Nelson Engineering Associates, Inc.

444 Neptune Boulevard, Suite 4 • Neptune, NJ 07753
(732) 918-2180

Drainage Study

Ryal Holding, LLC
Lot 6 in Block 3001

Township of Neptune
Monmouth County
New Jersey

Date:

September 26, 2024

Prepared By:

.....
(SEAL)
Matthew R. DuBois, PE, PP, CME
File Number: 230607
Nelson Engineering Associates, Inc.

Introduction and Executive Summary:

3324 Highway 33 is a commercial property that has been developed since before 2002. During that time, the extent of the use has gradually increased, resulting in an additional 8,625 square feet of impervious surfaces. It is proposed to restore 5,370 square feet, bringing the total increase since 2002 to 3,255 square feet. The increase in impervious area will be mitigated by the installation of a stormwater recharge system collecting runoff from the existing buildings.

The recharge system has been designed to completely capture the runoff from the 4,100 square feet of roof surfaces, which exceeds the 3,255 square feet of new impervious surfaces since 2002, resulting in a decrease in runoff from the property, therefore no adverse stormwater impacts to nearby properties are anticipated.

Recharge System Sizing and Design Methodology:

The previous increase of 8,625 does not meet the threshold of major development, therefore mitigation is proposed focused only in the increase in impervious area on the property. This is partially addressed by restoring 5,370 square feet of are to lawn. To account for the remaining 3,255 square feet, the existing roof areas totaling 4,100 square feet will be collected by a roof drain system and piped to a new recharge system. The system has been sized to capture and recharge the entire volume of runoff from these roof areas for the 100 year storm, more than making up the difference in runoff from the change in land cover.

The table below summarizes the stormwater runoff generated by the property based on its land cover in 2002 and after the proposed stormwater management system is installed. Stormwater runoff is calculated using the NRCS method, with CN values from TR-55 for hydrologic "A" type soils, the NOAA Atlas 14 curve D precipitation values for Monmouth County, NJ, and the SCS unit hydrograph.

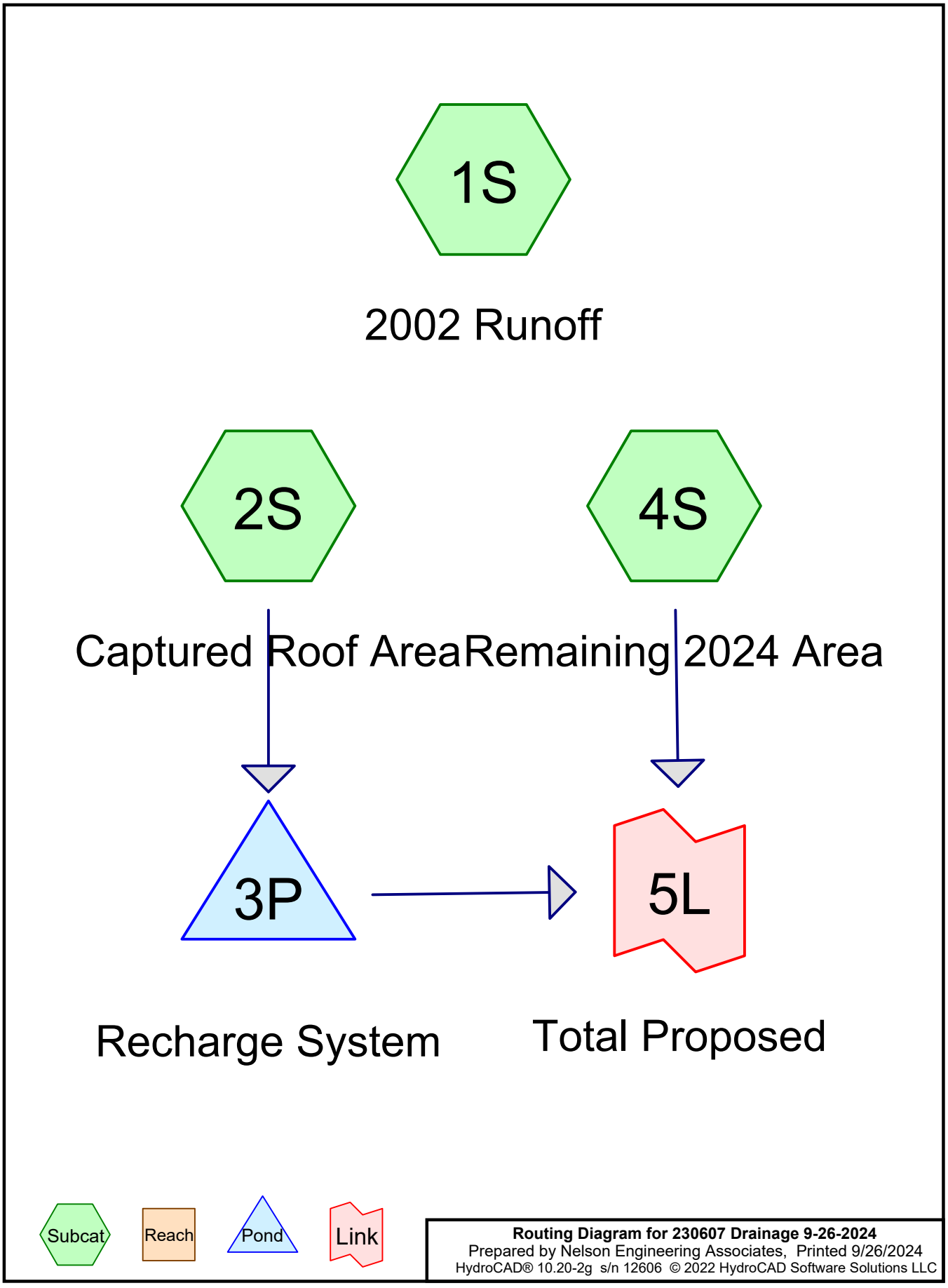
		2002 Runoff	Proposed
2-Year Storm	Peak Rate	2.41 cfs	2.37 cfs
	Volume	8,324 ft^3	8,291 ft^3
10-Year Storm	Peak Rate	3.81 cfs	3.73 cfs
	Volume	14,136 ft^3	13,919 ft^3
100-Year Storm	Peak Rate	7.67 cfs	7.40 cfs
	Volume	28,045 ft^3	27,219 ft^3

Conclusion:

The construction of a stormwater recharge system will result in a decrease in the total runoff volume for all studied storm events. No adverse stormwater impacts to nearby properties are anticipated.

Appendix:

- 2, 10, and 100-Year Runoff Hydrographs
- Soil log and permeability test results
- Web Soil Survey



Routing Diagram for 230607 Drainage 9-26-2024
Prepared by Nelson Engineering Associates, Printed 9/26/2024

Summary for Subcatchment 1S: 2002 Runoff

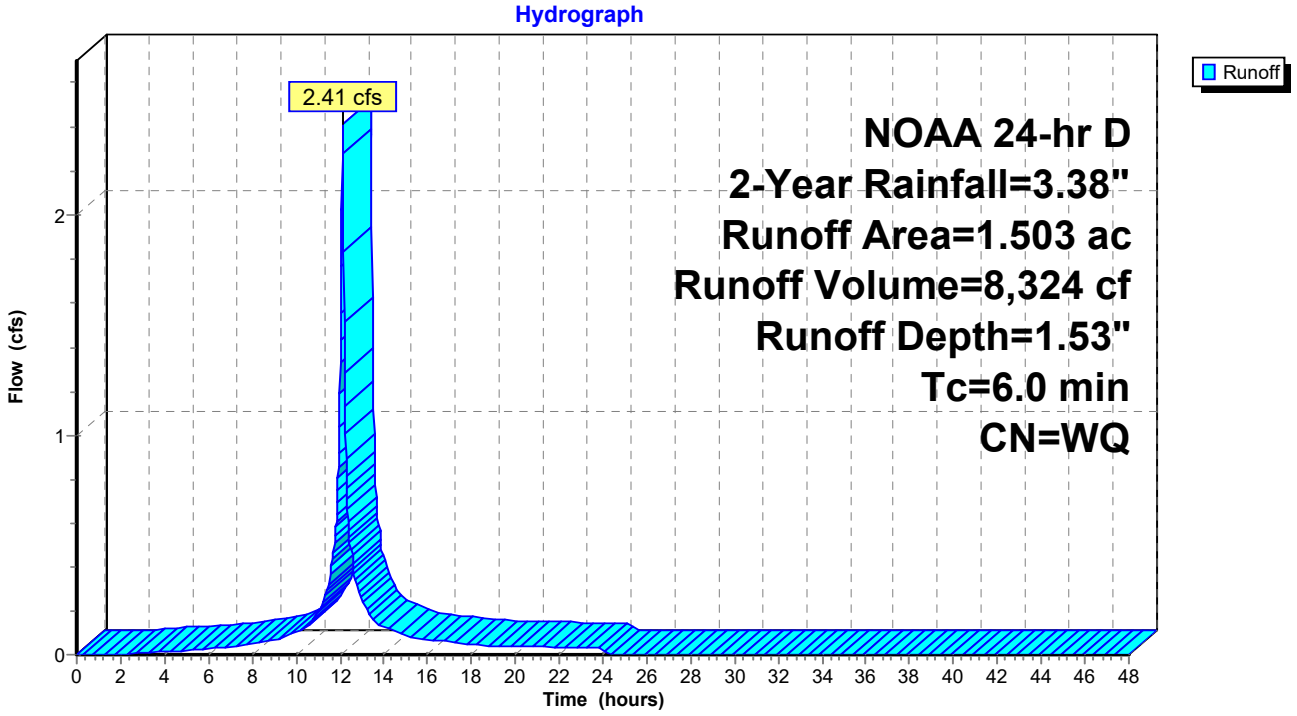
Runoff = 2.41 cfs @ 12.13 hrs, Volume= 8,324 cf, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
NOAA 24-hr D 2-Year Rainfall=3.38"

	Area (ac)	CN	Description
*	0.100	98	Impervious, HSG A
	0.675	96	Gravel surface, HSG A
	0.728	39	>75% Grass cover, Good, HSG A
	1.503		Weighted Average
	1.403	66	93.35% Pervious Area
	0.100	98	6.65% Impervious Area

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

Subcatchment 1S: 2002 Runoff



Summary for Subcatchment 2S: Captured Roof Area

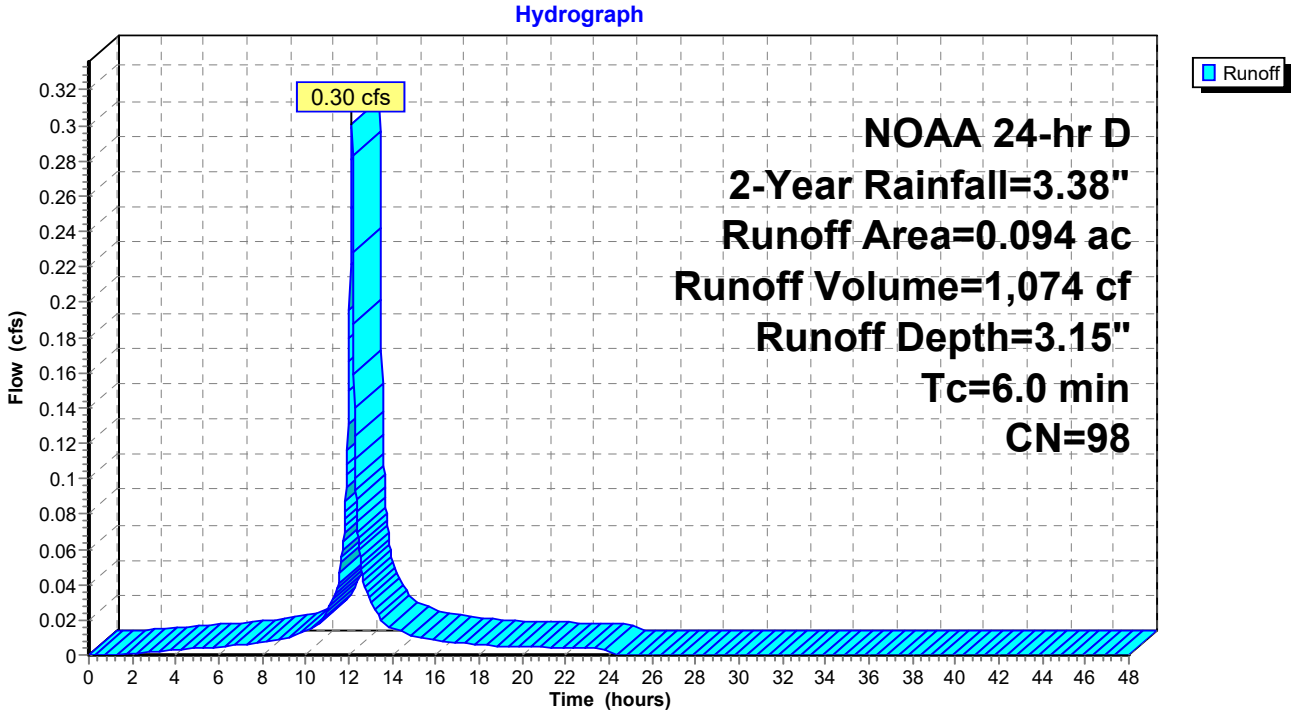
Runoff = 0.30 cfs @ 12.13 hrs, Volume= 1,074 cf, Depth= 3.15"
Routed to Pond 3P : Recharge System

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
NOAA 24-hr D 2-Year Rainfall=3.38"

Area (ac)	CN	Description
0.094	98	Roofs, HSG A
0.094	98	100.00% Impervious Area

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

Subcatchment 2S: Captured Roof Area



Summary for Pond 3P: Recharge System

Inflow Area = 4,095 sf, 100.00% Impervious, Inflow Depth = 3.15" for 2-Year event
Inflow = 0.30 cfs @ 12.13 hrs, Volume= 1,074 cf
Outflow = 0.07 cfs @ 12.41 hrs, Volume= 1,074 cf, Atten= 77%, Lag= 16.9 min
Discarded = 0.07 cfs @ 12.41 hrs, Volume= 1,074 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link 5L : Total Proposed

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 49.17' @ 12.41 hrs Surf.Area= 757 sf Storage= 210 cf

Plug-Flow detention time= 17.1 min calculated for 1,074 cf (100% of inflow)
Center-of-Mass det. time= 17.1 min (774.2 - 757.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	48.47'	595 cf	**7.45'W x 101.67'L x 3.00'H Field A** 2,272 cf Overall - 784 cf Embedded = 1,488 cf x 40.0% Voids
#2A	48.80'	620 cf	**ADS N-12 24"** x 10 Inside #1 Inside= 23.8"W x 23.8"H => 3.10 sf x 20.00'L = 62.0 cf Outside= 28.0"W x 28.0"H => 3.92 sf x 20.00'L = 78.4 cf 10 Chambers in 2 Rows
		1,215 cf	Total Available Storage

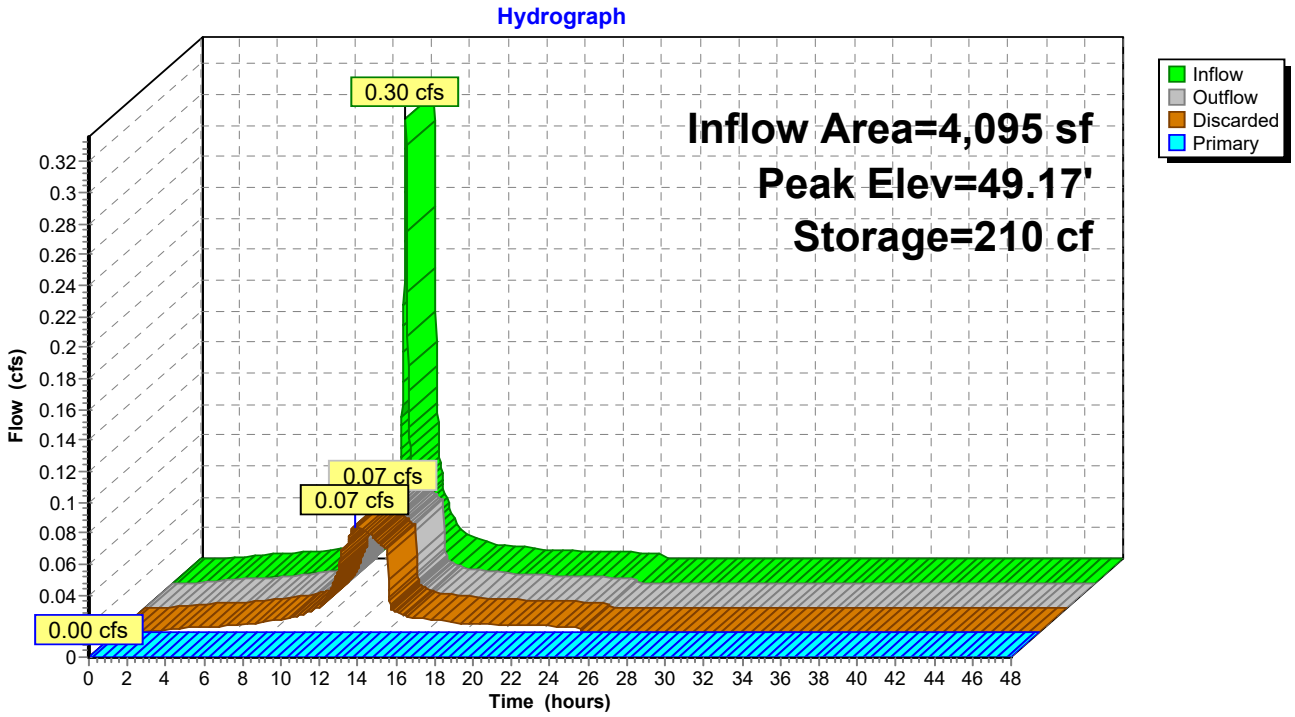
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#0	Primary	51.47'	**Automatic Storage Overflow** (Discharged without head)
#1	Discarded	48.47'	**3.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 46.10'

Discarded OutFlow Max=0.07 cfs @ 12.41 hrs HW=49.17' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.07 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=48.47' (Free Discharge)

Pond 3P: Recharge System



Summary for Subcatchment 4S: Remaining 2024 Area

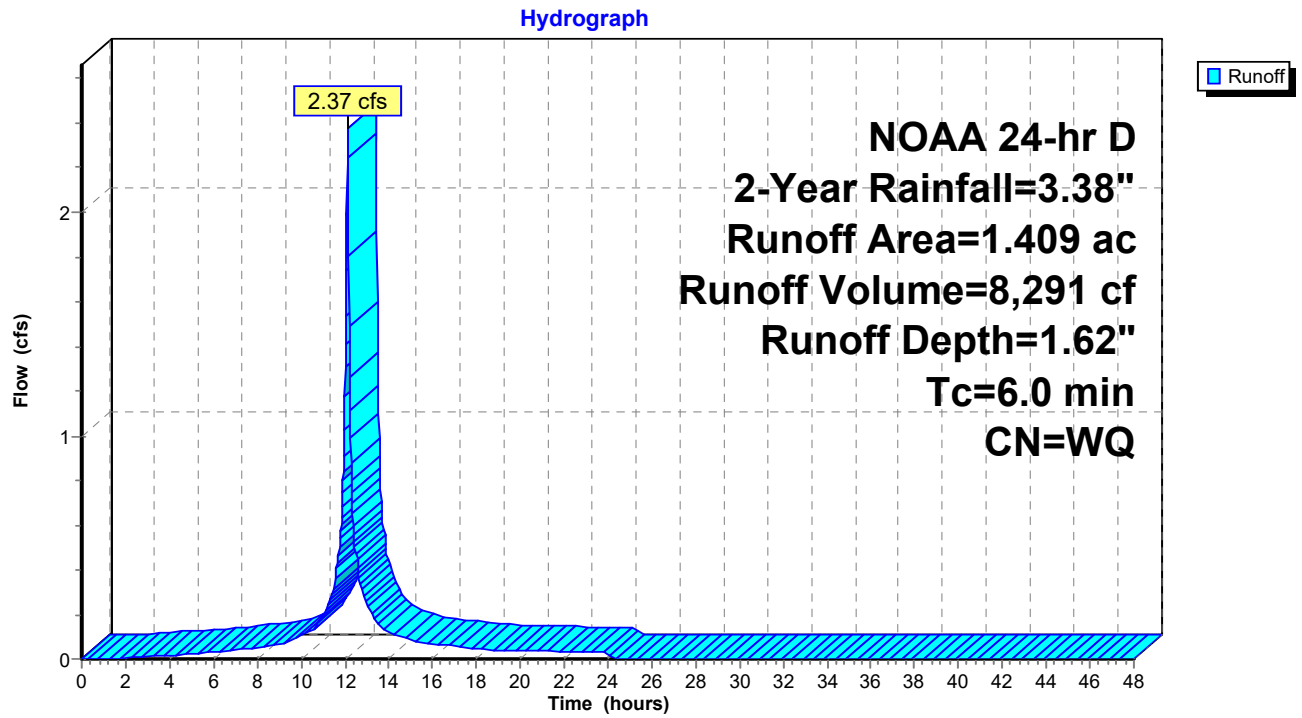
Runoff = 2.37 cfs @ 12.13 hrs, Volume= 8,291 cf, Depth= 1.62"
Routed to Link 5L : Total Proposed

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
NOAA 24-hr D 2-Year Rainfall=3.38"

	Area (ac)	CN	Description
*	0.313	98	Impervious, HSG A
	0.443	96	Gravel surface, HSG A
	0.653	39	>75% Grass cover, Good, HSG A
	1.409		Weighted Average
	1.096	62	77.79% Pervious Area
	0.313	98	22.21% Impervious Area

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

Subcatchment 4S: Remaining 2024 Area

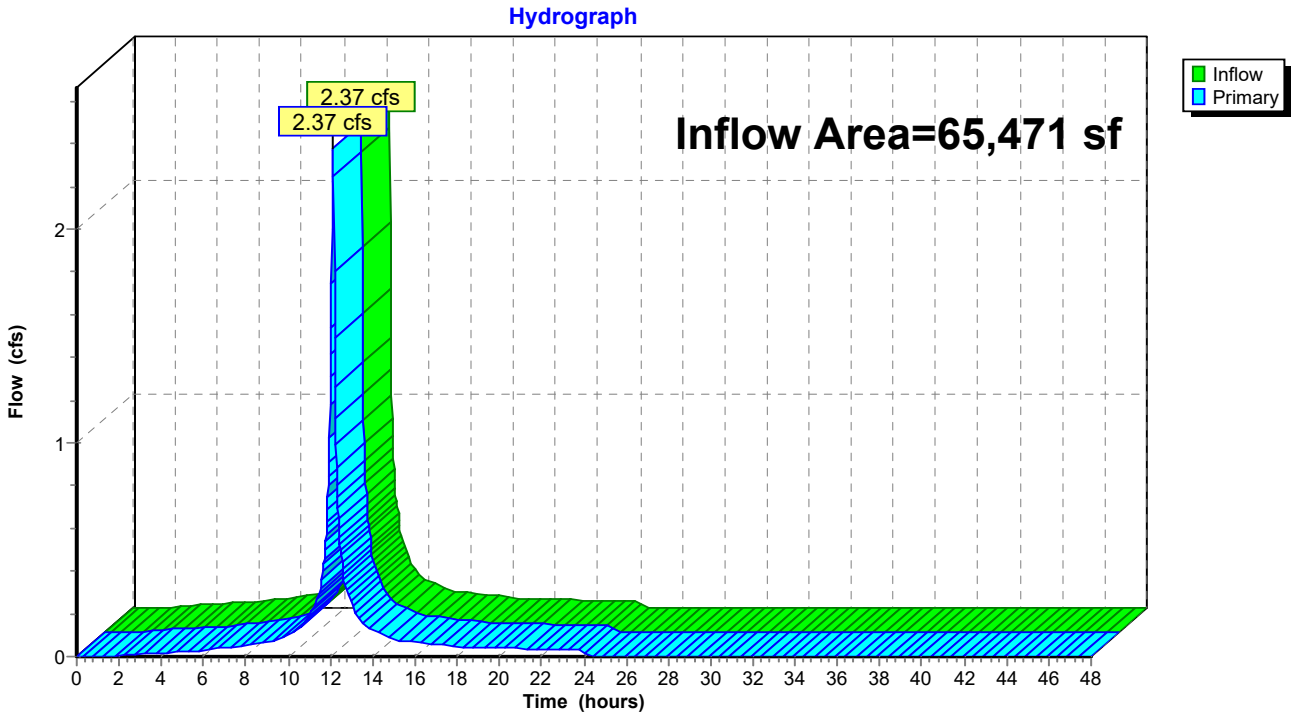


Summary for Link 5L: Total Proposed

Inflow Area = 65,471 sf, 27.08% Impervious, Inflow Depth = 1.52" for 2-Year event
Inflow = 2.37 cfs @ 12.13 hrs, Volume= 8,291 cf
Primary = 2.37 cfs @ 12.13 hrs, Volume= 8,291 cf, Atten= 0%, Lag= 0.0 min

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

Link 5L: Total Proposed



Summary for Subcatchment 1S: 2002 Runoff

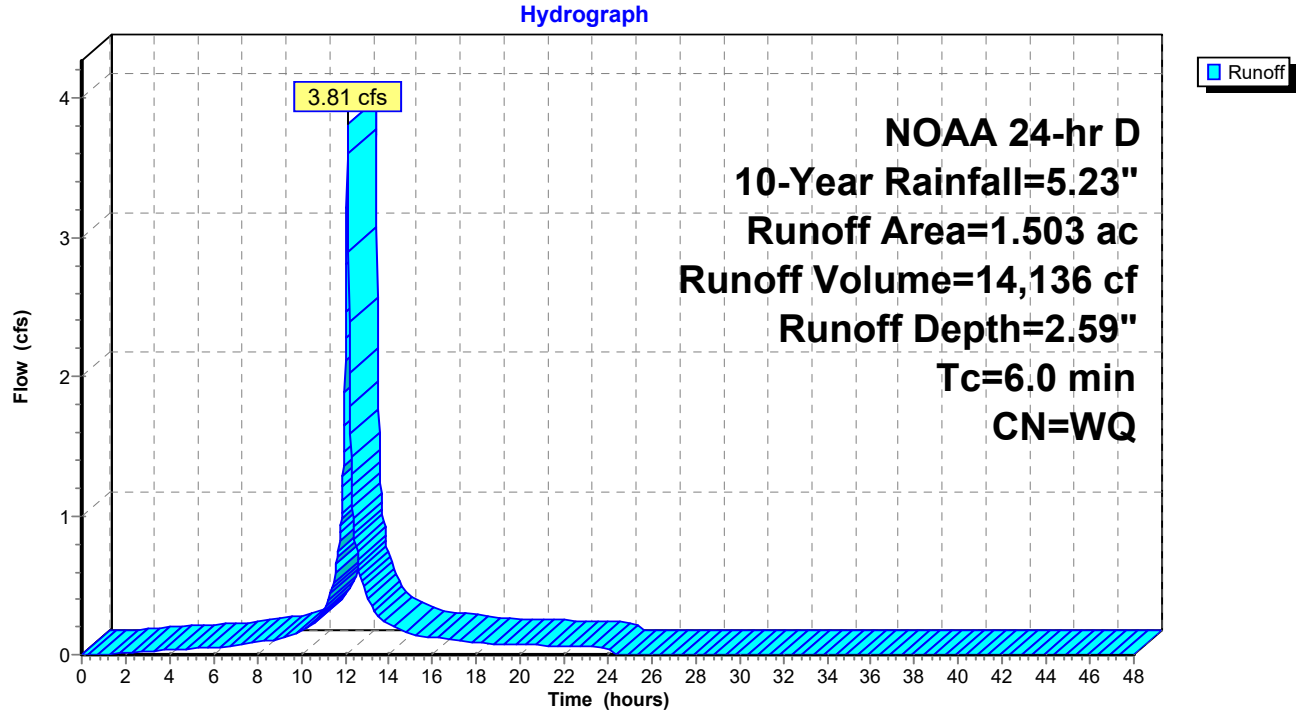
Runoff = 3.81 cfs @ 12.13 hrs, Volume= 14,136 cf, Depth= 2.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
NOAA 24-hr D 10-Year Rainfall=5.23"

	Area (ac)	CN	Description
*	0.100	98	Impervious, HSG A
	0.675	96	Gravel surface, HSG A
	0.728	39	>75% Grass cover, Good, HSG A
	1.503		Weighted Average
	1.403	66	93.35% Pervious Area
	0.100	98	6.65% Impervious Area

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

Subcatchment 1S: 2002 Runoff



Summary for Subcatchment 2S: Captured Roof Area

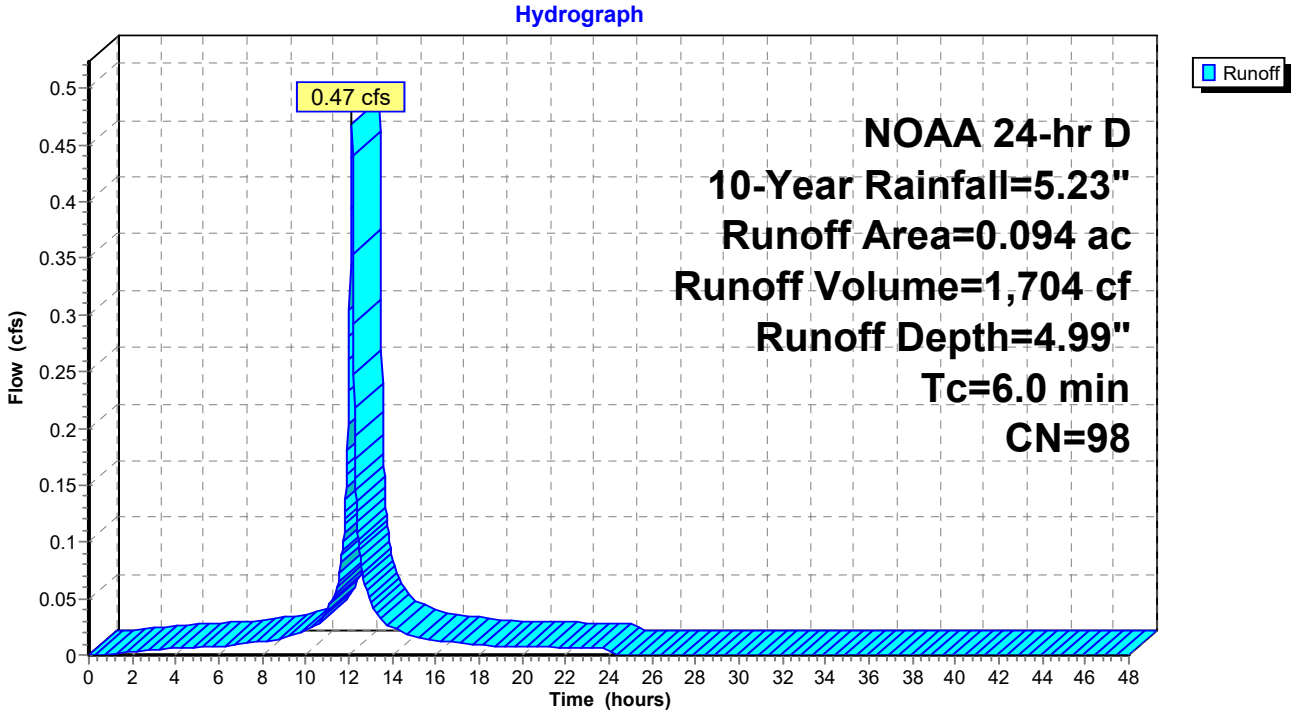
Runoff = 0.47 cfs @ 12.13 hrs, Volume= 1,704 cf, Depth= 4.99"
Routed to Pond 3P : Recharge System

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
NOAA 24-hr D 10-Year Rainfall=5.23"

Area (ac)	CN	Description
0.094	98	Roofs, HSG A
0.094	98	100.00% Impervious Area

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

Subcatchment 2S: Captured Roof Area



Summary for Pond 3P: Recharge System

Inflow Area = 4,095 sf, 100.00% Impervious, Inflow Depth = 4.99" for 10-Year event
Inflow = 0.47 cfs @ 12.13 hrs, Volume= 1,704 cf
Outflow = 0.08 cfs @ 12.59 hrs, Volume= 1,704 cf, Atten= 83%, Lag= 27.5 min
Discarded = 0.08 cfs @ 12.59 hrs, Volume= 1,704 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link 5L : Total Proposed

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 49.62' @ 12.59 hrs Surf.Area= 757 sf Storage= 423 cf

Plug-Flow detention time=33.4 min calculated for 1,703 cf (100% of inflow)
Center-of-Mass det. time=33.4 min (781.9 - 748.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	48.47'	595 cf	**7.45'W x 101.67'L x 3.00'H Field A** 2,272 cf Overall - 784 cf Embedded = 1,488 cf x 40.0% Voids
#2A	48.80'	620 cf	**ADS N-12 24"** x 10 Inside #1 Inside= 23.8"W x 23.8"H => 3.10 sf x 20.00'L = 62.0 cf Outside= 28.0"W x 28.0"H => 3.92 sf x 20.00'L = 78.4 cf 10 Chambers in 2 Rows
		1,215 cf	Total Available Storage

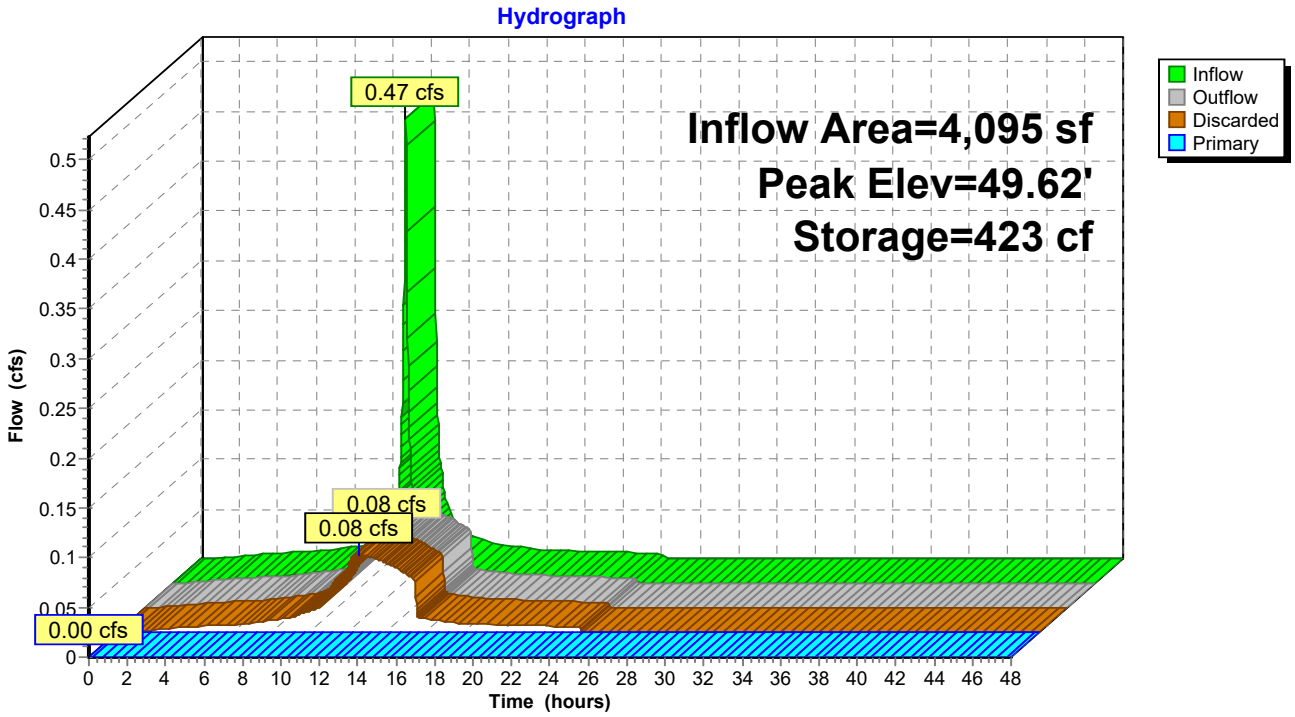
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#0	Primary	51.47'	**Automatic Storage Overflow**(Discharged without head)
#1	Discarded	48.47'	**3.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 46.10'

Discarded OutFlow Max=0.08 cfs @ 12.59 hrs HW=49.62' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.08 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=48.47' (Free Discharge)

Pond 3P: Recharge System



Summary for Subcatchment 4S: Remaining 2024 Area

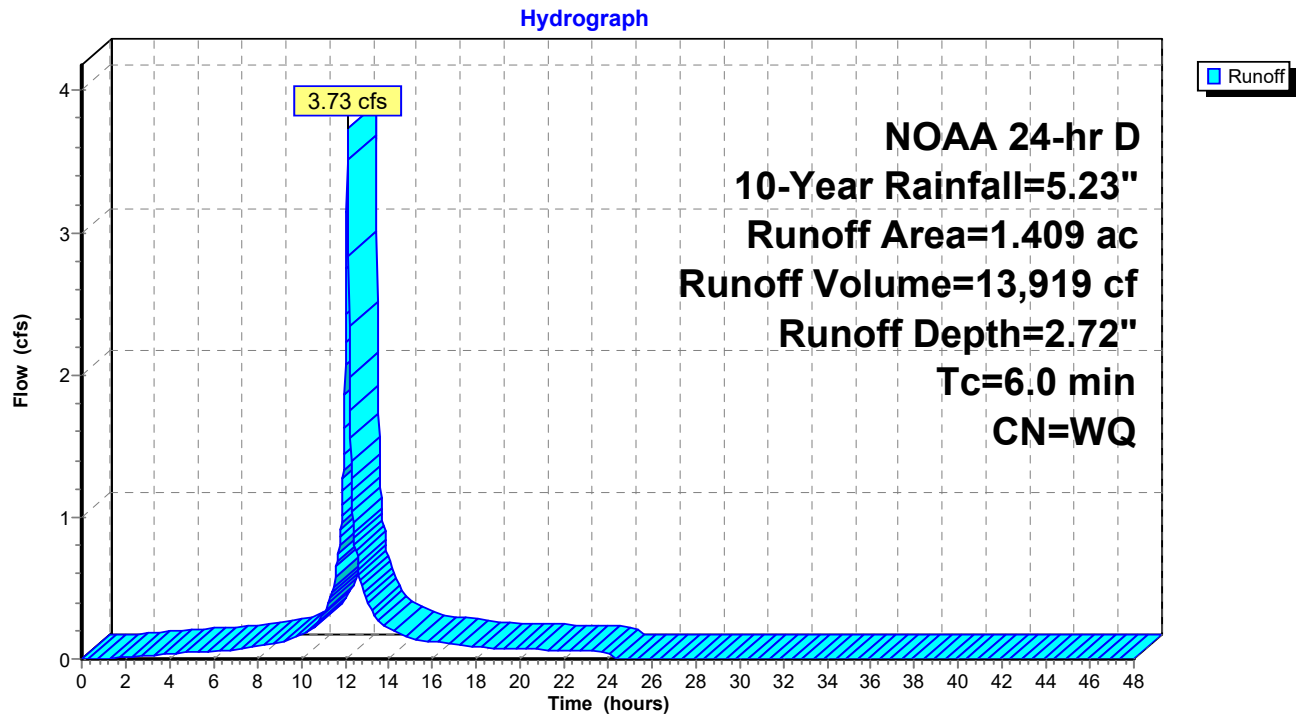
Runoff = 3.73 cfs @ 12.13 hrs, Volume= 13,919 cf, Depth= 2.72"
Routed to Link 5L : Total Proposed

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
NOAA 24-hr D 10-Year Rainfall=5.23"

	Area (ac)	CN	Description
*	0.313	98	Impervious, HSG A
	0.443	96	Gravel surface, HSG A
	0.653	39	>75% Grass cover, Good, HSG A
	1.409		Weighted Average
	1.096	62	77.79% Pervious Area
	0.313	98	22.21% Impervious Area

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

Subcatchment 4S: Remaining 2024 Area

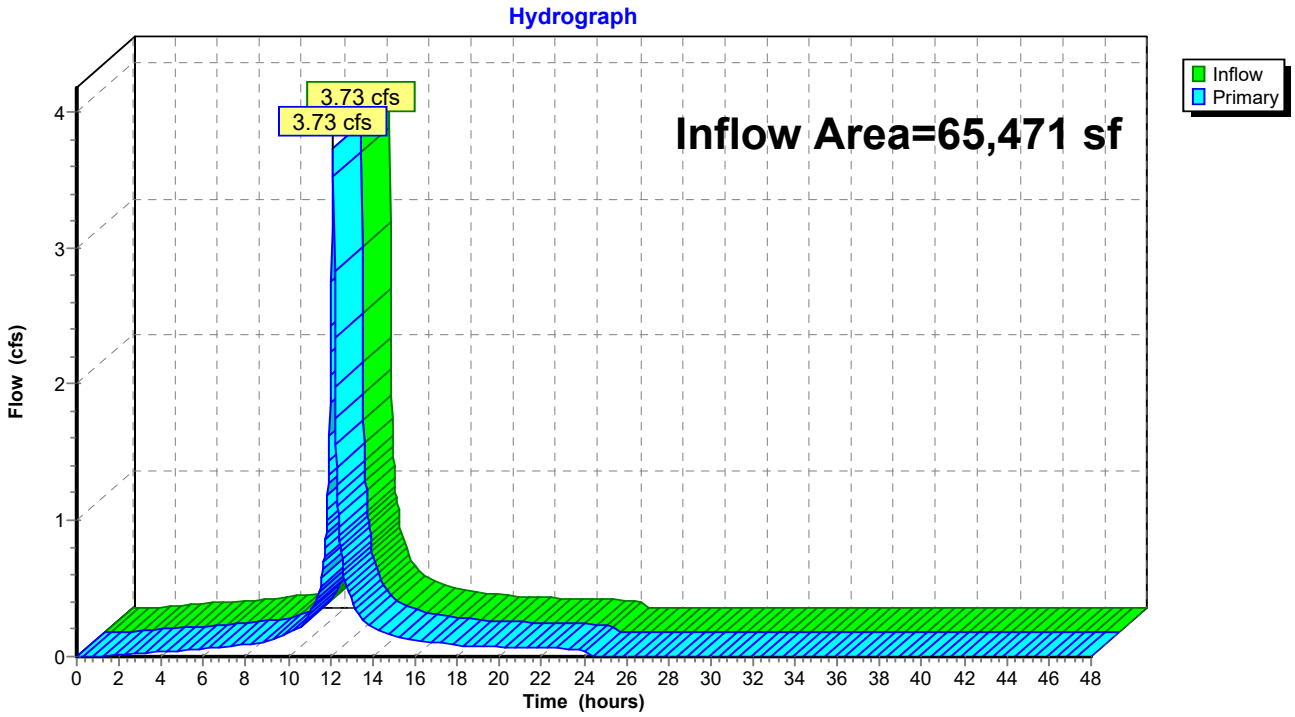


Summary for Link 5L: Total Proposed

Inflow Area = 65,471 sf, 27.08% Impervious, Inflow Depth = 2.55" for 10-Year event
Inflow = 3.73 cfs @ 12.13 hrs, Volume= 13,919 cf
Primary = 3.73 cfs @ 12.13 hrs, Volume= 13,919 cf, Atten= 0%, Lag= 0.0 min

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

Link 5L: Total Proposed



Summary for Subcatchment 1S: 2002 Runoff

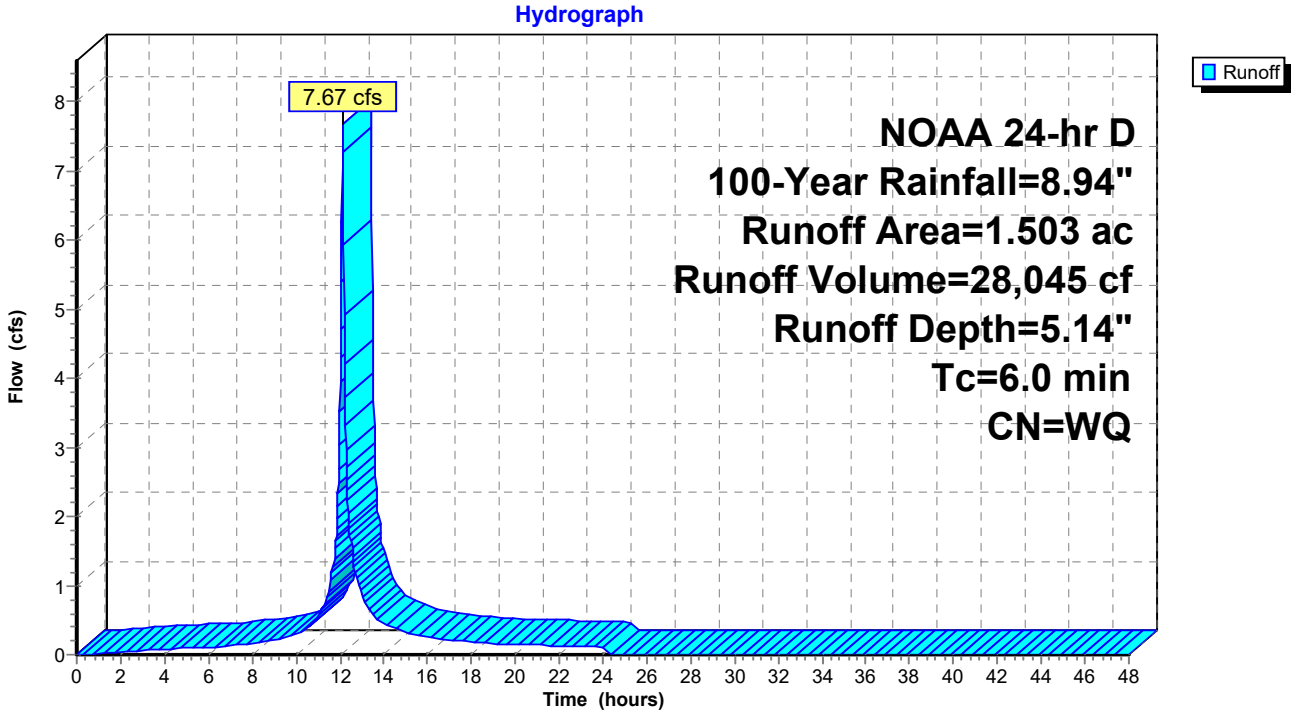
Runoff = 7.67 cfs @ 12.13 hrs, Volume= 28,045 cf, Depth= 5.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
NOAA 24-hr D 100-Year Rainfall=8.94"

	Area (ac)	CN	Description
*	0.100	98	Impervious, HSG A
	0.675	96	Gravel surface, HSG A
	0.728	39	>75% Grass cover, Good, HSG A
	1.503		Weighted Average
	1.403	66	93.35% Pervious Area
	0.100	98	6.65% Impervious Area

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

Subcatchment 1S: 2002 Runoff



Summary for Subcatchment 2S: Captured Roof Area

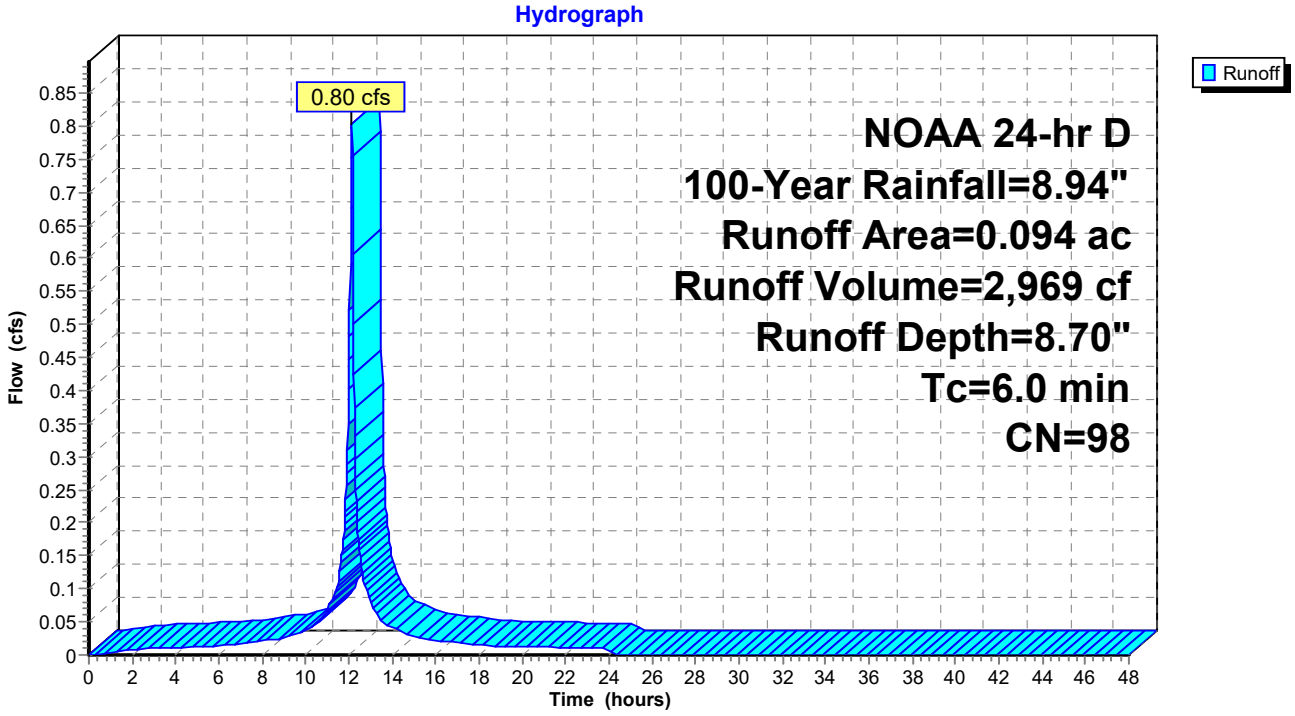
Runoff = 0.80 cfs @ 12.13 hrs, Volume= 2,969 cf, Depth= 8.70"
Routed to Pond 3P : Recharge System

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
NOAA 24-hr D 100-Year Rainfall=8.94"

Area (ac)	CN	Description
0.094	98	Roofs, HSG A
0.094	98	100.00% Impervious Area

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

Subcatchment 2S: Captured Roof Area



Summary for Pond 3P: Recharge System

Inflow Area = 4,095 sf, 100.00% Impervious, Inflow Depth = 8.70" for 100-Year event
Inflow = 0.80 cfs @ 12.13 hrs, Volume= 2,969 cf
Outflow = 0.10 cfs @ 12.81 hrs, Volume= 2,969 cf, Atten= 88%, Lag= 40.7 min
Discarded = 0.10 cfs @ 12.81 hrs, Volume= 2,969 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link 5L : Total Proposed

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Peak Elev= 50.59' @ 12.81 hrs Surf.Area= 757 sf Storage= 922 cf

Plug-Flow detention time=68.1 min calculated for 2,967 cf (100% of inflow)
Center-of-Mass det. time=68.0 min (808.7 - 740.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	48.47'	595 cf	**7.45'W x 101.67'L x 3.00'H Field A** 2,272 cf Overall - 784 cf Embedded = 1,488 cf x 40.0% Voids
#2A	48.80'	620 cf	**ADS N-12 24"** x 10 Inside #1 Inside= 23.8"W x 23.8"H => 3.10 sf x 20.00'L = 62.0 cf Outside= 28.0"W x 28.0"H => 3.92 sf x 20.00'L = 78.4 cf 10 Chambers in 2 Rows
		1,215 cf	Total Available Storage

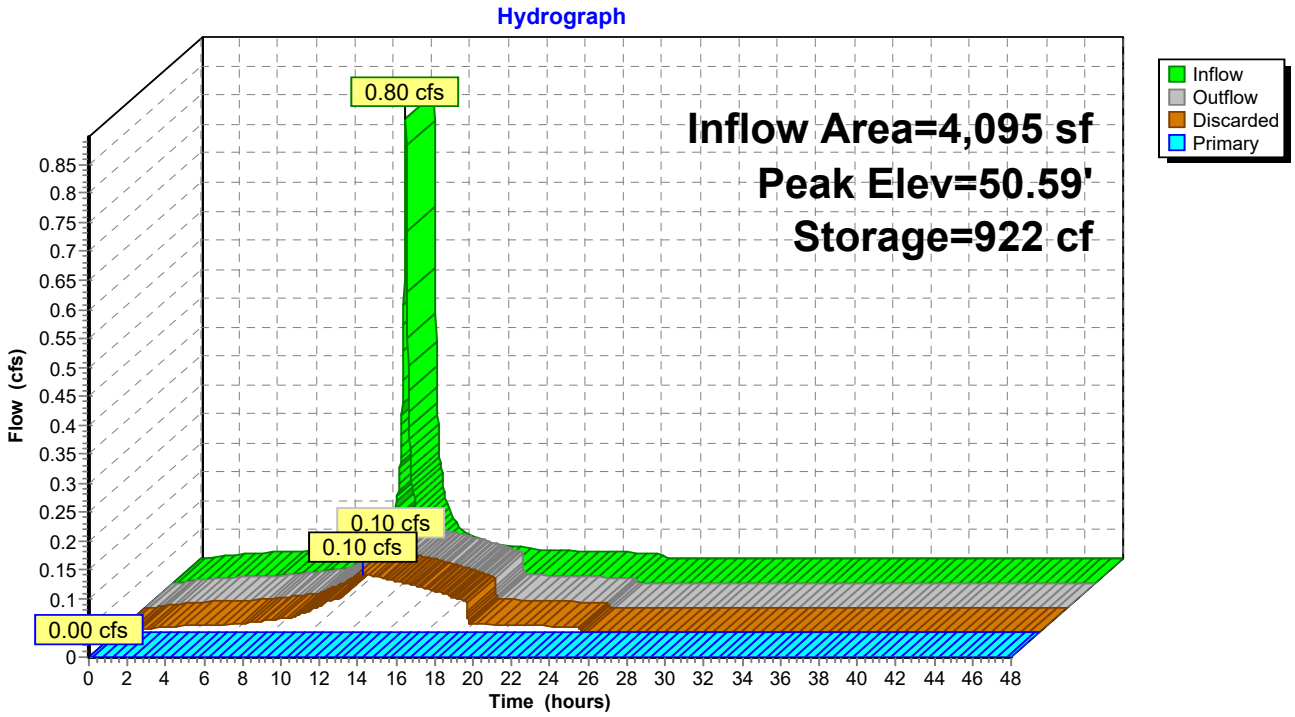
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#0	Primary	51.47'	**Automatic Storage Overflow**(Discharged without head)
#1	Discarded	48.47'	**3.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 46.10'

Discarded OutFlow Max=0.10 cfs @ 12.81 hrs HW=50.59' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.10 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=48.47' (Free Discharge)

Pond 3P: Recharge System



Summary for Subcatchment 4S: Remaining 2024 Area

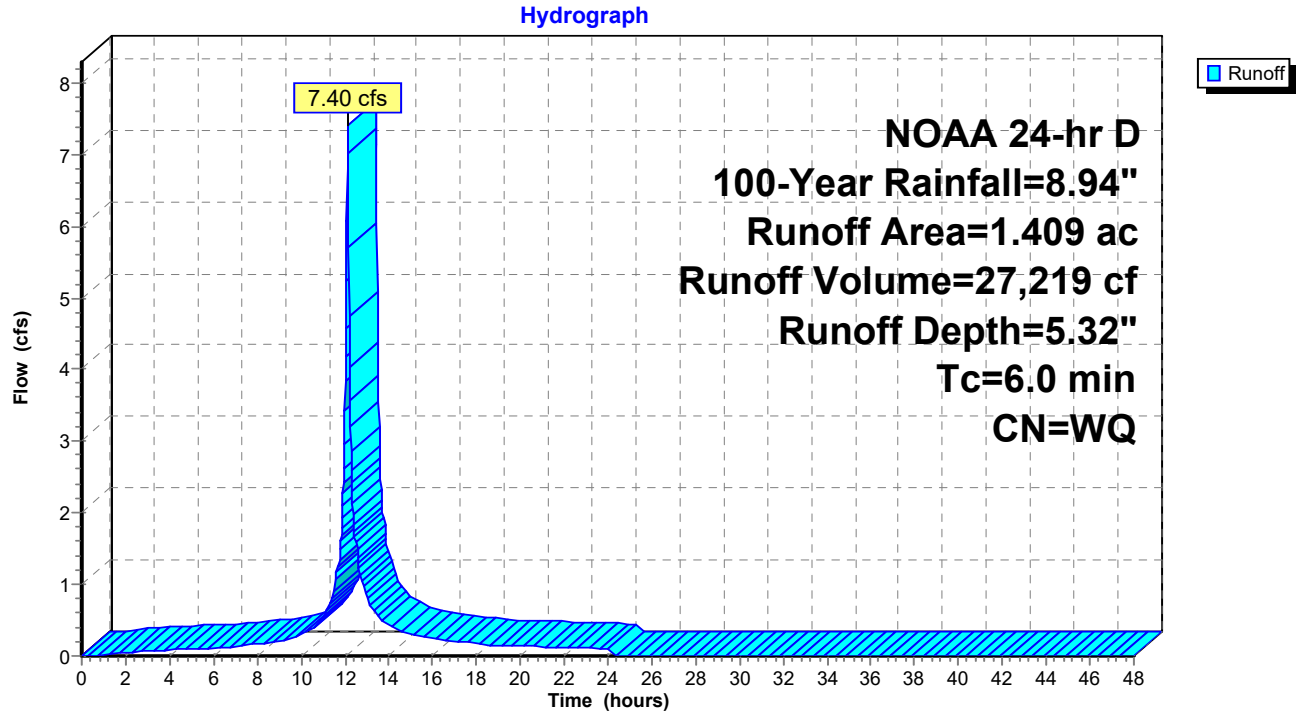
Runoff = 7.40 cfs @ 12.13 hrs, Volume= 27,219 cf, Depth= 5.32"
Routed to Link 5L : Total Proposed

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
NOAA 24-hr D 100-Year Rainfall=8.94"

	Area (ac)	CN	Description
*	0.313	98	Impervious, HSG A
	0.443	96	Gravel surface, HSG A
	0.653	39	>75% Grass cover, Good, HSG A
	1.409		Weighted Average
	1.096	62	77.79% Pervious Area
	0.313	98	22.21% Impervious Area

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

Subcatchment 4S: Remaining 2024 Area

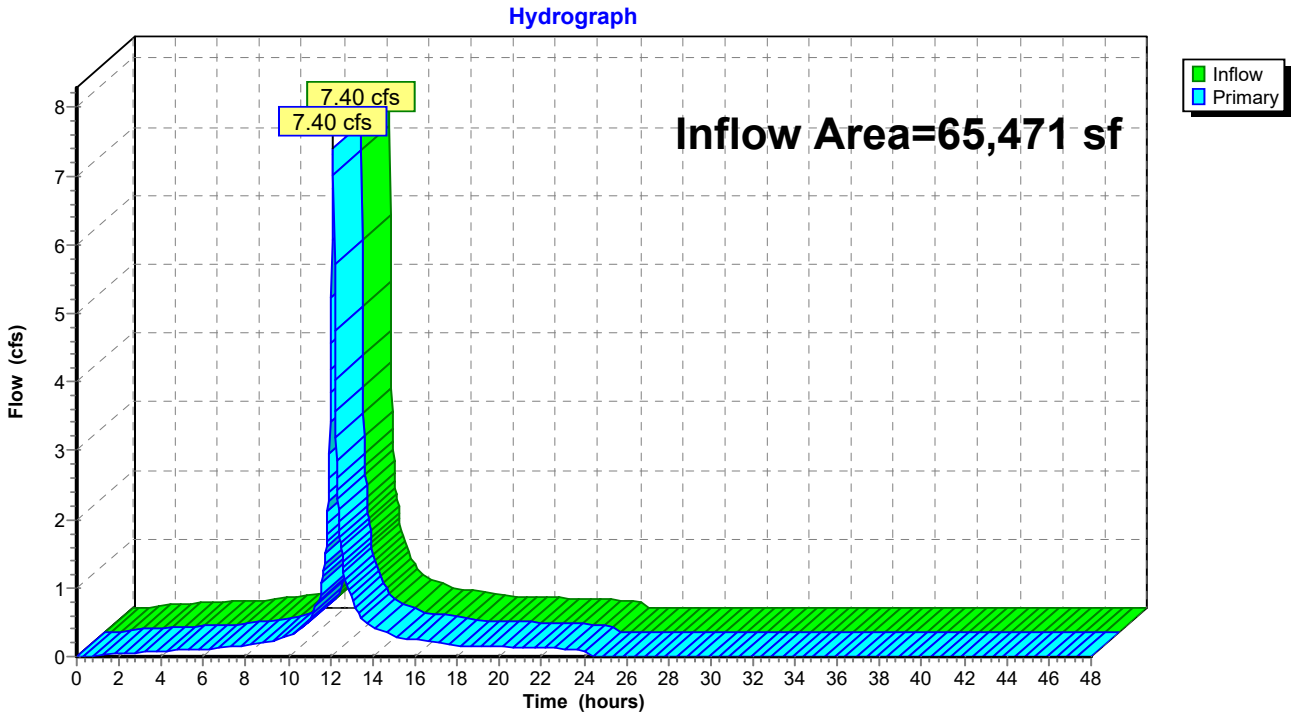


Summary for Link 5L: Total Proposed

Inflow Area = 65,471 sf, 27.08% Impervious, Inflow Depth = 4.99" for 100-Year event
Inflow = 7.40 cfs @ 12.13 hrs, Volume= 27,219 cf
Primary = 7.40 cfs @ 12.13 hrs, Volume= 27,219 cf, Atten= 0%, Lag= 0.0 min

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

Link 5L: Total Proposed



Nelson Engineering Associates, Inc.

444 Neptune Boulevard, Suite 4 • Neptune, NJ 07753
(732) 918-2180

Block(s): 3001; Lot(s); 6 **NEAI File # 230607**
Township of Neptune, Monmouth County, NJ **3324 Route 33**

Date & Time: Thursday September 12, 2024 at 1:30 PM Weather conditions at time of test: 77° F., clear

Soil Log Ground Surface Elevation: 53.0± **SB#1** Soil boring at southeast corner of rear gravel area

Depth	Description	Munsell
0" - 6"	Light brownish gray silty sand with 15% gravel, well graded granular structure, dry, loose and with an abrupt (1" Max.) boundary	10 YR 6/2
6" - 10"	Very dark gray organic layer, moist, firm, and with an abrupt (1" Max.) boundary	10 YR 3/1
10" - 16"	Gray sand with 15% gravel, medium to coarse granular structure, moist, loose, and with an abrupt (1" Max.) boundary	10 YR 6/1
16" - 28"	Very dark gray organic layer with some sand, moist, firm, and with an abrupt (1" Max.) boundary	10 YR 3/1
28" - 38"	Light gray silty sand, medium to fine granular structure, moist, friable, and with a clear (2.5" Max.) boundary	10 YR 7/1
38" - 69"	Yellowish brown silty sand, medium to fine granular structure, moist, loose, saturated from 67" to 69", and with a clear (2.5" Max.) boundary	10 YR 7/4
69" - 81"	Very pale brown clay, massive structure, moist, plastic, and with an abrupt (1" Max.) boundary	10 YR 8/4
81" - 94"	Brownish yellow sand with some silt, medium granular structure, moist, loose, saturated below 83", and with a gradual (5" Max.) boundary	10 YR 6/8
94" - 108"	Gray sand and silt, fine granular structure, saturated and friable	10 YR 5/1

Water seepage encountered at 83" Expected seasonal high water table (SHWT) elevation: 46.1±
Depth to expected seasonal high water table (SHWT): 83" (6.9') Samples taken at 50" & 90"

9/13/2024
Matthew R. DuBois, P.E., C.M.E. Date
(SEAL)

Nelson Engineering Associates, Inc.

444 Neptune Boulevard, Suite 4 • Neptune, NJ 07753
(732) 918-2180

CONSTANT HEAD TUBE PERMEAMETER TEST
Block(s): 3001; Lot(s); 6 **NEAI File # 230607**
Township of Neptune, Monmouth County, NJ Date of test: Wednesday September 18, 2024

Undisturbed **Disturbed**

Sample Location 1
Sample Depth: 50"

	REPLICATE A	REPLICATE B
SAMPLE LENGTH (CM) =	7.4	7.4
SAMPLE AREA (CM2) =	31.65	31.65
TIME (SEC) =	300	300
VOLUME (ML) =	290	310
HEAD (CM) =	49.9	49.9
PERMEABILITY (CM/SEC) =	0.0045	0.0048
PERMEABILITY (IN/HR) =	6	7
PERMEABILITY CLASS =	K-4	K-4

Sample Location 1
Sample Depth: 90"

	REPLICATE A	REPLICATE B
SAMPLE LENGTH (CM) =	7.4	6.3
SAMPLE AREA (CM2) =	31.65	31.65
TIME (SEC) =	300	300
VOLUME (ML) =	420	575
HEAD (CM) =	49.9	49.9
PERMEABILITY (CM/SEC) =	0.0066	0.0076
PERMEABILITY (IN/HR) =	9	11
PERMEABILITY CLASS =	K-4	K-4

DESIGN PERMEABILITY USING THE SLOWEST OF ALL TEST REPLICATES = **K-4** (6 - 20 INCHES PER HOUR)

I hereby certify, to the best of my professional knowledge and belief, that the above information is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58: 10A- et. Seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

9/18/2024
Matthew R. DuBois, P.E., C.M.E. Date
(SEAL)

MORE THAN 20 IN/HR = **K-5**
6 - 20 IN/HR = **K-4**
2 - 6 IN/HR = **K-3**
0.6 - 2 IN/HR = **K-2**
0.2 - 0.6 IN/HR = **K-1**
LESS THAN 0.2 IN/HR = **K-0**

Hydrologic Soil Group—Monmouth County, New Jersey
(Ryal Holdings LLC - Neptune, NJ)

Map Scale: 1:617 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 5 10 20 30

Feet
0 25 50 100 150

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 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Monmouth County, New Jersey
Survey Area Data: Version 17, Aug 29, 2023

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

Date(s) aerial images were photographed: Jun 4, 2022—Jul 22, 2022

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
EveC	Evesboro sand, 5 to 10 percent slopes	A	1.4	100.0%
Totals for Area of Interest			**1.4**	**100.0%**

Description

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

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

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

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

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

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

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

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher