWS on federal agency actions that may affect listed species [50 CFR 402.14(a)]. Consultation is not required for actions that will not affect listed species or critical habitat. Therefore, this determination key will not provide a consistency or verification letter for actions that will not affect listed species. If you believe that the northern long-eared bat may be affected by your project or if you would like assistance in deciding, please answer “No” and continue through the key. Remember that this key addresses only effects to the northern long-eared bat. Consultation with USFWS would be required if your action may affect another listed species or critical habitat. The definition of Effects of the Action can be found here: https://www.fws.gov/media/northern-long-eared-bat-assisted-determination-key-selected-definitions

    Yes

PROJECT QUESTIONNAIRE

Will all project activities by completed by November 30, 2024?

No

IPAC USER CONTACT INFORMATION

Agency: Tighe and Bond
Name: Rick Lipinski
Address: 177 Corporate Drive
City: Portsmouth
State: NH
Zip: 03801
Email rlipinski@tighebond.com
Phone: 5856268329

Drawn Action Area & Overlapping S7 Consultation Areas

Area of Interest (AOI) Information

Area : 2,665.94 acres

Jul 10 2024 9:50:07 Eastern Daylight Time



Summary

Name	Count	Area(acres)	Length(mi)
Atlantic Sturgeon	2	24.84	N/A
Shortnose Sturgeon	1	12.42	N/A
Atlantic Salmon	0	0	N/A
Sea Turtles	0	0	N/A
Atlantic Large Whales	0	0	N/A
In or Near Critical Habitat	0	0	N/A

Atlantic Sturgeon

#	Feature ID	Species	Lifestage	Behavior	Zone	From	Until	From (2)	Until (2)	Area(acres)
1	ANS_PIS_ADU_MAF	Atlantic sturgeon	Adult	Migrating & Foraging	Piscataqua River	01/01	12/31	N/A	N/A	12.42
2	ANS_PIS_SUB_MAF	Atlantic sturgeon	Subadult	Migrating & Foraging	Piscataqua River	01/01	12/31	N/A	N/A	12.42

Shortnose Sturgeon

#	Feature ID	Species	Life Stage	Behavior	Zone	From	Until	From (2)	Until (2)	Area(acres)
1	SNS_PIS_ADU_MAF	Shortnose sturgeon	Adult	Migrating & Foraging	Piscataqua River	04/01	11/30	N/A	N/A	12.42

EFH Mapper Report

EFH Data Notice

Essential Fish Habitat (EFH) is defined by textual descriptions contained in the fishery management plans developed by the regional fishery management councils. In most cases mapping data can not fully represent the complexity of the habitats that make up EFH. This report should be used for general interest queries only and should not be interpreted as a definitive evaluation of EFH at this location. A location-specific evaluation of EFH for any official purposes must be performed by a regional expert. Please refer to the following links for the appropriate regional resources.

Greater Atlantic Regional Office
Atlantic Highly Migratory Species Management Division

Query Results

Degrees, Minutes, Seconds: Latitude = 43° 10' 43" N, Longitude = 71° 6' 42" W
Decimal Degrees: Latitude = 43.179, Longitude = -70.888

The query location intersects with spatial data representing EFH and/or HAPCs for the following species/management units.

*** W A R N I N G ***

Please note under "Life Stage(s) Found at Location" the category "ALL" indicates that all life stages of that species share the same map and are designated at the queried location.

EFH

No additional Essential Fish Habitats (EFH) were identified at the report location.

Pacific Salmon EFH

No Pacific Salmon Essential Fish Habitat (EFH) were identified at the report location.

Atlantic Salmon

No Atlantic Salmon were identified at the report location.

HAPCs

No Habitat Areas of Particular Concern (HAPC) were identified at the report location.

EFH Areas Protected from Fishing

No EFH Areas Protected from Fishing (EFHA) were identified at the report location.

Spatial data does not currently exist for all the managed species in this area. The following is a list of species or management units for which there is no spatial data. ****For links to all EFH text descriptions see the complete data inventory: open data inventory -->**
All EFH species have been mapped for the Greater Atlantic region, **Atlantic Highly Migratory Species EFH**, Bigeye Sand Tiger Shark, Bigeye Sixgill Shark, Caribbean Sharpnose Shark,

Spatial data does not currently exist for all the managed species in this area. The following is a list of species or management units for which there is no spatial data.
****For links to all EFH text descriptions see the complete data inventory: open data inventory -->**

Galapagos Shark,
Narrowtooth Shark,
Sevengill Shark,
Sixgill Shark,
Smooth Hammerhead Shark,
Smalltail Shark

New Hampshire Natural Heritage Bureau
NHB DataCheck Results Letter

To: Rick Lipinski, Tighe and Bond
177 Corporate Drive

Portsmouth, NH 03801

From: NH Natural Heritage Bureau
Date: 7/10/2024 (valid until 7/10/2025)
Re: Review by NH Natural Heritage Bureau of request submitted 7/1/2024
Permits: NHDES - Alteration of Terrain Permit, NHDES - Standard Dredge & Fill - Major, NHDES - Wetland Permit by Notification (PBN), USACE - General Permit

NHB ID: **NHB24-2063** **Applicant:** Rick Lipinski

Location: Dover
25 Alumni Drive

Project Description: The following is our understanding of the proposed project: (approx. 21 acres, spring 2025)
- Renovation and/or replacement of Dunaway Football Field. The resulting field is
expected to be used by six varsity teams: boys' and girls' soccer; boys and girls
lacrosse; football; and field hockey.
- Renovation and/or replacement of the existing rubberized asphalt running track, and
field event spaces (LJ, TJ, PV, HJ, and throws).
- Renovation and possible replacement of the existing baseball field.
- Review and analysis of multiple field surfaces including natural grass and synthetic turf.
- Replacement of the home and away grandstands.
- Replacement of the light towers.
- Amenities including bathrooms, concessions, locker rooms, a press box, storage, scoreboards, sound system

The NH Natural Heritage database has been checked by staff of the NH Natural Heritage Bureau and/or the NH Nongame and Endangered Species Program for records of rare species and exemplary natural communities near the area mapped below. The species considered include those listed as Threatened or Endangered by either the state of New Hampshire or the federal government.

Department of Natural and Cultural Resources
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

DNCR/NHB
172 Pembroke Rd.
Concord, NH 03301

New Hampshire Natural Heritage Bureau
NHB DataCheck Results Letter

It was determined that, although there was a NHB record (e.g., rare wildlife, plant, and/or natural community) present in the vicinity, we do not expect that it will be impacted by the proposed project. This determination was made based on the project information submitted via the NHB Datacheck Tool on 7/1/2024 3:13:14 PM, and cannot be used for any other project.

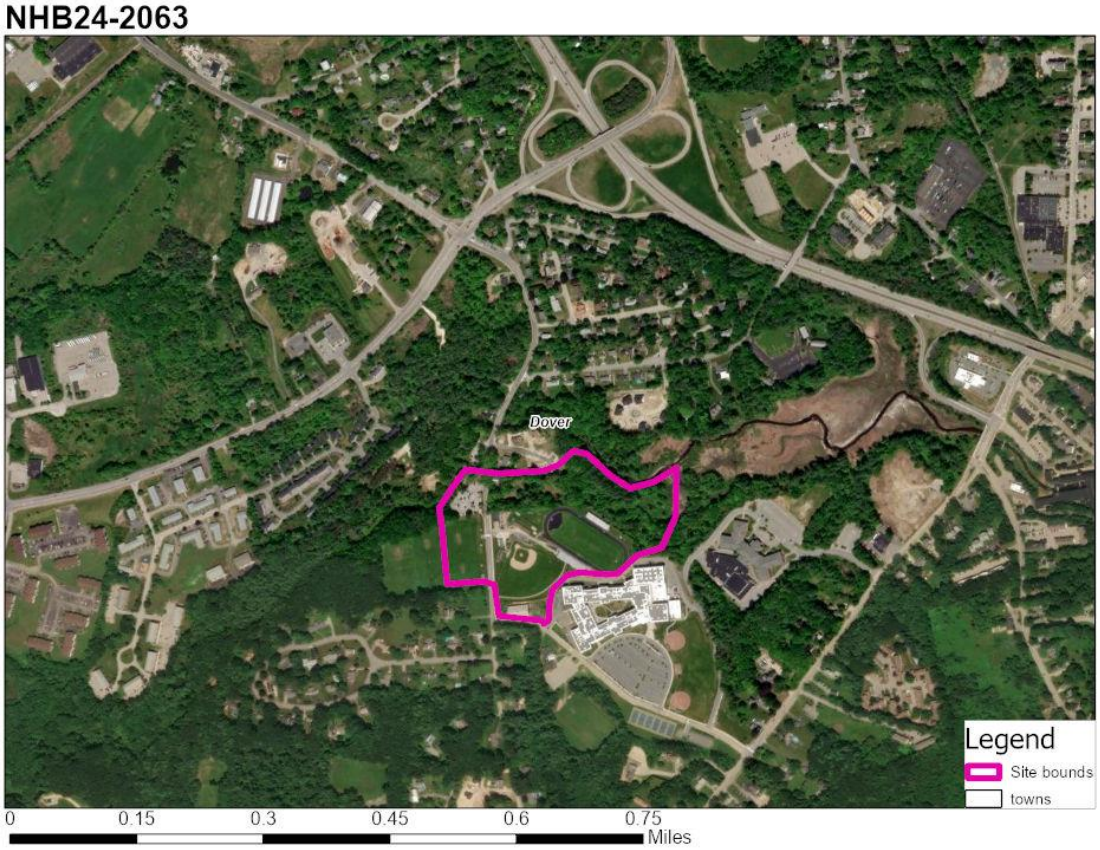
Based on the information submitted, no further consultation with the NH Fish and Game Department pursuant to Fis 1004 is required.

Department of Natural and Cultural Resources
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

DNCR/NHB
172 Pembroke Rd.
Concord, NH 03301

New Hampshire Natural Heritage Bureau
NHB DataCheck Results Letter

MAP OF PROJECT BOUNDARIES FOR: **NHB24-2063**



Department of Natural and Cultural Resources
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

DNCR/NHB
172 Pembroke Rd.
Concord, NH 03301

August 24, 2025

Conservation Commission
City of Dover, NH
288 Central Ave.
Dover, NH 03820
via email to:
ConservationCommission-All@dover.nh.gov

Dear Conservation Commission Members,

Dover residents have retained me as an expert to comment on the Dover High School Athletic Complex project. My name is Kristen Mello. I am the Director and co-founder of Westfield Residents Advocating For Themselves (WRAFT), a non-profit group in Westfield, Massachusetts, created in response to the PFAS contamination of our water supply. I hold a Bachelor of Science in Chemistry, a Masters in Analytical Chemistry, and belong to both the Analytical and Fluorine Divisions of the American Chemical Society. Additionally, I was elected an at-large City Councilor in 2019 (and re-elected in '21 & '23), and serve as the Chair of our Natural Resources Committee. While I never speak for the City of Westfield, MA or its City Council, my municipal work, my formal education / training, and years of PFAS work inform these comments.

The application for relief before you, with its selection of artificial turf, infill and stormwater management instead of natural grass, would obviously replace a dynamic living grass and topsoil ecosystem, that provides cooling via evapotranspiration, carbon sequestration and oxygen production via photosynthesis, and retention of water and soil in its mass and root systems.

An approval of this permit represents a real and measurable risk to the following protected drinking water resources; the groundwater protection district, Bellamy River, its associated wetlands, and Bellamy Reservoir.

This risk is because plastic, synthetic athletic field systems are impervious surfaces, and the precipitation that falls on them pick up contaminants that are not filtered out by currently available stormwater management systems. Since some of these contaminants are highly toxic and some are both toxic and persistent in the environment, approval of this project would cause pollutant discharge that could have long lasting, cumulative effects that are difficult to impossible to remediate.

Stormwater Quantity

According to PennState Extension, one (1) inch of rainfall on an acre of impervious surfaces produces twenty-seven thousand (27,000) gallons of stormwater to manage.[1]
For more on this topic see Appendix A, included with this letter.

Stormwater Quality

Heat.
The heat carried in stormwater affects the temperature of both the surrounding groundwater and stormwater that is discharged through the system. Temperature changes the conductivity of aqueous solutions, the solubility of contaminants, and results in a reduction in dissolved Oxygen content.[2]

During a visit to a field site in Milton, MA on the afternoon of June 25. 2025 I observed and recorded a surface temperature reading of 156 degrees Fahrenheit on the artificial turf baseball field through a hole in the fence. We entered and took video (available upon request) where the temperature readings rose even higher and varied slightly with the wind. The ambient air temperature was 89 degrees Fahrenheit that afternoon.

For more on this topic see Appendix B or https://www.testtheturf.org/heat.html

Contaminants.
There is existing evidence that artificial turf fields discharge chemicals that affect the environment. A 2024 systematic review found:

> *"Twenty-five studies performed total concentration analyses on samples of artificial turf infill and/or turf fibres. Of these studies, median reported concentrations of eight PAHs, cadmium, mercury and zinc exceeded the European limits used."*

and

> *"Potentially hazardous concentrations of chemicals were found across both artificial turf infill and artificial turf fibre samples;"*

and

> *"...artificial turf performed worse than natural turf in six separate categories of environmental impacts (including non-carcinogenic human toxicity and ecotoxicity of freshwater)"*

and

> *"Artificial turf samples contain a diverse range of chemicals, some of which have demonstrated in vitro bioactivities leading to effects such as endocrine, cardiometabolic and neurological toxicity."* [3]

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[1] Cotrone, V . (n.d.). The Role of Trees and Forests in Healthy Watersheds. Retrieved August 22, 2025, from https://extension.psu.edu/the-role-of-trees-and-forests-in-healthy-watersheds
[2] Foulquier A, Malard F, Barraud S, Gibert J. 2009. Thermal influence of urban groundwater recharge from stormwater infiltration basins. Hydrological Processes 23(12): 1701–1713.
[3] Ryan-Ndegwa S, Zamani R, Martins T. Exploring the Human Health Impact of Artificial Turf Worldwide: A Systematic Review. Environmental Health Insights. 2024;18. doi:10.1177/11786302241306291

Artificial turf is a source of micro-plastics and nanoplastics in the environment as has been published in peer-reviewed literature.

> *"Both the plastic grass and the rubber infill are susceptible to degradation from various environmental factors, including oxygen, water, heat, ultraviolet (UV) radiation, and abrasion (Cheng et al., 2014), and can break down into micro-sized and even nano-sized particles. These tiny particles pose a risk as they can be inhaled, ingested, or dermally absorbed by users and wildlife (Cheng et al., 2014). Additionally, maintenance-related watering and rainfall can lead to leachate containing microplastics (Cheng et al., 2014), and potentially nanoplastics. Nanoplastics, in particular, are a concern as they can penetrate biological barriers and cell membranes, potentially posing a greater hazard to aquatic life than microplastics (Shi et al., 2024; Besseling et al., 2017)."* [4]

Real World Testing.

The Martha's Vineyard Commission (MVC), when reviewing a project for the Martha's Vineyard Regional High School, ordered testing of the synthetic turf athletic field material components proposed for use in the project. Testing looked for metals, semi-volatile organic compounds, and PFAS.[5] The compiled results of the testing, synthesized from the Phase I report,[6] Phase II report,[7]and Final report[8] are in Tables 1-6 provided in Appendix C. The results of the MVC artificial turf athletic field component testing displayed in Tables 1-6 indicate that significant and quantifiable concentrations of semi-volatile organic compounds, metals, and PFAS will leach off the field components and migrate into the environment.

For information about other field system component testing, see www.TestTheTurf.org

Current Stormwater Management Does Not Remove Certain Contaminants

To date, I am not aware of any non-vegetative stormwater management systems or filters that remove dissolved metals, micro- and nanoplastics, and/or PFAS from stormwater, although some vegetation has been shown to be helpful in sequestering some metal contaminants.[1]

Based on the existing science cited above, the stormwater generated from this Project can be expected to

- carry contaminants, including microplastics and others, discharged by the degradation of the plastic (and other field system materials) under
    - physical distress and weathering,
    - ultraviolet radiation (exposure to sunlight), and
    - exposure to precipitation events,

---

[4] Hua, Jing & Lundqvist, Martin & Naidu, Shanti & Ekvall, Mikael & Cedervall, Tommy. (2024). Environmental risks of breakdown nanoplastics from synthetic football fields. Environmental pollution (Barking, Essex : 1987). 347. 123652. 10.1016/j.envpol.2024.123652.

[5]https://www.mvcommission.org/sites/default/files/docs/2020-11-25%20%28MVC_TurfAnalysis_ProposedApproach%29.pdf

[6] https://www.mvcommission.org/sites/default/files/docs/Alpha_Analytical_Report_1-7-21.pdf

[7]https://www.mvcommission.org/sites/default/files/docs/Alpha%20Analytical%20Report%20L2100733%20%28corrected%29.pdf

[8]https://www.mvcommission.org/sites/default/files/docs/2021-02-26%20%28TurfAnalysisReport_FINAL%29.pdf

- be warmed by the heat of the synthetic field system and
- be diverted by the artificial turf athletic field system into the stormwater system and buffer zone, wetlands, Bellamy River and Reservoir and drinking water resource areas.

For the record, I submit these comments in support of your community, its environment, athletes, and taxpayers without accepting or anticipating any compensation, financial or otherwise.

Please feel free to reach out with any questions you may have for me.

Sincerely,

Kristen Mello, MSc
klm.wraft@gmail.com

Flooding



Amanda Toke of Voorhees and Kat Holley in red of Morristown are surrounded by water as a storm dumped heavy rain on the lacrosse field at Ridge High School. The storm forced the postponement of the girls lacrosse match between Ridge and IHA in Basking Ridge. (William Perlman/The Star-Ledger). http://photos.nj.com/4504/gallery/heavy_rain_pounds_nj_-_may_23/index.html#/9 .

[**No. 17**] **Bernards Township, New Jersey: Water polo anyone?** The following speaks for itself. Source: "Heavy rain pounds NJ, on - May 23 [2013]," on *NewJersey.com* at http://s.nj.com/WHyPCua .



Source: http://msn.foxsports.com/collegefootball/story/high-school-football-field-with-artificial-surface-destroyed-083013



Source: Cameron Smith, "You won't believe what one hour of rain did to a Pittsburgh turf field." http://sports.yahoo.com/blogs/highschool-prep-rally/won-t-believe-one-hour-rain-did-pittsburgh-121148615.html . 30 August 2013. "School districts install turf fields to try and protect surfaces from the natural elements. Evidently that logic sometimes backfires."

[No. 18] East Huntington, Pennsylvania: Rains pleat the artificial turf field. Alverton is a small rural village in East Huntington Township in southwestern Pennsylvania. It is the site of the Russ Grimm field at the Southmoreland High School. The field is ProGrass artificial turf, which was installed in 2006. According to news report on *FoxSport.com* (31 August 2013), on Friday, 23 August, the Township received two inches of rain in single hour. The water "burrowed under … [the] playing surface. The surface then buckled up, ripped apart and washed away. The long and short of it is that nobody knows what to do." "Ironically, the Scotties are still able to practice, because there's a grass practice field right next to the other one." Source: Tully, Corcoran,"High school football field destroyed," on *FoxSports.com*, 31 August 2013, at http://msn.foxsports.com/collegefootball/story/high-school-football-field-with-artificial-surface-destroyed-083013 .



Spring Lake Park AD Matt St. Martin figures that the field drainage system couldn't keep up with the heavy rain, and with pumps pushing back against the deluge air was forced underneath the turf, causing the huge bubbles to form. (Photo: KARE)

Farther afield, in Spring Lake Park, Minnesota, according to a news report on *KARE* (NBC affiliate in Minneapolis/St. Paul) (22 September 2016), the Spring Lake Park's high school athletics director Matt St. Martin could not believe his eyes on 22 September – "The football/soccer field was under at least half a foot of water, with a large air bubble pushing the turf up in a long bump that ran down the middle of the playing surface." According to the report, "[t]he AD figures that the field drainage system couldn't keep up with the heavy rain that fell Thursday night, and with the pumps pushing back against the deluge air was forced underneath the turf, causing the huge bubbles to form …. The district's maintenance crew is working with city public works personnel to pump water off the field and into city sewers. At that point, they will work with Field Turf Inc., the manufacturer of the school's playing surface, to re-lay the turf correctly, groom and fill it with the material that makes the turf soft and playable." Source: Dana Thiede, "Deluge does a number on SLP sports turf," on KARE (NBC affiliate in Minneapolis/St. Paul, Minnesota), 22 September 2016, at http://www.kare11.com/weather/deluge-does-a-number-on-slp-sports-turf/323923814 .



Photo credit: Bob Niedbala/Observer-Reporter

[No. 21] Waynesburg, Pennsylvania – Inundated by the overflowing of Ten Mile Creek, Waynesburg University's football field at Wiley Stadium is slated for replacement. According to a news item in the Observer reporter (20 December 2016), "[t]he rushing water from Sunday morning's flood [18 December 2016] in Greene County severely damaged the artificial turf at Waynesburg University's football field, meaning the field surface will most likely need to be replaced before the start of next season. About four or five feet of muddy water overflowing from nearby Ten Mile Creek covered the field surface at Wiley Stadium, causing the turf to buckle and wrinkle in spots and leaving a thick layer of silt across the facility, according to Heidi Szuminsky, vice president for institutional advancement and university relations." According to Szuminsky 'the field turf is buckled; there are places that are bubbled up and wrinkled, so we're pretty sure we'll need to replace it,' and "it's expected to cost about $500,000 to replace the artificial turf, although she did not know if insurance would cover the cost of the repairs…." Source: Mike Jo0nes, "Flood damages Waynesburg U. football field," in *Observer Reporter*, 20 December 2016, at http://www.observer-reporter.com/20161220/flood_damages_waynesburg_u_football_field .



"The artificial turf at Frank Loria Memorial Field was rolling up and creating a wave-like look after flooding nearby Elk Creek reached the field early Monday morning. The extent of the damage is not known as [sic] this time. Staff photo by John G. Miller."

[No. 23] Clarksburg, West Virginia: Rains and overflowing river inundate city's artificial field. There is something to be said about not building artificial turf fields or any field for that matter in flood zones, especially near rivers and waterways. That is not only time-tested common sense engineering advice it is all the more so in the age of climate change that produces more sever weather events with greater frequency.

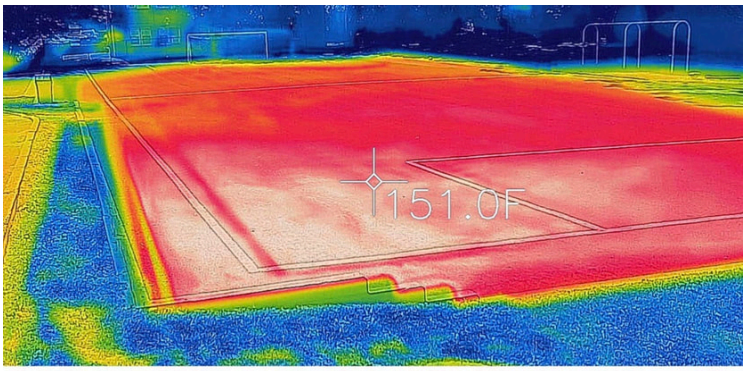
According to a news story in *The Exponent Telegram* (16 April 2018), "[h]eavy rains late Sunday into Monday morning [15-16 April 2018], pushed Elk Creek out of its banks, leading to flooding along its path, especially at Clarksburg City Park. Site of a recent artificial turf project on its main baseball field, the park's lower side, which consists of the main field, as well as five smaller baseball/softball fields and two soccer fields, is now under water. The main field, Frank Loria Memorial Field, was recently renovated with an artificial turf project costing between $550,00 to $700,000. While much of that was donated, the City of Clarksburg and Harrison County Commission did allocate funds, while the city's Board of Park Commissioners are obligated to pay back a $200,000-plus loan the city took out to complete the renovation. Now, with flooding causing apparent damage, with more likely to be discovered once the flood waters recede, Parks Director John Cooper said there will be additional costs to repair the project. 'We discussed flooding with (the turf contractors). Depending on the extent, they said it could be $30,000 or more.' While the full damage isn't likely to be known until later in the week, it was apparent that the water had caused the recently laid turf to roll up in spots, causing a wave-like effect. It is likely, too, that since the field surface was being pushed up, the gravel, which provides a flat base and support, has shifted underneath, which would lead to more repair work." Source: John Mille (Executive Editor), "Flooding damages Clarksburg Park's new turf project, leaves seven fields under water," in *The Exponent Telegram,* 16 April 2018, at https://www.wvnews.com/theet/news/flooding-damages-clarksburg-park-s-new-turf-project-leaves-seven/article_73b36b34-2446-5818-8c02-28adb29a5e04.html

Source: http://www.synturf.org/waterdamage.html

Heat

A natural grass field produces oxygen and clean water as byproducts of photosynthesis and its UV exposure. Creating cooling effects as opposed to the heat island effects of artificial turf playing fields. In fact the National Recreation and Park Association pointed out in 2019, stating that

> "...the high surface-level temperatures recorded on these fields compared to natural turf have been well-documented. Since grass leaves release water vapor (or transpire) and the evaporation of that water vapor leads to cooling, grass fields rarely get above 100° F. Turf fields, in comparison, regularly rise well above 100° F. Penn State University's Center for Sports Surface Research conducted studies comparing surface temperatures of synthetic turfs composed of various fiber and infill colors/materials and found that the maximum surface temperatures during hot, sunny conditions averaged from 140° F to 170° F.
>
> Another study conducted at Brigham Young University found that "The surface temperature of the synthetic turf was 37° F higher than asphalt and 86.5° F hotter than natural turf." And, as neuroscientist Kathleen Michels points out: "Any temperature over 120° F can cause skin burns with skin contact in two seconds."" [9]





Images courtesy Amanda Farber taken June 2019.
https://www.testtheturf.org/heat.html

[9] https://www.nrpa.org/parks-recreation-magazine/2019/may/synthetic-sports-fields-and-the-heat-island-effect/



Temperature readings taken June 25, 2025 at 1:45 pm on a hot (89F) sunny day at a Massachusetts high school (Milton, MA) artificial turf baseball field. The entire face of the thermal reader was through the fence. Videos available upon request.
Photo by Kristen Mello.



Temperature readings taken June 5, 2025 at 12:45 pm on a hot (89F) sunny day at a Massachusetts high school (Newton North) artificial turf athletic field and track. Photos by Ellie Goldberg.

A community member measures a surface temperature, 133F, of an artificial field in Portsmouth, New Hampshire, on a hot (89F) partly cloudy day in July 2024.

https://www.testtheturf.org/heat.html





https://www.nrpa.org/parks-recreation-magazine/2019/may/synthetic-sports-fields-and-the-heat-island-effect/





Asphalt Green, New York City. Copyright: Geoff Croft/NY Parks Advocate, July 2008.

"This field can get hot on warm, sunny days."

"Always remember: To protect yourself from heat, drink lots of water, wear light and loose fitting clothes, always wear shoes, take breaks often, and exercise moderately. If you experience symptoms of heat related illness, such as dizziness, weakness, headache, vomiting or muscle cramps, move to a shaded area, drink water, rest and seek medical attention if you do not feel better."

For the back story to this signage, *see* http://www.synturf.org/heateffect.html (Item No. 19)

http://www.synturf.org/heatwarningsignage.html

MVC Turf Testing Results Tables

Table 1: Semi-Volatile Organic Compounds

Results in *Italics* are for analytes that were Detected but not Quantified statistically.
Results in **Bold** are for analytes whose concentrations were calculated to sufficient statistical significance to be Quantified.
Results in grey boxes were not detected at the limit listed.
Synthetic Precipitation Leaching Procedure via EPA 1312 unless noted otherwise (metals).
Units: 1 mg/kg = 1 part per million (ppm); 1 µg/L = 1 part per billion (ppb)

Method	Analyte	Turf Carpet	Shockpad	Infill
SVOC by EPA 8270D	Benzyl Alcohol	Not Analyzed	Not Analyzed	**4.4** mg/kg
SVOC by SPLP then EPA 8270D	Benzyl Alcohol, SPLP	<2.0 µg/L	<2.0 µg/L	**15** µg/L
SVOC by EPA 8270D	Bis(2-ethylhexyl)phthalate	*0.37 J* mg/kg	< 0.69 mg/kg	<1.7 mg/kg
SVOC by SPLP then EPA 8270D	Bis(2-ethylhexyl)phthalate, SPLP	*1.5 J* µg/L	<3.0 µg/L	<3.0 µg/L
SVOC by EPA 8270D	Dimethylphenol, 2,4-	< 0.23 mg/kg	< 0.29 mg/kg	<0.70 mg/kg
SVOC by SPLP then EPA 8270D	Dimethylphenol, 2,4- , SPLP	<5.0 µg/L	<5.0 µg/L	*1.8 J* µg/L
SVOC by EPA 8270D	Methylphenol, 2- (Cresol, o-)	< 0.54 mg/kg	< 0.69 mg/kg	*0.31 J* mg/kg
SVOC by SPLP then EPA 8270D	Methylphenol, 2- (Cresol, o-), SPLP	<5.0 µg/L	<5.0 µg/L	**8.8** µg/L
SVOC by EPA 8270D	Methylphenol, 3- (Cresol, m-)	< 0.78 mg/kg	< 0.99 mg/kg	*0.63 J* mg/kg
SVOC by SPLP then EPA 8270D	Methylphenol, 3- (Cresol, m-), SPLP	<5.0 µg/L	<5.0 µg/L	**16** µg/L
SVOC by EPA 8270D	Phenol	*0.16 J* mg/kg	< 0.69 mg/kg	**6.9** mg/kg
SVOC by SPLP then EPA 8270D	Phenol, SPLP	*2.0* J µg/L	<5.0 µg/L	**16** µg/L

Table 2: Metals

Results in *Italics* are for analytes that were Detected but not Quantified statistically.
Results in **Bold** are for analytes whose concentrations were calculated to sufficient statistical significance to be Quantified.
Results in grey boxes were not detected at the limit listed.
Synthetic Precipitation Leaching Procedure via EPA 1312 unless noted otherwise (metals).
Units: 1 mg/kg = 1 part per million (ppm); 1 µg/L = 1 part per billion (ppb)

Method	Analyte	Turf Carpet	Shockpad	Infill
EPA 6010D	Antimony, Total	< 1.96 mg/kg	*0.384 J* mg/kg	<1.91 mg/kg
SPLP via 3005A then EPA 6010D	Antimony, SPLP	*9 J* µg/L	*8 J* µg/L	<50 µg/L
EPA 6010D	Arsenic, Total	< 0.392 mg/kg	<0.685 mg/kg	<0.381 mg/kg
SPLP via 3005A then EPA 6010D	Arsenic, SPLP	<5 µg/L	<5 µg/L	<5 µg/L
EPA 6010D	Barium, Total	*0.110 J* mg/kg	*0.144 J* mg/kg	**5.61** mg/kg
SPLP via 3005A then EPA 6010D	Barium, SPLP	*16 J* µg/L	*42 J* µg/L	**112** µg/L
EPA 6010D	Cadmium, Total	< 0.392 mg/kg	<0.685 mg/kg	*0.042 J* mg/kg
SPLP via 3005A then EPA 6010D	Cadmium, SPLP	<5 µg/L	<5 µg/L	<5 µg/L
EPA 6010D	Chromium, Total	*0.102 J* mg/kg	*0.342 J* mg/kg	<0.381 mg/kg
SPLP via 3005A then EPA 6010D	Chromium, SPLP	<10 µg/L	<10 µg/L	<10 µg/L
EPA 6010D	Chromium (VI), Total	<2.00 mg/kg	<4.00 mg/kg	<2.00 mg/kg
SPLP via 3005A then EPA 6010D	Chromium (VI), SPLP	Not Analyzed	Not Analyzed	Not Analyzed
EPA 6010D	Lead, Total	<1.96 mg/kg	*0.199 J* mg/kg	<1.91 mg/kg
SPLP via 3005A then EPA 6010D	Lead, SPLP	*7 J* µg/L	<10 µg/L	*5 J* µg/L
EPA 6010D	Nickel, Total	*0.118 J* mg/kg	<1.71 mg/kg	<0.953 mg/kg
SPLP via 3005A then EPA 6010D	Nickel, SLP	<25 µg/L	*6 J* µg/L	<25 µg/L
EPA 6010D	Selenium, Total	<1.96 mg/kg	<3.42 mg/kg	*0.656 J mg/kg*
SPLP via 3005A then EPA 6010D	Selenium, SPLP	<10 µg/L	<10 µg/L	<10 µg/L
EPA 6010D	Vanadium, Total	<0.392 mg/kg	<0.685 mg/kg	<0.381 mg/kg
SPLP via 3005A then EPA 6010D	Vanadium, SPLP	<10 µg/L	<10 µg/L	<10 µg/L
EPA 6010D	Zinc, Total	**9.49** mg/kg	**7.24** mg/kg	**5.71** mg/kg
SPLP via 3005A then EPA 6010D	Zinc, SPLP	<200 µg/L	**374** µg/L	*105 J* µg/L

Table 3: Regulated PFAS

Results in *Italics* are for analytes that were Detected but not Quantified statistically.
Results in **Bold** are for analytes whose concentrations were calculated to sufficient statistical significance to be Quantified.
Results in grey boxes were not detected at the limit listed.
Synthetic Precipitation Leaching Procedure via EPA 1312 unless noted otherwise (metals).
Units: 1 ng/g = 1 part per billion (ppb); 1 ng/L = 1 part per trillion (ppt)

Method	Analyte	Turf Carpet	Shockpad	Infill
PFAS - Isotope Dilution Analysis (IDA)	Perfluorohexanesulfonic Acid (PFHxS)	<3.08 ng/g	<9.52 ng/g	<2.84 ng/g
SPLP then PFAS - IDA	PFHxS, SPLP	<1.87 ng/L	<1.75 ng/L	<1.77 ng/L
PFAS - IDA	PFHxS, Pre-Oxidation	<0.413 ng/g	<1.64 ng/g	<2.30 ng/g
PFAS - IDA	Perfluoroheptanoic Acid (PFHpA)	<3.08 ng/g	<9.52 ng/g	<2.84 ng/g
SPLP then PFAS - IDA	PFHpA, SPLP	*0.545 J* ng/L	*1.00 J* ng/L	**5.01** F ng/L *
PFAS - IDA	PFHpA, Pre-Oxidation	<0.413 ng/g	<1.64 ng/g	<2.30 ng/g
PFAS - IDA	PFHpA, Post-Oxidation	<5.49 ng/g	<25.0 ng/g	**20.4** ng/g *
PFAS - IDA	Perfluorooctanoic Acid (PFOA)	<3.08 ng/g	<9.52 ng/g	<2.84 ng/g
SPLP then PFAS - IDA	PFOA, SPLP	Detected in blank	Detected in blank	<1.77 ng/L
PFAS - IDA	PFOA, Pre-Oxidation	<0.413 ng/g	<1.64 ng/g	<2.30 ng/g
PFAS - IDA	PFOA, Post-Oxidation	<5.49 ng/g	<25.0 ng/g	<4.38 ng/g
PFAS - IDA	Perfluorooctanesulfonic Acid (PFOS)	<3.08 ng/g	<9.52 ng/g	<2.84 ng/g
SPLP then PFAS - IDA	PFOS, SPLP	<1.87 ng/L	<1.75 ng/L	<1.77 ng/L
PFAS - IDA	PFOS, Pre-Oxidation	<0.413 ng/g	<1.64 ng/g	<2.30 ng/g
PFAS - IDA	Perfluorononanoic Acid (PFNA)	<3.08 ng/g	<9.52 ng/g	<2.84 ng/g
SPLP then PFAS - IDA	PFNA, SPLP	<1.87 ng/L	<1.75 ng/L	<1.77 ng/L
PFAS - IDA	PFNA, Pre-Oxidation	<0.413 ng/g	<1.64 ng/g	<2.30 ng/g
PFAS - IDA	PFNA, Post-Oxidation	<5.49 ng/g	<25.0 ng/g	<4.38 ng/g
PFAS - IDA	Perfluorodecanoic Acid (PFDA)	<3.08 ng/g	<9.52 ng/g	<2.84 ng/g
SPLP then PFAS - IDA	PFDA, SPLP	<1.87 ng/L	<1.75 ng/l	<1.77 ng/L
PFAS - IDA	PFDA, Pre-Oxidation	<0.413 ng/g	<1.64 ng/g	<2.30 ng/g
PFAS - IDA	PFDA, Post-Oxidation	<5.49 ng/g	<25.0 ng/g	<4.38 ng/g

* this value is an estimated maximum

Table 4: Unregulated PFAS

Results in *Italics* are for analytes that were Detected but not Quantified statistically.
Results in **Bold** are for analytes whose concentrations were calculated to sufficient statistical significance to be Quantified.
Results in grey boxes were not detected at the limit listed.
Synthetic Precipitation Leaching Procedure via EPA 1312 unless noted otherwise (metals).
Units: 1 ng/g = 1 part per billion (ppb); 1 ng/L = 1 part per trillion (ppt)

Method	Analyte	Turf Carpet	Shockpad	Infill
PFAS - Isotope Dilution Analysis (IDA)	Perfluorobutanoic Acid (PFBA)	<3.08 ng/g	<9.52 ng/g	<2.84 ng/g
SPLP then PFAS - IDA	PFBA, SPLP	*1.39 J* ng/L	**1.84** ng/L	<1.77 ng/L
PFAS - IDA	PFBA, Pre-Oxidation	<0.826 ng/g	<3.28 ng/L	<0.461 ng/L
PFAS - IDA	PFBA, Post-Oxidation	*7.06 J* ng/g	*28.7 J* ng/g	*2.11 J ng/g*
PFAS - IDA	Perfluoropentanoic Acid (PFPeA)	*0.148 J* ng/g	<9.52 ng/g	*0.455 J* ng/g
SPLP then PFAS - IDA	PFPeA, SPLP	*2.01 ng/L*	*1.52 J* ng/L	<1.77 ng/L
PFAS - IDA	PFPeA, Pre-Oxidation	<0.826 ng/g	<3.28 ng/L	<0.461 ng/L
PFAS - IDA	PFPeA, Post-Oxidation	<11.0 ng/g	<50.0 ng/g	<8.77 ng/g
PFAS - IDA	Perfluorohexanoic Acid (PFHxA)	<3.08 ng/g	<9.52 ng/g	<2.84 ng/g
SPLP then PFAS - IDA	PFHxA, SPLP	*0.803 J* ng/L	*1.03 J* ng/L	**2.88** ng/L *
PFAS - IDA	PFHxA, Pre-Oxidation	<0.826 ng/g	<3.28 ng/L	<0.461 ng/L
PFAS - IDA	PFHxA, Post-Oxidation	<11.0 ng/g	<50.0 ng/g	<8.77 ng/g
PFAS - IDA	1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	<3.08 ng/g	<9.52 ng/g	<2.84 ng/g
SPLP then PFAS - IDA	6:2FTS, SPLP	<1.87 ng/L	<1.75 ng/L	<1.77 ng/L
PFAS - IDA	6:2 FTS, pre-oxidation	<0.826 ng/g	<3.28 ng/L	<0.461 ng/L
PFAS - IDA	6:2 FTS, post-oxidation	Not Analyzed	Not Analyzed	Not Analyzed
PFAS - IDA	Perfluorodecanesulfonic Acid (PFDS)	<3.08 ng/g	<9.52 ng/g	<2.84 ng/g
SPLP then PFAS - IDA	PFDS, SPLP	**2.07** ng/L *	<1.75 ng/L	<1.77 ng/L
PFAS - IDA	PFDS, pre-oxidation	<0.826 ng/g	<3.28 ng/g	<0.461 ng/g
PFAS - IDA	PFDS, post-oxidation	<11.0 ng/g	<50.0 ng/g	<8.77 ng/g

* this value is an estimated maximum

Table 5: Total Organic Fluorine Determination

Results in *Italics* are for analytes that were Detected but not Quantified statistically.
Results in **Bold** are for analytes whose concentrations were calculated to sufficient statistical significance to be Quantified.
Results in grey boxes were not detected at the limit listed.
Synthetic Precipitation Leaching Procedure via EPA 1312 unless noted otherwise (metals).
Units: 1ppm = 1 part per million

Method	**Analyte**	**Turf Carpet**	**Shockpad**	**Infill**
Galbraith Laboratories Inc. (GLI) Procedure E9-1	Fluoride	<10 ppm	<10 ppm	<10 ppm
Galbraith Laboratories Inc. (GLI) Procedure E9-3	Fluorine	70 ppm	26 ppm	<10 ppm
Calculated	Organic Fluorine	70 ppm	26 ppm	<10 ppm

Dear Conservation Commission, 9/5/25

Regarding: Conditional Use Permit for Dover High School Athletic Field renovation

We share a desire to provide Dover with the highest quality water possible. I have grave concerns about the amount of plastic nanoparticles that will inevitably leach off the DHS plastic playing field into our waterways and drinking water.

This plastic field will be subjected to sun, rain, heat, and cold on a year-round, 24/7 basis. In addition, this same plastic will be ground under the cleats of fast moving and constantly dodging athletes for multiple hours per day at least six days a week for seven to nine months per year. If we intended to pulverize the plastic to produce nanoparticles, we could not find a more effective situation. Nanoparticle in water runoff from the fields is inevitable and constant. The DHS field will pollute our waterways: guaranteed.

The proposed rain garden catchment on DHS fields (1) seems inadequate and (2) ignores the need for maintenance program in the plan. Without regular servicing the rain garden will in time fill up with detritus and become ineffective.

Installing and maintaining municipal filtration systems to remove plastic from water will force yet another perpetual remediation cost on the taxpayer. The smartest and most cost-effective approach is to stop plastic pollution before it enters the water system.

Public health is the reason plastic pollution would force us to carry extra filtration costs. Plastic nanoparticles from drinking water have been found in breast milk, heart, lungs, and brain tissue. Plastic is even being found in infants in utero. Plastic has been implicated in cardiovascular diseases like heart attack and stroke, reproductive issues, respiratory problems, and potentially even cancer. We do not need to add to our already overburdened immune system by pouring plastic nanoparticles into our water.

Stop the plastic and save the water.

John Michael Atherton

22 West Concord St.

Dover NH

412-610-0134

JMAtherton.3@gmail.com

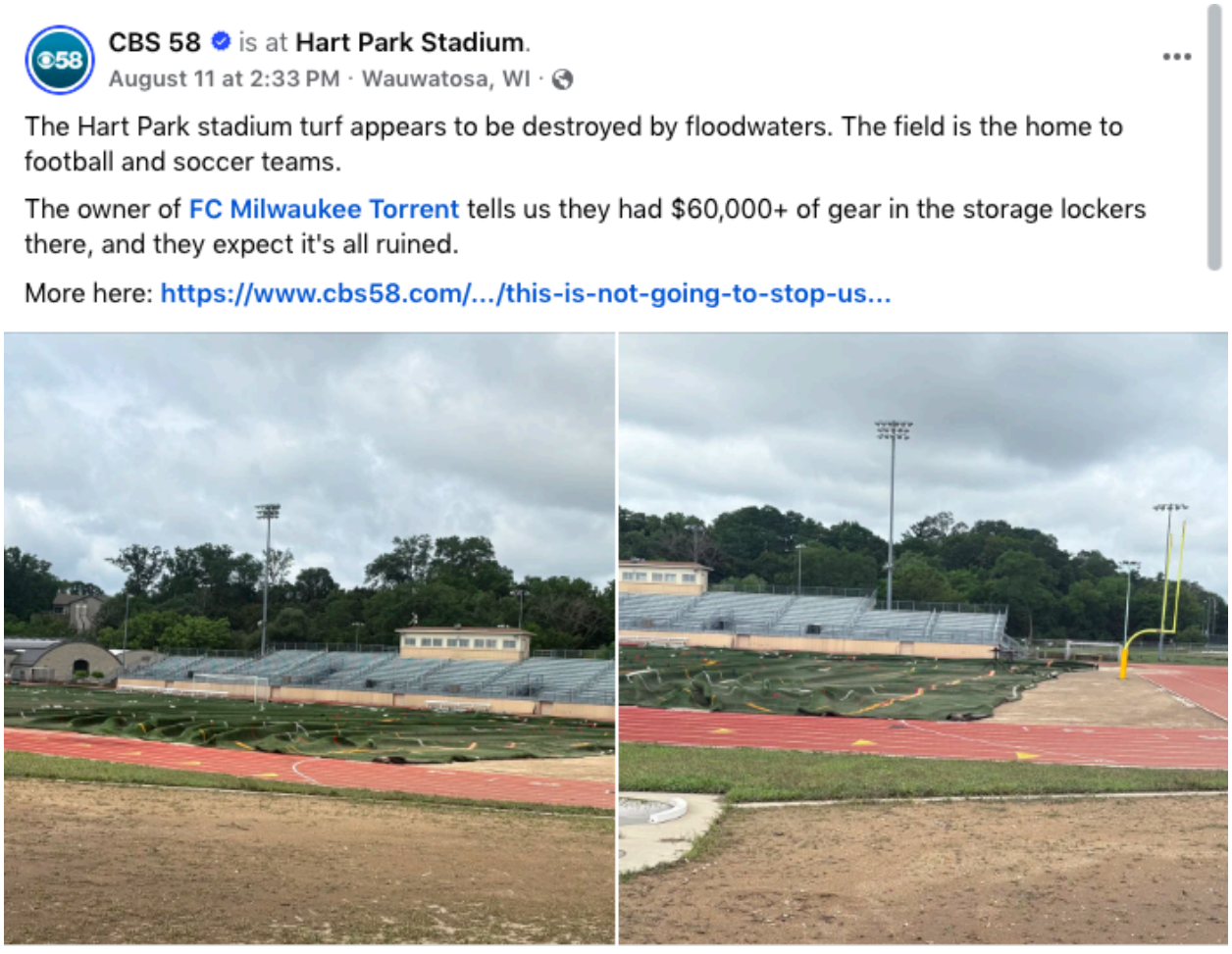
Dear Conservation Commission members,

Water resource protection is a top priority as outlined in the City of Dover Master Plan. Adding additional acres of impervious surface at Dover High School will have a tremendous impact on the adjacent wetlands and Bellamy River watershed, as well as the groundwater protection area in the following ways:

A huge volume of stormwater will be generated by plastic turf from the football field alone.

An estimate I calculated showed 20 times more stormwater runoff - approximately 2.1 million gallons of excess stormwater on average, per year from this area. (DHS Football Field calculation) If Dunaway Baseball ends up being artificial, this would add even more, potentially more than double the amount of impervious surface for the athletic fields.

As recent events in Wisconsin have shown, synthetic turf being an impervious surface is a liability, not an asset during a flooding event.



The stormwater coming from artificial turf carries a varied mixture of toxics and pollutants.

The plastic carpet sheds both micro and nano-plastics, and UV rays from sunshine helps release the additives and plasticizers from the polymer into the environment and generate greenhouse gases. These additives include, but are not limited to, PFAS, 1,4-dioxane, bisphenols, and phthalates.

The crumb rubber infill contains dozens of toxics, some bioaccumulative, including, but not limited to, carbon black, polycyclic aromatic hydrocarbons (PAHs), volatile organic compounds (VOCs), heavy metals (like lead and zinc), 6PPD, PFAS and phthalates.

Mixtures like this are found to be more toxic than a single compound alone. Two examples of this would be microplastics interacting with both PFAS and zinc to become more toxic.

According to the 2025 NH Stormwater Manual micro and nanoplastics, PFAS and 6PPD are all considered emerging contaminants.

The stormwater temperature coming from the artificial grass will be increased due to the heat island effect.

Because the plastic grass surface reaches temperatures hotter than asphalt, the temperature of the water entering the wetlands from the fields will be significantly warmer, which negatively affects the functioning of wetland and watershed ecosystems. Even small changes in temperature can have far reaching consequences affecting things like fish growth and behavior, oxygenation, and nutrient cycling.

Adding mitigation should not be looked at as an acceptable trade-off for increased pollution.

Elimination of the source - reduction in total impervious surface - is the best way to reduce contaminants. Adding a sock filter or retention area to the runoff is always going to be inadequate when numerous contaminants and pressures are present and subject to the wider elements and multiplicative effects.

The insistence that there is no practicable alternative to installing an impervious surface on the fields at DHS is demonstrably false.

Athletic fields, whether they are natural or synthetic, can fail for 3 reasons:

- Poor specifications

- Poor construction
- Poor maintenance

It has been well-established on the record that the JBC rejected repeated requests to consult with grass experts. Engineers are the experts on the design and construction of athletic fields, but *they are not turfgrass managers with the expertise on how to manage athletic fields* in a way that they not only hold up to the use Dover demands, but continue to function optimally providing ecosystem services like stormwater infiltration, oxygen production, carbon sequestration and more.

The two options were not given equal time or exploration throughout the process, despite this being part of the charge of the committee. Most people don't understand that engineers and landscape design firms are not independent third party experts. They have a financial incentive to recommend artificial fields as well as an intimate relationship with the synthetic turf industry, which is indisputably evidenced by the various firms with membership to the Synthetic Turf Council and the engineers who serve on their board of directors.

I hope the Conservation Commission can see this all clearly, and most importantly how the impact of this much additional impervious surface will be a substantial stressor on Dover's water resources.

The base bid for Dunaway Baseball is a minimum 30% sand-based field. This field has the potential to capture up to 27,000 gallons of rainwater before runoff occurs for every 5,000 sq ft of surface.

Therefore, a 105,000 sq ft baseball field can capture up to 567,000 gallons before runoff occurs.

Recommending that approval of this renovation be conditioned on (at the very least) the removal of synthetic turf as an alternate for the surface of Dunaway Baseball is both a reasonable and *meaningful* reduction to impervious surface and resulting stormwater runoff.

I do not believe that given our master plan goals, and the purpose of the Conservation Commission of "developing, protecting and promoting the natural resources of Dover" and "protecting the watershed resources of the city" that recommending anything less would be appropriate.

Diana Carpinone
Ward 3

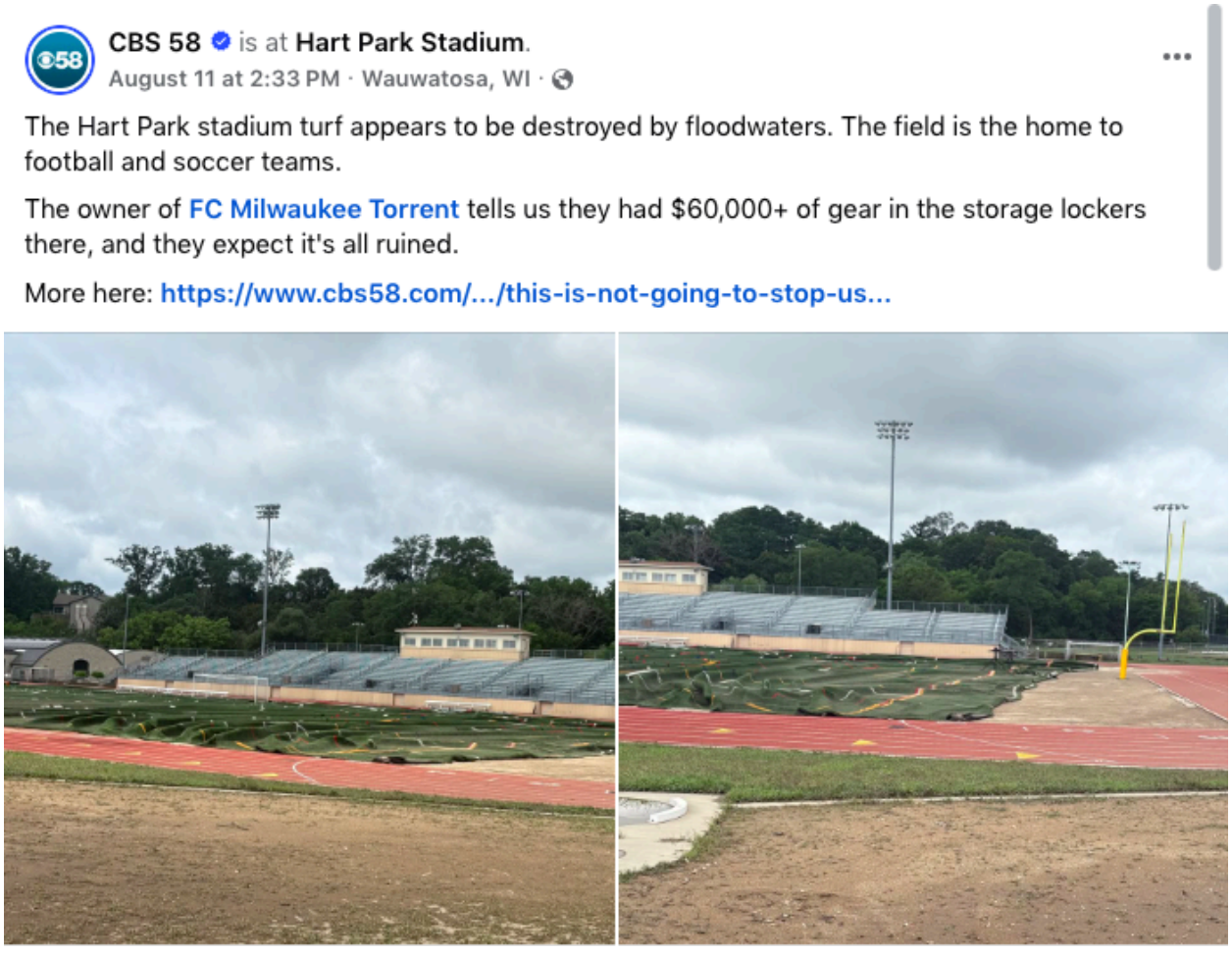
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Diana Carpinone
Ward 3

Dear Conservation Commission Members, Sept. 7, 2025

Thank you for your volunteer efforts to provide recommendations to the Planning Board and others regarding projects that could harm resources in Dover. I am a scientist with over 35 years of experience in pollution problems and solutions, with a focus on water quality. I appreciate the complexity of the many projects you review.

These DHS athletic facility plans present unique threats not yet seen in Dover. The Conditional Use Permit (CUP) application describes two synthetic fields that can total 100,000 lbs. of plastic turf and 1,000,000 lbs. of Crumb Rubber infill. Similar fields lose almost 1% per year as micro-nano-plastics and they leach toxic synthetic compounds and heavy metals. (See Fig.1 & 2 and Appendix)





Fig. 1 Crumb Rubber for one field (top image) & partly spread on field (side image).





Fig. 2 Sample of new synthetic turf (top image) & microplastics (< 100 micron size) after 15 min flush (side image). White fiber is 100 micron standard

If you accept the CUP application as is, the following could occur:

1. **Synthetic turf will be installed on both Dunaway** (≈ 77,000 sq. ft.) **and the multi-sport field** (≈115,000 sq. ft.). See Fig. 3 below.
   a. This will more than double stormwater volume, stressing the small raingarden system near Dunaway field north of the maintenance building, far from the multi-sport field.
   b. Synthetic turf on the multi-sport field also adds substantially more synthetic chemicals, heavy metals and micro and nano-plastics leaching from both fields. These toxic components will enter the small sediment trap (Forebay), small Raingarden and underground gravel pit. In order to keep up with stormwater entering the Forebay and Raingarden, these structures are designed to allow rapid discharge thus impacting groundwater, wetlands and the Bellamy River.
2. **Crumb Rubber infill could be used**. The proposal lists SBR (styrene-butadiene rubber) from shredded tires. Synthetic infills like this are now banned in Europe. (See Appendix) The JBC currently has complete control over all decisions regarding materials, including infill. Also, even if less toxic or natural infill is initially installed, without any restrictions from the you or the Planning Board, the JBC has permission to replace it with crumb rubber, as has happened in Portsmouth when their walnut shell infill failed.

3. **Substantial amounts of persistent, harmful substances from synthetic turf will enter a NH designated Priority Resource Area and Dover's Groundwater Recharge.** (See CUP) Synthetic chemicals, heavy metals and micro-plastics will enter the forebay, raingarden, and underground gravel pit, and rapidly discharge into groundwater wetlands, and the Bellamy River. The proposal cites only general estimates that raingardens trap natural carbon compounds (TOC), Nitrogen and Phosphorus. These natural compounds are consumed by organisms in raingardens. The CUP application makes no mention, however, of the many persistent harmful substances well-known to be present and leaching from plastic blades, backing and infill. (See Appendix)

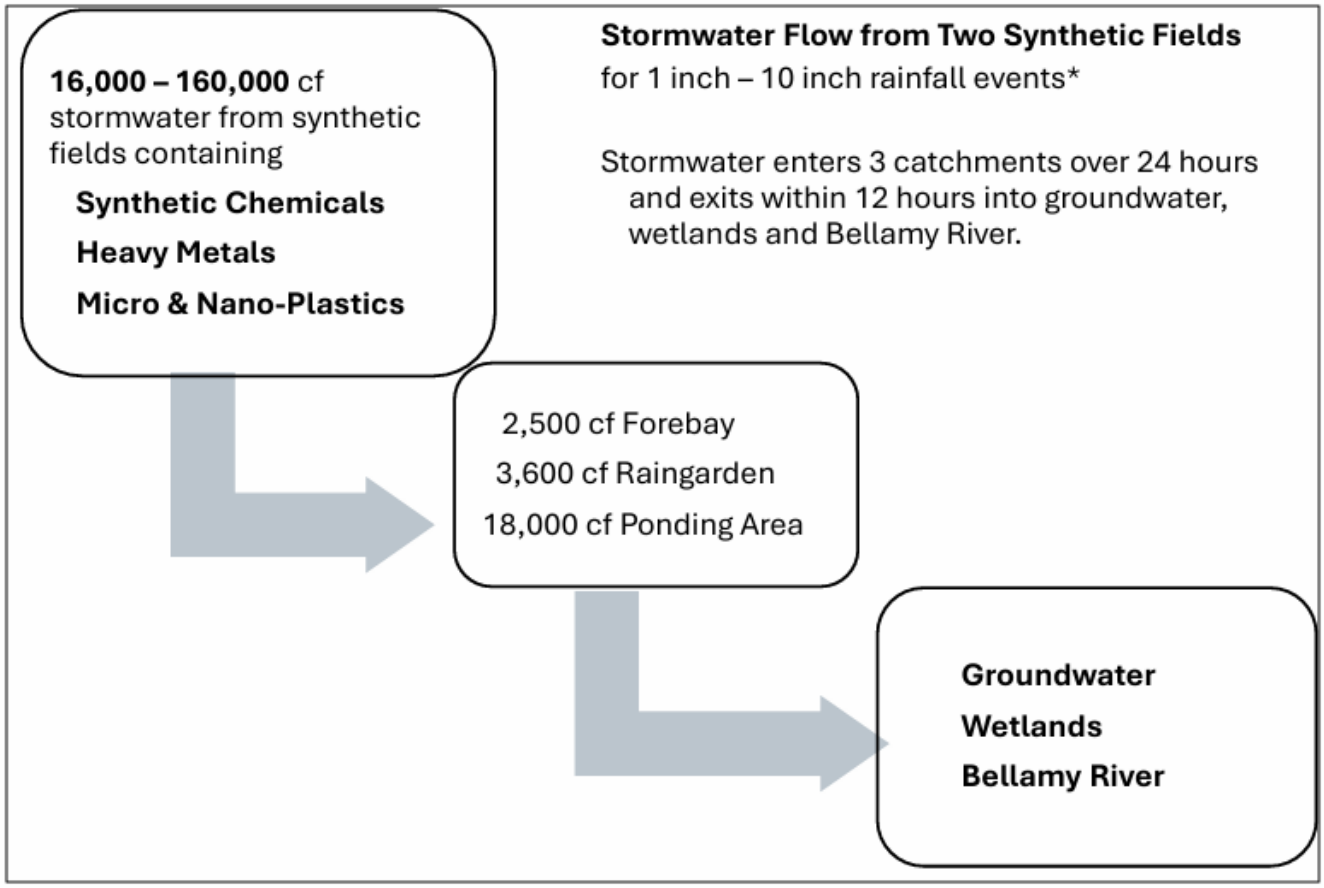


Figure 3. Diagram of stormwater from Dunaway and Multi-sport fields during rain events ranging from common amounts of 1 inch/24 hrs. to 100-year events at 10 inch/24 hrs. (cf=cubic feet)

- The small capacities of the sediment trap (Forebay) and Raingarden require them to rapidly discharge inputs, e.g., within 12 hrs. Discharge from the larger, Ponding Area is unknown.
- Note that substantial amounts of additional stormwater would be coming from all other impervious surfaces, i.e. bleachers and the maintenance building.
- If the multi-sport field is grass, stormwater from that field is reduced by 95%.
- Stormwater from a synthetic Dunaway field alone will be 6,400 – 64,000 cubic feet for 1 inch - 10 inch rain events.

Summary Request: (See the Appendix for supporting explanations and citations.)
I ask the Conservation Commission to reject the current conditional use permit.
I urge the Commission use their authority to the fullest extent toward these goals:

- Based on science, express your concerns that synthetic turf contains and releases harmful, persistent substances, e.g., micro-nano-plastics, toxic synthetic compounds and heavy metals, which are known to harm water quality.
- State that synthetic turf is not the only feasible/practicable option for athletic fields. Grass fields designed and maintained for Dover sport teams will protect water quality. Dover's organic management policy ensures non-toxic pesticides and slow-release fertilizer.
- State that grass is the preferred option for Dover playing fields. (Note that City Council intended grass for the Multi-sport field.)
- Recommend that, if synthetic turf is used, no crumb rubber (CR) infill of any kind anywhere, including, but not limited to SBR, virgin CR, encapsulated CR, etc.

Regards,
Cynthia Walter, Ph.D.
Dover, NH
cawalter22@gmail.com

Appendix

The following are examples of …

a. the substantial, independent science documenting risks to water quality from hazardous substances in synthetic turf (ST), and infill.
b. the professional information available regarding the feasibility/practicability of grass athletic playing fields for high school sport teams.

ST contains hazardous substances

Overview: "Numerous studies have shown that chemicals identified in artificial turf, including polycyclic aromatic hydrocarbons (PAHs), phthalates, and per- and polyfluoroalkyl substances (PFAS), are known carcinogens, neurotoxicants, mutagens, and endocrine disruptors." Murphy and Warner 2022

> Ryan-Ndegwa S, et al. 2024. Exploring the Human Health Impact of Artificial Turf Worldwide: A Systematic Review. Environmental Health Insights. 2024;18. doi:10.1177/11786302241306291

Plastic Additives:

> Plastic additives intrinsic to synthetic turf blades and backing are toxic"
> Cal. Dept. Toxic Substances Control 2024. Candidate Chemicals in Synthetic Turf
>
> Plasticizer chemical, DEHP, a type of Phthalate - EPA 2024 Risk Evaluation:
> > "robust evidence that DEHP exposure can cause developmental and reproductive toxicity."
> > https://www.epa.gov/assessing-and-managing-chemicals-under-tsca/risk-evaluation-di-ethylhexyl-phthalate-12-benzene
>
> UV stabilizer required for outdoor plastic, Hidden Amine Light Stabilizers (HALS)
> HALS are "persistent and toxic," "carried on dust."
> > Deng. et al. 2024. Env. Sci. Tech. Vol. 88

ST leaches hazardous compounds into water

> "Runoff water collected from the football pitches contained up to 13 PAHs as well as other chemicals of environmental concern. In addition, continuous leaching of chemicals from the crumb rubber to the surrounding water was demonstrated. The transfer of target chemicals into the runoff water poses a potential risk for the aquatic environment."

Celeiro et al. 2020. Evaluation of chemicals of environmental concern in crumb rubber and water leachates from several types of synthetic turf football pitches. Chemosphere 2021 May:270:128610. doi: 10.1016/j.chemosphere.2020.128610. Epub 2020 Oct 19.

deHann. et al. 2023. The dark side of artificial greening: Plastic turfs as widespread pollutants of aquatic environments. Environmental Pollution Vol. 334, 1 October 2023, 122094 https://doi.org/10.1016/j.envpol.2023.122094

Galkena 2023. Potential Impact of Additives in Artificial Turf Microplastics on Aquatic Life in the San Francisco Estuary. Masters Thesis. San Fransisco U.

ST fibers release microplastics from weathering

"Artificial turf … loses about 0.5% to 0.8% of its fiber mass per year due to microplastic weathering."
Cal. Dept. Toxic Substances Control 2024. Candidate Chem. in Synthetic Turf - Citing Hann et al. 2018

"Fragments of polyethylene microplastics showed long persistence in atmosphere."
Mamood et al. 2022 https://doi.org/10.1016/j.jhazmat.2022.128391

ST release toxic micro-nano-plastics

> "Consequently, it's important to understand that rainwater and the act of spraying synthetic turf fields with water can result in the release of leachate. This leachate is a complex mixture not just limited to infills, additives, and microplastics. It also contains transformed EPDM* nanoplastics and smaller oligomers, thus broadening the scope of pollution and potential environmental impact. These findings highlight the need for further research and regulatory measures to address nanoplastic pollution from synthetic turf fields."

*EPDM is synthetic rubber made from ethylene propylene diene monomers

Hua, Jin et al. 2024. Environmental risks of breakdown nanoplastics from synthetic football fields. Environmental pollution 347. 123652. 10.1016/j.envpol.2024.123652.

Infill - Crumb Rubber (CR) and other artificial infills contain toxics and are banned in Europe

Armada et al. 2022. Global evaluation of the chemical hazard of recycled tire crumb rubber employed on worldwide synthetic turf football pitches Sci Total Environ2022 Mar 15:812:152542.doi: 10.1016/j.scitotenv.2021.152542. Epub 2021 Dec 22

EPA - Synthetic Turf Field Recycled Tire Crumb Rubber Research Under the Federal Research Action Plan Final Report: Part 1 - Tire Crumb Characterization, US Environmental Protection Agency, Centers for Disease Control and Prevention/Agency for Toxic Substances and Disease Registry, 2019 (FRAP)

Examples of complexity in EPA study: Lines 1121-1123. An official reviewer stated:

> "For example: 15 out of the 16 EPA priority PAHs were found in all crumb rubber samples, and the average individual concentrations were above 1 mg/kg for many of the target PAHs in outdoor and indoor fields. In addition, the Sum15PAH was generally high, with values above 20 mg/g in most cases. In addition, the very high levels of other analytes such as 2- mercaptobenzothiazole (unfortunately it was not quantified) should be mentioned."

https://www.epa.gov/chemical-research/tire-crumb-exposure-characterization-report-volumes-1-and-2

Karatela S. et al. 2025. Rubber Crumb Infill in Synthetic Turf and Health Outcomes: A Review of the Literature on Polycyclic Aromatic Hydrocarbons and Metalloids. Epidemiologia (Basel). 2025 Jan 25;6(1):4. doi: 10.3390/epidemiologia6010004. PMID: 39982256; PMCID: PMC11843893.

Massey R, et al. 2020. Artificial Turf Infill: A Comparative Assessment of Chemical Contents. New Solut. 30(1):10-26. doi: 10.1177/1048291120906206. Epub 2020 Feb 23. PMID: 32089037.

Murphy M & Warner GR. 2022. Health impacts of artificial turf: Toxicity studies, challenges, and future directions. Environ Pollut. 2022 Oct 1;310:119841. doi: 10.1016/j.envpol.2022.119841. Epub 2022 Aug 7. PMID: 35948114; PMCID: PMC10262297.

Van Kleunen 2020. A microplastic used as infill material in artificial sport turfs reduces growth. Plants, People Planet. DOI: 10.1002/ppp3.10071

Zuccaro et al. 2024. The European Union Ban on Microplastics Includes Artificial Turf Crumb Rubber Infill: Other Nations Should Follow Suit. Environ. Sci. Technol. 2024, 58, 2591−2594

Grass playing fields predominate in large high schools in NH

Almost 80% of NHIAA* schools have all grass fields. (70/89)

Almost 60% of larger high schools, Division I & II, have all grass fields. (23/40)

*New Hampshire Interscholastic Athletic Association are grouped by size Schools competing under the NHIAA

Grass playing fields support intense use

Grass Field Examples 1 & 2 from Comprehensive U Mass Lowell Studies:
Hopkins Field, Marblehead MA T**otal hours per year 1860 hr ≈ 620 uses**
≈ 8 hr/d x 7 days/wk x 33 weeks

Springfield MA Grass Field – "No cancellations for rain except with lightning."

U Mass Lowell Study 2020 https://www.uml.edu/research/lowell-center/athletic-playing-fields/

Grass Field Example 3: "Winnacunnet has all natural turf. We have 2 full time grounds keepers to maintain all the fields as well as the surrounding campus. **Our fields are basically used from March until December.**" John Gamache Sr., Head Facilities Manager, Winnacunnet High School, Hampton NH Natural Grass Fields

"Natural grass fields can be built and maintained to meet playability needs based on level, demand, and budget. …With an existing field, as little as 1/10th of the amount of money needed for 1- synthetic field is needed to improve and maintain that grass field over 10 years."

https://turfrepublic.com/archive/grass-answer/

Strategies for Managing Heavily-Used Fields

https://www.sportsfieldmanagement.org/wp-content/uploads/2017/11/HighUseFields.pdf\

Grass Fields Limit Stormwater

https://www.sportsfieldmanagement.org/wp-content/uploads/2017/11/Drainage-1-Surface-FINAL.pdf

https://www.sportsdestinations.com/sports/sports-facilities/case-study-how-natural-grass-fields-can-hold-rain-34083

PERMIT SNAPSHOT REPORT COND-2025-0022
FOR CITY OF DOVER, N.H.

Permit Type	Conditional Use	**Project:**		**App Date:**	08/29/2025
Work Class:	Environmental	**District:**	None	**Exp Date:**	NOT AVAILABLE
Status:	In Review	**Square Feet:**	0.00	**Completed:**	NOT COMPLETED
Valuation:	$0.00	**Assigned To:**	Edgecomb, Makayla	**Approval Expire Date:**	

Description: The Project proposes to raise an existing home within the Flood Hazard Area and reconfigure the existing decks/stairs to allow for access.

Parcel:	**Address:** 13 1/2 Boston Harbor Road Dover, NH 03820	Main	**Zone:**

Applicant	Owner	Plan Preparer
Sam Hayden	Sheryl Rossignol	Sam Hayden
571 West Road Unit #3 Unit #3	Home: (306) 531-7812	Home: (207) 770-6438
Portsmouth, NH 03801		
Business: (207) 770-6438		

Permit Custom Fields

Select Permit Type	Conservation District	General Purpose	Alteration / Addition	Project Zone	Residential
What is the parcel zoned?	R-20	New Change in Impervious/Paved Area (sq ft)	0	Work	Conditional Use Approval is sought for activities within the 100 foot Conservation District and the 50 foot wetland buffer. Project proposes temporary impacts during construction - cribbing, jacks, and appurtenances of the house raising activity - and permanent reconfiguration of the existing deck to provide additional stairs up to the home.

permitstatefed	NHDES Minimum Expedite Wetlands Permit - Processing, waiting for confirmation from Conservation Commission that they will not intervene.

Attachment File Name	Added On	Added By	Attachment Group	Notes
Signature_Sam_Hayden_8/29/2025.jpg	08/29/2025 16:52	Hayden, Sam		Uploaded via CSS
Permit Snapshot Report.pdf	08/29/2025 16:53	Service, EnerGov		Attached by IO - ATTACH: Initial Permit Snapshot

Invoice No.	Fee	Fee Amount	Amount Paid
INV-2025013759	Planning General Application Fee	$200.00	$200.00
	Total for Invoice INV-2025013759	$200.00	$200.00
	Grand Total for Permit	**$200.00**	**$200.00**

Submittal Name	Status	Received Date	Due Date	Complete Date	Resubmit	Completed
Conditional Use Review v.1	In Review	09/02/2025	09/05/2025		No	No

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Planning	Planning	Edgecomb, Makayla	In Review	09/02/2025	09/30/2025	

PERMIT SNAPSHOT REPORT (COND-2025-0022)

Workflow Step / Action Name	Action Type	Start Date	End Date
Review v.1		09/02/2025 10:24	
Confirm application complete v.1	Generic Action		09/02/2025 10:24
Conditional Use Review v.1	Receive Submittal	09/02/2025 0:00	
Planning Board v.1			
Planning Board Agenda v.1	Task		
Invoice for Notices v.1	Task		
Send Notices v.1	Task		
Planner Creates Staff Recommendations v.1	Permit Activity		
Distribute Planning Board Materials v.1	Task		
Planning Board Hearing v.1	Hold Hearing		
Planning Board Decision v.1	Permit Activity		
NOD Sent to Applicant v.1	Create Report		
Issue Permit v.1			
Verify Fees Prior to Permit v.1	Generic Action		
Issue and Review Permit v.1	Generic Action		
Print and Email Permit v.1	Generic Action		
Plans uploaded to Treeno v.1	Generic Action		
Internal Notification of Plan Completion v.1	Generic Action		
Recording v.1	Task		

City of Dover, New Hampshire
CONDITIONAL USE PERMIT APPLICATION

[Revision Date: October 19, 2020]

Office Use Only	Project #:		Date Received:	
	Amount Paid:		Time Received:	

APPLICANT AND OWNER INFORMATION

Name of Applicant: Rossignol Family Revocable Trust of 2016 Telephone # 603 531 7812

Address of Applicant: 13 1/2 Boston Harbor Road, Dover, NH

E-Mail Address: _____

Name of Property Owner (if different from applicant): _____ Telephone #_____

Address of Property Owner: _____

PROPERTY INFORMATION

Assessor's Map # 7 Lot(s) # 6-0

Address of Property: 13 1/2 Boston Harbor Road, Dover, NH

Zoning District(s) R-20 Overlay District(s) Wetland Protection District

Existing Use of Property: Residential

CONDITIONAL USE PERMIT INFORMATION

Type of Conditional Use Permit (Check All That Apply):

☒ Conservation District	☐ RCM Use Overlay District	☐ Gateway District
☐ Groundwater Protection	☐ Off-Street Parking and Loading	☐ Alternative Treatment Center
☐ Wetland Protection District	☐ Central Business District	☐ Heritage Residential District

Describe Proposed Use or Activity That Requires Conditional Use Permit and Describe Any Impacts:

Conditional Use Approval is sought for activities within the 100 foot Conservation District and the 50 foot wetland buffer. Project proposes temporary impacts during construction - cribbing, jacks, and appurtenances of the house raising activity - and permanent reconfiguration of the existing deck to provide additional stairs up to the home.

List Any Associated State or Federal Permits That Have Been or Will Be Applied For and Indicate Their Status: NHDES Minimum Expedited Wetlands Permit - Processing, waiting for confirmation from Conservation Commission that they will not intervene.

Name of Professional That Prepared Plans: John Chagnon LLS , Sam Hayden CWS

Address 200 Griffin Road, Unit 3, Portsmouth, NH Telephone #: 207 283 9151

Professional License #: LLS 738, CWS 321 E-mail address: shayden@haleyward.com

SIGNATURES

I/We hereby submit this application to the City of Dover Planning Board and attest that to the best of my knowledge all of the information on this application form and in the accompanying application materials and documentation is true and accurate. As applicant or as agent, I attest that I am duly authorized to act in this capacity.

Signature of Property Owner: _____ Date: _____

Signature of Applicant (if different from owner): _____ Date: _____

Signature of Agent:  Samuel Hayden Date: 8/24/2025

AUTHORIZATION TO ENTER SUBJECT PROPERTY

I, and my successors, hereby authorize members of the Dover Planning Board, Planning Department and other pertinent City Departments and boards to enter my property for the purpose of evaluating this application, including performing inspections during the application phase, post-approval phase, construction phase and occupancy phase. It is understood that these individuals must use all reasonable care, courtesy, and diligence when on the property.

Signature of Property Owner: Sheryl Rossignol Date: 8/20/25

CITY OF DOVER CONDITIONAL USE
LIST OF ABUTTERS

Pursuant to RSA 676:4, the State Law of New Hampshire, the City of Dover is required to notify the applicant, abutters (including holders of conservation easements), and any professional whose seal is on the plan, of the public hearing by certified mail, return receipt requested. Staff will provide the abutter information, while the applicant must provide accurate contact information for the owner, applicant and professional agents representing the project.

Owner:

TAX MAP	LOT #	PROPERTY OWNER	MAILING ADDRESS
7	6-0	Rossignol Family Revocable Trust of 2016	13 1/2 Boston Harbor Road, Dover NH 03820

Applicant (if different from owner):

APPLICANT NAME	APPLICANT COMPANY	MAILING ADDRESS

Surveyor and/or Engineer/Professional Agent:

NAME	COMPANY	MAILING ADDRESS

Conservation Easement Holder:

TAX MAP	LOT #	NAME OF EASEMENT HOLDER	MAILING ADDRESS

Map	Lot	Deed	Owner(s) First/Trust	Owner(s) Last /Trustee	Mailing Address	City	State	Zip
R13	9		Ashley Phelps		9 Boston Harbor Road	Dover	NH	03820
R13	9 1/2		CTFC Properties LLC		23 Boston Harbor Road	Dover	NH	03820
R12	9 1/2		Boston Harbor Condominium Association		9 1/2 Boston Harbor Road	Dover	NH	03820
	13		Ozkurt Family Revocable Trust of 2024	Ozkurt Halil & Melissa Trustees	13 Boston Harbor Road,	Dover	NH	03820

Ambit Engineering Abutter List

Rossingnol Residence
13 1/2 Boston Harbor Road
Dover NH

Job # 5010534.001

Applicant/Owner(s)

Map	Lot	Deed	Owner (s) First/Trust	Owner(s) Last, Trustee	Mailing Address	City	State	Zip
R13	9		Gerrish Kimberly K Revocable Trust	Todd and Kimberly Gerrish	12 Liam's Court	Greenland	NH	03840

Engineer	**#REF!**		**#REF!**		

Other Consultants					
Other Consultants					
Other Consultants					

Job # 010534.001 **Abutters**

Map	Lot	Deed	Owner(s) First/Trust	Owner(s) Last /Trustee	Mailing Address	City	State	Zip
R13	9		Ashley Phelps		9 Boston Harbor Road	Dover	NH	03820
R13	9 1/2		CTFC Properties LLC		23 Boston Harbor Road	Dover	NH	03820
R12	9 1/2		Boston Harbor Condominium Association		9 1/2 Boston Harbor Road	Dover	NH	03820
	13		Ozkurt Family Revocable Trust of 2024	Ozkurt Halil & Melissa Trustees	13 Boston Harbor Road,	Dover	NH	03820

Ambit Engineering Abutter List

Job #	010534.001		Abutters					
Map	Lot	Deed	Owner(s) First/Trust	Owner(s) Last /Trustee	Mailing Address	City	State	Zip

EXPEDITED MINIMUM IMPACT (EXP) WETLANDS PERMIT APPLICATION

Water Division / Land Resources Management

Check the Status of your Application

RSA/Rule: RSA 482-A/Env-Wt 100-900 (Env-Wt 310.01)

APPLICANT'S NAME: Rossignol Family Revocable Trust Trust **TOWN NAME:** Dover

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

SECTION 1 - REQUIRED PLANNING FOR ALL PROJECTS (Env-Wt 306.05; Env-Wt 603.03; Env-Wt 603.05)

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.

Does the property contain a PRA? If yes, provide the following information:	◉ Yes ○ No
• Does the project qualify for an Impact Classification Adjustment (such as an NH Fish and Game Department (NHFG) and NHB agreement for a classification downgrade) or a Project-Type Exception (such as a 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): See NHB Consult Letter ○ NHB Project ID #: NHB25-1819	◉ 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(s):	○ 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 Wetland Permit Planning Tool or Stream Stats): N/a	

SECTION 2 - ELIGIBILITY (Env-Wt 306.03; Env-Wt 310.01; Env-Wt 310.03)

You must confirm that your project meets *all* of the following statements to qualify for the EXP process:

- The project qualifies as minimum impact project (Env-Wt 306.03).
- The project does not include activities that are prohibited under RSA 482-A (Env-Wt 306.03(a)).
- The project does not include any work in a jurisdictional area that was started without first obtaining the applicable approval (Env-Wt 306.03(b)).
- No work has been done on the subject property pursuant to another EXP or a Statutory Permit-by-Notification (SPN) within 12 months of the date this EXP will be issued. Alternatively, if any work has been done on the subject property pursuant to another EXP or a SPN within 12 months of the date this EXP will be issued, then you are submitting information, including a plan, with this application demonstrating that:
  - The work proposed in this EXP application is wholly unrelated to and separate from the work already done under the EXP or SPN; and
  - The work proposed in this EXP application, when combined with work that has been done under previously issued EXPs or SPNs within the last 12 months, does not constitute a project for which a Standard Permit is required (Env-Wt 310.03(a)).
- If the project is located in a PRA, it also qualifies for an impact classification adjustment under Env-Wt 407.02 or a project-type exception (PTE) under Env-Wt 407.04 (Env-Wt 310.01(d)(6)).

☒ My project meets all statements above. Proceed to Section 3.

☐ My project does not meet all of the statements above. **Your project does not qualify for the EXP process. Your project either is not permittable or requires a Standard Permit.**

SECTION 3 - INFORMATION ON THE PROPOSED PROJECT (Env-Wt 310.01(c))

Identify the rule(s)/provision(s) which make the project a minimum impact project. Refer to the project list below and the Expedited Minimum Impact (EXP) Project Classification Guidance Document.

☐ Aquatic Vegetation Control Projects (Env-Wt 510.08(a))
☐ Water Access Structure Construction Projects (Env-Wt 511.06(a))
☐ Beach Replenishment Projects (Env-Wt 511.07(a))
☐ Deck or Patio Repair Projects (Env-Wt 511.08(a))
☐ Breakwater Maintenance and Repair Projects (Env-Wt 512.07(b))
☐ Docking and Accessory Docking Structure Construction, Repair, and Replacement Projects (Env-Wt 513.24(a))
☐ Docking Structure Modification Projects (Env-Wt 513.25(a))
☐ Accessory Docking Structure Installation, Construction, Modification, Repair, and Replacement Projects (Env-Wt 513.26(a))
☐ Canopy Projects (Env-Wt 513.27(a))
☐ Bank/Shoreline Stabilization Construction Projects (Env-Wt 514.07(a))
☐ Dug-in Basins and Boathouse Construction or Modification Projects (Env-Wt 515.06(a), (b))
☐ Dug-in Basins and Boathouse Maintenance and Repair Projects (Env-Wt 515.07(a))
☐ Intake and Outflow Structure Construction, Maintenance and Repair Projects (Env-Wt 516.05; Env-Wt 516.06(b))
☐ Trail or Pathway Projects (Env-Wt 517.06(a); Env-Wt 517.06(d))
☐ Boardwalk Projects (Env-Wt 517.07(a); (Env-Wt 517.09)
☐ Dry Hydrants and Other Non-Docking Structure Projects (Env-Wt 518.07(a)(1), (b))
☐ Pond Construction, Maintenance, and Repair Projects (Env-Wt 519.08(a), (b); Env-Wt 519.09(a))
☐ Residential Utility Installation Projects (Env-Wt 521.06(a)(7))

- ☐ Non-tidal Dredging Projects (Env-Wt 523.04(a))
- ☐ Residential, Commercial, and Industrial Development Projects (Env-Wt 524.06(b))
- ☐ Restoration/Enhancement Projects (Env-Wt 525.05)
- ☐ Dam Construction, Reconstruction, or Replacement Projects (Env-Wt 526.06(a))
- ☐ Dam Modification, Repair, or Maintenance Projects (Env-Wt 526.07(a))
- ☐ Pubic Highway Projects (Env-Wt 527.06; Env-Wt 527.07)
- ☐ Coastal Projects (Env-Wt 600)
- ☐ Stream Crossing Projects (Env-Wt 903.01(e))
- ■ All Other Projects (Env-Wt 407.03)

Provide the project-specific information required by the rule(s)/provision(s). Refer to Chapters Env-Wt 400, Env-Wt 500, Env-Wt 600, and/or Env-Wt 900, as applicable, for project-specific application and design requirements.
Please see applicable standard Project Specific Worksheets for guidance.

Material Required:
Expedited Minimum Impact Wetlands Permit Application
Plan Set which meets requirements of 603.07
USGS Quad map
Tax Map
Appendix B Check list
Abutter List
Photographs
NHB & NHFG Consultation
Project Narrative

Water depth supporting information 603.08, and Data Screening 603.03 where not included because no in-water work or direct impacts to tidal resources are proposed.

For projects located on waterbodies, provide the linear feet of shoreline frontage on the property: linear feet

(■ Not applicable)

Provide a brief description of the project and the purpose of the project, outlining the scope of work to be performed and whether impacts are temporary or permanent. *Do not* reply "See attached".

The intent of the project is to increase the elevation of the first floor of an existing structure within the Flood Hazard Zone. Temporary impacts of 869 sq.ft. are anticipated for construction around the existing house. Once the first floor is raised, the front and back porches must be reconfigured to allow for additional steps to reach the ground floor. This reconfiguration will not increase the impervious area of the lot, nor will it move the primary structure closer to the resource.

Identify the type of jurisdictional resources to be impacted and the area of impact in square feet and/or linear feet:
Project proposes 869 sq. ft. of temporary impact to 100 ft Tidal Buffer Zone.

(☐ Not applicable)

SECTION 4 - PROJECT LOCATION (Env-Wt 310.01(b))

ADDRESS:13 1/2 Boston Harbor Road

TOWN/CITY:Dover

TAX MAP/LOT NUMBER:Map 7 Lot 6

US GEOLOGICAL SURVEY (USGS) TOPO MAP WATERBODY NAME:Boston Harbor
☐ N/A

LATITUDE/LONGITUDE in decimal degrees (to five decimal places): 43.12732° North
70.84399° West

SECTION 5 - APPLICANT (DESIRED PERMIT HOLDER) INFORMATION (Env-Wt 310.01(a))

If the applicant is a trust or a company, then the name of the trust or company should be written as the applicant's name.

NAME:Rossignol Family Revocable Trust

MAILING ADDRESS:35 Oakwood Drive

TOWN/CITY:Portsmouth | STATE:NH | ZIP CODE:03801

PHONE:603.531.7812 | EMAIL ADDRESS (OPTIONAL):sherylrossignlo712@gmail.com

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

SECTION 6 - AUTHORIZED AGENT INFORMATION (Env-Wt 310.01(a))

If the agent is a company, then the name of the company should be written as the agent's name.

NAME:Samuel Hayden

MAILING ADDRESS:200 Griffin Road, Unit 3

TOWN/CITY:Portsmouth | STATE:NH | ZIP CODE:03801

PHONE:207 770 6438 | EMAIL ADDRESS (OPTIONAL):shayden@haleyward.com

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

SECTION 7 - PROPERTY OWNER INFORMATION, IF DIFFERENT FROM APPLICANT (Env-Wt 310.01(a)) If the owner is a trust or a company, then the name of the trust or company should be written as the owner's name.			
NAME:			
MAILING ADDRESS:			
TOWN/CITY:		STATE:	ZIP CODE:
PHONE:	EMAIL ADDRESS (OPTIONAL):		
ELECTRONIC COMMUNICATION: By initialing here, I hereby authorize NHDES to communicate all matters relative to this application electronically.			

SECTION 8 - APPLICATION FEE (RSA 482-A:3, I)

Fee Set At $600 by RSA 483. and Budget Effective July 1, 2025

☐ $400 for minimum impact projects. Please make your check or money order payable to: "Treasurer - State of NH".

SECTION 9 - REQUIRED CERTIFICATIONS (Env-Wt 310.01(d))

Initial each box below to certify:

Initials:	The proposed project meets the conditions and limits of the applicable minimum impact project rule.
Initials:	All abutters have been notified.
Initials:	If the project is to repair or replace a docking structure, the docking structure is an existing legal structure. (■ N/A)
Initials:	The proposal is the alternative with the least adverse impact to jurisdictional areas, as required by Env-Wt 310.01(d)(4).
Initials:	The project is not an after-the-fact application.
Initials:	The project is: • Not located in a PRA, or • Is located in a PRA but is subject to a classification adjustment under Env-Wt 407.02 or a project-type exception under Env-Wt 407.04.
Initials:	The applicant is aware of the limits of the EXP and understands and will comply with all conditions in the EXP and all applicable conditions in Env-Wt 307.

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 10 - REQUIRED SIGNATURES (Env-Wt 310.01(d))

SIGNATURE (OWNER)*:	PRINT NAME LEGIBLY:	DATE:
*Note: If the applicant is not the owner of the property, each property owner also shall sign and date the application provided that property owner signatures shall not be required for transportation projects adjacent to existing rights-of-way where an easement will be obtained prior to the start of construction (Env-Wt 311.11(d)). Check the following box if your project meets this exception: ☐.		
SIGNATURE (APPLICANT, IF DIFFERENT FROM OWNER):	PRINT NAME LEGIBLY:	DATE:
SIGNATURE (AGENT, IF APPLICABLE):	PRINT NAME LEGIBLY:	DATE:

SECTION 11 - CONSERVATION COMMISSION SIGNATURE (Env-Wt 310.01(h))**

The signed statement from the Conservation Commission may be submitted electronically.

The signature below certifies that the municipal Conservation Commission or, if there is no conservation commission, the local governing body, has reviewed this application and the municipality waives its right to intervene on the project, per RSA 482-A:11.

AUTHORIZED COMMISSION SIGNATURE:	PRINT NAME LEGIBLY:	DATE:

SECTION 12 - LOCAL RIVER MANAGEMENT ADVISORY COMMITTEE SIGNATURE (Env-Wt 310.01(i))**		
The signature below certifies that the LAC waives its right to intervene per RSA 482-A:11: (☐ N/A This project is **not** within a Designated River Corridor)		
AUTHORIZED LAC REPRESENTATIVE SIGNATURE:	PRINT NAME LEGIBLY:	DATE:

**Note: If the application is administratively complete, except for the signed statement from the Conservation Commission and/or LAC, the application will be processed under the application processing times established in RSA 482-A:3, XIV (Env-Wt 310.02(h)). The applicant may also indicate that they are applying for a minimum impact application under standard processing timelines.

SECTION 14 - TOWN / CITY CLERK SIGNATURE (Env-Wt 310.01(f))	
As required by RSA 482-A:3, I(a)(1), I hereby certify that the municipality has received four copies of the application, including all attachments.	
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 single, 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.

EXPEDITED MINIMUM IMPACT (EXP) WETLANDS PERMIT APPLICATION APPLICATION CHECKLIST

Keep this checklist for your reference. Do not submit it with your application.

APPLICATION CHECKLIST

Required for all applications:

- ☐ The completed, dated, signed and certified application (Env-Wt 310.01).
- ☐ Application fee of $400, as determined in RSA 482-A:3, I (Env-Wt 310.01(e)). Make check or money order payable to "Treasurer – State of NH".
- ☐ 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 New Hampshire Section 106 Historic/Archaeological Resource review.
- ☐ A copy of the town tax map(s) showing the location of the proposed project in relation to abutters (Env-Wt 310.01(b)(2)).
- ☐ A list of abutters' names and mailing addresses to cross-reference with the tax map (Env-Wt 310.01(b)(3)).
- ☐ A copy of the appropriate US Geological Survey map with the property and project clearly marked (Env-Wt 310.01(b)(4)).
- ☐ Photos that meet all of the following criteria:
  - ☐ Clearly show the area to be impacted,
  - ☐ Are mounted or printed no more than two per sheet on 8.5-inch x 11-inch paper, and
  - ☐ Are annotated to explain impact (Env-Wt 310.01(b)(6)).
- ☐ The results and identification number of the NHB DataCheck (Env-Wt 310.01(b)(8)), as well as documentation of any consultation request made to NHF&G with the consultation results and recommendations. See Wetlands Permitting: Protected Species and Habitat fact sheet.
- ☐ An accurate drawing showing the precise location, with detailed dimensions clearly annotated to document existing site conditions and to show the proposed impacts to the jurisdictional areas (Env-Wt 310.01(c)(4)).
- ☐ An accurate drawing to show the impact of the proposed activity on jurisdictional areas, including the following (Env-Wt 310.01(c)(5)):
  - ☐ An overview of the property and proposed impact areas in relation to property lines,
  - ☐ The scale, if any, used on the drawing,
  - ☐ If the drawing is not to scale, the dimensions of all existing and proposed structures, existing and proposed topography, and all other relevant features necessary to clearly define the project,
  - ☐ A labeled north-pointing arrow to indicate orientation,
  - ☐ A legend that clearly indicates all symbols, line types, and shading used on the plan,
  - ☐ The location of the jurisdictional areas delineated and associated wetland delineation notes, in accordance with Env-Wt 400,
  - ☐ The proposed construction sequence including pre-construction through post-construction activities and the relative timing and progression of all work,
  - ☐ The location and type of siltation and turbidity controls indicated graphically and labeled or annotated as necessary,

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

- ☐ For any project using a temporary coffer dam and for any repair of a tier 3 stream crossing, the date, signature, and seal of the licensed professional engineer who prepared or had responsibility for the plan(s),
- ☐ For restoration/enhancement projects, the information required to be shown on a map by Env-Wt 525,
- ☐ For tidal minimum impact projects, the information required to be shown on a map by Env-Wt 600, and
- ☐ For minimum impact stream crossing projects, the information required to be shown on a map by Env-Wt 900.
- ☐ Plans or documentation showing that impacts have been avoided and minimized to the maximum extent practicable per Env-Wt 313.03(a).

☐ The linear distance of the project from abutting property boundaries (Env-Wt 310.01(c)(7)).

Required for certain project type, as applicable:

☐ The type of dock construction (Env-Wt 310.01(c)(8)).

☐ The diameter of culvert(s) to be used for road or driveway crossings (Env-Wt 310.01(c)(8)).

☐ The additional information specified in Env-Wt 522 for minimum impact agricultural applications (Env-Wt 310.01(c)(8)).

☐ Plans for maintenance of retaining walls, as specified in Env-Wt 514 (if applicable; Env-Wt 310.01(c)(8)).

☐ Specifications and plans for maintenance of rip-rap, as required by Env-Wt 514 (Env-Wt 310.01(c)(8)).

☐ Any other project-specific plan, cross section, or information required under Env-Wt 500 and as described in the project-specific worksheet (Env-Wt 310.01(c)(8)).

☐ Information required on the Coastal Resource Worksheet for coastal projects under Env-Wt 600.

☐ Prime Wetlands information required under Env-Wt 700.

☐ Information requested on the Stream Crossing Worksheet required by Env-Wt 900.

EXPEDITED (EXP) MINIMUM IMPACT WETLANDS PERMIT APPLICATION REVIEW PROCESS

(Keep this sheet for your reference; do not submit it with your application.)

In accordance with Env-Wt 310.02, the department must review an application for an expedited permit (EXP) for administrative completeness and compliance with applicable department rules within 30 calendar days of receipt if the application has been signed by:

- The municipal conservation commission or, if there is no conservation commission, the local governing body, certifying that the municipality waives its right to intervene on the project, which may be submtted electronically; and
- The LAC, if the project is within LAC jurisdiction, certifying that the LAC waives its right to intervene on the project. "LAC jurisdiction" means the authority conferred by RSA 483:8-a, III upon a local river management advisory committee relative to activities within a designated river or river corridor, provided that for the purpose of routine roadway maintenance activities conducted under an EXP, LAC jurisdiction is limited to activities in or within 250 feet of a tier 2 or tier 3 designated river that have a direct surface water connection to the designated river (Env-Wt 103.27).

Administrative Completeness Review:

If the application is administratively complete, complies with applicable requirements, and has the signature(s) mentioned above, the department will issue an EXP and post the information on OneStop within one business day of determining that the application was complete and in compliance with all applicable requirements.

If the application is lacking anything other than the signatures mentioned above and the project qualifies for an EXP, the department will send a written notice to the applicant that:

- Identifies each item that is missing; and
- Informs the applicant that in order to proceed under the EXP, the applicant must submit all necessary information within 20 days of the date of the notice or the application will be denied.

If the application was administratively complete except for one or both of the signatures required above, the department will send a written notice to the applicant that the application will be processed under the application processing times established in RSA 482-A:3, XIV.

If the applicant receives the above-mentioned notice and wishes to proceed under an EXP, the applicant must submit a revised application for an EXP that provides all of the required information within 20 days of the date of the notice. If the applicant does not submit all necessary information to the department within 20 days, the department will deny the EXP.

Technical Review:

If the information submitted as part of the application is not sufficient for the department to determine that the project meets the criteria for an EXP, the department shall send a request for more information, together with any written technical comments the department deems necessary, within 30 calendar days of receipt of the application. Such request and technical comments shall be sent by electronic means if the applicant or applicant's agent has indicted that doing so is acceptable.

If the project proposed in the EXP application does not comply with applicable requirements, the department will deny the application and notify the applicant in writing of the reason(s) for the denial.

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

PLAN REFERENCES:

1) PLAN OF LAND PREPARED FOR ANDREW AND HELEN MIKSENAS, 7 BOSTON HARBOR ROAD, DOVER, NEW HAMPSHIRE. PREPARED BY McENEANEY SURVEY ASSOCIATES, INC. DATED OCTOBER 25, 1995. S.C.R.D. PLAN 47–6.

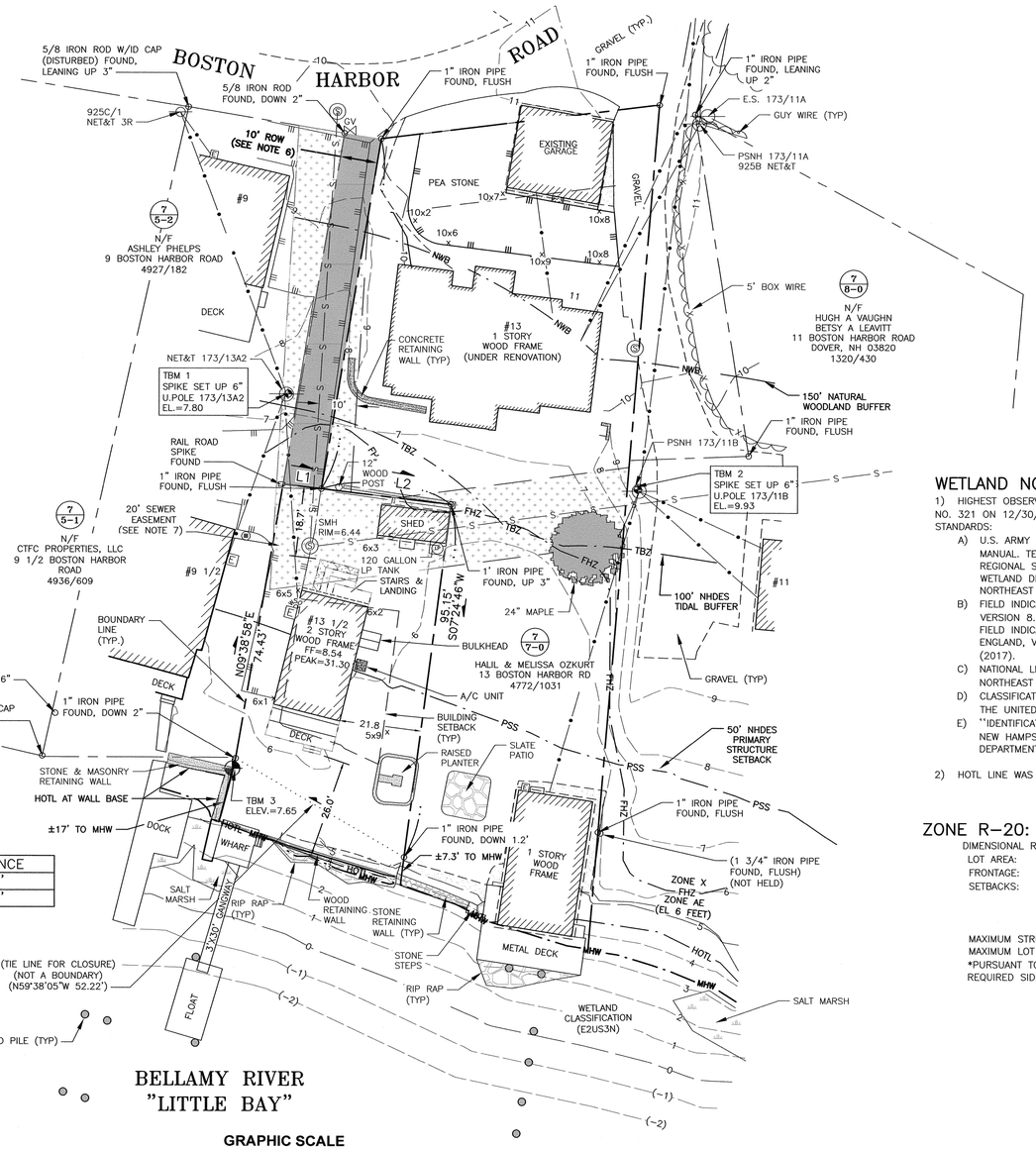
2) BOSTON HARBOR CONDOMINIUM SITE & PROFILE PLANS FOR PROPERTY AT 9 1/2 BOSTON HARBOR ROAD, DOVER, STRAFFORD COUNTY, NEW HAMPSHIRE, OWNED BY ROBERT W. STICKNEY & JOANNE STICKNEY 9 1/2 BOSTON HARBOR ROAD, DOVER, NH 03820. PREPARED BY EASTERLY SURVEYING, INC. DATED FEBRUARY 15, 2019. S.C.R.D. PLAN 118–30.

3) PLAN OF LAND PREPARED FOR ANDRE J. MESSIER, III & JENNIFER S. MESSIER, (LOT 7/6), 13 1/2 BOSTON HARBOR ROAD, DOVER, NH. PREPARED BY BOUDREAU LAND SURVEYING. DATED JULY 23, 2014. S.C.R.D. PLAN 107–96.

4) BOUNDARY ADJUSTMENT PLAN PREPARED FOR HUGH A VAUGHN & BETSY LEAVITT–VAUGHN DOVER, NH. PREPARED BY THOMAS F MORAN, INC, DATED: NOVEMBER 22, 1988, S.C.R.D PLAN 37–64.

LEGEND:

N/F	NOW OR FORMERLY
RP	RECORD OF PROBATE
SCRD	STRAFFORD COUNTY REGISTRY OF DEEDS
11/21	MAP 11 / LOT 21
	RAILROAD SPIKE FOUND
	IRON ROD/IRON PIPE FOUND
	IRON PIPE FOUND
	STONE/CONCRETE BOUND FOUND
	RAILROAD SPIKE SET
	IRON ROD SET
	DRILL HOLE SET
	GRANITE BOUND SET
	BOUNDARY
	BUILDING SETBACK
MHW	MEAN HIGH WATER LINE
MLW	MEAN LOW WATER LINE
HOTL	NH DES HIGHEST OBSERVABLE TIDE LINE
	FRESHWATER WETLAND LINE
WB	WETLAND BUFFER LINE
	OVERHEAD ELECTRIC/WIRES
100	CONTOUR
97x3	SPOT ELEVATION
	EDGE OF PAVEMENT (EP)
	WOODS / TREE LINE
	UTILITY POLE (w/ GUY)
	GAS SHUT OFF
	WATER SHUT OFF/CURB STOP
GV	GATE VALVE
HYD	HYDRANT
GWE	METER (GAS, WATER, ELECTRIC)
A–1	EDGE OF WETLAND FLAGGING
	SWAMP / MARSH
EL.	ELEVATION
EP	EDGE OF PAVEMENT
FF	FINISHED FLOOR
INV.	INVERT
TBM	TEMPORARY BENCHMARK
TYP.	TYPICAL
LSA	LANDSCAPED AREA
SMH	SEWER MANHOLE
	10' ROW



LENGTH TABLE

LINE	BEARING	DISTANCE
L1	S83°15'09"E	10.32'
L2	S83°03'23"E	34.86'



"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."

LLS 4/27/2025

PHILIP A. YETMAN, LLS 1122 DATE

GRAPHIC SCALE

20 0 10 20 40 60

(IN FEET)
1 inch = 20 ft.

NORTH NAD83(2011)

N

GRID NHSPC

WETLAND NOTES:

1) HIGHEST OBSERVABLE TIDE LINE DELINEATED BY SAM HAYDEN, CWS NO. 321 ON 12/30/2024 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. NEIWPCC 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.

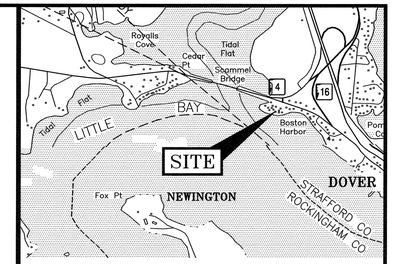
2) HOTL LINE WAS FIELD LOCATED BY HALEY WARD, INC.

ZONE R–20:

DIMENSIONAL REQUIREMENTS:

LOT AREA:		20,000 S.F. (MIN.)
FRONTAGE:		125 FEET (MIN.)
SETBACKS:	FRONT	20 FEET (MIN.)
		35 FEET (MAX.)
	SIDE	20 FEET* (MIN.)
	REAR	30 FEET (MIN.)
MAXIMUM STRUCTURE HEIGHT:		35 FEET
MAXIMUM LOT COVERAGE:		30%

*PURSUANT TO ARTICLE V SECTION 170–14. D(1), THE REQUIRED SIDE YARD SETBACK IS REDUCED TO 10 FEET.



LOCATION MAP 1" = 2000'

NOTES:

1. PARCEL IS SHOWN ON THE CITY OF DOVER'S ASSESSOR'S TAX MAP 7 AS LOT 6–0.
2. OWNERS OF RECORD:
   SHERYL & MARK ROSSIGNOL, TRUSTEES
   ROSSIGNOL FAMILY REVOCABLE TRUST OF 2016
   13 1/2 BOSTON HARBOR ROAD
   DOVER, NH 03820
   DEED BOOK 5198, PAGE 698
3. A MAJORITY PORTION OF THE PARCEL IS GRAPHICALLY LOCATED IN A SPECIAL FLOOD HAZARD AREA ZONE AE (EL 6 FEET) AS SHOWN ON FIRM PANEL 33017C0340E. EFFECTIVE DATE SEPTEMBER 30, 2015.
4. EXISTING LOT AREA (TO MEAN HIGH WATER):
   4,635± S.F.
   0.106± ACRES
5. PARCEL IS LOCATED IN THE LOW DENSITY RESIDENTIAL (R–20) ZONING DISRICT.
6. PARCEL IS BENEFITED BY A 10' ROW AS DESCRIBED IN DEED BOOK 1079, PAGE 791 AND A PERMANENT DRIVEWAY ACCESS EASEMENT AS DESCRIBED IN DEED BOOK 4579, PAGE 34.
7. THIS PARCEL IS SUBJECT TO OR BENEFITS FROM A 20 FOOT WIDE SEWER EASEMENT AS DESCRIBED IN DEED BOOK 1006 PAGE 453 (BOOK 1010 PAGE 450–PLAN).
8. THE PURPOSE OF THIS PLAN IS TO SHOW THE RESULTS OF A STANDARD BOUNDARY SURVEY OF ASSESSOR'S TAX MAP 7, LOT 6–0 IN THE CITY OF DOVER, NH.
9. VERTICAL DATUM IS NAVD88. BASIS OF VERTICAL DATUM IS REDUNDANT RTN GNSS OBSERVATIONS.
10. THE ENTIRE PARCEL IS WITHIN THE 250' NHDES PROTECTED SHORELAND.
11. ABUTTER INFORMATION TAKEN FROM THE CITY OF DOVER'S ASSESSORS GIS WEBSITE.
12. BUILDING MEASUREMENTS ARE TO SIDING.

REV.	DATE	DESCRIPTION	BY	CHK
1	05/27/2025	UPDATE/ADD INSTALLED DOCK	SJR	JRC
0	12/20/2024	ISSUED FOR COMMENT	—	—

DRAWING ISSUE STATUS

SITE SURVEY

HALEY WARD
ENGINEERING | ENVIRONMENTAL | SURVEYING
WWW.HALEYWARD.COM
200 Griffin Road, Unit 14
Portsmouth, NH 03801
603-430-9282

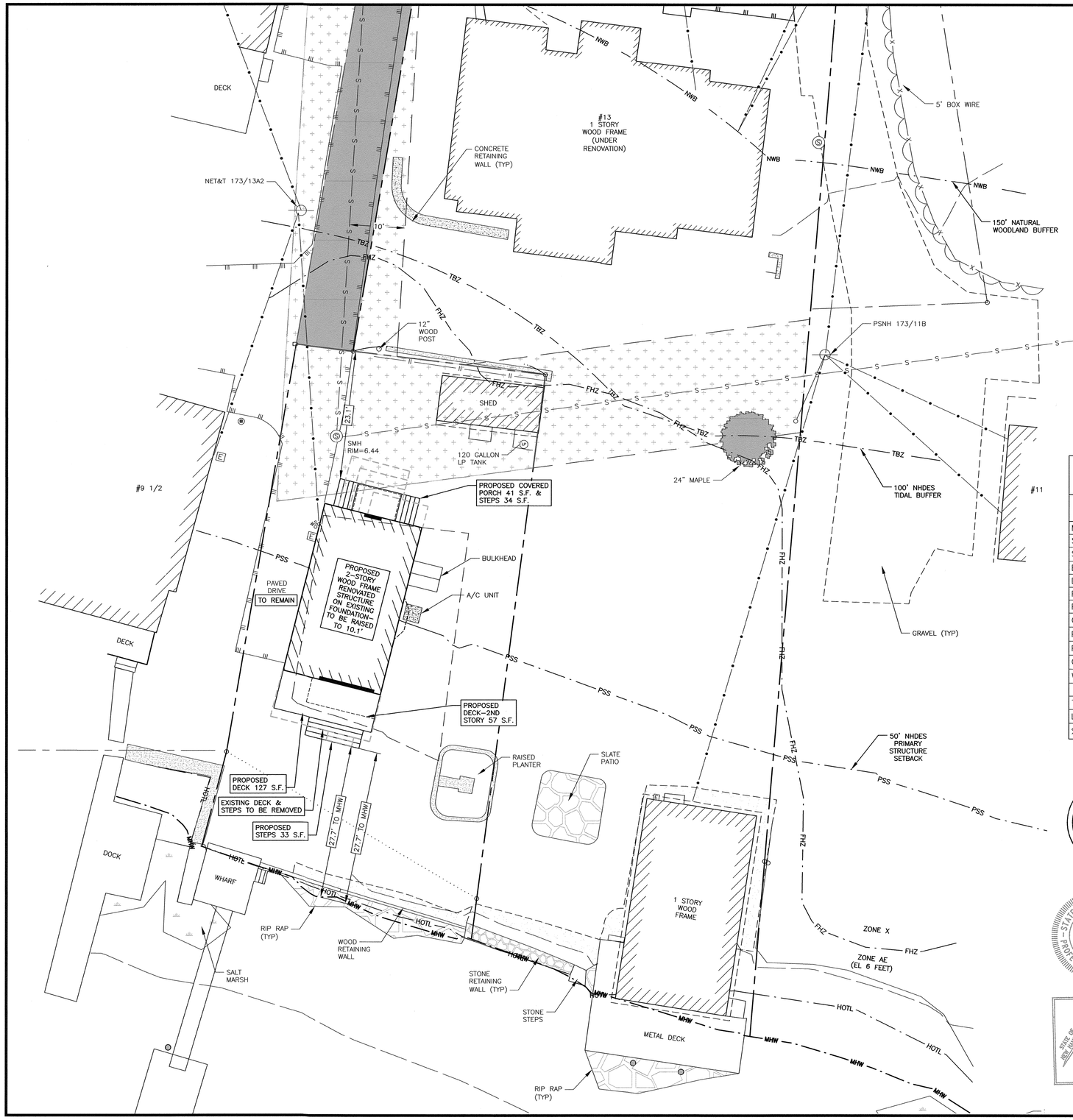
PROJECT

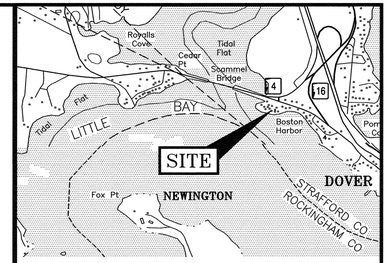
ROSSIGNOL RESIDENCE
13 1/2 BOSTON HARBOR ROAD, DOVER NH

TITLE

EXISTING CONDITIONS PLAN

DATE: DECEMBER 2024	SCALE: AS NOTED
DRAWN BY: PAY	DESIGNED BY: —
CHECKED BY: —	
PROJECT No.: 5010534.001	FIELD BOOK & PAGE: FB 419 PG 24
DRAWING No.: V-101	REV.: 1





LOCATION MAP 1" = 2000'

IMPERVIOUS SURFACE AREAS
(TO PROPERTY LINES)

STRUCTURE	PRE-CONSTRUCTION IMPERVIOUS (S.F.)	POST-CONSTRUCTION IMPERVIOUS (S.F.)
MAIN STRUCTURE	558	558
SHED	151	151
STEPS/LANDINGS	88	77
BULKHEAD	24	24
DECKS	194	127
PORCHES	0	41
RETAINING WALLS	55	52
GRAVEL	72	72
PAVED DRIVEWAY	538	538
PATIO	14	14
CONCRETE/PADS	8	8
WHARF	14	14
TOTAL	1,716	1,676
LOT SIZE	4,635	4,635
% LOT COVERAGE	37.0%	36.2%

NOTES:

1. PARCEL IS SHOWN ON THE CITY OF DOVER'S ASSESSOR'S TAX MAP 7 AS LOT 6-0.
2. OWNERS OF RECORD:
   SHERYL & MARK ROSSIGNOL, TRUSTEES
   ROSSIGNOL FAMILY REVOCABLE TRUST OF 2016
   13 1/2 BOSTON HARBOR ROAD
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   DEED BOOK 5198, PAGE 698
3. A MAJORITY PORTION OF THE PARCEL IS GRAPHICALLY LOCATED IN A SPECIAL FLOOD HAZARD AREA ZONE AE (EL 6 FEET) AS SHOWN ON FIRM PANEL 33017C0340E. EFFECTIVE DATE SEPTEMBER 30, 2015.
4. EXISTING LOT AREA (TO MEAN HIGH WATER):
   4,635± S.F.
   0.106± ACRES
5. PARCEL IS LOCATED IN THE LOW DENSITY RESIDENTIAL (R-20) ZONING DISTRICT.
6. PROPOSAL IS TO RAISE THE RENOVATED STRUCTURE TO A PROPOSED 10.1 FINISHED FLOOR (FF) ELEVATION AND RE-WORK THE FRONT AND BACK ACCESS TO ACCOMMODATE THE NEW FF.

ZONE R-20:

DIMENSIONAL REQUIREMENTS:

LOT AREA:		20,000 S.F. (MIN.)
FRONTAGE:		125 FEET (MIN.)
SETBACKS:	FRONT	20 FEET (MIN.)
		35 FEET (MAX.)
	SIDE	20 FEET* (MIN.)
	REAR	30 FEET (MIN.)
MAXIMUM STRUCTURE HEIGHT:		35 FEET
MAXIMUM LOT COVERAGE:		30%

*PURSUANT TO ARTICLE V SECTION 170-14. D(1), THE REQUIRED SIDE YARD SETBACK IS REDUCED TO 10 FEET.

STATE OF NEW HAMPSHIRE
SAMUEL N HAYDEN
No. 321
7/1/25
CERTIFIED WETLAND SCIENTIST

STATE OF NEW HAMPSHIRE
JOHN R. CHAGNON
No. 7651
LICENSED PROFESSIONAL ENGINEER

STATE OF NEW HAMPSHIRE
No. 238
JOHN R. CHAGNON
SIGNATURE
LICENSED LAND SURVEYOR

WETLAND NOTES:

1) HIGHEST OBSERVABLE TIDE LINE DELINEATED BY SAM HAYDEN, CWS NO. 321 ON 12/30/2024 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. NEIWPCC WETLANDS WORK GROUP (2017).
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   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) HOTL LINE WAS FIELD LOCATED BY HALEY WARD, INC.

GRAPHIC SCALE
10 0 5 10 20 30
(IN FEET)
1 inch = 10 ft.

REV.	DATE	DESCRIPTION	BY	CHK
2	07/03/2025	DECK	SJR	JRC
1	06/23/2025	REVISE MAIN STRUCTURES	SJR	JRC
0	05/27/2025	ISSUED FOR COMMENT	SJR	JRC

DRAWING ISSUE STATUS

SITE PLANS

HALEY WARD
ENGINEERING | ENVIRONMENTAL | SURVEYING
200 Griffin Road, Unit 14
Portsmouth, NH 03801
603-430-9282
WWW.HALEYWARD.COM

PROJECT

ROSSIGNOL RESIDENCE
13 1/2 BOSTON HARBOR ROAD, DOVER NH

TITLE

CITY OF DOVER SITE PLAN

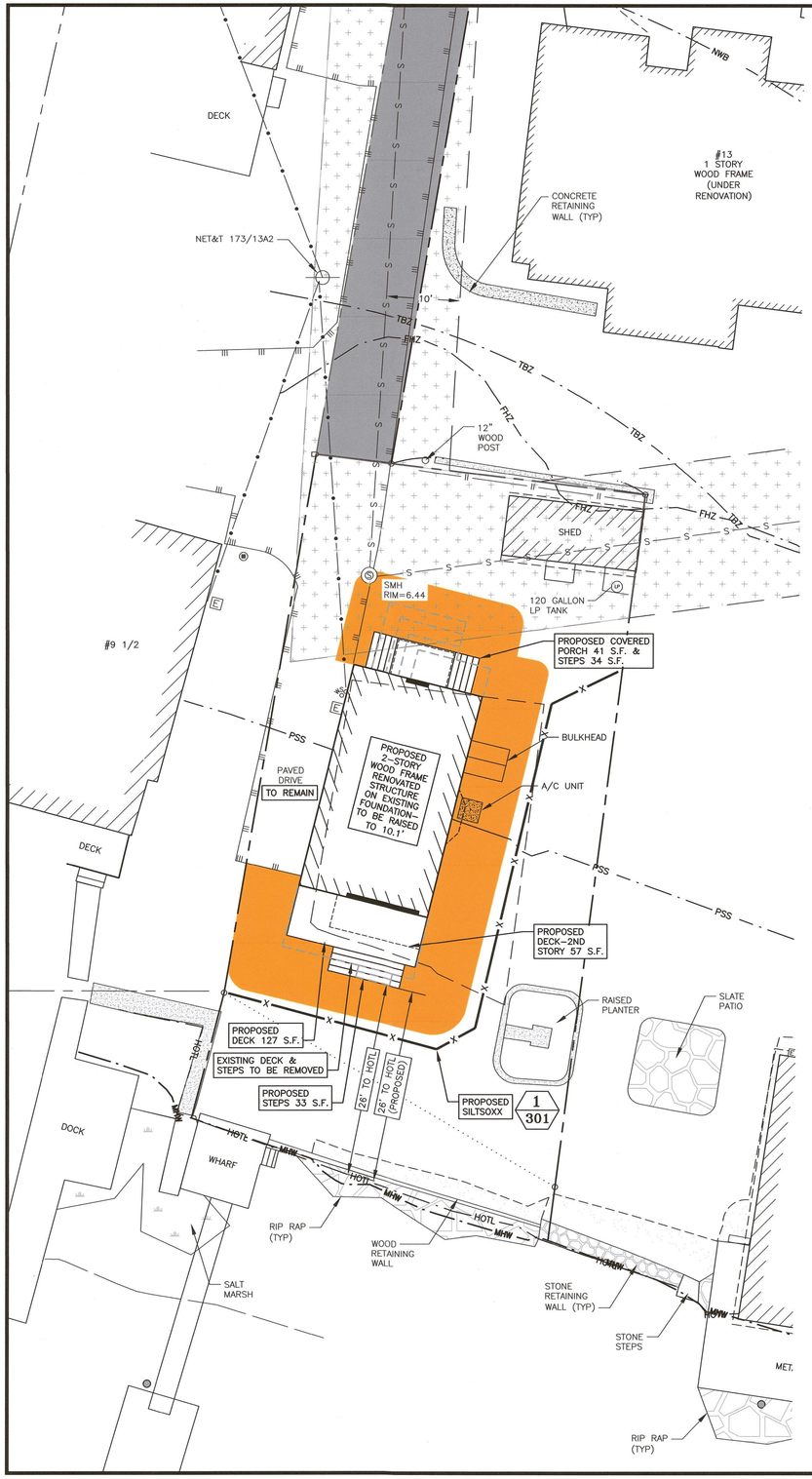
DATE	SCALE
MAY 2025	1"=10'

DRAWN BY	DESIGNED BY	CHECKED BY
SJR	JRC	JRC

PROJECT No. 5010534.001
FIELD BOOK & PAGE FB 419 PG 24

DRAWING No. **C-201**
REV. **2**

P:\5010534-Dover_Assigned\201-153 Boston Harbor Rd, Dover - FAY\02-CAD_Files\2025 Site\5010534.001 - C-STE.dwg, 7/2/2025 7:44:13 AM



IMPERVIOUS SURFACE AREAS
(WITHIN 250' SHORELAND PROTECTION ZONE)

STRUCTURE	PRE-CONSTRUCTION IMPERVIOUS (S.F.)	POST-CONSTRUCTION IMPERVIOUS (S.F.)
MAIN STRUCTURE	558	558
SHED	151	151
STEPS/LANDINGS	88	77
BULKHEAD	24	24
DECKS	194	127
PORCHES	0	41
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GRAVEL	72	72
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PATIO	14	14
CONCRETE/PADS	8	8
WHARF	14	14
TOTAL	1,716	1,676
LOT SIZE	4,635	4,635
% LOT COVERAGE	37.0%	36.2%

NHDES IMPACT AREAS
IN S.F.

	PERMANENT IMPACT AREAS	TEMPORARY IMPACT AREAS
100' TIDAL BUFFER ZONE/100' PRIME WETLAND BUFFER	0	869
250' PROTECTED SHORELAND ZONE	0	0

SITE REDEVELOPMENT:

BUILDING SF: NO CHANGE
FRONT ENTRY: EXISTING STEPS & LANDINGS: 120 S.F.
PROPOSED COVERED PORCH & STEPS: 75 S.F.
WATERSIDE DECK: EXISTING DECK & STEPS: 162 S.F.
PROPOSED DECK & STEPS: 160 S.F.

DEMOLITION NOTES

A) THE CONTRACTOR SHALL OBTAIN AND PAY FOR ADDITIONAL CONSTRUCTION PERMITS, NOTICES AND FEES NECESSARY TO COMPLETE THE WORK AND ARRANGE FOR AND PAY FOR ANY INSPECTIONS AND APPROVALS FROM THE AUTHORITIES HAVING JURISDICTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY ADDITIONAL AND OFF-SITE DISPOSAL OF MATERIALS REQUIRED TO COMPLETE THE WORK.

B) THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL EXISTING STRUCTURES WITHIN THE WORK LIMITS SHOWN UNLESS SPECIFICALLY IDENTIFIED TO REMAIN.

CONSTRUCTION SEQUENCE

1) DO NOT BEGIN CONSTRUCTION UNTIL ALL LOCAL, STATE AND FEDERAL PERMITS HAVE BEEN APPLIED FOR AND RECEIVED.
2) DEMOLISH EXISTING STRUCTURE AND PERFORM NEW CONSTRUCTION.
3) AFTER CONSTRUCTION, REPAIR ANY DISTURBED AREAS UTILIZED FOR CONSTRUCTION ACCESS.

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.

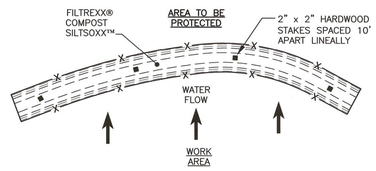
WORK SITE RESTORATION

- UPON COMPLETION OF CONSTRUCTION, ALL DISTURBED 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.

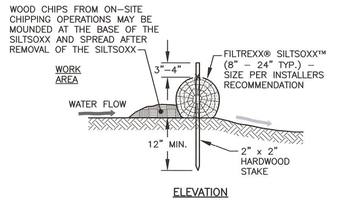
SEDIMENTATION AND EROSION CONTROL

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.

GRAPHIC SCALE
10 0 5 10 20 30
(IN FEET)
1 inch = 10 ft.



PLAN



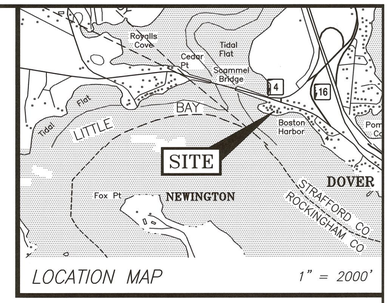
ELEVATION

NOTES:
1. ALL MATERIAL TO MEET FILTREXX SPECIFICATIONS.
2. FILLTREXX SYSTEM SHALL BE INSTALLED BY A CERTIFIED FILTREXX INSTALLER.
3. THE CONTRACTOR SHALL MAINTAIN THE COMPOST FILTRATION SYSTEM IN A FUNCTIONAL CONDITION AT ALL TIMES. IT WILL BE ROUTINELY INSPECTED AND REPAIRED WHEN REQUIRED.
4. SILTSOXX DEPICTED IS FOR MINIMUM SLOPES, GREATER SLOPES MAY REQUIRE ADDITIONAL PLACEMENTS.
5. THE COMPOST FILTER MATERIAL WILL BE DISPERSED ON SITE WHEN NO LONGER REQUIRED, AS DETERMINED BY THE ENGINEER.

1 / 301 FILTREXX® SILTSOXX™ FILTRATION SYSTEM
NTS

WETLAND NOTES:

1) HIGHEST OBSERVABLE TIDE LINE DELINEATED BY SAM HAYDEN, CWS NO. 321 ON 12/30/2024 IN ACCORDANCE WITH THE FOLLOWING STANDARDS:
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2) HOTL LINE WAS FIELD LOCATED BY HALEY WARD, INC.



LOCATION MAP 1" = 2000'

NOTES:

1. PARCEL IS SHOWN ON THE CITY OF DOVER'S ASSESSOR'S TAX MAP 7 AS LOT 6-0.
2. OWNERS OF RECORD:
   SHERYL & MARK ROSSIGNOL, TRUSTEES
   ROSSIGNOL FAMILY REVOCABLE TRUST OF 2016
   13 1/2 BOSTON HARBOR ROAD
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6. PROPOSAL IS TO RAISE THE RENOVATED STRUCTURE TO A PROPOSED 10.1 FINISHED FLOOR (FF) ELEVATION AND RE-WORK THE FRONT AND BACK ACCESS TO ACCOMMODATE THE NEW FF.

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SETBACKS:	FRONT	20 FEET (MIN.)
		35 FEET (MAX.)
	SIDE	20 FEET* (MIN.)
	REAR	30 FEET (MIN.)
MAXIMUM STRUCTURE HEIGHT:		35 FEET
MAXIMUM LOT COVERAGE:		30%

*PURSUANT TO ARTICLE V SECTION 170-14. D(1), THE REQUIRED SIDE YARD SETBACK IS REDUCED TO 10 FEET.

REV.	DATE	DESCRIPTION	BY	CHK.
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1	06/23/2025	REVISE MAIN STRUCTURES	SJR	JRC
0	05/27/2025	ISSUED FOR COMMENT	SJR	JRC

DRAWING ISSUE STATUS
SITE PLANS

HALEY WARD
ENGINEERING | ENVIRONMENTAL | SURVEYING
WWW.HALEYWARD.COM
200 Griffin Road, Unit 14
Portsmouth, NH 03801
603-430-9282

PROJECT
ROSSIGNOL RESIDENCE
13 1/2 BOSTON HARBOR ROAD, DOVER NH

TITLE
NHDES PERMIT PLAN

STATE OF NEW HAMPSHIRE - JOHN R. CHAGNON - 10581 - LICENSED PROFESSIONAL ENGINEER

DATE	SCALE
MAY 2025	1"=10'

DRAWN BY	DESIGNED BY	CHECKED BY
SJR	JRC	JRC

PROJECT No.	FIELD BOOK & PAGE
5010534.001	FB 419 PG 24

DRAWING No. **C-301** REV. **2**

P:\dwr\5010534-Jhwy_Boxing\cad\501-13 Boston Harbor Rd, Dover - FWV02-CAD_Fhwy2023 Shts\5010534.001 - C-3TE.dwg, 7/3/2025 7:41:40 AM

NHB25-1592 NEW HAMPSHIRE FISH AND GAME CONSERVATION MEASURES:

1. SHORTNOSE STURGEON (STATE AND FEDERALLY ENDANGERED), ATLANTIC STURGEON (STATE AND FEDERALLY THREATENED), NEW ENGLAND COTTONTAIL (STATE ENDANGERED), COMMON TERN (STATE THREATENED), CLIFF SWALLOW (STATE THREATENED), AND EASTERN MEADOWLARK (STATE THREATENED) OCCUR WITHIN THE VICINITY OF THE PROJECT AREA. ALL OPERATORS AND PERSONNEL WORKING ON OR ENTERING THE SITE SHOULD BE MADE AWARE OF THEIR POTENTIAL PRESENCE. SEE PLAN SHEET C-401.

2. NO IN-WATER WORK IS PROPOSED AND ALL WORK WILL BE CONDUCTED "IN THE DRY". IF WORK MUST BE CONDUCTED IN THE WATER NHFG MAY REQUIRE RECONSULTATION.

3. NO VEGETATION REMOVAL IS PROPOSED.

   a. SCRUB-SHRUB VEGETATION SHALL BE MAINTAINED ON SITE TO PROVIDE CONNECTIVITY IN THE LANDSCAPE FOR NEW ENGLAND COTTONTAIL.

4. IF NESTING CLIFF SWALLOWS ARE OBSERVED IN OR DIRECTLY ADJACENT TO THE PROJECT AREA, NHFG SHALL BE NOTIFIED FOR FURTHER COORDINATION AT 603-271-2461 AND BY EMAIL AT NHFGREVIEW@WILDLIFE.NH.GOV, WITH THE EMAIL SUBJECT LINE CONTAINING THE NHB DATA CHECK TOOL RESULTS LETTER ASSIGNED NUMBER, THE PROJECT NAME, AND THE TERM WILDLIFE SPECIES OBSERVATION. CLIFF SWALLOWS MAY NEST IN STRUCTURAL FIGURES ON NEARBY BUILDINGS SUCH AS EAVES, GUTTERS, DORMER, RAFTER, ROOF, OR SIMILAR FEATURES ON A STRUCTURE. SEE PLAN SHEETS C-201 & C-301.

5. EQUIPMENT AND MATERIALS SHALL NOT BE STAGED OR STORED IN THE MARSH UNTIL BEING INSTALLED. SEE PLAN SHEET C-301.

6. PROPER EROSION CONTROL SHALL BE INSTALLED TO PREVENT SEDIMENTATION FROM REACHING INTO THE WATERBODY. SEE PLAN SHEET C-301.

7. AVOID OR MINIMIZE THE USE OF FERTILIZERS IN UPLAND AREAS OR TRANSITION ZONES. IF FERTILIZERS ARE NECESSARY, USE ORGANIC VERSUS SYNTHETIC FERTILIZERS OPTIONS. SYNTHETIC OPTIONS SHOULD BE AVOIDED; HOWEVER, IF CHOSEN, THEY SHOULD BE CONTROLLED-RELEASED/SLOW-RELEASED AND AT LOW STRENGTHS. SEE PLAN SHEET C-301.

8. NATIVE SPECIES SHOULD BE USED FOR RESEEDING OR LANDSCAPING DISTURBED AREAS, IF APPLICABLE. SEE PLAN SHEETS C-301.

9. IF HYDROSEEDING IS DEEMED NECESSARY, THE MIX SHOULD NOT CONTAIN MICROPLASTICS AND DYES SHALL BE WATER-SOLUBLE AND ECO-FRIENDLY. HYDROSEEDING SHALL NOT OCCUR WITHIN 50 FEET OF THE RIVERS OR STREAMS TO MAINTAIN WATER QUALITY. SEE PLAN SHEET C-3001.

10. ALL MANUFACTURED EROSION AND SEDIMENT CONTROL PRODUCTS, WITH THE EXCEPTION OF TURF REINFORCEMENT MATS, UTILIZED FOR, BUT NOT LIMITED TO, SLOPE PROTECTION, RUNOFF DIVERSION, SLOPE INTERRUPTION, PERIMETER CONTROL, INLET PROTECTION, CHECK DAMS, AND SEDIMENT TRAPS SHOULD NOT CONTAIN PLASTIC, OR MULTIFILAMENT OR MONOFILAMENT POLYPROPYLENE NETTING OR MESH WITH AN OPENING SIZE OF GREATER THAN 1/8 INCHES. SEE PLAN SHEET C-301.

11. ALL OBSERVATIONS OF THREATENED OR ENDANGERED SPECIES ON THE PROJECT SITE SHOULD BE REPORTED IMMEDIATELY TO THE NHFG NONGAME AND ENDANGERED WILDLIFE ENVIRONMENTAL REVIEW PROGRAM BY PHONE AT 603-271-2461 AND BY EMAIL AT NHFGREVIEW@WILDLIFE.NH.GOV, WITH THE EMAIL SUBJECT LINE CONTAINING THE NHB DATACHECK TOOL RESULTS LETTER ASSIGNED NUMBER, THE PROJECT NAME, AND THE TERM WILDLIFE SPECIES OBSERVATION.
    a. PHOTOGRAPHS OF THE OBSERVED SPECIES AND NEARBY ELEMENTS OF HABITAT OR AREAS OF LAND DISTURBANCE SHOULD BE PROVIDED TO NHFG IN DIGITAL FORMAT AT THE ABOVE EMAIL ADDRESS FOR VERIFICATION, AS FEASIBLE.

12. IN THE EVENT A THREATENED OR ENDANGERED SPECIES IS OBSERVED ON THE PROJECT SITE DURING THE TERM OF THE PERMIT, THE SPECIES SHOULD NOT BE DISTURBED, HANDLED, OR HARMED IN ANY WAY PRIOR TO CONSULTATION WITH NHFG AND IMPLEMENTATION OF CORRECTIVE ACTIONS RECOMMENDED BY NHFG.

13. NHFG, INCLUDING ITS EMPLOYEES AND AUTHORIZED AGENTS, SHOULD HAVE ACCESS TO THE PROPERTY DURING THE TERM OF THE PERMIT.

REPORT OBSERVATIONS OF EASTERN MEADOWLARK

The NH Fish & Game Department is requesting observations of Eastern Meadowlark that could be encountered onsite.

Report sightings immediately to NHFG Wildlife Division at 603-271-2461 (M-F 8-4) or to NHFG Wildlife Biologist Melissa Winters 603-479-1129 (cell) anytime.

Please report promptly, noting specific location and date – Photographs strongly encouraged



Photo credit: Cornell lab of ornithology

- **State Threatened**
  - Possession and take prohibited.
  - Nests protected.
- Medium-sized bird (slightly larger but more compact than an American Robin, smaller than a Blue Jay) – 7.5-10.2 inches from tip to end of tail.
- Wingspan is 13.8-15.8 inches.
- Mottled brown back.
- Bright yellow throat and breast.
- Distinctive black "V" on chest.



Photo credit: Mike Allen

- Nesting occurs typically between mid-late May and early August
- Nests consist of 2-7 eggs.
- Eggs are white with brown speckles.
- May have more than 1 nest in a season.
- Nest is built on the ground with a roof of woven grasses, often not obvious when viewed directly from above.
- Incubation is for 13-16 days, nestling period lasts for 10-12 days



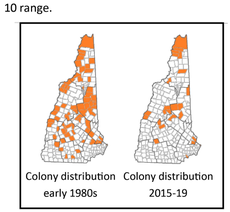
Photo credit: Mike Allen

- Adults may act agitated if disturbed within the vicinity of the nest. This may include:
  - Sharp alarm calls.
  - Flying from perch to perch, centered on a certain location.
  - Presence of two adults.

Cliff Swallows in New Hampshire: Fast Facts

Distribution and trends (see maps):
- Early 1980s: over 80 colonies
- Early 2000s: fewer than 40 colonies
- 2015-2019: 20-25 colonies

Existing colonies are primarily located in northern Coos County, with a second cluster in the Lakes Region. Most are on houses or barns, with two known sites on bridges. They range in size from single pairs to over 30, with most in the 5-10 range.



Colony distribution early 1980s | Colony distribution 2015-19

Migration:
- Arrive in early May and depart in August
- Rarely linger into September

Breeding:
- Lay eggs by end of May (sometimes later in the north)
- Incubation for two weeks
- Young leave nest in three weeks
- Most breeding completed by end of July

Cliff Swallows belong to a group of birds collectively known as "aerial insectivores," meaning that they feed primarily on insects caught while in flight. This group includes all swifts, swallows, flycatchers, and nightjars (nighthawks and whip-poor-wills), and shows some of the strongest declines among North American birds.

Most aerial insectivores in the Northeast are declining, and several additional species are considered "species of greatest conservation need" in New Hampshire including:

Common Nighthawk (endangered)
Purple Martin (threatened)
Bank Swallow
Chimney Swift
Eastern Whip-poor-will
Olive-sided Flycatcher

For more information on these species, please see the NH Wildlife Action Plan

https://www.wildlife.state.nh.us/wildlife/wap.html

For more detail on NH Cliff Swallows or to report sightings, contact Pam Hunt at NH Audubon (phunt@nhaudubon.org, 603-224-9909 x328). Additional information available at: https://www.cliffswallow.org/

Acknowledgments

Brochure developed by NH Audubon and the NH Fish and Game Department's Nongame Program with funding from a USFWS State Wildlife Grant and private donations.

NH AUDUBON

NH's Threatened

Cliff Swallows



Photo by Alan Schmierer

The Cliff Swallow (*Petrochelidon pyrrhonota*) is a colonial swallow that builds mud nests on vertical surfaces across most of North America. The number of colonies in New Hampshire has declined from over 80 in the 1980s to less than 25 today, and as a result it was added to the state's list of threatened species in 2017.



Cliff Swallow in a nest in Pittsburg (Pam Hunt)

The nest is gourd-shaped, made of mud, and attached to a vertical surface under an overhang (e.g., building eave). Nests are often very close together, even overlapping.

REV.	DATE	DESCRIPTION	BY	CHK.
0	08/18/2025	ISSUED FOR COMMENT	CBA	SNH

DRAWING ISSUE STATUS

DETAILS

HALEY WARD
ENGINEERING | ENVIRONMENTAL | SURVEYING
200 Griffin Rd. Unit 14
Portsmouth, NH 03801
603.430.9282
WWW.HALEYWARD.COM

PROJECT

ROSSIGNOL RESIDENCE
13 1/2 BOSTON HARBOR ROAD, DOVER NH

TITLE

NH FISH & GAME CONSERVATION MEASURES

DATE	SCALE
MAY 2025	AS NOTED

DRAWN BY	DESIGNED BY	CHECKED BY
CBA	**	SNH

PROJECT No. 5010534.001

DRAWING No. **C-401** REV. **0**

FILE LOCATION: P:\MS5\10534-SHERYL_ROSSIGNOL\001-13 5 BOSTON HARBOR RD, DOVER - PAYGO\CAD_FILES\2025 SITE\5010534.001-C-SITE.DWG, 2025.08.18, 12:51 PM

US Army Corps of Engineers ®
New England District

Appendix B

New Hampshire General Permits (GPs)
Required Information and Corps Secondary Impacts Checklist

In order for the Corps of Engineers to properly evaluate your application, applicants must submit the following information along with the New Hampshire DES Wetlands Bureau application or permit notification forms. Some projects may require more information. For a more comprehensive checklist, go to https://www.nae.usace.army.mil/Missions/Regulatory/ "Useful Documents, Forms and Publications" and then "Corps Application Form and Guidance." Check with the Corps at (978) 318-8832 for project-specific requirements. For your convenience, this Appendix B is also attached to the State of New Hampshire DES Wetlands Bureau application and Permit by Notification forms.

All Projects:

- New Hampshire Department of Environmental Services (DES) Wetlands Permit Application.
- Request for Project Review Form by the New Hampshire Division of Historical Resources (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 mean low water (MLW) and mean high water (MHW) elevations. Show the high tide line (HTL) elevations when fill is involved. In other waters, show ordinary high water (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), mean high water (MHW), mean low water (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 Federal Navigation Project 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 Federal Navigation Project;
    - 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 Corps 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 the Corps for guidance.

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)

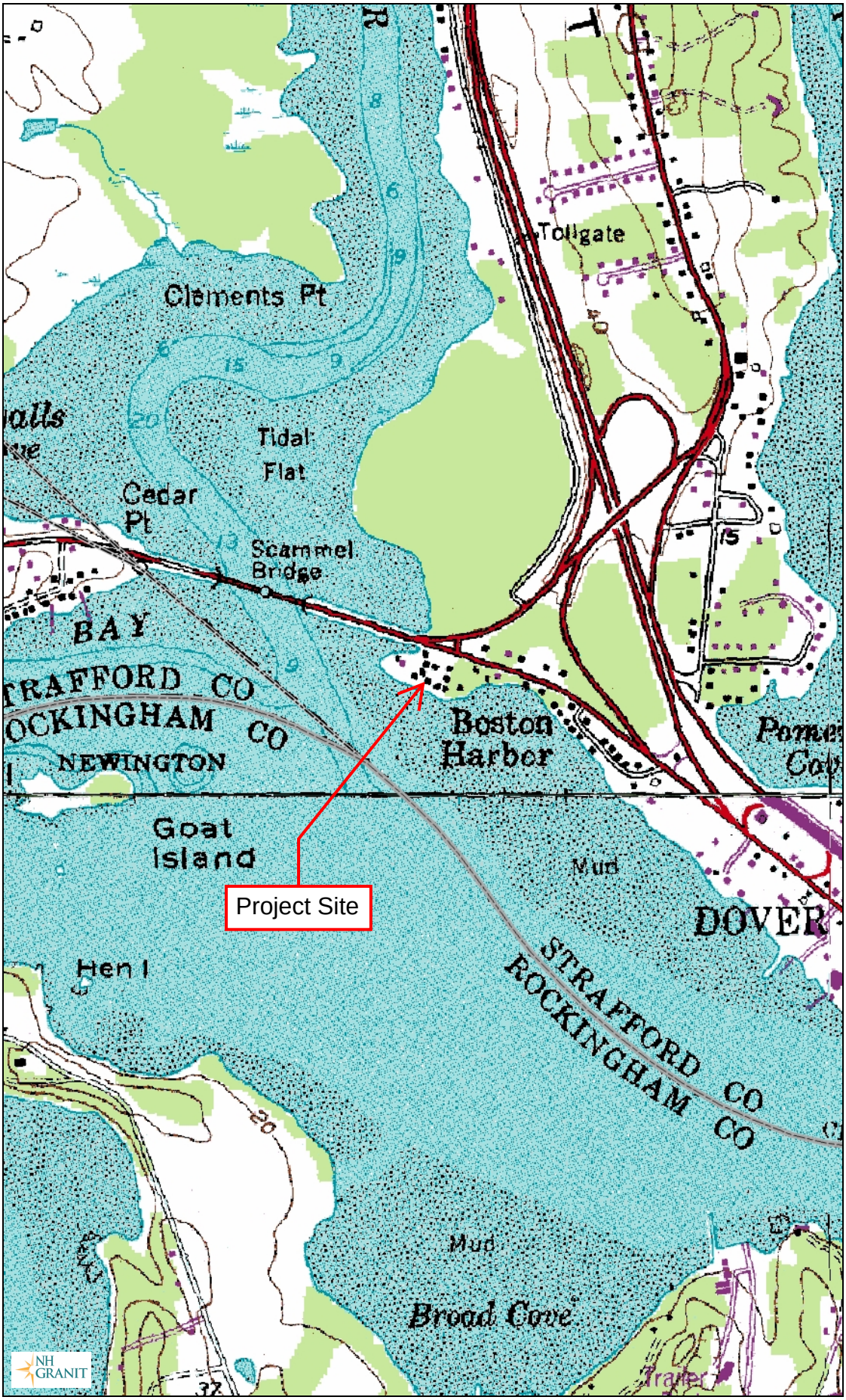
1. Attach any explanations to this checklist. Lack of information could delay a Corps permit determination.
2. All references to "work" include all work associated with the project construction and operation. Work includes filling, clearing, flooding, draining, excavation, dozing, stumping, etc.
3. See 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?		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?	N/A	
2.7 What is the area of the proposed fill in wetlands?	N/A	
2.8 What is the % of previously and proposed fill in wetlands to the overall project site?	N/A	
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?		X
4. Flooding/Floodplain Values	Yes	No
4.1 Is the proposed project within the 100-year floodplain of an adjacent river or stream?	X	
4.2 If 4.1 is yes, will compensatory flood storage be provided if the project results in a loss of flood storage?		X
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**		N/A

*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.

Map by NH GRANIT



Legend

- State
- County
- City/Town
- World Imagery
- Low Resolution 15m Imager
- High Resolution 60cm Image
- High Resolution 30cm Image
- Citations
- 4.8m Resolution Metadata

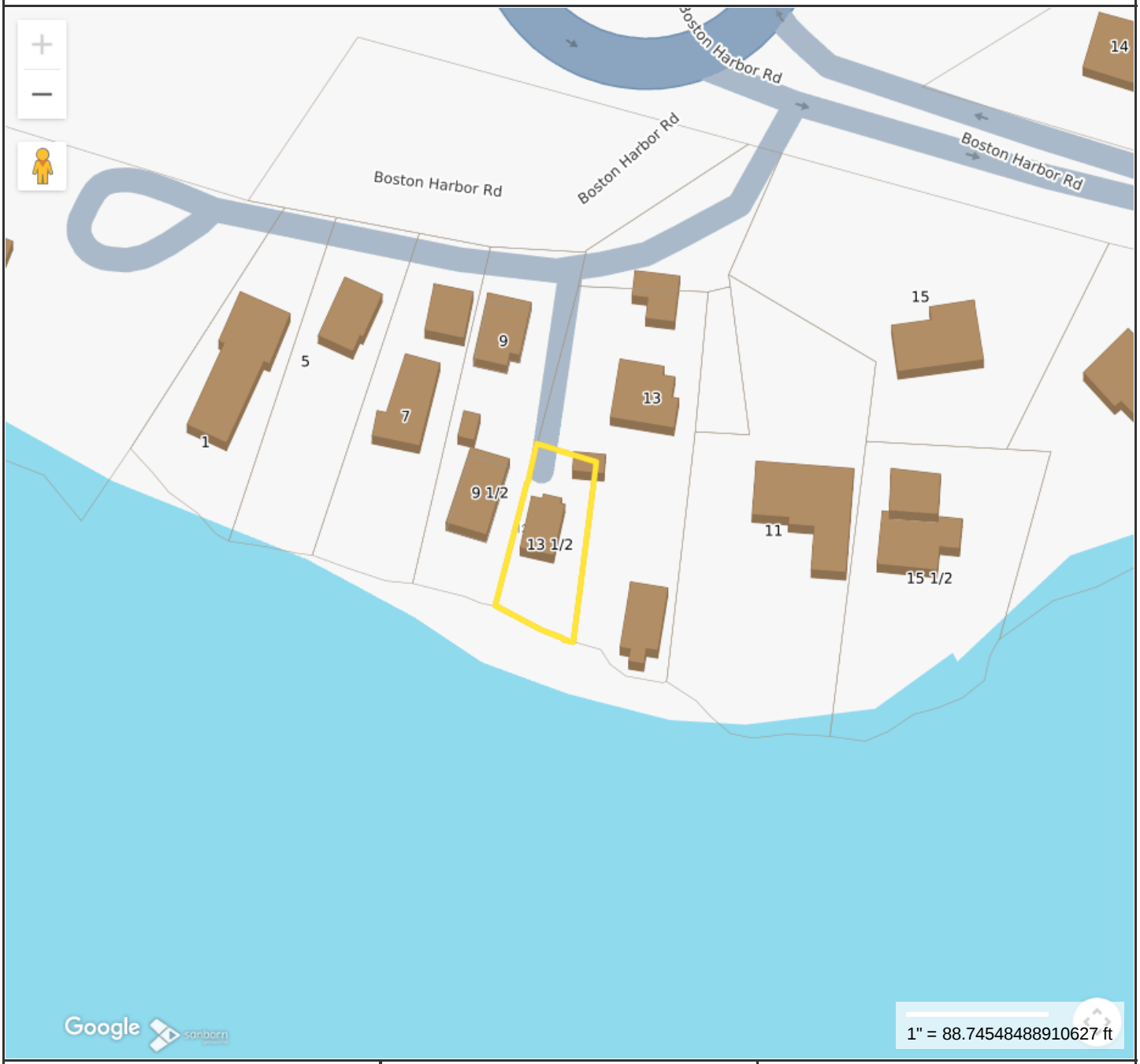
Map Scale

1: 12,988

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Map Generated: 7/24/2025

Notes



Property Information

Location	13 BOSTON HARBOR RD
Owner	ROSSIGNOL SHERYL J & MARK B TRUSTEES
Land Use	101R
Zoning Code	R-20
Property Id	07006-000000

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

City of Dover, 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 10/30/2023
Data updated Daily

Print map scale is approximate. Critical layout or measurement activities should not be done using this resource.

Ambit Engineering Abutter List

Rossingnol Residence
13 1/2 Boston Harbor Road
Dover NH

Job # 5010534.001

Applicant/Owner(s)

Map	Lot	Deed	Owner (s) First/Trust	Owner(s) Last, Trustee	Mailing Address	City	State	Zip
R13	9		Gerrish Kimberly K Revocable Trust	Todd and Kimberly Gerrish	12 Liam's Court	Greenland	NH	03840

Engineer	**#REF!**		**#REF!**		

Other Consultants					
Other Consultants					
Other Consultants					

Job # 010534.001 **Abutters**

Map	Lot	Deed	Owner(s) First/Trust	Owner(s) Last /Trustee	Mailing Address	City	State	Zip
R13	9		Ashley Phelps		9 Boston Harbor Road	Dover	NH	03820
R13	9 1/2		CTFC Properties LLC		23 Boston Harbor Road	Dover	NH	03820
R12	9 1/2		Boston Harbor Condominium Association		9 1/2 Boston Harbor Road	Dover	NH	03820
	13		Ozkurt Family Revocable Trust of 2024	Ozkurt Halil & Melissa Trustees	13 Boston Harbor Road,	Dover	NH	03820

Ambit Engineering Abutter List

Job #	010534.001		Abutters					
Map	Lot	Deed	Owner(s) First/Trust	Owner(s) Last /Trustee	Mailing Address	City	State	Zip

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CTFC Properties LLC
23 Boston Harbor Road
Dover, NH, 03820

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Dover, NH, 03820

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Ashley Phelps
9 Boston Harbor Road
Dover, NH, 03820

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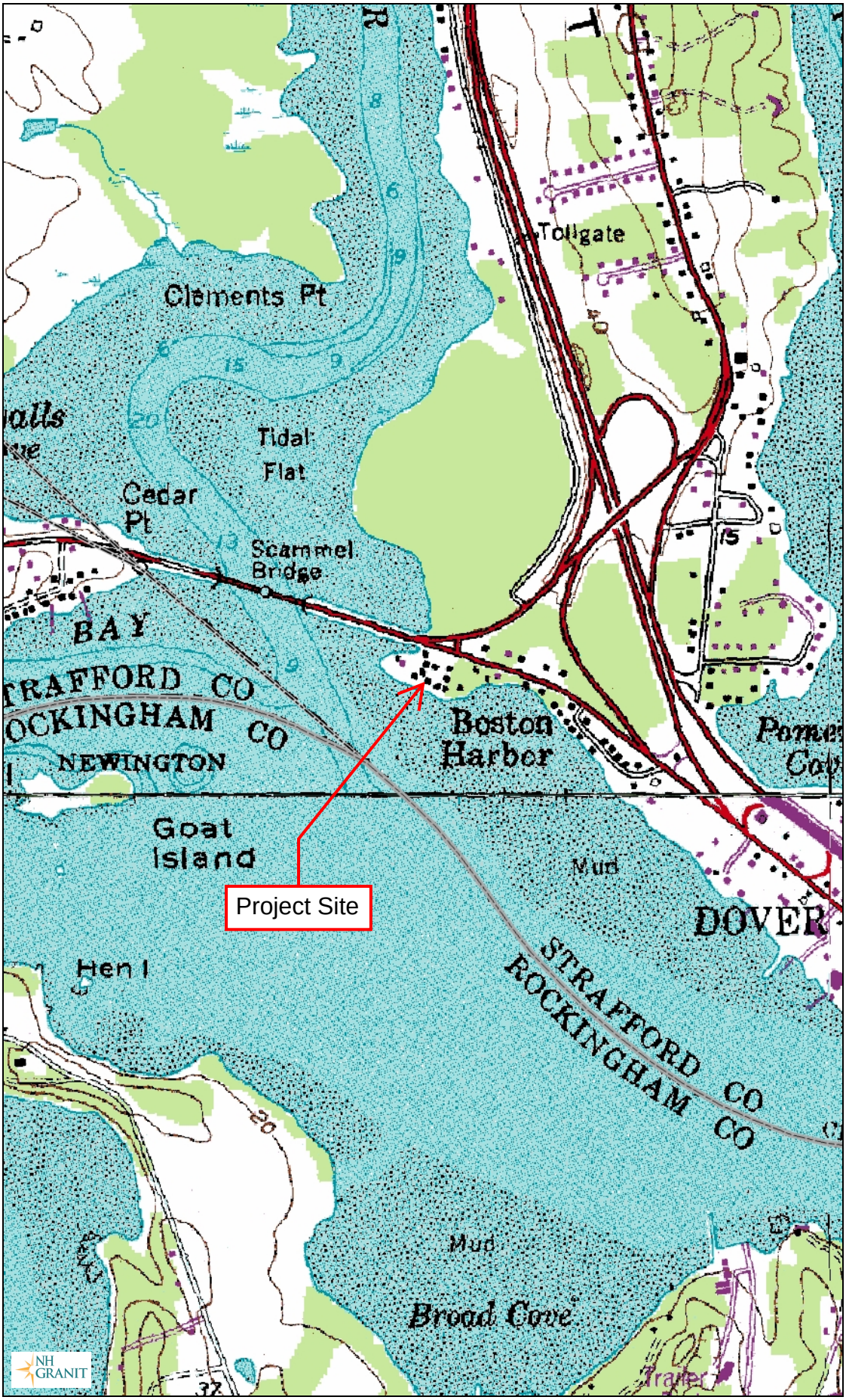
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Ozkurt Family Revocable Trust
13 Boston Harbor Road
Dover, NH, 03820-4645

USPS GREENLAND, NH 03840 AUG 20 2025 Postmark Here

PS Form 3800, January 2023 PSN 7530-02-000-9047 See Reverse for Instructions

Map by NH GRANIT



Legend

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- High Resolution 30cm Image
- Citations
- 4.8m Resolution Metadata

Map Scale

1: 12,988

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Map Generated: 7/24/2025

Notes

PHOTOGRAPHIC LOG
Rosignol Residence

Photo No. 1 **Photo Date:** 12/20/2024 **Site Location:** 13 ½ Boston Harbor Road, Dover, NH **Description:** View facing southwest of structure and northern porch. **Photo By:** MM	

Photo No. 2 **Photo Date:** 12/20/2024 **Site Location:** 13 ½ Boston Harbor Road, Dover, NH **Description:** View facing west of existing structure. Both porches visible. **Photo By:** MM	

PHOTOGRAPHIC LOG
Rosignol Residence

Photo No. 3 **Photo Date:** 12/20/2024 **Site Location:** 13 ½ Boston Harbor Road, Dover, NH **Description:** View northwest of existing structure and existing southern porch. **Photo By:** MM	

Photo No. 4 **Photo Date:** 12/20/2024 **Site Location:** 13 ½ Boston Harbor Road, Dover, NH **Description:** View facing northeast of existing structure. **Photo By:** MM	

PHOTOGRAPHIC LOG
Rosignol Residence

Photo No. 5	5
Photo Date: 12/20/2024	
Site Location: 13 ½ Boston Harbor Road, Dover, NH	
Description: View facing east of existing southern porch and maintained lawn adjacent to the resource.	
Photo By: MM	



Photo No. 5	5
Photo Date: 12/20/2024	
Site Location: 13 ½ Boston Harbor Road, Dover, NH	
Description: North of existing structure, salt marsh, and sparsely vegetated intertidal zone. No work proposed in this area.	
Photo By: MM	



DataCheck Results Letter
For NHDES Ecological Review

To: Sam Hayden, HaleyWard
200 Griffin Road Unit #3
Portsmouth, NH 03801
shayden@haleyward.com

From: Ecological Review Section
NH Department of Environmental Services
Main Contact: Maddie Severance - nhbreview@dncr.nh.gov

cc: NHFG Review, David Simmons

Date: 07/03/2025 (valid until 07/03/2026)
Re: DataCheck Review by NHDES Ecological Review Section and NH Fish & Game
Permits: NHDES - Standard Dredge & Fill - Minimum; or Expedited

DCT ID: NHB25-1819

Town: Dover
Location: 13 1/2 Boston Harbor Road

Project Description: Raising an existing building within its current footprint. Expansion is for additional stairs to reach ground floor after building raised.

Next Steps for Applicant:

NHDES's Ecological Review Section has searched the Natural Heritage Bureau's (NHB) database of rare species and exemplary natural communities. Please carefully read the comments below and the consultation requirements on the following page.

Plant and Natural Community Comments: No comments at this time.

Wildlife Comments: Please refer to NHFG consultation requirements below.

Plant and Natural Community Consultation

If this DataCheck letter includes records of rare plants and/or natural communities/systems, please contact the Ecological Review Section and provide any requested supplementary materials by emailing nhbreview@dncr.nh.gov.

If this DataCheck letter DOES NOT include any records of rare plants and/or natural communities/systems, no further consultation with the Ecological Review Section regarding rare plants and/or natural communities/systems is required.

Wildlife Consultation

If this 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 (NHFG) pursuant to Fis 1004 is required.

If this 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 DataCheck results letter number and "Fis 1004 consultation request" in the subject line.

If the 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 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 refer to this list when coordinating.

Vertebrate species	State[1]	Federal	Notes
Atlantic Sturgeon (*Acipenser oxyrinchus oxyrinchus*)	T	T	Contact the NH Fish & Game Dept (see above) and the US Fish & Wildlife Service (see below).
Cliff Swallow (*Petrochelidon pyrrhonota*)	T	--	Contact the NH Fish & Game Dept (see above).
Common Tern (*Sterna hirundo*)	T	--	Contact the NH Fish & Game Dept (see above).
Eastern Meadowlark (*Sturnella magna*)	T	--	Contact the NH Fish & Game Dept (see above).
New England Cottontail (*Sylvilagus transitionalis*)	E	--	Contact the NH Fish & Game Dept (see above).
Shortnose Sturgeon (*Acipenser brevirostrum*)	E	E	Contact the NH Fish & Game Dept (see above) and the US Fish & Wildlife Service (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. Contact for federally-listed animals: David Simmons, USFWS, at (603) 223-2541. Contact for federally-listed species: David Simmons, USFWS, at (603) 223-2541.

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.
Surveys are recommended to determine what species/natural communities are present onsite.

DataCheck Results Letter
For NHDES Ecological Review

Please note: Effective June 10th, 2025, DataCheck letters will no longer include specific locations of rare species and exemplary natural communities. Changes to the map have been made to reflect this update.

Important: The list of rare species and exemplary natural communities that may be impacted by the project is included. Please refer to that list when coordinating.

NHB25-1819



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.:

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 intent of the project is to increase the elevation of the first floor of an existing structure within the Flood Hazard Zone. Temporary impacts of 869 sq.ft. are anticipated for construction around the existing house. Once the first floor is raised, the front and back porches must be reconfigured to allow for additional steps to reach the ground floor. This reconfiguration will not increase the impervious area of the lot, nor will it move the primary structure closer to the resource.

The proposed layout of the new stairs overlaid on the old stairs can be seen in Sheet C-201 of the attached plan set.

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.

The project does not propose direct impacts to the resource or increase impervious surface area on the lot. All impacts will be temporary during construction. Industry standard temporary erosion and sedimentation controls will be utilized to prevent sediment leaving the site and entering the resource. These will remain in place until the workspace is returned to pre-construciton conditions and permanently stabilized with vegetation.

Provide a narrative showing how the project meets the standard conditions in Env-Wt 307 and the approval criteria in Env-Wt 313.01.

307.03, .04, .12 - The project will utilize erosion and sedimentation controls to prevent sediment leaving the site. These controls will be maintained through construction and removed following permanent site stabilization.

307.04 - Substantial earthwork or importation of materials which may contain seeds / propagules is not proposed.

307.06 - The project has consulted with NHB and NHFG and will implement their comments.

307.07 - Project will comply with RSA 483-B and has been designed to comply with env-Wq 1400.

307.08, .09, .10 - The project does not impact designated prime wetland buffers or propose shoreline structures or dredging.

307.16 - The contractor will be monitored to ensure compliance with the plans.

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 project has avoided and minimized to the greatest extent practicable by avaoiding any increase in impervious coverage on the lot. The changes to the decks are minimal, necessary to add additional stairs, and will not extend the primary structure closer to the reference line.

A construction sequence is included on Sheet C-301 of the attached plan set.

The completed project will be maintained in a similar manner to the current maintenance. Periodic mowing to maintain vegetative cover on the lanw and typical residential upkeep.

☒ 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.

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.

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.

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.

Identify areas of the proposed project site subject to flooding from SLR.

Identify areas currently located within the 100-year floodplain and subject to coastal flood risk.

Describe how the project design will consider and address the selected SLR scenario within the project design life, including in the design plans.

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:

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.

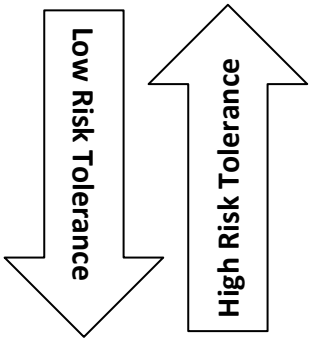
SECTION 10 – GUIDANCE

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.

8/21/2025

Wetland Inspector
New Hampshire Department of Environmental Services
Wetlands Bureau
29 Hazen Drive / P.O. Box 95
Concord, New Hampshire 03302

Re: NHDES Minimum Impact Wetland Permit Application, Tax Map 7, Lot 6, 13 ½ Boston Harbor Road, New Hampshire

Dear Wetland Inspector:

This letter transmits a New Hampshire Department of Environmental Services (NHDES) Minimum Impact Wetland Permit Application request to permit a reconfiguration of two porches attached to a primary structure which will result in temporary impacts to the previously developed 100' TBZ of 869 sq. ft.

Attached to this application you will find a NHDES Permit Plan (Sheet V-101) which depicts the existing lot, jurisdictional areas, abutting parcels, existing structures, proposed work, and temporary impact areas. Also attached to this application is a full plan set that includes an Existing Conditions Plan - V101 and a City of Dover Site Plan - C201.

Per Env-Wt 306.05, Certified Wetland Scientist Sam Hayden from Haley Ward. 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 on the attached plan set. Because this is a minimum impact project, a Coastal Vulnerability Assessment and Coastal Functional Assessment have not been completed, as Env-Wt 603.02(c) only require these for standard minor or major applications.

The project is necessary to increase the height of the ground floor of a structure within the Flood Hazard Zone as determined by the Federal Emergency Management Agency (Zone X, elevation 6 feet). By raising the height of the ground floor, additional stairs are required to reach this floor elevation from grade. The project has been designed to avoid increasing total impervious lot coverage and to maintain the existing distance from the primary structure to the HOTL (26.0').

200 GRIFFIN RD. UNIT 14, PORTSMOUTH, NH 03802 603.430.9282 | HALEYWARD.COM

All efforts to avoid and minimize have been taken during the design phase. 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, proposed structures, and temporary impact areas. 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 310 and Env-Wt 603 have been evaluated and addressed below.

603.06 – Narrative
The project will protect water quality by utilizing standard erosion and sedimentation controls to prevent exposed soils or temporary stockpiles from being mobilized into adjacent natural resources. These will remain in place until permanent stabilization by vegetation is achieved. The project does not propose major grading or disturbance of soils, nor significant importation of fill which can carry invasive species seeds or propagules. Additionally, the area is maintained as a lawn which will combat the establishment of expanding populations of invasive species. Rare-Threatened, or endangered species and critical habitat has been protected by consulting with NH NHB and NHF&G and integrating their comments into the plan set.

The project is limited to modification of a non-shoreline structure. The design avoided and minimized to the greatest extent practicable by avoiding any increase in impervious surfaces on the lot while still adding additional stairs to allow access to the house.

All criteria in Env-Wt 313.01 have been met by the design and application.

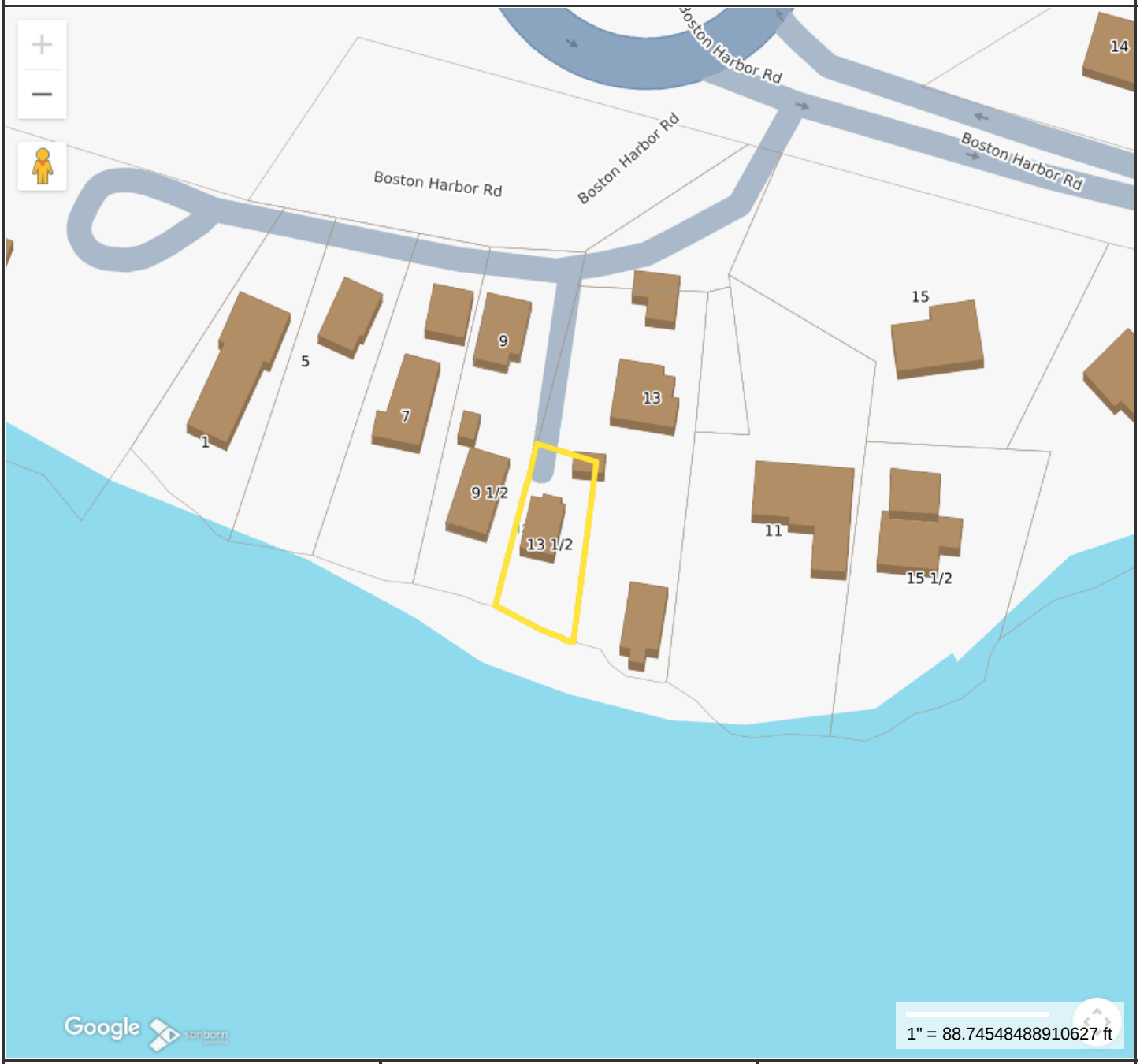
Although a Coastal Vulnerability Assessment is not required for Expedited application, the project is intended to increase the elevation of the ground floor to address flooding concerns. The footprint of the existing residence is not changing. Minor changes to the attached decks are proposed to reach the new ground floor elevation, but these decks are much more robust and indifferent to flooding. The project will reduce flooding risk due to SLR.

Please contact me if you have any questions or concerns regarding this application.

Respectfully submitted,



Sam Hayden, CWS
Project Scientist
shayden@haleyward.com



Property Information

Location	13 BOSTON HARBOR RD
Owner	ROSSIGNOL SHERYL J & MARK B TRUSTEES
Land Use	101R
Zoning Code	R-20
Property Id	07006-000000

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

City of Dover, 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 10/30/2023
Data updated Daily

Print map scale is approximate. Critical layout or measurement activities should not be done using this resource.

PHOTOGRAPHIC LOG
Rosignol Residence

Photo No. 1 **Photo Date:** 12/20/2024 **Site Location:** 13 ½ Boston Harbor Road, Dover, NH **Description:** View facing southwest of structure and northern porch. **Photo By:** MM	

Photo No. 2 **Photo Date:** 12/20/2024 **Site Location:** 13 ½ Boston Harbor Road, Dover, NH **Description:** View facing west of existing structure. Both porches visible. **Photo By:** MM	

PHOTOGRAPHIC LOG
Rosignol Residence

Photo No. 3 **Photo Date:** 12/20/2024 **Site Location:** 13 ½ Boston Harbor Road, Dover, NH **Description:** View northwest of existing structure and existing southern porch. **Photo By:** MM	

Photo No. 4 **Photo Date:** 12/20/2024 **Site Location:** 13 ½ Boston Harbor Road, Dover, NH **Description:** View facing northeast of existing structure. **Photo By:** MM	

PHOTOGRAPHIC LOG
Rosignol Residence

Photo No. 5	5
Photo Date: 12/20/2024	
Site Location: 13 ½ Boston Harbor Road, Dover, NH	
Description: View facing east of existing southern porch and maintained lawn adjacent to the resource.	
Photo By: MM	



Photo No. 5	5
Photo Date: 12/20/2024	
Site Location: 13 ½ Boston Harbor Road, Dover, NH	
Description: North of existing structure, salt marsh, and sparsely vegetated intertidal zone. No work proposed in this area.	
Photo By: MM	



PLAN REFERENCES:

1) PLAN OF LAND PREPARED FOR ANDREW AND HELEN MIKSENAS, 7 BOSTON HARBOR ROAD, DOVER, NEW HAMPSHIRE. PREPARED BY McENEANEY SURVEY ASSOCIATES, INC. DATED OCTOBER 25, 1995. S.C.R.D. PLAN 47–6.

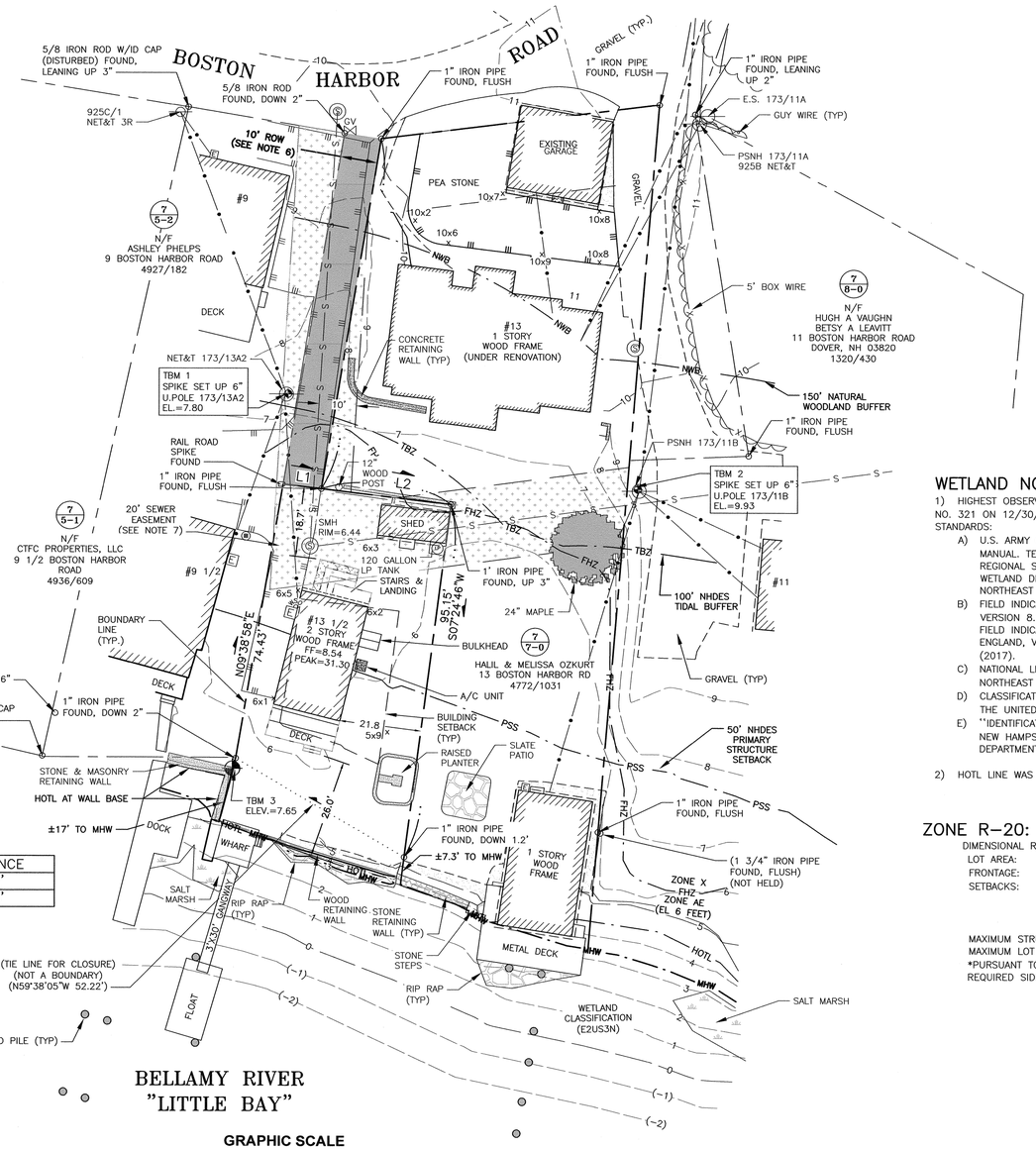
2) BOSTON HARBOR CONDOMINIUM SITE & PROFILE PLANS FOR PROPERTY AT 9 1/2 BOSTON HARBOR ROAD, DOVER, STRAFFORD COUNTY, NEW HAMPSHIRE, OWNED BY ROBERT W. STICKNEY & JOANNE STICKNEY 9 1/2 BOSTON HARBOR ROAD, DOVER, NH 03820. PREPARED BY EASTERLY SURVEYING, INC. DATED FEBRUARY 15, 2019. S.C.R.D. PLAN 118–30.

3) PLAN OF LAND PREPARED FOR ANDRE J. MESSIER, III & JENNIFER S. MESSIER, (LOT 7/6), 13 1/2 BOSTON HARBOR ROAD, DOVER, NH. PREPARED BY BOUDREAU LAND SURVEYING. DATED JULY 23, 2014. S.C.R.D. PLAN 107–96.

4) BOUNDARY ADJUSTMENT PLAN PREPARED FOR HUGH A VAUGHN & BETSY LEAVITT–VAUGHN DOVER, NH. PREPARED BY THOMAS F MORAN, INC, DATED: NOVEMBER 22, 1988, S.C.R.D PLAN 37–64.

LEGEND:

N/F	NOW OR FORMERLY
RP	RECORD OF PROBATE
SCRD	STRAFFORD COUNTY REGISTRY OF DEEDS
11/21	MAP 11 / LOT 21
	RAILROAD SPIKE FOUND
	IRON ROD/IRON PIPE FOUND
	IRON PIPE FOUND
	STONE/CONCRETE BOUND FOUND
	RAILROAD SPIKE SET
	IRON ROD SET
	DRILL HOLE SET
	GRANITE BOUND SET
	BOUNDARY
	BUILDING SETBACK
MHW	MEAN HIGH WATER LINE
MLW	MEAN LOW WATER LINE
HOTL	NH DES HIGHEST OBSERVABLE TIDE LINE
	FRESHWATER WETLAND LINE
WB	WETLAND BUFFER LINE
	OVERHEAD ELECTRIC/WIRES
100	CONTOUR
97x3	SPOT ELEVATION
	EDGE OF PAVEMENT (EP)
	WOODS / TREE LINE
	UTILITY POLE (w/ GUY)
	GAS SHUT OFF
	WATER SHUT OFF/CURB STOP
GV	GATE VALVE
HYD	HYDRANT
GWE	METER (GAS, WATER, ELECTRIC)
A–1	EDGE OF WETLAND FLAGGING
	SWAMP / MARSH
EL.	ELEVATION
EP	EDGE OF PAVEMENT
FF	FINISHED FLOOR
INV.	INVERT
TBM	TEMPORARY BENCHMARK
TYP.	TYPICAL
LSA	LANDSCAPED AREA
SMH	SEWER MANHOLE
	10' ROW



LENGTH TABLE

LINE	BEARING	DISTANCE
L1	S83°15'09"E	10.32'
L2	S83°03'23"E	34.86'



"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."

LLS 4/27/2025

PHILIP A. YETMAN, LLS 1122 DATE

GRAPHIC SCALE

20 0 10 20 40 60

(IN FEET)
1 inch = 20 ft.

NORTH NAD83(2011)

N

GRID NHSPC

WETLAND NOTES:

1) HIGHEST OBSERVABLE TIDE LINE DELINEATED BY SAM HAYDEN, CWS NO. 321 ON 12/30/2024 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. NEIWPCC 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.

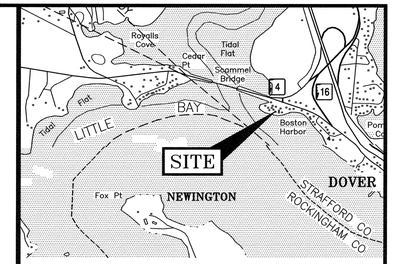
2) HOTL LINE WAS FIELD LOCATED BY HALEY WARD, INC.

ZONE R–20:

DIMENSIONAL REQUIREMENTS:

LOT AREA:		20,000 S.F. (MIN.)
FRONTAGE:		125 FEET (MIN.)
SETBACKS:	FRONT	20 FEET (MIN.)
		35 FEET (MAX.)
	SIDE	20 FEET* (MIN.)
	REAR	30 FEET (MIN.)
MAXIMUM STRUCTURE HEIGHT:		35 FEET
MAXIMUM LOT COVERAGE:		30%

*PURSUANT TO ARTICLE V SECTION 170–14. D(1), THE REQUIRED SIDE YARD SETBACK IS REDUCED TO 10 FEET.



LOCATION MAP 1" = 2000'

NOTES:

1. PARCEL IS SHOWN ON THE CITY OF DOVER'S ASSESSOR'S TAX MAP 7 AS LOT 6–0.
2. OWNERS OF RECORD:
   SHERYL & MARK ROSSIGNOL, TRUSTEES
   ROSSIGNOL FAMILY REVOCABLE TRUST OF 2016
   13 1/2 BOSTON HARBOR ROAD
   DOVER, NH 03820
   DEED BOOK 5198, PAGE 698
3. A MAJORITY PORTION OF THE PARCEL IS GRAPHICALLY LOCATED IN A SPECIAL FLOOD HAZARD AREA ZONE AE (EL 6 FEET) AS SHOWN ON FIRM PANEL 33017C0340E. EFFECTIVE DATE SEPTEMBER 30, 2015.
4. EXISTING LOT AREA (TO MEAN HIGH WATER):
   4,635± S.F.
   0.106± ACRES
5. PARCEL IS LOCATED IN THE LOW DENSITY RESIDENTIAL (R–20) ZONING DISRICT.
6. PARCEL IS BENEFITED BY A 10' ROW AS DESCRIBED IN DEED BOOK 1079, PAGE 791 AND A PERMANENT DRIVEWAY ACCESS EASEMENT AS DESCRIBED IN DEED BOOK 4579, PAGE 34.
7. THIS PARCEL IS SUBJECT TO OR BENEFITS FROM A 20 FOOT WIDE SEWER EASEMENT AS DESCRIBED IN DEED BOOK 1006 PAGE 453 (BOOK 1010 PAGE 450–PLAN).
8. THE PURPOSE OF THIS PLAN IS TO SHOW THE RESULTS OF A STANDARD BOUNDARY SURVEY OF ASSESSOR'S TAX MAP 7, LOT 6–0 IN THE CITY OF DOVER, NH.
9. VERTICAL DATUM IS NAVD88. BASIS OF VERTICAL DATUM IS REDUNDANT RTN GNSS OBSERVATIONS.
10. THE ENTIRE PARCEL IS WITHIN THE 250' NHDES PROTECTED SHORELAND.
11. ABUTTER INFORMATION TAKEN FROM THE CITY OF DOVER'S ASSESSORS GIS WEBSITE.
12. BUILDING MEASUREMENTS ARE TO SIDING.

REV.	DATE	DESCRIPTION	BY	CHK
1	05/27/2025	UPDATE/ADD INSTALLED DOCK	SJR	JRC
0	12/20/2024	ISSUED FOR COMMENT	—	—

DRAWING ISSUE STATUS

SITE SURVEY

HALEY WARD
ENGINEERING | ENVIRONMENTAL | SURVEYING
WWW.HALEYWARD.COM
200 Griffin Road, Unit 14
Portsmouth, NH 03801
603-430-9282

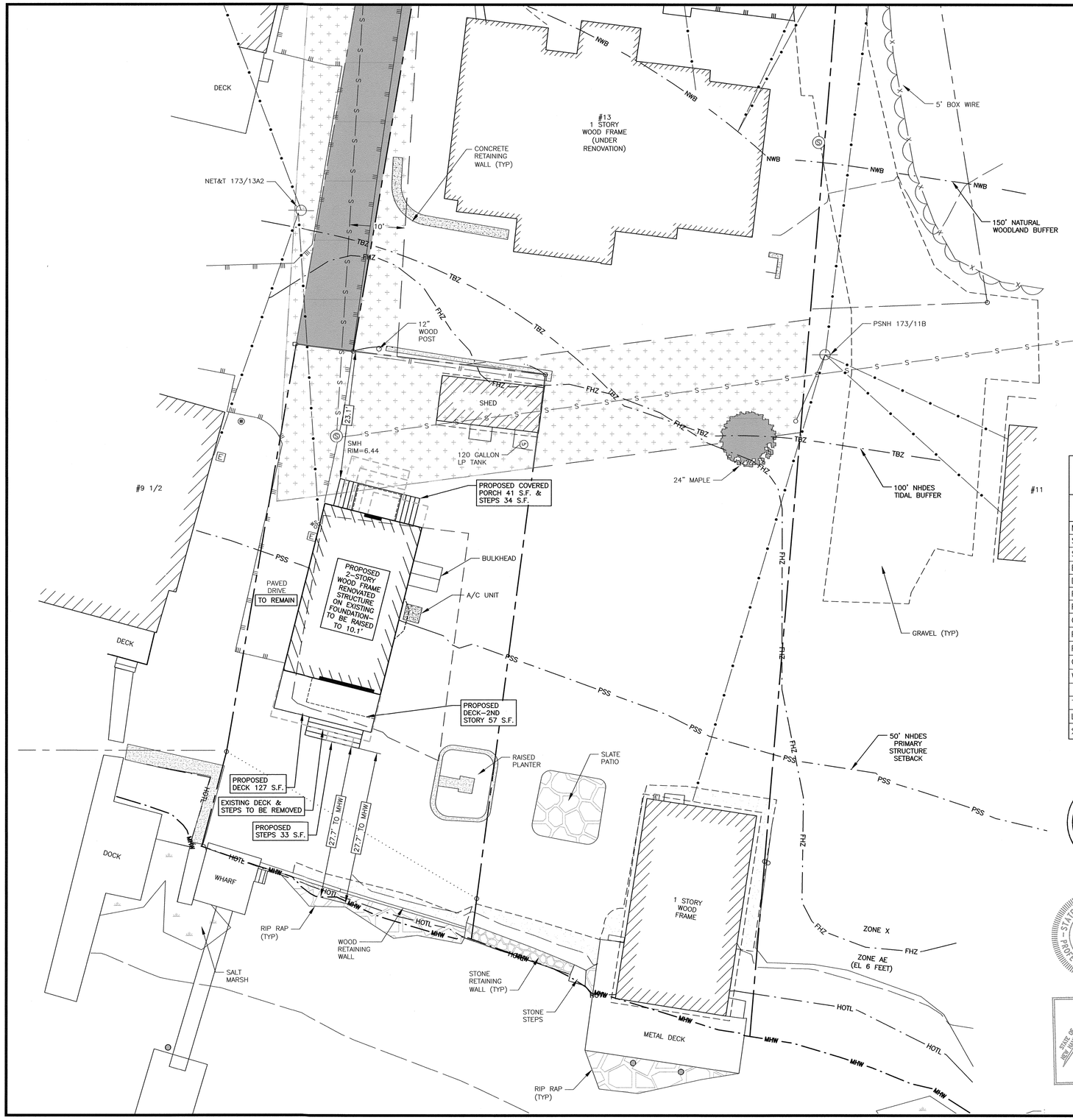
PROJECT

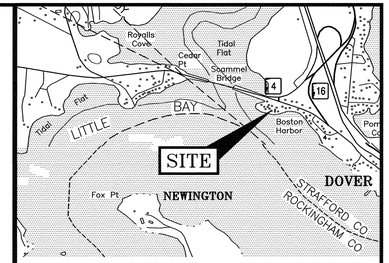
ROSSIGNOL RESIDENCE
13 1/2 BOSTON HARBOR ROAD, DOVER NH

TITLE

EXISTING CONDITIONS PLAN

DATE: DECEMBER 2024	SCALE: AS NOTED
DRAWN BY: PAY	DESIGNED BY: —
CHECKED BY: —	
PROJECT No.: 5010534.001	FIELD BOOK & PAGE: FB 419 PG 24
DRAWING No.: V-101	REV.: 1





LOCATION MAP 1" = 2000'

IMPERVIOUS SURFACE AREAS
(TO PROPERTY LINES)

STRUCTURE	PRE-CONSTRUCTION IMPERVIOUS (S.F.)	POST-CONSTRUCTION IMPERVIOUS (S.F.)
MAIN STRUCTURE	558	558
SHED	151	151
STEPS/LANDINGS	88	77
BULKHEAD	24	24
DECKS	194	127
PORCHES	0	41
RETAINING WALLS	55	52
GRAVEL	72	72
PAVED DRIVEWAY	538	538
PATIO	14	14
CONCRETE/PADS	8	8
WHARF	14	14
TOTAL	1,716	1,676
LOT SIZE	4,635	4,635
% LOT COVERAGE	37.0%	36.2%

NOTES:

1. PARCEL IS SHOWN ON THE CITY OF DOVER'S ASSESSOR'S TAX MAP 7 AS LOT 6-0.
2. OWNERS OF RECORD:
   SHERYL & MARK ROSSIGNOL, TRUSTEES
   ROSSIGNOL FAMILY REVOCABLE TRUST OF 2016
   13 1/2 BOSTON HARBOR ROAD
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4. EXISTING LOT AREA (TO MEAN HIGH WATER):
   4,635± S.F.
   0.106± ACRES
5. PARCEL IS LOCATED IN THE LOW DENSITY RESIDENTIAL (R-20) ZONING DISTRICT.
6. PROPOSAL IS TO RAISE THE RENOVATED STRUCTURE TO A PROPOSED 10.1 FINISHED FLOOR (FF) ELEVATION AND RE-WORK THE FRONT AND BACK ACCESS TO ACCOMMODATE THE NEW FF.

ZONE R-20:

DIMENSIONAL REQUIREMENTS:

LOT AREA:		20,000 S.F. (MIN.)
FRONTAGE:		125 FEET (MIN.)
SETBACKS:	FRONT	20 FEET (MIN.)
		35 FEET (MAX.)
	SIDE	20 FEET* (MIN.)
	REAR	30 FEET (MIN.)
MAXIMUM STRUCTURE HEIGHT:		35 FEET
MAXIMUM LOT COVERAGE:		30%

*PURSUANT TO ARTICLE V SECTION 170-14. D(1), THE REQUIRED SIDE YARD SETBACK IS REDUCED TO 10 FEET.

STATE OF NEW HAMPSHIRE
SAMUEL N HAYDEN
No. 321
7/1/25
CERTIFIED WETLAND SCIENTIST

STATE OF NEW HAMPSHIRE
JOHN R. CHAGNON
No. 7651
LICENSED PROFESSIONAL ENGINEER

STATE OF NEW HAMPSHIRE
No. 238
JOHN R. CHAGNON
SIGNATURE
LICENSED LAND SURVEYOR

WETLAND NOTES:

1) HIGHEST OBSERVABLE TIDE LINE DELINEATED BY SAM HAYDEN, CWS NO. 321 ON 12/30/2024 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. NEIWPCC WETLANDS WORK GROUP (2017).
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2) HOTL LINE WAS FIELD LOCATED BY HALEY WARD, INC.

GRAPHIC SCALE
10 0 5 10 20 30
(IN FEET)
1 inch = 10 ft.

REV.	DATE	DESCRIPTION	BY	CHK
2	07/03/2025	DECK	SJR	JRC
1	06/23/2025	REVISE MAIN STRUCTURES	SJR	JRC
0	05/27/2025	ISSUED FOR COMMENT	SJR	JRC

DRAWING ISSUE STATUS

SITE PLANS

HALEY WARD
ENGINEERING | ENVIRONMENTAL | SURVEYING
WWW.HALEYWARD.COM
200 Griffin Road, Unit 14
Portsmouth, NH 03801
603-430-9282

PROJECT

ROSSIGNOL RESIDENCE
13 1/2 BOSTON HARBOR ROAD, DOVER NH

TITLE

CITY OF DOVER SITE PLAN

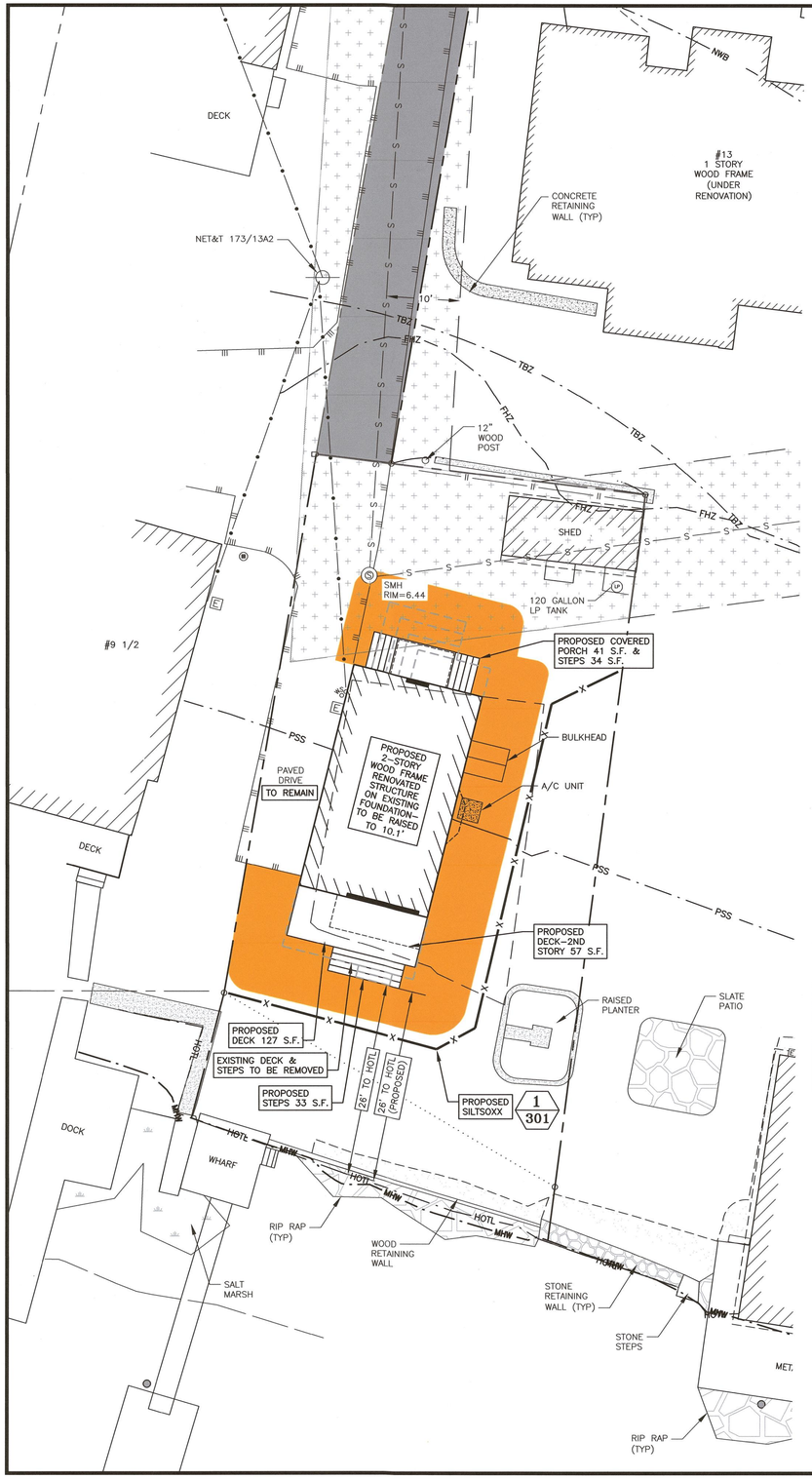
DATE	SCALE
MAY 2025	1"=10'

DRAWN BY	DESIGNED BY	CHECKED BY
SJR	JRC	JRC

PROJECT No. 5010534.001
FIELD BOOK & PAGE FB 419 PG 24

DRAWING No. **C-201**
REV. **2**

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IMPERVIOUS SURFACE AREAS
(WITHIN 250' SHORELAND PROTECTION ZONE)

STRUCTURE	PRE-CONSTRUCTION IMPERVIOUS (S.F.)	POST-CONSTRUCTION IMPERVIOUS (S.F.)
MAIN STRUCTURE	558	558
SHED	151	151
STEPS/LANDINGS	88	77
BULKHEAD	24	24
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CONCRETE/PADS	8	8
WHARF	14	14
TOTAL	1,716	1,676
LOT SIZE	4,635	4,635
% LOT COVERAGE	37.0%	36.2%

NHDES IMPACT AREAS
IN S.F.

	PERMANENT IMPACT AREAS	TEMPORARY IMPACT AREAS
100' TIDAL BUFFER ZONE/100' PRIME WETLAND BUFFER	0	869
250' PROTECTED SHORELAND ZONE	0	0

SITE REDEVELOPMENT:

BUILDING SF: NO CHANGE
FRONT ENTRY: EXISTING STEPS & LANDINGS: 120 S.F.
PROPOSED COVERED PORCH & STEPS: 75 S.F.
WATERSIDE DECK: EXISTING DECK & STEPS: 162 S.F.
PROPOSED DECK & STEPS: 160 S.F.

DEMOLITION NOTES

A) THE CONTRACTOR SHALL OBTAIN AND PAY FOR ADDITIONAL CONSTRUCTION PERMITS, NOTICES AND FEES NECESSARY TO COMPLETE THE WORK AND ARRANGE FOR AND PAY FOR ANY INSPECTIONS AND APPROVALS FROM THE AUTHORITIES HAVING JURISDICTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY ADDITIONAL AND OFF-SITE DISPOSAL OF MATERIALS REQUIRED TO COMPLETE THE WORK.

B) THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL EXISTING STRUCTURES WITHIN THE WORK LIMITS SHOWN UNLESS SPECIFICALLY IDENTIFIED TO REMAIN.

CONSTRUCTION SEQUENCE

1) DO NOT BEGIN CONSTRUCTION UNTIL ALL LOCAL, STATE AND FEDERAL PERMITS HAVE BEEN APPLIED FOR AND RECEIVED.
2) DEMOLISH EXISTING STRUCTURE AND PERFORM NEW CONSTRUCTION.
3) AFTER CONSTRUCTION, REPAIR ANY DISTURBED AREAS UTILIZED FOR CONSTRUCTION ACCESS.

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.

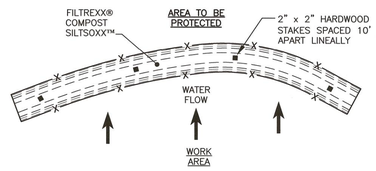
WORK SITE RESTORATION

- UPON COMPLETION OF CONSTRUCTION, ALL DISTURBED 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.

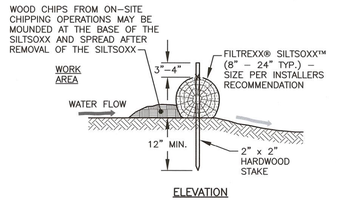
SEDIMENTATION AND EROSION CONTROL

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.

GRAPHIC SCALE
10 0 5 10 20 30
(IN FEET)
1 inch = 10 ft.



PLAN



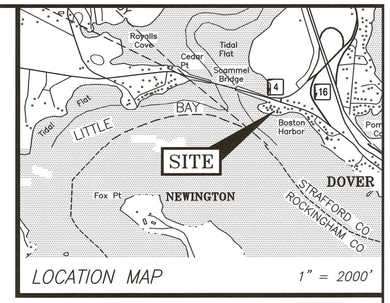
ELEVATION

NOTES:
1. ALL MATERIAL TO MEET FILTREXX SPECIFICATIONS.
2. FILLTREXX SYSTEM SHALL BE INSTALLED BY A CERTIFIED FILTREXX INSTALLER.
3. THE CONTRACTOR SHALL MAINTAIN THE COMPOST FILTRATION SYSTEM IN A FUNCTIONAL CONDITION AT ALL TIMES. IT WILL BE ROUTINELY INSPECTED AND REPAIRED WHEN REQUIRED.
4. SILTSOXX DEPICTED IS FOR MINIMUM SLOPES, GREATER SLOPES MAY REQUIRE ADDITIONAL PLACEMENTS.
5. THE COMPOST FILTER MATERIAL WILL BE DISPERSED ON SITE WHEN NO LONGER REQUIRED, AS DETERMINED BY THE ENGINEER.

1 / 301 FILTREXX® SILTSOXX™ FILTRATION SYSTEM
NTS

WETLAND NOTES:

1) HIGHEST OBSERVABLE TIDE LINE DELINEATED BY SAM HAYDEN, CWS NO. 321 ON 12/30/2024 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. NEIWPCC WETLANDS WORK GROUP (2017).
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2) HOTL LINE WAS FIELD LOCATED BY HALEY WARD, INC.



LOCATION MAP 1" = 2000'

NOTES:

1. PARCEL IS SHOWN ON THE CITY OF DOVER'S ASSESSOR'S TAX MAP 7 AS LOT 6-0.
2. OWNERS OF RECORD:
   SHERYL & MARK ROSSIGNOL, TRUSTEES
   ROSSIGNOL FAMILY REVOCABLE TRUST OF 2016
   13 1/2 BOSTON HARBOR ROAD
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4. EXISTING LOT AREA (TO MEAN HIGH WATER):
   4,635± S.F.
   0.106± ACRES
5. PARCEL IS LOCATED IN THE LOW DENSITY RESIDENTIAL (R-20) ZONING DISTRICT.
6. PROPOSAL IS TO RAISE THE RENOVATED STRUCTURE TO A PROPOSED 10.1 FINISHED FLOOR (FF) ELEVATION AND RE-WORK THE FRONT AND BACK ACCESS TO ACCOMMODATE THE NEW FF.

ZONE R-20:

DIMENSIONAL REQUIREMENTS:

LOT AREA:		20,000 S.F. (MIN.)
FRONTAGE:		125 FEET (MIN.)
SETBACKS:	FRONT	20 FEET (MIN.)
		35 FEET (MAX.)
	SIDE	20 FEET* (MIN.)
	REAR	30 FEET (MIN.)
MAXIMUM STRUCTURE HEIGHT:		35 FEET
MAXIMUM LOT COVERAGE:		30%

*PURSUANT TO ARTICLE V SECTION 170-14. D(1), THE REQUIRED SIDE YARD SETBACK IS REDUCED TO 10 FEET.

REV.	DATE	DESCRIPTION	BY	CHK.
2	07/03/2025	DECK	SJR	JRC
1	06/23/2025	REVISE MAIN STRUCTURES	SJR	JRC
0	05/27/2025	ISSUED FOR COMMENT	SJR	JRC

DRAWING ISSUE STATUS
SITE PLANS

HALEY WARD
ENGINEERING | ENVIRONMENTAL | SURVEYING
WWW.HALEYWARD.COM
200 Griffin Road, Unit 14
Portsmouth, NH 03801
603-430-9282

PROJECT
ROSSIGNOL RESIDENCE
13 1/2 BOSTON HARBOR ROAD, DOVER NH

TITLE
NHDES PERMIT PLAN

STATE OF NEW HAMPSHIRE - JOHN R. CHAGNON - 10581 - LICENSED PROFESSIONAL ENGINEER

DATE	SCALE
MAY 2025	1"=10'

DRAWN BY	DESIGNED BY	CHECKED BY
SJR	JRC	JRC

PROJECT No.	FIELD BOOK & PAGE
5010534.001	FB 419 PG 24

DRAWING No. **C-301** REV. **2**

P:\dwr\5010534-Jhwy_Boxing\cad\501-13 Boston Harbor Rd, Dover - FWV02-CAD_Fhwy2023 Shts\5010534.001 - C-3TE.dwg, 7/3/2025 7:41:40 AM

NHB25-1592 NEW HAMPSHIRE FISH AND GAME CONSERVATION MEASURES:

1. SHORTNOSE STURGEON (STATE AND FEDERALLY ENDANGERED), ATLANTIC STURGEON (STATE AND FEDERALLY THREATENED), NEW ENGLAND COTTONTAIL (STATE ENDANGERED), COMMON TERN (STATE THREATENED), CLIFF SWALLOW (STATE THREATENED), AND EASTERN MEADOWLARK (STATE THREATENED) OCCUR WITHIN THE VICINITY OF THE PROJECT AREA. ALL OPERATORS AND PERSONNEL WORKING ON OR ENTERING THE SITE SHOULD BE MADE AWARE OF THEIR POTENTIAL PRESENCE. SEE PLAN SHEET C-401.

2. NO IN-WATER WORK IS PROPOSED AND ALL WORK WILL BE CONDUCTED "IN THE DRY". IF WORK MUST BE CONDUCTED IN THE WATER NHFG MAY REQUIRE RECONSULTATION.

3. NO VEGETATION REMOVAL IS PROPOSED.

   a. SCRUB-SHRUB VEGETATION SHALL BE MAINTAINED ON SITE TO PROVIDE CONNECTIVITY IN THE LANDSCAPE FOR NEW ENGLAND COTTONTAIL.

4. IF NESTING CLIFF SWALLOWS ARE OBSERVED IN OR DIRECTLY ADJACENT TO THE PROJECT AREA, NHFG SHALL BE NOTIFIED FOR FURTHER COORDINATION AT 603-271-2461 AND BY EMAIL AT NHFGREVIEW@WILDLIFE.NH.GOV, WITH THE EMAIL SUBJECT LINE CONTAINING THE NHB DATA CHECK TOOL RESULTS LETTER ASSIGNED NUMBER, THE PROJECT NAME, AND THE TERM WILDLIFE SPECIES OBSERVATION. CLIFF SWALLOWS MAY NEST IN STRUCTURAL FIGURES ON NEARBY BUILDINGS SUCH AS EAVES, GUTTERS, DORMER, RAFTER, ROOF, OR SIMILAR FEATURES ON A STRUCTURE. SEE PLAN SHEETS C-201 & C-301.

5. EQUIPMENT AND MATERIALS SHALL NOT BE STAGED OR STORED IN THE MARSH UNTIL BEING INSTALLED. SEE PLAN SHEET C-301.

6. PROPER EROSION CONTROL SHALL BE INSTALLED TO PREVENT SEDIMENTATION FROM REACHING INTO THE WATERBODY. SEE PLAN SHEET C-301.

7. AVOID OR MINIMIZE THE USE OF FERTILIZERS IN UPLAND AREAS OR TRANSITION ZONES. IF FERTILIZERS ARE NECESSARY, USE ORGANIC VERSUS SYNTHETIC FERTILIZERS OPTIONS. SYNTHETIC OPTIONS SHOULD BE AVOIDED; HOWEVER, IF CHOSEN, THEY SHOULD BE CONTROLLED-RELEASED/SLOW-RELEASED AND AT LOW STRENGTHS. SEE PLAN SHEET C-301.

8. NATIVE SPECIES SHOULD BE USED FOR RESEEDING OR LANDSCAPING DISTURBED AREAS, IF APPLICABLE. SEE PLAN SHEETS C-301.

9. IF HYDROSEEDING IS DEEMED NECESSARY, THE MIX SHOULD NOT CONTAIN MICROPLASTICS AND DYES SHALL BE WATER-SOLUBLE AND ECO-FRIENDLY. HYDROSEEDING SHALL NOT OCCUR WITHIN 50 FEET OF THE RIVERS OR STREAMS TO MAINTAIN WATER QUALITY. SEE PLAN SHEET C-3001.

10. ALL MANUFACTURED EROSION AND SEDIMENT CONTROL PRODUCTS, WITH THE EXCEPTION OF TURF REINFORCEMENT MATS, UTILIZED FOR, BUT NOT LIMITED TO, SLOPE PROTECTION, RUNOFF DIVERSION, SLOPE INTERRUPTION, PERIMETER CONTROL, INLET PROTECTION, CHECK DAMS, AND SEDIMENT TRAPS SHOULD NOT CONTAIN PLASTIC, OR MULTIFILAMENT OR MONOFILAMENT POLYPROPYLENE NETTING OR MESH WITH AN OPENING SIZE OF GREATER THAN 1/8 INCHES. SEE PLAN SHEET C-301.

11. ALL OBSERVATIONS OF THREATENED OR ENDANGERED SPECIES ON THE PROJECT SITE SHOULD BE REPORTED IMMEDIATELY TO THE NHFG NONGAME AND ENDANGERED WILDLIFE ENVIRONMENTAL REVIEW PROGRAM BY PHONE AT 603-271-2461 AND BY EMAIL AT NHFGREVIEW@WILDLIFE.NH.GOV, WITH THE EMAIL SUBJECT LINE CONTAINING THE NHB DATACHECK TOOL RESULTS LETTER ASSIGNED NUMBER, THE PROJECT NAME, AND THE TERM WILDLIFE SPECIES OBSERVATION.
    a. PHOTOGRAPHS OF THE OBSERVED SPECIES AND NEARBY ELEMENTS OF HABITAT OR AREAS OF LAND DISTURBANCE SHOULD BE PROVIDED TO NHFG IN DIGITAL FORMAT AT THE ABOVE EMAIL ADDRESS FOR VERIFICATION, AS FEASIBLE.

12. IN THE EVENT A THREATENED OR ENDANGERED SPECIES IS OBSERVED ON THE PROJECT SITE DURING THE TERM OF THE PERMIT, THE SPECIES SHOULD NOT BE DISTURBED, HANDLED, OR HARMED IN ANY WAY PRIOR TO CONSULTATION WITH NHFG AND IMPLEMENTATION OF CORRECTIVE ACTIONS RECOMMENDED BY NHFG.

13. NHFG, INCLUDING ITS EMPLOYEES AND AUTHORIZED AGENTS, SHOULD HAVE ACCESS TO THE PROPERTY DURING THE TERM OF THE PERMIT.

REPORT OBSERVATIONS OF EASTERN MEADOWLARK

The NH Fish & Game Department is requesting observations of Eastern Meadowlark that could be encountered onsite.

Report sightings immediately to NHFG Wildlife Division at 603-271-2461 (M-F 8-4) or to NHFG Wildlife Biologist Melissa Winters 603-479-1129 (cell) anytime.

Please report promptly, noting specific location and date – Photographs strongly encouraged



Photo credit: Cornell lab of ornithology

- **State Threatened**
  - Possession and take prohibited.
  - Nests protected.
- Medium-sized bird (slightly larger but more compact than an American Robin, smaller than a Blue Jay) – 7.5-10.2 inches from tip to end of tail.
- Wingspan is 13.8-15.8 inches.
- Mottled brown back.
- Bright yellow throat and breast.
- Distinctive black "V" on chest.



Photo credit: Mike Allen

- Nesting occurs typically between mid-late May and early August
- Nests consist of 2-7 eggs.
- Eggs are white with brown speckles.
- May have more than 1 nest in a season.
- Nest is built on the ground with a roof of woven grasses, often not obvious when viewed directly from above.
- Incubation is for 13-16 days, nestling period lasts for 10-12 days



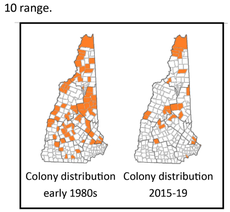
Photo credit: Mike Allen

- Adults may act agitated if disturbed within the vicinity of the nest. This may include:
  - Sharp alarm calls.
  - Flying from perch to perch, centered on a certain location.
  - Presence of two adults.

Cliff Swallows in New Hampshire: Fast Facts

Distribution and trends (see maps):
- Early 1980s: over 80 colonies
- Early 2000s: fewer than 40 colonies
- 2015-2019: 20-25 colonies

Existing colonies are primarily located in northern Coos County, with a second cluster in the Lakes Region. Most are on houses or barns, with two known sites on bridges. They range in size from single pairs to over 30, with most in the 5-10 range.



Colony distribution early 1980s | Colony distribution 2015-19

Migration:
- Arrive in early May and depart in August
- Rarely linger into September

Breeding:
- Lay eggs by end of May (sometimes later in the north)
- Incubation for two weeks
- Young leave nest in three weeks
- Most breeding completed by end of July

Cliff Swallows belong to a group of birds collectively known as "aerial insectivores," meaning that they feed primarily on insects caught while in flight. This group includes all swifts, swallows, flycatchers, and nightjars (nighthawks and whip-poor-wills), and shows some of the strongest declines among North American birds.

Most aerial insectivores in the Northeast are declining, and several additional species are considered "species of greatest conservation need" in New Hampshire including:

Common Nighthawk (endangered)
Purple Martin (threatened)
Bank Swallow
Chimney Swift
Eastern Whip-poor-will
Olive-sided Flycatcher

For more information on these species, please see the NH Wildlife Action Plan

https://www.wildlife.state.nh.us/wildlife/wap.html

For more detail on NH Cliff Swallows or to report sightings, contact Pam Hunt at NH Audubon (phunt@nhaudubon.org, 603-224-9909 x328). Additional information available at: https://www.cliffswallow.org/

Acknowledgments

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NH AUDUBON

NH's Threatened

Cliff Swallows



Photo by Alan Schmierer

The Cliff Swallow (*Petrochelidon pyrrhonota*) is a colonial swallow that builds mud nests on vertical surfaces across most of North America. The number of colonies in New Hampshire has declined from over 80 in the 1980s to less than 25 today, and as a result it was added to the state's list of threatened species in 2017.



Cliff Swallow in a nest in Pittsburg (Pam Hunt)

The nest is gourd-shaped, made of mud, and attached to a vertical surface under an overhang (e.g., building eave). Nests are often very close together, even overlapping.

REV.	DATE	DESCRIPTION	BY	CHK.
0	08/18/2025	ISSUED FOR COMMENT	CBA	SNH

DRAWING ISSUE STATUS

DETAILS

HALEY WARD
ENGINEERING | ENVIRONMENTAL | SURVEYING
200 Griffin Rd. Unit 14
Portsmouth, NH 03801
603.430.9282
WWW.HALEYWARD.COM

PROJECT

ROSSIGNOL RESIDENCE
13 1/2 BOSTON HARBOR ROAD, DOVER NH

TITLE

NH FISH & GAME CONSERVATION MEASURES

DATE	SCALE
MAY 2025	AS NOTED

DRAWN BY	DESIGNED BY	CHECKED BY
CBA	**	SNH

PROJECT No. 5010534.001

DRAWING No. **C-401** REV. **0**

FILE LOCATION: P:\MS5\10534-SHERYL_ROSSIGNOL\001-13 5 BOSTON HARBOR RD, DOVER - PAYGO\CAD_FILES\2025 SITE\5010534.001-C-SITE.DWG, 2025.08.18, 12:51 PM