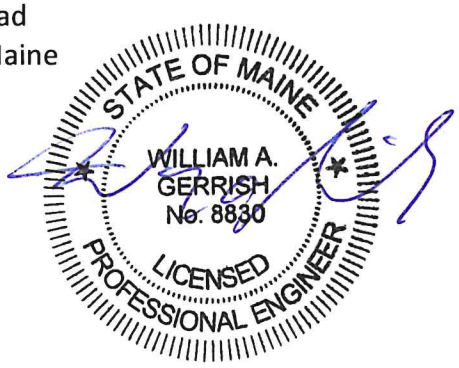
CARR WOODS
DEEP BROOK ROAD
CAPE ELIZABETH, MAINE

STORMWATER MANAGEMENT REPORT
APRIL 2021

Revised May 2021
Revised August 2021
Revised March 2022

Prepared for:

Andrew Carr
Deep Brook Road
Cape Elizabeth, Maine



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Project # 41875

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1) PROJECT DESCRIPTION

This Stormwater Management Report has been prepared for Andrew Carr to present the stormwater runoff results for an eighteen (18) unit condo development and one (1) single family lot on his property in Cape Elizabeth, Maine. The property is identified as lots 91, 91A and 92 on the local tax map U06 and encompasses approximately 14.3 acres. The proposed development will disturb approximately 6.53 acres of the property.

The existing property is almost entirely wooded with a total of 1.96 acres of forested wetland with no jurisdictional vernal pools. The wetlands and vernal pools were delineated by Albert Frick Associates in the summer of 2020 and re-verified in the spring of 2021. A Peer Review was conducted by Longview Partners in the fall of 2021.

The Maine Department of Inland Fisheries and Wildlife (IF&W) provides an online habitat mapper and they do not identify any high value riparian, plant or animal habitats on the property.

The development of the site will result in the following:

Total Development:

Proposed impervious area	= 2.50 acres
Proposed Landscaped area	= 1.70 acres
Proposed Developed area	= 4.20 acres

2) STORMWATER NARRATIVE

2.1 SITE LOCATION

The project site is located at 973 Shore Road in Cape Elizabeth, Maine. The property is almost entirely wooded with the exception of two single family homes, and a private road, Deep Brook Road, that provides access to each house. One single family home and the majority of the existing Deep Brook Road will be eliminated as part of this project.

2.2 RECEIVING WATERS

The majority of the site drains northeast into the Town's public stormwater system in Shore Road which is then conveyed down Cottage Lane to an outfall at Casino Beach

A small area of the property drains to the west to Town owned land which is occupied by a large low lying wetland area, which also, eventually, drains to the Atlantic Ocean.

2.3 HISTORIC FLOODING

The project site is not located with a floodplain and there is no flood map for this particular location.

2.4 METHODOLOGY AND MODELING ASSUMPTIONS

Runoff and routing calculations have been performed for the watershed areas affected by the proposed development. Times of concentration and runoff curve number calculations have been determined using the method described in the Natural Resource Conservation Service (NRCS) Technical Release 55, (TR-55). Time of concentration calculations have been amended where the values given by the TR-55 method is less than six minutes. In these cases, a standard minimum value of six minutes has been used to keep this parameter within the acceptable working range of the model. Each Tc path and corresponding length and slope is identified in the pre- and post-development drainage area plan. The TR-20 based HydroCAD (version 10.0) modeling software has been utilized to perform the complex runoff and routing calculations.

Design rainfall has been modeled using the SCS Type III hydrograph for 24-hour duration storm events. The rainfall depth for each return period is taken from the Stormwater Management for Maine: Best Management Practices, Appendix H. The rainfall depth values utilized in the stormwater model are indicated in the table below.

24-Hour Rainfall Depths for Cumberland County			
Stormwater Management for Maine: Best Management Practices Appendix H			
Frequency	2-Year	10-Year	25-Year
Rainfall Depth	3.1	4.6	5.8

2.5 SOILS

On site soils were derived by a Hight Intensity Soil Survey (HISS) conducted by Albert Frick Associates in June and September 2021. As with the wetland mapping, a Peer Review of the HISS was conducted by Longview Partners in the fall of 2021.

Offsite soil types within the drainage analysis area of the project were identified using the NRCS Web Soil Survey.

The curve numbers (CN) utilized in this analysis relate to the ground cover that was observed on the site. Soils identified within the analysis area are identified on the plan set and in Appendix D of this report. Soil boundaries have been identified on the Pre and Post Development Watershed Maps.

2.6 PERMITTING REQUIREMENTS

Local Permitting

The Town of Cape Elizabeth will require a storm water drainage and erosion control program that handles stormwater run-offs in conformance with the standards contained in the Maine Department of Environmental Protection's Chapter 500 rules.

MDEP Permitting Requirements:

Basic Standards: The basic standards require that grading and other construction activities on the site do not impede or otherwise alter drainage ways to create an unreasonable adverse impact on a protected natural resource. The basic standards will be met by the implementation of an Erosion and Sedimentation Control Plan addressing erosion and sediment control during construction and post-construction stabilization of the site and through the implementation of Stormwater Management Facilities Maintenance Plan identifying various inspection, maintenance and general housekeeping procedures. A copy or the Stormwater Management Facilities Maintenance Plan is attached to this report.

The Erosion and Sedimentation Control Plan was developed following Best Management Practice (BMP) guidelines and has been placed directly on the design plans for reference during construction.

General Standards: The general standards consist of Best Management Practice (BMP) standards. The BMP standards require a project's stormwater management system to include treatment measures that will mitigate the increased frequency and duration of channel erosive flows due to runoff from smaller storms, provide for effective treatment of pollutants in stormwater, and mitigate potential temperature impacts. This must be achieved by using one or more MDEP approved methods to treat runoff from no less than 95% of the proposed impervious area and no less than 80% of the proposed developed area associated with a project. For the linear portion of the project treatment may be reduced to 75% of the linear portion's impervious area and 50% of the linear portion's developed area. As this project will create greater than one acre of new impervious surface area the project is subject to MDEP General Standards, a DEP stormwater permit will be required for this project. It will also meet the MDEP General Standards based on the requirements of the Post-Construction Stormwater Infrastructure Management Ordinance.

Flooding Standard: MDEP requires that projects which create 3 acres or more of impervious area and 20 acres or more of developed area or otherwise require review pursuant to the Site Location of Development Law must control the peak flow of runoff from the site to pre-development rates during the 2-year, 10-year and 25-year, 24-hour storms. As this project does not meet the above criteria the MDEP Flooding Standard does not apply. The Town of Cape Elizabeth requires project that involve 10,000 square feet or impervious area or more

to meet their Post Construction Stormwater Management ordinance which requires the control of peak flows in the 2- and 25-year storm events.

Wetlands: The project will fill approximately 11,134 square feet of wetlands and will require a NRPA permit for impacts to the natural resources.

2.7 PROPOSED BMPS

The site will employ a number of MDEP approved stormwater treatment measures to treat stormwater runoff from the majority of the proposed developed areas on site. Several roof dripline filters are proposed to collect and filter the roof runoff from a majority of the proposed condo buildings. Stormwater quality treatment for a majority of the remaining proposed impervious and landscaped areas will be provided by constructing three (3) relatively small underdrained soil filters and three (3) small bioretention filters located throughout the site. In addition to these stormwater quality treatment measures, two (2) underground detention systems and one (1) small above ground detention basin are proposed to reduce peak stormwater runoff rates from the proposed developed areas on the site.

2.8 PROJECT IMPACTS

The entirety of the proposed development will result in the creation of approximately 2.50 acres of new non-vegetated developed area and a total of 4.20 acres of overall developed area.

3) STORMWATER QUANTITY ANAYSIS

3.1 PRE-DEVELOPMENT CONDITIONS

Under pre-development conditions the site is modeled as five subcatchment areas (See Plan Set for Pre-Development Drainage Area Plan) draining off the property at four analysis points, Study Point #1, #2, #3, and #4. The analysis area encompasses approximately 29.8 acres, of which approximately 15.5 are from offsite. Offsite areas are modeled to help determine the culvert sizing and to represent the projected peak flows at each study point.

Study Point #1, Pre-Development Condition: Study Point #1 is located in the northeasterly area of the site near the entrance to Deep Brook Road. The majority of the drainage analysis area, including offsite area, drains to a wetland on our property (Wetlands A & B) that is drained by a 12-inch diameter storm drain system, which acts like an outlet control structure for this wetland detention area (identified as Pond W1). This 12-inch diameter drain crosses private property and eventually connects into the public storm drain system in Shore Road and eventually to Cottage Lane to an outfall at Casino Beach. Although the 12-inch diameter drain system can handle the projected peak flow from the 2-year storm

event, it is not sufficient in size to handle the projected peak flows from the 10- and 25-year storm events without overtopping Deep Brook Road.

Study Point #2, Pre-Development Conditon: Study Point #2 is in the easterly end of the site adjacent to Town Property known as Loveitt Woods. This drainage area includes the westerly portion of the site and off-site areas to the north and south. No current drainage problems are apparent at Study Point #2.

Study Point #3, Pre-Development Condition: Study Point #3 is along the southerly boundary of the site at the outfall of Wetland D. This drainage area includes the central portion of the site and also includes off-site areas to the north and south. No current drainage problems are apparent at Study Point #3. However, runoff from the drainage area eventually drains through Town property and back onto our property at Wetlands A & B. Therefore, Study Point #3 contributes to the runoff at Study Point #1.

Study Point #4, Pre-Development Condition: Study Point #4 is along the northeasterly boundary of the site at Wetland C. This drainage area includes the northeasterly portion of the site and also includes a small off-site area to the north. This area drains to Wetland C before discharging easterly off-site onto abutting property and eventually to the public storm drain system in Shore Road. No current drainage problems are apparent at Study Point #4.

3.2 Post- Development Conditions

Under the post-development conditions, the site area is divided further into multiple sub-catchment areas to allow for the effects of localized storage/treatment to be calculated. The runoff for the individual sub-catchments drain to the same four points of analysis. As such, a direct comparison can be made of the pre-development and post-development runoff values at each Study Point.

Study Point #1, Post-Development Condition: In the post-development condition Study Point #1 is again the discharge point for a majority of the drainage analysis area including the same off-site areas as in the pre-development condition. The proposed system of upstream stormwater detention BMPs are projected to reduce peak discharge rates to below pre-development levels for all 3 storm events. As in the pre-development condition a vast majority of the stormwater runoff from this area drains to Wetlands A & B. The first section of the existing 12-inch storm drain pipe located adjacent to Wetland B will be replaced in-kind, which will again act like an outlet control structure for this wetland detention area (identified as Pond W1). The receiving catch basin, identified as Outlet Control Structure (OCS) #1 will discharge to a series of proposed catch basins and 24-inch diameter storm drains along the west side of Shore Road which are proposed to connect to the same existing public storm drain system in Shore Road. The only portion of this drainage area that will discharge to the existing 12-inch diameter drain across private property will be the outfall from Underdrained Soil Filter (USF) #3. The large reduction in

drainage area and stormwater detention capabilities of USF #3 will substantially reduce the projected peak flows to this existing 12-inch diameter storm drain so that it is able to handle the projected peak flows from the 25-year storm event without flooding. Therefore, by reducing the projected peak flow rates, substantially reducing the drainage area to the existing 12-inch diameter storm drains, and by discharging a majority of the runoff directly to the Shore Road drainage system, the risk of flooding to abutting properties should be extensively minimized as a result of the proposed project.

Study Point #2, Post-Development Conditon: In the post-development condition the drainage area to Study Point #2 will be slightly less that in the pre-development condition. The proposed improvements in this drainage area will drain to Bioretention Filter (BRF) #3 which will eventually discharge to Wetland D. Therefore, the projected peak discharge rates to Study Point #2 are slightly less in the post-development condition as compared to the pre-development condition.

Study Point #3, Post-Development Condition: In the post-development condition, a significant amount of the proposed improvements is located in the drainage area to Wetland D which outlets to Study Point #3 as in the pre-development condition. However, the proposed system of stormwater detention BMPs are projected to reduce the peak flows to Study Point #3 as compared to the pre-development condition for all 3 storm events. Since the drainage area to Study Point #3 discharges off-site and eventually back on site to Wetlands A & B, these upstream stormwater detention BMPs not only prevent adverse impacts to Wetland D and abutting properties, but they also help to reduce projected peak flow rates downstream to Study Point #1.

Study Point #4, Post-Development Condition: As a result of the proposed improvements, the drainage area to Study Point #4 will be reduced from approximately 2.55 acres in the pre-development condition to approximately 0.77 acres in the post-development condition. As a result, the projected peak discharge rates to Study Point #4 are less in the post-development as compared to the pre-development condition. Therefore, adverse impacts to abutting properties and to the public storm drain system are not anticipated.

Table 3.3 below summarizes the peak flows for each study point and compares the pre-development to the post-development stormwater rates. Study points are at locations where stormwater exists the property.

3.3 STORMWATER QUANTITY SUMMARY

Stormwater Runoff Summary Table Pre-Development vs. Post-Development								
Study Point	Watershed Area (Ac)		**Peak Rates of Runoff (cfs)**					
			2-Year		**10-Year**		**25-Year**	
	Pre	**Post**	Pre	Post	Pre	**Post**	**Pre**	**Post**
SP-1	24.31	26.13	3.95	**3.93**	14.62	**14.17**	25.19	**16.63**
SP-2	2.94	2.94	3.01	**3.01**	5.77	**5.76**	8.08	**8.07**
SP-3	9.27	9.06	4.76	**4.66**	9.68	**8.99**	13.90	**13.22**
SP-4	2.55	0.77	0.50	**0.38**	1.67	**0.88**	2.85	**1.34**

Due to the development and the stormwater detention BMPs that are proposed, the overall projected peak flows are the same or less in all storm events for all 4 study points.

4) STORMWATER QUALITY ANALYSIS

Developed area we be required to treat 95% of the non-linear impervious area, 75% of the linear impervious area and 80% of the total developed area.

Quality treatment for the development will be provided by a system of stormwater filter BMPs including 3 underdrained soil filters, 3 bioretention filters, and 9 roof dripline filters. Details of these proposed BMPs can be found in the design plan set. Treatment area calculations are shown on the Development Plan and Treatment Plan included in Appendix C of this report.

The overall treatment on this project will be 95.8% of the non-linear impervious area, 90.9% of the linear impervious area and 80.6% of the total developed area.

5) CONCLUSIONS

The runoff and routing calculations demonstrate that the development will not result in any increase in projected peak flows at all Study Points.

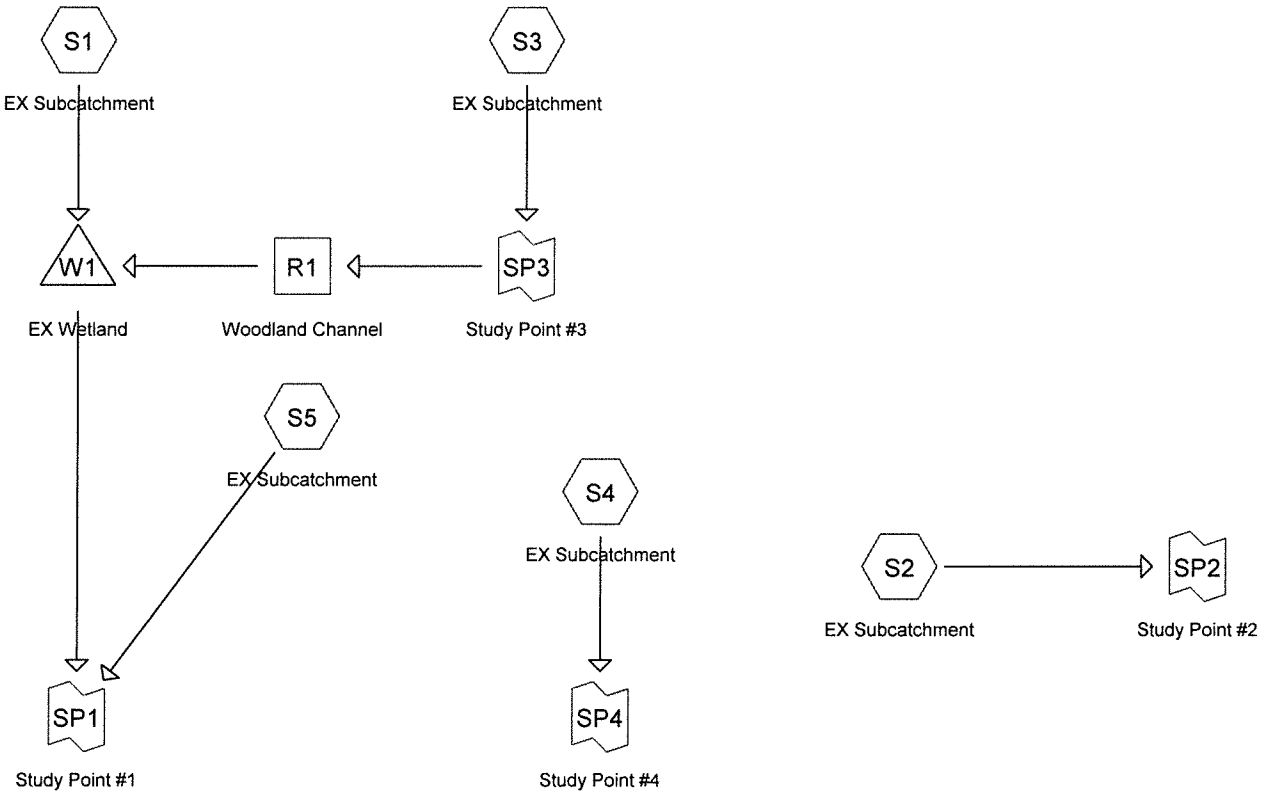
Stormwater runoff from this site has been designed to meet the MDEP Basic and General Standards for stormwater quality treatment.

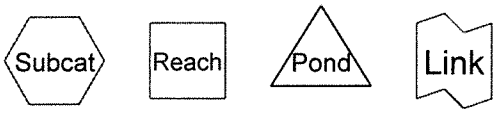
The proposed project is designed to fit into the topography and natural features of the site while avoiding impacts to on-site resources and abutting properties to the maximum extent practicable. Stormwater runoff from the development will be captured, detained and treated utilizing several DEP approved BMPs and discharged to the same locations as under the pre-development conditions.

An Erosion and Sedimentation Control Plan will be implemented to address erosion and sediment control during construction and the post-construction stabilization of the site. These construction requirements have been developed following BMP guidelines and have been placed directly on the design plans for construction reference.

APPENDIX A

PRE-DEVELOPMENT HYDROCAD OUTPUT





Routing Diagram for 41875 PRE_4_021522
Prepared by {enter your company name here}, Printed 3/29/2022
HydroCAD® 10.00-19 s/n 10427 © 2016 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.717	39	>75% Grass cover, Good, HSG A (S1, S4, S5)
0.147	74	>75% Grass cover, Good, HSG C (S3, S4)
5.870	80	>75% Grass cover, Good, HSG D (S1, S2, S3, S4, S5)
0.847	74	>75% Grass cover, Good, Madeland (S1, S2, S3, S4, S5)
0.023	98	Bedrock, HSG C (S1, S3)
1.150	98	Bedrock, HSG D (S1, S2, S3, S4)
0.056	98	Bedrock, Madeland (S1, S3, S4)
0.249	98	Pavement, HSG A (S1)
1.019	98	Pavement, HSG D (S1, S2, S3)
0.264	98	Pavement, Madeland (S1, S4)
0.076	98	Roof, HSG A (S1, S5)
1.085	98	Roof, HSG D (S1, S2, S3, S4, S5)
0.080	98	Roof, Madeland (S1, S3)
3.458	30	Woods, Good, HSG A (S1, S2, S3, S4, S5)
1.583	70	Woods, Good, HSG C (S1, S3)
10.164	77	Woods, Good, HSG D (S1, S2, S3, S4, S5)
1.009	70	Woods, Good, Madeland (S1, S2, S3)
29.798	**71**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
6.501	HSG A	S1, S2, S3, S4, S5
0.000	HSG B	
1.753	HSG C	S1, S3, S4
19.289	HSG D	S1, S2, S3, S4, S5
2.255	Other	S1, S2, S3, S4, S5
29.798		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcat Numbe
2.717	0.000	0.147	5.870	0.000	8.735	>75% Grass cover, Good	
0.000	0.000	0.000	0.000	0.847	0.847	>75% Grass cover, Good, Madeland	
0.000	0.000	0.023	1.150	0.000	1.173	Bedrock	
0.000	0.000	0.000	0.000	0.056	0.056	Bedrock, Madeland	
0.249	0.000	0.000	1.019	0.000	1.269	Pavement	
0.000	0.000	0.000	0.000	0.264	0.264	Pavement, Madeland	
0.076	0.000	0.000	1.085	0.000	1.161	Roof	
0.000	0.000	0.000	0.000	0.080	0.080	Roof, Madeland	
3.458	0.000	1.583	10.164	0.000	15.205	Woods, Good	
0.000	0.000	0.000	0.000	1.009	1.009	Woods, Good, Madeland	
6.501	**0.000**	**1.753**	**19.289**	**2.255**	**29.798**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	W1	21.35	21.38	40.0	-0.0007	0.012	12.0	0.0	0.0
2	W1	23.00	21.42	215.0	0.0073	0.012	12.0	0.0	0.0

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S1: EX Subcatchment Runoff Area=610,040 sf 14.81% Impervious Runoff Depth>0.58"
Flow Length=780' Tc=79.0 min CN=66 Runoff=2.57 cfs 0.672 af

Subcatchment S2: EX Subcatchment Runoff Area=128,052 sf 19.52% Impervious Runoff Depth>1.38"
Flow Length=415' Tc=23.0 min CN=81 Runoff=3.01 cfs 0.339 af

Subcatchment S3: EX Subcatchment Runoff Area=403,741 sf 10.32% Impervious Runoff Depth>1.18"
Flow Length=830' Tc=64.9 min CN=78 Runoff=4.76 cfs 0.911 af

Subcatchment S4: EX Subcatchment Runoff Area=111,115 sf 13.59% Impervious Runoff Depth>0.47"
Flow Length=440' Tc=40.9 min CN=63 Runoff=0.50 cfs 0.099 af

Subcatchment S5: EX Subcatchment Runoff Area=45,040 sf 4.95% Impervious Runoff Depth>0.43"
Flow Length=390' Tc=42.8 min CN=62 Runoff=0.18 cfs 0.037 af

Reach R1: Woodland Channel Avg. Flow Depth=0.48' Max Vel=1.48 fps Inflow=4.76 cfs 0.911 af
n=0.080 L=800.0' S=0.0225 '/' Capacity=170.06 cfs Outflow=4.62 cfs 0.901 af

Pond W1: EX Wetland Peak Elev=24.02' Storage=12,298 cf Inflow=7.17 cfs 1.574 af
Outflow=3.78 cfs 1.537 af

Link SP1: Study Point #1 Inflow=3.95 cfs 1.575 af
Primary=3.95 cfs 1.575 af

Link SP2: Study Point #2 Inflow=3.01 cfs 0.339 af
Primary=3.01 cfs 0.339 af

Link SP3: Study Point #3 Inflow=4.76 cfs 0.911 af
Primary=4.76 cfs 0.911 af

Link SP4: Study Point #4 Inflow=0.50 cfs 0.099 af
Primary=0.50 cfs 0.099 af

Total Runoff Area = 29.798 ac Runoff Volume = 2.059 af Average Runoff Depth = 0.83"
86.57% Pervious = 25.796 ac 13.43% Impervious = 4.002 ac

Summary for Subcatchment S1: EX Subcatchment

Runoff = 2.57 cfs @ 13.25 hrs, Volume= 0.672 af, Depth> 0.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
	93,898	39	>75% Grass cover, Good, HSG A
	108,213	30	Woods, Good, HSG A
*	1,186	98	Roof, HSG A
*	10,862	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	13,586	74	>75% Grass cover, Good, Madeland
*	42,960	70	Woods, Good, Madeland
*	1,993	98	Roof, Madeland
*	7,890	98	Pavement, Madeland
*	650	98	Bedrock, Madeland
	0	74	>75% Grass cover, Good, HSG C
	14,295	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	499	98	Bedrock, HSG C
	114,479	80	>75% Grass cover, Good, HSG D
	132,291	77	Woods, Good, HSG D
*	27,057	98	Roof, HSG D
*	31,549	98	Pavement, HSG D
*	8,632	98	Bedrock, HSG D
	610,040	66	Weighted Average
	519,722		85.19% Pervious Area
	90,318		14.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
71.5	300	0.0370	0.07		**Sheet Flow, A-B Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.10"
6.4	250	0.0170	0.65		**Shallow Concentrated Flow, B-C Shallow** Woodland Kv= 5.0 fps
1.1	230	0.0170	3.62	151.97	**Channel Flow, C-D Wetland Channel** Area= 42.0 sf Perim= 23.0' r= 1.83' n= 0.080
79.0	780	Total			

Summary for Subcatchment S2: EX Subcatchment

Runoff = 3.01 cfs @ 12.34 hrs, Volume= 0.339 af, Depth> 1.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
	0	39	>75% Grass cover, Good, HSG A
	2,327	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	4,096	74	>75% Grass cover, Good, Madeland
*	281	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	0	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	0	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	38,383	80	>75% Grass cover, Good, HSG D
	57,967	77	Woods, Good, HSG D
*	6,914	98	Roof, HSG D
*	8,323	98	Pavement, HSG D
*	9,761	98	Bedrock, HSG D
	128,052	81	Weighted Average
	103,054		80.48% Pervious Area
	24,998		19.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	100	0.0900	0.21		**Sheet Flow, A-B Sheet Flow** Grass: Dense n= 0.240 P2= 3.10"
10.0	50	0.1400	0.08		**Sheet Flow, B-C Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.10"
0.7	75	0.1200	1.73		**Shallow Concentrated Flow, C-D Shallow Concentrated Flow** Woodland Kv= 5.0 fps
4.4	190	0.0210	0.72		**Shallow Concentrated Flow, D-E Shallow Concentrated Flow** Woodland Kv= 5.0 fps
23.0	415	Total			

Summary for Subcatchment S3: EX Subcatchment

Runoff = 4.76 cfs @ 12.91 hrs, Volume= 0.911 af, Depth> 1.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
	0	39	>75% Grass cover, Good, HSG A
	2,931	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	6,234	74	>75% Grass cover, Good, Madeland
*	731	70	Woods, Good, Madeland
*	1,473	98	Roof, Madeland
*	0	98	Pavement, Madeland
*	911	98	Bedrock, Madeland
	2,070	74	>75% Grass cover, Good, HSG C
	54,652	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	499	98	Bedrock, HSG C
	72,866	80	>75% Grass cover, Good, HSG D
	222,587	77	Woods, Good, HSG D
*	11,200	98	Roof, HSG D
*	4,536	98	Pavement, HSG D
*	23,051	98	Bedrock, HSG D
	403,741	78	Weighted Average
	362,071		89.68% Pervious Area
	41,670		10.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.5	150	0.0200	0.05		**Sheet Flow, A-B Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.10"
11.5	600	0.0300	0.87		**Shallow Concentrated Flow, B-C Shallow Concentrated Flow** Woodland Kv= 5.0 fps
0.9	80	0.0125	1.56	10.39	**Parabolic Channel, Wetland Channel** W=10.00' D=1.00' Area=6.7 sf Perim=10.3' n= 0.080 Earth, long dense weeds
64.9	830	Total			

Summary for Subcatchment S4: EX Subcatchment

Runoff = 0.50 cfs @ 12.72 hrs, Volume= 0.099 af, Depth> 0.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
	7,614	39	>75% Grass cover, Good, HSG A
	34,921	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	10,459	74	>75% Grass cover, Good, Madeland
*	0	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	3,590	98	Pavement, Madeland
*	872	98	Bedrock, Madeland
	4,349	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	17,716	80	>75% Grass cover, Good, HSG D
	20,951	77	Woods, Good, HSG D
*	2,002	98	Roof, HSG D
*	0	98	Pavement, HSG D
*	8,641	98	Bedrock, HSG D
	111,115	63	Weighted Average
	96,010		86.41% Pervious Area
	15,105		13.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.6	150	0.0530	0.07		**Sheet Flow, A-B Sjeet** Woods: Dense underbrush n= 0.800 P2= 3.10"
5.3	290	0.0330	0.91		**Shallow Concentrated Flow, B-C Shallow Concentrated Flow** Woodland Kv= 5.0 fps
40.9	440	Total			

Summary for Subcatchment S5: EX Subcatchment

Runoff = 0.18 cfs @ 12.75 hrs, Volume= 0.037 af, Depth> 0.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
	16,843	39	>75% Grass cover, Good, HSG A
	2,229	30	Woods, Good, HSG A
*	2,144	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	2,521	74	>75% Grass cover, Good, Madeland
*	0	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	0	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	0	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	12,257	80	>75% Grass cover, Good, HSG D
	8,962	77	Woods, Good, HSG D
*	84	98	Roof, HSG D
*	0	98	Pavement, HSG D
*	0	98	Bedrock, HSG D
	45,040	62	Weighted Average
	42,812		95.05% Pervious Area
	2,228		4.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.1	80	0.0250	0.05		**Sheet Flow, A-B Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.10"
9.4	70	0.0290	0.12		**Sheet Flow, B-C Sheet Flow** Grass: Dense n= 0.240 P2= 3.10"
4.3	240	0.0180	0.94		**Shallow Concentrated Flow, B-C Shallow Concentrated Flow** Short Grass Pasture Kv= 7.0 fps
42.8	390	Total			

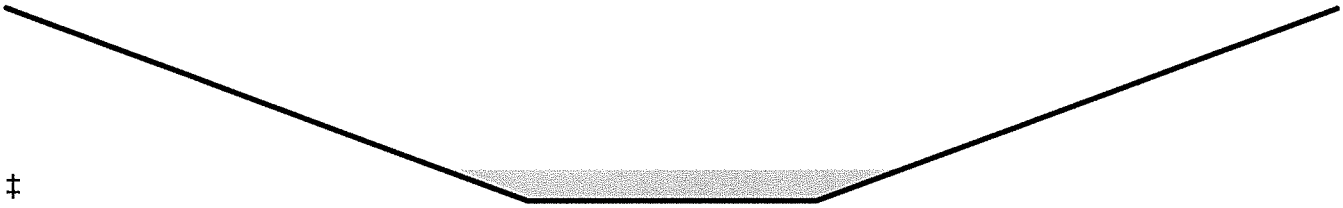
Summary for Reach R1: Woodland Channel

Inflow Area = 9.269 ac, 10.32% Impervious, Inflow Depth > 1.18" for 2-Year event
Inflow = 4.76 cfs @ 12.91 hrs, Volume= 0.911 af
Outflow = 4.62 cfs @ 13.18 hrs, Volume= 0.901 af, Atten= 3%, Lag= 16.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.48 fps, Min. Travel Time= 9.0 min
Avg. Velocity = 0.70 fps, Avg. Travel Time= 19.0 min

Peak Storage= 2,496 cf @ 13.03 hrs
Average Depth at Peak Storage= 0.48'
Bank-Full Depth= 3.00' Flow Area= 42.0 sf, Capacity= 170.06 cfs

5.00' x 3.00' deep channel, n= 0.080 Earth, long dense weeds
Side Slope Z-value= 3.0 '/' Top Width= 23.00'
Length= 800.0' Slope= 0.0225 '/'
Inlet Invert= 44.00', Outlet Invert= 26.00'



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Summary for Pond W1: EX Wetland

Inflow Area = 23.273 ac, 13.02% Impervious, Inflow Depth > 0.81" for 2-Year event
Inflow = 7.17 cfs @ 13.20 hrs, Volume= 1.574 af
Outflow = 3.78 cfs @ 12.84 hrs, Volume= 1.537 af, Atten= 47%, Lag= 0.0 min
Primary = 3.78 cfs @ 12.84 hrs, Volume= 1.537 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 24.02' @ 14.06 hrs Surf.Area= 19,792 sf Storage= 12,298 cf

Plug-Flow detention time= 37.0 min calculated for 1.537 af (98% of inflow)
Center-of-Mass det. time= 25.6 min (952.7 - 927.1)

Volume	Invert	Avail.Storage	Storage Description
#1	22.00'	38,586 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
22.00	0	0	0
23.00	2,145	1,073	1,073
24.00	19,494	10,820	11,892
25.00	33,894	26,694	38,586

Device	Routing	Invert	Outlet Devices
#1	Primary	21.38'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 21.35' / 21.38' S= -0.0007 '/' Cc= 0.900 n= 0.012 Steel, smooth, Flow Area= 0.79 sf
#2	Device 1	23.00'	**12.0" Round Culvert** L= 215.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 23.00' / 21.42' S= 0.0073 '/' Cc= 0.900 n= 0.012 Steel, smooth, Flow Area= 0.79 sf
#3	Device 1	23.08'	**24.0" Horiz. Orifice/Grate** C= 1.000 Limited to weir flow at low heads
#4	Primary	24.50'	**40.0' long x 15.0' 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) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=3.78 cfs @ 12.84 hrs HW=23.38' TW=22.38' (TW follows 1.00' below HW)
- **1=Culvert** (Inlet Controls 3.78 cfs @ 4.81 fps)
  - **2=Culvert** (Passes < 0.44 cfs potential flow)
  - **3=Orifice/Grate** (Passes < 3.45 cfs potential flow)
- **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Link SP1: Study Point #1

Inflow Area = 24.307 ac, 12.68% Impervious, Inflow Depth > 0.78" for 2-Year event
Inflow = 3.95 cfs @ 12.84 hrs, Volume= 1.575 af
Primary = 3.95 cfs @ 12.84 hrs, Volume= 1.575 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Link SP2: Study Point #2

Inflow Area = 2.940 ac, 19.52% Impervious, Inflow Depth > 1.38" for 2-Year event
Inflow = 3.01 cfs @ 12.34 hrs, Volume= 0.339 af
Primary = 3.01 cfs @ 12.34 hrs, Volume= 0.339 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Link SP3: Study Point #3

Inflow Area = 9.269 ac, 10.32% Impervious, Inflow Depth > 1.18" for 2-Year event
Inflow = 4.76 cfs @ 12.91 hrs, Volume= 0.911 af
Primary = 4.76 cfs @ 12.91 hrs, Volume= 0.911 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Link SP4: Study Point #4

Inflow Area = 2.551 ac, 13.59% Impervious, Inflow Depth > 0.47" for 2-Year event
Inflow = 0.50 cfs @ 12.72 hrs, Volume= 0.099 af
Primary = 0.50 cfs @ 12.72 hrs, Volume= 0.099 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S1: EX Subcatchment Runoff Area=610,040 sf 14.81% Impervious Runoff Depth>1.43"
Flow Length=780' Tc=79.0 min CN=66 Runoff=7.40 cfs 1.666 af

Subcatchment S2: EX Subcatchment Runoff Area=128,052 sf 19.52% Impervious Runoff Depth>2.62"
Flow Length=415' Tc=23.0 min CN=81 Runoff=5.77 cfs 0.642 af

Subcatchment S3: EX Subcatchment Runoff Area=403,741 sf 10.32% Impervious Runoff Depth>2.34"
Flow Length=830' Tc=64.9 min CN=78 Runoff=9.68 cfs 1.808 af

Subcatchment S4: EX Subcatchment Runoff Area=111,115 sf 13.59% Impervious Runoff Depth>1.25"
Flow Length=440' Tc=40.9 min CN=63 Runoff=1.67 cfs 0.265 af

Subcatchment S5: EX Subcatchment Runoff Area=45,040 sf 4.95% Impervious Runoff Depth>1.18"
Flow Length=390' Tc=42.8 min CN=62 Runoff=0.62 cfs 0.102 af

Reach R1: Woodland Channel Avg. Flow Depth=0.72' Max Vel=1.85 fps Inflow=9.68 cfs 1.808 af
n=0.080 L=800.0' S=0.0225 '/' Capacity=170.06 cfs Outflow=9.49 cfs 1.794 af

Pond W1: EX Wetland Peak Elev=24.71' Storage=29,463 cf Inflow=16.89 cfs 3.459 af
Outflow=14.37 cfs 3.419 af

Link SP1: Study Point #1 Inflow=14.62 cfs 3.521 af
Primary=14.62 cfs 3.521 af

Link SP2: Study Point #2 Inflow=5.77 cfs 0.642 af
Primary=5.77 cfs 0.642 af

Link SP3: Study Point #3 Inflow=9.68 cfs 1.808 af
Primary=9.68 cfs 1.808 af

Link SP4: Study Point #4 Inflow=1.67 cfs 0.265 af
Primary=1.67 cfs 0.265 af

Total Runoff Area = 29.798 ac Runoff Volume = 4.483 af Average Runoff Depth = 1.81"
86.57% Pervious = 25.796 ac 13.43% Impervious = 4.002 ac

Summary for Subcatchment S1: EX Subcatchment

Runoff = 7.40 cfs @ 13.09 hrs, Volume= 1.666 af, Depth> 1.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
	93,898	39	>75% Grass cover, Good, HSG A
	108,213	30	Woods, Good, HSG A
*	1,186	98	Roof, HSG A
*	10,862	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	13,586	74	>75% Grass cover, Good, Madeland
*	42,960	70	Woods, Good, Madeland
*	1,993	98	Roof, Madeland
*	7,890	98	Pavement, Madeland
*	650	98	Bedrock, Madeland
	0	74	>75% Grass cover, Good, HSG C
	14,295	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	499	98	Bedrock, HSG C
	114,479	80	>75% Grass cover, Good, HSG D
	132,291	77	Woods, Good, HSG D
*	27,057	98	Roof, HSG D
*	31,549	98	Pavement, HSG D
*	8,632	98	Bedrock, HSG D
	610,040	66	Weighted Average
	519,722		85.19% Pervious Area
	90,318		14.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
71.5	300	0.0370	0.07		**Sheet Flow, A-B Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.10"
6.4	250	0.0170	0.65		**Shallow Concentrated Flow, B-C Shallow** Woodland Kv= 5.0 fps
1.1	230	0.0170	3.62	151.97	**Channel Flow, C-D Wetland Channel** Area= 42.0 sf Perim= 23.0' r= 1.83' n= 0.080
79.0	780	Total			

Summary for Subcatchment S2: EX Subcatchment

Runoff = 5.77 cfs @ 12.32 hrs, Volume= 0.642 af, Depth> 2.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
	0	39	>75% Grass cover, Good, HSG A
	2,327	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	4,096	74	>75% Grass cover, Good, Madeland
*	281	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	0	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	0	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	38,383	80	>75% Grass cover, Good, HSG D
	57,967	77	Woods, Good, HSG D
*	6,914	98	Roof, HSG D
*	8,323	98	Pavement, HSG D
*	9,761	98	Bedrock, HSG D
	128,052	81	Weighted Average
	103,054		80.48% Pervious Area
	24,998		19.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	100	0.0900	0.21		**Sheet Flow, A-B Sheet Flow** Grass: Dense n= 0.240 P2= 3.10"
10.0	50	0.1400	0.08		**Sheet Flow, B-C Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.10"
0.7	75	0.1200	1.73		**Shallow Concentrated Flow, C-D Shallow Concentrated Flow** Woodland Kv= 5.0 fps
4.4	190	0.0210	0.72		**Shallow Concentrated Flow, D-E Shallow Concentrated Flow** Woodland Kv= 5.0 fps
23.0	415	Total			

Summary for Subcatchment S3: EX Subcatchment

Runoff = 9.68 cfs @ 12.91 hrs, Volume= 1.808 af, Depth> 2.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
	0	39	>75% Grass cover, Good, HSG A
	2,931	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	6,234	74	>75% Grass cover, Good, Madeland
*	731	70	Woods, Good, Madeland
*	1,473	98	Roof, Madeland
*	0	98	Pavement, Madeland
*	911	98	Bedrock, Madeland
	2,070	74	>75% Grass cover, Good, HSG C
	54,652	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	499	98	Bedrock, HSG C
	72,866	80	>75% Grass cover, Good, HSG D
	222,587	77	Woods, Good, HSG D
*	11,200	98	Roof, HSG D
*	4,536	98	Pavement, HSG D
*	23,051	98	Bedrock, HSG D
	403,741	78	Weighted Average
	362,071		89.68% Pervious Area
	41,670		10.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.5	150	0.0200	0.05		**Sheet Flow, A-B Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.10"
11.5	600	0.0300	0.87		**Shallow Concentrated Flow, B-C Shallow Concentrated Flow** Woodland Kv= 5.0 fps
0.9	80	0.0125	1.56	10.39	**Parabolic Channel, Wetland Channel** W=10.00' D=1.00' Area=6.7 sf Perim=10.3' n= 0.080 Earth, long dense weeds
64.9	830	Total			

Summary for Subcatchment S4: EX Subcatchment

Runoff = 1.67 cfs @ 12.63 hrs, Volume= 0.265 af, Depth> 1.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
	7,614	39	>75% Grass cover, Good, HSG A
	34,921	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	10,459	74	>75% Grass cover, Good, Madeland
*	0	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	3,590	98	Pavement, Madeland
*	872	98	Bedrock, Madeland
	4,349	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	17,716	80	>75% Grass cover, Good, HSG D
	20,951	77	Woods, Good, HSG D
*	2,002	98	Roof, HSG D
*	0	98	Pavement, HSG D
*	8,641	98	Bedrock, HSG D
	111,115	63	Weighted Average
	96,010		86.41% Pervious Area
	15,105		13.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.6	150	0.0530	0.07		**Sheet Flow, A-B Sjeet** Woods: Dense underbrush n= 0.800 P2= 3.10"
5.3	290	0.0330	0.91		**Shallow Concentrated Flow, B-C Shallow Concentrated Flow** Woodland Kv= 5.0 fps
40.9	440	Total			

Summary for Subcatchment S5: EX Subcatchment

Runoff = 0.62 cfs @ 12.65 hrs, Volume= 0.102 af, Depth> 1.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
	16,843	39	>75% Grass cover, Good, HSG A
	2,229	30	Woods, Good, HSG A
*	2,144	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	2,521	74	>75% Grass cover, Good, Madeland
*	0	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	0	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	0	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	12,257	80	>75% Grass cover, Good, HSG D
	8,962	77	Woods, Good, HSG D
*	84	98	Roof, HSG D
*	0	98	Pavement, HSG D
*	0	98	Bedrock, HSG D
	45,040	62	Weighted Average
	42,812		95.05% Pervious Area
	2,228		4.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.1	80	0.0250	0.05		**Sheet Flow, A-B Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.10"
9.4	70	0.0290	0.12		**Sheet Flow, B-C Sheet Flow** Grass: Dense n= 0.240 P2= 3.10"
4.3	240	0.0180	0.94		**Shallow Concentrated Flow, B-C Shallow Concentrated Flow** Short Grass Pasture Kv= 7.0 fps
42.8	390	Total			

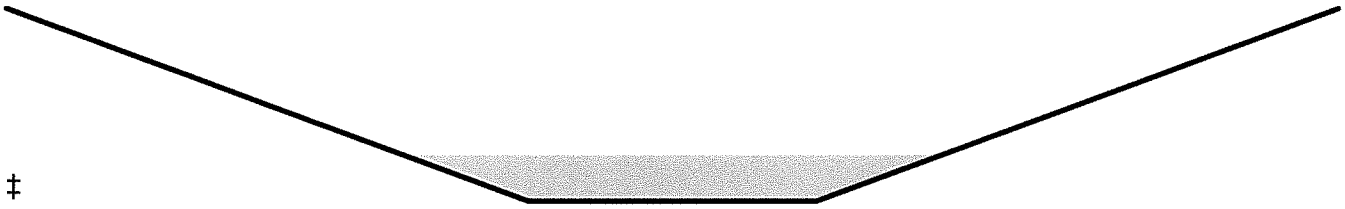
Summary for Reach R1: Woodland Channel

Inflow Area = 9.269 ac, 10.32% Impervious, Inflow Depth > 2.34" for 10-Year event
Inflow = 9.68 cfs @ 12.91 hrs, Volume= 1.808 af
Outflow = 9.49 cfs @ 13.10 hrs, Volume= 1.794 af, Atten= 2%, Lag= 11.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.85 fps, Min. Travel Time= 7.2 min
Avg. Velocity = 0.84 fps, Avg. Travel Time= 15.9 min

Peak Storage= 4,116 cf @ 12.98 hrs
Average Depth at Peak Storage= 0.72'
Bank-Full Depth= 3.00' Flow Area= 42.0 sf, Capacity= 170.06 cfs

5.00' x 3.00' deep channel, n= 0.080 Earth, long dense weeds
Side Slope Z-value= 3.0 '/' Top Width= 23.00'
Length= 800.0' Slope= 0.0225 '/'
Inlet Invert= 44.00', Outlet Invert= 26.00'



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Summary for Pond W1: EX Wetland

Inflow Area = 23.273 ac, 13.02% Impervious, Inflow Depth > 1.78" for 10-Year event
Inflow = 16.89 cfs @ 13.09 hrs, Volume= 3.459 af
Outflow = 14.37 cfs @ 13.44 hrs, Volume= 3.419 af, Atten= 15%, Lag= 20.5 min
Primary = 14.37 cfs @ 13.44 hrs, Volume= 3.419 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 24.71' @ 13.44 hrs Surf.Area= 29,767 sf Storage= 29,463 cf

Plug-Flow detention time= 54.9 min calculated for 3.418 af (99% of inflow)
Center-of-Mass det. time= 48.9 min (952.8 - 904.0)

Volume	Invert	Avail.Storage	Storage Description
#1	22.00'	38,586 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
22.00	0	0	0
23.00	2,145	1,073	1,073
24.00	19,494	10,820	11,892
25.00	33,894	26,694	38,586

Device	Routing	Invert	Outlet Devices
#1	Primary	21.38'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 21.35' / 21.38' S= -0.0007 '/' Cc= 0.900 n= 0.012 Steel, smooth, Flow Area= 0.79 sf
#2	Device 1	23.00'	**12.0" Round Culvert** L= 215.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 23.00' / 21.42' S= 0.0073 '/' Cc= 0.900 n= 0.012 Steel, smooth, Flow Area= 0.79 sf
#3	Device 1	23.08'	**24.0" Horiz. Orifice/Grate** C= 1.000 Limited to weir flow at low heads
#4	Primary	24.50'	**40.0' long x 15.0' 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) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=14.35 cfs @ 13.44 hrs HW=24.71' TW=23.71' (TW follows 1.00' below HW)
- **1=Culvert** (Inlet Controls 3.78 cfs @ 4.81 fps)
  - **2=Culvert** (Passes < 2.28 cfs potential flow)
  - **3=Orifice/Grate** (Passes < 25.21 cfs potential flow)
- **4=Broad-Crested Rectangular Weir** (Weir Controls 10.57 cfs @ 1.24 fps)

Summary for Link SP1: Study Point #1

Inflow Area = 24.307 ac, 12.68% Impervious, Inflow Depth > 1.74" for 10-Year event
Inflow = 14.62 cfs @ 13.43 hrs, Volume= 3.521 af
Primary = 14.62 cfs @ 13.43 hrs, Volume= 3.521 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Link SP2: Study Point #2

Inflow Area = 2.940 ac, 19.52% Impervious, Inflow Depth > 2.62" for 10-Year event
Inflow = 5.77 cfs @ 12.32 hrs, Volume= 0.642 af
Primary = 5.77 cfs @ 12.32 hrs, Volume= 0.642 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Link SP3: Study Point #3

Inflow Area = 9.269 ac, 10.32% Impervious, Inflow Depth > 2.34" for 10-Year event
Inflow = 9.68 cfs @ 12.91 hrs, Volume= 1.808 af
Primary = 9.68 cfs @ 12.91 hrs, Volume= 1.808 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Link SP4: Study Point #4

Inflow Area = 2.551 ac, 13.59% Impervious, Inflow Depth > 1.25" for 10-Year event
Inflow = 1.67 cfs @ 12.63 hrs, Volume= 0.265 af
Primary = 1.67 cfs @ 12.63 hrs, Volume= 0.265 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S1: EX Subcatchment Runoff Area=610,040 sf 14.81% Impervious Runoff Depth>2.25"
Flow Length=780' Tc=79.0 min CN=66 Runoff=12.14 cfs 2.620 af

Subcatchment S2: EX Subcatchment Runoff Area=128,052 sf 19.52% Impervious Runoff Depth>3.69"
Flow Length=415' Tc=23.0 min CN=81 Runoff=8.08 cfs 0.903 af

Subcatchment S3: EX Subcatchment Runoff Area=403,741 sf 10.32% Impervious Runoff Depth>3.36"
Flow Length=830' Tc=64.9 min CN=78 Runoff=13.90 cfs 2.592 af

Subcatchment S4: EX Subcatchment Runoff Area=111,115 sf 13.59% Impervious Runoff Depth>2.02"
Flow Length=440' Tc=40.9 min CN=63 Runoff=2.85 cfs 0.428 af

Subcatchment S5: EX Subcatchment Runoff Area=45,040 sf 4.95% Impervious Runoff Depth>1.93"
Flow Length=390' Tc=42.8 min CN=62 Runoff=1.07 cfs 0.166 af

Reach R1: Woodland Channel Avg. Flow Depth=0.87' Max Vel=2.05 fps Inflow=13.90 cfs 2.592 af
n=0.080 L=800.0' S=0.0225 '/' Capacity=170.06 cfs Outflow=13.70 cfs 2.575 af

Pond W1: EX Wetland Peak Elev=24.83' Storage=33,189 cf Inflow=25.82 cfs 5.196 af
Outflow=24.69 cfs 5.152 af

Link SP1: Study Point #1 Inflow=25.19 cfs 5.319 af
Primary=25.19 cfs 5.319 af

Link SP2: Study Point #2 Inflow=8.08 cfs 0.903 af
Primary=8.08 cfs 0.903 af

Link SP3: Study Point #3 Inflow=13.90 cfs 2.592 af
Primary=13.90 cfs 2.592 af

Link SP4: Study Point #4 Inflow=2.85 cfs 0.428 af
Primary=2.85 cfs 0.428 af

Total Runoff Area = 29.798 ac Runoff Volume = 6.710 af Average Runoff Depth = 2.70"
86.57% Pervious = 25.796 ac 13.43% Impervious = 4.002 ac

Summary for Subcatchment S1: EX Subcatchment

Runoff = 12.14 cfs @ 13.08 hrs, Volume= 2.620 af, Depth> 2.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
	93,898	39	>75% Grass cover, Good, HSG A
	108,213	30	Woods, Good, HSG A
*	1,186	98	Roof, HSG A
*	10,862	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	13,586	74	>75% Grass cover, Good, Madeland
*	42,960	70	Woods, Good, Madeland
*	1,993	98	Roof, Madeland
*	7,890	98	Pavement, Madeland
*	650	98	Bedrock, Madeland
	0	74	>75% Grass cover, Good, HSG C
	14,295	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	499	98	Bedrock, HSG C
	114,479	80	>75% Grass cover, Good, HSG D
	132,291	77	Woods, Good, HSG D
*	27,057	98	Roof, HSG D
*	31,549	98	Pavement, HSG D
*	8,632	98	Bedrock, HSG D
	610,040	66	Weighted Average
	519,722		85.19% Pervious Area
	90,318		14.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
71.5	300	0.0370	0.07		**Sheet Flow, A-B Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.10"
6.4	250	0.0170	0.65		**Shallow Concentrated Flow, B-C Shallow** Woodland Kv= 5.0 fps
1.1	230	0.0170	3.62	151.97	**Channel Flow, C-D Wetland Channel** Area= 42.0 sf Perim= 23.0' r= 1.83' n= 0.080
79.0	780	Total			

Summary for Subcatchment S2: EX Subcatchment

Runoff = 8.08 cfs @ 12.31 hrs, Volume= 0.903 af, Depth> 3.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
	0	39	>75% Grass cover, Good, HSG A
	2,327	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	4,096	74	>75% Grass cover, Good, Madeland
*	281	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	0	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	0	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	38,383	80	>75% Grass cover, Good, HSG D
	57,967	77	Woods, Good, HSG D
*	6,914	98	Roof, HSG D
*	8,323	98	Pavement, HSG D
*	9,761	98	Bedrock, HSG D
	128,052	81	Weighted Average
	103,054		80.48% Pervious Area
	24,998		19.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	100	0.0900	0.21		**Sheet Flow, A-B Sheet Flow** Grass: Dense n= 0.240 P2= 3.10"
10.0	50	0.1400	0.08		**Sheet Flow, B-C Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.10"
0.7	75	0.1200	1.73		**Shallow Concentrated Flow, C-D Shallow Concentrated Flow** Woodland Kv= 5.0 fps
4.4	190	0.0210	0.72		**Shallow Concentrated Flow, D-E Shallow Concentrated Flow** Woodland Kv= 5.0 fps
23.0	415	Total			

Summary for Subcatchment S3: EX Subcatchment

Runoff = 13.90 cfs @ 12.90 hrs, Volume= 2.592 af, Depth> 3.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
	0	39	>75% Grass cover, Good, HSG A
	2,931	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	6,234	74	>75% Grass cover, Good, Madeland
*	731	70	Woods, Good, Madeland
*	1,473	98	Roof, Madeland
*	0	98	Pavement, Madeland
*	911	98	Bedrock, Madeland
	2,070	74	>75% Grass cover, Good, HSG C
	54,652	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	499	98	Bedrock, HSG C
	72,866	80	>75% Grass cover, Good, HSG D
	222,587	77	Woods, Good, HSG D
*	11,200	98	Roof, HSG D
*	4,536	98	Pavement, HSG D
*	23,051	98	Bedrock, HSG D
	403,741	78	Weighted Average
	362,071		89.68% Pervious Area
	41,670		10.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.5	150	0.0200	0.05		**Sheet Flow, A-B Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.10"
11.5	600	0.0300	0.87		**Shallow Concentrated Flow, B-C Shallow Concentrated Flow** Woodland Kv= 5.0 fps
0.9	80	0.0125	1.56	10.39	**Parabolic Channel, Wetland Channel** W=10.00' D=1.00' Area=6.7 sf Perim=10.3' n= 0.080 Earth, long dense weeds
64.9	830	Total			

Summary for Subcatchment S4: EX Subcatchment

Runoff = 2.85 cfs @ 12.59 hrs, Volume= 0.428 af, Depth> 2.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
	7,614	39	>75% Grass cover, Good, HSG A
	34,921	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	10,459	74	>75% Grass cover, Good, Madeland
*	0	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	3,590	98	Pavement, Madeland
*	872	98	Bedrock, Madeland
	4,349	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	17,716	80	>75% Grass cover, Good, HSG D
	20,951	77	Woods, Good, HSG D
*	2,002	98	Roof, HSG D
*	0	98	Pavement, HSG D
*	8,641	98	Bedrock, HSG D
	111,115	63	Weighted Average
	96,010		86.41% Pervious Area
	15,105		13.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.6	150	0.0530	0.07		**Sheet Flow, A-B Sjeet** Woods: Dense underbrush n= 0.800 P2= 3.10"
5.3	290	0.0330	0.91		**Shallow Concentrated Flow, B-C Shallow Concentrated Flow** Woodland Kv= 5.0 fps
40.9	440	Total			

Summary for Subcatchment S5: EX Subcatchment

Runoff = 1.07 cfs @ 12.61 hrs, Volume= 0.166 af, Depth> 1.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
	16,843	39	>75% Grass cover, Good, HSG A
	2,229	30	Woods, Good, HSG A
*	2,144	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	2,521	74	>75% Grass cover, Good, Madeland
*	0	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	0	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	0	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	12,257	80	>75% Grass cover, Good, HSG D
	8,962	77	Woods, Good, HSG D
*	84	98	Roof, HSG D
*	0	98	Pavement, HSG D
*	0	98	Bedrock, HSG D
	45,040	62	Weighted Average
	42,812		95.05% Pervious Area
	2,228		4.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.1	80	0.0250	0.05		**Sheet Flow, A-B Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.10"
9.4	70	0.0290	0.12		**Sheet Flow, B-C Sheet Flow** Grass: Dense n= 0.240 P2= 3.10"
4.3	240	0.0180	0.94		**Shallow Concentrated Flow, B-C Shallow Concentrated Flow** Short Grass Pasture Kv= 7.0 fps
42.8	390	Total			

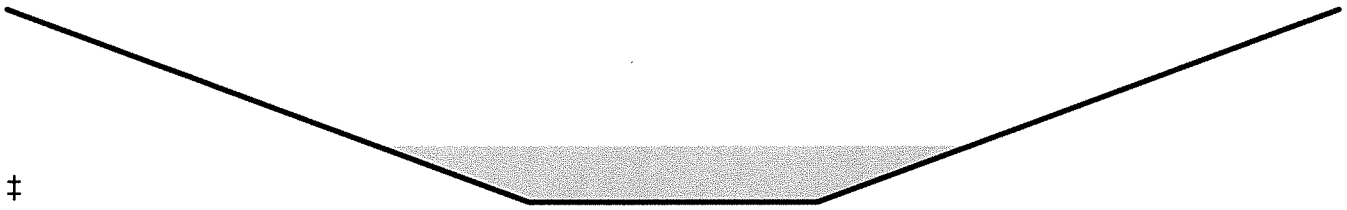
Summary for Reach R1: Woodland Channel

Inflow Area = 9.269 ac, 10.32% Impervious, Inflow Depth > 3.36" for 25-Year event
Inflow = 13.90 cfs @ 12.90 hrs, Volume= 2.592 af
Outflow = 13.70 cfs @ 13.06 hrs, Volume= 2.575 af, Atten= 1%, Lag= 9.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.05 fps, Min. Travel Time= 6.5 min
Avg. Velocity = 0.91 fps, Avg. Travel Time= 14.6 min

Peak Storage= 5,333 cf @ 12.95 hrs
Average Depth at Peak Storage= 0.87'
Bank-Full Depth= 3.00' Flow Area= 42.0 sf, Capacity= 170.06 cfs

5.00' x 3.00' deep channel, n= 0.080 Earth, long dense weeds
Side Slope Z-value= 3.0 '/' Top Width= 23.00'
Length= 800.0' Slope= 0.0225 '/'
Inlet Invert= 44.00', Outlet Invert= 26.00'



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Summary for Pond W1: EX Wetland

Inflow Area = 23.273 ac, 13.02% Impervious, Inflow Depth > 2.68" for 25-Year event
Inflow = 25.82 cfs @ 13.08 hrs, Volume= 5.196 af
Outflow = 24.69 cfs @ 13.24 hrs, Volume= 5.152 af, Atten= 4%, Lag= 9.6 min
Primary = 24.69 cfs @ 13.24 hrs, Volume= 5.152 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 24.83' @ 13.24 hrs Surf.Area= 31,518 sf Storage= 33,189 cf

Plug-Flow detention time= 46.8 min calculated for 5.150 af (99% of inflow)
Center-of-Mass det. time= 42.3 min (935.0 - 892.7)

Volume	Invert	Avail.Storage	Storage Description
#1	22.00'	38,586 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
22.00	0	0	0
23.00	2,145	1,073	1,073
24.00	19,494	10,820	11,892
25.00	33,894	26,694	38,586

Device	Routing	Invert	Outlet Devices
#1	Primary	21.38'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 21.35' / 21.38' S= -0.0007 '/' Cc= 0.900 n= 0.012 Steel, smooth, Flow Area= 0.79 sf
#2	Device 1	23.00'	**12.0" Round Culvert** L= 215.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 23.00' / 21.42' S= 0.0073 '/' Cc= 0.900 n= 0.012 Steel, smooth, Flow Area= 0.79 sf
#3	Device 1	23.08'	**24.0" Horiz. Orifice/Grate** C= 1.000 Limited to weir flow at low heads
#4	Primary	24.50'	**40.0' long x 15.0' 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) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=24.67 cfs @ 13.24 hrs HW=24.83' TW=23.83' (TW follows 1.00' below HW)
- **1=Culvert** (Inlet Controls 3.78 cfs @ 4.81 fps)
  - **2=Culvert** (Passes < 2.28 cfs potential flow)
  - **3=Orifice/Grate** (Passes < 25.21 cfs potential flow)
- **4=Broad-Crested Rectangular Weir** (Weir Controls 20.89 cfs @ 1.56 fps)

Summary for Link SP1: Study Point #1

Inflow Area = 24.307 ac, 12.68% Impervious, Inflow Depth > 2.63" for 25-Year event
Inflow = 25.19 cfs @ 13.23 hrs, Volume= 5.319 af
Primary = 25.19 cfs @ 13.23 hrs, Volume= 5.319 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Link SP2: Study Point #2

Inflow Area = 2.940 ac, 19.52% Impervious, Inflow Depth > 3.69" for 25-Year event
Inflow = 8.08 cfs @ 12.31 hrs, Volume= 0.903 af
Primary = 8.08 cfs @ 12.31 hrs, Volume= 0.903 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Link SP3: Study Point #3

Inflow Area = 9.269 ac, 10.32% Impervious, Inflow Depth > 3.36" for 25-Year event
Inflow = 13.90 cfs @ 12.90 hrs, Volume= 2.592 af
Primary = 13.90 cfs @ 12.90 hrs, Volume= 2.592 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

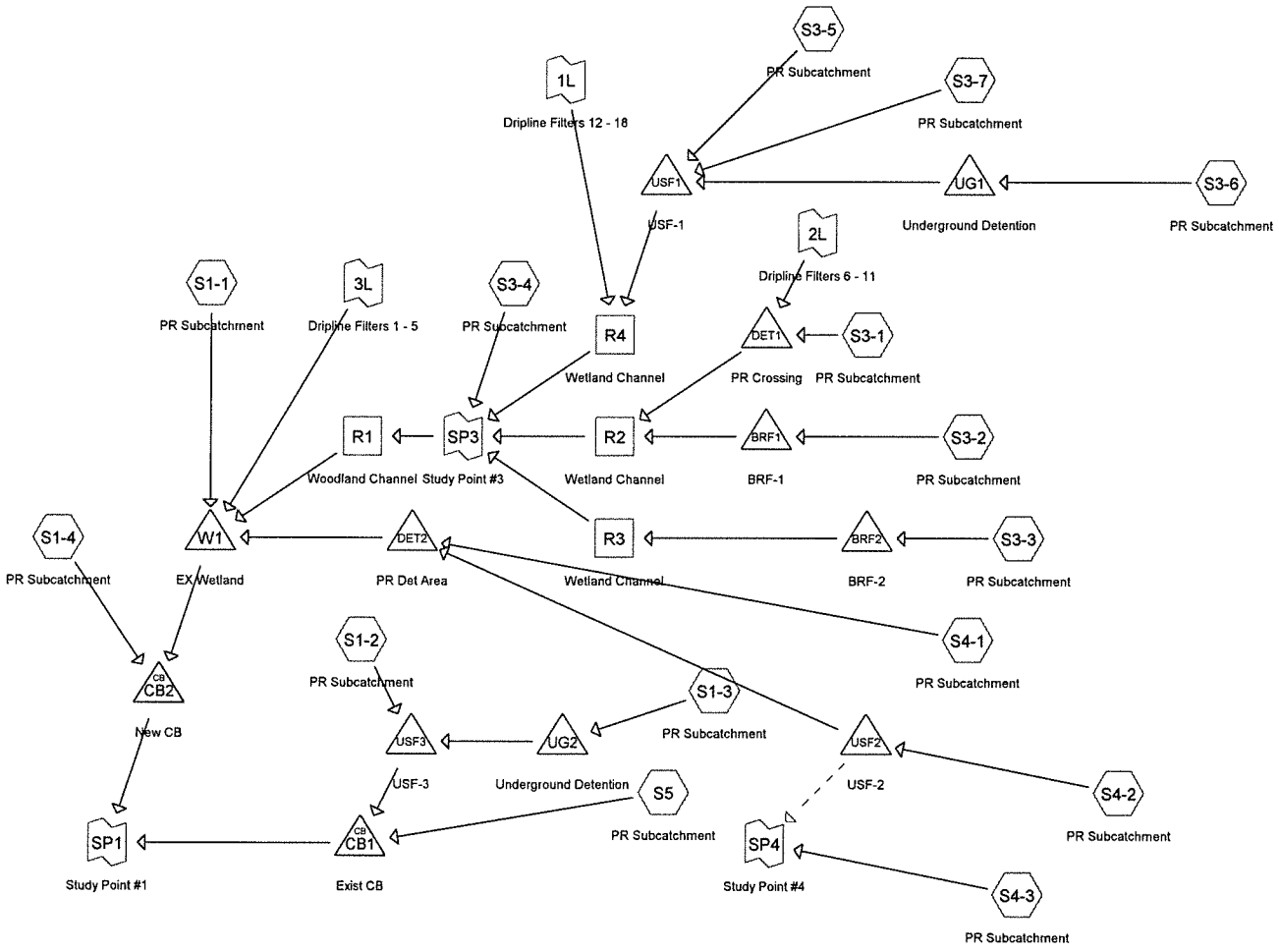
Summary for Link SP4: Study Point #4

Inflow Area = 2.551 ac, 13.59% Impervious, Inflow Depth > 2.02" for 25-Year event
Inflow = 2.85 cfs @ 12.59 hrs, Volume= 0.428 af
Primary = 2.85 cfs @ 12.59 hrs, Volume= 0.428 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

APPENDIX B

POST DEVELOPMENT HYDROCAD OUTPUT



Subcat Reach Pond Link

Routing Diagram for 41875 POST_4_021522

Prepared by {enter your company name here}, Printed 3/29/2022

HydroCAD® 10.00-19 s/n 10427 © 2016 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
3.135	39	>75% Grass cover, Good, HSG A (S1-1, S1-3, S1-4, S4-1, S4-2, S4-3, S5)
0.955	74	>75% Grass cover, Good, HSG C (S1-1, S1-2, S3-1, S3-2, S3-3, S3-4, S3-6, S3-7, S4-1, S4-2, S4-3)
6.818	80	>75% Grass cover, Good, HSG D (S1-1, S1-2, S1-3, S1-4, S3-1, S3-2, S3-3, S3-4, S3-5, S3-6, S3-7, S4-1, S4-2, S4-3, S5)
0.986	74	>75% Grass cover, Good, Madeland (S1-1, S1-2, S1-3, S1-4, S3-4, S4-1, S5)
0.066	98	Bedrock, HSG A (S3-4)
0.023	98	Bedrock, HSG C (S1-1, S3-7, S4-2)
0.869	98	Bedrock, HSG D (S1-1, S3-1, S3-5, S3-6, S4-1, S4-2)
0.045	98	Bedrock, Madeland (S1-1, S3-4, S4-1)
0.506	98	Pavement, HSG A (S1-1, S1-3, S1-4, S4-1, S4-2)
0.508	98	Pavement, HSG C (S1-2, S3-2, S3-3, S3-6, S3-7, S4-2)
1.386	98	Pavement, HSG D (S1-1, S1-2, S1-3, S1-4, S3-2, S3-3, S3-5, S3-6, S3-7)
0.312	98	Pavement, Madeland (S1-1, S1-2, S1-3, S1-4, S4-1)
0.077	98	Roof, HSG A (S1-1, S1-3, S5)
1.030	98	Roof, HSG D (S1-1, S3-1, S3-4, S3-5, S3-6, S4-3, S5)
0.057	98	Roof, Madeland (S1-3, S3-4)
2.717	30	Woods, Good, HSG A (S1-1, S3-4, S3-5, S4-1, S4-3, S5)
0.128	70	Woods, Good, HSG C (S1-1, S3-1, S4-3)
5.698	77	Woods, Good, HSG D (S1-1, S3-1, S3-4, S3-5, S3-6, S4-1, S4-2, S4-3, S5)
0.622	70	Woods, Good, Madeland (S1-1, S3-4, S4-1)
25.939	**72**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
6.502	HSG A	S1-1, S1-3, S1-4, S3-4, S3-5, S4-1, S4-2, S4-3, S5
0.000	HSG B	
1.614	HSG C	S1-1, S1-2, S3-1, S3-2, S3-3, S3-4, S3-6, S3-7, S4-1, S4-2, S4-3
15.800	HSG D	S1-1, S1-2, S1-3, S1-4, S3-1, S3-2, S3-3, S3-4, S3-5, S3-6, S3-7, S4-1, S4-2, S4-3, S5
2.023	Other	S1-1, S1-2, S1-3, S1-4, S3-4, S4-1, S5
25.939		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcat Numbe
3.135	0.000	0.955	6.818	0.000	10.908	>75% Grass cover, Good	
0.000	0.000	0.000	0.000	0.986	0.986	>75% Grass cover, Good, Madeland	
0.066	0.000	0.023	0.869	0.000	0.958	Bedrock	
0.000	0.000	0.000	0.000	0.045	0.045	Bedrock, Madeland	
0.506	0.000	0.508	1.386	0.000	2.399	Pavement	
0.000	0.000	0.000	0.000	0.312	0.312	Pavement, Madeland	
0.077	0.000	0.000	1.030	0.000	1.106	Roof	
0.000	0.000	0.000	0.000	0.057	0.057	Roof, Madeland	
2.717	0.000	0.128	5.698	0.000	8.544	Woods, Good	
0.000	0.000	0.000	0.000	0.622	0.622	Woods, Good, Madeland	
6.502	**0.000**	**1.614**	**15.800**	**2.023**	**25.939**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	S3-1	0.00	0.00	98.0	0.0050	0.013	12.0	0.0	0.0
2	S4-1	0.00	0.00	32.0	0.0156	0.013	12.0	0.0	0.0
3	CB1	21.34	20.75	160.0	0.0037	0.012	12.0	0.0	0.0
4	CB2	20.69	20.46	113.0	0.0020	0.013	24.0	0.0	0.0
5	DET1	51.00	48.93	69.0	0.0300	0.013	15.0	0.0	0.0
6	USF3	21.67	21.40	30.0	0.0090	0.013	6.0	0.0	0.0
7	W1	20.80	20.69	54.0	0.0020	0.012	24.0	0.0	0.0
8	W1	22.00	20.90	175.0	0.0063	0.013	12.0	0.0	0.0

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S1-1: PR Subcatchment Runoff Area=560,177 sf 13.88% Impervious Runoff Depth>0.54"
Flow Length=780' Tc=78.0 min CN=65 Runoff=2.16 cfs 0.575 af

Subcatchment S1-2: PR Subcatchment Runoff Area=16,843 sf 44.58% Impervious Runoff Depth>1.75"
Tc=6.0 min CN=86 Runoff=0.79 cfs 0.056 af

Subcatchment S1-3: PR Subcatchment Runoff Area=18,397 sf 71.87% Impervious Runoff Depth>1.75"
Tc=6.0 min CN=86 Runoff=0.87 cfs 0.061 af

Subcatchment S1-4: PR Subcatchment Runoff Area=14,892 sf 54.46% Impervious Runoff Depth>1.67"
Tc=6.0 min CN=85 Runoff=0.67 cfs 0.048 af

Subcatchment S3-1: PR Subcatchment Runoff Area=104,411 sf 15.68% Impervious Runoff Depth>1.38"
Flow Length=643' Tc=22.3 min CN=81 Runoff=2.49 cfs 0.276 af

Subcatchment S3-2: PR Subcatchment Runoff Area=5,960 sf 57.67% Impervious Runoff Depth>2.07"
Tc=6.0 min CN=90 Runoff=0.33 cfs 0.024 af

Subcatchment S3-3: PR Subcatchment Runoff Area=16,123 sf 56.57% Impervious Runoff Depth>1.91"
Tc=6.0 min CN=88 Runoff=0.83 cfs 0.059 af

Subcatchment S3-4: PR Subcatchment Runoff Area=106,688 sf 5.88% Impervious Runoff Depth>1.18"
Flow Length=230' Tc=57.4 min CN=78 Runoff=1.35 cfs 0.241 af

Subcatchment S3-5: PR Subcatchment Runoff Area=64,328 sf 18.28% Impervious Runoff Depth>1.31"
Flow Length=345' Tc=57.7 min CN=80 Runoff=0.91 cfs 0.161 af

Subcatchment S3-6: PR Subcatchment Runoff Area=54,859 sf 34.09% Impervious Runoff Depth>1.74"
Flow Length=240' Tc=17.2 min CN=86 Runoff=1.85 cfs 0.183 af

Subcatchment S3-7: PR Subcatchment Runoff Area=11,470 sf 51.67% Impervious Runoff Depth>1.91"
Tc=6.0 min CN=88 Runoff=0.59 cfs 0.042 af

Subcatchment S4-1: PR Subcatchment Runoff Area=44,553 sf 18.39% Impervious Runoff Depth>0.55"
Flow Length=282' Tc=36.3 min CN=65 Runoff=0.27 cfs 0.046 af

Subcatchment S4-2: PR Subcatchment Runoff Area=41,274 sf 53.01% Impervious Runoff Depth>1.45"
Flow Length=270' Tc=25.0 min CN=82 Runoff=0.99 cfs 0.114 af

Subcatchment S4-3: PR Subcatchment Runoff Area=33,609 sf 5.96% Impervious Runoff Depth>0.76"
Flow Length=270' Tc=32.0 min CN=70 Runoff=0.34 cfs 0.049 af

Subcatchment S5: PR Subcatchment Runoff Area=36,311 sf 6.14% Impervious Runoff Depth>0.36"
Flow Length=430' Tc=43.9 min CN=60 Runoff=0.11 cfs 0.025 af

Reach R1: Woodland Channel Avg. Flow Depth=0.47' Max Vel=1.46 fps Inflow=4.66 cfs 1.045 af
n=0.080 L=800.0' S=0.0225 '/' Capacity=170.06 cfs Outflow=4.43 cfs 1.034 af

Reach R2: Wetland Channel Avg. Flow Depth=0.31' Max Vel=0.81 fps Inflow=2.94 cfs 0.369 af
n=0.080 L=260.0' S=0.0154 '/' Capacity=35.10 cfs Outflow=2.83 cfs 0.367 af

Reach R3: Wetland Channel Avg. Flow Depth=0.12' Max Vel=0.35 fps Inflow=0.41 cfs 0.059 af
n=0.080 L=140.0' S=0.0107 '/' Capacity=29.29 cfs Outflow=0.29 cfs 0.058 af

Reach R4: Wetland Channel Avg. Flow Depth=0.21' Max Vel=0.72 fps Inflow=1.44 cfs 0.382 af
n=0.080 L=340.0' S=0.0206 '/' Capacity=40.60 cfs Outflow=1.42 cfs 0.379 af

Pond BRF1: BRF-1 Peak Elev=51.00' Storage=355 cf Inflow=0.33 cfs 0.024 af
Outflow=0.09 cfs 0.024 af

Pond BRF2: BRF-2 Peak Elev=49.01' Storage=734 cf Inflow=0.83 cfs 0.059 af
Outflow=0.41 cfs 0.059 af

Pond CB1: Exist CB Peak Elev=21.58' Inflow=0.17 cfs 0.094 af
12.0" Round Culvert n=0.012 L=160.0' S=0.0037 '/' Outflow=0.17 cfs 0.094 af

Pond CB2: New CB Peak Elev=21.78' Inflow=3.83 cfs 1.789 af
24.0" Round Culvert n=0.013 L=113.0' S=0.0020 '/' Outflow=3.83 cfs 1.789 af

Pond DET1: PR Crossing Peak Elev=52.02' Storage=17 cf Inflow=2.91 cfs 0.345 af
15.0" Round Culvert n=0.013 L=69.0' S=0.0300 '/' Outflow=2.91 cfs 0.345 af

Pond DET2: PR Det Area Peak Elev=32.78' Storage=553 cf Inflow=0.32 cfs 0.073 af
Outflow=0.19 cfs 0.073 af

Pond UG1: Underground Detention Peak Elev=59.76' Storage=1,969 cf Inflow=1.85 cfs 0.183 af
Outflow=0.81 cfs 0.180 af

Pond UG2: Underground Detention Peak Elev=28.77' Storage=1,086 cf Inflow=0.87 cfs 0.061 af
Outflow=0.11 cfs 0.060 af

Pond USF1: USF-1 Peak Elev=55.90' Storage=5,171 cf Inflow=1.76 cfs 0.383 af
Outflow=1.34 cfs 0.297 af

Pond USF2: USF-2 Peak Elev=37.59' Storage=2,299 cf Inflow=0.99 cfs 0.114 af
Primary=0.18 cfs 0.027 af Secondary=0.04 cfs 0.045 af Outflow=0.22 cfs 0.071 af

Pond USF3: USF-3 Peak Elev=25.51' Storage=2,703 cf Inflow=0.88 cfs 0.117 af
Outflow=0.07 cfs 0.068 af

Pond W1: EX Wetland Peak Elev=24.47' Storage=15,079 cf Inflow=6.27 cfs 1.744 af
Outflow=3.78 cfs 1.741 af

Link 1L: 2-Year Outflow Imported from 41875 POST_4-1_021522~Reach 1R.hce Inflow=0.48 cfs 0.085 af
Area= 0.417 ac 73.66% Imperv. Primary=0.48 cfs 0.085 af

Link 2L: 2-Year Outflow Imported from 41875 POST_4-1_021522~Reach 2R.hce Inflow=0.42 cfs 0.069 af
Area= 0.289 ac 100.00% Imperv. Primary=0.42 cfs 0.069 af

Link 3L: 2-Year Outflow Imported from 41875 POST_4-1_021522~Reach 3R.hce Inflow=0.36 cfs 0.062 af
Area= 0.259 ac 100.00% Imperv. Primary=0.36 cfs 0.062 af

Link SP1: Study Point #1 Inflow=3.93 cfs 1.882 af
Primary=3.93 cfs 1.882 af

Link SP3: Study Point #3 Inflow=4.66 cfs 1.045 af
Primary=4.66 cfs 1.045 af

Link SP4: Study Point #4 Inflow=0.38 cfs 0.094 af
Primary=0.38 cfs 0.094 af

Total Runoff Area = 25.939 ac Runoff Volume = 1.961 af Average Runoff Depth = 0.91"
81.19% Pervious = 21.061 ac 18.81% Impervious = 4.878 ac

Summary for Subcatchment S1-1: PR Subcatchment

Runoff = 2.16 cfs @ 13.26 hrs, Volume= 0.575 af, Depth> 0.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
	90,348	39	>75% Grass cover, Good, HSG A
	108,213	30	Woods, Good, HSG A
*	1,186	98	Roof, HSG A
*	8,570	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	10,506	74	>75% Grass cover, Good, Madeland
*	25,596	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	1,193	98	Pavement, Madeland
*	191	98	Bedrock, Madeland
	5,797	74	>75% Grass cover, Good, HSG C
	2,561	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	499	98	Bedrock, HSG C
	119,938	80	>75% Grass cover, Good, HSG D
	119,468	77	Woods, Good, HSG D
*	27,057	98	Roof, HSG D
*	33,901	98	Pavement, HSG D
*	5,153	98	Bedrock, HSG D
	560,177	65	Weighted Average
	482,427		86.12% Pervious Area
	77,750		13.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
71.5	300	0.0370	0.07		**Sheet Flow, A-B Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.10"
5.4	250	0.0240	0.77		**Shallow Concentrated Flow, B-C Shallow** Woodland Kv= 5.0 fps
1.1	230	0.0170	3.62	151.97	**Channel Flow, C-D Wetland Channel** Area= 42.0 sf Perim= 23.0' r= 1.83' n= 0.080
78.0	780	Total			

Summary for Subcatchment S1-2: PR Subcatchment

Runoff = 0.79 cfs @ 12.09 hrs, Volume= 0.056 af, Depth> 1.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
	0	39	>75% Grass cover, Good, HSG A
	0	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	4,066	74	>75% Grass cover, Good, Madeland
*	0	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	2,438	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	1,789	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	2,278	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	3,480	80	>75% Grass cover, Good, HSG D
	0	77	Woods, Good, HSG D
*	0	98	Roof, HSG D
*	2,792	98	Pavement, HSG D
*	0	98	Bedrock, HSG D
	16,843	86	Weighted Average
	9,335		55.42% Pervious Area
	7,508		44.58% Impervious Area

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

Summary for Subcatchment S1-3: PR Subcatchment

Runoff = 0.87 cfs @ 12.09 hrs, Volume= 0.061 af, Depth> 1.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
	3,152	39	>75% Grass cover, Good, HSG A
	0	30	Woods, Good, HSG A
*	33	98	Roof, HSG A
*	6,369	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	1,131	74	>75% Grass cover, Good, Madeland
*	0	70	Woods, Good, Madeland
*	1,023	98	Roof, Madeland
*	2,708	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	0	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	892	80	>75% Grass cover, Good, HSG D
	0	77	Woods, Good, HSG D
*	0	98	Roof, HSG D
*	3,089	98	Pavement, HSG D
*	0	98	Bedrock, HSG D
	18,397	86	Weighted Average
	5,175		28.13% Pervious Area
	13,222		71.87% Impervious Area

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

Summary for Subcatchment S1-4: PR Subcatchment

Runoff = 0.67 cfs @ 12.09 hrs, Volume= 0.048 af, Depth> 1.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
	998	39	>75% Grass cover, Good, HSG A
	0	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	1,707	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	5,445	74	>75% Grass cover, Good, Madeland
*	0	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	5,420	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	0	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	339	80	>75% Grass cover, Good, HSG D
	0	77	Woods, Good, HSG D
*	0	98	Roof, HSG D
*	983	98	Pavement, HSG D
*	0	98	Bedrock, HSG D
	14,892	85	Weighted Average
	6,782		45.54% Pervious Area
	8,110		54.46% Impervious Area

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

Summary for Subcatchment S3-1: PR Subcatchment

Runoff = 2.49 cfs @ 12.32 hrs, Volume= 0.276 af, Depth> 1.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
	0	39	>75% Grass cover, Good, HSG A
	0	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	0	74	>75% Grass cover, Good, Madeland
*	0	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	0	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	15,417	74	>75% Grass cover, Good, HSG C
	1,918	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	60,972	80	>75% Grass cover, Good, HSG D
	9,731	77	Woods, Good, HSG D
*	8,522	98	Roof, HSG D
*	0	98	Pavement, HSG D
*	7,851	98	Bedrock, HSG D
	104,411	81	Weighted Average
	88,038		84.32% Pervious Area
	16,373		15.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	85	0.0350	0.14		**Sheet Flow, A-B Sheet Flow** Grass: Dense n= 0.240 P2= 3.10"
9.6	40	0.1000	0.07		**Sheet Flow, B-C Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.10"
2.0	420	0.0536	3.47		**Shallow Concentrated Flow, C-D Shallow Concentrated Flow** Grassed Waterway Kv= 15.0 fps
0.5	98	0.0050	3.21	2.52	**Pipe Channel, Storm Drain** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
22.3	643	Total			

Summary for Subcatchment S3-2: PR Subcatchment

Runoff = 0.33 cfs @ 12.09 hrs, Volume= 0.024 af, Depth> 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
	0	39	>75% Grass cover, Good, HSG A
	0	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	0	74	>75% Grass cover, Good, Madeland
*	0	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	0	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	574	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	869	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	1,949	80	>75% Grass cover, Good, HSG D
	0	77	Woods, Good, HSG D
*	0	98	Roof, HSG D
*	2,568	98	Pavement, HSG D
*	0	98	Bedrock, HSG D
	5,960	90	Weighted Average
	2,523		42.33% Pervious Area
	3,437		57.67% Impervious Area

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

Summary for Subcatchment S3-3: PR Subcatchment

Runoff = 0.83 cfs @ 12.09 hrs, Volume= 0.059 af, Depth> 1.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
	0	39	>75% Grass cover, Good, HSG A
	0	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	0	74	>75% Grass cover, Good, Madeland
*	0	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	0	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	5,798	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	8,633	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	1,205	80	>75% Grass cover, Good, HSG D
	0	77	Woods, Good, HSG D
*	0	98	Roof, HSG D
*	487	98	Pavement, HSG D
*	0	98	Bedrock, HSG D
	16,123	88	Weighted Average
	7,003		43.43% Pervious Area
	9,120		56.57% Impervious Area

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

Summary for Subcatchment S3-4: PR Subcatchment

Runoff = 1.35 cfs @ 12.82 hrs, Volume= 0.241 af, Depth> 1.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
	0	39	>75% Grass cover, Good, HSG A
	705	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	2,889	98	Bedrock, HSG A
*	6,240	74	>75% Grass cover, Good, Madeland
*	731	70	Woods, Good, Madeland
*	1,473	98	Roof, Madeland
*	0	98	Pavement, Madeland
*	905	98	Bedrock, Madeland
	1,686	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	18,632	80	>75% Grass cover, Good, HSG D
	72,416	77	Woods, Good, HSG D
*	1,011	98	Roof, HSG D
*	0	98	Pavement, HSG D
*	0	98	Bedrock, HSG D
	106,688	78	Weighted Average
	100,410		94.12% Pervious Area
	6,278		5.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
56.5	150	0.0167	0.04		**Sheet Flow, A-B Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.10"
0.9	80	0.0125	1.56	10.39	**Parabolic Channel, Wetland Channel** W=10.00' D=1.00' Area=6.7 sf Perim=10.3' n= 0.080 Earth, long dense weeds
57.4	230	Total			

Summary for Subcatchment S3-5: PR Subcatchment

Runoff = 0.91 cfs @ 12.82 hrs, Volume= 0.161 af, Depth> 1.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
	0	39	>75% Grass cover, Good, HSG A
	2,931	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	0	74	>75% Grass cover, Good, Madeland
*	0	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	0	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	0	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	34,076	80	>75% Grass cover, Good, HSG D
	15,561	77	Woods, Good, HSG D
*	3,425	98	Roof, HSG D
*	4,536	98	Pavement, HSG D
*	3,799	98	Bedrock, HSG D
	64,328	80	Weighted Average
	52,568		81.72% Pervious Area
	11,760		18.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.5	150	0.0200	0.05		**Sheet Flow, A-B heet Flow** Woods: Dense underbrush n= 0.800 P2= 3.10"
5.2	195	0.0154	0.62		**Shallow Concentrated Flow, B-C Shallow Concentrated Flow** Woodland Kv= 5.0 fps
57.7	345	Total			

Summary for Subcatchment S3-6: PR Subcatchment

Runoff = 1.85 cfs @ 12.24 hrs, Volume= 0.183 af, Depth> 1.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
	0	39	>75% Grass cover, Good, HSG A
	0	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	0	74	>75% Grass cover, Good, Madeland
*	0	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	0	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	1,428	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	3,076	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	29,004	80	>75% Grass cover, Good, HSG D
	5,727	77	Woods, Good, HSG D
*	2,734	98	Roof, HSG D
*	8,365	98	Pavement, HSG D
*	4,525	98	Bedrock, HSG D
	54,859	86	Weighted Average
	36,159		65.91% Pervious Area
	18,700		34.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	85	0.0590	0.17		**Sheet Flow, A-B Sheet Flow** Grass: Dense n= 0.240 P2= 3.10"
8.4	50	0.2200	0.10		**Sheet Flow, B-C Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.10"
0.1	25	0.2800	3.70		**Shallow Concentrated Flow, C-D Shallow Concentrated Flow** Short Grass Pasture Kv= 7.0 fps
0.4	80	0.0310	3.57		**Shallow Concentrated Flow, D-E Shallow Concentrated Flow** Paved Kv= 20.3 fps
17.2	240	Total			

Summary for Subcatchment S3-7: PR Subcatchment

Runoff = 0.59 cfs @ 12.09 hrs, Volume= 0.042 af, Depth> 1.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
	0	39	>75% Grass cover, Good, HSG A
	0	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	0	74	>75% Grass cover, Good, Madeland
*	0	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	0	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	2,990	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	1,818	98	Pavement, HSG C
*	474	98	Bedrock, HSG C
	2,554	80	>75% Grass cover, Good, HSG D
	0	77	Woods, Good, HSG D
*	0	98	Roof, HSG D
*	3,634	98	Pavement, HSG D
*	0	98	Bedrock, HSG D
	11,470	88	Weighted Average
	5,544		48.33% Pervious Area
	5,926		51.67% Impervious Area

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

Summary for Subcatchment S4-1: PR Subcatchment

Runoff = 0.27 cfs @ 12.62 hrs, Volume= 0.046 af, Depth> 0.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
	12,727	39	>75% Grass cover, Good, HSG A
	3,773	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	1,559	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	13,625	74	>75% Grass cover, Good, Madeland
*	781	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	1,813	98	Pavement, Madeland
*	872	98	Bedrock, Madeland
	832	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	947	80	>75% Grass cover, Good, HSG D
	3,673	77	Woods, Good, HSG D
*	0	98	Roof, HSG D
*	0	98	Pavement, HSG D
*	3,951	98	Bedrock, HSG D
	44,553	65	Weighted Average
	36,358		81.61% Pervious Area
	8,195		18.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.6	150	0.0530	0.07		**Sheet Flow, A-B Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.10"
0.5	40	0.0750	1.37		**Shallow Concentrated Flow, B-C Shallow Concentrated Flow** Woodland Kv= 5.0 fps
0.1	32	0.0156	5.67	4.45	**Pipe Channel, Culvert** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.1	60	0.0420	9.23	147.65	**Trap/Vee/Rect Channel Flow, Ditch** Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.035 Earth, dense weeds
36.3	282	Total			

Summary for Subcatchment S4-2: PR Subcatchment

Runoff = 0.99 cfs @ 12.36 hrs, Volume= 0.114 af, Depth> 1.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
	6,349	39	>75% Grass cover, Good, HSG A
	0	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	3,854	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	0	74	>75% Grass cover, Good, Madeland
*	0	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	0	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	3,032	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	5,434	98	Pavement, HSG C
*	35	98	Bedrock, HSG C
	474	80	>75% Grass cover, Good, HSG D
	9,540	77	Woods, Good, HSG D
*	0	98	Roof, HSG D
*	0	98	Pavement, HSG D
*	12,556	98	Bedrock, HSG D
	41,274	82	Weighted Average
	19,395		46.99% Pervious Area
	21,879		53.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	50	0.0100	0.08		**Sheet Flow, A-B Sheet Flow** Grass: Dense n= 0.240 P2= 3.10"
13.4	90	0.2200	0.11		**Sheet Flow, B-C Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.10"
0.6	130	0.0620	3.73		**Shallow Concentrated Flow, C-D Shallow Concentrated Flow** Grassed Waterway Kv= 15.0 fps
25.0	270	Total			

Summary for Subcatchment S4-3: PR Subcatchment

Runoff = 0.34 cfs @ 12.51 hrs, Volume= 0.049 af, Depth> 0.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
	6,000	39	>75% Grass cover, Good, HSG A
	1,789	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	0	74	>75% Grass cover, Good, Madeland
*	0	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	0	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	2,268	74	>75% Grass cover, Good, HSG C
	1,118	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	11,625	80	>75% Grass cover, Good, HSG D
	8,807	77	Woods, Good, HSG D
*	2,002	98	Roof, HSG D
*	0	98	Pavement, HSG D
*	0	98	Bedrock, HSG D
	33,609	70	Weighted Average
	31,607		94.04% Pervious Area
	2,002		5.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	70	0.0750	0.18		**Sheet Flow, A-B Sheet Flow** Grass: Dense n= 0.240 P2= 3.10"
23.4	80	0.0430	0.06		**Sheet Flow, B-C Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.10"
2.2	120	0.0330	0.91		**Shallow Concentrated Flow, C-D Shallow Concentrated Flow** Woodland Kv= 5.0 fps
32.0	270	Total			

Summary for Subcatchment S5: PR Subcatchment

Runoff = 0.11 cfs @ 12.82 hrs, Volume= 0.025 af, Depth> 0.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
	17,004	39	>75% Grass cover, Good, HSG A
	943	30	Woods, Good, HSG A
*	2,130	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	1,954	74	>75% Grass cover, Good, Madeland
*	0	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	0	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	0	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	10,898	80	>75% Grass cover, Good, HSG D
	3,284	77	Woods, Good, HSG D
*	98	98	Roof, HSG D
*	0	98	Pavement, HSG D
*	0	98	Bedrock, HSG D
	36,311	60	Weighted Average
	34,083		93.86% Pervious Area
	2,228		6.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.1	80	0.0250	0.05		**Sheet Flow, A-B Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.10"
9.4	70	0.0290	0.12		**Sheet Flow, B-C Sheet Flow** Grass: Dense n= 0.240 P2= 3.10"
5.4	280	0.0150	0.86		**Shallow Concentrated Flow, B-C Shallow Concentrated Flow** Short Grass Pasture Kv= 7.0 fps
43.9	430	Total			

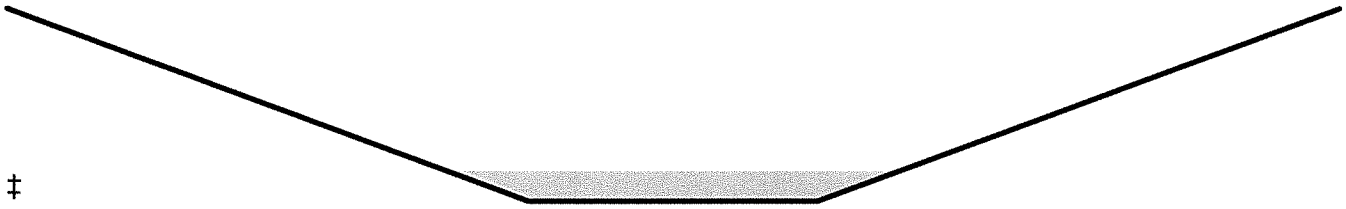
Summary for Reach R1: Woodland Channel

Inflow Area = 9.058 ac, 24.72% Impervious, Inflow Depth > 1.38" for 2-Year event
Inflow = 4.66 cfs @ 12.54 hrs, Volume= 1.045 af
Outflow = 4.43 cfs @ 12.81 hrs, Volume= 1.034 af, Atten= 5%, Lag= 16.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.46 fps, Min. Travel Time= 9.1 min
Avg. Velocity = 0.58 fps, Avg. Travel Time= 22.9 min

Peak Storage= 2,425 cf @ 12.66 hrs
Average Depth at Peak Storage= 0.47'
Bank-Full Depth= 3.00' Flow Area= 42.0 sf, Capacity= 170.06 cfs

5.00' x 3.00' deep channel, n= 0.080 Earth, long dense weeds
Side Slope Z-value= 3.0 '/' Top Width= 23.00'
Length= 800.0' Slope= 0.0225 '/'
Inlet Invert= 44.00', Outlet Invert= 26.00'



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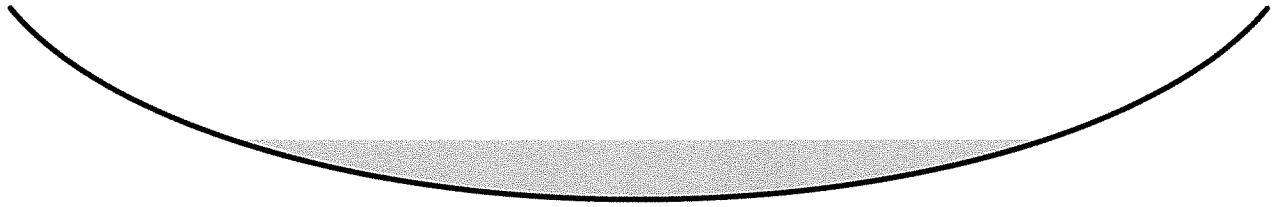
Summary for Reach R2: Wetland Channel

Inflow Area = 2.822 ac, 26.34% Impervious, Inflow Depth > 1.57" for 2-Year event
Inflow = 2.94 cfs @ 12.32 hrs, Volume= 0.369 af
Outflow = 2.83 cfs @ 12.48 hrs, Volume= 0.367 af, Atten= 4%, Lag= 9.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.81 fps, Min. Travel Time= 5.4 min
Avg. Velocity = 0.28 fps, Avg. Travel Time= 15.5 min

Peak Storage= 909 cf @ 12.39 hrs
Average Depth at Peak Storage= 0.31'
Bank-Full Depth= 1.00' Flow Area= 20.0 sf, Capacity= 35.10 cfs

30.00' x 1.00' deep Parabolic Channel, n= 0.080 Earth, long dense weeds
Length= 260.0' Slope= 0.0154 '/'
Inlet Invert= 48.00', Outlet Invert= 44.00'



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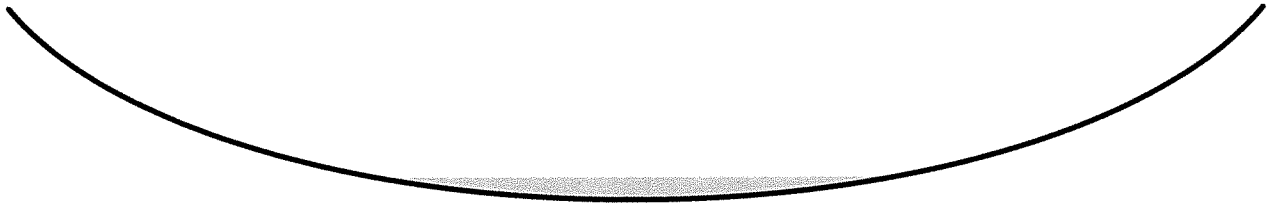
Summary for Reach R3: Wetland Channel

Inflow Area = 0.370 ac, 56.57% Impervious, Inflow Depth > 1.90" for 2-Year event
Inflow = 0.41 cfs @ 12.25 hrs, Volume= 0.059 af
Outflow = 0.29 cfs @ 12.49 hrs, Volume= 0.058 af, Atten= 29%, Lag= 14.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.35 fps, Min. Travel Time= 6.6 min
Avg. Velocity = 0.18 fps, Avg. Travel Time= 13.1 min

Peak Storage= 114 cf @ 12.38 hrs
Average Depth at Peak Storage= 0.12'
Bank-Full Depth= 1.00' Flow Area= 20.0 sf, Capacity= 29.29 cfs

30.00' x 1.00' deep Parabolic Channel, n= 0.080 Earth, long dense weeds
Length= 140.0' Slope= 0.0107 '/'
Inlet Invert= 45.50', Outlet Invert= 44.00'



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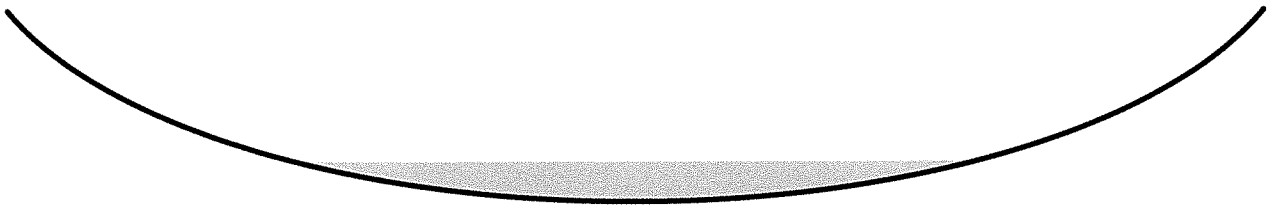
Summary for Reach R4: Wetland Channel

Inflow Area = 3.416 ac, 33.44% Impervious, Inflow Depth > 1.34" for 2-Year event
Inflow = 1.44 cfs @ 13.21 hrs, Volume= 0.382 af
Outflow = 1.42 cfs @ 13.45 hrs, Volume= 0.379 af, Atten= 2%, Lag= 14.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.72 fps, Min. Travel Time= 7.8 min
Avg. Velocity = 0.32 fps, Avg. Travel Time= 17.5 min

Peak Storage= 666 cf @ 13.32 hrs
Average Depth at Peak Storage= 0.21'
Bank-Full Depth= 1.00' Flow Area= 20.0 sf, Capacity= 40.60 cfs

30.00' x 1.00' deep Parabolic Channel, n= 0.080 Earth, long dense weeds
Length= 340.0' Slope= 0.0206 '/'
Inlet Invert= 51.00', Outlet Invert= 44.00'



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Summary for Pond BRF1: BRF-1

Inflow Area = 0.137 ac, 57.67% Impervious, Inflow Depth > 2.07" for 2-Year event
Inflow = 0.33 cfs @ 12.09 hrs, Volume= 0.024 af
Outflow = 0.09 cfs @ 12.46 hrs, Volume= 0.024 af, Atten= 73%, Lag= 22.2 min
Primary = 0.09 cfs @ 12.46 hrs, Volume= 0.024 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 51.00' @ 12.46 hrs Surf.Area= 769 sf Storage= 355 cf

Plug-Flow detention time= 91.1 min calculated for 0.024 af (100% of inflow)
Center-of-Mass det. time= 90.8 min (898.3 - 807.5)

Volume	Invert	Avail.Storage	Storage Description
#1	50.50'	392 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
50.50	644	0	0
51.05	781	392	392

Device	Routing	Invert	Outlet Devices
#1	Primary	50.50'	**0.03 cfs Exfiltration when above 50.50'**
#2	Primary	51.00'	**85.0' long (Profile 6) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 3.12 3.41 3.59

Primary OutFlow Max=0.07 cfs @ 12.46 hrs HW=51.00' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.03 cfs)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 0.04 cfs @ 0.17 fps)

Summary for Pond BRF2: BRF-2

Inflow Area = 0.370 ac, 56.57% Impervious, Inflow Depth > 1.91" for 2-Year event
Inflow = 0.83 cfs @ 12.09 hrs, Volume= 0.059 af
Outflow = 0.41 cfs @ 12.25 hrs, Volume= 0.059 af, Atten= 51%, Lag= 9.8 min
Primary = 0.41 cfs @ 12.25 hrs, Volume= 0.059 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 49.01' @ 12.25 hrs Surf.Area= 1,536 sf Storage= 734 cf

Plug-Flow detention time= 90.5 min calculated for 0.059 af (100% of inflow)
Center-of-Mass det. time= 90.2 min (905.9 - 815.7)

Volume	Invert	Avail.Storage	Storage Description
#1	48.50'	797 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
48.50	1,349	0	0
49.05	1,551	797	797

Device	Routing	Invert	Outlet Devices
#1	Primary	48.50'	**0.06 cfs Exfiltration when above 48.50'**
#2	Primary	49.00'	**135.0' long (Profile 6) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 3.12 3.41 3.59

Primary OutFlow Max=0.39 cfs @ 12.25 hrs HW=49.01' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.06 cfs)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 0.33 cfs @ 0.29 fps)

Summary for Pond CB1: Exist CB

Inflow Area = 1.643 ac, 32.09% Impervious, Inflow Depth > 0.68" for 2-Year event
Inflow = 0.17 cfs @ 12.82 hrs, Volume= 0.094 af
Outflow = 0.17 cfs @ 12.82 hrs, Volume= 0.094 af, Atten= 0%, Lag= 0.0 min
Primary = 0.17 cfs @ 12.82 hrs, Volume= 0.094 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 21.58' @ 12.82 hrs
Flood Elev= 22.79'

Device	Routing	Invert	Outlet Devices
#1	Primary	21.34'	**12.0" Round Culvert** L= 160.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 21.34' / 20.75' S= 0.0037 '/' Cc= 0.900 n= 0.012 Steel, smooth, Flow Area= 0.79 sf

Primary OutFlow Max=0.17 cfs @ 12.82 hrs HW=21.58' (Free Discharge)
↑**1=Culvert** (Barrel Controls 0.17 cfs @ 1.70 fps)

Summary for Pond CB2: New CB

Inflow Area = 24.489 ac, 21.07% Impervious, Inflow Depth > 0.88" for 2-Year event
Inflow = 3.83 cfs @ 14.09 hrs, Volume= 1.789 af
Outflow = 3.83 cfs @ 14.09 hrs, Volume= 1.789 af, Atten= 0%, Lag= 0.0 min
Primary = 3.83 cfs @ 14.09 hrs, Volume= 1.789 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 21.78' @ 14.09 hrs
Flood Elev= 25.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.69'	**24.0" Round Culvert** L= 113.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.69' / 20.46' S= 0.0020 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=3.82 cfs @ 14.09 hrs HW=21.78' TW=20.68' (TW follows 1.10' below HW)
↑**1=Culvert** (Barrel Controls 3.82 cfs @ 3.18 fps)

Summary for Pond DET1: PR Crossing

Inflow Area = 2.686 ac, 24.75% Impervious, Inflow Depth > 1.54" for 2-Year event
Inflow = 2.91 cfs @ 12.32 hrs, Volume= 0.345 af
Outflow = 2.91 cfs @ 12.32 hrs, Volume= 0.345 af, Atten= 0%, Lag= 0.2 min
Primary = 2.91 cfs @ 12.32 hrs, Volume= 0.345 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 52.02' @ 12.32 hrs Surf.Area= 36 sf Storage= 17 cf

Plug-Flow detention time= 0.1 min calculated for 0.345 af (100% of inflow)

Center-of-Mass det. time= 0.1 min (834.2 - 834.1)

Volume	Invert	Avail.Storage	Storage Description
#1	51.00'	1,410 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
51.00	0	0	0
52.00	32	16	16
53.00	256	144	160
54.00	591	424	584
55.00	1,062	827	1,410

Device	Routing	Invert	Outlet Devices
#1	Primary	51.00'	**15.0" Round Culvert** L= 69.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 51.00' / 48.93' S= 0.0300 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.91 cfs @ 12.32 hrs HW=52.02' (Free Discharge)
↑**1=Culvert** (Inlet Controls 2.91 cfs @ 2.71 fps)

Summary for Pond DET2: PR Det Area

Inflow Area = 1.970 ac, 35.04% Impervious, Inflow Depth > 0.45" for 2-Year event
Inflow = 0.32 cfs @ 13.05 hrs, Volume= 0.073 af
Outflow = 0.19 cfs @ 13.80 hrs, Volume= 0.073 af, Atten= 41%, Lag= 45.4 min
Primary = 0.19 cfs @ 13.80 hrs, Volume= 0.073 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 32.78' @ 13.80 hrs Surf.Area= 1,411 sf Storage= 553 cf

Plug-Flow detention time= 29.4 min calculated for 0.073 af (100% of inflow)
Center-of-Mass det. time= 28.4 min (927.6 - 899.2)

Volume	Invert	Avail.Storage	Storage Description
#1	32.00'	8,976 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
32.00	0	0	0
33.00	1,800	900	900
34.00	2,313	2,057	2,957
35.00	2,924	2,619	5,575
36.00	3,878	3,401	8,976

Device	Routing	Invert	Outlet Devices
#1	Primary	32.00'	**3.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	32.80'	**6.0" W x 3.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.19 cfs @ 13.80 hrs HW=32.78' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.19 cfs @ 3.91 fps)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond UG1: Underground Detention

Inflow Area = 1.259 ac, 34.09% Impervious, Inflow Depth > 1.74" for 2-Year event
Inflow = 1.85 cfs @ 12.24 hrs, Volume= 0.183 af
Outflow = 0.81 cfs @ 12.60 hrs, Volume= 0.180 af, Atten= 56%, Lag= 22.0 min
Primary = 0.81 cfs @ 12.60 hrs, Volume= 0.180 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 59.76' @ 12.60 hrs Surf.Area= 2,585 sf Storage= 1,969 cf

Plug-Flow detention time= 34.1 min calculated for 0.180 af (99% of inflow)
Center-of-Mass det. time= 26.1 min (858.3 - 832.2)

Volume	Invert	Avail.Storage	Storage Description
#1	58.50'	2,553 cf	**11.00'W x 235.00'L x 3.50'H Prismatoid** 9,048 cf Overall - 2,665 cf Embedded = 6,383 cf x 40.0% Voids
#2	59.00'	2,665 cf	**ADS_StormTech SC-740 +Cap** x 58 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
		5,218 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	58.50'	**5.5" Vert. Orifice/Grate** C= 0.600
#2	Primary	61.50'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=0.81 cfs @ 12.60 hrs HW=59.76' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.81 cfs @ 4.88 fps)
└─**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond UG2: Underground Detention

Inflow Area = 0.422 ac, 71.87% Impervious, Inflow Depth > 1.75" for 2-Year event
Inflow = 0.87 cfs @ 12.09 hrs, Volume= 0.061 af
Outflow = 0.11 cfs @ 12.70 hrs, Volume= 0.060 af, Atten= 87%, Lag= 36.6 min
Primary = 0.11 cfs @ 12.70 hrs, Volume= 0.060 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 28.77' @ 12.70 hrs Surf.Area= 1,408 sf Storage= 1,086 cf

Plug-Flow detention time= 107.8 min calculated for 0.060 af (98% of inflow)
Center-of-Mass det. time= 97.6 min (920.9 - 823.2)

Volume	Invert	Avail.Storage	Storage Description
#1	27.50'	1,383 cf	**11.00'W x 128.00'L x 3.50'H Prismatoid** 4,928 cf Overall - 1,470 cf Embedded = 3,458 cf x 40.0% Voids
#2	28.00'	1,470 cf	**ADS_StormTech SC-740 +Cap** x 32 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
		2,853 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	27.50'	**2.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	29.00'	**3.0" Vert. Orifice/Grate** C= 0.600
#3	Primary	30.50'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=0.11 cfs @ 12.70 hrs HW=28.77' (Free Discharge)
- **1=Orifice/Grate** (Orifice Controls 0.11 cfs @ 5.23 fps)
- **2=Orifice/Grate** (Controls 0.00 cfs)
- **3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond USF1: USF-1

Inflow Area = 2.999 ac, 27.85% Impervious, Inflow Depth > 1.53" for 2-Year event
Inflow = 1.76 cfs @ 12.76 hrs, Volume= 0.383 af
Outflow = 1.34 cfs @ 13.21 hrs, Volume= 0.297 af, Atten= 24%, Lag= 27.3 min
Primary = 1.34 cfs @ 13.21 hrs, Volume= 0.297 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 55.90' @ 13.21 hrs Surf.Area= 3,596 sf Storage= 5,171 cf

Plug-Flow detention time= 136.8 min calculated for 0.297 af (77% of inflow)
Center-of-Mass det. time= 57.2 min (921.6 - 864.4)

Volume	Invert	Avail.Storage	Storage Description
#1	54.00'	15,112 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
54.00	1,964	0	0
55.00	2,714	2,339	2,339
56.00	3,696	3,205	5,544
57.00	4,768	4,232	9,776
58.00	5,904	5,336	15,112

Device	Routing	Invert	Outlet Devices
#1	Primary	54.00'	**0.09 cfs Exfiltration at all elevations**
#2	Primary	55.50'	**20.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=1.34 cfs @ 13.21 hrs HW=55.90' (Free Discharge)
- **1=Exfiltration** (Exfiltration Controls 0.09 cfs)
- **2=Orifice/Grate** (Orifice Controls 1.25 cfs @ 2.26 fps)

Summary for Pond USF2: USF-2

Inflow Area = 0.948 ac, 53.01% Impervious, Inflow Depth > 1.45" for 2-Year event
Inflow = 0.99 cfs @ 12.36 hrs, Volume= 0.114 af
Outflow = 0.22 cfs @ 13.16 hrs, Volume= 0.071 af, Atten= 78%, Lag= 48.1 min
Primary = 0.18 cfs @ 13.16 hrs, Volume= 0.027 af
Secondary = 0.04 cfs @ 11.24 hrs, Volume= 0.045 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 37.59' @ 13.16 hrs Surf.Area= 2,058 sf Storage= 2,299 cf

Plug-Flow detention time= 225.6 min calculated for 0.071 af (62% of inflow)
Center-of-Mass det. time= 119.0 min (971.0 - 852.0)

Volume	Invert	Avail.Storage	Storage Description
#1	36.00'	6,039 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
36.00	860	0	0
37.00	1,585	1,223	1,223
38.00	2,386	1,986	3,208
39.00	3,276	2,831	6,039

Device	Routing	Invert	Outlet Devices
#1	Secondary	36.00'	**0.04 cfs Exfiltration at all elevations**
#2	Primary	37.50'	**24.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.18 cfs @ 13.16 hrs HW=37.59' (Free Discharge)
↑—**2=Orifice/Grate** (Orifice Controls 0.18 cfs @ 0.97 fps)

Secondary OutFlow Max=0.04 cfs @ 11.24 hrs HW=36.03' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.04 cfs)

Summary for Pond USF3: USF-3

Inflow Area = 0.809 ac, 58.83% Impervious, Inflow Depth > 1.73" for 2-Year event
Inflow = 0.88 cfs @ 12.09 hrs, Volume= 0.117 af
Outflow = 0.07 cfs @ 18.15 hrs, Volume= 0.068 af, Atten= 93%, Lag= 363.4 min
Primary = 0.07 cfs @ 18.15 hrs, Volume= 0.068 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 25.51' @ 18.15 hrs Surf.Area= 2,299 sf Storage= 2,703 cf

Plug-Flow detention time= 278.6 min calculated for 0.068 af (59% of inflow)
Center-of-Mass det. time= 154.5 min (1,028.2 - 873.8)

Volume	Invert	Avail.Storage	Storage Description
#1	24.00'	6,960 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
24.00	1,306	0	0
25.00	1,936	1,621	1,621
26.00	2,646	2,291	3,912
27.00	3,449	3,048	6,960

Device	Routing	Invert	Outlet Devices
#1	Primary	21.67'	**6.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 21.67' / 21.40' S= 0.0090 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Device 1	24.00'	**0.06 cfs Exfiltration at all elevations**
#3	Device 1	25.50'	**12.0" W x 3.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.06 cfs @ 18.15 hrs HW=25.51' TW=22.79' (Fixed TW Elev= 22.79')
↑—**1=Culvert** (Passes 0.06 cfs of 1.32 cfs potential flow)
↑—**2=Exfiltration** (Exfiltration Controls 0.06 cfs)
—**3=Orifice/Grate** (Orifice Controls 0.00 cfs @ 0.33 fps)

Summary for Pond W1: EX Wetland

Inflow Area = 24.147 ac, 20.60% Impervious, Inflow Depth > 0.87" for 2-Year event
Inflow = 6.27 cfs @ 12.88 hrs, Volume= 1.744 af
Outflow = 3.78 cfs @ 14.10 hrs, Volume= 1.741 af, Atten= 40%, Lag= 73.2 min
Primary = 3.78 cfs @ 14.10 hrs, Volume= 1.741 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 24.47' @ 14.10 hrs Surf.Area= 17,514 sf Storage= 15,079 cf

Plug-Flow detention time= 48.6 min calculated for 1.740 af (100% of inflow)
Center-of-Mass det. time= 47.8 min (960.6 - 912.7)

Volume	Invert	Avail.Storage	Storage Description
#1	22.00'	56,669 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
22.00	0	0	0
23.00	1,435	718	718
24.00	12,931	7,183	7,901
25.00	22,650	17,791	25,691
26.00	39,305	30,978	56,669

Device	Routing	Invert	Outlet Devices
#1	Primary	20.80'	**24.0" Round Culvert** L= 54.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.80' / 20.69' S= 0.0020 '/' Cc= 0.900 n= 0.012 Steel, smooth, Flow Area= 3.14 sf
#2	Device 1	22.00'	**12.0" Round Culvert** L= 175.0' CPP, projecting, no headwall, Ke= 0.900

			Inlet / Outlet Invert= 22.00' / 20.90' S= 0.0063 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 1	24.30'	**24.0" Horiz. Orifice/Grate** C= 1.000
			Limited to weir flow at low heads

Primary OutFlow Max=3.78 cfs @ 14.10 hrs HW=24.47' TW=23.47' (TW follows 1.00' below HW)
↑—**1=Culvert** (Passes 3.78 cfs of 15.13 cfs potential flow)
↑—**2=Culvert** (Outlet Controls 2.32 cfs @ 2.95 fps)
—**3=Orifice/Grate** (Weir Controls 1.46 cfs @ 1.35 fps)

Summary for Link 1L: Dripline Filters 12 - 18

Inflow Area = 0.417 ac, 73.66% Impervious, Inflow Depth > 2.46" for 2-Year event
Inflow = 0.48 cfs @ 12.00 hrs, Volume= 0.085 af
Primary = 0.48 cfs @ 12.00 hrs, Volume= 0.085 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

2-Year Outflow Imported from 41875 POST_4-1_021522~Reach 1R.hce

Summary for Link 2L: Dripline Filters 6 - 11

Inflow Area = 0.289 ac,100.00% Impervious, Inflow Depth > 2.87" for 2-Year event
Inflow = 0.42 cfs @ 11.97 hrs, Volume= 0.069 af
Primary = 0.42 cfs @ 11.97 hrs, Volume= 0.069 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

2-Year Outflow Imported from 41875 POST_4-1_021522~Reach 2R.hce

Summary for Link 3L: Dripline Filters 1 - 5

Inflow Area = 0.259 ac,100.00% Impervious, Inflow Depth > 2.87" for 2-Year event
Inflow = 0.36 cfs @ 11.99 hrs, Volume= 0.062 af
Primary = 0.36 cfs @ 11.99 hrs, Volume= 0.062 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

2-Year Outflow Imported from 41875 POST_4-1_021522~Reach 3R.hce

Summary for Link SP1: Study Point #1

Inflow Area = 26.131 ac, 21.76% Impervious, Inflow Depth > 0.86" for 2-Year event
Inflow = 3.93 cfs @ 14.09 hrs, Volume= 1.882 af
Primary = 3.93 cfs @ 14.09 hrs, Volume= 1.882 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Link SP3: Study Point #3

Inflow Area = 9.058 ac, 24.72% Impervious, Inflow Depth > 1.38" for 2-Year event
Inflow = 4.66 cfs @ 12.54 hrs, Volume= 1.045 af
Primary = 4.66 cfs @ 12.54 hrs, Volume= 1.045 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Link SP4: Study Point #4

Inflow Area = 0.772 ac, 5.96% Impervious, Inflow Depth > 1.46" for 2-Year event
Inflow = 0.38 cfs @ 12.51 hrs, Volume= 0.094 af
Primary = 0.38 cfs @ 12.51 hrs, Volume= 0.094 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S1-1: PR Subcatchment Runoff Area=560,177 sf 13.88% Impervious Runoff Depth>1.36"
Flow Length=780' Tc=78.0 min CN=65 Runoff=6.48 cfs 1.458 af

Subcatchment S1-2: PR Subcatchment Runoff Area=16,843 sf 44.58% Impervious Runoff Depth>3.09"
Tc=6.0 min CN=86 Runoff=1.39 cfs 0.100 af

Subcatchment S1-3: PR Subcatchment Runoff Area=18,397 sf 71.87% Impervious Runoff Depth>3.09"
Tc=6.0 min CN=86 Runoff=1.52 cfs 0.109 af

Subcatchment S1-4: PR Subcatchment Runoff Area=14,892 sf 54.46% Impervious Runoff Depth>3.00"
Tc=6.0 min CN=85 Runoff=1.19 cfs 0.085 af

Subcatchment S3-1: PR Subcatchment Runoff Area=104,411 sf 15.68% Impervious Runoff Depth>2.62"
Flow Length=643' Tc=22.3 min CN=81 Runoff=4.78 cfs 0.524 af

Subcatchment S3-2: PR Subcatchment Runoff Area=5,960 sf 57.67% Impervious Runoff Depth>3.49"
Tc=6.0 min CN=90 Runoff=0.54 cfs 0.040 af

Subcatchment S3-3: PR Subcatchment Runoff Area=16,123 sf 56.57% Impervious Runoff Depth>3.29"
Tc=6.0 min CN=88 Runoff=1.40 cfs 0.101 af

Subcatchment S3-4: PR Subcatchment Runoff Area=106,688 sf 5.88% Impervious Runoff Depth>2.34"
Flow Length=230' Tc=57.4 min CN=78 Runoff=2.75 cfs 0.479 af

Subcatchment S3-5: PR Subcatchment Runoff Area=64,328 sf 18.28% Impervious Runoff Depth>2.52"
Flow Length=345' Tc=57.7 min CN=80 Runoff=1.78 cfs 0.310 af

Subcatchment S3-6: PR Subcatchment Runoff Area=54,859 sf 34.09% Impervious Runoff Depth>3.09"
Flow Length=240' Tc=17.2 min CN=86 Runoff=3.25 cfs 0.324 af

Subcatchment S3-7: PR Subcatchment Runoff Area=11,470 sf 51.67% Impervious Runoff Depth>3.29"
Tc=6.0 min CN=88 Runoff=1.00 cfs 0.072 af

Subcatchment S4-1: PR Subcatchment Runoff Area=44,553 sf 18.39% Impervious Runoff Depth>1.38"
Flow Length=282' Tc=36.3 min CN=65 Runoff=0.81 cfs 0.118 af

Subcatchment S4-2: PR Subcatchment Runoff Area=41,274 sf 53.01% Impervious Runoff Depth>2.71"
Flow Length=270' Tc=25.0 min CN=82 Runoff=1.85 cfs 0.214 af

Subcatchment S4-3: PR Subcatchment Runoff Area=33,609 sf 5.96% Impervious Runoff Depth>1.73"
Flow Length=270' Tc=32.0 min CN=70 Runoff=0.84 cfs 0.111 af

Subcatchment S5: PR Subcatchment Runoff Area=36,311 sf 6.14% Impervious Runoff Depth>1.06"
Flow Length=430' Tc=43.9 min CN=60 Runoff=0.43 cfs 0.074 af

Reach R1: Woodland Channel Avg. Flow Depth=0.69' Max Vel=1.80 fps Inflow=8.99 cfs 1.988 af
n=0.080 L=800.0' S=0.0225 '/' Capacity=170.06 cfs Outflow=8.76 cfs 1.974 af

Reach R2: Wetland Channel Avg. Flow Depth=0.42' Max Vel=0.98 fps Inflow=5.36 cfs 0.669 af
n=0.080 L=260.0' S=0.0154 '/' Capacity=35.10 cfs Outflow=5.24 cfs 0.666 af

Reach R3: Wetland Channel Avg. Flow Depth=0.22' Max Vel=0.53 fps Inflow=1.40 cfs 0.101 af
n=0.080 L=140.0' S=0.0107 '/' Capacity=29.29 cfs Outflow=1.08 cfs 0.101 af

Reach R4: Wetland Channel Avg. Flow Depth=0.29' Max Vel=0.89 fps Inflow=2.85 cfs 0.747 af
n=0.080 L=340.0' S=0.0206 '/' Capacity=40.60 cfs Outflow=2.81 cfs 0.743 af

Pond BRF1: BRF-1 Peak Elev=51.02' Storage=365 cf Inflow=0.54 cfs 0.040 af
Outflow=0.53 cfs 0.040 af

Pond BRF2: BRF-2 Peak Elev=49.02' Storage=754 cf Inflow=1.40 cfs 0.101 af
Outflow=1.40 cfs 0.101 af

Pond CB1: Exist CB Peak Elev=21.83' Inflow=0.65 cfs 0.223 af
12.0" Round Culvert n=0.012 L=160.0' S=0.0037 '/' Outflow=0.65 cfs 0.223 af

Pond CB2: New CB Peak Elev=23.12' Inflow=13.64 cfs 3.840 af
24.0" Round Culvert n=0.013 L=113.0' S=0.0020 '/' Outflow=13.64 cfs 3.840 af

Pond DET1: PR Crossing Peak Elev=52.84' Storage=123 cf Inflow=5.19 cfs 0.629 af
15.0" Round Culvert n=0.013 L=69.0' S=0.0300 '/' Outflow=5.15 cfs 0.629 af

Pond DET2: PR Det Area Peak Elev=33.90' Storage=2,718 cf Inflow=2.11 cfs 0.234 af
Outflow=0.91 cfs 0.234 af

Pond UG1: Underground Detention Peak Elev=60.93' Storage=3,974 cf Inflow=3.25 cfs 0.324 af
Outflow=1.18 cfs 0.321 af

Pond UG2: Underground Detention Peak Elev=29.59' Storage=1,883 cf Inflow=1.52 cfs 0.109 af
Outflow=0.31 cfs 0.107 af

Pond USF1: USF-1 Peak Elev=56.42' Storage=7,184 cf Inflow=3.06 cfs 0.702 af
Outflow=2.40 cfs 0.612 af

Pond USF2: USF-2 Peak Elev=37.85' Storage=2,857 cf Inflow=1.85 cfs 0.214 af
Primary=1.31 cfs 0.116 af Secondary=0.04 cfs 0.049 af Outflow=1.35 cfs 0.166 af

Pond USF3: USF-3 Peak Elev=25.70' Storage=3,140 cf Inflow=1.51 cfs 0.207 af
Outflow=0.34 cfs 0.149 af

Pond W1: EX Wetland Peak Elev=24.97' Storage=24,980 cf Inflow=15.63 cfs 3.760 af
Outflow=13.55 cfs 3.755 af

Link 1L: 10-Year Outflow Imported from 41875 POST_4-1_021522~Reach 1R.hce Inflow=0.53 cfs 0.135 af
Area= 0.417 ac 73.66% Imperv. Primary=0.53 cfs 0.135 af

Link 2L: 10-Year Outflow Imported from 41875 POST_4-1_021522~Reach 2R.hce Inflow=0.42 cfs 0.105 af
Area= 0.289 ac 100.00% Imperv. Primary=0.42 cfs 0.105 af

Link 3L: 10-Year Outflow Imported from 41875 POST_4-1_021522~Reach 3R.hce Inflow=0.36 cfs 0.094 af
Area= 0.259 ac 100.00% Imperv. Primary=0.36 cfs 0.094 af

Link SP1: Study Point #1 Inflow=14.17 cfs 4.063 af
Primary=14.17 cfs 4.063 af

Link SP3: Study Point #3 Inflow=8.99 cfs 1.988 af
Primary=8.99 cfs 1.988 af

Link SP4: Study Point #4 Inflow=0.88 cfs 0.161 af
Primary=0.88 cfs 0.161 af

Total Runoff Area = 25.939 ac Runoff Volume = 4.118 af Average Runoff Depth = 1.91"
81.19% Pervious = 21.061 ac 18.81% Impervious = 4.878 ac

Summary for Subcatchment S1-1: PR Subcatchment

Runoff = 6.48 cfs @ 13.09 hrs, Volume= 1.458 af, Depth> 1.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
	90,348	39	>75% Grass cover, Good, HSG A
	108,213	30	Woods, Good, HSG A
*	1,186	98	Roof, HSG A
*	8,570	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	10,506	74	>75% Grass cover, Good, Madeland
*	25,596	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	1,193	98	Pavement, Madeland
*	191	98	Bedrock, Madeland
	5,797	74	>75% Grass cover, Good, HSG C
	2,561	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	499	98	Bedrock, HSG C
	119,938	80	>75% Grass cover, Good, HSG D
	119,468	77	Woods, Good, HSG D
*	27,057	98	Roof, HSG D
*	33,901	98	Pavement, HSG D
*	5,153	98	Bedrock, HSG D
	560,177	65	Weighted Average
	482,427		86.12% Pervious Area
	77,750		13.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
71.5	300	0.0370	0.07		**Sheet Flow, A-B Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.10"
5.4	250	0.0240	0.77		**Shallow Concentrated Flow, B-C Shallow** Woodland Kv= 5.0 fps
1.1	230	0.0170	3.62	151.97	**Channel Flow, C-D Wetland Channel** Area= 42.0 sf Perim= 23.0' r= 1.83' n= 0.080
78.0	780	Total			

Summary for Subcatchment S1-2: PR Subcatchment

Runoff = 1.39 cfs @ 12.09 hrs, Volume= 0.100 af, Depth> 3.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
	0	39	>75% Grass cover, Good, HSG A
	0	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	4,066	74	>75% Grass cover, Good, Madeland
*	0	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	2,438	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	1,789	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	2,278	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	3,480	80	>75% Grass cover, Good, HSG D
	0	77	Woods, Good, HSG D
*	0	98	Roof, HSG D
*	2,792	98	Pavement, HSG D
*	0	98	Bedrock, HSG D
	16,843	86	Weighted Average
	9,335		55.42% Pervious Area
	7,508		44.58% Impervious Area

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

Summary for Subcatchment S1-3: PR Subcatchment

Runoff = 1.52 cfs @ 12.09 hrs, Volume= 0.109 af, Depth> 3.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
	3,152	39	>75% Grass cover, Good, HSG A
	0	30	Woods, Good, HSG A
*	33	98	Roof, HSG A
*	6,369	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	1,131	74	>75% Grass cover, Good, Madeland
*	0	70	Woods, Good, Madeland
*	1,023	98	Roof, Madeland
*	2,708	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	0	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	892	80	>75% Grass cover, Good, HSG D
	0	77	Woods, Good, HSG D
*	0	98	Roof, HSG D
*	3,089	98	Pavement, HSG D
*	0	98	Bedrock, HSG D
	18,397	86	Weighted Average
	5,175		28.13% Pervious Area
	13,222		71.87% Impervious Area

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

Summary for Subcatchment S1-4: PR Subcatchment

Runoff = 1.19 cfs @ 12.09 hrs, Volume= 0.085 af, Depth> 3.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
	998	39	>75% Grass cover, Good, HSG A
	0	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	1,707	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	5,445	74	>75% Grass cover, Good, Madeland
*	0	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	5,420	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	0	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	339	80	>75% Grass cover, Good, HSG D
	0	77	Woods, Good, HSG D
*	0	98	Roof, HSG D
*	983	98	Pavement, HSG D
*	0	98	Bedrock, HSG D
	14,892	85	Weighted Average
	6,782		45.54% Pervious Area
	8,110		54.46% Impervious Area

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

Summary for Subcatchment S3-1: PR Subcatchment

Runoff = 4.78 cfs @ 12.31 hrs, Volume= 0.524 af, Depth> 2.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
	0	39	>75% Grass cover, Good, HSG A
	0	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	0	74	>75% Grass cover, Good, Madeland
*	0	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	0	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	15,417	74	>75% Grass cover, Good, HSG C
	1,918	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	60,972	80	>75% Grass cover, Good, HSG D
	9,731	77	Woods, Good, HSG D
*	8,522	98	Roof, HSG D
*	0	98	Pavement, HSG D
*	7,851	98	Bedrock, HSG D
	104,411	81	Weighted Average
	88,038		84.32% Pervious Area
	16,373		15.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	85	0.0350	0.14		**Sheet Flow, A-B Sheet Flow** Grass: Dense n= 0.240 P2= 3.10"
9.6	40	0.1000	0.07		**Sheet Flow, B-C Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.10"
2.0	420	0.0536	3.47		**Shallow Concentrated Flow, C-D Shallow Concentrated Flow** Grassed Waterway Kv= 15.0 fps
0.5	98	0.0050	3.21	2.52	**Pipe Channel, Storm Drain** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
22.3	643	Total			

Summary for Subcatchment S3-2: PR Subcatchment

Runoff = 0.54 cfs @ 12.09 hrs, Volume= 0.040 af, Depth> 3.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
	0	39	>75% Grass cover, Good, HSG A
	0	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	0	74	>75% Grass cover, Good, Madeland
*	0	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	0	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	574	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	869	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	1,949	80	>75% Grass cover, Good, HSG D
	0	77	Woods, Good, HSG D
*	0	98	Roof, HSG D
*	2,568	98	Pavement, HSG D
*	0	98	Bedrock, HSG D
	5,960	90	Weighted Average
	2,523		42.33% Pervious Area
	3,437		57.67% Impervious Area

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

Summary for Subcatchment S3-3: PR Subcatchment

Runoff = 1.40 cfs @ 12.09 hrs, Volume= 0.101 af, Depth> 3.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
	0	39	>75% Grass cover, Good, HSG A
	0	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	0	74	>75% Grass cover, Good, Madeland
*	0	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	0	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	5,798	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	8,633	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	1,205	80	>75% Grass cover, Good, HSG D
	0	77	Woods, Good, HSG D
*	0	98	Roof, HSG D
*	487	98	Pavement, HSG D
*	0	98	Bedrock, HSG D
	16,123	88	Weighted Average
	7,003		43.43% Pervious Area
	9,120		56.57% Impervious Area

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

Summary for Subcatchment S3-4: PR Subcatchment

Runoff = 2.75 cfs @ 12.82 hrs, Volume= 0.479 af, Depth> 2.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
	0	39	>75% Grass cover, Good, HSG A
	705	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	2,889	98	Bedrock, HSG A
*	6,240	74	>75% Grass cover, Good, Madeland
*	731	70	Woods, Good, Madeland
*	1,473	98	Roof, Madeland
*	0	98	Pavement, Madeland
*	905	98	Bedrock, Madeland
	1,686	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	18,632	80	>75% Grass cover, Good, HSG D
	72,416	77	Woods, Good, HSG D
*	1,011	98	Roof, HSG D
*	0	98	Pavement, HSG D
*	0	98	Bedrock, HSG D
	106,688	78	Weighted Average
	100,410		94.12% Pervious Area
	6,278		5.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
56.5	150	0.0167	0.04		**Sheet Flow, A-B Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.10"
0.9	80	0.0125	1.56	10.39	**Parabolic Channel, Wetland Channel** W=10.00' D=1.00' Area=6.7 sf Perim=10.3' n= 0.080 Earth, long dense weeds
57.4	230	Total			

Summary for Subcatchment S3-5: PR Subcatchment

Runoff = 1.78 cfs @ 12.76 hrs, Volume= 0.310 af, Depth> 2.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
	0	39	>75% Grass cover, Good, HSG A
	2,931	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	0	74	>75% Grass cover, Good, Madeland
*	0	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	0	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	0	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	34,076	80	>75% Grass cover, Good, HSG D
	15,561	77	Woods, Good, HSG D
*	3,425	98	Roof, HSG D
*	4,536	98	Pavement, HSG D
*	3,799	98	Bedrock, HSG D
	64,328	80	Weighted Average
	52,568		81.72% Pervious Area
	11,760		18.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.5	150	0.0200	0.05		**Sheet Flow, A-B heet Flow** Woods: Dense underbrush n= 0.800 P2= 3.10"
5.2	195	0.0154	0.62		**Shallow Concentrated Flow, B-C Shallow Concentrated Flow** Woodland Kv= 5.0 fps
57.7	345	Total			

Summary for Subcatchment S3-6: PR Subcatchment

Runoff = 3.25 cfs @ 12.23 hrs, Volume= 0.324 af, Depth> 3.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
	0	39	>75% Grass cover, Good, HSG A
	0	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	0	74	>75% Grass cover, Good, Madeland
*	0	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	0	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	1,428	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	3,076	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	29,004	80	>75% Grass cover, Good, HSG D
	5,727	77	Woods, Good, HSG D
*	2,734	98	Roof, HSG D
*	8,365	98	Pavement, HSG D
*	4,525	98	Bedrock, HSG D
	54,859	86	Weighted Average
	36,159		65.91% Pervious Area
	18,700		34.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	85	0.0590	0.17		**Sheet Flow, A-B Sheet Flow** Grass: Dense n= 0.240 P2= 3.10"
8.4	50	0.2200	0.10		**Sheet Flow, B-C Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.10"
0.1	25	0.2800	3.70		**Shallow Concentrated Flow, C-D Shallow Concentrated Flow** Short Grass Pasture Kv= 7.0 fps
0.4	80	0.0310	3.57		**Shallow Concentrated Flow, D-E Shallow Concentrated Flow** Paved Kv= 20.3 fps
17.2	240	Total			

Summary for Subcatchment S3-7: PR Subcatchment

Runoff = 1.00 cfs @ 12.09 hrs, Volume= 0.072 af, Depth> 3.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
	0	39	>75% Grass cover, Good, HSG A
	0	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	0	74	>75% Grass cover, Good, Madeland
*	0	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	0	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	2,990	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	1,818	98	Pavement, HSG C
*	474	98	Bedrock, HSG C
	2,554	80	>75% Grass cover, Good, HSG D
	0	77	Woods, Good, HSG D
*	0	98	Roof, HSG D
*	3,634	98	Pavement, HSG D
*	0	98	Bedrock, HSG D
	11,470	88	Weighted Average
	5,544		48.33% Pervious Area
	5,926		51.67% Impervious Area

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

Summary for Subcatchment S4-1: PR Subcatchment

Runoff = 0.81 cfs @ 12.55 hrs, Volume= 0.118 af, Depth> 1.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
	12,727	39	>75% Grass cover, Good, HSG A
	3,773	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	1,559	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	13,625	74	>75% Grass cover, Good, Madeland
*	781	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	1,813	98	Pavement, Madeland
*	872	98	Bedrock, Madeland
	832	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	947	80	>75% Grass cover, Good, HSG D
	3,673	77	Woods, Good, HSG D
*	0	98	Roof, HSG D
*	0	98	Pavement, HSG D
*	3,951	98	Bedrock, HSG D
	44,553	65	Weighted Average
	36,358		81.61% Pervious Area
	8,195		18.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.6	150	0.0530	0.07		**Sheet Flow, A-B Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.10"
0.5	40	0.0750	1.37		**Shallow Concentrated Flow, B-C Shallow Concentrated Flow** Woodland Kv= 5.0 fps
0.1	32	0.0156	5.67	4.45	**Pipe Channel, Culvert** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.1	60	0.0420	9.23	147.65	**Trap/Vee/Rect Channel Flow, Ditch** Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.035 Earth, dense weeds
36.3	282	Total			

Summary for Subcatchment S4-2: PR Subcatchment

Runoff = 1.85 cfs @ 12.35 hrs, Volume= 0.214 af, Depth> 2.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
	6,349	39	>75% Grass cover, Good, HSG A
	0	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	3,854	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	0	74	>75% Grass cover, Good, Madeland
*	0	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	0	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	3,032	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	5,434	98	Pavement, HSG C
*	35	98	Bedrock, HSG C
	474	80	>75% Grass cover, Good, HSG D
	9,540	77	Woods, Good, HSG D
*	0	98	Roof, HSG D
*	0	98	Pavement, HSG D
*	12,556	98	Bedrock, HSG D
	41,274	82	Weighted Average
	19,395		46.99% Pervious Area
	21,879		53.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	50	0.0100	0.08		**Sheet Flow, A-B Sheet Flow** Grass: Dense n= 0.240 P2= 3.10"
13.4	90	0.2200	0.11		**Sheet Flow, B-C Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.10"
0.6	130	0.0620	3.73		**Shallow Concentrated Flow, C-D Shallow Concentrated Flow** Grassed Waterway Kv= 15.0 fps
25.0	270	Total			

Summary for Subcatchment S4-3: PR Subcatchment

Runoff = 0.84 cfs @ 12.48 hrs, Volume= 0.111 af, Depth> 1.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
	6,000	39	>75% Grass cover, Good, HSG A
	1,789	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	0	74	>75% Grass cover, Good, Madeland
*	0	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	0	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	2,268	74	>75% Grass cover, Good, HSG C
	1,118	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	11,625	80	>75% Grass cover, Good, HSG D
	8,807	77	Woods, Good, HSG D
*	2,002	98	Roof, HSG D
*	0	98	Pavement, HSG D
*	0	98	Bedrock, HSG D
	33,609	70	Weighted Average
	31,607		94.04% Pervious Area
	2,002		5.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	70	0.0750	0.18		**Sheet Flow, A-B Sheet Flow** Grass: Dense n= 0.240 P2= 3.10"
23.4	80	0.0430	0.06		**Sheet Flow, B-C Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.10"
2.2	120	0.0330	0.91		**Shallow Concentrated Flow, C-D Shallow Concentrated Flow** Woodland Kv= 5.0 fps
32.0	270	Total			

Summary for Subcatchment S5: PR Subcatchment

Runoff = 0.43 cfs @ 12.68 hrs, Volume= 0.074 af, Depth> 1.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
	17,004	39	>75% Grass cover, Good, HSG A
	943	30	Woods, Good, HSG A
*	2,130	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	1,954	74	>75% Grass cover, Good, Madeland
*	0	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	0	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	0	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	10,898	80	>75% Grass cover, Good, HSG D
	3,284	77	Woods, Good, HSG D
*	98	98	Roof, HSG D
*	0	98	Pavement, HSG D
*	0	98	Bedrock, HSG D
	36,311	60	Weighted Average
	34,083		93.86% Pervious Area
	2,228		6.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.1	80	0.0250	0.05		**Sheet Flow, A-B Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.10"
9.4	70	0.0290	0.12		**Sheet Flow, B-C Sheet Flow** Grass: Dense n= 0.240 P2= 3.10"
5.4	280	0.0150	0.86		**Shallow Concentrated Flow, B-C Shallow Concentrated Flow** Short Grass Pasture Kv= 7.0 fps
43.9	430	Total			

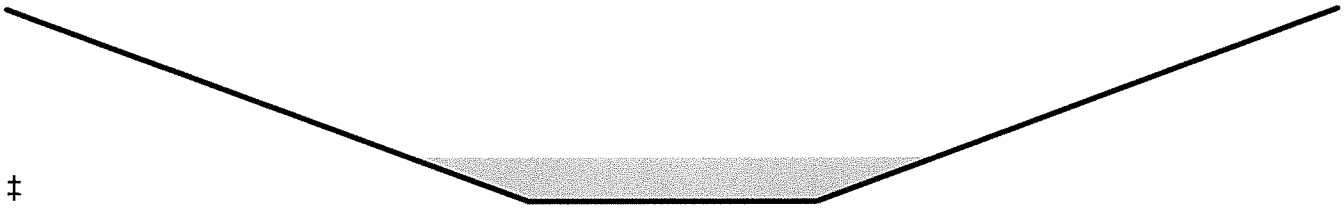
Summary for Reach R1: Woodland Channel

Inflow Area = 9.058 ac, 24.72% Impervious, Inflow Depth > 2.63" for 10-Year event
Inflow = 8.99 cfs @ 12.56 hrs, Volume= 1.988 af
Outflow = 8.76 cfs @ 12.79 hrs, Volume= 1.974 af, Atten= 2%, Lag= 13.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.80 fps, Min. Travel Time= 7.4 min
Avg. Velocity = 0.70 fps, Avg. Travel Time= 19.1 min

Peak Storage= 3,892 cf @ 12.67 hrs
Average Depth at Peak Storage= 0.69'
Bank-Full Depth= 3.00' Flow Area= 42.0 sf, Capacity= 170.06 cfs

5.00' x 3.00' deep channel, n= 0.080 Earth, long dense weeds
Side Slope Z-value= 3.0 '/' Top Width= 23.00'
Length= 800.0' Slope= 0.0225 '/'
Inlet Invert= 44.00', Outlet Invert= 26.00'



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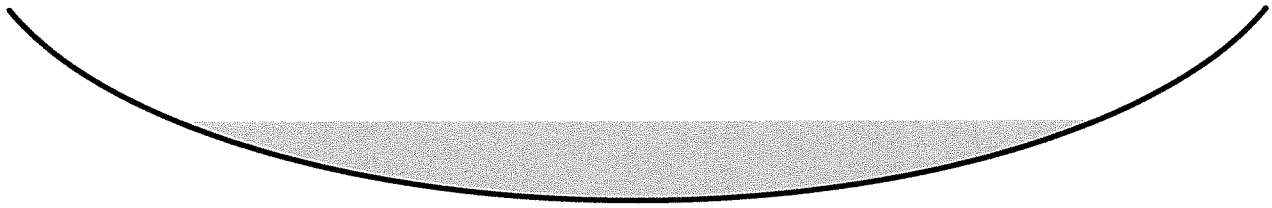
Summary for Reach R2: Wetland Channel

Inflow Area = 2.822 ac, 26.34% Impervious, Inflow Depth > 2.84" for 10-Year event
Inflow = 5.36 cfs @ 12.33 hrs, Volume= 0.669 af
Outflow = 5.24 cfs @ 12.45 hrs, Volume= 0.666 af, Atten= 2%, Lag= 7.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.98 fps, Min. Travel Time= 4.4 min
Avg. Velocity = 0.33 fps, Avg. Travel Time= 13.1 min

Peak Storage= 1,392 cf @ 12.38 hrs
Average Depth at Peak Storage= 0.42'
Bank-Full Depth= 1.00' Flow Area= 20.0 sf, Capacity= 35.10 cfs

30.00' x 1.00' deep Parabolic Channel, n= 0.080 Earth, long dense weeds
Length= 260.0' Slope= 0.0154 '/'
Inlet Invert= 48.00', Outlet Invert= 44.00'



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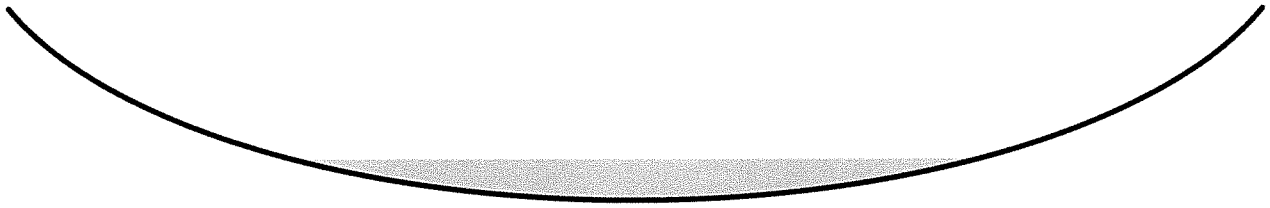
Summary for Reach R3: Wetland Channel

Inflow Area = 0.370 ac, 56.57% Impervious, Inflow Depth > 3.29" for 10-Year event
Inflow = 1.40 cfs @ 12.09 hrs, Volume= 0.101 af
Outflow = 1.08 cfs @ 12.23 hrs, Volume= 0.101 af, Atten= 23%, Lag= 8.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.53 fps, Min. Travel Time= 4.4 min
Avg. Velocity = 0.20 fps, Avg. Travel Time= 11.8 min

Peak Storage= 285 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.22'
Bank-Full Depth= 1.00' Flow Area= 20.0 sf, Capacity= 29.29 cfs

30.00' x 1.00' deep Parabolic Channel, n= 0.080 Earth, long dense weeds
Length= 140.0' Slope= 0.0107 '/'
Inlet Invert= 45.50', Outlet Invert= 44.00'



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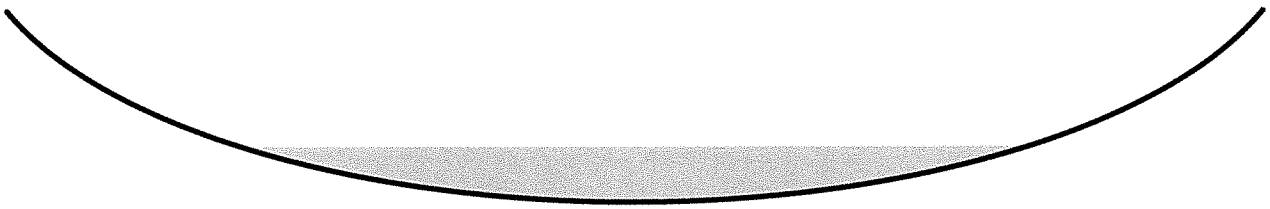
Summary for Reach R4: Wetland Channel

Inflow Area = 3.416 ac, 33.44% Impervious, Inflow Depth > 2.62" for 10-Year event
Inflow = 2.85 cfs @ 13.08 hrs, Volume= 0.747 af
Outflow = 2.81 cfs @ 13.19 hrs, Volume= 0.743 af, Atten= 1%, Lag= 6.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.89 fps, Min. Travel Time= 6.3 min
Avg. Velocity = 0.39 fps, Avg. Travel Time= 14.7 min

Peak Storage= 1,069 cf @ 13.08 hrs
Average Depth at Peak Storage= 0.29'
Bank-Full Depth= 1.00' Flow Area= 20.0 sf, Capacity= 40.60 cfs

30.00' x 1.00' deep Parabolic Channel, n= 0.080 Earth, long dense weeds
Length= 340.0' Slope= 0.0206 '/'
Inlet Invert= 51.00', Outlet Invert= 44.00'



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Summary for Pond BRF1: BRF-1

Inflow Area = 0.137 ac, 57.67% Impervious, Inflow Depth > 3.49" for 10-Year event
Inflow = 0.54 cfs @ 12.09 hrs, Volume= 0.040 af
Outflow = 0.53 cfs @ 12.11 hrs, Volume= 0.040 af, Atten= 3%, Lag= 1.4 min
Primary = 0.53 cfs @ 12.11 hrs, Volume= 0.040 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 51.02' @ 12.11 hrs Surf.Area= 772 sf Storage= 365 cf

Plug-Flow detention time= 74.3 min calculated for 0.040 af (100% of inflow)
Center-of-Mass det. time= 74.1 min (867.0 - 793.0)

Volume	Invert	Avail.Storage	Storage Description
#1	50.50'	392 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
50.50	644	0	0
51.05	781	392	392

Device	Routing	Invert	Outlet Devices
#1	Primary	50.50'	**0.03 cfs Exfiltration when above 50.50'**
#2	Primary	51.00'	**85.0' long (Profile 6) Broad-Crested Rectangular Weir**
			Head (feet) 0.49 0.98 1.48
			Coef. (English) 3.12 3.41 3.59

Primary OutFlow Max=0.52 cfs @ 12.11 hrs HW=51.02' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.03 cfs)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 0.49 cfs @ 0.38 fps)

Summary for Pond BRF2: BRF-2

Inflow Area = 0.370 ac, 56.57% Impervious, Inflow Depth > 3.29" for 10-Year event
Inflow = 1.40 cfs @ 12.09 hrs, Volume= 0.101 af
Outflow = 1.40 cfs @ 12.09 hrs, Volume= 0.101 af, Atten= 0%, Lag= 0.3 min
Primary = 1.40 cfs @ 12.09 hrs, Volume= 0.101 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 49.02' @ 12.09 hrs Surf.Area= 1,541 sf Storage= 754 cf

Plug-Flow detention time= 71.3 min calculated for 0.101 af (100% of inflow)
Center-of-Mass det. time= 71.1 min (871.4 - 800.3)

Volume	Invert	Avail.Storage	Storage Description
#1	48.50'	797 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
48.50	1,349	0	0
49.05	1,551	797	797

Device	Routing	Invert	Outlet Devices
#1	Primary	48.50'	**0.06 cfs Exfiltration when above 48.50'**
#2	Primary	49.00'	**135.0' long (Profile 6) Broad-Crested Rectangular Weir**
			Head (feet) 0.49 0.98 1.48
			Coef. (English) 3.12 3.41 3.59

Primary OutFlow Max=1.39 cfs @ 12.09 hrs HW=49.02' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.06 cfs)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 1.33 cfs @ 0.46 fps)

Summary for Pond CB1: Exist CB

Inflow Area = 1.643 ac, 32.09% Impervious, Inflow Depth > 1.63" for 10-Year event
Inflow = 0.65 cfs @ 12.88 hrs, Volume= 0.223 af
Outflow = 0.65 cfs @ 12.88 hrs, Volume= 0.223 af, Atten= 0%, Lag= 0.0 min
Primary = 0.65 cfs @ 12.88 hrs, Volume= 0.223 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 21.83' @ 12.88 hrs
Flood Elev= 22.79'

Device	Routing	Invert	Outlet Devices
#1	Primary	21.34'	**12.0" Round Culvert** L= 160.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 21.34' / 20.75' S= 0.0037 '/' Cc= 0.900 n= 0.012 Steel, smooth, Flow Area= 0.79 sf

Primary OutFlow Max=0.65 cfs @ 12.88 hrs HW=21.83' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 0.65 cfs @ 2.46 fps)

Summary for Pond CB2: New CB

Inflow Area = 24.489 ac, 21.07% Impervious, Inflow Depth > 1.88" for 10-Year event
Inflow = 13.64 cfs @ 13.37 hrs, Volume= 3.840 af
Outflow = 13.64 cfs @ 13.37 hrs, Volume= 3.840 af, Atten= 0%, Lag= 0.0 min
Primary = 13.64 cfs @ 13.37 hrs, Volume= 3.840 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 23.12' @ 13.37 hrs
Flood Elev= 25.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.69'	**24.0" Round Culvert** L= 113.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.69' / 20.46' S= 0.0020 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=13.64 cfs @ 13.37 hrs HW=23.12' TW=22.02' (TW follows 1.10' below HW)
↑—**1=Culvert** (Barrel Controls 13.64 cfs @ 4.54 fps)

Summary for Pond DET1: PR Crossing

Inflow Area = 2.686 ac, 24.75% Impervious, Inflow Depth > 2.81" for 10-Year event
Inflow = 5.19 cfs @ 12.31 hrs, Volume= 0.629 af
Outflow = 5.15 cfs @ 12.33 hrs, Volume= 0.629 af, Atten= 1%, Lag= 1.4 min
Primary = 5.15 cfs @ 12.33 hrs, Volume= 0.629 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 52.84' @ 12.33 hrs Surf.Area= 221 sf Storage= 123 cf

Plug-Flow detention time= 0.1 min calculated for 0.629 af (100% of inflow)

Center-of-Mass det. time= 0.1 min (821.7 - 821.5)

Volume	Invert	Avail.Storage	Storage Description
#1	51.00'	1,410 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
51.00	0	0	0
52.00	32	16	16
53.00	256	144	160
54.00	591	424	584
55.00	1,062	827	1,410

Device	Routing	Invert	Outlet Devices
#1	Primary	51.00'	**15.0" Round Culvert** L= 69.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 51.00' / 48.93' S= 0.0300 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=5.15 cfs @ 12.33 hrs HW=52.84' (Free Discharge)
↑**1=Culvert** (Inlet Controls 5.15 cfs @ 4.20 fps)

Summary for Pond DET2: PR Det Area

Inflow Area =	1.970 ac, 35.04% Impervious, Inflow Depth > 1.42"		for 10-Year event	
Inflow =	2.11 cfs @	12.57 hrs, Volume=	0.234 af	
Outflow =	0.91 cfs @	13.08 hrs, Volume=	0.234 af,	Atten= 57%, Lag= 31.0 min
Primary =	0.91 cfs @	13.08 hrs, Volume=	0.234 af	

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 33.90' @ 13.08 hrs Surf.Area= 2,259 sf Storage= 2,718 cf

Plug-Flow detention time= 39.5 min calculated for 0.234 af (100% of inflow)
Center-of-Mass det. time= 38.8 min (900.1 - 861.4)

Volume	Invert	Avail.Storage	Storage Description
#1	32.00'	8,976 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
32.00	0	0	0
33.00	1,800	900	900
34.00	2,313	2,057	2,957
35.00	2,924	2,619	5,575
36.00	3,878	3,401	8,976

Device	Routing	Invert	Outlet Devices
#1	Primary	32.00'	**3.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	32.80'	**6.0" W x 3.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.91 cfs @ 13.08 hrs HW=33.90' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 0.31 cfs @ 6.41 fps)
└—**2=Orifice/Grate** (Orifice Controls 0.59 cfs @ 4.74 fps)

Summary for Pond UG1: Underground Detention

Inflow Area = 1.259 ac, 34.09% Impervious, Inflow Depth > 3.09" for 10-Year event
Inflow = 3.25 cfs @ 12.23 hrs, Volume= 0.324 af
Outflow = 1.18 cfs @ 12.65 hrs, Volume= 0.321 af, Atten= 64%, Lag= 24.9 min
Primary = 1.18 cfs @ 12.65 hrs, Volume= 0.321 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 60.93' @ 12.65 hrs Surf.Area= 2,585 sf Storage= 3,974 cf

Plug-Flow detention time= 39.2 min calculated for 0.321 af (99% of inflow)
Center-of-Mass det. time= 33.3 min (849.4 - 816.1)

Volume	Invert	Avail.Storage	Storage Description
#1	58.50'	2,553 cf	**11.00'W x 235.00'L x 3.50'H Prismatoid** 9,048 cf Overall - 2,665 cf Embedded = 6,383 cf x 40.0% Voids
#2	59.00'	2,665 cf	**ADS_StormTech SC-740 +Cap** x 58 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
		5,218 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	58.50'	**5.5" Vert. Orifice/Grate** C= 0.600
#2	Primary	61.50'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=1.18 cfs @ 12.65 hrs HW=60.93' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 1.18 cfs @ 7.14 fps)
└—**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond UG2: Underground Detention

Inflow Area = 0.422 ac, 71.87% Impervious, Inflow Depth > 3.09" for 10-Year event
Inflow = 1.52 cfs @ 12.09 hrs, Volume= 0.109 af
Outflow = 0.31 cfs @ 12.52 hrs, Volume= 0.107 af, Atten= 80%, Lag= 26.1 min
Primary = 0.31 cfs @ 12.52 hrs, Volume= 0.107 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 29.59' @ 12.52 hrs Surf.Area= 1,408 sf Storage= 1,883 cf

Plug-Flow detention time= 114.5 min calculated for 0.107 af (99% of inflow)
Center-of-Mass det. time= 106.6 min (913.6 - 807.0)

Volume	Invert	Avail.Storage	Storage Description
#1	27.50'	1,383 cf	**11.00'W x 128.00'L x 3.50'H Prismatoid** 4,928 cf Overall - 1,470 cf Embedded = 3,458 cf x 40.0% Voids
#2	28.00'	1,470 cf	**ADS_StormTech SC-740 +Cap** x 32 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
		2,853 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	27.50'	**2.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	29.00'	**3.0" Vert. Orifice/Grate** C= 0.600
#3	Primary	30.50'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=0.31 cfs @ 12.52 hrs HW=29.59' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.15 cfs @ 6.82 fps)
└**2=Orifice/Grate** (Orifice Controls 0.16 cfs @ 3.28 fps)
└**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond USF1: USF-1

Inflow Area = 2.999 ac, 27.85% Impervious, Inflow Depth > 2.81" for 10-Year event
Inflow = 3.06 cfs @ 12.76 hrs, Volume= 0.702 af
Outflow = 2.40 cfs @ 13.17 hrs, Volume= 0.612 af, Atten= 21%, Lag= 24.8 min
Primary = 2.40 cfs @ 13.17 hrs, Volume= 0.612 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 56.42' @ 13.17 hrs Surf.Area= 4,144 sf Storage= 7,184 cf

Plug-Flow detention time= 93.6 min calculated for 0.612 af (87% of inflow)
Center-of-Mass det. time= 39.4 min (891.0 - 851.6)

Volume	Invert	Avail.Storage	Storage Description
#1	54.00'	15,112 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
54.00	1,964	0	0
55.00	2,714	2,339	2,339
56.00	3,696	3,205	5,544
57.00	4,768	4,232	9,776
58.00	5,904	5,336	15,112

Device	Routing	Invert	Outlet Devices
#1	Primary	54.00'	**0.09 cfs Exfiltration at all elevations**
#2	Primary	55.50'	**20.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=2.40 cfs @ 13.17 hrs HW=56.42' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.09 cfs)
└**2=Orifice/Grate** (Orifice Controls 2.31 cfs @ 4.17 fps)

Summary for Pond USF2: USF-2

Inflow Area = 0.948 ac, 53.01% Impervious, Inflow Depth > 2.71" for 10-Year event
Inflow = 1.85 cfs @ 12.35 hrs, Volume= 0.214 af
Outflow = 1.35 cfs @ 12.57 hrs, Volume= 0.166 af, Atten= 27%, Lag= 13.1 min
Primary = 1.31 cfs @ 12.57 hrs, Volume= 0.116 af
Secondary = 0.04 cfs @ 9.89 hrs, Volume= 0.049 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 37.85' @ 12.57 hrs Surf.Area= 2,265 sf Storage= 2,857 cf

Plug-Flow detention time= 127.0 min calculated for 0.166 af (77% of inflow)
Center-of-Mass det. time= 46.6 min (880.9 - 834.3)

Volume	Invert	Avail.Storage	Storage Description
#1	36.00'	6,039 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
36.00	860	0	0
37.00	1,585	1,223	1,223
38.00	2,386	1,986	3,208
39.00	3,276	2,831	6,039

Device	Routing	Invert	Outlet Devices
#1	Secondary	36.00'	**0.04 cfs Exfiltration at all elevations**
#2	Primary	37.50'	**24.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=1.31 cfs @ 12.57 hrs HW=37.85' (Free Discharge)
↑—**2=Orifice/Grate** (Orifice Controls 1.31 cfs @ 1.97 fps)

Secondary OutFlow Max=0.04 cfs @ 9.89 hrs HW=36.03' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.04 cfs)

Summary for Pond USF3: USF-3

Inflow Area = 0.809 ac, 58.83% Impervious, Inflow Depth > 3.07" for 10-Year event
Inflow = 1.51 cfs @ 12.09 hrs, Volume= 0.207 af
Outflow = 0.34 cfs @ 13.26 hrs, Volume= 0.149 af, Atten= 77%, Lag= 70.1 min
Primary = 0.34 cfs @ 13.26 hrs, Volume= 0.149 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 25.70' @ 13.26 hrs Surf.Area= 2,430 sf Storage= 3,140 cf

Plug-Flow detention time= 192.8 min calculated for 0.149 af (72% of inflow)
Center-of-Mass det. time= 90.5 min (952.8 - 862.3)

Volume	Invert	Avail.Storage	Storage Description
#1	24.00'	6,960 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
24.00	1,306	0	0
25.00	1,936	1,621	1,621
26.00	2,646	2,291	3,912
27.00	3,449	3,048	6,960

Device	Routing	Invert	Outlet Devices
#1	Primary	21.67'	**6.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 21.67' / 21.40' S= 0.0090 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Device 1	24.00'	**0.06 cfs Exfiltration at all elevations**
#3	Device 1	25.50'	**12.0" W x 3.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.34 cfs @ 13.26 hrs HW=25.70' TW=22.79' (Fixed TW Elev= 22.79')
↑—**1=Culvert** (Passes 0.34 cfs of 1.36 cfs potential flow)
↑—**2=Exfiltration** (Exfiltration Controls 0.06 cfs)
—**3=Orifice/Grate** (Orifice Controls 0.28 cfs @ 1.42 fps)

Summary for Pond W1: EX Wetland

Inflow Area = 24.147 ac, 20.60% Impervious, Inflow Depth > 1.87" for 10-Year event
Inflow = 15.63 cfs @ 12.95 hrs, Volume= 3.760 af
Outflow = 13.55 cfs @ 13.37 hrs, Volume= 3.755 af, Atten= 13%, Lag= 25.1 min
Primary = 13.55 cfs @ 13.37 hrs, Volume= 3.755 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 24.97' @ 13.37 hrs Surf.Area= 22,343 sf Storage= 24,980 cf

Plug-Flow detention time= 43.0 min calculated for 3.755 af (100% of inflow)
Center-of-Mass det. time= 42.3 min (935.5 - 893.1)

Volume	Invert	Avail.Storage	Storage Description
#1	22.00'	56,669 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
22.00	0	0	0
23.00	1,435	718	718
24.00	12,931	7,183	7,901
25.00	22,650	17,791	25,691
26.00	39,305	30,978	56,669

Device	Routing	Invert	Outlet Devices
#1	Primary	20.80'	**24.0" Round Culvert** L= 54.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.80' / 20.69' S= 0.0020 '/' Cc= 0.900 n= 0.012 Steel, smooth, Flow Area= 3.14 sf
#2	Device 1	22.00'	**12.0" Round Culvert** L= 175.0' CPP, projecting, no headwall, Ke= 0.900

Inlet / Outlet Invert= 22.00' / 20.90' S= 0.0063 '/' Cc= 0.900
n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3 Device 1 24.30' **24.0" Horiz. Orifice/Grate** C= 1.000
Limited to weir flow at low heads

Primary OutFlow Max=13.54 cfs @ 13.37 hrs HW=24.97' TW=23.97' (TW follows 1.00' below HW)
└─**1=Culvert** (Passes 13.54 cfs of 15.13 cfs potential flow)
├─**2=Culvert** (Outlet Controls 2.32 cfs @ 2.95 fps)
└─**3=Orifice/Grate** (Weir Controls 11.23 cfs @ 2.67 fps)

Summary for Link 1L: Dripline Filters 12 - 18

Inflow Area = 0.417 ac, 73.66% Impervious, Inflow Depth > 3.88" for 10-Year event
Inflow = 0.53 cfs @ 12.49 hrs, Volume= 0.135 af
Primary = 0.53 cfs @ 12.49 hrs, Volume= 0.135 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

10-Year Outflow Imported from 41875 POST_4-1_021522~Reach 1R.hce

Summary for Link 2L: Dripline Filters 6 - 11

Inflow Area = 0.289 ac,100.00% Impervious, Inflow Depth > 4.36" for 10-Year event
Inflow = 0.42 cfs @ 11.82 hrs, Volume= 0.105 af
Primary = 0.42 cfs @ 11.82 hrs, Volume= 0.105 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

10-Year Outflow Imported from 41875 POST_4-1_021522~Reach 2R.hce

Summary for Link 3L: Dripline Filters 1 - 5

Inflow Area = 0.259 ac,100.00% Impervious, Inflow Depth > 4.36" for 10-Year event
Inflow = 0.36 cfs @ 11.89 hrs, Volume= 0.094 af
Primary = 0.36 cfs @ 11.89 hrs, Volume= 0.094 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

10-Year Outflow Imported from 41875 POST_4-1_021522~Reach 3R.hce

Summary for Link SP1: Study Point #1

Inflow Area = 26.131 ac, 21.76% Impervious, Inflow Depth > 1.87" for 10-Year event
Inflow = 14.17 cfs @ 13.36 hrs, Volume= 4.063 af
Primary = 14.17 cfs @ 13.36 hrs, Volume= 4.063 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Link SP3: Study Point #3

Inflow Area = 9.058 ac, 24.72% Impervious, Inflow Depth > 2.63" for 10-Year event
Inflow = 8.99 cfs @ 12.56 hrs, Volume= 1.988 af
Primary = 8.99 cfs @ 12.56 hrs, Volume= 1.988 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Link SP4: Study Point #4

Inflow Area = 0.772 ac, 5.96% Impervious, Inflow Depth > 2.50" for 10-Year event
Inflow = 0.88 cfs @ 12.48 hrs, Volume= 0.161 af
Primary = 0.88 cfs @ 12.48 hrs, Volume= 0.161 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S1-1: PR Subcatchment Runoff Area=560,177 sf 13.88% Impervious Runoff Depth>2.16"
Flow Length=780' Tc=78.0 min CN=65 Runoff=10.76 cfs 2.315 af

Subcatchment S1-2: PR Subcatchment Runoff Area=16,843 sf 44.58% Impervious Runoff Depth>4.22"
Tc=6.0 min CN=86 Runoff=1.87 cfs 0.136 af

Subcatchment S1-3: PR Subcatchment Runoff Area=18,397 sf 71.87% Impervious Runoff Depth>4.22"
Tc=6.0 min CN=86 Runoff=2.04 cfs 0.148 af

Subcatchment S1-4: PR Subcatchment Runoff Area=14,892 sf 54.46% Impervious Runoff Depth>4.11"
Tc=6.0 min CN=85 Runoff=1.62 cfs 0.117 af

Subcatchment S3-1: PR Subcatchment Runoff Area=104,411 sf 15.68% Impervious Runoff Depth>3.69"
Flow Length=643' Tc=22.3 min CN=81 Runoff=6.69 cfs 0.736 af

Subcatchment S3-2: PR Subcatchment Runoff Area=5,960 sf 57.67% Impervious Runoff Depth>4.65"
Tc=6.0 min CN=90 Runoff=0.71 cfs 0.053 af

Subcatchment S3-3: PR Subcatchment Runoff Area=16,123 sf 56.57% Impervious Runoff Depth>4.43"
Tc=6.0 min CN=88 Runoff=1.86 cfs 0.137 af

Subcatchment S3-4: PR Subcatchment Runoff Area=106,688 sf 5.88% Impervious Runoff Depth>3.36"
Flow Length=230' Tc=57.4 min CN=78 Runoff=3.94 cfs 0.686 af

Subcatchment S3-5: PR Subcatchment Runoff Area=64,328 sf 18.28% Impervious Runoff Depth>3.56"
Flow Length=345' Tc=57.7 min CN=80 Runoff=2.52 cfs 0.438 af

Subcatchment S3-6: PR Subcatchment Runoff Area=54,859 sf 34.09% Impervious Runoff Depth>4.21"
Flow Length=240' Tc=17.2 min CN=86 Runoff=4.39 cfs 0.442 af

Subcatchment S3-7: PR Subcatchment Runoff Area=11,470 sf 51.67% Impervious Runoff Depth>4.43"
Tc=6.0 min CN=88 Runoff=1.33 cfs 0.097 af

Subcatchment S4-1: PR Subcatchment Runoff Area=44,553 sf 18.39% Impervious Runoff Depth>2.19"
Flow Length=282' Tc=36.3 min CN=65 Runoff=1.33 cfs 0.186 af

Subcatchment S4-2: PR Subcatchment Runoff Area=41,274 sf 53.01% Impervious Runoff Depth>3.79"
Flow Length=270' Tc=25.0 min CN=82 Runoff=2.58 cfs 0.299 af

Subcatchment S4-3: PR Subcatchment Runoff Area=33,609 sf 5.96% Impervious Runoff Depth>2.63"
Flow Length=270' Tc=32.0 min CN=70 Runoff=1.30 cfs 0.169 af

Subcatchment S5: PR Subcatchment Runoff Area=36,311 sf 6.14% Impervious Runoff Depth>1.77"
Flow Length=430' Tc=43.9 min CN=60 Runoff=0.77 cfs 0.123 af

Reach R1: Woodland Channel Avg. Flow Depth=0.85' Max Vel=2.02 fps Inflow=13.22 cfs 2.793 af
n=0.080 L=800.0' S=0.0225 '/' Capacity=170.06 cfs Outflow=12.93 cfs 2.776 af

Reach R2: Wetland Channel Avg. Flow Depth=0.47' Max Vel=1.07 fps Inflow=7.07 cfs 0.923 af
n=0.080 L=260.0' S=0.0154 '/' Capacity=35.10 cfs Outflow=6.98 cfs 0.920 af

Reach R3: Wetland Channel Avg. Flow Depth=0.27' Max Vel=0.61 fps Inflow=1.86 cfs 0.137 af
n=0.080 L=140.0' S=0.0107 '/' Capacity=29.29 cfs Outflow=1.66 cfs 0.136 af

Reach R4: Wetland Channel Avg. Flow Depth=0.33' Max Vel=0.97 fps Inflow=3.63 cfs 1.056 af
n=0.080 L=340.0' S=0.0206 '/' Capacity=40.60 cfs Outflow=3.62 cfs 1.051 af

Pond BRF1: BRF-1 Peak Elev=51.02' Storage=368 cf Inflow=0.71 cfs 0.053 af
Outflow=0.71 cfs 0.053 af

Pond BRF2: BRF-2 Peak Elev=49.03' Storage=761 cf Inflow=1.86 cfs 0.137 af
Outflow=1.86 cfs 0.137 af

Pond CB1: Exist CB Peak Elev=22.12' Inflow=1.42 cfs 0.344 af
12.0" Round Culvert n=0.012 L=160.0' S=0.0037 '/' Outflow=1.42 cfs 0.344 af

Pond CB2: New CB Peak Elev=23.53' Inflow=15.30 cfs 5.705 af
24.0" Round Culvert n=0.013 L=113.0' S=0.0020 '/' Outflow=15.30 cfs 5.705 af

Pond DET1: PR Crossing Peak Elev=53.77' Storage=455 cf Inflow=7.11 cfs 0.870 af
15.0" Round Culvert n=0.013 L=69.0' S=0.0300 '/' Outflow=6.83 cfs 0.870 af

Pond DET2: PR Det Area Peak Elev=34.93' Storage=5,362 cf Inflow=3.33 cfs 0.384 af
Outflow=1.25 cfs 0.383 af

Pond UG1: Underground Detention Peak Elev=61.73' Storage=4,937 cf Inflow=4.39 cfs 0.442 af
Outflow=2.79 cfs 0.438 af

Pond UG2: Underground Detention Peak Elev=30.44' Storage=2,539 cf Inflow=2.04 cfs 0.148 af
Outflow=0.45 cfs 0.147 af

Pond USF1: USF-1 Peak Elev=56.97' Storage=9,642 cf Inflow=4.95 cfs 0.973 af
Outflow=3.14 cfs 0.881 af

Pond USF2: USF-2 Peak Elev=38.06' Storage=3,355 cf Inflow=2.58 cfs 0.299 af
Primary=2.00 cfs 0.198 af Secondary=0.04 cfs 0.052 af Outflow=2.04 cfs 0.250 af

Pond USF3: USF-3 Peak Elev=25.87' Storage=3,576 cf Inflow=2.12 cfs 0.282 af
Outflow=0.65 cfs 0.222 af

Pond W1: EX Wetland Peak Elev=25.63' Storage=43,403 cf Inflow=23.62 cfs 5.595 af
Outflow=15.13 cfs 5.588 af

Link 1L: 25-Year Outflow Imported from 41875 POST_4-1_021522~Reach 1R.hce Inflow=0.78 cfs 0.175 af
Area= 0.417 ac 73.66% Imperv. Primary=0.78 cfs 0.175 af

Link 2L: 25-Year Outflow Imported from 41875 POST_4-1_021522~Reach 2R.hce Inflow=0.42 cfs 0.134 af
Area= 0.289 ac 100.00% Imperv. Primary=0.42 cfs 0.134 af

Link 3L: 25-Year Outflow Imported from 41875 POST_4-1_021522~Reach 3R.hce Inflow=0.36 cfs 0.120 af
Area= 0.259 ac 100.00% Imperv. Primary=0.36 cfs 0.120 af

Link SP1: Study Point #1 Inflow=16.63 cfs 6.050 af
Primary=16.63 cfs 6.050 af

Link SP3: Study Point #3 Inflow=13.22 cfs 2.793 af
Primary=13.22 cfs 2.793 af

Link SP4: Study Point #4 Inflow=1.34 cfs 0.221 af
Primary=1.34 cfs 0.221 af

Total Runoff Area = 25.939 ac Runoff Volume = 6.083 af Average Runoff Depth = 2.81"
81.19% Pervious = 21.061 ac 18.81% Impervious = 4.878 ac

Summary for Subcatchment S1-1: PR Subcatchment

Runoff = 10.76 cfs @ 13.09 hrs, Volume= 2.315 af, Depth> 2.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
	90,348	39	>75% Grass cover, Good, HSG A
	108,213	30	Woods, Good, HSG A
*	1,186	98	Roof, HSG A
*	8,570	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	10,506	74	>75% Grass cover, Good, Madeland
*	25,596	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	1,193	98	Pavement, Madeland
*	191	98	Bedrock, Madeland
	5,797	74	>75% Grass cover, Good, HSG C
	2,561	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	499	98	Bedrock, HSG C
	119,938	80	>75% Grass cover, Good, HSG D
	119,468	77	Woods, Good, HSG D
*	27,057	98	Roof, HSG D
*	33,901	98	Pavement, HSG D
*	5,153	98	Bedrock, HSG D
	560,177	65	Weighted Average
	482,427		86.12% Pervious Area
	77,750		13.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
71.5	300	0.0370	0.07		**Sheet Flow, A-B Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.10"
5.4	250	0.0240	0.77		**Shallow Concentrated Flow, B-C Shallow** Woodland Kv= 5.0 fps
1.1	230	0.0170	3.62	151.97	**Channel Flow, C-D Wetland Channel** Area= 42.0 sf Perim= 23.0' r= 1.83' n= 0.080
78.0	780	Total			

Summary for Subcatchment S1-2: PR Subcatchment

Runoff = 1.87 cfs @ 12.09 hrs, Volume= 0.136 af, Depth> 4.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
	0	39	>75% Grass cover, Good, HSG A
	0	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	4,066	74	>75% Grass cover, Good, Madeland
*	0	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	2,438	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	1,789	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	2,278	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	3,480	80	>75% Grass cover, Good, HSG D
	0	77	Woods, Good, HSG D
*	0	98	Roof, HSG D
*	2,792	98	Pavement, HSG D
*	0	98	Bedrock, HSG D
	16,843	86	Weighted Average
	9,335		55.42% Pervious Area
	7,508		44.58% Impervious Area

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

Summary for Subcatchment S1-3: PR Subcatchment

Runoff = 2.04 cfs @ 12.09 hrs, Volume= 0.148 af, Depth> 4.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
	3,152	39	>75% Grass cover, Good, HSG A
	0	30	Woods, Good, HSG A
*	33	98	Roof, HSG A
*	6,369	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	1,131	74	>75% Grass cover, Good, Madeland
*	0	70	Woods, Good, Madeland
*	1,023	98	Roof, Madeland
*	2,708	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	0	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	892	80	>75% Grass cover, Good, HSG D
	0	77	Woods, Good, HSG D
*	0	98	Roof, HSG D
*	3,089	98	Pavement, HSG D
*	0	98	Bedrock, HSG D
	18,397	86	Weighted Average
	5,175		28.13% Pervious Area
	13,222		71.87% Impervious Area

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

Summary for Subcatchment S1-4: PR Subcatchment

Runoff = 1.62 cfs @ 12.09 hrs, Volume= 0.117 af, Depth> 4.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
	998	39	>75% Grass cover, Good, HSG A
	0	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	1,707	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	5,445	74	>75% Grass cover, Good, Madeland
*	0	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	5,420	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	0	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	339	80	>75% Grass cover, Good, HSG D
	0	77	Woods, Good, HSG D
*	0	98	Roof, HSG D
*	983	98	Pavement, HSG D
*	0	98	Bedrock, HSG D
	14,892	85	Weighted Average
	6,782		45.54% Pervious Area
	8,110		54.46% Impervious Area

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

Summary for Subcatchment S3-1: PR Subcatchment

Runoff = 6.69 cfs @ 12.31 hrs, Volume= 0.736 af, Depth> 3.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
	0	39	>75% Grass cover, Good, HSG A
	0	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	0	74	>75% Grass cover, Good, Madeland
*	0	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	0	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	15,417	74	>75% Grass cover, Good, HSG C
	1,918	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	60,972	80	>75% Grass cover, Good, HSG D
	9,731	77	Woods, Good, HSG D
*	8,522	98	Roof, HSG D
*	0	98	Pavement, HSG D
*	7,851	98	Bedrock, HSG D
	104,411	81	Weighted Average
	88,038		84.32% Pervious Area
	16,373		15.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	85	0.0350	0.14		**Sheet Flow, A-B Sheet Flow** Grass: Dense n= 0.240 P2= 3.10"
9.6	40	0.1000	0.07		**Sheet Flow, B-C Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.10"
2.0	420	0.0536	3.47		**Shallow Concentrated Flow, C-D Shallow Concentrated Flow** Grassed Waterway Kv= 15.0 fps
0.5	98	0.0050	3.21	2.52	**Pipe Channel, Storm Drain** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
22.3	643	Total			

Summary for Subcatchment S3-2: PR Subcatchment

Runoff = 0.71 cfs @ 12.08 hrs, Volume= 0.053 af, Depth> 4.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
	0	39	>75% Grass cover, Good, HSG A
	0	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	0	74	>75% Grass cover, Good, Madeland
*	0	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	0	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	574	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	869	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	1,949	80	>75% Grass cover, Good, HSG D
	0	77	Woods, Good, HSG D
*	0	98	Roof, HSG D
*	2,568	98	Pavement, HSG D
*	0	98	Bedrock, HSG D
	5,960	90	Weighted Average
	2,523		42.33% Pervious Area
	3,437		57.67% Impervious Area

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

Summary for Subcatchment S3-3: PR Subcatchment

Runoff = 1.86 cfs @ 12.09 hrs, Volume= 0.137 af, Depth> 4.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
	0	39	>75% Grass cover, Good, HSG A
	0	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	0	74	>75% Grass cover, Good, Madeland
*	0	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	0	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	5,798	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	8,633	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	1,205	80	>75% Grass cover, Good, HSG D
	0	77	Woods, Good, HSG D
*	0	98	Roof, HSG D
*	487	98	Pavement, HSG D
*	0	98	Bedrock, HSG D
	16,123	88	Weighted Average
	7,003		43.43% Pervious Area
	9,120		56.57% Impervious Area

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

Summary for Subcatchment S3-4: PR Subcatchment

Runoff = 3.94 cfs @ 12.81 hrs, Volume= 0.686 af, Depth> 3.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
	0	39	>75% Grass cover, Good, HSG A
	705	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	2,889	98	Bedrock, HSG A
*	6,240	74	>75% Grass cover, Good, Madeland
*	731	70	Woods, Good, Madeland
*	1,473	98	Roof, Madeland
*	0	98	Pavement, Madeland
*	905	98	Bedrock, Madeland
	1,686	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	18,632	80	>75% Grass cover, Good, HSG D
	72,416	77	Woods, Good, HSG D
*	1,011	98	Roof, HSG D
*	0	98	Pavement, HSG D
*	0	98	Bedrock, HSG D
	106,688	78	Weighted Average
	100,410		94.12% Pervious Area
	6,278		5.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
56.5	150	0.0167	0.04		**Sheet Flow, A-B Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.10"
0.9	80	0.0125	1.56	10.39	**Parabolic Channel, Wetland Channel** W=10.00' D=1.00' Area=6.7 sf Perim=10.3' n= 0.080 Earth, long dense weeds
57.4	230	Total			

Summary for Subcatchment S3-5: PR Subcatchment

Runoff = 2.52 cfs @ 12.76 hrs, Volume= 0.438 af, Depth> 3.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
	0	39	>75% Grass cover, Good, HSG A
	2,931	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	0	74	>75% Grass cover, Good, Madeland
*	0	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	0	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	0	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	34,076	80	>75% Grass cover, Good, HSG D
	15,561	77	Woods, Good, HSG D
*	3,425	98	Roof, HSG D
*	4,536	98	Pavement, HSG D
*	3,799	98	Bedrock, HSG D
	64,328	80	Weighted Average
	52,568		81.72% Pervious Area
	11,760		18.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.5	150	0.0200	0.05		**Sheet Flow, A-B heet Flow** Woods: Dense underbrush n= 0.800 P2= 3.10"
5.2	195	0.0154	0.62		**Shallow Concentrated Flow, B-C Shallow Concentrated Flow** Woodland Kv= 5.0 fps
57.7	345	Total			

Summary for Subcatchment S3-6: PR Subcatchment

Runoff = 4.39 cfs @ 12.23 hrs, Volume= 0.442 af, Depth> 4.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
	0	39	>75% Grass cover, Good, HSG A
	0	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	0	74	>75% Grass cover, Good, Madeland
*	0	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	0	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	1,428	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	3,076	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	29,004	80	>75% Grass cover, Good, HSG D
	5,727	77	Woods, Good, HSG D
*	2,734	98	Roof, HSG D
*	8,365	98	Pavement, HSG D
*	4,525	98	Bedrock, HSG D
	54,859	86	Weighted Average
	36,159		65.91% Pervious Area
	18,700		34.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	85	0.0590	0.17		**Sheet Flow, A-B Sheet Flow** Grass: Dense n= 0.240 P2= 3.10"
8.4	50	0.2200	0.10		**Sheet Flow, B-C Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.10"
0.1	25	0.2800	3.70		**Shallow Concentrated Flow, C-D Shallow Concentrated Flow** Short Grass Pasture Kv= 7.0 fps
0.4	80	0.0310	3.57		**Shallow Concentrated Flow, D-E Shallow Concentrated Flow** Paved Kv= 20.3 fps
17.2	240	Total			

Summary for Subcatchment S3-7: PR Subcatchment

Runoff = 1.33 cfs @ 12.09 hrs, Volume= 0.097 af, Depth> 4.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
	0	39	>75% Grass cover, Good, HSG A
	0	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	0	74	>75% Grass cover, Good, Madeland
*	0	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	0	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	2,990	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	1,818	98	Pavement, HSG C
*	474	98	Bedrock, HSG C
	2,554	80	>75% Grass cover, Good, HSG D
	0	77	Woods, Good, HSG D
*	0	98	Roof, HSG D
*	3,634	98	Pavement, HSG D
*	0	98	Bedrock, HSG D
	11,470	88	Weighted Average
	5,544		48.33% Pervious Area
	5,926		51.67% Impervious Area

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

Summary for Subcatchment S4-1: PR Subcatchment

Runoff = 1.33 cfs @ 12.54 hrs, Volume= 0.186 af, Depth> 2.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
	12,727	39	>75% Grass cover, Good, HSG A
	3,773	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	1,559	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	13,625	74	>75% Grass cover, Good, Madeland
*	781	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	1,813	98	Pavement, Madeland
*	872	98	Bedrock, Madeland
	832	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	947	80	>75% Grass cover, Good, HSG D
	3,673	77	Woods, Good, HSG D
*	0	98	Roof, HSG D
*	0	98	Pavement, HSG D
*	3,951	98	Bedrock, HSG D
	44,553	65	Weighted Average
	36,358		81.61% Pervious Area
	8,195		18.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
35.6	150	0.0530	0.07		**Sheet Flow, A-B Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.10"
0.5	40	0.0750	1.37		**Shallow Concentrated Flow, B-C Shallow Concentrated Flow** Woodland Kv= 5.0 fps
0.1	32	0.0156	5.67	4.45	**Pipe Channel, Culvert** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.1	60	0.0420	9.23	147.65	**Trap/Vee/Rect Channel Flow, Ditch** Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.035 Earth, dense weeds
36.3	282	Total			

Summary for Subcatchment S4-2: PR Subcatchment

Runoff = 2.58 cfs @ 12.34 hrs, Volume= 0.299 af, Depth> 3.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
	6,349	39	>75% Grass cover, Good, HSG A
	0	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	3,854	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	0	74	>75% Grass cover, Good, Madeland
*	0	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	0	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	3,032	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	5,434	98	Pavement, HSG C
*	35	98	Bedrock, HSG C
	474	80	>75% Grass cover, Good, HSG D
	9,540	77	Woods, Good, HSG D
*	0	98	Roof, HSG D
*	0	98	Pavement, HSG D
*	12,556	98	Bedrock, HSG D
	41,274	82	Weighted Average
	19,395		46.99% Pervious Area
	21,879		53.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	50	0.0100	0.08		**Sheet Flow, A-B Sheet Flow** Grass: Dense n= 0.240 P2= 3.10"
13.4	90	0.2200	0.11		**Sheet Flow, B-C Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.10"
0.6	130	0.0620	3.73		**Shallow Concentrated Flow, C-D Shallow Concentrated Flow** Grassed Waterway Kv= 15.0 fps
25.0	270	Total			

Summary for Subcatchment S4-3: PR Subcatchment

Runoff = 1.30 cfs @ 12.47 hrs, Volume= 0.169 af, Depth> 2.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
	6,000	39	>75% Grass cover, Good, HSG A
	1,789	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	0	74	>75% Grass cover, Good, Madeland
*	0	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	0	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	2,268	74	>75% Grass cover, Good, HSG C
	1,118	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	11,625	80	>75% Grass cover, Good, HSG D
	8,807	77	Woods, Good, HSG D
*	2,002	98	Roof, HSG D
*	0	98	Pavement, HSG D
*	0	98	Bedrock, HSG D
	33,609	70	Weighted Average
	31,607		94.04% Pervious Area
	2,002		5.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	70	0.0750	0.18		**Sheet Flow, A-B Sheet Flow** Grass: Dense n= 0.240 P2= 3.10"
23.4	80	0.0430	0.06		**Sheet Flow, B-C Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.10"
2.2	120	0.0330	0.91		**Shallow Concentrated Flow, C-D Shallow Concentrated Flow** Woodland Kv= 5.0 fps
32.0	270	Total			

Summary for Subcatchment S5: PR Subcatchment

Runoff = 0.77 cfs @ 12.64 hrs, Volume= 0.123 af, Depth> 1.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
	17,004	39	>75% Grass cover, Good, HSG A
	943	30	Woods, Good, HSG A
*	2,130	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	1,954	74	>75% Grass cover, Good, Madeland
*	0	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	0	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	0	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	10,898	80	>75% Grass cover, Good, HSG D
	3,284	77	Woods, Good, HSG D
*	98	98	Roof, HSG D
*	0	98	Pavement, HSG D
*	0	98	Bedrock, HSG D
	36,311	60	Weighted Average
	34,083		93.86% Pervious Area
	2,228		6.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.1	80	0.0250	0.05		**Sheet Flow, A-B Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.10"
9.4	70	0.0290	0.12		**Sheet Flow, B-C Sheet Flow** Grass: Dense n= 0.240 P2= 3.10"
5.4	280	0.0150	0.86		**Shallow Concentrated Flow, B-C Shallow Concentrated Flow** Short Grass Pasture Kv= 7.0 fps
43.9	430	Total			

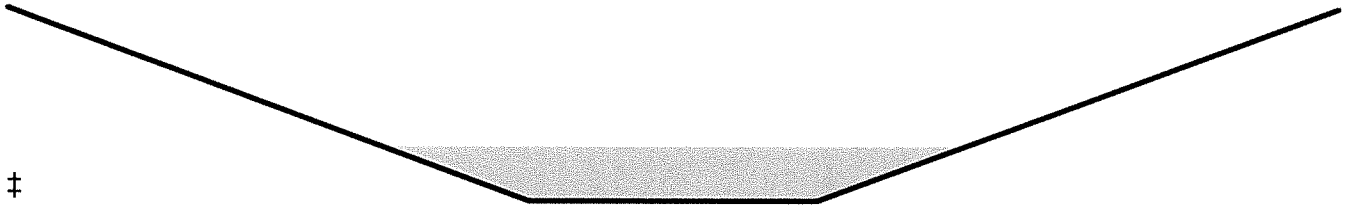
Summary for Reach R1: Woodland Channel

Inflow Area = 9.058 ac, 24.72% Impervious, Inflow Depth > 3.70" for 25-Year event
Inflow = 13.22 cfs @ 12.55 hrs, Volume= 2.793 af
Outflow = 12.93 cfs @ 12.74 hrs, Volume= 2.776 af, Atten= 2%, Lag= 10.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.02 fps, Min. Travel Time= 6.6 min
Avg. Velocity = 0.77 fps, Avg. Travel Time= 17.2 min

Peak Storage= 5,120 cf @ 12.63 hrs
Average Depth at Peak Storage= 0.85'
Bank-Full Depth= 3.00' Flow Area= 42.0 sf, Capacity= 170.06 cfs

5.00' x 3.00' deep channel, n= 0.080 Earth, long dense weeds
Side Slope Z-value= 3.0 '/' Top Width= 23.00'
Length= 800.0' Slope= 0.0225 '/'
Inlet Invert= 44.00', Outlet Invert= 26.00'



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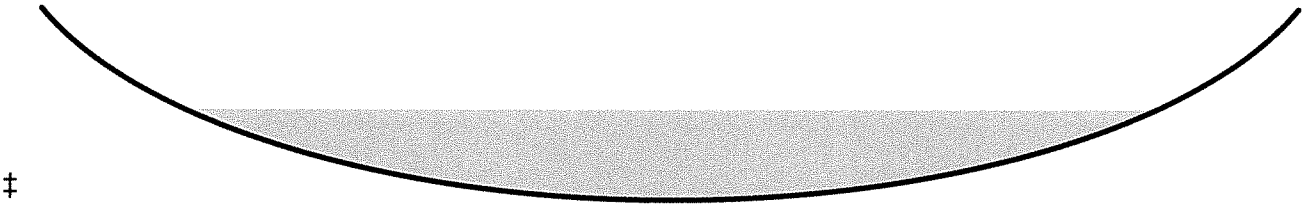
Summary for Reach R2: Wetland Channel

Inflow Area = 2.822 ac, 26.34% Impervious, Inflow Depth > 3.92" for 25-Year event
Inflow = 7.07 cfs @ 12.36 hrs, Volume= 0.923 af
Outflow = 6.98 cfs @ 12.47 hrs, Volume= 0.920 af, Atten= 1%, Lag= 6.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.07 fps, Min. Travel Time= 4.1 min
Avg. Velocity = 0.37 fps, Avg. Travel Time= 11.8 min

Peak Storage= 1,698 cf @ 12.41 hrs
Average Depth at Peak Storage= 0.47'
Bank-Full Depth= 1.00' Flow Area= 20.0 sf, Capacity= 35.10 cfs

30.00' x 1.00' deep Parabolic Channel, n= 0.080 Earth, long dense weeds
Length= 260.0' Slope= 0.0154 '/'
Inlet Invert= 48.00', Outlet Invert= 44.00'



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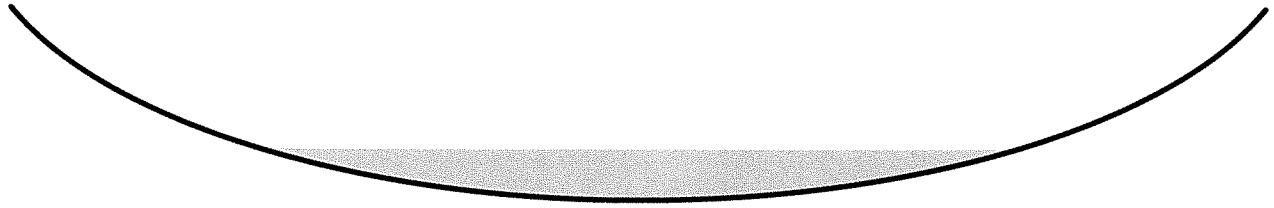
Summary for Reach R3: Wetland Channel

Inflow Area = 0.370 ac, 56.57% Impervious, Inflow Depth > 4.43" for 25-Year event
Inflow = 1.86 cfs @ 12.09 hrs, Volume= 0.137 af
Outflow = 1.66 cfs @ 12.19 hrs, Volume= 0.136 af, Atten= 11%, Lag= 6.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.61 fps, Min. Travel Time= 3.8 min
Avg. Velocity = 0.21 fps, Avg. Travel Time= 11.1 min

Peak Storage= 383 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.27'
Bank-Full Depth= 1.00' Flow Area= 20.0 sf, Capacity= 29.29 cfs

30.00' x 1.00' deep Parabolic Channel, n= 0.080 Earth, long dense weeds
Length= 140.0' Slope= 0.0107 '/'
Inlet Invert= 45.50', Outlet Invert= 44.00'



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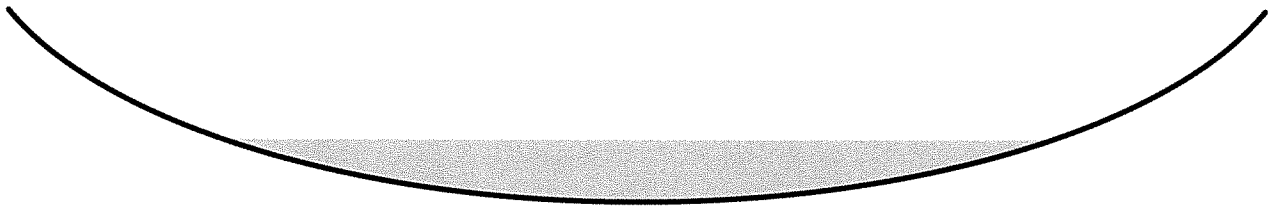
Summary for Reach R4: Wetland Channel

Inflow Area = 3.416 ac, 33.44% Impervious, Inflow Depth > 3.71" for 25-Year event
Inflow = 3.63 cfs @ 13.11 hrs, Volume= 1.056 af
Outflow = 3.62 cfs @ 13.23 hrs, Volume= 1.051 af, Atten= 0%, Lag= 7.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.97 fps, Min. Travel Time= 5.9 min
Avg. Velocity = 0.42 fps, Avg. Travel Time= 13.4 min

Peak Storage= 1,274 cf @ 13.13 hrs
Average Depth at Peak Storage= 0.33'
Bank-Full Depth= 1.00' Flow Area= 20.0 sf, Capacity= 40.60 cfs

30.00' x 1.00' deep Parabolic Channel, n= 0.080 Earth, long dense weeds
Length= 340.0' Slope= 0.0206 '/'
Inlet Invert= 51.00', Outlet Invert= 44.00'



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Summary for Pond BRF1: BRF-1

Inflow Area = 0.137 ac, 57.67% Impervious, Inflow Depth > 4.65" for 25-Year event
Inflow = 0.71 cfs @ 12.08 hrs, Volume= 0.053 af
Outflow = 0.71 cfs @ 12.09 hrs, Volume= 0.053 af, Atten= 0%, Lag= 0.2 min
Primary = 0.71 cfs @ 12.09 hrs, Volume= 0.053 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 51.02' @ 12.09 hrs Surf.Area= 773 sf Storage= 368 cf

Plug-Flow detention time= 66.1 min calculated for 0.053 af (100% of inflow)
Center-of-Mass det. time= 65.9 min (851.1 - 785.2)

Volume	Invert	Avail.Storage	Storage Description
#1	50.50'	392 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
50.50	644	0	0
51.05	781	392	392

Device	Routing	Invert	Outlet Devices
#1	Primary	50.50'	**0.03 cfs Exfiltration when above 50.50'**
#2	Primary	51.00'	**85.0' long (Profile 6) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 3.12 3.41 3.59

Primary OutFlow Max=0.71 cfs @ 12.09 hrs HW=51.02' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.03 cfs)
└—**2=Broad-Crested Rectangular Weir** (Weir Controls 0.68 cfs @ 0.43 fps)

Summary for Pond BRF2: BRF-2

Inflow Area = 0.370 ac, 56.57% Impervious, Inflow Depth > 4.43" for 25-Year event
Inflow = 1.86 cfs @ 12.09 hrs, Volume= 0.137 af
Outflow = 1.86 cfs @ 12.09 hrs, Volume= 0.137 af, Atten= 0%, Lag= 0.3 min
Primary = 1.86 cfs @ 12.09 hrs, Volume= 0.137 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 49.03' @ 12.09 hrs Surf.Area= 1,542 sf Storage= 761 cf

Plug-Flow detention time= 62.9 min calculated for 0.137 af (100% of inflow)
Center-of-Mass det. time= 62.6 min (854.7 - 792.0)

Volume	Invert	Avail.Storage	Storage Description
#1	48.50'	797 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
48.50	1,349	0	0
49.05	1,551	797	797

Device	Routing	Invert	Outlet Devices
#1	Primary	48.50'	**0.06 cfs Exfiltration when above 48.50'**
#2	Primary	49.00'	**135.0' long (Profile 6) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 3.12 3.41 3.59

Primary OutFlow Max=1.85 cfs @ 12.09 hrs HW=49.03' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.06 cfs)
└—**2=Broad-Crested Rectangular Weir** (Weir Controls 1.79 cfs @ 0.51 fps)

Summary for Pond CB1: Exist CB

Inflow Area = 1.643 ac, 32.09% Impervious, Inflow Depth > 2.52" for 25-Year event
Inflow = 1.42 cfs @ 12.65 hrs, Volume= 0.344 af
Outflow = 1.42 cfs @ 12.65 hrs, Volume= 0.344 af, Atten= 0%, Lag= 0.0 min
Primary = 1.42 cfs @ 12.65 hrs, Volume= 0.344 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 22.12' @ 12.65 hrs
Flood Elev= 22.79'

Device	Routing	Invert	Outlet Devices
#1	Primary	21.34'	**12.0" Round Culvert** L= 160.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 21.34' / 20.75' S= 0.0037 '/' Cc= 0.900 n= 0.012 Steel, smooth, Flow Area= 0.79 sf

Primary OutFlow Max=1.42 cfs @ 12.65 hrs HW=22.12' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 1.42 cfs @ 2.98 fps)

Summary for Pond CB2: New CB

Inflow Area = 24.489 ac, 21.07% Impervious, Inflow Depth > 2.80" for 25-Year event
Inflow = 15.30 cfs @ 12.84 hrs, Volume= 5.705 af
Outflow = 15.30 cfs @ 12.84 hrs, Volume= 5.705 af, Atten= 0%, Lag= 0.0 min
Primary = 15.30 cfs @ 12.84 hrs, Volume= 5.705 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 23.53' @ 12.84 hrs
Flood Elev= 25.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.69'	**24.0" Round Culvert** L= 113.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.69' / 20.46' S= 0.0020 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=15.30 cfs @ 12.84 hrs HW=23.53' TW=22.43' (TW follows 1.10' below HW)
↑—**1=Culvert** (Barrel Controls 15.30 cfs @ 4.87 fps)

Summary for Pond DET1: PR Crossing

Inflow Area = 2.686 ac, 24.75% Impervious, Inflow Depth > 3.89" for 25-Year event
Inflow = 7.11 cfs @ 12.31 hrs, Volume= 0.870 af
Outflow = 6.83 cfs @ 12.37 hrs, Volume= 0.870 af, Atten= 4%, Lag= 3.5 min
Primary = 6.83 cfs @ 12.37 hrs, Volume= 0.870 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 53.77' @ 12.37 hrs Surf.Area= 513 sf Storage= 455 cf

Plug-Flow detention time= 0.3 min calculated for 0.870 af (100% of inflow)

Center-of-Mass det. time= 0.3 min (814.9 - 814.6)

Volume	Invert	Avail.Storage	Storage Description
#1	51.00'	1,410 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
51.00	0	0	0
52.00	32	16	16
53.00	256	144	160
54.00	591	424	584
55.00	1,062	827	1,410

Device	Routing	Invert	Outlet Devices
#1	Primary	51.00'	**15.0" Round Culvert** L= 69.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 51.00' / 48.93' S= 0.0300 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=6.83 cfs @ 12.37 hrs HW=53.77' (Free Discharge)
↑**1=Culvert** (Inlet Controls 6.83 cfs @ 5.56 fps)

Summary for Pond DET2: PR Det Area

Inflow Area = 1.970 ac, 35.04% Impervious, Inflow Depth > 2.34" for 25-Year event
Inflow = 3.33 cfs @ 12.54 hrs, Volume= 0.384 af
Outflow = 1.25 cfs @ 13.12 hrs, Volume= 0.383 af, Atten= 63%, Lag= 34.8 min
Primary = 1.25 cfs @ 13.12 hrs, Volume= 0.383 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 34.93' @ 13.12 hrs Surf.Area= 2,879 sf Storage= 5,362 cf

Plug-Flow detention time= 50.4 min calculated for 0.383 af (100% of inflow)
Center-of-Mass det. time= 49.5 min (903.2 - 853.7)

Volume	Invert	Avail.Storage	Storage Description
#1	32.00'	8,976 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
32.00	0	0	0
33.00	1,800	900	900
34.00	2,313	2,057	2,957
35.00	2,924	2,619	5,575
36.00	3,878	3,401	8,976

Device	Routing	Invert	Outlet Devices
#1	Primary	32.00'	**3.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	32.80'	**6.0" W x 3.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=1.25 cfs @ 13.12 hrs HW=34.93' (Free Discharge)
1=Orifice/Grate (Orifice Controls 0.40 cfs @ 8.06 fps)
2=Orifice/Grate (Orifice Controls 0.85 cfs @ 6.81 fps)

Summary for Pond UG1: Underground Detention

Inflow Area = 1.259 ac, 34.09% Impervious, Inflow Depth > 4.21" for 25-Year event
Inflow = 4.39 cfs @ 12.23 hrs, Volume= 0.442 af
Outflow = 2.79 cfs @ 12.45 hrs, Volume= 0.438 af, Atten= 36%, Lag= 13.3 min
Primary = 2.79 cfs @ 12.45 hrs, Volume= 0.438 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 61.73' @ 12.45 hrs Surf.Area= 2,585 sf Storage= 4,937 cf

Plug-Flow detention time= 38.7 min calculated for 0.438 af (99% of inflow)
Center-of-Mass det. time= 33.7 min (841.1 - 807.4)

Volume	Invert	Avail.Storage	Storage Description
#1	58.50'	2,553 cf	**11.00'W x 235.00'L x 3.50'H Prismatoid** 9,048 cf Overall - 2,665 cf Embedded = 6,383 cf x 40.0% Voids
#2	59.00'	2,665 cf	**ADS_StormTech SC-740 +Cap** x 58 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
		5,218 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	58.50'	**5.5" Vert. Orifice/Grate** C= 0.600
#2	Primary	61.50'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=2.79 cfs @ 12.45 hrs HW=61.73' (Free Discharge)
1=Orifice/Grate (Orifice Controls 1.38 cfs @ 8.34 fps)
2=Sharp-Crested Rectangular Weir (Weir Controls 1.41 cfs @ 1.56 fps)

Summary for Pond UG2: Underground Detention

Inflow Area = 0.422 ac, 71.87% Impervious, Inflow Depth > 4.22" for 25-Year event
Inflow = 2.04 cfs @ 12.09 hrs, Volume= 0.148 af
Outflow = 0.45 cfs @ 12.50 hrs, Volume= 0.147 af, Atten= 78%, Lag= 24.8 min
Primary = 0.45 cfs @ 12.50 hrs, Volume= 0.147 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 30.44' @ 12.50 hrs Surf.Area= 1,408 sf Storage= 2,539 cf

Plug-Flow detention time= 109.1 min calculated for 0.147 af (99% of inflow)
Center-of-Mass det. time= 101.8 min (900.1 - 798.3)

Volume	Invert	Avail.Storage	Storage Description
#1	27.50'	1,383 cf	**11.00'W x 128.00'L x 3.50'H Prismatoid** 4,928 cf Overall - 1,470 cf Embedded = 3,458 cf x 40.0% Voids
#2	28.00'	1,470 cf	**ADS_StormTech SC-740 +Cap** x 32 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
		2,853 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	27.50'	**2.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	29.00'	**3.0" Vert. Orifice/Grate** C= 0.600
#3	Primary	30.50'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=0.45 cfs @ 12.50 hrs HW=30.44' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.18 cfs @ 8.14 fps)
└**2=Orifice/Grate** (Orifice Controls 0.27 cfs @ 5.53 fps)
└**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond USF1: USF-1

Inflow Area = 2.999 ac, 27.85% Impervious, Inflow Depth > 3.89" for 25-Year event
Inflow = 4.95 cfs @ 12.46 hrs, Volume= 0.973 af
Outflow = 3.14 cfs @ 13.15 hrs, Volume= 0.881 af, Atten= 36%, Lag= 41.2 min
Primary = 3.14 cfs @ 13.15 hrs, Volume= 0.881 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 56.97' @ 13.15 hrs Surf.Area= 4,738 sf Storage= 9,642 cf

Plug-Flow detention time= 81.9 min calculated for 0.881 af (91% of inflow)
Center-of-Mass det. time= 38.5 min (881.5 - 843.0)

Volume	Invert	Avail.Storage	Storage Description
#1	54.00'	15,112 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
54.00	1,964	0	0
55.00	2,714	2,339	2,339
56.00	3,696	3,205	5,544
57.00	4,768	4,232	9,776
58.00	5,904	5,336	15,112

Device	Routing	Invert	Outlet Devices
#1	Primary	54.00'	**0.09 cfs Exfiltration at all elevations**
#2	Primary	55.50'	**20.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=3.14 cfs @ 13.15 hrs HW=56.97' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.09 cfs)
└**2=Orifice/Grate** (Orifice Controls 3.05 cfs @ 5.50 fps)

Summary for Pond USF2: USF-2

Inflow Area = 0.948 ac, 53.01% Impervious, Inflow Depth > 3.79" for 25-Year event
Inflow = 2.58 cfs @ 12.34 hrs, Volume= 0.299 af
Outflow = 2.04 cfs @ 12.52 hrs, Volume= 0.250 af, Atten= 21%, Lag= 11.0 min
Primary = 2.00 cfs @ 12.52 hrs, Volume= 0.198 af
Secondary = 0.04 cfs @ 9.04 hrs, Volume= 0.052 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 38.06' @ 12.52 hrs Surf.Area= 2,440 sf Storage= 3,355 cf

Plug-Flow detention time= 102.2 min calculated for 0.250 af (84% of inflow)
Center-of-Mass det. time= 36.2 min (861.2 - 825.0)

Volume	Invert	Avail.Storage	Storage Description
#1	36.00'	6,039 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
36.00	860	0	0
37.00	1,585	1,223	1,223
38.00	2,386	1,986	3,208
39.00	3,276	2,831	6,039

Device	Routing	Invert	Outlet Devices
#1	Secondary	36.00'	**0.04 cfs Exfiltration at all elevations**
#2	Primary	37.50'	**24.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=2.00 cfs @ 12.52 hrs HW=38.06' (Free Discharge)
↑—**2=Orifice/Grate** (Orifice Controls 2.00 cfs @ 3.00 fps)

Secondary OutFlow Max=0.04 cfs @ 9.04 hrs HW=36.03' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.04 cfs)

Summary for Pond USF3: USF-3

Inflow Area = 0.809 ac, 58.83% Impervious, Inflow Depth > 4.19" for 25-Year event
Inflow = 2.12 cfs @ 12.09 hrs, Volume= 0.282 af
Outflow = 0.65 cfs @ 12.71 hrs, Volume= 0.222 af, Atten= 69%, Lag= 37.2 min
Primary = 0.65 cfs @ 12.71 hrs, Volume= 0.222 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 25.87' @ 12.71 hrs Surf.Area= 2,554 sf Storage= 3,576 cf

Plug-Flow detention time= 150.7 min calculated for 0.222 af (78% of inflow)
Center-of-Mass det. time= 63.3 min (914.4 - 851.1)

Volume	Invert	Avail.Storage	Storage Description
#1	24.00'	6,960 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
24.00	1,306	0	0
25.00	1,936	1,621	1,621
26.00	2,646	2,291	3,912
27.00	3,449	3,048	6,960

Device	Routing	Invert	Outlet Devices
#1	Primary	21.67'	**6.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 21.67' / 21.40' S= 0.0090 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Device 1	24.00'	**0.06 cfs Exfiltration at all elevations**
#3	Device 1	25.50'	**12.0" W x 3.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.65 cfs @ 12.71 hrs HW=25.87' TW=22.79' (Fixed TW Elev= 22.79')
└─**1=Culvert** (Passes 0.65 cfs of 1.41 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.06 cfs)
  └─**3=Orifice/Grate** (Orifice Controls 0.59 cfs @ 2.36 fps)

Summary for Pond W1: EX Wetland

Inflow Area = 24.147 ac, 20.60% Impervious, Inflow Depth > 2.78" for 25-Year event
Inflow = 23.62 cfs @ 12.91 hrs, Volume= 5.595 af
Outflow = 15.13 cfs @ 12.84 hrs, Volume= 5.588 af, Atten= 36%, Lag= 0.0 min
Primary = 15.13 cfs @ 12.84 hrs, Volume= 5.588 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 25.63' @ 13.74 hrs Surf.Area= 33,211 sf Storage= 43,403 cf

Plug-Flow detention time= 44.5 min calculated for 5.588 af (100% of inflow)
Center-of-Mass det. time= 43.9 min (928.5 - 884.7)

Volume	Invert	Avail.Storage	Storage Description
#1	22.00'	56,669 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
22.00	0	0	0
23.00	1,435	718	718
24.00	12,931	7,183	7,901
25.00	22,650	17,791	25,691
26.00	39,305	30,978	56,669

Device	Routing	Invert	Outlet Devices
#1	Primary	20.80'	**24.0" Round Culvert** L= 54.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.80' / 20.69' S= 0.0020 '/' Cc= 0.900 n= 0.012 Steel, smooth, Flow Area= 3.14 sf
#2	Device 1	22.00'	**12.0" Round Culvert** L= 175.0' CPP, projecting, no headwall, Ke= 0.900

			Inlet / Outlet Invert= 22.00' / 20.90' S= 0.0063 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 1	24.30'	**24.0" Horiz. Orifice/Grate** C= 1.000
			Limited to weir flow at low heads

Primary OutFlow Max=15.13 cfs @ 12.84 hrs HW=25.05' TW=24.05' (TW follows 1.00' below HW)
└─**1=Culvert** (Inlet Controls 15.13 cfs @ 4.81 fps)
  ├─**2=Culvert** (Passes < 2.32 cfs potential flow)
  └─**3=Orifice/Grate** (Passes < 13.37 cfs potential flow)

Summary for Link 1L: Dripline Filters 12 - 18

Inflow Area = 0.417 ac, 73.66% Impervious, Inflow Depth > 5.04" for 25-Year event
Inflow = 0.78 cfs @ 12.17 hrs, Volume= 0.175 af
Primary = 0.78 cfs @ 12.17 hrs, Volume= 0.175 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

25-Year Outflow Imported from 41875 POST_4-1_021522~Reach 1R.hce

Summary for Link 2L: Dripline Filters 6 - 11

Inflow Area = 0.289 ac,100.00% Impervious, Inflow Depth > 5.56" for 25-Year event
Inflow = 0.42 cfs @ 11.74 hrs, Volume= 0.134 af
Primary = 0.42 cfs @ 11.74 hrs, Volume= 0.134 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

25-Year Outflow Imported from 41875 POST_4-1_021522~Reach 2R.hce

Summary for Link 3L: Dripline Filters 1 - 5

Inflow Area = 0.259 ac,100.00% Impervious, Inflow Depth > 5.56" for 25-Year event
Inflow = 0.36 cfs @ 11.80 hrs, Volume= 0.120 af
Primary = 0.36 cfs @ 11.80 hrs, Volume= 0.120 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

25-Year Outflow Imported from 41875 POST_4-1_021522~Reach 3R.hce

Summary for Link SP1: Study Point #1

Inflow Area = 26.131 ac, 21.76% Impervious, Inflow Depth > 2.78" for 25-Year event
Inflow = 16.63 cfs @ 12.84 hrs, Volume= 6.050 af
Primary = 16.63 cfs @ 12.84 hrs, Volume= 6.050 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Link SP3: Study Point #3

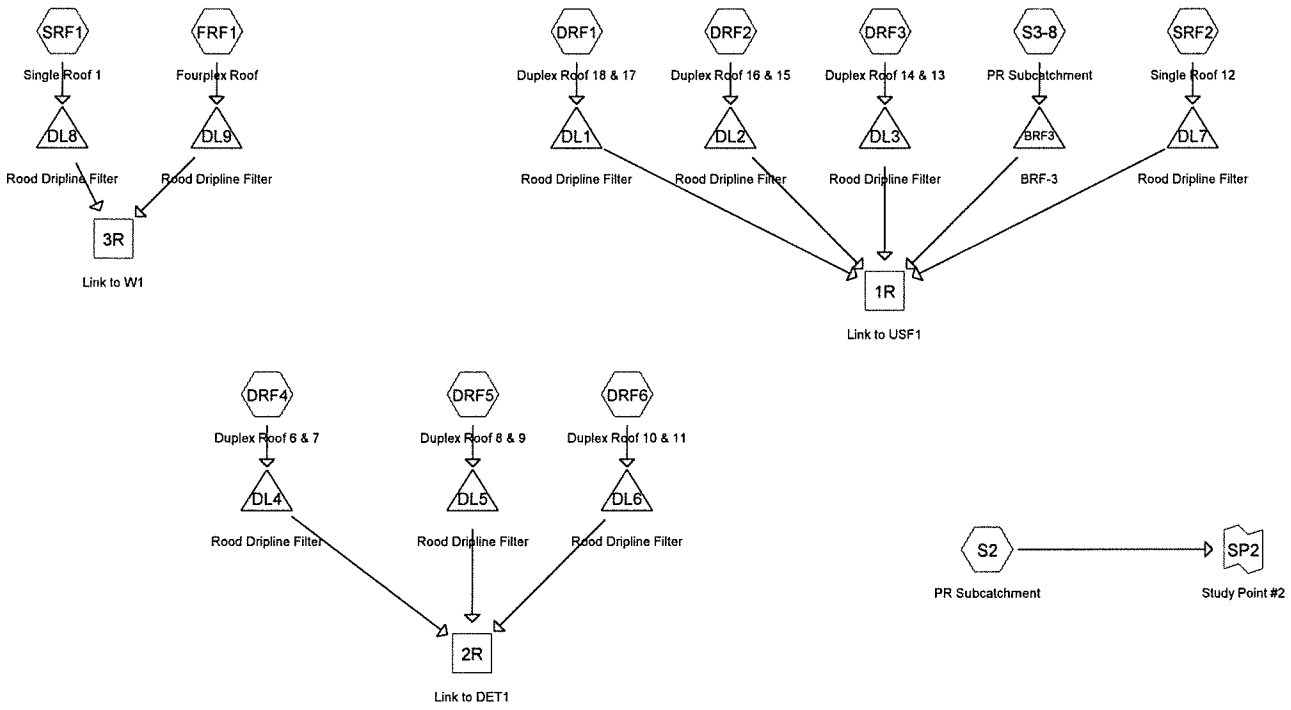
Inflow Area = 9.058 ac, 24.72% Impervious, Inflow Depth > 3.70" for 25-Year event
Inflow = 13.22 cfs @ 12.55 hrs, Volume= 2.793 af
Primary = 13.22 cfs @ 12.55 hrs, Volume= 2.793 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Link SP4: Study Point #4

Inflow Area = 0.772 ac, 5.96% Impervious, Inflow Depth > 3.44" for 25-Year event
Inflow = 1.34 cfs @ 12.47 hrs, Volume= 0.221 af
Primary = 1.34 cfs @ 12.47 hrs, Volume= 0.221 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs



Routing Diagram for 41875 POST_4-1_021522
Prepared by {enter your company name here}, Printed 3/29/2022
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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.004	39	>75% Grass cover, Good, HSG A (S2)
1.056	80	>75% Grass cover, Good, HSG D (S2, S3-8)
0.094	74	>75% Grass cover, Good, Madeland (S2)
0.234	98	Bedrock, HSG D (S2)
0.746	98	Duplex Roof (DRF1, DRF2, DRF3, DRF4, DRF5, DRF6, FRF1)
0.191	98	Pavement, HSG D (S2)
0.192	98	Roof, HSG D (S2)
0.109	98	Single Roof (SRF1, SRF2)
0.049	30	Woods, Good, HSG A (S2)
1.220	77	Woods, Good, HSG D (S2, S3-8)
0.006	70	Woods, Good, Madeland (S2)
3.901	**85**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.053	HSG A	S2
0.000	HSG B	
0.000	HSG C	
2.893	HSG D	S2, S3-8
0.955	Other	DRF1, DRF2, DRF3, DRF4, DRF5, DRF6, FRF1, S2, SRF1, SRF2
3.901		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcat Numbe
0.004	0.000	0.000	1.056	0.000	1.061	>75% Grass cover, Good	
0.000	0.000	0.000	0.000	0.094	0.094	>75% Grass cover, Good, Madeland	
0.000	0.000	0.000	0.234	0.000	0.234	Bedrock	
0.000	0.000	0.000	0.000	0.746	0.746	Duplex Roof	
0.000	0.000	0.000	0.191	0.000	0.191	Pavement	
0.000	0.000	0.000	0.192	0.000	0.192	Roof	
0.000	0.000	0.000	0.000	0.109	0.109	Single Roof	
0.049	0.000	0.000	1.220	0.000	1.269	Woods, Good	
0.000	0.000	0.000	0.000	0.006	0.006	Woods, Good, Madeland	
0.053	**0.000**	**0.000**	**2.893**	**0.955**	**3.901**	**TOTAL AREA**	

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DRF1: Duplex Roof 18 & 17 Runoff Area=4,192 sf 100.00% Impervious Runoff Depth>2.87"
Tc=5.0 min CN=98 Runoff=0.30 cfs 0.023 af

Subcatchment DRF2: Duplex Roof 16 & 15 Runoff Area=4,192 sf 100.00% Impervious Runoff Depth>2.87"
Tc=5.0 min CN=98 Runoff=0.30 cfs 0.023 af

Subcatchment DRF3: Duplex Roof 14 & 13 Runoff Area=4,192 sf 100.00% Impervious Runoff Depth>2.87"
Tc=5.0 min CN=98 Runoff=0.30 cfs 0.023 af

Subcatchment DRF4: Duplex Roof 6 & 7 Runoff Area=4,192 sf 100.00% Impervious Runoff Depth>2.87"
Tc=5.0 min CN=98 Runoff=0.30 cfs 0.023 af

Subcatchment DRF5: Duplex Roof 8 & 9 Runoff Area=4,192 sf 100.00% Impervious Runoff Depth>2.87"
Tc=5.0 min CN=98 Runoff=0.30 cfs 0.023 af

Subcatchment DRF6: Duplex Roof 10 & 11 Runoff Area=4,192 sf 100.00% Impervious Runoff Depth>2.87"
Tc=5.0 min CN=98 Runoff=0.30 cfs 0.023 af

Subcatchment FRF1: Fourplex Roof Runoff Area=7,328 sf 100.00% Impervious Runoff Depth>2.87"
Tc=5.0 min CN=98 Runoff=0.52 cfs 0.040 af

Subcatchment S2: PR Subcatchment Runoff Area=127,956 sf 20.99% Impervious Runoff Depth>1.38"
Flow Length=415' Tc=23.0 min CN=81 Runoff=3.01 cfs 0.339 af

Subcatchment S3-8: PR Subcatchment Runoff Area=4,780 sf 0.00% Impervious Runoff Depth>1.32"
Tc=6.0 min CN=80 Runoff=0.17 cfs 0.012 af

Subcatchment SRF1: Single Roof 1 Runoff Area=3,938 sf 100.00% Impervious Runoff Depth>2.87"
Tc=5.0 min CN=98 Runoff=0.28 cfs 0.022 af

Subcatchment SRF2: Single Roof 12 Runoff Area=792 sf 100.00% Impervious Runoff Depth>2.87"
Tc=5.0 min CN=98 Runoff=0.06 cfs 0.004 af

Reach 1R: Link to USF1 Inflow=0.48 cfs 0.085 af
Outflow=0.48 cfs 0.085 af

Reach 2R: Link to DET1 Inflow=0.42 cfs 0.069 af
Outflow=0.42 cfs 0.069 af

Reach 3R: Link to W1 Inflow=0.36 cfs 0.062 af
Outflow=0.36 cfs 0.062 af

Pond BRF3: BRF-3 Peak Elev=63.72' Storage=144 cf Inflow=0.17 cfs 0.012 af
Outflow=0.03 cfs 0.012 af

Pond DL1: Rood Dripline Filter Peak Elev=61.77' Storage=80 cf Inflow=0.30 cfs 0.023 af
Outflow=0.14 cfs 0.023 af

Pond DL2: Rood Dripline Filter Peak Elev=63.77' Storage=80 cf Inflow=0.30 cfs 0.023 af
Outflow=0.14 cfs 0.023 af

Pond DL3: Rood Dripline Filter Peak Elev=64.77' Storage=80 cf Inflow=0.30 cfs 0.023 af
Outflow=0.14 cfs 0.023 af

Pond DL4: Rood Dripline Filter Peak Elev=59.77' Storage=80 cf Inflow=0.30 cfs 0.023 af
Outflow=0.14 cfs 0.023 af

Pond DL5: Rood Dripline Filter Peak Elev=61.77' Storage=80 cf Inflow=0.30 cfs 0.023 af
Outflow=0.14 cfs 0.023 af

Pond DL6: Rood Dripline Filter Peak Elev=64.77' Storage=80 cf Inflow=0.30 cfs 0.023 af
Outflow=0.14 cfs 0.023 af

Pond DL7: Rood Dripline Filter Peak Elev=65.65' Storage=10 cf Inflow=0.06 cfs 0.004 af
Outflow=0.03 cfs 0.004 af

Pond DL8: Rood Dripline Filter Peak Elev=25.66' Storage=54 cf Inflow=0.28 cfs 0.022 af
Outflow=0.16 cfs 0.022 af

Pond DL9: Rood Dripline Filter Peak Elev=34.43' Storage=189 cf Inflow=0.52 cfs 0.040 af
Outflow=0.20 cfs 0.040 af

Link SP2: Study Point #2 Inflow=3.01 cfs 0.339 af
Primary=3.01 cfs 0.339 af

Total Runoff Area = 3.901 ac Runoff Volume = 0.555 af Average Runoff Depth = 1.71"
62.30% Pervious = 2.431 ac 37.70% Impervious = 1.471 ac

Summary for Subcatchment DRF1: Duplex Roof 18 & 17

Runoff = 0.30 cfs @ 12.07 hrs, Volume= 0.023 af, Depth> 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
*	4,192	98	Duplex Roof
	4,192		100.00% Impervious Area

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

Summary for Subcatchment DRF2: Duplex Roof 16 & 15

Runoff = 0.30 cfs @ 12.07 hrs, Volume= 0.023 af, Depth> 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
*	4,192	98	Duplex Roof
	4,192		100.00% Impervious Area

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

Summary for Subcatchment DRF3: Duplex Roof 14 & 13

Runoff = 0.30 cfs @ 12.07 hrs, Volume= 0.023 af, Depth> 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
*	4,192	98	Duplex Roof
	4,192		100.00% Impervious Area

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

Summary for Subcatchment DRF4: Duplex Roof 6 & 7

Runoff = 0.30 cfs @ 12.07 hrs, Volume= 0.023 af, Depth> 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
*	4,192	98	Duplex Roof
	4,192		100.00% Impervious Area

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

Summary for Subcatchment DRF5: Duplex Roof 8 & 9

Runoff = 0.30 cfs @ 12.07 hrs, Volume= 0.023 af, Depth> 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
*	4,192	98	Duplex Roof
	4,192		100.00% Impervious Area

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

Summary for Subcatchment DRF6: Duplex Roof 10 & 11

Runoff = 0.30 cfs @ 12.07 hrs, Volume= 0.023 af, Depth> 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
*	4,192	98	Duplex Roof
	4,192		100.00% Impervious Area

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

Summary for Subcatchment FRF1: Fourplex Roof

Runoff = 0.52 cfs @ 12.07 hrs, Volume= 0.040 af, Depth> 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
*	7,328	98	Duplex Roof
	7,328		100.00% Impervious Area

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

Summary for Subcatchment S2: PR Subcatchment

Runoff = 3.01 cfs @ 12.34 hrs, Volume= 0.339 af, Depth> 1.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
	195	39	>75% Grass cover, Good, HSG A
	2,132	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	4,096	74	>75% Grass cover, Good, Madeland
*	281	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	0	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	0	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	41,932	80	>75% Grass cover, Good, HSG D
	52,461	77	Woods, Good, HSG D
*	8,364	98	Roof, HSG D
*	8,323	98	Pavement, HSG D
*	10,172	98	Bedrock, HSG D
	127,956	81	Weighted Average
	101,097		79.01% Pervious Area
	26,859		20.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	100	0.0900	0.21		**Sheet Flow, A-B Sheet Flow** Grass: Dense n= 0.240 P2= 3.10"
10.0	50	0.1400	0.08		**Sheet Flow, B-C Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.10"
0.7	75	0.1200	1.73		**Shallow Concentrated Flow, C-D Shallow Concentrated Flow** Woodland Kv= 5.0 fps
4.4	190	0.0210	0.72		**Shallow Concentrated Flow, D-E Shallow Concentrated Flow** Woodland Kv= 5.0 fps
23.0	415	Total			

Summary for Subcatchment S3-8: PR Subcatchment

Runoff = 0.17 cfs @ 12.09 hrs, Volume= 0.012 af, Depth> 1.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
	0	39	>75% Grass cover, Good, HSG A
	0	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	0	74	>75% Grass cover, Good, Madeland
*	0	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	0	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	0	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	4,080	80	>75% Grass cover, Good, HSG D
	700	77	Woods, Good, HSG D
*	0	98	Roof, HSG D
*	0	98	Pavement, HSG D
*	0	98	Bedrock, HSG D
	4,780	80	Weighted Average
	4,780		100.00% Pervious Area

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

Summary for Subcatchment SRF1: Single Roof 1

Runoff = 0.28 cfs @ 12.07 hrs, Volume= 0.022 af, Depth> 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
*	3,938	98	Single Roof
	3,938		100.00% Impervious Area

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

Summary for Subcatchment SRF2: Single Roof 12

Runoff = 0.06 cfs @ 12.07 hrs, Volume= 0.004 af, Depth> 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
*	792	98	Single Roof
	792		100.00% Impervious Area

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

Summary for Reach 1R: Link to USF1

Inflow Area = 0.417 ac, 73.66% Impervious, Inflow Depth > 2.46" for 2-Year event
Inflow = 0.48 cfs @ 12.00 hrs, Volume= 0.085 af
Outflow = 0.48 cfs @ 12.00 hrs, Volume= 0.085 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach 2R: Link to DET1

Inflow Area = 0.289 ac,100.00% Impervious, Inflow Depth > 2.87" for 2-Year event
Inflow = 0.42 cfs @ 11.97 hrs, Volume= 0.069 af
Outflow = 0.42 cfs @ 11.97 hrs, Volume= 0.069 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach 3R: Link to W1

Inflow Area = 0.259 ac,100.00% Impervious, Inflow Depth > 2.87" for 2-Year event
Inflow = 0.36 cfs @ 11.99 hrs, Volume= 0.062 af
Outflow = 0.36 cfs @ 11.99 hrs, Volume= 0.062 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Pond BRF3: BRF-3

Inflow Area = 0.110 ac, 0.00% Impervious, Inflow Depth > 1.32" for 2-Year event
Inflow = 0.17 cfs @ 12.09 hrs, Volume= 0.012 af
Outflow = 0.03 cfs @ 11.80 hrs, Volume= 0.012 af, Atten= 82%, Lag= 0.0 min
Primary = 0.03 cfs @ 11.80 hrs, Volume= 0.012 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 63.72' @ 12.58 hrs Surf.Area= 698 sf Storage= 144 cf

Plug-Flow detention time= 32.0 min calculated for 0.012 af (100% of inflow)
Center-of-Mass det. time= 31.7 min (875.3 - 843.6)

Volume	Invert	Avail.Storage	Storage Description
#1	63.50'	392 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
63.50	644	0	0
64.05	781	392	392

Device	Routing	Invert	Outlet Devices
#1	Primary	63.50'	**0.03 cfs Exfiltration when above 63.50'**
#2	Primary	64.00'	**85.0' long (Profile 6) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 3.12 3.41 3.59

Primary OutFlow Max=0.03 cfs @ 11.80 hrs HW=63.51' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.03 cfs)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond DL1: Rood Dripline Filter

Inflow Area = 0.096 ac,100.00% Impervious, Inflow Depth > 2.87" for 2-Year event
Inflow = 0.30 cfs @ 12.07 hrs, Volume= 0.023 af
Outflow = 0.14 cfs @ 11.97 hrs, Volume= 0.023 af, Atten= 54%, Lag= 0.0 min
Primary = 0.14 cfs @ 11.97 hrs, Volume= 0.023 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 61.77' @ 12.21 hrs Surf.Area= 752 sf Storage= 80 cf

Plug-Flow detention time= 2.3 min calculated for 0.023 af (100% of inflow)
Center-of-Mass det. time= 2.2 min (757.9 - 755.7)

Volume	Invert	Avail.Storage	Storage Description
#1	61.50'	451 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,128 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
61.50	752	0	0
63.00	752	1,128	1,128

Device	Routing	Invert	Outlet Devices
#1	Primary	61.50'	**8.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.14 cfs @ 11.97 hrs HW=61.52' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.14 cfs)

Summary for Pond DL2: Rood Dripline Filter

Inflow Area = 0.096 ac,100.00% Impervious, Inflow Depth > 2.87" for 2-Year event
Inflow = 0.30 cfs @ 12.07 hrs, Volume= 0.023 af
Outflow = 0.14 cfs @ 11.97 hrs, Volume= 0.023 af, Atten= 54%, Lag= 0.0 min
Primary = 0.14 cfs @ 11.97 hrs, Volume= 0.023 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 63.77' @ 12.21 hrs Surf.Area= 752 sf Storage= 80 cf

Plug-Flow detention time= 2.3 min calculated for 0.023 af (100% of inflow)
Center-of-Mass det. time= 2.2 min (757.9 - 755.7)

Volume	Invert	Avail.Storage	Storage Description
#1	63.50'	451 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,128 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
63.50	752	0	0
65.00	752	1,128	1,128

Device	Routing	Invert	Outlet Devices
#1	Primary	63.50'	**8.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.14 cfs @ 11.97 hrs HW=63.52' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.14 cfs)

Summary for Pond DL3: Rood Dripline Filter

Inflow Area = 0.096 ac,100.00% Impervious, Inflow Depth > 2.87" for 2-Year event
Inflow = 0.30 cfs @ 12.07 hrs, Volume= 0.023 af
Outflow = 0.14 cfs @ 11.97 hrs, Volume= 0.023 af, Atten= 54%, Lag= 0.0 min
Primary = 0.14 cfs @ 11.97 hrs, Volume= 0.023 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 64.77' @ 12.21 hrs Surf.Area= 752 sf Storage= 80 cf

Plug-Flow detention time= 2.3 min calculated for 0.023 af (100% of inflow)
Center-of-Mass det. time= 2.2 min (757.9 - 755.7)

Volume	Invert	Avail.Storage	Storage Description
#1	64.50'	451 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,128 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
64.50	752	0	0
66.00	752	1,128	1,128

Device	Routing	Invert	Outlet Devices
#1	Primary	64.50'	**8.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.14 cfs @ 11.97 hrs HW=64.52' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.14 cfs)

Summary for Pond DL4: Rood Dripline Filter

Inflow Area = 0.096 ac,100.00% Impervious, Inflow Depth > 2.87" for 2-Year event
Inflow = 0.30 cfs @ 12.07 hrs, Volume= 0.023 af
Outflow = 0.14 cfs @ 11.97 hrs, Volume= 0.023 af, Atten= 54%, Lag= 0.0 min
Primary = 0.14 cfs @ 11.97 hrs, Volume= 0.023 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 59.77' @ 12.21 hrs Surf.Area= 752 sf Storage= 80 cf

Plug-Flow detention time= 2.3 min calculated for 0.023 af (100% of inflow)
Center-of-Mass det. time= 2.2 min (757.9 - 755.7)

Volume	Invert	Avail.Storage	Storage Description
#1	59.50'	451 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,128 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
59.50	752	0	0
61.00	752	1,128	1,128

Device	Routing	Invert	Outlet Devices
#1	Primary	59.50'	**8.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.14 cfs @ 11.97 hrs HW=59.52' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.14 cfs)

Summary for Pond DL5: Rood Dripline Filter

Inflow Area = 0.096 ac,100.00% Impervious, Inflow Depth > 2.87" for 2-Year event
Inflow = 0.30 cfs @ 12.07 hrs, Volume= 0.023 af
Outflow = 0.14 cfs @ 11.97 hrs, Volume= 0.023 af, Atten= 54%, Lag= 0.0 min
Primary = 0.14 cfs @ 11.97 hrs, Volume= 0.023 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 61.77' @ 12.21 hrs Surf.Area= 752 sf Storage= 80 cf

Plug-Flow detention time= 2.3 min calculated for 0.023 af (100% of inflow)
Center-of-Mass det. time= 2.2 min (757.9 - 755.7)

Volume	Invert	Avail.Storage	Storage Description
#1	61.50'	451 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,128 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
61.50	752	0	0
63.00	752	1,128	1,128

Device	Routing	Invert	Outlet Devices
#1	Primary	61.50'	**8.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.14 cfs @ 11.97 hrs HW=61.52' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.14 cfs)

Summary for Pond DL6: Rood Dripline Filter

Inflow Area = 0.096 ac,100.00% Impervious, Inflow Depth > 2.87" for 2-Year event
Inflow = 0.30 cfs @ 12.07 hrs, Volume= 0.023 af
Outflow = 0.14 cfs @ 11.97 hrs, Volume= 0.023 af, Atten= 54%, Lag= 0.0 min
Primary = 0.14 cfs @ 11.97 hrs, Volume= 0.023 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 64.77' @ 12.21 hrs Surf.Area= 752 sf Storage= 80 cf

Plug-Flow detention time= 2.3 min calculated for 0.023 af (100% of inflow)
Center-of-Mass det. time= 2.2 min (757.9 - 755.7)

Volume	Invert	Avail.Storage	Storage Description
#1	64.50'	451 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,128 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
64.50	752	0	0
66.00	752	1,128	1,128

Device	Routing	Invert	Outlet Devices
#1	Primary	64.50'	**8.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.14 cfs @ 11.97 hrs HW=64.52' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.14 cfs)

Summary for Pond DL7: Rood Dripline Filter

Inflow Area = 0.018 ac,100.00% Impervious, Inflow Depth > 2.87" for 2-Year event
Inflow = 0.06 cfs @ 12.07 hrs, Volume= 0.004 af
Outflow = 0.03 cfs @ 12.00 hrs, Volume= 0.004 af, Atten= 42%, Lag= 0.0 min
Primary = 0.03 cfs @ 12.00 hrs, Volume= 0.004 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 65.65' @ 12.17 hrs Surf.Area= 176 sf Storage= 10 cf

Plug-Flow detention time= 1.3 min calculated for 0.004 af (100% of inflow)
Center-of-Mass det. time= 1.2 min (756.9 - 755.7)

Volume	Invert	Avail.Storage	Storage Description
#1	65.50'	106 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 264 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
65.50	176	0	0
67.00	176	264	264

Device	Routing	Invert	Outlet Devices
#1	Primary	65.50'	**8.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.03 cfs @ 12.00 hrs HW=65.52' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Summary for Pond DL8: Rood Dripline Filter

Inflow Area = 0.090 ac,100.00% Impervious, Inflow Depth > 2.87" for 2-Year event
Inflow = 0.28 cfs @ 12.07 hrs, Volume= 0.022 af
Outflow = 0.16 cfs @ 11.99 hrs, Volume= 0.022 af, Atten= 44%, Lag= 0.0 min
Primary = 0.16 cfs @ 11.99 hrs, Volume= 0.022 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 25.66' @ 12.17 hrs Surf.Area= 856 sf Storage= 54 cf

Plug-Flow detention time= 1.3 min calculated for 0.022 af (100% of inflow)
Center-of-Mass det. time= 1.3 min (757.0 - 755.7)

Volume	Invert	Avail.Storage	Storage Description
#1	25.50'	514 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,284 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.50	856	0	0
27.00	856	1,284	1,284

Device	Routing	Invert	Outlet Devices
#1	Primary	25.50'	**8.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.16 cfs @ 11.99 hrs HW=25.52' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.16 cfs)

Summary for Pond DL9: Rood Dripline Filter

Inflow Area = 0.168 ac,100.00% Impervious, Inflow Depth > 2.87" for 2-Year event
Inflow = 0.52 cfs @ 12.07 hrs, Volume= 0.040 af
Outflow = 0.20 cfs @ 11.90 hrs, Volume= 0.040 af, Atten= 62%, Lag= 0.0 min
Primary = 0.20 cfs @ 11.90 hrs, Volume= 0.040 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 34.43' @ 12.28 hrs Surf.Area= 1,088 sf Storage= 189 cf

Plug-Flow detention time= 3.9 min calculated for 0.040 af (100% of inflow)
Center-of-Mass det. time= 3.8 min (759.5 - 755.7)

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	870 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 2,176 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
34.00	1,088	0	0
36.00	1,088	2,176	2,176

Device	Routing	Invert	Outlet Devices
#1	Primary	34.00'	**8.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.20 cfs @ 11.90 hrs HW=34.02' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.20 cfs)

Summary for Link SP2: Study Point #2

Inflow Area = 2.937 ac, 20.99% Impervious, Inflow Depth > 1.38" for 2-Year event
Inflow = 3.01 cfs @ 12.34 hrs, Volume= 0.339 af
Primary = 3.01 cfs @ 12.34 hrs, Volume= 0.339 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DRF1: Duplex Roof 18 & 17 Runoff Area=4,192 sf 100.00% Impervious Runoff Depth>4.36"
Tc=5.0 min CN=98 Runoff=0.45 cfs 0.035 af

Subcatchment DRF2: Duplex Roof 16 & 15 Runoff Area=4,192 sf 100.00% Impervious Runoff Depth>4.36"
Tc=5.0 min CN=98 Runoff=0.45 cfs 0.035 af

Subcatchment DRF3: Duplex Roof 14 & 13 Runoff Area=4,192 sf 100.00% Impervious Runoff Depth>4.36"
Tc=5.0 min CN=98 Runoff=0.45 cfs 0.035 af

Subcatchment DRF4: Duplex Roof 6 & 7 Runoff Area=4,192 sf 100.00% Impervious Runoff Depth>4.36"
Tc=5.0 min CN=98 Runoff=0.45 cfs 0.035 af

Subcatchment DRF5: Duplex Roof 8 & 9 Runoff Area=4,192 sf 100.00% Impervious Runoff Depth>4.36"
Tc=5.0 min CN=98 Runoff=0.45 cfs 0.035 af

Subcatchment DRF6: Duplex Roof 10 & 11 Runoff Area=4,192 sf 100.00% Impervious Runoff Depth>4.36"
Tc=5.0 min CN=98 Runoff=0.45 cfs 0.035 af

Subcatchment FRF1: Fourplex Roof Runoff Area=7,328 sf 100.00% Impervious Runoff Depth>4.36"
Tc=5.0 min CN=98 Runoff=0.78 cfs 0.061 af

Subcatchment S2: PR Subcatchment Runoff Area=127,956 sf 20.99% Impervious Runoff Depth>2.62"
Flow Length=415' Tc=23.0 min CN=81 Runoff=5.76 cfs 0.642 af

Subcatchment S3-8: PR Subcatchment Runoff Area=4,780 sf 0.00% Impervious Runoff Depth>2.54"
Tc=6.0 min CN=80 Runoff=0.33 cfs 0.023 af

Subcatchment SRF1: Single Roof 1 Runoff Area=3,938 sf 100.00% Impervious Runoff Depth>4.36"
Tc=5.0 min CN=98 Runoff=0.42 cfs 0.033 af

Subcatchment SRF2: Single Roof 12 Runoff Area=792 sf 100.00% Impervious Runoff Depth>4.36"
Tc=5.0 min CN=98 Runoff=0.08 cfs 0.007 af

Reach 1R: Link to USF1 Inflow=0.53 cfs 0.135 af
Outflow=0.53 cfs 0.135 af

Reach 2R: Link to DET1 Inflow=0.42 cfs 0.105 af
Outflow=0.42 cfs 0.105 af

Reach 3R: Link to W1 Inflow=0.36 cfs 0.094 af
Outflow=0.36 cfs 0.094 af

Pond BRF3: BRF-3 Peak Elev=64.00' Storage=355 cf Inflow=0.33 cfs 0.023 af
Outflow=0.08 cfs 0.023 af

Pond DL1: Rood Dripline Filter Peak Elev=62.21' Storage=215 cf Inflow=0.45 cfs 0.035 af
Outflow=0.14 cfs 0.035 af

Pond DL2: Rood Dripline Filter Peak Elev=64.21' Storage=215 cf Inflow=0.45 cfs 0.035 af
Outflow=0.14 cfs 0.035 af

Pond DL3: Rood Dripline Filter Peak Elev=65.21' Storage=215 cf Inflow=0.45 cfs 0.035 af
Outflow=0.14 cfs 0.035 af

Pond DL4: Rood Dripline Filter Peak Elev=60.21' Storage=215 cf Inflow=0.45 cfs 0.035 af
Outflow=0.14 cfs 0.035 af

Pond DL5: Rood Dripline Filter Peak Elev=62.21' Storage=215 cf Inflow=0.45 cfs 0.035 af
Outflow=0.14 cfs 0.035 af

Pond DL6: Rood Dripline Filter Peak Elev=65.21' Storage=215 cf Inflow=0.45 cfs 0.035 af
Outflow=0.14 cfs 0.035 af

Pond DL7: Rood Dripline Filter Peak Elev=65.93' Storage=30 cf Inflow=0.08 cfs 0.007 af
Outflow=0.03 cfs 0.007 af

Pond DL8: Rood Dripline Filter Peak Elev=25.95' Storage=155 cf Inflow=0.42 cfs 0.033 af
Outflow=0.16 cfs 0.033 af

Pond DL9: Rood Dripline Filter Peak Elev=35.08' Storage=469 cf Inflow=0.78 cfs 0.061 af
Outflow=0.20 cfs 0.061 af

Link SP2: Study Point #2 Inflow=5.76 cfs 0.642 af
Primary=5.76 cfs 0.642 af

Total Runoff Area = 3.901 ac Runoff Volume = 0.976 af Average Runoff Depth = 3.00"
62.30% Pervious = 2.431 ac 37.70% Impervious = 1.471 ac

Summary for Subcatchment DRF1: Duplex Roof 18 & 17

Runoff = 0.45 cfs @ 12.07 hrs, Volume= 0.035 af, Depth> 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
*	4,192	98	Duplex Roof
	4,192		100.00% Impervious Area

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

Summary for Subcatchment DRF2: Duplex Roof 16 & 15

Runoff = 0.45 cfs @ 12.07 hrs, Volume= 0.035 af, Depth> 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
*	4,192	98	Duplex Roof
	4,192		100.00% Impervious Area

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

Summary for Subcatchment DRF3: Duplex Roof 14 & 13

Runoff = 0.45 cfs @ 12.07 hrs, Volume= 0.035 af, Depth> 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
*	4,192	98	Duplex Roof
	4,192		100.00% Impervious Area

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

Summary for Subcatchment DRF4: Duplex Roof 6 & 7

Runoff = 0.45 cfs @ 12.07 hrs, Volume= 0.035 af, Depth> 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
*	4,192	98	Duplex Roof
	4,192		100.00% Impervious Area

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

Summary for Subcatchment DRF5: Duplex Roof 8 & 9

Runoff = 0.45 cfs @ 12.07 hrs, Volume= 0.035 af, Depth> 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
*	4,192	98	Duplex Roof
	4,192		100.00% Impervious Area

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

Summary for Subcatchment DRF6: Duplex Roof 10 & 11

Runoff = 0.45 cfs @ 12.07 hrs, Volume= 0.035 af, Depth> 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
*	4,192	98	Duplex Roof
	4,192		100.00% Impervious Area

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

Summary for Subcatchment FRF1: Fourplex Roof

Runoff = 0.78 cfs @ 12.07 hrs, Volume= 0.061 af, Depth> 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
*	7,328	98	Duplex Roof
	7,328		100.00% Impervious Area

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

Summary for Subcatchment S2: PR Subcatchment

Runoff = 5.76 cfs @ 12.32 hrs, Volume= 0.642 af, Depth> 2.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
	195	39	>75% Grass cover, Good, HSG A
	2,132	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	4,096	74	>75% Grass cover, Good, Madeland
*	281	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	0	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	0	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	41,932	80	>75% Grass cover, Good, HSG D
	52,461	77	Woods, Good, HSG D
*	8,364	98	Roof, HSG D
*	8,323	98	Pavement, HSG D
*	10,172	98	Bedrock, HSG D
	127,956	81	Weighted Average
	101,097		79.01% Pervious Area
	26,859		20.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	100	0.0900	0.21		**Sheet Flow, A-B Sheet Flow** Grass: Dense n= 0.240 P2= 3.10"
10.0	50	0.1400	0.08		**Sheet Flow, B-C Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.10"
0.7	75	0.1200	1.73		**Shallow Concentrated Flow, C-D Shallow Concentrated Flow** Woodland Kv= 5.0 fps
4.4	190	0.0210	0.72		**Shallow Concentrated Flow, D-E Shallow Concentrated Flow** Woodland Kv= 5.0 fps
23.0	415	Total			

Summary for Subcatchment S3-8: PR Subcatchment

Runoff = 0.33 cfs @ 12.09 hrs, Volume= 0.023 af, Depth> 2.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
	0	39	>75% Grass cover, Good, HSG A
	0	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	0	74	>75% Grass cover, Good, Madeland
*	0	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	0	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	0	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	4,080	80	>75% Grass cover, Good, HSG D
	700	77	Woods, Good, HSG D
*	0	98	Roof, HSG D
*	0	98	Pavement, HSG D
*	0	98	Bedrock, HSG D
	4,780	80	Weighted Average
	4,780		100.00% Pervious Area

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

Summary for Subcatchment SRF1: Single Roof 1

Runoff = 0.42 cfs @ 12.07 hrs, Volume= 0.033 af, Depth> 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
*	3,938	98	Single Roof
	3,938		100.00% Impervious Area

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

Summary for Subcatchment SRF2: Single Roof 12

Runoff = 0.08 cfs @ 12.07 hrs, Volume= 0.007 af, Depth> 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
*	792	98	Single Roof
	792		100.00% Impervious Area

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

Summary for Reach 1R: Link to USF1

Inflow Area = 0.417 ac, 73.66% Impervious, Inflow Depth > 3.88" for 10-Year event
Inflow = 0.53 cfs @ 12.49 hrs, Volume= 0.135 af
Outflow = 0.53 cfs @ 12.49 hrs, Volume= 0.135 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach 2R: Link to DET1

Inflow Area = 0.289 ac,100.00% Impervious, Inflow Depth > 4.36" for 10-Year event
Inflow = 0.42 cfs @ 11.82 hrs, Volume= 0.105 af
Outflow = 0.42 cfs @ 11.82 hrs, Volume= 0.105 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach 3R: Link to W1

Inflow Area = 0.259 ac,100.00% Impervious, Inflow Depth > 4.36" for 10-Year event
Inflow = 0.36 cfs @ 11.89 hrs, Volume= 0.094 af
Outflow = 0.36 cfs @ 11.89 hrs, Volume= 0.094 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Pond BRF3: BRF-3

Inflow Area = 0.110 ac, 0.00% Impervious, Inflow Depth > 2.54" for 10-Year event
Inflow = 0.33 cfs @ 12.09 hrs, Volume= 0.023 af
Outflow = 0.08 cfs @ 12.49 hrs, Volume= 0.023 af, Atten= 75%, Lag= 24.2 min
Primary = 0.08 cfs @ 12.49 hrs, Volume= 0.023 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 64.00' @ 12.49 hrs Surf.Area= 769 sf Storage= 355 cf

Plug-Flow detention time= 96.7 min calculated for 0.023 af (100% of inflow)
Center-of-Mass det. time= 96.5 min (921.2 - 824.7)

Volume	Invert	Avail.Storage	Storage Description
#1	63.50'	392 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
63.50	644	0	0
64.05	781	392	392

Device	Routing	Invert	Outlet Devices
#1	Primary	63.50'	**0.03 cfs Exfiltration when above 63.50'**
#2	Primary	64.00'	**85.0' long (Profile 6) Broad-Crested Rectangular Weir**
			Head (feet) 0.49 0.98 1.48
			Coef. (English) 3.12 3.41 3.59

Primary OutFlow Max=0.07 cfs @ 12.49 hrs HW=64.00' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.03 cfs)
└—**2=Broad-Crested Rectangular Weir** (Weir Controls 0.04 cfs @ 0.16 fps)

Summary for Pond DL1: Rood Dripline Filter

Inflow Area = 0.096 ac,100.00% Impervious, Inflow Depth > 4.36" for 10-Year event
Inflow = 0.45 cfs @ 12.07 hrs, Volume= 0.035 af
Outflow = 0.14 cfs @ 11.82 hrs, Volume= 0.035 af, Atten= 69%, Lag= 0.0 min
Primary = 0.14 cfs @ 11.82 hrs, Volume= 0.035 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 62.21' @ 12.36 hrs Surf.Area= 752 sf Storage= 215 cf

Plug-Flow detention time= 6.4 min calculated for 0.035 af (100% of inflow)
Center-of-Mass det. time= 6.3 min (754.4 - 748.1)

Volume	Invert	Avail.Storage	Storage Description
#1	61.50'	451 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,128 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
61.50	752	0	0
63.00	752	1,128	1,128

Device	Routing	Invert	Outlet Devices
#1	Primary	61.50'	**8.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.14 cfs @ 11.82 hrs HW=61.52' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.14 cfs)

Summary for Pond DL2: Rood Dripline Filter

Inflow Area = 0.096 ac,100.00% Impervious, Inflow Depth > 4.36" for 10-Year event
Inflow = 0.45 cfs @ 12.07 hrs, Volume= 0.035 af
Outflow = 0.14 cfs @ 11.82 hrs, Volume= 0.035 af, Atten= 69%, Lag= 0.0 min
Primary = 0.14 cfs @ 11.82 hrs, Volume= 0.035 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 64.21' @ 12.36 hrs Surf.Area= 752 sf Storage= 215 cf

Plug-Flow detention time= 6.4 min calculated for 0.035 af (100% of inflow)
Center-of-Mass det. time= 6.3 min (754.4 - 748.1)

Volume	Invert	Avail.Storage	Storage Description
#1	63.50'	451 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,128 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
63.50	752	0	0
65.00	752	1,128	1,128

Device	Routing	Invert	Outlet Devices
#1	Primary	63.50'	**8.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.14 cfs @ 11.82 hrs HW=63.52' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.14 cfs)

Summary for Pond DL3: Rood Dripline Filter

Inflow Area = 0.096 ac,100.00% Impervious, Inflow Depth > 4.36" for 10-Year event
Inflow = 0.45 cfs @ 12.07 hrs, Volume= 0.035 af
Outflow = 0.14 cfs @ 11.82 hrs, Volume= 0.035 af, Atten= 69%, Lag= 0.0 min
Primary = 0.14 cfs @ 11.82 hrs, Volume= 0.035 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 65.21' @ 12.36 hrs Surf.Area= 752 sf Storage= 215 cf

Plug-Flow detention time= 6.4 min calculated for 0.035 af (100% of inflow)
Center-of-Mass det. time= 6.3 min (754.4 - 748.1)

Volume	Invert	Avail.Storage	Storage Description
#1	64.50'	451 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,128 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
64.50	752	0	0
66.00	752	1,128	1,128

Device	Routing	Invert	Outlet Devices
#1	Primary	64.50'	**8.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.14 cfs @ 11.82 hrs HW=64.52' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.14 cfs)

Summary for Pond DL4: Rood Dripline Filter

Inflow Area = 0.096 ac,100.00% Impervious, Inflow Depth > 4.36" for 10-Year event
Inflow = 0.45 cfs @ 12.07 hrs, Volume= 0.035 af
Outflow = 0.14 cfs @ 11.82 hrs, Volume= 0.035 af, Atten= 69%, Lag= 0.0 min
Primary = 0.14 cfs @ 11.82 hrs, Volume= 0.035 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 60.21' @ 12.36 hrs Surf.Area= 752 sf Storage= 215 cf

Plug-Flow detention time= 6.4 min calculated for 0.035 af (100% of inflow)
Center-of-Mass det. time= 6.3 min (754.4 - 748.1)

Volume	Invert	Avail.Storage	Storage Description
#1	59.50'	451 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,128 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
59.50	752	0	0
61.00	752	1,128	1,128

Device	Routing	Invert	Outlet Devices
#1	Primary	59.50'	**8.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.14 cfs @ 11.82 hrs HW=59.52' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.14 cfs)

Summary for Pond DL5: Rood Dripline Filter

Inflow Area = 0.096 ac,100.00% Impervious, Inflow Depth > 4.36" for 10-Year event
Inflow = 0.45 cfs @ 12.07 hrs, Volume= 0.035 af
Outflow = 0.14 cfs @ 11.82 hrs, Volume= 0.035 af, Atten= 69%, Lag= 0.0 min
Primary = 0.14 cfs @ 11.82 hrs, Volume= 0.035 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 62.21' @ 12.36 hrs Surf.Area= 752 sf Storage= 215 cf

Plug-Flow detention time= 6.4 min calculated for 0.035 af (100% of inflow)
Center-of-Mass det. time= 6.3 min (754.4 - 748.1)

Volume	Invert	Avail.Storage	Storage Description
#1	61.50'	451 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,128 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
61.50	752	0	0
63.00	752	1,128	1,128

Device	Routing	Invert	Outlet Devices
#1	Primary	61.50'	**8.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.14 cfs @ 11.82 hrs HW=61.52' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.14 cfs)

Summary for Pond DL6: Rood Dripline Filter

Inflow Area = 0.096 ac,100.00% Impervious, Inflow Depth > 4.36" for 10-Year event
Inflow = 0.45 cfs @ 12.07 hrs, Volume= 0.035 af
Outflow = 0.14 cfs @ 11.82 hrs, Volume= 0.035 af, Atten= 69%, Lag= 0.0 min
Primary = 0.14 cfs @ 11.82 hrs, Volume= 0.035 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 65.21' @ 12.36 hrs Surf.Area= 752 sf Storage= 215 cf

Plug-Flow detention time= 6.4 min calculated for 0.035 af (100% of inflow)
Center-of-Mass det. time= 6.3 min (754.4 - 748.1)

Volume	Invert	Avail.Storage	Storage Description
#1	64.50'	451 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,128 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
64.50	752	0	0
66.00	752	1,128	1,128

Device	Routing	Invert	Outlet Devices
#1	Primary	64.50'	**8.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.14 cfs @ 11.82 hrs HW=64.52' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.14 cfs)

Summary for Pond DL7: Rood Dripline Filter

Inflow Area = 0.018 ac,100.00% Impervious, Inflow Depth > 4.36" for 10-Year event
Inflow = 0.08 cfs @ 12.07 hrs, Volume= 0.007 af
Outflow = 0.03 cfs @ 11.90 hrs, Volume= 0.007 af, Atten= 62%, Lag= 0.0 min
Primary = 0.03 cfs @ 11.90 hrs, Volume= 0.007 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 65.93' @ 12.28 hrs Surf.Area= 176 sf Storage= 30 cf

Plug-Flow detention time= 3.7 min calculated for 0.007 af (100% of inflow)
Center-of-Mass det. time= 3.6 min (751.7 - 748.1)

Volume	Invert	Avail.Storage	Storage Description
#1	65.50'	106 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 264 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
65.50	176	0	0
67.00	176	264	264

Device	Routing	Invert	Outlet Devices
#1	Primary	65.50'	**8.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.03 cfs @ 11.90 hrs HW=65.52' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Summary for Pond DL8: Rood Dripline Filter

Inflow Area = 0.090 ac,100.00% Impervious, Inflow Depth > 4.36" for 10-Year event
Inflow = 0.42 cfs @ 12.07 hrs, Volume= 0.033 af
Outflow = 0.16 cfs @ 11.89 hrs, Volume= 0.033 af, Atten= 62%, Lag= 0.0 min
Primary = 0.16 cfs @ 11.89 hrs, Volume= 0.033 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 25.95' @ 12.28 hrs Surf.Area= 856 sf Storage= 155 cf

Plug-Flow detention time= 3.9 min calculated for 0.033 af (100% of inflow)
Center-of-Mass det. time= 3.8 min (751.9 - 748.1)

Volume	Invert	Avail.Storage	Storage Description
#1	25.50'	514 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,284 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.50	856	0	0
27.00	856	1,284	1,284

Device	Routing	Invert	Outlet Devices
#1	Primary	25.50'	**8.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.16 cfs @ 11.89 hrs HW=25.52' (Free Discharge)
↳**1=Exfiltration** (Exfiltration Controls 0.16 cfs)

Summary for Pond DL9: Rood Dripline Filter

Inflow Area = 0.168 ac,100.00% Impervious, Inflow Depth > 4.36" for 10-Year event
Inflow = 0.78 cfs @ 12.07 hrs, Volume= 0.061 af
Outflow = 0.20 cfs @ 11.76 hrs, Volume= 0.061 af, Atten= 74%, Lag= 0.0 min
Primary = 0.20 cfs @ 11.76 hrs, Volume= 0.061 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 35.08' @ 12.42 hrs Surf.Area= 1,088 sf Storage= 469 cf

Plug-Flow detention time= 10.4 min calculated for 0.061 af (100% of inflow)
Center-of-Mass det. time= 10.3 min (758.3 - 748.1)

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	870 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 2,176 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
34.00	1,088	0	0
36.00	1,088	2,176	2,176

Device	Routing	Invert	Outlet Devices
#1	Primary	34.00'	**8.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.20 cfs @ 11.76 hrs HW=34.02' (Free Discharge)
↳**1=Exfiltration** (Exfiltration Controls 0.20 cfs)

Summary for Link SP2: Study Point #2

Inflow Area = 2.937 ac, 20.99% Impervious, Inflow Depth > 2.62" for 10-Year event
Inflow = 5.76 cfs @ 12.32 hrs, Volume= 0.642 af
Primary = 5.76 cfs @ 12.32 hrs, Volume= 0.642 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DRF1: Duplex Roof 18 & 17 Runoff Area=4,192 sf 100.00% Impervious Runoff Depth>5.56"
Tc=5.0 min CN=98 Runoff=0.57 cfs 0.045 af

Subcatchment DRF2: Duplex Roof 16 & 15 Runoff Area=4,192 sf 100.00% Impervious Runoff Depth>5.56"
Tc=5.0 min CN=98 Runoff=0.57 cfs 0.045 af

Subcatchment DRF3: Duplex Roof 14 & 13 Runoff Area=4,192 sf 100.00% Impervious Runoff Depth>5.56"
Tc=5.0 min CN=98 Runoff=0.57 cfs 0.045 af

Subcatchment DRF4: Duplex Roof 6 & 7 Runoff Area=4,192 sf 100.00% Impervious Runoff Depth>5.56"
Tc=5.0 min CN=98 Runoff=0.57 cfs 0.045 af

Subcatchment DRF5: Duplex Roof 8 & 9 Runoff Area=4,192 sf 100.00% Impervious Runoff Depth>5.56"
Tc=5.0 min CN=98 Runoff=0.57 cfs 0.045 af

Subcatchment DRF6: Duplex Roof 10 & 11 Runoff Area=4,192 sf 100.00% Impervious Runoff Depth>5.56"
Tc=5.0 min CN=98 Runoff=0.57 cfs 0.045 af

Subcatchment FRF1: Fourplex Roof Runoff Area=7,328 sf 100.00% Impervious Runoff Depth>5.56"
Tc=5.0 min CN=98 Runoff=0.99 cfs 0.078 af

Subcatchment S2: PR Subcatchment Runoff Area=127,956 sf 20.99% Impervious Runoff Depth>3.69"
Flow Length=415' Tc=23.0 min CN=81 Runoff=8.07 cfs 0.902 af

Subcatchment S3-8: PR Subcatchment Runoff Area=4,780 sf 0.00% Impervious Runoff Depth>3.60"
Tc=6.0 min CN=80 Runoff=0.46 cfs 0.033 af

Subcatchment SRF1: Single Roof 1 Runoff Area=3,938 sf 100.00% Impervious Runoff Depth>5.56"
Tc=5.0 min CN=98 Runoff=0.53 cfs 0.042 af

Subcatchment SRF2: Single Roof 12 Runoff Area=792 sf 100.00% Impervious Runoff Depth>5.56"
Tc=5.0 min CN=98 Runoff=0.11 cfs 0.008 af

Reach 1R: Link to USF1 Inflow=0.78 cfs 0.175 af
Outflow=0.78 cfs 0.175 af

Reach 2R: Link to DET1 Inflow=0.42 cfs 0.134 af
Outflow=0.42 cfs 0.134 af

Reach 3R: Link to W1 Inflow=0.36 cfs 0.120 af
Outflow=0.36 cfs 0.120 af

Pond BRF3: BRF-3 Peak Elev=64.01' Storage=361 cf Inflow=0.46 cfs 0.033 af
Outflow=0.33 cfs 0.033 af

Pond DL1: Rood Dripline Filter Peak Elev=62.68' Storage=354 cf Inflow=0.57 cfs 0.045 af
Outflow=0.14 cfs 0.045 af

Pond DL2: Rood Dripline Filter Peak Elev=64.68' Storage=354 cf Inflow=0.57 cfs 0.045 af
Outflow=0.14 cfs 0.045 af

Pond DL3: Rood Dripline Filter Peak Elev=65.68' Storage=354 cf Inflow=0.57 cfs 0.045 af
Outflow=0.14 cfs 0.045 af

Pond DL4: Rood Dripline Filter Peak Elev=60.68' Storage=354 cf Inflow=0.57 cfs 0.045 af
Outflow=0.14 cfs 0.045 af

Pond DL5: Rood Dripline Filter Peak Elev=62.68' Storage=354 cf Inflow=0.57 cfs 0.045 af
Outflow=0.14 cfs 0.045 af

Pond DL6: Rood Dripline Filter Peak Elev=65.68' Storage=354 cf Inflow=0.57 cfs 0.045 af
Outflow=0.14 cfs 0.045 af

Pond DL7: Rood Dripline Filter Peak Elev=66.25' Storage=53 cf Inflow=0.11 cfs 0.008 af
Outflow=0.03 cfs 0.008 af

Pond DL8: Rood Dripline Filter Peak Elev=26.29' Storage=269 cf Inflow=0.53 cfs 0.042 af
Outflow=0.16 cfs 0.042 af

Pond DL9: Rood Dripline Filter Peak Elev=35.68' Storage=733 cf Inflow=0.99 cfs 0.078 af
Outflow=0.20 cfs 0.078 af

Link SP2: Study Point #2 Inflow=8.07 cfs 0.902 af
Primary=8.07 cfs 0.902 af

Total Runoff Area = 3.901 ac Runoff Volume = 1.331 af Average Runoff Depth = 4.09"
62.30% Pervious = 2.431 ac 37.70% Impervious = 1.471 ac

Summary for Subcatchment DRF1: Duplex Roof 18 & 17

Runoff = 0.57 cfs @ 12.07 hrs, Volume= 0.045 af, Depth> 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	4,192	98	Duplex Roof
	4,192		100.00% Impervious Area

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

Summary for Subcatchment DRF2: Duplex Roof 16 & 15

Runoff = 0.57 cfs @ 12.07 hrs, Volume= 0.045 af, Depth> 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	4,192	98	Duplex Roof
	4,192		100.00% Impervious Area

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

Summary for Subcatchment DRF3: Duplex Roof 14 & 13

Runoff = 0.57 cfs @ 12.07 hrs, Volume= 0.045 af, Depth> 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	4,192	98	Duplex Roof
	4,192		100.00% Impervious Area

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

Summary for Subcatchment DRF4: Duplex Roof 6 & 7

Runoff = 0.57 cfs @ 12.07 hrs, Volume= 0.045 af, Depth> 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	4,192	98	Duplex Roof
	4,192		100.00% Impervious Area

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

Summary for Subcatchment DRF5: Duplex Roof 8 & 9

Runoff = 0.57 cfs @ 12.07 hrs, Volume= 0.045 af, Depth> 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	4,192	98	Duplex Roof
	4,192		100.00% Impervious Area

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

Summary for Subcatchment DRF6: Duplex Roof 10 & 11

Runoff = 0.57 cfs @ 12.07 hrs, Volume= 0.045 af, Depth> 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	4,192	98	Duplex Roof
	4,192		100.00% Impervious Area

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

Summary for Subcatchment FRF1: Fourplex Roof

Runoff = 0.99 cfs @ 12.07 hrs, Volume= 0.078 af, Depth> 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	7,328	98	Duplex Roof
	7,328		100.00% Impervious Area

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

Summary for Subcatchment S2: PR Subcatchment

Runoff = 8.07 cfs @ 12.31 hrs, Volume= 0.902 af, Depth> 3.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
	195	39	>75% Grass cover, Good, HSG A
	2,132	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	4,096	74	>75% Grass cover, Good, Madeland
*	281	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	0	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	0	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	41,932	80	>75% Grass cover, Good, HSG D
	52,461	77	Woods, Good, HSG D
*	8,364	98	Roof, HSG D
*	8,323	98	Pavement, HSG D
*	10,172	98	Bedrock, HSG D
	127,956	81	Weighted Average
	101,097		79.01% Pervious Area
	26,859		20.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	100	0.0900	0.21		**Sheet Flow, A-B Sheet Flow** Grass: Dense n= 0.240 P2= 3.10"
10.0	50	0.1400	0.08		**Sheet Flow, B-C Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.10"
0.7	75	0.1200	1.73		**Shallow Concentrated Flow, C-D Shallow Concentrated Flow** Woodland Kv= 5.0 fps
4.4	190	0.0210	0.72		**Shallow Concentrated Flow, D-E Shallow Concentrated Flow** Woodland Kv= 5.0 fps
23.0	415	Total			

Summary for Subcatchment S3-8: PR Subcatchment

Runoff = 0.46 cfs @ 12.09 hrs, Volume= 0.033 af, Depth> 3.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
	0	39	>75% Grass cover, Good, HSG A
	0	30	Woods, Good, HSG A
*	0	98	Roof, HSG A
*	0	98	Pavement, HSG A
*	0	98	Bedrock, HSG A
*	0	74	>75% Grass cover, Good, Madeland
*	0	70	Woods, Good, Madeland
*	0	98	Roof, Madeland
*	0	98	Pavement, Madeland
*	0	98	Bedrock, Madeland
	0	74	>75% Grass cover, Good, HSG C
	0	70	Woods, Good, HSG C
*	0	98	Roof, HSG C
*	0	98	Pavement, HSG C
*	0	98	Bedrock, HSG C
	4,080	80	>75% Grass cover, Good, HSG D
	700	77	Woods, Good, HSG D
*	0	98	Roof, HSG D
*	0	98	Pavement, HSG D
*	0	98	Bedrock, HSG D
	4,780	80	Weighted Average
	4,780		100.00% Pervious Area

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

Summary for Subcatchment SRF1: Single Roof 1

Runoff = 0.53 cfs @ 12.07 hrs, Volume= 0.042 af, Depth> 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	3,938	98	Single Roof
	3,938		100.00% Impervious Area

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

Summary for Subcatchment SRF2: Single Roof 12

Runoff = 0.11 cfs @ 12.07 hrs, Volume= 0.008 af, Depth> 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	792	98	Single Roof
	792		100.00% Impervious Area

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

Summary for Reach 1R: Link to USF1

Inflow Area = 0.417 ac, 73.66% Impervious, Inflow Depth > 5.04" for 25-Year event
Inflow = 0.78 cfs @ 12.17 hrs, Volume= 0.175 af
Outflow = 0.78 cfs @ 12.17 hrs, Volume= 0.175 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach 2R: Link to DET1

Inflow Area = 0.289 ac,100.00% Impervious, Inflow Depth > 5.56" for 25-Year event
Inflow = 0.42 cfs @ 11.74 hrs, Volume= 0.134 af
Outflow = 0.42 cfs @ 11.74 hrs, Volume= 0.134 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach 3R: Link to W1

Inflow Area = 0.259 ac,100.00% Impervious, Inflow Depth > 5.56" for 25-Year event
Inflow = 0.36 cfs @ 11.80 hrs, Volume= 0.120 af
Outflow = 0.36 cfs @ 11.80 hrs, Volume= 0.120 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Pond BRF3: BRF-3

Inflow Area = 0.110 ac, 0.00% Impervious, Inflow Depth > 3.60" for 25-Year event
Inflow = 0.46 cfs @ 12.09 hrs, Volume= 0.033 af
Outflow = 0.33 cfs @ 12.17 hrs, Volume= 0.033 af, Atten= 28%, Lag= 5.2 min
Primary = 0.33 cfs @ 12.17 hrs, Volume= 0.033 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 64.01' @ 12.17 hrs Surf.Area= 771 sf Storage= 361 cf

Plug-Flow detention time= 84.5 min calculated for 0.033 af (100% of inflow)
Center-of-Mass det. time= 84.2 min (899.1 - 814.8)

Volume	Invert	Avail.Storage	Storage Description
#1	63.50'	392 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
63.50	644	0	0
64.05	781	392	392

Device	Routing	Invert	Outlet Devices
#1	Primary	63.50'	**0.03 cfs Exfiltration when above 63.50'**
#2	Primary	64.00'	**85.0' long (Profile 6) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 3.12 3.41 3.59

Primary OutFlow Max=0.31 cfs @ 12.17 hrs HW=64.01' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.03 cfs)
2=Broad-Crested Rectangular Weir (Weir Controls 0.28 cfs @ 0.32 fps)

Summary for Pond DL1: Rood Dripline Filter

Inflow Area = 0.096 ac,100.00% Impervious, Inflow Depth > 5.56" for 25-Year event
Inflow = 0.57 cfs @ 12.07 hrs, Volume= 0.045 af
Outflow = 0.14 cfs @ 11.74 hrs, Volume= 0.045 af, Atten= 75%, Lag= 0.0 min
Primary = 0.14 cfs @ 11.74 hrs, Volume= 0.045 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 62.68' @ 12.43 hrs Surf.Area= 752 sf Storage= 354 cf

Plug-Flow detention time= 11.2 min calculated for 0.045 af (100% of inflow)
Center-of-Mass det. time= 11.2 min (755.5 - 744.3)

Volume	Invert	Avail.Storage	Storage Description
#1	61.50'	451 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,128 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
61.50	752	0	0
63.00	752	1,128	1,128

Device	Routing	Invert	Outlet Devices
#1	Primary	61.50'	**8.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.14 cfs @ 11.74 hrs HW=61.52' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.14 cfs)

Summary for Pond DL2: Rood Dripline Filter

Inflow Area = 0.096 ac,100.00% Impervious, Inflow Depth > 5.56" for 25-Year event
Inflow = 0.57 cfs @ 12.07 hrs, Volume= 0.045 af
Outflow = 0.14 cfs @ 11.74 hrs, Volume= 0.045 af, Atten= 75%, Lag= 0.0 min
Primary = 0.14 cfs @ 11.74 hrs, Volume= 0.045 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 64.68' @ 12.43 hrs Surf.Area= 752 sf Storage= 354 cf

Plug-Flow detention time= 11.2 min calculated for 0.045 af (100% of inflow)
Center-of-Mass det. time= 11.2 min (755.5 - 744.3)

Volume	Invert	Avail.Storage	Storage Description
#1	63.50'	451 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,128 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
63.50	752	0	0
65.00	752	1,128	1,128

Device	Routing	Invert	Outlet Devices
#1	Primary	63.50'	**8.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.14 cfs @ 11.74 hrs HW=63.52' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.14 cfs)

Summary for Pond DL3: Rood Dripline Filter

Inflow Area = 0.096 ac,100.00% Impervious, Inflow Depth > 5.56" for 25-Year event
Inflow = 0.57 cfs @ 12.07 hrs, Volume= 0.045 af
Outflow = 0.14 cfs @ 11.74 hrs, Volume= 0.045 af, Atten= 75%, Lag= 0.0 min
Primary = 0.14 cfs @ 11.74 hrs, Volume= 0.045 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 65.68' @ 12.43 hrs Surf.Area= 752 sf Storage= 354 cf

Plug-Flow detention time= 11.2 min calculated for 0.045 af (100% of inflow)
Center-of-Mass det. time= 11.2 min (755.5 - 744.3)

Volume	Invert	Avail.Storage	Storage Description
#1	64.50'	451 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,128 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
64.50	752	0	0
66.00	752	1,128	1,128

Device	Routing	Invert	Outlet Devices
#1	Primary	64.50'	**8.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.14 cfs @ 11.74 hrs HW=64.52' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.14 cfs)

Summary for Pond DL4: Rood Dripline Filter

Inflow Area = 0.096 ac,100.00% Impervious, Inflow Depth > 5.56" for 25-Year event
Inflow = 0.57 cfs @ 12.07 hrs, Volume= 0.045 af
Outflow = 0.14 cfs @ 11.74 hrs, Volume= 0.045 af, Atten= 75%, Lag= 0.0 min
Primary = 0.14 cfs @ 11.74 hrs, Volume= 0.045 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 60.68' @ 12.43 hrs Surf.Area= 752 sf Storage= 354 cf

Plug-Flow detention time= 11.2 min calculated for 0.045 af (100% of inflow)
Center-of-Mass det. time= 11.2 min (755.5 - 744.3)

Volume	Invert	Avail.Storage	Storage Description
#1	59.50'	451 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,128 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
59.50	752	0	0
61.00	752	1,128	1,128

Device	Routing	Invert	Outlet Devices
#1	Primary	59.50'	**8.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.14 cfs @ 11.74 hrs HW=59.52' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.14 cfs)

Summary for Pond DL5: Rood Dripline Filter

Inflow Area = 0.096 ac,100.00% Impervious, Inflow Depth > 5.56" for 25-Year event
Inflow = 0.57 cfs @ 12.07 hrs, Volume= 0.045 af
Outflow = 0.14 cfs @ 11.74 hrs, Volume= 0.045 af, Atten= 75%, Lag= 0.0 min
Primary = 0.14 cfs @ 11.74 hrs, Volume= 0.045 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 62.68' @ 12.43 hrs Surf.Area= 752 sf Storage= 354 cf

Plug-Flow detention time= 11.2 min calculated for 0.045 af (100% of inflow)
Center-of-Mass det. time= 11.2 min (755.5 - 744.3)

Volume	Invert	Avail.Storage	Storage Description
#1	61.50'	451 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,128 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
61.50	752	0	0
63.00	752	1,128	1,128

Device	Routing	Invert	Outlet Devices
#1	Primary	61.50'	**8.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.14 cfs @ 11.74 hrs HW=61.52' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.14 cfs)

Summary for Pond DL6: Rood Dripline Filter

Inflow Area = 0.096 ac,100.00% Impervious, Inflow Depth > 5.56" for 25-Year event
Inflow = 0.57 cfs @ 12.07 hrs, Volume= 0.045 af
Outflow = 0.14 cfs @ 11.74 hrs, Volume= 0.045 af, Atten= 75%, Lag= 0.0 min
Primary = 0.14 cfs @ 11.74 hrs, Volume= 0.045 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 65.68' @ 12.43 hrs Surf.Area= 752 sf Storage= 354 cf

Plug-Flow detention time= 11.2 min calculated for 0.045 af (100% of inflow)
Center-of-Mass det. time= 11.2 min (755.5 - 744.3)

Volume	Invert	Avail.Storage	Storage Description
#1	64.50'	451 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,128 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
64.50	752	0	0
66.00	752	1,128	1,128

Device	Routing	Invert	Outlet Devices
#1	Primary	64.50'	**8.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.14 cfs @ 11.74 hrs HW=64.52' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.14 cfs)

Summary for Pond DL7: Rood Dripline Filter

Inflow Area = 0.018 ac,100.00% Impervious, Inflow Depth > 5.56" for 25-Year event
Inflow = 0.11 cfs @ 12.07 hrs, Volume= 0.008 af
Outflow = 0.03 cfs @ 11.81 hrs, Volume= 0.008 af, Atten= 70%, Lag= 0.0 min
Primary = 0.03 cfs @ 11.81 hrs, Volume= 0.008 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 66.25' @ 12.36 hrs Surf.Area= 176 sf Storage= 53 cf

Plug-Flow detention time= 6.7 min calculated for 0.008 af (100% of inflow)
Center-of-Mass det. time= 6.6 min (750.9 - 744.3)

Volume	Invert	Avail.Storage	Storage Description
#1	65.50'	106 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 264 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
65.50	176	0	0
67.00	176	264	264

Device	Routing	Invert	Outlet Devices
#1	Primary	65.50'	**8.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.03 cfs @ 11.81 hrs HW=65.52' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Summary for Pond DL8: Rood Dripline Filter

Inflow Area = 0.090 ac,100.00% Impervious, Inflow Depth > 5.56" for 25-Year event
Inflow = 0.53 cfs @ 12.07 hrs, Volume= 0.042 af
Outflow = 0.16 cfs @ 11.80 hrs, Volume= 0.042 af, Atten= 70%, Lag= 0.0 min
Primary = 0.16 cfs @ 11.80 hrs, Volume= 0.042 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 26.29' @ 12.37 hrs Surf.Area= 856 sf Storage= 269 cf

Plug-Flow detention time= 7.1 min calculated for 0.042 af (100% of inflow)
Center-of-Mass det. time= 7.0 min (751.3 - 744.3)

Volume	Invert	Avail.Storage	Storage Description
#1	25.50'	514 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,284 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.50	856	0	0
27.00	856	1,284	1,284

Device	Routing	Invert	Outlet Devices
#1	Primary	25.50'	**8.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.16 cfs @ 11.80 hrs HW=25.52' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.16 cfs)

Summary for Pond DL9: Rood Dripline Filter

Inflow Area = 0.168 ac,100.00% Impervious, Inflow Depth > 5.56" for 25-Year event
Inflow = 0.99 cfs @ 12.07 hrs, Volume= 0.078 af
Outflow = 0.20 cfs @ 11.69 hrs, Volume= 0.078 af, Atten= 80%, Lag= 0.0 min
Primary = 0.20 cfs @ 11.69 hrs, Volume= 0.078 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 35.68' @ 12.48 hrs Surf.Area= 1,088 sf Storage= 733 cf

Plug-Flow detention time= 17.4 min calculated for 0.078 af (100% of inflow)
Center-of-Mass det. time= 17.3 min (761.6 - 744.3)

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	870 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 2,176 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
34.00	1,088	0	0
36.00	1,088	2,176	2,176

Device	Routing	Invert	Outlet Devices
#1	Primary	34.00'	**8.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.20 cfs @ 11.69 hrs HW=34.02' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.20 cfs)

Summary for Link SP2: Study Point #2

Inflow Area = 2.937 ac, 20.99% Impervious, Inflow Depth > 3.69" for 25-Year event
Inflow = 8.07 cfs @ 12.31 hrs, Volume= 0.902 af
Primary = 8.07 cfs @ 12.31 hrs, Volume= 0.902 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

APPENDIX C

STORMWATER TREATMENT PLANS

THIS PLAN IS FOR REVIEW PURPOSES ONLY AND IS NOT INTENDED FOR CONSTRUCTION OR RECORDING

Revision:	By:	Date:	Change:
4	SMA	4/1/22	PLANNING BOARD REVIEW

LEGEND

PROPOSED NON-LINEAR IMPERVIOUS AREA =	60,949 SF
PROPOSED LINEAR IMPERVIOUS AREA =	48,079 SF
PROPOSED LANDSCAPE AREA =	74,136 SF
PROPOSED DEVELOPED AREA =	183,164 SF

PROJECT NUMBER: 41875 | ACAD FILE: 41875-TREATMENT.DWG | SCALE: 1" = 80' | DATE: MARCH 14, 2022

Drawing Name:
DEVELOPMENT PLAN

Project Name:
PROPOSED SUBDIVISION – CARR WOODS
10 DEEP BROOK ROAD, CAPE ELIZABETH, MAINE 04107

Owner/Applicant:
ANDREW CARR, DEBRA CARR & ENA HANSON

STATE OF MAINE · WILLIAM A GERRISH No. 8830 · REGISTERED PROFESSIONAL ENGINEER · 4-1-22

SHEET 1 OF 2

SURVEYING ● ENGINEERING ● LAND PLANNING
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tel 207.883.1000 fax 207.883.1001 e-mail / website info@northeastcivilsolutions.com www.northeastcivilsolutions.com

0 80' 160' 320'

E:\LAND PROJECTS\41000\41875 CARR - SHORE RD - CAPE ELIZABETH\PLANSET\41875-TREATMENT.DWG

THIS PLAN IS FOR REVIEW PURPOSES ONLY AND IS NOT INTENDED FOR CONSTRUCTION OR RECORDING

Revision:	By:	Date:	Change:
4	SMA	4/1/22	PLANNING BOARD REVIEW

LEGEND

NON-LINEAR IMPERVIOUS AREA TREATED =	58,410 SF
LINEAR IMPERVIOUS AREA TREATED =	43,714 SF
LANDSCAPE AREA TREATED =	45,438 SF
TOTAL DEVELOPED AREA TREATED =	147,562 SF

PERCENT OF NON-LINEAR IMPERVIOUS AREA TREATED = 58,410 SF/60,949 SF = 95.8%

PERCENT OF LINEAR IMPERVIOUS AREA TREATED = 43,714 SF/48,079 SF = 90.9%

PERCENT OF DEVELOPED AREA TREATED = 147,562 SF/183,164 SF = 80.6%

PROJECT NUMBER: 41875 | ACAD FILE: 41875-DRAINAGE.DWG | SCALE: 1" = 80' | DATE: APRIL 30, 2021

Drawing Name:
TREATMENT PLAN

Project Name:
PROPOSED SUBDIVISION – CARR WOODS
10 DEEP BROOK ROAD, CAPE ELIZABETH, MAINE 04107

Owner/Applicant:
ANDREW CARR, DEBRA CARR & ENA HANSON

WILLIAM A. GERRISH No. 8830 STATE OF MAINE REGISTERED PROFESSIONAL ENGINEER
4-1-22

SHEET 2 OF 2

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0 80' 160' 320'

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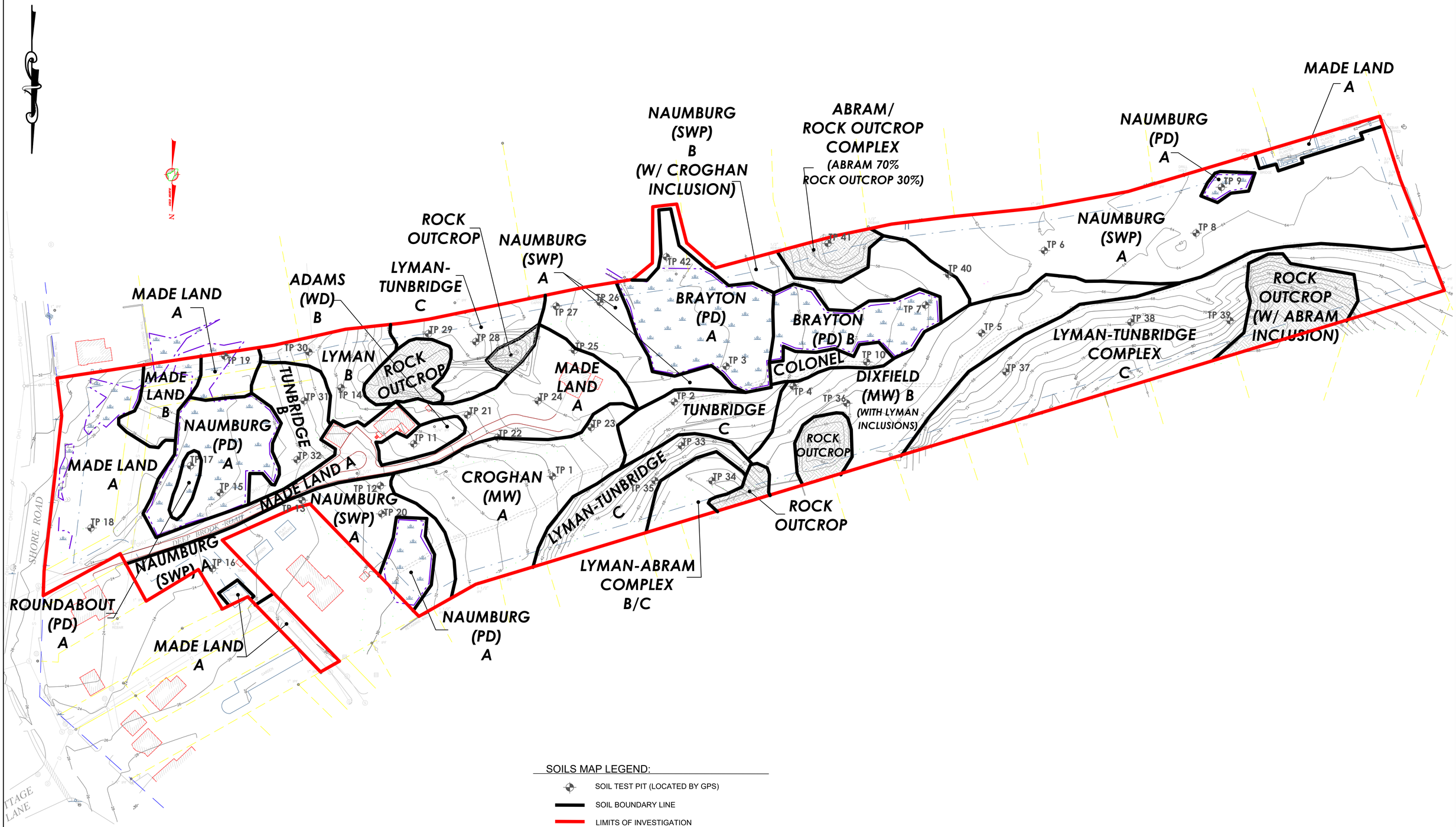
APPENDIX D

HYDROLOGIC SOIL GROUP MAPPING – NRCS & HISS



SOILS MAP LEGEND:

- SOIL TEST PIT (LOCATED BY GPS)
- SOIL BOUNDARY LINE
- LIMITS OF INVESTIGATION
- WETLAND AREA (AFA FLAGGED AND LOCATED BY SURVEY)
- BEDROCK OUTCROPPING (LOCATED BY GPS)

GRAPHIC SCALE

60 0 30 60 120

(IN FEET)

1 inch = 60 ft.

Drainage Class Acronyms

W- Well Drained
MW- Moderatley Well-Drained
SWP- Somewhat Poorly Draiined
PD- Poorly Drained
VPD- Very Poorly Drained

SLOPE DESIGNATION

A	——	0 - 3%
B	——	3 - 8%
C	——	8 - 20%
D	——	20%+

NOTE: SEE ACCOMPANYING SOIL NARRATIVE REPORT, DATED SEPTEMBER, 2021

THE ACCOMPANYING SOILS SURVEY WAS DONE IN ACCORDANCE WITH THE STANDARDS ADOPTED BY THE MAINE ASSOCIATION OF PROFESSIONAL SOIL SCIENTISTS, FEBRUARY 1995, AS AMENDED.

BASE MAP PROVIDED BY NORTHEAST CIVIL SOLUTIONS, PLAN RECEIVED 5-24-2021

STATE OF MAINE
CHRISTOPHER J. COPPI
No. 631
LICENSED SOIL SCIENTIST

DATE:	REVISIONS:
9/27/21	ADDED TEST PITS, REVISED PLAN TO INCLUDE CARR OUT PARCEL

CLASS A HIGH INTENSITY SOILS SURVEY

PREPARED FOR
ANDREW CARR
DEEP BROOK ROAD
CAPE ELIZABETH, MAINE

Albert Frick Associates, Inc.
Environmental Consultants
Gorham, Maine

Drawn By: B.J. | Checked By: C.C.

Date: 6/22/21 | Scale: 1" = 60'

Albert Frick Associates, Inc
Environmental Consultants
731 Foss Road Limerick, ME 04048
(207) 839-5563 FAX (207) 839-5564
www.albertfrick.com info@albertfrick.com

Andrew Carr
Deep Brook Road, Cape Elizabeth

September 27,2021

SOIL NARRATIVE REPORT

DATE: Soil profiles observed on June 10, September 16th, and 20th.

BASE MAP: Base map and conceptual subdivision layout provided by Northeast Civil Solutions, Inc. Contour map 2-foot intervals, scaled 1"= 100', from the Maine Office of GIS.

GROUND CONTROL: Test pits located by AFA using a Trimble Geo 7x Hand-Held GPS.

THE SOIL MAPPING CONFORMS WITH A HIGH-INTENSITY (CLASS A) SURVEY.

Class A - Soil Survey

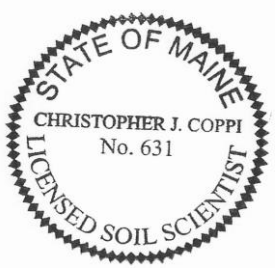
1. Mapping units of 1/8 acre or greater.
2. Scale of 1" = 100' or larger.
3. Up to 25% inclusions in mapping units of which no more than 15% may be dissimilar soils.
4. Ground control – Base map provided by Northeast Civil Solutions, Inc.
5. Base map with 2' contour lines.

This was prepared for a residential subdivision that will be served by public water and sewer.

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

Christopher J. Coppi

_____ L.S.S. #631, S.E. #403 __9__/__27__/_2021___
Christopher J. Coppi Date



ABRAM-ROCK OUTCROP-COMPLEX

SETTING

Parent Material: Loamy glacial till.

Landform: Glaciated upland ridges and knolls.

Position in Landscape: Upper portions of landform.

Slope Gradient Ranges: **(B)** 3-8% **(C)** 8-20%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: (for Lyman) Somewhat excessively drained with no apparent water table except during spring and periods of excessive precipitation, at which time runoff may be noted running along the bedrock surface. Abram Lyman and Rock Outcrop occur in a non-repeating pattern that cannot be separated out in mapping.
Note: All mineral soils in this complex are less than 10" deep.

Typical Profile Description:

Surface layer:	Reddish gray fine sandy loam, 0-4"
Subsurface layer:	Very dusky red loam, 4-6"
Subsoil layer:	Dark red loam, 6-10"

Hydrologic Group: Group D

Surface Run Off: Rapid

Permeability: Moderately rapid in the solum (in Abram), rapid in bedrock outcrop portions of map unit..

Depth to Bedrock: Very shallow (Abram 0-10") to shallow (Lyman 10-20")

Hazard to Flooding: None

Erosion Factor: K: .15 (for Abram)

INCLUSIONS
(Within Mapping Unit)

Similar: Lyman

USE AND MANAGEMENT

Development for connection to public sewer and water: This map unit is dominated by very shallow to bedrock soil conditions, in equal proportion to rock outcrop (exposed bedrock). Foundation construction will likely require bedrock removal.

ADAMS
(Typic Haplorthods)

SETTING

Parent Material: Derived from outwash, stratified drift material.

Landform: Occupy outwash terraces and sand plains, deltas, lake plains, moraines, terraces and eskers.

Position in Landscape: Usually occupies the upper positions of landform.

Slope Gradient Ranges: **(A)** 0-3% **(**B) 3-8% **(C)** 8-20% **(D)** 20%+

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Somewhat excessively to excessively well drained, with no evidence of high groundwater table within 3.5 feet of the soil surface.

Typical Profile Description:

Surface layer:	Pinkish gray sand, 0-4"
Subsurface layer:	Dark brown loamy sand, 4-10"
Subsoil layer:	Brown & yellowish brown sand,10-26"
Substratum:	Grayish brown sand, 26-70"

Hydrologic Group: Group A

Surface Run Off: Very slow to medium

Permeability: Rapid or very rapid

Depth to Bedrock: Very deep, greater than sixty inches

Hazard to Flooding: None

INCLUSIONS
(Within Mapping Unit)

Dissimilar: Croghan, Lyman, Naumburg S.W.P, Tunbridge

USE AND MANAGEMENT

Development with public sewer and water: Adams soil is suited for building site development. Proper foundation drainage is recommended.

Stormwater Design: The Adams soil is well drained to excessively well drained. The groundwater table is typically below 4.0'. This soil is well suited for subsurface stormwater treatments. The expected soil permeability is 6.0 to 20.0 inches/hour in the upper horizon approximately 0-2', and 20.0 inches/hour in the lower horizons.

BRAYTON
(Aeric Haplaquepts)

SETTING

Parent Material: Compact loamy glacial till.

Landform: Depressions and toeslopes of glaciated uplands.

Position in Landscape: Lowest positions on landform.

Slope Gradient Ranges: **(A)** 0-3% **(B)** 3-8%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Poorly drained, with a perched water table 0 to 1.0 feet beneath the soil surface from November through May or during periods of excessive precipitation.

Typical Profile Description:

Surface layer: Very dark grayish brown sandy loam, 0-5"
Subsurface layer: Grayish brown sandy loam, 5-15"
Subsoil layer: Olive gray fine sandy loam, 15-24"
Substratum: Olive sandy loam, 24-65"

Hydrologic Group: Group D

Surface Run Off: Moderate to moderately rapid.

Permeability: Moderate in solum, moderately slow or slow in dense substratum.

Depth to Bedrock: Deep, greater than 40 inches.

Hazard to Flooding: None

Erosion Factors: K: .24 - .32

INCLUSIONS
(Within Mapping Unit)

Similar: Colonel, Naumburg
Dissimilar: Peacham (Searsport)

USE AND MANAGEMENT

Development with public water: The limiting factor for building site development is wetness, due to a perched water table within one foot of the soil surface for some portion of the year. Proper foundation drainage or other site modification is recommended for construction. Brayton soil (poorly drained) may be classified as wetlands, based on the combined consideration of hydric conditions, hydrology, and vegetation.

Stormwater Design: Brayton soils generally exhibit permeabilities of 0.6 to 2.0 inches per hour in the upper horizon (0-6"), 0.6 to 2.0 inches per hour in the intermediate horizons (6-23") and .06 to 0.6 inches per hour in the substratum (23-65").

COLONEL
(Aquic Haplorthods)

SETTING

Parent Material: Compact loamy glacial till.

Landform: Glaciated uplands.

Position in Landscape: Intermediate positions on landform.

Slope Gradient Ranges: **(A)** 0-3% **(B)** 3-8% **(C)** 8-20%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Somewhat poorly drained, with a perched water table 1.0 to 1.5 feet beneath the soil surface from November through May or during periods of excessive precipitation.

Typical Profile Description:

Surface layer: Grayish brown fine sandy loam, 0-2"
Subsurface layer: Dark reddish brown fine sandy loam, 2-12"
Subsoil layer: Light olive brown gravelly fine sandy loam, 12-18"
Substratum: Olive gravelly fine sandy loam, 18-65"

Hydrologic Group: Group D

Surface Run Off: Moderate

Permeability: Moderate in solum and moderately slow or slow in the compact substratum.

Depth to Bedrock: Deep, greater than 40 inches.

Hazard to Flooding: None

Erosion Factor: K: .17 - .24

INCLUSIONS
(Within Mapping Unit)

Similar: Naumburg S.W.P

Dissimilar: Brayton, Naumburg P.D

USE AND MANAGEMENT

Development with public sewer and water: The limiting factor for building site development is wetness, due to the presence of a groundwater table 1.0 to 1.5 feet beneath the soil surface for some portion of the year. Proper foundation drainage or other site modification is recommended for construction.

Stormwater design: Colonel soils are somewhat poorly drained, with seasonal high groundwater table 1.0-1.5 feet beneath the soil surface in the spring and during periods of high precipitation. Colonel soils generally exhibit permeabilities of 0.6-2.0 inches/hour, while the dense substratum has permeabilities of 0.06-0.6 inches/hour

CROGHAN
(Aquic Haplorthods)

SETTING

Parent Material: Derived from outwash or deltaic sand.

Landform: Occupy outwash terraces and sand plains.

Position in Landscape: Usually are found in intermediate or upper positions in the landscape.

Slope Gradient Ranges: **(A)** 0-3% **(B)** 3-8% **(C)** 8-20%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Moderately well-drained, with an apparent water table 1.5 to 2.0 feet below the soil surface from November through May. The water table fluctuates from approximately 1.5 feet during prolonged wet periods to depths greater than 4 feet in dry seasons.

Typical Profile Description:

Surface layer: Dark brown sand, 0-7"

Subsurface layer: Strong brown/yellowish brown, brown & pale brown sand with mottles below 13", 7-52"

Substratum: Grayish brown loose sand, 52-60"

Hydrologic Group: Group A

Surface Run Off: Slow to medium

Permeability: Rapid to very rapid in the lower horizons.

Depth to Bedrock: Deep, greater than 40".

Hazard to Flooding: None

INCLUSIONS
(Within Mapping Unit)

Similar: Dixfield (Skerry), Tunbridge

Dissimilar: Colonel, Brayton, Naumburg

USE AND MANAGEMENT

Development with public sewer and water: The limiting factor for building site development is wetness due to the presence of a groundwater table. Proper foundation drainage or site modification is recommended.

Stormwater Design: The Croghan soil is moderately well drained. The groundwater table is typically greater than 15 inches, but less than 40 inches in the spring and/or periods of heavy precipitation. The expected soil permeability is 6 to 20 inches/hr in the top 0-12 inches, and 20 inches/hr below 12 inches.

DIXFIELD (PERU)
(Typic Haplorthods)

SETTING

Parent Material: Compact loamy glacial till.

Landform: Glaciated uplands and drumlins.

Position in Landscape: Upper portions of landform.

Slope Gradient Ranges: **(B)** 3-8% **(C)** 8-20%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Moderately well drained, with a perched water table 1.5 to 2.5 feet beneath the existing soil surface from November through April and during periods of excessive precipitation.

Typical Profile Description:

Surface layer:	Grayish brown and dark brown fine sandy loam, 0-6"
Subsurface layer:	Strong brown and dark yellowish brown fine sandy loam, 6-19"
Subsoil layer:	Light olive brown gravelly fine sandy loam, 19-24"
Substratum:	Light olive brown gravelly sandy loam, 24-65"

Hydrologic Group: Group C/D

Surface Runoff: Moderate in the solum, moderately slow or slow in the compact substratum.

Permeability: Moderate in the solum, moderately slow or slow in the compact substratum.

Depth to Bedrock: Very deep, greater than 40".

Hazard to Flooding: None
Erosion Factors: K: .17 - .24

INCLUSIONS
(Within Mapping Unit)

Similar: Tunbridge, Croghan
Dissimilar: Colonel, Lyman, Naumburg SWP

USE AND MANAGEMENT

Development with public sewer and water: The limiting factor for building site development is wetness due to the presence of a perched water table 1.5 to 2.5 feet beneath the existing soil surface for a significant portion of the year. Proper foundation drainage is recommended for construction. The Very Stony phase of Dixfield soil has up to 3% of the soil surface covered with stones.

Stormwater design: Dixfield soils are moderately well drained, with seasonal high groundwater table of approximately 1.5 to 3.5 feet beneath the soil surface. Dixfield soils generally exhibit permeabilities of 0.6-2.0inches/hour in the upper horizons, and 0.06-0.6 inches/hour in the firm basal till horizons of 1.5'+ (approximately).

LYMAN (Hollis)
(Lithic Haplorthods)

SETTING

Parent Material: Derived from glacial till.

Landform: Rocky hills and high plateaus.

Position in Landscape: Occupies the higher positions in the landscape on knolls, hills and mountains.

Slope Gradient Ranges: **(B)** 3-8% **(C)** 8-20% **(D)** 20%+

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Somewhat excessively drained. Water table usually not present but may exist on top of the underlying bedrock in concave pockets in places during prolonged wet periods.

Typical Profile Description:

Surface layer: Black loam, 0-2"
Subsurface layer: Reddish gray fine sandy loam, 2-4"
Subsoil layer: Very dusky red, dark red to brown loam to sandy loam, 10-20"

Hydrologic Group: Group D:

Surface Run Off: Slow to rapid depending on slope and bedrock exposure.

Permeability: Moderately rapid.

Depth to Bedrock: Shallow, 10-20".

Hazard to Flooding: None

INCLUSIONS
(Within Mapping Unit)

Similar: Tunbridge, 20-40" to bedrock, Dixfield (greater than 40" to bedrock)

Dissimilar: Abram (0-10" of soil above bedrock)

USE AND MANAGEMENT

Development with public sewer and water: The limiting factor for building site development is depth to bedrock, which is generally less than 20". Blasting or ripping of the more fractured or weathered bedrock may be necessary for deep excavation. Proper foundation drainage is recommended for construction.

Stormwater Design: The Lyman soil is excessively drained but is limited for deep stormwater treatment ponds, due to shallow depth to bedrock. The sandy loam soil above the bedrock has a permeability of 2.0 to 6.0 inches/hr.

MADE LAND

SETTING

Parent Material: Variable

Landform: Variable

Position in Landscape: Variable

Slope Gradient Ranges: **(A)** 0-3% **(B)** 3-8%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: None assigned

Typical Profile Description:

Surface layer:) Typically this map unit
Subsurface layer:) consists of areas
Subsoil layer:) excavated and reworked
Substratum:) by man, then smoothed.

Hydrologic Group: None assigned

Surface Run Off: Variable

Permeability: Variable

Depth to Bedrock: Variable

Hazard to Flooding: None

INCLUSIONS
(Within Mapping Unit)

Similar: Filled Land

Dissimilar: Small 'made' depressions that contain standing water or have other drainage implications. These may be caused by compaction by vehicular traffic, which is not synonymous with seasonal water tables.

USE AND MANAGEMENT

This map unit consists of areas reworked by man, so that the soils are no longer taxonomically classifiable. Limiting factor for development is soil drainage, though somewhat difficult to determine in these map units. This map unit contains manufactured soils including glass, concrete and compacted gravelly soil material. Man-made wetlands are included in this unit. HSG's are estimates based on best professional judgment.

NAUMBURG (Poorly Drained)-NAUMBURG (SWP)
(Aeric Haplaquods)

SETTING

Parent Material: Derived from outwash, stratified drift and deltaic sediments.

Landform: Usually occupies low sand plains and terraces.

Position in Landscape: Occupies the lower position in landscape.

Slope Gradient Ranges: **(A)** 0-3%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: This Naumburg soil is poorly drained to somewhat poorly drained with an apparent water table 0.5 to 1.5 feet below the soil surface from November through May. The water table fluctuates from near the surface during prolonged wet periods to depths greater than 1.5" in dry seasons.

Typical Profile Description: (for poorly drained- see also SWP description)

Surface layer: Black organic matter, 6" thick
Subsurface layer: Reddish gray loamy sand, 6" thick
Subsoil layer: Mottled dark reddish brown, dark brown and yellowish brown sand, fine sand or loamy sand, 6-30"
Substratum: Light brownish gray sand, 30-60"

Hydrologic Group: Group D

Surface Run Off: Very slow

Permeability: Rapid

Depth to Bedrock: Deep, greater than 40".

Hazard to Flooding: None

INCLUSIONS
(Within Mapping Unit)

Similar: Brayton
Dissimilar: Searsport, Peacham

USE AND MANAGEMENT

Development with subsurface wastewater disposal: The limiting factor for building site development is wetness due to the presence of a groundwater table. Proper foundation drainage or site modification is recommended. This soil is unsuitable for subsurface wastewater disposal. Naumburg (poorly drained) may be classified as wetlands, based on the combined consideration of hydric conditions, hydrology, and vegetation.

Stormwater Design: Naumburg soils generally exhibit permeabilities of 2.0 to 6.0 inches per hour in the upper horizons (0-19") and 6.0 to 20.0 inches per hour in the substratum (19-70")

ROCK OUTCROP

SETTING

Parent Material: Bedrock (igneous or metamorphic)

Landform: Commonly found on heights of land forms, along steep escarpments, and on knolls along sideslopes.

Position in Landscape: Varies (see above)

Slope Gradient Ranges: 0-100%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Excessively drained

Hydrologic Group: D

Surface Run Off: Rapid

Permeability: Impermeable

Depth to Bedrock: 0", on ground surface

Hazard to Flooding: None

INCLUSIONS
(Within Mapping Unit)

Similar: Abram

USE AND MANAGEMENT

Development of Public Water and Sewer:
Rock outcroppings present severe limitations for buildings and site development due to the difficulty to excavate which may cause significant flooding and drainage problems.

Stormwater Design: Rock outcroppings are not suitable for stormwater retainment nor treatment; exposed bedrock has a high potential for flooding and runoff.

ROUNDABOUT
(Aeric Haplaquepts)

SETTING

Parent Material: Derived from lacustrine and marine sediments.

Landform: Low-lying lake or marine plains.

Position in Landscape: Nearly level areas in lower portions of landscape.

Slope Gradient Ranges: **(A)** 0-3% **(B)** 3-8%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Roundabout soils are somewhat poorly to poorly drained, and exhibit a perched water table 0.5 to 1.5 feet below the soil surface from November through May and during periods of excessive wetness.

Typical Profile Description:

Surface layer:	Dark brown silt loam, few mottles, 0-7"
Subsurface layer:	Olive brown and grayish brown silt loam, many mottles, 7-26"
Subsoil layer:	Olive gray very fine sandy loam, many mottles, 26-30"
Substratum:	Olive silt loam, common mottles, 30-65"

Hydrologic Group: Group D

Surface Run Off: Slow to medium

Permeability: Moderate to moderately slow in upper horizons, moderately slow to slow in the medium textured substratum, and moderately rapid to rapid in the coarser textured substratum.

Depth to Bedrock: Deep, greater than 40".

Hazard to Flooding: None

INCLUSIONS
(Within Mapping Unit)

Similar: Brayton, Naumburg

USE AND MANAGEMENT

Development with public sewer and water: The limiting factor for building site development is wetness due to a high water table for some portion of the year. Proper foundation drainage or site modification is recommended for construction. Roundabout soil may be classified as wetlands based upon the combined consideration of hydric conditions, hydrology, and vegetation.

Stormwater design: Roundabout soils are poorly drained, with seasonal high groundwater table 0.5-1.5 feet beneath the soil surface in the spring and during periods of high precipitation. Roundabout soils generally exhibit permeabilities of 0.2-2.0 inches/hour from 0 to 30", and 0.06 to 0.6 inches/hour in the deeper horizons (below 30" from the surface).

TUNBRIDGE
(Typic Haplorthods)

SETTING

Parent Material: Loamy glacial till.

Landform: Glaciated uplands.

Position in Landscape: Upper positions on landform.

Slope Gradient Ranges: **(B)** 3-8% **(C)** 8-20% **(D)** 20+%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Somewhat excessively to well drained, with no evidence of a water table, or only inches from the bedrock surface during spring and during periods of heavy precipitation.

Typical Profile Description:

Surface layer:	Black and reddish brown loam and fine sandy loam, 0-4"
Subsurface layer:	Very dusky red loam, 4-6"
Subsoil layer:	Dark red loam, 6-10"
Substratum layer:	Dark brown to brown loam, 10-25". Bedrock at 25".

Hydrologic Group: Group C

Surface Run Off: Rapid

Permeability: Moderate or moderately rapid.

Depth to Bedrock: Moderately deep, 20-40".

Hazard to Flooding: None

INCLUSIONS
(Within Mapping Unit)

Similar: Dixfield (Peru), Skerry, Croghan

Dissimilar: Abram, Colonel, Lyman, Naumburg SWP

USE AND MANAGEMENT

Development with public sewer and water: The limiting factor for building site development is shallow depth to bedrock. This map unit has limitations for construction of houses with foundations. Proper foundation drainage or other site modification is recommended for construction.

Stormwater design: Tunbridge soils are moderately deep to bedrock, and offer limitations for subsurface stormwater design due to the 'ledge' blasting potential. The expected permeability of the upper 2.0' is 0.6 to 6.0 inches/hour, and 0.01 to 20.0 inches/hour in the lower horizons.

Town, City, Plantation	Street, Road Subdivision	Owner's Name
CAPE ELIZABETH	SHORE ROAD & DEEP BROOK ROAD	ANDREW CARR

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

Observation Hole TP 1 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)	Texture	Consistency	Color	Mottling
0–10	LOAMY SAND		BROWN	
10–20	FINE AND MEDIUM SAND	FRIABLE	YELLOW BROWN	
20–30			DARK YELLOW BROWN	COMMON, DISTINCT
30–40			GRAYISH BROWN	
40–50	LIMIT OF EXCAVATION			

FOR WASTEWATER DISPOSAL

Soil Classification (Profile / Condition)	Slope	Limiting Factor	Ground Water / Restrictive Layer / Bedrock / Pit Depth
	____ %	25 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING

Soil Series Name:	Drainage Class:	Hydrologic Group:
CROGHAN	MODERATELY WELL	A

Observation Hole TP 2 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)	Texture	Consistency	Color	Mottling
0–10	LOAMY SAND		BROWN	
10–20	SANDY LOAM	FRIABLE	YELLOW BROWN	
20–30			OLIVE GRAY	COMMON, DISTINCT
30–40	REFUSAL IN BOULDER OR BEDROCK			
40–50				

FOR WASTEWATER DISPOSAL

Soil Classification (Profile / Condition)	Slope	Limiting Factor	Ground Water / Restrictive Layer / Bedrock / Pit Depth
	____ %	30 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING

Soil Series Name:	Drainage Class:	Hydrologic Group:
TUNBRIDGE	MODERATELY WELL	C

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

Observation Hole TP 3 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)	Texture	Consistency	Color	Mottling
0–10	SANDY LOAM	FRIABLE	DARK GRAYISH BROWN	
10–20	COBBLY SANDY LOAM	FIRM	DARK OLIVE GRAY	COMMON, DISTINCT & SATURATED
20–30				
30–40				
40–50				

FOR WASTEWATER DISPOSAL

Soil Classification (Profile / Condition)	Slope	Limiting Factor	Ground Water / Restrictive Layer / Bedrock / Pit Depth
	____ %	6 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING

Soil Series Name:	Drainage Class:	Hydrologic Group:
BRAYTON	POORLY DRAINED	D

Observation Hole TP 4 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)	Texture	Consistency	Color	Mottling
0–10	SANDY LOAM	FRIABLE	BROWN	
10–20			YELLOW BROWN	
20–30		FIRM	GRAY	COMMON, DISTINCT
30–40				
40–50	LIMIT OF EXCAVATION			

FOR WASTEWATER DISPOSAL

Soil Classification (Profile / Condition)	Slope	Limiting Factor	Ground Water / Restrictive Layer / Bedrock / Pit Depth
	____ %	21 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING

Soil Series Name:	Drainage Class:	Hydrologic Group:
DIXFIELD	MODERATELY WELL	C/D

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Town, City, Plantation	Street, Road Subdivision	Owner's Name
CAPE ELIZABETH	SHORE ROAD & DEEP BROOK ROAD	ANDREW CARR

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

Observation Hole TP 5 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

Depth (inches)	Texture	Consistency	Color	Mottling
0	SANDY LOAM	FRIABLE	DARK BROWN	
10			YELLOW BROWN	
40	REFUSAL IN BOULDER OR BEDROCK			

DEPTH BELOW MINERAL SOIL SURFACE (inches)

FOR WASTEWATER DISPOSAL →

Soil Classification	Slope	Limiting Factor	
Profile: — Condition: —	— %	<40"	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
DIXFIELD	MODERATELY WELL	C

Observation Hole TP 6 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

Depth (inches)	Texture	Consistency	Color	Mottling
0	LOAMY SAND	FRIABLE	GRAY/BLACK	
10			DARK YELLOW BROWN	
	SAND		GRAY	COMMON, DISTINCT
20			DARK GRAYISH BROWN	
50	LIMIT OF EXCAVATION			

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Soil Classification	Slope	Limiting Factor	
Profile: — Condition: —	— %	13"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
NAUMBURG	SOMEWHAT POORLY	D

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

Observation Hole TP 7 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

Depth (inches)	Texture	Consistency	Color	Mottling
0	LOAMY FINE SAND	FRIABLE	DARK GRAYISH BROWN	
10	SANDY LOAM		GRAY	COMMON, DISTINCT
20				FREE WATER

DEPTH BELOW MINERAL SOIL SURFACE (inches)

FOR WASTEWATER DISPOSAL →

Soil Classification	Slope	Limiting Factor	
Profile: — Condition: —	— %	8"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
BRAYTON (VARIANT)	POORLY DRAINED	D

Observation Hole TP 8 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

Depth (inches)	Texture	Consistency	Color	Mottling
0	LOAMY SAND	FRIABLE	DARK BROWN	
10			DARK YELLOW BROWN	
	SAND		GRAYISH BROWN	FEW, FAINT
20				

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Soil Classification	Slope	Limiting Factor	
Profile: — Condition: —	— %	12"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
NAUMBURG	SOMEWHAT POORLY	D

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Town, City, Plantation	Street, Road Subdivision	Owner's Name
CAPE ELIZABETH	SHORE ROAD & DEEP BROOK ROAD	ANDREW CARR

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

Observation Hole TP 9 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)	Texture	Consistency	Color	Mottling
0–10	LOAMY FINE SAND		BLACK	
10–20	LOAMY SAND AND SAND	FRIABLE	GRAY/ DARK BROWN	COMMON, DISTINCT & SATURATED
20–50				

FOR WASTEWATER DISPOSAL

Soil Classification	Slope	Limiting Factor	
Profile: ____ Condition: ____	____ %	8 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING

Soil Series Name:	Drainage Class:	Hydrologic Group:
NAUMBURG	POORLY DRAINED	D

Observation Hole TP 10 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)	Texture	Consistency	Color	Mottling
0–10	SANDY LOAM AND FINE SANDY LOAM	FRIABLE	GRAYISH BROWN	
10–20			DARK REDDISH BROWN	
20–50			GRAYISH BROWN	COMMON, DISTINCT

Soil Classification	Slope	Limiting Factor	
Profile: ____ Condition: ____	____ %	13 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
COLONEL	SOMEWHAT POORLY	D

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

Observation Hole TP 11 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)	Texture	Consistency	Color	Mottling
0–10	LOAMY SAND		BROWN	
10–20	FINE AND MEDIUM SAND	FRIABLE	YELLOW BROWN	
20–30				
30–40			LIGHT YELLOW BROWN	
40	LIMIT OF EXCAVATION			
40–50				

FOR WASTEWATER DISPOSAL

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

FOR SOILS MAPPING

Soil Series Name:	Drainage Class:	Hydrologic Group:
ADAMS	WELL DRAINED	A

Observation Hole TP 12 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)	Texture	Consistency	Color	Mottling
0–10	LOAMY SAND	FRIABLE	BROWN/ GRAY	
10–20			GRAYISH BROWN	COMMON, DISTINCT
20–30				
30–40				
40	LIMIT OF EXCAVATION			
40–50				

Soil Classification	Slope	Limiting Factor	
Profile: ____ Condition: ____	____ %	8 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
NAUMBURG	POORLY DRAINED	D

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Site Evaluator / Soil Scientist Signature

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Town, City, Plantation	Street, Road Subdivision	Owner's Name
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SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 13 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	LOAMY SAND	FRIABLE	GRAY/ BLACK	
10–20			DARK REDDISH BROWN	COMMON, DISTINCT
20–50				

FOR WASTEWATER DISPOSAL

Soil Classification (Profile / Condition)	Slope	Limiting Factor	
	___ %	11 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING

Soil Series Name:	Drainage Class:	Hydrologic Group:
NAUMBURG	SOMEWHAT POORLY	D

Observation Hole TP 14 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	LOAMY SAND	FRIABLE	BROWN / YELLOW BROWN	
10–20			GRAYISH BROWN	
20			BEDROCK	
20–50				

Soil Classification (Profile / Condition)	Slope	Limiting Factor	
	___ %	19 "	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
LYMAN	SOMEWHAT POORLY	D

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

Observation Hole TP 15 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	LOAMY FINE SAND		BLACK	
10	LOAMY SAND	FRIABLE	GRAYISH BROWN	COMMON, DISTINCT
20–50				

FOR WASTEWATER DISPOSAL

Soil Classification (Profile / Condition)	Slope	Limiting Factor	
	___ %	6 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING

Soil Series Name:	Drainage Class:	Hydrologic Group:
NAUMBURG	POORLY DRAINED	D

Observation Hole TP 16 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	LOAMY SAND	FRIABLE	DARK BROWN/ BLACK	
10	SAND		LIGHT GRAY	COMMON, DISTINCT
20–50			GRAYISH BROWN	

Soil Classification (Profile / Condition)	Slope	Limiting Factor	
	___ %	12 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
NAUMBURG	SOMEWHAT POORLY	D

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CAPE ELIZABETH	SHORE ROAD & DEEP BROOK ROAD	ANDREW CARR

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

Observation Hole TP 17 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

	Texture	Consistency	Color	Mottling
0–10	MUCKY SILT LOAM		BLACK	
10–50	SILT LOAM	FRIABLE	GRAY	COMMON, DISTINCT

FOR WASTEWATER DISPOSAL

Soil Classification	Slope	Limiting Factor	
Profile: _____ Condition: _____	____ %	3 "	☐ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING

Soil Series Name:	Drainage Class:	Hydrologic Group:
ROUNDABOUT	POORLY DRAINED	D

Observation Hole TP 18 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

	Texture	Consistency	Color	Mottling
0–10	COMPACTED GRAVELLY SANDY LOAM	FRIABLE	DARK BROWN	
10–50			BROWN	

FOR WASTEWATER DISPOSAL

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

FOR SOILS MAPPING

Soil Series Name:	Drainage Class:	Hydrologic Group:
MADE LAND		

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

Observation Hole _____ ☐ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling

FOR WASTEWATER DISPOSAL

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

FOR SOILS MAPPING

Soil Series Name:	Drainage Class:	Hydrologic Group:

Observation Hole _____ ☐ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling

FOR WASTEWATER DISPOSAL

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

FOR SOILS MAPPING

Soil Series Name:	Drainage Class:	Hydrologic Group:

Christopher J. Coppi — Site Evaluator / Soil Scientist Signature

403 / 631 — SE/CSS #

6/10/2021 — Date

ALBERT FRICK ASSOCIATES – 380-B MAIN STREET GORHAM, MAINE 04038 – (207) 839-5563

Town, City, Plantation	Street, Road Subdivision	Owner's Name
CAPE ELIZABETH	SHORE ROAD & DEEP BROOK ROAD	ANDREW CARR

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

Observation Hole TP 17 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Depth	Texture	Consistency	Color	Mottling
0	MUCKY SILT LOAM		BLACK	
10	SILT LOAM	FRIABLE	GRAY	COMMON, DISTINCT
20				
30				
40				
50				

FOR WASTEWATER DISPOSAL

Soil Classification	Slope	Limiting Factor	
Profile / Condition	%	3 "	☐ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING

Soil Series Name:	Drainage Class:	Hydrologic Group:
ROUNDABOUT	POORLY DRAINED	D

Observation Hole TP 18 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Depth	Texture	Consistency	Color	Mottling
0	COMPACTED GRAVELLY SANDY LOAM	FRIABLE	DARK BROWN	
10			BROWN	
20				
30				
40				
50				

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

Soil Series Name:	Drainage Class:	Hydrologic Group:
MADE LAND		

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

Observation Hole TP 19 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Depth	Texture	Consistency	Color	Mottling
0	MUCKY LOAMY SAND		DARK GRAYISH BROWN	
10	LOAMY SAND	FRIABLE	GRAY	COMMON, DISTINCT
20				
30				
40				
50				

FOR WASTEWATER DISPOSAL

Soil Classification	Slope	Limiting Factor	
Profile / Condition	%	6 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING

Soil Series Name:	Drainage Class:	Hydrologic Group:
MADE LAND	POORLY DRAINED	D

Observation Hole TP 20 ■ Test Pit ☐ Boring

" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Depth	Texture	Consistency	Color	Mottling
0			DARK BROWN	
10	LOAMY SAND	FRIABLE	GRAY	COMMON, DISTINCT
20			DARK REDDISH BROWN	
30				
40				
50				

Soil Classification	Slope	Limiting Factor	
Profile / Condition	%	10 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
NAUMBURG	SOMEWHAT POORLY DRAINED	D

Christopher J. Cyr

Site Evaluator / Soil Scientist Signature

403 / 631

SE/CSS #

9/20/2021

Date

ALBERT FRICK ASSOCIATES – 380-B MAIN STREET GORHAM, MAINE 04038 – (207) 839-5563

Town, City, Plantation	Street, Road Subdivision	Owner's Name
CAPE ELIZABETH	SHORE ROAD & DEEP BROOK ROAD	ANDREW CARR

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

Observation Hole TP 21 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

	Texture	Consistency	Color	Mottling
0–10	LOAMY SAND	FRIABLE	DARK BROWN	
10–30	FINE AND MEDIUM SAND		YELLOW BROWN	
30–40			LIGHT YELLOW BROWN	
40–50			LIGHT OLIVE BROWN	COMMON, DISTINCT

LIMIT OF EXCAVATION

Soil Classification (Profile / Condition)	Slope	Limiting Factor	Ground Water / Restrictive Layer / Bedrock / Pit Depth
	____ %	36"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR WASTEWATER DISPOSAL →

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
CROGHAN	MODERATELY WELL	A

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

Observation Hole TP 22 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

	Texture	Consistency	Color	Mottling
0–10	LOAMY SAND	FRIABLE	DARK BROWN	
10–20	FINE AND MEDIUM SAND		BROWN	
20–30			YELLOW BROWN	
30–40			OLIVE YELLOW	
40–50				FEW, FAINT

LIMIT OF EXCAVATION

Soil Classification (Profile / Condition)	Slope	Limiting Factor	Ground Water / Restrictive Layer / Bedrock / Pit Depth
	____ %	42"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
MADE LAND OVER CROGHAN	MODERATELY WELL	A

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

Observation Hole TP 23 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

	Texture	Consistency	Color	Mottling
0–10	LOAMY FINE SAND AND SAND		DARK BROWN	
10–20		FRIABLE	DARK YELLOW BROWN	
20–30	FINE AND MEDIUM SAND		YELLOW BROWN	
30–40		FRIABLE (<10% CEMENTATION)	GRAYISH BROWN	COMMON, DISTINCT

LIMIT OF EXCAVATION

Soil Classification (Profile / Condition)	Slope	Limiting Factor	Ground Water / Restrictive Layer / Bedrock / Pit Depth
	____ %	32"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR WASTEWATER DISPOSAL →

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
CROGHAN	MODERATELY WELL	A

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

Observation Hole TP 24 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

	Texture	Consistency	Color	Mottling
0–10	SANDY LOAM WITH SILTY CLAY LOAM CLODS (FILL)	FRIABLE TO SOMEWHAT FIRM	BROWNS	
10–30		FIRM		
30–40	SAND	FRIABLE	YELLOW BROWN	

LIMIT OF EXCAVATION

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

Soil Series Name:	Drainage Class:	Hydrologic Group:
MADE LAND OVER ADAMS OR CROGHAN		A/C

Christopher J. Cyr

Site Evaluator / Soil Scientist Signature

403 / 631

SE/CSS #

9/20/2021

Date

ALBERT FRICK ASSOCIATES – 380-B MAIN STREET GORHAM, MAINE 04038 – (207) 839-5563

Town, City, Plantation	Street, Road Subdivision	Owner's Name
CAPE ELIZABETH	SHORE ROAD & DEEP BROOK ROAD	ANDREW CARR

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

Observation Hole TP 25 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	LOAMY SAND (FILL)		BROWN	
10–20	LOAMY FINE SAND		BLACK	
			GRAY	
20–30	LOAMY FINE SAND AND FINE SAND	FRIABLE	DARK BROWN	
30–40			YELLOW BROWN	FEW, DISTINCT
			GRAYISH BROWN	COMMON, DISTINCT
40–50			OLIVE YELLOW	
50	LIMIT OF EXCAVATION			

FOR WASTEWATER DISPOSAL

Soil Classification	Slope	Limiting Factor	
Profile: _____ Condition: _____	____ %	27 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING

Soil Series Name:	Drainage Class:	Hydrologic Group:
MADE LAND		C

Observation Hole TP 26 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	LOAMY FINE SAND	FRIABLE	BLACK	
			GRAYISH BROWN	
10–20	FINE SAND AND LOAMY FINE SAND	FRIABLE TO FIRM	DARK BROWN	FEW, FAINT
20–50				

Soil Classification	Slope	Limiting Factor	
Profile: _____ Condition: _____	____ %	12 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
NAUMBURG (VARIANT)	SOMEWHAT POORLY DRAINED	D

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

Observation Hole TP 27 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	FINE SAND AND LOAMY FINE SAND	FRIABLE	DARK BROWN	
			GRAY	
			BROWN	COMMON, DISTINCT
10–20		FIRM TO FRIABLE	DARK BROWN TO VERY DARK BROWN	
20–40				
40	LIMIT OF EXCAVATION			
40–50				

FOR WASTEWATER DISPOSAL

Soil Classification	Slope	Limiting Factor	
Profile: _____ Condition: _____	____ %	9 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING

Soil Series Name:	Drainage Class:	Hydrologic Group:
NAUMBURG (VARIANT)	SOMEWHAT POORLY DRAINED	D

Observation Hole TP 28 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	FINE SANDY LOAM	FRIABLE	DARK BROWN	
			BROWN	
10–20	REFUSAL IN BOULDER OR BEDROCK			
20–50				

Soil Classification	Slope	Limiting Factor	
Profile: _____ Condition: _____	____ %	16 "	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
LYMAN		D

Christopher V. Cyr

Site Evaluator / Soil Scientist Signature

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9/20/2021

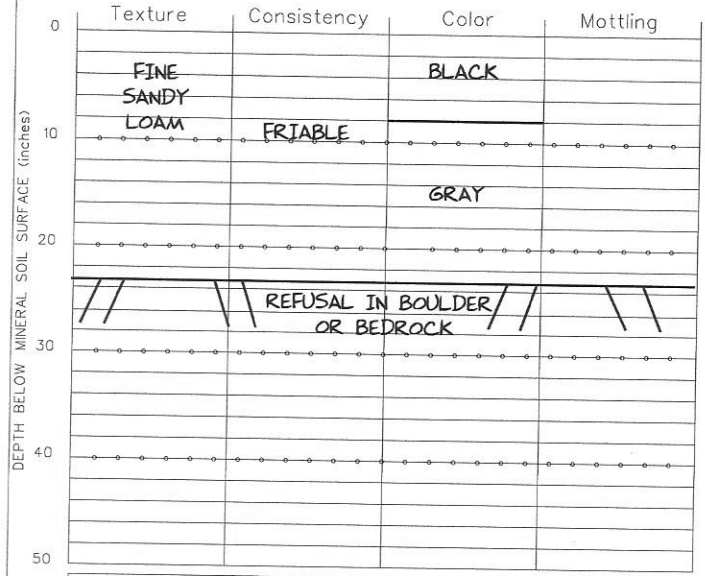
Date

ALBERT FRICK ASSOCIATES – 380-B MAIN STREET GORHAM, MAINE 04038 – (207) 839-5563

Town, City, Plantation	Street, Road Subdivision	Owner's Name
CAPE ELIZABETH	SHORE ROAD & DEEP BROOK ROAD	ANDREW CARR

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

Observation Hole TP 29 ■ Test Pit ☐ Boring
_____" Depth of Organic Horizon Above Mineral Soil



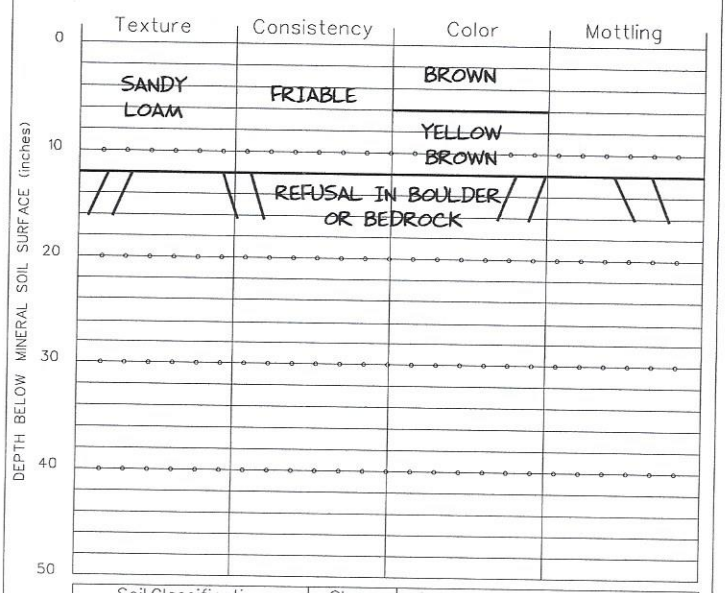
Soil Classification	Slope	Limiting Factor	
Profile ____ Condition ____	____ %	23"	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR WASTEWATER DISPOSAL →

Soil Series Name:	Drainage Class:	Hydrologic Group:
TUNBRIDGE		C

FOR SOILS MAPPING →

Observation Hole TP 30 ■ Test Pit ☐ Boring
_____" Depth of Organic Horizon Above Mineral Soil

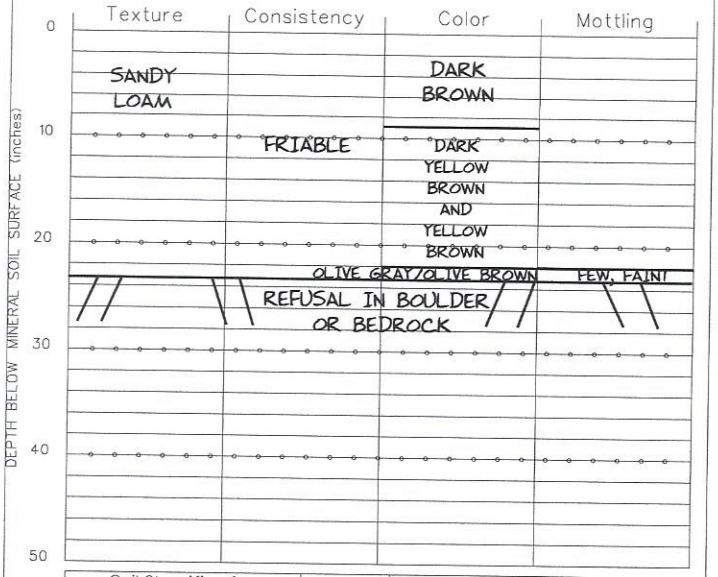


Soil Classification	Slope	Limiting Factor	
Profile ____ Condition ____	____ %	12"	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
LYMAN		D

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

Observation Hole TP 31 ■ Test Pit ☐ Boring
_____" Depth of Organic Horizon Above Mineral Soil



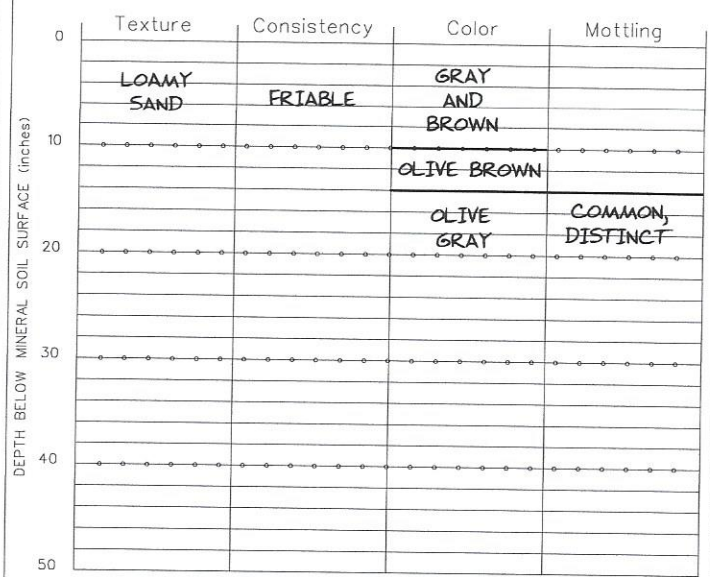
Soil Classification	Slope	Limiting Factor	
Profile ____ Condition ____	____ %	23"	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR WASTEWATER DISPOSAL →

Soil Series Name:	Drainage Class:	Hydrologic Group:
TUNBRIDGE		C

FOR SOILS MAPPING →

Observation Hole TP 32 ■ Test Pit ☐ Boring
_____" Depth of Organic Horizon Above Mineral Soil



Soil Classification	Slope	Limiting Factor	
Profile ____ Condition ____	____ %	14"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
NAUMBURG	SOMEWHAT POORLY DRAINED	D

Christopher V. Cyr
Site Evaluator / Soil Scientist Signature

403 / 631
SE/CSS #

9/20/2021
Date

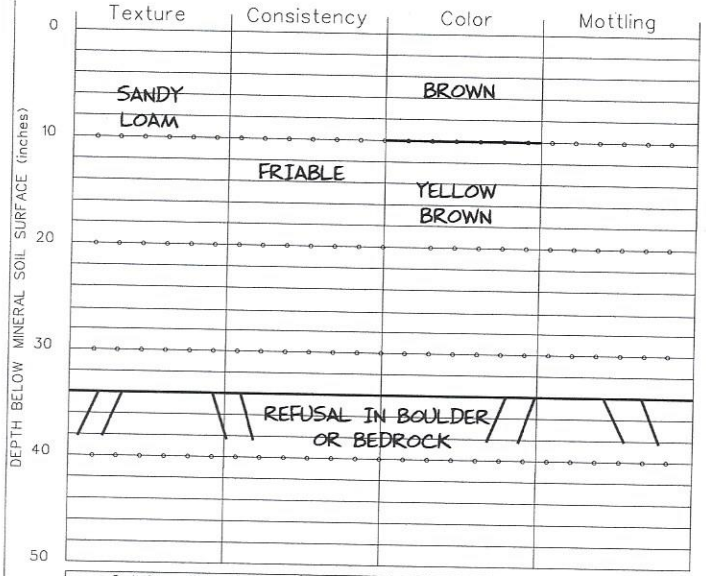
ALBERT FRICK ASSOCIATES – 380-B MAIN STREET GORHAM, MAINE 04038 – (207) 839-5563

Town, City, Plantation	Street, Road Subdivision	Owner's Name
CAPE ELIZABETH	SHORE ROAD & DEEP BROOK ROAD	ANDREW CARR

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

Observation Hole TP 33 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil



FOR WASTEWATER DISPOSAL →

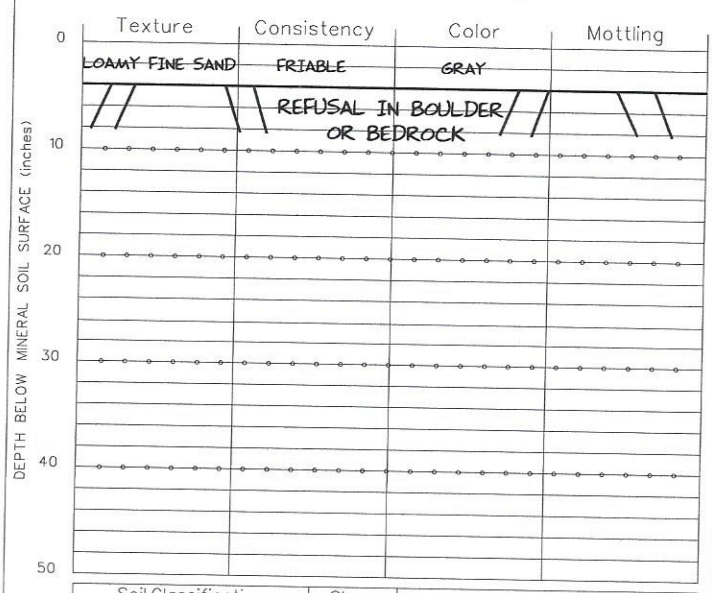
Soil Classification	Slope	Limiting Factor	
Profile: _____ Condition: _____	____ %	34 "	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
TUNBRIDGE		C

Observation Hole TP 34 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil



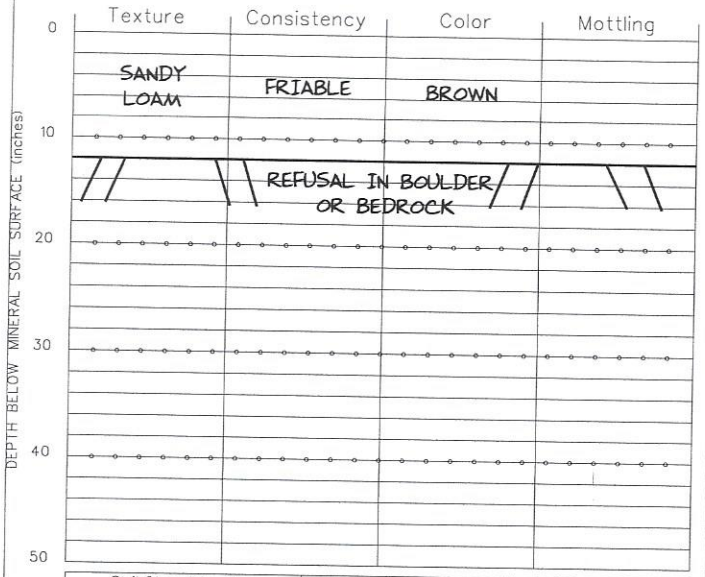
Soil Classification	Slope	Limiting Factor	
Profile: _____ Condition: _____	____ %	4 "	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
ABRAM		D

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

Observation Hole TP 35 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil



FOR WASTEWATER DISPOSAL →

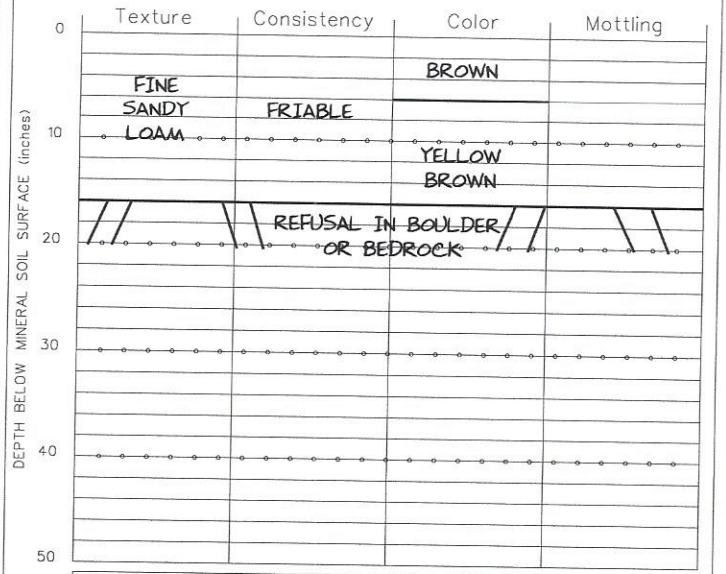
Soil Classification	Slope	Limiting Factor	
Profile: _____ Condition: _____	____ %	12 "	☐ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
LYMAN		D

Observation Hole TP 36 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil



Soil Classification	Slope	Limiting Factor	
Profile: _____ Condition: _____	____ %	16 "	☐ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
LYMAN (INCLUSION)		D

Christopher V. Cyr

Site Evaluator / Soil Scientist Signature

403 / 631

SE/CSS #

9/20/2021

Date

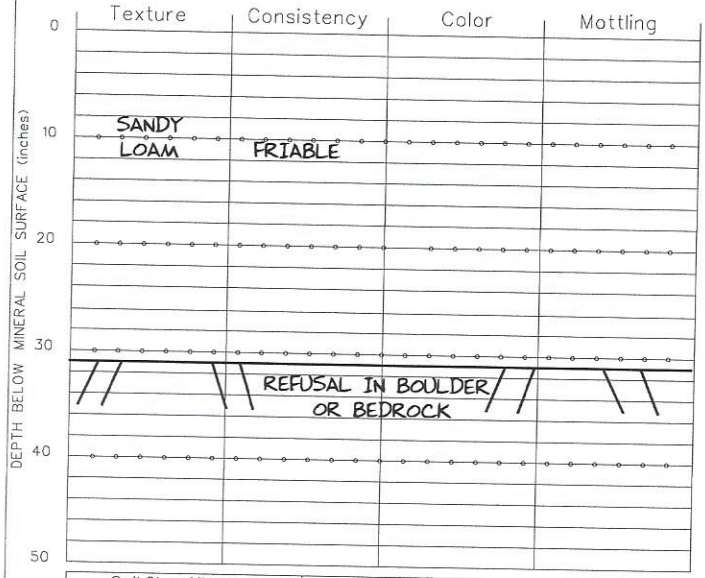
ALBERT FRICK ASSOCIATES – 380-B MAIN STREET GORHAM, MAINE 04038 – (207) 839-5563

Town, City, Plantation	Street, Road Subdivision	Owner's Name
CAPE ELIZABETH	SHORE ROAD & DEEP BROOK ROAD	ANDREW CARR

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

Observation Hole TP 37 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil



FOR WASTEWATER DISPOSAL →

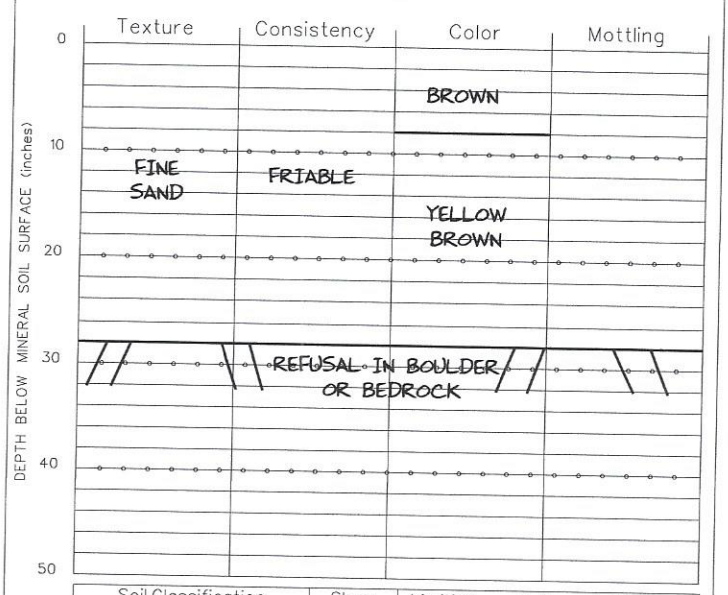
Soil Classification	Slope	Limiting Factor	
Profile _____ Condition _____	____ %	31 "	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
TUNBRIDGE		C

Observation Hole TP 38 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil



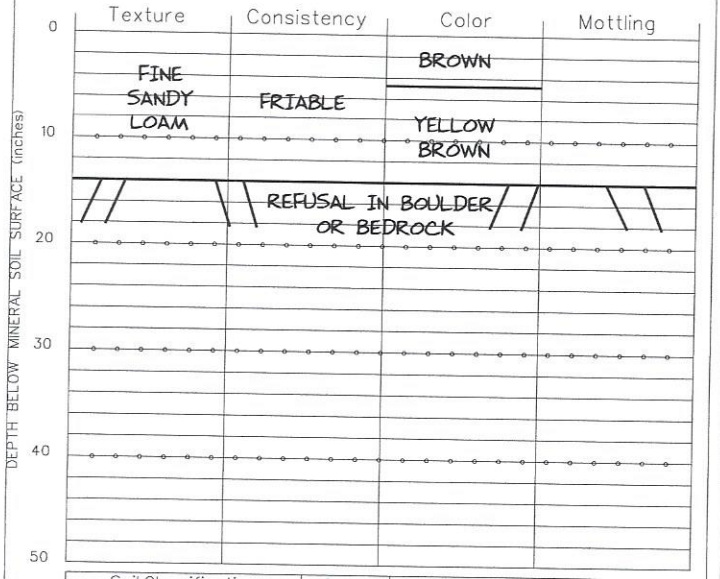
Soil Classification	Slope	Limiting Factor	
Profile _____ Condition _____	____ %	28 "	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
TUNBRIDGE		C

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

Observation Hole TP 39 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil



FOR WASTEWATER DISPOSAL →

Soil Classification	Slope	Limiting Factor	
Profile _____ Condition _____	____ %	14 "	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
LYMAN		D

Observation Hole TP 40 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Soil Classification	Slope	Limiting Factor	
Profile _____ Condition _____	____ %	18 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
CROGHAN	MODERATELY WELL	A

Christopher V. Cyr

Site Evaluator / Soil Scientist Signature

403 / 631

SE/CSS #

9/20/2021

Date

ALBERT FRICK ASSOCIATES – 380-B MAIN STREET GORHAM, MAINE 04038 – (207) 839-5563

Town, City, Plantation	Street, Road Subdivision	Owner's Name
CAPE ELIZABETH	SHORE ROAD & DEEP BROOK ROAD	ANDREW CARR

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

Observation Hole TP 41 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)	Texture	Consistency	Color	Mottling
0–10	FINE SANDY LOAM	FRIABLE	BLACK/ GRAY	
10	REFUSAL IN BOULDER OR BEDROCK			

Soil Classification	Slope	Limiting Factor	
Profile: ____ Condition: ____	____ %	8 "	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR WASTEWATER DISPOSAL →

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
ABRAM		D

Observation Hole TP 42 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)	Texture	Consistency	Color	Mottling
0–10	MUCK	FRIABLE	BLACK	
10–50	LOAMY SAND		GRAYISH BROWN	COMMON, DISTINCT

Soil Classification	Slope	Limiting Factor	
Profile: ____ Condition: ____	____ %	2 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
NAUMBURG	POORLY DRAINED	D

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

Observation Hole _____ ☐ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)	Texture	Consistency	Color	Mottling
0–50				

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

FOR WASTEWATER DISPOSAL →

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:

Observation Hole _____ ☐ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)	Texture	Consistency	Color	Mottling
0–50				

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

Soil Series Name:	Drainage Class:	Hydrologic Group:

Christopher J. Cappi

Site Evaluator / Soil Scientist Signature

403 / 631

SE/CSS #

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Date

ALBERT FRICK ASSOCIATES – 380-B MAIN STREET GORHAM, MAINE 04038 – (207) 839-5563

Map Scale: 1:4,850 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 200 400 800 1200

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
DeB	Deerfield loamy fine sand, 3 to 8 percent slopes	A	11.5	9.2%
HrB	Lyman-Tunbridge complex, 0 to 8 percent slopes, rocky	D	1.4	1.1%
HsB	Lyman-Abram complex, 0 to 8 percent slopes, very rocky	D	10.8	8.6%
HsC	Lyman-Abram complex, 8 to 15 percent slopes, very rocky	D	77.9	62.3%
HsE	Lyman-Abram complex, 15 to 35 percent slopes, very rocky	D	2.1	1.7%
Sp	Sebago mucky peat	A/D	1.8	1.4%
Wa	Walpole fine sandy loam	A/D	17.7	14.2%
WmB	Windsor loamy sand, 0 to 8 percent slopes	A	2.0	1.6%
Totals for Area of Interest			**125.1**	**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

APPENDIX E

INSPECTION, HOUSEKEEPING, and OPERATION & MAINTENANCE PLAN

STORMWATER SYSTEM

INSPECTION, HOUSKEEPING, and OPERATION & MAINTENANCE PLAN

Carr Woods – Deep Brook Road, Cape Elizabeth, Maine

Introduction

The following plan outlines the anticipated inspection and maintenance procedures for the erosion and sedimentation controls as well as stormwater management devices for the project site. Also, this plan outlines several housekeeping requirements that shall be followed during and after construction. These procedures should be followed in order to ensure the intended function of the designed measures and to prevent unreasonable adverse impacts to the surrounding environment.

The procedures outlined in this inspection and maintenance plan are provided as an overview of the anticipated practices to be used on this site. In some instances, additional measures may be required due to unexpected conditions. For additional detail on any of the erosion and sedimentation control measures or stormwater management devices to be utilized on this project, refer to the most recently revised edition of the "Maine Erosion and Sedimentation Control BMP" manual and/or the "Stormwater Management for Maine: Best Management Practices" manual as published by the Maine Department of Environmental Protection (MDEP).

During Construction

1. **Inspection:** During the construction process, it is the Contractor's responsibility to comply with the inspection and maintenance procedures outlined in this section. These responsibilities include inspecting disturbed and impervious areas, erosion control measures, materials 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 before and after a storm event, and prior to completing permanent stabilization measures. A person with knowledge of erosion and stormwater control, including the standards and conditions in any applicable permits, shall conduct the inspections.

2. **Maintenance:** All measures shall be maintained in an effective operating condition until areas are permanently stabilized. If Best Management Practices (BMPs) need to be maintained or modified, additional BMPs are necessary, or other corrective action is needed, implementation must be completed within 7 calendar days and prior to any storm event (rainfall).

3. **Documentation:** A log 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 major observations about the operation and maintenance of erosion and sedimentation controls, material storage areas, and vehicle access points to the site. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and locations 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 the appropriate regulatory agency upon request. The permittee shall retain a copy of the log for a period of at least three years from the completion of permanent stabilization.

4. **Specific Inspection and Maintenance Tasks:** The following is a list of erosion control and stormwater management measures and the specific inspection and maintenance tasks to be performed during construction.

A. Sediment Barriers:

- Hay bale barriers, silt fences, and filter berms shall be inspected immediately after each rainfall and at least daily during prolonged rainfall.
- If the fabric on a silt fence or filter barrier should decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, it shall be replaced.
- Sediment deposits should be removed after each storm event. They must be removed before deposits reach approximately one-half the height of the barrier.
- Filter berms shall be reshaped as needed.
- Any sediment deposits remaining in place after the silt fence or filter barrier is no longer required should be dressed to conform to the existing grade, prepared, and seeded.

B. Riprap Materials:

- Once a riprap installation has been completed, it should require very little maintenance. It shall, however, be inspected periodically to determine if high flows have caused scour beneath the riprap or dislodged any of the stone.

C. Temporary Storm Drain Inlet Protection:

- The inlet protection structure shall be inspected before each rain event and repaired as necessary.
- Sediment shall be removed and the storm drain sediment barrier restored to its original dimensions when the sediment has accumulated to half of the design depth of the trap.
- Structures shall be removed upon permanent stabilization of the tributary area.
- Upon removal of the structure, all accumulated sediments downstream of the structure shall be cleaned from the storm drain system.

D. Stabilized Construction Entrances/Exits:

- The exit shall be maintained in a condition that will prevent tracking of sediment onto public rights-of-way.
- When the control pad becomes ineffective, the stone shall be removed along with the collected soil material. The entrance should then be reconstructed.

- Areas that have received mud-tracking or sediment deposits shall be swept or washed. Washing shall be done on an area stabilized with aggregate, which drains into an approved sediment-trapping device (not into storm drains, ditches, or waterways).

E. Temporary Seed and Mulch:

- Mulched areas should be inspected after rain events to check for rill erosion.
- If less than 90% of the soil surface is covered by mulch, additional mulch shall be applied in bare areas.
- In applications where seeding and mulch have been applied in conjunction with erosion control blankets, the blankets must be inspected after rain events for dislocation or undercutting.
- Mulch shall continue to be reapplied until 95% of the soil surface has established temporary vegetative cover.

F. Stabilized Temporary Drainage Swales:

- Sediment accumulation in the swale shall be removed once the cross section of the swale is reduced by 25%.
- The swales shall be inspected after rainfall events. Any evidence of sloughing of the side slopes or channel erosion shall be repaired and corrective action should be taken to prevent reoccurrence of the problem.
- In addition to the stabilized lining of the channel (i.e. erosion control blankets), stone check dams may be needed to further reduce channel velocity.

5. **Housekeeping:** The following general performance standards apply to the proposed project.

A. Spill prevention: Controls must be used to prevent pollutants from being discharged from materials on-site, including storage practices to minimize exposure of the materials to stormwater, and appropriate spill prevention, containment, and response planning and implementation.

B. 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.

C. 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.

D. Debris and other materials: Litter, construction debris, and chemicals exposed to stormwater must be prevented from becoming a pollutant source.

E. Trench or foundation dewatering: Trench dewatering is the removal of water from trenches, foundations, cofferdams, 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 must be removed from the ponded area, either through gravity or pumping, and 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.

Post Construction Stormwater Inspection and Maintenance Plan

1. **Inspection:** After construction, it is the responsibility of the owner or assigned heirs to comply with the inspection and maintenance procedures outlined in this section. All measures must be maintained in effective operating condition. A person with knowledge of erosion and stormwater control, including the standards and conditions in all applicable permits, shall conduct the inspections.

The contractor and developer are responsible for all post construction stormwater maintenance and inspections until such time as the Condo Association takes over.

All annual inspections shall be conducted by a Qualified Post Construction Stormwater Inspector as defined below.

Inspections of stormwater infrastructure after significant rain events can be conducted by the Homeowners' Association. A sample inspection report form, Attachment 2, is included within this plan.

Qualified Post-Construction Storm Water Inspector: A person who conducts postconstruction inspections of Storm Water Runoff Systems and meets the following qualification:

a) The Inspector shall not have any ownership or financial interest in the property being inspected nor be an employee or partner of any entity having an ownership or financial interest in the property, and

b) The Inspector shall also meet the following criteria as approved by the Town's Enforcement Authority:

1. Someone who has received the appropriate training for such inspection from DEP and holds a valid certificate from DEP for such inspection or;

2. Have a working knowledge of the most current Maine DEP Storm Water

Management Laws including but not limited to Chapter 500 and Chapter 502 Rules, Storm Water Management Rules and Maine's Storm Water BMP Manual, have a college degree in environmental science, civil engineering, or comparable expertise, or any combination of experience and training; have a demonstrated practical working knowledge of Storm Water hydrology and Storm Water management techniques, including the maintenance requirements for Storm Water Runoff Systems; and have the ability to determine if Storm Water Runoff Systems are performing as intended;

2. **Specific Inspection and Maintenance Tasks:** The following is a list of permanent erosion control and stormwater management measures and the inspection and maintenance tasks to be performed after construction.

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 erosion is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows.
- Inspect steep slopes for signs of erosion. Any areas where erosion is present, shall be repaired, seeded and stabilized with erosion control matting.

B. Ditches, Swales, and Other Open Channels:

- Swale Locations:
  - North Side of Private Road, Station 7+50 to 9+00
  - North Side of Condominium buildings, Station 12+00 to 17+00
- Inspect ditches, swales and other open stormwater channels in the spring, in the late fall, and after heavy rains to remove any obstruction to flow. Remove accumulated sediments and debris, remove woody 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.
- Any woody vegetation growing through riprap linings must also be removed. Repair any slumping side slopes as soon as practicable.
- If the ditch has a riprap lining, replace riprap in areas where any underlying filter fabric or underdrain gravel is showing through the stone or where stones have dislodged.

C. Culverts:

- Culverts SD-1 through SD-35, as identified on "Drainage Plan – Sheet 1 & Sheet 2, Proposed Subdivision – Carr Woods" Dated April 30, 2021, as revised.
- Inspect culverts in the spring, in the 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.
- Inspect and repair any erosion damage at the culvert's inlet and outlet.

D. Catch Basins/Outlet Control Structure:

- Catch Basins CB-1 through CB-27, OCS-1 through OCS-7, as identified on "Drainage Plan – Sheet 1 & Sheet 2, Proposed Subdivision – Carr Woods" Dated April 30, 2021, as revised.
- Inspect and, if required, clean-out catch basins and outlet control structures at least once a year, preferably in early spring.
- Clean out must include the removal and legal disposal of accumulated sediments and debris at the bottom of the basin, at any inlet grates, at any inflow channels to the basin, and at any pipes between basins.
- If the basin outlet is designed to trap floatable materials, then remove the floating debris and any floating oils (using oil-absorptive pads).
- The overflow control weir shall be inspected to ensure nothing is impeding stormwater from overtopping. The hole in the weir must be free of debris. Special attention should be paid to this control feature to ensure proper drainage within the underground detention system.

E. Soil Filters:

- Soil Filters USF-1 through USF-3, BRF-1 through BRF-3 and Roof Dripline Filters as identified on "Grading and Drainage Plans – Sheet 1 & Sheet 2, Proposed Subdivision – Carr Woods" Dated April 30, 2021, as revised.
- A legal contract with a 5-year time period should establish maintenance responsibilities and the cost to cover long-term inspection and maintenance needs.
- The filter should be draining within 48 hours following a one-inch storm or greater. If the system drains too fast, an orifice may need to be added on the underdrain outlet or may need to be modified if already present, etc.
- Any pretreatment structure must be cleaned when necessary.
- Vegetated surfaces must be mowed at least annually or otherwise maintained to control the growth of woody vegetation and maintain flow capacity.
- Any woody vegetation growing through riprap linings must also be removed. Repair any slumping side slopes as soon as practicable.
- The top several inches of the filter should be replaced with fresh material if

the water is ponding for more than 72 hours.

F. Underground Detention:

- Detention Locations:
  - UGD-1, Station 15+50 to 18+00
  - UGD-2, Station 4+50 to 6+00
- Inspect and, if required, clean-out at least once a year, preferably in early spring.
- Underground detention systems should be cleaned when an inspection reveals accumulated sediment or trash is clogging the discharge orifice. Accumulated sediment and trash can be evacuated through the inspection ports of the system. If maintenance is not performed as recommended, sediment and trash may accumulate in front of the outlet orifice. Manhole covers should be securely seated following cleaning activities. Should it be necessary to get inside the system to perform maintenance activities, all appropriate precautions regarding confined space entry and OSHA regulations should be followed.
- Annual inspections are best practice for all underground systems. During this inspection if evidence of salting/de-icing agents is observed within the system, it is best practice for the system to be rinsed, including above the spring line soon after the spring thaw as part of the maintenance program for the system

G. Road Sweeping

- Inspect the road annually for excessive amounts of sand. A street sweeper may be needed if sand within the gutter becomes excessive.

3. **Documentation:** A log summarizing the inspections and any corrective action taken must be maintained. The log must include the name(s) and qualifications of the person making the inspections, the date(s) of the inspections, and major observations about the operation and maintenance of controls. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and locations 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 the appropriate regulatory agency upon request. The log shall be maintained for a period of 5 years, minimum.

- The town required an annual certification that the system has been inspected and maintained according to this plan. A sample annual certification is attached to this maintenance plan, attachment 1.

- The Maine DEP will require certification every 5 years.

Attachment 1 - Sample Maintenance Agreement

Maintenance Agreement for
Stormwater Management Facilities

This Maintenance Agreement is made this ___day of _____ 20___ by and between _____ and the Town of Cape Elizabeth, Maine.

The project name is _____.

The location is: _____, South Berwick, Maine.

The project's Tax Map and Lot Numbers are Tax Map Lot_____

The project is shown on a plan entitled "_____" dated_____ and most recently revised on _____, approved by the _____ on _____ and recorded in the _____ County Registry of Deeds in Plan Book _____ Page _____ (the "Project").

WHEREAS, the approval of the Project includes Stormwater Management Facilities which requires periodic maintenance; and

WHEREAS, in consideration of the approval of the Project the Town of Cape Elizabeth requires that periodic maintenance be performed on the Stormwater Management Facilities;

NOW, THEREFORE, in consideration of the mutual benefits accruing from the approval of the Project by the Town and the agreement of _____ to maintain the Stormwater Management Facilities, the parties hereby agree as follows:

1. _____, for itself, and its successors and assigns, agrees to the following:

(a) To inspect, clean, maintain, and repair the Stormwater Management Facilities, which includes, to the extent they exist, parking areas, catch basins, detention basins or ponds, drainage swales, pipes and related structures, at least annually, to prevent the build up and storage of sediment and debris in the system;

(b) To repair any deficiencies in the Stormwater Management Facilities noted during the annual inspection;

(c) To provide a summary report by August 1 each year on the inspection, maintenance, and repair activities performed annually on the Stormwater Management Facilities to the Town Public Works Director;

(d) To allow access by Town personnel or the Town's designee for inspecting the Stormwater Management Facilities for conformance with these requirements.

(e) To create a homeowners' association for the purpose of maintaining the Stormwater Management Facilities.

2. Upon creation of the homeowners' association, the homeowners' association shall become responsible for compliance with the terms of this Agreement.

3. This Agreement shall constitute a covenant running with the land, and _____ shall reference this Agreement in all deeds to lots and/or units within the Project.

_____

_____ By: _____
Witness Its: _____

TOWN OF CAPE ELIZABETH, MAINE

_____ By: _____
Witness Its: _____

STATE OF MAINE
_____, ss. _____, 20__

Personally appeared the above-named _____ _____, the _____ of _____, and acknowledged the foregoing Agreement to be said person's free act and deed in said capacity.

Before me,

_____
Notary Public / Attorney at Law

Print Name: _____

STATE OF MAINE
_____, ss. _____, 20__

Personally appeared the above-named _____ _____, the _____ of the Town of _____, and acknowledged the foregoing Agreement to be said his/her free act and deed in said capacity.

Before me,

_____
Notary Public / Attorney at Law

Print Name: _____

Annual Stormwater Management Facilities Certification

I, _____ (print or type name), certify the following:

1. I am making this Annual Stormwater Management Facilities Certification for the following property:

   _____
   (print or type name of subdivision, condominium or other development)

   located at: _____
   (print or type address), (the "Property");

2. The owner, operator, tenant, lessee, or homeowners' association of the Property is: _____ (names of owner, operator, tenant, lessee, homeowners' association, or other party having control over the Property);

3. I am a qualified Post-Construction Stormwater Inspector as described in the Town of Cape Elizabeth Ordinances Chapter 25, Article II, Section 25-2-4, and as such:
   a. do not have any ownership or financial interest in the property being inspected, nor am an employee or partner of any entity having an ownership or financial interest in the property, and am
   b. am technically qualified to conduct the inspection and maintenance

4. I have reviewed the approved Post-Construction Stormwater Management Plan for the Property;

5. On _____, I inspected the Stormwater Management Facilities, including but not limited to parking areas, catch basins, drainage swales, detention basins and ponds, pipes and related structures required by the approved Post-Construction Stormwater Management Plan for the Property

6. At the time of my inspection of the Stormwater Management Facilities on the Property, I identified the following maintenance needs for the Stormwater Management Facilities:
   a.

7. (If necessary) On _____ I returned to the site and found the above items had been completed

Date:_____, 20__.

By:_____
Signature

_____
Print Name

STATE OF MAINE
_____, ss. _____, 20__

Personally appeared the above-named _____, the _____ of _____, and acknowledged the foregoing Annual Certification to be said person's free act and deed in said capacity.

Before me,

_____
Notary Public/Attorney at Law

Print Name: _____

Mail this certification to the Cape Elizabeth Public Works Department at the following address:

Cape Elizabeth Public Works Department: Post Construction Stormwater
10 Cooper Drive
Cape Elizabeth, Maine 04107

Or Jay.Reynolds@capeelizabeth.org

Attachment 2 - Sample Inspection Form

Post-Construction Stormwater Inspection and Maintenance Log

Inspector: _____

Maintenance Personnel: _____

	Inspection		Maintenance	
SITE AREA	Date	Comments	Date	Corrective Action
Catch Basins / Drainage Structures				
Ditches, Swales Open Channels				
Culverts				
Inlet/Outler Riprap				
Winter Sanding				
Vegetated areas adjacent to pavement runoff				
Embankment Stabilization				
Drainage Along Curb lines				
Pavement Surface				
Contech StormFilter				
Underground Detention #1				
Inlet Streuture				
Outlet Structure				
Sediment				

Post-Construction Stormwater Inspection and Maintenance Log

Underground Detention #2				
Inlet Streuture				
Outlet Structure				
Sediment				

Underground Detention #3				
Inlet Streuture				
Outlet Structure				
Sediment				

Sediment/Debris Disposal

Location of Sediment/Debris Accumulation	Location of Sediment/Debris Disposal	Date of Disposal