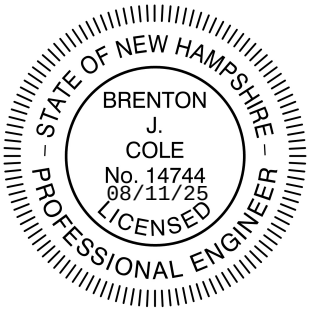
STORMWATER MANAGEMENT REPORT



GRANITE ENGINEERING

civil engineering ● land planning ● municipal services

GORDON SERVICES - KEENE

Keene: Map 215; Lots 7 & 8
Sullivan: Map 5; Lots 46 & 46-1
57 Route 9
Keene & Sullivan, New Hampshire
January 22, 2025
Revised: July 9, 2025

PREPARED FOR:
G2 HOLDINGS, LLC
250 NORTH STREET
JAFFREY, NH 03452

PREPARED BY:
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150 DOW STREET, TOWER 2, SUITE 421
MANCHESTER, NH 03101
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GE Project No. 23-0201-1

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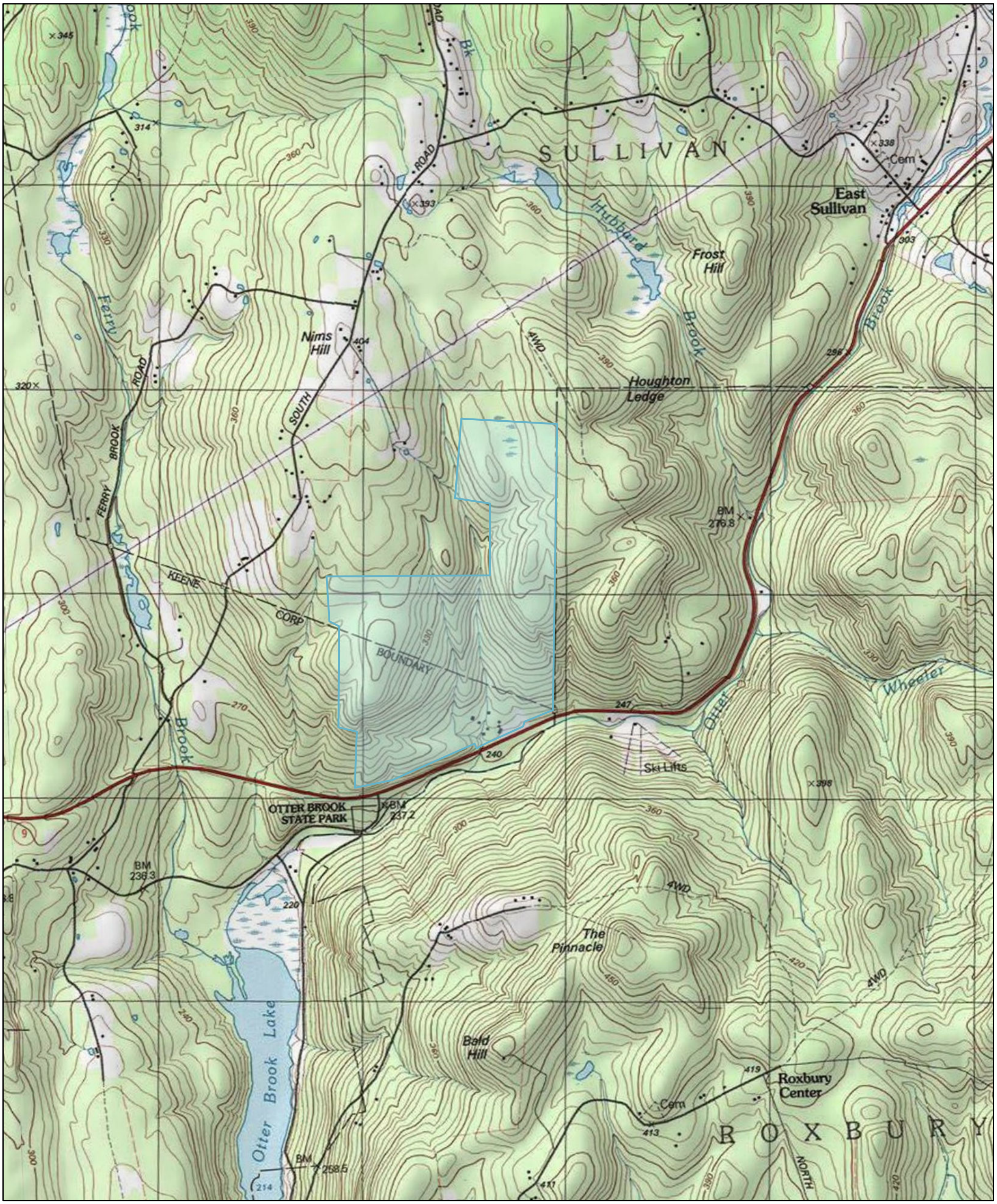
1. USGS MAP

USGS Map



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2. PROJECT NARRATIVE

I. INTRODUCTION

A. Project Description

The subject properties propose the expansion of an existing gravel and earth removal operation for G2 Holdings, LLC. The properties are located at 57 Route 9 in Keene and Sullivan, New Hampshire. The majority of the site is located within the Keene R (Rural) Zoning District. A proposed gravel road will be constructed to access various points on the site. Stormwater runoff will be managed through a series of sediment basins that connect to an existing infiltration pond.

B. Existing Site Conditions

Keene Tax Map 215 Lot 7 is approximately 78.4 acres in area. Keene Tax Map 215 Lot 8 is approximately 23.1 acres in area. Sullivan Tax Map 5 Lot 46 is approximately 169.0 acres in area. Tax map 5 Lot 46-1 is approximately 28.1 acres in area. The total area of all four subject properties is therefore 298.6 acres in area. The property is currently developed with a gravel removal operation. There are wetlands on the properties to the north and east. There is an existing, previously permitted, stormwater basin located to the south of the property, closest to Route 9.

According to the Site Specific Soil Survey, the predominant onsite soil types are Sunapee, Tunbridge Lyman Rock Outcrop, and Lyman.

Please refer to sections three (3) and eight (8) of this stormwater report for project specific NRCS soils and SSSS report information.

II. STORM DRAINAGE ANALYSIS & DESIGN

A. Methodology

The purpose of this analysis was to determine if the proposed sediment ponds could capture, detain, and release the stormwater flows through small, controlled, outlet pipes to both the existing infiltration area located currently on-site, as well as the proposed infiltration area to be completed during the final phase of the project (Period 8).

In accordance with generally accepted engineering practice, the 2-year, 10-year, 25-year, 50-year and 100-year frequency storm has been used in the various aspects of analysis and design of stormwater management considerations for the subject site. Stormwater-treatment provisions and all drainage facilities have been designed to be fully functional during a 50-year return frequency storm.

In appreciation of the benefits and limitations related to each of the various methods available to design professionals for estimating peak stormwater discharge rates for use in analysis and design, the TR-20 computer model was used. Values for Time of Concentration used in the analysis were estimated using the methodology contained within USDA-S.C.S. publication Urban Hydrology for Small Watersheds Technical Release No. 55 (TR 55).

All proposed stormwater inlet structures were designed to remain under inlet control throughout a design storm of the return frequency noted. Outlet protection for each discharging culvert was designed in accordance with the methodology for the "best management practice", in accordance with a publication entitled New Hampshire Stormwater Manual Volume 2: Post-Construction Best Management Practices Selection and Design. In addition, this publication served as the primary reference for the numerous temporary and permanent erosion control methods incorporated into the design of this project.

All design and analysis calculations performed using the referenced methodologies are attached to this report. The minimum time of concentrations used for the analysis is 6 minutes. These calculations document each catchment area, a breakdown of surface type, time of concentration, rainfall intensity, peak discharge volume, Manning's "n" value, peak velocity, and other descriptive design data for each watershed and pipe segment evaluated. In addition, the "Post Development Drainage Area Plans" graphically define and illustrate the extent of each watershed or catchment area investigated.

B. Post-Development Drainage Conditions

In order to evaluate the impact of the proposed development, two (2) Point of Analysis (POA) was analyzed to demonstrate that the peak rates of runoff would not increase from the site improvements.

The first POA, Link A, is located in the wetlands adjacent to Route 9 and directly south of the proposed project area. Within the wetlands, there is an 18" culvert directing runoff to the southern side of Route 9. This culvert has been shown on DOT Reference plans.

The second POA, Link B, is located in the wetlands directly to the east of the project area. Within the wetlands, there is an box culvert directing runoff to the southern side of Route 9.

Pre-development peak rates of discharge are identified in Table 2. Further explanation of the post-condition hydrology will show a net decrease to the point of analysis.

For a more visual description of the information presented in this section, please refer to the attached “Pre-Development Drainage Areas Plan” attached in the appendix of this report.

The analysis for the development of the site is broken into two segments, Interim and Final. “Interim Development” is in reference to the development of the site from Period 1 through Period 7. Once Period 7 is completed, the project will proceed with Period 8. In this Period, there is an additional excavation in the area of Period 1. For the construction of Period 8, this is viewed as the “Final Development”.

Stormwater from within the project area is managed by multiple sediment basins/detention ponds around each work area. These detention ponds are represented in the HydroCAD model and are denoted as SF 5, SF6, and SF7. The intent of the grading of the pit areas, as well as the haul roads, was to keep the stormwater self-contained, with no runoff during a 50-year, 24-hour storm event.

Within the HydroCAD Model, all significant grading for the excavation pits and detention basins was assigned as a grass surface and a hydrologic soil group ‘D’.

The detention basins mentioned above are designed to withhold and slowly discharge stormwater runoff to the infiltration basins near the lower portion of the project. During the project, in Period 1, the Infiltration Basin SF1 will be constructed to handle the runoff from the project site and infiltrate into the soil. Once Period 7 is completed, the project will move forward with Period 8. In this Period, Infiltration Basin SF8 will be constructed and will observe the runoff that originally was directed to SF1.

The proposed infiltration area was designed to use exfiltration though the native soils as its only means of outlet. Infiltration rates for the infiltration ponds were calculated by the default method as set forth in Env-Wq 1054.14. The practice is located in an area identified in the Soil Series Survey as Berkshire, Fine Sandy Loam Soils. Using Ksat values for New Hampshire Soils, Soil Scientists of Northern New England, Special Publications No. 5, September 2009, the lowest value associated with Berkshire soils is 0.6 inches per hour. Using a safety factor of 2, the infiltration rate utilized in the drainage analysis is 0.3 inches per hour.

Test pit data performed by TF Moran were used to determine the floor elevation of the pond, keeping it above the estimated seasonal high-water table.

The results of the drainage analysis determined that the stormwater was infiltrated in its entirety during a 50-year, 24-hour storm event. The self-

contained 50-year storm event for both the Interim and Final Development of the project. This was done through capturing stormwater in large sediment basins with small, controlled outlet devices to release stormwater in a controlled manner and by directing stormwater to the infiltration area.

During the 100-yr, 24-hour storm event, both the Interim and Final Development of the project provide a decrease in peak flow rate that discharge to the two points of analysis.

For a more visual description of the information presented in this section, please refer to the attached "Post-Development Drainage Areas Plan" attached in the appendix of this report.

All of these ponds provide adequate storage to offset the peak rates of runoff for the design storms. The detailed hydrologic and hydraulic relationship of each sub-catchment is described within the HydroCAD stormwater modeling, also contained in the appendix of this report.

The peak stormwater runoff rate for the specific storm frequency is presented and analyzed in the subsequent summary section of this report, for the point of analysis (Table 1).

C. Summary:

TABLE 1: CHANNEL PROTECTION REQUIREMENTS

Site Pre-Development vs. Post-Development (Storm Volume in Acre-Feet)			
Analysis Point	2-Year		
	Pre	Interim	Post
A	**1.011**	0.795	0.795
B	**5.037**	3.902	3.902

TABLE 2: PEAK RUNOFF (ENV-WQ 1507.06)

Site Pre-Development vs. Post-Development (Peak Discharge Rate in cfs)									
Analysis Point	2-Year			10-Year			25-Year		
	Pre	Interim	Post	**Pre**	Interim	Post	**Pre**	Interim	Post
A	**4.07**	3.47	3.47	**11.06**	8.71	8.71	**17.43**	13.39	13.39
B	**19.72**	15.86	15.86	**61.33**	46.94	46.94	**101.14**	76.24	76.24

Site Pre-Development vs. Post-Development (Peak Discharge Rate in cfs)						
Analysis Point	50-Year			100-Year		
	Pre	Interim	Post	**Pre**	Interim	Post
A	**23.78**	17.98	17.98	**31.70**	23.63	23.63
B	**141.45**	105.66	105.66	**192.17**	142.52	142.52

TABLE 3: PEAK STORMWATER POND ELEVATION

Site Post Development (Peak Pond Elevation)				
Description	**50-Year**		**100-Year**	
	Post - Interim	Final	Post - Interim	Final
Stormwater Basin Berm Elevation	874.00	856.00	874.00	856.00
Peak Water Elevation	873.04	854.40	873.66	855.32

III. EROSION & SEDIMENTATION CONTROL PROVISIONS

A. Temporary Erosion Control Measures

Temporary erosion and sediment control measures are indicated on the design plans, construction details, general notes and within the drainage report. Although not integral with this stormwater report, due to the size of the proposed development both temporary and permanent erosion control measures will also be specified within the project's Stormwater Pollution Prevention Plan (SWPPP). All erosion control measures specified are designed to reduce or eliminate potential soil migration and water quality degradation, both during and after the construction period.

The following temporary erosion control measures will be implemented;

- Silt Fence and/or Silt Logs
- Erosion Control Blankets on slopes 3:1 and steeper
- Riprap Aprons & Spillway Stabilization
- Turf Establishment - Hydroseeding with mulch and tackifiers
- Stone Check Dams
- Temporary Sediment Basins

These temporary erosion control measures are also discussed in the projects. Operation and Maintenance plan contained in the appendices of this report.

In addition to the above-listed erosion control measures, references are made throughout the project documents to the New Hampshire Stormwater Manual; Volume 3: Erosion and Sediment Temporary Controls During Construction for additional measures, as necessary.

B. Construction Sequence

A site-specific construction sequence sensitive to limiting soil loss due to erosion and associated water quality degradation was prepared specifically for this project and is shown on the project plans. As pointed out in the erosion control notes, it is important for the contractor to recognize that proper judgment in the implementation of work will be essential if erosion is to be limited and protection of completed work is to be realized. Moreover, any specific changes in sequence and/or field conditions affecting the ability of specific erosion control measures to adequately serve their intended purpose should be reported to this office by the contractor. Furthermore, the contractor is encouraged to supplement specified erosion control measures during the construction period where and when in his/ her best judgment, additional protection is warranted.

C. Permanent Erosion Control Measures

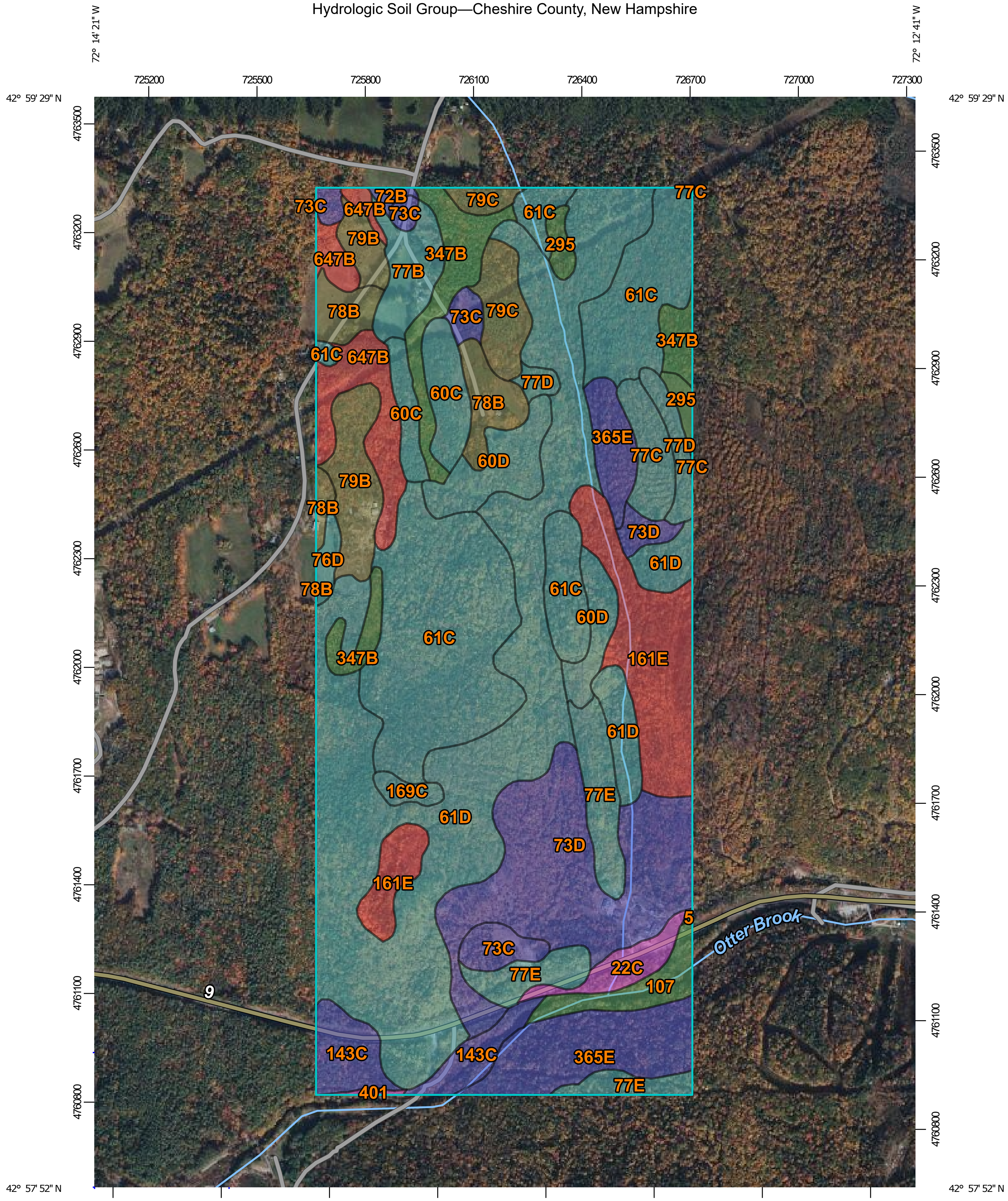
Similar to temporary erosion control measures, all permanent erosion control measures are indicated on the design plans, construction details, general notes, drainage report, SWPPP and O & M project documents.

The following permanent erosion control measures will be implemented;

- Stone-lined ditches
- Inlet & Outlet Protection - Riprap Stabilization
- Stormwater Basins with multi-stage outlets
- Turf Establishment - Hydroseeding with mulch and tackifiers

Each of the above-mentioned permanent erosion control measures are designed in a project-specific manner within both state and local regulatory compliance standards.

3. WEB SOIL SURVEY


72° 14' 21" W
72° 12' 41" W
42° 59' 29" N
42° 57' 52" N
725200
725500
725800
726100
726400
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727300
4763500
4763200
4762900
4762600
4762300
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73D
61D
76D
61C
78B
60D
61C
161E
347B
61D
169C
77E
61D
73D
161E
5
Otter Brook
73C
77E
22C
107
9
143C
143C
365E
401
77E

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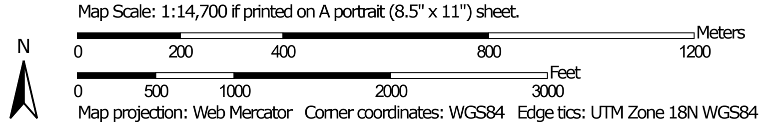


Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

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: Cheshire County, New Hampshire
Survey Area Data: Version 28, Sep 3, 2024

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

Date(s) aerial images were photographed: May 27, 2020—Oct 31, 2020

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
5	Rippowam fine sandy loam	A/D	0.2	0.0%
22C	Colton gravelly sandy loam, 8 to 15 percent slopes	A	7.4	1.1%
60C	Tunbridge-Berkshire complex, 8 to 15 percent slopes, very stony	C	15.3	2.4%
60D	Tunbridge-Berkshire complex, 15 to 25 percent slopes, very stony	C	21.0	3.2%
61C	Tunbridge-Lyman-Rock outcrop complex, 8 to 15 percent slopes	C	101.5	15.7%
61D	Tunbridge-Lyman-Rock outcrop complex, 15 to 25 percent slopes	C	165.1	25.5%
72B	Berkshire fine sandy loam, 3 to 8 percent slopes	B	1.2	0.2%
73C	Berkshire fine sandy loam, 8 to 15 percent slopes, very stony	B	11.9	1.8%
73D	Berkshire fine sandy loam, 15 to 25 percent slopes, very stony	B	64.4	9.9%
76D	Marlow fine sandy loam, 15 to 25 percent slopes	C	2.8	0.4%
77B	Marlow fine sandy loam, 0 to 8 percent slopes, very stony	C	11.8	1.8%
77C	Marlow fine sandy loam, 8 to 15 percent slopes, very stony	C	9.5	1.5%
77D	Marlow fine sandy loam, 15 to 25 percent slopes, very stony	C	7.6	1.2%
77E	Marlow fine sandy loam, 25 to 50 percent slopes, very stony	C	24.4	3.8%
78B	Peru fine sandy loam, 3 to 8 percent slopes	C/D	16.7	2.6%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
79B	Peru fine sandy loam, 0 to 8 percent slopes, very stony	C/D	20.0	3.1%
79C	Peru fine sandy loam, 8 to 15 percent slopes, very stony	C/D	13.2	2.0%
107	Rippowam-Saco complex	A/D	9.0	1.4%
143C	Monadnock fine sandy loam, 8 to 15 percent slopes, very stony	B	17.2	2.7%
161E	Lyman-Tunbridge-Rock outcrop complex, 25 to 60 percent slopes	D	39.8	6.1%
169C	Sunapee fine sandy loam, 8 to 15 percent slopes, very stony	C	2.9	0.5%
295	Greenwood mucky peat	A/D	4.9	0.7%
347B	Lyme and Moosilauke soils, 0 to 5 percent slopes, very stony	A/D	23.2	3.6%
365E	Monadnock and Berkshire soils, 25 to 60 percent slopes, extremely stony	B	35.2	5.4%
401	Occum fine sandy loam	A	0.7	0.1%
647B	Pillsbury fine sandy loam, 0 to 8 percent slopes, very stony	D	20.8	3.2%
Totals for Area of Interest			**647.8**	**100.0%**

Description

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

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

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

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

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

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

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

Rating Options

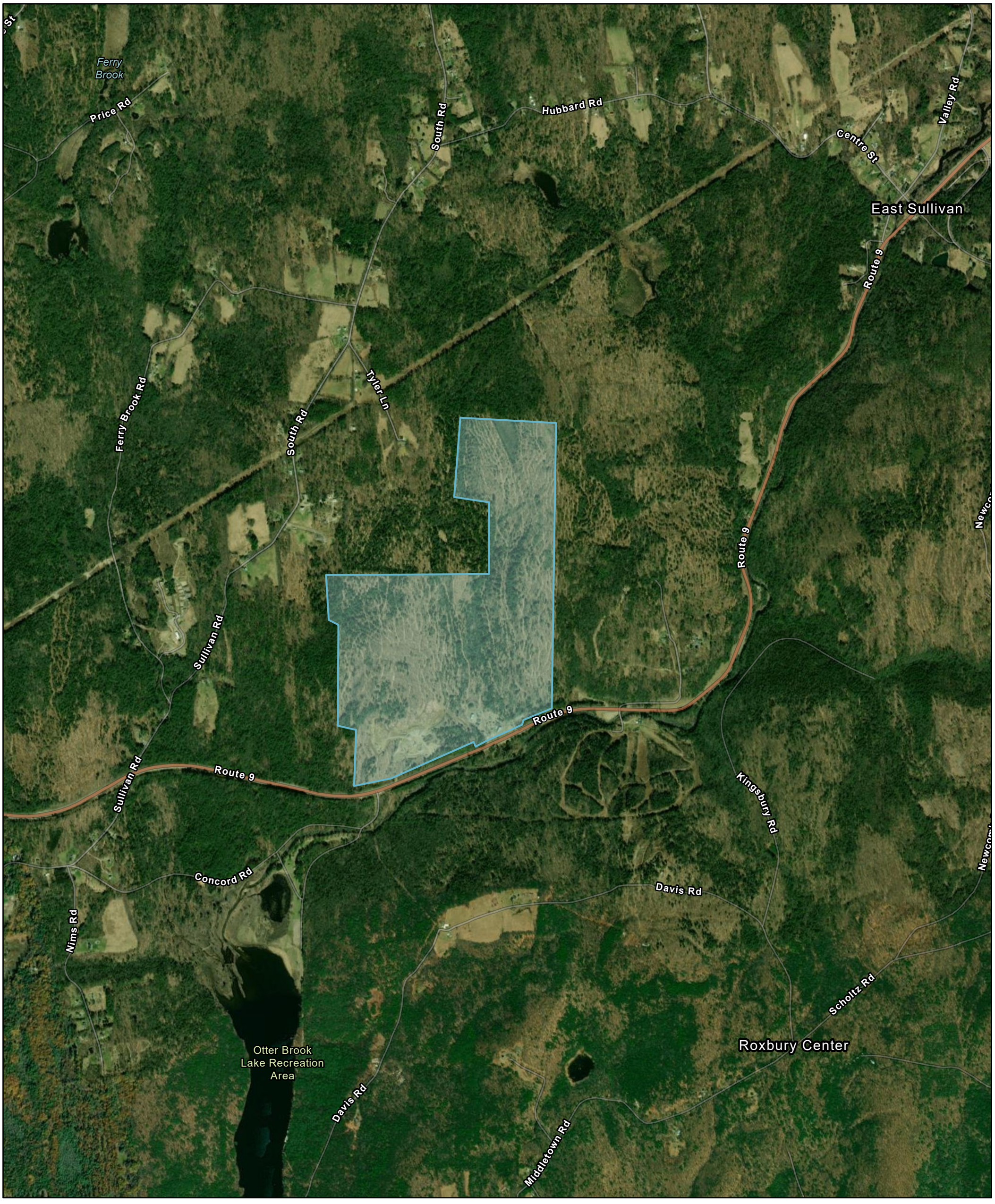
Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

4. AERIAL PHOTOGRAPH

Aerial Map



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VCGI, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS, VCGI, Maxar

5. EXTREME PRECIPITATION TABLES

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Metadata for Point

Smoothing	Yes
State	New Hampshire
Location	New Hampshire, United States
Latitude	42.971 degrees North
Longitude	72.221 degrees West
Elevation	250 feet
Date/Time	Tue Apr 16 2024 10:32:39 GMT-0400 (Eastern Daylight Time)

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.43	0.53	0.70	0.87	1.09	**1yr**	0.75	1.00	1.25	1.54	1.90	2.34	2.61	**1yr**	2.07	2.51	2.90	3.54	4.10	**1yr**
2yr	0.34	0.52	0.64	0.85	1.07	1.33	**2yr**	0.92	1.19	1.52	1.87	2.28	2.76	3.13	**2yr**	2.45	3.01	3.51	4.19	4.79	**2yr**
5yr	0.40	0.62	0.78	1.04	1.34	1.68	**5yr**	1.15	1.50	1.92	2.35	2.84	3.42	3.91	**5yr**	3.03	3.76	4.36	5.14	5.86	**5yr**
10yr	0.45	0.71	0.89	1.21	1.58	2.00	**10yr**	1.36	1.78	2.29	2.80	3.37	4.02	4.63	**10yr**	3.56	4.45	5.15	6.01	6.82	**10yr**
25yr	0.54	0.85	1.08	1.49	1.98	2.51	**25yr**	1.71	2.24	2.89	3.52	4.21	4.98	5.80	**25yr**	4.41	5.58	6.40	7.40	8.35	**25yr**
50yr	0.60	0.97	1.24	1.74	2.35	3.00	**50yr**	2.03	2.67	3.46	4.20	5.00	5.86	6.89	**50yr**	5.19	6.62	7.56	8.66	9.73	**50yr**
100yr	0.69	1.12	1.45	2.05	2.79	3.58	**100yr**	2.40	3.17	4.12	4.99	5.91	6.90	8.18	**100yr**	6.11	7.87	8.92	10.14	11.35	**100yr**
200yr	0.79	1.29	1.67	2.39	3.31	4.26	**200yr**	2.85	3.77	4.91	5.94	7.00	8.13	9.72	**200yr**	7.19	9.35	10.54	11.87	13.24	**200yr**
500yr	0.95	1.56	2.04	2.96	4.15	5.37	**500yr**	3.58	4.75	6.19	7.46	8.76	10.10	12.23	**500yr**	8.94	11.76	13.14	14.65	16.24	**500yr**

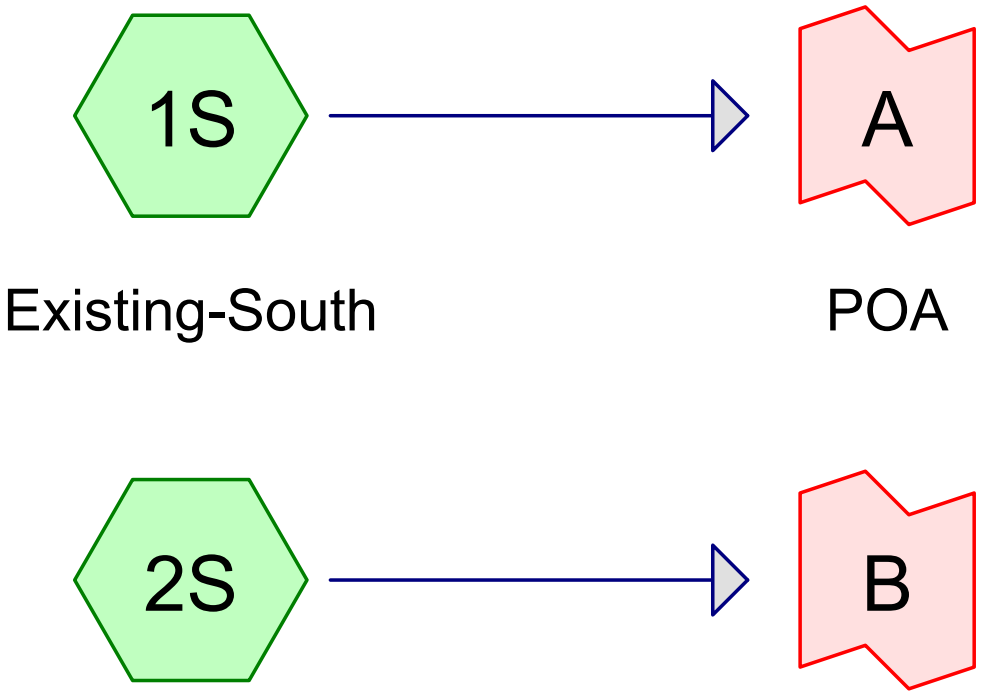
Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.23	0.36	0.44	0.59	0.73	0.81	**1yr**	0.63	0.80	1.02	1.35	1.58	2.06	2.30	**1yr**	1.83	2.22	2.50	3.14	3.35	**1yr**
2yr	0.32	0.49	0.61	0.82	1.02	1.17	**2yr**	0.88	1.14	1.33	1.71	2.16	2.70	3.05	**2yr**	2.39	2.94	3.42	4.10	4.67	**2yr**
5yr	0.36	0.56	0.70	0.96	1.22	1.39	**5yr**	1.05	1.36	1.56	2.00	2.50	3.17	3.63	**5yr**	2.81	3.49	4.04	4.81	5.46	**5yr**
10yr	0.40	0.61	0.76	1.06	1.37	1.59	**10yr**	1.19	1.55	1.77	2.25	2.79	3.58	4.15	**10yr**	3.17	3.99	4.63	5.41	6.15	**10yr**
25yr	0.45	0.68	0.85	1.22	1.60	1.89	**25yr**	1.38	1.85	2.07	2.64	3.20	4.22	4.94	**25yr**	3.74	4.75	5.51	6.35	7.22	**25yr**
50yr	0.49	0.75	0.93	1.34	1.80	2.15	**50yr**	1.56	2.10	2.33	3.00	3.55	4.81	5.66	**50yr**	4.26	5.44	6.32	7.17	8.19	**50yr**
100yr	0.54	0.82	1.02	1.48	2.03	2.44	**100yr**	1.75	2.39	2.64	3.40	3.94	5.48	6.50	**100yr**	4.85	6.25	7.25	8.14	9.29	**100yr**
200yr	0.59	0.88	1.12	1.62	2.26	2.78	**200yr**	1.95	2.72	2.99	3.87	4.36	6.28	7.48	**200yr**	5.56	7.20	8.35	9.26	10.57	**200yr**
500yr	0.66	0.99	1.27	1.85	2.63	3.31	**500yr**	2.27	3.24	3.52	4.60	5.00	7.54	9.08	**500yr**	6.67	8.73	10.09	11.04	12.56	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.31	0.48	0.58	0.79	0.97	1.13	**1yr**	0.83	1.11	1.27	1.57	2.01	2.52	2.85	**1yr**	2.23	2.75	3.17	3.81	4.42	**1yr**
2yr	0.35	0.54	0.67	0.91	1.12	1.27	**2yr**	0.97	1.25	1.43	1.80	2.30	2.86	3.25	**2yr**	2.54	3.12	3.64	4.33	4.94	**2yr**
5yr	0.43	0.67	0.83	1.14	1.45	1.68	**5yr**	1.25	1.64	1.85	2.29	2.84	3.73	4.26	**5yr**	3.30	4.09	4.70	5.55	6.35	**5yr**
10yr	0.53	0.82	1.01	1.41	1.83	2.10	**10yr**	1.58	2.05	2.26	2.75	3.37	4.56	5.23	**10yr**	4.04	5.03	5.82	6.69	7.67	**10yr**
25yr	0.69	1.05	1.31	1.87	2.46	2.81	**25yr**	2.12	2.75	2.94	3.48	4.21	5.94	6.88	**25yr**	5.26	6.61	7.58	8.57	9.83	**25yr**
50yr	0.84	1.27	1.59	2.28	3.07	3.50	**50yr**	2.65	3.42	3.58	4.17	4.99	7.25	8.45	**50yr**	6.42	8.12	9.27	10.33	11.85	**50yr**
100yr	1.03	1.55	1.94	2.81	3.85	4.38	**100yr**	3.32	4.28	4.37	4.99	5.92	8.84	10.36	**100yr**	7.82	9.96	11.29	12.46	14.28	**100yr**
200yr	1.26	1.89	2.39	3.47	4.83	5.49	**200yr**	4.17	5.37	5.33	5.97	7.03	10.77	12.70	**200yr**	9.54	12.21	13.78	15.00	17.19	**200yr**
500yr	1.65	2.45	3.15	4.58	6.52	7.39	**500yr**	5.62	7.23	6.93	7.57	8.81	13.96	16.61	**500yr**	12.35	15.97	17.90	19.18	21.95	**500yr**

6. HYDROCAD DRAINAGE ANALYSIS – PRE-DEVELOPMENT



Subcat Reach Pond Link

Routing Diagram for PRE-DEVELOPMENT
Prepared by Granite Engineering, LLC, Printed 4/8/2025

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-YR	Type III 24-hr		Default	24.00	1	2.76	2
2	10-YR	Type III 24-hr		Default	24.00	1	4.02	2
3	25-YR	Type III 24-hr		Default	24.00	1	4.98	2
4	50-YR	Type III 24-hr		Default	24.00	1	5.86	2
5	100-YR	Type III 24-hr		Default	24.00	1	6.90	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
3.032	61	>75% Grass cover, Good, HSG B (1S, 2S)
0.650	74	>75% Grass cover, Good, HSG C (1S, 2S)
0.153	80	>75% Grass cover, Good, HSG D (2S)
1.044	96	Gravel surface (1S, 2S)
1.908	86	Newly graded area, HSG B (1S, 2S)
1.207	91	Newly graded area, HSG C (1S, 2S)
0.827	98	Paved parking (1S)
1.196	98	Pavement/Roof (2S)
0.042	98	Water Surface, HSG B (2S)
4.434	30	Woods, Good, HSG A (2S)
33.549	55	Woods, Good, HSG B (1S, 2S)
106.897	70	Woods, Good, HSG C (1S, 2S)
6.333	77	Woods, Good, HSG D (1S, 2S)
161.272	**67**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
4.434	HSG A	2S
38.531	HSG B	1S, 2S
108.754	HSG C	1S, 2S
6.486	HSG D	1S, 2S
3.067	Other	1S, 2S
161.272		**TOTAL AREA**

Time span=0.00-48.00 hrs, dt=0.02 hrs, 2401 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

Subcatchment1S: Existing-South Runoff Area=22.238 ac 3.72% Impervious Runoff Depth=0.55"
Flow Length=2,469' Tc=70.5 min CN=69 Runoff=4.07 cfs 1.011 af

Subcatchment2S: Existing-East Runoff Area=139.034 ac 0.89% Impervious Runoff Depth=0.43"
Flow Length=6,891' Tc=63.3 min CN=66 Runoff=19.72 cfs 5.037 af

Link A: POA Inflow=4.07 cfs 1.011 af
Primary=4.07 cfs 1.011 af

Link B: POA Inflow=19.72 cfs 5.037 af
Primary=19.72 cfs 5.037 af

Total Runoff Area = 161.272 ac Runoff Volume = 6.048 af Average Runoff Depth = 0.45"
98.72% Pervious = 159.207 ac 1.28% Impervious = 2.065 ac

Time span=0.00-48.00 hrs, dt=0.02 hrs, 2401 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

Subcatchment1S: Existing-South Runoff Area=22.238 ac 3.72% Impervious Runoff Depth=1.28"
Flow Length=2,469' Tc=70.5 min CN=69 Runoff=11.06 cfs 2.371 af

Subcatchment2S: Existing-East Runoff Area=139.034 ac 0.89% Impervious Runoff Depth=1.10"
Flow Length=6,891' Tc=63.3 min CN=66 Runoff=61.33 cfs 12.721 af

Link A: POA Inflow=11.06 cfs 2.371 af
Primary=11.06 cfs 2.371 af

Link B: POA Inflow=61.33 cfs 12.721 af
Primary=61.33 cfs 12.721 af

Total Runoff Area = 161.272 ac Runoff Volume = 15.092 af Average Runoff Depth = 1.12"
98.72% Pervious = 159.207 ac 1.28% Impervious = 2.065 ac

Time span=0.00-48.00 hrs, dt=0.02 hrs, 2401 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

Subcatchment1S: Existing-South Runoff Area=22.238 ac 3.72% Impervious Runoff Depth=1.94"
Flow Length=2,469' Tc=70.5 min CN=69 Runoff=17.43 cfs 3.600 af

Subcatchment2S: Existing-East Runoff Area=139.034 ac 0.89% Impervious Runoff Depth=1.71"
Flow Length=6,891' Tc=63.3 min CN=66 Runoff=101.14 cfs 19.859 af

Link A: POA Inflow=17.43 cfs 3.600 af
Primary=17.43 cfs 3.600 af

Link B: POA Inflow=101.14 cfs 19.859 af
Primary=101.14 cfs 19.859 af

Total Runoff Area = 161.272 ac Runoff Volume = 23.460 af Average Runoff Depth = 1.75"
98.72% Pervious = 159.207 ac 1.28% Impervious = 2.065 ac

Time span=0.00-48.00 hrs, dt=0.02 hrs, 2401 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

Subcatchment1S: Existing-South Runoff Area=22.238 ac 3.72% Impervious Runoff Depth=2.60"
Flow Length=2,469' Tc=70.5 min CN=69 Runoff=23.78 cfs 4.825 af

Subcatchment2S: Existing-East Runoff Area=139.034 ac 0.89% Impervious Runoff Depth=2.34"
Flow Length=6,891' Tc=63.3 min CN=66 Runoff=141.45 cfs 27.077 af

Link A: POA Inflow=23.78 cfs 4.825 af
Primary=23.78 cfs 4.825 af

Link B: POA Inflow=141.45 cfs 27.077 af
Primary=141.45 cfs 27.077 af

Total Runoff Area = 161.272 ac Runoff Volume = 31.902 af Average Runoff Depth = 2.37"
98.72% Pervious = 159.207 ac 1.28% Impervious = 2.065 ac

Time span=0.00-48.00 hrs, dt=0.02 hrs, 2401 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

Subcatchment1S: Existing-South Runoff Area=22.238 ac 3.72% Impervious Runoff Depth=3.43"
Flow Length=2,469' Tc=70.5 min CN=69 Runoff=31.70 cfs 6.360 af

Subcatchment2S: Existing-East Runoff Area=139.034 ac 0.89% Impervious Runoff Depth=3.13"
Flow Length=6,891' Tc=63.3 min CN=66 Runoff=192.17 cfs 36.219 af

Link A: POA Inflow=31.70 cfs 6.360 af
Primary=31.70 cfs 6.360 af

Link B: POA Inflow=192.17 cfs 36.219 af
Primary=192.17 cfs 36.219 af

Total Runoff Area = 161.272 ac Runoff Volume = 42.580 af Average Runoff Depth = 3.17"
98.72% Pervious = 159.207 ac 1.28% Impervious = 2.065 ac

Summary for Subcatchment 1S: Existing-South

Runoff = 17.43 cfs @ 12.99 hrs, Volume= 3.600 af, Depth= 1.94"
Routed to Link A : POA

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YR Rainfall=4.98"

	Area (ac)	CN	Description
	4.378	55	Woods, Good, HSG B
	0.121	61	>75% Grass cover, Good, HSG B
	0.460	86	Newly graded area, HSG B
	14.435	70	Woods, Good, HSG C
	0.245	74	>75% Grass cover, Good, HSG C
	1.293	77	Woods, Good, HSG D
	0.173	91	Newly graded area, HSG C
	0.000	80	>75% Grass cover, Good, HSG D
*	0.306	96	Gravel surface
*	0.827	98	Paved parking
	22.238	69	Weighted Average
	21.411		96.28% Pervious Area
	0.827		3.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	47	0.1064	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.76"
5.6	949	0.3161	2.81		**Shallow Concentrated Flow, Woods to Wetlands** Woodland Kv= 5.0 fps
11.0	548	0.1095	0.83		**Shallow Concentrated Flow, Wetlands** Forest w/Heavy Litter Kv= 2.5 fps
0.3	54	0.2963	2.72		**Shallow Concentrated Flow, Wetland to Culvert** Woodland Kv= 5.0 fps
0.0	62	0.1145	24.37	76.55	**Pipe Channel, Driveway Culvert** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
5.0	316	0.0443	1.05		**Shallow Concentrated Flow, Woods to Wetlands** Woodland Kv= 5.0 fps
42.1	493	0.0061	0.20		**Shallow Concentrated Flow, Wetlands** Forest w/Heavy Litter Kv= 2.5 fps
70.5	2,469	Total			

Summary for Subcatchment 2S: Existing-East

[47] Hint: Peak is 368% of capacity of segment #5
[47] Hint: Peak is 1015% of capacity of segment #7

Runoff = 101.14 cfs @ 12.89 hrs, Volume= 19.859 af, Depth= 1.71"
Routed to Link B : POA

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YR Rainfall=4.98"

	Area (ac)	CN	Description
	4.434	30	Woods, Good, HSG A
	29.171	55	Woods, Good, HSG B
	2.911	61	>75% Grass cover, Good, HSG B
	1.448	86	Newly graded area, HSG B
	92.462	70	Woods, Good, HSG C
	0.405	74	>75% Grass cover, Good, HSG C
	1.034	91	Newly graded area, HSG C
	5.040	77	Woods, Good, HSG D
	0.153	80	>75% Grass cover, Good, HSG D
*	0.738	96	Gravel surface
*	1.196	98	Pavement/Roof
	0.042	98	Water Surface, HSG B
	139.034	66	Weighted Average
	137.796		99.11% Pervious Area
	1.238		0.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	100	0.1500	0.16		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.76"
37.7	2,618	0.0535	1.16		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.2	835	0.0479	3.28		**Shallow Concentrated Flow, Water-USGS** Grassed Waterway Kv= 15.0 fps
7.7	2,324	0.1123	5.03		**Shallow Concentrated Flow, Wetland-Stream** Grassed Waterway Kv= 15.0 fps
0.0	38	0.0684	15.55	27.47	**Pipe Channel, 18" culvert** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
1.9	497	0.0865	4.41		**Shallow Concentrated Flow, Wetland-Water** Grassed Waterway Kv= 15.0 fps
0.0	21	0.0238	8.12	9.97	**Pipe Channel, 15" culvert** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
1.5	458	0.1154	5.10		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
63.3	6,891	Total			

Summary for Link A: POA

Inflow Area = 22.238 ac, 3.72% Impervious, Inflow Depth = 1.94" for 25-YR event
Inflow = 17.43 cfs @ 12.99 hrs, Volume= 3.600 af
Primary = 17.43 cfs @ 12.99 hrs, Volume= 3.600 af, Atten= 0%, Lag= 0.0 min

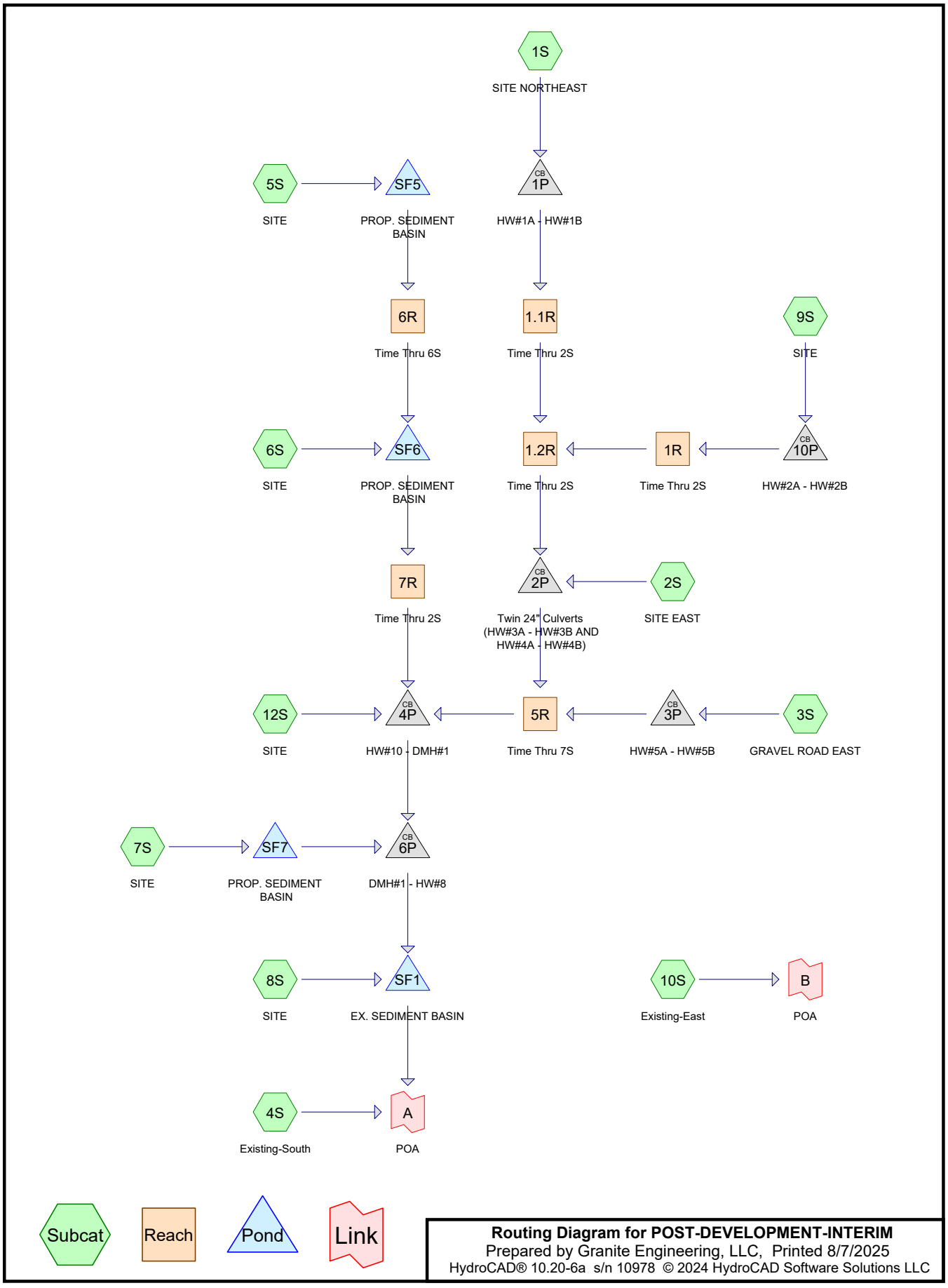
Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Summary for Link B: POA

Inflow Area = 139.034 ac, 0.89% Impervious, Inflow Depth = 1.71" for 25-YR event
Inflow = 101.14 cfs @ 12.89 hrs, Volume= 19.859 af
Primary = 101.14 cfs @ 12.89 hrs, Volume= 19.859 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

7. HYDROCAD DRAINAGE ANALYSIS – INTERIM-DEVELOPMENT



Routing Diagram for POST-DEVELOPMENT-INTERIM
Prepared by Granite Engineering, LLC, Printed 8/7/2025

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-YR	Type III 24-hr		Default	24.00	1	2.76	2
2	10-YR	Type III 24-hr		Default	24.00	1	4.02	2
3	25-YR	Type III 24-hr		Default	24.00	1	4.98	2
4	50-YR	Type III 24-hr		Default	24.00	1	5.86	2
5	100-YR	Type III 24-hr		Default	24.00	1	6.90	2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
8.067	61	>75% Grass cover, Good, HSG B (1S, 2S, 3S, 4S, 5S, 6S, 8S, 9S, 10S, 12S)
6.850	74	>75% Grass cover, Good, HSG C (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 12S)
22.360	80	>75% Grass cover, Good, HSG D (1S, 2S, 5S, 6S, 7S, 8S, 10S, 12S)
1.743	96	Gravel surface (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 12S)
2.282	98	Ledge (5S, 6S, 7S, 12S)
0.832	98	Paved parking (4S)
1.196	98	Pavement/Roof (10S)
0.042	98	Water Surface, HSG B (10S)
4.434	30	Woods, Good, HSG A (10S)
23.589	55	Woods, Good, HSG B (1S, 2S, 4S, 5S, 6S, 9S, 10S, 12S)
86.692	70	Woods, Good, HSG C (1S, 2S, 4S, 6S, 9S, 10S, 12S)
3.450	77	Woods, Good, HSG D (1S, 2S, 4S, 6S, 10S)
161.537	**69**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
4.434	HSG A	10S
31.698	HSG B	1S, 2S, 3S, 4S, 5S, 6S, 8S, 9S, 10S, 12S
93.542	HSG C	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 12S
25.810	HSG D	1S, 2S, 4S, 5S, 6S, 7S, 8S, 10S, 12S
6.053	Other	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 12S
161.537		**TOTAL AREA**

Time span=0.00-48.00 hrs, dt=0.02 hrs, 2401 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

Subcatchment1S: SITE NORTHEAST Runoff Area=79,004 sf 0.00% Impervious Runoff Depth=0.47"
Flow Length=450' Tc=7.2 min CN=67 Runoff=0.70 cfs 0.071 af

Subcatchment2S: SITE EAST Runoff Area=396,359 sf 0.00% Impervious Runoff Depth=0.28"
Flow Length=1,355' Tc=15.5 min CN=61 Runoff=1.13 cfs 0.211 af

Subcatchment3S: GRAVEL ROAD EAST Runoff Area=9,722 sf 0.00% Impervious Runoff Depth=0.96"
Tc=6.0 min CN=78 Runoff=0.24 cfs 0.018 af

Subcatchment4S: Existing-South Runoff Area=663,627 sf 5.46% Impervious Runoff Depth=0.63"
Flow Length=2,412' Tc=67.7 min CN=71 Runoff=3.47 cfs 0.795 af

Subcatchment5S: SITE Runoff Area=526,706 sf 9.58% Impervious Runoff Depth=1.13"
Flow Length=1,144' Tc=32.7 min CN=81 Runoff=8.55 cfs 1.141 af

Subcatchment6S: SITE Runoff Area=276,676 sf 9.52% Impervious Runoff Depth=0.91"
Flow Length=624' Tc=12.3 min CN=77 Runoff=5.19 cfs 0.481 af

Subcatchment7S: SITE Runoff Area=206,722 sf 10.83% Impervious Runoff Depth=1.19"
Tc=6.0 min CN=82 Runoff=6.54 cfs 0.472 af

Subcatchment8S: SITE Runoff Area=283,021 sf 0.00% Impervious Runoff Depth=0.96"
Tc=6.0 min CN=78 Runoff=7.02 cfs 0.520 af

Subcatchment9S: SITE Runoff Area=190,122 sf 0.00% Impervious Runoff Depth=0.40"
Flow Length=936' Tc=14.0 min CN=65 Runoff=1.03 cfs 0.146 af

Subcatchment10S: Existing-East Runoff Area=99.581 ac 1.24% Impervious Runoff Depth=0.47"
Flow Length=6,891' Tc=63.3 min CN=67 Runoff=15.86 cfs 3.902 af

Subcatchment12S: SITE Runoff Area=66,854 sf 0.32% Impervious Runoff Depth=0.71"
Flow Length=325' Tc=9.0 min CN=73 Runoff=1.03 cfs 0.091 af

Reach 1.1R: Time Thru 2S Avg. Flow Depth=0.19' Max Vel=1.74 fps Inflow=0.70 cfs 0.071 af
n=0.100 L=456.0' S=0.2237 '/' Capacity=7.45 cfs Outflow=0.61 cfs 0.071 af

Reach 1.2R: Time Thru 2S Avg. Flow Depth=0.25' Max Vel=4.18 fps Inflow=1.58 cfs 0.217 af
n=0.040 L=277.0' S=0.1264 '/' Capacity=132.55 cfs Outflow=1.57 cfs 0.217 af

Reach 1R: Time Thru 2S Avg. Flow Depth=0.20' Max Vel=3.63 fps Inflow=1.03 cfs 0.146 af
n=0.040 L=355.0' S=0.1211 '/' Capacity=129.78 cfs Outflow=1.03 cfs 0.146 af

Reach 5R: Time Thru 7S Avg. Flow Depth=0.21' Max Vel=2.85 fps Inflow=2.71 cfs 0.446 af
n=0.040 L=430.0' S=0.0535 '/' Capacity=158.33 cfs Outflow=2.70 cfs 0.446 af

Reach 6R: Time Thru 6S Avg. Flow Depth=0.33' Max Vel=0.99 fps Inflow=1.32 cfs 1.133 af
n=0.400 L=250.0' S=0.5376 '/' Capacity=14.89 cfs Outflow=1.32 cfs 1.133 af

Reach 7R: Time Thru 2S Avg. Flow Depth=0.11' Max Vel=3.48 fps Inflow=0.84 cfs 1.484 af
n=0.040 L=238.0' S=0.1933 '/' Capacity=526.52 cfs Outflow=0.84 cfs 1.484 af

Pond 1P: HW#1A - HW#1B Peak Elev=1,048.65' Inflow=0.70 cfs 0.071 af
15.0" Round Culvert n=0.013 L=41.0' S=0.0551 '/' Outflow=0.70 cfs 0.071 af

Pond 2P: Twin 24" Culverts (HW#3A - HW#3B AND HW#4A - Peak Elev=907.47' Inflow=2.60 cfs 0.428 af
24.0" Round Culvert x 2.00 n=0.013 L=27.0' S=0.0185 '/' Outflow=2.60 cfs 0.428 af

Pond 3P: HW#5A - HW#5B Peak Elev=907.24' Inflow=0.24 cfs 0.018 af
15.0" Round Culvert n=0.013 L=68.0' S=0.0074 '/' Outflow=0.24 cfs 0.018 af

Pond 4P: HW#10 - DMH#1 Peak Elev=881.18' Inflow=3.42 cfs 2.021 af
36.0" Round Culvert n=0.013 L=146.0' S=0.0308 '/' Outflow=3.42 cfs 2.021 af

Pond 6P: DMH#1 - HW#8 Peak Elev=876.79' Inflow=4.17 cfs 2.488 af
36.0" Round Culvert n=0.013 L=426.0' S=0.0059 '/' Outflow=4.17 cfs 2.488 af

Pond 10P: HW#2A - HW#2B Peak Elev=990.23' Inflow=1.03 cfs 0.146 af
15.0" Round Culvert n=0.013 L=26.0' S=0.0673 '/' Outflow=1.03 cfs 0.146 af

Pond SF1: EX. SEDIMENT BASIN Peak Elev=861.25' Storage=113,196 cf Inflow=8.89 cfs 3.008 af
Discarded=0.16 cfs 0.428 af Primary=0.00 cfs 0.000 af Outflow=0.16 cfs 0.428 af

Pond SF5: PROP. SEDIMENT BASIN Peak Elev=1,090.20' Storage=23,340 cf Inflow=8.55 cfs 1.141 af
Outflow=1.32 cfs 1.133 af

Pond SF6: PROP. SEDIMENT BASIN Peak Elev=949.04' Storage=35,206 cf Inflow=5.48 cfs 1.614 af
Outflow=0.84 cfs 1.484 af

Pond SF7: PROP. SEDIMENT BASIN Peak Elev=888.98' Storage=8,957 cf Inflow=6.54 cfs 0.472 af
Outflow=0.81 cfs 0.466 af

Link A: POA Inflow=3.47 cfs 0.795 af
Primary=3.47 cfs 0.795 af

Link B: POA Inflow=15.86 cfs 3.902 af
Primary=15.86 cfs 3.902 af

Total Runoff Area = 161.537 ac Runoff Volume = 7.848 af Average Runoff Depth = 0.58"
97.31% Pervious = 157.185 ac 2.69% Impervious = 4.352 ac

Time span=0.00-48.00 hrs, dt=0.02 hrs, 2401 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

Subcatchment1S: SITE NORTHEAST Runoff Area=79,004 sf 0.00% Impervious Runoff Depth=1.16"
Flow Length=450' Tc=7.2 min CN=67 Runoff=2.17 cfs 0.175 af

Subcatchment2S: SITE EAST Runoff Area=396,359 sf 0.00% Impervious Runoff Depth=0.82"
Flow Length=1,355' Tc=15.5 min CN=61 Runoff=5.28 cfs 0.624 af

Subcatchment3S: GRAVEL ROAD EAST Runoff Area=9,722 sf 0.00% Impervious Runoff Depth=1.90"
Tc=6.0 min CN=78 Runoff=0.49 cfs 0.035 af

Subcatchment4S: Existing-South Runoff Area=663,627 sf 5.46% Impervious Runoff Depth=1.41"
Flow Length=2,412' Tc=67.7 min CN=71 Runoff=8.71 cfs 1.787 af

Subcatchment5S: SITE Runoff Area=526,706 sf 9.58% Impervious Runoff Depth=2.14"
Flow Length=1,144' Tc=32.7 min CN=81 Runoff=16.48 cfs 2.155 af

Subcatchment6S: SITE Runoff Area=276,676 sf 9.52% Impervious Runoff Depth=1.83"
Flow Length=624' Tc=12.3 min CN=77 Runoff=10.96 cfs 0.967 af

Subcatchment7S: SITE Runoff Area=206,722 sf 10.83% Impervious Runoff Depth=2.22"
Tc=6.0 min CN=82 Runoff=12.34 cfs 0.878 af

Subcatchment8S: SITE Runoff Area=283,021 sf 0.00% Impervious Runoff Depth=1.90"
Tc=6.0 min CN=78 Runoff=14.39 cfs 1.030 af

Subcatchment9S: SITE Runoff Area=190,122 sf 0.00% Impervious Runoff Depth=1.04"
Flow Length=936' Tc=14.0 min CN=65 Runoff=3.65 cfs 0.378 af

Subcatchment10S: Existing-East Runoff Area=99.581 ac 1.24% Impervious Runoff Depth=1.16"
Flow Length=6,891' Tc=63.3 min CN=67 Runoff=46.94 cfs 9.602 af

Subcatchment12S: SITE Runoff Area=66,854 sf 0.32% Impervious Runoff Depth=1.54"
Flow Length=325' Tc=9.0 min CN=73 Runoff=2.43 cfs 0.197 af

Reach 1.1R: Time Thru 2S Avg. Flow Depth=0.33' Max Vel=2.51 fps Inflow=2.17 cfs 0.175 af
n=0.100 L=456.0' S=0.2237 '/' Capacity=7.45 cfs Outflow=2.02 cfs 0.175 af

Reach 1.2R: Time Thru 2S Avg. Flow Depth=0.47' Max Vel=5.85 fps Inflow=5.39 cfs 0.553 af
n=0.040 L=277.0' S=0.1264 '/' Capacity=132.55 cfs Outflow=5.37 cfs 0.553 af

Reach 1R: Time Thru 2S Avg. Flow Depth=0.39' Max Vel=5.19 fps Inflow=3.65 cfs 0.378 af
n=0.040 L=355.0' S=0.1211 '/' Capacity=129.78 cfs Outflow=3.63 cfs 0.378 af

Reach 5R: Time Thru 7S Avg. Flow Depth=0.48' Max Vel=4.55 fps Inflow=10.83 cfs 1.212 af
n=0.040 L=430.0' S=0.0535 '/' Capacity=158.33 cfs Outflow=10.76 cfs 1.212 af

Reach 6R: Time Thru 6S Avg. Flow Depth=0.39' Max Vel=1.09 fps Inflow=1.87 cfs 2.145 af
n=0.400 L=250.0' S=0.5376 '/' Capacity=14.89 cfs Outflow=1.87 cfs 2.145 af

Reach 7R: Time Thru 2S Avg. Flow Depth=0.14' Max Vel=3.97 fps Inflow=1.23 cfs 2.800 af
n=0.040 L=238.0' S=0.1933 '/' Capacity=526.52 cfs Outflow=1.23 cfs 2.799 af

Pond 1P: HW#1A - HW#1B Peak Elev=1,048.99' Inflow=2.17 cfs 0.175 af
15.0" Round Culvert n=0.013 L=41.0' S=0.0551 '/' Outflow=2.17 cfs 0.175 af

Pond 2P: Twin 24" Culverts (HW#3A - HW#3B AND HW#4A - Peak Elev=907.99' Inflow=10.56 cfs 1.177 af
24.0" Round Culvert x 2.00 n=0.013 L=27.0' S=0.0185 '/' Outflow=10.56 cfs 1.177 af

Pond 3P: HW#5A - HW#5B Peak Elev=907.35' Inflow=0.49 cfs 0.035 af
15.0" Round Culvert n=0.013 L=68.0' S=0.0074 '/' Outflow=0.49 cfs 0.035 af

Pond 4P: HW#10 - DMH#1 Peak Elev=881.89' Inflow=12.89 cfs 4.209 af
36.0" Round Culvert n=0.013 L=146.0' S=0.0308 '/' Outflow=12.89 cfs 4.209 af

Pond 6P: DMH#1 - HW#8 Peak Elev=877.50' Inflow=13.96 cfs 5.081 af
36.0" Round Culvert n=0.013 L=426.0' S=0.0059 '/' Outflow=13.96 cfs 5.081 af

Pond 10P: HW#2A - HW#2B Peak Elev=990.76' Inflow=3.65 cfs 0.378 af
15.0" Round Culvert n=0.013 L=26.0' S=0.0673 '/' Outflow=3.65 cfs 0.378 af

Pond SF1: EX. SEDIMENT BASIN Peak Elev=866.70' Storage=240,479 cf Inflow=23.75 cfs 6.111 af
Discarded=0.22 cfs 0.590 af Primary=0.00 cfs 0.000 af Outflow=0.22 cfs 0.590 af

Pond SF5: PROP. SEDIMENT BASIN Peak Elev=1,092.18' Storage=50,221 cf Inflow=16.48 cfs 2.155 af
Outflow=1.87 cfs 2.145 af

Pond SF6: PROP. SEDIMENT BASIN Peak Elev=949.95' Storage=69,110 cf Inflow=11.73 cfs 3.113 af
Outflow=1.23 cfs 2.800 af

Pond SF7: PROP. SEDIMENT BASIN Peak Elev=889.90' Storage=18,355 cf Inflow=12.34 cfs 0.878 af
Outflow=1.22 cfs 0.872 af

Link A: POA Inflow=8.71 cfs 1.787 af
Primary=8.71 cfs 1.787 af

Link B: POA Inflow=46.94 cfs 9.602 af
Primary=46.94 cfs 9.602 af

Total Runoff Area = 161.537 ac Runoff Volume = 17.829 af Average Runoff Depth = 1.32"
97.31% Pervious = 157.185 ac 2.69% Impervious = 4.352 ac

Time span=0.00-48.00 hrs, dt=0.02 hrs, 2401 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

Subcatchment1S: SITE NORTHEAST Runoff Area=79,004 sf 0.00% Impervious Runoff Depth=1.79"
Flow Length=450' Tc=7.2 min CN=67 Runoff=3.51 cfs 0.270 af

Subcatchment2S: SITE EAST Runoff Area=396,359 sf 0.00% Impervious Runoff Depth=1.36"
Flow Length=1,355' Tc=15.5 min CN=61 Runoff=9.72 cfs 1.029 af

Subcatchment3S: GRAVEL ROAD EAST Runoff Area=9,722 sf 0.00% Impervious Runoff Depth=2.69"
Tc=6.0 min CN=78 Runoff=0.70 cfs 0.050 af

Subcatchment4S: Existing-South Runoff Area=663,627 sf 5.46% Impervious Runoff Depth=2.10"
Flow Length=2,412' Tc=67.7 min CN=71 Runoff=13.39 cfs 2.668 af

Subcatchment5S: SITE Runoff Area=526,706 sf 9.58% Impervious Runoff Depth=2.97"
Flow Length=1,144' Tc=32.7 min CN=81 Runoff=22.88 cfs 2.990 af

Subcatchment6S: SITE Runoff Area=276,676 sf 9.52% Impervious Runoff Depth=2.61"
Flow Length=624' Tc=12.3 min CN=77 Runoff=15.77 cfs 1.379 af

Subcatchment7S: SITE Runoff Area=206,722 sf 10.83% Impervious Runoff Depth=3.06"
Tc=6.0 min CN=82 Runoff=16.97 cfs 1.211 af

Subcatchment8S: SITE Runoff Area=283,021 sf 0.00% Impervious Runoff Depth=2.69"
Tc=6.0 min CN=78 Runoff=20.50 cfs 1.459 af

Subcatchment9S: SITE Runoff Area=190,122 sf 0.00% Impervious Runoff Depth=1.64"
Flow Length=936' Tc=14.0 min CN=65 Runoff=6.14 cfs 0.597 af

Subcatchment10S: Existing-East Runoff Area=99.581 ac 1.24% Impervious Runoff Depth=1.79"
Flow Length=6,891' Tc=63.3 min CN=67 Runoff=76.24 cfs 14.847 af

Subcatchment12S: SITE Runoff Area=66,854 sf 0.32% Impervious Runoff Depth=2.26"
Flow Length=325' Tc=9.0 min CN=73 Runoff=3.64 cfs 0.290 af

Reach 1.1R: Time Thru 2S Avg. Flow Depth=0.41' Max Vel=2.92 fps Inflow=3.51 cfs 0.270 af
n=0.100 L=456.0' S=0.2237 '/' Capacity=7.45 cfs Outflow=3.32 cfs 0.270 af

Reach 1.2R: Time Thru 2S Avg. Flow Depth=0.61' Max Vel=6.70 fps Inflow=8.98 cfs 0.867 af
n=0.040 L=277.0' S=0.1264 '/' Capacity=132.55 cfs Outflow=8.96 cfs 0.867 af

Reach 1R: Time Thru 2S Avg. Flow Depth=0.51' Max Vel=5.96 fps Inflow=6.14 cfs 0.597 af
n=0.040 L=355.0' S=0.1211 '/' Capacity=129.78 cfs Outflow=6.12 cfs 0.597 af

Reach 5R: Time Thru 7S Avg. Flow Depth=0.65' Max Vel=5.42 fps Inflow=18.93 cfs 1.946 af
n=0.040 L=430.0' S=0.0535 '/' Capacity=158.33 cfs Outflow=18.83 cfs 1.946 af

Reach 6R: Time Thru 6S Avg. Flow Depth=0.42' Max Vel=1.14 fps Inflow=2.20 cfs 2.979 af
n=0.400 L=250.0' S=0.5376 '/' Capacity=14.89 cfs Outflow=2.20 cfs 2.979 af

Reach 7R: Time Thru 2S Avg. Flow Depth=0.15' Max Vel=4.20 fps Inflow=1.46 cfs 3.655 af
n=0.040 L=238.0' S=0.1933 '/' Capacity=526.52 cfs Outflow=1.46 cfs 3.654 af

Pond 1P: HW#1A - HW#1B Peak Elev=1,049.25' Inflow=3.51 cfs 0.270 af
15.0" Round Culvert n=0.013 L=41.0' S=0.0551 '/' Outflow=3.51 cfs 0.270 af

Pond 2P: Twin 24" Culverts (HW#3A - HW#3B AND HW#4A - Peak Elev=908.41' Inflow=18.53 cfs 1.896 af
24.0" Round Culvert x 2.00 n=0.013 L=27.0' S=0.0185 '/' Outflow=18.53 cfs 1.896 af

Pond 3P: HW#5A - HW#5B Peak Elev=907.42' Inflow=0.70 cfs 0.050 af
15.0" Round Culvert n=0.013 L=68.0' S=0.0074 '/' Outflow=0.70 cfs 0.050 af

Pond 4P: HW#10 - DMH#1 Peak Elev=882.40' Inflow=22.14 cfs 5.890 af
36.0" Round Culvert n=0.013 L=146.0' S=0.0308 '/' Outflow=22.14 cfs 5.890 af

Pond 6P: DMH#1 - HW#8 Peak Elev=878.03' Inflow=23.41 cfs 7.094 af
36.0" Round Culvert n=0.013 L=426.0' S=0.0059 '/' Outflow=23.41 cfs 7.094 af

Pond 10P: HW#2A - HW#2B Peak Elev=991.46' Inflow=6.14 cfs 0.597 af
15.0" Round Culvert n=0.013 L=26.0' S=0.0673 '/' Outflow=6.14 cfs 0.597 af

Pond SF1: EX. SEDIMENT BASIN Peak Elev=870.21' Storage=342,772 cf Inflow=37.67 cfs 8.553 af
Discarded=0.25 cfs 0.684 af Primary=0.00 cfs 0.000 af Outflow=0.25 cfs 0.684 af

Pond SF5: PROP. SEDIMENT BASIN Peak Elev=1,093.65' Storage=74,045 cf Inflow=22.88 cfs 2.990 af
Outflow=2.20 cfs 2.979 af

Pond SF6: PROP. SEDIMENT BASIN Peak Elev=950.64' Storage=96,298 cf Inflow=16.80 cfs 4.358 af
Outflow=1.46 cfs 3.655 af

Pond SF7: PROP. SEDIMENT BASIN Peak Elev=890.62' Storage=26,392 cf Inflow=16.97 cfs 1.211 af
Outflow=1.45 cfs 1.204 af

Link A: POA Inflow=13.39 cfs 2.668 af
Primary=13.39 cfs 2.668 af

Link B: POA Inflow=76.24 cfs 14.847 af
Primary=76.24 cfs 14.847 af

Total Runoff Area = 161.537 ac Runoff Volume = 26.790 af Average Runoff Depth = 1.99"
97.31% Pervious = 157.185 ac 2.69% Impervious = 4.352 ac

Time span=0.00-48.00 hrs, dt=0.02 hrs, 2401 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

Subcatchment1S: SITE NORTHEAST Runoff Area=79,004 sf 0.00% Impervious Runoff Depth=2.42"
Flow Length=450' Tc=7.2 min CN=67 Runoff=4.85 cfs 0.367 af

Subcatchment2S: SITE EAST Runoff Area=396,359 sf 0.00% Impervious Runoff Depth=1.91"
Flow Length=1,355' Tc=15.5 min CN=61 Runoff=14.34 cfs 1.450 af

Subcatchment3S: GRAVEL ROAD EAST Runoff Area=9,722 sf 0.00% Impervious Runoff Depth=3.46"
Tc=6.0 min CN=78 Runoff=0.90 cfs 0.064 af

Subcatchment4S: Existing-South Runoff Area=663,627 sf 5.46% Impervious Runoff Depth=2.79"
Flow Length=2,412' Tc=67.7 min CN=71 Runoff=17.98 cfs 3.537 af

Subcatchment5S: SITE Runoff Area=526,706 sf 9.58% Impervious Runoff Depth=3.76"
Flow Length=1,144' Tc=32.7 min CN=81 Runoff=28.87 cfs 3.785 af

Subcatchment6S: SITE Runoff Area=276,676 sf 9.52% Impervious Runoff Depth=3.36"
Flow Length=624' Tc=12.3 min CN=77 Runoff=20.34 cfs 1.777 af

Subcatchment7S: SITE Runoff Area=206,722 sf 10.83% Impervious Runoff Depth=3.86"
Tc=6.0 min CN=82 Runoff=21.27 cfs 1.526 af

Subcatchment8S: SITE Runoff Area=283,021 sf 0.00% Impervious Runoff Depth=3.46"
Tc=6.0 min CN=78 Runoff=26.27 cfs 1.871 af

Subcatchment9S: SITE Runoff Area=190,122 sf 0.00% Impervious Runoff Depth=2.25"
Flow Length=936' Tc=14.0 min CN=65 Runoff=8.66 cfs 0.818 af

Subcatchment10S: Existing-East Runoff Area=99.581 ac 1.24% Impervious Runoff Depth=2.42"
Flow Length=6,891' Tc=63.3 min CN=67 Runoff=105.66 cfs 20.123 af

Subcatchment12S: SITE Runoff Area=66,854 sf 0.32% Impervious Runoff Depth=2.97"
Flow Length=325' Tc=9.0 min CN=73 Runoff=4.81 cfs 0.380 af

Reach 1.1R: Time Thru 2S Avg. Flow Depth=0.48' Max Vel=3.23 fps Inflow=4.85 cfs 0.367 af
n=0.100 L=456.0' S=0.2237 '/' Capacity=7.45 cfs Outflow=4.63 cfs 0.367 af

Reach 1.2R: Time Thru 2S Avg. Flow Depth=0.71' Max Vel=7.31 fps Inflow=12.60 cfs 1.185 af
n=0.040 L=277.0' S=0.1264 '/' Capacity=132.55 cfs Outflow=12.58 cfs 1.185 af

Reach 1R: Time Thru 2S Avg. Flow Depth=0.60' Max Vel=6.53 fps Inflow=8.66 cfs 0.818 af
n=0.040 L=355.0' S=0.1211 '/' Capacity=129.78 cfs Outflow=8.63 cfs 0.818 af

Reach 5R: Time Thru 7S Avg. Flow Depth=0.80' Max Vel=6.05 fps Inflow=27.22 cfs 2.699 af
n=0.040 L=430.0' S=0.0535 '/' Capacity=158.33 cfs Outflow=27.10 cfs 2.699 af

Reach 6R: Time Thru 6S Avg. Flow Depth=0.65' Max Vel=1.45 fps Inflow=5.66 cfs 3.772 af
n=0.400 L=250.0' S=0.5376 '/' Capacity=14.89 cfs Outflow=5.63 cfs 3.772 af

Reach 7R: Time Thru 2S Avg. Flow Depth=0.16' Max Vel=4.39 fps Inflow=1.66 cfs 4.365 af
n=0.040 L=238.0' S=0.1933 '/' Capacity=526.52 cfs Outflow=1.66 cfs 4.363 af

Pond 1P: HW#1A - HW#1B Peak Elev=1,049.56' Inflow=4.85 cfs 0.367 af
15.0" Round Culvert n=0.013 L=41.0' S=0.0551 '/' Outflow=4.85 cfs 0.367 af

Pond 2P: Twin 24" Culverts (HW#3A - HW#3B AND HW#4A - Peak Elev=908.81' Inflow=26.70 cfs 2.635 af
24.0" Round Culvert x 2.00 n=0.013 L=27.0' S=0.0185 '/' Outflow=26.70 cfs 2.635 af

Pond 3P: HW#5A - HW#5B Peak Elev=907.48' Inflow=0.90 cfs 0.064 af
15.0" Round Culvert n=0.013 L=68.0' S=0.0074 '/' Outflow=0.90 cfs 0.064 af

Pond 4P: HW#10 - DMH#1 Peak Elev=882.88' Inflow=31.50 cfs 7.443 af
36.0" Round Culvert n=0.013 L=146.0' S=0.0308 '/' Outflow=31.50 cfs 7.443 af

Pond 6P: DMH#1 - HW#8 Peak Elev=878.52' Inflow=32.93 cfs 8.962 af
36.0" Round Culvert n=0.013 L=426.0' S=0.0059 '/' Outflow=32.93 cfs 8.962 af

Pond 10P: HW#2A - HW#2B Peak Elev=992.52' Inflow=8.66 cfs 0.818 af
15.0" Round Culvert n=0.013 L=26.0' S=0.0673 '/' Outflow=8.66 cfs 0.818 af

Pond SF1: EX. SEDIMENT BASIN Peak Elev=873.04' Storage=438,070 cf Inflow=51.31 cfs 10.833 af
Discarded=0.29 cfs 0.776 af Primary=0.00 cfs 0.000 af Outflow=0.29 cfs 0.776 af

Pond SF5: PROP. SEDIMENT BASIN Peak Elev=1,094.41' Storage=87,875 cf Inflow=28.87 cfs 3.785 af
Outflow=5.66 cfs 3.772 af

Pond SF6: PROP. SEDIMENT BASIN Peak Elev=951.35' Storage=126,182 cf Inflow=21.57 cfs 5.549 af
Outflow=1.66 cfs 4.365 af

Pond SF7: PROP. SEDIMENT BASIN Peak Elev=891.27' Storage=34,265 cf Inflow=21.27 cfs 1.526 af
Outflow=1.64 cfs 1.519 af

Link A: POA Inflow=17.98 cfs 3.537 af
Primary=17.98 cfs 3.537 af

Link B: POA Inflow=105.66 cfs 20.123 af
Primary=105.66 cfs 20.123 af

Total Runoff Area = 161.537 ac Runoff Volume = 35.699 af Average Runoff Depth = 2.65"
97.31% Pervious = 157.185 ac 2.69% Impervious = 4.352 ac

Time span=0.00-48.00 hrs, dt=0.02 hrs, 2401 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

Subcatchment1S: SITE NORTHEAST Runoff Area=79,004 sf 0.00% Impervious Runoff Depth=3.23"
Flow Length=450' Tc=7.2 min CN=67 Runoff=6.53 cfs 0.488 af

Subcatchment2S: SITE EAST Runoff Area=396,359 sf 0.00% Impervious Runoff Depth=2.63"
Flow Length=1,355' Tc=15.5 min CN=61 Runoff=20.29 cfs 1.994 af

Subcatchment3S: GRAVEL ROAD EAST Runoff Area=9,722 sf 0.00% Impervious Runoff Depth=4.38"
Tc=6.0 min CN=78 Runoff=1.14 cfs 0.082 af

Subcatchment4S: Existing-South Runoff Area=663,627 sf 5.46% Impervious Runoff Depth=3.64"
Flow Length=2,412' Tc=67.7 min CN=71 Runoff=23.63 cfs 4.620 af

Subcatchment5S: SITE Runoff Area=526,706 sf 9.58% Impervious Runoff Depth=4.71"
Flow Length=1,144' Tc=32.7 min CN=81 Runoff=36.02 cfs 4.748 af

Subcatchment6S: SITE Runoff Area=276,676 sf 9.52% Impervious Runoff Depth=4.28"
Flow Length=624' Tc=12.3 min CN=77 Runoff=25.87 cfs 2.263 af

Subcatchment7S: SITE Runoff Area=206,722 sf 10.83% Impervious Runoff Depth=4.82"
Tc=6.0 min CN=82 Runoff=26.39 cfs 1.907 af

Subcatchment8S: SITE Runoff Area=283,021 sf 0.00% Impervious Runoff Depth=4.38"
Tc=6.0 min CN=78 Runoff=33.20 cfs 2.374 af

Subcatchment9S: SITE Runoff Area=190,122 sf 0.00% Impervious Runoff Depth=3.03"
Flow Length=936' Tc=14.0 min CN=65 Runoff=11.84 cfs 1.100 af

Subcatchment10S: Existing-East Runoff Area=99.581 ac 1.24% Impervious Runoff Depth=3.23"
Flow Length=6,891' Tc=63.3 min CN=67 Runoff=142.52 cfs 26.783 af

Subcatchment12S: SITE Runoff Area=66,854 sf 0.32% Impervious Runoff Depth=3.85"
Flow Length=325' Tc=9.0 min CN=73 Runoff=6.24 cfs 0.492 af

Reach 1.1R: Time Thru 2S Avg. Flow Depth=0.55' Max Vel=3.53 fps Inflow=6.53 cfs 0.488 af
n=0.100 L=456.0' S=0.2237 '/' Capacity=7.45 cfs Outflow=6.28 cfs 0.488 af

Reach 1.2R: Time Thru 2S Avg. Flow Depth=0.82' Max Vel=7.91 fps Inflow=17.16 cfs 1.588 af
n=0.040 L=277.0' S=0.1264 '/' Capacity=132.55 cfs Outflow=17.15 cfs 1.588 af

Reach 1R: Time Thru 2S Avg. Flow Depth=0.70' Max Vel=7.08 fps Inflow=11.84 cfs 1.100 af
n=0.040 L=355.0' S=0.1211 '/' Capacity=129.78 cfs Outflow=11.81 cfs 1.100 af

Reach 5R: Time Thru 7S Avg. Flow Depth=0.96' Max Vel=6.66 fps Inflow=37.77 cfs 3.664 af
n=0.040 L=430.0' S=0.0535 '/' Capacity=158.33 cfs Outflow=37.63 cfs 3.664 af

Reach 6R: Time Thru 6S Avg. Flow Depth=0.80' Max Vel=1.64 fps Inflow=8.97 cfs 4.735 af
n=0.400 L=250.0' S=0.5376 '/' Capacity=14.89 cfs Outflow=8.97 cfs 4.734 af

Reach 7R: Time Thru 2S Avg. Flow Depth=0.29' Max Vel=6.05 fps Inflow=4.48 cfs 5.743 af
n=0.040 L=238.0' S=0.1933 '/' Capacity=526.52 cfs Outflow=4.48 cfs 5.742 af

Pond 1P: HW#1A - HW#1B Peak Elev=1,050.11' Inflow=6.53 cfs 0.488 af
15.0" Round Culvert n=0.013 L=41.0' S=0.0551 '/' Outflow=6.53 cfs 0.488 af

Pond 2P: Twin 24" Culverts (HW#3A - HW#3B AND HW#4A - Peak Elev=909.51' Inflow=37.12 cfs 3.582 af
24.0" Round Culvert x 2.00 n=0.013 L=27.0' S=0.0185 '/' Outflow=37.12 cfs 3.582 af

Pond 3P: HW#5A - HW#5B Peak Elev=907.55' Inflow=1.14 cfs 0.082 af
15.0" Round Culvert n=0.013 L=68.0' S=0.0074 '/' Outflow=1.14 cfs 0.082 af

Pond 4P: HW#10 - DMH#1 Peak Elev=883.62' Inflow=43.36 cfs 9.898 af
36.0" Round Culvert n=0.013 L=146.0' S=0.0308 '/' Outflow=43.36 cfs 9.898 af

Pond 6P: DMH#1 - HW#8 Peak Elev=879.25' Inflow=44.96 cfs 11.798 af
36.0" Round Culvert n=0.013 L=426.0' S=0.0059 '/' Outflow=44.96 cfs 11.798 af

Pond 10P: HW#2A - HW#2B Peak Elev=994.39' Inflow=11.84 cfs 1.100 af
15.0" Round Culvert n=0.013 L=26.0' S=0.0673 '/' Outflow=11.84 cfs 1.100 af

Pond SF1: EX. SEDIMENT BASIN Peak Elev=873.66' Storage=460,307 cf Inflow=68.32 cfs 14.172 af
Discarded=0.29 cfs 0.852 af Primary=2.95 cfs 2.827 af Outflow=3.24 cfs 3.679 af

Pond SF5: PROP. SEDIMENT BASIN Peak Elev=1,095.07' Storage=100,596 cf Inflow=36.02 cfs 4.748 af
Outflow=8.97 cfs 4.735 af

Pond SF6: PROP. SEDIMENT BASIN Peak Elev=951.49' Storage=132,309 cf Inflow=27.31 cfs 6.998 af
Outflow=4.48 cfs 5.743 af

Pond SF7: PROP. SEDIMENT BASIN Peak Elev=892.03' Storage=44,117 cf Inflow=26.39 cfs 1.907 af
Outflow=1.84 cfs 1.900 af

Link A: POA Inflow=23.63 cfs 7.448 af
Primary=23.63 cfs 7.448 af

Link B: POA Inflow=142.52 cfs 26.783 af
Primary=142.52 cfs 26.783 af

Total Runoff Area = 161.537 ac Runoff Volume = 46.852 af Average Runoff Depth = 3.48"
97.31% Pervious = 157.185 ac 2.69% Impervious = 4.352 ac

Summary for Subcatchment 1S: SITE NORTHEAST

Runoff = 3.51 cfs @ 12.11 hrs, Volume= 0.270 af, Depth= 1.79"
Routed to Pond 1P : HW#1A - HW#1B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YR Rainfall=4.98"

	Area (sf)	CN	Description
	7,907	61	>75% Grass cover, Good, HSG B
	1,133	74	>75% Grass cover, Good, HSG C
	5,908	80	>75% Grass cover, Good, HSG D
	28,934	55	Woods, Good, HSG B
	11,647	70	Woods, Good, HSG C
	19,575	77	Woods, Good, HSG D
*	3,900	96	Gravel surface
	79,004	67	Weighted Average
	79,004		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.3600	0.20		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.76"
3.0	400	0.1000	2.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.2	450	Total			

Summary for Subcatchment 2S: SITE EAST

Runoff = 9.72 cfs @ 12.24 hrs, Volume= 1.029 af, Depth= 1.36"
Routed to Pond 2P : Twin 24" Culverts (HW#3A - HW#3B AND HW#4A - HW#4B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YR Rainfall=4.98"

	Area (sf)	CN	Description
	32,026	61	>75% Grass cover, Good, HSG B
	30,085	74	>75% Grass cover, Good, HSG C
	5,114	80	>75% Grass cover, Good, HSG D
	258,850	55	Woods, Good, HSG B
	52,353	70	Woods, Good, HSG C
	1,847	77	Woods, Good, HSG D
*	16,084	96	Gravel surface
	396,359	61	Weighted Average
	396,359		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	50	0.1200	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.76"
5.2	697	0.2009	2.24		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.1	458	0.2500	2.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.7	150	0.2500	3.50		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
15.5	1,355	Total			

Summary for Subcatchment 3S: GRAVEL ROAD EAST

Runoff = 0.70 cfs @ 12.09 hrs, Volume= 0.050 af, Depth= 2.69"
Routed to Pond 3P : HW#5A - HW#5B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YR Rainfall=4.98"

	Area (sf)	CN	Description
	4,539	61	>75% Grass cover, Good, HSG B
	774	74	>75% Grass cover, Good, HSG C
*	4,409	96	Gravel surface
	9,722	78	Weighted Average
	9,722		100.00% Pervious Area

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

Summary for Subcatchment 4S: Existing-South

Runoff = 13.39 cfs @ 12.94 hrs, Volume= 2.668 af, Depth= 2.10"
Routed to Link A : POA

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YR Rainfall=4.98"

	Area (sf)	CN	Description
	98,300	55	Woods, Good, HSG B
	25,752	61	>75% Grass cover, Good, HSG B
	302,710	70	Woods, Good, HSG C
	148,882	74	>75% Grass cover, Good, HSG C
	39,890	77	Woods, Good, HSG D
*	11,854	96	Gravel surface
*	36,239	98	Paved parking
	663,627	71	Weighted Average
	627,388		94.54% Pervious Area
	36,239		5.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	64	0.1719	0.16		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.76"
1.7	350	0.4629	3.40		**Shallow Concentrated Flow, Woods to Grass** Woodland Kv= 5.0 fps
1.1	485	0.1979	7.16		**Shallow Concentrated Flow, Grass to Woods** Unpaved Kv= 16.1 fps
0.5	68	0.2059	2.27		**Shallow Concentrated Flow, Woods to Wetlands** Woodland Kv= 5.0 fps
10.2	520	0.1154	0.85		**Shallow Concentrated Flow, Wetlands** Forest w/Heavy Litter Kv= 2.5 fps
0.3	54	0.2963	2.72		**Shallow Concentrated Flow, Wetland to Culvert** Woodland Kv= 5.0 fps
0.0	62	0.1145	24.37	76.55	**Pipe Channel, Driveway Culvert** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
5.0	316	0.0443	1.05		**Shallow Concentrated Flow, Woods to Wetlands** Woodland Kv= 5.0 fps
42.1	493	0.0061	0.20		**Shallow Concentrated Flow, Wetlands** Forest w/Heavy Litter Kv= 2.5 fps
67.7	2,412	Total			

Summary for Subcatchment 5S: SITE

Runoff = 22.88 cfs @ 12.46 hrs, Volume= 2.990 af, Depth= 2.97"
Routed to Pond SF5 : PROP. SEDIMENT BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YR Rainfall=4.98"

	Area (sf)	CN	Description
	7,029	61	>75% Grass cover, Good, HSG B
	8,833	74	>75% Grass cover, Good, HSG C
	445,067	80	>75% Grass cover, Good, HSG D
	15,234	55	Woods, Good, HSG B
	0	77	Woods, Good, HSG D
*	65	96	Gravel surface
*	50,478	98	Ledge
	526,706	81	Weighted Average
	476,228		90.42% Pervious Area
	50,478		9.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	50	0.4000	0.46		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.76"
0.1	32	1.0000	7.00		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.2	220	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.1	296	0.0060	0.54		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.5	400	0.0050	0.49		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.0	146	0.0130	0.80		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
32.7	1,144	Total			

Summary for Subcatchment 6S: SITE

Runoff = 15.77 cfs @ 12.17 hrs, Volume= 1.379 af, Depth= 2.61"
Routed to Pond SF6 : PROP. SEDIMENT BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YR Rainfall=4.98"

	Area (sf)	CN	Description
	867	61	>75% Grass cover, Good, HSG B
	28,701	74	>75% Grass cover, Good, HSG C
	105,369	80	>75% Grass cover, Good, HSG D
	6,742	55	Woods, Good, HSG B
	101,770	70	Woods, Good, HSG C
	6,533	77	Woods, Good, HSG D
*	367	96	Gravel surface
*	26,327	98	Ledge
	276,676	77	Weighted Average
	250,349		90.48% Pervious Area
	26,327		9.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	50	0.1000	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.76"
1.8	339	0.4000	3.16		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	35	1.0000	7.00		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.4	200	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
12.3	624	Total			

Summary for Subcatchment 7S: SITE

Runoff = 16.97 cfs @ 12.09 hrs, Volume= 1.211 af, Depth= 3.06"
Routed to Pond SF7 : PROP. SEDIMENT BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YR Rainfall=4.98"

	Area (sf)	CN	Description
	0	61	>75% Grass cover, Good, HSG B
	9,013	74	>75% Grass cover, Good, HSG C
	175,058	80	>75% Grass cover, Good, HSG D
*	258	96	Gravel surface
*	22,393	98	Ledge
	206,722	82	Weighted Average
	184,329		89.17% Pervious Area
	22,393		10.83% Impervious Area

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

Summary for Subcatchment 8S: SITE

Runoff = 20.50 cfs @ 12.09 hrs, Volume= 1.459 af, Depth= 2.69"
Routed to Pond SF1 : EX. SEDIMENT BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YR Rainfall=4.98"

	Area (sf)	CN	Description
	30,087	61	>75% Grass cover, Good, HSG B
	22,914	74	>75% Grass cover, Good, HSG C
	224,053	80	>75% Grass cover, Good, HSG D
*	5,967	96	Gravel surface
	283,021	78	Weighted Average
	283,021		100.00% Pervious Area

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

Summary for Subcatchment 9S: SITE

Runoff = 6.14 cfs @ 12.21 hrs, Volume= 0.597 af, Depth= 1.64"
Routed to Pond 10P : HW#2A - HW#2B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YR Rainfall=4.98"

	Area (sf)	CN	Description
	15,575	61	>75% Grass cover, Good, HSG B
	3,937	74	>75% Grass cover, Good, HSG C
	101,360	70	Woods, Good, HSG C
	65,344	55	Woods, Good, HSG B
*	3,906	96	Gravel surface
	190,122	65	Weighted Average
	190,122		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	50	0.0822	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.76"
6.2	826	0.2000	2.24		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	60	0.2000	3.13		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
14.0	936	Total			

Summary for Subcatchment 10S: Existing-East

Runoff = 76.24 cfs @ 12.88 hrs, Volume= 14.847 af, Depth= 1.79"
Routed to Link B : POA

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YR Rainfall=4.98"

	Area (ac)	CN	Description
	4.434	30	Woods, Good, HSG A
	12.534	55	Woods, Good, HSG B
	5.077	61	>75% Grass cover, Good, HSG B
	0.000	86	Newly graded area, HSG B
	73.191	70	Woods, Good, HSG C
	0.574	74	>75% Grass cover, Good, HSG C
	0.000	91	Newly graded area, HSG C
	1.892	77	Woods, Good, HSG D
	0.153	80	>75% Grass cover, Good, HSG D
*	0.488	96	Gravel surface
*	1.196	98	Pavement/Roof
	0.042	98	Water Surface, HSG B
	99.581	67	Weighted Average
	98.343		98.76% Pervious Area
	1.238		1.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	100	0.1500	0.16		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.76"
37.7	2,618	0.0535	1.16		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.2	835	0.0479	3.28		**Shallow Concentrated Flow, Water-USGS** Grassed Waterway Kv= 15.0 fps
7.7	2,324	0.1123	5.03		**Shallow Concentrated Flow, Wetland-Stream** Grassed Waterway Kv= 15.0 fps
0.0	38	0.0684	15.55	27.47	**Pipe Channel, 18" culvert** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
1.9	497	0.0865	4.41		**Shallow Concentrated Flow, Wetland-Water** Grassed Waterway Kv= 15.0 fps
0.0	21	0.0238	8.12	9.97	**Pipe Channel, 15" culvert** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
1.5	458	0.1154	5.10		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
63.3	6,891	Total			

Summary for Subcatchment 12S: SITE

Runoff = 3.64 cfs @ 12.13 hrs, Volume= 0.290 af, Depth= 2.26"
Routed to Pond 4P : HW#10 - DMH#1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YR Rainfall=4.98"

	Area (sf)	CN	Description
	8,165	55	Woods, Good, HSG B
	18,266	70	Woods, Good, HSG C
	6,470	61	>75% Grass cover, Good, HSG B
	19,091	74	>75% Grass cover, Good, HSG C
	6,774	80	>75% Grass cover, Good, HSG D
*	7,875	96	Gravel surface
*	213	98	Ledge
	66,854	73	Weighted Average
	66,641		99.68% Pervious Area
	213		0.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	100	0.2800	0.21		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.76"
0.2	96	0.2083	7.35		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.8	129	0.0310	2.83		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
9.0	325	Total			

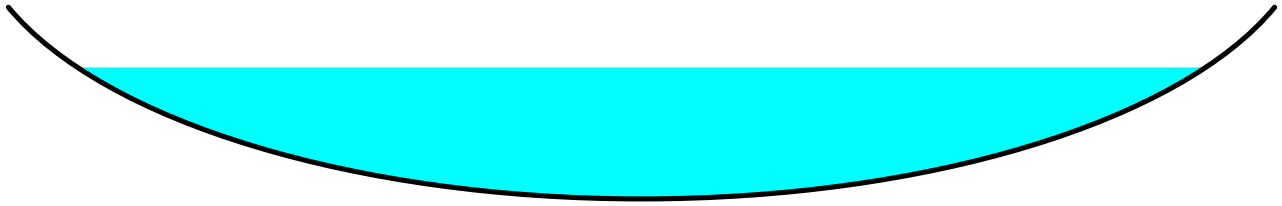
Summary for Reach 1.1R: Time Thru 2S

Inflow Area = 1.814 ac, 0.00% Impervious, Inflow Depth = 1.79" for 25-YR event
Inflow = 3.51 cfs @ 12.11 hrs, Volume= 0.270 af
Outflow = 3.32 cfs @ 12.14 hrs, Volume= 0.270 af, Atten= 5%, Lag= 1.9 min
Routed to Reach 1.2R : Time Thru 2S

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 2.92 fps, Min. Travel Time= 2.6 min
Avg. Velocity = 0.95 fps, Avg. Travel Time= 8.0 min

Peak Storage= 519 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.41' , Surface Width= 4.14'
Bank-Full Depth= 0.60' Flow Area= 2.0 sf, Capacity= 7.45 cfs

5.00' x 0.60' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage
Length= 456.0' Slope= 0.2237 '/'
Inlet Invert= 1,046.00', Outlet Invert= 944.00'



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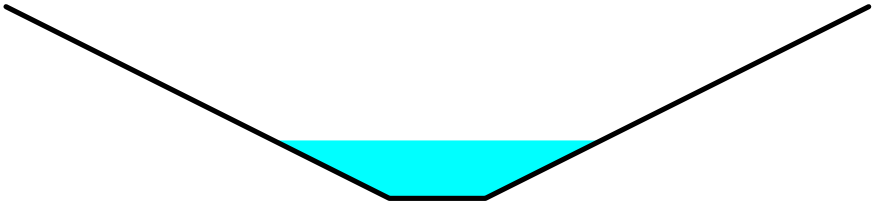
Summary for Reach 1.2R: Time Thru 2S

Inflow Area = 6.178 ac, 0.00% Impervious, Inflow Depth = 1.68" for 25-YR event
Inflow = 8.98 cfs @ 12.19 hrs, Volume= 0.867 af
Outflow = 8.96 cfs @ 12.20 hrs, Volume= 0.867 af, Atten= 0%, Lag= 0.6 min
Routed to Pond 2P : Twin 24" Culverts (HW#3A - HW#3B AND HW#4A - HW#4B)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 6.70 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 2.62 fps, Avg. Travel Time= 1.8 min

Peak Storage= 371 cf @ 12.20 hrs
Average Depth at Peak Storage= 0.61' , Surface Width= 3.42'
Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 132.55 cfs

1.00' x 2.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 9.00'
Length= 277.0' Slope= 0.1264 '/'
Inlet Invert= 943.00', Outlet Invert= 908.00'



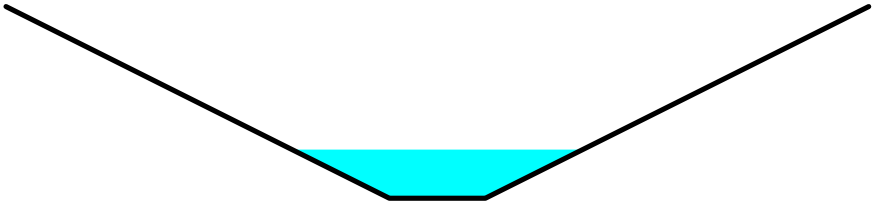
Summary for Reach 1R: Time Thru 2S

Inflow Area = 4.365 ac, 0.00% Impervious, Inflow Depth = 1.64" for 25-YR event
Inflow = 6.14 cfs @ 12.21 hrs, Volume= 0.597 af
Outflow = 6.12 cfs @ 12.22 hrs, Volume= 0.597 af, Atten= 0%, Lag= 0.8 min
Routed to Reach 1.2R : Time Thru 2S

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 5.96 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 2.46 fps, Avg. Travel Time= 2.4 min

Peak Storage= 364 cf @ 12.22 hrs
Average Depth at Peak Storage= 0.51' , Surface Width= 3.03'
Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 129.78 cfs

1.00' x 2.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 9.00'
Length= 355.0' Slope= 0.1211 '/'
Inlet Invert= 987.00', Outlet Invert= 944.00'



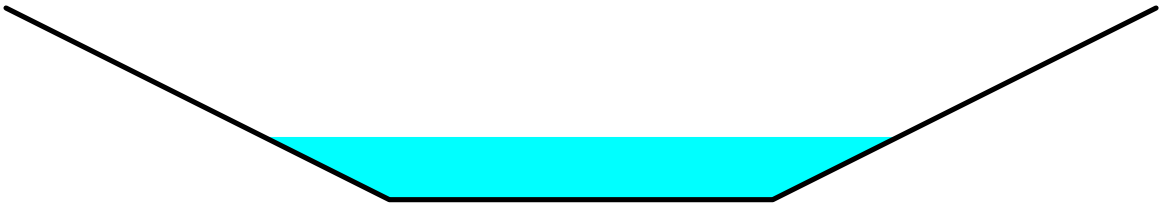
Summary for Reach 5R: Time Thru 7S

Inflow Area = 15.501 ac, 0.00% Impervious, Inflow Depth = 1.51" for 25-YR event
Inflow = 18.93 cfs @ 12.22 hrs, Volume= 1.946 af
Outflow = 18.83 cfs @ 12.23 hrs, Volume= 1.946 af, Atten= 1%, Lag= 1.0 min
Routed to Pond 4P : HW#10 - DMH#1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 5.42 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 1.68 fps, Avg. Travel Time= 4.3 min

Peak Storage= 1,493 cf @ 12.23 hrs
Average Depth at Peak Storage= 0.65' , Surface Width= 6.62'
Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 158.33 cfs

4.00' x 2.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 12.00'
Length= 430.0' Slope= 0.0535 '/'
Inlet Invert= 905.50', Outlet Invert= 882.50'



Summary for Reach 6R: Time Thru 6S

Inflow Area = 12.092 ac, 9.58% Impervious, Inflow Depth > 2.96" for 25-YR event
Inflow = 2.20 cfs @ 15.07 hrs, Volume= 2.979 af
Outflow = 2.20 cfs @ 15.11 hrs, Volume= 2.979 af, Atten= 0%, Lag= 2.6 min
Routed to Pond SF6 : PROP. SEDIMENT BASIN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 1.14 fps, Min. Travel Time= 3.7 min
Avg. Velocity = 0.73 fps, Avg. Travel Time= 5.7 min

Peak Storage= 483 cf @ 15.11 hrs
Average Depth at Peak Storage= 0.42' , Surface Width= 7.10'
Bank-Full Depth= 1.00' Flow Area= 8.0 sf, Capacity= 14.89 cfs

2.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 6.0 '/' Top Width= 14.00'
Length= 250.0' Slope= 0.5376 '/'
Inlet Invert= 1,086.40', Outlet Invert= 952.00'

‡

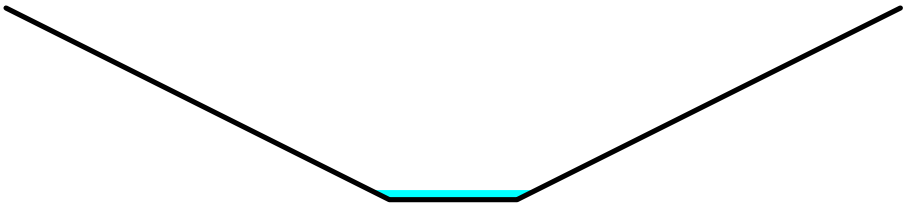
Summary for Reach 7R: Time Thru 2S

Inflow Area = 18.443 ac, 9.56% Impervious, Inflow Depth > 2.38" for 25-YR event
Inflow = 1.46 cfs @ 26.16 hrs, Volume= 3.655 af
Outflow = 1.46 cfs @ 26.17 hrs, Volume= 3.654 af, Atten= 0%, Lag= 0.6 min
Routed to Pond 4P : HW#10 - DMH#1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 4.20 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 3.78 fps, Avg. Travel Time= 1.0 min

Peak Storage= 83 cf @ 26.17 hrs
Average Depth at Peak Storage= 0.15' , Surface Width= 2.60'
Bank-Full Depth= 3.00' Flow Area= 24.0 sf, Capacity= 526.52 cfs

2.00' x 3.00' deep channel, n= 0.040
Side Slope Z-value= 2.0 '/' Top Width= 14.00'
Length= 238.0' Slope= 0.1933 '/'
Inlet Invert= 927.00', Outlet Invert= 881.00'



Summary for Pond 1P: HW#1A - HW#1B

Inflow Area = 1.814 ac, 0.00% Impervious, Inflow Depth = 1.79" for 25-YR event
Inflow = 3.51 cfs @ 12.11 hrs, Volume= 0.270 af
Outflow = 3.51 cfs @ 12.11 hrs, Volume= 0.270 af, Atten= 0%, Lag= 0.0 min
Primary = 3.51 cfs @ 12.11 hrs, Volume= 0.270 af
Routed to Reach 1.1R : Time Thru 2S

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 1,049.25' @ 12.11 hrs
Flood Elev= 1,052.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,048.26'	**15.0" Round Culvert** L= 41.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,048.26' / 1,046.00' S= 0.0551 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.49 cfs @ 12.11 hrs HW=1,049.24' TW=1,046.40' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 3.49 cfs @ 3.37 fps)

Summary for Pond 2P: Twin 24" Culverts (HW#3A - HW#3B AND HW#4A - HW#4B)

Inflow Area = 15.277 ac, 0.00% Impervious, Inflow Depth = 1.49" for 25-YR event
Inflow = 18.53 cfs @ 12.22 hrs, Volume= 1.896 af
Outflow = 18.53 cfs @ 12.22 hrs, Volume= 1.896 af, Atten= 0%, Lag= 0.0 min
Primary = 18.53 cfs @ 12.22 hrs, Volume= 1.896 af
Routed to Reach 5R : Time Thru 7S

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 908.41' @ 12.22 hrs
Flood Elev= 910.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	907.00'	**24.0" Round Culvert X 2.00** L= 27.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 907.00' / 906.50' S= 0.0185 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=18.53 cfs @ 12.22 hrs HW=908.41' TW=906.15' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 18.53 cfs @ 5.49 fps)

Summary for Pond 3P: HW#5A - HW#5B

Inflow Area = 0.223 ac, 0.00% Impervious, Inflow Depth = 2.69" for 25-YR event
Inflow = 0.70 cfs @ 12.09 hrs, Volume= 0.050 af
Outflow = 0.70 cfs @ 12.09 hrs, Volume= 0.050 af, Atten= 0%, Lag= 0.0 min
Primary = 0.70 cfs @ 12.09 hrs, Volume= 0.050 af
Routed to Reach 5R : Time Thru 7S

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 907.42' @ 12.09 hrs
Flood Elev= 910.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	907.00'	**15.0" Round Culvert** L= 68.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 907.00' / 906.50' S= 0.0074 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.70 cfs @ 12.09 hrs HW=907.42' TW=905.97' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 0.70 cfs @ 2.88 fps)

Summary for Pond 4P: HW#10 - DMH#1

Inflow Area = 35.478 ac, 4.98% Impervious, Inflow Depth > 1.99" for 25-YR event
Inflow = 22.14 cfs @ 12.22 hrs, Volume= 5.890 af
Outflow = 22.14 cfs @ 12.22 hrs, Volume= 5.890 af, Atten= 0%, Lag= 0.0 min
Primary = 22.14 cfs @ 12.22 hrs, Volume= 5.890 af
Routed to Pond 6P : DMH#1 - HW#8

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 882.40' @ 12.22 hrs
Flood Elev= 884.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	880.50'	**36.0" Round Culvert** L= 146.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 880.50' / 876.00' S= 0.0308 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=22.13 cfs @ 12.22 hrs HW=882.40' TW=878.03' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 22.13 cfs @ 4.69 fps)

Summary for Pond 6P: DMH#1 - HW#8

Inflow Area = 40.224 ac, 5.67% Impervious, Inflow Depth > 2.12" for 25-YR event
Inflow = 23.41 cfs @ 12.22 hrs, Volume= 7.094 af
Outflow = 23.41 cfs @ 12.22 hrs, Volume= 7.094 af, Atten= 0%, Lag= 0.0 min
Primary = 23.41 cfs @ 12.22 hrs, Volume= 7.094 af
Routed to Pond SF1 : EX. SEDIMENT BASIN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 878.03' @ 12.22 hrs
Flood Elev= 881.56'

Device	Routing	Invert	Outlet Devices
#1	Primary	876.00'	**36.0" Round Culvert** L= 426.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 876.00' / 873.50' S= 0.0059 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=23.39 cfs @ 12.22 hrs HW=878.02' TW=857.43' (Dynamic Tailwater)
1=Culvert (Barrel Controls 23.39 cfs @ 6.52 fps)

Summary for Pond 10P: HW#2A - HW#2B

Inflow Area = 4.365 ac, 0.00% Impervious, Inflow Depth = 1.64" for 25-YR event
Inflow = 6.14 cfs @ 12.21 hrs, Volume= 0.597 af
Outflow = 6.14 cfs @ 12.21 hrs, Volume= 0.597 af, Atten= 0%, Lag= 0.0 min
Primary = 6.14 cfs @ 12.21 hrs, Volume= 0.597 af
Routed to Reach 1R : Time Thru 2S

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 991.46' @ 12.21 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	989.75'	**15.0" Round Culvert** L= 26.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 989.75' / 988.00' S= 0.0673 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=6.13 cfs @ 12.21 hrs HW=991.45' TW=987.51' (Dynamic Tailwater)
1=Culvert (Inlet Controls 6.13 cfs @ 4.99 fps)

Summary for Pond SF1: EX. SEDIMENT BASIN

Inflow Area = 46.721 ac, 4.88% Impervious, Inflow Depth > 2.20" for 25-YR event
Inflow = 37.67 cfs @ 12.13 hrs, Volume= 8.553 af
Outflow = 0.25 cfs @ 48.00 hrs, Volume= 0.684 af, Atten= 99%, Lag= 2,152.2 min
Discarded = 0.25 cfs @ 48.00 hrs, Volume= 0.684 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link A : POA

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Peak Elev= 870.21' @ 48.00 hrs Surf.Area= 31,424 sf Storage= 342,772 cf
Flood Elev= 874.00' Surf.Area= 37,000 sf Storage= 472,957 cf

Plug-Flow detention time= 1,129.3 min calculated for 0.683 af (8% of inflow)
Center-of-Mass det. time= 559.2 min (1,827.3 - 1,268.0)

Volume	Invert	Avail.Storage	Storage Description
#1	854.00'	472,957 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
854.00	11,947	465.0	0	0	11,947
856.00	13,856	490.0	25,779	25,779	14,073
858.00	15,865	515.0	29,698	55,478	16,311
860.00	18,100	555.0	33,940	89,418	19,881
862.00	20,900	605.0	38,966	128,385	24,640
864.00	23,400	630.0	44,276	172,661	27,390
866.00	26,000	655.0	49,377	222,038	30,251
868.00	28,600	681.0	54,579	276,618	33,321
870.00	31,100	695.0	59,683	336,300	35,381
872.00	34,300	735.0	65,374	401,674	40,153
874.00	37,000	745.0	71,283	472,957	42,044

Device	Routing	Invert	Outlet Devices
#1	Discarded	854.00'	**0.300 in/hr Exfiltration over Wetted area** Phase-In= 0.01'
#2	Primary	873.50'	**20.0' long + 4.0 '/' SideZ x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.25 cfs @ 48.00 hrs HW=870.21' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.25 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=854.00' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond SF5: PROP. SEDIMENT BASIN

Inflow Area = 12.092 ac, 9.58% Impervious, Inflow Depth = 2.97" for 25-YR event
Inflow = 22.88 cfs @ 12.46 hrs, Volume= 2.990 af
Outflow = 2.20 cfs @ 15.07 hrs, Volume= 2.979 af, Atten= 90%, Lag= 156.8 min
Primary = 2.20 cfs @ 15.07 hrs, Volume= 2.979 af
Routed to Reach 6R : Time Thru 6S

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 1,093.65' @ 15.07 hrs Surf.Area= 17,493 sf Storage= 74,045 cf
Flood Elev= 1,096.00' Surf.Area= 21,600 sf Storage= 119,983 cf

Plug-Flow detention time= 418.8 min calculated for 2.978 af (100% of inflow)
Center-of-Mass det. time= 416.9 min (1,260.9 - 844.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,088.00'	119,983 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,088.00	9,200	420.0	0	0	9,200
1,090.00	11,800	480.0	20,946	20,946	13,590
1,092.00	14,800	540.0	26,543	47,490	18,566
1,094.00	18,100	590.0	32,845	80,334	23,202
1,096.00	21,600	650.0	39,648	119,983	29,251

Device	Routing	Invert	Outlet Devices
#1	Primary	1,088.00'	**12.0" Round Culvert** L= 57.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,088.00' / 1,087.40' S= 0.0105 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	1,088.00'	**6.0" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	1,094.25'	**48.0" x 48.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.20 cfs @ 15.07 hrs HW=1,093.65' TW=1,086.82' (Dynamic Tailwater)
└─**1=Culvert** (Passes 2.20 cfs of 7.96 cfs potential flow)
  ├─**2=Orifice** (Orifice Controls 2.20 cfs @ 11.19 fps)
  └─**3=Grate** (Controls 0.00 cfs)

Summary for Pond SF6: PROP. SEDIMENT BASIN

Inflow Area = 18.443 ac, 9.56% Impervious, Inflow Depth > 2.84" for 25-YR event
Inflow = 16.80 cfs @ 12.17 hrs, Volume= 4.358 af
Outflow = 1.46 cfs @ 26.16 hrs, Volume= 3.655 af, Atten= 91%, Lag= 839.2 min
Primary = 1.46 cfs @ 26.16 hrs, Volume= 3.655 af
Routed to Reach 7R : Time Thru 2S

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 950.64' @ 26.16 hrs Surf.Area= 40,745 sf Storage= 96,298 cf
Flood Elev= 952.00' Surf.Area= 45,300 sf Storage= 154,920 cf

Plug-Flow detention time= 752.6 min calculated for 3.655 af (84% of inflow)
Center-of-Mass det. time= 626.7 min (1,755.7 - 1,129.0)

Volume	Invert	Avail.Storage	Storage Description
#1	948.00'	154,920 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
948.00	32,400	1,350.0	0	0	32,400
950.00	38,700	1,380.0	71,007	71,007	39,466
952.00	45,300	1,430.0	83,913	154,920	50,994

Device	Routing	Invert	Outlet Devices
#1	Primary	948.00'	**12.0" Round Culvert** L= 118.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 948.00' / 928.00' S= 0.1695 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	948.00'	**6.0" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	951.35'	**48.0" x 48.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.46 cfs @ 26.16 hrs HW=950.64' TW=927.15' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.46 cfs of 5.53 cfs potential flow)
  └─**2=Orifice** (Orifice Controls 1.46 cfs @ 7.44 fps)
  └─**3=Grate** (Controls 0.00 cfs)

Summary for Pond SF7: PROP. SEDIMENT BASIN

Inflow Area = 4.746 ac, 10.83% Impervious, Inflow Depth = 3.06" for 25-YR event
Inflow = 16.97 cfs @ 12.09 hrs, Volume= 1.211 af
Outflow = 1.45 cfs @ 13.13 hrs, Volume= 1.204 af, Atten= 91%, Lag= 62.5 min
Primary = 1.45 cfs @ 13.13 hrs, Volume= 1.204 af
Routed to Pond 6P : DMH#1 - HW#8

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 890.62' @ 13.13 hrs Surf.Area= 11,672 sf Storage= 26,392 cf
Flood Elev= 894.00' Surf.Area= 16,024 sf Storage= 73,127 cf

Plug-Flow detention time= 241.0 min calculated for 1.204 af (99% of inflow)
Center-of-Mass det. time= 238.3 min (1,054.8 - 816.5)

Volume	Invert	Avail.Storage	Storage Description
#1	888.00'	73,127 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
888.00	8,530	588.0	0	0	8,530
890.00	10,927	612.0	19,408	19,408	11,117
892.00	13,425	637.0	24,309	43,717	13,898
894.00	16,024	662.0	29,411	73,127	16,790

Device	Routing	Invert	Outlet Devices
#1	Primary	888.00'	**12.0" Round Culvert** L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 888.00' / 876.00' S= 0.1500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	888.00'	**6.0" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	893.50'	**48.0" x 48.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.45 cfs @ 13.13 hrs HW=890.62' TW=876.97' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.45 cfs of 5.50 cfs potential flow)
  ├─**2=Orifice** (Orifice Controls 1.45 cfs @ 7.41 fps)
  └─**3=Grate** (Controls 0.00 cfs)

Summary for Link A: POA

Inflow Area = 61.956 ac, 5.03% Impervious, Inflow Depth = 0.52" for 25-YR event
Inflow = 13.39 cfs @ 12.94 hrs, Volume= 2.668 af
Primary = 13.39 cfs @ 12.94 hrs, Volume= 2.668 af, Atten= 0%, Lag= 0.0 min

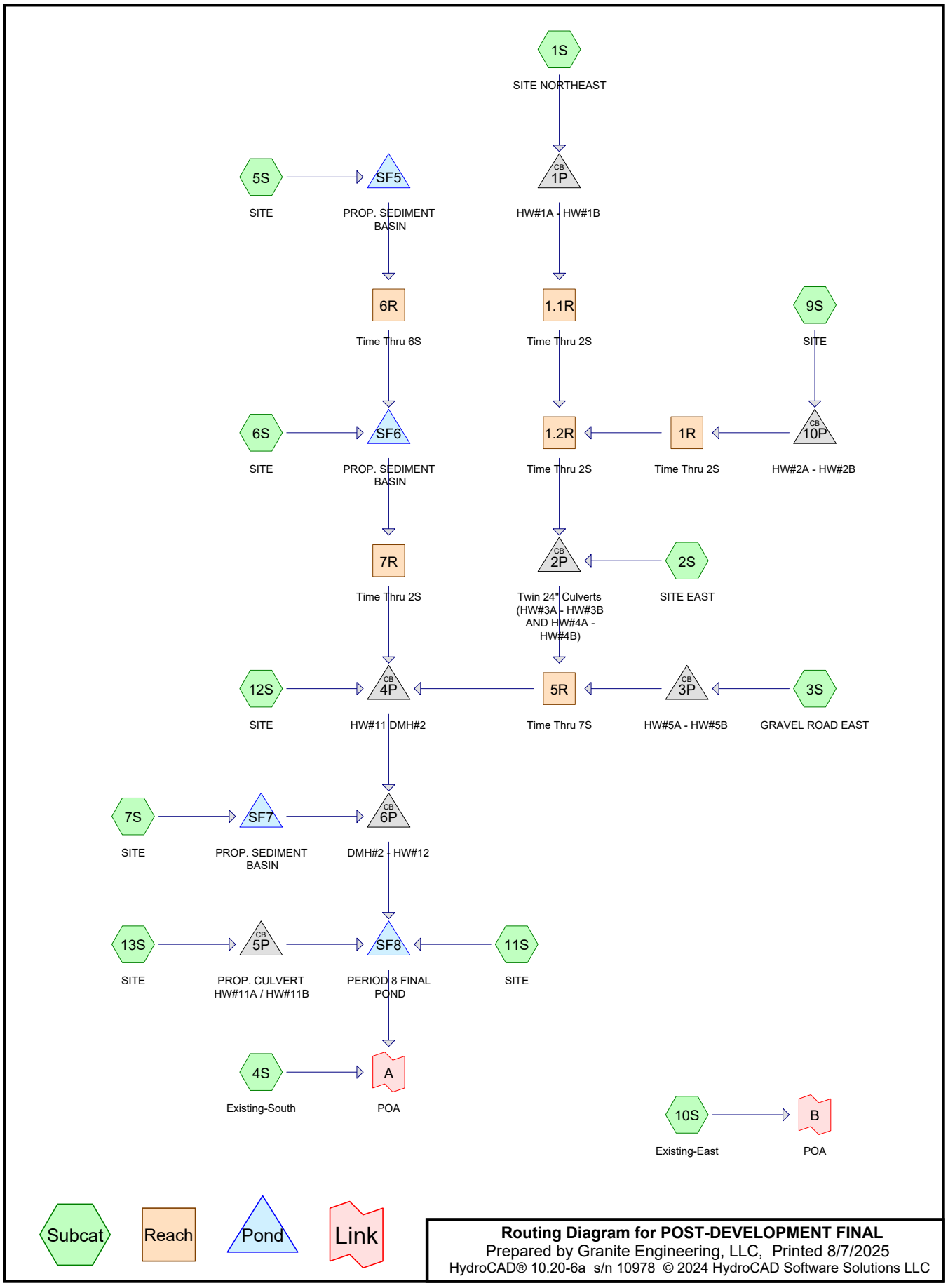
Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Summary for Link B: POA

Inflow Area = 99.581 ac, 1.24% Impervious, Inflow Depth = 1.79" for 25-YR event
Inflow = 76.24 cfs @ 12.88 hrs, Volume= 14.847 af
Primary = 76.24 cfs @ 12.88 hrs, Volume= 14.847 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

8. HYDROCAD DRAINAGE ANALYSIS – POST-DEVELOPMENT



Routing Diagram for POST-DEVELOPMENT FINAL
Prepared by Granite Engineering, LLC, Printed 8/7/2025

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-YR	Type III 24-hr		Default	24.00	1	2.76	2
2	10-YR	Type III 24-hr		Default	24.00	1	4.02	2
3	25-YR	Type III 24-hr		Default	24.00	1	4.98	2
4	50-YR	Type III 24-hr		Default	24.00	1	5.86	2
5	100-YR	Type III 24-hr		Default	24.00	1	6.90	2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
8.067	61	>75% Grass cover, Good, HSG B (1S, 2S, 3S, 4S, 5S, 6S, 9S, 10S, 11S, 12S, 13S)
6.850	74	>75% Grass cover, Good, HSG C (1S, 2S, 3S, 4S, 5S, 6S, 7S, 9S, 10S, 11S, 12S, 13S)
22.360	80	>75% Grass cover, Good, HSG D (1S, 2S, 5S, 6S, 7S, 10S, 11S, 12S, 13S)
1.743	96	Gravel surface (1S, 2S, 3S, 4S, 5S, 6S, 7S, 9S, 10S, 12S, 13S)
2.282	98	Ledge (5S, 6S, 7S, 12S)
0.832	98	Paved parking (4S)
1.196	98	Pavement/Roof (10S)
0.042	98	Water Surface, HSG B (10S)
4.434	30	Woods, Good, HSG A (10S)
23.589	55	Woods, Good, HSG B (1S, 2S, 4S, 5S, 6S, 9S, 10S, 12S)
86.692	70	Woods, Good, HSG C (1S, 2S, 4S, 6S, 9S, 10S, 12S)
3.450	77	Woods, Good, HSG D (1S, 2S, 4S, 6S, 10S)
161.537	**69**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
4.434	HSG A	10S
31.698	HSG B	1S, 2S, 3S, 4S, 5S, 6S, 9S, 10S, 11S, 12S, 13S
93.542	HSG C	1S, 2S, 3S, 4S, 5S, 6S, 7S, 9S, 10S, 11S, 12S, 13S
25.810	HSG D	1S, 2S, 4S, 5S, 6S, 7S, 10S, 11S, 12S, 13S
6.053	Other	1S, 2S, 3S, 4S, 5S, 6S, 7S, 9S, 10S, 12S, 13S
161.537		**TOTAL AREA**

Time span=0.00-48.00 hrs, dt=0.02 hrs, 2401 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

Subcatchment1S: SITE NORTHEAST Runoff Area=79,004 sf 0.00% Impervious Runoff Depth=0.47"
Flow Length=450' Tc=7.2 min CN=67 Runoff=0.70 cfs 0.071 af

Subcatchment2S: SITE EAST Runoff Area=396,359 sf 0.00% Impervious Runoff Depth=0.28"
Flow Length=1,355' Tc=15.5 min CN=61 Runoff=1.13 cfs 0.211 af

Subcatchment3S: GRAVEL ROAD EAST Runoff Area=9,722 sf 0.00% Impervious Runoff Depth=0.96"
Tc=6.0 min CN=78 Runoff=0.24 cfs 0.018 af

Subcatchment4S: Existing-South Runoff Area=663,627 sf 5.46% Impervious Runoff Depth=0.63"
Flow Length=2,412' Tc=67.7 min CN=71 Runoff=3.47 cfs 0.795 af

Subcatchment5S: SITE Runoff Area=526,706 sf 9.58% Impervious Runoff Depth=1.13"
Flow Length=1,144' Tc=32.7 min CN=81 Runoff=8.55 cfs 1.141 af

Subcatchment6S: SITE Runoff Area=276,676 sf 9.52% Impervious Runoff Depth=0.91"
Flow Length=624' Tc=12.3 min CN=77 Runoff=5.19 cfs 0.481 af

Subcatchment7S: SITE Runoff Area=206,722 sf 10.83% Impervious Runoff Depth=1.19"
Tc=6.0 min CN=82 Runoff=6.54 cfs 0.472 af

Subcatchment9S: SITE Runoff Area=190,122 sf 0.00% Impervious Runoff Depth=0.40"
Flow Length=936' Tc=14.0 min CN=65 Runoff=1.03 cfs 0.146 af

Subcatchment10S: Existing-East Runoff Area=99.581 ac 1.24% Impervious Runoff Depth=0.47"
Flow Length=6,891' Tc=63.3 min CN=67 Runoff=15.86 cfs 3.902 af

Subcatchment11S: SITE Runoff Area=236,726 sf 0.00% Impervious Runoff Depth=0.96"
Tc=6.0 min CN=78 Runoff=5.87 cfs 0.435 af

Subcatchment12S: SITE Runoff Area=66,854 sf 0.32% Impervious Runoff Depth=0.71"
Flow Length=325' Tc=9.0 min CN=73 Runoff=1.03 cfs 0.091 af

Subcatchment13S: SITE Runoff Area=46,295 sf 0.00% Impervious Runoff Depth=0.81"
Tc=6.0 min CN=75 Runoff=0.93 cfs 0.072 af

Reach 1.1R: Time Thru 2S Avg. Flow Depth=0.19' Max Vel=1.74 fps Inflow=0.70 cfs 0.071 af
n=0.100 L=456.0' S=0.2237 '/' Capacity=7.45 cfs Outflow=0.61 cfs 0.071 af

Reach 1.2R: Time Thru 2S Avg. Flow Depth=0.25' Max Vel=4.18 fps Inflow=1.58 cfs 0.217 af
n=0.040 L=277.0' S=0.1264 '/' Capacity=132.55 cfs Outflow=1.57 cfs 0.217 af

Reach 1R: Time Thru 2S Avg. Flow Depth=0.20' Max Vel=3.63 fps Inflow=1.03 cfs 0.146 af
n=0.040 L=355.0' S=0.1211 '/' Capacity=129.78 cfs Outflow=1.03 cfs 0.146 af

Reach 5R: Time Thru 7S Avg. Flow Depth=0.21' Max Vel=2.85 fps Inflow=2.71 cfs 0.446 af
n=0.040 L=430.0' S=0.0535 '/' Capacity=158.33 cfs Outflow=2.70 cfs 0.446 af

Reach 6R: Time Thru 6S Avg. Flow Depth=0.33' Max Vel=0.99 fps Inflow=1.32 cfs 1.133 af
n=0.400 L=250.0' S=0.5376 '/' Capacity=14.89 cfs Outflow=1.32 cfs 1.133 af

Reach 7R: Time Thru 2S Avg. Flow Depth=0.11' Max Vel=3.48 fps Inflow=0.84 cfs 1.484 af
n=0.040 L=238.0' S=0.1933 '/' Capacity=526.52 cfs Outflow=0.84 cfs 1.484 af

Pond 1P: HW#1A - HW#1B Peak Elev=1,048.65' Inflow=0.70 cfs 0.071 af
15.0" Round Culvert n=0.013 L=41.0' S=0.0551 '/' Outflow=0.70 cfs 0.071 af

Pond 2P: Twin 24" Culverts (HW#3A - HW#3B AND HW#4A - Peak Elev=907.47' Inflow=2.60 cfs 0.428 af
24.0" Round Culvert x 2.00 n=0.013 L=27.0' S=0.0185 '/' Outflow=2.60 cfs 0.428 af

Pond 3P: HW#5A - HW#5B Peak Elev=907.24' Inflow=0.24 cfs 0.018 af
15.0" Round Culvert n=0.013 L=68.0' S=0.0074 '/' Outflow=0.24 cfs 0.018 af

Pond 4P: HW#11 DMH#2 Peak Elev=881.18' Inflow=3.42 cfs 2.021 af
36.0" Round Culvert n=0.013 L=145.0' S=0.0586 '/' Outflow=3.42 cfs 2.021 af

Pond 5P: PROP. CULVERT HW#11A / HW#11B Peak Elev=851.46' Inflow=0.93 cfs 0.072 af
15.0" Round Culvert n=0.013 L=41.0' S=0.0732 '/' Outflow=0.93 cfs 0.072 af

Pond 6P: DMH#2 - HW#12 Peak Elev=872.76' Inflow=4.17 cfs 2.488 af
36.0" Round Culvert n=0.013 L=263.0' S=0.0989 '/' Outflow=4.17 cfs 2.488 af

Pond 10P: HW#2A - HW#2B Peak Elev=990.23' Inflow=1.03 cfs 0.146 af
15.0" Round Culvert n=0.013 L=26.0' S=0.0673 '/' Outflow=1.03 cfs 0.146 af

Pond SF5: PROP. SEDIMENT BASIN Peak Elev=1,090.20' Storage=23,340 cf Inflow=8.55 cfs 1.141 af
Outflow=1.32 cfs 1.133 af

Pond SF6: PROP. SEDIMENT BASIN Peak Elev=949.04' Storage=35,206 cf Inflow=5.48 cfs 1.614 af
Outflow=0.84 cfs 1.484 af

Pond SF7: PROP. SEDIMENT BASIN Peak Elev=888.98' Storage=8,957 cf Inflow=6.54 cfs 0.472 af
Outflow=0.81 cfs 0.466 af

Pond SF8: PERIOD 8 FINAL POND Peak Elev=846.73' Storage=105,000 cf Inflow=8.68 cfs 2.994 af
Discarded=0.23 cfs 0.647 af Primary=0.00 cfs 0.000 af Outflow=0.23 cfs 0.647 af

Link A: POA Inflow=3.47 cfs 0.795 af
Primary=3.47 cfs 0.795 af

Link B: POA Inflow=15.86 cfs 3.902 af
Primary=15.86 cfs 3.902 af

Total Runoff Area = 161.537 ac Runoff Volume = 7.834 af Average Runoff Depth = 0.58"
97.31% Pervious = 157.185 ac 2.69% Impervious = 4.352 ac

Time span=0.00-48.00 hrs, dt=0.02 hrs, 2401 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

Subcatchment1S: SITE NORTHEAST Runoff Area=79,004 sf 0.00% Impervious Runoff Depth=1.16"
Flow Length=450' Tc=7.2 min CN=67 Runoff=2.17 cfs 0.175 af

Subcatchment2S: SITE EAST Runoff Area=396,359 sf 0.00% Impervious Runoff Depth=0.82"
Flow Length=1,355' Tc=15.5 min CN=61 Runoff=5.28 cfs 0.624 af

Subcatchment3S: GRAVEL ROAD EAST Runoff Area=9,722 sf 0.00% Impervious Runoff Depth=1.90"
Tc=6.0 min CN=78 Runoff=0.49 cfs 0.035 af

Subcatchment4S: Existing-South Runoff Area=663,627 sf 5.46% Impervious Runoff Depth=1.41"
Flow Length=2,412' Tc=67.7 min CN=71 Runoff=8.71 cfs 1.787 af

Subcatchment5S: SITE Runoff Area=526,706 sf 9.58% Impervious Runoff Depth=2.14"
Flow Length=1,144' Tc=32.7 min CN=81 Runoff=16.48 cfs 2.155 af

Subcatchment6S: SITE Runoff Area=276,676 sf 9.52% Impervious Runoff Depth=1.83"
Flow Length=624' Tc=12.3 min CN=77 Runoff=10.96 cfs 0.967 af

Subcatchment7S: SITE Runoff Area=206,722 sf 10.83% Impervious Runoff Depth=2.22"
Tc=6.0 min CN=82 Runoff=12.34 cfs 0.878 af

Subcatchment9S: SITE Runoff Area=190,122 sf 0.00% Impervious Runoff Depth=1.04"
Flow Length=936' Tc=14.0 min CN=65 Runoff=3.65 cfs 0.378 af

Subcatchment10S: Existing-East Runoff Area=99.581 ac 1.24% Impervious Runoff Depth=1.16"
Flow Length=6,891' Tc=63.3 min CN=67 Runoff=46.94 cfs 9.602 af

Subcatchment11S: SITE Runoff Area=236,726 sf 0.00% Impervious Runoff Depth=1.90"
Tc=6.0 min CN=78 Runoff=12.04 cfs 0.862 af

Subcatchment12S: SITE Runoff Area=66,854 sf 0.32% Impervious Runoff Depth=1.54"
Flow Length=325' Tc=9.0 min CN=73 Runoff=2.43 cfs 0.197 af

Subcatchment13S: SITE Runoff Area=46,295 sf 0.00% Impervious Runoff Depth=1.68"
Tc=6.0 min CN=75 Runoff=2.06 cfs 0.149 af

Reach 1.1R: Time Thru 2S Avg. Flow Depth=0.33' Max Vel=2.51 fps Inflow=2.17 cfs 0.175 af
n=0.100 L=456.0' S=0.2237 '/' Capacity=7.45 cfs Outflow=2.02 cfs 0.175 af

Reach 1.2R: Time Thru 2S Avg. Flow Depth=0.47' Max Vel=5.85 fps Inflow=5.39 cfs 0.553 af
n=0.040 L=277.0' S=0.1264 '/' Capacity=132.55 cfs Outflow=5.37 cfs 0.553 af

Reach 1R: Time Thru 2S Avg. Flow Depth=0.39' Max Vel=5.19 fps Inflow=3.65 cfs 0.378 af
n=0.040 L=355.0' S=0.1211 '/' Capacity=129.78 cfs Outflow=3.63 cfs 0.378 af

Reach 5R: Time Thru 7S Avg. Flow Depth=0.48' Max Vel=4.55 fps Inflow=10.83 cfs 1.212 af
n=0.040 L=430.0' S=0.0535 '/' Capacity=158.33 cfs Outflow=10.76 cfs 1.212 af

Reach 6R: Time Thru 6S Avg. Flow Depth=0.39' Max Vel=1.09 fps Inflow=1.87 cfs 2.145 af
n=0.400 L=250.0' S=0.5376 '/' Capacity=14.89 cfs Outflow=1.87 cfs 2.145 af

Reach 7R: Time Thru 2S Avg. Flow Depth=0.14' Max Vel=3.97 fps Inflow=1.23 cfs 2.800 af
n=0.040 L=238.0' S=0.1933 '/' Capacity=526.52 cfs Outflow=1.23 cfs 2.799 af

Pond 1P: HW#1A - HW#1B Peak Elev=1,048.99' Inflow=2.17 cfs 0.175 af
15.0" Round Culvert n=0.013 L=41.0' S=0.0551 '/' Outflow=2.17 cfs 0.175 af

Pond 2P: Twin 24" Culverts (HW#3A - HW#3B AND HW#4A - Peak Elev=907.99' Inflow=10.56 cfs 1.177 af
24.0" Round Culvert x 2.00 n=0.013 L=27.0' S=0.0185 '/' Outflow=10.56 cfs 1.177 af

Pond 3P: HW#5A - HW#5B Peak Elev=907.35' Inflow=0.49 cfs 0.035 af
15.0" Round Culvert n=0.013 L=68.0' S=0.0074 '/' Outflow=0.49 cfs 0.035 af

Pond 4P: HW#11 DMH#2 Peak Elev=881.89' Inflow=12.89 cfs 4.209 af
36.0" Round Culvert n=0.013 L=145.0' S=0.0586 '/' Outflow=12.89 cfs 4.209 af

Pond 5P: PROP. CULVERT HW#11A / HW#11B Peak Elev=851.71' Inflow=2.06 cfs 0.149 af
15.0" Round Culvert n=0.013 L=41.0' S=0.0732 '/' Outflow=2.06 cfs 0.149 af

Pond 6P: DMH#2 - HW#12 Peak Elev=873.45' Inflow=13.96 cfs 5.081 af
36.0" Round Culvert n=0.013 L=263.0' S=0.0989 '/' Outflow=13.96 cfs 5.081 af

Pond 10P: HW#2A - HW#2B Peak Elev=990.76' Inflow=3.65 cfs 0.378 af
15.0" Round Culvert n=0.013 L=26.0' S=0.0673 '/' Outflow=3.65 cfs 0.378 af

Pond SF5: PROP. SEDIMENT BASIN Peak Elev=1,092.18' Storage=50,221 cf Inflow=16.48 cfs 2.155 af
Outflow=1.87 cfs 2.145 af

Pond SF6: PROP. SEDIMENT BASIN Peak Elev=949.95' Storage=69,110 cf Inflow=11.73 cfs 3.113 af
Outflow=1.23 cfs 2.800 af

Pond SF7: PROP. SEDIMENT BASIN Peak Elev=889.90' Storage=18,355 cf Inflow=12.34 cfs 0.878 af
Outflow=1.22 cfs 0.872 af

Pond SF8: PERIOD 8 FINAL POND Peak Elev=850.43' Storage=224,243 cf Inflow=23.49 cfs 6.092 af
Discarded=0.36 cfs 0.944 af Primary=0.00 cfs 0.000 af Outflow=0.36 cfs 0.944 af

Link A: POA Inflow=8.71 cfs 1.787 af
Primary=8.71 cfs 1.787 af

Link B: POA Inflow=46.94 cfs 9.602 af
Primary=46.94 cfs 9.602 af

Total Runoff Area = 161.537 ac Runoff Volume = 17.810 af Average Runoff Depth = 1.32"
97.31% Pervious = 157.185 ac 2.69% Impervious = 4.352 ac

Time span=0.00-48.00 hrs, dt=0.02 hrs, 2401 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

Subcatchment1S: SITE NORTHEAST Runoff Area=79,004 sf 0.00% Impervious Runoff Depth=1.79"
Flow Length=450' Tc=7.2 min CN=67 Runoff=3.51 cfs 0.270 af

Subcatchment2S: SITE EAST Runoff Area=396,359 sf 0.00% Impervious Runoff Depth=1.36"
Flow Length=1,355' Tc=15.5 min CN=61 Runoff=9.72 cfs 1.029 af

Subcatchment3S: GRAVEL ROAD EAST Runoff Area=9,722 sf 0.00% Impervious Runoff Depth=2.69"
Tc=6.0 min CN=78 Runoff=0.70 cfs 0.050 af

Subcatchment4S: Existing-South Runoff Area=663,627 sf 5.46% Impervious Runoff Depth=2.10"
Flow Length=2,412' Tc=67.7 min CN=71 Runoff=13.39 cfs 2.668 af

Subcatchment5S: SITE Runoff Area=526,706 sf 9.58% Impervious Runoff Depth=2.97"
Flow Length=1,144' Tc=32.7 min CN=81 Runoff=22.88 cfs 2.990 af

Subcatchment6S: SITE Runoff Area=276,676 sf 9.52% Impervious Runoff Depth=2.61"
Flow Length=624' Tc=12.3 min CN=77 Runoff=15.77 cfs 1.379 af

Subcatchment7S: SITE Runoff Area=206,722 sf 10.83% Impervious Runoff Depth=3.06"
Tc=6.0 min CN=82 Runoff=16.97 cfs 1.211 af

Subcatchment9S: SITE Runoff Area=190,122 sf 0.00% Impervious Runoff Depth=1.64"
Flow Length=936' Tc=14.0 min CN=65 Runoff=6.14 cfs 0.597 af

Subcatchment10S: Existing-East Runoff Area=99.581 ac 1.24% Impervious Runoff Depth=1.79"
Flow Length=6,891' Tc=63.3 min CN=67 Runoff=76.24 cfs 14.847 af

Subcatchment11S: SITE Runoff Area=236,726 sf 0.00% Impervious Runoff Depth=2.69"
Tc=6.0 min CN=78 Runoff=17.15 cfs 1.220 af

Subcatchment12S: SITE Runoff Area=66,854 sf 0.32% Impervious Runoff Depth=2.26"
Flow Length=325' Tc=9.0 min CN=73 Runoff=3.64 cfs 0.290 af

Subcatchment13S: SITE Runoff Area=46,295 sf 0.00% Impervious Runoff Depth=2.43"
Tc=6.0 min CN=75 Runoff=3.02 cfs 0.215 af

Reach 1.1R: Time Thru 2S Avg. Flow Depth=0.41' Max Vel=2.92 fps Inflow=3.51 cfs 0.270 af
n=0.100 L=456.0' S=0.2237 '/' Capacity=7.45 cfs Outflow=3.32 cfs 0.270 af

Reach 1.2R: Time Thru 2S Avg. Flow Depth=0.61' Max Vel=6.70 fps Inflow=8.98 cfs 0.867 af
n=0.040 L=277.0' S=0.1264 '/' Capacity=132.55 cfs Outflow=8.96 cfs 0.867 af

Reach 1R: Time Thru 2S Avg. Flow Depth=0.51' Max Vel=5.96 fps Inflow=6.14 cfs 0.597 af
n=0.040 L=355.0' S=0.1211 '/' Capacity=129.78 cfs Outflow=6.12 cfs 0.597 af

Reach 5R: Time Thru 7S Avg. Flow Depth=0.65' Max Vel=5.42 fps Inflow=18.93 cfs 1.946 af
n=0.040 L=430.0' S=0.0535 '/' Capacity=158.33 cfs Outflow=18.83 cfs 1.946 af

Reach 6R: Time Thru 6S Avg. Flow Depth=0.42' Max Vel=1.14 fps Inflow=2.20 cfs 2.979 af
n=0.400 L=250.0' S=0.5376 '/' Capacity=14.89 cfs Outflow=2.20 cfs 2.979 af

Reach 7R: Time Thru 2S Avg. Flow Depth=0.15' Max Vel=4.20 fps Inflow=1.46 cfs 3.655 af
n=0.040 L=238.0' S=0.1933 '/' Capacity=526.52 cfs Outflow=1.46 cfs 3.654 af

Pond 1P: HW#1A - HW#1B Peak Elev=1,049.25' Inflow=3.51 cfs 0.270 af
15.0" Round Culvert n=0.013 L=41.0' S=0.0551 '/' Outflow=3.51 cfs 0.270 af

Pond 2P: Twin 24" Culverts (HW#3A - HW#3B AND HW#4A - Peak Elev=908.41' Inflow=18.53 cfs 1.896 af
24.0" Round Culvert x 2.00 n=0.013 L=27.0' S=0.0185 '/' Outflow=18.53 cfs 1.896 af

Pond 3P: HW#5A - HW#5B Peak Elev=907.42' Inflow=0.70 cfs 0.050 af
15.0" Round Culvert n=0.013 L=68.0' S=0.0074 '/' Outflow=0.70 cfs 0.050 af

Pond 4P: HW#11 DMH#2 Peak Elev=882.40' Inflow=22.14 cfs 5.890 af
36.0" Round Culvert n=0.013 L=145.0' S=0.0586 '/' Outflow=22.14 cfs 5.890 af

Pond 5P: PROP. CULVERT HW#11A / HW#11B Peak Elev=852.74' Inflow=3.02 cfs 0.215 af
15.0" Round Culvert n=0.013 L=41.0' S=0.0732 '/' Outflow=3.02 cfs 0.215 af

Pond 6P: DMH#2 - HW#12 Peak Elev=873.96' Inflow=23.41 cfs 7.094 af
36.0" Round Culvert n=0.013 L=263.0' S=0.0989 '/' Outflow=23.41 cfs 7.094 af

Pond 10P: HW#2A - HW#2B Peak Elev=991.46' Inflow=6.14 cfs 0.597 af
15.0" Round Culvert n=0.013 L=26.0' S=0.0673 '/' Outflow=6.14 cfs 0.597 af

Pond SF5: PROP. SEDIMENT BASIN Peak Elev=1,093.65' Storage=74,045 cf Inflow=22.88 cfs 2.990 af
Outflow=2.20 cfs 2.979 af

Pond SF6: PROP. SEDIMENT BASIN Peak Elev=950.64' Storage=96,298 cf Inflow=16.80 cfs 4.358 af
Outflow=1.46 cfs 3.655 af

Pond SF7: PROP. SEDIMENT BASIN Peak Elev=890.62' Storage=26,392 cf Inflow=16.97 cfs 1.211 af
Outflow=1.45 cfs 1.204 af

Pond SF8: PERIOD 8 FINAL POND Peak Elev=852.76' Storage=320,250 cf Inflow=37.34 cfs 8.530 af
Discarded=0.47 cfs 1.178 af Primary=0.00 cfs 0.000 af Outflow=0.47 cfs 1.178 af

Link A: POA Inflow=13.39 cfs 2.668 af
Primary=13.39 cfs 2.668 af

Link B: POA Inflow=76.24 cfs 14.847 af
Primary=76.24 cfs 14.847 af

Total Runoff Area = 161.537 ac Runoff Volume = 26.767 af Average Runoff Depth = 1.99"
97.31% Pervious = 157.185 ac 2.69% Impervious = 4.352 ac

Time span=0.00-48.00 hrs, dt=0.02 hrs, 2401 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

Subcatchment1S: SITE NORTHEAST Runoff Area=79,004 sf 0.00% Impervious Runoff Depth=2.42"
Flow Length=450' Tc=7.2 min CN=67 Runoff=4.85 cfs 0.367 af

Subcatchment2S: SITE EAST Runoff Area=396,359 sf 0.00% Impervious Runoff Depth=1.91"
Flow Length=1,355' Tc=15.5 min CN=61 Runoff=14.34 cfs 1.450 af

Subcatchment3S: GRAVEL ROAD EAST Runoff Area=9,722 sf 0.00% Impervious Runoff Depth=3.46"
Tc=6.0 min CN=78 Runoff=0.90 cfs 0.064 af

Subcatchment4S: Existing-South Runoff Area=663,627 sf 5.46% Impervious Runoff Depth=2.79"
Flow Length=2,412' Tc=67.7 min CN=71 Runoff=17.98 cfs 3.537 af

Subcatchment5S: SITE Runoff Area=526,706 sf 9.58% Impervious Runoff Depth=3.76"
Flow Length=1,144' Tc=32.7 min CN=81 Runoff=28.87 cfs 3.785 af

Subcatchment6S: SITE Runoff Area=276,676 sf 9.52% Impervious Runoff Depth=3.36"
Flow Length=624' Tc=12.3 min CN=77 Runoff=20.34 cfs 1.777 af

Subcatchment7S: SITE Runoff Area=206,722 sf 10.83% Impervious Runoff Depth=3.86"
Tc=6.0 min CN=82 Runoff=21.27 cfs 1.526 af

Subcatchment9S: SITE Runoff Area=190,122 sf 0.00% Impervious Runoff Depth=2.25"
Flow Length=936' Tc=14.0 min CN=65 Runoff=8.66 cfs 0.818 af

Subcatchment10S: Existing-East Runoff Area=99.581 ac 1.24% Impervious Runoff Depth=2.42"
Flow Length=6,891' Tc=63.3 min CN=67 Runoff=105.66 cfs 20.123 af

Subcatchment11S: SITE Runoff Area=236,726 sf 0.00% Impervious Runoff Depth=3.46"
Tc=6.0 min CN=78 Runoff=21.97 cfs 1.565 af

Subcatchment12S: SITE Runoff Area=66,854 sf 0.32% Impervious Runoff Depth=2.97"
Flow Length=325' Tc=9.0 min CN=73 Runoff=4.81 cfs 0.380 af

Subcatchment13S: SITE Runoff Area=46,295 sf 0.00% Impervious Runoff Depth=3.16"
Tc=6.0 min CN=75 Runoff=3.94 cfs 0.280 af

Reach 1.1R: Time Thru 2S Avg. Flow Depth=0.48' Max Vel=3.23 fps Inflow=4.85 cfs 0.367 af
n=0.100 L=456.0' S=0.2237 '/' Capacity=7.45 cfs Outflow=4.63 cfs 0.367 af

Reach 1.2R: Time Thru 2S Avg. Flow Depth=0.71' Max Vel=7.31 fps Inflow=12.60 cfs 1.185 af
n=0.040 L=277.0' S=0.1264 '/' Capacity=132.55 cfs Outflow=12.58 cfs 1.185 af

Reach 1R: Time Thru 2S Avg. Flow Depth=0.60' Max Vel=6.53 fps Inflow=8.66 cfs 0.818 af
n=0.040 L=355.0' S=0.1211 '/' Capacity=129.78 cfs Outflow=8.63 cfs 0.818 af

Reach 5R: Time Thru 7S Avg. Flow Depth=0.80' Max Vel=6.05 fps Inflow=27.22 cfs 2.699 af
n=0.040 L=430.0' S=0.0535 '/' Capacity=158.33 cfs Outflow=27.10 cfs 2.699 af

Reach 6R: Time Thru 6S Avg. Flow Depth=0.65' Max Vel=1.45 fps Inflow=5.66 cfs 3.772 af
n=0.400 L=250.0' S=0.5376 '/' Capacity=14.89 cfs Outflow=5.63 cfs 3.772 af

Reach 7R: Time Thru 2S Avg. Flow Depth=0.16' Max Vel=4.39 fps Inflow=1.66 cfs 4.365 af
n=0.040 L=238.0' S=0.1933 '/' Capacity=526.52 cfs Outflow=1.66 cfs 4.363 af

Pond 1P: HW#1A - HW#1B Peak Elev=1,049.56' Inflow=4.85 cfs 0.367 af
15.0" Round Culvert n=0.013 L=41.0' S=0.0551 '/' Outflow=4.85 cfs 0.367 af

Pond 2P: Twin 24" Culverts (HW#3A - HW#3B AND HW#4A - Peak Elev=908.81' Inflow=26.70 cfs 2.635 af
24.0" Round Culvert x 2.00 n=0.013 L=27.0' S=0.0185 '/' Outflow=26.70 cfs 2.635 af

Pond 3P: HW#5A - HW#5B Peak Elev=907.48' Inflow=0.90 cfs 0.064 af
15.0" Round Culvert n=0.013 L=68.0' S=0.0074 '/' Outflow=0.90 cfs 0.064 af

Pond 4P: HW#11 DMH#2 Peak Elev=882.88' Inflow=31.50 cfs 7.443 af
36.0" Round Culvert n=0.013 L=145.0' S=0.0586 '/' Outflow=31.50 cfs 7.443 af

Pond 5P: PROP. CULVERT HW#11A / HW#11B Peak Elev=854.39' Inflow=3.94 cfs 0.280 af
15.0" Round Culvert n=0.013 L=41.0' S=0.0732 '/' Outflow=3.94 cfs 0.280 af

Pond 6P: DMH#2 - HW#12 Peak Elev=874.45' Inflow=32.93 cfs 8.962 af
36.0" Round Culvert n=0.013 L=263.0' S=0.0989 '/' Outflow=32.93 cfs 8.962 af

Pond 10P: HW#2A - HW#2B Peak Elev=992.52' Inflow=8.66 cfs 0.818 af
15.0" Round Culvert n=0.013 L=26.0' S=0.0673 '/' Outflow=8.66 cfs 0.818 af

Pond SF5: PROP. SEDIMENT BASIN Peak Elev=1,094.41' Storage=87,875 cf Inflow=28.87 cfs 3.785 af
Outflow=5.66 cfs 3.772 af

Pond SF6: PROP. SEDIMENT BASIN Peak Elev=951.35' Storage=126,182 cf Inflow=21.57 cfs 5.549 af
Outflow=1.66 cfs 4.365 af

Pond SF7: PROP. SEDIMENT BASIN Peak Elev=891.27' Storage=34,265 cf Inflow=21.27 cfs 1.526 af
Outflow=1.64 cfs 1.519 af

Pond SF8: PERIOD 8 FINAL POND Peak Elev=854.40' Storage=402,466 cf Inflow=51.01 cfs 10.807 af
Discarded=0.75 cfs 1.568 af Primary=0.00 cfs 0.000 af Outflow=0.75 cfs 1.568 af

Link A: POA Inflow=17.98 cfs 3.537 af
Primary=17.98 cfs 3.537 af

Link B: POA Inflow=105.66 cfs 20.123 af
Primary=105.66 cfs 20.123 af

Total Runoff Area = 161.537 ac Runoff Volume = 35.673 af Average Runoff Depth = 2.65"
97.31% Pervious = 157.185 ac 2.69% Impervious = 4.352 ac

Time span=0.00-48.00 hrs, dt=0.02 hrs, 2401 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

Subcatchment1S: SITE NORTHEAST Runoff Area=79,004 sf 0.00% Impervious Runoff Depth=3.23"
Flow Length=450' Tc=7.2 min CN=67 Runoff=6.53 cfs 0.488 af

Subcatchment2S: SITE EAST Runoff Area=396,359 sf 0.00% Impervious Runoff Depth=2.63"
Flow Length=1,355' Tc=15.5 min CN=61 Runoff=20.29 cfs 1.994 af

Subcatchment3S: GRAVEL ROAD EAST Runoff Area=9,722 sf 0.00% Impervious Runoff Depth=4.38"
Tc=6.0 min CN=78 Runoff=1.14 cfs 0.082 af

Subcatchment4S: Existing-South Runoff Area=663,627 sf 5.46% Impervious Runoff Depth=3.64"
Flow Length=2,412' Tc=67.7 min CN=71 Runoff=23.63 cfs 4.620 af

Subcatchment5S: SITE Runoff Area=526,706 sf 9.58% Impervious Runoff Depth=4.71"
Flow Length=1,144' Tc=32.7 min CN=81 Runoff=36.02 cfs 4.748 af

Subcatchment6S: SITE Runoff Area=276,676 sf 9.52% Impervious Runoff Depth=4.28"
Flow Length=624' Tc=12.3 min CN=77 Runoff=25.87 cfs 2.263 af

Subcatchment7S: SITE Runoff Area=206,722 sf 10.83% Impervious Runoff Depth=4.82"
Tc=6.0 min CN=82 Runoff=26.39 cfs 1.907 af

Subcatchment9S: SITE Runoff Area=190,122 sf 0.00% Impervious Runoff Depth=3.03"
Flow Length=936' Tc=14.0 min CN=65 Runoff=11.84 cfs 1.100 af

Subcatchment10S: Existing-East Runoff Area=99.581 ac 1.24% Impervious Runoff Depth=3.23"
Flow Length=6,891' Tc=63.3 min CN=67 Runoff=142.52 cfs 26.783 af

Subcatchment11S: SITE Runoff Area=236,726 sf 0.00% Impervious Runoff Depth=4.38"
Tc=6.0 min CN=78 Runoff=27.77 cfs 1.985 af

Subcatchment12S: SITE Runoff Area=66,854 sf 0.32% Impervious Runoff Depth=3.85"
Flow Length=325' Tc=9.0 min CN=73 Runoff=6.24 cfs 0.492 af

Subcatchment13S: SITE Runoff Area=46,295 sf 0.00% Impervious Runoff Depth=4.06"
Tc=6.0 min CN=75 Runoff=5.05 cfs 0.360 af

Reach 1.1R: Time Thru 2S Avg. Flow Depth=0.55' Max Vel=3.53 fps Inflow=6.53 cfs 0.488 af
n=0.100 L=456.0' S=0.2237 '/' Capacity=7.45 cfs Outflow=6.28 cfs 0.488 af

Reach 1.2R: Time Thru 2S Avg. Flow Depth=0.82' Max Vel=7.91 fps Inflow=17.16 cfs 1.588 af
n=0.040 L=277.0' S=0.1264 '/' Capacity=132.55 cfs Outflow=17.15 cfs 1.588 af

Reach 1R: Time Thru 2S Avg. Flow Depth=0.70' Max Vel=7.08 fps Inflow=11.84 cfs 1.100 af
n=0.040 L=355.0' S=0.1211 '/' Capacity=129.78 cfs Outflow=11.81 cfs 1.100 af

Reach 5R: Time Thru 7S Avg. Flow Depth=0.96' Max Vel=6.66 fps Inflow=37.77 cfs 3.664 af
n=0.040 L=430.0' S=0.0535 '/' Capacity=158.33 cfs Outflow=37.63 cfs 3.664 af

Reach 6R: Time Thru 6S Avg. Flow Depth=0.80' Max Vel=1.64 fps Inflow=8.97 cfs 4.735 af
n=0.400 L=250.0' S=0.5376 '/' Capacity=14.89 cfs Outflow=8.97 cfs 4.734 af

Reach 7R: Time Thru 2S Avg. Flow Depth=0.29' Max Vel=6.05 fps Inflow=4.48 cfs 5.743 af
n=0.040 L=238.0' S=0.1933 '/' Capacity=526.52 cfs Outflow=4.48 cfs 5.742 af

Pond 1P: HW#1A - HW#1B Peak Elev=1,050.11' Inflow=6.53 cfs 0.488 af
15.0" Round Culvert n=0.013 L=41.0' S=0.0551 '/' Outflow=6.53 cfs 0.488 af

Pond 2P: Twin 24" Culverts (HW#3A - HW#3B AND HW#4A - Peak Elev=909.51' Inflow=37.12 cfs 3.582 af
24.0" Round Culvert x 2.00 n=0.013 L=27.0' S=0.0185 '/' Outflow=37.12 cfs 3.582 af

Pond 3P: HW#5A - HW#5B Peak Elev=907.55' Inflow=1.14 cfs 0.082 af
15.0" Round Culvert n=0.013 L=68.0' S=0.0074 '/' Outflow=1.14 cfs 0.082 af

Pond 4P: HW#11 DMH#2 Peak Elev=883.62' Inflow=43.36 cfs 9.898 af
36.0" Round Culvert n=0.013 L=145.0' S=0.0586 '/' Outflow=43.36 cfs 9.898 af

Pond 5P: PROP. CULVERT HW#11A / HW#11B Peak Elev=855.29' Inflow=5.05 cfs 0.360 af
15.0" Round Culvert n=0.013 L=41.0' S=0.0732 '/' Outflow=5.05 cfs 0.360 af

Pond 6P: DMH#2 - HW#12 Peak Elev=875.25' Inflow=44.96 cfs 11.798 af
36.0" Round Culvert n=0.013 L=263.0' S=0.0989 '/' Outflow=44.96 cfs 11.798 af

Pond 10P: HW#2A - HW#2B Peak Elev=994.39' Inflow=11.84 cfs 1.100 af
15.0" Round Culvert n=0.013 L=26.0' S=0.0673 '/' Outflow=11.84 cfs 1.100 af

Pond SF5: PROP. SEDIMENT BASIN Peak Elev=1,095.07' Storage=100,596 cf Inflow=36.02 cfs 4.748 af
Outflow=8.97 cfs 4.735 af

Pond SF6: PROP. SEDIMENT BASIN Peak Elev=951.49' Storage=132,309 cf Inflow=27.31 cfs 6.998 af
Outflow=4.48 cfs 5.743 af

Pond SF7: PROP. SEDIMENT BASIN Peak Elev=892.03' Storage=44,117 cf Inflow=26.39 cfs 1.907 af
Outflow=1.84 cfs 1.900 af

Pond SF8: PERIOD 8 FINAL POND Peak Elev=855.32' Storage=485,620 cf Inflow=68.01 cfs 14.143 af
Discarded=1.27 cfs 3.026 af Primary=0.00 cfs 0.000 af Outflow=1.27 cfs 3.026 af

Link A: POA Inflow=23.63 cfs 4.620 af
Primary=23.63 cfs 4.620 af

Link B: POA Inflow=142.52 cfs 26.783 af
Primary=142.52 cfs 26.783 af

Total Runoff Area = 161.537 ac Runoff Volume = 46.823 af Average Runoff Depth = 3.48"
97.31% Pervious = 157.185 ac 2.69% Impervious = 4.352 ac

Summary for Subcatchment 1S: SITE NORTHEAST

Runoff = 3.51 cfs @ 12.11 hrs, Volume= 0.270 af, Depth= 1.79"
Routed to Pond 1P : HW#1A - HW#1B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YR Rainfall=4.98"

	Area (sf)	CN	Description
	7,907	61	>75% Grass cover, Good, HSG B
	1,133	74	>75% Grass cover, Good, HSG C
	5,908	80	>75% Grass cover, Good, HSG D
	28,934	55	Woods, Good, HSG B
	11,647	70	Woods, Good, HSG C
	19,575	77	Woods, Good, HSG D
*	3,900	96	Gravel surface
	79,004	67	Weighted Average
	79,004		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.3600	0.20		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.76"
3.0	400	0.1000	2.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.2	450	Total			

Summary for Subcatchment 2S: SITE EAST

Runoff = 9.72 cfs @ 12.24 hrs, Volume= 1.029 af, Depth= 1.36"
Routed to Pond 2P : Twin 24" Culverts (HW#3A - HW#3B AND HW#4A - HW#4B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YR Rainfall=4.98"

	Area (sf)	CN	Description
	32,026	61	>75% Grass cover, Good, HSG B
	30,085	74	>75% Grass cover, Good, HSG C
	5,114	80	>75% Grass cover, Good, HSG D
	258,850	55	Woods, Good, HSG B
	52,353	70	Woods, Good, HSG C
	1,847	77	Woods, Good, HSG D
*	16,084	96	Gravel surface
	396,359	61	Weighted Average
	396,359		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	50	0.1200	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.76"
5.2	697	0.2009	2.24		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.1	458	0.2500	2.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.7	150	0.2500	3.50		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
15.5	1,355	Total			

Summary for Subcatchment 3S: GRAVEL ROAD EAST

Runoff = 0.70 cfs @ 12.09 hrs, Volume= 0.050 af, Depth= 2.69"
Routed to Pond 3P : HW#5A - HW#5B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YR Rainfall=4.98"

	Area (sf)	CN	Description
	4,539	61	>75% Grass cover, Good, HSG B
	774	74	>75% Grass cover, Good, HSG C
*	4,409	96	Gravel surface
	9,722	78	Weighted Average
	9,722		100.00% Pervious Area

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

Summary for Subcatchment 4S: Existing-South

Runoff = 13.39 cfs @ 12.94 hrs, Volume= 2.668 af, Depth= 2.10"
Routed to Link A : POA

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YR Rainfall=4.98"

	Area (sf)	CN	Description
	98,300	55	Woods, Good, HSG B
	25,752	61	>75% Grass cover, Good, HSG B
	302,710	70	Woods, Good, HSG C
	148,882	74	>75% Grass cover, Good, HSG C
	39,890	77	Woods, Good, HSG D
*	11,854	96	Gravel surface
*	36,239	98	Paved parking
	663,627	71	Weighted Average
	627,388		94.54% Pervious Area
	36,239		5.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	64	0.1719	0.16		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.76"
1.7	350	0.4629	3.40		**Shallow Concentrated Flow, Woods to Grass** Woodland Kv= 5.0 fps
1.1	485	0.1979	7.16		**Shallow Concentrated Flow, Grass to Woods** Unpaved Kv= 16.1 fps
0.5	68	0.2059	2.27		**Shallow Concentrated Flow, Woods to Wetlands** Woodland Kv= 5.0 fps
10.2	520	0.1154	0.85		**Shallow Concentrated Flow, Wetlands** Forest w/Heavy Litter Kv= 2.5 fps
0.3	54	0.2963	2.72		**Shallow Concentrated Flow, Wetland to Culvert** Woodland Kv= 5.0 fps
0.0	62	0.1145	24.37	76.55	**Pipe Channel, Driveway Culvert** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
5.0	316	0.0443	1.05		**Shallow Concentrated Flow, Woods to Wetlands** Woodland Kv= 5.0 fps
42.1	493	0.0061	0.20		**Shallow Concentrated Flow, Wetlands** Forest w/Heavy Litter Kv= 2.5 fps
67.7	2,412	Total			

Summary for Subcatchment 5S: SITE

Runoff = 22.88 cfs @ 12.46 hrs, Volume= 2.990 af, Depth= 2.97"
Routed to Pond SF5 : PROP. SEDIMENT BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YR Rainfall=4.98"

	Area (sf)	CN	Description
	7,029	61	>75% Grass cover, Good, HSG B
	8,833	74	>75% Grass cover, Good, HSG C
	445,067	80	>75% Grass cover, Good, HSG D
	15,234	55	Woods, Good, HSG B
	0	77	Woods, Good, HSG D
*	65	96	Gravel surface
*	50,478	98	Ledge
	526,706	81	Weighted Average
	476,228		90.42% Pervious Area
	50,478		9.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	50	0.4000	0.46		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.76"
0.1	32	1.0000	7.00		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.2	220	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.1	296	0.0060	0.54		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.5	400	0.0050	0.49		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.0	146	0.0130	0.80		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
32.7	1,144	Total			

Summary for Subcatchment 6S: SITE

Runoff = 15.77 cfs @ 12.17 hrs, Volume= 1.379 af, Depth= 2.61"
Routed to Pond SF6 : PROP. SEDIMENT BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YR Rainfall=4.98"

	Area (sf)	CN	Description
	867	61	>75% Grass cover, Good, HSG B
	28,701	74	>75% Grass cover, Good, HSG C
	105,369	80	>75% Grass cover, Good, HSG D
	6,742	55	Woods, Good, HSG B
	101,770	70	Woods, Good, HSG C
	6,533	77	Woods, Good, HSG D
*	367	96	Gravel surface
*	26,327	98	Ledge
	276,676	77	Weighted Average
	250,349		90.48% Pervious Area
	26,327		9.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	50	0.1000	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.76"
1.8	339	0.4000	3.16		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	35	1.0000	7.00		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.4	200	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
12.3	624	Total			

Summary for Subcatchment 7S: SITE

Runoff = 16.97 cfs @ 12.09 hrs, Volume= 1.211 af, Depth= 3.06"
Routed to Pond SF7 : PROP. SEDIMENT BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YR Rainfall=4.98"

	Area (sf)	CN	Description
	0	61	>75% Grass cover, Good, HSG B
	9,013	74	>75% Grass cover, Good, HSG C
	175,058	80	>75% Grass cover, Good, HSG D
*	258	96	Gravel surface
*	22,393	98	Ledge
	206,722	82	Weighted Average
	184,329		89.17% Pervious Area
	22,393		10.83% Impervious Area

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

Summary for Subcatchment 9S: SITE

Runoff = 6.14 cfs @ 12.21 hrs, Volume= 0.597 af, Depth= 1.64"
Routed to Pond 10P : HW#2A - HW#2B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YR Rainfall=4.98"

	Area (sf)	CN	Description
	15,575	61	>75% Grass cover, Good, HSG B
	3,937	74	>75% Grass cover, Good, HSG C
	101,360	70	Woods, Good, HSG C
	65,344	55	Woods, Good, HSG B
*	3,906	96	Gravel surface
	190,122	65	Weighted Average
	190,122		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	50	0.0822	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.76"
6.2	826	0.2000	2.24		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	60	0.2000	3.13		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
14.0	936	Total			

Summary for Subcatchment 10S: Existing-East

Runoff = 76.24 cfs @ 12.88 hrs, Volume= 14.847 af, Depth= 1.79"
Routed to Link B : POA

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YR Rainfall=4.98"

	Area (ac)	CN	Description
	4.434	30	Woods, Good, HSG A
	12.534	55	Woods, Good, HSG B
	5.077	61	>75% Grass cover, Good, HSG B
	0.000	86	Newly graded area, HSG B
	73.191	70	Woods, Good, HSG C
	0.574	74	>75% Grass cover, Good, HSG C
	0.000	91	Newly graded area, HSG C
	1.892	77	Woods, Good, HSG D
	0.153	80	>75% Grass cover, Good, HSG D
*	0.488	96	Gravel surface
*	1.196	98	Pavement/Roof
	0.042	98	Water Surface, HSG B
	99.581	67	Weighted Average
	98.343		98.76% Pervious Area
	1.238		1.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	100	0.1500	0.16		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.76"
37.7	2,618	0.0535	1.16		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.2	835	0.0479	3.28		**Shallow Concentrated Flow, Water-USGS** Grassed Waterway Kv= 15.0 fps
7.7	2,324	0.1123	5.03		**Shallow Concentrated Flow, Wetland-Stream** Grassed Waterway Kv= 15.0 fps
0.0	38	0.0684	15.55	27.47	**Pipe Channel, 18" culvert** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
1.9	497	0.0865	4.41		**Shallow Concentrated Flow, Wetland-Water** Grassed Waterway Kv= 15.0 fps
0.0	21	0.0238	8.12	9.97	**Pipe Channel, 15" culvert** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
1.5	458	0.1154	5.10		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
63.3	6,891	Total			

Summary for Subcatchment 11S: SITE

Runoff = 17.15 cfs @ 12.09 hrs, Volume= 1.220 af, Depth= 2.69"
Routed to Pond SF8 : PERIOD 8 FINAL POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YR Rainfall=4.98"

	Area (sf)	CN	Description
	13,944	61	>75% Grass cover, Good, HSG B
	22,578	74	>75% Grass cover, Good, HSG C
	200,204	80	>75% Grass cover, Good, HSG D
*	0	96	Gravel surface
	236,726	78	Weighted Average
	236,726		100.00% Pervious Area

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

Summary for Subcatchment 12S: SITE

Runoff = 3.64 cfs @ 12.13 hrs, Volume= 0.290 af, Depth= 2.26"
Routed to Pond 4P : HW#11 DMH#2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YR Rainfall=4.98"

	Area (sf)	CN	Description
	8,165	55	Woods, Good, HSG B
	18,266	70	Woods, Good, HSG C
	6,470	61	>75% Grass cover, Good, HSG B
	19,091	74	>75% Grass cover, Good, HSG C
	6,774	80	>75% Grass cover, Good, HSG D
*	7,875	96	Gravel surface
*	213	98	Ledge
	66,854	73	Weighted Average
	66,641		99.68% Pervious Area
	213		0.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	100	0.2800	0.21		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.76"
0.2	96	0.2083	7.35		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.8	129	0.0310	2.83		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
9.0	325	Total			

Summary for Subcatchment 13S: SITE

Runoff = 3.02 cfs @ 12.09 hrs, Volume= 0.215 af, Depth= 2.43"
Routed to Pond 5P : PROP. CULVERT HW#11A / HW#11B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YR Rainfall=4.98"

	Area (sf)	CN	Description
	16,143	61	>75% Grass cover, Good, HSG B
	336	74	>75% Grass cover, Good, HSG C
	23,849	80	>75% Grass cover, Good, HSG D
*	5,967	96	Gravel surface
	46,295	75	Weighted Average
	46,295		100.00% Pervious Area

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

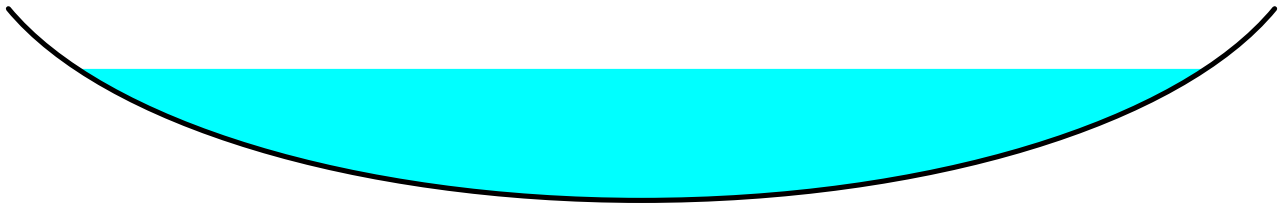
Summary for Reach 1.1R: Time Thru 2S

Inflow Area = 1.814 ac, 0.00% Impervious, Inflow Depth = 1.79" for 25-YR event
Inflow = 3.51 cfs @ 12.11 hrs, Volume= 0.270 af
Outflow = 3.32 cfs @ 12.14 hrs, Volume= 0.270 af, Atten= 5%, Lag= 1.9 min
Routed to Reach 1.2R : Time Thru 2S

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 2.92 fps, Min. Travel Time= 2.6 min
Avg. Velocity = 0.95 fps, Avg. Travel Time= 8.0 min

Peak Storage= 519 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.41' , Surface Width= 4.14'
Bank-Full Depth= 0.60' Flow Area= 2.0 sf, Capacity= 7.45 cfs

5.00' x 0.60' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage
Length= 456.0' Slope= 0.2237 '/'
Inlet Invert= 1,046.00', Outlet Invert= 944.00'



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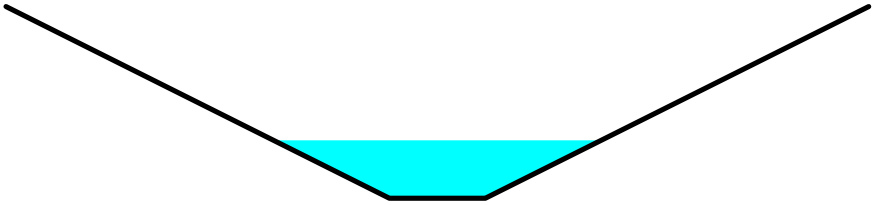
Summary for Reach 1.2R: Time Thru 2S

Inflow Area = 6.178 ac, 0.00% Impervious, Inflow Depth = 1.68" for 25-YR event
Inflow = 8.98 cfs @ 12.19 hrs, Volume= 0.867 af
Outflow = 8.96 cfs @ 12.20 hrs, Volume= 0.867 af, Atten= 0%, Lag= 0.6 min
Routed to Pond 2P : Twin 24" Culverts (HW#3A - HW#3B AND HW#4A - HW#4B)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 6.70 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 2.62 fps, Avg. Travel Time= 1.8 min

Peak Storage= 371 cf @ 12.20 hrs
Average Depth at Peak Storage= 0.61' , Surface Width= 3.42'
Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 132.55 cfs

1.00' x 2.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 9.00'
Length= 277.0' Slope= 0.1264 '/'
Inlet Invert= 943.00', Outlet Invert= 908.00'



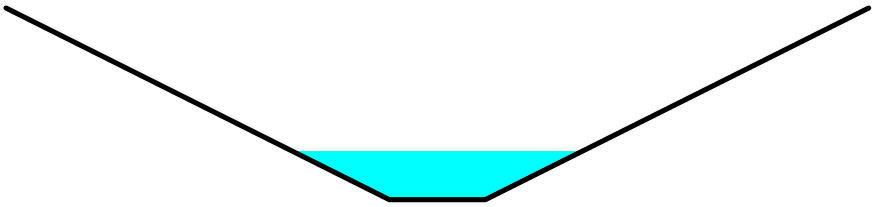
Summary for Reach 1R: Time Thru 2S

Inflow Area = 4.365 ac, 0.00% Impervious, Inflow Depth = 1.64" for 25-YR event
Inflow = 6.14 cfs @ 12.21 hrs, Volume= 0.597 af
Outflow = 6.12 cfs @ 12.22 hrs, Volume= 0.597 af, Atten= 0%, Lag= 0.8 min
Routed to Reach 1.2R : Time Thru 2S

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 5.96 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 2.46 fps, Avg. Travel Time= 2.4 min

Peak Storage= 364 cf @ 12.22 hrs
Average Depth at Peak Storage= 0.51' , Surface Width= 3.03'
Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 129.78 cfs

1.00' x 2.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 9.00'
Length= 355.0' Slope= 0.1211 '/'
Inlet Invert= 987.00', Outlet Invert= 944.00'



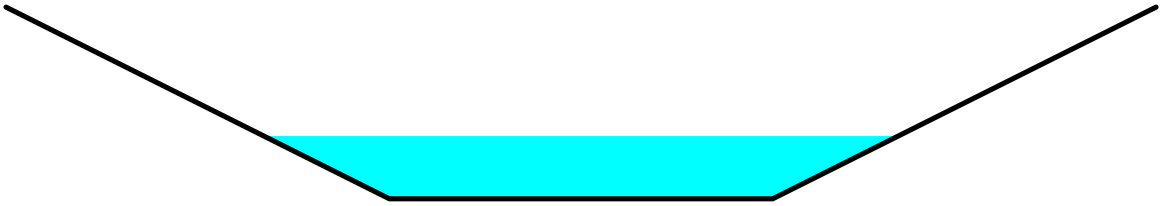
Summary for Reach 5R: Time Thru 7S

Inflow Area = 15.501 ac, 0.00% Impervious, Inflow Depth = 1.51" for 25-YR event
Inflow = 18.93 cfs @ 12.22 hrs, Volume= 1.946 af
Outflow = 18.83 cfs @ 12.23 hrs, Volume= 1.946 af, Atten= 1%, Lag= 1.0 min
Routed to Pond 4P : HW#11 DMH#2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 5.42 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 1.68 fps, Avg. Travel Time= 4.3 min

Peak Storage= 1,493 cf @ 12.23 hrs
Average Depth at Peak Storage= 0.65' , Surface Width= 6.62'
Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 158.33 cfs

4.00' x 2.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 12.00'
Length= 430.0' Slope= 0.0535 '/'
Inlet Invert= 905.50', Outlet Invert= 882.50'



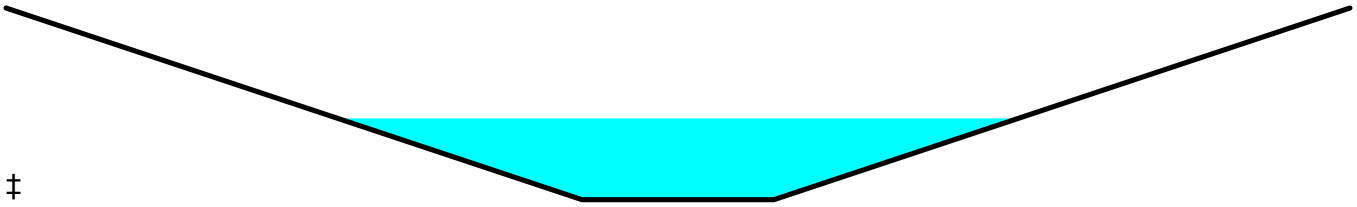
Summary for Reach 6R: Time Thru 6S

Inflow Area = 12.092 ac, 9.58% Impervious, Inflow Depth > 2.96" for 25-YR event
Inflow = 2.20 cfs @ 15.07 hrs, Volume= 2.979 af
Outflow = 2.20 cfs @ 15.11 hrs, Volume= 2.979 af, Atten= 0%, Lag= 2.6 min
Routed to Pond SF6 : PROP. SEDIMENT BASIN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 1.14 fps, Min. Travel Time= 3.7 min
Avg. Velocity = 0.73 fps, Avg. Travel Time= 5.7 min

Peak Storage= 483 cf @ 15.11 hrs
Average Depth at Peak Storage= 0.42' , Surface Width= 7.10'
Bank-Full Depth= 1.00' Flow Area= 8.0 sf, Capacity= 14.89 cfs

2.00' x 1.00' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 6.0 '/' Top Width= 14.00'
Length= 250.0' Slope= 0.5376 '/'
Inlet Invert= 1,086.40', Outlet Invert= 952.00'



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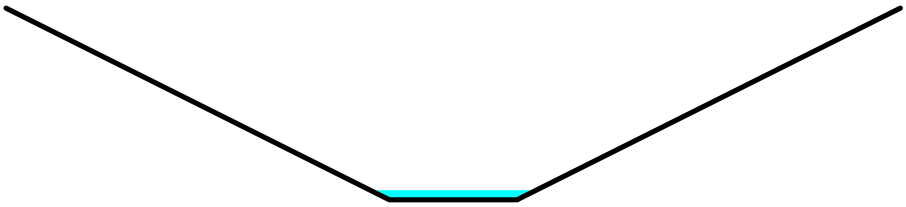
Summary for Reach 7R: Time Thru 2S

Inflow Area = 18.443 ac, 9.56% Impervious, Inflow Depth > 2.38" for 25-YR event
Inflow = 1.46 cfs @ 26.16 hrs, Volume= 3.655 af
Outflow = 1.46 cfs @ 26.17 hrs, Volume= 3.654 af, Atten= 0%, Lag= 0.6 min
Routed to Pond 4P : HW#11 DMH#2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Max. Velocity= 4.20 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 3.78 fps, Avg. Travel Time= 1.0 min

Peak Storage= 83 cf @ 26.17 hrs
Average Depth at Peak Storage= 0.15' , Surface Width= 2.60'
Bank-Full Depth= 3.00' Flow Area= 24.0 sf, Capacity= 526.52 cfs

2.00' x 3.00' deep channel, n= 0.040
Side Slope Z-value= 2.0 '/' Top Width= 14.00'
Length= 238.0' Slope= 0.1933 '/'
Inlet Invert= 927.00', Outlet Invert= 881.00'



Summary for Pond 1P: HW#1A - HW#1B

Inflow Area = 1.814 ac, 0.00% Impervious, Inflow Depth = 1.79" for 25-YR event
Inflow = 3.51 cfs @ 12.11 hrs, Volume= 0.270 af
Outflow = 3.51 cfs @ 12.11 hrs, Volume= 0.270 af, Atten= 0%, Lag= 0.0 min
Primary = 3.51 cfs @ 12.11 hrs, Volume= 0.270 af
Routed to Reach 1.1R : Time Thru 2S

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 1,049.25' @ 12.11 hrs
Flood Elev= 1,052.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,048.26'	**15.0" Round Culvert** L= 41.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,048.26' / 1,046.00' S= 0.0551 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.49 cfs @ 12.11 hrs HW=1,049.24' TW=1,046.40' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 3.49 cfs @ 3.37 fps)

Summary for Pond 2P: Twin 24" Culverts (HW#3A - HW#3B AND HW#4A - HW#4B)

Inflow Area = 15.277 ac, 0.00% Impervious, Inflow Depth = 1.49" for 25-YR event
Inflow = 18.53 cfs @ 12.22 hrs, Volume= 1.896 af
Outflow = 18.53 cfs @ 12.22 hrs, Volume= 1.896 af, Atten= 0%, Lag= 0.0 min
Primary = 18.53 cfs @ 12.22 hrs, Volume= 1.896 af
Routed to Reach 5R : Time Thru 7S

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 908.41' @ 12.22 hrs
Flood Elev= 910.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	907.00'	**24.0" Round Culvert X 2.00** L= 27.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 907.00' / 906.50' S= 0.0185 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=18.53 cfs @ 12.22 hrs HW=908.41' TW=906.15' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 18.53 cfs @ 5.49 fps)

Summary for Pond 3P: HW#5A - HW#5B

Inflow Area = 0.223 ac, 0.00% Impervious, Inflow Depth = 2.69" for 25-YR event
Inflow = 0.70 cfs @ 12.09 hrs, Volume= 0.050 af
Outflow = 0.70 cfs @ 12.09 hrs, Volume= 0.050 af, Atten= 0%, Lag= 0.0 min
Primary = 0.70 cfs @ 12.09 hrs, Volume= 0.050 af
Routed to Reach 5R : Time Thru 7S

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 907.42' @ 12.09 hrs
Flood Elev= 910.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	907.00'	**15.0" Round Culvert** L= 68.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 907.00' / 906.50' S= 0.0074 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.70 cfs @ 12.09 hrs HW=907.42' TW=905.97' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 0.70 cfs @ 2.88 fps)

Summary for Pond 4P: HW#11 DMH#2

Inflow Area = 35.478 ac, 4.98% Impervious, Inflow Depth > 1.99" for 25-YR event
Inflow = 22.14 cfs @ 12.22 hrs, Volume= 5.890 af
Outflow = 22.14 cfs @ 12.22 hrs, Volume= 5.890 af, Atten= 0%, Lag= 0.0 min
Primary = 22.14 cfs @ 12.22 hrs, Volume= 5.890 af
Routed to Pond 6P : DMH#2 - HW#12

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 882.40' @ 12.22 hrs
Flood Elev= 884.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	880.50'	**36.0" Round Culvert** L= 145.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 880.50' / 872.00' S= 0.0586 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=22.13 cfs @ 12.22 hrs HW=882.40' TW=873.96' (Dynamic Tailwater)
1=Culvert (Inlet Controls 22.13 cfs @ 4.69 fps)

Summary for Pond 5P: PROP. CULVERT HW#11A / HW#11B

Inflow Area = 1.063 ac, 0.00% Impervious, Inflow Depth = 2.43" for 25-YR event
Inflow = 3.02 cfs @ 12.09 hrs, Volume= 0.215 af
Outflow = 3.02 cfs @ 12.09 hrs, Volume= 0.215 af, Atten= 0%, Lag= 0.0 min
Primary = 3.02 cfs @ 12.09 hrs, Volume= 0.215 af
Routed to Pond SF8 : PERIOD 8 FINAL POND

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 852.74' @ 47.26 hrs
Flood Elev= 854.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	851.00'	**15.0" Round Culvert** L= 41.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 851.00' / 848.00' S= 0.0732 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.00 cfs @ 12.09 hrs HW=851.89' TW=843.53' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.00 cfs @ 3.21 fps)

Summary for Pond 6P: DMH#2 - HW#12

Inflow Area = 40.224 ac, 5.67% Impervious, Inflow Depth > 2.12" for 25-YR event
Inflow = 23.41 cfs @ 12.22 hrs, Volume= 7.094 af
Outflow = 23.41 cfs @ 12.22 hrs, Volume= 7.094 af, Atten= 0%, Lag= 0.0 min
Primary = 23.41 cfs @ 12.22 hrs, Volume= 7.094 af
Routed to Pond SF8 : PERIOD 8 FINAL POND

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Peak Elev= 873.96' @ 12.22 hrs
Flood Elev= 876.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	872.00'	**36.0" Round Culvert** L= 263.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 872.00' / 846.00' S= 0.0989 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=23.39 cfs @ 12.22 hrs HW=873.96' TW=844.34' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 23.39 cfs @ 4.77 fps)

Summary for Pond 10P: HW#2A - HW#2B

Inflow Area = 4.365 ac, 0.00% Impervious, Inflow Depth = 1.64" for 25-YR event
Inflow = 6.14 cfs @ 12.21 hrs, Volume= 0.597 af
Outflow = 6.14 cfs @ 12.21 hrs, Volume= 0.597 af, Atten= 0%, Lag= 0.0 min
Primary = 6.14 cfs @ 12.21 hrs, Volume= 0.597 af
Routed to Reach 1R : Time Thru 2S

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 991.46' @ 12.21 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	989.75'	**15.0" Round Culvert** L= 26.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 989.75' / 988.00' S= 0.0673 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=6.13 cfs @ 12.21 hrs HW=991.45' TW=987.51' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 6.13 cfs @ 4.99 fps)

Summary for Pond SF5: PROP. SEDIMENT BASIN

Inflow Area = 12.092 ac, 9.58% Impervious, Inflow Depth = 2.97" for 25-YR event
Inflow = 22.88 cfs @ 12.46 hrs, Volume= 2.990 af
Outflow = 2.20 cfs @ 15.07 hrs, Volume= 2.979 af, Atten= 90%, Lag= 156.8 min
Primary = 2.20 cfs @ 15.07 hrs, Volume= 2.979 af
Routed to Reach 6R : Time Thru 6S

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 1,093.65' @ 15.07 hrs Surf.Area= 17,493 sf Storage= 74,045 cf
Flood Elev= 1,096.00' Surf.Area= 21,600 sf Storage= 119,983 cf

Plug-Flow detention time= 418.8 min calculated for 2.978 af (100% of inflow)
Center-of-Mass det. time= 416.9 min (1,260.9 - 844.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,088.00'	119,983 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,088.00	9,200	420.0	0	0	9,200
1,090.00	11,800	480.0	20,946	20,946	13,590
1,092.00	14,800	540.0	26,543	47,490	18,566
1,094.00	18,100	590.0	32,845	80,334	23,202
1,096.00	21,600	650.0	39,648	119,983	29,251

Device	Routing	Invert	Outlet Devices
#1	Primary	1,088.00'	**12.0" Round Culvert** L= 57.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,088.00' / 1,087.40' S= 0.0105 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	1,088.00'	**6.0" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	1,094.25'	**48.0" x 48.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.20 cfs @ 15.07 hrs HW=1,093.65' TW=1,086.82' (Dynamic Tailwater)
└─**1=Culvert** (Passes 2.20 cfs of 7.96 cfs potential flow)
  ├─**2=Orifice** (Orifice Controls 2.20 cfs @ 11.19 fps)
  └─**3=Grate** (Controls 0.00 cfs)

Summary for Pond SF6: PROP. SEDIMENT BASIN

Inflow Area = 18.443 ac, 9.56% Impervious, Inflow Depth > 2.84" for 25-YR event
Inflow = 16.80 cfs @ 12.17 hrs, Volume= 4.358 af
Outflow = 1.46 cfs @ 26.16 hrs, Volume= 3.655 af, Atten= 91%, Lag= 839.2 min
Primary = 1.46 cfs @ 26.16 hrs, Volume= 3.655 af
Routed to Reach 7R : Time Thru 2S

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 950.64' @ 26.16 hrs Surf.Area= 40,745 sf Storage= 96,298 cf
Flood Elev= 952.00' Surf.Area= 45,300 sf Storage= 154,920 cf

Plug-Flow detention time= 752.6 min calculated for 3.655 af (84% of inflow)
Center-of-Mass det. time= 626.7 min (1,755.7 - 1,129.0)

Volume	Invert	Avail.Storage	Storage Description
#1	948.00'	154,920 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
948.00	32,400	1,350.0	0	0	32,400
950.00	38,700	1,380.0	71,007	71,007	39,466
952.00	45,300	1,430.0	83,913	154,920	50,994

Device	Routing	Invert	Outlet Devices
#1	Primary	948.00'	**15.0" Round Culvert** L= 118.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 948.00' / 928.00' S= 0.1695 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

#2	Device 1	948.00'	**6.0" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	951.35'	**48.0" x 48.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.46 cfs @ 26.16 hrs HW=950.64' TW=927.15' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.46 cfs of 8.38 cfs potential flow)
  ├─**2=Orifice** (Orifice Controls 1.46 cfs @ 7.44 fps)
  └─**3=Grate** (Controls 0.00 cfs)

Summary for Pond SF7: PROP. SEDIMENT BASIN

Inflow Area = 4.746 ac, 10.83% Impervious, Inflow Depth = 3.06" for 25-YR event
Inflow = 16.97 cfs @ 12.09 hrs, Volume= 1.211 af
Outflow = 1.45 cfs @ 13.13 hrs, Volume= 1.204 af, Atten= 91%, Lag= 62.5 min
Primary = 1.45 cfs @ 13.13 hrs, Volume= 1.204 af
Routed to Pond 6P : DMH#2 - HW#12

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 890.62' @ 13.13 hrs Surf.Area= 11,672 sf Storage= 26,392 cf
Flood Elev= 894.00' Surf.Area= 16,024 sf Storage= 73,127 cf

Plug-Flow detention time= 241.0 min calculated for 1.204 af (99% of inflow)
Center-of-Mass det. time= 238.3 min (1,054.8 - 816.5)

Volume	Invert	Avail.Storage	Storage Description
#1	888.00'	73,127 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
888.00	8,530	588.0	0	0	8,530
890.00	10,927	612.0	19,408	19,408	11,117
892.00	13,425	637.0	24,309	43,717	13,898
894.00	16,024	662.0	29,411	73,127	16,790

Device	Routing	Invert	Outlet Devices
#1	Primary	888.00'	**12.0" Round Culvert** L= 81.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 888.00' / 872.00' S= 0.1975 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	888.00'	**6.0" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	893.50'	**48.0" x 48.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.45 cfs @ 13.13 hrs HW=890.62' TW=872.93' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.45 cfs of 5.50 cfs potential flow)
  ├─**2=Orifice** (Orifice Controls 1.45 cfs @ 7.41 fps)
  └─**3=Grate** (Controls 0.00 cfs)

Summary for Pond SF8: PERIOD 8 FINAL POND

Inflow Area = 46.721 ac, 4.88% Impervious, Inflow Depth > 2.19" for 25-YR event
Inflow = 37.34 cfs @ 12.13 hrs, Volume= 8.530 af
Outflow = 0.47 cfs @ 48.00 hrs, Volume= 1.178 af, Atten= 99%, Lag= 2,152.2 min
Discarded = 0.47 cfs @ 48.00 hrs, Volume= 1.178 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link A : POA

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 852.76' @ 48.00 hrs Surf.Area= 45,148 sf Storage= 320,250 cf
Flood Elev= 856.00' Surf.Area= 161,730 sf Storage= 580,012 cf

Plug-Flow detention time= 1,157.6 min calculated for 1.178 af (14% of inflow)
Center-of-Mass det. time= 600.0 min (1,869.5 - 1,269.4)

Volume	Invert	Avail.Storage	Storage Description
#1	842.00'	580,012 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
842.00	16,810	570.0	0	0	16,810
844.00	21,415	645.0	38,132	38,132	24,163
846.00	26,000	705.0	47,341	85,473	30,748
848.00	30,516	775.0	56,456	141,929	39,124
850.00	36,160	852.0	66,596	208,525	49,226
852.00	42,390	922.0	78,468	286,993	59,265
854.00	49,835	1,060.0	92,125	379,117	81,121
856.00	161,730	1,805.0	200,894	580,012	250,997

Device	Routing	Invert	Outlet Devices
#1	Discarded	842.00'	**0.300 in/hr Exfiltration over Wetted area** Phase-In= 0.01'
#2	Primary	855.50'	**30.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.47 cfs @ 48.00 hrs HW=852.76' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.47 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=842.00' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Link A: POA

Inflow Area = 61.956 ac, 5.03% Impervious, Inflow Depth = 0.52" for 25-YR event
Inflow = 13.39 cfs @ 12.94 hrs, Volume= 2.668 af
Primary = 13.39 cfs @ 12.94 hrs, Volume= 2.668 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Summary for Link B: POA

Inflow Area = 99.581 ac, 1.24% Impervious, Inflow Depth = 1.79" for 25-YR event
Inflow = 76.24 cfs @ 12.88 hrs, Volume= 14.847 af
Primary = 76.24 cfs @ 12.88 hrs, Volume= 14.847 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

9. RIP RAP APRON CALCULATIONS

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RIP RAP OUTLET PROTECTION APRON CALCULATIONS

Project:	Gordon - Keene Pit	Date:	7/9/2025
Location:	HW#1B (1P)	Job No.:	2302011

INPUTS

Q	**3.51**	cfs	peak flow in the 25-year 24-hr storm event
Tw	**0.4**	ft	tailwater at the end of apron
d_o	**1.25**	ft	diameter in feet of outlet

OUTPUTS

D_{50}	**2.56**	in	median stone size (in)
Common D_{50}	**4.00**	in	median stone size (in)
Riprap Depth	**10**	in	(min.10 inches)
$L_{1 \text{ OR } 2}$	**12**	ft	L1 and L2 differ depending if TW is > or < D0/2
W_1	**16**	ft	
W_2	**4**	ft	

Equations

$$D_{50} = \frac{C}{Tw}\left[\frac{Q}{d_o}\right]^{4/3}$$

D_{50}	median stone size (ft)
Q	design discharge (cfs)
Tw	tailwater depth above the invert of the culvert (ft)
d_o	pipe diameter (ft)

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RIP RAP OUTLET PROTECTION APRON CALCULATIONS

Project:	Gordon - Keene Pit	Date:	7/9/2025
Location:	HW#2B (10P)	Job No.:	2302011

INPUTS

Q	**6.14**	cfs	peak flow in the 25-year 24-hr storm event
Tw	**0.5**	ft	tailwater at the end of apron
d_o	**1.25**	ft	diameter in feet of outlet

OUTPUTS

D_{50}	**4.32**	in	median stone size (in)
Common D_{50}	**6.00**	in	median stone size (in)
Riprap Depth	**15**	in	(min.10 inches)
$L_{1 \text{ OR } 2}$	**15**	ft	L1 and L2 differ depending if TW is > or < D0/2
W_1	**18**	ft	
W_2	**4**	ft	

Equations

$$D_{50} = \frac{C}{Tw}\left[\frac{Q}{d_o}\right]^{4/3}$$

D_{50}	median stone size (ft)
Q	design discharge (cfs)
Tw	tailwater depth above the invert of the culvert (ft)
d_o	pipe diameter (ft)

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RIP RAP OUTLET PROTECTION APRON CALCULATIONS

Project:	Gordon - Keene Pit	Date:	8/6/2025
Location:	HW#3B & HW#4B (2P)	Job No.:	2302011

INPUTS

Q	**18.53**	cfs	peak flow in the 25-year 24-hr storm event
Tw	**0.64**	ft	tailwater at the end of apron
d_o	**4**	ft	diameter in feet of outlet

OUTPUTS

	D_{50}	**4.60**	in	median stone size (in)
Common	D_{50}	**6.00**	in	median stone size (in)
Riprap Depth		**15**	in	(min.10 inches)
	$L_{1\ OR\ 2}$	**34**	ft	L1 and L2 differ depending if TW is > or < D0/2
	W_1	**46**	ft	
	W_2	**12**	ft	

Equations

$$D_{50} = \frac{C}{Tw}\left[\frac{Q}{d_o}\right]^{4/3}$$

D_{50}	median stone size (ft)
Q	design discharge (cfs)
Tw	tailwater depth above the invert of the culvert (ft)
d_o	pipe diameter (ft)

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RIP RAP OUTLET PROTECTION APRON CALCULATIONS

Project:	Gordon - Keene Pit	Date:	7/9/2025
Location:	HW#5B (3P)	Job No.:	2302011

INPUTS

Q	**0.7**	cfs	peak flow in the 25-year 24-hr storm event
Tw	**0.46**	ft	tailwater at the end of apron
d_o	**1.25**	ft	diameter in feet of outlet

OUTPUTS

	D_{50}	**0.26**	in	median stone size (in)
Common	D_{50}	**4.00**	in	median stone size (in)
Riprap Depth		**10**	in	(min.10 inches)
	$L_{1 \text{ OR } 2}$	**9**	ft	L1 and L2 differ depending if TW is > or < D0/2
	W_1	**13**	ft	
	W_2	**4**	ft	

Equations

$$\mathbf{D_{50}} = \frac{C}{Tw}\left[\frac{Q}{d_o}\right]^{4/3}$$

$\mathbf{D_{50}}$	median stone size (ft)
Q	design discharge (cfs)
Tw	tailwater depth above the invert of the culvert (ft)
d_o	pipe diameter (ft)

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RIP RAP OUTLET PROTECTION APRON CALCULATIONS

Project:	Gordon - Keene Pit	Date:	7/9/2025
Location:	HW#6B (SF5)	Job No.:	2302011

INPUTS

Q	**2.2**	cfs	peak flow in the 25-year 24-hr storm event
Tw	**0.42**	ft	tailwater at the end of apron
d_o	**1.0**	ft	diameter in feet of outlet

OUTPUTS

D_{50}	**1.64**	in	median stone size (in)
Common D_{50}	**4.00**	in	median stone size (in)
Riprap Depth	**10**	in	(min.10 inches)
$L_{1\ OR\ 2}$	**10**	ft	L1 and L2 differ depending if TW is > or < D0/2
W_1	**13**	ft	
W_2	**3**	ft	

Equations

$$\mathbf{D_{50}} = \frac{C}{Tw}\left[\frac{Q}{d_o}\right]^{4/3}$$

$\mathbf{D_{50}}$	median stone size (ft)
Q	design discharge (cfs)
Tw	tailwater depth above the invert of the culvert (ft)
d_o	pipe diameter (ft)

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RIP RAP OUTLET PROTECTION APRON CALCULATIONS

Project:	Gordon - Keene Pit	Date:	7/9/2025
Location:	HW#7B (SF6)	Job No.:	2302011

INPUTS

Q	**1.46**	cfs	peak flow in the 25-year 24-hr storm event
Tw	**0.15**	ft	tailwater at the end of apron
d_o	**1.0**	ft	diameter in feet of outlet

OUTPUTS

D_{50}	**2.65**	in	median stone size (in)
Common D_{50}	**4.00**	in	median stone size (in)
Riprap Depth	**10**	in	(min.10 inches)
$L_{1 \text{ OR } 2}$	**9**	ft	L1 and L2 differ depending if TW is > or < D0/2
W_1	**12**	ft	
W_2	**3**	ft	

Equations

$$D_{50} = \frac{C}{Tw}\left[\frac{Q}{d_o}\right]^{4/3}$$

D_{50}	median stone size (ft)
Q	design discharge (cfs)
Tw	tailwater depth above the invert of the culvert (ft)
d_o	pipe diameter (ft)

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RIP RAP OUTLET PROTECTION APRON CALCULATIONS

Project:	Gordon - Keene Pit	Date:	8/6/2025
Location:	HW#8 (6P-INTERIM)	Job No.:	2302011

INPUTS

Q	**23.41**	cfs	peak flow in the 25-year 24-hr storm event
Tw	**2.28**	ft	tailwater at the end of apron
d_o	**3.0**	ft	diameter in feet of outlet

OUTPUTS

	D_{50}	**2.35**	in	median stone size (in)
Common	D_{50}	**4.00**	in	median stone size (in)
Riprap Depth		**10**	in	(min.10 inches)
	$L_{1 \text{ OR } 2}$	**37**	ft	L1 and L2 differ depending if TW is > or < D0/2
	W_1	**24**	ft	
	W_2	**9**	ft	

Equations

$$\mathbf{D_{50}} = \frac{C}{Tw}\left[\frac{Q}{d_o}\right]^{4/3}$$

$\mathbf{D_{50}}$	median stone size (ft)
Q	design discharge (cfs)
Tw	tailwater depth above the invert of the culvert (ft)
d_o	pipe diameter (ft)

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RIP RAP OUTLET PROTECTION APRON CALCULATIONS

Project:	Gordon - Keene Pit	Date:	8/6/2025
Location:	HW#11B (5P)	Job No.:	2302011

INPUTS

Q	**3.02**	cfs	peak flow in the 25-year 24-hr storm event
Tw	**0.97**	ft	tailwater at the end of apron
d_o	**1.3**	ft	diameter in feet of outlet

OUTPUTS

D_{50}	**0.86**	in	median stone size (in)
Common D_{50}	**4.00**	in	median stone size (in)
Riprap Depth	**10**	in	(min.10 inches)
$L_{1 \text{ OR } 2}$	**14**	ft	L1 and L2 differ depending if TW is > or < D0/2
W_1	**9**	ft	
W_2	**4**	ft	

Equations

$$\mathbf{D_{50}} = \frac{C}{Tw}\left[\frac{Q}{d_o}\right]^{4/3}$$

$\mathbf{D_{50}}$	median stone size (ft)
Q	design discharge (cfs)
Tw	tailwater depth above the invert of the culvert (ft)
d_o	pipe diameter (ft)

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RIP RAP OUTLET PROTECTION APRON CALCULATIONS

Project:	Gordon - Keene Pit	Date:	8/6/2025
Location:	HW#12 (6P - Final)	Job No.:	2302011

INPUTS

Q	**23.41**	cfs	peak flow in the 25-year 24-hr storm event
Tw	**2.28**	ft	tailwater at the end of apron
d_o	**3**	ft	diameter in feet of outlet

OUTPUTS

	D_{50}	**2.35**	in	median stone size (in)
Common	D_{50}	**4.00**	in	median stone size (in)
Riprap Depth		**10**	in	(min.10 inches)
	$L_{1 \text{ OR } 2}$	**37**	ft	L1 and L2 differ depending if TW is > or < D0/2
	W_1	**24**	ft	
	W_2	**9**	ft	

Equations

$$D_{50} = \frac{C}{Tw}\left[\frac{Q}{d_o}\right]^{4/3}$$

D_{50}	median stone size (ft)
Q	design discharge (cfs)
Tw	tailwater depth above the invert of the culvert (ft)
d_o	pipe diameter (ft)

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10. SITE SPECIFIC SOIL REPORT

Hurley Environmental
AND LAND PLANNING, LLC

SITE-SPECIFIC SOIL SURVEY REPORT
For
21 Route 9 Keene

1. MAPPING STANDARDS

Site-Specific Soil Mapping Standards for New Hampshire and Vermont. SSSNNE Special Publication No. 3, Version 7.0, July 2021. This map product is within the technical standards of the National Cooperative Soil Survey. It is a special product, intended for the submission to NH DES Alteration of Terrain. It was produced by a professional soil scientist and is not a product of the USDA Natural Resource Conservation Service.

Hydrologic Soil Group was determined using SSSNNE Special Publication No. 5.
Scale of soil map:
Approximately 1" equals 100'
Contours:
Intervals of 2 feet

2. DATE SOIL MAP PRODUCED

Date(s) of on-site field work: 7/15/24
Date(s) of test pits: 7/15/24
Test pits recorded by: Luke Hurley, CSS #095

3. GEOGRAPHIC LOCATION AND SIZE OF SITE

City or town where soil mapping was conducted: Keene/Sulivan
Location: Gordon Gravel Pit, 21 Route 9, Keene, Map 215, Lots7 & 8/Sullivan Map 5, Lots 46 & 46-1
Size of area: approximately 25 acres
Was the map for the entire lot? No
The area where the map was created for the proposed area of cut slope as part of the gravel pit expansion to tie into the slopes of the site. Thes mapped area has had some historical logging but is mostly forested with steep rock exposed slopes.

4. PURPOSE OF THE SOIL MAP

Was the map prepared to meet the requirement of Alteration of Terrain? No
If no, what was the purpose of the map? Town of Keene
Who was the map prepared for? Granite Engineering, Inc.

5. SOIL IDENTIFICATION LEGEND

SSSM SYM.	SSS MAP NAME	HISS SYM.	HYDROLOGIC SOIL GRP.
168	Sunapee	321	B
61	Tunbridge Lyman Rock Outcrop	224/227	C
92	Lyman	224	D

SLOPE PHASE:
0-8% B 8-15% C 15-25% D 25%+ E

168 Sunapee 321 B
The Sunapee series consists of very deep, moderately well drained soils formed in loamy melt-out till on hills and mountains in glaciated uplands. Estimated saturated hydraulic conductivity is moderately high or high in the mineral solum and moderately high to very high in the substratum. Slope ranges from 0 to 60 percent. These soils have an ESHWT between 15-40 inches and have no significant ledge within the profile of 40". Thes soils are found in the lower area adjacent to the current access road in an isolated area within the mapped portion, but extend outside of it and are also found in the higher upper flat areas of the mapped portion.
Typical Profile
0-12" Fill Log Landing
12-16" 10YR3/2, FSL, GR, FR
16-36" 2.5Y5/3, FSL, GR, FR Redox 15% @ 20"
36-70" 2.5Y5/4, S, GR, FR Redox 15%
ESHWT 20"
Observed Water None
Refusal None

61 Tunbridge Lyman Rock Outcrop 224/227 C
This series is the dominant series in the mapped area. These soils overlap in such a frequency that they can not be separated out into individual series. The soils are located along the steep exposed rock slopes, as well as some of the upper flat areas. Some portions of this mapped unit have limited soil on top to a depth of approximately 20 inches.

The Tunbridge series consists of moderately deep, well drained soils on glaciated uplands. They formed in loamy supraglacial till. Saturated hydraulic conductivity is moderately high or high throughout the mineral soil. Slope ranges from 0 to 80 percent. These soils have no ESHWT within 40 inches and have ledge between 20-40 inches.

The Lyman series consists of shallow, somewhat excessively drained soils on glaciated uplands. They formed in loamy supraglacial till. Estimated saturated hydraulic conductivity is moderately high or high throughout the mineral soil. Slope ranges from 0 to 80 percent. This series has shallow to exposed ledge less than 20 inches from the surface.

92 Lyman 224 D
The Lyman series consists of shallow, somewhat excessively drained soils on glaciated uplands. They formed in loamy supraglacial till. Estimated saturated hydraulic conductivity is moderately high or high throughout the mineral soil. Slope ranges from 0 to 80 percent.

6. RESPONSIBLE SOIL SCIENTIST
Name: Luke Hurley
Certified Soil Scientist Number: CSS #095

wg, SSSS Request, 7/12/2024 10:26:58 AM,

MAP 215 LOT 6
G2 HOLDINGS, LLC
250 NORTH STREET
JAFFREY, NH 03452

TEST PIT 1

TEST PIT 2

150' (TYP.)

75' (TYP.)

TEST PIT 3

TEST PIT 4

TEST PIT 5

KEENE

SULLIVAN

MAP 5 LOT 41-2
ELIZABETH NEWCOMBE
1 MILL POND ROAD
NELSON, NH 03457

set up, mag spike

base Station set up, mag spike

Q series

S series

V series

X series

7. OTHER DISTINGUISHING FEATURES OF SITE
Is the site in a natural condition? The current mapping portion, yes.

8. Inclusions
No Inclusions were mapped.

Test Pits:
TP1
0-6” 10YR3/2, FSL, GR, FR
6-14” 10YR3/2, FSL, GR, FR
ESHWT None
Observed Water None
Refusal Ledge @14”

TP2
0-12” Fill, Old Log Landing
12-16” 10YR3/2, FSL, GR, FR
16-36” 2.5Y5/3, FSL, GR, FR Redox 15% @ 20”
36-70” 2.5Y5/4, S, GR, FR Redox 15%
ESHWT 20”
Observed Water None
Refusal None

TP3
0-6” 10YR3/2, FSL, GR, FR
6-14” 10YR4/4, FSL, GR, FR
14-36” 2.5Y5/4, S, GR, FR
ESHWT None
Observed Water None
Refusal 36”

TP4
0-8” 10YR3/2, FSL, GR, FR
8-18” 10YR4/3, FSL, GR, FR
18-32” 7.5YR5/4, S, GR, FR
32-44” 2.5Y4/4, S, GR, FR Redox 15%
44-70” 2.5Y5/4, S, GR, FR Redox 15%
ESHWT 32”
Observed Water None
Refusal 70”

TP5
Ledge @ 6”

11. OPERATIONS & MAINTENANCE MANUAL

Stormwater Management
Operation and Maintenance (O&M) Manual

for:

GORDON SERVICES - KEENE

Located at:

Keene: Map 215; Lots 7 & 8
Sullivan: Map 5; Lots 46 & 46-1
57 Route 9
Keene & Sullivan, New Hampshire

Prepared for:

G2 HOLDINGS, LLC
250 NORTH STREET
JAFFREY, NH 03452

Prepared by:

GRANITE ENGINEERING, LLC
150 DOW STREET, TOWER 2, SUITE 421
MANCHESTER, NH 03101
603.518.8030 | www.GraniteEng.com

Stormwater Management
Operation and Maintenance (O&M) Manual

Table of Contents

Stormwater Management
Operation and Maintenance (O&M) Manual

I. Compliance with Stormwater Facility Maintenance Requirements

The owner of the subject property is responsible for ensuring that stormwater facilities installed on the property are properly maintained and that they function as designed. In some cases, this maintenance responsibility may be assigned to others through special agreements. Any transfer of responsibility for inspection and maintenance activities or transfer of ownership shall be documented in writing. The contract documents will require the contractor to designate a person responsible for maintenance of the sedimentation control features during construction. Long-term operation and maintenance for the stormwater management facilities are presented below.

II. Inspection & Maintenance – Annual Reporting

Requirements for the inspection and maintenance of stormwater facilities, as well as reporting requirements, are included in this Stormwater Management Operation and Maintenance (O&M) Manual.

Verification that the Stormwater facilities have been properly inspected and maintained; copies of the annual report should be documented on site for future reporting upon request.

Copies of the Inspection and Maintenance forms for each of the stormwater facilities are located in Appendix B and C. A standard annual reporting form is provided in Appendix A.

III. Preventative Measures to Reduce Maintenance Costs

The most effective way to maintain your water quality facility is to prevent the pollutants from entering the facility in the first place. Common pollutants include sediment, trash & debris, chemicals, dog wastes, runoff from stored materials, illicit discharges into the storm drainage system and many others. A thoughtful maintenance program will include measures to address these potential contaminants and will save money and time in the long run. Key points to consider in your maintenance program include:

- Educate property owners/residents to be aware of how their actions affect water quality, and how they can help reduce maintenance costs
- Keep properties, streets and gutters, and parking lots free of trash, debris, and lawn clippings
- Ensure the proper disposal of hazardous wastes and chemicals
- Plan lawn care to minimize the use of chemicals and pesticides
- Sweep paved surfaces and put the sweepings back on the lawn
- Be aware of automobiles leaking fluids. Use absorbents such as cat litter to soak up drippings – dispose of properly
- Re-vegetate disturbed and bare areas to maintain vegetative stabilization.
- Clean out the upstream components of the storm drainage system, including inlets, storm sewers, and outfalls
- Do not store materials outdoors (including landscaping materials) unless properly protected from runoff

IV. Access

All stormwater management facilities located on the site have a designated access location. Refer to the Stormwater Plan located in Appendix E for access locations.

V. Safety

Keep safety considerations at the forefront of inspection procedures at all times. Likely hazards should be anticipated and avoided. Never enter confined space (outlet structure, manhole, etc) without proper training or equipment. A confined space should never be entered without at least one additional person present.

If a toxic or flammable substance is discovered, leave the immediate area and contact the local authority at 911.

Potentially dangerous (e.g., fuel, chemicals, hazardous materials) substances found in the areas must be referred to the local authority immediately for response. The emergency contact number is 911.

Vertical drops may be encountered in areas located within and around the facility. Avoid walking on top of retaining walls or other structures that have a significant vertical drop. If a vertical drop is identified within the pond that is greater than 48” in height, make the appropriate note/comment on the maintenance inspection form.

If any hazard is found within the facility area that poses an immediate threat to public safety, contact the local authority immediately.

VI. Field Inspection Equipment

It is imperative that the appropriate equipment is taken to the field with the inspector(s). This is to ensure the safety of the inspector and allow the inspections to be performed as efficiently as possible. Below is a list of the equipment that may be necessary to perform the inspections of all Stormwater Management Facilities:

- Protective clothing and boots
- Safety equipment (vest, hard hat, confined space entry equipment
- Communication equipment
- Operation and Maintenance Manual for the site including stormwater management facility location maps
- Clipboard
- Stormwater Facility Maintenance Inspection Forms (See Appendix B)
- Manhole Lid Remover
- Shovel
- Camera or phone camera

Some of the items identified above need not be carried by the inspector (manhole lid remover, shovel, and confined space entry equipment). However, this equipment should be available in the vehicle driven to the site.

VII. Inspecting Stormwater Management Facilities

The quality of stormwater relies heavily on the proper operation and maintenance of permanent best management practices. Stormwater management facilities must be periodically inspected to ensure that they function as designed. The inspection will determine the appropriate maintenance that is required for the facility.

A. Inspection Procedures

All stormwater management facilities are required to be inspected by a qualified individual. Inspections should follow the inspection guidance found in Appendix B of this manual.

B. Inspection Report

The person(s) conducting the inspection activities shall complete the appropriate inspection report for the specific facility. Inspection reports are located in Appendix B.

A record of inspection and maintenance activities shall be recorded on the Inspection and Maintenance Lot presented below. Photographs of each practice that is subject to the I&M requirement should be taken at each inspection of that practice. Records of Inspection forms, photos and Inspection Maintenance Logs shall be made available to DES and the Town of Bethlehem upon request.

VIII. Maintenance Requirements

Stormwater management facilities must be properly maintained to ensure that they operate correctly and provide the water quality treatment for which they were designed. Routine maintenance performed on a frequently scheduled basis can help avoid more costly rehabilitative maintenance that results when facilities are not adequately maintained.

The Long-Term Inspection and Maintenance Log provides a record of maintenance activities. Maintenance Logs for each facility type are provided in Appendix C.

Infiltration Systems

- Systems should be inspected at least twice annually, and following any rainfall event exceeding 2.5 inches in a 24 hour period, with maintenance or rehabilitation conducted as warranted by such inspection.
- Pretreatment measures should be inspected at least twice annually, and cleaned of accumulated sediment as warranted by inspection, but no less than once annually.

- Trash and debris should be removed at each inspection.
- Remove accumulated sediment based on inspection.
- Periodically mow the embankments and remove woody vegetation.
- Inspect and repair embankments and spillways based on inspection.
- At least once annually, system should be inspected for drawdown time. If bioretention system does not drain within 72-hours following a rainfall event, then a qualified professional should assess the condition of the facility to determine measures required to restore filtration function, including but not limited to removal of accumulated sediments or reconstruction of filter.

Sedimentation Basins

- The bottoms, interior and exterior side slopes, and crests of earthen detention basins should be mowed, and the vegetation maintained in healthy conditions, as appropriate to the function of the facility and type of vegetation.
- Vegetated embankments that serve as “berms” or “dams” that impound water should be mowed at least once annually to prevent the establishment of woody vegetation.
- Embankments should be inspected at least annually by a qualified professional for settlements, erosion, seepage, animal burrows, woody vegetation, and other conditions that could degrade the embankment and reduce its stability for impounding water. Immediate corrective action should be implemented if any such conditions are found.
- Inlet and outlet pipes, inlet and outlet structures, energy dissipation structures or practices, and other structural appurtenances should be inspected at least annually by a qualified professional, and corrective action implemented (e.g., maintenance, repairs, or replacement) as indicated by such inspection.
- Trash and debris should be removed from the basin and any inlet or outlet structures whenever observed by inspection.
- Accumulated sediment should be removed when it significantly affects basin capacity.

Level Spreaders

- Inspect at least once annually for accumulation of sediment and debris and for signs of erosion within approach channel, spreader channel, or down-slope of the spreader.
- Remove debris whenever observed during inspection.
- Remove sediment when accumulation exceeds 25% of level spreader channel depth.
- Mow as required by landscaping design. At a minimum, mow annually to control woody vegetation within the spreader.
- Snow should not be stored within or down-slope of the level spreader or its approach channel.
- Repair any erosion and re-grade or replace stone berm material, as warranted by inspection.
- Reconstruct the spreader if down-slope channelization indicates that the spreader is not level or that discharge has become concentrated, and corrections cannot be made through minor re-grading.

IX. Control of Invasive Species

During maintenance activities, check for the presence of invasive plants and remove in a safe manner as described on the following pages. They should be controlled as described in Appendix D.

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

- becoming weedy and overgrown;
- killing established shade trees;
- obstructing pipes and drainage systems;
- forming dense beds in water;
- lowering water levels in lakes, streams, and wetlands;
- destroying natural communities;
- promoting erosion on stream banks and hillsides; and
- resisting control except by hazardous chemicals.

Appendix A

Annual Inspection and Maintenance Reporting Form
for
Stormwater Facilities

Date: _____

Re: Certification of Inspection and Maintenance; Submittal of forms

Property/Subdivision Name: Gordon Services - Keene / Sullivan

Property Address: 57 Route 9, Keene

Contact Name: G2 Holdings LLC c/o Cody Gordon

I verify that the required stormwater facility inspections and required maintenance have been completed in accordance with the Operations and Maintenance Manual associated with the above-referenced property.

The required Stormwater Facility Inspection and Maintenance forms are hereby provided.

Cody Gordon

_____ _____

Name of Party Responsible for Inspection & Maintenance

G2 Holdings LLC

_____ _____

Authorized Signature

Signature

Appendix B

Birchwood Roadway Improvement

Address: Ridge Road & Cedar Drive, Bethlehem, New Hampshire

Owner: Birchwood Subdivision Homeowners' Association / Richard C. & Dina A. Southwell

Date: _____ E-mail: rcsouthwell@yahoo.com & dinasouthwell@hotmail.com
Phone: (401) 339-0907

I. GENERAL INSPECTION RESULTS					
Item	Inspection Results				BMP's in General
1	☐	Apparent problems	☐	No problems	BMP does not appear to be well maintained.
2	☐	Design flaws	☐	No flaws	BMP observed to have significant design flaws which lessen its effectiveness.
3	☐	Unauthorized modifications	☐	No modifications	BMP has unauthorized modifications that reduce its effectiveness.
4	☐	BMP removed	☐	BMP present	BMP has been destroyed or removed from property.
5	☐	Trash	☐	No Trash	Trash and debris has accumulated on/in BMP. Yard waste in BMP.
6	☐	Contaminated	☐	Uncontaminated	Evidence of Oil, gasoline. Contaminants or other pollutants.
7	☐	Smells	☐	Doesn't smell	Unpleasant odors from the BMP.
8	☐	Weeds	☐	No weeds	Invasive, nuisance vegetation or weeds are present.
II. BMP SPECIFIC INSPECTION RESULTS – Sediment Forebay					
Item	Inspection Results				BMP's in General
1	☐	Apparent problems	☐	No problems	BMP does not appear to be well maintained.
2	☐	Design flaws	☐	No flaws	BMP observed to have significant design flaws which lessen its effectiveness.
3	☐	Unauthorized modifications	☐	No modifications	BMP has unauthorized modifications that reduce its effectiveness.
4	☐	BMP removed	☐	BMP present	BMP has been destroyed or removed from property.
5	☐	Trash	☐	No Trash	Trash and debris has accumulated on/in BMP. Yard waste in BMP.

6	☐	Contaminated	☐	Uncontaminated	Evidence of Oil, gasoline. Contaminants or Animal Waste.
7	☐	Smells	☐	Doesn't smell	Unpleasant odors from the BMP.
8	☐	Weeds	☐	No weeds	Invasive, nuisance vegetation or weeds are present.
III. BMP SPECIFIC INSPECTION RESULTS – Infiltration Systems					
Item	Inspection Results				BMP's in General
1	☐	Apparent problems	☐	No problems	BMP does not appear to be well maintained.
2	☐	Design flaws	☐	No flaws	BMP observed to have significant design flaws which lessen its effectiveness.
3	☐	Unauthorized modifications	☐	No modifications	BMP has unauthorized modifications that reduce its effectiveness.
4	☐	BMP removed	☐	BMP present	BMP has been destroyed or removed from property.
5	☐	Trash	☐	No Trash	Trash and debris has accumulated on/in BMP. Yard waste in BMP.
6	☐	Contaminated	☐	Uncontaminated	Evidence of Oil, gasoline. Contaminants or Animal Waste.
7	☐	Smells	☐	Doesn't smell	Unpleasant odors from the BMP.
8	☐	Weeds	☐	No weeds	Invasive, nuisance vegetation or weeds are present.
IV. BMP SPECIFIC INSPECTION RESULTS – Level Spreader					
Item	Inspection Results				BMP's in General
1	☐	Apparent problems	☐	No problems	BMP does not appear to be well maintained.
2	☐	Design flaws	☐	No flaws	BMP observed to have significant design flaws which lessen its effectiveness.
3	☐	Unauthorized modifications	☐	No modifications	BMP has unauthorized modifications that reduce its effectiveness.
4	☐	BMP removed	☐	BMP present	BMP has been destroyed or removed from property.
5	☐	Trash	☐	No Trash	Trash and debris has accumulated on/in BMP. Yard waste in BMP.
6	☐	Contaminated	☐	Uncontaminated	Evidence of Oil, gasoline. Contaminants or Animal Waste.
7	☐	Smells	☐	Doesn't smell	Unpleasant odors from the BMP.
8	☐	Weeds	☐	No weeds	Invasive, nuisance vegetation or weeds are present.

V. BMP SPECIFIC INSPECTION RESULTS –Buffer					
Item	Inspection Results				BMP's in General
1	□	Apparent problems	□	No problems	BMP does not appear to be well maintained.
2	□	Design flaws	□	No flaws	BMP observed to have significant design flaws which lessen its effectiveness.
3	□	Unauthorized modifications	□	No modifications	BMP has unauthorized modifications that reduce its effectiveness.
4	□	BMP removed	□	BMP present	BMP has been destroyed or removed from property.
5	□	Trash	□	No Trash	Trash and debris has accumulated on/in BMP. Yard waste in BMP.
6	□	Contaminated	□	Uncontaminated	Evidence of Oil, gasoline. Contaminants or Animal Waste.
7	□	Smells	□	Doesn't smell	Unpleasant odors from the BMP.
8	□	Weeds	□	No weeds	Invasive, nuisance vegetation or weeds are present.
VI. BMP SPECIFIC INSPECTION RESULTS –Detention Basins					
Item	Inspection Results				BMP's in General
1	□	Apparent problems	□	No problems	BMP does not appear to be well maintained.
2	□	Design flaws	□	No flaws	BMP observed to have significant design flaws which lessen its effectiveness.
3	□	Unauthorized modifications	□	No modifications	BMP has unauthorized modifications that reduce its effectiveness.
4	□	BMP removed	□	BMP present	BMP has been destroyed or removed from property.
5	□	Trash	□	No Trash	Trash and debris has accumulated on/in BMP. Yard waste in BMP.
6	□	Contaminated	□	Uncontaminated	Evidence of Oil, gasoline. Contaminants or Animal Waste.
7	□	Smells	□	Doesn't smell	Unpleasant odors from the BMP.
8	□	Weeds	□	No weeds	Invasive, nuisance vegetation or weeds are present.
VII. BMP SPECIFIC INSPECTION RESULTS –Wet Pond					
Item	Inspection Results				BMP's in General
1	□	Apparent problems	□	No problems	BMP does not appear to be well maintained.
2	□	Design flaws	□	No flaws	BMP observed to have significant design flaws which lessen its effectiveness.

3	□	Unauthorized modifications	□	No modifications	BMP has unauthorized modifications that reduce its effectiveness.
4	□	BMP removed	□	BMP present	BMP has been destroyed or removed from property.
5	□	Trash	□	No Trash	Trash and debris has accumulated on/in BMP. Yard waste in BMP.
6	□	Contaminated	□	Uncontaminated	Evidence of Oil, gasoline. Contaminants or Animal Waste.
7	□	Smells	□	Doesn't smell	Unpleasant odors from the BMP.
8	□	Weeds	□	No weeds	Invasive, nuisance vegetation or weeds are present.

1. Is maintenance needed at this time? ☐ Yes ☐ No
2. Maintenance items needed/completed:

_____

_____

Appendix C

Long-Term Inspection & Maintenance Log

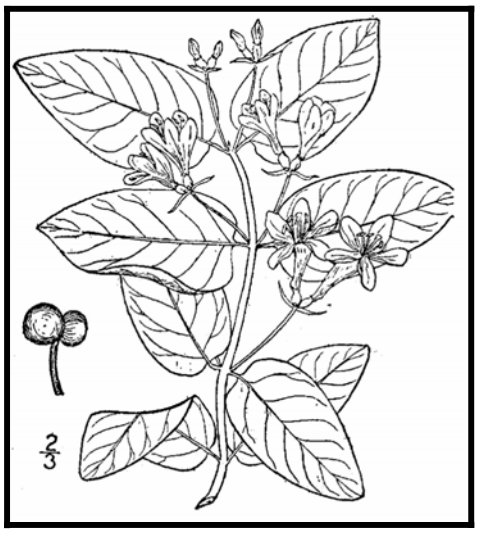
Date	Inspection (Yes or No)	Maintenance (Yes or No)	List BMPs Inspected and/or Provide Comments	Inspected By:

Appendix D

UNIVERSITY of NEW HAMPSHIRE COOPERATIVE EXTENSION

Methods for Disposing Non-Native Invasive Plants

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



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

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

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

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

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

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

New Hampshire Regulations

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

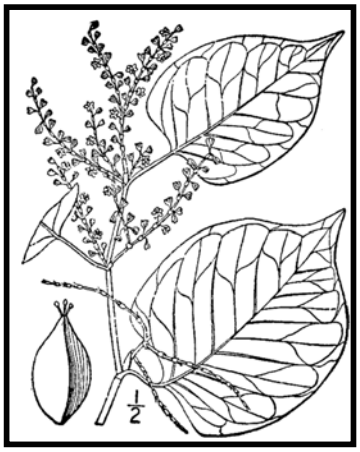
No person shall collect, transport, import, export, move, buy, sell, distribute, propagate or transplant any living and viable portion of any plant species, which includes all of their cultivars and varieties, listed in Table 3800.1 of the New Hampshire prohibited invasive species list. (Agr 3802.01)

Appendix D

How and When to Dispose of Invasives?

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

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



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

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

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

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

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

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

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

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

Appendix D
Suggested Disposal Methods for Non-Native Invasive Plants

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

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

Appendix D

<table>
<tr><th>Non-Woody Plants</th><th>Method of Reproducing</th><th>Methods of Disposal</th></tr>
<tr><td rowspan="2">garlic mustard
(Alliaria petiolata)
spotted knapweed
(Centaurea maculosa)
▪ Sap of related knapweed can cause skin irritation and tumors. Wear gloves when handling.
black swallow-wort
(Cynanchum nigrum)
▪ May cause skin rash. Wear gloves and long sleeves when handling.
pale swallow-wort
(Cynanchum rossicum)
giant hogweed
(Heracleum mantegazzianum)
▪ Can cause major skin rash. Wear gloves and long sleeves when handling.
dame’s rocket
(Hesperis matronalis)
perennial pepperweed
(Lepidium latifolium)
purple loosestrife
(Lythrum salicaria)
Japanese stilt grass
(Microstegium vimineum)
mile-a-minute weed
(Polygonum perfoliatum)</td><td rowspan="2">Fruits and Seeds</td><td>Prior to flowering
Depends on scale of infestation
Small infestation
▪ Pull or cut plant and leave on site with roots exposed.

Large infestation
▪ Pull or cut plant and pile. (You can pile onto or cover with plastic sheeting).
▪ Monitor. Remove any re-sprouting material.</td></tr>
<tr><td>During and following flowering
Do nothing until the following year or remove flowering heads and bag and let rot.

Small infestation
▪ Pull or cut plant and leave on site with roots exposed.

Large infestation
▪ Pull or cut plant and pile remaining material. (You can pile onto plastic or cover with plastic sheeting).
▪ Monitor. Remove any re-sprouting material.</td></tr>
<tr><td>common reed
(Phragmites australis)
Japanese knotweed
(Polygonum cuspidatum)
Bohemian knotweed
(Polygonum x bohemicum)</td><td>Fruits, Seeds, Plant Fragments
Primary means of spread in these species is by plant parts. Although all care should be given to preventing the dispersal of seed during control activities, the presence of seed doesn’t materially influence disposal activities.</td><td>Small infestation
▪ Bag all plant material and let rot.
▪ Never pile and use resulting material as compost.
▪ Burn.

Large infestation
▪ Remove material to unsuitable habitat (dry, hot and sunny or dry and shaded location) and scatter or pile.
▪ Monitor and remove any sprouting material.
▪ Pile, let dry, and burn.</td></tr>
</table>

January 2010

Appendix E

Site Deicing Data Form				
(This form shall be completed for each storm event throughout the season)				
Site:				
Date:				
Air Temperature	Pavement Temperature	Relative Humidity	Dew Point	Sky
Reason for applying:				
Site:				
Chemical:				
Application Time:				
Application Amount:				
Observation (first day):				
Observation (after event):				
Observation (before next application):				
Name:				

12. PLANS

A. PRE-DEVELOPMENT DRAINAGE AREAS PLAN (22” X 34”)

B. OVERALL INTERIM POST-DEVELOPMENT DRAINAGE AREAS PLAN (22” X 34”)

C. INTERIM DRAIN AREAS PLAN (22” X 34”)

D. OVERALL FINAL POST-DEVELOPMENT DRAINAGE AREAS PLAN (22” X 34”)

E. POST-DEVELOPMENT DRAINAGE AREAS PLANS (22” X 34”)

SITE SPECIFIC SOIL MAP UNIT KEY

SYMBOL	MAP UNIT	HYDROLOGIC SOIL GROUP
168	SUNAPEE	B
61	TUNBRIDGE LYMAN ROCK OUTCROP	C
92	LYMAN	D

SLOPE PHASE: 0–8%=B, 8–15%=C, 15–25%=D, 25%+=E

THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOILS SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, PRODUCED BY A CERTIFIED SOIL SCIENTIST, AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCE CONSERVATION SERVICE. THERE IS A NARRATIVE REPORT THAT ACCOMPANIES THIS MAP AND MAP KEY.

THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOIL SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, INTENDED FOR INFILTRATION REQUIREMENTS BY THE NH DES ALTERATION AND TERRAIN BUREAU. IT WAS PRODUCED BY A PROFESSIONAL SOIL SCIENTIST, AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCES CONSERVATION SERVICE. THERE IS A REPORT THAT ACCOMPANIES THIS MAP. THE SITE SPECIFIC SURVEY (SSSS) WAS PRODUCED JULY 15, 2024 AND WAS PREPARED BY LUKE HURLEY, CSS #095. SOILS WERE IDENTIFIED WITH THE NEW HAMPSHIRE STATE-WIDE NUMERICAL SOILS LEGEND, USDA NRCS, DURHAM, NH. ISSUE #10, JANUARY 2011. THE NUMERIC LEGEND WAS AMENDED TO IDENTIFY THE CORRECT SOILS COMPONENTS OF THE COMPLEX. HYDROLOGIC SOIL GROUP FROM KSAT VALUES FOR NEW HAMPSHIRE SOILS, SOCIETY OF SOIL SCIENTISTS OF NEW ENGLAND, SPECIAL PUBLICATION NO.5, SEPTEMBER, 2009

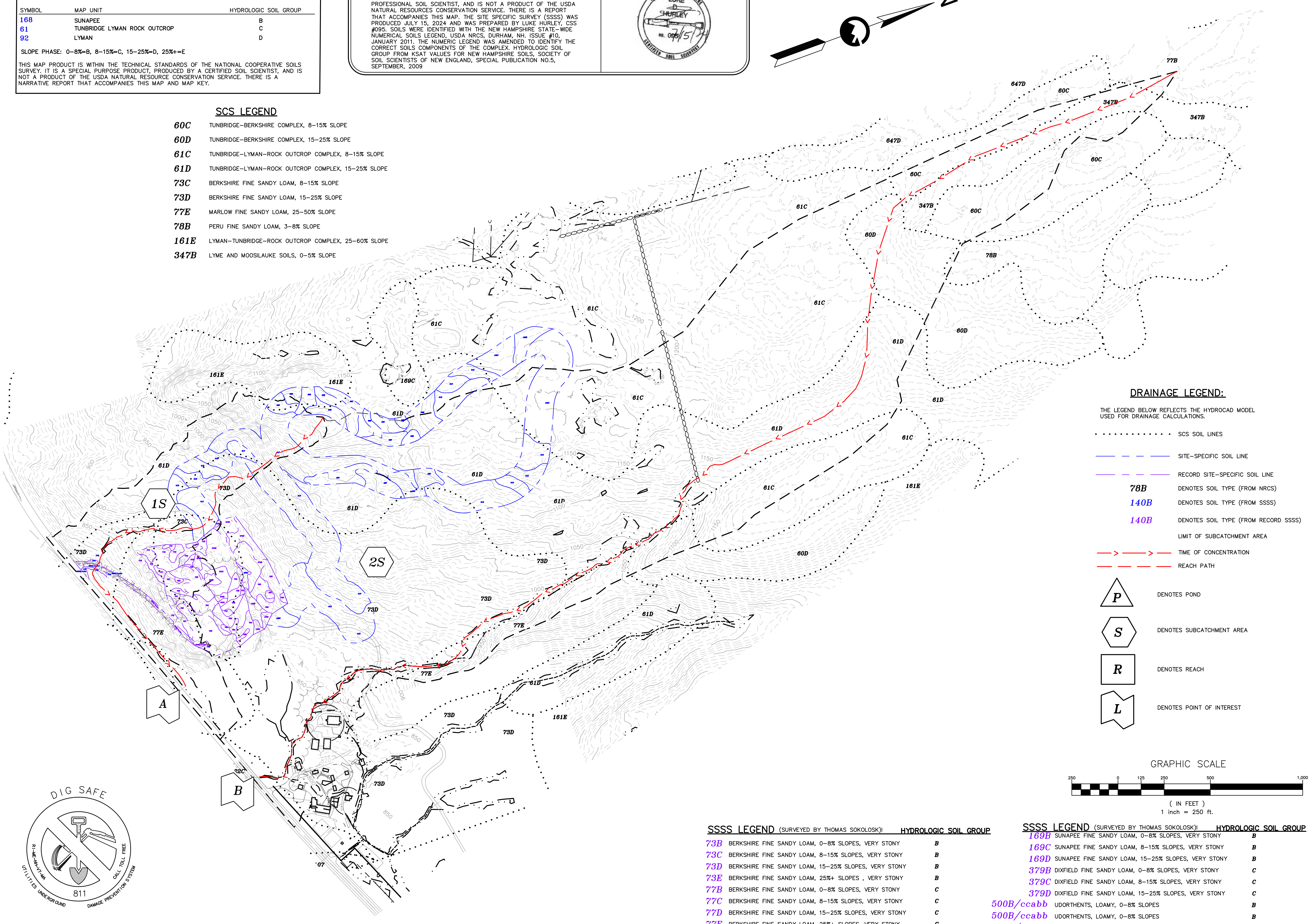
STATE OF NEW HAMPSHIRE
LUKE D. HURLEY
No. 095 7/5/24
CERTIFIED SOIL SCIENTIST

NOTES:

1. THE PURPOSE OF THIS PLAN IS TO DEPICT THE VARIOUS STORMWATER SUBCATCHMENT AREAS, CORRESPONDING TIMES OF CONCENTRATION, PONDS, AND REACHES ASSOCIATED WITH THE SUBJECT PARCEL PRE-DEVELOPMENT.

SCS LEGEND

60C	TUNBRIDGE–BERKSHIRE COMPLEX, 8–15% SLOPE
60D	TUNBRIDGE–BERKSHIRE COMPLEX, 15–25% SLOPE
61C	TUNBRIDGE–LYMAN–ROCK OUTCROP COMPLEX, 8–15% SLOPE
61D	TUNBRIDGE–LYMAN–ROCK OUTCROP COMPLEX, 15–25% SLOPE
73C	BERKSHIRE FINE SANDY LOAM, 8–15% SLOPE
73D	BERKSHIRE FINE SANDY LOAM, 15–25% SLOPE
77E	MARLOW FINE SANDY LOAM, 25–50% SLOPE
78B	PERU FINE SANDY LOAM, 3–8% SLOPE
161E	LYMAN–TUNBRIDGE–ROCK OUTCROP COMPLEX, 25–60% SLOPE
347B	LYME AND MOOSILAUKE SOILS, 0–5% SLOPE



DRAINAGE LEGEND:

THE LEGEND BELOW REFLECTS THE HYDROCAD MODEL USED FOR DRAINAGE CALCULATIONS.

SCS SOIL LINES

SITE-SPECIFIC SOIL LINE

RECORD SITE-SPECIFIC SOIL LINE

78B DENOTES SOIL TYPE (FROM NRCS)

140B DENOTES SOIL TYPE (FROM SSSS)

140B DENOTES SOIL TYPE (FROM RECORD SSSS)

LIMIT OF SUBCATCHMENT AREA

TIME OF CONCENTRATION

REACH PATH

P DENOTES POND

S DENOTES SUBCATCHMENT AREA

R DENOTES REACH

L DENOTES POINT OF INTEREST

GRAPHIC SCALE

250 0 125 250 500 1,000

(IN FEET)
1 inch = 250 ft.

SSSS LEGEND (SURVEYED BY THOMAS SOKOLOSK)I

		HYDROLOGIC SOIL GROUP
73B	BERKSHIRE FINE SANDY LOAM, 0–8% SLOPES, VERY STONY	B
73C	BERKSHIRE FINE SANDY LOAM, 8–15% SLOPES, VERY STONY	B
73D	BERKSHIRE FINE SANDY LOAM, 15–25% SLOPES, VERY STONY	B
73E	BERKSHIRE FINE SANDY LOAM, 25%+ SLOPES , VERY STONY	B
77B	BERKSHIRE FINE SANDY LOAM, 0–8% SLOPES, VERY STONY	C
77C	BERKSHIRE FINE SANDY LOAM, 8–15% SLOPES, VERY STONY	C
77D	BERKSHIRE FINE SANDY LOAM, 15–25% SLOPES, VERY STONY	C
77E	BERKSHIRE FINE SANDY LOAM, 25%+ SLOPES, VERY STONY	C

SSSS LEGEND (SURVEYED BY THOMAS SOKOLOSK)I

		HYDROLOGIC SOIL GROUP
169B	SUNAPEE FINE SANDY LOAM, 0–8% SLOPES, VERY STONY	B
169C	SUNAPEE FINE SANDY LOAM, 8–15% SLOPES, VERY STONY	B
169D	SUNAPEE FINE SANDY LOAM, 15–25% SLOPES, VERY STONY	B
379B	DIXFIELD FINE SANDY LOAM, 0–8% SLOPES, VERY STONY	C
379C	DIXFIELD FINE SANDY LOAM, 8–15% SLOPES, VERY STONY	C
379D	DIXFIELD FINE SANDY LOAM, 15–25% SLOPES, VERY STONY	C
500B/ccabb	UDORTHENTS, LOAMY, 0–8% SLOPES	B
500B/ccabb	UDORTHENTS, LOAMY, 0–8% SLOPES	B
500B/ccabb	URBAN LAND, 8–15% SLOPES	B

DIG SAFE
RI–ME–NH–VT–MA
CALL TOLL FREE
811
UTILITIES UNDERGROUND DAMAGE PREVENTION SYSTEM

GRANITE ENGINEERING
civil engineering
land planning
municipal services

REVISIONS

No.	DATE	COMMENTS	BY
1	12/20/24	PROJECT SUBMITTAL	JD
2	2/3/25	REVISED PER CITY COMMENTS	JD
3	5/9/25	REVISED PER CITY COMMENTS	JD
4	7/9/25	REVISED PER CITY COMMENTS	JD

OWNER/APPLICANT:
G2 HOLDINGS, LLC
250 NORTH STREET
JAFFREY, NH 03452

GRANITE ENGINEERING
civil engineering • land planning • municipal services
150 Dow Street, Tower 2, Suite 421
Manchester, New Hampshire 03101
603.518.8030
www.GraniteEng.com

STAMP:
STATE OF NEW HAMPSHIRE
BRENTON J. COLE
No. 14744
7/9/25
LICENSED
PROFESSIONAL ENGINEER

LOCATION:
KEENE TAX MAP 215 LOTS 7 & 8
SULLIVAN TAX MAP 5 LOTS 46 & 46-1
57 ROUTE 9
KEENE & SULLIVAN, NEW HAMPSHIRE
CHESHIRE COUNTY

PROJECT:
GORDON SERVICES KEENE

TITLE:
PRE-DEVELOPMENT DRAIN AREAS PLAN

PROJECT No.	DATE:	SCALE:
23–0201–1	MAY 9, 2025	HORIZ. 1"=250'
SHEET: 1 OF 5		

SITE SPECIFIC SOIL MAP UNIT KEY

SYMBOL	MAP UNIT	HYDROLOGIC SOIL GROUP
168	SUNAPEE	B
61	TUNBRIDGE LYMAN ROCK OUTCROP	C
92	LYMAN	D

SLOPE PHASE: 0–8%=B, 8–15%=C, 15–25%=D, 25%+=E

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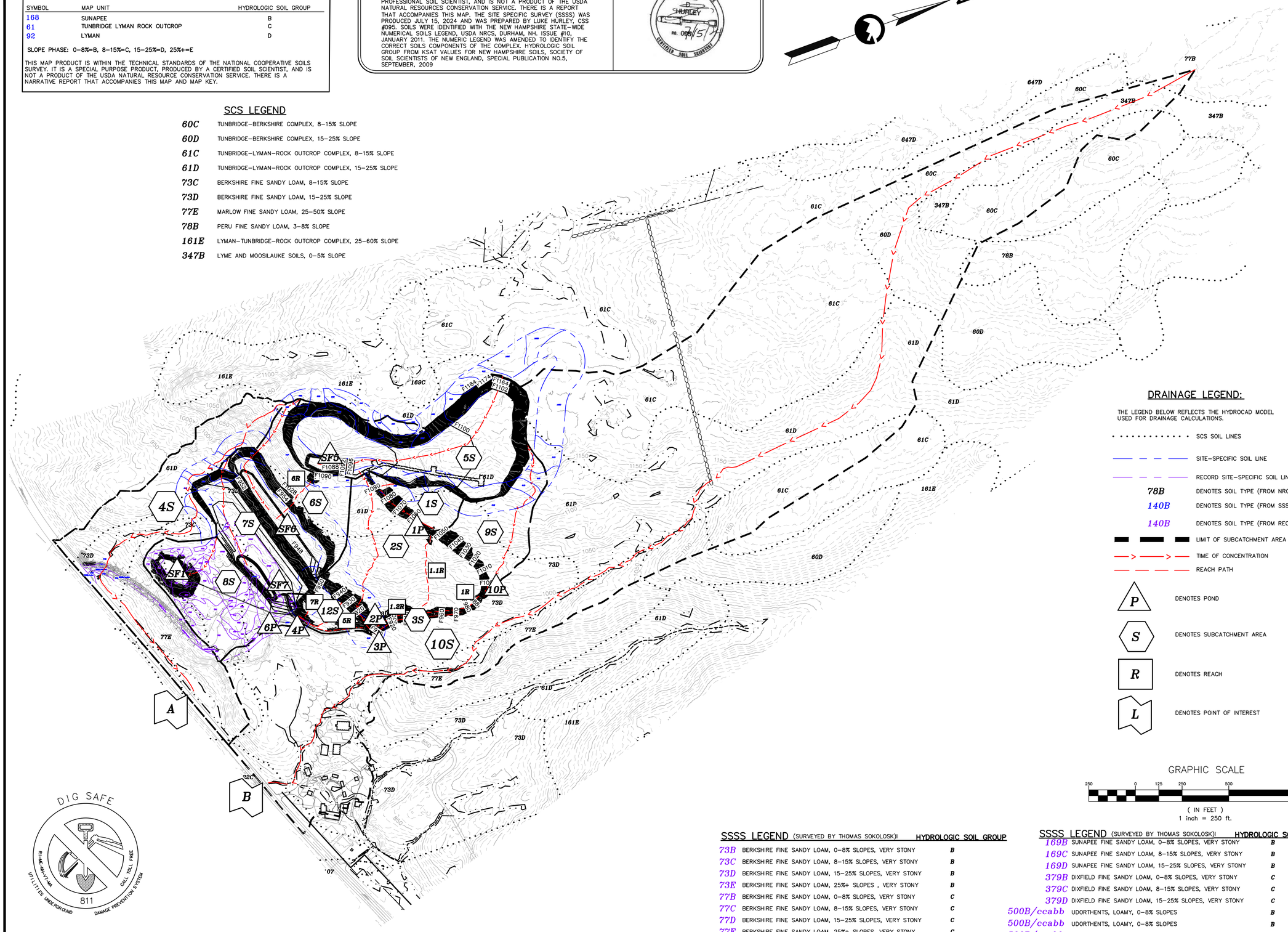
LUKE D. HURLEY
NO. 095
7/15/24

NOTES:

1. THE PURPOSE OF THIS PLAN IS TO DEPICT THE VARIOUS STORMWATER SUBCATCHMENT AREAS, CORRESPONDING TIMES OF CONCENTRATION, PONDS, AND REACHES ASSOCIATED WITH THE SUBJECT PARCEL POST–DEVELOPMENT.

SCS LEGEND

60C	TUNBRIDGE–BERKSHIRE COMPLEX, 8–15% SLOPE
60D	TUNBRIDGE–BERKSHIRE COMPLEX, 15–25% SLOPE
61C	TUNBRIDGE–LYMAN–ROCK OUTCROP COMPLEX, 8–15% SLOPE
61D	TUNBRIDGE–LYMAN–ROCK OUTCROP COMPLEX, 15–25% SLOPE
73C	BERKSHIRE FINE SANDY LOAM, 8–15% SLOPE
73D	BERKSHIRE FINE SANDY LOAM, 15–25% SLOPE
77E	MARLOW FINE SANDY LOAM, 25–50% SLOPE
78B	PERU FINE SANDY LOAM, 3–8% SLOPE
161E	LYMAN–TUNBRIDGE–ROCK OUTCROP COMPLEX, 25–60% SLOPE
347B	LYME AND MOOSILAUKE SOILS, 0–5% SLOPE



DRAINAGE LEGEND:

THE LEGEND BELOW REFLECTS THE HYDROCAD MODEL USED FOR DRAINAGE CALCULATIONS.

· · · · · · · · · ·	SCS SOIL LINES
—— — — ——	SITE–SPECIFIC SOIL LINE
—— — — ——	RECORD SITE–SPECIFIC SOIL LINE
78B	DENOTES SOIL TYPE (FROM NRCS)
140B	DENOTES SOIL TYPE (FROM SSSS)
140B	DENOTES SOIL TYPE (FROM RECORD SSSS)
▬ ▬ ▬	LIMIT OF SUBCATCHMENT AREA
—> —> —>	TIME OF CONCENTRATION
—— — — ——	REACH PATH
P	DENOTES POND
S	DENOTES SUBCATCHMENT AREA
R	DENOTES REACH
L	DENOTES POINT OF INTEREST

GRAPHIC SCALE

250 0 125 250 500 1,000

(IN FEET)
1 inch = 250 ft.

SSSS LEGEND (SURVEYED BY THOMAS SOKOLOSK)I

		HYDROLOGIC SOIL GROUP
73B	BERKSHIRE FINE SANDY LOAM, 0–8% SLOPES, VERY STONY	B
73C	BERKSHIRE FINE SANDY LOAM, 8–15% SLOPES, VERY STONY	B
73D	BERKSHIRE FINE SANDY LOAM, 15–25% SLOPES, VERY STONY	B
73E	BERKSHIRE FINE SANDY LOAM, 25%+ SLOPES , VERY STONY	B
77B	BERKSHIRE FINE SANDY LOAM, 0–8% SLOPES, VERY STONY	C
77C	BERKSHIRE FINE SANDY LOAM, 8–15% SLOPES, VERY STONY	C
77D	BERKSHIRE FINE SANDY LOAM, 15–25% SLOPES, VERY STONY	C
77E	BERKSHIRE FINE SANDY LOAM, 25%+ SLOPES, VERY STONY	C

SSSS LEGEND (SURVEYED BY THOMAS SOKOLOSK)I

		HYDROLOGIC SOIL GROUP
169B	SUNAPEE FINE SANDY LOAM, 0–8% SLOPES, VERY STONY	B
169C	SUNAPEE FINE SANDY LOAM, 8–15% SLOPES, VERY STONY	B
169D	SUNAPEE FINE SANDY LOAM, 15–25% SLOPES, VERY STONY	B
379B	DIXFIELD FINE SANDY LOAM, 0–8% SLOPES, VERY STONY	C
379C	DIXFIELD FINE SANDY LOAM, 8–15% SLOPES, VERY STONY	C
379D	DIXFIELD FINE SANDY LOAM, 15–25% SLOPES, VERY STONY	C
500B/ccabb	UDORTHENTS, LOAMY, 0–8% SLOPES	B
500B/ccabb	UDORTHENTS, LOAMY, 0–8% SLOPES	B
500B/ccabb	URBAN LAND, 8–15% SLOPES	B

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No.	DATE	COMMENTS	BY
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3	5/9/25	REVISED PER CITY COMMENTS	JD
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STAMP:
BRENTON J. COLE
No. 14744
7/9/25

LOCATION:
KEENE TAX MAP 215 LOTS 7 & 8
SULLIVAN TAX MAP 5 LOTS 46 & 46-1
57 ROUTE 9
KEENE & SULLIVAN, NEW HAMPSHIRE
CHESHIRE COUNTY

PROJECT:
GORDON SERVICES KEENE

TITLE:
INTERIM POST-DEVELOPMENT DRAIN AREAS PLAN

PROJECT No.	DATE:	SCALE:
23–0201–1	MAY 9, 2025	HORIZ. 1"=250'
SHEET: 2 OF 5		

SITE SPECIFIC SOIL MAP UNIT KEY

SYMBOL	MAP UNIT	HYDROLOGIC SOIL GROUP
168	SUNAPEE	B
61	TUNBRIDGE LYMAN ROCK OUTCROP	C
92	LYMAN	D

SLOPE PHASE: 0–8%=B, 8–15%=C, 15–25%=D, 25%+=E

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STATE OF NEW HAMPSHIRE — LUKE D. HURLEY — NO. 095 — CERTIFIED SOIL SCIENTIST — 7/15/24

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DRAINAGE LEGEND:

THE LEGEND BELOW REFLECTS THE HYDROCAD MODEL USED FOR DRAINAGE CALCULATIONS.

- SCS SOIL LINES
- SITE–SPECIFIC SOIL LINE
- RECORD SITE–SPECIFIC SOIL LINE
- 78B — DENOTES SOIL TYPE (FROM NRCS)
- 140B — DENOTES SOIL TYPE (FROM SSSS)
- 140B — DENOTES SOIL TYPE (FROM RECORD SSSS)
- LIMIT OF SUBCATCHMENT AREA
- TIME OF CONCENTRATION
- REACH PATH
- P — DENOTES POND
- S — DENOTES SUBCATCHMENT AREA
- R — DENOTES REACH
- L — DENOTES POINT OF INTEREST

SCS LEGEND

61D	TUNBRIDGE–LYMAN–ROCK OUTCROP COMPLEX, 8–15% SLOPE
73C	BERKSHIRE FINE SANDY LOAM, 8–15% SLOPE
73D	BERKSHIRE FINE SANDY LOAM, 15–25% SLOPE
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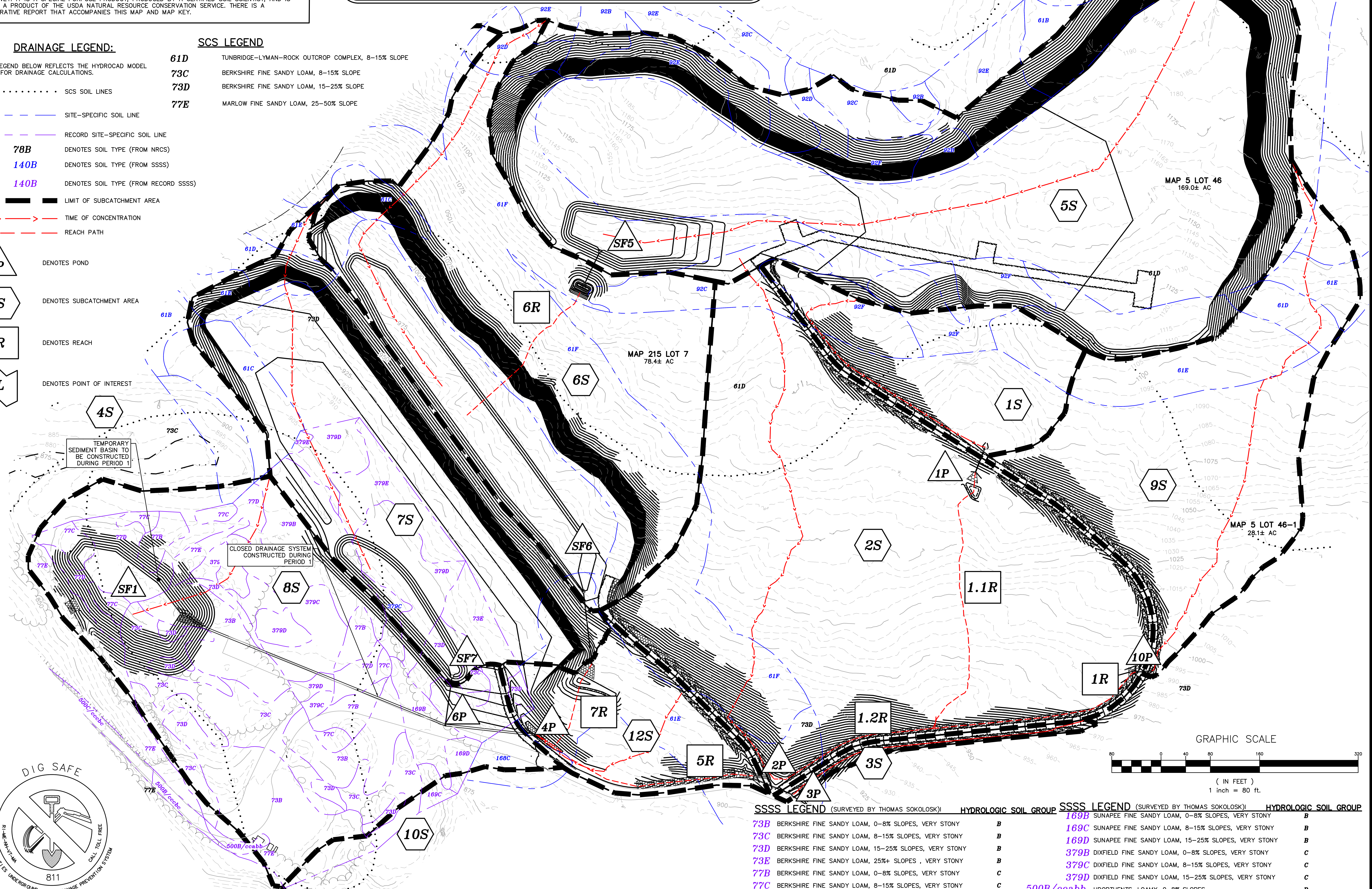

GRAPHIC SCALE

80 0 40 80 160 320

(IN FEET)
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SSSS LEGEND (SURVEYED BY THOMAS SOKOLOSK)I

		HYDROLOGIC SOIL GROUP
73B	BERKSHIRE FINE SANDY LOAM, 0–8% SLOPES, VERY STONY	B
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STAMP:
STATE OF NEW HAMPSHIRE — BRENTON J. COLE — No. 14744 — 7/9/25 — LICENSED PROFESSIONAL ENGINEER

LOCATION:
KEENE TAX MAP 215 LOTS 7 & 8
SULLIVAN TAX MAP 5 LOTS 46 & 46-1
57 ROUTE 9
KEENE & SULLIVAN, NEW HAMPSHIRE
CHESHIRE COUNTY

PROJECT:
GORDON SERVICES KEENE

TITLE:
INTERIM DRAIN AREAS PLAN

PROJECT No.	DATE:	SCALE:
23–0201–1	MAY 9, 2025	HORIZ. 1"=80'
SHEET: 3 OF 5		

SITE SPECIFIC SOIL MAP UNIT KEY

SYMBOL	MAP UNIT	HYDROLOGIC SOIL GROUP
168	SUNAPEE	B
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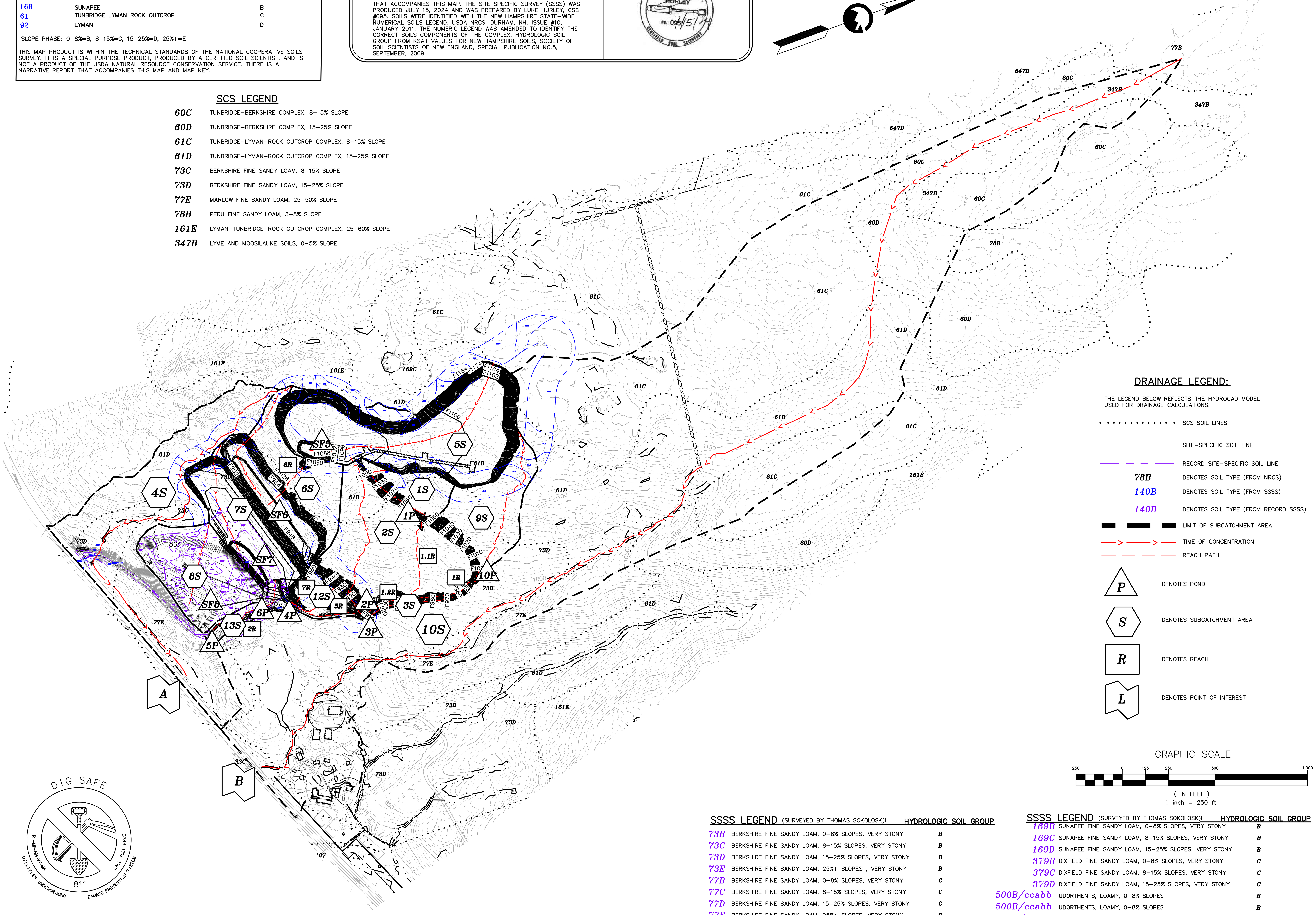

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	TIME OF CONCENTRATION
	REACH PATH
P	DENOTES POND
S	DENOTES SUBCATCHMENT AREA
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GRAPHIC SCALE

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57 ROUTE 9
KEENE & SULLIVAN, NEW HAMPSHIRE
CHESHIRE COUNTY

PROJECT:
GORDON SERVICES
KEENE

TITLE:
FINAL
POST-DEVELOPMENT
DRAIN AREAS PLAN

PROJECT No.	DATE:	SCALE:
23–0201–1	MAY 9, 2025	HORIZ. 1"=250'
SHEET: 4 OF 5		

SITE SPECIFIC SOIL MAP UNIT KEY

SYMBOL	MAP UNIT	HYDROLOGIC SOIL GROUP
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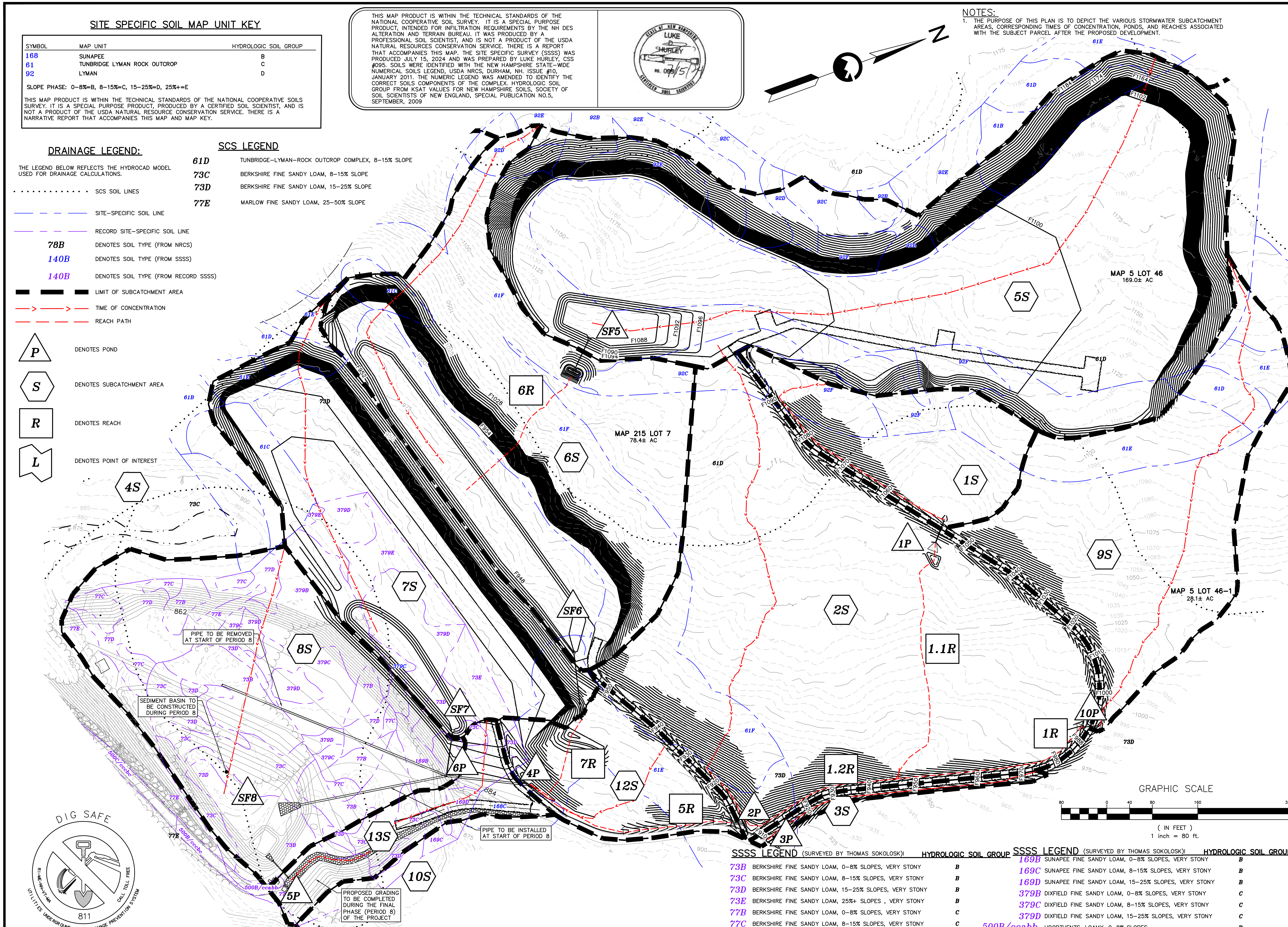

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1	12/20/24	PROJECT SUBMITTAL	JD
2	2/3/25	REVISED PER CITY COMMENTS	JD
3	5/9/25	REVISED PER CITY COMMENTS	JD
4	7/9/25	REVISED PER CITY COMMENTS	JD
5	7/24/25	ADDITIONAL WELL LOCATIONS	JD
6	8/11/25	REVISED PER CITY COMMENTS	JD

OWNER/APPLICANT:
G2 HOLDINGS, LLC
250 NORTH STREET
JAFFREY, NH 03452

GRANITE ENGINEERING
civil engineering • land planning • municipal services
150 Dow Street, Tower 2, Suite 421
Manchester, New Hampshire 03101
603.518.8030
www.GraniteEng.com

STAMP:
STATE OF NEW HAMPSHIRE — BRENTON J. COLE — No. 14744 — LICENSED PROFESSIONAL ENGINEER — 7/9/25

LOCATION:
KEENE TAX MAP 215 LOTS 7 & 8
SULLIVAN TAX MAP 5 LOTS 46 & 46-1
57 ROUTE 9
KEENE & SULLIVAN, NEW HAMPSHIRE
CHESHIRE COUNTY

PROJECT:
GORDON SERVICES KEENE

TITLE:
FINAL DRAIN AREAS PLAN

PROJECT No.	DATE:	SCALE:
23-0201-1	MAY 9, 2025	HORIZ. 1"=80'
SHEET: 5 OF 5		