TOWN OF GRAY

PLANNING BOARD

AGENDA • DECEMBER 14, 2023

Planning Board
Regular Meeting

Henry Pennell Municipal Complex
24 Main St., Gray, Maine
And via Zoom videoconferencing:
https://us06web.zoom.us/j/87863277845

7:00 PM

I. MEETING COMMENCES

Roll Call

II. MINUTES APPROVAL

a. Planning Board - Regular Meeting - October 16, 2023 7:00 PM

III. INFORMATION EXCHANGE

a. Welcome New Member

b. Ordinance Updates

c. Staff Review Committee Updates

IV. NEW BUSINESS

a.

Morgan Meadow Drive Subdivision – Sketch Plan Review

A request by 519 Morgan Meadows LLC, represented by Caleb Eulitt, for Planning Board sketch plan review of a proposal to create two or more lots on his 25.45+/- acre property on Morgan Meadow Drive, off Totten Road, at Tax Map 57, Lot 23-81 in the Rural Residential and Agricultural zoning district. This proposal is subject to subdivision review.

b.

Mayall Road Gervais Subdivision – Sketch Plan Review

A request by Andrew Gervais of Gervais Homes LLC, represented by Austin Fagan of BH2M Engineering, for Planning Board sketch plan review of a proposal to create a 12-lot subdivision on his 60 +/- acre property near 279 Mayall Road, at Tax Map 21, Lot 26-20 in the Rural Residential and Agricultural and Business Development-1 zoning districts. This proposal is subject to major subdivision review.

V. NEW BUSINESS/PUBLIC HEARING

a.

Aerie Estates Amendment to Eagles Ridge Subdivision - Preliminary Plan Review

A request by Sebago Realty, LLC, represented by D.H. Roma Consulting Engineers, for preliminary review of a proposal to create a 14-lot residential open space subdivision on the 41+/- acre parcel off Eagles Nest Road, at Tax Map 63, Lot 35-24, on the remaining land in the Eagles Ridge Subdivision, in a Rural Residential and Agricultural zoning district. The proposal is subject to major subdivision plan review.

VI. CONTINUED BUSINESS

a.

Cambell Acres Subdivision Amendment – Final Plan Review

A request by McDonnell Brothers Custom Builders, LLC, represented by DM Roma Consulting Engineers, for Planning Board final plan review of a proposal to create three lots in the Cambell Acres subdivision on the 7.12+/- parcel off Jenny Drive, Map 56, Lot 17-28-03 in the Rural Residential and Agricultural zoning district. This proposal is subject to major subdivision review.

VII. ADJOURNMENT

** The Town of Gray is an equal opportunity employer and complies with all applicable equal access to public accommodations law. If you are planning to attend a Town Council or Town committee or board meeting and need assistance with a physical disability, please contact the Town Manager's office at least 48 hours in advance of the meeting to have the Town assist you. 657-3339. TTY 657-3931.*

TOWN OF GRAY

PLANNING BOARD

AGENDA • DECEMBER 14, 2023

Planning Board
Regular Meeting

Henry Pennell Municipal Complex
24 Main St., Gray, Maine
And via Zoom videoconferencing:
https://us06web.zoom.us/j/87863277845

7:00 PM

I. MEETING COMMENCES

Roll Call

II. MINUTES APPROVAL

a. Planning Board - Regular Meeting - October 16, 2023 7:00 PM

III. INFORMATION EXCHANGE

a. Welcome New Member

b. Ordinance Updates

c. Staff Review Committee Updates

IV. NEW BUSINESS

a.

Morgan Meadow Drive Subdivision – Sketch Plan Review

A request by 519 Morgan Meadows LLC, represented by Caleb Eulitt, for Planning Board sketch plan review of a proposal to create two or more lots on his 25.45+/- acre property on Morgan Meadow Drive, off Totten Road, at Tax Map 57, Lot 23-81 in the Rural Residential and Agricultural zoning district. This proposal is subject to subdivision review.

b.

Mayall Road Gervais Subdivision – Sketch Plan Review

A request by Andrew Gervais of Gervais Homes LLC, represented by Austin Fagan of BH2M Engineering, for Planning Board sketch plan review of a proposal to create a 12-lot subdivision on his 60 +/- acre property near 279 Mayall Road, at Tax Map 21, Lot 26-20 in the Rural Residential and Agricultural and Business Development-1 zoning districts. This proposal is subject to major subdivision review.

V. NEW BUSINESS/PUBLIC HEARING

a.

Aerie Estates Amendment to Eagles Ridge Subdivision - Preliminary Plan Review

A request by Sebago Realty, LLC, represented by D.H. Roma Consulting Engineers, for preliminary review of a proposal to create a 14-lot residential open space subdivision on the 41+/- acre parcel off Eagles Nest Road, at Tax Map 63, Lot 35-24, on the remaining land in the Eagles Ridge Subdivision, in a Rural Residential and Agricultural zoning district. The proposal is subject to major subdivision plan review.

VI. CONTINUED BUSINESS

a.

Cambell Acres Subdivision Amendment – Final Plan Review

A request by McDonnell Brothers Custom Builders, LLC, represented by DM Roma Consulting Engineers, for Planning Board final plan review of a proposal to create three lots in the Cambell Acres subdivision on the 7.12+/- parcel off Jenny Drive, Map 56, Lot 17-28-03 in the Rural Residential and Agricultural zoning district. This proposal is subject to major subdivision review.

VII. ADJOURNMENT

***** *The Town of Gray is an equal opportunity employer and complies with all applicable equal access to public accommodations law. If you are planning to attend a Town Council or Town committee or board meeting and need assistance with a physical disability, please contact the Town Manager's office at least 48 hours in advance of the meeting to have the Town assist you. 657-3339. TTY 657-3931.*

PLANNING BOARD/STAFF REVIEW COMMITTEE APPLICATION
TOWN OF GRAY MAINE

PROPERTY TO BE DEVELOPED

Property Location/Address	0 Morgan Meadows Dr. (@ dead end)	Property Map/Lot	57 . 23 . 81 . 00
Zoning District	BRA	Lot Acreage	25.45
Owner Name	519 Morgan Meadows LLC	Tax Sheet	
Owner Address	9 Keystone Dr. Windham, ME 04062	Owner Phone	207-838-2475

APPLICANT

Name (IF different than owner)	Caleb Eulitt	Contact Phone Number	207-838-2475
Mailing Address	9 Keystone Dr.	Alternate Phone Number	
Mailing City/State/Zip	Windham, ME 04062	Fax Number	
Email Address	ceulitt@gmail.com		

AGENT/CONSULTANT

Name		Contact Phone Number	
Mailing Address		Alternate Phone Number	
Mailing City/State/Zip		Fax Number	
Email Address			

PROJECT

The undersigned requests that the Town of Gray Planning Board consider the following application for:

- [x] **Subdivision**
  - [x] Sketch Plan Review
  - [ ] Preliminary Plan Review (Major)
  - [ ] Final Plan Review (Major)
  - [ ] Minor
- [ ] **Site Plan Review**
  - [ ] Pre-Application Conference
  - [ ] Minor
  - [ ] Major
- [ ] **Shoreland Zoning Permit**
- [ ] **Other (specify)**
  - [ ] Conditional Use
  - [ ] Amendment
  - [ ] Extension
  - [ ] Workshop
  - [ ] Contract Zone Request

Project Description / Comments:

To develope Remaining lot of Morgan Meadows Dr. conscientiously For a small personal mixed (single + 2 family) houses.

Applicant Signature [redacted] **Date** 11/13/23

Caleb Eulitt
9 Keystone Dr.
Windham, ME 04062
207-838-2475

11/13/2023

Re: Morgan Meadows Drive Subdivision Sketch Plan Review

Dear Board Members,

I have recently purchased the remaining +/- 25 acres of vacant land at the dead end of Morgan Meadows Dr. in Gray. I have contracted with Main-Land Development Inc. to compromise required mapping and concepts for a small subdivision. Initially I purchased the land with the intention of building (2) quality duplexes and ultimately a garage for myself to house my tools, trailers, and maintenance equipment. This would allow for very minimal changes to the overall lot and neighborhood, keeping it as a small gravel private drive with the maximum 10 dwelling units.

After being approached by several people including 1 abutter, and my sister about their struggle to find a home to purchase in the last few years, Main-Land has since started conceptualizing a slightly larger, open space development for an option to create several more lots. This concept has not been completed other than base mapping, so my best guess at this point would be roughly 6-8 newly created lots for a mixture of duplexes and single family homes, again with my garage also being included in some remaining land out of sight in the rear. If this larger development option is chosen I would be planning to upgrade the road to a rural public easement street to allow the less than or equal to 25 dwelling units (Although I would have no desire to reach this maximum). There is no road association, and the land on which the road is constructed belongs to my lot, and is worded that it is to serve my land.

Either option seems to be able to be achieved with keeping fairly private wooded lots, without exceeding 1500' of total road construction, and would leave a significant amount of area undisturbed for open space. There is an area of wetlands that should be able to be almost completely avoided, and a small stream draining them in one lower portion. Some perimeters of the lot are quite steep, but the remaining land in between seems well drained and gently sloping to allow for suitable building and basic drainage throughout. Private water and sewer would be provided for each lot.

Thank you for the time and consideration.

A TRU[redacted]

MORTGAGE DEED

519 MORGAN MEADOW LLC, a Maine limited liability company having a place of business in Portland, Maine, for consideration paid, grant to Caleb Eulitt, with mailing address of 9 Keystone Drive, Windham, Maine 04062, with **MORTGAGE COVENANTS**, to secure the payment of One Dollar ($1.00) and other valuable consideration, payable as provided in a promissory note of even date, the land in the Gray, Maine, described in Exhibit A attached hereto and incorporated by reference.

This mortgage is upon the **STATUTORY CONDITION**, for any breach of which the Mortgagee shall have the remedies provided by law, including without limitation, the Statutory Power of Sale as defined in 33 M.R.S.A. § 501-A, or foreclosure under any other legal method existing at the time this mortgage becomes in default. In addition to the covenants and agreements covered by the Statutory Condition, the Mortgagor hereby covenants and agrees that it will keep the buildings and improvements now existing or hereafter erected on the mortgaged property in good repair and will permit the Mortgagee to enter and inspect the property, buildings and improvements from time to time upon reasonable advance notice to the Mortgagor. Insurance provided by Mortgagor shall, is addition to fire insure the premises against "all risks" and shall have ten day notice of cancellation to Mortgagee.

Grantor warrants and represents that this mortgage is given to secure a loan primarily for a business, commercial or agricultural purpose, that loan proceeds shall be used only for such purpose, and the mortgaged premises are not the Grantor's primary residence. If Grantor is a trust or trustee(s) of a trust, then Grantor further warrants and represents that either the mortgaged premises are not used exclusively for residential purposes, or if they are used for residential purposes, the mortgaged premises consist of more than four (4) residential units and none of the residential units are the principal residence of the owner of at least one-half of the beneficial interest in the trust.

This is an open-ended mortgage which secures existing indebtedness, "future advances," "protective advances" and "contingent obligations," as such terms are defined in 33 M.R.S.A. §505, as may be amended. Grantee may from time to time make further advances to Grantor, and each such advance shall be secured by this Mortgage Deed as fully as though it had originally been included in and evidenced by Grantor's said Note. The maximum aggregate amount of all debts or obligations secured by this Mortgage Deed, including future advances, but excluding protective advances, shall not at any time exceed Six Hundred Thirty Thousand and 00/100 Dollars ($630,000.00). Nothing herein contained, however, shall limit the amount secured by this Mortgage Deed if such amount is increased by advances made by Grantee to protect or preserve the security.

Notwithstanding any other provision contained herein, it shall be a default of this mortgage for the mortgagors herein to permit an assumption of, or sale subject to this mortgage, including but not limited to an outright sale, an installment land contract, a bond for a deed or other related type of instrument.

Upon Borrower's breach of any covenant or agreement of Borrower in this Mortgage, including the covenants to pay when due any sums secured by this Mortgage, Lender at Lender's option may declare all of the sums secured by this Mortgage to be immediately due and payable without further demand and Lender shall have any foreclosure remedies permitted by applicable law. This Mortgage is given primarily for a business, commercial or agricultural purpose. Lender shall be entitled to collect all reasonable costs and expenses incurred in pursuing the remedies, including, but not limited to, reasonable attorney's fees.

Assignment of Rents; Appointment of Receiver; Lender in Possession. As additional security hereunder, Borrower hereby assigns to Lender the rents of the Property, provided that Borrower shall, prior to acceleration or abandonment of the Property, have the right to collect and retain such rents as they become due and payable.

Upon acceleration or abandonment of the Property, Lender, in person, by agent or by judicially appointed receiver, shall be entitled to enter upon, take possession of and manage the Property and to collect the rents of the Property including those past due. All rents collected by Lender or the receiver shall be applied first to payment of the costs of management of the Property and collection of rents, including, but not limited to, receiver's fees, premiums on receiver's bonds and reasonable attorney's fees, and then to the sums secured by this Mortgage. Lender and the receiver shall be liable to account for only those rents actually received. Lender shall have the right to apply for and shall be entitled to the appointment of a receiver of the rents, issues and profits of the Property, without notice to the Mortgagor, without regard to the value of the Property as security for the amounts due to the Mortgagee or to the solvency of any person liable for the payment of such amounts, and irrespective of whether the Mortgagee has an adequate remedy at law.

[redacted]

Witnes

519 MORGAN MEADOW LLC

[redacted]

Caleb Eulitt, Authorized Agent

STATE OF MAINE
CUMBERLAND, SS.

September 6, 2023

Personally appeared before me the above-named Caleb Eulitt, duly authorized Agent of 519 Morgan Meadow, LLC, and acknowledged the foregoing instrument to be his free act and deed in his said capacity and the free act and deed of the Limited Liability Company.

JOSEPH JULES NELSON
Notary Public-Maine
My Commission Expires
May 03, 2028

[redacted]

Notary Public/Attorney-at-Law

Return to:
519 Morgan Meadow LLC

[redacted]

WARRANTY DEED

KNOW ALL PERSONS BY THESE PRESENTS: That **Allison P. Walton**, of 17 Trout Lane, New Gloucester, Maine 04260, for consideration paid grants to **519 Morgan Meadow LLC, a Maine Limited Liability Company,** care of 9 Keystone Drive, Windham, ME 04062, with WARRANTY COVENANTS, the following parcel of land, with any improvements thereon, located in the Town of Gray, County of Cumberland and State of Maine:

All that parcel of land shown as "other land of McAtee Excavation, Inc." on the "Final Plan of Morgan Meadows" off Totten Road in the Town of Gray, County of Cumberland and State of Maine, made for Douglas McAtee and recorded at the Cumberland County Registry of Deeds in Plan Book 203, Page 565.

Subject to a right of way 60 feet in width benefitting Lot I as shown on said Plan, extending from the westerly sideline of the Totten Road a distance of 300 feet, between the northwesterly sideline of Lot A and the southeasterly sideline of Lot I as shown on said Plan. Such right of way including the right of access for all purposes for which a town road may be used, including utility services. The costs of maintenance, repair and plowing to be shared pro-rata among the lots having the rights of use based on the number of lots and the distance of each lot's use.

The above lot is conveyed subject to the terms: restrictions: notes, easements and conditions as shown on the Plan referred to above.

The above Lot is also conveyed with the restriction that no mobile homes or double-wides will be placed thereon and that there shall be no clear cutting of the property.

Excepting and reserving from this conveyance property- conveyed by Gary Parks to Jeremy Berry and Kayla Fischer by deed dated October 24, 2008 recorded in said Registry of Deeds in Book 26429, Page 22, to which deed reference may be had for a more particular description.

Excepting and reserving from this conveyance property conveyed to Robie Builders, LLC dated March 28, 2014 and recorded in Book 31413, Page 37, to which deed reference may be had for a more particular description.

Also excepted herefrom is a parcel of land conveyed by Allison P. Walton to Stax Building Inc. by Deed dated January 8, 2021 and recorded on January 12, 2021, in the Cumberland County Registry of Deeds in Book 37685 Page 144 (being Lot D as shown on Plan Book 221 Page 24).

Meaning and intending to describe and convey the same premises conveyed to Allison P. Walton by virtue of a Warranty Deed of Gary Parks dated June 06, 2015 and recorded in the Cumberland County Registry of Deeds at Book 32427, Page 78.

Executed this 6th day of August, 2023.

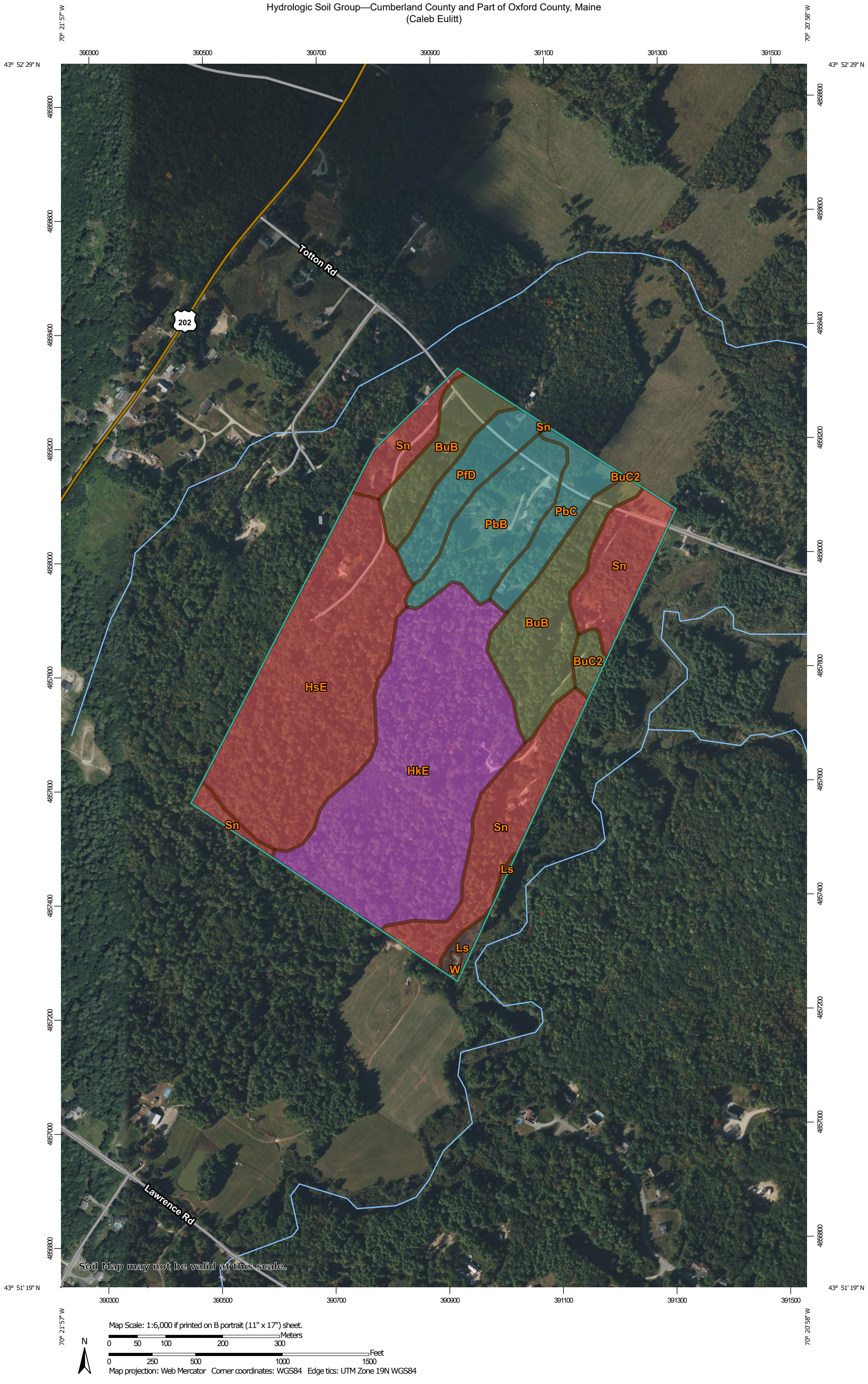
[redacted]

State of Maine
County of Androscoggin

Then personally appeared before me on this 6th day of August, 2023 the said Allison Walton and acknowledged the foregoing to be his/her/their vol[redacted]

Notary Public
Commission expiration:

JOSEPH JULES NELSON
Notary Public-Maine
My Commission Expires
May 03, 2028



Map Scale: 1:6,000 if printed on B portrait (11" x 17") sheet.

N

Meters
0 50 100 200 300

Feet
0 250 500 1000 1500

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

MAP LEGEND

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

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

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

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: Cumberland County and Part of Oxford County, Maine
Survey Area Data: Version 20, Sep 5, 2023

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

Date(s) aerial images were photographed: Jun 19, 2020—Oct 7, 2021

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.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BuB	Lamoine silt loam, 3 to 8 percent slopes	C/D	15.2	12.8%
BuC2	Buxton silt loam, 8 to 15 percent slopes	C/D	1.2	1.0%
HkE	Hermon sandy loam, 20 to 60 percent slopes, extremely stony	A	33.6	28.2%
HsE	Lyman-Abram complex, 15 to 35 percent slopes, very rocky	D	28.6	23.9%
Ls	Limerick-Saco silt loams	B/D	1.0	0.8%
PbB	Paxton fine sandy loam, 3 to 8 percent slopes	C	9.2	7.7%
PbC	Paxton fine sandy loam, 8 to 15 percent slopes	C	4.7	3.9%
PfD	Paxton very stony fine sandy loam, 15 to 25 percent slopes	C	5.6	4.7%
Sn	Scantic silt loam, 0 to 3 percent slopes	D	20.1	16.9%
W	Water		0.1	0.1%
Totals for Area of Interest			**119.4**	**100.0%**

Description

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

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

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

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

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

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

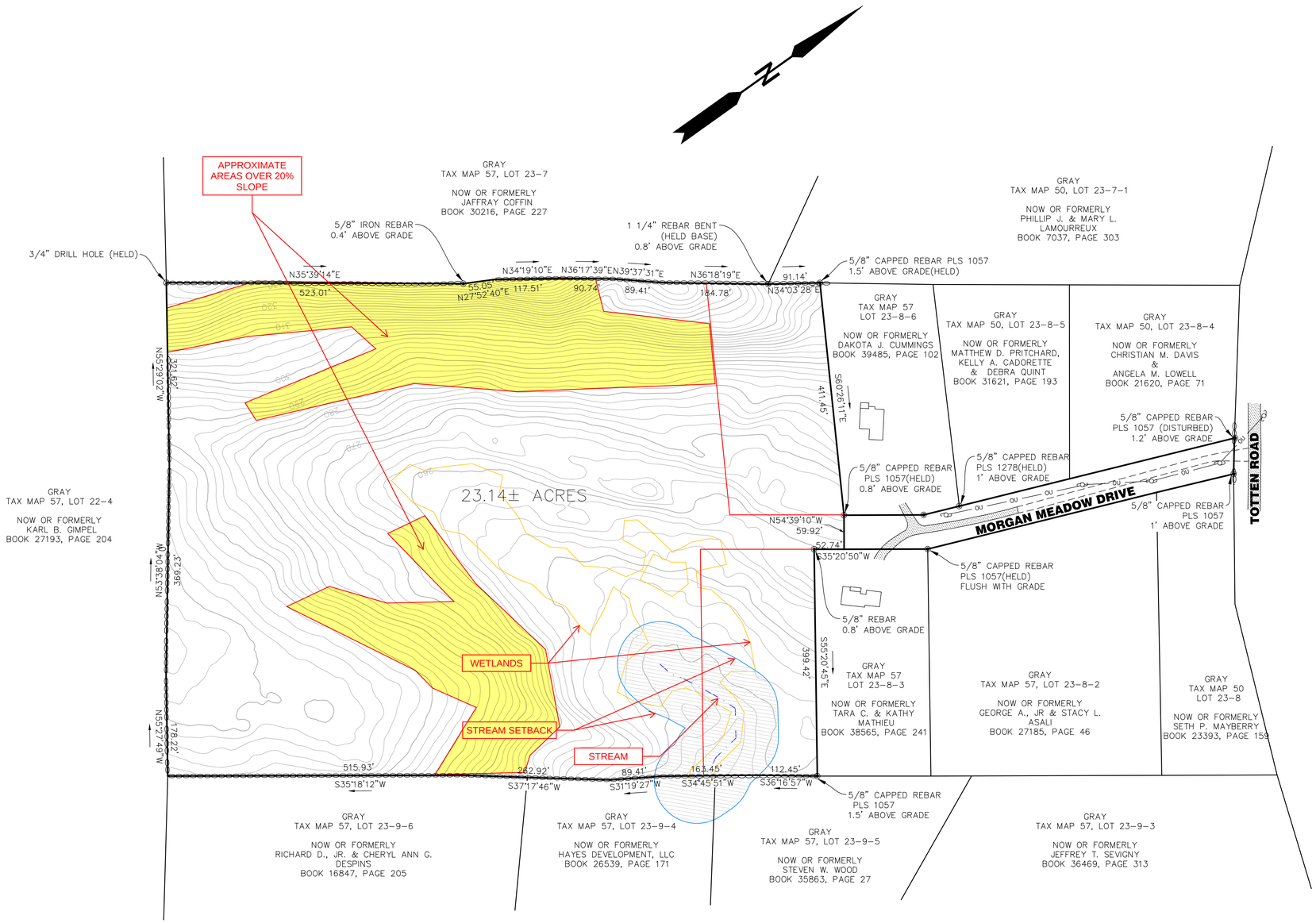
If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher



LEGEND

- EXISTING IRON PIPE, ROD, OR REBAR, AS NOTED
- 5/8 REBAR CAPPED, "PLS 2282", TO BE SET
- DRILL HOLE
- UTILITY POLE
- OVERHEAD UTILITY
- BOUNDARY LINE (SURVEYED)
- ABUTTING BOUNDARY LINES (APPROX.)
- EDGE OF GRAVEL
- STONEWALL
- PAVEMENT
- WETLAND AREA (APPROX.)

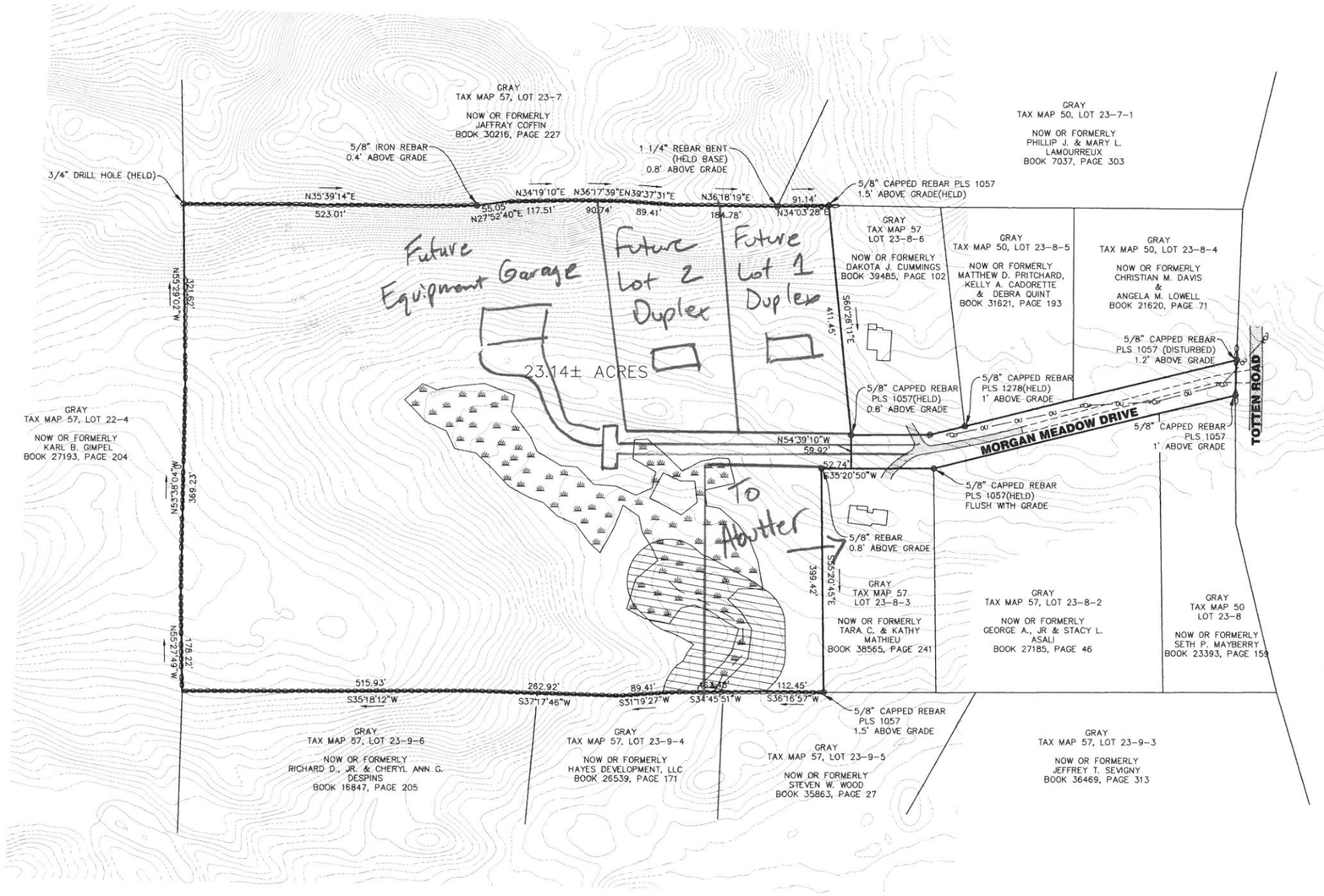
1" = 100'

NOTES

1. ALL BEARINGS ARE REFERENCED TO MAINE STATE GRID, WEST ZONE, NAD83 AND BASED ON GPS OBSERVATIONS NEAR THE SURVEYED PARCEL.
2. TOWN OF GRAY: TAX MAP 57, LOT 23-81.
3. OWNER OF RECORD AT TIME OF SURVEY: ALLISON WALTON: BOOK 32427, PAGE 78.
4. TOTAL AREA: 23.14 ACRES, MORE OR LESS.
5. ALL BOOK AND PAGES REFER TO THE CUMBERLAND COUNTY REGISTRY OF DEEDS.
6. NO APPARENT ENCROACHMENTS WERE OBSERVED AT TIME OF SURVEY.
7. ALL NATURAL RESOURCE FEATURES WERE DELINEATED AND LOCATED BY MAIN-LAND WITH THE USE OF A SUB-METER HANDHELD TRIMBLE GEO 7X.
8. CONTOURS SHOWN ARE BASED ON STATE OF MAINE LIDAR DOWNLOADED FROM HTTP://COAST.NOAA.GOV WITH A 2-FOOT CONTOUR INTERVAL.

PLAN REFERENCES

1. " PROPERTY PLAN OF LOT DIVISION, MORGAN DRIVE, GRAY, MAINE", DATED OCTOBER 31 2020, MADE FOR ALLISON P. WALTON, SURVEYED BY JOHN D. PALMITTER AND RECORDED IN PLAN BOOK 221, PAGE 24 ON JANUARY 15, 2021.
1. "EXISTING CONDITION SURVEY OF TOTTEN ROAD PROPERTY, TOTTEN ROAD, GRAY, MAINE", DATED MAY 10, 2001, MADE FOR FRANK GRONDIN, SURVEYED BY SEBAGO TECHNICS, UNRECORDED PLAN.



LEGEND

- EXISTING IRON PIPE, ROD, OR REBAR, AS NOTED
- 5/8 REBAR CAPPED, "PLS 2282", TO BE SET
- DRILL HOLE
- UTILITY POLE
- OVERHEAD UTILITY
- BOUNDARY LINE (SURVEYED)
- ABUTTING BOUNDARY LINES (APPROX.)
- EDGE OF GRAVEL
- STONEWALL
- PAVEMENT
- STREAM EDGE / STREAM CENTERLINE
- 75' STREAM BUFFER
- TYPICAL WETLAND BOUNDARY

11/13/23 Proposed Plan #1 For:
Caleb Eulitt / 519 Morgan Meadows LLC

MAIN-LAND
DEVELOPMENT
CONSULTANTS, INC.
69 MAIN ST. LIVERMORE FALLS, MAINE
367 US ROUTE 1 FALMOUTH, MAINE
PH: (207) 897-6752 FAX: (207) 897-5404
WWW.MAIN-LANDDEV.COM

PROJECT
SUBDIVISION MORGAN MEADOW DRIVE
MORGAN MEADOW DRIVE
GRAY, MAINE, 04039

OWNER OF RECORD
CALEB EULITT
9 KEYSTONE DRIVE
WINDHAM, ME, 04062

MADE FOR
CALEB EULITT
9 KEYSTONE DRIVE
WINDHAM, ME, 04062

DRAWING SCALE:
-100 0 50 100
(IN FEET)
1 INCH = 100 FT

SUBMISSION NOTES:
SUBMISSION 1: 2023-11-07 MJB

PROJ. MGR:	MJB
DRAWN BY:	HRD
CHECKED BY:	MJB
REVISION NO.	N/A
SURVEY DATE:	2023-10-04
SUBMISSION DATE:	2023-11-07
SUBMITTED FOR:	REVIEW

EXISTING CONDITIONS MAP

SEAL:
DRAFT

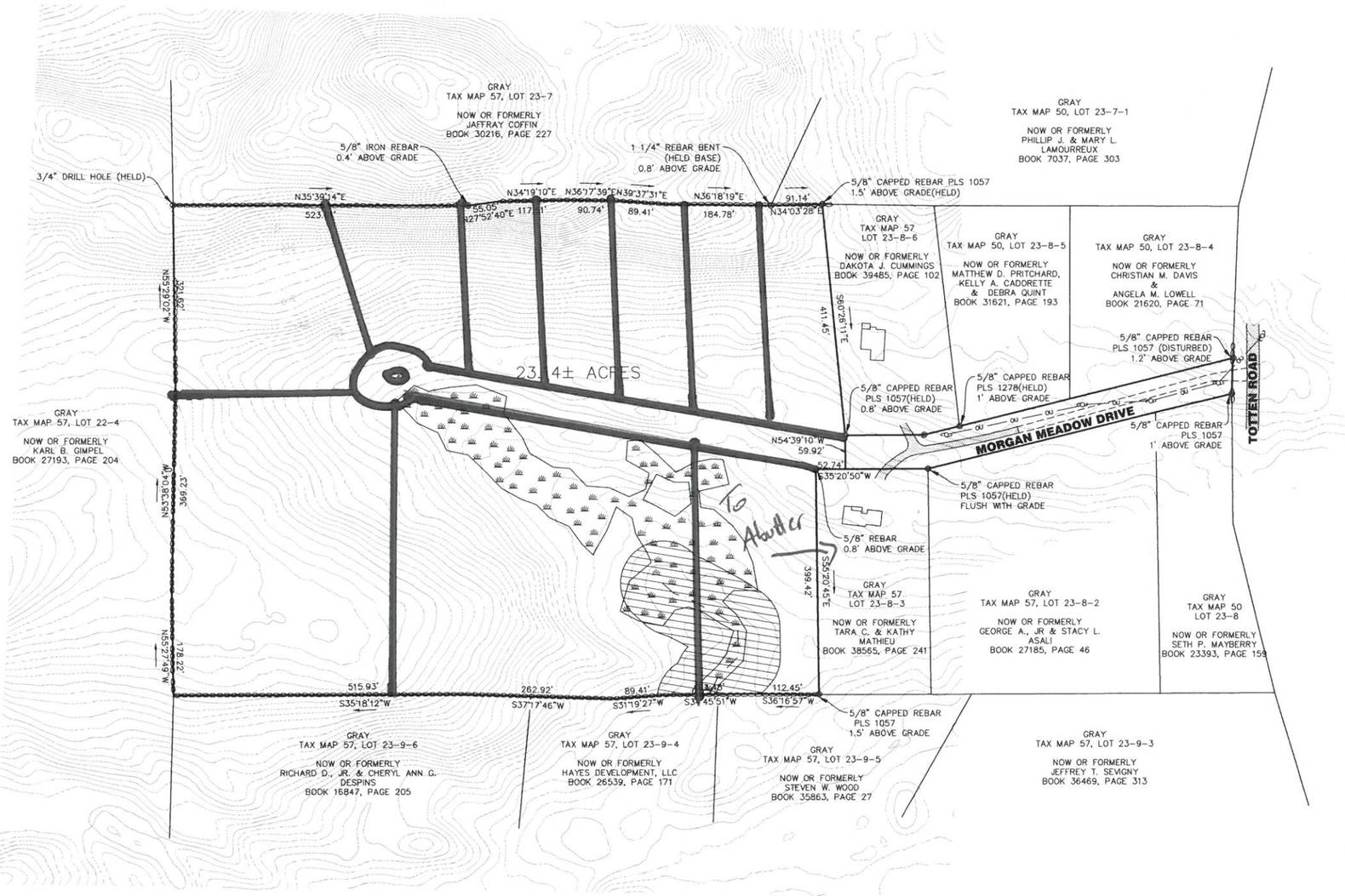
DRAWING NO.
C1.1
MLDC NO. 23-301 1 OF 1

NOTES

1. ALL BEARINGS ARE REFERENCED TO MAINE STATE GRID, WEST ZONE, NAD83 AND BASED ON GPS OBSERVATIONS NEAR THE SURVEYED PARCEL.
2. TOWN OF GRAY: TAX MAP 57, LOT 23-81.
3. OWNER OF RECORD AT TIME OF SURVEY: ALLISON WALTON: BOOK 32427, PAGE 78.
4. TOTAL AREA: 23.14 ACRES, MORE OR LESS.
5. ALL BOOK AND PAGES REFER TO THE CUMBERLAND COUNTY REGISTRY OF DEEDS.
6. NO APPARENT ENCROACHMENTS WERE OBSERVED AT TIME OF SURVEY.
7. ALL NATURAL RESOURCE FEATURES WERE DELINEATED AND LOCATED BY MAIN-LAND WITH THE USE OF A SUB-METER HANDHELD TRIMBLE GEO 7X.
8. CONTOURS SHOWN ARE BASED ON STATE OF MAINE LIDAR DOWNLOADED FROM HTTP://COAST.NOAA.GOV WITH A 2-FOOT CONTOUR INTERVAL.

PLAN REFERENCES

1. " PROPERTY PLAN OF LOT DIVISION, MORGAN DRIVE, GRAY, MAINE", DATED OCTOBER 31 2020, MADE FOR ALLISON P. WALTON, SURVEYED BY JOHN D. PALMITTER AND RECORDED IN PLAN BOOK 221, PAGE 24 ON JANUARY 15, 2021.
1. "EXISTING CONDITION SURVEY OF TOTTEN ROAD PROPERTY, TOTTEN ROAD, GRAY, MAINE", DATED MAY 10, 2001, MADE FOR FRANK GRONDIN, SURVEYED BY SEBAGO TECHNICS, UNRECORDED PLAN.



LEGEND

- EXISTING IRON PIPE, ROD, OR REBAR, AS NOTED
- 5/8 REBAR CAPPED, "PLS 2282", TO BE SET
- DRILL HOLE
- UTILITY POLE
- OVERHEAD UTILITY
- BOUNDARY LINE (SURVEYED)
- ABUTTING BOUNDARY LINES (APPROX.)
- EDGE OF GRAVEL
- STONEWALL
- PAVEMENT
- STREAM EDGE / STREAM CENTERLINE
- 75' STREAM BUFFER
- TYPICAL WETLAND BOUNDARY

11/13/23 Proposed Plan #2 (Rough) for:
Caleb Eulitt / 519 Morgan Meadows LLC

MAIN-LAND DEVELOPMENT CONSULTANTS, INC.
69 MAIN ST. LIVERMORE FALLS, MAINE
367 US ROUTE 1 FALMOUTH, MAINE
PH: (207) 897-6752 FAX: (207) 897-5404
WWW.MAIN-LANDDCI.COM

PROJECT
SUBDIVISION MORGAN MEADOW DRIVE
MORGAN MEADOW DRIVE
GRAY, MAINE, 04039

OWNER OF RECORD
CALEB EULITT
9 KEYSTONE DRIVE
WINDHAM, ME, 04062

MADE FOR
CALEB EULITT
9 KEYSTONE DRIVE
WINDHAM, ME, 04062

DRAWING SCALE:
-100 0 50 100
(IN FEET)
1 INCH = 100 FT

SUBMISSION NOTES:
SUBMISSION 1: 2023-11-07 MJB

PROJ. MGR:	MJB
DRAWN BY:	HRD
CHECKED BY:	MJB
REVISION NO.	N/A
SURVEY DATE:	2023-10-04
SUBMISSION DATE:	2023-11-07
SUBMITTED FOR:	REVIEW

EXISTING CONDITIONS MAP

SEAL:
DRAFT

DRAWING NO.
C1.1
MLDC NO. 23-301 1 OF 1

BH2M

Civil Engineering | Surveying

November 10, 2023

Kristen Muszynski
Community Planner – Town of Gray
Henry Pennell Municipal Complex
24 Main Street
Gray, Maine 04039

Re: Sketch Plan Application
Proposed 10-Lot Subdivision
Mayall Road

Dear Kristen;

BH2M has been retained by Andrew Gervais or Gervais Homes, LLC to provide surveying, engineering, and permitting services for a proposed 12-lot single family residential subdivision located off Mayall Road in Gray. Enclosed please find 14 copies of the following materials:

Attachment 1 – Pre-App/Sketch Plan Application & Agent Authorization
Attachment 2 – Parcel Deed (Book 40268, Page 31)
Attachment 3 – Maps (Tax, USGS, FEMA)
Attachment 4 – Wetland Delineation Letter – Mark Hampton Associates
Attachment 5 – Class B Soil Survey – Mark Hampton Associates
Attachment 6 – Sketch Plan Set – BH2M

Existing Conditions

The proposed project is located off Mayall Road and lies within the Rural Residential and Agricultural, and Business Development 1 Districts. The existing parcel is undeveloped woodlands that are bounded by commercial and residential properties to the north, east, and west, and by woodlands to the south. Onsite wetlands and soils have been delineated by Mark Hampton Associates.

Proposed Project

Attached are two plans for the board to review showing two possible phases of this project. Phase I of the project proposes to split off an Outsale Lot that will not be subject to subdivision review standards and can be developed at any time. This split will not require subdivision review since no lots have been split from the overall parcel in the past 5 years, and the property has never been part of a subdivision in the past. Along with this split, 12 additional lots will be created, 6 with frontage

on Mayall Road, and 6 with frontage on a proposed roadway that will be approximately 1,000 linear feet. The lots with frontage on Mayall Road utilize conventional dimensional requirements, while the lots on the proposed roadway are proposed to meet the Open Space Subdivision standards.

Phase II of the project could consist of 11 additional lots that would be proposed to meet the Open Space Subdivision standards within the RRA district, and conventional lot sizes in the BD-1 district. This phase may not take place for some time, but this plan is being provided to show the board the full development potential of the property.

We anticipate that the project will require the following permits:

- Subdivision Permit (Town of Gray)

We look forward to discussing this project with Staff and the Board. We would like to request being placed on the next available Planning Board Agenda.

Sincerely,

Austin G. Fagan, PE
Project Engineer

Encl.
Cc A. Gervais

Attachment 1
Sketch Plan Application & Agent Authorization Form

PLANNING BOARD/STAFF REVIEW COMMITTEE APPLICATION
TOWN OF GRAY MAINE

PROPERTY TO BE DEVELOPED			
Property Location/Address	Mayall Road	Property Map/Lot	21 . 26 . 20 .
Zoning District	RRA & BD-1	Lot Acreage	60 Acres
Owner Name	Gervais Homes LLC (Andrew Gervais)	Tax Sheet	21
Owner Address	52 Whites Bridge Road, Standish, ME 08084	Owner Phone	207-756-5520

APPLICANT			
Name (IF different than owner)		Contact Phone Number	
Mailing Address		Alternate Phone Number	
Mailing City/State/Zip		Fax Number	
Email Address			

AGENT/CONSULTANT			
Name	Austin Fagan, PE	Contact Phone Number	207-839-2771
Mailing Address	380B Main Street	Alternate Phone Number	
Mailing City/State/Zip	Gorham, Maine 04038	Fax Number	
Email Address	afagan@bh2m.com		

PROJECT

The undersigned requests that the Town of Gray Planning Board consider the following application for:

☒ **Subdivision**
- ☒ Sketch Plan Review
- Preliminary Plan Review (Major)
- Final Plan Review (Major)
- Minor

☐ **Site Plan Review**
- Pre-Application Conference
- Minor
- Major

☐ **Shoreland Zoning Permit**

☐ **Other (specify)**
- Conditional Use
- Amendment
- Extension
- Workshop
- Contract Zone Request

Project Description / Comments:

The applicant is proposing to split off an outsale lot per State Subdivision Law, and then subdivide the remaining property into 12 single family lots with remaining land and open space. A plan showing a potential second phase with full buildout is also attached for the boards review.

Applicant Signature [redacted] **Date** 11-10-2023

DocuSign Envelope ID: 57DC6C11-95DD-4839-837D-2A2871195A58

Agent Authorization

Property Description	**Physical Address/ Location**	**Mayall Road Gray, ME**	**Map 21**	
			Lot 26-20	
Applicant Information	**Name**	**Andrew Gervais**	**Mailing Address**	**52 Whites Bridge Road Standish, Maine 04084**
	Phone	**(207) 756-5520**		
	Email	**ajgervais1@gmail.com**		
Owner Information	**Name**	**Gervais Homes LLC**	**Mailing Address**	**52 Whites Bridge Road Standish, Maine 04084**
	Phone	**(207) 756-5520**		
	Email	**ajgervais1@gmail.com**		
Applicant's Agent Information	**Name**	**Austin Fagan**	**Business Name**	**BH2M**
	Phone	**(207) 839-2771**	**Mailing Address**	**380B Main Street Gorham, Maine 04038**
	Email	**afagan@bh2m.com**		

The above-listed company/agents may represent me to expedite and complete the approval of the permits/applications required for development for this parcel.

DocuSigned by: [redacted]

November 10, 2023 | 1:16 PM EST

APPLICANT SIGNAURE — **DATE**

Andrew Gervais

PRINTED NAME

CO-APPLICANT SIGNATURE (if applicable) — **DATE**

PRINTED NAME

[redacted]

11-10-2023

AGENT SIGNATURE — **DATE**

[redacted]

PRINTED NAME

Attachment 2
Parcel Deed

MAINE REAL ESTATE TAX-Paid

UNOFFICIAL COPY

QUITCLAIM DEED DLN: 1002340243237

KNOW ALL PERSONS BY THESE PRESENTS that **OCTOBER CORPORATION**, a Maine nonprofit corporation, for consideration paid, RELEASES to **GERVAIS HOMES, LLC,** a Maine limited liability company with a mailing address of 52 Whites Bridge Road, Standish, Maine 04084, certain real estate located in the Town of Gray, County of Cumberland, and State of Maine and being more particularly described in **Exhibit A**, attached hereto and made a part hereof.

IN WITNESS WHEREOF, the said **OCTOBER CORPORATION** has caused this instrument to be executed by its undersigned representative on this 26th day of July, 2023, and delivered to the grantee on this 27th day of July, 2023.

[redacted]
Witness

OCTOBER CORPORATION

By: [redacted]
Name: Craig N. Deneras
Its: President

STATE OF MAINE
County of Cumberland, SS.

July 26, 2023

Then personally appeared the above-named Craig N. Deneras in his capacity as President of **OCTOBER CORPORATION** and acknowledged the foregoing instrument to be his free act and deed in his said capacity and the free act and deed of said **OCTOBER CORPORATION**.

Before me

[redacted]
~~Notary Public~~/Maine Attorney-at-Law
Printed Name: Paul D. Petropoli
Commission Expires:

UNOFFICIAL COPY

EXHIBIT A

A certain lot or parcel of land located on the westerly side of Mayall Road in the Town of Gray, County of Cumberland, and State of Maine, more particularly described as follows:

Beginning at a 5/8" rebar with cap #1057 set on the northwesterly sideline of the discontinued portion of the Colley Hill Road in a stone wall on the assumed right of way line at a corner of land now or formerly of Gene Humphrey, all as shown on the Standard Boundary Survey of "Ralph S. Sawyer Land" dated December 4, 1990 as recorded at the Cumberland County Registry of Deeds in Plan Book 191, Page 55;

Thence N 51° 01' 08" W 285.99' to a 5/8" rebar with cap #1057;

Thence N 48° 38' 23" E 508.04' to a 5/8" rebar with cap #1057;

Thence N 59° 46' 15" W 584.12' to an angle point in the stone wall;

Thence N 57° 37' 00" W 380.06' to an angle point in the stone wall;

Thence N 59° 34' 10" W 456.47' to an angle point in the stone wall;

Thence N 58° 35' 50" W 598.58' to an angle point in the stone wall;

Thence N 60° 10' 36" W 264.09' to a 5/8" rebar with cap #1057 set at the intersection of two stone walls;

Thence N 53° 12' 30" E 235.46' to a drill hole found in rock in the stone wall;

Thence N 52° 27' 08" E 300.00' to a drill hole found in rock in the stone wall;

Thence N 53° 24' 32" E 303.23' to an angle point in the stone wall;

Thence N 53° 59' 34" E 208.79' to a drill hole found in rock in the stone wall;

Thence N 52° 27' 20" E 268.89' to a 1" x 36" hollow iron;

Thence N 54° 46' 42" E 210.76' to an angle point in the stone wall;

Thence N 52° 42' 59" E 202.50' to an angle point in the stone wall;

Thence N 53° 26' 35" E 188.57' to an angle point in the stone wall;

Thence N 55° 43' 52" E 274.23' to a 5/8" rebar with cap #1057 set on the assumed westerly sideline of Mayall Road;

Thence S 01° 34' 26" W 146.47' to an angle point in the stone wall;

Thence S 05° 28' 01" W 148.10' to a 5/8" rebar with cap #1057;

DOC :25214 BK:40268 PG:33
RECEIVED - RECORDED, CUMBERLAND COUNTY REGISTER OF DEEDS
07/28/2023, 11:22:23A
Register of Deeds Jessica M. Spaulding E-RECORDED

Thence S 88° 29' 43" W 150.00' to a 5/8" rebar with cap #1057;

Thence S 03° 21' 20" E 141.88' to a 5/8" rebar with cap #1057;

Thence N 84° 43' 19" E 150.00' to a 5/8" rebar with cap #1057;

Thence S 03° 21' 10" E 140.03' to a 5/8" rebar with cap #1057;

Thence S 70° 33' 07" W 165.00' to a 5/8" rebar with cap #1057;

Thence S 11° 19' 27" E 132.00' to a 5/8' rebar with cap #1057;

Thence N 70° 33' 07" E 33.00' to a 5/8" with cap #1057;

Thence S 11° 08' 46" E 64.76' to a 5/8" rebar iron with cap #1183;

Thence S 11° 26' 19" E 98.82' to a 5/8" rebar iron;

Thence N 70° 25' 54" E 131.98' to a 5/8" rebar iron;

Thence S 10° 56' 41" E 149.16' to an angle point in the stone wall;

Thence S 14° 50' 46" E 458.92' to an angle point in the stone wall;

Thence S 16° 00' 52" E 568.94' to an angle point in the stone wall;

Thence S 17° 01' 35" E 486.94' to a 5/8' rebar with cap #1057;

Thence S 35° 10' 59" W 129.65' to an angle point in the stone wall;

Thence S 44°-08'-18" W 131.11' to an angle point in the stone wall;

Thence S 45° 41' 36" W 254.02' to an angle point in the stone wall;

Thence S 39° 16' 13" W 105.66' to angle point in the stone wall;

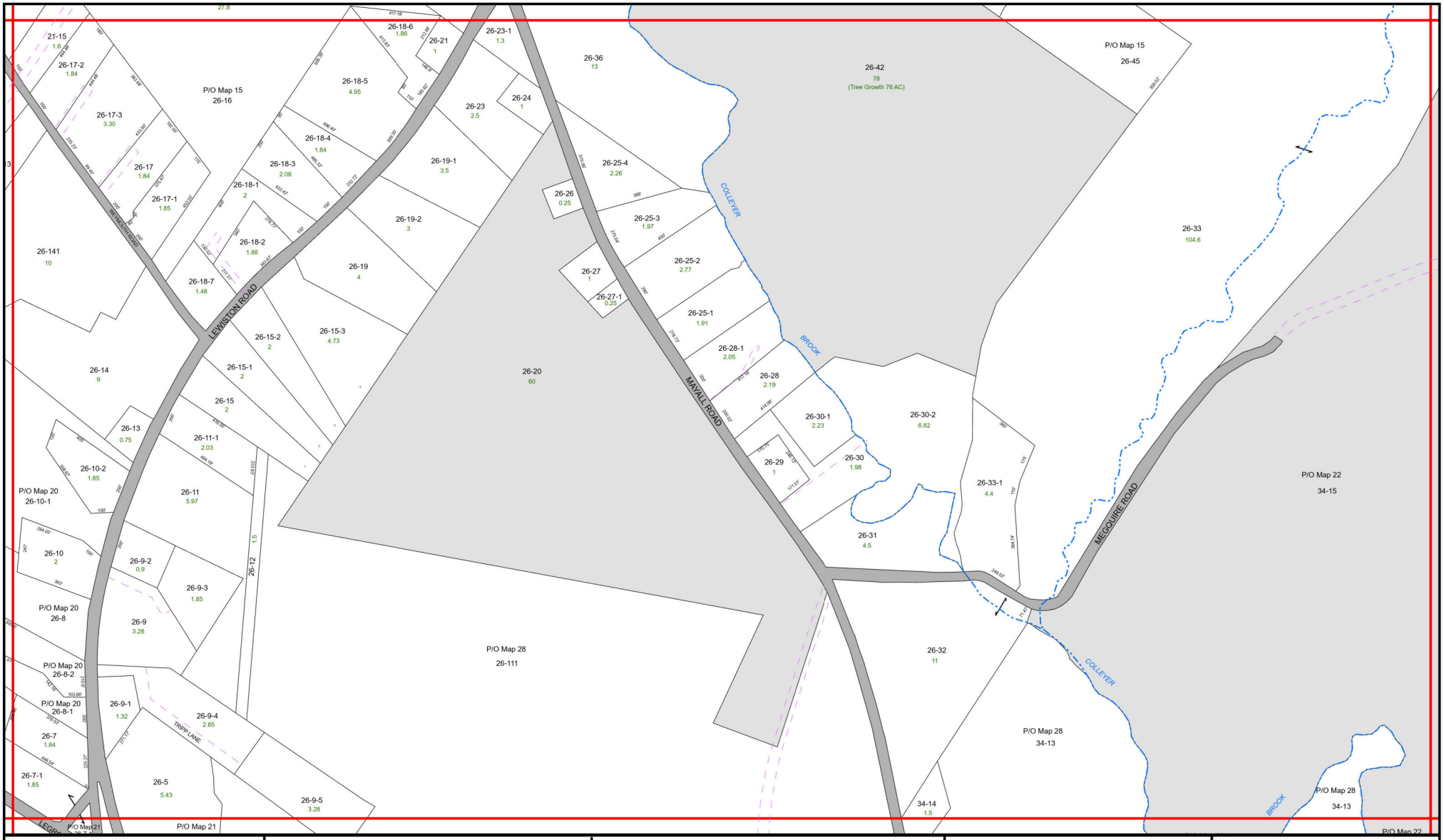
Thence S 34° 06' 45" W 87.64' to the point of beginning.

Meaning and intending to describe the 59.74 acre parcel shown on the above-referenced plan, being a portion of the property described in a deed from R & T Enterprise, LLC to October Corporation, which deed is dated April 15, 2005, and recorded in the Cumberland County Registry of Deeds in Book 22535, Page 91, which portion is referred to in Exhibit A to said deed as "Parcel Two" (also referred to in said Exhibit A to said deed as "Land off Mayall Road").

Together with any interest of the Grantor in the land extending from the southeasterly boundary of the above-described property to the centerline of the discontinued portion of Colley Hill Road as shown on said plan.

UNOFFICIAL COPY

Attachment 3
Maps



Maps Prepared by:

VIEWSHED
Yarmouth, ME
207.846.2355
www.viewshed.net

Tax Sheets are intended for assessing purposes only. Boundary locations are approximate and should not be used for conveyance of property.

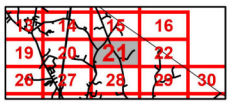
Misc Lines
- Leaders
- ROW
- Streams

Tax Parcels
- Parcel
- Tree Growth
- Open Space Classified
- Subdivision Open Space
- Roads
- Condo/Mobile Home
- ROW
- Railroad
- Water

Town of Gray, Maine

0 100 200 400 600 Feet

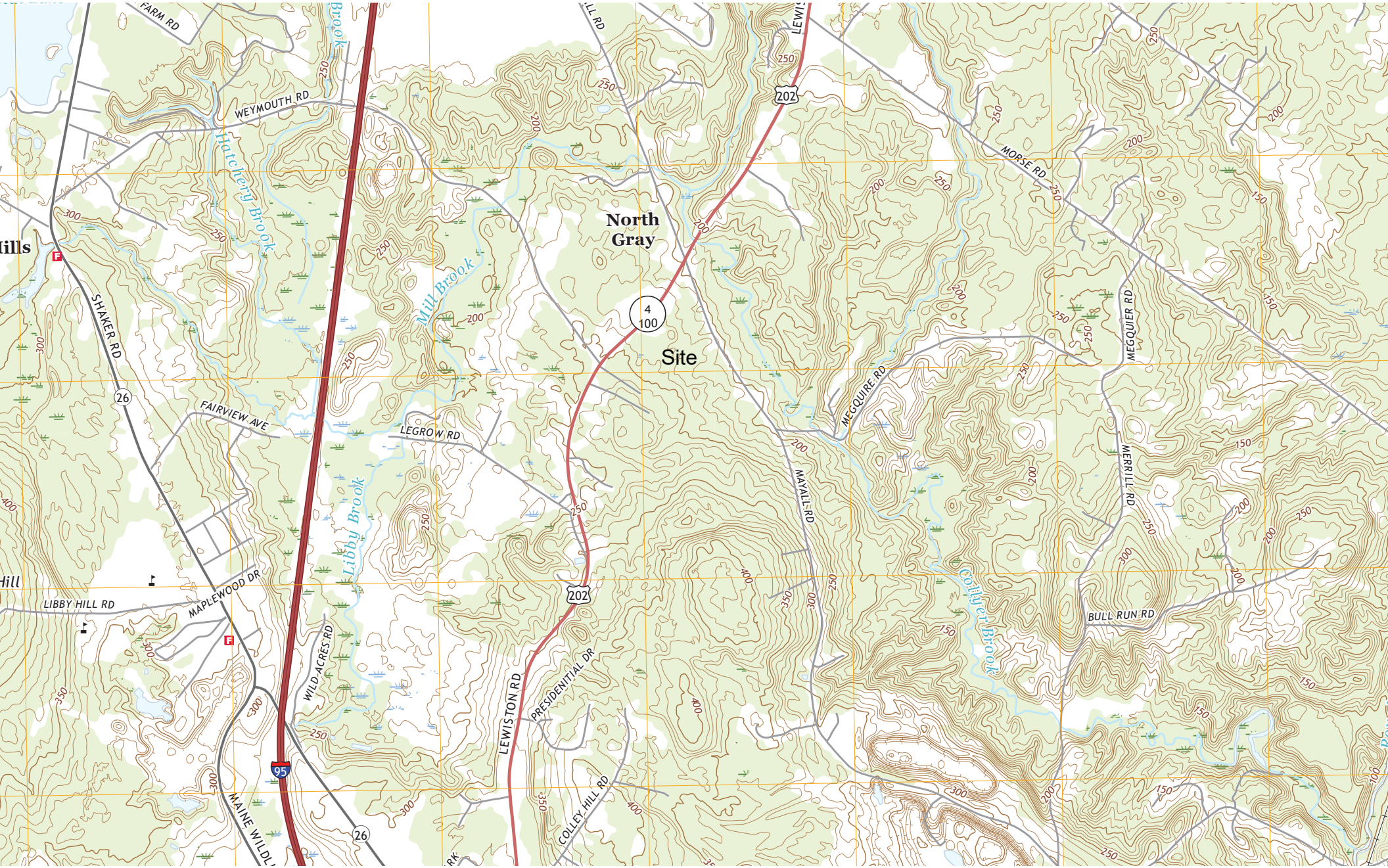
Index Map

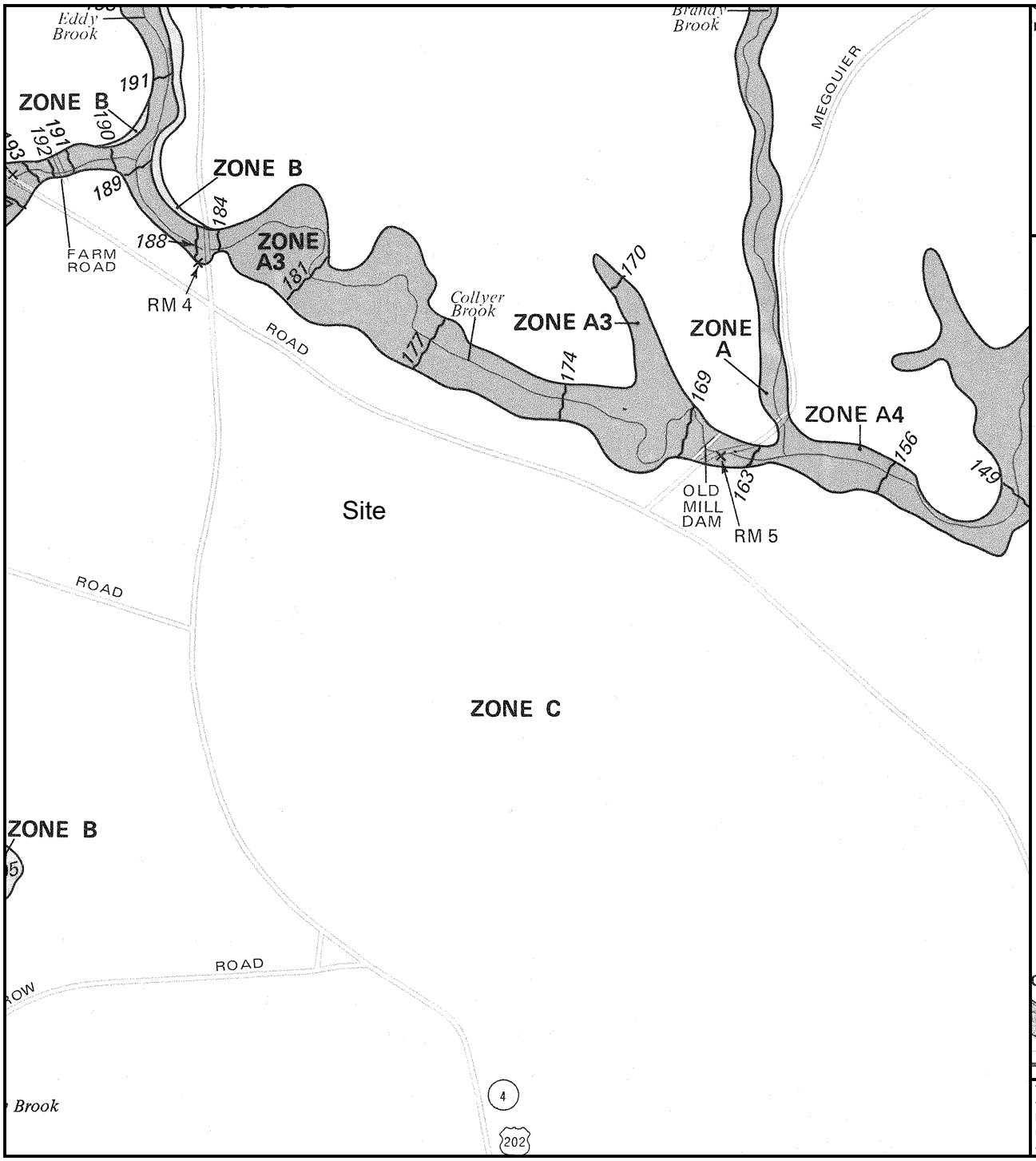


N

Gray Tax Sheet 21

Map updated to: April 1, 2023


North Gray
Site
4
100
202
26
95
Hatchery Brook
Mill Brook
Libby Brook
Collyer Brook
WEYMOUTH RD
FARM RD
SHAKER RD
FAIRVIEW AVE
LEGROW RD
LIBBY HILL RD
MAPLEWOOD DR
WILD ACRES RD
LEWISTON RD
PRESIDENITIAL DR
COLLEY HILL RD
MAINE WILDL
MAYALL RD
MEGQUIRE RD
MORSE RD
MEGQUIER RD
MERRILL RD
BULL RUN RD



rogram at (800) 638-6620.

APPROXIMATE SCALE

1000 0 1000 FEET

CORPORATE LIMITS

ONE B

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

TOWN OF
GRAY, MAINE
CUMBERLAND COUNTY

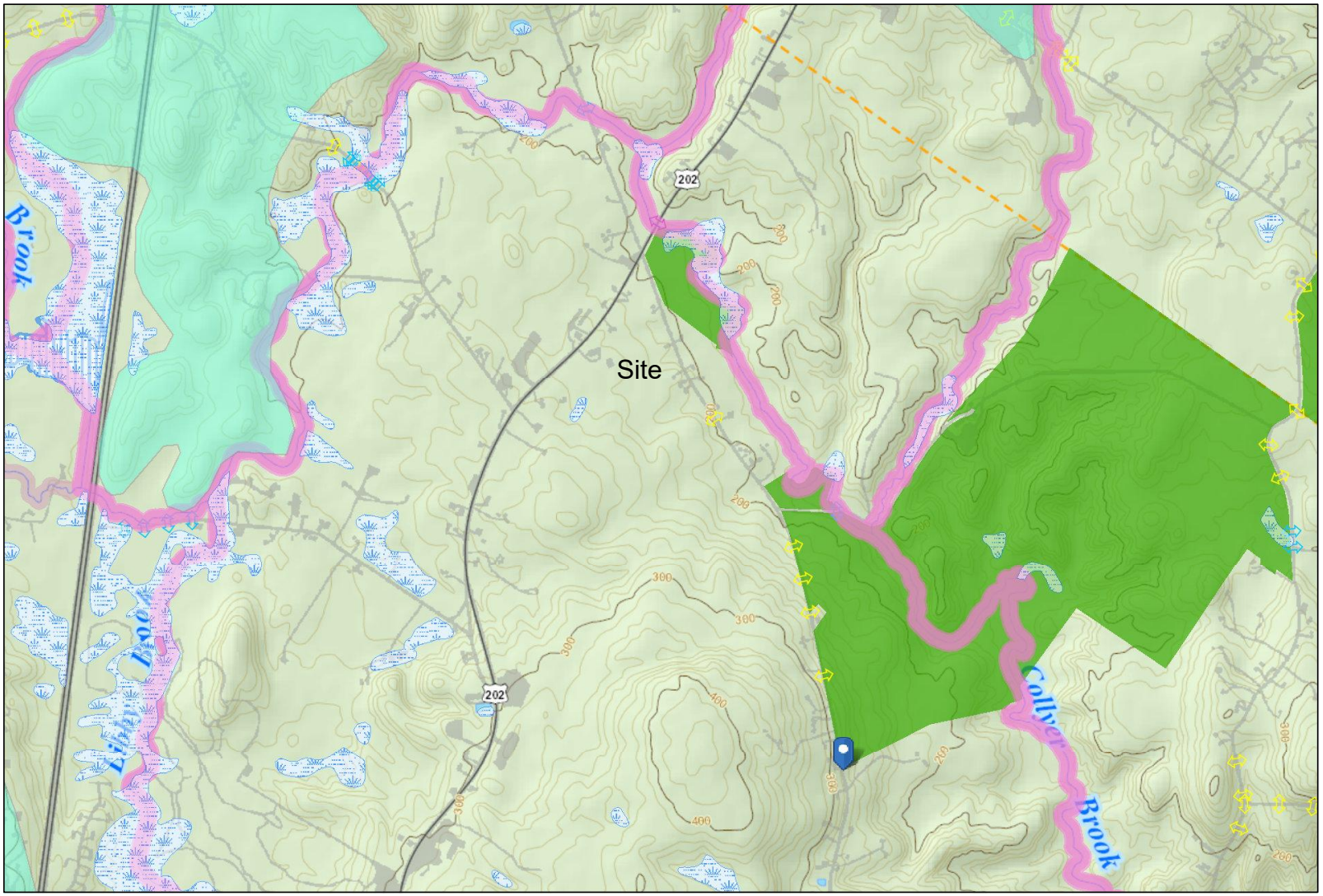
PANEL 5 OF 15
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
230048 0005 A

EFFECTIVE DATE:
JANUARY 6,1982

federal emergency management agency

This is an official FIRMette showing a portion of the above-referenced flood map created from the MSC FIRMette Web tool. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For additional information about how to make sure the map is current, please see the Flood Hazard Mapping Updates Overview Fact Sheet available on the FEMA Flood Map Service Center home page at https://msc.fema.gov.



BEGINNING WITH HABITAT

Legend

State of Maine

The Nature Conservancy
Protecting nature. Preserving life.

Maine Audubon

Maine Coast Heritage Trust
A Statewide Land Conservation Organization

MaineDOT

0 0.225 0.45 0.9 1.35 mi

N W E S

Supported in part by Maine Outdoor Heritage Fund lottery ticket sales

Map Prepared by Maine Department of Inland Fisheries & Wildlife
June 2023

Supported in part by Loon Conservation Plate funds

MAINE LOONS THANX
A NATURAL TREASURE

Attachment 4
Wetland Delineation Letter

MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

7639

September 18, 2023

Mr. Andy Gervais
Gervais Homes LLC
52 Whites Bridge Road
Windham, ME 04062

Re: Wetland Delineation, 60 acre parcel on Mayall Road Gray, ME

Dear Andy,

We have completed a delineation of wetlands on a 60 acre parcel located on Mayall Road Gray, Maine. The wetland delineation was completed in accordance with the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual for the Northcentral and Northeast Regions dated January 2012. These manuals require the presence of three parameters for a wetland to be present, wetland hydrology, hydrophytic vegetation, and hydric soils.

The wetlands we found on the parcel were flagged with yellow flagging. The flagging was labeled in an alphanumeric sequence. The wetland flags were located by GPS equipment capable of locating a point to within three feet. This data has been forwarded to BH2M to incorporate into the boundary survey. The wetlands on the parcel are forested wetlands. These wetlands do not meet the definition of wetland of special significance as defined by the Maine Department of Environmental Protection.

If you have any questions or require additional information, please contact me.

Sincerely,

[redacted]

Mark J. Hampton C.S.S., L.S.E.
Certified Soil Scientist #216
Licensed Site Evaluator #263

P.O. BOX 1931 • PORTLAND, ME 04104-1931 • 207-756-2900 • mhampto1@maine.rr.com

Quality services that meet your deadline

Attachment 5
Class B Soil Survey

Legend for Soil Maps

1. Drainage Class

Excessively Well Drained	EWD
Well Drained	WD
Moderately Well Drained	MWD
Somewhat Poorly Drained	SPD
Poorly Drained	PD
Very Poorly Drained	VPD

2. Slope Designation

0-3%	A
3-8%	B
8-15%	C
15-25%	D
>25%	E

3. Note: High Intensity Soil Survey has been prepared by Mark Hampton Associates, Inc. in accordance with the standards adopted by the Maine Association of Professional Soil Scientists, and the Maine Board of Certification of Geologists and Soil Scientists.

MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

7639

Mayall Road
Gray, ME
Gervais Homes LLC

Soil Narrative Report

DATE:	Soil Profiles observed on October 11, 2023
BASE MAP:	Base plan provided by BH2M, Scale 1 inch equals 100 feet and one foot contours.
GROUND CONTROL:	Soil survey boundaries located by Mark Hampton Associates, Inc. for Class B Soil Survey

Class B-High Intensity Soil Survey (Minimum Standards)

Mapping units of 1 acre or less.
Scale of 1"= 200 feet or larger.
Up to 25% inclusions in mapping units of which no more than 15% may be dissimilar soils.
Ground Control – test pits located by means of compass by chaining, pacing, or taping from known survey control points
Base Map –5 foot contour intervals

Provided:

Mapping units of 1 acre or less
Base map scale of 1"= 100 feet.
Up to 25 percent inclusions in mapping units of which no more than 15 percent is dissimilar soils.
Baseline information and test pits located by pacing and taping from know survey control points.
Ground topographic survey with one foot contours and ground control provided.

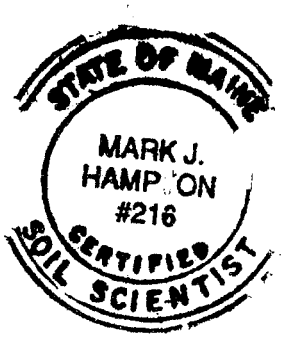
P.O. BOX 1931 • PORTLAND, ME 04104-1931 • 207-756-2900 • mhampto1@maine.rr.com

Quality services that meet your deadline

The accompanying soil profile descriptions, soil map, and this soil narrative report were done in accordance with the standards adopted by the Maine Association of Professional Soil Scientists, and the Maine Board of Certification of Geologists and Soil Scientists.

[redacted] C.S.S. #216, L.S.E. #263 October 22, 2023

Mark J. Hampton Date



MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

7639

Mayall Road
Gray, ME
Gervais Homes LLC

Dixfield
(Aquic Haplorthods)

SETTING

PARENT MATERIAL:	Derived from compact loamy glacial till.
LANDFORM:	Till plains, hills and ridges.
POSITION IN LANDSCAPE:	Plains and middle levels.
SLOPE GRADIENT RANGES:	(A) 0-3%, (B)3-8%, (C) 8-15%, (D) 15-25%

COMPOSITION AND SOIL CHARACTERISTICS

DRAINAGE CLASS: Moderately well drained with a perched watertable from 1.0 to 2.0 feet below the surface at some time from October to May or during periods of heavy precipitation.

TYPICAL PROFILE:

Surface Layer:	Dark brown, stony sandy loam, 0-7"
Subsurface Layer:	Brown, sandy loam, 7-20"
Subsoil Layer:	Olive brown, stony sandy loam 16-31"
Substratum:	Olive gray, stony sandy loam, 25-65"

HYDROLOGIC GROUP:	Group C
SURFACE RUNOFF:	Moderately Rapid
PERMEABILITY:	Moderate in solum, slow in substratum
DEPTH TO BEDROCK:	Greater than 65 inches
HAZARD TO FLOODING:	None

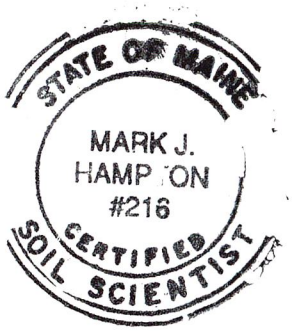
INCLUSIONS

(Within Mapping Unit)

CONTRASTING: Colonel, Brayton

USE AND MANAGEMENT

Development: There are few limiting factors for building site development



P.O. BOX 1931 • PORTLAND, ME 04104-1931 • 207-756-2900 • mhampto1@maine.rr.com

Quality services that meet your deadline

MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

7636

Mayall Road
Gray, ME
Gervais Homes LLC

Colonel
(Aquic Haplorthods)

SETTING

PARENT MATERIAL:	Derived from dense, loamy glacial till
LANDFORM:	Drumlins and Sideslopes of glaciated uplands
POSITION IN LANDSCAPE:	Mid-positions on landform
SLOPE GRADIENT RANGES:	(A) 0-3%

COMPOSITION AND SOIL CHARACTERISTICS

DRAINAGE CLASS: Somewhat poorly drained with a perched watertable from 1.0 to 2.0 feet below the surface at some time from October to May or during periods of heavy precipitation.

TYPICAL PROFILE:

Surface Layer:	Dk gray brown, stony sandy loam 0-3"
Subsurface Layer:	Dark Brown, stony sandy loam, 3-12"
Subsoil Layer:	Olive Brown, stony sandy loam, 12-18"
Substratum:	Olive, stony, sandy loam, 18-65"

HYDROLOGIC GROUP:	Group C
SURFACE RUNOFF:	Moderate to moderately slow
PERMEABILITY:	Moderate and moderately slow
DEPTH TO BEDROCK:	Greater than 65 inches
HAZARD TO FLOODING:	None

INCLUSIONS

(Within Mapping Unit)

CONTRASTING: Dixfield, Brayton

STATE OF MAINE
MARK J. HAMPTON
#216
CERTIFIED SOIL SCIENTIST

USE AND MANAGEMENT

Development: The limiting factor for building site development is wetness due to the presence of a high watertable for a portion of the year. Proper foundation drainage or site modification is recommended.

MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

7639

Mayall Road
Gray, ME
Gervais Homes LLC

Brayton
(Aeric Epiaquepts)

SETTING

PARENT MATERIAL:	Derived from dense glacial till
LANDFORM:	Toeslopes and depressions in glaciated uplands
POSITION IN LANDSCAPE:	Lower positions on landform
SLOPE GRADIENT RANGES:	(A) 0-3%, (B) 3-8%

COMPOSITION AND SOIL CHARACTERISTICS

DRAINAGE CLASS: Poorly drained with a perched watertable from 0.0 to 1.0 feet below the surface at some time from October to May or during periods of heavy precipitation.

TYPICAL PROFILE:

Surface Layer: Dk gray, fine sandy loam 0-5",
Subsurface Layer: Gray fine sandy loam, 5-15",
Subsoil Layer: Grayish brown fine sandy loam, 15-24"
Substratum: Olive fine sandy loam, 24-65",

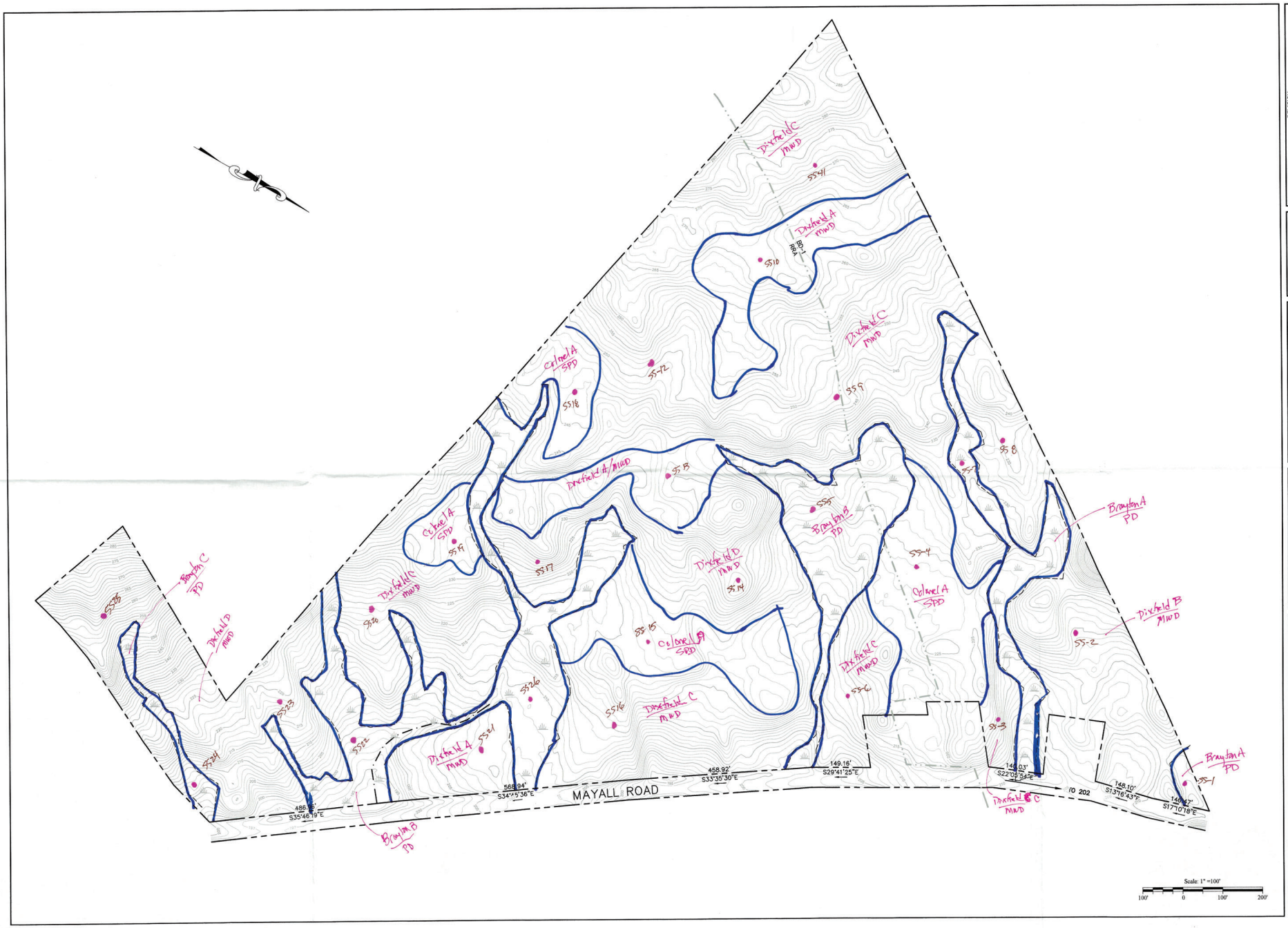
HYDROLOGIC GROUP:	Group C
SURFACE RUNOFF:	Moderate to moderately slow
PERMEABILITY:	Moderate and moderately slow
DEPTH TO BEDROCK:	Greater than 65 inches
HAZARD TO FLOODING:	None

INCLUSIONS
(Within Mapping Unit)

CONTRASTING: Colonel, Dixfield,

USE AND MANAGEMENT

Development: The limiting factor for building site development is wetness due to the presence of an extremely high watertable for a portion of the year. This soil is not suitable for development without alteration, which may require additional permitting.



REVISION		
NO.	DATE	DESCRIPTION

BH2M

Berry, Huff, McDonald, Milligan Inc.
Engineers, Surveyors
380B Main Street
Gorham, Maine 04038
Tel. (207) 839-2771
www.bh2m.com

FOR
Andy Gervais
32 Whites Bridge Road
Standish, Maine

SKETCH PLAN

MAYALL ROAD

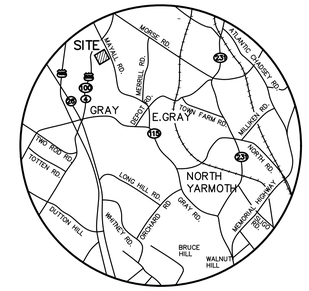
MAYALL ROAD
GRAY, MAINE

DESIGNED	DATE
----	----
DRAWN	SCALE
----	----
CHECKED	JOB. NO.
----	----

SHEET
1

REPRODUCTION OR REUSE OF THIS DOCUMENT WITHOUT THE EXPRESSED WRITTEN CONSENT OF BH2M INC. IS PROHIBITED

Attachment 6
Sketch Plans



LOCATION MAP
N.T.S.

NOTES:

1. OWNER/APPLICANT: ANDREW GERVAIS
52 WHITES BRIDGE ROAD
STANDISH, MAINE 04084

2. ENGINEER: AUSTIN G. FAGAN, PE #16523
BH2M
380B MAIN STREET
GORHAM, MAINE 04038

3. SURVEYOR: ROBERT C. LIBBY, JR., PLS #2190
BH2M

4. DEED REFERENCE: BOOK 40268, PAGE 31

5. TAX MAP REFERENCE: MAP 21, LOT 26-20

6. TOTAL PARCEL AREA: 2,602,195 S.F. (59.74 ACRES)

7. ZONING: RURAL RES. AND AGRICULTURAL (RRA)
BUSINESS DEVELOPMENT-1 (BD-1)

8. PROPOSED USE: SINGLE FAMILY LOTS

9. MIN. STANDARDS:

RRA DISTRICT	
MIN. LOT SIZE:	80,000 S.F.
MIN. LOT AREA PER DWELLING UNIT:	40,000 S.F.
MIN. STREET FRONTAGE:	200 FT
MIN. FRONT YARD	50 FT
MIN. SIDE YARD:	25 FT
MIN. REAR YARD:	50 FT
MAX. BUILDING HEIGHT:	35'
MAX. BUILDING COVERAGE:	10%
BD-1 DISTRICT	
MIN. LOT SIZE:	80,000 S.F.
MIN. LOT AREA PER DWELLING UNIT:	40,000 S.F.
MIN. STREET FRONTAGE:	200 FT
MIN. FRONT YARD	50 FT
MIN. SIDE YARD:	25 FT
MIN. REAR YARD:	50 FT
MAX. BUILDING HEIGHT:	35'
MAX. BUILDING COVERAGE:	50%
RRA OPEN SPACE	
MIN. LOT SIZE:	35,000 S.F.
MIN. LOT AREA PER DWELLING UNIT:	30,000 S.F.
MIN. STREET FRONTAGE:	125 FT
MIN. FRONT YARD	40 FT
MIN. SIDE YARD:	20 FT
MIN. REAR YARD:	20 FT
MIN. OPEN SPACE:	35%
MIN. USABLE OPEN SPACE:	20%

10. SEWER SERVICE: INDIVIDUAL SUBSURFACE DISPOSAL SYSTEM

11. WATER: INDIVIDUAL DOMESTIC WELL

LEGEND

SYMBOL	DESCRIPTION
●	5/8" IRON ROD W/ CAP TO BE SET
■	GRANITE MONUMENT TO BE SET
IPF/IRF	IRON PIPE/IRON ROD FOUND
CIRF	CAPPED IRON ROD FOUND
	UTILITY POLE
	SIGN
TP	TEST PIT
	PROPERTY LINE
	ABUTTER'S PROPERTY LINE
	EASEMENT LINE
	WETLANDS
	VERNAL POOL
	EDGE OF GRAVEL
	TREE LINE
A.G./B.G.	ABOVE GROUND/BELOW GROUND
N/F	NOW OR FORMERLY

NET RESIDENTIAL DENSITY CALCULATION

TOTAL AREA		2,602,195	S.F.
1	25% OR GREATER SLOPE	21,065	S.F.
2	ISOLATED LAND	0	S.F.
3	100 YEAR FLOOD ZONE	0	S.F.
4	WATERBODIES	0	S.F.
5	WETLANDS IN 100YR FLOODPLAIN	0	S.F.
6	LIQUIDATION HARVESTING AREA	0	S.F.
7	ROCK OUTCROP > 1,500 SF	0	S.F.
8	BORROW PIT	0	S.F.
9	POORLY DRAINED SOILS	394,158	S.F.
10	VERY POORLY DRAINED SOILS 50% DEDCUTION	0	S.F.
11	S.P.D. SOILS 311,967/2 =	155,984	S.F.
12	LAND IN RESOURCE PROTECTION	0	S.F.
13	UNDEVEL. FORESTED WETLANDS	0	S.F.
14	SIG. PLANT & ANIMAL HABITAT	0	S.F.
15	OTHER AREAS	0	S.F.
	NET AREA	2,030,988	S.F.

MINIMUM DENSITY URE ZONE - 80,000 S.F./LOT
2,387,806 S.F. / 80,000 S.F. = 25.38 LOTS

Scale: 1" = 150'
150' 0 150' 300'

NO.	DATE	REVISION DESCRIPTION

BH2M
Berry, Huff, McDonald, Milligan Inc.
Engineers, Surveyors
380B Main Street
Gorham, Maine 04038
Tel. (207) 839-2771
www.bh2m.com

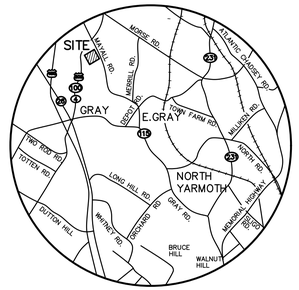
FOR
Andy Gervais
52 Whites Bridge Road
Standish, Maine

PHASE I SKETCH PLAN
MAYALL ROAD
MAYALL ROAD
GRAY, MAINE

DESIGNED	DATE
A. Fagan	Sept. 2023
DRAWN	SCALE
A. Fagan	1"=150'
CHECKED	JOB. NO.
W. Pelkey	23155

SHEET
1

REPRODUCTION OR REUSE OF THIS DOCUMENT WITHOUT THE EXPRESSED WRITTEN CONSENT OF BH2M INC. IS PROHIBITED



LOCATION MAP
N.T.S.

NOTES:

1. OWNER/APPLICANT: ANDREW GERVAIS
52 WHITES BRIDGE ROAD
STANDISH, MAINE 04084

2. ENGINEER: AUSTIN G. FAGAN, PE #16523
BH2M
380B MAIN STREET
GORHAM, MAINE 04038

3. SURVEYOR: ROBERT C. LIBBY, JR., PLS #2190
BH2M

4. DEED REFERENCE: BOOK 40268, PAGE 31

5. TAX MAP REFERENCE: MAP 21, LOT 26-20

6. TOTAL PARCEL AREA: 2,602,195 S.F. (59.74 ACRES)

7. ZONING: RURAL RES. AND AGRICULTURAL (RRA)
BUSINESS DEVELOPMENT-1 (BD-1)

8. PROPOSED USE: SINGLE FAMILY LOTS

9. MIN. STANDARDS:

RRA DISTRICT	
MIN. LOT SIZE:	80,000 S.F.
MIN. LOT AREA PER DWELLING UNIT:	40,000 S.F.
MIN. STREET FRONTAGE:	200 FT
MIN. FRONT YARD	50 FT
MIN. SIDE YARD:	25 FT
MIN. REAR YARD:	50 FT
MAX. BUILDING HEIGHT:	35'
MAX. BUILDING COVERAGE:	10%
BD-1 DISTRICT	
MIN. LOT SIZE:	80,000 S.F.
MIN. LOT AREA PER DWELLING UNIT:	40,000 S.F.
MIN. STREET FRONTAGE:	200 FT
MIN. FRONT YARD	50 FT
MIN. SIDE YARD:	25 FT
MIN. REAR YARD:	50 FT
MAX. BUILDING HEIGHT:	35'
MAX. BUILDING COVERAGE:	50%
RRA OPEN SPACE	
MIN. LOT SIZE:	35,000 S.F.
MIN. LOT AREA PER DWELLING UNIT:	30,000 S.F.
MIN. STREET FRONTAGE:	125 FT
MIN. FRONT YARD	40 FT
MIN. SIDE YARD:	20 FT
MIN. REAR YARD:	20 FT
MIN. OPEN SPACE:	35%
MIN. USABLE OPEN SPACE:	20%

10. SEWER SERVICE: INDIVIDUAL SUBSURFACE DISPOSAL SYSTEM

11. WATER: INDIVIDUAL DOMESTIC WELL

LEGEND

SYMBOL	DESCRIPTION
●	5/8" IRON ROD W/ CAP TO BE SET
⊡	GRANITE MONUMENT TO BE SET
IPF/IRF	IRON PIPE/IRON ROD FOUND
CIRF	CAPPED IRON ROD FOUND
UP	UTILITY POLE
S	SIGN
TP	TEST PIT
	PROPERTY LINE
	ABUTTER'S PROPERTY LINE
	EASEMENT LINE
	WETLANDS
	VERNAL POOL
	EDGE OF GRAVEL
	TREE LINE
A.G./B.G.	ABOVE GROUND/BELOW GROUND
N/F	NOW OR FORMERLY

NET RESIDENTIAL DENSITY CALCULATION

TOTAL AREA		2,602,195	S.F.
1	25% OR GREATER SLOPE	21,065	S.F.
2	ISOLATED LAND	0	S.F.
3	100 YEAR FLOOD ZONE	0	S.F.
4	WATERBODIES	0	S.F.
5	WETLANDS IN 100YR FLOODPLAIN	0	S.F.
6	LIQUIDATION HARVESTING AREA	0	S.F.
7	ROCK OUTCROP > 1,500 SF	0	S.F.
8	BORROW PIT	0	S.F.
9	POORLY DRAINED SOILS	394,158	S.F.
10	VERY POORLY DRAINED SOILS 50% DEDCUTION	0	S.F.
11	S.P.D. SOILS 311,967/2 =	155,984	S.F.
12	LAND IN RESOURCE PROTECTION	0	S.F.
13	UNDEVEL. FORESTED WETLANDS	0	S.F.
14	SIG. PLANT & ANIMAL HABITAT	0	S.F.
15	OTHER AREAS	0	S.F.
	NET AREA	2,030,988	S.F.

MINIMUM DENSITY URE ZONE - 80,000 S.F./LOT
2,387,806 S.F. / 80,000 S.F. = 25.38 LOTS

Scale: 1" = 150'
150' 0 150' 300'

NO.	DATE	REVISION DESCRIPTION

BH2M
Berry, Huff, McDonald, Milligan Inc.
Engineers, Surveyors
380B Main Street
Gorham, Maine 04038
Tel. (207) 839-2771
www.bh2m.com

FOR
Andy Gervais
52 Whites Bridge Road
Standish, Maine

PHASE II SKETCH PLAN

MAYALL ROAD

MAYALL ROAD
GRAY, MAINE

DESIGNED	DATE
A. Fagan	Sept. 2023
DRAWN	SCALE
A. Fagan	1"=150'
CHECKED	JOB. NO.
W. Pelkey	23155

SHEET
1

REPRODUCTION OR REUSE OF THIS DOCUMENT WITHOUT THE EXPRESSED WRITTEN CONSENT OF BH2M INC. IS PROHIBITED

DM ROMA
CONSULTING ENGINEERS

December 5, 2023

Kristen Muszynski, Community Planner
Town of Gray
24 Main Street
Gray, ME 04039

Re: Response to Review Comments
Aerie Estates ~ Second Amendment to Eagles Ridge Subdivision
Sebago Realty, LLC - Applicant

Dear Kristen:

Enclosed please find the following information associated with the proposed Aerie Estates - Second Amendment to Eagles Ridge Subdivision:

- Approval letter from MEDEP for NRPA & SW Permit by Rule, dated 11/21/2023.
- Revised civil plan set for the design of the Subdivision and associated infrastructure.

Based on comments from Planning Staff and Peer review engineer of the November 13, 2023 plan set, the project design and plans have been revised to incorporate the following:

- Proposed trail location within Open Space "A" with access from proposed subdivision road Aerie Drive.
- Revised NRA/ NRD table, including areas associated with Lot 14, which is intended to be a residential open space subdivision back lot.
- 75' forested scenic road buffer on the Open Space lot A and lot B.
- Revised monument locations, with concrete or stone monuments proposed along the subdivision road.
- Revised Subdivision plan general notes #111, 15, 16, 18, 20 and 24 and added plan note #26 and 27.

Upon your review of this information, please let us know if you have any questions or require any additional information.

Sincerely,

DM ROMA CONSULTING ENGINEERS

[redacted]

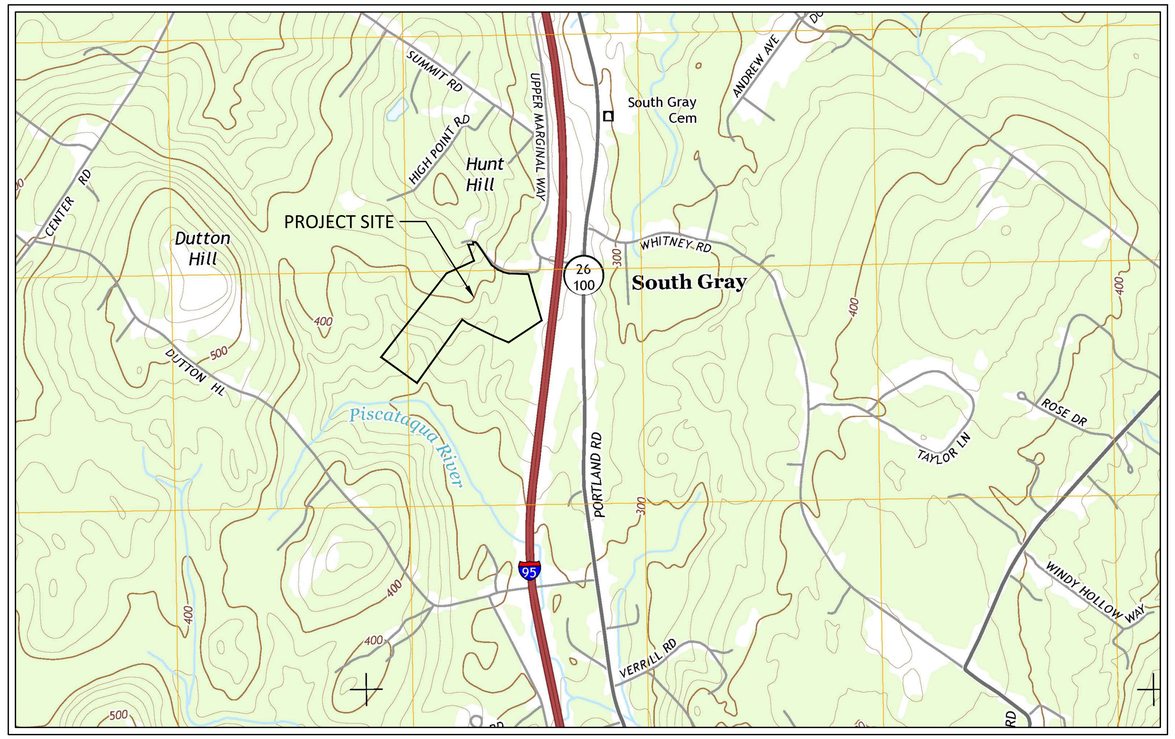
J.P. Connolly
Senior Project Engineer

AERIE ESTATES

(SECOND AMENDMENT TO EAGLES RIDGE SUBDIVISION)
AERIE DRIVE, OFF EAGLES NEST ROAD
GRAY, MAINE

CONSULTANTS

CIVIL ENGINEER	DM ROMA CONSULTING ENGINEERS
LAND SURVEYOR	SURVEY, INC
SITE EVALUATOR	MAINELY SOILS, LLC



PROJECT VICINITY MAP
SCALE 1" = 1,000'

PERMITTING PLAN SET - NOT FOR CONSTRUCTION

DECEMBER 4, 2023

PREPARED BY:

DM ROMA
CONSULTING ENGINEERS
P.O. BOX 1116
WINDHAM, ME 04062
(207) 591-5055

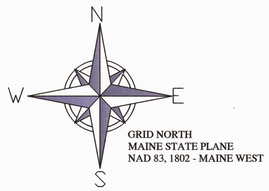
APPLICANT & RECORD OWNER:

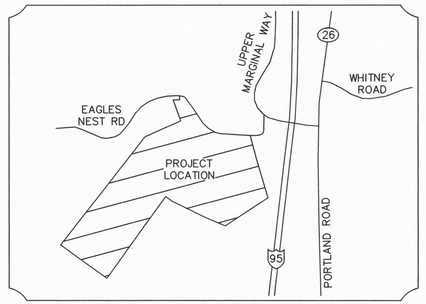
SEBAGO REALTY, LLC
PO BOX 1116
WINDHAM, ME 04062

AERIE ESTATES SUBDIVISION

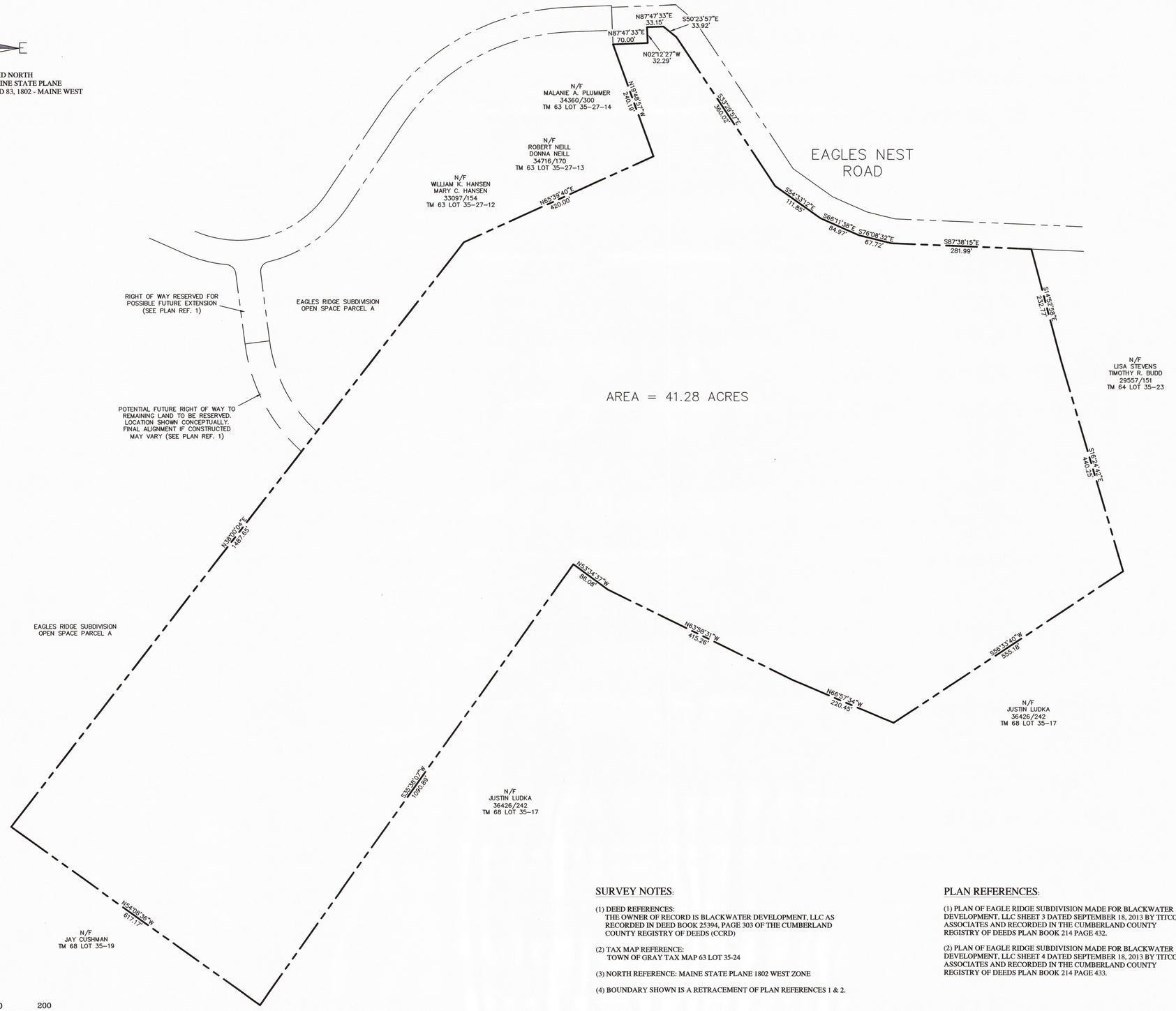
DRAWING SHEET INDEX

PAGE NO.	DESCRIPTION
1	TITLE SHEET
2	BOUNDARY SURVEY
3	SUBDIVISION PLAN
4	ROADWAY PLAN
5	STORMWATER MANAGEMENT DETAILS
6	ROADWAY PROFILE
7	CONSTRUCTION DETAILS
8	CONSTRUCTION DETAILS





LOCATION MAP
(NOT TO SCALE)



SURVEY NOTES:

(1) DEED REFERENCES:
THE OWNER OF RECORD IS BLACKWATER DEVELOPMENT, LLC AS RECORDED IN DEED BOOK 25394, PAGE 303 OF THE CUMBERLAND COUNTY REGISTRY OF DEEDS (CCRD)

(2) TAX MAP REFERENCE:
TOWN OF GRAY TAX MAP 63 LOT 35-24

(3) NORTH REFERENCE: MAINE STATE PLANE 1802 WEST ZONE

(4) BOUNDARY SHOWN IS A RETRACEMENT OF PLAN REFERENCES 1 & 2.

PLAN REFERENCES:

(1) PLAN OF EAGLE RIDGE SUBDIVISION MADE FOR BLACKWATER DEVELOPMENT, LLC SHEET 3 DATED SEPTEMBER 18, 2013 BY TITCOMB ASSOCIATES AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS PLAN BOOK 214 PAGE 432.

(2) PLAN OF EAGLE RIDGE SUBDIVISION MADE FOR BLACKWATER DEVELOPMENT, LLC SHEET 4 DATED SEPTEMBER 18, 2013 BY TITCOMB ASSOCIATES AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS PLAN BOOK 214 PAGE 433.

CERTIFICATION:

I CERTIFY THAT THIS SURVEY CONFORMS TO THE STANDARDS OF THE MAINE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS AND IS CORRECT TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF.

WILLIAM C. SHIP[redacted]

STATE OF MAINE
WILLIAM C. SHIPPEN
2118
PROFESSIONAL LAND SURVEYOR

BOUNDARY SURVEY

EAGLES NEST ROAD
GRAY, ME

FOR: **DM ROMA CONSULTING ENGINEERS**
(CLIENT)

SURVEY BY: **SURVEY, INC.**
P.O. BOX 210
WINDHAM, ME 04062
(207) 892-2556
INFO@SURVEYINCORPORATED.COM

DWN: DRR CHK: WCS

DATE: AUGUST 2023 JOB NO. 23144

LEGEND

EXISTING	PROPOSED
PROPERTY LINE/R.O.W.	
ABUTTER PROPERTY LINE	
SETBACK	
EASEMENT LINE	
GRANITE MONUMENT	
IRON PIN/DRILL HOLE	
CENTERLINE	
BUILDING	
EDGE OF PAVEMENT/CURB	
EDGE OF GRAVEL	
EDGE OF WETLANDS	
CENTERLINE OF STREAM	
CONTOUR LINE	200 — 201
TREELINE	
CULVERT/STORMDRAIN	
SANITARY SEWER PIPE	
WELL	
OVERHEAD UTILITIES	
UTILITY POLE	
WELL EXCLUSION AREA	
STEEP SLOPES >25%	

OPEN SPACE CALCULATIONS:

GROSS LAND AREA: 1,798,333 S.F. (±41.3 AC)

OPEN SPACE REQUIREMENTS FOR ZONE RRA (TABLE 401.13.13.B.1):

	REQUIRED	PROVIDED
MIN. OPEN SPACE (35% OF OVERALL PARCEL)	629,417 S.F.	752,344 S.F. (42%)
MIN. USEABLE OPEN SPACE (20%)	359,667 S.F.	450,000± S.F.
MIN. CONTIGUOUS USEABLE OPEN SPACE AREA*	60,000 S.F.	671,465± S.F.
(* - ADJACENT TO ROAD)		

NET RESIDENTIAL DENSITY CALCULATIONS FOR OPEN SPACE SUBDIVISION:

GROSS LAND AREA: 1,798,333 S.F. (±41.3 AC)

100% DEDUCTIONS:

a. STEEP SLOPES (25% OR GREATER)	109,695 S.F.
b. INACCESSIBLE LAND	0 S.F.
c. 100-YEAR FLOODPLAIN	0 S.F.
d. WATERBODIES	0 S.F.
e. NON-FORESTED OR IMPACTED WETLANDS	1,444 S.F.
f. LIQUIDATION HARVESTING	0 S.F.
g. SIGNIFICANT ROCK OUTCROP	0 S.F.
h. GRAVEL PIT	0 S.F.
i. POORLY DRAINED SOILS	0 S.F.
j. VERY POORLY DRAINED SOILS	0 S.F.
SUBTOTAL 100% DEDUCTION:	111,139 S.F.

50% DEDUCTIONS:

a. SOMEWHAT POORLY DRAINED SOILS	91,727 S.F.
b. RESOURCE PROTECTION (UNDEVELOPED)	0 S.F.
c. FORESTED WETLANDS (UNDEVELOPED)	208,018 S.F.
d. SIGNIFICANT HABITAT	244,656 S.F.
SUBTOTAL 50% DEDUCTIONS:	544,401 S.F.
ACTUAL DEDUCTION:	272,201 S.F.

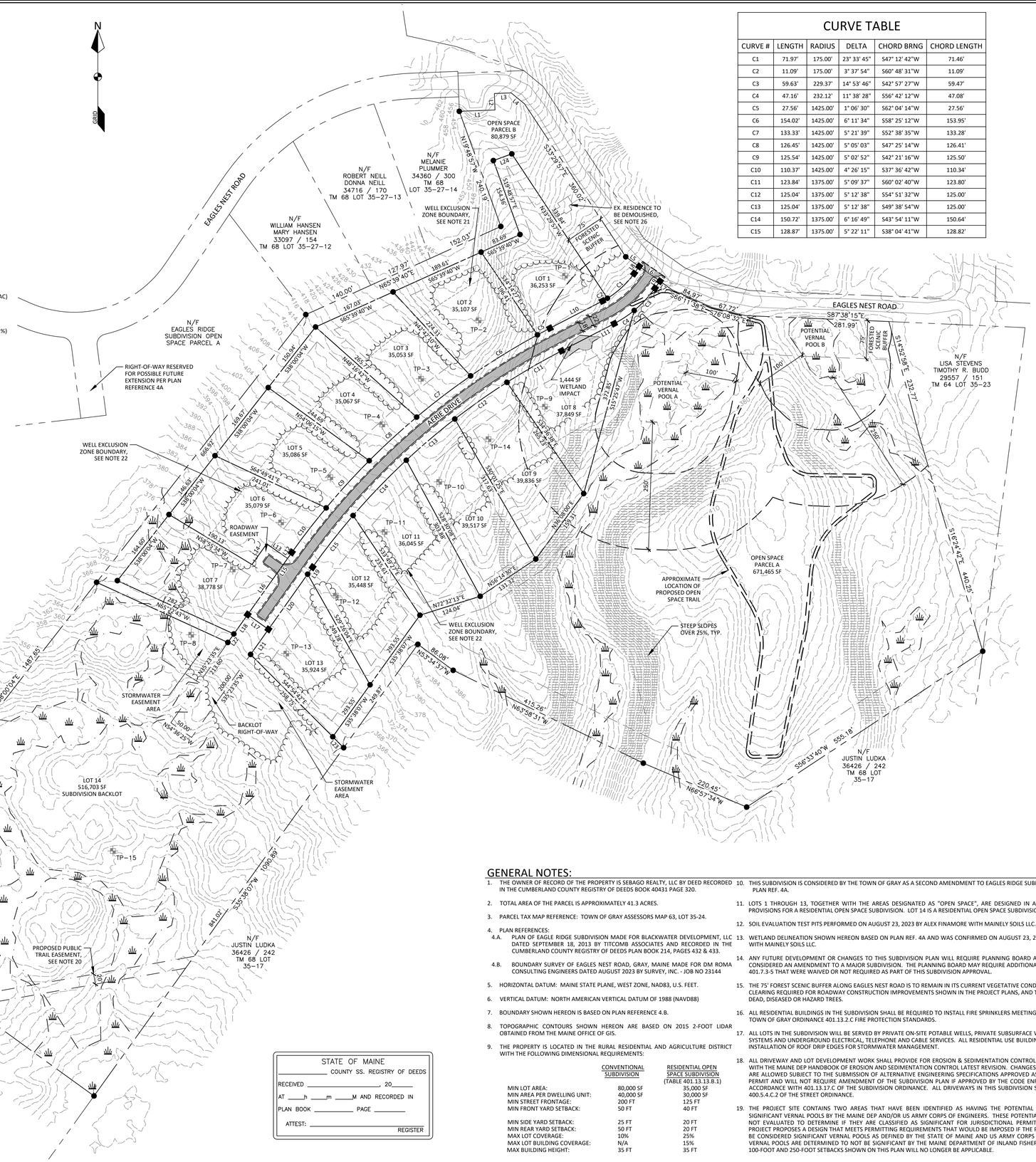
NET AREA SUBTOTAL:	1,414,993 S.F.
DEDUCT 10% FOR ROADS & RIGHT OF WAYS:	141,499 S.F.
TOTAL NET AREA:	1,273,494 S.F.

5% BONUS DENSITY PER 401.13.13.C.4:

(D) - 5 ACRES OF NON-HARVESTED FOREST	5% BONUS

NET RESIDENTIAL AREA WITH BONUS = 1,273,494 SF X 105% = 1,337,169 SF

REQUIRED MIN. AREA PER LOT:	80,000 SF
MAXIMUM RESIDENTIAL DENSITY WITH BONUS:	16.71 UNITS
NUMBER OF LOTS PROPOSED:	14



CURVE TABLE

CURVE #	LENGTH	RADIUS	DELTA	CHORD BRNG	CHORD LENGTH
C1	71.97'	175.00'	23° 33' 45"	S47° 12' 42"W	71.46'
C2	11.09'	175.00'	3° 37' 54"	S60° 48' 31"W	11.09'
C3	59.63'	229.37'	14° 53' 46"	S42° 57' 27"W	59.47'
C4	47.16'	232.12'	11° 38' 28"	S56° 42' 12"W	47.08'
C5	27.56'	1425.00'	1° 06' 30"	S62° 04' 14"W	27.56'
C6	154.02'	1425.00'	6° 11' 34"	S58° 25' 12"W	153.95'
C7	133.33'	1425.00'	5° 21' 39"	S52° 38' 35"W	133.28'
C8	126.45'	1425.00'	5° 05' 03"	S47° 25' 14"W	126.41'
C9	125.54'	1425.00'	5° 02' 52"	S42° 21' 16"W	125.50'
C10	110.37'	1425.00'	4° 26' 15"	S37° 36' 42"W	110.34'
C11	123.84'	1375.00'	5° 09' 37"	S60° 02' 40"W	123.80'
C12	125.04'	1375.00'	5° 12' 38"	S54° 51' 32"W	125.00'
C13	125.04'	1375.00'	5° 12' 38"	S49° 38' 54"W	125.00'
C14	150.72'	1375.00'	6° 16' 49"	S43° 54' 11"W	150.64'
C15	128.87'	1375.00'	5° 22' 11"	S38° 04' 41"W	128.82'

LINE TABLE

LINE #	LENGTH	BEARING
L1	70.00'	N87° 47' 33"E
L2	32.29'	N2° 12' 27"W
L3	33.15'	N87° 47' 33"E
L4	33.92'	S50° 23' 57"E
L5	32.35'	S54° 33' 12"E
L6	50.00'	S54° 33' 12"E
L7	29.50'	S54° 33' 12"E
L8	17.25'	N35° 25' 50"E
L9	17.24'	N35° 25' 50"E
L10	116.26'	N62° 37' 29"E
L11	116.26'	N62° 37' 29"E
L12	14.67'	S35° 23' 35"W
L13	50.00'	S54° 36' 25"E
L14	50.00'	N35° 23' 35"E
L15	50.00'	S35° 23' 35"W
L16	85.00'	S35° 23' 35"W
L17	50.00'	N54° 36' 25"W
L18	46.74'	S35° 23' 35"W
L19	16.87'	S35° 23' 35"W
L20	132.80'	S35° 23' 35"W
L21	60.34'	S35° 23' 35"W
L22	20.36'	S35° 23' 35"E
L23	30.41'	S44° 54' 42"E
L24	38.58'	S70° 10' 05"W

LOT DEVELOPMENT ALLOWANCES:

LOT #	MAXIMUM NON-ROOF IMPERVIOUS	MAXIMUM DEVELOPED AREA OF LOT
1	1,200 SF	16,500 SF
2	2,700 SF	23,000 SF
3	1,400 SF	20,100 SF
4	1,400 SF	18,000 SF
5	1,400 SF	18,000 SF
6	1,400 SF	18,000 SF
7	1,400 SF	24,200 SF
8	2,400 SF	22,200 SF
9	2,400 SF	22,500 SF
10	1,800 SF	19,000 SF
11	1,600 SF	20,000 SF
12	1,400 SF	20,500 SF
13	1,500 SF	21,300 SF
14	3,600 SF	41,000 SF

NOTE - BUILDING ROOF AREA MAY BE ANY SIZE PROVIDED ALL ROOF AREAS DRAIN TO A ROOFLINE DRIP EDGE CONSTRUCTED IN ACCORDANCE WITH THE DESIGN PLANS.

LOT FRONTAGE:

LOT #	PROVIDED LOT FRONTAGE
1	154.9 FT
2	154.0 FT
3	133.3 FT
4	126.5 FT
5	125.5 FT
6	225.0 FT
7	181.7 FT
8	287.4 FT
9	125.0 FT
10	125.0 FT
11	150.7 FT
12	145.7 FT
13	193.1 FT
14*	443.2 SF

* - LOT 14 IS A RESIDENTIAL OPEN SPACE BACKLOT AND FRONTAGE AS SHOWN IN TABLE IS MEASURED ALONG ROW ONLY.

APPROVED - GRAY PLANNING BOARD:

CHAIRPERSON DATE

GENERAL NOTES:

1. THE OWNER OF RECORD OF THE PROPERTY IS SEBAGO REALTY, LLC BY DEED RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS BOOK 40431 PAGE 320.
2. TOTAL AREA OF THE PARCEL IS APPROXIMATELY 41.3 ACRES.
3. PARCEL TAX MAP REFERENCE: TOWN OF GRAY ASSESSORS MAP 63, LOT 35-24.
4. PLAN REFERENCES:
   - 4.A. PLAN OF EAGLE RIDGE SUBDIVISION MADE FOR BLACKWATER DEVELOPMENT, LLC DATED SEPTEMBER 18, 2013 BY TITCOMB ASSOCIATES AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS PLAN BOOK 214, PAGES 432 & 433.
   - 4.B. BOUNDARY SURVEY OF EAGLES NEST ROAD, GRAY, MAINE MADE FOR DM ROMA CONSULTING ENGINEERS DATED AUGUST 2023 BY SURVEY, INC. - JOB NO 23144
5. HORIZONTAL DATUM: MAINE STATE PLANE, WEST ZONE, NAD83, U.S. FEET.
6. VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)
7. BOUNDARY SHOWN HEREON IS BASED ON PLAN REFERENCE 4.B.
8. TOPOGRAPHIC CONTOURS SHOWN HEREON ARE BASED ON 2015 2-FOOT LIDAR OBTAINED FROM THE MAINE OFFICE OF GIS.
9. THE PROPERTY IS LOCATED IN THE RURAL RESIDENTIAL AND AGRICULTURE DISTRICT WITH THE FOLLOWING DIMENSIONAL REQUIREMENTS:

	CONVENTIONAL SUBDIVISION	RESIDENTIAL OPEN SPACE SUBDIVISION (TABLE 401.13.13.B.1)
MIN LOT AREA:	80,000 SF	35,000 SF
MIN AREA PER DWELLING UNIT:	40,000 SF	30,000 SF
MIN STREET FRONTAGE:	200 FT	125 FT
MIN FRONT YARD SETBACK:	50 FT	40 FT
MIN SIDE YARD SETBACK:	25 FT	20 FT
MIN REAR YARD SETBACK:	50 FT	20 FT
MAX LOT COVERAGE:	10%	25%
MAX LOT BUILDING COVERAGE:	N/A	15%
MAX BUILDING HEIGHT:	35 FT	35 FT

10. THIS SUBDIVISION IS CONSIDERED BY THE TOWN OF GRAY AS A SECOND AMENDMENT TO EAGLES RIDGE SUBDIVISION SHOWN ON PLAN REF. 4A.
11. LOTS 1 THROUGH 13, TOGETHER WITH THE AREAS DESIGNATED AS "OPEN SPACE", ARE DESIGNED IN ACCORDANCE WITH THE PROVISIONS FOR A RESIDENTIAL OPEN SPACE SUBDIVISION. LOT 14 IS A RESIDENTIAL OPEN SPACE SUBDIVISION BACKLOT.
12. SOIL EVALUATION TEST PITS PERFORMED ON AUGUST 23, 2023 BY ALEX FINAMORE WITH MAINELY SOILS LLC.
13. WETLAND DELINEATION SHOWN HEREON BASED ON PLAN REF. 4A AND WAS CONFIRMED ON AUGUST 23, 2023 BY ALEX FINAMORE WITH MAINELY SOILS LLC.
14. ANY FUTURE DEVELOPMENT OR CHANGES TO THIS SUBDIVISION PLAN WILL REQUIRE PLANNING BOARD APPROVAL AND WILL BE CONSIDERED AN AMENDMENT TO A MAJOR SUBDIVISION. THE PLANNING BOARD MAY REQUIRE ADDITIONAL PLANS & STUDIES PER 401.7.3-5 THAT WERE WAIVED OR NOT REQUIRED AS PART OF THIS SUBDIVISION APPROVAL.
15. THE 75' FOREST SCENIC BUFFER ALONG EAGLES NEST ROAD IS TO REMAIN IN ITS CURRENT VEGETATIVE CONDITION EXCEPT FOR CLEARING REQUIRED FOR ROADWAY CONSTRUCTION IMPROVEMENTS SHOWN IN THE PROJECT PLANS, AND THE REMOVAL OF ANY DEAD, DISEASED OR HAZARD TREES.
16. ALL RESIDENTIAL BUILDINGS IN THE SUBDIVISION SHALL BE REQUIRED TO INSTALL FIRE SPRINKLERS MEETING NFPA STANDARDS AND TOWN OF GRAY ORDINANCE 401.13.2.C FIRE PROTECTION STANDARDS.
17. ALL LOTS IN THE SUBDIVISION WILL BE SERVED BY PRIVATE ON-SITE POTABLE WELLS, PRIVATE SUBSURFACE WASTEWATER DISPOSAL SYSTEMS AND UNDERGROUND ELECTRICAL, TELEPHONE AND CABLE SERVICES. ALL RESIDENTIAL USE BUILDINGS SHALL REQUIRE THE INSTALLATION OF ROOF DRIP EDGES FOR STORMWATER MANAGEMENT.
18. ALL DRIVEWAY AND LOT DEVELOPMENT WORK SHALL PROVIDE FOR EROSION & SEDIMENTATION CONTROL BMPS IN ACCORDANCE WITH THE MAINE DEP HANDBOOK OF EROSION AND SEDIMENTATION CONTROL LATEST REVISION. CHANGES TO DRIVEWAY DESIGNS ARE ALLOWED SUBJECT TO THE SUBMISSION OF ALTERNATIVE ENGINEERING SPECIFICATIONS APPROVED AS PART OF A DRIVEWAY PERMIT AND WILL NOT REQUIRE AMENDMENT OF THE SUBDIVISION PLAN IF APPROVED BY THE CODE ENFORCEMENT OFFICER IN ACCORDANCE WITH 401.13.17.C OF THE SUBDIVISION ORDINANCE. ALL DRIVEWAYS IN THIS SUBDIVISION SHALL COMPLY SECTION 400.5.4.C.2 OF THE STREET ORDINANCE.
19. THE PROJECT SITE CONTAINS TWO AREAS THAT HAVE BEEN IDENTIFIED AS HAVING THE POTENTIAL TO BE REGULATED AS SIGNIFICANT VERNAL POOLS BY THE MAINE DEP AND/OR US ARMY CORPS OF ENGINEERS. THESE POTENTIAL VERNAL POOLS WERE NOT EVALUATED TO DETERMINE IF THEY ARE CLASSIFIED AS SIGNIFICANT FOR JURISDICTIONAL PERMITTING PURPOSES. THIS PROJECT PROPOSES A DESIGN THAT MEETS PERMITTING REQUIREMENTS THAT WOULD BE IMPOSED IF THE POOLS WERE FOUND TO BE CONSIDERED SIGNIFICANT VERNAL POOLS AS DEFINED BY THE STATE OF MAINE AND US ARMY CORPS OF ENGINEERS. IF THE VERNAL POOLS ARE DETERMINED TO NOT BE SIGNIFICANT BY THE MAINE DEPARTMENT OF INLAND FISHERIES AND WILDLIFE, THE 100-FOOT AND 250-FOOT SETBACKS SHOWN ON THIS PLAN WILL NO LONGER BE APPLICABLE.
20. ALL ROADS IN THIS SUBDIVISION SHALL REMAIN PRIVATE ROADS TO BE MAINTAINED BY THE DEVELOPER OR THE LOT OWNERS AND SHALL NOT BE ACCEPTED OR MAINTAINED BY THE TOWN EXCEPT FOR ROADS THAT MEET REQUIREMENTS FOR WINTER MAINTENANCE UNDER A PUBLIC EASEMENT. ALL DECISIONS TO ACCEPT PUBLIC EASEMENTS ARE SUBJECT TO THE DISCRETIONARY AUTHORITY OF THE TOWN COUNCIL, AND ALL MAINTENANCE OF AERIE DRIVE SHALL BE THE RESPONSIBILITY OF THE HOMEOWNERS ASSOCIATION. IN THE EVENT THAT THE TOWN ACCEPTS AN EASEMENT OVER THE ROADWAY AND AGREES TO PROVIDE WINTER MAINTENANCE, ALL OTHER MAINTENANCE OF AERIE DRIVE SHALL BE THE RESPONSIBILITY OF THE HOMEOWNERS ASSOCIATION .
21. THE 20-FOOT WIDE EASEMENT SHOWN ON THIS PLAN THAT CROSSES LOT 14 IS INTENDED TO PROVIDE TRAIL CONNECTIVITY BETWEEN THE EAGLES RIDGE SUBDIVISION OPEN SPACE PARCEL AND OTHER ADJACENT LAND. A DEED RESTRICTION SHALL BE ATTACHED TO LOT 14 THAT ALLOWS FOR PUBLIC ACCESS WITHIN THIS 20-FOOT WIDE EASEMENT AREA. THE EASEMENT MAY BE RELOCATED IF APPROVED BY THE OWNER OF LOT 14 AND THE GRAY PLANNING BOARD.
22. PRIOR TO CONSTRUCTION ALL TREE CLEARING LIMITS AND BUFFERS SHALL BE CLEARLY MARKED.
23. INDIVIDUAL WELLS ON EACH LOT MUST BE INSTALLED OUTSIDE OF THE WELL EXCLUSION ZONE. THE WELL EXCLUSION ZONE IS GENERALLY DEFINED AS THE AREA ON EACH LOT THAT IS WITHIN 150 FEET OF THE ROADWAY RIGHT-OF-WAY.
24. THE LOTS 1 THROUGH 13 THAT ARE SHOWN ON THIS PLAN AND AREAS DESIGNATED AS OPEN SPACE SHALL NOT BE FURTHER DIVIDED FOR ANY OTHER USE. LOT 14 MAY ONLY BE FURTHER SUBDIVIDED WITH PLANNING BOARD APPROVAL.
25. ALL LOTS IN THE SUBDIVISION SHALL BE SERVED BY PRIVATE ON-SITE POTABLE WELLS, AND PRIVATE SUBSURFACE WASTEWATER DISPOSAL SYSTEMS AND UNDERGROUND ELECTRICAL, TELEPHONE AND CABLE SERVICES. PRIVATE ON-SITE POTABLE WELLS SHALL NOT BE CONSTRUCTED WITHIN 100 FEET OF THE TRAVELED WAY OF ANY STREET, IF LOCATED DOWNHILL FROM THE STREET, OR WITHIN 50 FEET OF THE TRAVELED WAY OF ANY STREET, IF LOCATED UPHILL OF THE STREET. WATER SUPPLIES SHALL MEET PRIMARY DRINKING WATER STANDARDS CONTAINED IN THE STAT OF MAINE RULES RELATING TO DRINKING WATER. WELL EXCLUSION ZONE SHOWN HEREON BASED ON APPROXIMATE SEPTIC DISPOSAL FIELD LOCATIONS AND ARE TO BE VERIFIED BASED ON FINAL SEPTIC DESIGN.
26. AS PART OF THE PROJECT, THE EXISTING STRUCTURE WITH ACCESS FROM EAGLES NEST ROAD IS TO BE DEMOLISHED AND/OR REMOVED.
27. PROJECT PERMITTING INCLUDES MEDEP PBR #78278, 78280, & 78281 APPROVAL DATED 11/21/2023.

STATE OF MAINE
_____ COUNTY SS. REGISTRY OF DEEDS
RECEIVED _____, 20_____
AT ____h ____m ____M AND RECORDED IN
PLAN BOOK _____ PAGE _____
ATTEST: _____
REGISTER

NOT FOR RECORDING

STATE OF MAINE — DUSTIN M. ROMA — REG. No. 12131 — PROFESSIONAL ENGINEER

DM ROMA
CONSULTING ENGINEERS
P.O. BOX 1116
WINDHAM, ME 04062
(207) 593-5055

REV	DATE	BY	DESCRIPTION
A	9-15-23	JPC	ISSUED FOR REVIEW
B	10-24-23	JPC	ISSUED FOR REVIEW
C	11-22-23	JPC	REVISED PER REVIEW COMMENTS
D	12-4-23	JPC	REVISED PER REVIEW COMMENTS

SECOND AMENDED SUBDIVISION PLAN

AERIE ESTATES - AMENDMENT TO EAGLES RIDGE SUBDIVISION

AERIE DRIVE - OFF EAGLES NEST ROAD
GRAY, MAINE

FOR RECORD OWNER:
SEBAGO REALTY, LLC
PO BOX 1116
WINDHAM, ME 04062

JOB NUMBER:	23050
SCALE:	1" = 100'
DATE:	12-4-2023
	SHEET 3 OF 8
	SB-1

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE/R.O.W.	
	ABUTTER PROPERTY LINE	
	TIE LINE	
	SETBACK	
	EASEMENT LINE	
	GRANITE MONUMENT	
	IRON PIN/DRILL HOLE	
	CENTERLINE	
	BUILDING	
	EDGE OF PAVEMENT/CURB	
	EDGE OF GRAVEL	
	EDGE OF CONCRETE	
	SIGN	
	EDGE OF WETLANDS	
	EDGE OF WATER	
	CENTERLINE OF STREAM	
	FLOODPLAIN	
-200- -201-	CONTOUR LINE	200 201
	TREELINE	
TP-1	TEST PIT	
	CATCHBASIN	
	DRAINAGE MANHOLE	
	CULVERT/STORMDRAIN	
	UNDERDRAIN	UD
	HYDRANT	
W	WELL	W
	UTILITY POLE	
	LIGHT POLE	
OHU	OVERHEAD UTILITIES	OHU
UGU	UNDERGROUND UTILITIES	UGU
	TRANSFORMER PAD	T
G	GAS MAIN	G
	GAS VALVE	
	RIPRAP	
SF	SILT FENCE	SF

GRAPHIC SCALE
0 20 40 80
1" = 40'

CONSTRUCTION NOTES:

1. ALL CULVERTS SHALL BE HDPE PIPE EQUAL TO ADS N-12.
2. DRIVEWAY CULVERTS FOR LOTS 1, 3, 4, 5, 10 AND 11 SHALL BE MINIMUM 15" DIAMETER. DRIVEWAY CULVERTS FOR LOTS 6, 7, 12 AND 13 SHALL BE MINIMUM 18" DIAMETER.
3. INSTALL EROSION CONTROL BLANKET ON ALL SLOPES GREATER THAN 15% AND UP TO A 2:1 SLOPE.

STATE OF MAINE
DUSTIN M. ROMA
REG. NO. 12131
PROFESSIONAL ENGINEER

DM ROMA
CONSULTING ENGINEERS
P.O. BOX 1116
WINDHAM, ME 04062
(207) 591-5055

REV	DATE	BY	DESCRIPTION
A	9-15-23	JPC	ISSUED FOR REVIEW
B	10-24-23	JPC	ISSUED FOR REVIEW
C	11-13-23	JPC	REVISED PER REVIEW COMMENTS
D	11-22-23	JPC	REVISED PER REVIEW COMMENTS
E	12-4-23	JPC	REVISED PER REVIEW COMMENTS

ROADWAY PLAN

AERIE ESTATES SUBDIVISION
AERIE DRIVE, OFF EAGLES NEST ROAD
GRAY, MAINE
FOR:
SEBAGO REALTY, LLC
PO BOX 1116
WINDHAM, ME 04062

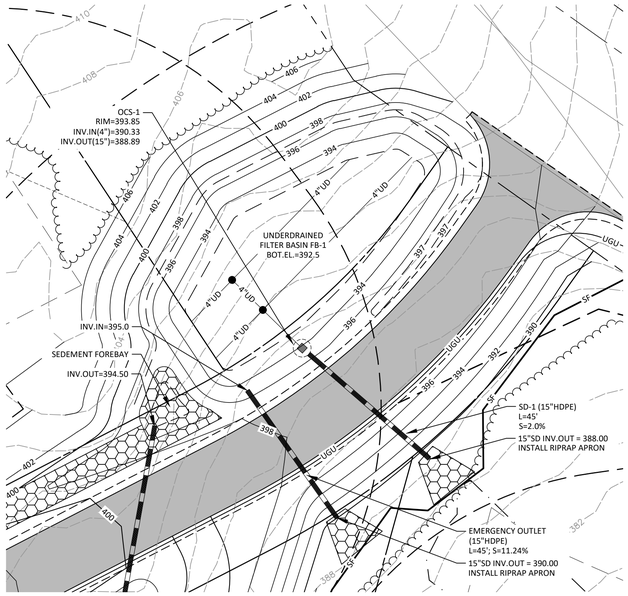
23050
JOB NUMBER:

1" = 40'
SCALE:

12-4-2023
DATE:

SHEET 4 OF 8

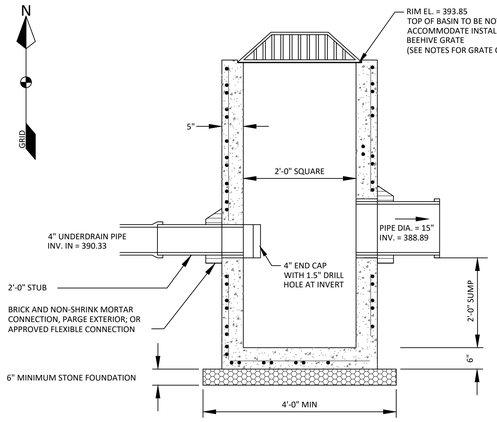
PP-1



UNDERDRAINED FILTER BASIN FB-1 DETAIL

SCALE 1"=20'

GRAPHIC SCALE
1" = 20'



NOTES:

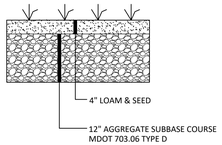
1. OUTLET CONTROL STRUCTURE SHALL BE CONSTRUCTED UTILIZING A PRECAST CATCH BASIN (24"x 24" ~ TYPE F).

2. CAST IRON GRATE SHALL BE EQUAL TO NEENAH FOUNDRY, PRODUCT NO. R-4345, BEEHIVE LIGHT DUTY GRATE, OR APPROVED EQUIVALENT.

3. SUBMIT SHOP DRAWINGS AND CASTING SPECIFICATIONS TO ENGINEER FOR APPROVAL.

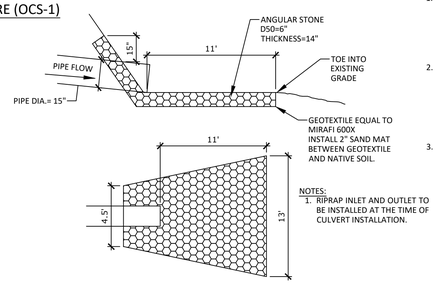
OUTLET CONTROL STRUCTURE (OCS-1)

NOT TO SCALE



TYPICAL POND ACCESS ROAD SECTION

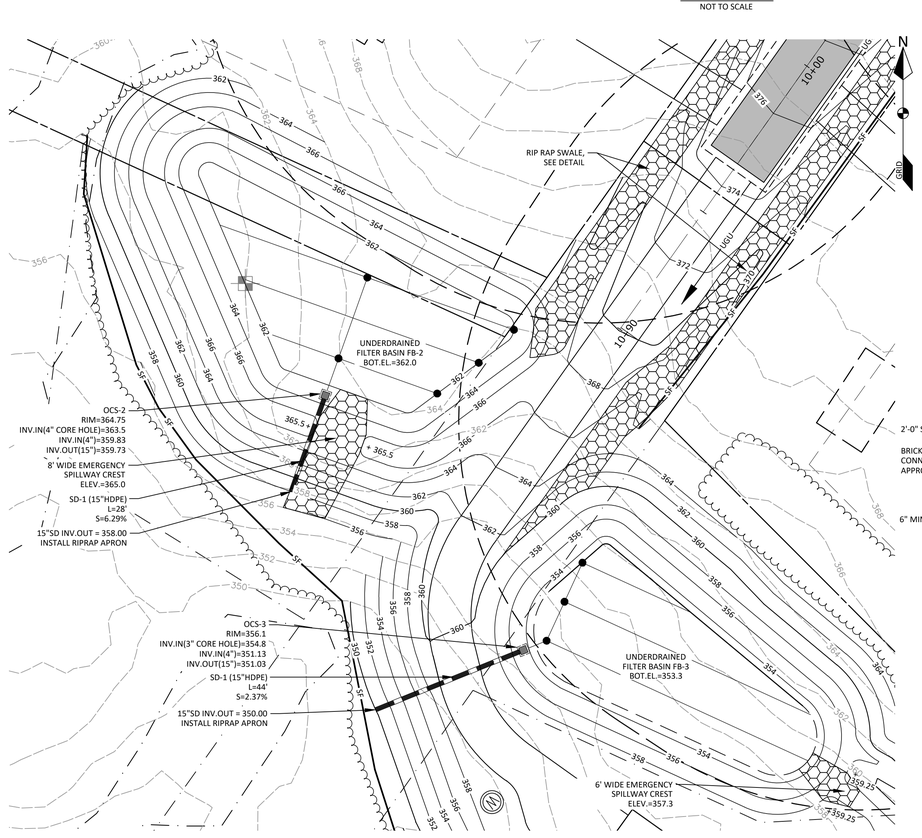
NOT TO SCALE



NOTES:
1. RIPRAP INLET AND OUTLET TO BE INSTALLED AT THE TIME OF CULVERT INSTALLATION.

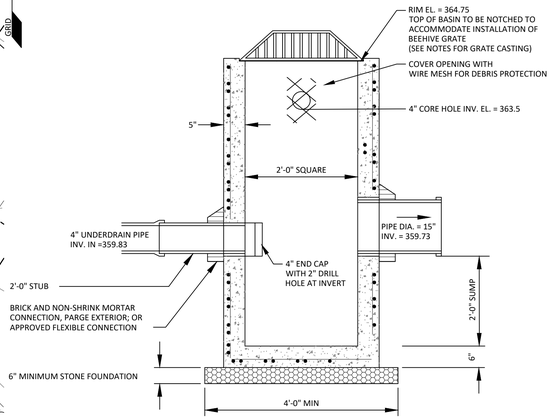
RIPRAP APRON AT PIPE

NOT TO SCALE



UNDERDRAINED FILTER BASIN FB-2 DETAIL

SCALE 1"=20'



NOTES:

1. OUTLET CONTROL STRUCTURE SHALL BE CONSTRUCTED UTILIZING A PRECAST CATCH BASIN (24"x 24" ~ TYPE F).

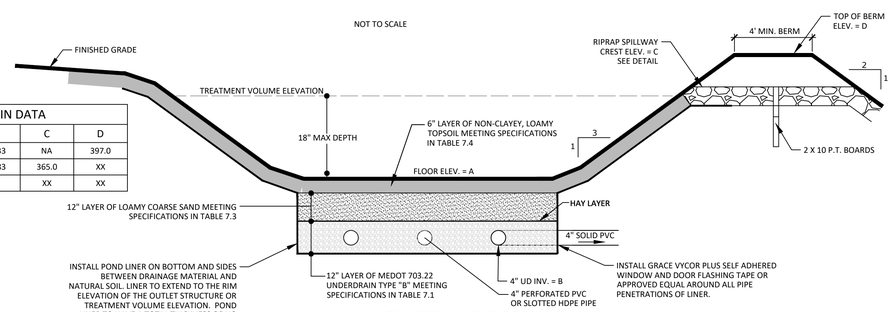
2. CAST IRON GRATE SHALL BE EQUAL TO NEENAH FOUNDRY, PRODUCT NO. R-4345, BEEHIVE LIGHT DUTY GRATE, OR APPROVED EQUIVALENT.

3. SUBMIT SHOP DRAWINGS AND CASTING SPECIFICATIONS TO ENGINEER FOR APPROVAL.

OUTLET CONTROL STRUCTURE (OCS-2)

NOT TO SCALE

NOT TO SCALE



GRASSED UNDERDRAINED SOIL FILTER BASIN SECTION

NOT TO SCALE

FILTER BASIN DATA				
POND ID	A	B	C	D
FB-1	392.5	390.33	NA	397.0
FB-2	362.0	359.83	365.0	XX
FB-3	XX	XX	XX	XX

TABLE 7.1 UNDERDRAIN 703.22 TYPE "B"	
SIEVE SIZE	% PASSING BY WEIGHT
1"	90-100
1/2"	75-100
#4	50-100
#20	15-80
#50	0-15
#200	0-5

TABLE 7.3 LOAMY COARSE SAND	
SIEVE SIZE	% PASSING BY WEIGHT
#10	85-100
#20	70-100
#60	15-40
#200	8-15
200 CLAY	<2.0

TABLE 7.4 SANDY LOAM	
SIEVE SIZE	% PASSING BY WEIGHT
#4	
#10	
#40	
#200	
200 CLAY	

GENERAL NOTES:

1. CONSTRUCTION SEQUENCE: THE SOIL FILTER MEDIA AND VEGETATION MUST NOT BE INSTALLED UNTIL THE AREA THAT DRAINS TO THE FILTER HAS BEEN PERMANENTLY STABILIZED WITH PAVEMENT OR OTHER STRUCTURE, 90% VEGETATION COVER, OR OTHER PERMANENT STABILIZATION UNLESS THE RUNOFF FROM THE CONTRIBUTING DRAINAGE AREA IS DIVERTED AROUND THE FILTER UNTIL STABILIZATION IS COMPLETED.

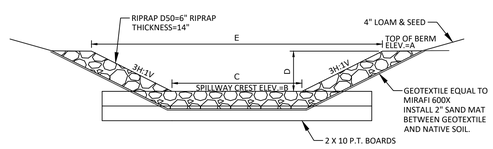
2. COMPACTION OF SOIL FILTER: FILTER SOIL MEDIA AND UNDERDRAIN BEDDING MATERIAL MUST BE COMPACTED BETWEEN 90% AND 92% STANDARD PROCTOR. THE BED SHOULD BE INSTALLED IN AT LEAST TWO LIFTS TO PREVENT POCKETS OF LOOSE MEDIA.

FILTRATION BMPs CONSTRUCTION OVERSIGHT NOTES:

1. INSPECTION BY THE DESIGN ENGINEER OR SUITABLE THIRD PARTY WILL OCCUR AT A MINIMUM:
   A) AFTER THE PRELIMINARY CONSTRUCTION OF THE FILTER GRADES AND ONCE THE UNDERDRAIN PIPES ARE INSTALLED BUT NOT BACKFILLED.
   B) AFTER THE DRAINAGE LAYER IS CONSTRUCTED AND PRIOR TO THE INSTALLATION OF THE FILTER MEDIA.
   C) AFTER THE FILTER MEDIA HAS BEEN INSTALLED AND SEEDED.
   D) AFTER ONE YEAR TO INSPECT HEALTH OF THE VEGETATION AND MAKE CORRECTIONS.
   E)ALL THE MATERIAL USED FOR THE CONSTRUCTION OF THE FILTER BASIN MUST BE CONFIRMED AS SUITABLE BY THE DESIGN ENGINEER. TESTING MUST BE DONE BY A CERTIFIED LABORATORY TO SHOW THAT THEY ARE PASSING MDEP SPECIFICATIONS.
2. TESTING AND SUBMITTALS: THE CONTRACTOR SHALL IDENTIFY THE LOCATION OF THE SOURCE OF EACH COMPONENT OF THE FILTER MEDIA. ALL RESULTS OF FIELD AND LABORATORY TESTING SHALL BE SUBMITTED TO THE PROJECT ENGINEER FOR CONFIRMATION. THE CONTRACTOR SHALL:
   A) SELECT SAMPLES FOR SAMPLING OF EACH TYPE OF MATERIAL TO BE BLENDED FOR THE MIXED FILTER MEDIA AND SAMPLES OF THE UNDERDRAIN BEDDING MATERIAL. SAMPLES MUST BE A COMPOSITE OF THREE DIFFERENT LOCATIONS (GRABS) FROM THE STOCKPILE OR PIT FACE. SAMPLE SIZE REQUIRED WILL BE DETERMINED BY THE TESTING LABORATORY.
   B) PERFORM A SIEVE ANALYSIS CONFORMING TO STM C136 (STANDARD TEST METHOD FOR SIEVE ANALYSIS OF FINE AND COARSE AGGREGATES 1996A) ON EACH TYPE OF THE SAMPLE MATERIAL. THE RESULTING SOIL FILTER MEDIA MIXTURE MUST HAVE 8% TO 12% BY WEIGHT PASSING THE #200 SIEVE, A CLAY CONTENT OF LESS THAN 2% (DETERMINED BY HYDROMETER GRAIN SIZE ANALYSIS) AND HAVE 10% DRY WEIGHT OF ORGANIC MATTER.
   C) PERFORM A PERMIABILITY TEST ON THE SOIL FILTER MEDIA MIXTURE CONFORMING TO ASTM D2434 WITH THE MIXTURE COMPACTED TO 90-92% OF MAXIMUM DRY DENSITY BASED ON ASTM D698
3. WITHIN 30 DAYS OF COMPLETION OF THE FILTRATION BMP, THE APPLICANT SHALL SUBMIT A LOG OF INSPECTION REPORTS DETAILING THE ITEMS INSPECTED, PHOTOS TAKEN, AND THE DATES OF EACH INSPECTION TO THE MAINE DEP BUREAU OF LAND RESOURCES FOR REVIEW.

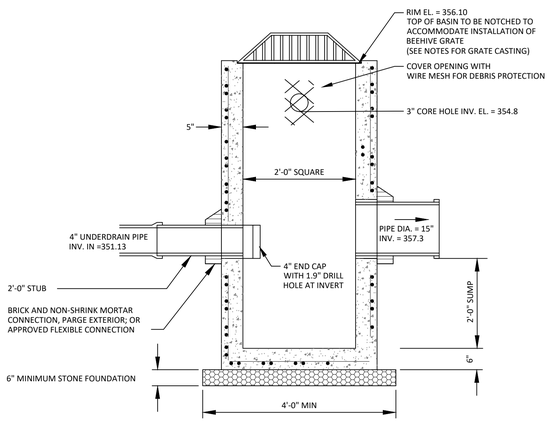
GRASSED UNDERDRAINED SOIL FILTER BASIN SECTION

NOT TO SCALE



SPILLWAY DATA						
POND ID	A	B	C	D	E	
FB-1	397.0	NA	NA	NA	NA	
FB-2	366.5	365.0	8.0'	1.5'	17'	
FB-3	359.25	357.3	6.0'	1.95'	17.7'	

RIPRAPPED SPILLWAY CROSS-SECTION



NOTES:

1. OUTLET CONTROL STRUCTURE SHALL BE CONSTRUCTED UTILIZING A PRECAST CATCH BASIN (24"x 24" ~ TYPE F).

2. CAST IRON GRATE SHALL BE EQUAL TO NEENAH FOUNDRY, PRODUCT NO. R-4345, BEEHIVE LIGHT DUTY GRATE, OR APPROVED EQUIVALENT.

3. SUBMIT SHOP DRAWINGS AND CASTING SPECIFICATIONS TO ENGINEER FOR APPROVAL.

OUTLET CONTROL STRUCTURE (OCS-3)

NOT TO SCALE

LEGEND

EXISTING	PROPOSED
PROPERTY LINE/R.O.W.	
ABUTTER PROPERTY LINE	
TIE LINE	
SETBACK	
EASEMENT LINE	
GRANITE MONUMENT	
IRON PIN/DRILL HOLE	
CENTERLINE	
BUILDING	
EDGE OF PAVEMENT/CURB	
EDGE OF GRAVEL	
EDGE OF CONCRETE	
SIGN	
EDGE OF WETLANDS	
EDGE OF WATER	
CENTERLINE OF STREAM	
FLOODPLAIN	
CONTOUR LINE	200 — 201
TREELINE	
TEST PIT	
CATCHBASIN	
DRAINAGE MANHOLE	
CULVERT/STORMDRAIN	
UNDERDRAIN	UD
HYDRANT	
WELL	W
UTILITY POLE	
LIGHT POLE	
OVERHEAD UTILITIES	OHU
UNDERGROUND UTILITIES	UGU
TRANSFORMER PAD	T
GAS MAIN	G
GAS VALVE	
RIPRAP	
SILT FENCE	SF

DM ROMA
CONSULTING ENGINEERS
P.O. BOX 1116
WINDHAM, ME 04062
(207) 591-5055

REV	DATE	BY	DESCRIPTION
A	9-15-23	JPC	ISSUED FOR REVIEW
B	10-24-23	JPC	ISSUED FOR REVIEW
C	11-13-23	JPC	REVISED PER REVIEW COMMENTS
D	12-4-23	JPC	REVISED PER REVIEW COMMENTS

STORMWATER MANAGEMENT DETAILS

AERIE ESTATES SUBDIVISION
AERIE DRIVE - OFF EAGLES NEST ROAD
GRAY, MAINE

FOR:
SEBAGO REALTY, LLC
PO BOX 1116
WINDHAM, ME 04062

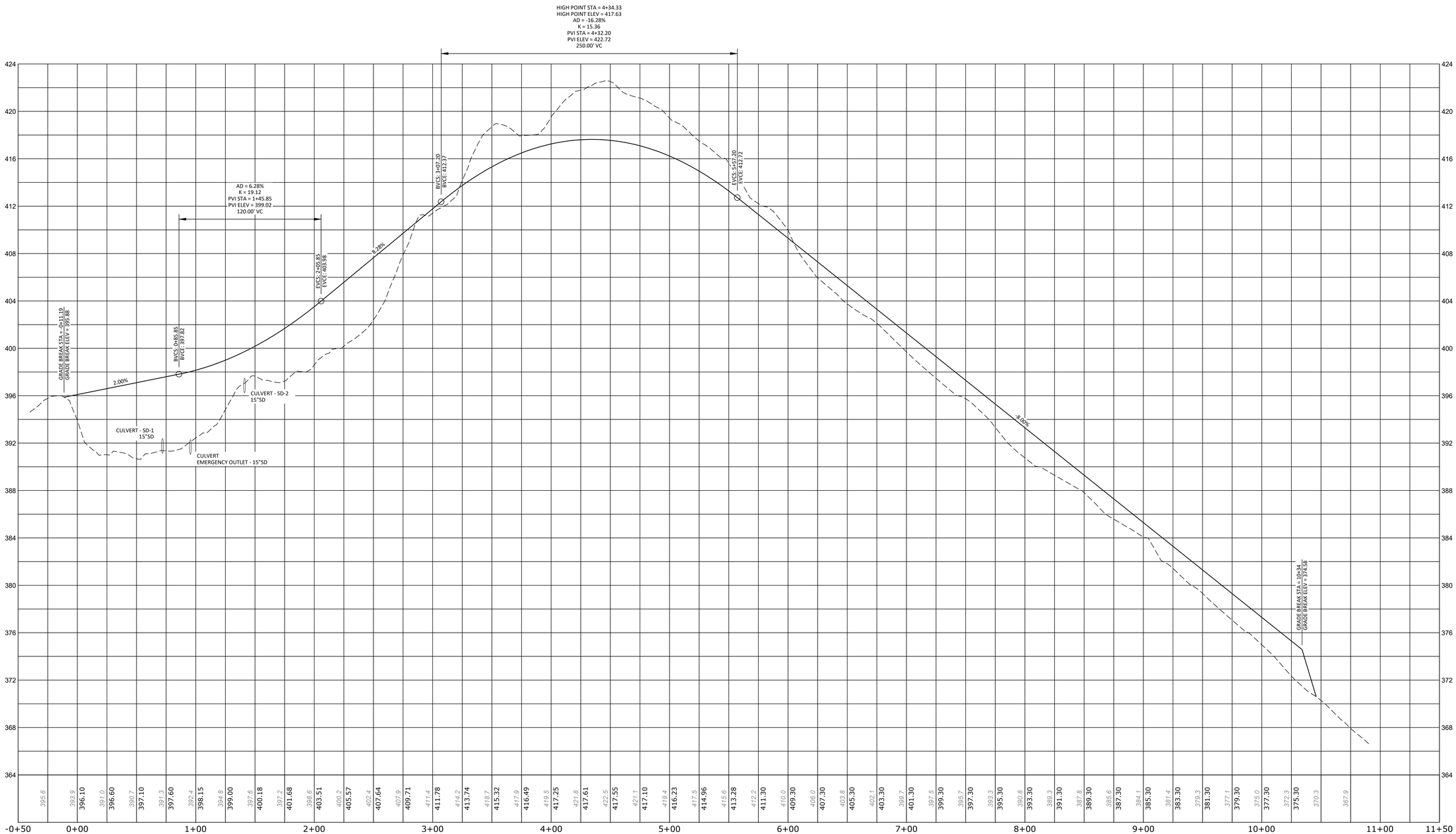
23050
JOB NUMBER:

AS SHOWN
SCALE:

12-4-2023
DATE:

SHEET 5 OF 8

PP-2



ROADWAY PROFILE - AERIE DRIVE

SCALE 1"=40'H, 1"=4'V

GRAPHIC SCALE
1" = 40'
0 20 40 80

DM ROMA
CONSULTING ENGINEERS
P.O. BOX 1116
WINDHAM, ME 04062
(207) 593-5055

REV	DATE	BY	DESCRIPTION
A	9-15-23	JPC	ISSUED FOR REVIEW
B	11-13-23	JPC	REVISED PER REVIEW COMMENTS
C	12-4-23	JPC	REVISED PER REVIEW COMMENTS

ROADWAY PROFILE

AERIE ESTATES SUBDIVISION

AERIE DRIVE OFF EAGLES NEST ROAD
GRAY, MAINE

FOR:
SEBAGO REALTY, LLC
PO BOX 1116
WINDHAM, ME 04062

23050
JOB NUMBER:

AS SHOWN
SCALE:

12-4-2023
DATE:

SHEET 6 OF 8

PP-3

EROSION AND SEDIMENTATION CONTROL NOTES:

EXCAVATION AND EARTHWORK SHALL BE COMPLETED SUCH THAT NO MORE THAN 1 ACRE OF THE SITE IS WITHOUT STABILIZATION AT ANY ONE TIME. LIMIT THE EXPOSED AREA TO THOSE AREAS IN WHICH WORK IS TO OCCUR DURING THE FOLLOWING 15 DAYS AND THAT CAN BE MULCHED IN ONE DAY.

IN ORDER TO EFFECTIVELY PREVENT AND CONTROL EROSION RELATED TO SOIL DISTURBANCE, THE FOLLOWING BEST MANAGEMENT PRACTICES (BMPS) SHALL BE EMPLOYED:

1. POLLUTION PREVENTION

MINIMIZE DISTURBED AREAS AND PROTECT NATURAL DOWNGRADIENT BUFFER AREAS TO THE EXTENT PRACTICABLE. CONTROL STORMWATER VOLUME AND VELOCITY WITHIN THE SITE TO MINIMIZE SOIL EROSION. MINIMIZE THE DISTURBANCE OF STEEP SLOPES. CONTROL STORMWATER DISCHARGES, INCLUDING BOTH PEAK FLOW RATES AND VOLUME, TO MINIMIZE EROSION AT OUTLETS. THE DISCHARGE MAY NOT RESULT IN EROSION OF ANY OPEN DRAINAGE CHANNELS, SWALES, STREAM CHANNELS OR STREAM BANKS, UPLAND, OR COASTAL OR FRESHWATER WETLANDS OFF THE PROJECT SITE.

WHENEVER PRACTICABLE, NO DISTURBANCE ACTIVITIES SHOULD TAKE PLACE WITHIN 50 FEET OF ANY PROTECTED NATURAL RESOURCE. IF DISTURBANCE ACTIVITIES TAKE PLACE BETWEEN 30 FEET AND 50 FEET OF ANY PROTECTED NATURAL RESOURCE, AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TOWARD THE PROTECTED NATURAL RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED. IF DISTURBANCE ACTIVITIES TAKE PLACE LESS THAN 30 FEET FROM ANY PROTECTED NATURAL RESOURCE, AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TOWARD THE PROTECTED NATURAL RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED AND DISTURBED AREAS MUST BE TEMPORARILY OR PERMANENTLY STABILIZED WITHIN 7 DAYS.

2. TEMPORARY SOIL STABILIZATION BMPS

TEMPORARY MULCHING SHALL BE APPLIED IMMEDIATELY TO ANY AREAS THAT HAVE BEEN TEMPORARILY OR PERMANENTLY SEEDED. ANY DISTURBED SOIL WITHIN 75' OF A STREAM, WATER BODY OR WETLAND MUST RECEIVE TEMPORARY MULCH WITHIN 48 HOURS FOLLOWING DISTURBANCE AND BEFORE ANY STORM EVENT. ALL OTHER AREAS SHALL RECEIVE TEMPORARY MULCH WITHIN 7 DAYS OF DISTURBANCE. AREAS WHICH CANNOT BE SEEDED DURING THE GROWING SEASON SHALL BE MULCHED FOR OVER-WINTER PROTECTION. THE FOLLOWING ARE ACCEPTABLE TEMPORARY MULCHING METHODS:

HAY OR STRAW MULCHES NEED TO BE AIR-DRIED, FREE OF UNDESIRABLE SEEDS AND COARSE MATERIALS. APPLICATION RATE MUST BE 2 BALES (70-90 POUNDS) PER 1000 SQ FT OR 1.5 TO 2 TONS (90-100 BALES) PER ACRE TO COVER 75-90% OF THE GROUND SURFACE. HAY OR STRAW CAN BE DRIVEN INTO THE GROUND WITH TRACKED EQUIPMENT IF SLOPES ARE LESS THAN 3%, OR CAN BE ANCHORED WITH JUTE, WOOD FIBER OR PLASTIC NETTING ON STEEPER SLOPES.

EROSION CONTROL MIX MUST CONSIST PRIMARILY OF ORGANIC MATERIAL AND WILL INCLUDE ANY OF THE FOLLOWING: SHREDDED BARK, STUMP GRINDINGS, COMPOSTED BARK OR OTHER ACCEPTABLE PRODUCTS BASED ON A SIMILAR RAW SOURCE. WOOD OR BARK CHIPS, GROUND CONSTRUCTION DEBRIS OR REPROCESSED WOOD PRODUCTS ARE NOT ACCEPTABLE. EROSION CONTROL MIX CAN BE USED AS A STAND-ALONE REINFORCEMENT ON SLOPES OF 2 HORIZONTAL TO 1 VERTICAL OR LESS AND DRAINING IN SHEET FLOW. IT CAN BE PLACED WITH A HYDRAULIC BUCKET, WITH A PNEUMATIC BLOWER OR BY HAND, AND MUST PROVIDE 100% SOIL COVERAGE.

EROSION CONTROL MIX SHALL MEET THE FOLLOWING SPECIFICATIONS:
- -ORGANIC MATTER CONTENT SHALL BE BETWEEN 50-100%, DRY WEIGHT BASIS.
- -MINERAL PORTION OF THE MIX SHOULD BE NATURALLY INCLUDED IN THE MIX WITH NO LARGER ROCKS (>4")
- -ORGANIC PORTION NEEDS TO BE FIBROUS AND ELONGATED
- -LARGE PORTIONS OF SILTS, CLAYS OR FINE SANDS ARE NOT ACCEPTABLE IN THE MIX
- -IN STUMP GRINDING, THE MINERAL SOIL ORIGINATES FROM THE ROOT BALL AND SHOULD NOT BE REMOVED BEFORE GRINDING
- -THE MIX SHOULD BE FREE OF REFUSE, MATERIAL TOXIC TO PLANT GROWTH OR UNSUITABLE MATERIAL (BARK CHIPS, GROUND CONSTRUCTION DEBRIS OR REPROCESSED WOOD PRODUCTS

WHEN USED AS MULCH, THE THICKNESS OF THE EROSION CONTROL MIX IS BASED UPON THE FOLLOWING:

LENGTH OF SLOPE	3:1 SLOPE OR LESS	BETWEEN 2:1 AND 3:1 SLOPE
LESS THAN 20 FT	2.0 IN.	4.0 IN.
BETWEEN 20 - 60 FT	3.0 IN.	5.0 IN.
BETWEEN 60 - 100 FT	4.0 IN.	6.0 IN.

CHEMICAL MULCHES AND SOIL BINDERS MAY BE USED AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL CONSULT WITH THE MANUFACTURER TO DETERMINE ADEQUATE APPLICATION RATES AND METHODS.

TEMPORARY MULCH SHALL BE INSPECTED FOLLOWING ANY SIGNIFICANT RAINFALL EVENT (GREATER THAN 0.5 INCH RAINFALL, TYP.). IF LESS THAN 90% OF THE SOIL SURFACE IS COVERED BY MULCH, ADDITIONAL MULCH SHALL BE IMMEDIATELY APPLIED. EROSION CONTROL MATS AND MULCH ANCHORING MUST BE INSPECTED AFTER RAINFALL EVENTS FOR DISLOCATION OR FAILURE, AND REPAIRED IMMEDIATELY. INSPECTIONS SHALL TAKE PLACE UNTIL 95% OF THE SOIL SURFACE IS COVERED WITH PERMANENT VEGETATION. WHERE MULCH IS USED WITH ORNAMENTAL PLANTINGS, INSPECT PERIODICALLY THROUGHOUT THE YEAR TO DETERMINE IF MULCH IS MAINTAINING COVERAGE OF THE SOIL SURFACE, AND REPAIR AS NEEDED.

TEMPORARY VEGETATION SHALL BE ESTABLISHED ON SOILS THAT WILL NOT BE BROUGHT TO FINAL GRADE FOR A PERIOD OF MORE THAN 30 DAYS. IF TEMPORARY VEGETATION CANNOT BE ESTABLISHED PRIOR TO OCTOBER 15, TEMPORARY MULCH SHALL BE APPLIED THROUGH THE WINTER AND TEMPORARY VEGETATION SHALL BE PLANTED AT THE BEGINNING OF THE GROWING SEASON THE FOLLOWING YEAR. TO PREPARE THE SEEDBED, THE CONTRACTOR SHALL APPLY FERTILIZER AT A RATE OF 600 POUNDS PER ACRE OF 10-10-10 (N-P205-K20) OR EQUIVALENT AND LIMESTONE AT A RATE OF 3 TONS PER ACRE, IF NECESSARY. LOOSEN SOIL TO A DEPTH OF 2 INCHES IN AREAS THAT HAVE BEEN COMPACTED BY CONSTRUCTION ACTIVITIES. GRASS SEED SHALL BE SELECTED BASED UPON THE TIME OF YEAR THE PLANTING WILL TAKE PLACE AS SUMMARIZED IN THE FOLLOWING TABLE:

SEED	LB. PER ACRE	RECOMMENDED SEEDING DATES
WINTER RYE	112	8/15 - 10/1
OATS	80	4/1 - 7/1 8/15 - 9/15
ANNUAL RYEGRASS	40	4/1 - 7/1

TEMPORARY SEEDING SHALL BE PERIODICALLY INSPECTED TO MAINTAIN AT LEAST 95% VEGETATIVE COVER OF SOIL SURFACE. IF ANY EVIDENCE OF EROSION OR SEDIMENTATION IS APPARENT, REPAIRS SHALL BE MADE AND OTHER TEMPORARY MEASURES SHALL BE USED IN THE INTERIM SUCH AS TEMPORARY MULCH, FILTER BARRIERS, ETC.

3. SEDIMENT BARRIER BMPS

PRIOR TO CONSTRUCTION TEMPORARY SEDIMENT BARRIERS SHALL BE INSTALLED AT THE DOWNGRADIENT EDGE OF ANY AREA TO BE DISTURBED AND ADJACENT TO ANY DRAINAGE CHANNELS WITHIN THE DISTURBED AREA . SEDIMENT BARRIERS INCLUDE ANY OF THE FOLLOWING:

FILTER BARRIER FENCE, ALSO CALLED SILT FENCE, SHALL BE INSTALLED WHERE SHOWN ON THE PLANS AND IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS. THE FILTER FABRIC SHALL BE A PERVIOUS SHEET OF PROPYLENE, NYLON, POLYESTER OR ETHYLENE YARN AND SHALL PROVIDE A MINIMUM OF 6 MONTHS USABLE CONSTRUCTION LIFE INCLUDING PROTECTION AGAINST ULTRA-VIOLET LIGHT. THE HEIGHT OF THE FENCE SHALL NOT EXCEED 36 INCHES INSTALLED AND POST SPACING SHALL NOT EXCEED 6 FEET. JOINTS IN THE FENCE SHALL BE AVOIDED TO THE EXTENT POSSIBLE, AND IF NECESSARY SHALL BE SPLICED TOGETHER AT A SUPPORT POST WITH A MINIMUM 6 INCH OVERLAP. A TRENCH SHALL BE EXCAVATED APPROXIMATELY 6 INCHES WIDE AND 6 INCHES DEEP, AND THE BOTTOM 6-8 INCHES OF FABRIC SHALL BE "TOED-IN" TO THE TRENCH AND COMPACTED. THE TRENCH SHOULD BE UPHILL OF THE FABRIC PRIOR TO BURIAL.

EROSION CONTROL MIX BERMS ARE LINEAR BARRIERS COMPOSED OF EROSION CONTROL MIX AS SPECIFIED ABOVE. THE BERM MUST BE A MINIMUM OF 12 INCHES TALL AND 24 INCHES WIDE AT THE BASE IF UPHILL SLOPES ARE LESS THAN 5%. STEEPER SLOPES OR SLOPES GREATER THAN 20 FEET LONG MAY REQUIRE A LARGER WIDTH BERM. EROSION CONTROL MIX BERMS SHALL BE PROHIBITED AT THE BASE OF A LONG OR STEEP SLOPE (8% OR GREATER) WITHOUT THE ADDITIONAL SUPPORT OF A FILTER FENCE INSTALLED ON THE DOWNHILL SIDE OF THE BERM.

SEDIMENT BARRIERS SHOULD BE INSTALLED DOWNGRADIENT OF SOIL OR SEDIMENT STOCKPILES AND STORMWATER SHOULD BE PREVENTED FROM RUNNING ONTO THE STOCKPILE. SEDIMENT BARRIERS SHALL BE INSPECTED AFTER ANY SIGNIFICANT RAINFALL EVENT (GREATER THAN 0.5 INCH RAINFALL) AND REPAIRED IMMEDIATELY IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BELOW THE BARRIERS. IF THERE ARE SIGNS OF UNDERCUTTING AT THE CENTER OR EDGES OF THE BARRIER, OR IF LARGE VOLUMES OF WATER ARE IMPOUNDED BEHIND THE BARRIER, IT MAY BE NECESSARY TO REPLACE THE BARRIER WITH A TEMPORARY STONE CHECK DAM. SEDIMENT SHALL BE REMOVED ONCE IT REACHES HALF THE BARRIER HEIGHT. AFTER THE BARRIER IS REMOVED, ANY REMAINING SILT SHALL EITHER BE REMOVED OR GRADED TO CONFORM WITH THE EXISTING TOPOGRAPHY AND VEGETATED.

TEMPORARY EROSION CONTROL MEASURES ARE REMOVED ONCE THE SITE IS PERMANENTLY STABILIZED AND CONSTRUCTION ACTIVITY HAS BEEN COMPLETED.

4. STORM DRAIN INLET PROTECTION

STORM DRAIN INLETS THAT ARE MADE OPERATIONAL BEFORE THEIR DRAINAGE AREA IS STABILIZED SHALL BE PROTECTED WITH A FILTER UNTIL THE DRAINAGE AREA IS EITHER PAVED OR STABILIZED WITH 95% VEGETATIVE GROWTH. THE FOLLOWING ARE ACCEPTABLE BMPS ASSOCIATED WITH STORM DRAIN INLET PROTECTION:

MANUFACTURED SEDIMENT FILTERS ARE THE PREFERRED METHOD FOR PROTECTING CATCH BASIN INLETS IN PAVED OR GRAVEL ROADWAYS. THE FILTERS TYPICALLY CONSIST OF A FABRIC OR OTHER PERVIOUS MATERIAL THAT IS PLACED ABOVE OR BELOW THE GRATE THAT TRAPS SEDIMENT ON THE SURFACE AND ALLOWS WATER TO FLOW THROUGH THE GRATE. CONSIDERATIONS SUCH AS WEATHER CONDITIONS, SLOPES, TRIBUTARY WATERSHED AREA AND EXPECTED SEDIMENT ACCUMULATION SHOULD BE FACTORED INTO MAKING A DECISION ON ANY PARTICULAR PRODUCT, AND THE MANUFACTURER'S RECOMMENDATIONS ON INSTALLATION AND MAINTENANCE SHALL BE STRICTLY ADHERED TO.

5. STABILIZED CONSTRUCTION ENTRANCE/EXIT

TO REDUCE THE TRACKING OF SEDIMENT ONTO ROADWAYS, A STABILIZED CONSTRUCTION EXIT SHALL BE INSTALLED AT ALL POINTS OF EGRESS WHERE VEHICLES MAY TRAVEL FROM THE PROJECT SITE TO A PUBLIC ROAD OR OTHER PAVED AREA. THE STONE PAD SHALL CONSIST OF A MINIMUM 6-INCH DEPTH OF 2-3 INCH CRUSHED STONE, AND SHALL BE PLACED ON A GEOTEXTILE FABRIC. THE PAD SHALL EXTEND AT LEAST 50 FEET INTO THE PROJECT SITE AND BE A MINIMUM OF 10 FEET WIDE. THE EXIT SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, AND THE CONTRACTOR SHALL SWEEP PAVEMENT AT EXITS THAT HAVE EXPERIENCED ANY MUD-TRACKING PRIOR TO THE NEXT STORM EVENT. MAINTAIN THE PAD UNTIL ALL DISTURBED AREAS ARE STABILIZED.

6. DUST CONTROL

THE CONTRACTOR IS RESPONSIBLE FOR CONTROLLING DUST ON THE PROJECT SITE AND ON ADJACENT ROADWAYS. EXPOSED SOIL SURFACES SHALL BE MOISTENED PERIODICALLY WITH ADEQUATE WATER TO CONTROL DUST. GRAVEL SURFACES SHALL EITHER BE TREATED WITH AN APPLICATION OF CALCIUM CHLORIDE OR COVERED WITH CRUSHED STONE IF DUST CONTROL BECOMES DIFFICULT WITH NORMAL WATER APPLICATIONS.

7. LAND GRADING AND SLOPE PREPARATION

GRADING SHALL BE PLANNED SO AS TO MINIMIZE THE LENGTH OF TIME BETWEEN INITIAL SOIL EXPOSURE AND FINAL GRADING. ON LARGE PROJECTS THIS SHOULD BE ACCOMPLISHED BY PHASING THE OPERATION AND COMPLETING THE FIRST PHASE UP TO FINAL GRADING AND SEEDING BEFORE STARTING THE NEXT PHASE. ANY EXPOSED AREA THAT WILL NOT BE FINISH GRADED WITHIN 7 DAYS SHALL BE TREATED WITH MULCH OR PLANTED WITH TEMPORARY VEGETATION. PROVISIONS SHALL BE MADE TO SAFELY CONVEY SURFACE RUNOFF TO STORM DRAINS, PROTECTED OUTLETS OR TO STABLE WATER COURSES TO ENSURE THAT SURFACE RUNOFF WILL NOT DAMAGE SLOPES OR OTHER GRADED AREAS. CUT AND FILL SLOPES THAT ARE TO BE STABILIZED WITH GRASS SHALL NOT BE STEEPER THAN 2:1. AREAS TO BE FILLED SHALL BE CLEARED, GRUBBED AND STRIPPED OF TOPSOIL TO REMOVE TREES, VEGETATION, ROOTS OR OTHER OBJECTIONABLE MATERIALS. AREAS SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 3 INCHES PRIOR TO PLACEMENT OF TOPSOIL. ALL FILLS SHALL BE COMPACTED AS REQUIRED TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, SUBSIDENCE OR OTHER RELATED PROBLEMS. FILL INTENDED TO SUPPORT BUILDINGS, STRUCTURES AND CONDUITS, ETC. SHALL BE COMPACTED IN ACCORDANCE WITH LOCAL REQUIREMENTS OR CODES. ALL FILLS SHALL BE PLACED AND COMPACTED IN LAYERS NOT TO EXCEED 8 INCHES IN THICKNESS. FILL MATERIAL SHALL BE FREE OF STUMPS, BUILDING DEBRIS AND OTHER OBJECTIONABLE MATERIALS THAT WOULD INTERFERE WITH OR PREVENT CONSTRUCTION OF SATISFACTORY LIFTS. FROZEN MATERIAL OR SOFT, MUCKY OR HIGHLY COMPRESSIBLE MATERIALS SHALL NOT BE INCORPORATED INTO FILL SLOPES OR STRUCTURAL FILLS. FILL SHALL NOT BE PLACED ON A FROZEN FOUNDATION. SEEPS OR SPRINGS ENCOUNTERED DURING CONSTRUCTION SHALL BE HANDLED APPROPRIATELY. ALL GRADED AREAS SHALL BE PERMANENTLY STABILIZED IMMEDIATELY FOLLOWING FINISHED GRADING.

8. TOPSOIL

IF POSSIBLE, TOPSOIL SHALL BE STOCKPILED ON THE PROJECT SITE AND REUSED. HIGH QUALITY TOPSOIL SHALL BE FRIABLE AND LOAMY (LOAM, SANDY LOAM, SILT LOAM, SANDY CLAY LOAM, CLAY LOAM), AND SHALL BE FREE OF DEBRIS, TRASH, STUMPS, ROCKS, ROOTS AND NOXIOUS WEEDS. AFTER THE AREAS TO BE TOPSOILED HAVE BEEN BROUGHT TO GRADE, AND IMMEDIATELY PRIOR TO SPREADING THE TOPSOIL, THE SUBGRADE SHALL BE LOOSENED BY SCARIFYING TO A DEPTH OF AT LEAST 2 INCHES TO ENSURE BONDING WITH SUBSOIL. THE TOPSOIL SHALL BE UNIFORMLY DISTRIBUTED TO A MINIMUM COMPACTED DEPTH OF 4 INCHES. ANY IRREGULARITIES IN THE SURFACE RESULTING FROM TOPSOILING OR OTHER OPERATIONS SHALL BE CORRECTED IN ORDER TO PREVENT THE FORMATION OF DEPRESSIONS OR WATER POCKETS. IT IS NECESSARY TO COMPACT THE TOPSOIL ENOUGH TO ENSURE GOOD CONTACT WITH THE UNDERLYING SOIL, BUT UNDUE COMPACTION IS TO BE AVOIDED.

9. PERMANENT SOIL STABILIZATION

IF THE AREA WILL NOT BE WORKED FOR MORE THAN ONE YEAR OR HAS BEEN BROUGHT TO FINAL GRADE, THEN PERMANENTLY STABILIZE THE AREA WITHIN 7 DAYS BY PLANTING VEGETATION, SEEDING, SOD, OR THROUGH THE USE OF PERMANENT MULCH, OR RIPRAP, OR ROAD SUB-BASE. IF USING VEGETATION FOR STABILIZATION, SELECT THE PROPER VEGETATION FOR THE LIGHT, MOISTURE, AND SOIL CONDITIONS; AMEND AREAS OF DISTURBED SUBSOILS WITH TOPSOIL, COMPOST, OR FERTILIZERS; PROTECT SEEDED AREAS WITH MULCH OR, IF NECESSARY, EROSION CONTROL BLANKETS; AND SCHEDULE SODDING, PLANTING, AND SEEDING SO TO AVOID DIE-OFF FROM SUMMER DROUGHT AND FALL FROSTS. NEWLY SEEDED OR SODDED AREAS MUST BE PROTECTED FROM VEHICLE TRAFFIC, EXCESSIVE PEDESTRIAN TRAFFIC, AND CONCENTRATED RUNOFF UNTIL THE VEGETATION IS WELL-ESTABLISHED WITH 90% COVER BY HEALTHY VEGETATION. IF NECESSARY, AREAS MUST BE REWORKED AND RESTABILIZED IF GERMINATION IS SPARSE, PLANT COVERAGE IS SPOTTY, OR TOPSOIL EROSION IS EVIDENT. ONE OR MORE OF THE FOLLOWING MAY APPLY TO A PARTICULAR SITE.

SEEDED AREAS: TO PREPARE THE SEEDBED, APPLY 10-20-20 FERTILIZER AT A RATE OF 800 POUNDS PER ACRE AND GROUND LIMESTONE AT A RATE OF 3 TONS PER ACRE. WORK THE FERTILIZER AND LIMESTONE INTO THE TOPSOIL TO A DEPTH OF 4 INCHES AND REMOVE ANY STONES, ROOTS OR OTHER VISIBLE DEBRIS. SELECT A SEED MIXTURE THAT IS APPROPRIATE FOR THE SOIL TYPE AND MOISTURE CONTENT AS FOUND AT THE SITE, AND FOR THE AMOUNT OF SUN EXPOSURE AND FOR LEVEL OF USE. REFER TO THE USDA SOIL CONSERVATION SERVICE OR THE LOCAL SOIL AND WATER CONSERVATION DISTRICT FOR APPROPRIATE SEED MIXTURES. APPLY SEED UNIFORMLY IN ACCORDANCE WITH SUPPLIER RECOMMENDATIONS AND IMMEDIATELY COVER WITH MULCH AS DESCRIBED IN THE TEMPORARY MULCHING SECTION OF THIS PLAN.

HYDROSEEDING SHALL BE DONE IN ACCORDANCE WITH SUPPLIERS RECOMMENDATIONS. FOR SEEDED AREAS TO BE PERMANENTLY STABILIZED, 90% OF THE DISTURBED SOIL SHALL BE COVERED WITH MATURE HEALTHY PLANTS WITH NO EVIDENCE OF WASHING OR RILLING OF THE TOPSOIL.

SOD STRIPS SHALL BE LAID AT RIGHT ANGLES TO DIRECTION OF SLOPE OR FLOW OF WATER STARTING AT LOWEST ELEVATION. JOINTS SHALL BE STAGGERED, AND ALL STRIPS SHALL BE ROLLED OR TAMPED INTO PLACE. ON SLOPES, SOD SHALL BE ANCHORED WITH STAPLES, WIRE OR PINS. IRRIGATE SODDED AREA IMMEDIATELY AFTER INSTALLATION. FOR SODDED AREAS TO BE PERMANENTLY STABILIZED, THE ROOTS OF THE SOD MUST BE COMPLETELY BOUND INTO THE UNDERLYING SOIL WITH NO SLUMPING OF THE SOD OR DIE-OFF.

PERMANENT MULCH IS A LONG TERM COVER THAT PROVIDES A GOOD BUFFER AROUND DISTURBED AREAS. THE EROSION CONTROL MIX SHALL CONSIST PRIMARILY OF ORGANIC MATERIAL AND MAY INCLUDE SHREDDED BARK, STUMP GRINDINGS OR COMPOSTED BARK. WOOD CHIPS, GROUND CONSTRUCTION DEBRIS, REPROCESSED WOOD PRODUCTS OR BARK CHIPS ARE NOT ACCEPTABLE. THE EROSION CONTROL MIX SHALL CONTAIN A WELL-GRADED MIXTURE OF PARTICLE SIZES AND MAY CONTAIN ROCKS LESS THAN 4 INCHES IN DIAMETER. EROSION CONTROL MIX MUST BE FREE OF REFUSE, PHYSICAL CONTAMINANTS AND MATERIAL TOXIC TO PLANT GROWTH.

RIPRAP STONE SHALL CONSIST OF SUB-ANGULAR FIELD STONE OR ROUGH UNEVEN QUARRY STONE OF APPROXIMATELY RECTANGULAR SHAPE. THE DEPTH OF STONE SHALL BE A MINIMUM OF 2.2 TIMES THE MAXIMUM STONE DIAMETER. A GRAVEL OR GEOTEXTILE FILTER BLANKET SHALL BE PLACED BETWEEN THE RIPRAP AND UNDERLYING SOIL SURFACE. GRAVEL FILTER BLANKETS SHALL MEET MDOT TYPE-C UNDERDRAIN MATERIAL SPECIFICATIONS AND BE AT LEAST 6 INCHES THICK. GEOTEXTILE FILTER BLANKETS SHALL BE SPECIFIED BASED ON SITE CONDITIONS. RIPRAP SLOPES SHALL BE TOED INTO THE BASE OF THE EMBANKMENT BY EXCAVATING A TRENCH AT THE BOTTOM OF THE SLOPE AND INSTALLING A STABLE BASE OF RIPRAP TO GRADE.

DITCHES, CHANNELS AND SWALES ARE CONSIDERED PERMANENTLY STABILIZED WHEN THE CHANNEL HAS 90% COVER OF HEALTHY VEGETATION WITH A WELL GRADED RIPRAP LINING, EROSION CONTROL BLANKET, OR WITH ANOTHER NON-EROSIVE LINING SUCH AS CONCRETE OR ASPHALT PAVEMENT. THERE MUST BE NO EVIDENCE OF SLUMPING OF THE CHANNEL LINING, UNDERCUTTING OF THE BANKS, OR DOWNCUTTING OF THE CHANNEL.

10. STORMWATER CHANNELS

EACH CHANNEL SHOULD BE CONSTRUCTED IN SECTIONS SO THAT THE SECTION'S GRADING, SHAPING, AND INSTALLATION OF THE PERMANENT LINING CAN BE COMPLETED THE SAME DAY. IF A CHANNEL'S FINAL GRADING OR LINING INSTALLATION MUST BE DELAYED, THEN DIVERSION BERMS MUST BE INSTALLED WITH AN EROSION CONTROL COVER. DURING WINTER CONSTRUCTION, A DOUBLE ROW OF SEDIMENT BARRIERS SHALL BE INSTALLED IN THE CHANNEL TO SLOW THE WATER VELOCITY, AND A TEMPORARY LINING INSTALLED ALONG THE CHANNEL TO PREVENT SCOURING.

WINTER EROSION AND SEDIMENTATION CONTROL NOTES:

THE WINTER CONSTRUCTION PERIOD TYPICALLY BEGINS IN EARLY NOVEMBER AND ENDS IN MID APRIL. IF A CONSTRUCTION SITE IS NOT STABILIZED WITH PAVEMENT, A ROAD GRAVEL BASE OR RIPRAP BY NOVEMBER 15 THEN THE SITE NEEDS TO BE PROTECTED WITH OVER-WINTER STABILIZATION. WINTER EXCAVATION AND EARTHWORK SHALL BE COMPLETED SUCH THAT NO MORE THAN 1 ACRE OF THE SITE IS WITHOUT STABILIZATION AT ANY ONE TIME. LIMIT THE EXPOSED AREA TO THOSE AREAS IN WHICH WORK IS TO OCCUR DURING THE FOLLOWING 15 DAYS AND THAT CAN BE MULCHED IN ONE DAY PRIOR TO ANY SNOW EVENT. AN AREA SHALL BE CONSIDERED DENUDED UNTIL THE SUBBASE GRAVEL IS INSTALLED IN THE ROADWAY AREAS OR THE AREAS OF FUTURE LOAM AND SEED HAVE BEEN LOAMED, SEEDED AND MULCHED. A COVER OF EROSION CONTROL MIX IS THE PREFERRED TEMPORARY MULCH DURING WINTER CONDITIONS.

1. NATURAL RESOURCE PROTECTION

ANY AREAS WITHIN 75 FEET FROM ANY REGULATED NATURAL RESOURCES SHALL BE MULCHED BY DECEMBER 1 AND ANCHORED WITH PLASTIC NETTING OR PROTECTED WITH AN EROSION CONTROL COVER. DURING WINTER CONSTRUCTION, A DOUBLE ROW OF SEDIMENT BARRIERS (FOR EXAMPLE, SILT FENCE BACKED WITH HAY BALES OR EROSION CONTROL MIX) WILL BE PLACED BETWEEN ANY REGULATED NATURAL RESOURCE AND THE DISTURBED AREA. PROJECTS CROSSING THE REGULATED NATURAL RESOURCE SHALL BE PROTECTED A MINIMUM DISTANCE OF 100 FEET ON EITHER SIDE FROM THE RESOURCE. EXISTING PROJECTS NOT STABILIZED BY DECEMBER 1 SHALL BE PROTECTED WITH THE SECOND LINE OF SEDIMENT BARRIER TO ENSURE FUNCTIONALITY DURING THE SPRING THAW AND RAINS.

2. SEDIMENT BARRIERS

DURING FROZEN CONDITIONS, SEDIMENT BARRIERS MAY CONSIST OF EROSION CONTROL MIX BERMS OR ANY OTHER RECOGNIZED SEDIMENT BARRIERS AS FROZEN SOIL PREVENTS THE PROPER INSTALLATION OF HAY BALES OR SILT FENCES.

3. MULCHING

ALL AREAS SHALL BE CONSIDERED TO BE DENUDED UNTIL SEEDED AND MULCHED. HAY AND STRAW MULCH SHALL BE APPLIED AT A RATE OF 3 TONS PER ACRE (TWICE THE NORMAL ACCEPTED RATE) AND SHALL BE PROPERLY ANCHORED. EROSION CONTROL MIX MUST BE APPLIED WITH A MINIMUM 4 INCHES THICKNESS. MULCH SHALL NOT BE SPREAD ON TOP OF SNOW. SNOW MUST BE REMOVED DOWN TO A ONE-INCH DEPTH PRIOR TO APPLICATION. AFTER EACH DAY OF FINAL GRADING, THE AREA WILL BE PROPERTY STABILIZED WITH ANCHORED HAY OR STRAW OR EROSION CONTROL MATTING. AN AREA SHALL BE CONSIDERED TO HAVE BEEN STABILIZED WHEN EXPOSED SURFACES HAVE BEEN EITHER MULCHED OR ADEQUATELY ANCHORED SO THAT GROUND SURFACE IS NOT VISIBLE THROUGH THE MULCH. BETWEEN THE DATES OF NOVEMBER 1 AND APRIL 15, ALL MULCH SHALL BE ANCHORED BY EITHER MULCH NETTING, TRACKING OR WOOD CELLULOSE FIBER. THE COVER WILL BE CONSIDERED SUFFICIENT WITH THE GROUND SURFACE IS NOT VISIBLE THROUGH THE MULCH. AFTER NOVEMBER 1ST, MULCH AND ANCHORING OF ALL EXPOSED SOIL SHALL OCCUR AT THE END OF EACH FINAL GRADING WORKDAY.

4. SOIL STOCKPILING

STOCKPILES OF SOIL OR SUBSOIL WILL BE MULCHED FOR OVER WINTER PROTECTION WITH HAY OR STRAW AT TWICE THE NORMAL RATE OR WITH A FOUR-INCH LAYER OF EROSION CONTROL MIX. THIS WILL BE DONE WITHIN 24 HOURS OF STACKING AND RE-ESTABLISHED PRIOR TO ANY RAINFALL (0.5 INCH RAINFALL OR GREATER) OR SNOWFALL. SEDIMENT BARRIERS SHOULD BE INSTALLED DOWNGRADIENT OF SOIL OR SEDIMENT STOCKPILES AND STORMWATER SHOULD BE PREVENTED FROM RUNNING ONTO THE STOCKPILE. ANY SOIL STOCKPILE WILL NOT BE PLACED WITHIN 100 FEET FROM ANY REGULATED NATURAL RESOURCE.

5. SEEDING

BETWEEN THE DATES OF OCTOBER 15 AND APRIL 1, LOAM OR SEED WILL NOT BE REQUIRED. DURING PERIODS OF ABOVE FREEZING TEMPERATURES FINISHED AREAS SHALL BE FINE GRADED AND EITHER PROTECTED MULCH OR TEMPORARILY SEEDED AND MULCHED UNTIL SUCH TIME AS THE FINAL TREATMENT CAN BE APPLIED. IF THE DATE IS AFTER NOVEMBER 1 AND IF THE EXPOSED AREA HAS BEEN LOOMED, FINAL GRADED WITH A UNIFORM SURFACE, THEN THE AREA MAY BE DORMANT SEEDED AT A RATE OF 3 TIMES HIGHER THAN SPECIFIED FOR PERMANENT SEED AND THEN MULCHED. IF DORMANT SEEDING IS USED, ALL DISTURBED AREAS SHALL RECEIVE 4 INCHES OF LOAM AND SEED AT AN APPLICATION RATE OF 5 LBS PER 1,000 S.F. ALL AREAS INSUFFICIENTLY VEGETATED (LESS THAN 90%) IN THE SPRING SHALL BE REVEGETATED.

6. OVER-WINTER STABILIZATION OF DITCHES AND CHANNELS

ALL STONE-LINED DITCHES AND CHANNELS MUST BE CONSTRUCTED BY NOVEMBER 1. ALL GRASS-LINED DITCHES AND CHANNELS MUST BE CONSTRUCTED AND STABILIZED BY SEPTEMBER 1. IF A GRASS-LINED DITCH OR CHANNEL IS STABILIZED BY SEPTEMBER 1, THEN EITHER A SOD LINING SHALL BE INSTALLED PRIOR TO OCTOBER 1 OR THE DITCH MUST BE LINED WITH STONE RIPRAP BACKED BY AN APPROPRIATE GRAVEL BED OR GEOTEXTILE PRIOR TO NOVEMBER 1.

7. OVER-WINTER STABILIZATION OF DISTURBED SLOPES

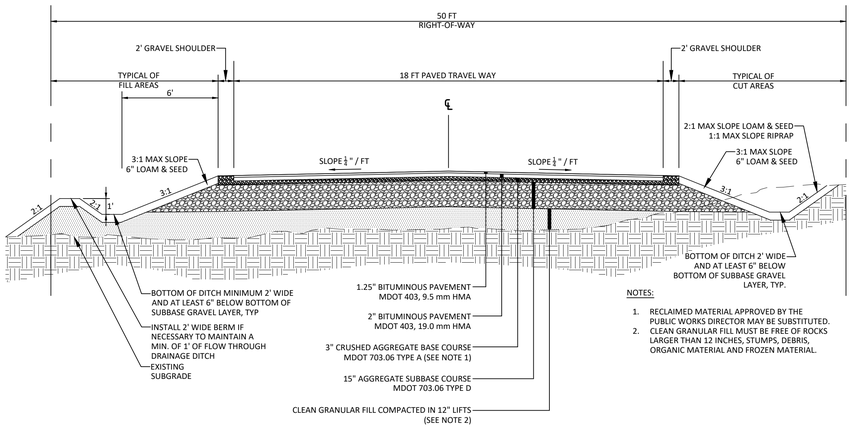
ALL STONE-COVERED SLOPES MUST BE CONSTRUCTED AND STABILIZED BY NOVEMBER 15. ALL SLOPES TO BE VEGETATED MUST BE SEEDED AND MULCHED BY SEPTEMBER 1. ALL AREAS HAVING A GRADE STEEPER THAN 8% SHALL BE CONSIDERED A SLOPE. IF A SLOPE TO BE VEGETATED IS NOT STABILIZED BY SEPTEMBER 1, THEN THE SLOPE SHALL EITHER BE STABILIZED WITH TEMPORARY VEGETATION AND EROSION CONTROL MATS BY OCTOBER 1, SOD BY OCTOBER 1, EROSION CONTROL MIX BY NOVEMBER 1 OR STONE RIPRAP BY NOVEMBER 15. SEE APPLICABLE SECTIONS UNDER EROSION AND SEDIMENTATION CONTROL NOTES FOR PROPER INSTALLATION METHODS.

8. OVER-WINTER STABILIZATION OF DISTURBED SOILS

BY SEPTEMBER 15, ALL DISTURBED SOILS ON AREAS HAVING A SLOPE LESS THAN 15% MUST BE SEEDED AND MULCHED. IF THE DISTURBED AREAS ARE NOT STABILIZED BY THIS DATE, THEN THE AREA SHALL EITHER BE STABILIZED WITH TEMPORARY VEGETATION BY OCTOBER 1, SOD BY OCTOBER 1, OR MULCH BY NOVEMBER 15. SEE APPLICABLE SECTIONS UNDER EROSION AND SEDIMENTATION CONTROL NOTES FOR PROPER INSTALLATION METHODS.

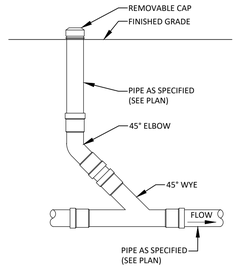
9. MAINTENANCE

MAINTENANCE MEASURES SHALL BE APPLIED AS NEEDED DURING THE ENTIRE CONSTRUCTION SEASON. AFTER EACH RAINFALL, SNOW STORM, PERIOD OF THAWING AND RUNOFF AND AT LAST ONCE A WEEK, THE SITE CONTRACTOR SHALL PERFORM A VISUAL INSPECTION OF ALL INSTALLED EROSION CONTROL MEASURES AND PERFORM REPAIRS AS NEEDED TO INSURE THEIR CONTINUOUS FUNCTION. FOLLOWING THE TEMPORARY AND/OR F

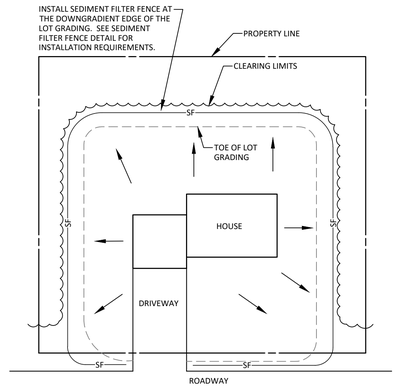


NOTES:
1. RECLAIMED MATERIAL APPROVED BY THE PUBLIC WORKS DIRECTOR MAY BE SUBSTITUTED.
2. CLEAN GRANULAR FILL MUST BE FREE OF ROCKS LARGER THAN 12 INCHES, STUMPS, DEBRIS, ORGANIC MATERIAL AND FROZEN MATERIAL.

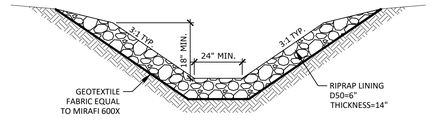
TYPICAL ROADWAY SECTION
MODIFIED MINOR RURAL STREET STANDARD



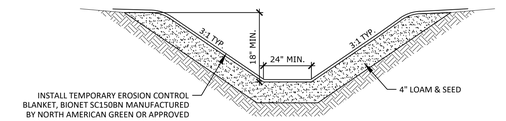
UNDERDRAIN CLEANOUT DETAIL
NOT TO SCALE



TYPICAL HOUSE LOT
EROSION CONTROL DETAIL
NOT TO SCALE

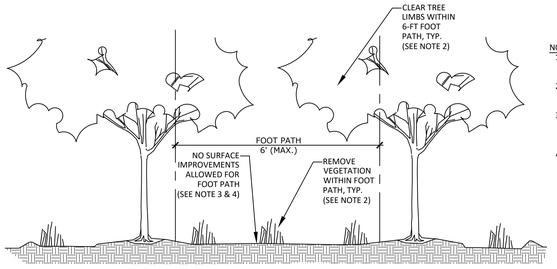


RIPRAP SWALE
NOT TO SCALE



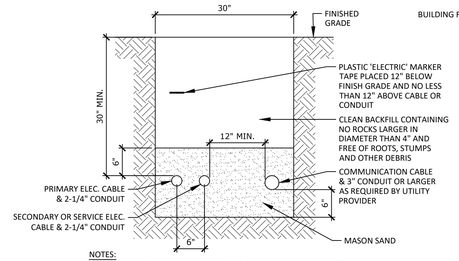
INSTALL TEMPORARY EROSION CONTROL BLANKET, BIONET SC150BN MANUFACTURED BY NORTH AMERICAN GREEN OR APPROVED EQUIVALENT WITHIN LIMITS OF DRAINAGE SWALE. CONTRACTOR TO STAPLE EROSION CONTROL BLANKET PER MANUFACTURER'S SPECIFICATIONS.

DRAINAGE SWALE
NOT TO SCALE



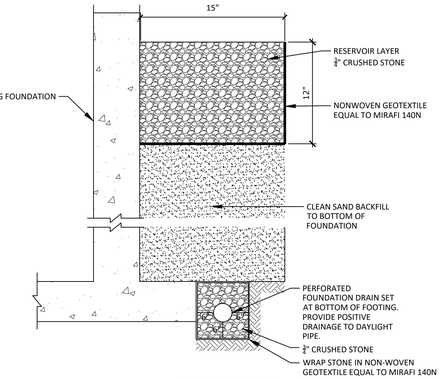
NOTES:
1. PROPOSED FOOT PATH THROUGH THE OPEN SPACE LOT (LOT 4) SHALL BE LOCATED SUCH THAT NO TREE CLEARING IS REQUIRED.
2. CLEARING FOR FOOT PATH IS LIMITED TO REMOVING BRUSH AND VEGETATION, AND IF NECESSARY TRIMMING OF LIMBS ONLY.
3. FOOT PATH SHALL NOT BE INSTALLED WITH ANY SURFACE IMPROVEMENTS OR EARTH DISTURBANCE (NO EXCAVATION OR PLACEMENT OF FILL, AND NO INSTALLATION OF GRAVEL/PAVEMENT).
4. IN THE EVENT NO ALTERNATE FOOT PATH LOCATION IS ACCEPTABLE, 4-FT WIDE (MAX.) STAIRS MAY BE INSTALLED WHERE SLOPES EXCEED 15%.

FOOT PATH DETAIL

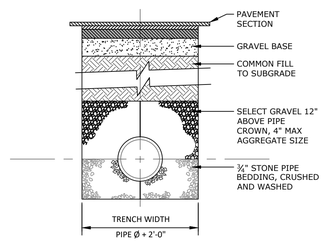


NOTES:
1. CONDUIT SIZE AND MATERIAL AS SPECIFIED BY THE UTILITY PROVIDER.
2. INSTALLATION SHOULD NOT ALLOW THE INTER-TWINING OF CABLES.
3. BEDDING AND BACKFILL SHALL BE FREE OF ROOTS, STUMPS AND OTHER DEBRIS.
4. COMMUNICATION CABLE AND POWER CABLE SHALL HAVE NO LESS THAN 12 INCHES OF RADIAL SEPARATION.

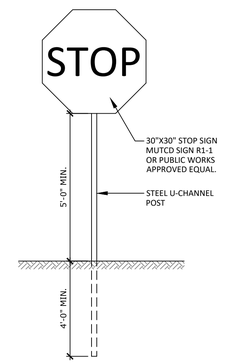
UTILITY TRENCH DETAIL
NOT TO SCALE



ROOF DRIP EDGE
NOT TO SCALE



TYPICAL TRENCH SECTION
NOT TO SCALE



STOP SIGN INSTALLATION
NOT TO SCALE

DM ROMA
CONSULTING ENGINEERS
P.O. BOX 1116
WINDHAM, ME 04062
(207) 591-5055

REV	DATE	BY	DESCRIPTION
A	9-15-23	JPC	ISSUED FOR REVIEW
B	11-13-23	JPC	REVISED PER TOWN REVIEW
C	11-22-23	JPC	REVISED PER REVIEW COMMENTS
D	12-4-23	JPC	REVISED PER REVIEW COMMENTS

DETAILS

AERIE ESTATES SUBDIVISION
AERIE DRIVE - OFF EAGLES NEST ROAD
GRAY, MAINE

FOR:
SEBAGO REALTY, LLC
PO BOX 1116
WINDHAM, ME 04062

23050	JOB NUMBER:
AS NOTED	SCALE:
12-4-2023	DATE:
SHEET 8 OF 8	
D-2	

DM ROMA
CONSULTING ENGINEERS

November 15, 2023

Kristen Muszynski, Community Planner
Town of Gray
24 Main Street
Gray, ME 04039

Re: Amended Subdivision review application
Aerie Estates ~ Eagles Ridge Second Amended Subdivision
Sebago Realty, LLC - Applicant

Dear Kristen:

Based on Town staff recommendation and discussions with you we acknowledge that the project will be reviewed from the Town's perspective as an amended subdivision. We will provide amended submittal materials promptly for consideration, but would like this letter to serve as notice that we understand how the Town intends to process this application and do not object.

Sincerely,

DM ROMA CONSULTING ENGINEERS

[redacted]

J.P. Connolly,
Senior project engineer

DM ROMA
CONSULTING ENGINEERS

November 13, 2023

Kristen Muszynski, Community Planner
Town of Gray
24 Main Street
Gray, ME 04039

Re: Response to Review Comments
Aerie Estates Subdivision
Sebago Realty, LLC - Applicant

Dear Kristen:

Enclosed please find the following information associated with the proposed Aerie Estates Subdivision:

- Sebago Realty, LLC closed on the purchase of the land on October 19, 2023. Attached is a copy of the deed recorded in CCRD Book 40431 page 320.
- Approval letter from Maine Historic Preservation Commission indicating that no historic properties will be affected by the project.
- Revised Stormwater Management Report that includes calculations to address Peer Review Comments.
- Revised civil plan set for the design of the Subdivision and associated infrastructure.

Our previous application proposed a 30,000-gallon fire cistern at the project entrance. When we met with the Fire Chief, we were provided with the option to either install a cistern or require that all new homes in the subdivision be built with sprinkler systems. Based on the revised design that includes multiple stormwater ponds, we have removed the cistern from the plans and are instead proposing to install sprinkler systems in each of the new homes. Note 15 on the Subdivision Plan has been revised to indicate sprinkler systems are required for all new homes.

We appreciated the opportunity to meet with the Open Space Committee on November 8th to discuss the project with them, and have incorporated their comments into the attached revised plans. Specifically, we have added an easement over Lot 14 to provide a potential future trail connection between the parcels that abut to the west and east, and we have also expanded the open space area between Lot 7 and Lot 14 to provide a location where a trail could extend from the end of Aerie Drive to the abutting open space lot to the west.

We had submitted a Preliminary Subdivision Plan application dated 9-15-2023 with our Sketch Plan application, which included all the required exhibits for Preliminary Plan review, including payment of the required application and review fees. This document is intended to supplement the previous application so that we can have the opportunity to proceed with Preliminary Subdivision Plan review. We have received review comments from consulting engineer Gorrill-Palmer in an email dated September 27, 2023, and offer the following response. The comments contained in the review memo are presented in italics, with our response following.

Comment 1: The potential vernal pools have been treated as significant vernal pools in the design of the subdivision. An NRPA Permit by rule application will be submitted. Provide a copy of the application to the Town.

Response: Copies of the NRPA Permit applications and/or approvals will be provided to the Town with the Final Plan Application.

Comment 2: An MDEP Stormwater Permit by Rule application will be submitted. Provide a copy of the application to the Town.

Response: A copy of the Stormwater Permit-By-Rule application and/or approval will be provided to the Town with the Final Plan Application.

Comment 3: The shapes of Lot 1 and Lot 8 do not appear to comply with Section 401.13.I.B.4 of the subdivision ordinance. Section 401.13.13.B.6 states that the Planning Board shall have the authority to adjust lot configurations consistent with the Open Space Standards. The Planning Board may want to review these lot configurations.

Response: We have prepared conceptual Site Plans with buildings, driveways and lot grading for Lots 1, 2, 3, 8, 9 and 10 to demonstrate how the lots contain suitable building area for development. The information can be found on Plan Sheet 4 (Roadway Plan).

Comment 4: Provide the sight distance at the intersection of the subdivision roadway and Eagles Nest Road.

Response: Vehicle sight distance information has been added to Plan Sheet 4 (Roadway Plan).

Comment 5: Ensure that lot driveways between approximate stations 3+00 to 6+00 have adequate sight distance.

Response: We estimate that vehicle sight distance will be in excess of 300 feet for Lots 1, 2, 3, 8 and 9 based on the geometry of the vertical crest and the proposed driveway locations shown on Sheet 4 (Roadway Plan). Lot 10 will have adequate sight distance provided the driveway is located between STA 5+00 and 5+25. Lot 4 is estimated to have over 300 feet of sight distance provided the driveway is located at either of it's side lot lines (STA 5+75 or STA 6+40).

Comment 6: A swale is created between the proposed contours and existing contours from station 2+50 to 4+00 left. Check the ditch for stability due to stormwater runoff.

Response: The lot grading for Lot 8 that is now shown on Sheet 4 better defines the ditch location that will be created in the front yard of Lot 8. We have added a riprap apron at the inlet of the culvert that will drain this area towards the Underdrained Filter Basin FB-1.

Comment 7: Per Section 401.13.17.C provide driveway designs for lots 1,2,3,8,9 and 10.

Response: We have added proposed site grading to Lots 1, 2,3, 8, 9 and 10 on Sheet 4. The driveways have been graded to comply with the Town's slope standards.

Comment 8: Provide driveway culvert sizing.

Response: Culvert sizing and material specifications have been added To the Construction Notes on Plan Sheet 4.

Comment 9: The tree line at the proposed level lip spreader should be revised to depict the area needed for grading to the existing 360.5 elevation.

Response: The level lip spreaders have been replaced with Underdrained Soil Filter Basins.

Comment 10: The contours are based on Lidar. Add a note to the level lip spreader that the location and elevation of the level lip spreader shall be field verified by the Engineer prior to construction to ensure that stormwater runoff does not concentrate below the level lip.

Response: The level lip spreaders have been replaced with Underdrained Soil Filer Basins.

Comment 11: In accordance with Section 401.13.12.A, list the maximum disturbed, developed, and impervious area for each lot.

Response: A table listing the "Lot Development Allowance" of each lot has been added to the Subdivision Plan.

Comment 12: Add the language required by Section 401.13.13.D.4 to the Subdivision Plan

Response: This note was added as Note 23 on the Subdivision Plan.

Comment 13: Add the language required by Section 401.13.13.D.7 to the Subdivision Plan

Response: Note 24 was added to the Subdivision Plan containing this language.

Comment 14: Provide easements for the swale, culvert, and level lip spreader on Lot 14.

Response: Easement areas have been added to the Subdivision Plan for the two underdrained filter basins that are proposed to be located on Lot 14.

Comment 15: Show the 75' forest scenic buffer along Eagles Nest Road on the plans.

Response: Notes and dimensions have been added to the Subdivision Plan to note the 75-ft forsted scenic buffer

Comment 16: Lot 14 is designated as not part of the open space subdivision, therefore the frontage requirements of a conventional lot in the RRA zone apply. The required frontage is 200 feet. In accordance with 402.7.5.B, frontage equal to the street frontage required for the zoning district shall be required along the access way. The access way has less than 200 feet of frontage.

Response: An access way with a 200-ft right-of-way extension has been added to the plans.

Comment 17: Section 401.13.12 requires that Major Subdivisions provide treatment measures for water quantity and quality for development of the lots as well as the infrastructure to support the project. The

project must show compliance with MDEP Basic, General, and Flooding Standards for the entire development including the assumed lot disturbed, developed and impervious area.

a. *Basic Standards – add a note to install an erosion control blanket on all slopes greater than 15% and up to a 2:1 slope.*
b. *General Standards – provide stormwater quality treatment for the project*
c. *Flooding Standards – the proposed 2% and 4% increase in peak flow appears excessive since additional runoff will be generated by the lot development. Limit the post development peak flow to pre development levels.*

Response: A note was added to the Construction Notes on Sheet 4 to require Erosion Control Blanket on slopes that exceed 15%. We have revised the plans to include three Underdrained Filter Basins to provide water quality treatment and flood control in accordance with the Maine DEP General Standards and Flooding Standards.

Upon your review of this information, please let us know if you have any questions or require any additional information.

Sincerely,

DM ROMA CONSULTING ENGINEERS

Dustin M. Roma, PE
President

MAINE HISTORIC PRESERVATION COMMISSION
55 CAPITOL STREET
65 STATE HOUSE STATION
AUGUSTA, MAINE
04333

JANET T. MILLS
GOVERNOR

KIRK F. MOHNEY
DIRECTOR

October 16, 2023

Mr. Dustin M. Roma
DM Roma
PO Box 1116
Windham, ME 04062

Project: MHPC# 1504-23 Sebago Realty LLC; Off Eagles Nest Road
Proposed Residential Development

Town: Gray, ME

Dear Mr. Roma:

In response to your recent request, I have reviewed the information received October 3, 2023 to initiate consultation on the above referenced project in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA).

Based on the information submitted, I have concluded that there will be no historic properties (architectural or archaeological) affected by this proposed undertaking, as defined by Section 106.

Please contact Megan Rideout at (207) 287-2992 or megan.m.rideout@maine.gov if we can be of further assistance in this matter.

Sincerely,

[redacted]

Kirk F. Mohney
State Historic Preservation Officer

PHONE: (207) 287-2132 FAX: (207) 287-2335

MAINE REAL ESTATE TAX-Paid

WARRANTY DEED
Statutory Short Form

DLN: 1002340253149

KNOW ALL BY THESE PRESENTS, That, **Blackwater Development, LLC, a Maine Limited Liability Company** with a mailing address of **19 Mitchellwood Drive, Falmouth, ME 04105**, for consideration paid, grants to **Sebago Realty, LLC**, a Maine Limited Liability Company, whose mailing address is **P.O. Box 1116, Windham, ME 04062**, Warranty Covenants, the real property in the Town of **Gray**, County of **Cumberland** and State of **Maine**, more particularly described as follows:

A certain lot or parcel of land with the buildings thereon situated in the Town of Gray, County of Cumberland and State of Maine, known as the Julia E. Burrows farm and homestead, meaning hereby to convey all real estate in said Gray of which said Julia E. Burrows died seized and possessed, and more particularly described in the following named lots:

First, a certain lot commencing at the most northerly corner of the Orchard Lot, so-called, thence running southwesterly on line now or formerly of William Emery, 80 rods, more or less, to Lot #30 in the third division of lots in said Gray, thence southeasterly 60 rods to land now or formerly of Edson Buker; thence northeasterly by said Buker land to land conveyed to William H. Webster on March 10th, A.D. 1874; thence north westerly by said land to the first mentioned bound, containing 30 acres, more or less.

Second, another parcel of land in said Gray, being a part of Lot #30 as aforesaid and bounded as follows:- Beginning at the most northerly corner of said Lot; thence southwest about 70 rods to land now or formerly of Lewis Libby's heirs; thence southeast 112 rods, thence northeast about 70 rods thence northwest 112 rods to the bounds first mentioned, containing 46 acres, more or less.

Third, another parcel of land in said Gray, being a part of said Lot #30, bounded as follows: Beginning at the most northerly corner of said land; thence southwest 54 rods to land now or formerly of James Small, Jr.; thence southeast 6 rods; thence northeast 54 rods; thence northwest 6 rods to the bound first mentioned, containing 2 acres, more or less.

Also another certain lot or parcel of land with the buildings, thereon situated in the Town of Gray, County of Cumberland and State of Maine, and more particularly bounded and described as follows:

Being a small strip of land situated on the west side of the road leading from the County Road to the Burrows house, so-called, bounded on the east by land now or formerly of Frank T. Grover, on the southwest by land formerly of Edwards Burrowes, and containing one half acre, more or less, and being the same premises conveyed to me by Vera B. Favor by deed dated September 15, 1941, and recorded in the Cumberland County Registry of Deeds in Book 1650, Page 402.

Also another certain lot or parcel of land situated in the Town of Gray, County of Cumberland and State of Maine being on the Southwesterly side of the road leading from the Federal Road to the home now or formerly owned by Stanley Favor, formerly the Burroughs homestead, and bounded and described as follows:

Beginning on the Southwesterly side of the road leading to the Stanley Favor place at the most Northerly corner of land formerly owned by Jolm Hunt; thence Southwesterly on the line of the stone wall on said road 53 rods; thence Northwesterly 7 rods to a stone wall on the land formerly owned by Edward Burroughs; thence on said course 7 rods to stone wall on said Burroughs land; thence North 50° East 52 rods to the road first mentioned; thence Southeasterly to the first mentioned bound; said lot containing 5 acres, more or less, being part of the same premises conveyed to the Cumberland Savings and Loan Association by Herman D. Morey and Addie I. Morey by a Mortgage Deed dated December 29, 1948 and recorded in the Cumberland County Registry of Deeds in Book 1941, Page 164 to which reference is made for a further description.

Also another certain piece or parcel of land situated in the Town of Gray, County of Cumberland and State of Maine lying on the Westerly side of the road leading from Gray corner to Portland and bounded as follows viz:

Beginning on the Westerly side of said road at a willow tree nearly opposite Edson Burker's house, thence running Northwesterly by a stone wall by land owned by Winfield S. Leighton, thence Southerly by a stone wall, and said Leighton's line by land owned by Stephen Small's heirs, thence Southeasterly by a stone wall and said Small's heirs line to the bound road; thence Northerly on the line of said road, to the willow tree and first bounds - Also one other piece of land situated in said Gray bounded as follows, viz: Beginning at the most Southerly corner of land owned by Winfield S. Leighton thence running Southwesterly by a stone wall that separates land owned by Stephen Small's heirs from that I hereby convey until it strikes Edson Buker's land, thence Northeasterly by a stone wall that separates said Buker's land from that I hereby convey until it strikes the road leading to Nicholas Leighton's house thence Southeast by a stone wall to Winfield S. Leighton's land thence Southerly by a stone wall to land owned by Stephen Small containing 20 acres, more or less. Intending to convey all the cleared land I own on the Westerly side of said road.

Excepting and Reserving a certain lot or parcel of land situated in the Town of Gray, County of Cumberland and State of Maine, bounded and described as follows to wit:

Parcel No. 24-A: Beginning at a point on the property line between the land of Henry V. Blais and Cora M. Blais and the land of Gabrielle Rodrique said point being located 150 feet distant easterly from the survey base line of the Maine Turnpike, so called, a measured at right angles at Station 3043+66.5, as shown on a Property Plan entitled "Maine Turnpike Authority Maine Turnpike Section 2 - Portland to Augusta" dated January 4, 1954 on file in the office of the Maine Turnpike Authority and to be filed in the Cumberland County Registry of Deeds, the parcel of land herein described being shown on Gray sheet No. 2 of said Plan;

thence, S 36° -00' W by the line of land of said Henry V. Blais and Cora M. Blais a distance of about 42.3 feet to a point on the line of land of Charles V. Henry and Helen J. Henry said point being located 129.4 feet distant easterly from the said survey base line, measured at right angles at Station 3043+29.5;

thence, S 55° -08' W by the line of land of said Charles V. Henry and Helen J. Henry a distance of about 374.4 feet to a point, said point being located 150 feet distant westerly from the said survey base line, measured at right angles at Station 3040+80.3;

thence, N 6° -52' E parallel to the said survey base line and 150 feet distant westerly therefrom a distance of about 28.1 feet to a point on the line of land of Donald F. Stevens, said point being

located 150 feet distance westerly from the said survey base line, measured at right angles at Station 3041+80.4;

thence, N 55° -08' E by the line of land of said Donald F. Stevens a distance of about 359.7 feet to an angle point said angle point being located 118.4 feet distant easterly from the said survey base line, measured at right angles at Station 3043+41.8, thence, N 36° -00' E continuing by the line of land of said Donald F. Stevens a distance of about 62.4 feet to a point, said point being located 150 feet distant westerly from the said survey base line, measured at right angles at Station 3044+00.4;

thence, S 6° -52' W parallel to the said survey base line and 150 feet distant easterly therefrom a distance of about 33.9 feet to the point of beginning, containing approximately 0.13 acres;

The bearings in the foregoing description are referred to the true meridian.

Tract B. 26 High Point Road

A certain lot or parcel of land southwesterly of, but not adjacent to, the southeasterly terminus of Libby Lane in the Town of Gray, County of Cumberland and State of Maine, bounded and described as follows:

Beginning at a 6"x6" stone monument at the northwesterly corner of land now or formerly of Hunter Properties Group LLC as described in a deed recorded in the Cumberland County of Deeds in Book 22631, Page 61. Thence;

1) S 35° 51' 24" W by said Land of Hunter Properties Group LLC and land now or formerly of Joyce Lewis Friedman as described in a deed recorded in said Registry in Book 4381, Page 101 a distance of One Thousand Four Hundred Fifty and 06/100 (1450.06) feet to a 4"x10" stone monument and land now or formerly of the Pamela Moore Seggerman Revocable Living Trust as described in a deed recorded to said Registry in Book 23351, Page 240.
2) N 52° 56' 22" W by said land of the Pamela Moore Seggerman Revocable Living Trust a distance of Five Hundred Ninety-Seven and 33/100 (597.33) feet to a 6"x10" stone monument.
3) N 34° 54' 48" E by land of the Pamela Moore Seggerman Revocable Living Trust a distance of One Thousand Three Hundred Fifty-Seven and 24/100 (1357.24) feet to a point.
4) S 53° 00' 59" E a distance of Three Hundred Thirty One and 35/100 (331.35) feet to a point.
5) N 73° 10' 06" E a distance of One Hundred Fourteen and 76/100 (114.76) feet to a point.
6) S 53° 00' 59" E a distance of Two Hundred Eighteen and 74/100 (218.74) feet to the point of beginning.

Bearings are referenced to grid north Maine State Plane Coordinate System, West Zone.

The above described parcel contains 19.49 acres, and being a portion of land now or formerly of David A. Libby and Irene A. Libby as described in a deed recorded in the Cumberland County Registry of Deeds in Book 12637, Page 230.

Reference is herein made to a plan entitled "Standard Boundary Survey" made for a Blackwater Development, LLC by Titcomb Associates dated May 1, 2006 and revised through July 12, 2007.

Parcel B

A certain lot or parcel of land southeasterly of, but not adjacent to ,the southeasterly terminus of Libby lane in the Town of Gray, County of Cumberland, State of Maine, bounded and described as follows:

Beginning at a 5/8" capped iron rod (PLS #1057) at the southerly corner of land now or formerly of Shirley M. Harriman as described in a deed recorded in the Cumberland County Registry of Deeds in Book 7363, Page 201 and land now of formerly of Hunter Properties Group, LLC as described in a deed recorded in said Registry in Book 22631, Page 61. Thence:

1) S 33° 59' 45" W by said land of Hunter Properties Group, LLC a distance of four hundred thirty-six and 20/100 (436.20) feet to a 5/8" capped iron rod (PLS#1057)
2) N 53° 19' 35" W by said land of Hunter Properties Group, LLC a distance of Six Hundred Thirty and 01/100 (630.01) feet to a point
3) S 85° 34' 53" E a distance of One Hundred Eighty and 80/100 (180.80) feet to a point.
4) N 57° 42' 36" E a distance of One hundred Seventy-four and 21/100 (174.21) feet to a point.
5) N 57° 17' 04" E a distance of One hundred Thirty-Three and 31/100 (133.31) feet to a point.
6) N 48° 01' 56" E a distance of Two hundred Forty-Nine and 45/100 (249.45) feet to a point and said land of Harriman.
7) S 20° 26' 59" E by said land of Harriman a distance of Three Hundred Fifty-Five and 00/100 (355.00) to the point of beginning.

Bearings are referenced to grid north Maine State Plane Coordinate System, West Zone,

The above described parcel contains 5.09 acres as described in a deed recorded in the Cumberland County Registry of Deeds in Book 12637, Page 220.

Reference is herein made to a plan entitled "Standard Boundary Survey" made for Blackwater Development, LLC by Titcomb Associates dated May 1, 2006 and revised through July 12, 2007.

The above described parcel is subject to a right of way Sixty and 00/100 (60.00) feet to width lying southeasterly of, but not adjacent to, the southeasterly terminus of Libby Lane in the Town of Gray, County of Cumberland and State of Maine, bounded and described as follows:

Beginning at a 5/8" Capped iron rod (PLS #1057) at the southerly corner of land now or formerly of Shirley M. Harriman as described in a deed recorded in the Cumberland County Registry of Deeds in Book 7363, page 201 and land now or formerly of Hunter Properties Group, LLC as described in a deed recorded in said Registry in Book 22631, Page 61. Thence:

1) S 33° 59' 45" W by said land of Hunter Properties Group, LLC a distance of Seventy-Three and 75/100 (73.75) feet to a point.
2) N 20° 26' 59" W a distance of Three Hundred Seventy-four and 23/100 (374.23) feet to a point.
3) N 48° 01' 56" E a distance of Sixty-Four and 50/100 (64.50) feet to a point and said land Harriman.
4) S 20° 26' 59" E by said land of Harriman a distance of Three Hundred Fifty-Five and 00/100 (355.00) to the point of beginning.

Bearings are referenced to grid north Maine State Plan Coordinate System, West Zone.

The above described parcel contained 21,877 square feet, and lying over a portion of land now or formerly of David A. Libby and Irene A. Libby as described in a deed recorded in the Cumberland County Registry of Deeds in Book 12637, Page 220.

DOC :38203 BK:40431 PG:324
RECEIVED - RECORDED, CUMBERLAND COUNTY REGISTER OF DEEDS
10/20/2023, 11:23:04A
Register of Deeds Jessica M. Spaulding E-RECORDED

Reference is herein made to a plan entitled "Standard Boundary Survey" made for Blackwater Development, LLC by Titcomb Associates dated May 1, 2006 and revised through July 12, 2007.

Also shown and described as the "Remaining Land, Area = 41.28 acres" on an Amended Plan of Eagle Ridge Subdivision, Eagles Nest Road, Gray, Maine, made for Normand Berube Builders, Inc., dated December 20, 2018 and recorded in Plan Book 219, Pages 22 and 23.

Excepting the land in the Town of Gray, County of Cumberland and State of Maine, described as follows:

Lots 1-14 as set forth on Plan of Eagles Ridge Subdivision made for Blackwater Development, LLC by Titcomb Associates dated May 8, 2014 and recorded in the Cumberland County Registry of Deeds in Plan Book 214, Pages 432 and 433, together with the open space depicted on said Plan as "Open Space Parcel A," a 49.72 acre parcel.

The above-described premises are conveyed together with an appurtenant easement over Eagles Nest Road for purposes of ingress and egress and the location of utilities and all customary uses of a road.

Meaning and intending to convey and conveying a portion of the real property described in a deed to **Blackwater Development, LLC, by virtue of a deed dated August 17, 2007 and recorded in the Cumberland County Registry of Deeds at Book 25394, Page 303 and Book 25394, Page 307.**

Witness my hand and seal this October 19, 2023.

Witnes[redacted]

Blackwater Development, LLC

By: [redacted]
John Jordan, Member

STATE OF **MAINE**
COUNTY OF **CUMBERLAND**, ss. October 19, 2023

Personally appeared on the above date, the above-named **John Jordan, Member** of said **Blackwater Development, LLC,** and acknowledged the foregoing to be his free act and deed in his said capacity and the free act and deed of said **Blackwater Development, LLC.**

Befor[redacted]

Notar[redacted]
Print name:
Exp: _____

Kerry E. Kimball
State of Maine
Attorney At Law
Bar #8577

Kerry E. Kimball
State of Maine
Attorney At Law
Bar #8577

DM ROMA
CONSULTING ENGINEERS

STORMWATER MANAGEMENT REPORT

AERIE ESTATES SUBDIVISION
EAGLE'S NEST ROAD
GRAY, MAINE

A. Narrative

Sebago Realty, LLC, the applicant, is proposing to develop a 41.3±-acre parcel off of Eagles Nest Road in Gray, Maine. The project site is identified as Lot 35-24 on Town of Gray Assessors Map 63, and the owner of record is Blackwater Development, LLC as indicated on a deed recorded in the Cumberland County Registry of Deeds Book 25394 page 303 on Augst 17, 2007. The 41± acre project site is currently undeveloped and consists of natural woodland. The site primarily drains southeasterly through a series of natural drainage channels that are tributary to the Piscataqua River which then flows to the Presumpscot River.

The applicant is proposing a total of 14 lots to be subdivided. The project consists of a 13-lot residential open space subdivision with Lot 14 being created as a 12-acre back lot. The development will include the construction of a new roadway approximately 1,034 ft in length that will be built to the Rural Public Easement Street standard. All lots in the subdivision will require private wells and private on-site subsurface wastewater disposal fields. All electrical and data utilities will be installed underground.

B. Alterations to Land Cover

Sebago Realty LLC will be building the roadway improvements and selling vacant lots to home builders. The proposed project will include approximately 1.8 acres of total land disturbance to build the roadway, stormwater management features and to grade the roadway side slopes. The project will create approximately 20,129± square feet of paved subdivision road, approximately 4,905± square feet of gravel shoulders for the roadway construction. While the project applicant does not intend to construct the houses as part of the project, for the purposes of this report the lots have been designed with typical residential structures and driveways; the project lot development will create approximately 29,203± square feet driveway, for a sum of 49,332± square feet of impervious area of driveway, road way and gravel shoulders. Lot development design also includes 24,024± square feet of proposed building roof area, as well as a total landscape area of 259,379± square feet.

The Town of Gray's Subdivision Ordinance indicates that the project's stormwater design will be required to meet the Basic, General and Flooding Standards of the Chapter 500 Stormwater Management rules.

The site varies in slope from moderately sloped (5-12%) with steeper slopes around the northerly perimeter of the site and adjacent to a natural drainage channel in the northeasterly portion of the site. Soils on the property were determined utilizing the Class-A High Intensity Soil Survey performed by Mark Hampton Associates. The soils boundaries and hydrologic soils group (HSG) designations are indicated on the Watershed Maps within the design plan set and the Preliminary Subdivision application package includes the Class-A High Intensity Soil Survey (also included in Attachment 1), as well as test pit data performed by Mainly Soils, LLC.

C. Methodology and Modeling Assumptions

The proposed stormwater management system has been designed utilizing Best Management Practices to maintain existing drainage patterns. The goal of the storm drainage system design is to provide attenuation of the peak rates of runoff leaving the site. The method utilized to predict the surface water runoff rates in this analysis is a computer program entitled HydroCAD, which is based on the same methods that were originally developed by the U.S. Department of Agriculture (USDA), Natural Resources Conservation Service, and utilized in the TR-20 modeling program. Peak rates of runoff are forecasted based upon land use, hydrologic soil conditions, vegetative cover, contributing watershed area, time of concentration, rainfall data, storage volumes of detention basins and the hydraulic capacity of structures. The computer model predicts the amount of runoff as a function of time, with the ability to include the attenuation effect due to dams, lakes, large wetlands, floodplains and constructed stormwater management facilities, including basins and level spreaders. The input data for rainfalls with statistical recurrence frequencies of 2-, 10-, 25- and 50-years was obtained from the Northeast Regional Climate Center's extreme precipitation tables for the project site.

D. Basic Standards

The project is required by the MDEP and the Town to provide permanent and temporary Erosion Control Best Management Practices. These methods are incorporated into the project design and outlined in detail in the plan set.

E. General Standard

The project design results in a proposed creation of more than 1 acres of impervious area (0.55± acres total project impervious area) and less than 5 acres of developed area (1.58± acres of land disturbance associated with roadside ditches, stormwater ponds and grading for a total developed area of 2.13± acres) within a non-lake watershed; therefore the proposed project is required by the MDEP and the Town of Gray to meet the General Standards outlined in the MDEP Chapter 500 to provide water quality treatment. Since the project intends to develop less than 60% of the total parcel area, the project is required to provide treatment for no less than 90% of the new impervious surface and 75% of the total developed area associated with the project. This standard will be met by incorporating three grassed underdrained soil filter basins (FB-1, FB-2 and F-3) to address the proposed project's storm water management design as well as drip edges along all fourteen (14) of the residential buildings shown for the purposes of the project. The stormwater treatment calculations indicate that the project's storm water design is estimated to provide water quality treatment for more than 91% of the new impervious surface and more than 75% of the new developed area. Calculations illustrating compliance with the treatment standards can be found in the project plans on sheet WS-2, Watershed Map: Developed Conditions and are included as Attachment 2 in this report. Calculations confirming the proposed BMPs, namely FB-1, FB-2, and FB-3 have been adequately sized and designed are also included in Attachment 2.

F. Flooding Standard

The Town of Gray requires the project to detain, retain or result in the infiltration of stormwater from the 24-hour storms of the 2-year, 10-year and 25-year frequencies such that the peak flows of stormwater from the project site do not exceed the peak flows of stormwater prior to undertaking the project. Additionally, the Town requires that all proposed culverts be sized to adequately convey the design flows generated by a 50-year 24-hour storm event.

The project's stormwater design incorporates three (3) filter basins to generally to maintain these peak stormwater flows to pre-developed project conditions. The proposed project design has been modeled to evaluate and analyze the stormwater runoff characteristics of the site prior to construction of the project and upon completion of all proposed construction activities.

Study Point 1 (SP-1) is located at the southeasterly corner of the project property. This study point represents a location where stormwater generated from areas both off-site and on-site drain through the site via a wetland complex before being discharged from the property at a location where series of natural drainage channels converge. Stormwater discharged at this location continues to be conveyed through the interconnected wetland complex that is onsite and is then conveyed to the south into an unnamed tributary of the Piscataqua River and ultimately into the Presumpscot River. Sub-basin watershed area for SP-1 is made up of both existing and proposed onsite development areas and offsite areas, and consists of developed land, and undeveloped woodland.

Study Point 2 (SP-2) is located along the westerly edge of a wetland associated with a natural drainage channel that exists in the northeasterly portion of the site. Stormwater discharged at this location is then conveyed to the south, and into an unnamed tributary of the Piscataqua River then ultimately into the Presumpscot River. Sub-basin watershed area for SP-2 is made up of both existing and proposed onsite development areas and offsite areas, and consists of developed land, and undeveloped woodland.

The following table summarizes the analysis:

Table 1 – Peak Rates of Stormwater Runoff						
Study Point	2-Year (cfs)		10-Year (cfs)		25-Year (cfs)	
	Pre	Post	Pre	Post	Pre	Post
SP1	17.64	13.85	34.80	27.57	48.97	44.52
SP2	10.36	10.35	20.22	20.10	28.34	26.60

As illustrated in the table above, the proposed project's design as modeled indicates the project's design will reduce the post-developed peak discharge at each study point in the 2-, 10- and 25-year storm events.

To ensure that stormwater culverts have been sized to be capable of safely conveying the 50-year storm from the developed condition, a 50-year storm event HydroCAD model is included with this report. The results of this portion of the model also illustrates the flows and velocities we expect to see in the road swale which will be constructed with rip rap armoring.

The HydroCAD output has been provided in Attachment 3 of this report. The watershed maps showing pre-development and post-development drainage patterns are included in the plan set.

G. Maintenance of common facilities or property

The applicant will be responsible for the maintenance of the stormwater facilities until a homeowner's association is established. The Inspection, Maintenance and Housekeeping Plan for the project has been created and has been included in Attachment 4 of this report.

Prepared by:
DM ROMA CONSULTING ENGINEERS

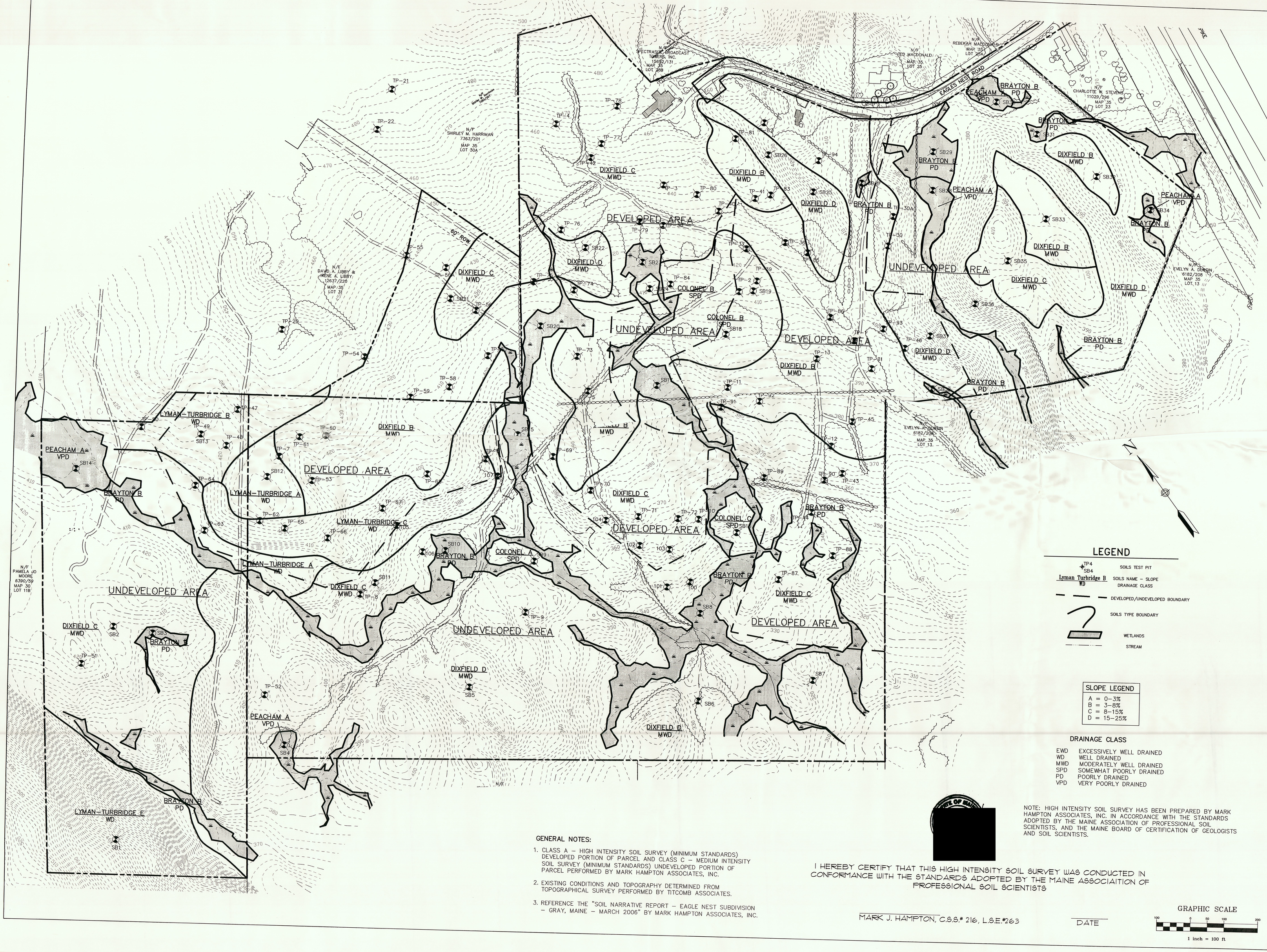
[redacted]

[redacted]

J.P. Connolly	Dustin M. Roma P.E.	11-13-2023
Senior Project Engineer	President	

ATTACHMENT 1

HIGH INTENSITY SOILS MAP



LEGEND

- TP4 / SB4 — SOILS TEST PIT
- Lyman Turbridge B / WD — SOILS NAME – SLOPE / DRAINAGE CLASS
- DEVELOPED/UNDEVELOPED BOUNDARY
- 2 — SOILS TYPE BOUNDARY
- WETLANDS
- STREAM

SLOPE LEGEND
A = 0–3%
B = 3–8%
C = 8–15%
D = 15–25%

DRAINAGE CLASS

EWD	EXCESSIVELY WELL DRAINED
WD	WELL DRAINED
MWD	MODERATELY WELL DRAINED
SPD	SOMEWHAT POORLY DRAINED
PD	POORLY DRAINED
VPD	VERY POORLY DRAINED

GENERAL NOTES:

1. CLASS A – HIGH INTENSITY SOIL SURVEY (MINIMUM STANDARDS) DEVELOPED PORTION OF PARCEL AND CLASS C – MEDIUM INTENSITY SOIL SURVEY (MINIMUM STANDARDS) UNDEVELOPED PORTION OF PARCEL PERFORMED BY MARK HAMPTON ASSOCIATES, INC.
2. EXISTING CONDITIONS AND TOPOGRAPHY DETERMINED FROM TOPOGRAPHICAL SURVEY PERFORMED BY TITCOMB ASSOCIATES.
3. REFERENCE THE "SOIL NARRATIVE REPORT – EAGLE NEST SUBDIVISION – GRAY, MAINE – MARCH 2006" BY MARK HAMPTON ASSOCIATES, INC.

NOTE: HIGH INTENSITY SOIL SURVEY HAS BEEN PREPARED BY MARK HAMPTON ASSOCIATES, INC. IN ACCORDANCE WITH THE STANDARDS ADOPTED BY THE MAINE ASSOCIATION OF PROFESSIONAL SOIL SCIENTISTS, AND THE MAINE BOARD OF CERTIFICATION OF GEOLOGISTS AND SOIL SCIENTISTS.

I HEREBY CERTIFY THAT THIS HIGH INTENSITY SOIL SURVEY WAS CONDUCTED IN CONFORMANCE WITH THE STANDARDS ADOPTED BY THE MAINE ASSOCIAITION OF PROFESSIONAL SOIL SCIENTISTS

MARK J. HAMPTON, C.S.S.# 216, L.S.E.#263 — DATE

GRAPHIC SCALE
100 0 50 100 200
1 inch = 100 ft

Stantec Consulting Services Inc.
22 Free Street, Suite 205
Portland, ME U.S.A.
04101-3900
Tel. 207.775.3211
Fax. 207.775.6434
Stantec

EAGLE RIDGE SUBDIVISION

EAGLE NEST ROAD, GRAY, MAINE

PREPARED FOR:
BIKWATER DEVELOPMENT, LLC
320 CONGRESS STREET
PORTLAND, MAINE 04102

Revision	Date
REV PER TOWN PEER REVIEW COMMENTS	2/29/08
FINAL MAJOR SUBDIVISION SUBMISSION	4/24/08

Designed	FJL
Drawn	PJP
Checked	FJL
Scale	1"=100'
Date	1-25-08

MEDIUM & HIGH INTENSITY SOIL SURVEY

Job No. 195410271
Drawing 2

ATTACHMENT 2

STORMWATER TREATMENT CALCULATIONS & BMP SIZING CALCULATIONS

DM ROMA
CONSULTING ENGINEERS

Aerie Estates Subdivision, Gray
Calculated by: JPC
Printed 11/14/2023
Job #23050

Stormwater Treatment Table

	Total Watershed Area (SF)	New Roof Area (SF) **	New Paved/Gravel Area (SF)	New Landscaped Area (SF)	Existing/Offsite Impervious Area (SF)*	Existing/Offsite Landscaping Area (SF)*	Existing Undeveloped Area (SF)	Treatment Provided	New Impervious Area Treated (SF)	New Landscaped Area Treated (SF)	Treatment Device
WS-1	669,661	5,711	0	39,634	0	0	624,316	Dripedge	5,711	0	Dripedge Only
WS-11	99,647	4,764	15,920	65,281	0	0	13,682	Yes	20,684	65,281	FB2
WS-12	121,470	5,436	13,766	68,160	0	0	34,108	Yes	19,202	68,160	FB3
WS-2	156,380	2,965	8,557	41,097	9,412	24,878	69,471	Yes	11,522	41,097	FB1
WS-21	208,251	4,314	6,095	34,514	173	0	163,155	Dripedge	4,314	0	Dripedge Only
WS-22	16,521	834	4,994	10,693	0	0	0	Yes	5,828	10,693	FB1
Total		**24,024**	**49,332**	**259,379**					**67,261**	**185,231**	

* The project is not taking credit for the Existing / Offsite impervious and landscaped areas, but are included in the BMP sizing calculations for each treatment device.
** All buildings shall install a roofline drip edge to provide treatment for the rooftop impervious surface.
The building's impervious area is included in the watershed and overall treatment calculations below, but not included in the BMP sizing calculations for each treatment device.

New Impervious Area =	73,356	
New Impervious Area Requiring Treatment (90%)	66,020	
Provided New Impervious Treatment=	67,261	
	91.69%	New Impervious Area Treated
New Developed Area =	332,735	
New Developed Area Requiring Treatment (75%)=	249,551	
New Developed Area Treated=	252,493	
	75.88%	New Developed Area Treated

Underdrained Filter Basin Sizing Calculations

Filter Basin 1

Tributary Impervious Area=	13,551 sf	(WS-2 & 22 Impervious Area)
Tributary Landscaped Area=	51,790 sf	(WS-2 & 22 Landscaped Area)

Water Quality Volume (WQV) Calculation

WQV (Required) = 1"xImpervious Area + 0.4"xLandscaped Area

WQV (Required) = 2,856 cf

Stage Storage Volume

Elevation	Area (sf)	Storage (cf)
392.5	2,044	0
393.85	2,826	3,208

Outlet Elevation = 394.00

Storage Volume Provided= 3,208 cf > Required

Filter Bottom Calculation

Filter Area (Required) = 5%xImpervious Area + 2%xLandscaped Area

Filter Area Required = 1,713 sf

Filter Area Provided = 2,044 sf > Required

Sediment Pre-treatment Sizing

Required Sediment Treatment Volume :

10 storms/year x sanded area (acres) x 500lbs/acre-storm / 90 lbs/cf

Tributary Pavement Requiring Sanding 13,551 sf

Sediment Volume (Required) 17.3 cf

Runoff is collected in drainage swale & sediment forebay providing more than 35 cf of sediment storage.

Hydrograph for Pond FB1:

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	392.50	0.00	0.00	**0.00**
1.50	0.00	0	392.50	0.00	0.00	0.00
3.00	0.01	0	392.50	0.01	0.01	0.00
4.50	0.02	0	392.50	0.02	0.02	0.00
6.00	0.02	0	392.50	0.02	0.02	0.00
7.50	0.04	0	392.50	0.04	0.04	0.00
9.00	0.07	0	392.50	0.07	0.07	0.00
10.50	0.24	340	392.66	0.08	0.08	0.00
12.00	**3.38**	**3,704**	**394.00**	**1.73**	**1.73**	0.00
13.50	**0.74**	**3,477**	**393.92**	**0.76**	**0.76**	0.00
15.00	0.46	3,384	393.89	0.47	0.47	0.00
16.50	0.29	3,327	393.87	0.29	0.29	0.00
18.00	0.20	3,300	393.86	0.21	0.21	0.00
19.50	0.17	3,288	393.86	0.17	0.17	0.00
21.00	0.15	3,281	393.86	0.15	0.15	0.00
22.50	0.13	3,274	393.85	0.13	0.13	0.00
24.00	0.11	3,268	393.85	0.11	0.11	0.00
25.50	0.00	2,824	393.69	0.09	0.09	0.00
27.00	0.00	2,326	393.51	0.09	0.09	0.00
28.50	0.00	1,842	393.32	0.09	0.09	0.00
30.00	0.00	1,375	393.13	0.09	0.09	0.00
31.50	0.00	923	392.93	0.08	0.08	0.00
33.00	0.00	488	392.73	0.08	0.08	0.00
34.50	0.00	72	392.54	0.08	0.08	0.00
36.00	0.00	0	392.50	0.00	0.00	0.00
37.50	0.00	0	392.50	0.00	0.00	0.00
39.00	0.00	0	392.50	0.00	0.00	0.00
40.50	0.00	0	392.50	0.00	0.00	0.00
42.00	0.00	0	392.50	0.00	0.00	0.00
43.50	0.00	0	392.50	0.00	0.00	0.00
45.00	0.00	0	392.50	0.00	0.00	0.00
46.50	0.00	0	392.50	0.00	0.00	0.00
48.00	0.00	0	392.50	0.00	0.00	0.00

Underdrained Filter Basin Sizing Calculations

Filter Basin 2

Tributary Impervious Area=	15,920 sf	(WS-11 Impervious Area)
Tributary Landscaped Area=	65,281 sf	(WS-11 Landscaped Area)

Water Quality Volume (WQV) Calculation

WQV (Required) = 1"xImpervious Area + 0.4"xLandscaped Area

WQV (Required) = 3,503 cf

Stage Storage Volume

Elevation	Area (sf)	Storage (cf)
362	2,896	0
363.5	4,023	5,166

Outlet Elevation = 363.50

Storage Volume Provided= 5,166 cf > Required

Filter Bottom Calculation

Filter Area (Required) = 5%xImpervious Area + 2%xLandscaped Area

Filter Area Required = 2,102 sf

Filter Area Provided = 2,896 sf > Required

Sediment Pre-treatment Sizing

Required Sediment Treatment Volume :

10 storms/year x sanded area (acres) x 500lbs/acre-storm / 90 lbs/cf

Tributary Pavement Requiring Sanding 15,920 sf

Sediment Volume (Required) 20.3 cf

Runoff is collected in drainage swale providing more than 423 cf of sediment storage.

Hydrograph for Pond FB2:

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	362.00	0.00	**0.00**	0.00
1.50	0.00	0	362.00	0.00	0.00	0.00
3.00	0.00	0	362.00	0.00	0.00	0.00
4.50	0.00	0	362.00	0.00	0.00	0.00
6.00	0.01	0	362.00	0.01	0.00	0.01
7.50	0.01	0	362.00	0.01	0.00	0.01
9.00	0.03	0	362.00	0.03	0.00	0.03
10.50	0.05	0	362.00	0.05	0.00	0.05
12.00	**0.66**	468	362.16	0.07	0.00	0.07
13.50	**0.24**	4,370	363.30	0.08	0.00	0.08
15.00	0.15	4,955	363.45	0.08	0.00	0.08
16.50	0.10	**5,164**	**363.50**	**0.08**	0.00	**0.08**
18.00	0.07	**5,153**	**363.50**	**0.08**	0.00	**0.08**
19.50	0.06	5,026	363.47	0.08	0.00	0.08
21.00	0.05	4,855	363.42	0.08	0.00	0.08
22.50	0.04	4,652	363.37	0.08	0.00	0.08
24.00	0.04	4,416	363.31	0.08	0.00	0.08
25.50	0.00	4,016	363.21	0.08	0.00	0.08
27.00	0.00	3,583	363.09	0.08	0.00	0.08
28.50	0.00	3,158	362.97	0.08	0.00	0.08
30.00	0.00	2,741	362.86	0.08	0.00	0.08
31.50	0.00	2,332	362.74	0.07	0.00	0.07
33.00	0.00	1,931	362.62	0.07	0.00	0.07
34.50	0.00	1,539	362.50	0.07	0.00	0.07
36.00	0.00	1,156	362.38	0.07	0.00	0.07
37.50	0.00	782	362.26	0.07	0.00	0.07
39.00	0.00	417	362.14	0.07	0.00	0.07
40.50	0.00	62	362.02	0.06	0.00	0.06
42.00	0.00	0	362.00	0.00	0.00	0.00
43.50	0.00	0	362.00	0.00	0.00	0.00
45.00	0.00	0	362.00	0.00	0.00	0.00
46.50	0.00	0	362.00	0.00	0.00	0.00
48.00	0.00	0	362.00	0.00	0.00	0.00
49.50	0.00	0	362.00	0.00	0.00	0.00
51.00	0.00	0	362.00	0.00	0.00	0.00
52.50	0.00	0	362.00	0.00	0.00	0.00
54.00	0.00	0	362.00	0.00	0.00	0.00
55.50	0.00	0	362.00	0.00	0.00	0.00
57.00	0.00	0	362.00	0.00	0.00	0.00
58.50	0.00	0	362.00	0.00	0.00	0.00
60.00	0.00	0	362.00	0.00	0.00	0.00
61.50	0.00	0	362.00	0.00	0.00	0.00
63.00	0.00	0	362.00	0.00	0.00	0.00
64.50	0.00	0	362.00	0.00	0.00	0.00
66.00	0.00	0	362.00	0.00	0.00	0.00
67.50	0.00	0	362.00	0.00	0.00	0.00
69.00	0.00	0	362.00	0.00	0.00	0.00
70.50	0.00	0	362.00	0.00	0.00	0.00
72.00	0.00	0	362.00	0.00	0.00	0.00

Summary for Pond FB2:

[62] Hint: Exceeded Reach R6 OUTLET depth by 3.01' @ 24.75 hrs

Inflow Area = 99,647 sf, 11.38% Impervious, Inflow Depth = 3.95" for 25-Year event
Inflow = 7.33 cfs @ 12.24 hrs, Volume= 32,761 cf
Outflow = 4.87 cfs @ 12.45 hrs, Volume= 20,760 cf, Atten= 34%, Lag= 12.6 min
Primary = 4.87 cfs @ 12.45 hrs, Volume= 20,760 cf
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Peak Elev= 365.38' @ 12.45 hrs Surf.Area= 5,224 sf Storage= 13,936 cf

Plug-Flow detention time= 196.6 min calculated for 20,760 cf (63% of inflow)
Center-of-Mass det. time= 92.2 min (901.5 - 809.3)

Volume	Invert	Avail.Storage	Storage Description
#1	362.00'	17,298 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
362.00	2,896	238.0	0	0	2,896
364.00	4,440	276.2	7,281	7,281	4,541
365.00	5,005	288.7	4,720	12,001	5,170
366.00	5,595	301.3	5,297	17,298	5,831

Device	Routing	Invert	Outlet Devices
#1	Primary	365.00'	**8.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#2	Secondary	359.73'	**15.0" Round 15-inch culvert X 0.00** L= 27.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 359.73' / 358.00' S= 0.0629 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#3	Device 2	359.83'	**4.0" Vert. 4" UD** C= 0.600
#4	Device 3	362.00'	**2.410 in/hr Exfiltration over Surface area**
#5	Device 2	363.50'	**4.0" Vert. Orifice/Grate** C= 0.600
#6	Device 2	364.75'	**Neenah R4345 Beehive Grate Light Duty-req. structure** Head (feet) 0.00 0.10 0.15 0.20 0.25 0.30 0.35 0.40 0.50 0.60 0.70 0.80 0.90 1.00 Disch. (cfs) 0.000 0.900 1.600 2.500 3.500 4.000 4.600 5.300 6.800 7.500 8.100 8.600 9.100 9.600

Primary OutFlow Max=4.87 cfs @ 12.45 hrs HW=365.38' TW=356.47' (Dynamic Tailwater)
└─**1=Broad-Crested Rectangular Weir** (Weir Controls 4.87 cfs @ 1.61 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=362.00' TW=356.00' (Dynamic Tailwater)
└─**2=15-inch culvert** (Controls 0.00 cfs)
  └─**3=4" UD** (Passes 0.00 cfs of 0.59 cfs potential flow)
    └─**4=Exfiltration** (Passes 0.00 cfs of 0.16 cfs potential flow)
  └─**5=Orifice/Grate** (Controls 0.00 cfs)
  └─**6=Neenah R4345 Beehive Grate Light Duty-req. structure** (Controls 0.00 cfs)

Underdrained Filter Basin Sizing Calculations

Filter Basin 3

Tributary Impervious Area=	13,766 sf	(WS-12 Impervious Area)
Tributary Landscaped Area=	68,160 sf	(WS-12 Landscaped Area)

Water Quality Volume (WQV) Calculation

WQV (Required) = 1"xImpervious Area + 0.4"xLandscaped Area

WQV (Required) = 3,419 cf

Stage Storage Volume

Elevation	Area (sf)	Storage (cf)
362	2,456	0
665.5	2,774	3,345

Outlet Elevation = 665.50

Storage Volume Provided= 3,345 problem

Filter Bottom Calculation

Filter Area (Required) = 5%xImpervious Area + 2%xLandscaped Area

Filter Area Required = 2,052 sf

Filter Area Provided = 2,068 sf > Required

Sediment Pre-treatment Sizing

Required Sediment Treatment Volume :

10 storms/year x sanded area (acres) x 500lbs/acre-storm / 90 lbs/cf

Tributary Pavement Requiring Sanding 13,766 sf

Sediment Volume (Required) 17.6 cf

Runoff is collected in drainage swale providing more than 423 cf of sediment storage.

Hydrograph for Pond FB3:

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	353.30	0.00	**0.00**	0.00
1.50	0.00	0	353.30	0.00	0.00	0.00
3.00	0.00	0	353.30	0.00	0.00	0.00
4.50	0.00	0	353.30	0.00	0.00	0.00
6.00	0.00	0	353.30	0.00	0.00	0.00
7.50	0.00	0	353.30	0.00	0.00	0.00
9.00	0.00	0	353.30	0.00	0.00	0.00
10.50	0.01	0	353.30	0.01	0.00	0.01
12.00	**0.43**	130	353.35	0.06	0.00	0.06
13.50	**0.25**	3,373	354.47	0.07	0.00	0.07
15.00	0.16	4,074	354.68	0.07	0.00	0.07
16.50	0.11	4,406	354.78	0.07	0.00	0.07
18.00	0.08	**4,509**	**354.80**	**0.07**	0.00	**0.07**
19.50	0.06	**4,490**	**354.80**	**0.07**	0.00	**0.07**
21.00	0.06	4,423	354.78	0.07	0.00	0.07
22.50	0.05	4,318	354.75	0.07	0.00	0.07
24.00	0.04	4,176	354.71	0.07	0.00	0.07
25.50	0.00	3,825	354.61	0.07	0.00	0.07
27.00	0.00	3,450	354.49	0.07	0.00	0.07
28.50	0.00	3,082	354.38	0.07	0.00	0.07
30.00	0.00	2,720	354.27	0.07	0.00	0.07
31.50	0.00	2,364	354.15	0.07	0.00	0.07
33.00	0.00	2,016	354.04	0.06	0.00	0.06
34.50	0.00	1,674	353.92	0.06	0.00	0.06
36.00	0.00	1,340	353.80	0.06	0.00	0.06
37.50	0.00	1,013	353.69	0.06	0.00	0.06
39.00	0.00	693	353.57	0.06	0.00	0.06
40.50	0.00	381	353.45	0.06	0.00	0.06
42.00	0.00	78	353.33	0.06	0.00	0.06
43.50	0.00	0	353.30	0.00	0.00	0.00
45.00	0.00	0	353.30	0.00	0.00	0.00
46.50	0.00	0	353.30	0.00	0.00	0.00
48.00	0.00	0	353.30	0.00	0.00	0.00
49.50	0.00	0	353.30	0.00	0.00	0.00
51.00	0.00	0	353.30	0.00	0.00	0.00
52.50	0.00	0	353.30	0.00	0.00	0.00
54.00	0.00	0	353.30	0.00	0.00	0.00
55.50	0.00	0	353.30	0.00	0.00	0.00
57.00	0.00	0	353.30	0.00	0.00	0.00
58.50	0.00	0	353.30	0.00	0.00	0.00
60.00	0.00	0	353.30	0.00	0.00	0.00
61.50	0.00	0	353.30	0.00	0.00	0.00
63.00	0.00	0	353.30	0.00	0.00	0.00
64.50	0.00	0	353.30	0.00	0.00	0.00
66.00	0.00	0	353.30	0.00	0.00	0.00
67.50	0.00	0	353.30	0.00	0.00	0.00
69.00	0.00	0	353.30	0.00	0.00	0.00
70.50	0.00	0	353.30	0.00	0.00	0.00
72.00	0.00	0	353.30	0.00	0.00	0.00

Summary for Pond FB3:

Inflow Area = 208,853 sf, 1.58% Impervious, Inflow Depth = 3.55" for 25-Year event
Inflow = 15.65 cfs @ 12.18 hrs, Volume= 61,738 cf
Outflow = 12.84 cfs @ 12.28 hrs, Volume= 46,871 cf, Atten= 18%, Lag= 6.0 min
Primary = 12.84 cfs @ 12.28 hrs, Volume= 46,871 cf
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Peak Elev= 358.16' @ 12.28 hrs Surf.Area= 5,290 sf Storage= 19,227 cf

Plug-Flow detention time= 142.6 min calculated for 46,871 cf (76% of inflow)
Center-of-Mass det. time= 57.1 min (879.3 - 822.2)

Volume	Invert	Avail.Storage	Storage Description
#1	353.30'	23,852 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
353.30	2,495	213.7	0	0	2,495
354.00	2,957	226.9	1,906	1,906	2,983
354.80	3,520	242.0	2,588	4,493	3,577
356.00	4,119	257.1	4,579	9,072	4,247
358.00	5,198	282.2	9,296	18,368	5,452
359.00	5,775	294.8	5,484	23,852	6,098

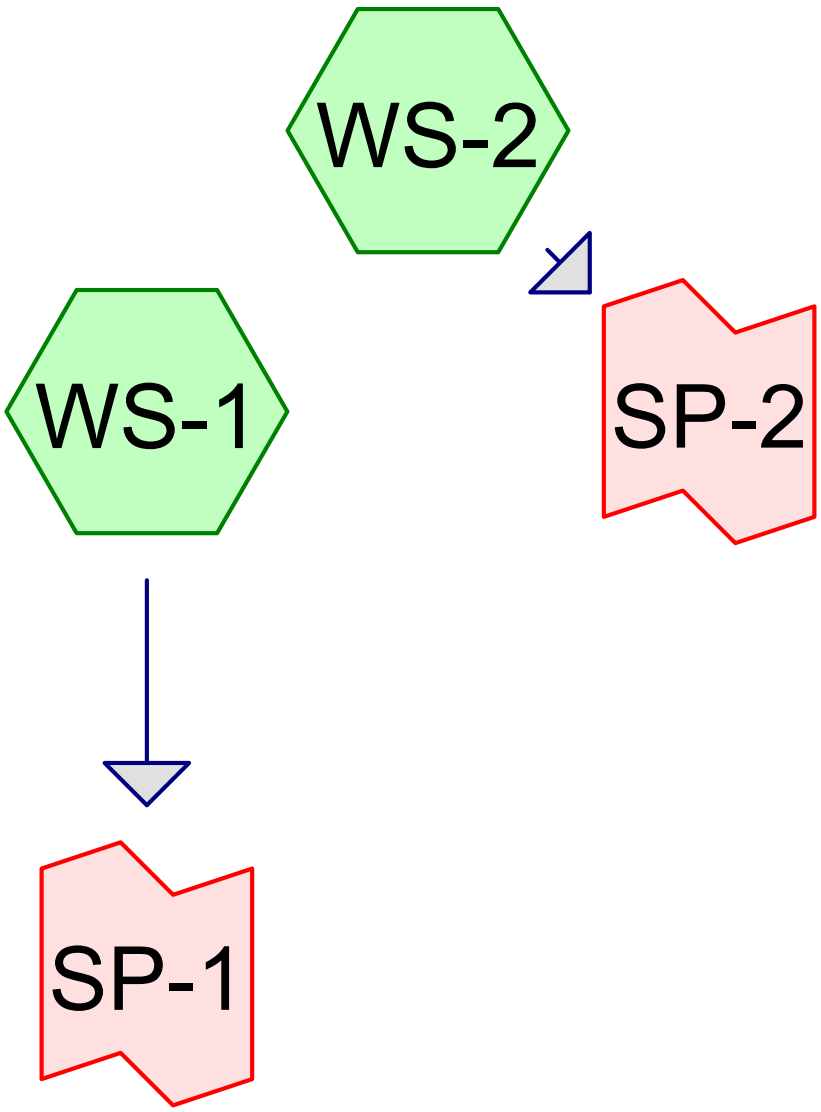
Device	Routing	Invert	Outlet Devices
#1	Primary	357.30'	**6.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#2	Secondary	351.03'	**15.0" Round 15-inch culvert X 0.00** L= 43.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 351.03' / 350.00' S= 0.0237 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#3	Device 2	351.13'	**4.0" Vert. 4" UD** C= 0.600
#4	Device 3	353.30'	**2.410 in/hr Exfiltration over Surface area**
#5	Device 2	354.80'	**3.0" Vert. Orifice/Grate** C= 0.600
#6	Device 2	356.10'	**Neenah R4345 Beehive Grate Light Duty-req. structure** Head (feet) 0.00 0.10 0.15 0.20 0.25 0.30 0.35 0.40 0.50 0.60 0.70 0.80 0.90 1.00 Disch. (cfs) 0.000 0.900 1.600 2.500 3.500 4.000 4.600 5.300 6.800 7.500 8.100 8.600 9.100 9.600

Primary OutFlow Max=12.76 cfs @ 12.28 hrs HW=358.16' TW=350.71' (Dynamic Tailwater)
└─**1=Broad-Crested Rectangular Weir** (Weir Controls 12.76 cfs @ 2.47 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=353.30' TW=350.00' (Dynamic Tailwater)
└─**2=15-inch culvert** (Controls 0.00 cfs)
  ├─**3=4" UD** (Passes 0.00 cfs of 0.59 cfs potential flow)
  │ └─**4=Exfiltration** (Passes 0.00 cfs of 0.14 cfs potential flow)
  ├─**5=Orifice/Grate** (Controls 0.00 cfs)
  └─**6=Neenah R4345 Beehive Grate Light Duty-req. structure** (Controls 0.00 cfs)

ATTACHMENT 3

HYDROCAD CALCULATIONS



Subcat Reach Pond Link

Routing Diagram for 23050 - PRE
Prepared by DM Roma Consulting Engineers, Printed 11/14/2023
HydroCAD® 10.00-26 s/n 09237 © 2020 HydroCAD Software Solutions LLC

Time span=0.00-48.00 hrs, dt=0.03 hrs, 1601 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 WS-1: Runoff Area=884,471 sf 0.00% Impervious Runoff Depth=1.28"
Flow Length=2,268' Tc=27.0 min CN=79 Runoff=17.64 cfs 94,118 cf

Subcatchment WS-2: Runoff Area=387,340 sf 2.43% Impervious Runoff Depth=1.32"
Flow Length=620' Tc=14.1 min CN=WQ Runoff=10.36 cfs 42,613 cf

Link SP-1: Inflow=17.64 cfs 94,118 cf
Primary=17.64 cfs 94,118 cf

Link SP-2: Inflow=10.36 cfs 42,613 cf
Primary=10.36 cfs 42,613 cf

Time span=0.00-48.00 hrs, dt=0.03 hrs, 1601 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 WS-1: Runoff Area=884,471 sf 0.00% Impervious Runoff Depth=2.47"
Flow Length=2,268' Tc=27.0 min CN=79 Runoff=34.80 cfs 181,984 cf

Subcatchment WS-2: Runoff Area=387,340 sf 2.43% Impervious Runoff Depth=2.52"
Flow Length=620' Tc=14.1 min CN=WQ Runoff=20.22 cfs 81,370 cf

Link SP-1: Inflow=34.80 cfs 181,984 cf
Primary=34.80 cfs 181,984 cf

Link SP-2: Inflow=20.22 cfs 81,370 cf
Primary=20.22 cfs 81,370 cf

Time span=0.00-48.00 hrs, dt=0.03 hrs, 1601 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 WS-1: Runoff Area=884,471 sf 0.00% Impervious Runoff Depth=3.47"
Flow Length=2,268' Tc=27.0 min CN=79 Runoff=48.97 cfs 256,126 cf

Subcatchment WS-2: Runoff Area=387,340 sf 2.43% Impervious Runoff Depth=3.53"
Flow Length=620' Tc=14.1 min CN=WQ Runoff=28.34 cfs 113,986 cf

Link SP-1: Inflow=48.97 cfs 256,126 cf
Primary=48.97 cfs 256,126 cf

Link SP-2: Inflow=28.34 cfs 113,986 cf
Primary=28.34 cfs 113,986 cf

Summary for Subcatchment WS-1:

Runoff = 48.97 cfs @ 12.38 hrs, Volume= 256,126 cf, Depth= 3.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type III 24-hr 25-Year Rainfall=5.77"

Area (sf)	CN	Description
884,471	79	Woods/grass comb., Good, HSG D
884,471		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.1	150	0.1116	0.17		**Sheet Flow, Seg A to B** Woods: Light underbrush n= 0.400 P2= 3.12"
5.8	497	0.0815	1.43		**Shallow Concentrated Flow, Seg B to C** Woodland Kv= 5.0 fps
1.6	157	0.1037	1.61		**Shallow Concentrated Flow, Seg C to D** Woodland Kv= 5.0 fps
0.9	425	0.0870	7.88	345.28	**Channel Flow, Seg D to E** Area= 43.8 sf Perim= 87.7' r= 0.50' n= 0.035 Earth, dense weeds
1.1	308	0.0325	4.82	278.06	**Channel Flow, Seg E to F** Area= 57.7 sf Perim= 115.5' r= 0.50' n= 0.035 Earth, dense weeds
1.7	390	0.0205	3.82	199.64	**Channel Flow, Seg F to G** Area= 52.2 sf Perim= 104.6' r= 0.50' n= 0.035 Earth, dense weeds
0.8	341	0.0674	6.94	239.33	**Channel Flow, Seg G to H** Area= 34.5 sf Perim= 69.1' r= 0.50' n= 0.035 Earth, dense weeds
27.0	2,268	Total			

Summary for Subcatchment WS-2:

Runoff = 28.34 cfs @ 12.19 hrs, Volume= 113,986 cf, Depth= 3.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type III 24-hr 25-Year Rainfall=5.77"

	Area (sf)	CN	Description
	353,050	79	Woods/grass comb., Good, HSG D
*	9,412	98	Paved areas
	24,878	80	>75% Grass cover, Good, HSG D
	387,340		Weighted Average
	377,928		97.57% Pervious Area
	9,412		2.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	38	0.0396	1.47		**Sheet Flow, Seg A to B** Smooth surfaces n= 0.011 P2= 3.12"
11.3	110	0.1231	0.16		**Sheet Flow, Seg B to C** Woods: Light underbrush n= 0.400 P2= 3.12"
0.5	290	0.1184	9.19	270.27	**Channel Flow, Seg C to D** Area= 29.4 sf Perim= 58.9' r= 0.50' n= 0.035 Earth, dense weeds
1.9	182	0.0991	1.57		**Shallow Concentrated Flow, Seg D to E** Woodland Kv= 5.0 fps
14.1	620	Total			

Summary for Link SP-1:

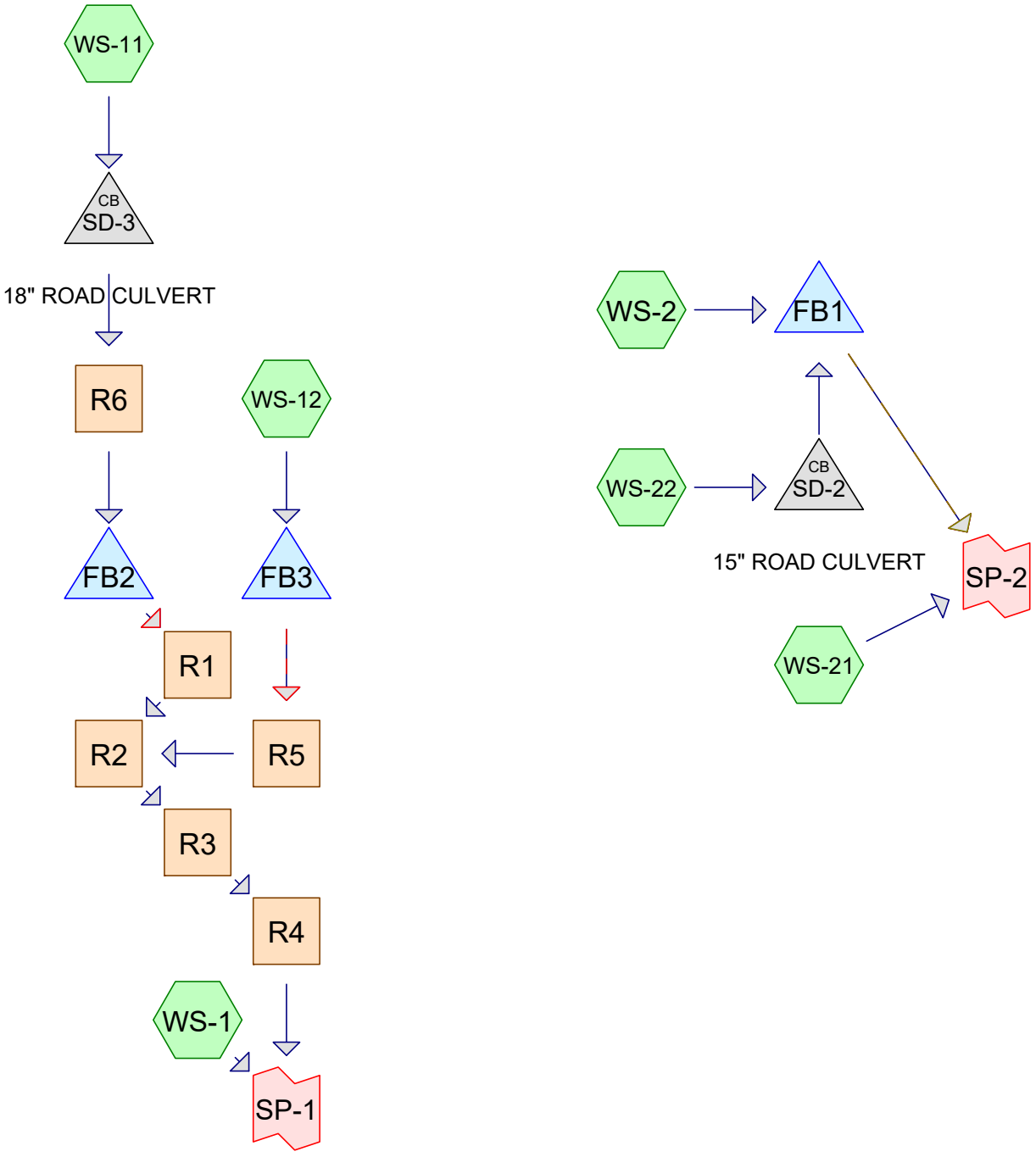
Inflow Area = 884,471 sf, 0.00% Impervious, Inflow Depth = 3.47" for 25-Year event
Inflow = 48.97 cfs @ 12.38 hrs, Volume= 256,126 cf
Primary = 48.97 cfs @ 12.38 hrs, Volume= 256,126 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs

Summary for Link SP-2:

Inflow Area = 387,340 sf, 2.43% Impervious, Inflow Depth = 3.53" for 25-Year event
Inflow = 28.34 cfs @ 12.19 hrs, Volume= 113,986 cf
Primary = 28.34 cfs @ 12.19 hrs, Volume= 113,986 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs



Routing Diagram for 23050 - POST
Prepared by DM Roma Consulting Engineers, Printed 11/14/2023
HydroCAD® 10.00-26 s/n 09237 © 2020 HydroCAD Software Solutions LLC

Time span=0.00-72.00 hrs, dt=0.03 hrs, 2401 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 WS-1: Runoff Area=669,661 sf 0.85% Impervious Runoff Depth=1.29"
Flow Length=2,263' Tc=27.1 min CN=WQ Runoff=13.50 cfs 72,237 cf

Subcatchment WS-11: Runoff Area=99,647 sf 11.38% Impervious Runoff Depth=1.63"
Flow Length=622' Tc=17.2 min CN=WQ Runoff=3.01 cfs 13,558 cf

Subcatchment WS-12: Runoff Area=121,470 sf 8.91% Impervious Runoff Depth=1.55"
Flow Length=596' Tc=13.4 min CN=WQ Runoff=3.85 cfs 15,714 cf

Subcatchment WS-2: Runoff Area=156,380 sf 10.52% Impervious Runoff Depth=1.51"
Flow Length=634' Tc=12.9 min CN=WQ Runoff=4.90 cfs 19,720 cf

Subcatchment WS-21: Runoff Area=208,250 sf 2.89% Impervious Runoff Depth=1.36"
Flow Length=481' Tc=9.8 min CN=WQ Runoff=6.52 cfs 23,681 cf

Subcatchment WS-22: Runoff Area=16,521 sf 20.65% Impervious Runoff Depth=1.85"
Tc=6.0 min CN=WQ Runoff=0.78 cfs 2,553 cf

Reach R1: Avg. Flow Depth=0.17' Max Vel=2.25 fps Inflow=0.32 cfs 13,560 cf
n=0.035 L=234.5' S=0.0768 '/' Capacity=226.48 cfs Outflow=0.32 cfs 13,560 cf

Reach R2: Avg. Flow Depth=0.18' Max Vel=1.52 fps Inflow=0.70 cfs 29,278 cf
n=0.035 L=308.1' S=0.0325 '/' Capacity=443.25 cfs Outflow=0.70 cfs 29,278 cf

Reach R3: Avg. Flow Depth=0.20' Max Vel=1.32 fps Inflow=0.70 cfs 29,278 cf
n=0.035 L=390.4' S=0.0205 '/' Capacity=308.51 cfs Outflow=0.70 cfs 29,278 cf

Reach R4: Avg. Flow Depth=0.19' Max Vel=2.40 fps Inflow=0.70 cfs 29,278 cf
n=0.035 L=308.1' S=0.0747 '/' Capacity=376.75 cfs Outflow=0.70 cfs 29,278 cf

Reach R5: Avg. Flow Depth=0.19' Max Vel=2.14 fps Inflow=0.38 cfs 15,718 cf
n=0.035 L=199.6' S=0.0601 '/' Capacity=200.43 cfs Outflow=0.38 cfs 15,718 cf

Reach R6: Avg. Flow Depth=0.46' Max Vel=3.00 fps Inflow=3.01 cfs 13,558 cf
n=0.069 L=150.5' S=0.1030 '/' Capacity=184.33 cfs Outflow=3.00 cfs 13,558 cf

Pond FB1: Peak Elev=394.20' Storage=4,305 cf Inflow=5.42 cfs 22,273 cf
Primary=4.77 cfs 22,275 cf Secondary=0.00 cfs 0 cf Outflow=4.77 cfs 22,275 cf

Pond FB2: Peak Elev=363.74' Storage=6,157 cf Inflow=3.00 cfs 13,558 cf
Primary=0.00 cfs 0 cf Secondary=0.32 cfs 13,560 cf Outflow=0.32 cfs 13,560 cf

Pond FB3: Peak Elev=355.52' Storage=7,150 cf Inflow=3.85 cfs 15,714 cf
Primary=0.00 cfs 0 cf Secondary=0.38 cfs 15,718 cf Outflow=0.38 cfs 15,718 cf

Pond SD-2: 15" ROAD CULVERT Peak Elev=396.97' Inflow=0.78 cfs 2,553 cf
15.0" Round Culvert n=0.013 L=55.6' S=0.0360 '/' Outflow=0.78 cfs 2,553 cf

Pond SD-3: 18" ROAD CULVERT Peak Elev=381.93' Inflow=3.01 cfs 13,558 cf
18.0" Round Culvert n=0.013 L=58.4' S=0.0599 '/' Outflow=3.01 cfs 13,558 cf

Link SP-1: Inflow=13.85 cfs 101,515 cf
Primary=13.85 cfs 101,515 cf

Link SP-2: Inflow=10.35 cfs 45,956 cf
Primary=10.35 cfs 45,956 cf

Total Runoff Area = 1,271,929 sf Runoff Volume = 147,463 cf Average Runoff Depth = 1.39"
95.78% Pervious = 1,218,191 sf 4.22% Impervious = 53,738 sf

Time span=0.00-72.00 hrs, dt=0.03 hrs, 2401 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 WS-1: Runoff Area=669,661 sf 0.85% Impervious Runoff Depth=2.49"
Flow Length=2,263' Tc=27.1 min CN=WQ Runoff=26.50 cfs 138,978 cf

Subcatchment WS-11: Runoff Area=99,647 sf 11.38% Impervious Runoff Depth=2.90"
Flow Length=622' Tc=17.2 min CN=WQ Runoff=5.40 cfs 24,078 cf

Subcatchment WS-12: Runoff Area=121,470 sf 8.91% Impervious Runoff Depth=2.80"
Flow Length=596' Tc=13.4 min CN=WQ Runoff=7.04 cfs 28,372 cf

Subcatchment WS-2: Runoff Area=156,380 sf 10.52% Impervious Runoff Depth=2.75"
Flow Length=634' Tc=12.9 min CN=WQ Runoff=9.04 cfs 35,889 cf

Subcatchment WS-21: Runoff Area=208,250 sf 2.89% Impervious Runoff Depth=2.58"
Flow Length=481' Tc=9.8 min CN=WQ Runoff=12.52 cfs 44,690 cf

Subcatchment WS-22: Runoff Area=16,521 sf 20.65% Impervious Runoff Depth=3.16"
Tc=6.0 min CN=WQ Runoff=1.33 cfs 4,355 cf

Reach R1: Avg. Flow Depth=0.25' Max Vel=2.93 fps Inflow=0.91 cfs 24,079 cf
n=0.035 L=234.5' S=0.0768 '/' Capacity=226.48 cfs Outflow=0.91 cfs 24,079 cf

Reach R2: Avg. Flow Depth=0.34' Max Vel=2.36 fps Inflow=4.13 cfs 52,458 cf
n=0.035 L=308.1' S=0.0325 '/' Capacity=443.25 cfs Outflow=4.05 cfs 52,458 cf

Reach R3: Avg. Flow Depth=0.39' Max Vel=2.03 fps Inflow=4.05 cfs 52,458 cf
n=0.035 L=390.4' S=0.0205 '/' Capacity=308.51 cfs Outflow=3.88 cfs 52,458 cf

Reach R4: Avg. Flow Depth=0.36' Max Vel=3.67 fps Inflow=3.88 cfs 52,458 cf
n=0.035 L=308.1' S=0.0747 '/' Capacity=376.75 cfs Outflow=3.86 cfs 52,458 cf

Reach R5: Avg. Flow Depth=0.44' Max Vel=3.75 fps Inflow=3.59 cfs 28,379 cf
n=0.035 L=199.6' S=0.0601 '/' Capacity=200.43 cfs Outflow=3.57 cfs 28,379 cf

Reach R6: Avg. Flow Depth=0.61' Max Vel=3.49 fps Inflow=5.40 cfs 24,078 cf
n=0.069 L=150.5' S=0.1030 '/' Capacity=184.33 cfs Outflow=5.39 cfs 24,078 cf

Pond FB1: Peak Elev=394.60' Storage=5,552 cf Inflow=9.94 cfs 40,244 cf
Primary=8.48 cfs 40,248 cf Secondary=0.00 cfs 0 cf Outflow=8.48 cfs 40,248 cf

Pond FB2: Peak Elev=364.78' Storage=10,898 cf Inflow=5.39 cfs 24,078 cf
Primary=0.00 cfs 0 cf Secondary=0.91 cfs 24,079 cf Outflow=0.91 cfs 24,079 cf

Pond FB3: Peak Elev=356.33' Storage=10,458 cf Inflow=7.04 cfs 28,372 cf
Primary=0.00 cfs 0 cf Secondary=3.59 cfs 28,379 cf Outflow=3.59 cfs 28,379 cf

Pond SD-2: 15" ROAD CULVERT Peak Elev=397.13' Inflow=1.33 cfs 4,355 cf
15.0" Round Culvert n=0.013 L=55.6' S=0.0360 '/' Outflow=1.33 cfs 4,355 cf

Pond SD-3: 18" ROAD CULVERT Peak Elev=382.39' Inflow=5.40 cfs 24,078 cf
18.0" Round Culvert n=0.013 L=58.4' S=0.0599 '/' Outflow=5.40 cfs 24,078 cf

Link SP-1: Inflow=27.57 cfs 191,436 cf
Primary=27.57 cfs 191,436 cf

Link SP-2: Inflow=20.10 cfs 84,937 cf
Primary=20.10 cfs 84,937 cf

Total Runoff Area = 1,271,929 sf Runoff Volume = 276,362 cf Average Runoff Depth = 2.61"
95.78% Pervious = 1,218,191 sf 4.22% Impervious = 53,738 sf

Time span=0.00-72.00 hrs, dt=0.03 hrs, 2401 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 WS-1: Runoff Area=669,661 sf 0.85% Impervious Runoff Depth=3.50"
Flow Length=2,263' Tc=27.1 min CN=WQ Runoff=37.23 cfs 195,228 cf

Subcatchment WS-11: Runoff Area=99,647 sf 11.38% Impervious Runoff Depth=3.95"
Flow Length=622' Tc=17.2 min CN=WQ Runoff=7.33 cfs 32,761 cf

Subcatchment WS-12: Runoff Area=121,470 sf 8.91% Impervious Runoff Depth=3.84"
Flow Length=596' Tc=13.4 min CN=WQ Runoff=9.64 cfs 38,869 cf

Subcatchment WS-2: Runoff Area=156,380 sf 10.52% Impervious Runoff Depth=3.79"
Flow Length=634' Tc=12.9 min CN=WQ Runoff=12.43 cfs 49,332 cf

Subcatchment WS-21: Runoff Area=208,250 sf 2.89% Impervious Runoff Depth=3.59"
Flow Length=481' Tc=9.8 min CN=WQ Runoff=17.44 cfs 62,316 cf

Subcatchment WS-22: Runoff Area=16,521 sf 20.65% Impervious Runoff Depth=4.23"
Tc=6.0 min CN=WQ Runoff=1.77 cfs 5,825 cf

Reach R1: Avg. Flow Depth=0.45' Max Vel=4.27 fps Inflow=4.19 cfs 32,768 cf
n=0.035 L=234.5' S=0.0768 '/' Capacity=226.48 cfs Outflow=4.18 cfs 32,768 cf

Reach R2: Avg. Flow Depth=0.47' Max Vel=2.93 fps Inflow=9.66 cfs 71,643 cf
n=0.035 L=308.1' S=0.0325 '/' Capacity=443.25 cfs Outflow=9.57 cfs 71,643 cf

Reach R3: Avg. Flow Depth=0.54' Max Vel=2.53 fps Inflow=9.57 cfs 71,643 cf
n=0.035 L=390.4' S=0.0205 '/' Capacity=308.51 cfs Outflow=9.41 cfs 71,643 cf

Reach R4: Avg. Flow Depth=0.50' Max Vel=4.59 fps Inflow=9.41 cfs 71,643 cf
n=0.035 L=308.1' S=0.0747 '/' Capacity=376.75 cfs Outflow=9.39 cfs 71,643 cf

Reach R5: Avg. Flow Depth=0.57' Max Vel=4.45 fps Inflow=7.09 cfs 38,875 cf
n=0.035 L=199.6' S=0.0601 '/' Capacity=200.43 cfs Outflow=7.08 cfs 38,875 cf

Reach R6: Avg. Flow Depth=0.70' Max Vel=3.78 fps Inflow=7.33 cfs 32,761 cf
n=0.069 L=150.5' S=0.1030 '/' Capacity=184.33 cfs Outflow=7.33 cfs 32,761 cf

Pond FB1: Peak Elev=395.06' Storage=7,133 cf Inflow=13.63 cfs 55,157 cf
Primary=10.82 cfs 55,157 cf Secondary=0.02 cfs 4 cf Outflow=10.83 cfs 55,161 cf

Pond FB2: Peak Elev=365.00' Storage=11,992 cf Inflow=7.33 cfs 32,761 cf
Primary=0.00 cfs 0 cf Secondary=4.19 cfs 32,768 cf Outflow=4.19 cfs 32,768 cf

Pond FB3: Peak Elev=356.58' Storage=11,566 cf Inflow=9.64 cfs 38,869 cf
Primary=0.00 cfs 0 cf Secondary=7.09 cfs 38,875 cf Outflow=7.09 cfs 38,875 cf

Pond SD-2: 15" ROAD CULVERT Peak Elev=397.24' Inflow=1.77 cfs 5,825 cf
15.0" Round Culvert n=0.013 L=55.6' S=0.0360 '/' Outflow=1.77 cfs 5,825 cf

Pond SD-3: 18" ROAD CULVERT Peak Elev=382.94' Inflow=7.33 cfs 32,761 cf
18.0" Round Culvert n=0.013 L=58.4' S=0.0599 '/' Outflow=7.33 cfs 32,761 cf

Link SP-1: Inflow=44.52 cfs 266,871 cf
Primary=44.52 cfs 266,871 cf

Link SP-2: Inflow=26.60 cfs 117,477 cf
Primary=26.60 cfs 117,477 cf

Total Runoff Area = 1,271,929 sf Runoff Volume = 384,330 cf Average Runoff Depth = 3.63"
95.78% Pervious = 1,218,191 sf 4.22% Impervious = 53,738 sf

Summary for Subcatchment WS-1:

Runoff = 37.23 cfs @ 12.37 hrs, Volume= 195,228 cf, Depth= 3.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 25-Year Rainfall=5.77"

	Area (sf)	CN	Description
	624,316	79	Woods/grass comb., Good, HSG D
	39,634	80	>75% Grass cover, Good, HSG D
*	5,711	98	Prop. roofs
	669,661		Weighted Average
	663,950		99.15% Pervious Area
	5,711		0.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.1	150	0.1116	0.17		**Sheet Flow, Seg A to B** Woods: Light underbrush n= 0.400 P2= 3.12"
5.8	497	0.0815	1.43		**Shallow Concentrated Flow, Seg B to C** Woodland Kv= 5.0 fps
0.4	97	0.0670	4.17		**Shallow Concentrated Flow, Seg C to D** Unpaved Kv= 16.1 fps
1.4	145	0.1174	1.71		**Shallow Concentrated Flow, Seg D to E** Woodland Kv= 5.0 fps
0.4	157	0.0765	7.18	248.36	**Channel Flow, Seg E to F** Area= 34.6 sf Perim= 72.4' r= 0.48' n= 0.035 Earth, dense weeds
0.4	178	0.0898	7.78	261.58	**Channel Flow, Seg F to G** Area= 33.6 sf Perim= 70.2' r= 0.48' n= 0.035 Earth, dense weeds
1.1	308	0.0325	4.82	278.06	**Channel Flow, Seg G to H** Area= 57.7 sf Perim= 115.5' r= 0.50' n= 0.035 Earth, dense weeds
1.7	390	0.0205	3.82	199.64	**Channel Flow, Seg H to I** Area= 52.2 sf Perim= 104.6' r= 0.50' n= 0.035 Earth, dense weeds
0.8	341	0.0674	6.94	239.33	**Channel Flow, Seg 0 to P** Area= 34.5 sf Perim= 69.1' r= 0.50' n= 0.035 Earth, dense weeds
27.1	2,263	Total			

Summary for Subcatchment WS-11:

Runoff = 7.33 cfs @ 12.23 hrs, Volume= 32,761 cf, Depth= 3.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 25-Year Rainfall=5.77"

	Area (sf)	CN	Description
	13,682	79	Woods/grass comb., Good, HSG D
	65,281	80	>75% Grass cover, Good, HSG D
*	9,343	96	Gravel road shoulder & driveway
*	6,577	98	Paved road
*	4,764	98	Prop. roofs
	99,647		Weighted Average
	88,306		88.62% Pervious Area
	11,341		11.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0	70	0.0994	0.08		**Sheet Flow, Seg A to B** Woods: Dense underbrush n= 0.800 P2= 3.12"
0.9	12	0.2893	0.22		**Sheet Flow, Seg B to C** Grass: Dense n= 0.240 P2= 3.12"
0.2	81	0.1234	5.66		**Shallow Concentrated Flow, Seg C to D** Unpaved Kv= 16.1 fps
1.1	459	0.0755	6.87	124.48	**Trap/Vee/Rect Channel Flow, Seg D to E** Bot.W=1.00' D=2.50' Z= 2.0 & 3.0 '/' Top.W=13.50' n= 0.069 Riprap, 6-inch
17.2	622	Total			

Summary for Subcatchment WS-12:

Runoff = 9.64 cfs @ 12.18 hrs, Volume= 38,869 cf, Depth= 3.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 25-Year Rainfall=5.77"

	Area (sf)	CN	Description
	34,108	79	Woods/grass comb., Good, HSG D
*	0	98	Exist. Paved areas
*	0	80	Exist, >75% Grass cover, Good, HSG D
*	8,384	96	Gravel road shoulder & driveway
*	5,382	98	Paved road
	68,160	80	>75% Grass cover, Good, HSG D
	5,436	98	Unconnected roofs, HSG A
	121,470		Weighted Average
	110,652		91.09% Pervious Area
	10,818		8.91% Impervious Area
	5,436		50.25% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	150	0.0657	0.20		**Sheet Flow, Seg A to B** Grass: Dense n= 0.240 P2= 3.12"
0.0	13	0.0463	4.37		**Shallow Concentrated Flow, Seg B to C** Paved Kv= 20.3 fps
1.0	433	0.0811	7.55	163.57	**Trap/Vee/Rect Channel Flow, Seg C to D** Bot.W=1.00' D=2.75' Z= 3.0 & 2.0 '/' Top.W=14.75' n= 0.069 Riprap, 6-inch
13.4	596	Total			

Summary for Subcatchment WS-2:

Runoff = 12.43 cfs @ 12.18 hrs, Volume= 49,332 cf, Depth= 3.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 25-Year Rainfall=5.77"

	Area (sf)	CN	Description
	69,471	79	Woods/grass comb., Good, HSG D
*	9,412	98	Exist. Paved areas
*	24,878	80	Exist, >75% Grass cover, Good, HSG D
*	4,488	96	Gravel road shoulder & driveways
*	4,069	98	Paved road
	41,097	80	>75% Grass cover, Good, HSG D
*	2,965	98	Prop. roofs
	156,380		Weighted Average
	139,934		89.48% Pervious Area
	16,446		10.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	38	0.0396	1.47		**Sheet Flow, Seg A to B** Smooth surfaces n= 0.011 P2= 3.12"
11.3	110	0.1231	0.16		**Sheet Flow, Seg B to C** Woods: Light underbrush n= 0.400 P2= 3.12"
0.4	214	0.1088	8.65	254.21	**Channel Flow, Seg C to D** Area= 29.4 sf Perim= 60.6' r= 0.49' n= 0.035 Earth, dense weeds
0.5	140	0.0982	5.05		**Shallow Concentrated Flow, Seg D to E** Unpaved Kv= 16.1 fps
0.2	64	0.1254	5.70		**Shallow Concentrated Flow, Seg E to F** Unpaved Kv= 16.1 fps
0.1	68	0.0627	14.40	260.91	**Trap/Vee/Rect Channel Flow, Seg F to G** Bot.W=1.00' D=2.50' Z= 2.0 & 3.0 '/' Top.W=13.50' n= 0.030 Earth, grassed & winding
12.9	634	Total			

Summary for Subcatchment WS-21:

Runoff = 17.44 cfs @ 12.14 hrs, Volume= 62,316 cf, Depth= 3.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 25-Year Rainfall=5.77"

	Area (sf)	CN	Description
	163,155	79	Woods/grass comb., Good, HSG D
*	173	98	Exist. Paved areas
*	0	80	Exist, >75% Grass cover, Good, HSG D
*	4,570	96	Gravel road shoulder & driveway
*	1,524	98	Paved road
	34,514	80	>75% Grass cover, Good, HSG D
*	4,314	98	Prop. roofs
	208,250		Weighted Average
	202,239		97.11% Pervious Area
	6,011		2.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	150	0.1366	0.27		**Sheet Flow, Seg A to B** Grass: Dense n= 0.240 P2= 3.12"
0.3	265	0.1265	14.74	403.43	**Trap/Vee/Rect Channel Flow, Seg B to C** Bot.W=1.00' D=1.50' Z= 3.0 & 20.0 '/' Top.W=35.50' n= 0.030 Earth, grassed & winding
0.2	66	0.1594	6.43		**Shallow Concentrated Flow, Seg C to D** Unpaved Kv= 16.1 fps
9.8	481	Total			

Summary for Subcatchment WS-22:

Runoff = 1.77 cfs @ 12.09 hrs, Volume= 5,825 cf, Depth= 4.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 25-Year Rainfall=5.77"

	Area (sf)	CN	Description
	0	79	Woods/grass comb., Good, HSG D
*	2,417	96	Gravel road shoulder & driveways
*	2,577	98	Paved road
	10,693	80	>75% Grass cover, Good, HSG D
*	834	98	Prop. roofs
	16,521		Weighted Average
	13,110		79.35% Pervious Area
	3,411		20.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Tc <6.0 min**

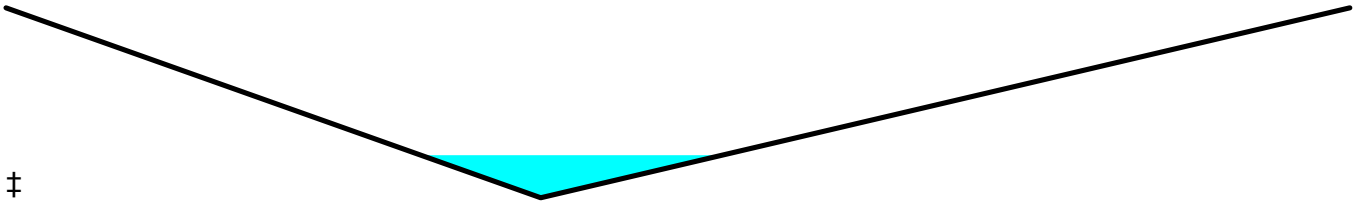
Summary for Reach R1:

Inflow Area = 99,647 sf, 11.38% Impervious, Inflow Depth = 3.95" for 25-Year event
Inflow = 4.19 cfs @ 12.51 hrs, Volume= 32,768 cf
Outflow = 4.18 cfs @ 12.52 hrs, Volume= 32,768 cf, Atten= 0%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Max. Velocity= 4.27 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 1.93 fps, Avg. Travel Time= 2.0 min

Peak Storage= 229 cf @ 12.52 hrs
Average Depth at Peak Storage= 0.45'
Bank-Full Depth= 2.00' Flow Area= 19.5 sf, Capacity= 226.48 cfs

Custom cross-section, Length= 234.5' Slope= 0.0768 '/'
Constant n= 0.035 Earth, dense weeds
Inlet Invert= 356.00', Outlet Invert= 338.00'



‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	346.00	0.00
7.77	344.00	2.00
19.53	346.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
2.00	19.5	20.0	4,580	226.48

Summary for Reach R2:

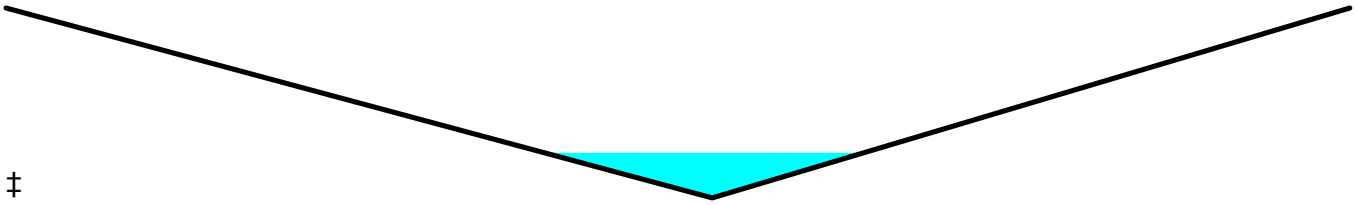
[62] Hint: Exceeded Reach R1 OUTLET depth by 0.21' @ 12.33 hrs
[62] Hint: Exceeded Reach R5 OUTLET depth by 0.03' @ 32.85 hrs

Inflow Area = 221,117 sf, 10.02% Impervious, Inflow Depth = 3.89" for 25-Year event
Inflow = 9.66 cfs @ 12.47 hrs, Volume= 71,643 cf
Outflow = 9.57 cfs @ 12.50 hrs, Volume= 71,643 cf, Atten= 1%, Lag= 1.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Max. Velocity= 2.93 fps, Min. Travel Time= 1.8 min
Avg. Velocity = 1.26 fps, Avg. Travel Time= 4.1 min

Peak Storage= 1,007 cf @ 12.50 hrs
Average Depth at Peak Storage= 0.47'
Bank-Full Depth= 2.00' Flow Area= 58.0 sf, Capacity= 443.25 cfs

Custom cross-section, Length= 308.1' Slope= 0.0325 '/'
Constant n= 0.035 Earth, dense weeds
Inlet Invert= 338.00', Outlet Invert= 328.00'



‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	332.00	0.00
30.50	330.00	2.00
58.04	332.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
2.00	58.0	58.2	17,882	443.25

Summary for Reach R3:

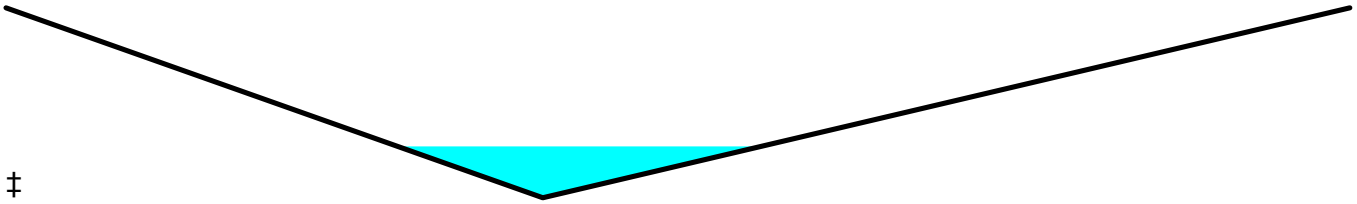
[62] Hint: Exceeded Reach R2 OUTLET depth by 0.08' @ 12.69 hrs

Inflow Area = 221,117 sf, 10.02% Impervious, Inflow Depth = 3.89" for 25-Year event
Inflow = 9.57 cfs @ 12.50 hrs, Volume= 71,643 cf
Outflow = 9.41 cfs @ 12.53 hrs, Volume= 71,643 cf, Atten= 2%, Lag= 2.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Max. Velocity= 2.53 fps, Min. Travel Time= 2.6 min
Avg. Velocity = 1.07 fps, Avg. Travel Time= 6.1 min

Peak Storage= 1,449 cf @ 12.53 hrs
Average Depth at Peak Storage= 0.54'
Bank-Full Depth= 2.00' Flow Area= 50.9 sf, Capacity= 308.51 cfs

Custom cross-section, Length= 390.4' Slope= 0.0205 '/'
Constant n= 0.035 Earth, dense weeds
Inlet Invert= 328.00', Outlet Invert= 320.00'



‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	324.00	0.00
20.32	322.00	2.00
50.87	324.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
2.00	50.9	51.0	19,860	308.51

Summary for Reach R4:

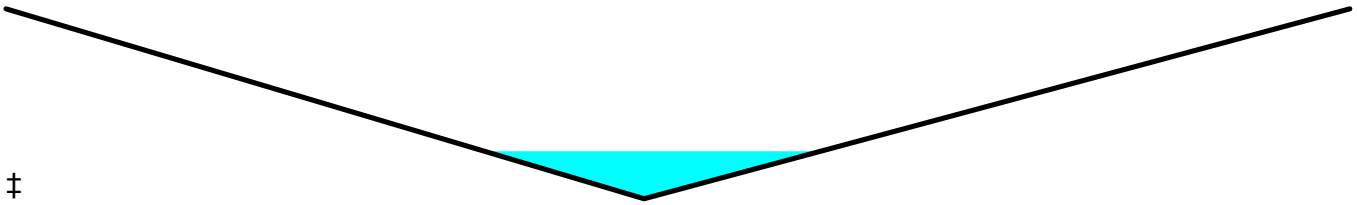
[61] Hint: Exceeded Reach R3 outlet invert by 0.50' @ 12.54 hrs

Inflow Area = 221,117 sf, 10.02% Impervious, Inflow Depth = 3.89" for 25-Year event
Inflow = 9.41 cfs @ 12.53 hrs, Volume= 71,643 cf
Outflow = 9.39 cfs @ 12.55 hrs, Volume= 71,643 cf, Atten= 0%, Lag= 0.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Max. Velocity= 4.59 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 1.94 fps, Avg. Travel Time= 2.6 min

Peak Storage= 631 cf @ 12.55 hrs
Average Depth at Peak Storage= 0.50'
Bank-Full Depth= 2.00' Flow Area= 32.6 sf, Capacity= 376.75 cfs

Custom cross-section, Length= 308.1' Slope= 0.0747 '/'
Constant n= 0.035 Earth, dense weeds
Inlet Invert= 320.00', Outlet Invert= 297.00'



‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	314.00	0.00
15.50	312.00	2.00
32.64	314.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
2.00	32.6	32.9	10,056	376.75

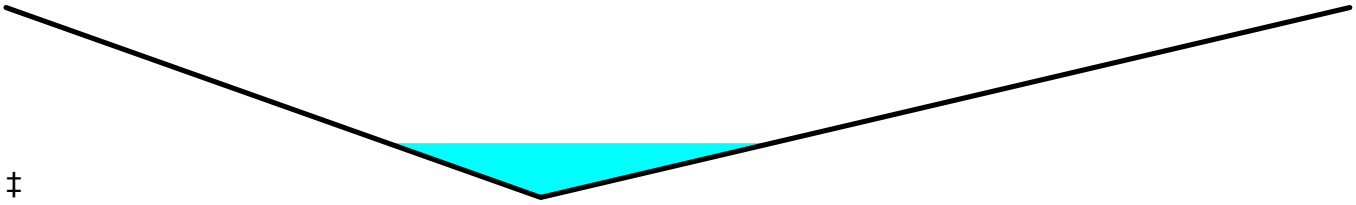
Summary for Reach R5:

Inflow Area = 121,470 sf, 8.91% Impervious, Inflow Depth = 3.84" for 25-Year event
Inflow = 7.09 cfs @ 12.32 hrs, Volume= 38,875 cf
Outflow = 7.08 cfs @ 12.33 hrs, Volume= 38,875 cf, Atten= 0%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Max. Velocity= 4.45 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 1.78 fps, Avg. Travel Time= 1.9 min

Peak Storage= 318 cf @ 12.33 hrs
Average Depth at Peak Storage= 0.57'
Bank-Full Depth= 2.00' Flow Area= 19.5 sf, Capacity= 200.43 cfs

Custom cross-section, Length= 199.6' Slope= 0.0601 '/'
Constant n= 0.035 Earth, dense weeds
Inlet Invert= 350.00', Outlet Invert= 338.00'



‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	346.00	0.00
7.77	344.00	2.00
19.53	346.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
2.00	19.5	20.0	3,898	200.43

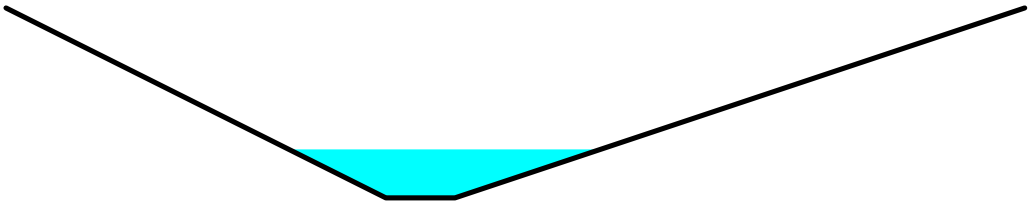
Summary for Reach R6:

Inflow Area = 99,647 sf, 11.38% Impervious, Inflow Depth = 3.95" for 25-Year event
Inflow = 7.33 cfs @ 12.23 hrs, Volume= 32,761 cf
Outflow = 7.33 cfs @ 12.24 hrs, Volume= 32,761 cf, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Max. Velocity= 3.78 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 1.31 fps, Avg. Travel Time= 1.9 min

Peak Storage= 292 cf @ 12.24 hrs
Average Depth at Peak Storage= 0.70'
Bank-Full Depth= 2.75' Flow Area= 21.7 sf, Capacity= 184.33 cfs

1.00' x 2.75' deep channel, n= 0.069 Riprap, 6-inch
Side Slope Z-value= 2.0 3.0 '/' Top Width= 14.75'
Length= 150.5' Slope= 0.1030 '/'
Inlet Invert= 377.50', Outlet Invert= 362.00'



Summary for Pond FB1:

Inflow Area = 172,901 sf, 11.48% Impervious, Inflow Depth = 3.83" for 25-Year event
Inflow = 13.63 cfs @ 12.17 hrs, Volume= 55,157 cf
Outflow = 10.83 cfs @ 12.28 hrs, Volume= 55,161 cf, Atten= 20%, Lag= 6.6 min
Primary = 10.82 cfs @ 12.28 hrs, Volume= 55,157 cf
Secondary = 0.02 cfs @ 12.28 hrs, Volume= 4 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Peak Elev= 395.06' @ 12.28 hrs Surf.Area= 3,523 sf Storage= 7,133 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 67.7 min (875.4 - 807.6)

Volume	Invert	Avail.Storage	Storage Description
#1	392.50'	145,475 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
392.50	2,020	189.9	0	0	2,020
394.00	2,939	218.2	3,698	3,698	2,989
396.00	4,080	282.6	6,988	10,686	5,604
397.00	4,658	295.2	4,366	15,051	6,251
425.00	4,658	295.2	130,424	145,475	14,517

Device	Routing	Invert	Outlet Devices
#1	Primary	388.89'	**15.0" Round 15-inch culvert** L= 44.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 388.89' / 388.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	390.33'	**1.6" Vert. 1-5/8" DRILL HOLE** C= 0.600
#3	Device 2	390.33'	**4.0" Vert. 4" UD** C= 0.600
#4	Device 3	392.50'	**2.410 in/hr Exfiltration over Surface area**
#5	Device 1	393.85'	**Neenah R4345 Beehive Grate Light Duty-req. structure** Head (feet) 0.00 0.10 0.15 0.20 0.25 0.30 0.35 0.40 0.50 0.60 0.70 0.80 0.90 1.00

Disch. (cfs) 0.000 0.900 1.600 2.500 3.500 4.000 4.600 5.300 6.800 7.500 8.100 8.600 9.100 9.600

#6 Secondary 395.00' **15.0" Round Emergency 15-inch Culvert**
L= 44.5' CPP, projecting, no headwall, Ke= 0.900
Inlet / Outlet Invert= 395.00' / 390.00' S= 0.1124 '/' Cc= 0.900
n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=10.81 cfs @ 12.28 hrs HW=395.06' TW=0.00' (Dynamic Tailwater)
- **1=15-inch culvert** (Passes 10.81 cfs of 13.92 cfs potential flow)
  - **2=1-5/8" DRILL HOLE** (Orifice Controls 0.15 cfs @ 10.40 fps)
    - **3=4" UD** (Passes 0.15 cfs of 0.90 cfs potential flow)
      - **4=Exfiltration** (Passes 0.15 cfs of 0.20 cfs potential flow)
  - **5=Neenah R4345 Beehive Grate Light Duty-req. structure** (Custom Controls 10.66 cfs)

Secondary OutFlow Max=0.02 cfs @ 12.28 hrs HW=395.06' TW=0.00' (Dynamic Tailwater)
- **6=Emergency 15-inch Culvert** (Inlet Controls 0.02 cfs @ 0.67 fps)

Summary for Pond FB2:

[62] Hint: Exceeded Reach R6 OUTLET depth by 2.54' @ 12.99 hrs

Inflow Area =	99,647 sf,	11.38% Impervious,	Inflow Depth =	3.95"	for 25-Year event
Inflow =	7.33 cfs @	12.24 hrs, Volume=	32,761 cf		
Outflow =	4.19 cfs @	12.51 hrs, Volume=	32,768 cf,	Atten= 43%,	Lag= 16.2 min
Primary =	0.00 cfs @	0.00 hrs, Volume=	0 cf		
Secondary =	4.19 cfs @	12.51 hrs, Volume=	32,768 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Peak Elev= 365.00' @ 12.51 hrs Surf.Area= 5,004 sf Storage= 11,992 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 210.3 min (1,019.6 - 809.3)

Volume	Invert	Avail.Storage	Storage Description
#1	362.00'	17,298 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
362.00	2,896	238.0	0	0	2,896
364.00	4,440	276.2	7,281	7,281	4,541
365.00	5,005	288.7	4,720	12,001	5,170
366.00	5,595	301.3	5,297	17,298	5,831

Device	Routing	Invert	Outlet Devices
#1	Primary	365.00'	**8.0' long x 12.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#2	Secondary	359.73'	**15.0" Round 15-inch culvert**
			L= 27.5' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 359.73' / 358.00' S= 0.0629 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#3	Device 2	359.83'	**2.0" Vert. 2" DRILL HOLE** C= 0.600

#4	Device 3	359.83'	**4.0" Vert. 4" UD** C= 0.600
#5	Device 4	362.00'	**2.410 in/hr Exfiltration over Surface area**
#6	Device 2	363.50'	**4.0" Vert. Orifice/Grate** C= 0.600
#7	Device 2	364.75'	**Neenah R4345 Beehive Grate Light Duty-req. structure**

Head (feet) 0.00 0.10 0.15 0.20 0.25 0.30 0.35 0.40 0.50 0.60 0.70 0.80 0.90 1.00
Disch. (cfs) 0.000 0.900 1.600 2.500 3.500 4.000 4.600 5.300 6.800 7.500 8.100 8.600 9.100 9.600

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=362.00' TW=356.00' (Dynamic Tailwater)
└─**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=4.19 cfs @ 12.51 hrs HW=365.00' TW=356.45' (Dynamic Tailwater)
└─**2=15-inch culvert** (Passes 4.19 cfs of 12.73 cfs potential flow)
  ├─**3=2" DRILL HOLE** (Orifice Controls 0.24 cfs @ 10.86 fps)
  │ └─**4=4" UD** (Passes 0.24 cfs of 0.94 cfs potential flow)
  │ └─**5=Exfiltration** (Passes 0.24 cfs of 0.28 cfs potential flow)
  ├─**6=Orifice/Grate** (Orifice Controls 0.48 cfs @ 5.56 fps)
  └─**7=Neenah R4345 Beehive Grate Light Duty-req. structure** (Custom Controls 3.46 cfs)

Summary for Pond FB3:

Inflow Area = 121,470 sf, 8.91% Impervious, Inflow Depth = 3.84" for 25-Year event
Inflow = 9.64 cfs @ 12.18 hrs, Volume= 38,869 cf
Outflow = 7.09 cfs @ 12.32 hrs, Volume= 38,875 cf, Atten= 27%, Lag= 8.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Secondary = 7.09 cfs @ 12.32 hrs, Volume= 38,875 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Peak Elev= 356.58' @ 12.32 hrs Surf.Area= 4,421 sf Storage= 11,566 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 187.6 min (996.4 - 808.9)

Volume	Invert	Avail.Storage	Storage Description
#1	353.30'	23,852 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
353.30	2,495	213.7	0	0	2,495
354.00	2,957	226.9	1,906	1,906	2,983
354.80	3,520	242.0	2,588	4,493	3,577
356.00	4,119	257.1	4,579	9,072	4,247
358.00	5,198	282.2	9,296	18,368	5,452
359.00	5,775	294.8	5,484	23,852	6,098

Device	Routing	Invert	Outlet Devices
#1	Primary	357.30'	**6.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#2	Secondary	351.03'	**15.0" Round 15-inch culvert** L= 43.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 351.03' / 350.00' S= 0.0237 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#3	Device 2	351.13'	**1.9" Vert. 1-7/8" DRILL HOLE** C= 0.600
#4	Device 3	351.13'	**4.0" Vert. 4" UD** C= 0.600
#5	Device 4	353.30'	**2.410 in/hr Exfiltration over Surface area**
#6	Device 2	354.80'	**3.0" Vert. Orifice/Grate** C= 0.600
#7	Device 2	356.10'	**Neenah R4345 Beehive Grate Light Duty-req. structure** Head (feet) 0.00 0.10 0.15 0.20 0.25 0.30 0.35 0.40 0.50 0.60 0.70 0.80 0.90 1.00 Disch. (cfs) 0.000 0.900 1.600 2.500 3.500 4.000 4.600 5.300 6.800 7.500 8.100 8.600 9.100 9.600

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=353.30' TW=350.00' (Dynamic Tailwater)
└─**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=7.06 cfs @ 12.32 hrs HW=356.58' TW=350.57' (Dynamic Tailwater)
└─**2=15-inch culvert** (Passes 7.06 cfs of 13.12 cfs potential flow)
  ├─**3=1-7/8" DRILL HOLE** (Orifice Controls 0.22 cfs @ 11.16 fps)
  │ └─**4=4" UD** (Passes 0.22 cfs of 0.97 cfs potential flow)
  │ └─**5=Exfiltration** (Passes 0.22 cfs of 0.25 cfs potential flow)
  ├─**6=Orifice/Grate** (Orifice Controls 0.30 cfs @ 6.20 fps)
  └─**7=Neenah R4345 Beehive Grate Light Duty-req. structure** (Custom Controls 6.54 cfs)

Summary for Pond SD-2: 15" ROAD CULVERT

[57] Hint: Peaked at 397.24' (Flood elevation advised)

Inflow Area = 16,521 sf, 20.65% Impervious, Inflow Depth = 4.23" for 25-Year event
Inflow = 1.77 cfs @ 12.09 hrs, Volume= 5,825 cf
Outflow = 1.77 cfs @ 12.09 hrs, Volume= 5,825 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.77 cfs @ 12.09 hrs, Volume= 5,825 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Peak Elev= 397.24' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	396.50'	**15.0" Round 15-INCH CULVERT** L= 55.6' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 396.50' / 394.50' S= 0.0360 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.76 cfs @ 12.09 hrs HW=397.24' TW=394.48' (Dynamic Tailwater)
└─**1=15-INCH CULVERT** (Inlet Controls 1.76 cfs @ 2.32 fps)

Summary for Pond SD-3: 18" ROAD CULVERT

[57] Hint: Peaked at 382.94' (Flood elevation advised)

Inflow Area = 99,647 sf, 11.38% Impervious, Inflow Depth = 3.95" for 25-Year event
Inflow = 7.33 cfs @ 12.23 hrs, Volume= 32,761 cf
Outflow = 7.33 cfs @ 12.23 hrs, Volume= 32,761 cf, Atten= 0%, Lag= 0.0 min
Primary = 7.33 cfs @ 12.23 hrs, Volume= 32,761 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Peak Elev= 382.94' @ 12.23 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	381.00'	**18.0" Round 18-INCH CULVERT** L= 58.4' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 381.00' / 377.50' S= 0.0599 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=7.31 cfs @ 12.23 hrs HW=382.93' TW=378.20' (Dynamic Tailwater)
↑**1=18-INCH CULVERT** (Inlet Controls 7.31 cfs @ 4.14 fps)

Summary for Link SP-1:

Inflow Area = 890,778 sf, 3.13% Impervious, Inflow Depth = 3.60" for 25-Year event
Inflow = 44.52 cfs @ 12.40 hrs, Volume= 266,871 cf
Primary = 44.52 cfs @ 12.40 hrs, Volume= 266,871 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Summary for Link SP-2:

Inflow Area = 381,151 sf, 6.79% Impervious, Inflow Depth = 3.70" for 25-Year event
Inflow = 26.60 cfs @ 12.15 hrs, Volume= 117,477 cf
Primary = 26.60 cfs @ 12.15 hrs, Volume= 117,477 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Summary for Subcatchment WS-1:

Runoff = 47.34 cfs @ 12.37 hrs, Volume= 249,062 cf, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 50-Year Rainfall=6.84"

	Area (sf)	CN	Description
	624,316	79	Woods/grass comb., Good, HSG D
	39,634	80	>75% Grass cover, Good, HSG D
*	5,711	98	Prop. roofs
	669,661		Weighted Average
	663,950		99.15% Pervious Area
	5,711		0.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.1	150	0.1116	0.17		**Sheet Flow, Seg A to B** Woods: Light underbrush n= 0.400 P2= 3.12"
5.8	497	0.0815	1.43		**Shallow Concentrated Flow, Seg B to C** Woodland Kv= 5.0 fps
0.4	97	0.0670	4.17		**Shallow Concentrated Flow, Seg C to D** Unpaved Kv= 16.1 fps
1.4	145	0.1174	1.71		**Shallow Concentrated Flow, Seg D to E** Woodland Kv= 5.0 fps
0.4	157	0.0765	7.18	248.36	**Channel Flow, Seg E to F** Area= 34.6 sf Perim= 72.4' r= 0.48' n= 0.035 Earth, dense weeds
0.4	178	0.0898	7.78	261.58	**Channel Flow, Seg F to G** Area= 33.6 sf Perim= 70.2' r= 0.48' n= 0.035 Earth, dense weeds
1.1	308	0.0325	4.82	278.06	**Channel Flow, Seg G to H** Area= 57.7 sf Perim= 115.5' r= 0.50' n= 0.035 Earth, dense weeds
1.7	390	0.0205	3.82	199.64	**Channel Flow, Seg H to I** Area= 52.2 sf Perim= 104.6' r= 0.50' n= 0.035 Earth, dense weeds
0.8	341	0.0674	6.94	239.33	**Channel Flow, Seg 0 to P** Area= 34.5 sf Perim= 69.1' r= 0.50' n= 0.035 Earth, dense weeds
27.1	2,263	Total			

Summary for Subcatchment WS-11:

Runoff = 9.15 cfs @ 12.23 hrs, Volume= 40,990 cf, Depth= 4.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 50-Year Rainfall=6.84"

	Area (sf)	CN	Description
	13,682	79	Woods/grass comb., Good, HSG D
	65,281	80	>75% Grass cover, Good, HSG D
*	9,343	96	Gravel road shoulder & driveway
*	6,577	98	Paved road
*	4,764	98	Prop. roofs
	99,647		Weighted Average
	88,306		88.62% Pervious Area
	11,341		11.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0	70	0.0994	0.08		**Sheet Flow, Seg A to B** Woods: Dense underbrush n= 0.800 P2= 3.12"
0.9	12	0.2893	0.22		**Sheet Flow, Seg B to C** Grass: Dense n= 0.240 P2= 3.12"
0.2	81	0.1234	5.66		**Shallow Concentrated Flow, Seg C to D** Unpaved Kv= 16.1 fps
1.1	459	0.0755	6.87	124.48	**Trap/Vee/Rect Channel Flow, Seg D to E** Bot.W=1.00' D=2.50' Z= 2.0 & 3.0 '/' Top.W=13.50' n= 0.069 Riprap, 6-inch
17.2	622	Total			

Summary for Subcatchment WS-12:

Runoff = 12.07 cfs @ 12.18 hrs, Volume= 48,839 cf, Depth= 4.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 50-Year Rainfall=6.84"

	Area (sf)	CN	Description
	34,108	79	Woods/grass comb., Good, HSG D
*	0	98	Exist. Paved areas
*	0	80	Exist, >75% Grass cover, Good, HSG D
*	8,384	96	Gravel road shoulder & driveway
*	5,382	98	Paved road
	68,160	80	>75% Grass cover, Good, HSG D
	5,436	98	Unconnected roofs, HSG A
	121,470		Weighted Average
	110,652		91.09% Pervious Area
	10,818		8.91% Impervious Area
	5,436		50.25% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	150	0.0657	0.20		**Sheet Flow, Seg A to B** Grass: Dense n= 0.240 P2= 3.12"
0.0	13	0.0463	4.37		**Shallow Concentrated Flow, Seg B to C** Paved Kv= 20.3 fps
1.0	433	0.0811	7.55	163.57	**Trap/Vee/Rect Channel Flow, Seg C to D** Bot.W=1.00' D=2.75' Z= 3.0 & 2.0 '/' Top.W=14.75' n= 0.069 Riprap, 6-inch
13.4	596	Total			

Summary for Subcatchment WS-2:

Runoff = 15.60 cfs @ 12.18 hrs, Volume= 62,120 cf, Depth= 4.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 50-Year Rainfall=6.84"

	Area (sf)	CN	Description
	69,471	79	Woods/grass comb., Good, HSG D
*	9,412	98	Exist. Paved areas
*	24,878	80	Exist, >75% Grass cover, Good, HSG D
*	4,488	96	Gravel road shoulder & driveways
*	4,069	98	Paved road
	41,097	80	>75% Grass cover, Good, HSG D
*	2,965	98	Prop. roofs
	156,380		Weighted Average
	139,934		89.48% Pervious Area
	16,446		10.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	38	0.0396	1.47		**Sheet Flow, Seg A to B** Smooth surfaces n= 0.011 P2= 3.12"
11.3	110	0.1231	0.16		**Sheet Flow, Seg B to C** Woods: Light underbrush n= 0.400 P2= 3.12"
0.4	214	0.1088	8.65	254.21	**Channel Flow, Seg C to D** Area= 29.4 sf Perim= 60.6' r= 0.49' n= 0.035 Earth, dense weeds
0.5	140	0.0982	5.05		**Shallow Concentrated Flow, Seg D to E** Unpaved Kv= 16.1 fps
0.2	64	0.1254	5.70		**Shallow Concentrated Flow, Seg E to F** Unpaved Kv= 16.1 fps
0.1	68	0.0627	14.40	260.91	**Trap/Vee/Rect Channel Flow, Seg F to G** Bot.W=1.00' D=2.50' Z= 2.0 & 3.0 '/' Top.W=13.50' n= 0.030 Earth, grassed & winding
12.9	634	Total			

Summary for Subcatchment WS-21:

Runoff = 22.06 cfs @ 12.14 hrs, Volume= 79,151 cf, Depth= 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 50-Year Rainfall=6.84"

	Area (sf)	CN	Description
	163,155	79	Woods/grass comb., Good, HSG D
*	173	98	Exist. Paved areas
*	0	80	Exist, >75% Grass cover, Good, HSG D
*	4,570	96	Gravel road shoulder & driveway
*	1,524	98	Paved road
	34,514	80	>75% Grass cover, Good, HSG D
*	4,314	98	Prop. roofs
	208,250		Weighted Average
	202,239		97.11% Pervious Area
	6,011		2.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	150	0.1366	0.27		**Sheet Flow, Seg A to B** Grass: Dense n= 0.240 P2= 3.12"
0.3	265	0.1265	14.74	403.43	**Trap/Vee/Rect Channel Flow, Seg B to C** Bot.W=1.00' D=1.50' Z= 3.0 & 20.0 '/' Top.W=35.50' n= 0.030 Earth, grassed & winding
0.2	66	0.1594	6.43		**Shallow Concentrated Flow, Seg C to D** Unpaved Kv= 16.1 fps
9.8	481	Total			

Summary for Subcatchment WS-22:

Runoff = 2.18 cfs @ 12.09 hrs, Volume= 7,210 cf, Depth= 5.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 50-Year Rainfall=6.84"

	Area (sf)	CN	Description
	0	79	Woods/grass comb., Good, HSG D
*	2,417	96	Gravel road shoulder & driveways
*	2,577	98	Paved road
	10,693	80	>75% Grass cover, Good, HSG D
*	834	98	Prop. roofs
	16,521		Weighted Average
	13,110		79.35% Pervious Area
	3,411		20.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Tc <6.0 min**

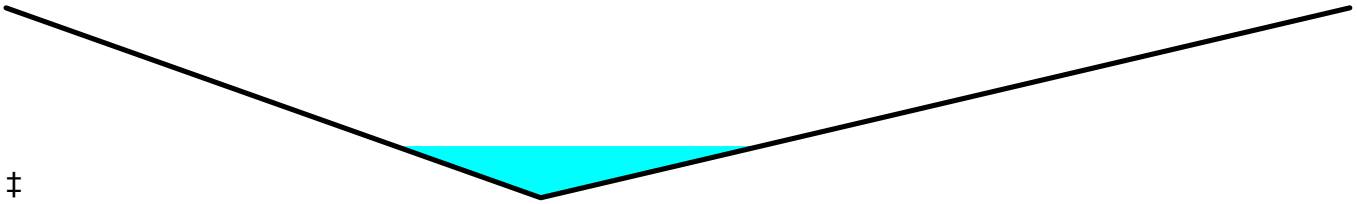
Summary for Reach R1:

Inflow Area = 99,647 sf, 11.38% Impervious, Inflow Depth = 4.94" for 50-Year event
Inflow = 7.06 cfs @ 12.39 hrs, Volume= 40,997 cf
Outflow = 7.06 cfs @ 12.40 hrs, Volume= 40,997 cf, Atten= 0%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Max. Velocity= 4.87 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 1.99 fps, Avg. Travel Time= 2.0 min

Peak Storage= 340 cf @ 12.40 hrs
Average Depth at Peak Storage= 0.54'
Bank-Full Depth= 2.00' Flow Area= 19.5 sf, Capacity= 226.48 cfs

Custom cross-section, Length= 234.5' Slope= 0.0768 '/'
Constant n= 0.035 Earth, dense weeds
Inlet Invert= 356.00', Outlet Invert= 338.00'



‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	346.00	0.00
7.77	344.00	2.00
19.53	346.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
2.00	19.5	20.0	4,580	226.48

Summary for Reach R2:

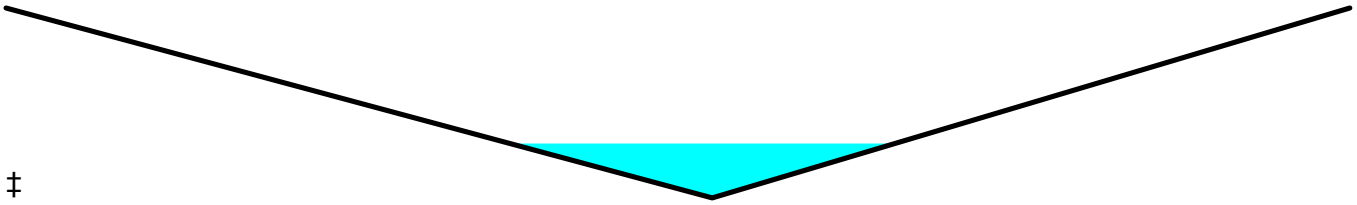
[62] Hint: Exceeded Reach R1 OUTLET depth by 0.23' @ 12.21 hrs
[62] Hint: Exceeded Reach R5 OUTLET depth by 0.03' @ 33.42 hrs

Inflow Area = 221,117 sf, 10.02% Impervious, Inflow Depth = 4.88" for 50-Year event
Inflow = 15.89 cfs @ 12.38 hrs, Volume= 89,839 cf
Outflow = 15.81 cfs @ 12.40 hrs, Volume= 89,839 cf, Atten= 1%, Lag= 1.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Max. Velocity= 3.32 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 1.30 fps, Avg. Travel Time= 4.0 min

Peak Storage= 1,467 cf @ 12.40 hrs
Average Depth at Peak Storage= 0.57'
Bank-Full Depth= 2.00' Flow Area= 58.0 sf, Capacity= 443.25 cfs

Custom cross-section, Length= 308.1' Slope= 0.0325 '/'
Constant n= 0.035 Earth, dense weeds
Inlet Invert= 338.00', Outlet Invert= 328.00'



‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	332.00	0.00
30.50	330.00	2.00
58.04	332.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
2.00	58.0	58.2	17,882	443.25

Summary for Reach R3:

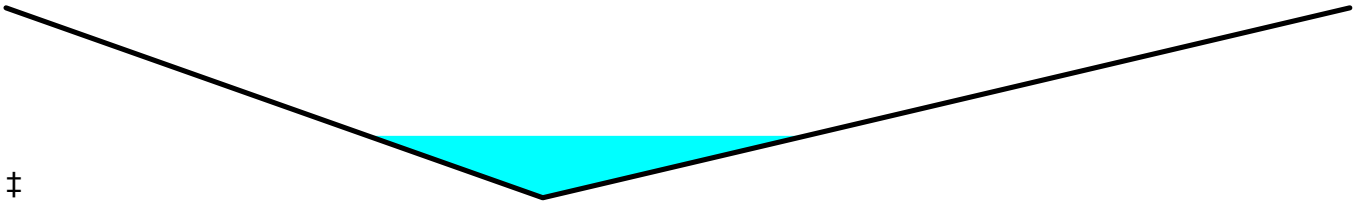
[62] Hint: Exceeded Reach R2 OUTLET depth by 0.09' @ 12.60 hrs

Inflow Area = 221,117 sf, 10.02% Impervious, Inflow Depth = 4.88" for 50-Year event
Inflow = 15.81 cfs @ 12.40 hrs, Volume= 89,839 cf
Outflow = 15.56 cfs @ 12.44 hrs, Volume= 89,839 cf, Atten= 2%, Lag= 2.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Max. Velocity= 2.87 fps, Min. Travel Time= 2.3 min
Avg. Velocity = 1.10 fps, Avg. Travel Time= 5.9 min

Peak Storage= 2,113 cf @ 12.44 hrs
Average Depth at Peak Storage= 0.65'
Bank-Full Depth= 2.00' Flow Area= 50.9 sf, Capacity= 308.51 cfs

Custom cross-section, Length= 390.4' Slope= 0.0205 '/'
Constant n= 0.035 Earth, dense weeds
Inlet Invert= 328.00', Outlet Invert= 320.00'



‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	324.00	0.00
20.32	322.00	2.00
50.87	324.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
2.00	50.9	51.0	19,860	308.51

Summary for Reach R4:

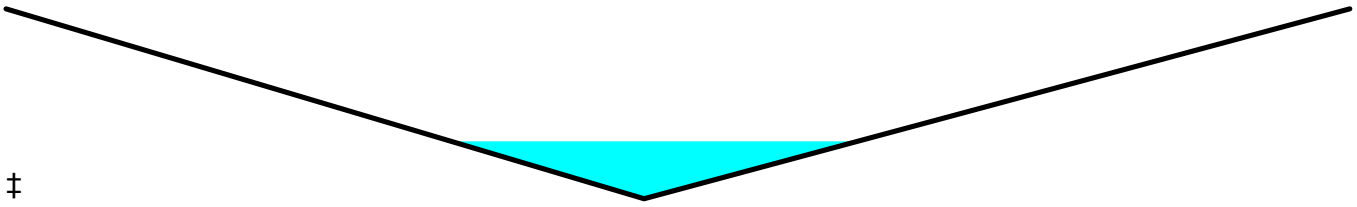
[61] Hint: Exceeded Reach R3 outlet invert by 0.60' @ 12.45 hrs

Inflow Area = 221,117 sf, 10.02% Impervious, Inflow Depth = 4.88" for 50-Year event
Inflow = 15.56 cfs @ 12.44 hrs, Volume= 89,839 cf
Outflow = 15.53 cfs @ 12.45 hrs, Volume= 89,839 cf, Atten= 0%, Lag= 0.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Max. Velocity= 5.20 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 2.01 fps, Avg. Travel Time= 2.6 min

Peak Storage= 920 cf @ 12.45 hrs
Average Depth at Peak Storage= 0.60'
Bank-Full Depth= 2.00' Flow Area= 32.6 sf, Capacity= 376.75 cfs

Custom cross-section, Length= 308.1' Slope= 0.0747 '/'
Constant n= 0.035 Earth, dense weeds
Inlet Invert= 320.00', Outlet Invert= 297.00'



‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	314.00	0.00
15.50	312.00	2.00
32.64	314.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
2.00	32.6	32.9	10,056	376.75

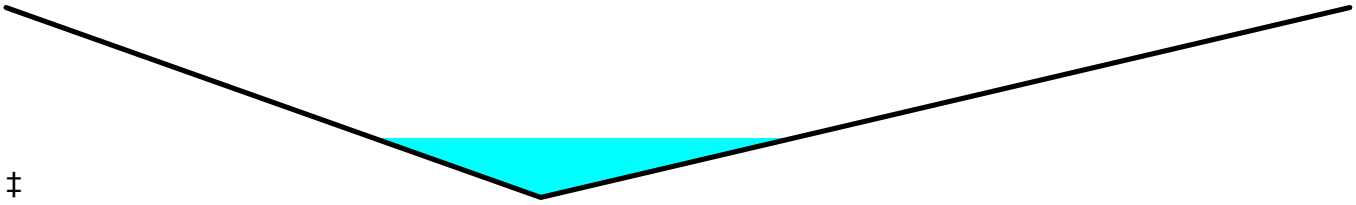
Summary for Reach R5:

Inflow Area = 121,470 sf, 8.91% Impervious, Inflow Depth = 4.83" for 50-Year event
Inflow = 9.10 cfs @ 12.31 hrs, Volume= 48,842 cf
Outflow = 9.09 cfs @ 12.31 hrs, Volume= 48,842 cf, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Max. Velocity= 4.74 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 1.84 fps, Avg. Travel Time= 1.8 min

Peak Storage= 383 cf @ 12.31 hrs
Average Depth at Peak Storage= 0.63'
Bank-Full Depth= 2.00' Flow Area= 19.5 sf, Capacity= 200.43 cfs

Custom cross-section, Length= 199.6' Slope= 0.0601 '/'
Constant n= 0.035 Earth, dense weeds
Inlet Invert= 350.00', Outlet Invert= 338.00'



‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	346.00	0.00
7.77	344.00	2.00
19.53	346.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
2.00	19.5	20.0	3,898	200.43

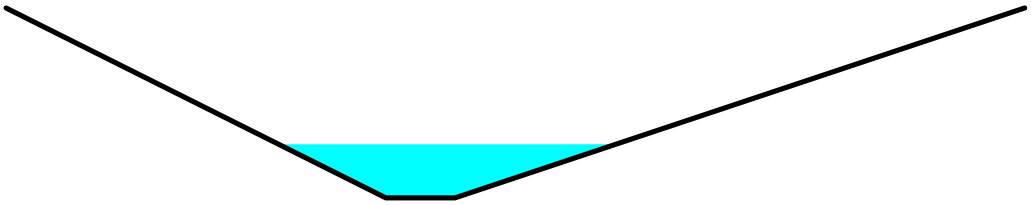
Summary for Reach R6:

Inflow Area = 99,647 sf, 11.38% Impervious, Inflow Depth = 4.94" for 50-Year event
Inflow = 9.15 cfs @ 12.23 hrs, Volume= 40,990 cf
Outflow = 9.14 cfs @ 12.24 hrs, Volume= 40,990 cf, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Max. Velocity= 4.00 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 1.40 fps, Avg. Travel Time= 1.8 min

Peak Storage= 344 cf @ 12.24 hrs
Average Depth at Peak Storage= 0.78'
Bank-Full Depth= 2.75' Flow Area= 21.7 sf, Capacity= 184.33 cfs

1.00' x 2.75' deep channel, n= 0.069 Riprap, 6-inch
Side Slope Z-value= 2.0 3.0 '/' Top Width= 14.75'
Length= 150.5' Slope= 0.1030 '/'
Inlet Invert= 377.50', Outlet Invert= 362.00'



Summary for Pond FB1:

Inflow Area = 172,901 sf, 11.48% Impervious, Inflow Depth = 4.81" for 50-Year event
Inflow = 17.10 cfs @ 12.16 hrs, Volume= 69,330 cf
Outflow = 13.61 cfs @ 12.27 hrs, Volume= 69,335 cf, Atten= 20%, Lag= 6.5 min
Primary = 12.84 cfs @ 12.27 hrs, Volume= 68,849 cf
Secondary = 0.77 cfs @ 12.27 hrs, Volume= 486 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Peak Elev= 395.47' @ 12.27 hrs Surf.Area= 3,758 sf Storage= 8,600 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 56.9 min (859.3 - 802.4)

Volume	Invert	Avail.Storage	Storage Description
#1	392.50'	145,475 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
392.50	2,020	189.9	0	0	2,020
394.00	2,939	218.2	3,698	3,698	2,989
396.00	4,080	282.6	6,988	10,686	5,604
397.00	4,658	295.2	4,366	15,051	6,251
425.00	4,658	295.2	130,424	145,475	14,517

Device	Routing	Invert	Outlet Devices
#1	Primary	388.89'	**15.0" Round 15-inch culvert** L= 44.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 388.89' / 388.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	390.33'	**1.6" Vert. 1-5/8" DRILL HOLE** C= 0.600
#3	Device 2	390.33'	**4.0" Vert. 4" UD** C= 0.600
#4	Device 3	392.50'	**2.410 in/hr Exfiltration over Surface area**
#5	Device 1	393.85'	**Neenah R4345 Beehive Grate Light Duty-req. structure** Head (feet) 0.00 0.10 0.15 0.20 0.25 0.30 0.35 0.40 0.50 0.60 0.70 0.80 0.90 1.00

Disch. (cfs) 0.000 0.900 1.600 2.500 3.500 4.000 4.600 5.300 6.800 7.500 8.100 8.600 9.100 9.600

#6 Secondary 395.00' **15.0" Round Emergency 15-inch Culvert**
L= 44.5' CPP, projecting, no headwall, Ke= 0.900
Inlet / Outlet Invert= 395.00' / 390.00' S= 0.1124 '/' Cc= 0.900
n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=12.83 cfs @ 12.27 hrs HW=395.47' TW=0.00' (Dynamic Tailwater)
- **1=15-inch culvert** (Passes 12.83 cfs of 14.41 cfs potential flow)
  - **2=1-5/8" DRILL HOLE** (Orifice Controls 0.15 cfs @ 10.84 fps)
    - **3=4" UD** (Passes 0.15 cfs of 0.94 cfs potential flow)
      - **4=Exfiltration** (Passes 0.15 cfs of 0.21 cfs potential flow)
  - **5=Neenah R4345 Beehive Grate Light Duty-req. structure** (Custom Controls 12.68 cfs)

Secondary OutFlow Max=0.76 cfs @ 12.27 hrs HW=395.47' TW=0.00' (Dynamic Tailwater)
- **6=Emergency 15-inch Culvert** (Inlet Controls 0.76 cfs @ 1.83 fps)

Summary for Pond FB2:

[62] Hint: Exceeded Reach R6 OUTLET depth by 2.54' @ 14.76 hrs

Inflow Area = 99,647 sf, 11.38% Impervious, Inflow Depth = 4.94" for 50-Year event
Inflow = 9.14 cfs @ 12.24 hrs, Volume= 40,990 cf
Outflow = 7.06 cfs @ 12.39 hrs, Volume= 40,997 cf, Atten= 23%, Lag= 8.9 min
Primary = 1.11 cfs @ 12.39 hrs, Volume= 816 cf
Secondary = 5.95 cfs @ 12.39 hrs, Volume= 40,182 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Peak Elev= 365.14' @ 12.39 hrs Surf.Area= 5,087 sf Storage= 12,722 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 183.5 min (987.8 - 804.3)

Volume	Invert	Avail.Storage	Storage Description
#1	362.00'	17,298 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
362.00	2,896	238.0	0	0	2,896
364.00	4,440	276.2	7,281	7,281	4,541
365.00	5,005	288.7	4,720	12,001	5,170
366.00	5,595	301.3	5,297	17,298	5,831

Device	Routing	Invert	Outlet Devices
#1	Primary	365.00'	**8.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#2	Secondary	359.73'	**15.0" Round 15-inch culvert** L= 27.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 359.73' / 358.00' S= 0.0629 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#3	Device 2	359.83'	**2.0" Vert. 2" DRILL HOLE** C= 0.600

#4	Device 3	359.83'	**4.0" Vert. 4" UD** C= 0.600
#5	Device 4	362.00'	**2.410 in/hr Exfiltration over Surface area**
#6	Device 2	363.50'	**4.0" Vert. Orifice/Grate** C= 0.600
#7	Device 2	364.75'	**Neenah R4345 Beehive Grate Light Duty-req. structure**

Head (feet) 0.00 0.10 0.15 0.20 0.25 0.30 0.35 0.40 0.50 0.60 0.70 0.80 0.90 1.00
Disch. (cfs) 0.000 0.900 1.600 2.500 3.500 4.000 4.600 5.300 6.800 7.500 8.100 8.600 9.100 9.600

Primary OutFlow Max=1.11 cfs @ 12.39 hrs HW=365.14' TW=356.54' (Dynamic Tailwater)
└─**1=Broad-Crested Rectangular Weir** (Weir Controls 1.11 cfs @ 0.97 fps)

Secondary OutFlow Max=5.95 cfs @ 12.39 hrs HW=365.14' TW=356.54' (Dynamic Tailwater)
└─**2=15-inch culvert** (Passes 5.95 cfs of 12.93 cfs potential flow)
  ├─**3=2" DRILL HOLE** (Orifice Controls 0.24 cfs @ 11.01 fps)
  │ └─**4=4" UD** (Passes 0.24 cfs of 0.95 cfs potential flow)
  │ └─**5=Exfiltration** (Passes 0.24 cfs of 0.28 cfs potential flow)
  ├─**6=Orifice/Grate** (Orifice Controls 0.51 cfs @ 5.85 fps)
  └─**7=Neenah R4345 Beehive Grate Light Duty-req. structure** (Custom Controls 5.20 cfs)

Summary for Pond FB3:

Inflow Area = 121,470 sf, 8.91% Impervious, Inflow Depth = 4.82" for 50-Year event
Inflow = 12.07 cfs @ 12.18 hrs, Volume= 48,839 cf
Outflow = 9.10 cfs @ 12.31 hrs, Volume= 48,842 cf, Atten= 25%, Lag= 7.5 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Secondary = 9.10 cfs @ 12.31 hrs, Volume= 48,842 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Peak Elev= 356.89' @ 12.31 hrs Surf.Area= 4,583 sf Storage= 12,935 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 162.9 min (966.4 - 803.5)

Volume	Invert	Avail.Storage	Storage Description
#1	353.30'	23,852 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
353.30	2,495	213.7	0	0	2,495
354.00	2,957	226.9	1,906	1,906	2,983
354.80	3,520	242.0	2,588	4,493	3,577
356.00	4,119	257.1	4,579	9,072	4,247
358.00	5,198	282.2	9,296	18,368	5,452
359.00	5,775	294.8	5,484	23,852	6,098

Device	Routing	Invert	Outlet Devices
#1	Primary	357.30'	**6.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#2	Secondary	351.03'	**15.0" Round 15-inch culvert** L= 43.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 351.03' / 350.00' S= 0.0237 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#3	Device 2	351.13'	**1.9" Vert. 1-7/8" DRILL HOLE** C= 0.600
#4	Device 3	351.13'	**4.0" Vert. 4" UD** C= 0.600
#5	Device 4	353.30'	**2.410 in/hr Exfiltration over Surface area**
#6	Device 2	354.80'	**3.0" Vert. Orifice/Grate** C= 0.600
#7	Device 2	356.10'	**Neenah R4345 Beehive Grate Light Duty-req. structure** Head (feet) 0.00 0.10 0.15 0.20 0.25 0.30 0.35 0.40 0.50 0.60 0.70 0.80 0.90 1.00 Disch. (cfs) 0.000 0.900 1.600 2.500 3.500 4.000 4.600 5.300 6.800 7.500 8.100 8.600 9.100 9.600

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=353.30' TW=350.00' (Dynamic Tailwater)
└─**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=9.09 cfs @ 12.31 hrs HW=356.89' TW=350.63' (Dynamic Tailwater)
└─**2=15-inch culvert** (Passes 9.09 cfs of 13.52 cfs potential flow)
  ├─**3=1-7/8" DRILL HOLE** (Orifice Controls 0.23 cfs @ 11.47 fps)
  │ └─**4=4" UD** (Passes 0.23 cfs of 0.99 cfs potential flow)
  │ └─**5=Exfiltration** (Passes 0.23 cfs of 0.26 cfs potential flow)
  ├─**6=Orifice/Grate** (Orifice Controls 0.33 cfs @ 6.74 fps)
  └─**7=Neenah R4345 Beehive Grate Light Duty-req. structure** (Custom Controls 8.53 cfs)

Summary for Pond SD-2: 15" ROAD CULVERT

[57] Hint: Peaked at 397.34' (Flood elevation advised)

Inflow Area = 16,521 sf, 20.65% Impervious, Inflow Depth = 5.24" for 50-Year event
Inflow = 2.18 cfs @ 12.09 hrs, Volume= 7,210 cf
Outflow = 2.18 cfs @ 12.09 hrs, Volume= 7,210 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.18 cfs @ 12.09 hrs, Volume= 7,210 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Peak Elev= 397.34' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	396.50'	**15.0" Round 15-INCH CULVERT** L= 55.6' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 396.50' / 394.50' S= 0.0360 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.16 cfs @ 12.09 hrs HW=397.34' TW=394.69' (Dynamic Tailwater)
└─**1=15-INCH CULVERT** (Inlet Controls 2.16 cfs @ 2.46 fps)

Summary for Pond SD-3: 18" ROAD CULVERT

[57] Hint: Peaked at 383.60' (Flood elevation advised)

Inflow Area = 99,647 sf, 11.38% Impervious, Inflow Depth = 4.94" for 50-Year event
Inflow = 9.15 cfs @ 12.23 hrs, Volume= 40,990 cf
Outflow = 9.15 cfs @ 12.23 hrs, Volume= 40,990 cf, Atten= 0%, Lag= 0.0 min
Primary = 9.15 cfs @ 12.23 hrs, Volume= 40,990 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Peak Elev= 383.60' @ 12.23 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	381.00'	**18.0" Round 18-INCH CULVERT** L= 58.4' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 381.00' / 377.50' S= 0.0599 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=9.11 cfs @ 12.23 hrs HW=383.59' TW=378.27' (Dynamic Tailwater)
↑**1=18-INCH CULVERT** (Inlet Controls 9.11 cfs @ 5.16 fps)

Summary for Link SP-1:

Inflow Area = 890,778 sf, 3.13% Impervious, Inflow Depth = 4.57" for 50-Year event
Inflow = 61.82 cfs @ 12.41 hrs, Volume= 338,901 cf
Primary = 61.82 cfs @ 12.41 hrs, Volume= 338,901 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Summary for Link SP-2:

Inflow Area = 381,151 sf, 6.79% Impervious, Inflow Depth = 4.67" for 50-Year event
Inflow = 32.82 cfs @ 12.16 hrs, Volume= 148,485 cf
Primary = 32.82 cfs @ 12.16 hrs, Volume= 148,485 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

ATTACHMENT 4

INSPECTION, MAINTENANCE & HOUSEKEEPING PLAN

DM ROMA
CONSULTING ENGINEERS

INSPECTION, MAINTENANCE, AND HOUSEKEEPING PLAN

(Prepared by Jayson Haskell, PE #13002)

AERIE ESTATES SUBDIVISION
EAGLES NEST ROAD
GRAY, MAINE

Responsible Party

Owner: Sebago Realty, LLC.
391 Roosevelt Trail
Windham, Maine 04062

The owner/applicant is responsible for the maintenance of all stormwater management structures and related site components and the keeping of a maintenance log book with service records until a homeowner's association is established. Once the association is established, maintenance will be the responsibility of the homeowners. Records of all inspections and maintenance work performed must be kept on file with the owner and retained for a minimum of five years. The maintenance log will be made available to the Town and Maine Department of Environmental Protection (MDEP) upon request. At a minimum, the maintenance of stormwater management systems will be performed on the prescribed schedule.

The procedures outlined in this plan are provided as a general overview of the anticipated practices to be utilized on this site. In some instances, additional measures may be required due to unexpected conditions. *The Maine Erosion and Sedimentation Control BMP* and *Stormwater Management for Maine: Best Management Practices* Manuals published by the MDEP should be referenced for additional information.

During Construction

1. **Inspection and Corrective Action:** It is the contractor's responsibility to comply with the inspection and maintenance procedures outlined in this section. Inspection shall occur on all disturbed and impervious areas, erosion control measures, material storage areas that are exposed to precipitation, and locations where vehicles enter or exit the site. These areas shall be inspected at least once a week as well as 24 hours before and after a storm event generating more than 0.5 inch of rainfall over a 24-hour period and prior to completing permanent stabilization measures. A person with knowledge of erosion and stormwater control, including the standards and conditions in the permit, shall conduct the inspections.

2. **Maintenance:** Erosion controls shall be maintained in effective operating condition until areas are permanently stabilized. If best management practices (BMPs) need to be repaired, the repair work should be initiated upon discovery of the problem but no later than the end of the next workday. If BMPs need to be maintained or modified, additional BMPs are necessary, or other corrective action is needed, implementation must be completed within seven calendar days and prior to any rainfall event.

3. **Construction vehicles and equipment:** Construction vehicles and equipment shall not be driven or stored within the stormwater basins. To ensure the basins function as designed perpetually, prohibiting vehicles and equipment from these areas will limit the risk of inhibiting the function of the basins due to compaction.

4. **Documentation:** A report summarizing the inspections and any corrective action taken must be maintained on site. The log must include the name(s) and qualifications of the person making the inspections; the date(s) of the inspections; and the major observations about the operation and maintenance of erosion and sedimentation controls, materials storage areas, and vehicle access points to the parcel. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and location(s) where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken. The log must be made accessible to MDEP and Town staff, and a copy must be provided upon request. The owner shall retain a copy of the log for a period of at least three years from the completion of permanent stabilization.

Housekeeping

1. **Spill prevention:** Controls must be used to prevent pollutants from construction and waste materials on site to enter stormwater, which includes storage practices to minimize exposure of the materials to stormwater. The site contractor or operator must develop, and implement as necessary, appropriate spill prevention, containment, and response planning measures.

2. **Groundwater protection:** During construction, liquid petroleum products and other hazardous materials with the potential to contaminate groundwater may not be stored or handled in areas of the site draining to an infiltration area. An "infiltration area" is any area of the site that by design or as a result of soils, topography and other relevant factors accumulates runoff that infiltrates into the soil. Dikes, berms, sumps, and other forms of secondary containment that prevent discharge to groundwater may be used to isolate portions of the site for the purposes of storage and handling of these materials. Any project proposing infiltration of stormwater must provide adequate pre-treatment of stormwater prior to discharge of stormwater to the infiltration area, or provide for treatment within the infiltration area, in order to prevent the accumulation of fines, reduction in infiltration rate, and consequent flooding and destabilization.

3. **Fugitive sediment and dust:** Actions must be taken to ensure that activities do not result in noticeable erosion of soils or fugitive dust emissions during or after construction. Oil may not be used for dust control, but other water additives may be considered as needed. A stabilized construction entrance (SCE) should be included to minimize tracking of mud and sediment. If off-site tracking occurs, public roads should be swept immediately and no less than once a week and prior to significant storm events. Operations during dry months, that experience fugitive dust problems, should wet down unpaved access roads once a week or more frequently as needed with a water additive to suppress fugitive sediment and dust.

4. **Debris and other materials:** Minimize the exposure of construction debris, building and landscaping materials, trash, fertilizers, pesticides, herbicides, detergents, sanitary waste and other materials to precipitation and stormwater runoff. These materials must be prevented from becoming a pollutant source.

5. **Excavation de-watering:** Excavation de-watering is the removal of water from trenches, foundations, coffer dams, ponds, and other areas within the construction area that retain water after excavation. In most cases the collected water is heavily silted and hinders correct and safe construction practices. The collected water removed from the ponded area, either through gravity or pumping, must be spread through natural wooded buffers or removed to areas that are specifically designed to collect the maximum amount of sediment possible, like a cofferdam sedimentation basin. Avoid allowing the water to flow over disturbed areas of the site. Equivalent measures may be taken if approved by the Department.

6. **Authorized Non-stormwater discharges:** Identify and prevent contamination by non-stormwater discharges. Where allowed non-stormwater discharges exist, they must be identified and steps should be taken to ensure the implementation of appropriate pollution prevention measures for the non-stormwater component(s) of the discharge. Authorized non-stormwater discharges are:
   (a) Discharges from firefighting activity;
   (b) Fire hydrant flushings;
   (c) Vehicle washwater if detergents are not used and washing is limited to the exterior of vehicles (engine, undercarriage and transmission washing is prohibited);
   (d) Dust control runoff in accordance with permit conditions and Appendix (C)(3);
   (e) Routine external building washdown, not including surface paint removal, that does not involve detergents;
   (f) Pavement washwater (where spills/leaks of toxic or hazardous materials have not occurred, unless all spilled material had been removed) if detergents are not used;
   (g) Uncontaminated air conditioning or compressor condensate;
   (h) Uncontaminated groundwater or spring water;
   (i) Foundation or footer drain-water where flows are not contaminated;
   (j) Uncontaminated excavation dewatering (see requirements in Appendix C(5));
   (k) Potable water sources including waterline flushings; and

(l) Landscape irrigation.

7. **Unauthorized non-stormwater discharges:** Approval from the Town does not authorize a discharge that is mixed with a source of non-stormwater, other than those discharges in compliance with Section 6 above. Specifically, the Town's approval does not authorize discharges of the following:
   (a) Wastewater from the washout or cleanout of concrete, stucco, paint, form release oils, curing compounds or other construction materials;
   (b) Fuels, oils or other pollutants used in vehicle and equipment operation and maintenance;
   (c) Soaps, solvents, or detergents used in vehicle and equipment washing; and
   (d) Toxic or hazardous substances from a spill or other release.

Post Construction

1. **Inspection and Corrective Action:** All stormwater measures, must be maintained by the owner in effective operating condition. A qualified inspector hired by the owner shall at least annually inspect the stormwater management facilities. This person should have knowledge of erosion and stormwater control including the standards and conditions of the site's approvals. The following areas, facilities, and measures must be inspected, and identified deficiencies must be corrected. Areas, facilities, and measures other than those listed below may also require inspection on a specific site.

   A. **Vegetated Areas:** Inspect vegetated areas, particularly slopes and embankments, early in the growing season or after heavy rains to identify active or potential erosion problems. Replant bare areas or areas with sparse growth. Where rill is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows.

   B. **Ditches, Swales, and Open Channels:** Inspect ditches, swales, and other open channels in the spring, late fall, and after heavy rains to remove any obstructions to flow, remove accumulated sediments and debris, control vegetative growth that could obstruct flow, and repair any erosion of the ditch lining. Vegetated ditches must be mowed at least annually or otherwise maintained to control the growth of woody vegetation and maintain flow capacity. Repair any slumping side slopes as soon as practicable. The channel must receive adequate routine maintenance to maintain capacity and prevent or correct any erosion of the channel's bottom or side slopes.

   C. **Culverts & Storm Drains:** Inspect culverts & storm drains in the spring, late fall, and after heavy rains to 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 storm drain's outlet.

D. **Roofline Drip edges:** The drip edges should be inspected semi-annually and following major storm events for the first year and every six months thereafter. The reservoir crushed stone should drain within 24 to 48 hours following a major storm event. If ponding exceeds 48 hours, the stone reservoir course shall be removed and the filter bed be rototilled to reestablish the soil's filtration capacity. If water ponds in the reservoir course for more than 72 hours, the top several inches of the filter shall be replaced with fresh material. Inspect for debris and sediment build up at surface and remove as needed. The drip edges are part of the stormwater management plan and cannot be paved over or altered in anyway.

E. **Underdrained Filter Basin:** The filter basin is not intended to function as snow storage areas. Inspector to verify that winter plowing operations are not dumping or pushing snow into the basins. The basin shall also not be used for vehicle or heavy equipment storage. Basin should be inspected after several major storm events (0.5 inches rainfall over 24 hours) to determine drawdown time during the first year. Basin to be inspected every six months thereafter with at least one inspection after a major storm event.

   The basin should drain dry within 24 to 48 hours following a one-inch storm. If ponding exceeds 48 hours, the top of the filter bed must be rototilled to reestablish the soil's filtration capacity. If water ponds on the surface of the bed for more than 72 hours, the top several inches of the filter shall be replaced with fresh material. Inspect for debris and sediment build up in the forebay and basin and remove as needed. Mowing of the basin can only occur semi-annually to a height of no less than 6 inches utilizing a hand-held string trimmer or push-mower. Any bare areas or erosion rills shall be repaired with new filter media or sandy loam then seeded and mulched. The basin should also be inspected annually for destabilization of side slopes, embankment settling and other signs of structural failure.

F. **Emergency Spillway:** Spillways should be inspected semi-annually and following major storm events for the first year and every six months thereafter to remove any obstructions to flow. Any woody vegetation growing through riprap lining must be removed. Replace riprap on areas where any underlying filter fabric is showing through the stone or where stones have been dislodged.

G. **Regular Maintenance:** Clear accumulations of winter sand along roadway and parking areas once a year, preferably in the spring. Accumulations on pavement may be removed by pavement sweeping. Accumulations of sand along pavement shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader.

H. **Documentation:** Keep a log (report) summarizing inspections, maintenance, and any corrective actions taken. The log must 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. If a maintenance task requires the clean-out of any sediments or debris, indicate where the sediment and debris was disposed after removal. The log must be made accessible to Town staff upon request. The permittee shall retain a copy of the log for a period of at least five years from the completion of permanent stabilization. Attached is a sample log.

Duration of Maintenance

Perform maintenance as described.

INSPECTION AND MAINTENANCE LOG – GENERAL INSPECTION

AERIE ESTATES SUBDIVISION
EAGLES NEST ROAD
GRAY, MAINE

The following stormwater management and erosion control items shall be inspected and maintained as prescribed in the Maintenance Plan with recommended frequencies as identified below. The owner is responsible for keeping this maintenance log on file for a minimum of five years and shall provide a copy to the Town upon request. Inspections are to be performed by a qualified third-party inspector and all corrective actions shall be performed by personnel familiar with stormwater management systems and erosion controls.

Maintenance Item	Maintenance Event	Date Performed	Responsible Personnel	Comments
Vegetated Areas	Inspect slopes and embankments early in Spring.			
Ditches, swales and other open channels	Inspect after major rainfall event.			
	Inspect for erosion or slumping and repair			
	Mowed at least annually			
Storm Drains	Inspect semiannually and after major rainfall.			
	Repair erosion at inlet or outlet of pipe.			
	Repair displaced riprap.			
	Clean accumulated sediment in culverts when >20% full.			
Roofline Dripedges	Check after each rainfall event to ensure that the stone reservoir drains within 24-48 hours.			
	Replace top several inches of filter if reservoir does not drain within 72 hours.			
	Inspect and remove sediment or debris build up on the surface of the stone			
	Inspect semi-annually for erosion or sediment accumulation and repair as necessary.			
Regular Maintenance	Clear accumulation of winter sand in paved areas annually.			

INSPECTION AND MAINTENANCE LOG – UNDERDRAINED FILTER BASIN

AERIE ESTATES SUBDIVISION
EAGLES NEST ROAD
GRAY, MAINE

The following stormwater management and erosion control items shall be inspected and maintained as prescribed in the Maintenance Plan with recommended frequencies as identified below. The owner is responsible for keeping this maintenance log on file for a minimum of five years and shall provide a copy to the Town and MDEP upon request. Inspections are to be performed by a qualified third-party inspector and all corrective actions shall be performed by personnel familiar with stormwater management systems and erosion controls.

Maintenance Item	Maintenance Event	Date Performed	Responsible Personnel	Comments
Underdrained Filter Basin	Check after each rainfall event to ensure that pond drains within 24-48 hours.			
	Replace top several inches of filter if pond does not drain within 72 hours.			
	Mow grass no more than twice a year to no less than 6 inches in height.			
	Inspect semi-annually for erosion or sediment accumulation and repair as necessary.			
	Inspector to verify basin not utilized for snow storage			
	Inspector to verify basin not utilized for vehicle or heavy equipment storage.			
Outlet Control Structure	Inspect to ensure that structure is properly draining.			
	Remove accumulated sediment semiannually.			
	Inspect grates/inlets and remove debris as needed.			
Emergency Spillway	Inspect and remove obstructions as necessary.			
	Remove woody vegetation.			
	Replace riprap as necessary.			

LEGEND

EXISTING	PROPOSED
PROPERTY LINE/R.O.W.	
ABUTTER PROPERTY LINE	
TIE LINE	
SETBACK	
EASEMENT LINE	
GRANITE MONUMENT	
IRON PIN/DRILL HOLE	
CENTERLINE	
BUILDING	
EDGE OF PAVEMENT/CURB	
EDGE OF GRAVEL	
EDGE OF CONCRETE	
SIGN	
EDGE OF WETLANDS	
EDGE OF WATER	
CENTERLINE OF STREAM	
FLOODPLAIN	
-200- CONTOUR LINE	200 201
TREELINE	
TP-1 TEST PIT	
CATCHBASIN	
DRAINAGE MANHOLE	
CULVERT/STORMDRAIN	
UNDERDRAIN	UD
HYDRANT	
WELL	W
UTILITY POLE	
LIGHT POLE	
OHU OVERHEAD UTILITIES	OHU
UGU UNDERGROUND UTILITIES	UGU
TRANSFORMER PAD	T
G GAS MAIN	G
GAS VALVE	
RIPRAP	
SILT FENCE	SF

GRAPHIC SCALE
0 20 40 80
1" = 40'

CONSTRUCTION NOTES:

1. ALL CULVERTS SHALL BE HDPE PIPE EQUAL TO ADS N-12.
2. DRIVEWAY CULVERTS FOR LOTS 1, 3, 4, 5, 10 AND 11 SHALL BE MINIMUM 15" DIAMETER. DRIVEWAY CULVERTS FOR LOTS 6, 7, 12 AND 13 SHALL BE MINIMUM 18" DIAMETER.
3. INSTALL EROSION CONTROL BLANKET ON ALL SLOPES GREATER THAN 15% AND UP TO A 2:1 SLOPE.

STATE OF MAINE
DUSTIN M. ROMA
REG. No. 12131
FIRM

DM ROMA
CONSULTING ENGINEERS
P.O. BOX 1116
WINDHAM, ME 04062
(207) 591-5055

REV	DATE	BY	DESCRIPTION
A	9-15-23	JPC	ISSUED FOR REVIEW
B	10-24-23	JPC	ISSUED FOR REVIEW
C	11-13-23	JPC	REVISED PER REVIEW COMMENTS
D	11-22-23	JPC	REVISED PER REVIEW COMMENTS

ROADWAY PLAN

AERIE ESTATES SUBDIVISION
AERIE DRIVE, OFF EAGLES NEST ROAD
GRAY, MAINE
FOR:
SEBAGO REALTY, LLC
PO BOX 1116
WINDHAM, ME 04062

23050 JOB NUMBER:
1" = 40' SCALE:
11-22-2023 DATE:
SHEET 4 OF 8
PP-1

EROSION AND SEDIMENTATION CONTROL NOTES:

EXCAVATION AND EARTHWORK SHALL BE COMPLETED SUCH THAT NO MORE THAN 1 ACRE OF THE SITE IS WITHOUT STABILIZATION AT ANY ONE TIME. LIMIT THE EXPOSED AREA TO THOSE AREAS IN WHICH WORK IS TO OCCUR DURING THE FOLLOWING 15 DAYS AND THAT CAN BE MULCHED IN ONE DAY.

IN ORDER TO EFFECTIVELY PREVENT AND CONTROL EROSION RELATED TO SOIL DISTURBANCE, THE FOLLOWING BEST MANAGEMENT PRACTICES (BMPS) SHALL BE EMPLOYED:

1. POLLUTION PREVENTION

MINIMIZE DISTURBED AREAS AND PROTECT NATURAL DOWNGRADIENT BUFFER AREAS TO THE EXTENT PRACTICABLE. CONTROL STORMWATER VOLUME AND VELOCITY WITHIN THE SITE TO MINIMIZE SOIL EROSION. MINIMIZE THE DISTURBANCE OF STEEP SLOPES. CONTROL STORMWATER DISCHARGES, INCLUDING BOTH PEAK FLOW RATES AND VOLUME, TO MINIMIZE EROSION AT OUTLETS. THE DISCHARGE MAY NOT RESULT IN EROSION OF ANY OPEN DRAINAGE CHANNELS, SWALES, STREAM CHANNELS OR STREAM BANKS, UPLAND, OR COASTAL OR FRESHWATER WETLANDS OFF THE PROJECT SITE.

WHENEVER PRACTICABLE, NO DISTURBANCE ACTIVITIES SHOULD TAKE PLACE WITHIN 50 FEET OF ANY PROTECTED NATURAL RESOURCE. IF DISTURBANCE ACTIVITIES TAKE PLACE BETWEEN 30 FEET AND 50 FEET OF ANY PROTECTED NATURAL RESOURCE, AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TOWARD THE PROTECTED NATURAL RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED. IF DISTURBANCE ACTIVITIES TAKE PLACE LESS THAN 30 FEET FROM ANY PROTECTED NATURAL RESOURCE, AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TOWARD THE PROTECTED NATURAL RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED AND DISTURBED AREAS MUST BE TEMPORARILY OR PERMANENTLY STABILIZED WITHIN 7 DAYS.

2. TEMPORARY SOIL STABILIZATION BMPS

TEMPORARY MULCHING SHALL BE APPLIED IMMEDIATELY TO ANY AREAS THAT HAVE BEEN TEMPORARILY OR PERMANENTLY SEEDED. ANY DISTURBED SOIL WITHIN 75' OF A STREAM, WATER BODY OR WETLAND MUST RECEIVE TEMPORARY MULCH WITHIN 48 HOURS FOLLOWING DISTURBANCE AND BEFORE ANY STORM EVENT. ALL OTHER AREAS SHALL RECEIVE TEMPORARY MULCH WITHIN 7 DAYS OF DISTURBANCE. AREAS WHICH CANNOT BE SEEDED DURING THE GROWING SEASON SHALL BE MULCHED FOR OVER-WINTER PROTECTION. THE FOLLOWING ARE ACCEPTABLE TEMPORARY MULCHING METHODS:

HAY OR STRAW MULCHES NEED TO BE AIR-DRIED, FREE OF UNDESIRABLE SEEDS AND COARSE MATERIALS. APPLICATION RATE MUST BE 2 BALES (70-90 POUNDS) PER 1000 SQ FT OR 1.5 TO 2 TONS (90-100 BALES) PER ACRE TO COVER 75-90% OF THE GROUND SURFACE. HAY OR STRAW CAN BE DRIVEN INTO THE GROUND WITH TRACKED EQUIPMENT IF SLOPES ARE LESS THAN 3%, OR CAN BE ANCHORED WITH JUTE, WOOD FIBER OR PLASTIC NETTING ON STEEPER SLOPES.

EROSION CONTROL MIX MUST CONSIST PRIMARILY OF ORGANIC MATERIAL AND WILL INCLUDE ANY OF THE FOLLOWING: SHREDDED BARK, STUMP GRINDINGS, COMPOSTED BARK OR OTHER ACCEPTABLE PRODUCTS BASED ON A SIMILAR RAW SOURCE. WOOD OR BARK CHIPS, GROUND CONSTRUCTION DEBRIS OR REPROCESSED WOOD PRODUCTS ARE NOT ACCEPTABLE. EROSION CONTROL MIX CAN BE USED AS A STAND-ALONE REINFORCEMENT ON SLOPES OF 2 HORIZONTAL TO 1 VERTICAL OR LESS AND DRAINING IN SHEET FLOW. IT CAN BE PLACED WITH A HYDRAULIC BUCKET, WITH A PNEUMATIC BLOWER OR BY HAND, AND MUST PROVIDE 100% SOIL COVERAGE.

EROSION CONTROL MIX SHALL MEET THE FOLLOWING SPECIFICATIONS:
- -ORGANIC MATTER CONTENT SHALL BE BETWEEN 50-100%, DRY WEIGHT BASIS.
- -MINERAL PORTION OF THE MIX SHOULD BE NATURALLY INCLUDED IN THE MIX WITH NO LARGER ROCKS (>4")
- -ORGANIC PORTION NEEDS TO BE FIBROUS AND ELONGATED
- -LARGE PORTIONS OF SILTS, CLAYS OR FINE SANDS ARE NOT ACCEPTABLE IN THE MIX
- -IN STUMP GRINDING, THE MINERAL SOIL ORIGINATES FROM THE ROOT BALL AND SHOULD NOT BE REMOVED BEFORE GRINDING
- -THE MIX SHOULD BE FREE OF REFUSE, MATERIAL TOXIC TO PLANT GROWTH OR UNSUITABLE MATERIAL (BARK CHIPS, GROUND CONSTRUCTION DEBRIS OR REPROCESSED WOOD PRODUCTS

WHEN USED AS MULCH, THE THICKNESS OF THE EROSION CONTROL MIX IS BASED UPON THE FOLLOWING:

LENGTH OF SLOPE	3:1 SLOPE OR LESS	BETWEEN 2:1 AND 3:1 SLOPE
LESS THAN 20 FT	2.0 IN.	4.0 IN.
BETWEEN 20 - 60 FT	3.0 IN.	5.0 IN.
BETWEEN 60 - 100 FT	4.0 IN.	6.0 IN.

CHEMICAL MULCHES AND SOIL BINDERS MAY BE USED AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL CONSULT WITH THE MANUFACTURER TO DETERMINE ADEQUATE APPLICATION RATES AND METHODS.

TEMPORARY MULCH SHALL BE INSPECTED FOLLOWING ANY SIGNIFICANT RAINFALL EVENT (GREATER THAN 0.5 INCH RAINFALL, TYP.). IF LESS THAN 90% OF THE SOIL SURFACE IS COVERED BY MULCH, ADDITIONAL MULCH SHALL BE IMMEDIATELY APPLIED. EROSION CONTROL MATS AND MULCH ANCHORING MUST BE INSPECTED AFTER RAINFALL EVENTS FOR DISLOCATION OR FAILURE, AND REPAIRED IMMEDIATELY. INSPECTIONS SHALL TAKE PLACE UNTIL 95% OF THE SOIL SURFACE IS COVERED WITH PERMANENT VEGETATION. WHERE MULCH IS USED WITH ORNAMENTAL PLANTINGS, INSPECT PERIODICALLY THROUGHOUT THE YEAR TO DETERMINE IF MULCH IS MAINTAINING COVERAGE OF THE SOIL SURFACE, AND REPAIR AS NEEDED.

TEMPORARY VEGETATION SHALL BE ESTABLISHED ON SOILS THAT WILL NOT BE BROUGHT TO FINAL GRADE FOR A PERIOD OF MORE THAN 30 DAYS. IF TEMPORARY VEGETATION CANNOT BE ESTABLISHED PRIOR TO OCTOBER 15, TEMPORARY MULCH SHALL BE APPLIED THROUGH THE WINTER AND TEMPORARY VEGETATION SHALL BE PLANTED AT THE BEGINNING OF THE GROWING SEASON THE FOLLOWING YEAR. TO PREPARE THE SEEDBED, THE CONTRACTOR SHALL APPLY FERTILIZER AT A RATE OF 600 POUNDS PER ACRE OF 10-10-10 (N-P205-K20) OR EQUIVALENT AND LIMESTONE AT A RATE OF 3 TONS PER ACRE, IF NECESSARY. LOOSEN SOIL TO A DEPTH OF 2 INCHES IN AREAS THAT HAVE BEEN COMPACTED BY CONSTRUCTION ACTIVITIES. GRASS SEED SHALL BE SELECTED BASED UPON THE TIME OF YEAR THE PLANTING WILL TAKE PLACE AS SUMMARIZED IN THE FOLLOWING TABLE:

SEED	LB. PER ACRE	RECOMMENDED SEEDING DATES
WINTER RYE	112	8/15 - 10/1
OATS	80	4/1 - 7/1 8/15 - 9/15
ANNUAL RYEGRASS	40	4/1 - 7/1

TEMPORARY SEEDING SHALL BE PERIODICALLY INSPECTED TO MAINTAIN AT LEAST 95% VEGETATIVE COVER OF SOIL SURFACE. IF ANY EVIDENCE OF EROSION OR SEDIMENTATION IS APPARENT, REPAIRS SHALL BE MADE AND OTHER TEMPORARY MEASURES SHALL BE USED IN THE INTERIM SUCH AS TEMPORARY MULCH, FILTER BARRIERS, ETC.

3. SEDIMENT BARRIER BMPS

PRIOR TO CONSTRUCTION TEMPORARY SEDIMENT BARRIERS SHALL BE INSTALLED AT THE DOWNGRADIENT EDGE OF ANY AREA TO BE DISTURBED AND ADJACENT TO ANY DRAINAGE CHANNELS WITHIN THE DISTURBED AREA . SEDIMENT BARRIERS INCLUDE ANY OF THE FOLLOWING:

FILTER BARRIER FENCE, ALSO CALLED SILT FENCE, SHALL BE INSTALLED WHERE SHOWN ON THE PLANS AND IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS. THE FILTER FABRIC SHALL BE A PERVIOUS SHEET OF PROPYLENE, NYLON, POLYESTER OR ETHYLENE YARN AND SHALL PROVIDE A MINIMUM OF 6 MONTHS USABLE CONSTRUCTION LIFE INCLUDING PROTECTION AGAINST ULTRA-VIOLET LIGHT. THE HEIGHT OF THE FENCE SHALL NOT EXCEED 36 INCHES INSTALLED AND POST SPACING SHALL NOT EXCEED 6 FEET. JOINTS IN THE FENCE SHALL BE AVOIDED TO THE EXTENT POSSIBLE, AND IF NECESSARY SHALL BE SPLICED TOGETHER AT A SUPPORT POST WITH A MINIMUM 6 INCH OVERLAP. A TRENCH SHALL BE EXCAVATED APPROXIMATELY 6 INCHES WIDE AND 6 INCHES DEEP, AND THE BOTTOM 6-8 INCHES OF FABRIC SHALL BE "TOED-IN" TO THE TRENCH AND COMPACTED. THE TRENCH SHOULD BE UPHILL OF THE FABRIC PRIOR TO BURIAL.

EROSION CONTROL MIX BERMS ARE LINEAR BARRIERS COMPOSED OF EROSION CONTROL MIX AS SPECIFIED ABOVE. THE BERM MUST BE A MINIMUM OF 12 INCHES TALL AND 24 INCHES WIDE AT THE BASE IF UPHILL SLOPES ARE LESS THAN 5%. STEEPER SLOPES OR SLOPES GREATER THAN 20 FEET LONG MAY REQUIRE A LARGER WIDTH BERM. EROSION CONTROL MIX BERMS SHALL BE PROHIBITED AT THE BASE OF A LONG OR STEEP SLOPE (8% OR GREATER) WITHOUT THE ADDITIONAL SUPPORT OF A FILTER FENCE INSTALLED ON THE DOWNHILL SIDE OF THE BERM.

SEDIMENT BARRIERS SHOULD BE INSTALLED DOWNGRADIENT OF SOIL OR SEDIMENT STOCKPILES AND STORMWATER SHOULD BE PREVENTED FROM RUNNING ONTO THE STOCKPILE. SEDIMENT BARRIERS SHALL BE INSPECTED AFTER ANY SIGNIFICANT RAINFALL EVENT (GREATER THAN 0.5 INCH RAINFALL) AND REPAIRED IMMEDIATELY IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BELOW THE BARRIERS. IF THERE ARE SIGNS OF UNDERCUTTING AT THE CENTER OR EDGES OF THE BARRIER, OR IF LARGE VOLUMES OF WATER ARE IMPOUNDED BEHIND THE BARRIER, IT MAY BE NECESSARY TO REPLACE THE BARRIER WITH A TEMPORARY STONE CHECK DAM. SEDIMENT SHALL BE REMOVED ONCE IT REACHES HALF THE BARRIER HEIGHT. AFTER THE BARRIER IS REMOVED, ANY REMAINING SILT SHALL EITHER BE REMOVED OR GRADED TO CONFORM WITH THE EXISTING TOPOGRAPHY AND VEGETATED.

TEMPORARY EROSION CONTROL MEASURES ARE REMOVED ONCE THE SITE IS PERMANENTLY STABILIZED AND CONSTRUCTION ACTIVITY HAS BEEN COMPLETED.

4. STORM DRAIN INLET PROTECTION

STORM DRAIN INLETS THAT ARE MADE OPERATIONAL BEFORE THEIR DRAINAGE AREA IS STABILIZED SHALL BE PROTECTED WITH A FILTER UNTIL THE DRAINAGE AREA IS EITHER PAVED OR STABILIZED WITH 95% VEGETATIVE GROWTH. THE FOLLOWING ARE ACCEPTABLE BMPS ASSOCIATED WITH STORM DRAIN INLET PROTECTION:

MANUFACTURED SEDIMENT FILTERS ARE THE PREFERRED METHOD FOR PROTECTING CATCH BASIN INLETS IN PAVED OR GRAVEL ROADWAYS. THE FILTERS TYPICALLY CONSIST OF A FABRIC OR OTHER PERVIOUS MATERIAL THAT IS PLACED ABOVE OR BELOW THE GRATE THAT TRAPS SEDIMENT ON THE SURFACE AND ALLOWS WATER TO FLOW THROUGH THE GRATE. CONSIDERATIONS SUCH AS WEATHER CONDITIONS, SLOPES, TRIBUTARY WATERSHED AREA AND EXPECTED SEDIMENT ACCUMULATION SHOULD BE FACTORED INTO MAKING A DECISION ON ANY PARTICULAR PRODUCT, AND THE MANUFACTURER'S RECOMMENDATIONS ON INSTALLATION AND MAINTENANCE SHALL BE STRICTLY ADHERED TO.

5. STABILIZED CONSTRUCTION ENTRANCE/EXIT

TO REDUCE THE TRACKING OF SEDIMENT ONTO ROADWAYS, A STABILIZED CONSTRUCTION EXIT SHALL BE INSTALLED AT ALL POINTS OF EGRESS WHERE VEHICLES MAY TRAVEL FROM THE PROJECT SITE TO A PUBLIC ROAD OR OTHER PAVED AREA. THE STONE PAD SHALL CONSIST OF A MINIMUM 6-INCH DEPTH OF 2-3 INCH CRUSHED STONE, AND SHALL BE PLACED ON A GEOTEXTILE FABRIC. THE PAD SHALL EXTEND AT LEAST 50 FEET INTO THE PROJECT SITE AND BE A MINIMUM OF 10 FEET WIDE. THE EXIT SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, AND THE CONTRACTOR SHALL SWEEP PAVEMENT AT EXITS THAT HAVE EXPERIENCED ANY MUD-TRACKING PRIOR TO THE NEXT STORM EVENT. MAINTAIN THE PAD UNTIL ALL DISTURBED AREAS ARE STABILIZED.

6. DUST CONTROL

THE CONTRACTOR IS RESPONSIBLE FOR CONTROLLING DUST ON THE PROJECT SITE AND ON ADJACENT ROADWAYS. EXPOSED SOIL SURFACES SHALL BE MOISTENED PERIODICALLY WITH ADEQUATE WATER TO CONTROL DUST. GRAVEL SURFACES SHALL EITHER BE TREATED WITH AN APPLICATION OF CALCIUM CHLORIDE OR COVERED WITH CRUSHED STONE IF DUST CONTROL BECOMES DIFFICULT WITH NORMAL WATER APPLICATIONS.

7. LAND GRADING AND SLOPE PREPARATION

GRADING SHALL BE PLANNED SO AS TO MINIMIZE THE LENGTH OF TIME BETWEEN INITIAL SOIL EXPOSURE AND FINAL GRADING. ON LARGE PROJECTS THIS SHOULD BE ACCOMPLISHED BY PHASING THE OPERATION AND COMPLETING THE FIRST PHASE UP TO FINAL GRADING AND SEEDING BEFORE STARTING THE NEXT PHASE. ANY EXPOSED AREA THAT WILL NOT BE FINISH GRADED WITHIN 7 DAYS SHALL BE TREATED WITH MULCH OR PLANTED WITH TEMPORARY VEGETATION. PROVISIONS SHALL BE MADE TO SAFELY CONVEY SURFACE RUNOFF TO STORM DRAINS, PROTECTED OUTLETS OR TO STABLE WATER COURSES TO ENSURE THAT SURFACE RUNOFF WILL NOT DAMAGE SLOPES OR OTHER GRADED AREAS. CUT AND FILL SLOPES THAT ARE TO BE STABILIZED WITH GRASS SHALL NOT BE STEEPER THAN 2:1. AREAS TO BE FILLED SHALL BE CLEARED, GRUBBED AND STRIPPED OF TOPSOIL TO REMOVE TREES, VEGETATION, ROOTS OR OTHER OBJECTIONABLE MATERIALS. AREAS SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 3 INCHES PRIOR TO PLACEMENT OF TOPSOIL. ALL FILLS SHALL BE COMPACTED AS REQUIRED TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, SUBSIDENCE OR OTHER RELATED PROBLEMS. FILL INTENDED TO SUPPORT BUILDINGS, STRUCTURES AND CONDUITS, ETC. SHALL BE COMPACTED IN ACCORDANCE WITH LOCAL REQUIREMENTS OR CODES. ALL FILLS SHALL BE PLACED AND COMPACTED IN LAYERS NOT TO EXCEED 8 INCHES IN THICKNESS. FILL MATERIAL SHALL BE FREE OF STUMPS, BUILDING DEBRIS AND OTHER OBJECTIONABLE MATERIALS THAT WOULD INTERFERE WITH OR PREVENT CONSTRUCTION OF SATISFACTORY LIFTS. FROZEN MATERIAL OR SOFT, MUCKY OR HIGHLY COMPRESSIBLE MATERIALS SHALL NOT BE INCORPORATED INTO FILL SLOPES OR STRUCTURAL FILLS. FILL SHALL NOT BE PLACED ON A FROZEN FOUNDATION. SEEPS OR SPRINGS ENCOUNTERED DURING CONSTRUCTION SHALL BE HANDLED APPROPRIATELY. ALL GRADED AREAS SHALL BE PERMANENTLY STABILIZED IMMEDIATELY FOLLOWING FINISHED GRADING.

8. TOPSOIL

IF POSSIBLE, TOPSOIL SHALL BE STOCKPILED ON THE PROJECT SITE AND REUSED. HIGH QUALITY TOPSOIL SHALL BE FRIABLE AND LOAMY (LOAM, SANDY LOAM, SILT LOAM, SANDY CLAY LOAM, CLAY LOAM), AND SHALL BE FREE OF DEBRIS, TRASH, STUMPS, ROCKS, ROOTS AND NOXIOUS WEEDS. AFTER THE AREAS TO BE TOPSOILED HAVE BEEN BROUGHT TO GRADE, AND IMMEDIATELY PRIOR TO SPREADING THE TOPSOIL, THE SUBGRADE SHALL BE LOOSENED BY SCARIFYING TO A DEPTH OF AT LEAST 2 INCHES TO ENSURE BONDING WITH SUBSOIL. THE TOPSOIL SHALL BE UNIFORMLY DISTRIBUTED TO A MINIMUM COMPACTED DEPTH OF 4 INCHES. ANY IRREGULARITIES IN THE SURFACE RESULTING FROM TOPSOILING OR OTHER OPERATIONS SHALL BE CORRECTED IN ORDER TO PREVENT THE FORMATION OF DEPRESSIONS OR WATER POCKETS. IT IS NECESSARY TO COMPACT THE TOPSOIL ENOUGH TO ENSURE GOOD CONTACT WITH THE UNDERLYING SOIL, BUT UNDUE COMPACTION IS TO BE AVOIDED.

9. PERMANENT SOIL STABILIZATION

IF THE AREA WILL NOT BE WORKED FOR MORE THAN ONE YEAR OR HAS BEEN BROUGHT TO FINAL GRADE, THEN PERMANENTLY STABILIZE THE AREA WITHIN 7 DAYS BY PLANTING VEGETATION, SEEDING, SOD, OR THROUGH THE USE OF PERMANENT MULCH, OR RIPRAP, OR ROAD SUB-BASE. IF USING VEGETATION FOR STABILIZATION, SELECT THE PROPER VEGETATION FOR THE LIGHT, MOISTURE, AND SOIL CONDITIONS; AMEND AREAS OF DISTURBED SUBSOILS WITH TOPSOIL, COMPOST, OR FERTILIZERS; PROTECT SEEDED AREAS WITH MULCH OR, IF NECESSARY, EROSION CONTROL BLANKETS; AND SCHEDULE SODDING, PLANTING, AND SEEDING SO TO AVOID DIE-OFF FROM SUMMER DROUGHT AND FALL FROSTS. NEWLY SEEDED OR SODDED AREAS MUST BE PROTECTED FROM VEHICLE TRAFFIC, EXCESSIVE PEDESTRIAN TRAFFIC, AND CONCENTRATED RUNOFF UNTIL THE VEGETATION IS WELL-ESTABLISHED WITH 90% COVER BY HEALTHY VEGETATION. IF NECESSARY, AREAS MUST BE REWORKED AND RESTABILIZED IF GERMINATION IS SPARSE, PLANT COVERAGE IS SPOTTY, OR TOPSOIL EROSION IS EVIDENT. ONE OR MORE OF THE FOLLOWING MAY APPLY TO A PARTICULAR SITE.

SEEDED AREAS: TO PREPARE THE SEEDBED, APPLY 10-20-20 FERTILIZER AT A RATE OF 800 POUNDS PER ACRE AND GROUND LIMESTONE AT A RATE OF 3 TONS PER ACRE. WORK THE FERTILIZER AND LIMESTONE INTO THE TOPSOIL TO A DEPTH OF 4 INCHES AND REMOVE ANY STONES, ROOTS OR OTHER VISIBLE DEBRIS. SELECT A SEED MIXTURE THAT IS APPROPRIATE FOR THE SOIL TYPE AND MOISTURE CONTENT AS FOUND AT THE SITE, AND FOR THE AMOUNT OF SUN EXPOSURE AND FOR LEVEL OF USE. REFER TO THE USDA SOIL CONSERVATION SERVICE OR THE LOCAL SOIL AND WATER CONSERVATION DISTRICT FOR APPROPRIATE SEED MIXTURES. APPLY SEED UNIFORMLY IN ACCORDANCE WITH SUPPLIER RECOMMENDATIONS AND IMMEDIATELY COVER WITH MULCH AS DESCRIBED IN THE TEMPORARY MULCHING SECTION OF THIS PLAN.

HYDROSEEDING SHALL BE DONE IN ACCORDANCE WITH SUPPLIERS RECOMMENDATIONS. FOR SEEDED AREAS TO BE PERMANENTLY STABILIZED, 90% OF THE DISTURBED SOIL SHALL BE COVERED WITH MATURE HEALTHY PLANTS WITH NO EVIDENCE OF WASHING OR RILLING OF THE TOPSOIL.

SOD STRIPS SHALL BE LAID AT RIGHT ANGLES TO DIRECTION OF SLOPE OR FLOW OF WATER STARTING AT LOWEST ELEVATION. JOINTS SHALL BE STAGGERED, AND ALL STRIPS SHALL BE ROLLED OR TAMPED INTO PLACE. ON SLOPES, SOD SHALL BE ANCHORED WITH STAPLES, WIRE OR PINS. IRRIGATE SODDED AREA IMMEDIATELY AFTER INSTALLATION. FOR SODDED AREAS TO BE PERMANENTLY STABILIZED, THE ROOTS OF THE SOD MUST BE COMPLETELY BOUND INTO THE UNDERLYING SOIL WITH NO SLUMPING OF THE SOD OR DIE-OFF.

PERMANENT MULCH IS A LONG TERM COVER THAT PROVIDES A GOOD BUFFER AROUND DISTURBED AREAS. THE EROSION CONTROL MIX SHALL CONSIST PRIMARILY OF ORGANIC MATERIAL AND MAY INCLUDE SHREDDED BARK, STUMP GRINDINGS OR COMPOSTED BARK. WOOD CHIPS, GROUND CONSTRUCTION DEBRIS, REPROCESSED WOOD PRODUCTS OR BARK CHIPS ARE NOT ACCEPTABLE. THE EROSION CONTROL MIX SHALL CONTAIN A WELL-GRADED MIXTURE OF PARTICLE SIZES AND MAY CONTAIN ROCKS LESS THAN 4 INCHES IN DIAMETER. EROSION CONTROL MIX MUST BE FREE OF REFUSE, PHYSICAL CONTAMINANTS AND MATERIAL TOXIC TO PLANT GROWTH.

RIPRAP STONE SHALL CONSIST OF SUB-ANGULAR FIELD STONE OR ROUGH UNEVEN QUARRY STONE OF APPROXIMATELY RECTANGULAR SHAPE. THE DEPTH OF STONE SHALL BE A MINIMUM OF 2.2 TIMES THE MAXIMUM STONE DIAMETER. A GRAVEL OR GEOTEXTILE FILTER BLANKET SHALL BE PLACED BETWEEN THE RIPRAP AND UNDERLYING SOIL SURFACE. GRAVEL FILTER BLANKETS SHALL MEET MDOT TYPE-C UNDERDRAIN MATERIAL SPECIFICATIONS AND BE AT LEAST 6 INCHES THICK. GEOTEXTILE FILTER BLANKETS SHALL BE SPECIFIED BASED ON SITE CONDITIONS. RIPRAP SLOPES SHALL BE TOED INTO THE BASE OF THE EMBANKMENT BY EXCAVATING A TRENCH AT THE BOTTOM OF THE SLOPE AND INSTALLING A STABLE BASE OF RIPRAP TO GRADE.

DITCHES, CHANNELS AND SWALES ARE CONSIDERED PERMANENTLY STABILIZED WHEN THE CHANNEL HAS 90% COVER OF HEALTHY VEGETATION WITH A WELL GRADED RIPRAP LINING, EROSION CONTROL BLANKET, OR WITH ANOTHER NON-EROSIVE LINING SUCH AS CONCRETE OR ASPHALT PAVEMENT. THERE MUST BE NO EVIDENCE OF SLUMPING OF THE CHANNEL LINING, UNDERCUTTING OF THE BANKS, OR DOWNCUTTING OF THE CHANNEL.

10. STORMWATER CHANNELS

EACH CHANNEL SHOULD BE CONSTRUCTED IN SECTIONS SO THAT THE SECTION'S GRADING, SHAPING, AND INSTALLATION OF THE PERMANENT LINING CAN BE COMPLETED THE SAME DAY. IF A CHANNEL'S FINAL GRADING OR LINING INSTALLATION MUST BE DELAYED, THEN DIVERSION BERMS MUST BE USED TO DIVERT STORMWATER AWAY FROM THE CHANNEL. PROPERLY-SPACED CHECK DAMS MUST BE INSTALLED IN THE CHANNEL TO SLOW THE WATER VELOCITY, AND A TEMPORARY LINING INSTALLED ALONG THE CHANNEL TO PREVENT SCOURING.

WINTER EROSION AND SEDIMENTATION CONTROL NOTES:

THE WINTER CONSTRUCTION PERIOD TYPICALLY BEGINS IN EARLY NOVEMBER AND ENDS IN MID APRIL. IF A CONSTRUCTION SITE IS NOT STABILIZED WITH PAVEMENT, A ROAD GRAVEL BASE OR RIPRAP BY NOVEMBER 15 THEN THE SITE NEEDS TO BE PROTECTED WITH OVER-WINTER STABILIZATION. WINTER EXCAVATION AND EARTHWORK SHALL BE COMPLETED SUCH THAT NO MORE THAN 1 ACRE OF THE SITE IS WITHOUT STABILIZATION AT ANY ONE TIME. LIMIT THE EXPOSED AREA TO THOSE AREAS IN WHICH WORK IS TO OCCUR DURING THE FOLLOWING 15 DAYS AND THAT CAN BE MULCHED IN ONE DAY PRIOR TO ANY SNOW EVENT. AN AREA SHALL BE CONSIDERED DENUDED UNTIL THE SUBBASE GRAVEL IS INSTALLED IN THE ROADWAY AREAS OR THE AREAS OF FUTURE LOAM AND SEED HAVE BEEN LOAMED, SEEDED AND MULCHED. A COVER OF EROSION CONTROL MIX IS THE PREFERRED TEMPORARY MULCH DURING WINTER CONDITIONS.

1. NATURAL RESOURCE PROTECTION

ANY AREAS WITHIN 75 FEET FROM ANY REGULATED NATURAL RESOURCES SHALL BE MULCHED BY DECEMBER 1 AND ANCHORED WITH PLASTIC NETTING OR PROTECTED WITH AN EROSION CONTROL COVER. DURING WINTER CONSTRUCTION, A DOUBLE ROW OF SEDIMENT BARRIERS (FOR EXAMPLE, SILT FENCE BACKED WITH HAY BALES OR EROSION CONTROL MIX) WILL BE PLACED BETWEEN ANY REGULATED NATURAL RESOURCE AND THE DISTURBED AREA. PROJECTS CROSSING THE REGULATED NATURAL RESOURCE SHALL BE PROTECTED A MINIMUM DISTANCE OF 100 FEET ON EITHER SIDE FROM THE RESOURCE. EXISTING PROJECTS NOT STABILIZED BY DECEMBER 1 SHALL BE PROTECTED WITH THE SECOND LINE OF SEDIMENT BARRIER TO ENSURE FUNCTIONALITY DURING THE SPRING THAW AND RAINS.

2. SEDIMENT BARRIERS

DURING FROZEN CONDITIONS, SEDIMENT BARRIERS MAY CONSIST OF EROSION CONTROL MIX BERMS OR ANY OTHER RECOGNIZED SEDIMENT BARRIERS AS FROZEN SOIL PREVENTS THE PROPER INSTALLATION OF HAY BALES OR SILT FENCES.

3. MULCHING

ALL AREAS SHALL BE CONSIDERED TO BE DENUDED UNTIL SEEDED AND MULCHED. HAY AND STRAW MULCH SHALL BE APPLIED AT A RATE OF 3 TONS PER ACRE (TWICE THE NORMAL ACCEPTED RATE) AND SHALL BE PROPERLY ANCHORED. EROSION CONTROL MIX MUST BE APPLIED WITH A MINIMUM 4 INCHES THICKNESS. MULCH SHALL NOT BE SPREAD ON TOP OF SNOW. SNOW MUST BE REMOVED DOWN TO A ONE-INCH DEPTH PRIOR TO APPLICATION. AFTER EACH DAY OF FINAL GRADING, THE AREA WILL BE PROPERTY STABILIZED WITH ANCHORED HAY OR STRAW OR EROSION CONTROL MATTING. AN AREA SHALL BE CONSIDERED TO HAVE BEEN STABILIZED WHEN EXPOSED SURFACES HAVE BEEN EITHER MULCHED OR ADEQUATELY ANCHORED SO THAT GROUND SURFACE IS NOT VISIBLE THROUGH THE MULCH. BETWEEN THE DATES OF NOVEMBER 1 AND APRIL 15, ALL MULCH SHALL BE ANCHORED BY EITHER MULCH NETTING, TRACKING OR WOOD CELLULOSE FIBER. THE COVER WILL BE CONSIDERED SUFFICIENT WITH THE GROUND SURFACE IS NOT VISIBLE THROUGH THE MULCH. AFTER NOVEMBER 1ST, MULCH AND ANCHORING OF ALL EXPOSED SOIL SHALL OCCUR AT THE END OF EACH FINAL GRADING WORKDAY.

4. SOIL STOCKPILING

STOCKPILES OF SOIL OR SUBSOIL WILL BE MULCHED FOR OVER WINTER PROTECTION WITH HAY OR STRAW AT TWICE THE NORMAL RATE OR WITH A FOUR-INCH LAYER OF EROSION CONTROL MIX. THIS WILL BE DONE WITHIN 24 HOURS OF STACKING AND RE-ESTABLISHED PRIOR TO ANY RAINFALL (0.5 INCH RAINFALL OR GREATER) OR SNOWFALL. SEDIMENT BARRIERS SHOULD BE INSTALLED DOWNGRADIENT OF SOIL OR SEDIMENT STOCKPILES AND STORMWATER SHOULD BE PREVENTED FROM RUNNING ONTO THE STOCKPILE. ANY SOIL STOCKPILE WILL NOT BE PLACED WITHIN 100 FEET FROM ANY REGULATED NATURAL RESOURCE.

5. SEEDING

BETWEEN THE DATES OF OCTOBER 15 AND APRIL 1, LOAM OR SEED WILL NOT BE REQUIRED. DURING PERIODS OF ABOVE FREEZING TEMPERATURES FINISHED AREAS SHALL BE FINE GRADED AND EITHER PROTECTED MULCH OR TEMPORARILY SEEDED AND MULCHED UNTIL SUCH TIME AS THE FINAL TREATMENT CAN BE APPLIED. IF THE DATE IS AFTER NOVEMBER 1 AND IF THE EXPOSED AREA HAS BEEN LOOMED, FINAL GRADED WITH A UNIFORM SURFACE, THEN THE AREA MAY BE DORMANT SEEDED AT A RATE OF 3 TIMES HIGHER THAN SPECIFIED FOR PERMANENT SEED AND THEN MULCHED. IF DORMANT SEEDING IS USED, ALL DISTURBED AREAS SHALL RECEIVE 4 INCHES OF LOAM AND SEED AT AN APPLICATION RATE OF 5 LBS PER 1,000 S.F. ALL AREAS INSUFFICIENTLY VEGETATED (LESS THAN 90%) IN THE SPRING SHALL BE REVEGETATED.

6. OVER-WINTER STABILIZATION OF DITCHES AND CHANNELS

ALL STONE-LINED DITCHES AND CHANNELS MUST BE CONSTRUCTED BY NOVEMBER 1. ALL GRASS-LINED DITCHES AND CHANNELS MUST BE CONSTRUCTED AND STABILIZED BY SEPTEMBER 1. IF A GRASS-LINED DITCH OR CHANNEL IS STABILIZED BY SEPTEMBER 1, THEN EITHER A SOD LINING SHALL BE INSTALLED PRIOR TO OCTOBER 1 OR THE DITCH MUST BE LINED WITH STONE RIPRAP BACKED BY AN APPROPRIATE GRAVEL BED OR GEOTEXTILE PRIOR TO NOVEMBER 1.

7. OVER-WINTER STABILIZATION OF DISTURBED SLOPES

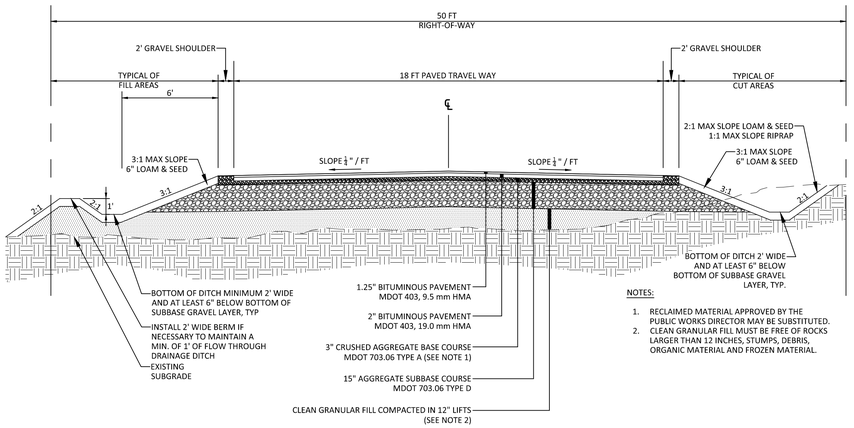
ALL STONE-COVERED SLOPES MUST BE CONSTRUCTED AND STABILIZED BY NOVEMBER 15. ALL SLOPES TO BE VEGETATED MUST BE SEEDED AND MULCHED BY SEPTEMBER 1. ALL AREAS HAVING A GRADE STEEPER THAN 8% SHALL BE CONSIDERED A SLOPE. IF A SLOPE TO BE VEGETATED IS NOT STABILIZED BY SEPTEMBER 1, THEN THE SLOPE SHALL EITHER BE STABILIZED WITH TEMPORARY VEGETATION AND EROSION CONTROL MATS BY OCTOBER 1, SOD BY OCTOBER 1, EROSION CONTROL MIX BY NOVEMBER 1 OR STONE RIPRAP BY NOVEMBER 15. SEE APPLICABLE SECTIONS UNDER EROSION AND SEDIMENTATION CONTROL NOTES FOR PROPER INSTALLATION METHODS.

8. OVER-WINTER STABILIZATION OF DISTURBED SOILS

BY SEPTEMBER 15, ALL DISTURBED SOILS ON AREAS HAVING A SLOPE LESS THAN 15% MUST BE SEEDED AND MULCHED. IF THE DISTURBED AREAS ARE NOT STABILIZED BY THIS DATE, THEN THE AREA SHALL EITHER BE STABILIZED WITH TEMPORARY VEGETATION BY OCTOBER 1, SOD BY OCTOBER 1, OR MULCH BY NOVEMBER 15. SEE APPLICABLE SECTIONS UNDER EROSION AND SEDIMENTATION CONTROL NOTES FOR PROPER INSTALLATION METHODS.

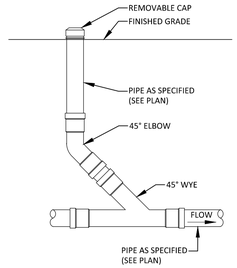
9. MAINTENANCE

MAINTENANCE MEASURES SHALL BE APPLIED AS NEEDED DURING THE ENTIRE CONSTRUCTION SEASON. AFTER EACH RAINFALL, SNOW STORM, PERIOD OF THAWING AND RUNOFF AND AT LAST ONCE A WEEK, THE SITE CONTRACTOR SHALL PERFORM A VISUAL INSPECTION OF ALL INSTALLED EROSION CONTROL MEASURES AND PERFORM REPAIRS AS NEEDED TO INSURE THEIR CONTINUOUS FUNCTION. FOLLOWING THE TEMPORARY AND/OR FINAL SEEDING AND MULCHING, TH

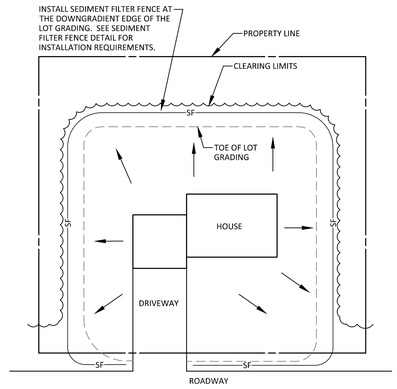


NOTES:
1. RECLAIMED MATERIAL APPROVED BY THE PUBLIC WORKS DIRECTOR MAY BE SUBSTITUTED.
2. CLEAN GRANULAR FILL MUST BE FREE OF ROCKS LARGER THAN 12 INCHES, STUMPS, DEBRIS, ORGANIC MATERIAL AND FROZEN MATERIAL.

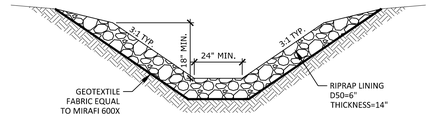
TYPICAL ROADWAY SECTION
MODIFIED MINOR RURAL STREET STANDARD



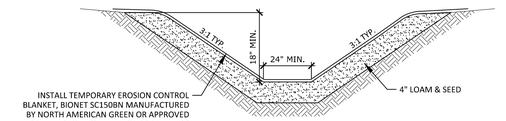
UNDERDRAIN CLEANOUT DETAIL
NOT TO SCALE



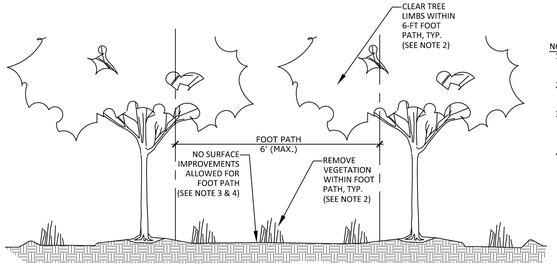
TYPICAL HOUSE LOT
EROSION CONTROL DETAIL
NOT TO SCALE



RIPRAP SWALE
NOT TO SCALE

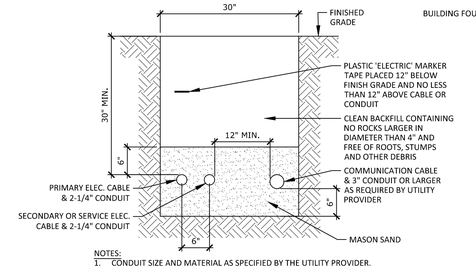


DRAINAGE SWALE
NOT TO SCALE



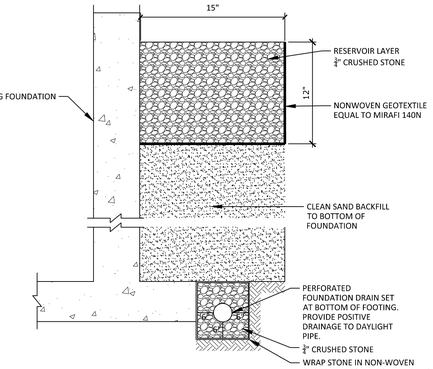
NOTES:
1. PROPOSED FOOT PATH THROUGH THE OPEN SPACE LOT (LOT 4) SHALL BE LOCATED SUCH THAT NO TREE CLEARING IS REQUIRED.
2. CLEARING FOR FOOT PATH IS LIMITED TO REMOVING BRUSH AND VEGETATION, AND IF NECESSARY TRIMMING OF LIMBS ONLY.
3. FOOT PATH SHALL NOT BE INSTALLED WITH ANY SURFACE IMPROVEMENTS OR EARTH DISTURBANCE (NO EXCAVATION OR PLACEMENT OF FILL, AND NO INSTALLATION OF GRAVEL/PAVEMENT).
4. IN THE EVENT NO ALTERNATE FOOT PATH LOCATION IS ACCEPTABLE, 4-FT WIDE (MAX.) STAIRS MAY BE INSTALLED WHERE SLOPES EXCEED 15%.

FOOT PATH DETAIL

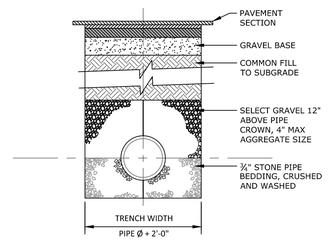


NOTES:
1. CONDUIT SIZE AND MATERIAL AS SPECIFIED BY THE UTILITY PROVIDER.
2. INSTALLATION SHOULD NOT ALLOW THE INTER-TWINING OF CABLES.
3. BEDDING AND BACKFILL SHALL BE FREE OF ROOTS, STUMPS AND OTHER DEBRIS.
4. COMMUNICATION CABLE AND POWER CABLE SHALL HAVE NO LESS THAN 12 INCHES OF RADIAL SEPARATION.

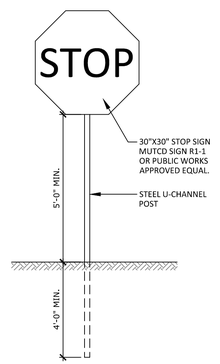
UTILITY TRENCH DETAIL
NOT TO SCALE



ROOF DRIP EDGE
NOT TO SCALE



TYPICAL TRENCH SECTION
NOT TO SCALE



STOP SIGN INSTALLATION
NOT TO SCALE

DM ROMA
CONSULTING ENGINEERS
P.O. BOX 1116
WINDHAM, ME 04062
(207) 591-5055

REV	DATE	BY	DESCRIPTION
A	9-15-23	JPC	ISSUED FOR REVIEW
B	11-13-23	JPC	REVISED PER TOWN REVIEW
C	11-22-23	JPC	REVISED PER REVIEW COMMENTS

DETAILS

AERIE ESTATES SUBDIVISION
AERIE DRIVE - OFF EAGLES NEST ROAD
GRAY, MAINE

FOR:
SEBAGO REALTY, LLC
PO BOX 1116
WINDHAM, ME 04062

23050
JOB NUMBER:

AS NOTED
SCALE:

11-22-2023
DATE:

SHEET 8 OF 8

D-2

MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

1846

Soil Narrative Report
Eagle Nest Subdivision
Gray, Maine
March 2006

DATE: Soil Profiles observed on June 2005, March 2006

BASE MAP: Base plan prepared and provided by Land Use Consultants, Inc. Topographic contour 2 foot, Scale of plan 1"= 100 feet.

GROUND CONTROL: Soil survey boundaries and test pit locations located by Mark Hampton Associates, Inc.

Class A – High Intensity Soil Survey (Minimum Standards) **Developed Area**

Mapping units of 1/8acre or greater.
Scale of 1"= 100 feet or larger.
Up to 25% inclusions in mapping units of which no more than 15% may be dissimilar soils.
Ground Control – base line and test pit locations located under the direction of registered land surveyor or professional engineer.
Base Map with 2' contour lines.

Class C – Medium-High Intensity Soil Survey (Minimum Standards) **Open Space**

Mapping units 3 acres or less
Scale of 1 inch equals 500 feet or larger
Ground Control – as determined by mapper
Base map – as determined by mapper

The accompanying soil profile descriptions, soil map, and this soil narrative report were done in accordance with the standards adopted by the Maine Association of Professional Soil Scientists, and the Maine Board of Certification of Geologists and Soil Scientists.

[redacted] C.S.S. #216, L.S.E. #263 3/22/06
Mark J. Hampton Date

STATE OF MAINE
MARK J. HAMPTON
#216
CERTIFIED SOIL SCIENTIST

P.O. BOX 1931 • PORTLAND, ME 04104-1931 • 207-773-8650 • mhampto1@maine.rr.com

Quality services that meet your deadlines

MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

1846

Eagle Nest Subdivision
Hunter Properties Group
Gray, Maine

LYMAN-TUNBRIDGE COMPLEX
SETTING

PARENT MATERIAL:	Loamy glacial till
LANDFORM:	Glaciated uplands
POSITION IN LANDSCAPE:	Uppermost locations, sideslopes, shoulders and crests
SLOPE GRADIENT RANGES:	(A) 0-3%, (B) 3-8%, (C) 8-15%, (E) +25%

COMPOSITION AND SOIL CHARACTERISTICS

DRAINAGE CLASS: Excessively well drained Lyman (10-20 inches to bedrock) and Tunbridge (20-40 inches to bedrock) These soils occur in a nonrepeating pattern with exposed bedrock outcrops and cannot be separated.

TYPICAL PROFILE:

Surface Layer:	Reddish brown fine sandy loam, 0-4 inches
Subsurface Layer:	Red brown sandy loam 4-12"
Subsoil Layer:	Dark red sandy loam 12-18"
Substratum:	Brown sandy loam 18-36"

HYDROLOGIC GROUP:	Group C/D
PERMEABILITY:	Slow to rapid, depending on slope and bedrock outcrops.
DEPTH TO BEDROCK:	Shallow (Lyman 10-20 inches) to moderately deep (Tunbridge 20-40 inches).
HAZARD TO FLOODING:	None

INCLUSIONS
(Within Mapping Unit)

CONTRASTING: Marlow, Dixfield, Colonel, Brayton

USE AND MANAGEMENT

Development: The limiting factor for building site development is depth to bedrock which ranges from 0 to 40 inches within this complex. Tunbridge and Lyman (deeper than 11 inches) soils are suitable for subsurface wastewater disposal.

P.O. BOX 1931 • PORTLAND, ME 04104-1931 • 207-773-8650 • mhampto1@maine.rr.com

Quality services that meet your deadlines

MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

1846

Eagle Nest Subdivision
Hunter Properties Group LLC
Gray, Maine

Brayton
(Aeric Epiaquepts)

SETTING

PARENT MATERIAL:	Derived from dense glacial till
LANDFORM:	Toeslopes and depressions in glaciated uplands
POSITION IN LANDSCAPE:	Lower positions on landform
SLOPE GRADIENT RANGES:	(A) 0-3%, (B) 3-8%

COMPOSITION AND SOIL CHARACTERISTICS

DRAINAGE CLASS: Poorly drained with a perched watertable from 0.0 to 1.0 feet below the surface at some time from October to May or during periods of heavy precipitation.

TYPICAL PROFILE:

Surface Layer:	Dk gray brown, stony fine sandy loam 0-5"
Subsurface Layer:	Gray Brown, stony fine sandy loam, 5-15"
Subsoil Layer:	Olive gray, stony fine sandy loam, 15-24"
Substratum:	Olive fine sandy loam, 24-65"

HYDROLOGIC GROUP:	Group D
SURFACE RUNOFF:	Moderate to moderately slow
PERMEABILITY:	Moderate and moderately slow
DEPTH TO BEDROCK:	Greater than 65 inches
HAZARD TO FLOODING:	None

INCLUSIONS
(Within Mapping Unit)

CONTRASTING: Colonel, Dixfield, Lyman -Tunbridge

USE AND MANAGEMENT

Development: The limiting factor for building site development is wetness due to the presence of a high watertable for a portion of the year. Proper foundation drainage or site modification is recommended.

P.O. BOX 1931 • PORTLAND, ME 04104-1931 • 207-773-8650 • mhampto1@maine.rr.com

Quality services that meet your deadlines

MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

1846
Eagle Nest Subdivision
Hunter Properties Group LLC
Gray, Maine

Colonel
(Aquic Haplorthods)

SETTING

PARENT MATERIAL:	Derived from dense, loamy glacial till
LANDFORM:	Drumlins and Sideslopes of glaciated uplands
POSITION IN LANDSCAPE:	Mid-positions on landform
SLOPE GRADIENT RANGES:	(B) 3-8%, (C) 8-15%

COMPOSITION AND SOIL CHARACTERISTICS

DRAINAGE CLASS: Somewhat poorly drained with a perched watertable from 1.0 to 2.0 feet below the surface at some time from October to May or during periods of heavy precipitation.

TYPICAL PROFILE:

Surface Layer:	Dk gray brown, stony fine sandy loam 0-3"
Subsurface Layer:	Dark Brown, stony fine sandy loam, 3-12"
Subsoil Layer:	Olive Brown, stony fine sandy loam, 12-18"
Substratum:	Olive, stony, fine sandy loam, 18-65"

HYDROLOGIC GROUP:	Group C
SURFACE RUNOFF:	Moderate to moderately slow
PERMEABILITY:	Moderate and moderately slow
DEPTH TO BEDROCK:	Greater than 65 inches
HAZARD TO FLOODING:	None

INCLUSIONS
(Within Mapping Unit)

CONTRASTING: Brayton, Dixfield, Lyman-Tunbridge

USE AND MANAGEMENT

Development: The limiting factor for building site development is wetness due to the presence of a high watertable for a portion of the year. Proper foundation drainage or site modification is recommended.

P.O. BOX 1931 • PORTLAND, ME 04104-1931 • 207-773-8650 • mhampto1@maine.rr.com

Quality services that meet your deadlines

MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

1846

Eagle Nest Subdivision
Hunter Properties Group LLC
Gray, Maine

Dixfield
(Aquic Haplorthods)

SETTING

PARENT MATERIAL:	Derived from compact loamy glacial till.
LANDFORM:	Till plains, hills and ridges.
POSITION IN LANDSCAPE:	Plains and middle levels.
SLOPE GRADIENT RANGES:	(B) 3-8%, (C) 8-15% (D) 15-25%

COMPOSITION AND SOIL CHARACTERISTICS

DRAINAGE CLASS: Moderately well drained with a perched watertable from 1.0 to 2.0 feet below the surface at some time from October to May or during periods of heavy precipitation.

TYPICAL PROFILE:

Surface Layer:	Dark brown, stony fine sandy loam, 0-7"
Subsurface Layer:	Brown, stony fine sandy loam, 7-20"
Subsoil Layer:	Olive brown, stony gravelly fine sandy loam 16-31"
Substratum:	Olive gray, stony fine sandy loam, 25-65"

HYDROLOGIC GROUP:	Group C
SURFACE RUNOFF:	Moderately Rapid
PERMEABILITY:	Moderate in solum, slow in substratum
DEPTH TO BEDROCK:	Greater than 65 inches
HAZARD TO FLOODING:	None

INCLUSIONS
(Within Mapping Unit)

CONTRASTING: Colonel, Marlow, Lyman-Tunbridge, Brayton

USE AND MANAGEMENT

Development: There are few limiting factors for building site development

P.O. BOX 1931 • PORTLAND, ME 04104-1931 • 207-773-8650 • mhampto1@maine.rr.com

MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

1846
Eagle Nest Subdivision
Hunter Properties Group LLC
Gray, Maine

Marlow
(Oxyaquic Haplorthods)

SETTING

PARENT MATERIAL:	Derived from compact loamy glacial till.
LANDFORM:	Till plains, hills and ridges.
POSITION IN LANDSCAPE:	Plains and middle levels.
SLOPE GRADIENT RANGES:	(B) 3-8%, (C) 3-8%

COMPOSITION AND SOIL CHARACTERISTICS

DRAINAGE CLASS: Well drained

TYPICAL PROFILE:

Surface Layer:	Gray fine sandy loam, 0-7"
Subsurface Layer:	Yellowish red, sandy loam, 7-16"
Subsoil Layer:	Olive brown, Stony, fine sandy loam 16-25"
Substratum:	Olive gray, fine sandy loam, 25-65"

HYDROLOGIC GROUP:	Group C
SURFACE RUNOFF:	Moderately Rapid
PERMEABILITY:	Moderate in solum, slow in substratum
DEPTH TO BEDROCK:	Greater than 65 inches
HAZARD TO FLOODING:	None

INCLUSIONS
(Within Mapping Unit)

CONTRASTING: Lyman-Tunbridge, Dixfield, Colonel, Brayton

USE AND MANAGEMENT

Development: There are few limiting factors for building site development

P.O. BOX 1931 • PORTLAND, ME 04104-1931 • 207-773-8650 • mhampto1@maine.rr.com

Quality services that meet your deadlines

MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

1846

Eagle Nest Subdivision
Hunter Properties Group
Gray, Maine

Peacham
(Histic Humaquepts)

SETTING

PARENT MATERIAL:	Derived from dense glacial till
LANDFORM:	Drainageways and depressions in glaciated uplands
POSITION IN LANDSCAPE:	Lower positions on landform
SLOPE GRADIENT RANGES:	(A) 0-3%

COMPOSITION AND SOIL CHARACTERISTICS

DRAINAGE CLASS: Very poorly drained with a perched watertable from 0.0 to 1.0 feet above the surface at some time from October to May or during periods of heavy precipitation.

TYPICAL PROFILE:

Surface Layer:	Very Dark Brown, muck, 0-14"
Subsurface Layer:	Gray Brown, loam, 14-21"
Subsoil Layer:	Olive gray, gravelly loam, 21-29"
Substratum:	Olive gray, gravelly fine sandy loam, 29-65"

HYDROLOGIC GROUP:	Group D
SURFACE RUNOFF:	Moderate to moderately slow
PERMEABILITY:	Moderate and moderately slow in subsoil and slow in substratum
DEPTH TO BEDROCK:	Greater than 65 inches
HAZARD TO FLOODING:	None

INCLUSIONS
(Within Mapping Unit)

CONTRASTING: Colonel, Brayton, Dixfield

USE AND MANAGEMENT

Development: The limiting factor for building site development is severe due to the presence of a high watertable for a portion of the year.

P.O. BOX 1931 • PORTLAND, ME 04104-1931 • 207-773-8650 • mhampto1@maine.rr.com

Quality services that meet your deadlines

PAGE 1 OF _____ 1846 FORM E 9/01

SOIL CONDITIONS SUMMARY TABLE

SUMMARY LOG OF SUBSURFACE EXPLORATIONS AT PROJECT SITES

Project Name: Eagles Nest Subdivision | Applicant Name: Hunter Property Group | Project Location (municipality): Gray

Lot No.	Exploration Symbol (TP 1, B 2, etc.)	✓ or ✗ if at SSWD Field	Description of subsurface materials by: ● Soil profile/condition (if by S.E.), ● Soil series name (if by C.S.S.), or by ● Geologic unit (if by C.G.)	Depths to (check one): ☑ inches ☐ cm — Mottling (seasonal watertable)	Bedrock	Firm or Restrictive Layer	Limit of Exploration	Ground Surface Slope (%)
	TP1		3D	8		8	28"	4
	TP2		3D	9		9	30	6
33	TP3	X	4C				34	6
	TP4		4C	17		N/A	28	6
	TP5		4D	14		N/A	28	4
18	TP6	X	3C	17		17	30	8
	TP 7		2A		10		10	4
	TP8		2A II		20		20	6
	TP9		2A III	16	24	N/A	24	4
	TP10		4C	N/A	N/A	N/A	16	12
	TP11		2C				26	8
3	TP12	X	3C	22		22	32	5
33	TP13	X	3C	16		16	24	5
	TP14							
	TP15							
	TP16							
	TP17							
	TP 18							
	TP 19							
	TP 20		2C	22			24	4
	TP 21		2A II	6	15		15	5
	TP22		2C	18			20	3
	TP 23		2D	12			22	4
	TP24							
	TP 25							
	TP 26							
	TP 27							
	TP 28							
	TP29							
	TP 30		3D	8		8	35	6
	TP31		4C		N/A	28	42	6

INVESTIGATOR INFORMATION AND SIGNATURE

Signature: [redacted] Date: 7/22/06

Name Printed/Typed: Marc J. Hampton Cert/Lic/Reg. # 216263

Title: ☑ Licensed Site Evaluator ☑ Certified Soil Scientist ☐ Certified Geologist ☐ Other:

affix professional seal

1846 FORM E 9/01

SOIL CONDITIONS SUMMARY TABLE

SUMMARY LOG OF SUBSURFACE EXPLORATIONS AT PROJECT SITES

Project Name: Eagles Nest Subdivision | Applicant Name: Hunter Property Group | Project Location (municipality): Gray

Lot No.	Exploration Symbol (TP 1, B 2, etc.)	✓ or ✗ if at SSWD Field	Description of subsurface materials by: ● Soil profile/condition (if by S.E.), ● Soil series name (if by C.S.S.), or by ● Geologic unit (if by C.G.)	Depths to (check one): ☐ inches ☐ cm — Mottling (seasonal watertable)	Bedrock	Firm or Restrictive Layer	Limit of Exploration	Ground Surface Slope (%)
	TP32							
	TP33							
	TP34							
	TP35							
	TP36		5D	14		15	36	6
	TP37		3D	10		22	35	6
	TP38		3C	18		18	40	6
	TP39		3C	7		7	42	5
	TP40		3C	16		18	36	4
	TP41		5C	N/A		18	41	10
	TP42		4C	18			48	10
	TP43		3C	17		17	48	10
	TP44		6C	18		18	38	5
27	TP45	X	3D	14		20	41	4
	TP46		3D	7		7	47	6
	TP47		3C	30		30	36	4
13	TP48	X	2A/B	17	29	N/A	29	6
	TP49		4C			24	24	3
	TP50		4C			28	28	4
	TP51		5C				28	10
	TP52		4C			34	34	4
	TP53		3C	21		21	26	6
	TP54		3C	26		26	36	6
	TP55		3C	24		24	37	8
	TP56		3C	24		24	34	4
7	TP57	X	3C	15		15	36	2
9	TP58	X	3C	18		18	38	2
10	TP59	X	3C	22		22	42	2
11	TP60	X	2A		24		24	2
12	TP61	X	2A		27		27	4
	TP62		2A		6"		6	2

INVESTIGATOR INFORMATION AND SIGNATURE

Signature [redacted] Date: 7/22/06

Name Printed/typed: MARC J. Hampton Cert/Lic/Reg. # 216/26

Title: ☒ Licensed Site Evaluator ☒ Certified Soil Scientist ☐ Certified Geologist ☐ Other:

affix professional seal

DEP Form E Rev. 9/01

1046 FORM E 9/01

SOIL CONDITIONS SUMMARY TABLE

SUMMARY LOG OF SUBSURFACE EXPLORATIONS AT PROJECT SITES

Project Name: Eagle Heights Subdivision | Applicant Name: Hunter Property Group | Project Location (municipality): Gray

Lot No.	Exploration Symbol (TP 1, B 2, etc.)	✓ or ✗ if at SSWD Field	Description of subsurface materials by: ● Soil profile/condition (if by S.E.), ● Soil series name (if by C.S.S.), or by ● Geologic unit (if by C.G.)	Depths to (check one): ☐ inches ☐ cm — Mottling (seasonal watertable)	Bedrock	Firm or Restrictive Layer	Limit of Exploration	Ground Surface Slope (%)
	TP 63		3D	13		13	26	4
14	TP 64	X	2A		17		17	6
15	TP 65	X	2A		27		27	4
16	TP 66	X	3C	25		25	38	4
17	TP 67	X	3C	17		17	32	4
	TP 68		2A		37		37	4
19	TP 69	X	3C	20		20	37	4
20	TP 70	X	3C	17		17	36	4
21	TP 71	X	3C	24		24	38	2
22	TP 72	X	3C	22		22	37	2
6	TP 73	X	3C	26		26	37	4
5	TP 74	X	3C	22		22	36	4
	TP 75		3C	18		18	38	4
4	TP 76	X	3C	17		17	38	2
2	TP 77	X	3C	17		17	36	4
1	TP 78	X	3C	16		16	32	2
37	TP 79	X	3C	15		15	34	4
	TP 80		3C	18		18	32	2
39	TP 81	X	3C	15		15	34	4
40	TP 82	X	3C	15		15	38	2
30	TP 83	X	3C	15		15	32	4
36	TP 84	X	3D	14		14	36	2
31	TP 85	X	3C	16		16	37	4
32	TP 86	X	3C	19		19	38	4
24	TP 87	X	2A III		15		15	4
25	TP 88	X	3C	18		18	36	4
33	TP 89	X	3C	22		22	37	4
26	TP 90	X	3C	18		18	38	2
35	TP 91	X	3C	15		15	32	4
34	TP 92	X	3D	14		14	38	2
28	TP 93	X	3C	15		15	38	4

INVESTIGATOR INFORMATION AND SIGNATURE

Signature: [redacted] Date: 7/22/16

Name Printed/Typed: MARK T. Hampton Cert/Lic/Reg. # 216263

Title: ☑ Licensed Site Evaluator ☑ Certified Soil Scientist ☐ Certified Geologist ☐ Other:

affix professional seal

DEP Form E Rev. 9/01

1246 FORM E 9/01

SOIL CONDITIONS SUMMARY TABLE

SUMMARY LOG OF SUBSURFACE EXPLORATIONS AT PROJECT SITES

Project Name: Eagles Nest Subdivision

Applicant Name: Hunter Property Group

Project Location (municipality): Gray

Lot No.	Exploration Symbol (TP 1, B 2, etc.)	✓ or ✗ if at SSWD Field	Description of subsurface materials by: ● Soil profile/condition (if by S.E.), ● Soil series name (if by C.S.S.), or by ● Geologic unit (if by C.G.)	Depths to (check one): ☒ inches ☐ cm — Mottling (seasonal watertable)	Bedrock	Firm or Restrictive Layer	Limit of Exploration	Ground Surface Slope (%)
29	TP94	X	3C	18		18	32	4
8	P56A	X	2C			24	24	3
	MHA1		Dixfield	18		18	27	4
	MHA2		Colonel	12		12	24	4
	MHA3		Colonel	13		13	24	4
	MHA4		Dixfield	15		15	24	4
	MHA5		Lyman-Tunbridge		16			2
	MHA6		Lyman Tunbridge		16			2
	MHA7		Lyman Tunbridge		18			2
	MHA8		Lyman Tunbridge		20			2
	MHA9		Lyman Tunbridge		22			2
	MHA10		Lyman Tunbridge		22			4
	MHA11		Lyman Tunbridge		18			2
	MHA12		Lyman-Tunbridge		16			4
	MHA13		Colonel	12		12		4
	MHA14		Colonel	11		11		4
	MHA15		Colonel	12		12		4
	MHA16		Dixfield	18		18		4
	MHA17		Dixfield	22		22		4
	MHA18		Dixfield	20		20		6
	MHA19		Dixfield	20		20		6
	MHA20		Dixfield	16		16		4
	MHA21		Dixfield	22		22		6
	MHA22		Dixfield	20		20		6
	MHA23		Dixfield	28		28		4
	MHA24		Dixfield	26		26		4
	P30A		4C	21			41	3
	P56A		2C				24	3
	SB1		Lyman-Tunbridge		6"		6"	25
	SB2		Dixfield	16		16	24"	6
	SB3		Brayton	5		5	10"	0

INVESTIGATOR INFORMATION AND SIGNATURE

Signature: [redacted] Date: 7/22/06 / 8/23/06

Name Printed/typed: Nancy Hampton Cert/Lic/Reg. # 216/663

Title: ☒ Licensed Site Evaluator ☒ Certified Soil Scientist ☐ Certified Geologist ☐ Other:

affix professional seal

DEP Form E Rev. 9/01

PAGE 4A OF ____

1846 FORM E 9/01

SOIL CONDITIONS SUMMARY TABLE

SUMMARY LOG OF SUBSURFACE EXPLORATIONS AT PROJECT SITES

Project Name: Eagles Ridge Subdivision

Applicant Name: Hunter Properties Group LLC

Project Location (municipality): Gray

Lot No.	Exploration Symbol (TP 1, B 2, etc.)	✓ or ✗ if at SSWD Field	Description of subsurface materials by: ● Soil profile/condition (if by S.E.), ● Soil series name (if by C.S.S.), or by ● Geologic unit (if by C.G.)	Depths to (check one): ☑ inches ☐ cm — Mottling (seasonal watertable)	Bedrock	Firm or Restrictive Layer	Limit of Exploration	Ground Surface Slope (%)
	SB4		Peacham	5		5	10"	0
	SB5		Dixfield	15		15	22"	6
	SB6		Dixfield	18		18	24"	6
	SB7		Dixfield	16		16	26"	10
	SB8		Brayton	5"		5"	12"	0
	SB9		Colonel	13"		13"	15	3
	SB10		Brayton	6"		6"	10	0
	SB11		Dixfield	17		17	22	8
	SB12		Lyman-Tunbridge		14		14	4
	SB13		Lyman-Tunbridge		7		7	4
	SB14		Peacham	5		5	10	0
	SB15		Brayton	5		5	12	0
	SB16		Colonel	13		13	18	8
	SB17		Brayton	5		5	10	4
	SB18		Colonel	12		12	16	6
	SB19		Colonel	14		14	18	6
	SB20		Brayton	5		5	12	2
	SB21		Dixfield	15		15	22	10
	SB22		Dixfield	18		18	26	8
	SB23		Brayton	5		5	10	4
	SB24		Colonel	12		12	16	6
	SB25		Dixfield	20		20	24	20
	SB26		Dixfield	22		22	30	20
	SB27		Brayton	5		5	10	0
	SB28		Peacham	4		4	10	0
	SB29		Brayton	6		6	12	0
	SB30		Peacham	6		6	12	0
	SB31		Brayton	6		6	12	0
	SB32		Dixfield	18		18	24	4
	SB33		Dixfield	20		20	26	4
	SB34		Peacham	6		6	12	0

INVESTIGATOR INFORMATION AND SIGNATURE

Signature: [redacted] Date: 8/23/06

Name Printed/Typed: MARC T. Hampton Cert/Lic/Reg. # 216

Title: ☐ Licensed Site Evaluator ☑ Certified Soil Scientist ☐ Certified Geologist ☐ Other:

affix professional seal

DEP Form E Rev. 9/01

1846 FORM E 9/01

SOIL CONDITIONS SUMMARY TABLE

SUMMARY LOG OF SUBSURFACE EXPLORATIONS AT PROJECT SITES

Project Name: Eagles Ridge Subdivision

Applicant Name: Hunter Properties Group LLC

Project Location (municipality): Gray

Lot No.	Exploration Symbol (TP 1, B 2, etc.)	✓ or ✗ if at SSWD Field	Description of subsurface materials by: ● Soil profile/condition (if by S.E.), ● Soil series name (if by C.S.S.), or by ● Geologic unit (if by C.G.)	Depths to (check one): ☒ inches ☐ cm — Mottling (seasonal watertable)	Bedrock	Firm or Restrictive Layer	Limit of Exploration	Ground Surface Slope (%)
	SB35		Dixfield	20		20	27	10
	SB36		Dixfield	18		18	24	18
	SB37		Dixfield	18		18	22	20
	SB38		Brayton	4		6	12	4

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION — Division of Health Engineering

Town, City, Plantation ORRINGTON — Street, Road, Subdivision EAGLE NEST — Owners Name PASCALIS

PRELIMINARY TESTING FOR FEASIBILITY STUDY. 6/30/04 USING SHOVEL + AUGER (FJL) TEST PITS (1-13) page 1 of 4

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP-1 ☑ Test Pit ☐ Boring

2-3" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling
0–6" FSL	FRI	LT BR	N/O
6–10" FSL	FIRM	LT OLIVE BR.	COMM. DIST (APP 10")
10–15" FLS			
15–30" LOAMY SAND			
BOE 28" NO LEDGE			

Soil	Classification	Slope	Limiting Factor	
3 (Profile)	D (Condition)	3-5 %	7"-8"	☐ Ground Water ☑ Restrictive Layer ☐ Bedrock

Observation Hole TP-2 ☑ Test Pit ☐ Boring

2-3" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling
0–6" FSL *	FRI	DK BR.	N/O
6–10" 4 STONES	SOMEWHAT FIRM	OLIVE BR	9"
10–15" FLS	FIRM		C.D.T
15–30" LOAMY SAND		LIGHT OLIVE BR	
BOE	NO REF USJL		
(* DUG PLOW LAYER?)			

Soil	Classification	Slope	Limiting Factor	
3 (Profile)	D (Condition)	0-8%	9"	☑ Ground Water ☑ Restrictive Layer ☐ Bedrock

* TEST PIT LOCATIONS ON 1"=100 AERIAL MAP.

Site Evaluator Signature — SE# — Date

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 3 ☐ Test Pit ☐ Boring

2-3" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling
0–6" FSL (APPS IN PLOW LAYER)		DK BR	N/O
6–10"		10"	
10–15" FSL	FRI	OL BR	
15–20" FLS		LT OL. BR.	
20–30" FINE-MED SAND			N/O
BOE 34" NO REF			

Soil	Classification	Slope	Limiting Factor	
4	C	0-8	34"+	☐ Ground Water ☐ Restrictive Layer ☐ Bedrock

Observation Hole TP4 ☐ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling
0–6" FSL		MED BR	
6–10"		LT OL BR	N/O
10–15" FLS	FRI		
15–20" W COARSE COBBLE 2-5%		LT. (YEL) OL. (GRAY)	17-18" FEW DIST.
20–30" M-F SAND	BOE 19"	NO REF	

Soil	Classification	Slope	Limiting Factor	
4 (Profile)	C (Condition)	5-8%	17-18"	☑ Ground Water ☐ Restrictive Layer ☐ Bedrock

[redacted]

340 — SE#

6/30/04 — Date

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Division of Health Engineering

Town, City, Plantation GRAY ME Street, Road, Subdivision EAGLE NEST Owners Name PARADIS

PARADIS, GRAY

6/30/04 pg 2 of 4

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP-5 ☑ Test Pit ☐ Boring

3" " Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (Inches)	Texture	Consistency	Color	Mottling
0–6	FSL		med Br	N/O
6–15	FLS	FRI	LT OL	
15–30	Stoney @ 14"	14" somewhat Firm/Firm		FSW FANT grey splotches
30	BOE	28"	NO REF.	

Soil	Classification	Slope	Limiting Factor	
4 (Profile)	C/D (Condition)	3-5%	14-15"	☑ Ground Water ☐ Restrictive Layer ☐ Bedrock

Observation Hole TP-6 ☑ Test Pit ☐ Boring

3" " Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (Inches)	Texture	Consistency	Color	Mottling
0–6	FSL		med Br to or br	
6–15	to stoney FLS (3-5"ϕ)	FRI	(bright) or. br.	
15–30		S.W. Firm to Firm	light or. br. (Bright	17" Few Dist.
30	BOE	30"	NO REF.	

Soil	Classification	Slope	Limiting Factor	
3 (Profile)	C (Condition)	5-10%	17"	☑ Ground Water ☑ Restrictive Layer ☐ Bedrock ?

Site Evaluator Signature SE# Date

Page 2 of 3

HHE-200 Rev.1/84

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP-7 ☑ Test Pit ☐ Boring

2 " Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (Inches)	Texture	Consistency	Color	Mottling
0–10		FRI	BR or br	N/O
10–20	9-10"		Refusal Ledge?	

Soil	Classification	Slope	Limiting Factor	
(Profile)	(Condition)	0-5%	9	☐ Ground Water ☐ Restrictive Layer ☑ Bedrock

Observation Hole TP-8 ☑ Test Pit ☐ Boring

2-3" " Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (Inches)	Texture	Consistency	Color	Mottling
0–6	FSL	FRI	BR OL BR	N/O Roots to 15"
6–20	refusal due to stones not ledge.			20"

Soil	Classification	Slope	Limiting Factor	
2 (Profile)	C (Condition)	5-8%	20	☑ Ground Water ☐ Restrictive Layer ☐ Bedrock

[redacted]

340 SE# 6/30/04 Date

Page 2 of 3

HHE-200 Rev.1/84

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION — Division of Health Engineering

Town, City, Plantation GRAY ME — Street, Road, Subdivision EAGLE NEST (FJL) — Owners Name PARADIS GRAY 6.30.04 — 3 OF 4

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP-9 ☑ Test Pit ☐ Boring

2-3" Depth of Organic Horizon Above Mineral Soil

Texture	Consistency	Color	Mottling
VFSL/SiL FSL	FRI	OL BR	N/O
SiL 100%			16" few dull, faint
BOE 24" w/ augur due to stones not ledge			

Soil Profile: 7 — Classification Condition: C — Slope: 0-5% — Limiting Factor: 16" — ☑ Ground Water ☐ Restrictive Layer ☐ Bedrock

Observation Hole TP-10 ☑ Test Pit ☐ Boring

3" Depth of Organic Horizon Above Mineral Soil

Texture	Consistency	Color	Mottling
VFSL/gravelly LS	FRI	OR BR	N/O
BOE 15-16" due to stoniness		not ledge	

Soil Profile: 4 — Classification Condition: C/D — Slope: 12% — Limiting Factor: 15" BOE — ☐ Ground Water ☐ Restrictive Layer ☐ Bedrock

Site Evaluator Signature — SE# — Date

Page 2 of 3
HHE-200 Rev.1/84

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP-11 ☑ Test Pit ☐ Boring

3" Depth of Organic Horizon Above Mineral Soil

Texture	Consistency	Color	Mottling
FSL (stony) 6" cobbly	FRI	BR LT OL.	roots to 10"
			N/O
BOE 26" due to stones not ledge			

Soil Profile: 12 — Classification Condition: C — Slope: % — Limiting Factor: 26" BOE — ☐ Ground Water ☐ Restrictive Layer ☐ Bedrock

Observation Hole TP12 ☑ Test Pit ☐ Boring

3" Depth of Organic Horizon Above Mineral Soil

Texture	Consistency	Color	Mottling
FSL		DK BR	
FEW stones	FRI	OL BR	
			22"±
FLS 32"		LT OL grey.	FEW DISTP
BOE no refusal			

Soil Profile: 3 — Classification Condition: C — Slope: 5% — Limiting Factor: 22"+ — ☑ Ground Water ☐ Restrictive Layer ☐ Bedrock

[redacted] — 340 SE# — 6/30/04 Date

Page 2 of 3
HHE-200 Rev.1/84

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Division of Health Engineering

Town, City, Plantation | Street, Road, Subdivision | Owners Name

6.30.04

PARADIS GRAY 4 OF 4

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP-13 ☑ Test Pit ☐ Boring

2" " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Depth	Texture	Consistency	Color	Mottling
0–6	FSL	FRI	BR	
6–15	FLS	S.W. FIRM	LT OR BR	16"
15–30	some stones 1"ø		OLIVE grey (light)	grey
30	BOE @ 24"		NO REF	

Soil	Classification	Slope	Limiting Factor	
2 (Profile)	C (Condition)	5 %	16"	☑ Ground Water ☐ Restrictive Layer ☐ Bedrock

Observation Hole _____ ☐ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

Depth	Texture	Consistency	Color	Mottling
0–50				

Soil	Classification	Slope	Limiting Factor	
Profile	Condition	%	"	☐ Ground Water ☐ Restrictive Layer ☐ Bedrock

Site Evaluator Signature _____ SE# Lost Pit #13 6/30/04 Date _____

Page 2 of 3
HHE-200 Rev.1/84

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole _____ ☐ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Depth	Texture	Consistency	Color	Mottling
0–50				

Soil	Classification	Slope	Limiting Factor	
Profile	Condition	%	"	☐ Ground Water ☐ Restrictive Layer ☐ Bedrock

Observation Hole _____ ☐ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

Depth	Texture	Consistency	Color	Mottling
0–50				

Soil	Classification	Slope	Limiting Factor	
Profile	Condition	%	"	☐ Ground Water ☐ Restrictive Layer ☐ Bedrock

[redacted] 340 SE# 6/30/04 Date

Page 2 of 3
HHE-200 Rev.1/84

WASTEWATER DISPOSAL SYSTEM APPLICATION

Division of Health Engineering

Town, City, Plantation: GRAY.

Street, Road, Subdivision: PARADIS / LIBBY / HERRIMAN LAND

Owners Name: VERRIN, SCOTT

4/15/05

2nd LEVEL OF TESTING @ 12+45 AC Parcels

4311.1

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 20 ☑ Test Pit ☐ Boring

3" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Depth	Texture	Consistency	Color	Mottling
0–10	FSL	FRI	OL. BR	
20			22	grey mottled C. Dist
24	BOE	NO REF		

Soil	Classification	Slope	Limiting Factor	
2 (Profile)	C (Condition)	3-5 %	22	☑ Ground Water ☐ Restrictive Layer ☐ Bedrock

Observation Hole TP 21 ☑ Test Pit ☐ Boring

5" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Depth	Texture	Consistency	Color	Mottling
0–15	FSL	FRI	BL TO DK BR	MOIST
15				▼ FREE
20		LEDGE		

Soil	Classification	Slope	Limiting Factor	
2 (Profile)	AII/E (Condition)	5/6 %	6"-7"	☐ Ground Water ☐ Restrictive Layer ☐ Bedrock

[redacted]

#340 SE#

4/15/05 Date

Page 2 of 3

HHE-200 Rev.1/84

SEE 1"=100 AERIAL PLAN FOR TP LOC - LIBBY LAND

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 22 ☑ Test Pit ☐ Boring

3" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Depth	Texture	Consistency	Color	Mottling
0–15	FSL	FRI	OL. BR	moist (free)
15				18" red/brown
20	BOE - NO REF			

Soil	Classification	Slope	Limiting Factor	
2	C	3	18"	☑ Ground Water ☐ Restrictive Layer ☐ Bedrock

Observation Hole TP 23 ☑ Test Pit ☐ Boring

2" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Depth	Texture	Consistency	Color	Mottling
0–15	FSL	FRI	RED/OR OL BR	moist (free) ▼ FREE 12" mottled
20	BOE	STONES	NO REF	

Soil	Classification	Slope	Limiting Factor	
2 (Profile)	D (Condition)	3-5 %	12	☑ Ground Water ☐ Restrictive Layer ☐ Bedrock

[redacted]

S340 SE#

4/15/05 Date

Page 2 of 3

HHE-200 Rev.1/84

LIBBY TESTING

SHEET 1 OF 1

TP SHOTES 30-36 [illegible]

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Department of Human Services
Division of Health Engineering

Town, City, Plantation: EAGLES NEST RD, GRAY

Street, Road, Subdivision:

Owners Name: VERRILL EAGLES NEST GRAY. LUC 4311.1

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP31 ☑ Test Pit ☐ Boring

4" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Depth	Texture	Consistency	Color	Mottling
0–6			DK BR	
6–10	FSL	FRI		
10–15			LT OL BR	N/O
15–30	gravelly loamy sand	Firm	GREY OLIVE	
30–50	BOE 42" NO REF			

Soil	Classification	Slope	Limiting Factor	
4 (Profile)	C (Condition)	5-8 %	28	☐ Ground Water ☑ Restrictive Layer ☐ Bedrock

Observation Hole TP 30 ☑ Test Pit ☐ Boring

4" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Depth	Texture	Consistency	Color	Mottling
0–6	FSL	FRI	BR	NO
6–15	LOAMY SAND med	FIRM TO VERY F. W CEMENTED layers	ol. grey	
15–35	BOE 35"	NO REF		

Soil	Classification	Slope	Limiting Factor	
3 (Profile)	D (Condition)	5-8 %	8	☐ Ground Water ☑ Restrictive Layer ☐ Bedrock

[redacted] ature

340 SE#

5/13/05 Date

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP30A ☑ Test Pit ☐ Boring

3" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Depth	Texture	Consistency	Color	Mottling
0–6	LOAM	FRI	BR/GREY	
6–15	FSL		OR BR	
15–21	21"			
21–30	FSL to FLS		DULL OR BR	FEW DIST.
30–40				▼ Free 38"
40–50	BOE	41" NO REF		

Soil	Classification	Slope	Limiting Factor	
4 (Profile)	C (Condition)	3 %	21	☑ Ground Water ☐ Restrictive Layer ☐ Bedrock

Observation Hole TP36 ☑ Test Pit ☐ Boring

2-3" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Depth	Texture	Consistency	Color	Mottling
0–6	FSL	FRI	OR BR	
6–15	MED L. SAND			14-15"
15–30	MED-CRSE gravelly sand	FIRM	OLIVE GREY	C. DIST
30–50	BOE	36" NO REF		

Soil	Classification	Slope	Limiting Factor	
5 (Profile)	C/D (Condition)	5-8 %	14-15"	☑ Ground Water ☑ Restrictive Layer ☐ Bedrock

[redacted]

340 SE#

5/13/05 Date

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Department of Human Services
Division of Health Engineering

Town, City, Plantation | Street, Road, Subdivision | Owners Name

VERRILL 4311.1

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 37 ☑ Test Pit ☐ Boring

3" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling
FSL	FRI	BR	
F-MED L.S		DK BR	DULL DIST.
			SATURATED
		OLIVE GREY	FREE 28"
35" BOE NO REF.			

Soil Profile	Classification Condition	Slope	Limiting Factor	Ground Water / Restrictive Layer / Bedrock
3	D	5-8 %	10	☑ Ground Water ☐ Restrictive Layer ☐ Bedrock

Observation Hole TP 38 ☑ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling
FSL		DK BR	
FLS	FRI	OL BR	
			COM. DIST
MED-COSE L.SAND (gravelly)	SLIGHT WHAT FIRM	OL GREY	SATURATED FREE 30"
BOE 40" NO REF			

Soil Profile	Classification Condition	Slope	Limiting Factor	Ground Water / Restrictive Layer / Bedrock
3	C	5-8 %	18	☑ Ground Water ☐ Restrictive Layer ☐ Bedrock

Site Evaluator Signature | SE# | 5/13/05 Date

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 39 ☑ Test Pit ☐ Boring

3" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling
FSL	FRI	DK BR	
FLS	7" FIRM LAYER	OL BR	C.D
		17"	C. DIST
FINE-MED L.S TO SAND	FRI	OL GREY	28" FREE
BOE 42" NO REF.			

Soil Profile	Classification Condition	Slope	Limiting Factor	Ground Water / Restrictive Layer / Bedrock
3	E	5 %	7	☑ Ground Water ☑ Restrictive Layer ☐ Bedrock

Observation Hole TP 40 ☑ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling
FSL	FRI	DK BR	ROOTS TO 18"
		OR BR	
	18"		C. DIST
COSE LOAMY SAND	FIRM	OLIVE GREY	FREE
36" BOE NO REF			

Soil Profile	Classification Condition	Slope	Limiting Factor	Ground Water / Restrictive Layer / Bedrock
3	C	4 %	16"	☑ Ground Water ☑ Restrictive Layer ☐ Bedrock

[redacted] Site Evaluator Signature | 340 SE# | 5/13/05 Date

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Department of Human Services
Division of Health Engineering

Town, City, Plantation | Street, Road, Subdivision | Owners Name

EAGLE NEST GRAY. VERRILL 4311.1

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 41 ☑ Test Pit ☐ Boring

4" " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Depth	Texture	Consistency	Color	Mottling
0	FSL	FRI	LT OR	
6				
10			OR BR	N/A
15				
20	FSL w/some stones		18"	
		FIRM		FEW
30				
40				
50	BOE 41" (ROCK - REF/NOT LIKELY)			

Soil Profile	Classification Condition	Slope	Limiting Factor	
5	C	10 %	18	☑ Ground Water ☑ Restrictive Layer ☐ Bedrock

Observation Hole TP 42 ☑ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Depth	Texture	Consistency	Color	Mottling
0			DK BR	
6	FSL		OR BR	
10				N/A
15	19"			
20		FRI	LT	
	F-MED		OL	C DIST.
30	L.S		grey.	
40				
50	BOE 45" NO REF			

Soil Profile	Classification Condition	Slope	Limiting Factor	
4	C	8-10 %	18"	☑ Ground Water ☐ Restrictive Layer ☐ Bedrock

Site Evaluator Signature | SE# | Date 5.13.05

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP-43 ☑ Test Pit ☐ Boring

3" " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Depth	Texture	Consistency	Color	Mottling
0			DK BR	
6		FRI		
10			OR BR	
15	FSL			17"
20		24-26"		FEW FREE
				24-26"
30	to	FIRM	OL grey	
	FLS			
40				
50		BOE 48" NO REF		

Soil Profile	Classification Condition	Slope	Limiting Factor	
3	D	8-10 %	17	☑ Ground Water ☐ Restrictive Layer ☐ Bedrock

Observation Hole TP-44 ☑ Test Pit ☐ Boring

4" " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Depth	Texture	Consistency	Color	Mottling
0			BR	
6	FSL	FRI		
10	some		OL	
15	stones		Brown	
20				19"
	24"			FEW FEW
30	Stoney FLS / TOMED LS	FIRM	OL grey	FREE mottling C DIST
40	BOE 38" NO REF			
50				

Soil Profile	Classification Condition	Slope	Limiting Factor	
6	C	5 %	19	☑ Ground Water ☑ Restrictive Layer ☐ Bedrock

[redacted]nature | SE# 340 | Date 5.13.05

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Department of Human Services
Division of Health Engineering

Town, City, Plantation | Street, Road, Subdivision | Owners Name

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP-45 ☑ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (Inches)	Texture	Consistency	Color	Mottling
0			Br.	
6	FSL	FRI		
10			OR BR	14"
15	FSL			C DIST
20				
30	med sand	FIRM	OLIVE GREY	FREE
40	fine silty sand			
50	BOE 41" NO REF			

Soil	Classification	Slope	Limiting Factor
3 (Profile)	D (Condition)	3-5 %	14 ☑ Ground Water ☐ Restrictive Layer ☐ Bedrock

Observation Hole TP-46 ☑ Test Pit ☐ Boring

2" " Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (Inches)	Texture	Consistency	Color	Mottling
0	FSL	FRI	BR	
7				
15	SANDY LOAM to SILT LOAM	FIRM to CEMENTED + V. FIRM	OL GREY	C. DIST
30	NO STONES			
50	BOE 47" NO REF			

Soil	Classification	Slope	Limiting Factor
3 (Profile)	D (Condition)	5-8 %	7-8" ☐ Ground Water ☑ Restrictive Layer ☐ Bedrock

[redacted] Site Evaluator Signature _____ SE# _____ 5/13/05 Date

[redacted] PARCEL TESTING → AP-47-

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 47 ☐ Test Pit ☐ Boring

3" " Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (Inches)	Texture	Consistency	Color	Mottling
0	FSL STONEY	FRI	BR	
10			OR BROWN (BRIGHT)	N/O
18				
20	VERY STONE/ FLS to S+G			
30		FIRM	OL GREY	C-DIST
40	BOE 36" REF. DUE TO STONINESS NOT LEDGE			
50				

Soil	Classification	Slope	Limiting Factor
3 (Profile)	C (Condition)	3-5 %	30" ☑ Ground Water ☐ Restrictive Layer ☐ Bedrock

Observation Hole TP 48 ☑ Test Pit ☐ Boring

2" " Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (Inches)	Texture	Consistency	Color	Mottling
0	LOAM TO FSL STONEY	FRI	OL-OR	
10			OR BRN	ROOTS/ MOIST (RAIN)
15	FSL STONEY		BRN	
20			DARK mottled grey	22" NE
29"	SW			
30				
40				
50				

Soil	Classification	Slope	Limiting Factor
2AII (Profile)	II (Condition)	5-8 %	17-20" ☑ Ground Water ☐ Restrictive Layer ☑ Bedrock

[redacted] nature _____ 340 SE# _____ 5/13/05 Date

Page 2 of 3
HHE-200 Rev

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Department of Human Services
Division of Health Engineering

Town, City, Plantation | Street, Road, Subdivision | Owners Name

(UNDEVELOPED LAND)

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 49 ☑ Test Pit ☐ Boring

2-3" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

	Texture	Consistency	Color	Mottling
0				
6	FSL	FRI	OR. BRN	
10				
15	STONE/			
20	MED L.SAND			NO
30	SILT E.S. DUG TO BOTTOM			
40				
50				

Soil Profile	Classification Condition	Slope	Limiting Factor	
4	C	3 %	24"	☐ Ground Water ☑ Restrictive Layer ☐ Bedrock BOE

Observation Hole TP-50 ☑ Test Pit ☐ Boring

3" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

	Texture	Consistency	Color	Mottling
0			DK BR	
6	FSL	FRI	LT OL-OR	N/O
10				
15	STONE/		BRN	
20	CANDEN CRSE LOAMY SND	FRI	Bright colors)	
30	BOE	28" DUG TO STONELESS		NIT
40				
50				

Soil Profile	Classification Condition	Slope	Limiting Factor	
4	C	3-5 %	28"	☐ Ground Water ☐ Restrictive Layer ☐ Bedrock

Site Evaluator Signature | SE# | Date

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 51 ☑ Test Pit ☐ Boring

3" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

	Texture	Consistency	Color	Mottling
0				
6	FSL		OR BR	
10	COARSE GRAVELLY L.S. W/STONES	FRI		
15				N/O
20			OLIVE BRN	
30	28" BOE	NO LEDGE	BOULEY	
40				
50				

Soil Profile	Classification Condition	Slope	Limiting Factor	
5	C	10 %	28"	☐ Ground Water ☐ Restrictive Layer ☐ Bedrock

Observation Hole TP-52 ☑ Test Pit ☐ Boring

3" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

	Texture	Consistency	Color	Mottling
0				
6	FSL	FRI	GRAY/BROWN	
10				
15			OR-BRN	
20	CRSE L.S+G STONEY			N/O
30	34" BOE	NO LEDGE	BOULEY	
40				
50				

Soil Profile	Classification Condition	Slope	Limiting Factor	
4	C	3-5 %	34"	☐ Ground Water ☐ Restrictive Layer ☐ Bedrock

[redacted] | 340 SE# | 5/30/05 Date

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Department of Human Services
Division of Health Engineering

Town, City, Plantation | Street, Road, Subdivision | Owners Name

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 53 ☑ Test Pit ☐ Boring

3" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Depth	Texture	Consistency	Color	Mottling
0–6			OL BR	
6–10	[illegible]	FRI	OR BR	N/O
10–20	CRS STG	FIRM/ COMPACT	OR-OL	FEW DIST 21"
20–30	BOE	LEDGE / ROCK?		26"

Soil	Classification	Slope	Limiting Factor
3 (Profile)	C (Condition)	5-8 %	21" ☐ Ground Water ☑ Restrictive Layer ☐ Bedrock

Observation Hole TP-54 ☑ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Depth	Texture	Consistency	Color	Mottling
0–6	FSL		BR	
6–10	TV		OR	
10–15	FLS	FRI	BR	
15–20	Stoney			
20–30	MED SAND (gravel)	SOMEWHAT FIRM	OL GREY	26" FEW DIST
30–40	36" DOE ROCKS NOT LEDGE			

Soil	Classification	Slope	Limiting Factor
3 (Profile)	C (Condition)	5-8 %	26" ☑ Ground Water ☐ Restrictive Layer ☐ Bedrock

Site Evaluator Signature | SE# | Date

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP-55 ☑ Test Pit ☐ Boring

3" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Depth	Texture	Consistency	Color	Mottling
0–6			BR	
6–10	FSL	FRI	OR	
10–15	STONEY		BRN	N/O
15–30	L SAND STONEY	SOMEWHAT FIRM	OL GREY	C. DIST
30–40	BOE 37" ROCKS NOT LEDGE			

Soil	Classification	Slope	Limiting Factor
3 (Profile)	C (Condition)	8 %	22-24" ☑ Ground Water ☐ Restrictive Layer ☐ Bedrock

Observation Hole TP-56 ☑ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Depth	Texture	Consistency	Color	Mottling
0–6	FSL		BR	
6–10			OR	
10–15	FLS	FRI	BR	
15–20	(SOME STONES)			
20–30	LS to SAND	SOMEWHAT FIRM	OL GREY	C. DIST
30–40	BOE 34" ROCKS NOT LEDGE			

Soil	Classification	Slope	Limiting Factor
3 (Profile)	C (Condition)	4 %	24" ☑ Ground Water ☐ Restrictive Layer ☐ Bedrock

[redacted] | 340 (SE#) | 5/13/05 (Date)

EAGLES RIDGE SUBDIVISION

LOT 8 TEST PIT
LVC #4311.1

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Department of Human Services
Division of Health Engineering

1 of 1

Town, City, Plantation: GRAY, MAINE

Street, Road, Subdivision: EAGLES NEST RD.

Owners Name: HUNTER PROPERTIES GROUP

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole 56-A ☒ Test Pit ☐ Boring

2" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)	Texture	Consistency	Color	Mottling
0				
6	FLS	FRI	DK. BR	
10	COBBLY FSL (STONEY)			N/O
15				
20				
30	BOE 24" STONES - NO REF/LEDGE			
40	(LOT 8 PROPOSED)			
50				

Soil Profile	Classification Condition	Slope	Limiting Factor	
2	C	0-3 %	24"	☐ Ground Water ☐ Restrictive Layer ☐ Bedrock

Observation Hole _____ ☐ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)	Texture	Consistency	Color	Mottling
0				
6				
10				
15				
20				
30				
40				
50				

Soil Profile	Classification Condition	Slope	Limiting Factor	
		%		☐ Ground Water ☐ Restrictive Layer ☐ Bedrock

[redacted]

SE340
SE#

6/30/06
Date

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole _____ ☐ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)	Texture	Consistency	Color	Mottling
0				
6				
10				
15				
20				
30				
40				
50				

Soil Profile	Classification Condition	Slope	Limiting Factor	
		%		☐ Ground Water ☐ Restrictive Layer ☐ Bedrock

Observation Hole _____ ☐ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)	Texture	Consistency	Color	Mottling
0				
6				
10				
15				
20				
30				
40				
50				

Soil Profile	Classification Condition	Slope	Limiting Factor	
		%		☐ Ground Water ☐ Restrictive Layer ☐ Bedrock

1 of 1

PAGE ____ OF ____

1846 FORM F 9/01

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name: Eagle Nest Subdivision | Applicant Name: Hunter Property Group | Project Location (municipality): Gray

Exploration Symbol: TP57 ■ Test Pit ☐ Boring

____ " Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark Brown	
6–18	Stony Sandy loam	Friable	Brown	
18–24	Stony Sandy loam	Firm	Olive	Common Distinct
24–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
	3	C	2	15	■ Groundwater ■ Restrictive Layer ☐ Bedrock

soil data by S.S. — Soil series/phase name: ☐ Hydric ☐ Non-hydric — Hydrologic Soil Group

Exploration Symbol: TP58 ■ Test Pit ☐ Boring

____ " Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark Brown	
6–18	Stony Sandy loam	Friable	Brown	
18–24	Stony Sandy loam	Firm	Olive	Common Distinct
24–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
	3	C	2	18	■ Groundwater ■ Restrictive Layer ☐ Bedrock

soil data by S.S. — Soil series/phase name: ☐ Hydric ☐ Non-hydric — Hydrologic Soil Group

Exploration Symbol: TP59 ■ Test Pit ☐ Boring

____ " Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark Brown	
6–12	Stony Sandy loam	Friable	Brown	
12–24				
24–30	Stony Sandy loam	Firm	Olive	Common Distinct
30–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
	3	C	2	22	■ Groundwater ■ Restrictive Layer ☐ Bedrock

soil data by S.S. — Soil series/phase name: ☐ Hydric ☐ Non-hydric — Hydrologic Soil Group

Exploration Symbol: TP60 ■ Test Pit ☐ Boring

____ " Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark Brown	
6–12	Sandy loam	Friable	Brown	Few Mottled
12–24	Stony			
24–30				
30–36		Ledge		
36–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
	2	Rock	2	24	☐ Groundwater ☐ Restrictive Layer ■ Bedrock

soil data by S.S. — Soil series/phase name: Lyman-Turbridge — ☐ Hydric ■ Non-hydric — Hydrologic Soil Group

INVESTIGATOR INFORMATION AND SIGNATURE

Signature [redacted] Date: 3/21/06

Name Printed/typed: Marc J. Hampton Cert/Lic/Reg. # 216/263

Title: ■ Licensed Site Evaluator ■ Certified Soil Scientist ☐ Certified Geologist ☐ Other:

STATE OF MAINE — MARK J. HAMPTON #216 — CERTIFIED SOIL SCIENTIST

affix professional seal

DEP Form F Rev. 9/01

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name: Eagle Nest Subdivision | Applicant Name: Hunter Property Group | Project Location (municipality): Gray

Exploration Symbol: TP61 ■ Test Pit ☐ Boring

____ " Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark Brown	
6–12	Stony Sandy loam	Friable	Red Brown	none noted
12–18				
18–24				
30–36		Ledge		
36–42				
42–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
	2	A III	4	27"	☐ Groundwater ☐ Restrictive Layer ■ Bedrock

soil data by S.S.	Soil series/phase name:		Hydrologic Soil Group
	Lyman-Turbridge	☐ Hydric ■ Non-hydric	

Exploration Symbol: TP62 ■ Test Pit ☐ Boring

____ " Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Brown	none noted
6–12				
12–18		Ledge		
18–24				
30–36				
36–42				
42–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
	2	A III	2	6"	☐ Groundwater ☐ Restrictive Layer ■ Bedrock

soil data by S.S.	Soil series/phase name:		Hydrologic Soil Group
	Lyman-Turbridge	☐ Hydric ■ Non-hydric	

Exploration Symbol: TP63 ■ Test Pit ☐ Boring

____ " Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark Brown	
6–12	Sandy loam	Friable	Brown	
12–18	Stony Sandy loam	Friable	Olive	Common 3 Distinct
18–24				
30–36				
36–42				
42–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
	3	D	4	13"	■ Groundwater ■ Restrictive Layer ☐ Bedrock

soil data by S.S.	Soil series/phase name:		Hydrologic Soil Group
	Colonel	☐ Hydric ■ Non-hydric	

Exploration Symbol: TP64 ■ Test Pit ☐ Boring

____ " Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark Brown	
6–12	Stony Sandy loam	Friable	Red Brown	none noted
12–18				
18–24		Ledge		
30–36				
36–42				
42–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
	2	A III	6	17"	☐ Groundwater ☐ Restrictive Layer ■ Bedrock

soil data by S.S.	Soil series/phase name:		Hydrologic Soil Group
	Lyman-Turbridge	☐ Hydric ■ Non-hydric	

INVESTIGATOR INFORMATION AND SIGNATURE

Signatu[redacted] Date: 5/21/06

Name Printed/typed: Mark J. Hampton Cert/Lic/Reg. # 216/263

Title: ■ Licensed Site Evaluator ■ Certified Soil Scientist ☐ Certified Geologist ☐ Other:

STATE OF MAINE MARK J. HAMPTON #216 CERTIFIED SOIL SCIENTIST

affix professional seal

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name: Eagle nest Subdivision | Applicant Name: Hunter Properties Group | Project Location (municipality): Gray

Exploration Symbol: P65 ■ Test Pit ☐ Boring

____" Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark Brown	
6–12	Stony Sandy loam	Friable	Brown	None noted
12–18				
18–24				
24–30	XXX	XXX	XXX	
30–36	ledge			
36–42				
42–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
	2	A ##	4	27 .	☐ Groundwater ☐ Restrictive Layer ■ Bedrock

soil data by S.S. Soil series/phase name: ☐ Hydric ☐ Non-hydric Hydrologic Soil Group

Exploration Symbol: P66 ■ Test Pit ☐ Boring

____" Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark Brown	
6–12	Stony Sandy loam		Brown	
12–18		Friable		
18–24				
24–30	Stony Sandy loam	Firm	olive	Common ? Distinct
30–36				
36–42				
42–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
	3	C	4	25 .	■ Groundwater ■ Restrictive Layer ☐ Bedrock

soil data by S.S. Soil series/phase name: ☐ Hydric ☐ Non-hydric Hydrologic Soil Group

Exploration Symbol: P67 ■ Test Pit ☐ Boring

____" Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark Brown	
6–12	Sandy loam	Friable	Brown	
12–18				
18–24	Stony Sandy loam	Firm	olive	Common ? Distinct
24–30				
30–36	Boulders			
36–42				
42–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
	3	C	4	17 .	■ Groundwater ■ Restrictive Layer ☐ Bedrock

soil data by S.S. Soil series/phase name: ☐ Hydric ☐ Non-hydric Hydrologic Soil Group

Exploration Symbol: P68 ■ Test Pit ☐ Boring

____" Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark Brown	
6–12	Stony Sandy loam	Friable	Red Brown	
12–18				
18–24				
24–30	Sandy loam	Firm	olive	Common ? Distinct
30–36				
36–42	XXX	XXX	XXX	
42–48	ledge			

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
	2	A ##	4	37 .	☐ Groundwater ☐ Restrictive Layer ■ Bedrock

soil data by S.S. Soil series/phase name: ☐ Hydric ☐ Non-hydric Hydrologic Soil Group

INVESTIGATOR INFORMATION AND SIGNATURE

Signature [redacted] Date: 3/21/06

Name Printed/typed: Mark J. Hampton Cert/Lic/Reg. # P1616

Title: ■ Licensed Site Evaluator ■ Certified Soil Scientist ☐ Certified Geologist ☐ Other:

STATE OF MAINE MARK J. HAMPTON #216 CERTIFIED SOIL SCIENTIST

affix professional seal

PAGE ____ OF ____ 1346 FORM F 9/01

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Eagle Nest Subdivision	Hunter Properties Group	Gray

Exploration Symbol: TP69 ☑ Test Pit ☐ Boring

____" Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark brown	
6–12	Sandy loam	Friable	Brown	
12–18				
18–24	Stony sandy loam	Firm	Olive	Common distinct
24–30				
30–36				
36–42				
42–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
	3	C	4	20"	☑ Groundwater ☑ Restrictive Layer ☐ Bedrock

soil data by S.S.	Soil series/phase name:		Hydrologic Soil Group
		☐ Hydric ☐ Non-hydric	

Exploration Symbol: TP70 ☑ Test Pit ☐ Boring

____" Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark brown	
6–12	Sandy loam	Friable	Red brown	
12–18				
18–24	Stony sandy loam	Firm	Olive	Common distinct
24–30				
30–36				
36–42				
42–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
	3	C	4	17"	☑ Groundwater ☑ Restrictive Layer ☐ Bedrock

soil data by S.S.	Soil series/phase name:		Hydrologic Soil Group
		☐ Hydric ☐ Non-hydric	

Exploration Symbol: TP71 ☑ Test Pit ☐ Boring

____" Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark brown	
6–12	Sandy loam	Friable	Brown	
12–18				
18–24	Stony			
24–30	Stony sandy loam	Firm	Olive	Common distinct
30–36				
36–42				
42–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
	3	C	2	24"	☑ Groundwater ☑ Restrictive Layer ☐ Bedrock

soil data by S.S.	Soil series/phase name:		Hydrologic Soil Group
		☐ Hydric ☐ Non-hydric	

Exploration Symbol: TP72 ☑ Test Pit ☐ Boring

____" Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark brown	
6–12	Stony sandy loam	Friable	Red brown	
12–18				
18–24				
24–30	Stony sandy loam	Firm	Olive	Common distinct
30–36				
36–42				
42–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
	3	C	2	22"	☑ Groundwater ☑ Restrictive Layer ☐ Bedrock

soil data by S.S.	Soil series/phase name:		Hydrologic Soil Group
		☐ Hydric ☐ Non-hydric	

INVESTIGATOR INFORMATION AND SIGNATURE

Signatu[redacted]		Date: 3/21/06
Name P[redacted]	Mark J. Hampton	Cert/Lic/Reg. # 216/263

Title: ☑ Licensed Site Evaluator ☑ Certified Soil Scientist ☐ Certified Geologist ☐ Other:

STATE OF MAINE MARK J. HAMPTON #216 CERTIFIED SOIL SCIENTIST

affix professional seal

DEP Form F Rev. 9/01

PAGE ____ OF ____ 1846 FORM F 9/01

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Eagle West Subdivision	Hunter Properties Group LLC	Gray

Exploration Symbol: TP 73 — Test Pit ☐ Boring

____" Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark brown	
6–12	Stony		Red	
12–18	Sandy loam	Friable	Brown	
18–24				
24–30	Stony sandy loam	Firm	Olive	Common distinct
30–36				
36–42				
42–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
	3	C	4	26"	☑ Groundwater ☑ Restrictive Layer ☐ Bedrock

soil data by S.S.	Soil series/phase name:		Hydrologic Soil Group
		☐ Hydric ☐ Non-hydric	

Exploration Symbol: TP 74 — Test Pit ☐ Boring

____" Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark brown	
6–12	Sandy loam	Friable	Red brown	
12–18				
18–24	Stony			
24–30	Sandy loam	Firm	Olive	Common distinct
30–36				
36–42				
42–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
	3	C	4	22"	☑ Groundwater ☑ Restrictive Layer ☐ Bedrock

soil data by S.S.	Soil series/phase name:		Hydrologic Soil Group
		☐ Hydric ☐ Non-hydric	

Exploration Symbol: TP 75 — Test Pit ☐ Boring

____" Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark brown	
6–12	Stony		Brown	
12–18	Sandy loam	Friable		
18–24				
24–30	Stony sandy loam	Firm	Olive	Common distinct
30–36				
36–42				
42–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
	3	C	4	18"	☑ Groundwater ☑ Restrictive Layer ☐ Bedrock

soil data by S.S.	Soil series/phase name:		Hydrologic Soil Group
		☐ Hydric ☐ Non-hydric	

Exploration Symbol: TP 76 — Test Pit ☐ Boring

____" Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark brown	
6–12	Stony sandy loam	Friable	Brown	
12–18				
18–24	Stony		Olive	Common distinct.
24–30	Sandy loam	Firm		
30–36				
36–42				
42–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
	3	C	2	17"	☑ Groundwater ☑ Restrictive Layer ☐ Bedrock

soil data by S.S.	Soil series/phase name:		Hydrologic Soil Group
		☐ Hydric ☐ Non-hydric	

INVESTIGATOR INFORMATION AND SIGNATURE

Signature: [redacted]	Date: 3/21/06
Name Printed/typed: Mark J. Hampton	Cert/Lic/Reg. # 216/263

Title: ☑ Licensed Site Evaluator ☑ Certified Soil Scientist ☐ Certified Geologist ☐ Other:

STATE OF MAINE — MARK J. HAMPTON #216 — CERTIFIED SOIL SCIENTIST

affix professional seal

DEP FORM E Rev. 9/01

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name: Eagle nest Subdivision | Applicant Name: Hunter Properties Group LLC | Project Location (municipality): Gray

Exploration Symbol: P77 ☑ Test Pit ☐ Boring

____" Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark Brown	
6–12	Stony Sandy loam	Friable	Red Brown	
12–18				
18–24	Stony Sandy loam	Firm	Olive	Common Distinct
24–30				
30–36				
36–42				
42–48				

soil data by S.E.	Soil	Classification	Slope	Limiting Factor	
	3 (Profile)	C (Condition)	4 (Percent)	17 (Depth)	☑ Groundwater ☑ Restrictive Layer ☐ Bedrock

soil data by S.S.	Soil series/phase name:		Hydrologic
		☐ Hydric ☐ Non-hydric	Soil Group

Exploration Symbol: P79 ☑ Test Pit ☐ Boring

____" Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark Brown	
6–12	Stony Sandy loam	Friable	Red Brown	
12–18				
18–24	Stony Sandy loam	Firm	Olive	Common Distinct
24–30				
30–36				
36–42				
42–48				

soil data by S.E.	Soil	Classification	Slope	Limiting Factor	
	3 (Profile)	C (Condition)	2 (Percent)	16 (Depth)	☑ Groundwater ☑ Restrictive Layer ☐ Bedrock

soil data by S.S.	Soil series/phase name:		Hydrologic
		☐ Hydric ☐ Non-hydric	Soil Group

Exploration Symbol: P79 ☑ Test Pit ☐ Boring

____" Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark Brown	
6–12	Sandy loam	Friable	Brown	
12–18				
18–24	Stony sandy loam	Firm	Olive	Common Distinct
24–30				
30–36				
36–42				
42–48				

soil data by S.E.	Soil	Classification	Slope	Limiting Factor	
	3 (Profile)	C (Condition)	4 (Percent)	15 (Depth)	☑ Groundwater ☑ Restrictive Layer ☐ Bedrock

soil data by S.S.	Soil series/phase name:		Hydrologic
		☐ Hydric ☐ Non-hydric	Soil Group

Exploration Symbol: P80 ☑ Test Pit ☐ Boring

____" Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark Brown	
6–12	Sandy loam	Friable	Brown	
12–18				
18–24	Stony sandy loam	Firm	Olive	Common Distinct
24–30				
30–36				
36–42				
42–48				

soil data by S.E.	Soil	Classification	Slope	Limiting Factor	
	3 (Profile)	C (Condition)	2 (Percent)	18 (Depth)	☑ Groundwater ☑ Restrictive Layer ☐ Bedrock

soil data by S.S.	Soil series/phase name:		Hydrologic
		☐ Hydric ☐ Non-hydric	Soil Group

INVESTIGATOR INFORMATION AND SIGNATURE

Signature: [redacted] Date: 3/2/10

Name (Print/type): Mark J. Hampton Cert/Lic/Reg. # 216/263

Title: ☑ Licensed Site Evaluator ☑ Certified Soil Scientist ☐ Certified Geologist ☐ Other:

STATE OF MAINE MARK J. HAMPTON #216 CERTIFIED SOIL SCIENTIST

affix professional seal

PAGE ____ OF ____ 1846 FORM F 9/01

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name: Eagle Nest Subdivision | Applicant Name: Hunter Property Group LLC | Project Location (municipality): Gray

Exploration Symbol: TP81 ☑ Test Pit ☐ Boring

____" Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark Brown	
6–12	Sandy loam, Stony	Friable	Brown	
12–18				Common Distinct
18–24	Sandy loam, Stony	Firm	Olive	
24–30				
30–36				
36–42				
42–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	Groundwater / Restrictive Layer / Bedrock
	3	C	4	15"	

soil data by S.S.	Soil series/phase name:	Hydric / Non-hydric	Hydrologic Soil Group

Exploration Symbol: TP82 ☑ Test Pit ☐ Boring

____" Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Fr. Fble	Dark Brown	
6–12	Sandy loam	Fr. Fble	Brown	
12–18				
18–24	Stony Sandy loam	Firm	Olive	Common Distinct
24–30				
30–36				
36–42				
42–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	Groundwater / Restrictive Layer / Bedrock
	3	C	2	15"	

soil data by S.S.	Soil series/phase name:	Hydric / Non-hydric	Hydrologic Soil Group

Exploration Symbol: TP83 ☑ Test Pit ☐ Boring

____" Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark Brown	
6–12	Stony sandy loam	Friable	Brown	
12–18				
18–24	Stony sandy loam	Firm	Olive	Common Distinct
24–30				
30–36				
36–42				
42–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	Groundwater / Restrictive Layer / Bedrock
	3	C	4	15"	

soil data by S.S.	Soil series/phase name:	Hydric / Non-hydric	Hydrologic Soil Group

Exploration Symbol: TP84 ☑ Test Pit ☐ Boring

____" Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark Brown	
6–12	Stony Sandy loam	Friable	Red Brown	
12–18				Common Distinct
18–24	Sandy loam	Firm	Olive	
24–30				
30–36				
36–42				
42–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	Groundwater / Restrictive Layer / Bedrock
	3	D	2	14"	

soil data by S.S.	Soil series/phase name:	Hydric / Non-hydric	Hydrologic Soil Group

INVESTIGATOR INFORMATION AND SIGNATURE

Signatu [redacted] Date: 3/11/06

Name Printed/typed: Marc J. Hampton Cert/Lic/Reg. # 216/243

Title: ☑ Licensed Site Evaluator ☐ Certified Geologist ☑ Certified Soil Scientist ☐ Other:

STATE OF MAINE MARK J. HAMPTON #216 CERTIFIED SOIL SCIENTIST

Affix professional seal

PAGE ____ OF ____ 1846 FORM F 9/01

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Eagle Nest Subdivision	Hunter Properties Group LLC	Gray

Exploration Symbol: TP85 ☑ Test Pit ☐ Boring

____" Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark brown	
6–18	Stony sandy loam	Friable	Brown	
18–24	Stony sandy loam	Firm	Olive	Common distinct
24–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
	3	C	4	16	☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

soil data by S.S.	Soil series/phase name:		Hydrologic Soil Group
		☐ Hydric ☐ Non-hydric	

Exploration Symbol: TP86 ☑ Test Pit ☐ Boring

____" Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark brown	
6–12	Sandy loam	Friable	Red brown	
12–18				
18–24	Stony sandy loam	Firm	Olive	Common distinct
24–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
	3	C	4	19	☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

soil data by S.S.	Soil series/phase name:		Hydrologic Soil Group
		☐ Hydric ☐ Non-hydric	

Exploration Symbol: TP87 ☑ Test Pit ☐ Boring

____" Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark brown	
6–12	Sandy loam	Friable	Brown	none noted
12–18	XXX	XXX	XXX	XXX
18–24				
24–30		Ledge		
30–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
	2	A/B	4	15	☐ Groundwater ☐ Restrictive Layer ☑ Bedrock

soil data by S.S.	Soil series/phase name:		Hydrologic Soil Group
		☐ Hydric ☐ Non-hydric	

Exploration Symbol: TP88 ☑ Test Pit ☐ Boring

____" Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark brown	
6–12	Stony sandy loam	Friable	Red brown	
12–18				
18–24	Stony sandy loam	Firm	Olive	Common distinct
24–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
	3	C	4	18	☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

soil data by S.S.	Soil series/phase name:		Hydrologic Soil Group
		☐ Hydric ☐ Non-hydric	

INVESTIGATOR INFORMATION AND SIGNATURE

Signature [redacted]	Date: 3/21/06
Name Printed/Typed: Mark J. Hampton	Cert/Lic/Reg. # 216/263

Title: ☑ Licensed Site Evaluator ☑ Certified Soil Scientist ☐ Certified Geologist ☐ Other:

STATE OF MAINE — MARK J. HAMPTON #216 — CERTIFIED SOIL SCIENTIST

affix professional seal

DEP-Form F-Rev. 9/01

PAGE _____ OF _____ 1946 FORM F 9/01

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Eagle Nest Subdivision	Hunter Properties Group LLC	Gray

Exploration Symbol: TP89 ☑ Test Pit ☐ Boring

_____" Organic horizon thickness Ground surface elev. _____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark brown	
6–12	Stony sandy loam	Friable	Brown	
12–24	Stony sandy loam	Firm	Olive	Common distinct
24–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	Groundwater / Restrictive Layer / Bedrock
	3	C	4	22	

soil data by S.S.	Soil series/phase name:	Hydric / Non-hydric	Hydrologic Soil Group
		☐ Hydric ☐ Non-hydric	

Exploration Symbol: TP90 ☑ Test Pit ☐ Boring

_____" Organic horizon thickness Ground surface elev. _____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark brown	
6–12	Sandy loam	Friable	Brown	
12–24	Stony sandy loam	Firm	Olive	Common distinct
24–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	Groundwater / Restrictive Layer / Bedrock
	3	C	2	16	

soil data by S.S.	Soil series/phase name:	Hydric / Non-hydric	Hydrologic Soil Group
		☐ Hydric ☐ Non-hydric	

Exploration Symbol: TP91 ☑ Test Pit ☐ Boring

_____" Organic horizon thickness Ground surface elev. _____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark brown	
6–12	Sandy loam	Friable	Brown	
12–18	Stony sandy loam	Firm	Olive	Common distinct
18–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	Groundwater / Restrictive Layer / Bedrock
	3	C	4	15	

soil data by S.S.	Soil series/phase name:	Hydric / Non-hydric	Hydrologic Soil Group
		☐ Hydric ☐ Non-hydric	

Exploration Symbol: TP92 ☑ Test Pit ☐ Boring

_____" Organic horizon thickness Ground surface elev. _____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark brown	
6–12	Stony sandy loam	Friable	Brown	
12–18	Sandy loam	Firm	Olive	Common distinct
18–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	Groundwater / Restrictive Layer / Bedrock
	3	D	2	14	

soil data by S.S.	Soil series/phase name:	Hydric / Non-hydric	Hydrologic Soil Group
		☐ Hydric ☐ Non-hydric	

INVESTIGATOR INFORMATION AND SIGNATURE

Signature	[redacted]	Date: 5/21/06
Name Printed/typed: Mark J. Hampton		Cert/Lic/Reg. # 216/263

Title: ☑ Licensed Site Evaluator ☑ Certified Soil Scientist ☐ Certified Geologist ☐ Other:

STATE OF MAINE — MARK J. HAMPTON #216 — Professional — SOIL SCIENTIST

DEP Form F Rev. 9/01

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Eagle Nest Subdivision	Hunter Properties Group LLC	Gray

Exploration Symbol: TP93 ☐ Test Pit ☐ Boring

_____ " Organic horizon thickness Ground surface elev. _____

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark Brown	
6–18	Sandy loam	Friable	Brown	
18–24	Stony Sandy loam	Firm	Olive	Common & Distinct
30				
36				
42				
48				

soil data by S.E. ▸▸	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
	3	C	4	15	☒ Groundwater ☒ Restrictive Layer ☐ Bedrock

soil data by S.S. ▸▸	Soil series/phase name:	☐ Hydric ☐ Non-hydric	Hydrologic Soil Group

Exploration Symbol: TP94 ☒ Test Pit ☐ Boring

_____ " Organic horizon thickness Ground surface elev. _____

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark Brown	
6–18	Stony Sandy loam	Friable	Brown	
18–24	Stony Sandy loam	Firm	Olive	Common & Distinct.
30				
36				
42				
48				

soil data by S.E. ▸▸	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
	3	C	4	18	☒ Groundwater ☒ Restrictive Layer ☐ Bedrock

soil data by S.S. ▸▸	Soil series/phase name:	☐ Hydric ☐ Non-hydric	Hydrologic Soil Group

Exploration Symbol: _____ ☐ Test Pit ☐ Boring

_____ " Organic horizon thickness Ground surface elev. _____

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Mottling
0				
6				
12				
18				
24				
30				
36				
42				
48				

soil data by S.E. ▸▸	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
					☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

soil data by S.S. ▸▸	Soil series/phase name:	☐ Hydric ☐ Non-hydric	Hydrologic Soil Group

Exploration Symbol: _____ ☐ Test Pit ☐ Boring

_____ " Organic horizon thickness Ground surface elev. _____

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Mottling
0				
6				
12				
18				
24				
30				
36				
42				
48				

soil data by S.E. ▸▸	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
					☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

soil data by S.S. ▸▸	Soil series/phase name:	☐ Hydric ☐ Non-hydric	Hydrologic Soil Group

INVESTIGATOR INFORMATION AND SIGNATURE

Signature [redacted]	Date: 3/21/06
Name Printed/typed: Mark J. Hampton	Cert/Lic/Reg. # 216/263

Title: ☒ Licensed Site Evaluator ☒ Certified Soil Scientist ☐ Certified Geologist ☐ Other:

STATE OF MAINE MARK J. HAMPTON #216 CERTIFIED SOIL SCIENTIST

affix professional seal

DEP Form F Rev. 9/01

1846 FORM F 9/01

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name: Eagles Ridge Subdivision
Applicant Name: Hunter Property Group LLC
Project Location (municipality): Gray

Exploration Symbol: SB1 ☐ Test Pit ☒ Boring

____ " Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark Brown	none
6–12	Sandy loam	Friable	Red Brown	noted
12–48	Ledge			

soil data by S.E. ▸▸ Soil Profile ____ Classification Condition ____ Slope Percent ____ Limiting Factor Depth ____ ☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

soil data by S.S. ▸▸ Soil series/phase name: Lyman-Tunbridge ☐ Hydric ☒ Non-hydric Hydrologic Soil Group ____

Exploration Symbol: SB2 ☐ Test Pit ☒ Boring

____ " Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark Brown	
6–18	Sandy loam	Friable	Brown	
18–48	Sandy loam	Firm	Olive	Common & Distinct

soil data by S.E. ▸▸ Soil Profile ____ Classification Condition ____ Slope Percent ____ Limiting Factor Depth ____ ☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

soil data by S.S. ▸▸ Soil series/phase name: Dixfield ☐ Hydric ☒ Non-hydric Hydrologic Soil Group ____

Exploration Symbol: SB3 ☐ Test Pit ☒ Boring

2 " Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Black	
6–48	Sandy loam	Firm	Gray	Common & Distinct

soil data by S.E. ▸▸ Soil Profile ____ Classification Condition ____ Slope Percent ____ Limiting Factor Depth ____ ☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

soil data by S.S. ▸▸ Soil series/phase name: Brayton ☒ Hydric ☐ Non-hydric Hydrologic Soil Group ____

Exploration Symbol: SB4 ☐ Test Pit ☒ Boring

18 " Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Black	
6–48	Sandy loam	Firm	Gray	Common & Distinct

soil data by S.E. ▸▸ Soil Profile ____ Classification Condition ____ Slope Percent ____ Limiting Factor Depth ____ ☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

soil data by S.S. ▸▸ Soil series/phase name: Peacham ☒ Hydric ☐ Non-hydric Hydrologic Soil Group ____

INVESTIGATOR INFORMATION AND SIGNATURE

Signature [redacted]
Date: 8/23/06
Name Printed/typed: MARK J. Hampton
Cert/Lic/Reg. # 216
Title: ☐ Licensed Site Evaluator ☐ Certified Geologist ☒ Certified Soil Scientist ☐ Other:

STATE OF MAINE
MARK J. HAMPTON
#216
CERTIFIED SOIL SCIENTIST
affix professional seal

DEP Form F Rev. 9/01

PAGE 2 OF _____ 1846 FORM F 9/01

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name: Eagle Ridge Subdivision | Applicant Name: Hunter Properties Group LLC | Project Location (municipality): Gray

Exploration Symbol: SB5 ☐ Test Pit ☒ Boring

_____" Organic horizon thickness Ground surface elev. _____

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark brown	
6–12	Sandy loam	Friable	Brown	
12–18	Sandy loam	Firm	Olive	Common distinct
18–24				
24–30				
30–36				
36–42				
42–48				

soil data by S.E. ▸▸ | Soil Profile | Classification Condition | Slope Percent | Limiting Factor Depth | ☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

soil data by S.S. ▸▸ | Soil series/phase name: Dixfield | ☐ Hydric ☒ Non-hydric | Hydrologic Soil Group

Exploration Symbol: SB6 ☐ Test Pit ☒ Boring

_____" Organic horizon thickness Ground surface elev. _____

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark brown	
6–12	Sandy loam	Friable	Brown	
12–18				
18–24	Sandy loam	Firm	Olive	Common distinct
24–30				
30–36				
36–42				
42–48				

soil data by S.E. ▸▸ | Soil Profile | Classification Condition | Slope Percent | Limiting Factor Depth | ☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

soil data by S.S. ▸▸ | Soil series/phase name: Dixfield | ☐ Hydric ☒ Non-hydric | Hydrologic Soil Group

Exploration Symbol: SB7 ☐ Test Pit ☒ Boring

_____" Organic horizon thickness Ground surface elev. _____

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark brown	
6–12	Sandy loam	Friable	Brown	
12–18				
18–24	Sandy loam	Firm	Olive	Common distinct
24–30				
30–36				
36–42				
42–48				

soil data by S.E. ▸▸ | Soil Profile | Classification Condition | Slope Percent | Limiting Factor Depth | ☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

soil data by S.S. ▸▸ | Soil series/phase name: Dixfield | ☐ Hydric ☒ Non-hydric | Hydrologic Soil Group

Exploration Symbol: SB8 ☐ Test Pit ☒ Boring

2 " Organic horizon thickness Ground surface elev. _____

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Black	
6–12	Sandy loam	Firm	Gray	Common distinct
12–18				
18–24				
24–30				
30–36				
36–42				
42–48				

soil data by S.E. ▸▸ | Soil Profile | Classification Condition | Slope Percent | Limiting Factor Depth | ☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

soil data by S.S. ▸▸ | Soil series/phase name: Brayton | ☐ Hydric ☐ Non-hydric | Hydrologic Soil Group

INVESTIGATOR INFORMATION AND SIGNATURE

Signature: [redacted] Date: 8/23/06

Name Printed/typed: Mark J. Hampton Cert/Lic/Reg. # 216

Title: ☐ Licensed Site Evaluator ☒ Certified Soil Scientist ☐ Certified Geologist ☐ Other:

STATE OF MAINE MARK J. HAMPTON #216 CERTIFIED SOIL SCIENTIST

affix professional seal

DEP Form F Rev. 9/01

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name: Eagle Edge Subdivision | Applicant Name: Hunter Properties Group LLC | Project Location (municipality): Gray

Exploration Symbol: SB9 ☐ Test Pit ■ Boring

____" Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark brown	
6–12	Fine sandy loam	Friable	Brown	
12–18	Sandy loam	Firm	Olive	Common distinct
18–24				
24–30				
30–36				
36–42				
42–48				

soil data by S.E.	Soil Profile	Soil Classification Condition	Slope Percent	Limiting Factor Depth	☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

soil data by S.S.	Soil series/phase name:	☐ Hydric ■ Non-hydric	Hydrologic Soil Group
	Colonel		

Exploration Symbol: SB10 ☐ Test Pit ■ Boring

____" Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Black	
6–12	Sandy loam	Firm	Gray	Common distinct
12–18				
18–24				
24–30				
30–36				
36–42				
42–48				

soil data by S.E.	Soil Profile	Soil Classification Condition	Slope Percent	Limiting Factor Depth	☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

soil data by S.S.	Soil series/phase name:	■ Hydric ☐ Non-hydric	Hydrologic Soil Group
	Brayton		

Exploration Symbol: SB11 ☐ Test Pit ■ Boring

____" Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark brown	
6–12	Sandy loam	Friable	Brown	
12–18				
18–24	Sandy loam	Firm	Gray	Common distinct
24–30				
30–36				
36–42				
42–48				

soil data by S.E.	Soil Profile	Soil Classification Condition	Slope Percent	Limiting Factor Depth	☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

soil data by S.S.	Soil series/phase name:	☐ Hydric ■ Non-hydric	Hydrologic Soil Group
	Dixfield		

Exploration Symbol: SB12 ☐ Test Pit ■ Boring

____" Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark brown	
6–12	Sandy loam	Friable	Brown	Mottled
12–18				
18–24		Loose		
24–30				
30–36				
36–42				
42–48				

soil data by S.E.	Soil Profile	Soil Classification Condition	Slope Percent	Limiting Factor Depth	☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

soil data by S.S.	Soil series/phase name:	☐ Hydric ■ Non-hydric	Hydrologic Soil Group
	Lyman Tunbridge		

STATE OF MAINE MARK J. HAMPTON #216 CERTIFIED SOIL SCIENTIST

affix professional seal

INVESTIGATOR INFORMATION AND SIGNATURE

Signature [redacted] Date: 8/23/06

Name Printed/typed: Mark J. Hampton Cert/Lic/Reg. # 216

Title: ☐ Licensed Site Evaluator ■ Certified Soil Scientist ☐ Certified Geologist ☐ Other:

DEP Form F Rev. 9/01

PAGE ____ OF ____ 1846 FORM F 9/01

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Eagle Ridge Subdivision	Hunter Properties Group LLC	Gray

Exploration Symbol: SB13 ☐ Test Pit ☒ Boring

____ " Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches): 0, 6, 12, 18, 24, 30, 36, 42, 48

Texture	Consistency	Color	Mottling
Sandy loam	Friable	Dark Brown	None noted
XXX		XXX	
	Ledge		

soil data by S.E. ▸▸ Soil Profile ____ Classification Condition ____ Slope Percent ____ Limiting Factor Depth ____ ☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

soil data by S.S. ▸▸ Soil series/phase name: Lyman Tunbridge ☐ Hydric ☒ Non-hydric Hydrologic Soil Group ____

Exploration Symbol: SB14 ☐ Test Pit ☒ Boring

16 " Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches): 0, 6, 12, 18, 24, 30, 36, 42, 48

Texture	Consistency	Color	Mottling
Sandy loam	Friable	Black	
Sandy loam	Firm	Gray	Common & Distinct

soil data by S.E. ▸▸ Soil Profile ____ Classification Condition ____ Slope Percent ____ Limiting Factor Depth ____ ☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

soil data by S.S. ▸▸ Soil series/phase name: Peacham ☒ Hydric ☐ Non-hydric Hydrologic Soil Group ____

Exploration Symbol: SB15 ☐ Test Pit ☒ Boring

3 " Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches): 0, 6, 12, 18, 24, 30, 36, 42, 48

Texture	Consistency	Color	Mottling
Sandy loam	Friable	Black	
Sandy loam	Firm	Gray	Common & Distinct

soil data by S.E. ▸▸ Soil Profile ____ Classification Condition ____ Slope Percent ____ Limiting Factor Depth ____ ☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

soil data by S.S. ▸▸ Soil series/phase name: Brayton ☒ Hydric ☐ Non-hydric Hydrologic Soil Group ____

Exploration Symbol: SB16 ☐ Test Pit ☒ Boring

____ " Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches): 0, 6, 12, 18, 24, 30, 36, 42, 48

Texture	Consistency	Color	Mottling
Sandy loam	Friable	Dark Brown	
Sandy loam	Friable	Brown	
Sandy loam	Firm	Gray	Common & Distinct

soil data by S.E. ▸▸ Soil Profile ____ Classification Condition ____ Slope Percent ____ Limiting Factor Depth ____ ☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

soil data by S.S. ▸▸ Soil series/phase name: Colonel ☐ Hydric ☒ Non-hydric Hydrologic Soil Group ____

INVESTIGATOR INFORMATION AND SIGNATURE

Signature: [redacted]	Date: 8/23/06
Name Printed/typed: Mark J. Hampton	Cert/Lic/Reg. # 216
Title: ☐ Licensed Site Evaluator ☐ Certified Geologist	☒ Certified Soil Scientist ☐ Other:

STATE OF MAINE MARK J. HAMPTON #216 CERTIFIED SOIL SCIENTIST

affix professional seal

DEP Form F Rev. 9/01

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name: Eagle Ridge Subdivision | Applicant Name: Hunter Properties Group LLC | Project Location (municipality): Gray

Exploration Symbol: SB17 ☐ Test Pit ■ Boring

4 " Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Black	
6–12	Sandy loam	Firm	Gray	Common distinct
12–18				
18–24				
24–30				
30–36				
36–42				
42–48				

soil data by S.E.: Soil Classification (Profile / Condition) | Slope (Percent) | Limiting Factor (Depth) | ☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

soil data by S.S.: Soil series/phase name: Brayton | ■ Hydric ☐ Non-hydric | Hydrologic Soil Group

Exploration Symbol: SB18 ☐ Test Pit ■ Boring

____ " Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark brown	
6–12	Sandy loam	Friable	Brown	
12–18	Sandy loam	Firm	Olive gray	Common distinct
18–24				
24–30				
30–36				
36–42				
42–48				

soil data by S.E.: Soil Classification (Profile / Condition) | Slope (Percent) | Limiting Factor (Depth) | ☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

soil data by S.S.: Soil series/phase name: Colonel | ☐ Hydric ■ Non-hydric | Hydrologic Soil Group

Exploration Symbol: SB19 ☐ Test Pit ■ Boring

____ " Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark brown	
6–12	Sandy loam	Friable	Brown	
12–18	Sandy loam	Firm	Olive gray	Common distinct
18–24				
24–30				
30–36				
36–42				
42–48				

soil data by S.E.: Soil Classification (Profile / Condition) | Slope (Percent) | Limiting Factor (Depth) | ☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

soil data by S.S.: Soil series/phase name: Colonel | ☐ Hydric ■ Non-hydric | Hydrologic Soil Group

Exploration Symbol: SB20 ☐ Test Pit ■ Boring

2 " Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Fr. friable	Black	
6–12	Sandy loam	Firm	Gray	Common distinct
12–18				
18–24				
24–30				
30–36				
36–42				
42–48				

soil data by S.E.: Soil Classification (Profile / Condition) | Slope (Percent) | Limiting Factor (Depth) | ☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

soil data by S.S.: Soil series/phase name: Brayton | ■ Hydric ☐ Non-hydric | Hydrologic Soil Group

INVESTIGATOR INFORMATION AND SIGNATURE

Signature: [redacted] Date: 8/23/06

Name Printed/typed: MARK J. Hampton Cert/Lic/Reg. # 216

Title: ☐ Licensed Site Evaluator ■ Certified Soil Scientist ☐ Certified Geologist ☐ Other:

STATE OF MAINE MARK J. HAMPTON #216 CERTIFIED SOIL SCIENTIST

affix professional seal

DEP-Form F Rev. 9/01

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Eagle Ridge Subdivision	Hunter Properties Group LLC	Gray

Exploration Symbol: SB21 ☐ Test Pit ☒ Boring

____ " Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark Brown	
6–12	Sandy loam	Friable	Brown	
12–18				
18–24	Sandy loam	Firm	Olive Silty	Common distinct
24–30				
30–36				
36–42				
42–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

soil data by S.S.	Soil series/phase name:	☐ Hydric ☒ Non-hydric	Hydrologic Soil Group
	Dixfield		

Exploration Symbol: SB22 ☐ Test Pit ☒ Boring

____ " Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark Brown	
6–12	Sandy loam	Friable	Brown	
12–18				
18–24	Sandy loam	Firm	Olive Silty	Common distinct
24–30				
30–36				
36–42				
42–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

soil data by S.S.	Soil series/phase name:	☐ Hydric ☒ Non-hydric	Hydrologic Soil Group
	Dixfield		

Exploration Symbol: SB23 ☐ Test Pit ☒ Boring

2 " Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Black	
6–12	Sandy loam	Firm	Silty	Common distinct
12–18				
18–24				
24–30				
30–36				
36–42				
42–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

soil data by S.S.	Soil series/phase name:	☒ Hydric ☐ Non-hydric	Hydrologic Soil Group
	Brayton		

Exploration Symbol: SB24 ☐ Test Pit ☒ Boring

____ " Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark Brown	
6–12	Sandy loam	Friable	Brown	
12–18	Sandy loam	Firm	Olive Silty	Common distinct
18–24				
24–30				
30–36				
36–42				
42–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

soil data by S.S.	Soil series/phase name:	☐ Hydric ☒ Non-hydric	Hydrologic Soil Group
	Colonel		

INVESTIGATOR INFORMATION AND SIGNATURE

Signature: [redacted]	Date: 8/23/06
Name Printed/typed: Mark J. Hampton	Cert/Lic/Reg. # 216

Title: ☐ Licensed Site Evaluator ☐ Certified Soil Scientist ☐ Certified Geologist ☐ Other:

STATE OF MAINE — MARK J. HAMPTON #216 — CERTIFIED SOIL SCIENTIST

affix professional seal

DEP Form F Rev. 9/01

PAGE _____ OF _____ 1846 FORM F 9/01

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Eagle Ridge Subdivision	Hunter Properties Group	Gray

Exploration Symbol: SB25 ☐ Test Pit ■ Boring

_____" Organic horizon thickness Ground surface elev. _____

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark Brown	
6–12	Sandy loam	Friable	Brown	
12–18				
18–24				
24–30	Sandy loam	Firm	Olive Gray	Common Distinct
30–36				
36–42				
42–48				

soil data by S.E.	Soil Classification: Profile / Condition	Slope: Percent	Limiting Factor: Depth	☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

soil data by S.S.	Soil series/phase name:	☐ Hydric ■ Non-hydric	Hydrologic Soil Group
	Dixfield		

Exploration Symbol: SB26 ☐ Test Pit ■ Boring

_____" Organic horizon thickness Ground surface elev. _____

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark Brown	
6–12	Sandy loam	Friable	Brown	
12–18				
18–24				
24–30	Sandy loam	Firm	Olive Gray	Common Distinct
30–36				
36–42				
42–48				

soil data by S.E.	Soil Classification: Profile / Condition	Slope: Percent	Limiting Factor: Depth	☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

soil data by S.S.	Soil series/phase name:	☐ Hydric ■ Non-hydric	Hydrologic Soil Group
	Dixfield		

Exploration Symbol: SB27 ☐ Test Pit ■ Boring

4 " Organic horizon thickness Ground surface elev. _____

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Black	
6–12	Sandy loam	Firm	gray	Common Distinct
12–18				
18–24				
24–30				
30–36				
36–42				
42–48				

soil data by S.E.	Soil Classification: Profile / Condition	Slope: Percent	Limiting Factor: Depth	☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

soil data by S.S.	Soil series/phase name:	■ Hydric ☐ Non-hydric	Hydrologic Soil Group
	Brayton		

Exploration Symbol: SB28 ☐ Test Pit ■ Boring

20 " Organic horizon thickness Ground surface elev. _____

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Black	
6–12	Sandy loam	Firm	gray	Common Distinct
12–18				
18–24				
24–30				
30–36				
36–42				
42–48				

soil data by S.E.	Soil Classification: Profile / Condition	Slope: Percent	Limiting Factor: Depth	☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

soil data by S.S.	Soil series/phase name:	■ Hydric ☐ Non-hydric	Hydrologic Soil Group
	Peacham		

INVESTIGATOR INFORMATION AND SIGNATURE

Signature: [redacted]	Date: 8/23/06
Name Printed/Typed: MARK J. Hampton	Cert/Lic/Reg. # 216

Title: ☐ Licensed Site Evaluator ■ Certified Soil Scientist ☐ Certified Geologist ☐ Other:

STATE OF MAINE — MARK J. HAMPTON #216 — CERTIFIED SOIL SCIENTIST

affix professional seal

DEP Form F Rev. 9/01

1846

FORM F 9/01

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Eagle Ridge Subdivision	Hunter Properties Group LLC	Gray

Exploration Symbol: SB29 ☐ Test Pit ■ Boring

2 " Organic horizon thickness Ground surface elev. _____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Black	
6–48	Sandy loam	Firm	Gray	Common & Distinct

soil data by S.E. ▸▸: Soil Profile / Classification Condition / Slope Percent / Limiting Factor Depth ☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

soil data by S.S. ▸▸: Soil series/phase name: Brayton ■ Hydric ☐ Non-hydric Hydrologic Soil Group

Exploration Symbol: SB30 ☐ Test Pit ■ Boring

36 " Organic horizon thickness Ground surface elev. _____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Black	
6–48	Sandy loam	Friable	Gray	Common & Distinct

soil data by S.E. ▸▸: Soil Profile / Classification Condition / Slope Percent / Limiting Factor Depth ☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

soil data by S.S. ▸▸: Soil series/phase name: Peacham ■ Hydric ☐ Non-hydric Hydrologic Soil Group

Exploration Symbol: SB31 ☐ Test Pit ■ Boring

4 " Organic horizon thickness Ground surface elev. _____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Black	
6–48	Sandy loam	Firm	Gray	Common & Distinct

soil data by S.E. ▸▸: Soil Profile / Classification Condition / Slope Percent / Limiting Factor Depth ☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

soil data by S.S. ▸▸: Soil series/phase name: Brayton ■ Hydric ☐ Non-hydric Hydrologic Soil Group

Exploration Symbol: SB32 ☐ Test Pit ■ Boring

_____ " Organic horizon thickness Ground surface elev. _____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark Gray	
6–18	Sandy loam	Friable	Brown	
18–48	Sandy loam	Firm	Olive Gray	Common & Distinct

soil data by S.E. ▸▸: Soil Profile / Classification Condition / Slope Percent / Limiting Factor Depth ☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

soil data by S.S. ▸▸: Soil series/phase name: Dixfield ☐ Hydric ■ Non-hydric Hydrologic Soil Group

INVESTIGATOR INFORMATION AND SIGNATURE

Signature: [redacted]	Date: 8/23/06
Name Printed/Typed: MARK J. Hampton	Cert/Lic/Reg. # 216
Title: ☐ Licensed Site Evaluator ☐ Certified Geologist	■ Certified Soil Scientist ☐ Other:

STATE OF MAINE
MARK J. HAMPTON
#216
CERTIFIED SOIL SCIENTIST

affix professional seal

DEP Form F Rev. 9/01

PAGE _____ OF _____ 1846 FORM F 9/01

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Eagle Ridge Subdivision	Hunter Properties Group LLC	Gray

Exploration Symbol: SB33 ☐ Test Pit ■ Boring

_____" Organic horizon thickness Ground surface elev. _____

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark Brown	
6–12	Sandy loam	Friable	Brown	
12–18				
18–24	Sandy loam	Firm	Olive Gray	Common distinct
24–30				
30–36				
36–42				
42–48				

soil data by S.E.	Soil Classification: Profile / Condition	Slope: Percent	Limiting Factor: Depth	☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

soil data by S.S.	Soil series/phase name:	☐ Hydric ■ Non-hydric	Hydrologic Soil Group
	Dixfield		

Exploration Symbol: SB34 ☐ Test Pit ■ Boring

20" Organic horizon thickness Ground surface elev. _____

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Black	
6–12	Sandy loam	Firm	Gley	Common distinct
12–18				
18–24				
24–30				
30–36				
36–42				
42–48				

soil data by S.E.	Soil Classification: Profile / Condition	Slope: Percent	Limiting Factor: Depth	☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

soil data by S.S.	Soil series/phase name:	☐ Hydric ■ Non-hydric	Hydrologic Soil Group
	Peacham		

Exploration Symbol: SB35 ☐ Test Pit ■ Boring

_____" Organic horizon thickness Ground surface elev. _____

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark Brown	
6–12	Sandy loam	Friable	Brown	
12–18				
18–24				
24–30	Sandy loam	Firm	Olive Gray	Common distinct
30–36				
36–42				
42–48				

soil data by S.E.	Soil Classification: Profile / Condition	Slope: Percent	Limiting Factor: Depth	☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

soil data by S.S.	Soil series/phase name:	☐ Hydric ■ Non-hydric	Hydrologic Soil Group
	Dixfield		

Exploration Symbol: SB36 ☐ Test Pit ■ Boring

_____" Organic horizon thickness Ground surface elev. _____

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark Brown	
6–12	Sandy loam	Friable	Brown	
12–18				
18–24	Sandy loam	Firm	Olive Brown	Common distinct
24–30				
30–36				
36–42				
42–48				

soil data by S.E.	Soil Classification: Profile / Condition	Slope: Percent	Limiting Factor: Depth	☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

soil data by S.S.	Soil series/phase name:	☐ Hydric ■ Non-hydric	Hydrologic Soil Group
	Dixfield		

INVESTIGATOR INFORMATION AND SIGNATURE

Signature:	[redacted]	Date: 8/23/06
Name Printed/typed:	Mark J. Hampton	Cert/Lic/Reg. # 216

Title: ☐ Licensed Site Evaluator ■ Certified Soil Scientist ☐ Certified Geologist ☐ Other:

STATE OF MAINE — MARK J. HAMPTON #216 — CERTIFIED SOIL SCIENTIST

affix professional seal

DEP Form F Rev. 9/01

PAGE ____ OF ____ 1846 FORM F 9/01

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Eagle Ridge Subdivision	Hunter Properties Group LLC	Gray

Exploration Symbol: SB37 ☐ Test Pit ■ Boring

____ " Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Pale Brown	
6–18	Sandy loam	Friable	Brown	
18–48	Sandy loam	Firm	olive Gray	Common & Distinct

soil data by S.E. ▸▸	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	☐ Groundwater ☐ Restrictive Layer ☐ Bedrock
soil data by S.S. ▸▸	Soil series/phase name: Dixfield		☐ Hydric ■ Non-hydric		Hydrologic Soil Group

Exploration Symbol: SB38 ☐ Test Pit ■ Boring

6 " Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Black	
6–48	Sandy loam	Firm	Gray	Common & Distinct

soil data by S.E. ▸▸	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	☐ Groundwater ☐ Restrictive Layer ☐ Bedrock
soil data by S.S. ▸▸	Soil series/phase name: Brayton		■ Hydric ☐ Non-hydric		Hydrologic Soil Group

Exploration Symbol: ____ ☐ Test Pit ☐ Boring

____ " Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Mottling
0–48				

soil data by S.E. ▸▸	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	☐ Groundwater ☐ Restrictive Layer ☐ Bedrock
soil data by S.S. ▸▸	Soil series/phase name:		☐ Hydric ☐ Non-hydric		Hydrologic Soil Group

Exploration Symbol: ____ ☐ Test Pit ☐ Boring

____ " Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Mottling
0–48				

soil data by S.E. ▸▸	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	☐ Groundwater ☐ Restrictive Layer ☐ Bedrock
soil data by S.S. ▸▸	Soil series/phase name:		☐ Hydric ☐ Non-hydric		Hydrologic Soil Group

INVESTIGATOR INFORMATION AND SIGNATURE

Signatu[redacted]	Date: 8/23/06
Name P[redacted] Mark J. Hampton	Cert/Lic/Reg. # 216
Title: ☐ Licensed Site Evaluator ☐ Certified Geologist	■ Certified Soil Scientist ☐ Other:

STATE OF MAINE
MARK J. HAMPTON
#216
CERTIFIED SOIL SCIENTIST

affix professional seal

DEP Form F Rev. 9/01

1846 FORM F 9/01

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Eagle Nest Subdivision	Eagle Nest LLC	Gray

Exploration Symbol: MHA1 ■ Test Pit ☐ Boring

____" Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Mottling
0–6	Stony Sandy loam	Friable	Dark Brown	
6–12	Sandy loam	Friable	Red Brown	
12–18				
18–24	Sandy loam	Firm	Olive	Common Distinct
24–30		Limit of Hole		
30–36				
36–42				
42–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
	3	C	4	18"	■ Groundwater ■ Restrictive Layer ☐ Bedrock

soil data by S.S.	Soil series/phase name:		Hydrologic Soil Group
	Dixfield	☐ Hydric ☐ Non-hydric	

Exploration Symbol: MHA2 ■ Test Pit ☐ Boring

____" Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark Brown	
6–12	Sandy loam	Friable	Brown	
12–18	Fine Sandy loam	Firm	Olive	Common + Distinct
18–24		Limit of Hole		
24–30				
30–36				
36–42				
42–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
	3	D	4	12"	■ Groundwater ■ Restrictive Layer ☐ Bedrock

soil data by S.S.	Soil series/phase name:		Hydrologic Soil Group
	Colonel	☐ Hydric ☐ Non-hydric	

Exploration Symbol: MHA3 ■ Test Pit ☐ Boring

____" Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark Brown	
6–12	Sandy loam	Friable	Brown	
12–18	Sandy loam	Firm	Olive	Common Distinct
18–24				
24–30		Limit of Hole		
30–36				
36–42				
42–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
	3	D	4	13"	■ Groundwater ■ Restrictive Layer ☐ Bedrock

soil data by S.S.	Soil series/phase name:		Hydrologic Soil Group
	Colonel	☐ Hydric ☐ Non-hydric	

Exploration Symbol: MHA4 ■ Test Pit ☐ Boring

____" Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark Brown	
6–12	Sandy loam	Friable	Brown	
12–18	Sandy loam	Firm	Olive	Common + Distinct
18–24		Limit of Hole		
24–30				
30–36				
36–42				
42–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
	3	C	4	15"	■ Groundwater ■ Restrictive Layer ☐ Bedrock

soil data by S.S.	Soil series/phase name:		Hydrologic Soil Group
	Dixfield	☐ Hydric ☐ Non-hydric	

INVESTIGATOR INFORMATION AND SIGNATURE

Signatur[redacted]	Date: 6/22/05
Name P[redacted] MARK J. Hampton	Cert/Lic/Reg. # 263

Title: ■ Licensed Site Evaluator ☐ Certified Soil Scientist ☐ Certified Geologist ☐ Other:

STATE OF MAINE
MARK J. HAMPTON
#216
CERTIFIED SOIL SCIENTIST
affix professional seal

DEP Form F Rev. 9/01

1846

FORM F 9/01

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name: Eagle Nest Subdivision

Applicant Name: Eagle Nest LLC

Project Location (municipality): Gray

Exploration Symbol: MHA 5 ☒ Test Pit ☐ Boring

____ " Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches): 0, 6, 12, 18, 24, 30, 36, 42, 48

Texture	Consistency	Color	Mottling
Sandy Loam	Friable	Dark Brown	
Sandy Loam	Friable	Red Brown	None noted
		Ledge?	

soil data by S.E.: Soil 2 (Profile); Classification AIII (Condition); Slope 2 (Percent); Limiting Factor 16 (Depth); ☐ Groundwater ☐ Restrictive Layer ☒ Bedrock

soil data by S.S.: Soil series/phase name: Lyman-Tunbridge; ☐ Hydric ☐ Non-hydric; Hydrologic ____ Soil Group

Exploration Symbol: MHA 6 ☒ Test Pit ☐ Boring

____ " Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches): 0, 6, 12, 18, 24, 30, 36, 42, 48

Texture	Consistency	Color	Mottling
Sandy Loam	Friable	Dark Brown	
Sandy Loam	Friable	Red Brown	None noted
		Ledge?	

soil data by S.E.: Soil 2 (Profile); Classification AIII (Condition); Slope 2 (Percent); Limiting Factor 18 (Depth); ☐ Groundwater ☐ Restrictive Layer ☒ Bedrock

soil data by S.S.: Soil series/phase name: Lyman Tunbridge; ☐ Hydric ☐ Non-hydric; Hydrologic ____ Soil Group

Exploration Symbol: MHA 7 ☒ Test Pit ☐ Boring

____ " Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches): 0, 6, 12, 18, 24, 30, 36, 42, 48

Texture	Consistency	Color	Mottling
Sandy Loam	Friable	Dark Brown	
Sandy Loam	Friable	Red Brown	None noted
		Ledge?	

soil data by S.E.: Soil 2 (Profile); Classification AIII (Condition); Slope 2 (Percent); Limiting Factor 18 (Depth); ☐ Groundwater ☐ Restrictive Layer ☒ Bedrock

soil data by S.S.: Soil series/phase name: Lyman Tunbridge; ☐ Hydric ☐ Non-hydric; Hydrologic ____ Soil Group

Exploration Symbol: MHA 8 ☒ Test Pit ☐ Boring

____ " Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches): 0, 6, 12, 18, 24, 30, 36, 42, 48

Texture	Consistency	Color	Mottling
Sandy Loam	Friable	Dark Brown	
Sandy Loam	Friable	Red Brown	None noted
		Ledge?	

soil data by S.E.: Soil 2 (Profile); Classification AIII (Condition); Slope 2 (Percent); Limiting Factor 20 (Depth); ☐ Groundwater ☐ Restrictive Layer ☒ Bedrock

soil data by S.S.: Soil series/phase name: Lyman Tunbridge; ☐ Hydric ☐ Non-hydric; Hydrologic ____ Soil Group

INVESTIGATOR INFORMATION AND SIGNATURE

Signature: [redacted]

Date: 6/22/05

Name Printed/typed: Mark J. Hampton

Cert/Lic/Reg. # 263

Title: ☒ Licensed Site Evaluator ☐ Certified Geologist ☐ Certified Soil Scientist ☐ Other:

STATE OF MAINE
MARK J. HAMPTON
#216
CERTIFIED SOIL SCIENTIST

affix professional seal

DEP Form F Rev. 9/01

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Eaglenest Subdivision	Eaglenest LLC	Gray

Exploration Symbol: MHA9 ☒ Test Pit ☐ Boring

____ " Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark brown	
6–12	Sandy loam	Friable	Red brown	none noted
12–18				
18–24	XXX	XXX	XXX	
24–30	ledge ?			
30–36				
36–42				
42–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	☐ Groundwater ☐ Restrictive Layer ☒ Bedrock
	2	A III	2	22 "	

soil data by S.S.	Soil series/phase name:	☐ Hydric ☐ Non-hydric	Hydrologic Soil Group
	Lyman-Tunbridge		

Exploration Symbol: MHA10 ☒ Test Pit ☐ Boring

____ " Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark brown	
6–12	Sandy loam	Friable	Red brown	none noted
12–18				
18–24	XXX	XXX	XXX	
24–30	ledge ?			
30–36				
36–42				
42–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	☐ Groundwater ☐ Restrictive Layer ☒ Bedrock
	2	A III	4	22 "	

soil data by S.S.	Soil series/phase name:	☐ Hydric ☐ Non-hydric	Hydrologic Soil Group
	Lyman-Tunbridge		

Exploration Symbol: MHA11 ☒ Test Pit ☐ Boring

____ " Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark brown	
6–12	Sandy loam	Friable	Red brown	none noted
12–18				
18–24	XXX	XXX	XXX	
24–30	ledge ?			
30–36				
36–42				
42–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	☐ Groundwater ☐ Restrictive Layer ☒ Bedrock
	2	A III	2	18 "	

soil data by S.S.	Soil series/phase name:	☐ Hydric ☐ Non-hydric	Hydrologic Soil Group
	Lyman-Tunbridge		

Exploration Symbol: MHA12 ☒ Test Pit ☐ Boring

____ " Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark brown	
6–12	Sandy loam	Friable	Red brown	none noted
12–18				
18–24	XXX	XXX	XXX	
24–30	ledge ?			
30–36				
36–42				
42–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	☐ Groundwater ☐ Restrictive Layer ☒ Bedrock
	2	A III	4	16 "	

soil data by S.S.	Soil series/phase name:	☐ Hydric ☐ Non-hydric	Hydrologic Soil Group
	Lyman-Tunbridge		

INVESTIGATOR INFORMATION AND SIGNATURE

Signature: [redacted]		Date: 6/22/05
Name Printed/typed: Mark J. Hampton		Cert/Lic/Reg. # 263
Title: ☒ Licensed Site Evaluator ☐ Certified Geologist	☐ Certified Soil Scientist ☐ Other:	

STATE OF MAINE
MARK J. HAMPTON
#216
CERTIFIED SOIL SCIENTIST

affix professional seal

1846

FORM F 9/01

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Eagle Nest Subdivision	Eagle Nest LLC	Gray

Exploration Symbol: MHA13 ■ Test Pit ☐ Boring

____" Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark brown	
6–12	Sandy loam	Friable	Brown	
12–18	Sandy loam	Firm	Olive	Common distinct
18–24		Limit of Hole		
24–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
	3	D	4	12	■ Groundwater ■ Restrictive Layer ☐ Bedrock

soil data by S.S.	Soil series/phase name:		Hydrologic Soil Group
	Colonel	☐ Hydric ☐ Non-hydric	

Exploration Symbol: MHA14 ■ Test Pit ☐ Boring

____" Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark brown	
6–12	Sandy loam	Friable	Brown	
12–18	Sandy loam	Firm	Olive	Common distinct
18–24		Limit of Hole		
24–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
	3	D	4	11	■ Groundwater ■ Restrictive Layer ☐ Bedrock

soil data by S.S.	Soil series/phase name:		Hydrologic Soil Group
	Colonel	☐ Hydric ☐ Non-hydric	

Exploration Symbol: MHA15 ■ Test Pit ☐ Boring

____" Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark brown	
6–12	Sandy loam	Friable	Brown	
12–18	Sandy loam	Firm	Olive	Common distinct
18–24		Limit of Hole		
24–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
	3	D	4	12	■ Groundwater ■ Restrictive Layer ☐ Bedrock

soil data by S.S.	Soil series/phase name:		Hydrologic Soil Group
	Colonel	☐ Hydric ☐ Non-hydric	

Exploration Symbol: MHA16 ■ Test Pit ☐ Boring

____" Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark brown	
6–12	Sandy loam	Friable	Red brown	
12–18	Sandy loam	Firm	Olive brown	Common distinct
18–24		Limit of Hole		
24–48				

soil data by S.E.	Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
	3	C	4	18	■ Groundwater ■ Restrictive Layer ☐ Bedrock

soil data by S.S.	Soil series/phase name:		Hydrologic Soil Group
	Dixfield	☐ Hydric ☐ Non-hydric	

INVESTIGATOR INFORMATION AND SIGNATURE

Signature:	Date: 6/22/05
Name Printed/typed: Mark J. Hampton	Cert/Lic/Reg. # 263

Title: ■ Licensed Site Evaluator ☐ Certified Soil Scientist ☐ Certified Geologist ☐ Other:

STATE OF MAINE
MARK J. HAMPTON #216
CERTIFIED SOIL SCIENTIST
affix professional seal

DEP Form F Rev. 9/01

1846 FORM F 9/01

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name: Eaglenest Subdivision | Applicant Name: Eaglenest LLC | Project Location (municipality): Gray

Exploration Symbol: MHA 17 ■ Test Pit ☐ Boring

____" Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark Brown	
6–12	Sandy loam		Red	
12–18		Friable	Brown	
18–24				
24–30	Sandy loam	Firm		Common Distinct
30–36		Limit of Hole		
36–42				
42–48				

soil data by S.E.: Soil Profile 3 | Classification Condition C | Slope Percent 4 | Limiting Factor Depth 22 | ■ Groundwater ■ Restrictive Layer ☐ Bedrock

soil data by S.S.: Soil series/phase name: Dixfield | ☐ Hydric ☐ Non-hydric | Hydrologic Soil Group

Exploration Symbol: MHA 18 ■ Test Pit ☐ Boring

____" Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark Brown	
6–12	Sandy		Red	
12–18	Loam	Friable	Brown	
18–24				
24–30	Sandy loam	Firm	Red	Common Distinct
30–36		Limit of Hole		
36–42				
42–48				

soil data by S.E.: Soil Profile 3 | Classification Condition C | Slope Percent 6 | Limiting Factor Depth 20 | ■ Groundwater ■ Restrictive Layer ☐ Bedrock

soil data by S.S.: Soil series/phase name: Dixfield | ☐ Hydric ☐ Non-hydric | Hydrologic Soil Group

Exploration Symbol: MHA 19 ■ Test Pit ☐ Boring

____" Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark Brown	
6–12	Sandy	Friable	Red	
12–18	Loam		Brown	
18–24	Sandy loam	Firm	Red	Common Distinct
24–30		Limit of Hole		
30–36				
36–42				
42–48				

soil data by S.E.: Soil Profile 3 | Classification Condition C | Slope Percent 6 | Limiting Factor Depth 20 | ■ Groundwater ■ Restrictive Layer ☐ Bedrock

soil data by S.S.: Soil series/phase name: Dixfield | ☐ Hydric ☐ Non-hydric | Hydrologic Soil Group

Exploration Symbol: MHA 20 ■ Test Pit ☐ Boring

____" Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark Brown	
6–12	Sandy loam	Friable	Red Brown	
12–18				
18–24	Sandy loam	Firm	Red	Common Distinct
24–30		Limit of Hole		
30–36				
36–42				
42–48				

soil data by S.E.: Soil Profile 3 | Classification Condition C | Slope Percent 4 | Limiting Factor Depth 16 | ■ Groundwater ■ Restrictive Layer ☐ Bedrock

soil data by S.S.: Soil series/phase name: Dixfield | ☐ Hydric ☐ Non-hydric | Hydrologic Soil Group

INVESTIGATOR INFORMATION AND SIGNATURE

Signature: [redacted] | Date: 6/22/05

Name Printed/typed: Mark J. Hampton | Cert/Lic/Reg. # 263

Title: ■ Licensed Site Evaluator ☐ Certified Soil Scientist ☐ Certified Geologist ☐ Other:

STATE OF MAINE — MARK J. HAMPTON #216 — CERTIFIED SOIL SCIENTIST

Affix professional seal

DEP Form F Rev. 9/01

1846 FORM F 9/01

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name: Eaglenest Subdivision | Applicant Name: Eagle Nest LLC | Project Location (municipality): Gray

Exploration Symbol: MHA21 ☑ Test Pit ☐ Boring

____ " Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark brown	
6–12	Sandy loam	Friable	Red	
12–18			Brown	
18–24				
24–30	Sandy loam	Firm	olive	Common + Distinct
30–36	Limit of Hole			
36–42				
42–48				

soil data by S.E.	Soil Profile: 3	Classification Condition: C	Slope Percent: 6	Limiting Factor Depth: 22	☑ Groundwater ☑ Restrictive Layer ☐ Bedrock
soil data by S.S.	Soil series/phase name: Dixfield		☐ Hydric ☐ Non-hydric		Hydrologic Soil Group

Exploration Symbol: MHA22 ☑ Test Pit ☐ Boring

____ " Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark brown	
6–12	Sandy loam	Friable	red brown	
12–18				
18–24				
24–30	Sandy loam	Firm	olive	Common + Distinct
30–36	Limit of Hole			
36–42				
42–48				

soil data by S.E.	Soil Profile: 3	Classification Condition: C	Slope Percent: 6	Limiting Factor Depth: 20	☑ Groundwater ☑ Restrictive Layer ☐ Bedrock
soil data by S.S.	Soil series/phase name: Dixfield		☐ Hydric ☐ Non-hydric		Hydrologic Soil Group

Exploration Symbol: MHA23 ☑ Test Pit ☐ Boring

____ " Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark brown	
6–12	Sandy loam		Red	
12–18		Friable	Brown	
18–24				
24–30				
30–36	Sandy loam	Firm	olive	Common + Distinct
36–42	Limit of Hole			
42–48				

soil data by S.E.	Soil Profile: 3	Classification Condition: C	Slope Percent: 4	Limiting Factor Depth: 28	☑ Groundwater ☑ Restrictive Layer ☐ Bedrock
soil data by S.S.	Soil series/phase name: Dixfield		☐ Hydric ☐ Non-hydric		Hydrologic Soil Group

Exploration Symbol: MHA24 ☑ Test Pit ☐ Boring

____ " Organic horizon thickness Ground surface elev. ____

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6	Sandy loam	Friable	Dark brown	
6–12	Sandy loam	Friable	Red	
12–18			Brown	
18–24				
24–30				
30–36	Sandy loam	Firm	olive	Common + Distinct
36–42				
42–48				

soil data by S.E.	Soil Profile: 3	Classification Condition: C	Slope Percent: 4	Limiting Factor Depth: 26	☑ Groundwater ☑ Restrictive Layer ☐ Bedrock
soil data by S.S.	Soil series/phase name: Dixfield		☐ Hydric ☐ Non-hydric		Hydrologic Soil Group

INVESTIGATOR INFORMATION AND SIGNATURE

Signature: [redacted] Date: 6/22/05

Name Printed/Typed: Mark S. Hampton Cert/Lic/Reg. # 265

Title: ☑ Licensed Site Evaluator ☐ Certified Soil Scientist ☐ Certified Geologist ☐ Other:

STATE OF MAINE — MARK J. HAMPTON #216 — CERTIFIED SOIL SCIENTIST

affix professional seal

MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

1846

November 21, 2023

Mr. J. P. Connolly
D M Roma Consulting Engineers
P. O. Box 1116
Windham, ME 04062

Re: Eagle Nest Subdivision, High Intensity Soil Survey, March 2006

Dear J. P.

I have found the original soil survey narrative and test pit log descriptions I completed for the original subdivision in 2006. I am including a copy of the high intensity soil survey narrative and the test pit logs and test pit summary sheets from that time. Though the approved subdivision has been developed, the soils on the property have not changed since that time, so the soil map is accurate still today, especially for the undeveloped portions of the property.

If you need anything else, please let me know,

Sincerely,

[redacted]

Certified Soil Scientist #216
Licensed Site Evaluator #263

Enc.

P.O. BOX 1931 • PORTLAND, ME 04104-1931 • 207-756-2900 • mhampto1@maine.rr.com

Quality services that meet your deadline

PLANNING BOARD/STAFF REVIEW COMMITTEE APPLICATION
TOWN OF GRAY MAINE

PROPERTY TO BE DEVELOPED

Property Location/Address	EAGLES NEST ROAD	Property Map/Lot	63 . 35 . 24 .
Zoning District	RRA	Lot Acreage	41.3 ACRES
Owner Name	BLACKWATER DEVELOPMENT, LLC	Tax Sheet	
Owner Address	19 MITCHELLWOOD DR, FALMOUTH, ME 04105	Owner Phone	(207) 318 - 6931

APPLICANT

Name (IF different than owner)	SEBAGO REALTY, LLC	Contact Phone Number	(207) 310 - 0506
Mailing Address	PO BOX 1116	Alternate Phone Number	
Mailing City/State/Zip	WINDHAM, ME 04062	Fax Number	
Email Address	DUSTIN@DMROMA.COM		

AGENT/CONSULTANT

Name	DM ROMA CONSULTING ENGINEERS	Contact Phone Number	(760) - 840 - 0997
Mailing Address	PO BOX 1116	Alternate Phone Number	(207) 591 - 5055
Mailing City/State/Zip	WINDHAM, ME 04062	Fax Number	
Email Address	JP@DMROMA.COM		

PROJECT

The undersigned requests that the Town of Gray Planning Board consider the following application for:

☒ **Subdivision**
- Sketch Plan Review
- × Preliminary Plan Review (Major)
- Final Plan Review (Major)
- Minor

☐ **Site Plan Review**
- Pre-Application Conference
- Minor
- Major

☐ **Shoreland Zoning Permit**

☐ **Other (specify)**
- Conditional Use
- × Amendment
- Extension
- Workshop
- Contract Zone Request

Eagles Ridge Second Amended Subdivision

Project Description / Comments:

AERIE ESTATES IS THE SECOND AMENDMENT TO EAGLES RIDGE SUBDIVISION AND INCLUDES THE SUBDIVISION OF 14 LOTS ON A 42-ACRE PARCEL OF LAND SHOWN AS RETAINED LAND ON THE EAGLES RIDGE SUBDIVISION. 13 OF THE LOTS WILL BE DESIGNED AS AN OPEN SPACE SUBDIVISION, WITH ONE LOT DESIGNED AS A 12-ACRE BACK LOT. ALL LOTS WILL BE SERVED BY PRIVATE WELLS, PRIVATE ON-SITE WASTEWATER DISPOSAL AND UNDERGROUND POWER. THE PROJECT INCLUDES THE CONSTRUCTION OF A NEW ROADWAY APPROXIMATELY 1,000 FEET IN LENGTH TO BE BUILT TO THE RURAL PUBLIC EASEMENT ROAD STANDARD.

[redacted]

Date 11-21-2023

PRELIMINARY SUBDIVISION PLAN APPLICATION SUBMISSION CHECKLIST F-1B TOWN OF GRAY MAINE

For Office Use Only
Date Received: _____
Received by: _____

SUBDIVISION

Subdivision Name	AERIE ESTATES ~ EAGELS RIDGE SECOND AMENDED SUBDIVISION	Date	11-21-2023

This checklist has been prepared to assist applicants in developing their applications. It should be used as a guide in assembling the information necessary for a complete application. The checklist, however, does not substitute for the requirements of **Article 7** of the Subdivision Ordinance. The Planning Board will also use the checklist to ensure your application is complete. Indicate if the information has been submitted or if a waiver is requested. If you feel that information is not applicable to your project, please indicate in the second column. The perimeter survey, subdivision plan and engineering plans may be contained on the same drawing. Detailed engineering drawings such as road profiles, drainage swales and erosion/sedimentation plans, however, may best be presented on a separate sheet or sheets. Note that this checklist only covers the submission requirements for a *preliminary plan*.

There is an additional checklist for *final plan* submission. Neither checklist addresses the standards that the subdivision plan must meet. For review standards refer to Article 13 & checklist F-1D.

PRELIMINARY SUBDIVISION PLAN SUBMISSION REQUIREMENTS

	Submitted by Applicant	Not Applicable	Applicant Request to be Waived	Reviewed by Planner/ Engineer	Waived by Planning Board
401.7.2.A Fourteen (14) copies of application plus accompanying information	X				
401.7.2.B LOCATION MAP					
B.1 Existing subdivisions in the proximity of proposed subdivision	X				
B.2 Locations and names of existing and proposed streets	X				
B.3 Zoning boundaries and designations	X				
B.4 Outline of proposed subdivision and owner's remaining contiguous land	X				
401.7.2.C PRELIMINARY PLAN					
C. Fourteen (14) copies of all maps and/or drawings printed or reproduced on paper	X				
C. Scale not smaller than 1"= 100'; for subdivision more than 100 acres, not smaller than 1"= 200'	X				
401.7.2.C APPLICATION REQUIREMENTS					
C.1 Name of subdivision name of town and assessor's map and lot number(s)	X				
C.2 Verification of right, title or interest in property	X				
C.3 Standard boundary survey with bearings and distances, certified by PLS, all corners located and marked.	X				
C.3 Standard boundary survey shows entire parcel or tract and all contiguous land in common ownership within the last five years per MRSA Title 30-A section 4401	X				
C.4 Copy of most recently recorded deed; all restrictions, easements, rights-of-way and other encumbrances	X				
C.5 Deed restrictions on proposed new lots or dwellings	X				

401.7.2.C APPLICATION REQUIREMENTS (CONT'D)					
C.6 Map of test pits & test pit analyses by Site Evaluator or Certified Soil Scientist	X				
C.7 Type of water supply system(s)	X				
C.7 Gray Water District letter of capacity		X			
C.8 Date plan prepared, north point and graphic map scale	X				
C.9 Names and addresses of record owner, applicant, plan preparer(s) and adjoining property owners	X				
C.10 All wetlands delineated regardless of size	X				
C.11 Total acres in subdivision; location of property lines, existing building(s), unusually large specimen trees, vegetative cover type and other essential physical features	X				
C.12 All rivers, streams and brooks within and adjacent to subdivision; designation of great pond watershed	X				
C.13 Zoning district of proposed subdivision and any zoning boundary lines affecting the subdivision	X				
C.14 Location and size of existing and proposed sewers, water mains, culverts and drainage ways on and adjacent to subdivision	X				
C.15 Location, name and widths of existing and proposed streets and highways easements, building lines, parks and open spaces on or adjacent to subdivision	X				
C.16 Width & location of any streets, public improvements or open space shown in Comprehensive Plan within the property	X				
C.17 Proposed lot lines, approximate dimensions and lot areas	X				
C.18 Parcels of land proposed to be dedicated to public use; condition of such dedication		X			
C.19 Open space to be preserved; proposed ownership, improvements, management	X				
C.20 Area of each lot permitting forest clearing and/or lawn	X				
C.21 Anticipated driveway locations & constraints	X				
C.22 100-year flood elevations in flood prone areas		X			
C.22 Areas within or adjacent to the subdivision identified by the Comprehensive Plan, MDIFW, MNAP, or BWH as areas to be preserved and appropriate preservation measures.		X			
C.23 Areas within or adjacent to subdivision listed in the Comprehensive Plan or listed/eligible to be listed on National Register of Historic Places		X			

401.7.3 ADDITIONAL REQUIRED PLANS & STUDIES					
A. Contour lines at interval set by Planning Board showing all areas at greater than 25% slopes	X				
B. Erosion & sedimentation control plan (can be waived if not in great pond watershed and < 5% impervious)	X				
C. Stormwater management plan (can be waived if not in great pond watershed and < 5% impervious)	X				
D. Phosphorus management plan if in pond watershed & > 4 lots or 800 ft. of road or drives		X			
401.7.4 REQUIRED SUBMISSIONS FOR WHICH A WAIVER MAY BE GRANTED					
A. High Intensity Soil Survey by a Registered Soil Scientist	X				
B.1 Hydrogeologic assessment for subdivision if any part of subdivision is over a sand and gravel aquifer, or		X			
B.2 Hydrogeologic assessment if average density is more than one dwelling unit per 100,000 sq. ft.			X		
B.3 Hydrogeologic assessment if Board determines potential adverse impacts on ground water quality (e.g., shallow bedrock soils, cluster subdivisions)			X		
C. Vehicular trip generation rates & entrance sight distances	X				
D. Traffic impact analysis by a registered traffic P.E. for 28 or more parking spaces or projected to generate more than 140 vehicle trips per day to include expected ADT, peak-hour volumes, access conditions, distribution of traffic, types of vehicles expected, effect on LOS, recommended improvements		X			

November 22, 2023

JP Connolly
DM Roma Consulting Engineers
59 Harvest Hill Rd
Windham, ME 04062

RE: Soil Evaluation for Potential Subsurface Wastewater Disposal Systems
Eagles Nest Subdivision, Gray, Maine

Dear Mr. Connolly:

On August 23, 2023, fifteen test pits were dug and assessed on the subject parcel identified on the Town of Gray tax maps as Map 63, Lot 35-24 on Eagles Nest Road for proposed houselots associated with Phase 2 of the Eagles Nest Subdivision. The test pits were evaluated by Alexander Finamore, LSE #391. Test pits logs were completed, were located by GPS, and provided separately. Each test pit was located in an area that could support at least a 3 bedroom septic system at least 15'x25' in dimension.

Based on soil observations of the project site, and review of the plan set dated 11-22-2023 the proposed lot layout is suitable to provide viable private septic disposal areas and private potable drinking water wells for each proposed residence. Final septic locations and completion of HHE-200 designs will need to consider building architecture and a 100' setback to onsite and neighboring wells so proposed locations on plan sets are approximate and open to change during construction.

If you have any questions, please feel free to email me at: mainelysoils@gmail.com or call 207-650-4313.

Sincerely,

[redacted]

Alexander A. Finamore, LSE #391
Owner - Mainely Soils, LLC

WAIVER REQUESTS

The applicant would like the Planning Board to consider granting waivers to the following requirements:

- Hydrogeologic Assessment
- Street light requirement
- Stone or Concrete monuments at all property corners

The applicant is requesting the Planning Board consider granting a waiver from the requirement of having a hydrogeologic assessment of the site. The project site is not located within a sand and gravel aquifer, and the average density of the current proposed fourteen (14) lot layout results is one dwelling per 128,452± sf of total project area (1,798,333 sf / 14 proposed dwellings = 128,452 sf). Town of Gray Subdivision Ordinance Section 401.7.4.B.2 "Hydrogeologic Assessment" requires a hydrogeologic assessment for a project when "The subdivision has an average density of more than one dwelling unit per 100,000 square feet". As such the impact of the proposed project on the hydrogeology of the site is not expected to be significant.

The applicant is requesting the Planning Board consider granting a waiver from the requirement to install and maintain a streetlight at the end of the proposed subdivision road. If a street light where to be installed it would likely be located either in the proposed hammerhead easement or at the end of the proposed of the ROW associated with Aerie Drive. Both the proposed hammerhead and the end of the ROW is located between residential lots, with residential lots on the opposite side of the street as well and in an area that will be at relatively similar elevation to the proposed residential structures. Either of these areas are expected to be clear of trees and is not expected to be very dark with limited obstructions from the residential exterior lighting of four (4) proposed residents. Additionally with the street light near to residents, it is anticipated that it would create a less than desirable design feature due to the likelihood it would cast a significant amount of light into these homes through the night.

The applicant is requesting the Planning Board consider granting a waiver from the requirement that all property corners be monumented with stone or concrete bounds. Many of the proposed property corners are located well into forested areas and would likely be covered and obscured by leaves and vegetation relatively soon after installation, whereas capped iron pins would make future location work easier with the use of a metal detector, a common field survey tool. As illustrated on the amended subdivision plan, proposed property corners located in existing stonewalls are being proposed as pins, while at all other locations stone or concrete bounds shall be installed.

DM ROMA
CONSULTING ENGINEERS

December 5, 2023

Town of Gray Planning Board
c/o Kristen Muszynski, Town Planner
Henry Pennell Municipal Complex
24 Main St, Gray, ME 04039

Re: Cambell Acres – Amended Subdivision – Final Major Subdivision Application
Planning Department and Town Engineer review comment response
McDonnell Brothers Custom Builders, LLC. – Owner/Applicant

Dear Ms. Muszynski:

On behalf of McDonnell Brothers Custom Builders, LLC., DM Roma Consulting Engineers has revised the project plan set for the proposed residential subdivision project located off Jenny Drive, proposing the development of a residential subdivision with three proposed lots. The revisions were prepared to address concerns and comments that we have received from the Town Staff, and Town's Review Engineer since the submission of the November 13, 2023 plan set. Based on comments from Planning Staff and Peer review engineer of the November 13, 2023 plan set, the project design and plans have been revised to incorporate the following:

- Foundation drains and callouts on the Roadway Plan and Profile.
- Plunge pool at the outlet of proposed filter basin.

Additionally, please find included with this letter a High Intensity Soil Survey soil narrative report, including additional test pit logs from Mark Hampton Associates, Inc. The effort to address the comments regarding the waiver of the High Intensity Soil Survey required the similar number of test pits, so despite the waiver granted from the High Intensity Soil Survey, the project will ultimately provide a HISS. At this time we do not have the HISS Map, but expect it before the end of the week and will provide it to the Town as soon as possible.

Enclosed with this submission is the revised supporting documentation and design plans for your review. Upon your review of the submission, please do not hesitate to contact me if you have any questions or require any additional information.

Sincerely,

DM ROMA CONSULTING ENGINEERS

[redacted]

J.P. Connolly
Senior Project Engineer

Cc: McDonnell Brothers Custom Builders, LLC.

MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

7732

Cambell Shore Road
Gray, ME
McDonnell Brothers Custom Builders, LLC

Soil Narrative Report

DATE:	Soil Profiles observed on November 30, 2023
BASE MAP:	Base plan provided by D M Roma Consulting Engineers, Scale 1 inch equals 40 feet and one foot contours.
GROUND CONTROL:	Soil survey boundaries located by Mark Hampton Associates, Inc. for Class B Soil Survey

Class B-High Intensity Soil Survey (Minimum Standards)

Mapping units of 1 acre or less.
Scale of 1"= 200 feet or larger.
Up to 25% inclusions in mapping units of which no more than 15% may be dissimilar soils.
Ground Control – test pits located by means of compass by chaining, pacing, or taping from known survey control points
Base Map –5 foot contour intervals

Provided:

Mapping units of 1 acre or less
Base map scale of 1"= 40 feet.
Up to 25 percent inclusions in mapping units of which no more than 15 percent is dissimilar soils.
Baseline information and test pits located by pacing and taping from know survey control points.
Ground topographic survey with one foot contours and ground control provided.

The accompanying soil profile descriptions, soil map, and this soil narrative report were done in accordance with the standards adopted by the Maine Association of Professional Soil Scientists, and the Maine Board of Certification of Geologists and Soil Scientists.

[redacted] C.S.S. #216, L.S.E. #263 12/4/23

Mark J. Hampton Date

STATE OF MAINE
MARK J.
HAMPTON
#216
CERTIFIED
SOIL SCIENTIST

MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

7732

Cambell Shore Road
Gray, ME
McDonnell Brothers Custom Builders, LLC

Dixfield
(Aquic Haplorthods)

SETTING

PARENT MATERIAL:	Derived from compact loamy glacial till.
LANDFORM:	Till plains, hills and ridges.
POSITION IN LANDSCAPE:	Plains and middle levels.
SLOPE GRADIENT RANGES:	(A) 0-3%, (B) 3-8%, (C) 8-15%

COMPOSITION AND SOIL CHARACTERISTICS

DRAINAGE CLASS: Moderately well drained with a perched watertable from 1.0 to 2.0 feet below the surface at some time from October to May or during periods of heavy precipitation.

TYPICAL PROFILE:

Surface Layer:	Dark brown, stony sandy loam, 0-7"
Subsurface Layer:	Brown, sandy loam, 7-20"
Subsoil Layer:	Olive brown, stony sandy loam 16-31"
Substratum:	Olive gray, stony sandy loam, 25-65"

HYDROLOGIC GROUP:	Group C
SURFACE RUNOFF:	Moderately Rapid
PERMEABILITY:	Moderate in solum, slow in substratum
DEPTH TO BEDROCK:	Greater than 65 inches
HAZARD TO FLOODING:	None

INCLUSIONS

(Within Mapping Unit)

CONTRASTING: Skerry, Lyman-Tunbridge

USE AND MANAGEMENT

Development: There are few limiting factors for building site development

7732

FORM F Rev. 07/11

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Cambell Shore Road	McDonnell Brothers Custom Builders L	Gray

Exploration Symbol # SS-1 ☒ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)

Texture	Consistency	Color	Redox Features
Sandy Loam	Friable	Dark Brown	
Sandy Loam	Friable	Brown	
Sandy Loam	Firm	Olive	Common and Distinct

Soil Details by S.E. ▸▸ S.S. ▸▸

Soil Classification	Slope	Limiting Factor	
3 Profile / C Condition	2 Percent	20 " Depth	☒ Groundwater ☒ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name: Dixfield MWD ☐ Hydric ☒ Non-hydric Hydrologic Soil Group: _____

Exploration Symbol # SS-2 ☒ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)

Texture	Consistency	Color	Redox Features
Sandy Loam	Friable	Dark Brown	
Sandy Loam	Friable	Brown	
Sandy Loam	Firm	Olive	Common and Distinct

Soil Details by S.E. ▸▸ S.S. ▸▸

Soil Classification	Slope	Limiting Factor	
3 Profile / C Condition	6 Percent	18 " Depth	☒ Groundwater ☒ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name: Dixfield MWD ☐ Hydric ☒ Non-hydric Hydrologic Soil Group: _____

Exploration Symbol # SS-3 ☒ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)

Texture	Consistency	Color	Redox Features
Sandy Loam	Friable	Dark Brown	
Sandy Loam	Friable	Brown	
Sandy Loam	Firm	Olive	Common and Distinct

Soil Details by S.E. ▸▸ S.S. ▸▸

Soil Classification	Slope	Limiting Factor	
3 Profile / C Condition	12 Percent	16 " Depth	☒ Groundwater ☒ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name: Dixfield MWD ☐ Hydric ☐ Non-hydric Hydrologic Soil Group: _____

Exploration Symbol # _____ ☐ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)

Texture	Consistency	Color	Redox Features

Soil Details by S.E. ▸▸ S.S. ▸▸

Soil Classification	Slope	Limiting Factor	
Profile / Condition	Percent	Depth	☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name: _____ ☐ Hydric ☐ Non-hydric Hydrologic Soil Group: _____

STATE OF MAINE MARK J. HAMPTON #216 CERTIFIED SOIL SCIENTIST affix professional seal

INVESTIGATOR INFORMATION AND SIGNATURE

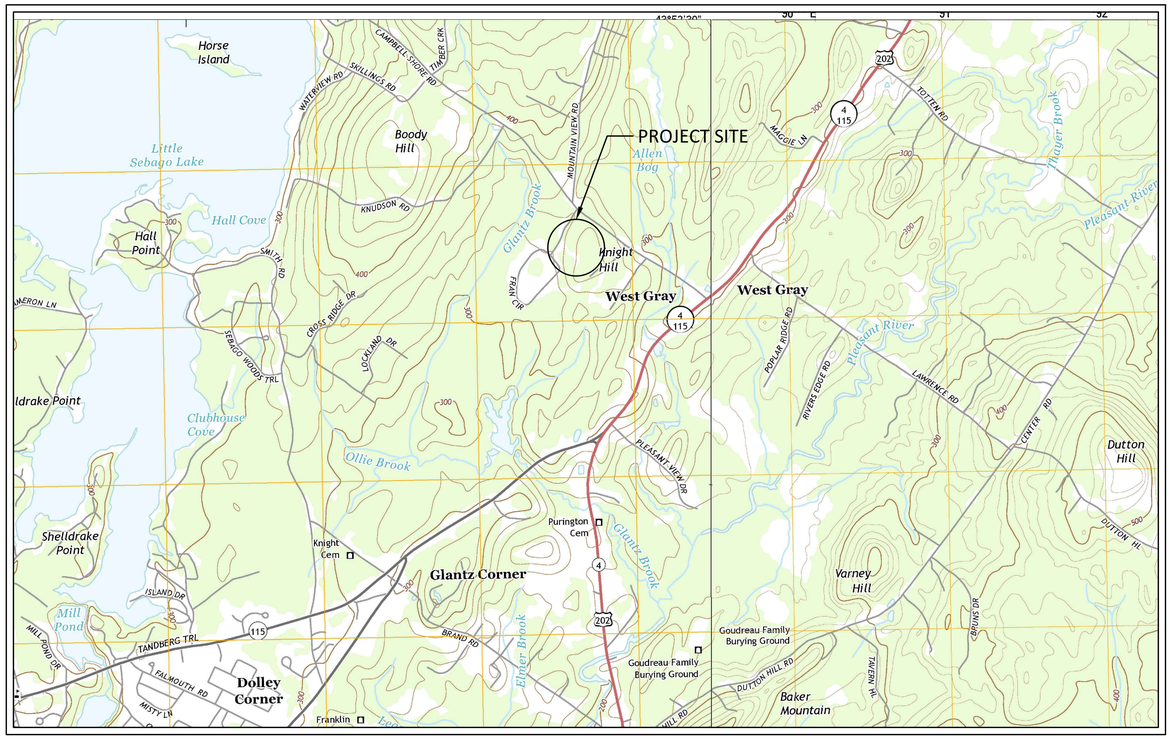
Signatu[redacted]	Date 12/4/2023
Name Printed Mark J. Hampton	Cert/Lic/Reg. # 216

Title ☐ Licensed Site Evaluator ☒ Certified Soil Scientist ☐ Certified Geologist ☐ Professional Engineer

CAMBELL ACRES SECOND AMENDED SUBDIVISION

JENNY DRIVE - LIEUTENANTS DRIVE
GRAY, MAINE

CONSULTANTS	
CIVIL ENGINEER	DM ROMA CONSULTING ENGINEERS
LAND SURVEYOR	SURVEY, INC.
SITE EVALUATOR	MAINELY SOILS, LLC
GEOLOGIST	MARK CENCI GEOLOGIC, INC.
SOIL SCIENTIST	MARK HAMPTON ASSOCIATES, INC.



PROJECT VICINITY MAP

ISSUED FOR PERMITTING - NOT FOR CONSTRUCTION
DECEMBER 4, 2023

PREPARED BY:

DM ROMA
CONSULTING ENGINEERS
P.O. BOX 1116
WINDHAM, ME 04062
(207) 591-5055

APPLICANT:

McDONNELL BROTHERS CUSTOM BUILDERS, LLC.
391 ROOSEVELT TRAIL
WINDHAM, MAINE 04062

CAMBELL ACRES SECOND AMENDED SUBDIVISION

DRAWING SHEET INDEX

PAGE NO.	DESCRIPTION
1	TITLE SHEET
2	AMENDED SUBDIVISION PLAN CAMBELL ACRES
3	SECOND AMENDED SUBDIVISION PLAN
4	ROADWAY PLAN AND PROFILE: LIEUTENANTS DRIVE
5	DETAILS
6	DETAILS
7	WASTEWATER PLAN

GRID NORTH
MAINE STATE PLANE
NAD 83, 1802 - MAINE WEST

JENNY DRIVE

PAVED-22'± WIDE
60' RIGHT OF WAY

EXISTING DRIVEWAY
PROPOSED DRIVEWAY AND CULVERT SEE NOTE 10
EXISTING CULVERT
CAPPED REBAR
6"X6" CONCRETE MONUMENT
1-INCH IRON PIPE
BUFFER AREA-WELL EXCLUSION ZONE
ROAD FRONTAGE 274.87'
ROAD FRONTAGE 212.51'
50' MUNICIPAL SETBACK
25' MUNICIPAL SETBACK
TP-1
TP-2
TP-3
TP-4
TP-5

N19°48'31"E 79.03'
N37°16'15"E 93.38'
N29°22'00"E 119.13'
N09°36'55"E 91.42'
N08°51'10"E 100.59'
N42°59'16"E 82.86'
N48°50'53"W 58.96'
N42°36'46"W 231.75'
N22°18'19"W 357.00'
S54°47'12"E 263.71'
S54°47'12"E 200.00'
S06°59'39"W 289.02'
S06°59'39"W 196.55'
S35°12'48"W 81.45'
S67°41'50"E 401.48'
S68°12'18"E 365.96'
S55°28'45"E 242.70'
S52°58'29"E 184.10'
S55°15'11"E 21.42'
S34°52'26"W 199.59'
S28°04'12"W 38.95'
S37°23'12"W 132.73'
S03°44'12"W 52.05'
S13°18'12"W 88.38'
S12°37'12"W 71.28'
S23°37'42"W 100.30'
S40°08'42"W 157.94'
S41°48'12"W 202.82'
S41°48'12"W 53.11'
N32°26'18"E 400.00'
S56°31'48"E 42.02'

PARCEL AREA
80,727
TAX MAP 56 LOT 17-28-02

PARCEL AREA
7.12± ACRES
TAX MAP 56 LOT 17-28-03
SEE NOTE 11

PARCEL AREA
3.74± ACRES
TAX MAP 56 LOT 17-28-00

N/F
PHILIP W. FOSTER
BARBARA J. FOSTER
32864/110

N/F
CARL I. HIGGINS
ANGELA V. HIGGINS
14318/319

N/F
WILLIAM H. EMMONS
DEBORAH J. EMMONS
14227/146

N/F
BRITTON R. DOIG
32354/50

N/F
DONNA M. EMERSON
28357/285

N/F
ROBERT J. LENZ
PAMELA J. LENZ
20076/230

N/F
DOW L. LAMKIN
DEBORAH E. LAMKIN
12619/58

MONUMENT TO BE SET (TYPICAL)
REBAR TO BE SET (TYPICAL)
BUFFER AREA
PROPOSED BUFFER AREA
OPEN FIELD
WOODS
HOUSE
DRILLED WELL
GARAGE
SHED
PAVED DRIVEWAY
TOTAL ROAD FRONTAGE 205.52'
6"X12" STONE MONUMENT
1-INCH IRON PIPE
1-1/2-INCH IRON PIPE

CAMBELL SHORE ROAD

PAVED-22'± WIDE
49.5' RIGHT OF WAY

GRAPHIC SCALE
1"=50'
50 0 25 50 100

State of Maine, Cumberland SS.
Registry of Deeds
Received May 11, 20 22
at 11 h 39 m A M and recorded in
Plan Book 222 Page 174
Attest: _____ Register

ZONING:

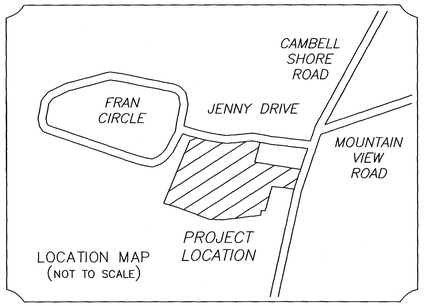
THE PARCEL IS LOCATED WITHIN THE RURAL RESIDENTIAL AND AGRICULTURAL DISTRICT WITH THE FOLLOWING CURRENT DIMENSIONAL REQUIREMENTS:

MINIMUM LOT AREA	80,000 SF
MINIMUM STREET FRONTAGE	200'
MAXIMUM LOT COVERAGE	10%
MINIMUM LOT LINE SETBACK FRONT	50'
MINIMUM LOT LINE SETBACK SIDE	25'
MINIMUM LOT LINE SETBACK REAR	50'
MAXIMUM BUILDING HEIGHT	35'

REFERENCE IS MADE TO THE ZONING ORDINANCE FOR THE TOWN OF GRAY FOR ADDITIONAL INFORMATION.

FLOOD NOTE

THAT THIS LOT DOES NOT, BY SCALING METHODS, FALL WITHIN A SPECIAL FLOOD HAZARD AREA AS SHOWN ON THE FLOOD INSURANCE RATE MAP FOR THE TOWN OF GRAY, MAINE COMMUNITY PANEL NO. 230048-0015A WITH AN EFFECTIVE DATE OF JANUARY 6, 1982.



NET RESIDENTIAL AREA CALCULATION

Zone	RRA
Total Area (in square feet)	390874
4D.2.a. Slopes 25% or steeper	17189
D.2.b. Land which is not able to be practically accessible, usable, or unavailable due to its location and/or existing site condition(s) such as being cut off from the main parcel	82993
D.2.c. All land areas within the 100-year floodplain FEMA FIRM Maps regardless of any other classification.	0
D.2.d. Land situated below the normal high water mark of any water body	0
D.2.e. Land below the upland edge of freshwater wetlands except Forested Wetlands that are to remain undeveloped and not located in a 100-year floodplain.	0
D.2.f. All lands that have been determined to be a liquidation harvesting.	0
D.2.g. Unusable areas larger than 1,500 sf such as significant rock outcroppings, etc.	0
D.2.h. Land area consisting of unreclaimed gravel pits	0
D.2.i. Poorly drained soils unless located in a Forested Wetland that are to remain undeveloped and not located in a 100-year floodplain	0
D.2.j. Very poorly drained soils.	0
Subtotal of D.2 series	
100182	
D.3.a. Somewhat poorly drained soils	0
D.3.b. Land designated as Resource Protection District that remain undeveloped	0
D.3.c. Forested Wetlands that remain undeveloped not located in a 100-year floodplain	0
D.3.d.i. Significant Wildlife habitat as mapped by MDIF&W	0
D.3.d.ii. Significant Wildlife habitats determined by the applicant in consultation with the MDIF&W	0
D.3.d.iii. Endangered botanical resources as mapped by Maine Natural Areas Program	0
D.3.d.iv. Endangered botanical resources as determined by applicant consultation with the Maine Department of Conservation	0
Subtotal of D.3 series:	
0	
50% of D.3 series:	
0	
Total Deductions from D.2 & D.3 series:	
100182	
Subtotal of Remaining Area:	
290692	
D.5 Roads & ROWs deduction: 10% of remaining area or actual area of ROW (whichever is greater)	0
Net Residential Area	290692
Minimum Land Area per Dwelling Unit	80000
Net Residential Density	3.63365

The Planning Board, at its meeting held on April 14, 2022, also voted 3-0 to waive the following subdivision requirements:

- 401.13.6 open space
- 401.13.6 f homeowner's association
- 401.13.8 financial and technical capacity
- 401.13.12 stormwater management
- 401.13.18 C.3.c field verification of soils

APPROVED BY THE TOWN OF GRAY, MAINE PLANNING BOARD

[redacted]

April 14, 2022 DATE

SURVEY NOTES:

(1) THE OWNERS OF RECORD ARE KRISTIN A. STANLEY AND PHILIP M. STANLEY AS DESCRIBED IN A DEED RECORDED IN BOOK 38846 PAGE 201 IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS.

(2) THE PARCEL IS SHOWN AS LOT 17-28-00 ON THE TOWN OF GRAY ASSESSORS MAP 56.

(3) BEARINGS ARE GRID NORTH, MAINE STATE PLANE 1802 WEST ZONE.

(4) VERTICAL DATUM- NAVD 88

(5) LIMITS OF THE OPEN FIELD WERE TAKEN FROM GOOGLE EARTH IMAGERY.

(6) TEST PIT INFORMATION WAS PROVIDED BY MAINELY SOILS DURHAM, MAINE. TEST PITS 1 AND 2 ARE FOR PROPOSED SEPTIC SYSTEMS. TEST PITS 3,4 AND 5 ARE FOR THE WETLAND AND SOIL ASSESSMENT.

(7) CONTOURS SHOWN ARE TAKEN FROM THE NOAA DIGITAL COAST: DATA ACCESS VIEWER.

(8) BUFFER AREAS ARE SUBJECT TO LIMITED CUTTING OF TREES AND VEGETATION. NO BUILDINGS ARE TO BE LOCATED WITHIN THE BUFFER AREAS.

(9) THERE SHALL BE NO CONSTRUCTION WITHIN THE 50' FORESTED BUFFERS BETWEEN THE LOTS AND ALONG THE ROAD FRONTAGE, OTHER THAN THE NECESSARY CLEARING FOR THE APPROVED DRIVEWAYS. FORESTED BUFFERS AS SHOWN ON SAID PLAN SHALL BE KEPT IN A NATURAL VEGETATIVE STATE WITH ONLY DEAD DISEASED TREES OR TREES THAT POSE A SAFETY HAZARD THAT MAY BE REMOVED IN KEEPING WITH THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION REGULATIONS, CHAPTER 500.

(10) DRIVEWAYS WILL ADHERE TO THE DRIVEWAY STANDARDS OUTLINED IN 401.13.16-17 AND THE TOWN OF GRAY STREET ORDINANCE, CHAPTER 400 SECTION 5. ENGINEERING MAY BE REQUIRED. THE TWO DRIVEWAY LOCATIONS SHOWN ON THIS PLAN ARE FIXED. ANY OTHER LOCATION FOR THE TWO DRIVEWAYS OR ANY ADDITIONAL DRIVEWAYS MUST BE APPROVED BY THE GRAY PLANNING BOARD.

(11) FURTHER SUBDIVISION OF THIS LOT MAY NOT BE MADE WITHOUT THE EXPRESS APPROVAL OF THE PLANNING BOARD OF THE TOWN OF GRAY. NO ADDITIONAL CURB CUTS ARE ALLOWED WITHOUT EXPRESS APPROVAL OF THE PLANNING BOARD OF THE TOWN OF GRAY.

(12) SPRINKLER INSTALLATION IS REQUIRED FOR ANY DWELLING UNIT INSTALLED ON LOTS 56-17-28-02 AND 56-17-28-03. SPRINKLERS ARE NOT REQUIRED FOR THE EXISTING SINGLE-FAMILY HOME ON LOT 56-17-28-00.

(13) THESE TWO NEW LOTS WILL BE SERVED BY INDIVIDUAL DRILLED WELLS AND ON-SITE SEPTIC SYSTEMS.

PLAN REFERENCES:

(1) PLAN OF PROPERTY IN GRAY MAINE MADE FOR VERA G. JORDAN DATED MAY 23, 1973 REVISED JUNE 7, 1973 BY HI AND EC JORDAN.

(2) CAMPBELL ACRES GRAY, MAINE FINAL SUBDIVISION PLAN K. NORTON & J. GENDRON SOUTH PORTLAND, MAINE DATED OCTOBER 1974 BY LAND USE CONSULTANTS, INC RECORDED IN PLAN BOOK 104 PAGE 27 IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS.

(3) CAMPBELL SUBDIVISION GRAY MAINE RECORDED IN PLAN BOOK 115 PAGE 4 IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS.

(4) SUBDIVISION PLAN OF CAMPBELL ACRES GRAY, MAINE FOR KERRY NORTON AND EDSON SOBEY DATED OCT. 5, 1977 BY JACK BERMAN, INC. RECORDED IN PLAN BOOK 119 PAGE 65 IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS.

(5) STANDARD BOUNDARY SURVEY ON CAMPBELL SHORE ROAD GRAY, MAINE FOR SUZANNE TANBERG DATED OCTOBER 1994 BY WAYNE T. WOOD AND CO. RECORDED IN PLAN BOOK 195 PAGE 403 IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS.

(6) RESUBDIVISION PLAN OF LOT 1 CAMPBELL ACRES SUBDIVISION FOR FRANCIS L. AND VERNA L. MACKELL FRAN CIRCLE AND JENNY DRIVE DATED JANUARY 8, 1988 BY JOHN D. PALMITER RECORDED IN PLAN BOOK 170 PAGE 58 IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS.

(7) BOUNDARY SURVEY CAMPBELL SHORE ROAD GRAY, MAINE FOR: KRISTIN STANLEY DATED OCTOBER 2021 BY SURVEY INC.

(8) THE THREE LOTS SHOWN ON THIS PLAN ARE A SUBDIVISION OF LOT #1 ON A 1974 PLAN RECORDED IN PLAN BOOK 104, PAGE 27 CCRD. ON 9-10-98, THE GRAY PLANNING BOARD APPROVED AN AMENDMENT THAT SPLIT OFF A PORTION OF LOT #1 TO CARL AND ANGELA HIGGINS. THIS 1998 PLAN WAS NEVER SIGNED OR RECORDED; IT IS ON FILE AT GRAY TOWN HALL. ADDITIONAL DETAILS ARE IN THE PLANNING BOARD NOTICE OF DECISION FOR THIS 2022 AMENDED PLAN, ALSO AT GRAY TOWN HALL.

SIGHT DISTANCE

THE SIGHT LINES FROM THE PROPOSED DRIVEWAY ON LOT 17-28-03 ARE: LEFT TOWARDS FRAN CIRCLE 325', RIGHT TOWARDS CURVE ON JENNY DRIVE 350'

THE SIGHT LINES FROM THE PROPOSED DRIVEWAY ON LOT 17-28-02 ARE: LEFT TOWARDS CURVE ON JENNY DRIVE 290', RIGHT TOWARDS CAMPBELL SHORE ROAD 325'
THE SPEED LIMIT ON JENNY DRIVE IS ASSUMED TO BE 25 MPH.

CERTIFICATION:

I CERTIFY THAT THIS SURVEY CONFORMS TO THE STANDARDS OF THE MAINE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS AND IS CORRECT TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF.

WILLIAM C. SHIPPEN P.L.S. 2118 [redacted]

STATE OF MAINE ★ WILLIAM C. SHIPPEN ★ 2118 PROFESSIONAL LAND SURVEYOR

NOTE

THE PURPOSE OF THIS AMENDED SUBDIVISION PLAN IS TO DIVIDE LOT 1 AS SHOWN ON A PLAN ENTITLED "CAMPBELL ACRES" RECORDED IN PLAN BOOK 104 PAGE 27 IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS. THE PROJECT SHALL BE CONSTRUCTED, OPERATED AND MAINTAINED IN ACCORDANCE WITH THE PLANS, TEXTUAL SUBMISSIONS AND TESTIMONY PRESENTED TO THE PLANNING BOARD BY THE APPLICANT.

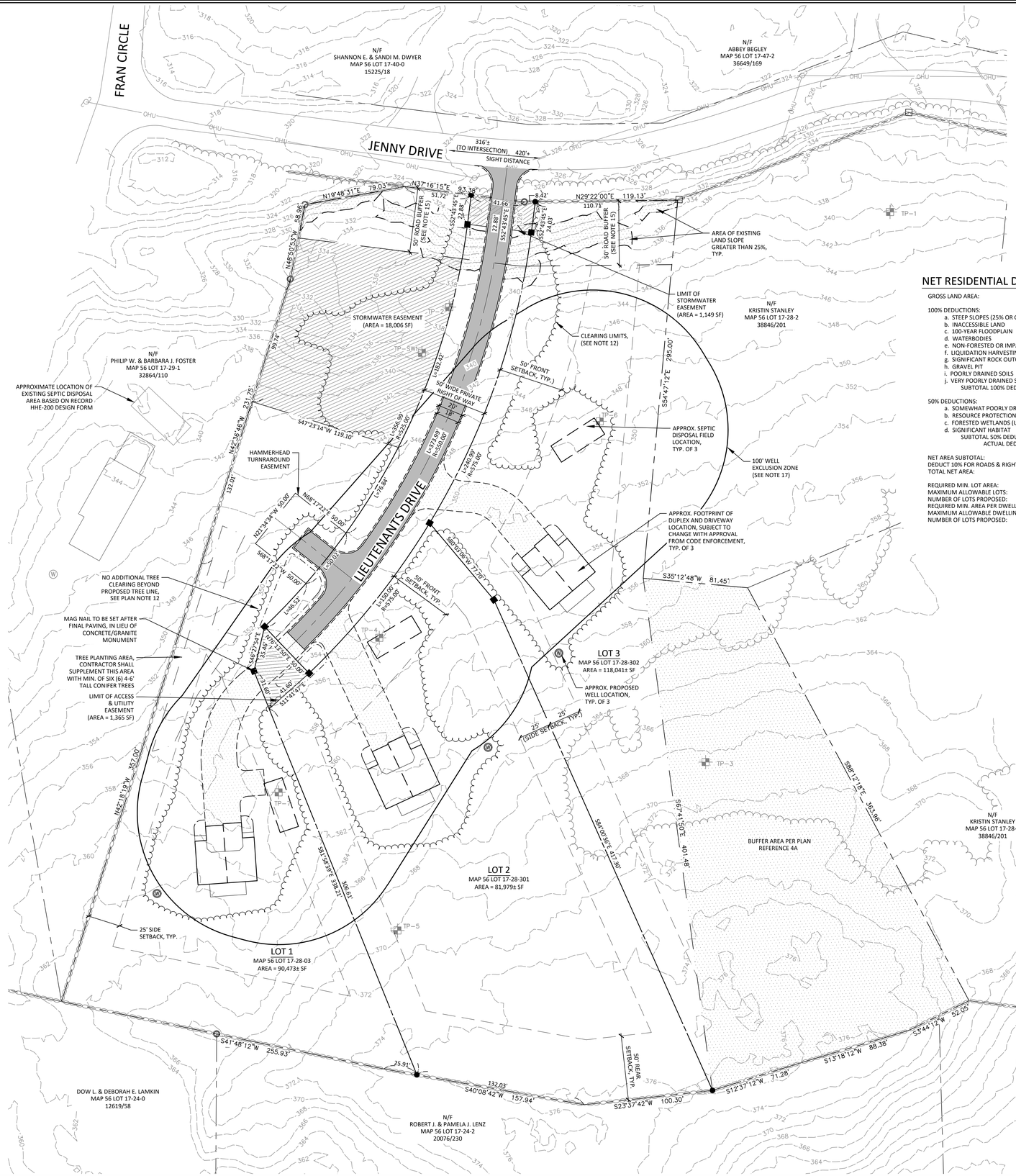
AMENDED SUBDIVISION PLAN CAMBELL ACRES

CAMBELL SHORE ROAD
GRAY, MAINE

FOR: **KRISTIN STANLEY**
PO BOX 1161
GRAY, MAINE 04039
(CLIENT)

SURVEY BY: **SURVEY, INC.**
P.O. BOX 210
WINDHAM, ME 04062
(207) 892-2556
INFO@SURVEYINCORPORATED.COM

DWN: WCS CHK: DRR
DATE: DECEMBER 2021 JOB NO. 21-270-2
REV: 3-10-22 MISC CHANGES AS REQUESTED BY TOWN
REV: 3-16-22 MISC CHANGES AS REQUESTED BY TOWN
REV: 4-4-22 MISC CHANGES AS REQUESTED BY TOWN
REV: 5-4-22 PLANNING BOARD CONDITIONS OF APPROVAL
REV: 5-9-22 MISC CHANGES AS REQUESTED BY TOWN



GENERAL NOTES:

1. THE OWNER OF RECORD OF THE PROPERTY IS McDONNELL BROTHERS CUSTOM BUILDERS, LLC. BY DEED RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS BOOK 40059 PAGE 250.
2. TOTAL AREA OF THE PARCEL IS APPROXIMATELY 7.12 ACRES.
3. PARCEL TAX MAP REFERENCE: TOWN OF GRAY ASSESSORS MAP 56, LOT 17-28-03.
4. PLAN REFERENCES:
   - 4.A. AMENDED SUBDIVISION PLAN CAMBELL ACRES, PREPARED FOR KRISTIN STANLEY, PREPARED BY SURVEY, INC. DATED DECEMBER 2021 AND REVISED THRU 5-9-22, AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS PLAN BOOK 222 PAGE 174 ON MAY 11, 2022.
   - 4.B. CAMBELL ACRES, GRAY, MAINE FINAL SUBDIVISION PLAN, PREPARED FOR K. NORTON & J. GENDRON, PREPARED BY LAND USE CONSULTANTS, INC. DATED OCTOBER 1974 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS PLAN BOOK 104 PAGE 27 ON DEC. 6, 1974.
5. HORIZONTAL DATUM: MAINE STATE PLANE, WEST ZONE, NAD83, U.S. FEET.
6. VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)
7. BOUNDARY SHOWN HEREON IS BASED ON PLAN REFERENCE 4.A.
8. TOPOGRAPHIC CONTOURS SHOWN HEREON ARE BASED ON PLAN REFERENCE 4.A.
9. THE PROPERTY IS LOCATED IN THE RURAL RESIDENTIAL AND AGRICULTURE DISTRICT.
10. SPACE AND BULK REQUIREMENTS: RRA DISTRICT

	CONVENTIONAL SUBDIVISION
MIN LOT AREA:	80,000 SF
MIN AREA PER DWELLING UNIT:	40,000 SF
MIN STREET FRONTAGE:	200 FT
MIN FRONT YARD SETBACK:	50 FT
MIN SIDE YARD SETBACK:	25 FT
MIN REAR YARD SETBACK:	50 FT
MAX LOT COVERAGE:	10%
MAX BUILDING HEIGHT:	35 FT

11. SOIL EVALUATION TEST PITS PERFORMED ON DECEMBER 19, 2021, FEBRUARY 11, 2022 AND JULY 27, 2023 BY MAINELY SOILS, LLC.
12. PROPOSED CLEARING NECESSARY FOR THE CONSTRUCTION OF THE SUBDIVISION ROAD AND ALL LOT DEVELOPMENT IS LIMITED TO CLEARING LIMITS SHOWN ON THIS PLAN, EXCEPT FOR THE REMOVAL OF ANY DEAD OR DISEASED TREES.
13. ALL LOTS IN THIS SUBDIVISION ARE REQUIRED TO PROVIDE ROOF DRIP EDGES FOR ALL PROPOSED DUPLEXES.
14. ANY FUTURE DEVELOPMENT OR CHANGES TO THIS SUBDIVISION PLAN WILL REQUIRE PLANNING BOARD APPROVAL AND WILL BE CONSIDERED AS AN AMENDMENT TO A MAJOR SUBDIVISION. THE PLANNING BOARD MAY REQUIRE ADDITIONAL PLANS & STUDIES PER 401.7.3-5 THAT WERE WAIVED OR NOT REQUIRED AS PART OF THIS SUBDIVISION APPROVAL.
15. THE 50' FOREST SCENIC BUFFER ALONG JENNY DRIVE IS TO REMAIN IN ITS CURRENT VEGETATIVE CONDITION EXCEPT FOR CLEARING REQUIRED FOR ACCESS DRIVE CONSTRUCTION AND THE REMOVAL OF ANY DEAD OR DISEASED TREES.
16. PROPOSED BUILDINGS ON ALL PROPOSED LOTS ARE INTENDED TO BE CONSTRUCTED WITH FIRE SPRINKLERS MEETING NFPA STANDARDS AND TOWN OF GRAY ORDINANCE 401.13.2.C FIRE PROTECTION STANDARDS.
17. ALL LOTS IN THE SUBDIVISION SHALL BE SERVED BY PRIVATE ON-SITE POTABLE WELLS, AND PRIVATE SUBSURFACE WASTEWATER DISPOSAL SYSTEMS AND UNDERGROUND ELECTRICAL, TELEPHONE AND CABLE SERVICES. PRIVATE ON-SITE POTABLE WELLS SHALL NOT BE CONSTRUCTED WITHIN 100 FEET OF THE TRAVELED WAY OF ANY STREET, IF LOCATED DOWNHILL FROM THE STREET, OR WITHIN 50 FEET OF THE TRAVELED WAY OF ANY STREET, IF LOCATED UPHILL OF THE STREET. WATER SUPPLIES SHALL MEET PRIMARY DRINKING WATER STANDARDS CONTAINED IN THE STAT OF MAINE RULES RELATING TO DRINKING WATER. WELL EXCLUSION ZONE SHOWN HEREON BASED ON APPROXIMATE SEPTIC DISPOSAL FIELD LOCATION AND TO BE VERIFIED BASED ON FINAL SEPTIC DESIGN.
18. HYDROGEOLOGIC ASSESSMENT AND PROPOSED HHE-200'S FOR THE PROPOSED SEPTIC LOCATIONS WERE PREPARED BY MARK CENCI GEOLOGIC, INC. ANALYSIS OF ONSITE SOILS BY CERTIFIED SOIL SCIENTIST PERFORMED BY MARK HAMPTON ASSOCIATES, INC.
19. ALL DRIVEWAY AND LOT DEVELOPMENT WORK SHALL PROVIDE FOR EROSION & SEDIMENTATION CONTROL BMPS IN ACCORDANCE WITH THE MAINE DEP HANDBOOK OF EROSION AND SEDIMENTATION CONTROL LATEST REVISION.
20. SUBDIVISION ROAD SHALL REMAIN PRIVATE ROADS TO BE MAINTAINED BY THE DEVELOPER OR THE LOT OWNERS AND SHALL NOT BE ACCEPTED OR MAINTAINED BY THE TOWN. PROPOSED ROAD SECTION DOES NOT MEET REQUIREMENTS FOR WINTER MAINTENANCE UNDER A PUBLIC EASEMENT. PROPOSED ROAD SECTION IS SHOWN ON DETAIL SHEET D-2 AND REQUIRES AN 18' PAVED SECTION WITH 1' GRAVEL SHOULDER ON EACH SIDE.

NET RESIDENTIAL DENSITY CALCULATIONS:

GROSS LAND AREA:	310,342± S.F.
100% DEDUCTIONS:	
a. STEEP SLOPES (25% OR GREATER)	6,291 S.F.
b. INACCESSIBLE LAND	0 S.F.
c. 100-YEAR FLOODPLAIN	0 S.F.
d. WATERBODIES	0 S.F.
e. NON-FORESTED OR IMPACTED WETLANDS	0 S.F.
f. LIQUIDATION HARVESTING	0 S.F.
g. SIGNIFICANT ROCK OUTCROP	0 S.F.
h. GRAVEL PIT	0 S.F.
i. POORLY DRAINED SOILS	0 S.F.
j. VERY POORLY DRAINED SOILS	0 S.F.
SUBTOTAL 100% DEDUCTION:	6,291 S.F.
50% DEDUCTIONS:	
a. SOMEWHAT POORLY DRAINED SOILS	0 S.F.
b. RESOURCE PROTECTION (UNDEVELOPED)	0 S.F.
c. FORESTED WETLANDS (UNDEVELOPED)	0 S.F.
d. SIGNIFICANT HABITAT	0 S.F.
SUBTOTAL 50% DEDUCTIONS:	0 S.F.
ACTUAL DEDUCTION:	0 S.F.
NET AREA SUBTOTAL:	304,050 S.F.
DEDUCT 10% FOR ROADS & RIGHT OF WAYS:	30,405 S.F.
TOTAL NET AREA:	273,645 S.F.
REQUIRED MIN. LOT AREA:	80,000 S.F.
MAXIMUM ALLOWABLE LOTS:	3.42
NUMBER OF LOTS PROPOSED:	3
REQUIRED MIN. AREA PER DWELLING:	40,000 SF
MAXIMUM ALLOWABLE DWELLING:	6.84
NUMBER OF LOTS PROPOSED:	6

LOT DEVELOPMENT TABLE:

LOT #	IMPERVIOUS LOT AREA (SQ. FT.)	DEVELOPED LOT AREA (SQ. FT.)
LOT 1	4,657	16,477
LOT 2	5,534	17,706
LOT 3	6,568	24,984

WAIVERS GRANTED:

TOWN OF GRAY PLANNING BOARD GRANTED THE FOLLOWING WAIVERS ON OCTOBER 16, 2023:

1. SECTION 401.13.18 C.: HIGH INTENSITY SOIL SURVEY.
2. SECTION 401.13.1.D STONE OR CONCRETE MONUMENTS AT ALL CORNERS.
3. SECTION 401.13.15.C.4 STREET LIGHT AT DEAD END.

CONDITIONS OF APPROVAL:

1. THE PROJECT SHALL BE CONSTRUCTED, OPERATED, AND MAINTAINED IN ACCORDANCE WITH THE PLANS, SUBMISSIONS AND TESTIMONY PRESENTED TO THE PLANNING BOARD BY THE APPLICANT AND ITS REPRESENTATIVES.
2. ALL PRIOR APPLICABLE STANDARDS AND CONDITIONS OF APPROVAL REMAIN IN EFFECT.
3. NO WELLS WILL BE LOCATED SHALL BE LOCATED WITHIN 100' OF ANY SEPTIC DISPOSAL FIELD AND CONTRACTOR TO VERIFY LOCATION OF ALL WELLS AND SEPTIC DISPOSAL AREA FOR COMPLIANCE WITH THIS STANDARD PRIOR TO INSTALLATION. SEE NOTE 17 FOR ADDITIONAL REQUIREMENTS.
4. THE APPLICANT SHALL PROVIDE EVIDENCE OF THE MDEP STORMWATER PBR PERMIT TO THE TOWN, PRIOR TO CODE ENFORCEMENT OFFICER ISSUING BUILDING PERMITS.
5. THE APPLICANT SHALL PROVIDE A SIGNED AGREEMENT OUTLINING THE RESPONSIBLE PARTIES, AND THE REQUIRED MAINTENANCE AND INSPECTION OF THE STORMWATER CONTROL FACILITIES.

APPROVED - TOWN OF GRAY PLANNING BOARD:

CHAIRPERSON _____ DATE _____

LEGEND

EXISTING	PROPOSED
PROPERTY LINE/R.O.W.	
ABUTTER PROPERTY LINE	
SETBACK	
EASEMENT LINE	
GRANITE MONUMENT	■
IRON PIN/DRILL HOLE	●
CENTERLINE	
BUILDING	
EDGE OF PAVEMENT/CURB	
EDGE OF GRAVEL	
STONEWALL	
SIGN	
200 CONTOUR LINE	201
TREELINE	
TEST PIT	
WELL	Ⓦ
UTILITY POLE	
OHU OVERHEAD UTILITIES	

GRID
0 20 40 80
GRAPHIC SCALE
1" = 40'

STATE OF MAINE
JAYSON R. HASKELL
23
[redacted]

DM ROMA
CONSULTING ENGINEERS
P.O. BOX 1116
WINDHAM, ME 04062
(207) 591-5055

REV	DATE	BY	DESCRIPTION
B	7-13-23	JPC	REVISED ROAD ALIGNMENT
C	8-4-23	JPC	ISSUED FOR TOWN PERMIT REVIEW
D	8-22-23	JPC	REVISED PER TOWN COMMENTS
E	9-21-23	JPC	REVISED PER TOWN COMMENTS
F	11-13-23	JPC	ISSUED FOR TOWN FINAL SUBDIVISION REVIEW
G	11-22-23	JPC	REVISED PER TOWN COMMENTS
H	12-4-23	JPC	REVISED PER TOWN COMMENTS

SECOND AMENDED SUBDIVISION PLAN

CAMBELL ACRES SUBDIVISION
CAMBELL SHORE ROAD/JENNY DRIVE/LIEUTENANTS DRIVE
GRAY, MAINE

FOR RECORD OWNER:
McDONNELL BROTHERS CUSTOM BUILDERS, LLC.
391 ROOSEVELT TRAIL
WINDHAM, MAINE 04062

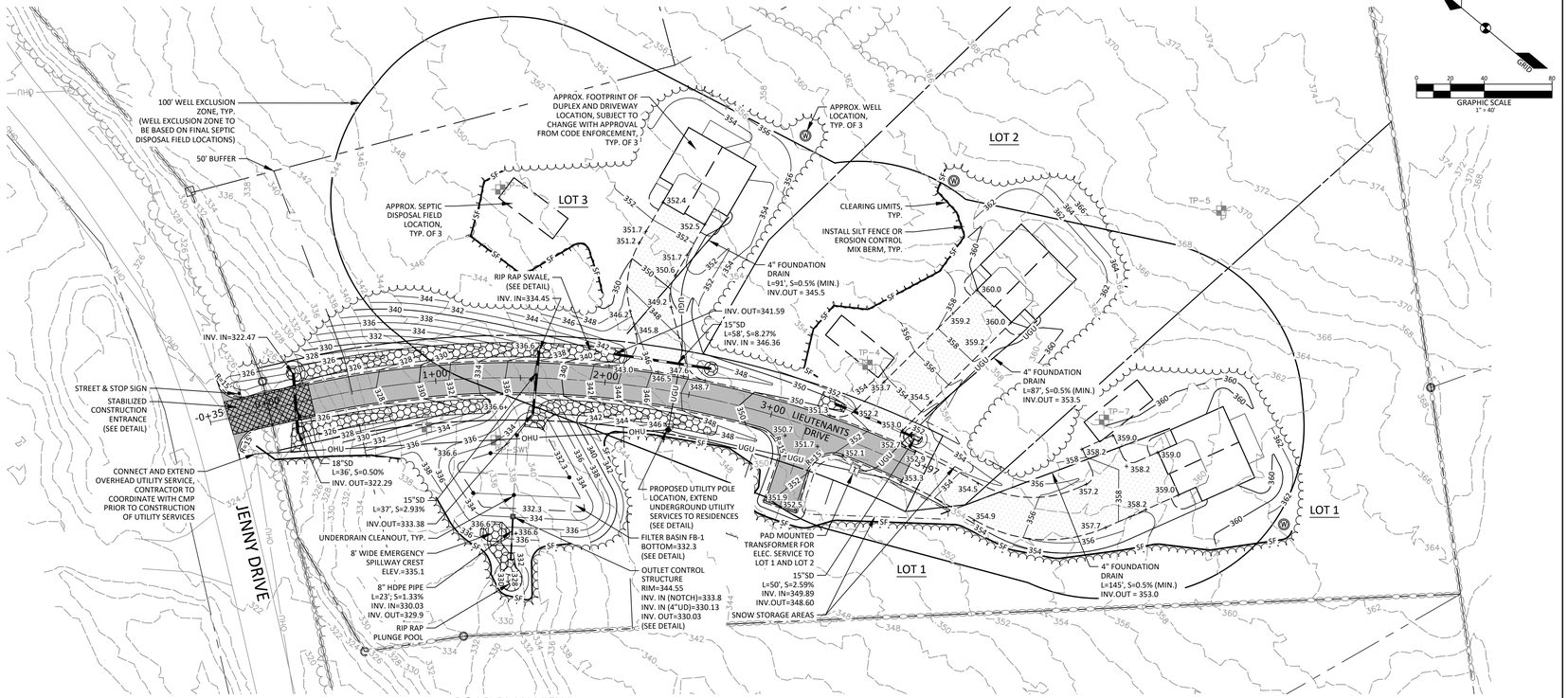
23015
JOB NUMBER:

1" = 40'
SCALE:

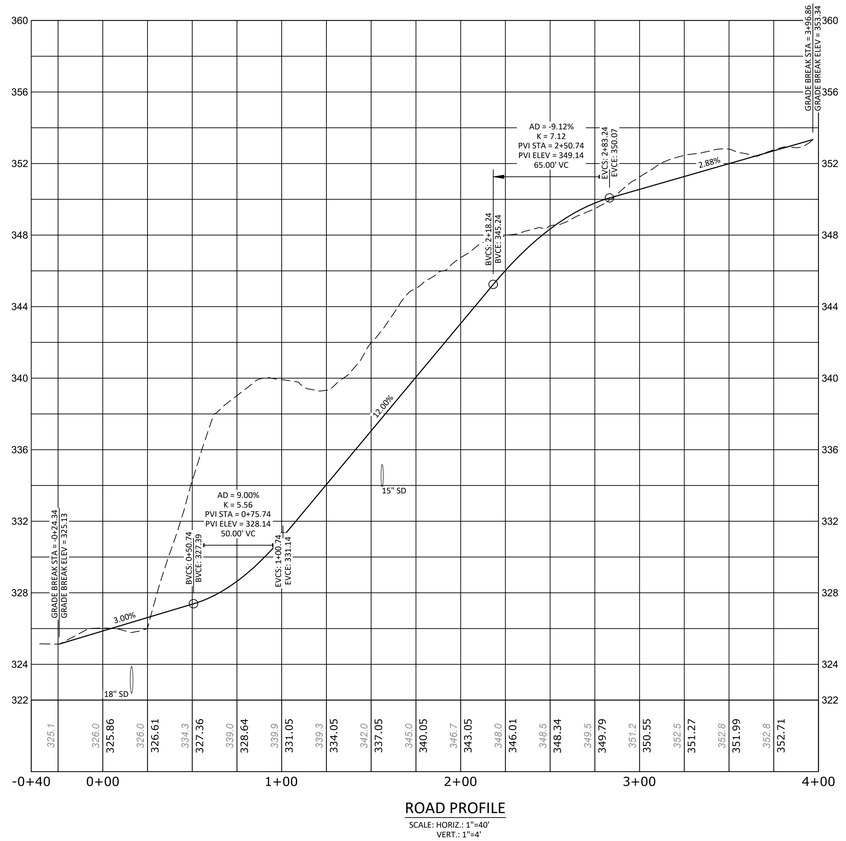
12-4-2023
DATE:

SHEET 3 OF 7

SASB-1



ROAD PLAN VIEW
SCALE: 1"=40'



ROAD PROFILE
SCALE: HORIZ.: 1"=40'
VERT.: 1"=4'

LEGEND

EXISTING		PROPOSED
PROPERTY LINE/R.O.W.		
ABUTTER PROPERTY LINE		
SETBACK		
EASEMENT LINE		
CENTERLINE		
BUILDING		
EDGE OF PAVEMENT/CURB		
EDGE OF GRAVEL		
STONEWALL		
SIGN		
-200- -201-	CONTOUR LINE	200 201
TREELINE		
TP-1	TEST PIT	
CULVERT/STORMDRAIN		
W	WELL	W
	UTILITY POLE	
OHU	OVERHEAD UTILITIES	OHU
UGU	UNDERGROUND UTILITIES	UGU
	TRANSFORMER PAD	T
	RIPRAP	
	SILT FENCE	SF

JAYSON R. HASKELL
STATE OF MAINE
23

DM ROMA
CONSULTING ENGINEERS
P.O. BOX 1116
WINDHAM, ME 04062
(207) 591-5055

REV	DATE	BY	DESCRIPTION
A	8-4-23	JPC	ISSUED FOR TOWN PERMIT REVIEW
B	8-10-23	JPC	REVISED PER TOWN COMMENTS
C	8-22-23	JPC	REVISED LOT 1 AND LOT 3 LAYOUT
D	9-21-23	JPC	REVISED PER TOWN COMMENTS
E	11-13-23	JPC	ISSUED FOR TOWN FINAL SUBDIVISION REVIEW
F	11-22-23	JPC	REVISED PER TOWN COMMENTS
G	12-4-23	JPC	REVISED PER TOWN COMMENTS

ROADWAY PLAN & PROFILE: LIEUTENANTS DRIVE

CAMBELL ACRES SUBDIVISION
CAMBELL SHORE ROAD/JENNY DRIVE/LIEUTENANTS DRIVE
GRAY, MAINE
FOR:
McDONNELL BROTHERS CUSTOM BUILDERS, LLC.
391 ROOSEVELT TRAIL
WINDHAM, MAINE, 04062

23015
JOB NUMBER:

1" = 40'
SCALE:

12-4-2023
DATE:

SHEET 4 OF 7

PP-1

EROSION AND SEDIMENTATION CONTROL NOTES:

EXCAVATION AND EARTHWORK SHALL BE COMPLETED SUCH THAT NO MORE THAN 1 ACRE OF THE SITE IS WITHOUT STABILIZATION AT ANY ONE TIME. LIMIT THE EXPOSED AREA TO THOSE AREAS IN WHICH WORK IS TO OCCUR DURING THE FOLLOWING 15 DAYS AND THAT CAN BE MULCHED IN ONE DAY.

IN ORDER TO EFFECTIVELY PREVENT AND CONTROL EROSION RELATED TO SOIL DISTURBANCE, THE FOLLOWING BEST MANAGEMENT PRACTICES (BMPS) SHALL BE EMPLOYED:

1. POLLUTION PREVENTION

MINIMIZE DISTURBED AREAS AND PROTECT NATURAL DOWNGRADIENT BUFFER AREAS TO THE EXTENT PRACTICABLE. CONTROL STORMWATER VOLUME AND VELOCITY WITHIN THE SITE TO MINIMIZE SOIL EROSION. MINIMIZE THE DISTURBANCE OF STEEP SLOPES. CONTROL STORMWATER DISCHARGES, INCLUDING BOTH PEAK FLOW RATES AND VOLUME, TO MINIMIZE EROSION AT OUTLETS. THE DISCHARGE MAY NOT RESULT IN EROSION OF ANY OPEN DRAINAGE CHANNELS, SWALES, STREAM CHANNELS OR STREAM BANKS, UPLAND, OR COASTAL OR FRESHWATER WETLANDS OFF THE PROJECT SITE.

WHENEVER PRACTICABLE, NO DISTURBANCE ACTIVITIES SHOULD TAKE PLACE WITHIN 50 FEET OF ANY PROTECTED NATURAL RESOURCE. IF DISTURBANCE ACTIVITIES TAKE PLACE BETWEEN 30 FEET AND 50 FEET OF ANY PROTECTED NATURAL RESOURCE, AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TOWARD THE PROTECTED NATURAL RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED. IF DISTURBANCE ACTIVITIES TAKE PLACE LESS THAN 30 FEET FROM ANY PROTECTED NATURAL RESOURCE, AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TOWARD THE PROTECTED NATURAL RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED AND DISTURBED AREAS MUST BE TEMPORARILY OR PERMANENTLY STABILIZED WITHIN 7 DAYS.

2. TEMPORARY SOIL STABILIZATION BMPS

TEMPORARY MULCHING SHALL BE APPLIED IMMEDIATELY TO ANY AREAS THAT HAVE BEEN TEMPORARILY OR PERMANENTLY SEEDED. ANY DISTURBED SOIL WITHIN 75' OF A STREAM, WATER BODY OR WETLAND MUST RECEIVE TEMPORARY MULCH WITHIN 48 HOURS FOLLOWING DISTURBANCE AND BEFORE ANY STORM EVENT. ALL OTHER AREAS SHALL RECEIVE TEMPORARY MULCH WITHIN 7 DAYS OF DISTURBANCE. AREAS WHICH CANNOT BE SEEDED DURING THE GROWING SEASON SHALL BE MULCHED FOR OVER-WINTER PROTECTION. THE FOLLOWING ARE ACCEPTABLE TEMPORARY MULCHING METHODS:

HAY OR STRAW MULCHES NEED TO BE AIR-DRIED, FREE OF UNDESIRABLE SEEDS AND COARSE MATERIALS. APPLICATION RATE MUST BE 2 BALES (70-90 POUNDS) PER 1000 SQ FT OR 1.5 TO 2 TONS (90-100 BALES) PER ACRE TO COVER 75-90% OF THE GROUND SURFACE. HAY OR STRAW CAN BE DRIVEN INTO THE GROUND WITH TRACKED EQUIPMENT IF SLOPES ARE LESS THAN 3%, OR CAN BE ANCHORED WITH JUTE, WOOD FIBER OR PLASTIC NETTING ON STEEPER SLOPES.

EROSION CONTROL MIX MUST CONSIST PRIMARILY OF ORGANIC MATERIAL AND WILL INCLUDE ANY OF THE FOLLOWING: SHREDDED BARK, STUMP GRINDINGS, COMPOSTED BARK OR OTHER ACCEPTABLE PRODUCTS BASED ON A SIMILAR RAW SOURCE. WOOD OR BARK CHIPS, GROUND CONSTRUCTION DEBRIS OR REPROCESSED WOOD PRODUCTS ARE NOT ACCEPTABLE. EROSION CONTROL MIX CAN BE USED AS A STAND-ALONE REINFORCEMENT ON SLOPES OF 2 HORIZONTAL TO 1 VERTICAL OR LESS AND DRAINING IN SHEET FLOW. IT CAN BE PLACED WITH A HYDRAULIC BUCKET, WITH A PNEUMATIC BLOWER OR BY HAND, AND MUST PROVIDE 100% SOIL COVERAGE.

EROSION CONTROL MIX SHALL MEET THE FOLLOWING SPECIFICATIONS:
- -ORGANIC MATTER CONTENT SHALL BE BETWEEN 50-100%, DRY WEIGHT BASIS.
- -MINERAL PORTION OF THE MIX SHOULD BE NATURALLY INCLUDED IN THE MIX WITH NO LARGER ROCKS (>4")
- -ORGANIC PORTION NEEDS TO BE FIBROUS AND ELONGATED
- -LARGE PORTIONS OF SILTS, CLAYS OR FINE SANDS ARE NOT ACCEPTABLE IN THE MIX
- -IN STUMP GRINDING, THE MINERAL SOIL ORIGINATES FROM THE ROOT BALL AND SHOULD NOT BE REMOVED BEFORE GRINDING
- -THE MIX SHOULD BE FREE OF REFUSE, MATERIAL TOXIC TO PLANT GROWTH OR UNSUITABLE MATERIAL (BARK CHIPS, GROUND CONSTRUCTION DEBRIS OR REPROCESSED WOOD PRODUCTS

WHEN USED AS MULCH, THE THICKNESS OF THE EROSION CONTROL MIX IS BASED UPON THE FOLLOWING:

LENGTH OF SLOPE	3:1 SLOPE OR LESS	BETWEEN 2:1 AND 3:1 SLOPE
LESS THAN 20 FT	2.0 IN.	4.0 IN.
BETWEEN 20 - 60 FT	3.0 IN.	5.0 IN.
BETWEEN 60 - 100 FT	4.0 IN.	6.0 IN.

CHEMICAL MULCHES AND SOIL BINDERS MAY BE USED AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL CONSULT WITH THE MANUFACTURER TO DETERMINE ADEQUATE APPLICATION RATES AND METHODS.

TEMPORARY MULCH SHALL BE INSPECTED FOLLOWING ANY SIGNIFICANT RAINFALL EVENT (GREATER THAN 0.5 INCH RAINFALL, TYP.). IF LESS THAN 90% OF THE SOIL SURFACE IS COVERED BY MULCH, ADDITIONAL MULCH SHALL BE IMMEDIATELY APPLIED. EROSION CONTROL MATS AND MULCH ANCHORING MUST BE INSPECTED AFTER RAINFALL EVENTS FOR DISLOCATION OR FAILURE, AND REPAIRED IMMEDIATELY. INSPECTIONS SHALL TAKE PLACE UNTIL 95% OF THE SOIL SURFACE IS COVERED WITH PERMANENT VEGETATION. WHERE MULCH IS USED WITH ORNAMENTAL PLANTINGS, INSPECT PERIODICALLY THROUGHOUT THE YEAR TO DETERMINE IF MULCH IS MAINTAINING COVERAGE OF THE SOIL SURFACE, AND REPAIR AS NEEDED.

TEMPORARY VEGETATION SHALL BE ESTABLISHED ON SOILS THAT WILL NOT BE BROUGHT TO FINAL GRADE FOR A PERIOD OF MORE THAN 30 DAYS. IF TEMPORARY VEGETATION CANNOT BE ESTABLISHED PRIOR TO OCTOBER 15, TEMPORARY MULCH SHALL BE APPLIED THROUGH THE WINTER AND TEMPORARY VEGETATION SHALL BE PLANTED AT THE BEGINNING OF THE GROWING SEASON THE FOLLOWING YEAR. TO PREPARE THE SEEDBED, THE CONTRACTOR SHALL APPLY FERTILIZER AT A RATE OF 600 POUNDS PER ACRE OF 10-10-10 (N-P205-K20) OR EQUIVALENT AND LIMESTONE AT A RATE OF 3 TONS PER ACRE, IF NECESSARY. LOOSEN SOIL TO A DEPTH OF 2 INCHES IN AREAS THAT HAVE BEEN COMPACTED BY CONSTRUCTION ACTIVITIES. GRASS SEED SHALL BE SELECTED BASED UPON THE TIME OF YEAR THE PLANTING WILL TAKE PLACE AS SUMMARIZED IN THE FOLLOWING TABLE:

SEED	LB. PER ACRE	RECOMMENDED SEEDING DATES
WINTER RYE	112	8/15 - 10/1
OATS	80	4/1 - 7/1 8/15 - 9/15
ANNUAL RYEGRASS	40	4/1 - 7/1

TEMPORARY SEEDING SHALL BE PERIODICALLY INSPECTED TO MAINTAIN AT LEAST 95% VEGETATIVE COVER OF SOIL SURFACE. IF ANY EVIDENCE OF EROSION OR SEDIMENTATION IS APPARENT, REPAIRS SHALL BE MADE AND OTHER TEMPORARY MEASURES SHALL BE USED IN THE INTERIM SUCH AS TEMPORARY MULCH, FILTER BARRIERS, ETC.

3. SEDIMENT BARRIER BMPS

PRIOR TO CONSTRUCTION TEMPORARY SEDIMENT BARRIERS SHALL BE INSTALLED AT THE DOWNGRADIENT EDGE OF ANY AREA TO BE DISTURBED AND ADJACENT TO ANY DRAINAGE CHANNELS WITHIN THE DISTURBED AREA . SEDIMENT BARRIERS INCLUDE ANY OF THE FOLLOWING:

FILTER BARRIER FENCE, ALSO CALLED SILT FENCE, SHALL BE INSTALLED WHERE SHOWN ON THE PLANS AND IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS. THE FILTER FABRIC SHALL BE A PERVIOUS SHEET OF PROPYLENE, NYLON, POLYESTER OR ETHYLENE YARN AND SHALL PROVIDE A MINIMUM OF 6 MONTHS USABLE CONSTRUCTION LIFE INCLUDING PROTECTION AGAINST ULTRA-VIOLET LIGHT. THE HEIGHT OF THE FENCE SHALL NOT EXCEED 36 INCHES INSTALLED AND POST SPACING SHALL NOT EXCEED 6 FEET. JOINTS IN THE FENCE SHALL BE AVOIDED TO THE EXTENT POSSIBLE, AND IF NECESSARY SHALL BE SPLICED TOGETHER AT A SUPPORT POST WITH A MINIMUM 6 INCH OVERLAP. A TRENCH SHALL BE EXCAVATED APPROXIMATELY 6 INCHES WIDE AND 6 INCHES DEEP, AND THE BOTTOM 8 INCHES OF FABRIC SHALL BE "TOED-IN" TO THE TRENCH AND COMPACTED. THE TRENCH SHOULD BE UPHILL OF THE FABRIC PRIOR TO BURIAL.

EROSION CONTROL MIX BERMS ARE LINEAR BARRIERS COMPOSED OF EROSION CONTROL MIX AS SPECIFIED ABOVE. THE BERM MUST BE A MINIMUM OF 12 INCHES TALL AND 24 INCHES WIDE AT THE BASE IF UPHILL SLOPES ARE LESS THAN 5%. STEEPER SLOPES OR SLOPES GREATER THAN 20 FEET LONG MAY REQUIRE A LARGER WIDTH BERM. EROSION CONTROL MIX BERMS SHALL BE PROHIBITED AT THE BASE OF A LONG OR STEEP SLOPE (6% OR GREATER) WITHOUT THE ADDITIONAL SUPPORT OF A FILTER FENCE INSTALLED ON THE DOWNHILL SIDE OF THE BERM.

SEDIMENT BARRIERS SHOULD BE INSTALLED DOWNGRADIENT OF SOIL OR SEDIMENT STOCKPILES AND STORMWATER SHOULD BE PREVENTED FROM RUNNING ONTO THE STOCKPILE. SEDIMENT BARRIERS SHALL BE INSPECTED AFTER ANY SIGNIFICANT RAINFALL EVENT (GREATER THAN 0.5 INCH RAINFALL) AND REPAIRED IMMEDIATELY IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BELOW THE BARRIERS. IF THERE ARE SIGNS OF UNDERCUTTING AT THE CENTER OR EDGES OF THE BARRIER, OR IF LARGE VOLUMES OF WATER ARE IMPOUNDED BEHIND THE BARRIER, IT MAY BE NECESSARY TO REPLACE THE BARRIER WITH A TEMPORARY STONE CHECK DAM. SEDIMENT SHALL BE REMOVED ONCE IT REACHES HALF THE BARRIER HEIGHT. AFTER THE BARRIER IS REMOVED, ANY REMAINING SILT SHALL EITHER BE REMOVED OR GRADED TO CONFORM WITH THE EXISTING TOPOGRAPHY AND VEGETATED.

TEMPORARY EROSION CONTROL MEASURES ARE REMOVED ONCE THE SITE IS PERMANENTLY STABILIZED AND CONSTRUCTION ACTIVITY HAS BEEN COMPLETED.

4. STORM DRAIN INLET PROTECTION

STORM DRAIN INLETS THAT ARE MADE OPERATIONAL BEFORE THEIR DRAINAGE AREA IS STABILIZED SHALL BE PROTECTED WITH A FILTER UNTIL THE DRAINAGE AREA IS EITHER PAVED OR STABILIZED WITH 95% VEGETATIVE GROWTH. THE FOLLOWING ARE ACCEPTABLE BMPS ASSOCIATED WITH STORM DRAIN INLET PROTECTION:

MANUFACTURED SEDIMENT FILTERS ARE THE PREFERRED METHOD FOR PROTECTING CATCH BASIN INLETS IN PAVED OR GRAVEL ROADWAYS. THE FILTERS TYPICALLY CONSIST OF A FABRIC OR OTHER PERVIOUS MATERIAL THAT IS PLACED ABOVE OR BELOW THE GRATE THAT TRAPS SEDIMENT ON THE SURFACE AND ALLOWS WATER TO FLOW THROUGH THE GRATE. CONSIDERATIONS SUCH AS WEATHER CONDITIONS, SLOPES, TRIBUTARY WATERSHED AREA AND EXPECTED SEDIMENT ACCUMULATION SHOULD BE FACTORED INTO MAKING A DECISION ON ANY PARTICULAR PRODUCT, AND THE MANUFACTURER'S RECOMMENDATIONS ON INSTALLATION AND MAINTENANCE SHALL BE STRICTLY ADHERED TO.

5. STABILIZED CONSTRUCTION ENTRANCE/EXIT

TO REDUCE THE TRACKING OF SEDIMENT ONTO ROADWAYS, A STABILIZED CONSTRUCTION EXIT SHALL BE INSTALLED AT ALL POINTS OF EGRESS WHERE VEHICLES MAY TRAVEL FROM THE PROJECT SITE TO A PUBLIC ROAD OR OTHER PAVED AREA. THE STONE PAD SHALL CONSIST OF A MINIMUM 6-INCH DEPTH OF 2-3 INCH CRUSHED STONE, AND SHALL BE PLACED ON A GEOTEXTILE FABRIC. THE PAD SHALL EXTEND AT LEAST 50 FEET INTO THE PROJECT SITE AND BE A MINIMUM OF 10 FEET WIDE. THE PAD SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, AND THE CONTRACTOR SHALL SWEEP PAVEMENT AT EXITS THAT HAVE EXPERIENCED ANY MUD-TRACKING PRIOR TO THE NEXT STORM EVENT. MAINTAIN THE PAD UNTIL ALL DISTURBED AREAS ARE STABILIZED.

6. DUST CONTROL

THE CONTRACTOR IS RESPONSIBLE FOR CONTROLLING DUST ON THE PROJECT SITE AND ON ADJACENT ROADWAYS. EXPOSED SOIL SURFACES SHALL BE MOISTENED PERIODICALLY WITH ADEQUATE WATER TO CONTROL DUST. GRAVEL SURFACES SHALL EITHER BE TREATED WITH AN APPLICATION OF CALCIUM CHLORIDE OR COVERED WITH CRUSHED STONE IF DUST CONTROL BECOMES DIFFICULT WITH NORMAL WATER APPLICATIONS.

7. LAND GRADING AND SLOPE PREPARATION

GRADING SHALL BE PLANNED SO AS TO MINIMIZE THE LENGTH OF TIME BETWEEN INITIAL SOIL EXPOSURE AND FINAL GRADING. ON LARGE PROJECTS THIS SHOULD BE ACCOMPLISHED BY PHASING THE OPERATION AND COMPLETING THE FIRST PHASE UP TO FINAL GRADING AND SEEDING BEFORE STARTING THE NEXT PHASE. ANY EXPOSED AREA THAT WILL NOT BE FINISH GRADED WITHIN 7 DAYS SHALL BE TREATED WITH MULCH OR PLANTED WITH TEMPORARY VEGETATION. PROVISIONS SHALL BE MADE TO SAFELY CONVEY SURFACE RUNOFF TO STORM DRAINS, PROTECTED OUTLETS OR TO STABLE WATER COURSES TO ENSURE THAT SURFACE RUNOFF WILL NOT DAMAGE SLOPES OR OTHER GRADED AREAS. CUT AND FILL SLOPES THAT ARE TO BE STABILIZED WITH GRASS SHALL NOT BE STEEPER THAN 2:1. AREAS TO BE FILLED SHALL BE CLEARED, GRUBBED AND STRIPPED OF TOPSOIL TO REMOVE TREES, VEGETATION, ROOTS OR OTHER OBJECTIONABLE MATERIALS. AREAS SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 3 INCHES PRIOR TO PLACEMENT OF TOPSOIL. ALL FILLS SHALL BE COMPACTED AS REQUIRED TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, SUBSIDENCE OR OTHER RELATED PROBLEMS. FILL INTENDED TO SUPPORT BUILDINGS, STRUCTURES AND CONDUITS, ETC. SHALL BE COMPACTED IN ACCORDANCE WITH LOCAL REQUIREMENTS OR CODES. ALL FILLS SHALL BE PLACED AND COMPACTED IN LAYERS NOT TO EXCEED 8 INCHES IN THICKNESS. FILL MATERIAL SHALL BE FREE OF STUMPS, BUILDING DEBRIS AND OTHER OBJECTIONABLE MATERIALS THAT WOULD INTERFERE WITH OR PREVENT CONSTRUCTION OF SATISFACTORY LIFTS. FROZEN MATERIAL OR SOFT, MUCKY OR HIGHLY COMPRESSIBLE MATERIALS SHALL NOT BE INCORPORATED INTO FILL SLOPES OR STRUCTURAL FILLS. FILL SHALL NOT BE PLACED ON A FROZEN FOUNDATION. SEEPS OR SPRINGS ENCOUNTERED DURING CONSTRUCTION SHALL BE HANDLED APPROPRIATELY. ALL GRADED AREAS SHALL BE PERMANENTLY STABILIZED IMMEDIATELY FOLLOWING FINISHED GRADING.

8. TOPSOIL

IF POSSIBLE, TOPSOIL SHALL BE STOCKPILED ON THE PROJECT SITE AND REUSED. HIGH QUALITY TOPSOIL SHALL BE FRIABLE AND LOAMY (LOAM, SANDY LOAM, SILT LOAM, SANDY CLAY LOAM, CLAY LOAM), AND SHALL BE FREE OF DEBRIS, TRASH, STUMPS, ROCKS, ROOTS AND NOXIOUS WEEDS. AFTER THE AREAS TO BE TOPSOILED HAVE BEEN BROUGHT TO GRADE, AND IMMEDIATELY PRIOR TO SPREADING THE TOPSOIL, THE SUBGRADE SHALL BE LOOSENED BY SCARIFYING TO A DEPTH OF AT LEAST 2 INCHES TO ENSURE BONDING WITH SUBSOIL. THE TOPSOIL SHALL BE UNIFORMLY DISTRIBUTED TO A MINIMUM COMPACTED DEPTH OF 4 INCHES. ANY IRREGULARITIES IN THE SURFACE RESULTING FROM TOPSOILING OR OTHER OPERATIONS SHALL BE CORRECTED IN ORDER TO PREVENT THE FORMATION OF DEPRESSIONS OR WATER POCKETS. IT IS NECESSARY TO COMPACT THE TOPSOIL ENOUGH TO ENSURE GOOD CONTACT WITH THE UNDERLYING SOIL, BUT UNDUE COMPACTION IS TO BE AVOIDED.

9. PERMANENT SOIL STABILIZATION

IF THE AREA WILL NOT BE WORKED FOR MORE THAN ONE YEAR OR HAS BEEN BROUGHT TO FINAL GRADE, THEN PERMANENTLY STABILIZE THE AREA WITHIN 7 DAYS BY PLANTING VEGETATION, SEEDING, SOD, OR THROUGH THE USE OF PERMANENT MULCH, OR RIPRAP, OR ROAD SUB-BASE. IF USING VEGETATION FOR STABILIZATION, SELECT THE PROPER VEGETATION FOR THE LIGHT, MOISTURE, AND SOIL CONDITIONS; AMEND AREAS OF DISTURBED SUBSOILS WITH TOPSOIL, COMPOST, OR FERTILIZERS; PROTECT SEEDED AREAS WITH MULCH OR, IF NECESSARY, EROSION CONTROL BLANKETS; AND SCHEDULE SODDING, PLANTING, AND SEEDING SO TO AVOID DIE-OFF FROM SUMMER DROUGHT AND FALL FROSTS. NEWLY SEEDED OR SODDED AREAS MUST BE PROTECTED FROM VEHICLE TRAFFIC, EXCESSIVE PEDESTRIAN TRAFFIC, AND CONCENTRATED RUNOFF UNTIL THE VEGETATION IS WELL-ESTABLISHED WITH 90% COVER BY HEALTHY VEGETATION. IF NECESSARY, AREAS MUST BE REWORKED AND RESTABILIZED IF GERMINATION IS SPARSE, PLANT COVERAGE IS SPOTTY, OR TOPSOIL EROSION IS EVIDENT. ONE OR MORE OF THE FOLLOWING MAY APPLY TO A PARTICULAR SITE.

SEEDED AREAS: TO PREPARE THE SEEDBED, APPLY 10-20-20 FERTILIZER AT A RATE OF 800 POUNDS PER ACRE AND GROUND LIMESTONE AT A RATE OF 3 TONS PER ACRE. WORK THE FERTILIZER AND LIMESTONE INTO THE TOPSOIL TO A DEPTH OF 4 INCHES AND REMOVE ANY STONES, ROOTS OR OTHER VISIBLE DEBRIS. SELECT A SEED MIXTURE THAT IS APPROPRIATE FOR THE SOIL TYPE AND MOISTURE CONTENT AS FOUND AT THE SITE, AND FOR THE AMOUNT OF SUN EXPOSURE AND FOR LEVEL OF USE. REFER TO THE USDA SOIL CONSERVATION SERVICE OR THE LOCAL SOIL AND WATER CONSERVATION DISTRICT FOR APPROPRIATE SEED MIXTURES. APPLY SEED UNIFORMLY IN ACCORDANCE WITH SUPPLIER RECOMMENDATIONS AND IMMEDIATELY COVER WITH MULCH AS DESCRIBED IN THE TEMPORARY MULCHING SECTION OF THIS PLAN.

HYDROSEEDING SHALL BE DONE IN ACCORDANCE WITH SUPPLIERS RECOMMENDATIONS. FOR SEEDED AREAS TO BE PERMANENTLY STABILIZED, 90% OF THE DISTURBED SOIL SHALL BE COVERED WITH MATURE HEALTHY PLANTS WITH NO EVIDENCE OF WASHING OR RILLING OF THE TOPSOIL.

SOD STRIPS SHALL BE LAID AT RIGHT ANGLES TO DIRECTION OF SLOPE OR FLOW OF WATER STARTING AT LOWEST ELEVATION. JOINTS SHALL BE STAGGERED, AND ALL STRIPS SHALL BE ROLLED OR TAMPED INTO PLACE. ON SLOPES, SOD SHALL BE ANCHORED WITH STAPLES, WIRE OR PINS. IRRIGATE SODDED AREA IMMEDIATELY AFTER INSTALLATION. FOR SODDED AREAS TO BE PERMANENTLY STABILIZED, THE ROOTS OF THE SOD MUST BE COMPLETELY BOUND INTO THE UNDERLYING SOIL WITH NO SLUMPING OF THE SOD OR DIE-OFF.

PERMANENT MULCH IS A LONG TERM COVER THAT PROVIDES A GOOD BUFFER AROUND DISTURBED AREAS. THE EROSION CONTROL MIX SHALL CONSIST PRIMARILY OF ORGANIC MATERIAL AND MAY INCLUDE SHREDDED BARK, STUMP GRINDINGS OR COMPOSTED BARK. WOOD CHIPS, GROUND CONSTRUCTION DEBRIS, REPROCESSED WOOD PRODUCTS OR BARK CHIPS ARE NOT ACCEPTABLE. THE EROSION CONTROL MIX SHALL CONTAIN A WELL-GRADED MIXTURE OF PARTICLE SIZES AND MAY CONTAIN ROCKS LESS THAN 4 INCHES IN DIAMETER. EROSION CONTROL MIX MUST BE FREE OF REFUSE, PHYSICAL CONTAMINANTS AND MATERIAL TOXIC TO PLANT GROWTH.

RIPRAP STONE SHALL CONSIST OF SUB-ANGULAR FIELD STONE OR ROUGH UNEVEN QUARRY STONE OF APPROXIMATELY RECTANGULAR SHAPE. THE DEPTH OF STONE SHALL BE A MINIMUM OF 2.2 TIMES THE MAXIMUM STONE DIAMETER. A GRAVEL OR GEOTEXTILE FILTER BLANKET SHALL BE PLACED BETWEEN THE RIPRAP AND UNDERLYING SOIL SURFACE. GRAVEL FILTER BLANKETS SHALL MEET MDOT TYPE-C UNDERDRAIN MATERIAL SPECIFICATIONS AND BE AT LEAST 6 INCHES THICK. GEOTEXTILE FILTER BLANKETS SHALL BE SPECIFIED BASED ON SITE CONDITIONS. RIPRAP SLOPES SHALL BE TOED INTO THE BASE OF THE EMBANKMENT BY EXCAVATING A TRENCH AT THE BOTTOM OF THE SLOPE AND INSTALLING A STABLE BASE OF RIPRAP TO GRADE.

DITCHES, CHANNELS AND SWALES ARE CONSIDERED PERMANENTLY STABILIZED WHEN THE CHANNEL HAS 90% COVER OF HEALTHY VEGETATION WITH A WELL GRADED RIPRAP LINING, EROSION CONTROL BLANKET, OR WITH ANOTHER NON-EROSIVE LINING SUCH AS CONCRETE OR ASPHALT PAVEMENT. THERE MUST BE NO EVIDENCE OF SLUMPING OF THE CHANNEL LINING, UNDERCUTTING OF THE BANKS, OR DOWNCUTTING OF THE CHANNEL.

10. STORMWATER CHANNELS

EACH CHANNEL SHOULD BE CONSTRUCTED IN SECTIONS SO THAT THE SECTION'S GRADING, SHAPING, AND INSTALLATION OF THE PERMANENT LINING CAN BE COMPLETED THE SAME DAY. IF A CHANNEL'S FINAL GRADING OR LINING INSTALLATION MUST BE DELAYED, THEN DIVERSION BERMS MUST BE USED TO DIVERT STORMWATER AWAY FROM THE CHANNEL. PROPERLY-SPACED CHECK DAMS MUST BE INSTALLED IN THE CHANNEL TO SLOW THE WATER VELOCITY, AND A TEMPORARY LINING INSTALLED ALONG THE CHANNEL TO PREVENT SCOURING.

WINTER EROSION AND SEDIMENTATION CONTROL NOTES:

THE WINTER CONSTRUCTION PERIOD TYPICALLY BEGINS IN EARLY NOVEMBER AND ENDS IN MID APRIL. IF A CONSTRUCTION SITE IS NOT STABILIZED WITH PAVEMENT, A ROAD GRAVEL BASE OR RIPRAP BY NOVEMBER 15 THEN THE SITE NEEDS TO BE PROTECTED WITH OVER-WINTER STABILIZATION. WINTER EXCAVATION AND EARTHWORK SHALL BE COMPLETED SUCH THAT NO MORE THAN 1 ACRE OF THE SITE IS WITHOUT STABILIZATION AT ANY ONE TIME. LIMIT THE EXPOSED AREA TO THOSE AREAS IN WHICH WORK IS TO OCCUR DURING THE FOLLOWING 15 DAYS AND THAT CAN BE MULCHED IN ONE DAY PRIOR TO ANY SNOW EVENT. AN AREA SHALL BE CONSIDERED DENUDED UNTIL THE SUBBASE GRAVEL IS INSTALLED IN THE ROADWAY AREAS OR THE AREAS OF FUTURE LOAM AND SEED HAVE BEEN LOAMED, SEEDED AND MULCHED. A COVER OF EROSION CONTROL MIX IS THE PREFERRED TEMPORARY MULCH DURING WINTER CONDITIONS.

1. NATURAL RESOURCE PROTECTION

ANY AREAS WITHIN 75 FEET FROM ANY REGULATED NATURAL RESOURCES SHALL BE MULCHED BY DECEMBER 1 AND ANCHORED WITH PLASTIC NETTING OR PROTECTED WITH AN EROSION CONTROL COVER. DURING WINTER CONSTRUCTION, A DOUBLE ROW OF SEDIMENT BARRIERS (FOR EXAMPLE, SILT FENCE BACKED WITH HAY BALES OR EROSION CONTROL MIX) WILL BE PLACED BETWEEN ANY REGULATED NATURAL RESOURCE AND THE DISTURBED AREA. PROJECTS CROSSING THE REGULATED NATURAL RESOURCE SHALL BE PROTECTED A MINIMUM DISTANCE OF 100 FEET ON EITHER SIDE FROM THE RESOURCE. EXISTING PROJECTS NOT STABILIZED BY DECEMBER 1 SHALL BE PROTECTED WITH THE SECOND LINE OF SEDIMENT BARRIER TO ENSURE FUNCTIONALITY DURING THE SPRING THAW AND RAINS.

2. SEDIMENT BARRIERS

DURING FROZEN CONDITIONS, SEDIMENT BARRIERS MAY CONSIST OF EROSION CONTROL MIX BERMS OR ANY OTHER RECOGNIZED SEDIMENT BARRIERS AS FROZEN SOIL PREVENTS THE PROPER INSTALLATION OF HAY BALES OR SILT FENCES.

3. MULCHING

ALL AREAS SHALL BE CONSIDERED TO BE DENUDED UNTIL SEEDED AND MULCHED. HAY AND STRAW MULCH SHALL BE APPLIED AT A RATE OF 3 TONS PER ACRE (TWICE THE NORMAL ACCEPTED RATE) AND SHALL BE PROPERLY ANCHORED. EROSION CONTROL MIX MUST BE APPLIED WITH A MINIMUM 4 INCHES THICKNESS. MULCH SHALL NOT BE SPREAD ON TOP OF SNOW. SNOW MUST BE REMOVED DOWN TO A ONE-INCH DEPTH PRIOR TO APPLICATION. AFTER EACH DAY OF FINAL GRADING, THE AREA WILL BE PROPERTY STABILIZED WITH ANCHORED HAY OR STRAW OR EROSION CONTROL MATTING. AN AREA SHALL BE CONSIDERED TO HAVE BEEN STABILIZED WHEN EXPOSED SURFACES HAVE BEEN EITHER MULCHED OR ADEQUATELY ANCHORED SO THAT GROUND SURFACE IS NOT VISIBLE THROUGH THE MULCH. BETWEEN THE DATES OF NOVEMBER 1 AND APRIL 15, ALL MULCH SHALL BE ANCHORED BY EITHER MULCH NETTING, TRACKING OR WOOD CELLULOSE FIBER. THE COVER WILL BE CONSIDERED SUFFICIENT WITH THE GROUND SURFACE IS NOT VISIBLE THROUGH THE MULCH. AFTER NOVEMBER 1ST, MULCH AND ANCHORING OF ALL EXPOSED SOIL SHALL OCCUR AT THE END OF EACH FINAL GRADING WORKDAY.

4. SOIL STOCKPILING

STOCKPILES OF SOIL OR SUBSOIL WILL BE MULCHED FOR OVER WINTER PROTECTION WITH HAY OR STRAW AT TWICE THE NORMAL RATE OR WITH A FOUR-INCH LAYER OF EROSION CONTROL MIX. THIS WILL BE DONE WITHIN 24 HOURS OF STACKING AND RE-ESTABLISHED PRIOR TO ANY RAINFALL (0.5 INCH RAINFALL OR GREATER) OR SNOWFALL. SEDIMENT BARRIERS SHOULD BE INSTALLED DOWNGRADIENT OF SOIL OR SEDIMENT STOCKPILES AND STORMWATER SHOULD BE PREVENTED FROM RUNNING ONTO THE STOCKPILE. ANY SOIL STOCKPILE WILL NOT BE PLACED WITHIN 100 FEET FROM ANY REGULATED NATURAL RESOURCE.

5. SEEDING

BETWEEN THE DATES OF OCTOBER 15 AND APRIL 1, LOAM OR SEED WILL NOT BE REQUIRED. DURING PERIODS OF ABOVE FREEZING TEMPERATURES FINISHED AREAS SHALL BE FINE GRADED AND EITHER PROTECTED MULCH OR TEMPORARILY SEEDED AND MULCHED UNTIL SUCH TIME AS THE FINAL TREATMENT CAN BE APPLIED. IF THE DATE IS AFTER NOVEMBER 1 AND IF THE EXPOSED AREA HAS BEEN LOOMED, FINAL GRADED WITH A UNIFORM SURFACE, THEN THE AREA MAY BE DORMANT SEEDED AT A RATE OF 3 TIMES HIGHER THAN SPECIFIED FOR PERMANENT SEED AND THEN MULCHED. IF DORMANT SEEDING IS USED, ALL DISTURBED AREAS SHALL RECEIVE 4 INCHES OF LOAM AND SEED AT AN APPLICATION RATE OF 5 LBS PER 1,000 S.F. ALL AREAS INSUFFICIENTLY VEGETATED (LESS THAN 90%) IN THE SPRING SHALL BE REVEGETATED.

6. OVER-WINTER STABILIZATION OF DITCHES AND CHANNELS

ALL STONE-LINED DITCHES AND CHANNELS MUST BE CONSTRUCTED BY NOVEMBER 1. ALL GRASS-LINED DITCHES AND CHANNELS MUST BE CONSTRUCTED AND STABILIZED BY SEPTEMBER 1. IF A GRASS-LINED DITCH OR CHANNEL IS STABILIZED BY SEPTEMBER 1, THEN EITHER A SOD LINING SHALL BE INSTALLED PRIOR TO OCTOBER 1 OR THE DITCH MUST BE LINED WITH STONE RIPRAP BACKED BY AN APPROPRIATE GRAVEL BED OR GEOTEXTILE PRIOR TO NOVEMBER 1.

7. OVER-WINTER STABILIZATION OF DISTURBED SLOPES

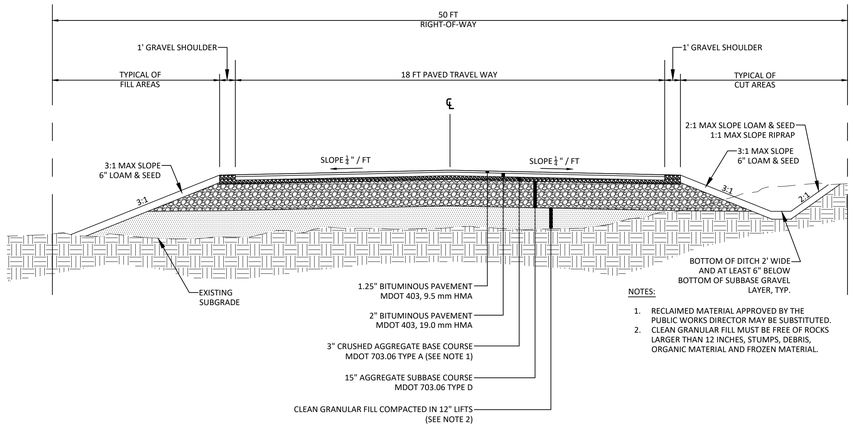
ALL STONE-COVERED SLOPES MUST BE CONSTRUCTED AND STABILIZED BY NOVEMBER 15. ALL SLOPES TO BE VEGETATED MUST BE SEEDED AND MULCHED BY SEPTEMBER 1. ALL AREAS HAVING A GRADE STEEPER THAN 8% SHALL BE CONSIDERED A SLOPE. IF A SLOPE TO BE VEGETATED IS NOT STABILIZED BY SEPTEMBER 1, THEN THE SLOPE SHALL EITHER BE STABILIZED WITH TEMPORARY VEGETATION AND EROSION CONTROL MATS BY OCTOBER 1, SOD BY OCTOBER 1, EROSION CONTROL MIX BY NOVEMBER 1 OR STONE RIPRAP BY NOVEMBER 15. SEE APPLICABLE SECTIONS UNDER EROSION AND SEDIMENTATION CONTROL NOTES FOR PROPER INSTALLATION METHODS.

8. OVER-WINTER STABILIZATION OF DISTURBED SOILS

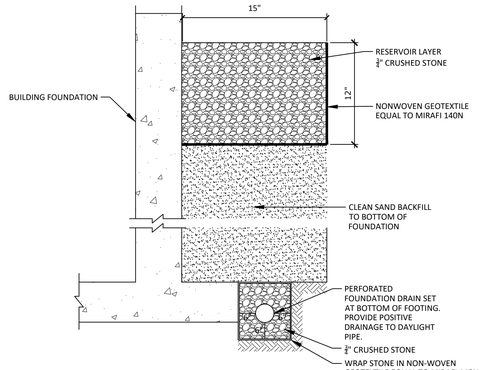
BY SEPTEMBER 15, ALL DISTURBED SOILS ON AREAS HAVING A SLOPE LESS THAN 15% MUST BE SEEDED AND MULCHED. IF THE DISTURBED AREAS ARE NOT STABILIZED BY THIS DATE, THEN THE AREA SHALL EITHER BE STABILIZED WITH TEMPORARY VEGETATION BY OCTOBER 1, SOD BY OCTOBER 1, OR MULCH BY NOVEMBER 15. SEE APPLICABLE SECTIONS UNDER EROSION AND SEDIMENTATION CONTROL NOTES FOR PROPER INSTALLATION METHODS.

9. MAINTENANCE

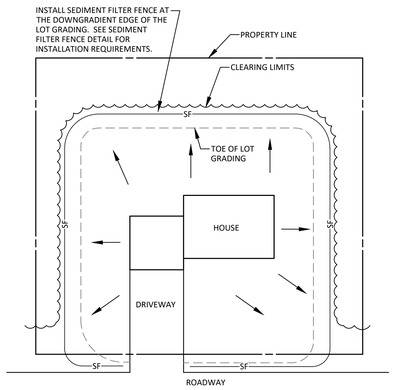
MAINTENANCE MEASURES SHALL BE APPLIED AS NEEDED DURING THE ENTIRE CONSTRUCTION SEASON. AFTER EACH RAINFALL, SNOW STORM, PERIOD OF THAWING AND RUNOFF AND AT LAST ONCE A WEEK, THE SITE CONTRACTOR SHALL PERFORM A VISUAL INSPECTION OF ALL INSTALLED EROSION CONTROL MEASURES AND PERFORM REPAIRS AS NEEDED TO INSURE THEIR CONTINUOUS FUNCTION. FOLLOWING THE TEMPORARY AND/OR FINAL SEEDING AND MULCHING, THE CON



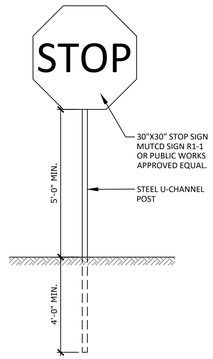
TYPICAL ROADWAY SECTION
MODIFIED MINOR RURAL STREET STANDARD
NOT TO SCALE



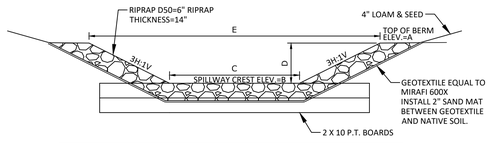
ROOF DRIP EDGE
NOT TO SCALE



TYPICAL HOUSE LOT
EROSION CONTROL DETAIL
NOT TO SCALE

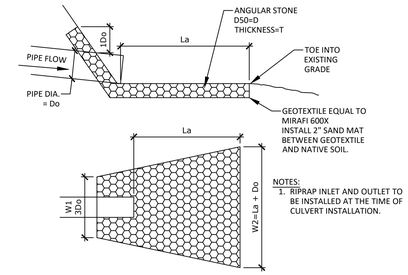


STOP SIGN INSTALLATION
NOT TO SCALE



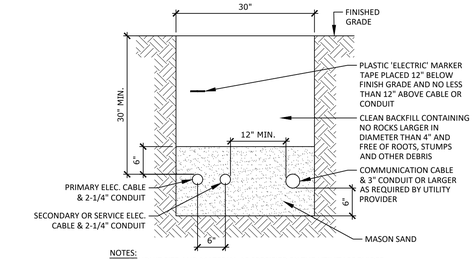
SPILLWAY DATA					
POND ID	A	B	C	D	E
FB-1	336.60	335.10	8'	1.50'	17.00'

RIPRAPPED SPILLWAY CROSS-SECTION
NOT TO SCALE



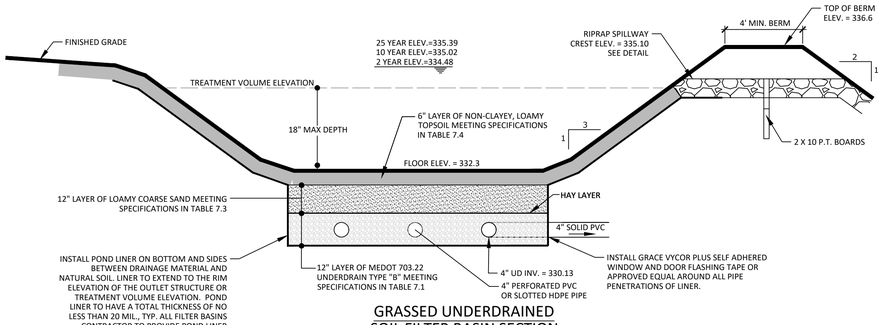
RIPRAP APRON DATA					
PIPE DIA.	W1	W2	La	D	T
12" & SMALLER	3'	7'	6'	6"	14"
15"	4'	9'	8'	6"	14"
18"	5'	10	11'	6"	14"

RIPRAP APRON AT PIPE
NOT TO SCALE



NOTES:
1. CONDUIT SIZE AND MATERIAL AS SPECIFIED BY THE UTILITY PROVIDER.
2. INSTALLATION SHOULD NOT ALLOW THE INTER-TWINING OF CABLES.
3. BEDDING AND BACKFILL SHALL BE FREE OF ROOTS, STUMPS AND OTHER DEBRIS.
4. COMMUNICATION CABLE AND POWER CABLE SHALL HAVE NO LESS THAN 12 INCHES OF RADIAL SEPARATION.

UTILITY TRENCH DETAIL
NOT TO SCALE



GRASSED UNDERDRAINED
SOIL FILTER BASIN SECTION
NOT TO SCALE

TABLE 7.1 UNDERDRAIN 703.22 TYPE "B"	
SIEVE SIZE	% PASSING BY WEIGHT
1"	90-100
1/2"	75-100
#4	50-100
#20	15-80
#50	0-15
#200	0-5

TABLE 7.3 LOAMY COARSE SAND	
SIEVE SIZE	% PASSING BY WEIGHT
#10	85-100
#20	70-100
#60	15-40
#200	8-15
200 CLAY	<2.0

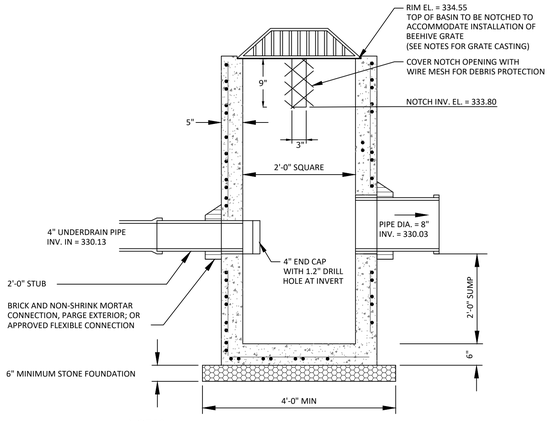
TABLE 7.4 SANDY LOAM	
SIEVE SIZE	% PASSING BY WEIGHT
#4	75-95
#10	60-90
#40	35-85
#200	20-70
200 CLAY	<2.0

GENERAL NOTES:
1. CONSTRUCTION SEQUENCE: THE SOIL FILTER MEDIA AND VEGETATION MUST NOT BE INSTALLED UNTIL THE AREA THAT DRAINS TO THE FILTER HAS BEEN PERMANENTLY STABILIZED WITH PAVEMENT OR OTHER STRUCTURE, 90% VEGETATION COVER, OR OTHER PERMANENT STABILIZATION UNLESS THE RUNOFF FROM THE CONTRIBUTING DRAINAGE AREA IS DIVERTED AROUND THE FILTER UNTIL STABILIZATION IS COMPLETED.

2. COMPACTION OF SOIL FILTER: FILTER SOIL MEDIA AND UNDERDRAIN BEDDING MATERIAL MUST BE COMPACTED BETWEEN 90% AND 92% STANDARD PROCTOR. THE BED SHOULD BE INSTALLED IN AT LEAST TWO LIFTS TO PREVENT POCKETS OF LOOSE MEDIA.

FILTRATION BMPs CONSTRUCTION OVERSIGHT NOTES:
1. INSPECTION BY THE DESIGN ENGINEER OR SUITABLE THIRD PARTY WILL OCCUR AT A MINIMUM:
   A) AFTER THE PRELIMINARY CONSTRUCTION OF THE FILTER GRADES AND ONCE THE UNDERDRAIN PIPES ARE INSTALLED BUT NOT BACKFILLED.
   B) AFTER THE DRAINAGE LAYER IS CONSTRUCTED AND PRIOR TO THE INSTALLATION OF THE FILTER MEDIA.
   C) AFTER THE FILTER MEDIA HAS BEEN INSTALLED AND SEEDED.
   D) AFTER ONE YEAR TO INSPECT HEALTH OF THE VEGETATION AND MAKE CORRECTIONS.
   E)ALL THE MATERIAL USED FOR THE CONSTRUCTION OF THE FILTER BASIN MUST BE CONFIRMED AS SUITABLE BY THE DESIGN ENGINEER. TESTING MUST BE DONE BY A CERTIFIED LABORATORY TO SHOW THAT THEY ARE PASSING MDEP SPECIFICATIONS.
2. TESTING AND SUBMITTALS: THE CONTRACTOR SHALL IDENTIFY THE LOCATION OF THE SOURCE OF EACH COMPONENT OF THE FILTER MEDIA. ALL RESULTS OF FIELD AND LABORATORY TESTING SHALL BE SUBMITTED TO THE PROJECT ENGINEER FOR CONFIRMATION. THE CONTRACTOR SHALL:
   A) SELECT SAMPLES FOR SAMPLING OF EACH TYPE OF MATERIAL TO BE BLENDED FOR THE MIXED FILTER MEDIA AND SAMPLES OF THE UNDERDRAIN BEDDING MATERIAL. SAMPLES MUST BE A COMPOSITE OF THREE DIFFERENT LOCATIONS (GRABS) FROM THE STOCKPILE OR PIT FACE. SAMPLE SIZE REQUIRED WILL BE DETERMINED BY THE TESTING LABORATORY.
   B) PERFORM A SIEVE ANALYSIS CONFORMING TO STM C136 (STANDARD TEST METHOD FOR SIEVE ANALYSIS OF FINE AND COARSE AGGREGATES 1996A) ON EACH TYPE OF THE SAMPLE MATERIAL. THE RESULTING SOIL FILTER MEDIA MIXTURE MUST HAVE 8% TO 12% BY WEIGHT PASSING THE #200 SIEVE, A CLAY CONTENT OF LESS THAN 2% (DETERMINED BY HYDROMETER GRAIN SIZE ANALYSIS) AND HAVE 10% DRY WEIGHT OF ORGANIC MATTER.
   C) PERFORM A PERMIABILITY TEST ON THE SOIL FILTER MEDIA MIXTURE CONFORMING TO ASTM D2434 WITH THE MIXTURE COMPACTED TO 90-92% OF MAXIMUM DRY DENSITY BASED ON ASTM D698
3. WITHIN 30 DAYS OF COMPLETION OF THE FILTRATION BMP, THE APPLICANT SHALL SUBMIT A LOG OF INSPECTION REPORTS DETAILING THE ITEMS INSPECTED, PHOTOS TAKEN, AND THE DATES OF EACH INSPECTION TO THE MAINE DEP BUREAU OF LAND RESOURCES FOR REVIEW.

GRASSED UNDERDRAINED
SOIL FILTER BASIN SECTION
NOT TO SCALE

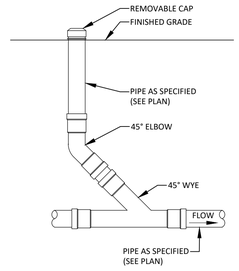


NOTES:
1. OUTLET CONTROL STRUCTURE SHALL BE CONSTRUCTED UTILIZING A PRECAST CATCH BASIN (24"x 24" ~ TYPE F).

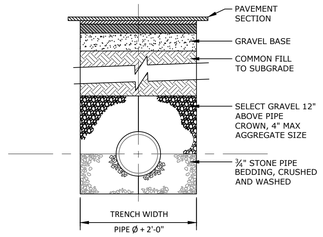
2. CAST IRON GRATE SHALL BE EQUAL TO NEENAH FOUNDRY, PRODUCT NO. R-4345, BEEHIVE LIGHT DUTY GRATE, OR APPROVED EQUIVALENT.

3. SUBMIT SHOP DRAWINGS AND CASTING SPECIFICATIONS TO ENGINEER FOR APPROVAL.

OUTLET CONTROL STRUCTURE (OCS-1)
NOT TO SCALE



UNDERDRAIN CLEANOUT DETAIL
NOT TO SCALE



TYPICAL TRENCH SECTION
NOT TO SCALE

STATE OF MAINE
JAYSON R. HASKELL
DM ROMA
CONSULTING ENGINEERS
P.O. BOX 1116
WINDHAM, ME 04062
(207) 591-5055

REV	DATE	BY	DESCRIPTION
A	8-4-23	JPC	ISSUED FOR TOWN PERMIT REVIEW
B	8-22-23	JPC	REVISED PER TOWN COMMENTS
C	9-21-23	JPC	REVISED PER TOWN COMMENTS
D	11-13-23	JPC	ISSUED FOR TOWN FINAL SUBDIVISION REVIEW
E	11-22-23	JPC	REVISED PER TOWN COMMENTS
F	12-4-23	JPC	REVISED PER TOWN COMMENTS

DETAILS

CAMBELL ACRES SUBDIVISION
CAMBELL SHORE ROAD/JENNY DRIVE/LIEUTENANT'S DRIVE
GRAY, MAINE
FOR:
McDONNELL BROTHERS CUSTOM BUILDERS, LLC.
391 ROOSEVELT TRAIL
WINDHAM, MAINE, 04062

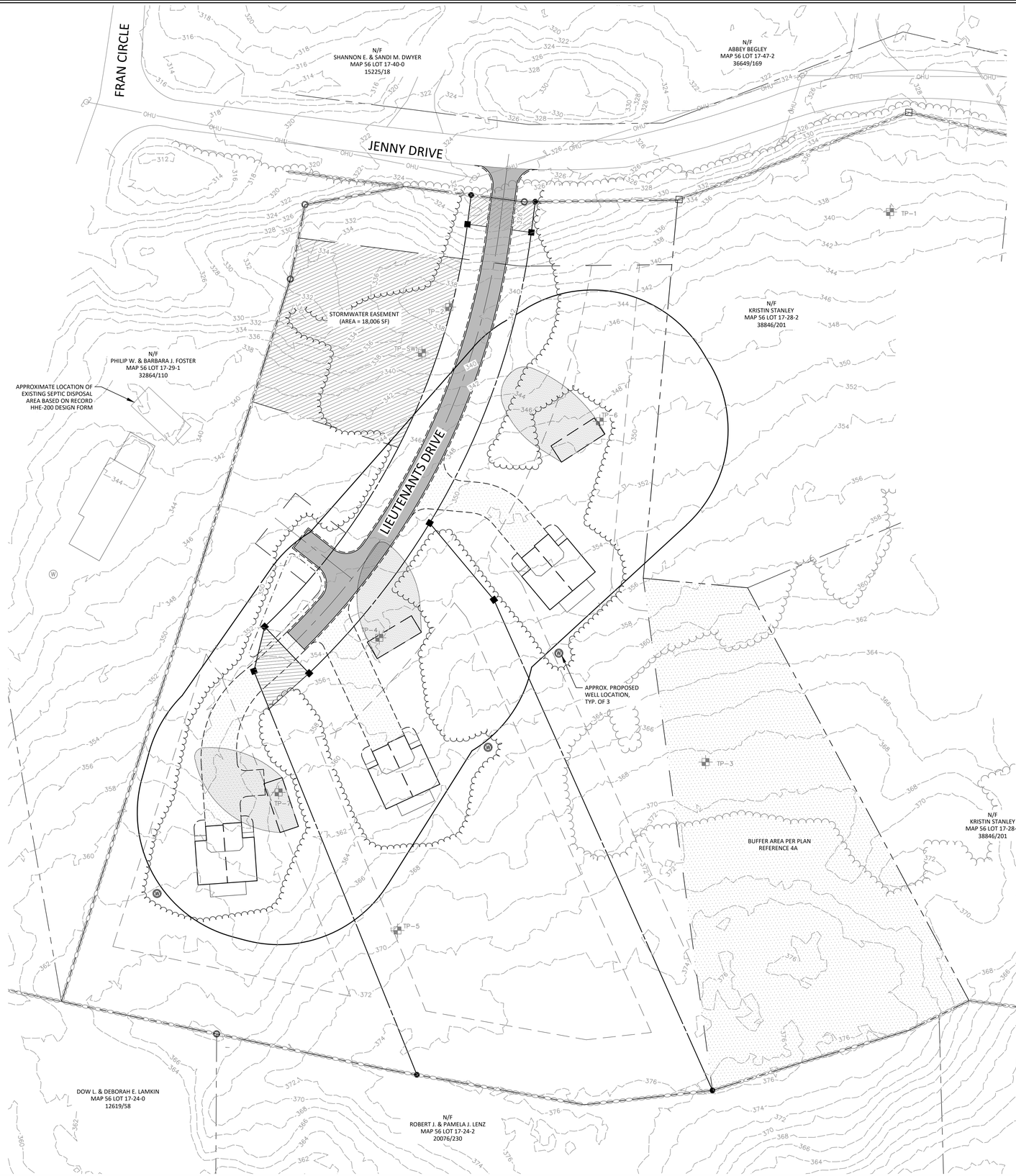
23015
JOB NUMBER:

AS NOTED
SCALE:

12-4-2023
DATE:

SHEET 6 OF 7

D-2



PLAN NOTES:

1. BASE PLAN PREPARED BY DM ROMA CONSULTING ENGINEERS.
2. SOIL EVALUATION TEST PITS SHOWN HEREON PERFORMED ON DECEMBER 19, 2021, FEBRUARY 11, 2022 AND JULY 27, 2023 BY MAINELY SOILS, LLC.
3. NITRATE PLUMES AS INDICATED IN A REPORT TITLED "NITRATE-NITROGEN IMPACT ASSESSMENT CAMBELL ACRES SUBDIVISION, LIEUTENANT'S DRIVE, GRAY" PREPARED BY MARK CENCI GEOLOGIC, INC. DATED NOVEMBER 10, 2023.

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE/R.O.W.	
	ABUTTER PROPERTY LINE	
	SETBACK	
	EASEMENT LINE	
	GRANITE MONUMENT	■
	IRON PIN/DRILL HOLE	●
	CENTERLINE	
	BUILDING	
	EDGE OF PAVEMENT/CURB	
	EDGE OF GRAVEL	
	STONEWALL	
	SIGN	
200 201	CONTOUR LINE	
	TREELINE	
TP-1	TEST PIT	
W	WELL	W
	UTILITY POLE	
OHU	OVERHEAD UTILITIES	
	DISPOSAL FIELD	
	NITRATE PLUME WITH 10mg/L NO ISO CONC	

DM ROMA
CONSULTING ENGINEERS
P.O. BOX 1116
WINDHAM, ME 04062
(207) 591-5055

REV	DATE	BY	DESCRIPTION
A	11-13-23	JPC	ISSUED FOR TOWN FINAL SUBDIVISION REVIEW

WASTEWATER PLAN

CAMBELL ACRES SUBDIVISION
CAMBELL SHORE ROAD/JENNY DRIVE/LIEUTENANT'S DRIVE
GRAY, MAINE

FOR RECORD OWNER:
McDONNELL BROTHERS CUSTOM BUILDERS, LLC.
391 ROOSEVELT TRAIL
WINDHAM, MAINE, 04062

23015	JOB NUMBER:
1" = 40'	SCALE:
11-13-2023	DATE:
SHEET 7 OF 7	
W-1	

DM ROMA
CONSULTING ENGINEERS

November 13, 2023

Town of Gray Planning Board
c/o Kristen Muszynski, Town Planner
Henry Pennell Municipal Complex
24 Main St, Gray, ME 04039

Re: Cambell Acres – Amended Subdivision – Final Major Subdivision Application
Planning Department and Town Engineer review comment response
McDonnell Brothers Custom Builders, LLC. – Owner/Applicant

Dear Ms. Muszynski:

On behalf of McDonnell Brothers Custom Builders, LLC., DM Roma Consulting Engineers has revised the project plan set for the proposed residential subdivision project located off Jenny Drive, proposing the development of a residential subdivision with three proposed lots. The revisions were prepared to address concerns and comments that we have received to date from the Town Staff, Town's Review Engineer, and abutters.

Included with this letter please is a staff review application for Final Subdivision Plan Review, Maine DEP Stormwater PBR application, letter form certified soil scientist, HHE-200's & Nitrate-Nitrogen Impact Assessment, and Stormwater Report.

This letter is intended to clarify and highlight the changes that were made to the project design as shown on the revised plan set, as well as to provide a response to the comments received to date. The following is a list of comments and followed by our response:

Town's Review Engineer comments:

- The Applicant stated that the project would include the infrastructure as well as the lot development. In accordance with Section 401.13.12, provide water quality treatment in accordance with MDEP Chapter 500 standards as well as the submitted Basic and Flooding standards.
    - The project design has been revised to incorporate a underdrained soil filter basin, in lieu of the previously proposed detention basin. Analysis of the water quality treatment provided does not meet the General Standards required 90% impervious area and 75% developed area, required for a project with less than 60% of the available land being proposed for development. DM Roma did evaluate relocating the proposed filter basin to the project intersection with Jenny Drive that would be able to treat more 90% of the total impervious area and more than 75% of the total developed area.

The relocated basin would ultimately result in a larger basin than designed located adjacent to Jenny Drive, with a spillway for the basin along the property frontage and discharge directly into the drainage swale associated with Jenny Drive. The basin grading would be very significant and require a deep cut into the embankment, resulting in more than double the tree clearing required for the current proposed basin design, as well as disturbing the entire 50' no clear buffer along Jenny Drive, which per the Town requirements are only permitted to be disturbed for driveway and road access. Additionally, the location of the proposed filter basin shown on the plans will be located such that it will be significantly less visible to traffic and pedestrians in Jenny Drive. The current basin design discharges overland to forested areas, whereas the alternate location would discharge to the road swale which would not provide the same level of attenuation and filtration. Based on these reasons as well as abutter's comments and concerns about the change to the neighborhood aesthetics we have elected to keep the stormwater filter basin in the same location as the previously proposed detention basin.

- In accordance with Section 401.13.12.A, list the maximum disturbed, developed, and impervious area for each lot.
    - The amended subdivision plan has been revised accordingly to include a lot development table.

- Add a note to install erosion control blankets over all slopes greater than 15%.
    - The project design and details reflect the common standard practice of requiring erosion control blankets for constructed slopes steeper than 3:1 and rip rap armoring of slopes 2:1 and steeper; disturbed areas with slopes less steep than 3:1 are required to be stabilized with vegetative ground cover.
- Provide trash rack for 8" diameter pond outlet pipe. An 8" pipe will clog easily with leaves, etc. consider using a different outlet configuration.
    - The project design has been revised accordingly, and a note was added on the revised plan and profile sheet, as well as the in the detail on Detail sheet D-2.

- The Study Points for the Flooding Standard should be revised to compare the peak flows at the project's property lines to ensure that there is no increased runoff on abutting property. The current study points include runoff over approximately 240 feet of the abutter's property. The runoff should be compared just below reach R3 and reach R9 of the post development watershed map.
    - Two additional study points have been included in the revised stormwater modeling per the Town Engineer's comment; discharge onto the abutters land resulting from the project is less than the pre-developed condition in all modeled storm events, as well as the discharge at the existing catch basin near the intersection of Jenny Drive and Fran Circle. There is an increase in stormwater discharged into the Jenny Drive road swale. This increase could be mitigated if the stormwater filter basin was relocated to the intersection of

Lieutenant's Drive but due to the reasoning stated previously the filter basin was not moved to the project frontage.

- Show the location of the roof drip strip outlet for Lot 2 to ensure it conveys runoff to the desired subcatchment. The watersheds split on each side of the house.
    - Foundation drains have been added to each lot and are shown on the Plan and Profile sheet.

- Can a pole mounted transformer provide power to all three lots, the length from the pole to lot #1 is over 300 feet? If not, show proposed transformer locations on the plans.
    - A proposed transformer was added to serve Lot 1 and Lot 2.

- We previously commented on the outlet to the detention pond. The design includes an 8 inch diameter culvert and now includes a trash rack. We still have concerns with the outlet pipe clogging given the nature of the tributary watershed and potential for debris. We would recommend an alternative configuration that would be less prone to clogging.
    - With the re-configuration of the detention pond to a proposed filter basin, a outlet control structure has been utilized to drain the filter basin in lieu of the previously proposed 8-inch culvert and trash rack.

Enclosed with this submission is the revised supporting documentation and design plans for your review. Upon your review of the submission, please do not hesitate to contact me if you have any questions or require any additional information.

Sincerely,

DM ROMA CONSULTING ENGINEERS

J.P. Connolly
Senior Project Engineer

Cc: McDonnell Brothers Custom Builders, LLC.

PLANNING BOARD/STAFF REVIEW COMMITTEE APPLICATION
TOWN OF GRAY MAINE

PROPERTY TO BE DEVELOPED

Property Location/Address	Jenny Drive	Property Map/Lot	Map 56 . Lot 17 . 28 . 03
Zoning District	Rural Residential & Agriculture	Lot Acreage	7.12 acres
Owner Name	McDonnell Brothers Custom Builders, LLC	Tax Sheet	
Owner Address	391 Roosevelt Trail, Windham ME	Owner Phone	

APPLICANT

Name (IF different than owner)		Contact Phone Number	
Mailing Address		Alternate Phone Number	
Mailing City/State/Zip		Fax Number	
Email Address			

AGENT/CONSULTANT

Name	DM Roma ~ J.P. Connolly	Contact Phone Number	(207) 591-5055
Mailing Address	PO Box 1116	Alternate Phone Number	(760) 840-0997
Mailing City/State/Zip	Windham, Maine, 04062	Fax Number	
Email Address	jp@dmroma.com		

PROJECT

The undersigned requests that the Town of Gray Planning Board consider the following application for:

☒ **Subdivision**
- ☐ Sketch Plan Review
- Preliminary Plan Review (Major)
- ☒ Final Plan Review (Major)
- ☐ Minor

☐ **Site Plan Review**
- ☐ Pre-Application Conference
- ☐ Minor
- ☐ Major

☐ **Shoreland Zoning Permit**

☐ **Other (specify)**
- ☐ Conditional Use
- ☒ Amendment
- ☐ Extension
- ☐ Workshop
- ☐ Contract Zone Request

Second amendment of Cambell Acres Subdivision

Project Description / Comments:

The applicant/owner is proposing to develop the 7.12± acre parcel (shown on Tax Map 56, Lot 17-28-03) into a three (3) lot residential subdivision; consisting of one (1) duplex house on each proposed lot, and including construction of a road way (421± linear feet in length of new private road). The project will also include the integration of stormwater management including drainage swales, culverts and stormwater quality management in the form a grassed line soil fiter basin BMP. Each lot will be serviced with a private well and septic system, as well as served by overhead electric and data services.

[redacted] as agent **Date** 11-13-2023

DM ROMA
CONSULTING ENGINEERS

August 25, 2023

Maine Department of Environmental Protection
17 State House Station
Augusta, Maine 04333

Re: Stormwater Law Permit by Rule
Cambell Acres – Amended Subdivision ~ Gray, Maine
McDonnell Brothers Custom Builders, LLC. – Owner/Applicant

Dear Project Reviewer:

On behalf of our client McDonnell Brothers Custom Builders, LLC., we have prepared the enclosed Stormwater Permit By Rule applications for a residential subdivision consisting of three (3) residential duplexes on three (3) proposed lots off of Jenny Drive in Gray. The approximately 7.12-acre parcel, currently owned by McDonnell Brothers Custom Builders, LLC., is identified as Lot 17-28-03 on the Town of Gray Tax Map 56. The site is undeveloped and consisted predominantly natural woodland with a small area of meadow.

Development Description

The project proposes to construct three (3) residential duplexes on three (3) separate proposed residential lots. The lots will be accessed by a private road with a design length of approximately 421' from the intersection of Jenny Drive to the end of the proposed subdivision road and will include a hammerhead turnaround at the end of the proposed dead-end road. The project proposes to serve the residential development with both private water (three proposed potable private wells to be installed) and with individual private septic systems servicing each lot. Proposed telephone/electric/communication/cable services are proposed to be installed above ground, by extending overhead service from an existing utility pole located near the proposed curb cut though the project site.

The project proposes to construct three (3) residential duplexes on three (3) separate proposed residential lots. The lots will be accessed by a private road with a design length of approximately 421' from the intersection of Jenny Drive to the end of the proposed subdivision road and will include a hammerhead turnaround at the end of the proposed dead-end road. The project proposes to serve the residential development with both private water (three proposed potable private wells to be installed) and with individual private septic systems servicing each lot. Proposed telephone/electric/communication/cable services are proposed to be installed above ground, by extending overhead service from an existing utility pole located near the proposed curb cut though the project site.

Stormwater

The applicant will be responsible for creating approximately 19,716 square feet (0.45± acres) of impervious surface consisting of the proposed roadway, and driveways, an additional 6,715 square feet of proposed roof area associated with the three proposed duplexes and approximately 57,893 square feet (1.33± acres) of landscaped area totaling approximately 84,324 square feet (1.94± acres) of total developed area. Since the project will disturb over 1 acre of land, a Stormwater Permit by Rule is required. The application form has been included in this submission.

While not relevant to the Stormwater Permit By Rule directly, the Town of Gray's Subdivision Ordinance requires the preparation of a stormwater management plan with the objective to limit peak discharge, after development, to equivalent levels before development. To maintain these rates, a proposed detention basin pond has been incorporated into the stormwater infrastructure.

Once you have reviewed the enclosed submission and design plans, please don't hesitate to contact us with any questions or comments.

Sincerely,

[redacted] Engineers

Senior Project Engineer

Cc: McDonnell Brothers Custom Builders, LLC.

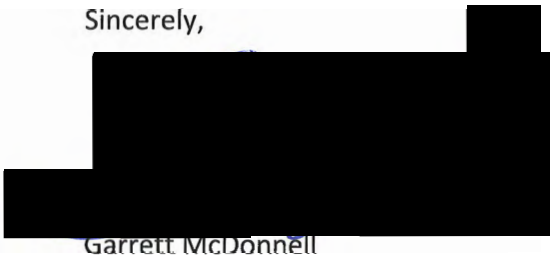
August 16, 2023

Re: Agent Authorization

I, Garrett McDonnell, am an authorized representative of McDonnell Brothers Custom Builders, LLC., the owner of the property on Jenny Drive, in Gray, Maine. The property is shown as Lot 17-28-03 on the "Amended Subdivision Plan Cambell Acres", prepared for Kristin Stanley, prepared by Survey, Inc. dated December 2021 and revised thru 5-9-22, and recorded in the Cumberland County Registry of Deeds Plan Book 222 page 174 on May 11, 2022.

I have retained the services of DM Roma Consulting Engineers to act as my agent to apply for land use permits associated with the development of this property.

Sincerely,



Garrett McDonnell

STORMWATER PBR APPLICATION FORM

[1] **Name of Applicant:** MCDonnell Brothers Custom Builders, LLC.	[5] **Name of Agent:** DM ROMA CONSULTING ENGINEERS - J.P. CONNOLLY
[2] **Applicant's Mailing Address:** 391 Roosevelt Trail Windham, Maine 04062	[6] **Agent's Mailing Address:** PO BOX 1116 WINDHAM, ME 04062
[3] **Applicant's Daytime Phone:** (207) 415-1707	[7] **Agent's Daytime Phone:** (207) 591-5055
[4] **Applicant's Email Address:** mbchmaine@gmail.com	[8] **Agent's Email Address:** JP@DMROMA.COM

[9] **Location of Project: (Road, Street, Rt.)** JENNY DRIVE (OFF OF)	[10] **Location Town:** GRAY	[11] **Location County:** CUMBERLAND

[12] **Is this PBR for renewal of an individual Stormwater permit or Stormwater Permit-by-Rule?** ☐ Yes ☑ No

Is this PBR for transfer of a Stormwater Permit-by-Rule? ☐ Yes ☑ No

If Yes, DEP Permit Number: --- **Prior Project Manager (if known):** ---

NOTE: If either box is checked Yes, skip to Box 30B below.

[13] **Type of Direct Watershed: (Check all that apply.)**

- ☐ Lake not most at risk
- ☐ Lake most at risk
- ☐ Lake most at risk, severely blooming
- ☑ River, stream or brook
- ☐ Urban impaired stream
- ☐ Freshwater wetland
- ☐ Coastal wetland
- ☐ Wellhead of public water supply

[14] **Amount of Developed Area:**
Total 1.94± acres **OR** Total 84,324± SF

[15] **Amount of Impervious Area:**
Total 0.61± acres **OR** Total 26,431± SF

[16] **Amount of Occupied Area (Solar Projects Only):**
Total --- acres

[17] **Part of a Subdivision?** ☑ Yes ☐ No	[18] **Is this Activity Part of a Larger Project?** ☐ Yes ☑ No
[19] **Name of Waterbody(ies) Drained to:** GLANTZ BROOK -> PLEASANT RIVER	[20] **Name of Impaired Waterbody (if applicable)** ---

[21] **Brief Project Description:**
PROPOSED 3 LOT RESIDENTIAL DUPLEX SUBDIVISION, WITH CONSTRUCTION OF 421'± PAVED ROAD, 3 DRIVEWAYS, PRIVATE WELLS & SEPTIC SYSTEMS, AND TYPICAL RESIDENTIAL UTILITY SERVICE EXTENSTION.

[22] **Size of Lot or Parcel:** Total 7.12 acres **OR** Total ___ SF	**UTM Northing, if known:** 4,857,423.8 m	**UTM Easting, if known:** 388,586.1 m
[23] **Deed Reference Numbers:** Book: 40059 Page: 250	[24] **Map and Lot Numbers:** Map: 56	Lot: 17-28-03
[25] **DEP Staff Previously Contacted:** NONE	[26] **Project started prior to Application?** ☐ Yes ☑ No	**If yes, Completed?** ☐ Yes ☑ No

[27] **Resubmission of PBR Application?** ☑ No ☐ Yes➔	**If Yes, Prior Application Number:** ---	**Prior Project Manager:** ---
[28] **Written Notice of Violation?** ☑ No ☐ Yes➔	**If Yes, Name of DEP Enforcement Staff Involved:** ---	

[29] **Detailed Directions to the Project Site:**
FROM RT 202 (WEST GRAY RD), TAKE CAMBELL SHORE RD TO JENNY DR, SITE IS ON THE EAST SIDE

SUBMISSIONS

[30A] **For a new Stormwater PBR:**

- ☑ This Form (signed and dated)
- ☑ Fee
- ☐ Dept. of Inland Fisheries & Wildlife Approval (if in Essential Habitat)
- ☑ Photos of Area
- ☑ ESC Plan
- ☑ Location Map
- ☑ Site Plan

[30B] **For renewal of an individual Stormwater permit or Stormwater PBR and/or transfer of a Stormwater PBR:**

- ☐ This Form (signed and dated)
- ☐ Copy of original Stormwater permit or PBR
- ☐ Fee
- ☐ For a transfer: A copy of the deed, lease, purchase option or other evidence of applicant's title, right or interest in project site, and proof of legal name if the applicant is a corporation or other legal entity.

FEE: Pay by credit card at the Payment Portal. The SW Permit-by-Rule fee may be found here: https://www.maine.gov/dep/feeschedule.pdf.

☑ **Attach payment confirmation from the Payment Portal when filing this notification form.**

STORMWATER PBR APPLICATION FORM

CERTIFICATION / SIGNATURE for NEW STORMWATER PBR or RENEWAL

Applicant Statement:

I am applying for a Stormwater PBR or permit renewal and have attached the required submissions. I have read the requirements and I affirm that my project satisfies the applicable stormwater management standards. I authorize staff of State and Federal agencies having jurisdiction over this activity to access the project site for the purpose of determining compliance with the rules.

"I certify under penalty of law that I have personally examined the information submitted in this document and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the information is true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

Signature (may be typed): J.P. CONNOLLY - AS AGENT Title: PROJECT ENGINEER Date: 8-25-2023

Print or Type Name: J.P. CONNOLY

CERTIFICATION / SIGNATURES for TRANSFER of a STORMWATER PBR

Current Permittee Statement: By signing below, the current permittee certifies that they agree to the transfer of the Stormwater PBR identified on this application form to the applicant named on this form.

Signature (may be typed): _____ Title: _____ Date: _____

Print or Type Name: _____

Applicant Statement: By signing below the applicant certifies that they have received, read, and understand and will comply with the Stormwater PBR being transferred.

"I certify under penalty of law that I have personally examined the information submitted in this document and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the information is true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

Signature (may be typed): _____ Title: _____ Date: _____

Print or Type Name: _____

NOTICE OF INTENT TO COMPLY with the MAINE CONSTRUCTION GENERAL PERMIT
(Must be Completed by All Applicants)

Applicant Statement: With this Stormwater PBR form and my signature below, I am filing notice of my intent to carry out work that meets the requirements of the Maine Construction General Permit (MCGP). I have read and will comply with all of the MCGP standards. In addition, I will file a Notice of Termination (NOT) within 20 days of project completion.

If this form is not being signed by the landowner or lessee of the property, attach documentation showing authorization to sign. *If typing your signature below, you are agreeing to and acknowledging the above information is true.*

Signature (may be typed): J.P. CONNOLLY - AS AGENT Title: PROJECT ENGINEER Date: 8-25-2023

Print or Type Name: J.P. CONNOLLY

State of Maine DEP Payment Receipt

Contact Informa Dustin Roma - PO Box 1116, Windham, ME, 04062

(207) 591-5055

dustin.roma@gmail.com

Product	Reference Number	Customer Number	Payment Amount	Comments
Stormwater Management Law (Permit-by-Rule)	New Application		$79.00	Applicant: McDonnell Brothers Construction Location: Jenny Drive, Gray

Receipt ID: 1064

Transaction Date: 8/28/2023 9:46:09 AM

Transaction Summary

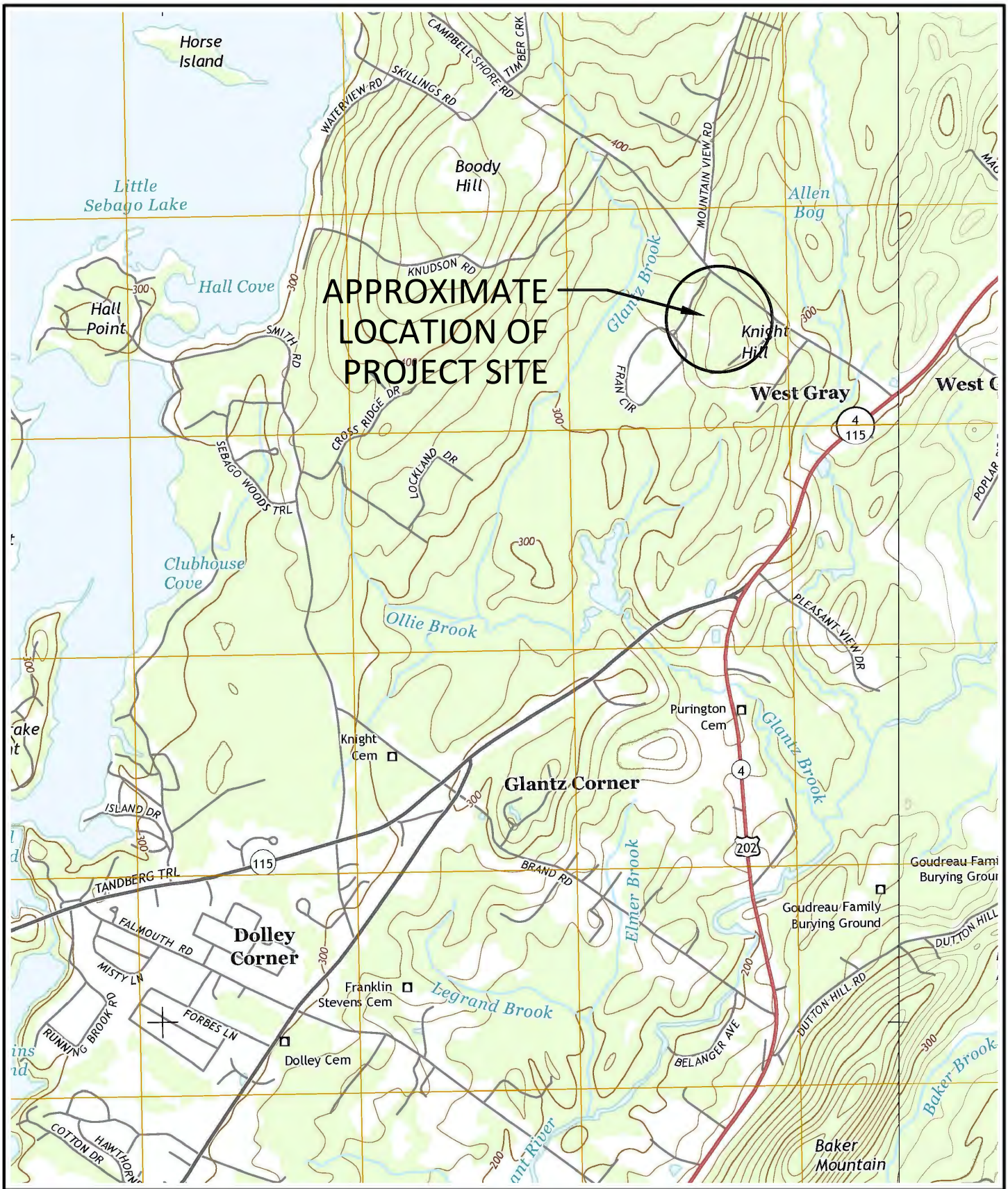
Payment	$79.00
Service Fee	$2.00
Total	**$81.00**

Thank you for your successful transaction.

If you have questions or concerns, please call (207) 287-7688

or Email: Payments.DEP@maine.gov

Print



SITE LOCATION MAP

CAMBELL ACRES AMENDED SUBDIVISION
GRAY, MAINE

FOR RECORD OWNER:
McDONNELL BROTHERS CUSTOM BUILDERS, LLC.
391 ROOSEVELT TRAIL
WINDHAM, MAINE, 04062

SCALE: 1"=2000'
DATE: 8-4-2023
JOB NUMBER: 23015

DM ROMA
CONSULTING ENGINEERS
P.O. BOX 1116
WINDHAM, ME 04062
(207) 591-5055

Interactive Corporate Services

MAINE

Department of the Secretary of State

Bureau of Corporations, Elections and Commissions

Corporate Name Search

Information Summary

Subscriber activity report

This record contains information from the CEC database and is accurate as of: Fri Aug 25 2023 10:53:05. Please print or save for your records.

Legal Name	Charter Number	Filing Type	Status
MCDONNELL BROTHERS CUSTOM BUILDERS, LLC	20102687DC	LIMITED LIABILITY COMPANY (DOMESTIC)	GOOD STANDING

Filing Date	Expiration Date	Jurisdiction
04/02/2010	N/A	MAINE

Other Names	(A=Assumed ; F=Former)
MCDONNELL BROTHERS CUSTOM HOMES, LLC	A
DM CARPENTRY, LLC	F

Clerk/Registered Agent

JOHN W GEISMAR
P. O. BOX 4600

PORTLAND, ME 04112 4600

New Search

Click on a link to obtain additional information.

List of Filings	View list of filings	
Obtain additional information:		
Additional Addresses	Plain Copy	Certified copy
Certificate of Existence (more info)	Short Form without amendments ($30.00)	Long Form with amendments ($30.00)

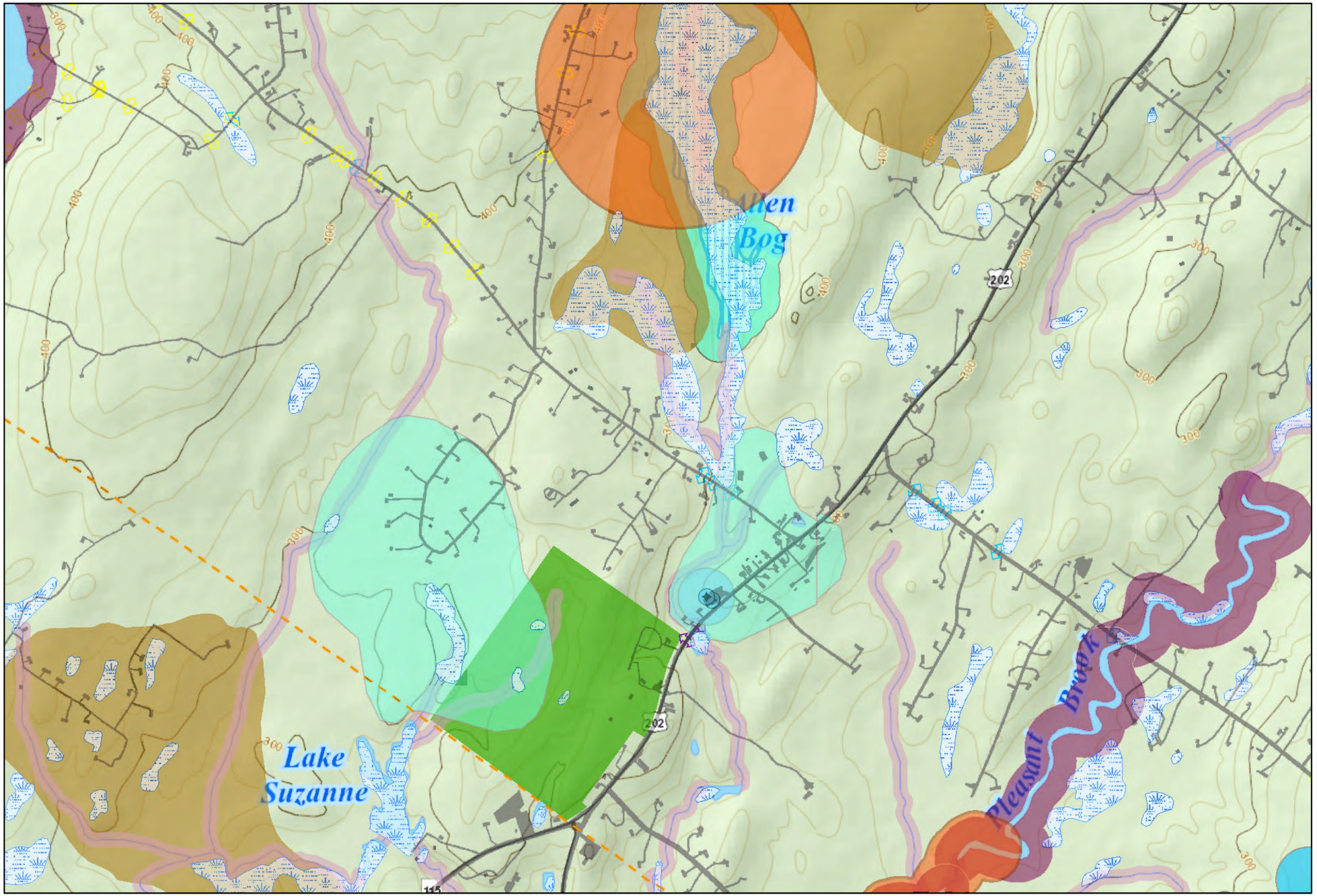
You will need Adobe Acrobat version 3.0 or higher in order to view PDF files.
If you encounter problems, visit the troubleshooting page.

Adobe Get Acrobat Reader

If you encounter technical difficulties while using these services, please contact the Webmaster. If you are unable to find the information you need through the resources provided on this web site,

PHOTO 1 – LOOKING NORTHEAST FROM JENNY DRIVE INTO SITE

PHOTO 2 – LOOKING SOUTHEASTERLY FROM JENNY DRIVE, PROPOSED ROAD INTERSECTION TO BE LOCATED TO THE LEFT (NORTH) OF THE UTILITY POOL.



BEGINNING WITH HABITAT

Legend

- City/Township
- 1
- 2
- Watershed Divide (HUC 12)
- Watershed Divide (HUC 10)
- Watershed Divide (HUC 8)
- Watershed Divide (HUC 6)
- Wetlands
- Great Ponds
- Stream_Buffers_75ft
- Shellfish Beds
- Public Water Supply Wells
- Source Protection
- Aquifers
- ETSC Animal Habitat Buffers
- Rare Plants and Natural Communities
- Natural Communities
- Wild Brook Trout Habitat
- Atlantic Salmon Rearing Habitat
- Atlantic Salmon Spawning Habitat
- Roseate Tern, Piping Plover or Least Tern Nesting Areas
- Deer Wintering
- Inland Wading Bird and Waterfowl Habitat
- Wildlife Wetlands
- Seabird Nesting Island
- Shorebird Habitat
- Tidal Wading Bird and Waterfowl Habitat
- Significant Vernal Pools
- Municipal
- Water Dist., etc.
- Private
- State
- Conserved Lands Easements
- Focus
- Less than 2000 Vehicles/Day
- More than 2000 Vehicles/Day
- Less than 2000 Vehicles/Day
- More than 2000 Vehicles/Day
- Undeveloped Habitat Blocks
- Highway Bridge Connectors
- Maine Conserved Lands
- Federal

0 0.225 0.45 0.9 1.35 mi

N W E S

Supported in part by Maine Outdoor Heritage Fund lottery ticket sales

Map Prepared by Maine Department of Inland Fisheries & Wildlife
March 2023

Supported in part by Loon Conservation Plate funds

MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

7683

October 20, 2023

Mr. Jayson Haskell
DM Roma Consulting Engineers
P. O. Box 1116
Windham, ME 04062

Re: Presence of Poorly and Very Poorly Drained Soils, 55 Cambell Shore Road, Gray, ME

Dear Jay,

At your request I completed a walkover of the parcel of land located at 55 Cambell Shore Road Gray, ME, to determine if there were any poorly or very poorly drained soils present on the parcel. I can state that in my professional opinion, that there are no poorly or very poorly drained soils present on this parcel.

Sincerely,

[redacted]

Mark J. Hampton C.S.S., L.S.E.
Certified Soil Scientist #216
Licensed Site Evaluator #263

P.O. BOX 1931 • PORTLAND, ME 04104-1931 • 207-756-2900 • mhampto1@maine.rr.com

Quality services that meet your deadline

Mark Cenci
Geologic, Inc.

CERTIFIED GEOLOGIST/LICENSED SITE EVALUATOR

93 Mill Road • North Yarmouth, Maine 04097
Cell: 207.329.3524 • mark@markcenci.com
www.markcenci.com

Nitrate-nitrogen Impact Assessment
Campbell Acres Subdivision
Lieutenant's Drive, Gray

Date: November 10, 2023

Summary:

The array of wastewater disposal locations on the site plan meets the requirements of the Town of Gray Subdivision Ordinance regarding effects on groundwater.

Purpose of the assessment:

The purpose of the assessments is to predict the locations and possible effects of wastewater plumes on groundwater from the septic systems planned for a residential subdivision. This assessment is done to satisfy the Subdivision Ordinance of the Town of Gray.

Information used:

Information used in this study includes library research of published literature, a plan of the development by DM Roma and soil information from Mainely Soils, LLC and Mark Cenci Geologic, Inc.

Project summary:

The property investigated is lot17-28-03 on Gray Tax Map 56. The project is a 3-lot residential housing subdivision of 7.12 acres. The residences will be three-bedroom duplexes on each lot. Wastewater disposal will be by on-site subsurface wastewater disposal systems. Water will be provided by individual drilled bedrock wells.

Summary of geology:

The property is located on the west facing slope of Knights Hill (see Figure 1). Drainage is southerly to an unnamed tributary of Pleasant River. Surface slopes are gentle to moderate ranging from 3% to 15%. on most of the property. Near Jenny Drive there are steeper slopes,

The property is mapped as glacial till (see Figure 2) on the *Surficial Geology of the North Windham Quadrangle, Maine* by Andree M., Bolduc and others (ME Geol. Surv. Open-File Map 97-41).
This map does not depict the site as having shallow bedrock. Bedrock beneath the site is mapped as granite of the Sebago Batholith by the Maine Geological Survey. There are three water wells shown on Jenny Dive in the Maine Water Well Database with depth to bedrock recorded as 6 to 12 feet below the surface.

The *National Cooperative Soil Survey* depicts the property as Paxton fine sandy loam (see Figure 2). Paxton is a soil formed from glacial till. This agrees with the surficial geologic mapping and the soil information by Mainely Soils, LLC and Mark Cenci Geologic, Inc.

The property is not mapped as an aquifer (see Figure 4). on the *Significant Sand and Gravel Aquifers of the North Windham Quadrangle, Maine (*Craig Neil and others, (1998 ME Geol. Surv. Open-File Map 98-158).

Summary of hydrogeology:

The source of groundwater on this site is precipitation. Precipitation falling on this site seeps into the soil and descends until restrictive soil layers or the water table is encountered. Thereupon, the flow of groundwater is down gradient toward wetlands and streams. Where groundwater encounters open fractures on the bedrock surface, a portion of the water will seep downward into the bedrock to recharge the bedrock aquifer.

On this site the soils are sandy loams to loamy sands. Slopes are gentle to moderate in the areas investigated. Based on the relative absence of wetlands on the property and the sandy textures of the soils, recharge appears to be greater than average over the entire property. Based on the guidelines for nitrogen impact assessment published by the Maine DEP, it is reasonable to assume that 40% of all precipitation recharges the soil.

The groundwater flow directions on this property can be assumed to be perpendicular to the topographic contour lines. The estimated hydraulic conductivity of the till deposit is 8 feet per day. The assumed effective porosity is assumed to be 25%.

The hydraulic gradient on basal till sites is a subdued replica of the surface slope. The hydraulic

gradient is approximately 5%. As the site is undeveloped and forested, the assumption is that background soil NO3-N is less than 1.0 mg/liter.

Impact on Groundwater Quality:

Nitrate-nitrogen is the chemical to assess for impact on groundwater. Nitrate-nitrogen is generated by subsurface wastewater disposal systems. It is a conservative contaminant, meaning it does not readily degrade in groundwater, nor does it attenuate or attach itself to soil particles. Nitrate-nitrogen is limited to 10 mg/liter in public drinking water supplies by the Primary Drinking Water Standard and is the limit placed by the Town of Gray at the property boundaries of a project.

The analysis of nitrate-nitrogen impacts was calculated by SOLUTRANS, a 32-bit Windows program for modeling three-dimensional solute transport written by Dr. Charles R. Fitts of Fitts Geosolutions and the University of Southern Maine. The program is based on the analytical solutions of Liej *et. al.* (1991 and 1993). The solutions in SOLUTRANS all assume a uniform one-dimensional flow field, but allow three-dimensional dispersion, retardation and first-order decay estimations.

Variables entered into the calculations include a hydraulic conductivity value of 8 feet per day, a hydraulic gradient of 5% and an assumed porosity of 25%. This leads to a seepage velocity of 1.6 feet per day. Additional variables include flows of 540 gpd from the duplexes, an initial wastewater concentration of 40 mg/L NO3-N, retardation of 1, and a decay constant of zero.

The dispersivity values are not site-specific measurements of the heterogeneities of the soil but are assumed to be uniform and independent of location and time, with lateral dispersivity being 1/3 of longitudinal dispersivity and vertical dispersivity being 1/10 of lateral dispersivity.

Dispersivity is governed by the equation: longitudinal dispersivity = (0.0175) x (Length of plume raised to 1.46 power). The plume length analyzed is 150 feet. Therefore, longitudinal dispersivity of 15 feet, lateral dispersivity of 5 feet and vertical dispersivity of 0.5 feet are used.

Another feature of this analytical program that simulates numerical modelling is a thickness corrector, which is governed by the equation:
Z = (270) / (7.481) divided by (disposal width) (K)(I).

Calculations were made and reveal the 10 mg/L NO3-N plume will be approximately55 feet in length. The graph of these results is enclosed. Given an assumed background

concentration of 1.0 mg/liter the 10 mg/liter plume lengths are concluded to be 60 feet.

Using the topographic contour information as a determinant of groundwater flow direction, the calculated 10 plumes were drawn on the plan of the project by Mark Cenci Geologic, Inc. and forwarded to DM Roma.

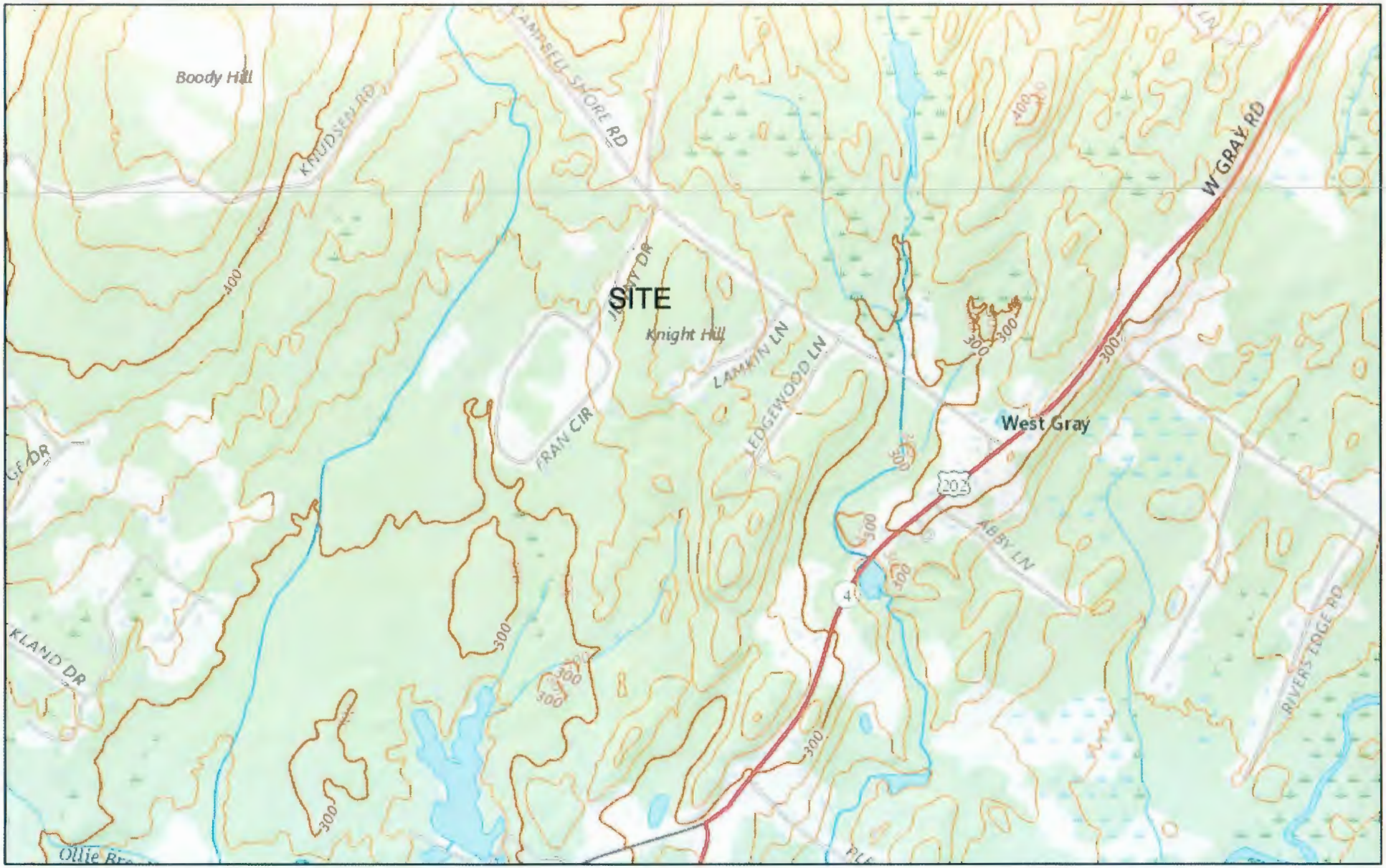
Conclusions:

The depicted array of wastewater disposal areas on the three lots meets the requirements of the Town of Gray.

[redacted]

Mark Cenci
Licensed Maine Geologist #467

Figure 1.



11/10/2023, 9:14:44 AM

Normal Intermediate Contours

Normal Index Contours

1:18,056

0 0.1 0.2 0.4 mi

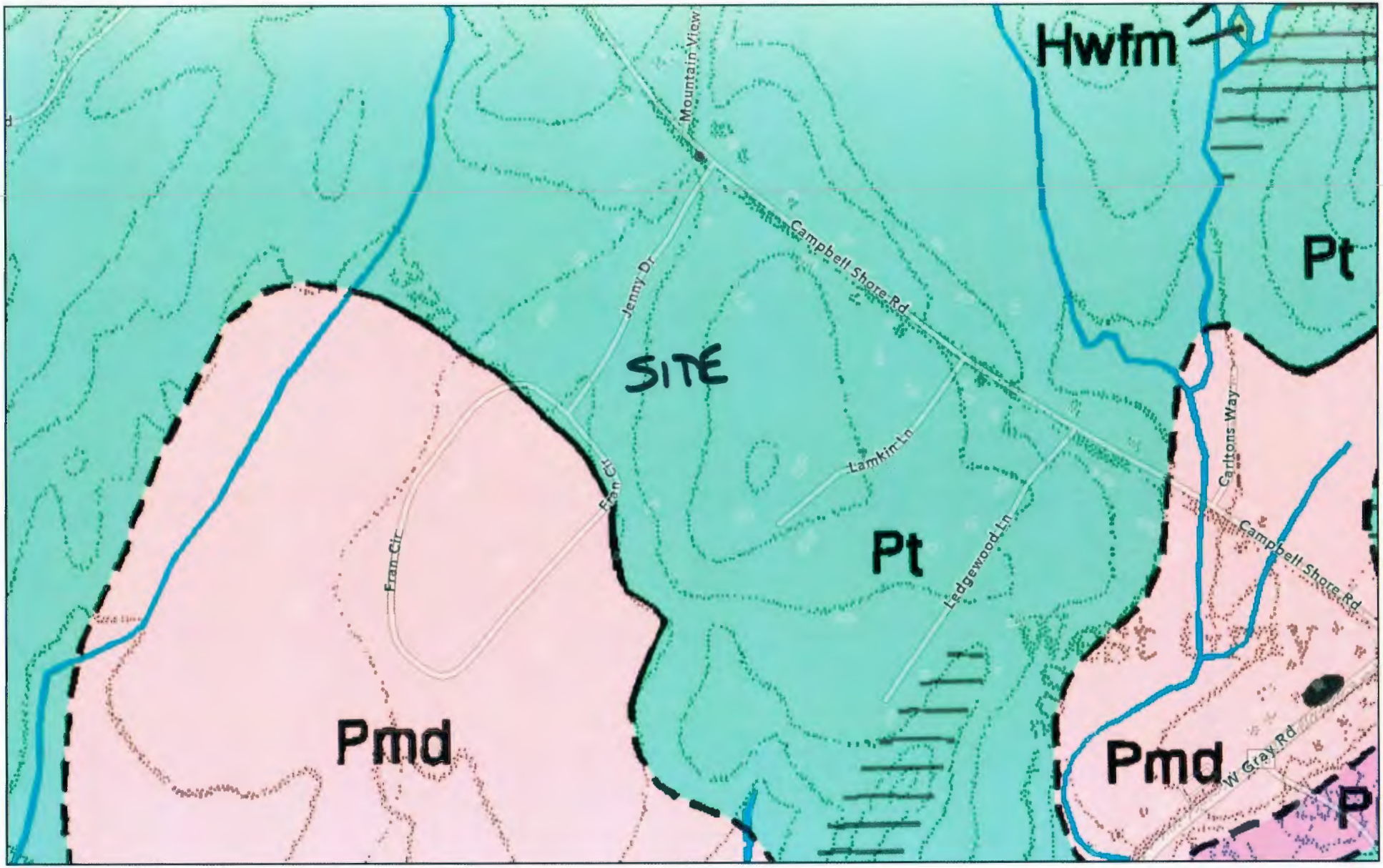
0 0.17 0.35 0.7 km

USGS The National Map: 3D Elevation Program. Data Refreshed October, 2023., USGS The National Map: National Boundaries Dataset, 3DEP

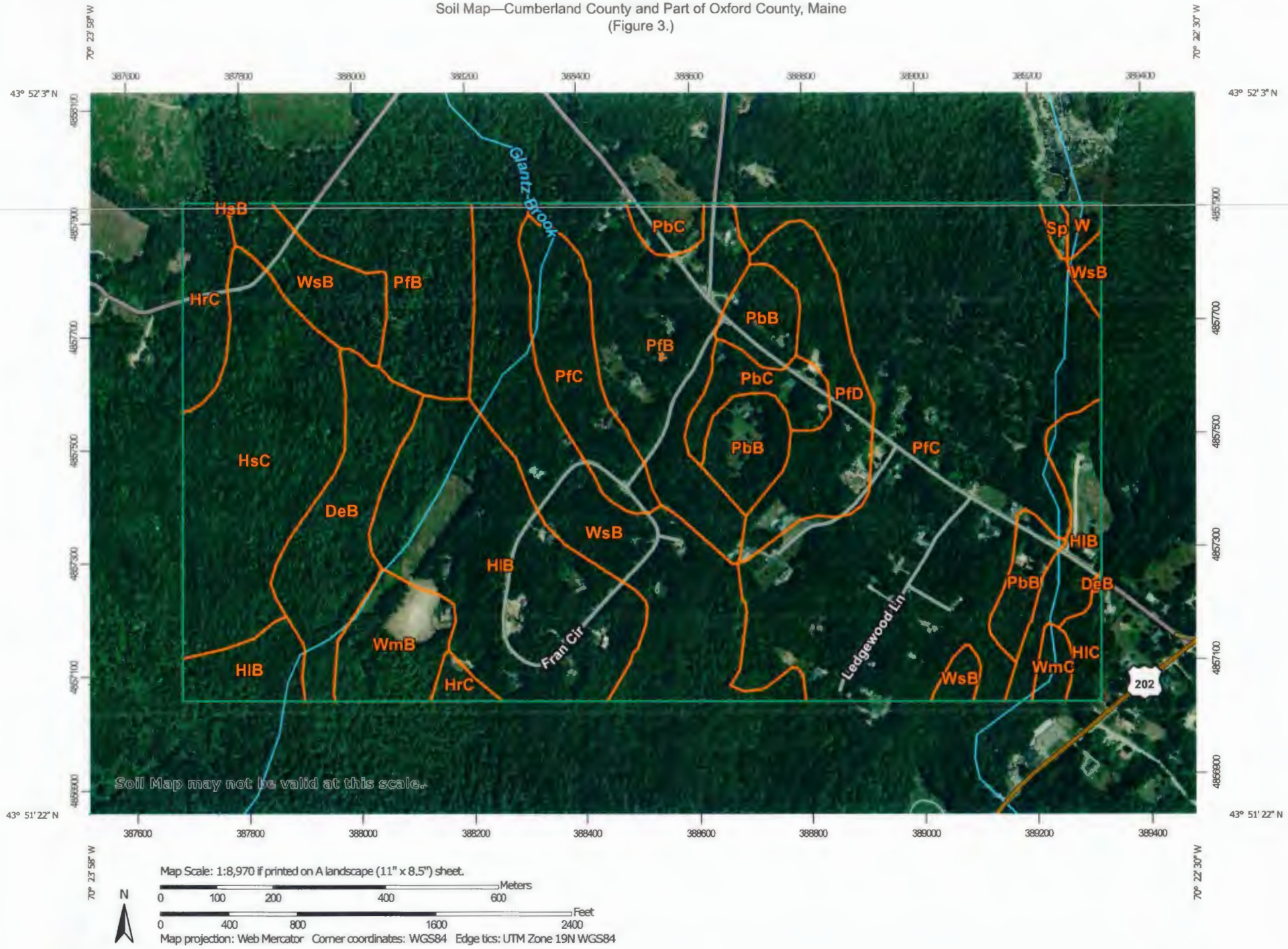
USGS

2021 USGS

Figure 2. Surficial Geology 1:24,000



Soil Map—Cumberland County and Part of Oxford County, Maine
(Figure 3.)



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: Cumberland County and Part of Oxford County, Maine
Survey Area Data: Version 20, Sep 5, 2023

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

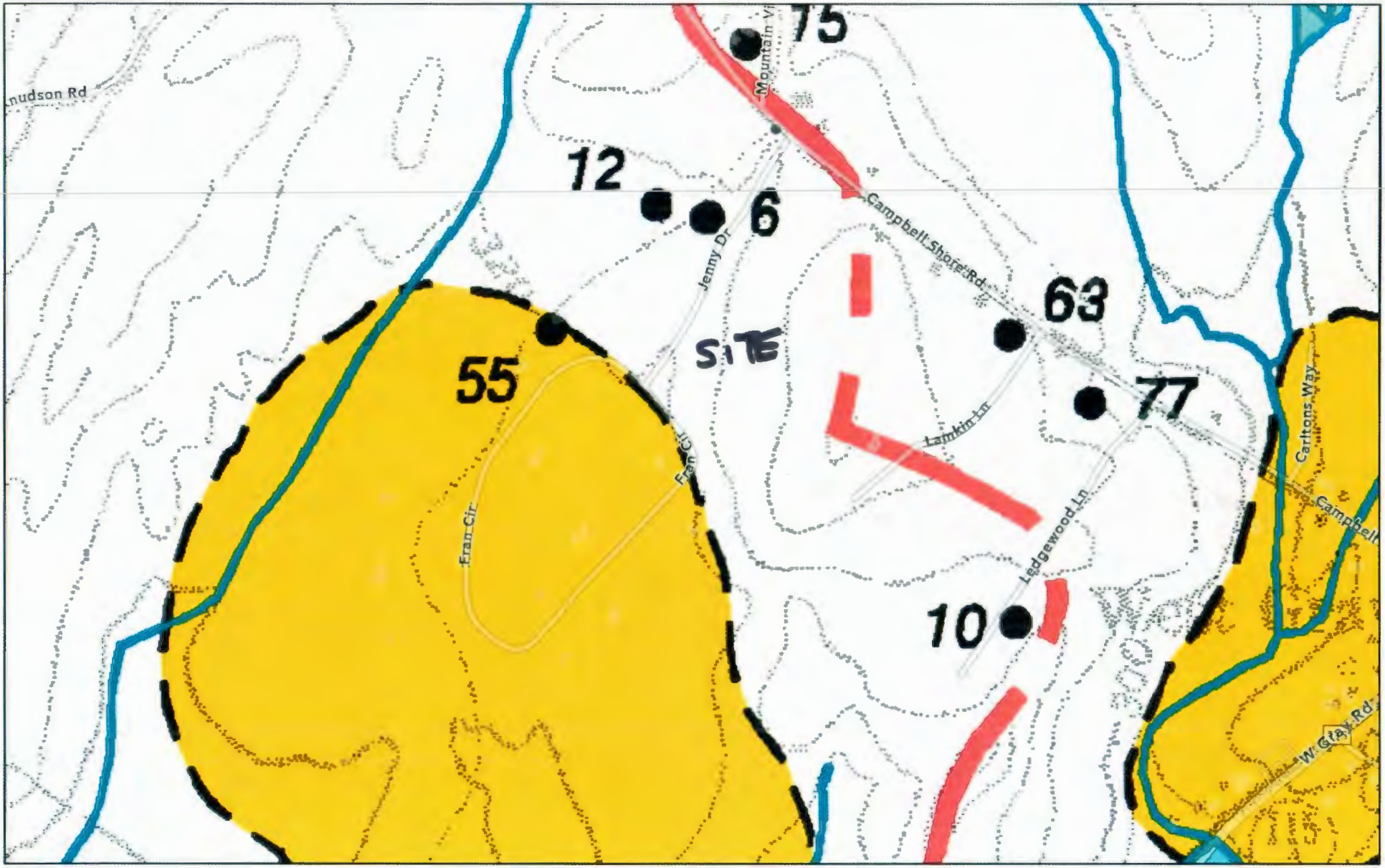
Date(s) aerial images were photographed: Jul 22, 2021—Oct 7, 2021

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
DeB	Deerfield loamy fine sand, 3 to 8 percent slopes	16.8	4.7%
HlB	Hinckley loamy sand, 3 to 8 percent slopes	51.4	14.4%
HlC	Hinckley loamy sand, 8 to 15 percent slopes	2.4	0.7%
HrC	Lyman-Tunbridge complex, 8 to 15 percent slopes, rocky	8.4	2.4%
HsB	Lyman-Abram complex, 0 to 8 percent slopes, very rocky	0.1	0.0%
HsC	Lyman-Abram complex, 8 to 15 percent slopes, very rocky	33.4	9.4%
PbB	Paxton fine sandy loam, 3 to 8 percent slopes	14.7	4.1%
PbC	Paxton fine sandy loam, 8 to 15 percent slopes	8.1	2.3%
PfB	Paxton very stony fine sandy loam, 3 to 8 percent slopes	43.9	12.3%
PfC	Paxton very stony fine sandy loam, 8 to 15 percent slopes	103.0	29.0%
PfD	Paxton very stony fine sandy loam, 15 to 25 percent slopes	15.2	4.3%
Sp	Sebago mucky peat	0.8	0.2%
W	Water	1.2	0.3%
WmB	Windsor loamy sand, 0 to 8 percent slopes	9.0	2.5%
WmC	Windsor loamy sand, 8 to 15 percent slopes	1.8	0.5%
WsB	Woodbridge very stony fine sandy loam, 0 to 8 percent slopes	45.5	12.8%
Totals for Area of Interest		**355.7**	**100.0%**

Figure 4. Aquifers 24K



11/10/2023, 9:30:42 AM

Image

Red: Band_1

Green: Band_2

Blue: Band_3

1:9,028

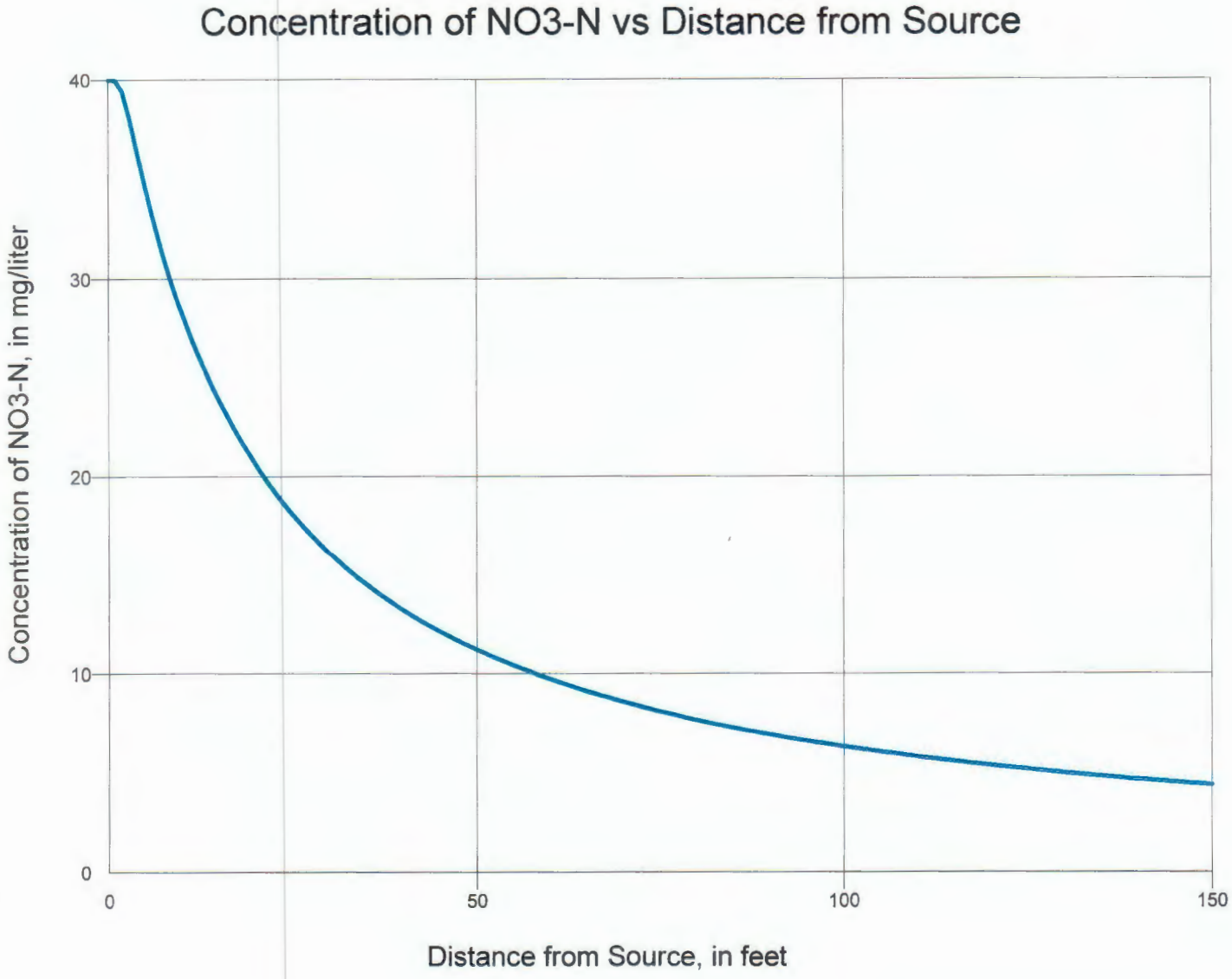
0 0.05 0.1 0.2 mi

0 0.07 0.15 0.3 km

Maine Geological Survey, Esri Community Maps Contributors, © OpenStreetMap, Microsoft, Esri, HERE, Garmin, SafeGraph,

Maine Geological Survey

Maine Geological Survey | Esri Community Maps Contributors, © OpenStreetMap, Microsoft, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA | Esri Community Maps Contributors, © OpenStreetMap,


Concentration of NO3-N vs Distance from Source
Concentration of NO3-N, in mg/liter
40
30
20
10
0
0
50
100
150
Distance from Source, in feet

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Dept.Health & Human Services
Div of Environmental Health , 11 SHS
(207) 287-5672 Fax: (207) 287-4172

PROPERTY LOCATION

City, Town, or Plantation: Gray
Street or Road: Lieutenant Dr
Subdivision, Lot #: Lot 2

OWNER/APPLICANT INFORMATION

Name (last, first, MI) ☐Owner ☐Applicant
Mailing Address of Owner/Applicant
Daytime Tel. #

OWNER OR APPLICANT STATEMENT
I state and acknowledge that the information submitted is correct to the best of my knowledge and understand that any falsification is reason for the Department and/or Local Plumbing Inspector to deny a Permit.

Signature of Owner or Applicant ____ Date ____

>> CAUTION: LPI APPROVAL REQUIRED <<

Town/City ____ Permit # ____
Date Permit Issued __/__/__ Fee: $____ Double Fee Charged [ ]
Local Plumbing Inspector Signature ____ L.P.I. # ____
☐ Owner ☐ Town ☐ State

The Subsurface Wastewater Disposal System shall not be installed until a Permit is issued by the Local Plumbing Inspector. The Permit shall authorize the owner or installer to install the disposal system in accordance with this application and the Maine Subsurface Wastewater Disposal Rules.

Municipal Tax Map # ____ Lot # ____

CAUTION: INSPECTION REQUIRED
I have inspected the installation authorized above and found it to be in compliance with the Subsurface Wastewater Disposal Rules Application. ____ (1st) date approved
Local Plumbing Inspector Signature ____ (2nd) date approved

PERMIT INFORMATION

TYPE OF APPLICATION
☒1. First Time System
☐2. Replacement System
Type replaced: ____
Year installed: ____
☐3. Expanded System
☐a. <25% Expansion
☐b. >25% Expansion
☐4. Experimental System
☐5. Seasonal Conversion

THIS APPLICATION REQUIRES
☒1. No Rule Variance
☐2. First Time System Variance
☐a. Local Plumbing Inspector Approval
☐b. State & Local Plumbing Inspector Approval
☐3. Replacement System Variance
☐a. Local Plumbing Inspector Approval
☐b. State & Local Plumbing Inspector Approval
☐4. Minimum Lot Size Variance
☐5. Seasonal Conversion Permit

DISPOSAL SYSTEM COMPONENTS
☒1. Complete Non-engineered System
☐2. Primitive System (graywater & alt. toilet)
☐3. Alternative Toilet, specify: ____
☐4. Non-engineered Treatment Tank (only)
☐5. Holding Tank, ____ gallons
☐6. Non-engineered Disposal Field (only)
☐7. Separated Laundry System
☐8. Complete Engineered System (2000 gpd or more)
☐9. Engineered Treatment Tank (only)
☐10. Engineered Disposal Field (only)
☐11. Pre-treatment, specify: ____
☐12. Miscellaneous Components

SIZE OF PROPERTY
81,979 ☒SQ. FT. ☐ACRES

SHORELAND ZONING
☐Yes ☒No

DISPOSAL SYSTEM TO SERVE
☐1. Single Family Dwelling Unit, No. of Bedrooms: ____
☒2. Multiple Family Dwelling, No. of Units: 2
☐3. Other: ____ (specify)
Current Use ☐Seasonal ☐Year Round ☒Undeveloped

TYPE OF WATER SUPPLY
TOBE:
☒1. Drilled Well ☐2. Dug Well ☐3. Private
☐4. Public ☐5. Other

DESIGN DETAILS (SYSTEM LAYOUT SHOWN ON PAGE 3)

TREATMENT TANK
☒1. Concrete
☒a. Regular
☐b. Low Profile
☐2. Plastic
☐3. Other: ____
CAPACITY: 2000 GAL.
OR 2-1000 GALL

DISPOSAL FIELD TYPE & SIZE
☐1. Stone Bed ☐2. Stone Trench
☒3. Proprietary Device
☒a. cluster array ☐b. Linear
☒c. regular load ☐d. H-20 load
☐4. Other: ____
SIZE: 1920 ☒sq. ft. ☐in. ft.

GARBAGE DISPOSAL UNIT
☒1. No ☐2. Yes ☐3. Maybe
If Yes or Maybe, specify one below:
☐a. multi-compartment tank
☐b. ___ tanks in series
☐c. Increase in tank capacity
☐d. Filter on Tank Outlet

DESIGN FLOW
540 gallons per day
BASED ON:
☒1. Table 4A (dwelling unit(s))
☐2. Table 4C(other facilities)
SHOW CALCULATIONS for other facilites
6 BEDROOMS AT 90 GPD
☐3. Section 4G (meter readings)
ATTACH WATER METER DATA

SOIL DATA & DESIGN CLASS
PROFILE CONDITION
3 C
at Observation Hole # TP-1
Depth 20"
of Most Limiting Soil Factor

DISPOSAL FIELD SIZING
☐1. Medium---2.6 sq. ft. / gpd
☒2. Medium---Large 3.3 sq. f.t / gpd
☐3. Large---4.1 sq. ft. / gpd
☐4. Extra Large---5.0 sq. ft. / gpd

EFFLUENT/EJECTOR PUMP
☒1. Not Required
☐2. May Be Required
☐3. Required
Specify only for engineered systems:
DOSE: ____ gallons

LATITUDE AND LONGITUDE
at center of disposal area
Lat. 43 d 86 m 29 s 09
Lon. -70 d 28 m 64 s 425
If g.p.s, state margin of error: ____

SITE EVALUATOR STATEMENT

I certify that on 11-8-23 (date) I completed a site evaluation on this property and state that the data reported are accurate and that the proposed [redacted] is in compliance with the State of Maine Subsurface Wastewater Disposal Rules (10-144A CMR 241).

[redacted] 262 11-10-23
Site Evaluator Signature SE # Date

MARK CENCI 329-3524
Site Evaluator Name Printed Telephone Number E-mail Address

Note : Changes to or deviations from the design should be confirmed with the Site Evaluator.

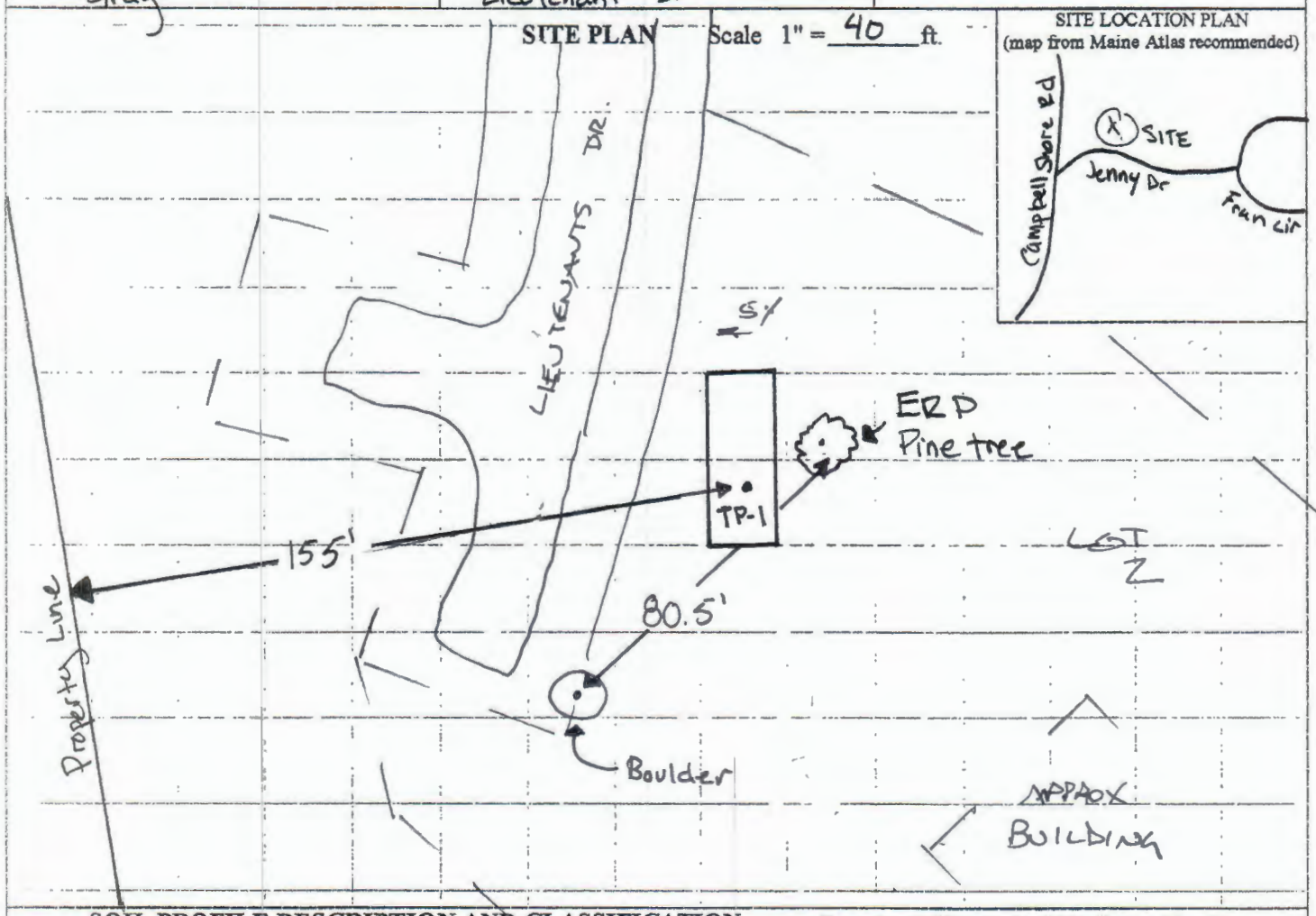
SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Department of Human Services
Division of Health Engineering, Station 10
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation	Street, Road, Subdivision	Owner or Applicant Name
Gray	Lieutenant Dr LOT 2	

SITE PLAN

Scale 1" = 40 ft.



SITE LOCATION PLAN
(map from Maine Atlas recommended)

SOIL PROFILE DESCRIPTION AND CLASSIFICATION

(Location of Observation Holes Shown Above)

Observation Hole # TP-1 ☐ Test Pit ☒ Boring

" Depth of organic horizon above mineral soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0			Dark Brown	
6	Stoney Fine Sandy Loam	FRIABLE	Red Brown	
12				
18				
24	REFUSAL (BOULDERS?)			
30				
36				
42				
48				

Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
3	C	5	20	☐ Groundwater ☒ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Observation Hole # _____ ☐ Test Pit ☐ Boring

" Depth of organic horizon above mineral soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0				
6				
12				
18				
24				
30				
36				
42				
48				

Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
				☐ Groundwater ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

[redacted] Site Evaluator Signature

262 SE #

11-10-23 Date

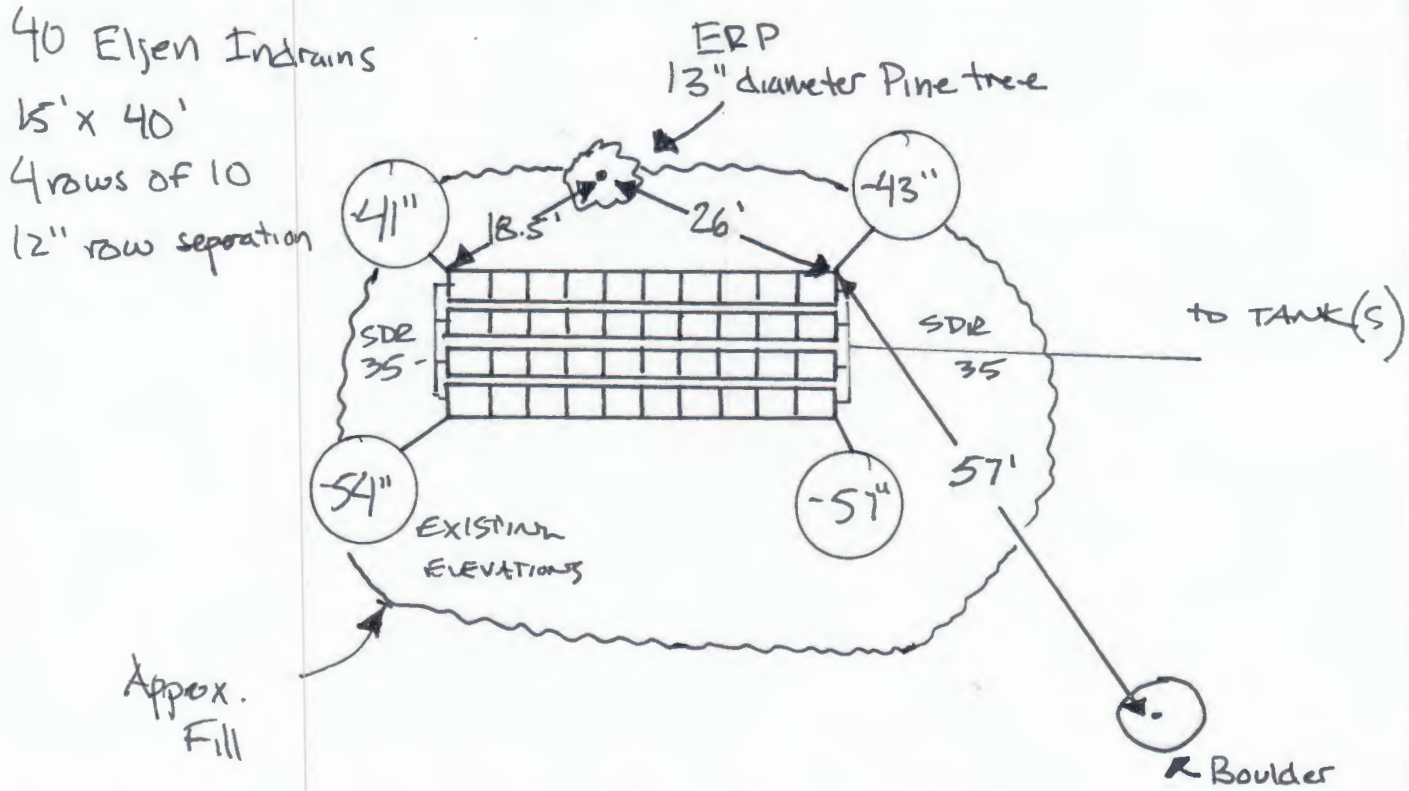
SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Department of Human Services
Division of Health Engineering, Station 10
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation	Street, Road, Subdivision	Lot	Owner or Applicant Name
Gray	Lieutenant Dr	2	

SUBSURFACE WASTEWATER DISPOSAL PLAN

Scale: 1" = 20 ft.

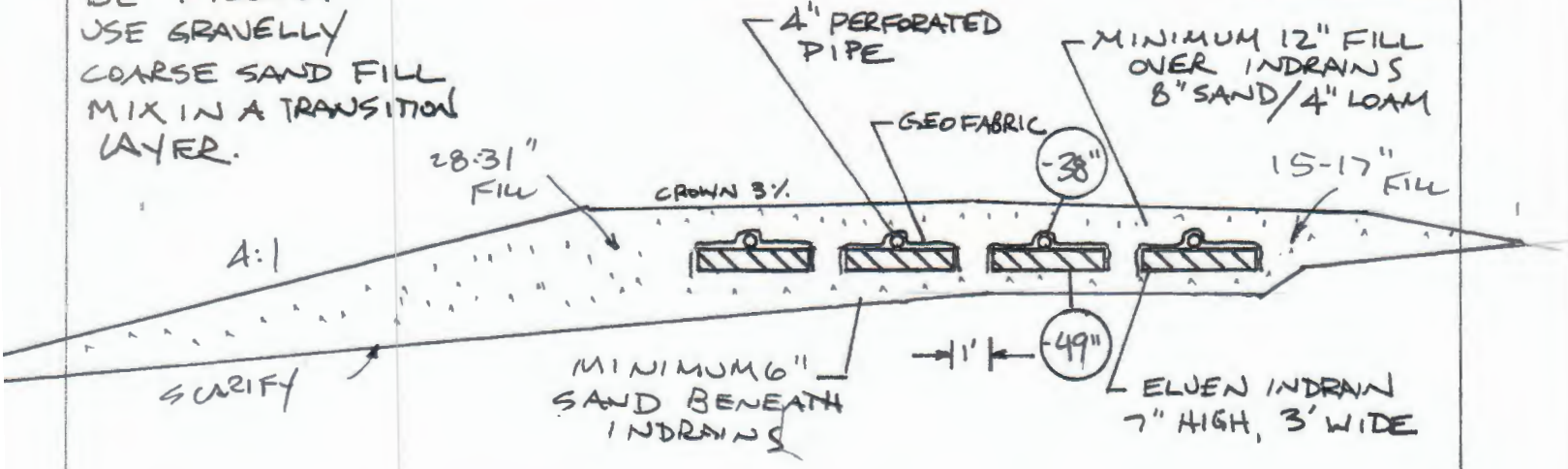


BACKFILL REQUIREMENTS	CONSTRUCTION ELEVATIONS		ELEVATION REFERENCE POINT
ABOVE GRADE		-26"	Location & Description: 13" diameter Pine tree, Nail 19" above base
Depth of Backfill (upslope) 15-17"	Finished Grade Elevation	-38"	
Depth of Backfill (downslope) 28-31"	Top of PIPES	-49"	
DEPTHS AT CROSS-SECTION (shown below)	Bottom of INDRAINS		Reference Elevation is: 0.0" or:

DISPOSAL FIELD CROSS SECTION

Scales:
Vertical: 1" = 5 ft.
Horizontal: 1" = 5 ft.

SCARIFY ALL GROUND TO BE FILLED. USE GRAVELLY COARSE SAND FILL MIX IN A TRANSITION LAYER.



[redacted] 262 11-10-23

Site Evaluator Signature | SE # | Date

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Dept.Health & Human Services
Div of Environmental Health , 11 SHS
(207) 287-5672 Fax: (207) 287-4172

PROPERTY LOCATION

City, Town, or Plantation	Grey
Street or Road	Lieutenant Dr
Subdivision, Lot #	LOT 1

OWNER/APPLICANT INFORMATION

Name (last, first, MI) ☐Owner ☐Applicant

Mailing Address of Owner/Applicant

Daytime Tel. #

OWNER OR APPLICANT STATEMENT
I state and acknowledge that the information submitted is correct to the best of my knowledge and understand that any falsification is reason for the Department and/or Local Plumbing Inspector to deny a Permit.

Signature of Owner or Applicant ____ Date ____

>> CAUTION: LPI APPROVAL REQUIRED <<

Town/City ____ Permit # ____

Date Permit Issued __/__/__ Fee: $____ Double Fee Charged [ ]

Local Plumbing Inspector Signature L.P.I. # ____

☐ Owner ☐ Town ☐ State

The Subsurface Wastewater Disposal System shall not be installed until a Permit is issued by the Local Plumbing Inspector. The Permit shall authorize the owner or installer to install the disposal system in accordance with this application and the Maine Subsurface Wastewater Disposal Rules.

Municipal Tax Map # ____ Lot # ____

CAUTION: INSPECTION REQUIRED
I have inspected the installation authorized above and found it to be in compliance with the Subsurface Wastewater Disposal Rules Application. ____ (1st) date approved

Local Plumbing Inspector Signature ____ (2nd) date approved

PERMIT INFORMATION

TYPE OF APPLICATION

☒ 1. First Time System
☐ 2. Replacement System
Type replaced: ____
Year installed: ____
☐ 3. Expanded System
☐ a. <25% Expansion
☐ b. >25% Expansion
☐ 4. Experimental System
☐ 5. Seasonal Conversion

THIS APPLICATION REQUIRES

☒ 1. No Rule Variance
☐ 2. First Time System Variance
☐ a. Local Plumbing Inspector Approval
☐ b. State & Local Plumbing Inspector Approval
☐ 3. Replacement System Variance
☐ a. Local Plumbing Inspector Approval
☐ b. State & Local Plumbing Inspector Approval
☐ 4. Minimum Lot Size Variance
☐ 5. Seasonal Conversion Permit

DISPOSAL SYSTEM COMPONENTS

☒ 1. Complete Non-engineered System
☐ 2. Primitive System (graywater & alt. toilet)
☐ 3. Alternative Toilet, specify: ____
☐ 4. Non-engineered Treatment Tank (only)
☐ 5. Holding Tank, ____ gallons
☐ 6. Non-engineered Disposal Field (only)
☐ 7. Separated Laundry System
☐ 8. Complete Engineered System (2000 gpd or more)
☐ 9. Engineered Treatment Tank (only)
☐ 10. Engineered Disposal Field (only)
☐ 11. Pre-treatment, specify: ____
☐ 12. Miscellaneous Components

SIZE OF PROPERTY

90.473 ☐SQ. FT. ☒ACRES

SHORELAND ZONING

☐ Yes ☒ No

DISPOSAL SYSTEM TO SERVE

☐ 1. Single Family Dwelling Unit, No. of Bedrooms: ____
☒ 2. Multiple Family Dwelling, No. of Units: 2
☐ 3. Other: ____ (specify)
Current Use ☐ Seasonal ☐ Year Round ☒ Undeveloped

TO BE: TYPE OF WATER SUPPLY

☒ 1. Drilled Well ☐ 2. Dug Well ☐ 3. Private
☐ 4. Public ☐ 5. Other

DESIGN DETAILS (SYSTEM LAYOUT SHOWN ON PAGE 3)

TREATMENT TANK

☒ 1. Concrete
☒ a. Regular
☐ b. Low Profile
☐ 2. Plastic
☐ 3. Other: ____
CAPACITY: 2000 GAL.

DISPOSAL FIELD TYPE & SIZE

☐ 1. Stone Bed ☐ 2. Stone Trench
☒ 3. Proprietary Device
☒ a. cluster array ☐ c. Linear
☒ b. regular load ☐ d. H-20 load
☐ 4. Other: ____
SIZE: 1920 ☒ sq. ft. ☐ in. ft.

GARBAGE DISPOSAL UNIT

☒ 1. No ☐ 2. Yes ☐ 3. Maybe
If Yes or Maybe, specify one below:
☐ a. multi-compartment tank
☐ b. ___ tanks in series
☐ c. Increase in tank capacity
☐ d. Filter on Tank Outlet

DESIGN FLOW

540 gallons per day
BASED ON:
☒ 1. Table 4A (dwelling unit(s))
☐ 2. Table 4C(other facilities)
SHOW CALCULATIONS for other facilites

☐ 3. Section 4G (meter readings)
ATTACH WATER METER DATA

SOIL DATA & DESIGN CLASS

PROFILE CONDITION
3 1 6
at Observation Hole # TP3
Depth 18 "
of Most Limiting Soil Factor

DISPOSAL FIELD SIZING

☐ 1. Medium---2.6 sq. ft. / gpd
☒ 2. Medium---Large 3.3 sq. f.t / gpd
☐ 3. Large---4.1 sq. ft. / gpd
☐ 4. Extra Large---5.0 sq. ft. / gpd

EFFLUENT/EJECTOR PUMP

☒ 1. Not Required
☐ 2. May Be Required
☐ 3. Required
Specify only for engineered systems:
DOSE: ____ gallons

LATITUDE AND LONGITUDE

at center of disposal area
Lat. 43 d 86 m 29 s 119
Lon. 70 d 38 m 64 s 42
If g.p.s, state margin of error: ____

SITE EVALUATOR STATEMENT

I certify that on 11-8-23 (date) I completed a site evaluation on this property and state that the data reported are accurate and that the proposed system is in compliance with the State of Maine Subsurface Wastewater Disposal Rules (10-144A CMR 241).

[redacted] Site Evaluator Signature
262 SE #
11-10-23 Date

MARK OENKI Site Evaluator Name Printed
329-3524 Telephone Number
E-mail Address

Note : Changes to or deviations from the design should be confirmed with the Site Evaluator.

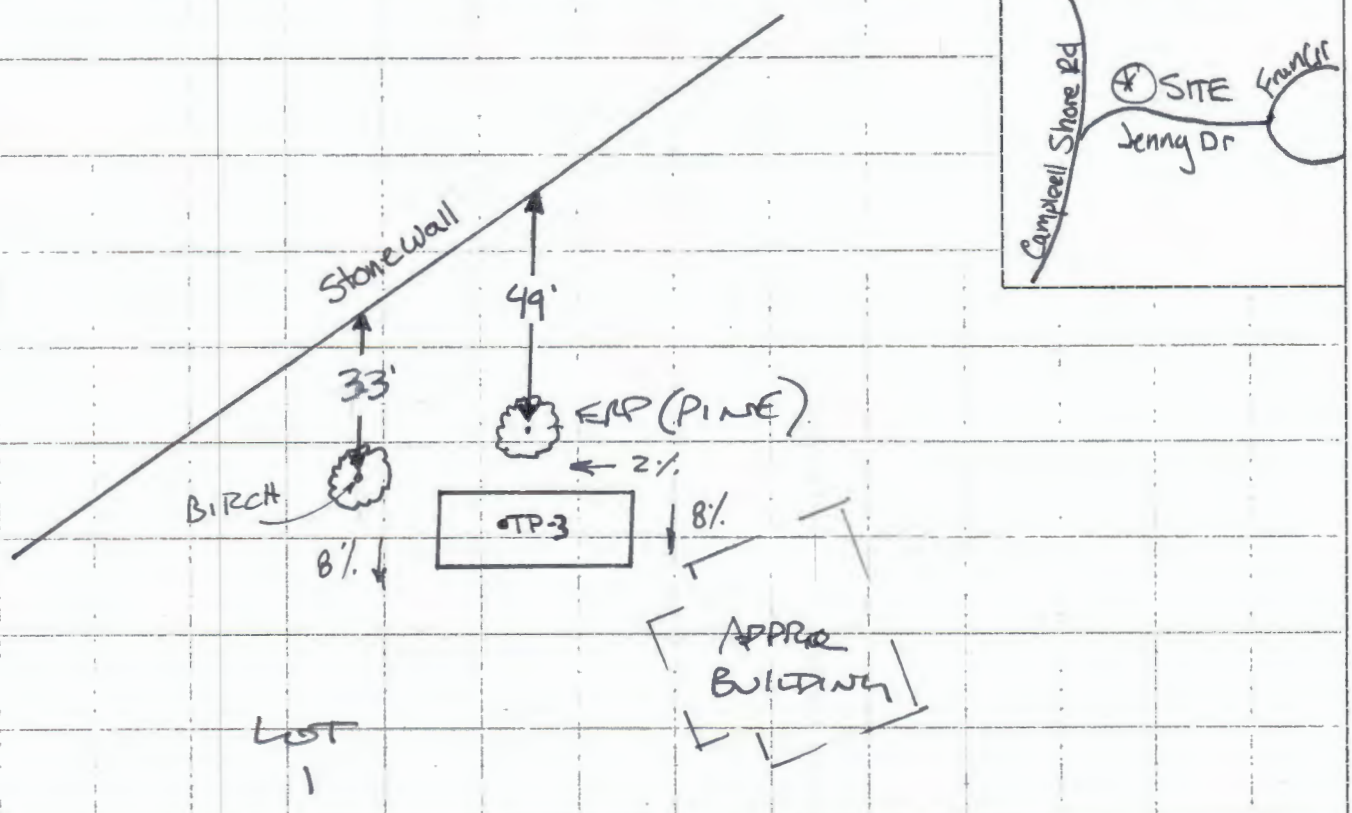
SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Department of Human Services
Division of Health Engineering, Station 10
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation	Street, Road, Subdivision	Owner or Applicant Name
Gray	Lieutenant Dr	

SITE PLAN

Scale 1" = 40 ft.



SITE LOCATION PLAN
(map from Maine Atlas recommended)

SOIL PROFILE DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole # TP-3 ☐ Test Pit ☐ Boring

" Depth of organic horizon above mineral soil

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6	Fine Sandy Loam	FRIABLE	Dark Brown	
6–12	Stoney Fine Sandy Loam		Red Brown	
12–18				
18–24	REFUSAL (BOULDERS?)			
24–30				
30–36				
36–42				
42–48				

Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
3	C	15	18	☐ Groundwater ☒ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Observation Hole # _____ ☐ Test Pit ☐ Boring

" Depth of organic horizon above mineral soil

Depth below mineral soil surface (inches)

	Texture	Consistency	Color	Mottling
0–6				
6–12				
12–18				
18–24				
24–30				
30–36				
36–42				
42–48				

Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
				☐ Groundwater ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

[redacted] Site Evaluator Signature

262 SE #

11-10-23 Date

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

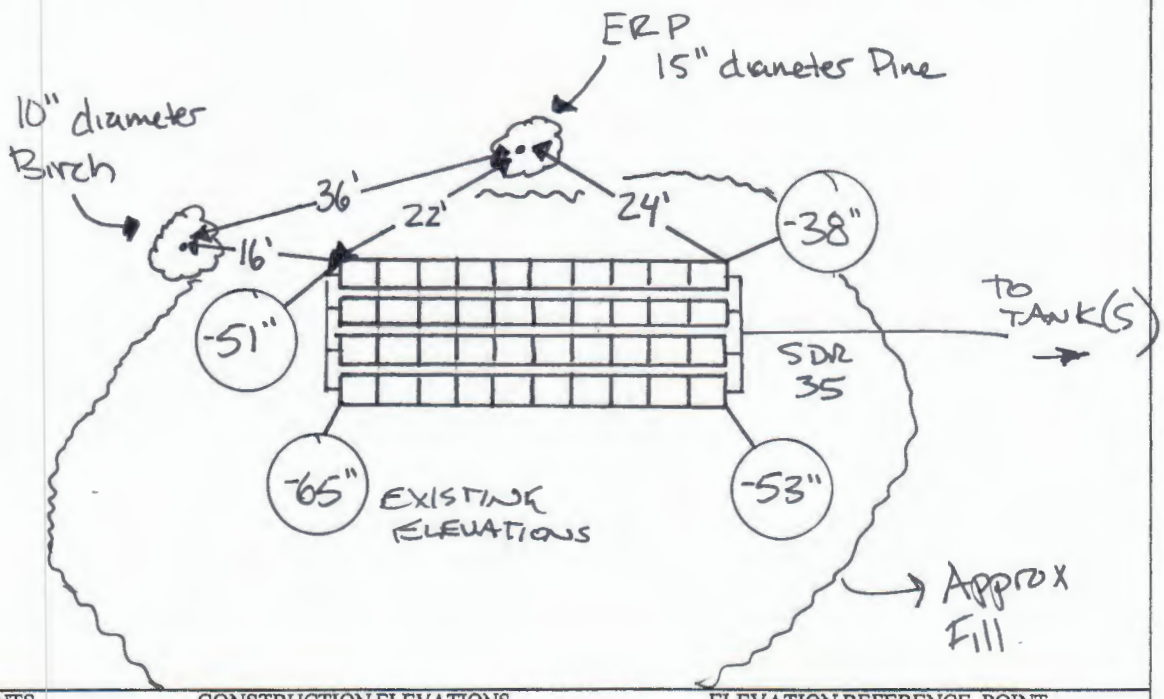
Maine Department of Human Services
Division of Health Engineering, Station 10
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation	Street, Road, Subdivision	Owner or Applicant Name
Gray	Lieutenant Dr	

SUBSURFACE WASTEWATER DISPOSAL PLAN

Scale: 1" = 20 ft.

40 Eljen Indrains
4 rows of 10
15' x 40'
12" row Separation

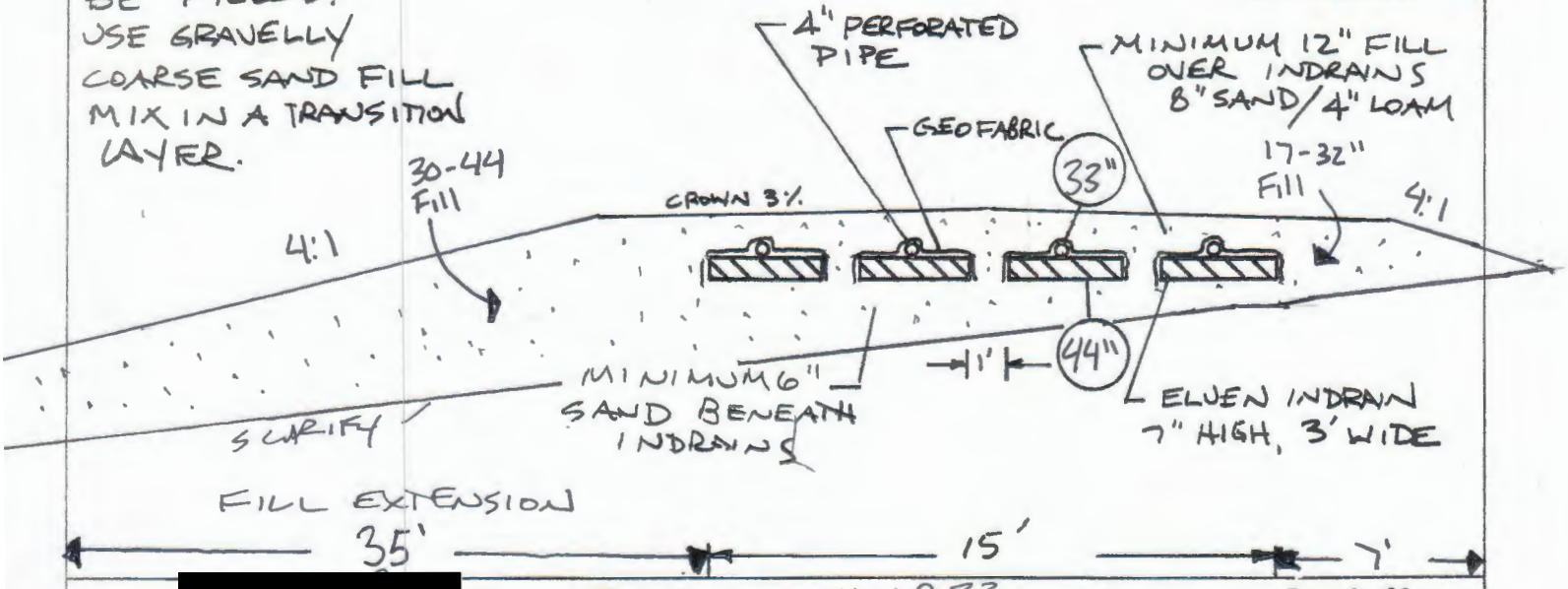


BACKFILL REQUIREMENTS	CONSTRUCTION ELEVATIONS		ELEVATION REFERENCE POINT
ABOVE GRADE			Location & Description: 15" diameter Pine Tree, Nail 35" above base
Depth of Backfill (upslope) 17-32"	Finished Grade Elevation	-21"	
Depth of Backfill (downslope) 30-44"	Top of PIPES	-33"	
DEPTHS AT CROSS-SECTION (shown below)	Bottom of INDRAINS	-44"	Reference Elevation is: 0.0" or:

DISPOSAL FIELD CROSS SECTION

Scales:
Vertical: 1" = 5 ft.
Horizontal: 1" = 5 ft.

SCARIFY ALL GROUND TO BE FILLED. USE GRAVELLY COARSE SAND FILL MIX IN A TRANSITION LAYER.



[redacted] | 262 | 11-10-23 | Page 3 of 3
Site Evaluator Signature | SE # | Date | HHE-200 Rev. 10/02

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Dept.Health & Human Services
Div of Environmental Health , 11 SHS
(207) 287-5672 Fax: (207) 287-4172

PROPERTY LOCATION

City, Town, or Plantation	Gray
Street or Road	Lieutenant Dr
Subdivision, Lot #	LOT 3

OWNER/APPLICANT INFORMATION

Name (last, first, MI) ☐Owner ☐Applicant

Mailing Address of Owner/Applicant

Daytime Tel. #

OWNER OR APPLICANT STATEMENT

I state and acknowledge that the information submitted is correct to the best of my knowledge and understand that any falsification is reason for the Department and/or Local Plumbing Inspector to deny a Permit.

Signature of Owner or Applicant ____ Date ____

>> CAUTION: LPI APPROVAL REQUIRED <<

Town/City ____ Permit # ____

Date Permit Issued __/__/__ Fee: $____ Double Fee Charged [ ]

Local Plumbing Inspector Signature ____ L.P.I. # ____

☐ Owner ☐ Town ☐ State

The Subsurface Wastewater Disposal System shall not be installed until a Permit is issued by the Local Plumbing Inspector. The Permit shall authorize the owner or installer to install the disposal system in accordance with this application and the Maine Subsurface Wastewater Disposal Rules.

Municipal Tax Map # ____ Lot # ____

CAUTION: INSPECTION REQUIRED

I have inspected the installation authorized above and found it to be in compliance with the Subsurface Wastewater Disposal Rules Application. ____ (1st) date approved

Local Plumbing Inspector Signature ____ (2nd) date approved

PERMIT INFORMATION

TYPE OF APPLICATION

☒ 1. First Time System
☐ 2. Replacement System
Type replaced: ____
Year installed: ____
☐ 3. Expanded System
☐ a. <25% Expansion
☐ b. >25% Expansion
☐ 4. Experimental System
☐ 5. Seasonal Conversion

THIS APPLICATION REQUIRES

☒ 1. No Rule Variance
☐ 2. First Time System Variance
☐ a. Local Plumbing Inspector Approval
☐ b. State & Local Plumbing Inspector Approval
☐ 3. Replacement System Variance
☐ a. Local Plumbing Inspector Approval
☐ b. State & Local Plumbing Inspector Approval
☐ 4. Minimum Lot Size Variance
☐ 5. Seasonal Conversion Permit

DISPOSAL SYSTEM COMPONENTS

☒ 1. Complete Non-engineered System
☐ 2. Primitive System (graywater & alt. toilet)
☐ 3. Alternative Toilet, specify: ____
☐ 4. Non-engineered Treatment Tank (only)
☐ 5. Holding Tank, ____ gallons
☐ 6. Non-engineered Disposal Field (only)
☐ 7. Separated Laundry System
☐ 8. Complete Engineered System (2000 gpd or more)
☐ 9. Engineered Treatment Tank (only)
☐ 10. Engineered Disposal Field (only)
☐ 11. Pre-treatment, specify: ____
☐ 12. Miscellaneous Components

SIZE OF PROPERTY

118,041 ☒ SQ. FT. ☐ ACRES

SHORELAND ZONING

☐ Yes ☒ No

DISPOSAL SYSTEM TO SERVE

☐ 1. Single Family Dwelling Unit, No. of Bedrooms: ____
☒ 2. Multiple Family Dwelling, No. of Units: 2
☐ 3. Other: ____ (specify)

Current Use ☐ Seasonal ☐ Year Round ☒ Undeveloped

TO BE: TYPE OF WATER SUPPLY

☒ 1. Drilled Well ☐ 2. Dug Well ☐ 3. Private
☐ 4. Public ☐ 5. Other

DESIGN DETAILS (SYSTEM LAYOUT SHOWN ON PAGE 3)

TREATMENT TANK

☒ 1. Concrete
☒ a. Regular
☐ b. Low Profile
☐ 2. Plastic
☐ 3. Other: ____
CAPACITY: 2000 GAL.
OR 2-1000

DISPOSAL FIELD TYPE & SIZE

☐ 1. Stone Bed ☐ 2. Stone Trench
☒ 3. Proprietary Device
☒ a. cluster array ☐ c. Linear
☒ b. regular load ☐ d. H-20 load
☐ 4. Other: ____
SIZE: 1920 ☒ sq. ft. ☐ in. ft.

GARBAGE DISPOSAL UNIT

☒ 1. No ☐ 2. Yes ☐ 3. Maybe
If Yes or Maybe, specify one below:
☐ a. multi-compartment tank
☐ b. ___ tanks in series
☐ c. increase in tank capacity
☐ d. Filter on Tank Outlet

DESIGN FLOW

540 gallons per day
BASED ON:
☒ 1. Table 4A (dwelling unit(s))
☐ 2. Table 4C(other facilities)
SHOW CALCULATIONS for other facilites

SOIL DATA & DESIGN CLASS

PROFILE CONDITION
3 / C
at Observation Hole # TP-2
Depth 20 "
of Most Limiting Soil Factor

DISPOSAL FIELD SIZING

☐ 1. Medium---2.6 sq. ft. / gpd
☒ 2. Medium---Large 3.3 sq. f.t / gpd
☐ 3. Large---4.1 sq. ft. / gpd
☐ 4. Extra Large---5.0 sq. ft. / gpd

EFFLUENT/EJECTOR PUMP

☒ 1. Not Required
☐ 2. May Be Required
☐ 3. Required
Specify only for engineered systems:
DOSE: ____ gallons

☐ 3. Section 4G (meter readings)
ATTACH WATER METER DATA

LATITUDE AND LONGITUDE

at center of disposal area
Lat. 43 d 86 m 29 s 119
Lon. -70 d 38 m 64 s 425
If g.p.s, state margin of error: ____

SITE EVALUATOR STATEMENT

I certify that on 11-8-23 (date) I completed a site evaluation on this property and state that the data reported are accurate and that [redacted] with the State of Maine Subsurface Wastewater Disposal Rules (10-144A CMR 241).

[redacted] 262 SE # 11-10-23 Date

MARK CENCI Site Evaluator Name Printed 329-3524 Telephone Number [redacted] E-mail Address

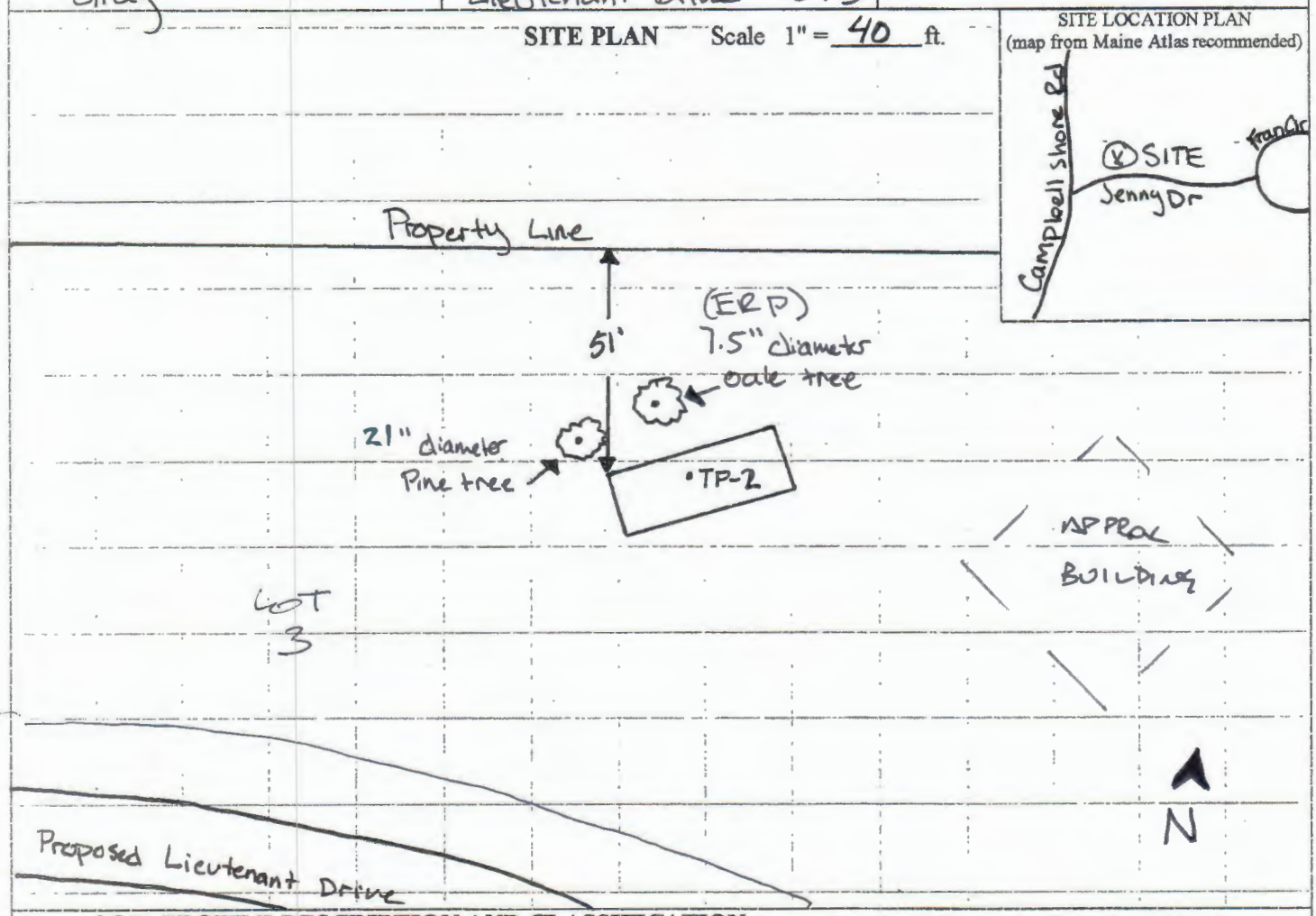
Note : Changes to or deviations from the design should be confirmed with the Site Evaluator.

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Department of Human Services
Division of Health Engineering, Station 10
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation	Street, Road, Subdivision	Owner or Applicant Name
Gray	Lieutenant Drive LOT 3	

SITE PLAN Scale 1" = 40 ft.



SITE LOCATION PLAN
(map from Maine Atlas recommended)

SOIL PROFILE DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole # TP-1 ☐ Test Pit ☐ Boring

" Depth of organic horizon above mineral soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–6	Fine Sandy Loam		Dark Brown	
6–12			Yellow Brown	
12–18				
18–24	REFUSAL (BOULDERS ?)			
24–30				
30–36				
36–42				
42–48				

Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
3	C	1-5%	20"	☐ Groundwater ☒ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Observation Hole # _____ ☐ Test Pit ☐ Boring

" Depth of organic horizon above mineral soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–6				
6–12				
12–18				
18–24				
24–30				
30–36				
36–42				
42–48				

Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
				☐ Groundwater ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

[redacted] 262 11-10-23
Site Evaluator Signature SE # Date

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

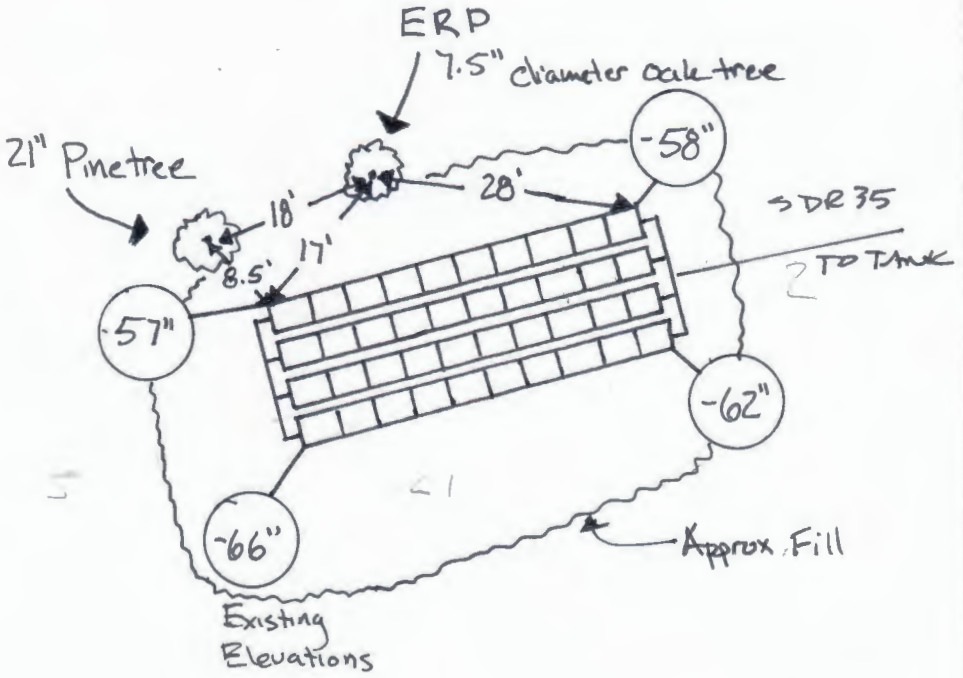
Maine Department of Human Services
Division of Health Engineering, Station 10
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation	Street, Road, Subdivision	Owner or Applicant Name
Gray	Lieutenant LOT 3	

SUBSURFACE WASTEWATER DISPOSAL PLAN

Scale: 1" = 20 ft.

40 Eljen Indrains
15' x 40'
4 rows of 10
12" row seperation

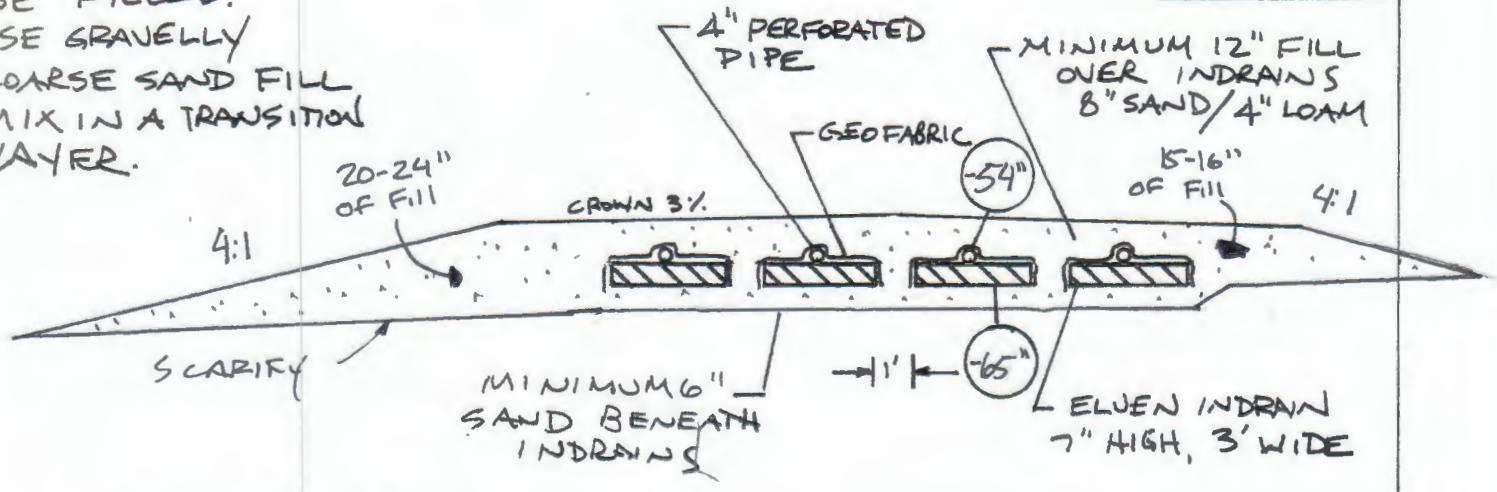


BACKFILL REQUIREMENTS	CONSTRUCTION ELEVATIONS		ELEVATION REFERENCE POINT
ABOVE GRADE			Location & Description: 7.5" diameter
Depth of Backfill (upslope) 15"-16"	Finished Grade Elevation	-42"	Oak tree, Nail 47" above base
Depth of Backfill (downslope) 20"-24"	Top of PIPES	-54"	
DEPTHS AT CROSS-SECTION (shown below)	Bottom of INDRAINS	-65"	Reference Elevation is: 0.0" or:

SCARIFY ALL GROUND TO BE FILLED. USE GRAVELLY COARSE SAND FILL MIX IN A TRANSITION LAYER.

DISPOSAL FIELD CROSS SECTION

Scales:
Vertical: 1" = 5 ft.
Horizontal: 1" = 5 ft.



FILL EXTENSION
15.5' 15' 7.5'

[redacted] 262 11-10-23
Site Evaluator Signature SE # Date

DM ROMA
CONSULTING ENGINEERS

STORMWATER MANAGEMENT REPORT

CAMBELL ACRES AMENDED SUBDIVISION
JENNY DRIVE & LIEUTENANTS DRIVE
GRAY, MAINE

A. Narrative

McDonnell Brothers Custom Builders, LLC, the applicant, is proposing to develop a 7.12±-acre parcel off of Jenny Drive in Gray, Maine. The project site is identified as Lot 17-28-03 on the "Amended Subdivision Plan Cambell Acres", prepared for Kristin Stanley, prepared by Survey, Inc. dated December 2021 and revised thru 5-9-22, and recorded in the Cumberland County Registry of Deeds Plan Book 222 page 174 on May 11, 2022. The property is vacant and consists predominantly of natural woodland with a small field area that is located within a buffer area at the northeasterly corner of the property.

The project proposes to construct three (3) residential duplexes on three (3) separate proposed residential lots. The lots will be accessed by a private road with a design length of approximately 421' from the intersection of Jenny Drive to the end of the proposed subdivision road and will include a hammerhead turnaround at the end of the proposed dead-end road. The project proposes to serve the residential development with both private water (three proposed potable private wells to be installed) and with individual private septic systems servicing each lot. Proposed telephone/electric/communication/cable services are proposed to be installed above ground, by extending overhead service from an existing utility pole located near the proposed curb cut though the project site.

In general, the property drains southwesterly towards Jenny Drive and discharges from the site into a depressed natural area within the site or to the existing road drainage swale in Jenny Drive, both ultimately merging at a depression at the outlet of a road culvert at the intersection of Jenny Drive and Fran Circle. From that point, stormwater is conveyed into an unnamed tributary of Glantz Brook and ultimately into the Pleasant River.

B. Alterations to Land Cover

McDonnell Brothers Custom Builders, LLC, intends to construct the roadway, the duplexes as well as all associated improvements and stormwater infrastructure. The applicant will be responsible for creating approximately 19,961 square feet (0.46± acres) of impervious surface consisting of the proposed roadway, and driveways, an additional 6,715 square feet of proposed roof area associated with the three proposed duplexes and approximately 58,935 square feet (1.35± acres) of landscaped area totaling approximately 85,612 square feet (1.96± acres) of total developed area.

The Town of Gray's Subdivision Ordinance indicates that the project's stormwater design will be required to meet the Basic, General and Flooding Standards of the Chapter 500 Stormwater Management rules.

The site is moderately sloped (5-9%) with steeper slopes closer to Jenny Drive. Soils on the property were determined utilizing the Medium Intensity Soil Maps for Cumberland County, Maine published by the Natural Resources Conservation Service. The soils boundaries and hydrologic soils group (HSG) designations

are indicated on the Watershed Maps within the design plan set and a Soils Map has been included as Attachment 1 of this report. Attachment 2 of this report includes all test pit logs analyzed within the project site.

C. Methodology and Modeling Assumptions

The proposed stormwater management system has been designed utilizing Best Management Practices to maintain existing drainage patterns. The goal of the storm drainage system design is to provide attenuation of the peak rates of runoff leaving the site. The method utilized to predict the surface water runoff rates in this analysis is a computer program entitled HydroCAD, which is based on the same methods that were originally developed by the U.S. Department of Agriculture (USDA), Natural Resources Conservation Service, and utilized in the TR-20 modeling program. Peak rates of runoff are forecasted based upon land use, hydrologic soil conditions, vegetative cover, contributing watershed area, time of concentration, rainfall data, storage volumes of detention basins and the hydraulic capacity of structures. The computer model predicts the amount of runoff as a function of time, with the ability to include the attenuation effect due to dams, lakes, large wetlands, floodplains and constructed stormwater management basins. The input data for rainfalls with statistical recurrence frequencies of 2-, 10- and 25 years was obtained from the Northeast Regional Climate Center's extreme precipitation tables for the project site.

D. Basic Standards

The project is required by the MDEP and the Town to provide permanent and temporary Erosion Control Best Management Practices. These methods are incorporated into the project design and outlined in detail in the plan set.

E. General Standard

The project design results in a proposed creation of less than 1 acre of impervious area (0.46± acres total project impervious area) and less than 5 acres of developed area (1.96± acres of total project developed area) within a non-lake watershed; therefore the proposed project is required by the MDEP and the Town of Gray to meet the General Standards outlined in the MDEP Chapter 500 to provide water quality treatment. Since the project intends to develop less than 60% of the total parcel area, the project is required to provide treatment for 90% of the new impervious surface and 75% of the total developed area associated with the project. The project proposes a grassed underdrained soil filter basins (FB-1) to address the proposed project's storm water management design as well as requiring drip edges along all three (3) of the residential buildings shown for the purposes of the project. The stormwater treatment calculations indicate that the project's storm water design is estimated to provide water quality treatment for more than 84% of the new impervious surface and more than 69% of the new developed area. Calculations illustrating treatment values calculated standards can be found in the project plans on sheet WS-2, Watershed Map: Developed Conditions and are included as Attachment 3 in this report. Calculations confirming the proposed BMPs, namely FB-1, have been adequately sized and designed are also included in Attachment 3.

F. Flooding Standard

The Town of Gray requires the project to detain, retain or result in the infiltration of stormwater from the 24-hour storms of the 2-year, 10-year and 25-year frequencies such that the peak flows of stormwater from the project site do not exceed the peak flows of stormwater prior to undertaking the project.

The project's stormwater design incorporates a detention to maintain these peak stormwater flows to pre-developed project conditions. The proposed project design has been modeled to evaluate and analyze the stormwater runoff characteristics of the site prior to construction of the project and upon completion of all proposed construction activities.

The first study point, Study Point 1 (SP-1) is located to the southwest of the project site near the outlet to an existing road culvert at the intersection of Jenny Drive and Fran Circle. This depression collects stormwater generated from both off-site and on-site tributary areas where the Jenny Drive Road swale converges with a natural drainage path, as well as the discharge from the existing road culvert. Stormwater is then conveyed to the south into an unnamed tributary of Glantz Brook and ultimately into the Pleasant River. Sub-basin watershed area for SP1 is made up of both proposed onsite development and offsite areas, and consists of developed land, undeveloped woodland, and undeveloped meadow areas.

Study Point 2 (SP-2) is located to the along the property frontage with Jenny Drive at the northwesterly property corner, and represents one of the two primary points of discharge from the project site. Stormwater discharged at this location continues to drain overland in an existing roadside swale, and drains to Study Point 1.

Study Point 3 (SP-3) is located along the westerly property side line and near the northwesterly property corner. Stormwater discharged at SP-3 drains of overland though naturally wooded area on the property of the abutter N/F Philip and Barbara Foster, and ultimately converges with flow from SP-2 at SP-1.

The following table summarizes the analysis:

Table 1 – Peak Rates of Stormwater Runoff

Study Point	2-Year (cfs)		10-Year (cfs)		25-Year (cfs)	
	Pre	Post	Pre	Post	Pre	Post
SP1	3.66	2.27	8.41	7.49	12.57	12.56
SP2	1.07	1.48	2.43	3.27	3.61	4.82
SP3	2.86	0.89	6.62	4.57	9.91	8.08

As illustrated in the table above, the proposed project's design including the integration of the proposed detention basin, reduces the peak rates of runoff at the study points SP-1 and SP-3, with increase at SP-2 of 0.39 cfs in the 2-year event, 0.84 cfs in the 10-year event and 1.21 cfs in the 25-year event.

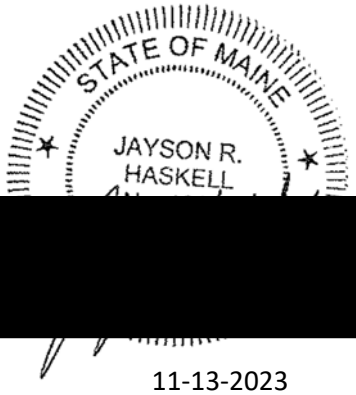
The watershed maps showing pre-development and post-development drainage patterns are included in the plan set and the computations performed with the HydroCAD software program are included as Attachment 4 of this report.

G. Maintenance of common facilities or property

The applicant will be responsible for the maintenance of the stormwater facilities until a homeowner's association is established. The Inspection, Maintenance and Housekeeping Plan for the project has been created and has been included in Attachment 5 of this report.

Prepared by:

DM ROMA CONSULTING ENGINEERS

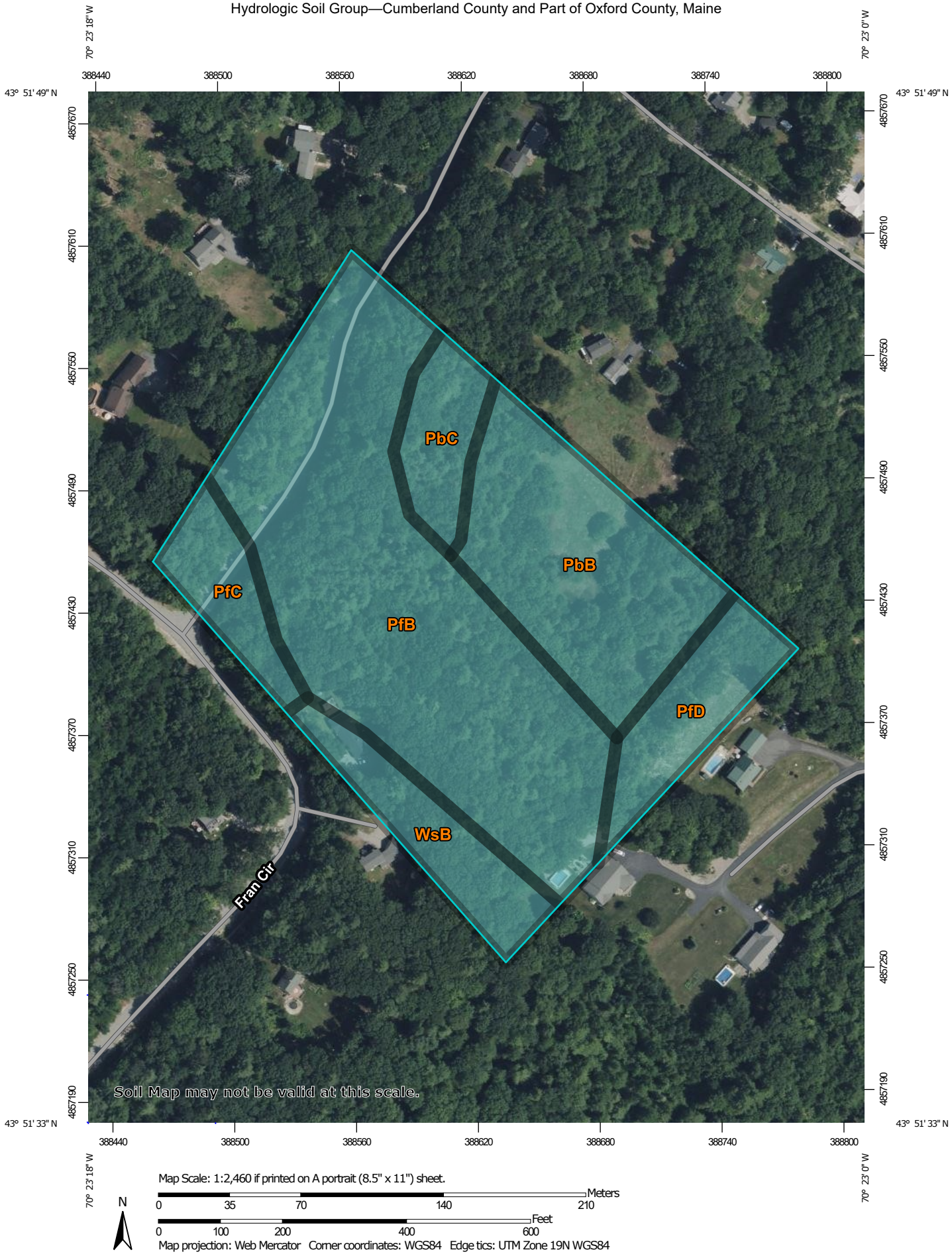


[redacted]

J.
Senior Project Engineer Southern Maine Regional Manager 11-13-2023

ATTACHMENT 1

MEDIUM INTENSITY SOILS MAP


70° 23' 18" W
70° 23' 0" W
388440
388500
388560
388620
388680
388740
388800
43° 51' 49" N
43° 51' 33" N
4857670
4857610
4857550
4857490
4857430
4857370
4857310
4857250
4857190
PbC
PbB
PfC
PfB
PfD
WsB
Fran Cir
Soil Map may not be valid at this scale.
Map Scale: 1:2,460 if printed on A portrait (8.5" x 11") sheet.
N
Meters
0 35 70 140 210
Feet
0 100 200 400 600
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

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

Soil Rating Lines

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

Soil Rating Points

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

Water Features

Streams and Canals

Transportation

Rails
Interstate Highways
US Routes
Major Roads
Local Roads

Background

Aerial Photography

MAP INFORMATION

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

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: Cumberland County and Part of Oxford County, Maine
Survey Area Data: Version 19, Aug 30, 2022

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

Date(s) aerial images were photographed: Jul 22, 2021—Oct 7, 2021

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.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
PbB	Paxton fine sandy loam, 3 to 8 percent slopes	C	2.9	21.9%
PbC	Paxton fine sandy loam, 8 to 15 percent slopes	C	0.8	6.0%
PfB	Paxton very stony fine sandy loam, 3 to 8 percent slopes	C	6.6	49.4%
PfC	Paxton very stony fine sandy loam, 8 to 15 percent slopes	C	0.8	6.0%
PfD	Paxton very stony fine sandy loam, 15 to 25 percent slopes	C	1.1	8.3%
WsB	Woodbridge very stony fine sandy loam, 0 to 8 percent slopes	C	1.1	8.4%
Totals for Area of Interest			**13.4**	**100.0%**

Description

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

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

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

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

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

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

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

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

ATTACHMENT 2

TEST PIT LOGS

FORM F

SOIL PROFILE/CLASSIFICATION INFORMATION

Detailed Description of Subsurface Conditions at Project Sites

Project Name:	Applicant Name:	Project Location (municipality):
Campbell Shore Road Lots	Kristin Stanley	Gray

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: TP-1 [X] Test Pit [ ] Boring

0 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling
FINE SANDY LOAM	FRIABLE	DARK BROWN	NONE OBSERVED
SANDY LOAM		YELLOWISH BROWN	
SANDY LOAM w/ COBBLES		LIGHT OLIVE BROWN	
	FIRM	OLIVE BROWN	FEW, FINE, & FAINT
LIMIT OF EXCAVATION = 34"			

[■] hydric [ ] non-hydric | Slope %: 0-5 | Limiting factor: 24" | [ ] ground water [■] restrictive layer [ ] bedrock

C.S.S. Soil Series / phase name: | Drainage Class | Hydrologic Group

L.S.E. Soil Classification: 3 Profile | C Soil Condition

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: TP-2 [ ] [X] Test Pit [ ] Boring

0 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling
FINE SANDY LOAM	FRIABLE	DARK BROWN	NONE OBSERVED
SANDY LOAM		YELLOWISH BROWN	
SANDY LOAM w/ COBBLES		LIGHT OLIVE BROWN	
	FIRM	OLIVE BROWN	FEW, FINE, & FAINT
LIMIT OF EXCAVATION = 34"			

[■] hydric [ ] non-hydric | Slope %: 0-3 | Limiting factor: 34" | [ ] ground water [■] restrictive layer [ ] bedrock

C.S.S. Soil Series / phase name: | Drainage Class | Hydrologic Group

L.S.E. Soil Classification: 3 Profile | C Soil Condition

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: [X] Test Pit [ ] Boring

0 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling

[■] hydric [■] non-hydric | Slope % | Limiting factor | [■] ground water [■] restrictive layer [■] bedrock

C.S.S. Soil Series / phase name: | Drainage Class | Hydrologic Group

L.S.E. Soil Classification: Profile | Soil Condition

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: [X] Test Pit [ ] Boring

0 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling

[■] hydric [■] non-hydric | Slope % | Limiting factor | [■] ground water [■] restrictive layer [■] bedrock

C.S.S. Soil Series / phase name: | Drainage Class | Hydrologic Group

L.S.E. Soil Classification: Profile | Soil Condition

Professional Endorsements *(as applicable)*

C.S.S. signature: [redacted] Date: 12/9/21

name printed/typed: Alexander A. Finamore Lic.#: 391

FORM F

SOIL PROFILE/CLASSIFICATION INFORMATION

Detailed Description of Subsurface Conditions at Project Sites

Project Name:	Applicant Name:	Project Location (municipality):
Campbell Shore Road Lots	Kristin Stanley	Gray

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: TP-3 | [X] Test Pit | [ ] Boring

0 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling
LOAM	FRIABLE	DARK BROWN	NONE OBSERVED
FINE SANDY LOAM		YELLOWISH BROWN	
SANDY LOAM w/ COBBLES		BROWN	
	FIRM	OLIVE BROWN	FEW, FINE, & FAINT
LIMIT OF EXCAVATION = 32"			

[■] hydric [ ] non-hydric | Slope %: 3-8 | Limiting factor: 20" | [ ] ground water [■] restrictive layer [ ] bedrock

C.S.S. Soil Series / phase name: | Drainage Class | Hydrologic Group

L.S.E. Soil Classification: 3 (Profile) | C (Soil Condition)

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: TP-4 | [X] Test Pit | [ ] Boring

0 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling
SANDY LOAM	FRIABLE	DARK BROWN	NONE OBSERVED
FINE SANDY LOAM		YELLOWISH BROWN	
SANDY LOAM w/ COBBLES		LIGHT OLIVE BROWN	
	FIRM	OLIVE BROWN	FEW, FINE, & FAINT
LIMIT OF EXCAVATION = 44"			

[■] hydric [ ] non-hydric | Slope %: 0-3 | Limiting factor: 34" | [ ] ground water [■] restrictive layer [ ] bedrock

C.S.S. Soil Series / phase name: | Drainage Class | Hydrologic Group

L.S.E. Soil Classification: 3 (Profile) | C (Soil Condition)

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: TP-5 | [X] Test Pit | [ ] Boring

0 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling
SANDY LOAM	FRIABLE	DARK BROWN	NONE OBSERVED
FINE SANDY LOAM		YELLOWISH BROWN	
SANDY LOAM w/ COBBLES		LIGHT OLIVE BROWN	
LIMIT OF EXCAVATION = 44"			

[■] hydric [ ] non-hydric | Slope %: 5-8 | Limiting factor: >48" | [ ] ground water [ ] restrictive layer [ ] bedrock

C.S.S. Soil Series / phase name: | Drainage Class | Hydrologic Group

L.S.E. Soil Classification: 2 (Profile) | B (Soil Condition)

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: | [X] Test Pit | [ ] Boring

0 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (Inches)

Texture	Consistency	Color	Mottling

[ ] hydric [ ] non-hydric | Slope % | Limiting factor | [ ] ground water [■] restrictive layer [ ] bedrock

C.S.S. Soil Series / phase name: | Drainage Class | Hydrologic Group

L.S.E. Soil Classification: Profile | Soil Condition

Professional Endorsements *(as applicable)*

C.S.S. signature:		Date:
name printed/typed:		Lic.#:
[redacted]		Date: 2/11/22
name printed/typed:	Alexander A. Finamore	Lic.#: 391

FORM F

SOIL PROFILE/CLASSIFICATION INFORMATION

Detailed Description of Subsurface Conditions at Project Sites

Project Name:	Applicant Name:	Project Location (municipality):
Campbell Shore Road Lots	McDonnell Brothers Custom Builders, LLC	Gray

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: TP-6 [X] Test Pit [ ] Boring

0 * Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
FINE SANDY LOAM	FRIABLE	DARK BROWN	NONE OBSERVED
SANDY LOAM w/ COBBLES		YELLOWISH BROWN	
		OLIVE	
	FIRM	OLIVE BROWN	FEW, FINE, & FAINT
LIMIT OF EXCAVATION = 34"			

[■] hydric [ ] non-hydric | Slope %: 0-5 | Limiting factor: 18" | [■] ground water [■] restrictive layer [ ] bedrock

C.S.S. Soil Series / phase name: | Drainage Class | Hydrologic Group

L.S.E. Soil Classification: 3 (Profile) | C (Soil Condition)

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: TP-7 [ ] [X] Test Pit [ ] Boring

0 * Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
FINE SANDY LOAM	FRIABLE	DARK BROWN	NONE OBSERVED
SANDY LOAM		YELLOWISH BROWN	
SANDY LOAM w/ COBBLES		LIGHT OLIVE BROWN	
	FIRM	OLIVE BROWN	FEW, FINE, & FAINT
LIMIT OF EXCAVATION = 34"			

[ ] hydric [■] non-hydric | Slope %: 0-3 | Limiting factor: 28" | [■] ground water [■] restrictive layer [ ] bedrock

C.S.S. Soil Series / phase name: | Drainage Class | Hydrologic Group

L.S.E. Soil Classification: 3 (Profile) | C (Soil Condition)

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: TP-SW1 [X] Test Pit [ ] Boring

0 * Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
FINE SANDY LOAM	FRIABLE	DARK BROWN	NONE OBSERVED
SANDY LOAM w/ COBBLES		YELLOWISH BROWN	
		OLVIE	
		OLIVE BROWN	FEW, FINE, & FAINT
	FIRM		
LIMIT OF EXCAVATION = 34"			

[■] hydric [ ] non-hydric | Slope %: 5-8 | Limiting factor: 13" | [■] ground water [ ] restrictive layer [ ] bedrock

C.S.S. Soil Series / phase name: | Drainage Class | Hydrologic Group

L.S.E. Soil Classification: 3 (Profile) | D (Soil Condition)

SOIL DESCRIPTION AND CLASSIFICATION

Exploration Symbol: [ ] [X] Test Pit [ ] Boring

0 * Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling

[ ] hydric [ ] non-hydric | Slope % | Limiting factor | [ ] ground water [■] restrictive layer [ ] bedrock

C.S.S. Soil Series / phase name: | Drainage Class | Hydrologic Group

L.S.E. Soil Classification: (Profile) | (Soil Condition)

Professional Endorsements *(as applicable)*

C.S.S.	signature:	Date:
	name printed/typed:	Lic.#:
[redacted]		Date: 7/27/23
	name printed/typed: Alexander A. Finamore	Lic.#: 391

ATTACHMENT 3

WATER QUALITY & BMP SIZING CALCULATIONS

DM ROMA
CONSULTING ENGINEERS

Cambell Acres ~ Lieutenants Drive
Calculated by: JPC
Printed 11/14/2023
Job #23015

Stormwater Treatment Table

	Total Watershed Area (SF)	New Paved/Gravel Area (SF)	New Building Area (SF)	New Landscaped Area (SF)	Existing/Offsite Impervious Area (SF)*	Existing/Offsite Landscaping Area (SF)*	Existing Undeveloped Area (SF)	Treatment Provided	New Impervious Area Treated (SF)	New Landscaped Area Treated (SF)	Treatment Device
WS-1	18,623	2,158	0	3,419	2,039	3,205	7,803	No	0	0	none
WS-11	96,640	1,853	0	9,162	361	20,522	64,742	No	0	0	none
WS-2**	45,343	201	955	9,201	0	0	34,986	dripedge	955	0	dripedge only
WS-21**	36,959	3,781	1,424	6,563	0	7,004	18,187	Yes	5,204	6,563	FB1
WS-22**	71,354	5,364	2,238	12,011	0	1,365	50,376	Yes	7,602	12,011	FB1
WS-23	14,473	2,263	0	9,439	0	0	2,770	Yes	2,263	9,439	FB1
WS-24	47,852	4,342	2,098	9,141	0	0	32,272	Yes	6,440	9,141	FB1
Total	**331,243**	**19,961**	**6,715**	**58,935**					**22,464**	**37,154**	

* The project is not taking credit for the Existing / Offsite impervious and landscaped areas, but are included in the BMP sizing calculations for each treatment device.

** All proposed buildings shall be installed with a roofline drip edge to provide treatment for the rooftop impervious surface. The buildings' impervious area is included in the watershed and overall treatment calculations below, but not included in the BMP sizing calculations for each treatment device.

Impervious Area =	26,676	sf
New Impervious Area Requiring Treatment (90%)	25,342	sf
Provided Impervious Treatment=	22,464	sf
	84.21%	Impervious Area Treated
Developed Area =	85,612	sf
Developed Area Requiring Treatment (75%)=	68,489	sf
Developed Area Treated=	59,618	sf
	69.64%	Developed Area Treated

Underdrained Filter Basin Sizing Calculations

Filter Basin 1

Tributary Impervious Area=	17,847 sf	(WS-21 & 27 Impervious Area)
Tributary Landscaped Area=	37,154 sf	(WS-21 & 27 Landscaped Area)

Water Quality Volume (WQV) Calculation

WQV (Required) = 1"xImpervious Area + 0.4"xLandscaped Area

WQV (Required) = 2,726 cf

Stage Storage Volume

Elevation	Area (sf)	Storage (cf)
332.3	2,352	0
333.8	3,310	4,226

Outlet Elevation = 333.80

Storage Volume Provided= 4,226 cf > Required

Filter Bottom Calculation

Filter Area (Required) = 5%xImpervious Area + 2%xLandscaped Area

Filter Area Required = 1,635 sf

Filter Area Provided = 2,352 sf > Required

FILTER BASIN ~ DRAINDOWN CALCULATION

Hydrograph for Pond FB1:

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	332.30	0.00	**0.00**	0.00
2.50	0.00	0	332.30	0.00	0.00	0.00
5.00	0.00	0	332.30	0.00	0.00	0.00
7.50	0.00	0	332.30	0.00	0.00	0.00
10.00	**0.00**	0	332.30	0.00	0.00	0.00
12.50	**1.05**	1,160	332.77	0.06	0.00	0.06
15.00	0.17	3,748	333.65	0.07	0.00	0.07
17.50	0.09	**4,224**	**333.80**	**0.07**	0.00	**0.07**
20.00	0.06	**4,218**	**333.80**	**0.07**	0.00	**0.07**
22.50	0.05	4,070	333.75	0.07	0.00	0.07
25.00	0.00	3,745	333.65	0.07	0.00	0.07
27.50	0.00	3,121	333.45	0.07	0.00	0.07
30.00	0.00	2,515	333.25	0.07	0.00	0.07
32.50	0.00	1,928	333.05	0.06	0.00	0.06
35.00	0.00	1,362	332.84	0.06	0.00	0.06
37.50	0.00	818	332.63	0.06	0.00	0.06
40.00	0.00	296	332.42	0.06	0.00	0.06
42.50	0.00	0	332.30	0.00	0.00	0.00
45.00	0.00	0	332.30	0.00	0.00	0.00
47.50	0.00	0	332.30	0.00	0.00	0.00
50.00	0.00	0	332.30	0.00	0.00	0.00
52.50	0.00	0	332.30	0.00	0.00	0.00
55.00	0.00	0	332.30	0.00	0.00	0.00
57.50	0.00	0	332.30	0.00	0.00	0.00
60.00	0.00	0	332.30	0.00	0.00	0.00
62.50	0.00	0	332.30	0.00	0.00	0.00
65.00	0.00	0	332.30	0.00	0.00	0.00
67.50	0.00	0	332.30	0.00	0.00	0.00
70.00	0.00	0	332.30	0.00	0.00	0.00

POND AT CPV AT 17.5 HRS
EMPTY AT 42.5 HRS
DRAINDOWN TIME = 42.5-17.5=25 HRS

FILTER BASIN ~ SPILLWAY OUTLET ONLY CALCULATION

Summary for Pond FB1:

[80] Warning: Exceeded Pond R9 by 0.66' @ 25.50 hrs (1.42 cfs 59,300 cf)

Inflow Area = 170,636 sf, 6.10% Impervious, Inflow Depth = 3.12" for 25-Year event
Inflow = 7.78 cfs @ 12.38 hrs, Volume= 44,422 cf
Outflow = 7.36 cfs @ 12.49 hrs, Volume= 35,289 cf, Atten= 5%, Lag= 6.3 min
Primary = 7.36 cfs @ 12.49 hrs, Volume= 35,289 cf
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 335.59' @ 12.49 hrs Surf.Area= 4,679 sf Storage= 11,319 cf

PEAK WS EL.= 335.59
BERM EL.= 336.6
FREEBOARD:
336.6-335.59=1.01'

Plug-Flow detention time= 127.2 min calculated for 35,289 cf (79% of inflow)
Center-of-Mass det. time= 47.2 min (895.0 - 847.8)

Volume	Invert	Avail.Storage	Storage Description
#1	332.30'	13,356 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
332.30	2,352	203.8	0	0	2,352
334.00	3,450	234.4	4,902	4,902	3,482
335.00	4,181	253.2	3,810	8,712	4,251
335.50	4,533	261.4	2,178	10,890	4,611
336.00	5,345	280.3	2,467	13,356	5,437

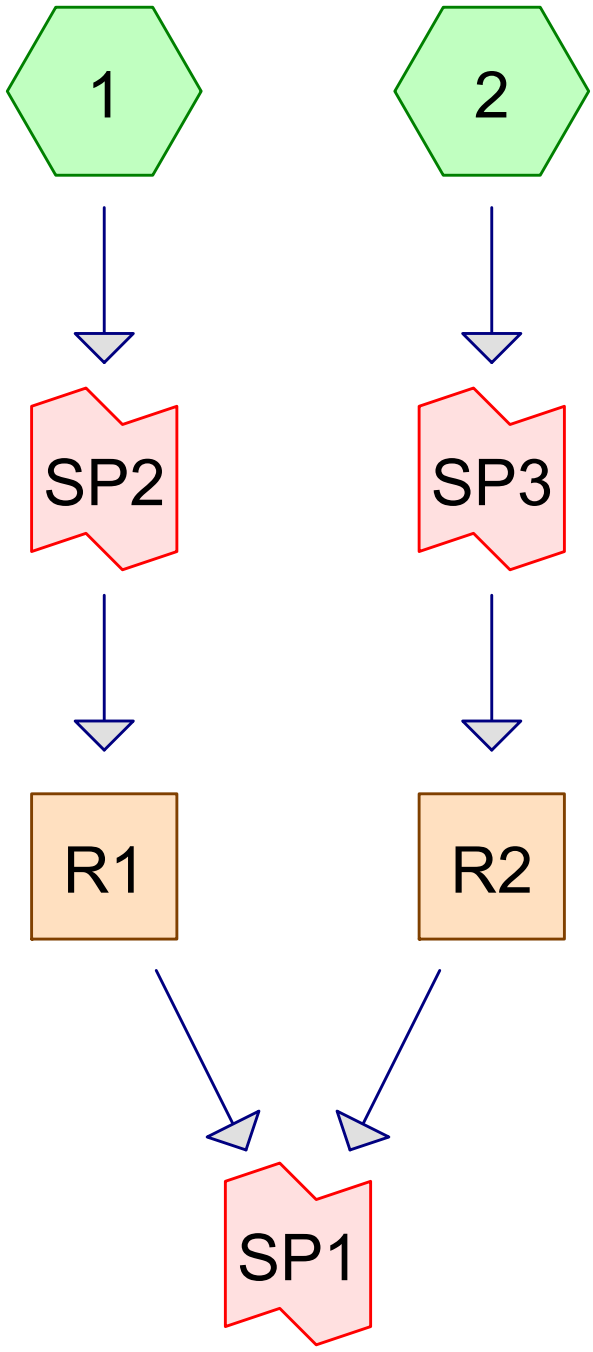
Device	Routing	Invert	Outlet Devices
#1	Primary	335.10'	**8.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#2	Secondary	330.03'	**8.0" Round Culvert X 0.00** L= 26.6' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 330.03' / 329.90' S= 0.0049 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#3	Device 2	330.13'	**1.2" Vert. Orifice/Grate** C= 0.600
#4	Device 3	330.13'	**4.0" Vert. 4" UD** C= 0.600
#5	Device 4	332.30'	**2.410 in/hr Exfiltration over Surface area**
#6	Device 2	333.80'	**3.0" W x 9.0" H Vert. Orifice/Grate** C= 0.600
#7	Device 2	334.55'	**Neenah R4345 Beehive Grate Light Duty-req. structure** Head (feet) 0.00 0.10 0.15 0.20 0.25 0.30 0.35 0.40 0.50 0.60 0.70 0.80 0.90 1.00 Disch. (cfs) 0.000 0.900 1.600 2.500 3.500 4.000 4.600 5.300 6.800 7.500 8.100 8.600 9.100 9.600

Primary OutFlow Max=7.34 cfs @ 12.49 hrs HW=335.59' TW=330.65' (Dynamic Tailwater)
└─**1=Broad-Crested Rectangular Weir** (Weir Controls 7.34 cfs @ 1.86 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=332.30' TW=329.90' (Dynamic Tailwater)
└─**2=Culvert** (Controls 0.00 cfs)
  ├─**3=Orifice/Grate** (Passes 0.00 cfs of 0.06 cfs potential flow)
  │ └─**4=4" UD** (Passes 0.00 cfs of 0.59 cfs potential flow)
  │ └─**5=Exfiltration** (Passes 0.00 cfs of 0.13 cfs potential flow)
  ├─**6=Orifice/Grate** (Controls 0.00 cfs)
  └─**7=Neenah R4345 Beehive Grate Light Duty-req. structure** (Controls 0.00 cfs)

ATTACHMENT 4

HYDROCAD CALCULATIONS



Subcat Reach Pond Link

Routing Diagram for 23015 - PRE
Prepared by DM Roma Consulting Engineers, Printed 11/14/2023
HydroCAD® 10.00-26 s/n 09237 © 2020 HydroCAD Software Solutions LLC

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

Subcatchment 1: Runoff Area=71,190 sf 3.38% Impervious Runoff Depth=0.93"
Flow Length=876' Tc=21.6 min CN=73 Runoff=1.07 cfs 5,529 cf

Subcatchment 2: Runoff Area=260,052 sf 0.00% Impervious Runoff Depth=0.88"
Flow Length=761' Tc=37.6 min CN=72 Runoff=2.86 cfs 19,080 cf

Reach R1: Avg. Flow Depth=0.16' Max Vel=3.29 fps Inflow=1.07 cfs 5,529 cf
n=0.022 L=114.0' S=0.0698 '/' Capacity=942.98 cfs Outflow=1.07 cfs 5,529 cf

Reach R2: Avg. Flow Depth=0.35' Max Vel=3.52 fps Inflow=2.86 cfs 19,080 cf
n=0.035 L=257.2' S=0.0719 '/' Capacity=304.41 cfs Outflow=2.86 cfs 19,080 cf

Link SP1: Inflow=3.66 cfs 24,609 cf
Primary=3.66 cfs 24,609 cf

Link SP2: Inflow=1.07 cfs 5,529 cf
Primary=1.07 cfs 5,529 cf

Link SP3: Inflow=2.86 cfs 19,080 cf
Primary=2.86 cfs 19,080 cf

Total Runoff Area = 331,242 sf Runoff Volume = 24,609 cf Average Runoff Depth = 0.89"
99.27% Pervious = 328,835 sf 0.73% Impervious = 2,407 sf

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

Subcatchment 1: Runoff Area=71,190 sf 3.38% Impervious Runoff Depth=1.98"
Flow Length=876' Tc=21.6 min CN=73 Runoff=2.43 cfs 11,741 cf

Subcatchment 2: Runoff Area=260,052 sf 0.00% Impervious Runoff Depth=1.90"
Flow Length=761' Tc=37.6 min CN=72 Runoff=6.62 cfs 41,219 cf

Reach R1: Avg. Flow Depth=0.22' Max Vel=4.04 fps Inflow=2.43 cfs 11,741 cf
n=0.022 L=114.0' S=0.0698 '/' Capacity=942.98 cfs Outflow=2.43 cfs 11,741 cf

Reach R2: Avg. Flow Depth=0.48' Max Vel=4.34 fps Inflow=6.62 cfs 41,219 cf
n=0.035 L=257.2' S=0.0719 '/' Capacity=304.41 cfs Outflow=6.62 cfs 41,219 cf

Link SP1: Inflow=8.41 cfs 52,960 cf
Primary=8.41 cfs 52,960 cf

Link SP2: Inflow=2.43 cfs 11,741 cf
Primary=2.43 cfs 11,741 cf

Link SP3: Inflow=6.62 cfs 41,219 cf
Primary=6.62 cfs 41,219 cf

Total Runoff Area = 331,242 sf Runoff Volume = 52,960 cf Average Runoff Depth = 1.92"
99.27% Pervious = 328,835 sf 0.73% Impervious = 2,407 sf

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

Subcatchment 1: Runoff Area=71,190 sf 3.38% Impervious Runoff Depth=2.90"
Flow Length=876' Tc=21.6 min CN=73 Runoff=3.61 cfs 17,197 cf

Subcatchment 2: Runoff Area=260,052 sf 0.00% Impervious Runoff Depth=2.81"
Flow Length=761' Tc=37.6 min CN=72 Runoff=9.91 cfs 60,813 cf

Reach R1: Avg. Flow Depth=0.25' Max Vel=4.46 fps Inflow=3.61 cfs 17,197 cf
n=0.022 L=114.0' S=0.0698 '/' Capacity=942.98 cfs Outflow=3.61 cfs 17,197 cf

Reach R2: Avg. Flow Depth=0.55' Max Vel=4.80 fps Inflow=9.91 cfs 60,813 cf
n=0.035 L=257.2' S=0.0719 '/' Capacity=304.41 cfs Outflow=9.91 cfs 60,813 cf

Link SP1: Inflow=12.57 cfs 78,011 cf
Primary=12.57 cfs 78,011 cf

Link SP2: Inflow=3.61 cfs 17,197 cf
Primary=3.61 cfs 17,197 cf

Link SP3: Inflow=9.91 cfs 60,813 cf
Primary=9.91 cfs 60,813 cf

Total Runoff Area = 331,242 sf Runoff Volume = 78,011 cf Average Runoff Depth = 2.83"
99.27% Pervious = 328,835 sf 0.73% Impervious = 2,407 sf

Summary for Subcatchment 1:

Runoff = 3.61 cfs @ 12.31 hrs, Volume= 17,197 cf, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.77"

	Area (sf)	CN	Description
	14,154	74	>75% Grass cover, Good, HSG C
	54,629	72	Woods/grass comb., Good, HSG C
*	2,407	98	Exist. road
	71,190	73	Weighted Average
	68,783		96.62% Pervious Area
	2,407		3.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2	113	0.0533	0.12		**Sheet Flow, Seg A to B** Woods: Light underbrush n= 0.400 P2= 3.12"
0.7	149	0.0553	3.79		**Shallow Concentrated Flow, Seg B to C** Unpaved Kv= 16.1 fps
4.1	371	0.0922	1.52		**Shallow Concentrated Flow, Seg C to D** Woodland Kv= 5.0 fps
0.4	130	0.0423	5.44	169.64	**Channel Flow, Seg D to E** Area= 31.2 sf Perim= 63.5' r= 0.49' n= 0.035 Earth, dense weeds
0.2	113	0.0355	11.57	169.24	**Trap/Vee/Rect Channel Flow, Seg E to F** Bot.W=3.00' D=1.50' Z= 6.0 & 3.0 '/' Top.W=16.50' n= 0.022 Earth, clean & straight
21.6	876	Total			

Summary for Subcatchment 2:

Runoff = 9.91 cfs @ 12.53 hrs, Volume= 60,813 cf, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.77"

Area (sf)	CN	Description
18,347	74	>75% Grass cover, Good, HSG C
241,705	72	Woods/grass comb., Good, HSG C
260,052	72	Weighted Average
260,052		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
32.3	150	0.0167	0.08		**Sheet Flow, Seg A to B** Woods: Light underbrush n= 0.400 P2= 3.12"
0.8	61	0.0734	1.35		**Shallow Concentrated Flow, Seg B to C** Woodland Kv= 5.0 fps
0.3	125	0.0582	6.30	238.91	**Channel Flow, Seg C to D** Area= 37.9 sf Perim= 78.5' r= 0.48' n= 0.035 Earth, dense weeds
1.0	84	0.0807	1.42		**Shallow Concentrated Flow, Seg D to E** Woodland Kv= 5.0 fps
0.3	86	0.0261	4.96	293.50	**Channel Flow, Seg E to F** Area= 59.2 sf Perim= 121.4' r= 0.49' n= 0.030 Earth, grassed & winding
2.9	255	0.0833	1.44		**Shallow Concentrated Flow, Seg F to G** Woodland Kv= 5.0 fps
37.6	761	Total			

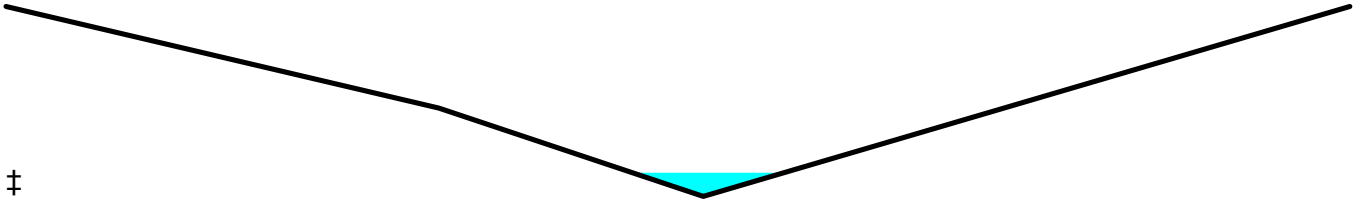
Summary for Reach R1:

Inflow Area = 71,190 sf, 3.38% Impervious, Inflow Depth = 2.90" for 25-Year event
Inflow = 3.61 cfs @ 12.31 hrs, Volume= 17,197 cf
Outflow = 3.61 cfs @ 12.31 hrs, Volume= 17,197 cf, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.46 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 2.05 fps, Avg. Travel Time= 0.9 min

Peak Storage= 92 cf @ 12.31 hrs
Average Depth at Peak Storage= 0.25'
Bank-Full Depth= 2.00' Flow Area= 54.5 sf, Capacity= 942.98 cfs

Custom cross-section, Length= 114.0' Slope= 0.0698 '/' (101 Elevation Intervals)
Constant n= 0.022 Earth, clean & straight
Inlet Invert= 319.96', Outlet Invert= 312.00'



‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	320.00	0.00
18.38	318.93	1.07
29.62	318.00	2.00
57.08	320.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.93	11.2	24.1	1,273	119.36
2.00	54.5	57.2	6,218	942.98

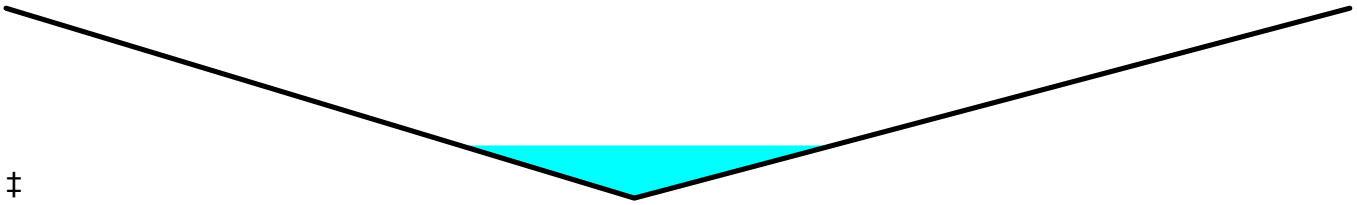
Summary for Reach R2:

Inflow Area = 260,052 sf, 0.00% Impervious, Inflow Depth = 2.81" for 25-Year event
Inflow = 9.91 cfs @ 12.53 hrs, Volume= 60,813 cf
Outflow = 9.91 cfs @ 12.54 hrs, Volume= 60,813 cf, Atten= 0%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.80 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 2.23 fps, Avg. Travel Time= 1.9 min

Peak Storage= 531 cf @ 12.54 hrs
Average Depth at Peak Storage= 0.55'
Bank-Full Depth= 2.00' Flow Area= 26.9 sf, Capacity= 304.41 cfs

Custom cross-section, Length= 257.2' Slope= 0.0719 '/'
Constant n= 0.035 Earth, dense weeds
Inlet Invert= 330.50', Outlet Invert= 312.00'



‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	334.00	0.00
12.59	332.00	2.00
26.93	334.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
2.00	26.9	27.2	6,926	304.41

Summary for Link SP1:

Inflow Area = 331,242 sf, 0.73% Impervious, Inflow Depth = 2.83" for 25-Year event
Inflow = 12.57 cfs @ 12.49 hrs, Volume= 78,011 cf
Primary = 12.57 cfs @ 12.49 hrs, Volume= 78,011 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Link SP2:

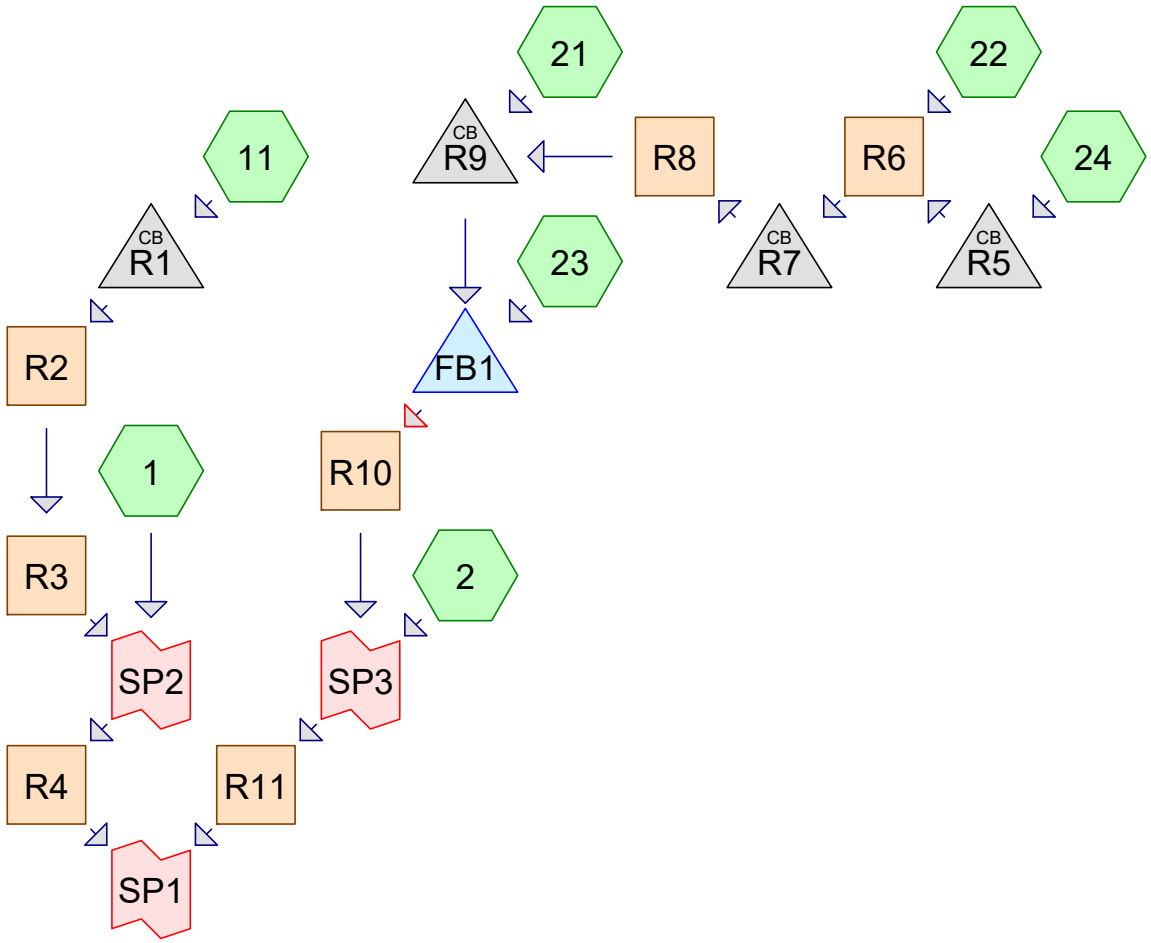
Inflow Area = 71,190 sf, 3.38% Impervious, Inflow Depth = 2.90" for 25-Year event
Inflow = 3.61 cfs @ 12.31 hrs, Volume= 17,197 cf
Primary = 3.61 cfs @ 12.31 hrs, Volume= 17,197 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Link SP3:

Inflow Area = 260,052 sf, 0.00% Impervious, Inflow Depth = 2.81" for 25-Year event
Inflow = 9.91 cfs @ 12.53 hrs, Volume= 60,813 cf
Primary = 9.91 cfs @ 12.53 hrs, Volume= 60,813 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



Subcat Reach Pond Link

Routing Diagram for 23015 - POST
Prepared by DM Roma Consulting Engineers, Printed 11/14/2023
HydroCAD® 10.00-26 s/n 09237 © 2020 HydroCAD Software Solutions LLC

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

Subcatchment 1: Runoff Area=18,624 sf 21.64% Impervious Runoff Depth=1.28"
Flow Length=201' Tc=8.8 min CN=79 Runoff=0.56 cfs 1,982 cf

Subcatchment 2: Runoff Area=45,343 sf 2.24% Impervious Runoff Depth=0.93"
Flow Length=593' Tc=17.8 min CN=73 Runoff=0.74 cfs 3,522 cf

Subcatchment 11: Runoff Area=96,641 sf 2.11% Impervious Runoff Depth=0.93"
Flow Length=750' Tc=30.5 min CN=73 Runoff=1.26 cfs 7,506 cf

Subcatchment 21: Runoff Area=36,958 sf 6.13% Impervious Runoff Depth=1.10"
Flow Length=649' Tc=37.5 min CN=76 Runoff=0.53 cfs 3,378 cf

Subcatchment 22: Runoff Area=71,354 sf 5.55% Impervious Runoff Depth=1.04"
Flow Length=548' Tc=29.2 min CN=75 Runoff=1.08 cfs 6,185 cf

Subcatchment 23: Runoff Area=14,472 sf 14.29% Impervious Runoff Depth=1.15"
Flow Length=87' Tc=9.8 min CN=77 Runoff=0.38 cfs 1,393 cf

Subcatchment 24: Runoff Area=47,852 sf 4.41% Impervious Runoff Depth=1.04"
Flow Length=443' Tc=22.6 min UI Adjusted CN=75 Runoff=0.81 cfs 4,148 cf

Reach R10: Avg. Flow Depth=0.28' Max Vel=1.00 fps Inflow=0.54 cfs 15,114 cf
n=0.035 L=52.4' S=0.0076 '/' Capacity=99.17 cfs Outflow=0.54 cfs 15,114 cf

Reach R11: Avg. Flow Depth=0.23' Max Vel=2.57 fps Inflow=0.89 cfs 18,636 cf
n=0.035 L=257.2' S=0.0680 '/' Capacity=296.07 cfs Outflow=0.88 cfs 18,636 cf

Reach R2: Avg. Flow Depth=0.52' Max Vel=1.28 fps Inflow=1.26 cfs 7,506 cf
n=0.035 L=34.4' S=0.0058 '/' Capacity=11.80 cfs Outflow=1.26 cfs 7,506 cf

Reach R3: Avg. Flow Depth=0.45' Max Vel=3.03 fps Inflow=1.26 cfs 7,506 cf
n=0.022 L=113.0' S=0.0188 '/' Capacity=48.93 cfs Outflow=1.26 cfs 7,506 cf

Reach R4: Avg. Flow Depth=0.18' Max Vel=3.57 fps Inflow=1.48 cfs 9,488 cf
n=0.022 L=114.0' S=0.0698 '/' Capacity=942.98 cfs Outflow=1.48 cfs 9,488 cf

Reach R6: Avg. Flow Depth=0.26' Max Vel=2.74 fps Inflow=1.85 cfs 10,332 cf
n=0.030 L=86.3' S=0.0260 '/' Capacity=249.38 cfs Outflow=1.85 cfs 10,332 cf

Reach R8: Avg. Flow Depth=0.25' Max Vel=2.89 fps Inflow=1.85 cfs 10,332 cf
n=0.069 L=44.4' S=0.1608 '/' Capacity=269.88 cfs Outflow=1.86 cfs 10,332 cf

Pond FB1: Peak Elev=334.36' Storage=6,190 cf Inflow=2.52 cfs 15,103 cf
Primary=0.00 cfs 0 cf Secondary=0.54 cfs 15,114 cf Outflow=0.54 cfs 15,114 cf

Pond R1: Peak Elev=323.11' Inflow=1.26 cfs 7,506 cf
18.0" Round Culvert n=0.013 L=35.5' S=0.0051 '/' Outflow=1.26 cfs 7,506 cf

Pond R5: Peak Elev=350.37' Inflow=0.81 cfs 4,148 cf
15.0" Round Culvert n=0.013 L=49.9' S=0.0259 '/' Outflow=0.81 cfs 4,148 cf

Pond R7: Peak Elev=347.13' Inflow=1.85 cfs 10,332 cf
15.0" Round Culvert n=0.013 L=57.7' S=0.0827 '/' Outflow=1.85 cfs 10,332 cf

Pond R9: Peak Elev=335.33' Inflow=2.33 cfs 13,710 cf
15.0" Round Culvert n=0.013 L=36.6' S=0.0292 '/' Outflow=2.33 cfs 13,710 cf

Link SP1: Inflow=2.27 cfs 28,123 cf
Primary=2.27 cfs 28,123 cf

Link SP2: Inflow=1.48 cfs 9,488 cf
Primary=1.48 cfs 9,488 cf

Link SP3: Inflow=0.89 cfs 18,636 cf
Primary=0.89 cfs 18,636 cf

Total Runoff Area = 331,244 sf Runoff Volume = 28,112 cf Average Runoff Depth = 1.02"
94.72% Pervious = 313,761 sf 5.28% Impervious = 17,483 sf

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

Subcatchment 1: Runoff Area=18,624 sf 21.64% Impervious Runoff Depth=2.47"
Flow Length=201' Tc=8.8 min CN=79 Runoff=1.10 cfs 3,832 cf

Subcatchment 2: Runoff Area=45,343 sf 2.24% Impervious Runoff Depth=1.98"
Flow Length=593' Tc=17.8 min CN=73 Runoff=1.67 cfs 7,478 cf

Subcatchment 11: Runoff Area=96,641 sf 2.11% Impervious Runoff Depth=1.98"
Flow Length=750' Tc=30.5 min CN=73 Runoff=2.84 cfs 15,938 cf

Subcatchment 21: Runoff Area=36,958 sf 6.13% Impervious Runoff Depth=2.22"
Flow Length=649' Tc=37.5 min CN=76 Runoff=1.11 cfs 6,831 cf

Subcatchment 22: Runoff Area=71,354 sf 5.55% Impervious Runoff Depth=2.14"
Flow Length=548' Tc=29.2 min CN=75 Runoff=2.32 cfs 12,707 cf

Subcatchment 23: Runoff Area=14,472 sf 14.29% Impervious Runoff Depth=2.30"
Flow Length=87' Tc=9.8 min CN=77 Runoff=0.78 cfs 2,774 cf

Subcatchment 24: Runoff Area=47,852 sf 4.41% Impervious Runoff Depth=2.14"
Flow Length=443' Tc=22.6 min UI Adjusted CN=75 Runoff=1.74 cfs 8,521 cf

Reach R10: Avg. Flow Depth=0.57' Max Vel=1.59 fps Inflow=3.43 cfs 30,834 cf
n=0.035 L=52.4' S=0.0076 '/' Capacity=99.17 cfs Outflow=3.43 cfs 30,834 cf

Reach R11: Avg. Flow Depth=0.42' Max Vel=3.86 fps Inflow=4.57 cfs 38,312 cf
n=0.035 L=257.2' S=0.0680 '/' Capacity=296.07 cfs Outflow=4.49 cfs 38,312 cf

Reach R2: Avg. Flow Depth=0.70' Max Vel=1.57 fps Inflow=2.84 cfs 15,938 cf
n=0.035 L=34.4' S=0.0058 '/' Capacity=11.80 cfs Outflow=2.84 cfs 15,938 cf

Reach R3: Avg. Flow Depth=0.61' Max Vel=3.71 fps Inflow=2.84 cfs 15,938 cf
n=0.022 L=113.0' S=0.0188 '/' Capacity=48.93 cfs Outflow=2.84 cfs 15,938 cf

Reach R4: Avg. Flow Depth=0.24' Max Vel=4.35 fps Inflow=3.27 cfs 19,770 cf
n=0.022 L=114.0' S=0.0698 '/' Capacity=942.98 cfs Outflow=3.27 cfs 19,770 cf

Reach R6: Avg. Flow Depth=0.39' Max Vel=3.43 fps Inflow=3.99 cfs 21,228 cf
n=0.030 L=86.3' S=0.0260 '/' Capacity=249.38 cfs Outflow=3.99 cfs 21,228 cf

Reach R8: Avg. Flow Depth=0.37' Max Vel=3.63 fps Inflow=3.99 cfs 21,228 cf
n=0.069 L=44.4' S=0.1608 '/' Capacity=269.88 cfs Outflow=3.99 cfs 21,228 cf

Pond FB1: Peak Elev=334.97' Storage=8,570 cf Inflow=5.36 cfs 30,833 cf
Primary=0.00 cfs 0 cf Secondary=3.43 cfs 30,834 cf Outflow=3.43 cfs 30,834 cf

Pond R1: Peak Elev=323.46' Inflow=2.84 cfs 15,938 cf
18.0" Round Culvert n=0.013 L=35.5' S=0.0051 '/' Outflow=2.84 cfs 15,938 cf

Pond R5: Peak Elev=350.63' Inflow=1.74 cfs 8,521 cf
15.0" Round Culvert n=0.013 L=49.9' S=0.0259 '/' Outflow=1.74 cfs 8,521 cf

Pond R7: Peak Elev=347.71' Inflow=3.99 cfs 21,228 cf
15.0" Round Culvert n=0.013 L=57.7' S=0.0827 '/' Outflow=3.99 cfs 21,228 cf

Pond R9: Peak Elev=336.22' Inflow=4.99 cfs 28,059 cf
15.0" Round Culvert n=0.013 L=36.6' S=0.0292 '/' Outflow=4.99 cfs 28,059 cf

Link SP1: Inflow=7.49 cfs 58,082 cf
Primary=7.49 cfs 58,082 cf

Link SP2: Inflow=3.27 cfs 19,770 cf
Primary=3.27 cfs 19,770 cf

Link SP3: Inflow=4.57 cfs 38,312 cf
Primary=4.57 cfs 38,312 cf

Total Runoff Area = 331,244 sf Runoff Volume = 58,081 cf Average Runoff Depth = 2.10"
94.72% Pervious = 313,761 sf 5.28% Impervious = 17,483 sf

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

Subcatchment 1: Runoff Area=18,624 sf 21.64% Impervious Runoff Depth=3.47"
Flow Length=201' Tc=8.8 min CN=79 Runoff=1.56 cfs 5,393 cf

Subcatchment 2: Runoff Area=45,343 sf 2.24% Impervious Runoff Depth=2.90"
Flow Length=593' Tc=17.8 min CN=73 Runoff=2.48 cfs 10,953 cf

Subcatchment 11: Runoff Area=96,641 sf 2.11% Impervious Runoff Depth=2.90"
Flow Length=750' Tc=30.5 min CN=73 Runoff=4.21 cfs 23,346 cf

Subcatchment 21: Runoff Area=36,958 sf 6.13% Impervious Runoff Depth=3.18"
Flow Length=649' Tc=37.5 min CN=76 Runoff=1.61 cfs 9,802 cf

Subcatchment 22: Runoff Area=71,354 sf 5.55% Impervious Runoff Depth=3.09"
Flow Length=548' Tc=29.2 min CN=75 Runoff=3.38 cfs 18,356 cf

Subcatchment 23: Runoff Area=14,472 sf 14.29% Impervious Runoff Depth=3.28"
Flow Length=87' Tc=9.8 min CN=77 Runoff=1.11 cfs 3,955 cf

Subcatchment 24: Runoff Area=47,852 sf 4.41% Impervious Runoff Depth=3.09"
Flow Length=443' Tc=22.6 min UI Adjusted CN=75 Runoff=2.54 cfs 12,310 cf

Reach R10: Avg. Flow Depth=0.73' Max Vel=1.88 fps Inflow=6.72 cfs 44,422 cf
n=0.035 L=52.4' S=0.0076 '/' Capacity=99.17 cfs Outflow=6.73 cfs 44,422 cf

Reach R11: Avg. Flow Depth=0.52' Max Vel=4.47 fps Inflow=8.08 cfs 55,376 cf
n=0.035 L=257.2' S=0.0680 '/' Capacity=296.07 cfs Outflow=8.07 cfs 55,376 cf

Reach R2: Avg. Flow Depth=0.82' Max Vel=1.74 fps Inflow=4.21 cfs 23,346 cf
n=0.035 L=34.4' S=0.0058 '/' Capacity=11.80 cfs Outflow=4.21 cfs 23,346 cf

Reach R3: Avg. Flow Depth=0.71' Max Vel=4.09 fps Inflow=4.21 cfs 23,346 cf
n=0.022 L=113.0' S=0.0188 '/' Capacity=48.93 cfs Outflow=4.21 cfs 23,346 cf

Reach R4: Avg. Flow Depth=0.28' Max Vel=4.79 fps Inflow=4.82 cfs 28,739 cf
n=0.022 L=114.0' S=0.0698 '/' Capacity=942.98 cfs Outflow=4.82 cfs 28,739 cf

Reach R6: Avg. Flow Depth=0.48' Max Vel=3.83 fps Inflow=5.81 cfs 30,666 cf
n=0.030 L=86.3' S=0.0260 '/' Capacity=249.38 cfs Outflow=5.81 cfs 30,666 cf

Reach R8: Avg. Flow Depth=0.46' Max Vel=4.05 fps Inflow=5.81 cfs 30,666 cf
n=0.069 L=44.4' S=0.1608 '/' Capacity=269.88 cfs Outflow=5.82 cfs 30,666 cf

Pond FB1: Peak Elev=335.39' Storage=10,373 cf Inflow=7.78 cfs 44,422 cf
Primary=3.15 cfs 3,954 cf Secondary=3.58 cfs 40,468 cf Outflow=6.72 cfs 44,422 cf

Pond R1: Peak Elev=323.73' Inflow=4.21 cfs 23,346 cf
18.0" Round Culvert n=0.013 L=35.5' S=0.0051 '/' Outflow=4.21 cfs 23,346 cf

Pond R5: Peak Elev=350.82' Inflow=2.54 cfs 12,310 cf
15.0" Round Culvert n=0.013 L=49.9' S=0.0259 '/' Outflow=2.54 cfs 12,310 cf

Pond R7: Peak Elev=348.54' Inflow=5.81 cfs 30,666 cf
15.0" Round Culvert n=0.013 L=57.7' S=0.0827 '/' Outflow=5.81 cfs 30,666 cf

Pond R9: Peak Elev=337.53' Inflow=7.25 cfs 40,467 cf
15.0" Round Culvert n=0.013 L=36.6' S=0.0292 '/' Outflow=7.25 cfs 40,467 cf

Link SP1: Inflow=12.56 cfs 84,115 cf
Primary=12.56 cfs 84,115 cf

Link SP2: Inflow=4.82 cfs 28,739 cf
Primary=4.82 cfs 28,739 cf

Link SP3: Inflow=8.08 cfs 55,376 cf
Primary=8.08 cfs 55,376 cf

Total Runoff Area = 331,244 sf Runoff Volume = 84,114 cf Average Runoff Depth = 3.05"
94.72% Pervious = 313,761 sf 5.28% Impervious = 17,483 sf

Summary for Subcatchment 1:

Runoff = 1.56 cfs @ 12.12 hrs, Volume= 5,393 cf, Depth= 3.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.77"

	Area (sf)	CN	Description
	6,624	74	>75% Grass cover, Good, HSG C
	7,803	72	Woods/grass comb., Good, HSG C
*	1,992	98	Paved road
*	2,039	98	Exist. paved road
*	166	96	Gravel surface
	18,624	79	Weighted Average
	14,593		78.36% Pervious Area
	4,031		21.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	88	0.1594	0.17		**Sheet Flow, Seg A to B** Woods: Light underbrush n= 0.400 P2= 3.12"
0.2	113	0.0355	11.57	169.24	**Trap/Vee/Rect Channel Flow, Seg B to C** Bot.W=3.00' D=1.50' Z= 6.0 & 3.0 '/' Top.W=16.50' n= 0.022 Earth, clean & straight
8.8	201	Total			

Summary for Subcatchment 2:

Runoff = 2.48 cfs @ 12.25 hrs, Volume= 10,953 cf, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.77"

	Area (sf)	CN	Description
*	0	74	>75% Grass cover, Existing, Good, HSG C
*	9,201	74	>75% Grass cover, Proposed, Good, HSG C
	34,986	72	Woods/grass comb., Good, HSG C
*	59	98	Paved road
*	142	96	Gravel surface
*	955	98	Unconnected roofs,
	45,343	73	Weighted Average
	44,329		97.76% Pervious Area
	1,014		2.24% Impervious Area
	955		94.18% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	91	0.0604	0.12		**Sheet Flow, Seg A to B** Woods: Light underbrush n= 0.400 P2= 3.12"
0.3	165	0.0574	10.10	291.61	**Trap/Vee/Rect Channel Flow, Seg B to C** Bot.W=2.00' D=1.50' Z= 20.0 & 3.0 '/' Top.W=36.50' n= 0.030 Earth, grassed & winding
1.1	73	0.0477	1.09		**Shallow Concentrated Flow, Seg C to D** Woodland Kv= 5.0 fps
2.8	204	0.0589	1.21		**Shallow Concentrated Flow, Seg D to E** Woodland Kv= 5.0 fps
0.6	60	0.1173	1.71		**Shallow Concentrated Flow, Seg E to F** Woodland Kv= 5.0 fps
17.8	593	Total			

Summary for Subcatchment 11:

Runoff = 4.21 cfs @ 12.43 hrs, Volume= 23,346 cf, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.77"

	Area (sf)	CN	Description
*	20,522	74	>75% Grass cover, Existing, Good, HSG C
*	9,162	74	>75% Grass cover, Proposed, Good, HSG C
	64,742	72	Woods/grass comb., Good, HSG C
*	1,675	98	Paved road
*	361	98	Exist. paved road
*	179	96	Gravel surface
*	0	98	Unconnected roofs,
	96,641	73	Weighted Average
	94,605		97.89% Pervious Area
	2,036		2.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.0	150	0.0317	0.10		**Sheet Flow, Seg A to B** Woods: Light underbrush n= 0.400 P2= 3.12"
0.7	28	0.0181	0.67		**Shallow Concentrated Flow, Seg B to C** Woodland Kv= 5.0 fps
0.6	154	0.0680	4.20		**Shallow Concentrated Flow, Seg C to D** Unpaved Kv= 16.1 fps
4.0	286	0.0568	1.19		**Shallow Concentrated Flow, Seg D to E** Woodland Kv= 5.0 fps
0.0	26	0.4301	10.56		**Shallow Concentrated Flow, Seg E to F** Unpaved Kv= 16.1 fps
0.2	106	0.0880	7.87	170.39	**Trap/Vee/Rect Channel Flow, Seg F to G** Bot.W=1.00' D=2.75' Z= 2.0 & 3.0 '/' Top.W=14.75' n= 0.069 Riprap, 6-inch
30.5	750	Total			

Summary for Subcatchment 21:

Runoff = 1.61 cfs @ 12.53 hrs, Volume= 9,802 cf, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.77"

	Area (sf)	CN	Description
*	7,004	74	>75% Grass cover, Existing, Good, HSG C
*	6,563	74	>75% Grass cover, Proposed, Good, HSG C
	18,187	72	Woods/grass comb., Good, HSG C
*	840	98	Paved road
*	2,940	96	Gravel surface
*	1,424	98	Unconnected roofs,
	36,958	76	Weighted Average
	34,694		93.87% Pervious Area
	2,264		6.13% Impervious Area
	1,424		62.90% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.7	150	0.0150	0.07		**Sheet Flow, Seg A to B** Woods: Light underbrush n= 0.400 P2= 3.12"
1.5	83	0.0330	0.91		**Shallow Concentrated Flow, Seg B to C** Woodland Kv= 5.0 fps
0.4	107	0.0653	4.11		**Shallow Concentrated Flow, Seg C to D** Unpaved Kv= 16.1 fps
0.9	78	0.0897	1.50		**Shallow Concentrated Flow, Seg D to E** Woodland Kv= 5.0 fps
0.0	15	0.2167	7.49		**Shallow Concentrated Flow, Seg E to F** Unpaved Kv= 16.1 fps
0.7	155	0.0225	3.96	34.19	**Trap/Vee/Rect Channel Flow, Seg F to G** Bot.W=1.00' D=0.75' Z= 3.0 & 25.0 '/' Top.W=22.00' n= 0.030 Earth, grassed & winding
0.3	27	0.0833	1.44		**Shallow Concentrated Flow, Seg G to H** Woodland Kv= 5.0 fps
0.0	24	0.4603	10.92		**Shallow Concentrated Flow, Seg H to I** Unpaved Kv= 16.1 fps
0.0	10	0.1399	9.92	214.84	**Trap/Vee/Rect Channel Flow, Seg I to J** Bot.W=1.00' D=2.75' Z= 2.0 & 3.0 '/' Top.W=14.75' n= 0.069 Riprap, 6-inch
37.5	649	Total			

Summary for Subcatchment 22:

Runoff = 3.38 cfs @ 12.41 hrs, Volume= 18,356 cf, Depth= 3.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.77"

	Area (sf)	CN	Description
*	1,365	74	>75% Grass cover, Existing, Good, HSG C
*	12,011	74	>75% Grass cover, Proposed, Good, HSG C
	50,376	72	Woods/grass comb., Good, HSG C
*	1,720	98	Paved road
*	3,644	96	Gravel surface
*	2,238	98	Unconnected roofs,
	71,354	75	Weighted Average
	67,396		94.45% Pervious Area
	3,958		5.55% Impervious Area
	2,238		56.54% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.8	150	0.0267	0.09		**Sheet Flow, Seg A to B** Woods: Light underbrush n= 0.400 P2= 3.12"
0.1	61	0.0693	8.12	211.97	**Channel Flow, Seg B to C** Area= 26.1 sf Perim= 53.1' r= 0.49' n= 0.030 Earth, grassed & winding
1.3	90	0.0558	1.18		**Shallow Concentrated Flow, Seg C to D** Woodland Kv= 5.0 fps
0.1	29	0.0519	3.67		**Shallow Concentrated Flow, Seg D to E** Unpaved Kv= 16.1 fps
0.4	39	0.0996	1.58		**Shallow Concentrated Flow, Seg E to F** Woodland Kv= 5.0 fps
0.4	93	0.0617	4.00		**Shallow Concentrated Flow, Seg F to G** Unpaved Kv= 16.1 fps
0.1	86	0.0654	16.22	395.85	**Trap/Vee/Rect Channel Flow, Seg G to H** Bot.W=2.00' D=2.75' Z= 2.0 & 3.0 '/' Top.W=15.75' n= 0.030 Earth, grassed & winding
29.2	548	Total			

Summary for Subcatchment 23:

Runoff = 1.11 cfs @ 12.14 hrs, Volume= 3,955 cf, Depth= 3.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.77"

	Area (sf)	CN	Description
*	0	74	>75% Grass cover, Existing, Good, HSG C
*	9,439	74	>75% Grass cover, Proposed, Good, HSG C
	2,770	72	Woods/grass comb., Good, HSG C
*	2,068	98	Paved road
*	195	96	Gravel surface
*	0	98	Unconnected roofs,
	14,472	77	Weighted Average
	12,404		85.71% Pervious Area
	2,068		14.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	60	0.0835	0.12		**Sheet Flow, Seg A to B** Woods: Light underbrush n= 0.400 P2= 3.12"
1.6	27	0.3330	0.27		**Sheet Flow, Seg B to C** Grass: Dense n= 0.240 P2= 3.12"
9.8	87	Total			

Summary for Subcatchment 24:

Runoff = 2.54 cfs @ 12.32 hrs, Volume= 12,310 cf, Depth= 3.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.77"

	Area (sf)	CN	Adj	Description
*	0	74		>75% Grass cover, Existing, Good, HSG C
*	9,141	74		>75% Grass cover, Proposed, Good, HSG C
	32,272	72		Woods/grass comb., Good, HSG C
*	14	98		Paved road
*	4,327	96		Gravel surface
*	2,098	98		Unconnected roofs,
	47,852	76	75	Weighted Average, UI Adjusted
	45,740			95.59% Pervious Area
	2,112			4.41% Impervious Area
	2,098			99.34% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.3	150	0.0475	0.12		**Sheet Flow, Seg A to B** Woods: Light underbrush n= 0.400 P2= 3.12"
0.8	78	0.0950	1.54		**Shallow Concentrated Flow, Seg B to C** Woodland Kv= 5.0 fps
0.2	76	0.0401	5.39	26.78	**Trap/Vee/Rect Channel Flow, Seg C to D** Bot.W=1.00' D=0.75' Z= 3.0 & 12.0 '/' Top.W=12.25' n= 0.030 Earth, grassed & winding
0.1	25	0.0394	4.03		**Shallow Concentrated Flow, Seg D to E** Paved Kv= 20.3 fps
0.2	114	0.0660	10.84	89.47	**Trap/Vee/Rect Channel Flow, Seg E to F** Bot.W=1.00' D=1.50' Z= 3.0 '/' Top.W=10.00' n= 0.030 Earth, grassed & winding
22.6	443	Total			

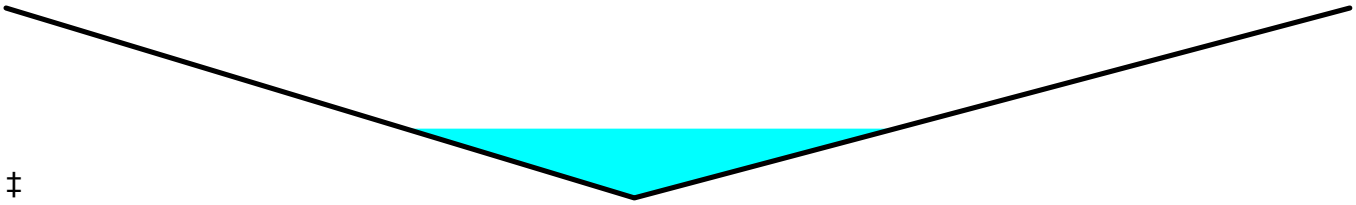
Summary for Reach R10:

Inflow Area = 170,636 sf, 6.10% Impervious, Inflow Depth = 3.12" for 25-Year event
Inflow = 6.72 cfs @ 12.56 hrs, Volume= 44,422 cf
Outflow = 6.73 cfs @ 12.56 hrs, Volume= 44,422 cf, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.88 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 0.84 fps, Avg. Travel Time= 1.0 min

Peak Storage= 188 cf @ 12.56 hrs
Average Depth at Peak Storage= 0.73'
Bank-Full Depth= 2.00' Flow Area= 26.9 sf, Capacity= 99.17 cfs

Custom cross-section, Length= 52.4' Slope= 0.0076 '/'
Constant n= 0.035 Earth, dense weeds
Inlet Invert= 329.90', Outlet Invert= 329.50'



‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	334.00	0.00
12.59	332.00	2.00
26.93	334.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
2.00	26.9	27.2	1,411	99.17

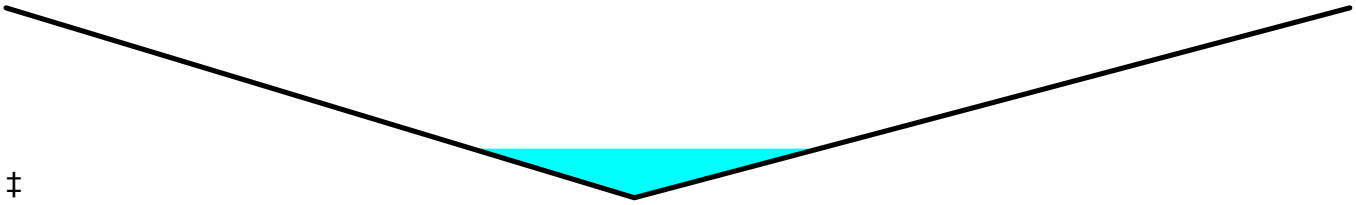
Summary for Reach R11:

Inflow Area = 215,979 sf, 5.29% Impervious, Inflow Depth = 3.08" for 25-Year event
Inflow = 8.08 cfs @ 12.54 hrs, Volume= 55,376 cf
Outflow = 8.07 cfs @ 12.55 hrs, Volume= 55,376 cf, Atten= 0%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.47 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 2.00 fps, Avg. Travel Time= 2.1 min

Peak Storage= 465 cf @ 12.55 hrs
Average Depth at Peak Storage= 0.52'
Bank-Full Depth= 2.00' Flow Area= 26.9 sf, Capacity= 296.07 cfs

Custom cross-section, Length= 257.2' Slope= 0.0680 '/'
Constant n= 0.035 Earth, dense weeds
Inlet Invert= 329.50', Outlet Invert= 312.00'



‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	334.00	0.00
12.59	332.00	2.00
26.93	334.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
2.00	26.9	27.2	6,926	296.07

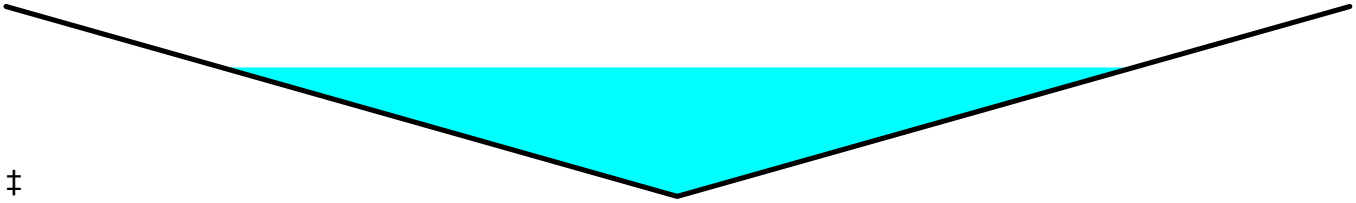
Summary for Reach R2:

Inflow Area = 96,641 sf, 2.11% Impervious, Inflow Depth = 2.90" for 25-Year event
Inflow = 4.21 cfs @ 12.43 hrs, Volume= 23,346 cf
Outflow = 4.21 cfs @ 12.44 hrs, Volume= 23,346 cf, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.74 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 0.79 fps, Avg. Travel Time= 0.7 min

Peak Storage= 83 cf @ 12.44 hrs
Average Depth at Peak Storage= 0.82'
Bank-Full Depth= 1.20' Flow Area= 5.2 sf, Capacity= 11.80 cfs

Custom cross-section, Length= 34.4' Slope= 0.0058 '/'
Constant n= 0.035 Earth, dense weeds
Inlet Invert= 322.29', Outlet Invert= 322.09'



‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	324.00	0.00
4.37	322.80	1.20
8.75	324.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
1.20	5.2	9.1	181	11.80

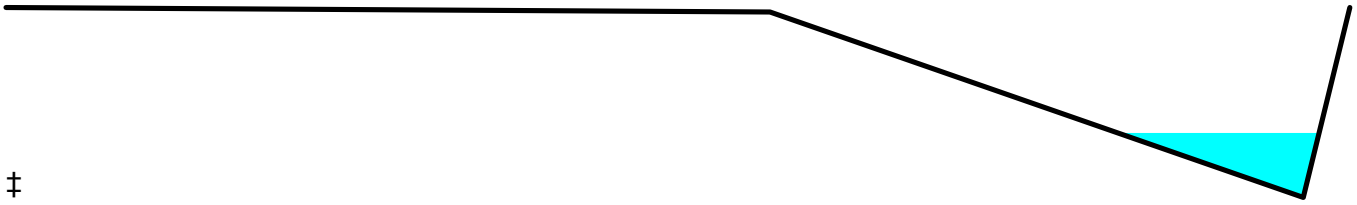
Summary for Reach R3:

Inflow Area = 96,641 sf, 2.11% Impervious, Inflow Depth = 2.90" for 25-Year event
Inflow = 4.21 cfs @ 12.44 hrs, Volume= 23,346 cf
Outflow = 4.21 cfs @ 12.44 hrs, Volume= 23,346 cf, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.09 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.88 fps, Avg. Travel Time= 1.0 min

Peak Storage= 116 cf @ 12.44 hrs
Average Depth at Peak Storage= 0.71'
Bank-Full Depth= 2.09' Flow Area= 9.2 sf, Capacity= 48.93 cfs

Custom cross-section, Length= 113.0' Slope= 0.0188 '/' (101 Elevation Intervals)
Constant n= 0.022 Earth, clean & straight
Inlet Invert= 322.09', Outlet Invert= 319.96'



‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	322.09	0.00
11.00	322.04	0.05
18.68	320.00	2.09
19.35	322.09	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
2.04	8.5	10.1	961	70.33
2.09	9.2	21.1	1,039	48.93

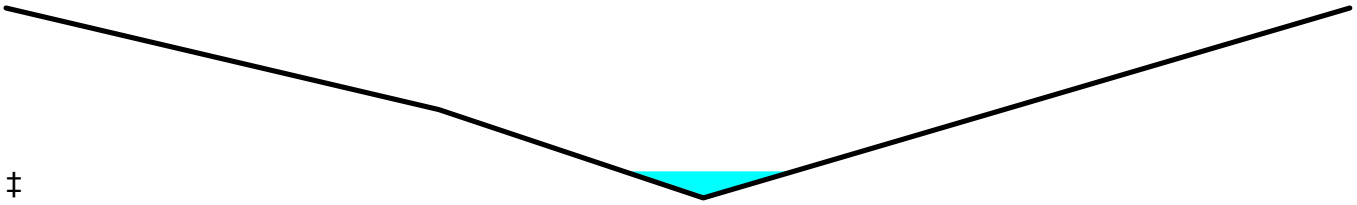
Summary for Reach R4:

Inflow Area = 115,265 sf, 5.26% Impervious, Inflow Depth = 2.99" for 25-Year event
Inflow = 4.82 cfs @ 12.41 hrs, Volume= 28,739 cf
Outflow = 4.82 cfs @ 12.42 hrs, Volume= 28,739 cf, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.79 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 2.18 fps, Avg. Travel Time= 0.9 min

Peak Storage= 115 cf @ 12.42 hrs
Average Depth at Peak Storage= 0.28'
Bank-Full Depth= 2.00' Flow Area= 54.5 sf, Capacity= 942.98 cfs

Custom cross-section, Length= 114.0' Slope= 0.0698 '/' (101 Elevation Intervals)
Constant n= 0.022 Earth, clean & straight
Inlet Invert= 319.96', Outlet Invert= 312.00'



‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	320.00	0.00
18.38	318.93	1.07
29.62	318.00	2.00
57.08	320.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.93	11.2	24.1	1,273	119.36
2.00	54.5	57.2	6,218	942.98

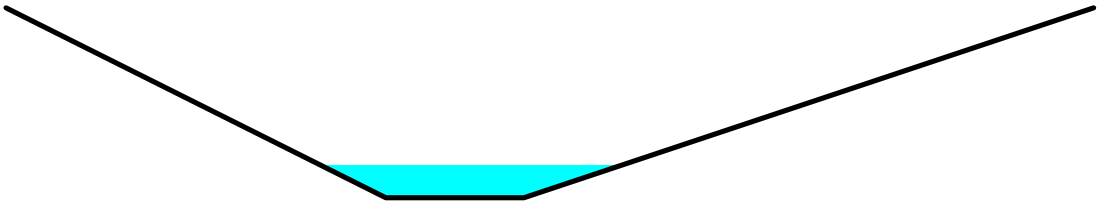
Summary for Reach R6:

Inflow Area = 119,206 sf, 5.09% Impervious, Inflow Depth = 3.09" for 25-Year event
Inflow = 5.81 cfs @ 12.36 hrs, Volume= 30,666 cf
Outflow = 5.81 cfs @ 12.37 hrs, Volume= 30,666 cf, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.83 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.46 fps, Avg. Travel Time= 1.0 min

Peak Storage= 131 cf @ 12.37 hrs
Average Depth at Peak Storage= 0.48'
Bank-Full Depth= 2.75' Flow Area= 24.4 sf, Capacity= 249.38 cfs

2.00' x 2.75' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 2.0 3.0 '/' Top Width= 15.75'
Length= 86.3' Slope= 0.0260 '/'
Inlet Invert= 348.60', Outlet Invert= 346.36'



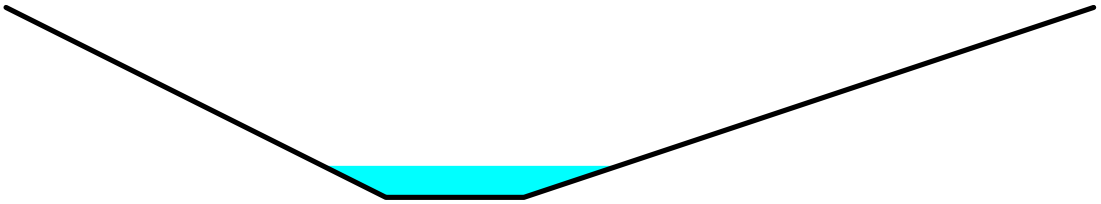
Summary for Reach R8:

Inflow Area = 119,206 sf, 5.09% Impervious, Inflow Depth = 3.09" for 25-Year event
Inflow = 5.81 cfs @ 12.37 hrs, Volume= 30,666 cf
Outflow = 5.82 cfs @ 12.37 hrs, Volume= 30,666 cf, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.05 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.55 fps, Avg. Travel Time= 0.5 min

Peak Storage= 64 cf @ 12.37 hrs
Average Depth at Peak Storage= 0.46'
Bank-Full Depth= 2.75' Flow Area= 24.4 sf, Capacity= 269.88 cfs

2.00' x 2.75' deep channel, n= 0.069 Riprap, 6-inch
Side Slope Z-value= 2.0 3.0 '/' Top Width= 15.75'
Length= 44.4' Slope= 0.1608 '/'
Inlet Invert= 341.59', Outlet Invert= 334.45'



Summary for Pond FB1:

Inflow Area = 170,636 sf, 6.10% Impervious, Inflow Depth = 3.12" for 25-Year event
Inflow = 7.78 cfs @ 12.38 hrs, Volume= 44,422 cf
Outflow = 6.72 cfs @ 12.56 hrs, Volume= 44,422 cf, Atten= 14%, Lag= 10.6 min
Primary = 3.15 cfs @ 12.56 hrs, Volume= 3,954 cf
Secondary = 3.58 cfs @ 12.51 hrs, Volume= 40,468 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 335.39' @ 12.56 hrs Surf.Area= 4,451 sf Storage= 10,373 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 126.1 min (973.9 - 847.8)

Volume	Invert	Avail.Storage	Storage Description
#1	332.30'	13,356 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
332.30	2,352	203.8	0	0	2,352
334.00	3,450	234.4	4,902	4,902	3,482
335.00	4,181	253.2	3,810	8,712	4,251
335.50	4,533	261.4	2,178	10,890	4,611
336.00	5,345	280.3	2,467	13,356	5,437

Device	Routing	Invert	Outlet Devices
#1	Primary	335.10'	**8.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#2	Secondary	330.03'	**8.0" Round Culvert** L= 26.6' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 330.03' / 329.90' S= 0.0049 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#3	Device 2	330.13'	**2.0" Vert. Orifice/Grate** C= 0.600
#4	Device 3	330.13'	**4.0" Vert. 4" UD** C= 0.600
#5	Device 4	332.30'	**2.410 in/hr Exfiltration over Surface area**
#6	Device 2	333.80'	**3.0" W x 9.0" H Vert. Notch** C= 0.600
#7	Device 2	334.55'	**Neenah R4345 Beehive Grate Light Duty-req. structure** Head (feet) 0.00 0.10 0.15 0.20 0.25 0.30 0.35 0.40 0.50 0.60 0.70 0.80 0.90 1.00 Disch. (cfs) 0.000 0.900 1.600 2.500 3.500 4.000 4.600 5.300 6.800 7.500 8.100 8.600 9.100 9.600

Primary OutFlow Max=3.12 cfs @ 12.56 hrs HW=335.38' TW=330.63' (Dynamic Tailwater)
└─**1=Broad-Crested Rectangular Weir** (Weir Controls 3.12 cfs @ 1.38 fps)

Secondary OutFlow Max=3.57 cfs @ 12.51 hrs HW=335.37' TW=330.62' (Dynamic Tailwater)
└─**2=Culvert** (Outlet Controls 3.57 cfs @ 10.22 fps)
  ├─**3=Orifice/Grate** (Passes < 0.23 cfs potential flow)
  │ └─**4=4" UD** (Passes < 0.92 cfs potential flow)
  │ └─**5=Exfiltration** (Passes < 0.25 cfs potential flow)
  ├─**6=Notch** (Passes < 0.98 cfs potential flow)
  └─**7=Neenah R4345 Beehive Grate Light Duty-req. structure** (Passes < 8.70 cfs potential flow)

Summary for Pond R1:

Inflow Area = 96,641 sf, 2.11% Impervious, Inflow Depth = 2.90" for 25-Year event
Inflow = 4.21 cfs @ 12.43 hrs, Volume= 23,346 cf
Outflow = 4.21 cfs @ 12.43 hrs, Volume= 23,346 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.21 cfs @ 12.43 hrs, Volume= 23,346 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 323.73' @ 12.43 hrs
Flood Elev= 325.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	322.47'	**18.0" Round Culvert** L= 35.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 322.47' / 322.29' S= 0.0051 '/' Cc= 0.900

n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=4.20 cfs @ 12.43 hrs HW=323.72' TW=323.10' (Dynamic Tailwater)
1=Culvert (Barrel Controls 4.20 cfs @ 3.60 fps)

Summary for Pond R5:

Inflow Area = 47,852 sf, 4.41% Impervious, Inflow Depth = 3.09" for 25-Year event
Inflow = 2.54 cfs @ 12.32 hrs, Volume= 12,310 cf
Outflow = 2.54 cfs @ 12.32 hrs, Volume= 12,310 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.54 cfs @ 12.32 hrs, Volume= 12,310 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 350.82' @ 12.32 hrs
Flood Elev= 348.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	349.89'	**15.0" Round Culvert** L= 49.9' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 349.89' / 348.60' S= 0.0259 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.52 cfs @ 12.32 hrs HW=350.82' TW=349.07' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.52 cfs @ 2.59 fps)

Summary for Pond R7:

Inflow Area = 119,206 sf, 5.09% Impervious, Inflow Depth = 3.09" for 25-Year event
Inflow = 5.81 cfs @ 12.37 hrs, Volume= 30,666 cf
Outflow = 5.81 cfs @ 12.37 hrs, Volume= 30,666 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.81 cfs @ 12.37 hrs, Volume= 30,666 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 348.54' @ 12.37 hrs
Flood Elev= 348.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	346.36'	**15.0" Round Culvert** L= 57.7' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 346.36' / 341.59' S= 0.0827 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=5.78 cfs @ 12.37 hrs HW=348.52' TW=342.05' (Dynamic Tailwater)
1=Culvert (Inlet Controls 5.78 cfs @ 4.71 fps)

Summary for Pond R9:

Inflow Area = 156,164 sf, 5.34% Impervious, Inflow Depth = 3.11" for 25-Year event
Inflow = 7.25 cfs @ 12.40 hrs, Volume= 40,467 cf
Outflow = 7.25 cfs @ 12.40 hrs, Volume= 40,467 cf, Atten= 0%, Lag= 0.0 min
Primary = 7.25 cfs @ 12.40 hrs, Volume= 40,467 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 337.53' @ 12.44 hrs
Flood Elev= 336.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	334.45'	**15.0" Round Culvert** L= 36.6' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 334.45' / 333.38' S= 0.0292 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=7.08 cfs @ 12.40 hrs HW=337.49' TW=335.19' (Dynamic Tailwater)
1=Culvert (Inlet Controls 7.08 cfs @ 5.77 fps)

Summary for Link SP1:

Inflow Area = 331,244 sf, 5.28% Impervious, Inflow Depth = 3.05" for 25-Year event
Inflow = 12.56 cfs @ 12.52 hrs, Volume= 84,115 cf
Primary = 12.56 cfs @ 12.52 hrs, Volume= 84,115 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Link SP2:

Inflow Area = 115,265 sf, 5.26% Impervious, Inflow Depth = 2.99" for 25-Year event
Inflow = 4.82 cfs @ 12.41 hrs, Volume= 28,739 cf
Primary = 4.82 cfs @ 12.41 hrs, Volume= 28,739 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Link SP3:

Inflow Area = 215,979 sf, 5.29% Impervious, Inflow Depth = 3.08" for 25-Year event
Inflow = 8.08 cfs @ 12.54 hrs, Volume= 55,376 cf
Primary = 8.08 cfs @ 12.54 hrs, Volume= 55,376 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
332.30	2,352	203.8	0	0	2,352
334.00	3,450	234.4	4,902	4,902	3,482
335.00	4,181	253.2	3,810	8,712	4,251
335.50	4,533	261.4	2,178	10,890	4,611
336.00	5,345	280.3	2,467	13,356	5,437

Device	Routing	Invert	Outlet Devices
#1	Primary	335.10'	**8.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#2	Secondary	330.03'	**8.0" Round Culvert** L= 26.6' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 330.03' / 329.90' S= 0.0049 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#3	Device 2	330.13'	**2.0" Vert. Orifice/Grate** C= 0.600
#4	Device 3	330.13'	**4.0" Vert. 4" UD** C= 0.600
#5	Device 4	332.30'	**2.410 in/hr Exfiltration over Surface area**
#6	Device 2	333.80'	**3.0" W x 9.0" H Vert. Notch** C= 0.600
#7	Device 2	334.55'	**Neenah R4345 Beehive Grate Light Duty-req. structure** Head (feet) 0.00 0.10 0.15 0.20 0.25 0.30 0.35 0.40 0.50 0.60 0.70 0.80 0.90 1.00 Disch. (cfs) 0.000 0.900 1.600 2.500 3.500 4.000 4.600 5.300 6.800 7.500 8.100 8.600 9.100 9.600

Primary OutFlow Max=5.99 cfs @ 12.47 hrs HW=335.53' TW=330.73' (Dynamic Tailwater)
└─**1=Broad-Crested Rectangular Weir** (Weir Controls 5.99 cfs @ 1.73 fps)

Secondary OutFlow Max=3.58 cfs @ 12.36 hrs HW=335.47' TW=330.68' (Dynamic Tailwater)
└─**2=Culvert** (Outlet Controls 3.58 cfs @ 10.25 fps)
  ├─**3=Orifice/Grate** (Passes < 0.23 cfs potential flow)
  │ └─**4=4" UD** (Passes < 0.92 cfs potential flow)
  │ └─**5=Exfiltration** (Passes < 0.25 cfs potential flow)
  ├─**6=Notch** (Passes < 1.02 cfs potential flow)
  └─**7=Neenah R4345 Beehive Grate Light Duty-req. structure** (Passes < 9.19 cfs potential flow)

Summary for Pond R1:

Inflow Area = 96,641 sf, 2.11% Impervious, Inflow Depth = 3.80" for 50-Year event
Inflow = 5.53 cfs @ 12.43 hrs, Volume= 30,584 cf
Outflow = 5.53 cfs @ 12.43 hrs, Volume= 30,584 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.53 cfs @ 12.43 hrs, Volume= 30,584 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 323.98' @ 12.43 hrs
Flood Elev= 325.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	322.47'	**18.0" Round Culvert** L= 35.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 322.47' / 322.29' S= 0.0051 '/' Cc= 0.900

n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=5.51 cfs @ 12.43 hrs HW=323.98' TW=323.19' (Dynamic Tailwater)
1=Culvert (Barrel Controls 5.51 cfs @ 3.86 fps)

Summary for Pond R5:

Inflow Area = 47,852 sf, 4.41% Impervious, Inflow Depth = 4.01" for 50-Year event
Inflow = 3.30 cfs @ 12.31 hrs, Volume= 15,986 cf
Outflow = 3.30 cfs @ 12.31 hrs, Volume= 15,986 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.30 cfs @ 12.31 hrs, Volume= 15,986 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 351.01' @ 12.31 hrs
Flood Elev= 348.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	349.89'	**15.0" Round Culvert** L= 49.9' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 349.89' / 348.60' S= 0.0259 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.28 cfs @ 12.31 hrs HW=351.01' TW=349.14' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.28 cfs @ 2.84 fps)

Summary for Pond R7:

Inflow Area = 119,206 sf, 5.09% Impervious, Inflow Depth = 4.01" for 50-Year event
Inflow = 7.56 cfs @ 12.36 hrs, Volume= 39,822 cf
Outflow = 7.56 cfs @ 12.36 hrs, Volume= 39,822 cf, Atten= 0%, Lag= 0.0 min
Primary = 7.56 cfs @ 12.36 hrs, Volume= 39,822 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 349.61' @ 12.36 hrs
Flood Elev= 348.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	346.36'	**15.0" Round Culvert** L= 57.7' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 346.36' / 341.59' S= 0.0827 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=7.53 cfs @ 12.36 hrs HW=349.59' TW=342.11' (Dynamic Tailwater)
1=Culvert (Inlet Controls 7.53 cfs @ 6.13 fps)

Summary for Pond R9:

Inflow Area = 156,164 sf, 5.34% Impervious, Inflow Depth = 4.03" for 50-Year event
Inflow = 9.42 cfs @ 12.39 hrs, Volume= 52,497 cf
Outflow = 9.42 cfs @ 12.39 hrs, Volume= 52,497 cf, Atten= 0%, Lag= 0.0 min
Primary = 9.42 cfs @ 12.39 hrs, Volume= 52,497 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 339.53' @ 12.41 hrs
Flood Elev= 336.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	334.45'	**15.0" Round Culvert** L= 36.6' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 334.45' / 333.38' S= 0.0292 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=9.32 cfs @ 12.39 hrs HW=339.49' TW=335.50' (Dynamic Tailwater)
1=Culvert (Inlet Controls 9.32 cfs @ 7.60 fps)

Summary for Link SP1:

Inflow Area = 331,244 sf, 5.28% Impervious, Inflow Depth = 3.96" for 50-Year event
Inflow = 18.07 cfs @ 12.45 hrs, Volume= 109,412 cf
Primary = 18.07 cfs @ 12.45 hrs, Volume= 109,412 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Link SP2:

Inflow Area = 115,265 sf, 5.26% Impervious, Inflow Depth = 3.90" for 50-Year event
Inflow = 6.31 cfs @ 12.41 hrs, Volume= 37,473 cf
Primary = 6.31 cfs @ 12.41 hrs, Volume= 37,473 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Link SP3:

Inflow Area = 215,979 sf, 5.29% Impervious, Inflow Depth = 4.00" for 50-Year event
Inflow = 11.83 cfs @ 12.45 hrs, Volume= 71,939 cf
Primary = 11.83 cfs @ 12.45 hrs, Volume= 71,939 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, 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-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: Runoff Area=18,624 sf 21.64% Impervious Runoff Depth=0.64"
Flow Length=201' Tc=8.8 min CN=79 Runoff=0.27 cfs 998 cf

Subcatchment 2: Runoff Area=45,343 sf 2.24% Impervious Runoff Depth=0.41"
Flow Length=593' Tc=17.8 min CN=73 Runoff=0.28 cfs 1,562 cf

Subcatchment 11: Runoff Area=96,641 sf 2.11% Impervious Runoff Depth=0.41"
Flow Length=750' Tc=30.5 min CN=73 Runoff=0.48 cfs 3,329 cf

Subcatchment 21: Runoff Area=36,958 sf 6.13% Impervious Runoff Depth=0.52"
Flow Length=649' Tc=37.5 min CN=76 Runoff=0.23 cfs 1,603 cf

Subcatchment 22: Runoff Area=71,354 sf 5.55% Impervious Runoff Depth=0.48"
Flow Length=548' Tc=29.2 min CN=75 Runoff=0.45 cfs 2,873 cf

Subcatchment 23: Runoff Area=14,472 sf 14.29% Impervious Runoff Depth=0.56"
Flow Length=87' Tc=9.8 min CN=77 Runoff=0.17 cfs 675 cf

Subcatchment 24: Runoff Area=47,852 sf 4.41% Impervious Runoff Depth=0.48"
Flow Length=443' Tc=22.6 min UI Adjusted CN=75 Runoff=0.33 cfs 1,926 cf

Reach R10: Avg. Flow Depth=0.18' Max Vel=0.75 fps Inflow=0.17 cfs 7,086 cf
n=0.035 L=52.4' S=0.0076 '/' Capacity=99.17 cfs Outflow=0.17 cfs 7,086 cf

Reach R11: Avg. Flow Depth=0.17' Max Vel=2.13 fps Inflow=0.41 cfs 8,648 cf
n=0.035 L=257.2' S=0.0680 '/' Capacity=296.07 cfs Outflow=0.41 cfs 8,648 cf

Reach R2: Avg. Flow Depth=0.36' Max Vel=1.01 fps Inflow=0.48 cfs 3,329 cf
n=0.035 L=34.4' S=0.0058 '/' Capacity=11.80 cfs Outflow=0.48 cfs 3,329 cf

Reach R3: Avg. Flow Depth=0.31' Max Vel=2.38 fps Inflow=0.48 cfs 3,329 cf
n=0.022 L=113.0' S=0.0188 '/' Capacity=48.93 cfs Outflow=0.48 cfs 3,329 cf

Reach R4: Avg. Flow Depth=0.13' Max Vel=2.83 fps Inflow=0.58 cfs 4,327 cf
n=0.022 L=114.0' S=0.0698 '/' Capacity=942.98 cfs Outflow=0.58 cfs 4,327 cf

Reach R6: Avg. Flow Depth=0.16' Max Vel=2.06 fps Inflow=0.77 cfs 4,799 cf
n=0.030 L=86.3' S=0.0260 '/' Capacity=249.38 cfs Outflow=0.77 cfs 4,799 cf

Reach R8: Avg. Flow Depth=0.15' Max Vel=2.18 fps Inflow=0.77 cfs 4,799 cf
n=0.069 L=44.4' S=0.1608 '/' Capacity=269.88 cfs Outflow=0.77 cfs 4,799 cf

Pond FB1: Peak Elev=333.33' Storage=2,745 cf Inflow=1.06 cfs 7,077 cf
Primary=0.00 cfs 0 cf Secondary=0.17 cfs 7,086 cf Outflow=0.17 cfs 7,086 cf

Pond R1: Peak Elev=322.86' Inflow=0.48 cfs 3,329 cf
18.0" Round Culvert n=0.013 L=35.5' S=0.0051 '/' Outflow=0.48 cfs 3,329 cf

Pond R5: Peak Elev=350.19' Inflow=0.33 cfs 1,926 cf
15.0" Round Culvert n=0.013 L=49.9' S=0.0259 '/' Outflow=0.33 cfs 1,926 cf

Pond R7: Peak Elev=346.83' Inflow=0.77 cfs 4,799 cf
15.0" Round Culvert n=0.013 L=57.7' S=0.0827 '/' Outflow=0.77 cfs 4,799 cf

Pond R9: Peak Elev=334.98' Inflow=0.97 cfs 6,402 cf
15.0" Round Culvert n=0.013 L=36.6' S=0.0292 '/' Outflow=0.97 cfs 6,402 cf

Link SP1: Inflow=0.96 cfs 12,975 cf
Primary=0.96 cfs 12,975 cf

Link SP2: Inflow=0.58 cfs 4,327 cf
Primary=0.58 cfs 4,327 cf

Link SP3: Inflow=0.41 cfs 8,648 cf
Primary=0.41 cfs 8,648 cf

Total Runoff Area = 331,244 sf Runoff Volume = 12,966 cf Average Runoff Depth = 0.47"
94.72% Pervious = 313,761 sf 5.28% Impervious = 17,483 sf

Summary for Subcatchment 1:

Runoff = 0.27 cfs @ 12.14 hrs, Volume= 998 cf, Depth= 0.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr WQ-FB1 Rainfall=2.20"

	Area (sf)	CN	Description
	6,624	74	>75% Grass cover, Good, HSG C
	7,803	72	Woods/grass comb., Good, HSG C
*	1,992	98	Paved road
*	2,039	98	Exist. paved road
*	166	96	Gravel surface
	18,624	79	Weighted Average
	14,593		78.36% Pervious Area
	4,031		21.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	88	0.1594	0.17		**Sheet Flow, Seg A to B** Woods: Light underbrush n= 0.400 P2= 3.12"
0.2	113	0.0355	11.57	169.24	**Trap/Vee/Rect Channel Flow, Seg B to C** Bot.W=3.00' D=1.50' Z= 6.0 & 3.0 '/' Top.W=16.50' n= 0.022 Earth, clean & straight
8.8	201	Total			

Summary for Subcatchment 2:

Runoff = 0.28 cfs @ 12.31 hrs, Volume= 1,562 cf, Depth= 0.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr WQ-FB1 Rainfall=2.20"

	Area (sf)	CN	Description
*	0	74	>75% Grass cover, Existing, Good, HSG C
*	9,201	74	>75% Grass cover, Proposed, Good, HSG C
	34,986	72	Woods/grass comb., Good, HSG C
*	59	98	Paved road
*	142	96	Gravel surface
*	955	98	Unconnected roofs,
	45,343	73	Weighted Average
	44,329		97.76% Pervious Area
	1,014		2.24% Impervious Area
	955		94.18% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	91	0.0604	0.12		**Sheet Flow, Seg A to B** Woods: Light underbrush n= 0.400 P2= 3.12"
0.3	165	0.0574	10.10	291.61	**Trap/Vee/Rect Channel Flow, Seg B to C** Bot.W=2.00' D=1.50' Z= 20.0 & 3.0 '/' Top.W=36.50' n= 0.030 Earth, grassed & winding
1.1	73	0.0477	1.09		**Shallow Concentrated Flow, Seg C to D** Woodland Kv= 5.0 fps
2.8	204	0.0589	1.21		**Shallow Concentrated Flow, Seg D to E** Woodland Kv= 5.0 fps
0.6	60	0.1173	1.71		**Shallow Concentrated Flow, Seg E to F** Woodland Kv= 5.0 fps
17.8	593	Total			

Summary for Subcatchment 11:

Runoff = 0.48 cfs @ 12.52 hrs, Volume= 3,329 cf, Depth= 0.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr WQ-FB1 Rainfall=2.20"

	Area (sf)	CN	Description
*	20,522	74	>75% Grass cover, Existing, Good, HSG C
*	9,162	74	>75% Grass cover, Proposed, Good, HSG C
	64,742	72	Woods/grass comb., Good, HSG C
*	1,675	98	Paved road
*	361	98	Exist. paved road
*	179	96	Gravel surface
*	0	98	Unconnected roofs,
	96,641	73	Weighted Average
	94,605		97.89% Pervious Area
	2,036		2.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.0	150	0.0317	0.10		**Sheet Flow, Seg A to B** Woods: Light underbrush n= 0.400 P2= 3.12"
0.7	28	0.0181	0.67		**Shallow Concentrated Flow, Seg B to C** Woodland Kv= 5.0 fps
0.6	154	0.0680	4.20		**Shallow Concentrated Flow, Seg C to D** Unpaved Kv= 16.1 fps
4.0	286	0.0568	1.19		**Shallow Concentrated Flow, Seg D to E** Woodland Kv= 5.0 fps
0.0	26	0.4301	10.56		**Shallow Concentrated Flow, Seg E to F** Unpaved Kv= 16.1 fps
0.2	106	0.0880	7.87	170.39	**Trap/Vee/Rect Channel Flow, Seg F to G** Bot.W=1.00' D=2.75' Z= 2.0 & 3.0 '/' Top.W=14.75' n= 0.069 Riprap, 6-inch
30.5	750	Total			

Summary for Subcatchment 21:

Runoff = 0.23 cfs @ 12.60 hrs, Volume= 1,603 cf, Depth= 0.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr WQ-FB1 Rainfall=2.20"

	Area (sf)	CN	Description
*	7,004	74	>75% Grass cover, Existing, Good, HSG C
*	6,563	74	>75% Grass cover, Proposed, Good, HSG C
	18,187	72	Woods/grass comb., Good, HSG C
*	840	98	Paved road
*	2,940	96	Gravel surface
*	1,424	98	Unconnected roofs,
	36,958	76	Weighted Average
	34,694		93.87% Pervious Area
	2,264		6.13% Impervious Area
	1,424		62.90% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.7	150	0.0150	0.07		**Sheet Flow, Seg A to B** Woods: Light underbrush n= 0.400 P2= 3.12"
1.5	83	0.0330	0.91		**Shallow Concentrated Flow, Seg B to C** Woodland Kv= 5.0 fps
0.4	107	0.0653	4.11		**Shallow Concentrated Flow, Seg C to D** Unpaved Kv= 16.1 fps
0.9	78	0.0897	1.50		**Shallow Concentrated Flow, Seg D to E** Woodland Kv= 5.0 fps
0.0	15	0.2167	7.49		**Shallow Concentrated Flow, Seg E to F** Unpaved Kv= 16.1 fps
0.7	155	0.0225	3.96	34.19	**Trap/Vee/Rect Channel Flow, Seg F to G** Bot.W=1.00' D=0.75' Z= 3.0 & 25.0 '/' Top.W=22.00' n= 0.030 Earth, grassed & winding
0.3	27	0.0833	1.44		**Shallow Concentrated Flow, Seg G to H** Woodland Kv= 5.0 fps
0.0	24	0.4603	10.92		**Shallow Concentrated Flow, Seg H to I** Unpaved Kv= 16.1 fps
0.0	10	0.1399	9.92	214.84	**Trap/Vee/Rect Channel Flow, Seg I to J** Bot.W=1.00' D=2.75' Z= 2.0 & 3.0 '/' Top.W=14.75' n= 0.069 Riprap, 6-inch
37.5	649	Total			

Summary for Subcatchment 22:

Runoff = 0.45 cfs @ 12.48 hrs, Volume= 2,873 cf, Depth= 0.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr WQ-FB1 Rainfall=2.20"

	Area (sf)	CN	Description
*	1,365	74	>75% Grass cover, Existing, Good, HSG C
*	12,011	74	>75% Grass cover, Proposed, Good, HSG C
	50,376	72	Woods/grass comb., Good, HSG C
*	1,720	98	Paved road
*	3,644	96	Gravel surface
*	2,238	98	Unconnected roofs,
	71,354	75	Weighted Average
	67,396		94.45% Pervious Area
	3,958		5.55% Impervious Area
	2,238		56.54% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.8	150	0.0267	0.09		**Sheet Flow, Seg A to B** Woods: Light underbrush n= 0.400 P2= 3.12"
0.1	61	0.0693	8.12	211.97	**Channel Flow, Seg B to C** Area= 26.1 sf Perim= 53.1' r= 0.49' n= 0.030 Earth, grassed & winding
1.3	90	0.0558	1.18		**Shallow Concentrated Flow, Seg C to D** Woodland Kv= 5.0 fps
0.1	29	0.0519	3.67		**Shallow Concentrated Flow, Seg D to E** Unpaved Kv= 16.1 fps
0.4	39	0.0996	1.58		**Shallow Concentrated Flow, Seg E to F** Woodland Kv= 5.0 fps
0.4	93	0.0617	4.00		**Shallow Concentrated Flow, Seg F to G** Unpaved Kv= 16.1 fps
0.1	86	0.0654	16.22	395.85	**Trap/Vee/Rect Channel Flow, Seg G to H** Bot.W=2.00' D=2.75' Z= 2.0 & 3.0 '/' Top.W=15.75' n= 0.030 Earth, grassed & winding
29.2	548	Total			

Summary for Subcatchment 23:

Runoff = 0.17 cfs @ 12.16 hrs, Volume= 675 cf, Depth= 0.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr WQ-FB1 Rainfall=2.20"

	Area (sf)	CN	Description
*	0	74	>75% Grass cover, Existing, Good, HSG C
*	9,439	74	>75% Grass cover, Proposed, Good, HSG C
	2,770	72	Woods/grass comb., Good, HSG C
*	2,068	98	Paved road
*	195	96	Gravel surface
*	0	98	Unconnected roofs,
	14,472	77	Weighted Average
	12,404		85.71% Pervious Area
	2,068		14.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	60	0.0835	0.12		**Sheet Flow, Seg A to B** Woods: Light underbrush n= 0.400 P2= 3.12"
1.6	27	0.3330	0.27		**Sheet Flow, Seg B to C** Grass: Dense n= 0.240 P2= 3.12"
9.8	87	Total			

Summary for Subcatchment 24:

Runoff = 0.33 cfs @ 12.37 hrs, Volume= 1,926 cf, Depth= 0.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr WQ-FB1 Rainfall=2.20"

	Area (sf)	CN	Adj	Description
*	0	74		>75% Grass cover, Existing, Good, HSG C
*	9,141	74		>75% Grass cover, Proposed, Good, HSG C
	32,272	72		Woods/grass comb., Good, HSG C
*	14	98		Paved road
*	4,327	96		Gravel surface
*	2,098	98		Unconnected roofs,
	47,852	76	75	Weighted Average, UI Adjusted
	45,740			95.59% Pervious Area
	2,112			4.41% Impervious Area
	2,098			99.34% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.3	150	0.0475	0.12		**Sheet Flow, Seg A to B** Woods: Light underbrush n= 0.400 P2= 3.12"
0.8	78	0.0950	1.54		**Shallow Concentrated Flow, Seg B to C** Woodland Kv= 5.0 fps
0.2	76	0.0401	5.39	26.78	**Trap/Vee/Rect Channel Flow, Seg C to D** Bot.W=1.00' D=0.75' Z= 3.0 & 12.0 '/' Top.W=12.25' n= 0.030 Earth, grassed & winding
0.1	25	0.0394	4.03		**Shallow Concentrated Flow, Seg D to E** Paved Kv= 20.3 fps
0.2	114	0.0660	10.84	89.47	**Trap/Vee/Rect Channel Flow, Seg E to F** Bot.W=1.00' D=1.50' Z= 3.0 '/' Top.W=10.00' n= 0.030 Earth, grassed & winding
22.6	443	Total			

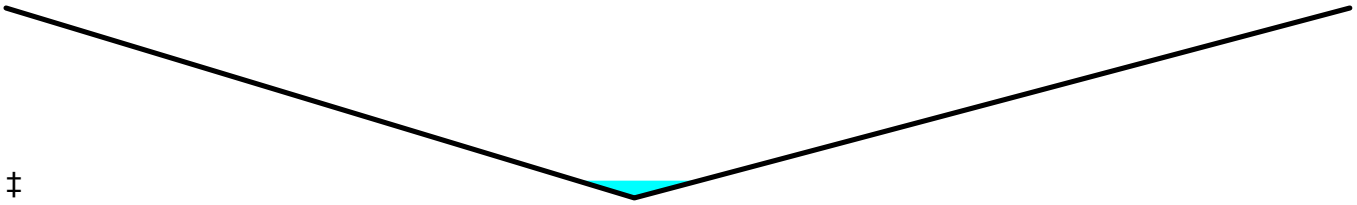
Summary for Reach R10:

Inflow Area = 170,636 sf, 6.10% Impervious, Inflow Depth = 0.50" for WQ-FB1 event
Inflow = 0.17 cfs @ 15.11 hrs, Volume= 7,086 cf
Outflow = 0.17 cfs @ 15.12 hrs, Volume= 7,086 cf, Atten= 0%, Lag= 0.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.75 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 0.67 fps, Avg. Travel Time= 1.3 min

Peak Storage= 12 cf @ 15.12 hrs
Average Depth at Peak Storage= 0.18'
Bank-Full Depth= 2.00' Flow Area= 26.9 sf, Capacity= 99.17 cfs

Custom cross-section, Length= 52.4' Slope= 0.0076 '/'
Constant n= 0.035 Earth, dense weeds
Inlet Invert= 329.90', Outlet Invert= 329.50'



‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	334.00	0.00
12.59	332.00	2.00
26.93	334.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
2.00	26.9	27.2	1,411	99.17

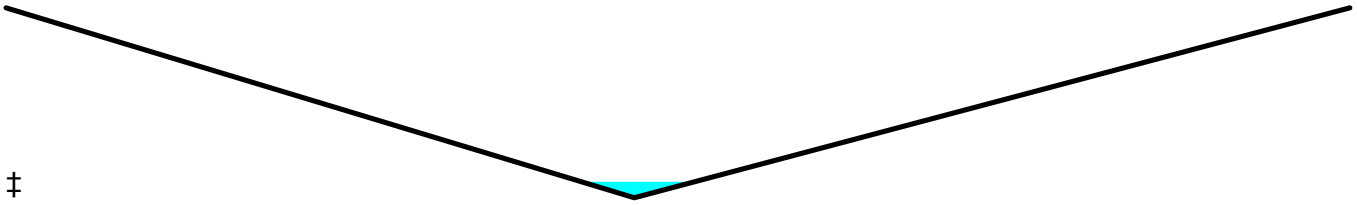
Summary for Reach R11:

Inflow Area = 215,979 sf, 5.29% Impervious, Inflow Depth = 0.48" for WQ-FB1 event
Inflow = 0.41 cfs @ 12.31 hrs, Volume= 8,648 cf
Outflow = 0.41 cfs @ 12.34 hrs, Volume= 8,648 cf, Atten= 1%, Lag= 1.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.13 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 1.61 fps, Avg. Travel Time= 2.7 min

Peak Storage= 50 cf @ 12.34 hrs
Average Depth at Peak Storage= 0.17'
Bank-Full Depth= 2.00' Flow Area= 26.9 sf, Capacity= 296.07 cfs

Custom cross-section, Length= 257.2' Slope= 0.0680 '/'
Constant n= 0.035 Earth, dense weeds
Inlet Invert= 329.50', Outlet Invert= 312.00'



‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	334.00	0.00
12.59	332.00	2.00
26.93	334.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
2.00	26.9	27.2	6,926	296.07

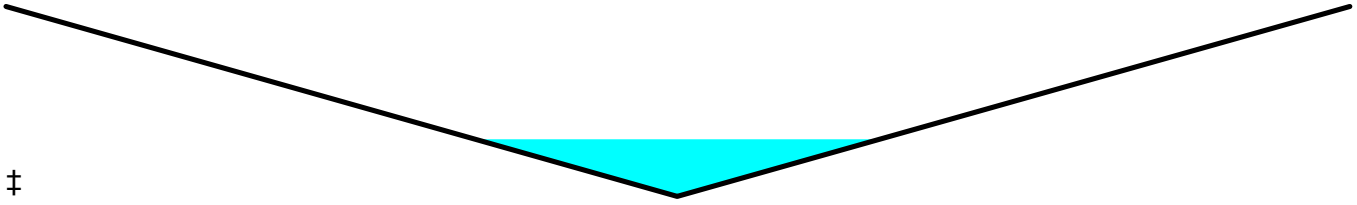
Summary for Reach R2:

Inflow Area = 96,641 sf, 2.11% Impervious, Inflow Depth = 0.41" for WQ-FB1 event
Inflow = 0.48 cfs @ 12.52 hrs, Volume= 3,329 cf
Outflow = 0.48 cfs @ 12.53 hrs, Volume= 3,329 cf, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.01 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 0.55 fps, Avg. Travel Time= 1.1 min

Peak Storage= 16 cf @ 12.53 hrs
Average Depth at Peak Storage= 0.36'
Bank-Full Depth= 1.20' Flow Area= 5.2 sf, Capacity= 11.80 cfs

Custom cross-section, Length= 34.4' Slope= 0.0058 '/'
Constant n= 0.035 Earth, dense weeds
Inlet Invert= 322.29', Outlet Invert= 322.09'



‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	324.00	0.00
4.37	322.80	1.20
8.75	324.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
1.20	5.2	9.1	181	11.80

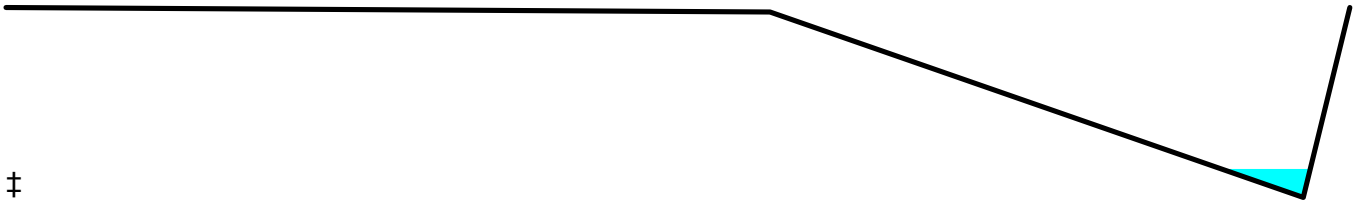
Summary for Reach R3:

Inflow Area = 96,641 sf, 2.11% Impervious, Inflow Depth = 0.41" for WQ-FB1 event
Inflow = 0.48 cfs @ 12.53 hrs, Volume= 3,329 cf
Outflow = 0.48 cfs @ 12.54 hrs, Volume= 3,329 cf, Atten= 0%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.38 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 1.30 fps, Avg. Travel Time= 1.4 min

Peak Storage= 23 cf @ 12.54 hrs
Average Depth at Peak Storage= 0.31'
Bank-Full Depth= 2.09' Flow Area= 9.2 sf, Capacity= 48.93 cfs

Custom cross-section, Length= 113.0' Slope= 0.0188 '/' (101 Elevation Intervals)
Constant n= 0.022 Earth, clean & straight
Inlet Invert= 322.09', Outlet Invert= 319.96'



‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	322.09	0.00
11.00	322.04	0.05
18.68	320.00	2.09
19.35	322.09	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
2.04	8.5	10.1	961	70.33
2.09	9.2	21.1	1,039	48.93

Summary for Reach R4:

Inflow Area = 115,265 sf, 5.26% Impervious, Inflow Depth = 0.45" for WQ-FB1 event
Inflow = 0.58 cfs @ 12.49 hrs, Volume= 4,327 cf
Outflow = 0.58 cfs @ 12.49 hrs, Volume= 4,327 cf, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.83 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 1.58 fps, Avg. Travel Time= 1.2 min

Peak Storage= 23 cf @ 12.49 hrs
Average Depth at Peak Storage= 0.13'
Bank-Full Depth= 2.00' Flow Area= 54.5 sf, Capacity= 942.98 cfs

Custom cross-section, Length= 114.0' Slope= 0.0698 '/' (101 Elevation Intervals)
Constant n= 0.022 Earth, clean & straight
Inlet Invert= 319.96', Outlet Invert= 312.00'

‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	320.00	0.00
18.38	318.93	1.07
29.62	318.00	2.00
57.08	320.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.93	11.2	24.1	1,273	119.36
2.00	54.5	57.2	6,218	942.98

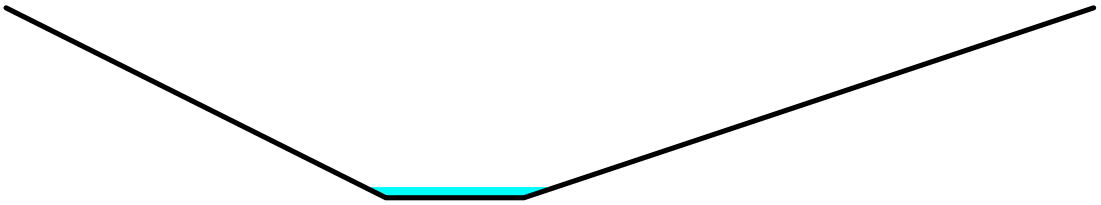
Summary for Reach R6:

Inflow Area = 119,206 sf, 5.09% Impervious, Inflow Depth = 0.48" for WQ-FB1 event
Inflow = 0.77 cfs @ 12.44 hrs, Volume= 4,799 cf
Outflow = 0.77 cfs @ 12.45 hrs, Volume= 4,799 cf, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.06 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 0.92 fps, Avg. Travel Time= 1.6 min

Peak Storage= 32 cf @ 12.45 hrs
Average Depth at Peak Storage= 0.16'
Bank-Full Depth= 2.75' Flow Area= 24.4 sf, Capacity= 249.38 cfs

2.00' x 2.75' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 2.0 3.0 '/' Top Width= 15.75'
Length= 86.3' Slope= 0.0260 '/'
Inlet Invert= 348.60', Outlet Invert= 346.36'



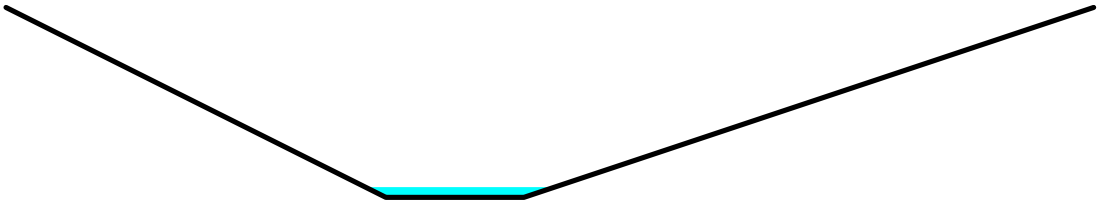
Summary for Reach R8:

Inflow Area = 119,206 sf, 5.09% Impervious, Inflow Depth = 0.48" for WQ-FB1 event
Inflow = 0.77 cfs @ 12.45 hrs, Volume= 4,799 cf
Outflow = 0.77 cfs @ 12.45 hrs, Volume= 4,799 cf, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.18 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 0.97 fps, Avg. Travel Time= 0.8 min

Peak Storage= 16 cf @ 12.45 hrs
Average Depth at Peak Storage= 0.15'
Bank-Full Depth= 2.75' Flow Area= 24.4 sf, Capacity= 269.88 cfs

2.00' x 2.75' deep channel, n= 0.069 Riprap, 6-inch
Side Slope Z-value= 2.0 3.0 '/' Top Width= 15.75'
Length= 44.4' Slope= 0.1608 '/'
Inlet Invert= 341.59', Outlet Invert= 334.45'



Summary for Pond FB1:

Inflow Area = 170,636 sf, 6.10% Impervious, Inflow Depth = 0.50" for WQ-FB1 event
Inflow = 1.06 cfs @ 12.46 hrs, Volume= 7,077 cf
Outflow = 0.17 cfs @ 15.11 hrs, Volume= 7,086 cf, Atten= 84%, Lag= 158.8 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Secondary = 0.17 cfs @ 15.11 hrs, Volume= 7,086 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 333.33' @ 15.11 hrs Surf.Area= 2,992 sf Storage= 2,745 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 183.4 min (1,088.3 - 904.9)

Volume	Invert	Avail.Storage	Storage Description
#1	332.30'	13,356 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
332.30	2,352	203.8	0	0	2,352
334.00	3,450	234.4	4,902	4,902	3,482
335.00	4,181	253.2	3,810	8,712	4,251
335.50	4,533	261.4	2,178	10,890	4,611
336.00	5,345	280.3	2,467	13,356	5,437

Device	Routing	Invert	Outlet Devices
#1	Primary	335.10'	**8.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#2	Secondary	330.03'	**8.0" Round Culvert** L= 26.6' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 330.03' / 329.90' S= 0.0049 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#3	Device 2	330.13'	**2.0" Vert. Orifice/Grate** C= 0.600
#4	Device 3	330.13'	**4.0" Vert. 4" UD** C= 0.600
#5	Device 4	332.30'	**2.410 in/hr Exfiltration over Surface area**
#6	Device 2	333.80'	**3.0" W x 9.0" H Vert. Notch** C= 0.600
#7	Device 2	334.55'	**Neenah R4345 Beehive Grate Light Duty-req. structure** Head (feet) 0.00 0.10 0.15 0.20 0.25 0.30 0.35 0.40 0.50 0.60 0.70 0.80 0.90 1.00 Disch. (cfs) 0.000 0.900 1.600 2.500 3.500 4.000 4.600 5.300 6.800 7.500 8.100 8.600 9.100 9.600

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=332.30' TW=329.90' (Dynamic Tailwater)
└─**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=0.17 cfs @ 15.11 hrs HW=333.33' TW=330.08' (Dynamic Tailwater)
└─**2=Culvert** (Passes 0.17 cfs of 2.72 cfs potential flow)
  ├─**3=Orifice/Grate** (Passes 0.17 cfs of 0.19 cfs potential flow)
  │ └─**4=4" UD** (Passes 0.17 cfs of 0.73 cfs potential flow)
  │ └─**5=Exfiltration** (Exfiltration Controls 0.17 cfs)
  ├─**6=Notch** (Controls 0.00 cfs)
  └─**7=Neenah R4345 Beehive Grate Light Duty-req. structure** (Controls 0.00 cfs)

Summary for Pond R1:

Inflow Area = 96,641 sf, 2.11% Impervious, Inflow Depth = 0.41" for WQ-FB1 event
Inflow = 0.48 cfs @ 12.52 hrs, Volume= 3,329 cf
Outflow = 0.48 cfs @ 12.52 hrs, Volume= 3,329 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.48 cfs @ 12.52 hrs, Volume= 3,329 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 322.86' @ 12.54 hrs
Flood Elev= 325.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	322.47'	**18.0" Round Culvert** L= 35.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 322.47' / 322.29' S= 0.0051 '/' Cc= 0.900

n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.48 cfs @ 12.52 hrs HW=322.86' TW=322.65' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.48 cfs @ 1.94 fps)

Summary for Pond R5:

Inflow Area = 47,852 sf, 4.41% Impervious, Inflow Depth = 0.48" for WQ-FB1 event
Inflow = 0.33 cfs @ 12.37 hrs, Volume= 1,926 cf
Outflow = 0.33 cfs @ 12.37 hrs, Volume= 1,926 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.33 cfs @ 12.37 hrs, Volume= 1,926 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 350.19' @ 12.37 hrs
Flood Elev= 348.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	349.89'	**15.0" Round Culvert** L= 49.9' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 349.89' / 348.60' S= 0.0259 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.33 cfs @ 12.37 hrs HW=350.19' TW=348.75' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.33 cfs @ 1.47 fps)

Summary for Pond R7:

Inflow Area = 119,206 sf, 5.09% Impervious, Inflow Depth = 0.48" for WQ-FB1 event
Inflow = 0.77 cfs @ 12.45 hrs, Volume= 4,799 cf
Outflow = 0.77 cfs @ 12.45 hrs, Volume= 4,799 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.77 cfs @ 12.45 hrs, Volume= 4,799 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 346.83' @ 12.45 hrs
Flood Elev= 348.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	346.36'	**15.0" Round Culvert** L= 57.7' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 346.36' / 341.59' S= 0.0827 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.77 cfs @ 12.45 hrs HW=346.83' TW=341.74' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.77 cfs @ 1.84 fps)

Summary for Pond R9:

Inflow Area = 156,164 sf, 5.34% Impervious, Inflow Depth = 0.49" for WQ-FB1 event
Inflow = 0.97 cfs @ 12.48 hrs, Volume= 6,402 cf
Outflow = 0.97 cfs @ 12.48 hrs, Volume= 6,402 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.97 cfs @ 12.48 hrs, Volume= 6,402 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 334.98' @ 12.48 hrs
Flood Elev= 336.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	334.45'	**15.0" Round Culvert** L= 36.6' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 334.45' / 333.38' S= 0.0292 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.97 cfs @ 12.48 hrs HW=334.98' TW=332.68' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.97 cfs @ 1.96 fps)

Summary for Link SP1:

Inflow Area = 331,244 sf, 5.28% Impervious, Inflow Depth = 0.47" for WQ-FB1 event
Inflow = 0.96 cfs @ 12.46 hrs, Volume= 12,975 cf
Primary = 0.96 cfs @ 12.46 hrs, Volume= 12,975 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Link SP2:

Inflow Area = 115,265 sf, 5.26% Impervious, Inflow Depth = 0.45" for WQ-FB1 event
Inflow = 0.58 cfs @ 12.49 hrs, Volume= 4,327 cf
Primary = 0.58 cfs @ 12.49 hrs, Volume= 4,327 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Link SP3:

Inflow Area = 215,979 sf, 5.29% Impervious, Inflow Depth = 0.48" for WQ-FB1 event
Inflow = 0.41 cfs @ 12.31 hrs, Volume= 8,648 cf
Primary = 0.41 cfs @ 12.31 hrs, Volume= 8,648 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

ATTACHMENT 5

INSPECTION, MAINTENANCE & HOUSEKEEPING PLAN

DM ROMA
CONSULTING ENGINEERS

INSPECTION, MAINTENANCE, AND HOUSEKEEPING PLAN

(Prepared by Jayson Haskell, PE #13002)

CAMBELL ACRES AMENDED SUBDIVISION
LEIUTENANTS DRIVE (OFF JENNY DRIVE)
GRAY, MAINE

Responsible Party

Owner: McDonnell Brothers Custom Builders, LLC.
391 Roosevelt Trail
Windham, Maine 04062

The owner/applicant is responsible for the maintenance of all stormwater management structures and related site components and the keeping of a maintenance log book with service records until a homeowner's association is established. Once the association is established, maintenance will be the responsibility of the homeowners. Records of all inspections and maintenance work performed must be kept on file with the owner and retained for a minimum of five years. The maintenance log will be made available to the Town and Maine Department of Environmental Protection (MDEP) upon request. At a minimum, the maintenance of stormwater management systems will be performed on the prescribed schedule.

The procedures outlined in this plan are provided as a general overview of the anticipated practices to be utilized on this site. In some instances, additional measures may be required due to unexpected conditions. *The Maine Erosion and Sedimentation Control BMP* and *Stormwater Management for Maine: Best Management Practices* Manuals published by the MDEP should be referenced for additional information.

During Construction

1. **Inspection and Corrective Action:** It is the contractor's responsibility to comply with the inspection and maintenance procedures outlined in this section. Inspection shall occur on all disturbed and impervious areas, erosion control measures, material storage areas that are exposed to precipitation, and locations where vehicles enter or exit the site. These areas shall be inspected at least once a week as well as 24 hours before and after a storm event generating more than 0.5 inch of rainfall over a 24-hour period and prior to completing permanent stabilization measures. A person with knowledge of erosion and stormwater control, including the standards and conditions in the permit, shall conduct the inspections.

2. **Maintenance:** Erosion controls shall be maintained in effective operating condition until areas are permanently stabilized. If best management practices (BMPs) need to be repaired, the repair work should be initiated upon discovery of the problem but no later than the end of the next workday. If BMPs need to be maintained or modified, additional BMPs are necessary, or other corrective action is needed, implementation must be completed within seven calendar days and prior to any rainfall event.

3. **Construction vehicles and equipment:** Construction vehicles and equipment shall not be driven or stored within the stormwater basins. To ensure the basins function as designed perpetually, prohibiting vehicles and equipment from these areas will limit the risk of inhibiting the function of the basins due to compaction.

4. **Documentation:** A report summarizing the inspections and any corrective action taken must be maintained on site. The log must include the name(s) and qualifications of the person making the inspections; the date(s) of the inspections; and the major observations about the operation and maintenance of erosion and sedimentation controls, materials storage areas, and vehicle access points to the parcel. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and location(s) where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken. The log must be made accessible to MDEP and Town staff, and a copy must be provided upon request. The owner shall retain a copy of the log for a period of at least three years from the completion of permanent stabilization.

Housekeeping

1. **Spill prevention:** Controls must be used to prevent pollutants from construction and waste materials on site to enter stormwater, which includes storage practices to minimize exposure of the materials to stormwater. The site contractor or operator must develop, and implement as necessary, appropriate spill prevention, containment, and response planning measures.

2. **Groundwater protection:** During construction, liquid petroleum products and other hazardous materials with the potential to contaminate groundwater may not be stored or handled in areas of the site draining to an infiltration area. An "infiltration area" is any area of the site that by design or as a result of soils, topography and other relevant factors accumulates runoff that infiltrates into the soil. Dikes, berms, sumps, and other forms of secondary containment that prevent discharge to groundwater may be used to isolate portions of the site for the purposes of storage and handling of these materials. Any project proposing infiltration of stormwater must provide adequate pre-treatment of stormwater prior to discharge of stormwater to the infiltration area, or provide for treatment within the infiltration area, in order to prevent the accumulation of fines, reduction in infiltration rate, and consequent flooding and destabilization.

3. **Fugitive sediment and dust:** Actions must be taken to ensure that activities do not result in noticeable erosion of soils or fugitive dust emissions during or after construction. Oil may not be used for dust control, but other water additives may be considered as needed. A stabilized construction entrance (SCE) should be included to minimize tracking of mud and sediment. If off-site tracking occurs, public roads should be swept immediately and no less than once a week and prior to significant storm events. Operations during dry months, that experience fugitive dust problems, should wet down unpaved access roads once a week or more frequently as needed with a water additive to suppress fugitive sediment and dust.

4. **Debris and other materials:** Minimize the exposure of construction debris, building and landscaping materials, trash, fertilizers, pesticides, herbicides, detergents, sanitary waste and other materials to precipitation and stormwater runoff. These materials must be prevented from becoming a pollutant source.

5. **Excavation de-watering:** Excavation de-watering is the removal of water from trenches, foundations, coffer dams, ponds, and other areas within the construction area that retain water after excavation. In most cases the collected water is heavily silted and hinders correct and safe construction practices. The collected water removed from the ponded area, either through gravity or pumping, must be spread through natural wooded buffers or removed to areas that are specifically designed to collect the maximum amount of sediment possible, like a cofferdam sedimentation basin. Avoid allowing the water to flow over disturbed areas of the site. Equivalent measures may be taken if approved by the Department.

6. **Authorized Non-stormwater discharges:** Identify and prevent contamination by non-stormwater discharges. Where allowed non-stormwater discharges exist, they must be identified and steps should be taken to ensure the implementation of appropriate pollution prevention measures for the non-stormwater component(s) of the discharge. Authorized non-stormwater discharges are:
   (a) Discharges from firefighting activity;
   (b) Fire hydrant flushings;
   (c) Vehicle washwater if detergents are not used and washing is limited to the exterior of vehicles (engine, undercarriage and transmission washing is prohibited);
   (d) Dust control runoff in accordance with permit conditions and Appendix (C)(3);
   (e) Routine external building washdown, not including surface paint removal, that does not involve detergents;
   (f) Pavement washwater (where spills/leaks of toxic or hazardous materials have not occurred, unless all spilled material had been removed) if detergents are not used;
   (g) Uncontaminated air conditioning or compressor condensate;
   (h) Uncontaminated groundwater or spring water;
   (i) Foundation or footer drain-water where flows are not contaminated;
   (j) Uncontaminated excavation dewatering (see requirements in Appendix C(5));
   (k) Potable water sources including waterline flushings; and

(l) Landscape irrigation.

7. **Unauthorized non-stormwater discharges:** Approval from the Town does not authorize a discharge that is mixed with a source of non-stormwater, other than those discharges in compliance with Section 6 above. Specifically, the Town's approval does not authorize discharges of the following:
   (a) Wastewater from the washout or cleanout of concrete, stucco, paint, form release oils, curing compounds or other construction materials;
   (b) Fuels, oils or other pollutants used in vehicle and equipment operation and maintenance;
   (c) Soaps, solvents, or detergents used in vehicle and equipment washing; and
   (d) Toxic or hazardous substances from a spill or other release.

Post Construction

1. **Inspection and Corrective Action:** All stormwater measures, must be maintained by the owner in effective operating condition. A qualified inspector hired by the owner shall at least annually inspect the stormwater management facilities. This person should have knowledge of erosion and stormwater control including the standards and conditions of the site's approvals. The following areas, facilities, and measures must be inspected, and identified deficiencies must be corrected. Areas, facilities, and measures other than those listed below may also require inspection on a specific site.

   A. **Vegetated Areas:** Inspect vegetated areas, particularly slopes and embankments, early in the growing season or after heavy rains to identify active or potential erosion problems. Replant bare areas or areas with sparse growth. Where rill is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows.

   B. **Ditches, Swales, and Open Channels:** Inspect ditches, swales, and other open channels in the spring, late fall, and after heavy rains to remove any obstructions to flow, remove accumulated sediments and debris, control vegetative growth that could obstruct flow, and repair any erosion of the ditch lining. Vegetated ditches must be mowed at least annually or otherwise maintained to control the growth of woody vegetation and maintain flow capacity. Repair any slumping side slopes as soon as practicable. The channel must receive adequate routine maintenance to maintain capacity and prevent or correct any erosion of the channel's bottom or side slopes.

   C. **Culverts & Storm Drains:** Inspect culverts & storm drains in the spring, late fall, and after heavy rains to 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 storm drain's outlet.

D. **Roofline Drip edges:** The drip edges should be inspected semi-annually and following major storm events for the first year and every six months thereafter. The reservoir crushed stone should drain within 24 to 48 hours following a major storm event. If ponding exceeds 48 hours, the stone reservoir course shall be removed and the filter bed be rototilled to reestablish the soil's filtration capacity. If water ponds in the reservoir course for more than 72 hours, the top several inches of the filter shall be replaced with fresh material. Inspect for debris and sediment build up at surface and remove as needed. The drip edges are part of the stormwater management plan and cannot be paved over or altered in anyway.

E. **Underdrained Filter Basin:** The filter basin is not intended to function as snow storage areas. Inspector to verify that winter plowing operations are not dumping or pushing snow into the basins. The basin shall also not be used for vehicle or heavy equipment storage. Basin should be inspected after several major storm events (0.5 inches rainfall over 24 hours) to determine drawdown time during the first year. Basin to be inspected every six months thereafter with at least one inspection after a major storm event.

   The basin should drain dry within 24 to 48 hours following a one-inch storm. If ponding exceeds 48 hours, the top of the filter bed must be rototilled to reestablish the soil's filtration capacity. If water ponds on the surface of the bed for more than 72 hours, the top several inches of the filter shall be replaced with fresh material. Inspect for debris and sediment build up in the forebay and basin and remove as needed. Mowing of the basin can only occur semi-annually to a height of no less than 6 inches utilizing a hand-held string trimmer or push-mower. Any bare areas or erosion rills shall be repaired with new filter media or sandy loam then seeded and mulched. The basin should also be inspected annually for destabilization of side slopes, embankment settling and other signs of structural failure.

F. **Emergency Spillway:** Spillways should be inspected semi-annually and following major storm events for the first year and every six months thereafter to remove any obstructions to flow. Any woody vegetation growing through riprap lining must be removed. Replace riprap on areas where any underlying filter fabric is showing through the stone or where stones have been dislodged.

G. **Regular Maintenance:** Clear accumulations of winter sand along roadway and parking areas once a year, preferably in the spring. Accumulations on pavement may be removed by pavement sweeping. Accumulations of sand along pavement shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader.

H. **Documentation:** Keep a log (report) summarizing inspections, maintenance, and any corrective actions taken. The log must 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. If a maintenance task requires the clean-out of any sediments or debris, indicate where the sediment and debris was disposed after removal. The log must be made accessible to Town staff upon request. The permittee shall retain a copy of the log for a period of at least five years from the completion of permanent stabilization. Attached is a sample log.

Duration of Maintenance

Perform maintenance as described.

INSPECTION AND MAINTENANCE LOG – GENERAL INSPECTION

CAMBELL ACRES AMENDED SUBDIVISION
LEIUTENANTS DRIVE (OFF JENNY DRIVE)
GRAY, MAINE

The following stormwater management and erosion control items shall be inspected and maintained as prescribed in the Maintenance Plan with recommended frequencies as identified below. The owner is responsible for keeping this maintenance log on file for a minimum of five years and shall provide a copy to the Town upon request. Inspections are to be performed by a qualified third-party inspector and all corrective actions shall be performed by personnel familiar with stormwater management systems and erosion controls.

Maintenance Item	Maintenance Event	Date Performed	Responsible Personnel	Comments
Vegetated Areas	Inspect slopes and embankments early in Spring.			
Ditches, swales and other open channels	Inspect after major rainfall event.			
	Inspect for erosion or slumping and repair			
	Mowed at least annually			
Storm Drains	Inspect semiannually and after major rainfall.			
	Repair erosion at inlet or outlet of pipe.			
	Repair displaced riprap.			
	Clean accumulated sediment in culverts when >20% full.			
Roofline Dripedges	Check after each rainfall event to ensure that the stone reservoir drains within 24-48 hours.			
	Replace top several inches of filter if reservoir does not drain within 72 hours.			
	Inspect and remove sediment or debris build up on the surface of the stone			
	Inspect semi-annually for erosion or sediment accumulation and repair as necessary.			
Regular Maintenance	Clear accumulation of winter sand in paved areas annually.			

INSPECTION AND MAINTENANCE LOG – FILTER BASIN

CAMBELL ACRES AMENDED SUBDIVISION
LEIUTENANTS DRIVE (OFF JENNY DRIVE)
GRAY, MAINE

The following stormwater management and erosion control items shall be inspected and maintained as prescribed in the Maintenance Plan with recommended frequencies as identified below. The owner is responsible for keeping this maintenance log on file for a minimum of five years and shall provide a copy to the Town upon request. Inspections are to be performed by a qualified third-party inspector and all corrective actions shall be performed by personnel familiar with stormwater management systems and erosion controls.

Maintenance Item	Maintenance Event	Date Performed	Responsible Personnel	Comments
Underdrained Filter Basin	Check after each rainfall event to ensure that pond drains within 24-48 hours.			
	Replace top several inches of filter if pond does not drain within 72 hours.			
	Mow grass no more than twice a year to no less than 6 inches in height.			
	Inspect semi-annually for erosion or sediment accumulation and repair as necessary.			
	Inspector to verify basin not utilized for snow storage			
	Inspector to verify basin not utilized for vehicle or heavy equipment storage.			
Outlet Control Structure	Inspect to ensure that structure is properly draining.			
	Remove accumulated sediment semiannually.			
	Inspect grates/inlets and remove debris as needed.			
Emergency Spillway	Inspect and remove obstructions as necessary.			
	Remove woody vegetation.			
	Replace riprap as necessary.			