DM ROMA
CONSULTING ENGINEERS

June 22, 2020

Jennifer Curtis, Town Planner
Town of Windham
8 School Road
Windham, ME 04062

Re: Response to Review Comments & Final Amended Subdivision Application
Veery Estates Condominium – Major Subdivision Plan Application
RMills, LLC - Applicant

Dear Jennifer:

Enclosed please find our Final Subdivision Plan application for the Veery Estates Condominium Project. I've also included the Response to Comments information below that was copied from a digital submission that was provided via email on June 8.

We have received review comments from the Town Planner and offer the following response and additional information:

1. Attached is a copy of the HHE-200 Subsurface Wastewater Disposal System designs for each of the three proposed systems.
2. Attached is an updated Ability to Serve letter from the Portland Water District to allow the additional dwellings to be connected to the private water main.
3. Attached is an updated Letter of Financial Capacity from Gorham Savings Bank
4. The Final Amended Subdivision Plan will be stamped by a Licensed Land Surveyor.
5. The existing tree line is shown on the plan and referenced in the legend. There is no proposed tree clearing for this project so the existing tree line and proposed tree line are the same.
6. Street trees have been added to the Subdivision Plan. Since this is a residential project we assumed the street trees shown on the subdivision plan is sufficient to meet the submission requirement of a Landscaping Plan. Additional plantings along the front of the building foundations will be installed typical of residential dwellings.
7. The existing four dwellings that were constructed in the initial project phase are estimated to generate 4 peak hour trip-ends and 40 daily vehicle trips. The proposed additional 10 dwelling units are expected to generate 10 peak hour trip-ends and 100 daily vehicle trips for cumulative total of 14 peak hour trip-ends and 140 daily vehicle trips. These estimates are based on the data published in the Institute of Transportation Engineers Trip Generation Manual.

We received the following review comments from the Town Engineer and offer the following response:

Comment 1: The stormwater treatment buffer sizing indicates that the flow path in Meadow Buffer #1 is 75 feet, which is the specified length in DEP's Stormwater BMP Manual for berm lengths provided, but measured on the plan sheets it is only about 66 feet in length. Please clarify.

Response 1: The level spreader location and buffer limits have been revised to achieve the required 75 feet of buffer length.

Comment 2: The buffer sizing for Buffer 2 and Buffer 3 indicates 100 feet of berm length per acre of impervious and 30 feet of berm length per acre of developed area, but the DEP BMP Manual specifies 125 feet and 35 feet, respectively for soils in Hydrologic Group C, which the soils map indicates these are. Please clarify.

Response 2: The length of the level spreader berm was adjusted for Buffer 2 and Buffer 3 based on HSG C soils and 100 feet of buffer length. The result is that the berm length decreased from what was previously shown.

Comment 3: The hydrocad analysis includes a "Pond D1". Please clarify on the Post-Development Stormwater Map where the pond is.

Response 3: The center of the cul-de-sac has been modeled as Pond D1. A symbol has been added to the Post-Development Stormwater Map.

Comment 4: The stormwater treatment table on the PDSM indicates WS-40 is treated by FB-1 and MB-2, but the routing diagram does not show the flow path through these buffers. Please clarify.

Response 4: The table states that WS-40 is treated by Buffer 1 – MB1 which is accurate.

Comment 5: A note needs to be added to the Subdivision Plan indicating that Stormwater Buffers will be marked prior to construction and with permanent pins.

Response 5: Note 12 on the Amended Subdivision Plan was revised to require temporary and permanent marking of the stormwater buffers.

Comment 6: Condition #2 from the previous Subdivision Plan needs to be added to this amended plan to address the requirements of the Post-Construction Stormwater Ordinance.

Response 6: Condition of Approval # 2 was added to the Amended Subdivision Plan.

Comment 7: Would a drip edge outlet be required for the drip edge filters on Units 5/6 and 7/8?

Response 7: Drip edge outlets have been added to these two buildings on the Grading & Utility Plan.

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 Roma

Dustin M. Roma, P.E.
President

Final Plan - Major Subdivision

Project Name: VEERY ESTATES CONDOMINIUM

Tax Map: 5 **Lot:** 1-1

10 ADDITIONAL

Number of lots/dwelling units: 14 TOTAL **Estimated road length:** 700 FT

Is the total disturbance proposed > 1 acre? ☒ **Yes** □ **No**

Contact Information

1. Applicant

Name: RMILLS, LLC

Mailing Address: 13 VICTORIA LANE, WINDHAM, ME 04062

Telephone: _____ Fax: _____ E-mail: _____

2. Record owner of property

☒ (Check here if same as applicant)

Name: _____

Mailing Address: _____

Telephone: _____ Fax: _____ Email: _____

3. Contact Person/Agent (if completed and signed by applicant's agent, provide written documentation of authority to act on behalf of applicant)

Name: DUSTIN ROMA

Company Name: DM ROMA CONSULTING ENGINEERS

Mailing Address: PO BOX 1116, WINDHAM, ME 04062

Telephone: 310 - 0506 Fax: _____ E-mail: DUSTIN@DMROMA.COM

I certify all the information in this application form and accompanying materials is true and accurate to the best of my knowledge.

Dustin Roma 6-22-2020

Signature Date

June 5, 2020

Town of Windham, Planning Office
8 School Street,
Windham, Maine 06062

RE: Financing for R Mills, LLC Junco Drive Condominium Project Phase 2

To Whom It May Concern,

RMills LLC, R. Bryan Mills and Robert Mills have an established banking relationship with Gorham Savings Bank. They have the financial capacity to develop and complete the proposed Phase 2 of the Junco Drive Condominium Project. Final approval of the financing is subject to full underwriting, Town approvals and an acceptable "as completed" appraisal of the project.

Should you have any further questions, I can be reached at 207-222-1499 or Kdonnelly@Gorhamsavings.bank.

Sincerely,

Kimberly A. Donnelly
SVP, Director of Business Banking
Gorham Savings Bank

STORMWATER PBR APPLICATION FORM PLEASE TYPE OR PRINT IN INK ONLY Page 1 02/14

1. Name of Applicant:	RMILLS, LLC.	**5. Name of Agent: (if applicable)**	DM ROMA CONSULTING ENGINEERS DUSTIN M. ROMA
2. Applicant's Mailing Address:	13 VICTORIA LANE, WINDHAM, ME 04062	**6. Agent's Mailing Address:**	PO BOX 1116, WINDHAM ME 04062
3. Applicant's Daytime Phone #:		**7. Agent's Daytime Phone #:**	207-310-0506
4. Applicant's email address:		**8. Agent's email address:**	DUSTIN@DMROMA.COM
9. Location of Project: (Road, Street, Rt.#)	JUNCO DRIVE (OFF RIVER ROAD)	**10. Town:**	WINDHAM
		11. County:	CUMBERLAND

12. Is this PBR for renewal of an individual stormwater permit? If yes, skip to Block 27 and signature page. ❑ Yes ☑ No

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 # of _____acres OR ☑ Total # of 120,287± square feet
		15. Amount of Impervious Area:	❑ Total # of _____acres OR ☑ Total # of 38,853± square feet

16. Creating a common plan of development or sale?	❑ Yes ☑ No	**17. Is this activity part of a larger project?**	☑ Yes ❑ No
18. Name of waterbody (ies) drained to	PRESUMPSCOT RIVER	**19. Name of impaired Waterbody, if appplicable**	
20. Brief Project Description:	SECOND PHASE OF CONSTRUCTION TO INCLUDE FIVE (5) NEW DUPLEX RESIDENTIAL STRUCTURES (10 NEW UNITS), AND EXTENSION OF JUNCO DRIVE		
21. Size of Lot or Parcel and UTM locations, if known:	❑ _____ square feet OR ☑ 5.97± acres	**UTM Northing, if known:** 4,844,756.9 m	**UTM Easting, if known:** 384,953.8 m
22. Deed Reference Numbers:	Book#: 34761 Page#: 152	**23. Map and Lot Numbers:**	Map #: 5 Lot #: 1-1
24. DEP Staff Previously contacted		**25. Project started prior to application?** ☑ Yes ❑ No	**If yes, Completed?:** ❑ Yes ☑ No
26. Resubmission of PBR Application?	❑ Yes ☑ No	**If yes, prior application #:**	**Prior project manager:**
27. Written Notice of Violation?	❑ Yes➔ ☑ No	**If yes, name of DEP enforcement staff involved:**	
28. Detailed Directions to the Project Site: (Attach separate sheet if necessary)	FROM THE INTERSECTION OF RIVER ROAD AND MAIN STREET IN WINDHAM, PROCEED NORTH ON RIVER ROAD TO JUNCO DRIVE (WEST SIDE OF RIVER RD)		
29. Renewal of individual stormwater permit	DEP Permit#:	Project Manager:	

30. SUBMISSIONS ▼

☑ This form (signed and dated) ☑ Fee	❒ Dept. of Inland Fisheries and Wildlife Approval (if in Essential Habitat)	☑ Photos of Area ☑ ESC Plan ☑ Location Map ☑ Site Plan	**For Renewal of an individual Stormwater permit only:** ❒ This form (signed and dated) ❒ Copy of original stormwater permit ❒ Fee

Does the agent have an interest in this project? If yes, what is the interest?	NO

CERTIFICATIONS AND SIGNATURES LOCATED ON PAGE 2

CERTIFICATIONS / SIGNATURES

Applicant's Statement:

I am applying for a Stormwater PBR and have attached the required PBR submissions. I have read the requirements herein 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.

Signed: Dustin M. Roma **Date:** 6/11/2020

Notice of Intent to Comply with Maine Construction General Permit	**With this Stormwater PBR notification form and my signature below, I am filing notice of my intent to carry out work which meets the requirements of the Maine Construction General Permit. 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.** **Signed** Dustin M. Roma **Date:** 6/11/2020

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Department of Human Services
Division of Health Engineering, 10 SHS
(207) 287-5672 Fax: (207) 287-3165

PROPERTY LOCATION

City, Town, or Plantation	Windham
Street or Road	River Road, Map 5, Lot 1–1
Subdivision, Lot #	

OWNER/APPLICANT INFORMATION

Name (last, first, MI)	RMILLS, LLC — Owner ☒ Applicant
Mailing Address of Owner/Applicant	13 Victoria Lane Windham, ME 04062
Daytime Tel. #	207–310–0506

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: PERMIT REQUIRED - ATTACH IN SPACE BELOW <<

Town _____ Permit# _____

Date Permit Issued __/__/__ Fee: $ _____ Double Fee Charged [ ]

_____ L.P.I. # _____
Local Plumbing Inspector

☐ Owner ☐ Town ☐ State

The Subsurface Wastewater Disposal System ***shall not*** be installed until a Permit is attached HERE 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 # 5 Lot # 1–1

CAUTION: INSPECTION REQUIRED

I have inspected the installation authoirzed 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. Minor Expansion
b. Major 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

5.97 ☒ 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: 4
3. Other: _____ (specify)

Current Use Seasonal ☒ Year Round Undeveloped — BED #2

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: 2X1500 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: 3564 ☒sq. ft. lin. 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

1,080 gallons per day
BASED ON:
☒1. Table 501.1 (dwelling unit(s))
2. Table 501.2 (other facilities)
SHOW CALCULATIONS for other facilites
4 units @
3 bedrooms @ 90 gpd = 1,080 gpd
3. Section 503.0 (meter readings)
ATTACH WATER METER DATA

SOIL DATA & DESIGN CLASS

PROFILE CONDITION
3 / C
at Observation Hole # TP–2
Depth 24 "
of Most Limiting Soil Factor

DISPOSAL FIELD SIZING

1. Small---2.0 sq. ft. / gpd
2. Medium---2.6 sq. ft. / gpd
☒3. Medium---Large 3.3 sq. f.t / gpd
4. Large---4.1 sq. ft. / gpd
5. 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 44 m 49.26 s
Lon. –70 d 25 m 44.53 s

SITE EVALUATOR STATEMENT

I certify that on 5/20/2020 (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).

Site Evaluator Signature	SE #	Date
	391	6/1/2020

Site Evaluator Name Printed	Telephone Number	E-mail Address
Alexander A. Finamore	(207) 650–4313	alfinamore@yahoo.com

Note: Changes to or deviations from the design should be confirmed with the Site Evaluator.

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

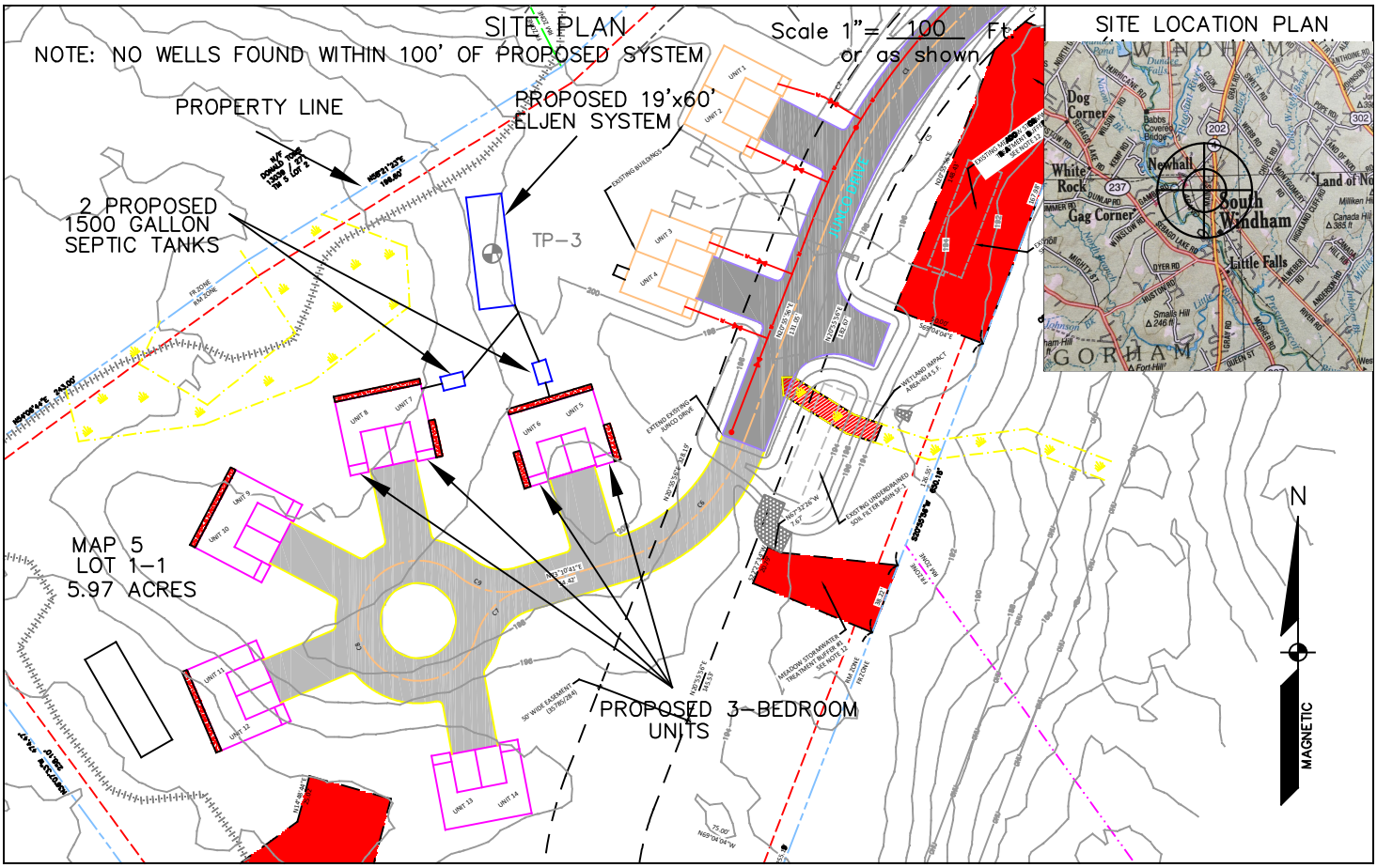
Maine Department of Human Services
Division of Health Engineering, 10 SHS
(207) 287-5672 FAX (207) 287-3165

Town, City ,Plantation	Street, Road, Subdivision	Owner or Applicant Name
Windham	River Road – Map 5, Lot 1-1 – BED#2	RMILLS, LLC

SITE PLAN

NOTE: NO WELLS FOUND WITHIN 100' OF PROPOSED SYSTEM

Scale 1"= 100 Ft. or as shown



SITE LOCATION PLAN

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP-2 ☒ Test pit ☐ Boring

0 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
SANDY LOAM (0–10)		DARK BROWN	NONE OBSERVED
FINE SANDY LOAM (10–20)	FRIABLE	DARK YELLOWISH BROWN	
	FIRM	LIGHT GREYISH BROWN	FINE&FAINT

LIMIT OF EXCAVATION = 32"

Soil Classification	Slope	Limiting Factor	
3 Profile / C Condition	5 %	24 "	☐ Ground Water ☒ 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

Soil Classification	Slope	Limiting Factor	
Profile / Condition	%	"	☐ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Site Evaluator Signature

391
SE #

6/1/2020
Date

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Department of Human Services
Division of Health Engineering, 10 SHS
(207) 287-5672 FAX (207) 287-3165

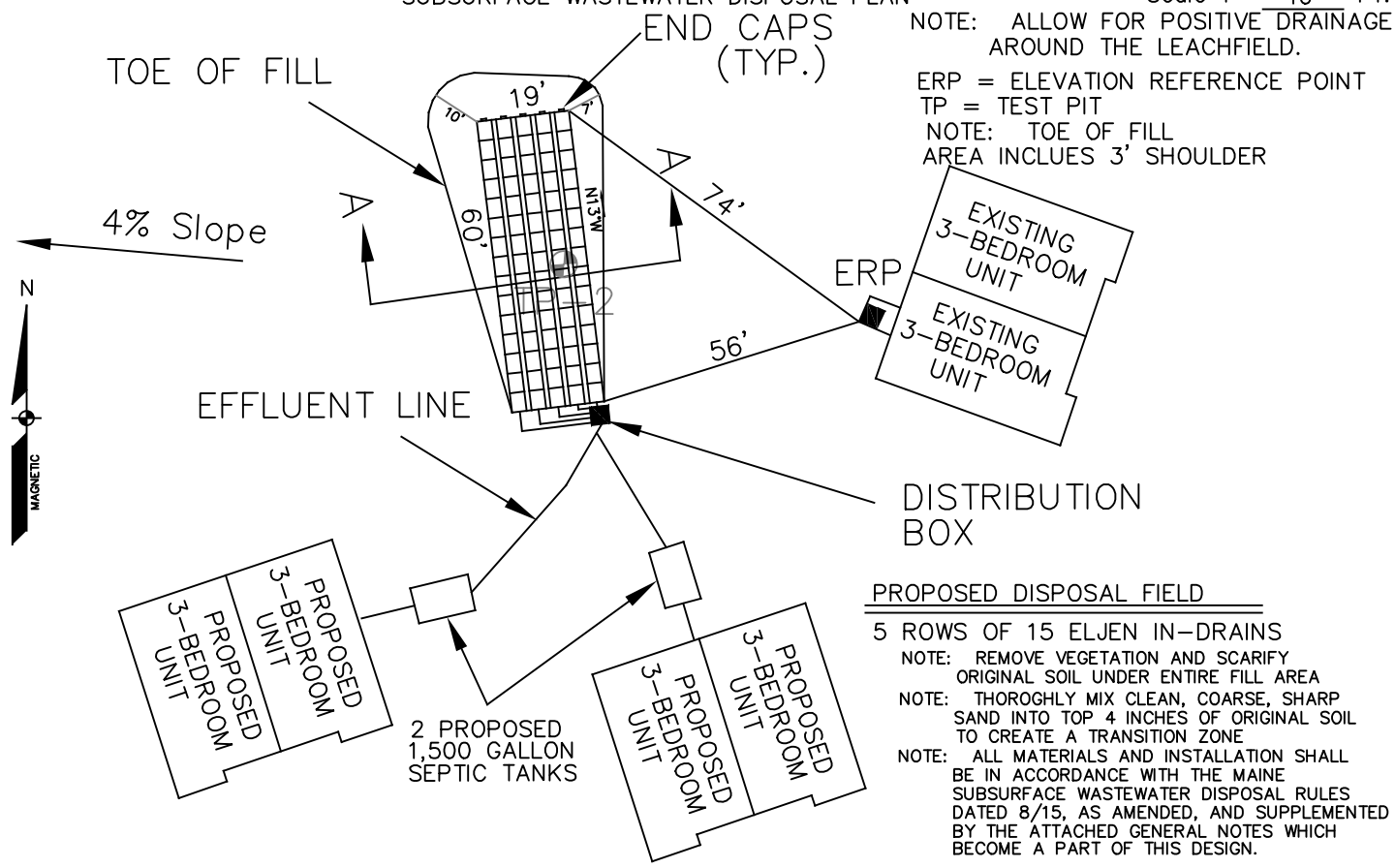
Town, City ,Plantation	Street, Road, Subdivision	Owner or Applicant Name
WINDHAM	RIVER ROAD – MAP 5, LOT 1-1	RMILLS, LLC

SUBSURFACE WASTEWATER DISPOSAL PLAN

Scale 1" = 40 FT.

NOTE: ALLOW FOR POSITIVE DRAINAGE AROUND THE LEACHFIELD.

ERP = ELEVATION REFERENCE POINT
TP = TEST PIT
NOTE: TOE OF FILL AREA INCLUES 3' SHOULDER



PROPOSED DISPOSAL FIELD

5 ROWS OF 15 ELJEN IN-DRAINS

NOTE: REMOVE VEGETATION AND SCARIFY ORIGINAL SOIL UNDER ENTIRE FILL AREA

NOTE: THOROGHLY MIX CLEAN, COARSE, SHARP SAND INTO TOP 4 INCHES OF ORIGINAL SOIL TO CREATE A TRANSITION ZONE

NOTE: ALL MATERIALS AND INSTALLATION SHALL BE IN ACCORDANCE WITH THE MAINE SUBSURFACE WASTEWATER DISPOSAL RULES DATED 8/15, AS AMENDED, AND SUPPLEMENTED BY THE ATTACHED GENERAL NOTES WHICH BECOME A PART OF THIS DESIGN.

BACKFILL REQUIREMENTS

Depth of Fill (Upslope) varies 0-16"
Depth of Fill (Downslope) varies 0-25"

CONSTRUCTION ELEVATIONS

Finished Grade Elevation
Top of Distribution Pipe or Proprietary Device
Bottom of Disposal Area (Bottom of Stone)

ELEVATION REFERENCE POINT

SEE TABLE Location & Description TOP OF
SEE TABLE BULKHEAD UP 11"
SEE TABLE Reference Elevation 0"

Construction Elevations

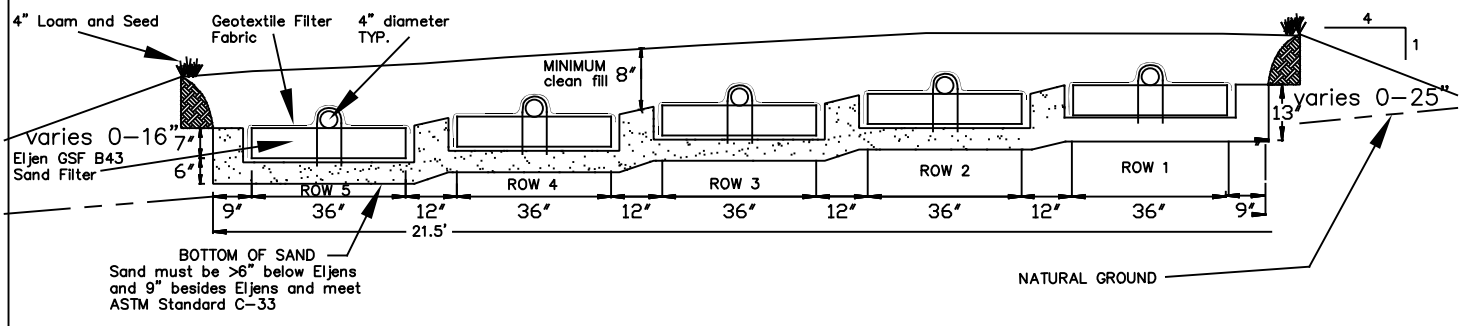
Row #	Finish Grade	Top of Pipe	Bottom of Eljen	Bottom of Sand
1	-20"	-28"	-39"	-45"
2	-23"	-31"	-42"	-48"
3	-26"	-34"	-45"	-51"
4	-29"	-37"	-48"	-54"
5	-32"	-40"	-51"	-57"

DISPOSAL FIELD CROSS SECTION

CROSS SECTION A-A'

12" SEPARATION USED IN DESIGN

SCALE:
VERTICAL: 1" =3'
HORIZONTAL: 1" =5'



Site Evaluator Signature | 391 SE # | 6/1/2020 Date

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Department of Human Services
Division of Health Engineering, 10 SHS
(207) 287-5672 Fax: (207) 287-3165

PROPERTY LOCATION

City, Town, or Plantation	Windham
Street or Road	River Road, Map 5, Lot 1–1
Subdivision, Lot #	

OWNER/APPLICANT INFORMATION

Name (last, first, MI)	RMILLS, LLC — Owner ×Applicant
Mailing Address of Owner/Applicant	13 Victoria Lane Windham, ME 04062
Daytime Tel. #	207–310–0506

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: PERMIT REQUIRED - ATTACH IN SPACE BELOW <<

Town _____ Permit# _____

Date Permit Issued __/__/__ Fee: $ _____ Double Fee Charged [ ]

_____ L.P.I. # _____
Local Plumbing Inspector

☐ Owner ☐ Town ☐ State

The Subsurface Wastewater Disposal System ***shall not*** be installed until a Permit is attached HERE 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 # 5 Lot # 1–1

CAUTION: INSPECTION REQUIRED

I have inspected the installation authoirzed 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. Minor Expansion
b. Major 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

5.97 ×ACRES SQ. FT.

SHORELAND ZONING

Yes No

DISPOSAL SYSTEM TO SERVE

1. Single Family Dwelling Unit, No. of Bedrooms: ____
×2. Multiple Family Dwelling, No. of Units: 4
3. Other: _____ (specify)

Current Use Seasonal ×Year Round Undeveloped — BED #3

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: 2X1500 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: 3564 ×sq. ft. lin. 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

1,080 gallons per day
BASED ON:
×1. Table 501.1 (dwelling unit(s))
2. Table 501.2 (other facilities)
SHOW CALCULATIONS for other facilites
4 units @
3 bedrooms @ 90 gpd = 1,080 gpd
3. Section 503.0 (meter readings)
ATTACH WATER METER DATA

SOIL DATA & DESIGN CLASS

PROFILE CONDITION
2 / C
at Observation Hole # TP–3
Depth 18 "
of Most Limiting Soil Factor

DISPOSAL FIELD SIZING

1. Small---2.0 sq. ft. / gpd
2. Medium---2.6 sq. ft. / gpd
×3. Medium---Large 3.3 sq. f.t / gpd
4. Large---4.1 sq. ft. / gpd
5. 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 44 m 47.37 s
Lon. –70 d 25 m 47.12 s

SITE EVALUATOR STATEMENT

I certify that on 5/20/2020 (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).

Alexander Finamore — 391 — 6/2/2020
Site Evaluator Signature — SE # — Date

Alexander A. Finamore — (207) 650–4313 — alfinamore@yahoo.com
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

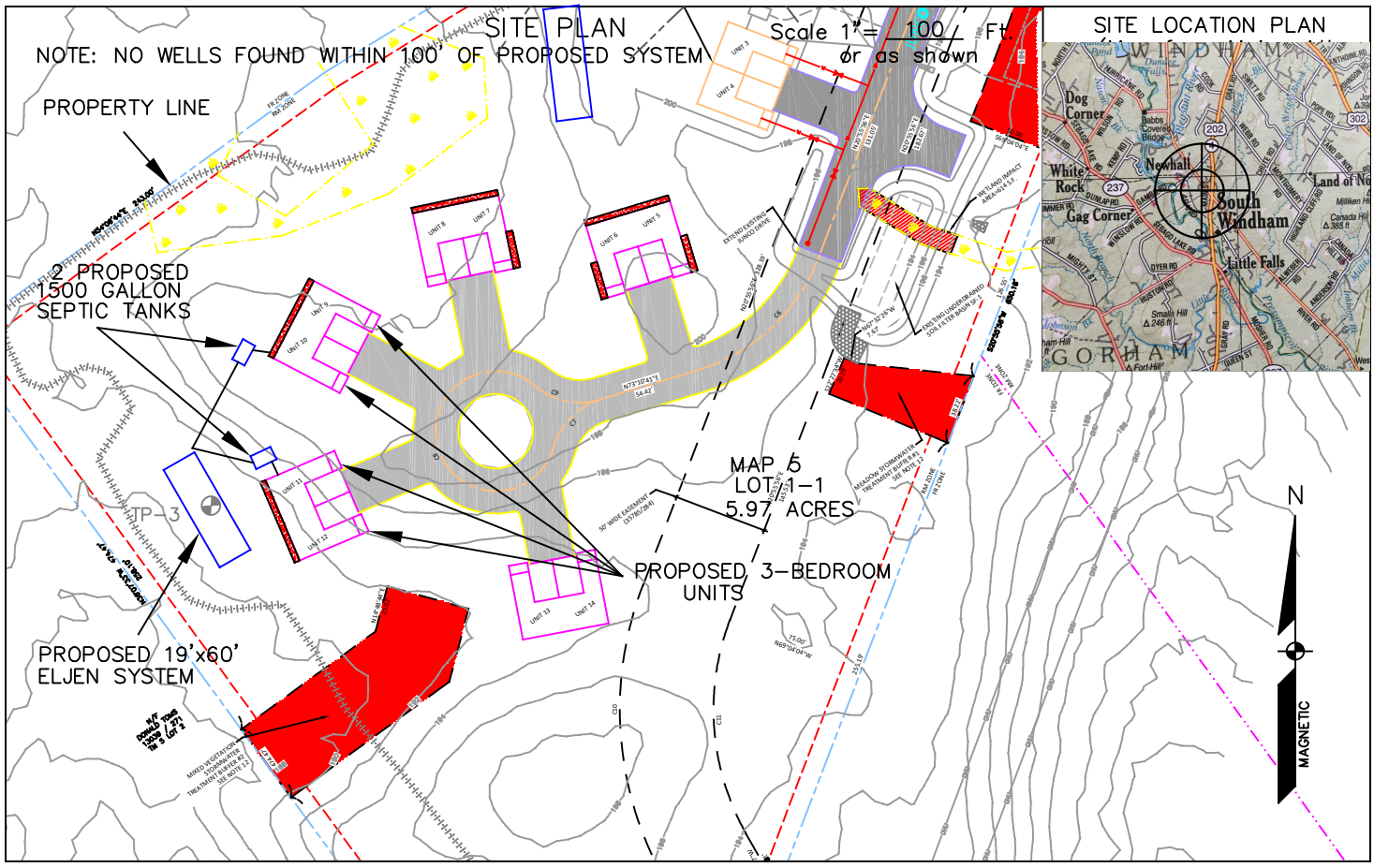
Maine Department of Human Services
Division of Health Engineering, 10 SHS
(207) 287-5672 FAX (207) 287-3165

Town, City ,Plantation	Street, Road, Subdivision	Owner or Applicant Name
Windham	River Road – Map 5, Lot 1-1 – BED#3	RMILLS, LLC

SITE PLAN

NOTE: NO WELLS FOUND WITHIN 100' OF PROPOSED SYSTEM

Scale 1" = 100' Ft. or as shown



SITE LOCATION PLAN

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP-3 ☒ Test pit ☐ Boring

0 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

	Texture	Consistency	Color	Mottling
0–10	SANDY LOAM		DARK BROWN	NONE OBSERVED
10–20	FINE SANDY LOAM	FRIABLE	DARK YELLOWISH BROWN	
20–30			LIGHT GREYISH BROWN	COMMON & MEDIUM
30–50	LIMIT OF EXCAVATION = 32"			

Soil Classification	Slope	Limiting Factor	
2 Profile / C Condition	5 %	18 "	☐ Ground Water ☒ 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

Soil Classification	Slope	Limiting Factor	
Profile / Condition	%	"	☐ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Site Evaluator Signature | 391 SE # | 6/1/2020 Date

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Department of Human Services
Division of Health Engineering, 10 SHS
(207) 287-5672 FAX (207) 287-3165

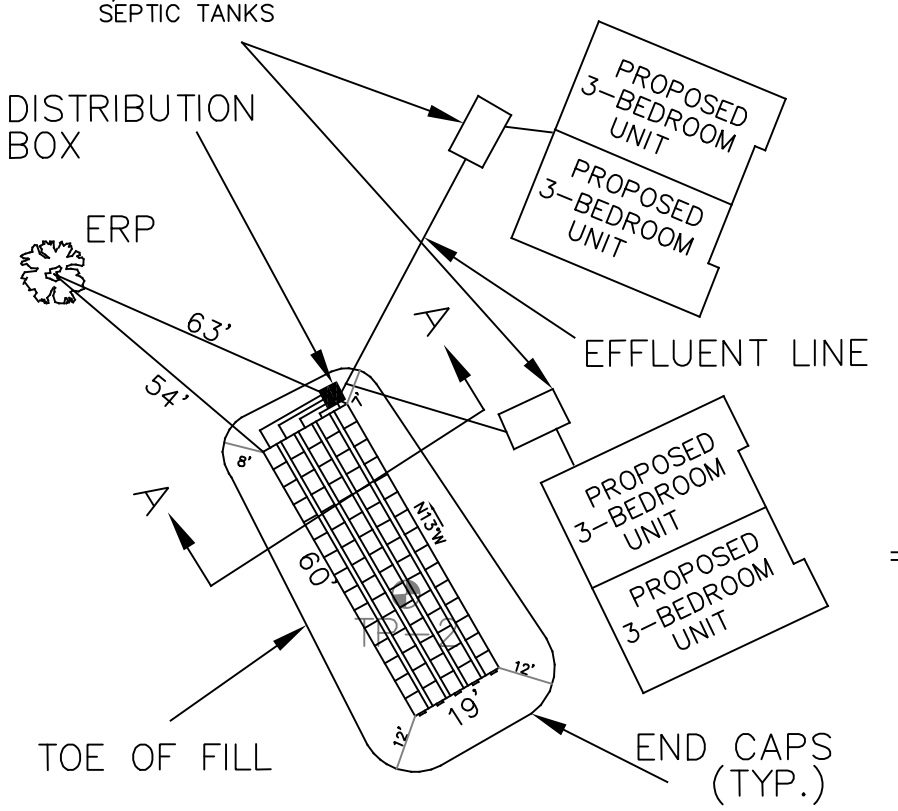
Town, City ,Plantation	Street, Road, Subdivision	Owner or Applicant Name
WINDHAM	RIVER ROAD – MAP 5, LOT 1-1 BED #3	RMILLS, LLC

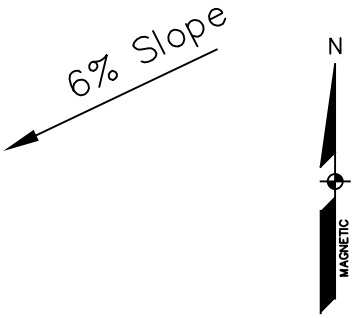
SUBSURFACE WASTEWATER DISPOSAL PLAN

Scale 1" = 40 FT.

NOTE: ALLOW FOR POSITIVE DRAINAGE AROUND THE LEACHFIELD.

ERP = ELEVATION REFERENCE POINT
TP = TEST PIT
NOTE: TOE OF FILL AREA INCLUES 3' SHOULDER





PROPOSED DISPOSAL FIELD

5 ROWS OF 15 ELJEN IN-DRAINS

NOTE: REMOVE VEGETATION AND SCARIFY ORIGINAL SOIL UNDER ENTIRE FILL AREA

NOTE: THOROGHLY MIX CLEAN, COARSE, SHARP SAND INTO TOP 4 INCHES OF ORIGINAL SOIL TO CREATE A TRANSITION ZONE

NOTE: ALL MATERIALS AND INSTALLATION SHALL BE IN ACCORDANCE WITH THE MAINE SUBSURFACE WASTEWATER DISPOSAL RULES DATED 8/15, AS AMENDED, AND SUPPLEMENTED BY THE ATTACHED GENERAL NOTES WHICH BECOME A PART OF THIS DESIGN.

BACKFILL REQUIREMENTS

Depth of Fill (Upslope) varies 21-35"
Depth of Fill (Downslope) varies 19-27"

CONSTRUCTION ELEVATIONS

Finished Grade Elevation
Top of Distribution Pipe or Proprietary Device
Bottom of Disposal Area (Bottom of Stone)

ELEVATION REFERENCE POINT

SEE TABLE Location & Description Nail up 55" in a 5" DBH Apple Tree
SEE TABLE Reference Elevation 0"
SEE TABLE

Construction Elevations

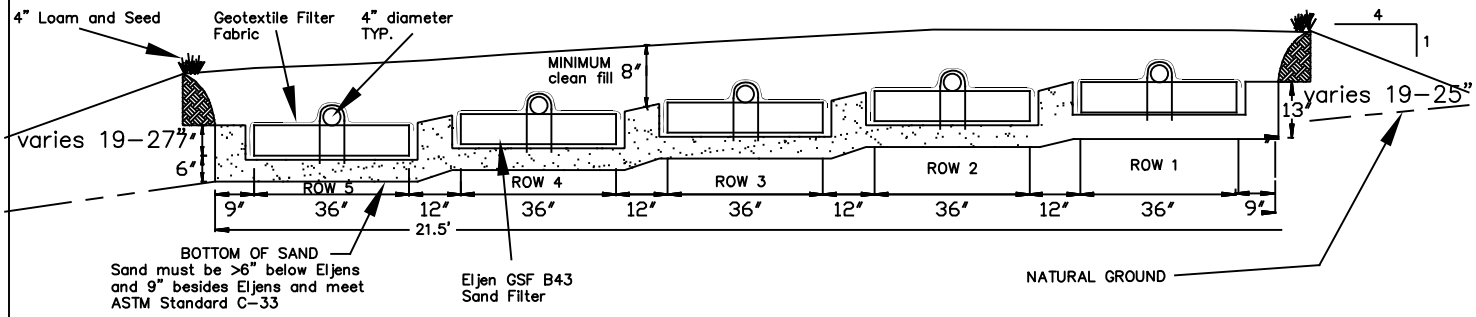
Row #	Finish Grade	Top of Pipe	Bottom of Eljen	Bottom of Sand
1	-19"	-27"	-38"	-46"
2	-23"	-31"	-42"	-50"
3	-27"	-35"	-46"	-54"
4	-31"	-39"	-50"	-58"
5	-35"	-43"	-54"	-62

DISPOSAL FIELD CROSS SECTION

CROSS SECTION A-A'

12" SEPARATION USED IN DESIGN

SCALE:
VERTICAL: 1" =3'
HORIZONTAL: 1" =5'



Site Evaluator Signature | 391 SE # | 6/2/2020 Date

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Department of Human Services
Division of Health Engineering, 10 SHS
(207) 287-5672 Fax: (207) 287-3165

PROPERTY LOCATION

City, Town, or Plantation	Windham
Street or Road	River Road, Map 5, Lot 1–1
Subdivision, Lot #	

OWNER/APPLICANT INFORMATION

Name (last, first, MI)	RMILLS, LLC — Owner ☒ Applicant
Mailing Address of Owner/Applicant	13 Victoria Lane Windham, ME 04062
Daytime Tel. #	207–310–0506

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: PERMIT REQUIRED - ATTACH IN SPACE BELOW <<

Town _____ Permit# _____

Date Permit Issued __/__/__ Fee: $ _____ Double Fee Charged [ ]

_____ L.P.I. # _____
Local Plumbing Inspector

☐ Owner ☐ Town ☐ State

The Subsurface Wastewater Disposal System ***shall not*** be installed until a Permit is attached HERE 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 # 5 Lot # 1–1

CAUTION: INSPECTION REQUIRED

I have inspected the installation authoirzed 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. Minor Expansion
b. Major 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

5.97 ☒ 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 — BED #4

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: 1500 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: 1782 ☒ sq. ft. lin. 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 501.1 (dwelling unit(s))
2. Table 501.2 (other facilities)
SHOW CALCULATIONS for other facilites
2 units @
3 bedrooms @ 90 gpd = 540 gpd
3. Section 503.0 (meter readings)
ATTACH WATER METER DATA

SOIL DATA & DESIGN CLASS

PROFILE CONDITION
2 / C
at Observation Hole # TP–4
Depth 22 "
of Most Limiting Soil Factor

DISPOSAL FIELD SIZING

1. Small---2.0 sq. ft. / gpd
2. Medium---2.6 sq. ft. / gpd
☒ 3. Medium---Large 3.3 sq. f.t / gpd
4. Large---4.1 sq. ft. / gpd
5. 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 44 m 47.37 s
Lon. –70 d 25 m 47.12 s

SITE EVALUATOR STATEMENT

I certify that on 5/20/2020 (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).

Site Evaluator Signature	SE #	Date
	391	6/4/2020

Site Evaluator Name Printed	Telephone Number	E-mail Address
Alexander A. Finamore	(207) 650–4313	alfinamore@yahoo.com

Note: Changes to or deviations from the design should be confirmed with the Site Evaluator.

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

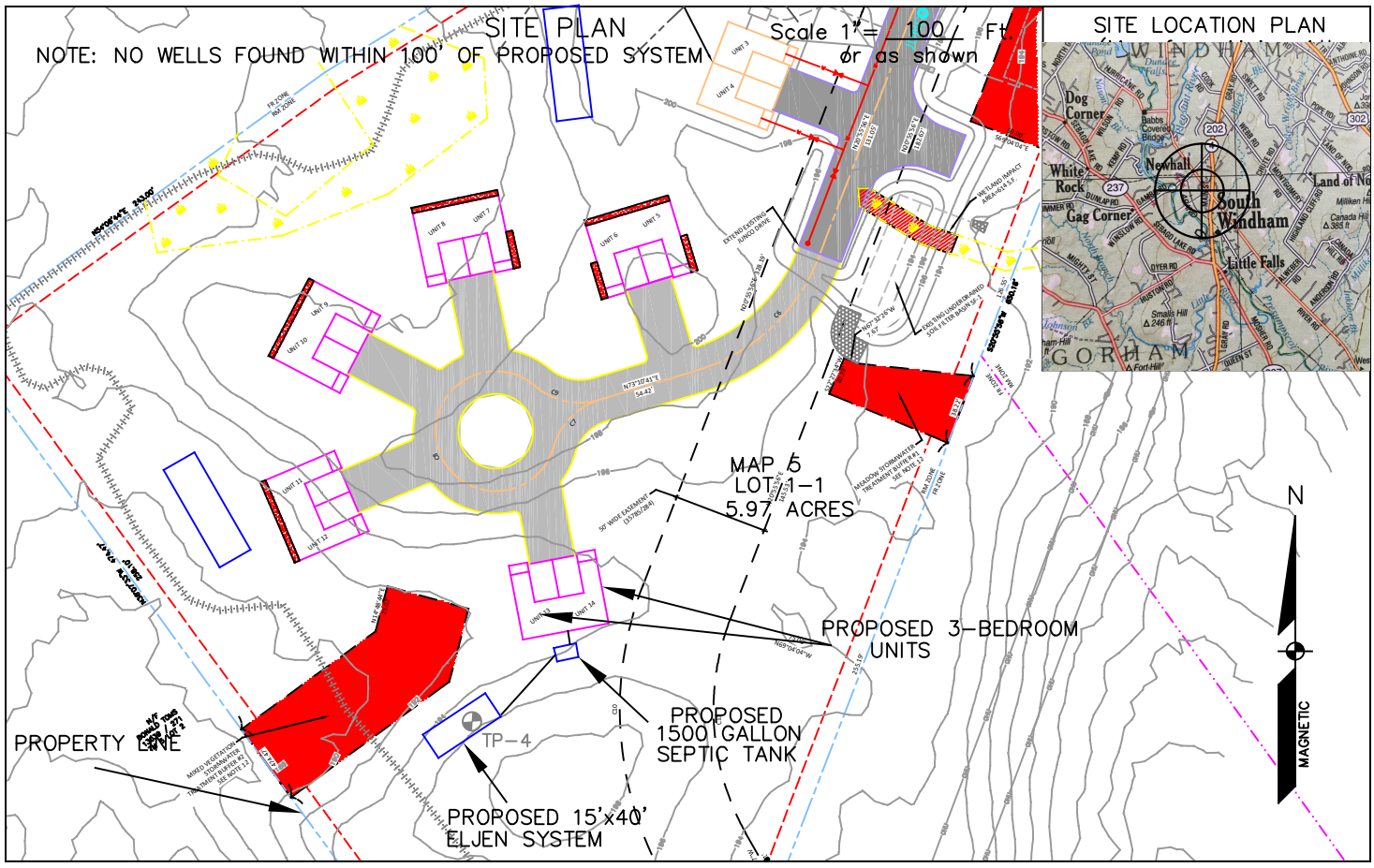
Maine Department of Human Services
Division of Health Engineering, 10 SHS
(207) 287-5672 FAX (207) 287-3165

Town, City ,Plantation	Street, Road, Subdivision	Owner or Applicant Name
Windham	River Road – Map 5, Lot 1-1 – BED#4	RMILLS, LLC

SITE PLAN

NOTE: NO WELLS FOUND WITHIN 100' OF PROPOSED SYSTEM

Scale 1" = 100' Ft. or as shown

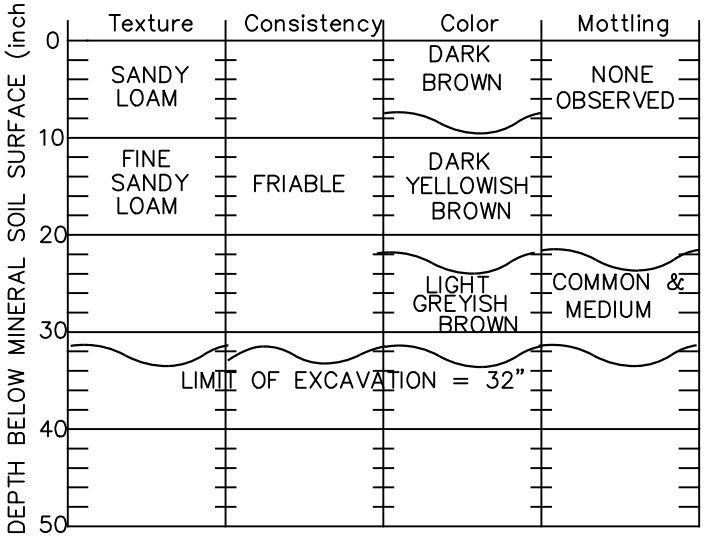


SITE LOCATION PLAN

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP-4 ☒ Test pit ☐ Boring

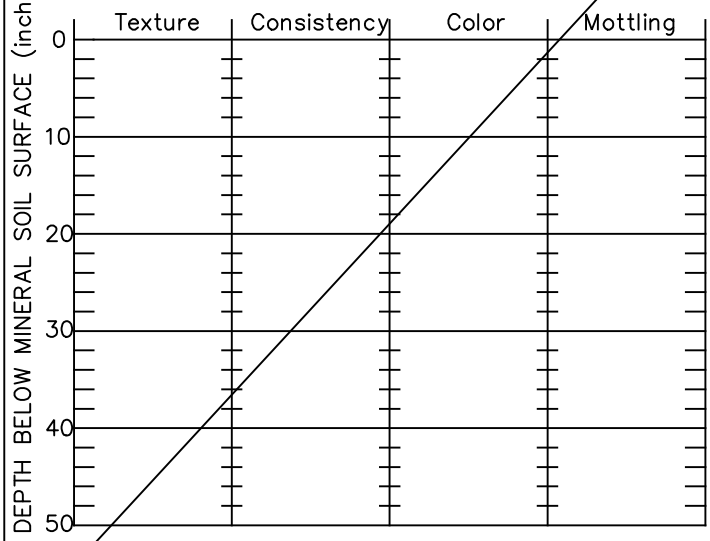
0 " Depth of Organic Horizon Above Mineral Soil



Soil Classification	Slope	Limiting Factor	
2 Profile / C Condition	5-8%	22 "	☒ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Observation Hole _____ ☐ Test pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil



Soil Classification	Slope	Limiting Factor	
Profile / Condition	%	"	☐ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Site Evaluator Signature | 391 SE # | 6/4/2020 Date

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Department of Human Services
Division of Health Engineering, 10 SHS
(207) 287-5672 FAX (207) 287-3165

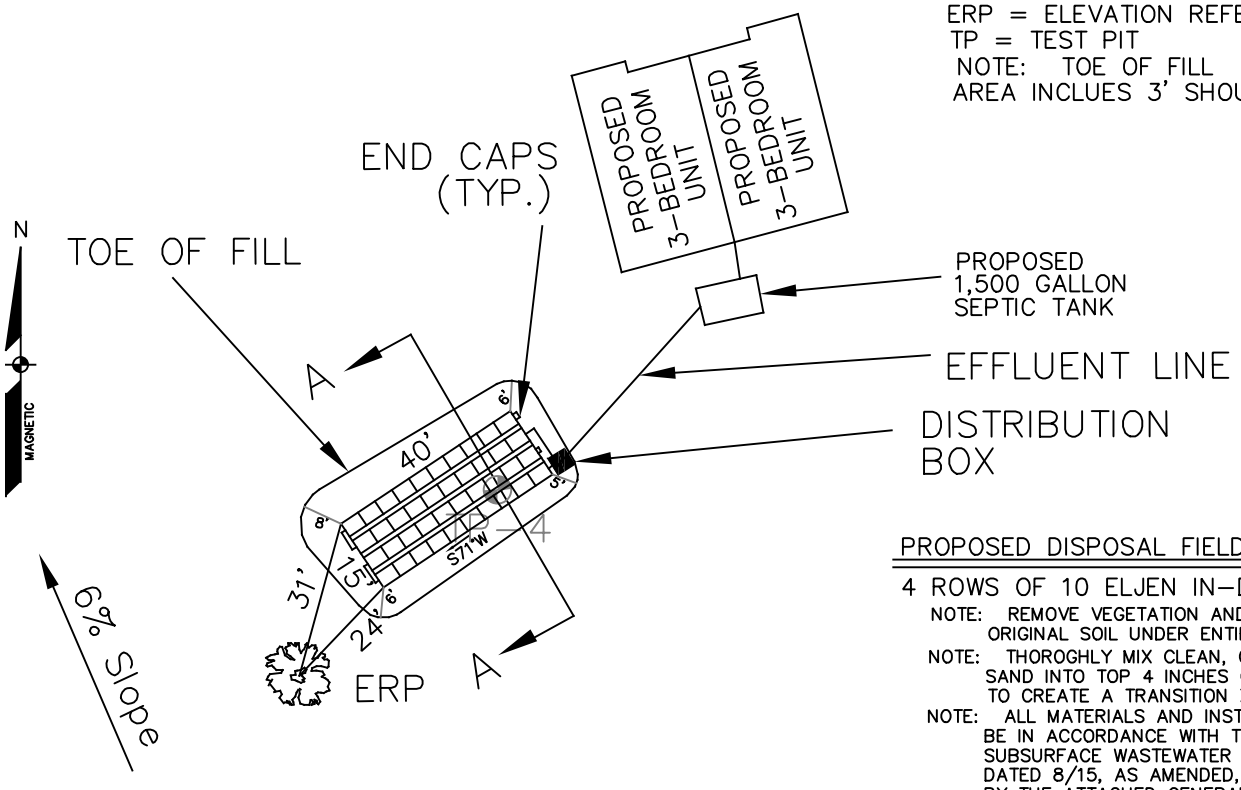
Town, City ,Plantation	Street, Road, Subdivision	Owner or Applicant Name
WINDHAM	RIVER ROAD – MAP 5, LOT 1-1 BED #4	RMILLS, LLC

SUBSURFACE WASTEWATER DISPOSAL PLAN

Scale 1" = 40 FT.

NOTE: ALLOW FOR POSITIVE DRAINAGE AROUND THE LEACHFIELD.

ERP = ELEVATION REFERENCE POINT
TP = TEST PIT
NOTE: TOE OF FILL AREA INCLUES 3' SHOULDER



PROPOSED DISPOSAL FIELD

4 ROWS OF 10 ELJEN IN-DRAINS

NOTE: REMOVE VEGETATION AND SCARIFY ORIGINAL SOIL UNDER ENTIRE FILL AREA

NOTE: THOROGHLY MIX CLEAN, COARSE, SHARP SAND INTO TOP 4 INCHES OF ORIGINAL SOIL TO CREATE A TRANSITION ZONE

NOTE: ALL MATERIALS AND INSTALLATION SHALL BE IN ACCORDANCE WITH THE MAINE SUBSURFACE WASTEWATER DISPOSAL RULES DATED 8/15, AS AMENDED, AND SUPPLEMENTED BY THE ATTACHED GENERAL NOTES WHICH BECOME A PART OF THIS DESIGN.

BACKFILL REQUIREMENTS

Depth of Fill (Upslope) varies 15-20"
Depth of Fill (Downslope) varies 14-20"

CONSTRUCTION ELEVATIONS

Finished Grade Elevation
Top of Distribution Pipe or Proprietary Device
Bottom of Disposal Area (Bottom of Stone)

ELEVATION REFERENCE POINT

SEE TABLE Location & Description Nail up 44"
SEE TABLE in a 6" DBH Sugar Maple
SEE TABLE Reference Elevation 0"

Construction Elevations

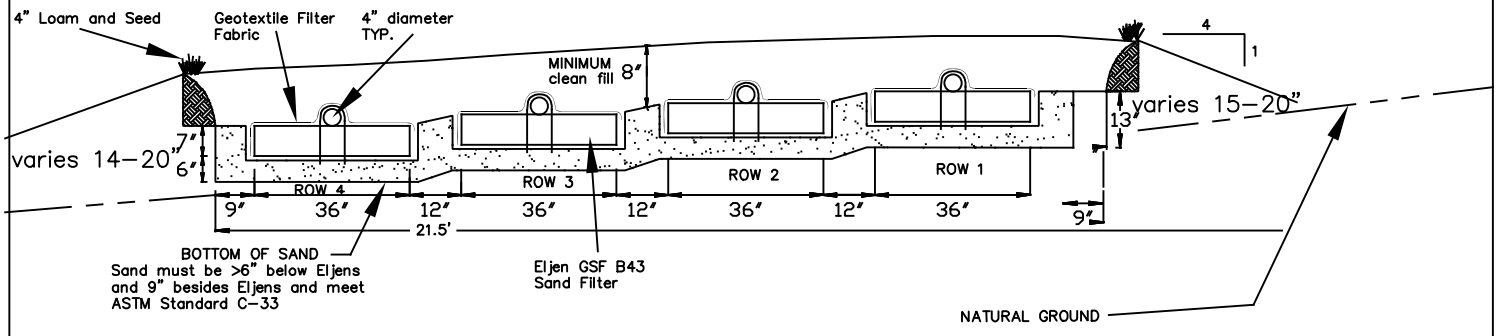
Row #	Finish Grade	Top of Pipe	Bottom of Eljen	Bottom of Sand
1	-28"	-36"	-47"	-53"
2	-32"	-40"	-51"	-57"
3	-36"	-44"	-55"	-61"
4	-40"	-48"	-59"	-65"

DISPOSAL FIELD CROSS SECTION

CROSS SECTION A-A'

12" SEPARATION USED IN DESIGN

SCALE:
VERTICAL: 1" =3'
HORIZONTAL: 1" =5'



Site Evaluator Signature | 391 SE # | 6/4/2020 Date

Portland Water District

FROM SEBAGO LAKE TO CASCO BAY

May 27, 2020

Jayson Haskell
DM Roma Consulting Engineers
PO Box 1116
Windham, ME 04062

Re: 3 Junco Drive, WI
Ability to Serve with PWD Water

Dear Mr. Haskell:

The Portland Water District has received your change of use request for the noted site submitted on May 22, 2020. Please see below for existing site conditions and how to proceed with your project. **Please note that this change of use determination is based on information provided. Any changes affecting the site use or water system will require further review and approval by PWD.**

Existing Site Service

The following conditions of service apply:

- The existing service line at this site may be used to provide domestic water to the building. Our records show that the property is currently served with a 2-inch domestic water service with a 1.5-inch meter.

- Portland Water District Terms and Conditions require that a service to one parcel cannot serve another parcel. If in the future this parcel is subdivided, a separate service(s) will be required.

The MEANS department can be reached by email at MEANS@pwd.org or by phone at (207)774-5961 Ext. 3199.

If the District can be of further assistance in this matter, please let us know.

Sincerely,
Portland Water District

Robert A. Bartels, P.E.
Senior Project Engineer

225 DOUGLASS STREET P.O. BOX 3553 PORTLAND, MAINE 04104-3553
PHONE: 207.774.5961 FAX: 207.761.8307 WEB: WWW.PWD.ORG

DM ROMA
CONSULTING ENGINEERS

STORMWATER MANAGEMENT REPORT

VEERY ESTATES CONDOMINIUM
JUNCO DRIVE
WINDHAM, MAINE

A. Narrative

RMills, LLC is proposing to further develop a 6-acre parcel off River Road in Windham, which was approved in 2019 as a 4-unit condominium development and is currently under construction. The applicant is proposing to amend the approved subdivision plan to include an additional five (5) duplex residential structures for a total of fourteen (14) units, and extend Junco Drive to include a cul-de-sac. The project site is located on a portion of Lot 1-1 on the Town of Windham Assessors Map 5 and is located in the Medium Residential and Farm Residential Zoning Districts.

This stormwater management report analyzes and evaluates the portion of the project that is directly related to the proposed extension of Junco Drive and the additional five (5) duplex units. The proposed development consisting of all seven (7) residential duplex buildings, including the construction of approximately 745 linear feet of paved roadway including a cul-de-sac, utilities and stormwater infrastructure. In general, the site drains to the southeast toward the Central Maine Power easement which abuts the property. Runoff from the property is tributary to the Presumpscot River.

B. Alterations to Land Cover

The 6-acre parcel consists of undeveloped meadow. The proposed development will create approximately 33,147 square feet (0.76± acres) of additional new impervious area consisting of the additional five (5) structures and the additional new roadway, for an overall project total of approximately 38,857 square feet (0.89± acres) of new impervious area. An additional 62,215 square feet (1.43± acres) of proposed lawn and landscaping will generate a total additional site developed area of approximately 95,662 square feet (2.19± acres), for an overall project total of 120,297 square feet (2.76± acres).

Since the project site will generate less than one (1) acre of new impervious surface or five (5) acres of new developed area, a Stormwater Permit will not be required from the Maine Department of Environmental Protection (MDEP). The site will be required to obtain an MDEP Stormwater Permit by Rule prior to construction since it will generate more than one (1) acre of land disturbance. The project will be reviewed by the Town of Windham as a Minor Subdivision.
The site is moderately sloped (5%-15%), draining southeasterly onto the abutting Central Maine Power Company easement. The onsite soils are primarily Belgrade very fine sandy

loam and Woodbridge fine sandy loam as identified on the Medium Intensity Soil Maps for Cumberland County, Maine published by the Natural Resources Conservation Service. The soils within the proposed development are in the hydrologic soil group "C" respectively.

The soils boundaries and hydrologic soils group (HSG) designations are indicated on the Watershed Maps and the Medium Intensity Soils Map has been included as Attachment 1 of this report.

C. Methodology and Modeling Assumptions

The proposed stormwater management system has been designed utilizing Best Management Practices to maintain existing drainage patterns while providing stormwater quality improvement measures. The goal of the storm drainage system design is to remove potential stormwater pollutants from runoff generated by the development while providing 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 Appendix H of the MDEP, Chapter 500 Stormwater Management, last revised in 2015. The National Weather Service developed four synthetic storm types to simulate rainfall patterns around the country. For analysis in Cumberland County, Maine, the type III rainfall pattern with a 24-hour duration is appropriate.

D. Basic Standards

The project is required by the Town and the MDEP 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 Town of Windham requires the entire project to meet the General Standards outlined in the MDEP Chapter 500 to provide water quality treatment for no less than 95% of the new impervious surface and 80% of the total developed area associated with the project.

To provide the required stormwater treatment for the development, two (2) underdrained filter basins will be constructed, as well as a meadow buffer adjacent to the downhill side of

a road, one meadow buffer with level spreader, one mixed vegetation buffer with level spreader, along with several units constructed with roof drip edges (as shown on the project plan set) will be maintained as part of the site's stormwater infrastructure. As a result of the proposed stormwater infrastructure and providing treatment for existing offsite impervious and landscaped areas, the project provides water quality treatment for over 100% of the equivalent new impervious and developed areas. Calculations can be found on the Watershed Maps and enclosed as Attachment 2 in this report.

F. Flooding Standard

The Town of Windham Land Use Ordinance 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. To maintain these rates, two (2) underdrained filter basins and a detention basin have been proposed as part of the stormwater infrastructure.

A portion of the site has been previously analyzed, and includes the area of the project site associated with the project access from the site at River Road and extends into the site through station 2+00 of Junco Drive. This portion of the site is treated and drained to either the meadow buffer adjacent to the downhill side of a road, or underdrained filter basin 1, and the analysis can be found in the approved Stormwater Management Report for "River Road Property Condominiums" dated 7-23-2018. This report will analyze the sub basin watershed of the project site of which the proposed improvements shown on the project plan set will impact, and will ensure that the underdrained filter basin 2 proposed as part of the intial "River Road Condominium" project is still adequately sized and designed, as well as illustrate that the proposed detention basin has been designed accordingly.

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 (SP-1) is located along the easterly property line, and included an area where the project site drains to a narrow wetland which eventually crosses the CMP easement and extends along the easterly property line to a relative high point approximately 100± feet from the southerly property corner (the boundary with Study Point 2).

The second study point (SP-2) is located at the southerly property corner, and evaluates a sub-basin watershed that extends along the ridges that extend from a mounded relative high point in the southeasterly portion of the project site to the easterly and southerly property boundary.

The third study point (SP-3) is located along the southerly property boundary and extends from the boundary of SP-2 to the extension of a ridge line and relative high point along the westerly property boundary at the southern portion of the project site. SP-3's sub-basin

watershed includes the valley that is created by the relative high point in the southeasterly corner of the project site (SP-2) and a relative high point in the central portion of the project site.

The fourth study point (SP-4) is located along the westerly property boundary and includes a sub-basin watershed that is tributary to the southerly portion of the westerly property boundary. Stormwater discharged from the project site at any one of the four evaluated study points ultimately is convey overland off the project site and into unnamed natural drainage channels that cross the CMP utility corridor and into the Presumpscot River.

The following table summarizes the analysis prepared for this stormwater management report:

Table 1 – Peak Rates of Stormwater Runoff

Study Point	2-Year (cfs)		10-Year (cfs)		25-Year (cfs)	
	Pre	Post	Pre	Post	Pre	Post
SP-1	1.37	0.86	3.30	2.21	5.07	4.42
SP-2	0.21	.21	0.50	.50	0.77	0.77
SP-3	1.31	1.00	3.06	2.223	4.70	3.31
SP-4	0.87	0.79	2.05	1.64	3.11	2.37

As illustrated by the table above, the proposed BMP's as incorporated in the project's storm water design, effectively reduces or matches the peak flow at all study points, during all storms.

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 3 of this report.

G. Maintenance of common facilities or property

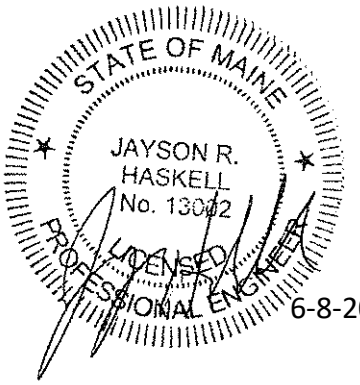
The applicant will be responsible for the maintenance of the stormwater facilities until a homeowners' association is created. Enclosed within this submission is an Inspection, Maintenance and Housekeeping Plan for the project.

Prepared by:

DM ROMA CONSULTING ENGINEERS

Jayson R. Haskell

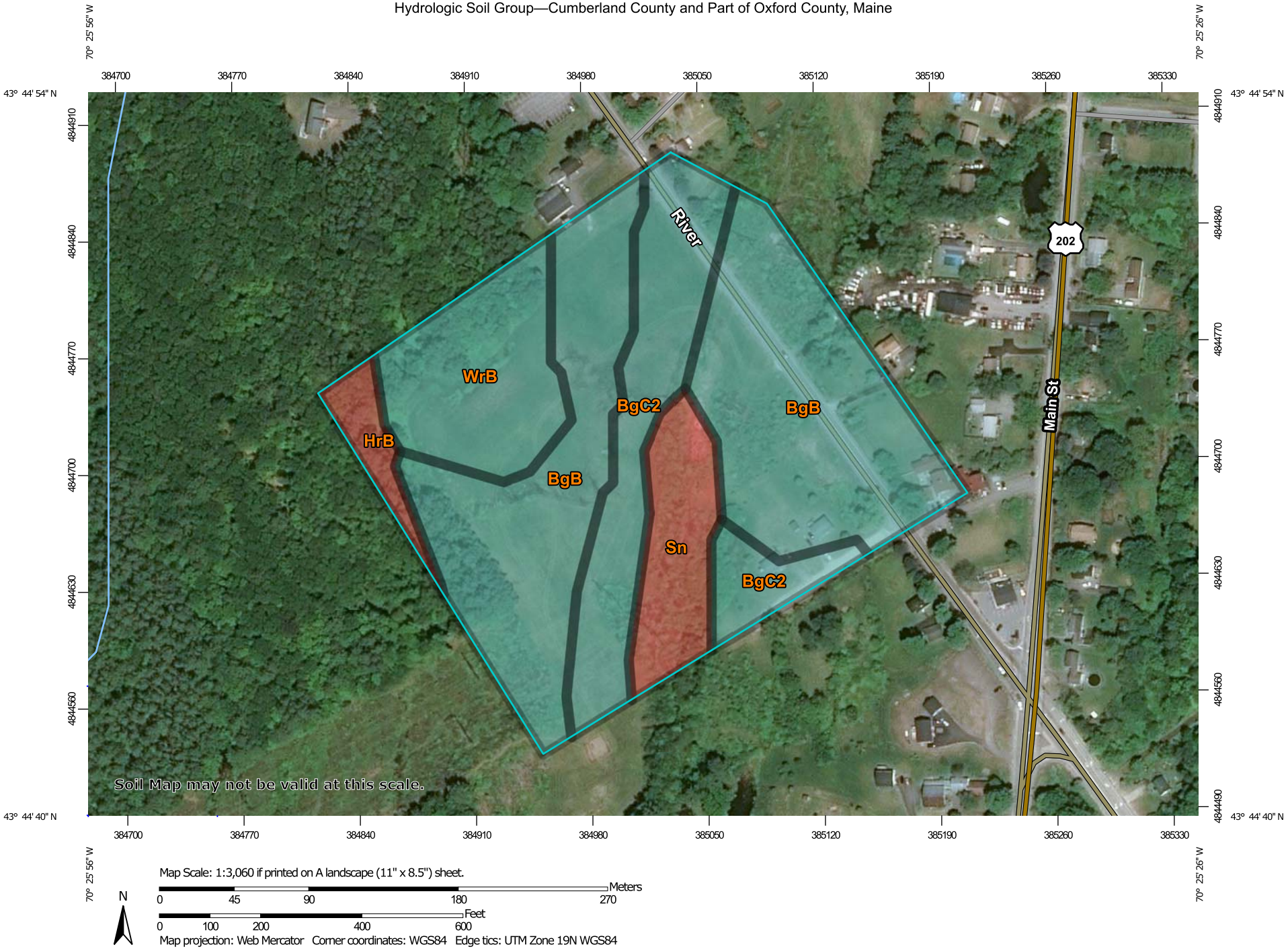
Jayson R. Haskell, P.E.
Southern Maine Regional Manager



6-8-20

ATTACHMENT 1

MEDIUM INTENSITY SOILS MAP



Map Scale: 1:3,060 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 45 90 180 270

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 16, Sep 16, 2019

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

Date(s) aerial images were photographed: Jun 7, 2019—Jul 2, 2019

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
BgB	Nicholville very fine sandy loam, 0 to 8 percent slopes	C	9.9	52.3%
BgC2	Nicholville very fine sandy loam, 8 to 15 percent slopes	C	3.9	20.9%
HrB	Lyman-Tunbridge complex, 0 to 8 percent slopes, rocky	D	0.6	3.2%
Sn	Scantic silt loam, 0 to 3 percent slopes	D	1.7	9.2%
WrB	Woodbridge fine sandy loam, 0 to 8 percent slopes	C	2.7	14.4%
Totals for Area of Interest			**18.9**	**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

STORMWATER TREATMENT CALCULATIONS

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Veery Estates
Calculated by: JPC
Printed 6/8/2020
Job #17057

Stormwater Treatment Table

	Total Watershed Area (SF)	New Driveway and Road Impervious Area (SF)	New Landscaped Area (SF)	Existing/ Offsite Impervious Area (SF)	Existing/ Offsite Landscaped Area (SF)	Existing Undeveloped Area (SF)	Treatment Provided	Impervious Area Treated In Treatment Device (SF)	Landscaped Area Treated In Treatment Device (SF)	Treatment Device
WS-20*	28,300	1,855	12,700	3,190	6,170	4,385	Yes	5,045	18,870	FB1
WS-21*	45,075	0	590	17,170	25,300	2,015	No	0	0	None
WS-22*	15,520	1,825	4,635	0	0	9,060	Yes	1,825	4,635	Buffer
WS-23*	5,200	2,030	1,000	1,055	0	1,115	No	0	0	None
** - WS AREAS "WS-20", "WS-21", "WS-22", & "WS-23" ARE FROM THE ARRPOVED STORMWATER REPORT FOR "RIVER ROAD PROPERTY CONDOMINIUMS" DATED 7-23-2018.*										
WS-10	42,829	9,438	22,497	1,614	8,117	1,163	Yes	11,052	30,614	EXISTING FB2
WS-11	6,348	3,024	3,324	0	0	0	Yes	3,024	3,324	EXISTING FB2
WS-12	5,972	0	2,213	0	0	3,759	No	0	0	None
WS-40	4,662	1,830	2,832	0	0	0	Yes	1,830	2,832	BUFFER 1 - MB1
WS-41	21,434	1,152	4,238	0	0	16,044	Yes	1,152	1,443	BUFFER 2- MB2 & FB1
WS-42	29,704	10,553	8,719	0	0	10,432	Yes	10,553	5,924	BUFFER 3 - MB2 & FB1
WS-43	33,133	0	0	0	0	33,133	No	0	0	None
WS-44	13,871	0	0	0	0	13,871	No	0	0	None
WS-45	22,366	933	3,961	0	0	17,471	Yes	933	0	Roof Drip Edge Only*
WS-46	46,103	6,213	14,725	0	0	25,165	Yes	4,082	0	Roof Drip Edge Only*
Additional proposed		33,143	62,509					32,627	44,137	
Total		**38,853**	**81,434**					**39,497**	**67,642**	

Additional New Impervious Area =	33,143 sf	Overall New Impervious Area =	38,853 sf
Additional Impervious Area Requiring Treatment (95%) =	31,486 sf	Overall Impervious Area Requiring Treatment (95%) =	36,911 sf
Additional Impervious Area Treatment Provided =	32,627 sf	Overall Impervious Area Treatment Provided =	39,497 sf
New Impervious Area Treated	98%	Overall New Impervious Area Treated	>100%
Additional New Developed Area =	95,652 sf	Overall New Developed Area =	120,287 sf
Additional Developed Area Requiring Treatment (80%) =	76,522 sf	Overall Developed Area Requiring Treatment (80%) =	96,230 sf
Additional Developed Area Treatment Provided =	76,763 sf	Overall Developed Area Treatment Provided =	107,138 sf
New Developed Area Treated	80%	Overall New Developed Area Treated	89%

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Veery Estates
Calculated by: JPC
Printed 6/8/2020
Job #17057

Stormwater Treatment Buffer Sizing

BUFFER 1 - MB1

Meadow Stormwater Treatment Buffer With Level Spreader

Class:	Sandy Loam	
HSG:	C	
Watershed:	WS-40	
Buffer Length=	75	ft
Buffer Slope=	3%	
Berm Length Per Acre Impervious =	150	ft
Berm Length Per Acre Landscape =	45	ft
Tributary Impervious Area =	1,830	
Tributary Landscaped Area =	2,832	
Required Berm Length:	9	ft
Provided Berm Length:	10	ft

BUFFER 2

Mixed Vegetation Stormwater Treatment Buffer With Level Spreader

Class:	Sandy Loam		
HSG:	C		
Watershed:	WS-41		
Total Area of Buffer:	5,175	sf	
Area of Forest:	2,110	sf	41%
Area of Meadow:	3,065	sf	59%
Buffer Length=	75	ft	
Buffer Slope=	2%		

	Forested		Meadow		Composite	
Berm Length Per Acre Impervious =	100	ft	125	ft	115	ft
Berm Length Per Acre Landscape =	30	ft	35	ft	33	ft

Tributary Impervious Area =	1,152	
Tributary Landscaped Area =	1,443	
Required Berm Length:	4	ft
Provided Berm Length:	10	ft

BUFFER 3

Mixed Vegetation Stormwater Treatment Buffer With Level Spreader

Class:	Sandy Loam		
HSG:	C		
Watershed:	WS-42		
Total Area of Buffer:	5,175	sf	
Area of Forest:	2,110	sf	41%
Area of Meadow:	3,065	sf	59%
Buffer Length=	100	ft	
Buffer Slope=	2%		

	Forested		Meadow		Composite	
Berm Length Per Acre Impervious =	100	ft	125	ft	115	ft
Berm Length Per Acre Landscape =	30	ft	35	ft	33	ft

Tributary Impervious Area =	10,553	
Tributary Landscaped Area =	5,924	
Required Berm Length:	32	ft
Provided Berm Length:	35	ft

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Veery Estates
Calculated by: JPC
Printed 6/8/2020
Job #17057

Typical Drip Edge Sizing Calculations

ROOF AREA 1

Tributary Impervious Area=	933	sf
Tributary Landscaped Area=	0	sf

Water Quality Volume (WQV) Calculation

WQV (Required) = 1.0"xImpervious Area + 0.4"xLandscaped Area

WQV (Required) = 78 cf

Drip Edge sizing:

Width	3	feet
Depth	1.5	feet
Effective Area	140	feet
% Void (crushed stone	40%	
Total Volume Provided:	**84**	**cf > Required**

Typical Drip Edge Sizing Calculations

ROOF AREA 2 (ROOF GUTTER SYSTEM MAY BE NECESSARY)

Tributary Impervious Area=	453	sf
Tributary Landscaped Area=	0	sf

Water Quality Volume (WQV) Calculation

WQV (Required) = 1.0"xImpervious Area + 0.4"xLandscaped Area

WQV (Required) = 38 cf

Drip Edge sizing:

Width	3.5	feet
Depth	1.5	feet
Effective Area	70	feet
% Void (crushed stone	40%	
Total Volume Provided:	**42**	**cf > Required**

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Veery Estates
Calculated by: JPC
Printed 6/8/2020
Job #17057

Filter Basin FB-2 (CONFIRMATION OF AS-BUILT SIZING)

Tributary Impervious Area=	14,076	sf
Tributary Landscaped Area=	33,938	sf

Water Quality Volume (WQV) Calculation

WQV (Required) = 1.0"xImpervious Area + 0.4"xLandscaped Area

WQV (Required) = 2,304 cf

Stage Storage Volume

Elevation	Area (sf)	Storage (cf)
193.5	1,405	0
194	1,664	767
195	1,169	2,721
196	2,823	5,254

Outlet Elevation = 195.00

Storage Volume Provided = 2,721 cf > Required

Filter Bottom Calculation

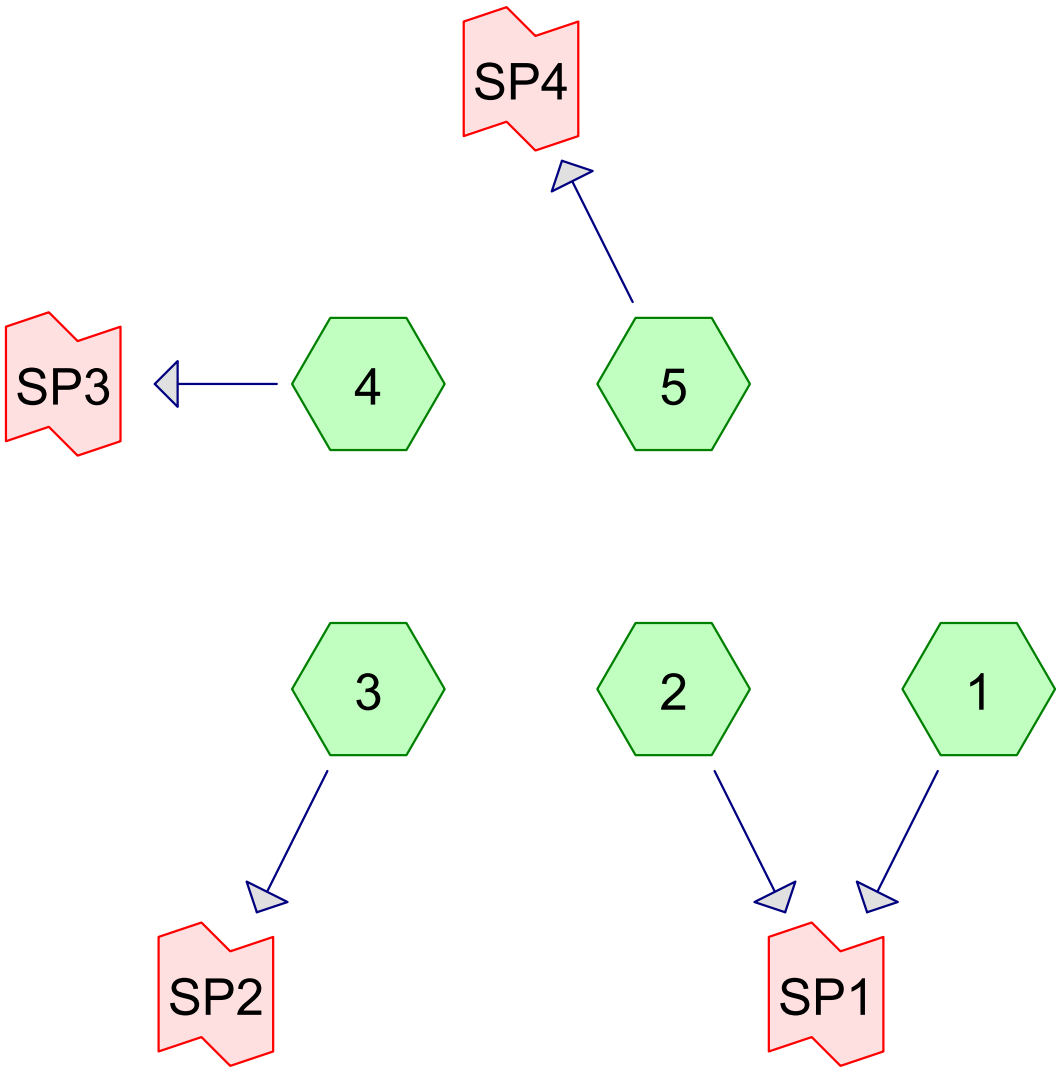
Filter Area (Required) = 5%xImpervious Area + 2%xLandscaped Area

Filter Area Required = 1,383 sf

Filter Area Provided = 1,405 sf > Required

ATTACHMENT 3

HYDROCAD OUTPUT



Subcat Reach Pond Link

Routing Diagram for 17057-Pre
Prepared by {enter your company name here}, Printed 6/8/2020
HydroCAD® 10.00-25 s/n 09237 © 2019 HydroCAD Software Solutions LLC

Time span=0.00-48.00 hrs, dt=0.06 hrs, 801 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=55,443 sf 0.29% Impervious Runoff Depth=0.82"
Flow Length=450' Tc=13.6 min CN=71 Runoff=0.84 cfs 3,782 cf

Subcatchment 2: Runoff Area=32,280 sf 0.00% Impervious Runoff Depth=0.82"
Flow Length=169' Tc=9.1 min CN=71 Runoff=0.56 cfs 2,202 cf

Subcatchment 3: Runoff Area=13,871 sf 0.00% Impervious Runoff Depth=0.82"
Flow Length=146' Tc=14.7 min CN=71 Runoff=0.21 cfs 946 cf

Subcatchment 4: Runoff Area=72,799 sf 0.00% Impervious Runoff Depth=0.87"
Flow Length=372' Tc=10.3 min CN=72 Runoff=1.31 cfs 5,267 cf

Subcatchment 5: Runoff Area=51,112 sf 0.00% Impervious Runoff Depth=0.87"
Flow Length=299' Tc=12.4 min CN=72 Runoff=0.87 cfs 3,698 cf

Link SP1: Inflow=1.37 cfs 5,984 cf
Primary=1.37 cfs 5,984 cf

Link SP2: Inflow=0.21 cfs 946 cf
Primary=0.21 cfs 946 cf

Link SP3: Inflow=1.31 cfs 5,267 cf
Primary=1.31 cfs 5,267 cf

Link SP4: Inflow=0.87 cfs 3,698 cf
Primary=0.87 cfs 3,698 cf

Summary for Subcatchment 1:

Runoff = 0.84 cfs @ 12.21 hrs, Volume= 3,782 cf, Depth= 0.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.06 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
*	163	98	Offsite Building & pavement
	5,310	74	>75% Grass cover, Good, HSG C
	41,670	71	Meadow, non-grazed, HSG C
	7,325	71	Meadow, non-grazed, HSG C
*	975	78	Meadow, non-grazed, HSG D-Wetland
	55,443	71	Weighted Average
	55,280	71	99.71% Pervious Area
	163	98	0.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	65	0.0460	0.21		**Sheet Flow, Seg A to B** Grass: Short n= 0.150 P2= 3.10"
5.6	85	0.0612	0.25		**Sheet Flow, Seg B to C** Grass: Short n= 0.150 P2= 3.10"
2.5	205	0.0390	1.38		**Shallow Concentrated Flow, Seg C to D** Short Grass Pasture Kv= 7.0 fps
0.4	95	0.0300	3.76	13.17	**Trap/Vee/Rect Channel Flow, Seg D to E** Bot.W=2.00' D=0.50' Z= 10.0 '/' Top.W=12.00' n= 0.030 Earth, grassed & winding
13.6	450	Total			

Summary for Subcatchment 2:

Runoff = 0.56 cfs @ 12.15 hrs, Volume= 2,202 cf, Depth= 0.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.06 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
	31,484	71	Meadow, non-grazed, HSG C
	796	71	Meadow, non-grazed, HSG C
*	0	78	Meadow, non-grazed, HSG D-Wetland
	32,280	71	Weighted Average
	32,280	71	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	150	0.0587	0.28		**Sheet Flow, Seg A to B** Grass: Short n= 0.150 P2= 3.10"
0.1	19	0.0533	3.72		**Shallow Concentrated Flow, Seg B to C** Unpaved Kv= 16.1 fps
9.1	169	Total			

Summary for Subcatchment 3:

Runoff = 0.21 cfs @ 12.23 hrs, Volume= 946 cf, Depth= 0.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.06 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
	7,591	71	Meadow, non-grazed, HSG C
	6,280	72	Woods/grass comb., Good, HSG C
	0	71	Meadow, non-grazed, HSG C
*	0	78	Meadow, non-grazed, HSG D-Wetland
	13,871	71	Weighted Average
	13,871	71	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	85	0.0698	0.27		**Sheet Flow, Seg A to B** Grass: Short n= 0.150 P2= 3.10"
9.4	61	0.0603	0.11		**Sheet Flow, Seg B to C** Woods: Light underbrush n= 0.400 P2= 3.10"
14.7	146	Total			

Summary for Subcatchment 4:

Runoff = 1.31 cfs @ 12.17 hrs, Volume= 5,267 cf, Depth= 0.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.06 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
	34,985	71	Meadow, non-grazed, HSG C
	9,526	72	Woods/grass comb., Good, HSG C
	22,783	71	Meadow, non-grazed, HSG C
	522	72	Woods/grass comb., Good, HSG C
*	1,446	78	Meadow, non-grazed, HSG D
	3,537	79	Woods/grass comb., Good, HSG D
	72,799	72	Weighted Average
	72,799	72	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	150	0.0493	0.26		**Sheet Flow, Seg A to B** Grass: Short n= 0.150 P2= 3.10"
0.7	222	0.0275	5.17	407.41	**Channel Flow, Seg B to C** Area= 78.8 sf Perim= 157.8' r= 0.50' n= 0.030 Short grass
10.3	372	Total			

Summary for Subcatchment 5:

Runoff = 0.87 cfs @ 12.19 hrs, Volume= 3,698 cf, Depth= 0.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.06 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
	0	71	Meadow, non-grazed, HSG C
	0	72	Woods/grass comb., Good, HSG C
	43,152	71	Meadow, non-grazed, HSG C
	0	72	Woods/grass comb., Good, HSG C
*	7,857	78	Meadow, non-grazed, HSG D- WETLANDS
*	103	78	Meadow, non-grazed, HSG D
	0	79	Woods/grass comb., Good, HSG D
	51,112	72	Weighted Average
	51,112	72	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	150	0.0360	0.23		**Sheet Flow, Seg A to B** Grass: Short n= 0.150 P2= 3.10"
1.1	52	0.0116	0.75		**Shallow Concentrated Flow, Seg B to C** Short Grass Pasture Kv= 7.0 fps
0.4	97	0.0155	3.88	686.85	**Channel Flow, Seg C to D** Area= 176.8 sf Perim= 353.6' r= 0.50' n= 0.030 Earth, grassed & winding
12.4	299	Total			

Summary for Link SP1:

Inflow Area = 87,723 sf, 0.19% Impervious, Inflow Depth = 0.82" for 2-Year event
Inflow = 1.37 cfs @ 12.19 hrs, Volume= 5,984 cf
Primary = 1.37 cfs @ 12.19 hrs, Volume= 5,984 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.06 hrs

Summary for Link SP2:

Inflow Area = 13,871 sf, 0.00% Impervious, Inflow Depth = 0.82" for 2-Year event
Inflow = 0.21 cfs @ 12.23 hrs, Volume= 946 cf
Primary = 0.21 cfs @ 12.23 hrs, Volume= 946 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.06 hrs

Summary for Link SP3:

Inflow Area = 72,799 sf, 0.00% Impervious, Inflow Depth = 0.87" for 2-Year event
Inflow = 1.31 cfs @ 12.17 hrs, Volume= 5,267 cf
Primary = 1.31 cfs @ 12.17 hrs, Volume= 5,267 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.06 hrs

Summary for Link SP4:

Inflow Area = 51,112 sf, 0.00% Impervious, Inflow Depth = 0.87" for 2-Year event
Inflow = 0.87 cfs @ 12.19 hrs, Volume= 3,698 cf
Primary = 0.87 cfs @ 12.19 hrs, Volume= 3,698 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.06 hrs

Time span=0.00-48.00 hrs, dt=0.06 hrs, 801 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=55,443 sf 0.29% Impervious Runoff Depth=1.82"
Flow Length=450' Tc=13.6 min CN=71 Runoff=2.06 cfs 8,405 cf

Subcatchment 2: Runoff Area=32,280 sf 0.00% Impervious Runoff Depth=1.82"
Flow Length=169' Tc=9.1 min CN=71 Runoff=1.37 cfs 4,893 cf

Subcatchment 3: Runoff Area=13,871 sf 0.00% Impervious Runoff Depth=1.82"
Flow Length=146' Tc=14.7 min CN=71 Runoff=0.50 cfs 2,103 cf

Subcatchment 4: Runoff Area=72,799 sf 0.00% Impervious Runoff Depth=1.89"
Flow Length=372' Tc=10.3 min CN=72 Runoff=3.06 cfs 11,494 cf

Subcatchment 5: Runoff Area=51,112 sf 0.00% Impervious Runoff Depth=1.89"
Flow Length=299' Tc=12.4 min CN=72 Runoff=2.05 cfs 8,070 cf

Link SP1: Inflow=3.30 cfs 13,298 cf
Primary=3.30 cfs 13,298 cf

Link SP2: Inflow=0.50 cfs 2,103 cf
Primary=0.50 cfs 2,103 cf

Link SP3: Inflow=3.06 cfs 11,494 cf
Primary=3.06 cfs 11,494 cf

Link SP4: Inflow=2.05 cfs 8,070 cf
Primary=2.05 cfs 8,070 cf

Time span=0.00-48.00 hrs, dt=0.06 hrs, 801 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=55,443 sf 0.29% Impervious Runoff Depth=2.74"
Flow Length=450' Tc=13.6 min CN=71 Runoff=3.17 cfs 12,652 cf

Subcatchment 2: Runoff Area=32,280 sf 0.00% Impervious Runoff Depth=2.74"
Flow Length=169' Tc=9.1 min CN=71 Runoff=2.10 cfs 7,366 cf

Subcatchment 3: Runoff Area=13,871 sf 0.00% Impervious Runoff Depth=2.74"
Flow Length=146' Tc=14.7 min CN=71 Runoff=0.77 cfs 3,165 cf

Subcatchment 4: Runoff Area=72,799 sf 0.00% Impervious Runoff Depth=2.83"
Flow Length=372' Tc=10.3 min CN=72 Runoff=4.70 cfs 17,171 cf

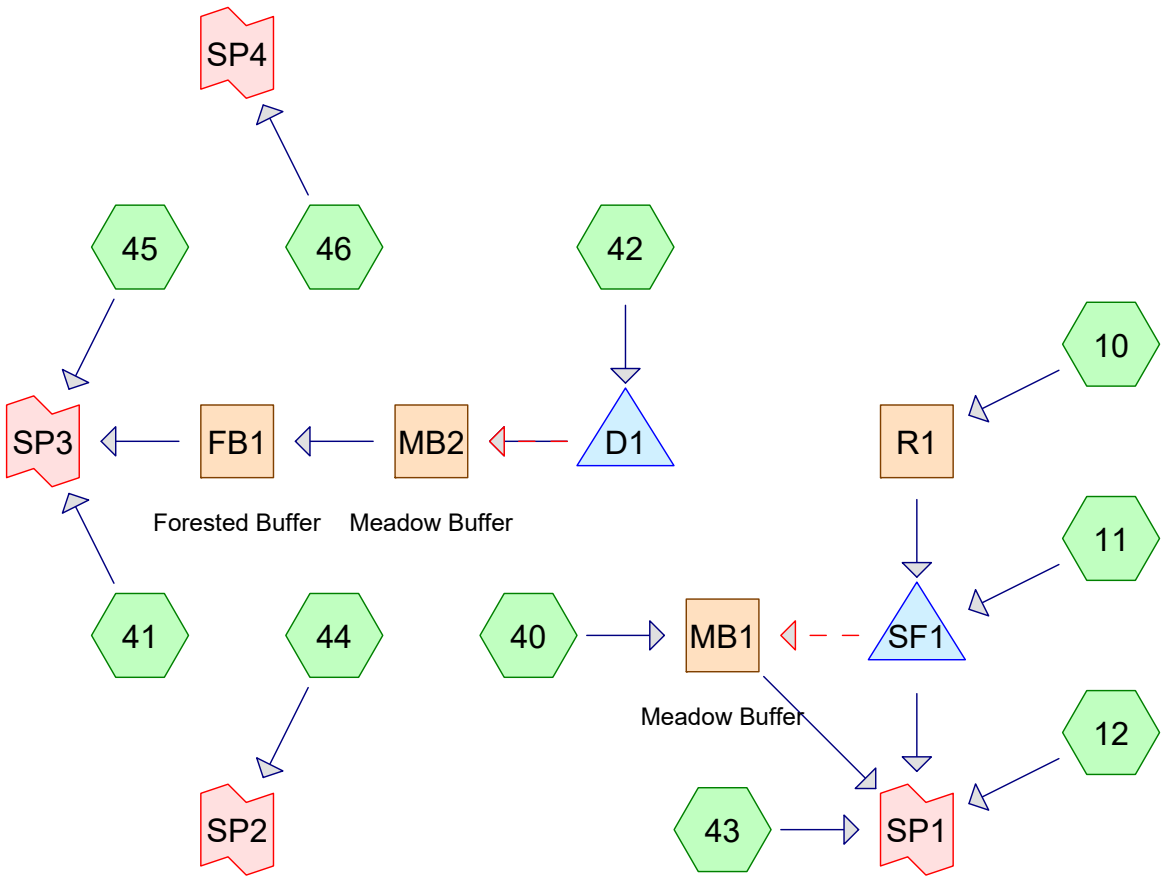
Subcatchment 5: Runoff Area=51,112 sf 0.00% Impervious Runoff Depth=2.83"
Flow Length=299' Tc=12.4 min CN=72 Runoff=3.11 cfs 12,056 cf

Link SP1: Inflow=5.07 cfs 20,019 cf
Primary=5.07 cfs 20,019 cf

Link SP2: Inflow=0.77 cfs 3,165 cf
Primary=0.77 cfs 3,165 cf

Link SP3: Inflow=4.70 cfs 17,171 cf
Primary=4.70 cfs 17,171 cf

Link SP4: Inflow=3.11 cfs 12,056 cf
Primary=3.11 cfs 12,056 cf



Subcat Reach Pond Link

Routing Diagram for 17057-Post
Prepared by {enter your company name here}, Printed 6/8/2020

Time span=0.00-48.00 hrs, dt=0.06 hrs, 801 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

Subcatchment10: Runoff Area=42,831 sf 25.81% Impervious Runoff Depth=1.33"
Flow Length=427' Tc=16.4 min CN=80 Runoff=1.09 cfs 4,731 cf

Subcatchment11: Runoff Area=6,348 sf 47.64% Impervious Runoff Depth=1.67"
Flow Length=427' Tc=16.4 min CN=85 Runoff=0.21 cfs 885 cf

Subcatchment12: Runoff Area=5,972 sf 0.00% Impervious Runoff Depth=0.87"
Flow Length=71' Tc=6.0 min CN=72 Runoff=0.12 cfs 432 cf

Subcatchment40: Runoff Area=4,662 sf 39.25% Impervious Runoff Depth=1.53"
Flow Length=147' Tc=7.4 min CN=83 Runoff=0.18 cfs 593 cf

Subcatchment41: Runoff Area=21,434 sf 5.37% Impervious Runoff Depth=0.92"
Flow Length=378' Tc=52.8 min CN=73 Runoff=0.21 cfs 1,642 cf

Subcatchment42: Runoff Area=29,704 sf 35.53% Impervious Runoff Depth=1.46"
Flow Length=93' Tc=10.4 min CN=82 Runoff=0.97 cfs 3,609 cf

Subcatchment43: Runoff Area=33,133 sf 0.00% Impervious Runoff Depth=0.82"
Flow Length=139' Slope=0.0336 '/' Tc=10.5 min CN=71 Runoff=0.55 cfs 2,260 cf

Subcatchment44: Runoff Area=13,871 sf 0.00% Impervious Runoff Depth=0.82"
Flow Length=146' Tc=14.7 min CN=71 Runoff=0.21 cfs 946 cf

Subcatchment45: Runoff Area=22,365 sf 4.17% Impervious Runoff Depth=0.97"
Flow Length=159' Tc=12.3 min CN=74 Runoff=0.44 cfs 1,812 cf

Subcatchment46: Runoff Area=46,103 sf 13.48% Impervious Runoff Depth=1.14"
Flow Length=338' Tc=28.5 min CN=77 Runoff=0.79 cfs 4,383 cf

Reach FB1: Forested Buffer Avg. Flow Depth=0.17' Max Vel=0.08 fps Inflow=0.76 cfs 3,559 cf
n=0.800 L=57.4' S=0.0218 '/' Capacity=111.72 cfs Outflow=0.61 cfs 3,559 cf

Reach MB1: Meadow Buffer Avg. Flow Depth=0.04' Max Vel=0.10 fps Inflow=0.18 cfs 593 cf
n=0.240 L=79.7' S=0.0217 '/' Capacity=3.24 cfs Outflow=0.12 cfs 593 cf

Reach MB2: Meadow Buffer Avg. Flow Depth=0.12' Max Vel=0.13 fps Inflow=1.06 cfs 3,559 cf
n=0.410 L=77.4' S=0.0258 '/' Capacity=567.95 cfs Outflow=0.76 cfs 3,559 cf

Reach R1: Avg. Flow Depth=0.30' Max Vel=4.87 fps Inflow=1.09 cfs 4,731 cf
15.0" Round Pipe n=0.013 L=43.3' S=0.0185 '/' Capacity=8.78 cfs Outflow=1.09 cfs 4,731 cf

Pond D1: Peak Elev=195.74' Storage=82 cf Inflow=0.97 cfs 3,609 cf
Discarded=0.00 cfs 50 cf Primary=1.06 cfs 3,559 cf Outflow=1.07 cfs 3,609 cf

Pond SF1: Peak Elev=194.92' Storage=2,553 cf Inflow=1.30 cfs 5,616 cf
Primary=0.12 cfs 5,618 cf Secondary=0.00 cfs 0 cf Outflow=0.12 cfs 5,618 cf

Link SP1: Inflow=0.86 cfs 8,903 cf
Primary=0.86 cfs 8,903 cf

Link SP2: Inflow=0.21 cfs 946 cf
Primary=0.21 cfs 946 cf

Link SP3: Inflow=1.00 cfs 7,014 cf
Primary=1.00 cfs 7,014 cf

Link SP4: Inflow=0.79 cfs 4,383 cf
Primary=0.79 cfs 4,383 cf

Summary for Subcatchment 10:

Runoff = 1.09 cfs @ 12.24 hrs, Volume= 4,731 cf, Depth= 1.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.06 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
*	765	98	Existing building
*	849	98	Existing paved driveway
*	6,492	74	Existing grass, good, HSG C
*	1,625	74	Existing grass, good, HSG C
*	3,875	98	New Building
*	5,564	98	New road, & driveways, pavement
	17,091	74	>75% Grass cover, Good, HSG C
	5,406	74	>75% Grass cover, Good, HSG C
	0	80	>75% Grass cover, Good, HSG D
	1,164	71	Meadow, non-grazed, HSG C
	0	71	Meadow, non-grazed, HSG C
	42,831	80	Weighted Average
	31,778		74.19% Pervious Area
	11,053		25.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	65	0.0460	0.21		**Sheet Flow, Seg A to B** Grass: Short n= 0.150 P2= 3.10"
8.1	85	0.0612	0.17		**Sheet Flow, Seg B to C** Grass: Dense n= 0.240 P2= 3.10"
3.2	265	0.0400	1.40		**Shallow Concentrated Flow, Seg C to D** Short Grass Pasture Kv= 7.0 fps
0.0	12	0.1295	12.69	63.45	**Trap/Vee/Rect Channel Flow, Seg D to E** Bot.W=2.00' D=1.00' Z= 3.0 '/' Top.W=8.00' n= 0.030 Earth, grassed & winding
16.4	427	Total			

Summary for Subcatchment 11:

Runoff = 0.21 cfs @ 12.23 hrs, Volume= 885 cf, Depth= 1.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.06 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
*	0	98	Existing building
*	0	98	Existing paved driveway
*	0	61	Existing grass, good, HSG B
*	0	98	New Building and Pavement
*	3,024	98	New road, & driveways, pavement
	3,324	74	>75% Grass cover, Good, HSG C
	0	74	>75% Grass cover, Good, HSG C
	0	80	>75% Grass cover, Good, HSG D
	0	71	Meadow, non-grazed, HSG C
	0	71	Meadow, non-grazed, HSG C
	6,348	85	Weighted Average
	3,324		52.36% Pervious Area
	3,024		47.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	65	0.0460	0.21		**Sheet Flow, Seg A to B** Grass: Short n= 0.150 P2= 3.10"
8.1	85	0.0612	0.17		**Sheet Flow, Seg B to C** Grass: Dense n= 0.240 P2= 3.10"
3.2	265	0.0400	1.40		**Shallow Concentrated Flow, Seg C to D** Short Grass Pasture Kv= 7.0 fps
0.0	12	0.1295	12.69	63.45	**Trap/Vee/Rect Channel Flow, Seg D to E** Bot.W=2.00' D=1.00' Z= 3.0 '/' Top.W=8.00' n= 0.030 Earth, grassed & winding
16.4	427	Total			

Summary for Subcatchment 12:

Runoff = 0.12 cfs @ 12.11 hrs, Volume= 432 cf, Depth= 0.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.06 hrs
Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
2,213	74	>75% Grass cover, Good, HSG C
3,759	71	Meadow, non-grazed, HSG C
5,972	72	Weighted Average
5,972		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	22	0.1955	0.21		**Sheet Flow, Seg A to B** Grass: Dense n= 0.240 P2= 3.10"
3.4	49	0.0694	0.24		**Sheet Flow, Seg B to C** Grass: Short n= 0.150 P2= 3.10"
5.1	71	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 40:

Runoff = 0.18 cfs @ 12.11 hrs, Volume= 593 cf, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.06 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
*	0	98	Proposed roof
*	1,830	98	Proposed road & driveways
	1,917	74	>75% Grass cover, Good, HSG C
	915	74	>75% Grass cover, Good, HSG C
	0	80	>75% Grass cover, Good, HSG D
	0	58	Meadow, non-grazed, HSG B
	0	71	Meadow, non-grazed, HSG C
	4,662	83	Weighted Average
	2,832		60.75% Pervious Area
	1,830		39.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	60	0.0448	0.14		**Sheet Flow, Seg A to B** Grass: Dense n= 0.240 P2= 3.10"
0.4	87	0.0112	3.73	18.66	**Trap/Vee/Rect Channel Flow, Seg B to C** Bot.W=2.00' D=1.00' Z= 3.0 '/' Top.W=8.00' n= 0.030 Earth, grassed & winding
7.4	147	Total			

Summary for Subcatchment 41:

Runoff = 0.21 cfs @ 12.78 hrs, Volume= 1,642 cf, Depth= 0.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.06 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
*	1,152	98	Proposed roof
*	0	98	Proposed road & driveways
	3,363	74	>75% Grass cover, Good, HSG C
	875	74	>75% Grass cover, Good, HSG C
	0	80	>75% Grass cover, Good, HSG D
	12,529	71	Meadow, non-grazed, HSG C
	2,739	72	Woods/grass comb., Good, HSG C
	776	71	Meadow, non-grazed, HSG C
	21,434	73	Weighted Average
	20,282		94.63% Pervious Area
	1,152		5.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.5	75	0.0202	0.11		**Sheet Flow, Seg A to B** Grass: Dense n= 0.240 P2= 3.10"
8.3	42	0.0143	0.08		**Sheet Flow, Seg B to C** Grass: Dense n= 0.240 P2= 3.10"
0.3	63	0.0133	3.49	17.43	**Trap/Vee/Rect Channel Flow, Seg C to D** Bot.W=2.00' D=1.00' Z= 3.0 '/' Top.W=8.00' n= 0.035 Earth, dense weeds
0.8	63	0.0331	1.27		**Shallow Concentrated Flow, Seg D to E** Short Grass Pasture Kv= 7.0 fps
8.0	78	0.0207	0.16		**Sheet Flow, Seg E to F** Grass: Short n= 0.150 P2= 3.10"
23.9	57	0.0207	0.04		**Sheet Flow, Seg F to G** Woods: Dense underbrush n= 0.800 P2= 3.10"
52.8	378	Total			

Summary for Subcatchment 42:

Runoff = 0.97 cfs @ 12.15 hrs, Volume= 3,609 cf, Depth= 1.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.06 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
*	2,832	98	Proposed roof
*	7,721	98	Proposed road & driveways
	2,674	74	>75% Grass cover, Good, HSG C
	6,045	74	>75% Grass cover, Good, HSG C
	0	80	>75% Grass cover, Good, HSG D
	5,472	71	Meadow, non-grazed, HSG C
	4,960	72	Woods/grass comb., Good, HSG C
	0	71	Meadow, non-grazed, HSG C
	29,704	82	Weighted Average
	19,151		64.47% Pervious Area
	10,553		35.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	45	0.0207	0.10		**Sheet Flow, Seg A to B** Grass: Dense n= 0.240 P2= 3.10"
0.4	28	0.0212	1.07		**Sheet Flow, Seg B to C** Smooth surfaces n= 0.011 P2= 3.10"
2.5	20	0.0630	0.13		**Sheet Flow, Seg C to D** Grass: Dense n= 0.240 P2= 3.10"
10.4	93	Total			

Summary for Subcatchment 43:

Runoff = 0.55 cfs @ 12.17 hrs, Volume= 2,260 cf, Depth= 0.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.06 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
*	0	98	Proposed roof
*	0	98	Proposed road & driveways
	0	74	>75% Grass cover, Good, HSG C
	0	74	>75% Grass cover, Good, HSG C
	0	80	>75% Grass cover, Good, HSG D
	33,129	71	Meadow, non-grazed, HSG C
	4	71	Meadow, non-grazed, HSG C
	33,133	71	Weighted Average
	33,133		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	139	0.0336	0.22		**Sheet Flow, Seg A to B** Grass: Short n= 0.150 P2= 3.10"

Summary for Subcatchment 44:

Runoff = 0.21 cfs @ 12.23 hrs, Volume= 946 cf, Depth= 0.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.06 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
	7,591	71	Meadow, non-grazed, HSG C
	6,280	72	Woods/grass comb., Good, HSG C
	0	71	Meadow, non-grazed, HSG C
*	0	78	Meadow, non-grazed, HSG D-Wetland
	13,871	71	Weighted Average
	13,871		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	85	0.0698	0.27		**Sheet Flow, Seg A to B** Grass: Short n= 0.150 P2= 3.10"
9.4	61	0.0603	0.11		**Sheet Flow, Seg B to C** Woods: Light underbrush n= 0.400 P2= 3.10"
14.7	146	Total			

Summary for Subcatchment 45:

Runoff = 0.44 cfs @ 12.19 hrs, Volume= 1,812 cf, Depth= 0.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.06 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
*	933	98	Proposed roof
*	0	98	Proposed road & driveways
	568	74	>75% Grass cover, Good, HSG C
	3,393	74	>75% Grass cover, Good, HSG C
	0	80	>75% Grass cover, Good, HSG D
	4,531	71	Meadow, non-grazed, HSG C
	1,827	72	Woods/grass comb., Good, HSG C
	5,608	71	Meadow, non-grazed, HSG C
	522	72	Woods/grass comb., Good, HSG C
	1,446	78	Meadow, non-grazed, HSG D
	3,537	79	Woods/grass comb., Good, HSG D
	22,365	74	Weighted Average
	21,432		95.83% Pervious Area
	933		4.17% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	53	0.0808	0.18		**Sheet Flow, Seg A to B** Grass: Dense n= 0.240 P2= 3.10"
6.9	80	0.0325	0.19		**Sheet Flow, Seg B to C** Grass: Short n= 0.150 P2= 3.10"
0.4	26	0.0386	0.98		**Shallow Concentrated Flow, Seg C to D** Woodland Kv= 5.0 fps
12.3	159	Total			

Summary for Subcatchment 46:

Runoff = 0.79 cfs @ 12.42 hrs, Volume= 4,383 cf, Depth= 1.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.06 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
*	4,082	98	Proposed roof
*	2,132	98	Proposed road & driveways
	0	61	>75% Grass cover, Good, HSG B
	14,725	74	>75% Grass cover, Good, HSG C
	0	80	>75% Grass cover, Good, HSG D
	0	58	Meadow, non-grazed, HSG B
	0	58	Woods/grass comb., Good, HSG B
	12,813	71	Meadow, non-grazed, HSG C
	6,200	72	Woods/grass comb., Good, HSG C
	69	78	Meadow, non-grazed, HSG D
*	6,052	78	Meadow, non-grazed, HSG D- wetlands
	30	79	Woods/grass comb., Good, HSG D
	46,103	77	Weighted Average
	39,889		86.52% Pervious Area
	6,214		13.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.7	127	0.0133	0.10		**Sheet Flow, Seg A to B** Grass: Dense n= 0.240 P2= 3.10"
5.1	23	0.0143	0.07		**Sheet Flow, Seg B to C** Grass: Dense n= 0.240 P2= 3.10"
2.4	116	0.0133	0.81		**Shallow Concentrated Flow, Seg C to D** Short Grass Pasture Kv= 7.0 fps
0.3	72	0.0155	3.88	686.85	**Channel Flow, Seg C to D** Area= 176.8 sf Perim= 353.6' r= 0.50' n= 0.030 Earth, grassed & winding
28.5	338	Total			

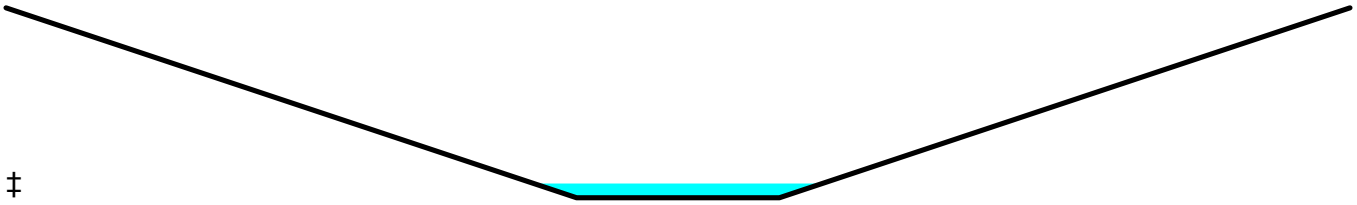
Summary for Reach FB1: Forested Buffer

Inflow Area = 29,704 sf, 35.53% Impervious, Inflow Depth = 1.44" for 2-Year event
Inflow = 0.76 cfs @ 12.26 hrs, Volume= 3,559 cf
Outflow = 0.61 cfs @ 12.43 hrs, Volume= 3,559 cf, Atten= 20%, Lag= 9.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.06 hrs
Max. Velocity= 0.08 fps, Min. Travel Time= 12.7 min
Avg. Velocity = 0.03 fps, Avg. Travel Time= 35.2 min

Peak Storage= 467 cf @ 12.43 hrs
Average Depth at Peak Storage= 0.17'
Bank-Full Depth= 2.25' Flow Area= 343.1 sf, Capacity= 111.72 cfs

40.00' x 2.25' deep channel, n= 0.800 Sheet flow: Woods+dense brush
Side Slope Z-value= 50.0 '/' Top Width= 265.00'
Length= 57.4' Slope= 0.0218 '/'
Inlet Invert= 189.55', Outlet Invert= 188.30'



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Summary for Reach MB1: Meadow Buffer

Inflow Area = 4,662 sf, 39.25% Impervious, Inflow Depth = 1.53" for 2-Year event
Inflow = 0.18 cfs @ 12.11 hrs, Volume= 593 cf
Outflow = 0.12 cfs @ 12.23 hrs, Volume= 593 cf, Atten= 31%, Lag= 6.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.06 hrs
Max. Velocity= 0.10 fps, Min. Travel Time= 13.3 min
Avg. Velocity = 0.03 fps, Avg. Travel Time= 49.2 min

Peak Storage= 98 cf @ 12.23 hrs
Average Depth at Peak Storage= 0.04'
Bank-Full Depth= 0.25' Flow Area= 10.6 sf, Capacity= 3.24 cfs

30.00' x 0.25' deep channel, n= 0.240 Sheet flow over Dense Grass
Side Slope Z-value= 50.0 '/' Top Width= 55.00'
Length= 79.7' Slope= 0.0217 '/'
Inlet Invert= 194.50', Outlet Invert= 192.77'

‡

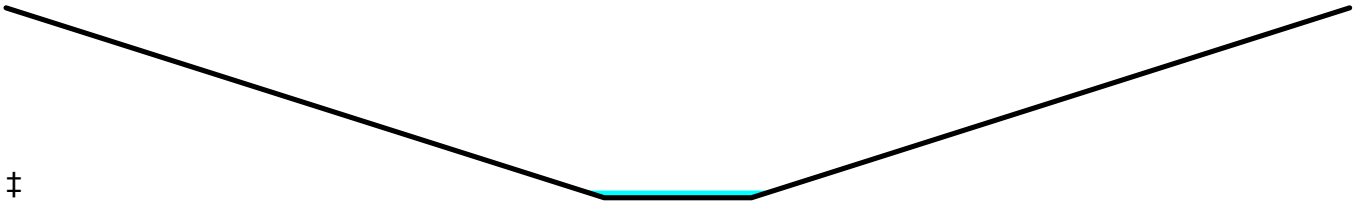
Summary for Reach MB2: Meadow Buffer

Inflow Area = 29,704 sf, 35.53% Impervious, Inflow Depth = 1.44" for 2-Year event
Inflow = 1.06 cfs @ 12.14 hrs, Volume= 3,559 cf
Outflow = 0.76 cfs @ 12.26 hrs, Volume= 3,559 cf, Atten= 28%, Lag= 7.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.06 hrs
Max. Velocity= 0.13 fps, Min. Travel Time= 9.7 min
Avg. Velocity = 0.06 fps, Avg. Travel Time= 20.9 min

Peak Storage= 441 cf @ 12.26 hrs
Average Depth at Peak Storage= 0.12'
Bank-Full Depth= 3.25' Flow Area= 658.1 sf, Capacity= 567.95 cfs

40.00' x 3.25' deep channel, n= 0.410 Sheet flow over Bermuda Grass
Side Slope Z-value= 50.0 '/' Top Width= 365.00'
Length= 77.4' Slope= 0.0258 '/'
Inlet Invert= 191.50', Outlet Invert= 189.50'



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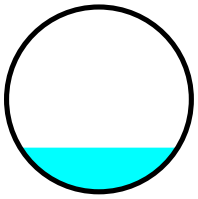
Summary for Reach R1:

Inflow Area = 42,831 sf, 25.81% Impervious, Inflow Depth = 1.33" for 2-Year event
Inflow = 1.09 cfs @ 12.24 hrs, Volume= 4,731 cf
Outflow = 1.09 cfs @ 12.24 hrs, Volume= 4,731 cf, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.06 hrs
Max. Velocity= 4.87 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.95 fps, Avg. Travel Time= 0.4 min

Peak Storage= 10 cf @ 12.24 hrs
Average Depth at Peak Storage= 0.30'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 8.78 cfs

15.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 43.3' Slope= 0.0185 '/'
Inlet Invert= 194.50', Outlet Invert= 193.70'



Summary for Pond D1:

Inflow Area = 29,704 sf, 35.53% Impervious, Inflow Depth = 1.46" for 2-Year event
Inflow = 0.97 cfs @ 12.15 hrs, Volume= 3,609 cf
Outflow = 1.07 cfs @ 12.14 hrs, Volume= 3,609 cf, Atten= 0%, Lag= 0.0 min
Discarded = 0.00 cfs @ 12.14 hrs, Volume= 50 cf
Primary = 1.06 cfs @ 12.14 hrs, Volume= 3,559 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.06 hrs
Peak Elev= 195.74' @ 12.14 hrs Surf.Area= 128 sf Storage= 82 cf

Plug-Flow detention time= 2.1 min calculated for 3,605 cf (100% of inflow)
Center-of-Mass det. time= 2.1 min (844.0 - 841.9)

Volume	Invert	Avail.Storage	Storage Description
#1	194.50'	1,090 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)
194.50	20	15.7	0	0	20
196.00	162	45.2	119	119	170
198.00	910	107.0	971	1,090	934

Device	Routing	Invert	Outlet Devices
#1	Discarded	194.50'	**1.020 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 190.00'
#2	Primary	192.40'	**12.0" Round Culvert** L= 79.8' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 192.40' / 192.00' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 2	194.58'	**4.0" Vert. Orifice/Grate** C= 0.600
#4	Device 2	195.67'	**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

Discarded OutFlow Max=0.00 cfs @ 12.14 hrs HW=195.73' (Free Discharge)
└**1=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=1.00 cfs @ 12.14 hrs HW=195.73' TW=191.60' (Dynamic Tailwater)
└**2=Culvert** (Passes 1.00 cfs of 4.97 cfs potential flow)
  ├**3=Orifice/Grate** (Orifice Controls 0.42 cfs @ 4.79 fps)
  └**4=Neenah R4345 Beehive Grate Light Duty-req. structure** (Custom Controls 0.58 cfs)

Summary for Pond SF1:

Inflow Area = 49,179 sf, 28.62% Impervious, Inflow Depth = 1.37" for 2-Year event
Inflow = 1.30 cfs @ 12.24 hrs, Volume= 5,616 cf
Outflow = 0.12 cfs @ 14.28 hrs, Volume= 5,618 cf, Atten= 91%, Lag= 122.6 min
Primary = 0.12 cfs @ 14.28 hrs, Volume= 5,618 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= 0.06 hrs
Peak Elev= 194.92' @ 14.28 hrs Surf.Area= 2,200 sf Storage= 2,553 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 229.0 min (1,080.7 - 851.6)

Volume	Invert	Avail.Storage	Storage Description
#1	193.50'	5,254 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
193.50	1,405	0	0
194.00	1,664	767	767
196.00	2,823	4,487	5,254

Device	Routing	Invert	Outlet Devices
#1	Primary	193.50'	**2.410 in/hr Exfiltration over Surface area**
#2	Secondary	195.00'	**6.0' long x 10.0' 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) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.12 cfs @ 14.28 hrs HW=194.92' TW=0.00' (Dynamic Tailwater)
↑└**1=Exfiltration** (Exfiltration Controls 0.12 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=193.50' TW=194.50' (Dynamic Tailwater)
↑└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Link SP1:

Inflow Area = 92,946 sf, 17.11% Impervious, Inflow Depth = 1.15" for 2-Year event
Inflow = 0.86 cfs @ 12.17 hrs, Volume= 8,903 cf
Primary = 0.86 cfs @ 12.17 hrs, Volume= 8,903 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.06 hrs

Summary for Link SP2:

Inflow Area = 13,871 sf, 0.00% Impervious, Inflow Depth = 0.82" for 2-Year event
Inflow = 0.21 cfs @ 12.23 hrs, Volume= 946 cf
Primary = 0.21 cfs @ 12.23 hrs, Volume= 946 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.06 hrs

Summary for Link SP3:

Inflow Area = 73,503 sf, 17.19% Impervious, Inflow Depth = 1.15" for 2-Year event
Inflow = 1.00 cfs @ 12.40 hrs, Volume= 7,014 cf
Primary = 1.00 cfs @ 12.40 hrs, Volume= 7,014 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.06 hrs

Summary for Link SP4:

Inflow Area = 46,103 sf, 13.48% Impervious, Inflow Depth = 1.14" for 2-Year event
Inflow = 0.79 cfs @ 12.42 hrs, Volume= 4,383 cf
Primary = 0.79 cfs @ 12.42 hrs, Volume= 4,383 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.06 hrs

Time span=0.00-48.00 hrs, dt=0.06 hrs, 801 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

Subcatchment10: Runoff Area=42,831 sf 25.81% Impervious Runoff Depth=2.55"
Flow Length=427' Tc=16.4 min CN=80 Runoff=2.13 cfs 9,091 cf

Subcatchment11: Runoff Area=6,348 sf 47.64% Impervious Runoff Depth=3.00"
Flow Length=427' Tc=16.4 min CN=85 Runoff=0.37 cfs 1,587 cf

Subcatchment12: Runoff Area=5,972 sf 0.00% Impervious Runoff Depth=1.89"
Flow Length=71' Tc=6.0 min CN=72 Runoff=0.29 cfs 943 cf

Subcatchment40: Runoff Area=4,662 sf 39.25% Impervious Runoff Depth=2.81"
Flow Length=147' Tc=7.4 min CN=83 Runoff=0.33 cfs 1,093 cf

Subcatchment41: Runoff Area=21,434 sf 5.37% Impervious Runoff Depth=1.97"
Flow Length=378' Tc=52.8 min CN=73 Runoff=0.47 cfs 3,521 cf

Subcatchment42: Runoff Area=29,704 sf 35.53% Impervious Runoff Depth=2.72"
Flow Length=93' Tc=10.4 min CN=82 Runoff=1.85 cfs 6,743 cf

Subcatchment43: Runoff Area=33,133 sf 0.00% Impervious Runoff Depth=1.82"
Flow Length=139' Slope=0.0336 '/' Tc=10.5 min CN=71 Runoff=1.33 cfs 5,023 cf

Subcatchment44: Runoff Area=13,871 sf 0.00% Impervious Runoff Depth=1.82"
Flow Length=146' Tc=14.7 min CN=71 Runoff=0.50 cfs 2,103 cf

Subcatchment45: Runoff Area=22,365 sf 4.17% Impervious Runoff Depth=2.05"
Flow Length=159' Tc=12.3 min CN=74 Runoff=0.98 cfs 3,820 cf

Subcatchment46: Runoff Area=46,103 sf 13.48% Impervious Runoff Depth=2.29"
Flow Length=338' Tc=28.5 min CN=77 Runoff=1.64 cfs 8,806 cf

Reach FB1: Forested Buffer Avg. Flow Depth=0.26' Max Vel=0.10 fps Inflow=1.55 cfs 6,681 cf
n=0.800 L=57.4' S=0.0218 '/' Capacity=111.72 cfs Outflow=1.30 cfs 6,681 cf

Reach MB1: Meadow Buffer Avg. Flow Depth=0.16' Max Vel=0.24 fps Inflow=1.67 cfs 4,544 cf
n=0.240 L=79.7' S=0.0217 '/' Capacity=3.24 cfs Outflow=1.47 cfs 4,544 cf

Reach MB2: Meadow Buffer Avg. Flow Depth=0.19' Max Vel=0.17 fps Inflow=1.84 cfs 6,681 cf
n=0.410 L=77.4' S=0.0258 '/' Capacity=567.95 cfs Outflow=1.55 cfs 6,681 cf

Reach R1: Avg. Flow Depth=0.42' Max Vel=5.90 fps Inflow=2.13 cfs 9,091 cf
15.0" Round Pipe n=0.013 L=43.3' S=0.0185 '/' Capacity=8.78 cfs Outflow=2.13 cfs 9,091 cf

Pond D1: Peak Elev=195.81' Storage=91 cf Inflow=1.85 cfs 6,743 cf
Discarded=0.00 cfs 62 cf Primary=1.84 cfs 6,681 cf Outflow=1.84 cfs 6,743 cf

Pond SF1: Peak Elev=195.22' Storage=3,232 cf Inflow=2.50 cfs 10,678 cf
Primary=0.13 cfs 7,231 cf Secondary=1.56 cfs 3,450 cf Outflow=1.69 cfs 10,681 cf

Link SP1: Inflow=2.21 cfs 17,740 cf
Primary=2.21 cfs 17,740 cf

Link SP2: Inflow=0.50 cfs 2,103 cf
Primary=0.50 cfs 2,103 cf

Link SP3: Inflow=2.23 cfs 14,022 cf
Primary=2.23 cfs 14,022 cf

Link SP4: Inflow=1.64 cfs 8,806 cf
Primary=1.64 cfs 8,806 cf

Time span=0.00-48.00 hrs, dt=0.06 hrs, 801 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

Subcatchment10: Runoff Area=42,831 sf 25.81% Impervious Runoff Depth=3.60"
Flow Length=427' Tc=16.4 min CN=80 Runoff=3.00 cfs 12,854 cf

Subcatchment11: Runoff Area=6,348 sf 47.64% Impervious Runoff Depth=4.11"
Flow Length=427' Tc=16.4 min CN=85 Runoff=0.50 cfs 2,176 cf

Subcatchment12: Runoff Area=5,972 sf 0.00% Impervious Runoff Depth=2.83"
Flow Length=71' Tc=6.0 min CN=72 Runoff=0.43 cfs 1,409 cf

Subcatchment40: Runoff Area=4,662 sf 39.25% Impervious Runoff Depth=3.91"
Flow Length=147' Tc=7.4 min CN=83 Runoff=0.45 cfs 1,518 cf

Subcatchment41: Runoff Area=21,434 sf 5.37% Impervious Runoff Depth=2.92"
Flow Length=378' Tc=52.8 min CN=73 Runoff=0.71 cfs 5,222 cf

Subcatchment42: Runoff Area=29,704 sf 35.53% Impervious Runoff Depth=3.80"
Flow Length=93' Tc=10.4 min CN=82 Runoff=2.57 cfs 9,415 cf

Subcatchment43: Runoff Area=33,133 sf 0.00% Impervious Runoff Depth=2.74"
Flow Length=139' Slope=0.0336 '/' Tc=10.5 min CN=71 Runoff=2.03 cfs 7,561 cf

Subcatchment44: Runoff Area=13,871 sf 0.00% Impervious Runoff Depth=2.74"
Flow Length=146' Tc=14.7 min CN=71 Runoff=0.77 cfs 3,165 cf

Subcatchment45: Runoff Area=22,365 sf 4.17% Impervious Runoff Depth=3.02"
Flow Length=159' Tc=12.3 min CN=74 Runoff=1.46 cfs 5,624 cf

Subcatchment46: Runoff Area=46,103 sf 13.48% Impervious Runoff Depth=3.31"
Flow Length=338' Tc=28.5 min CN=77 Runoff=2.37 cfs 12,698 cf

Reach FB1: Forested Buffer Avg. Flow Depth=0.32' Max Vel=0.11 fps Inflow=2.19 cfs 9,345 cf
n=0.800 L=57.4' S=0.0218 '/' Capacity=111.72 cfs Outflow=1.89 cfs 9,345 cf

Reach MB1: Meadow Buffer Avg. Flow Depth=0.24' Max Vel=0.30 fps Inflow=3.25 cfs 8,460 cf
n=0.240 L=79.7' S=0.0217 '/' Capacity=3.24 cfs Outflow=3.00 cfs 8,460 cf

Reach MB2: Meadow Buffer Avg. Flow Depth=0.23' Max Vel=0.19 fps Inflow=2.55 cfs 9,345 cf
n=0.410 L=77.4' S=0.0258 '/' Capacity=567.95 cfs Outflow=2.19 cfs 9,345 cf

Reach R1: Avg. Flow Depth=0.50' Max Vel=6.48 fps Inflow=3.00 cfs 12,854 cf
15.0" Round Pipe n=0.013 L=43.3' S=0.0185 '/' Capacity=8.78 cfs Outflow=3.00 cfs 12,854 cf

Pond D1: Peak Elev=195.85' Storage=97 cf Inflow=2.57 cfs 9,415 cf
Discarded=0.00 cfs 70 cf Primary=2.55 cfs 9,345 cf Outflow=2.56 cfs 9,415 cf

Pond SF1: Peak Elev=195.34' Storage=3,522 cf Inflow=3.51 cfs 15,030 cf
Primary=0.14 cfs 8,094 cf Secondary=3.04 cfs 6,942 cf Outflow=3.18 cfs 15,037 cf

Link SP1: Inflow=4.42 cfs 25,524 cf
Primary=4.42 cfs 25,524 cf

Link SP2: Inflow=0.77 cfs 3,165 cf
Primary=0.77 cfs 3,165 cf

Link SP3: Inflow=3.31 cfs 20,190 cf
Primary=3.31 cfs 20,190 cf

Link SP4: Inflow=2.37 cfs 12,698 cf
Primary=2.37 cfs 12,698 cf

ATTACHMENT 4

INSPECTION, MAINTENANCE & HOUSEKEEPING PLAN

DM ROMA
CONSULTING ENGINEERS

INSPECTION, MAINTENANCE, AND HOUSEKEEPING PLAN

(Prepared by Jayson Haskell, PE #13002)

VEERY ESTATES CONDOMINIUM
WINDHAM, MAINE

Responsible Party

Owner: RMills, LLC
13 Victoria Lane
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 such time that a homeowner's association is created. 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 underdrained filter basins or detention basin. 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. **Snow Storage:** The proposed underdrained filter basins shall not be utilized for snow storage. Snow storage areas shall be located away from the basins, and in areas that will direct snow melt runoff into one of the basins on site.

5. **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, including but not limited to those shown on the enclosed Stormwater Infrastructure Map, must be maintained by the owner in effective operating condition. A qualified third-party 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 inspector shall be certified through the MDEP to inspect the stormwater infrastructure. 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. **Storm Drains:** Inspect 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. **Catch Basins and Outlet Control Structures:** Inspect and, if required, clean out structure at least once a year, preferably in early spring. Clean out must include the removal and legal disposal of any accumulated sediments and debris at the bottom of the structure and inlet grate.

E. **Underdrained Filter Basins:** The filter basins are 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 basins 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. Basins 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.

   The emergency spillways associated with the filter basins 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.

F. **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.

G. **Forested Stormwater Buffer:** Wooded buffers must remain fully wooded and have no disturbance to the duff layer. Stormwater runoff should enter the buffer as sheet flow, and any observed channelization of flows or erosion should be corrected immediately. Activities that may result in disturbance of the duff layer are prohibited in a buffer. See Appendix A for further restrictions.

H. **Meadow Stormwater Buffer:** Meadow stormwater buffers must remain as natural meadow areas. These areas are necessary to satisfy the project's stormwater design and treatment calculations. These areas shall be maintained as meadow and not mowed more than twice per year to a height no less than six inches. Meadow within these areas shall not be fertilized and maintained in its natural condition. See Appendix B for further restrictions.

I. **Regular Maintenance:** Clear accumulations of winter sand along 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.

J. **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 and MDEP 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.

Re-certification

Submit a certification of the following to the MDEP within three months of the expiration of each five-year interval from the date of issuance of the permit.

(a) **Identification and repair of erosion problems**. All areas of the project site have been inspected for areas of erosion, and appropriate steps have been taken to permanently stabilize these areas.

(b) **Inspection and repair of stormwater control system**. All aspects of the stormwater control system have been inspected for damage, wear, and malfunction, and appropriate steps have been taken to repair or replace the system, or portions of the system.

(c) **Maintenance**. The erosion and stormwater maintenance plan for the site is being implemented as written, or modifications to the plan have been submitted to and approved by the Department, and the maintenance log is being maintained.

Municipalities with separate storm sewer systems regulated under the Maine Pollutant Discharge Elimination System (MPDES) Program may report on all regulated systems under their control as part of their required annual reporting in lieu of separate certification of each system.

Municipalities not regulated by the MPDES Program, but that are responsible for maintenance of permitted stormwater systems, may report on multiple stormwater systems in one report.

Duration of Maintenance

Perform maintenance as described.

INSPECTION AND MAINTENANCE LOG – GENERAL INSPECTION

VEERY ESTATES CONDOMINIUM
WINDHAM, 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
Vegetated Areas	Inspect slopes and embankments early in Spring.			
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.			
Catch Basins	Inspect to ensure that structure is properly draining.			
	Remove accumulated sediment semiannually.			
	Inspect grates/inlets and remove debris as needed.			
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.			

INSPECTION AND MAINTENANCE LOG – GENERAL INSPECTION

VEERY ESTATES CONDOMINIUM
WINDHAM, MAINE

Maintenance Item	Maintenance Event	Date Performed	Responsible Personnel	Comments
Forested Stormwater Buffer	Inspect for erosion and channelized flow semiannually.			
	Remove accumulated sediment semiannually.			
	Inspect vegetation cover and reestablish as needed.			
	See Appendix A – Stormwater Management Forested Buffer Declaration of Restrictions for further restrictions and maintenance requirements.			
Meadow Stormwater Buffer	Areas to be mowed not more than twice a year to a height no less than 6”.			
	See Appendix B – Stormwater Management Meadow Buffer Declaration of Restrictions for further restrictions and maintenance requirements.			
Regular Maintenance	Clear accumulation of winter sand in paved areas annually.			

INSPECTION AND MAINTENANCE LOG – UNDERDRAINED FILTER BASINS

VEERY ESTATES CONDOMINIUM,
WINDHAM, MAINE

FILTER BASIN #_____

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.			
Emergency Spillway	Inspect and remove obstructions as necessary.			
	Remove woody vegetation.			
	Replace riprap as necessary.			
Outlet Control Structure	Inspect to ensure that structure is properly draining.			
	Remove accumulated sediment semiannually.			
	Inspect grates/inlets and remove debris as needed.			

INSPECTION AND MAINTENANCE LOG – DETENTION BASIN

VEERY ESTATES CONDOMINIUM,
WINDHAM, MAINE

Maintenance Item	Maintenance Event	Date Performed	Responsible Personnel	Comments
Detention Basin	Check after each rainfall event to ensure that pond drains within 24-48 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 vehicle or heavy equipment storage.			
Outlet Control Structure (TYPE F BOX)	Inspect to ensure that structure is properly draining.			
	Remove accumulated sediment semiannually.			
	Inspect grates/inlets and remove debris as needed.			

APPENDIX A

DRAFT - STORMWATER MANAGEMENT FORESTED BUFFER DECLARATION OF RESTRICTIONS

THIS DECLARATION OF RESTRICTIONS is made this _____day of _____, 20___, by

_____, _____
(name) (street address)

_____, _____County, Maine,_____, (herein referred to as the
(city or town) (county) (zip code)

"Declarant"), pursuant to a permit received from the Maine Department of Environmental Protection under the Stormwater Management Law, to preserve a buffer area on a parcel of land near

_____, _____ .
(road name) (known feature and/or town)

WHEREAS, the Declarant holds title to certain real property situated in _____, Maine
(town)
described in a deed from _____ to _____, dated
(name) (name of Declarant)

_____, 20____, and recorded in Book ____ Page ____ at the _____County Registry of Deeds, herein referred to as the "property"; and

WHEREAS, Declarant desires to place certain restrictions, under the terms and conditions herein, over a portion of said real property (hereinafter referred to as the "Restricted Buffer") as shown on the enclosed Stormwater Infrastructure Map.

WHEREAS, pursuant to the Stormwater Management Law, 38 M.R.S. Section 420-D and Chapter 500 of rules promulgated by the Maine Board of Environmental Protection ("Stormwater Management Rules"), Declarant has agreed to impose certain restrictions on the Restricted Buffer Area as more particularly set forth herein and has agreed that these restrictions may be enforced by the Maine Department of Environmental Protection or any successor (hereinafter the "MDEP"),

NOW, THEREFORE, the Declarant hereby declares that the Restricted Buffer Area is and shall forever be held, transferred, sold, conveyed, occupied and maintained subject to the conditions and restrictions set forth herein. The Restrictions shall run with the Restricted Buffer Area and shall be binding on all parties having any right, title or interest in and to the Restricted Buffer Area, or any portion thereof, and their heirs, personal representatives, successors, and assigns. Any present or future owner or occupant of the Restricted Buffer Area or any portion thereof, by the acceptance of a deed of conveyance of all or part of the Covenant Area or an instrument conveying any interest therein, whether or not the deed or instrument shall so express, shall be deemed to have accepted the Restricted Buffer Area subject to the Restrictions and shall agree to be bound by, to comply with and to be subject to each and every one of the Restrictions hereinafter set forth.

1. **Restrictions on Restricted Buffer Area**. Unless the owner of the Restricted Buffer Area, or any successors or assigns, obtains the prior written approval of the MDEP, the Restricted Buffer Area must remain undeveloped in perpetuity. To maintain the ability of the Restricted Buffer Area to filter and absorb stormwater, and to maintain compliance with the Stormwater Management Law and the permit issued thereunder to the Declarant, the use of the Restricted Buffer Area is hereinafter limited as follows.

    a. No soil, loam, peat, sand, gravel, concrete, rock or other mineral substance, refuse, trash, vehicle bodies or parts, rubbish, debris, junk waste, pollutants or other fill material will be placed, stored or dumped on the Restricted Buffer Area, nor shall the topography of the area be altered or manipulated in any way;

    b. No trees may be cut or sprayed with biocides except for the normal maintenance of dead, windblown or damaged trees and for pruning of tree branches below a height of 12 feet provided two thirds of the tree's canopy is maintained;

    c. No undergrowth, ground cover vegetation, leaf litter, organic duff layer or mineral soil may be disturbed except that one winding path, that is no wider than six feet and that does not provide a downhill channel for runoff, is allowed through the area;

    d. No building or other temporary or permanent structure may be constructed, placed or permitted to remain on the Restricted Buffer Area, except for a sign, utility pole or fence (whether constructed of wood, steel or other materials) and appurtenant equipment such as guys and guy anchors;

    e. No trucks, cars, dirt bikes, ATVs, bulldozers, backhoes, or other motorized vehicles or mechanical equipment may be permitted on the Restricted Buffer Area;

    f. Any level lip spreader directing flow to the Restricted Buffer Area must be regularly inspected and adequately maintained to preserve the function of the level spreader.

    Any activity on or use of the Restricted Buffer Area inconsistent with the purpose of these Restrictions is prohibited. Any future alterations or changes in use of the Restricted Buffer Area must receive prior approval in writing from the MDEP. The MDEP may approve such alterations and changes in use if such alterations and uses do not impede the stormwater control and treatment capability of the Restricted Buffer Area or if adequate and appropriate alternative means of stormwater control and treatment are provided.

2. **Enforcement**. The MDEP may enforce any of the Restrictions set forth in Section 1 above.

3. **Binding Effect**. The restrictions set forth herein shall be binding on any present or future owner of the Restricted Buffer Area. If the Restricted Buffer Area is at any time owned by more than one owner, each owner shall be bound by the foregoing restrictions to the extent that any of the Restricted Buffer Area is included within such owner's property.

4. **Amendment**. Any provision contained in this Declaration may be amended or revoked only by the recording of a written instrument or instruments specifying the amendment or the revocation signed by the owner or owners of the Restricted Buffer Area and by the MDEP.

5. **Effective Provisions of Declaration**. Each provision of this Declaration, and any agreement, promise, covenant and undertaking to comply with each provision of this Declaration, shall be deemed a land use restriction running with the land as a burden and upon the title to the Restricted Buffer Area.

6. **Severability**. Invalidity or unenforceability of any provision of this Declaration in whole or in part shall not affect the validity or enforceability of any other provision or any valid and enforceable part of a provision of this Declaration.

7. **Governing Law**. This Declaration shall be governed by and interpreted in accordance with the laws of the State of Maine.

_____
(NAME)

STATE OF MAINE, _____, County, dated _____, 20__ .
(County)

Personally appeared before me the above named _____, who swore to the truth of the foregoing to the best of (his/her) knowledge, information and belief and acknowledged the foregoing instrument to be (his/her) free act and deed.

_____
Notary Public

_____

APPENDIX B

DRAFT – STORMWATER MEADOW BUFFER
DECLARATION OF RESTRICTIONS

THIS DECLARATION OF RESTRICTIONS is made this _____day of _____, 20___, by

_____, _____
(name) (street address)

_____, _____County, Maine,_____, (herein referred to as the
(city or town) (county) (zip code)

"Declarant"), pursuant to a permit received from the Maine Department of Environmental Protection under the Stormwater Management Law, to preserve a buffer area on a parcel of land near

_____, _____ .
(road name) (known feature and/or town)

WHEREAS, the Declarant holds title to certain real property situated in _____, Maine
(town)
described in a deed from _____ to _____, dated
(name) (name of Declarant)

_____, 20____, and recorded in Book ____ Page ____ at the _____County Registry of Deeds, herein referred to as the "property"; and

WHEREAS, Declarant desires to place certain restrictions, under the terms and conditions herein, over a portion of said real property (hereinafter referred to as the "Restricted Buffer") as shown on the enclosed Stormwater Infrastructure Map.

WHEREAS, pursuant to the Stormwater Management Law, 38 M.R.S. Section 420-D and Chapter 500 of rules promulgated by the Maine Board of Environmental Protection ("Stormwater Management Rules"), Declarant has agreed to impose certain restrictions on the Restricted Buffer Area as more particularly set forth herein and has agreed that these restrictions may be enforced by the Maine Department of Environmental Protection or any successor (hereinafter the "MDEP"),

NOW, THEREFORE, the Declarant hereby declares that the Restricted Buffer Area is and shall forever be held, transferred, sold, conveyed, occupied and maintained subject to the conditions and restrictions set forth herein. The Restrictions shall run with the Restricted Buffer Area and shall be binding on all parties having any right, title or interest in and to the Restricted Buffer Area, or any portion thereof, and their heirs, personal representatives, successors, and assigns. Any present or future owner or occupant of the Restricted Buffer Area or any portion thereof, by the acceptance of a deed of conveyance of all or part of the Covenant Area or an instrument conveying any interest therein, whether or not the deed or instrument shall so express, shall be deemed to have accepted the Restricted Buffer Area subject to the Restrictions and shall agree to be bound by, to comply with and to be subject to each and every one of the Restrictions hereinafter set forth.

1. **Restrictions on Restricted Buffer Area**. Unless the owner of the Restricted Buffer Area, or any successors or assigns, obtains the prior written approval of the MDEP, the Restricted Buffer Area must remain undeveloped in perpetuity. To maintain the ability of the Restricted Buffer Area to filter and absorb stormwater, and to maintain compliance with the Stormwater Management Law and the permit issued thereunder to the Declarant, the use of the Restricted Buffer Area is hereinafter limited as follows.

    a. No soil, loam, peat, sand, gravel, concrete, rock or other mineral substance, refuse, trash, vehicle bodies or parts, rubbish, debris, junk waste, pollutants or other fill material will be placed, stored or dumped on the Restricted Buffer Area, nor may the topography or the natural mineral soil of the area be altered or manipulated in any way;

    b. A dense cover of grassy vegetation must be maintained over the Restricted Buffer Area, except that shrubs, trees and other woody vegetation may also be planted or allowed to grow in the area. The Restricted Buffer Area may not be maintained as a lawn or used as a pasture. If vegetation in the Restricted Buffer Area is mowed, it may be mown no more than two times per year.

    c. No building or other temporary or permanent structure may be constructed, placed or permitted to remain on the Restricted Buffer Area, except for a sign, utility pole or fence (whether constructed of wood, steel or other materials) and appurtenant equipment such as guys and guy anchors;

    d. No trucks, cars, dirt bikes, ATVs, bulldozers, backhoes, or other motorized vehicles or mechanical equipment may be permitted on the Restricted Buffer Area, except for vehicles used in mowing;

    Any activity on or use of the Restricted Buffer Area inconsistent with the purpose of these Restrictions is prohibited. Any future alterations or changes in use of the Restricted Buffer Area must receive prior approval in writing from the MDEP. The MDEP may approve such alterations and changes in use if such alterations and uses do not impede the stormwater control and treatment capability of the Restricted Buffer Area or if adequate and appropriate alternative means of stormwater control and treatment are provided.

2. **Enforcement**. The MDEP may enforce any of the Restrictions set forth in Section 1 above.

3. **Binding Effect**. The restrictions set forth herein shall be binding on any present or future owner of the Restricted Buffer Area. If the Restricted Buffer Area is at any time owned by more than one owner, each owner shall be bound by the foregoing restrictions to the extent that any of the Restricted Buffer Area is included within such owner's property.

4. **Amendment**. Any provision contained in this Declaration may be amended or revoked only by the recording of a written instrument or instruments specifying the amendment or the revocation signed by the owner or owners of the Restricted Buffer Area and by the MDEP.

5. **Effective Provisions of Declaration**. Each provision of this Declaration, and any agreement, promise, covenant and undertaking to comply with each provision of this Declaration, shall be deemed a land use restriction running with the land as a burden and upon the title to the Restricted Buffer Area.

6. **Severability**. Invalidity or unenforceability of any provision of this Declaration in whole or in part shall not affect the validity or enforceability of any other provision or any valid and enforceable part of a provision of this Declaration.

7. **Governing Law**. This Declaration shall be governed by and interpreted in accordance with the laws of the State of Maine.

_____
(NAME)

STATE OF MAINE, _____, County, dated _____, 20__ .
(County)

Personally appeared before me the above named _____, who swore to the truth of the foregoing to the best of (his/her) knowledge, information and belief and acknowledged the foregoing instrument to be (his/her) free act and deed.

_____
Notary Public

_____