SEBAGO TECHNICS

CIVIL ENGINEERING ▪ SURVEYING ▪ LANDSCAPE ARCHITECTURE

STORMWATER MANAGEMENT REPORT

For

NAPLES SELF-STORAGE
NAPLES, MAINE

Prepared for

Naples Self-Storage, LLC
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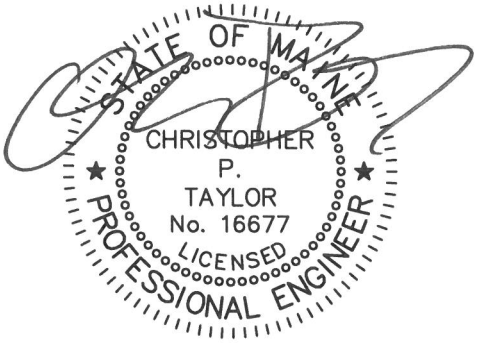
Las Vegas, Nevada 89103



March 2021

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STORMWATER MANAGEMENT REPORT
NAPLES SELF-STORAGE
NAPLES, MAINE

1. Introduction

This Stormwater Management Plan Report has been prepared to present analyses performed to address the potential impacts associated with the project due to proposed modification in stormwater runoff characteristics and land cover changes. The stormwater management controls that are outlined in this report have been designed to suit the proposed development and to comply with applicable regulatory requirements.

2. Existing Conditions

The project site consists of two parcels of land located at 17 Serenity Hill Estates in Naples. Parcel 1 (Lot 3) is approximately 3.04 acres in size and includes two existing 8,000 square foot self-storage buildings. Parcel 2 (Lot 4) is approximately 0.92 acres in size and includes one existing 3,000 square foot self-storage building. The site is bounded by undeveloped wooded areas to the south and east, a residential development to the west, and U.S. Route 302 (Roosevelt Trail) to the north. The site contains approximately 1.3 acres of existing impervious area.

Slopes on the site range from approximately 1% to 60% throughout the parcel including the existing self-storage areas and the embankments around the storage unit drive areas. The majority of the site slopes toward the north of the parcel near U.S. Route 302.

The site is tributary to Long Lake, which ultimately flows into Sebago Lake via Brandy Pond and Crooked River. Long Lake is identified as a Lake Most at Risk from New Development in Chapter 502 of the Maine Department of Environmental Protection (MDEP) regulations and is not listed as severely blooming.

The proposed development area of the site is not located in an identified flood zone per the FEMA Flood Insurance Rate Map for the Town of Naples, Maine Community Panel number 2300500005B dated April 1, 1988. A copy of the flood insurance rate map is attached in Appendix 5.

3. Soils

A Class ‘D’ Medium Intensity Soil Survey for the site was obtained from the Soil Survey of Cumberland County Maine, published by the United States Department of Agriculture (USDA) and Natural Resources Conservation Service, latest revision. Soil data was obtained via the Web Soil Survey. On site soil testing has not been performed as stormwater BMPs are lined and do not rely on native soil conditions. The Hydrologic Soil Groups (HSG) of the soils are classified by Technical Release TR-55 of the Soil Conservation Service as follows:

Soil Map Symbol	Soil Name	Slope (%)	HSG
HgB	Hermon sandy loam	3-8	A
HgC	Hermon sandy loam	8-15	A
HhB	Hermon sandy loam, very stony	0-8	A
HhC	Hermon sandy loam, very stony	8-15	A
PIB	Peru fine sandy loam, very stony	0-8	C/D
PIC	Peru fine sandy loam, very stony	8-15	C/D

Hydrologic Soil Group boundaries are delineated on the Watershed Map. A copy of the Class D Medium Intensity Soil Survey is included in Appendix 4.

4. Proposed Site Improvements

The proposed development will consist of three (3) additional self-storage unit buildings that total approximately 14,000 square feet of new building space. The new buildings along with the paved area will be constructed in addition to the 11,000 square feet of existing self-storage facility buildings and associated gravel driveway area to the southwest of the parcel. Landscaped area on the site will include grassed swales for stormwater conveyance and treatment. Stormwater will be treated through the utilization of two (2) underdrained soil filters. The existing and proposed buildings on site will have sloped metal roofs which do not require treatment for stormwater runoff. The project will result in 0.48 acres of additional non-vegetated area and 0.44 acres of additional developed area.

5. Existing Conditions Model

The pre-development watershed plan consists of four subcatchments labeled 1.0S through 3.0S in the HydroCAD model. Three locations were identified as a Point of Analysis (POA) for comparing peak runoff rates. Two Points of Analyses are modeled as drainage ditches where all stormwater exits the site along U.S. Route 302 Roosevelt Trail. The third Point of Analysis is modeled as an area where stormwater leaves the site toward an existing house lot at the west of the parcel.

POA-1 is located at the northeasterly corner of the lot where runoff leaves the site via a drainage ditch. Watershed 1.0S contributes runoff to this POA with an overall runoff area of approximately 3.17 acres.

POA-2 is located at the southwesterly corner of the lot where runoff leaves the site via a drainage ditch. Watersheds 2.0S and 2.1S contribute runoff to this POA with an overall runoff area of approximately 0.94 acres.

POA-3 is located at the westerly corner of the lot where runoff leaves the site adjacent to the existing house lot. Watershed 3.0S contributes runoff to this POA with an overall runoff area of approximately 1.24 acres.

All points of analysis and the associated drainage area are tributary to Long Lake, which is identified as a Lake Most at Risk from New Development in Chapter 502 of the Maine Department of Environmental Protection (MDEP) regulations.

6. Proposed Conditions Model

The post-development watershed area consists of the same overall area as the pre-development plan, however, the pre-development subcatchments have been broken into smaller watersheds as a result of the proposed development.

POA1: Post-development subcatchments 10.0S represents the offsite developed land from pre-development 1.0S. Subcatchments 10.1S, 10.2S, 10.3S, 10.4S, and 10.5S represent the majority of the proposed developed area including the building, driveway, and landscaped areas. Subcatchments 10.0S, 10.1S, and 10.3S are treated by an underdrained soil filter and subcatchments 10.2S and 10.4S are proposed buildings with sloped metal roofs each treated by a stone drip edge. The overall tributary area associated with POA-1 is 3.72 acres.

POA2: Post-development subcatchments 20.0S and 20.1S represent the undeveloped land from pre-development 2.0S and 2.1S. The overall tributary area associated with POA-2 is 0.83 acres.

POA3: Post-development subcatchment 30.0S represents the undeveloped land from pre-development 3.0S. The overall tributary area associated with POA-3 is 0.79 acres.

The four Best Management Practices have been designed and sized in accordance with DEP BMP standards contained within Chapter 500 and the BMP Manual. Sizing calculations can be found in Appendix 1.

7. Stormwater Management

Basic Standard - Chapter 500, Section 4(B)

Since the project will disturb more than one (1) acre of land area, MDEP Basic Standards apply, requiring that grading or other construction activities on the site do not impede or otherwise alter drainage ways to have an unreasonable adverse impact. We have avoided adverse impacts by providing an Erosion & Sedimentation Control Plan, and an Inspection, Maintenance, and Housekeeping Plan (Appendix 3) to be implemented during construction and post-construction stabilization of the site. These construction requirements have been developed following Best Management Practice guidelines.

General Standard - Chapter 500, Section 4(C)

The existing and proposed development will result in more than one (1) acre of impervious surface on site, as such the MDEP General Standards apply, which require a project's stormwater management system to include treatment measures that will mitigate for 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. It does not appear that stormwater treatment is being provided for the existing self-storage facility development consisting of approximately 1.3 acres of impervious area. Treatment of stormwater runoff from both the existing development and the proposed development will be provided complying with the General Standards. The General Standards require treatment of no less than 95% of the site's impervious area and no less than 80% of the site's developed area (landscaped area and impervious area combined). Off-site existing area drains to the proposed underdrained soil filter at the north of the site in addition to the proposed development. As a result of this, the site exceeds the required treatment for the General Standards. To mitigate the changes in hydrologic patterns due to the development of this project, two underdrained soil filters have been implemented into the stormwater management infrastructure, as well as the use of sloped metal roofs for the buildings. Filtration BMPs are very effective at removing a wide range of pollutants through the use of organic soil filter media.

BMP sizing and treatment calculations are provided as Appendix 1.

Through the use of the aforementioned BMP's 111% of new impervious area and 107% of new developed area will be receiving treatment. This meets the requirements for the Maine DEP General Standards.

Flooding Standard - Chapter 500, Section 4(F)

Since the planned project will not result in more than three (3) acres of impervious surface, MDEP Flooding Standards do not need to be met for a MDEP stormwater permit. However, The Town of Naples Land Use Ordinance requires no increase in offsite runoff from the 25-year storm frequency. In addition, the site drains directly to Roosevelt Trail (Route 302), and the MDOT requires the 50-year storm frequency to be analyzed. As such, the proposed development has been designed to comply with the Flooding Standard.

The Flooding Standard requires a project's stormwater management system to detain, retain, or result in the infiltration of stormwater from 24-hour storms of the 2, 10, and 25-year frequencies such that the peak flows of stormwater from the project site do not exceed the peak flows of stormwater prior to undertaking the project. The 50-year storm frequency was also analyzed to comply with MDOT requirement. A runoff evaluation was performed using the methodology outlined in the USDA Soil Conservation Service's "Urban Hydrology for Small Watersheds - Technical Release #55 (TR-55)". HydroCAD computer software was utilized to perform the calculations.

Runoff curve numbers were determined for each of the watersheds by measuring the area of each hydrologic soil group within each type of land cover. The type of land cover was determined based on survey data, field reconnaissance, and aerial photography. Times of concentration were determined from site topographic maps in accordance with SCS procedures.

The 24-hour rainfall values utilized in the hydrologic model were obtained from Appendix H of MDEP's Chapter 500: Stormwater Management (effective date August 2015). Rainfall values for Cumberland County Northwest (NW of Route 11) are listed in the table below.

Storm Frequency Precipitation (in./24 hr) Cumberland County Northwest	
2-year	3.0
10-year	4.3
25-year	5.4
50-year	6.3

The following table presents the results of the peak runoff calculations at the analysis points for the existing and proposed conditions.

Peak Runoff Rate Summary Table			
Analysis Point	**Storm Event**	**Existing Conditions (cfs)**	**Proposed Conditions (cfs)**
POA-1	2-year	0.8	0.4
	10-year	2.6	1.0
	25-year	4.4	1.4
	50-year	6.1	2.3
POA-2	2-year	0.0	0.0
	10-year	0.0	0.0
	25-year	0.1	0.0
	50-year	0.1	0.0
POA-3	2-year	0.0	0.0
	10-year	0.0	0.0
	25-year	0.0	0.0
	50-year	0.1	0.0

The HydroCAD Data output sheets from this analysis are appended to this report (Appendix 2) along with the Stormwater Management Plans (Appendix 6). The model predicts that the peak runoff rates in the post-development condition at Points of Analysis 1 and 2 are at or below pre-development runoff rates for the 2, 10, 25, and 50-year storm events with implantation of the proposed stormwater management practices.

8. Summary

The proposed development has been designed to manage stormwater runoff through Best Management Practices approved by MDEP. Stormwater BMP's provide treatment to 111% (95% required) of impervious areas, and 107% (80% required) of the total developed area. Runoff discharging from the site will be at or below pre-development conditions for the 2, 10, 25, and 50-year storm events at the study point. Additionally, erosion and sedimentation controls along with associated maintenance and housekeeping procedures have been outlined to prevent unreasonable impacts on the site and to the surrounding environment.

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Appendix 1

Stormwater Quality Calculations

Table 1: MDEP GENERAL STANDARD CALCULATIONS

Job #20519

AREA ID	WATERSHED SIZE (S.F.)	EXISTING OFFSITE IMPERVIOUS AREA TO REMAIN (S.F.)	ONSITE IMPERVIOUS AREA (S.F.)	EXISTING ONSITE BUILDING AREA (S.F.)	EXISTING OFFSITE LANDSCAPED AREA TO REMAIN (S.F.)	ONSITE LANDSCAPED AREA (S.F.)	NET NEW DEVELOPED AREA (S.F.)	NET EXISTING DEVELOPED AREAS (S.F.)	TREATMENT PROVIDED?	IMPERVIOUS AREA TREATED (S.F.)	LANDSCAPED AREA TREATED (S.F.)	DEVELOPED AREA TREATED (S.F.)	TREATMENT BMP
10.0S	25,083	10,811	1,808	0	5,111	1,796	3,604	15,922	YES	12,619	6,907	19,526	UDSF-2
10.1S	90,849	0	27,845	18,937	0	16,240	44,085	18,937	YES	27,845	16,240	44,085	UDSF-2
10.2S	4,223	0	3,806	0	0	417	4,223	0	YES	3,806	417	4,223	DRIPEDGE
10.3S	28,722	0	14,916	0	0	6,197	21,113	0	YES	14,916	6,197	21,113	UDSF-1
10.4S	4,400	0	4,000	0	0	400	4,400	0	YES	4,000	400	4,400	DRIPEDGE
10.5S	8,921	0	4,462	0	0	1,606	6,068	0	NO	0	0	0	NONE
20.0S	13,763	0	0	0	0	2,379	2,379	0	NO	0	0	0	NONE
20.1S	22,291	0	0	0	0	0	0	0	NO	0	0	0	NONE
30.0S	34,704	0	0	0	0	1,201	1,201	0	NO	0	0	0	NONE
TOTAL (S.F.)	**232,956**	**10,811**	**56,837**	**18,937**	**5,111**	**30,236**	**87,073**	**34,859**		**63,186**	**30,161**	**93,347**	

TOTAL IMPERVIOUS AREA ONSITE (S.F.)	**56,837**	**TOTAL DEVELOPED AREA ONSITE (S.F.)**	**87,073**
TOTAL IMPERVIOUS AREA RECEIVING TREATMENT (S.F.)	**63,186**	**TOTAL AREA RECEIVING TREATMENT (S.F.)**	**93,347**
% OF IMPERVIOUS AREA RECEIVING TREATMENT	**111.17%**	**% OF AREA RECEIVING TREATMENT**	**107.21%**

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JOB	20522		
SHEET NO.	1	OF	2
CALCULATED BY	DJS	DATE	3/4/2021
FILE NAME		PRNT DATE	3/4/2021

UNDERDRAINED SOIL FILTER

Task: Calculate water quality volume per MDEP chapter 500 regulations

1. Maine DEP Chapter 500, Section 4.C.(3)(b)

References

a. "must detain a runoff volume equal to 1.0 inch times the subcatchment's impervious area plus 0.4 inch times the subcatchment's landscaped area"

2. Maine DEP Best Management Practices Stormwater Manual, Section 7.1

a. "surface should represent 5% of impervious area and 2% of landscaped area"

Tributary to Underdrained Filter UDSF-1

Landscaped Area	6,197.00	SF			
Impervious Area	14,916.00	SF			

Minimum Surface Area

Required (2% X Landscaped + 5%" X Impervious)

Total Landscaped Area	6,197.00	SF	Area	123.9	SF
Total Impervious Area	14,916.00	SF	Area	745.8	SF
Required Minimum Surface Area				869.7	SF
Provided Surface Area				1,627.0	SF

Treatment Volume

Required (0.4" X Landscaped + 1.0" X Impervious)

Landscaped Area	6,197.00	SF	Volume	206.6	
Impervious Area	14,916.00	SF	Volume	1,243.0	
Treatment Volume Required				1,449.6	CF 0.033 AF
Provided Treatment Volume				1,460.0	CF 386.0 to 386.70

Sediment Pre-Treatment

Per Reference 2, Chapter 7.1 "Pretreatment devices shall be provided to minimize discharge of sediment to the soil filter"

Annual Sediment Load: 55 cubic feet per acre per year of sanded area

Area to be sanded:	14,916.00	SF
Sediment Volume	19	CF
Provided	104 CF	6 Inch Deep Forebay with area of 207 sf

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JOB	20522		
SHEET NO.	2	OF	2
CALCULATED BY	DJS	DATE	3/4/2021
FILE NAME		PRNT DATE	3/4/2021

UNDERDRAINED SOIL FILTER

Task: Calculate water quality volume per MDEP chapter 500 regulations

References

1. Maine DEP Chapter 500, Section 4.C.(3)(b)
   a. "must detain a runoff volume equal to 1.0 inch times the subcatchment's impervious area plus 0.4 inch times the subcatchment's landscaped area"
2. Maine DEP Best Management Practices Stormwater Manual, Section 7.1
   a. "surface should represent 5% of impervious area and 2% of landscaped area"

Tributary to Underdrained Filter UDSF-2

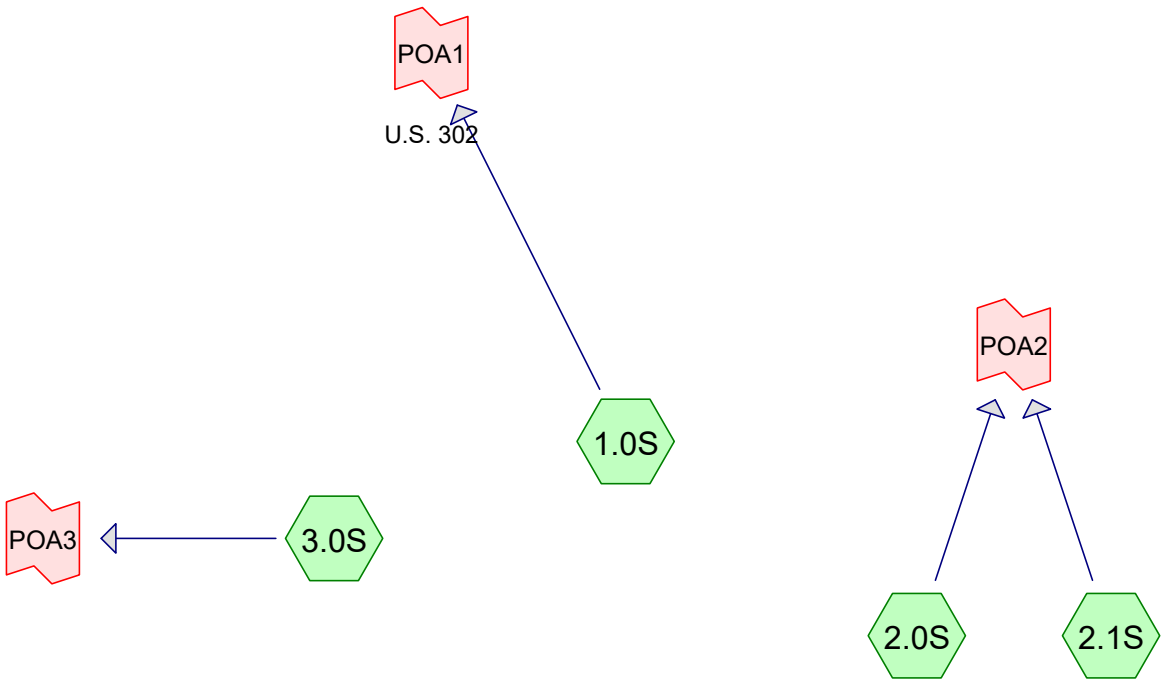
Landscaped Area	23,147.00	SF				
Impervious Area	40,464.00	SF				
Minimum Surface Area						
Required	(2% X Landscaped + 5%" X Impervious)					
Total Landscaped Area	23,147.00	SF	Area	462.9	SF	
Total Impervious Area	40,464.00	SF	Area	2,023.2	SF	
Required Minimum Surface Area				2,486.1	SF	
Provided Surface Area				3,000.0	SF	
Treatment Volume						
Required	(0.4" X Landscaped + 1.0" X Impervious)					
Landscaped Area	23,147.00	SF	Volume	771.6		
Impervious Area	40,464.00	SF	Volume	3,372.0		
Treatment Volume Required				4,143.6	CF	0.095 AF
Provided Treatment Volume				4,192.0	CF	347.0 to 348.15

Sediment Pre-Treatment

Per Reference 2, Chapter 7.1	"Pretreatment devices shall be provided to minimize discharge of sediment to the soil filter"					
Annual Sediment Load:	55 cubic feet per acre per year of sanded area					
Area to be sanded:	40,464.00	SF				
Sediment Volume	51	CF				
Provided	70	CF	12	Inch Deep Forebay	with area of	70 sf

Appendix 2A

Hydrologic Modeling
Existing Conditions
HydroCAD Summary



Subcat Reach Pond Link

Routing Diagram for 20522_Existing Conditions
Prepared by Sebago Technics, Inc., Printed 3/4/2021

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.379	68	<50% Grass cover, Poor, HSG A (1.0S, 3.0S)
0.477	39	>75% Grass cover, Good, HSG A (1.0S, 2.0S)
0.729	96	Gravel surface, HSG A (1.0S, 2.0S, 3.0S)
0.331	98	Paved parking (1.0S)
0.448	98	Roofs (1.0S)
2.984	30	Woods, Good, HSG A (1.0S, 2.0S, 2.1S, 3.0S)
5.348	**52**	**TOTAL AREA**

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1.0S: Runoff Area=138,278 sf 24.54% Impervious Runoff Depth=0.47"
Flow Length=956' Tc=19.8 min CN=64 Runoff=0.8 cfs 0.124 af

Subcatchment2.0S: Runoff Area=18,578 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=278' Tc=8.5 min CN=41 Runoff=0.0 cfs 0.000 af

Subcatchment2.1S: Runoff Area=22,291 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=404' Tc=25.1 min CN=30 Runoff=0.0 cfs 0.000 af

Subcatchment3.0S: Runoff Area=53,809 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=912' Tc=31.7 min CN=37 Runoff=0.0 cfs 0.000 af

Link POA1: U.S. 302 Inflow=0.8 cfs 0.124 af
Primary=0.8 cfs 0.124 af

Link POA2: Inflow=0.0 cfs 0.000 af
Primary=0.0 cfs 0.000 af

Link POA3: Inflow=0.0 cfs 0.000 af
Primary=0.0 cfs 0.000 af

Total Runoff Area = 5.348 ac Runoff Volume = 0.124 af Average Runoff Depth = 0.28"
85.43% Pervious = 4.569 ac 14.57% Impervious = 0.779 ac

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1.0S: Runoff Area=138,278 sf 24.54% Impervious Runoff Depth=1.15"
Flow Length=956' Tc=19.8 min CN=64 Runoff=2.6 cfs 0.303 af

Subcatchment2.0S: Runoff Area=18,578 sf 0.00% Impervious Runoff Depth=0.13"
Flow Length=278' Tc=8.5 min CN=41 Runoff=0.0 cfs 0.005 af

Subcatchment2.1S: Runoff Area=22,291 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=404' Tc=25.1 min CN=30 Runoff=0.0 cfs 0.000 af

Subcatchment3.0S: Runoff Area=53,809 sf 0.00% Impervious Runoff Depth=0.04"
Flow Length=912' Tc=31.7 min CN=37 Runoff=0.0 cfs 0.005 af

Link POA1: U.S. 302 Inflow=2.6 cfs 0.303 af
Primary=2.6 cfs 0.303 af

Link POA2: Inflow=0.0 cfs 0.005 af
Primary=0.0 cfs 0.005 af

Link POA3: Inflow=0.0 cfs 0.005 af
Primary=0.0 cfs 0.005 af

Total Runoff Area = 5.348 ac Runoff Volume = 0.312 af Average Runoff Depth = 0.70"
85.43% Pervious = 4.569 ac 14.57% Impervious = 0.779 ac

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1.0S: Runoff Area=138,278 sf 24.54% Impervious Runoff Depth=1.85"
Flow Length=956' Tc=19.8 min CN=64 Runoff=4.4 cfs 0.488 af

Subcatchment2.0S: Runoff Area=18,578 sf 0.00% Impervious Runoff Depth=0.38"
Flow Length=278' Tc=8.5 min CN=41 Runoff=0.1 cfs 0.013 af

Subcatchment2.1S: Runoff Area=22,291 sf 0.00% Impervious Runoff Depth=0.02"
Flow Length=404' Tc=25.1 min CN=30 Runoff=0.0 cfs 0.001 af

Subcatchment3.0S: Runoff Area=53,809 sf 0.00% Impervious Runoff Depth=0.21"
Flow Length=912' Tc=31.7 min CN=37 Runoff=0.0 cfs 0.022 af

Link POA1: U.S. 302 Inflow=4.4 cfs 0.488 af
Primary=4.4 cfs 0.488 af

Link POA2: Inflow=0.1 cfs 0.014 af
Primary=0.1 cfs 0.014 af

Link POA3: Inflow=0.0 cfs 0.022 af
Primary=0.0 cfs 0.022 af

Total Runoff Area = 5.348 ac Runoff Volume = 0.524 af Average Runoff Depth = 1.18"
85.43% Pervious = 4.569 ac 14.57% Impervious = 0.779 ac

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1.0S: Runoff Area=138,278 sf 24.54% Impervious Runoff Depth=2.48"
Flow Length=956' Tc=19.8 min CN=64 Runoff=6.1 cfs 0.656 af

Subcatchment2.0S: Runoff Area=18,578 sf 0.00% Impervious Runoff Depth=0.66"
Flow Length=278' Tc=8.5 min CN=41 Runoff=0.1 cfs 0.023 af

Subcatchment2.1S: Runoff Area=22,291 sf 0.00% Impervious Runoff Depth=0.11"
Flow Length=404' Tc=25.1 min CN=30 Runoff=0.0 cfs 0.005 af

Subcatchment3.0S: Runoff Area=53,809 sf 0.00% Impervious Runoff Depth=0.42"
Flow Length=912' Tc=31.7 min CN=37 Runoff=0.1 cfs 0.043 af

Link POA1: U.S. 302 Inflow=6.1 cfs 0.656 af
Primary=6.1 cfs 0.656 af

Link POA2: Inflow=0.1 cfs 0.028 af
Primary=0.1 cfs 0.028 af

Link POA3: Inflow=0.1 cfs 0.043 af
Primary=0.1 cfs 0.043 af

Total Runoff Area = 5.348 ac Runoff Volume = 0.727 af Average Runoff Depth = 1.63"
85.43% Pervious = 4.569 ac 14.57% Impervious = 0.779 ac

Summary for Subcatchment 1.0S:

Runoff = 4.4 cfs @ 12.30 hrs, Volume= 0.488 af, Depth= 1.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YEAR Rainfall=5.40"

	Area (sf)	CN	Description
*	14,430	98	Paved parking
*	19,505	98	Roofs
	18,502	39	>75% Grass cover, Good, HSG A
	28,644	96	Gravel surface, HSG A
	49,559	30	Woods, Good, HSG A
	7,638	68	<50% Grass cover, Poor, HSG A
	138,278	64	Weighted Average
	104,343		75.46% Pervious Area
	33,935		24.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.4	81	0.0460	0.10		**Sheet Flow, A to B** Woods: Light underbrush n= 0.400 P2= 3.00"
1.3	120	0.1000	1.58		**Shallow Concentrated Flow, B to C** Woodland Kv= 5.0 fps
0.1	28	0.5000	3.54		**Shallow Concentrated Flow, C to D** Woodland Kv= 5.0 fps
2.2	215	0.0100	1.61		**Shallow Concentrated Flow, D to E** Unpaved Kv= 16.1 fps
1.4	96	0.0550	1.17		**Shallow Concentrated Flow, E to F** Woodland Kv= 5.0 fps
0.3	49	0.1400	2.62		**Shallow Concentrated Flow, F to G** Short Grass Pasture Kv= 7.0 fps
0.3	76	0.0600	4.97		**Shallow Concentrated Flow, G to H** Paved Kv= 20.3 fps
0.2	62	0.1000	4.74		**Shallow Concentrated Flow, H to I** Grassed Waterway Kv= 15.0 fps
0.1	35	0.0314	6.22	11.00	**Pipe Channel, I to J** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.022
0.2	55	0.1000	4.74		**Shallow Concentrated Flow, J to K** Grassed Waterway Kv= 15.0 fps
0.3	139	0.1100	6.73		**Shallow Concentrated Flow, K to L** Paved Kv= 20.3 fps
19.8	956	Total			

Summary for Subcatchment 2.0S:

Runoff = 0.1 cfs @ 12.40 hrs, Volume= 0.013 af, Depth= 0.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YEAR Rainfall=5.40"

Area (sf)	CN	Description
2,271	39	>75% Grass cover, Good, HSG A
13,434	30	Woods, Good, HSG A
2,873	96	Gravel surface, HSG A
18,578	41	Weighted Average
18,578		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	28	0.2900	0.17		**Sheet Flow, A to B** Woods: Light underbrush n= 0.400 P2= 3.00"
0.2	22	0.0900	1.50		**Shallow Concentrated Flow, B to C** Woodland Kv= 5.0 fps
0.2	38	0.4000	3.16		**Shallow Concentrated Flow, C to D** Woodland Kv= 5.0 fps
5.0	133	0.0080	0.45		**Shallow Concentrated Flow, D to E** Woodland Kv= 5.0 fps
0.4	57	0.2500	2.50		**Shallow Concentrated Flow, E to F** Woodland Kv= 5.0 fps
8.5	278	Total			

Summary for Subcatchment 2.1S:

Runoff = 0.0 cfs @ 21.84 hrs, Volume= 0.001 af, Depth= 0.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YEAR Rainfall=5.40"

Area (sf)	CN	Description
22,291	30	Woods, Good, HSG A
22,291		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.7	150	0.0476	0.12		**Sheet Flow, A to B** Woods: Light underbrush n= 0.400 P2= 3.00"
2.3	152	0.0470	1.08		**Shallow Concentrated Flow, B to C** Woodland Kv= 5.0 fps
1.1	102	0.1000	1.58		**Shallow Concentrated Flow, C to D** Woodland Kv= 5.0 fps
25.1	404	Total			

Summary for Subcatchment 3.0S:

Runoff = 0.0 cfs @ 13.91 hrs, Volume= 0.022 af, Depth= 0.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YEAR Rainfall=5.40"

Area (sf)	CN	Description
44,704	30	Woods, Good, HSG A
8,865	68	<50% Grass cover, Poor, HSG A
240	96	Gravel surface, HSG A
53,809	37	Weighted Average
53,809		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.3	150	0.0500	0.12		**Sheet Flow, A to B** Woods: Light underbrush n= 0.400 P2= 3.00"
7.0	557	0.0700	1.32		**Shallow Concentrated Flow, B to C** Woodland Kv= 5.0 fps
3.4	205	0.0400	1.00		**Shallow Concentrated Flow, C to D** Woodland Kv= 5.0 fps
31.7	912	Total			

Summary for Link POA1: U.S. 302

Inflow Area = 3.174 ac, 24.54% Impervious, Inflow Depth = 1.85" for 25-YEAR event
Inflow = 4.4 cfs @ 12.30 hrs, Volume= 0.488 af
Primary = 4.4 cfs @ 12.30 hrs, Volume= 0.488 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link POA2:

Inflow Area = 0.938 ac, 0.00% Impervious, Inflow Depth = 0.18" for 25-YEAR event
Inflow = 0.1 cfs @ 12.40 hrs, Volume= 0.014 af
Primary = 0.1 cfs @ 12.40 hrs, Volume= 0.014 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

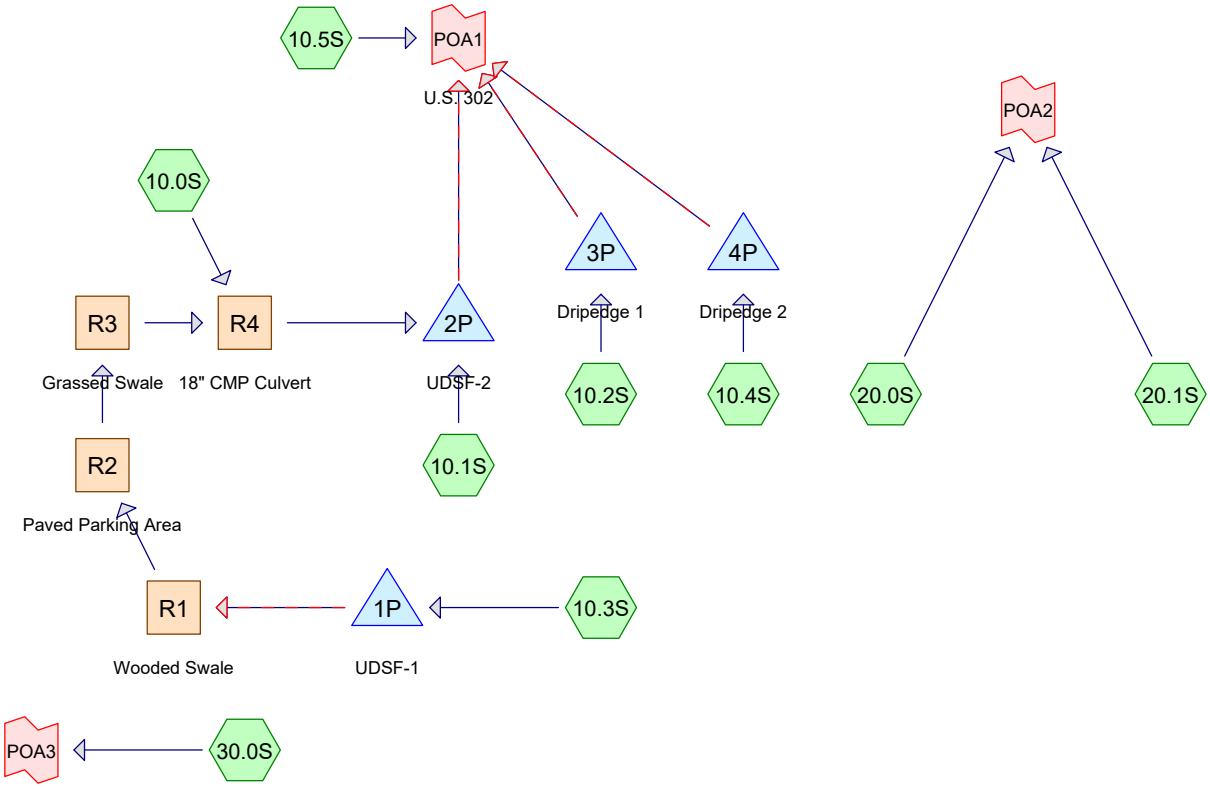
Summary for Link POA3:

Inflow Area = 1.235 ac, 0.00% Impervious, Inflow Depth = 0.21" for 25-YEAR event
Inflow = 0.0 cfs @ 13.91 hrs, Volume= 0.022 af
Primary = 0.0 cfs @ 13.91 hrs, Volume= 0.022 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Appendix 2B

Hydrologic Modeling
Proposed Conditions
HydroCAD Summary



Subcat Reach Pond Link

Routing Diagram for 20522_Proposed Conditions
Prepared by Sebago Technics, Inc., Printed 3/8/2021

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.811	39	>75% Grass cover, Good, HSG A (10.0S, 10.1S, 10.2S, 10.3S, 10.4S, 10.5S, 20.0S, 30.0S)
0.029	96	Gravel surface, HSG A (10.0S)
0.393	30	Meadow, non-grazed, HSG A (10.0S, 10.1S, 10.3S, 10.5S)
1.194	98	Paved parking (10.0S, 10.1S, 10.3S, 10.5S)
0.765	98	Roofs (10.0S, 10.1S, 10.2S, 10.3S, 10.4S)
2.155	30	Woods, Good, HSG A (10.0S, 10.1S, 10.5S, 20.0S, 20.1S, 30.0S)
5.348	**57**	**TOTAL AREA**

Time span=0.00-50.00 hrs, dt=0.01 hrs, 5001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment10.0S: Runoff Area=25,083 sf 45.34% Impervious Runoff Depth=0.58"
Flow Length=350' Tc=9.9 min CN=67 Runoff=0.3 cfs 0.028 af

Subcatchment10.1S: Runoff Area=90,849 sf 51.49% Impervious Runoff Depth=0.58"
Flow Length=745' Tc=19.2 min CN=67 Runoff=0.8 cfs 0.102 af

Subcatchment10.2S: Runoff Area=4,223 sf 90.13% Impervious Runoff Depth=2.16"
Tc=6.0 min CN=92 Runoff=0.2 cfs 0.017 af

Subcatchment10.3S: Runoff Area=28,722 sf 51.93% Impervious Runoff Depth=0.58"
Flow Length=231' Tc=6.0 min CN=67 Runoff=0.4 cfs 0.032 af

Subcatchment10.4S: Runoff Area=4,400 sf 90.91% Impervious Runoff Depth=2.25"
Tc=6.0 min CN=93 Runoff=0.3 cfs 0.019 af

Subcatchment10.5S: Runoff Area=8,921 sf 50.02% Impervious Runoff Depth=0.54"
Flow Length=338' Slope=0.0800 '/' Tc=6.0 min CN=66 Runoff=0.1 cfs 0.009 af

Subcatchment20.0S: Runoff Area=13,763 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=278' Tc=8.5 min CN=32 Runoff=0.0 cfs 0.000 af

Subcatchment20.1S: Runoff Area=22,291 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=404' Tc=25.1 min CN=30 Runoff=0.0 cfs 0.000 af

Subcatchment30.0S: Runoff Area=34,704 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=923' Tc=40.2 min CN=30 Runoff=0.0 cfs 0.000 af

Reach R1: Wooded Swale Avg. Flow Depth=0.07' Max Vel=0.15 fps Inflow=0.0 cfs 0.032 af
n=0.400 L=83.0' S=0.0819 '/' Capacity=4.9 cfs Outflow=0.0 cfs 0.032 af

Reach R2: Paved Parking Area Avg. Flow Depth=0.00' Max Vel=0.63 fps Inflow=0.0 cfs 0.032 af
n=0.016 L=106.0' S=0.0547 '/' Capacity=169.4 cfs Outflow=0.0 cfs 0.032 af

Reach R3: Grassed Swale Avg. Flow Depth=0.01' Max Vel=0.95 fps Inflow=0.0 cfs 0.032 af
n=0.030 L=131.0' S=0.1053 '/' Capacity=78.7 cfs Outflow=0.0 cfs 0.032 af

Reach R4: 18" CMP Culvert Avg. Flow Depth=0.17' Max Vel=2.67 fps Inflow=0.3 cfs 0.060 af
18.0" Round Pipe n=0.022 L=35.0' S=0.0314 '/' Capacity=11.0 cfs Outflow=0.3 cfs 0.060 af

Pond 1P: UDSF-1 Peak Elev=386.42' Storage=813 cf Inflow=0.4 cfs 0.032 af
Primary=0.0 cfs 0.032 af Secondary=0.0 cfs 0.000 af Outflow=0.0 cfs 0.032 af

Pond 2P: UDSF-2 Peak Elev=348.16' Storage=4,245 cf Inflow=1.0 cfs 0.162 af
Primary=0.0 cfs 0.142 af Secondary=0.0 cfs 0.000 af Outflow=0.0 cfs 0.142 af

Pond 3P: Dripedge 1 Peak Elev=370.56' Storage=280 cf Inflow=0.2 cfs 0.017 af
Primary=0.0 cfs 0.010 af Secondary=0.1 cfs 0.007 af Outflow=0.1 cfs 0.017 af

Pond 4P: Dripedge 2 Peak Elev=382.57' Storage=282 cf Inflow=0.3 cfs 0.019 af
Primary=0.0 cfs 0.010 af Secondary=0.2 cfs 0.009 af Outflow=0.2 cfs 0.019 af

Link POA1: U.S. 302 Inflow=0.4 cfs 0.188 af
Primary=0.4 cfs 0.188 af

Link POA2: Inflow=0.0 cfs 0.000 af
Primary=0.0 cfs 0.000 af

Link POA3: Inflow=0.0 cfs 0.000 af
Primary=0.0 cfs 0.000 af

Total Runoff Area = 5.348 ac Runoff Volume = 0.208 af Average Runoff Depth = 0.47"
63.37% Pervious = 3.389 ac 36.63% Impervious = 1.959 ac

Time span=0.00-50.00 hrs, dt=0.01 hrs, 5001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment10.0S: Runoff Area=25,083 sf 45.34% Impervious Runoff Depth=1.33"
Flow Length=350' Tc=9.9 min CN=67 Runoff=0.7 cfs 0.064 af

Subcatchment10.1S: Runoff Area=90,849 sf 51.49% Impervious Runoff Depth=1.33"
Flow Length=745' Tc=19.2 min CN=67 Runoff=2.1 cfs 0.232 af

Subcatchment10.2S: Runoff Area=4,223 sf 90.13% Impervious Runoff Depth=3.41"
Tc=6.0 min CN=92 Runoff=0.4 cfs 0.028 af

Subcatchment10.3S: Runoff Area=28,722 sf 51.93% Impervious Runoff Depth=1.33"
Flow Length=231' Tc=6.0 min CN=67 Runoff=1.0 cfs 0.073 af

Subcatchment10.4S: Runoff Area=4,400 sf 90.91% Impervious Runoff Depth=3.51"
Tc=6.0 min CN=93 Runoff=0.4 cfs 0.030 af

Subcatchment10.5S: Runoff Area=8,921 sf 50.02% Impervious Runoff Depth=1.27"
Flow Length=338' Slope=0.0800 '/' Tc=6.0 min CN=66 Runoff=0.3 cfs 0.022 af

Subcatchment20.0S: Runoff Area=13,763 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=278' Tc=8.5 min CN=32 Runoff=0.0 cfs 0.000 af

Subcatchment20.1S: Runoff Area=22,291 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=404' Tc=25.1 min CN=30 Runoff=0.0 cfs 0.000 af

Subcatchment30.0S: Runoff Area=34,704 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=923' Tc=40.2 min CN=30 Runoff=0.0 cfs 0.000 af

Reach R1: Wooded Swale Avg. Flow Depth=0.07' Max Vel=0.16 fps Inflow=0.0 cfs 0.052 af
n=0.400 L=83.0' S=0.0819 '/' Capacity=4.9 cfs Outflow=0.0 cfs 0.052 af

Reach R2: Paved Parking Area Avg. Flow Depth=0.00' Max Vel=0.63 fps Inflow=0.0 cfs 0.052 af
n=0.016 L=106.0' S=0.0547 '/' Capacity=169.4 cfs Outflow=0.0 cfs 0.052 af

Reach R3: Grassed Swale Avg. Flow Depth=0.02' Max Vel=0.99 fps Inflow=0.0 cfs 0.052 af
n=0.030 L=131.0' S=0.1053 '/' Capacity=78.7 cfs Outflow=0.0 cfs 0.052 af

Reach R4: 18" CMP Culvert Avg. Flow Depth=0.27' Max Vel=3.56 fps Inflow=0.8 cfs 0.116 af
18.0" Round Pipe n=0.022 L=35.0' S=0.0314 '/' Capacity=11.0 cfs Outflow=0.8 cfs 0.116 af

Pond 1P: UDSF-1 Peak Elev=387.05' Storage=2,422 cf Inflow=1.0 cfs 0.073 af
Primary=0.0 cfs 0.052 af Secondary=0.0 cfs 0.000 af Outflow=0.0 cfs 0.052 af

Pond 2P: UDSF-2 Peak Elev=349.55' Storage=11,108 cf Inflow=2.6 cfs 0.348 af
Primary=0.1 cfs 0.175 af Secondary=0.0 cfs 0.000 af Outflow=0.1 cfs 0.175 af

Pond 3P: Dripedge 1 Peak Elev=370.61' Storage=312 cf Inflow=0.4 cfs 0.028 af
Primary=0.0 cfs 0.011 af Secondary=0.3 cfs 0.017 af Outflow=0.3 cfs 0.028 af

Pond 4P: Dripedge 2 Peak Elev=382.61' Storage=308 cf Inflow=0.4 cfs 0.030 af
Primary=0.0 cfs 0.011 af Secondary=0.4 cfs 0.019 af Outflow=0.4 cfs 0.030 af

Link POA1: U.S. 302 Inflow=1.0 cfs 0.253 af
Primary=1.0 cfs 0.253 af

Link POA2: Inflow=0.0 cfs 0.000 af
Primary=0.0 cfs 0.000 af

Link POA3: Inflow=0.0 cfs 0.000 af
Primary=0.0 cfs 0.000 af

Total Runoff Area = 5.348 ac Runoff Volume = 0.448 af Average Runoff Depth = 1.00"
63.37% Pervious = 3.389 ac 36.63% Impervious = 1.959 ac

Time span=0.00-50.00 hrs, dt=0.01 hrs, 5001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment10.0S: Runoff Area=25,083 sf 45.34% Impervious Runoff Depth=2.09"
Flow Length=350' Tc=9.9 min CN=67 Runoff=1.2 cfs 0.100 af

Subcatchment10.1S: Runoff Area=90,849 sf 51.49% Impervious Runoff Depth=2.09"
Flow Length=745' Tc=19.2 min CN=67 Runoff=3.4 cfs 0.363 af

Subcatchment10.2S: Runoff Area=4,223 sf 90.13% Impervious Runoff Depth=4.48"
Tc=6.0 min CN=92 Runoff=0.5 cfs 0.036 af

Subcatchment10.3S: Runoff Area=28,722 sf 51.93% Impervious Runoff Depth=2.09"
Flow Length=231' Tc=6.0 min CN=67 Runoff=1.6 cfs 0.115 af

Subcatchment10.4S: Runoff Area=4,400 sf 90.91% Impervious Runoff Depth=4.59"
Tc=6.0 min CN=93 Runoff=0.5 cfs 0.039 af

Subcatchment10.5S: Runoff Area=8,921 sf 50.02% Impervious Runoff Depth=2.01"
Flow Length=338' Slope=0.0800 '/' Tc=6.0 min CN=66 Runoff=0.5 cfs 0.034 af

Subcatchment20.0S: Runoff Area=13,763 sf 0.00% Impervious Runoff Depth=0.06"
Flow Length=278' Tc=8.5 min CN=32 Runoff=0.0 cfs 0.002 af

Subcatchment20.1S: Runoff Area=22,291 sf 0.00% Impervious Runoff Depth=0.02"
Flow Length=404' Tc=25.1 min CN=30 Runoff=0.0 cfs 0.001 af

Subcatchment30.0S: Runoff Area=34,704 sf 0.00% Impervious Runoff Depth=0.02"
Flow Length=923' Tc=40.2 min CN=30 Runoff=0.0 cfs 0.001 af

Reach R1: Wooded Swale Avg. Flow Depth=0.16' Max Vel=0.24 fps Inflow=0.1 cfs 0.071 af
n=0.400 L=83.0' S=0.0819 '/' Capacity=4.9 cfs Outflow=0.1 cfs 0.071 af

Reach R2: Paved Parking Area Avg. Flow Depth=0.01' Max Vel=0.68 fps Inflow=0.1 cfs 0.071 af
n=0.016 L=106.0' S=0.0547 '/' Capacity=169.4 cfs Outflow=0.1 cfs 0.071 af

Reach R3: Grassed Swale Avg. Flow Depth=0.04' Max Vel=1.59 fps Inflow=0.1 cfs 0.071 af
n=0.030 L=131.0' S=0.1053 '/' Capacity=78.7 cfs Outflow=0.1 cfs 0.071 af

Reach R4: 18" CMP Culvert Avg. Flow Depth=0.34' Max Vel=4.10 fps Inflow=1.2 cfs 0.171 af
18.0" Round Pipe n=0.022 L=35.0' S=0.0314 '/' Capacity=11.0 cfs Outflow=1.2 cfs 0.171 af

Pond 1P: UDSF-1 Peak Elev=387.41' Storage=3,502 cf Inflow=1.6 cfs 0.115 af
Primary=0.1 cfs 0.071 af Secondary=0.0 cfs 0.000 af Outflow=0.1 cfs 0.071 af

Pond 2P: UDSF-2 Peak Elev=349.72' Storage=12,067 cf Inflow=4.3 cfs 0.534 af
Primary=0.5 cfs 0.341 af Secondary=0.0 cfs 0.000 af Outflow=0.5 cfs 0.341 af

Pond 3P: Dripedge 1 Peak Elev=370.63' Storage=328 cf Inflow=0.5 cfs 0.036 af
Primary=0.0 cfs 0.011 af Secondary=0.4 cfs 0.025 af Outflow=0.4 cfs 0.036 af

Pond 4P: Dripedge 2 Peak Elev=382.63' Storage=325 cf Inflow=0.5 cfs 0.039 af
Primary=0.0 cfs 0.011 af Secondary=0.5 cfs 0.028 af Outflow=0.5 cfs 0.039 af

Link POA1: U.S. 302 Inflow=1.4 cfs 0.450 af
Primary=1.4 cfs 0.450 af

Link POA2: Inflow=0.0 cfs 0.003 af
Primary=0.0 cfs 0.003 af

Link POA3: Inflow=0.0 cfs 0.001 af
Primary=0.0 cfs 0.001 af

Total Runoff Area = 5.348 ac Runoff Volume = 0.691 af Average Runoff Depth = 1.55"
63.37% Pervious = 3.389 ac 36.63% Impervious = 1.959 ac

Time span=0.00-50.00 hrs, dt=0.01 hrs, 5001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment10.0S: Runoff Area=25,083 sf 45.34% Impervious Runoff Depth=2.76"
Flow Length=350' Tc=9.9 min CN=67 Runoff=1.6 cfs 0.132 af

Subcatchment10.1S: Runoff Area=90,849 sf 51.49% Impervious Runoff Depth=2.76"
Flow Length=745' Tc=19.2 min CN=67 Runoff=4.6 cfs 0.479 af

Subcatchment10.2S: Runoff Area=4,223 sf 90.13% Impervious Runoff Depth=5.36"
Tc=6.0 min CN=92 Runoff=0.6 cfs 0.043 af

Subcatchment10.3S: Runoff Area=28,722 sf 51.93% Impervious Runoff Depth=2.76"
Flow Length=231' Tc=6.0 min CN=67 Runoff=2.1 cfs 0.152 af

Subcatchment10.4S: Runoff Area=4,400 sf 90.91% Impervious Runoff Depth=5.48"
Tc=6.0 min CN=93 Runoff=0.6 cfs 0.046 af

Subcatchment10.5S: Runoff Area=8,921 sf 50.02% Impervious Runoff Depth=2.66"
Flow Length=338' Slope=0.0800 '/' Tc=6.0 min CN=66 Runoff=0.6 cfs 0.045 af

Subcatchment20.0S: Runoff Area=13,763 sf 0.00% Impervious Runoff Depth=0.18"
Flow Length=278' Tc=8.5 min CN=32 Runoff=0.0 cfs 0.005 af

Subcatchment20.1S: Runoff Area=22,291 sf 0.00% Impervious Runoff Depth=0.11"
Flow Length=404' Tc=25.1 min CN=30 Runoff=0.0 cfs 0.005 af

Subcatchment30.0S: Runoff Area=34,704 sf 0.00% Impervious Runoff Depth=0.11"
Flow Length=923' Tc=40.2 min CN=30 Runoff=0.0 cfs 0.007 af

Reach R1: Wooded Swale Avg. Flow Depth=0.26' Max Vel=0.32 fps Inflow=0.2 cfs 0.108 af
n=0.400 L=83.0' S=0.0819 '/' Capacity=4.9 cfs Outflow=0.2 cfs 0.108 af

Reach R2: Paved Parking Area Avg. Flow Depth=0.01' Max Vel=1.03 fps Inflow=0.2 cfs 0.108 af
n=0.016 L=106.0' S=0.0547 '/' Capacity=169.4 cfs Outflow=0.2 cfs 0.108 af

Reach R3: Grassed Swale Avg. Flow Depth=0.07' Max Vel=2.23 fps Inflow=0.2 cfs 0.108 af
n=0.030 L=131.0' S=0.1053 '/' Capacity=78.7 cfs Outflow=0.2 cfs 0.108 af

Reach R4: 18" CMP Culvert Avg. Flow Depth=0.39' Max Vel=4.46 fps Inflow=1.6 cfs 0.240 af
18.0" Round Pipe n=0.022 L=35.0' S=0.0314 '/' Capacity=11.0 cfs Outflow=1.6 cfs 0.240 af

Pond 1P: UDSF-1 Peak Elev=387.41' Storage=3,526 cf Inflow=2.1 cfs 0.152 af
Primary=0.2 cfs 0.108 af Secondary=0.0 cfs 0.000 af Outflow=0.2 cfs 0.108 af

Pond 2P: UDSF-2 Peak Elev=349.76' Storage=12,266 cf Inflow=5.7 cfs 0.720 af
Primary=2.0 cfs 0.527 af Secondary=0.0 cfs 0.000 af Outflow=2.0 cfs 0.527 af

Pond 3P: Dripedge 1 Peak Elev=370.64' Storage=340 cf Inflow=0.6 cfs 0.043 af
Primary=0.0 cfs 0.011 af Secondary=0.5 cfs 0.032 af Outflow=0.5 cfs 0.043 af

Pond 4P: Dripedge 2 Peak Elev=382.65' Storage=338 cf Inflow=0.6 cfs 0.046 af
Primary=0.0 cfs 0.011 af Secondary=0.5 cfs 0.035 af Outflow=0.5 cfs 0.046 af

Link POA1: U.S. 302 Inflow=2.3 cfs 0.662 af
Primary=2.3 cfs 0.662 af

Link POA2: Inflow=0.0 cfs 0.009 af
Primary=0.0 cfs 0.009 af

Link POA3: Inflow=0.0 cfs 0.007 af
Primary=0.0 cfs 0.007 af

Total Runoff Area = 5.348 ac Runoff Volume = 0.915 af Average Runoff Depth = 2.05"
63.37% Pervious = 3.389 ac 36.63% Impervious = 1.959 ac

Summary for Subcatchment 10.0S:

Runoff = 1.2 cfs @ 12.15 hrs, Volume= 0.100 af, Depth= 2.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YEAR Rainfall=5.40"

	Area (sf)	CN	Description
*	10,799	98	Paved parking
*	574	98	Roofs
	1,246	96	Gravel surface, HSG A
	6,907	39	>75% Grass cover, Good, HSG A
	239	30	Meadow, non-grazed, HSG A
	5,318	30	Woods, Good, HSG A
	25,083	67	Weighted Average
	13,710		54.66% Pervious Area
	11,373		45.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	63	0.0800	0.12		**Sheet Flow, A to B** Woods: Light underbrush n= 0.400 P2= 3.00"
0.8	213	0.0500	4.54		**Shallow Concentrated Flow, B to C** Paved Kv= 20.3 fps
0.3	74	0.0800	4.24		**Shallow Concentrated Flow, C to D** Grassed Waterway Kv= 15.0 fps
9.9	350	Total			

Summary for Subcatchment 10.1S:

Runoff = 3.4 cfs @ 12.27 hrs, Volume= 0.363 af, Depth= 2.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YEAR Rainfall=5.40"

	Area (sf)	CN	Description
	16,240	39	>75% Grass cover, Good, HSG A
*	27,845	98	Paved parking
*	18,937	98	Roofs
	19,660	30	Woods, Good, HSG A
	8,167	30	Meadow, non-grazed, HSG A
	90,849	67	Weighted Average
	44,067		48.51% Pervious Area
	46,782		51.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.4	81	0.0460	0.10		**Sheet Flow, A to B** Woods: Light underbrush n= 0.400 P2= 3.00"
1.1	72	0.0500	1.12		**Shallow Concentrated Flow, B to C** Woodland Kv= 5.0 fps
0.2	54	0.5000	4.95		**Shallow Concentrated Flow, C to D** Short Grass Pasture Kv= 7.0 fps
1.9	228	0.0100	2.03		**Shallow Concentrated Flow, D to E** Paved Kv= 20.3 fps
1.4	94	0.0500	1.12		**Shallow Concentrated Flow, E to F** Woodland Kv= 5.0 fps
0.8	77	0.1000	1.58		**Shallow Concentrated Flow, F to G** Woodland Kv= 5.0 fps
0.0	32	0.0360	10.82	13.28	**Pipe Channel, G to H** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
0.4	107	0.0800	4.24		**Shallow Concentrated Flow, H to I** Grassed Waterway Kv= 15.0 fps
19.2	745	Total			

Summary for Subcatchment 10.2S:

Runoff = 0.5 cfs @ 12.08 hrs, Volume= 0.036 af, Depth= 4.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YEAR Rainfall=5.40"

	Area (sf)	CN	Description
*	3,806	98	Roofs
	417	39	>75% Grass cover, Good, HSG A
	4,223	92	Weighted Average
	417		9.87% Pervious Area
	3,806		90.13% Impervious Area

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

Summary for Subcatchment 10.3S:

Runoff = 1.6 cfs @ 12.09 hrs, Volume= 0.115 af, Depth= 2.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YEAR Rainfall=5.40"

	Area (sf)	CN	Description
	6,197	39	>75% Grass cover, Good, HSG A
*	8,916	98	Paved parking
*	6,000	98	Roofs
	7,609	30	Meadow, non-grazed, HSG A
	28,722	67	Weighted Average
	13,806		48.07% Pervious Area
	14,916		51.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	41	0.3300	0.42		**Sheet Flow, A to B** Grass: Short n= 0.150 P2= 3.00"
1.6	190	0.0100	2.03		**Shallow Concentrated Flow, B to C** Paved Kv= 20.3 fps
2.8					**Direct Entry, C to D**
6.0	231	Total			

Summary for Subcatchment 10.4S:

Runoff = 0.5 cfs @ 12.08 hrs, Volume= 0.039 af, Depth= 4.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YEAR Rainfall=5.40"

	Area (sf)	CN	Description
*	4,000	98	Roofs
	400	39	>75% Grass cover, Good, HSG A
	4,400	93	Weighted Average
	400		9.09% Pervious Area
	4,000		90.91% Impervious Area

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

Summary for Subcatchment 10.5S:

Runoff = 0.5 cfs @ 12.09 hrs, Volume= 0.034 af, Depth= 2.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YEAR Rainfall=5.40"

	Area (sf)	CN	Description
*	4,462	98	Paved parking
	1,606	39	>75% Grass cover, Good, HSG A
	1,120	30	Meadow, non-grazed, HSG A
	1,733	30	Woods, Good, HSG A
	8,921	66	Weighted Average
	4,459		49.98% Pervious Area
	4,462		50.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	150	0.0800	2.51		**Sheet Flow, A to B** Smooth surfaces n= 0.011 P2= 3.00"
0.5	188	0.0800	5.74		**Shallow Concentrated Flow, B to C** Paved Kv= 20.3 fps
4.5					**Direct Entry, C to D**
6.0	338	Total			

Summary for Subcatchment 20.0S:

Runoff = 0.0 cfs @ 15.63 hrs, Volume= 0.002 af, Depth= 0.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YEAR Rainfall=5.40"

Area (sf)	CN	Description
2,379	39	>75% Grass cover, Good, HSG A
11,384	30	Woods, Good, HSG A
13,763	32	Weighted Average
13,763		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	28	0.2900	0.17		**Sheet Flow, A to B** Woods: Light underbrush n= 0.400 P2= 3.00"
0.2	22	0.0900	1.50		**Shallow Concentrated Flow, B to C** Woodland Kv= 5.0 fps
0.2	38	0.4000	3.16		**Shallow Concentrated Flow, C to D** Woodland Kv= 5.0 fps
5.0	133	0.0080	0.45		**Shallow Concentrated Flow, D to E** Woodland Kv= 5.0 fps
0.4	57	0.2500	2.50		**Shallow Concentrated Flow, E to F** Woodland Kv= 5.0 fps
8.5	278	Total			

Summary for Subcatchment 20.1S:

Runoff = 0.0 cfs @ 21.84 hrs, Volume= 0.001 af, Depth= 0.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YEAR Rainfall=5.40"

Area (sf)	CN	Description
22,291	30	Woods, Good, HSG A
22,291		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.7	150	0.0476	0.12		**Sheet Flow, A to B** Woods: Light underbrush n= 0.400 P2= 3.00"
2.3	152	0.0470	1.08		**Shallow Concentrated Flow, B to C** Woodland Kv= 5.0 fps
1.1	102	0.1000	1.58		**Shallow Concentrated Flow, C to D** Woodland Kv= 5.0 fps
25.1	404	Total			

Summary for Subcatchment 30.0S:

Runoff = 0.0 cfs @ 22.11 hrs, Volume= 0.001 af, Depth= 0.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YEAR Rainfall=5.40"

Area (sf)	CN	Description
33,503	30	Woods, Good, HSG A
1,201	39	>75% Grass cover, Good, HSG A
34,704	30	Weighted Average
34,704		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.1	150	0.0364	0.10		**Sheet Flow, A to B** Woods: Light underbrush n= 0.400 P2= 3.00"
8.5	557	0.0476	1.09		**Shallow Concentrated Flow, B to C** Woodland Kv= 5.0 fps
7.6	216	0.0360	0.47		**Shallow Concentrated Flow, C to D** Forest w/Heavy Litter Kv= 2.5 fps
40.2	923	Total			

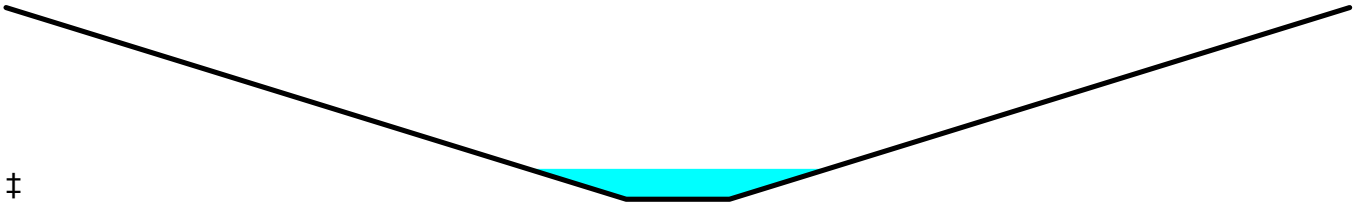
Summary for Reach R1: Wooded Swale

Inflow Area = 0.659 ac, 51.93% Impervious, Inflow Depth > 1.30" for 25-YEAR event
Inflow = 0.1 cfs @ 15.66 hrs, Volume= 0.071 af
Outflow = 0.1 cfs @ 15.79 hrs, Volume= 0.071 af, Atten= 3%, Lag= 8.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.24 fps, Min. Travel Time= 5.8 min
Avg. Velocity = 0.16 fps, Avg. Travel Time= 8.4 min

Peak Storage= 26 cf @ 15.79 hrs
Average Depth at Peak Storage= 0.16'
Bank-Full Depth= 1.00' Flow Area= 7.0 sf, Capacity= 4.9 cfs

1.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 6.0 '/' Top Width= 13.00'
Length= 83.0' Slope= 0.0819 '/'
Inlet Invert= 382.60', Outlet Invert= 375.80'



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Summary for Reach R2: Paved Parking Area

Inflow Area = 0.659 ac, 51.93% Impervious, Inflow Depth > 1.29" for 25-YEAR event
Inflow = 0.1 cfs @ 15.79 hrs, Volume= 0.071 af
Outflow = 0.1 cfs @ 15.82 hrs, Volume= 0.071 af, Atten= 0%, Lag= 1.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.68 fps, Min. Travel Time= 2.6 min
Avg. Velocity = 0.63 fps, Avg. Travel Time= 2.8 min

Peak Storage= 11 cf @ 15.82 hrs
Average Depth at Peak Storage= 0.01'
Bank-Full Depth= 0.50' Flow Area= 15.0 sf, Capacity= 169.4 cfs

20.00' x 0.50' deep channel, n= 0.016 Asphalt, rough
Side Slope Z-value= 20.0 '/' Top Width= 40.00'
Length= 106.0' Slope= 0.0547 '/'
Inlet Invert= 375.80', Outlet Invert= 370.00'

‡

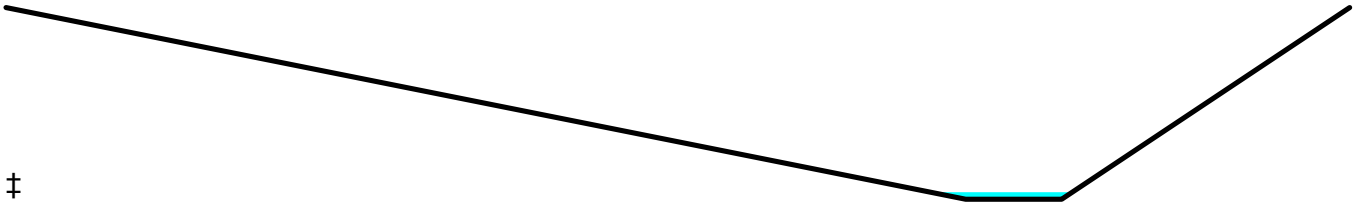
Summary for Reach R3: Grassed Swale

Inflow Area = 0.659 ac, 51.93% Impervious, Inflow Depth > 1.29" for 25-YEAR event
Inflow = 0.1 cfs @ 15.82 hrs, Volume= 0.071 af
Outflow = 0.1 cfs @ 15.84 hrs, Volume= 0.071 af, Atten= 0%, Lag= 1.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.59 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 1.05 fps, Avg. Travel Time= 2.1 min

Peak Storage= 6 cf @ 15.84 hrs
Average Depth at Peak Storage= 0.04'
Bank-Full Depth= 1.00' Flow Area= 7.5 sf, Capacity= 78.7 cfs

1.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 10.0 3.0 '/' Top Width= 14.00'
Length= 131.0' Slope= 0.1053 '/'
Inlet Invert= 370.00', Outlet Invert= 356.20'



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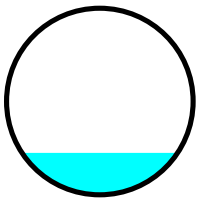
Summary for Reach R4: 18" CMP Culvert

Inflow Area = 1.235 ac, 48.86% Impervious, Inflow Depth > 1.66" for 25-YEAR event
Inflow = 1.2 cfs @ 12.15 hrs, Volume= 0.171 af
Outflow = 1.2 cfs @ 12.15 hrs, Volume= 0.171 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.10 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.39 fps, Avg. Travel Time= 0.4 min

Peak Storage= 10 cf @ 12.15 hrs
Average Depth at Peak Storage= 0.34'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 11.0 cfs

18.0" Round Pipe
n= 0.022
Length= 35.0' Slope= 0.0314 '/'
Inlet Invert= 361.10', Outlet Invert= 360.00'



Summary for Pond 1P: UDSF-1

Inflow Area = 0.659 ac, 51.93% Impervious, Inflow Depth = 2.09" for 25-YEAR event
Inflow = 1.6 cfs @ 12.09 hrs, Volume= 0.115 af
Outflow = 0.1 cfs @ 15.66 hrs, Volume= 0.071 af, Atten= 95%, Lag= 213.9 min
Primary = 0.1 cfs @ 15.66 hrs, Volume= 0.071 af
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 387.41' @ 15.66 hrs Surf.Area= 3,227 sf Storage= 3,502 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 804.8 min (1,655.8 - 851.1)

Volume	Invert	Avail.Storage	Storage Description
#1	383.83'	7,631 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
383.83	1,627	0.0	0	0
383.84	1,627	0.0	0	0
385.99	1,627	0.0	0	0
386.00	1,627	100.0	16	16
387.00	2,873	100.0	2,250	2,266
388.00	3,746	100.0	3,310	5,576
388.50	4,474	100.0	2,055	7,631

Device	Routing	Invert	Outlet Devices
#1	Primary	383.16'	**12.0" Round Culvert** L= 98.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 383.16' / 382.60' S= 0.0057 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	383.83'	**0.6" Vert. Orifice/Grate** C= 0.600
#3	Device 1	387.40'	**1.0" x 9.0" Horiz. Beehive Grate X 28.00** C= 0.600 Limited to weir flow at low heads
#4	Secondary	387.50'	**12.0' 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=0.1 cfs @ 15.66 hrs HW=387.41' TW=382.75' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.1 cfs of 5.8 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 0.0 cfs @ 9.07 fps)
└**3=Beehive Grate** (Weir Controls 0.1 cfs @ 0.24 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=383.83' TW=382.60' (Dynamic Tailwater)
└**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond 2P: UDSF-2

Inflow Area = 3.321 ac, 50.51% Impervious, Inflow Depth > 1.93" for 25-YEAR event
Inflow = 4.3 cfs @ 12.25 hrs, Volume= 0.534 af
Outflow = 0.5 cfs @ 13.93 hrs, Volume= 0.341 af, Atten= 87%, Lag= 100.8 min
Primary = 0.5 cfs @ 13.93 hrs, Volume= 0.341 af
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 349.72' @ 13.93 hrs Surf.Area= 5,817 sf Storage= 12,067 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 480.7 min (1,448.7 - 968.0)

Volume	Invert	Avail.Storage	Storage Description
#1	344.83'	18,961 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
344.83	3,000	0.0	0	0
344.84	3,000	0.0	0	0
346.99	3,000	0.0	0	0
347.00	3,000	100.0	30	30
348.00	4,078	100.0	3,539	3,569
349.00	5,064	100.0	4,571	8,140
350.00	6,107	100.0	5,586	13,725
350.80	6,982	100.0	5,236	18,961

Device	Routing	Invert	Outlet Devices
#1	Primary	344.16'	**12.0" Round Culvert** L= 36.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 344.16' / 343.90' S= 0.0072 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	344.83'	**1.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	349.70'	**1.0" x 9.0" Horiz. Beehive Grate X 28.00** C= 0.600 Limited to weir flow at low heads
#4	Secondary	349.80'	**20.0' 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=0.5 cfs @ 13.93 hrs HW=349.72' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.5 cfs of 6.7 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.1 cfs @ 10.60 fps)
  └─**3=Beehive Grate** (Weir Controls 0.5 cfs @ 0.48 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=344.83' TW=0.00' (Dynamic Tailwater)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond 3P: Dripedge 1

Inflow Area = 0.097 ac, 90.13% Impervious, Inflow Depth = 4.48" for 25-YEAR event
Inflow = 0.5 cfs @ 12.08 hrs, Volume= 0.036 af
Outflow = 0.4 cfs @ 12.12 hrs, Volume= 0.036 af, Atten= 9%, Lag= 2.2 min
Primary = 0.0 cfs @ 12.12 hrs, Volume= 0.011 af
Secondary = 0.4 cfs @ 12.12 hrs, Volume= 0.025 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 370.63' @ 12.12 hrs Surf.Area= 791 sf Storage= 328 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 241.9 min (1,022.2 - 780.3)

Volume	Invert	Avail.Storage	Storage Description
#1	368.99'	391 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
368.99	410	0.0	0	0
369.00	410	40.0	2	2
370.49	410	40.0	244	246
370.50	410	100.0	4	250
370.70	1,000	100.0	141	391

Device	Routing	Invert	Outlet Devices
#1	Primary	368.16'	**6.0" Round Culvert** L= 120.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 368.16' / 343.90' S= 0.2022 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#2	Device 1	368.16'	**0.3" Vert. Orifice** C= 0.600
#3	Secondary	370.50'	**3.5' long x 50.0' 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=0.0 cfs @ 12.12 hrs HW=370.63' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Passes 0.0 cfs of 1.1 cfs potential flow)
↑—**2=Orifice** (Orifice Controls 0.0 cfs @ 7.55 fps)

Secondary OutFlow Max=0.4 cfs @ 12.12 hrs HW=370.63' TW=0.00' (Dynamic Tailwater)
↑—**3=Broad-Crested Rectangular Weir** (Weir Controls 0.4 cfs @ 0.96 fps)

Summary for Pond 4P: Dripedge 2

Inflow Area = 0.101 ac, 90.91% Impervious, Inflow Depth = 4.59" for 25-YEAR event
Inflow = 0.5 cfs @ 12.08 hrs, Volume= 0.039 af
Outflow = 0.5 cfs @ 12.12 hrs, Volume= 0.039 af, Atten= 9%, Lag= 2.2 min
Primary = 0.0 cfs @ 12.12 hrs, Volume= 0.011 af
Secondary = 0.5 cfs @ 12.12 hrs, Volume= 0.028 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs

Peak Elev= 382.63' @ 12.12 hrs Surf.Area= 802 sf Storage= 325 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 222.0 min (998.0 - 776.0)

Volume	Invert	Avail.Storage	Storage Description
#1	380.99'	384 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
380.99	400	0.0	0	0
381.00	400	40.0	2	2
382.49	400	40.0	238	240
382.50	400	100.0	4	244
382.70	1,000	100.0	140	384

Device	Routing	Invert	Outlet Devices
#1	Primary	380.16'	**6.0" Round Culvert** L= 200.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 380.16' / 343.90' S= 0.1813 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#2	Device 1	380.16'	**0.3" Vert. Orifice** C= 0.600
#3	Secondary	382.50'	**3.5' long x 50.0' 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=0.0 cfs @ 12.12 hrs HW=382.63' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Passes 0.0 cfs of 1.1 cfs potential flow)
↑—**2=Orifice** (Orifice Controls 0.0 cfs @ 7.55 fps)

Secondary OutFlow Max=0.5 cfs @ 12.12 hrs HW=382.63' TW=0.00' (Dynamic Tailwater)
↑—**3=Broad-Crested Rectangular Weir** (Weir Controls 0.5 cfs @ 0.98 fps)

Summary for Link POA1: U.S. 302

Inflow Area = 3.724 ac, 52.61% Impervious, Inflow Depth > 1.45" for 25-YEAR event
Inflow = 1.4 cfs @ 12.11 hrs, Volume= 0.450 af
Primary = 1.4 cfs @ 12.11 hrs, Volume= 0.450 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs

Summary for Link POA2:

Inflow Area = 0.828 ac, 0.00% Impervious, Inflow Depth = 0.04" for 25-YEAR event
Inflow = 0.0 cfs @ 20.77 hrs, Volume= 0.003 af
Primary = 0.0 cfs @ 20.77 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.0 min

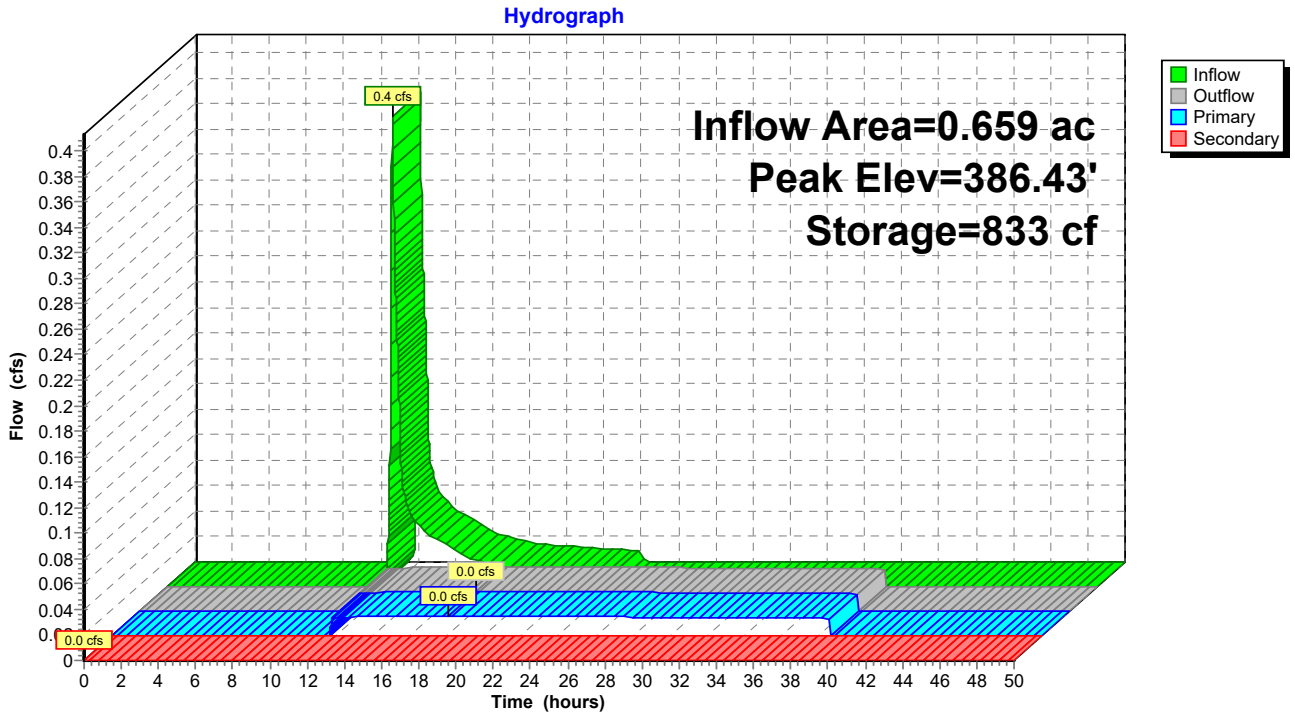
Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs

Summary for Link POA3:

Inflow Area = 0.797 ac, 0.00% Impervious, Inflow Depth = 0.02" for 25-YEAR event
Inflow = 0.0 cfs @ 22.11 hrs, Volume= 0.001 af
Primary = 0.0 cfs @ 22.11 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs

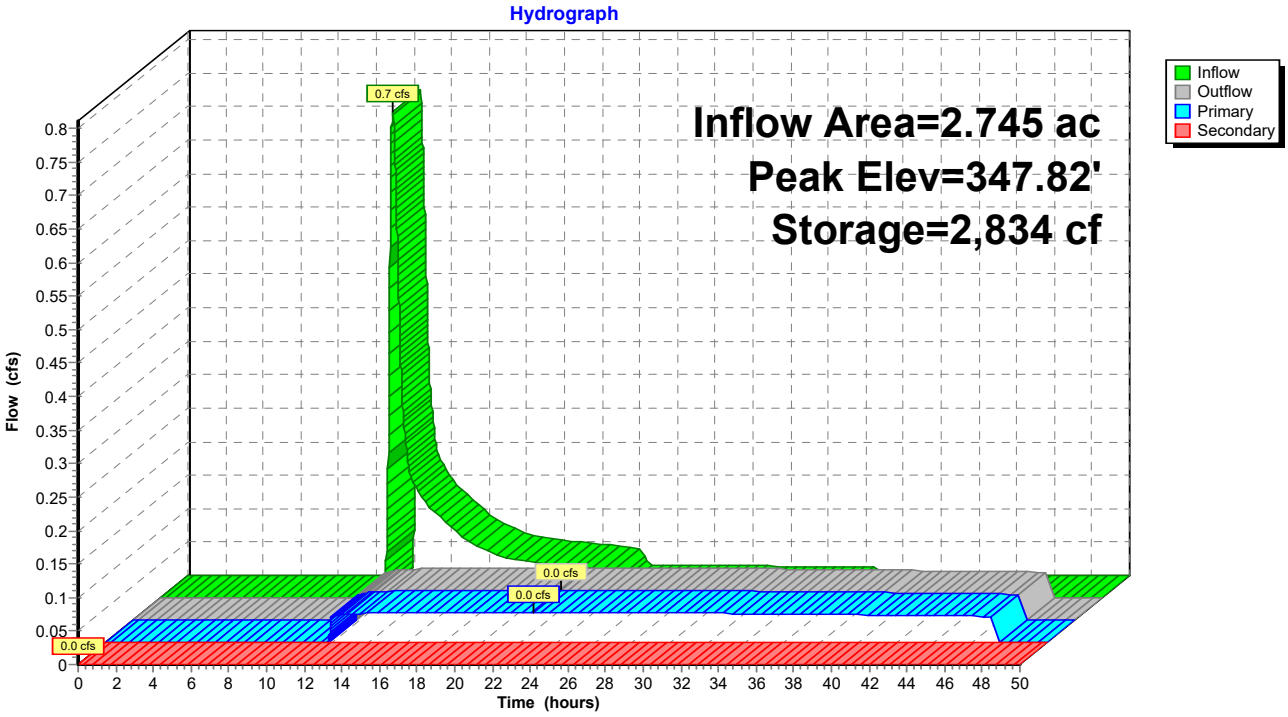
Pond 1P: UDSF-1



Hydrograph for Pond 1P: UDSF-1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.0	0	383.83	0.0	0.0	**0.0**
1.00	0.0	0	383.83	0.0	0.0	0.0
2.00	0.0	0	383.83	0.0	0.0	0.0
3.00	0.0	0	383.83	0.0	0.0	0.0
4.00	0.0	0	383.83	0.0	0.0	0.0
5.00	0.0	0	383.83	0.0	0.0	0.0
6.00	0.0	0	383.83	0.0	0.0	0.0
7.00	0.0	0	383.83	0.0	0.0	0.0
8.00	0.0	0	383.83	0.0	0.0	0.0
9.00	0.0	0	383.83	0.0	0.0	0.0
10.00	0.0	0	383.83	0.0	0.0	0.0
11.00	0.0	0	383.83	0.0	0.0	0.0
12.00	**0.1**	30	386.01	0.0	0.0	0.0
13.00	**0.1**	549	386.29	0.0	0.0	0.0
14.00	0.0	672	386.35	0.0	0.0	0.0
15.00	0.0	751	386.39	0.0	0.0	0.0
16.00	0.0	800	386.42	0.0	0.0	0.0
17.00	0.0	824	386.43	0.0	0.0	0.0
18.00	0.0	**833**	**386.43**	**0.0**	**0.0**	0.0
19.00	0.0	**830**	**386.43**	**0.0**	**0.0**	0.0
20.00	0.0	823	386.43	0.0	0.0	0.0
21.00	0.0	813	386.42	0.0	0.0	0.0
22.00	0.0	798	386.41	0.0	0.0	0.0
23.00	0.0	781	386.41	0.0	0.0	0.0
24.00	0.0	759	386.40	0.0	0.0	0.0
25.00	0.0	708	386.37	0.0	0.0	0.0
26.00	0.0	654	386.35	0.0	0.0	0.0
27.00	0.0	601	386.32	0.0	0.0	0.0
28.00	0.0	547	386.29	0.0	0.0	0.0
29.00	0.0	494	386.27	0.0	0.0	0.0
30.00	0.0	442	386.24	0.0	0.0	0.0
31.00	0.0	389	386.21	0.0	0.0	0.0
32.00	0.0	337	386.18	0.0	0.0	0.0
33.00	0.0	285	386.16	0.0	0.0	0.0
34.00	0.0	234	386.13	0.0	0.0	0.0
35.00	0.0	183	386.10	0.0	0.0	0.0
36.00	0.0	132	386.07	0.0	0.0	0.0
37.00	0.0	81	386.04	0.0	0.0	0.0
38.00	0.0	31	386.01	0.0	0.0	0.0
39.00	0.0	0	383.83	0.0	0.0	0.0
40.00	0.0	0	383.83	0.0	0.0	0.0
41.00	0.0	0	383.83	0.0	0.0	0.0
42.00	0.0	0	383.83	0.0	0.0	0.0
43.00	0.0	0	383.83	0.0	0.0	0.0
44.00	0.0	0	383.83	0.0	0.0	0.0
45.00	0.0	0	383.83	0.0	0.0	0.0
46.00	0.0	0	383.83	0.0	0.0	0.0
47.00	0.0	0	383.83	0.0	0.0	0.0
48.00	0.0	0	383.83	0.0	0.0	0.0
49.00	0.0	0	383.83	0.0	0.0	0.0
50.00	0.0	0	383.83	0.0	0.0	0.0

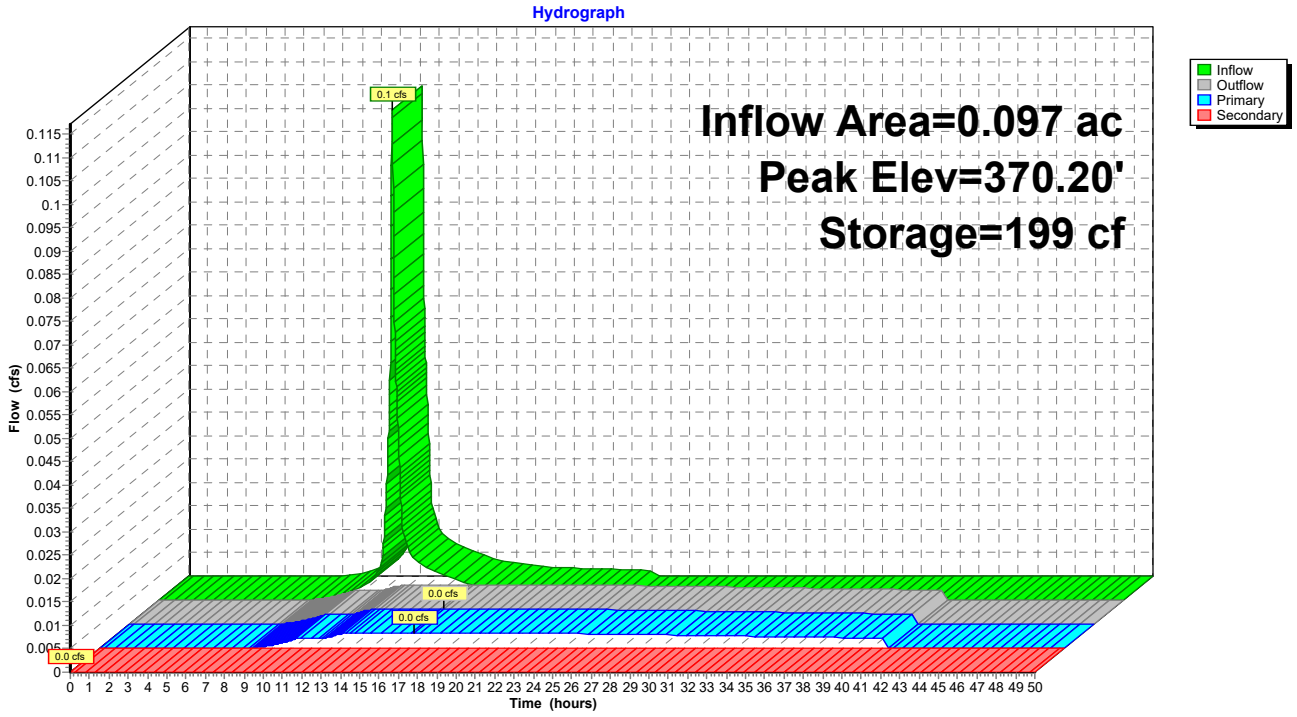
Pond 2P: UDSF-2



Hydrograph for Pond 2P: UDSF-2

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.0	0	344.83	0.0	0.0	**0.0**
1.00	0.0	0	344.83	0.0	0.0	0.0
2.00	0.0	0	344.83	0.0	0.0	0.0
3.00	0.0	0	344.83	0.0	0.0	0.0
4.00	0.0	0	344.83	0.0	0.0	0.0
5.00	0.0	0	344.83	0.0	0.0	0.0
6.00	0.0	0	344.83	0.0	0.0	0.0
7.00	0.0	0	344.83	0.0	0.0	0.0
8.00	0.0	0	344.83	0.0	0.0	0.0
9.00	0.0	0	344.83	0.0	0.0	0.0
10.00	0.0	0	344.83	0.0	0.0	0.0
11.00	0.0	0	344.83	0.0	0.0	0.0
12.00	**0.1**	2	346.99	0.0	0.0	0.0
13.00	**0.2**	1,476	347.45	0.0	0.0	0.0
14.00	0.1	1,951	347.58	0.0	0.0	0.0
15.00	0.1	2,261	347.66	0.0	0.0	0.0
16.00	0.1	2,480	347.72	0.0	0.0	0.0
17.00	0.1	2,616	347.76	0.0	0.0	0.0
18.00	0.1	2,705	347.78	0.0	0.0	0.0
19.00	0.1	2,757	347.80	0.0	0.0	0.0
20.00	0.1	2,794	347.80	0.0	0.0	0.0
21.00	0.1	2,817	347.81	0.0	0.0	0.0
22.00	0.0	**2,831**	**347.81**	**0.0**	**0.0**	0.0
23.00	0.0	**2,833**	**347.82**	**0.0**	**0.0**	0.0
24.00	0.0	2,825	347.81	0.0	0.0	0.0
25.00	0.0	2,744	347.79	0.0	0.0	0.0
26.00	0.0	2,636	347.76	0.0	0.0	0.0
27.00	0.0	2,529	347.74	0.0	0.0	0.0
28.00	0.0	2,422	347.71	0.0	0.0	0.0
29.00	0.0	2,316	347.68	0.0	0.0	0.0
30.00	0.0	2,210	347.65	0.0	0.0	0.0
31.00	0.0	2,105	347.62	0.0	0.0	0.0
32.00	0.0	2,000	347.59	0.0	0.0	0.0
33.00	0.0	1,895	347.56	0.0	0.0	0.0
34.00	0.0	1,792	347.54	0.0	0.0	0.0
35.00	0.0	1,688	347.51	0.0	0.0	0.0
36.00	0.0	1,585	347.48	0.0	0.0	0.0
37.00	0.0	1,473	347.45	0.0	0.0	0.0
38.00	0.0	1,324	347.40	0.0	0.0	0.0
39.00	0.0	1,174	347.36	0.0	0.0	0.0
40.00	0.0	1,026	347.31	0.0	0.0	0.0
41.00	0.0	879	347.27	0.0	0.0	0.0
42.00	0.0	733	347.23	0.0	0.0	0.0
43.00	0.0	588	347.18	0.0	0.0	0.0
44.00	0.0	446	347.14	0.0	0.0	0.0
45.00	0.0	304	347.09	0.0	0.0	0.0
46.00	0.0	164	347.04	0.0	0.0	0.0
47.00	0.0	25	347.00	0.0	0.0	0.0
48.00	0.0	0	344.83	0.0	0.0	0.0
49.00	0.0	0	344.83	0.0	0.0	0.0
50.00	0.0	0	344.83	0.0	0.0	0.0

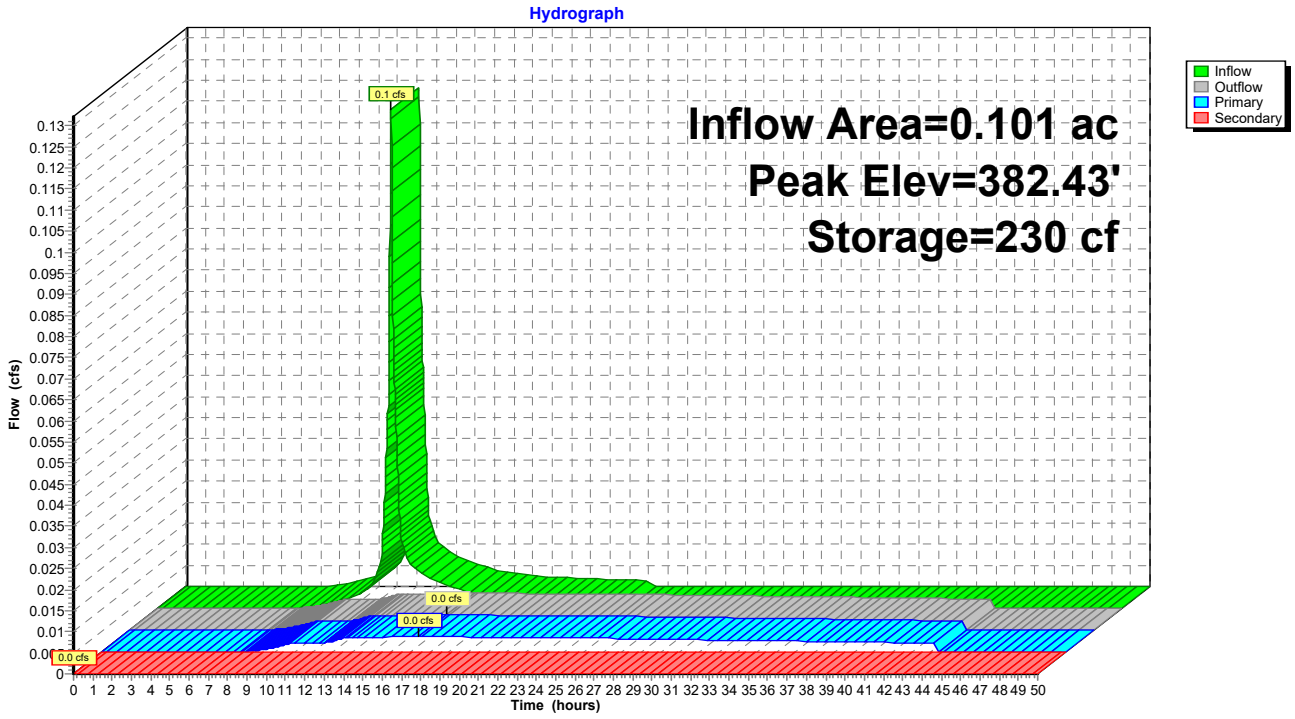
Pond 3P: Dripedge 1



Hydrograph for Pond 3P: Dripedge 1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.0	0	368.99	0.0	0.0	**0.0**
1.00	0.0	0	368.99	0.0	0.0	0.0
2.00	0.0	0	368.99	0.0	0.0	0.0
3.00	0.0	0	368.99	0.0	0.0	0.0
4.00	0.0	0	368.99	0.0	0.0	0.0
5.00	0.0	0	368.99	0.0	0.0	0.0
6.00	0.0	0	368.99	0.0	0.0	0.0
7.00	0.0	0	368.99	0.0	0.0	0.0
8.00	0.0	0	368.99	0.0	0.0	0.0
9.00	0.0	0	368.99	0.0	0.0	0.0
10.00	0.0	0	368.99	0.0	0.0	0.0
11.00	0.0	3	369.01	0.0	0.0	0.0
12.00	**0.1**	47	369.28	0.0	0.0	0.0
13.00	**0.0**	168	370.02	0.0	0.0	0.0
14.00	0.0	186	370.12	0.0	0.0	0.0
15.00	0.0	195	370.18	0.0	0.0	0.0
16.00	0.0	**199**	**370.20**	**0.0**	**0.0**	0.0
17.00	0.0	**198**	**370.20**	**0.0**	**0.0**	0.0
18.00	0.0	195	370.18	0.0	0.0	0.0
19.00	0.0	191	370.15	0.0	0.0	0.0
20.00	0.0	186	370.12	0.0	0.0	0.0
21.00	0.0	180	370.09	0.0	0.0	0.0
22.00	0.0	174	370.05	0.0	0.0	0.0
23.00	0.0	167	370.01	0.0	0.0	0.0
24.00	0.0	160	369.97	0.0	0.0	0.0
25.00	0.0	150	369.90	0.0	0.0	0.0
26.00	0.0	139	369.83	0.0	0.0	0.0
27.00	0.0	128	369.77	0.0	0.0	0.0
28.00	0.0	117	369.70	0.0	0.0	0.0
29.00	0.0	107	369.64	0.0	0.0	0.0
30.00	0.0	96	369.58	0.0	0.0	0.0
31.00	0.0	86	369.52	0.0	0.0	0.0
32.00	0.0	77	369.46	0.0	0.0	0.0
33.00	0.0	67	369.40	0.0	0.0	0.0
34.00	0.0	58	369.34	0.0	0.0	0.0
35.00	0.0	49	369.29	0.0	0.0	0.0
36.00	0.0	40	369.23	0.0	0.0	0.0
37.00	0.0	31	369.18	0.0	0.0	0.0
38.00	0.0	23	369.13	0.0	0.0	0.0
39.00	0.0	15	369.08	0.0	0.0	0.0
40.00	0.0	7	369.03	0.0	0.0	0.0
41.00	0.0	0	368.99	0.0	0.0	0.0
42.00	0.0	0	368.99	0.0	0.0	0.0
43.00	0.0	0	368.99	0.0	0.0	0.0
44.00	0.0	0	368.99	0.0	0.0	0.0
45.00	0.0	0	368.99	0.0	0.0	0.0
46.00	0.0	0	368.99	0.0	0.0	0.0
47.00	0.0	0	368.99	0.0	0.0	0.0
48.00	0.0	0	368.99	0.0	0.0	0.0
49.00	0.0	0	368.99	0.0	0.0	0.0
50.00	0.0	0	368.99	0.0	0.0	0.0

Pond 4P: Dripedge 2



Hydrograph for Pond 4P: Dripedge 2

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.0	0	380.99	0.0	0.0	**0.0**
1.00	0.0	0	380.99	0.0	0.0	0.0
2.00	0.0	0	380.99	0.0	0.0	0.0
3.00	0.0	0	380.99	0.0	0.0	0.0
4.00	0.0	0	380.99	0.0	0.0	0.0
5.00	0.0	0	380.99	0.0	0.0	0.0
6.00	0.0	0	380.99	0.0	0.0	0.0
7.00	0.0	0	380.99	0.0	0.0	0.0
8.00	0.0	0	380.99	0.0	0.0	0.0
9.00	0.0	0	380.99	0.0	0.0	0.0
10.00	0.0	0	380.99	0.0	0.0	0.0
11.00	0.0	6	381.03	0.0	0.0	0.0
12.00	**0.1**	59	381.36	0.0	0.0	0.0
13.00	**0.0**	195	382.21	0.0	0.0	0.0
14.00	0.0	215	382.33	0.0	0.0	0.0
15.00	0.0	225	382.40	0.0	0.0	0.0
16.00	0.0	**230**	**382.43**	**0.0**	**0.0**	0.0
17.00	0.0	**230**	**382.42**	**0.0**	**0.0**	0.0
18.00	0.0	227	382.41	0.0	0.0	0.0
19.00	0.0	222	382.38	0.0	0.0	0.0
20.00	0.0	217	382.35	0.0	0.0	0.0
21.00	0.0	211	382.31	0.0	0.0	0.0
22.00	0.0	205	382.27	0.0	0.0	0.0
23.00	0.0	198	382.23	0.0	0.0	0.0
24.00	0.0	191	382.18	0.0	0.0	0.0
25.00	0.0	179	382.11	0.0	0.0	0.0
26.00	0.0	168	382.04	0.0	0.0	0.0
27.00	0.0	156	381.97	0.0	0.0	0.0
28.00	0.0	145	381.90	0.0	0.0	0.0
29.00	0.0	134	381.83	0.0	0.0	0.0
30.00	0.0	123	381.76	0.0	0.0	0.0
31.00	0.0	112	381.69	0.0	0.0	0.0
32.00	0.0	102	381.63	0.0	0.0	0.0
33.00	0.0	92	381.56	0.0	0.0	0.0
34.00	0.0	82	381.50	0.0	0.0	0.0
35.00	0.0	72	381.44	0.0	0.0	0.0
36.00	0.0	63	381.38	0.0	0.0	0.0
37.00	0.0	54	381.32	0.0	0.0	0.0
38.00	0.0	45	381.27	0.0	0.0	0.0
39.00	0.0	36	381.21	0.0	0.0	0.0
40.00	0.0	27	381.16	0.0	0.0	0.0
41.00	0.0	19	381.11	0.0	0.0	0.0
42.00	0.0	11	381.06	0.0	0.0	0.0
43.00	0.0	3	381.01	0.0	0.0	0.0
44.00	0.0	0	380.99	0.0	0.0	0.0
45.00	0.0	0	380.99	0.0	0.0	0.0
46.00	0.0	0	380.99	0.0	0.0	0.0
47.00	0.0	0	380.99	0.0	0.0	0.0
48.00	0.0	0	380.99	0.0	0.0	0.0
49.00	0.0	0	380.99	0.0	0.0	0.0
50.00	0.0	0	380.99	0.0	0.0	0.0

Appendix 3

Inspection, Maintenance and Housekeeping Plan

20522

INSPECTION, MAINTENANCE, AND HOUSEKEEPING PLAN
Naples Self-Storage
Naples, Maine

Prepared by Christopher P. Taylor, P.E., Sebago Technics, Inc.

Introduction

The following plan outlines the anticipated inspection and maintenance procedures for the erosion and sedimentation control measures as well as stormwater management facilities for the project. This plan also outlines several housekeeping requirements that shall be followed during and after construction. These procedures shall be followed in order to ensure the intended function of the designed measures and to prevent unreasonably adverse impacts to the surrounding environment.

The procedures outlined in this Inspection, Maintenance, and Housekeeping Plan are provided as an overview of the anticipated practices to be used on this site by the contractor during construction and by the Town of Naples after construction. In some instances, additional measures may be required due to unexpected conditions. For additional details 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 and the erosion and sedimentation control plan for the project. 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 per week as well as before and after a storm event of 0.5" of rain in 24-hours, 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. Correction action shall be performed in general conformance with the Maine Construction General Permit and Maine DEP Chapter 500 Stormwater standards. 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. Filter Berms:

- Hay bale barriers, silt fences, and filter berms shall be inspected immediately after each storm event of greater than 0.5 inches in a 24-hour period 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. Erosion Control Blankets:

- Inspect these reinforced areas semi-annually and after significant rainfall events of greater than 0.5 inches in a 24-hour period for slumping, sliding, seepage, and scour. Pay close attention to unreinforced areas adjacent to the erosion control blankets, which may experience accelerated erosion.
- Review all applicable inspection and maintenance procedures recommended by the specific blanket manufacturer. These tasks shall be included in addition to the requirements of this plan.

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 of greater than 0.5 inches in a 24-hour period. 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.

G. Dewatering:

- Collected water needs a treatment and discharge point that will not cause downgradient erosion and offsite sedimentation or within a resource.
- Any dewatering that takes place shall be filtered through a geotextile filter bag or silt sack prior to any discharge.
- Filter bags and silt sacks must be inspected daily to assure that water is being filtered properly.
- All areas where erosion takes place must be repaired immediately and maintained until the site is fully stabilized.

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. A Spill, Prevention, Control and Countermeasures Plan is to be kept onsite at all times.

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

1. **Inspection:** After construction, it is the responsibility of the owner 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.

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 0.5-inches of rainfall in a 24-hour period 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.

   B. Ditches, Swales and Other Open Channels:

   - Inspect ditches, swales, level spreaders and other open stormwater channels in the spring, in the late fall, and after storm events of greater than 0.5 inches in a 24-hour period to remove any obstructions 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. Winter Sanding:

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

D. Culverts:

- Inspect culverts in the spring, in the late fall, and after 1-inch of rainfall in 24-hours 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.

E. Underdrained Soil Filter:

- The soil filter outlet structure and outlet of the soil filter should be checked periodically to ensure that flow structures are not blocked by debris. All ditches or pipes connecting soil filters in series should be checked for debris that may obstruct flow. Inspections should be conducted monthly during wet weather conditions from March to November.
- The soil filter and outlet should be inspected bi-annually for erosion, destabilization of side slopes, embankment settling and other signs of structural failure. Any signs of erosion shall be immediately repaired to assure stability and proper function.
- The soil filter will be inspected on a bi-annual basis to assure that significant sediment accumulation has not occurred in the pond outlet structure. Whenever the filter bed is inundated with sediment, the accumulated sediment shall be removed and property disposed of.

F. Stone Drip Edge Filter:

- Drip edge filters should be inspected bi-annually and after major storm events. Remove debris and sediment buildup.
- Inspect stone bi-annually and after major storm events to ensure there is no excessive ponding.
- Inspect discharge pipe bi-annually and after major storm events to ensure there is no erosion occurring at the outlet.

3. Documentation:

A. 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. Post-construction inspection and maintenance documentation shall be maintained for a minimum of five years. The log must be made accessible to the appropriate regulatory agency upon request. A sample "Stormwater Inspection and Maintenance Log" has been included as Attachment 1 of this Inspection, Maintenance, and Housekeeping Plan.

4. Maine DEP Recertification: A certification of the following shall be submitted to the MDEP within three months of the expiration of each five-year interval from the date of issuance of MDEP permits.

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

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

C. The Inspection, Maintenance, and Housekeeping Plan for the site is being implemented as written, or modifications to the plan have been submitted to and approved by the MDEP, and the maintenance log is being maintained.

5. Duration of Maintenance: Perform maintenance as described and required for any associated permits unless and until the system is formally accepted by a municipality or quasi-municipal district, or is placed under the jurisdiction of a legally created association that will be responsible for the maintenance of the system. If a municipality or quasi-municipal district chooses to accept a stormwater management system, or a component of a stormwater system, it must provide a letter to the MDEP stating that it assumes responsibility for the system. The letter must specify the components of the system for which the municipality or district will assume responsibility, and that the municipality or district agrees to maintain those components of the system in compliance with MDEP standards. Upon such assumption of responsibility, and approval by the MDEP, the municipality, quasi-municipal district, or association becomes a co-permittee for this purpose only and must comply with all terms and conditions of the permit.

Attachments

Attachment 1 – Stormwater Inspection and Maintenance Log
Attachment 2 – Stormwater Inspection and Maintenance Log – Underdrained Soil Filter
Attachment 3 – Stormwater Inspection and Maintenance Log – Roof Drip Edge Filter

General Site

INSPECTION MAINTENANCE AND HOUSEKEEPING FORM			
General Information			
Project Name:		**Inspection Date:**	
Project Location:		**Current Weather:**	
		Date / Amount Last Precip:	
BMP Owner:		**Company conducting inspection:**	
Owner Mailing Address:		**Company Mailing Address**	
Owner Phone #:		**Company Phone #:**	
Owner Email:		**Inspector Name:**	
		Inspector Email:	

Site Element	Suggested Maintenance (recm'd frequency)	Observations	Inspection Notes/Recommended Action
Vegetated Areas	Inspect Slopes/Embankments for erosion (annually)		
	Replant bare areas or areas of sparse growth (annually)		
Ditches/Swales	Remove obstructions/debris/sediment (monthly)		
	Inspect for erosion/repair as needed (annually)		
	Remove woody vegetation (annually)		
	Mow vegetated ditches (annually)		
Catch Basins	Remove sediment/debris from sump (annually)		
	Remove accumulated debris from inlet grate		
Culverts	Remove sediment/debris from inlet/outlet aprons (annually)		
	Inspect inlet/outlet aprons for erosion, repair as needed (annually)		
	Inspect, repair as needed, riprap aprons for dislodged/sparse coverage (annually)		
Pipe Outlets	Remove sediment/debris from outlet aprons (annually)		
	Inspect outlet aprons for erosion, repair as needed (annually)		
	Inspect, repair as needed, riprap aprons for dislodged/sparse coverage (annually)		

Additional Notes/Observations:

Underdrain Soil Filter

INSPECTION MAINTENANCE AND HOUSEKEEPING FORM			
General Information			
Project Name:		**Inspection Date:**	
Project Location:		**Current Weather:**	
		Date / Amount Last Precip:	
BMP Owner:		**Company conducting inspection:**	
Owner Mailing Address:		**Company Mailing Address**	
Owner Phone #:		**Company Phone #:**	
Owner Email:		**Inspector Name:**	
		Inspector Email:	

BMP Element	Suggested Maintenance (recm'd frequency)	Observations	Inspection Notes/Recommended Action
Forebay/Pretreatment	Sediment/Debris Removal (Annually)		
	Inspect for bare areas or rill erosion (Annually)		
Outlet Control Structure	Sediment Depth (Annually)		
	Floatables/Debris (Annually)		
Discharge Pipe	Ground Stabilized (>1" rain, Annually)		
Emergency Spillway	Review for signs of erosion (Twice Annually)		
	Review for signs of discharge (>1" rain, twice annually)		
Embankments	Review for signs of erosion (Twice Annually)		
Filter Bed	Trim overgrown vegetation with string trimmer (annually)		
	Review basin for evidence of vehicular traffic or storage of snow within footprint (annually)		
	Confirm pond drains in 24-48 hours for water quality volume (annually)		

Additional Notes/Observations:

Roof Drip Edge Filter

INSPECTION MAINTENANCE AND HOUSEKEEPING FORM			
General Information			
Project Name:		**Inspection Date:**	
Project Location:		**Current Weather:**	
		Date / Amount Last Precip:	
BMP Owner:		**Company conducting inspection:**	
Owner Mailing Address:		**Company Mailing Address**	
Owner Phone #:		**Company Phone #:**	
Owner Email:		**Inspector Name:**	
		Inspector Email:	

BMP Element	Suggested Maintenance (recm'd frequency)	Observations	Inspection Notes/Recommended Action
Pretreatment	Sediment/Debris Removal (Annually)		
	Inspect for bare areas or rill erosion (Annually)		
Downstream Structure	Sediment Depth (Annually)		
	Floatables/Debris (Annually)		
Discharge Pipe	Ground Stabilized (>1" rain, Annually)		
Embankments	Review for signs of erosion (Twice Annually)		
Stone	Trim overgrown vegetation with string trimmer (annually)		
	Review trench for evidence of vehicular traffic or storage of snow within footprint (annually)		
	Confirm no excessive ponding of water (annually)		

Additional Notes/Observations:

Appendix 4

Subsurface Investigations

Cumberland County and Part of Oxford County, Maine

HgB—Hermon sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2w9r8
Elevation: 0 to 950 feet
Mean annual precipitation: 31 to 65 inches
Mean annual air temperature: 36 to 52 degrees F
Frost-free period: 90 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Hermon

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Backslope, summit, shoulder
Landform position (three-dimensional): Mountainbase, interfluve, base slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Sandy and gravelly supraglacial meltout till derived from granite and gneiss

Typical profile

Ap - 0 to 9 inches: sandy loam
Bs1 - 9 to 16 inches: very gravelly sandy loam
Bs2 - 16 to 32 inches: extremely gravelly loamy sand
C - 32 to 65 inches: very gravelly coarse sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (1.42 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A

Hydric soil rating: No

Minor Components

Monadnock

Percent of map unit: 4 percent
Landform: Mountains, hills
Landform position (two-dimensional): Backslope, summit, shoulder
Landform position (three-dimensional): Mountainbase, interfluve, base slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Skerry

Percent of map unit: 4 percent
Landform: Hills, mountains
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Mountainbase, interfluve, base slope
Microfeatures of landform position: Closed depressions, closed depressions
Down-slope shape: Convex, concave
Across-slope shape: Linear, concave
Hydric soil rating: No

Tunbridge

Percent of map unit: 2 percent
Landform: Mountains, hills
Landform position (two-dimensional): Backslope, summit, shoulder
Landform position (three-dimensional): Mountainbase, interfluve, base slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Data Source Information

Soil Survey Area: Cumberland County and Part of Oxford County, Maine
Survey Area Data: Version 17, Jun 5, 2020

Map Scale: 1:3,090 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 45 90 180 270

Feet: 0 150 300 600 900

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

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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

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 17, Jun 5, 2020

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

Date(s) aerial images were photographed: Sep 5, 2013—Oct 22, 2017

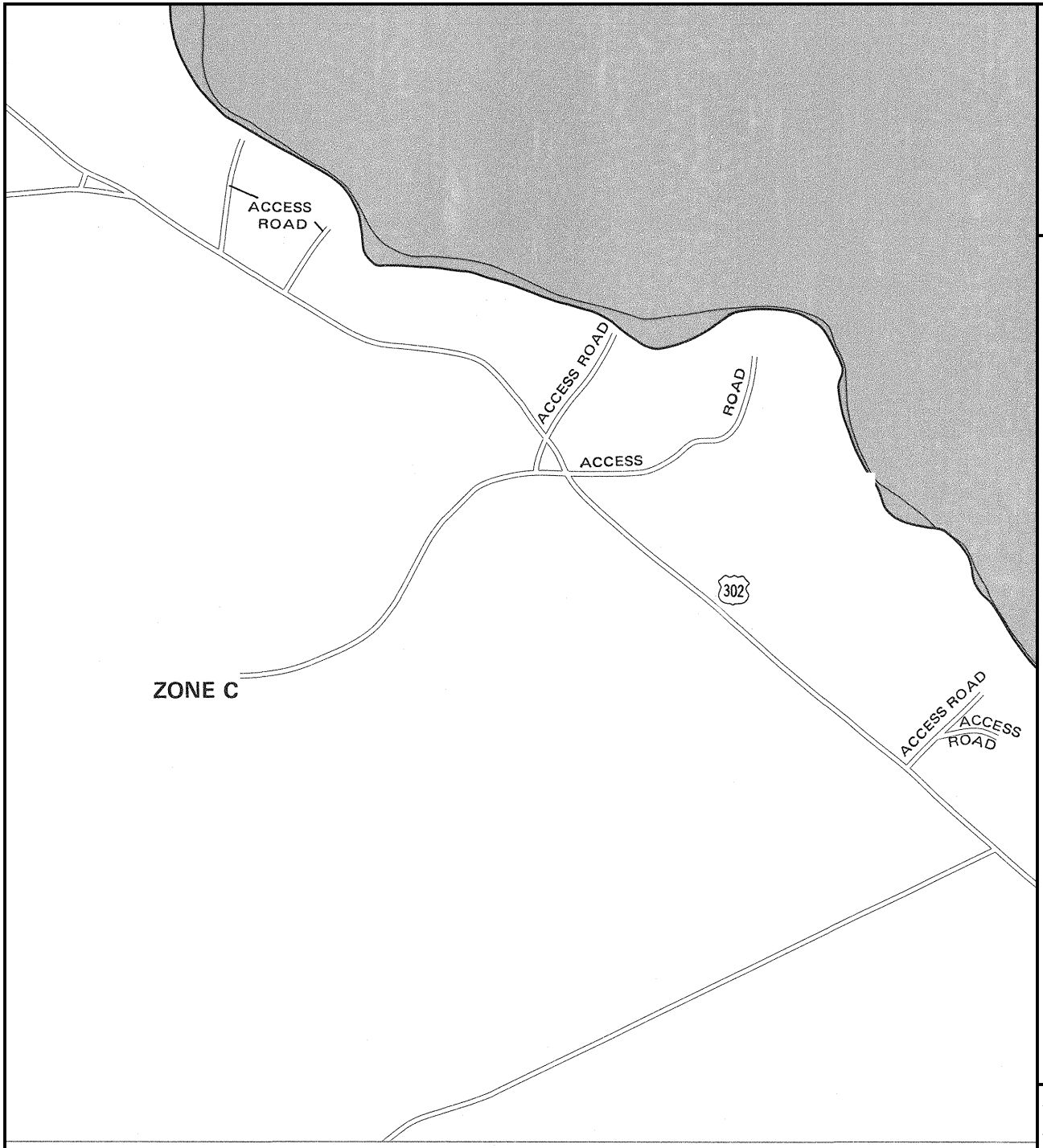
The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
HgB	Hermon sandy loam, 3 to 8 percent slopes	7.7	18.4%
HgC	Hermon sandy loam, 8 to 15 percent slopes	4.1	9.8%
HhB	Hermon sandy loam, 0 to 8 percent slopes, very stony	9.3	22.3%
HhC	Hermon sandy loam, 8 to 15 percent slopes, very stony	14.0	33.8%
PlB	Peru fine sandy loam, 0 to 8 percent slopes, very stony	4.3	10.3%
PlC	Peru fine sandy loam, 8 to 15 percent slopes, very stony	2.2	5.4%
Totals for Area of Interest		**41.5**	**100.0%**

Appendix 5

Flood Insurance Rate Map



PROXIMATE SCALE

800 0 800 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

TOWN OF
NAPLES, MAINE
CUMBERLAND COUNTY

PANEL 5 OF 25
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
230050 0005 B

EFFECTIVE DATE:
APRIL 1, 1982

Federal Emergency Management Agency

Appendix 6

Stormwater Management Plans