TRANSMITTAL

Town of Stratham
Planning Department
10 Bunker Hill Ave.
Stratham, NH 03885

Date: Feb. 6, 2024
Project: NH-1500
Location: Lovering Road
Via: Hand Deliver

We are sending you the following items:

Items:

Attached: For Subdivision

We are sending you the following items:

1 – Completed Subdivision Application
6 – Copies of Full-size Plans
9 – Copies Reduced Plans 11 x 17 Plans
9 – Letter of Authorization to represent
1 – List of Abutters w/3 labels for each
1 - Check payable to Town of Stratham
3 - Copies of Drainage report
9 – Copy Lot Sizing by Soil Type
9 - Copy Stamped Test Pits
9 – Copy Soils report prepared by Gove Environmental

Please feel free to call me if you have any comments, or if anything further is required.

Transmitted by: **Christian O. Smith, PE.**

TOWN OF STRATHAM

10 Bunker Hill Avenue, Stratham NH 03885
Planning Department (603) 772-7391
www.strathamnh.gov

SUBDIVISION APPLICATION

1. CHECKLIST SUMMARY:

1. This completed application (including all application package contents noted in the Site Plan Review Checklist) must be filed with the Planning Board's Agent no later than 12:00 PM on the deadline day published in the Planning Board's Schedule of Regular Board Meetings.
2. Fees (cash or check). Make checks payable to the Town of Stratham.

Application: (check one)

- ☐ **Preliminary Consultation**
- ☐ **Lot Line Revision**
- ☐ **Minor Subdivision Review***
- ■ **Major Subdivision Review****

*A minor subdivision is one that will not create more than 3 lots and does not require construction of a road.
**A major subdivision is one that creates more than 3 lots or includes construction of a road.

Please complete this application thoroughly and accurately, and attach the required exhibits as indicated in the Site Plan Review Checklist. Please note that an incomplete application will not be accepted for processing.

2. APPLICANT AND PROPERTY OWNER INFORMATION:

APPLICANT NAME:	Chinburg Properties Inc.		
Phone #:	(603) 868-5995 x31	Email Address:	ssammis@chinburg.com
Mailing Address:	3 Penstock Way, Newmarket, NH 03857		
PROPERTY OWNER NAME (If different from Applicant):	LANZILLO IRREVOCABLE TRUST		
Phone #:		Email Address:	
Mailing Address:	OCEAN BLVD UNIT 3 HAMPTON, NH 03842		

3. PROPERTY/PROJECT INFORMATION:

Tax Map:	06	Property Deed Information:	Book: 4624 Page: 2000		
Lot(s):	167	Total parcel area (SF):	606024	Total parcel area (acres):	13

Zoning District(s): Check all that apply.

- ☐ Commercial/Light Industrial/Office
- ☐ Flexible/Mixed Use Development
- ☐ Gateway Commercial Business
- ☐ Industrial
- ☐ Manufactured Housing/Mobile Home
- ☐ Professional/Residential
- ■ Residential/Agricultural
- ☐ Retirement Planned Community
- ☐ Route 33 Legacy Highway Heritage
- ☐ Special Commercial
- ☐ Town Center

Overlay District(s): Check all that apply.

- ☐ Aquifer Protection
- ☐ Floodplain Management
- ☐ Shoreline Protection
- ☐ Wetland Conservation

4. PROFESSIONAL SUPPORT: (Include additional sheets if necessary.)

COMPANY NAME:	Beals Associates	Contact:	Christian Smith
Phone #:	603-583-4860	Email Address:	csmith@bealsassociates.com
Mailing Address:	70 Portsmouth Ave, 3rd Flr, Unit 2, Stratham, NH		
COMPANY NAME:	Northam Survey, LLC	Contact:	ERIC SALOVITCH
Phone #:	(603) 953-3164	Email Address:	eric@northamsurvey.com
Mailing Address:	686 Central Ave, Suite 100 Dover, NH 03820		

5. PROJECT DESCRIPTION:

Briefly describe your existing and proposed use(s):

The proposal is to remove the existing home on the 14 acre parcel and subdivide the land into 6 residential lots with a proposed road.

Existing Number of Lots:	1	Existing Total Impervious Surface Area (SF):	9032
Proposed Number of Lots:	6	Proposed Total Impervious Surface Area (SF):	36180

6. APPLICANT'S CERTIFICATION:

I/We declare under penalty of perjury that all of the submitted information is true and correct to the best of my knowledge and belief. I/We have read and agree to abide by the regulations of the Town of Stratham. I/We understand that any misrepresentations of submitted data may invalidate any approval of this application. If the use is not operated in compliance with these regulations, the permit may be revoked by the Code Enforcement Officer or the Zoning Board of Adjustment.

By signing this application, you are agreeing to all rules and regulations of the Town of Stratham, and are agreeing to allow agents of the Town of Stratham to conduct inspections, during normal town business hours, or your property, to ensure compliance with all Stratham Zoning, Subdivision and/or Site Plan Review regulations while your application is under consideration. The Town accepts electronic signatures on this application. Electronic signatures carry the same validity, enforceability and admissibility, as handwritten signatures.

I/We authorize Beals Associates to submit this application to the Stratham Planning Board and to act as the professional and primary contact representing this application before the Stratham Planning Board. Communications related to this application, including those from the Stratham Planning Department, will be directed to this representative.

Signature of Applicant	**Print Applicant's Name**	**Date**
	SHAWNA SAMMIS, CHINBURG DEVELOPMENT	2 FEB 2024
(See Letter of Authorization, attached).		
Signature of Owner	**Print Owner's Name**	**Date**

SCHEDULE OF FEES FOR PLAN SUBMISSION

Fees will be calculated by Planning Department Staff with payment due at the time of final plan submission for the following:

Preliminary Consultation $75.00
Lot Line Revision (plus notice costs) $150.00
Minor Subdivision (plus notice costs) ..... $150.00 for the first lot, plus $100.00 for each lot or unit thereafter
Major Subdivision (plus notice costs)..... $250.00 for the first lot, plus $100.00 for each lot or unit thereafter
Notice Costs.....$150.00 plus $8.00 per abutter and per applicant

Please note that additional Special Investigative, Recording, and Municipal Review costs may apply. Review the Site Plan Review Regulations for more information and contact the Town Planner with questions.

PLEASE DO NOT WRITE BELOW THIS LINE – FOR PLANNING DEPARMENT USE ONLY

Application Received Date:_____ Date of Public Hearing Notice:_____

Application Fee:_____ Check Number:_____

Public Notice Fee:_____ Check Amount:_____

Abutter Notice Fee:_____ Check Payor:_____

Letter of Authorization

I, Kenneth F Lanzillo Jr., Trustee of the Kenneth F Lanzillo Revocable Trust, owner of 14 acres located at 189 Bunker Hill Ave in Stratham, NH, do hereby authorize the following parties to act as agents on our behalf for the above-described property in order to apply for any necessary state and local applications or permits relative to the development of said lot:

Chinburg Development and their agents to include but not limited to :

Beals Associates PLLC, 70 Portsmouth Ave, Stratham, NH

Gove Environmental, 8 Continental Drive Exeter, NH

as agents to act on my behalf in matters to be discussed with the Town of Stratham, State Departments and other Land Use Boards concerning the property previously mentioned.

I hereby appoint the above referenced parties as my agent to act on my behalf in the review process, to include any required signatures.

Kenneth F Lanzillo Jr. Trustee dotloop verified 10/10/23 3:29 PM EDT JANR-BDUR-NLWV-RJXP

Kenneth F. Lanzillo Jr, Trustee

Date

Kenneth F Lanzillo Irrevocable Trust

ABUTTERS LIST
FOR
NH- 1500 Chinburg - Stratham, NH
DATE February 5, 2024

SUBJECT PARCEL

TAX MAP/LOT	OWNER OF RECORD
06-167	LANZILLO IRREVOCABLE TRUST LANZILLO, KENNETH F. - TRUSTEE LANZILLO, KENNETH F. JR - TRUS 939 OCEAN BLVD UNIT 3 HAMPTON, NH 03842

ABUTTERS

TAX MAP/LOT	OWNER OF RECORD
06-150	MONTROSE CONDO ASSOC. C/O EVERGREEN HARVARD GROUP 72 PORTSMOUTH AVENUE SUITE 201 STRATHAM, NH 03885
06-150-012	COOK, SARAH L. 12 MONTROSE DRIVE STRATHAM, NH 03885
06-150-027	FREDERICK, DONNA 27 MONTROSE DRIVE STRATHAM, NH 03885
06-150-072	GILL, DAVID W. GILL, SHARON L. 72 MONTROSE DRIVE STRATHAM, NH 03885
06-156	COLE, MICHAEL R. COLE, CELESTE A. 10 WEDGEWOOD DRIVE STRATHAM, NH 03885
06-157	SONNEBORN, JEFFREY J. SONNEBORN, KATHERIN A. 8 WEDGEWOOD DRIVE STRATHAM, NH 03885

ABUTTERS LIST
FOR
NH- 1500 Chinburg - Stratham, NH
DATE February 5, 2024

06-158	WARD, DAVID J. WARD, JOANNE A. 6 WEDGEWOOD DRIVE STRATHAM, NH 03885
06-162	MELFI FAMILY REVOCABLE TRUST MELFI, JAMES I., -TRUSTEE 6 HERSEY LANE STRATHAM, NH 03885
06-163	LAPIERRE, RICHARD 4 HERSEY LANE STRATHAM, NH 03885
06-164-001	KREMER, SARAH 2A HERSEY LANE STRATHAM, NH 03885
06-164-002	WINSLOW, SHANE 2B HERSEY LANE STRATHAM, NH 03885
06-165	WIGGIN, PETER E. WIGGIN, DORI A. P. O. BOX 1193 PORTSMOUTH, NH 03801
06-166	GRAY, CHRISTOPHER & LEAH TRUST CHRISTOPHER D & LEAH C GRAY 181 BUNKER HILL AVENUE STRATHAM, NH 03885
06-168	THOMAS, DANNY E. 193 BUNKER HILL AVENUE STRATHAM, NH 03885
06-170	STONE, DAVID ABBOTT, ROY & SANDRA 194 BUNKER HILL AVENUE STRATHAM, NH 03885

ABUTTERS LIST
FOR
NH- 1500 Chinburg - Stratham, NH
DATE February 5, 2024

06-171	PHILBRICK, GEORGE & SUSAN REV. PHILBRICK, SUSAN C.-TRUSTEE PHILBRICK, GEORGE R. SR.-TRUST 188 BUNKER HILL AVENUE STRATHAM, NH 03885
07-012	STEVENS, JOHN K. STEVENS, RENATA PIKALIS 195 BUNKER HILL AVENUE STRATHAM, NH 03885

PROFESSIONALS

ENGINEERING FIRM	BEALS ASSOCIATES, PLLC. 70 PORTSMOUTH AVE. 3RD FLOOR STRATHAM, NH 03885
SOIL SCIENTIST	GOVE ENVIRONMENTAL 8 CONTINENTAL DR. BLDG. 2 UNIT H EXETER, NH 03833
SURVEYOR	NORTHAM SURVEY, LLC 686 CENTRAL AVE, SUITE 100 DOVER, NH 03820
DEVELOPERS	CHINBURG BUILDERS 3 PENSTOCK WAY NEWMARKET, NH 03857

NH-1500 – 189 Bunker Hill Ave, Stratham, NH
Test Pits – Christian Smith, P.E. of Beals Associates, PLLC- #1543

11/08/2023
Witness: Mike Cuomo

Test Pit #1

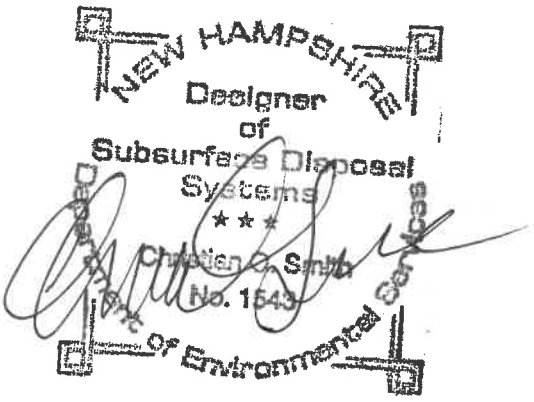
0" – 10"	10YR 3/3	Dark Brown Fine, Sandy, Loam Platy, Friable
10" - 20"	10YR 5 /6	Yellowish Brown Fine, Sandy, Loam Blocky, Friable
20" – 63"	2.5Y 4/4	Olive Brown Very Fine, Sandy Loam Blocky, Firm

ESHWT = 20"
Observed Ground Water –None
Restrictive Layer: 20 Inches
Refusal: None to 63"
Roots to 25 Inches
Perc Rate 8 min/inch @18"

Test Pit #2

0" – 10"	10YR 3 /4	Dark Yellowish Brown Fine, Sandy, Loam Platy, Friable
10" - 34"	10YR 4 /6	Dark Yellowish Brown Fine, Sandy, Loam Blocky, Friable
34" – 60"	2.5Y 4/4	Olive Brown Very Fine Silt Loam Blocky, Firm Redox-Common 2-20%

ESHWT = 34"
Observed Ground Water – None
Restrictive Layer: 34 Inches
Refusal: None
Roots to 6 Inches
Perc Rate 10 min/inch @23"



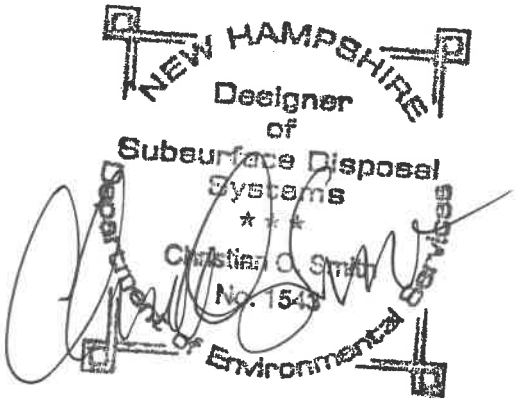
NH-1500 – 189 Bunker Hill Ave, Stratham, NH
Test Pits – Christian Smith, P.E. of Beals Associates, PLLC- #1543

11/08/2023
Witness: Mike Cuomo

Test Pit #3

0" – 10"	10YR 3 /4	Dark Yellowish Brown Fine, Sandy, Loam Platy, Friable
10" - 18"	10YR 4 /6	Dark Yellowish Brown Fine, Sandy, Loam Blocky, Friable
18" –62"	2.5Y 4/6	Olive Brown Very Fine, Sandy Loam Blocky, Firm Redox-Common 2-20%

ESHWT = 18"
Observed Ground Water – None
Restrictive Layer: 18 Inches
Refusal: None to 62"
Roots to 12 Inches
Perc Rate 8 min/inch @15"



Test Pit #4

0" –9"	10YR 3 /4	Dark Yellowish Brown Fine, Sandy, Loam Blocky, Friable
9" - 22"	10YR 4 /6	Dark Yellowish Brown Fine, Sandy, Loam Blocky, Friable
22" – 63"	2.5Y 4/4	Olive Brown Very Fine, Sandy Loam Blocky, Firm Redox-Common 2-20%

ESHWT = 22"
Observed Ground Water – None
Restrictive Layer: 22 Inches
Refusal: None to 63"
Roots to 6 Inches
Perc Rate 8 min/inch @15"

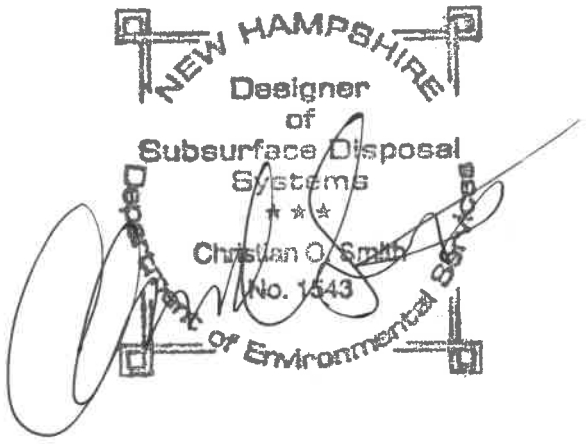
NH-1500 – 189 Bunker Hill Ave, Stratham, NH
Test Pits – Christian Smith, P.E. of Beals Associates, PLLC- #1543

11/08/2023
Witness: Mike Cuomo

Test Pit #5

0" – 10"	10YR 4/3	Brown Fine, Sandy, Loam Blocky, Friable
10" -26"	10YR 4 /6	Dark Yellowish Brown Fine, Sandy, Loam Blocky, Friable
26" – 62"	2.5Y 4/4	Olive Brown Fine, Loamy Sand Blocky, Firm Redox-Common 2-20%

ESHWT = 26"
Observed Ground Water – None
Restrictive Layer: 26 Inches
Refusal: None to 62"
Roots to 6 Inches
Perc Rate 8 min/inch @22"



Test Pit #6

0" – 14"	10YR 4 /4	Dark Yellowish Brown Fine, Sandy, Loam Blocky, Friable
14" - 32"	10YR 4 /6	Dark Yellowish Brown Fine, Sandy, Loam Blocky, Friable
32" –62"	2.5Y 4/4	Olive Brown Medium, Loamy Sand Massive, Firm Redox-Common 2-20%

ESHWT = 32"
Observed Ground Water – None
Restrictive Layer: 32 Inches
Refusal: None – 62 Inches
Roots to 6 Inches
Perc Rate 7 min/inch @26"

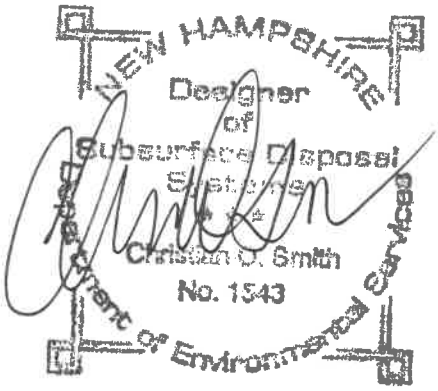
NH-1500 – 189 Bunker Hill Ave, Stratham, NH
Test Pits – Christian Smith, P.E. of Beals Associates, PLLC- #1543

11/08/2023
Witness: Mike Cuomo

Test Pit #7

0" – 9"	10YR 3/4	Dark Yellowish Brown Fine, Sandy, Loam Granular, Friable
9" - 18"	10YR 5 /6	Yellowish Brown Fine, Sandy, Loam Platy, Friable
18" – 62"	2.5Y 5/4	Light Olive Brown Silt Loam Platy, Firm Redox-Common 2-20%

ESHWT = 18"
Observed Ground Water – None
Restrictive Layer: 18 Inches
Refusal: None to 62"
Roots to 26 Inches
Perc Rate 10 min/inch @15"



Test Pit #8

0" – 8"	10YR 3 /4	Dark Yellowish Brown Fine, Sandy, Loam Blocky, Friable
8" - 23"	10YR 5 /4	Yellowish Brown Fine, Sandy, Loam Platy, Friable
23" – 62"	2.5Y 4/4	Olive Brown Silt Loam Platy, Firm Redox-Common 2-20%

ESHWT = 23"
Observed Ground Water – None
Restrictive Layer: 23 Inches
Refusal: None to 62"
Roots to 21 Inches
Perc Rate 10 min/inch @18"

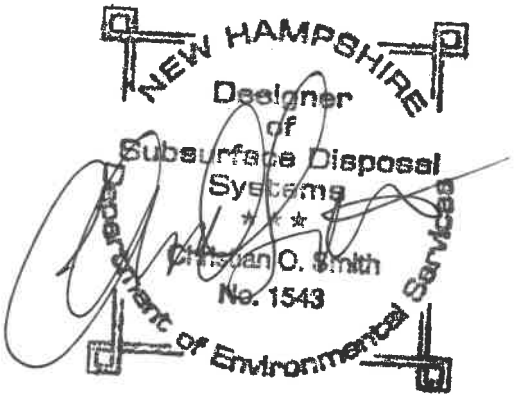
NH-1500 – 189 Bunker Hill Ave, Stratham, NH
Test Pits – Christian Smith, P.E. of Beals Associates, PLLC- #1543

11/08/2023
Witness: Mike Cuomo

Test Pit #9

0" – 9"	10YR 3 /4	Dark Yellowish Brown Fine, Sandy, Loam Granular, Friable
9" - 23"	10YR 5 /4	Yellowish Brown Fine, Sandy, Loam Platy, Friable
23"-63"	2.5Y 5/4	Light Olive Brown Loamy, Sand Massive, Firm Redox-Common 2-20%

ESHWT = 23"
Observed Ground Water – None
Restrictive Layer: 23 Inches
Refusal: None to 63"
Roots to 4 Inches
Perc Rate 7 min/inch @20"



Test Pit #10

0" – 8"	10YR 4/4	Dark Yellowish Brown Fine, Sandy, Loam Platy, Friable
8" - 21"	10YR 4/6	Dark Yellowish Brown Fine, Sandy, Loam Blocky, Friable/Very Stoney
21" – 61"	2.5Y 4/4	Olive Brown Loamy Sand Massive, Firm/Very Stoney Redox-Common 2-20%

ESHWT = 21"
Observed Ground Water – None
Restrictive Layer: 21 Inches
Refusal: None to 61"
Roots to 8 Inches
Perc Rate 8 min/inch @18"

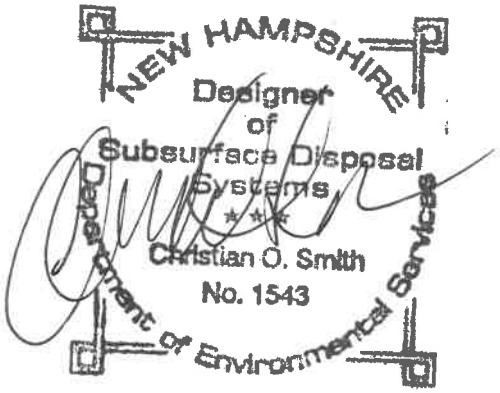
NH-1500 – 189 Bunker Hill Ave, Stratham, NH
Test Pits – Christian Smith, P.E. of Beals Associates, PLLC- #1543

11/08/2023
Witness: Mike Cuomo

Test Pit #11

0" – 10"	10YR 3 /4	Dark Yellowish Brown Fine, Sandy, Loam Blocky, Friable
10" - 27"	10YR 5 /6	Yellowish Brown Fine, Sandy, Loam Blocky, Friable/Stoney
27" – 64"	2.5Y 5/4	Light Olive Brown Loamy Sand Blocky, Firm/Stoney Redox-Common 2-20%

ESHWT = 27"
Observed Ground Water – None
Restrictive Layer: 27 Inches
Refusal: None – 64 Inches
Roots to 6 Inches
Perc Rate 8 min/inch @22"



Test Pit #12

0" – 12"	10YR 3 /4	Dark Yellowish Brown Fine, Sandy, Loam Blocky, Friable
12" - 37"	10YR 5 /4	Yellowish Brown Fine, Sandy, Loam Blocky, Friable
37" – 62"	2.5Y 4/4	Olive Brown Loamy Sand Massive, Firm/Stoney Redox-Common 2-20%

ESHWT = 37"
Observed Ground Water – None
Restrictive Layer: 37 Inches
Refusal: None – 62 Inches
Roots to 6 Inches
Perc Rate 8 min/inch @25"

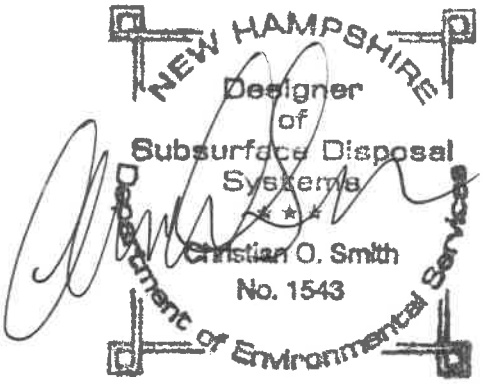
NH-1500 – 189 Bunker Hill Ave, Stratham, NH
Test Pits – Christian Smith, P.E. of Beals Associates, PLLC- #1543

11/08/2023
Witness: Mike Cuomo

Test Pit #13

0" – 10"	10YR 3/4	Dark Yellowish Brown Fine, Sandy, Loam Granular, Friable
10" - 23"	10YR 4/6	Dark Yellowish Brown Fine, Sandy, Loam Blocky, Friable
23" – 62"	2.5Y 5/4	Light Olive Brown Silt Loam Platy, Firm Redox-Common 2-20%

ESHWT = 23"
Observed Ground Water – None
Restrictive Layer: 23 Inches
Refusal: None to 62 Inches
Roots to 23 Inches
Perc Rate 10 min/inch @20"



Test Pit #14

0" – 18"	10YR 3 /4	Dark Yellowish Brown Fine, Sandy, Loam Granular, Friable
18" - 21"	10YR 4/ 4	Dark Yellowish Brown Fine Sandy Loam Blocky, Friable
21" – 64"	2.5Y 4/4	Olive Brown Silt, Loam Blocky, Firm Redox-Common 2-20%

ESHWT = 21"
Observed Ground Water – None
Restrictive Layer: 21 Inches
Refusal: None - 64 Inches
Roots to 32 Inches
Perc Rate 10 min/inch @18"

Test Pit #D1

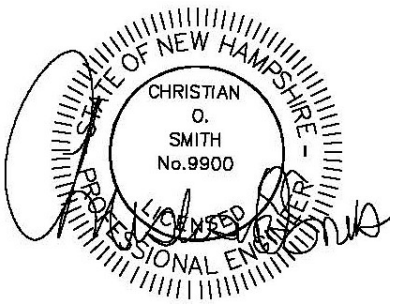
0" – 12"	10YR 4 /4	Dark Yellowish Brown Fine, Sandy, Loam Granular, Friable
12" - 28"	10YR 5/ 4	Yellowish Brown Fine, Sandy, Loam Blocky, Friable
28" – 68"	2.5Y 4/3	Olive Brown Silt, Loam Platy, Firm Redox-Common 2-20%

ESHWT = 28"
Observed Ground Water – 42 inches
Restrictive Layer: 28 Inches
Refusal: None
Roots to 26 Inches

Test Pit #D2

0" – 10"	10YR 4 /4	Dark Yellowish Brown Fine, Sandy, Loam Granular, Friable
10" - 18"	10YR 5/ 3	Brown Fine, Sandy, Loam Blocky, Friable
18" – 68"	2.5Y 5/2	Grayish Brown Silt, Loam Blocky, Firm Redox-Common 2-20%

ESHWT = 18"
Observed Ground Water – 38 inches
Restrictive Layer: 18 Inches
Refusal: None
Roots to 6 Inches

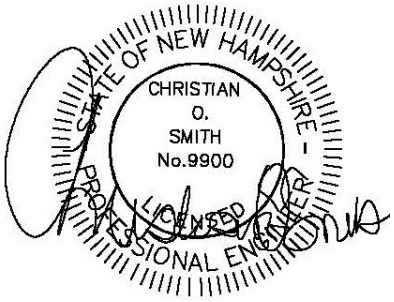


NH-1500 – 189 Bunker Hill 01/23/2024
Test Pits – Christian Smith, P.E. of Beals Associates, PLLC- #1543 Witness:

Test Pit #D3

0" – 12"	10YR 4 /4	Dark Yellowish Brown Fine, Sandy, Loam Granular, Friable
12" - 18"	10YR 5/ 3	Brown Fine, Sandy, Loam Blocky, Friable
18" – 60"	2.5Y 5/4	Light Olive Brown Silt, Loam Platy, Firm Redox-Common 2-20%

ESHWT = 18"
Observed Ground Water – 24 inches
Restrictive Layer: 18 Inches
Refusal: None
Roots to 6 Inches



DRAINAGE ANALYSIS
&
SEDIMENT AND EROSION CONTROL PLAN

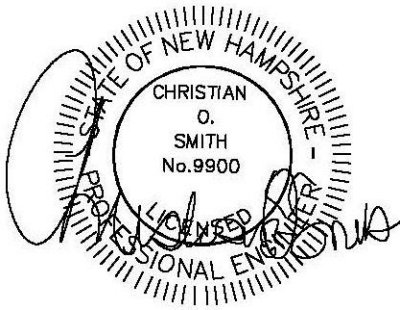
Prepared for:

CHINBURG PROPERTIES INC
WINDSONG PLACE
RESIDENTIAL SUBDIVISION

Prepared by:

BEALS ASSOCIATES, PLLC
70 PORTSMOUTH AVENUE
STRATHAM, NH 03885

Project Number:
NH-1500
Bunker Hill Road
Stratham, New Hampshire
February 1, 2024



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1.0 ANALYSIS SUMMARY

Chinburg Properties Inc proposes to construct a residential site plan to establish a subdivision on a 13.9+/- acre parcel of land located off Bunker Hill Road in Stratham, New Hampshire. A drainage analysis of 28.6+/- acres of the proposed site improvement was conducted for the purpose of estimating the peak rate of stormwater run-off and to subsequently design adequate drainage structures. Two models were compiled: one for the area in its existing (pre-construction) condition and a second for its proposed (post-construction) condition. The analysis was conducted using Extreme Precipitation data provided by Cornell University for the following 24-hour duration storm events:

Storm Event	Rainfall Depth (inches)
2-Year	3.25
10-Year	4.94
25Year	6.28

These storm events use the USDA SCS TR-20 method within the HydroCAD Stormwater Modeling System environment to model the rainfall and predict stormwater runoff flows and volumes. A Type III storm pattern was used in the model. The purpose of this analysis is to estimate the peak rates of run-off from the site for detention adequacy purposes, and to compare the peak rate of run-off between the existing and proposed conditions.

Peak Rate of Discharge

		Component Peak Rate of Discharge (CFS)		
Analysis Point # Analysis Point Description	**Condition**	**2-Year**	**10-Year**	**25-Year**
Reach #<100>	Existing	5.92	14.30	22.93
Flow to Northeast	Proposed	1.31	9.34	20.42
Reach #<200>	Existing	3.11	6.58	9.65
Flow to South	Proposed	2.48	4.87	6.98
Reach #<300>	Existing	1.67	3.67	5.42
Flow to Southeast	Proposed	1.45	3.33	4.97

The proposed 6 lot residential subdivision includes a paved roadway into the subdivision ending in a cul-de-sac. The proposed improvement area includes three different subcatchments. The peak rate of run-off in the proposed conditions is decreased from that of the existing conditions, due to the addition of two infiltration ponds. All paved roadway runoff receives treatment from grass-lined swales, a forebay, and an infiltration pond prior to discharging overland. In addition, the potential for increased erosion and sedimentation is handled by way of silt barriers surrounding the disturbed areas. The use of Best Management Practices per the Rockingham Conservation District / DES Handbook have been applied to the design of these structures and will be observed during all stages of construction. All land disturbed during construction will be stabilized within 30 days of groundbreaking. Existing wetlands and abutters will suffer no adverse effects resulting from this proposed development.

2.0 EXISTING CONDITIONS ANALYSIS

The existing property is located on a parcel consisting of woodlands, a residential home, and extensive lawn areas. The existing topography is such that the site analysis is divided into three subcatchments within the area proposed to be improved, and includes a large area of contributing off-site area comprised of residential houses. Final Reach #<100> flows towards the northeast of the proposed improvement area, Final Reach #<200> flows towards the South, and Reach #300 flows toward the east of the proposed improvement area.

Classified by a combination of Site-Specific and NRCS Soil Mapping, the land of the site is composed of relatively flat slopes and soils categorized into the Hydrologic Soil Groups (HSG) A, B, C, and D (See appendix for Hiss/HSG designations). The majority of the area to be developed is comprised of Eldrige and Scituate soils.

3.0 PROPOSED CONDITIONS ANALYSIS

The addition of the impervious area, clearing of trees, and grading of slopes causes an increase in the curve number (Cn) and a decrease in the time of concentration (Tc) which results in a potential increase in peak rates of run-off from the site. To reduce these flows to pre-development conditions, various stormwater management systems will be proposed. A pipe network consisting of catchbasins with deep sumps and oil-debris separators combined with grass-lined swales controls the conveyance of stormwater. The proposed development divides the site into several different post-construction subcatchments, but ultimately the three main subcatchments match the pre-construction analysis. The run-off is directed to off-site areas through HydroCAD “reaches” and “ponds”, consisting of a two infiltration ponds.

In an effort to prevent the sedimentation of abutting properties, the paved roadway will be graded to flow into a closed drainage system, grass-lined swales, a sediment forebay prior to flowing towards an infiltration pond. During construction, appropriate Best Management Practices (BMP's) will be applied so as to negate the potential for sediment-laden run-off to discharge off-site prior to the final stabilization of the proposed grading. The structures outlined in this proposal provide for adequate treatment of stormwater run-off for sediment control.

4.0 SEDIMENT & EROSION CONTROL PLANS BEST MANAGEMENT PRACTICES (BMP’s)

The proposed site development is protected from erosion and the roadways and abutting properties are protected from sediment by the use of Best Management Practices as outlined in the New Hampshire Stormwater Manual. Any area disturbed by construction will be re-stabilized within 30 days, and abutting properties and wetlands will not be adversely affected by this development. All swales and drainage structures will be constructed and stabilized prior to having run-off directed to them.

4.1 Silt Barrier / Construction Fence

The plan set demonstrates the location of silt barriers for sediment control. Sheet E-1, Erosion and Sediment Control Details, has the specifications for installation and maintenance of the silt barriers selected for the site. In areas where the limits of construction need to be emphasized to operators, construction fence for added visibility will be installed. Orange construction fence will be VISI Perimeter Fence by Conwed Plastic Fencing, or approved equal. The four-foot construction fencing is to be installed using six-foot posts buried at least two feet into the ground spaced six to eight feet apart.

4.2 Vegetated Stabilization

All areas that are disturbed during construction will be stabilized with vegetated material within 30 days of disturbance. Construction will be managed in such a manner that erosion is prevented and that no abutter's property will be subjected to any siltation, unless otherwise permitted. All areas to be planted with grass for long-term cover will follow the specifications on Sheet E-1 using the seeding mixture below:

Mixture C	**Pounds per Acre**	**Pounds per 1,000 sf**
Tall Fescue	20	0.45
Creeping Red Fescue	20	0.45
Birdsfoot Trefoil	8	0.20
Total	**48**	**1.10**

4.3 Stabilized Construction Entrance/Exit

A temporary gravel construction entrance/exit provides an area where mud can be dislodged from tires before the vehicle leaves the construction site to reduce the amount of mud and sediment transported onto paved municipal and state roads. The stone size for the gravel pad should be between 1- and 2-inch coarse aggregate and the pad itself constructed to a minimum length of 50' for the full width of the access road. The aggregate should be placed at least six inches thick. Plan and profile view details are shown on Sheet E1 - Sediment and Erosion Control Detail Plan.

4.2 Drainage Swales / Stormwater Conveyance Channels

Drainage swales will be stabilized with vegetation for long term cover as outlined below using seed mixture C. As a general rule, velocities in the swale should not exceed 3.0 feet per second for a vegetated swale although velocities as high as 4.5 FPS are allowed under certain soil conditions.

4.5 Level Spreaders

Level spreaders enable any run-off directed towards them to be spread evenly into sheet flow prior to discharge into wetlands or treatment by a filter strip, thus allowing for better filter strip efficiency and a lesser potential for erosion.

4.6 Vegetated Buffers

Vegetated buffers are areas of land with natural or planted vegetation designed to receive sheet run-off from upgradient development. These natural areas, preferably wooded, are effective in removing sediment and sediment-laden pollutants from such run-off, although their effectiveness is severely diminished when forced to deal with concentrated flow and must therefore be equipped with a level-spreading device. Vegetated buffers should not have a slope exceeding fifteen percent and have a minimum length of seventy-five feet.

4.6 Filter Strips

Filter strips are areas of land with natural or planted vegetation designed to receive sheet run-off from upgradient development. These natural areas, preferably wooded, are effective in removing sediment and sediment-laden pollutants from such run-off, although their effectiveness is severely diminished when forced to deal with concentrated flow and must therefore be equipped with a level-spreading device. Filter strips should not have a slope exceeding fifteen percent and have a minimum length of seventy-five feet.

4.4 Environmental Dust Control

Dust will be controlled on the site using multiple Best Management Practices. Mulching and temporary seeding will be the first line of protection to be utilized where problems occur. If dust problems are not solved by these applications, the use of water and calcium chloride can be applied. Calcium chloride will be applied at a rate that will keep the surface moist but not cause pollution.

4.5 Construction Sequence

1. Cut and remove trees in construction areas as directed or required.

2. Construct and/or install temporary and permanent sediment erosion and detention control facilities, as required. Erosion, sediment, and facilities shall be installed and stabilized prior to any earth moving operation, and prior to directing run-off to them.

3. Clear, cut, grub, and dispose of debris in approved facilities.

4. Excavate and stockpile topsoil / loam. All disturbed areas shall be stabilized immediately after grading.

5. Construct the roadway and its associated drainage structures.

6. Begin permanent and temporary seeding and mulching. All cut and fill slopes and disturbed areas shall be seeded and mulched as required or directed.

7. Daily, or as required, construct temporary berms, drainage ditches, sediment traps, etc. to prevent erosion on the site and prevent any siltation of abutting waters or property.

8. Inspect and maintain all erosion and sediment control measures during construction.

9. Complete permanent seeding and landscaping.

10. Remove temporary erosion control measures after seeding areas have established themselves and site improvements are complete. Smooth and re-vegetate all disturbed areas.

11. All swales and drainage structures will be constructed and stabilized prior to having run-off being directed to them.

12. Finish paving all roadways.

4.6 Temporary Erosion Control Measures

1. The smallest practical area of land shall be exposed at any one time.

2. Erosion and sediment control measures shall be installed as shown on the plans and at locations as required, or directed by the engineer.

3. All disturbed areas shall be returned to original grades and elevations. Disturbed areas shall be loamed with a minimum of 4” of loam and seeded with not less than 1.10 pound of seed per 1,000 square feet (48 pounds per acre) of area.

4. Silt barriers shall be inspected periodically and after every rainstorm during the life of the project. All damaged areas shall be repaired and sediment deposits shall periodically be removed and properly disposed of.

5. After all disturbed areas have been stabilized, the temporary erosion control measures are to be removed and the area disturbed by the removal smoothed and revegetated.

6. Areas must be seeded and mulched within 5 days of final grading, permanently stabilized within 15 days of final grading, or temporarily stabilized within 30 days of initial disturbance of soil.

4.7 Inspection and Maintenance Schedule

Silt barriers shall be inspected during and after storm events to ensure that the fence still has integrity and is not allowing sediment to pass.

5.0 CONCLUSION

This proposed site development off of Bunker Hill Road in Stratham, NH will have no adverse effect on the abutting property owners by way of stormwater run-off or siltation. The post-construction peak rates of run-off for the site will be lower than the existing conditions for the storm events, as shown in the tables above. Appropriate steps will be taken to eliminate erosion and sedimentation; these will be accomplished through the construction of a drainage system consisting of a forebay and two infiltration ponds. The Best Management Practices developed by the State of New Hampshire have been utilized in the design of this system and these applications will be enforced throughout the construction process.

An Alteration of Terrain Permit (RSA 485: A-17) is not required for this project due to the area of disturbance being less than 100,000 square feet.

Respectfully Submitted,

BEALS ASSOCIATES, *PLLC.*

Christian O. Smith

Christian O Smith, PE
Principal

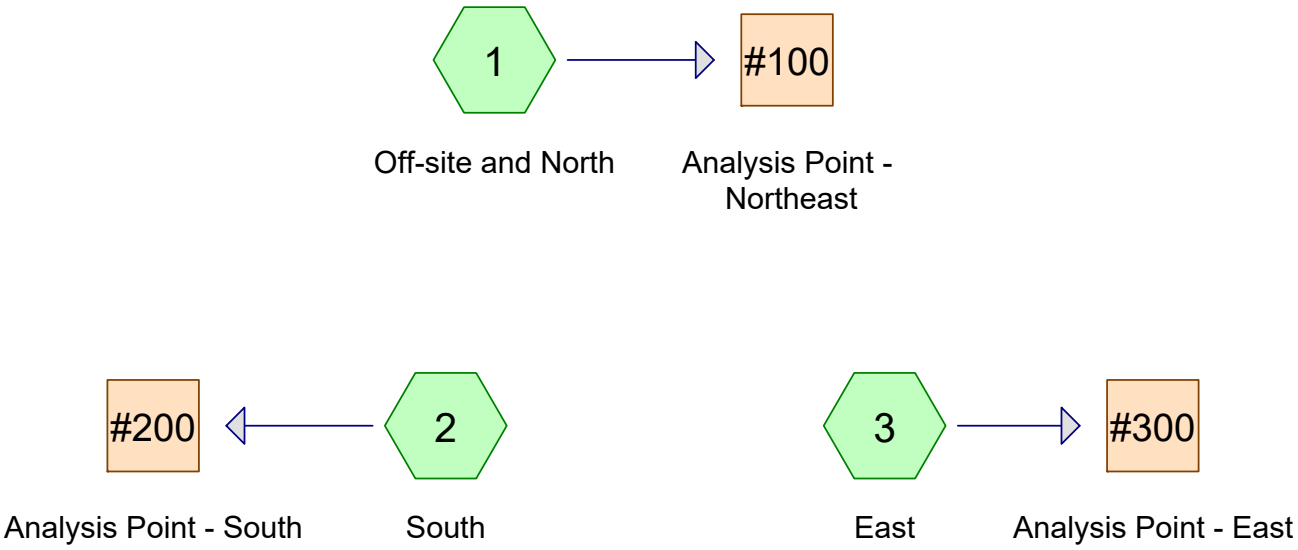
Appendix I

Existing Conditions Analysis

2-Year 24-Hour Summary

10-Year 24-Hour Complete

25-Year 24-Hour Summary



Subcat Reach Pond Link

Routing Diagram for NH-1500 Existing
Prepared by Beals Associates, PLLC, Printed 1/25/2024

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
9.753	46	2 acre lots, 12% imp, HSG A (1)
2.766	77	2 acre lots, 12% imp, HSG C (1)
0.397	82	2 acre lots, 12% imp, HSG D (1)
1.201	39	>75% Grass cover, Good, HSG A (2)
10.338	74	>75% Grass cover, Good, HSG C (1, 2, 3)
0.029	30	Brush, Good, HSG A (2)
0.027	65	Brush, Good, HSG C (2)
0.192	98	Paved parking, HSG A (2)
0.190	98	Paved parking, HSG C (2, 3)
0.093	98	Roofs, HSG A (2)
0.070	98	Roofs, HSG C (3)
0.203	30	Woods, Good, HSG A (2)
3.385	70	Woods, Good, HSG C (1, 2, 3)
28.643	**63**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
11.471	HSG A	1, 2
0.000	HSG B	
16.775	HSG C	1, 2, 3
0.397	HSG D	1
0.000	Other	
28.643		**TOTAL AREA**

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: Off-site and North Runoff Area=946,088 sf 7.14% Impervious Runoff Depth=0.63"
Flow Length=2,139' Tc=56.1 min CN=WQ Runoff=5.92 cfs 1.139 af

Subcatchment 2: South Runoff Area=183,613 sf 7.93% Impervious Runoff Depth=0.84"
Flow Length=533' Tc=12.1 min CN=WQ Runoff=3.11 cfs 0.296 af

Subcatchment 3: East Runoff Area=118,007 sf 7.76% Impervious Runoff Depth=1.15"
Flow Length=496' Tc=39.1 min CN=WQ Runoff=1.67 cfs 0.259 af

Reach #100: Analysis Point - Northeast Inflow=5.92 cfs 1.139 af
Outflow=5.92 cfs 1.139 af

Reach #200: Analysis Point - South Inflow=3.11 cfs 0.296 af
Outflow=3.11 cfs 0.296 af

Reach #300: Analysis Point - East Inflow=1.67 cfs 0.259 af
Outflow=1.67 cfs 0.259 af

Total Runoff Area = 28.643 ac Runoff Volume = 1.695 af Average Runoff Depth = 0.71"
92.69% Pervious = 26.549 ac 7.31% Impervious = 2.094 ac

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: Off-site and North Runoff Area=946,088 sf 7.14% Impervious Runoff Depth=1.50"
Flow Length=2,139' Tc=56.1 min CN=WQ Runoff=14.30 cfs 2.715 af

Subcatchment 2: South Runoff Area=183,613 sf 7.93% Impervious Runoff Depth=1.75"
Flow Length=533' Tc=12.1 min CN=WQ Runoff=6.58 cfs 0.613 af

Subcatchment 3: East Runoff Area=118,007 sf 7.76% Impervious Runoff Depth=2.39"
Flow Length=496' Tc=39.1 min CN=WQ Runoff=3.67 cfs 0.539 af

Reach #100: Analysis Point - Northeast Inflow=14.30 cfs 2.715 af
Outflow=14.30 cfs 2.715 af

Reach #200: Analysis Point - South Inflow=6.58 cfs 0.613 af
Outflow=6.58 cfs 0.613 af

Reach #300: Analysis Point - East Inflow=3.67 cfs 0.539 af
Outflow=3.67 cfs 0.539 af

Total Runoff Area = 28.643 ac Runoff Volume = 3.868 af Average Runoff Depth = 1.62"
92.69% Pervious = 26.549 ac 7.31% Impervious = 2.094 ac

Summary for Subcatchment 1: Off-site and North

Runoff = 14.30 cfs @ 12.80 hrs, Volume= 2.715 af, Depth= 1.50"
Routed to Reach #100 : Analysis Point - Northeast

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=4.94"

Area (sf)	CN	Description
424,852	46	2 acre lots, 12% imp, HSG A
120,469	77	2 acre lots, 12% imp, HSG C
17,315	82	2 acre lots, 12% imp, HSG D
94,122	70	Woods, Good, HSG C
289,330	74	>75% Grass cover, Good, HSG C
946,088		Weighted Average
878,572		92.86% Pervious Area
67,516		7.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	50	0.0400	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.92"
13.9	910	0.0242	1.09		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
23.4	514	0.0214	0.37		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
2.1	106	0.0140	0.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.1	73	0.0550	0.59		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
10.1	486	0.0130	0.80		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
56.1	2,139	Total			

Summary for Subcatchment 2: South

Runoff = 6.58 cfs @ 12.17 hrs, Volume= 0.613 af, Depth= 1.75"
Routed to Reach #200 : Analysis Point - South

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=4.94"

Area (sf)	CN	Description
1,254	30	Brush, Good, HSG A
8,850	30	Woods, Good, HSG A
52,307	39	>75% Grass cover, Good, HSG A
8,362	98	Paved parking, HSG A
4,038	98	Roofs, HSG A
1,177	65	Brush, Good, HSG C
12,506	70	Woods, Good, HSG C
92,955	74	>75% Grass cover, Good, HSG C
2,164	98	Paved parking, HSG C
183,613		Weighted Average
169,049		92.07% Pervious Area
14,564		7.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	50	0.0800	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.92"
8.7	483	0.0176	0.93		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
12.1	533	Total			

Summary for Subcatchment 3: East

Runoff = 3.67 cfs @ 12.55 hrs, Volume= 0.539 af, Depth= 2.39"
Routed to Reach #300 : Analysis Point - East

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=4.94"

Area (sf)	CN	Description
40,802	70	Woods, Good, HSG C
68,052	74	>75% Grass cover, Good, HSG C
6,098	98	Paved parking, HSG C
3,055	98	Roofs, HSG C
118,007		Weighted Average
108,854		92.24% Pervious Area
9,153		7.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	50	0.0240	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.92"
33.6	446	0.0010	0.22		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
39.1	496	Total			

Summary for Reach #100: Analysis Point - Northeast

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 21.719 ac, 7.14% Impervious, Inflow Depth = 1.50" for 10-YR event
Inflow = 14.30 cfs @ 12.80 hrs, Volume= 2.715 af
Outflow = 14.30 cfs @ 12.80 hrs, Volume= 2.715 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Reach #200: Analysis Point - South

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 4.215 ac, 7.93% Impervious, Inflow Depth = 1.75" for 10-YR event
Inflow = 6.58 cfs @ 12.17 hrs, Volume= 0.613 af
Outflow = 6.58 cfs @ 12.17 hrs, Volume= 0.613 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Reach #300: Analysis Point - East

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 2.709 ac, 7.76% Impervious, Inflow Depth = 2.39" for 10-YR event
Inflow = 3.67 cfs @ 12.55 hrs, Volume= 0.539 af
Outflow = 3.67 cfs @ 12.55 hrs, Volume= 0.539 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: Off-site and North Runoff Area=946,088 sf 7.14% Impervious Runoff Depth=2.34"
Flow Length=2,139' Tc=56.1 min CN=WQ Runoff=22.93 cfs 4.240 af

Subcatchment 2: South Runoff Area=183,613 sf 7.93% Impervious Runoff Depth=2.59"
Flow Length=533' Tc=12.1 min CN=WQ Runoff=9.65 cfs 0.910 af

Subcatchment 3: East Runoff Area=118,007 sf 7.76% Impervious Runoff Depth=3.49"
Flow Length=496' Tc=39.1 min CN=WQ Runoff=5.42 cfs 0.788 af

Reach #100: Analysis Point - Northeast Inflow=22.93 cfs 4.240 af
Outflow=22.93 cfs 4.240 af

Reach #200: Analysis Point - South Inflow=9.65 cfs 0.910 af
Outflow=9.65 cfs 0.910 af

Reach #300: Analysis Point - East Inflow=5.42 cfs 0.788 af
Outflow=5.42 cfs 0.788 af

Total Runoff Area = 28.643 ac Runoff Volume = 5.938 af Average Runoff Depth = 2.49"
92.69% Pervious = 26.549 ac 7.31% Impervious = 2.094 ac

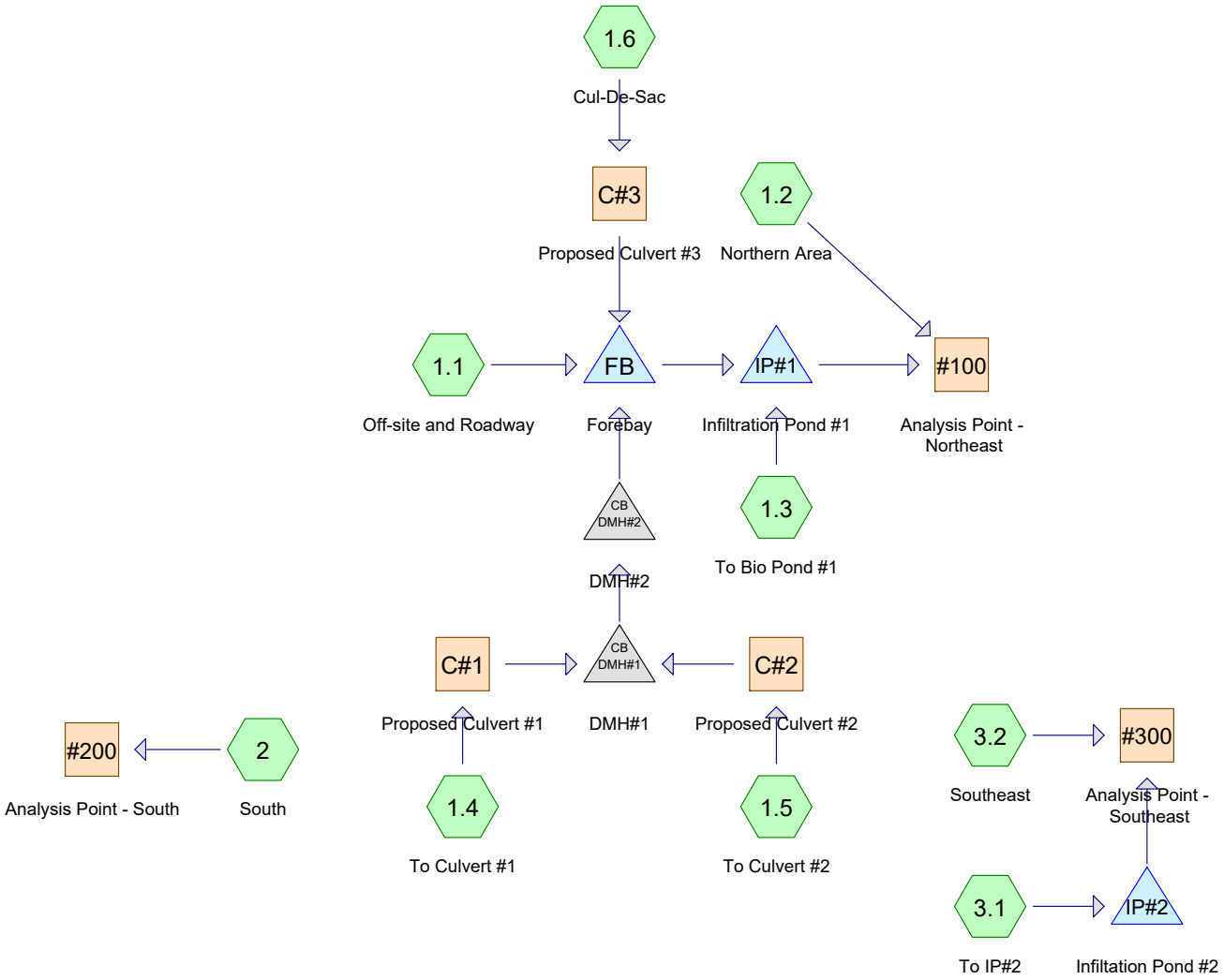
Appendix II

Proposed Conditions Analysis

2-Year 24-Hour Summary

10-Year 24-Hour Complete

25-Year 24-Hour Summary



Subcat Reach Pond Link

Routing Diagram for NH-1500 Proposed
Prepared by Beals Associates, PLLC, Printed 1/31/2024

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
9.753	46	2 acre lots, 12% imp, HSG A (1.1)
10.809	77	2 acre lots, 12% imp, HSG C (1.1, 1.2, 1.3, 1.5, 2, 3.1, 3.2)
0.397	82	2 acre lots, 12% imp, HSG D (1.1)
1.201	39	>75% Grass cover, Good, HSG A (2)
2.323	74	>75% Grass cover, Good, HSG C (1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2, 3.2)
0.029	30	Brush, Good, HSG A (2)
0.022	65	Brush, Good, HSG C (1.5, 2)
0.192	98	Paved parking, HSG A (2)
0.674	98	Paved parking, HSG C (1.1, 1.4, 1.5, 2)
0.093	98	Roofs, HSG A (2)
0.203	30	Woods, Good, HSG A (2)
2.947	70	Woods, Good, HSG C (1.1, 1.2, 1.3, 1.5, 2, 3.1, 3.2)
28.643	**64**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
11.471	HSG A	1.1, 2
0.000	HSG B	
16.775	HSG C	1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2, 3.1, 3.2
0.397	HSG D	1.1
0.000	Other	
28.643		**TOTAL AREA**

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1.1: Off-site and Roadway Runoff Area=830,642 sf 13.10% Impervious Runoff Depth=0.67"
Flow Length=2,087' Tc=55.6 min CN=WQ Runoff=5.59 cfs 1.061 af

Subcatchment 1.2: Northern Area Runoff Area=86,916 sf 2.19% Impervious Runoff Depth=0.97"
Flow Length=336' Tc=24.0 min CN=WQ Runoff=1.31 cfs 0.162 af

Subcatchment 1.3: To Bio Pond #1 Runoff Area=24,538 sf 3.69% Impervious Runoff Depth=1.12"
Flow Length=314' Tc=25.4 min CN=WQ Runoff=0.43 cfs 0.053 af

Subcatchment 1.4: To Culvert #1 Runoff Area=14,366 sf 29.54% Impervious Runoff Depth=1.65"
Flow Length=318' Tc=8.2 min CN=WQ Runoff=0.53 cfs 0.045 af

Subcatchment 1.5: To Culvert #2 Runoff Area=34,830 sf 21.89% Impervious Runoff Depth=1.44"
Flow Length=325' Tc=8.3 min CN=WQ Runoff=1.15 cfs 0.096 af

Subcatchment 1.6: Cul-De-Sac Runoff Area=9,503 sf 0.00% Impervious Runoff Depth=1.07"
Flow Length=97' Slope=0.0210 '/' Tc=6.6 min CN=74 Runoff=0.25 cfs 0.019 af

Subcatchment 2: South Runoff Area=142,777 sf 13.97% Impervious Runoff Depth=0.85"
Flow Length=533' Tc=12.1 min CN=WQ Runoff=2.48 cfs 0.231 af

Subcatchment 3.1: To IP#2 Runoff Area=31,503 sf 11.63% Impervious Runoff Depth=1.24"
Flow Length=211' Tc=7.8 min CN=WQ Runoff=0.94 cfs 0.074 af

Subcatchment 3.2: Southeast Runoff Area=72,623 sf 5.81% Impervious Runoff Depth=1.06"
Flow Length=411' Tc=15.2 min CN=WQ Runoff=1.45 cfs 0.148 af

Reach #100: Analysis Point - Northeast Inflow=1.31 cfs 0.162 af
Outflow=1.31 cfs 0.162 af

Reach #200: Analysis Point - South Inflow=2.48 cfs 0.231 af
Outflow=2.48 cfs 0.231 af

Reach #300: Analysis Point - Southeast Inflow=1.45 cfs 0.148 af
Outflow=1.45 cfs 0.148 af

Reach C#1: Proposed Culvert #1 Avg. Flow Depth=0.15' Max Vel=7.01 fps Inflow=0.53 cfs 0.045 af
12.0" Round Pipe n=0.012 L=25.0' S=0.0756 '/' Capacity=10.61 cfs Outflow=0.53 cfs 0.045 af

Reach C#2: Proposed Culvert #2 Avg. Flow Depth=0.18' Max Vel=11.73 fps Inflow=1.15 cfs 0.096 af
12.0" Round Pipe n=0.012 L=11.0' S=0.1718 '/' Capacity=16.00 cfs Outflow=1.15 cfs 0.096 af

Reach C#3: Proposed Culvert #3 Avg. Flow Depth=0.21' Max Vel=2.05 fps Inflow=0.25 cfs 0.019 af
12.0" Round Pipe n=0.013 L=50.0' S=0.0050 '/' Capacity=2.52 cfs Outflow=0.25 cfs 0.019 af

Pond DMH#1: DMH#1 Peak Elev=91.72' Inflow=1.68 cfs 0.141 af
15.0" Round Culvert n=0.013 L=325.0' S=0.0050 '/' Outflow=1.68 cfs 0.141 af

Pond DMH#2: DMH#2 Peak Elev=89.99' Inflow=1.68 cfs 0.141 af
15.0" Round Culvert n=0.013 L=300.0' S=0.0050 '/' Outflow=1.68 cfs 0.141 af

Pond FB: Forebay Peak Elev=82.65' Storage=5,990 cf Inflow=5.88 cfs 1.221 af
Outflow=5.87 cfs 1.096 af

Pond IP#1: Infiltration Pond #1 Peak Elev=81.63' Storage=24,587 cf Inflow=6.08 cfs 1.149 af
Discarded=0.85 cfs 1.149 af Primary=0.00 cfs 0.000 af Outflow=0.85 cfs 1.149 af

Pond IP#2: Infiltation Pond #2 Peak Elev=94.43' Storage=954 cf Inflow=0.94 cfs 0.074 af
Discarded=0.16 cfs 0.074 af Primary=0.00 cfs 0.000 af Outflow=0.16 cfs 0.074 af

Total Runoff Area = 28.643 ac Runoff Volume = 1.889 af Average Runoff Depth = 0.79"
87.87% Pervious = 25.169 ac 12.13% Impervious = 3.474 ac

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1.1: Off-site and Roadway Runoff Area=830,642 sf 13.10% Impervious Runoff Depth=1.52"
Flow Length=2,087' Tc=55.6 min CN=WQ Runoff=12.62 cfs 2.419 af

Subcatchment 1.2: Northern Area Runoff Area=86,916 sf 2.19% Impervious Runoff Depth=2.17"
Flow Length=336' Tc=24.0 min CN=WQ Runoff=3.11 cfs 0.360 af

Subcatchment 1.3: To Bio Pond #1 Runoff Area=24,538 sf 3.69% Impervious Runoff Depth=2.39"
Flow Length=314' Tc=25.4 min CN=WQ Runoff=0.95 cfs 0.112 af

Subcatchment 1.4: To Culvert #1 Runoff Area=14,366 sf 29.54% Impervious Runoff Depth=3.02"
Flow Length=318' Tc=8.2 min CN=WQ Runoff=1.00 cfs 0.083 af

Subcatchment 1.5: To Culvert #2 Runoff Area=34,830 sf 21.89% Impervious Runoff Depth=2.78"
Flow Length=325' Tc=8.3 min CN=WQ Runoff=2.29 cfs 0.185 af

Subcatchment 1.6: Cul-De-Sac Runoff Area=9,503 sf 0.00% Impervious Runoff Depth=2.32"
Flow Length=97' Slope=0.0210 '/' Tc=6.6 min CN=74 Runoff=0.57 cfs 0.042 af

Subcatchment 2: South Runoff Area=142,777 sf 13.97% Impervious Runoff Depth=1.68"
Flow Length=533' Tc=12.1 min CN=WQ Runoff=4.87 cfs 0.460 af

Subcatchment 3.1: To IP#2 Runoff Area=31,503 sf 11.63% Impervious Runoff Depth=2.55"
Flow Length=211' Tc=7.8 min CN=WQ Runoff=2.01 cfs 0.154 af

Subcatchment 3.2: Southeast Runoff Area=72,623 sf 5.81% Impervious Runoff Depth=2.30"
Flow Length=411' Tc=15.2 min CN=WQ Runoff=3.33 cfs 0.319 af

Reach #100: Analysis Point - Northeast Inflow=9.34 cfs 1.590 af
Outflow=9.34 cfs 1.590 af

Reach #200: Analysis Point - South Inflow=4.87 cfs 0.460 af
Outflow=4.87 cfs 0.460 af

Reach #300: Analysis Point - Southeast Inflow=3.33 cfs 0.319 af
Outflow=3.33 cfs 0.319 af

Reach C#1: Proposed Culvert #1 Avg. Flow Depth=0.21' Max Vel=8.47 fps Inflow=1.00 cfs 0.083 af
12.0" Round Pipe n=0.012 L=25.0' S=0.0756 '/' Capacity=10.61 cfs Outflow=1.00 cfs 0.083 af

Reach C#2: Proposed Culvert #2 Avg. Flow Depth=0.26' Max Vel=14.37 fps Inflow=2.29 cfs 0.185 af
12.0" Round Pipe n=0.012 L=11.0' S=0.1718 '/' Capacity=16.00 cfs Outflow=2.29 cfs 0.185 af

Reach C#3: Proposed Culvert #3 Avg. Flow Depth=0.32' Max Vel=2.59 fps Inflow=0.57 cfs 0.042 af
12.0" Round Pipe n=0.013 L=50.0' S=0.0050 '/' Capacity=2.52 cfs Outflow=0.57 cfs 0.042 af

Pond DMH#1: DMH#1 Peak Elev=92.09' Inflow=3.29 cfs 0.268 af
15.0" Round Culvert n=0.013 L=325.0' S=0.0050 '/' Outflow=3.29 cfs 0.268 af

Pond DMH#2: DMH#2 Peak Elev=90.35' Inflow=3.29 cfs 0.268 af
15.0" Round Culvert n=0.013 L=300.0' S=0.0050 '/' Outflow=3.29 cfs 0.268 af

Pond FB: Forebay Peak Elev=82.76' Storage=6,414 cf Inflow=13.15 cfs 2.729 af
Outflow=13.14 cfs 2.604 af

Pond IP#1: Infiltration Pond #1 Peak Elev=82.56' Storage=36,455 cf Inflow=13.57 cfs 2.716 af
Discarded=0.94 cfs 1.487 af Primary=8.71 cfs 1.230 af Outflow=9.65 cfs 2.716 af

Pond IP#2: Infiltation Pond #2 Peak Elev=95.09' Storage=2,672 cf Inflow=2.01 cfs 0.154 af
Discarded=0.20 cfs 0.154 af Primary=0.00 cfs 0.000 af Outflow=0.20 cfs 0.154 af

Total Runoff Area = 28.643 ac Runoff Volume = 4.134 af Average Runoff Depth = 1.73"
87.87% Pervious = 25.169 ac 12.13% Impervious = 3.474 ac

Summary for Subcatchment 1.1: Off-site and Roadway

Runoff = 12.62 cfs @ 12.79 hrs, Volume= 2.419 af, Depth= 1.52"
Routed to Pond FB : Forebay

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=4.94"

Area (sf)	CN	Description
424,852	46	2 acre lots, 12% imp, HSG A
309,852	77	2 acre lots, 12% imp, HSG C
17,315	82	2 acre lots, 12% imp, HSG D
33,389	70	Woods, Good, HSG C
26,661	74	>75% Grass cover, Good, HSG C
18,573	98	Paved parking, HSG C
830,642		Weighted Average
721,827		86.90% Pervious Area
108,815		13.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	50	0.0400	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.92"
13.9	910	0.0242	1.09		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
23.4	514	0.0214	0.37		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
2.1	106	0.0140	0.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.1	73	0.0550	0.59		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
9.6	434	0.0115	0.75		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
55.6	2,087	Total			

Summary for Subcatchment 1.2: Northern Area

Runoff = 3.11 cfs @ 12.35 hrs, Volume= 0.360 af, Depth= 2.17"
Routed to Reach #100 : Analysis Point - Northeast

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=4.94"

Area (sf)	CN	Description
53,051	70	Woods, Good, HSG C
17,967	74	>75% Grass cover, Good, HSG C
15,898	77	2 acre lots, 12% imp, HSG C
86,916		Weighted Average
85,008		97.81% Pervious Area
1,908		2.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.2	50	0.0260	0.04		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 2.92"
3.8	286	0.0320	1.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.0	336	Total			

Summary for Subcatchment 1.3: To Bio Pond #1

Runoff = 0.95 cfs @ 12.36 hrs, Volume= 0.112 af, Depth= 2.39"
Routed to Pond IP#1 : Infiltration Pond #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=4.94"

Area (sf)	CN	Description
616	70	Woods, Good, HSG C
16,375	74	>75% Grass cover, Good, HSG C
7,547	77	2 acre lots, 12% imp, HSG C
24,538		Weighted Average
23,632		96.31% Pervious Area
906		3.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.0	50	0.0210	0.04		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 2.92"
3.4	264	0.0352	1.31		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
25.4	314	Total			

Summary for Subcatchment 1.4: To Culvert #1

Runoff = 1.00 cfs @ 12.12 hrs, Volume= 0.083 af, Depth= 3.02"
Routed to Reach C#1 : Proposed Culvert #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=4.94"

Area (sf)	CN	Description
10,122	74	>75% Grass cover, Good, HSG C
4,244	98	Paved parking, HSG C
14,366		Weighted Average
10,122		70.46% Pervious Area
4,244		29.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	50	0.0500	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.92"
4.1	268	0.0240	1.08		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.2	318	Total			

Summary for Subcatchment 1.5: To Culvert #2

Runoff = 2.29 cfs @ 12.12 hrs, Volume= 0.185 af, Depth= 2.78"
Routed to Reach C#2 : Proposed Culvert #2

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=4.94"

Area (sf)	CN	Description
612	65	Brush, Good, HSG C
3,633	70	Woods, Good, HSG C
6,643	74	>75% Grass cover, Good, HSG C
18,542	77	2 acre lots, 12% imp, HSG C
5,400	98	Paved parking, HSG C
34,830		Weighted Average
27,205		78.11% Pervious Area
7,625		21.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	50	0.0500	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.92"
4.2	275	0.0240	1.08		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.3	325	Total			

Summary for Subcatchment 1.6: Cul-De-Sac

Runoff = 0.57 cfs @ 12.10 hrs, Volume= 0.042 af, Depth= 2.32"
Routed to Reach C#3 : Proposed Culvert #3

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=4.94"

Area (sf)	CN	Description
9,503	74	>75% Grass cover, Good, HSG C
9,503		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	50	0.0210	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.92"
0.8	47	0.0210	1.01		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.6	97	Total			

Summary for Subcatchment 2: South

Runoff = 4.87 cfs @ 12.17 hrs, Volume= 0.460 af, Depth= 1.68"
Routed to Reach #200 : Analysis Point - South

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=4.94"

Area (sf)	CN	Description
1,254	30	Brush, Good, HSG A
8,850	30	Woods, Good, HSG A
52,307	39	>75% Grass cover, Good, HSG A
8,362	98	Paved parking, HSG A
4,038	98	Roofs, HSG A
329	65	Brush, Good, HSG C
4,476	70	Woods, Good, HSG C
8,681	74	>75% Grass cover, Good, HSG C
53,329	77	2 acre lots, 12% imp, HSG C
1,151	98	Paved parking, HSG C
142,777		Weighted Average
122,827		86.03% Pervious Area
19,950		13.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	50	0.0800	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.92"
8.7	483	0.0176	0.93		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
12.1	533	Total			

Summary for Subcatchment 3.1: To IP#2

Runoff = 2.01 cfs @ 12.11 hrs, Volume= 0.154 af, Depth= 2.55"
Routed to Pond IP#2 : Infiltation Pond #2

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=4.94"

Area (sf)	CN	Description
983	70	Woods, Good, HSG C
30,520	77	2 acre lots, 12% imp, HSG C
31,503		Weighted Average
27,841		88.37% Pervious Area
3,662		11.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	50	0.0180	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.92"
1.7	161	0.0497	1.56		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.8	211	Total			

Summary for Subcatchment 3.2: Southeast

Runoff = 3.33 cfs @ 12.22 hrs, Volume= 0.319 af, Depth= 2.30"
Routed to Reach #300 : Analysis Point - Southeast

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=4.94"

Area (sf)	CN	Description
32,217	70	Woods, Good, HSG C
5,233	74	>75% Grass cover, Good, HSG C
35,173	77	2 acre lots, 12% imp, HSG C
72,623		Weighted Average
68,402		94.19% Pervious Area
4,221		5.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	50	0.0180	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.92"
9.1	361	0.0090	0.66		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
15.2	411	Total			

Summary for Reach #100: Analysis Point - Northeast

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 22.975 ac, 12.34% Impervious, Inflow Depth = 0.83" for 10-YR event
Inflow = 9.34 cfs @ 13.20 hrs, Volume= 1.590 af
Outflow = 9.34 cfs @ 13.20 hrs, Volume= 1.590 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Reach #200: Analysis Point - South

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 3.278 ac, 13.97% Impervious, Inflow Depth = 1.68" for 10-YR event
Inflow = 4.87 cfs @ 12.17 hrs, Volume= 0.460 af
Outflow = 4.87 cfs @ 12.17 hrs, Volume= 0.460 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Reach #300: Analysis Point - Southeast

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 2.390 ac, 7.57% Impervious, Inflow Depth = 1.60" for 10-YR event
Inflow = 3.33 cfs @ 12.22 hrs, Volume= 0.319 af
Outflow = 3.33 cfs @ 12.22 hrs, Volume= 0.319 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Reach C#1: Proposed Culvert #1

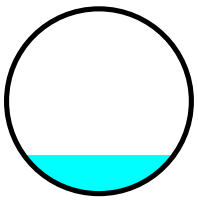
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.330 ac, 29.54% Impervious, Inflow Depth = 3.02" for 10-YR event
Inflow = 1.00 cfs @ 12.12 hrs, Volume= 0.083 af
Outflow = 1.00 cfs @ 12.12 hrs, Volume= 0.083 af, Atten= 0%, Lag= 0.0 min
Routed to Pond DMH#1 : DMH#1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.47 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 2.72 fps, Avg. Travel Time= 0.2 min

Peak Storage= 3 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.21' , Surface Width= 0.81'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 10.61 cfs

12.0" Round Pipe
n= 0.012 Concrete pipe, finished
Length= 25.0' Slope= 0.0756 '/'
Inlet Invert= 93.00', Outlet Invert= 91.11'



Summary for Reach C#2: Proposed Culvert #2

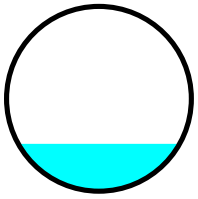
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.800 ac, 21.89% Impervious, Inflow Depth = 2.78" for 10-YR event
Inflow = 2.29 cfs @ 12.12 hrs, Volume= 0.185 af
Outflow = 2.29 cfs @ 12.12 hrs, Volume= 0.185 af, Atten= 0%, Lag= 0.0 min
Routed to Pond DMH#1 : DMH#1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Max. Velocity= 14.37 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 4.46 fps, Avg. Travel Time= 0.0 min

Peak Storage= 2 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.26' , Surface Width= 0.87'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 16.00 cfs

12.0" Round Pipe
n= 0.012 Concrete pipe, finished
Length= 11.0' Slope= 0.1718 '/'
Inlet Invert= 93.00', Outlet Invert= 91.11'



Summary for Reach C#3: Proposed Culvert #3

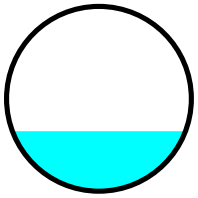
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.218 ac, 0.00% Impervious, Inflow Depth = 2.32" for 10-YR event
Inflow = 0.57 cfs @ 12.10 hrs, Volume= 0.042 af
Outflow = 0.57 cfs @ 12.11 hrs, Volume= 0.042 af, Atten= 0%, Lag= 0.2 min
Routed to Pond FB : Forebay

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.59 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 0.95 fps, Avg. Travel Time= 0.9 min

Peak Storage= 11 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.32' , Surface Width= 0.94'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.52 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 50.0' Slope= 0.0050 '/'
Inlet Invert= 80.90', Outlet Invert= 80.65'



Summary for Pond DMH#1: DMH#1

[62] Hint: Exceeded Reach C#1 OUTLET depth by 0.76' @ 12.15 hrs
[62] Hint: Exceeded Reach C#2 OUTLET depth by 0.72' @ 12.15 hrs

Inflow Area = 1.129 ac, 24.13% Impervious, Inflow Depth = 2.85" for 10-YR event
Inflow = 3.29 cfs @ 12.12 hrs, Volume= 0.268 af
Outflow = 3.29 cfs @ 12.12 hrs, Volume= 0.268 af, Atten= 0%, Lag= 0.0 min
Primary = 3.29 cfs @ 12.12 hrs, Volume= 0.268 af
Routed to Pond DMH#2 : DMH#2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 92.09' @ 12.13 hrs
Flood Elev= 95.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	91.01'	**15.0" Round Culvert** L= 325.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 91.01' / 89.38' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.12 cfs @ 12.12 hrs HW=92.07' TW=90.33' (Dynamic Tailwater)
1=Culvert (Outlet Controls 3.12 cfs @ 3.78 fps)

Summary for Pond DMH#2: DMH#2

Inflow Area = 1.129 ac, 24.13% Impervious, Inflow Depth = 2.85" for 10-YR event
Inflow = 3.29 cfs @ 12.12 hrs, Volume= 0.268 af
Outflow = 3.29 cfs @ 12.12 hrs, Volume= 0.268 af, Atten= 0%, Lag= 0.0 min
Primary = 3.29 cfs @ 12.12 hrs, Volume= 0.268 af
Routed to Pond FB : Forebay

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 90.35' @ 12.12 hrs
Flood Elev= 101.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.28'	**15.0" Round Culvert** L= 300.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 89.28' / 87.78' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.20 cfs @ 12.12 hrs HW=90.33' TW=82.66' (Dynamic Tailwater)
1=Culvert (Barrel Controls 3.20 cfs @ 3.92 fps)

Summary for Pond FB: Forebay

[63] Warning: Exceeded Reach C#3 INLET depth by 1.74' @ 12.85 hrs

Inflow Area = 20.416 ac, 13.57% Impervious, Inflow Depth = 1.60" for 10-YR event
Inflow = 13.15 cfs @ 12.79 hrs, Volume= 2.729 af
Outflow = 13.14 cfs @ 12.80 hrs, Volume= 2.604 af, Atten= 0%, Lag= 0.8 min
Primary = 13.14 cfs @ 12.80 hrs, Volume= 2.604 af
Routed to Pond IP#1 : Infiltration Pond #1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 82.76' @ 12.80 hrs Surf.Area= 4,108 sf Storage= 6,414 cf
Flood Elev= 83.00' Surf.Area= 4,806 sf Storage= 7,478 cf

Plug-Flow detention time= 40.9 min calculated for 2.604 af (95% of inflow)
Center-of-Mass det. time= 15.6 min (895.9 - 880.3)

Volume	Invert	Avail.Storage	Storage Description
#1	79.00'	7,478 cf	**Custom Stage Data (Conic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
79.00	634	0	0	634
80.00	1,032	825	825	1,045
82.00	2,251	3,205	4,030	2,296
83.00	4,806	3,449	7,478	4,859

Device	Routing	Invert	Outlet Devices
#1	Primary	82.50'	**40.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=13.14 cfs @ 12.80 hrs HW=82.76' TW=81.95' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 13.14 cfs @ 1.26 fps)

Summary for Pond IP#1: Infiltration Pond #1

Inflow Area = 20.980 ac, 13.30% Impervious, Inflow Depth = 1.55" for 10-YR event
Inflow = 13.57 cfs @ 12.78 hrs, Volume= 2.716 af
Outflow = 9.65 cfs @ 13.21 hrs, Volume= 2.716 af, Atten= 29%, Lag= 25.4 min
Discarded = 0.94 cfs @ 13.21 hrs, Volume= 1.487 af
Primary = 8.71 cfs @ 13.21 hrs, Volume= 1.230 af
Routed to Reach #100 : Analysis Point - Northeast

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 82.56' @ 13.21 hrs Surf.Area= 13,574 sf Storage= 36,455 cf
Flood Elev= 83.00' Surf.Area= 14,258 sf Storage= 42,643 cf

Plug-Flow detention time= 227.5 min calculated for 2.716 af (100% of inflow)
Center-of-Mass det. time= 227.6 min (1,121.7 - 894.1)

Volume	Invert	Avail.Storage	Storage Description
#1	79.30'	42,643 cf	**Custom Stage Data (Conic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
79.30	8,936	0.0	0	0	8,936
80.00	9,883	100.0	6,584	6,584	9,913
82.00	12,743	100.0	22,566	29,149	12,870
83.00	14,258	100.0	13,493	42,643	14,440

Device	Routing	Invert	Outlet Devices
#1	Discarded	79.30'	**3.000 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#2	Primary	80.20'	**12.0" Round Culvert X 2.00** L= 24.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 80.20' / 80.00' S= 0.0083 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 2	81.70'	**24.0" Vert. Horizontal Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#4	Primary	82.50'	**20.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=0.94 cfs @ 13.21 hrs HW=82.55' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.94 cfs)

Primary OutFlow Max=8.69 cfs @ 13.21 hrs HW=82.55' TW=0.00' (Dynamic Tailwater)
└**2=Culvert** (Passes 8.07 cfs of 10.30 cfs potential flow)
└**3=Horizontal Grate** (Orifice Controls 8.07 cfs @ 3.15 fps)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 0.62 cfs @ 0.57 fps)

Summary for Pond IP#2: Infiltation Pond #2

Inflow Area = 0.723 ac, 11.63% Impervious, Inflow Depth = 2.55" for 10-YR event
Inflow = 2.01 cfs @ 12.11 hrs, Volume= 0.154 af
Outflow = 0.20 cfs @ 13.16 hrs, Volume= 0.154 af, Atten= 90%, Lag= 63.0 min
Discarded = 0.20 cfs @ 13.16 hrs, Volume= 0.154 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach #300 : Analysis Point - Southeast

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 95.09' @ 13.16 hrs Surf.Area= 2,857 sf Storage= 2,672 cf
Flood Elev= 95.75' Surf.Area= 3,369 sf Storage= 4,727 cf

Plug-Flow detention time= 128.9 min calculated for 0.154 af (100% of inflow)
Center-of-Mass det. time= 128.9 min (961.2 - 832.4)

Volume	Invert	Avail.Storage	Storage Description
#1	94.00'	4,727 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
94.00	2,068	0	0	2,068
95.00	2,791	2,420	2,420	2,812
95.75	3,369	2,307	4,727	3,408

Device	Routing	Invert	Outlet Devices
#1	Discarded	94.00'	**3.000 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#2	Primary	95.25'	**10.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Discarded OutFlow Max=0.20 cfs @ 13.16 hrs HW=95.09' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.20 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=94.00' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1.1: Off-site and Roadway Runoff Area=830,642 sf 13.10% Impervious Runoff Depth=2.35"
Flow Length=2,087' Tc=55.6 min CN=WQ Runoff=19.98 cfs 3.733 af

Subcatchment 1.2: Northern Area Runoff Area=86,916 sf 2.19% Impervious Runoff Depth=3.24"
Flow Length=336' Tc=24.0 min CN=WQ Runoff=4.70 cfs 0.538 af

Subcatchment 1.3: To Bio Pond #1 Runoff Area=24,538 sf 3.69% Impervious Runoff Depth=3.51"
Flow Length=314' Tc=25.4 min CN=WQ Runoff=1.41 cfs 0.165 af

Subcatchment 1.4: To Culvert #1 Runoff Area=14,366 sf 29.54% Impervious Runoff Depth=4.20"
Flow Length=318' Tc=8.2 min CN=WQ Runoff=1.40 cfs 0.115 af

Subcatchment 1.5: To Culvert #2 Runoff Area=34,830 sf 21.89% Impervious Runoff Depth=3.93"
Flow Length=325' Tc=8.3 min CN=WQ Runoff=3.25 cfs 0.262 af

Subcatchment 1.6: Cul-De-Sac Runoff Area=9,503 sf 0.00% Impervious Runoff Depth=3.42"
Flow Length=97' Slope=0.0210 '/' Tc=6.6 min CN=74 Runoff=0.85 cfs 0.062 af

Subcatchment 2: South Runoff Area=142,777 sf 13.97% Impervious Runoff Depth=2.47"
Flow Length=533' Tc=12.1 min CN=WQ Runoff=6.98 cfs 0.676 af

Subcatchment 3.1: To IP#2 Runoff Area=31,503 sf 11.63% Impervious Runoff Depth=3.70"
Flow Length=211' Tc=7.8 min CN=WQ Runoff=2.91 cfs 0.223 af

Subcatchment 3.2: Southeast Runoff Area=72,623 sf 5.81% Impervious Runoff Depth=3.39"
Flow Length=411' Tc=15.2 min CN=WQ Runoff=4.97 cfs 0.472 af

Reach #100: Analysis Point - Northeast Inflow=20.42 cfs 3.138 af
Outflow=20.42 cfs 3.138 af

Reach #200: Analysis Point - South Inflow=6.98 cfs 0.676 af
Outflow=6.98 cfs 0.676 af

Reach #300: Analysis Point - Southeast Inflow=4.97 cfs 0.500 af
Outflow=4.97 cfs 0.500 af

Reach C#1: Proposed Culvert #1 Avg. Flow Depth=0.25' Max Vel=9.33 fps Inflow=1.40 cfs 0.115 af
12.0" Round Pipe n=0.012 L=25.0' S=0.0756 '/' Capacity=10.61 cfs Outflow=1.40 cfs 0.115 af

Reach C#2: Proposed Culvert #2 Avg. Flow Depth=0.31' Max Vel=15.91 fps Inflow=3.25 cfs 0.262 af
12.0" Round Pipe n=0.012 L=11.0' S=0.1718 '/' Capacity=16.00 cfs Outflow=3.25 cfs 0.262 af

Reach C#3: Proposed Culvert #3 Avg. Flow Depth=0.40' Max Vel=2.89 fps Inflow=0.85 cfs 0.062 af
12.0" Round Pipe n=0.013 L=50.0' S=0.0050 '/' Capacity=2.52 cfs Outflow=0.85 cfs 0.062 af

Pond DMH#1: DMH#1 Peak Elev=92.46' Inflow=4.66 cfs 0.377 af
15.0" Round Culvert n=0.013 L=325.0' S=0.0050 '/' Outflow=4.66 cfs 0.377 af

Pond DMH#2: DMH#2 Peak Elev=90.70' Inflow=4.66 cfs 0.377 af
15.0" Round Culvert n=0.013 L=300.0' S=0.0050 '/' Outflow=4.66 cfs 0.377 af

Pond FB: Forebay Peak Elev=82.92' Storage=7,090 cf Inflow=20.71 cfs 4.173 af
Outflow=20.18 cfs 4.048 af

Pond IP#1: Infiltration Pond #1 Peak Elev=82.80' Storage=39,785 cf Inflow=20.95 cfs 4.212 af
Discarded=0.97 cfs 1.613 af Primary=19.01 cfs 2.599 af Outflow=19.97 cfs 4.212 af

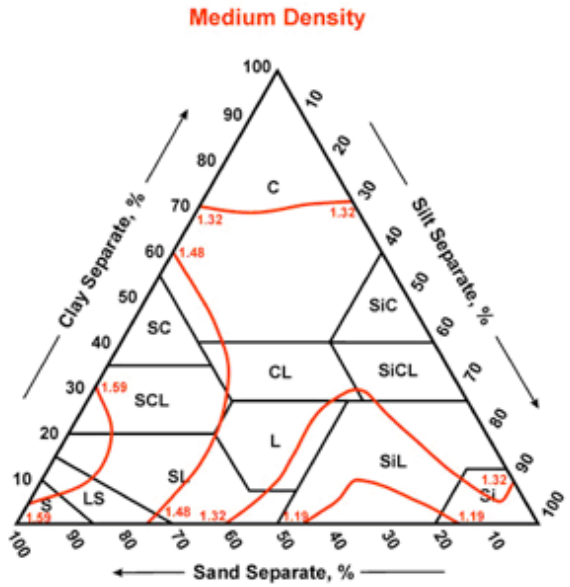
Pond IP#2: Infiltation Pond #2 Peak Elev=95.35' Storage=3,448 cf Inflow=2.91 cfs 0.223 af
Discarded=0.21 cfs 0.194 af Primary=0.77 cfs 0.029 af Outflow=0.98 cfs 0.223 af

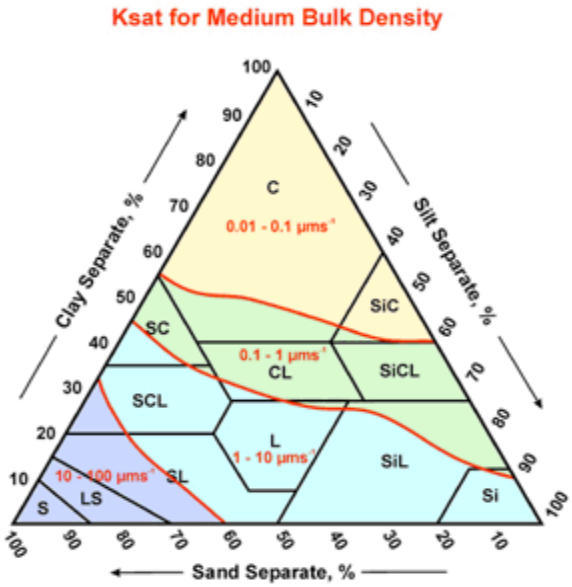
Total Runoff Area = 28.643 ac Runoff Volume = 6.246 af Average Runoff Depth = 2.62"
87.87% Pervious = 25.169 ac 12.13% Impervious = 3.474 ac

Appendix III

Charts, Graphs, and Calculations

K_{sat} VALUES
FOR
NEW HAMPSHIRE SOILS
(Including Hydrologic and DES Soil Lot Sizing Groups)





From: Guide for Estimating Ksat from Soil Properties (**Exhibit 618-9**). (http://soils.usda.gov/technical/handbook/contents/part618ex.html)

Sponsored by the Society of Soil Scientists of Northern New England
SSSNNE Special Publication No. 5
September, 2009

Soil Series	legend number	Ksat low - B in/hr	Ksat high - B in/hr	Ksat low - C in/hr	Ksat high - C in/hr	Hyd. Grp.	Group	Land Form	Temp.	Soil Textures	Spodosol ?	Other
Abenaki	501	0.6	2.0	6.00	99.0	B	2	Outwash and Stream Terraces	frigid	loamy over sandy-skeletal	no	loamy over gravelly
Acton	146	2.0	20.0	2.00	20.0	B	3	Loose till, sandy textures	mesic	sandy-skeletal	no	cobbly loamy sand
Adams	36	6.0	20.0	20.00	99.0	A	1	Outwash and Stream Terraces	frigid	sandy	yes	
Agawam	24	6.0	20.0	20.00	100.0	B	2	Outwash and Stream Terraces	mesic	loamy over sandy	no	loamy over sand/gravel
Allagash	127	0.6	2.0	6.00	20.0	B	2	Outwash and Stream Terraces	frigid	loamy over sandy	yes	loamy over sandy
Au Gres	516					B	5	Outwash and Stream Terraces	frigid	sandy	yes	single grain, loose
Bangor	572	0.6	2.0	0.60	2.0	B	2	Friable till, silty, schist & phyllite	frigid	loamy	yes	silt loam
Becket	56	0.6	2.0	0.06	0.6	C	3	Firm, platy, sandy till	frigid	loamy	yes	gravelly sandy loam in Cd
Belgrade	532	0.6	2.0	0.06	2.0	B	3	Terraces and glacial lake plains	mesic	silty	no	strata of fine sand
Bemis	224	0.6	0.2	0.00	0.2	C	5	Firm, platy, loamy till	cryic	loamy	no	
Berkshire	72	0.6	6.0	0.60	6.0	B	2	Loose till, loamy textures	frigid	loamy	yes	fine sandy loam
Bernardston	330	0.6	2.0	0.06	0.2	C	3	Firm, platy, silty till, schist & phyllite	mesic	loamy	no	channery silt loam in Cd
Bice	226	0.6	6.0	0.60	6.0	B	2	Loose till, loamy textures	frigid	loamy	no	sandy loam
Biddeford	234	0.0	0.2	0.00	0.2	D	6	Silt and Clay Deposits	frigid	fine	no	organic over clay
Binghamville	534	0.2	2.0	0.06	0.2	D	5	Terraces and glacial lake plains	mesic	silty	no	
Boscawen	220	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	frigid	sandy-skeletal	no	loamy cap
Boxford	32	0.1	0.2	0.00	0.2	C	3	Silt and Clay Deposits	mesic	fine	no	silty clay loam
Brayton	240	0.6	2.0	0.06	0.6	C	5	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	
Buckland	237	0.6	2.0	0.06	0.2	C	3	Firm, platy, loamy till	frigid	loamy	no	loam in Cd
Bucksport	895					D	6	Organic Materials - Freshwater	frigid	sapric	no	deep organic
Burnham	131	0.2	6.0	0.02	0.2	D	6	Firm, platy, silty till, schist & phylitte	frigid	loamy	no	organic over silt
Buxton	232	0.1	0.6	0.00	0.2	C	3	Silt and Clay Deposits	frigid	fine	no	silty clay
Cabot	589	0.6	2.0	0.06	0.2	D	5	Firm, platy, silty till, schist & phyllite	frigid	loamy	no	
Caesar	526	20.0	100.0	20.00	100.0	A	1	Outwash and Stream Terraces	mesic	coarse sand	no	
Canaan	663	2.0	20.0	2.00	20.0	C	4	Weathered Bedrock Till	frigid	loamy-skeletal	yes	less than 20 in. deep
Canterbury	166	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	no	loam in Cd
Canton	42	2.0	6.0	6.00	20.0	B	2	Loose till, sandy textures	mesic	loamy over sandy	no	loamy over loamy sand
Cardigan	357	0.6	2.0	0.60	2.0	B	4	Friable till, silty, schist & phyllite	mesic	loamy	no	20 to 40 in. deep
Catden	296					A/D	6	Organic Materials - Freshwater	mesic	sapric	no	deep organic
Champlain	35	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	frigid	gravelly sand	no	
Charles	209	0.6	100.0	0.60	100.0	C	5	Flood Plain (Bottom Land)	frigid	silty	no	
Charlton	62	0.6	6.0	0.60	6.0	B	2	Loose till, loamy textures	mesic	loamy	no	fine sandy loam
Chatfield	89	0.6	6.0	0.60	6.0	B	4	Loose till, bedrock	mesic	loamy	no	20 to 40 in. deep
Chatfield Var.	289	0.6	6.0	0.60	6.0	B	3	Loose till, bedrock	mesic	loamy	no	mwd to swpd
Chesuncook	126	0.6	2.0	0.02	0.2	C	3	Firm, platy, silty till, schist & phyllite	frigid	loamy	yes	channery silt loam in Cd
Chichester	442	0.6	2.0	2.00	6.0	B		Loose till, sandy textures	frigid	loamy over sandy	no	loamy over loamy sand
Chocorua	395			6.00	20.0	D	6	Organic Materials - Freshwater	frigid	sandy or sandy-skeletal	no	organic over sand
Cohas	505	0.6	2.0	0.60	100.0	C	5	Flood Plain (Bottom Land)	frigid	co. loamy over sandy (skeletal)	no	
Colonel	927	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	yes	loam in Cd
Colton	22	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	
Colton, gravelly	21	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	gravelly surface
Croghan	613	20.0	100.0	20.00	100.0	B	3	Outwash and Stream Terraces	frigid	sandy	yes	single grain in C
Dartmouth	132	0.6	2.0	0.06	0.6	B	3	Terraces and glacial lake plains	mesic	silty	no	thin strata silty clay loam
Deerfield	313	6.0	20.0	20.00	100.0	B	3	Outwash and Stream Terraces	mesic	sandy	no	single grain in C
Dixfield	378	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	yes	fine sandy loam in Cd
Dixmont	578	0.6	2.0	0.60	2.0	C	3	Friable till, silty, schist & phyllite	frigid	loamy	yes	silt loam, platy in C
Duane	413	6.0	20.0	6.00	20.0	B	3	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	cemented (ortstein)
Dutchess	366	0.6	2.0	0.60	2.0	B	2	Friable till, silty, schist & phyllite	mesic	loamy	no	very channery
Eldridge	38	6.0	20.0	0.06	0.6	C	3	Sandy/loamy over silt/clay	mesic	sandy over loamy	no	
Elliottsville	128	0.6	2.0	0.60	2.0	B	4	Friable till, silty, schist & phyllite	frigid	loamy	yes	20 to 40 in. deep
Elmridge	238	2.0	6.0	0.00	0.2	C	3	Sandy/loamy over silt/clay	mesic	loamy over clayey	no	
Elmwood	338	2.0	6.0	0.00	0.2	C	3	Sandy/loamy over silt/clay	frigid	loamy over clayey	no	
Finch	116					C	3	Outwash and Stream Terraces	frigid	sandy	yes	cemented (ortstein)

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	42.991 degrees North
Longitude	70.879 degrees West
Elevation	30 feet
Date/Time	Thu Jan 18 2024 14:18:44 GMT-0500 (Eastern Standard 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	0.66	0.82	1.04	**1yr**	0.71	0.99	1.22	1.58	2.05	2.70	2.95	**1yr**	2.39	2.83	3.25	3.96	4.60	**1yr**
2yr	0.32	0.50	0.62	0.82	1.03	1.31	**2yr**	0.89	1.18	1.52	1.95	2.51	3.25	3.60	**2yr**	2.87	3.47	3.97	4.72	5.38	**2yr**
5yr	0.38	0.58	0.73	0.98	1.26	1.62	**5yr**	1.08	1.47	1.90	2.45	3.17	4.12	4.63	**5yr**	3.65	4.45	5.10	6.01	6.79	**5yr**
10yr	0.42	0.65	0.83	1.12	1.46	1.91	**10yr**	1.26	1.74	2.25	2.93	3.80	4.94	5.60	**10yr**	4.37	5.39	6.16	7.22	8.10	**10yr**
25yr	0.48	0.77	0.98	1.35	1.79	2.37	**25yr**	1.55	2.16	2.81	3.68	4.81	6.28	7.21	**25yr**	5.56	6.93	7.91	9.21	10.24	**25yr**
50yr	0.54	0.87	1.12	1.56	2.10	2.80	**50yr**	1.81	2.55	3.34	4.39	5.76	7.53	8.72	**50yr**	6.67	8.39	9.56	11.06	12.23	**50yr**
100yr	0.61	0.98	1.27	1.80	2.45	3.31	**100yr**	2.12	3.01	3.97	5.25	6.90	9.04	10.56	**100yr**	8.00	10.16	11.56	13.31	14.61	**100yr**
200yr	0.69	1.12	1.45	2.08	2.88	3.91	**200yr**	2.48	3.56	4.70	6.25	8.25	10.85	12.79	**200yr**	9.60	12.30	13.99	16.01	17.47	**200yr**
500yr	0.82	1.34	1.75	2.54	3.55	4.86	**500yr**	3.06	4.44	5.89	7.88	10.46	13.82	16.47	**500yr**	12.23	15.84	17.99	20.45	22.13	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.23	0.36	0.44	0.60	0.73	0.89	**1yr**	0.63	0.87	0.93	1.30	1.61	2.30	2.61	**1yr**	2.04	2.51	2.90	3.30	4.00	**1yr**
2yr	0.32	0.49	0.60	0.82	1.01	1.19	**2yr**	0.87	1.17	1.37	1.82	2.33	3.12	3.53	**2yr**	2.76	3.39	3.89	4.62	5.17	**2yr**
5yr	0.36	0.55	0.68	0.93	1.19	1.42	**5yr**	1.02	1.39	1.62	2.12	2.73	3.87	4.32	**5yr**	3.42	4.16	4.79	5.67	6.40	**5yr**
10yr	0.39	0.60	0.75	1.05	1.35	1.62	**10yr**	1.17	1.59	1.82	2.40	3.07	4.47	5.05	**10yr**	3.96	4.85	5.62	6.60	7.40	**10yr**
25yr	0.45	0.69	0.86	1.22	1.61	1.94	**25yr**	1.39	1.89	2.12	2.77	3.56	4.90	6.18	**25yr**	4.33	5.94	6.92	8.06	8.96	**25yr**
50yr	0.50	0.76	0.95	1.36	1.84	2.22	**50yr**	1.58	2.17	2.37	3.09	3.98	5.54	7.19	**50yr**	4.91	6.92	8.10	9.38	10.37	**50yr**
100yr	0.56	0.85	1.06	1.54	2.11	2.54	**100yr**	1.82	2.49	2.65	3.44	4.42	6.25	8.36	**100yr**	5.53	8.04	9.50	10.91	11.96	**100yr**
200yr	0.63	0.94	1.20	1.73	2.41	2.91	**200yr**	2.08	2.84	2.96	3.82	4.90	7.03	9.74	**200yr**	6.22	9.36	11.15	12.69	13.83	**200yr**
500yr	0.74	1.10	1.41	2.05	2.91	3.50	**500yr**	2.51	3.42	3.44	4.37	5.65	8.18	11.89	**500yr**	7.24	11.43	13.78	15.48	16.73	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.29	0.44	0.54	0.72	0.89	1.08	**1yr**	0.77	1.06	1.27	1.73	2.19	3.01	3.13	**1yr**	2.66	3.01	3.60	4.38	5.07	**1yr**
2yr	0.33	0.52	0.64	0.86	1.06	1.27	**2yr**	0.92	1.24	1.48	1.95	2.50	3.44	3.70	**2yr**	3.04	3.55	4.08	4.86	5.68	**2yr**
5yr	0.40	0.62	0.77	1.05	1.34	1.62	**5yr**	1.16	1.59	1.88	2.51	3.20	4.38	4.93	**5yr**	3.88	4.74	5.42	6.38	7.17	**5yr**
10yr	0.47	0.73	0.90	1.26	1.62	1.98	**10yr**	1.40	1.94	2.27	3.06	3.87	5.42	6.15	**10yr**	4.80	5.91	6.74	7.87	8.77	**10yr**
25yr	0.58	0.89	1.10	1.57	2.07	2.57	**25yr**	1.79	2.52	2.94	4.00	5.00	7.79	8.24	**25yr**	6.90	7.93	8.99	10.42	11.48	**25yr**
50yr	0.68	1.03	1.29	1.85	2.49	3.13	**50yr**	2.15	3.06	3.57	4.89	6.10	9.77	10.30	**50yr**	8.65	9.90	11.19	12.89	14.06	**50yr**
100yr	0.80	1.21	1.51	2.19	3.00	3.81	**100yr**	2.59	3.72	4.34	6.00	7.44	12.25	12.87	**100yr**	10.85	12.38	13.92	15.97	17.24	**100yr**
200yr	0.94	1.41	1.79	2.58	3.60	4.65	**200yr**	3.11	4.54	5.30	7.36	9.07	15.41	16.11	**200yr**	13.64	15.49	17.33	19.77	21.15	**200yr**
500yr	1.16	1.73	2.22	3.23	4.59	6.03	**500yr**	3.96	5.89	6.87	9.68	11.82	20.89	21.66	**500yr**	18.48	20.82	23.13	26.26	27.76	**500yr**

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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 Rockingham County, New Hampshire

January 16, 2024

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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Contents

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.

Custom Soil Resource Report
Soil Map

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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

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

Soil Survey Area: Rockingham County, New Hampshire
Survey Area Data: Version 26, Aug 22, 2023

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

Date(s) aerial images were photographed: May 22, 2022—Jun 5, 2022

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
32A	Boxford silt loam, 0 to 3 percent slopes	13.6	11.6%
33A	Scitico silt loam, 0 to 5 percent slopes	8.7	7.4%
66B	Paxton fine sandy loam, 3 to 8 percent slopes	4.4	3.8%
115	Scarboro muck, coastal lowland, 0 to 3 percent slopes	2.8	2.4%
140B	Chatfield-Hollis-Canton complex, 0 to 8 percent slopes, rocky	9.8	8.4%
140C	Chatfield-Hollis-Canton complex, 8 to 15 percent slopes, rocky	0.0	0.0%
298	Pits, sand and gravel	4.5	3.8%
299	Udorthents, smoothed	0.0	0.0%
313A	Deerfield loamy fine sand, 0 to 3 percent slopes	3.8	3.2%
313B	Deerfield loamy fine sand, 3 to 8 percent slopes	3.4	2.9%
495	Natchaug mucky peat, 0 to 2 percent slopes	5.3	4.5%
510A	Hoosic gravelly fine sandy loam, 0 to 3 percent slopes	1.0	0.9%
510B	Hoosic gravelly fine sandy loam, 3 to 8 percent slopes	54.6	46.7%
538A	Squamscott fine sandy loam, 0 to 5 percent slopes	4.9	4.2%
Totals for Area of Interest		**116.8**	**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.

Rockingham County, New Hampshire

32A—Boxford silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 9cn3
Elevation: 0 to 1,000 feet
Mean annual precipitation: 30 to 55 inches
Mean annual air temperature: 45 to 54 degrees F
Frost-free period: 120 to 180 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Boxford and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Boxford

Setting

Parent material: Glaciomarine

Typical profile

H1 - 0 to 2 inches: silt loam
H2 - 2 to 13 inches: silt loam
H3 - 13 to 23 inches: silty clay loam
H4 - 23 to 60 inches: silty clay

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately 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: About 12 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: D
Ecological site: F144AY018NY - Moist Lake Plain
Hydric soil rating: No

Minor Components

Scitico

Percent of map unit: 10 percent
Landform: Marine terraces
Hydric soil rating: Yes

Eldridge

Percent of map unit: 5 percent

Hydric soil rating: No

Squamscott

Percent of map unit: 5 percent
Landform: Marine terraces
Hydric soil rating: Yes

33A—Scitico silt loam, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 9cn6
Elevation: 0 to 180 feet
Mean annual precipitation: 47 to 49 inches
Mean annual air temperature: 48 degrees F
Frost-free period: 155 to 165 days
Farmland classification: Farmland of local importance

Map Unit Composition

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

Description of Scitico

Setting

Landform: Marine terraces

Typical profile

H1 - 0 to 6 inches: silt loam
H2 - 6 to 12 inches: silty clay loam
H3 - 12 to 60 inches: silty clay

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly 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: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C/D
Ecological site: F144AY019NH - Wet Lake Plain
Hydric soil rating: Yes

Minor Components

Maybid
Percent of map unit: 5 percent
Landform: Marine terraces
Hydric soil rating: Yes

Squamscott
Percent of map unit: 5 percent
Landform: Marine terraces
Hydric soil rating: Yes

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

66B—Paxton fine sandy loam, 3 to 8 percent slopes

Map Unit Setting
National map unit symbol: 2t2qp
Elevation: 0 to 1,570 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
Paxton and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Paxton

Setting
Landform: Hills, drumlins, ground moraines
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Crest, nose slope, side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile
Ap - 0 to 8 inches: fine sandy loam
Bw1 - 8 to 15 inches: fine sandy loam
Bw2 - 15 to 26 inches: fine sandy loam
Cd - 26 to 65 inches: gravelly fine sandy loam

Properties and qualities
Slope: 3 to 8 percent
Depth to restrictive feature: 18 to 39 inches to densic material

Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: C
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

Minor Components

Woodbridge

Percent of map unit: 9 percent
Landform: Hills, drumlins, ground moraines
Landform position (two-dimensional): Summit, backslope, footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Ridgebury

Percent of map unit: 6 percent
Landform: Drainageways, hills, ground moraines, depressions
Landform position (two-dimensional): Backslope, footslope, toeslope
Landform position (three-dimensional): Head slope, base slope, dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Charlton

Percent of map unit: 5 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

115—Scarboro muck, coastal lowland, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2svkw
Elevation: 0 to 650 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

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

Description of Scarboro, Coastal Lowland

Setting

Landform: Drainageways, outwash terraces, outwash deltas, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, tread, dip
Down-slope shape: Concave
Across-slope shape: Linear, concave
Parent material: Sandy glaciofluvial deposits derived from schist and/or gneiss and/or granite

Typical profile

Oa - 0 to 8 inches: muck
A - 8 to 14 inches: mucky fine sandy loam
Cg1 - 14 to 22 inches: sand
Cg2 - 22 to 65 inches: gravelly sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (1.42 to 14.17 in/hr)
Depth to water table: About 0 to 2 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: A/D
Ecological site: F144AY031MA - Very Wet Outwash
Hydric soil rating: Yes

Minor Components

Swansea

Percent of map unit: 10 percent
Landform: Swamps, bogs
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Mashpee

Percent of map unit: 5 percent

Landform: Drainageways, terraces, depressions
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

140B—Chatfield-Hollis-Canton complex, 0 to 8 percent slopes, rocky

Map Unit Setting

National map unit symbol: 2w82m
Elevation: 380 to 1,070 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Chatfield, very stony, and similar soils: 35 percent
Canton, very stony, and similar soils: 25 percent
Hollis, very stony, and similar soils: 25 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chatfield, Very Stony

Setting

Landform: Hills, ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, crest, nose slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 2 inches: fine sandy loam
Bw - 2 to 30 inches: gravelly fine sandy loam
2R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 0 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 20 to 41 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches

Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Description of Canton, Very Stony

Setting

Landform: Ridges, hills, moraines
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, crest, nose slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 5 inches: fine sandy loam
Bw1 - 5 to 16 inches: fine sandy loam
Bw2 - 16 to 22 inches: gravelly fine sandy loam
2C - 22 to 67 inches: gravelly loamy sand

Properties and qualities

Slope: 0 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Description of Hollis, Very Stony

Setting

Landform: Hills, ridges
Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Side slope, crest, nose slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 7 inches: gravelly fine sandy loam
Bw - 7 to 16 inches: gravelly fine sandy loam
2R - 16 to 26 inches: bedrock

Properties and qualities

Slope: 0 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 8 to 23 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

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

Minor Components

Freetown

Percent of map unit: 5 percent
Landform: Swamps, kettles, bogs, depressions, marshes
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Newfields, very stony

Percent of map unit: 5 percent
Landform: Moraines, hills, ground moraines
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Walpole, very stony

Percent of map unit: 3 percent
Landform: Outwash terraces, depressions, outwash plains, depressions, deltas
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave

Hydric soil rating: Yes

Rock outcrop

Percent of map unit: 2 percent
Landform: Hills, ridges
Hydric soil rating: Unranked

140C—Chatfield-Hollis-Canton complex, 8 to 15 percent slopes, rocky

Map Unit Setting

National map unit symbol: 2w82s
Elevation: 0 to 980 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Chatfield, very stony, and similar soils: 35 percent
Canton, very stony, and similar soils: 25 percent
Hollis, very stony, and similar soils: 25 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chatfield, Very Stony

Setting

Landform: Hills, ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, crest, nose slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 2 inches: fine sandy loam
Bw - 2 to 30 inches: gravelly fine sandy loam
2R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 20 to 41 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Description of Hollis, Very Stony

Setting

Landform: Hills, ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, crest, nose slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 7 inches: gravelly fine sandy loam
Bw - 7 to 16 inches: gravelly fine sandy loam
2R - 16 to 26 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 8 to 23 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

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

Description of Canton, Very Stony

Setting

Landform: Ridges, hills, moraines

Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, crest, nose slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 5 inches: fine sandy loam
Bw1 - 5 to 16 inches: fine sandy loam
Bw2 - 16 to 22 inches: gravelly fine sandy loam
2C - 22 to 67 inches: gravelly loamy sand

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Newfields, very stony

Percent of map unit: 5 percent
Landform: Hills, ground moraines, moraines
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Freetown

Percent of map unit: 5 percent
Landform: Swamps, kettles, bogs, depressions, marshes
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Scarboro, very stony

Percent of map unit: 3 percent
Landform: Outwash deltas, drainageways, outwash terraces, depressions

Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave, linear
Hydric soil rating: Yes

Rock outcrop
Percent of map unit: 2 percent
Landform: Hills, ridges
Hydric soil rating: Unranked

298—Pits, sand and gravel

Map Unit Composition
Pits: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

299—Udorthents, smoothed

Map Unit Setting
National map unit symbol: 9cmt
Elevation: 0 to 840 feet
Mean annual precipitation: 44 to 49 inches
Mean annual air temperature: 48 degrees F
Frost-free period: 155 to 165 days
Farmland classification: Not prime farmland

Map Unit Composition
Udorthents and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents

Properties and qualities
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

313A—Deerfield loamy fine sand, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2xfg8
Elevation: 0 to 1,100 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Farmland of local importance

Map Unit Composition

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

Description of Deerfield

Setting

Landform: Kame terraces, outwash plains, outwash deltas, outwash terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Parent material: Sandy outwash derived from granite, gneiss, and/or quartzite

Typical profile

Ap - 0 to 9 inches: loamy fine sand
Bw - 9 to 25 inches: loamy fine sand
BC - 25 to 33 inches: fine sand
Cg - 33 to 60 inches: sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: About 15 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Sodium adsorption ratio, maximum: 11.0
Available water supply, 0 to 60 inches: Moderate (about 6.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: A
Ecological site: F144AY027MA - Moist Sandy Outwash
Hydric soil rating: No

Minor Components

Windsor

Percent of map unit: 7 percent
Landform: Outwash plains, outwash deltas, kame terraces, outwash terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

Wareham

Percent of map unit: 5 percent
Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Sudbury

Percent of map unit: 2 percent
Landform: Outwash terraces, outwash deltas, kame terraces, outwash plains
Landform position (three-dimensional): Tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

Ninigret

Percent of map unit: 1 percent
Landform: Outwash terraces, outwash plains, kame terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear, convex
Across-slope shape: Concave, convex
Hydric soil rating: No

313B—Deerfield loamy fine sand, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2xfg9
Elevation: 0 to 1,190 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Deerfield

Setting

Landform: Kame terraces, outwash plains, outwash terraces, outwash deltas
Landform position (three-dimensional): Tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Parent material: Sandy outwash derived from granite, gneiss, and/or quartzite

Typical profile

Ap - 0 to 9 inches: loamy fine sand
Bw - 9 to 25 inches: loamy fine sand
BC - 25 to 33 inches: fine sand
Cg - 33 to 60 inches: sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: About 15 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Sodium adsorption ratio, maximum: 11.0
Available water supply, 0 to 60 inches: Moderate (about 6.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: A
Ecological site: F144AY027MA - Moist Sandy Outwash
Hydric soil rating: No

Minor Components

Windsor

Percent of map unit: 7 percent
Landform: Outwash deltas, kame terraces, outwash plains, outwash terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

Wareham

Percent of map unit: 5 percent
Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Sudbury

Percent of map unit: 2 percent
Landform: Outwash plains, outwash terraces, outwash deltas, kame terraces
Landform position (three-dimensional): Tread

Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

Ninigret

Percent of map unit: 1 percent
Landform: Kame terraces, outwash terraces, outwash plains
Landform position (three-dimensional): Tread
Down-slope shape: Convex, linear
Across-slope shape: Convex, concave
Hydric soil rating: No

495—Natchaug mucky peat, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2w691
Elevation: 0 to 910 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Natchaug and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Natchaug

Setting

Landform: Depressions, depressions, depressions
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Moderately decomposed organic material over loamy glaciofluvial deposits and/or loamy glaciolacustrine deposits and/or loamy till

Typical profile

Oe1 - 0 to 12 inches: mucky peat
Oe2 - 12 to 31 inches: mucky peat
2Cg1 - 31 to 39 inches: silt loam
2Cg2 - 39 to 79 inches: fine sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.01 to 14.17 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None

Frequency of ponding: Frequent
Calcium carbonate, maximum content: 25 percent
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Very high (about 14.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w
Hydrologic Soil Group: B/D
Ecological site: F144AY042NY - Semi-Rich Organic Wetlands
Hydric soil rating: Yes

Minor Components

Walpole

Percent of map unit: 4 percent
Landform: Outwash terraces, depressions, outwash plains, depressions, deltas
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Scarboro

Percent of map unit: 4 percent
Landform: Outwash deltas, drainageways, outwash terraces, depressions
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Maybid

Percent of map unit: 2 percent
Landform: Depressions, depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

510A—Hoosic gravelly fine sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 9cp3
Elevation: 100 to 1,100 feet
Mean annual precipitation: 30 to 50 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 135 to 190 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Hoosic and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hoosic

Setting

Parent material: Outwash

Typical profile

H1 - 0 to 8 inches: gravelly fine sandy loam
H2 - 8 to 15 inches: very gravelly fine sandy loam
H3 - 15 to 60 inches: very gravelly coarse sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (2.00 to 20.00 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 2.6 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: 10 percent
Hydric soil rating: No

510B—Hoosic gravelly fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9cp4
Elevation: 100 to 1,100 feet
Mean annual precipitation: 30 to 50 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 135 to 190 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Hoosic and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hoosic

Setting

Parent material: Outwash

Typical profile

H1 - 0 to 8 inches: gravelly fine sandy loam
H2 - 8 to 15 inches: very gravelly fine sandy loam
H3 - 15 to 60 inches: very gravelly coarse sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (2.00 to 20.00 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 2.6 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: 10 percent
Hydric soil rating: No

538A—Squamscott fine sandy loam, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 9cp9
Elevation: 0 to 1,000 feet
Mean annual precipitation: 30 to 55 inches
Mean annual air temperature: 45 to 54 degrees F
Frost-free period: 120 to 180 days
Farmland classification: Farmland of local importance

Map Unit Composition

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

Description of Squamscott

Setting

Landform: Marine terraces

Typical profile

H1 - 0 to 4 inches: fine sandy loam
H2 - 4 to 12 inches: loamy sand
H3 - 12 to 19 inches: fine sand
H4 - 19 to 65 inches: silt loam

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C/D
Ecological site: F144AY019NH - Wet Lake Plain
Hydric soil rating: Yes

Minor Components

Maybid

Percent of map unit: 5 percent
Landform: Marine terraces
Hydric soil rating: Yes

Scitico

Percent of map unit: 5 percent
Landform: Marine terraces
Hydric soil rating: Yes

Eldridge

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

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United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

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NH-1500 – 189 Bunker Hill Ave, Stratham, NH
Test Pits – Christian Smith, P.E. of Beals Associates, PLLC- #1543

11/08/2023
Witness: Mike Cuomo

Test Pit #1

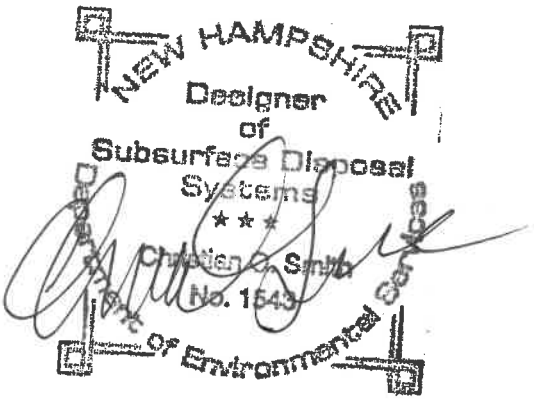
0" – 10"	10YR 3/3	Dark Brown Fine, Sandy, Loam Platy, Friable
10" - 20"	10YR 5 /6	Yellowish Brown Fine, Sandy, Loam Blocky, Friable
20" – 63"	2.5Y 4/4	Olive Brown Very Fine, Sandy Loam Blocky, Firm

ESHWT = 20"
Observed Ground Water –None
Restrictive Layer: 20 Inches
Refusal: None to 63"
Roots to 25 Inches
Perc Rate 8 min/inch @18"

Test Pit #2

0" – 10"	10YR 3 /4	Dark Yellowish Brown Fine, Sandy, Loam Platy, Friable
10" - 34"	10YR 4 /6	Dark Yellowish Brown Fine, Sandy, Loam Blocky, Friable
34" – 60"	2.5Y 4/4	Olive Brown Very Fine Silt Loam Blocky, Firm Redox-Common 2-20%

ESHWT = 34"
Observed Ground Water – None
Restrictive Layer: 34 Inches
Refusal: None
Roots to 6 Inches
Perc Rate 10 min/inch @23"



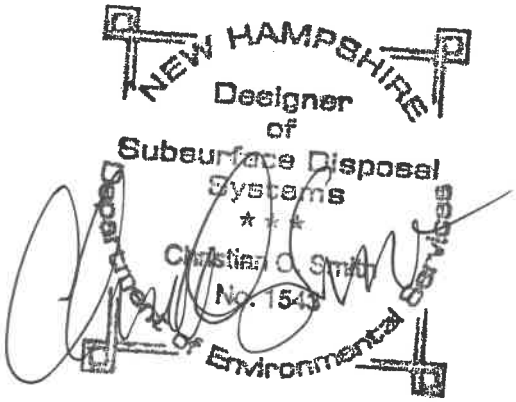
NH-1500 – 189 Bunker Hill Ave, Stratham, NH
Test Pits – Christian Smith, P.E. of Beals Associates, PLLC- #1543

11/08/2023
Witness: Mike Cuomo

Test Pit #3

0" – 10"	10YR 3 /4	Dark Yellowish Brown Fine, Sandy, Loam Platy, Friable
10" - 18"	10YR 4 /6	Dark Yellowish Brown Fine, Sandy, Loam Blocky, Friable
18" –62"	2.5Y 4/6	Olive Brown Very Fine, Sandy Loam Blocky, Firm Redox-Common 2-20%

ESHWT = 18"
Observed Ground Water – None
Restrictive Layer: 18 Inches
Refusal: None to 62"
Roots to 12 Inches
Perc Rate 8 min/inch @15"



Test Pit #4

0" –9"	10YR 3 /4	Dark Yellowish Brown Fine, Sandy, Loam Blocky, Friable
9" - 22"	10YR 4 /6	Dark Yellowish Brown Fine, Sandy, Loam Blocky, Friable
22" – 63"	2.5Y 4/4	Olive Brown Very Fine, Sandy Loam Blocky, Firm Redox-Common 2-20%

ESHWT = 22"
Observed Ground Water – None
Restrictive Layer: 22 Inches
Refusal: None to 63"
Roots to 6 Inches
Perc Rate 8 min/inch @15"

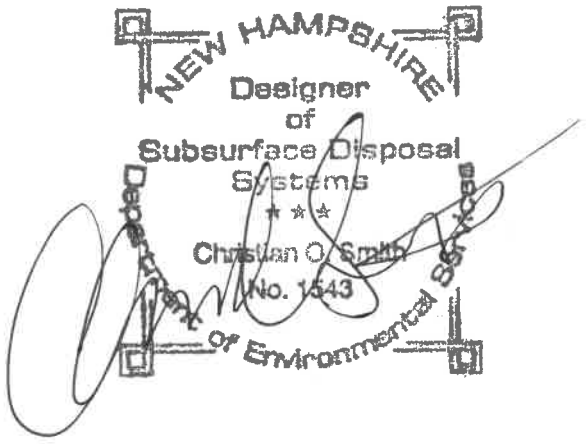
NH-1500 – 189 Bunker Hill Ave, Stratham, NH
Test Pits – Christian Smith, P.E. of Beals Associates, PLLC- #1543

11/08/2023
Witness: Mike Cuomo

Test Pit #5

0" – 10"	10YR 4/3	Brown Fine, Sandy, Loam Blocky, Friable
10" -26"	10YR 4 /6	Dark Yellowish Brown Fine, Sandy, Loam Blocky, Friable
26" – 62"	2.5Y 4/4	Olive Brown Fine, Loamy Sand Blocky, Firm Redox-Common 2-20%

ESHWT = 26"
Observed Ground Water – None
Restrictive Layer: 26 Inches
Refusal: None to 62"
Roots to 6 Inches
Perc Rate 8 min/inch @22"



Test Pit #6

0" – 14"	10YR 4 /4	Dark Yellowish Brown Fine, Sandy, Loam Blocky, Friable
14" - 32"	10YR 4 /6	Dark Yellowish Brown Fine, Sandy, Loam Blocky, Friable
32" –62"	2.5Y 4/4	Olive Brown Medium, Loamy Sand Massive, Firm Redox-Common 2-20%

ESHWT = 32"
Observed Ground Water – None
Restrictive Layer: 32 Inches
Refusal: None – 62 Inches
Roots to 6 Inches
Perc Rate 7 min/inch @26"

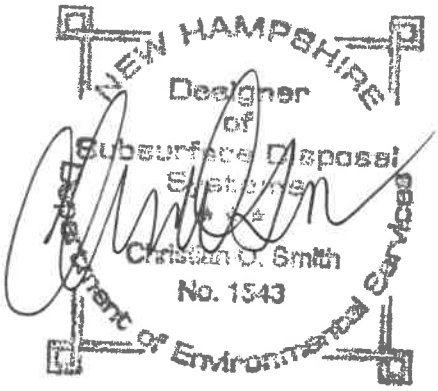
NH-1500 – 189 Bunker Hill Ave, Stratham, NH
Test Pits – Christian Smith, P.E. of Beals Associates, PLLC- #1543

11/08/2023
Witness: Mike Cuomo

Test Pit #7

0" – 9"	10YR 3/4	Dark Yellowish Brown Fine, Sandy, Loam Granular, Friable
9" - 18"	10YR 5 /6	Yellowish Brown Fine, Sandy, Loam Platy, Friable
18" – 62"	2.5Y 5/4	Light Olive Brown Silt Loam Platy, Firm Redox-Common 2-20%

ESHWT = 18"
Observed Ground Water – None
Restrictive Layer: 18 Inches
Refusal: None to 62"
Roots to 26 Inches
Perc Rate 10 min/inch @15"



Test Pit #8

0" – 8"	10YR 3 /4	Dark Yellowish Brown Fine, Sandy, Loam Blocky, Friable
8" - 23"	10YR 5 /4	Yellowish Brown Fine, Sandy, Loam Platy, Friable
23" – 62"	2.5Y 4/4	Olive Brown Silt Loam Platy, Firm Redox-Common 2-20%

ESHWT = 23"
Observed Ground Water – None
Restrictive Layer: 23 Inches
Refusal: None to 62"
Roots to 21 Inches
Perc Rate 10 min/inch @18"

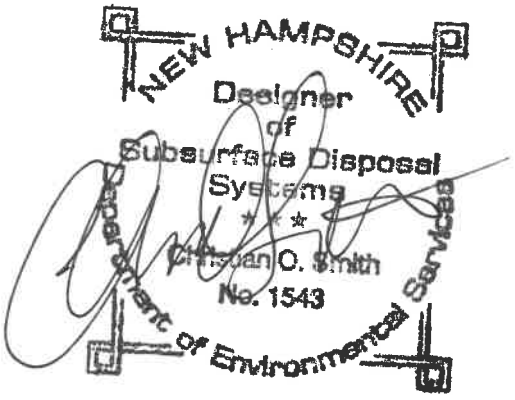
NH-1500 – 189 Bunker Hill Ave, Stratham, NH
Test Pits – Christian Smith, P.E. of Beals Associates, PLLC- #1543

11/08/2023
Witness: Mike Cuomo

Test Pit #9

0" – 9"	10YR 3 /4	Dark Yellowish Brown Fine, Sandy, Loam Granular, Friable
9" - 23"	10YR 5 /4	Yellowish Brown Fine, Sandy, Loam Platy, Friable
23"-63"	2.5Y 5/4	Light Olive Brown Loamy, Sand Massive, Firm Redox-Common 2-20%

ESHWT = 23"
Observed Ground Water – None
Restrictive Layer: 23 Inches
Refusal: None to 63"
Roots to 4 Inches
Perc Rate 7 min/inch @20"



Test Pit #10

0" – 8"	10YR 4/4	Dark Yellowish Brown Fine, Sandy, Loam Platy, Friable
8" - 21"	10YR 4/6	Dark Yellowish Brown Fine, Sandy, Loam Blocky, Friable/Very Stoney
21" – 61"	2.5Y 4/4	Olive Brown Loamy Sand Massive, Firm/Very Stoney Redox-Common 2-20%

ESHWT = 21"
Observed Ground Water – None
Restrictive Layer: 21 Inches
Refusal: None to 61"
Roots to 8 Inches
Perc Rate 8 min/inch @18"

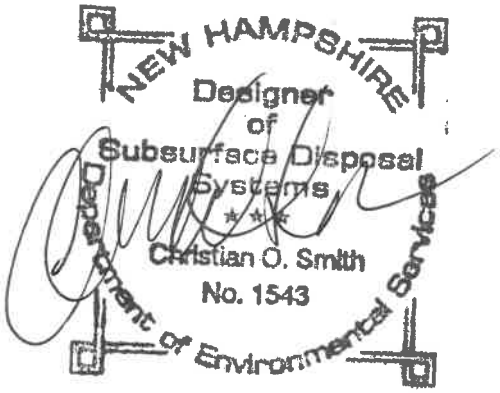
NH-1500 – 189 Bunker Hill Ave, Stratham, NH
Test Pits – Christian Smith, P.E. of Beals Associates, PLLC- #1543

11/08/2023
Witness: Mike Cuomo

Test Pit #11

0" – 10"	10YR 3 /4	Dark Yellowish Brown Fine, Sandy, Loam Blocky, Friable
10" - 27"	10YR 5 /6	Yellowish Brown Fine, Sandy, Loam Blocky, Friable/Stoney
27" – 64"	2.5Y 5/4	Light Olive Brown Loamy Sand Blocky, Firm/Stoney Redox-Common 2-20%

ESHWT = 27"
Observed Ground Water – None
Restrictive Layer: 27 Inches
Refusal: None – 64 Inches
Roots to 6 Inches
Perc Rate 8 min/inch @22"



Test Pit #12

0" – 12"	10YR 3 /4	Dark Yellowish Brown Fine, Sandy, Loam Blocky, Friable
12" - 37"	10YR 5 /4	Yellowish Brown Fine, Sandy, Loam Blocky, Friable
37" – 62"	2.5Y 4/4	Olive Brown Loamy Sand Massive, Firm/Stoney Redox-Common 2-20%

ESHWT = 37"
Observed Ground Water – None
Restrictive Layer: 37 Inches
Refusal: None – 62 Inches
Roots to 6 Inches
Perc Rate 8 min/inch @25"

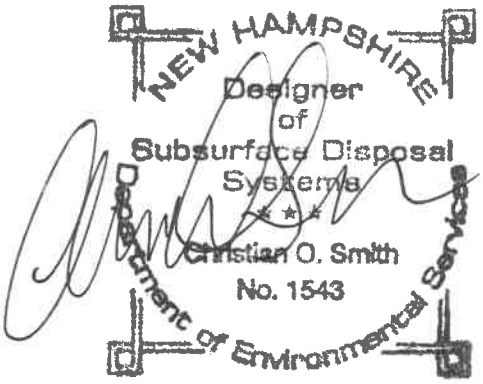
NH-1500 – 189 Bunker Hill Ave, Stratham, NH
Test Pits – Christian Smith, P.E. of Beals Associates, PLLC- #1543

11/08/2023
Witness: Mike Cuomo

Test Pit #13

0" – 10"	10YR 3/4	Dark Yellowish Brown Fine, Sandy, Loam Granular, Friable
10" - 23"	10YR 4/6	Dark Yellowish Brown Fine, Sandy, Loam Blocky, Friable
23" – 62"	2.5Y 5/4	Light Olive Brown Silt Loam Platy, Firm Redox-Common 2-20%

ESHWT = 23"
Observed Ground Water – None
Restrictive Layer: 23 Inches
Refusal: None to 62 Inches
Roots to 23 Inches
Perc Rate 10 min/inch @20"



Test Pit #14

0" – 18"	10YR 3 /4	Dark Yellowish Brown Fine, Sandy, Loam Granular, Friable
18" - 21"	10YR 4/ 4	Dark Yellowish Brown Fine Sandy Loam Blocky, Friable
21" – 64"	2.5Y 4/4	Olive Brown Silt, Loam Blocky, Firm Redox-Common 2-20%

ESHWT = 21"
Observed Ground Water – None
Restrictive Layer: 21 Inches
Refusal: None - 64 Inches
Roots to 32 Inches
Perc Rate 10 min/inch @18"

Test Pit #D1

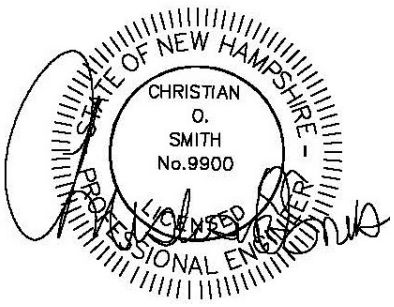
0" – 12"	10YR 4 /4	Dark Yellowish Brown Fine, Sandy, Loam Granular, Friable
12" - 28"	10YR 5/ 4	Yellowish Brown Fine, Sandy, Loam Blocky, Friable
28" – 68"	2.5Y 4/3	Olive Brown Silt, Loam Platy, Firm Redox-Common 2-20%

ESHWT = 28"
Observed Ground Water – 42 inches
Restrictive Layer: 28 Inches
Refusal: None
Roots to 26 Inches

Test Pit #D2

0" – 10"	10YR 4 /4	Dark Yellowish Brown Fine, Sandy, Loam Granular, Friable
10" - 18"	10YR 5/ 3	Brown Fine, Sandy, Loam Blocky, Friable
18" – 68"	2.5Y 5/2	Grayish Brown Silt, Loam Blocky, Firm Redox-Common 2-20%

ESHWT = 18"
Observed Ground Water – 38 inches
Restrictive Layer: 18 Inches
Refusal: None
Roots to 6 Inches

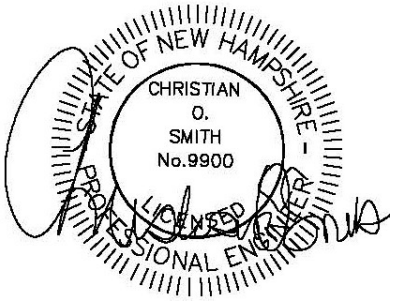


NH-1500 – 189 Bunker Hill 01/23/2024
Test Pits – Christian Smith, P.E. of Beals Associates, PLLC- #1543 Witness:

Test Pit #D3

0" – 12"	10YR 4 /4	Dark Yellowish Brown Fine, Sandy, Loam Granular, Friable
12" - 18"	10YR 5/ 3	Brown Fine, Sandy, Loam Blocky, Friable
18" – 60"	2.5Y 5/4	Light Olive Brown Silt, Loam Platy, Firm Redox-Common 2-20%

ESHWT = 18"
Observed Ground Water – 24 inches
Restrictive Layer: 18 Inches
Refusal: None
Roots to 6 Inches



STORMWATER MANAGEMENT / BMP
INSPECTION & MAINTENANCE PLAN

Chinburg Properties Inc
Windsong Place
Stratham, New Hampshire
NH-1500
January 2024

Proper construction, inspections, maintenance, and repairs are key elements in maintaining a successful stormwater management program on a developed property. Routine inspections ensure permit compliance and reduce the potential for deterioration of infrastructure or reduced water quality.

For the purpose of this Stormwater Management Program, a significant rainfall event is considered an event of three (3) inches or more in a 24-hour period or at least 0.5 inches in a one-hour period. During construction, inspections should be conducted every two weeks or after a 0.25" rainfall event in a 24-hour period per the EPA NPDES Phase II SWPPP, until the entire disturbed area is fully restabilized. Upon full stabilization of the project and filing of an NOI, inspections need only be conducted after a significant rainfall event as described above or as described in the maintenance guidelines below.

During construction activities Chinburg Properties Inc with an address of 3 Penstock Way, Newmarket, NH 03857 and a phone of 603.868.5995 or their heirs and/or assigns, shall be responsible for inspections and maintenance activities for the above project site. The individual homeowners shall be responsible for *ongoing inspection and maintenance* of the sediment forebay and infiltration ponds. The Town of Stratham DPW shall be responsible for *ongoing inspection and maintenance* of the catchbasins and manholes within the right-of-way.

The owner is responsible to ensure that any subsequent owner has copies of the Log Form and Annual Report records and fully understands the responsibilities of this plan. The grantor owner(s) will ensure this document is provided to the grantee owner(s) by duplicating the Ownership Responsibility Sheet which is found toward the back of this document, which will be maintained with the Inspection & Maintenance Logs and provided to the Town of Stratham upon request.

Documentation:
A maintenance log (i.e., report) will be kept summarizing inspections, maintenance, and any corrective actions taken. The log will include the date on which each inspection or maintenance task was performed, a description of the inspection findings or maintenance completed, and the name of the inspector or maintenance personnel performing the task (see Stormwater System Operation and Maintenance Plan Inspection & Maintenance Manual Checklist attached). If a maintenance task requires the clean-out of any sediments or debris, the location where the sediment and debris was disposed after removal shall be indicated.

Best Management Practices (BMP) Maintenance Guidelines

The following provides a list of recommendations and guidelines for managing the Stormwater facilities. The cited areas, facilities, and measures will be inspected and the identified deficiencies will be corrected. Clean-out must include the removal and legal disposal of any accumulated sediments and debris.

DURING CONSTRUCTION

1. Stabilized Construction Entrance

A temporary gravel construction entrance provides an area where mud can be dislodged from tires before the vehicle leaves the construction site to reduce the amount of mud and sediment transported onto paved municipal and state roads. The stone size for the pad should be between 1 and 2-inch coarse aggregate, and the pad itself constructed to a minimum length of 50' for the full width of the access road. The aggregate should be placed at least six inches thick. A plan view and profile are shown on Sheet E1 - Sediment and Erosion Control Detail Plan.

2. Dust Control

Dust will be controlled on the site using multiple BMPs. Mulching and temporary seeding will be the first line of protection to be utilized where problems occur. If dust problems are not solved by these applications, the use of water and calcium chloride can be applied. Calcium chloride will be applied at a rate that will keep the surface moist but not cause pollution.

3. Temporary Erosion and Sediment Control Devices / Barriers

Function – Temporary erosion and sediment control devices are utilized during construction period to divert, store and filter stormwater from non-stabilized surfaces. These devices include, but are not limited to: silt fences, hay bales, filters, sediment traps, stone check dams, mulch and erosion control blankets.

Maintenance – Temporary erosion and sediment control devices shall be inspected and maintained on a weekly basis and following a significant storm event (>0.5-inch rain event) throughout the construction period to ensure that they still have integrity and are not allowing sediment to pass. Sediment build-up in swales will be removed if it is deeper than six inches. Sediment is to be removed from sumps in the catch basin semi-annually. Refer to the Site Plan drawings for the maintenance of temporary erosion and sediment control devices.

4. Invasive Species

THE NH COMMISSIONER OF AGRICULTURE PROHIBITS THE COLLECTION, POSSESSION, IMPORTATION, TRANSPORTATION, SALE, PROPAGATION, TRANSPLANTATION, OR CULTIVATION OF PLANTS BANNED BY NH LAW RSA 430:53 AND NH CODE ADMINISTRATIVE RULES AGR 3800. THE PROJECT

SHALL MEET ALL REQUIREMENTS AND THE INTENT OF. RSA 430:53 AND AGR 3800 RELATIVE TO INVASIVE SPECIES.

POST CONSTRUCTION / LONG TERM MAINTENANCE:

5. Catch Basins/Manholes

Inspect catch basins 2 times per year (preferably in spring and fall) to ensure that the catch basins are working in their intended fashion and that they are free of debris. Clean structures when sediment depths reach 2" from invert of outlet. If the basin outlet is designed with a hood to trap floatable materials (i.e. Snout), check to ensure watertight seal is working. Remove floating debris and hydrocarbons at the time of the inspection.

6. Culverts

Inspect culverts 2 times per year (preferably in spring and fall) to ensure that the culverts are working in their intended fashion and that they are free of debris. Remove any obstructions to flow; remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit and to repair any erosion damage at the culvert's inlet and outlet. Repair/replace culvert if it becomes crushed or deteriorated.

7. Vegetated Areas

Inspect slopes and embankments early in the growing season to identify active or potential erosion problems. Replant bare areas or areas with sparse growth. Where rill erosion is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows. The facilities will be inspected after major storms and any identified deficiencies will be corrected.

8. Roadways and Paved Surfaces

Clear accumulations of winter sand along roadways at least once a year, preferably in the spring. Accumulations on pavement may be removed by pavement sweeping. Accumulations of sand along road shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader.

9. Pretreatment Structures/Sediment Forebays

Inspect all upstream pre-treatment measures (forebays, etc.) for sediment and floatables accumulation. Remove and dispose of sediments, debris, or woody vegetation as needed. Remove sediment as needed when average depths reach 6". Mow embankments at least two times annually.

10. Drainage Swales/Stormwater Conveyances

Drainage swales will be stabilized with vegetation for long term cover as outlined below, and on Sheet E-1 using seed mixture C. As a general rule, velocities in the swale should not

exceed 3.0 feet per second for a vegetated swale although velocities as high as 4.5 FPS are allowed under certain soil conditions.

Maintenance

- Inspect annually for erosion, sediment accumulation, vegetation loss and presence of invasive species.
- Perform periodic mowing; frequency depends on location and type of grass.
- Do not cut shorter than Water Quality Flow depth (maximum 4 inches)
- Remove debris and accumulated sediment, based on inspection.
- Repair eroded areas, remove invasive species and dead vegetation, and reseed
- With applicable grass mix as warranted by inspection.

11. Stormwater Infiltration Facilities

- Inspect all upstream pre-treatment measures for sediment and floatables accumulation. Remove and dispose of sediments or debris as needed.
- The infiltration facility will be inspected within the first three months after construction.
- After the initial three months, the infiltration facility will be inspected 2 times per year to ensure that the filter is draining within 72 hours of a rain event equivalent to 1/2" or more.
- Failure to drain in 72 hours will require part or all of the top 3 inches of the infiltration area to be removed and replaced with new like material. If the infiltration system does not drain within 72-hours following a rainfall event, then a qualified professional should assess the condition of the facility to determine measures required to restore infiltration function.
- Vegetated infiltration ponds or swales will be mowed at least annually or otherwise maintained to control the growth of woody vegetation and to control the accumulation of sediments in order to maintain the water quality volume. Any woody vegetation or accumulated sediment must be removed.
- The facilities will be inspected after major storms and any identified deficiencies will be corrected.

12. Riprap Weir – Maintenance

- Inspect at least once annually for accumulation of sediment and debris and for signs of erosion within weir or down-slope of the spreader.
- Remove debris whenever observed during inspection.
- Mow as required by landscaping design. At a minimum, mow annually to control woody vegetation.
- Repair any erosion and re-grade or replace stone berm material, as warranted by inspection.
- Reconstruct the spreader if down-slope channelization indicates that the spreader is not level or that discharge has become concentrated, and corrections cannot be made through minor re-grading.

14. Invasive Species

Background

Invasive plants are introduced, alien, or non-native plants, which have been moved by people from their native habitat to a new area. Some exotic plants are imported for human use such as landscaping, erosion control, or food crops. They also can arrive as "hitchhikers" among shipments of other plants, seeds, packing materials, or fresh produce. Some exotic plants become invasive and cause harm by:

- Becoming weedy and overgrown;
- Killing established shade trees;
- Obstructing pipes and drainage systems;
- Forming dense beds in water;
- Lowering water levels in lakes, streams, and wetlands;
- Destroying natural communities;
- Promoting erosion on stream banks and hillsides; and
- Resisting control except by hazardous chemical.

During maintenance activities, check for the presence of invasive plants and remove in a safe manner. They should be controlled as described on the following fact sheet prepared by the University of New Hampshire Cooperative Extension entitled Methods for Disposing Non-Native Invasive Plant dated January 2010.

In the event that invasive species are noticed growing in any of the stormwater management practices, the invasive vegetation shall be removed completely to include root matter and disposed of properly. Prior to disposal, the vegetation shall be placed on and completely cover with a plastic tarp for a period of two – three weeks until plants are completely dead. If necessary or to expedite the process, spray only the invasive vegetation and roots with a systemic nonselective herbicide after placement on the tarp (to prevent chemical migration) and then cover.

Annual Report

Description: The owner is responsible to keep an **Inspection & Maintenance Activity Log** that documents inspection, maintenance, and repairs to the storm water management system, and a **Deicing Log** to track the amount and type of deicing material applied to the site. The original owner is responsible to ensure that any subsequent owner (s) have copies of the Stormwater System Operation and Maintenance Plan & Inspection and Maintenance Manual, copies of past logs and check lists. This includes any owner association for potential condominium conversion of the property. The Annual Report will be prepared and submitted to the Town of Stratham DPW upon request.

Disposal Requirements

Disposal of debris, trash, sediment, and other waste materials should be done at suitable disposal/recycling sites and in compliance with all applicable local, state, and federal waste regulations.

STORMWATER SYSTEM OPERATION AND MAINTENANCE PLAN

Inspection & Maintenance Manual Checklist

Residential Development
Chinburg Properties Inc – Windsong Place
Stratham, NH

BMP / System	Minimum Inspection Frequency	Minimum Inspection Requirements	Maintenance / Cleanout Threshold
Stabilized Construction Entrance	Weekly	Inspect adjacent roadway for sediment tracking Inspect stone for sediment accumulation	Sweep adjacent roadways as soon as sediment is tracked Top dress with additional stone when necessary to prevent tracking
Sediment Control Devices / Barriers	Weekly	Inspect accumulated sediment level, rips, and tears	Repair or replace damaged lengths Remove and dispose of accumulated sediment once level reaches 1/3 of barrier height
Pavement Sweeping	Spring and Fall	Removal of sand and litter from impervious areas	N/A
Litter/Trash Removal	Routinely	Inspect dumpsters, outdoor waste receptacles area, and yard areas, as well as ponds and swale areas.	Site will be free of litter/trash.
Landscaping	Maintained as required and mulched each Spring	N/A	Trash/debris and weed removal
Drainage Pipes, Catchbasins & Drain Manholes	Spring and Fall	Check for sediment accumulation & clogging.	More than 2" sediment depth

Sediment Forebay	Spring and Fall	Sediment accumulation. Inspect embankments, inlet and outlet structures, and appurtenances.	Remove sediment as needed. Remove trash & debris from system and appurtenances. Mow embankment and remove woody vegetation.
Infiltration Basin	Spring and Fall and after every 2.5" of rain or greater in a 24-hour period	Monitoring and evaluation of wetland vegetation, inspection of sediment on pond surface, inlet/outlet and appurtenance structure evaluation. 72-Hour drawdown time evaluation and vegetation evaluation.	Remove dead & diseased vegetation along with all debris; take corrective measures, reseed and repair inlet/outlet structures and appurtenances if required. Mow embankments and remove woody vegetation. Restore infiltration by removing accumulated sediments and reconstruction of the infiltration basin as necessary.
Drainage Swales	Annually	Inspect for erosion, sediment accumulation, vegetation loss, and presence of invasive species.	Remove sediment & debris when exceeds 3". Repair eroded areas. Remove invasive species and dead vegetation. Reseed as warranted.
	Spring and Fall	Inspect height of vegetation	Mow when necessary – allow length of vegetation to remain at least 4" high
Riprap Outlet Protection/Level Spreaders	Spring and Fall and after every 2.5" of rain or greater in a 24-hour period	Check for sediment buildup and displaced stones. Inspect for torn or visible fabric.	Remove excess sediment and trash/debris. Immediately repair and replace stone and/or fabric as necessary.
Annual Report	1 time per year	Submit Annual Report to Town of Stratham Inspector upon request	

Inspection Notes:

STORMWATER SYSTEM OPERATION AND MAINTENANCE PLAN

Inspection & Maintenance Manual Log Form

Residential Development
Chinburg Properties Inc – Windsong Place
Stratham, NH

BMP / System	Date Inspected	Inspected By	Cleaning/Repair (List Items & Comments)	Date Repaired	Repairs Performed By

INSPECTION CHECKLIST AND MAINTENANCE GUIDANCE

INFILTRATION POND - INSPECTION CHECKLIST

Location: _____

Owner Change Since Last Inspection? Y N

Owner Name, Address, Phone: _____

Date:_____Time:_____Site Conditions: _____

Inspection Items	Satisfactory (S) or Unsatisfactory (U)	Comments/Corrective Action
Sand Filter Inspection List		
Complete drainage of the filter in about 40 hours after a rain event?		
Clogging of filter surface?		
Clogging of inlet/outlet structures?		
Clogging of filter fabric?		
Clear of debris and functional?		
Leaks or seeps in filter?		
Obstructions of spillway(s)?		
Animal burrows in filter?		
Sediment accumulation in filter bed (less than 50% is acceptable)?		
Cracking, spalling, bulging or deterioration of concrete?		
Erosion in area draining to sand filter?		
Erosion around inlets, filter bed, or outlets?		
Pipes and other structures in good		
Undesirable vegetation growth?		
Other (describe)?		
Hazards		
Have there been complaints from residents?		
Public hazards noted?		

If any of the above inspection items are **UNSATISFACTORY**, list corrective actions and the corresponding completion dates below:

Corrective Action Needed	Due Date

Inspector Signature:_____

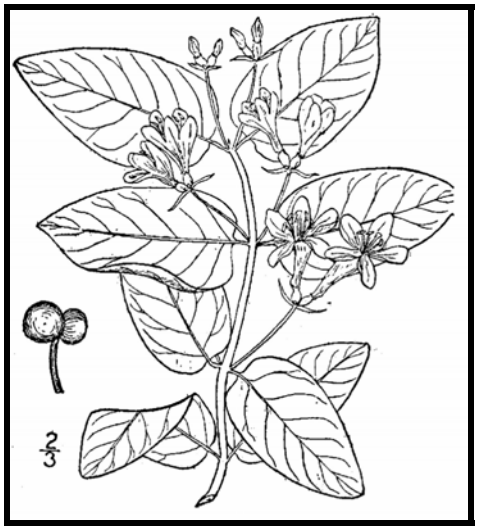
Inspector Name (printed):_____

Date:_____

University of New Hampshire Cooperative Extension

Methods for Disposing Non-Native Invasive Plants

Prepared by the Invasives Species Outreach Group, volunteers interested in helping people control invasive plants. Assistance provided by the Piscataquog Land Conservancy and the NH Invasives Species Committee. Edited by Karen Bennett, Extension Forestry Professor and Specialist.



Tatarian honeysuckle
Lonicera tatarica
USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 3: 282.

Non-native invasive plants crowd out natives in natural and managed landscapes. They cost taxpayers billions of dollars each year from lost agricultural and forest crops, decreased biodiversity, impacts to natural resources and the environment, and the cost to control and eradicate them.

Invasive plants grow well even in less than desirable conditions such as sandy soils along roadsides, shaded wooded areas, and in wetlands. In ideal conditions, they grow and spread even faster. There are many ways to remove these non-native invasives, but once removed, care is needed to dispose the removed plant material so the plants don't grow where disposed.

Knowing how a particular plant reproduces indicates its method of spread and helps determine the appropriate disposal method. Most are spread by seed and are dispersed by wind, water, animals, or people. Some reproduce by vegetative means from pieces of stems or roots forming new plants. Others spread through both seed and vegetative means.

Because movement and disposal of viable plant parts is restricted (see NH Regulations), viable invasive parts can't be brought to most transfer stations in the state. Check with your transfer station to see if there is an approved, designated area for invasives disposal. This fact sheet gives recommendations for rendering plant parts non-viable.

Control of invasives is beyond the scope of this fact sheet. For information about control visit www.nhinvasives.org or contact your UNH Cooperative Extension office.

New Hampshire Regulations

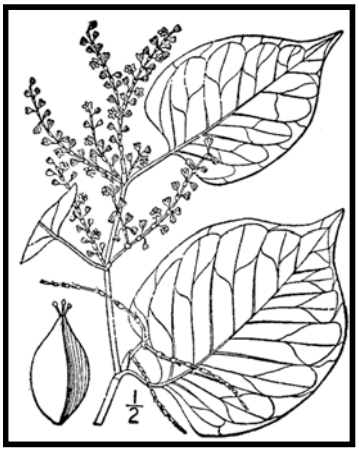
Prohibited invasive species shall only be disposed of in a manner that renders them nonliving and nonviable. (Agr. 3802.04)

No person shall collect, transport, import, export, move, buy, sell, distribute, propagate or transplant any living and viable portion of any plant species, which includes all of their cultivars and varieties, listed in Table 3800.1 of the New Hampshire prohibited invasive species list. (Agr 3802.01)

How and When to Dispose of Invasives?

To prevent seed from spreading remove invasive plants before seeds are set (produced). Some plants continue to grow, flower and set seed even after pulling or cutting. Seeds can remain viable in the ground for many years. If the plant has flowers or seeds, place the flowers and seeds in a heavy plastic bag "head first" at the weeding site and transport to the disposal site. The following are general descriptions of disposal methods. See the chart for recommendations by species.

Burning: Large woody branches and trunks can be used as firewood or burned in piles. For outside burning, a written fire permit from the local forest fire warden is required unless the ground is covered in snow. Brush larger than 5 inches in diameter can't be burned. Invasive plants with easily airborne seeds like black swallow-wort with mature seed pods (indicated by their brown color) shouldn't be burned as the seeds may disperse by the hot air created by the fire.



Japanese knotweed
Polygonum cuspidatum
USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 1: 676.

Bagging (solarization): Use this technique with softer-tissue plants. Use heavy black or clear plastic bags (contractor grade), making sure that no parts of the plants poke through. Allow the bags to sit in the sun for several weeks and on dark pavement for the best effect.

Tarping and Drying: Pile material on a sheet of plastic and cover with a tarp, fastening the tarp to the ground and monitoring it for escapes. Let the material dry for several weeks, or until it is clearly nonviable.

Chipping: Use this method for woody plants that don't reproduce vegetatively.

Burying: This is risky, but can be done with watchful diligence. Lay thick plastic in a deep pit before placing the cut up plant material in the hole. Place the material away from the edge of the plastic before covering it with more heavy plastic. Eliminate as much air as possible and toss in soil to weight down the material in the pit. Note that the top of the buried material should be at least three feet underground. Japanese knotweed should be at least 5 feet underground!

Drowning: Fill a large barrel with water and place soft-tissue plants in the water. Check after a few weeks and look for rotted plant material (roots, stems, leaves, flowers). Well-rotted plant material may be composted. A word of caution- seeds may still be viable after using this method. Do this before seeds are set. This method isn't used often. Be prepared for an awful stink!

Composting: Invasive plants can take root in compost. Don't compost any invasives unless you know there is no viable (living) plant material left. Use one of the above techniques (bagging, tarping, drying, chipping, or drowning) to render the plants nonviable before composting. Closely examine the plant before composting and avoid composting seeds.

Be diligent looking for seedlings for *years* in areas where removal and disposal took place.

Suggested Disposal Methods for Non-Native Invasive Plants

This table provides information concerning the disposal of removed invasive plant material. If the infestation is treated with herbicide and left in place, these guidelines don't apply. Don't bring invasives to a local transfer station, unless there is a designated area for their disposal, or they have been rendered non-viable. This listing includes wetland and upland plants from the New Hampshire Prohibited Invasive Species List. The disposal of aquatic plants isn't addressed.

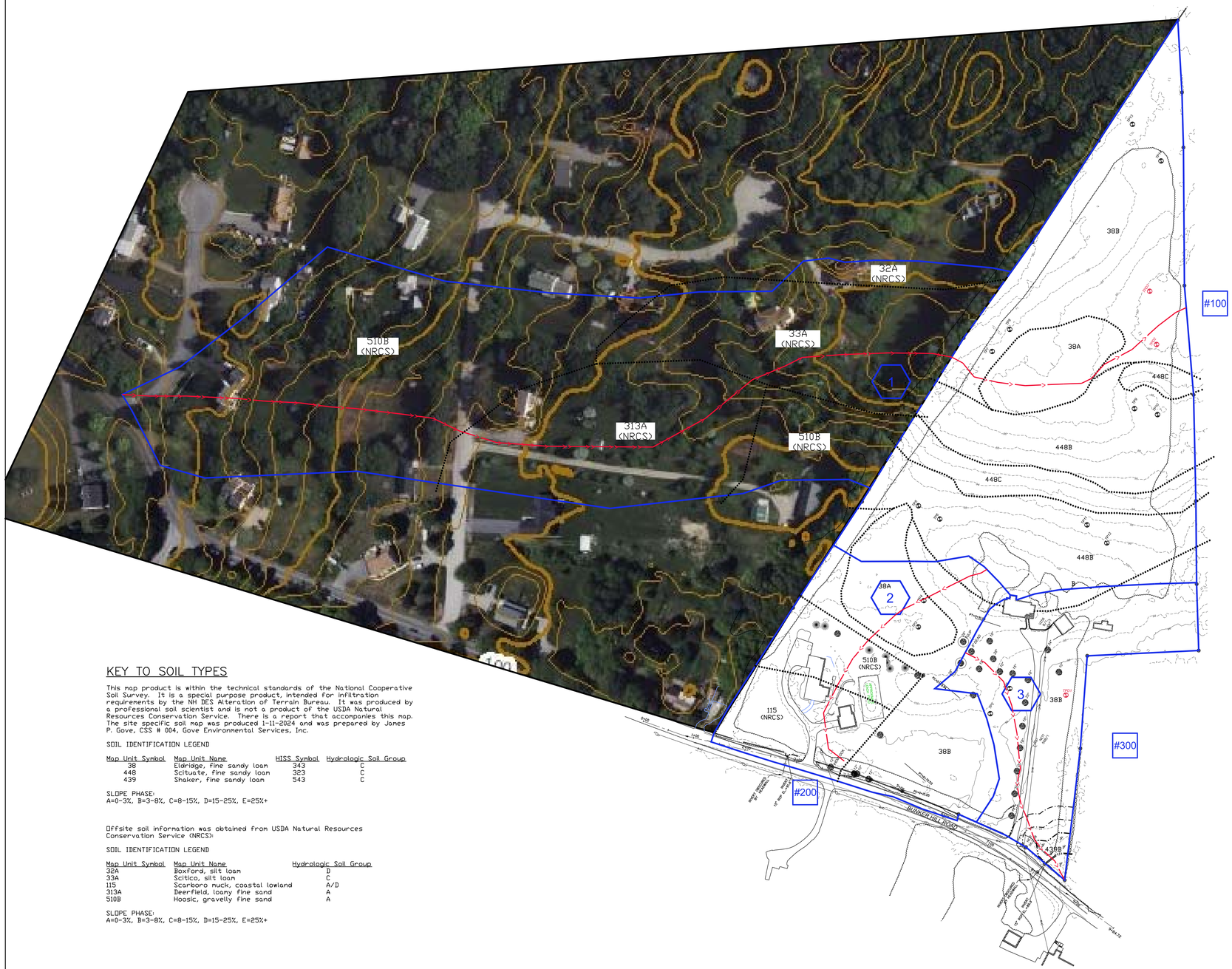
<table>
<tr><th>Woody Plants</th><th>Method of Reproducing</th><th>Methods of Disposal</th></tr>
<tr><td rowspan="2">Norway maple
(Acer platanoides)
European barberry
(Berberis vulgaris)
Japanese barberry
(Berberis thunbergii)
autumn olive
(Elaeagnus umbellata)
burning bush
(Euonymus alatus)
Morrow's honeysuckle
(Lonicera morrowii)
Tatarian honeysuckle
(Lonicera tatarica)
showy bush honeysuckle
(Lonicera x bella)
common buckthorn
(Rhamnus cathartica)
glossy buckthorn
(Frangula alnus)</td><td rowspan="2">Fruit and Seeds
  </td><td>Prior to fruit/seed ripening
Seedlings and small plants
▪ Pull or cut and leave on site with roots exposed. No special care needed.
Larger plants
▪ Use as firewood.
▪ Make a brush pile.
▪ Chip.
▪ Burn.</td></tr>
<tr><td>After fruit/seed is ripe
Don't remove from site.
▪ Burn.
▪ Make a covered brush pile.
▪ Chip once all fruit has dropped from branches.
▪ Leave resulting chips on site and monitor.</td></tr>
<tr><td rowspan="2">oriental bittersweet
(Celastrus orbiculatus)
multiflora rose
(Rosa multiflora)</td><td rowspan="2">Fruits, Seeds, Plant Fragments
  </td><td>Prior to fruit/seed ripening
Seedlings and small plants
▪ Pull or cut and leave on site with roots exposed. No special care needed.
Larger plants
▪ Make a brush pile.
▪ Burn.</td></tr>
<tr><td>After fruit/seed is ripe
Don't remove from site.
▪ Burn.
▪ Make a covered brush pile.
▪ Chip – only after material has fully dried (1 year) and all fruit has dropped from branches. Leave resulting chips on site and monitor.</td></tr>
</table>

Non-Woody Plants	Method of Reproducing	Methods of Disposal
garlic mustard *(Alliaria petiolata)* spotted knapweed *(Centaurea maculosa)* ▪ Sap of related knapweed can cause skin irritation and tumors. Wear gloves when handling. black swallow-wort *(Cynanchum nigrum)* ▪ May cause skin rash. Wear gloves and long sleeves when handling. pale swallow-wort *(Cynanchum rossicum)* giant hogweed *(Heracleum mantegazzianum)* ▪ Can cause major skin rash. Wear gloves and long sleeves when handling. dame's rocket *(Hesperis matronalis)* perennial pepperweed *(Lepidium latifolium)* purple loosestrife *(Lythrum salicaria)* Japanese stilt grass *(Microstegium vimineum)* mile-a-minute weed *(Polygonum perfoliatum)*	**Fruits and Seeds** 	**Prior to flowering** Depends on scale of infestation Small infestation ▪ Pull or cut plant and leave on site with roots exposed. Large infestation ▪ Pull or cut plant and pile. (You can pile onto or cover with plastic sheeting). ▪ Monitor. Remove any re-sprouting material. **During and following flowering** Do nothing until the following year or remove flowering heads and bag and let rot. Small infestation ▪ Pull or cut plant and leave on site with roots exposed. Large infestation ▪ Pull or cut plant and pile remaining material. (You can pile onto plastic or cover with plastic sheeting). ▪ Monitor. Remove any re-sprouting material.
common reed (*Phragmites australis*) Japanese knotweed *(Polygonum cuspidatum)* Bohemian knotweed *(Polygonum x bohemicum)*	**Fruits, Seeds, Plant Fragments** Primary means of spread in these species is by plant parts. Although all care should be given to preventing the dispersal of seed during control activities, the presence of seed doesn't materially influence disposal activities.	**Small infestation** ▪ Bag all plant material and let rot. ▪ Never pile and use resulting material as compost. ▪ Burn. **Large infestation** ▪ Remove material to unsuitable habitat (dry, hot and sunny or dry and shaded location) and scatter or pile. ▪ Monitor and remove any sprouting material. ▪ Pile, let dry, and burn.

January 2010

Appendix IV

Plans



KEY TO SOIL TYPES

This map product is within the technical standards of the National Cooperative Soil Survey. It is a special purpose product, intended for infiltration requirements by the NH DES Alteration of Terrain Bureau. It was produced by a professional soil scientist and is not a product of the USDA Natural Resources Conservation Service. There is a report that accompanies this map. The site specific soil map was produced 1-11-2024 and was prepared by James P. Gove, CSS # 004, Gove Environmental Services, Inc.

SOIL IDENTIFICATION LEGEND

Map Unit Symbol	Map Unit Name	HISS Symbol	Hydrologic Soil Group
38	Eldridge, fine sandy loam	343	C
448	Scituate, fine sandy loam	323	C
439	Shaker, fine sandy loam	543	C

SLOPE PHASE:
A=0-3%, B=3-8%, C=8-15%, D=15-25%, E=25%+

Offsite soil information was obtained from USDA Natural Resources Conservation Service (NRCS)

SOIL IDENTIFICATION LEGEND

Map Unit Symbol	Map Unit Name	Hydrologic Soil Group
32A	Boxford, silt loam	D
33A	Scitico, silt loam	C
115	Scarboro muck, coastal lowland	A/D
313A	Deerfield, loamy fine sand	A
510B	Hoosic, gravelly fine sand	A

SLOPE PHASE:
A=0-3%, B=3-8%, C=8-15%, D=15-25%, E=25%+

PREPARED FOR:

CHINBURG PROPERTIES INC
3 PENSTOCK WAY
NEWMARKET, NH 03857

BEALS ASSOCIATES, PLLC
70 PORTSMOUTH AVE,
THIRD FLOOR, SUITE 2
STRATHAM, N.H. 03885
PHONE: 603-583-4860,
FAX. 603-583-4863

** THIS DRAWING IS FOR DRAINAGE PURPOSES ONLY **

WATERSHED LEGEND

- 4 — SUBCATCHMENT
- 4 — REACH
- 4 — POND
- LIMIT OF SUBCATCHMENT
- FLOW PATH

LEGEND

- UTILITY POLE
- TP#1A — TEST PIT W/ NO.
- SURFACE LEDGE
- STONE WALL
- TREE LINE
- EXISTING CONTOUR – 10'
- EXISTING CONTOUR – 2'
- WETLAND BOUNDARY
- SOILS BOUNDARY LINE
- ABUTTING PROPERTY LINE
- EXISTING PROPERTY LINE

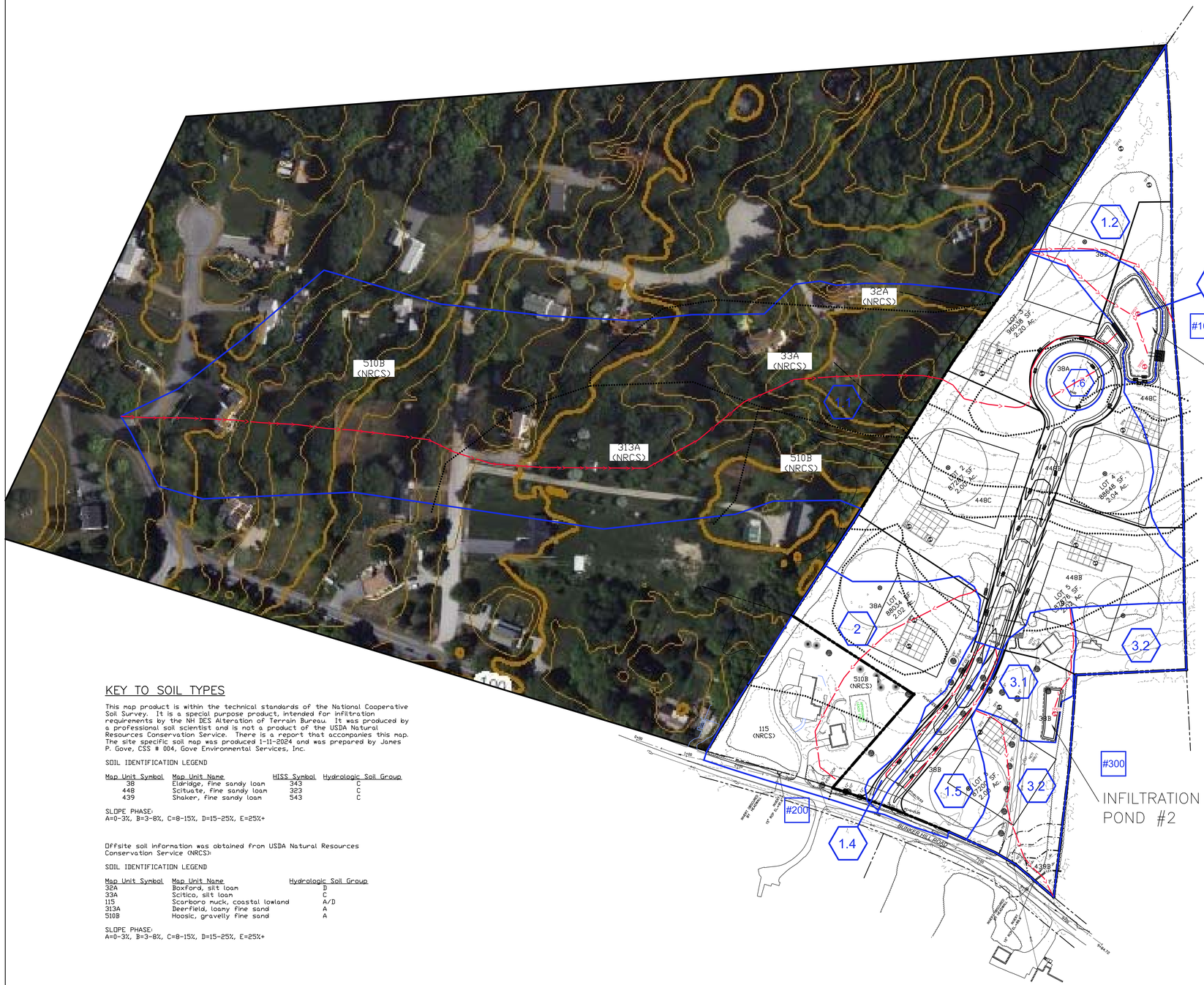
0 100 200 300

REVISIONS:	DATE:

EXISTING WATERSHED PLAN

PLAN FOR:
RESIDENTIAL DEVELOPMENT
BUNKER HILL AVE
STRATHAM, NH

DATE:	JAN. 2024	SCALE:	1"=100'
PROJ. N0:	NH-1500	SHEET NO.	WS-1



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SOIL IDENTIFICATION LEGEND

Map Unit Symbol	Map Unit Name	HISS Symbol	Hydrologic Soil Group
38	Eldridge, fine sandy loam	343	C
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439	Shaker, fine sandy loam	543	C

SLOPE PHASE:
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Offsite soil information was obtained from USDA Natural Resources Conservation Service (NRCS)

SOIL IDENTIFICATION LEGEND

Map Unit Symbol	Map Unit Name	Hydrologic Soil Group
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115	Scarboro muck, coastal lowland	A/D
313A	Deerfield, loamy fine sand	A
510B	Hoosic, gravelly fine sand	A

SLOPE PHASE:
A=0-3%, B=3-8%, C=8-15%, D=15-25%, E=25%+

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- EXISTING CONTOUR – 10'
- EXISTING CONTOUR – 2'
- WETLAND BOUNDARY
- SOILS BOUNDARY LINE
- ABUTTING PROPERTY LINE
- EXISTING PROPERTY LINE
- PROPOSED PROPERTY LINE

0 100 200 300

REVISIONS:	DATE:

PROPOSED WATERSHED PLAN

PLAN FOR:
RESIDENTIAL DEVELOPMENT
BUNKER HILL AVE
STRATHAM, NH

DATE:	JAN. 2024	SCALE:	1"=100'
PROJ. N0:	NH-1500	SHEET NO.	WS-2

GOVE ENVIRONMENTAL SERVICES, INC

SITE-SPECIFIC SOIL SURVEY REPORT
For
189 Bunker Hill Avenue, Stratham NH
By
GES, Inc.
Project # 2023139
Date: 1-11-2024

1. MAPPING STANDARDS

Site-Specific Soil Mapping Standards for New Hampshire and Vermont. SSSNNE Special Publication No. 3, Version 7.0, July, 2021.

This map product is within the technical standards of the National Cooperative Soil Survey. It is a special purpose product, intended for infiltration requirements by the NH DES Alteration of Terrain Bureau. The soil map was produced by a professional soil scientist and is not a product of the USDA Natural Resources Conservation Service. This report accompanies the soil map.

The site-specific soil map (SSSM) was produced 1-11-2024; prepared by JP Gove, CSS #004, GES, Inc.

Soils were identified with the New Hampshire State-wide Numerical Soils Legend, USDA NRCS, Durham, NH. Issue # 10, January 2011.

Hydrologic Soil Group was determined using SSSNNE Special Publication No. 5, Ksat Values for New Hampshire Soils, September 2009.

High Intensity Soil Map symbols, based upon SSSNNE Special Publication 1, December 2017, were added to the Soil Legend.

Scale of soil map: Approximately 1" = 60'.

Contours Interval: 2 feet

2. LANDFORMS & EXISTING CONDITIONS:

The site is located on a rolling landform that is a mix of parent materials: glacial till and marine sediments. The land is a primarily a field that has been mowed yearly. An old farmhouse is still present on the site.

3. DATE SOIL MAP PRODUCED

Date(s) of on-site field work: 10-18-2023

Date(s) of test pits: 11-08-2023

Test pits recorded by: Christian Smith #1543, Beals Associates, and witnessed by Michael Cuomo of the Rockingham Conservation District and as Town if Stratham reviewer.

4. GEOGRAPHIC LOCATION AND SIZE OF SITE

City or town where soil mapping was conducted: Stratham

Location: Tax Map 6, Lot 167

Size of area: Approximately 13.19 acres

Was the map for the entire lot? Yes

If no, where was the mapping conducted on the parcel: n/a

5. PURPOSE OF THE SOIL MAP

Was the map prepared to meet the requirement of Alteration of Terrain? Yes

If no, what was the purpose of the map? n/a

Who was the map prepared for? Beals Associates, PLLC

6. SOIL IDENTIFICATION LEGEND

Map Unit Symbol	Map Unit Name	HISS Symbol	Hydrologic Soil Group

38	Eldridge, fine sandy loam	343	C
448	Scituate, fine sandy loam	323	C
439	Shaker, fine sandy loam	543	C

SLOPE PHASE:

0-8%	B	8-15%	C	15-25%	D
25%-50%	E	50%+	F		

7. NARRATIVE MAP UNIT DESCRIPTIONS

SITE-SPECIFIC MAP UNIT: 38

CORRELATED SOIL SERIES: Eldridge, fine sandy loam

LANDSCAPE SETTING: Lower elevations and valleys

CHARACTERISTIC SURFACE FEATURES: Open field, no surface rocks

DRAINAGE CLASS: Moderately well drained

PARENT MATERIAL: Sands over marine silts and clays

NATURE OF DISSIMILAR INCLUSIONS: Boxford where the sand is too thin to classify and is primarily silts of silty clay. Scituate where the dense glacial till substratum is within 40 inches of the surface, but overlain with sands and silts. Both soils are moderately well drained.

ESTIMATED PERCENTAGE OF DISSIMILAR INCLUSIONS: 5%

SOIL PROFILE DESCRIPTIONS- horizon designation, depth, soil texture, Munsell color notation, Munsell color of redox features, soil structure, soil consistence, estimated coarse fragments, estimated seasonal high water table (ESHWT), observed water table (OBSWT), kind of water table (perched, apparent, or both), depth to lithic or paralithic contact:

Ap, 0 to 9 inches, fine sandy loam, 10YR3/2, granular, friable, less than 5% coarse fragments.

Bw1, 9 to 24 inches, fine sandy loam, 10YR5/6, granular, friable, less than 5% coarse fragments.

Bw2, 24 to 38 inches, loamy sand, 10YR5/4, massive, friable, less than 5% coarse fragments, 5YR5/8 redox features, ESHWT 24 inches, no OBSWT, perched, no lithic contact.

2C, 38 to 63 inches, silty clay loam, 2.5Y5/3, blocky, firm, less than 5% coarse fragments, 5YR5/8 redox features, no OBSWT, no lithic contact.

SITE-SPECIFIC MAP UNIT: 448

CORRELATED SOIL SERIES: Scituate, fine sandy loam

LANDSCAPE SETTING: Higher elevations and hills

CHARACTERISTIC SURFACE FEATURES: Open field, no surface rocks

DRAINAGE CLASS: Moderately well drained

PARENT MATERIAL: Dense glacial till

NATURE OF DISSIMILAR INCLUSIONS: Eldridge found along the transition between the Eldridge fine sandy loam map unit and the Scituate fine sandy loam map unit.

ESTIMATED PERCENTAGE OF DISSIMILAR INCLUSIONS: 5%

SOIL PROFILE DESCRIPTIONS- horizon designation, depth, soil texture, Munsell color notation, Munsell color of redox features, soil structure, soil consistence, estimated coarse fragments, estimated seasonal

high water table (ESHWT), observed water table (OBSWT), kind of water table (perched, apparent, or both), depth to lithic or paralithic contact:

Ap, 0 to 12 inches, fine sandy loam, 10YR3/2, granular, friable, 10% gravel coarse fragments.

Bw, 12 to 20 inches, fine sandy loam, 10YR5/6, granular, friable, 10% gravel coarse fragments.

Cd, 20 to 52 inches, fine sandy loam, 2.5Y5/4, blocky, firm, 10% gravel coarse fragments, 5YR5/8 and 2.5Y5/2 redox features, ESHWT 20 inches, no OBSWT, perched, no lithic contact.

SITE-SPECIFIC MAP UNIT: 439

CORRELATED SOIL SERIES: Shaker, fine sandy loam

LANDSCAPE SETTING: Low area near the road on southern edge of the site

CHARACTERISTIC SURFACE FEATURES: Forested, drains to the south under the road.

DRAINAGE CLASS: Poorly drained

PARENT MATERIAL: Sands over marine silts and clays

NATURE OF DISSIMILAR INCLUSIONS: Scitico silt loam where the sand is too shallow over the silts to classify as Shaker. This inclusion is also poorly drained.

ESTIMATED PERCENTAGE OF DISSIMILAR INCLUSIONS: 5%

SOIL PROFILE DESCRIPTIONS- horizon designation, depth, soil texture, Munsell color notation, Munsell color of redox features, soil structure, soil consistence, estimated coarse fragments, estimated seasonal high water table (ESHWT), observed water table (OBSWT), kind of water table (perched, apparent, or both), depth to lithic or paralithic contact:

Ap, 0 to 6 inches, fine sandy loam, 10YR2/2, granular, friable, less than 5% coarse fragments.

Cg, 9 to 24 inches, loamy sand, 2.5Y5/2, massive, friable, less than 5% coarse fragments. 5YR5/8 redox features, ESHWT 9 inches, ODSWT 9 inches, perched, no lithic contact.

2Cg, 24 to 30 inches, silty clay loam, 2.5Y5/2, blocky, firm, less than 5% coarse fragments, 5YR5/8 redox features.

---

8. RESPONSIBLE SOIL SCIENTIST

Name: James Gove

Certified Soil Scientist Number: 004

9. OTHER DISTINGUISHING FEATURES OF SITE

Is the site in a natural condition? Altered by plowing.

If no, what is the nature of the disturbance? Normal agricultural activities

Lot Size By Soil Type
WINDSONG PLACE
Stratham, New Hampshire
February 5, 2024

Soil SSS	Soil Name	Soil HISS	Soil sf Quantities	Town Required	Town Percentage
Lot 1					
38A	Eldridge	343BH	33,309	54,500	61%
38B	Eldridge	343CH	45,249	54,500	83%
448B	Scituate	323BH	8,715	77,000	11%
Total			87,273		155%
Lot 2					
38A	Eldridge	343BH	10,206	54,500	19%
38B	Eldridge	343CH	6,490	54,500	12%
448B	Scituate	323BH	54,698	77,000	71%
448C	Scituate	323CH	15,847	89,000	18%
Total			87,241		119%
Lot 3					
38A	Eldridge	343BH	5,368	54,500	10%
38B	Eldridge	343CH	89,272	54,500	164%
Total			94,640		174%
Lot 4					
38B	Eldridge	343CH	38,576	54,500	71%
448B	Scituate	323BH	37,149	77,000	48%
448C	Scituate	323CH	12,317	89,000	14%
Total			88,042		133%
Lot 5					
38B	Eldridge	343CH	39,468	54,500	72%
448B	Scituate	323BH	41,437	77,000	54%
448C	Scituate	323CH	6,971	89,000	8%
Total			87,876		134%
Lot 6					
38B	Eldridge	343CH	83,723	54,500	154%
439B	Shaker	543BH	3,477	106,000	3%
Total			87,200		157%