

Stormwater Management Report

**For a
Preliminary and Final Major
Subdivision of Hemingway Estates**

**Located on
Wilbur Avenue**

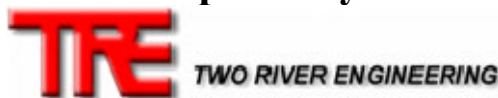
**LOT 1242, 1267, 1268, 1272, 1276 BLOCK 23 LOT 1134, 113, 1165, 1206, 1216, 1234 BLOCK 24
LOT 1286, PART OF 1291, AND PART OF 1307 BLOCK 26
LOT 1201, 1204, PART OF 1197 AND PART OF 1168 BLOCK 27 LOTS 1071, 1084
AND PART OF 1091 BLOCK 28**

**Township of Manchester
Ocean County, New Jersey**

April 20, 2026

**Prepared for:
Arya Properties at Wilbur, LLC**

Prepared by:



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A handwritten signature in black ink, appearing to read "A.J. Garito Jr.", is written over a horizontal line.

**A.J. Garito Jr., P.E.
New Jersey Professional Engineer
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A. Description of Site

The project site is known as Lots 1242, 1267, 1268, 1272, 1276 block 23 lot 1134, 113, 1165, 1206, 1216, 1234 in Block 24, Lot 1286, part of 1291, and part of 1307 in Block 26, Lot 1201, 1204, part of 1197 and part of 1168, Block 27, Lots 1071,1084 and part of 1091 in Block 28 according to the Township of Manchester tax map 1.01. The site address is 3044 Wilbur Avenue however the parcel includes additional lots and blocks listed above. The property is currently predominantly wooded. The site consists of 15.152 acres. This report will focus on stormwater management for the proposed improvements. The project has a frontage on the northerly side of Wilbur Avenue, approximately 400 feet north of Holly Hill Road. The applicant intends to construct a fourteen (14) lot residential subdivision with associated improvements on the 11.659 acres parcel with an open space conservation lot of 3.493 acres. The site is located within the R-40 Residential Zone. This report has been prepared to summarize how the proposed development complies with the applicable local, county, and state stormwater management regulations.

B. Existing Land Characteristics

a) Soils

According to the "Soil Survey of Ocean County, New Jersey", the soil type found on site consists of approximately 100% Downer Loamy Sand, a hydrologic group "A".

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

b) Topography

The site is relatively gently sloping approximately two (0) to five (5) percent slopes which meander from the middle of the property to the east and from the middle of the property to the west and shown on the existing drainage map. A Pre-Develeoped Drainage Area Map is included as part of this report which shows where the drainage areas are located.

C. Executive Summary

This project has been determined to be “Major Development” as defined in N.J.A.C. 7:8 – Stormwater Management Rules and as such must meet the requirements of NJAC 7:8. The stormwater management system is in conformance with the applicable regulations of the New Jersey Department of Environmental Protection (NJDEP) in accordance with the following:

1. This Project has provided adequate measures for **stormwater quality** by meeting the minimum of 80% Total Suspended Solids (TSS) removal from the stormwater runoff from the site. This standard is met by utilizing a sand bottom infiltration basin. The infiltration basin has been assigned a total suspended solids (TSS) removal of 80% within the NJBMP Manual which meets the requirement of the Stormwater Management Rule.
2. Design measures so that the post-construction will match the existing peak runoff rates for the 2, 10 and 100-year storm. The designed basins will have a drainage time of less than 72 hours for the 100-year storm.
3. Design stormwater management features in accordance with the **Standards for Soil Erosion and Sediment Control in New Jersey** established under the Soil Erosion and Sediment Control Act, N.J.S.A. 4:24-39 et seq. (see N.J.A.C. 2:90-1.3).

D. Infiltration Basin Features

The stormwater Infiltration basin has been designed to incorporate the following features to address the design criteria:

- a) The sand filter bed is specified to be a K-5 sand with a minimum permeability rate of 20 inches / hour. Infiltration has been disregarded in the various analyses in accordance with the requirements set forth within NJAC 7:8.
- b) The basin bottom is level to encourage even spreading of the water quality storm event.
- c) The bottom of the basin has a minimum two (2) feet clearance from the seasonal high water table as measured from the bottom of the sand layer. Soils testing will need to be performed to confirm the design, however, based on the soils on site along with the topography of the existing land, the design assumptions will likely result in a more conservative design. This testing will be performed as a condition of approval.

- d) The infiltration basin side slopes are set at a maximum of three (3) feet horizontal to one (1) foot vertical.

E. Existing Drainage Conditions

The property currently has two existing drainage areas. Drainage Area 1 flows to the easterly side of the property towards the vacated Jackson Avenue. Drainage Area 2 flows to the south of the property to Wilbur Avenue right of way. The existing drainage areas exclude the open space lot as it matches an existing topography ridge line.

TR-55 calculations were performed for the existing and proposed conditions using Hydroflow Hydrographs. Curve number and time of concentration worksheets are included in the appendix. Calculations were run for the 2, 10, and 100-year storms and are included in Appendix 1, “Existing Drainage Calculations”. The storm frequencies and peak flows are illustrated in the table below. Due to the subject site’s location within the State, the Delmarva unit hydrograph was utilized.

Existing Drainage Area 1:
Wooded Area = 302,830 s.f. (6.952 ac.)

Existing Drainage Area 2:
Wooded Area = 212,008 s.f. (4.867 ac.)

PEAK RUNOFF DATA, EXISTING CONDITIONS A.P. #1

Storm Frequency (Years)	Required Reduction (%)	Peak Discharge (cfs)	Allowable Release Rate (cfs)
Water Quality	N/A	0.00	N/A
2	50	0.00	0.00
10	25	0.02	0.01
25	N/A	0.12	N/A
100	20	1.09	0.87

PEAK RUNOFF DATA, EXISTING CONDITIONS A.P. #2

Storm Frequency (Years)	Required Reduction (%)	Peak Discharge (cfs)	Allowable Release Rate (cfs)
Water Quality	N/A	0.00	N/A
2	50	0.00	0.00
10	25	0.00	0.00
25	N/A	0.09	N/A
100	20	0.85	0.68

F. Post Development Drainage Conditions

Developed conditions are separated into three (3) main drainage areas. Drainage area #1 improvements will be conveyed into surface infiltration basin #1. Drainage area #2 improvements will be conveyed into surface infiltration basin #2. Drainage area #3 improvements will be conveyed into surface infiltration basin #3. The existing wooded areas are undisturbed and not included in the contributory area however are accounted for in the runoff calculations meeting appropriate reductions. The roof runoff for each dwelling unit will have a drywell to minimize the contributory area and reduce impervious flows to the infiltration basins. The basins are designed to hold all the storm volumes to meet required runoff with appropriate reductions to meet NJAC and NJDEP BMP requirements. The offsite drainage area is included in the calculations and meets the applicable reductions.

CN & TCs are calculated intrinsically within the HydroCAD analysis. Calculations were prepared for the water quality, 2, 10, 25 and 100-year storm events and are included in Appendix 2, "Post Developed Drainage Calculations". The storm frequencies and peak flows are illustrated in the table on the following page:

PEAK RUNOFF DATA, PROPOSED CONDITIONS

Peak Flow Reduction Analysis (Existing Drainage Area-1)					
Storm Frequency	Predevelopment Peak Flow	Required Reduction	Allowable Post-development Flow	Proposed Post-development Flowrate	Realized Reduction
<i>(year)</i>	<i>(cfs)</i>	<i>(%)</i>	<i>(cfs)</i>	<i>(cfs)</i>	<i>(%)</i>
2	0.00	50%	0.00	0.00	N/A
10	0.02	25%	0.02	0.01	50%
25	0.12	N/A	N/A	0.03	N/A
100	1.09	20%	0.87	0.29	73%
* Flowrates with undetained onsite contribution.					

Peak Flow Reduction Analysis (Existing Drainage Area-2)					
Storm Frequency	Predevelopment Peak Flow	Required Reduction	Allowable Post-development Flow	Proposed Post-development Flowrate	Realized Reduction
<i>(year)</i>	<i>(cfs)</i>	<i>(%)</i>	<i>(cfs)</i>	<i>(cfs)</i>	<i>(%)</i>
2	0.00	50%	0.00	0.00	N/A
10	0.00	25%	0.00	0.00	N/A
25	0.09	N/A	N/A	0.00	N/A
100	0.85	20%	0.68	0.49	42%
* Flowrates with undetained onsite contribution.					

Peak Flow Reduction Analysis (Existing Drainage Area-1) - Future					
Storm Frequency	Predevelopment Peak Flow	Required Reduction	Allowable Post-development Flow	Proposed Post-development Flowrate	Realized Reduction
<i>(year)</i>	<i>(cfs)</i>	<i>(%)</i>	<i>(cfs)</i>	<i>(cfs)</i>	<i>(%)</i>
2	0.00	50%	0.00	0.00	N/A
10	0.08	25%	0.06	0.02	75%
100	2.53	20%	2.02	0.69	73%
* Flowrates with undetained onsite contribution.					

Peak Flow Reduction Analysis (Existing Drainage Area-2) - Future					
Storm Frequency	Predevelopment Peak Flow	Required Reduction	Allowable Post-development Flow	Proposed Post-development Flowrate	Realized Reduction
<i>(year)</i>	<i>(cfs)</i>	<i>(%)</i>	<i>(cfs)</i>	<i>(cfs)</i>	<i>(%)</i>
2	0.00	50%	0.00	0.00	100%
10	0.02	25%	0.02	0.00	100%
100	2.08	20%	1.66	1.50	28%
* Flowrates with undetained onsite contribution.					

DRAINAGE TIME FOR 100 YR-STORM

BASIN	ELEV. (ft)	UNDER 72.0 HRS COMPLIES (Y=YES, N=NO)	DURATION OF INFILTRATION	SEASONAL HIGH WATER TABLE	MOUNDING HEIGHT (ELEV.)
1	77.00	Y	49.98	62.0 (+-)	3.10 (65.1)
2	77.00	Y	43.10	62.0 (+-)	2.86 (64.86)
2	66.00	Y	57.72	61.0 (+-)	3.60 (64.60)

The preceding table illustrates that the proposed peak elevations for the 100-year storm event will be infiltration within the 72. hours. See appendix 8 for calculations. (Soil testing will be supplied)

Green Infrastructure compliance is met through smaller drainage areas as per BMP section 9.8 small-scale infiltration basins. The maximum proposed drainage area of 2.5 acres. The proposed drainage areas for the proposed development meet the criteria by being less than 2.5 acres as shown on the proposed drainage are map. The existing un-detained area to the west of the improvement area flows offsite into the county basin lot meeting reductions. For modeling purposes, the un-detained areas are calculated in the hydrographs in this report.

G. Stormwater Management Measures

In accordance with N.J.A.C. 7:8-5 - Stormwater Management Strategies shall be incorporated into all proposed site designs to the maximum extent practicable. The Major Development identified below along with the means by which the site design attempts to incorporate these techniques.

- a) Stormwater management measures for major development shall be designed to provide erosion control, groundwater recharge, stormwater runoff quantity control, and stormwater runoff quality treatment as follows:
 1. The minimum design and performance standards for erosion control are those established under the Soil Erosion and Sediment Control Act, N.J.S.A. 4:24-39 et seq., and implementing rules at N.J.A.C. 2:90 and 16:25A.
 2. The minimum design and performance standards for groundwater recharge, stormwater runoff quality, and stormwater runoff quantity at N.J.A.C. 7:8-5.4, 5.5,

- and 5.6 shall be met by incorporating green infrastructure in accordance with N.J.A.C. 7:8-5.3. Maximize the protection of natural drainage features and vegetation.
- b) Minimize the decrease in the pre-construction time of concentration.
 - i. Through the introduction of impervious surfaces, times of concentration are increased. The design has attempted to minimize this increase. These systems will naturally attenuate runoff thereby minimizing the decrease to the time of concentration to the maximum extent practicable.
 - c) Minimize land disturbance including clearing and grading.
 - i. The existing site is vacant woodland with a access road. The proposed development requires clearing to construct the necessary improvements (i.e. road, sidewalk, houses, basins, etc.).
 - d) Minimize soil compaction.
 - i. In accordance with the standards for soil erosion and sediment control, a soil management and preparation plan has been prepared. This plan provides rules and regulations as it relates to the compaction of the vegetated areas and post-construction testing to confirm that these areas have not been over-compacted. This development will comply with these requirements.
 - e) Provide low maintenance landscaping that encourages retention and planting of native vegetation and minimizes the use of lawns, fertilizers and pesticides.
 - i. Street trees are proposed along the roadway and also surrounding the proposed basin. The plants selected were specifically selected due to the location and the general low maintenance required for these plantings.
 - f) Provide vegetated open-channel conveyance systems discharging into and through stable vegetated swales.
 - i. All of the proposed dwellings will direct runoff towards the street will be captured and conveyed to the proposed surface basin.
 - g) Provide other source controls to prevent or minimize the use or exposure of pollutants at the site in order to prevent or minimize the release of those pollutants into stormwater runoff.
 - i. All runoff from impervious areas requiring treatment (i.e. roadway, driveways) will be captured via on-site stormwater conveyance piping and

directed to the proposed surface basins where the entirety of the water quality storm event will be infiltrated. In accordance with the New Jersey BMP manual, infiltration basins provide for the removal of 80% of total suspended solids.

H. Dam Determination

N.J.A.C. 7:20 defines a dam as any artificial dike, levee or other barrier, together with appurtenant works, which is constructed for the purpose of impounding water on a permanent or temporary basis, that **raises** the water level five feet or more above the usual, mean, low water height when measured from the downstream toe-of-dam to the emergency spillway crest or, in the absence of an emergency spillway, the top-of dam.” The proposed basin does not meet the definition of a dam.

I. Conclusions

The proposed development will comply with applicable stormwater quantity, quality and groundwater recharge measures as specified in NJAC 7:8. Three (3) small-scale infiltration basins are located on-site to treat the stormwater runoff before being infiltrated.

Through non-structural, stormwater management measures, the proposed development will mitigate the stormwater impacts from the proposed development. When considering infiltration, not only would the peak rate of runoff from the subject site be further reduced but the runoff volume discharged from the subject site would also be reduced thereby increasing runoff which will be recharged into the ground.

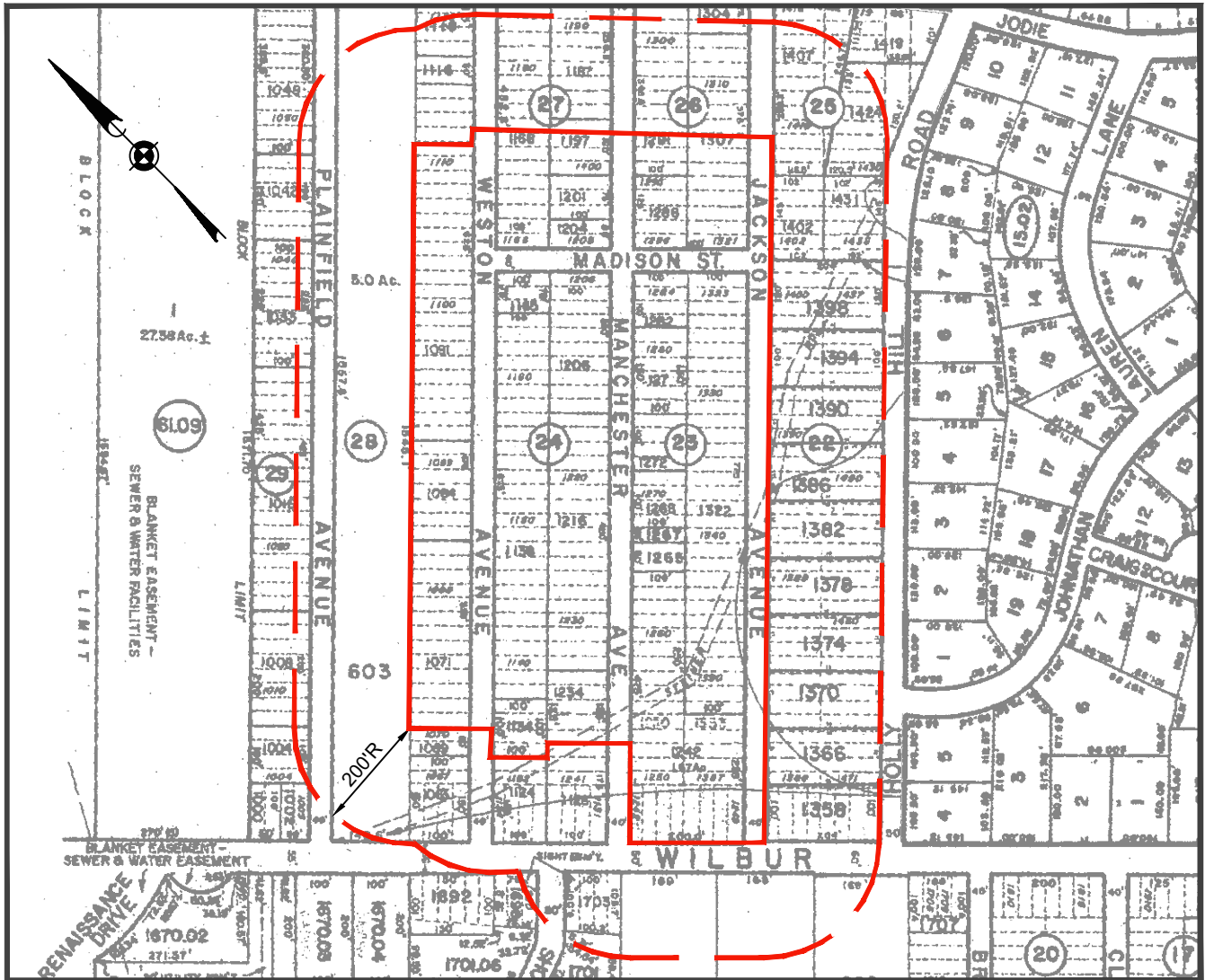
Through recharging all storms up to the 100-year storm event with infiltration, the proposed development complies N.J.A.C. 7:8 which requires through hydrologic and hydraulic analysis that the increase of stormwater runoff volume from pre-construction to post-construction for the two year storm is infiltrated. However, the basins have been designed to fully detain and infiltrate all storms up to the hundred (100) year storm so it can be assumed that the increase in stormwater runoff volume for the two (2) year storm is being infiltrated.

APPENDIX 1



LOCATION MAP

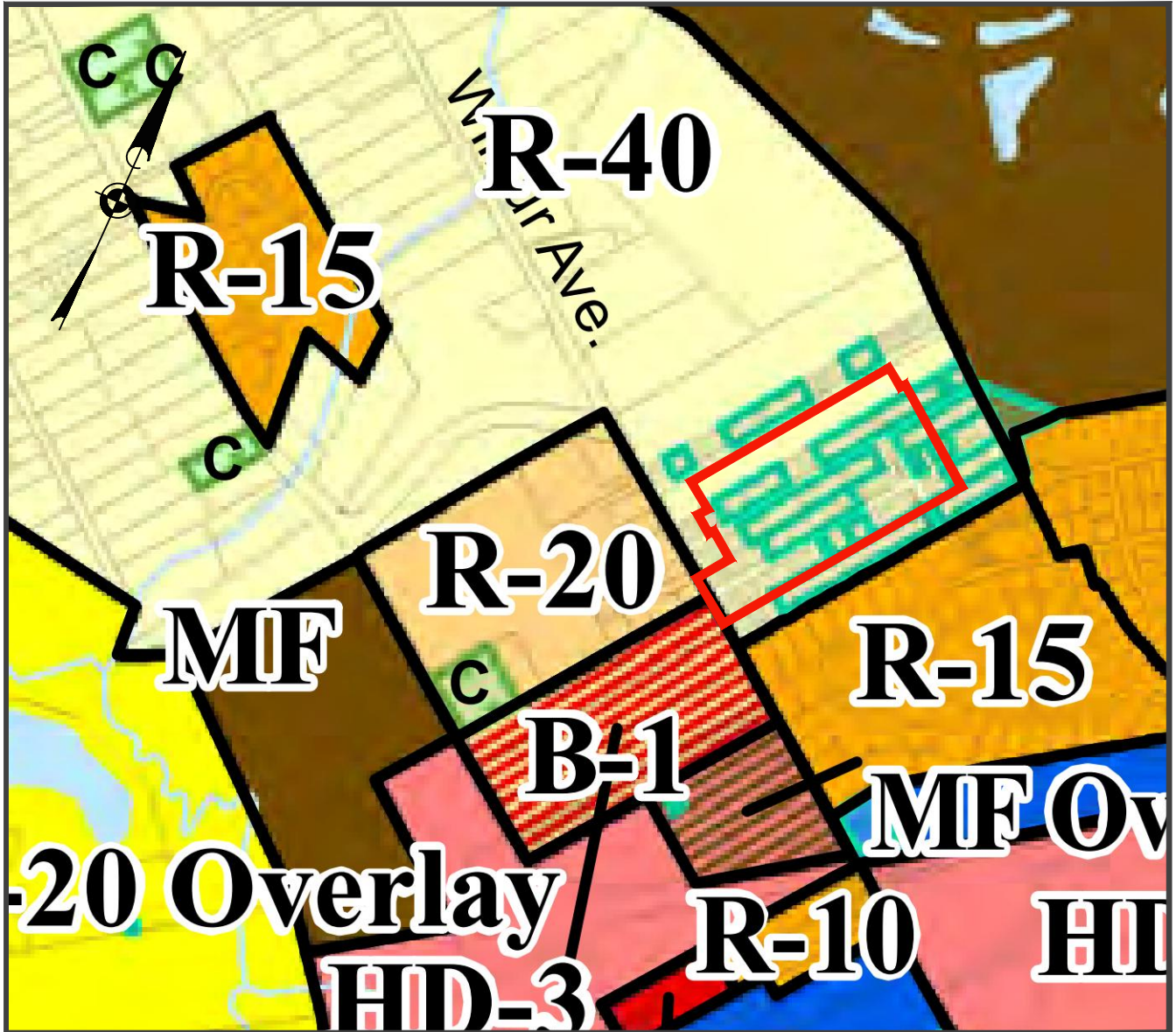
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TOWNSHIP OF MANCHESTER TAX MAP SHEET NUMBER #1.01

TAX MAP

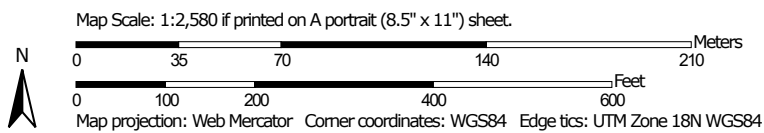
SCALE: 1" = 300'



ZONING MAP

N.T.S.

Soil Map—Ocean County, New Jersey



Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

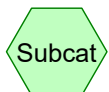
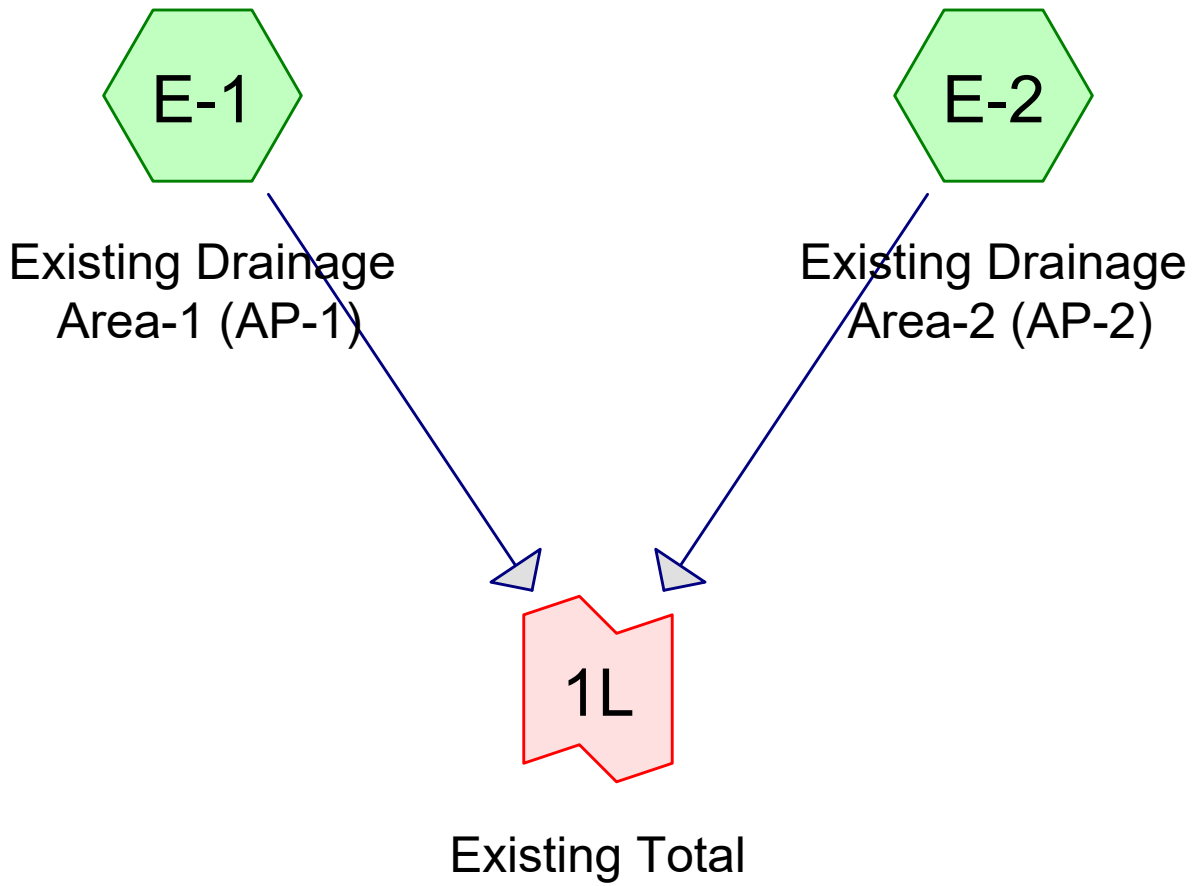
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Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
DocBO	Downer loamy sand, 0 to 5 percent slopes, Northern Tidewater Area	0.9	5.5%
DoeAO	Downer sandy loam, 0 to 2 percent slopes, Northern Tidewater Area	2.6	16.9%
DoeBO	Downer sandy loam, 2 to 5 percent slopes, Northern Tidewater Area	12.1	77.6%
Totals for Area of Interest		15.6	100.0%



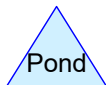
APPENDIX 2



Subcat



Reach



Pond



Link

Routing Diagram for Arya2025-014_Hemingway Est_Rev-0_05.02.26

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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Yr. Current	NOAA 24-hr	D	Default	24.00	1	3.42	2
2	10-Yr. Current	NOAA 24-hr	D	Default	24.00	1	5.38	2
3	25-Year	NOAA 24-hr	D	Default	24.00	1	6.68	2
4	100-Yr. Current	NOAA 24-hr	D	Default	24.00	1	9.48	2

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv.
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment E-1: Existing Drainage	Runoff Area=302,830 sf 0.00% Impervious Runoff Depth=0.00" Flow Length=590' Tc=32.9 min CN=30/0 Runoff=0.00 cfs 0 cf
Subcatchment E-2: Existing Drainage	Runoff Area=212,008 sf 0.00% Impervious Runoff Depth=0.00" Flow Length=550' Tc=23.7 min CN=30/0 Runoff=0.00 cfs 0 cf
Link 1L: Existing Total	Inflow=0.00 cfs 0 cf Primary=0.00 cfs 0 cf
Total Runoff Area = 514,838 sf Runoff Volume = 0 cf Average Runoff Depth = 0.00" 100.00% Pervious = 514,838 sf 0.00% Impervious = 0 sf	

Summary for Subcatchment E-1: Existing Drainage Area-1 (AP-1)

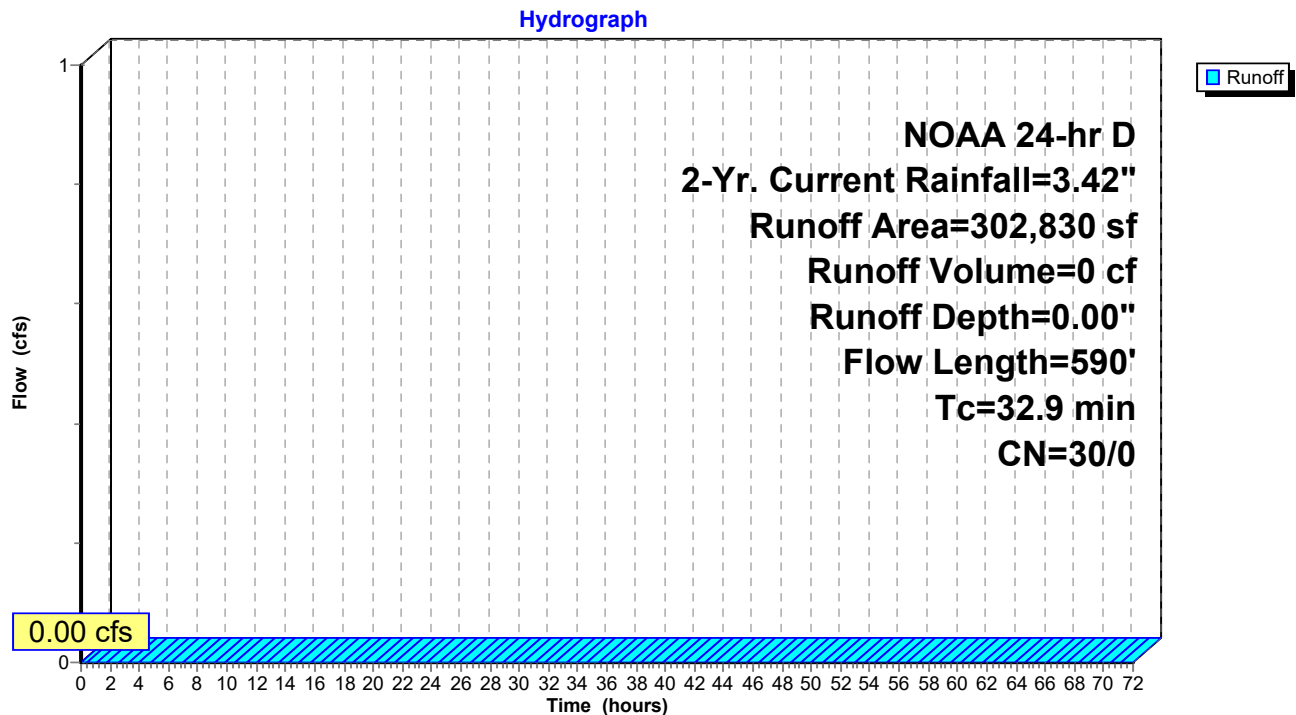
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"
 Routed to Link 1L : Existing Total

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Current Rainfall=3.42"

Area (sf)	CN	Description
302,830	30	Woods, Good, HSG A
302,830	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.7	100	0.0400	0.11		Sheet Flow, Sheet woods Woods: Light underbrush n= 0.400 P2= 3.42"
4.5	220	0.0270	0.82		Shallow Concentrated Flow, Shallow woods Woodland Kv= 5.0 fps
12.7	270	0.0050	0.35		Shallow Concentrated Flow, Shallow Flow Woodland Kv= 5.0 fps
32.9	590	Total			

Subcatchment E-1: Existing Drainage Area-1 (AP-1)



Summary for Subcatchment E-2: Existing Drainage Area-2 (AP-2)

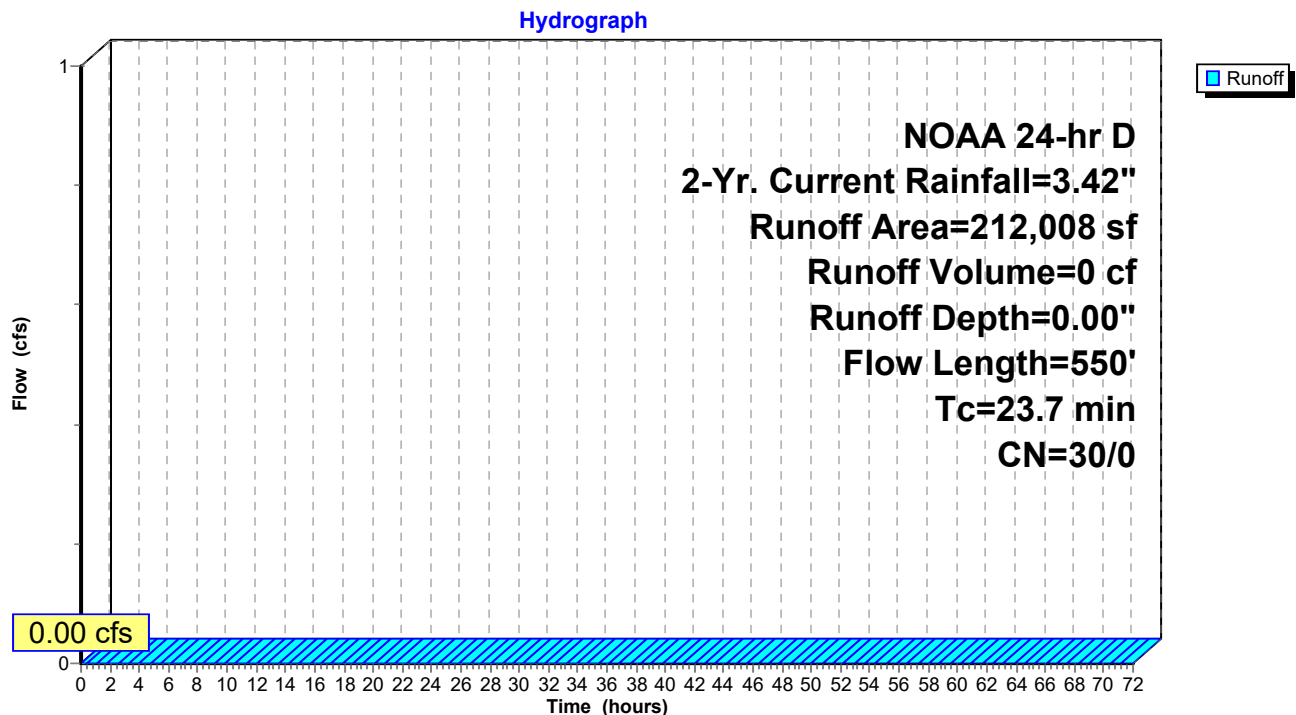
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"
 Routed to Link 1L : Existing Total

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Current Rainfall=3.42"

Area (sf)	CN	Description
212,008	30	Woods, Good, HSG A
212,008	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.7	100	0.0400	0.11		Sheet Flow, Sheet Woods
					Woods: Light underbrush n= 0.400 P2= 3.42"
8.0	450	0.0350	0.94		Shallow Concentrated Flow, Shallow Woods
					Woodland Kv= 5.0 fps
23.7	550	Total			

Subcatchment E-2: Existing Drainage Area-2 (AP-2)

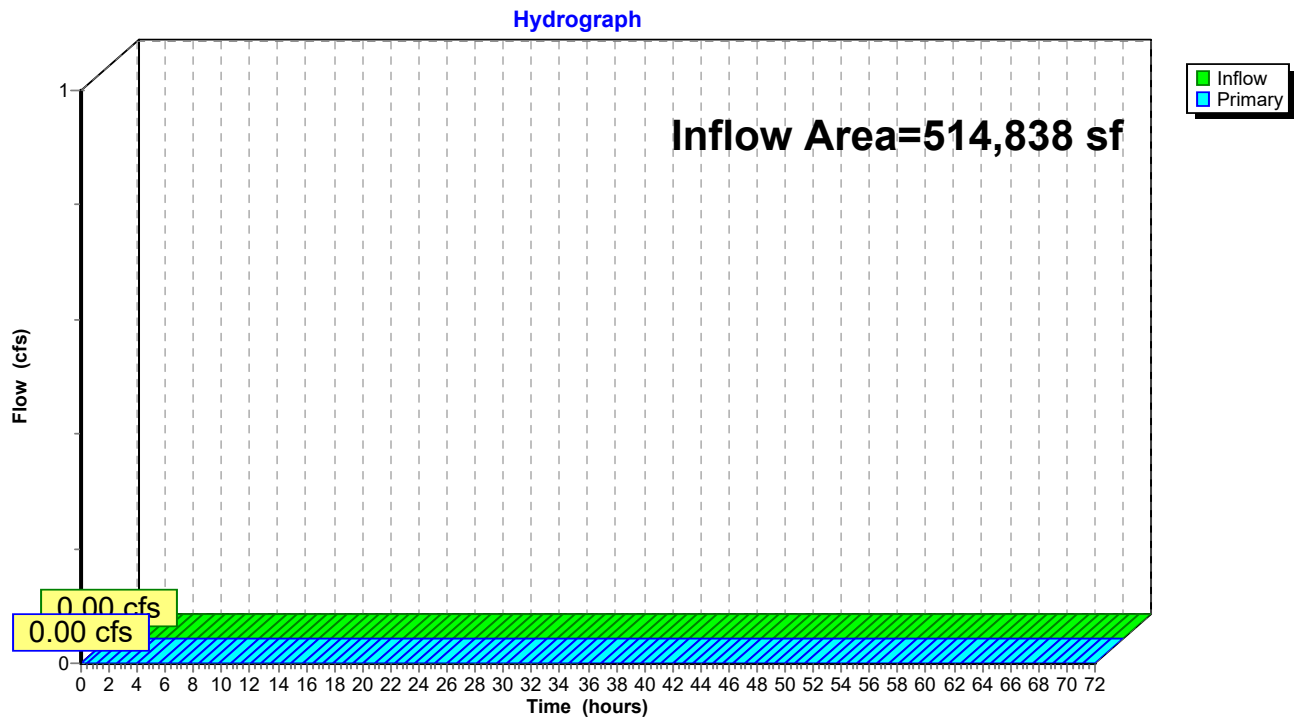


Summary for Link 1L: Existing Total

Inflow Area = 514,838 sf, 0.00% Impervious, Inflow Depth = 0.00" for 2-Yr. Current event
 Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 1L: Existing Total



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv.
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment E-1: Existing Drainage Runoff Area=302,830 sf 0.00% Impervious Runoff Depth=0.02"
Flow Length=590' Tc=32.9 min CN=30/0 Runoff=0.02 cfs 534 cf

Subcatchment E-2: Existing Drainage Runoff Area=212,008 sf 0.00% Impervious Runoff Depth=0.02"
Flow Length=550' Tc=23.7 min CN=30/0 Runoff=0.02 cfs 374 cf

Link 1L: Existing Total Inflow=0.04 cfs 908 cf
Primary=0.04 cfs 908 cf

Total Runoff Area = 514,838 sf Runoff Volume = 908 cf Average Runoff Depth = 0.02"
100.00% Pervious = 514,838 sf 0.00% Impervious = 0 sf

Summary for Subcatchment E-1: Existing Drainage Area-1 (AP-1)

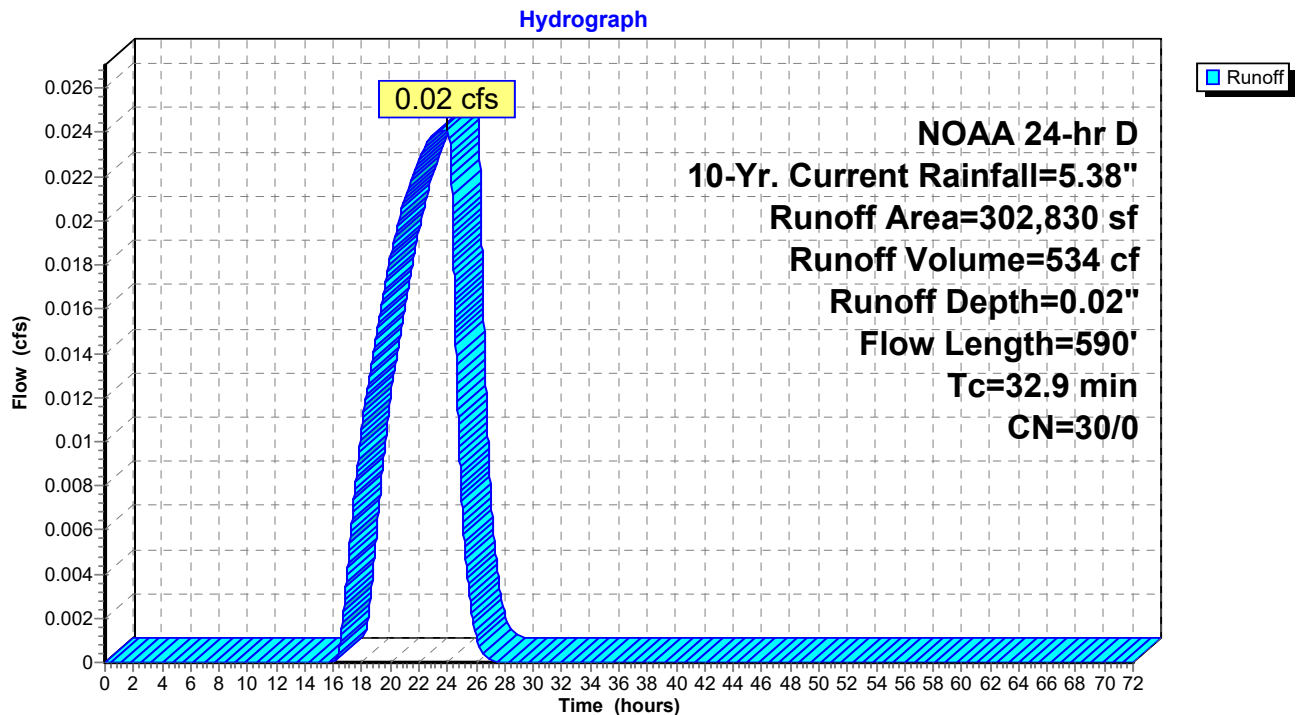
Runoff = 0.02 cfs @ 23.91 hrs, Volume= 534 cf, Depth= 0.02"
 Routed to Link 1L : Existing Total

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Current Rainfall=5.38"

Area (sf)	CN	Description
302,830	30	Woods, Good, HSG A
302,830	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.7	100	0.0400	0.11		Sheet Flow, Sheet woods Woods: Light underbrush n= 0.400 P2= 3.42"
4.5	220	0.0270	0.82		Shallow Concentrated Flow, Shallow woods Woodland Kv= 5.0 fps
12.7	270	0.0050	0.35		Shallow Concentrated Flow, Shallow Flow Woodland Kv= 5.0 fps
32.9	590	Total			

Subcatchment E-1: Existing Drainage Area-1 (AP-1)



Summary for Subcatchment E-2: Existing Drainage Area-2 (AP-2)

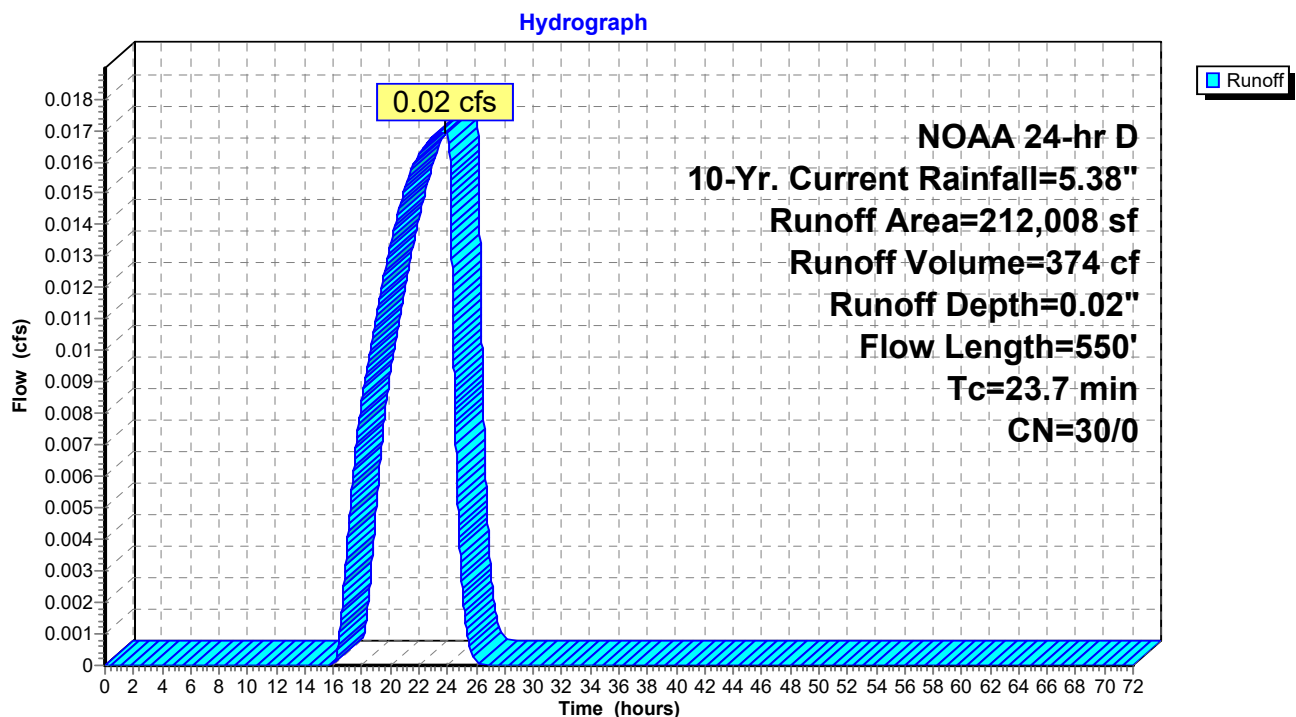
Runoff = 0.02 cfs @ 23.76 hrs, Volume= 374 cf, Depth= 0.02"
 Routed to Link 1L : Existing Total

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Current Rainfall=5.38"

Area (sf)	CN	Description
212,008	30	Woods, Good, HSG A
212,008	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.7	100	0.0400	0.11		Sheet Flow, Sheet Woods
					Woods: Light underbrush n= 0.400 P2= 3.42"
8.0	450	0.0350	0.94		Shallow Concentrated Flow, Shallow Woods
					Woodland Kv= 5.0 fps
23.7	550	Total			

Subcatchment E-2: Existing Drainage Area-2 (AP-2)

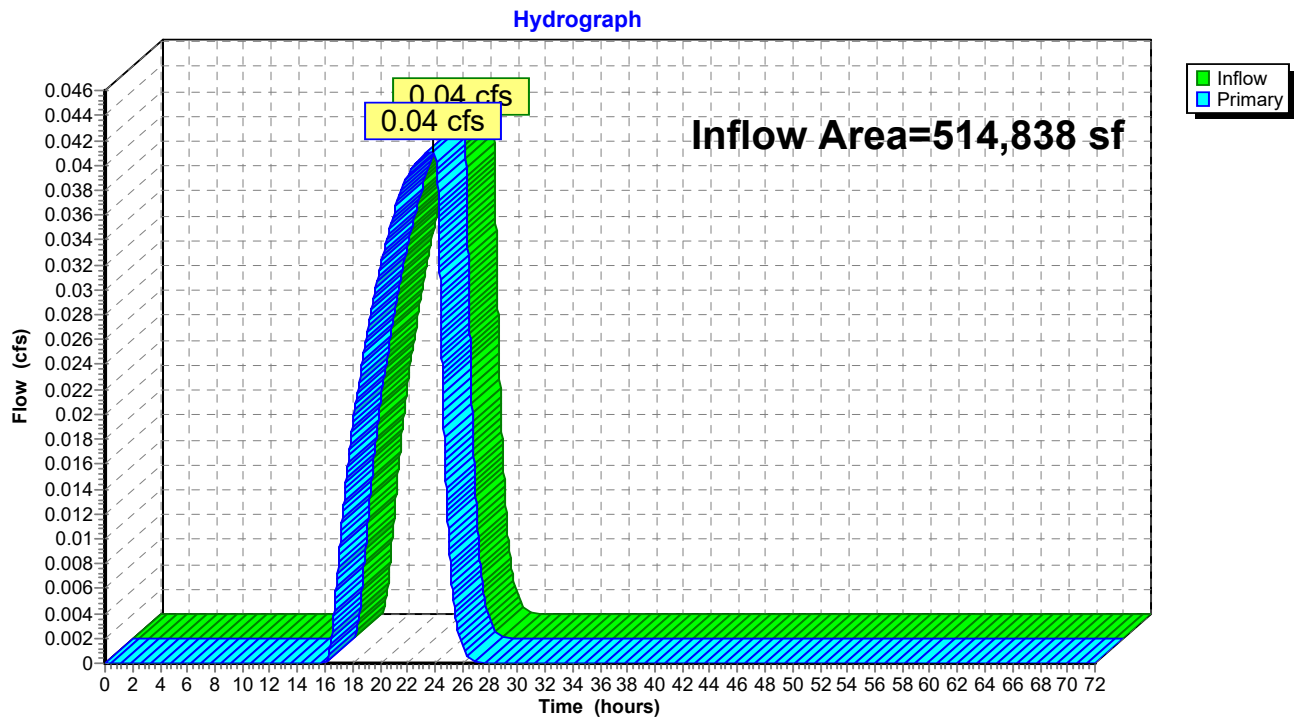


Summary for Link 1L: Existing Total

Inflow Area = 514,838 sf, 0.00% Impervious, Inflow Depth = 0.02" for 10-Yr. Current event
 Inflow = 0.04 cfs @ 23.84 hrs, Volume= 908 cf
 Primary = 0.04 cfs @ 23.84 hrs, Volume= 908 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 1L: Existing Total



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv.
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment E-1: Existing Drainage Runoff Area=302,830 sf 0.00% Impervious Runoff Depth=0.16"
Flow Length=590' Tc=32.9 min CN=30/0 Runoff=0.12 cfs 4,036 cf

Subcatchment E-2: Existing Drainage Runoff Area=212,008 sf 0.00% Impervious Runoff Depth=0.16"
Flow Length=550' Tc=23.7 min CN=30/0 Runoff=0.09 cfs 2,825 cf

Link 1L: Existing Total Inflow=0.21 cfs 6,861 cf
Primary=0.21 cfs 6,861 cf

Total Runoff Area = 514,838 sf Runoff Volume = 6,861 cf Average Runoff Depth = 0.16"
100.00% Pervious = 514,838 sf 0.00% Impervious = 0 sf

Summary for Subcatchment E-1: Existing Drainage Area-1 (AP-1)

Runoff = 0.12 cfs @ 15.13 hrs, Volume= 4,036 cf, Depth= 0.16"
Routed to Link 1L : Existing Total

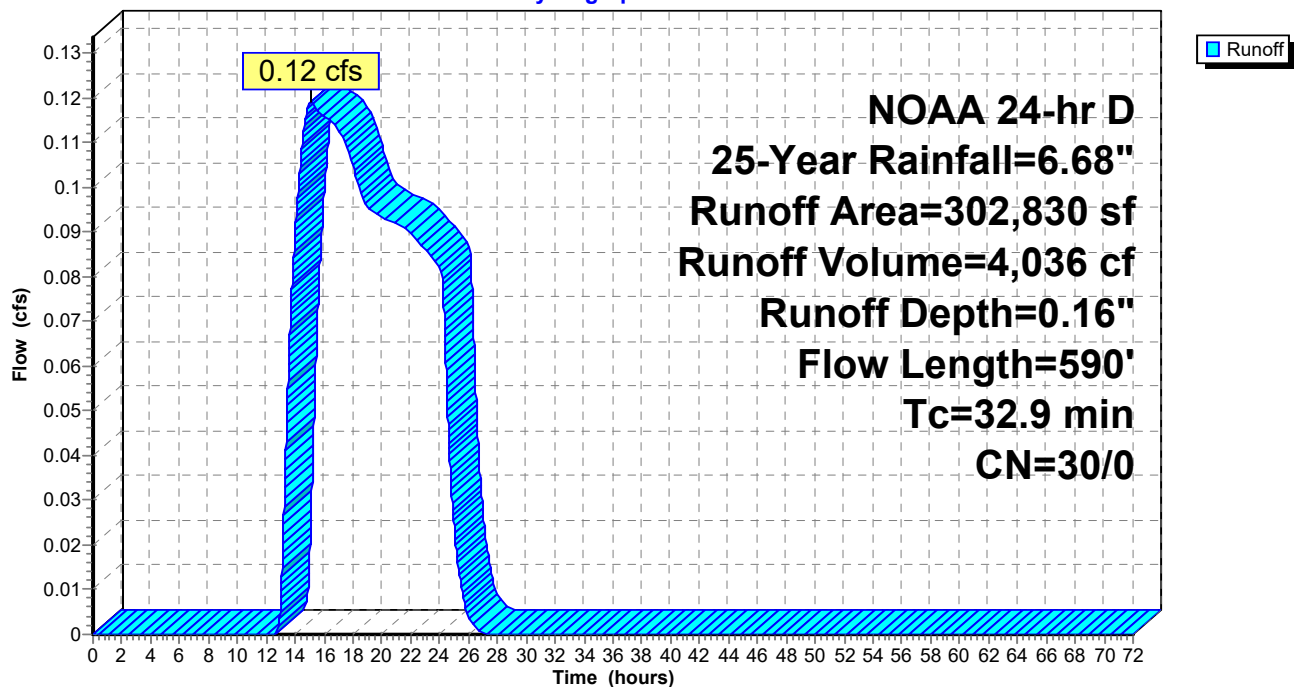
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 25-Year Rainfall=6.68"

Area (sf)	CN	Description
302,830	30	Woods, Good, HSG A
302,830	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.7	100	0.0400	0.11		Sheet Flow, Sheet woods Woods: Light underbrush n= 0.400 P2= 3.42"
4.5	220	0.0270	0.82		Shallow Concentrated Flow, Shallow woods Woodland Kv= 5.0 fps
12.7	270	0.0050	0.35		Shallow Concentrated Flow, Shallow Flow Woodland Kv= 5.0 fps
32.9	590	Total			

Subcatchment E-1: Existing Drainage Area-1 (AP-1)

Hydrograph



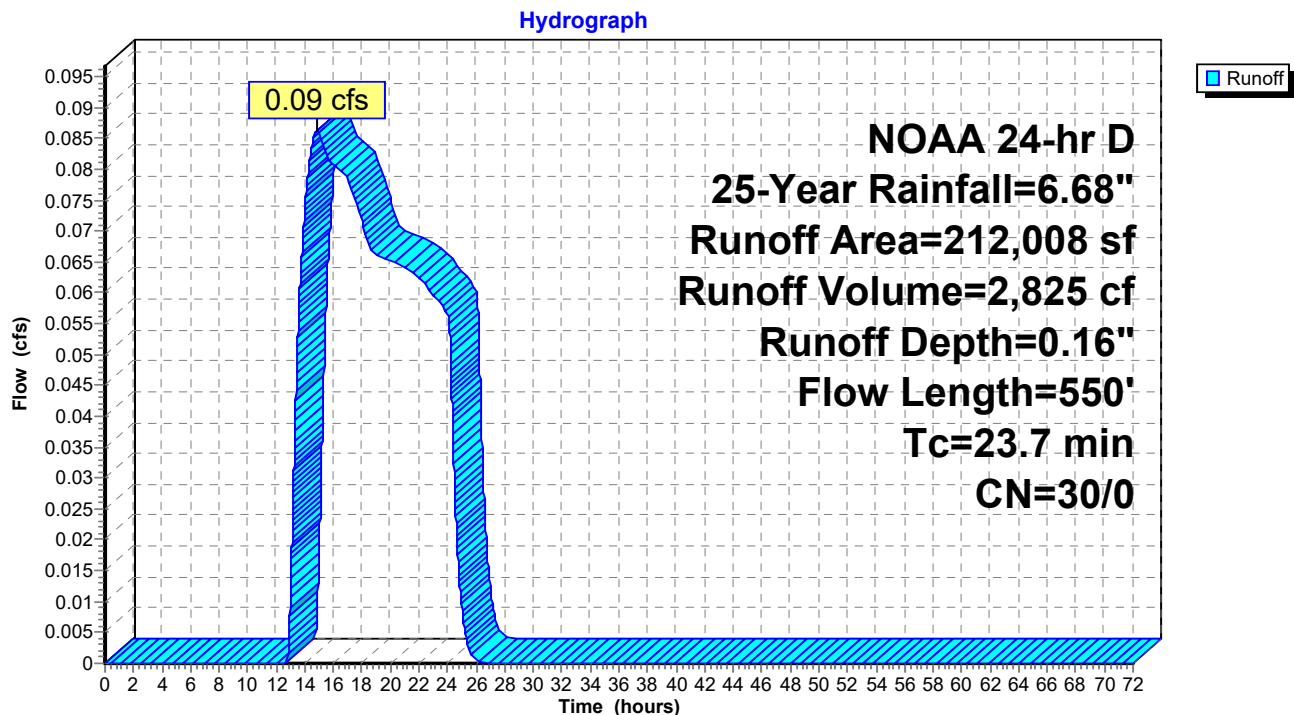
Summary for Subcatchment E-2: Existing Drainage Area-2 (AP-2)

Runoff = 0.09 cfs @ 14.85 hrs, Volume= 2,825 cf, Depth= 0.16"
Routed to Link 1L : Existing Total

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 25-Year Rainfall=6.68"

Area (sf)	CN	Description
212,008	30	Woods, Good, HSG A
212,008	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.7	100	0.0400	0.11		Sheet Flow, Sheet Woods
					Woods: Light underbrush n= 0.400 P2= 3.42"
8.0	450	0.0350	0.94		Shallow Concentrated Flow, Shallow Woods
					Woodland Kv= 5.0 fps
23.7	550	Total			

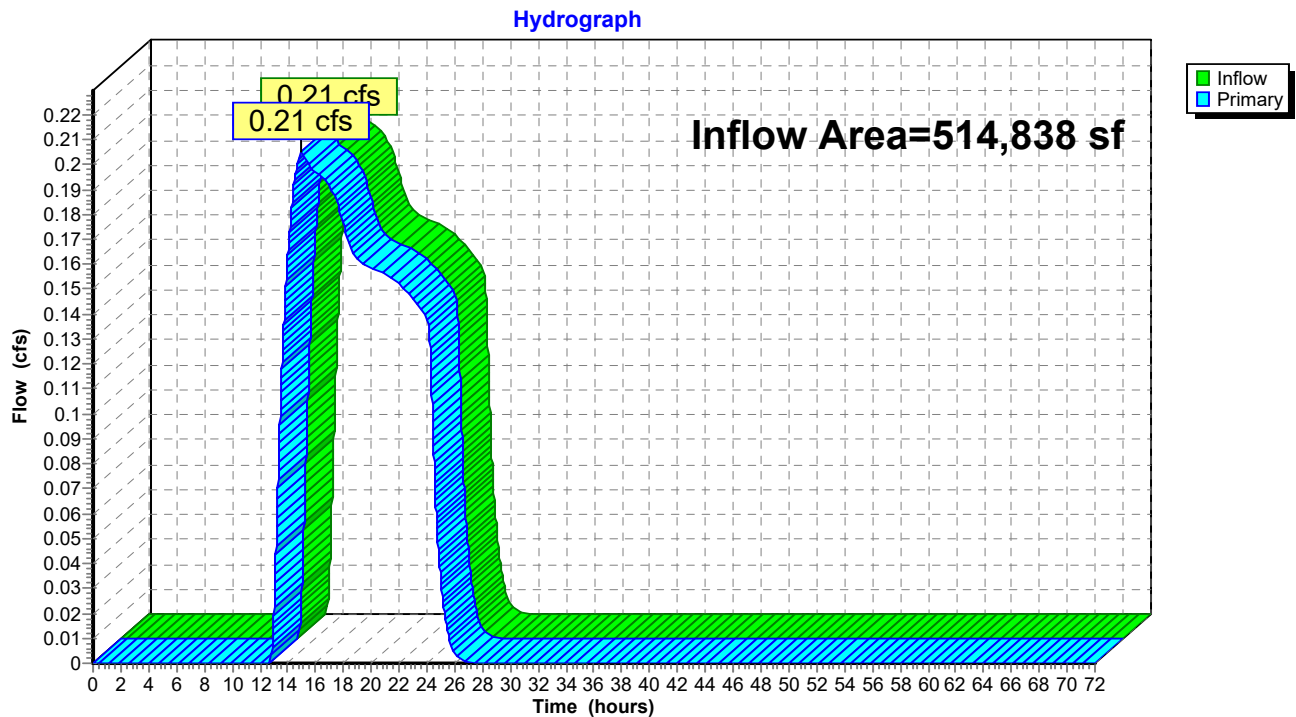
Subcatchment E-2: Existing Drainage Area-2 (AP-2)

Summary for Link 1L: Existing Total

Inflow Area = 514,838 sf, 0.00% Impervious, Inflow Depth = 0.16" for 25-Year event
Inflow = 0.21 cfs @ 15.00 hrs, Volume= 6,861 cf
Primary = 0.21 cfs @ 15.00 hrs, Volume= 6,861 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 1L: Existing Total



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv.
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment E-1: Existing Drainage Runoff Area=302,830 sf 0.00% Impervious Runoff Depth=0.82"
Flow Length=590' Tc=32.9 min CN=30/0 Runoff=1.09 cfs 20,772 cf

Subcatchment E-2: Existing Drainage Runoff Area=212,008 sf 0.00% Impervious Runoff Depth=0.82"
Flow Length=550' Tc=23.7 min CN=30/0 Runoff=0.85 cfs 14,542 cf

Link 1L: Existing Total Inflow=1.93 cfs 35,315 cf
Primary=1.93 cfs 35,315 cf

Total Runoff Area = 514,838 sf Runoff Volume = 35,315 cf Average Runoff Depth = 0.82"
100.00% Pervious = 514,838 sf 0.00% Impervious = 0 sf

Summary for Subcatchment E-1: Existing Drainage Area-1 (AP-1)

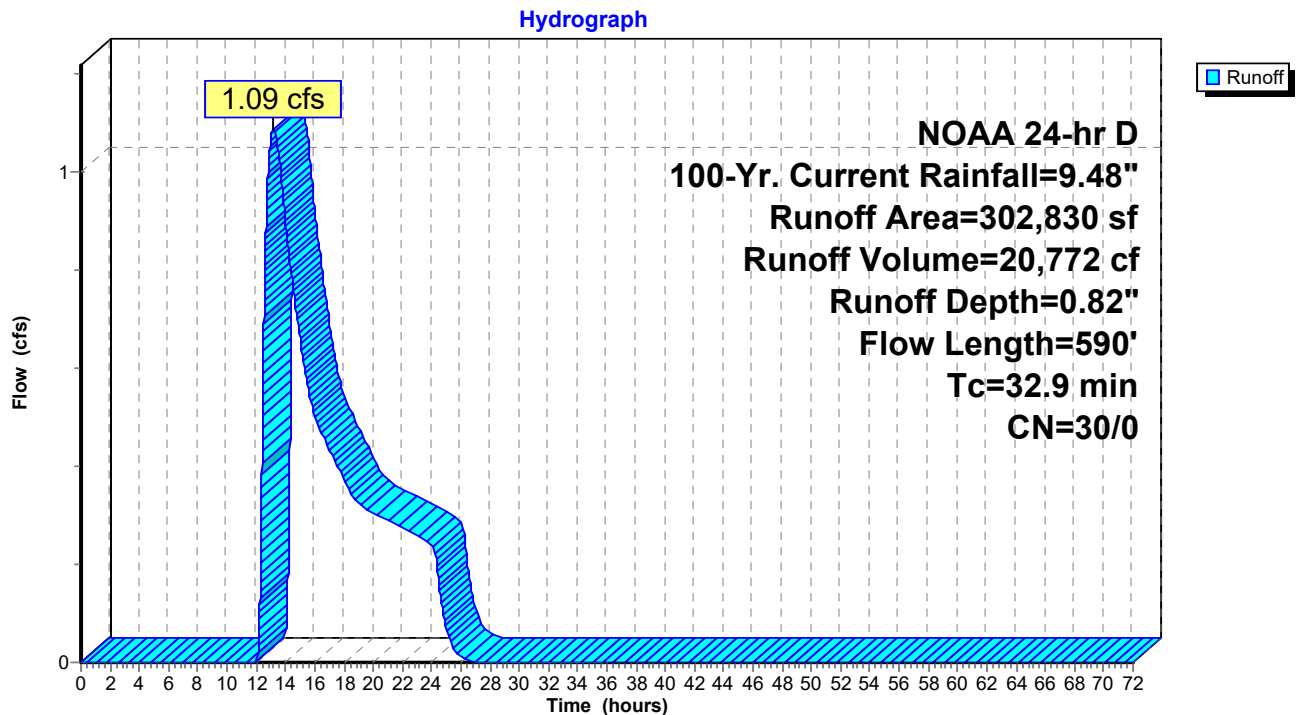
Runoff = 1.09 cfs @ 13.16 hrs, Volume= 20,772 cf, Depth= 0.82"
 Routed to Link 1L : Existing Total

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 100-Yr. Current Rainfall=9.48"

Area (sf)	CN	Description
302,830	30	Woods, Good, HSG A
302,830	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.7	100	0.0400	0.11		Sheet Flow, Sheet woods Woods: Light underbrush n= 0.400 P2= 3.42"
4.5	220	0.0270	0.82		Shallow Concentrated Flow, Shallow woods Woodland Kv= 5.0 fps
12.7	270	0.0050	0.35		Shallow Concentrated Flow, Shallow Flow Woodland Kv= 5.0 fps
32.9	590	Total			

Subcatchment E-1: Existing Drainage Area-1 (AP-1)



Summary for Subcatchment E-2: Existing Drainage Area-2 (AP-2)

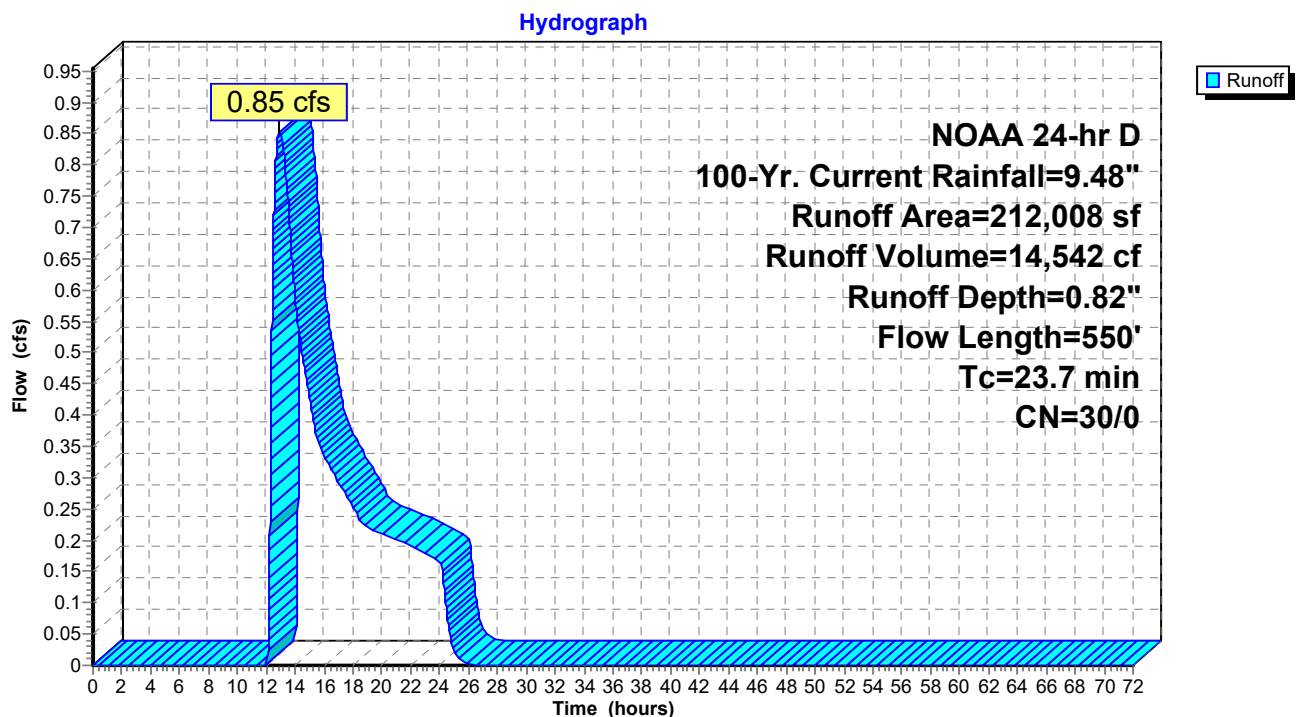
Runoff = 0.85 cfs @ 12.91 hrs, Volume= 14,542 cf, Depth= 0.82"
 Routed to Link 1L : Existing Total

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 100-Yr. Current Rainfall=9.48"

Area (sf)	CN	Description
212,008	30	Woods, Good, HSG A
212,008	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.7	100	0.0400	0.11		Sheet Flow, Sheet Woods
					Woods: Light underbrush n= 0.400 P2= 3.42"
8.0	450	0.0350	0.94		Shallow Concentrated Flow, Shallow Woods
					Woodland Kv= 5.0 fps
23.7	550	Total			

Subcatchment E-2: Existing Drainage Area-2 (AP-2)

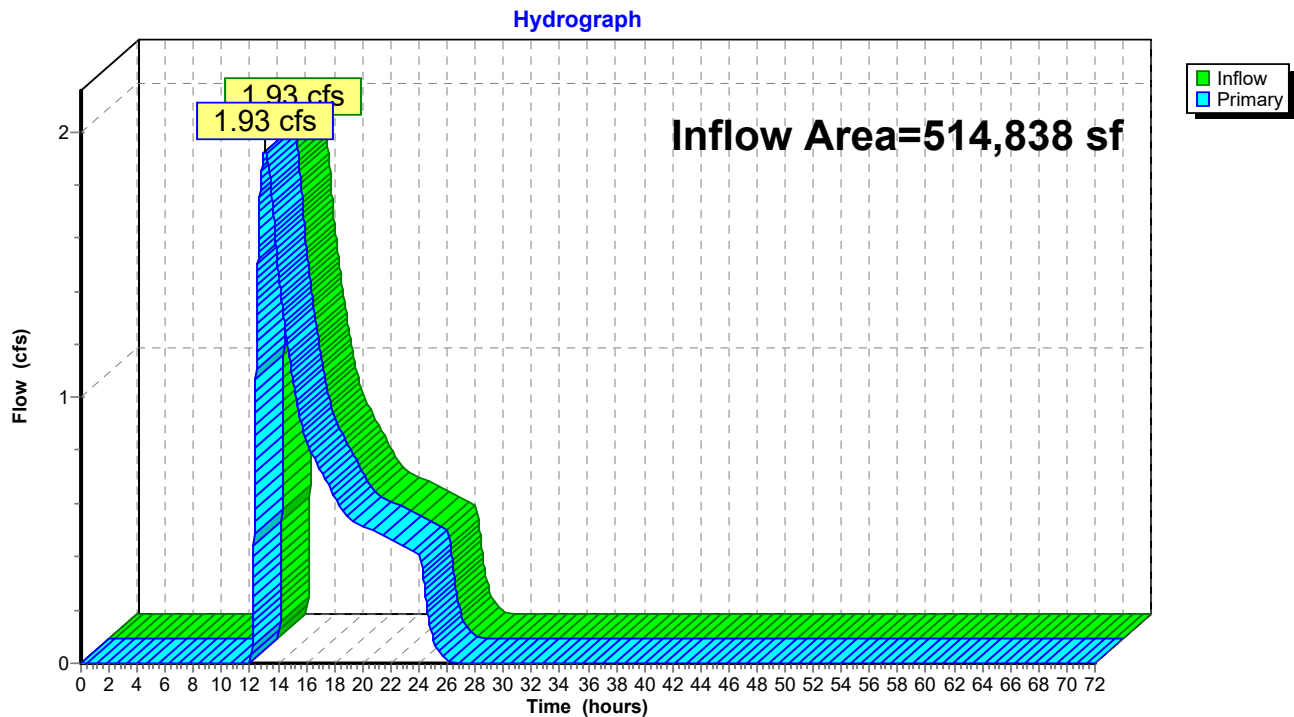


Summary for Link 1L: Existing Total

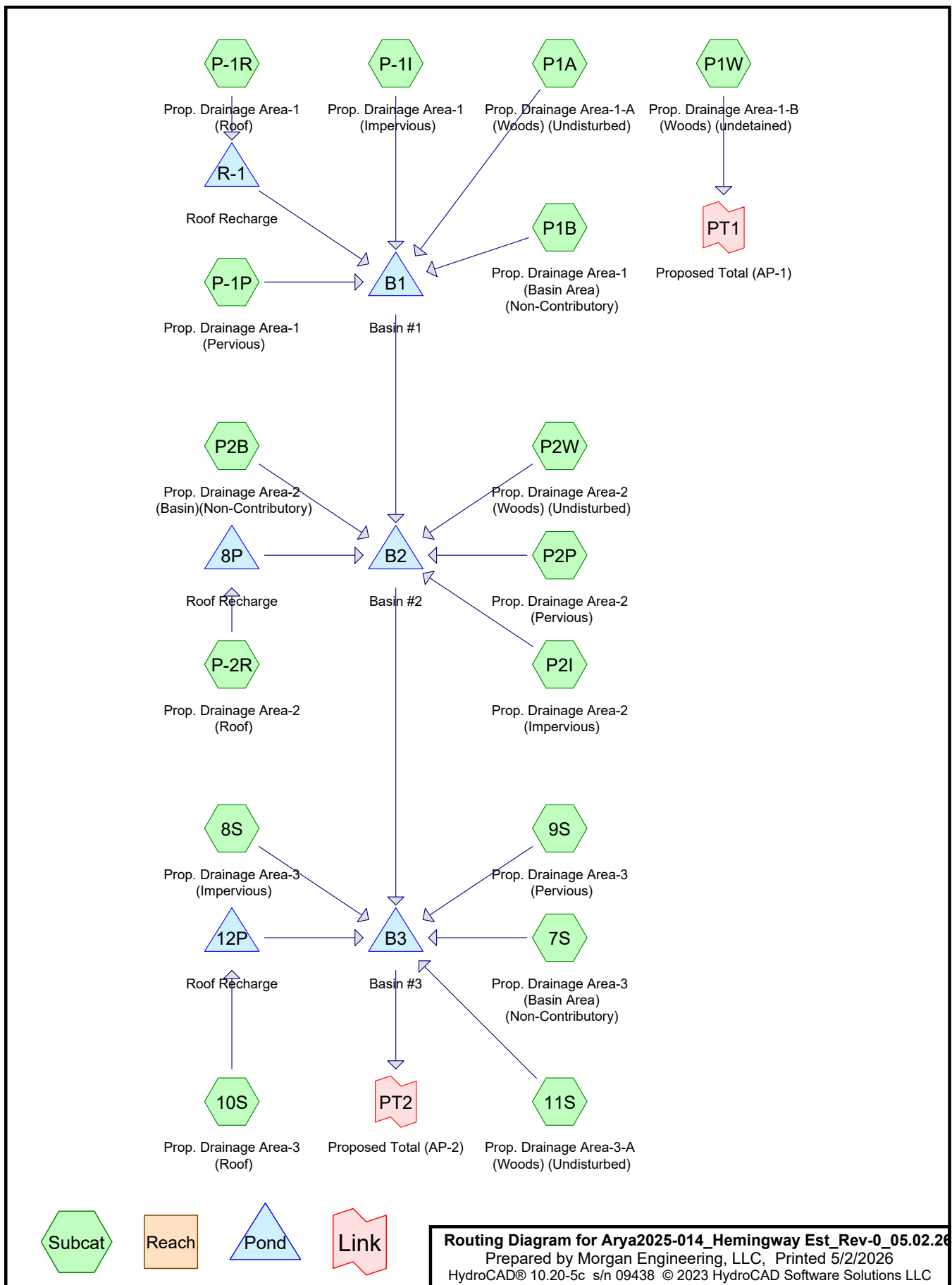
Inflow Area = 514,838 sf, 0.00% Impervious, Inflow Depth = 0.82" for 100-Yr. Current event
 Inflow = 1.93 cfs @ 13.08 hrs, Volume= 35,315 cf
 Primary = 1.93 cfs @ 13.08 hrs, Volume= 35,315 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 1L: Existing Total



APPENDIX 3



Arya2025-014_Hemingway Est_Rev-0_05.02.26

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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Yr. Current	NOAA 24-hr	D	Default	24.00	1	3.42	2
2	10-Yr. Current	NOAA 24-hr	D	Default	24.00	1	5.38	2
3	25-Year	NOAA 24-hr	D	Default	24.00	1	6.68	2
4	100-Yr. Current	NOAA 24-hr	D	Default	24.00	1	9.48	2

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
 Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv.
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment7S: Prop. Drainage Area-3 Runoff Area=18,104 sf 0.00% Impervious Runoff Depth=0.01"
 Flow Length=50' Slope=0.1000 '/ Tc=4.2 min CN=39/0 Runoff=0.00 cfs 8 cf

Subcatchment8S: Prop. Drainage Area-3 Runoff Area=22,694 sf 100.00% Impervious Runoff Depth=3.19"
 Flow Length=530' Tc=3.0 min CN=0/98 Runoff=1.68 cfs 6,027 cf

Subcatchment9S: Prop. Drainage Area-3 Runoff Area=70,251 sf 0.00% Impervious Runoff Depth=0.01"
 Flow Length=717' Tc=12.5 min CN=39/0 Runoff=0.00 cfs 31 cf

Subcatchment10S: Prop. Drainage Runoff Area=12,530 sf 100.00% Impervious Runoff Depth=3.19"
 Tc=2.0 min CN=0/98 Runoff=0.98 cfs 3,327 cf

Subcatchment11S: Prop. Drainage Runoff Area=33,921 sf 0.00% Impervious Runoff Depth=0.00"
 Flow Length=50' Slope=0.0250 '/ Tc=10.9 min CN=30/0 Runoff=0.00 cfs 0 cf

SubcatchmentP-1I: Prop. Drainage Runoff Area=24,003 sf 100.00% Impervious Runoff Depth=3.19"
 Flow Length=430' Tc=3.6 min CN=0/98 Runoff=1.70 cfs 6,374 cf

SubcatchmentP-1P: Prop. Drainage Area-1 Runoff Area=72,415 sf 0.00% Impervious Runoff Depth=0.01"
 Flow Length=530' Tc=13.1 min CN=39/0 Runoff=0.00 cfs 32 cf

SubcatchmentP-1R: Prop. Drainage Runoff Area=12,530 sf 100.00% Impervious Runoff Depth=3.19"
 Tc=2.0 min CN=0/98 Runoff=0.98 cfs 3,327 cf

SubcatchmentP-2R: Prop. Drainage Runoff Area=10,024 sf 100.00% Impervious Runoff Depth=3.19"
 Tc=2.0 min CN=0/98 Runoff=0.79 cfs 2,662 cf

SubcatchmentP1A: Prop. Drainage Runoff Area=25,206 sf 0.00% Impervious Runoff Depth=0.00"
 Flow Length=470' Tc=24.2 min CN=30/0 Runoff=0.00 cfs 0 cf

SubcatchmentP1B: Prop. Drainage Area-1 Runoff Area=18,385 sf 0.00% Impervious Runoff Depth=0.01"
 Flow Length=50' Slope=0.1000 '/ Tc=4.2 min CN=39/0 Runoff=0.00 cfs 8 cf

SubcatchmentP1W: Prop. Drainage Runoff Area=74,786 sf 0.00% Impervious Runoff Depth=0.00"
 Flow Length=285' Tc=26.7 min CN=30/0 Runoff=0.00 cfs 0 cf

SubcatchmentP2B: Prop. Drainage Area-2 Runoff Area=18,844 sf 0.00% Impervious Runoff Depth=0.01"
 Flow Length=50' Slope=0.1000 '/ Tc=4.2 min CN=39/0 Runoff=0.00 cfs 8 cf

SubcatchmentP2I: Prop. Drainage Area-2 Runoff Area=15,753 sf 100.00% Impervious Runoff Depth=3.19"
 Flow Length=745' Tc=5.1 min CN=0/98 Runoff=1.01 cfs 4,183 cf

SubcatchmentP2P: Prop. Drainage Area-2 Runoff Area=56,947 sf 0.00% Impervious Runoff Depth=0.01"
 Flow Length=835' Tc=18.5 min CN=39/0 Runoff=0.00 cfs 25 cf

SubcatchmentP2W: Prop. Drainage Area-2 Runoff Area=28,444 sf 0.00% Impervious Runoff Depth=0.00"
 Flow Length=880' Tc=15.5 min CN=30/0 Runoff=0.00 cfs 0 cf

Pond 8P: Roof Recharge Peak Elev=76.90' Storage=411 cf Inflow=0.79 cfs 2,662 cf
 Discarded=0.19 cfs 2,662 cf Primary=0.00 cfs 0 cf Outflow=0.19 cfs 2,662 cf

Pond 12P: Roof Recharge Peak Elev=77.26' Storage=619 cf Inflow=0.98 cfs 3,327 cf
 Discarded=0.19 cfs 3,327 cf Primary=0.00 cfs 0 cf Outflow=0.19 cfs 3,327 cf

Pond B1: Basin #1 Peak Elev=77.41' Storage=1,824 cf Inflow=1.70 cfs 6,415 cf
 Discarded=0.22 cfs 6,415 cf Primary=0.00 cfs 0 cf Outflow=0.22 cfs 6,415 cf

Pond B2: Basin #2 Peak Elev=77.27' Storage=1,012 cf Inflow=1.01 cfs 4,217 cf
 Discarded=0.18 cfs 4,217 cf Primary=0.00 cfs 0 cf Outflow=0.18 cfs 4,217 cf

Pond B3: Basin #3 Peak Elev=66.44' Storage=1,763 cf Inflow=1.68 cfs 6,066 cf
 Discarded=0.20 cfs 6,066 cf Primary=0.00 cfs 0 cf Outflow=0.20 cfs 6,066 cf

Pond R-1: Roof Recharge Peak Elev=76.90' Storage=513 cf Inflow=0.98 cfs 3,327 cf
 Discarded=0.24 cfs 3,327 cf Primary=0.00 cfs 0 cf Outflow=0.24 cfs 3,327 cf

Link PT1: Proposed Total (AP-1) Inflow=0.00 cfs 0 cf
 Primary=0.00 cfs 0 cf

Link PT2: Proposed Total (AP-2) Inflow=0.00 cfs 0 cf
 Primary=0.00 cfs 0 cf

Total Runoff Area = 514,837 sf Runoff Volume = 26,015 cf Average Runoff Depth = 0.61"
81.06% Pervious = 417,303 sf 18.94% Impervious = 97,534 sf

Summary for Subcatchment 7S: Prop. Drainage Area-3 (Basin Area) (Non-Contributory)

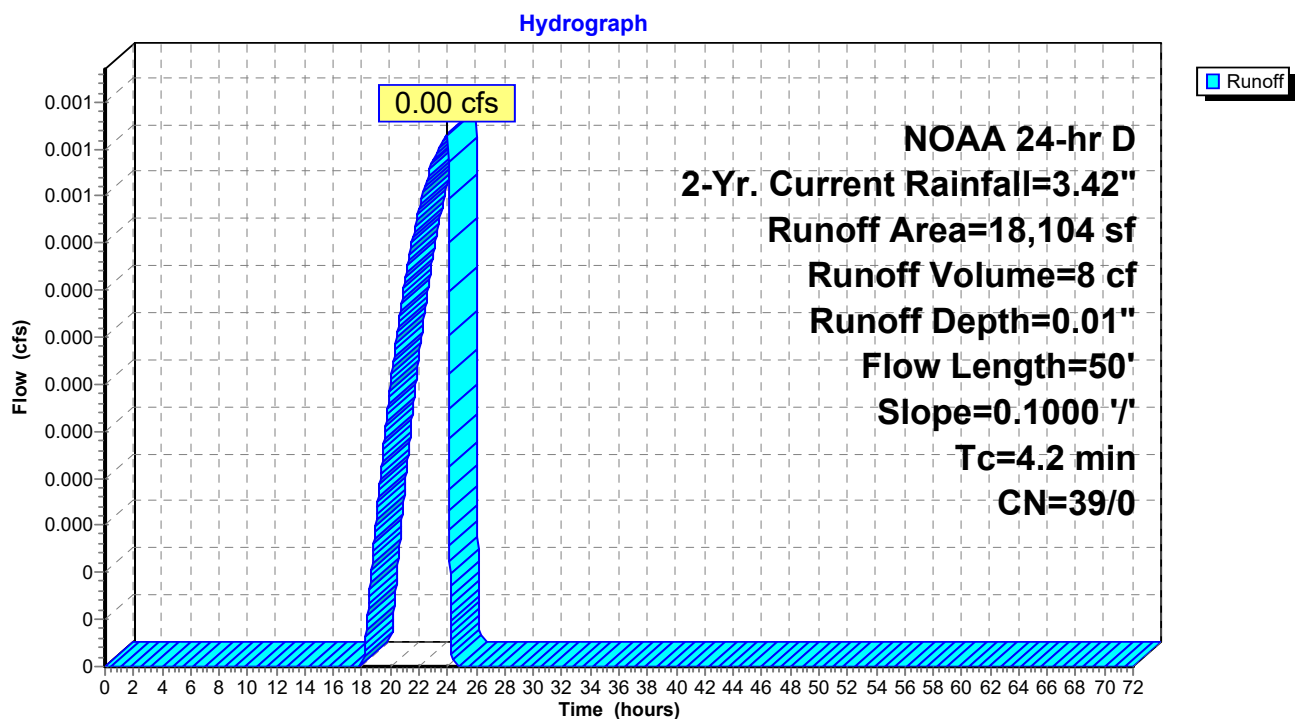
Runoff = 0.00 cfs @ 24.00 hrs, Volume= 8 cf, Depth= 0.01"
 Routed to Pond B3 : Basin #3

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Current Rainfall=3.42"

Area (sf)	CN	Description
* 18,104	39	Basin Area-Non-contributory, HSG A
18,104	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.1000	0.20		Sheet Flow, Sheet Grass
Grass: Dense n= 0.240 P2= 3.42"					

Subcatchment 7S: Prop. Drainage Area-3 (Basin Area) (Non-Contributory)



Summary for Subcatchment 8S: Prop. Drainage Area-3 (Impervious)

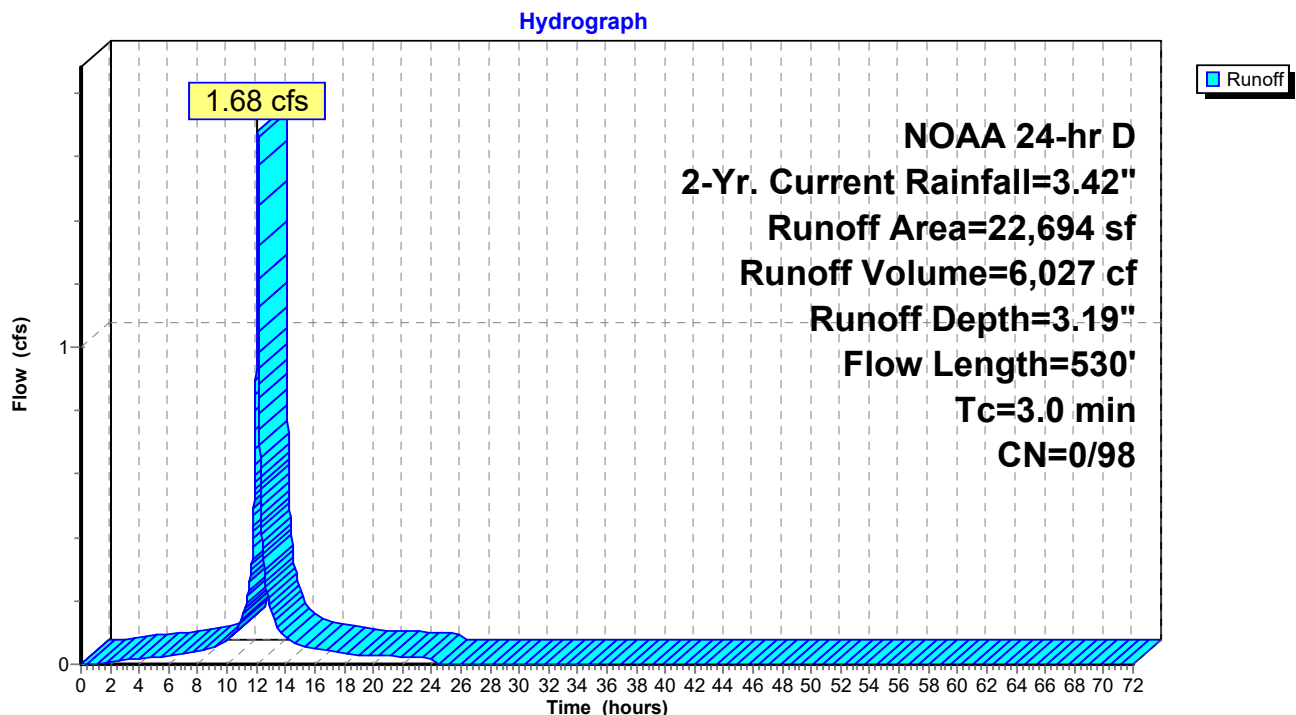
Runoff = 1.68 cfs @ 12.11 hrs, Volume= 6,027 cf, Depth= 3.19"
 Routed to Pond B3 : Basin #3

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Current Rainfall=3.42"

Area (sf)	CN	Description
13,555	98	Paved roads w/curbs & sewers, HSG A
* 3,626	98	Sidewalks, HSG A
* 5,513	98	Driveways, HSG A
22,694	98	Weighted Average
22,694	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	100	0.0292	1.65		Sheet Flow, Sheet Pvmt Smooth surfaces n= 0.011 P2= 3.42"
1.1	233	0.0292	3.47		Shallow Concentrated Flow, Shallow Pvmt Paved Kv= 20.3 fps
0.9	197	0.0040	3.76	6.64	Pipe Channel, Pipe 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
3.0	530	Total			

Subcatchment 8S: Prop. Drainage Area-3 (Impervious)



Summary for Subcatchment 9S: Prop. Drainage Area-3 (Pervious)

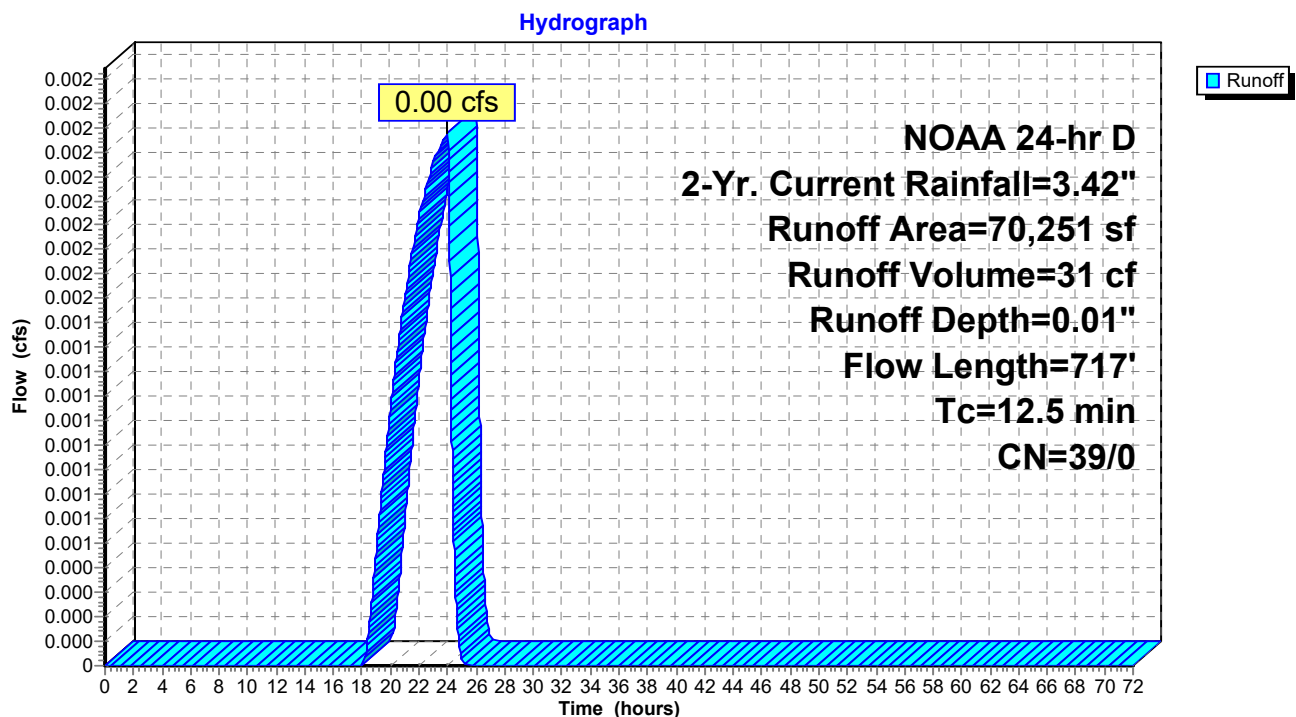
Runoff = 0.00 cfs @ 24.02 hrs, Volume= 31 cf, Depth= 0.01"
 Routed to Pond B3 : Basin #3

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Current Rainfall=3.42"

Area (sf)	CN	Description
70,251	39	>75% Grass cover, Good, HSG A
70,251	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	100	0.0500	0.17		Sheet Flow, Sheet Grass Grass: Dense n= 0.240 P2= 3.42"
0.1	20	0.0500	3.60		Shallow Concentrated Flow, Shallow Grass Unpaved Kv= 16.1 fps
1.9	400	0.0292	3.47		Shallow Concentrated Flow, Shallow Pvmnt Paved Kv= 20.3 fps
0.9	197	0.0040	3.76	6.64	Pipe Channel, Pipe 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
12.5	717	Total			

Subcatchment 9S: Prop. Drainage Area-3 (Pervious)



Summary for Subcatchment 10S: Prop. Drainage Area-3 (Roof)

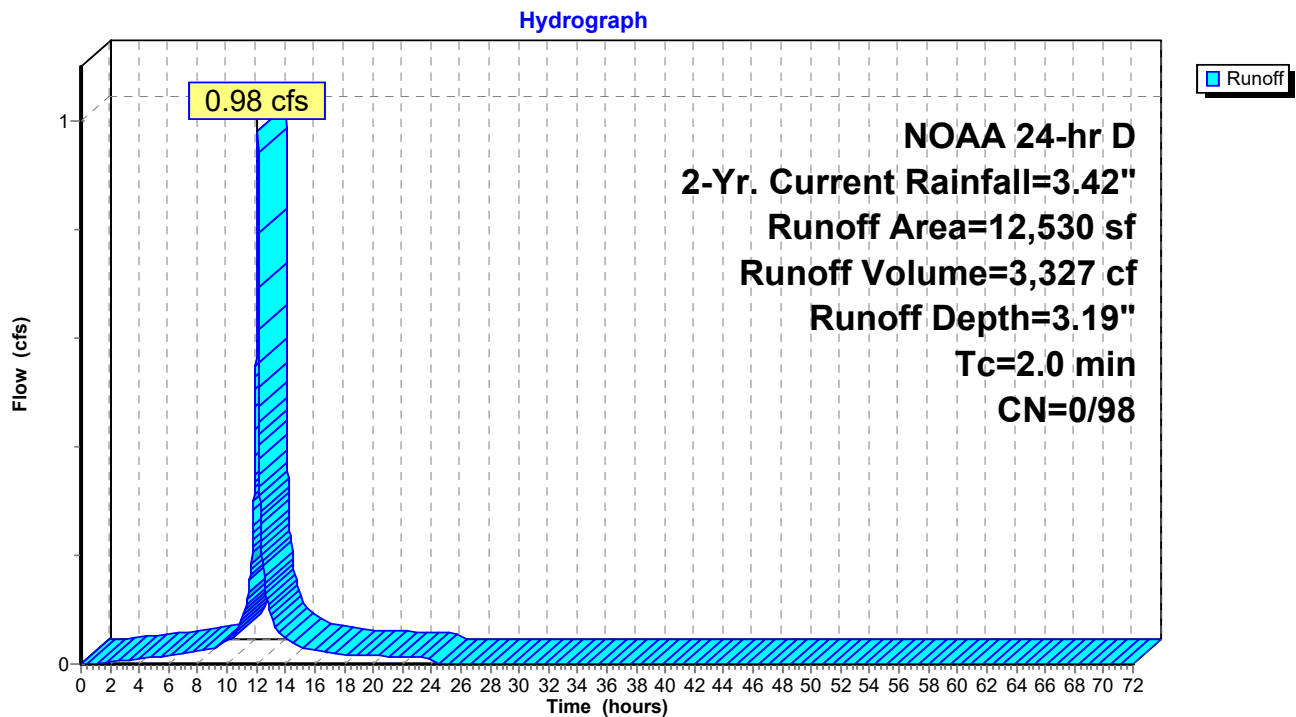
Runoff = 0.98 cfs @ 12.10 hrs, Volume= 3,327 cf, Depth= 3.19"
 Routed to Pond 12P : Roof Recharge

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Current Rainfall=3.42"

Area (sf)	CN	Description
12,530	98	Roofs, HSG A
12,530	98	100.00% Impervious Area

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

Subcatchment 10S: Prop. Drainage Area-3 (Roof)



Summary for Subcatchment 11S: Prop. Drainage Area-3-A (Woods) (Undisturbed)

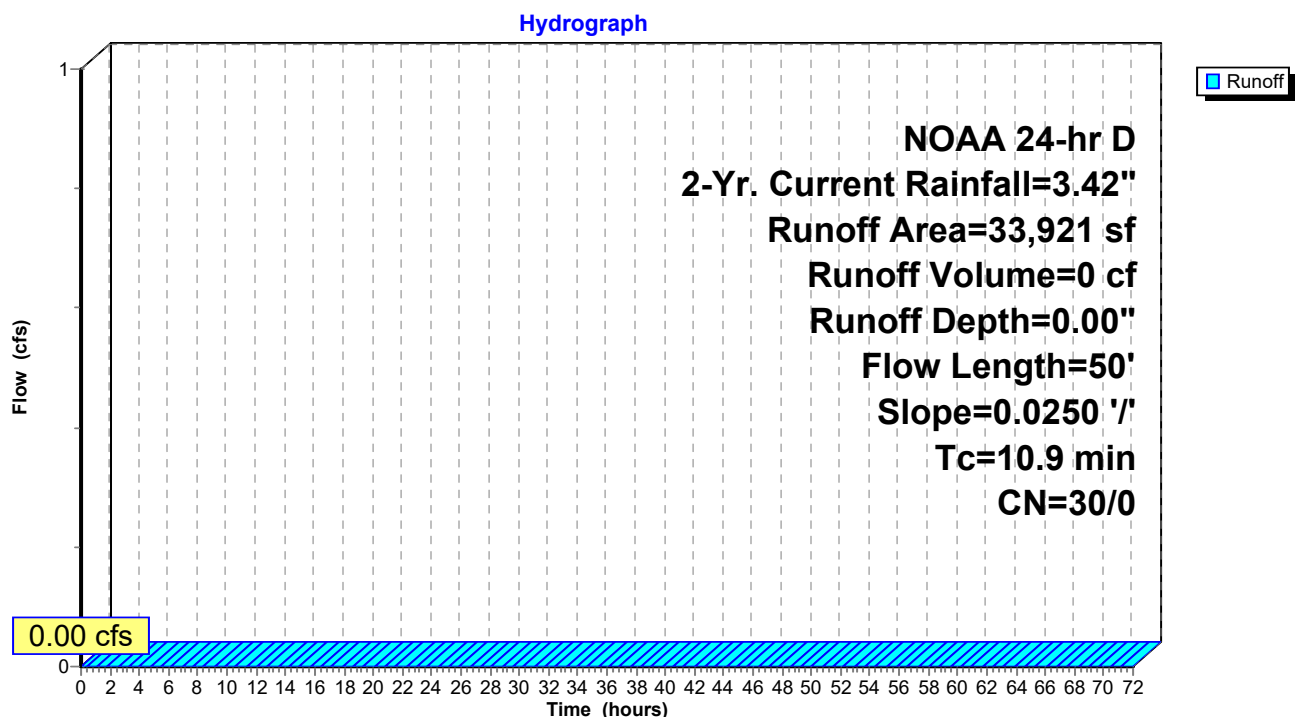
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"
 Routed to Pond B3 : Basin #3

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Current Rainfall=3.42"

Area (sf)	CN	Description
33,921	30	Woods, Good, HSG A
33,921	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	50	0.0250	0.08		Sheet Flow, Sheet woods Woods: Light underbrush n= 0.400 P2= 3.42"

Subcatchment 11S: Prop. Drainage Area-3-A (Woods) (Undisturbed)



Summary for Subcatchment P-1I: Prop. Drainage Area-1 (Impervious)

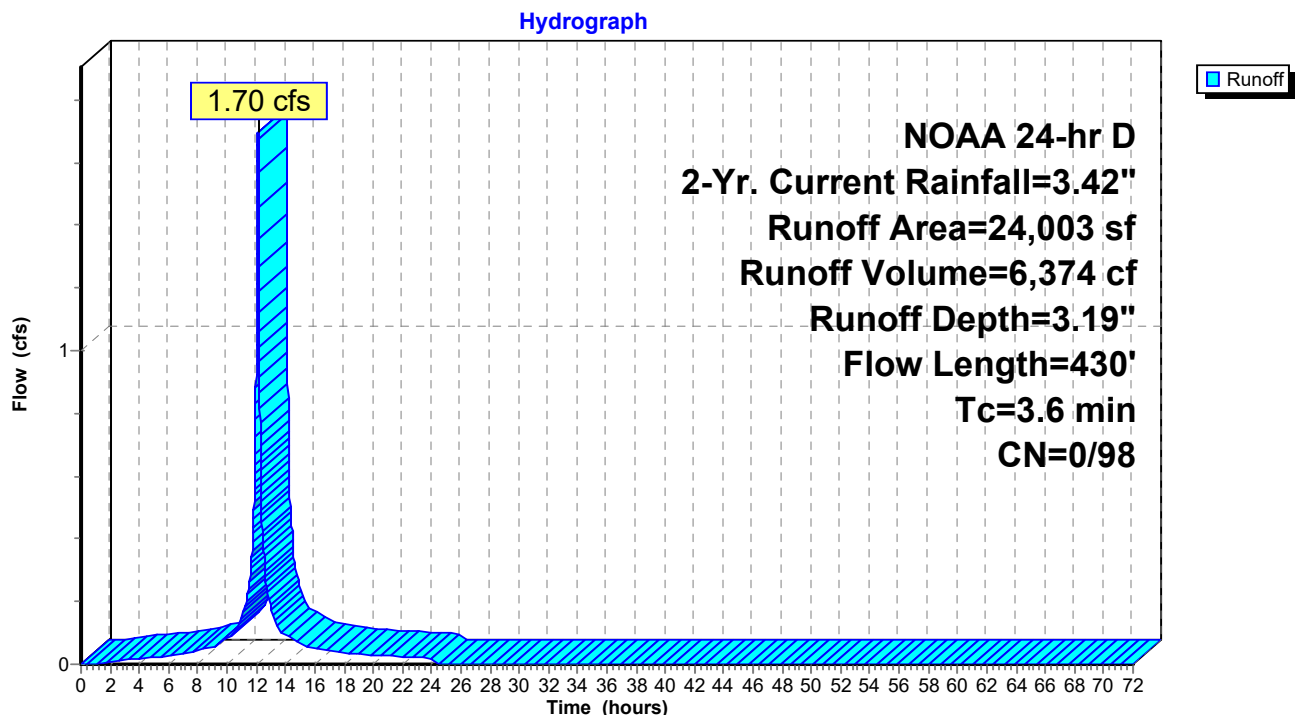
Runoff = 1.70 cfs @ 12.12 hrs, Volume= 6,374 cf, Depth= 3.19"
 Routed to Pond B1 : Basin #1

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Current Rainfall=3.42"

Area (sf)	CN	Description
15,941	98	Paved roads w/curbs & sewers, HSG A
* 2,588	98	Sidewalks, HSG A
* 5,474	98	Driveways, HSG A
24,003	98	Weighted Average
24,003	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	100	0.0083	1.00		Sheet Flow, Sheet Pvmt Smooth surfaces n= 0.011 P2= 3.42"
0.7	60	0.0050	1.44		Shallow Concentrated Flow, Shallow Pvmt Paved Kv= 20.3 fps
1.2	270	0.0050	3.72	4.57	Pipe Channel, Pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
3.6	430	Total			

Subcatchment P-1I: Prop. Drainage Area-1 (Impervious)



Summary for Subcatchment P-1P: Prop. Drainage Area-1 (Pervious)

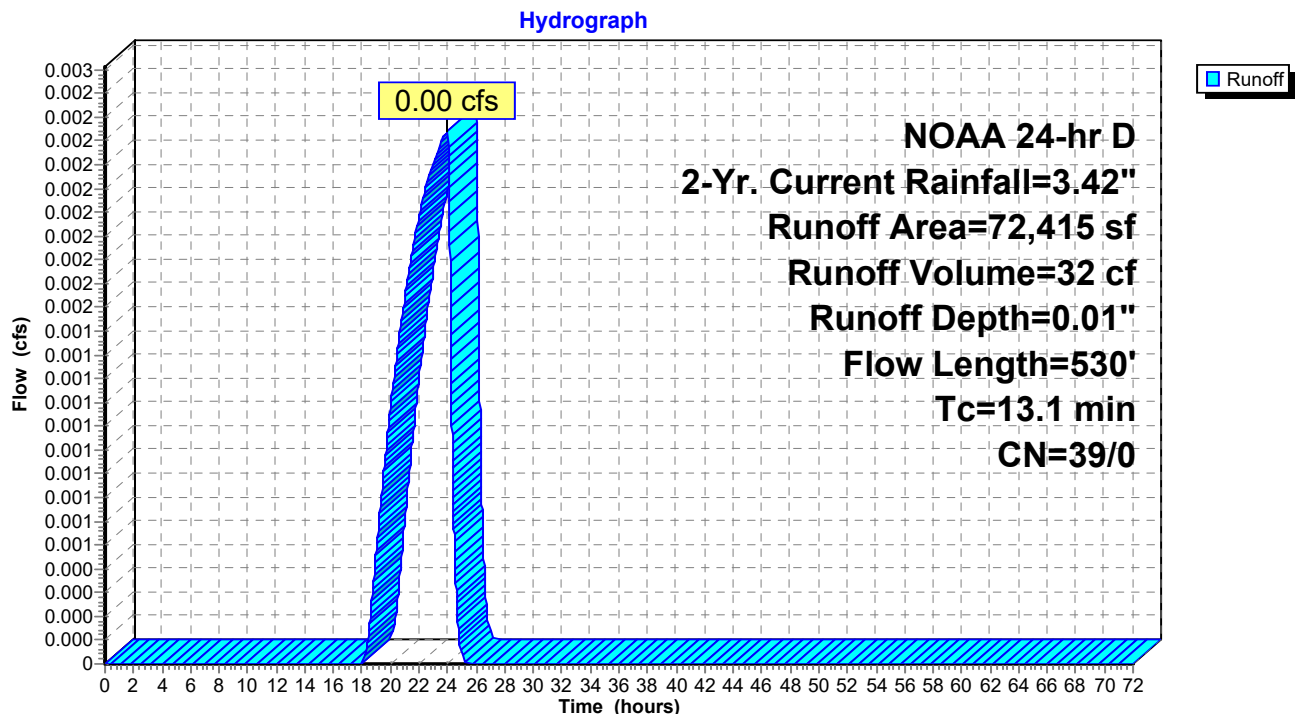
Runoff = 0.00 cfs @ 24.01 hrs, Volume= 32 cf, Depth= 0.01"
 Routed to Pond B1 : Basin #1

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Current Rainfall=3.42"

Area (sf)	CN	Description
72,415	39	>75% Grass cover, Good, HSG A
72,415	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0400	0.16		Sheet Flow, Sheet Grass Grass: Dense n= 0.240 P2= 3.42"
1.4	160	0.0083	1.85		Shallow Concentrated Flow, Shallow Pvmnt Paved Kv= 20.3 fps
1.2	270	0.0050	3.72	4.57	Pipe Channel, Pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
13.1	530	Total			

Subcatchment P-1P: Prop. Drainage Area-1 (Pervious)



Summary for Subcatchment P-1R: Prop. Drainage Area-1 (Roof)

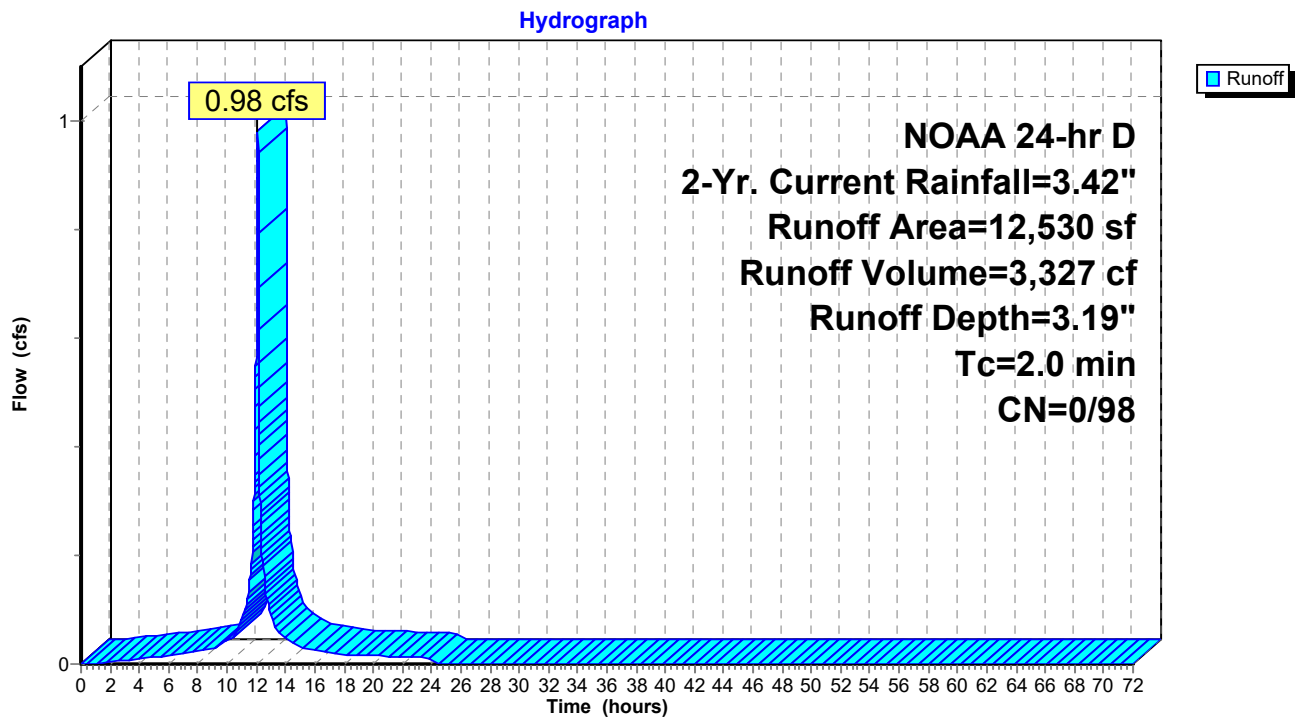
Runoff = 0.98 cfs @ 12.10 hrs, Volume= 3,327 cf, Depth= 3.19"
 Routed to Pond R-1 : Roof Recharge

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Current Rainfall=3.42"

Area (sf)	CN	Description
12,530	98	Roofs, HSG A
12,530	98	100.00% Impervious Area

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

Subcatchment P-1R: Prop. Drainage Area-1 (Roof)



Summary for Subcatchment P-2R: Prop. Drainage Area-2 (Roof)

Runoff = 0.79 cfs @ 12.10 hrs, Volume= 2,662 cf, Depth= 3.19"
 Routed to Pond 8P : Roof Recharge

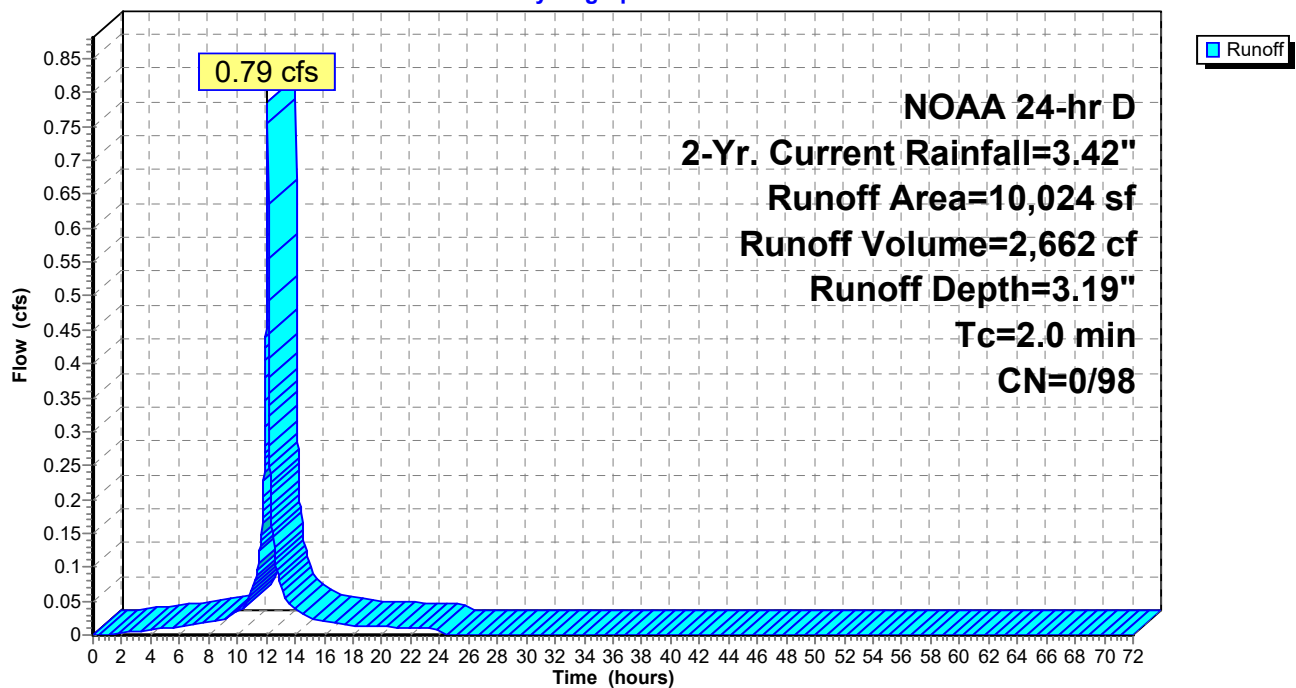
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Current Rainfall=3.42"

Area (sf)	CN	Description
10,024	98	Roofs, HSG A
10,024	98	100.00% Impervious Area

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

Subcatchment P-2R: Prop. Drainage Area-2 (Roof)

Hydrograph



Summary for Subcatchment P1A: Prop. Drainage Area-1-A (Woods) (Undisturbed)

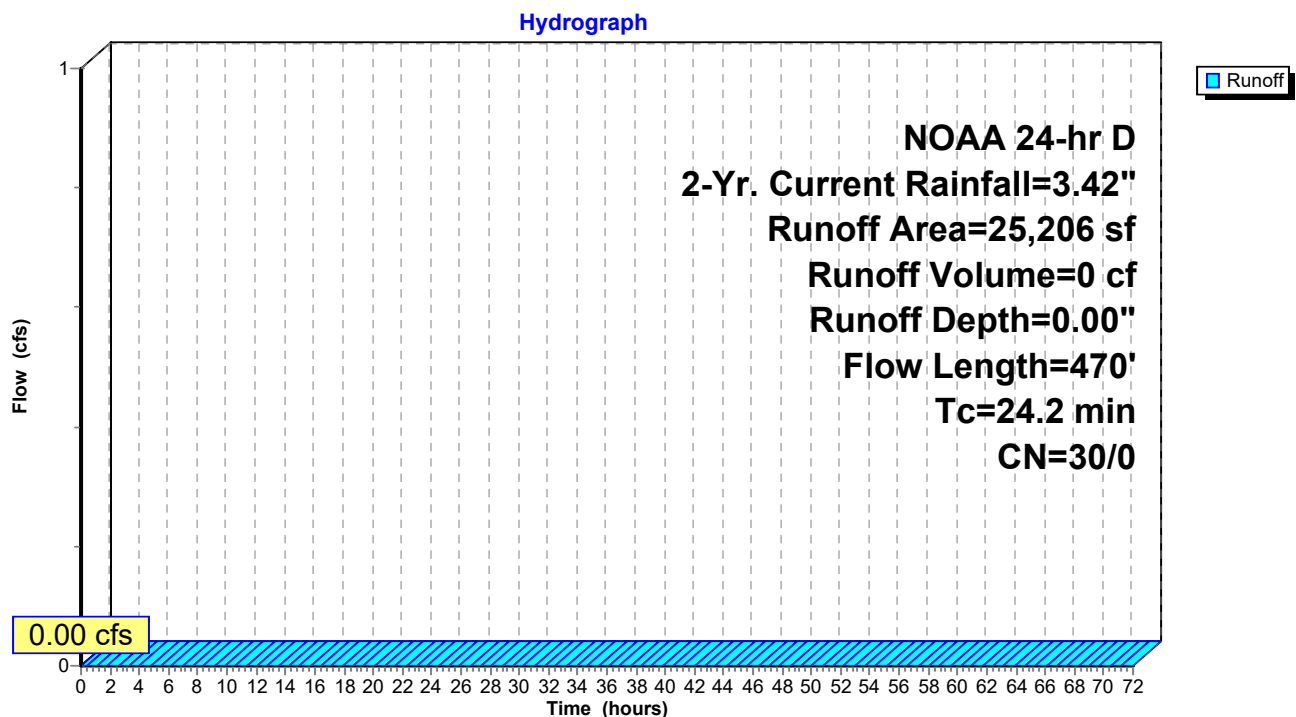
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"
 Routed to Pond B1 : Basin #1

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Current Rainfall=3.42"

Area (sf)	CN	Description
25,206	30	Woods, Good, HSG A
25,206	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2	100	0.0170	0.08		Sheet Flow, Sheet woods Woods: Light underbrush n= 0.400 P2= 3.42"
0.4	60	0.0200	2.28		Shallow Concentrated Flow, Shallow Grass Unpaved Kv= 16.1 fps
0.4	40	0.0062	1.60		Shallow Concentrated Flow, shallow Pvmt Paved Kv= 20.3 fps
1.2	270	0.0050	3.72	4.57	Pipe Channel, pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
24.2	470	Total			

Subcatchment P1A: Prop. Drainage Area-1-A (Woods) (Undisturbed)



Summary for Subcatchment P1B: Prop. Drainage Area-1 (Basin Area) (Non-Contributory)

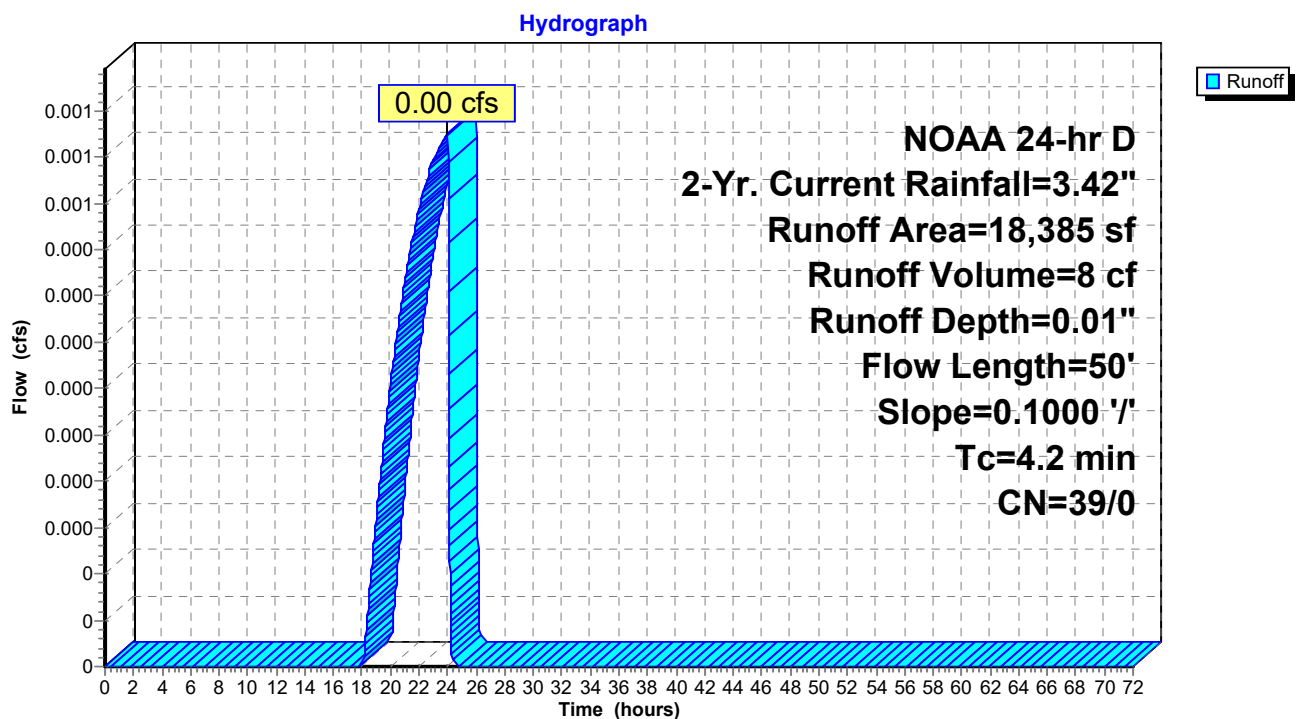
Runoff = 0.00 cfs @ 24.00 hrs, Volume= 8 cf, Depth= 0.01"
 Routed to Pond B1 : Basin #1

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Current Rainfall=3.42"

Area (sf)	CN	Description
* 18,385	39	Basin Area-Non-contributory, HSG A
18,385	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.1000	0.20		Sheet Flow, Sheet Grass
Grass: Dense n= 0.240 P2= 3.42"					

Subcatchment P1B: Prop. Drainage Area-1 (Basin Area) (Non-Contributory)



Summary for Subcatchment P1W: Prop. Drainage Area-1-B (Woods) (undetained)

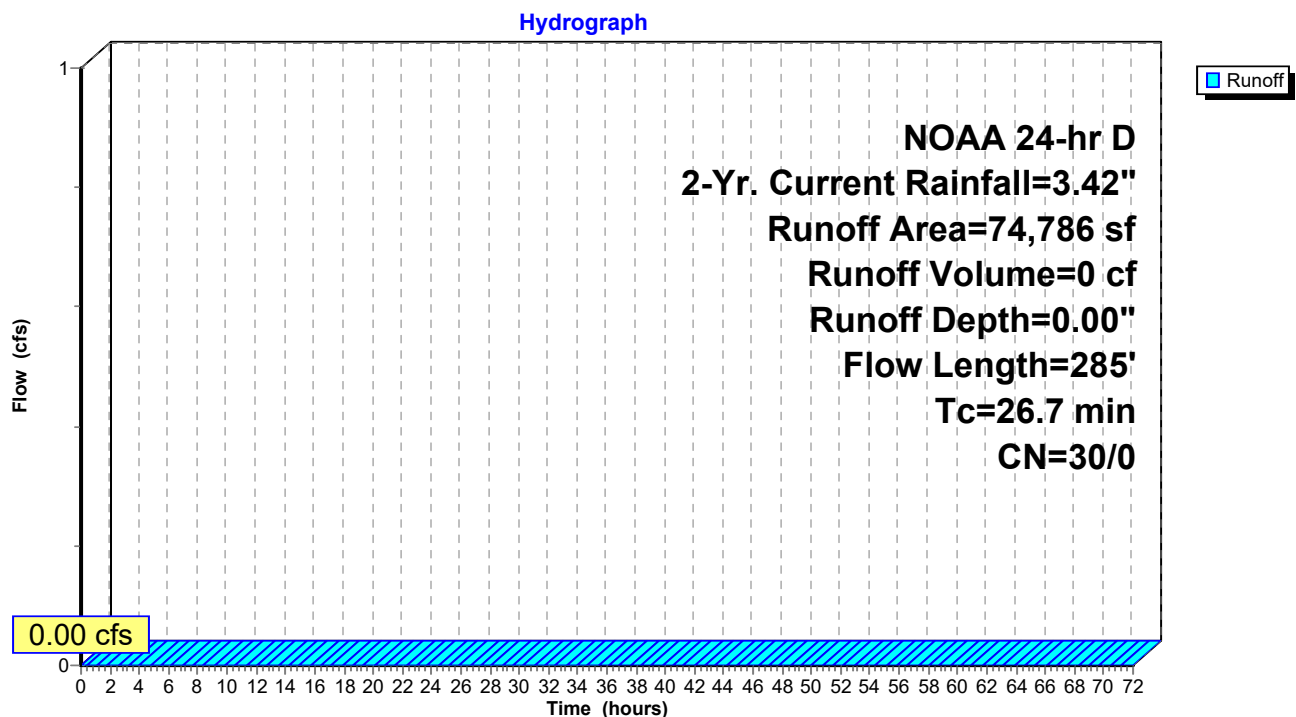
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"
 Routed to Link PT1 : Proposed Total (AP-1)

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Current Rainfall=3.42"

Area (sf)	CN	Description
74,786	30	Woods, Good, HSG A
74,786	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.8	100	0.0200	0.08		Sheet Flow, Sheet woods
					Woods: Light underbrush n= 0.400 P2= 3.42"
5.9	185	0.0110	0.52		Shallow Concentrated Flow, Shallow Woods
					Woodland Kv= 5.0 fps
26.7	285	Total			

Subcatchment P1W: Prop. Drainage Area-1-B (Woods) (undetained)



Summary for Subcatchment P2B: Prop. Drainage Area-2 (Basin)(Non-Contributory)

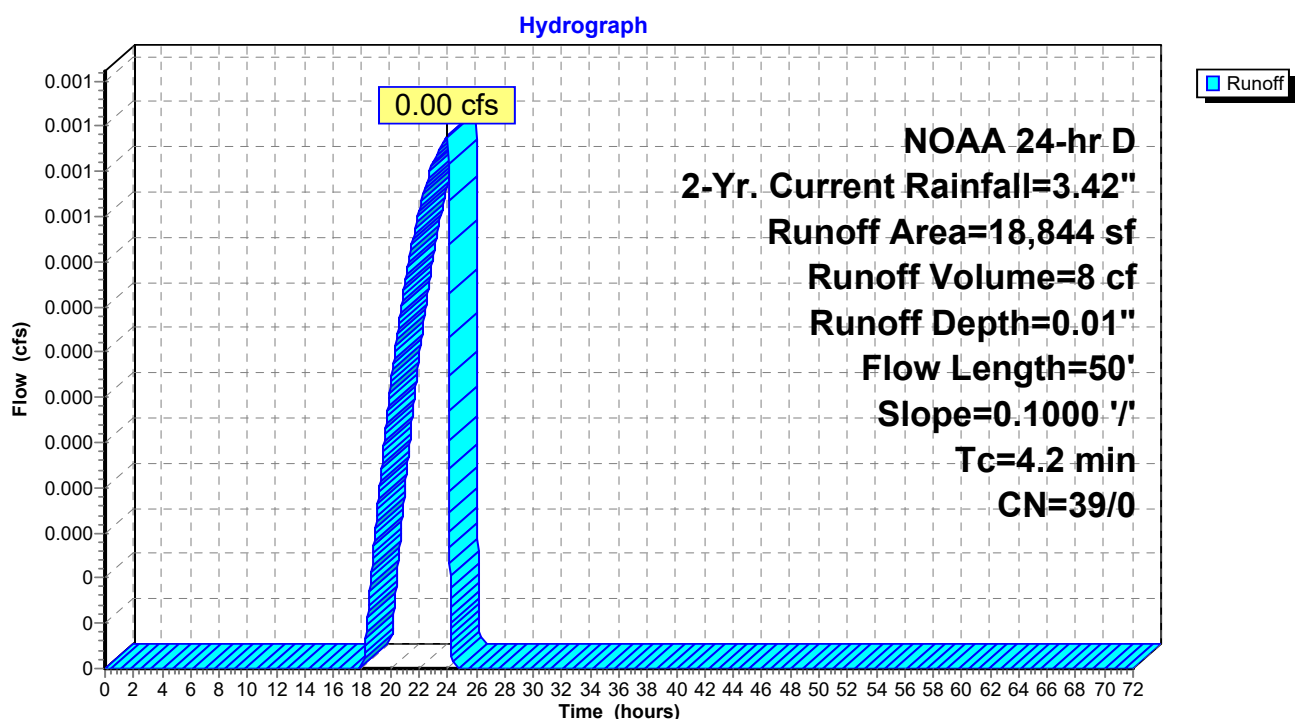
Runoff = 0.00 cfs @ 24.00 hrs, Volume= 8 cf, Depth= 0.01"
 Routed to Pond B2 : Basin #2

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Current Rainfall=3.42"

Area (sf)	CN	Description
* 18,844	39	Basin Area-Non-contributory, HSG A
18,844	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.1000	0.20		Sheet Flow, Sheet Grass
Grass: Dense n= 0.240 P2= 3.42"					

Subcatchment P2B: Prop. Drainage Area-2 (Basin)(Non-Contributory)



Summary for Subcatchment P2I: Prop. Drainage Area-2 (Impervious)

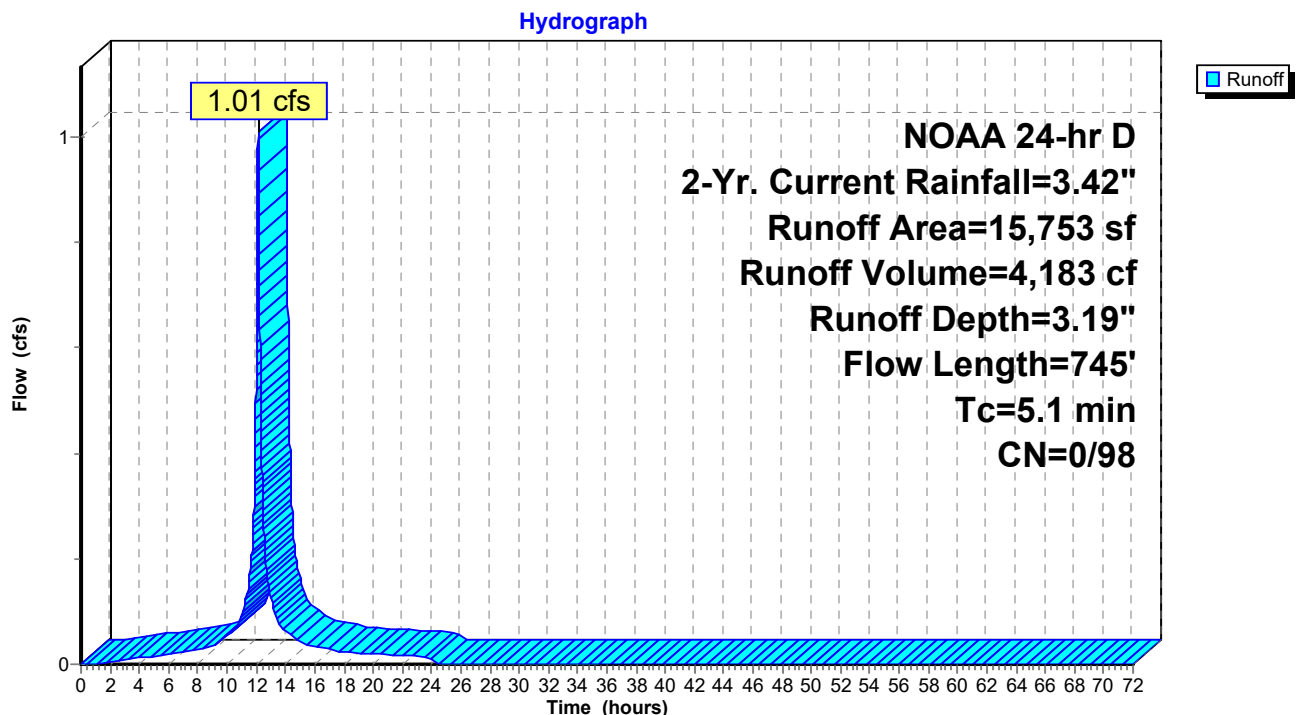
Runoff = 1.01 cfs @ 12.13 hrs, Volume= 4,183 cf, Depth= 3.19"
 Routed to Pond B2 : Basin #2

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Current Rainfall=3.42"

Area (sf)	CN	Description
9,010	98	Paved roads w/curbs & sewers, HSG A
* 2,394	98	Sidewalks, HSG A
* 4,349	98	Driveways, HSG A
15,753	98	Weighted Average
15,753	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	100	0.0083	1.00		Sheet Flow, Sheet Pvmt Smooth surfaces n= 0.011 P2= 3.42"
0.9	95	0.0083	1.85		Shallow Concentrated Flow, Shallow Pvmt Paved Kv= 20.3 fps
2.5	550	0.0050	3.72	4.57	Pipe Channel, Pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
5.1	745	Total			

Subcatchment P2I: Prop. Drainage Area-2 (Impervious)



Summary for Subcatchment P2P: Prop. Drainage Area-2 (Pervious)

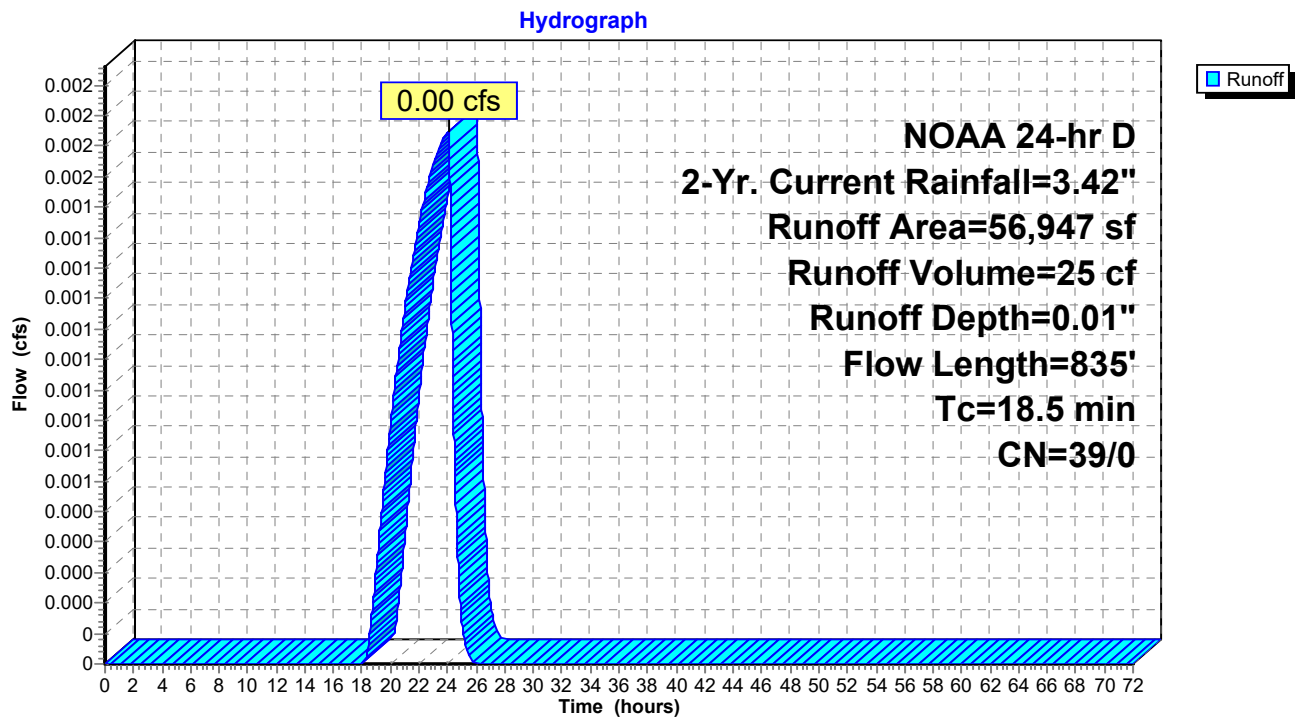
Runoff = 0.00 cfs @ 24.04 hrs, Volume= 25 cf, Depth= 0.01"
 Routed to Pond B2 : Basin #2

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Current Rainfall=3.42"

Area (sf)	CN	Description
56,947	39	>75% Grass cover, Good, HSG A
56,947	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	90	0.0150	0.11		Sheet Flow, Sheet Grass Grass: Dense n= 0.240 P2= 3.42"
1.8	195	0.0083	1.85		Shallow Concentrated Flow, Shallow Pvmnt Paved Kv= 20.3 fps
2.5	550	0.0050	3.72	4.57	Pipe Channel, Pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
18.5	835	Total			

Subcatchment P2P: Prop. Drainage Area-2 (Pervious)



Summary for Subcatchment P2W: Prop. Drainage Area-2 (Woods) (Undisturbed)

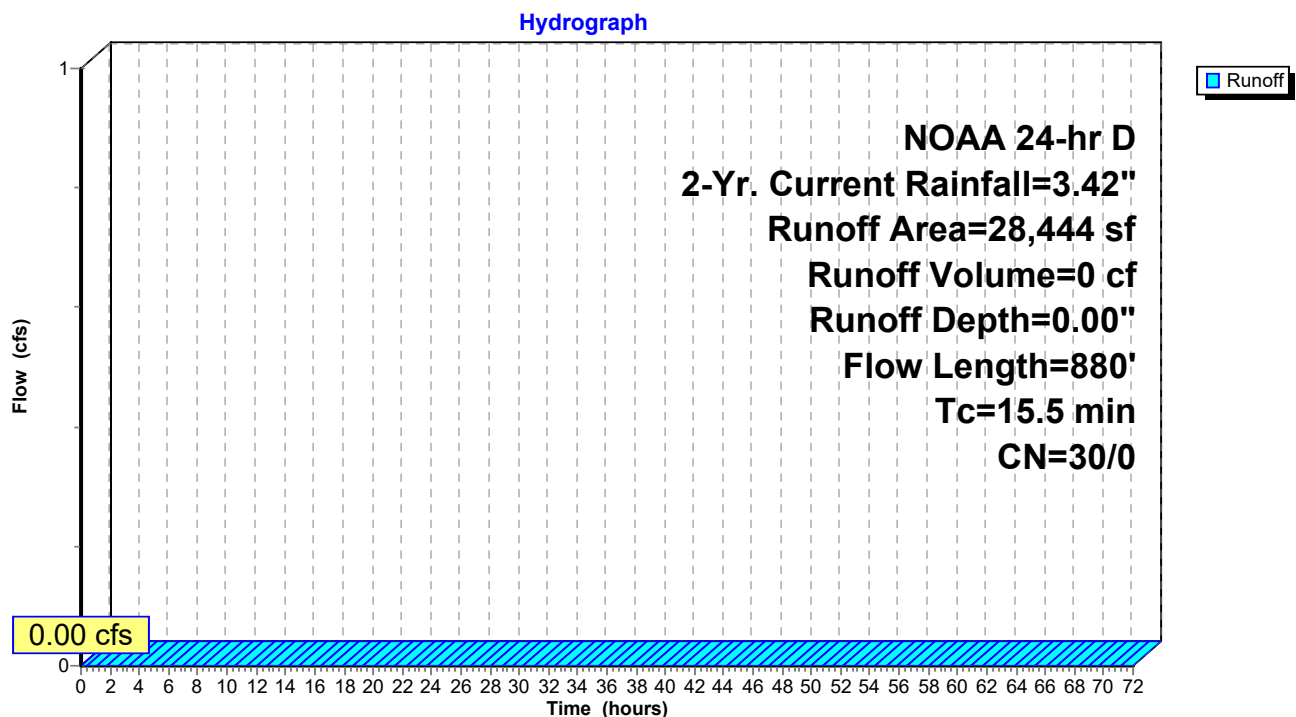
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"
 Routed to Pond B2 : Basin #2

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Current Rainfall=3.42"

Area (sf)	CN	Description
28,444	30	Woods, Good, HSG A
28,444	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	50	0.0250	0.08		Sheet Flow, Sheet woods Woods: Light underbrush n= 0.400 P2= 3.42"
0.6	120	0.0400	3.22		Shallow Concentrated Flow, Shallow Grass Unpaved Kv= 16.1 fps
1.7	190	0.0083	1.85		Shallow Concentrated Flow, shallow Pvmt Paved Kv= 20.3 fps
2.3	520	0.0050	3.72	4.57	Pipe Channel, pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
15.5	880	Total			

Subcatchment P2W: Prop. Drainage Area-2 (Woods) (Undisturbed)



Summary for Pond 8P: Roof Recharge

Inflow Area = 10,024 sf, 100.00% Impervious, Inflow Depth = 3.19" for 2-Yr. Current event
 Inflow = 0.79 cfs @ 12.10 hrs, Volume= 2,662 cf
 Outflow = 0.19 cfs @ 11.90 hrs, Volume= 2,662 cf, Atten= 76%, Lag= 0.0 min
 Discarded = 0.19 cfs @ 11.90 hrs, Volume= 2,662 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to Pond B2 : Basin #2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 76.90' @ 12.33 hrs Surf.Area= 822 sf Storage= 411 cf

Plug-Flow detention time= 8.9 min calculated for 2,662 cf (100% of inflow)
 Center-of-Mass det. time= 8.9 min (763.3 - 754.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	76.00'	219 cf	6.25'W x 32.23'L x 3.75'H Field A 755 cf Overall - 209 cf Embedded = 546 cf x 40.0% Voids
#2A	76.50'	209 cf	ADS_StormTech SC-800 +Cap x 4 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap Cap Storage= 3.4 cf x 2 x 1 rows = 6.8 cf
#3	76.00'	24 cf	2.00'W x 2.00'L x 6.00'H Prismatic
			452 cf x 4.00 = 1,807 cf Total Available Storage

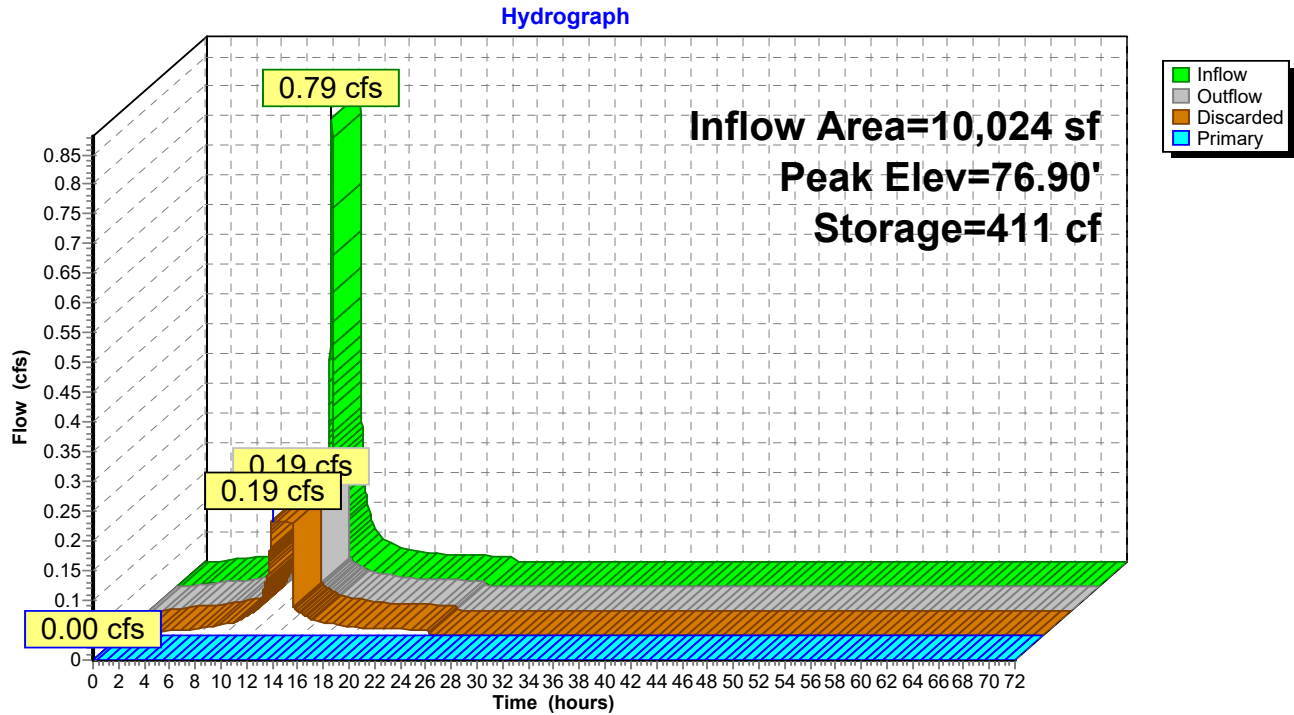
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	81.00'	24.0" x 24.0" Horiz. Grate 24" C= 0.600 Limited to weir flow at low heads
#2	Discarded	76.00'	10.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.19 cfs @ 11.90 hrs HW=76.07' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=76.00' TW=77.00' (Dynamic Tailwater)
 ↑ **1=Grate 24"** (Controls 0.00 cfs)

Pond 8P: Roof Recharge



Summary for Pond 12P: Roof Recharge

Inflow Area = 12,530 sf, 100.00% Impervious, Inflow Depth = 3.19" for 2-Yr. Current event
 Inflow = 0.98 cfs @ 12.10 hrs, Volume= 3,327 cf
 Outflow = 0.19 cfs @ 11.83 hrs, Volume= 3,327 cf, Atten= 81%, Lag= 0.0 min
 Discarded = 0.19 cfs @ 11.83 hrs, Volume= 3,327 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to Pond B3 : Basin #3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 77.26' @ 12.42 hrs Surf.Area= 822 sf Storage= 619 cf

Plug-Flow detention time= 15.2 min calculated for 3,327 cf (100% of inflow)
 Center-of-Mass det. time= 15.2 min (769.5 - 754.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	76.00'	219 cf	6.25'W x 32.23'L x 3.75'H Field A 755 cf Overall - 209 cf Embedded = 546 cf x 40.0% Voids
#2A	76.50'	209 cf	ADS_StormTech SC-800 +Cap x 4 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap Cap Storage= 3.4 cf x 2 x 1 rows = 6.8 cf
#3	76.00'	24 cf	2.00'W x 2.00'L x 6.00'H Prismatic
			452 cf x 4.00 = 1,807 cf Total Available Storage

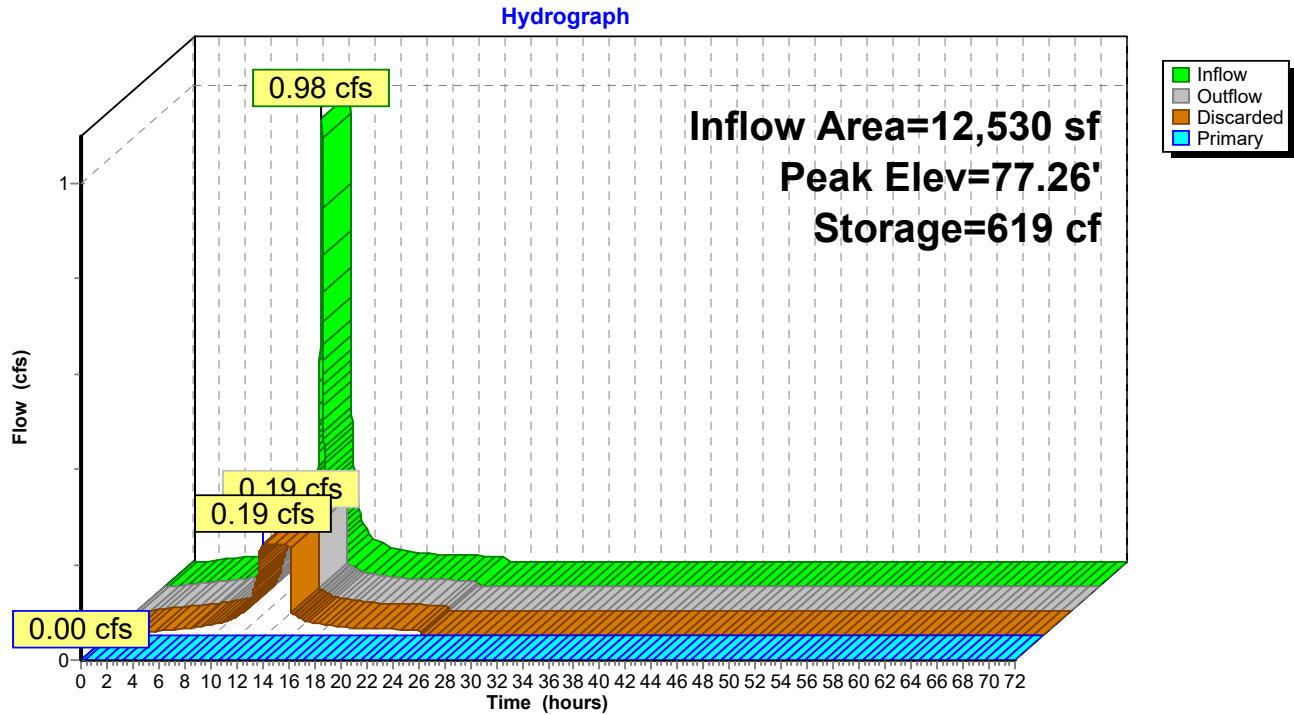
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	81.00'	24.0" x 24.0" Horiz. Grate 24" C= 0.600 Limited to weir flow at low heads
#2	Discarded	76.00'	10.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.19 cfs @ 11.83 hrs HW=76.06' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=76.00' TW=66.00' (Dynamic Tailwater)
 ↑ **1=Grate 24"** (Controls 0.00 cfs)

Pond 12P: Roof Recharge



Summary for Pond B1: Basin #1

Inflow Area = 152,539 sf, 23.95% Impervious, Inflow Depth = 0.50" for 2-Yr. Current event
 Inflow = 1.70 cfs @ 12.12 hrs, Volume= 6,415 cf
 Outflow = 0.22 cfs @ 12.81 hrs, Volume= 6,415 cf, Atten= 87%, Lag= 41.8 min
 Discarded = 0.22 cfs @ 12.81 hrs, Volume= 6,415 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to Pond B2 : Basin #2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 77.41' @ 12.81 hrs Surf.Area= 4,803 sf Storage= 1,824 cf

Plug-Flow detention time= 53.0 min calculated for 6,415 cf (100% of inflow)
 Center-of-Mass det. time= 53.0 min (813.4 - 760.4)

Volume	Invert	Avail.Storage	Storage Description
#1	77.00'	20,548 cf	Basin 1 (Prismatic) Listed below (Recalc)

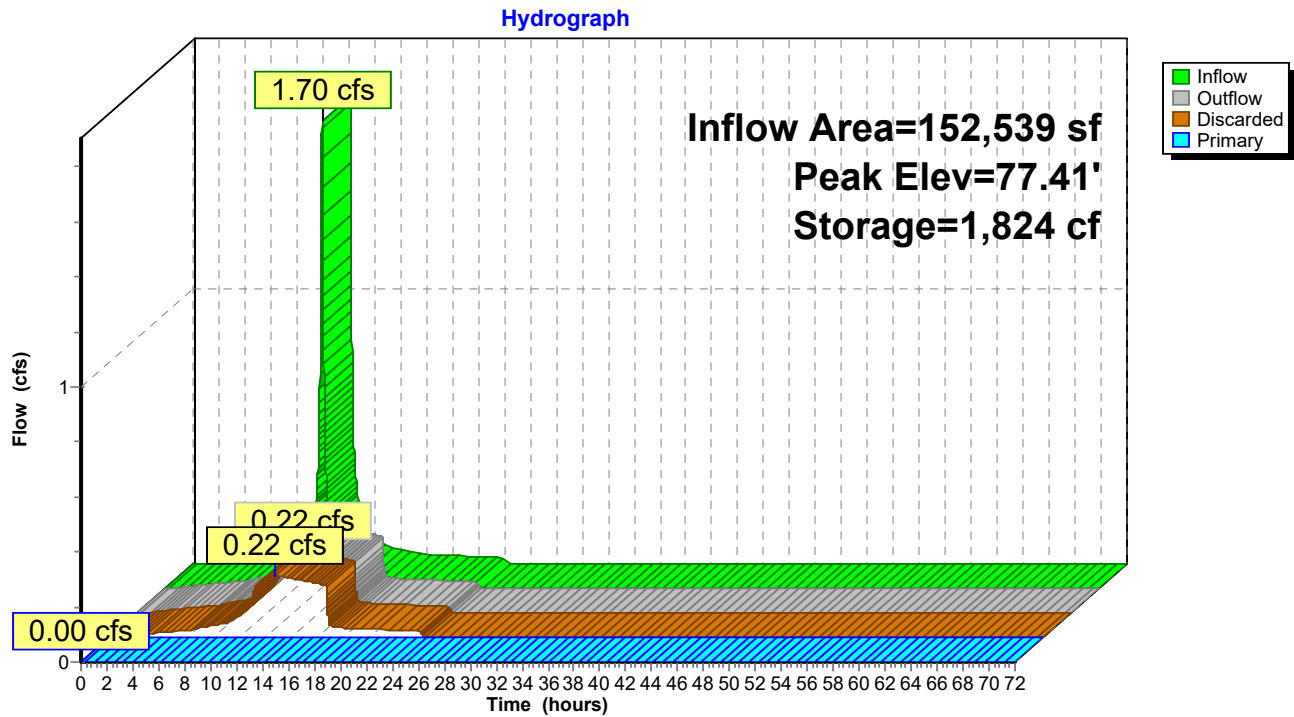
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
77.00	4,060	0	0
78.00	5,865	4,963	4,963
79.00	7,766	6,816	11,778
80.00	9,773	8,770	20,548

Device	Routing	Invert	Outlet Devices
#1	Primary	77.34'	15.0" Round Culvert 15" L= 69.0' Ke= 0.500 Inlet / Outlet Invert= 77.34' / 77.00' S= 0.0049 ' S= 0.0049 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.23 sf
#2	Device 1	77.50'	3.0" Vert. Orifice 3" C= 0.600 Limited to weir flow at low heads
#3	Device 1	80.00'	42.0" x 42.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	80.20'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	77.00'	2.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.22 cfs @ 12.81 hrs HW=77.41' (Free Discharge)
 ↳ **5=Exfiltration** (Exfiltration Controls 0.22 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=77.00' TW=77.00' (Dynamic Tailwater)
 ↳ **1=Culvert 15"** (Controls 0.00 cfs)
 ↳ **2=Orifice 3"** (Controls 0.00 cfs)
 ↳ **3=Grate** (Controls 0.00 cfs)
 ↳ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B1: Basin #1



Summary for Pond B2: Basin #2

Inflow Area = 282,551 sf, 22.05% Impervious, Inflow Depth = 0.18" for 2-Yr. Current event
 Inflow = 1.01 cfs @ 12.13 hrs, Volume= 4,217 cf
 Outflow = 0.18 cfs @ 12.66 hrs, Volume= 4,217 cf, Atten= 82%, Lag= 31.7 min
 Discarded = 0.18 cfs @ 12.66 hrs, Volume= 4,217 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to Pond B3 : Basin #3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 77.27' @ 12.66 hrs Surf.Area= 3,995 sf Storage= 1,012 cf

Plug-Flow detention time= 32.2 min calculated for 4,217 cf (100% of inflow)
 Center-of-Mass det. time= 32.2 min (795.9 - 763.7)

Volume	Invert	Avail.Storage	Storage Description
#1	77.00'	18,035 cf	Basin 2 (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
77.00	3,573	0	0
78.00	5,151	4,362	4,362
79.00	6,815	5,983	10,345
80.00	8,565	7,690	18,035

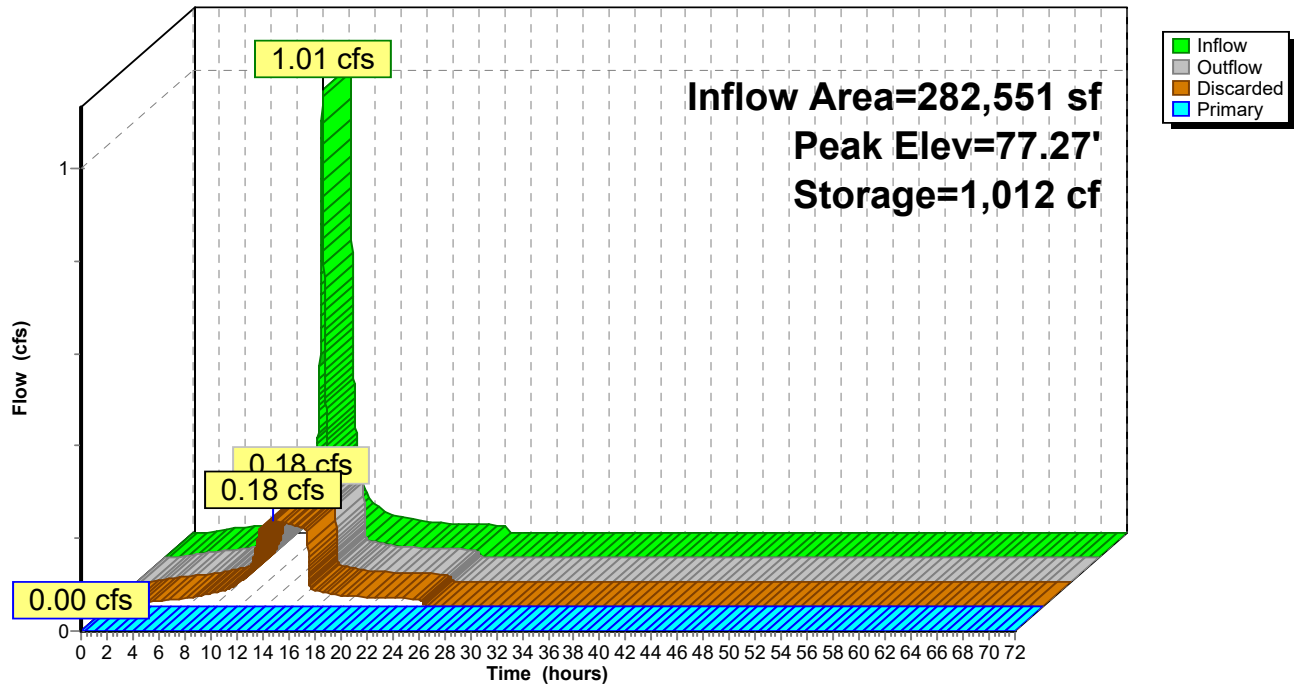
Device	Routing	Invert	Outlet Devices
#1	Primary	77.00'	18.0" Round Culvert 15" L= 69.0' Ke= 0.500 Inlet / Outlet Invert= 77.00' / 66.00' S= 0.1594 ' S= 0.1594 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf
#2	Device 1	77.50'	4.0" Vert. Orifice 4" C= 0.600 Limited to weir flow at low heads
#3	Device 1	80.00'	42.0" x 42.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	80.30'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	77.00'	2.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.18 cfs @ 12.66 hrs HW=77.27' (Free Discharge)
 ↳ **5=Exfiltration** (Exfiltration Controls 0.18 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=77.00' TW=66.00' (Dynamic Tailwater)
 ↳ **1=Culvert 15"** (Controls 0.00 cfs)
 ↳ **2=Orifice 4"** (Controls 0.00 cfs)
 ↳ **3=Grate** (Controls 0.00 cfs)
 ↳ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B2: Basin #2

Hydrograph



Summary for Pond B3: Basin #3

Inflow Area = 440,051 sf, 22.16% Impervious, Inflow Depth = 0.17" for 2-Yr. Current event
 Inflow = 1.68 cfs @ 12.11 hrs, Volume= 6,066 cf
 Outflow = 0.20 cfs @ 12.87 hrs, Volume= 6,066 cf, Atten= 88%, Lag= 45.3 min
 Discarded = 0.20 cfs @ 12.87 hrs, Volume= 6,066 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to Link PT2 : Proposed Total (AP-2)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 66.44' @ 12.87 hrs Surf.Area= 4,225 sf Storage= 1,763 cf

Plug-Flow detention time= 57.7 min calculated for 6,065 cf (100% of inflow)
 Center-of-Mass det. time= 57.7 min (817.2 - 759.6)

Volume	Invert	Avail.Storage	Storage Description
#1	66.00'	34,230 cf	Basin 3 (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
66.00	3,879	0	0
67.00	4,673	4,276	4,276
68.00	5,501	5,087	9,363
69.00	6,379	5,940	15,303
70.00	7,310	6,845	22,148
71.00	8,291	7,801	29,948
71.50	8,836	4,282	34,230

Device	Routing	Invert	Outlet Devices
#1	Primary	67.49'	15.0" Round Culvert 15" L= 360.0' Ke= 0.500 Inlet / Outlet Invert= 67.49' / 66.00' S= 0.0041 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.23 sf
#2	Device 1	68.00'	4.0" Vert. Orifice 4" C= 0.600 Limited to weir flow at low heads
#3	Device 1	70.50'	42.0" x 42.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	71.50'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	66.00'	2.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.20 cfs @ 12.87 hrs HW=66.44' (Free Discharge)

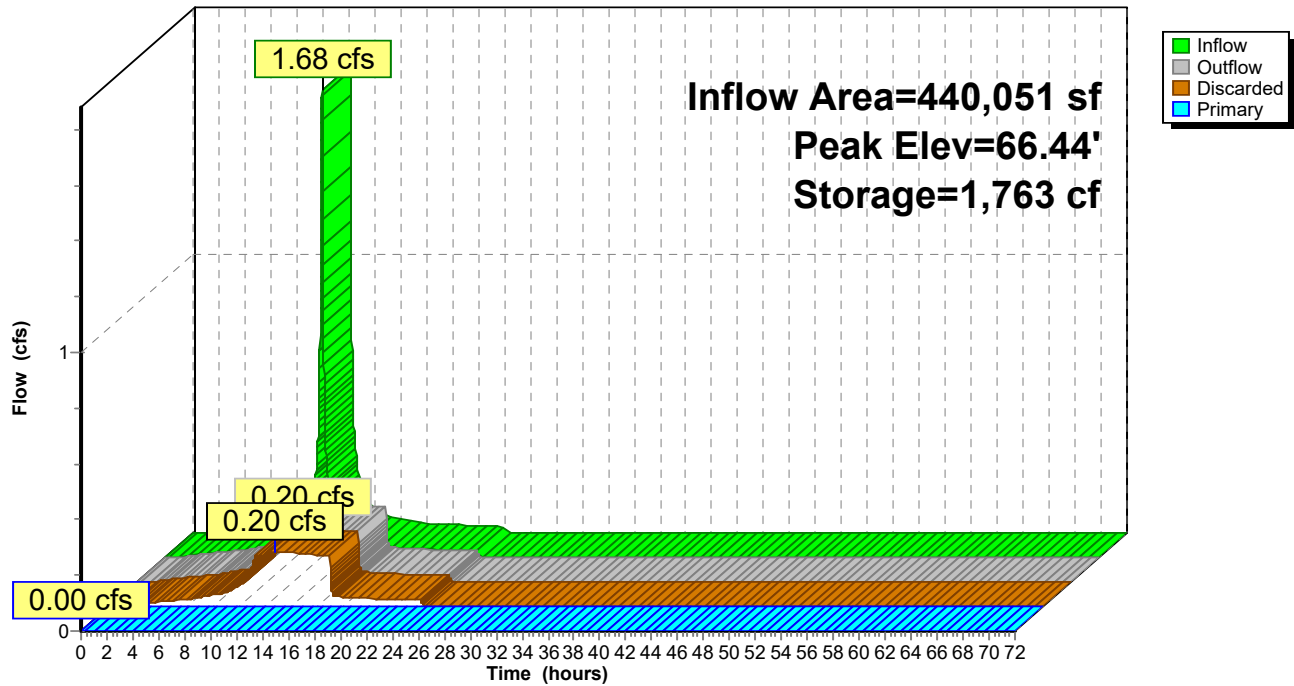
↳ **5=Exfiltration** (Exfiltration Controls 0.20 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=66.00' TW=0.00' (Dynamic Tailwater)

↳ **1=Culvert 15"** (Controls 0.00 cfs)
 ↳ **2=Orifice 4"** (Controls 0.00 cfs)
 ↳ **3=Grate** (Controls 0.00 cfs)
 ↳ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B3: Basin #3

Hydrograph



Summary for Pond R-1: Roof Recharge

Inflow Area = 12,530 sf, 100.00% Impervious, Inflow Depth = 3.19" for 2-Yr. Current event
 Inflow = 0.98 cfs @ 12.10 hrs, Volume= 3,327 cf
 Outflow = 0.24 cfs @ 11.90 hrs, Volume= 3,327 cf, Atten= 76%, Lag= 0.0 min
 Discarded = 0.24 cfs @ 11.90 hrs, Volume= 3,327 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to Pond B1 : Basin #1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 76.90' @ 12.33 hrs Surf.Area= 1,027 sf Storage= 513 cf

Plug-Flow detention time= 8.9 min calculated for 3,327 cf (100% of inflow)
 Center-of-Mass det. time= 8.9 min (763.3 - 754.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	76.00'	219 cf	6.25'W x 32.23'L x 3.75'H Field A 755 cf Overall - 209 cf Embedded = 546 cf x 40.0% Voids
#2A	76.50'	209 cf	ADS_StormTech SC-800 +Cap x 4 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap Cap Storage= 3.4 cf x 2 x 1 rows = 6.8 cf
#3	76.00'	24 cf	2.00'W x 2.00'L x 6.00'H Prismatic
			452 cf x 5.00 = 2,259 cf Total Available Storage

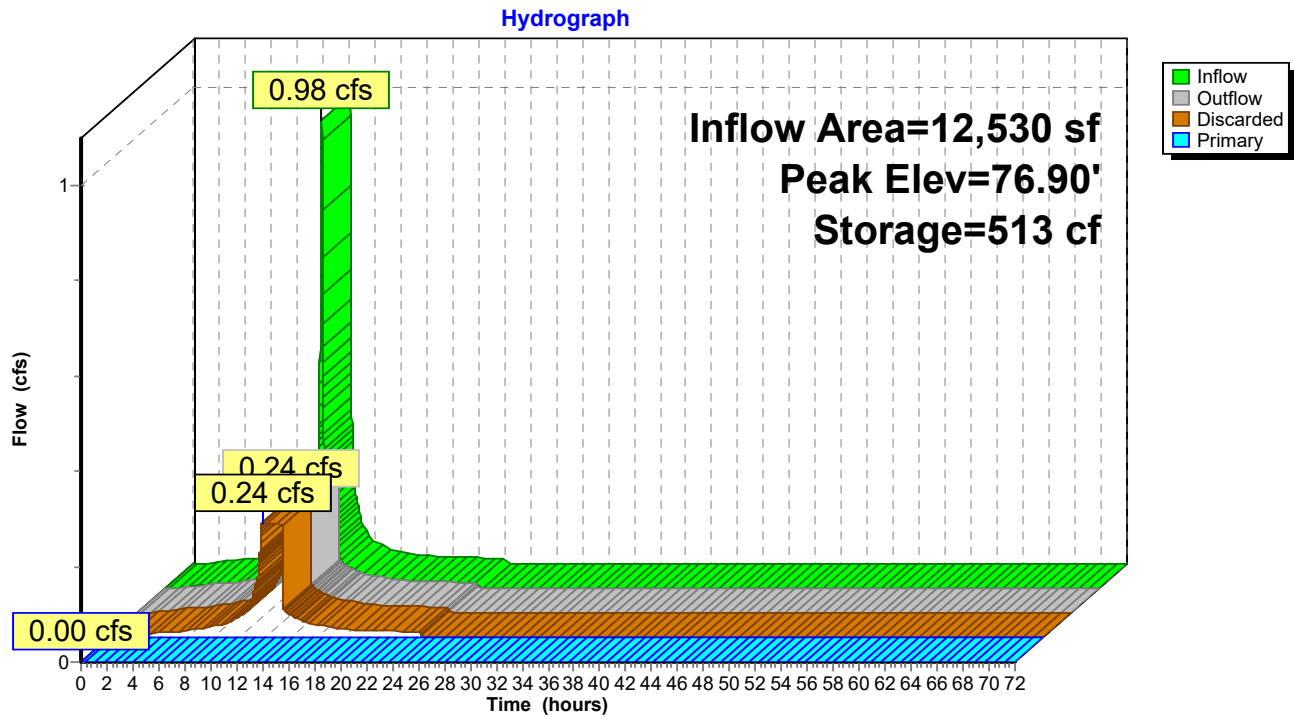
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	81.00'	24.0" x 24.0" Horiz. Grate 24" C= 0.600 Limited to weir flow at low heads
#2	Discarded	76.00'	10.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.24 cfs @ 11.90 hrs HW=76.07' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.24 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=76.00' TW=77.00' (Dynamic Tailwater)
 ↑ **1=Grate 24"** (Controls 0.00 cfs)

Pond R-1: Roof Recharge

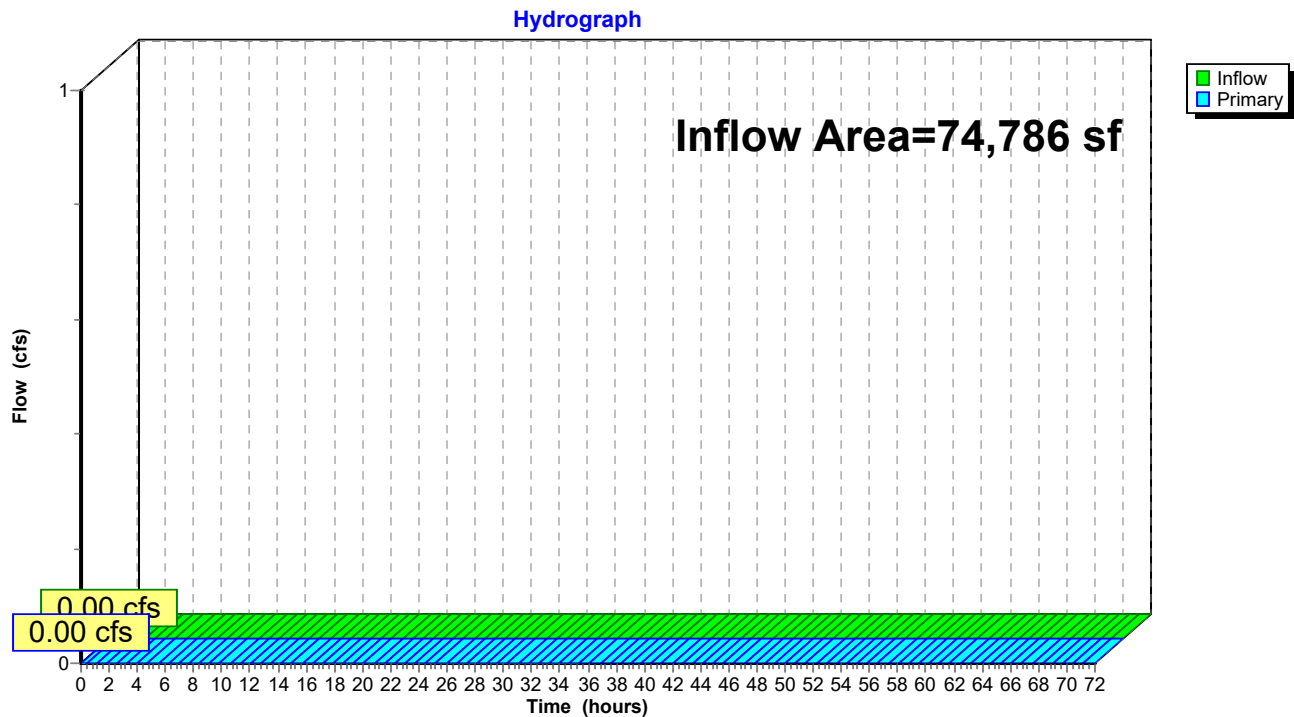


Summary for Link PT1: Proposed Total (AP-1)

Inflow Area = 74,786 sf, 0.00% Impervious, Inflow Depth = 0.00" for 2-Yr. Current event
 Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link PT1: Proposed Total (AP-1)

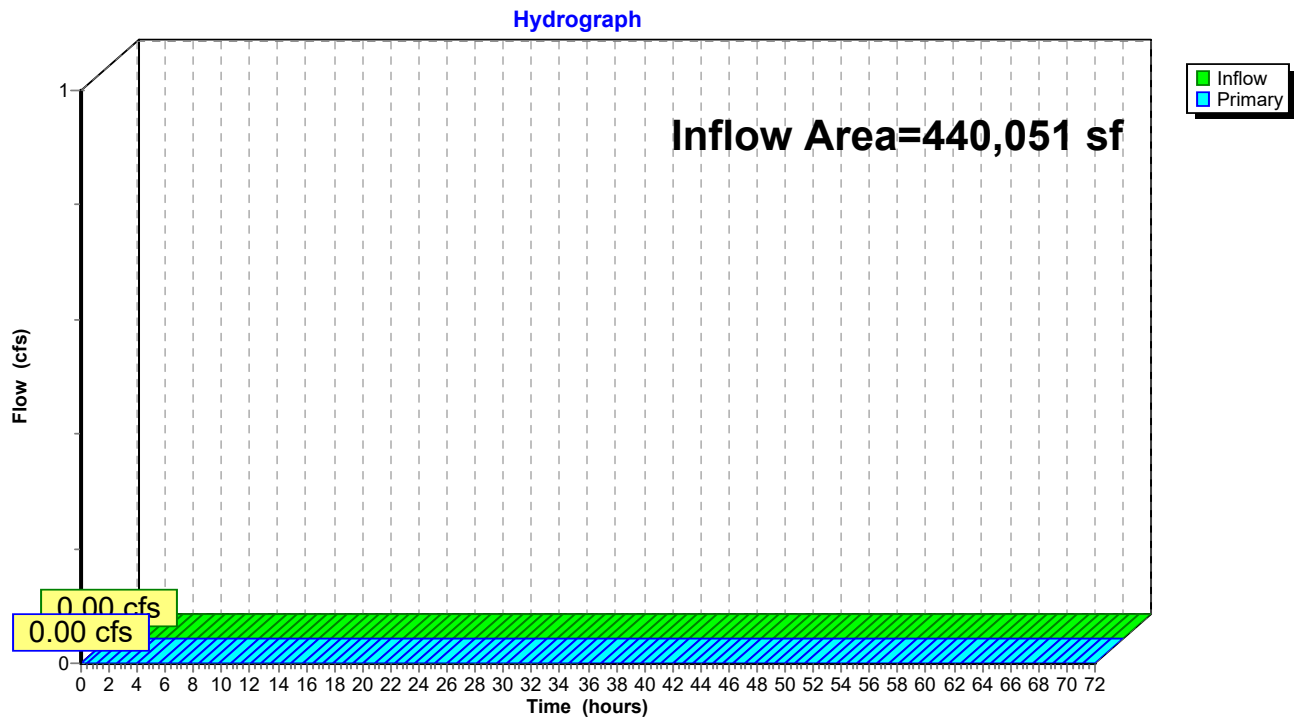


Summary for Link PT2: Proposed Total (AP-2)

Inflow Area = 440,051 sf, 22.16% Impervious, Inflow Depth = 0.00" for 2-Yr. Current event
 Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link PT2: Proposed Total (AP-2)



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
 Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv.
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment7S: Prop. Drainage Area-3 Runoff Area=18,104 sf 0.00% Impervious Runoff Depth=0.28"
 Flow Length=50' Slope=0.1000 '/' Tc=4.2 min CN=39/0 Runoff=0.02 cfs 428 cf

Subcatchment8S: Prop. Drainage Area-3 Runoff Area=22,694 sf 100.00% Impervious Runoff Depth=5.14"
 Flow Length=530' Tc=3.0 min CN=0/98 Runoff=2.66 cfs 9,726 cf

Subcatchment9S: Prop. Drainage Area-3 Runoff Area=70,251 sf 0.00% Impervious Runoff Depth=0.28"
 Flow Length=717' Tc=12.5 min CN=39/0 Runoff=0.08 cfs 1,659 cf

Subcatchment10S: Prop. Drainage Runoff Area=12,530 sf 100.00% Impervious Runoff Depth=5.14"
 Tc=2.0 min CN=0/98 Runoff=1.56 cfs 5,370 cf

Subcatchment11S: Prop. Drainage Runoff Area=33,921 sf 0.00% Impervious Runoff Depth=0.02"
 Flow Length=50' Slope=0.0250 '/' Tc=10.9 min CN=30/0 Runoff=0.00 cfs 60 cf

SubcatchmentP-1I: Prop. Drainage Runoff Area=24,003 sf 100.00% Impervious Runoff Depth=5.14"
 Flow Length=430' Tc=3.6 min CN=0/98 Runoff=2.69 cfs 10,287 cf

SubcatchmentP-1P: Prop. Drainage Area-1 Runoff Area=72,415 sf 0.00% Impervious Runoff Depth=0.28"
 Flow Length=530' Tc=13.1 min CN=39/0 Runoff=0.08 cfs 1,710 cf

SubcatchmentP-1R: Prop. Drainage Runoff Area=12,530 sf 100.00% Impervious Runoff Depth=5.14"
 Tc=2.0 min CN=0/98 Runoff=1.56 cfs 5,370 cf

SubcatchmentP-2R: Prop. Drainage Runoff Area=10,024 sf 100.00% Impervious Runoff Depth=5.14"
 Tc=2.0 min CN=0/98 Runoff=1.24 cfs 4,296 cf

SubcatchmentP1A: Prop. Drainage Runoff Area=25,206 sf 0.00% Impervious Runoff Depth=0.02"
 Flow Length=470' Tc=24.2 min CN=30/0 Runoff=0.00 cfs 44 cf

SubcatchmentP1B: Prop. Drainage Area-1 Runoff Area=18,385 sf 0.00% Impervious Runoff Depth=0.28"
 Flow Length=50' Slope=0.1000 '/' Tc=4.2 min CN=39/0 Runoff=0.02 cfs 434 cf

SubcatchmentP1W: Prop. Drainage Runoff Area=74,786 sf 0.00% Impervious Runoff Depth=0.02"
 Flow Length=285' Tc=26.7 min CN=30/0 Runoff=0.01 cfs 132 cf

SubcatchmentP2B: Prop. Drainage Area-2 Runoff Area=18,844 sf 0.00% Impervious Runoff Depth=0.28"
 Flow Length=50' Slope=0.1000 '/' Tc=4.2 min CN=39/0 Runoff=0.02 cfs 445 cf

SubcatchmentP2I: Prop. Drainage Area-2 Runoff Area=15,753 sf 100.00% Impervious Runoff Depth=5.14"
 Flow Length=745' Tc=5.1 min CN=0/98 Runoff=1.60 cfs 6,751 cf

SubcatchmentP2P: Prop. Drainage Area-2 Runoff Area=56,947 sf 0.00% Impervious Runoff Depth=0.28"
 Flow Length=835' Tc=18.5 min CN=39/0 Runoff=0.06 cfs 1,345 cf

SubcatchmentP2W: Prop. Drainage Area-2 Runoff Area=28,444 sf 0.00% Impervious Runoff Depth=0.02"
 Flow Length=880' Tc=15.5 min CN=30/0 Runoff=0.00 cfs 50 cf

Pond 8P: Roof Recharge Peak Elev=77.85' Storage=948 cf Inflow=1.24 cfs 4,296 cf
 Discarded=0.19 cfs 4,296 cf Primary=0.00 cfs 0 cf Outflow=0.19 cfs 4,296 cf

Pond 12P: Roof Recharge Peak Elev=78.69' Storage=1,376 cf Inflow=1.56 cfs 5,370 cf
 Discarded=0.19 cfs 5,370 cf Primary=0.00 cfs 0 cf Outflow=0.19 cfs 5,370 cf

Pond B1: Basin #1 Peak Elev=77.77' Storage=3,649 cf Inflow=2.69 cfs 12,475 cf
 Discarded=0.25 cfs 11,669 cf Primary=0.09 cfs 806 cf Outflow=0.34 cfs 12,475 cf

Pond B2: Basin #2 Peak Elev=77.63' Storage=2,583 cf Inflow=1.60 cfs 9,397 cf
 Discarded=0.21 cfs 9,093 cf Primary=0.04 cfs 304 cf Outflow=0.25 cfs 9,397 cf

Pond B3: Basin #3 Peak Elev=66.97' Storage=4,121 cf Inflow=2.66 cfs 12,176 cf
 Discarded=0.22 cfs 12,176 cf Primary=0.00 cfs 0 cf Outflow=0.22 cfs 12,176 cf

Pond R-1: Roof Recharge Peak Elev=77.85' Storage=1,186 cf Inflow=1.56 cfs 5,370 cf
 Discarded=0.24 cfs 5,370 cf Primary=0.00 cfs 0 cf Outflow=0.24 cfs 5,370 cf

Link PT1: Proposed Total (AP-1) Inflow=0.01 cfs 132 cf
 Primary=0.01 cfs 132 cf

Link PT2: Proposed Total (AP-2) Inflow=0.00 cfs 0 cf
 Primary=0.00 cfs 0 cf

Total Runoff Area = 514,837 sf Runoff Volume = 48,105 cf Average Runoff Depth = 1.12"
81.06% Pervious = 417,303 sf 18.94% Impervious = 97,534 sf

Summary for Subcatchment 7S: Prop. Drainage Area-3 (Basin Area) (Non-Contributory)

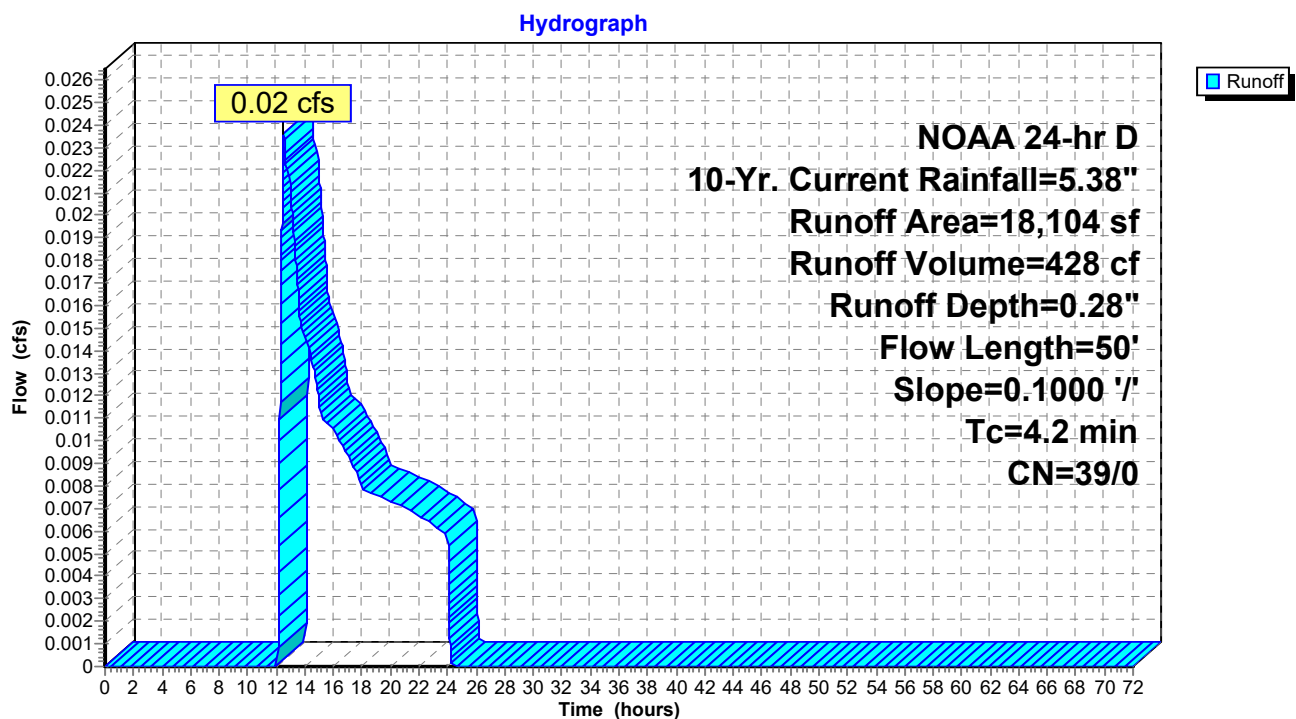
Runoff = 0.02 cfs @ 12.53 hrs, Volume= 428 cf, Depth= 0.28"
 Routed to Pond B3 : Basin #3

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Current Rainfall=5.38"

Area (sf)	CN	Description
* 18,104	39	Basin Area-Non-contributory, HSG A
18,104	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.1000	0.20		Sheet Flow, Sheet Grass
Grass: Dense n= 0.240 P2= 3.42"					

Subcatchment 7S: Prop. Drainage Area-3 (Basin Area) (Non-Contributory)



Summary for Subcatchment 8S: Prop. Drainage Area-3 (Impervious)

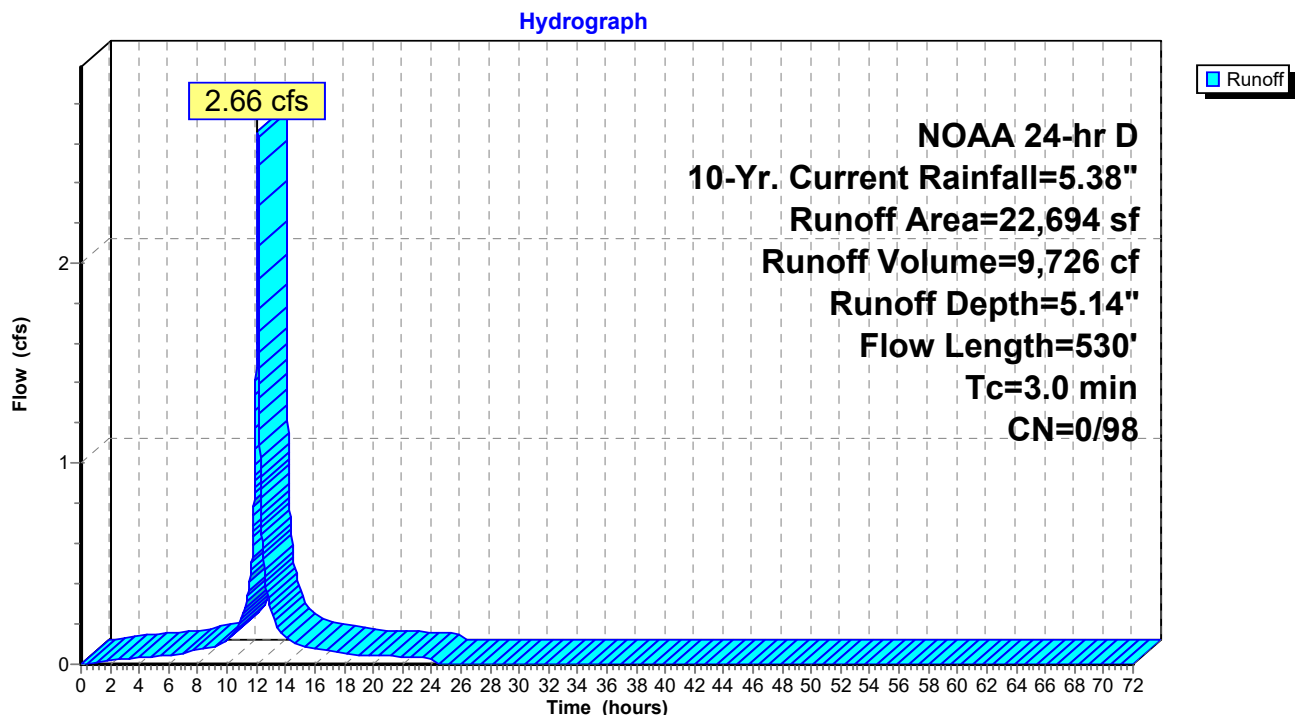
Runoff = 2.66 cfs @ 12.11 hrs, Volume= 9,726 cf, Depth= 5.14"
 Routed to Pond B3 : Basin #3

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Current Rainfall=5.38"

Area (sf)	CN	Description
13,555	98	Paved roads w/curbs & sewers, HSG A
* 3,626	98	Sidewalks, HSG A
* 5,513	98	Driveways, HSG A
22,694	98	Weighted Average
22,694	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	100	0.0292	1.65		Sheet Flow, Sheet Pvmt Smooth surfaces n= 0.011 P2= 3.42"
1.1	233	0.0292	3.47		Shallow Concentrated Flow, Shallow Pvmt Paved Kv= 20.3 fps
0.9	197	0.0040	3.76	6.64	Pipe Channel, Pipe 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
3.0	530	Total			

Subcatchment 8S: Prop. Drainage Area-3 (Impervious)



Summary for Subcatchment 9S: Prop. Drainage Area-3 (Pervious)

Runoff = 0.08 cfs @ 13.03 hrs, Volume= 1,659 cf, Depth= 0.28"
 Routed to Pond B3 : Basin #3

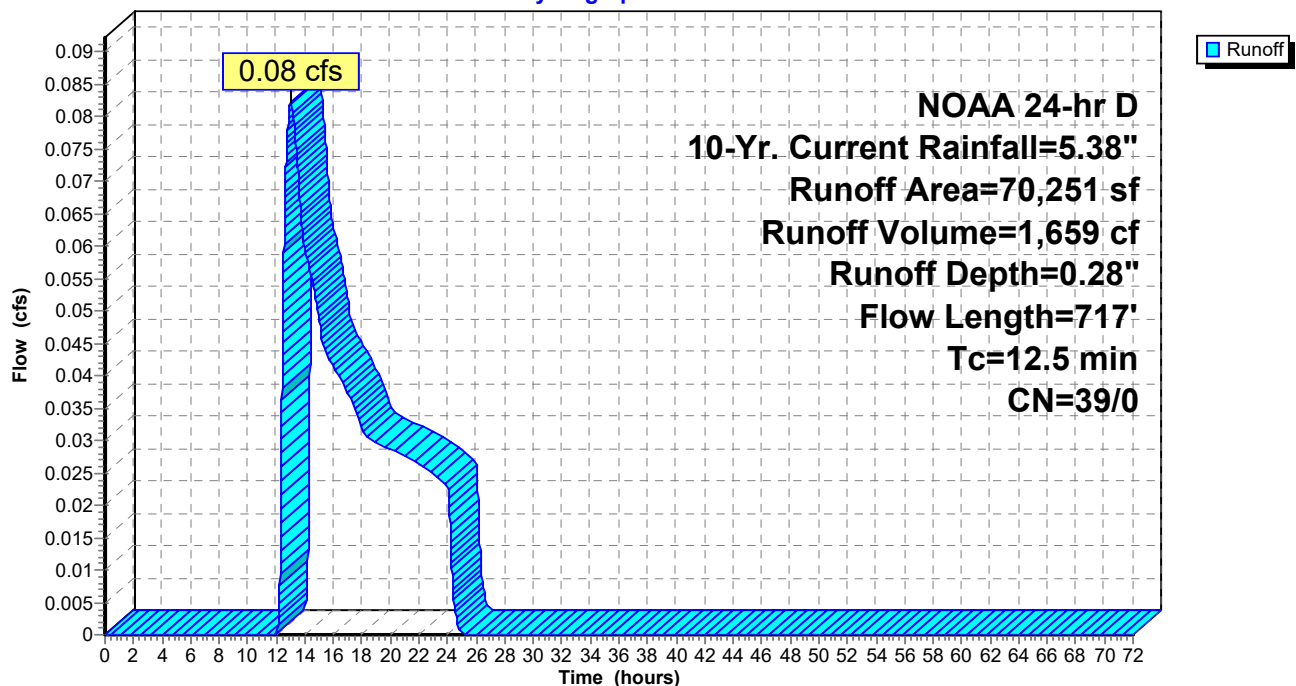
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Current Rainfall=5.38"

Area (sf)	CN	Description
70,251	39	>75% Grass cover, Good, HSG A
70,251	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	100	0.0500	0.17		Sheet Flow, Sheet Grass Grass: Dense n= 0.240 P2= 3.42"
0.1	20	0.0500	3.60		Shallow Concentrated Flow, Shallow Grass Unpaved Kv= 16.1 fps
1.9	400	0.0292	3.47		Shallow Concentrated Flow, Shallow Pvmnt Paved Kv= 20.3 fps
0.9	197	0.0040	3.76	6.64	Pipe Channel, Pipe 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
12.5	717	Total			

Subcatchment 9S: Prop. Drainage Area-3 (Pervious)

Hydrograph



Summary for Subcatchment 10S: Prop. Drainage Area-3 (Roof)

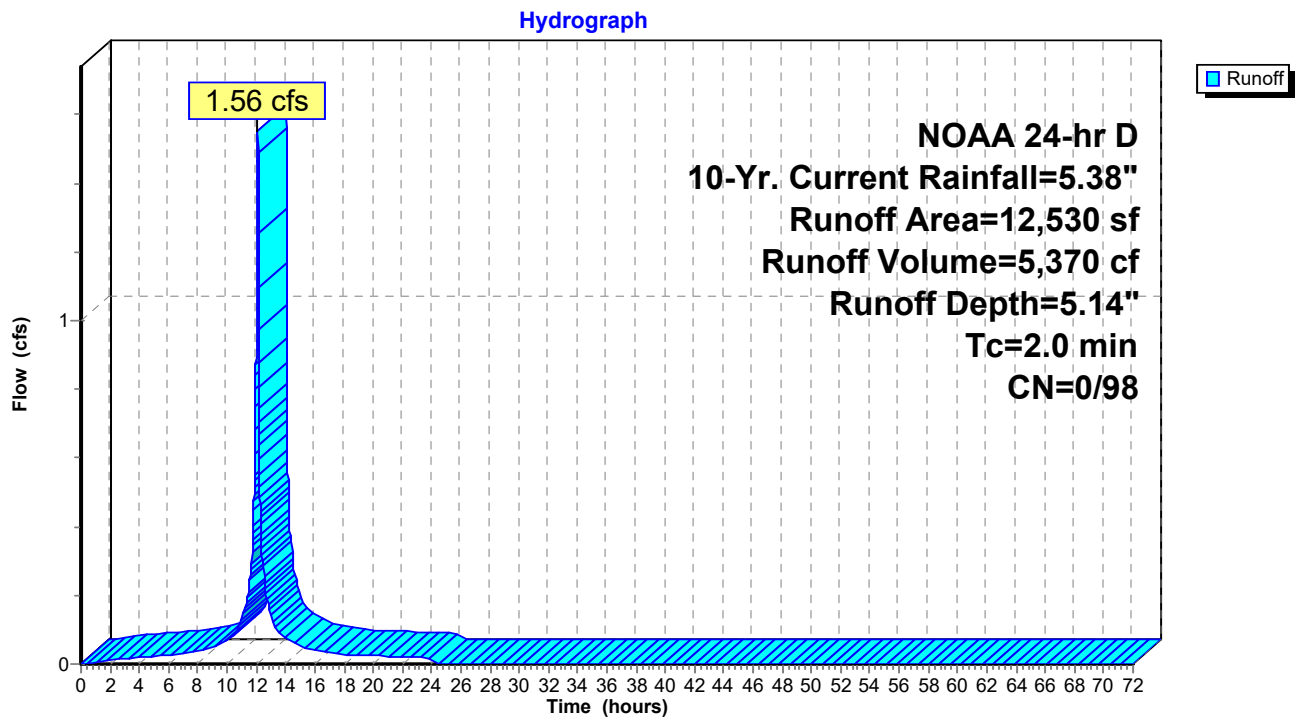
Runoff = 1.56 cfs @ 12.10 hrs, Volume= 5,370 cf, Depth= 5.14"
 Routed to Pond 12P : Roof Recharge

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Current Rainfall=5.38"

Area (sf)	CN	Description
12,530	98	Roofs, HSG A
12,530	98	100.00% Impervious Area

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

Subcatchment 10S: Prop. Drainage Area-3 (Roof)



Summary for Subcatchment 11S: Prop. Drainage Area-3-A (Woods) (Undisturbed)

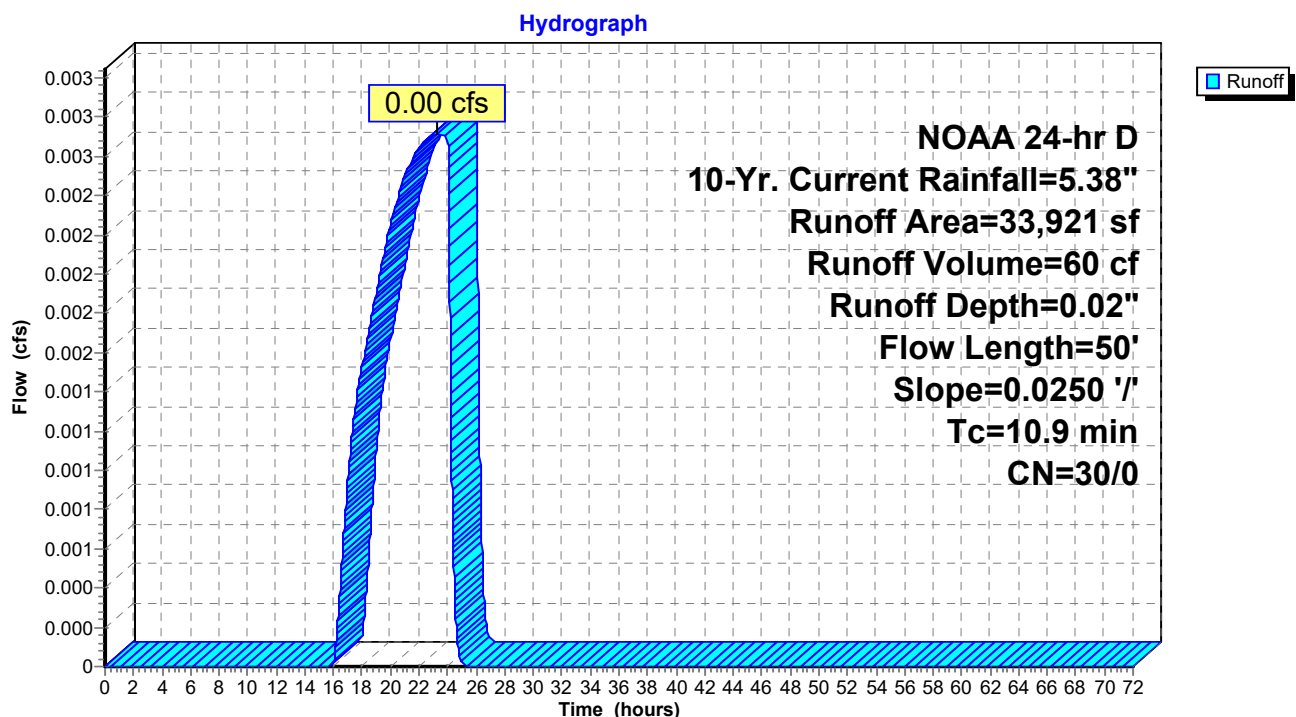
Runoff = 0.00 cfs @ 23.20 hrs, Volume= 60 cf, Depth= 0.02"
 Routed to Pond B3 : Basin #3

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Current Rainfall=5.38"

Area (sf)	CN	Description
33,921	30	Woods, Good, HSG A
33,921	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	50	0.0250	0.08		Sheet Flow, Sheet woods Woods: Light underbrush n= 0.400 P2= 3.42"

Subcatchment 11S: Prop. Drainage Area-3-A (Woods) (Undisturbed)



Summary for Subcatchment P-1I: Prop. Drainage Area-1 (Impervious)

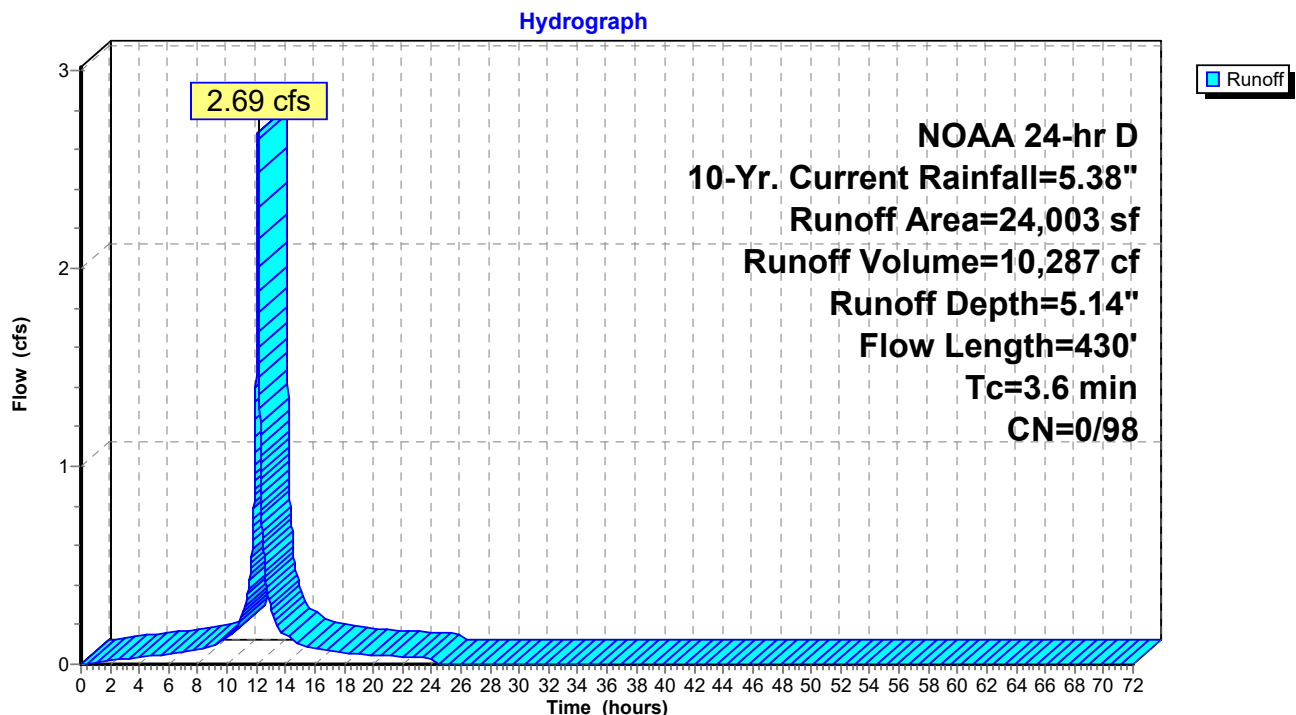
Runoff = 2.69 cfs @ 12.12 hrs, Volume= 10,287 cf, Depth= 5.14"
 Routed to Pond B1 : Basin #1

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Current Rainfall=5.38"

Area (sf)	CN	Description
15,941	98	Paved roads w/curbs & sewers, HSG A
* 2,588	98	Sidewalks, HSG A
* 5,474	98	Driveways, HSG A
24,003	98	Weighted Average
24,003	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	100	0.0083	1.00		Sheet Flow, Sheet Pvmt Smooth surfaces n= 0.011 P2= 3.42"
0.7	60	0.0050	1.44		Shallow Concentrated Flow, Shallow Pvmt Paved Kv= 20.3 fps
1.2	270	0.0050	3.72	4.57	Pipe Channel, Pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
3.6	430	Total			

Subcatchment P-1I: Prop. Drainage Area-1 (Impervious)



Summary for Subcatchment P-1P: Prop. Drainage Area-1 (Pervious)

Runoff = 0.08 cfs @ 13.04 hrs, Volume= 1,710 cf, Depth= 0.28"
 Routed to Pond B1 : Basin #1

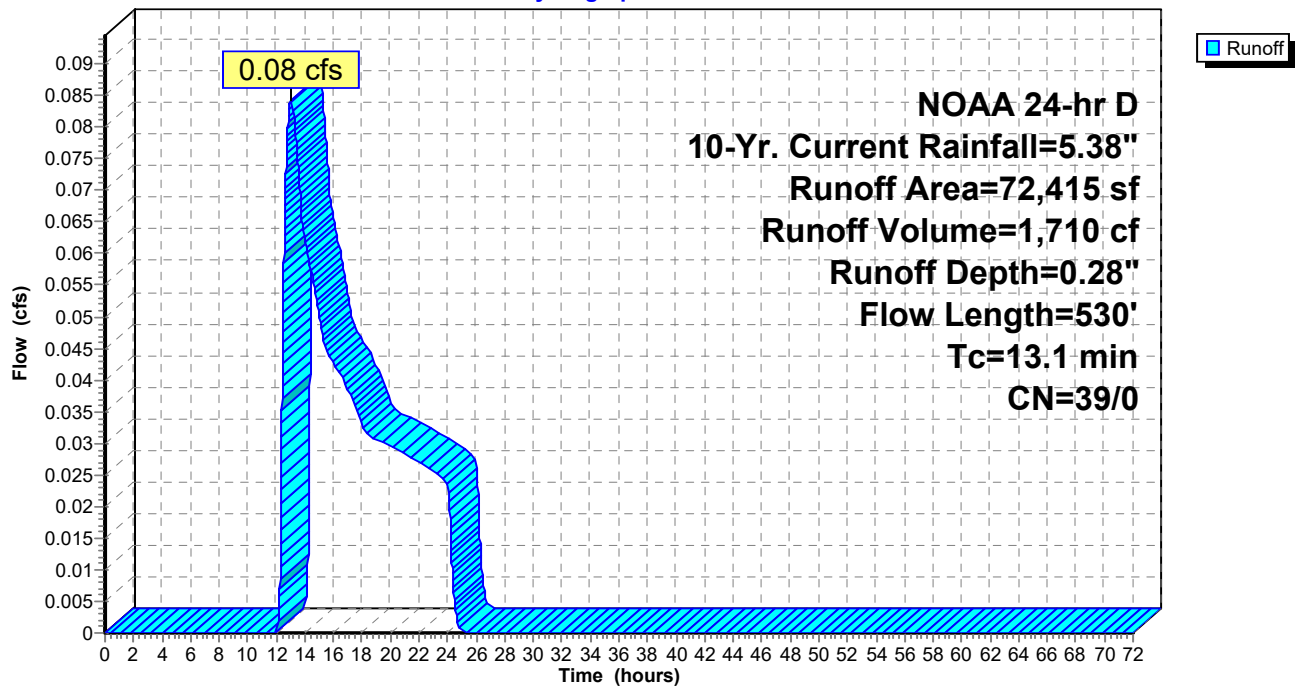
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Current Rainfall=5.38"

Area (sf)	CN	Description
72,415	39	>75% Grass cover, Good, HSG A
72,415	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0400	0.16		Sheet Flow, Sheet Grass Grass: Dense n= 0.240 P2= 3.42"
1.4	160	0.0083	1.85		Shallow Concentrated Flow, Shallow Pvmnt Paved Kv= 20.3 fps
1.2	270	0.0050	3.72	4.57	Pipe Channel, Pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
13.1	530	Total			

Subcatchment P-1P: Prop. Drainage Area-1 (Pervious)

Hydrograph



Summary for Subcatchment P-1R: Prop. Drainage Area-1 (Roof)

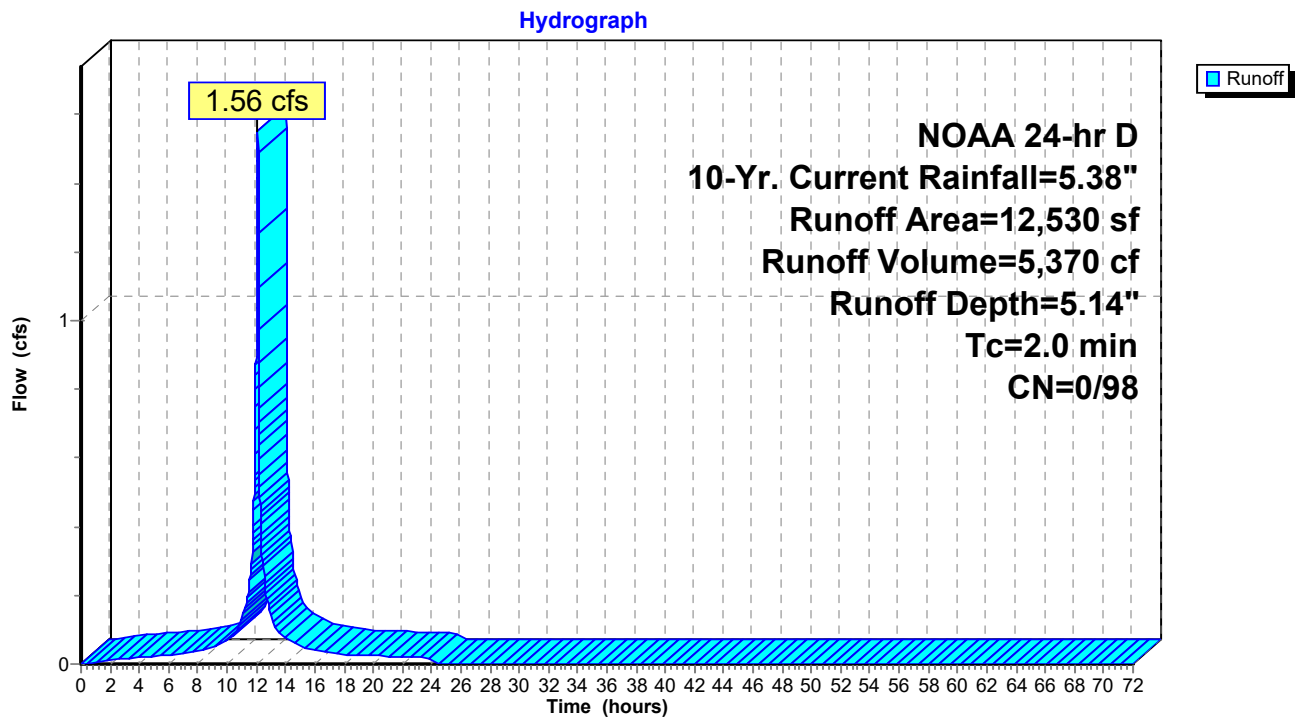
Runoff = 1.56 cfs @ 12.10 hrs, Volume= 5,370 cf, Depth= 5.14"
 Routed to Pond R-1 : Roof Recharge

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Current Rainfall=5.38"

Area (sf)	CN	Description
12,530	98	Roofs, HSG A
12,530	98	100.00% Impervious Area

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

Subcatchment P-1R: Prop. Drainage Area-1 (Roof)



Summary for Subcatchment P-2R: Prop. Drainage Area-2 (Roof)

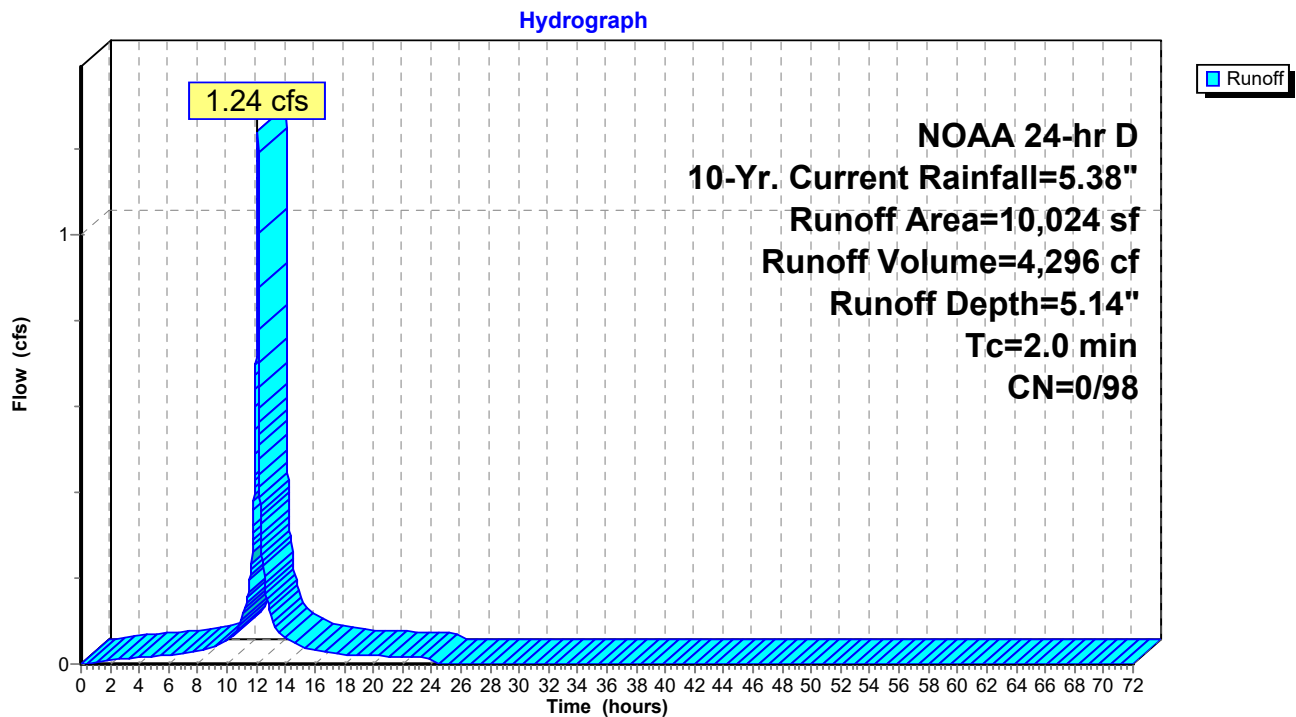
Runoff = 1.24 cfs @ 12.10 hrs, Volume= 4,296 cf, Depth= 5.14"
 Routed to Pond 8P : Roof Recharge

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Current Rainfall=5.38"

Area (sf)	CN	Description
10,024	98	Roofs, HSG A
10,024	98	100.00% Impervious Area

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

Subcatchment P-2R: Prop. Drainage Area-2 (Roof)



Summary for Subcatchment P1A: Prop. Drainage Area-1-A (Woods) (Undisturbed)

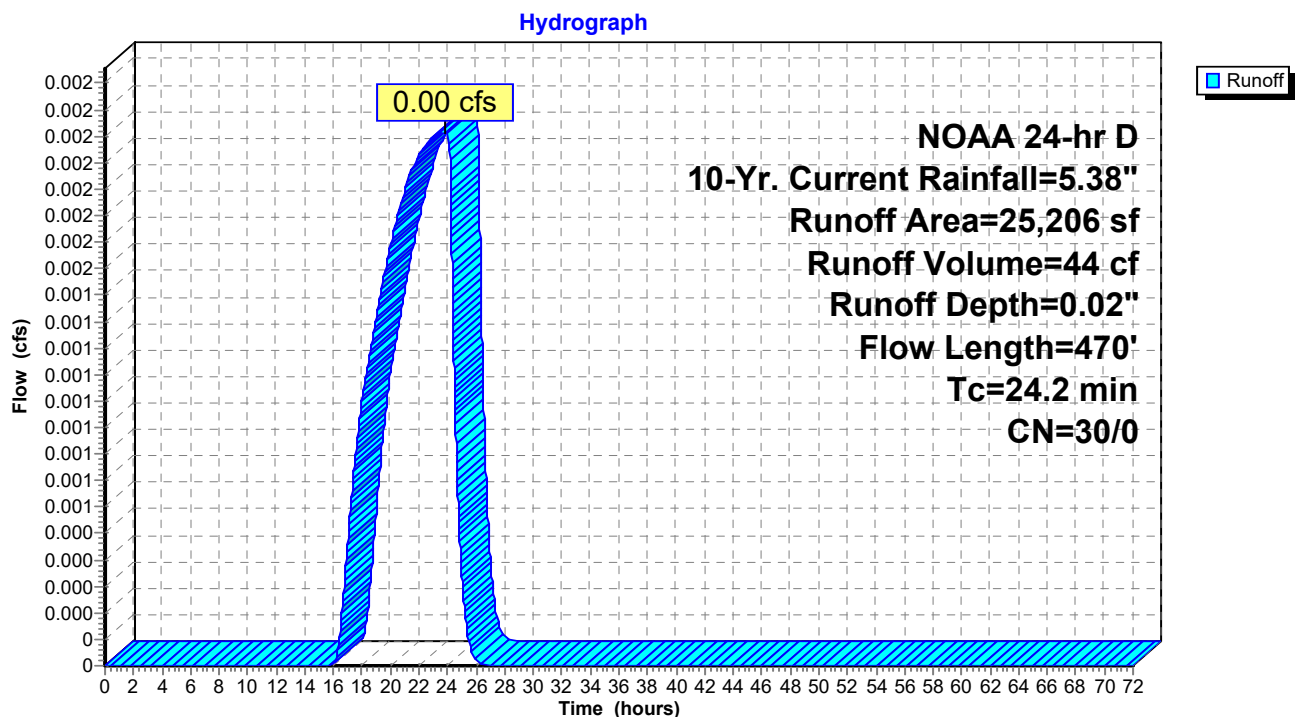
Runoff = 0.00 cfs @ 23.77 hrs, Volume= 44 cf, Depth= 0.02"
 Routed to Pond B1 : Basin #1

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Current Rainfall=5.38"

Area (sf)	CN	Description
25,206	30	Woods, Good, HSG A
25,206	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2	100	0.0170	0.08		Sheet Flow, Sheet woods Woods: Light underbrush n= 0.400 P2= 3.42"
0.4	60	0.0200	2.28		Shallow Concentrated Flow, Shallow Grass Unpaved Kv= 16.1 fps
0.4	40	0.0062	1.60		Shallow Concentrated Flow, shallow Pvmt Paved Kv= 20.3 fps
1.2	270	0.0050	3.72	4.57	Pipe Channel, pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
24.2	470	Total			

Subcatchment P1A: Prop. Drainage Area-1-A (Woods) (Undisturbed)



Summary for Subcatchment P1B: Prop. Drainage Area-1 (Basin Area) (Non-Contributory)

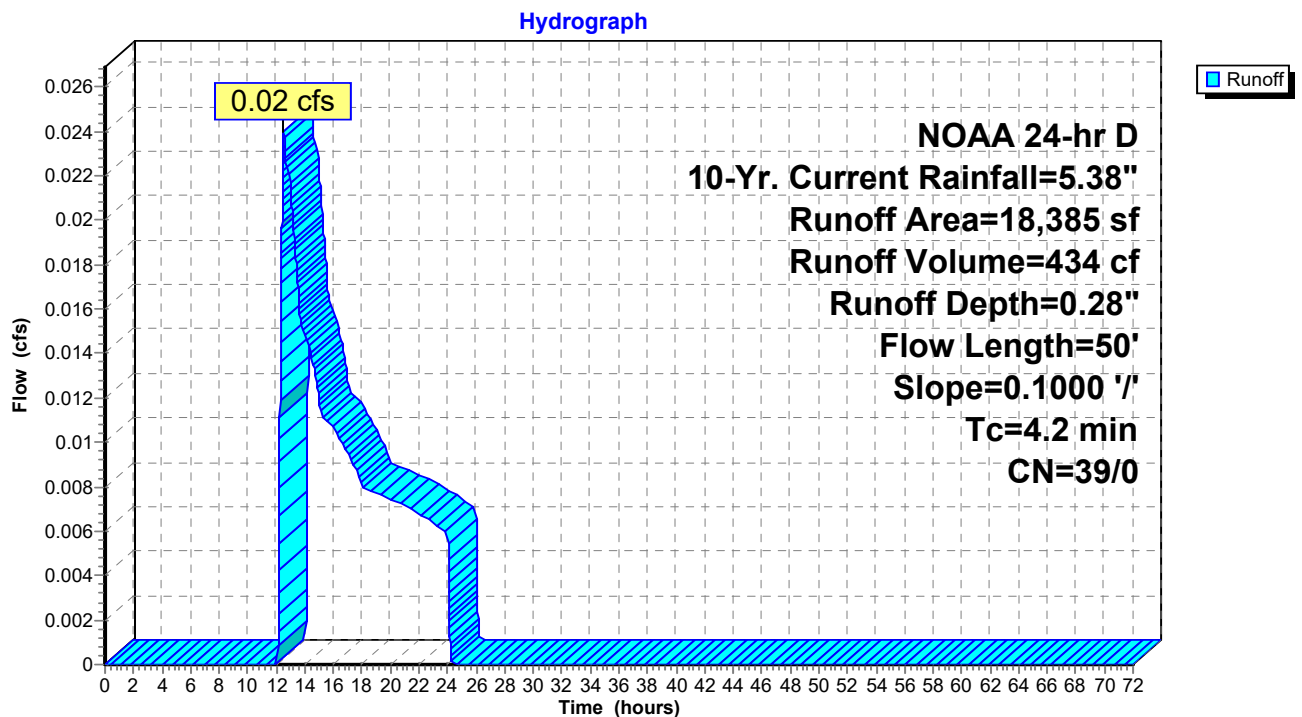
Runoff = 0.02 cfs @ 12.53 hrs, Volume= 434 cf, Depth= 0.28"
 Routed to Pond B1 : Basin #1

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Current Rainfall=5.38"

Area (sf)	CN	Description
* 18,385	39	Basin Area-Non-contributory, HSG A
18,385	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.1000	0.20		Sheet Flow, Sheet Grass
Grass: Dense n= 0.240 P2= 3.42"					

Subcatchment P1B: Prop. Drainage Area-1 (Basin Area) (Non-Contributory)



Summary for Subcatchment P1W: Prop. Drainage Area-1-B (Woods) (undetained)

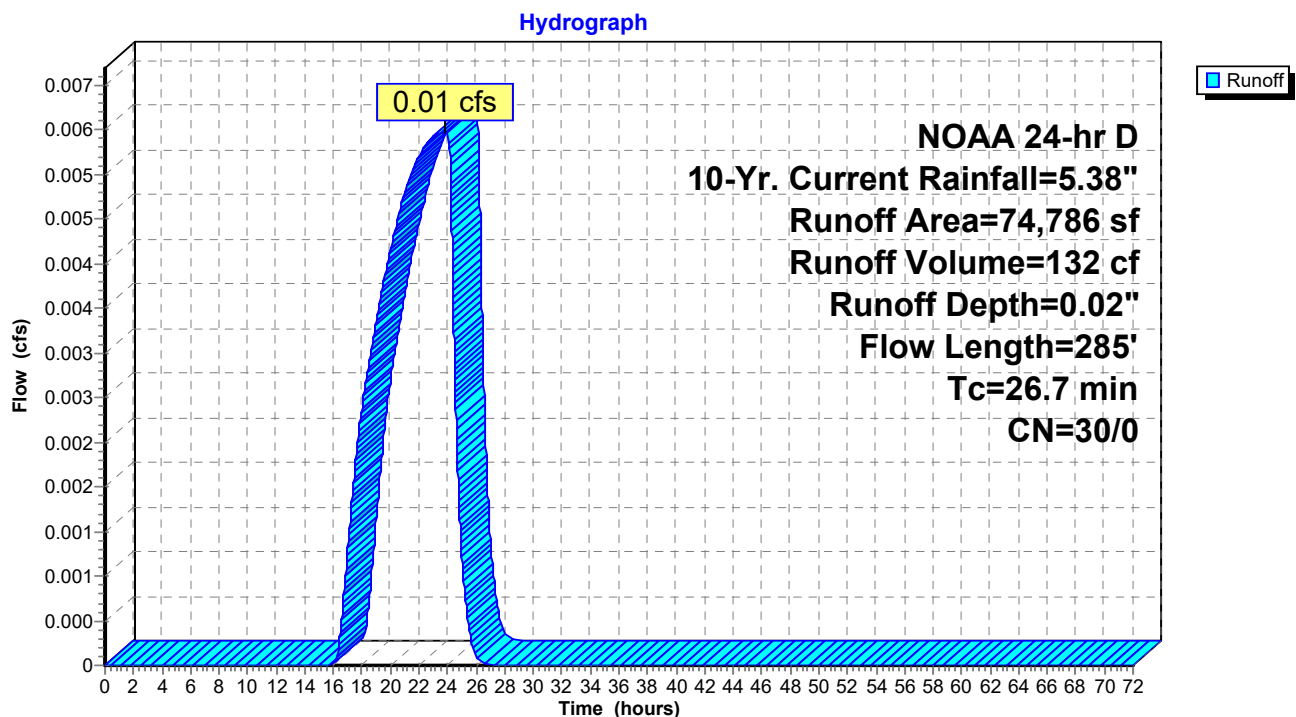
Runoff = 0.01 cfs @ 23.79 hrs, Volume= 132 cf, Depth= 0.02"
 Routed to Link PT1 : Proposed Total (AP-1)

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Current Rainfall=5.38"

Area (sf)	CN	Description
74,786	30	Woods, Good, HSG A
74,786	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.8	100	0.0200	0.08		Sheet Flow, Sheet woods
					Woods: Light underbrush n= 0.400 P2= 3.42"
5.9	185	0.0110	0.52		Shallow Concentrated Flow, Shallow Woods
					Woodland Kv= 5.0 fps
26.7	285	Total			

Subcatchment P1W: Prop. Drainage Area-1-B (Woods) (undetained)



Summary for Subcatchment P2B: Prop. Drainage Area-2 (Basin)(Non-Contributory)

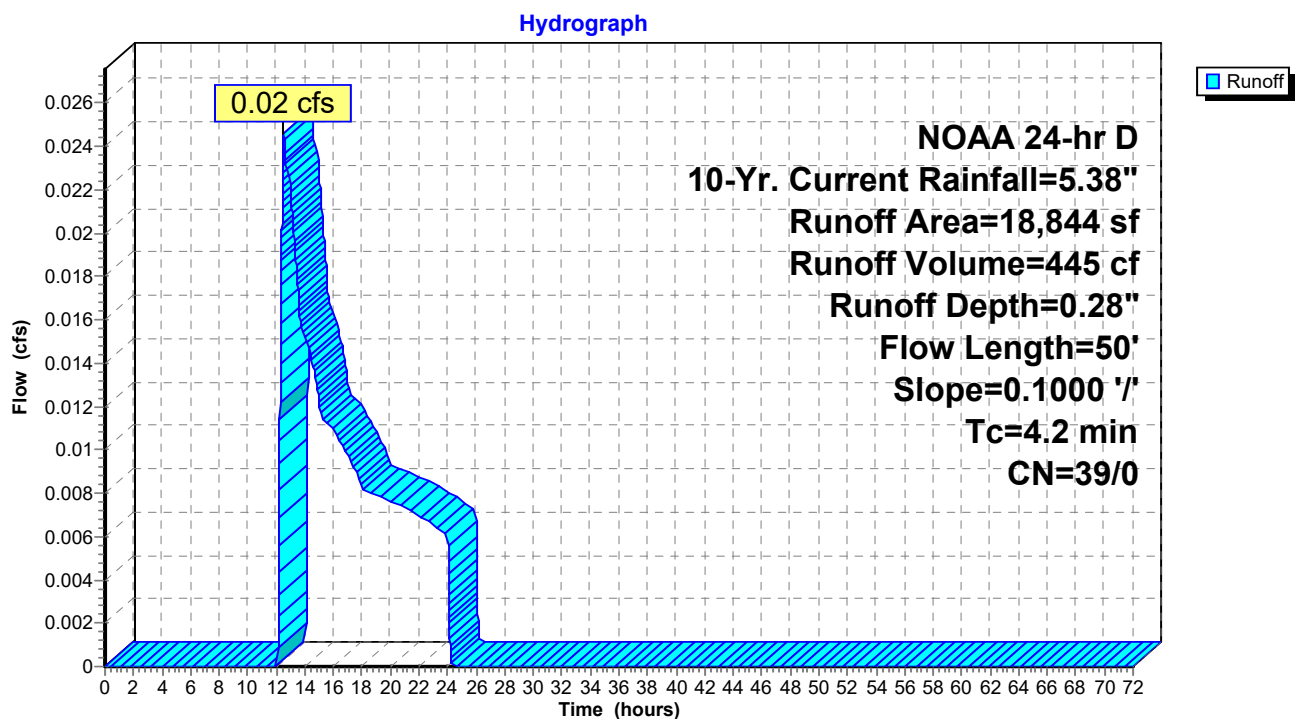
Runoff = 0.02 cfs @ 12.53 hrs, Volume= 445 cf, Depth= 0.28"
 Routed to Pond B2 : Basin #2

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Current Rainfall=5.38"

Area (sf)	CN	Description
* 18,844	39	Basin Area-Non-contributory, HSG A
18,844	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.1000	0.20		Sheet Flow, Sheet Grass
Grass: Dense n= 0.240 P2= 3.42"					

Subcatchment P2B: Prop. Drainage Area-2 (Basin)(Non-Contributory)



Summary for Subcatchment P2I: Prop. Drainage Area-2 (Impervious)

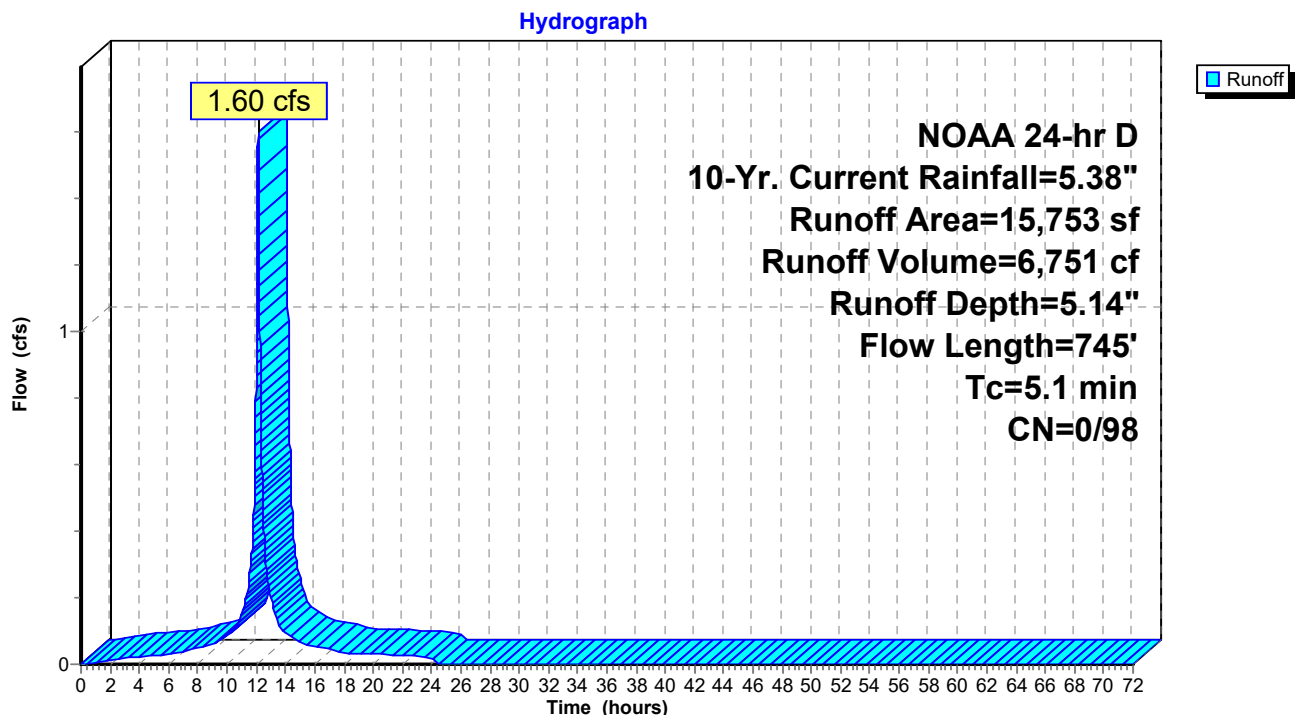
Runoff = 1.60 cfs @ 12.13 hrs, Volume= 6,751 cf, Depth= 5.14"
 Routed to Pond B2 : Basin #2

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Current Rainfall=5.38"

Area (sf)	CN	Description
9,010	98	Paved roads w/curbs & sewers, HSG A
* 2,394	98	Sidewalks, HSG A
* 4,349	98	Driveways, HSG A
15,753	98	Weighted Average
15,753	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	100	0.0083	1.00		Sheet Flow, Sheet Pvmt Smooth surfaces n= 0.011 P2= 3.42"
0.9	95	0.0083	1.85		Shallow Concentrated Flow, Shallow Pvmt Paved Kv= 20.3 fps
2.5	550	0.0050	3.72	4.57	Pipe Channel, Pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
5.1	745	Total			

Subcatchment P2I: Prop. Drainage Area-2 (Impervious)



Summary for Subcatchment P2P: Prop. Drainage Area-2 (Pervious)

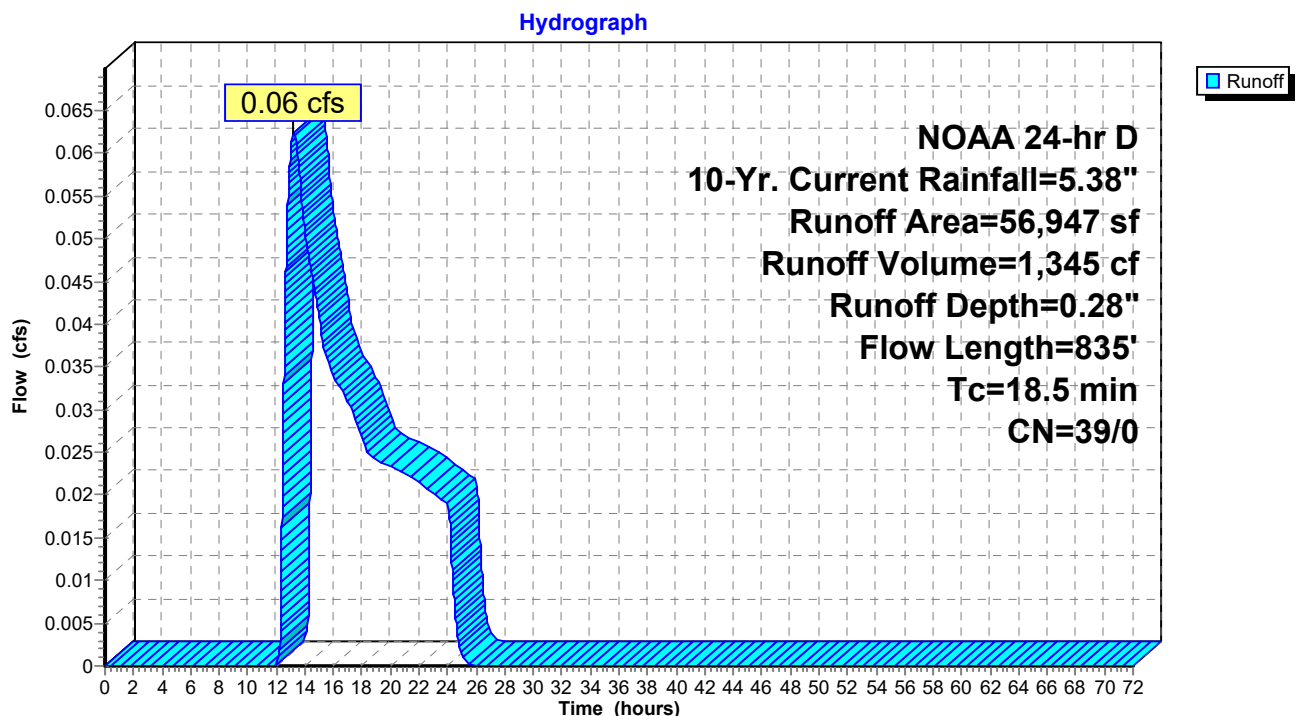
Runoff = 0.06 cfs @ 13.20 hrs, Volume= 1,345 cf, Depth= 0.28"
 Routed to Pond B2 : Basin #2

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Current Rainfall=5.38"

Area (sf)	CN	Description
56,947	39	>75% Grass cover, Good, HSG A
56,947	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	90	0.0150	0.11		Sheet Flow, Sheet Grass Grass: Dense n= 0.240 P2= 3.42"
1.8	195	0.0083	1.85		Shallow Concentrated Flow, Shallow Pvmnt Paved Kv= 20.3 fps
2.5	550	0.0050	3.72	4.57	Pipe Channel, Pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
18.5	835	Total			

Subcatchment P2P: Prop. Drainage Area-2 (Pervious)



Summary for Subcatchment P2W: Prop. Drainage Area-2 (Woods) (Undisturbed)

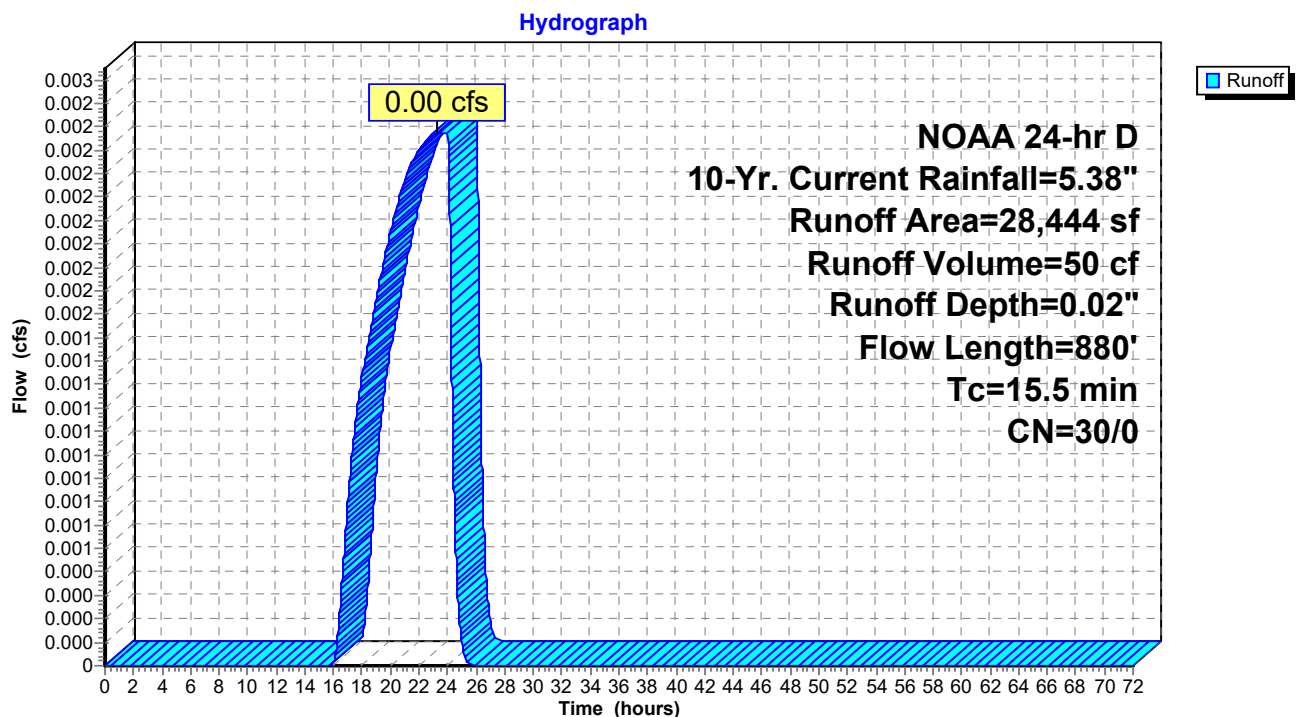
Runoff = 0.00 cfs @ 23.26 hrs, Volume= 50 cf, Depth= 0.02"
 Routed to Pond B2 : Basin #2

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Current Rainfall=5.38"

Area (sf)	CN	Description
28,444	30	Woods, Good, HSG A
28,444	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	50	0.0250	0.08		Sheet Flow, Sheet woods Woods: Light underbrush n= 0.400 P2= 3.42"
0.6	120	0.0400	3.22		Shallow Concentrated Flow, Shallow Grass Unpaved Kv= 16.1 fps
1.7	190	0.0083	1.85		Shallow Concentrated Flow, shallow Pvmt Paved Kv= 20.3 fps
2.3	520	0.0050	3.72	4.57	Pipe Channel, pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
15.5	880	Total			

Subcatchment P2W: Prop. Drainage Area-2 (Woods) (Undisturbed)



Summary for Pond 8P: Roof Recharge

Inflow Area = 10,024 sf, 100.00% Impervious, Inflow Depth = 5.14" for 10-Yr. Current event
 Inflow = 1.24 cfs @ 12.10 hrs, Volume= 4,296 cf
 Outflow = 0.19 cfs @ 11.70 hrs, Volume= 4,296 cf, Atten= 85%, Lag= 0.0 min
 Discarded = 0.19 cfs @ 11.70 hrs, Volume= 4,296 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to Pond B2 : Basin #2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 77.85' @ 12.55 hrs Surf.Area= 822 sf Storage= 948 cf

Plug-Flow detention time= 25.4 min calculated for 4,295 cf (100% of inflow)
 Center-of-Mass det. time= 25.4 min (770.9 - 745.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	76.00'	219 cf	6.25'W x 32.23'L x 3.75'H Field A 755 cf Overall - 209 cf Embedded = 546 cf x 40.0% Voids
#2A	76.50'	209 cf	ADS_StormTech SC-800 +Cap x 4 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap Cap Storage= 3.4 cf x 2 x 1 rows = 6.8 cf
#3	76.00'	24 cf	2.00'W x 2.00'L x 6.00'H Prismatic
			452 cf x 4.00 = 1,807 cf Total Available Storage

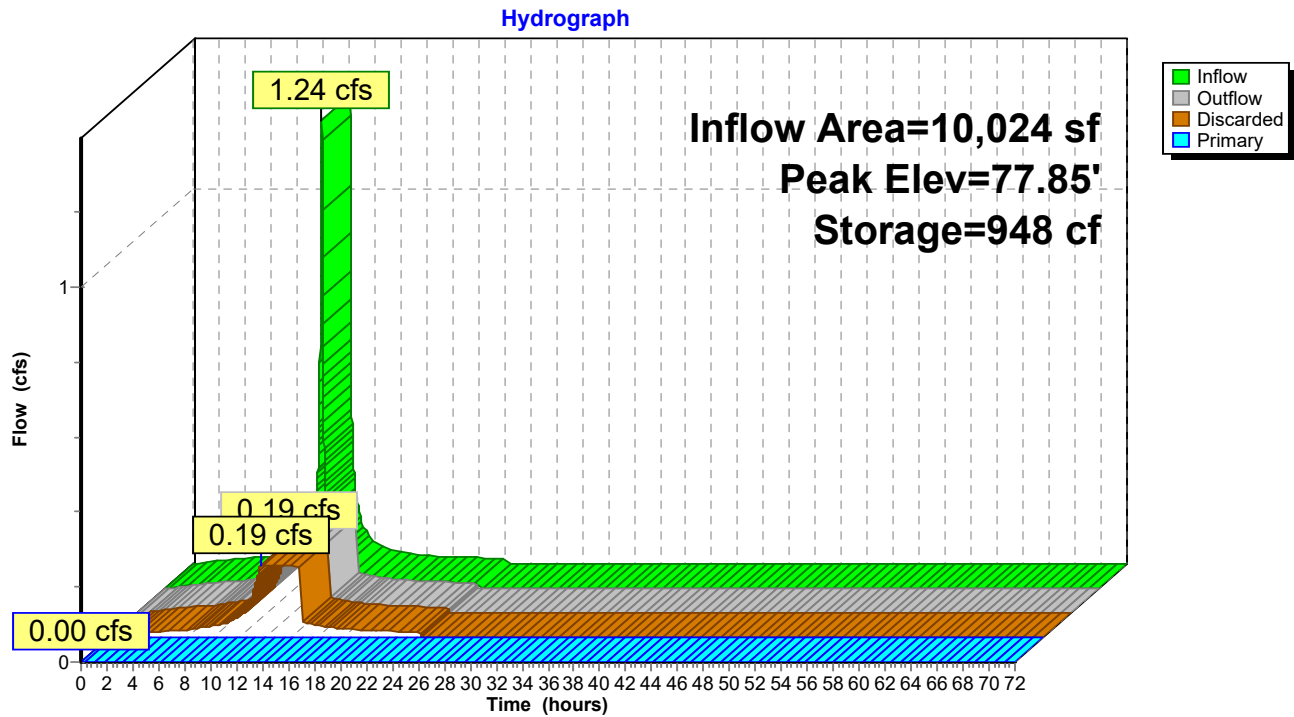
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	81.00'	24.0" x 24.0" Horiz. Grate 24" C= 0.600 Limited to weir flow at low heads
#2	Discarded	76.00'	10.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.19 cfs @ 11.70 hrs HW=76.06' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=76.00' TW=77.00' (Dynamic Tailwater)
 ↑ **1=Grate 24"** (Controls 0.00 cfs)

Pond 8P: Roof Recharge



Summary for Pond 12P: Roof Recharge

Inflow Area = 12,530 sf, 100.00% Impervious, Inflow Depth = 5.14" for 10-Yr. Current event
 Inflow = 1.56 cfs @ 12.10 hrs, Volume= 5,370 cf
 Outflow = 0.19 cfs @ 11.59 hrs, Volume= 5,370 cf, Atten= 88%, Lag= 0.0 min
 Discarded = 0.19 cfs @ 11.59 hrs, Volume= 5,370 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to Pond B3 : Basin #3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 78.69' @ 12.73 hrs Surf.Area= 822 sf Storage= 1,376 cf

Plug-Flow detention time= 40.6 min calculated for 5,369 cf (100% of inflow)
 Center-of-Mass det. time= 40.6 min (786.1 - 745.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	76.00'	219 cf	6.25'W x 32.23'L x 3.75'H Field A 755 cf Overall - 209 cf Embedded = 546 cf x 40.0% Voids
#2A	76.50'	209 cf	ADS_StormTech SC-800 +Cap x 4 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap Cap Storage= 3.4 cf x 2 x 1 rows = 6.8 cf
#3	76.00'	24 cf	2.00'W x 2.00'L x 6.00'H Prismatic
			452 cf x 4.00 = 1,807 cf Total Available Storage

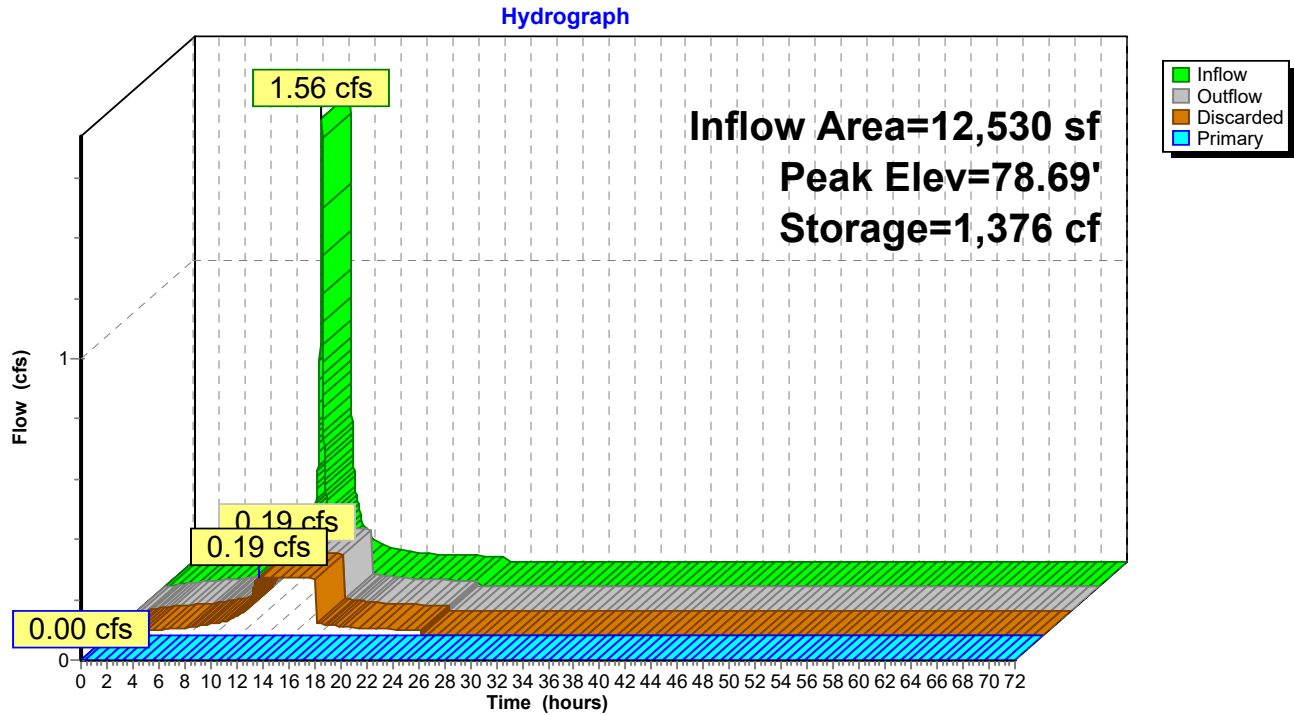
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	81.00'	24.0" x 24.0" Horiz. Grate 24" C= 0.600 Limited to weir flow at low heads
#2	Discarded	76.00'	10.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.19 cfs @ 11.59 hrs HW=76.07' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=76.00' TW=66.00' (Dynamic Tailwater)
 ↑ **1=Grate 24"** (Controls 0.00 cfs)

Pond 12P: Roof Recharge



Summary for Pond B1: Basin #1

Inflow Area = 152,539 sf, 23.95% Impervious, Inflow Depth = 0.98" for 10-Yr. Current event
 Inflow = 2.69 cfs @ 12.12 hrs, Volume= 12,475 cf
 Outflow = 0.34 cfs @ 13.21 hrs, Volume= 12,475 cf, Atten= 87%, Lag= 65.3 min
 Discarded = 0.25 cfs @ 13.21 hrs, Volume= 11,669 cf
 Primary = 0.09 cfs @ 13.21 hrs, Volume= 806 cf
 Routed to Pond B2 : Basin #2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 77.77' @ 13.21 hrs Surf.Area= 5,446 sf Storage= 3,649 cf

Plug-Flow detention time= 103.1 min calculated for 12,474 cf (100% of inflow)
 Center-of-Mass det. time= 103.1 min (900.1 - 797.0)

Volume	Invert	Avail.Storage	Storage Description
#1	77.00'	20,548 cf	Basin 1 (Prismatic) Listed below (Recalc)

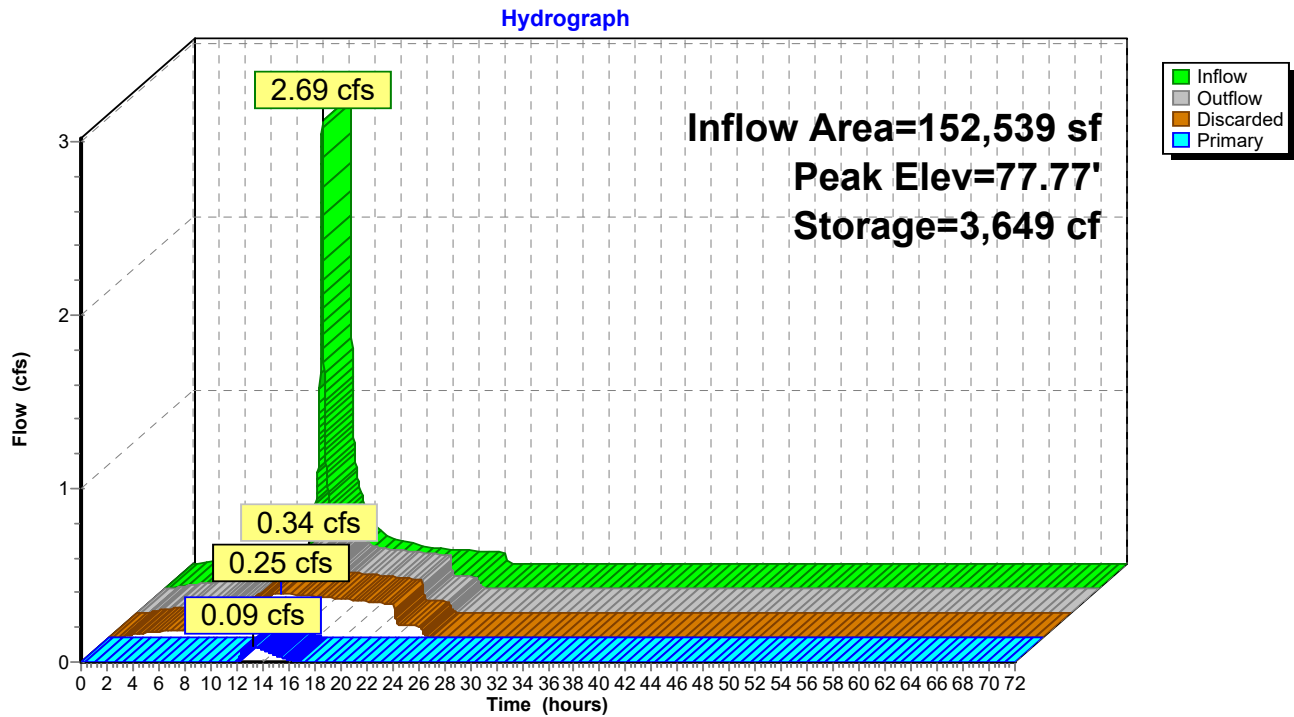
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
77.00	4,060	0	0
78.00	5,865	4,963	4,963
79.00	7,766	6,816	11,778
80.00	9,773	8,770	20,548

Device	Routing	Invert	Outlet Devices
#1	Primary	77.34'	15.0" Round Culvert 15" L= 69.0' Ke= 0.500 Inlet / Outlet Invert= 77.34' / 77.00' S= 0.0049 ' S= 0.0049 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.23 sf
#2	Device 1	77.50'	3.0" Vert. Orifice 3" C= 0.600 Limited to weir flow at low heads
#3	Device 1	80.00'	42.0" x 42.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	80.20'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	77.00'	2.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.25 cfs @ 13.21 hrs HW=77.77' (Free Discharge)
 ↳ **5=Exfiltration** (Exfiltration Controls 0.25 cfs)

Primary OutFlow Max=0.09 cfs @ 13.21 hrs HW=77.77' TW=77.61' (Dynamic Tailwater)
 ↳ **1=Culvert 15"** (Passes 0.09 cfs of 0.36 cfs potential flow)
 ↳ **2=Orifice 3"** (Orifice Controls 0.09 cfs @ 1.82 fps)
 ↳ **3=Grate** (Controls 0.00 cfs)
 ↳ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B1: Basin #1



Summary for Pond B2: Basin #2

Inflow Area = 282,551 sf, 22.05% Impervious, Inflow Depth = 0.40" for 10-Yr. Current event
 Inflow = 1.60 cfs @ 12.13 hrs, Volume= 9,397 cf
 Outflow = 0.25 cfs @ 13.79 hrs, Volume= 9,397 cf, Atten= 84%, Lag= 99.8 min
 Discarded = 0.21 cfs @ 13.79 hrs, Volume= 9,093 cf
 Primary = 0.04 cfs @ 13.79 hrs, Volume= 304 cf
 Routed to Pond B3 : Basin #3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 77.63' @ 13.79 hrs Surf.Area= 4,574 sf Storage= 2,583 cf

Plug-Flow detention time= 95.2 min calculated for 9,396 cf (100% of inflow)
 Center-of-Mass det. time= 95.2 min (907.7 - 812.5)

Volume	Invert	Avail.Storage	Storage Description
#1	77.00'	18,035 cf	Basin 2 (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
77.00	3,573	0	0
78.00	5,151	4,362	4,362
79.00	6,815	5,983	10,345
80.00	8,565	7,690	18,035

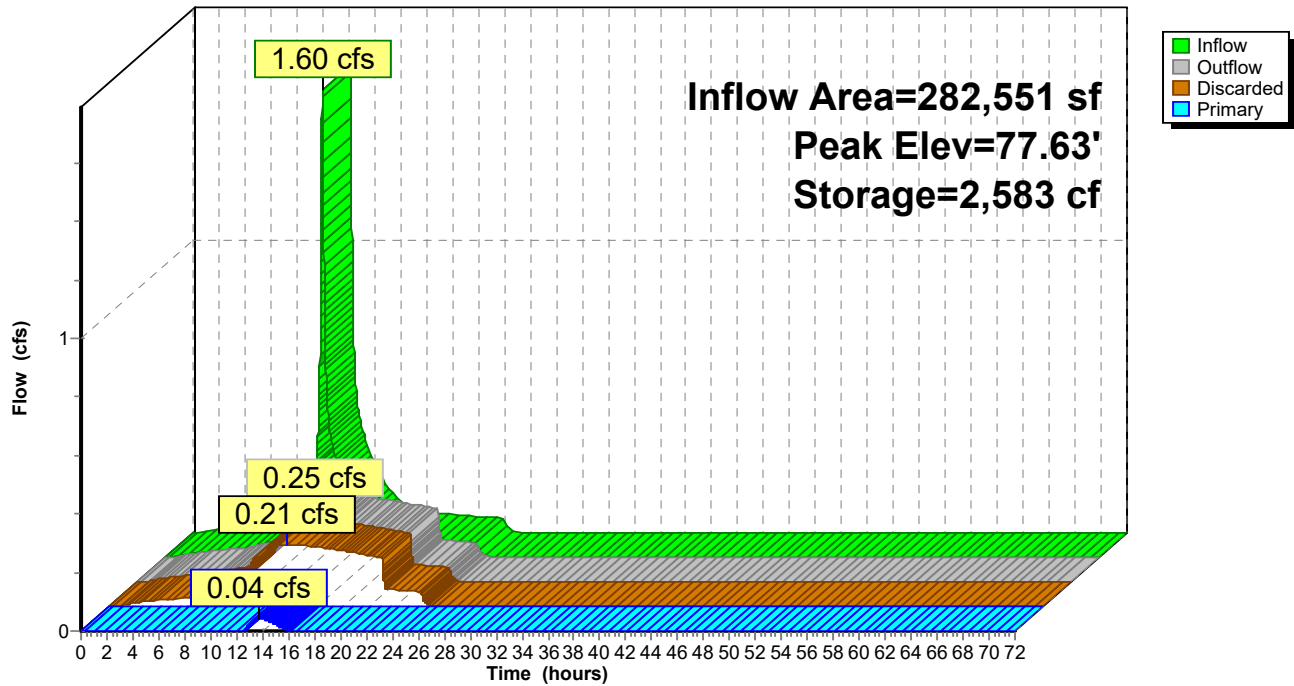
Device	Routing	Invert	Outlet Devices
#1	Primary	77.00'	18.0" Round Culvert 15" L= 69.0' Ke= 0.500 Inlet / Outlet Invert= 77.00' / 66.00' S= 0.1594 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf
#2	Device 1	77.50'	4.0" Vert. Orifice 4" C= 0.600 Limited to weir flow at low heads
#3	Device 1	80.00'	42.0" x 42.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	80.30'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	77.00'	2.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.21 cfs @ 13.79 hrs HW=77.63' (Free Discharge)
 ↳ **5=Exfiltration** (Exfiltration Controls 0.21 cfs)

Primary OutFlow Max=0.04 cfs @ 13.79 hrs HW=77.63' TW=66.95' (Dynamic Tailwater)
 ↳ **1=Culvert 15"** (Passes 0.04 cfs of 1.93 cfs potential flow)
 ↳ **2=Orifice 4"** (Orifice Controls 0.04 cfs @ 1.25 fps)
 ↳ **3=Grate** (Controls 0.00 cfs)
 ↳ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B2: Basin #2

Hydrograph



Summary for Pond B3: Basin #3

Inflow Area = 440,051 sf, 22.16% Impervious, Inflow Depth = 0.33" for 10-Yr. Current event
 Inflow = 2.66 cfs @ 12.11 hrs, Volume= 12,176 cf
 Outflow = 0.22 cfs @ 14.53 hrs, Volume= 12,176 cf, Atten= 92%, Lag= 144.9 min
 Discarded = 0.22 cfs @ 14.53 hrs, Volume= 12,176 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to Link PT2 : Proposed Total (AP-2)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 66.97' @ 14.53 hrs Surf.Area= 4,647 sf Storage= 4,121 cf

Plug-Flow detention time= 167.7 min calculated for 12,176 cf (100% of inflow)
 Center-of-Mass det. time= 167.7 min (966.8 - 799.1)

Volume	Invert	Avail.Storage	Storage Description
#1	66.00'	34,230 cf	Basin 3 (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
66.00	3,879	0	0
67.00	4,673	4,276	4,276
68.00	5,501	5,087	9,363
69.00	6,379	5,940	15,303
70.00	7,310	6,845	22,148
71.00	8,291	7,801	29,948
71.50	8,836	4,282	34,230

Device	Routing	Invert	Outlet Devices
#1	Primary	67.49'	15.0" Round Culvert 15" L= 360.0' Ke= 0.500 Inlet / Outlet Invert= 67.49' / 66.00' S= 0.0041 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.23 sf
#2	Device 1	68.00'	4.0" Vert. Orifice 4" C= 0.600 Limited to weir flow at low heads
#3	Device 1	70.50'	42.0" x 42.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	71.50'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	66.00'	2.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

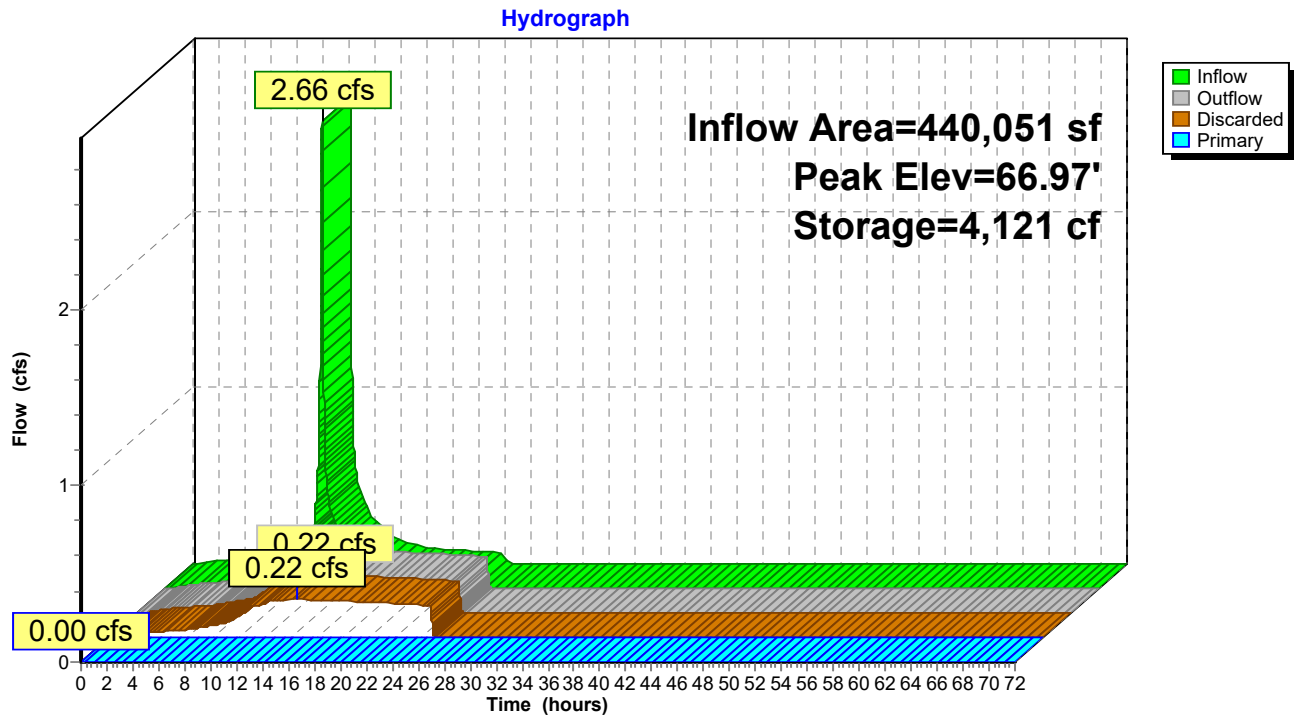
Discarded OutFlow Max=0.22 cfs @ 14.53 hrs HW=66.97' (Free Discharge)

↳ **5=Exfiltration** (Exfiltration Controls 0.22 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=66.00' TW=0.00' (Dynamic Tailwater)

↳ **1=Culvert 15"** (Controls 0.00 cfs)
 ↳ **2=Orifice 4"** (Controls 0.00 cfs)
 ↳ **3=Grate** (Controls 0.00 cfs)
 ↳ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B3: Basin #3



Summary for Pond R-1: Roof Recharge

Inflow Area = 12,530 sf, 100.00% Impervious, Inflow Depth = 5.14" for 10-Yr. Current event
 Inflow = 1.56 cfs @ 12.10 hrs, Volume= 5,370 cf
 Outflow = 0.24 cfs @ 11.70 hrs, Volume= 5,370 cf, Atten= 85%, Lag= 0.0 min
 Discarded = 0.24 cfs @ 11.70 hrs, Volume= 5,370 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to Pond B1 : Basin #1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 77.85' @ 12.55 hrs Surf.Area= 1,027 sf Storage= 1,186 cf

Plug-Flow detention time= 25.4 min calculated for 5,369 cf (100% of inflow)
 Center-of-Mass det. time= 25.4 min (770.9 - 745.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	76.00'	219 cf	6.25'W x 32.23'L x 3.75'H Field A 755 cf Overall - 209 cf Embedded = 546 cf x 40.0% Voids
#2A	76.50'	209 cf	ADS_StormTech SC-800 +Cap x 4 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap Cap Storage= 3.4 cf x 2 x 1 rows = 6.8 cf
#3	76.00'	24 cf	2.00'W x 2.00'L x 6.00'H Prismatic
			452 cf x 5.00 = 2,259 cf Total Available Storage

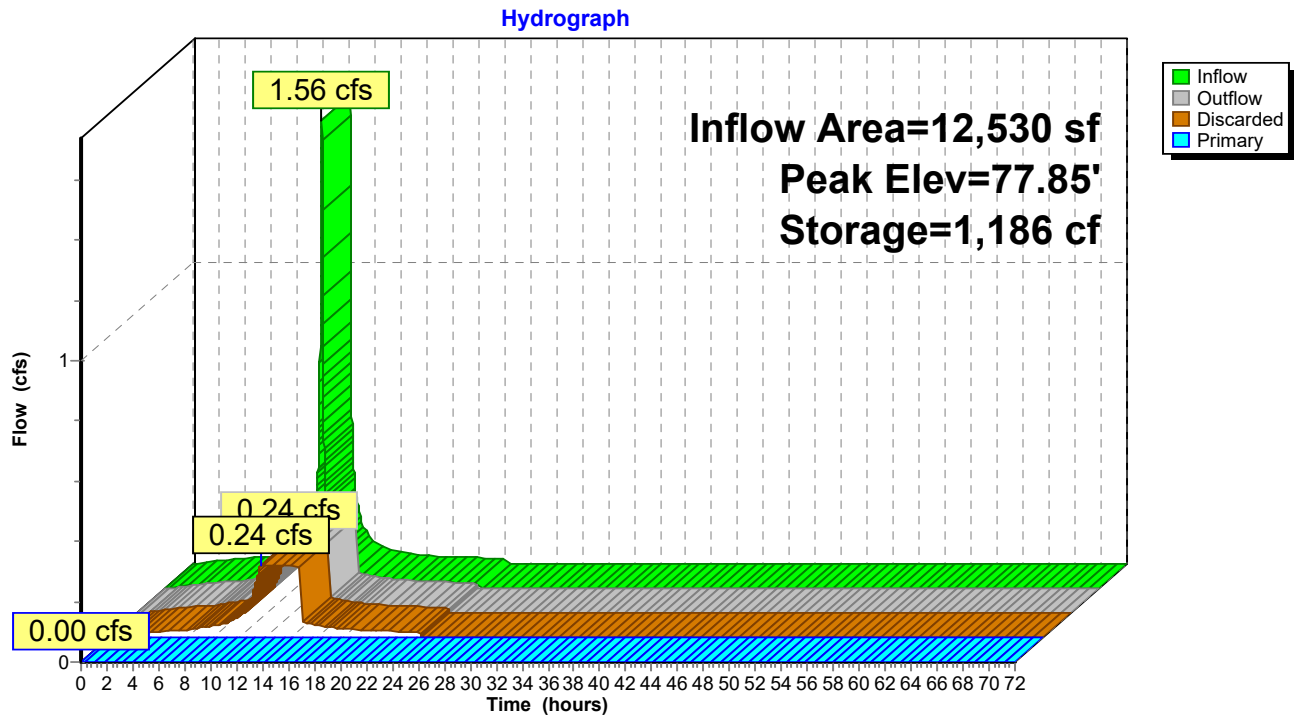
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	81.00'	24.0" x 24.0" Horiz. Grate 24" C= 0.600 Limited to weir flow at low heads
#2	Discarded	76.00'	10.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.24 cfs @ 11.70 hrs HW=76.06' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.24 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=76.00' TW=77.00' (Dynamic Tailwater)
 ↑ **1=Grate 24"** (Controls 0.00 cfs)

Pond R-1: Roof Recharge

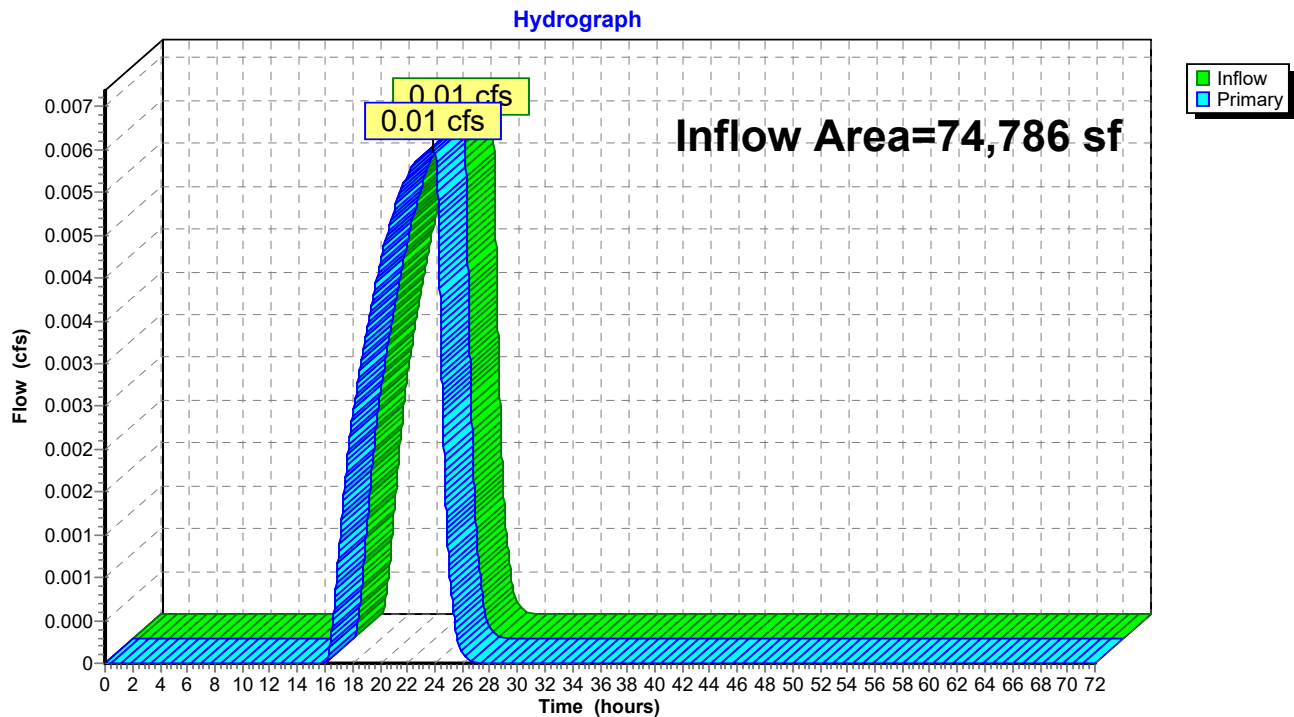


Summary for Link PT1: Proposed Total (AP-1)

Inflow Area = 74,786 sf, 0.00% Impervious, Inflow Depth = 0.02" for 10-Yr. Current event
 Inflow = 0.01 cfs @ 23.79 hrs, Volume= 132 cf
 Primary = 0.01 cfs @ 23.79 hrs, Volume= 132 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link PT1: Proposed Total (AP-1)

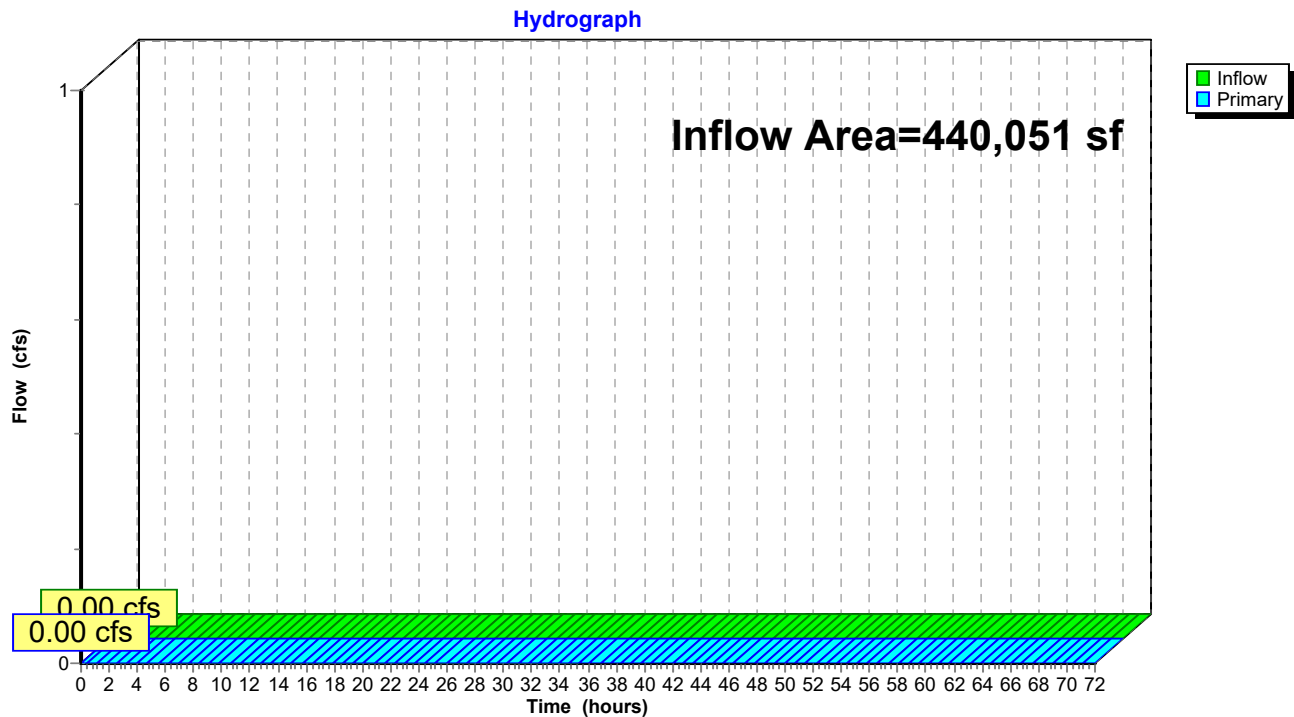


Summary for Link PT2: Proposed Total (AP-2)

Inflow Area = 440,051 sf, 22.16% Impervious, Inflow Depth = 0.00" for 10-Yr. Current event
 Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link PT2: Proposed Total (AP-2)



Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Flow Length=50' Slope=0.1000 '/' Tc=4.2 min CN=39/0 Runoff=0.12 cfs 992 cf

Flow Length=530' Tc=3.0 min CN=0/98 Runoff=3.30 cfs 12,181 cf

Flow Length=717' Tc=12.5 min CN=39/0 Runoff=0.31 cfs 3,848 cf

Tc=2.0 min CN=0/98 Runoff=1.94 cfs 6.726 cf

Flow Length=50' Slope=0.0250 '/' Tc=10.9 min CN=30/0 Runoff=0.01 cfs 452 cf

Flow Length=430' Tc=3.6 min CN=0/98 Runoff=3.35 cfs 12,884 cf

Flow Length=530' Tc=13.1 min CN=39/0 Runoff=0.31 cfs 3,966 cf

Tc=2.0 min CN=0/98 Runoff=1.94 cfs 6,726 cf

Tc=2.0 min CN=0/98 Runoff=1.55 cfs 5,381 cf

Flow Length=470' Tc=24.2 min CN=30/0 Runoff=0.01 cfs 336 cf

Flow Length=50' Slope=0.1000 '/' Tc=4.2 min CN=39/0 Runoff=0.12 cfs 1,007 cf

Flow Length=285' Tc=26.7 min CN=30/0 Runoff=0.03 cfs 997 cf

Flow Length=50' Slope=0.1000 '/' Tc=4.2 min CN=39/0 Runoff=0.12 cfs 1,032 cf

Flow Length=745' Tc=5.1 min CN=0/98 Runoff=1.99 cfs 8,456 cf

Flow Length=835' Tc=18.5 min CN=39/0 Runoff=0.22 cfs 3,119 cf

Flow Length=880' Tc=15.5 min CN=30/0 Runoff=0.01 cfs 379 cf

Pond 8P: Roof Recharge Peak Elev=78.66' Storage=1,366 cf Inflow=1.55 cfs 5,381 cf
 Discarded=0.19 cfs 5,381 cf Primary=0.00 cfs 0 cf Outflow=0.19 cfs 5,381 cf

Pond 12P: Roof Recharge Peak Elev=81.04' Storage=1,792 cf Inflow=1.94 cfs 6,726 cf
 Discarded=0.19 cfs 6,544 cf Primary=0.25 cfs 182 cf Outflow=0.44 cfs 6,726 cf

Pond B1: Basin #1 Peak Elev=78.16' Storage=5,902 cf Inflow=3.50 cfs 18,193 cf
 Discarded=0.29 cfs 15,548 cf Primary=0.12 cfs 2,645 cf Outflow=0.40 cfs 18,193 cf

Pond B2: Basin #2 Peak Elev=77.91' Storage=3,906 cf Inflow=2.16 cfs 15,631 cf
 Discarded=0.23 cfs 12,339 cf Primary=0.21 cfs 3,292 cf Outflow=0.44 cfs 15,631 cf

Pond B3: Basin #3 Peak Elev=68.02' Storage=9,478 cf Inflow=3.44 cfs 20,948 cf
 Discarded=0.26 cfs 20,943 cf Primary=0.00 cfs 4 cf Outflow=0.26 cfs 20,948 cf

Pond R-1: Roof Recharge Peak Elev=78.66' Storage=1,707 cf Inflow=1.94 cfs 6,726 cf
 Discarded=0.24 cfs 6,726 cf Primary=0.00 cfs 0 cf Outflow=0.24 cfs 6,726 cf

Link PT1: Proposed Total (AP-1) Inflow=0.03 cfs 997 cf
 Primary=0.03 cfs 997 cf

Link PT2: Proposed Total (AP-2) Inflow=0.00 cfs 4 cf
 Primary=0.00 cfs 4 cf

Total Runoff Area = 514,837 sf Runoff Volume = 68,481 cf Average Runoff Depth = 1.60"
81.06% Pervious = 417,303 sf 18.94% Impervious = 97,534 sf

Summary for Subcatchment 7S: Prop. Drainage Area-3 (Basin Area) (Non-Contributory)

Runoff = 0.12 cfs @ 12.15 hrs, Volume= 992 cf, Depth= 0.66"
 Routed to Pond B3 : Basin #3

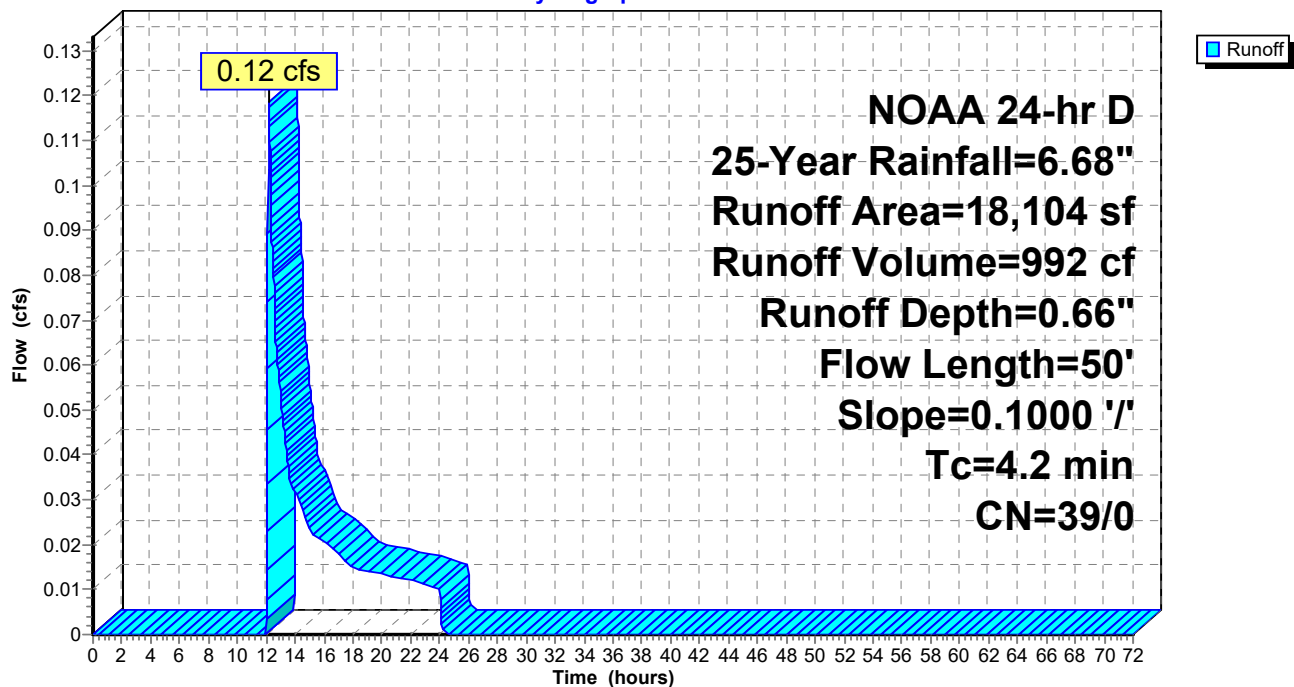
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 25-Year Rainfall=6.68"

Area (sf)	CN	Description
* 18,104	39	Basin Area-Non-contributory, HSG A
18,104	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.1000	0.20		Sheet Flow, Sheet Grass
Grass: Dense n= 0.240 P2= 3.42"					

Subcatchment 7S: Prop. Drainage Area-3 (Basin Area) (Non-Contributory)

Hydrograph



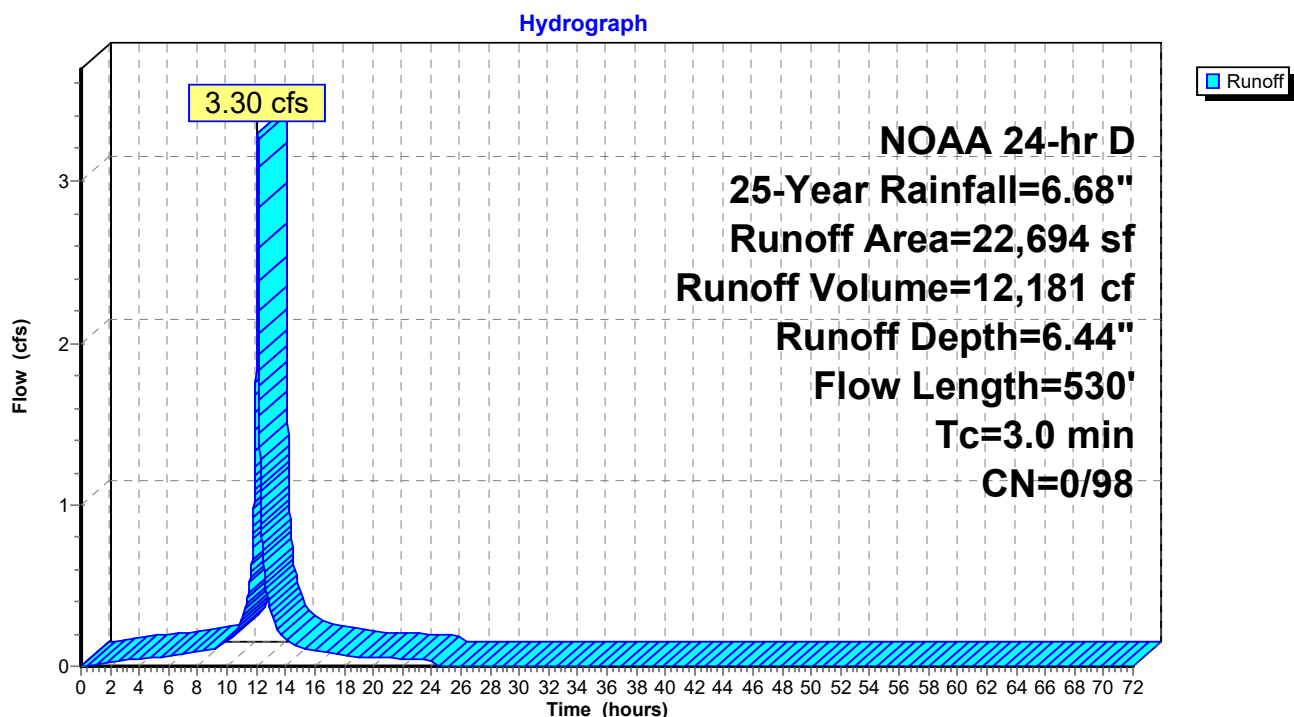
Summary for Subcatchment 8S: Prop. Drainage Area-3 (Impervious)

Runoff = 3.30 cfs @ 12.11 hrs, Volume= 12,181 cf, Depth= 6.44"
Routed to Pond B3 : Basin #3

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 25-Year Rainfall=6.68"

Area (sf)	CN	Description
13,555	98	Paved roads w/curbs & sewers, HSG A
* 3,626	98	Sidewalks, HSG A
* 5,513	98	Driveways, HSG A
22,694	98	Weighted Average
22,694	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	100	0.0292	1.65		Sheet Flow, Sheet Pvmt Smooth surfaces n= 0.011 P2= 3.42"
1.1	233	0.0292	3.47		Shallow Concentrated Flow, Shallow Pvmt Paved Kv= 20.3 fps
0.9	197	0.0040	3.76	6.64	Pipe Channel, Pipe 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
3.0	530	Total			

Subcatchment 8S: Prop. Drainage Area-3 (Impervious)

Summary for Subcatchment 9S: Prop. Drainage Area-3 (Pervious)

Runoff = 0.31 cfs @ 12.44 hrs, Volume= 3,848 cf, Depth= 0.66"
Routed to Pond B3 : Basin #3

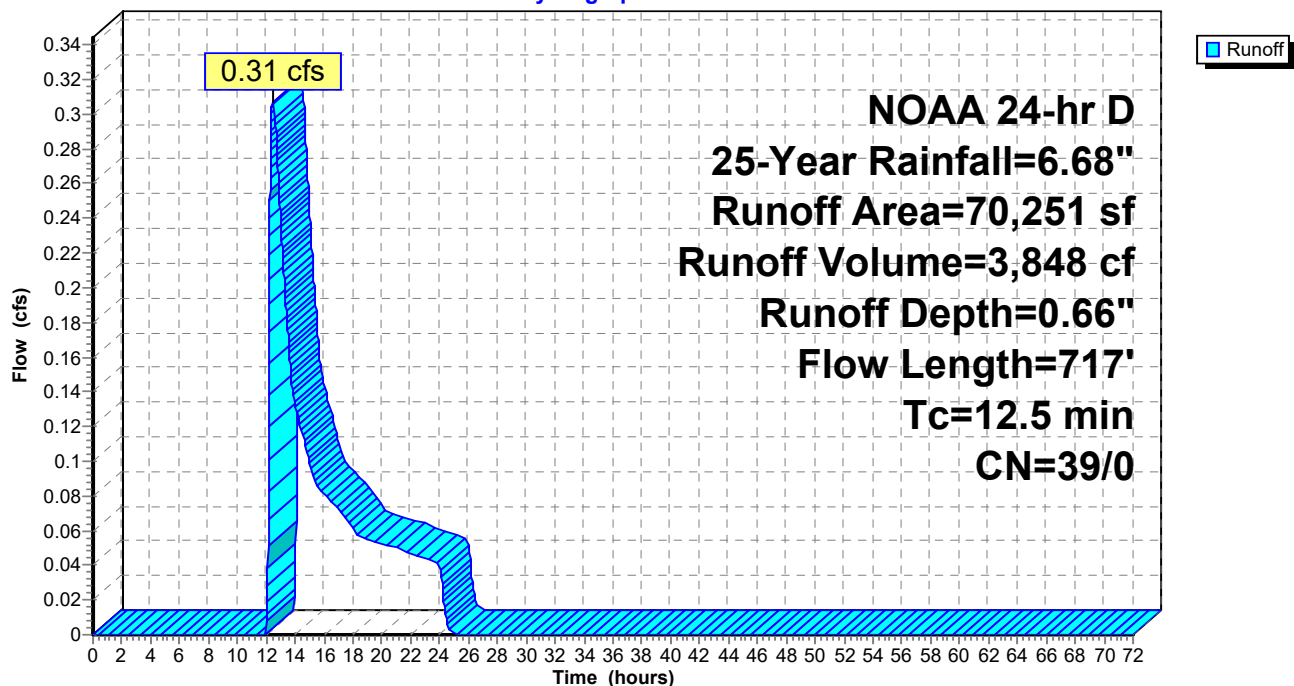
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 25-Year Rainfall=6.68"

Area (sf)	CN	Description
70,251	39	>75% Grass cover, Good, HSG A
70,251	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	100	0.0500	0.17		Sheet Flow, Sheet Grass Grass: Dense n= 0.240 P2= 3.42"
0.1	20	0.0500	3.60		Shallow Concentrated Flow, Shallow Grass Unpaved Kv= 16.1 fps
1.9	400	0.0292	3.47		Shallow Concentrated Flow, Shallow Pvmnt Paved Kv= 20.3 fps
0.9	197	0.0040	3.76	6.64	Pipe Channel, Pipe 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
12.5	717	Total			

Subcatchment 9S: Prop. Drainage Area-3 (Pervious)

Hydrograph



Summary for Subcatchment 10S: Prop. Drainage Area-3 (Roof)

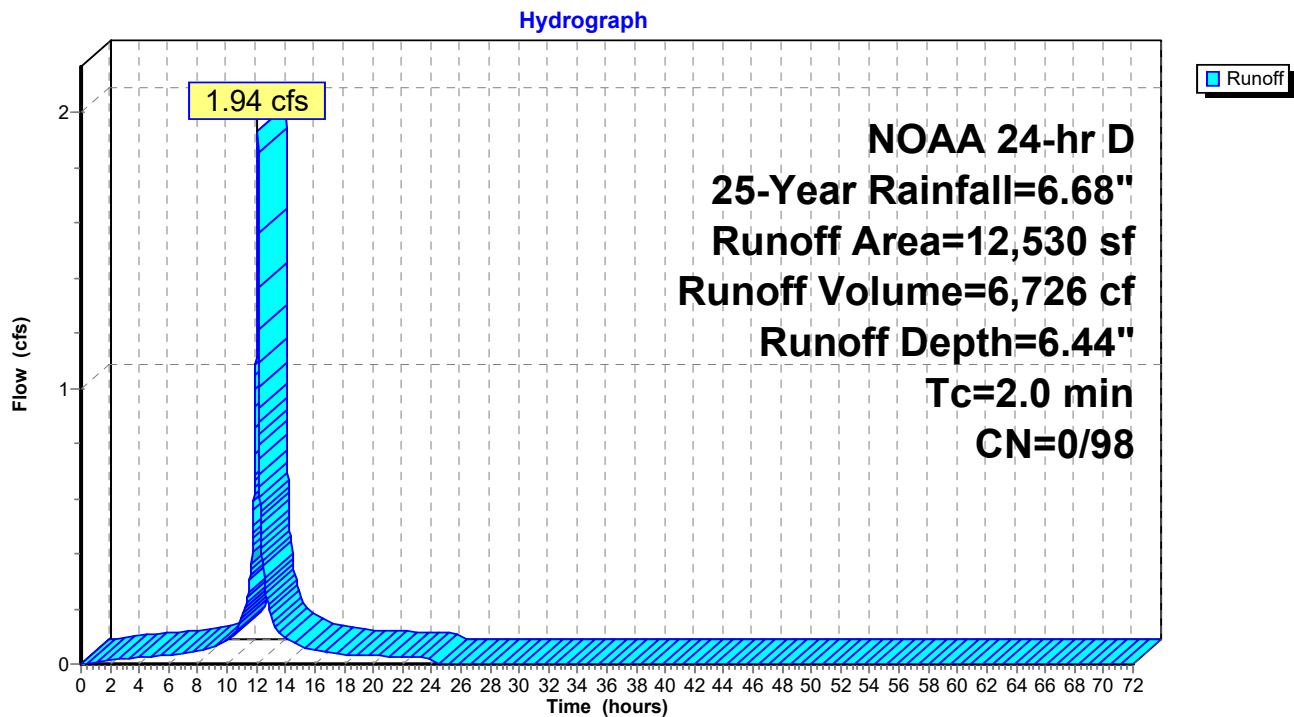
Runoff = 1.94 cfs @ 12.10 hrs, Volume= 6,726 cf, Depth= 6.44"
Routed to Pond 12P : Roof Recharge

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 25-Year Rainfall=6.68"

Area (sf)	CN	Description
12,530	98	Roofs, HSG A
12,530	98	100.00% Impervious Area

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

Subcatchment 10S: Prop. Drainage Area-3 (Roof)



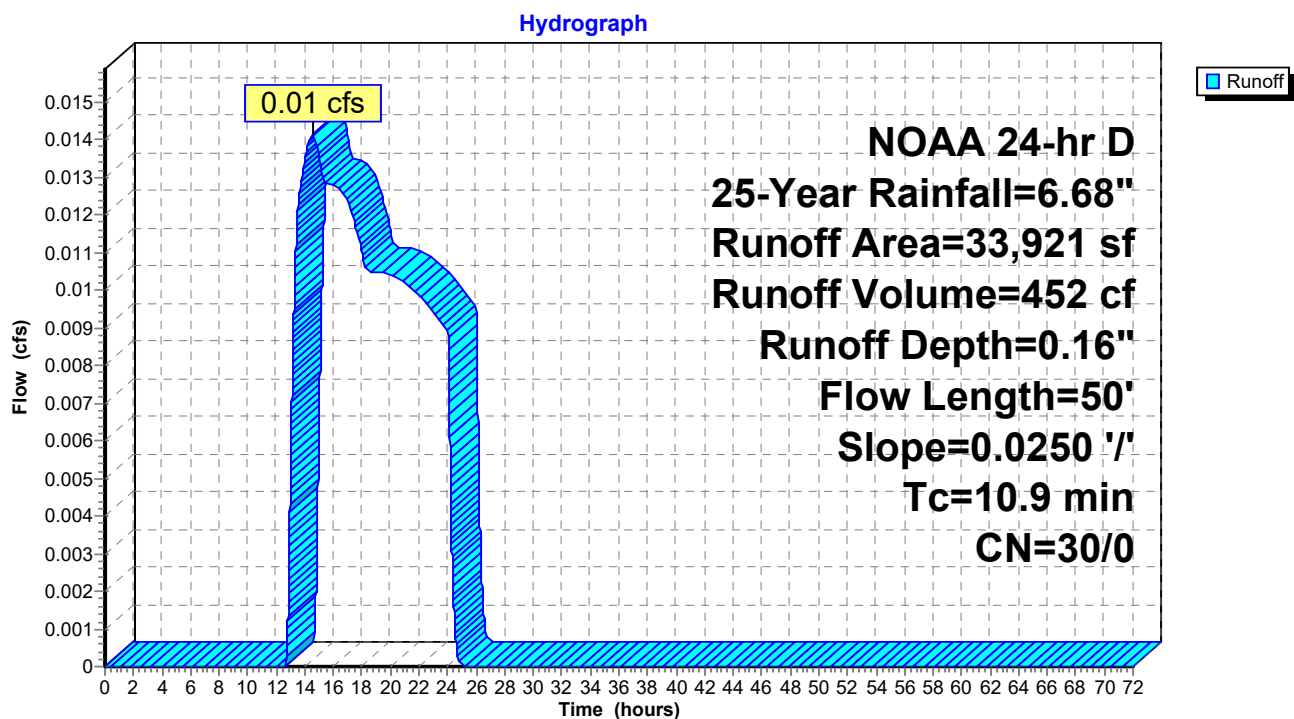
Summary for Subcatchment 11S: Prop. Drainage Area-3-A (Woods) (Undisturbed)

Runoff = 0.01 cfs @ 14.53 hrs, Volume= 452 cf, Depth= 0.16"
 Routed to Pond B3 : Basin #3

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 25-Year Rainfall=6.68"

Area (sf)	CN	Description
33,921	30	Woods, Good, HSG A
33,921	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	50	0.0250	0.08		Sheet Flow, Sheet woods Woods: Light underbrush n= 0.400 P2= 3.42"

Subcatchment 11S: Prop. Drainage Area-3-A (Woods) (Undisturbed)

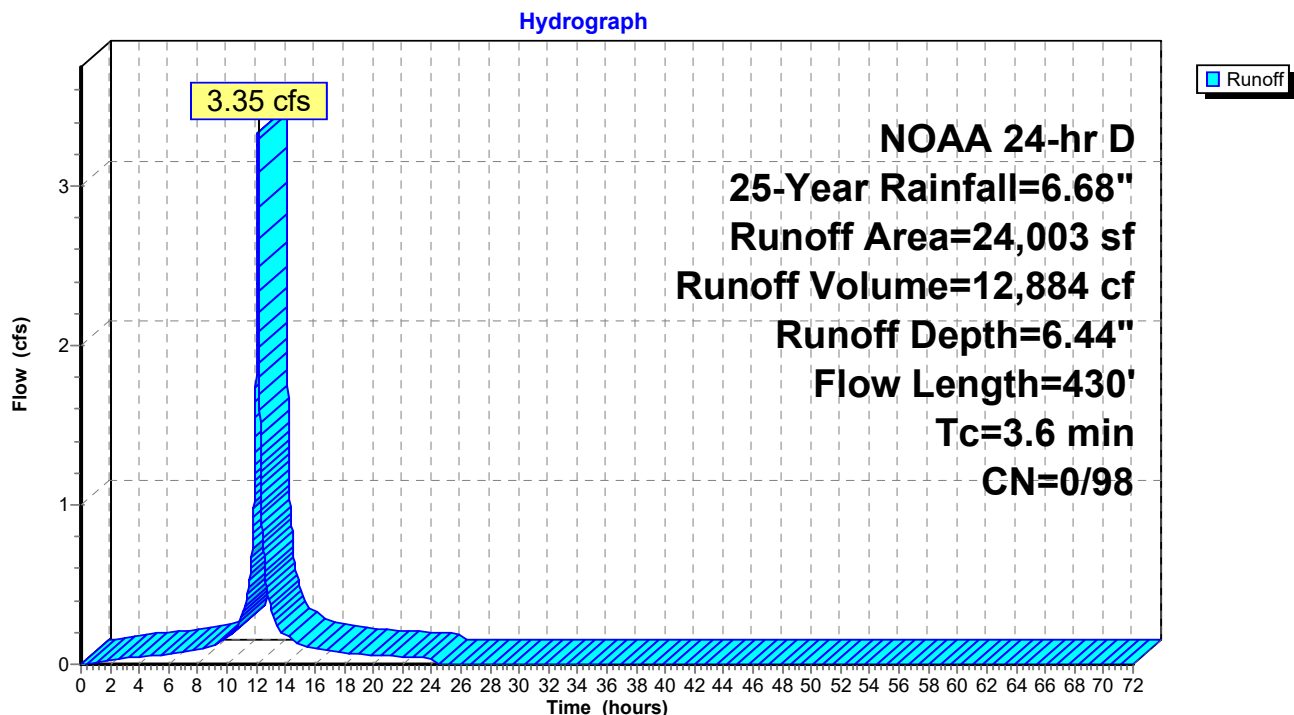
Summary for Subcatchment P-1I: Prop. Drainage Area-1 (Impervious)

Runoff = 3.35 cfs @ 12.12 hrs, Volume= 12,884 cf, Depth= 6.44"
Routed to Pond B1 : Basin #1

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 25-Year Rainfall=6.68"

Area (sf)	CN	Description
15,941	98	Paved roads w/curbs & sewers, HSG A
* 2,588	98	Sidewalks, HSG A
* 5,474	98	Driveways, HSG A
24,003	98	Weighted Average
24,003	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	100	0.0083	1.00		Sheet Flow, Sheet Pvmt Smooth surfaces n= 0.011 P2= 3.42"
0.7	60	0.0050	1.44		Shallow Concentrated Flow, Shallow Pvmt Paved Kv= 20.3 fps
1.2	270	0.0050	3.72	4.57	Pipe Channel, Pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
3.6	430	Total			

Subcatchment P-1I: Prop. Drainage Area-1 (Impervious)

Summary for Subcatchment P-1P: Prop. Drainage Area-1 (Pervious)

Runoff = 0.31 cfs @ 12.54 hrs, Volume= 3,966 cf, Depth= 0.66"
Routed to Pond B1 : Basin #1

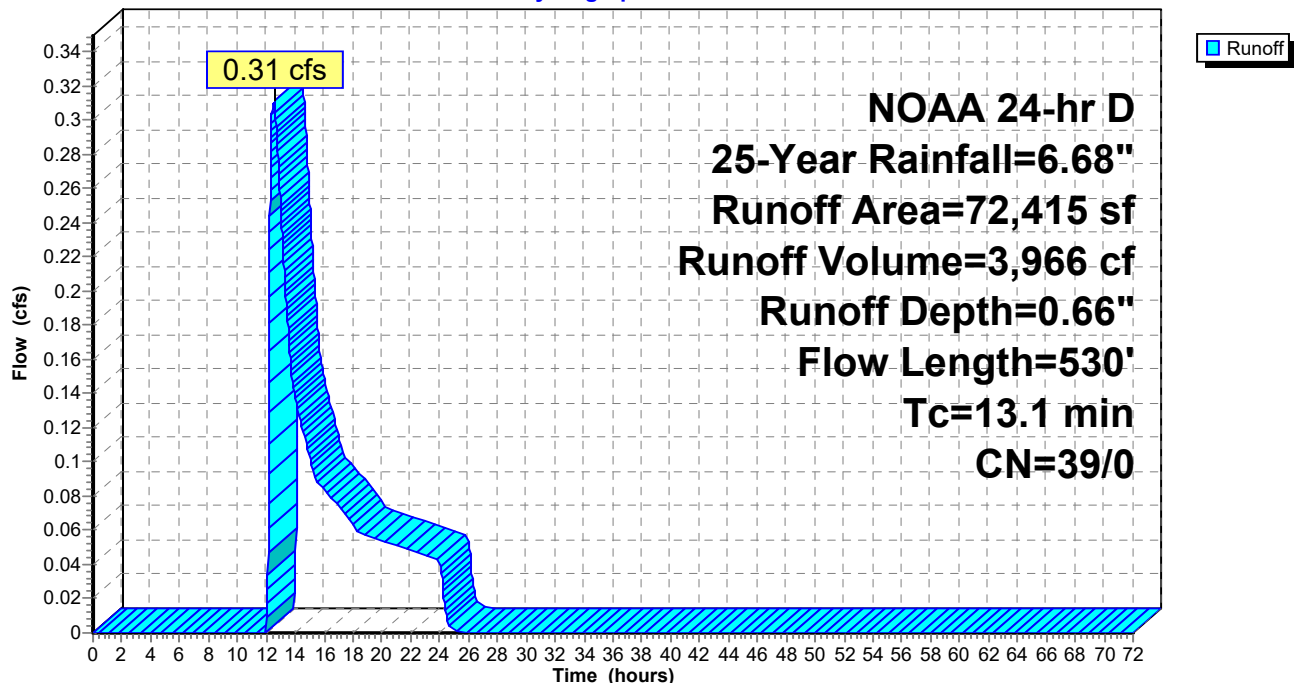
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 25-Year Rainfall=6.68"

Area (sf)	CN	Description
72,415	39	>75% Grass cover, Good, HSG A
72,415	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0400	0.16		Sheet Flow, Sheet Grass Grass: Dense n= 0.240 P2= 3.42"
1.4	160	0.0083	1.85		Shallow Concentrated Flow, Shallow Pvmnt Paved Kv= 20.3 fps
1.2	270	0.0050	3.72	4.57	Pipe Channel, Pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
13.1	530	Total			

Subcatchment P-1P: Prop. Drainage Area-1 (Pervious)

Hydrograph



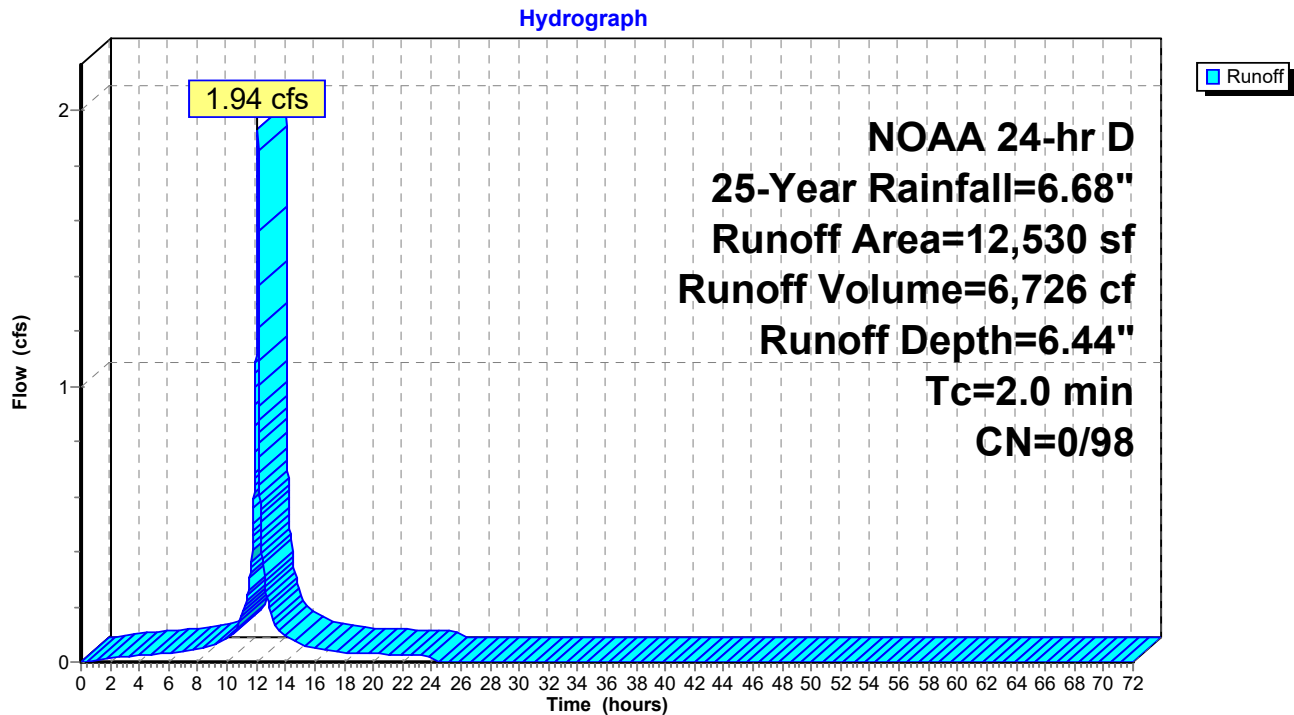
Summary for Subcatchment P-1R: Prop. Drainage Area-1 (Roof)

Runoff = 1.94 cfs @ 12.10 hrs, Volume= 6,726 cf, Depth= 6.44"
 Routed to Pond R-1 : Roof Recharge

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 25-Year Rainfall=6.68"

Area (sf)	CN	Description
12,530	98	Roofs, HSG A
12,530	98	100.00% Impervious Area

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

Subcatchment P-1R: Prop. Drainage Area-1 (Roof)

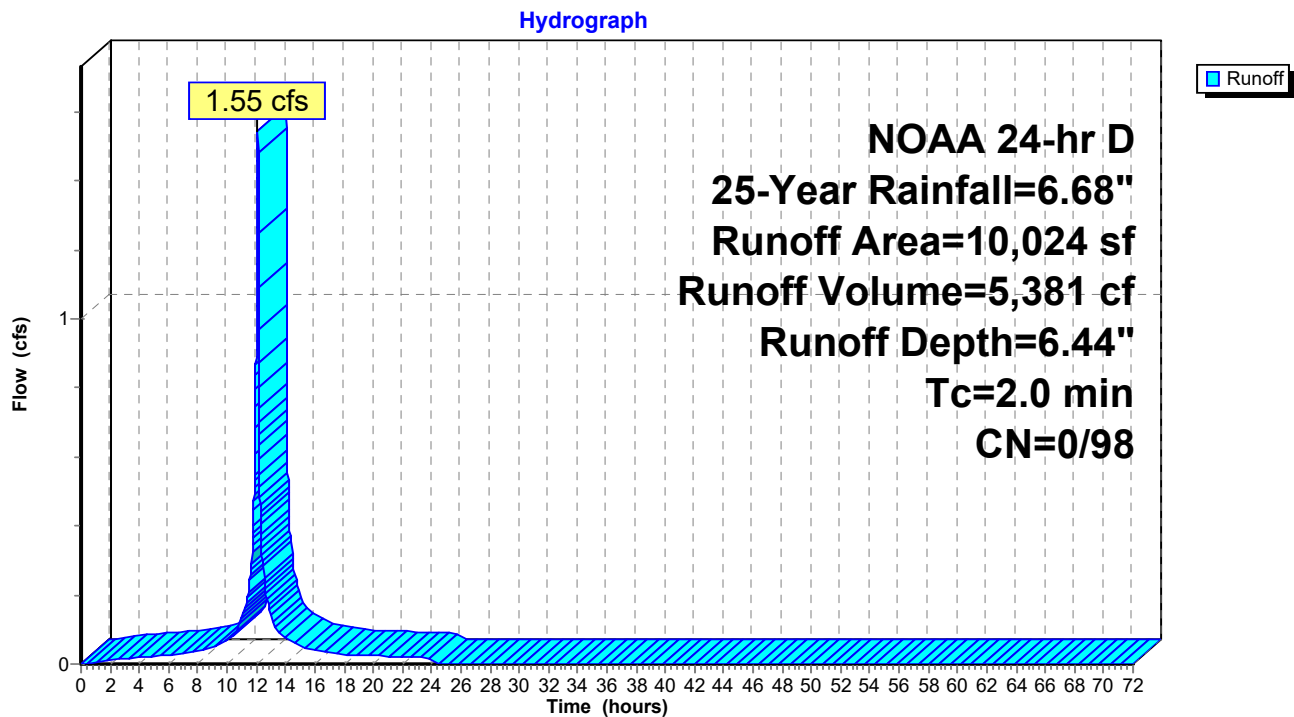
Summary for Subcatchment P-2R: Prop. Drainage Area-2 (Roof)

Runoff = 1.55 cfs @ 12.10 hrs, Volume= 5,381 cf, Depth= 6.44"
 Routed to Pond 8P : Roof Recharge

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 25-Year Rainfall=6.68"

Area (sf)	CN	Description
10,024	98	Roofs, HSG A
10,024	98	100.00% Impervious Area

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

Subcatchment P-2R: Prop. Drainage Area-2 (Roof)

Summary for Subcatchment P1A: Prop. Drainage Area-1-A (Woods) (Undisturbed)

Runoff = 0.01 cfs @ 14.89 hrs, Volume= 336 cf, Depth= 0.16"
Routed to Pond B1 : Basin #1

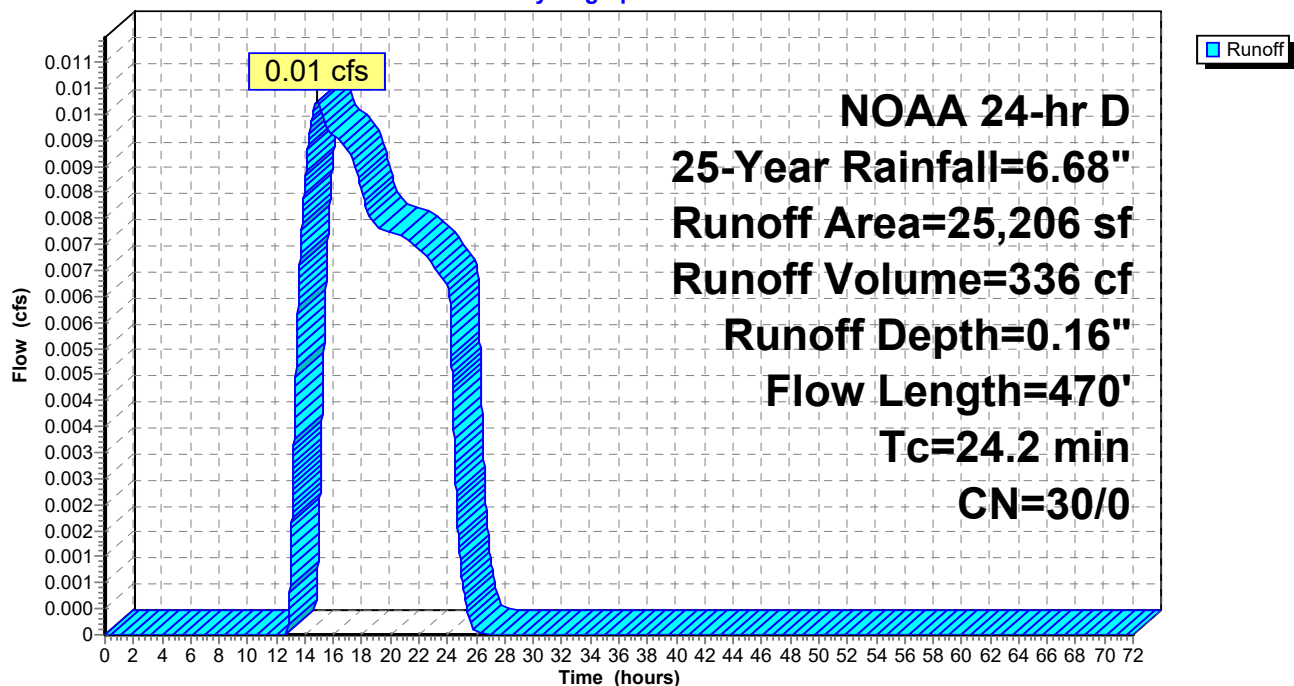
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 25-Year Rainfall=6.68"

Area (sf)	CN	Description
25,206	30	Woods, Good, HSG A
25,206	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2	100	0.0170	0.08		Sheet Flow, Sheet woods Woods: Light underbrush n= 0.400 P2= 3.42"
0.4	60	0.0200	2.28		Shallow Concentrated Flow, Shallow Grass Unpaved Kv= 16.1 fps
0.4	40	0.0062	1.60		Shallow Concentrated Flow, shallow Pvmt Paved Kv= 20.3 fps
1.2	270	0.0050	3.72	4.57	Pipe Channel, pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
24.2	470	Total			

Subcatchment P1A: Prop. Drainage Area-1-A (Woods) (Undisturbed)

Hydrograph



Summary for Subcatchment P1B: Prop. Drainage Area-1 (Basin Area) (Non-Contributory)

Runoff = 0.12 cfs @ 12.15 hrs, Volume= 1,007 cf, Depth= 0.66"
 Routed to Pond B1 : Basin #1

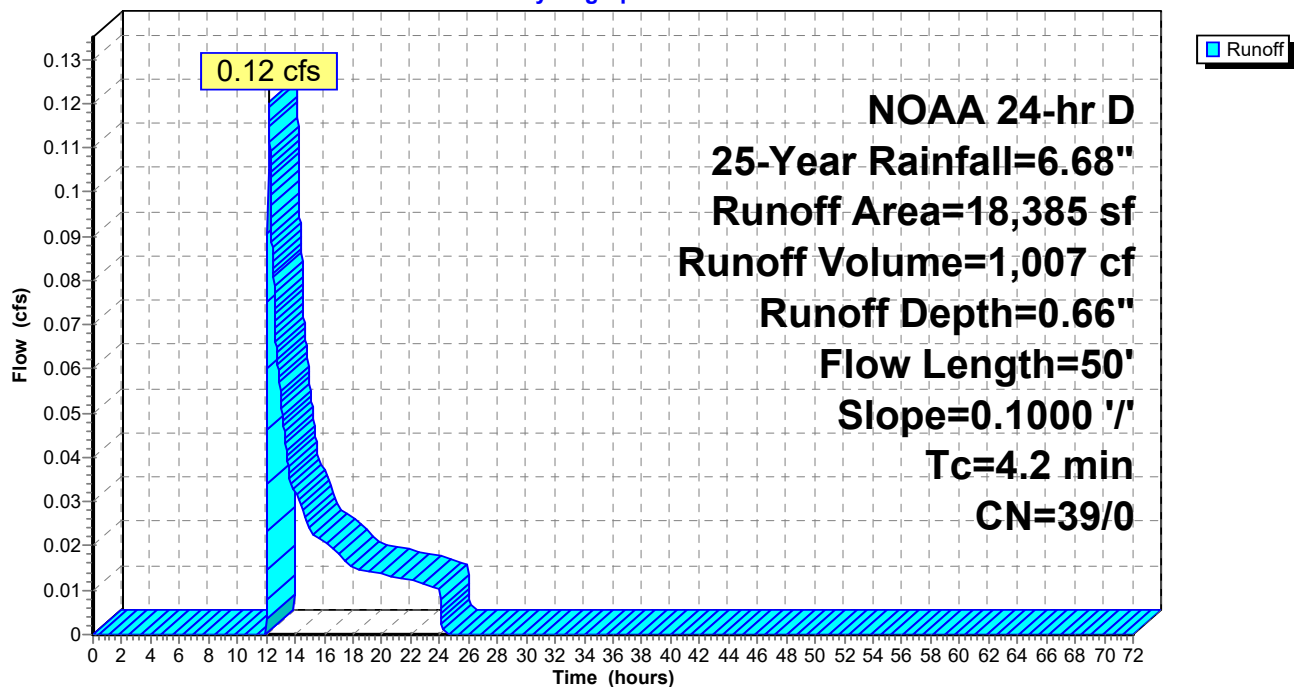
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 25-Year Rainfall=6.68"

Area (sf)	CN	Description
* 18,385	39	Basin Area-Non-contributory, HSG A
18,385	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.1000	0.20		Sheet Flow, Sheet Grass
Grass: Dense n= 0.240 P2= 3.42"					

Subcatchment P1B: Prop. Drainage Area-1 (Basin Area) (Non-Contributory)

Hydrograph



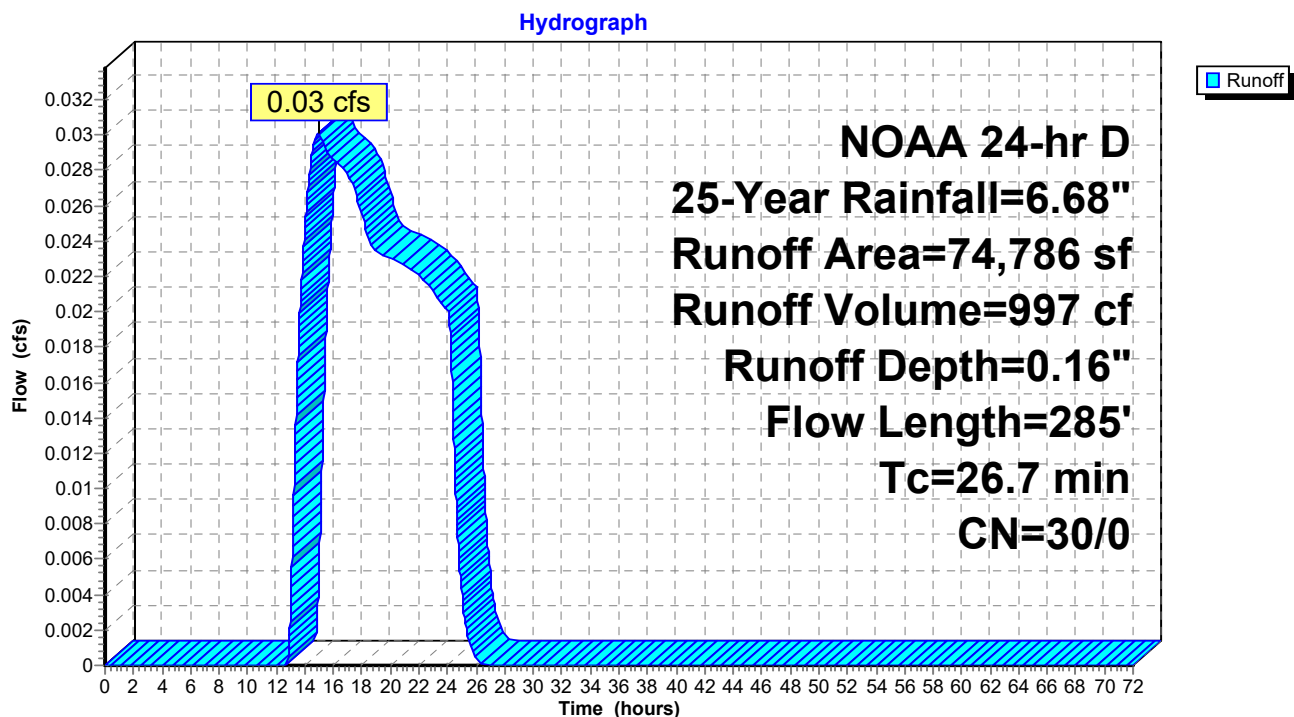
Summary for Subcatchment P1W: Prop. Drainage Area-1-B (Woods) (undetained)

Runoff = 0.03 cfs @ 14.95 hrs, Volume= 997 cf, Depth= 0.16"
 Routed to Link PT1 : Proposed Total (AP-1)

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 25-Year Rainfall=6.68"

Area (sf)	CN	Description
74,786	30	Woods, Good, HSG A
74,786	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.8	100	0.0200	0.08		Sheet Flow, Sheet woods
					Woods: Light underbrush n= 0.400 P2= 3.42"
5.9	185	0.0110	0.52		Shallow Concentrated Flow, Shallow Woods
					Woodland Kv= 5.0 fps
26.7	285	Total			

Subcatchment P1W: Prop. Drainage Area-1-B (Woods) (undetained)

Summary for Subcatchment P2B: Prop. Drainage Area-2 (Basin)(Non-Contributory)

Runoff = 0.12 cfs @ 12.15 hrs, Volume= 1,032 cf, Depth= 0.66"
Routed to Pond B2 : Basin #2

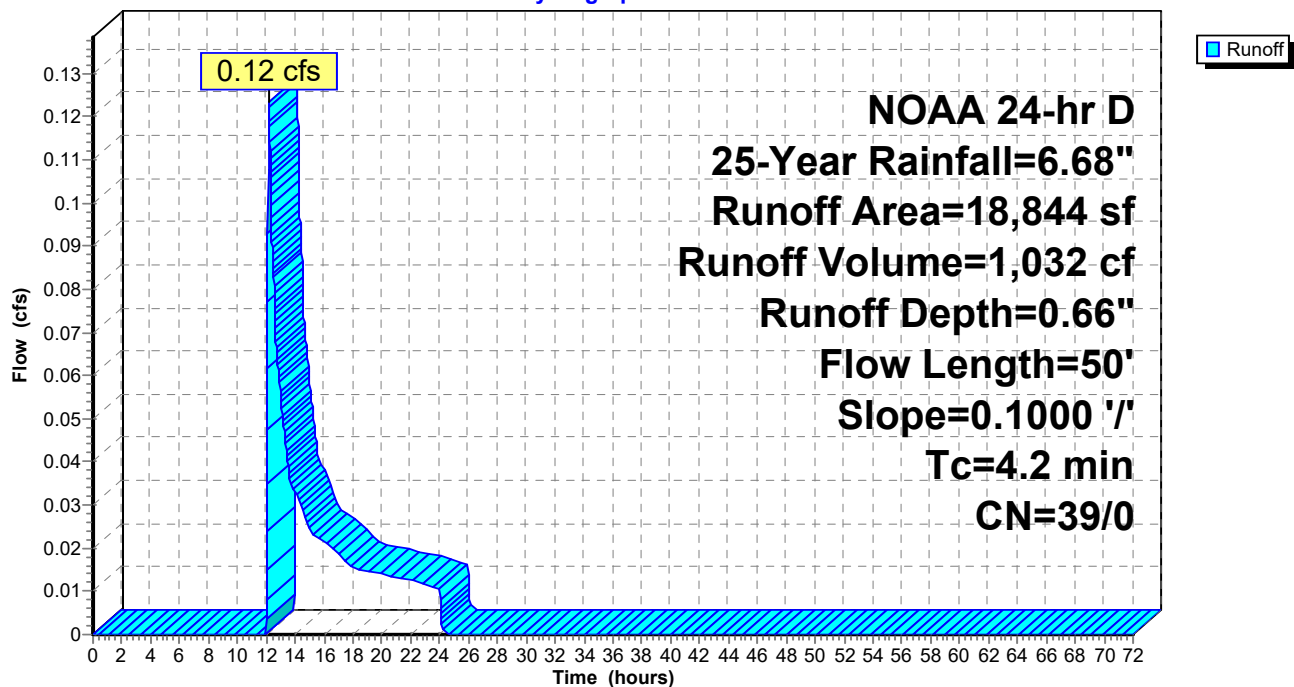
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 25-Year Rainfall=6.68"

Area (sf)	CN	Description
* 18,844	39	Basin Area-Non-contributory, HSG A
18,844	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.1000	0.20		Sheet Flow, Sheet Grass
Grass: Dense n= 0.240 P2= 3.42"					

Subcatchment P2B: Prop. Drainage Area-2 (Basin)(Non-Contributory)

Hydrograph



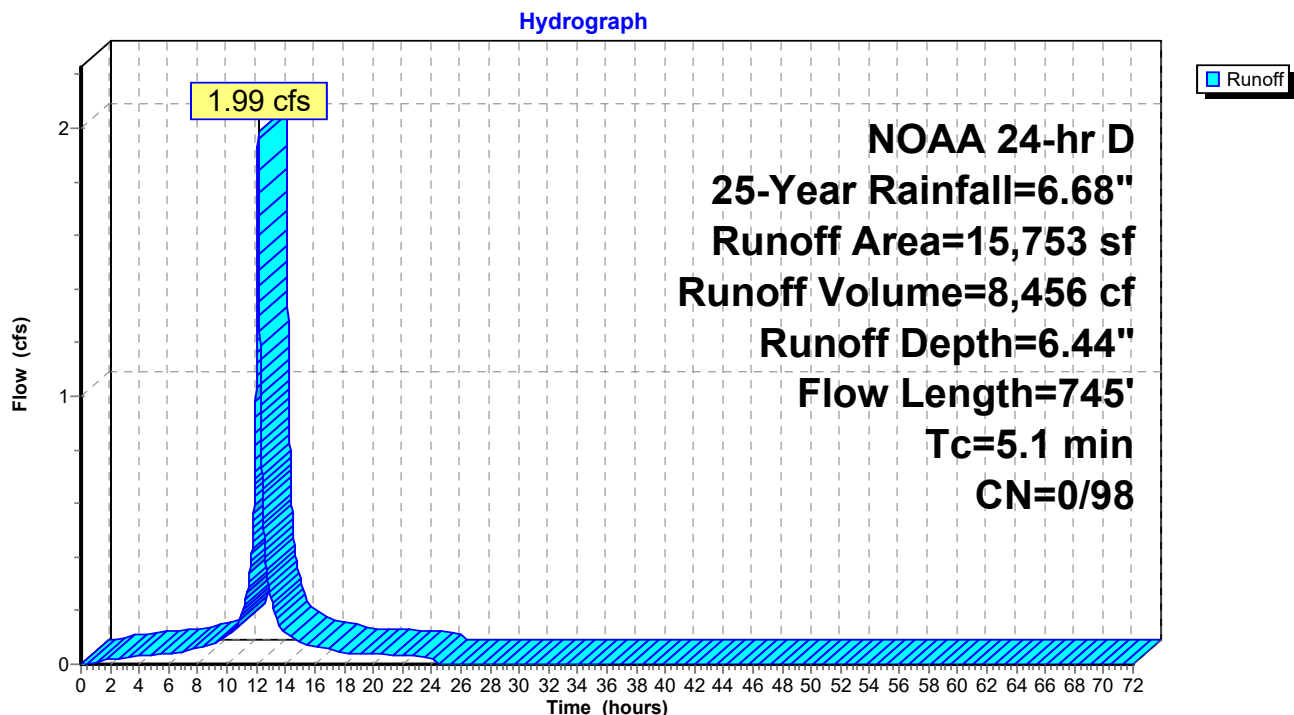
Summary for Subcatchment P2I: Prop. Drainage Area-2 (Impervious)

Runoff = 1.99 cfs @ 12.13 hrs, Volume= 8,456 cf, Depth= 6.44"
Routed to Pond B2 : Basin #2

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 25-Year Rainfall=6.68"

Area (sf)	CN	Description
9,010	98	Paved roads w/curbs & sewers, HSG A
* 2,394	98	Sidewalks, HSG A
* 4,349	98	Driveways, HSG A
15,753	98	Weighted Average
15,753	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	100	0.0083	1.00		Sheet Flow, Sheet Pvmt Smooth surfaces n= 0.011 P2= 3.42"
0.9	95	0.0083	1.85		Shallow Concentrated Flow, Shallow Pvmt Paved Kv= 20.3 fps
2.5	550	0.0050	3.72	4.57	Pipe Channel, Pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
5.1	745	Total			

Subcatchment P2I: Prop. Drainage Area-2 (Impervious)

Summary for Subcatchment P2P: Prop. Drainage Area-2 (Pervious)

Runoff = 0.22 cfs @ 12.66 hrs, Volume= 3,119 cf, Depth= 0.66"
Routed to Pond B2 : Basin #2

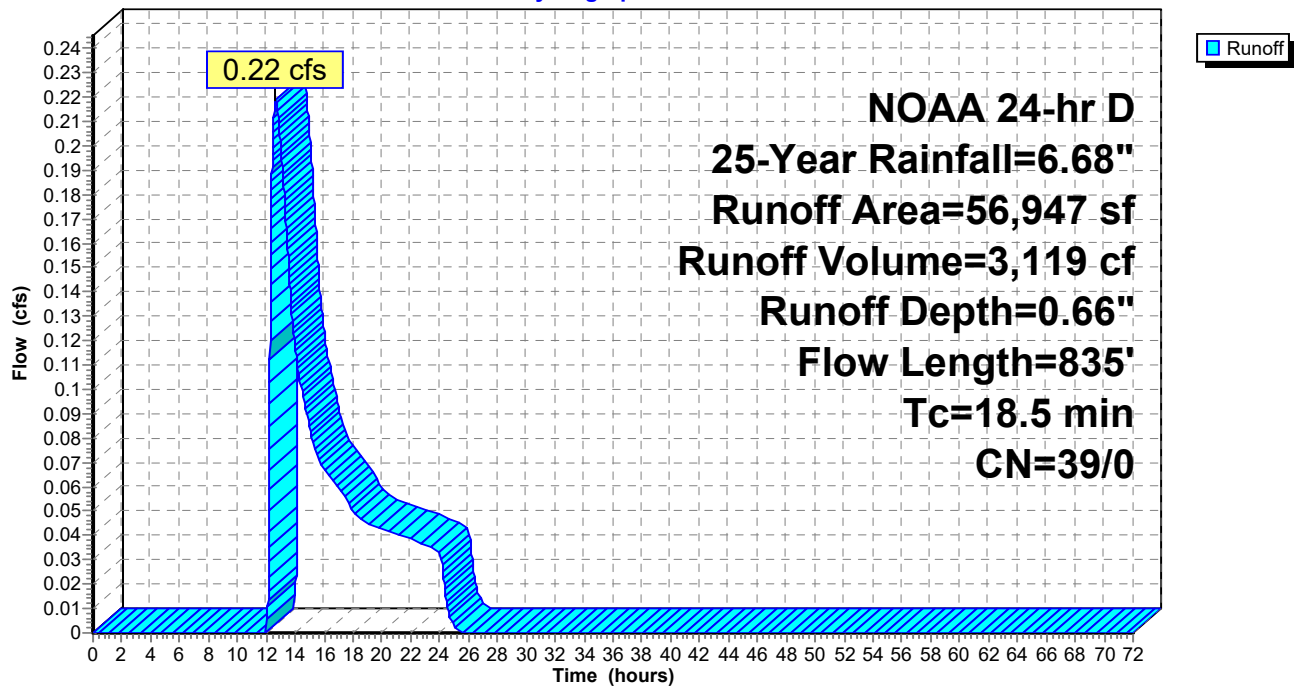
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 25-Year Rainfall=6.68"

Area (sf)	CN	Description
56,947	39	>75% Grass cover, Good, HSG A
56,947	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	90	0.0150	0.11		Sheet Flow, Sheet Grass Grass: Dense n= 0.240 P2= 3.42"
1.8	195	0.0083	1.85		Shallow Concentrated Flow, Shallow Pvmnt Paved Kv= 20.3 fps
2.5	550	0.0050	3.72	4.57	Pipe Channel, Pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
18.5	835	Total			

Subcatchment P2P: Prop. Drainage Area-2 (Pervious)

Hydrograph



Summary for Subcatchment P2W: Prop. Drainage Area-2 (Woods) (Undisturbed)

Runoff = 0.01 cfs @ 14.64 hrs, Volume= 379 cf, Depth= 0.16"
Routed to Pond B2 : Basin #2

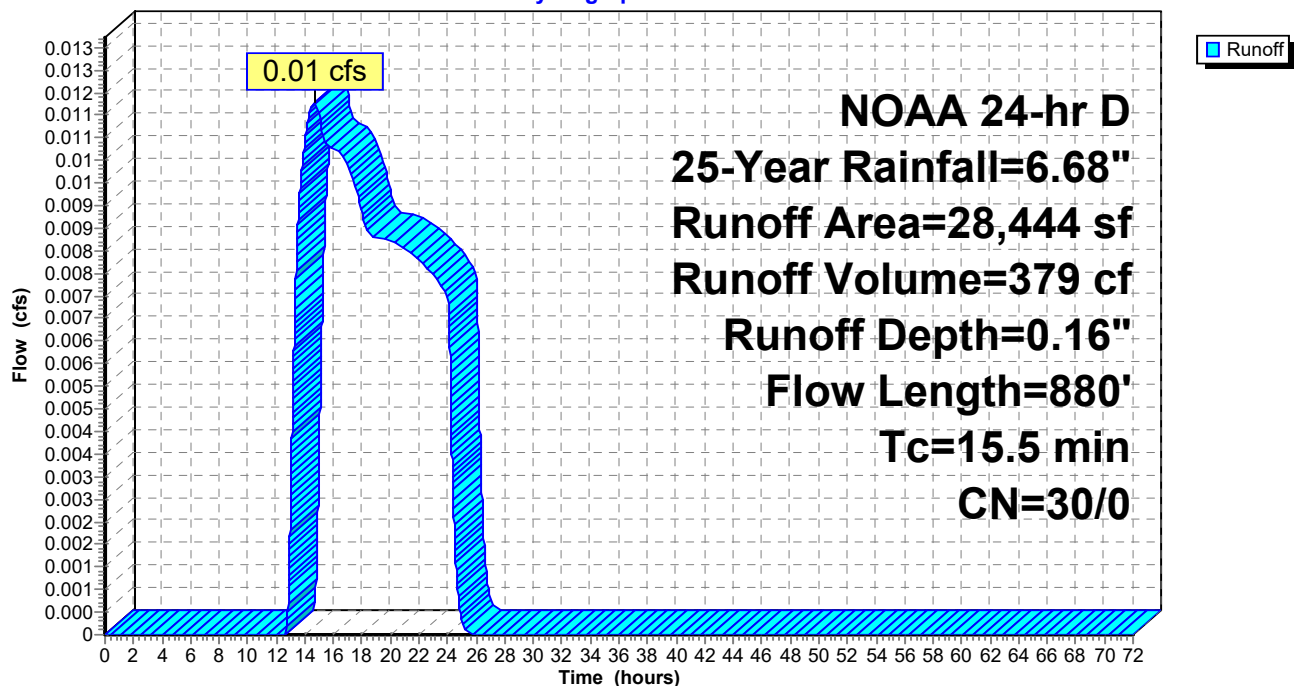
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 25-Year Rainfall=6.68"

Area (sf)	CN	Description
28,444	30	Woods, Good, HSG A
28,444	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	50	0.0250	0.08		Sheet Flow, Sheet woods Woods: Light underbrush n= 0.400 P2= 3.42"
0.6	120	0.0400	3.22		Shallow Concentrated Flow, Shallow Grass Unpaved Kv= 16.1 fps
1.7	190	0.0083	1.85		Shallow Concentrated Flow, shallow Pvmt Paved Kv= 20.3 fps
2.3	520	0.0050	3.72	4.57	Pipe Channel, pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
15.5	880	Total			

Subcatchment P2W: Prop. Drainage Area-2 (Woods) (Undisturbed)

Hydrograph



Summary for Pond 8P: Roof Recharge

Inflow Area = 10,024 sf, 100.00% Impervious, Inflow Depth = 6.44" for 25-Year event
 Inflow = 1.55 cfs @ 12.10 hrs, Volume= 5,381 cf
 Outflow = 0.19 cfs @ 11.59 hrs, Volume= 5,381 cf, Atten= 88%, Lag= 0.0 min
 Discarded = 0.19 cfs @ 11.59 hrs, Volume= 5,381 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to Pond B2 : Basin #2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 78.66' @ 12.72 hrs Surf.Area= 822 sf Storage= 1,366 cf

Plug-Flow detention time= 39.9 min calculated for 5,380 cf (100% of inflow)
 Center-of-Mass det. time= 39.9 min (782.0 - 742.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	76.00'	219 cf	6.25'W x 32.23'L x 3.75'H Field A 755 cf Overall - 209 cf Embedded = 546 cf x 40.0% Voids
#2A	76.50'	209 cf	ADS_StormTech SC-800 +Cap x 4 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap Cap Storage= 3.4 cf x 2 x 1 rows = 6.8 cf
#3	76.00'	24 cf	2.00'W x 2.00'L x 6.00'H Prismatic
			452 cf x 4.00 = 1,807 cf Total Available Storage

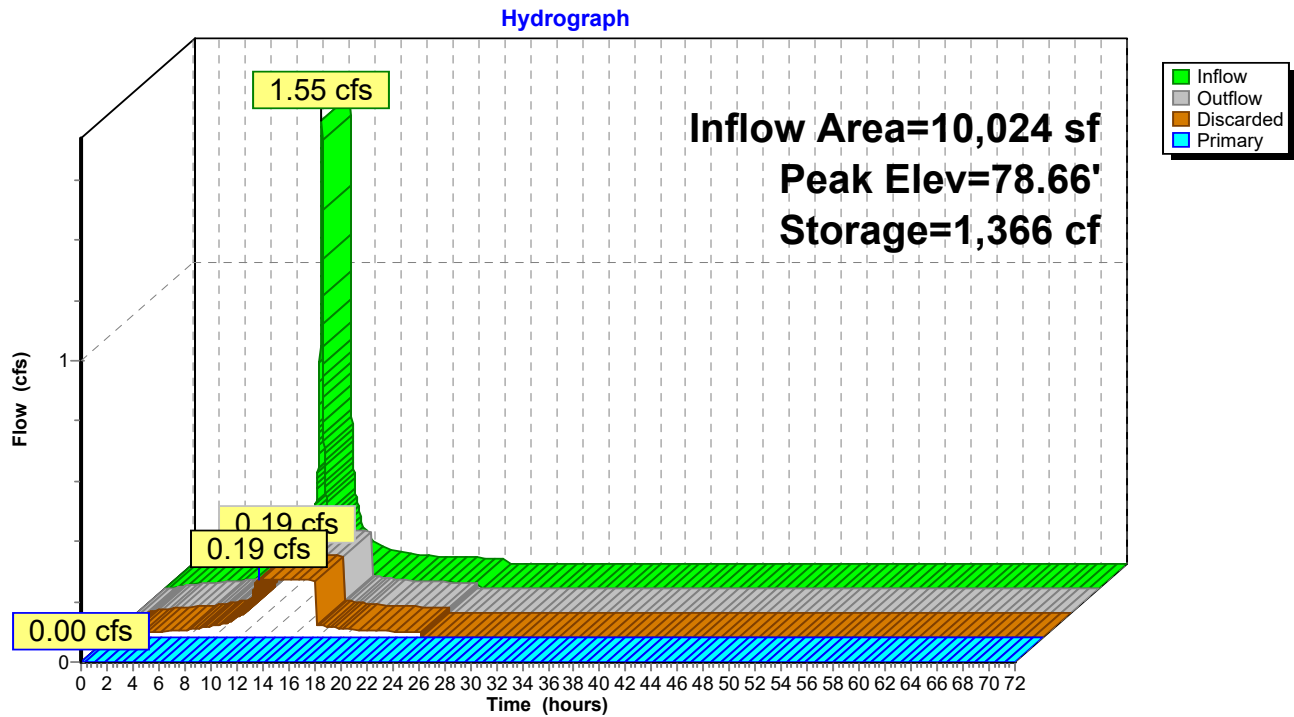
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	81.00'	24.0" x 24.0" Horiz. Grate 24" C= 0.600 Limited to weir flow at low heads
#2	Discarded	76.00'	10.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.19 cfs @ 11.59 hrs HW=76.07' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=76.00' TW=77.00' (Dynamic Tailwater)
 ↑ **1=Grate 24"** (Controls 0.00 cfs)

Pond 8P: Roof Recharge



Summary for Pond 12P: Roof Recharge

Inflow Area = 12,530 sf, 100.00% Impervious, Inflow Depth = 6.44" for 25-Year event
 Inflow = 1.94 cfs @ 12.10 hrs, Volume= 6,726 cf
 Outflow = 0.44 cfs @ 12.37 hrs, Volume= 6,726 cf, Atten= 77%, Lag= 16.0 min
 Discarded = 0.19 cfs @ 11.38 hrs, Volume= 6,544 cf
 Primary = 0.25 cfs @ 12.37 hrs, Volume= 182 cf
 Routed to Pond B3 : Basin #3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 81.04' @ 12.37 hrs Surf.Area= 822 sf Storage= 1,792 cf

Plug-Flow detention time= 55.2 min calculated for 6,725 cf (100% of inflow)
 Center-of-Mass det. time= 55.2 min (797.2 - 742.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	76.00'	219 cf	6.25'W x 32.23'L x 3.75'H Field A 755 cf Overall - 209 cf Embedded = 546 cf x 40.0% Voids
#2A	76.50'	209 cf	ADS_StormTech SC-800 +Cap x 4 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap Cap Storage= 3.4 cf x 2 x 1 rows = 6.8 cf
#3	76.00'	24 cf	2.00'W x 2.00'L x 6.00'H Prismatic
			452 cf x 4.00 = 1,807 cf Total Available Storage

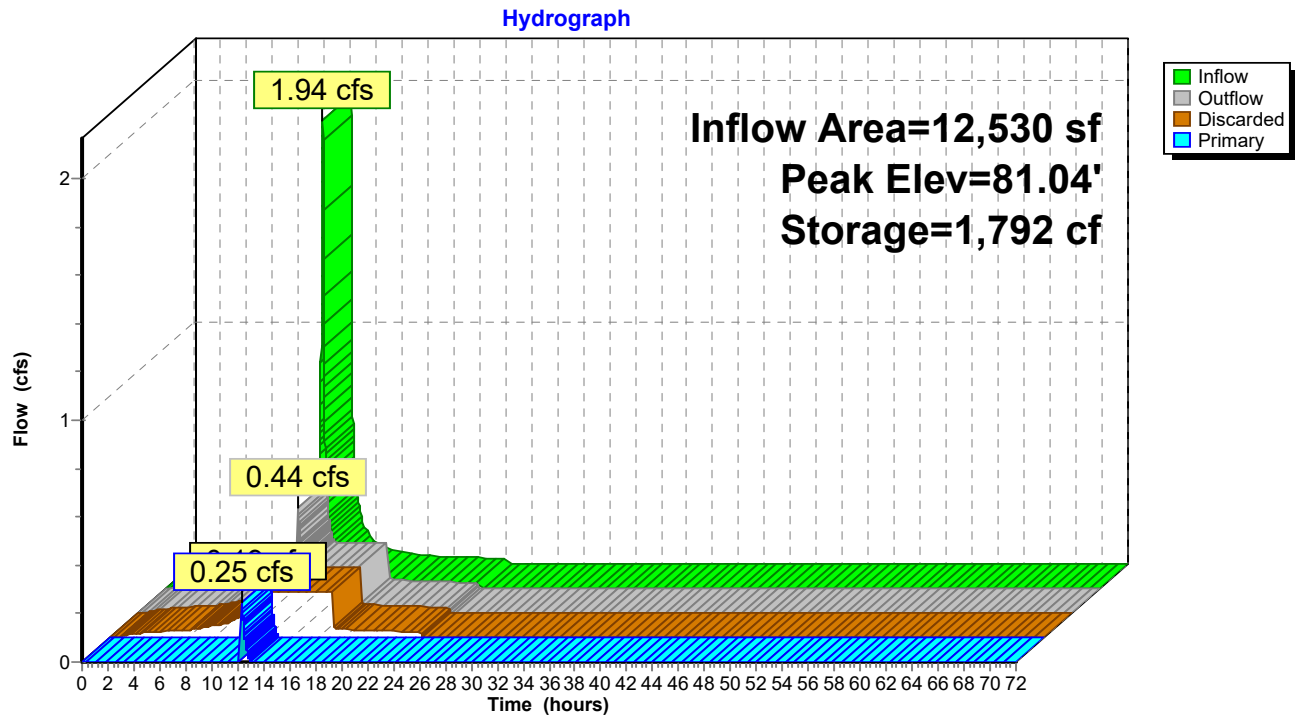
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	81.00'	24.0" x 24.0" Horiz. Grate 24" C= 0.600 Limited to weir flow at low heads
#2	Discarded	76.00'	10.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.19 cfs @ 11.38 hrs HW=76.06' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=0.24 cfs @ 12.37 hrs HW=81.04' TW=67.03' (Dynamic Tailwater)
 ↑ **1=Grate 24"** (Weir Controls 0.24 cfs @ 0.69 fps)

Pond 12P: Roof Recharge



Summary for Pond B1: Basin #1

Inflow Area = 152,539 sf, 23.95% Impervious, Inflow Depth = 1.43" for 25-Year event
 Inflow = 3.50 cfs @ 12.12 hrs, Volume= 18,193 cf
 Outflow = 0.40 cfs @ 13.71 hrs, Volume= 18,193 cf, Atten= 88%, Lag= 95.2 min
 Discarded = 0.29 cfs @ 13.68 hrs, Volume= 15,548 cf
 Primary = 0.12 cfs @ 12.33 hrs, Volume= 2,645 cf
 Routed to Pond B2 : Basin #2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 78.16' @ 13.68 hrs Surf.Area= 6,162 sf Storage= 5,902 cf

Plug-Flow detention time= 150.4 min calculated for 18,193 cf (100% of inflow)
 Center-of-Mass det. time= 150.4 min (963.4 - 813.0)

Volume	Invert	Avail.Storage	Storage Description
#1	77.00'	20,548 cf	Basin 1 (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
77.00	4,060	0	0
78.00	5,865	4,963	4,963
79.00	7,766	6,816	11,778
80.00	9,773	8,770	20,548

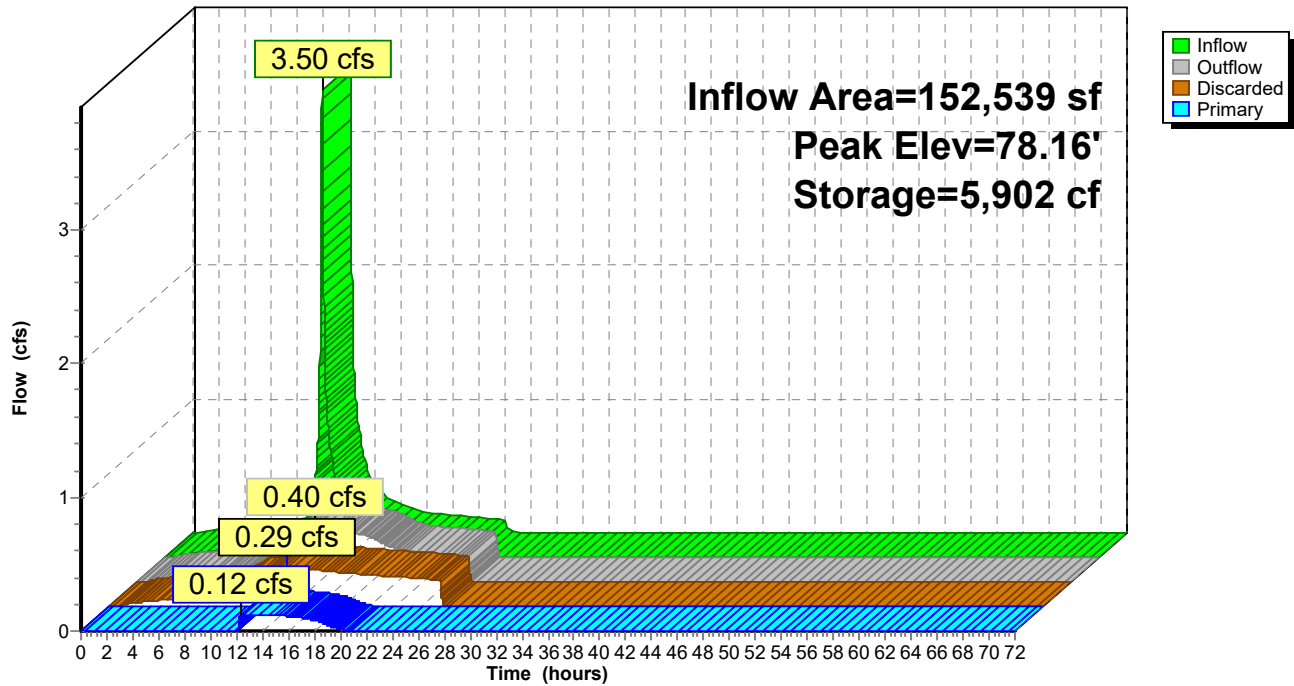
Device	Routing	Invert	Outlet Devices
#1	Primary	77.34'	15.0" Round Culvert 15" L= 69.0' Ke= 0.500 Inlet / Outlet Invert= 77.34' / 77.00' S= 0.0049 ' S= 0.0049 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.23 sf
#2	Device 1	77.50'	3.0" Vert. Orifice 3" C= 0.600 Limited to weir flow at low heads
#3	Device 1	80.00'	42.0" x 42.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	80.20'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	77.00'	2.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.29 cfs @ 13.68 hrs HW=78.16' (Free Discharge)
 ↳ **5=Exfiltration** (Exfiltration Controls 0.29 cfs)

Primary OutFlow Max=0.12 cfs @ 12.33 hrs HW=77.89' TW=77.64' (Dynamic Tailwater)
 ↳ **1=Culvert 15"** (Passes 0.12 cfs of 0.72 cfs potential flow)
 ↳ **2=Orifice 3"** (Orifice Controls 0.12 cfs @ 2.42 fps)
 ↳ **3=Grate** (Controls 0.00 cfs)
 ↳ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B1: Basin #1

Hydrograph



Summary for Pond B2: Basin #2

Inflow Area = 282,551 sf, 22.05% Impervious, Inflow Depth = 0.66" for 25-Year event
 Inflow = 2.16 cfs @ 12.14 hrs, Volume= 15,631 cf
 Outflow = 0.44 cfs @ 13.67 hrs, Volume= 15,631 cf, Atten= 80%, Lag= 91.8 min
 Discarded = 0.23 cfs @ 13.67 hrs, Volume= 12,339 cf
 Primary = 0.21 cfs @ 13.67 hrs, Volume= 3,292 cf
 Routed to Pond B3 : Basin #3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 77.91' @ 13.67 hrs Surf.Area= 5,009 sf Storage= 3,906 cf

Plug-Flow detention time= 120.0 min calculated for 15,631 cf (100% of inflow)
 Center-of-Mass det. time= 120.0 min (966.6 - 846.6)

Volume	Invert	Avail.Storage	Storage Description
#1	77.00'	18,035 cf	Basin 2 (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
77.00	3,573	0	0
78.00	5,151	4,362	4,362
79.00	6,815	5,983	10,345
80.00	8,565	7,690	18,035

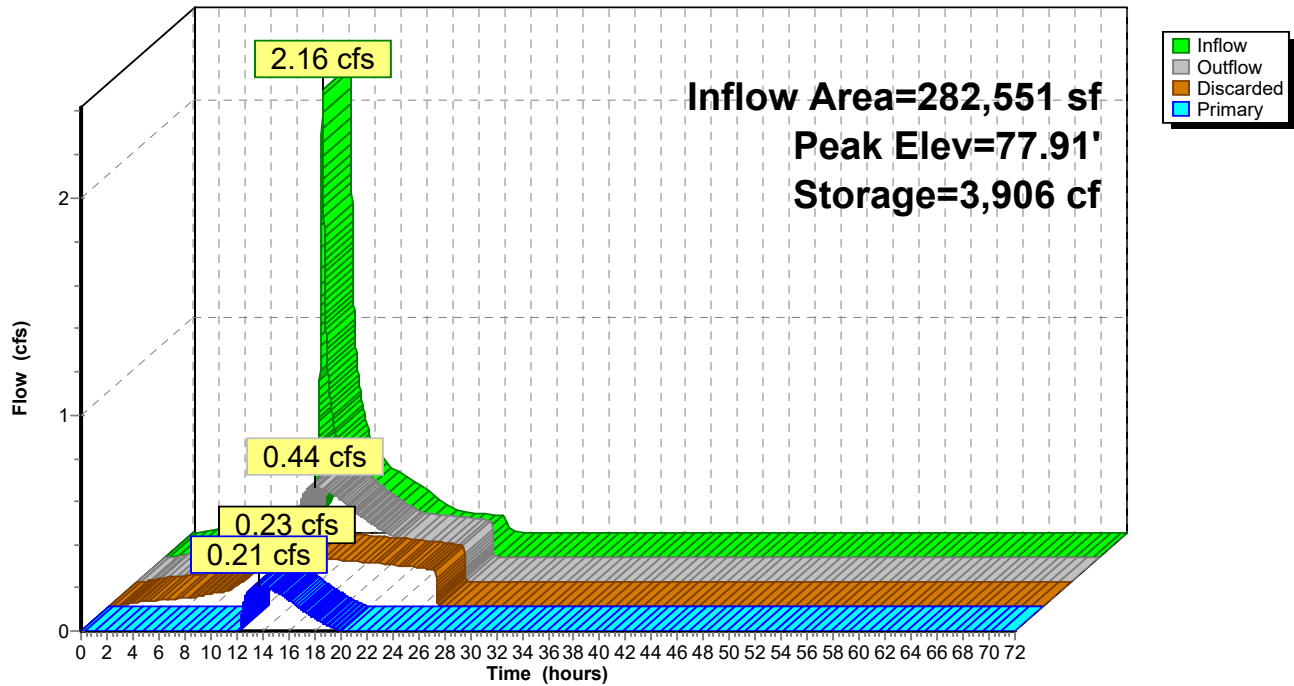
Device	Routing	Invert	Outlet Devices
#1	Primary	77.00'	18.0" Round Culvert 15" L= 69.0' Ke= 0.500 Inlet / Outlet Invert= 77.00' / 66.00' S= 0.1594 ' S= 0.1594 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf
#2	Device 1	77.50'	4.0" Vert. Orifice 4" C= 0.600 Limited to weir flow at low heads
#3	Device 1	80.00'	42.0" x 42.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	80.30'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	77.00'	2.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.23 cfs @ 13.67 hrs HW=77.91' (Free Discharge)
 ↳ **5=Exfiltration** (Exfiltration Controls 0.23 cfs)

Primary OutFlow Max=0.21 cfs @ 13.67 hrs HW=77.91' TW=67.64' (Dynamic Tailwater)
 ↳ **1=Culvert 15"** (Passes 0.21 cfs of 3.64 cfs potential flow)
 ↳ **2=Orifice 4"** (Orifice Controls 0.21 cfs @ 2.38 fps)
 ↳ **3=Grate** (Controls 0.00 cfs)
 ↳ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B2: Basin #2

Hydrograph



Summary for Pond B3: Basin #3

Inflow Area = 440,051 sf, 22.16% Impervious, Inflow Depth = 0.57" for 25-Year event
 Inflow = 3.44 cfs @ 12.11 hrs, Volume= 20,948 cf
 Outflow = 0.26 cfs @ 17.34 hrs, Volume= 20,948 cf, Atten= 93%, Lag= 313.5 min
 Discarded = 0.26 cfs @ 17.34 hrs, Volume= 20,943 cf
 Primary = 0.00 cfs @ 17.34 hrs, Volume= 4 cf
 Routed to Link PT2 : Proposed Total (AP-2)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 68.02' @ 17.34 hrs Surf.Area= 5,519 sf Storage= 9,478 cf

Plug-Flow detention time= 372.0 min calculated for 20,948 cf (100% of inflow)
 Center-of-Mass det. time= 372.0 min (1,200.4 - 828.4)

Volume	Invert	Avail.Storage	Storage Description
#1	66.00'	34,230 cf	Basin 3 (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
66.00	3,879	0	0
67.00	4,673	4,276	4,276
68.00	5,501	5,087	9,363
69.00	6,379	5,940	15,303
70.00	7,310	6,845	22,148
71.00	8,291	7,801	29,948
71.50	8,836	4,282	34,230

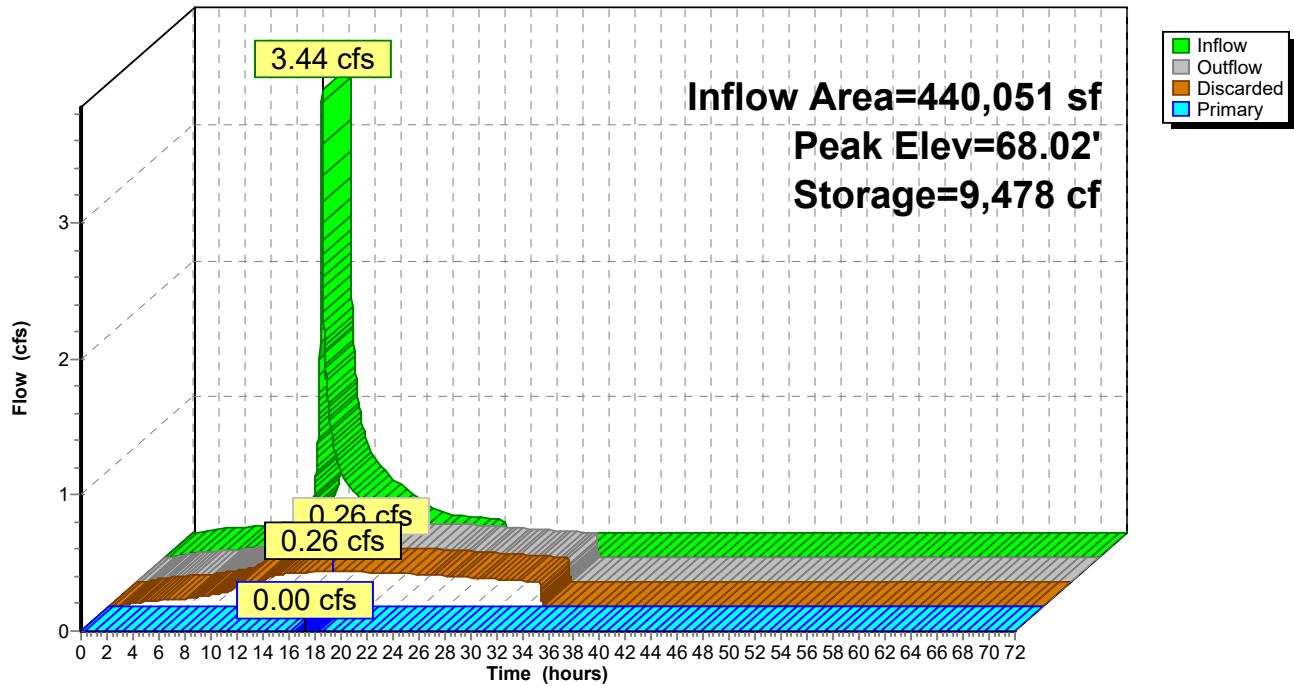
Device	Routing	Invert	Outlet Devices
#1	Primary	67.49'	15.0" Round Culvert 15" L= 360.0' Ke= 0.500 Inlet / Outlet Invert= 67.49' / 66.00' S= 0.0041 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.23 sf
#2	Device 1	68.00'	4.0" Vert. Orifice 4" C= 0.600 Limited to weir flow at low heads
#3	Device 1	70.50'	42.0" x 42.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	71.50'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	66.00'	2.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.26 cfs @ 17.34 hrs HW=68.02' (Free Discharge)
 ↳ **5=Exfiltration** (Exfiltration Controls 0.26 cfs)

Primary OutFlow Max=0.00 cfs @ 17.34 hrs HW=68.02' TW=0.00' (Dynamic Tailwater)
 ↳ **1=Culvert 15"** (Passes 0.00 cfs of 0.90 cfs potential flow)
 ↳ **2=Orifice 4"** (Orifice Controls 0.00 cfs @ 0.49 fps)
 ↳ **3=Grate** (Controls 0.00 cfs)
 ↳ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B3: Basin #3

Hydrograph



Summary for Pond R-1: Roof Recharge

Inflow Area = 12,530 sf, 100.00% Impervious, Inflow Depth = 6.44" for 25-Year event
 Inflow = 1.94 cfs @ 12.10 hrs, Volume= 6,726 cf
 Outflow = 0.24 cfs @ 11.59 hrs, Volume= 6,726 cf, Atten= 88%, Lag= 0.0 min
 Discarded = 0.24 cfs @ 11.59 hrs, Volume= 6,726 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to Pond B1 : Basin #1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 78.66' @ 12.72 hrs Surf.Area= 1,027 sf Storage= 1,707 cf

Plug-Flow detention time= 39.9 min calculated for 6,725 cf (100% of inflow)
 Center-of-Mass det. time= 39.9 min (782.0 - 742.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	76.00'	219 cf	6.25'W x 32.23'L x 3.75'H Field A 755 cf Overall - 209 cf Embedded = 546 cf x 40.0% Voids
#2A	76.50'	209 cf	ADS_StormTech SC-800 +Cap x 4 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap Cap Storage= 3.4 cf x 2 x 1 rows = 6.8 cf
#3	76.00'	24 cf	2.00'W x 2.00'L x 6.00'H Prismatic
		452 cf	x 5.00 = 2,259 cf Total Available Storage

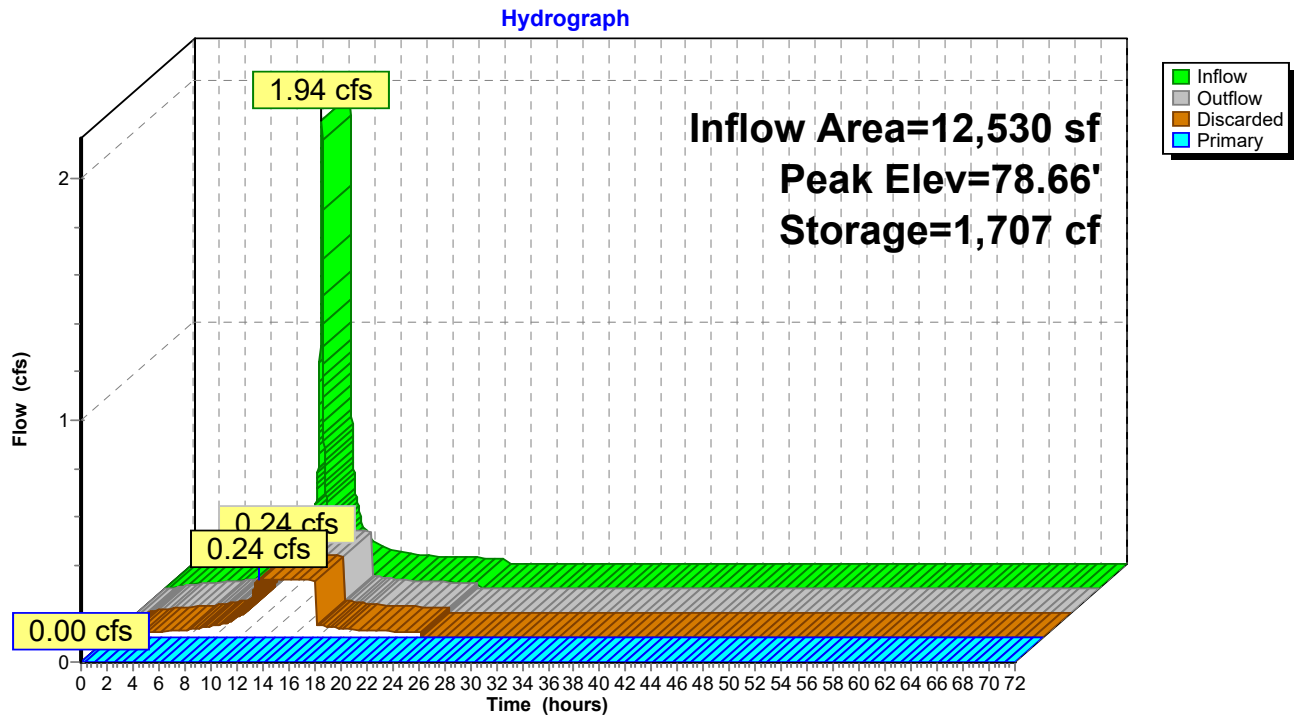
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	81.00'	24.0" x 24.0" Horiz. Grate 24" C= 0.600 Limited to weir flow at low heads
#2	Discarded	76.00'	10.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.24 cfs @ 11.59 hrs HW=76.07' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.24 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=76.00' TW=77.00' (Dynamic Tailwater)
 ↑ **1=Grate 24"** (Controls 0.00 cfs)

Pond R-1: Roof Recharge

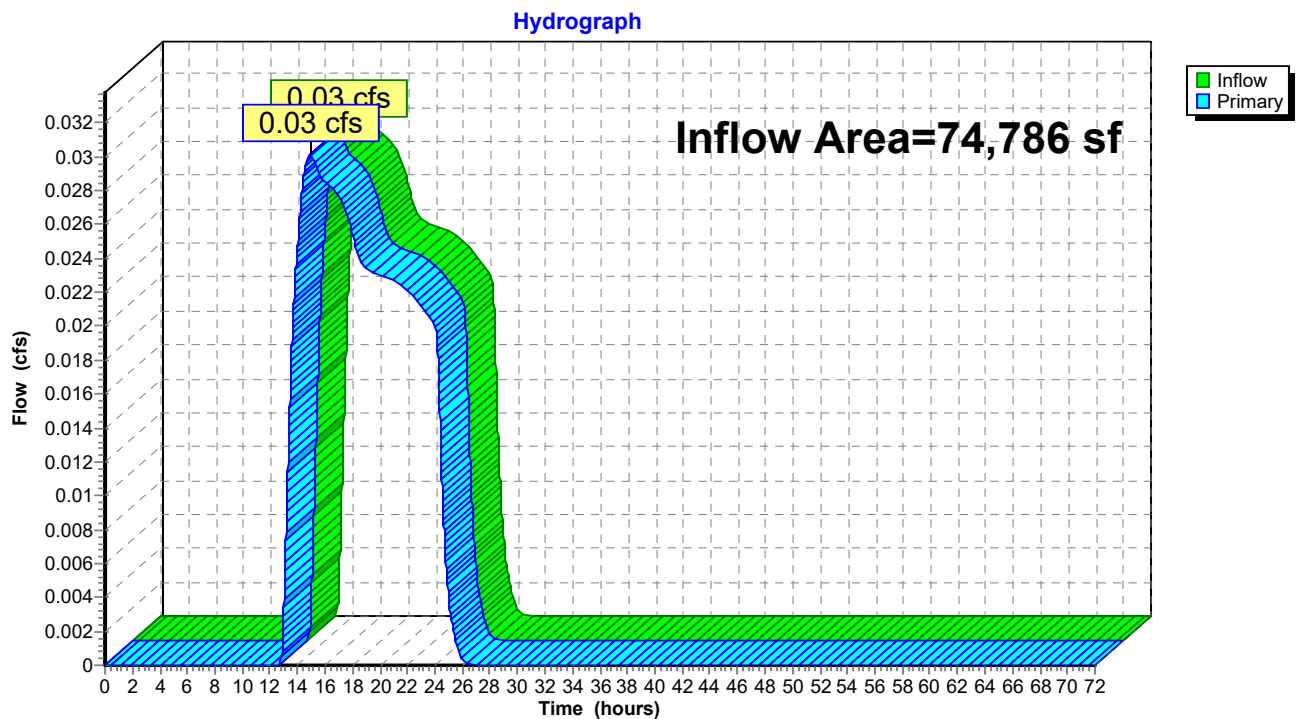


Summary for Link PT1: Proposed Total (AP-1)

Inflow Area =	74,786 sf,	0.00% Impervious,	Inflow Depth = 0.16"	for 25-Year event
Inflow =	0.03 cfs @	14.95 hrs,	Volume=	997 cf
Primary =	0.03 cfs @	14.95 hrs,	Volume=	997 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link PT1: Proposed Total (AP-1)

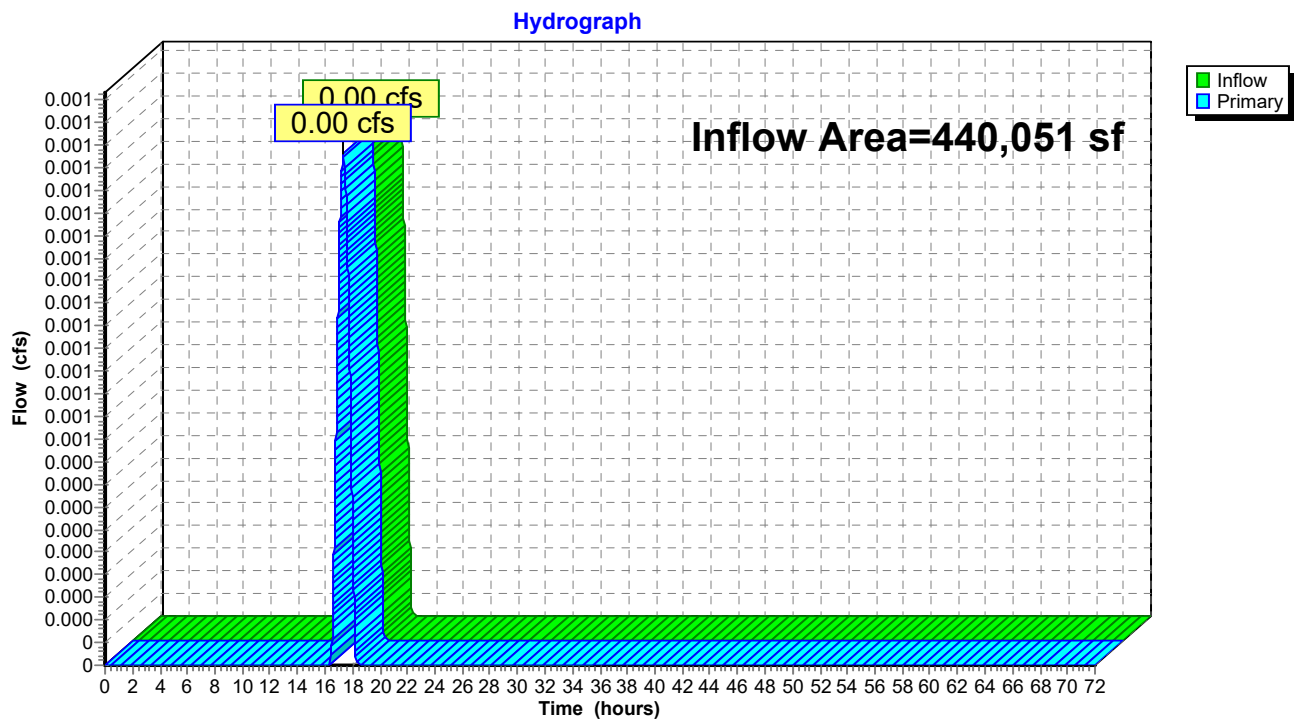


Summary for Link PT2: Proposed Total (AP-2)

Inflow Area = 440,051 sf, 22.16% Impervious, Inflow Depth = 0.00" for 25-Year event
 Inflow = 0.00 cfs @ 17.34 hrs, Volume= 4 cf
 Primary = 0.00 cfs @ 17.34 hrs, Volume= 4 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link PT2: Proposed Total (AP-2)



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
 Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv.
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment7S: Prop. Drainage Area-3 Runoff Area=18,104 sf 0.00% Impervious Runoff Depth=1.83"
 Flow Length=50' Slope=0.1000 '/' Tc=4.2 min CN=39/0 Runoff=0.67 cfs 2,768 cf

Subcatchment8S: Prop. Drainage Area-3 Runoff Area=22,694 sf 100.00% Impervious Runoff Depth=9.24"
 Flow Length=530' Tc=3.0 min CN=0/98 Runoff=4.69 cfs 17,473 cf

Subcatchment9S: Prop. Drainage Area-3 Runoff Area=70,251 sf 0.00% Impervious Runoff Depth=1.83"
 Flow Length=717' Tc=12.5 min CN=39/0 Runoff=1.50 cfs 10,739 cf

Subcatchment10S: Prop. Drainage Runoff Area=12,530 sf 100.00% Impervious Runoff Depth=9.24"
 Tc=2.0 min CN=0/98 Runoff=2.75 cfs 9,647 cf

Subcatchment11S: Prop. Drainage Runoff Area=33,921 sf 0.00% Impervious Runoff Depth=0.82"
 Flow Length=50' Slope=0.0250 '/' Tc=10.9 min CN=30/0 Runoff=0.17 cfs 2,327 cf

SubcatchmentP-1I: Prop. Drainage Runoff Area=24,003 sf 100.00% Impervious Runoff Depth=9.24"
 Flow Length=430' Tc=3.6 min CN=0/98 Runoff=4.76 cfs 18,481 cf

SubcatchmentP-1P: Prop. Drainage Area-1 Runoff Area=72,415 sf 0.00% Impervious Runoff Depth=1.83"
 Flow Length=530' Tc=13.1 min CN=39/0 Runoff=1.51 cfs 11,070 cf

SubcatchmentP-1R: Prop. Drainage Runoff Area=12,530 sf 100.00% Impervious Runoff Depth=9.24"
 Tc=2.0 min CN=0/98 Runoff=2.75 cfs 9,647 cf

SubcatchmentP-2R: Prop. Drainage Runoff Area=10,024 sf 100.00% Impervious Runoff Depth=9.24"
 Tc=2.0 min CN=0/98 Runoff=2.20 cfs 7,718 cf

SubcatchmentP1A: Prop. Drainage Runoff Area=25,206 sf 0.00% Impervious Runoff Depth=0.82"
 Flow Length=470' Tc=24.2 min CN=30/0 Runoff=0.10 cfs 1,729 cf

SubcatchmentP1B: Prop. Drainage Area-1 Runoff Area=18,385 sf 0.00% Impervious Runoff Depth=1.83"
 Flow Length=50' Slope=0.1000 '/' Tc=4.2 min CN=39/0 Runoff=0.68 cfs 2,811 cf

SubcatchmentP1W: Prop. Drainage Runoff Area=74,786 sf 0.00% Impervious Runoff Depth=0.82"
 Flow Length=285' Tc=26.7 min CN=30/0 Runoff=0.29 cfs 5,130 cf

SubcatchmentP2B: Prop. Drainage Area-2 Runoff Area=18,844 sf 0.00% Impervious Runoff Depth=1.83"
 Flow Length=50' Slope=0.1000 '/' Tc=4.2 min CN=39/0 Runoff=0.70 cfs 2,881 cf

SubcatchmentP2I: Prop. Drainage Area-2 Runoff Area=15,753 sf 100.00% Impervious Runoff Depth=9.24"
 Flow Length=745' Tc=5.1 min CN=0/98 Runoff=2.83 cfs 12,129 cf

SubcatchmentP2P: Prop. Drainage Area-2 Runoff Area=56,947 sf 0.00% Impervious Runoff Depth=1.83"
 Flow Length=835' Tc=18.5 min CN=39/0 Runoff=0.98 cfs 8,706 cf

SubcatchmentP2W: Prop. Drainage Area-2 Runoff Area=28,444 sf 0.00% Impervious Runoff Depth=0.82"
 Flow Length=880' Tc=15.5 min CN=30/0 Runoff=0.13 cfs 1,951 cf

Pond 8P: Roof Recharge Peak Elev=81.12' Storage=1,793 cf Inflow=2.20 cfs 7,718 cf
 Discarded=0.19 cfs 7,084 cf Primary=1.13 cfs 634 cf Outflow=1.32 cfs 7,718 cf

Pond 12P: Roof Recharge Peak Elev=81.29' Storage=1,796 cf Inflow=2.75 cfs 9,647 cf
 Discarded=0.19 cfs 8,015 cf Primary=4.15 cfs 1,632 cf Outflow=4.34 cfs 9,647 cf

Pond B1: Basin #1 Peak Elev=79.40' Storage=15,055 cf Inflow=6.59 cfs 34,884 cf
 Discarded=0.40 cfs 25,895 cf Primary=0.19 cfs 8,989 cf Outflow=0.58 cfs 34,884 cf

Pond B2: Basin #2 Peak Elev=78.90' Storage=9,672 cf Inflow=4.87 cfs 35,290 cf
 Discarded=0.31 cfs 19,308 cf Primary=0.47 cfs 15,982 cf Outflow=0.77 cfs 35,290 cf

Pond B3: Basin #3 Peak Elev=69.55' Storage=18,966 cf Inflow=10.04 cfs 50,921 cf
 Discarded=0.32 cfs 30,363 cf Primary=0.49 cfs 20,558 cf Outflow=0.81 cfs 50,921 cf

Pond R-1: Roof Recharge Peak Elev=81.14' Storage=2,241 cf Inflow=2.75 cfs 9,647 cf
 Discarded=0.24 cfs 8,855 cf Primary=1.41 cfs 793 cf Outflow=1.65 cfs 9,647 cf

Link PT1: Proposed Total (AP-1) Inflow=0.29 cfs 5,130 cf
 Primary=0.29 cfs 5,130 cf

Link PT2: Proposed Total (AP-2) Inflow=0.49 cfs 20,558 cf
 Primary=0.49 cfs 20,558 cf

Total Runoff Area = 514,837 sf Runoff Volume = 125,207 cf Average Runoff Depth = 2.92"
81.06% Pervious = 417,303 sf 18.94% Impervious = 97,534 sf

Summary for Subcatchment 7S: Prop. Drainage Area-3 (Basin Area) (Non-Contributory)

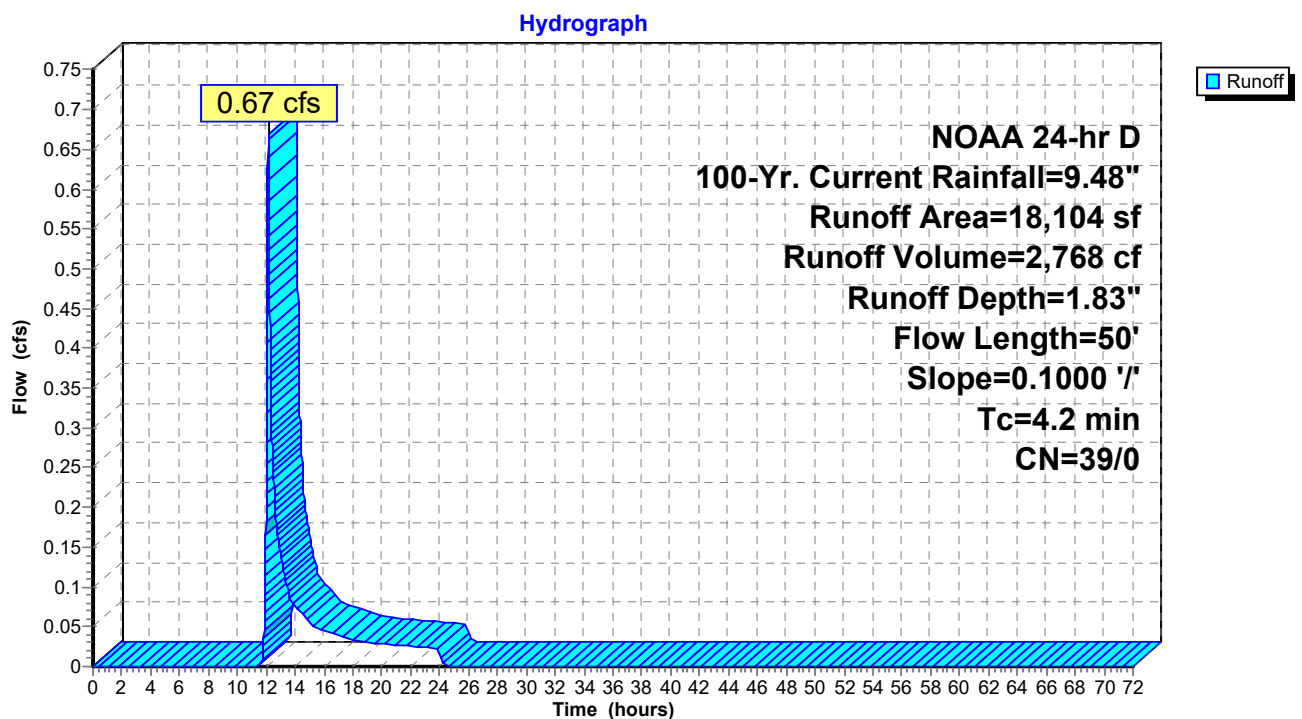
Runoff = 0.67 cfs @ 12.13 hrs, Volume= 2,768 cf, Depth= 1.83"
 Routed to Pond B3 : Basin #3

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 100-Yr. Current Rainfall=9.48"

Area (sf)	CN	Description
* 18,104	39	Basin Area-Non-contributory, HSG A
18,104	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.1000	0.20		Sheet Flow, Sheet Grass
Grass: Dense n= 0.240 P2= 3.42"					

Subcatchment 7S: Prop. Drainage Area-3 (Basin Area) (Non-Contributory)



Summary for Subcatchment 8S: Prop. Drainage Area-3 (Impervious)

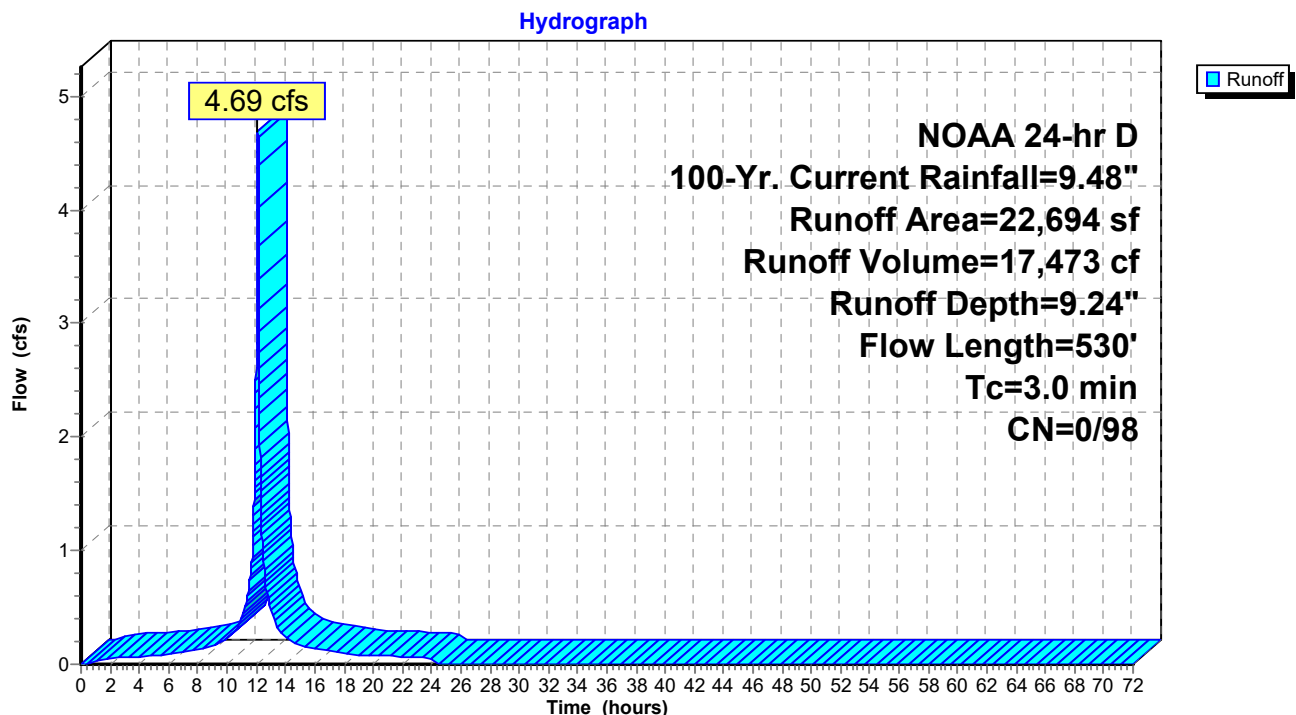
Runoff = 4.69 cfs @ 12.11 hrs, Volume= 17,473 cf, Depth= 9.24"
 Routed to Pond B3 : Basin #3

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 100-Yr. Current Rainfall=9.48"

Area (sf)	CN	Description
13,555	98	Paved roads w/curbs & sewers, HSG A
* 3,626	98	Sidewalks, HSG A
* 5,513	98	Driveways, HSG A
22,694	98	Weighted Average
22,694	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	100	0.0292	1.65		Sheet Flow, Sheet Pvmt Smooth surfaces n= 0.011 P2= 3.42"
1.1	233	0.0292	3.47		Shallow Concentrated Flow, Shallow Pvmt Paved Kv= 20.3 fps
0.9	197	0.0040	3.76	6.64	Pipe Channel, Pipe 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
3.0	530	Total			

Subcatchment 8S: Prop. Drainage Area-3 (Impervious)



Summary for Subcatchment 9S: Prop. Drainage Area-3 (Pervious)

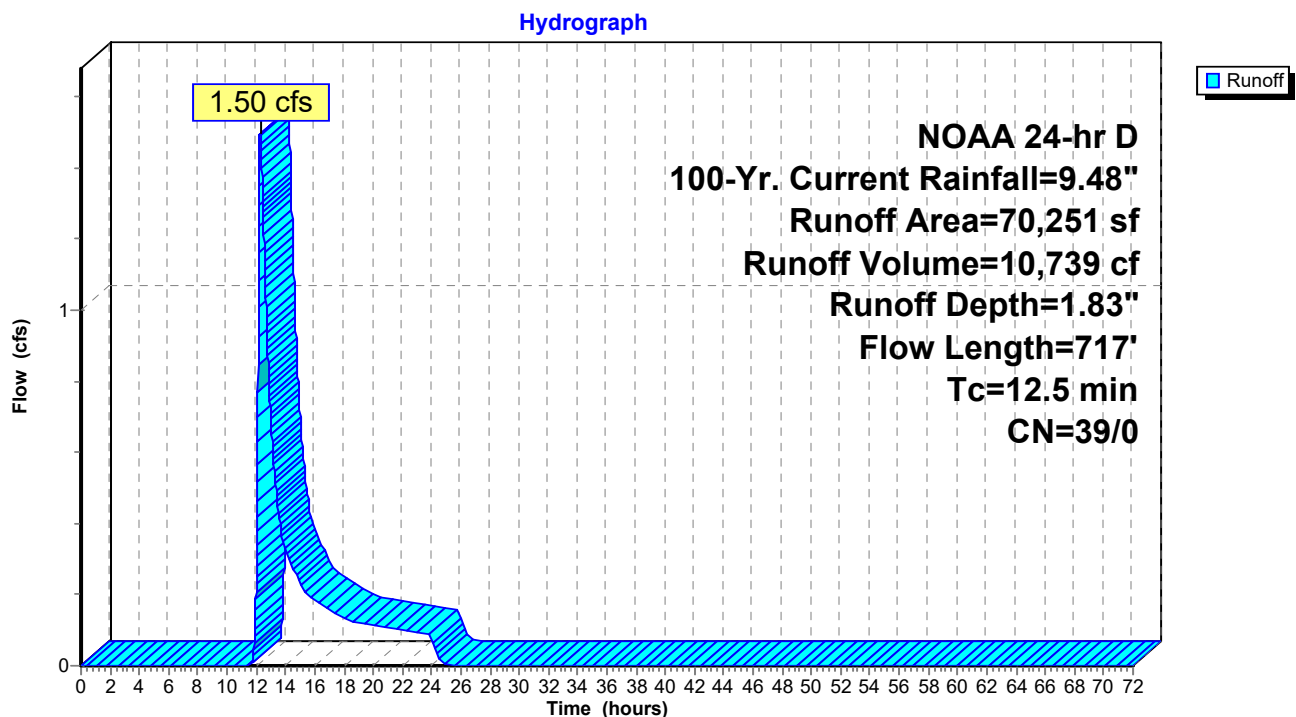
Runoff = 1.50 cfs @ 12.25 hrs, Volume= 10,739 cf, Depth= 1.83"
 Routed to Pond B3 : Basin #3

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 100-Yr. Current Rainfall=9.48"

Area (sf)	CN	Description
70,251	39	>75% Grass cover, Good, HSG A
70,251	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	100	0.0500	0.17		Sheet Flow, Sheet Grass Grass: Dense n= 0.240 P2= 3.42"
0.1	20	0.0500	3.60		Shallow Concentrated Flow, Shallow Grass Unpaved Kv= 16.1 fps
1.9	400	0.0292	3.47		Shallow Concentrated Flow, Shallow Pvmnt Paved Kv= 20.3 fps
0.9	197	0.0040	3.76	6.64	Pipe Channel, Pipe 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
12.5	717	Total			

Subcatchment 9S: Prop. Drainage Area-3 (Pervious)



Summary for Subcatchment 10S: Prop. Drainage Area-3 (Roof)

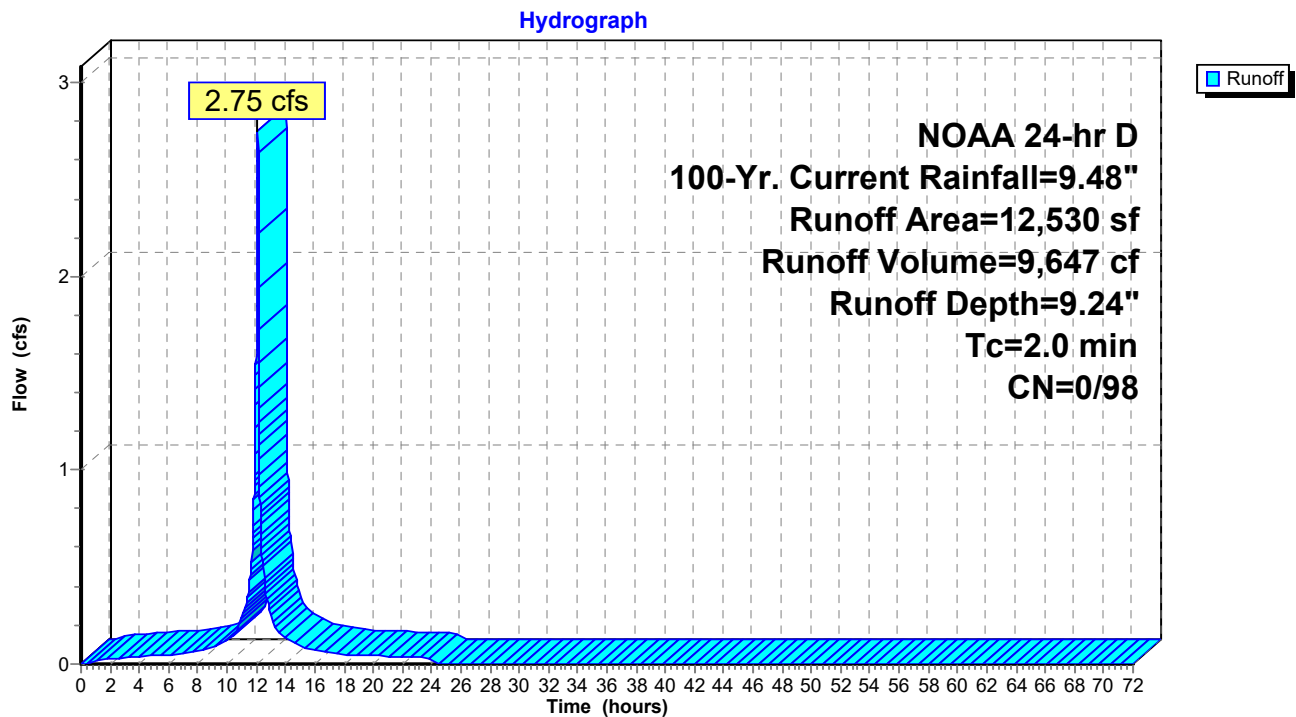
Runoff = 2.75 cfs @ 12.10 hrs, Volume= 9,647 cf, Depth= 9.24"
 Routed to Pond 12P : Roof Recharge

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 100-Yr. Current Rainfall=9.48"

Area (sf)	CN	Description
12,530	98	Roofs, HSG A
12,530	98	100.00% Impervious Area

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

Subcatchment 10S: Prop. Drainage Area-3 (Roof)



Summary for Subcatchment 11S: Prop. Drainage Area-3-A (Woods) (Undisturbed)

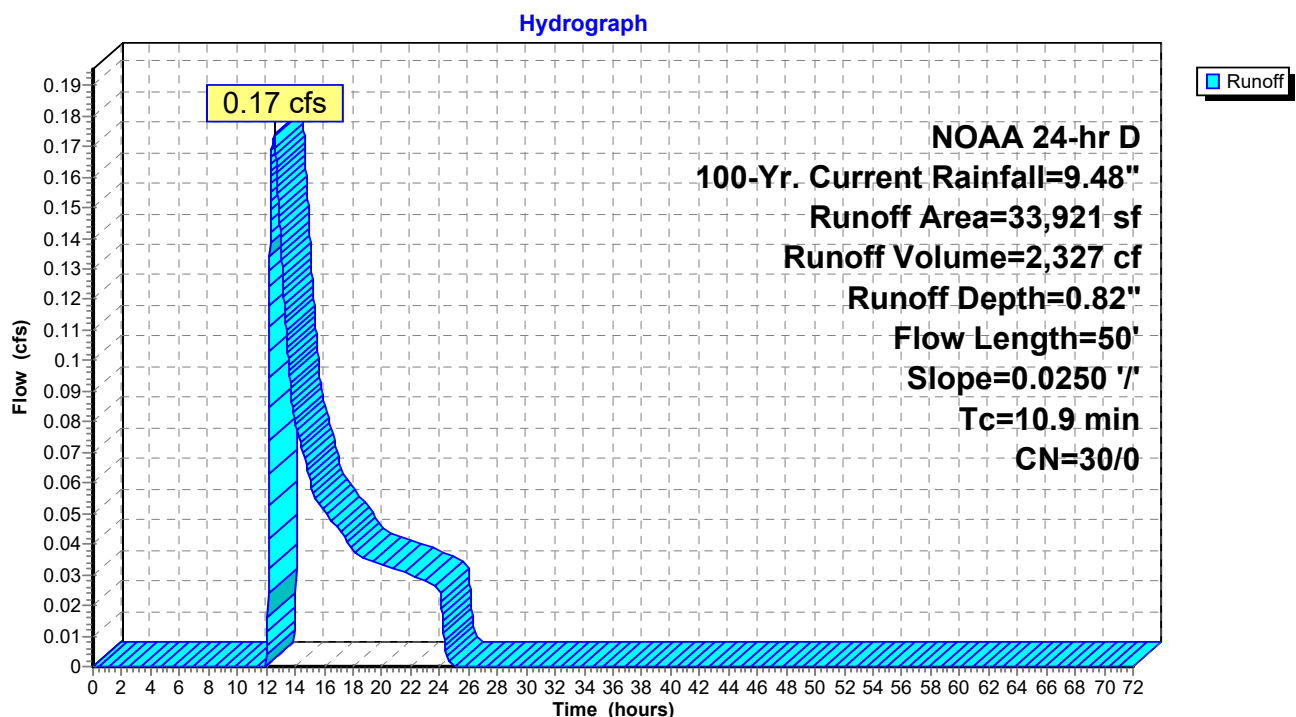
Runoff = 0.17 cfs @ 12.55 hrs, Volume= 2,327 cf, Depth= 0.82"
 Routed to Pond B3 : Basin #3

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 100-Yr. Current Rainfall=9.48"

Area (sf)	CN	Description
33,921	30	Woods, Good, HSG A
33,921	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	50	0.0250	0.08		Sheet Flow, Sheet woods Woods: Light underbrush n= 0.400 P2= 3.42"

Subcatchment 11S: Prop. Drainage Area-3-A (Woods) (Undisturbed)



Summary for Subcatchment P-1I: Prop. Drainage Area-1 (Impervious)

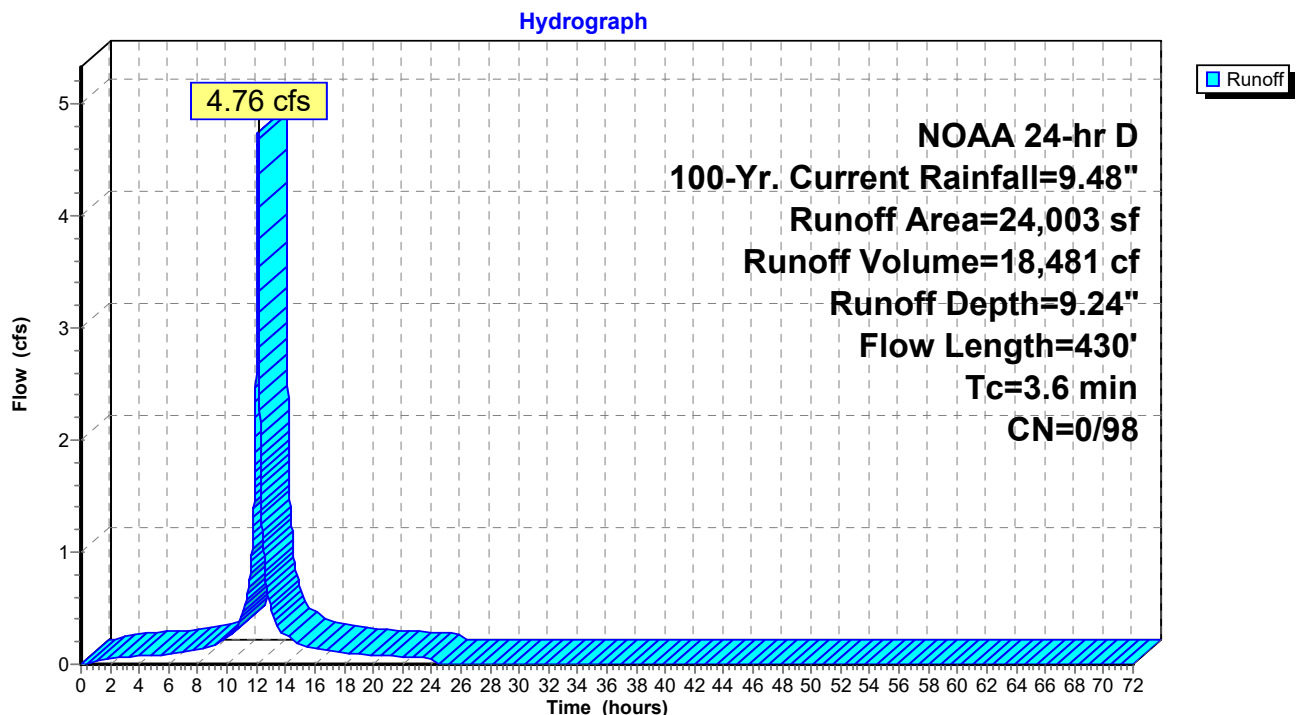
Runoff = 4.76 cfs @ 12.12 hrs, Volume= 18,481 cf, Depth= 9.24"
 Routed to Pond B1 : Basin #1

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 100-Yr. Current Rainfall=9.48"

Area (sf)	CN	Description
15,941	98	Paved roads w/curbs & sewers, HSG A
* 2,588	98	Sidewalks, HSG A
* 5,474	98	Driveways, HSG A
24,003	98	Weighted Average
24,003	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	100	0.0083	1.00		Sheet Flow, Sheet Pvmt Smooth surfaces n= 0.011 P2= 3.42"
0.7	60	0.0050	1.44		Shallow Concentrated Flow, Shallow Pvmt Paved Kv= 20.3 fps
1.2	270	0.0050	3.72	4.57	Pipe Channel, Pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
3.6	430	Total			

Subcatchment P-1I: Prop. Drainage Area-1 (Impervious)



Summary for Subcatchment P-1P: Prop. Drainage Area-1 (Pervious)

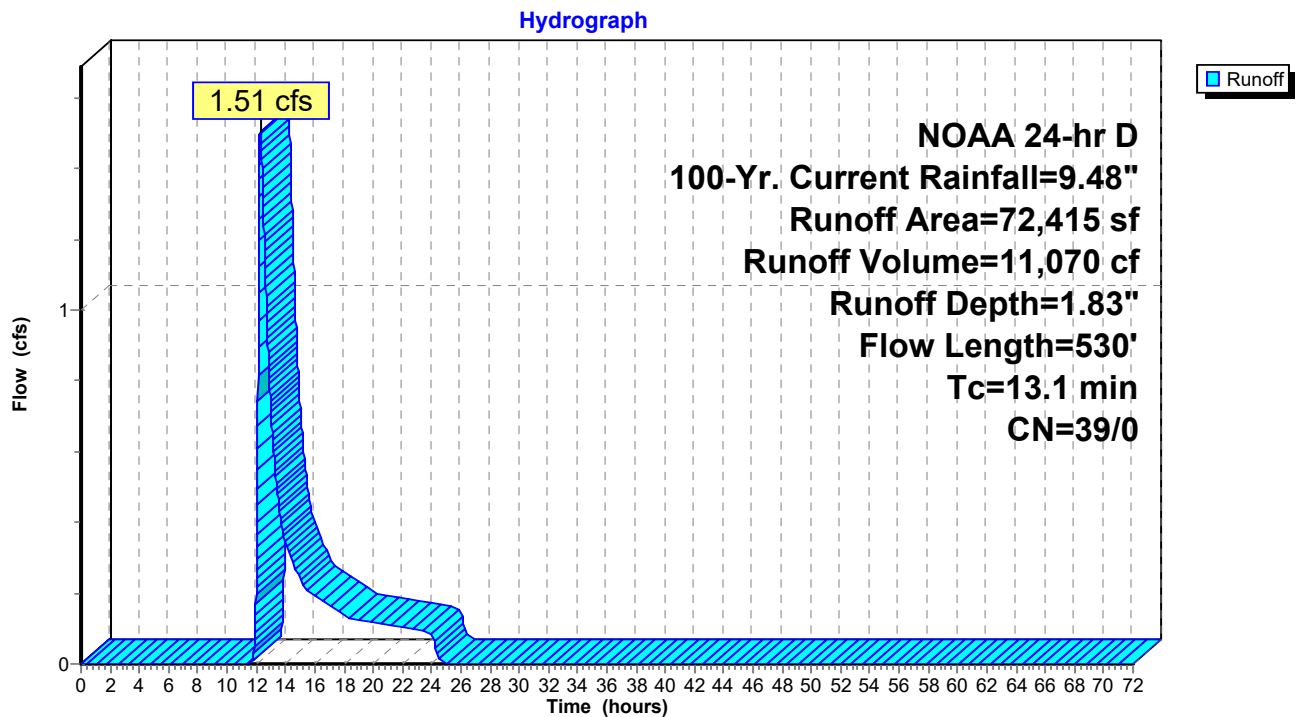
Runoff = 1.51 cfs @ 12.26 hrs, Volume= 11,070 cf, Depth= 1.83"
 Routed to Pond B1 : Basin #1

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 100-Yr. Current Rainfall=9.48"

Area (sf)	CN	Description
72,415	39	>75% Grass cover, Good, HSG A
72,415	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0400	0.16		Sheet Flow, Sheet Grass Grass: Dense n= 0.240 P2= 3.42"
1.4	160	0.0083	1.85		Shallow Concentrated Flow, Shallow Pvmt Paved Kv= 20.3 fps
1.2	270	0.0050	3.72	4.57	Pipe Channel, Pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
13.1	530	Total			

Subcatchment P-1P: Prop. Drainage Area-1 (Pervious)



Summary for Subcatchment P-1R: Prop. Drainage Area-1 (Roof)

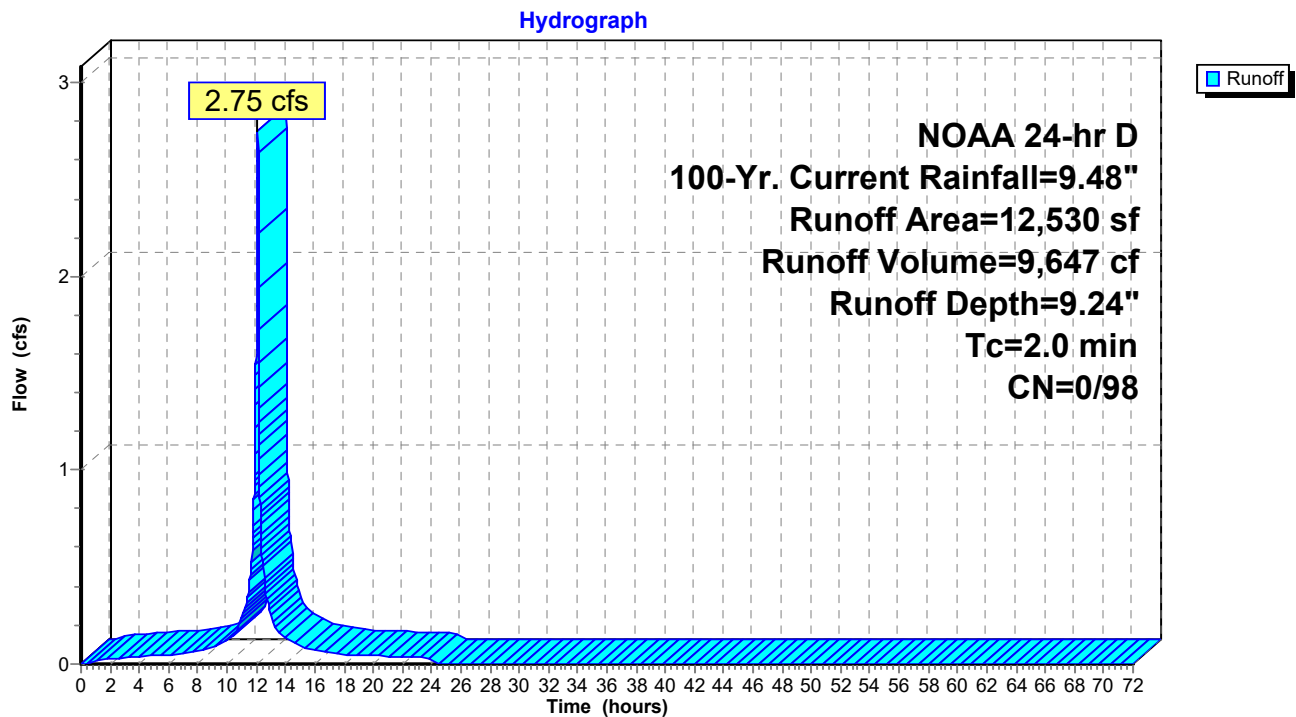
Runoff = 2.75 cfs @ 12.10 hrs, Volume= 9,647 cf, Depth= 9.24"
 Routed to Pond R-1 : Roof Recharge

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 100-Yr. Current Rainfall=9.48"

Area (sf)	CN	Description
12,530	98	Roofs, HSG A
12,530	98	100.00% Impervious Area

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

Subcatchment P-1R: Prop. Drainage Area-1 (Roof)



Summary for Subcatchment P-2R: Prop. Drainage Area-2 (Roof)

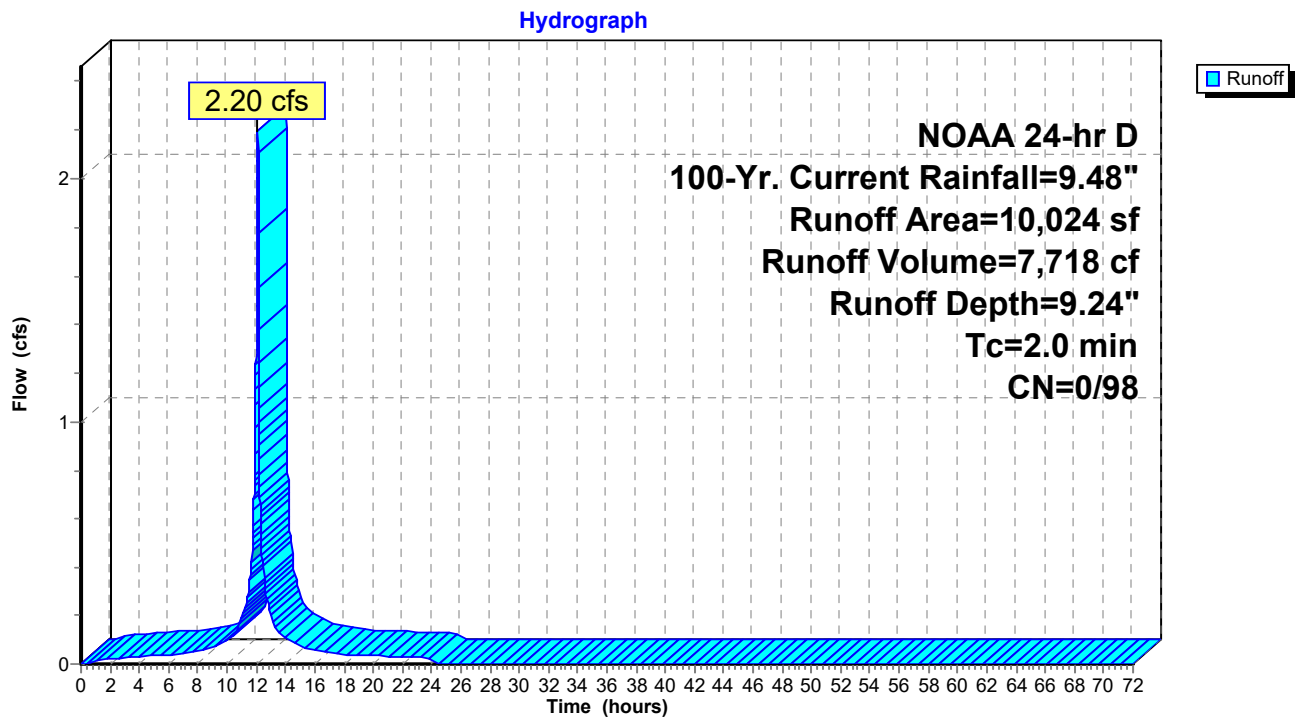
Runoff = 2.20 cfs @ 12.10 hrs, Volume= 7,718 cf, Depth= 9.24"
 Routed to Pond 8P : Roof Recharge

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 100-Yr. Current Rainfall=9.48"

Area (sf)	CN	Description
10,024	98	Roofs, HSG A
10,024	98	100.00% Impervious Area

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

Subcatchment P-2R: Prop. Drainage Area-2 (Roof)



Summary for Subcatchment P1A: Prop. Drainage Area-1-A (Woods) (Undisturbed)

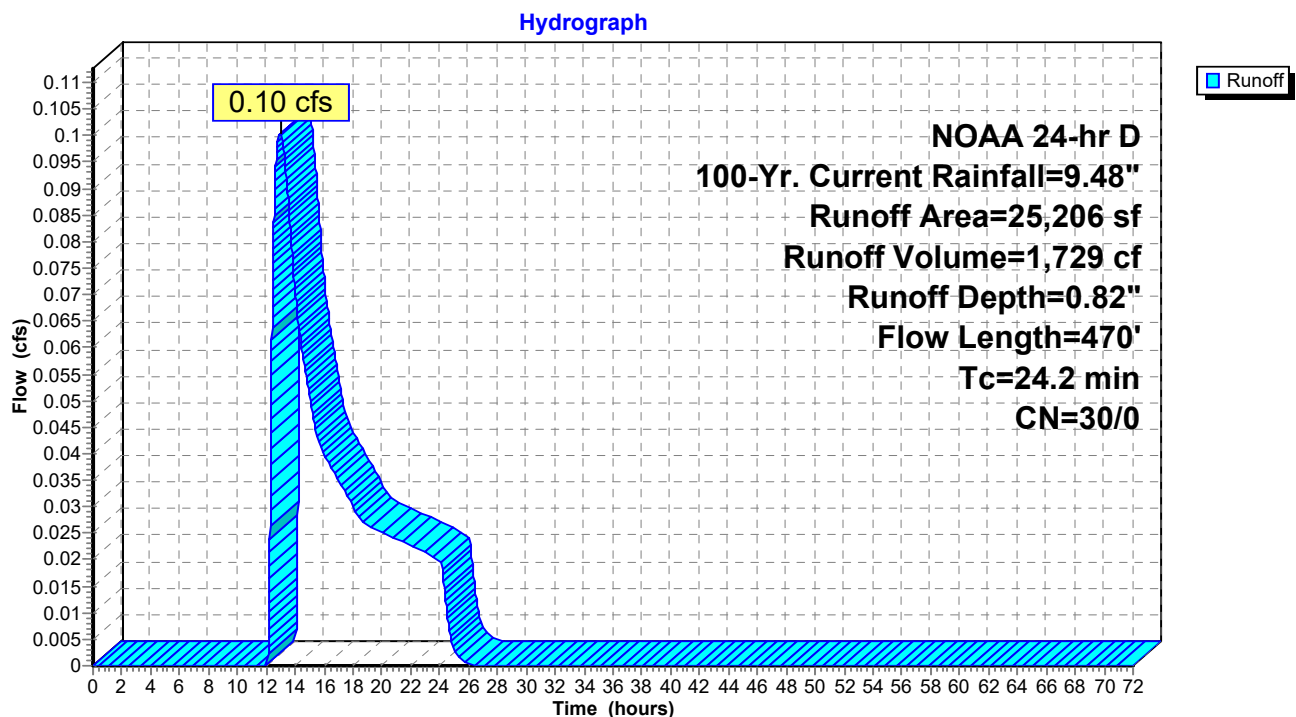
Runoff = 0.10 cfs @ 12.96 hrs, Volume= 1,729 cf, Depth= 0.82"
 Routed to Pond B1 : Basin #1

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 100-Yr. Current Rainfall=9.48"

Area (sf)	CN	Description
25,206	30	Woods, Good, HSG A
25,206	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2	100	0.0170	0.08		Sheet Flow, Sheet woods Woods: Light underbrush n= 0.400 P2= 3.42"
0.4	60	0.0200	2.28		Shallow Concentrated Flow, Shallow Grass Unpaved Kv= 16.1 fps
0.4	40	0.0062	1.60		Shallow Concentrated Flow, shallow Pvmt Paved Kv= 20.3 fps
1.2	270	0.0050	3.72	4.57	Pipe Channel, pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
24.2	470	Total			

Subcatchment P1A: Prop. Drainage Area-1-A (Woods) (Undisturbed)



Summary for Subcatchment P1B: Prop. Drainage Area-1 (Basin Area) (Non-Contributory)

Runoff = 0.68 cfs @ 12.13 hrs, Volume= 2,811 cf, Depth= 1.83"
 Routed to Pond B1 : Basin #1

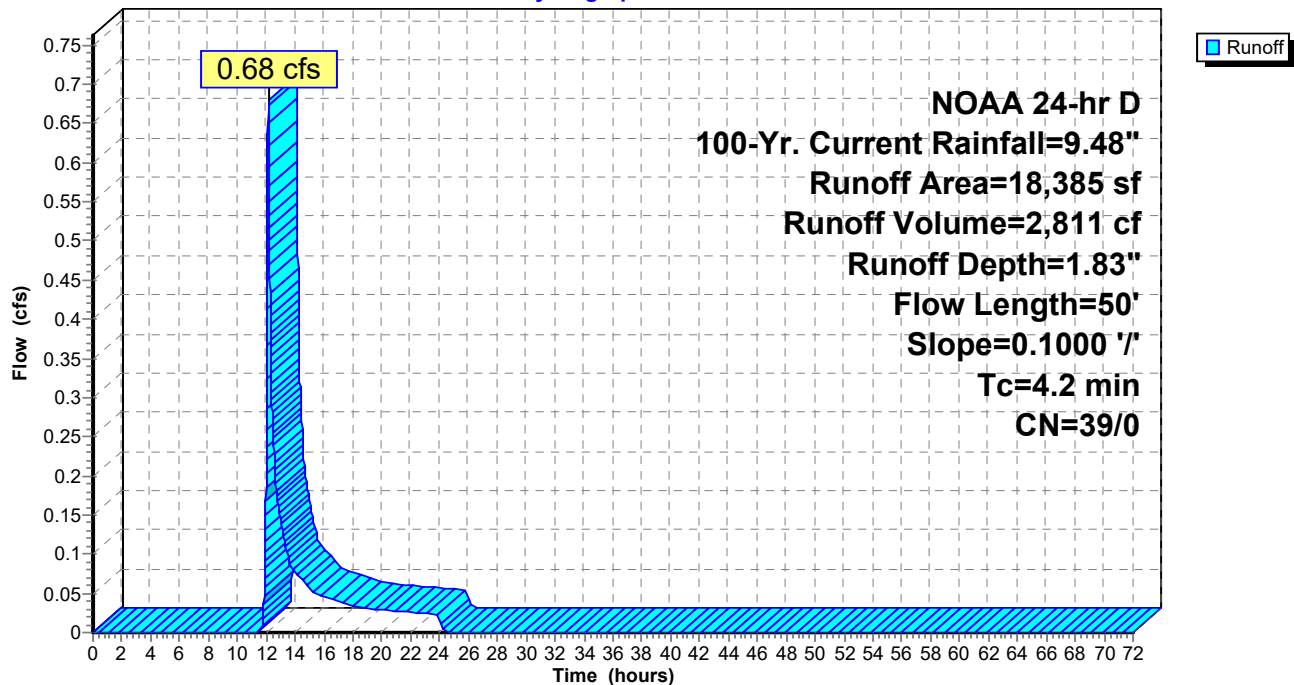
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 100-Yr. Current Rainfall=9.48"

Area (sf)	CN	Description
* 18,385	39	Basin Area-Non-contributory, HSG A
18,385	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.1000	0.20		Sheet Flow, Sheet Grass
Grass: Dense n= 0.240 P2= 3.42"					

Subcatchment P1B: Prop. Drainage Area-1 (Basin Area) (Non-Contributory)

Hydrograph



Summary for Subcatchment P1W: Prop. Drainage Area-1-B (Woods) (undetained)

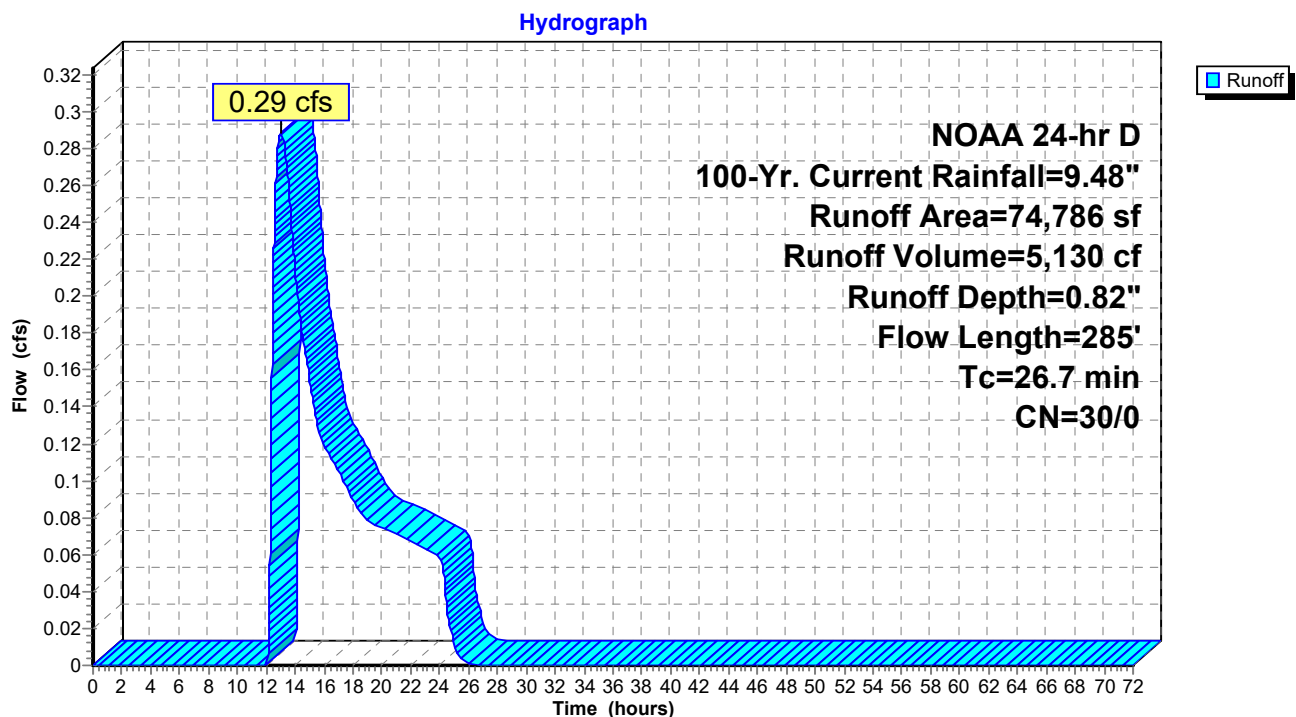
Runoff = 0.29 cfs @ 13.00 hrs, Volume= 5,130 cf, Depth= 0.82"
 Routed to Link PT1 : Proposed Total (AP-1)

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 100-Yr. Current Rainfall=9.48"

Area (sf)	CN	Description
74,786	30	Woods, Good, HSG A
74,786	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.8	100	0.0200	0.08		Sheet Flow, Sheet woods
					Woods: Light underbrush n= 0.400 P2= 3.42"
5.9	185	0.0110	0.52		Shallow Concentrated Flow, Shallow Woods
					Woodland Kv= 5.0 fps
26.7	285	Total			

Subcatchment P1W: Prop. Drainage Area-1-B (Woods) (undetained)



Summary for Subcatchment P2B: Prop. Drainage Area-2 (Basin)(Non-Contributory)

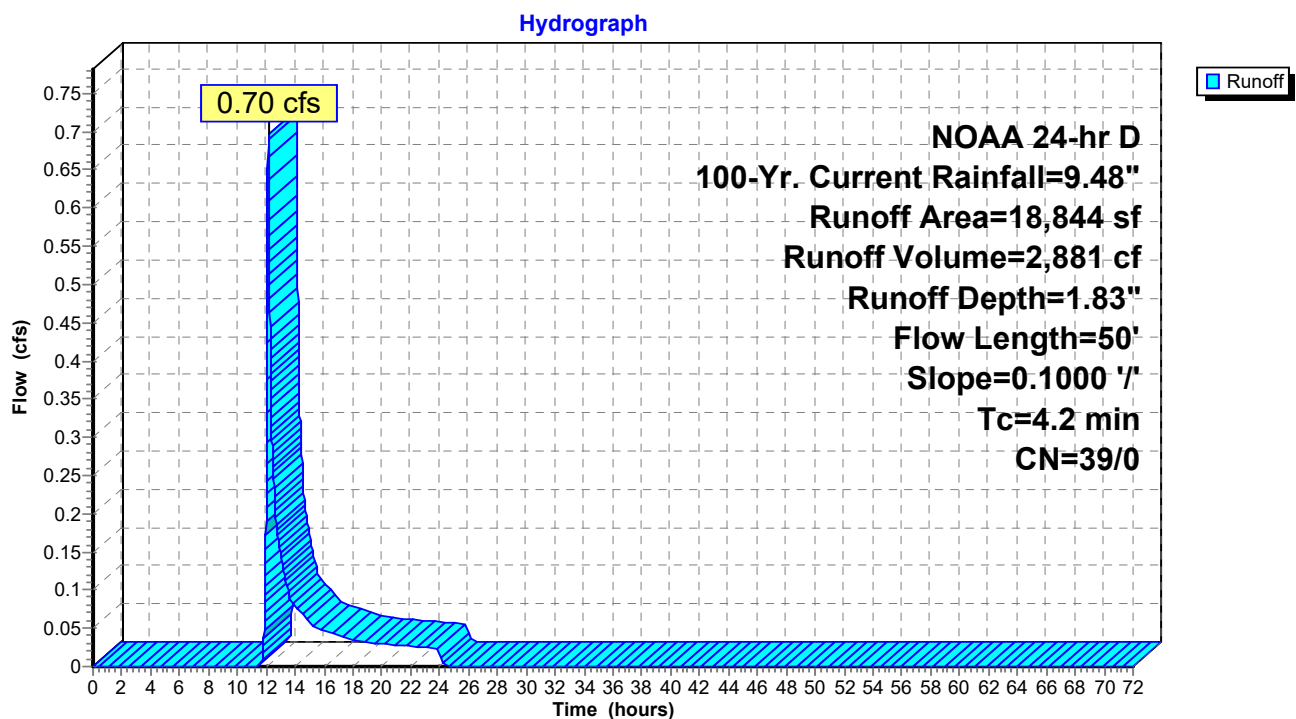
Runoff = 0.70 cfs @ 12.13 hrs, Volume= 2,881 cf, Depth= 1.83"
 Routed to Pond B2 : Basin #2

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 100-Yr. Current Rainfall=9.48"

Area (sf)	CN	Description
* 18,844	39	Basin Area-Non-contributory, HSG A
18,844	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.1000	0.20		Sheet Flow, Sheet Grass
Grass: Dense n= 0.240 P2= 3.42"					

Subcatchment P2B: Prop. Drainage Area-2 (Basin)(Non-Contributory)



Summary for Subcatchment P2I: Prop. Drainage Area-2 (Impervious)

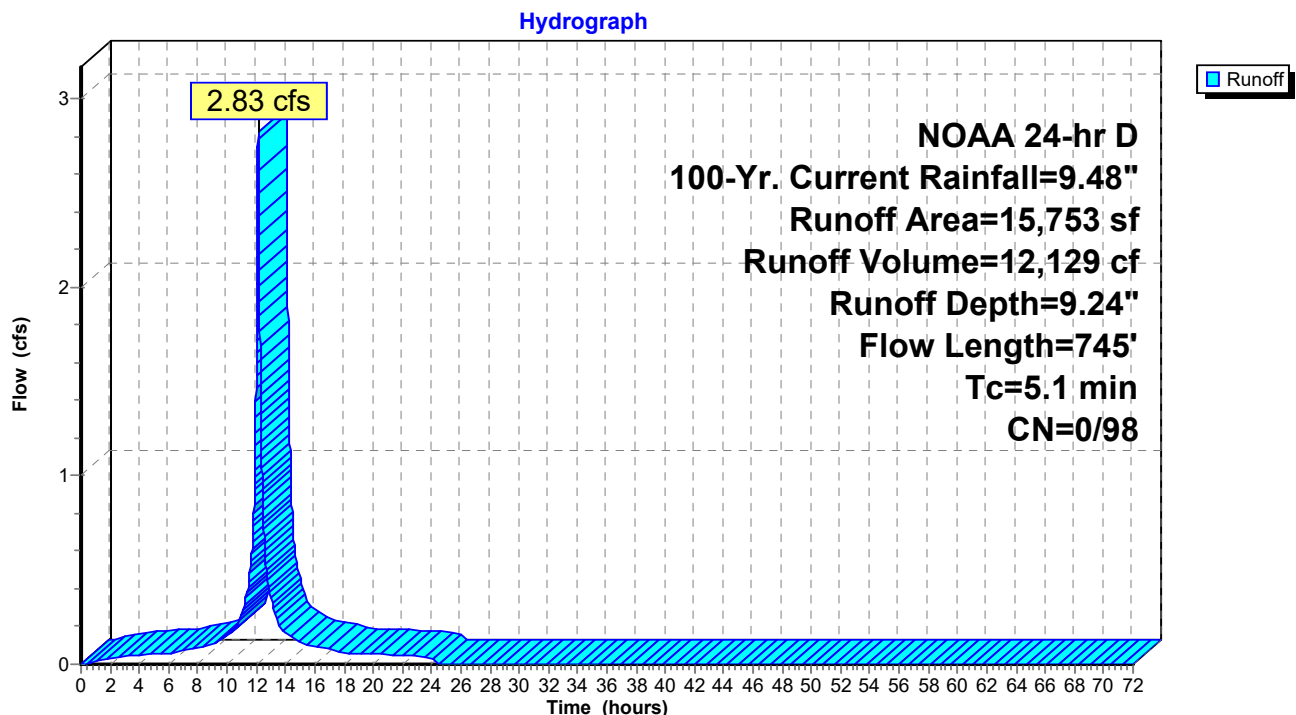
Runoff = 2.83 cfs @ 12.13 hrs, Volume= 12,129 cf, Depth= 9.24"
 Routed to Pond B2 : Basin #2

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 100-Yr. Current Rainfall=9.48"

Area (sf)	CN	Description
9,010	98	Paved roads w/curbs & sewers, HSG A
* 2,394	98	Sidewalks, HSG A
* 4,349	98	Driveways, HSG A
15,753	98	Weighted Average
15,753	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	100	0.0083	1.00		Sheet Flow, Sheet Pvmt Smooth surfaces n= 0.011 P2= 3.42"
0.9	95	0.0083	1.85		Shallow Concentrated Flow, Shallow Pvmt Paved Kv= 20.3 fps
2.5	550	0.0050	3.72	4.57	Pipe Channel, Pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
5.1	745	Total			

Subcatchment P2I: Prop. Drainage Area-2 (Impervious)



Summary for Subcatchment P2P: Prop. Drainage Area-2 (Pervious)

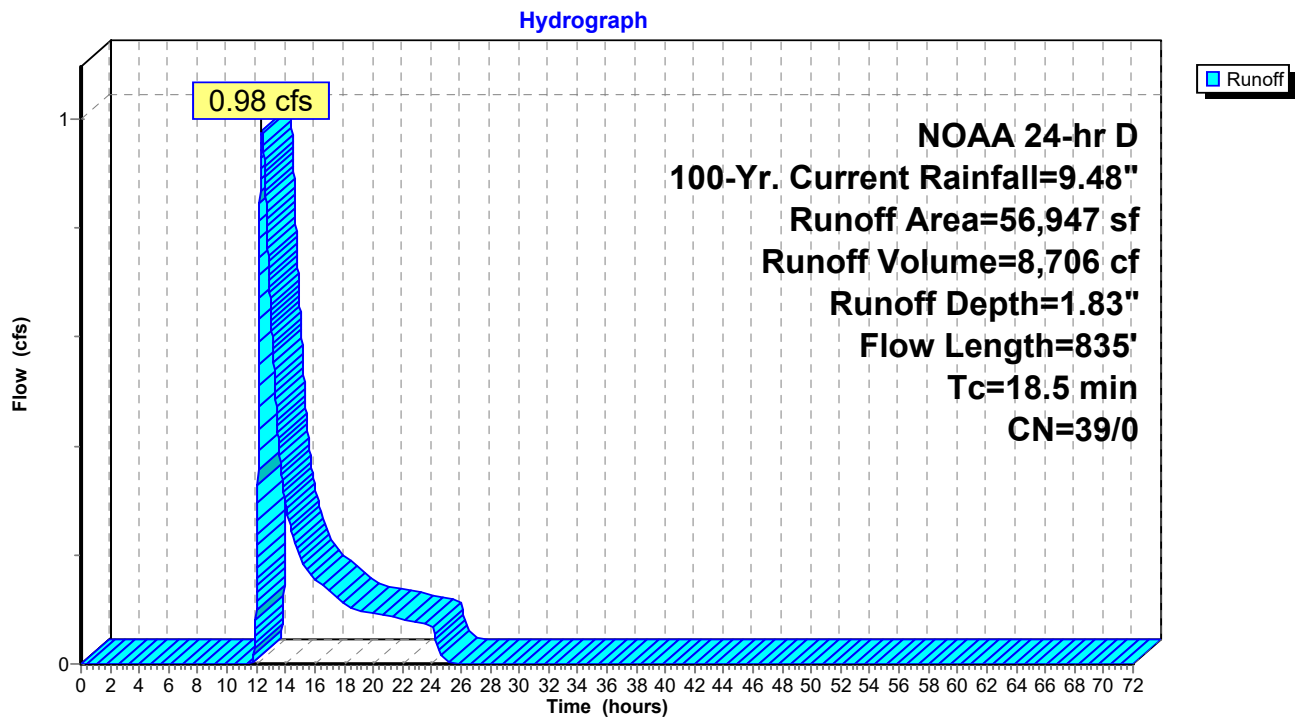
Runoff = 0.98 cfs @ 12.38 hrs, Volume= 8,706 cf, Depth= 1.83"
 Routed to Pond B2 : Basin #2

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 100-Yr. Current Rainfall=9.48"

Area (sf)	CN	Description
56,947	39	>75% Grass cover, Good, HSG A
56,947	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	90	0.0150	0.11		Sheet Flow, Sheet Grass Grass: Dense n= 0.240 P2= 3.42"
1.8	195	0.0083	1.85		Shallow Concentrated Flow, Shallow Pvmt Paved Kv= 20.3 fps
2.5	550	0.0050	3.72	4.57	Pipe Channel, Pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
18.5	835	Total			

Subcatchment P2P: Prop. Drainage Area-2 (Pervious)



Summary for Subcatchment P2W: Prop. Drainage Area-2 (Woods) (Undisturbed)

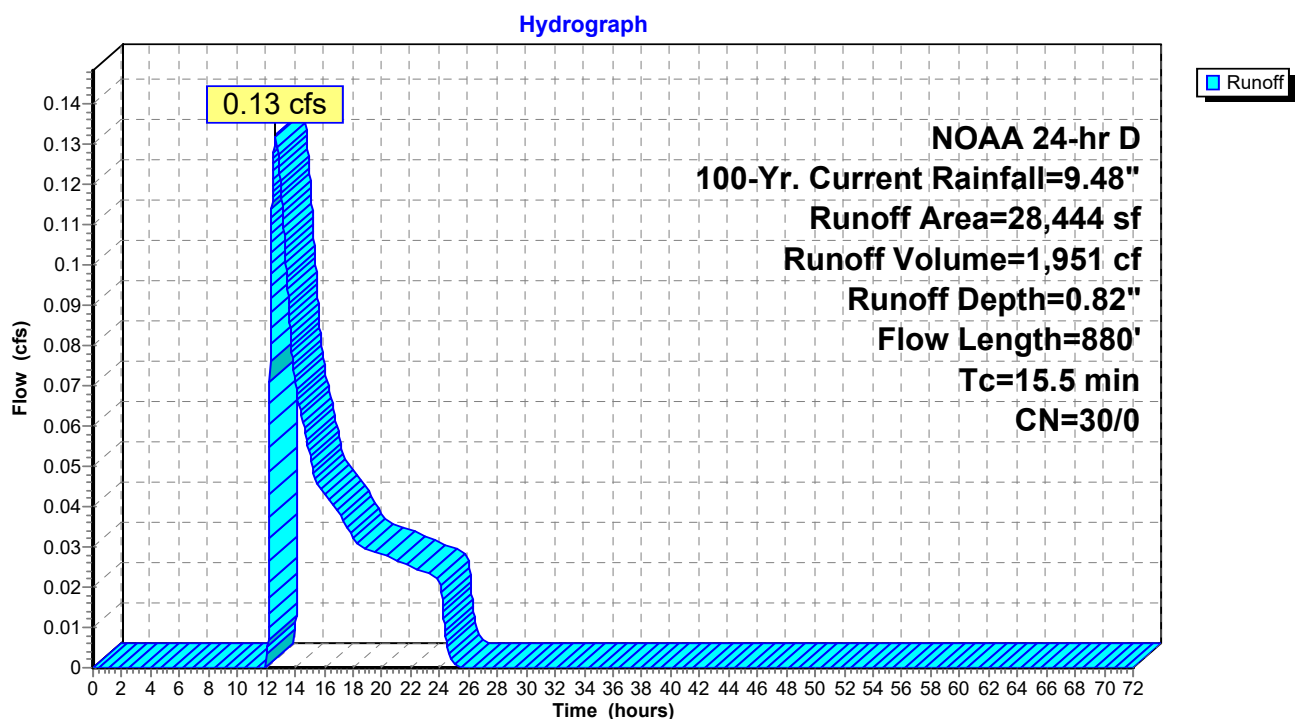
Runoff = 0.13 cfs @ 12.64 hrs, Volume= 1,951 cf, Depth= 0.82"
 Routed to Pond B2 : Basin #2

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 100-Yr. Current Rainfall=9.48"

Area (sf)	CN	Description
28,444	30	Woods, Good, HSG A
28,444	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	50	0.0250	0.08		Sheet Flow, Sheet woods Woods: Light underbrush n= 0.400 P2= 3.42"
0.6	120	0.0400	3.22		Shallow Concentrated Flow, Shallow Grass Unpaved Kv= 16.1 fps
1.7	190	0.0083	1.85		Shallow Concentrated Flow, shallow Pvmt Paved Kv= 20.3 fps
2.3	520	0.0050	3.72	4.57	Pipe Channel, pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
15.5	880	Total			

Subcatchment P2W: Prop. Drainage Area-2 (Woods) (Undisturbed)



Summary for Pond 8P: Roof Recharge

Inflow Area = 10,024 sf, 100.00% Impervious, Inflow Depth = 9.24" for 100-Yr. Current event
 Inflow = 2.20 cfs @ 12.10 hrs, Volume= 7,718 cf
 Outflow = 1.32 cfs @ 12.18 hrs, Volume= 7,718 cf, Atten= 40%, Lag= 4.6 min
 Discarded = 0.19 cfs @ 11.24 hrs, Volume= 7,084 cf
 Primary = 1.13 cfs @ 12.18 hrs, Volume= 634 cf
 Routed to Pond B2 : Basin #2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 81.12' @ 12.18 hrs Surf.Area= 822 sf Storage= 1,793 cf

Plug-Flow detention time= 52.3 min calculated for 7,717 cf (100% of inflow)
 Center-of-Mass det. time= 52.3 min (789.8 - 737.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	76.00'	219 cf	6.25'W x 32.23'L x 3.75'H Field A 755 cf Overall - 209 cf Embedded = 546 cf x 40.0% Voids
#2A	76.50'	209 cf	ADS_StormTech SC-800 +Cap x 4 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap Cap Storage= 3.4 cf x 2 x 1 rows = 6.8 cf
#3	76.00'	24 cf	2.00'W x 2.00'L x 6.00'H Prismatic
			452 cf x 4.00 = 1,807 cf Total Available Storage

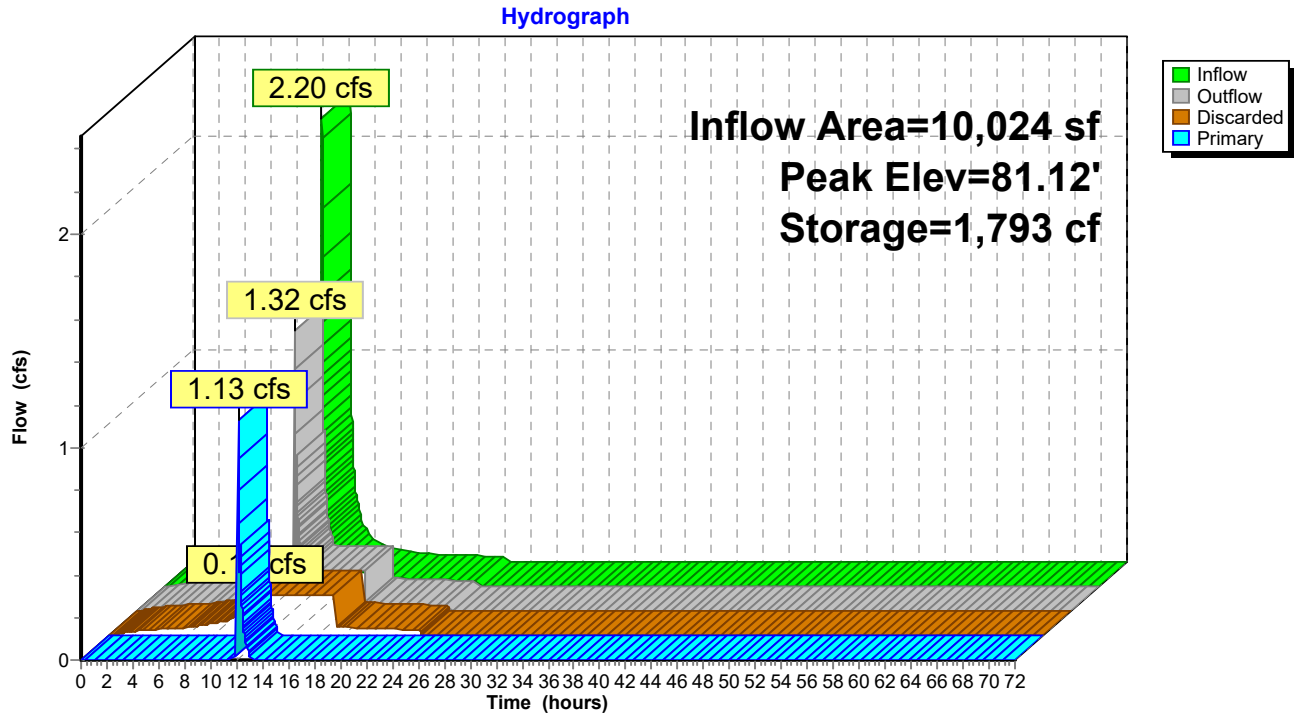
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	81.00'	24.0" x 24.0" Horiz. Grate 24" C= 0.600 Limited to weir flow at low heads
#2	Discarded	76.00'	10.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.19 cfs @ 11.24 hrs HW=76.06' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=1.11 cfs @ 12.18 hrs HW=81.12' TW=77.85' (Dynamic Tailwater)
 ↑ **1=Grate 24"** (Weir Controls 1.11 cfs @ 1.14 fps)

Pond 8P: Roof Recharge



Summary for Pond 12P: Roof Recharge

Inflow Area = 12,530 sf, 100.00% Impervious, Inflow Depth = 9.24" for 100-Yr. Current event
 Inflow = 2.75 cfs @ 12.10 hrs, Volume= 9,647 cf
 Outflow = 4.34 cfs @ 12.09 hrs, Volume= 9,647 cf, Atten= 0%, Lag= 0.0 min
 Discarded = 0.19 cfs @ 11.01 hrs, Volume= 8,015 cf
 Primary = 4.15 cfs @ 12.09 hrs, Volume= 1,632 cf
 Routed to Pond B3 : Basin #3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 81.29' @ 12.09 hrs Surf.Area= 822 sf Storage= 1,796 cf

Plug-Flow detention time= 48.7 min calculated for 9,646 cf (100% of inflow)
 Center-of-Mass det. time= 48.7 min (786.1 - 737.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	76.00'	219 cf	6.25'W x 32.23'L x 3.75'H Field A 755 cf Overall - 209 cf Embedded = 546 cf x 40.0% Voids
#2A	76.50'	209 cf	ADS_StormTech SC-800 +Cap x 4 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap Cap Storage= 3.4 cf x 2 x 1 rows = 6.8 cf
#3	76.00'	24 cf	2.00'W x 2.00'L x 6.00'H Prismatic
			452 cf x 4.00 = 1,807 cf Total Available Storage

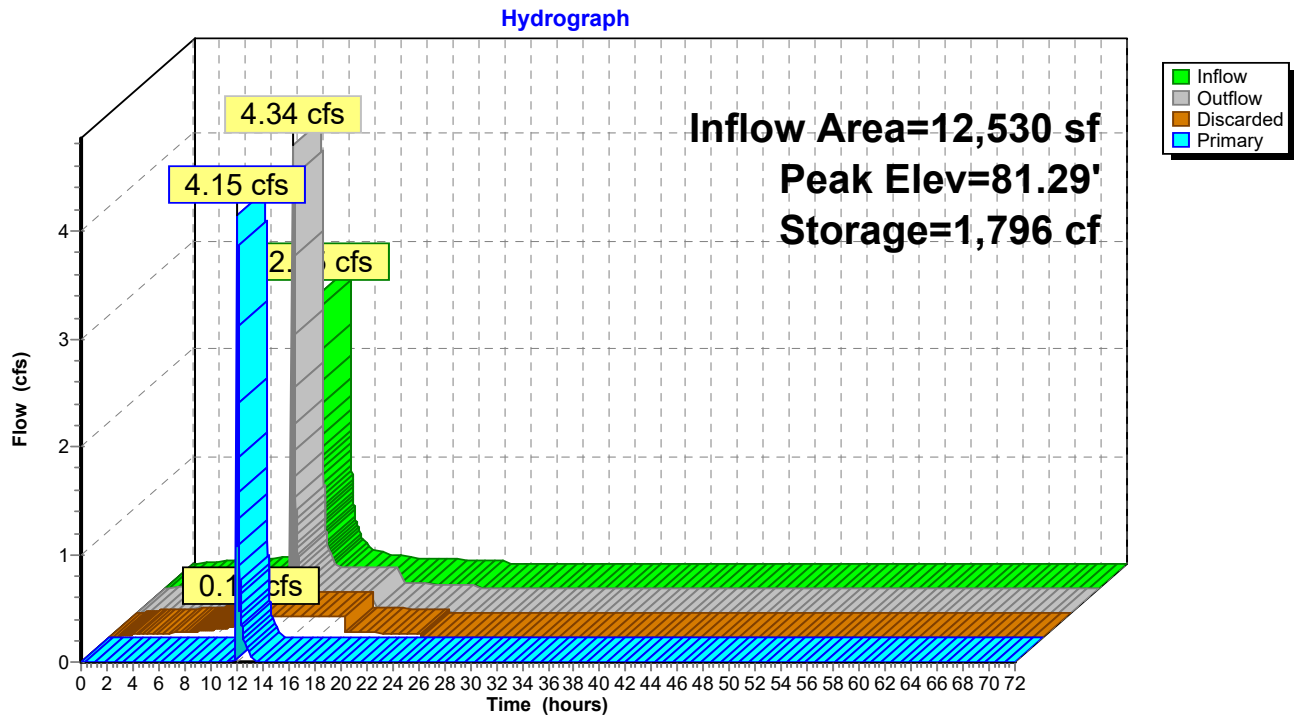
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	81.00'	24.0" x 24.0" Horiz. Grate 24" C= 0.600 Limited to weir flow at low heads
#2	Discarded	76.00'	10.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.19 cfs @ 11.01 hrs HW=76.06' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=4.03 cfs @ 12.09 hrs HW=81.29' TW=67.08' (Dynamic Tailwater)
 ↑ **1=Grate 24"** (Weir Controls 4.03 cfs @ 1.75 fps)

Pond 12P: Roof Recharge



Summary for Pond B1: Basin #1

Inflow Area = 152,539 sf, 23.95% Impervious, Inflow Depth = 2.74" for 100-Yr. Current event
 Inflow = 6.59 cfs @ 12.18 hrs, Volume= 34,884 cf
 Outflow = 0.58 cfs @ 16.30 hrs, Volume= 34,884 cf, Atten= 91%, Lag= 247.1 min
 Discarded = 0.40 cfs @ 14.78 hrs, Volume= 25,895 cf
 Primary = 0.19 cfs @ 18.78 hrs, Volume= 8,989 cf
 Routed to Pond B2 : Basin #2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 79.40' @ 14.78 hrs Surf.Area= 8,571 sf Storage= 15,055 cf

Plug-Flow detention time= 280.0 min calculated for 34,884 cf (100% of inflow)
 Center-of-Mass det. time= 280.0 min (1,105.0 - 825.0)

Volume	Invert	Avail.Storage	Storage Description
#1	77.00'	20,548 cf	Basin 1 (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
77.00	4,060	0	0
78.00	5,865	4,963	4,963
79.00	7,766	6,816	11,778
80.00	9,773	8,770	20,548

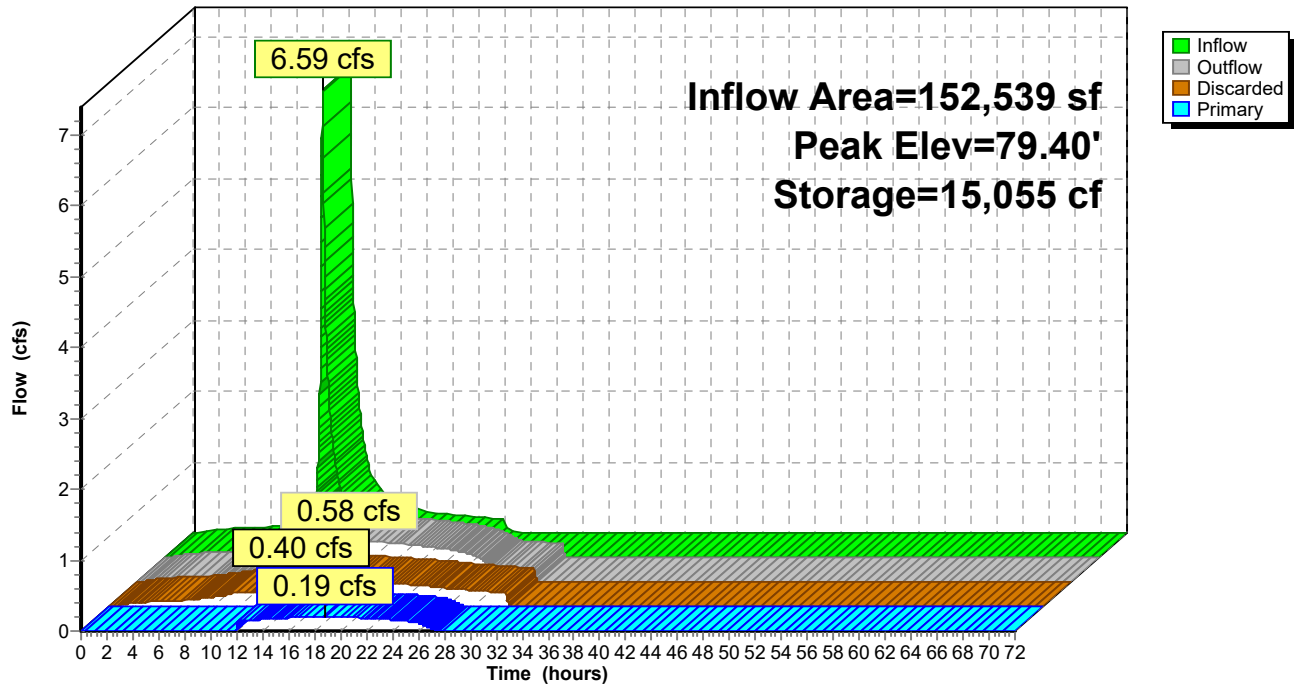
Device	Routing	Invert	Outlet Devices
#1	Primary	77.34'	15.0" Round Culvert 15" L= 69.0' Ke= 0.500 Inlet / Outlet Invert= 77.34' / 77.00' S= 0.0049 ' S= 0.0049 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.23 sf
#2	Device 1	77.50'	3.0" Vert. Orifice 3" C= 0.600 Limited to weir flow at low heads
#3	Device 1	80.00'	42.0" x 42.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	80.20'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	77.00'	2.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.40 cfs @ 14.78 hrs HW=79.40' (Free Discharge)
 ↳ **5=Exfiltration** (Exfiltration Controls 0.40 cfs)

Primary OutFlow Max=0.19 cfs @ 18.78 hrs HW=79.06' TW=78.39' (Dynamic Tailwater)
 ↳ **1=Culvert 15"** (Passes 0.19 cfs of 4.59 cfs potential flow)
 ↳ **2=Orifice 3"** (Orifice Controls 0.19 cfs @ 3.96 fps)
 ↳ **3=Grate** (Controls 0.00 cfs)
 ↳ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B1: Basin #1

Hydrograph



Summary for Pond B2: Basin #2

Inflow Area = 282,551 sf, 22.05% Impervious, Inflow Depth = 1.50" for 100-Yr. Current event
 Inflow = 4.87 cfs @ 12.18 hrs, Volume= 35,290 cf
 Outflow = 0.77 cfs @ 14.01 hrs, Volume= 35,290 cf, Atten= 84%, Lag= 110.0 min
 Discarded = 0.31 cfs @ 14.01 hrs, Volume= 19,308 cf
 Primary = 0.47 cfs @ 14.01 hrs, Volume= 15,982 cf
 Routed to Pond B3 : Basin #3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 78.90' @ 14.01 hrs Surf.Area= 6,649 sf Storage= 9,672 cf

Plug-Flow detention time= 157.9 min calculated for 35,285 cf (100% of inflow)
 Center-of-Mass det. time= 157.9 min (1,078.3 - 920.3)

Volume	Invert	Avail.Storage	Storage Description
#1	77.00'	18,035 cf	Basin 2 (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
77.00	3,573	0	0
78.00	5,151	4,362	4,362
79.00	6,815	5,983	10,345
80.00	8,565	7,690	18,035

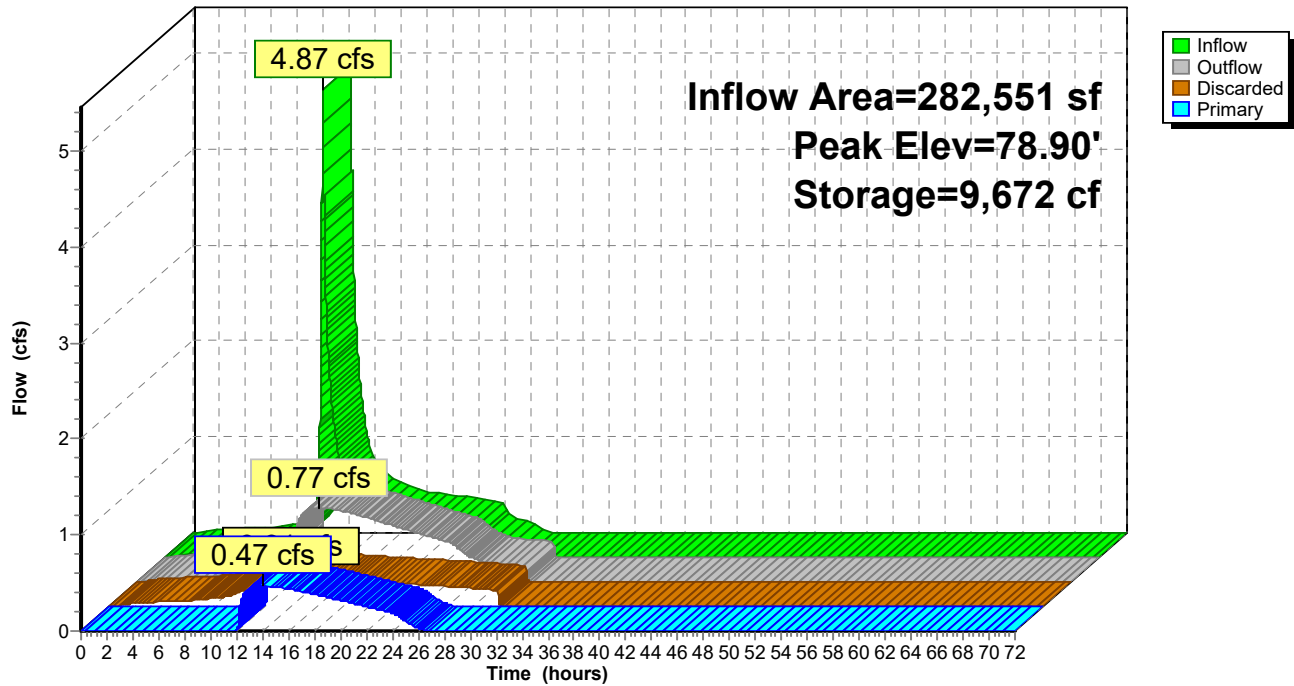
Device	Routing	Invert	Outlet Devices
#1	Primary	77.00'	18.0" Round Culvert 15" L= 69.0' Ke= 0.500 Inlet / Outlet Invert= 77.00' / 66.00' S= 0.1594 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf
#2	Device 1	77.50'	4.0" Vert. Orifice 4" C= 0.600 Limited to weir flow at low heads
#3	Device 1	80.00'	42.0" x 42.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	80.30'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	77.00'	2.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.31 cfs @ 14.01 hrs HW=78.90' (Free Discharge)
 ↳ **5=Exfiltration** (Exfiltration Controls 0.31 cfs)

Primary OutFlow Max=0.47 cfs @ 14.01 hrs HW=78.90' TW=69.35' (Dynamic Tailwater)
 ↳ **1=Culvert 15"** (Passes 0.47 cfs of 9.12 cfs potential flow)
 ↳ **2=Orifice 4"** (Orifice Controls 0.47 cfs @ 5.35 fps)
 ↳ **3=Grate** (Controls 0.00 cfs)
 ↳ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B2: Basin #2

Hydrograph



Summary for Pond B3: Basin #3

Inflow Area = 440,051 sf, 22.16% Impervious, Inflow Depth = 1.39" for 100-Yr. Current event
 Inflow = 10.04 cfs @ 12.11 hrs, Volume= 50,921 cf
 Outflow = 0.81 cfs @ 16.48 hrs, Volume= 50,921 cf, Atten= 92%, Lag= 261.9 min
 Discarded = 0.32 cfs @ 16.48 hrs, Volume= 30,363 cf
 Primary = 0.49 cfs @ 16.48 hrs, Volume= 20,558 cf
 Routed to Link PT2 : Proposed Total (AP-2)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 69.55' @ 16.48 hrs Surf.Area= 6,893 sf Storage= 18,966 cf

Plug-Flow detention time= 350.9 min calculated for 50,921 cf (100% of inflow)
 Center-of-Mass det. time= 350.9 min (1,250.9 - 900.0)

Volume	Invert	Avail.Storage	Storage Description
#1	66.00'	34,230 cf	Basin 3 (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
66.00	3,879	0	0
67.00	4,673	4,276	4,276
68.00	5,501	5,087	9,363
69.00	6,379	5,940	15,303
70.00	7,310	6,845	22,148
71.00	8,291	7,801	29,948
71.50	8,836	4,282	34,230

Device	Routing	Invert	Outlet Devices
#1	Primary	67.49'	15.0" Round Culvert 15" L= 360.0' Ke= 0.500 Inlet / Outlet Invert= 67.49' / 66.00' S= 0.0041 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.23 sf
#2	Device 1	68.00'	4.0" Vert. Orifice 4" C= 0.600 Limited to weir flow at low heads
#3	Device 1	70.50'	42.0" x 42.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	71.50'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	66.00'	2.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.32 cfs @ 16.48 hrs HW=69.55' (Free Discharge)

←**5=Exfiltration** (Exfiltration Controls 0.32 cfs)

Primary OutFlow Max=0.49 cfs @ 16.48 hrs HW=69.55' TW=0.00' (Dynamic Tailwater)

←**1=Culvert 15"** (Passes 0.49 cfs of 4.75 cfs potential flow)

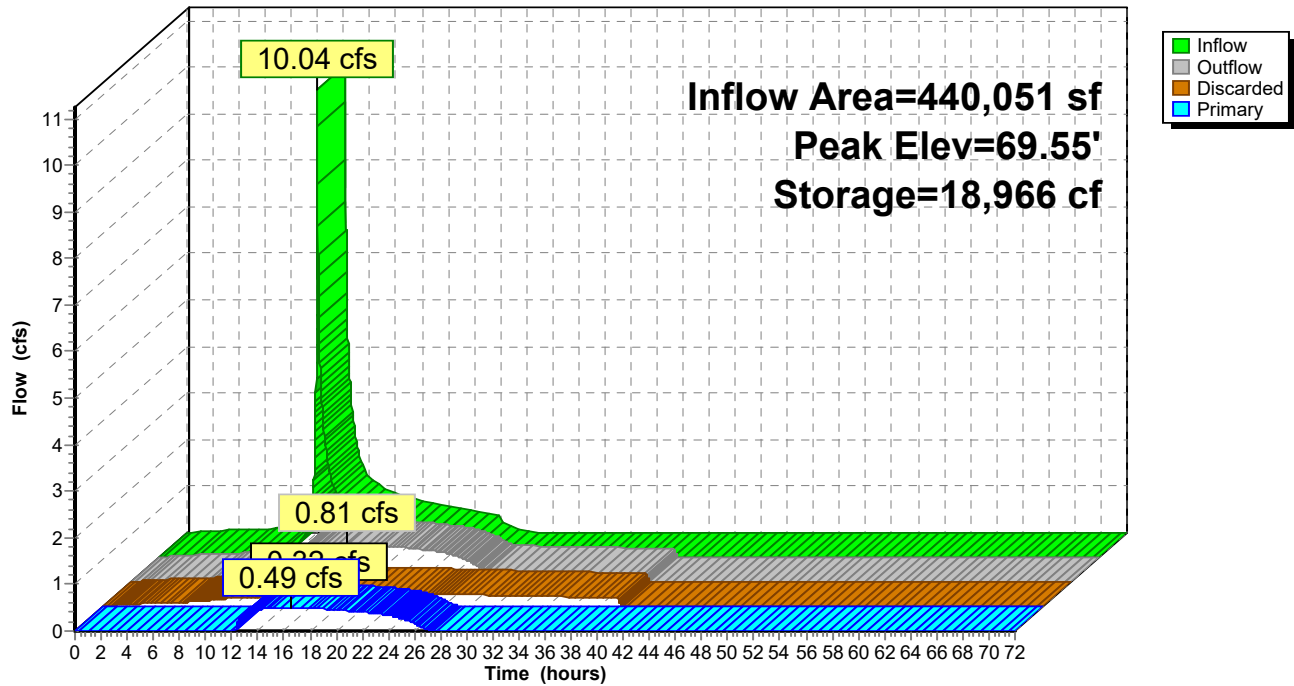
←**2=Orifice 4"** (Orifice Controls 0.49 cfs @ 5.67 fps)

←**3=Grate** (Controls 0.00 cfs)

←**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B3: Basin #3

Hydrograph



Summary for Pond R-1: Roof Recharge

Inflow Area = 12,530 sf, 100.00% Impervious, Inflow Depth = 9.24" for 100-Yr. Current event
 Inflow = 2.75 cfs @ 12.10 hrs, Volume= 9,647 cf
 Outflow = 1.65 cfs @ 12.18 hrs, Volume= 9,647 cf, Atten= 40%, Lag= 4.6 min
 Discarded = 0.24 cfs @ 11.24 hrs, Volume= 8,855 cf
 Primary = 1.41 cfs @ 12.18 hrs, Volume= 793 cf
 Routed to Pond B1 : Basin #1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 81.14' @ 12.18 hrs Surf.Area= 1,027 sf Storage= 2,241 cf

Plug-Flow detention time= 52.3 min calculated for 9,646 cf (100% of inflow)
 Center-of-Mass det. time= 52.3 min (789.8 - 737.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	76.00'	219 cf	6.25'W x 32.23'L x 3.75'H Field A 755 cf Overall - 209 cf Embedded = 546 cf x 40.0% Voids
#2A	76.50'	209 cf	ADS_StormTech SC-800 +Cap x 4 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap Cap Storage= 3.4 cf x 2 x 1 rows = 6.8 cf
#3	76.00'	24 cf	2.00'W x 2.00'L x 6.00'H Prismatic
		452 cf	x 5.00 = 2,259 cf Total Available Storage

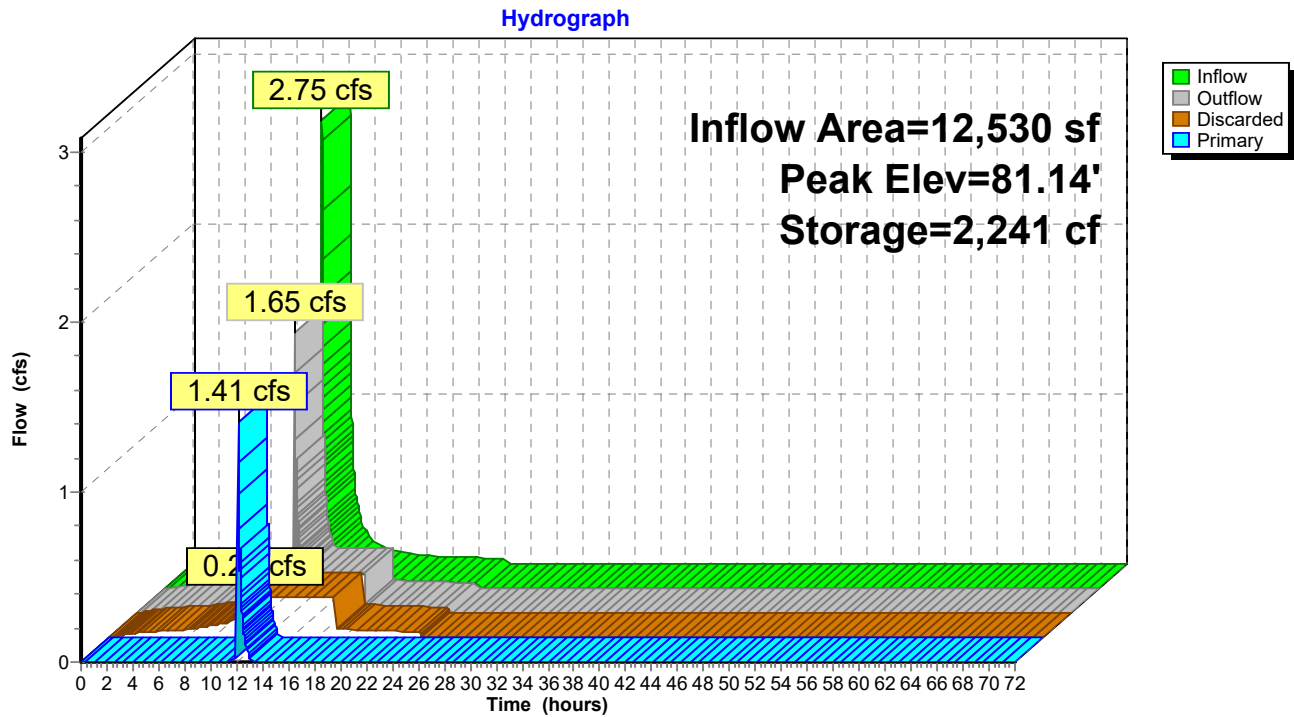
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	81.00'	24.0" x 24.0" Horiz. Grate 24" C= 0.600 Limited to weir flow at low heads
#2	Discarded	76.00'	10.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.24 cfs @ 11.24 hrs HW=76.06' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.24 cfs)

Primary OutFlow Max=1.39 cfs @ 12.18 hrs HW=81.14' TW=78.22' (Dynamic Tailwater)
 ↑ **1=Grate 24"** (Weir Controls 1.39 cfs @ 1.23 fps)

Pond R-1: Roof Recharge

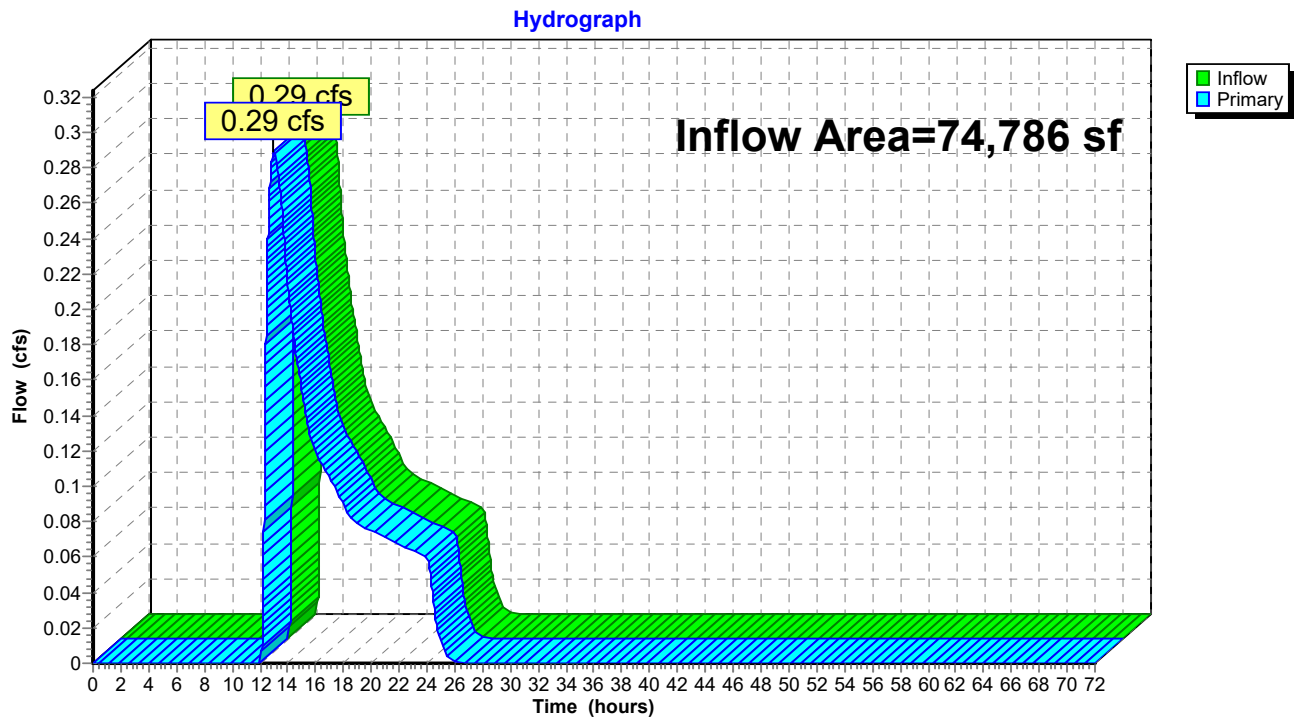


Summary for Link PT1: Proposed Total (AP-1)

Inflow Area = 74,786 sf, 0.00% Impervious, Inflow Depth = 0.82" for 100-Yr. Current event
 Inflow = 0.29 cfs @ 13.00 hrs, Volume= 5,130 cf
 Primary = 0.29 cfs @ 13.00 hrs, Volume= 5,130 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link PT1: Proposed Total (AP-1)

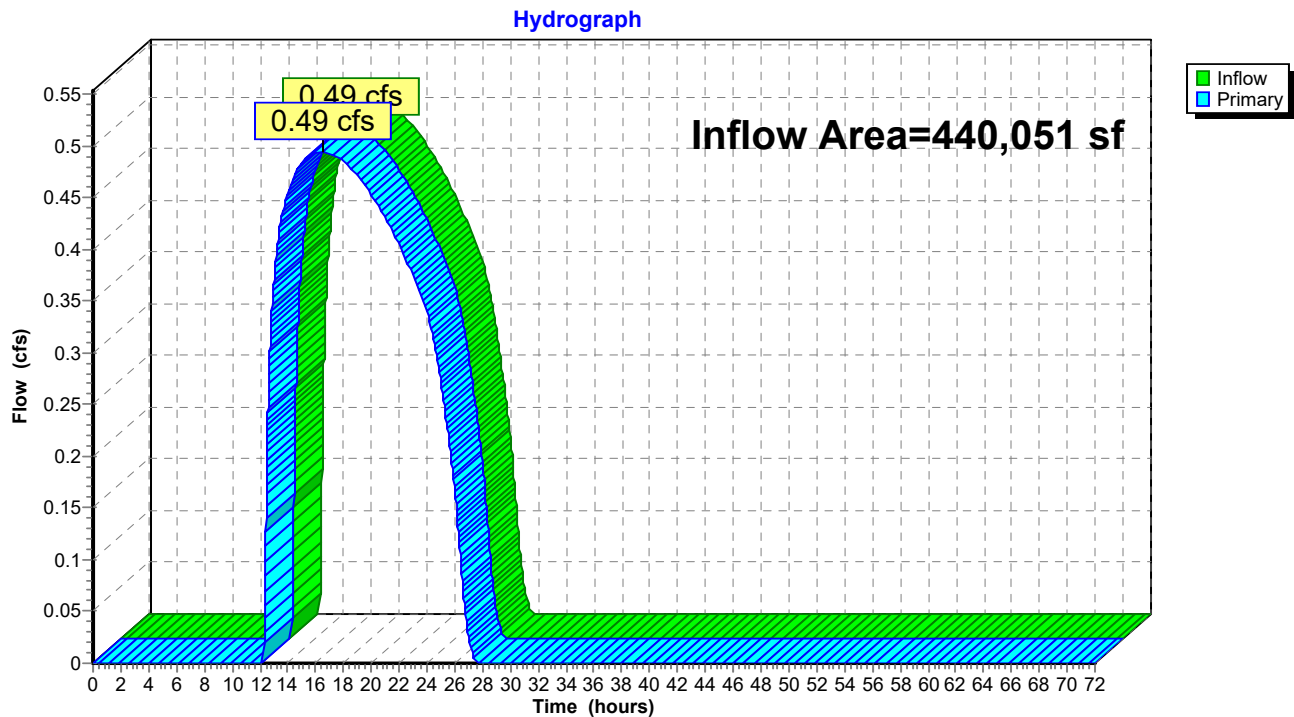


Summary for Link PT2: Proposed Total (AP-2)

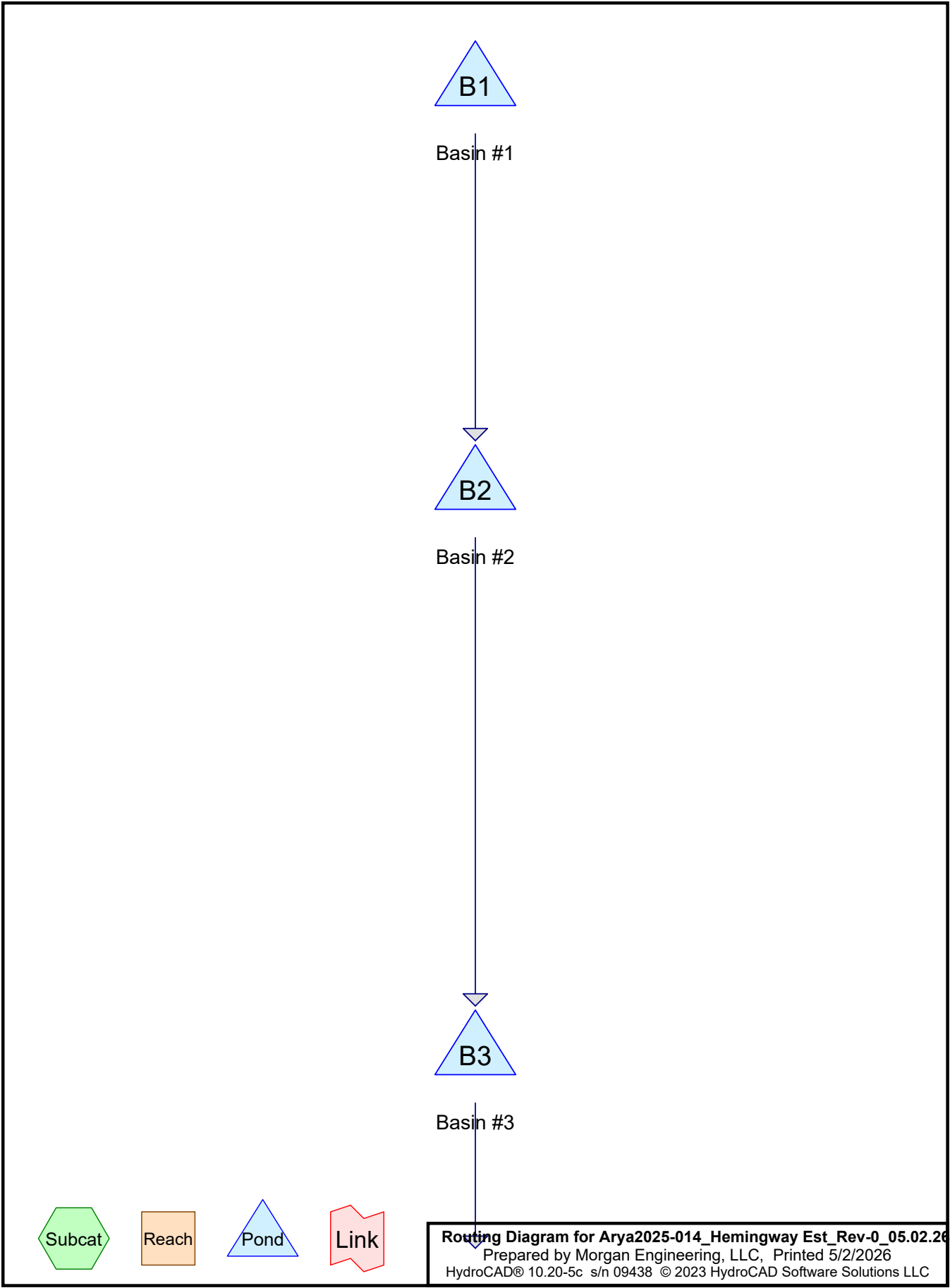
Inflow Area = 440,051 sf, 22.16% Impervious, Inflow Depth = 0.56" for 100-Yr. Current event
 Inflow = 0.49 cfs @ 16.48 hrs, Volume= 20,558 cf
 Primary = 0.49 cfs @ 16.48 hrs, Volume= 20,558 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link PT2: Proposed Total (AP-2)



APPENDIX 4



Arya2025-014_Hemingway Est_Rev-0_05.02.26

Prepared by Morgan Engineering, LLC

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Proposed WQSE

Printed 5/2/2026

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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	WQSE	NJ DEP 2-hr		Default	2.00	1	1.25	2

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv.

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Pond B1: Basin #1Peak Elev=77.28' Storage=1,210 cf Inflow=1.54 cfs 2,069 cf
Discarded=0.21 cfs 2,069 cf Primary=0.00 cfs 0 cf Outflow=0.21 cfs 2,069 cf**Pond B2: Basin #2**Peak Elev=77.19' Storage=697 cf Inflow=0.91 cfs 1,358 cf
Discarded=0.18 cfs 1,358 cf Primary=0.00 cfs 0 cf Outflow=0.18 cfs 1,358 cf**Pond B3: Basin #3**Peak Elev=66.29' Storage=1,160 cf Inflow=1.51 cfs 1,957 cf
Discarded=0.19 cfs 1,957 cf Primary=0.00 cfs 0 cf Outflow=0.19 cfs 1,957 cf

Summary for Pond B1: Basin #1

Inflow Area = 152,539 sf, 23.95% Impervious, Inflow Depth = 0.16" for WQSE event
 Inflow = 1.54 cfs @ 1.10 hrs, Volume= 2,069 cf
 Outflow = 0.21 cfs @ 1.53 hrs, Volume= 2,069 cf, Atten= 86%, Lag= 26.1 min
 Discarded = 0.21 cfs @ 1.53 hrs, Volume= 2,069 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to Pond B2 : Basin #2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 77.28' @ 1.53 hrs Surf.Area= 4,566 sf Storage= 1,210 cf

Plug-Flow detention time= 55.3 min calculated for 2,069 cf (100% of inflow)
 Center-of-Mass det. time= 55.3 min (125.6 - 70.2)

Volume	Invert	Avail.Storage	Storage Description
#1	77.00'	20,548 cf	Basin 1 (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
77.00	4,060	0	0
78.00	5,865	4,963	4,963
79.00	7,766	6,816	11,778
80.00	9,773	8,770	20,548

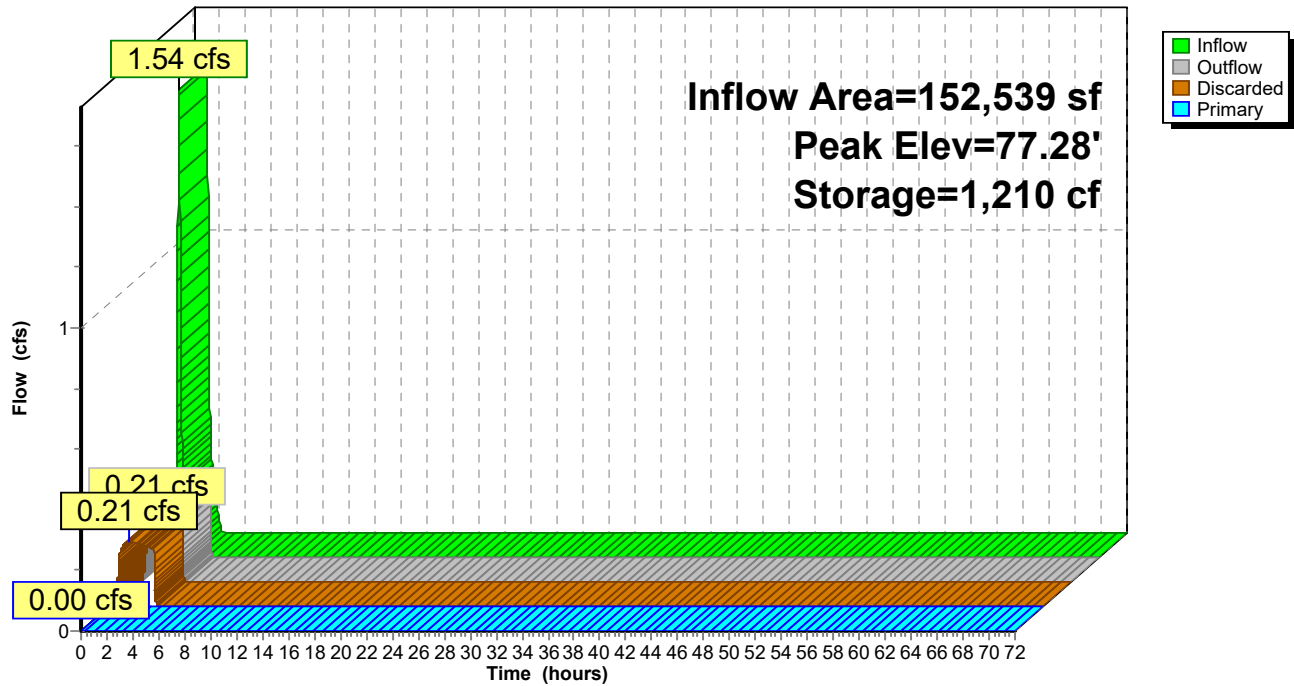
Device	Routing	Invert	Outlet Devices
#1	Primary	77.34'	15.0" Round Culvert 15" L= 69.0' Ke= 0.500 Inlet / Outlet Invert= 77.34' / 77.00' S= 0.0049 ' S= 0.0049 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.23 sf
#2	Device 1	77.50'	3.0" Vert. Orifice 3" C= 0.600 Limited to weir flow at low heads
#3	Device 1	80.00'	42.0" x 42.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	80.20'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	77.00'	2.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.21 cfs @ 1.53 hrs HW=77.28' (Free Discharge)
 ↳ **5=Exfiltration** (Exfiltration Controls 0.21 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=77.00' TW=77.00' (Dynamic Tailwater)
 ↳ **1=Culvert 15"** (Controls 0.00 cfs)
 ↳ **2=Orifice 3"** (Controls 0.00 cfs)
 ↳ **3=Grate** (Controls 0.00 cfs)
 ↳ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B1: Basin #1

Hydrograph



Summary for Pond B2: Basin #2

Inflow Area = 282,551 sf, 22.05% Impervious, Inflow Depth = 0.06" for WQSE event
 Inflow = 0.91 cfs @ 1.11 hrs, Volume= 1,358 cf
 Outflow = 0.18 cfs @ 1.47 hrs, Volume= 1,358 cf, Atten= 80%, Lag= 21.3 min
 Discarded = 0.18 cfs @ 1.47 hrs, Volume= 1,358 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to Pond B3 : Basin #3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 77.19' @ 1.47 hrs Surf.Area= 3,869 sf Storage= 697 cf

Plug-Flow detention time= 37.8 min calculated for 1,358 cf (100% of inflow)
 Center-of-Mass det. time= 37.8 min (110.4 - 72.6)

Volume	Invert	Avail.Storage	Storage Description
#1	77.00'	18,035 cf	Basin 2 (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
77.00	3,573	0	0
78.00	5,151	4,362	4,362
79.00	6,815	5,983	10,345
80.00	8,565	7,690	18,035

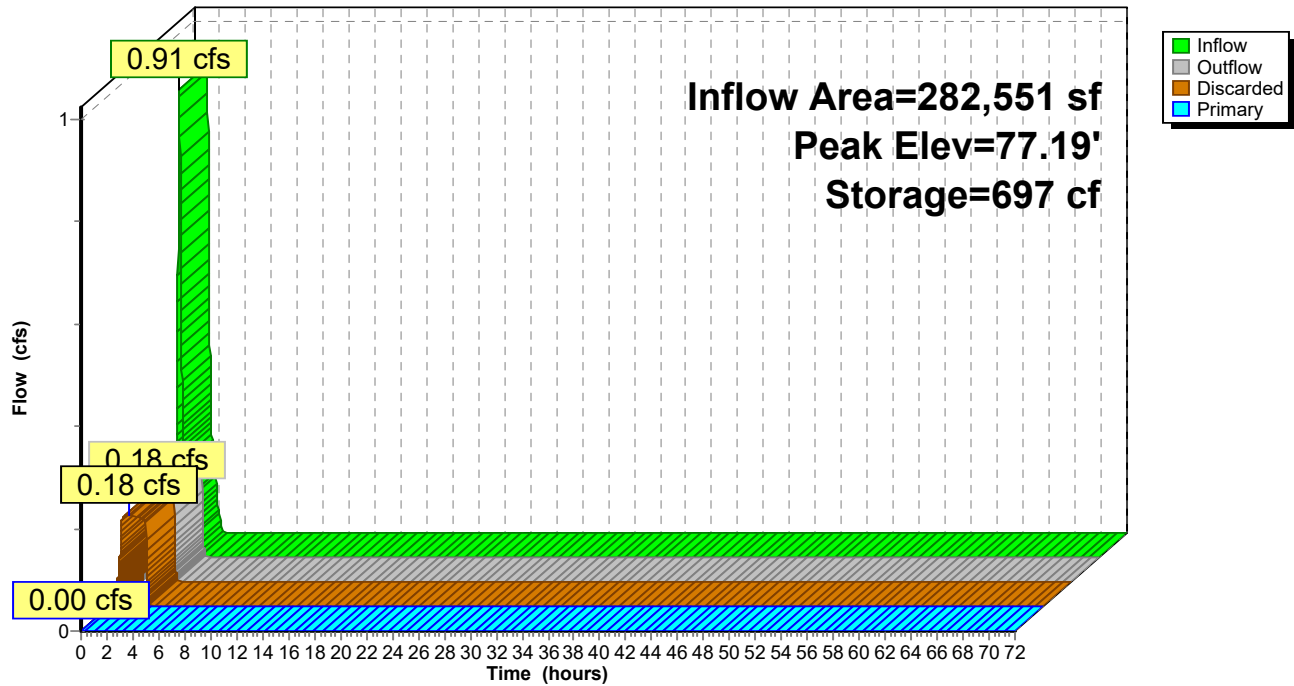
Device	Routing	Invert	Outlet Devices
#1	Primary	77.00'	18.0" Round Culvert 15" L= 69.0' Ke= 0.500 Inlet / Outlet Invert= 77.00' / 66.00' S= 0.1594 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf
#2	Device 1	77.50'	4.0" Vert. Orifice 4" C= 0.600 Limited to weir flow at low heads
#3	Device 1	80.00'	42.0" x 42.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	80.30'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	77.00'	2.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.18 cfs @ 1.47 hrs HW=77.19' (Free Discharge)
 ↳ **5=Exfiltration** (Exfiltration Controls 0.18 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=77.00' TW=66.00' (Dynamic Tailwater)
 ↳ **1=Culvert 15"** (Controls 0.00 cfs)
 ↳ **2=Orifice 4"** (Controls 0.00 cfs)
 ↳ **3=Grate** (Controls 0.00 cfs)
 ↳ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B2: Basin #2

Hydrograph



Summary for Pond B3: Basin #3

Inflow Area = 440,051 sf, 22.16% Impervious, Inflow Depth = 0.05" for WQSE event
 Inflow = 1.51 cfs @ 1.09 hrs, Volume= 1,957 cf
 Outflow = 0.19 cfs @ 1.54 hrs, Volume= 1,957 cf, Atten= 87%, Lag= 26.9 min
 Discarded = 0.19 cfs @ 1.54 hrs, Volume= 1,957 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to Link PT2 : Proposed Total (AP-2)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 66.29' @ 1.54 hrs Surf.Area= 4,110 sf Storage= 1,160 cf

Plug-Flow detention time= 57.9 min calculated for 1,956 cf (100% of inflow)
 Center-of-Mass det. time= 57.9 min (127.3 - 69.3)

Volume	Invert	Avail.Storage	Storage Description
#1	66.00'	34,230 cf	Basin 3 (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
66.00	3,879	0	0
67.00	4,673	4,276	4,276
68.00	5,501	5,087	9,363
69.00	6,379	5,940	15,303
70.00	7,310	6,845	22,148
71.00	8,291	7,801	29,948
71.50	8,836	4,282	34,230

Device	Routing	Invert	Outlet Devices
#1	Primary	67.49'	15.0" Round Culvert 15" L= 360.0' Ke= 0.500 Inlet / Outlet Invert= 67.49' / 66.00' S= 0.0041 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.23 sf
#2	Device 1	68.00'	4.0" Vert. Orifice 4" C= 0.600 Limited to weir flow at low heads
#3	Device 1	70.50'	42.0" x 42.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	71.50'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	66.00'	2.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.19 cfs @ 1.54 hrs HW=66.29' (Free Discharge)

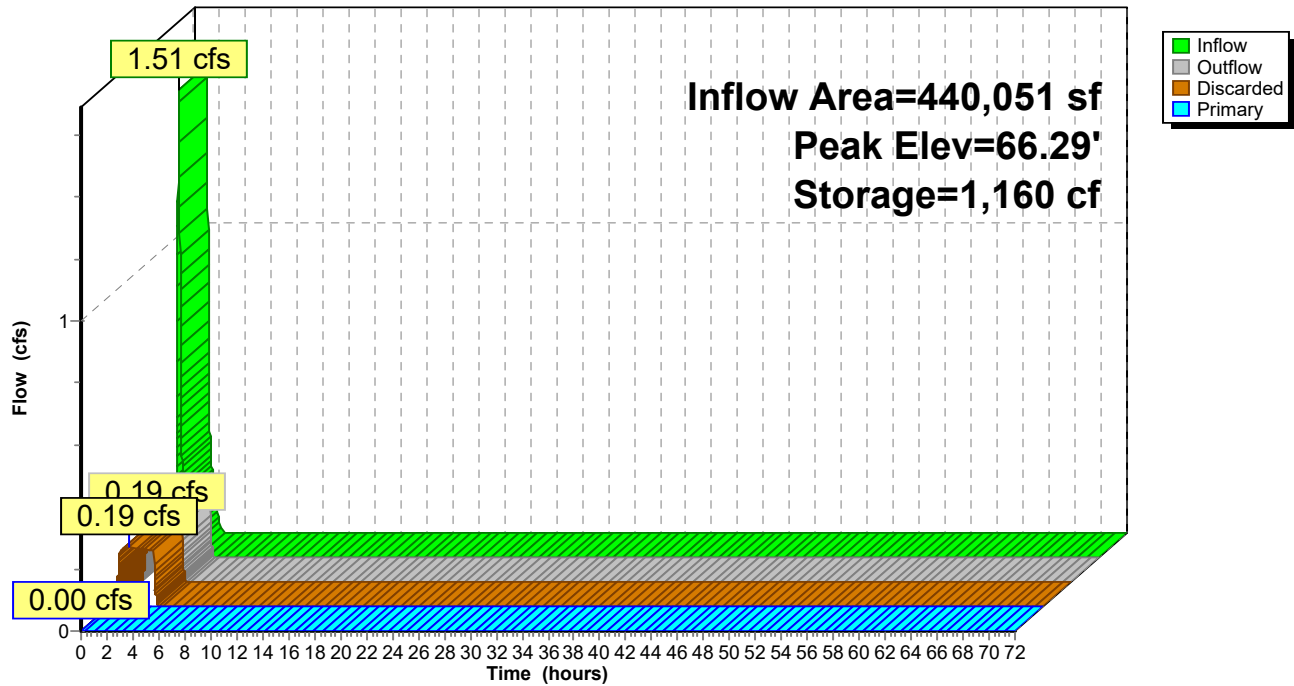
←**5=Exfiltration** (Exfiltration Controls 0.19 cfs)

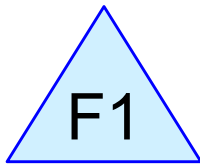
Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=66.00' TW=0.00' (Dynamic Tailwater)

←**1=Culvert 15"** (Controls 0.00 cfs)
 ←**2=Orifice 4"** (Controls 0.00 cfs)
 ←**3=Grate** (Controls 0.00 cfs)
 ←**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

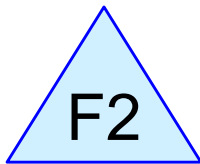
Pond B3: Basin #3

Hydrograph

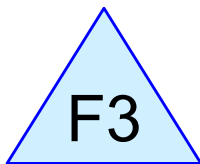




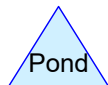
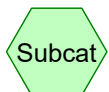
FOREBAY #1 (HW-1)



FOREBAY #2 (HW-2)



FOREBAY #3 (HW-3)



Routing Diagram for Arya2025-014_Hemingway Est_Rev-0_05.02.26
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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	WQSE	NJ DEP 2-hr		Default	2.00	1	1.25	2

Summary for Pond F1: FOREBAY #1 (HW-1)

Volume	Invert	Avail.Storage	Storage Description
#1	77.00'	475 cf	FOREBAY-1 (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
77.00	214	0	0
78.00	350	282	282
78.50	420	193	475

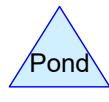
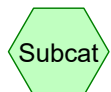
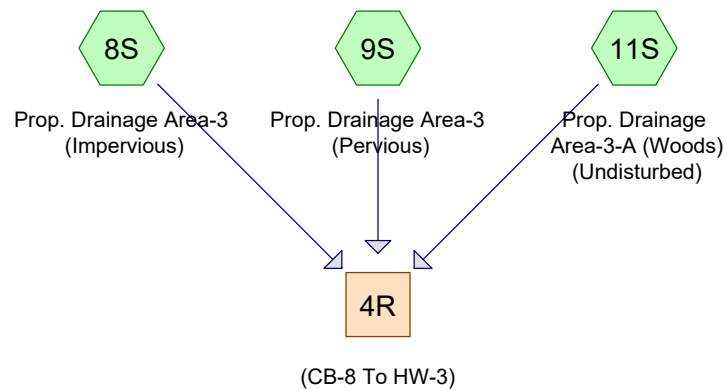
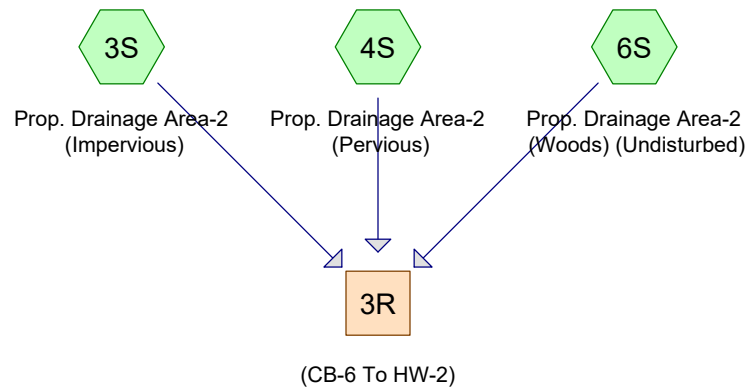
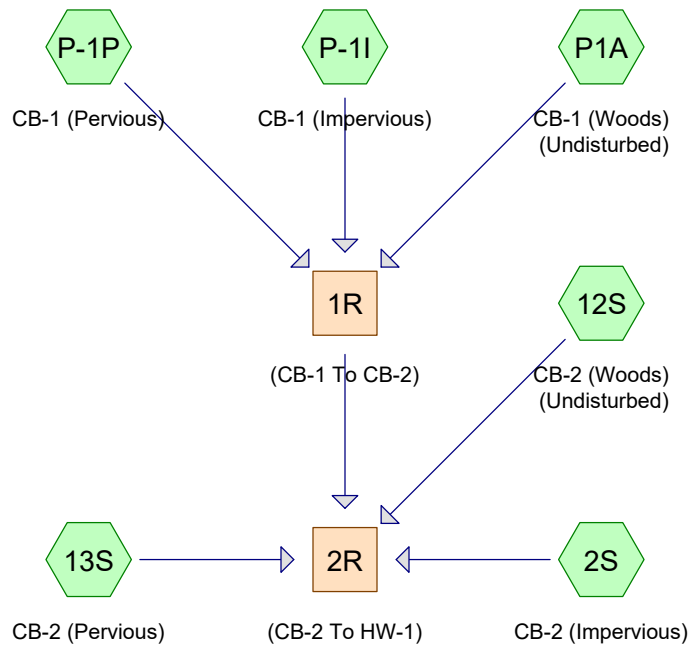
Summary for Pond F2: FOREBAY #2 (HW-2)

Volume	Invert	Avail.Storage	Storage Description
#1	77.00'	158 cf	FOREBAY-2 (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
77.00	96	0	0
78.00	106	101	101
78.50	120	57	158

Summary for Pond F3: FOREBAY #3 (HW-3)

Volume	Invert	Avail.Storage	Storage Description
#1	66.00'	276 cf	FOREBAY-3 (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
66.00	145	0	0
67.00	192	169	169
67.50	238	108	276

APPENDIX 5



Routing Diagram for Arya2025-014_Hemingway Est_Rev-0_05.02.26_Capacities
 Prepared by Morgan Engineering, LLC, Printed 5/2/2026
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Arya2025-014_Hemingway Est_Rev-0_05.02.26_Capacities

Prepared by Morgan Engineering, LLC

Printed 5/2/2026

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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	25-Year	NOAA 24-hr	D	Default	24.00	1	6.68	2

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
 Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv.
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment2S: CB-2 (Impervious) Runoff Area=12,002 sf 100.00% Impervious Runoff Depth=6.44"
 Flow Length=430' Tc=3.6 min CN=0/98 Runoff=1.68 cfs 6,442 cf

Subcatchment3S: Prop. Drainage Area-2 Runoff Area=15,753 sf 100.00% Impervious Runoff Depth=6.44"
 Flow Length=745' Tc=5.1 min CN=0/98 Runoff=1.99 cfs 8,456 cf

Subcatchment4S: Prop. Drainage Area-2 Runoff Area=56,947 sf 0.00% Impervious Runoff Depth=0.66"
 Flow Length=835' Tc=18.5 min CN=39/0 Runoff=0.22 cfs 3,119 cf

Subcatchment6S: Prop. Drainage Area-2 Runoff Area=28,444 sf 0.00% Impervious Runoff Depth=0.16"
 Flow Length=880' Tc=15.5 min CN=30/0 Runoff=0.01 cfs 379 cf

Subcatchment8S: Prop. Drainage Area-3 Runoff Area=22,694 sf 100.00% Impervious Runoff Depth=6.44"
 Flow Length=530' Tc=3.0 min CN=0/98 Runoff=3.30 cfs 12,181 cf

Subcatchment9S: Prop. Drainage Area-3 Runoff Area=70,251 sf 0.00% Impervious Runoff Depth=0.66"
 Flow Length=717' Tc=12.5 min CN=39/0 Runoff=0.31 cfs 3,848 cf

Subcatchment11S: Prop. Drainage Runoff Area=33,921 sf 0.00% Impervious Runoff Depth=0.16"
 Flow Length=50' Slope=0.0250 '/ Tc=10.9 min CN=30/0 Runoff=0.01 cfs 452 cf

Subcatchment12S: CB-2 (Woods) Runoff Area=12,603 sf 0.00% Impervious Runoff Depth=0.16"
 Flow Length=470' Tc=24.2 min CN=30/0 Runoff=0.01 cfs 168 cf

Subcatchment13S: CB-2 (Pervious) Runoff Area=36,207 sf 0.00% Impervious Runoff Depth=0.66"
 Flow Length=530' Tc=13.1 min CN=39/0 Runoff=0.16 cfs 1,983 cf

SubcatchmentP-1I: CB-1 (Impervious) Runoff Area=12,002 sf 100.00% Impervious Runoff Depth=6.44"
 Flow Length=430' Tc=3.6 min CN=0/98 Runoff=1.68 cfs 6,442 cf

SubcatchmentP-1P: CB-1 (Pervious) Runoff Area=36,208 sf 0.00% Impervious Runoff Depth=0.66"
 Flow Length=530' Tc=13.1 min CN=39/0 Runoff=0.16 cfs 1,983 cf

SubcatchmentP1A: CB-1 (Woods) Runoff Area=12,603 sf 0.00% Impervious Runoff Depth=0.16"
 Flow Length=470' Tc=24.2 min CN=30/0 Runoff=0.01 cfs 168 cf

Reach 1R: (CB-1 To CB-2) Avg. Flow Depth=0.53' Max Vel=3.42 fps Inflow=1.70 cfs 8,593 cf
 15.0" Round Pipe n=0.013 L=63.0' S=0.0049 '/ Capacity=4.53 cfs Outflow=1.69 cfs 8,593 cf

Reach 2R: (CB-2 To HW-1) Avg. Flow Depth=0.72' Max Vel=4.02 fps Inflow=3.39 cfs 17,187 cf
 18.0" Round Pipe n=0.013 L=219.0' S=0.0047 '/ Capacity=7.24 cfs Outflow=3.35 cfs 17,187 cf

Reach 3R: (CB-6 To HW-2) Avg. Flow Depth=0.61' Max Vel=3.35 fps Inflow=2.01 cfs 11,954 cf
 15.0" Round Pipe n=0.013 L=191.0' S=0.0041 '/ Capacity=4.15 cfs Outflow=1.99 cfs 11,954 cf

Reach 4R: (CB-8 To HW-3) Avg. Flow Depth=0.75' Max Vel=3.76 fps Inflow=3.34 cfs 16,481 cf
 18.0" Round Pipe n=0.013 L=197.0' S=0.0040 '/ Capacity=6.65 cfs Outflow=3.30 cfs 16,481 cf

Total Runoff Area = 349,635 sf Runoff Volume = 45,622 cf Average Runoff Depth = 1.57"
82.14% Pervious = 287,184 sf 17.86% Impervious = 62,451 sf

Summary for Subcatchment 2S: CB-2 (Impervious)

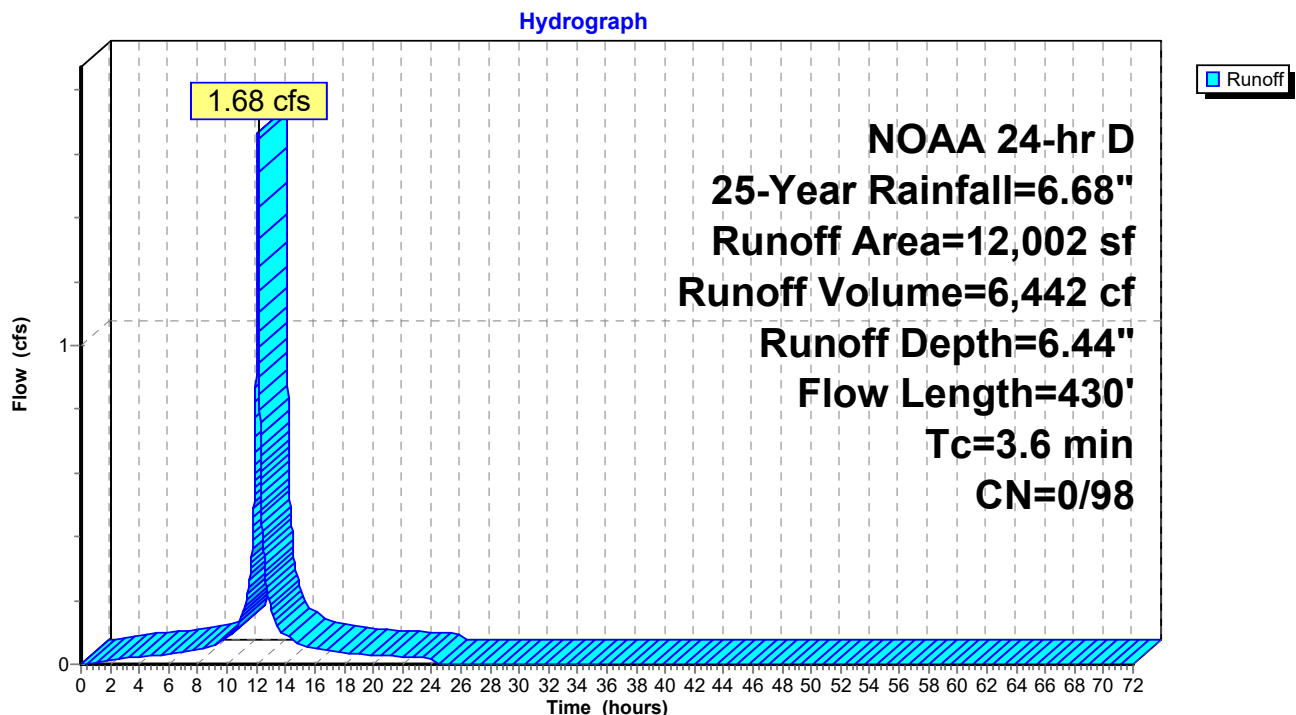
Runoff = 1.68 cfs @ 12.12 hrs, Volume= 6,442 cf, Depth= 6.44"
 Routed to Reach 2R : (CB-2 To HW-1)

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 25-Year Rainfall=6.68"

Area (sf)	CN	Description
7,971	98	Paved roads w/curbs & sewers, HSG A
* 1,294	98	Sidewalks, HSG A
* 2,737	98	Driveways, HSG A
12,002	98	Weighted Average
12,002	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	100	0.0083	1.00		Sheet Flow, Sheet Pvmt Smooth surfaces n= 0.011 P2= 3.42"
0.7	60	0.0050	1.44		Shallow Concentrated Flow, Shallow Pvmt Paved Kv= 20.3 fps
1.2	270	0.0050	3.72	4.57	Pipe Channel, Pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
3.6	430	Total			

Subcatchment 2S: CB-2 (Impervious)



Summary for Subcatchment 3S: Prop. Drainage Area-2 (Impervious)

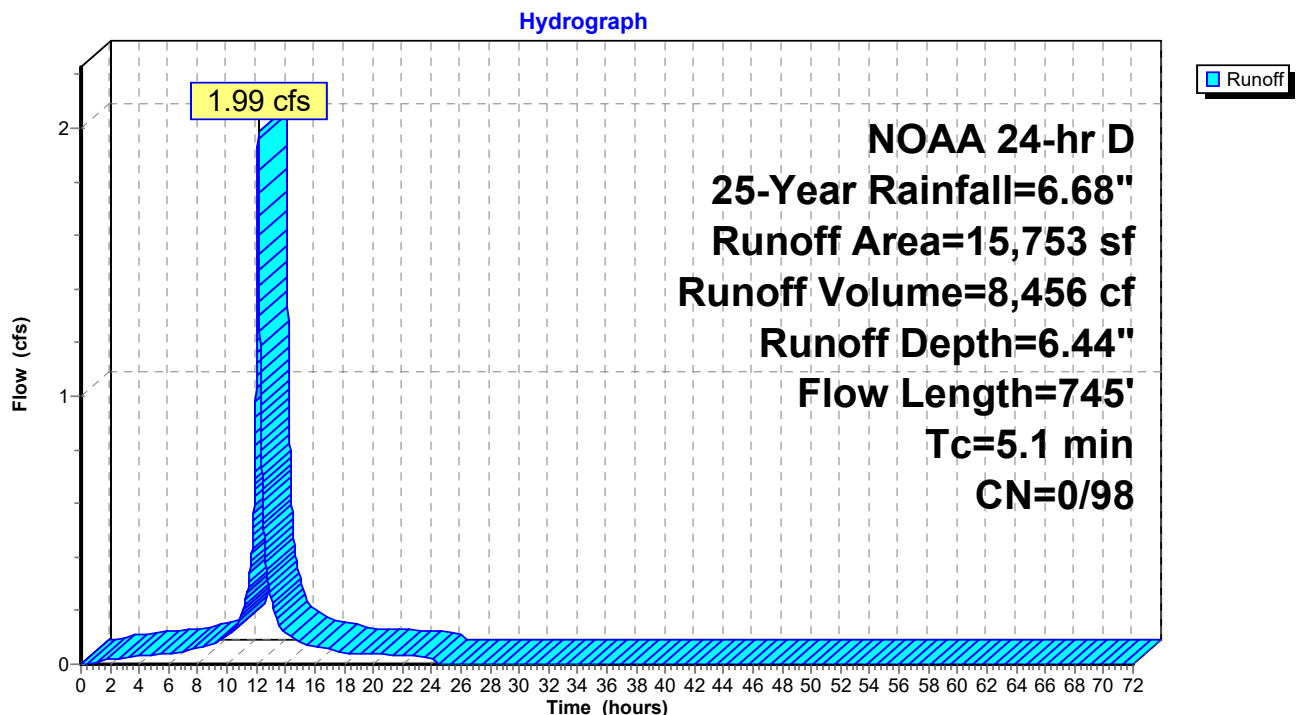
Runoff = 1.99 cfs @ 12.13 hrs, Volume= 8,456 cf, Depth= 6.44"
 Routed to Reach 3R : (CB-6 To HW-2)

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 25-Year Rainfall=6.68"

Area (sf)	CN	Description
9,010	98	Paved roads w/curbs & sewers, HSG A
* 2,394	98	Sidewalks, HSG A
* 4,349	98	Driveways, HSG A
15,753	98	Weighted Average
15,753	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	100	0.0083	1.00		Sheet Flow, Sheet Pvmt Smooth surfaces n= 0.011 P2= 3.42"
0.9	95	0.0083	1.85		Shallow Concentrated Flow, Shallow Pvmt Paved Kv= 20.3 fps
2.5	550	0.0050	3.72	4.57	Pipe Channel, Pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
5.1	745	Total			

Subcatchment 3S: Prop. Drainage Area-2 (Impervious)



Summary for Subcatchment 4S: Prop. Drainage Area-2 (Pervious)

Runoff = 0.22 cfs @ 12.66 hrs, Volume= 3,119 cf, Depth= 0.66"
 Routed to Reach 3R : (CB-6 To HW-2)

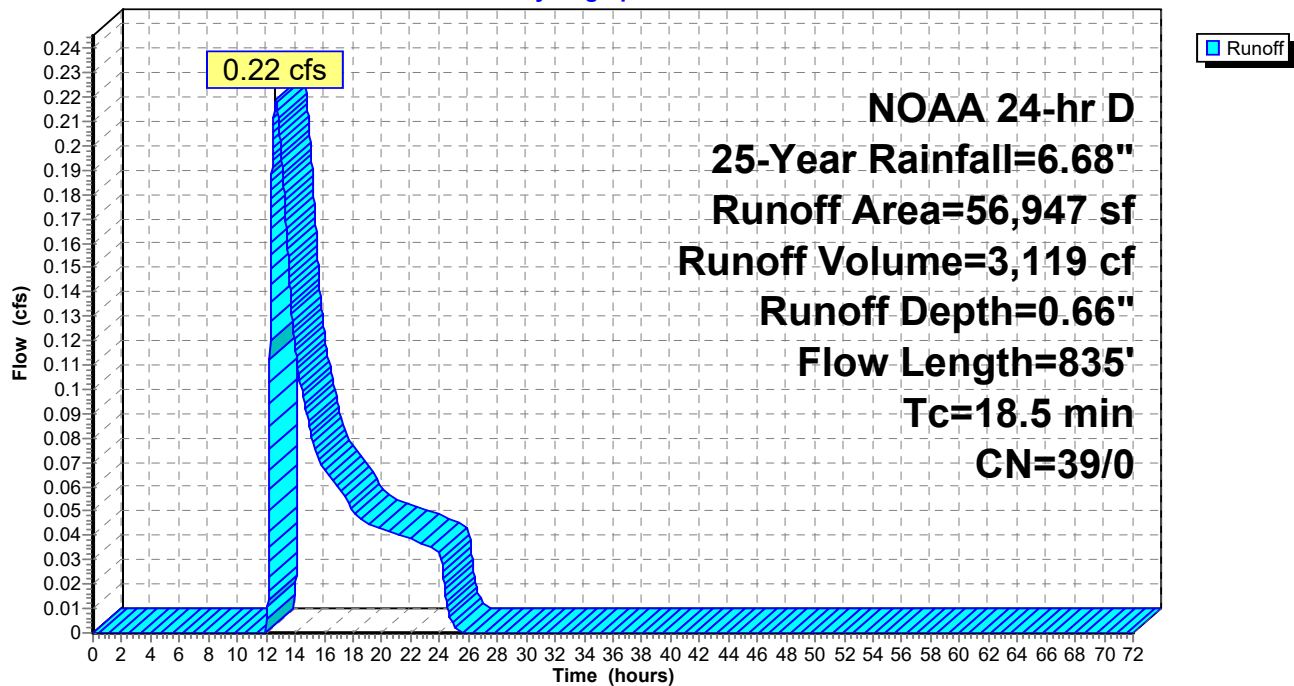
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 25-Year Rainfall=6.68"

Area (sf)	CN	Description
56,947	39	>75% Grass cover, Good, HSG A
56,947	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	90	0.0150	0.11		Sheet Flow, Sheet Grass Grass: Dense n= 0.240 P2= 3.42"
1.8	195	0.0083	1.85		Shallow Concentrated Flow, Shallow Pvmnt Paved Kv= 20.3 fps
2.5	550	0.0050	3.72	4.57	Pipe Channel, Pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
18.5	835	Total			

Subcatchment 4S: Prop. Drainage Area-2 (Pervious)

Hydrograph



Summary for Subcatchment 6S: Prop. Drainage Area-2 (Woods) (Undisturbed)

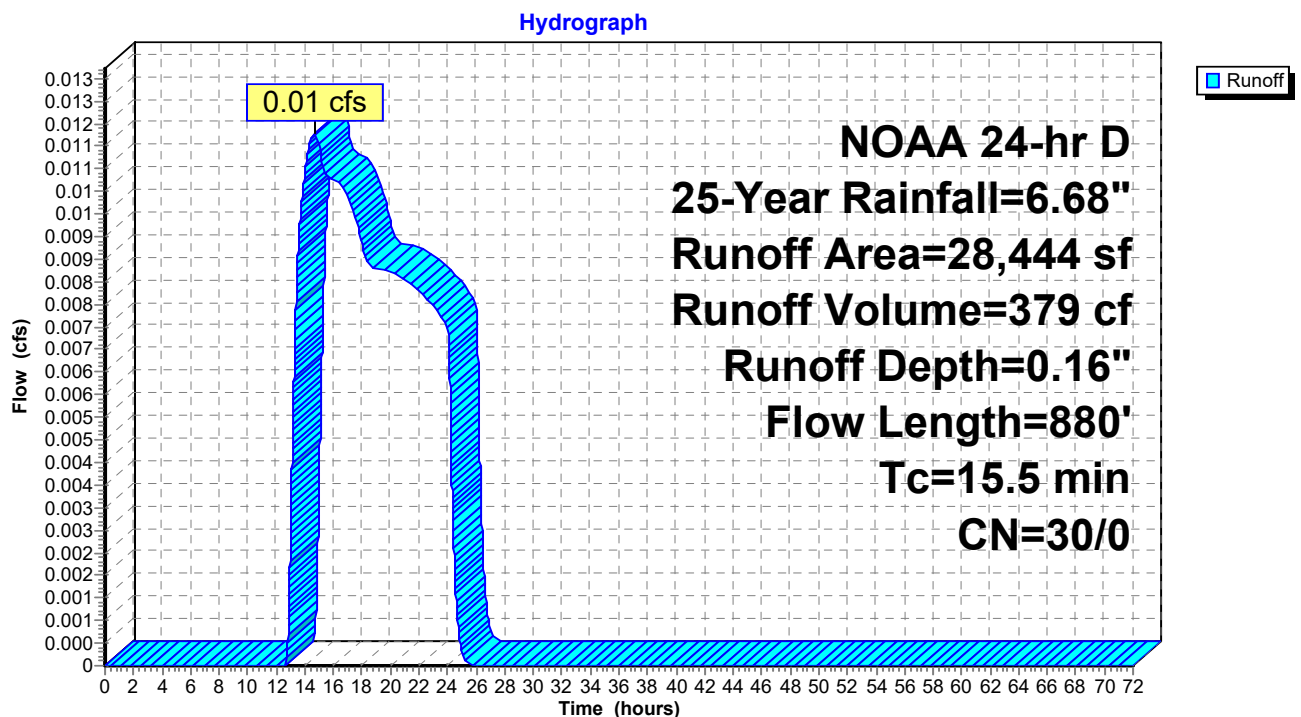
Runoff = 0.01 cfs @ 14.64 hrs, Volume= 379 cf, Depth= 0.16"
 Routed to Reach 3R : (CB-6 To HW-2)

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 25-Year Rainfall=6.68"

Area (sf)	CN	Description
28,444	30	Woods, Good, HSG A
28,444	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	50	0.0250	0.08		Sheet Flow, Sheet woods Woods: Light underbrush n= 0.400 P2= 3.42"
0.6	120	0.0400	3.22		Shallow Concentrated Flow, Shallow Grass Unpaved Kv= 16.1 fps
1.7	190	0.0083	1.85		Shallow Concentrated Flow, shallow Pvmt Paved Kv= 20.3 fps
2.3	520	0.0050	3.72	4.57	Pipe Channel, pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
15.5	880	Total			

Subcatchment 6S: Prop. Drainage Area-2 (Woods) (Undisturbed)



Summary for Subcatchment 8S: Prop. Drainage Area-3 (Impervious)

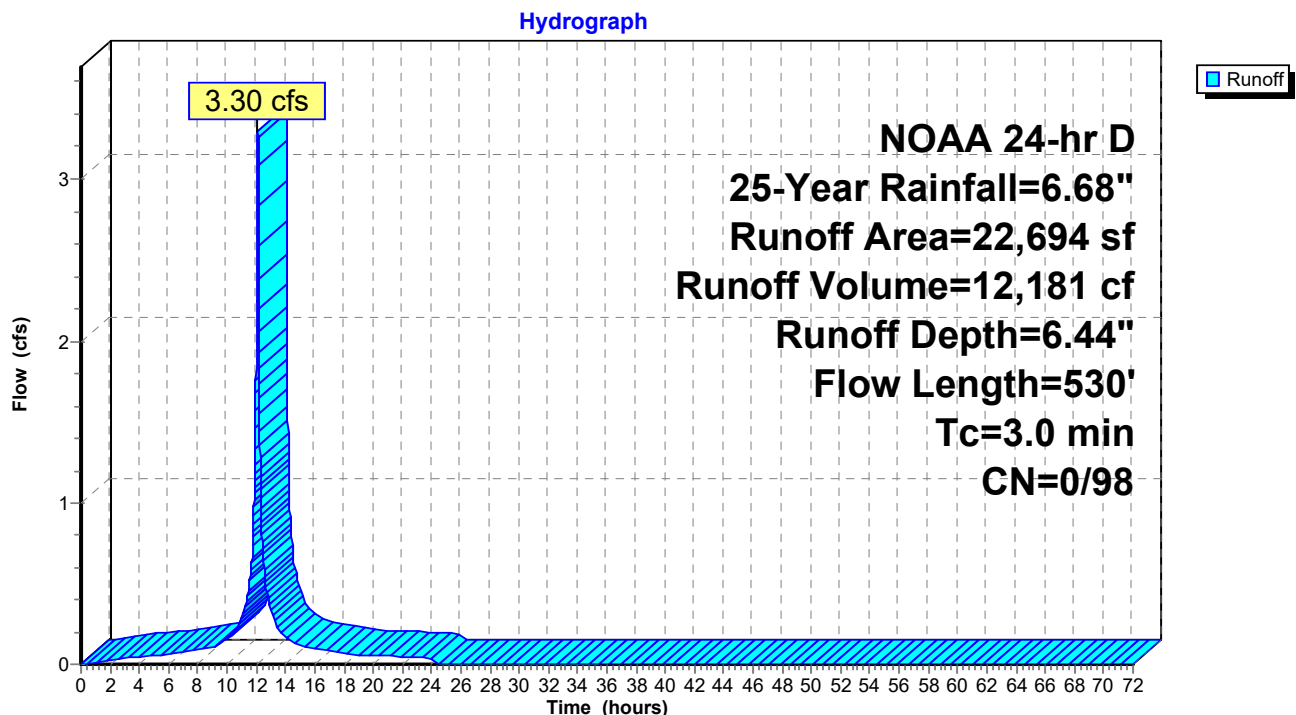
Runoff = 3.30 cfs @ 12.11 hrs, Volume= 12,181 cf, Depth= 6.44"
 Routed to Reach 4R : (CB-8 To HW-3)

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 25-Year Rainfall=6.68"

Area (sf)	CN	Description
13,555	98	Paved roads w/curbs & sewers, HSG A
* 3,626	98	Sidewalks, HSG A
* 5,513	98	Driveways, HSG A
22,694	98	Weighted Average
22,694	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	100	0.0292	1.65		Sheet Flow, Sheet Pvmt Smooth surfaces n= 0.011 P2= 3.42"
1.1	233	0.0292	3.47		Shallow Concentrated Flow, Shallow Pvmt Paved Kv= 20.3 fps
0.9	197	0.0040	3.76	6.64	Pipe Channel, Pipe 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
3.0	530	Total			

Subcatchment 8S: Prop. Drainage Area-3 (Impervious)



Summary for Subcatchment 9S: Prop. Drainage Area-3 (Pervious)

Runoff = 0.31 cfs @ 12.44 hrs, Volume= 3,848 cf, Depth= 0.66"
 Routed to Reach 4R : (CB-8 To HW-3)

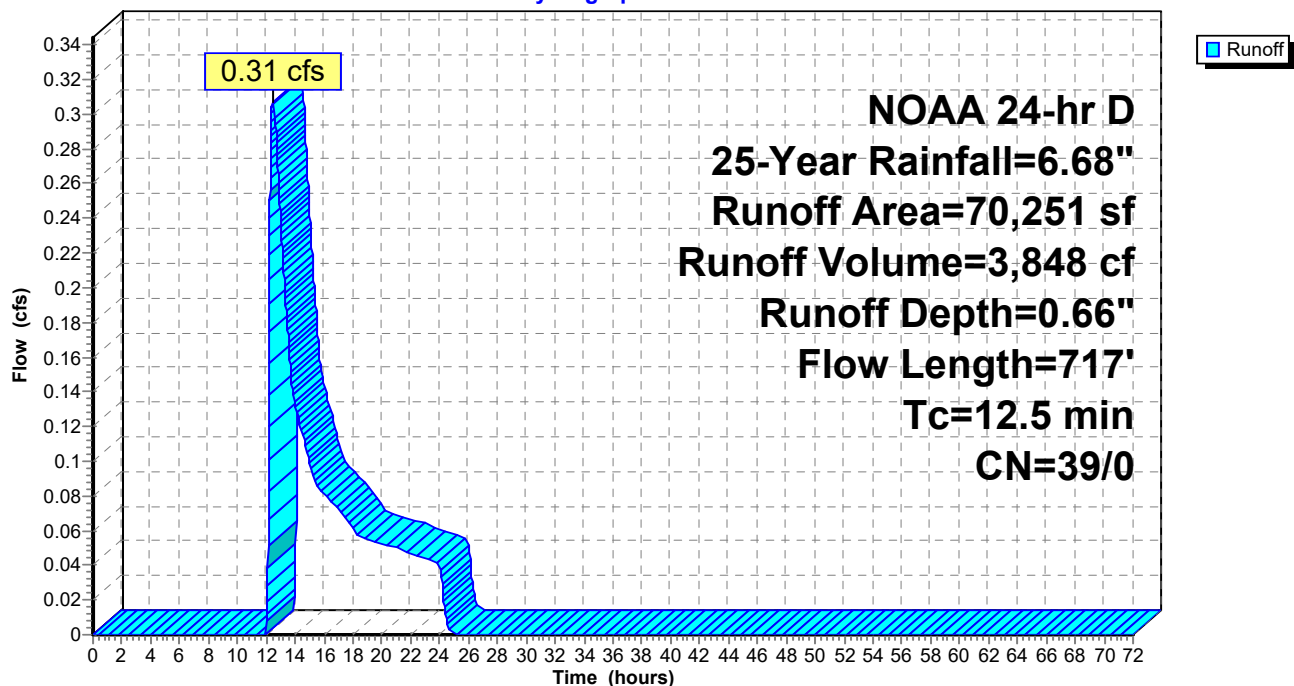
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 25-Year Rainfall=6.68"

Area (sf)	CN	Description
70,251	39	>75% Grass cover, Good, HSG A
70,251	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	100	0.0500	0.17		Sheet Flow, Sheet Grass Grass: Dense n= 0.240 P2= 3.42"
0.1	20	0.0500	3.60		Shallow Concentrated Flow, Shallow Grass Unpaved Kv= 16.1 fps
1.9	400	0.0292	3.47		Shallow Concentrated Flow, Shallow Pvmnt Paved Kv= 20.3 fps
0.9	197	0.0040	3.76	6.64	Pipe Channel, Pipe 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
12.5	717	Total			

Subcatchment 9S: Prop. Drainage Area-3 (Pervious)

Hydrograph



Summary for Subcatchment 11S: Prop. Drainage Area-3-A (Woods) (Undisturbed)

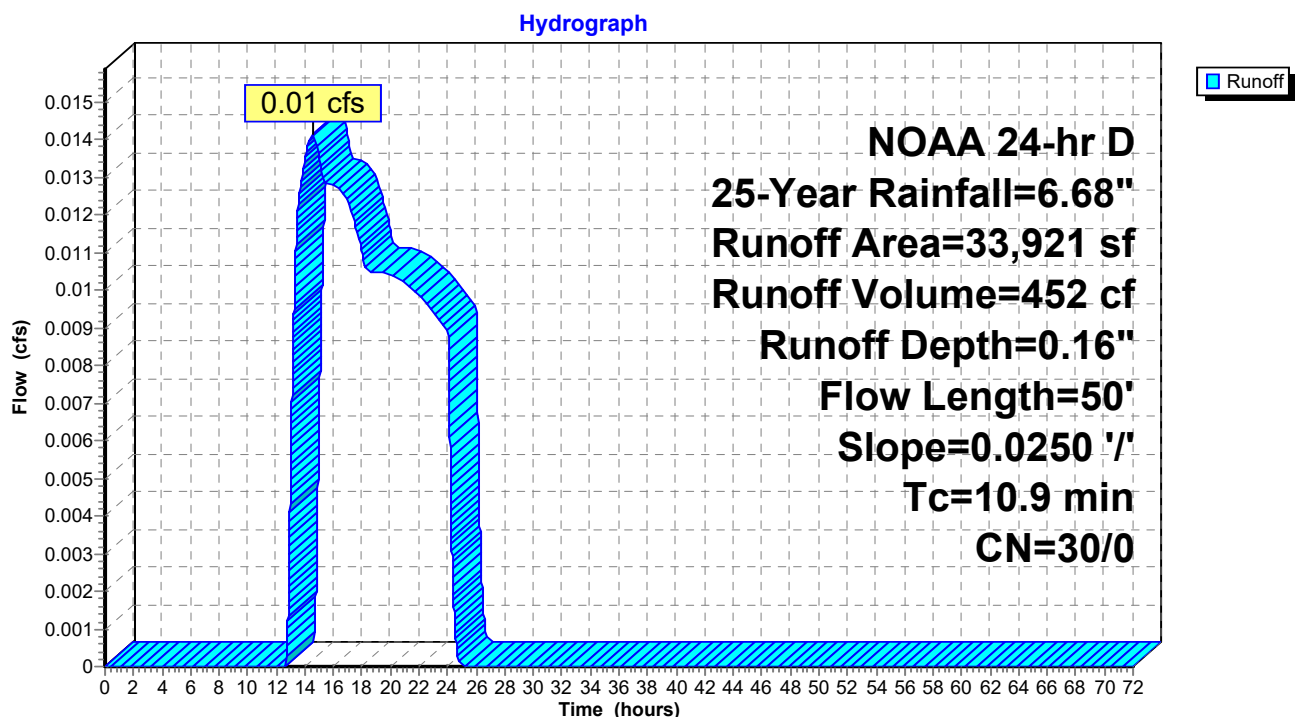
Runoff = 0.01 cfs @ 14.53 hrs, Volume= 452 cf, Depth= 0.16"
 Routed to Reach 4R : (CB-8 To HW-3)

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 25-Year Rainfall=6.68"

Area (sf)	CN	Description
33,921	30	Woods, Good, HSG A
33,921	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	50	0.0250	0.08		Sheet Flow, Sheet woods Woods: Light underbrush n= 0.400 P2= 3.42"

Subcatchment 11S: Prop. Drainage Area-3-A (Woods) (Undisturbed)



Summary for Subcatchment 12S: CB-2 (Woods) (Undisturbed)

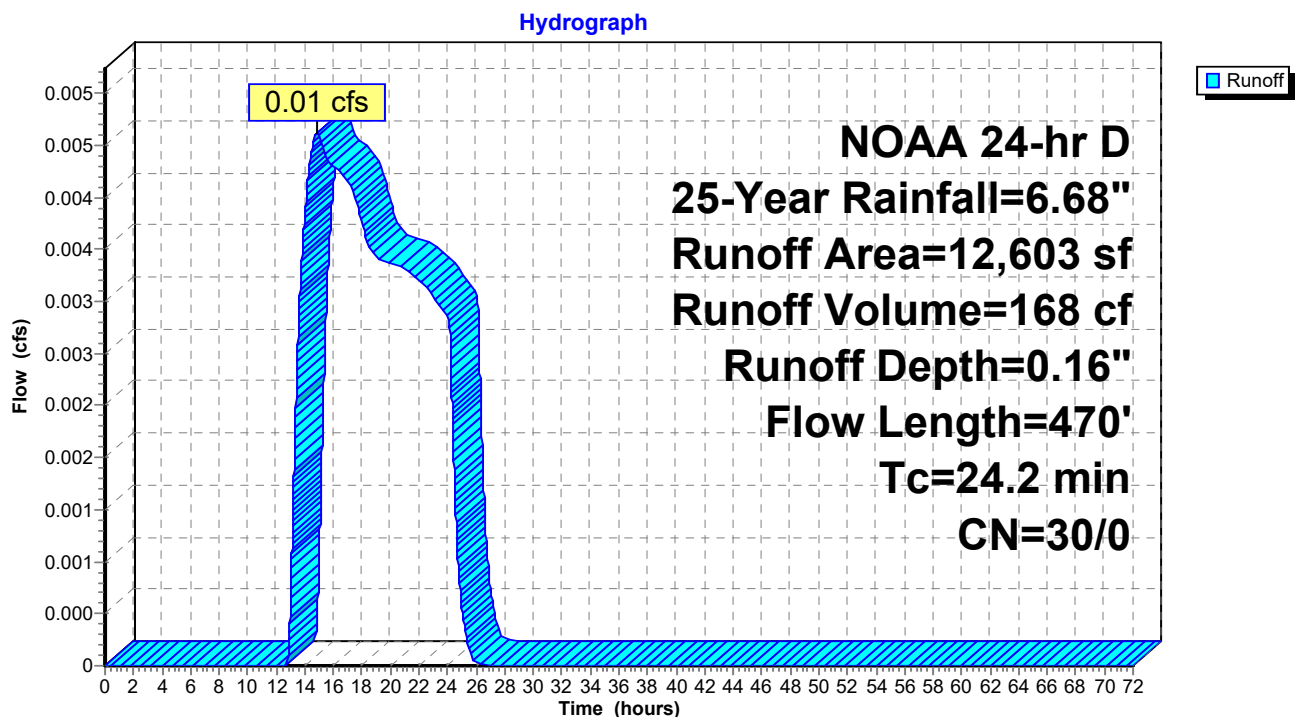
Runoff = 0.01 cfs @ 14.89 hrs, Volume= 168 cf, Depth= 0.16"
 Routed to Reach 2R : (CB-2 To HW-1)

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 25-Year Rainfall=6.68"

Area (sf)	CN	Description
12,603	30	Woods, Good, HSG A
12,603	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2	100	0.0170	0.08		Sheet Flow, Sheet woods Woods: Light underbrush n= 0.400 P2= 3.42"
0.4	60	0.0200	2.28		Shallow Concentrated Flow, Shallow Grass Unpaved Kv= 16.1 fps
0.4	40	0.0062	1.60		Shallow Concentrated Flow, shallow Pvm Paved Kv= 20.3 fps
1.2	270	0.0050	3.72	4.57	Pipe Channel, pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
24.2	470	Total			

Subcatchment 12S: CB-2 (Woods) (Undisturbed)



Summary for Subcatchment 13S: CB-2 (Pervious)

Runoff = 0.16 cfs @ 12.54 hrs, Volume= 1,983 cf, Depth= 0.66"
 Routed to Reach 2R : (CB-2 To HW-1)

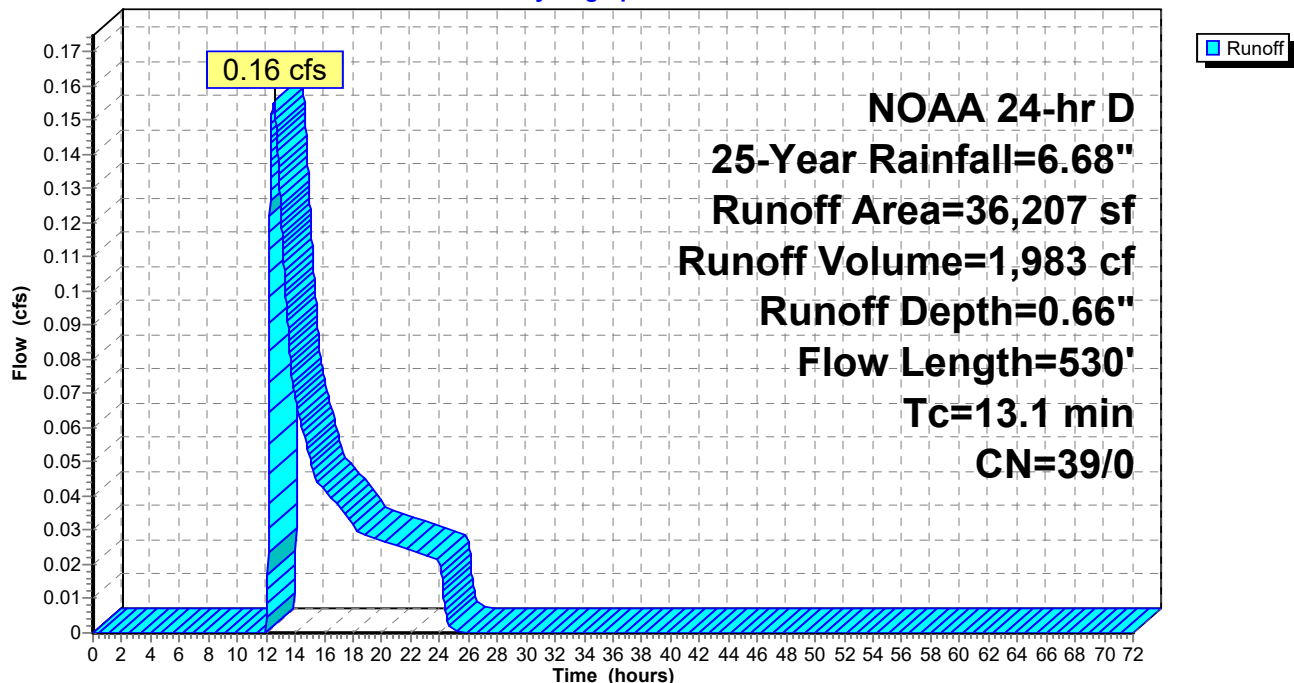
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 25-Year Rainfall=6.68"

Area (sf)	CN	Description
36,207	39	>75% Grass cover, Good, HSG A
36,207	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0400	0.16		Sheet Flow, Sheet Grass Grass: Dense n= 0.240 P2= 3.42"
1.4	160	0.0083	1.85		Shallow Concentrated Flow, Shallow Pvmnt Paved Kv= 20.3 fps
1.2	270	0.0050	3.72	4.57	Pipe Channel, Pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
13.1	530	Total			

Subcatchment 13S: CB-2 (Pervious)

Hydrograph



Summary for Subcatchment P-1I: CB-1 (Impervious)

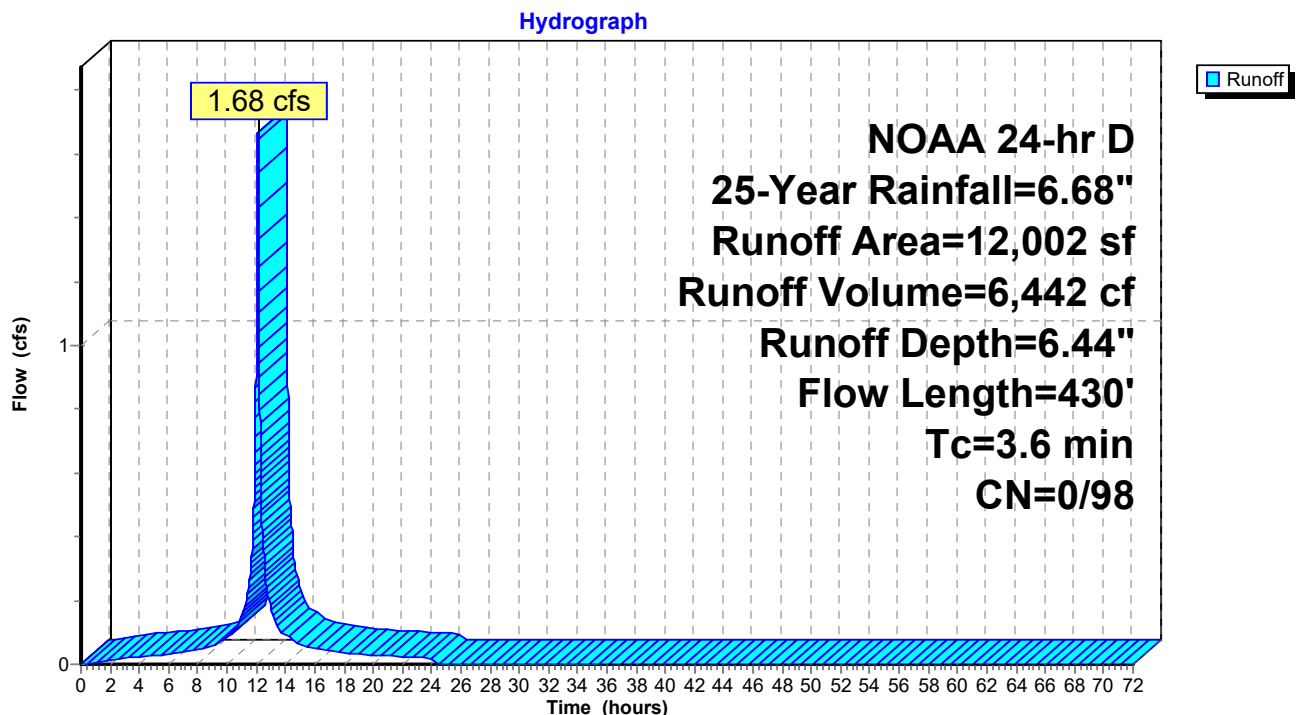
Runoff = 1.68 cfs @ 12.12 hrs, Volume= 6,442 cf, Depth= 6.44"
 Routed to Reach 1R : (CB-1 To CB-2)

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 25-Year Rainfall=6.68"

Area (sf)	CN	Description
7,971	98	Paved roads w/curbs & sewers, HSG A
* 1,294	98	Sidewalks, HSG A
* 2,737	98	Driveways, HSG A
12,002	98	Weighted Average
12,002	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	100	0.0083	1.00		Sheet Flow, Sheet Pvmt Smooth surfaces n= 0.011 P2= 3.42"
0.7	60	0.0050	1.44		Shallow Concentrated Flow, Shallow Pvmt Paved Kv= 20.3 fps
1.2	270	0.0050	3.72	4.57	Pipe Channel, Pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
3.6	430	Total			

Subcatchment P-1I: CB-1 (Impervious)



Summary for Subcatchment P-1P: CB-1 (Pervious)

Runoff = 0.16 cfs @ 12.54 hrs, Volume= 1,983 cf, Depth= 0.66"
 Routed to Reach 1R : (CB-1 To CB-2)

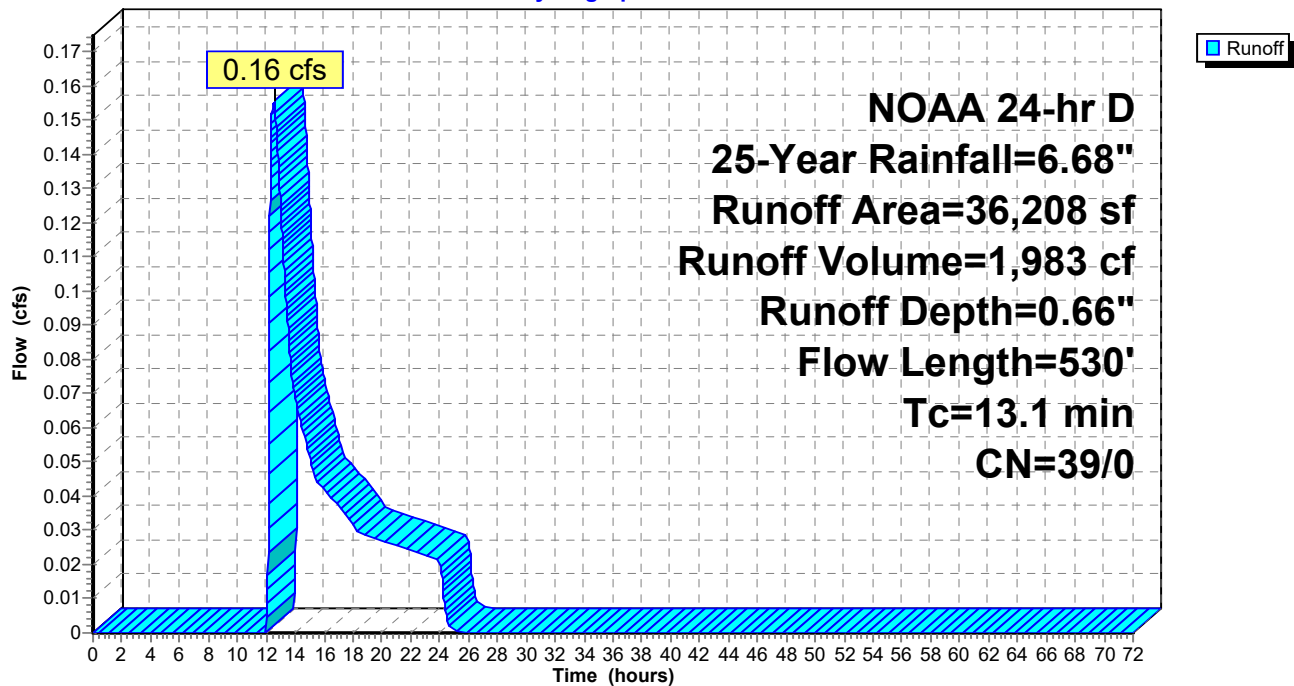
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 25-Year Rainfall=6.68"

Area (sf)	CN	Description
36,208	39	>75% Grass cover, Good, HSG A
36,208	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0400	0.16		Sheet Flow, Sheet Grass Grass: Dense n= 0.240 P2= 3.42"
1.4	160	0.0083	1.85		Shallow Concentrated Flow, Shallow Pvmnt Paved Kv= 20.3 fps
1.2	270	0.0050	3.72	4.57	Pipe Channel, Pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
13.1	530	Total			

Subcatchment P-1P: CB-1 (Pervious)

Hydrograph



Summary for Subcatchment P1A: CB-1 (Woods) (Undisturbed)

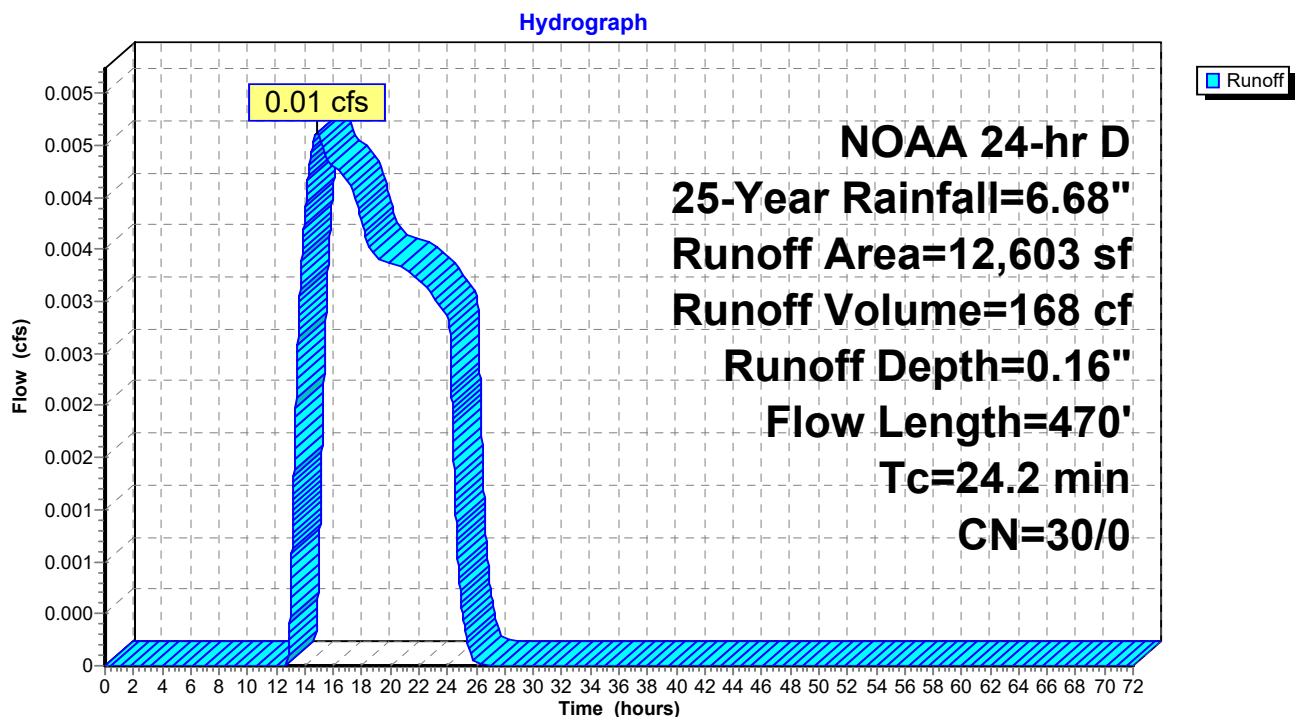
Runoff = 0.01 cfs @ 14.89 hrs, Volume= 168 cf, Depth= 0.16"
 Routed to Reach 1R : (CB-1 To CB-2)

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 25-Year Rainfall=6.68"

Area (sf)	CN	Description
12,603	30	Woods, Good, HSG A
12,603	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2	100	0.0170	0.08		Sheet Flow, Sheet woods Woods: Light underbrush n= 0.400 P2= 3.42"
0.4	60	0.0200	2.28		Shallow Concentrated Flow, Shallow Grass Unpaved Kv= 16.1 fps
0.4	40	0.0062	1.60		Shallow Concentrated Flow, shallow Pvmnt Paved Kv= 20.3 fps
1.2	270	0.0050	3.72	4.57	Pipe Channel, pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
24.2	470	Total			

Subcatchment P1A: CB-1 (Woods) (Undisturbed)



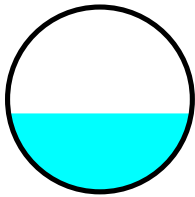
Summary for Reach 1R: (CB-1 To CB-2)

Inflow Area = 60,813 sf, 19.74% Impervious, Inflow Depth = 1.70" for 25-Year event
 Inflow = 1.70 cfs @ 12.12 hrs, Volume= 8,593 cf
 Outflow = 1.69 cfs @ 12.12 hrs, Volume= 8,593 cf, Atten= 0%, Lag= 0.2 min
 Routed to Reach 2R : (CB-2 To HW-1)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Max. Velocity= 3.42 fps, Min. Travel Time= 0.3 min
 Avg. Velocity= 1.27 fps, Avg. Travel Time= 0.8 min

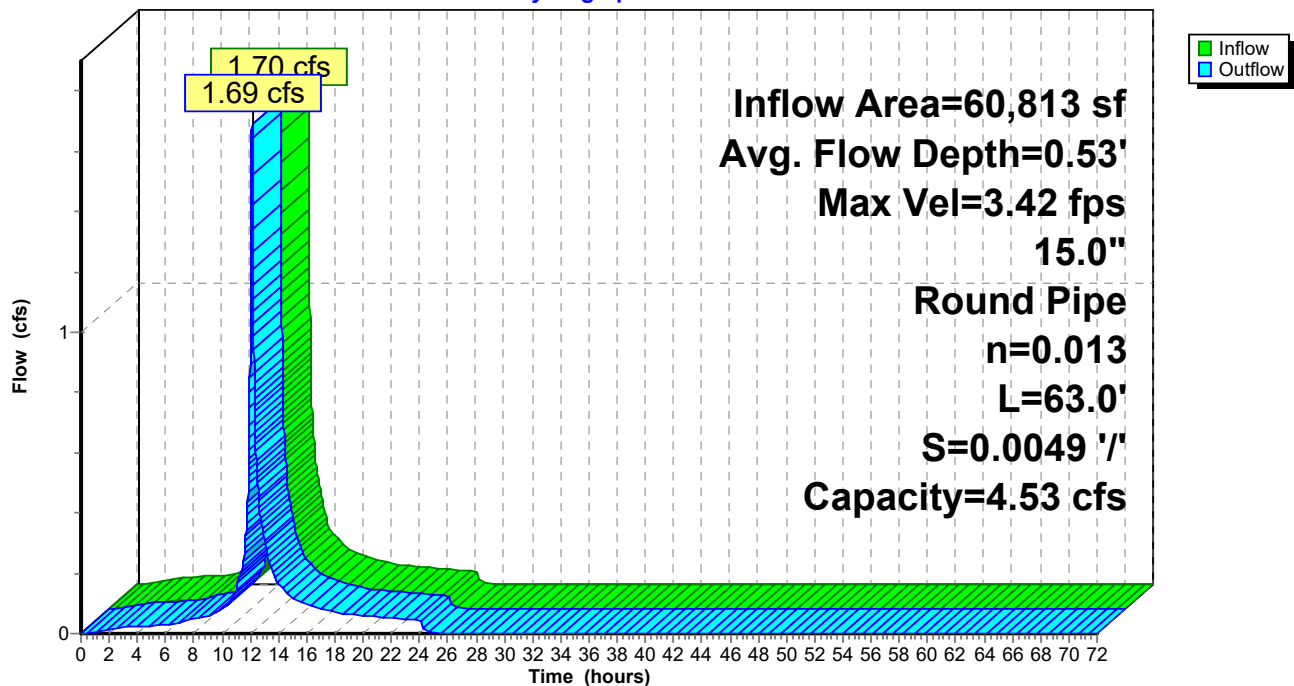
Peak Storage= 31 cf @ 12.12 hrs
 Average Depth at Peak Storage= 0.53' , Surface Width= 1.24'
 Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 4.53 cfs

15.0" Round Pipe
 n= 0.013 Concrete pipe, bends & connections
 Length= 63.0' Slope= 0.0049 '/'
 Inlet Invert= 78.35', Outlet Invert= 78.04'



Reach 1R: (CB-1 To CB-2)

Hydrograph



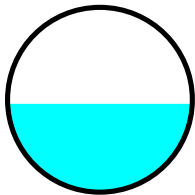
Summary for Reach 2R: (CB-2 To HW-1)

Inflow Area = 121,625 sf, 19.74% Impervious, Inflow Depth = 1.70" for 25-Year event
 Inflow = 3.39 cfs @ 12.12 hrs, Volume= 17,187 cf
 Outflow = 3.35 cfs @ 12.13 hrs, Volume= 17,187 cf, Atten= 1%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Max. Velocity= 4.02 fps, Min. Travel Time= 0.9 min
 Avg. Velocity = 1.49 fps, Avg. Travel Time= 2.4 min

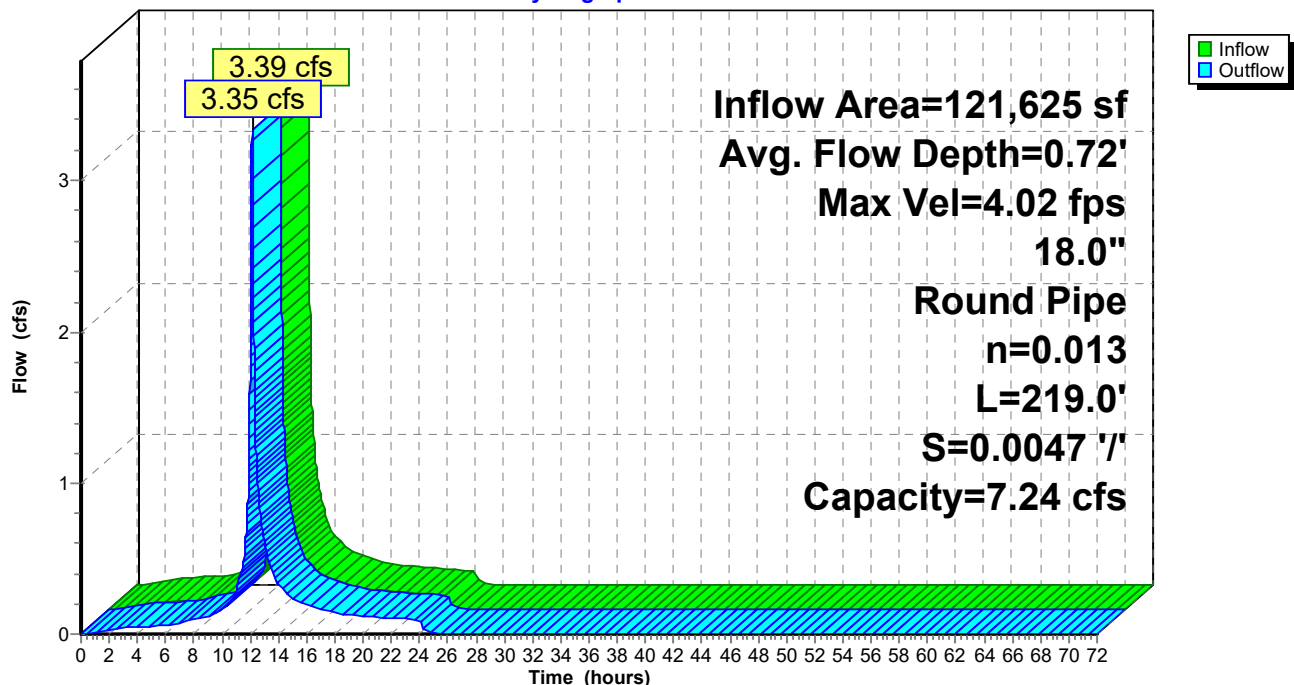
Peak Storage= 182 cf @ 12.13 hrs
 Average Depth at Peak Storage= 0.72' , Surface Width= 1.50'
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 7.24 cfs

18.0" Round Pipe
 n= 0.013 Concrete pipe, bends & connections
 Length= 219.0' Slope= 0.0047 '/'
 Inlet Invert= 78.04', Outlet Invert= 77.00'



Reach 2R: (CB-2 To HW-1)

Hydrograph



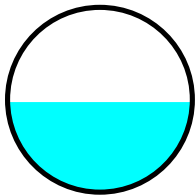
Summary for Reach 3R: (CB-6 To HW-2)

Inflow Area = 101,144 sf, 15.57% Impervious, Inflow Depth = 1.42" for 25-Year event
 Inflow = 2.01 cfs @ 12.13 hrs, Volume= 11,954 cf
 Outflow = 1.99 cfs @ 12.14 hrs, Volume= 11,954 cf, Atten= 1%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Max. Velocity= 3.35 fps, Min. Travel Time= 1.0 min
 Avg. Velocity = 1.32 fps, Avg. Travel Time= 2.4 min

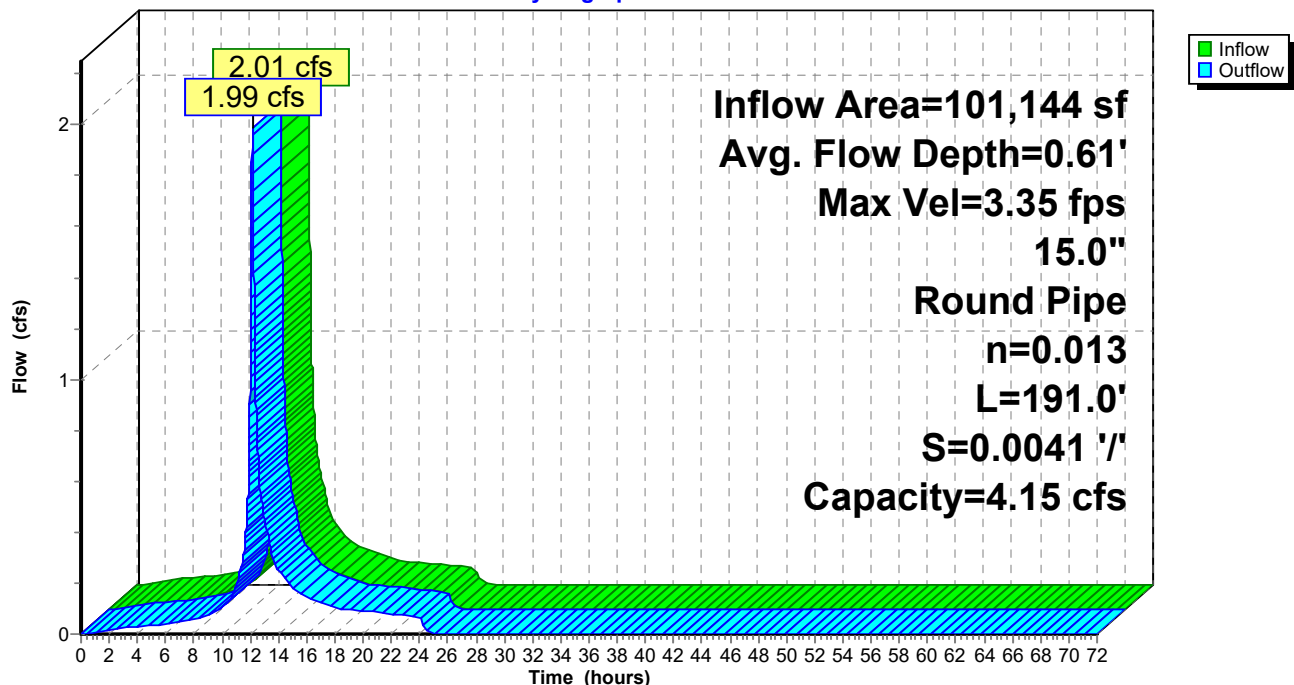
Peak Storage= 113 cf @ 12.14 hrs
 Average Depth at Peak Storage= 0.61' , Surface Width= 1.25'
 Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 4.15 cfs

15.0" Round Pipe
 n= 0.013 Concrete pipe, bends & connections
 Length= 191.0' Slope= 0.0041 '/'
 Inlet Invert= 77.79', Outlet Invert= 77.00'



Reach 3R: (CB-6 To HW-2)

Hydrograph



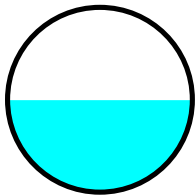
Summary for Reach 4R: (CB-8 To HW-3)

Inflow Area = 126,866 sf, 17.89% Impervious, Inflow Depth = 1.56" for 25-Year event
 Inflow = 3.34 cfs @ 12.11 hrs, Volume= 16,481 cf
 Outflow = 3.30 cfs @ 12.12 hrs, Volume= 16,481 cf, Atten= 1%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Max. Velocity= 3.76 fps, Min. Travel Time= 0.9 min
 Avg. Velocity = 1.42 fps, Avg. Travel Time= 2.3 min

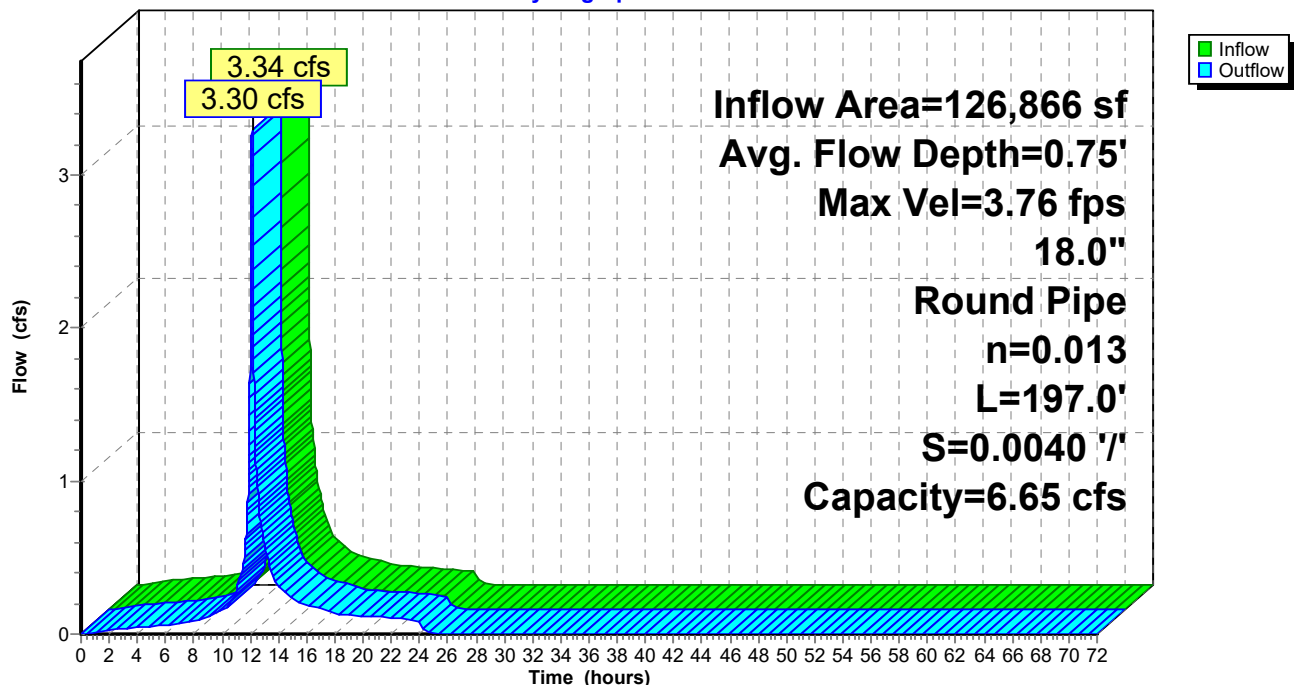
Peak Storage= 173 cf @ 12.12 hrs
 Average Depth at Peak Storage= 0.75' , Surface Width= 1.50'
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 6.65 cfs

18.0" Round Pipe
 n= 0.013 Concrete pipe, bends & connections
 Length= 197.0' Slope= 0.0040 '/'
 Inlet Invert= 66.79', Outlet Invert= 66.00'

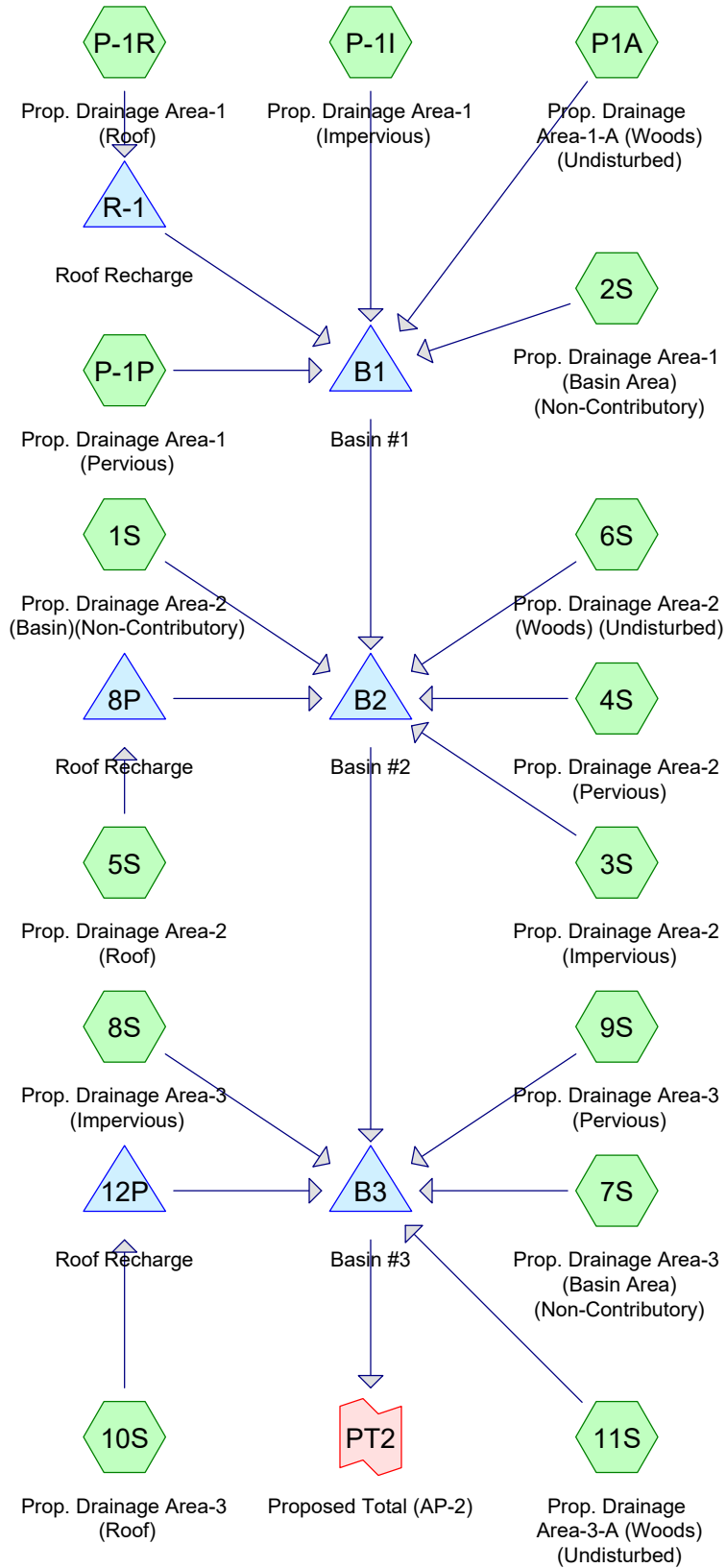


Reach 4R: (CB-8 To HW-3)

Hydrograph



APPENDIX 6



Routing Diagram for Arya2025-014_Hemingway Est_Rev-0_05.02.26_SCD
 Prepared by Morgan Engineering, LLC, Printed 5/2/2026
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Arya2025-014_Hemingway Est_Rev-0_05.02.26_SCD

Prepared by Morgan Engineering, LLC

Printed 5/2/2026

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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Yr. Current	NOAA 24-hr	D	Default	24.00	1	3.42	2
2	10-Yr. Current	NOAA 24-hr	D	Default	24.00	1	5.38	2
3	25-Year	NOAA 24-hr	D	Default	24.00	1	6.68	2

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
 Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv.
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Prop. Drainage Area-2 Runoff Area=18,844 sf 0.00% Impervious Runoff Depth=0.01"
 Flow Length=50' Slope=0.1000 '/ Tc=4.2 min CN=39/0 Runoff=0.00 cfs 8 cf

Subcatchment2S: Prop. Drainage Area-1 Runoff Area=18,385 sf 0.00% Impervious Runoff Depth=0.01"
 Flow Length=50' Slope=0.1000 '/ Tc=4.2 min CN=39/0 Runoff=0.00 cfs 8 cf

Subcatchment3S: Prop. Drainage Area-2 Runoff Area=15,753 sf 100.00% Impervious Runoff Depth=3.19"
 Flow Length=745' Tc=5.1 min CN=0/98 Runoff=1.01 cfs 4,183 cf

Subcatchment4S: Prop. Drainage Area-2 Runoff Area=56,947 sf 0.00% Impervious Runoff Depth=0.01"
 Flow Length=835' Tc=18.5 min CN=39/0 Runoff=0.00 cfs 25 cf

Subcatchment5S: Prop. Drainage Area-2 Runoff Area=10,024 sf 100.00% Impervious Runoff Depth=3.19"
 Tc=2.0 min CN=0/98 Runoff=0.79 cfs 2,662 cf

Subcatchment6S: Prop. Drainage Area-2 Runoff Area=28,444 sf 0.00% Impervious Runoff Depth=0.00"
 Flow Length=880' Tc=15.5 min CN=30/0 Runoff=0.00 cfs 0 cf

Subcatchment7S: Prop. Drainage Area-3 Runoff Area=18,104 sf 0.00% Impervious Runoff Depth=0.01"
 Flow Length=50' Slope=0.1000 '/ Tc=4.2 min CN=39/0 Runoff=0.00 cfs 8 cf

Subcatchment8S: Prop. Drainage Area-3 Runoff Area=22,694 sf 100.00% Impervious Runoff Depth=3.19"
 Flow Length=530' Tc=3.0 min CN=0/98 Runoff=1.68 cfs 6,027 cf

Subcatchment9S: Prop. Drainage Area-3 Runoff Area=70,251 sf 0.00% Impervious Runoff Depth=0.01"
 Flow Length=717' Tc=12.5 min CN=39/0 Runoff=0.00 cfs 31 cf

Subcatchment10S: Prop. Drainage Runoff Area=12,530 sf 100.00% Impervious Runoff Depth=3.19"
 Tc=2.0 min CN=0/98 Runoff=0.98 cfs 3,327 cf

Subcatchment11S: Prop. Drainage Runoff Area=33,921 sf 0.00% Impervious Runoff Depth=0.00"
 Flow Length=50' Slope=0.0250 '/ Tc=10.9 min CN=30/0 Runoff=0.00 cfs 0 cf

SubcatchmentP-1I: Prop. Drainage Runoff Area=24,003 sf 100.00% Impervious Runoff Depth=3.19"
 Flow Length=430' Tc=3.6 min CN=0/98 Runoff=1.70 cfs 6,374 cf

SubcatchmentP-1P: Prop. Drainage Area-1 Runoff Area=72,415 sf 0.00% Impervious Runoff Depth=0.01"
 Flow Length=530' Tc=13.1 min CN=39/0 Runoff=0.00 cfs 32 cf

SubcatchmentP-1R: Prop. Drainage Runoff Area=12,530 sf 100.00% Impervious Runoff Depth=3.19"
 Tc=2.0 min CN=0/98 Runoff=0.98 cfs 3,327 cf

SubcatchmentP1A: Prop. Drainage Runoff Area=25,206 sf 0.00% Impervious Runoff Depth=0.00"
 Flow Length=470' Tc=24.2 min CN=30/0 Runoff=0.00 cfs 0 cf

Pond 8P: Roof Recharge Peak Elev=76.90' Storage=411 cf Inflow=0.79 cfs 2,662 cf
 Discarded=0.19 cfs 2,662 cf Primary=0.00 cfs 0 cf Outflow=0.19 cfs 2,662 cf

Pond 12P: Roof Recharge Peak Elev=77.26' Storage=619 cf Inflow=0.98 cfs 3,327 cf
 Discarded=0.19 cfs 3,327 cf Primary=0.00 cfs 0 cf Outflow=0.19 cfs 3,327 cf

Pond B1: Basin #1 Peak Elev=78.18' Storage=6,061 cf Inflow=1.70 cfs 6,415 cf
 Outflow=0.12 cfs 6,287 cf

Pond B2: Basin #2 Peak Elev=77.98' Storage=4,258 cf Inflow=1.10 cfs 10,504 cf
 Outflow=0.24 cfs 10,407 cf

Pond B3: Basin #3 Peak Elev=68.69' Storage=13,378 cf Inflow=1.85 cfs 16,473 cf
 Outflow=0.30 cfs 16,311 cf

Pond R-1: Roof Recharge Peak Elev=76.90' Storage=513 cf Inflow=0.98 cfs 3,327 cf
 Discarded=0.24 cfs 3,327 cf Primary=0.00 cfs 0 cf Outflow=0.24 cfs 3,327 cf

Link PT2: Proposed Total (AP-2) Inflow=0.30 cfs 16,311 cf
 Primary=0.30 cfs 16,311 cf

Total Runoff Area = 440,051 sf Runoff Volume = 26,015 cf Average Runoff Depth = 0.71"
77.84% Pervious = 342,517 sf 22.16% Impervious = 97,534 sf

Summary for Subcatchment 1S: Prop. Drainage Area-2 (Basin)(Non-Contributory)

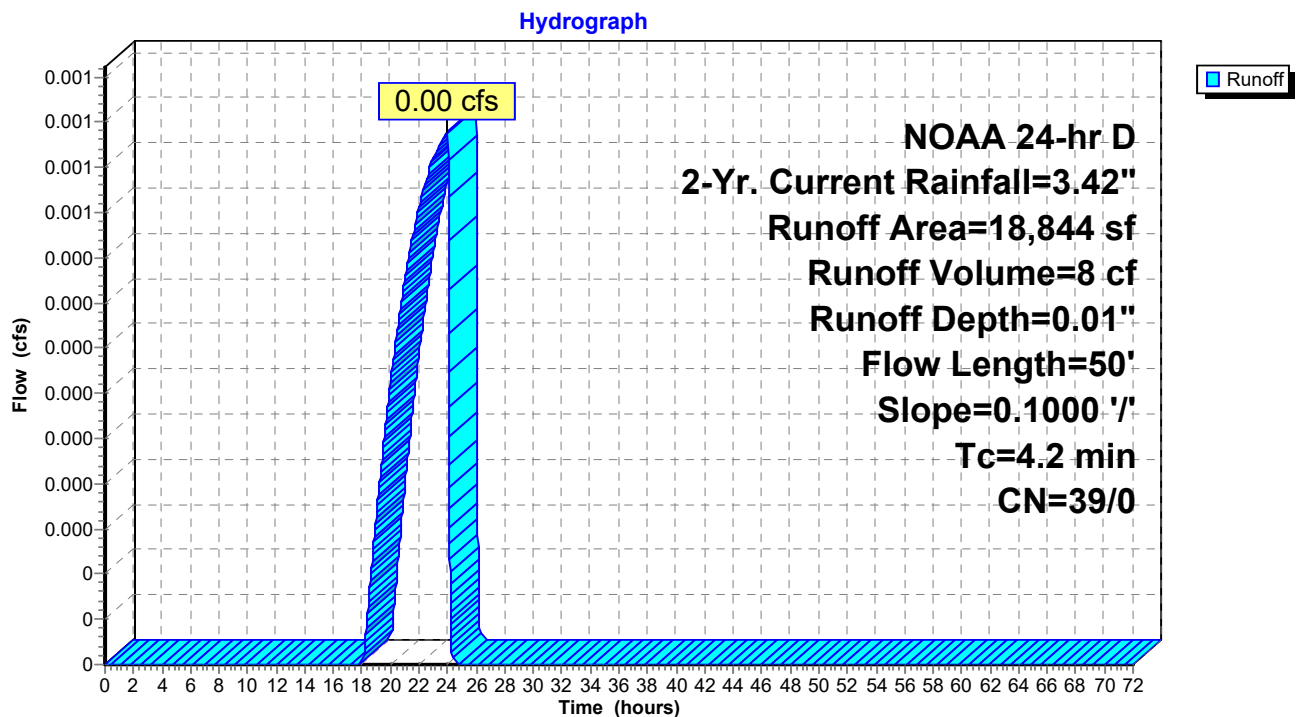
Runoff = 0.00 cfs @ 24.00 hrs, Volume= 8 cf, Depth= 0.01"
 Routed to Pond B2 : Basin #2

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Current Rainfall=3.42"

Area (sf)	CN	Description
* 18,844	39	Basin Area-Non-contributory, HSG A
18,844	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.1000	0.20		Sheet Flow, Sheet Grass
Grass: Dense n= 0.240 P2= 3.42"					

Subcatchment 1S: Prop. Drainage Area-2 (Basin)(Non-Contributory)



Summary for Subcatchment 2S: Prop. Drainage Area-1 (Basin Area) (Non-Contributory)

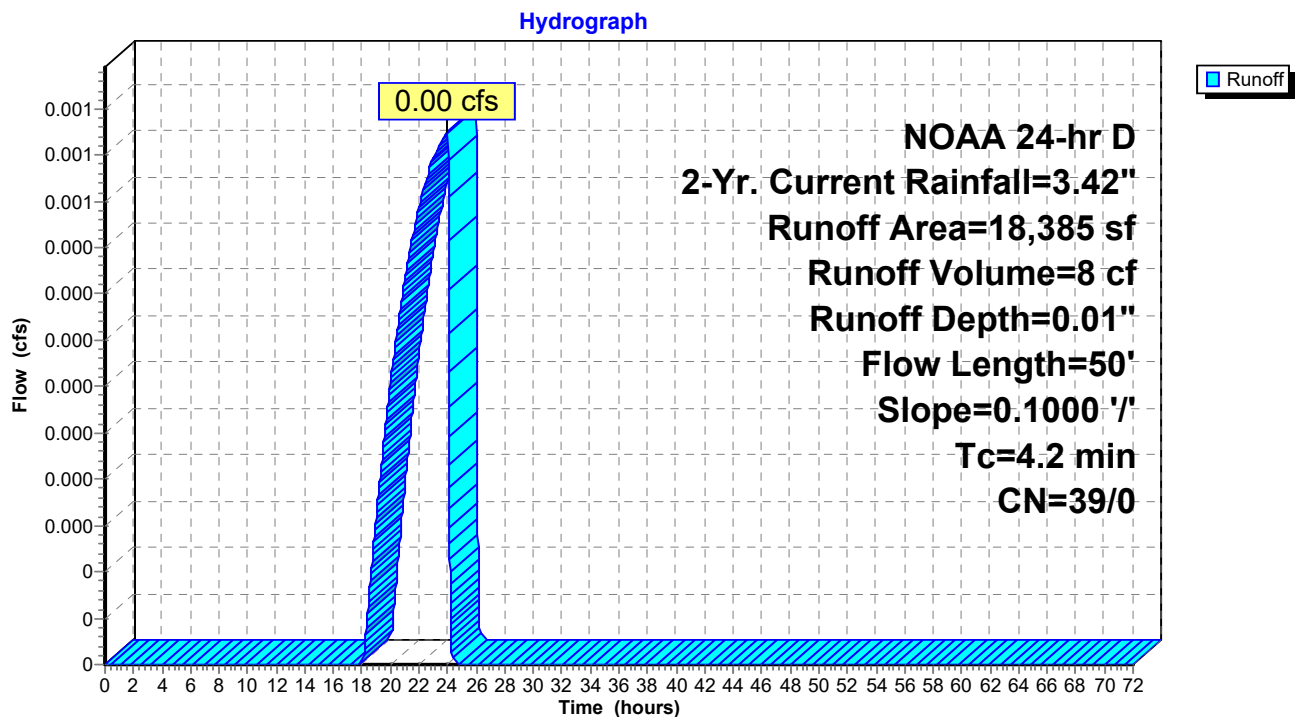
Runoff = 0.00 cfs @ 24.00 hrs, Volume= 8 cf, Depth= 0.01"
 Routed to Pond B1 : Basin #1

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Current Rainfall=3.42"

Area (sf)	CN	Description
* 18,385	39	Basin Area-Non-contributory, HSG A
18,385	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.1000	0.20		Sheet Flow, Sheet Grass
Grass: Dense n= 0.240 P2= 3.42"					

Subcatchment 2S: Prop. Drainage Area-1 (Basin Area) (Non-Contributory)



Summary for Subcatchment 3S: Prop. Drainage Area-2 (Impervious)

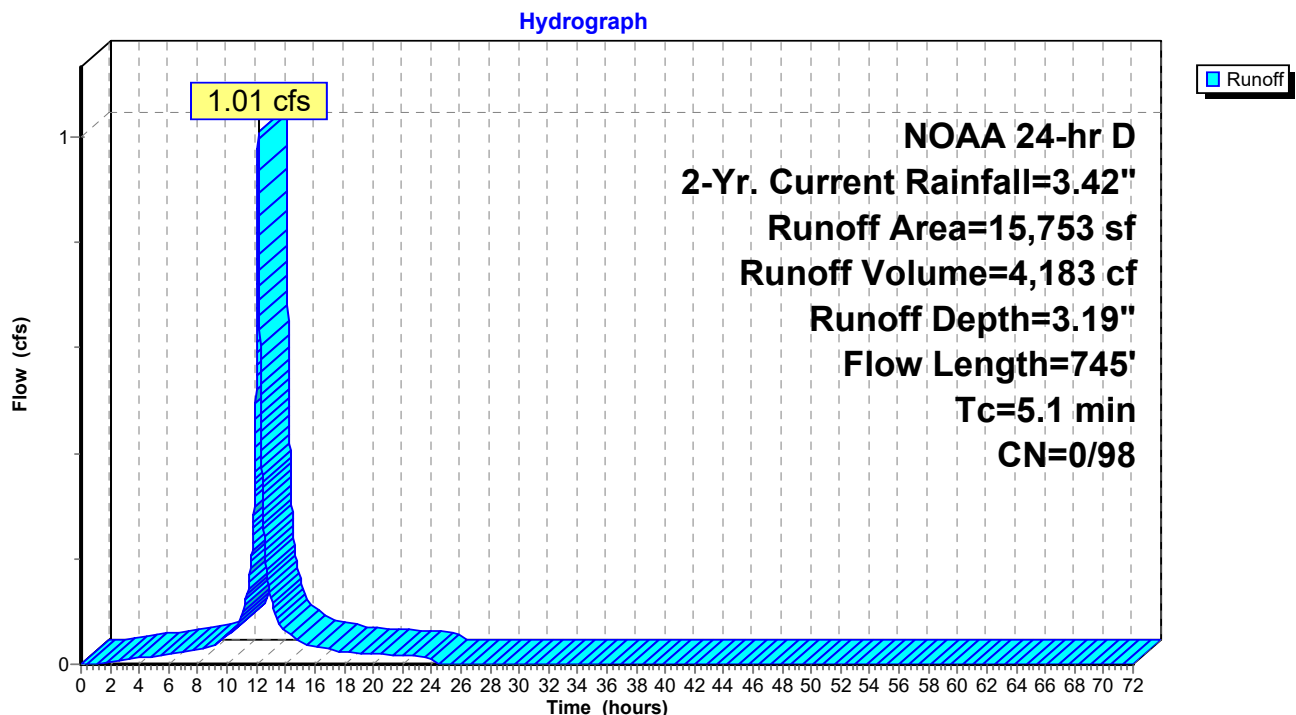
Runoff = 1.01 cfs @ 12.13 hrs, Volume= 4,183 cf, Depth= 3.19"
 Routed to Pond B2 : Basin #2

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Current Rainfall=3.42"

Area (sf)	CN	Description
9,010	98	Paved roads w/curbs & sewers, HSG A
* 2,394	98	Sidewalks, HSG A
* 4,349	98	Driveways, HSG A
15,753	98	Weighted Average
15,753	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	100	0.0083	1.00		Sheet Flow, Sheet Pvmt Smooth surfaces n= 0.011 P2= 3.42"
0.9	95	0.0083	1.85		Shallow Concentrated Flow, Shallow Pvmt Paved Kv= 20.3 fps
2.5	550	0.0050	3.72	4.57	Pipe Channel, Pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
5.1	745	Total			

Subcatchment 3S: Prop. Drainage Area-2 (Impervious)



Summary for Subcatchment 4S: Prop. Drainage Area-2 (Pervious)

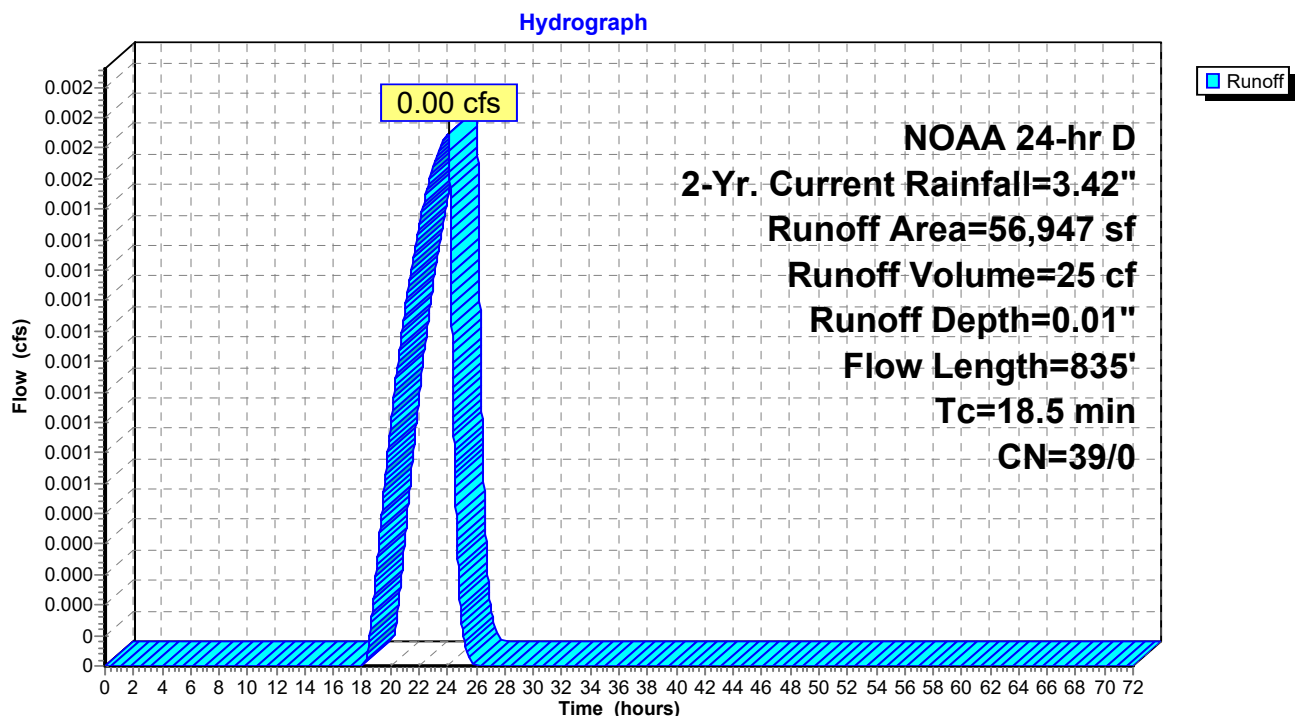
Runoff = 0.00 cfs @ 24.04 hrs, Volume= 25 cf, Depth= 0.01"
Routed to Pond B2 : Basin #2

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 2-Yr. Current Rainfall=3.42"

Area (sf)	CN	Description
56,947	39	>75% Grass cover, Good, HSG A
56,947	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	90	0.0150	0.11		Sheet Flow, Sheet Grass Grass: Dense n= 0.240 P2= 3.42"
1.8	195	0.0083	1.85		Shallow Concentrated Flow, Shallow Pvmnt Paved Kv= 20.3 fps
2.5	550	0.0050	3.72	4.57	Pipe Channel, Pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
18.5	835	Total			

Subcatchment 4S: Prop. Drainage Area-2 (Pervious)



Summary for Subcatchment 5S: Prop. Drainage Area-2 (Roof)

Runoff = 0.79 cfs @ 12.10 hrs, Volume= 2,662 cf, Depth= 3.19"
 Routed to Pond 8P : Roof Recharge

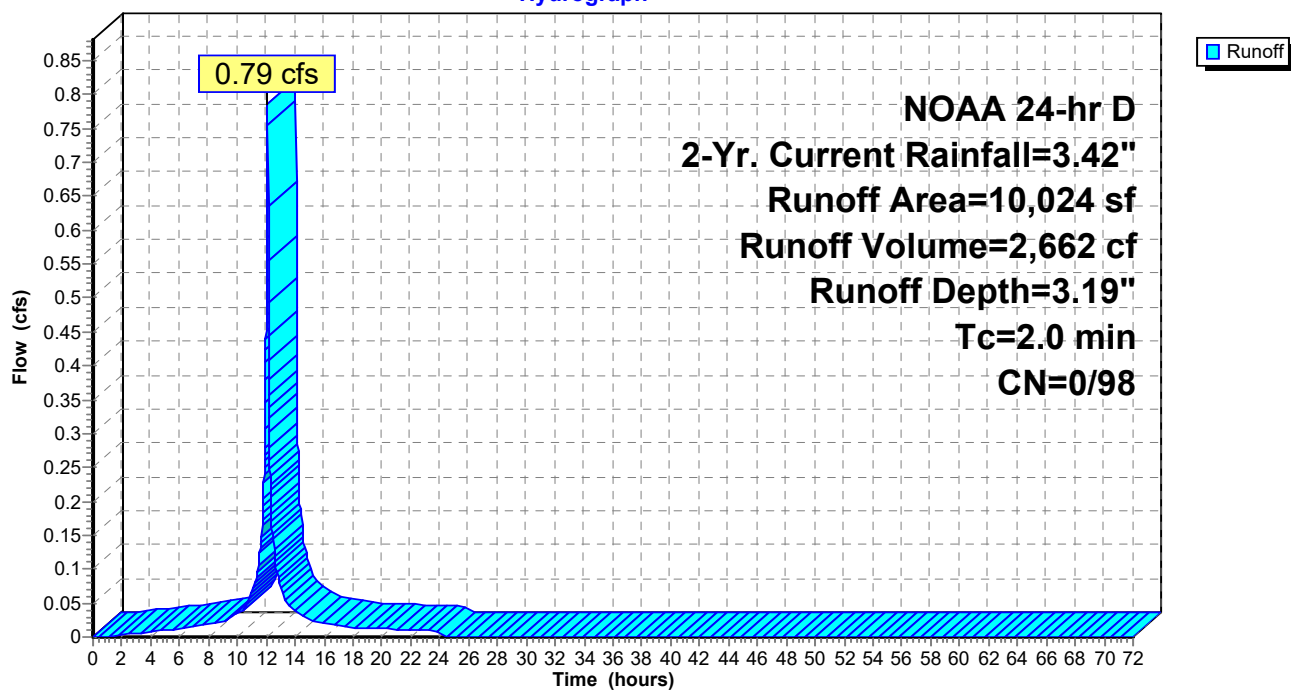
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Current Rainfall=3.42"

Area (sf)	CN	Description
10,024	98	Roofs, HSG A
10,024	98	100.00% Impervious Area

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

Subcatchment 5S: Prop. Drainage Area-2 (Roof)

Hydrograph



Summary for Subcatchment 6S: Prop. Drainage Area-2 (Woods) (Undisturbed)

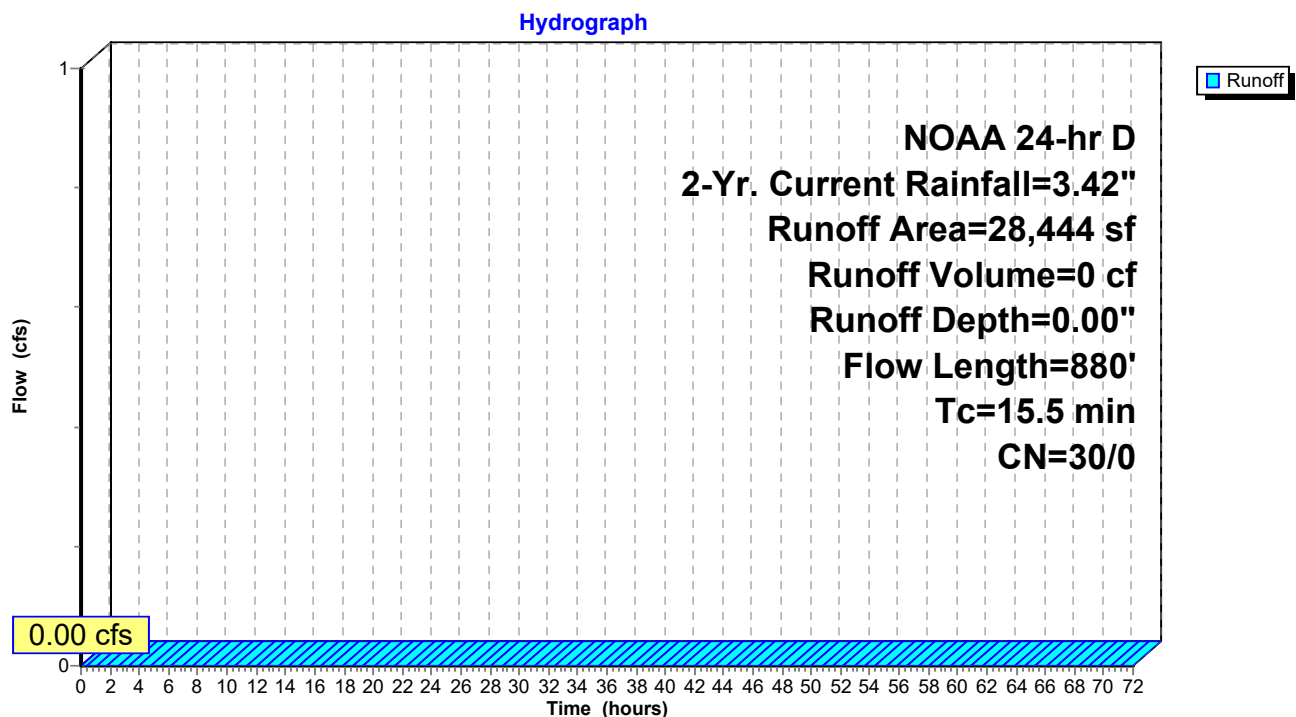
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"
 Routed to Pond B2 : Basin #2

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Current Rainfall=3.42"

Area (sf)	CN	Description
28,444	30	Woods, Good, HSG A
28,444	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	50	0.0250	0.08		Sheet Flow, Sheet woods Woods: Light underbrush n= 0.400 P2= 3.42"
0.6	120	0.0400	3.22		Shallow Concentrated Flow, Shallow Grass Unpaved Kv= 16.1 fps
1.7	190	0.0083	1.85		Shallow Concentrated Flow, shallow Pvmt Paved Kv= 20.3 fps
2.3	520	0.0050	3.72	4.57	Pipe Channel, pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
15.5	880	Total			

Subcatchment 6S: Prop. Drainage Area-2 (Woods) (Undisturbed)



Summary for Subcatchment 7S: Prop. Drainage Area-3 (Basin Area) (Non-Contributory)

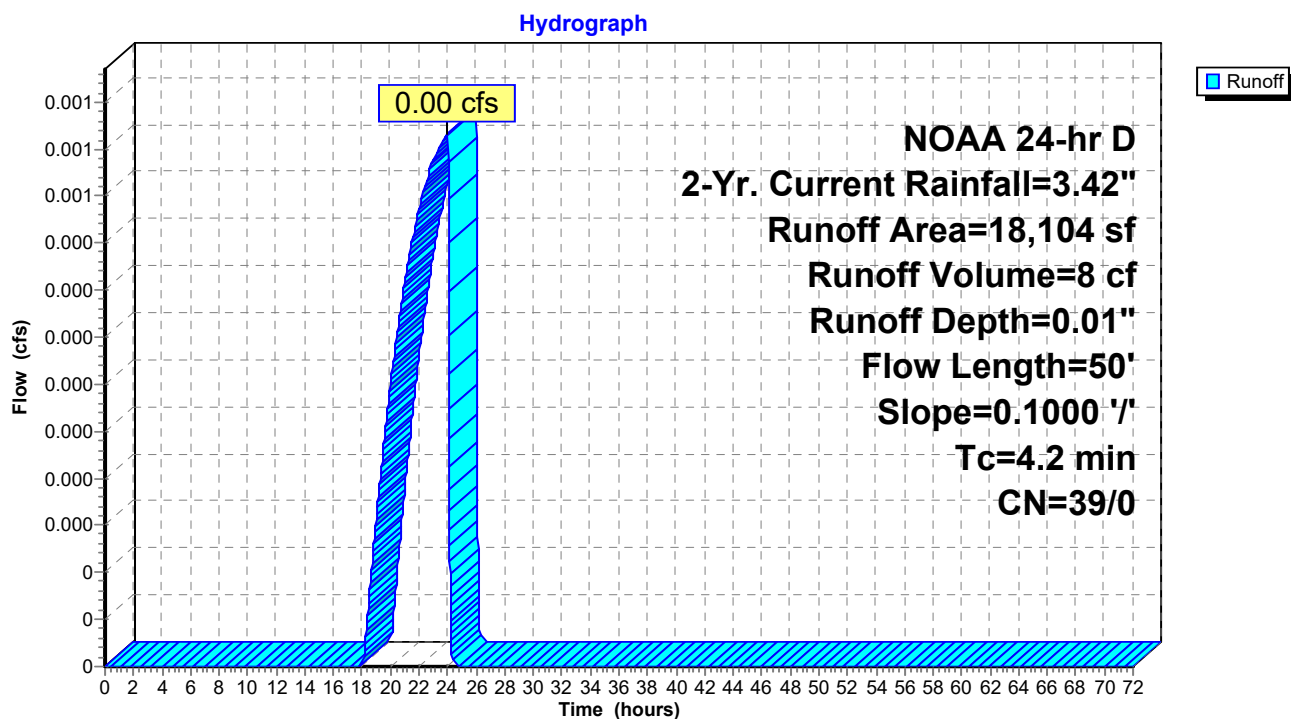
Runoff = 0.00 cfs @ 24.00 hrs, Volume= 8 cf, Depth= 0.01"
 Routed to Pond B3 : Basin #3

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Current Rainfall=3.42"

Area (sf)	CN	Description
* 18,104	39	Basin Area-Non-contributory, HSG A
18,104	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.1000	0.20		Sheet Flow, Sheet Grass
Grass: Dense n= 0.240 P2= 3.42"					

Subcatchment 7S: Prop. Drainage Area-3 (Basin Area) (Non-Contributory)



Summary for Subcatchment 8S: Prop. Drainage Area-3 (Impervious)

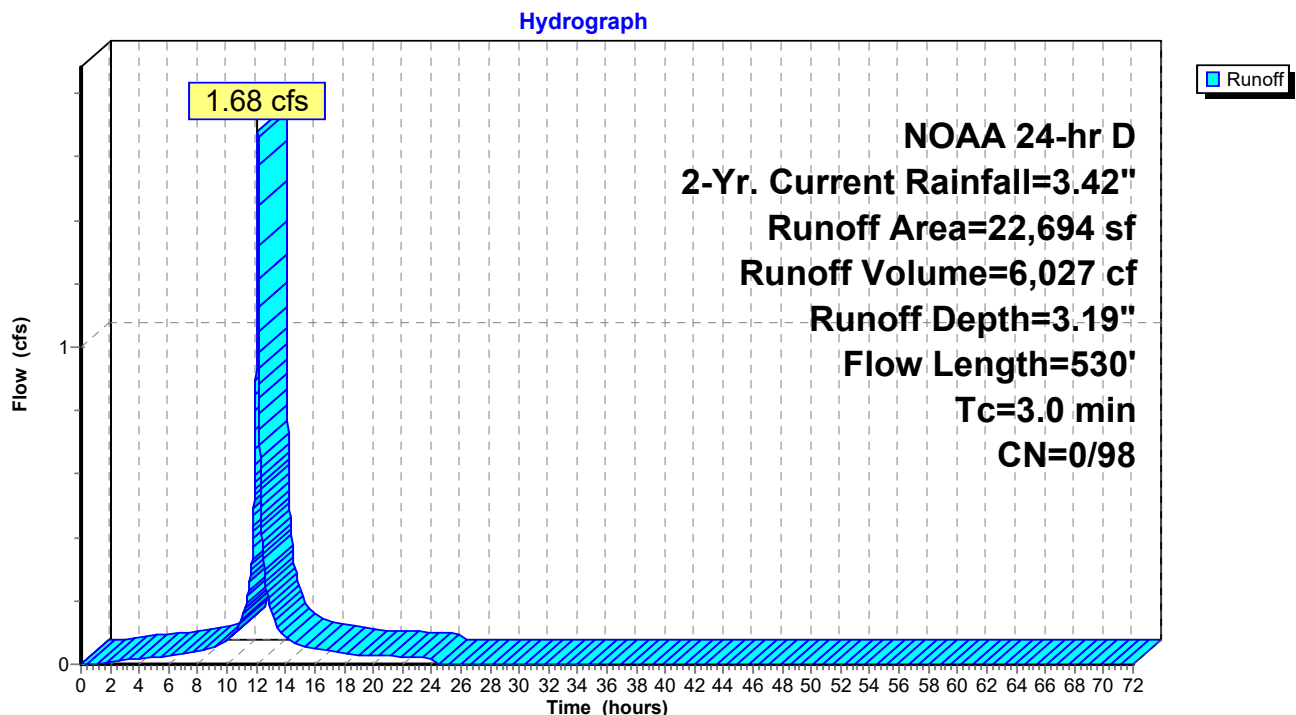
Runoff = 1.68 cfs @ 12.11 hrs, Volume= 6,027 cf, Depth= 3.19"
 Routed to Pond B3 : Basin #3

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Current Rainfall=3.42"

Area (sf)	CN	Description
13,555	98	Paved roads w/curbs & sewers, HSG A
* 3,626	98	Sidewalks, HSG A
* 5,513	98	Driveways, HSG A
22,694	98	Weighted Average
22,694	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	100	0.0292	1.65		Sheet Flow, Sheet Pvmt Smooth surfaces n= 0.011 P2= 3.42"
1.1	233	0.0292	3.47		Shallow Concentrated Flow, Shallow Pvmt Paved Kv= 20.3 fps
0.9	197	0.0040	3.76	6.64	Pipe Channel, Pipe 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
3.0	530	Total			

Subcatchment 8S: Prop. Drainage Area-3 (Impervious)



Summary for Subcatchment 9S: Prop. Drainage Area-3 (Pervious)

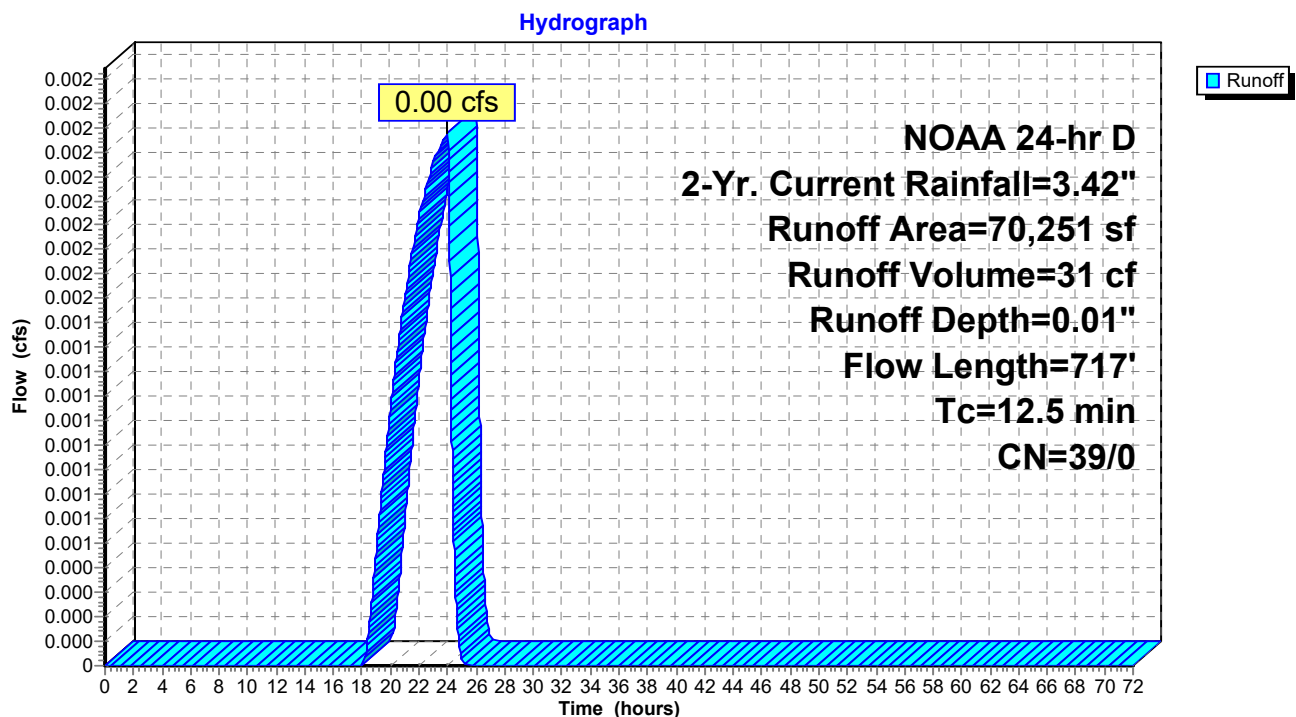
Runoff = 0.00 cfs @ 24.02 hrs, Volume= 31 cf, Depth= 0.01"
 Routed to Pond B3 : Basin #3

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Current Rainfall=3.42"

Area (sf)	CN	Description
70,251	39	>75% Grass cover, Good, HSG A
70,251	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	100	0.0500	0.17		Sheet Flow, Sheet Grass Grass: Dense n= 0.240 P2= 3.42"
0.1	20	0.0500	3.60		Shallow Concentrated Flow, Shallow Grass Unpaved Kv= 16.1 fps
1.9	400	0.0292	3.47		Shallow Concentrated Flow, Shallow Pvmnt Paved Kv= 20.3 fps
0.9	197	0.0040	3.76	6.64	Pipe Channel, Pipe 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
12.5	717	Total			

Subcatchment 9S: Prop. Drainage Area-3 (Pervious)



Summary for Subcatchment 10S: Prop. Drainage Area-3 (Roof)

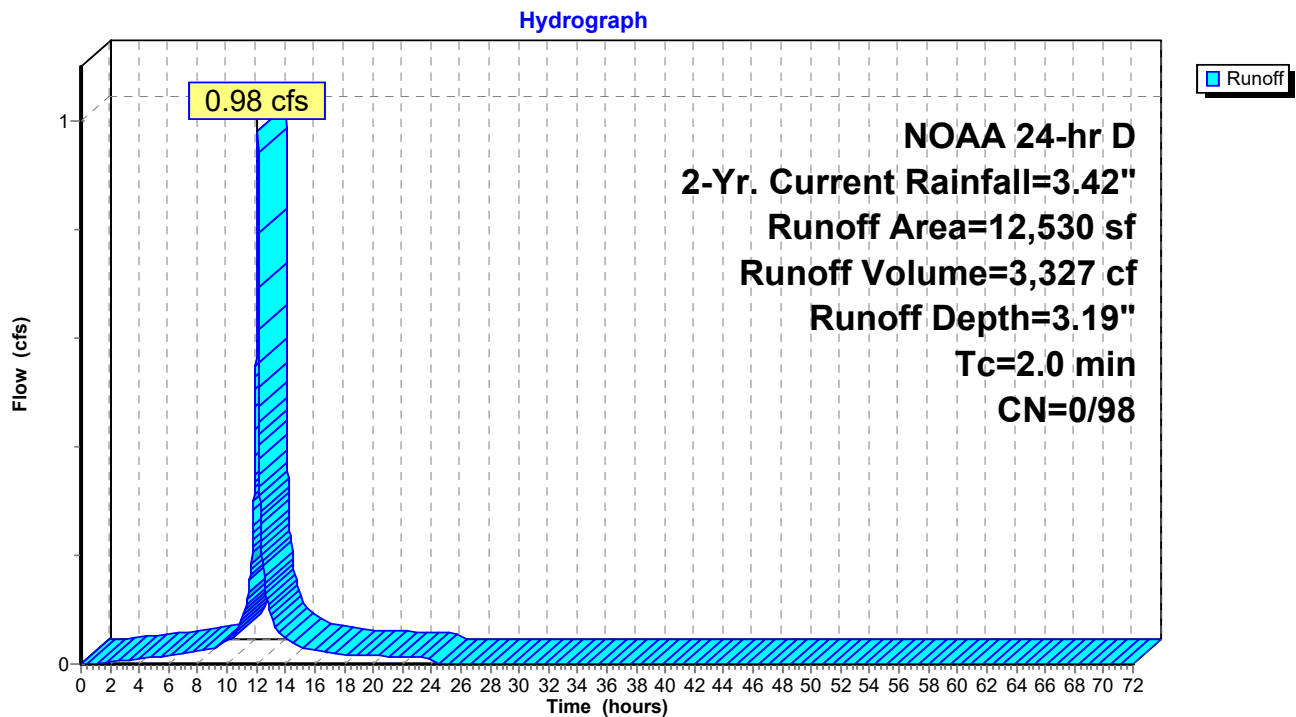
Runoff = 0.98 cfs @ 12.10 hrs, Volume= 3,327 cf, Depth= 3.19"
 Routed to Pond 12P : Roof Recharge

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Current Rainfall=3.42"

Area (sf)	CN	Description
12,530	98	Roofs, HSG A
12,530	98	100.00% Impervious Area

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

Subcatchment 10S: Prop. Drainage Area-3 (Roof)



Summary for Subcatchment 11S: Prop. Drainage Area-3-A (Woods) (Undisturbed)

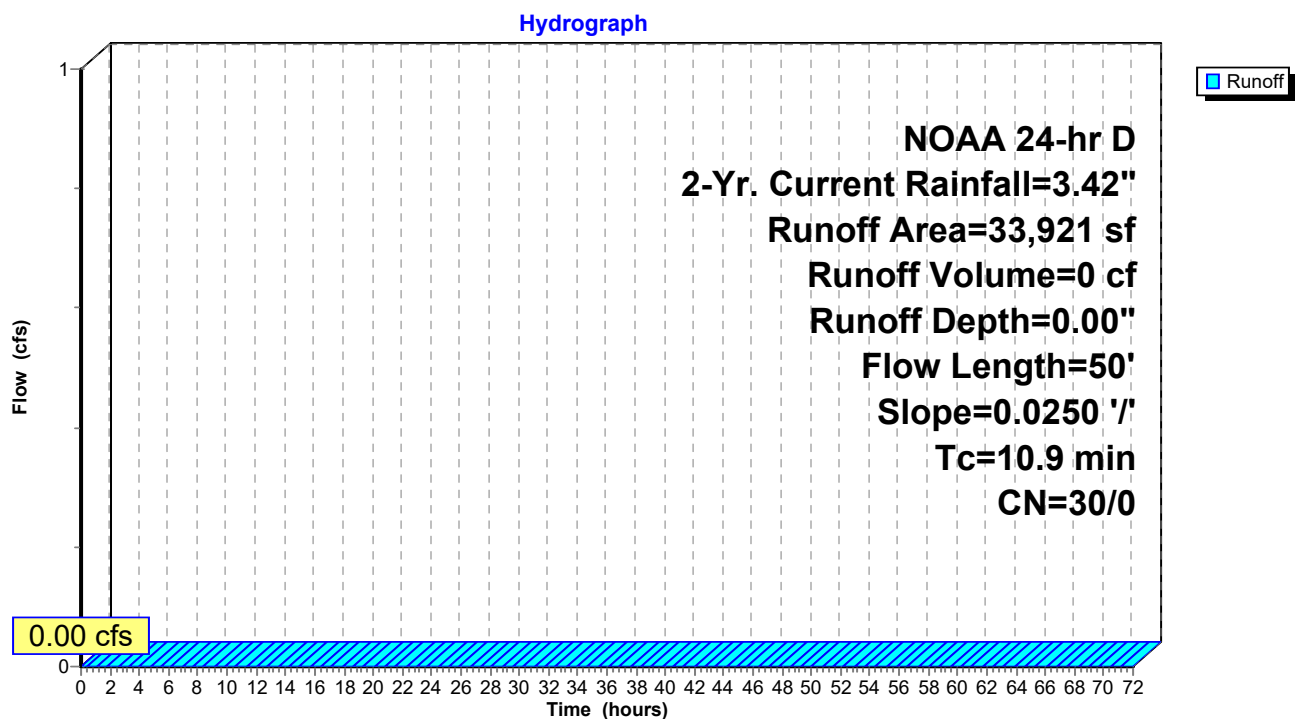
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"
 Routed to Pond B3 : Basin #3

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Current Rainfall=3.42"

Area (sf)	CN	Description
33,921	30	Woods, Good, HSG A
33,921	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	50	0.0250	0.08		Sheet Flow, Sheet woods Woods: Light underbrush n= 0.400 P2= 3.42"

Subcatchment 11S: Prop. Drainage Area-3-A (Woods) (Undisturbed)



Summary for Subcatchment P-1I: Prop. Drainage Area-1 (Impervious)

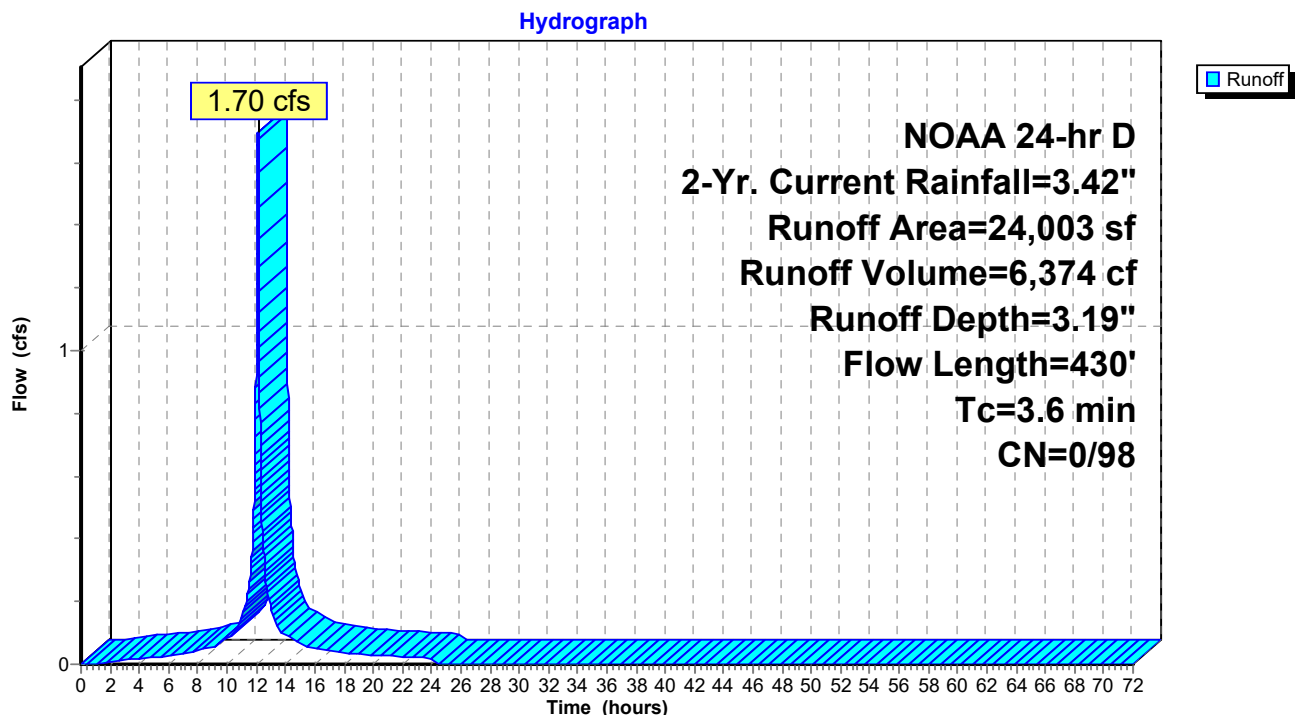
Runoff = 1.70 cfs @ 12.12 hrs, Volume= 6,374 cf, Depth= 3.19"
Routed to Pond B1 : Basin #1

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 2-Yr. Current Rainfall=3.42"

Area (sf)	CN	Description
15,941	98	Paved roads w/curbs & sewers, HSG A
* 2,588	98	Sidewalks, HSG A
* 5,474	98	Driveways, HSG A
24,003	98	Weighted Average
24,003	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	100	0.0083	1.00		Sheet Flow, Sheet Pvmt Smooth surfaces n= 0.011 P2= 3.42"
0.7	60	0.0050	1.44		Shallow Concentrated Flow, Shallow Pvmt Paved Kv= 20.3 fps
1.2	270	0.0050	3.72	4.57	Pipe Channel, Pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
3.6	430	Total			

Subcatchment P-1I: Prop. Drainage Area-1 (Impervious)



Summary for Subcatchment P-1P: Prop. Drainage Area-1 (Pervious)

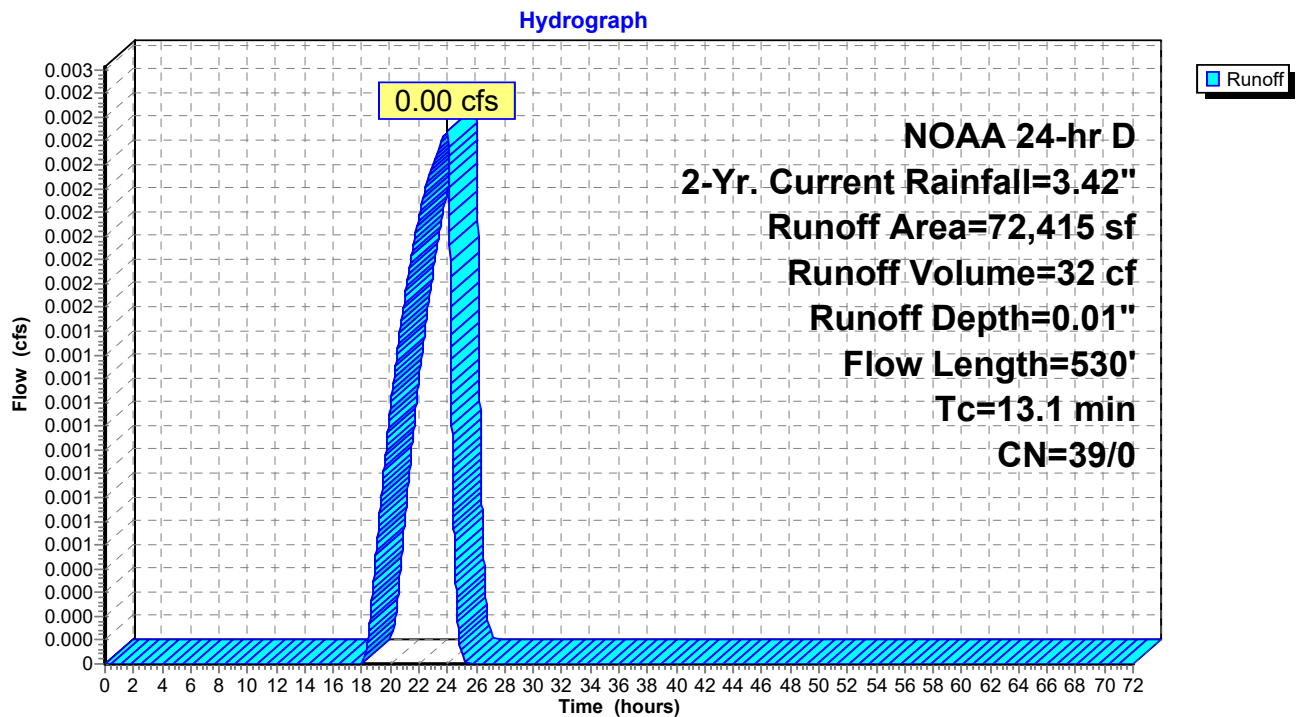
Runoff = 0.00 cfs @ 24.01 hrs, Volume= 32 cf, Depth= 0.01"
Routed to Pond B1 : Basin #1

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 2-Yr. Current Rainfall=3.42"

Area (sf)	CN	Description
72,415	39	>75% Grass cover, Good, HSG A
72,415	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0400	0.16		Sheet Flow, Sheet Grass Grass: Dense n= 0.240 P2= 3.42"
1.4	160	0.0083	1.85		Shallow Concentrated Flow, Shallow Pvmnt Paved Kv= 20.3 fps
1.2	270	0.0050	3.72	4.57	Pipe Channel, Pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
13.1	530	Total			

Subcatchment P-1P: Prop. Drainage Area-1 (Pervious)



Summary for Subcatchment P-1R: Prop. Drainage Area-1 (Roof)

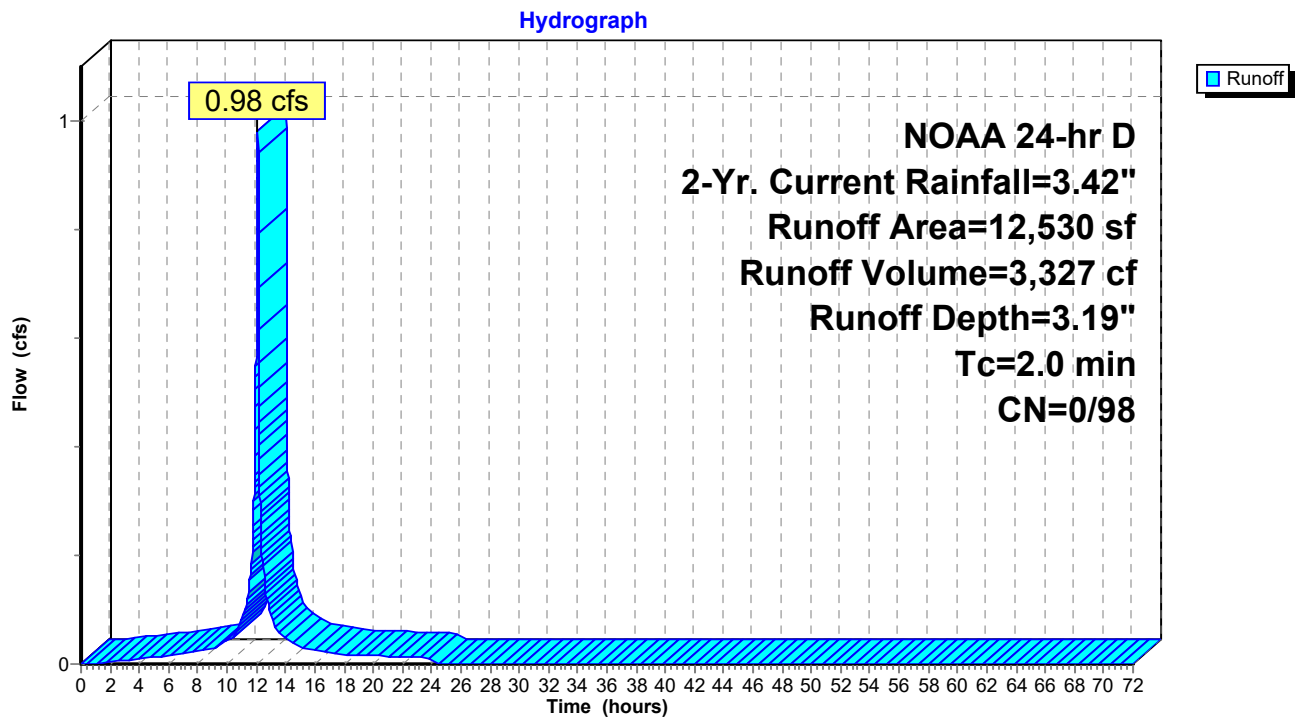
Runoff = 0.98 cfs @ 12.10 hrs, Volume= 3,327 cf, Depth= 3.19"
 Routed to Pond R-1 : Roof Recharge

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Current Rainfall=3.42"

Area (sf)	CN	Description
12,530	98	Roofs, HSG A
12,530	98	100.00% Impervious Area

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

Subcatchment P-1R: Prop. Drainage Area-1 (Roof)



Summary for Subcatchment P1A: Prop. Drainage Area-1-A (Woods) (Undisturbed)

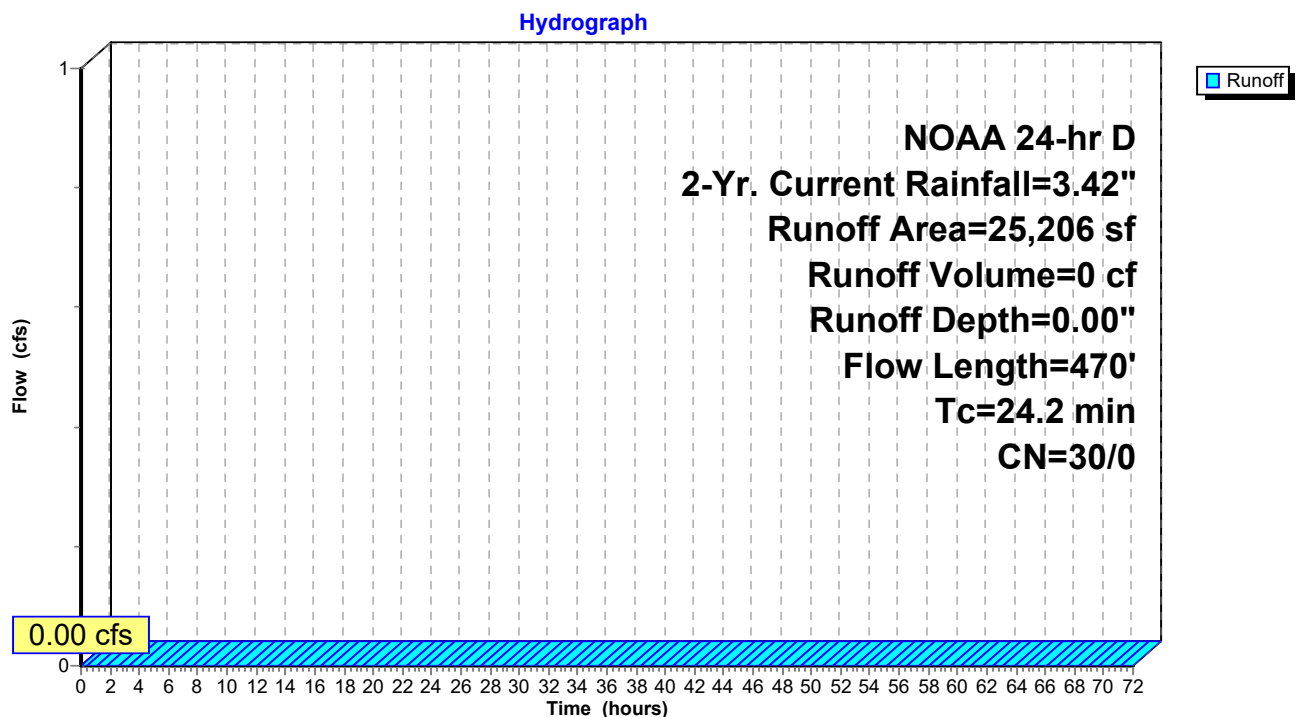
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"
 Routed to Pond B1 : Basin #1

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Current Rainfall=3.42"

Area (sf)	CN	Description
25,206	30	Woods, Good, HSG A
25,206	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2	100	0.0170	0.08		Sheet Flow, Sheet woods Woods: Light underbrush n= 0.400 P2= 3.42"
0.4	60	0.0200	2.28		Shallow Concentrated Flow, Shallow Grass Unpaved Kv= 16.1 fps
0.4	40	0.0062	1.60		Shallow Concentrated Flow, shallow Pvmt Paved Kv= 20.3 fps
1.2	270	0.0050	3.72	4.57	Pipe Channel, pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
24.2	470	Total			

Subcatchment P1A: Prop. Drainage Area-1-A (Woods) (Undisturbed)



Summary for Pond 8P: Roof Recharge

Inflow Area = 10,024 sf, 100.00% Impervious, Inflow Depth = 3.19" for 2-Yr. Current event
 Inflow = 0.79 cfs @ 12.10 hrs, Volume= 2,662 cf
 Outflow = 0.19 cfs @ 11.90 hrs, Volume= 2,662 cf, Atten= 76%, Lag= 0.0 min
 Discarded = 0.19 cfs @ 11.90 hrs, Volume= 2,662 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to Pond B2 : Basin #2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 76.90' @ 12.33 hrs Surf.Area= 822 sf Storage= 411 cf

Plug-Flow detention time= 8.9 min calculated for 2,662 cf (100% of inflow)
 Center-of-Mass det. time= 8.9 min (763.3 - 754.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	76.00'	219 cf	6.25'W x 32.23'L x 3.75'H Field A 755 cf Overall - 209 cf Embedded = 546 cf x 40.0% Voids
#2A	76.50'	209 cf	ADS_StormTech SC-800 +Cap x 4 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap Cap Storage= 3.4 cf x 2 x 1 rows = 6.8 cf
#3	76.00'	24 cf	2.00'W x 2.00'L x 6.00'H Prismatic
			452 cf x 4.00 = 1,807 cf Total Available Storage

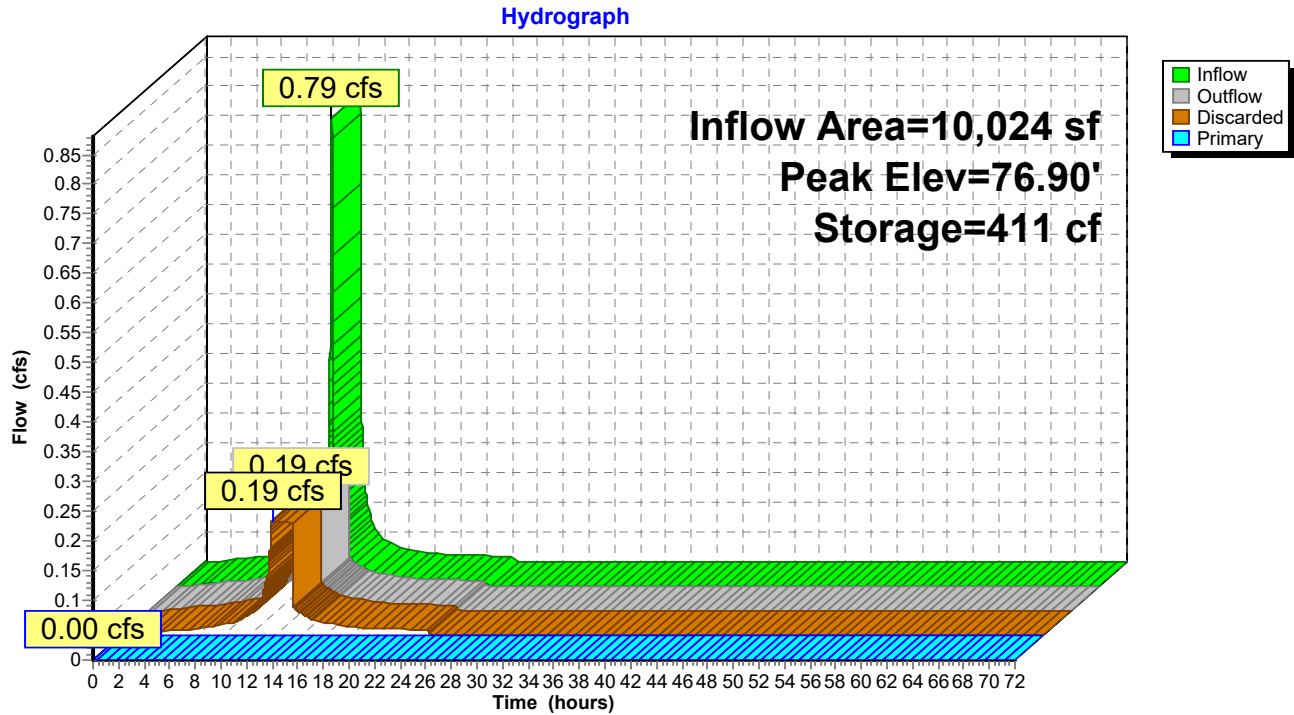
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	81.00'	24.0" x 24.0" Horiz. Grate 24" C= 0.600 Limited to weir flow at low heads
#2	Discarded	76.00'	10.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.19 cfs @ 11.90 hrs HW=76.07' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=76.00' TW=77.50' (Dynamic Tailwater)
 ↑ **1=Grate 24"** (Controls 0.00 cfs)

Pond 8P: Roof Recharge



Summary for Pond 12P: Roof Recharge

Inflow Area = 12,530 sf, 100.00% Impervious, Inflow Depth = 3.19" for 2-Yr. Current event
 Inflow = 0.98 cfs @ 12.10 hrs, Volume= 3,327 cf
 Outflow = 0.19 cfs @ 11.83 hrs, Volume= 3,327 cf, Atten= 81%, Lag= 0.0 min
 Discarded = 0.19 cfs @ 11.83 hrs, Volume= 3,327 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to Pond B3 : Basin #3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 77.26' @ 12.42 hrs Surf.Area= 822 sf Storage= 619 cf

Plug-Flow detention time= 15.2 min calculated for 3,327 cf (100% of inflow)
 Center-of-Mass det. time= 15.2 min (769.5 - 754.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	76.00'	219 cf	6.25'W x 32.23'L x 3.75'H Field A 755 cf Overall - 209 cf Embedded = 546 cf x 40.0% Voids
#2A	76.50'	209 cf	ADS_StormTech SC-800 +Cap x 4 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap Cap Storage= 3.4 cf x 2 x 1 rows = 6.8 cf
#3	76.00'	24 cf	2.00'W x 2.00'L x 6.00'H Prismatic
			452 cf x 4.00 = 1,807 cf Total Available Storage

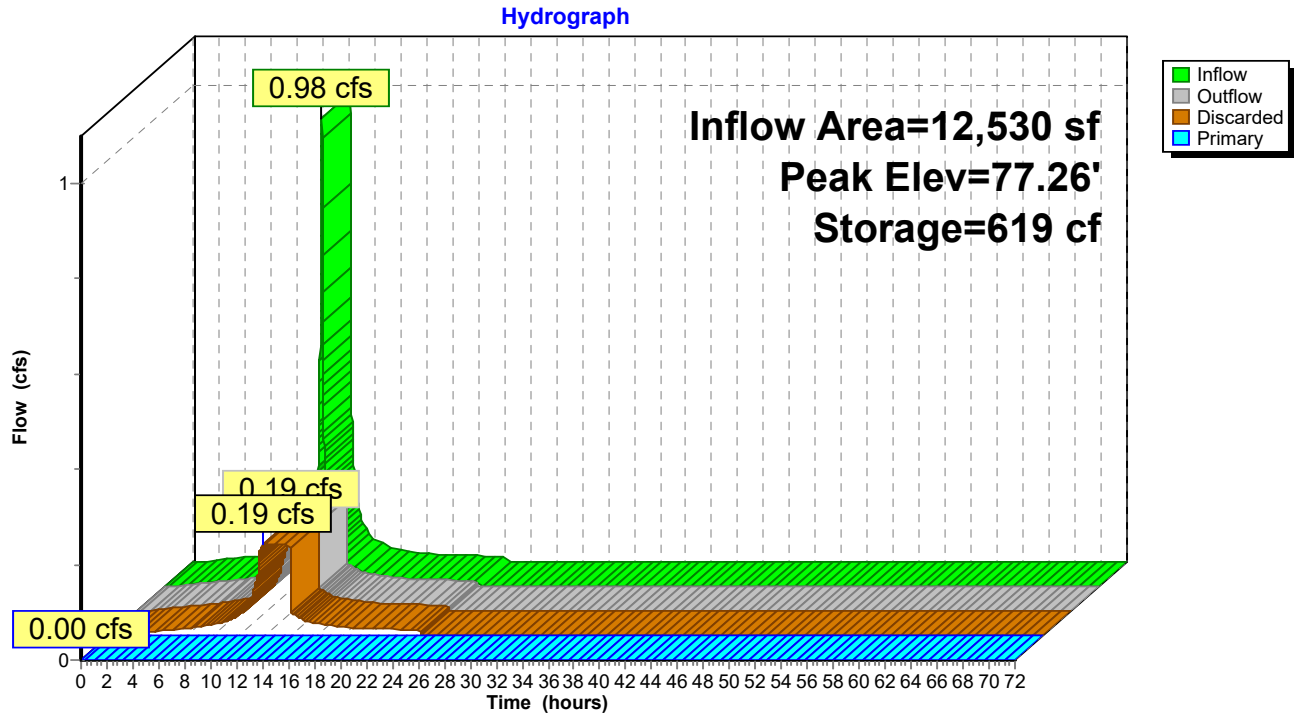
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	81.00'	24.0" x 24.0" Horiz. Grate 24" C= 0.600 Limited to weir flow at low heads
#2	Discarded	76.00'	10.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.19 cfs @ 11.83 hrs HW=76.06' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=76.00' TW=68.00' (Dynamic Tailwater)
 ↑ **1=Grate 24"** (Controls 0.00 cfs)

Pond 12P: Roof Recharge



Summary for Pond B1: Basin #1

Inflow Area = 152,539 sf, 23.95% Impervious, Inflow Depth = 0.50" for 2-Yr. Current event
 Inflow = 1.70 cfs @ 12.12 hrs, Volume= 6,415 cf
 Outflow = 0.12 cfs @ 15.47 hrs, Volume= 6,287 cf, Atten= 93%, Lag= 201.4 min
 Primary = 0.12 cfs @ 15.47 hrs, Volume= 6,287 cf
 Routed to Pond B2 : Basin #2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Starting Elev= 77.50' Surf.Area= 4,963 sf Storage= 2,256 cf
 Peak Elev= 78.18' @ 13.58 hrs Surf.Area= 6,211 sf Storage= 6,061 cf (3,805 cf above start)

Plug-Flow detention time= 823.3 min calculated for 4,032 cf (63% of inflow)
 Center-of-Mass det. time= 469.1 min (1,229.5 - 760.4)

Volume	Invert	Avail.Storage	Storage Description
#1	77.00'	20,548 cf	Basin 1 (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
77.00	4,060	0	0
78.00	5,865	4,963	4,963
79.00	7,766	6,816	11,778
80.00	9,773	8,770	20,548

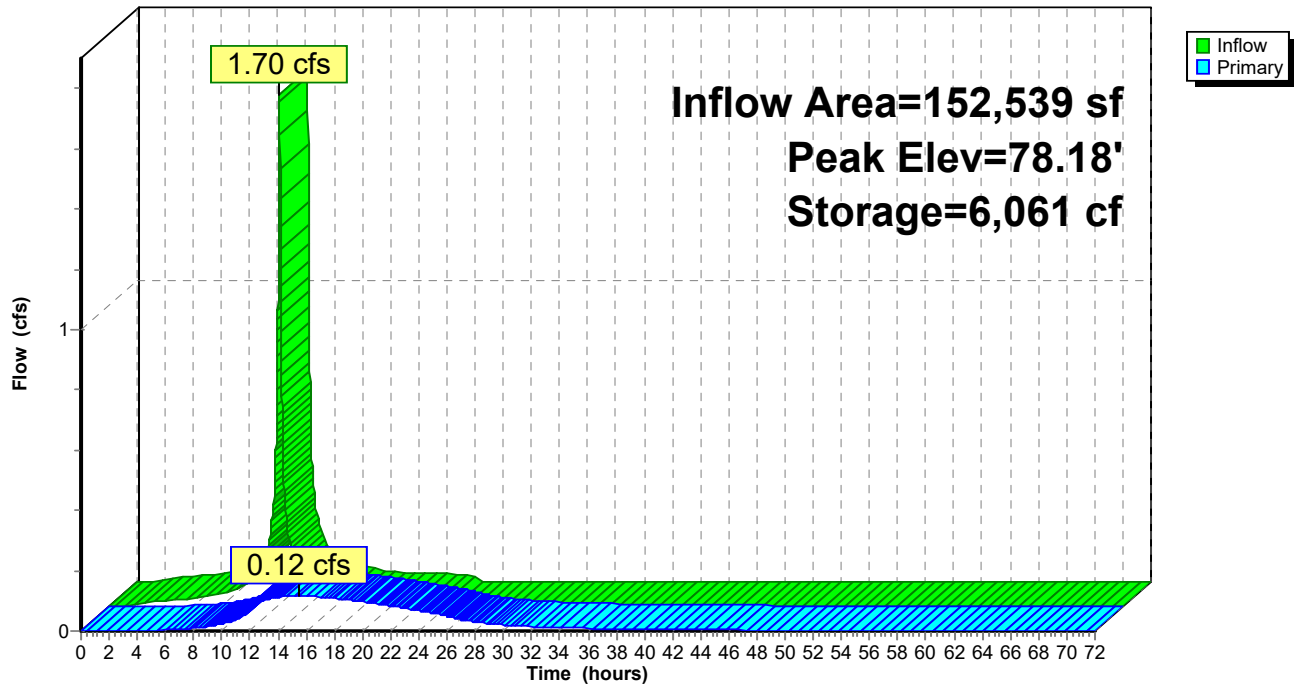
Device	Routing	Invert	Outlet Devices
#1	Primary	77.34'	15.0" Round Culvert 15" L= 69.0' Ke= 0.500 Inlet / Outlet Invert= 77.34' / 77.00' S= 0.0049 ' S= 0.0049 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.23 sf
#2	Device 1	77.50'	3.0" Vert. Orifice 3" C= 0.600 Limited to weir flow at low heads
#3	Device 1	80.00'	42.0" x 42.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	80.20'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.12 cfs @ 15.47 hrs HW=78.14' TW=77.90' (Dynamic Tailwater)

- 1=Culvert 15" (Passes 0.12 cfs of 1.30 cfs potential flow)
- 2=Orifice 3" (Orifice Controls 0.12 cfs @ 2.37 fps)
- 3=Grate (Controls 0.00 cfs)
- 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond B1: Basin #1

Hydrograph



Summary for Pond B2: Basin #2

Inflow Area = 282,551 sf, 22.05% Impervious, Inflow Depth > 0.45" for 2-Yr. Current event
 Inflow = 1.10 cfs @ 12.13 hrs, Volume= 10,504 cf
 Outflow = 0.24 cfs @ 12.95 hrs, Volume= 10,407 cf, Atten= 79%, Lag= 49.3 min
 Primary = 0.24 cfs @ 12.95 hrs, Volume= 10,407 cf
 Routed to Pond B3 : Basin #3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Starting Elev= 77.50' Surf.Area= 4,362 sf Storage= 1,984 cf
 Peak Elev= 77.98' @ 12.95 hrs Surf.Area= 5,119 sf Storage= 4,258 cf (2,274 cf above start)

Plug-Flow detention time= 471.2 min calculated for 8,422 cf (80% of inflow)
 Center-of-Mass det. time= 173.3 min (1,215.8 - 1,042.5)

Volume	Invert	Avail.Storage	Storage Description
#1	77.00'	18,035 cf	Basin 2 (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
77.00	3,573	0	0
78.00	5,151	4,362	4,362
79.00	6,815	5,983	10,345
80.00	8,565	7,690	18,035

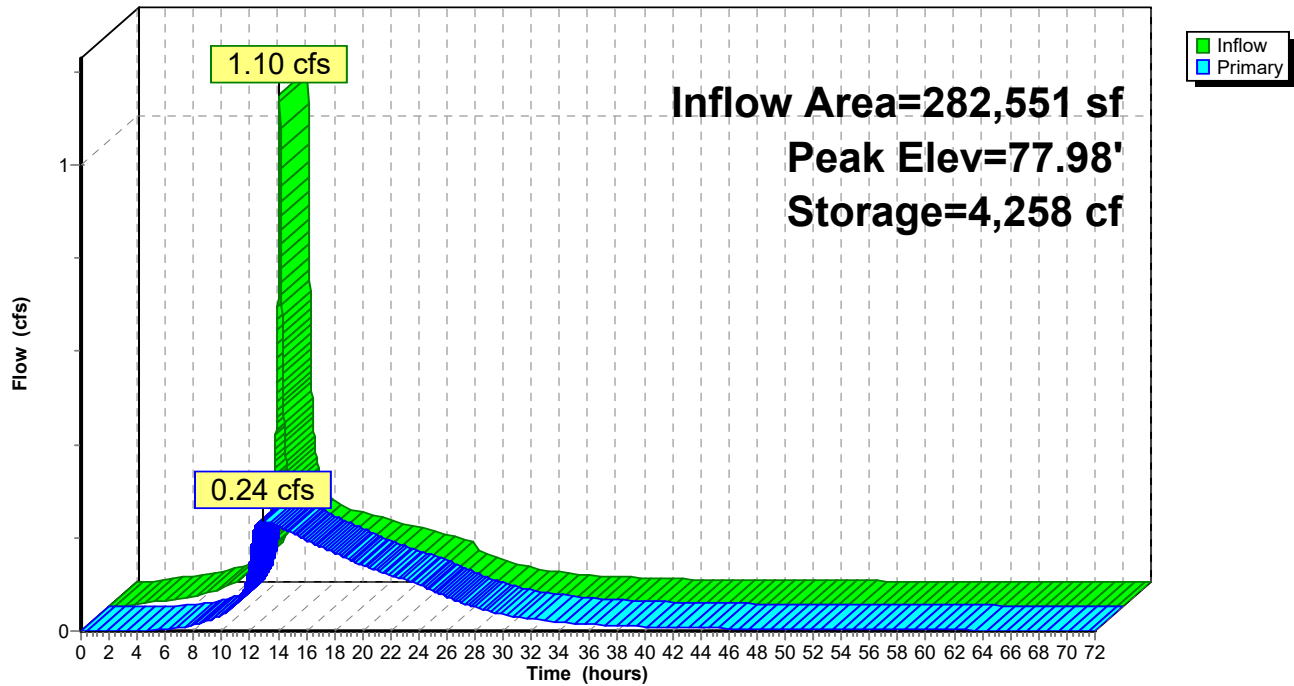
Device	Routing	Invert	Outlet Devices
#1	Primary	77.00'	18.0" Round Culvert 15" L= 69.0' Ke= 0.500 Inlet / Outlet Invert= 77.00' / 66.00' S= 0.1594 ' S= 0.1594 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf
#2	Device 1	77.50'	4.0" Vert. Orifice 4" C= 0.600 Limited to weir flow at low heads
#3	Device 1	80.00'	42.0" x 42.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	80.30'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.24 cfs @ 12.95 hrs HW=77.98' TW=68.66' (Dynamic Tailwater)

- 1=Culvert 15" (Passes 0.24 cfs of 4.12 cfs potential flow)
- 2=Orifice 4" (Orifice Controls 0.24 cfs @ 2.69 fps)
- 3=Grate (Controls 0.00 cfs)
- 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond B2: Basin #2

Hydrograph



Summary for Pond B3: Basin #3

Inflow Area = 440,051 sf, 22.16% Impervious, Inflow Depth > 0.45" for 2-Yr. Current event
 Inflow = 1.85 cfs @ 12.11 hrs, Volume= 16,473 cf
 Outflow = 0.30 cfs @ 14.17 hrs, Volume= 16,311 cf, Atten= 84%, Lag= 123.4 min
 Primary = 0.30 cfs @ 14.17 hrs, Volume= 16,311 cf
 Routed to Link PT2 : Proposed Total (AP-2)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Starting Elev= 68.00' Surf.Area= 5,501 sf Storage= 9,363 cf
 Peak Elev= 68.69' @ 14.17 hrs Surf.Area= 6,108 sf Storage= 13,378 cf (4,015 cf above start)

Plug-Flow detention time= 1,014.4 min calculated for 6,947 cf (42% of inflow)
 Center-of-Mass det. time= 208.6 min (1,256.4 - 1,047.8)

Volume	Invert	Avail.Storage	Storage Description
#1	66.00'	34,230 cf	Basin 3 (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
66.00	3,879	0	0
67.00	4,673	4,276	4,276
68.00	5,501	5,087	9,363
69.00	6,379	5,940	15,303
70.00	7,310	6,845	22,148
71.00	8,291	7,801	29,948
71.50	8,836	4,282	34,230

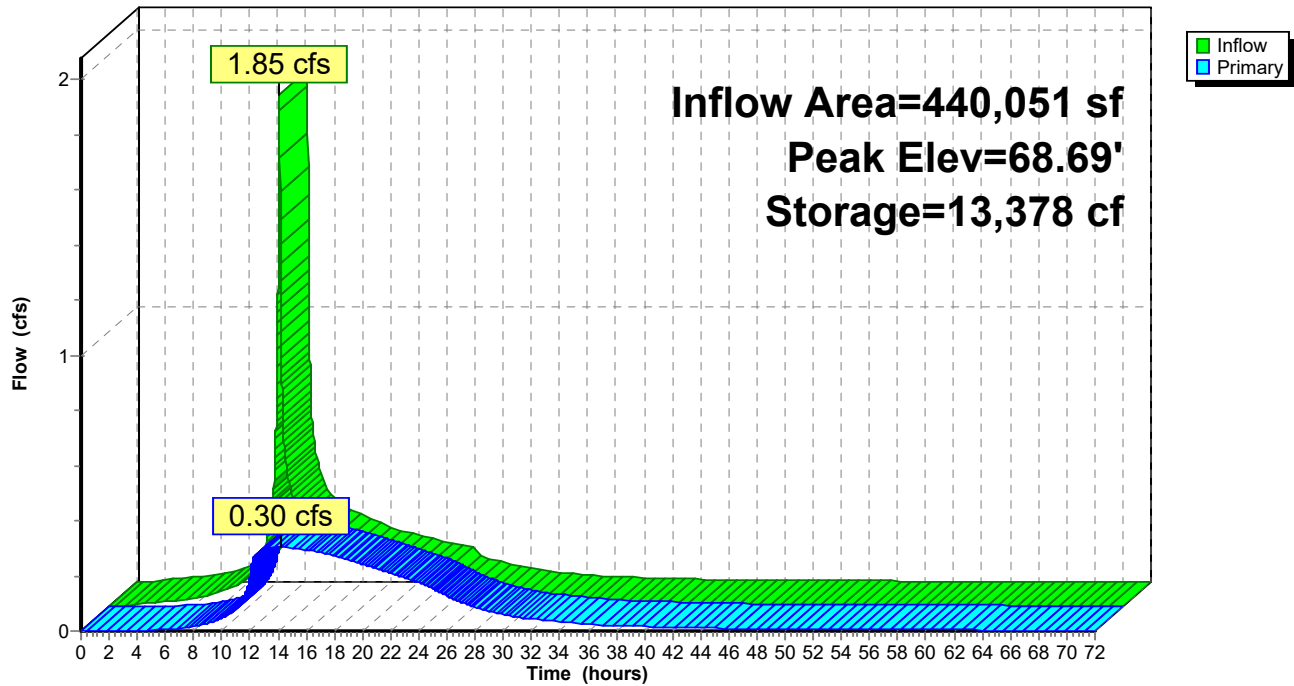
Device	Routing	Invert	Outlet Devices
#1	Primary	67.49'	15.0" Round Culvert 15" L= 360.0' Ke= 0.500 Inlet / Outlet Invert= 67.49' / 66.00' S= 0.0041 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.23 sf
#2	Device 1	68.00'	4.0" Vert. Orifice 4" C= 0.600 Limited to weir flow at low heads
#3	Device 1	70.50'	42.0" x 42.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	71.50'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.30 cfs @ 14.17 hrs HW=68.69' TW=0.00' (Dynamic Tailwater)

- 1=Culvert 15" (Passes 0.30 cfs of 3.57 cfs potential flow)
- 2=Orifice 4" (Orifice Controls 0.30 cfs @ 3.49 fps)
- 3=Grate (Controls 0.00 cfs)
- 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond B3: Basin #3

Hydrograph



Summary for Pond R-1: Roof Recharge

Inflow Area = 12,530 sf, 100.00% Impervious, Inflow Depth = 3.19" for 2-Yr. Current event
 Inflow = 0.98 cfs @ 12.10 hrs, Volume= 3,327 cf
 Outflow = 0.24 cfs @ 11.90 hrs, Volume= 3,327 cf, Atten= 76%, Lag= 0.0 min
 Discarded = 0.24 cfs @ 11.90 hrs, Volume= 3,327 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to Pond B1 : Basin #1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 76.90' @ 12.33 hrs Surf.Area= 1,027 sf Storage= 513 cf

Plug-Flow detention time= 8.9 min calculated for 3,327 cf (100% of inflow)
 Center-of-Mass det. time= 8.9 min (763.3 - 754.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	76.00'	219 cf	6.25'W x 32.23'L x 3.75'H Field A 755 cf Overall - 209 cf Embedded = 546 cf x 40.0% Voids
#2A	76.50'	209 cf	ADS_StormTech SC-800 +Cap x 4 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap Cap Storage= 3.4 cf x 2 x 1 rows = 6.8 cf
#3	76.00'	24 cf	2.00'W x 2.00'L x 6.00'H Prismatic
			452 cf x 5.00 = 2,259 cf Total Available Storage

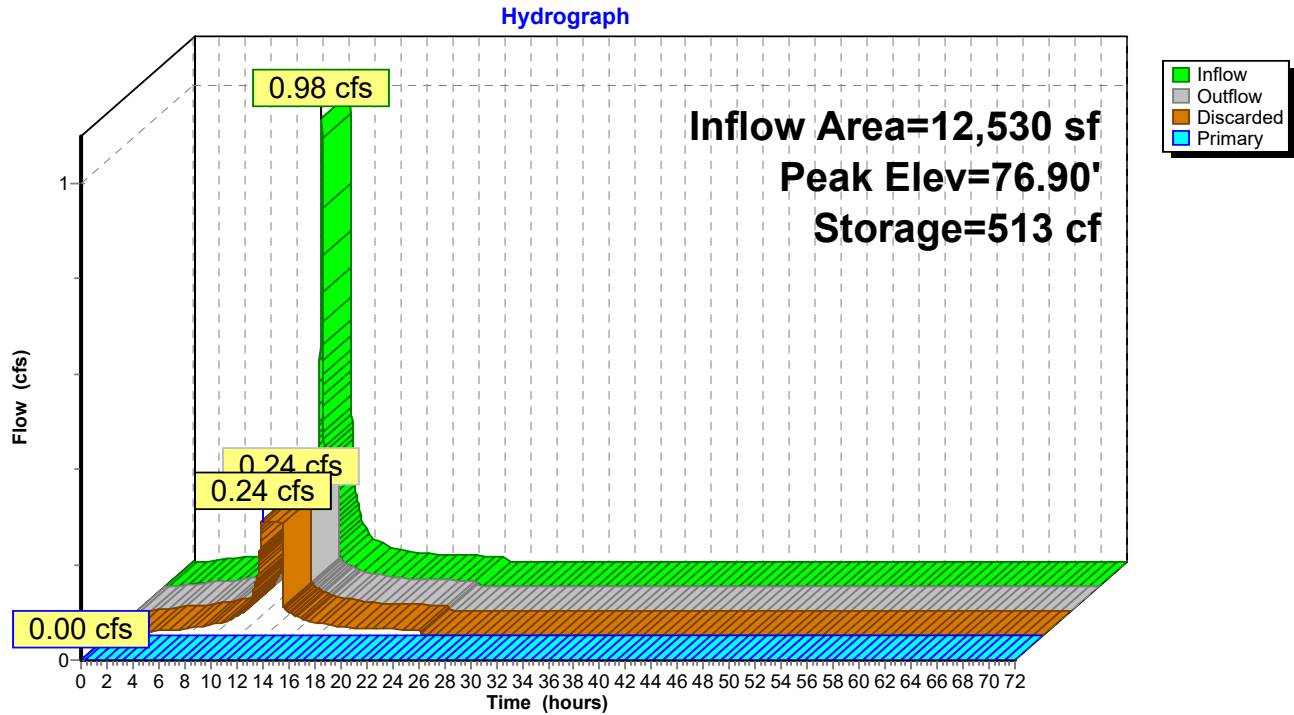
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	81.00'	24.0" x 24.0" Horiz. Grate 24" C= 0.600 Limited to weir flow at low heads
#2	Discarded	76.00'	10.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.24 cfs @ 11.90 hrs HW=76.07' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.24 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=76.00' TW=77.50' (Dynamic Tailwater)
 ↑ **1=Grate 24"** (Controls 0.00 cfs)

Pond R-1: Roof Recharge

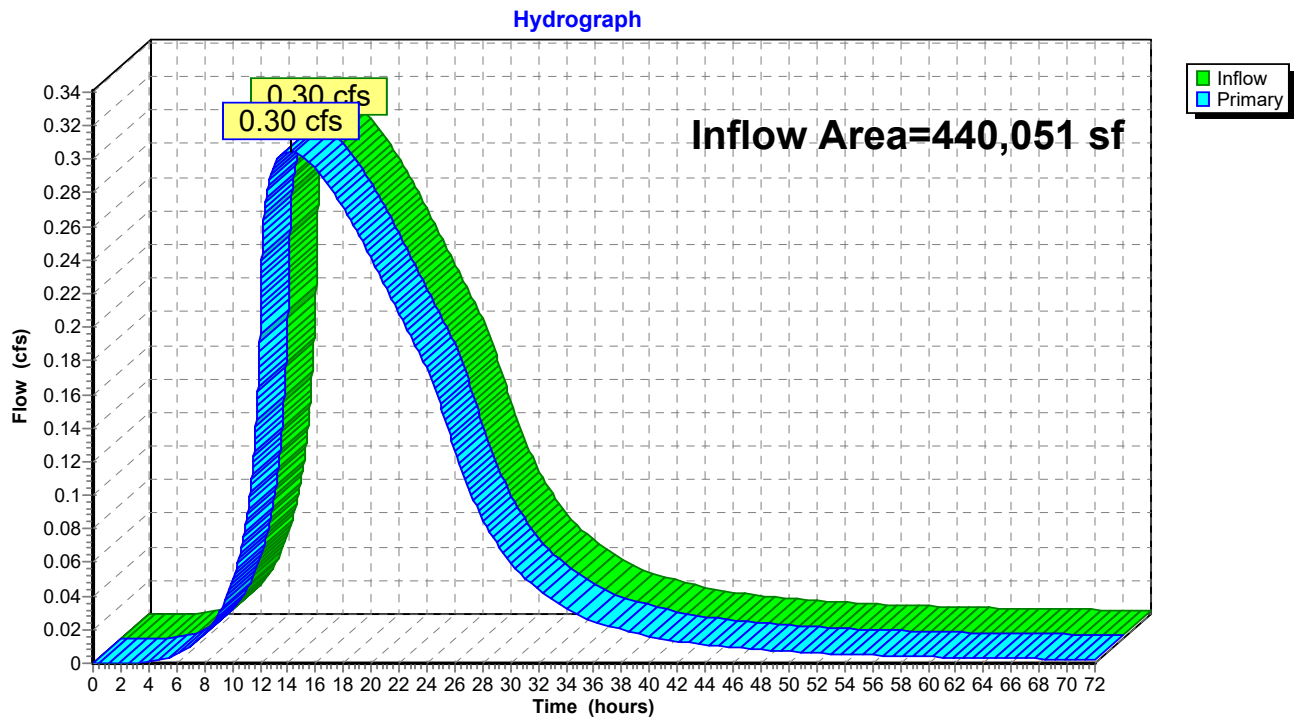


Summary for Link PT2: Proposed Total (AP-2)

Inflow Area = 440,051 sf, 22.16% Impervious, Inflow Depth > 0.44" for 2-Yr. Current event
 Inflow = 0.30 cfs @ 14.17 hrs, Volume= 16,311 cf
 Primary = 0.30 cfs @ 14.17 hrs, Volume= 16,311 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link PT2: Proposed Total (AP-2)



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
 Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv.
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Prop. Drainage Area-2 Runoff Area=18,844 sf 0.00% Impervious Runoff Depth=0.28"
 Flow Length=50' Slope=0.1000 '/' Tc=4.2 min CN=39/0 Runoff=0.02 cfs 445 cf

Subcatchment2S: Prop. Drainage Area-1 Runoff Area=18,385 sf 0.00% Impervious Runoff Depth=0.28"
 Flow Length=50' Slope=0.1000 '/' Tc=4.2 min CN=39/0 Runoff=0.02 cfs 434 cf

Subcatchment3S: Prop. Drainage Area-2 Runoff Area=15,753 sf 100.00% Impervious Runoff Depth=5.14"
 Flow Length=745' Tc=5.1 min CN=0/98 Runoff=1.60 cfs 6,751 cf

Subcatchment4S: Prop. Drainage Area-2 Runoff Area=56,947 sf 0.00% Impervious Runoff Depth=0.28"
 Flow Length=835' Tc=18.5 min CN=39/0 Runoff=0.06 cfs 1,345 cf

Subcatchment5S: Prop. Drainage Area-2 Runoff Area=10,024 sf 100.00% Impervious Runoff Depth=5.14"
 Tc=2.0 min CN=0/98 Runoff=1.24 cfs 4,296 cf

Subcatchment6S: Prop. Drainage Area-2 Runoff Area=28,444 sf 0.00% Impervious Runoff Depth=0.02"
 Flow Length=880' Tc=15.5 min CN=30/0 Runoff=0.00 cfs 50 cf

Subcatchment7S: Prop. Drainage Area-3 Runoff Area=18,104 sf 0.00% Impervious Runoff Depth=0.28"
 Flow Length=50' Slope=0.1000 '/' Tc=4.2 min CN=39/0 Runoff=0.02 cfs 428 cf

Subcatchment8S: Prop. Drainage Area-3 Runoff Area=22,694 sf 100.00% Impervious Runoff Depth=5.14"
 Flow Length=530' Tc=3.0 min CN=0/98 Runoff=2.66 cfs 9,726 cf

Subcatchment9S: Prop. Drainage Area-3 Runoff Area=70,251 sf 0.00% Impervious Runoff Depth=0.28"
 Flow Length=717' Tc=12.5 min CN=39/0 Runoff=0.08 cfs 1,659 cf

Subcatchment10S: Prop. Drainage Runoff Area=12,530 sf 100.00% Impervious Runoff Depth=5.14"
 Tc=2.0 min CN=0/98 Runoff=1.56 cfs 5,370 cf

Subcatchment11S: Prop. Drainage Runoff Area=33,921 sf 0.00% Impervious Runoff Depth=0.02"
 Flow Length=50' Slope=0.0250 '/' Tc=10.9 min CN=30/0 Runoff=0.00 cfs 60 cf

SubcatchmentP-1I: Prop. Drainage Runoff Area=24,003 sf 100.00% Impervious Runoff Depth=5.14"
 Flow Length=430' Tc=3.6 min CN=0/98 Runoff=2.69 cfs 10,287 cf

SubcatchmentP-1P: Prop. Drainage Area-1 Runoff Area=72,415 sf 0.00% Impervious Runoff Depth=0.28"
 Flow Length=530' Tc=13.1 min CN=39/0 Runoff=0.08 cfs 1,710 cf

SubcatchmentP-1R: Prop. Drainage Runoff Area=12,530 sf 100.00% Impervious Runoff Depth=5.14"
 Tc=2.0 min CN=0/98 Runoff=1.56 cfs 5,370 cf

SubcatchmentP1A: Prop. Drainage Runoff Area=25,206 sf 0.00% Impervious Runoff Depth=0.02"
 Flow Length=470' Tc=24.2 min CN=30/0 Runoff=0.00 cfs 44 cf

Pond 8P: Roof Recharge Peak Elev=77.85' Storage=948 cf Inflow=1.24 cfs 4,296 cf
 Discarded=0.19 cfs 4,296 cf Primary=0.00 cfs 0 cf Outflow=0.19 cfs 4,296 cf

Pond 12P: Roof Recharge Peak Elev=78.69' Storage=1,376 cf Inflow=1.56 cfs 5,370 cf
 Discarded=0.19 cfs 5,370 cf Primary=0.00 cfs 0 cf Outflow=0.19 cfs 5,370 cf

Pond B1: Basin #1 Peak Elev=78.66' Storage=9,236 cf Inflow=2.69 cfs 12,475 cf
 Outflow=0.16 cfs 12,323 cf

Pond B2: Basin #2 Peak Elev=78.27' Storage=5,806 cf Inflow=1.71 cfs 20,914 cf
 Outflow=0.33 cfs 20,797 cf

Pond B3: Basin #3 Peak Elev=69.23' Storage=16,791 cf Inflow=2.90 cfs 32,669 cf
 Outflow=0.43 cfs 32,475 cf

Pond R-1: Roof Recharge Peak Elev=77.85' Storage=1,186 cf Inflow=1.56 cfs 5,370 cf
 Discarded=0.24 cfs 5,370 cf Primary=0.00 cfs 0 cf Outflow=0.24 cfs 5,370 cf

Link PT2: Proposed Total (AP-2) Inflow=0.43 cfs 32,475 cf
 Primary=0.43 cfs 32,475 cf

Total Runoff Area = 440,051 sf Runoff Volume = 47,973 cf Average Runoff Depth = 1.31"
77.84% Pervious = 342,517 sf 22.16% Impervious = 97,534 sf

Summary for Subcatchment 1S: Prop. Drainage Area-2 (Basin)(Non-Contributory)

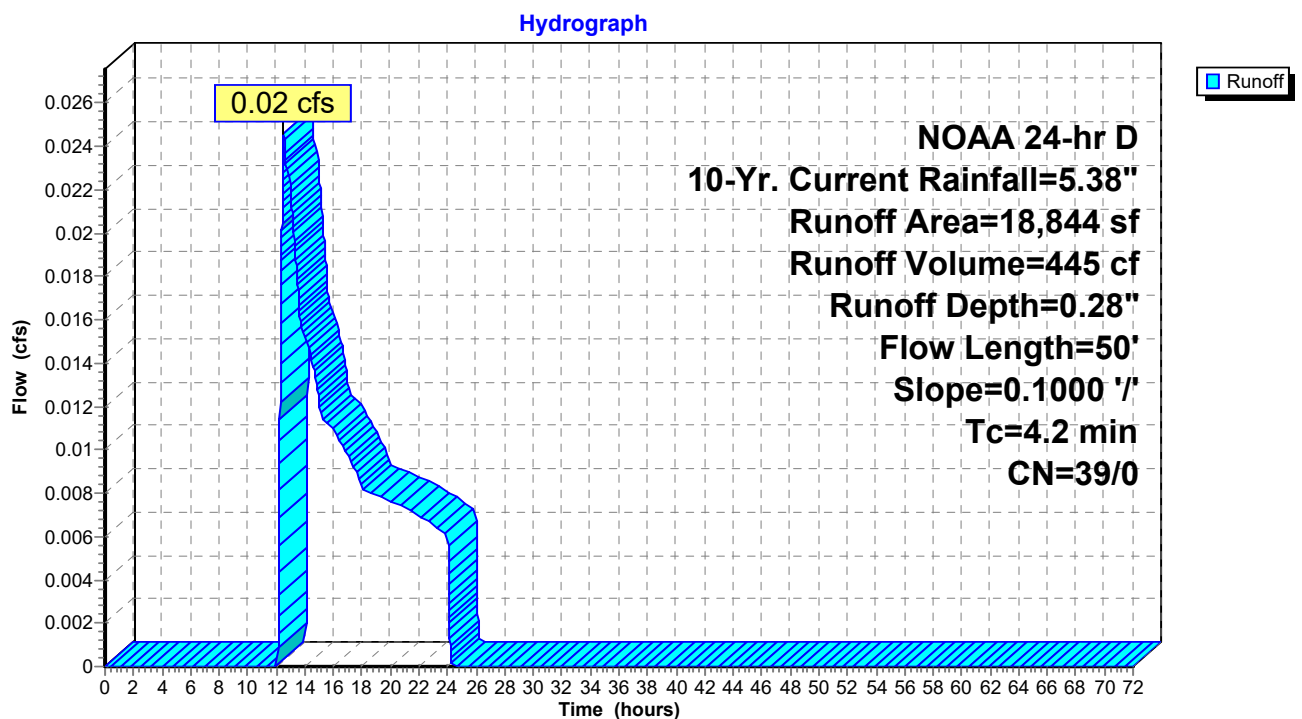
Runoff = 0.02 cfs @ 12.53 hrs, Volume= 445 cf, Depth= 0.28"
 Routed to Pond B2 : Basin #2

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Current Rainfall=5.38"

Area (sf)	CN	Description
* 18,844	39	Basin Area-Non-contributory, HSG A
18,844	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.1000	0.20		Sheet Flow, Sheet Grass
Grass: Dense n= 0.240 P2= 3.42"					

Subcatchment 1S: Prop. Drainage Area-2 (Basin)(Non-Contributory)



Summary for Subcatchment 2S: Prop. Drainage Area-1 (Basin Area) (Non-Contributory)

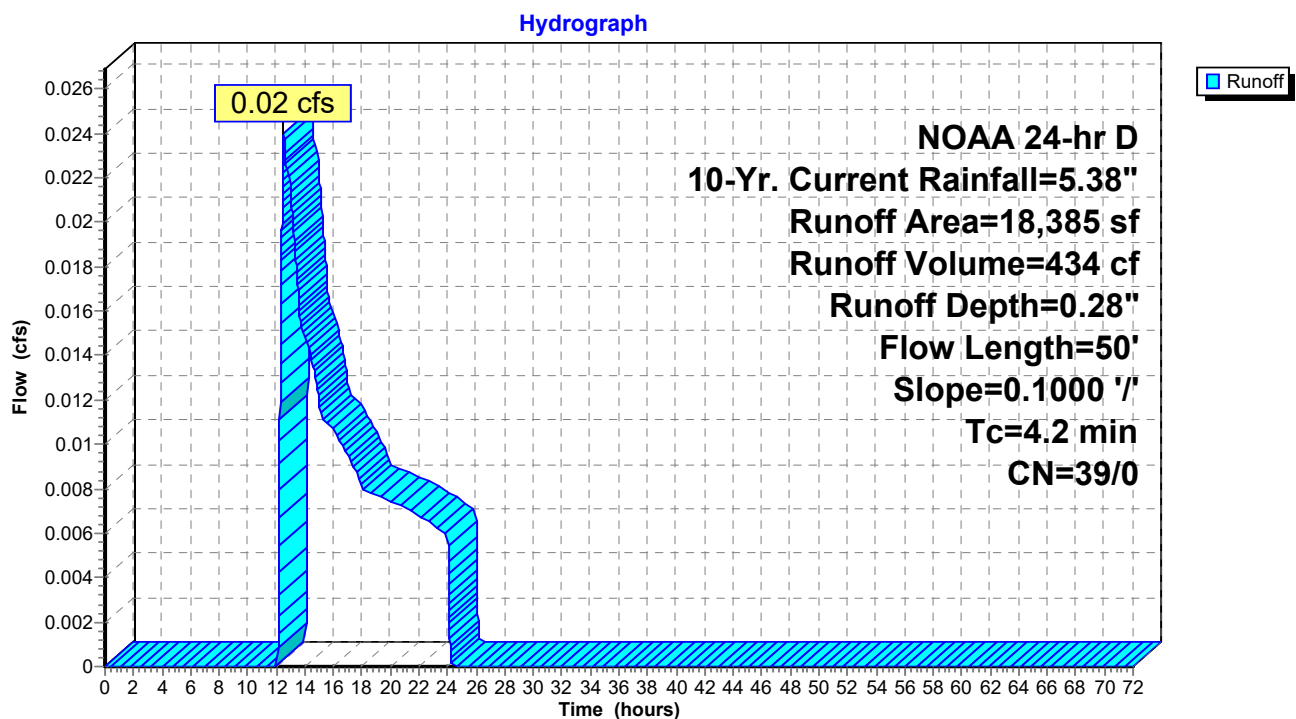
Runoff = 0.02 cfs @ 12.53 hrs, Volume= 434 cf, Depth= 0.28"
 Routed to Pond B1 : Basin #1

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Current Rainfall=5.38"

Area (sf)	CN	Description
* 18,385	39	Basin Area-Non-contributory, HSG A
18,385	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.1000	0.20		Sheet Flow, Sheet Grass
Grass: Dense n= 0.240 P2= 3.42"					

Subcatchment 2S: Prop. Drainage Area-1 (Basin Area) (Non-Contributory)



Summary for Subcatchment 3S: Prop. Drainage Area-2 (Impervious)

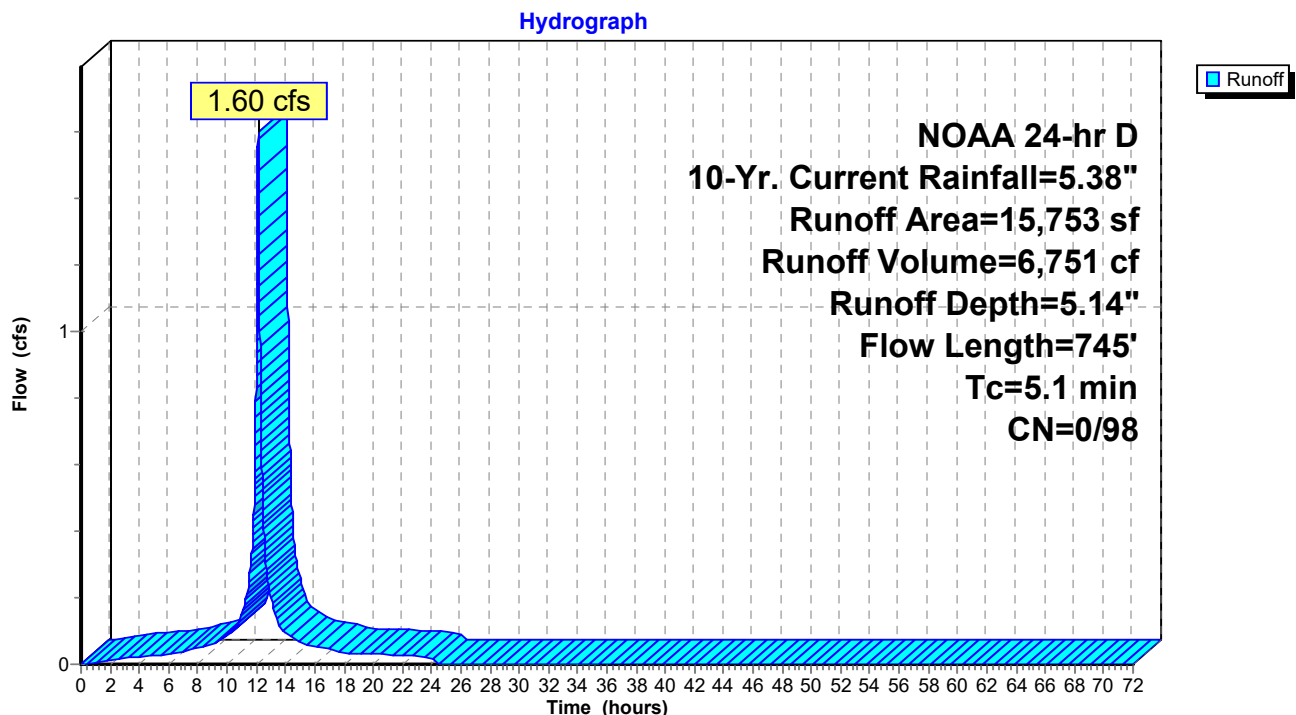
Runoff = 1.60 cfs @ 12.13 hrs, Volume= 6,751 cf, Depth= 5.14"
 Routed to Pond B2 : Basin #2

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Current Rainfall=5.38"

Area (sf)	CN	Description
9,010	98	Paved roads w/curbs & sewers, HSG A
* 2,394	98	Sidewalks, HSG A
* 4,349	98	Driveways, HSG A
15,753	98	Weighted Average
15,753	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	100	0.0083	1.00		Sheet Flow, Sheet Pvmt Smooth surfaces n= 0.011 P2= 3.42"
0.9	95	0.0083	1.85		Shallow Concentrated Flow, Shallow Pvmt Paved Kv= 20.3 fps
2.5	550	0.0050	3.72	4.57	Pipe Channel, Pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
5.1	745	Total			

Subcatchment 3S: Prop. Drainage Area-2 (Impervious)



Summary for Subcatchment 4S: Prop. Drainage Area-2 (Pervious)

Runoff = 0.06 cfs @ 13.20 hrs, Volume= 1,345 cf, Depth= 0.28"
 Routed to Pond B2 : Basin #2

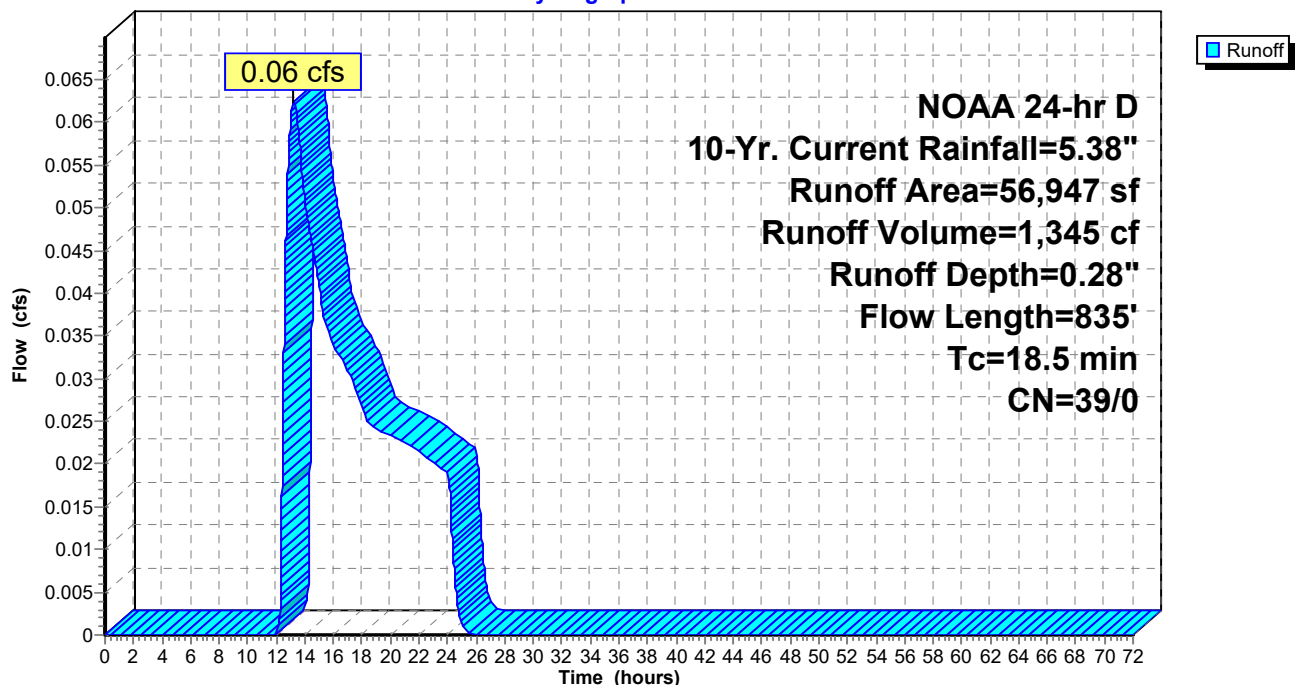
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Current Rainfall=5.38"

Area (sf)	CN	Description
56,947	39	>75% Grass cover, Good, HSG A
56,947	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	90	0.0150	0.11		Sheet Flow, Sheet Grass Grass: Dense n= 0.240 P2= 3.42"
1.8	195	0.0083	1.85		Shallow Concentrated Flow, Shallow Pvmnt Paved Kv= 20.3 fps
2.5	550	0.0050	3.72	4.57	Pipe Channel, Pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
18.5	835	Total			

Subcatchment 4S: Prop. Drainage Area-2 (Pervious)

Hydrograph



Summary for Subcatchment 5S: Prop. Drainage Area-2 (Roof)

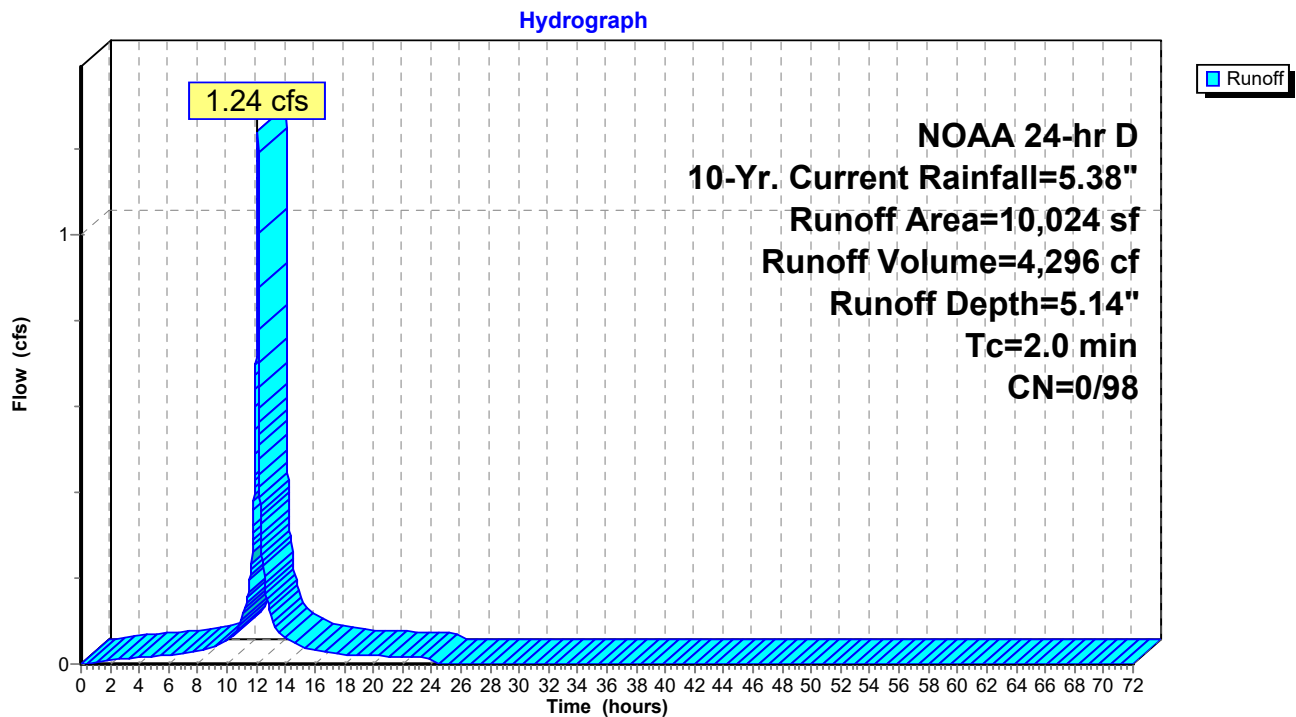
Runoff = 1.24 cfs @ 12.10 hrs, Volume= 4,296 cf, Depth= 5.14"
 Routed to Pond 8P : Roof Recharge

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Current Rainfall=5.38"

Area (sf)	CN	Description
10,024	98	Roofs, HSG A
10,024	98	100.00% Impervious Area

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

Subcatchment 5S: Prop. Drainage Area-2 (Roof)



Summary for Subcatchment 6S: Prop. Drainage Area-2 (Woods) (Undisturbed)

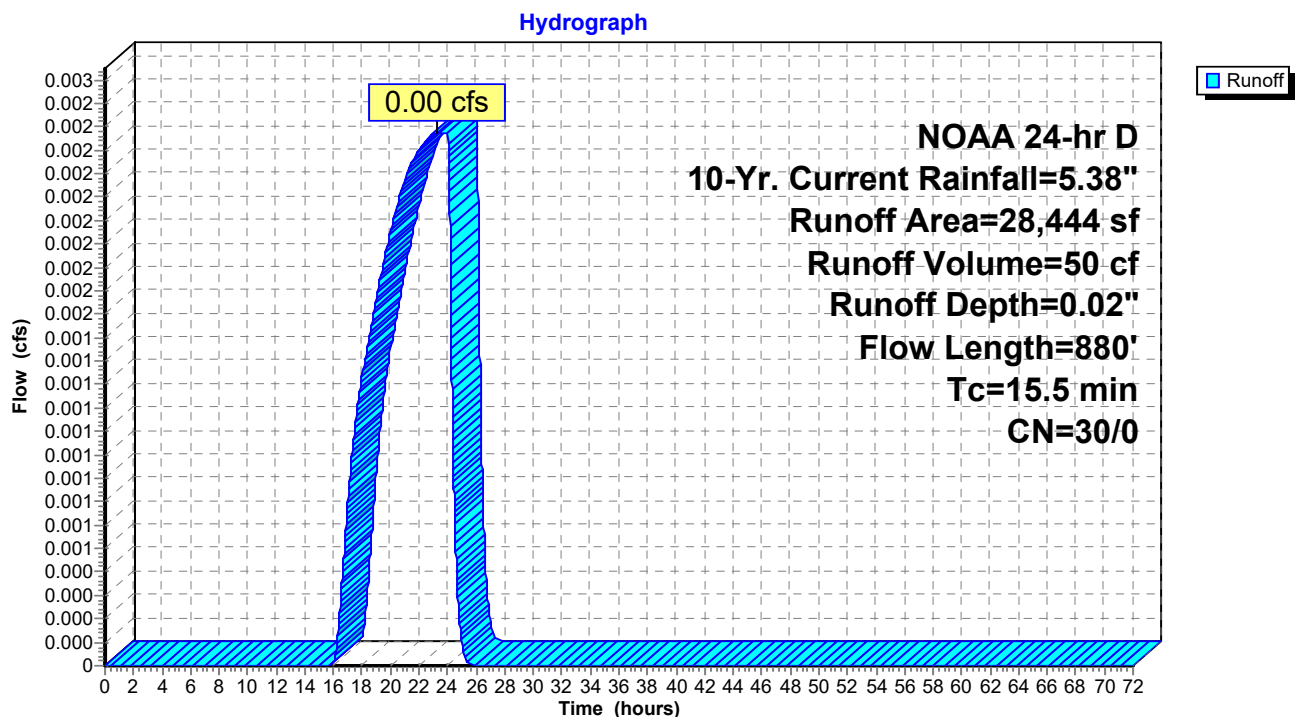
Runoff = 0.00 cfs @ 23.26 hrs, Volume= 50 cf, Depth= 0.02"
 Routed to Pond B2 : Basin #2

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Current Rainfall=5.38"

Area (sf)	CN	Description
28,444	30	Woods, Good, HSG A
28,444	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	50	0.0250	0.08		Sheet Flow, Sheet woods Woods: Light underbrush n= 0.400 P2= 3.42"
0.6	120	0.0400	3.22		Shallow Concentrated Flow, Shallow Grass Unpaved Kv= 16.1 fps
1.7	190	0.0083	1.85		Shallow Concentrated Flow, shallow Pvmt Paved Kv= 20.3 fps
2.3	520	0.0050	3.72	4.57	Pipe Channel, pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
15.5	880	Total			

Subcatchment 6S: Prop. Drainage Area-2 (Woods) (Undisturbed)



Summary for Subcatchment 7S: Prop. Drainage Area-3 (Basin Area) (Non-Contributory)

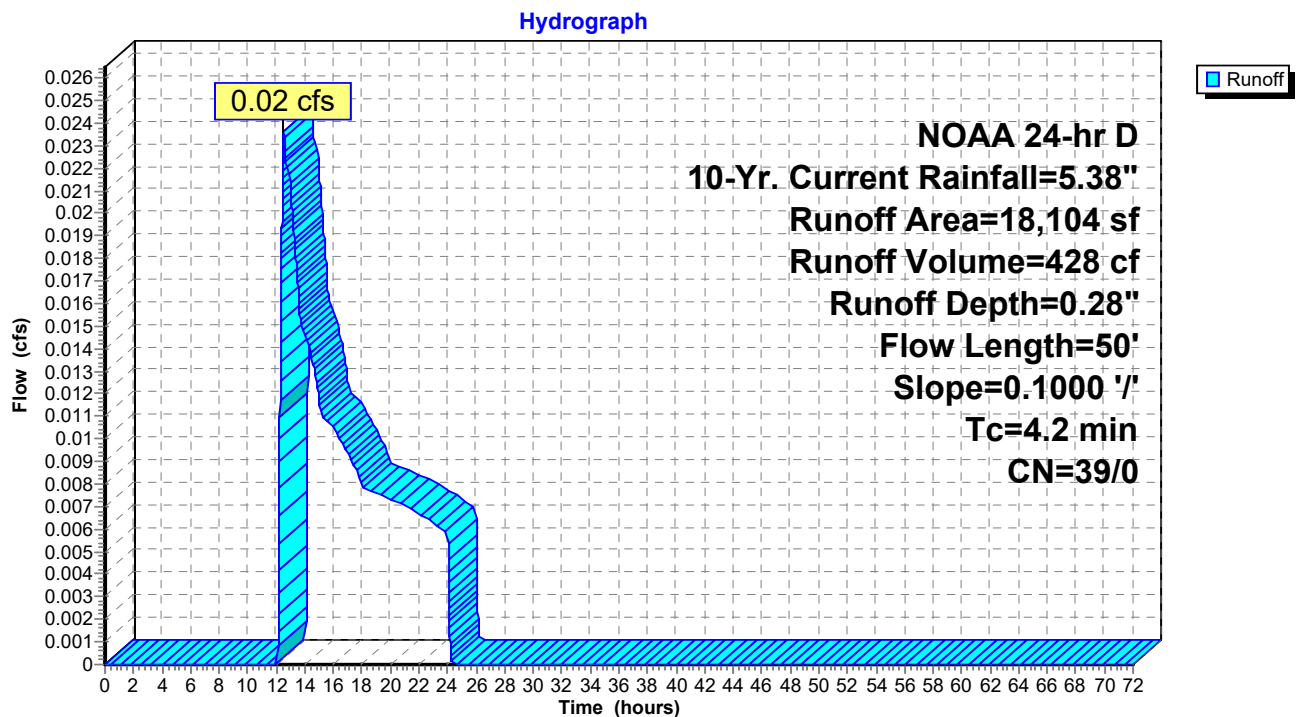
Runoff = 0.02 cfs @ 12.53 hrs, Volume= 428 cf, Depth= 0.28"
 Routed to Pond B3 : Basin #3

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Current Rainfall=5.38"

Area (sf)	CN	Description
* 18,104	39	Basin Area-Non-contributory, HSG A
18,104	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.1000	0.20		Sheet Flow, Sheet Grass
Grass: Dense n= 0.240 P2= 3.42"					

Subcatchment 7S: Prop. Drainage Area-3 (Basin Area) (Non-Contributory)



Summary for Subcatchment 8S: Prop. Drainage Area-3 (Impervious)

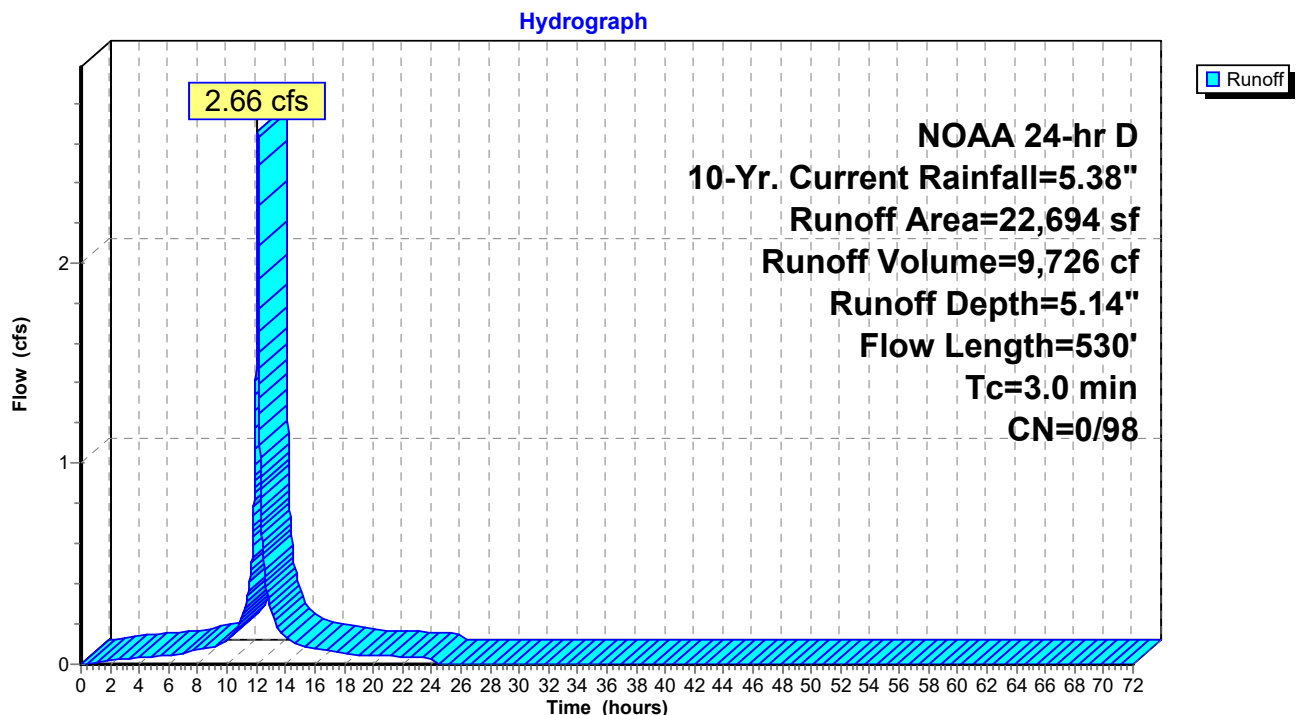
Runoff = 2.66 cfs @ 12.11 hrs, Volume= 9,726 cf, Depth= 5.14"
 Routed to Pond B3 : Basin #3

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Current Rainfall=5.38"

Area (sf)	CN	Description
13,555	98	Paved roads w/curbs & sewers, HSG A
* 3,626	98	Sidewalks, HSG A
* 5,513	98	Driveways, HSG A
22,694	98	Weighted Average
22,694	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	100	0.0292	1.65		Sheet Flow, Sheet Pvmnt Smooth surfaces n= 0.011 P2= 3.42"
1.1	233	0.0292	3.47		Shallow Concentrated Flow, Shallow Pvmnt Paved Kv= 20.3 fps
0.9	197	0.0040	3.76	6.64	Pipe Channel, Pipe 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
3.0	530	Total			

Subcatchment 8S: Prop. Drainage Area-3 (Impervious)



Summary for Subcatchment 9S: Prop. Drainage Area-3 (Pervious)

Runoff = 0.08 cfs @ 13.03 hrs, Volume= 1,659 cf, Depth= 0.28"
 Routed to Pond B3 : Basin #3

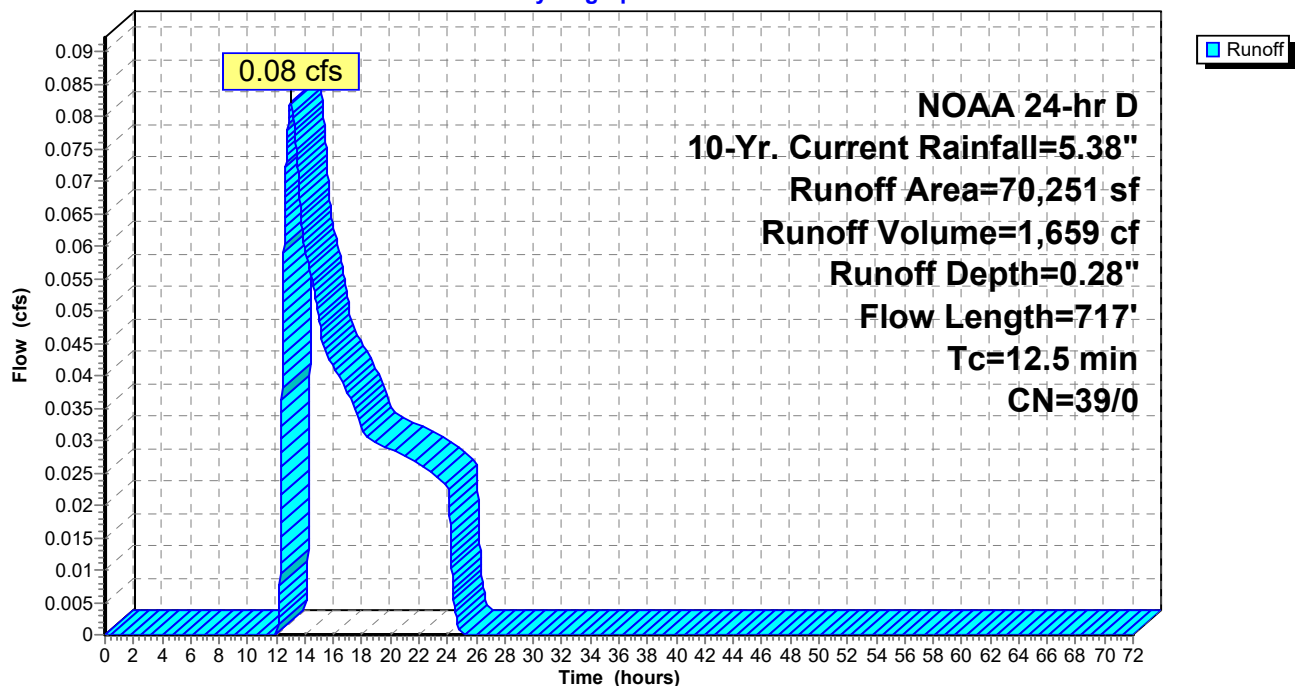
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Current Rainfall=5.38"

Area (sf)	CN	Description
70,251	39	>75% Grass cover, Good, HSG A
70,251	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	100	0.0500	0.17		Sheet Flow, Sheet Grass Grass: Dense n= 0.240 P2= 3.42"
0.1	20	0.0500	3.60		Shallow Concentrated Flow, Shallow Grass Unpaved Kv= 16.1 fps
1.9	400	0.0292	3.47		Shallow Concentrated Flow, Shallow Pvmnt Paved Kv= 20.3 fps
0.9	197	0.0040	3.76	6.64	Pipe Channel, Pipe 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
12.5	717	Total			

Subcatchment 9S: Prop. Drainage Area-3 (Pervious)

Hydrograph



Summary for Subcatchment 10S: Prop. Drainage Area-3 (Roof)

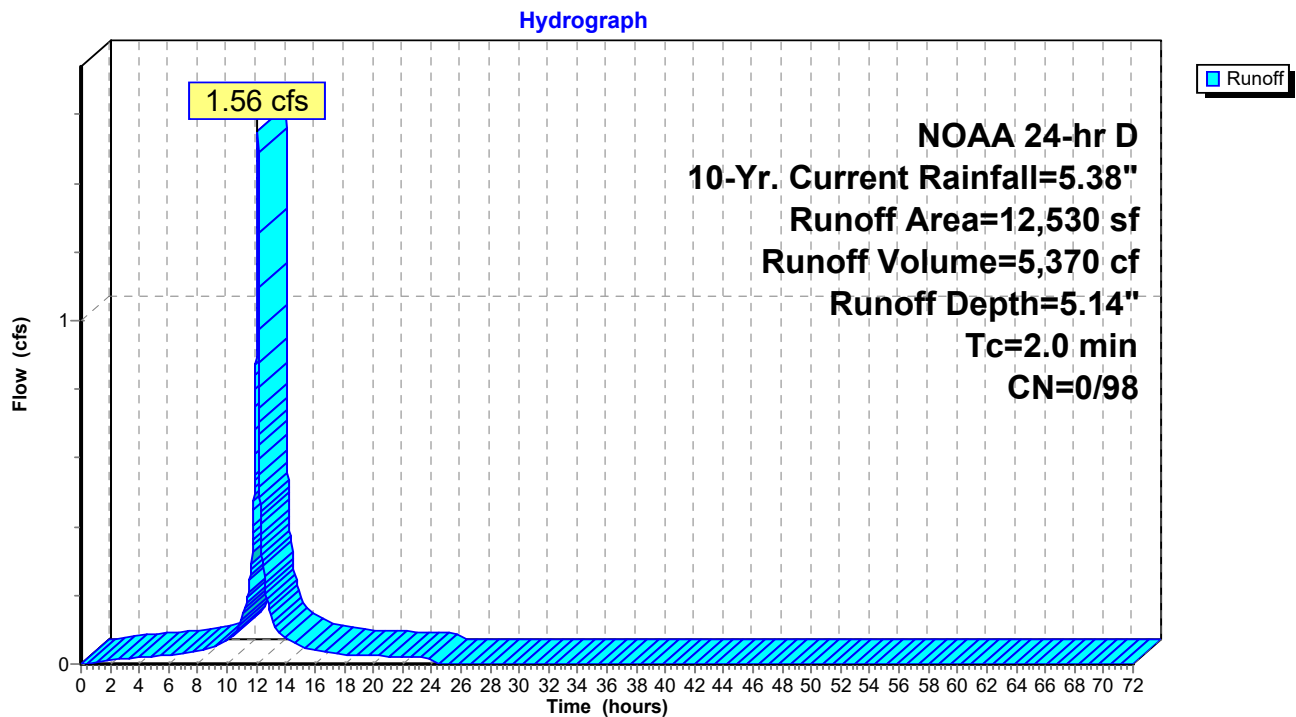
Runoff = 1.56 cfs @ 12.10 hrs, Volume= 5,370 cf, Depth= 5.14"
 Routed to Pond 12P : Roof Recharge

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Current Rainfall=5.38"

Area (sf)	CN	Description
12,530	98	Roofs, HSG A
12,530	98	100.00% Impervious Area

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

Subcatchment 10S: Prop. Drainage Area-3 (Roof)



Summary for Subcatchment 11S: Prop. Drainage Area-3-A (Woods) (Undisturbed)

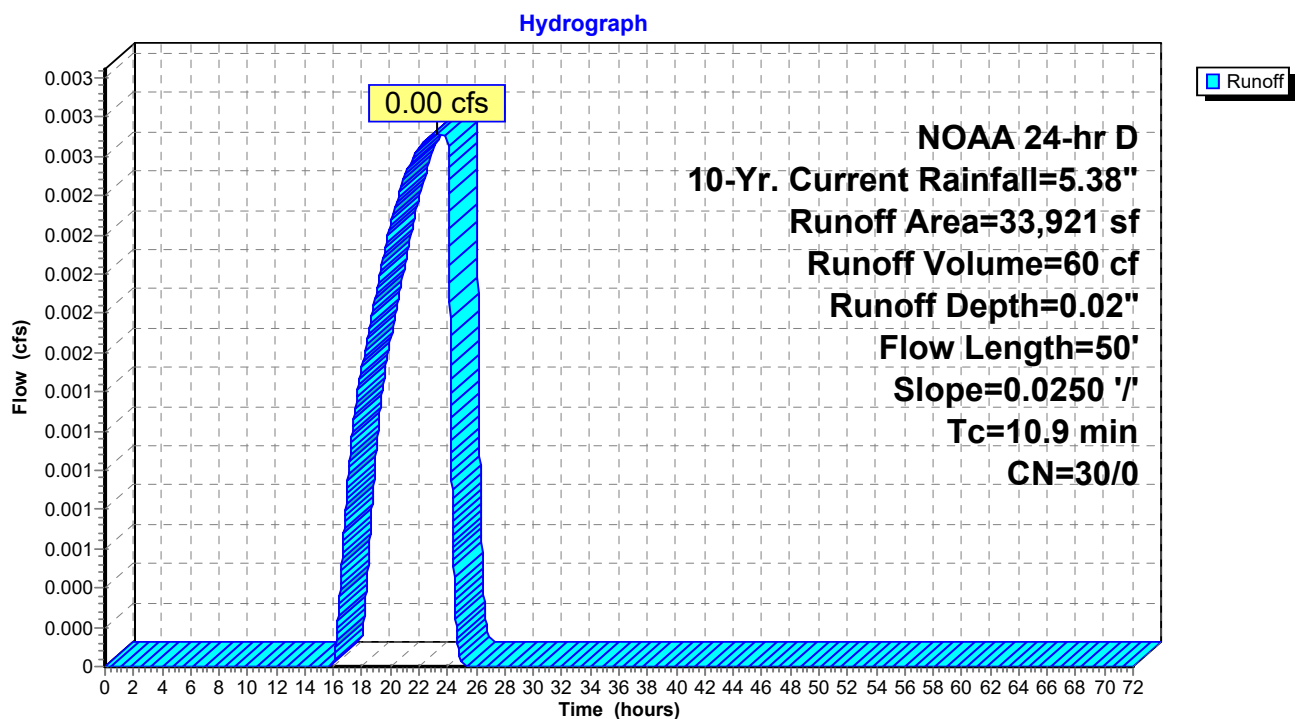
Runoff = 0.00 cfs @ 23.20 hrs, Volume= 60 cf, Depth= 0.02"
Routed to Pond B3 : Basin #3

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 10-Yr. Current Rainfall=5.38"

Area (sf)	CN	Description
33,921	30	Woods, Good, HSG A
33,921	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	50	0.0250	0.08		Sheet Flow, Sheet woods Woods: Light underbrush n= 0.400 P2= 3.42"

Subcatchment 11S: Prop. Drainage Area-3-A (Woods) (Undisturbed)



Summary for Subcatchment P-1I: Prop. Drainage Area-1 (Impervious)

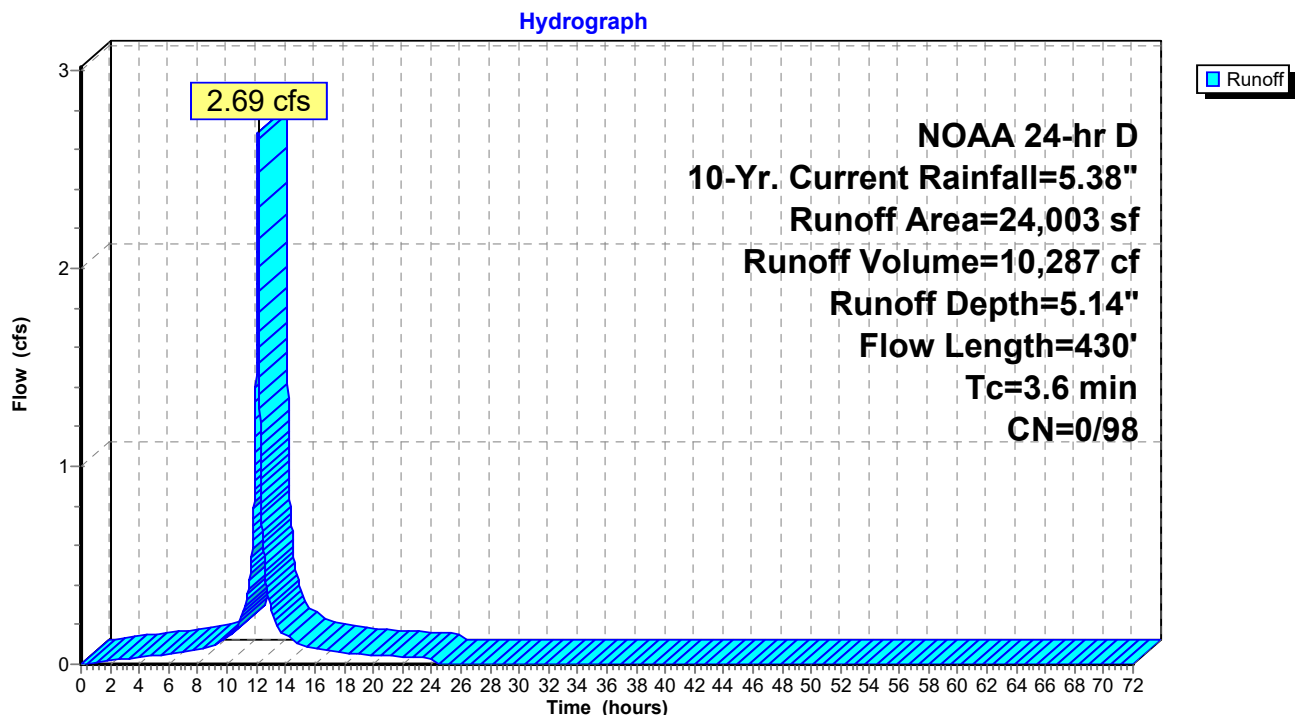
Runoff = 2.69 cfs @ 12.12 hrs, Volume= 10,287 cf, Depth= 5.14"
 Routed to Pond B1 : Basin #1

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Current Rainfall=5.38"

Area (sf)	CN	Description
15,941	98	Paved roads w/curbs & sewers, HSG A
* 2,588	98	Sidewalks, HSG A
* 5,474	98	Driveways, HSG A
24,003	98	Weighted Average
24,003	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	100	0.0083	1.00		Sheet Flow, Sheet Pvmt Smooth surfaces n= 0.011 P2= 3.42"
0.7	60	0.0050	1.44		Shallow Concentrated Flow, Shallow Pvmt Paved Kv= 20.3 fps
1.2	270	0.0050	3.72	4.57	Pipe Channel, Pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
3.6	430	Total			

Subcatchment P-1I: Prop. Drainage Area-1 (Impervious)



Summary for Subcatchment P-1P: Prop. Drainage Area-1 (Pervious)

Runoff = 0.08 cfs @ 13.04 hrs, Volume= 1,710 cf, Depth= 0.28"
 Routed to Pond B1 : Basin #1

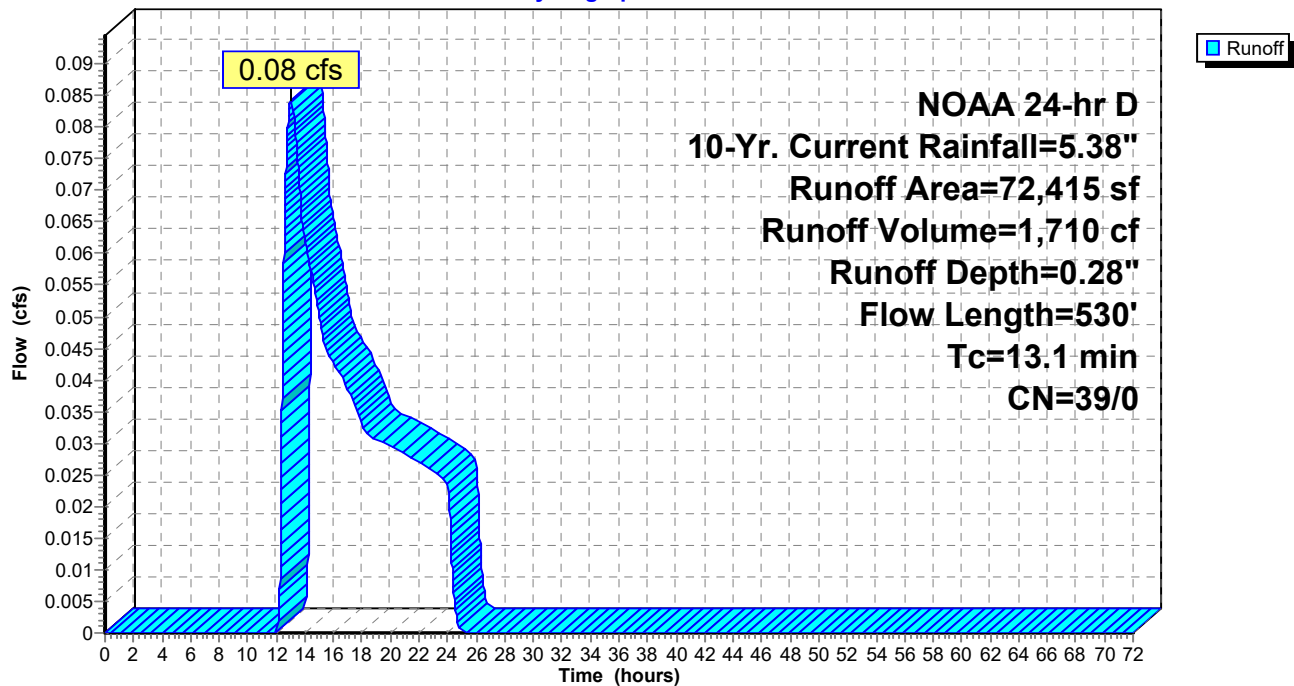
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Current Rainfall=5.38"

Area (sf)	CN	Description
72,415	39	>75% Grass cover, Good, HSG A
72,415	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0400	0.16		Sheet Flow, Sheet Grass Grass: Dense n= 0.240 P2= 3.42"
1.4	160	0.0083	1.85		Shallow Concentrated Flow, Shallow Pvmnt Paved Kv= 20.3 fps
1.2	270	0.0050	3.72	4.57	Pipe Channel, Pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
13.1	530	Total			

Subcatchment P-1P: Prop. Drainage Area-1 (Pervious)

Hydrograph



Summary for Subcatchment P-1R: Prop. Drainage Area-1 (Roof)

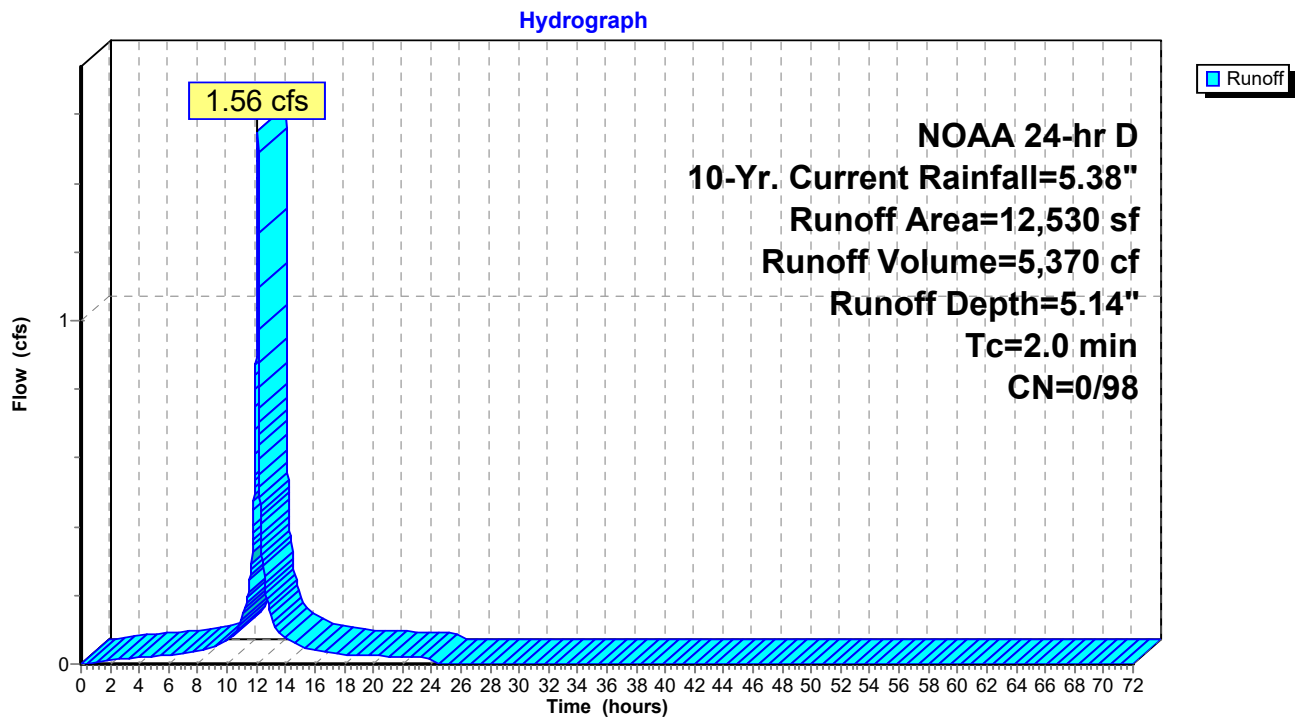
Runoff = 1.56 cfs @ 12.10 hrs, Volume= 5,370 cf, Depth= 5.14"
 Routed to Pond R-1 : Roof Recharge

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Current Rainfall=5.38"

Area (sf)	CN	Description
12,530	98	Roofs, HSG A
12,530	98	100.00% Impervious Area

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

Subcatchment P-1R: Prop. Drainage Area-1 (Roof)



Summary for Subcatchment P1A: Prop. Drainage Area-1-A (Woods) (Undisturbed)

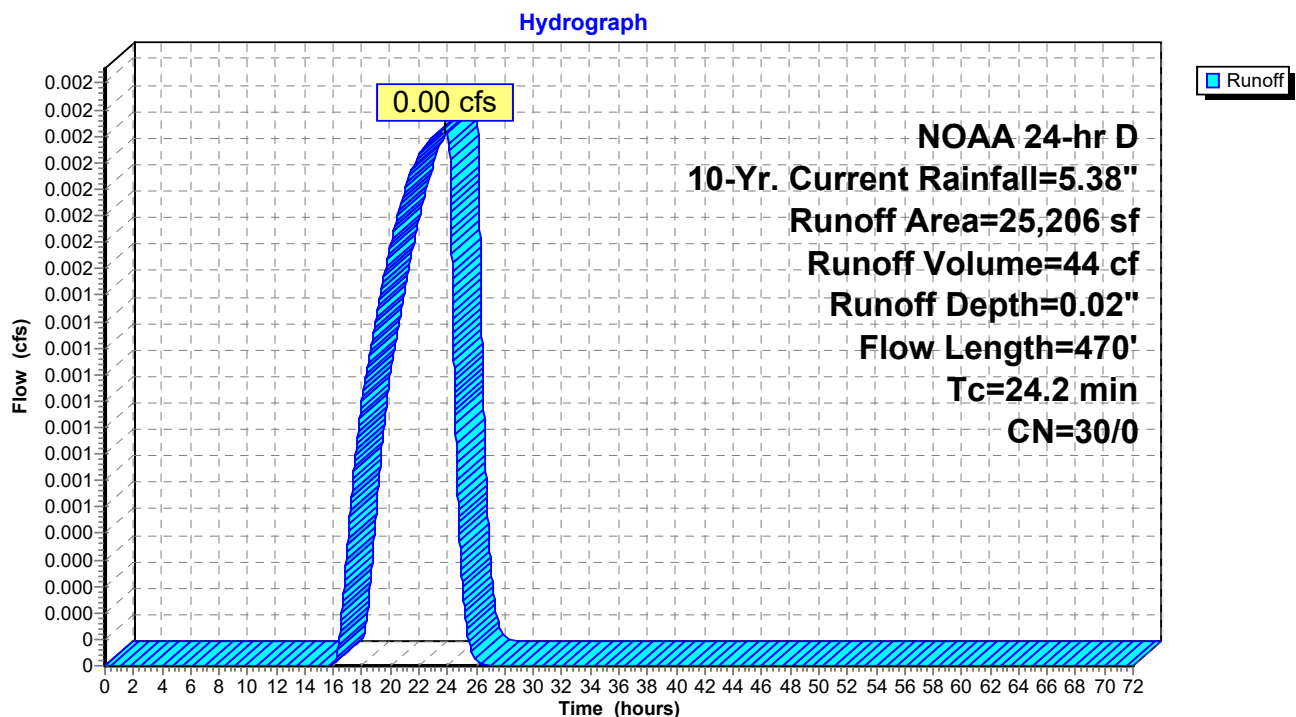
Runoff = 0.00 cfs @ 23.77 hrs, Volume= 44 cf, Depth= 0.02"
 Routed to Pond B1 : Basin #1

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Current Rainfall=5.38"

Area (sf)	CN	Description
25,206	30	Woods, Good, HSG A
25,206	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2	100	0.0170	0.08		Sheet Flow, Sheet woods Woods: Light underbrush n= 0.400 P2= 3.42"
0.4	60	0.0200	2.28		Shallow Concentrated Flow, Shallow Grass Unpaved Kv= 16.1 fps
0.4	40	0.0062	1.60		Shallow Concentrated Flow, shallow Pvmt Paved Kv= 20.3 fps
1.2	270	0.0050	3.72	4.57	Pipe Channel, pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
24.2	470	Total			

Subcatchment P1A: Prop. Drainage Area-1-A (Woods) (Undisturbed)



Summary for Pond 8P: Roof Recharge

Inflow Area = 10,024 sf, 100.00% Impervious, Inflow Depth = 5.14" for 10-Yr. Current event
 Inflow = 1.24 cfs @ 12.10 hrs, Volume= 4,296 cf
 Outflow = 0.19 cfs @ 11.70 hrs, Volume= 4,296 cf, Atten= 85%, Lag= 0.0 min
 Discarded = 0.19 cfs @ 11.70 hrs, Volume= 4,296 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to Pond B2 : Basin #2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 77.85' @ 12.55 hrs Surf.Area= 822 sf Storage= 948 cf

Plug-Flow detention time= 25.4 min calculated for 4,295 cf (100% of inflow)
 Center-of-Mass det. time= 25.4 min (770.9 - 745.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	76.00'	219 cf	6.25'W x 32.23'L x 3.75'H Field A 755 cf Overall - 209 cf Embedded = 546 cf x 40.0% Voids
#2A	76.50'	209 cf	ADS_StormTech SC-800 +Cap x 4 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap Cap Storage= 3.4 cf x 2 x 1 rows = 6.8 cf
#3	76.00'	24 cf	2.00'W x 2.00'L x 6.00'H Prismatic
			452 cf x 4.00 = 1,807 cf Total Available Storage

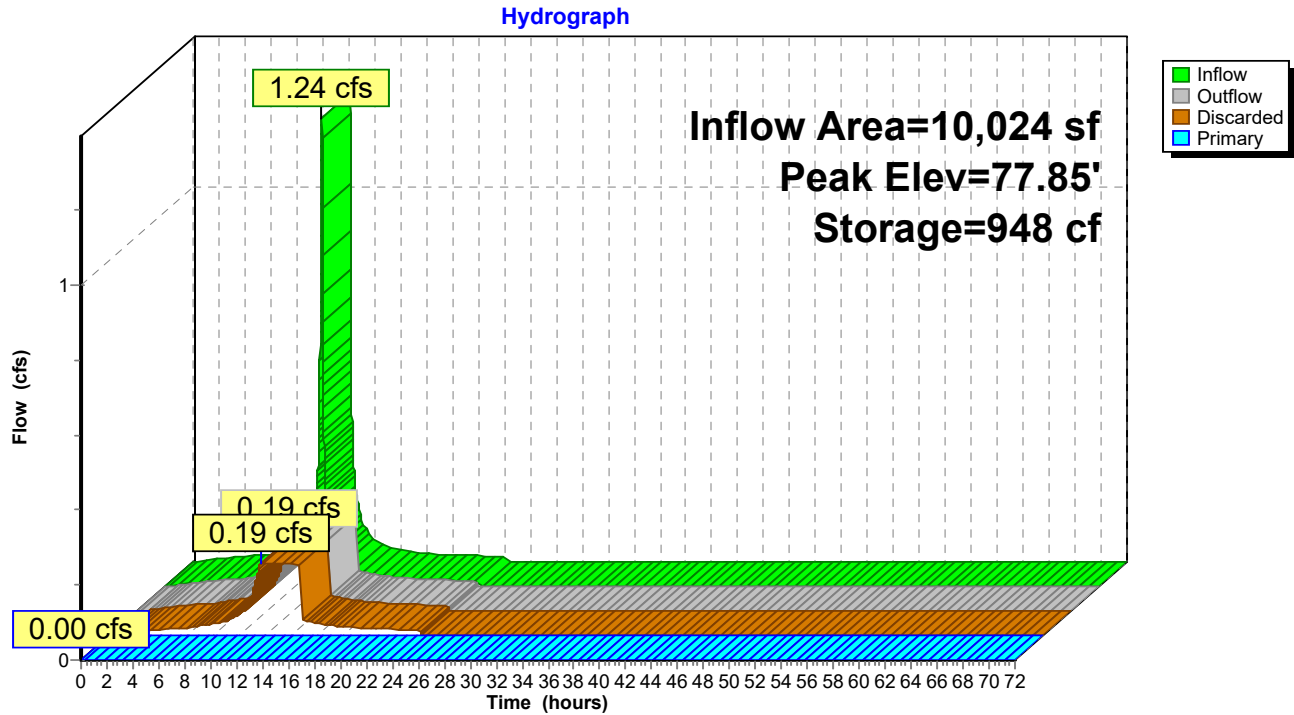
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	81.00'	24.0" x 24.0" Horiz. Grate 24" C= 0.600 Limited to weir flow at low heads
#2	Discarded	76.00'	10.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.19 cfs @ 11.70 hrs HW=76.06' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=76.00' TW=77.50' (Dynamic Tailwater)
 ↑ **1=Grate 24"** (Controls 0.00 cfs)

Pond 8P: Roof Recharge



Summary for Pond 12P: Roof Recharge

Inflow Area = 12,530 sf, 100.00% Impervious, Inflow Depth = 5.14" for 10-Yr. Current event
 Inflow = 1.56 cfs @ 12.10 hrs, Volume= 5,370 cf
 Outflow = 0.19 cfs @ 11.59 hrs, Volume= 5,370 cf, Atten= 88%, Lag= 0.0 min
 Discarded = 0.19 cfs @ 11.59 hrs, Volume= 5,370 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to Pond B3 : Basin #3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 78.69' @ 12.73 hrs Surf.Area= 822 sf Storage= 1,376 cf

Plug-Flow detention time= 40.6 min calculated for 5,369 cf (100% of inflow)
 Center-of-Mass det. time= 40.6 min (786.1 - 745.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	76.00'	219 cf	6.25'W x 32.23'L x 3.75'H Field A 755 cf Overall - 209 cf Embedded = 546 cf x 40.0% Voids
#2A	76.50'	209 cf	ADS_StormTech SC-800 +Cap x 4 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap Cap Storage= 3.4 cf x 2 x 1 rows = 6.8 cf
#3	76.00'	24 cf	2.00'W x 2.00'L x 6.00'H Prismatic
			452 cf x 4.00 = 1,807 cf Total Available Storage

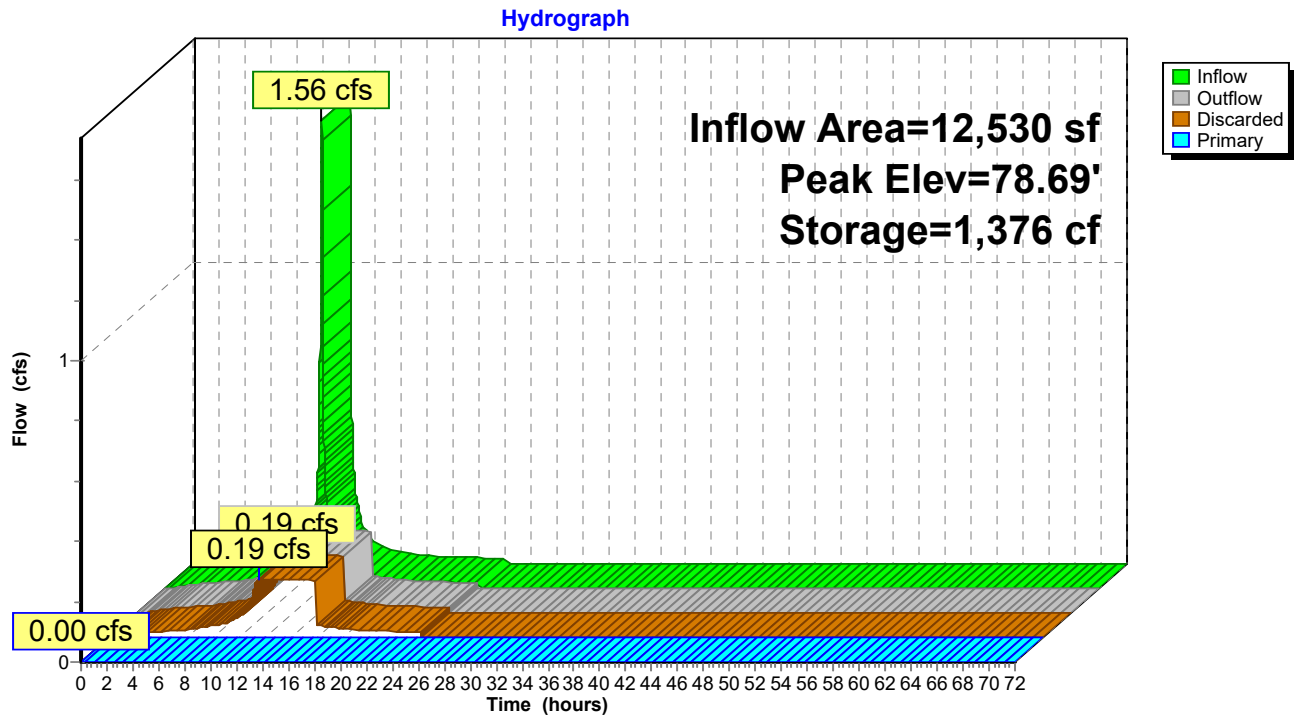
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	81.00'	24.0" x 24.0" Horiz. Grate 24" C= 0.600 Limited to weir flow at low heads
#2	Discarded	76.00'	10.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.19 cfs @ 11.59 hrs HW=76.07' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=76.00' TW=68.00' (Dynamic Tailwater)
 ↑ **1=Grate 24"** (Controls 0.00 cfs)

Pond 12P: Roof Recharge



Summary for Pond B1: Basin #1

Inflow Area = 152,539 sf, 23.95% Impervious, Inflow Depth = 0.98" for 10-Yr. Current event
 Inflow = 2.69 cfs @ 12.12 hrs, Volume= 12,475 cf
 Outflow = 0.16 cfs @ 18.43 hrs, Volume= 12,323 cf, Atten= 94%, Lag= 378.6 min
 Primary = 0.16 cfs @ 18.43 hrs, Volume= 12,323 cf
 Routed to Pond B2 : Basin #2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Starting Elev= 77.50' Surf.Area= 4,963 sf Storage= 2,256 cf
 Peak Elev= 78.66' @ 15.13 hrs Surf.Area= 7,117 sf Storage= 9,236 cf (6,980 cf above start)

Plug-Flow detention time= 802.0 min calculated for 10,067 cf (81% of inflow)
 Center-of-Mass det. time= 562.2 min (1,359.2 - 797.0)

Volume	Invert	Avail.Storage	Storage Description
#1	77.00'	20,548 cf	Basin 1 (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
77.00	4,060	0	0
78.00	5,865	4,963	4,963
79.00	7,766	6,816	11,778
80.00	9,773	8,770	20,548

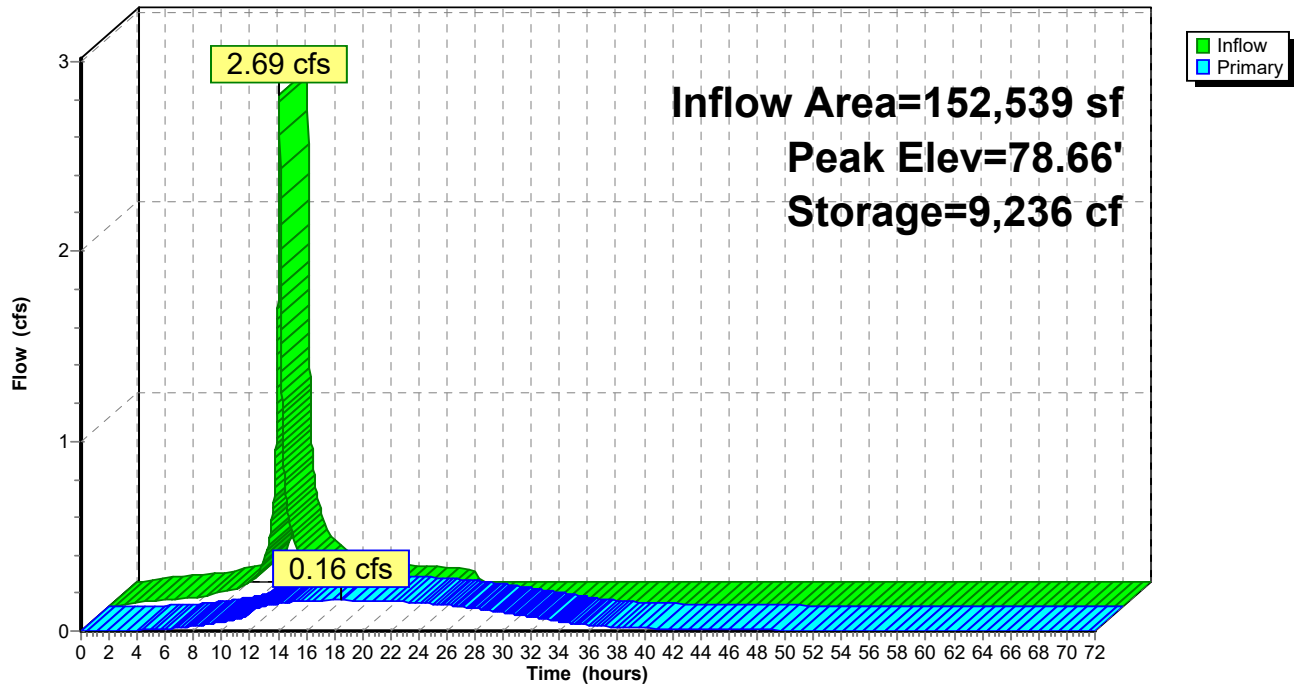
Device	Routing	Invert	Outlet Devices
#1	Primary	77.34'	15.0" Round Culvert 15" L= 69.0' Ke= 0.500 Inlet / Outlet Invert= 77.34' / 77.00' S= 0.0049 ' S= 0.0049 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.23 sf
#2	Device 1	77.50'	3.0" Vert. Orifice 3" C= 0.600 Limited to weir flow at low heads
#3	Device 1	80.00'	42.0" x 42.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	80.20'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.16 cfs @ 18.43 hrs HW=78.59' TW=78.12' (Dynamic Tailwater)

- 1=Culvert 15" (Passes 0.16 cfs of 3.28 cfs potential flow)
- 2=Orifice 3" (Orifice Controls 0.16 cfs @ 3.30 fps)
- 3=Grate (Controls 0.00 cfs)
- 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond B1: Basin #1

Hydrograph



Summary for Pond B2: Basin #2

Inflow Area = 282,551 sf, 22.05% Impervious, Inflow Depth > 0.89" for 10-Yr. Current event
 Inflow = 1.71 cfs @ 12.13 hrs, Volume= 20,914 cf
 Outflow = 0.33 cfs @ 13.64 hrs, Volume= 20,797 cf, Atten= 81%, Lag= 90.4 min
 Primary = 0.33 cfs @ 13.64 hrs, Volume= 20,797 cf
 Routed to Pond B3 : Basin #3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Starting Elev= 77.50' Surf.Area= 4,362 sf Storage= 1,984 cf
 Peak Elev= 78.27' @ 13.64 hrs Surf.Area= 5,598 sf Storage= 5,806 cf (3,822 cf above start)

Plug-Flow detention time= 367.2 min calculated for 18,813 cf (90% of inflow)
 Center-of-Mass det. time= 174.1 min (1,308.1 - 1,134.1)

Volume	Invert	Avail.Storage	Storage Description
#1	77.00'	18,035 cf	Basin 2 (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
77.00	3,573	0	0
78.00	5,151	4,362	4,362
79.00	6,815	5,983	10,345
80.00	8,565	7,690	18,035

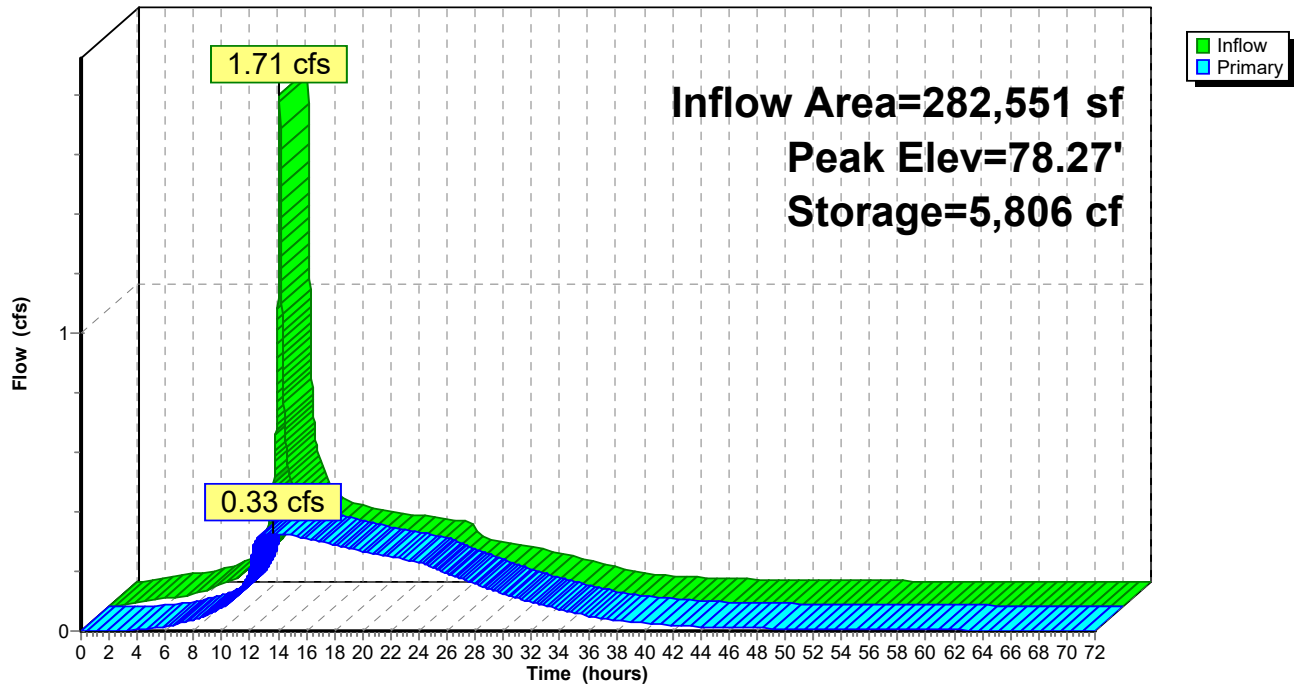
Device	Routing	Invert	Outlet Devices
#1	Primary	77.00'	18.0" Round Culvert 15" L= 69.0' Ke= 0.500 Inlet / Outlet Invert= 77.00' / 66.00' S= 0.1594 ' S= 0.1594 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf
#2	Device 1	77.50'	4.0" Vert. Orifice 4" C= 0.600 Limited to weir flow at low heads
#3	Device 1	80.00'	42.0" x 42.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	80.30'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.33 cfs @ 13.64 hrs HW=78.27' TW=69.15' (Dynamic Tailwater)

- 1=Culvert 15" (Passes 0.33 cfs of 6.11 cfs potential flow)
- 2=Orifice 4" (Orifice Controls 0.33 cfs @ 3.74 fps)
- 3=Grate (Controls 0.00 cfs)
- 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond B2: Basin #2

Hydrograph



Summary for Pond B3: Basin #3

Inflow Area = 440,051 sf, 22.16% Impervious, Inflow Depth > 0.89" for 10-Yr. Current event
 Inflow = 2.90 cfs @ 12.11 hrs, Volume= 32,669 cf
 Outflow = 0.43 cfs @ 16.16 hrs, Volume= 32,475 cf, Atten= 85%, Lag= 243.0 min
 Primary = 0.43 cfs @ 16.16 hrs, Volume= 32,475 cf
 Routed to Link PT2 : Proposed Total (AP-2)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Starting Elev= 68.00' Surf.Area= 5,501 sf Storage= 9,363 cf
 Peak Elev= 69.23' @ 16.16 hrs Surf.Area= 6,593 sf Storage= 16,791 cf (7,428 cf above start)

Plug-Flow detention time= 731.4 min calculated for 23,109 cf (71% of inflow)
 Center-of-Mass det. time= 242.7 min (1,365.4 - 1,122.7)

Volume	Invert	Avail.Storage	Storage Description
#1	66.00'	34,230 cf	Basin 3 (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
66.00	3,879	0	0
67.00	4,673	4,276	4,276
68.00	5,501	5,087	9,363
69.00	6,379	5,940	15,303
70.00	7,310	6,845	22,148
71.00	8,291	7,801	29,948
71.50	8,836	4,282	34,230

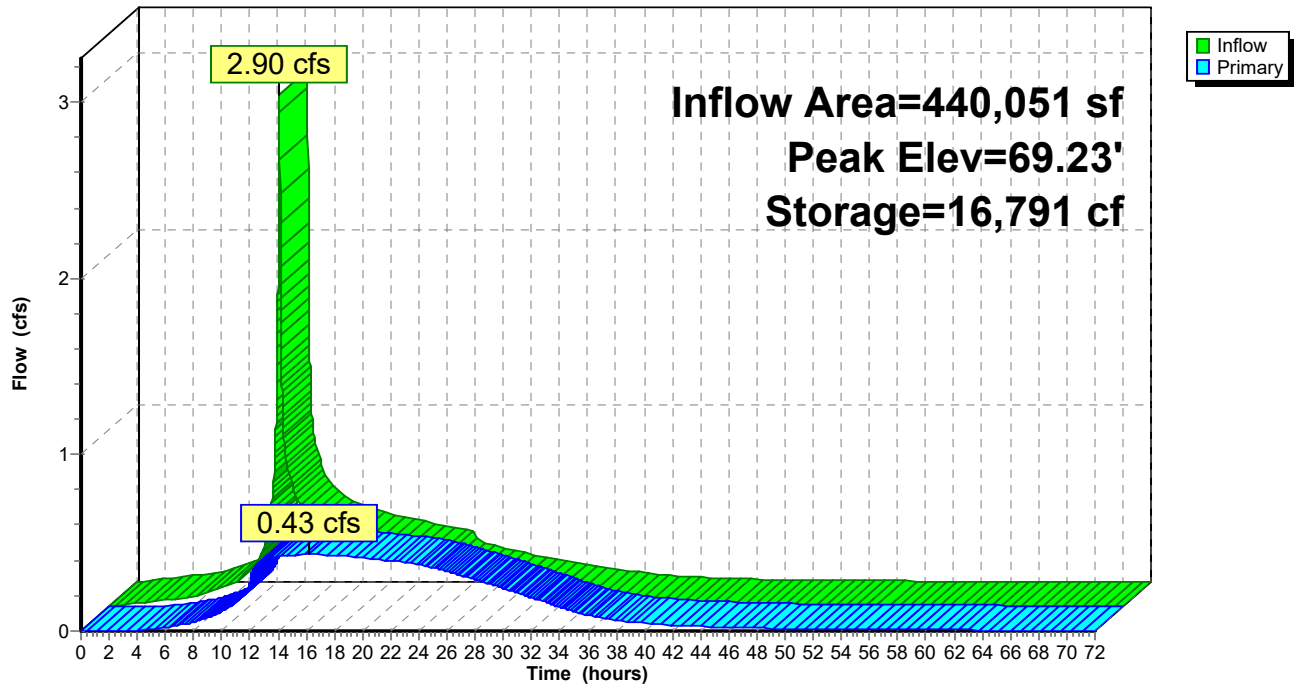
Device	Routing	Invert	Outlet Devices
#1	Primary	67.49'	15.0" Round Culvert 15" L= 360.0' Ke= 0.500 Inlet / Outlet Invert= 67.49' / 66.00' S= 0.0041 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.23 sf
#2	Device 1	68.00'	4.0" Vert. Orifice 4" C= 0.600 Limited to weir flow at low heads
#3	Device 1	70.50'	42.0" x 42.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	71.50'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.43 cfs @ 16.16 hrs HW=69.23' TW=0.00' (Dynamic Tailwater)

- 1=Culvert 15" (Passes 0.43 cfs of 4.40 cfs potential flow)
- 2=Orifice 4" (Orifice Controls 0.43 cfs @ 4.96 fps)
- 3=Grate (Controls 0.00 cfs)
- 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond B3: Basin #3

Hydrograph



Summary for Pond R-1: Roof Recharge

Inflow Area = 12,530 sf, 100.00% Impervious, Inflow Depth = 5.14" for 10-Yr. Current event
 Inflow = 1.56 cfs @ 12.10 hrs, Volume= 5,370 cf
 Outflow = 0.24 cfs @ 11.70 hrs, Volume= 5,370 cf, Atten= 85%, Lag= 0.0 min
 Discarded = 0.24 cfs @ 11.70 hrs, Volume= 5,370 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to Pond B1 : Basin #1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 77.85' @ 12.55 hrs Surf.Area= 1,027 sf Storage= 1,186 cf

Plug-Flow detention time= 25.4 min calculated for 5,369 cf (100% of inflow)
 Center-of-Mass det. time= 25.4 min (770.9 - 745.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	76.00'	219 cf	6.25'W x 32.23'L x 3.75'H Field A 755 cf Overall - 209 cf Embedded = 546 cf x 40.0% Voids
#2A	76.50'	209 cf	ADS_StormTech SC-800 +Cap x 4 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap Cap Storage= 3.4 cf x 2 x 1 rows = 6.8 cf
#3	76.00'	24 cf	2.00'W x 2.00'L x 6.00'H Prismatic
			452 cf x 5.00 = 2,259 cf Total Available Storage

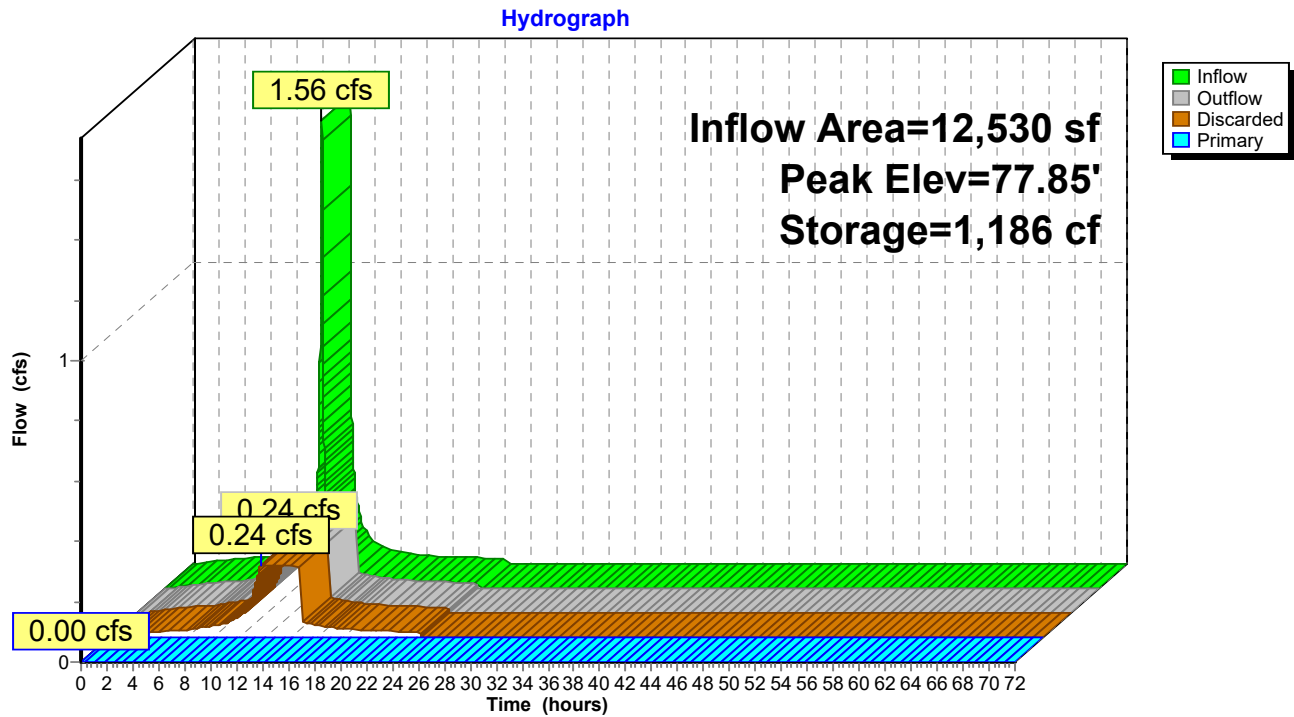
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	81.00'	24.0" x 24.0" Horiz. Grate 24" C= 0.600 Limited to weir flow at low heads
#2	Discarded	76.00'	10.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.24 cfs @ 11.70 hrs HW=76.06' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.24 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=76.00' TW=77.50' (Dynamic Tailwater)
 ↑ **1=Grate 24"** (Controls 0.00 cfs)

Pond R-1: Roof Recharge

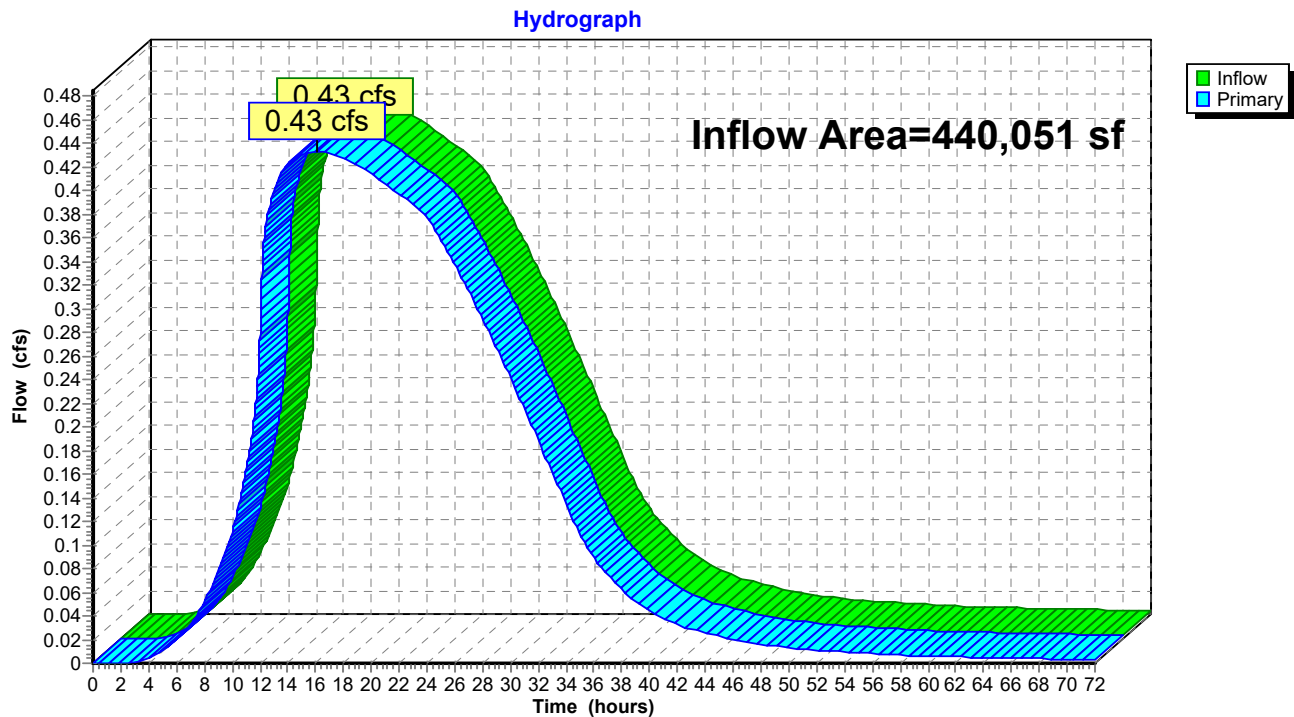


Summary for Link PT2: Proposed Total (AP-2)

Inflow Area = 440,051 sf, 22.16% Impervious, Inflow Depth > 0.89" for 10-Yr. Current event
 Inflow = 0.43 cfs @ 16.16 hrs, Volume= 32,475 cf
 Primary = 0.43 cfs @ 16.16 hrs, Volume= 32,475 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link PT2: Proposed Total (AP-2)



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
 Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv.
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Prop. Drainage Area-2 Runoff Area=18,844 sf 0.00% Impervious Runoff Depth=0.66"
 Flow Length=50' Slope=0.1000 '/' Tc=4.2 min CN=39/0 Runoff=0.12 cfs 1,032 cf

Subcatchment2S: Prop. Drainage Area-1 Runoff Area=18,385 sf 0.00% Impervious Runoff Depth=0.66"
 Flow Length=50' Slope=0.1000 '/' Tc=4.2 min CN=39/0 Runoff=0.12 cfs 1,007 cf

Subcatchment3S: Prop. Drainage Area-2 Runoff Area=15,753 sf 100.00% Impervious Runoff Depth=6.44"
 Flow Length=745' Tc=5.1 min CN=0/98 Runoff=1.99 cfs 8,456 cf

Subcatchment4S: Prop. Drainage Area-2 Runoff Area=56,947 sf 0.00% Impervious Runoff Depth=0.66"
 Flow Length=835' Tc=18.5 min CN=39/0 Runoff=0.22 cfs 3,119 cf

Subcatchment5S: Prop. Drainage Area-2 Runoff Area=10,024 sf 100.00% Impervious Runoff Depth=6.44"
 Tc=2.0 min CN=0/98 Runoff=1.55 cfs 5,381 cf

Subcatchment6S: Prop. Drainage Area-2 Runoff Area=28,444 sf 0.00% Impervious Runoff Depth=0.16"
 Flow Length=880' Tc=15.5 min CN=30/0 Runoff=0.01 cfs 379 cf

Subcatchment7S: Prop. Drainage Area-3 Runoff Area=18,104 sf 0.00% Impervious Runoff Depth=0.66"
 Flow Length=50' Slope=0.1000 '/' Tc=4.2 min CN=39/0 Runoff=0.12 cfs 992 cf

Subcatchment8S: Prop. Drainage Area-3 Runoff Area=22,694 sf 100.00% Impervious Runoff Depth=6.44"
 Flow Length=530' Tc=3.0 min CN=0/98 Runoff=3.30 cfs 12,181 cf

Subcatchment9S: Prop. Drainage Area-3 Runoff Area=70,251 sf 0.00% Impervious Runoff Depth=0.66"
 Flow Length=717' Tc=12.5 min CN=39/0 Runoff=0.31 cfs 3,848 cf

Subcatchment10S: Prop. Drainage Runoff Area=12,530 sf 100.00% Impervious Runoff Depth=6.44"
 Tc=2.0 min CN=0/98 Runoff=1.94 cfs 6,726 cf

Subcatchment11S: Prop. Drainage Runoff Area=33,921 sf 0.00% Impervious Runoff Depth=0.16"
 Flow Length=50' Slope=0.0250 '/' Tc=10.9 min CN=30/0 Runoff=0.01 cfs 452 cf

SubcatchmentP-1I: Prop. Drainage Runoff Area=24,003 sf 100.00% Impervious Runoff Depth=6.44"
 Flow Length=430' Tc=3.6 min CN=0/98 Runoff=3.35 cfs 12,884 cf

SubcatchmentP-1P: Prop. Drainage Area-1 Runoff Area=72,415 sf 0.00% Impervious Runoff Depth=0.66"
 Flow Length=530' Tc=13.1 min CN=39/0 Runoff=0.31 cfs 3,966 cf

SubcatchmentP-1R: Prop. Drainage Runoff Area=12,530 sf 100.00% Impervious Runoff Depth=6.44"
 Tc=2.0 min CN=0/98 Runoff=1.94 cfs 6,726 cf

SubcatchmentP1A: Prop. Drainage Runoff Area=25,206 sf 0.00% Impervious Runoff Depth=0.16"
 Flow Length=470' Tc=24.2 min CN=30/0 Runoff=0.01 cfs 336 cf

Pond 8P: Roof Recharge Peak Elev=78.66' Storage=1,366 cf Inflow=1.55 cfs 5,381 cf
 Discarded=0.19 cfs 5,381 cf Primary=0.00 cfs 0 cf Outflow=0.19 cfs 5,381 cf

Pond 12P: Roof Recharge Peak Elev=81.04' Storage=1,792 cf Inflow=1.94 cfs 6,726 cf
 Discarded=0.19 cfs 6,544 cf Primary=0.25 cfs 182 cf Outflow=0.44 cfs 6,726 cf

Pond B1: Basin #1 Peak Elev=79.15' Storage=12,940 cf Inflow=3.50 cfs 18,193 cf
 Outflow=0.20 cfs 18,014 cf

Pond B2: Basin #2 Peak Elev=78.60' Storage=7,724 cf Inflow=2.26 cfs 31,000 cf
 Outflow=0.40 cfs 30,862 cf

Pond B3: Basin #3 Peak Elev=69.83' Storage=20,898 cf Inflow=3.72 cfs 48,517 cf
 Outflow=0.54 cfs 48,289 cf

Pond R-1: Roof Recharge Peak Elev=78.66' Storage=1,707 cf Inflow=1.94 cfs 6,726 cf
 Discarded=0.24 cfs 6,726 cf Primary=0.00 cfs 0 cf Outflow=0.24 cfs 6,726 cf

Link PT2: Proposed Total (AP-2) Inflow=0.54 cfs 48,289 cf
 Primary=0.54 cfs 48,289 cf

Total Runoff Area = 440,051 sf Runoff Volume = 67,484 cf Average Runoff Depth = 1.84"
77.84% Pervious = 342,517 sf 22.16% Impervious = 97,534 sf

Summary for Subcatchment 1S: Prop. Drainage Area-2 (Basin)(Non-Contributory)

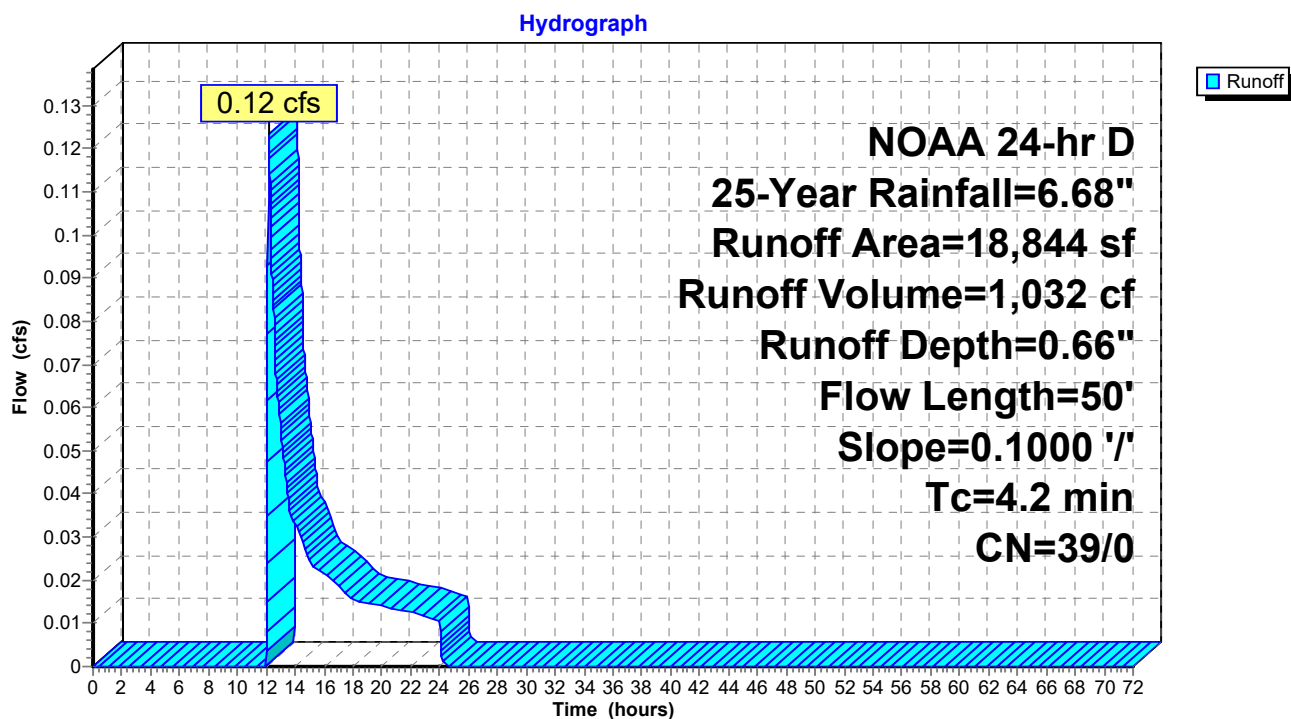
Runoff = 0.12 cfs @ 12.15 hrs, Volume= 1,032 cf, Depth= 0.66"
 Routed to Pond B2 : Basin #2

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 25-Year Rainfall=6.68"

Area (sf)	CN	Description
* 18,844	39	Basin Area-Non-contributory, HSG A
18,844	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.1000	0.20		Sheet Flow, Sheet Grass
Grass: Dense n= 0.240 P2= 3.42"					

Subcatchment 1S: Prop. Drainage Area-2 (Basin)(Non-Contributory)



Summary for Subcatchment 2S: Prop. Drainage Area-1 (Basin Area) (Non-Contributory)

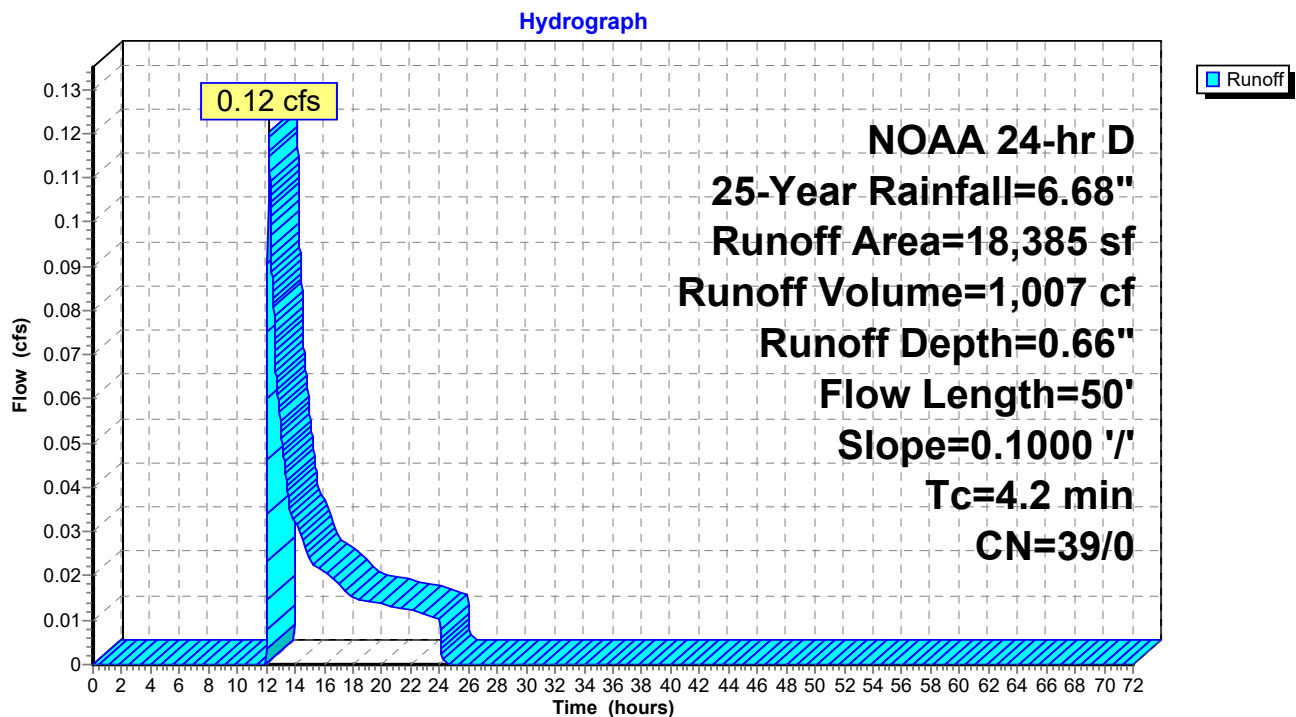
Runoff = 0.12 cfs @ 12.15 hrs, Volume= 1,007 cf, Depth= 0.66"
 Routed to Pond B1 : Basin #1

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 25-Year Rainfall=6.68"

Area (sf)	CN	Description
* 18,385	39	Basin Area-Non-contributory, HSG A
18,385	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.1000	0.20		Sheet Flow, Sheet Grass
Grass: Dense n= 0.240 P2= 3.42"					

Subcatchment 2S: Prop. Drainage Area-1 (Basin Area) (Non-Contributory)



Summary for Subcatchment 3S: Prop. Drainage Area-2 (Impervious)

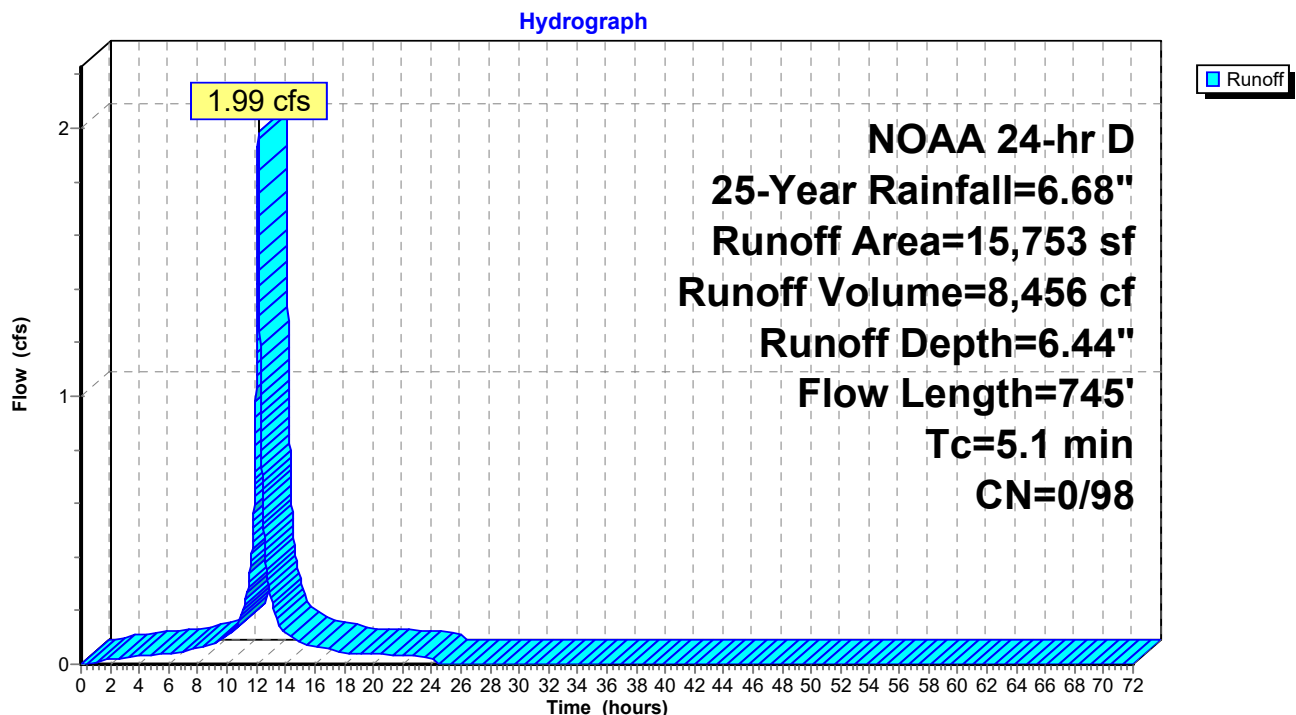
Runoff = 1.99 cfs @ 12.13 hrs, Volume= 8,456 cf, Depth= 6.44"
 Routed to Pond B2 : Basin #2

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 25-Year Rainfall=6.68"

Area (sf)	CN	Description
9,010	98	Paved roads w/curbs & sewers, HSG A
* 2,394	98	Sidewalks, HSG A
* 4,349	98	Driveways, HSG A
15,753	98	Weighted Average
15,753	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	100	0.0083	1.00		Sheet Flow, Sheet Pvmt Smooth surfaces n= 0.011 P2= 3.42"
0.9	95	0.0083	1.85		Shallow Concentrated Flow, Shallow Pvmt Paved Kv= 20.3 fps
2.5	550	0.0050	3.72	4.57	Pipe Channel, Pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
5.1	745	Total			

Subcatchment 3S: Prop. Drainage Area-2 (Impervious)



Summary for Subcatchment 4S: Prop. Drainage Area-2 (Pervious)

Runoff = 0.22 cfs @ 12.66 hrs, Volume= 3,119 cf, Depth= 0.66"
 Routed to Pond B2 : Basin #2

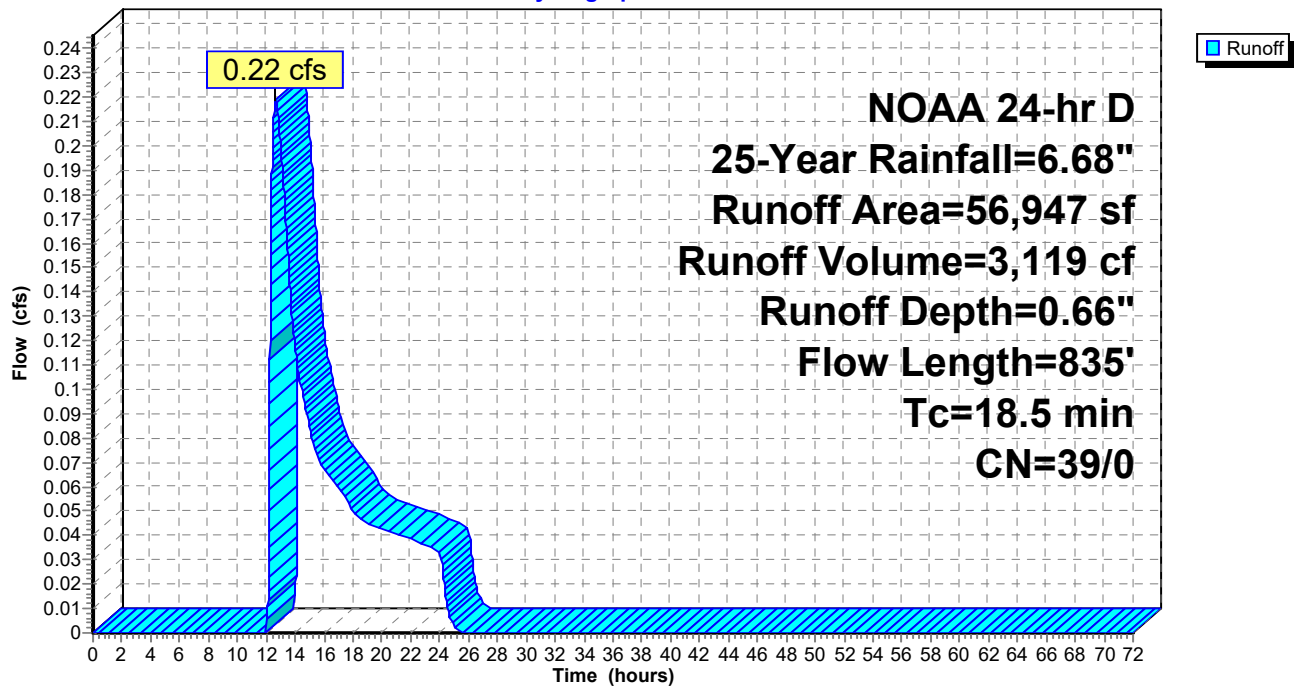
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 25-Year Rainfall=6.68"

Area (sf)	CN	Description
56,947	39	>75% Grass cover, Good, HSG A
56,947	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	90	0.0150	0.11		Sheet Flow, Sheet Grass Grass: Dense n= 0.240 P2= 3.42"
1.8	195	0.0083	1.85		Shallow Concentrated Flow, Shallow Pvmnt Paved Kv= 20.3 fps
2.5	550	0.0050	3.72	4.57	Pipe Channel, Pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
18.5	835	Total			

Subcatchment 4S: Prop. Drainage Area-2 (Pervious)

Hydrograph



Summary for Subcatchment 5S: Prop. Drainage Area-2 (Roof)

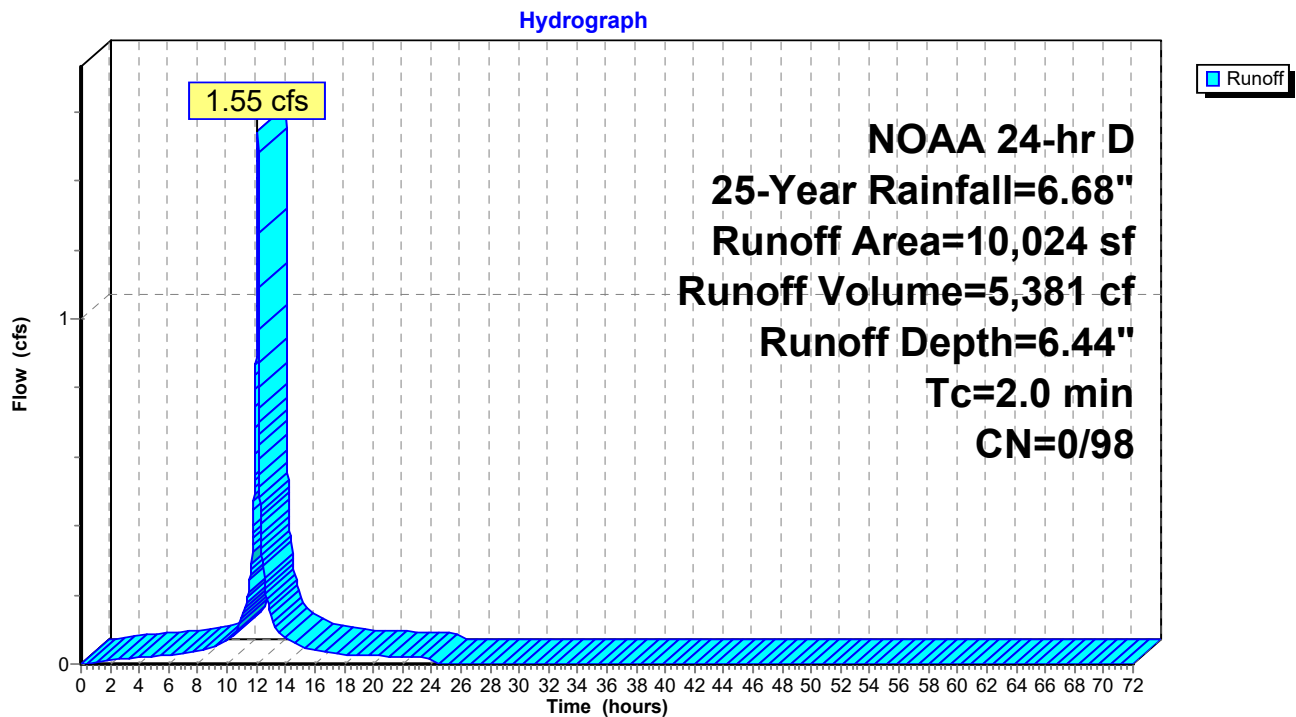
Runoff = 1.55 cfs @ 12.10 hrs, Volume= 5,381 cf, Depth= 6.44"
 Routed to Pond 8P : Roof Recharge

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 25-Year Rainfall=6.68"

Area (sf)	CN	Description
10,024	98	Roofs, HSG A
10,024	98	100.00% Impervious Area

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

Subcatchment 5S: Prop. Drainage Area-2 (Roof)



Summary for Subcatchment 6S: Prop. Drainage Area-2 (Woods) (Undisturbed)

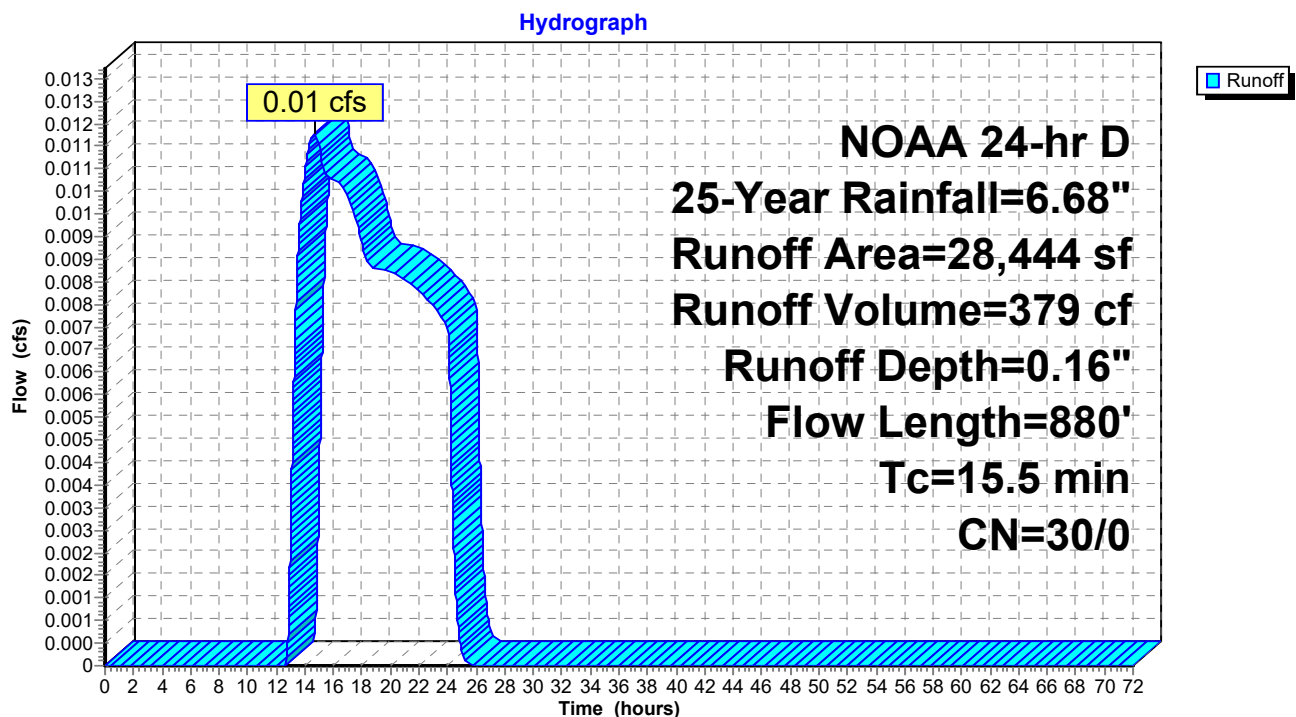
Runoff = 0.01 cfs @ 14.64 hrs, Volume= 379 cf, Depth= 0.16"
 Routed to Pond B2 : Basin #2

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 25-Year Rainfall=6.68"

Area (sf)	CN	Description
28,444	30	Woods, Good, HSG A
28,444	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	50	0.0250	0.08		Sheet Flow, Sheet woods Woods: Light underbrush n= 0.400 P2= 3.42"
0.6	120	0.0400	3.22		Shallow Concentrated Flow, Shallow Grass Unpaved Kv= 16.1 fps
1.7	190	0.0083	1.85		Shallow Concentrated Flow, shallow Pvmt Paved Kv= 20.3 fps
2.3	520	0.0050	3.72	4.57	Pipe Channel, pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
15.5	880	Total			

Subcatchment 6S: Prop. Drainage Area-2 (Woods) (Undisturbed)



Summary for Subcatchment 7S: Prop. Drainage Area-3 (Basin Area) (Non-Contributory)

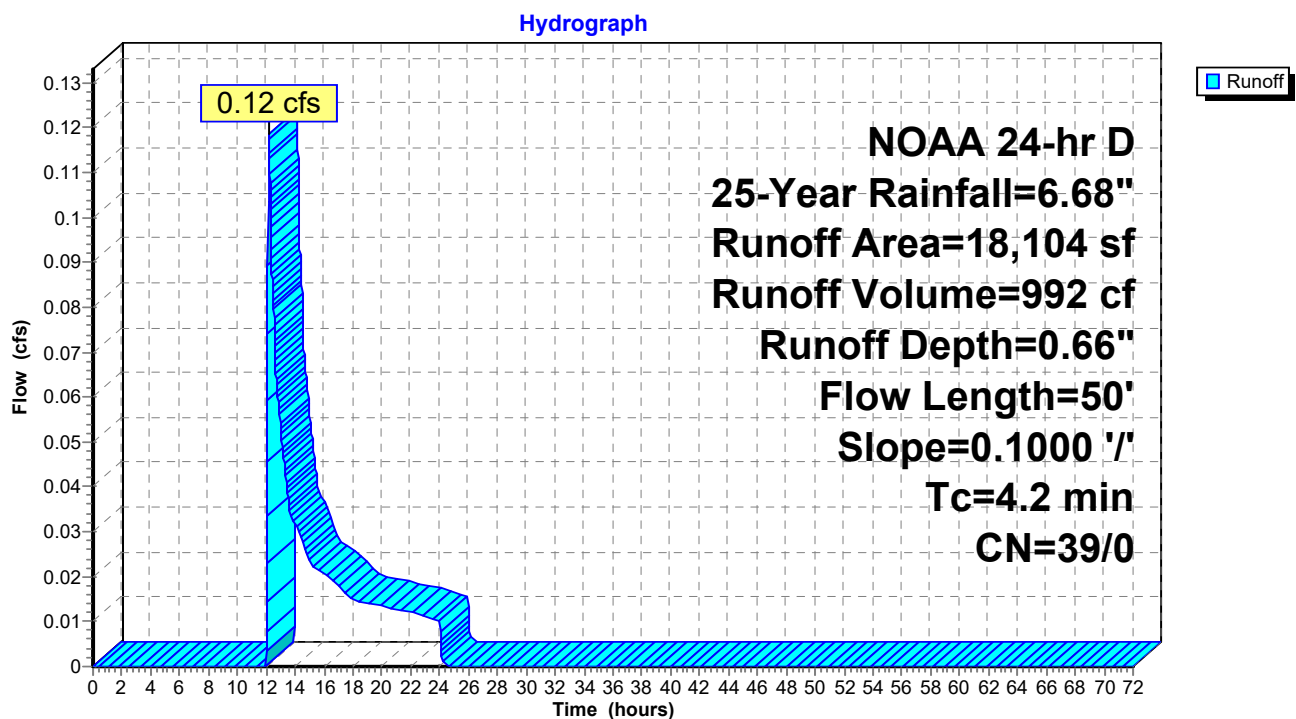
Runoff = 0.12 cfs @ 12.15 hrs, Volume= 992 cf, Depth= 0.66"
 Routed to Pond B3 : Basin #3

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 25-Year Rainfall=6.68"

Area (sf)	CN	Description
* 18,104	39	Basin Area-Non-contributory, HSG A
18,104	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.1000	0.20		Sheet Flow, Sheet Grass
Grass: Dense n= 0.240 P2= 3.42"					

Subcatchment 7S: Prop. Drainage Area-3 (Basin Area) (Non-Contributory)



Summary for Subcatchment 8S: Prop. Drainage Area-3 (Impervious)

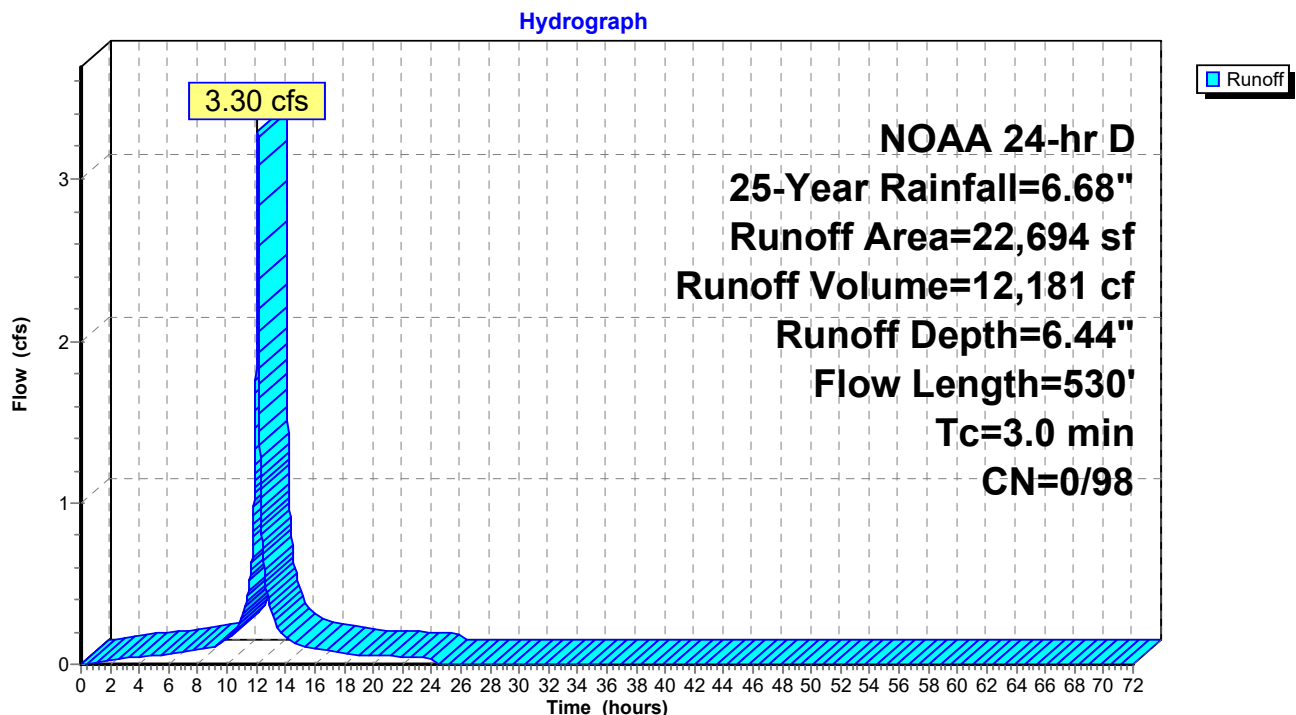
Runoff = 3.30 cfs @ 12.11 hrs, Volume= 12,181 cf, Depth= 6.44"
 Routed to Pond B3 : Basin #3

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 25-Year Rainfall=6.68"

Area (sf)	CN	Description
13,555	98	Paved roads w/curbs & sewers, HSG A
* 3,626	98	Sidewalks, HSG A
* 5,513	98	Driveways, HSG A
22,694	98	Weighted Average
22,694	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	100	0.0292	1.65		Sheet Flow, Sheet Pvmnt Smooth surfaces n= 0.011 P2= 3.42"
1.1	233	0.0292	3.47		Shallow Concentrated Flow, Shallow Pvmnt Paved Kv= 20.3 fps
0.9	197	0.0040	3.76	6.64	Pipe Channel, Pipe 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
3.0	530	Total			

Subcatchment 8S: Prop. Drainage Area-3 (Impervious)



Summary for Subcatchment 9S: Prop. Drainage Area-3 (Pervious)

Runoff = 0.31 cfs @ 12.44 hrs, Volume= 3,848 cf, Depth= 0.66"
 Routed to Pond B3 : Basin #3

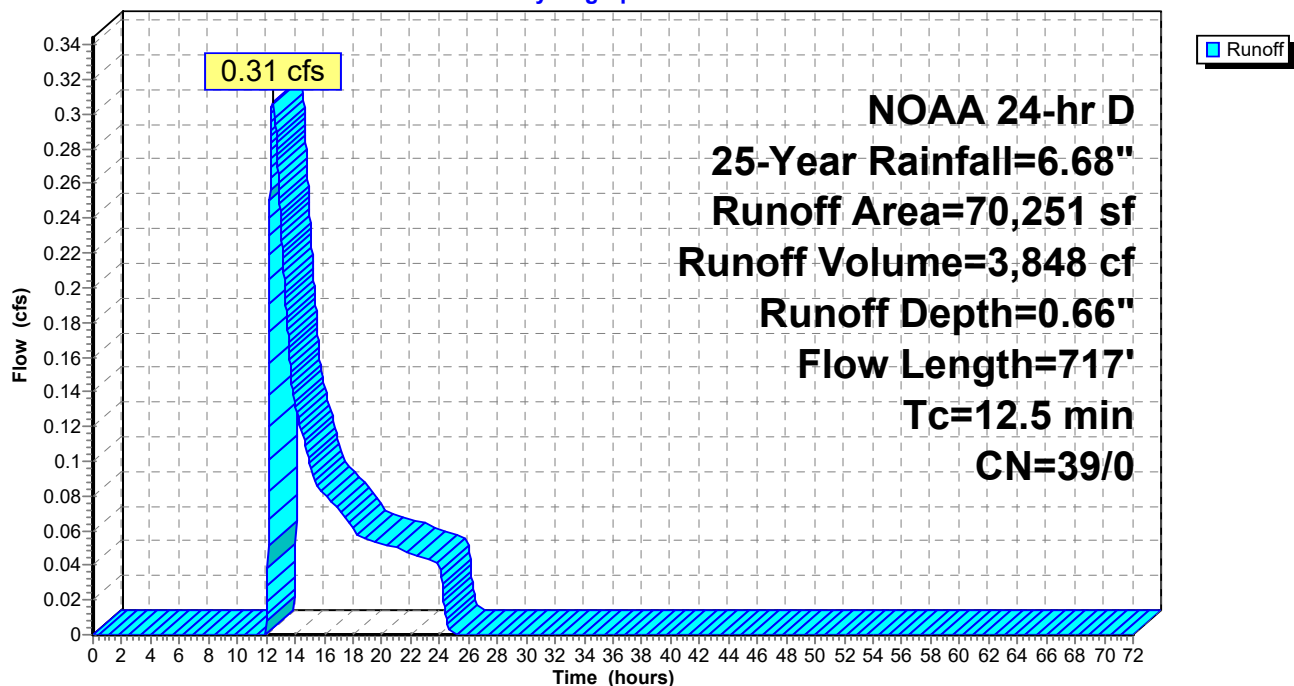
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 25-Year Rainfall=6.68"

Area (sf)	CN	Description
70,251	39	>75% Grass cover, Good, HSG A
70,251	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	100	0.0500	0.17		Sheet Flow, Sheet Grass Grass: Dense n= 0.240 P2= 3.42"
0.1	20	0.0500	3.60		Shallow Concentrated Flow, Shallow Grass Unpaved Kv= 16.1 fps
1.9	400	0.0292	3.47		Shallow Concentrated Flow, Shallow Pvmnt Paved Kv= 20.3 fps
0.9	197	0.0040	3.76	6.64	Pipe Channel, Pipe 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
12.5	717	Total			

Subcatchment 9S: Prop. Drainage Area-3 (Pervious)

Hydrograph



Summary for Subcatchment 10S: Prop. Drainage Area-3 (Roof)

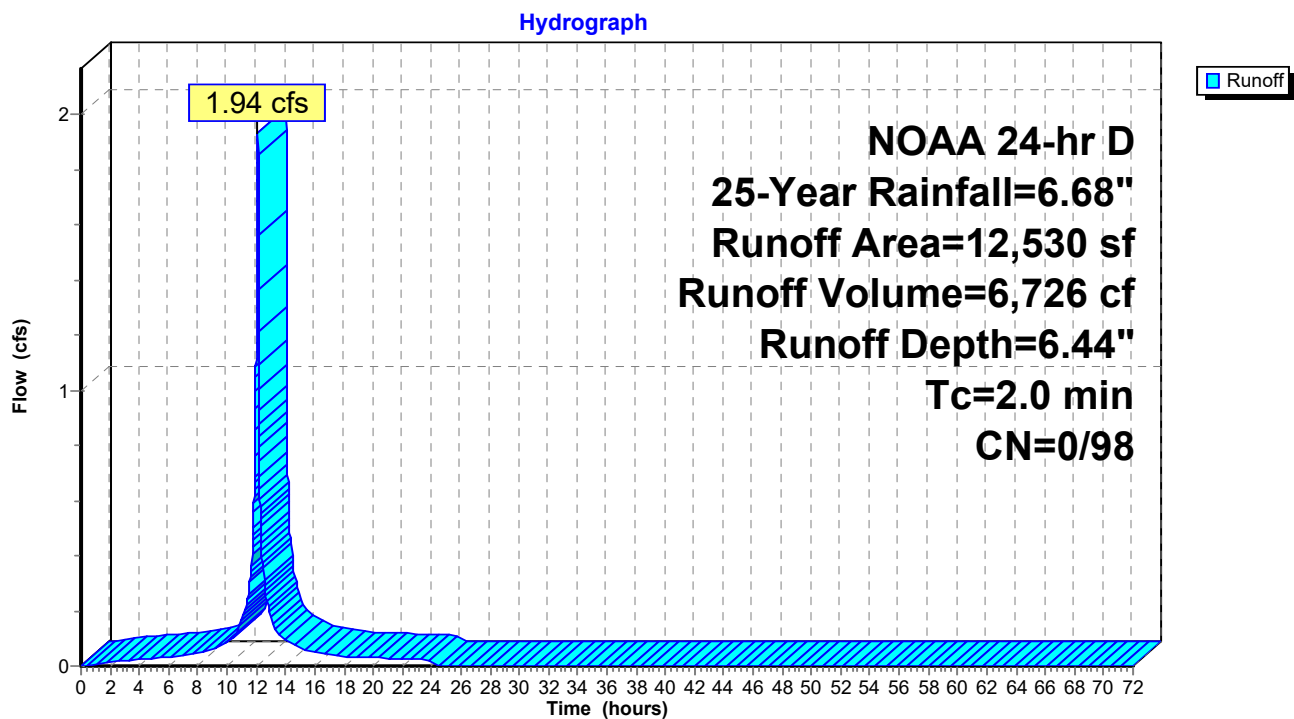
Runoff = 1.94 cfs @ 12.10 hrs, Volume= 6,726 cf, Depth= 6.44"
 Routed to Pond 12P : Roof Recharge

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 25-Year Rainfall=6.68"

Area (sf)	CN	Description
12,530	98	Roofs, HSG A
12,530	98	100.00% Impervious Area

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

Subcatchment 10S: Prop. Drainage Area-3 (Roof)



Summary for Subcatchment 11S: Prop. Drainage Area-3-A (Woods) (Undisturbed)

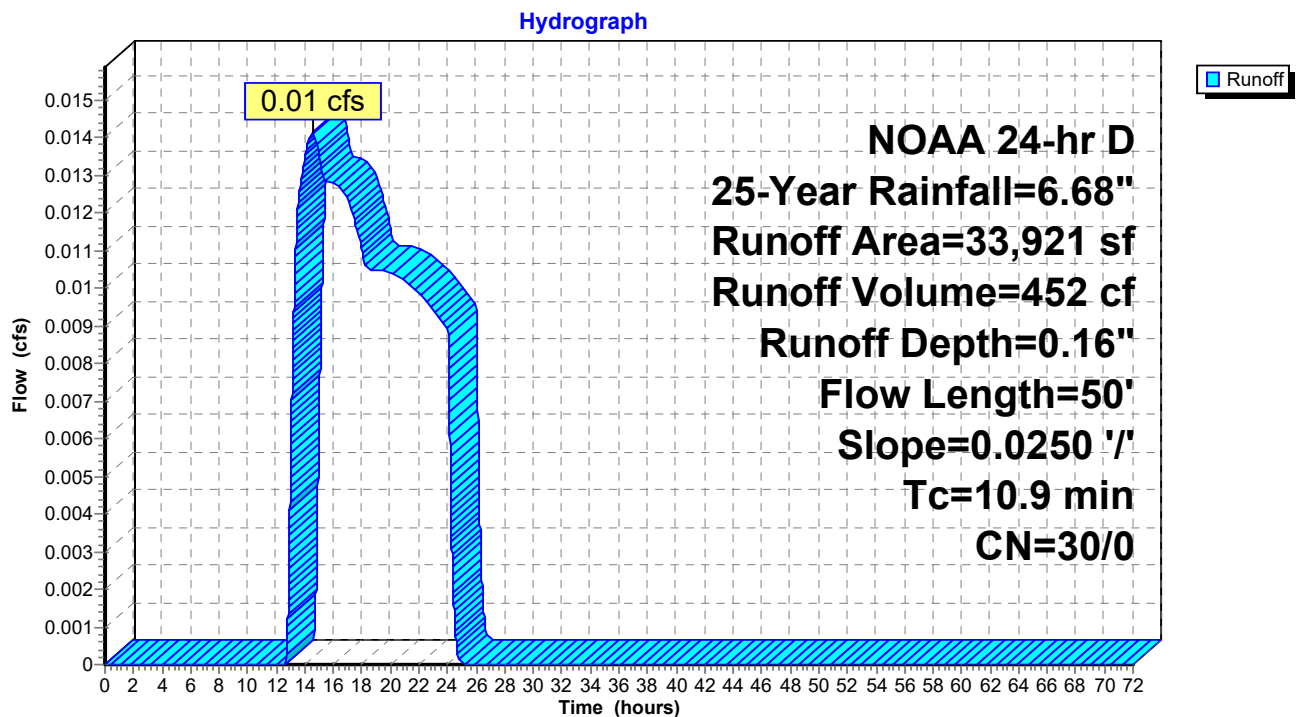
Runoff = 0.01 cfs @ 14.53 hrs, Volume= 452 cf, Depth= 0.16"
 Routed to Pond B3 : Basin #3

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 25-Year Rainfall=6.68"

Area (sf)	CN	Description
33,921	30	Woods, Good, HSG A
33,921	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	50	0.0250	0.08		Sheet Flow, Sheet woods Woods: Light underbrush n= 0.400 P2= 3.42"

Subcatchment 11S: Prop. Drainage Area-3-A (Woods) (Undisturbed)



Summary for Subcatchment P-1I: Prop. Drainage Area-1 (Impervious)

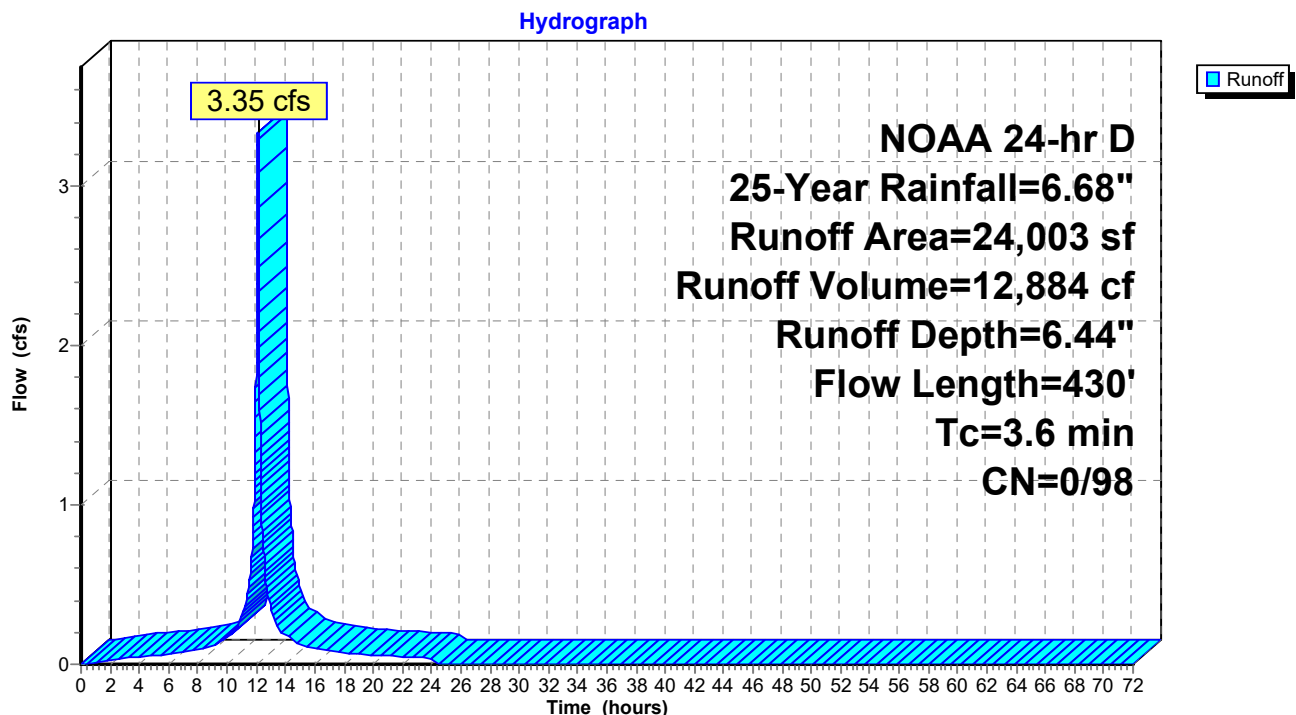
Runoff = 3.35 cfs @ 12.12 hrs, Volume= 12,884 cf, Depth= 6.44"
 Routed to Pond B1 : Basin #1

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 25-Year Rainfall=6.68"

Area (sf)	CN	Description
15,941	98	Paved roads w/curbs & sewers, HSG A
* 2,588	98	Sidewalks, HSG A
* 5,474	98	Driveways, HSG A
24,003	98	Weighted Average
24,003	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	100	0.0083	1.00		Sheet Flow, Sheet Pvmt Smooth surfaces n= 0.011 P2= 3.42"
0.7	60	0.0050	1.44		Shallow Concentrated Flow, Shallow Pvmt Paved Kv= 20.3 fps
1.2	270	0.0050	3.72	4.57	Pipe Channel, Pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
3.6	430	Total			

Subcatchment P-1I: Prop. Drainage Area-1 (Impervious)



Summary for Subcatchment P-1P: Prop. Drainage Area-1 (Pervious)

Runoff = 0.31 cfs @ 12.54 hrs, Volume= 3,966 cf, Depth= 0.66"
 Routed to Pond B1 : Basin #1

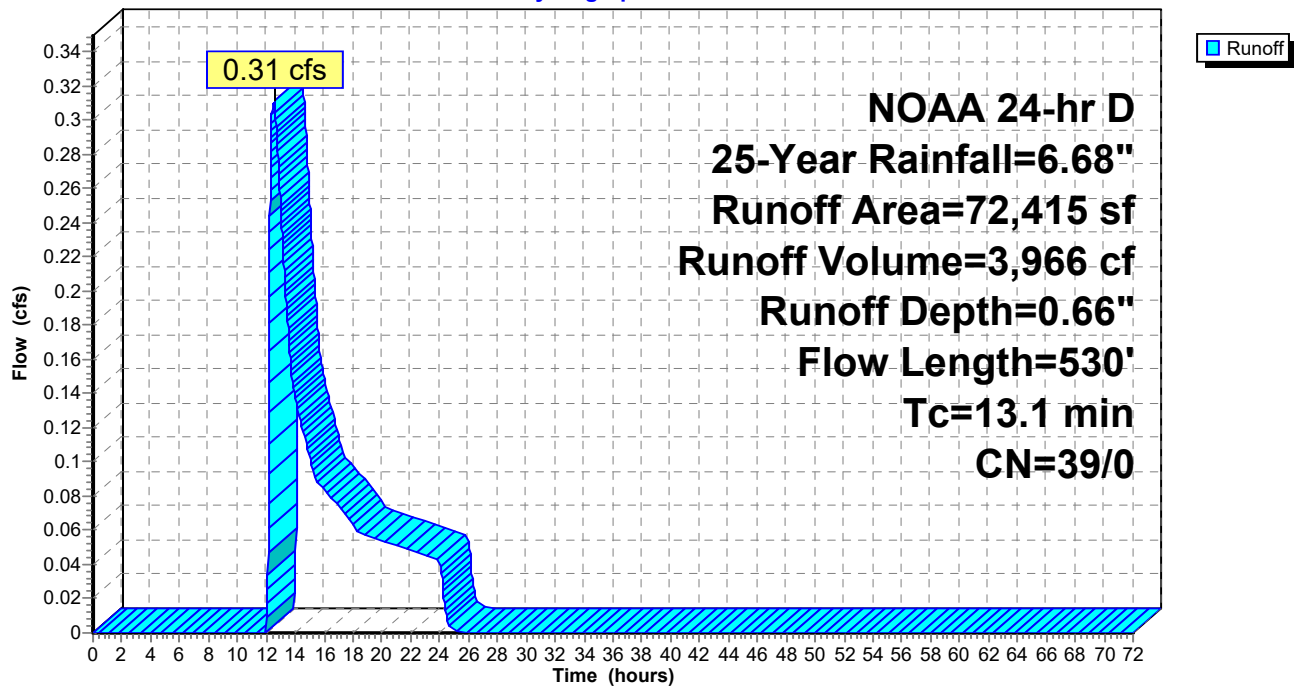
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 25-Year Rainfall=6.68"

Area (sf)	CN	Description
72,415	39	>75% Grass cover, Good, HSG A
72,415	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0400	0.16		Sheet Flow, Sheet Grass Grass: Dense n= 0.240 P2= 3.42"
1.4	160	0.0083	1.85		Shallow Concentrated Flow, Shallow Pvmnt Paved Kv= 20.3 fps
1.2	270	0.0050	3.72	4.57	Pipe Channel, Pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
13.1	530	Total			

Subcatchment P-1P: Prop. Drainage Area-1 (Pervious)

Hydrograph



Summary for Subcatchment P-1R: Prop. Drainage Area-1 (Roof)

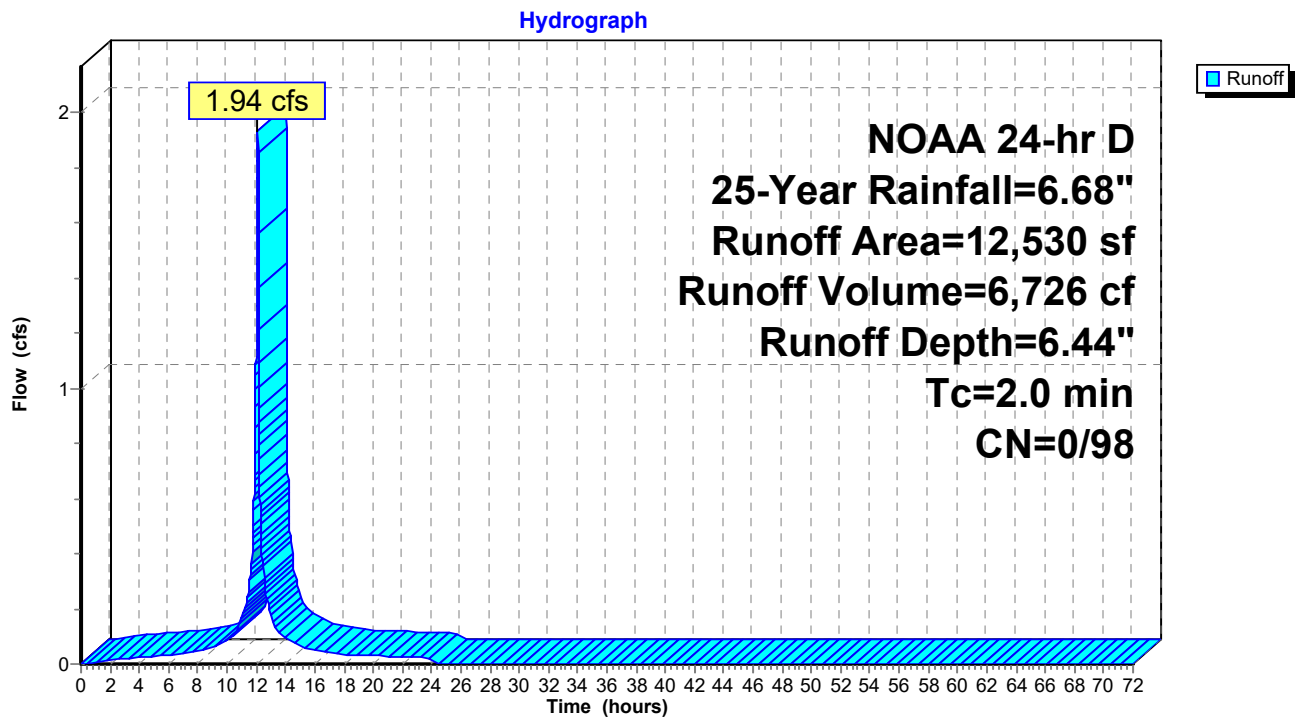
Runoff = 1.94 cfs @ 12.10 hrs, Volume= 6,726 cf, Depth= 6.44"
 Routed to Pond R-1 : Roof Recharge

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 25-Year Rainfall=6.68"

Area (sf)	CN	Description
12,530	98	Roofs, HSG A
12,530	98	100.00% Impervious Area

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

Subcatchment P-1R: Prop. Drainage Area-1 (Roof)



Summary for Subcatchment P1A: Prop. Drainage Area-1-A (Woods) (Undisturbed)

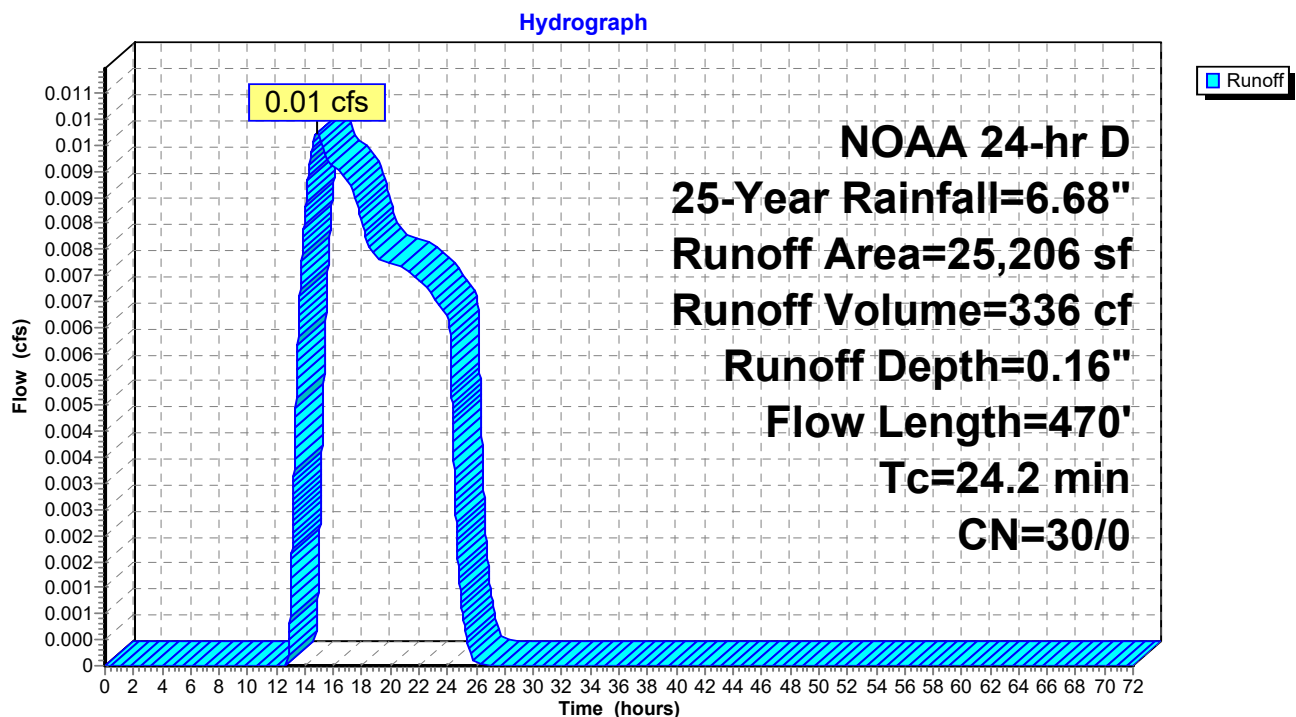
Runoff = 0.01 cfs @ 14.89 hrs, Volume= 336 cf, Depth= 0.16"
 Routed to Pond B1 : Basin #1

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 25-Year Rainfall=6.68"

Area (sf)	CN	Description
25,206	30	Woods, Good, HSG A
25,206	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2	100	0.0170	0.08		Sheet Flow, Sheet woods Woods: Light underbrush n= 0.400 P2= 3.42"
0.4	60	0.0200	2.28		Shallow Concentrated Flow, Shallow Grass Unpaved Kv= 16.1 fps
0.4	40	0.0062	1.60		Shallow Concentrated Flow, shallow Pvmt Paved Kv= 20.3 fps
1.2	270	0.0050	3.72	4.57	Pipe Channel, pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
24.2	470	Total			

Subcatchment P1A: Prop. Drainage Area-1-A (Woods) (Undisturbed)



Summary for Pond 8P: Roof Recharge

Inflow Area = 10,024 sf, 100.00% Impervious, Inflow Depth = 6.44" for 25-Year event
 Inflow = 1.55 cfs @ 12.10 hrs, Volume= 5,381 cf
 Outflow = 0.19 cfs @ 11.59 hrs, Volume= 5,381 cf, Atten= 88%, Lag= 0.0 min
 Discarded = 0.19 cfs @ 11.59 hrs, Volume= 5,381 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to Pond B2 : Basin #2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 78.66' @ 12.72 hrs Surf.Area= 822 sf Storage= 1,366 cf

Plug-Flow detention time= 39.9 min calculated for 5,380 cf (100% of inflow)
 Center-of-Mass det. time= 39.9 min (782.0 - 742.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	76.00'	219 cf	6.25'W x 32.23'L x 3.75'H Field A 755 cf Overall - 209 cf Embedded = 546 cf x 40.0% Voids
#2A	76.50'	209 cf	ADS_StormTech SC-800 +Cap x 4 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap Cap Storage= 3.4 cf x 2 x 1 rows = 6.8 cf
#3	76.00'	24 cf	2.00'W x 2.00'L x 6.00'H Prismatic
			452 cf x 4.00 = 1,807 cf Total Available Storage

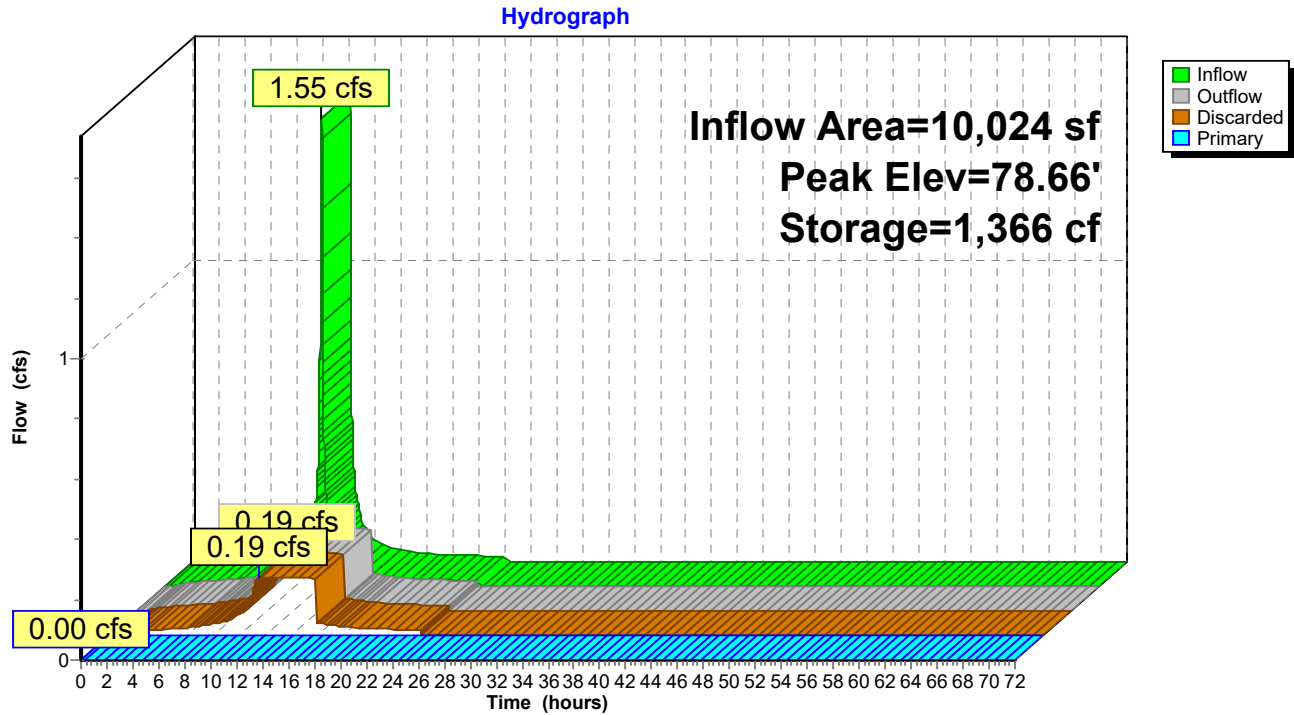
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	81.00'	24.0" x 24.0" Horiz. Grate 24" C= 0.600 Limited to weir flow at low heads
#2	Discarded	76.00'	10.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.19 cfs @ 11.59 hrs HW=76.07' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=76.00' TW=77.50' (Dynamic Tailwater)
 ↑ **1=Grate 24"** (Controls 0.00 cfs)

Pond 8P: Roof Recharge



Summary for Pond 12P: Roof Recharge

Inflow Area = 12,530 sf, 100.00% Impervious, Inflow Depth = 6.44" for 25-Year event
 Inflow = 1.94 cfs @ 12.10 hrs, Volume= 6,726 cf
 Outflow = 0.44 cfs @ 12.37 hrs, Volume= 6,726 cf, Atten= 77%, Lag= 16.0 min
 Discarded = 0.19 cfs @ 11.38 hrs, Volume= 6,544 cf
 Primary = 0.25 cfs @ 12.37 hrs, Volume= 182 cf
 Routed to Pond B3 : Basin #3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 81.04' @ 12.37 hrs Surf.Area= 822 sf Storage= 1,792 cf

Plug-Flow detention time= 55.2 min calculated for 6,725 cf (100% of inflow)
 Center-of-Mass det. time= 55.2 min (797.2 - 742.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	76.00'	219 cf	6.25'W x 32.23'L x 3.75'H Field A 755 cf Overall - 209 cf Embedded = 546 cf x 40.0% Voids
#2A	76.50'	209 cf	ADS_StormTech SC-800 +Cap x 4 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap Cap Storage= 3.4 cf x 2 x 1 rows = 6.8 cf
#3	76.00'	24 cf	2.00'W x 2.00'L x 6.00'H Prismatic
			452 cf x 4.00 = 1,807 cf Total Available Storage

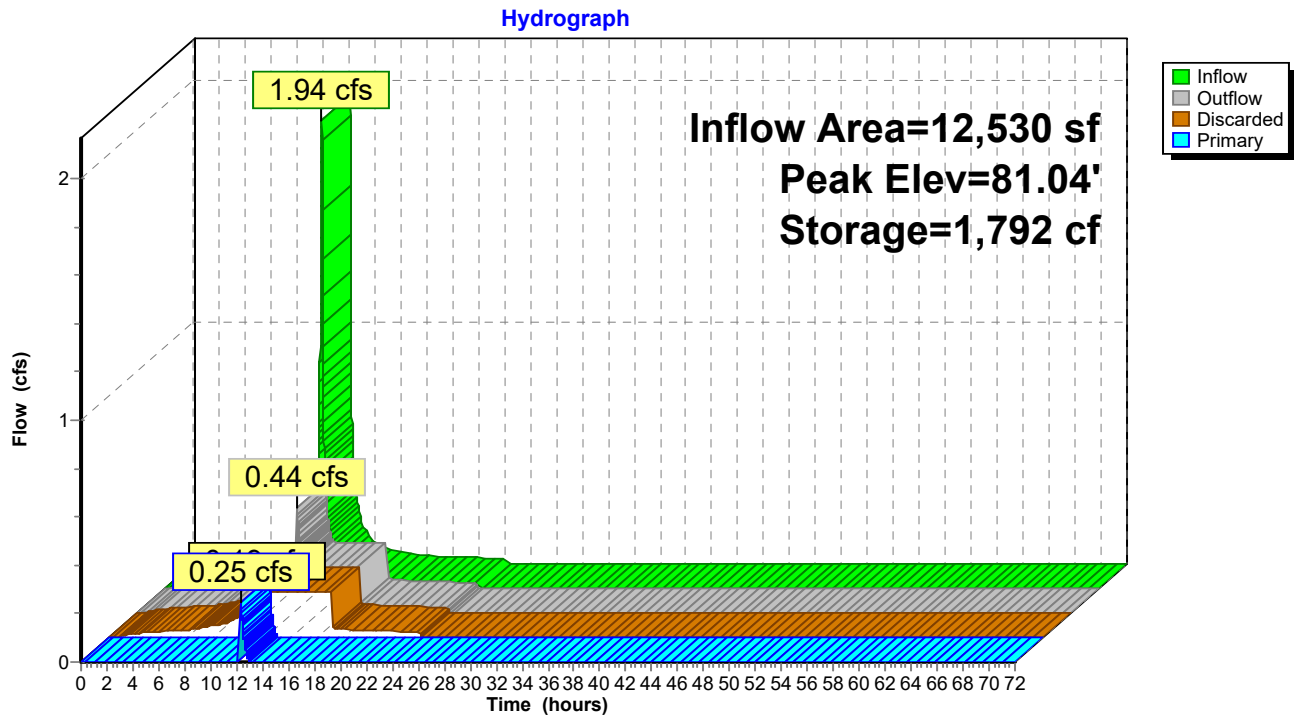
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	81.00'	24.0" x 24.0" Horiz. Grate 24" C= 0.600 Limited to weir flow at low heads
#2	Discarded	76.00'	10.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.19 cfs @ 11.38 hrs HW=76.06' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=0.24 cfs @ 12.37 hrs HW=81.04' TW=69.18' (Dynamic Tailwater)
 ↑ **1=Grate 24"** (Weir Controls 0.24 cfs @ 0.69 fps)

Pond 12P: Roof Recharge



Summary for Pond B1: Basin #1

Inflow Area = 152,539 sf, 23.95% Impervious, Inflow Depth = 1.43" for 25-Year event
 Inflow = 3.50 cfs @ 12.12 hrs, Volume= 18,193 cf
 Outflow = 0.20 cfs @ 21.65 hrs, Volume= 18,014 cf, Atten= 94%, Lag= 572.2 min
 Primary = 0.20 cfs @ 21.65 hrs, Volume= 18,014 cf
 Routed to Pond B2 : Basin #2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Starting Elev= 77.50' Surf.Area= 4,963 sf Storage= 2,256 cf
 Peak Elev= 79.15' @ 17.01 hrs Surf.Area= 8,061 sf Storage= 12,940 cf (10,684 cf above start)

Plug-Flow detention time= 867.2 min calculated for 15,756 cf (87% of inflow)
 Center-of-Mass det. time= 677.8 min (1,490.8 - 813.0)

Volume	Invert	Avail.Storage	Storage Description
#1	77.00'	20,548 cf	Basin 1 (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
77.00	4,060	0	0
78.00	5,865	4,963	4,963
79.00	7,766	6,816	11,778
80.00	9,773	8,770	20,548

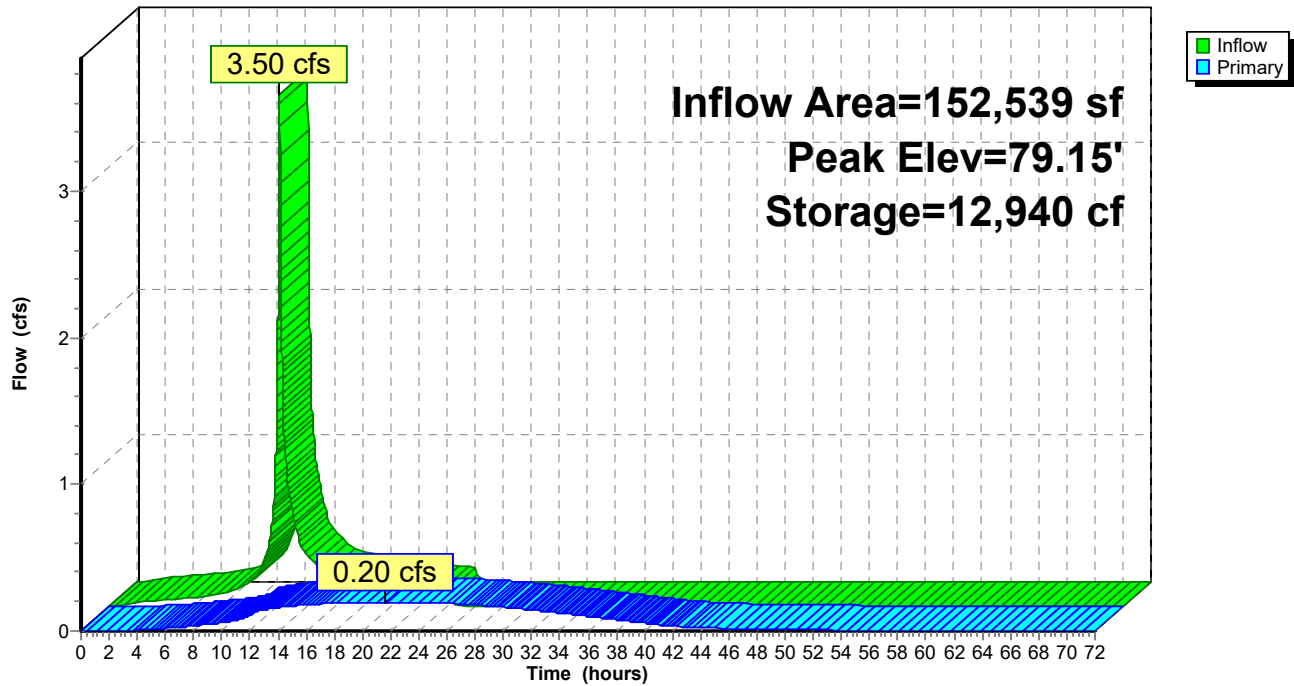
Device	Routing	Invert	Outlet Devices
#1	Primary	77.34'	15.0" Round Culvert 15" L= 69.0' Ke= 0.500 Inlet / Outlet Invert= 77.34' / 77.00' S= 0.0049 ' S= 0.0049 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.23 sf
#2	Device 1	77.50'	3.0" Vert. Orifice 3" C= 0.600 Limited to weir flow at low heads
#3	Device 1	80.00'	42.0" x 42.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	80.20'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.20 cfs @ 21.65 hrs HW=79.04' TW=78.35' (Dynamic Tailwater)

- 1=Culvert 15" (Passes 0.20 cfs of 4.65 cfs potential flow)
- 2=Orifice 3" (Orifice Controls 0.20 cfs @ 4.01 fps)
- 3=Grate (Controls 0.00 cfs)
- 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond B1: Basin #1

Hydrograph



Summary for Pond B2: Basin #2

Inflow Area = 282,551 sf, 22.05% Impervious, Inflow Depth > 1.32" for 25-Year event
 Inflow = 2.26 cfs @ 12.13 hrs, Volume= 31,000 cf
 Outflow = 0.40 cfs @ 14.53 hrs, Volume= 30,862 cf, Atten= 82%, Lag= 143.6 min
 Primary = 0.40 cfs @ 14.53 hrs, Volume= 30,862 cf
 Routed to Pond B3 : Basin #3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Starting Elev= 77.50' Surf.Area= 4,362 sf Storage= 1,984 cf
 Peak Elev= 78.60' @ 14.53 hrs Surf.Area= 6,142 sf Storage= 7,724 cf (5,740 cf above start)

Plug-Flow detention time= 347.4 min calculated for 28,875 cf (93% of inflow)
 Center-of-Mass det. time= 191.5 min (1,405.6 - 1,214.1)

Volume	Invert	Avail.Storage	Storage Description
#1	77.00'	18,035 cf	Basin 2 (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
77.00	3,573	0	0
78.00	5,151	4,362	4,362
79.00	6,815	5,983	10,345
80.00	8,565	7,690	18,035

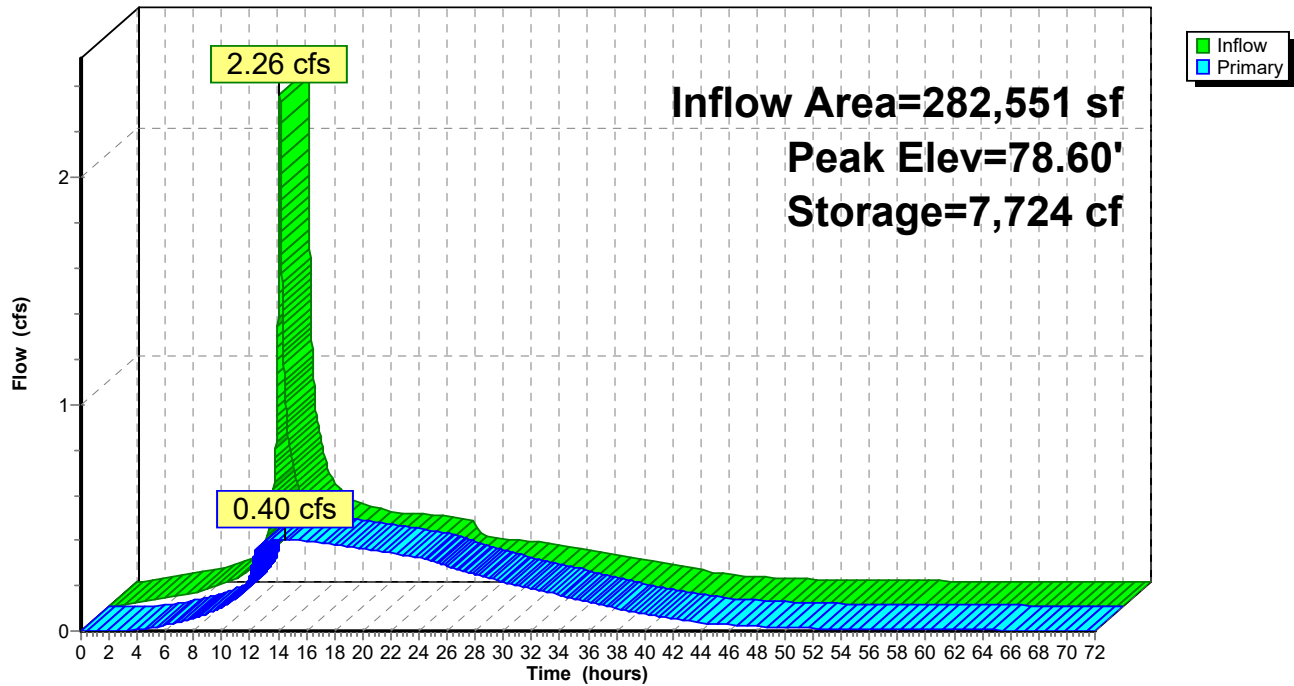
Device	Routing	Invert	Outlet Devices
#1	Primary	77.00'	18.0" Round Culvert 15" L= 69.0' Ke= 0.500 Inlet / Outlet Invert= 77.00' / 66.00' S= 0.1594 ' S= 0.1594 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf
#2	Device 1	77.50'	4.0" Vert. Orifice 4" C= 0.600 Limited to weir flow at low heads
#3	Device 1	80.00'	42.0" x 42.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	80.30'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.40 cfs @ 14.53 hrs HW=78.60' TW=69.71' (Dynamic Tailwater)

- 1=Culvert 15" (Passes 0.40 cfs of 7.82 cfs potential flow)
- 2=Orifice 4" (Orifice Controls 0.40 cfs @ 4.64 fps)
- 3=Grate (Controls 0.00 cfs)
- 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond B2: Basin #2

Hydrograph



Summary for Pond B3: Basin #3

Inflow Area = 440,051 sf, 22.16% Impervious, Inflow Depth > 1.32" for 25-Year event
 Inflow = 3.72 cfs @ 12.11 hrs, Volume= 48,517 cf
 Outflow = 0.54 cfs @ 17.76 hrs, Volume= 48,289 cf, Atten= 85%, Lag= 338.8 min
 Primary = 0.54 cfs @ 17.76 hrs, Volume= 48,289 cf
 Routed to Link PT2 : Proposed Total (AP-2)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Starting Elev= 68.00' Surf.Area= 5,501 sf Storage= 9,363 cf
 Peak Elev= 69.83' @ 17.76 hrs Surf.Area= 7,149 sf Storage= 20,898 cf (11,535 cf above start)

Plug-Flow detention time= 684.9 min calculated for 38,921 cf (80% of inflow)
 Center-of-Mass det. time= 286.4 min (1,477.0 - 1,190.5)

Volume	Invert	Avail.Storage	Storage Description
#1	66.00'	34,230 cf	Basin 3 (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
66.00	3,879	0	0
67.00	4,673	4,276	4,276
68.00	5,501	5,087	9,363
69.00	6,379	5,940	15,303
70.00	7,310	6,845	22,148
71.00	8,291	7,801	29,948
71.50	8,836	4,282	34,230

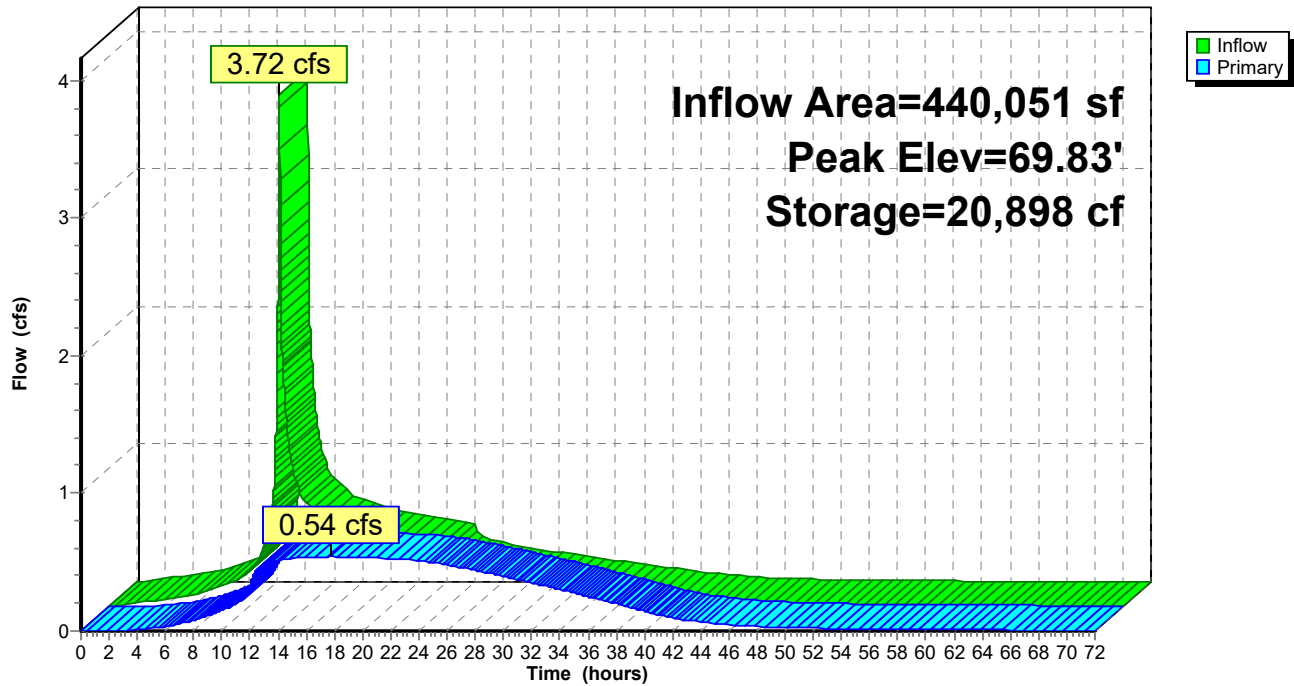
Device	Routing	Invert	Outlet Devices
#1	Primary	67.49'	15.0" Round Culvert 15" L= 360.0' Ke= 0.500 Inlet / Outlet Invert= 67.49' / 66.00' S= 0.0041 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.23 sf
#2	Device 1	68.00'	4.0" Vert. Orifice 4" C= 0.600 Limited to weir flow at low heads
#3	Device 1	70.50'	42.0" x 42.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	71.50'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.54 cfs @ 17.76 hrs HW=69.83' TW=0.00' (Dynamic Tailwater)

- 1=Culvert 15" (Passes 0.54 cfs of 5.03 cfs potential flow)
- 2=Orifice 4" (Orifice Controls 0.54 cfs @ 6.20 fps)
- 3=Grate (Controls 0.00 cfs)
- 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond B3: Basin #3

Hydrograph



Summary for Pond R-1: Roof Recharge

Inflow Area = 12,530 sf, 100.00% Impervious, Inflow Depth = 6.44" for 25-Year event
 Inflow = 1.94 cfs @ 12.10 hrs, Volume= 6,726 cf
 Outflow = 0.24 cfs @ 11.59 hrs, Volume= 6,726 cf, Atten= 88%, Lag= 0.0 min
 Discarded = 0.24 cfs @ 11.59 hrs, Volume= 6,726 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to Pond B1 : Basin #1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 78.66' @ 12.72 hrs Surf.Area= 1,027 sf Storage= 1,707 cf

Plug-Flow detention time= 39.9 min calculated for 6,725 cf (100% of inflow)
 Center-of-Mass det. time= 39.9 min (782.0 - 742.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	76.00'	219 cf	6.25'W x 32.23'L x 3.75'H Field A 755 cf Overall - 209 cf Embedded = 546 cf x 40.0% Voids
#2A	76.50'	209 cf	ADS_StormTech SC-800 +Cap x 4 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap Cap Storage= 3.4 cf x 2 x 1 rows = 6.8 cf
#3	76.00'	24 cf	2.00'W x 2.00'L x 6.00'H Prismatic
		452 cf	x 5.00 = 2,259 cf Total Available Storage

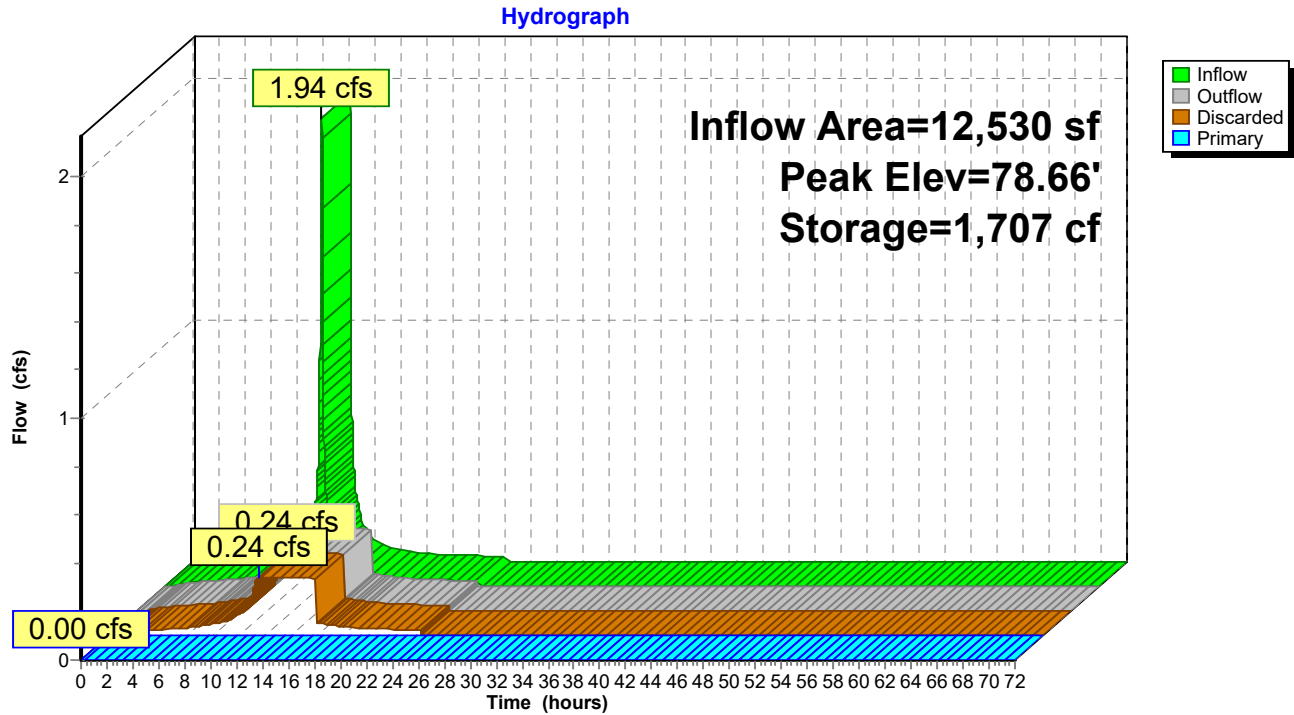
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	81.00'	24.0" x 24.0" Horiz. Grate 24" C= 0.600 Limited to weir flow at low heads
#2	Discarded	76.00'	10.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.24 cfs @ 11.59 hrs HW=76.07' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.24 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=76.00' TW=77.50' (Dynamic Tailwater)
 ↑ **1=Grate 24"** (Controls 0.00 cfs)

Pond R-1: Roof Recharge

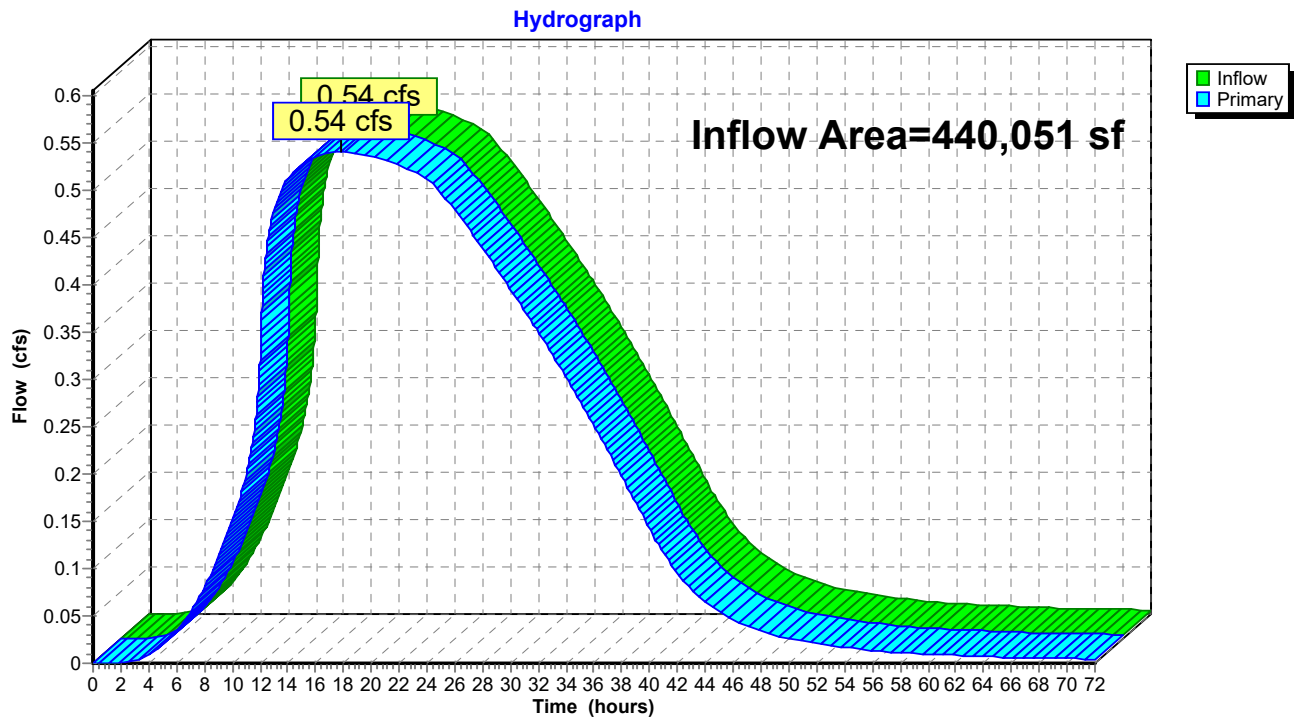


Summary for Link PT2: Proposed Total (AP-2)

Inflow Area = 440,051 sf, 22.16% Impervious, Inflow Depth > 1.32" for 25-Year event
 Inflow = 0.54 cfs @ 17.76 hrs, Volume= 48,289 cf
 Primary = 0.54 cfs @ 17.76 hrs, Volume= 48,289 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link PT2: Proposed Total (AP-2)



APPENDIX 7

Morgan Engineering, LLC

Engineers & Surveyors

130 Central Ave, P.O.box 5232, Island Heights, N.J. 08754

Phone: (732) 270-9690 Fax: (732) 270-9691

Subdivision Plans

PREFORMED SCOUR HOLE

Job No.: **Arya25-014** **SCD Application #:**

Location: Hemingway est.

N/A

Date:

2-May-2026

Rev.:

$La = 3 \times Do$

Flow (cfs): **2.11**

HW / FES #: **FES No. 1 (100 yr. future)**

$W = 2 \times Wo$

$Y = 1/2 Do$

$q = Q_{25}/Do = 1.69$

Pipe Height (Do): **1.25** feet

$Y = \text{Depth of scour hole below culvert invert}$

Pipe Width (Wo): **1.25** feet

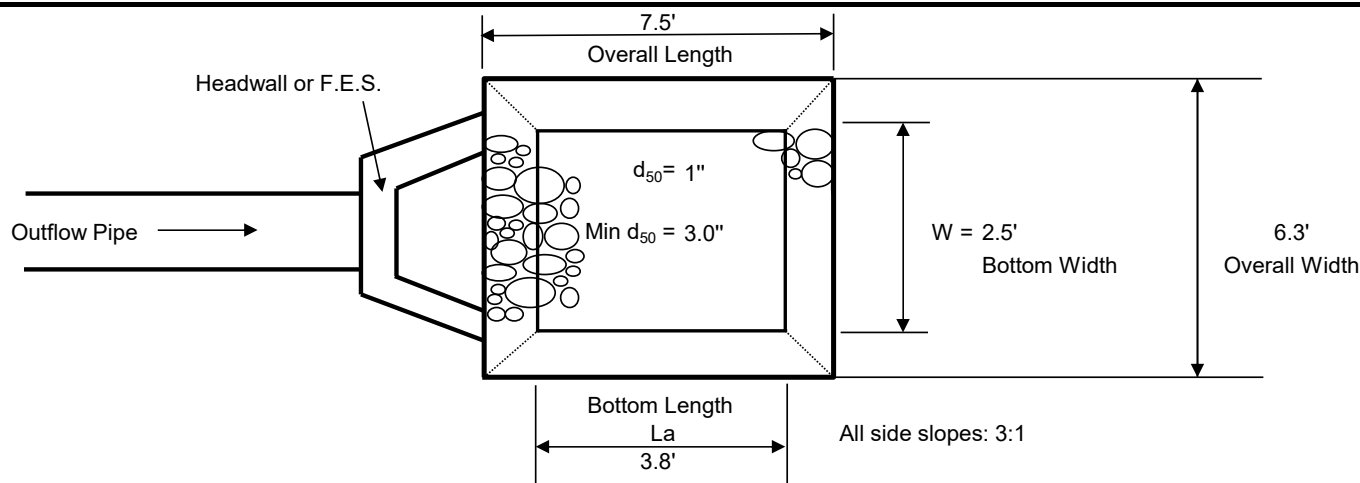
$d_{50} = (0.0125 / TW) \times (q)^{1.33}$

Thickness = $3 d_{50}$ Min. = 9"

Thickness = $2 d_{50}$ Min. = 6"

Tailwater (TW): **0.27** feet

(if Filter Fabric is installed)



Remarks:

* Use $d_{50} = 6"$ minimum riprap

Morgan Engineering, LLC

Engineers & Surveyors

130 Central Ave, P.O.box 5232, Island Heights, N.J. 08754

Phone: (732) 270-9690 Fax: (732) 270-9691

Subdivision Plans

PREFORMED SCOUR HOLE

Job No.: **Arya25-014** **SCD Application #:**

Location: Hemingway est.

N/A

Date:

2-May-2026

Rev.:

$La = 3 \times Do$

Flow (cfs): **1.30**

HW / FES #: **FES No. 2 (100 yr. future)**

$W = 2 \times Wo$

$Y = 1/2 Do$

$q = Q_{25}/Do = 1.04$

Pipe Height (Do): **1.25** feet

Y = Depth of scour hole below culvert invert

Pipe Width (Wo): **1.25** feet

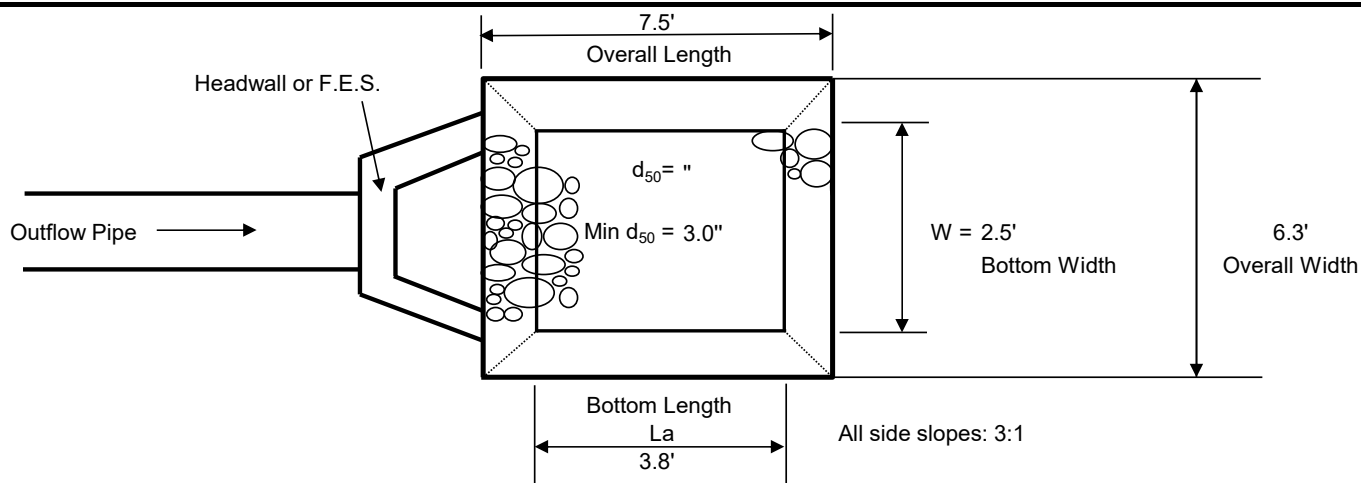
$d_{50} = (0.0125 / TW) \times (q)^{1.33}$

Thickness = $3 d_{50}$ Min. = 9"

Thickness = $2 d_{50}$ Min. = 6"

Tailwater (TW): **0.44** feet

(if Filter Fabric is installed)



Remarks:

* Use d50 = 6" minimum riprap

Morgan Engineering, LLC

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Phone: (732) 270-9690 Fax: (732) 270-9691

Subdivision Plans

PREFORMED SCOUR HOLE

Job No.: **Arya25-014** **SCD Application #:**

Location: Hemingway est.

N/A

Date:

2-May-2026

Rev.:

$La = 3 \times Do$

Flow (cfs): **3.35**

HW / FES #: **HW No. 1 (25 yr.)**

$W = 2 \times Wo$

$Y = 1/2 Do$

$q = Q_{25}/Do = 2.23$

Pipe Height (Do): **1.5** feet

$Y = \text{Depth of scour hole below culvert invert}$

Pipe Width (Wo): **1.5** feet

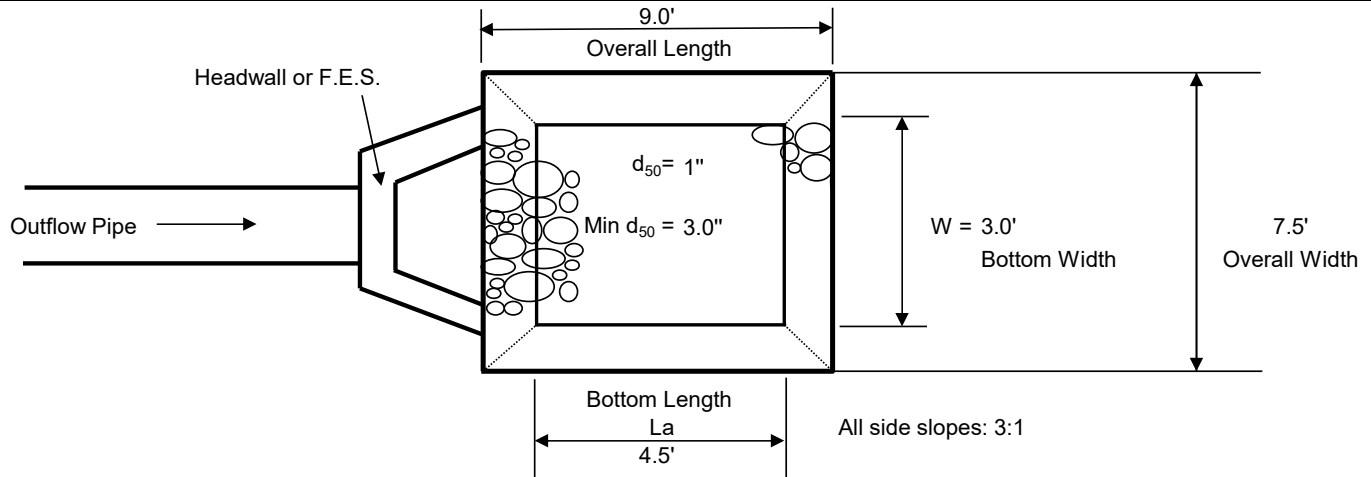
$d_{50} = (0.0125 / TW) \times (q)^{1.33}$

Thickness = $3 d_{50}$ Min. = 9"

Thickness = $2 d_{50}$ Min. = 6"

Tailwater (TW): **0.41** feet

(if Filter Fabric is installed)



Remarks:

* Use $d_{50} = 6"$ minimum riprap

Morgan Engineering, LLC

Engineers & Surveyors

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Phone: (732) 270-9690 Fax: (732) 270-9691

Subdivision Plans

PREFORMED SCOUR HOLE

Job No.: **Arya25-014** **SCD Application #:**

Location: Hemingway est.

N/A

Date:

2-May-2026

Rev.:

$La = 3 \times Do$

Flow (cfs): **1.99**

HW / FES #: **HW No. 2 (25 yr.)**

$W = 2 \times Wo$

$Y = 1/2 Do$

$q = Q_{25}/Do = 1.59$

Pipe Height (Do): **1.25** feet

Y = Depth of scour hole below culvert invert

Pipe Width (Wo): **1.25** feet

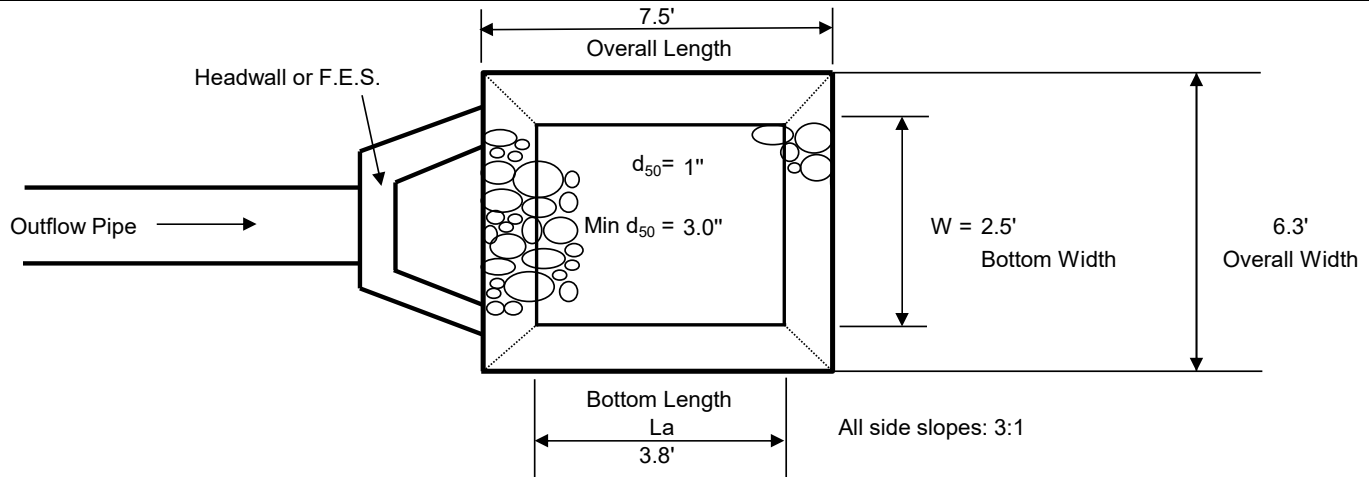
$d_{50} = (0.0125 / TW) \times (q)^{1.33}$

Thickness = $3 d_{50}$ Min. = 9"

Thickness = $2 d_{50}$ Min. = 6"

Tailwater (TW): **0.27** feet

(if Filter Fabric is installed)



Remarks:

* Use d50 = 6" minimum riprap

Morgan Engineering, LLC

Engineers & Surveyors

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Phone: (732) 270-9690 Fax: (732) 270-9691

Subdivision Plans

PREFORMED SCOUR HOLE

Job No.: **Arya25-014** **SCD Application #:**

Location: Hemingway est.

N/A

Date:

2-May-2026

Rev.:

$La = 3 \times Do$

Flow (cfs): **3.30**

HW / FES #: **HW No. 3 (25 yr.)**

$W = 2 \times Wo$

$Y = 1/2 Do$

$q = Q_{25}/Do = 2.20$

Pipe Height (Do): **1.5** feet

$Y = \text{Depth of scour hole below culvert invert}$

Pipe Width (Wo): **1.5** feet

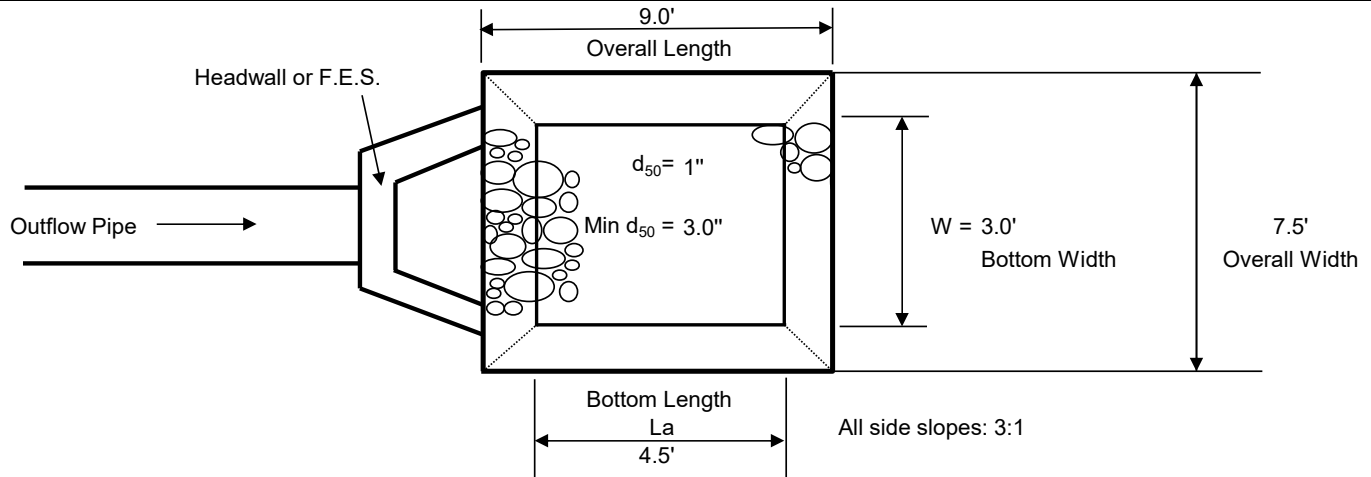
$d_{50} = (0.0125 / TW) \times (q)^{1.33}$

Thickness = $3 d_{50}$ Min. = 9"

Thickness = $2 d_{50}$ Min. = 6"

Tailwater (TW): **0.44** feet

(if Filter Fabric is installed)



Remarks:

* Use d50 = 6" minimum riprap

APPENDIX 8

DURATION OF INFILTRATION					
Basin "1" (Infiltration Basin)					
Volume to be infiltrated (cf)	X	12 in./ft			
33822	X	12	405864		
4060	X	2	8120	=	Duration
					49.98 hr.
infiltration Area (sf)	X	Perm Rate			
DURATION OF INFILTRATION					
Basin "2" (Infiltration Basin)					
Volume to be infiltrated (cf)	X	12 in./ft			
25669	X	12	308028		
3573	X	2	7146	=	Duration
					43.10 hr.
infiltration Area (sf)	X	Perm Rate			
DURATION OF INFILTRATION					
Basin "3" (Infiltration Basin)					
Volume to be infiltrated (cf)	X	12 in./ft			
37316	X	12	447792		
3879	X	2	7758	=	Duration
					57.72 hr.
infiltration Area (sf)	X	Perm Rate			

Basin -1

Input Values

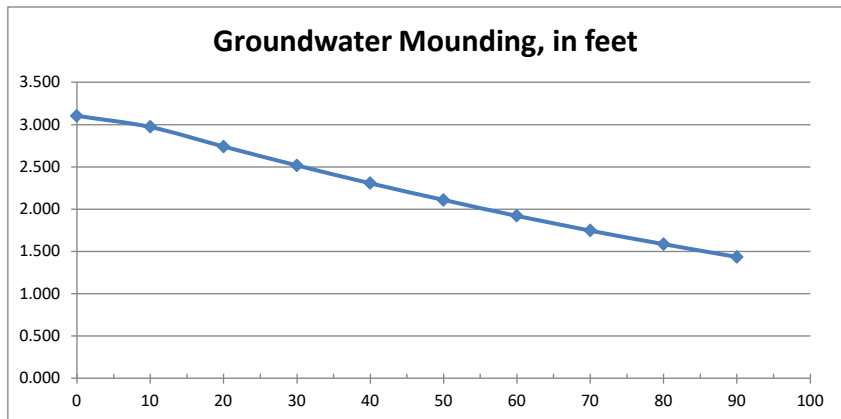
2.00	R	Recharge rate (permeability rate) (in/hr)
0.150	Sy	Specific yield, Sy (dimensionless) default value is 0.15; max value is 0.2 provided that a lab test data is submitted
50.00	Kh	Horizontal hydraulic conductivity (in/hr) Kh = 5xRecharge Rate (R) in the costal plan; Kh=R outside the coastal plan
8.000	x	1/2 length of basin (x direction, in feet)
125.000	y	1/2 width of basin (y direction, in feet)
49.98	t	Duration of infiltration period (hours)
10.00	hi(0)	Initial thickness of saturated zone (feet)

13.102	h(max)	Maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
3.102	$\Delta h(\max)$	Maximum groundwater mounding (beneath center of basin at end of infiltration period)
Distance from		
Ground-water	center of basin in x	
Mounding, in feet	direction, in feet	

3.102	0
2.972	10
2.739	20
2.516	30
2.305	40
2.106	50
1.920	60
1.746	70
1.584	80
1.433	90



Re-Calculate Now



Disclaimer

This spreadsheet solving the Hantush (1967) equation for ground-water mounding beneath an infiltration basin is made available to the general public as a convenience for those wishing to replicate values documented in the USGS Scientific Investigations Report 2010-5102 "Groundwater mounding beneath hypothetical stormwater infiltration basins" or to calculate values based on user-specified site conditions. Any changes made to the spreadsheet (other than values identified as user-specified) after transmission from the USGS could have unintended, undesirable consequences. These consequences could include, but may not be limited to: erroneous output, numerical instabilities, and violations of underlying assumptions that are inherent in results presented in the accompanying USGS published report. The USGS assumes no responsibility for the consequences of any changes made to the spreadsheet. If changes are made to the spreadsheet, the user is responsible for documenting the changes and justifying the results and conclusions.

Basin - 2

Input Values

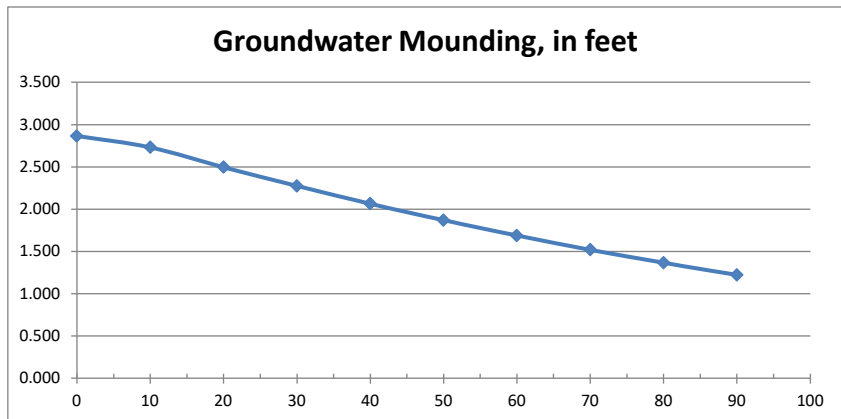
2.00	R	Recharge rate (permeability rate) (in/hr)
0.150	Sy	Specific yield, Sy (dimensionless) default value is 0.15; max value is 0.2 provided that a lab test data is submitted
50.00	Kh	Horizontal hydraulic conductivity (in/hr) Kh = 5xRecharge Rate (R) in the costal plan; Kh=R outside the coastal plan
8.000	x	1/2 length of basin (x direction, in feet)
113.000	y	1/2 width of basin (y direction, in feet)
43.10	t	Duration of infiltration period (hours)
10.00	hi(0)	Initial thickness of saturated zone (feet)

12.863	h(max)	Maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
2.863	$\Delta h(\max)$	Maximum groundwater mounding (beneath center of basin at end of infiltration period)
Distance from center of basin in x direction, in feet		
Ground-water Mounding, in feet		

2.863	0
2.730	10
2.495	20
2.272	30
2.063	40
1.868	50
1.686	60
1.518	70
1.364	80
1.221	90



Re-Calculate Now



Disclaimer

This spreadsheet solving the Hantush (1967) equation for ground-water mounding beneath an infiltration basin is made available to the general public as a convenience for those wishing to replicate values documented in the USGS Scientific Investigations Report 2010-5102 "Groundwater mounding beneath hypothetical stormwater infiltration basins" or to calculate values based on user-specified site conditions. Any changes made to the spreadsheet (other than values identified as user-specified) after transmission from the USGS could have unintended, undesirable consequences. These consequences could include, but may not be limited to: erroneous output, numerical instabilities, and violations of underlying assumptions that are inherent in results presented in the accompanying USGS published report. The USGS assumes no responsibility for the consequences of any changes made to the spreadsheet. If changes are made to the spreadsheet, the user is responsible for documenting the changes and justifying the results and conclusions.

Basin - 3

Input Values

2.00
0.150
50.00
10.000
100.000
57.72
10.00

<i>R</i>	Recharge rate (permeability rate) (in/hr)
<i>Sy</i>	Specific yield, <i>Sy</i> (dimensionless) default value is 0.15; max value is 0.2 provided that a lab test data is submitted
<i>Kh</i>	Horizontal hydraulic conductivity (in/hr) $Kh = 5 \times \text{Recharge Rate (R)}$ in the costal plan; $Kh=R$ outside the coastal plan
<i>x</i>	1/2 length of basin (x direction, in feet)
<i>y</i>	1/2 width of basin (y direction, in feet)
<i>t</i>	Duration of infiltration period (hours)
<i>hi(0)</i>	Initial thickness of saturated zone (feet)

13.600
3.600

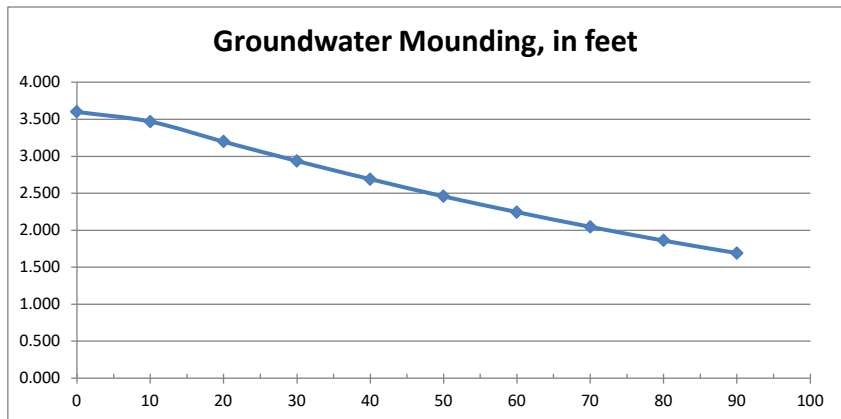
<i>h(max)</i>	Maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
$\Delta h(max)$	Maximum groundwater mounding (beneath center of basin at end of infiltration period)

Distance from
Ground-water center of basin in x
Mounding, in feet direction, in feet

3.600	0
3.467	10
3.198	20
2.935	30
2.688	40
2.458	50
2.243	60
2.044	70
1.860	80
1.689	90



Re-Calculate Now



Disclaimer

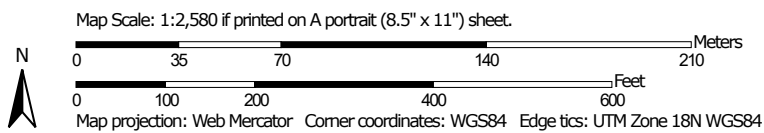
This spreadsheet solving the Hantush (1967) equation for ground-water mounding beneath an infiltration basin is made available to the general public as a convenience for those wishing to replicate values documented in the USGS Scientific Investigations Report 2010-5102 "Groundwater mounding beneath hypothetical stormwater infiltration basins" or to calculate values based on user-specified site conditions. Any changes made to the spreadsheet (other than values identified as user-specified) after transmission from the USGS could have unintended, undesirable consequences. These consequences could include, but may not be limited to: erroneous output, numerical instabilities, and violations of underlying assumptions that are inherent in results presented in the accompanying USGS published report. The USGS assumes no responsibility for the consequences of any changes made to the spreadsheet. If changes are made to the spreadsheet, the user is responsible for documenting the changes and justifying the results and conclusions.

APPENDIX 9

Hydrologic Soil Group—Ocean County, New Jersey



Soil Map may not be valid at this scale.



Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

4/19/2020
Page 1 of 4

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
DocBO	Downer loamy sand, 0 to 5 percent slopes, Northern Tidewater Area	A	0.9	5.5%
DoeAO	Downer sandy loam, 0 to 2 percent slopes, Northern Tidewater Area	A	2.6	16.9%
DoeBO	Downer sandy loam, 2 to 5 percent slopes, Northern Tidewater Area	A	12.1	77.6%
Totals for Area of Interest			15.6	100.0%



Description

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

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

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

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

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

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

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

Rating Options

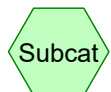
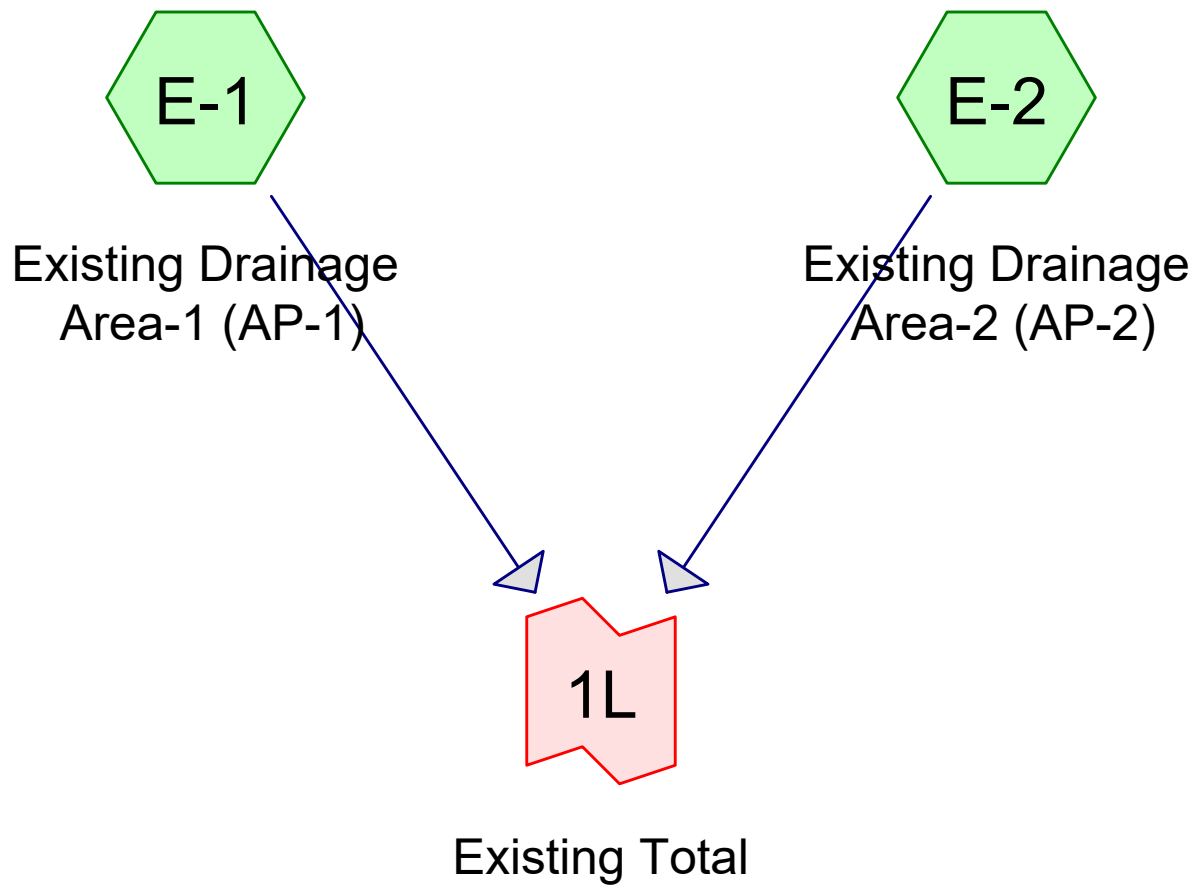
Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher



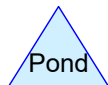
APPENDIX 10



Subcat



Reach



Pond



Link

Routing Diagram for Arya2025-014_Hemingway Est_Rev-0_05.02.26

Prepared by Morgan Engineering, LLC, Printed 5/2/2026

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Arya2025-014_Hemingway Est_Rev-0_05.02.26

Prepared by Morgan Engineering, LLC

Printed 5/2/2026

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Page 2

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Yr. Future	NOAA 24-hr	D	Default	24.00	1	4.04	2
2	10-Yr. Future	NOAA 24-hr	D	Default	24.00	1	6.34	2
3	100-Yr. Future	NOAA 24-hr	D	Default	24.00	1	11.41	2

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
 Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv.
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment E-1: Existing Drainage	Runoff Area=302,830 sf 0.00% Impervious Runoff Depth=0.00" Flow Length=590' Tc=32.9 min CN=30/0 Runoff=0.00 cfs 0 cf
Subcatchment E-2: Existing Drainage	Runoff Area=212,008 sf 0.00% Impervious Runoff Depth=0.00" Flow Length=550' Tc=23.7 min CN=30/0 Runoff=0.00 cfs 0 cf
Link 1L: Existing Total	Inflow=0.00 cfs 0 cf Primary=0.00 cfs 0 cf
Total Runoff Area = 514,838 sf Runoff Volume = 0 cf Average Runoff Depth = 0.00" 100.00% Pervious = 514,838 sf 0.00% Impervious = 0 sf	

Summary for Subcatchment E-1: Existing Drainage Area-1 (AP-1)

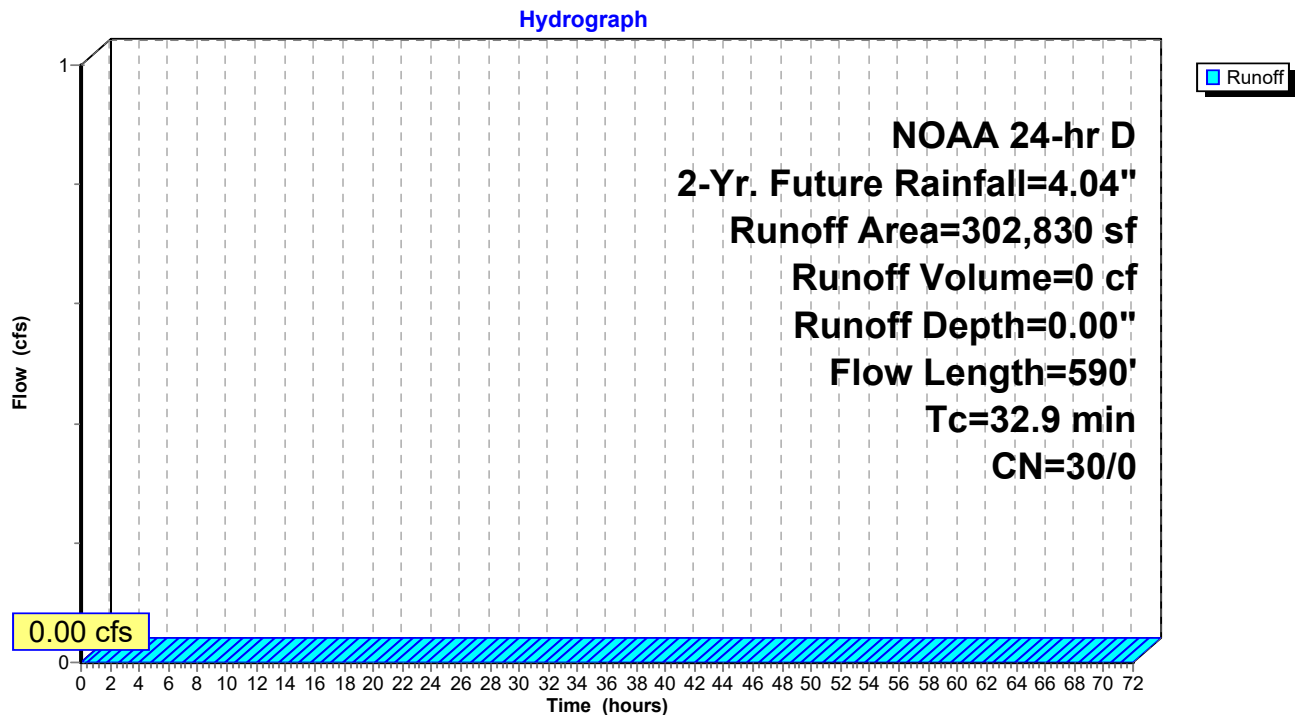
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"
 Routed to Link 1L : Existing Total

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Future Rainfall=4.04"

Area (sf)	CN	Description
302,830	30	Woods, Good, HSG A
302,830	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.7	100	0.0400	0.11		Sheet Flow, Sheet woods Woods: Light underbrush n= 0.400 P2= 3.42"
4.5	220	0.0270	0.82		Shallow Concentrated Flow, Shallow woods Woodland Kv= 5.0 fps
12.7	270	0.0050	0.35		Shallow Concentrated Flow, Shallow Flow Woodland Kv= 5.0 fps
32.9	590	Total			

Subcatchment E-1: Existing Drainage Area-1 (AP-1)



Summary for Subcatchment E-2: Existing Drainage Area-2 (AP-2)

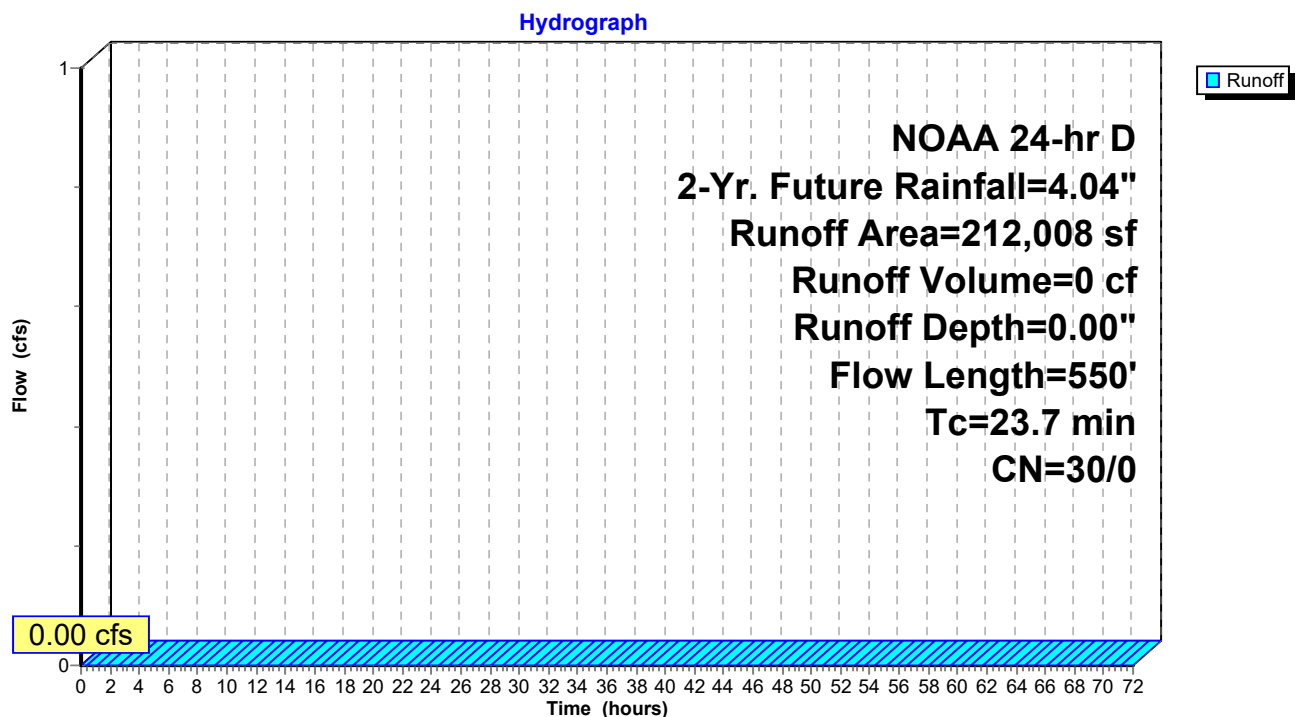
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"
 Routed to Link 1L : Existing Total

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Future Rainfall=4.04"

Area (sf)	CN	Description
212,008	30	Woods, Good, HSG A
212,008	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.7	100	0.0400	0.11		Sheet Flow, Sheet Woods
					Woods: Light underbrush n= 0.400 P2= 3.42"
8.0	450	0.0350	0.94		Shallow Concentrated Flow, Shallow Woods
					Woodland Kv= 5.0 fps
23.7	550	Total			

Subcatchment E-2: Existing Drainage Area-2 (AP-2)

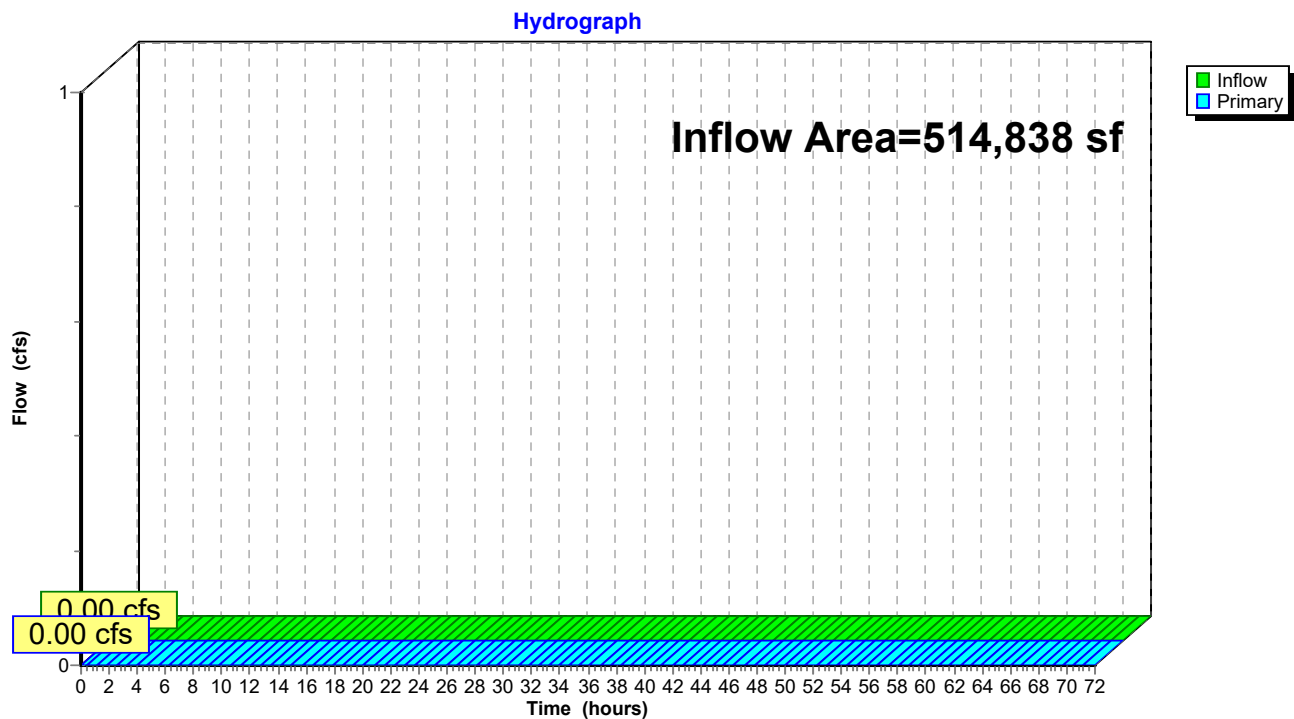


Summary for Link 1L: Existing Total

Inflow Area = 514,838 sf, 0.00% Impervious, Inflow Depth = 0.00" for 2-Yr. Future event
 Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 1L: Existing Total



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
 Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv.
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment E-1: Existing Drainage Runoff Area=302,830 sf 0.00% Impervious Runoff Depth=0.11"
 Flow Length=590' Tc=32.9 min CN=30/0 Runoff=0.08 cfs 2,826 cf

Subcatchment E-2: Existing Drainage Runoff Area=212,008 sf 0.00% Impervious Runoff Depth=0.11"
 Flow Length=550' Tc=23.7 min CN=30/0 Runoff=0.06 cfs 1,978 cf

Link 1L: Existing Total Inflow=0.14 cfs 4,804 cf
 Primary=0.14 cfs 4,804 cf

Total Runoff Area = 514,838 sf Runoff Volume = 4,804 cf Average Runoff Depth = 0.11"
100.00% Pervious = 514,838 sf 0.00% Impervious = 0 sf

Summary for Subcatchment E-1: Existing Drainage Area-1 (AP-1)

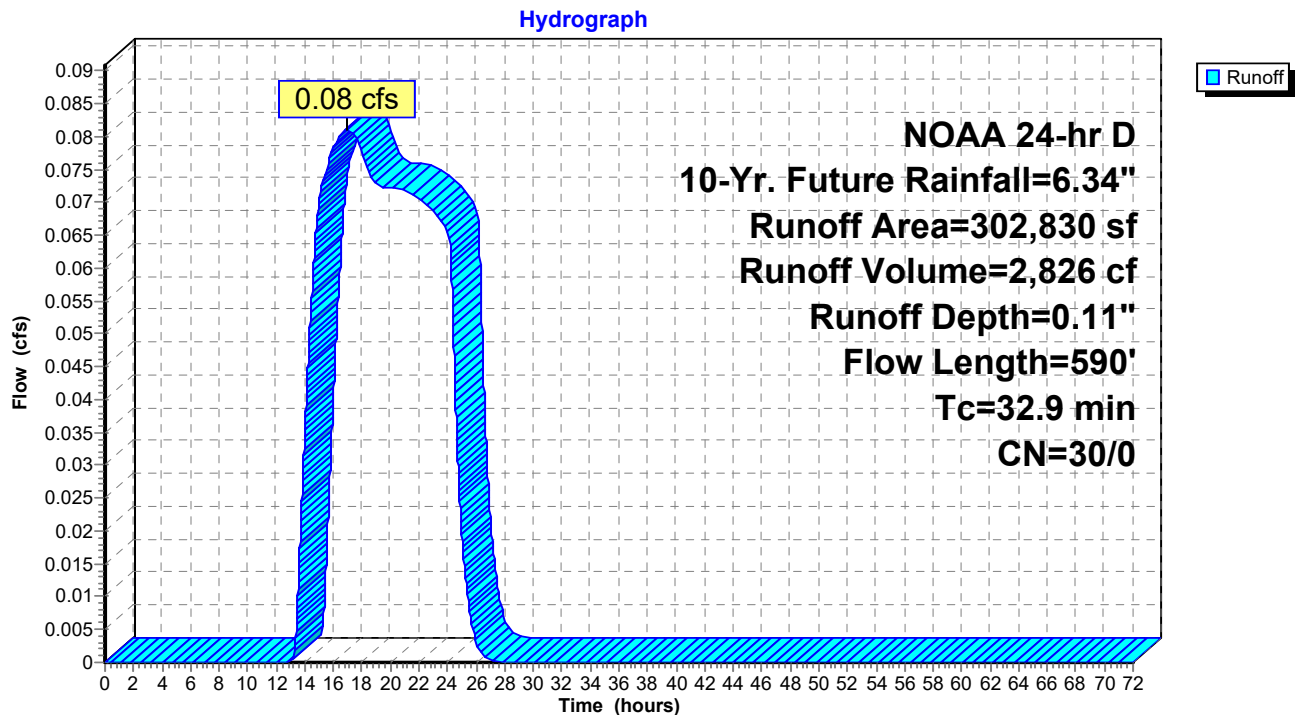
Runoff = 0.08 cfs @ 16.97 hrs, Volume= 2,826 cf, Depth= 0.11"
 Routed to Link 1L : Existing Total

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Future Rainfall=6.34"

Area (sf)	CN	Description
302,830	30	Woods, Good, HSG A
302,830	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.7	100	0.0400	0.11		Sheet Flow, Sheet woods Woods: Light underbrush n= 0.400 P2= 3.42"
4.5	220	0.0270	0.82		Shallow Concentrated Flow, Shallow woods Woodland Kv= 5.0 fps
12.7	270	0.0050	0.35		Shallow Concentrated Flow, Shallow Flow Woodland Kv= 5.0 fps
32.9	590	Total			

Subcatchment E-1: Existing Drainage Area-1 (AP-1)



Summary for Subcatchment E-2: Existing Drainage Area-2 (AP-2)

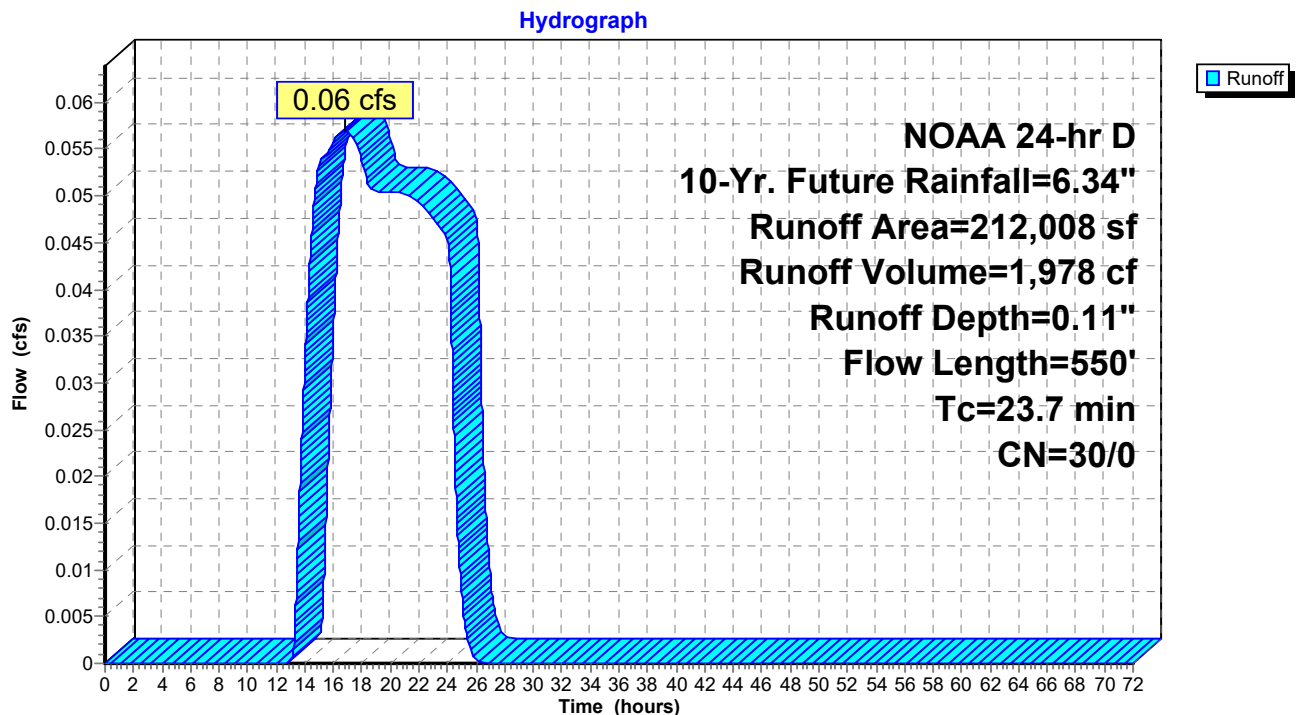
Runoff = 0.06 cfs @ 16.80 hrs, Volume= 1,978 cf, Depth= 0.11"
 Routed to Link 1L : Existing Total

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Future Rainfall=6.34"

Area (sf)	CN	Description
212,008	30	Woods, Good, HSG A
212,008	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.7	100	0.0400	0.11		Sheet Flow, Sheet Woods
					Woods: Light underbrush n= 0.400 P2= 3.42"
8.0	450	0.0350	0.94		Shallow Concentrated Flow, Shallow Woods
					Woodland Kv= 5.0 fps
23.7	550	Total			

Subcatchment E-2: Existing Drainage Area-2 (AP-2)

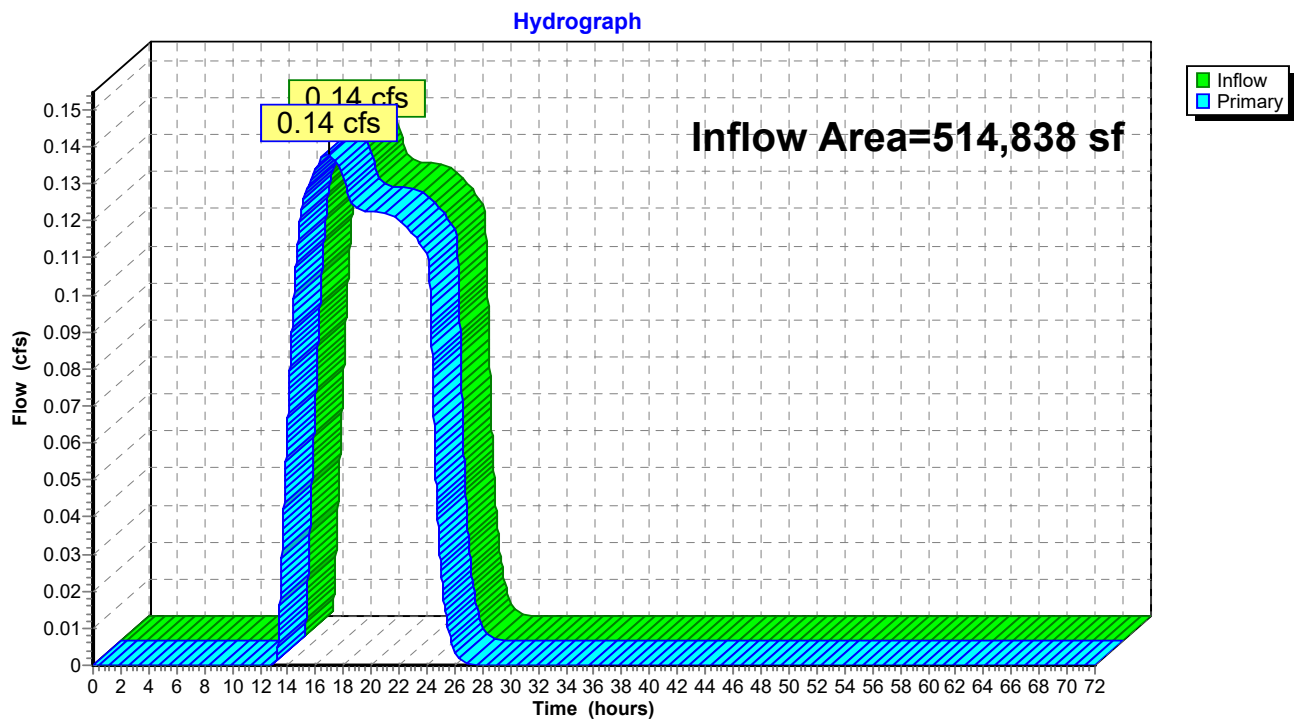


Summary for Link 1L: Existing Total

Inflow Area = 514,838 sf, 0.00% Impervious, Inflow Depth = 0.11" for 10-Yr. Future event
 Inflow = 0.14 cfs @ 16.90 hrs, Volume= 4,804 cf
 Primary = 0.14 cfs @ 16.90 hrs, Volume= 4,804 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 1L: Existing Total



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
 Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv.
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment E-1: Existing Drainage Runoff Area=302,830 sf 0.00% Impervious Runoff Depth=1.51"
 Flow Length=590' Tc=32.9 min CN=30/0 Runoff=2.53 cfs 38,154 cf

Subcatchment E-2: Existing Drainage Runoff Area=212,008 sf 0.00% Impervious Runoff Depth=1.51"
 Flow Length=550' Tc=23.7 min CN=30/0 Runoff=2.08 cfs 26,711 cf

Link 1L: Existing Total Inflow=4.56 cfs 64,865 cf
 Primary=4.56 cfs 64,865 cf

Total Runoff Area = 514,838 sf Runoff Volume = 64,865 cf Average Runoff Depth = 1.51"
100.00% Pervious = 514,838 sf 0.00% Impervious = 0 sf

Summary for Subcatchment E-1: Existing Drainage Area-1 (AP-1)

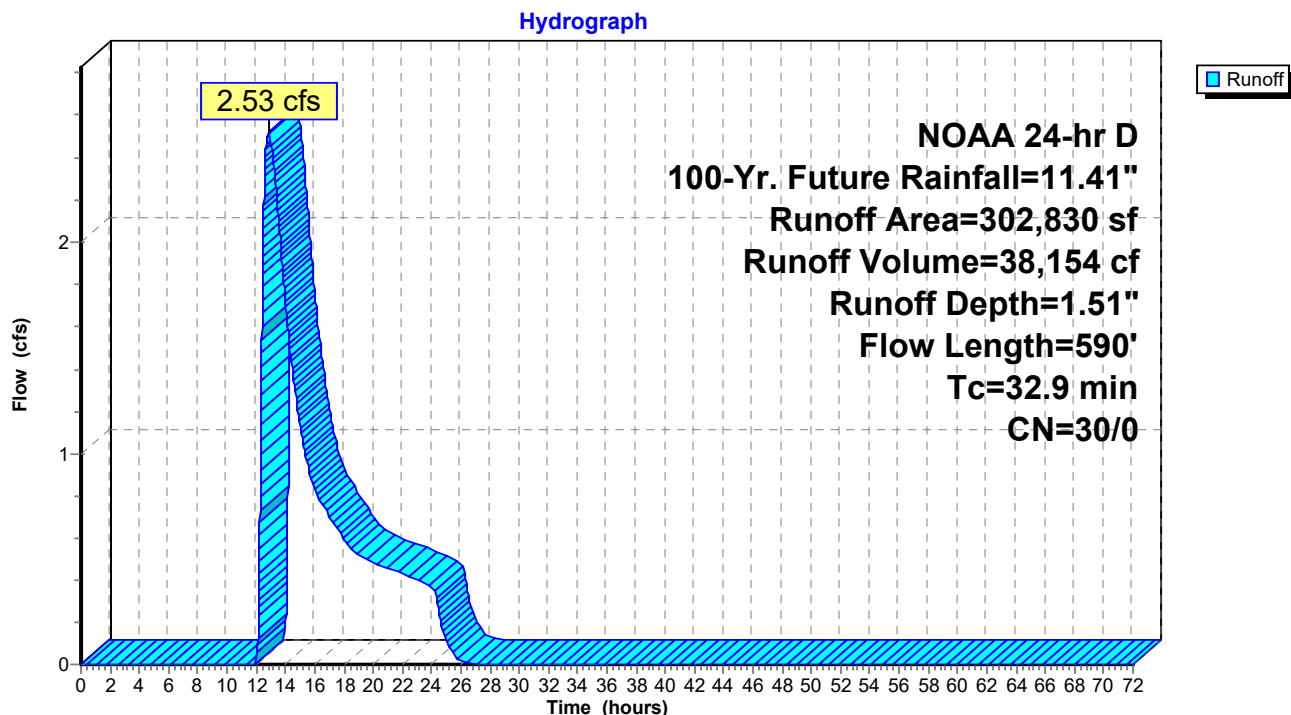
Runoff = 2.53 cfs @ 12.80 hrs, Volume= 38,154 cf, Depth= 1.51"
 Routed to Link 1L : Existing Total

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 100-Yr. Future Rainfall=11.41"

Area (sf)	CN	Description
302,830	30	Woods, Good, HSG A
302,830	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.7	100	0.0400	0.11		Sheet Flow, Sheet woods Woods: Light underbrush n= 0.400 P2= 3.42"
4.5	220	0.0270	0.82		Shallow Concentrated Flow, Shallow woods Woodland Kv= 5.0 fps
12.7	270	0.0050	0.35		Shallow Concentrated Flow, Shallow Flow Woodland Kv= 5.0 fps
32.9	590	Total			

Subcatchment E-1: Existing Drainage Area-1 (AP-1)



Summary for Subcatchment E-2: Existing Drainage Area-2 (AP-2)

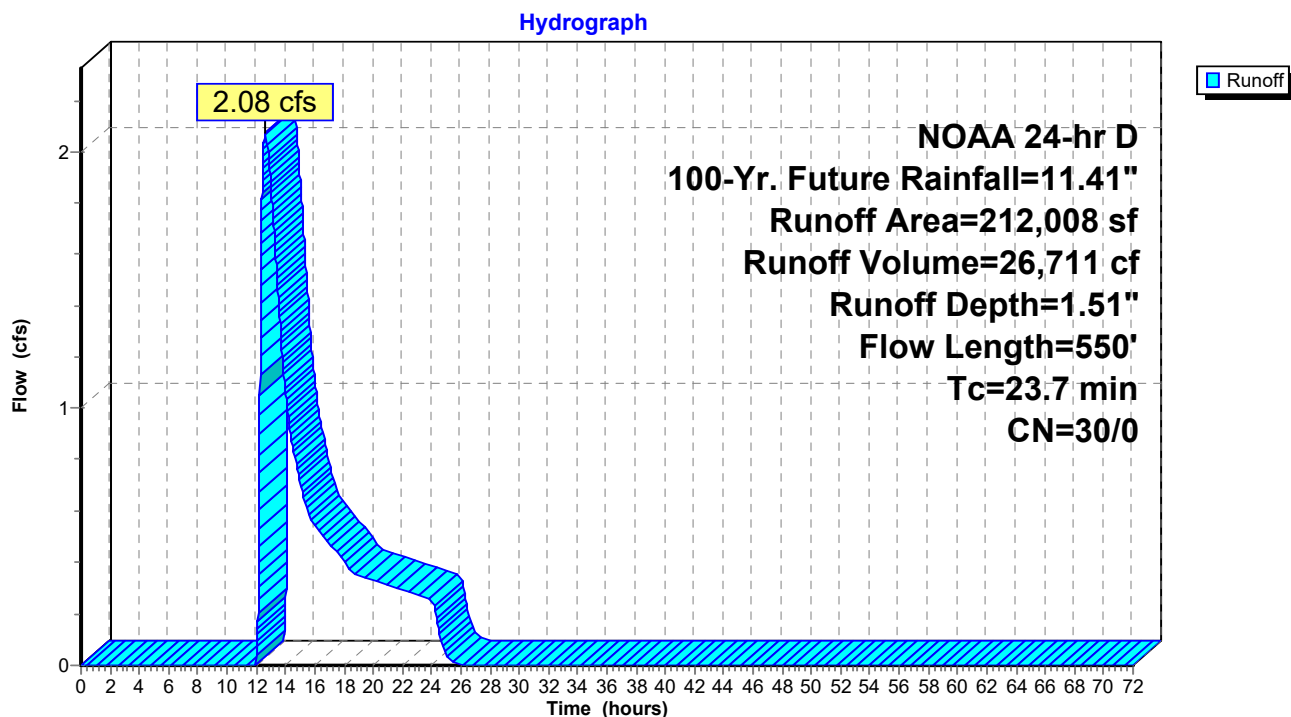
Runoff = 2.08 cfs @ 12.64 hrs, Volume= 26,711 cf, Depth= 1.51"
 Routed to Link 1L : Existing Total

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 100-Yr. Future Rainfall=11.41"

Area (sf)	CN	Description
212,008	30	Woods, Good, HSG A
212,008	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.7	100	0.0400	0.11		Sheet Flow, Sheet Woods
					Woods: Light underbrush n= 0.400 P2= 3.42"
8.0	450	0.0350	0.94		Shallow Concentrated Flow, Shallow Woods
					Woodland Kv= 5.0 fps
23.7	550	Total			

Subcatchment E-2: Existing Drainage Area-2 (AP-2)

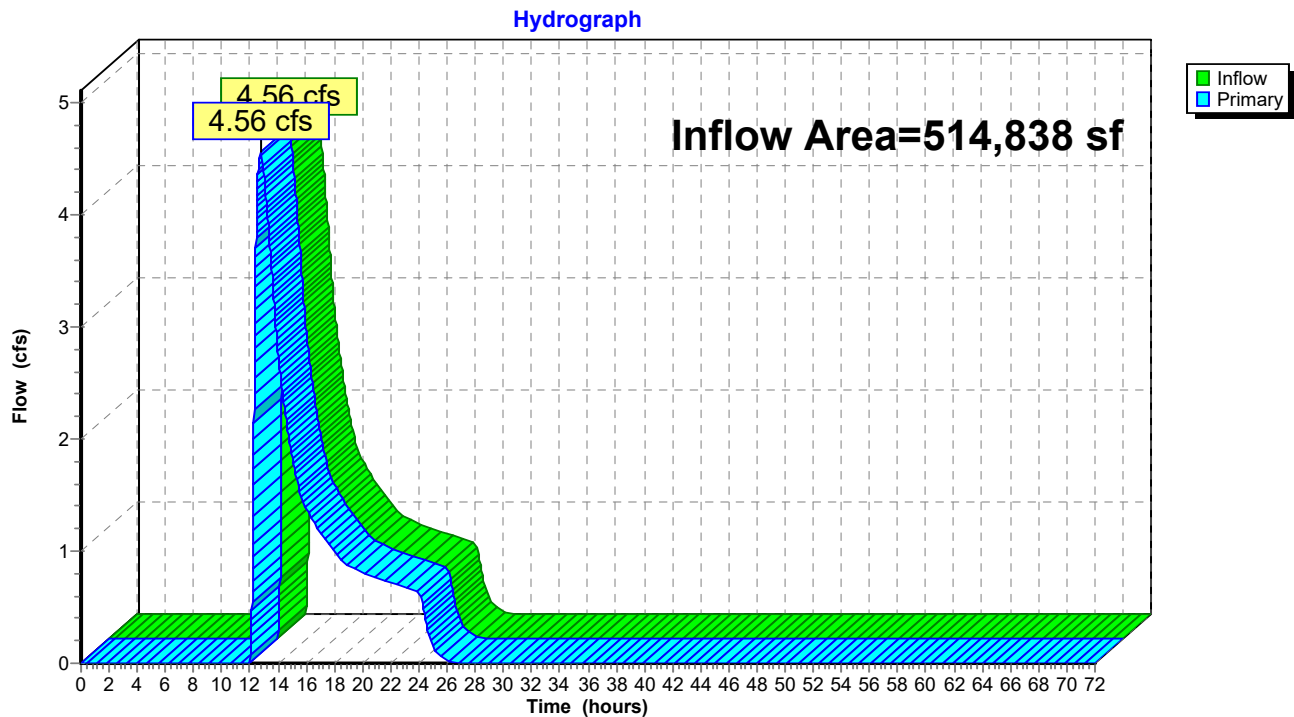


Summary for Link 1L: Existing Total

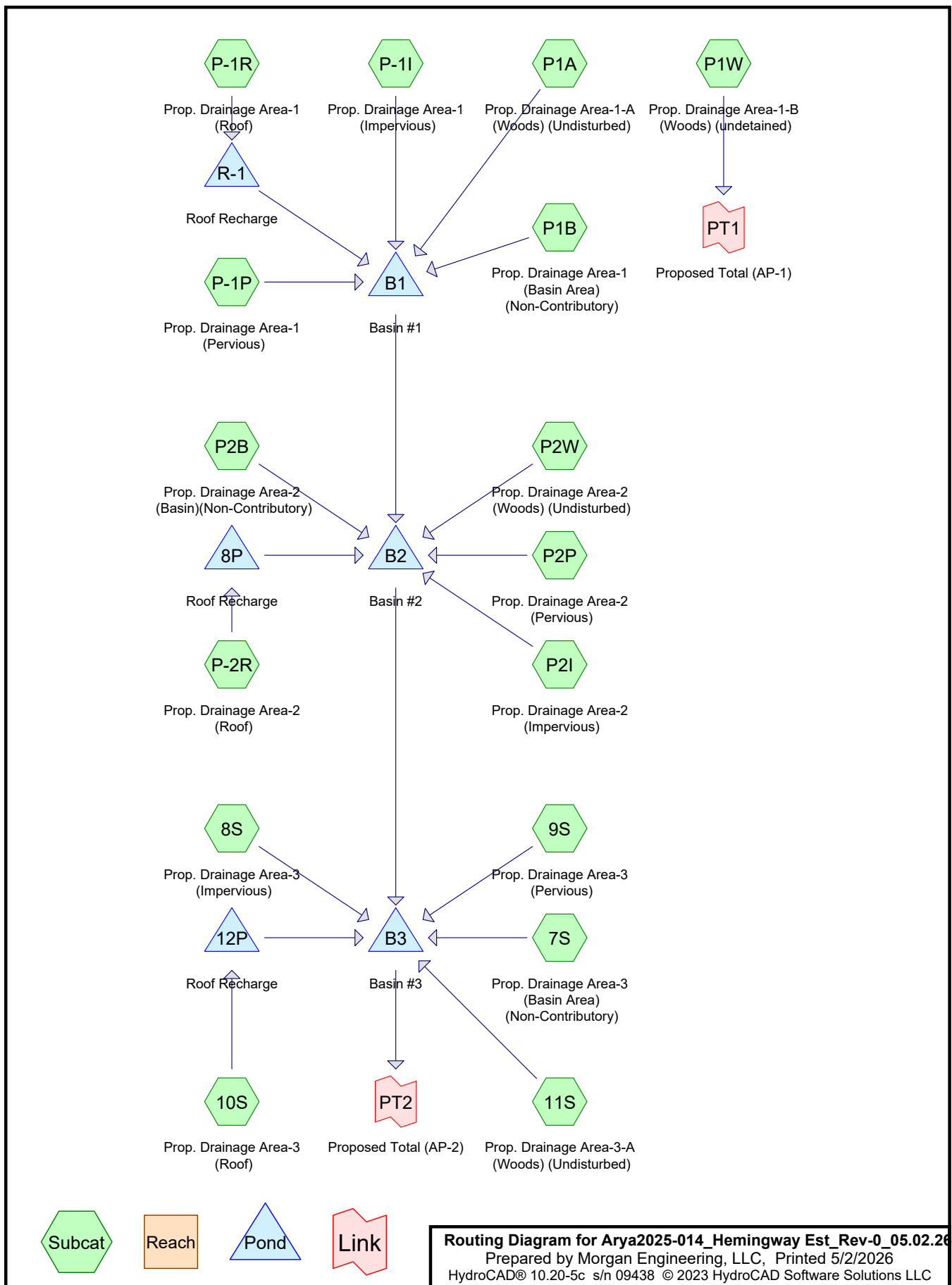
Inflow Area = 514,838 sf, 0.00% Impervious, Inflow Depth = 1.51" for 100-Yr. Future event
 Inflow = 4.56 cfs @ 12.72 hrs, Volume= 64,865 cf
 Primary = 4.56 cfs @ 12.72 hrs, Volume= 64,865 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 1L: Existing Total



APPENDIX 11



Arya2025-014_Hemingway Est_Rev-0_05.02.26

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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Yr. Future	NOAA 24-hr	D	Default	24.00	1	4.04	2
2	10-Yr. Future	NOAA 24-hr	D	Default	24.00	1	6.34	2
3	100-Yr. Future	NOAA 24-hr	D	Default	24.00	1	11.41	2

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
 Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv.
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment7S: Prop. Drainage Area-3 Runoff Area=18,104 sf 0.00% Impervious Runoff Depth=0.05"
 Flow Length=50' Slope=0.1000 '/ Tc=4.2 min CN=39/0 Runoff=0.00 cfs 76 cf

Subcatchment8S: Prop. Drainage Area-3 Runoff Area=22,694 sf 100.00% Impervious Runoff Depth=3.81"
 Flow Length=530' Tc=3.0 min CN=0/98 Runoff=1.99 cfs 7,196 cf

Subcatchment9S: Prop. Drainage Area-3 Runoff Area=70,251 sf 0.00% Impervious Runoff Depth=0.05"
 Flow Length=717' Tc=12.5 min CN=39/0 Runoff=0.01 cfs 294 cf

Subcatchment10S: Prop. Drainage Runoff Area=12,530 sf 100.00% Impervious Runoff Depth=3.81"
 Tc=2.0 min CN=0/98 Runoff=1.16 cfs 3,973 cf

Subcatchment11S: Prop. Drainage Runoff Area=33,921 sf 0.00% Impervious Runoff Depth=0.00"
 Flow Length=50' Slope=0.0250 '/ Tc=10.9 min CN=30/0 Runoff=0.00 cfs 0 cf

SubcatchmentP-1I: Prop. Drainage Runoff Area=24,003 sf 100.00% Impervious Runoff Depth=3.81"
 Flow Length=430' Tc=3.6 min CN=0/98 Runoff=2.02 cfs 7,611 cf

SubcatchmentP-1P: Prop. Drainage Area-1 Runoff Area=72,415 sf 0.00% Impervious Runoff Depth=0.05"
 Flow Length=530' Tc=13.1 min CN=39/0 Runoff=0.01 cfs 303 cf

SubcatchmentP-1R: Prop. Drainage Runoff Area=12,530 sf 100.00% Impervious Runoff Depth=3.81"
 Tc=2.0 min CN=0/98 Runoff=1.16 cfs 3,973 cf

SubcatchmentP-2R: Prop. Drainage Runoff Area=10,024 sf 100.00% Impervious Runoff Depth=3.81"
 Tc=2.0 min CN=0/98 Runoff=0.93 cfs 3,178 cf

SubcatchmentP1A: Prop. Drainage Runoff Area=25,206 sf 0.00% Impervious Runoff Depth=0.00"
 Flow Length=470' Tc=24.2 min CN=30/0 Runoff=0.00 cfs 0 cf

SubcatchmentP1B: Prop. Drainage Area-1 Runoff Area=18,385 sf 0.00% Impervious Runoff Depth=0.05"
 Flow Length=50' Slope=0.1000 '/ Tc=4.2 min CN=39/0 Runoff=0.00 cfs 77 cf

SubcatchmentP1W: Prop. Drainage Runoff Area=74,786 sf 0.00% Impervious Runoff Depth=0.00"
 Flow Length=285' Tc=26.7 min CN=30/0 Runoff=0.00 cfs 0 cf

SubcatchmentP2B: Prop. Drainage Area-2 Runoff Area=18,844 sf 0.00% Impervious Runoff Depth=0.05"
 Flow Length=50' Slope=0.1000 '/ Tc=4.2 min CN=39/0 Runoff=0.00 cfs 79 cf

SubcatchmentP2I: Prop. Drainage Area-2 Runoff Area=15,753 sf 100.00% Impervious Runoff Depth=3.81"
 Flow Length=745' Tc=5.1 min CN=0/98 Runoff=1.20 cfs 4,995 cf

SubcatchmentP2P: Prop. Drainage Area-2 Runoff Area=56,947 sf 0.00% Impervious Runoff Depth=0.05"
 Flow Length=835' Tc=18.5 min CN=39/0 Runoff=0.01 cfs 238 cf

SubcatchmentP2W: Prop. Drainage Area-2 Runoff Area=28,444 sf 0.00% Impervious Runoff Depth=0.00"
 Flow Length=880' Tc=15.5 min CN=30/0 Runoff=0.00 cfs 0 cf

Pond 8P: Roof Recharge Peak Elev=77.16' Storage=563 cf Inflow=0.93 cfs 3,178 cf
Discarded=0.19 cfs 3,178 cf Primary=0.00 cfs 0 cf Outflow=0.19 cfs 3,178 cf

Pond 12P: Roof Recharge Peak Elev=77.65' Storage=842 cf Inflow=1.16 cfs 3,973 cf
Discarded=0.19 cfs 3,973 cf Primary=0.00 cfs 0 cf Outflow=0.19 cfs 3,973 cf

Pond B1: Basin #1 Peak Elev=77.52' Storage=2,363 cf Inflow=2.02 cfs 7,991 cf
Discarded=0.23 cfs 7,989 cf Primary=0.00 cfs 2 cf Outflow=0.23 cfs 7,991 cf

Pond B2: Basin #2 Peak Elev=77.34' Storage=1,325 cf Inflow=1.20 cfs 5,314 cf
Discarded=0.19 cfs 5,314 cf Primary=0.00 cfs 0 cf Outflow=0.19 cfs 5,314 cf

Pond B3: Basin #3 Peak Elev=66.56' Storage=2,295 cf Inflow=1.99 cfs 7,566 cf
Discarded=0.20 cfs 7,566 cf Primary=0.00 cfs 0 cf Outflow=0.20 cfs 7,566 cf

Pond R-1: Roof Recharge Peak Elev=77.16' Storage=704 cf Inflow=1.16 cfs 3,973 cf
Discarded=0.24 cfs 3,973 cf Primary=0.00 cfs 0 cf Outflow=0.24 cfs 3,973 cf

Link PT1: Proposed Total (AP-1) Inflow=0.00 cfs 0 cf
Primary=0.00 cfs 0 cf

Link PT2: Proposed Total (AP-2) Inflow=0.00 cfs 0 cf
Primary=0.00 cfs 0 cf

Total Runoff Area = 514,837 sf Runoff Volume = 31,994 cf Average Runoff Depth = 0.75"
81.06% Pervious = 417,303 sf 18.94% Impervious = 97,534 sf

Summary for Subcatchment 7S: Prop. Drainage Area-3 (Basin Area) (Non-Contributory)

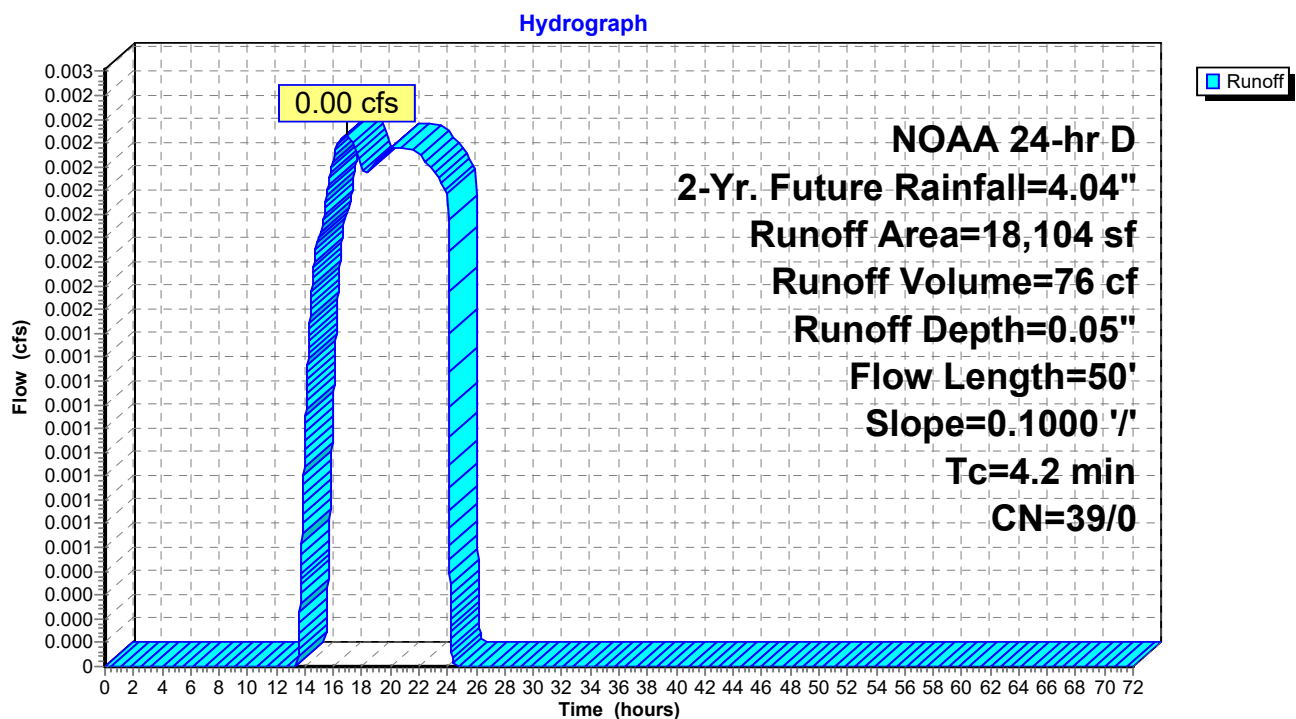
Runoff = 0.00 cfs @ 16.93 hrs, Volume= 76 cf, Depth= 0.05"
Routed to Pond B3 : Basin #3

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 2-Yr. Future Rainfall=4.04"

Area (sf)	CN	Description
* 18,104	39	Basin Area-Non-contributory, HSG A
18,104	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.1000	0.20		Sheet Flow, Sheet Grass
Grass: Dense n= 0.240 P2= 3.42"					

Subcatchment 7S: Prop. Drainage Area-3 (Basin Area) (Non-Contributory)



Summary for Subcatchment 8S: Prop. Drainage Area-3 (Impervious)

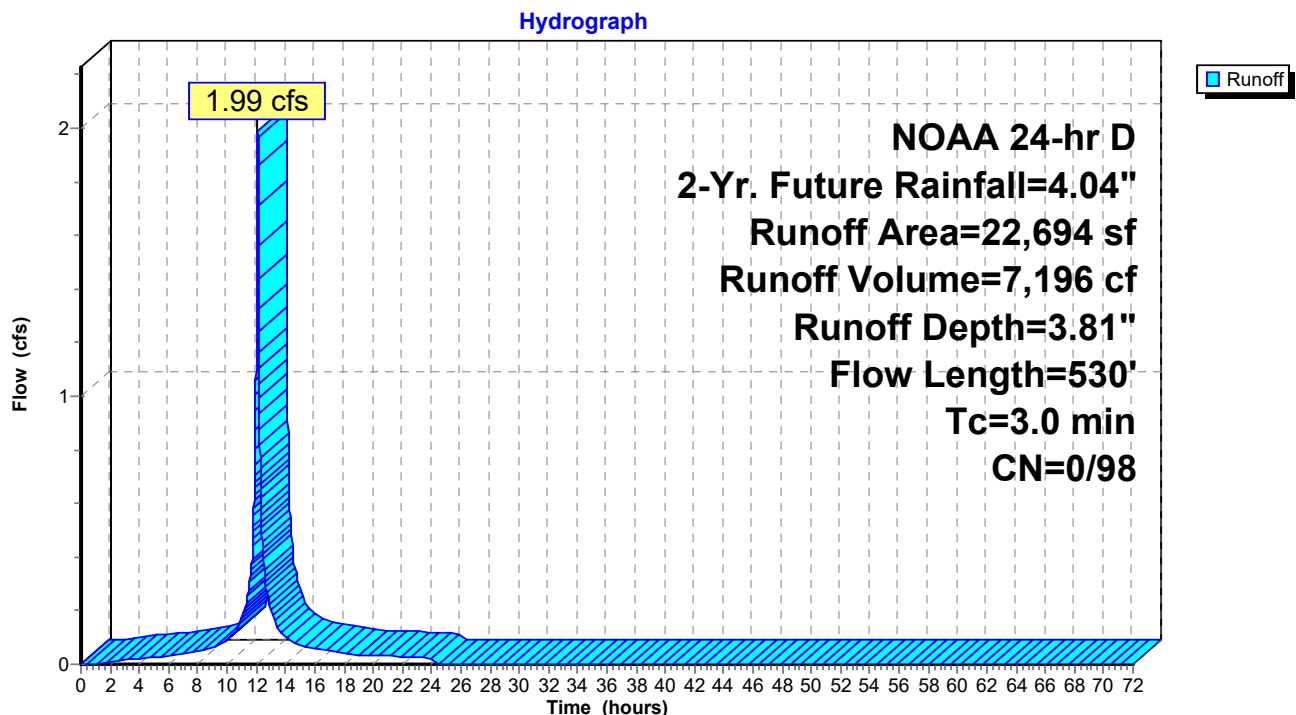
Runoff = 1.99 cfs @ 12.11 hrs, Volume= 7,196 cf, Depth= 3.81"
 Routed to Pond B3 : Basin #3

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Future Rainfall=4.04"

Area (sf)	CN	Description
13,555	98	Paved roads w/curbs & sewers, HSG A
* 3,626	98	Sidewalks, HSG A
* 5,513	98	Driveways, HSG A
22,694	98	Weighted Average
22,694	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	100	0.0292	1.65		Sheet Flow, Sheet Pvmt Smooth surfaces n= 0.011 P2= 3.42"
1.1	233	0.0292	3.47		Shallow Concentrated Flow, Shallow Pvmt Paved Kv= 20.3 fps
0.9	197	0.0040	3.76	6.64	Pipe Channel, Pipe 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
3.0	530	Total			

Subcatchment 8S: Prop. Drainage Area-3 (Impervious)



Summary for Subcatchment 9S: Prop. Drainage Area-3 (Pervious)

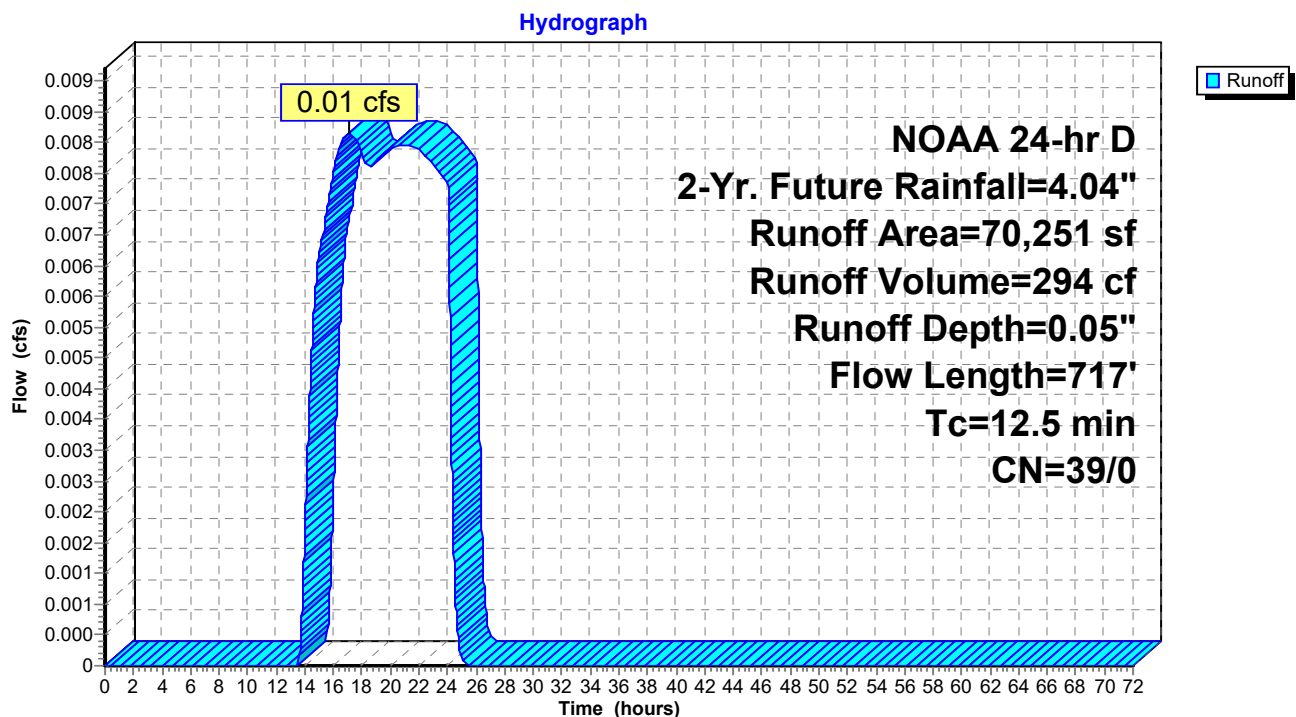
Runoff = 0.01 cfs @ 17.11 hrs, Volume= 294 cf, Depth= 0.05"
 Routed to Pond B3 : Basin #3

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Future Rainfall=4.04"

Area (sf)	CN	Description
70,251	39	>75% Grass cover, Good, HSG A
70,251	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	100	0.0500	0.17		Sheet Flow, Sheet Grass Grass: Dense n= 0.240 P2= 3.42"
0.1	20	0.0500	3.60		Shallow Concentrated Flow, Shallow Grass Unpaved Kv= 16.1 fps
1.9	400	0.0292	3.47		Shallow Concentrated Flow, Shallow Pvmnt Paved Kv= 20.3 fps
0.9	197	0.0040	3.76	6.64	Pipe Channel, Pipe 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
12.5	717	Total			

Subcatchment 9S: Prop. Drainage Area-3 (Pervious)



Summary for Subcatchment 10S: Prop. Drainage Area-3 (Roof)

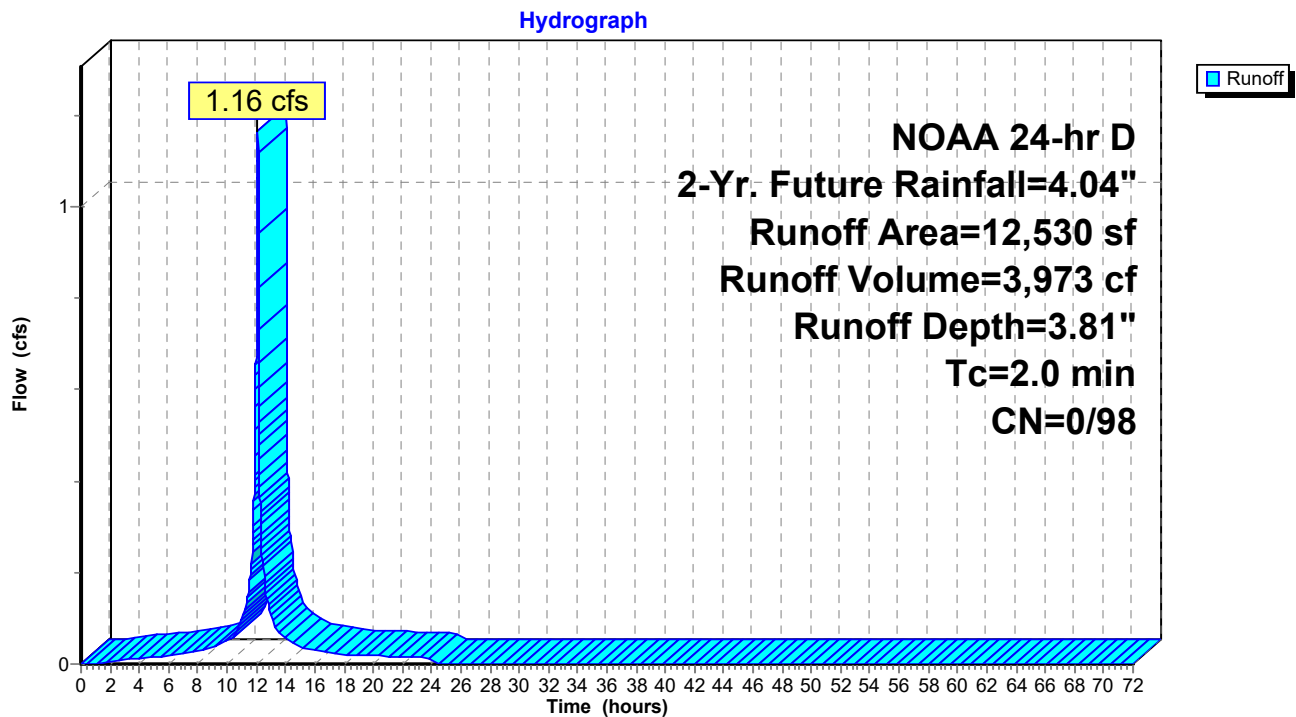
Runoff = 1.16 cfs @ 12.10 hrs, Volume= 3,973 cf, Depth= 3.81"
 Routed to Pond 12P : Roof Recharge

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Future Rainfall=4.04"

Area (sf)	CN	Description
12,530	98	Roofs, HSG A
12,530	98	100.00% Impervious Area

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

Subcatchment 10S: Prop. Drainage Area-3 (Roof)



Summary for Subcatchment 11S: Prop. Drainage Area-3-A (Woods) (Undisturbed)

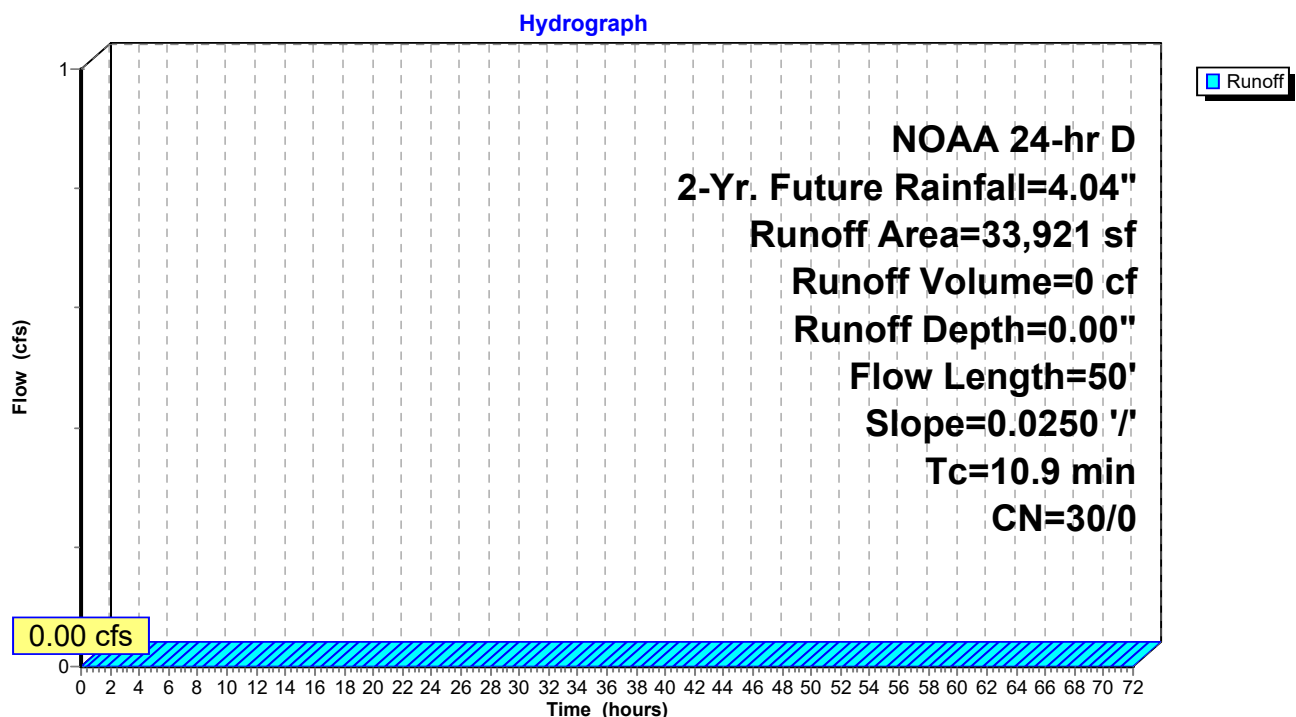
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"
 Routed to Pond B3 : Basin #3

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Future Rainfall=4.04"

Area (sf)	CN	Description
33,921	30	Woods, Good, HSG A
33,921	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	50	0.0250	0.08		Sheet Flow, Sheet woods Woods: Light underbrush n= 0.400 P2= 3.42"

Subcatchment 11S: Prop. Drainage Area-3-A (Woods) (Undisturbed)



Summary for Subcatchment P-1I: Prop. Drainage Area-1 (Impervious)

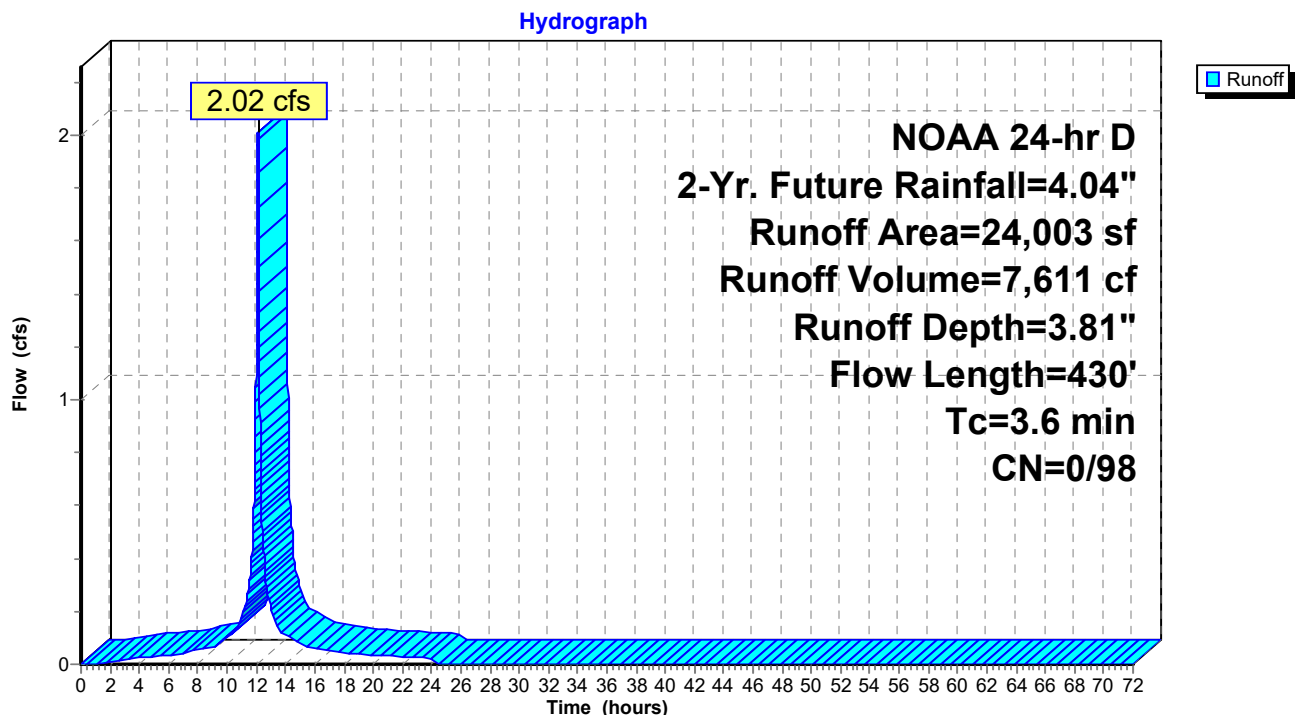
Runoff = 2.02 cfs @ 12.12 hrs, Volume= 7,611 cf, Depth= 3.81"
 Routed to Pond B1 : Basin #1

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Future Rainfall=4.04"

Area (sf)	CN	Description
15,941	98	Paved roads w/curbs & sewers, HSG A
* 2,588	98	Sidewalks, HSG A
* 5,474	98	Driveways, HSG A
24,003	98	Weighted Average
24,003	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	100	0.0083	1.00		Sheet Flow, Sheet Pvmt Smooth surfaces n= 0.011 P2= 3.42"
0.7	60	0.0050	1.44		Shallow Concentrated Flow, Shallow Pvmt Paved Kv= 20.3 fps
1.2	270	0.0050	3.72	4.57	Pipe Channel, Pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
3.6	430	Total			

Subcatchment P-1I: Prop. Drainage Area-1 (Impervious)



Summary for Subcatchment P-1P: Prop. Drainage Area-1 (Pervious)

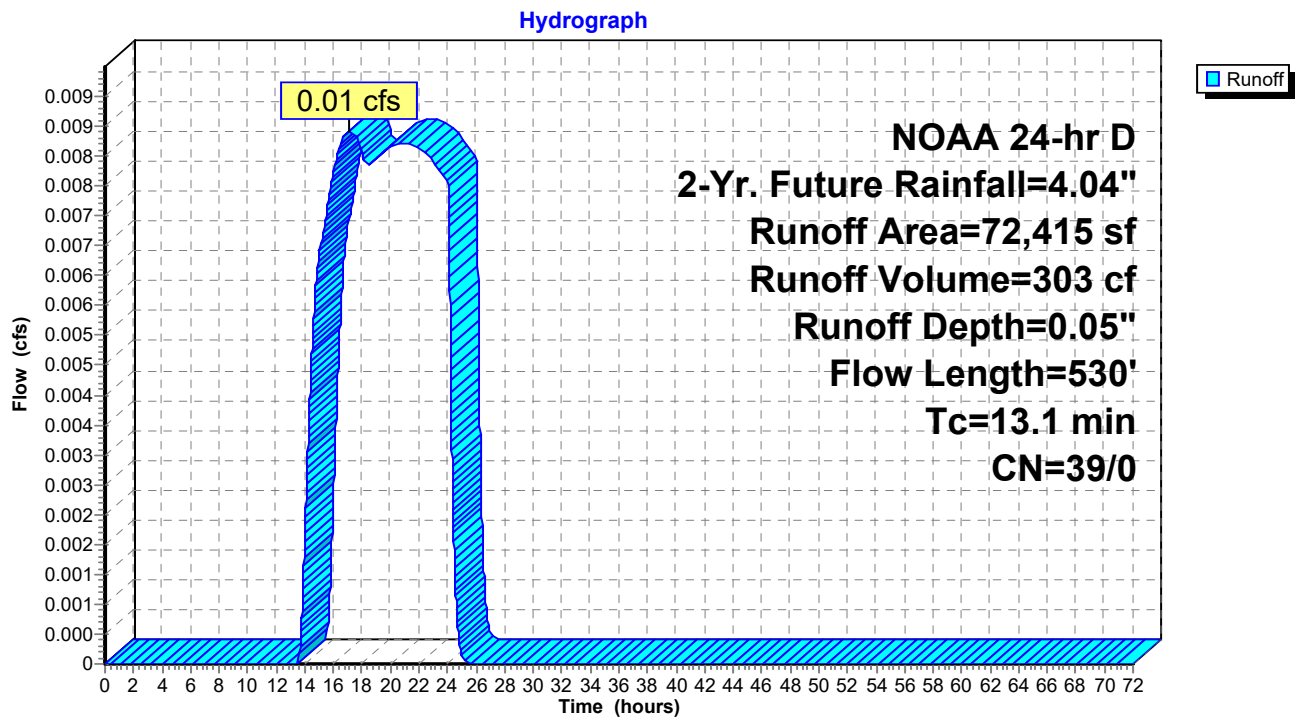
Runoff = 0.01 cfs @ 17.14 hrs, Volume= 303 cf, Depth= 0.05"
 Routed to Pond B1 : Basin #1

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Future Rainfall=4.04"

Area (sf)	CN	Description
72,415	39	>75% Grass cover, Good, HSG A
72,415	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0400	0.16		Sheet Flow, Sheet Grass Grass: Dense n= 0.240 P2= 3.42"
1.4	160	0.0083	1.85		Shallow Concentrated Flow, Shallow Pvmnt Paved Kv= 20.3 fps
1.2	270	0.0050	3.72	4.57	Pipe Channel, Pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
13.1	530	Total			

Subcatchment P-1P: Prop. Drainage Area-1 (Pervious)



Summary for Subcatchment P-1R: Prop. Drainage Area-1 (Roof)

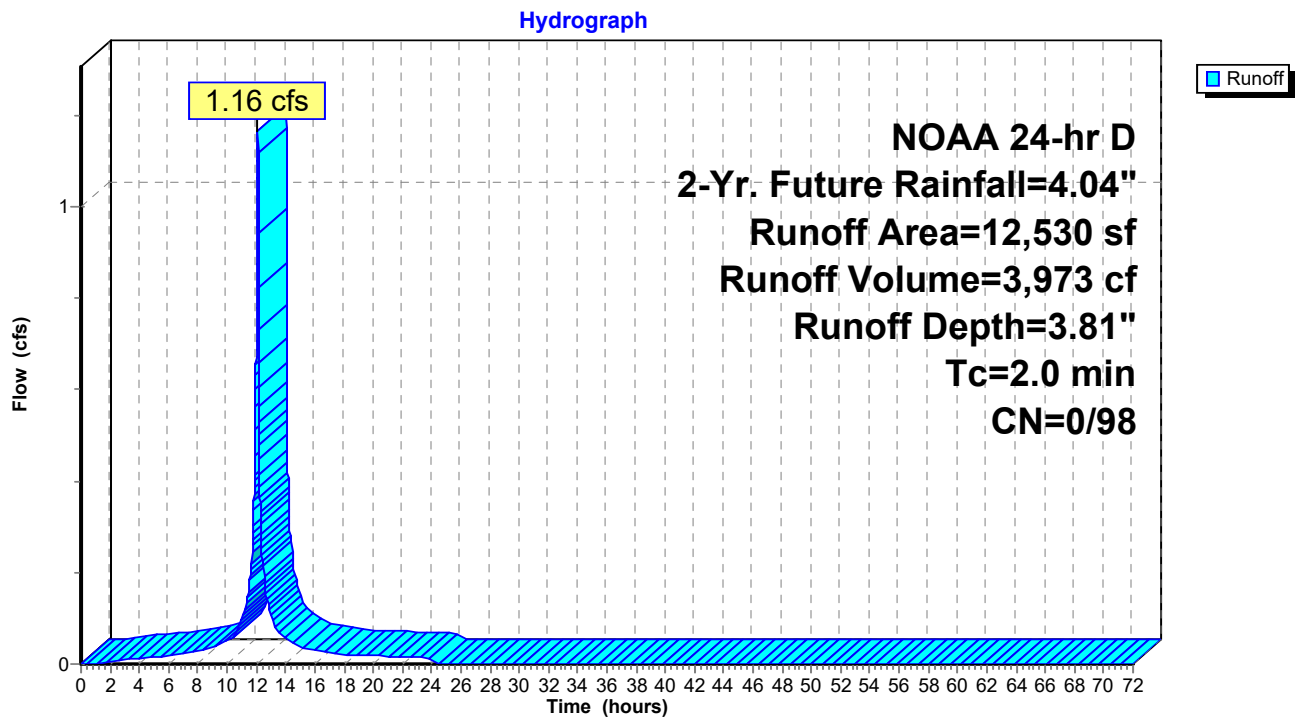
Runoff = 1.16 cfs @ 12.10 hrs, Volume= 3,973 cf, Depth= 3.81"
 Routed to Pond R-1 : Roof Recharge

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Future Rainfall=4.04"

Area (sf)	CN	Description
12,530	98	Roofs, HSG A
12,530	98	100.00% Impervious Area

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

Subcatchment P-1R: Prop. Drainage Area-1 (Roof)



Summary for Subcatchment P-2R: Prop. Drainage Area-2 (Roof)

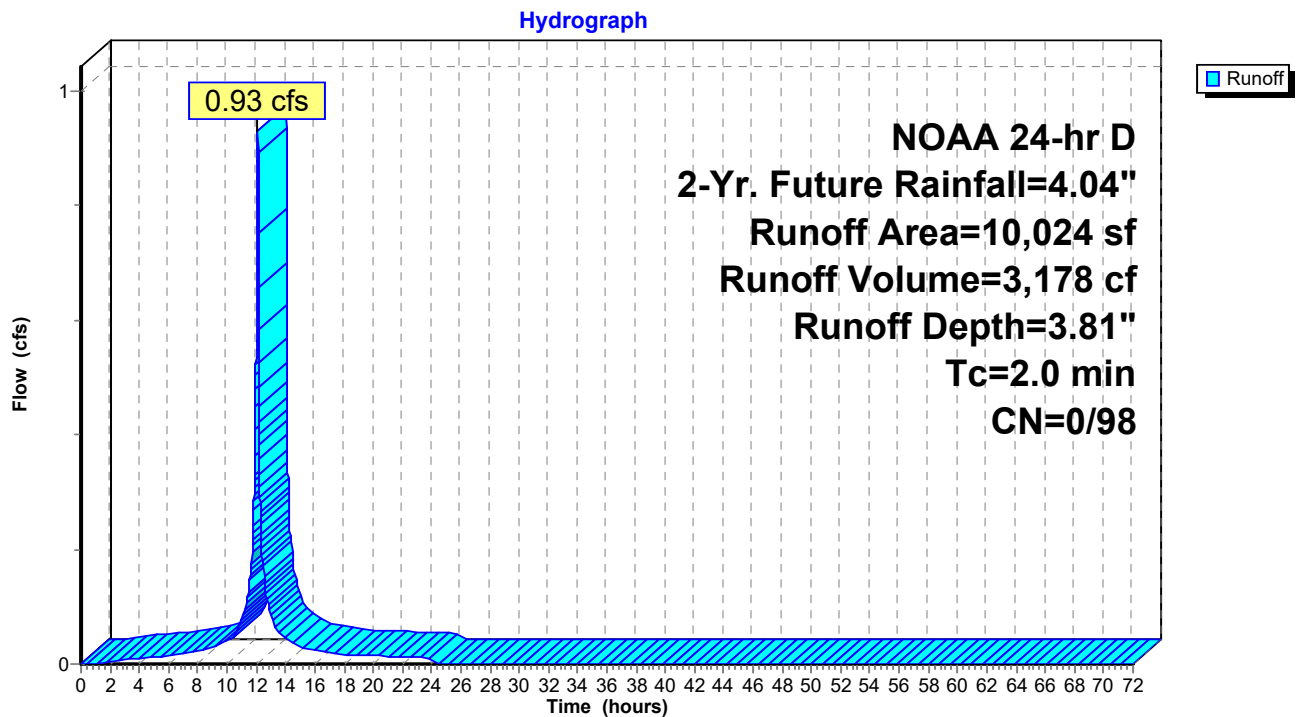
Runoff = 0.93 cfs @ 12.10 hrs, Volume= 3,178 cf, Depth= 3.81"
 Routed to Pond 8P : Roof Recharge

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Future Rainfall=4.04"

Area (sf)	CN	Description
10,024	98	Roofs, HSG A
10,024	98	100.00% Impervious Area

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

Subcatchment P-2R: Prop. Drainage Area-2 (Roof)



Summary for Subcatchment P1A: Prop. Drainage Area-1-A (Woods) (Undisturbed)

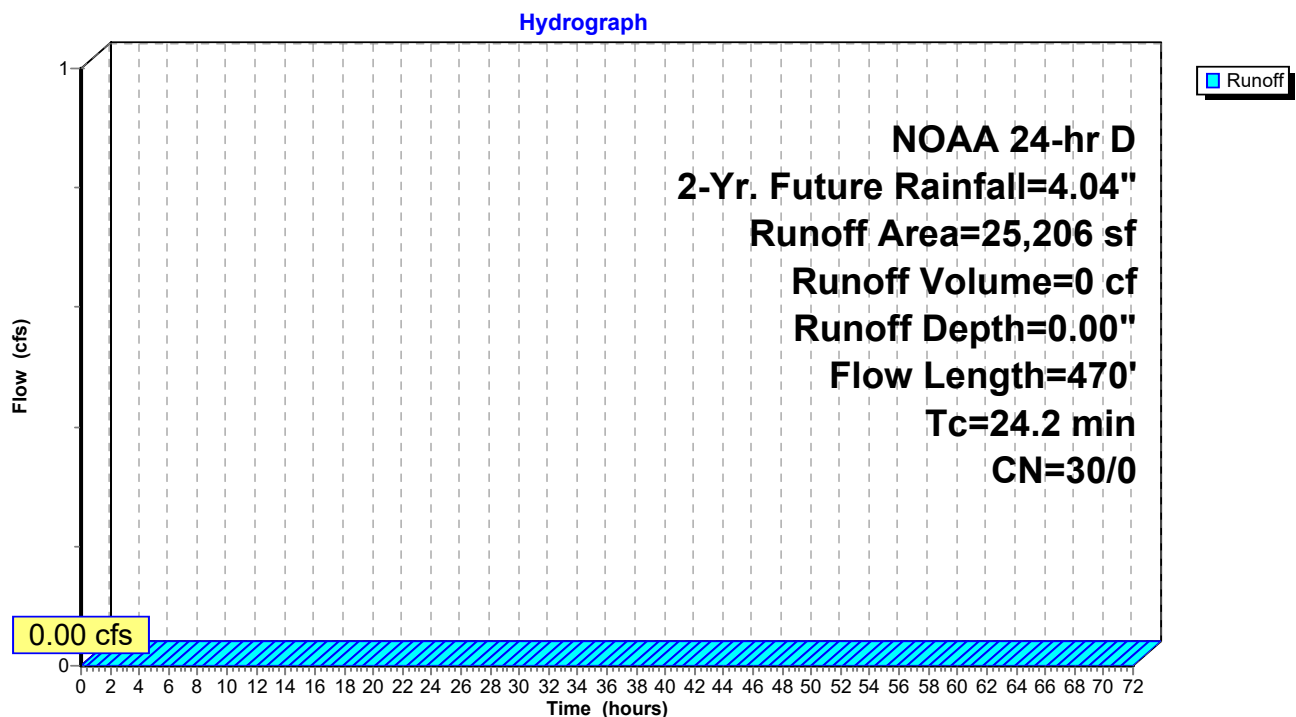
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"
 Routed to Pond B1 : Basin #1

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Future Rainfall=4.04"

Area (sf)	CN	Description
25,206	30	Woods, Good, HSG A
25,206	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2	100	0.0170	0.08		Sheet Flow, Sheet woods Woods: Light underbrush n= 0.400 P2= 3.42"
0.4	60	0.0200	2.28		Shallow Concentrated Flow, Shallow Grass Unpaved Kv= 16.1 fps
0.4	40	0.0062	1.60		Shallow Concentrated Flow, shallow Pvmt Paved Kv= 20.3 fps
1.2	270	0.0050	3.72	4.57	Pipe Channel, pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
24.2	470	Total			

Subcatchment P1A: Prop. Drainage Area-1-A (Woods) (Undisturbed)



Summary for Subcatchment P1B: Prop. Drainage Area-1 (Basin Area) (Non-Contributory)

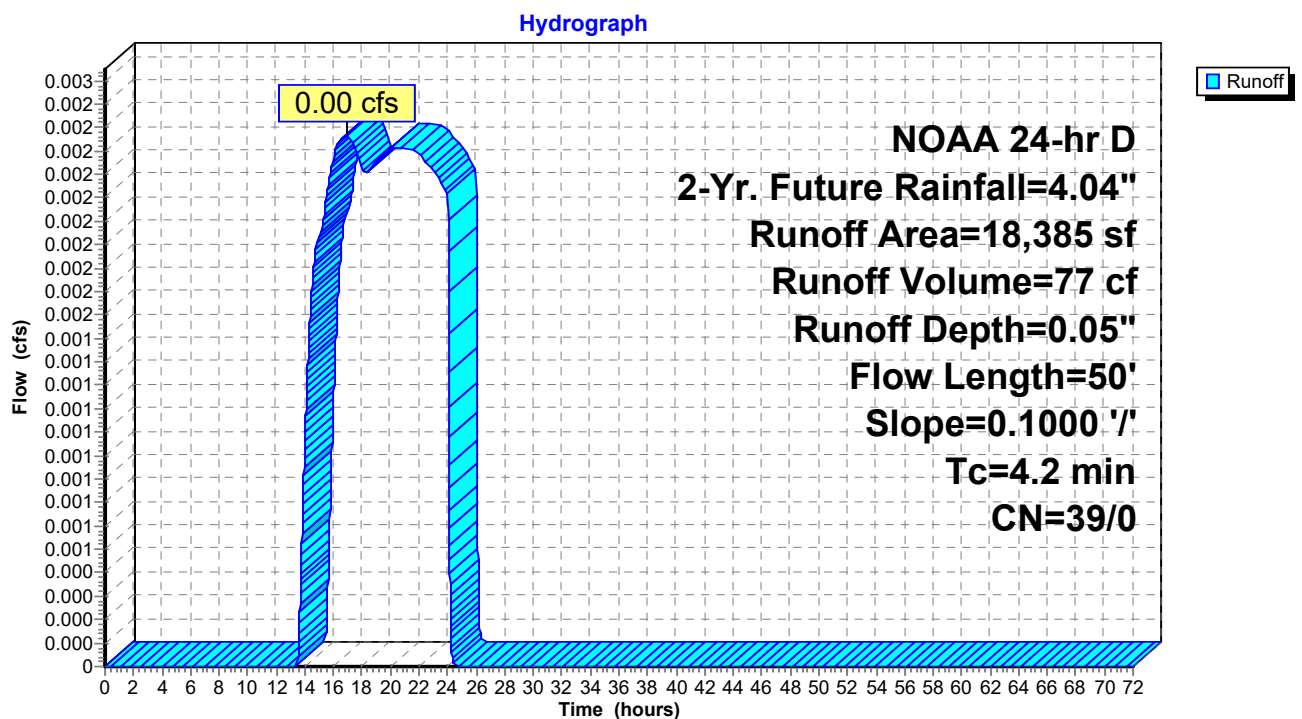
Runoff = 0.00 cfs @ 16.93 hrs, Volume= 77 cf, Depth= 0.05"
 Routed to Pond B1 : Basin #1

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Future Rainfall=4.04"

Area (sf)	CN	Description
* 18,385	39	Basin Area-Non-contributory, HSG A
18,385	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.1000	0.20		Sheet Flow, Sheet Grass
Grass: Dense n= 0.240 P2= 3.42"					

Subcatchment P1B: Prop. Drainage Area-1 (Basin Area) (Non-Contributory)



Summary for Subcatchment P1W: Prop. Drainage Area-1-B (Woods) (undetained)

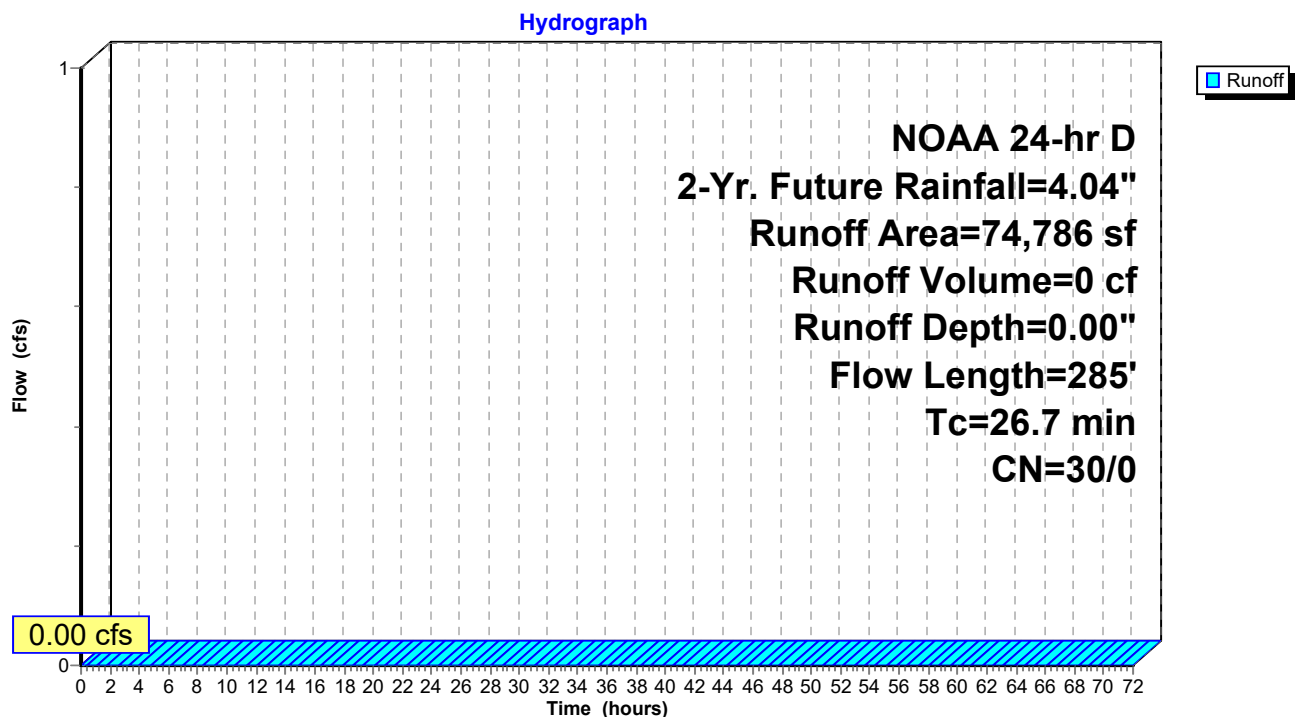
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"
 Routed to Link PT1 : Proposed Total (AP-1)

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Future Rainfall=4.04"

Area (sf)	CN	Description
74,786	30	Woods, Good, HSG A
74,786	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.8	100	0.0200	0.08		Sheet Flow, Sheet woods
					Woods: Light underbrush n= 0.400 P2= 3.42"
5.9	185	0.0110	0.52		Shallow Concentrated Flow, Shallow Woods
					Woodland Kv= 5.0 fps
26.7	285	Total			

Subcatchment P1W: Prop. Drainage Area-1-B (Woods) (undetained)



Summary for Subcatchment P2B: Prop. Drainage Area-2 (Basin)(Non-Contributory)

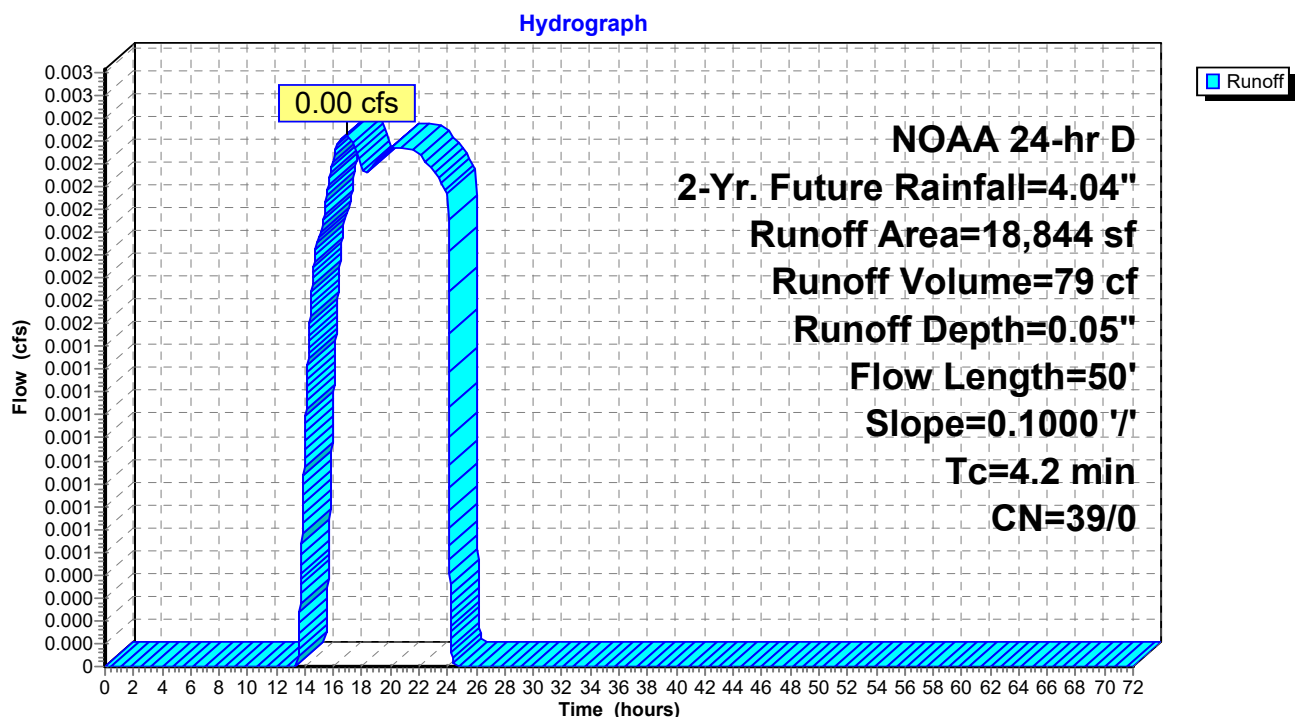
Runoff = 0.00 cfs @ 16.93 hrs, Volume= 79 cf, Depth= 0.05"
 Routed to Pond B2 : Basin #2

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Future Rainfall=4.04"

Area (sf)	CN	Description
* 18,844	39	Basin Area-Non-contributory, HSG A
18,844	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.1000	0.20		Sheet Flow, Sheet Grass
Grass: Dense n= 0.240 P2= 3.42"					

Subcatchment P2B: Prop. Drainage Area-2 (Basin)(Non-Contributory)



Summary for Subcatchment P2I: Prop. Drainage Area-2 (Impervious)

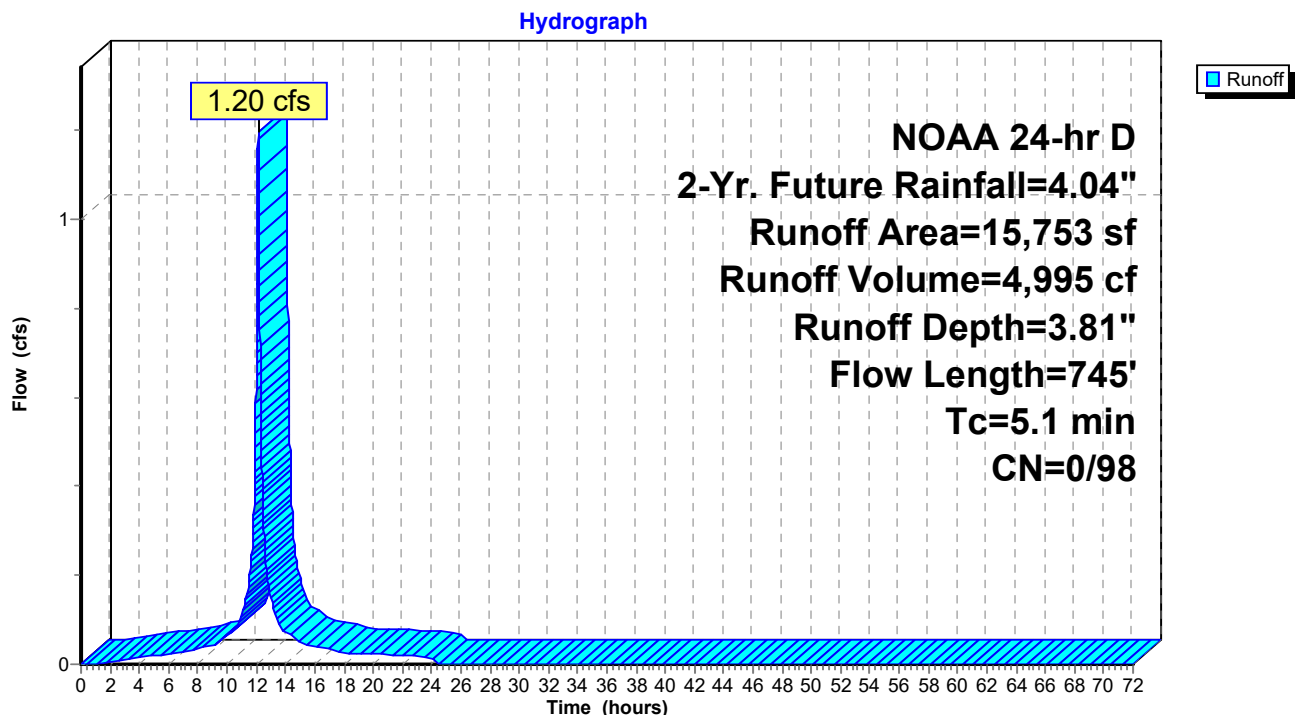
Runoff = 1.20 cfs @ 12.13 hrs, Volume= 4,995 cf, Depth= 3.81"
 Routed to Pond B2 : Basin #2

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Future Rainfall=4.04"

Area (sf)	CN	Description
9,010	98	Paved roads w/curbs & sewers, HSG A
* 2,394	98	Sidewalks, HSG A
* 4,349	98	Driveways, HSG A
15,753	98	Weighted Average
15,753	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	100	0.0083	1.00		Sheet Flow, Sheet Pvmt Smooth surfaces n= 0.011 P2= 3.42"
0.9	95	0.0083	1.85		Shallow Concentrated Flow, Shallow Pvmt Paved Kv= 20.3 fps
2.5	550	0.0050	3.72	4.57	Pipe Channel, Pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
5.1	745	Total			

Subcatchment P2I: Prop. Drainage Area-2 (Impervious)



Summary for Subcatchment P2P: Prop. Drainage Area-2 (Pervious)

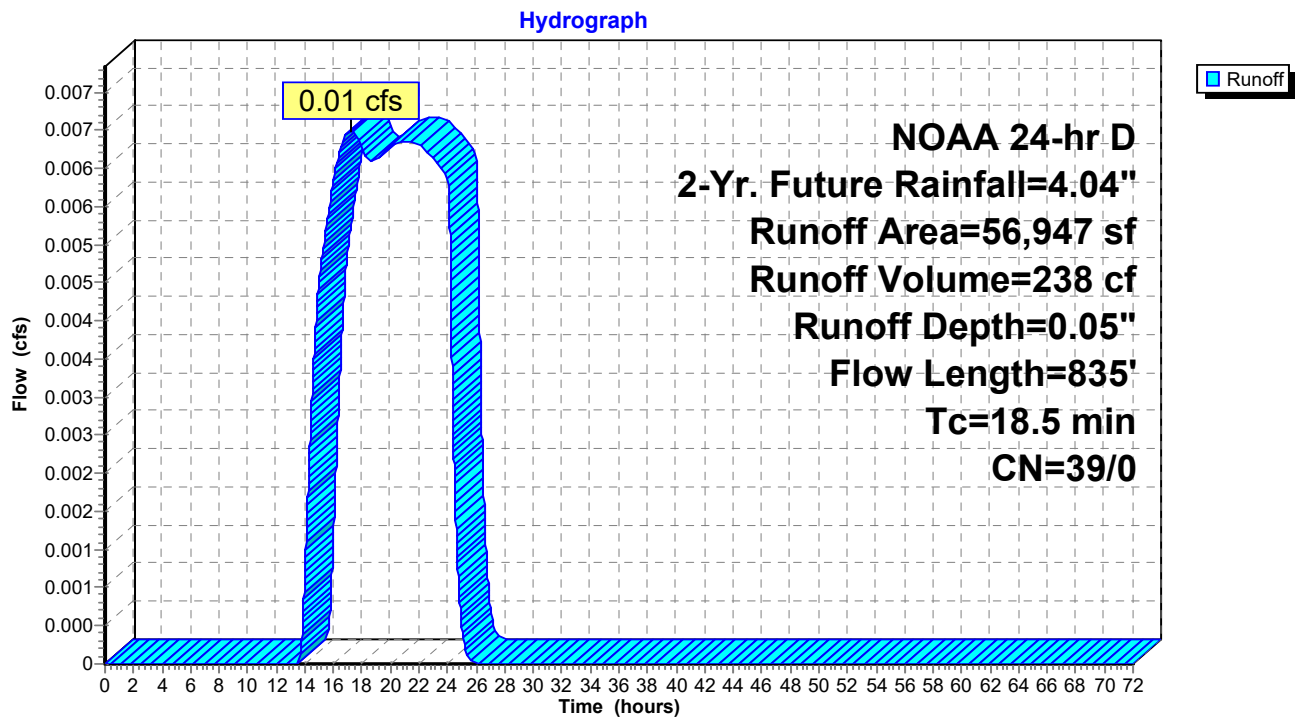
Runoff = 0.01 cfs @ 17.26 hrs, Volume= 238 cf, Depth= 0.05"
 Routed to Pond B2 : Basin #2

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Future Rainfall=4.04"

Area (sf)	CN	Description
56,947	39	>75% Grass cover, Good, HSG A
56,947	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	90	0.0150	0.11		Sheet Flow, Sheet Grass Grass: Dense n= 0.240 P2= 3.42"
1.8	195	0.0083	1.85		Shallow Concentrated Flow, Shallow Pvmnt Paved Kv= 20.3 fps
2.5	550	0.0050	3.72	4.57	Pipe Channel, Pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
18.5	835	Total			

Subcatchment P2P: Prop. Drainage Area-2 (Pervious)



Summary for Subcatchment P2W: Prop. Drainage Area-2 (Woods) (Undisturbed)

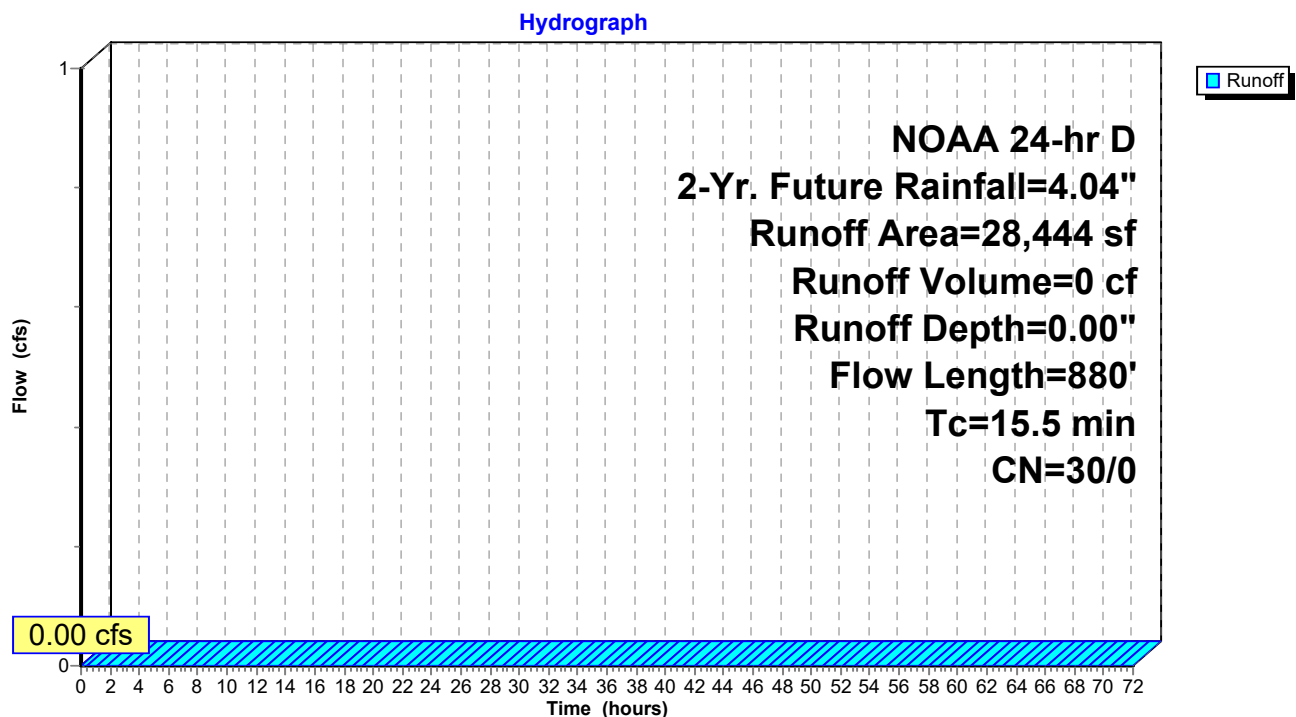
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"
 Routed to Pond B2 : Basin #2

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Yr. Future Rainfall=4.04"

Area (sf)	CN	Description
28,444	30	Woods, Good, HSG A
28,444	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	50	0.0250	0.08		Sheet Flow, Sheet woods Woods: Light underbrush n= 0.400 P2= 3.42"
0.6	120	0.0400	3.22		Shallow Concentrated Flow, Shallow Grass Unpaved Kv= 16.1 fps
1.7	190	0.0083	1.85		Shallow Concentrated Flow, shallow Pvmt Paved Kv= 20.3 fps
2.3	520	0.0050	3.72	4.57	Pipe Channel, pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
15.5	880	Total			

Subcatchment P2W: Prop. Drainage Area-2 (Woods) (Undisturbed)



Summary for Pond 8P: Roof Recharge

Inflow Area = 10,024 sf, 100.00% Impervious, Inflow Depth = 3.81" for 2-Yr. Future event
 Inflow = 0.93 cfs @ 12.10 hrs, Volume= 3,178 cf
 Outflow = 0.19 cfs @ 11.84 hrs, Volume= 3,178 cf, Atten= 80%, Lag= 0.0 min
 Discarded = 0.19 cfs @ 11.84 hrs, Volume= 3,178 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to Pond B2 : Basin #2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 77.16' @ 12.38 hrs Surf.Area= 822 sf Storage= 563 cf

Plug-Flow detention time= 13.3 min calculated for 3,178 cf (100% of inflow)
 Center-of-Mass det. time= 13.3 min (764.2 - 750.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	76.00'	219 cf	6.25'W x 32.23'L x 3.75'H Field A 755 cf Overall - 209 cf Embedded = 546 cf x 40.0% Voids
#2A	76.50'	209 cf	ADS_StormTech SC-800 +Cap x 4 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap Cap Storage= 3.4 cf x 2 x 1 rows = 6.8 cf
#3	76.00'	24 cf	2.00'W x 2.00'L x 6.00'H Prismatic
			452 cf x 4.00 = 1,807 cf Total Available Storage

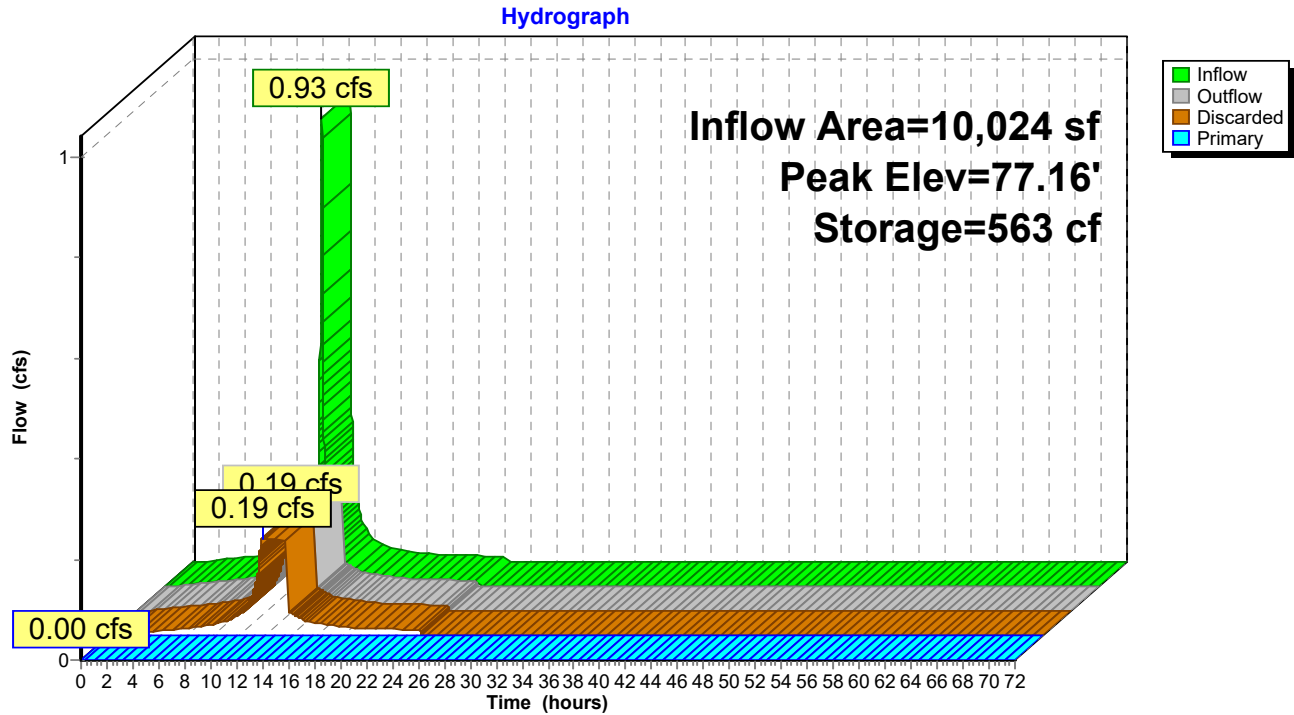
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	81.00'	24.0" x 24.0" Horiz. Grate 24" C= 0.600 Limited to weir flow at low heads
#2	Discarded	76.00'	10.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.19 cfs @ 11.84 hrs HW=76.06' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=76.00' TW=77.00' (Dynamic Tailwater)
 ↑ **1=Grate 24"** (Controls 0.00 cfs)

Pond 8P: Roof Recharge



Summary for Pond 12P: Roof Recharge

Inflow Area = 12,530 sf, 100.00% Impervious, Inflow Depth = 3.81" for 2-Yr. Future event
 Inflow = 1.16 cfs @ 12.10 hrs, Volume= 3,973 cf
 Outflow = 0.19 cfs @ 11.75 hrs, Volume= 3,973 cf, Atten= 84%, Lag= 0.0 min
 Discarded = 0.19 cfs @ 11.75 hrs, Volume= 3,973 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to Pond B3 : Basin #3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 77.65' @ 12.53 hrs Surf.Area= 822 sf Storage= 842 cf

Plug-Flow detention time= 22.1 min calculated for 3,973 cf (100% of inflow)
 Center-of-Mass det. time= 22.1 min (773.0 - 750.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	76.00'	219 cf	6.25'W x 32.23'L x 3.75'H Field A 755 cf Overall - 209 cf Embedded = 546 cf x 40.0% Voids
#2A	76.50'	209 cf	ADS_StormTech SC-800 +Cap x 4 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap Cap Storage= 3.4 cf x 2 x 1 rows = 6.8 cf
#3	76.00'	24 cf	2.00'W x 2.00'L x 6.00'H Prismatic
			452 cf x 4.00 = 1,807 cf Total Available Storage

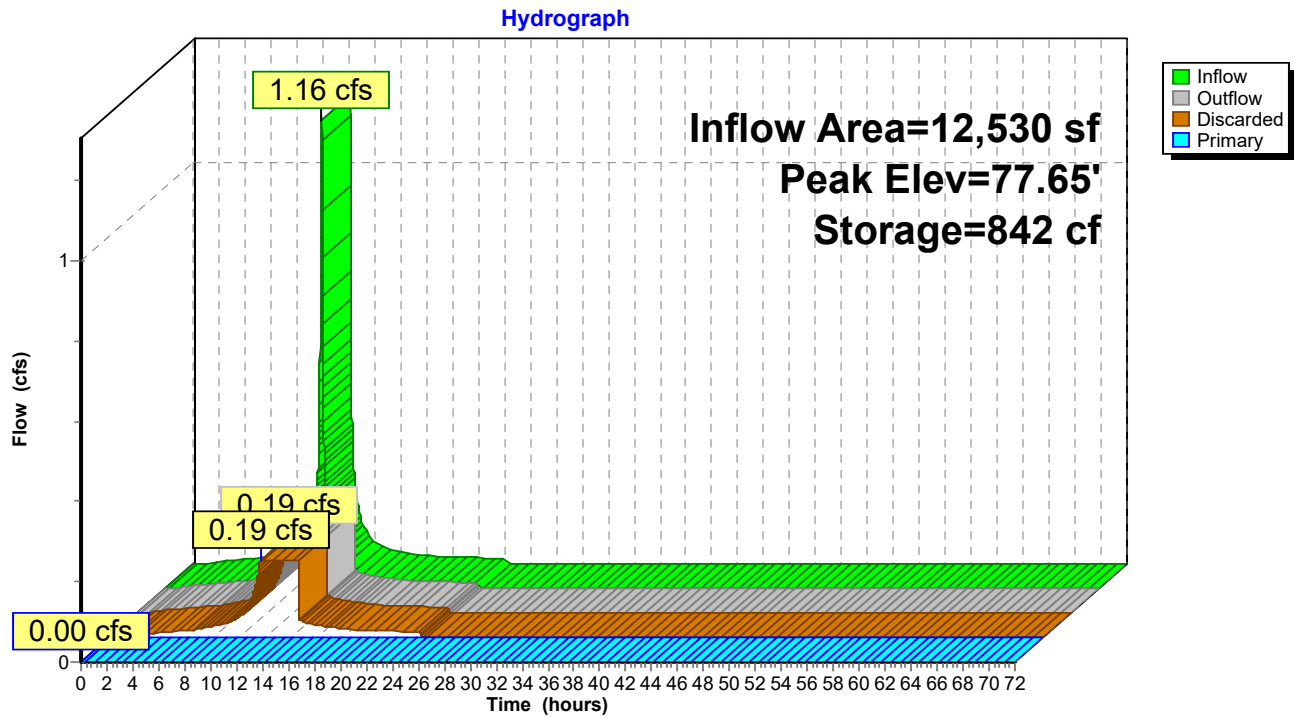
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	81.00'	24.0" x 24.0" Horiz. Grate 24" C= 0.600 Limited to weir flow at low heads
#2	Discarded	76.00'	10.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.19 cfs @ 11.75 hrs HW=76.06' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=76.00' TW=66.00' (Dynamic Tailwater)
 ↑ **1=Grate 24"** (Controls 0.00 cfs)

Pond 12P: Roof Recharge



Summary for Pond B1: Basin #1

Inflow Area = 152,539 sf, 23.95% Impervious, Inflow Depth = 0.63" for 2-Yr. Future event
 Inflow = 2.02 cfs @ 12.12 hrs, Volume= 7,991 cf
 Outflow = 0.23 cfs @ 12.94 hrs, Volume= 7,991 cf, Atten= 88%, Lag= 49.6 min
 Discarded = 0.23 cfs @ 12.94 hrs, Volume= 7,989 cf
 Primary = 0.00 cfs @ 12.94 hrs, Volume= 2 cf
 Routed to Pond B2 : Basin #2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 77.52' @ 12.94 hrs Surf.Area= 5,001 sf Storage= 2,363 cf

Plug-Flow detention time= 68.3 min calculated for 7,991 cf (100% of inflow)
 Center-of-Mass det. time= 68.3 min (840.9 - 772.6)

Volume	Invert	Avail.Storage	Storage Description
#1	77.00'	20,548 cf	Basin 1 (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
77.00	4,060	0	0
78.00	5,865	4,963	4,963
79.00	7,766	6,816	11,778
80.00	9,773	8,770	20,548

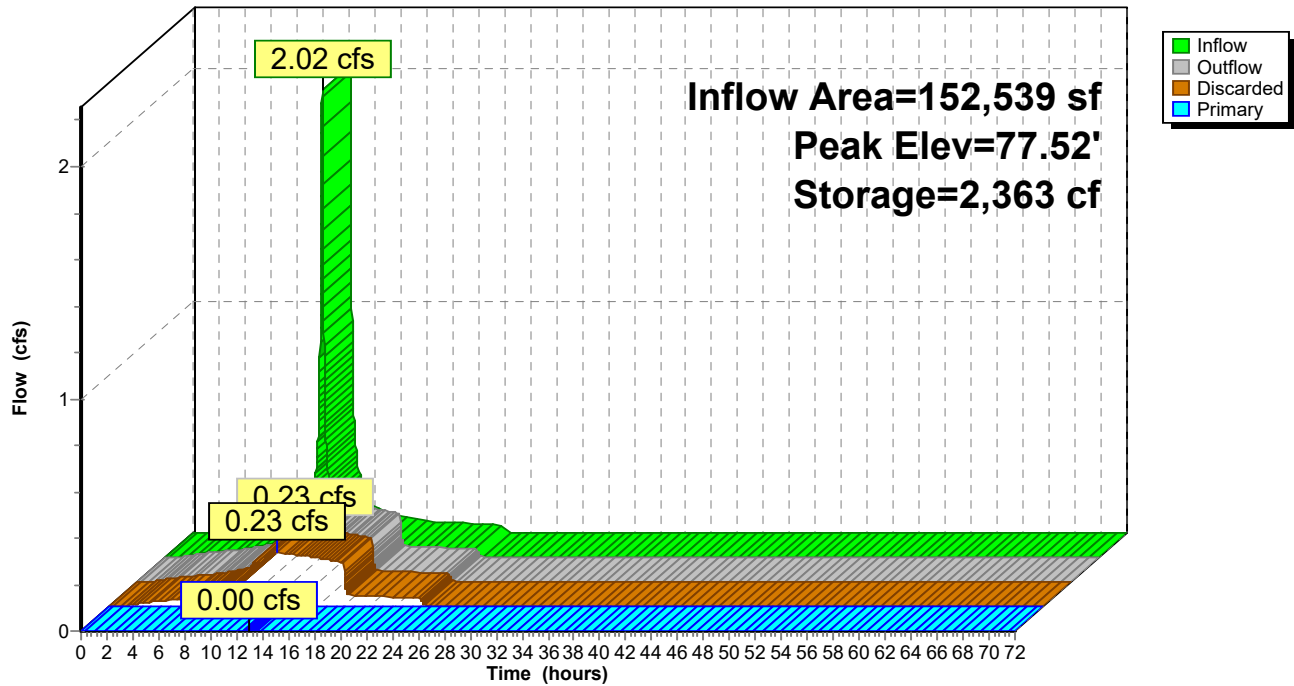
Device	Routing	Invert	Outlet Devices
#1	Primary	77.34'	15.0" Round Culvert 15" L= 69.0' Ke= 0.500 Inlet / Outlet Invert= 77.34' / 77.00' S= 0.0049 ' S= 0.0049 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.23 sf
#2	Device 1	77.50'	3.0" Vert. Orifice 3" C= 0.600 Limited to weir flow at low heads
#3	Device 1	80.00'	42.0" x 42.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	80.20'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	77.00'	2.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.23 cfs @ 12.94 hrs HW=77.52' (Free Discharge)
 ↳ **5=Exfiltration** (Exfiltration Controls 0.23 cfs)

Primary OutFlow Max=0.00 cfs @ 12.94 hrs HW=77.52' TW=77.34' (Dynamic Tailwater)
 ↳ **1=Culvert 15"** (Passes 0.00 cfs of 0.08 cfs potential flow)
 ↳ **2=Orifice 3"** (Orifice Controls 0.00 cfs @ 0.50 fps)
 ↳ **3=Grate** (Controls 0.00 cfs)
 ↳ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B1: Basin #1

Hydrograph



Summary for Pond B2: Basin #2

Inflow Area = 282,551 sf, 22.05% Impervious, Inflow Depth = 0.23" for 2-Yr. Future event
 Inflow = 1.20 cfs @ 12.13 hrs, Volume= 5,314 cf
 Outflow = 0.19 cfs @ 12.76 hrs, Volume= 5,314 cf, Atten= 84%, Lag= 38.0 min
 Discarded = 0.19 cfs @ 12.76 hrs, Volume= 5,314 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to Pond B3 : Basin #3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 77.34' @ 12.76 hrs Surf.Area= 4,117 sf Storage= 1,325 cf

Plug-Flow detention time= 41.3 min calculated for 5,314 cf (100% of inflow)
 Center-of-Mass det. time= 41.3 min (821.3 - 780.0)

Volume	Invert	Avail.Storage	Storage Description
#1	77.00'	18,035 cf	Basin 2 (Prismatic) Listed below (Recalc)

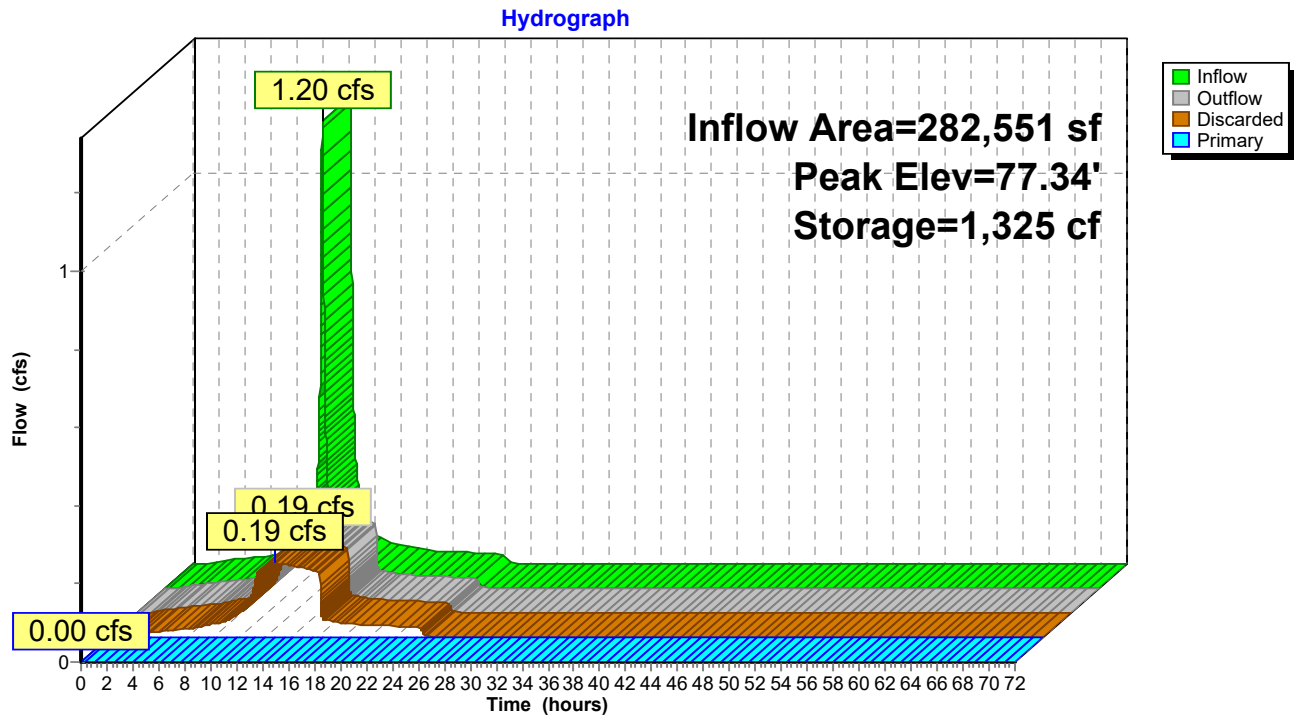
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
77.00	3,573	0	0
78.00	5,151	4,362	4,362
79.00	6,815	5,983	10,345
80.00	8,565	7,690	18,035

Device	Routing	Invert	Outlet Devices
#1	Primary	77.00'	18.0" Round Culvert 15" L= 69.0' Ke= 0.500 Inlet / Outlet Invert= 77.00' / 66.00' S= 0.1594 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf
#2	Device 1	77.50'	4.0" Vert. Orifice 4" C= 0.600 Limited to weir flow at low heads
#3	Device 1	80.00'	42.0" x 42.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	80.30'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	77.00'	2.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.19 cfs @ 12.76 hrs HW=77.34' (Free Discharge)
 ↳ **5=Exfiltration** (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=77.00' TW=66.00' (Dynamic Tailwater)
 ↳ **1=Culvert 15"** (Controls 0.00 cfs)
 ↳ **2=Orifice 4"** (Controls 0.00 cfs)
 ↳ **3=Grate** (Controls 0.00 cfs)
 ↳ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B2: Basin #2



Summary for Pond B3: Basin #3

Inflow Area = 440,051 sf, 22.16% Impervious, Inflow Depth = 0.21" for 2-Yr. Future event
 Inflow = 1.99 cfs @ 12.11 hrs, Volume= 7,566 cf
 Outflow = 0.20 cfs @ 13.02 hrs, Volume= 7,566 cf, Atten= 90%, Lag= 54.8 min
 Discarded = 0.20 cfs @ 13.02 hrs, Volume= 7,566 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to Link PT2 : Proposed Total (AP-2)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 66.56' @ 13.02 hrs Surf.Area= 4,323 sf Storage= 2,295 cf

Plug-Flow detention time= 76.4 min calculated for 7,566 cf (100% of inflow)
 Center-of-Mass det. time= 76.4 min (848.6 - 772.2)

Volume	Invert	Avail.Storage	Storage Description
#1	66.00'	34,230 cf	Basin 3 (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
66.00	3,879	0	0
67.00	4,673	4,276	4,276
68.00	5,501	5,087	9,363
69.00	6,379	5,940	15,303
70.00	7,310	6,845	22,148
71.00	8,291	7,801	29,948
71.50	8,836	4,282	34,230

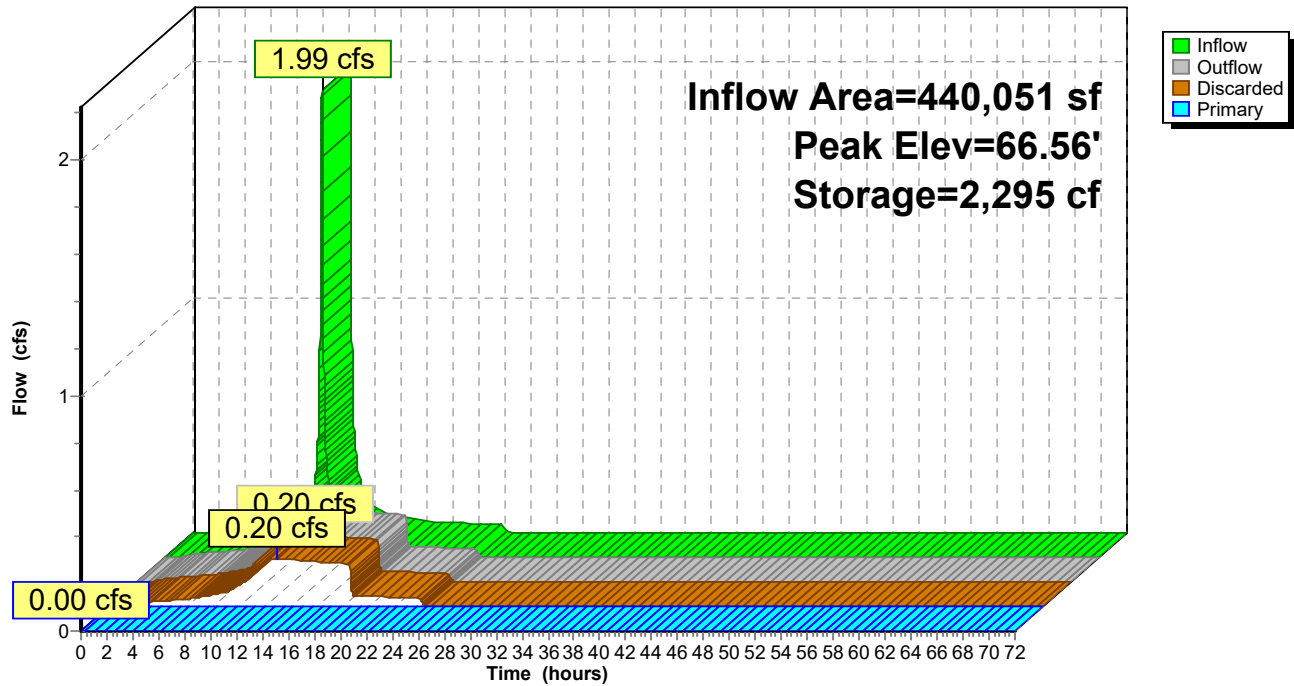
Device	Routing	Invert	Outlet Devices
#1	Primary	67.49'	15.0" Round Culvert 15" L= 360.0' Ke= 0.500 Inlet / Outlet Invert= 67.49' / 66.00' S= 0.0041 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.23 sf
#2	Device 1	68.00'	4.0" Vert. Orifice 4" C= 0.600 Limited to weir flow at low heads
#3	Device 1	70.50'	42.0" x 42.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	71.50'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	66.00'	2.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.20 cfs @ 13.02 hrs HW=66.56' (Free Discharge)
 ↳ **5=Exfiltration** (Exfiltration Controls 0.20 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=66.00' TW=0.00' (Dynamic Tailwater)
 ↳ **1=Culvert 15"** (Controls 0.00 cfs)
 ↳ **2=Orifice 4"** (Controls 0.00 cfs)
 ↳ **3=Grate** (Controls 0.00 cfs)
 ↳ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B3: Basin #3

Hydrograph



Summary for Pond R-1: Roof Recharge

Inflow Area = 12,530 sf, 100.00% Impervious, Inflow Depth = 3.81" for 2-Yr. Future event
 Inflow = 1.16 cfs @ 12.10 hrs, Volume= 3,973 cf
 Outflow = 0.24 cfs @ 11.84 hrs, Volume= 3,973 cf, Atten= 80%, Lag= 0.0 min
 Discarded = 0.24 cfs @ 11.84 hrs, Volume= 3,973 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to Pond B1 : Basin #1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 77.16' @ 12.38 hrs Surf.Area= 1,027 sf Storage= 704 cf

Plug-Flow detention time= 13.3 min calculated for 3,973 cf (100% of inflow)
 Center-of-Mass det. time= 13.3 min (764.2 - 750.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	76.00'	219 cf	6.25'W x 32.23'L x 3.75'H Field A 755 cf Overall - 209 cf Embedded = 546 cf x 40.0% Voids
#2A	76.50'	209 cf	ADS_StormTech SC-800 +Cap x 4 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap Cap Storage= 3.4 cf x 2 x 1 rows = 6.8 cf
#3	76.00'	24 cf	2.00'W x 2.00'L x 6.00'H Prismatic
		452 cf	x 5.00 = 2,259 cf Total Available Storage

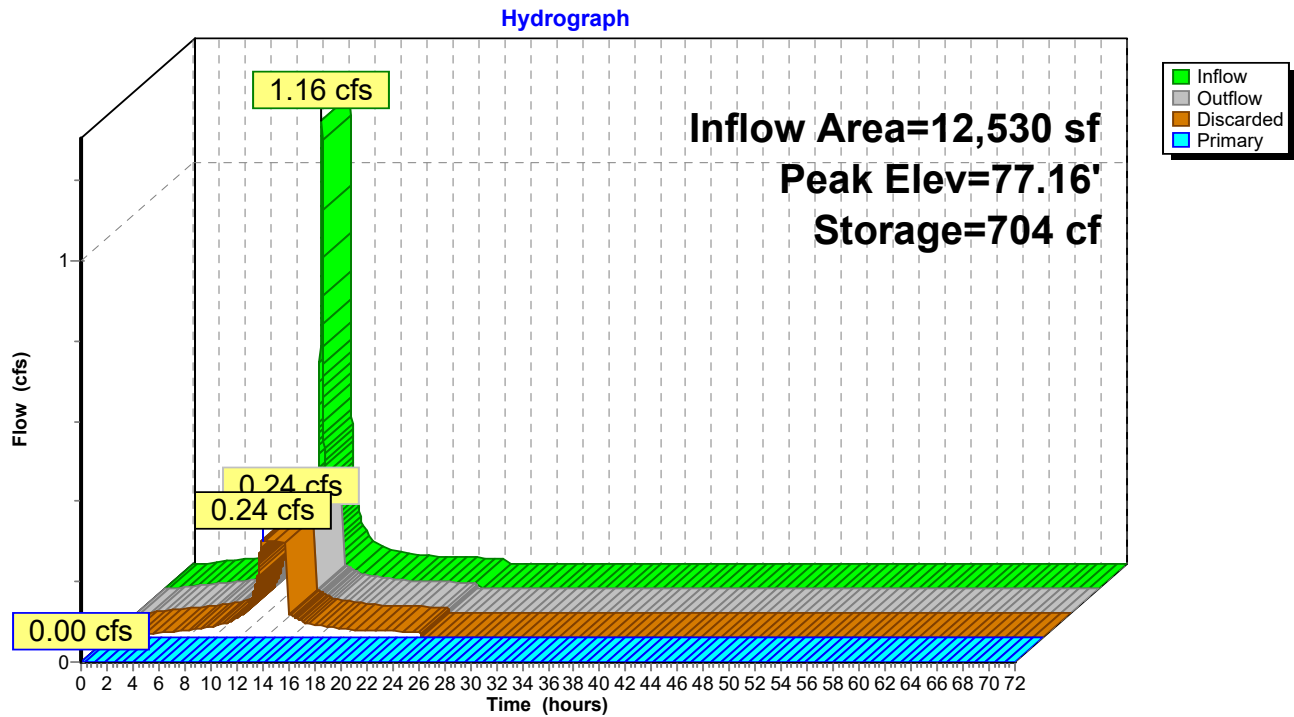
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	81.00'	24.0" x 24.0" Horiz. Grate 24" C= 0.600 Limited to weir flow at low heads
#2	Discarded	76.00'	10.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.24 cfs @ 11.84 hrs HW=76.06' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.24 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=76.00' TW=77.00' (Dynamic Tailwater)
 ↑ **1=Grate 24"** (Controls 0.00 cfs)

Pond R-1: Roof Recharge

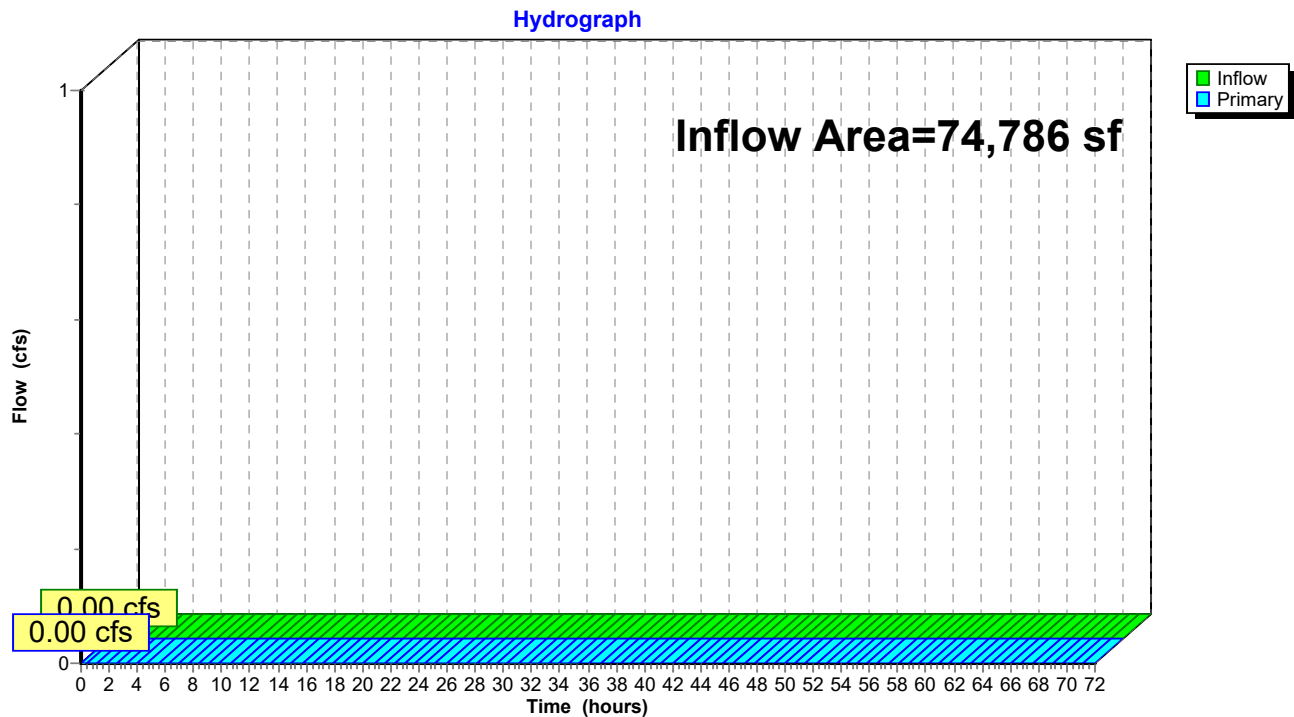


Summary for Link PT1: Proposed Total (AP-1)

Inflow Area = 74,786 sf, 0.00% Impervious, Inflow Depth = 0.00" for 2-Yr. Future event
 Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link PT1: Proposed Total (AP-1)

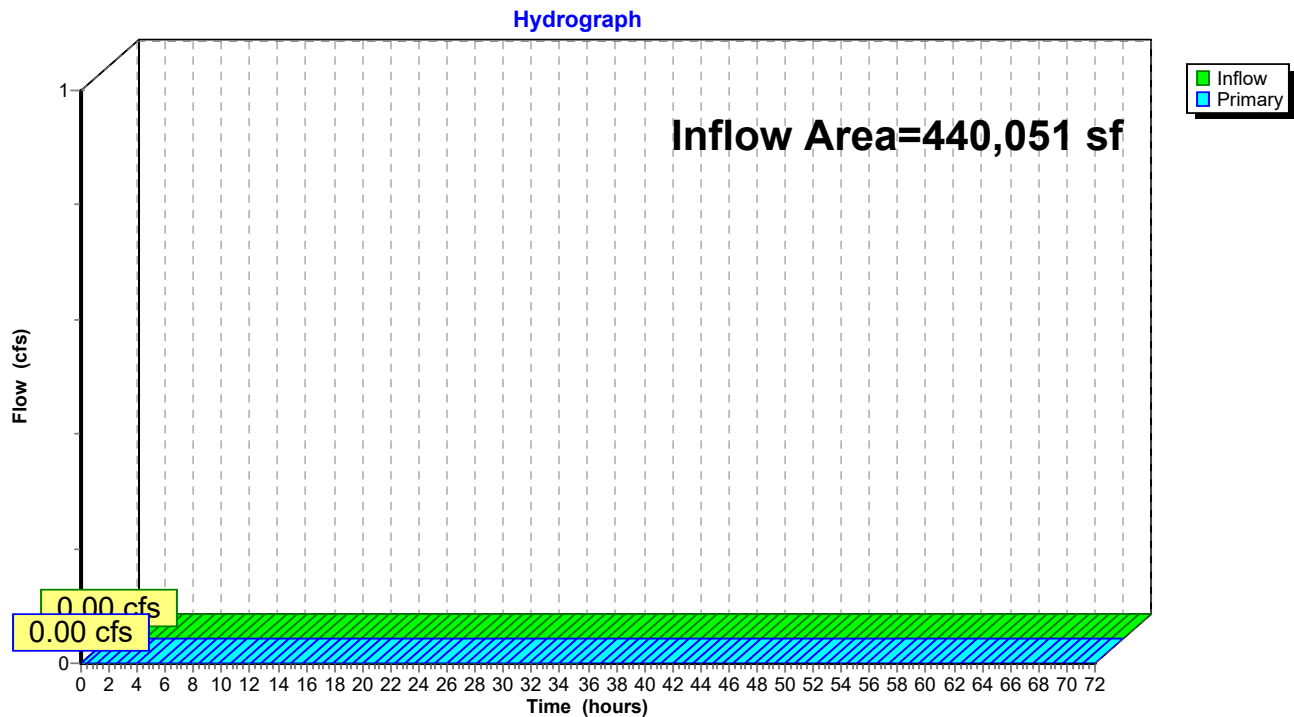


Summary for Link PT2: Proposed Total (AP-2)

Inflow Area = 440,051 sf, 22.16% Impervious, Inflow Depth = 0.00" for 2-Yr. Future event
 Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link PT2: Proposed Total (AP-2)



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
 Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv.
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment7S: Prop. Drainage Area-3 Runoff Area=18,104 sf 0.00% Impervious Runoff Depth=0.55"
 Flow Length=50' Slope=0.1000 '/' Tc=4.2 min CN=39/0 Runoff=0.08 cfs 825 cf

Subcatchment8S: Prop. Drainage Area-3 Runoff Area=22,694 sf 100.00% Impervious Runoff Depth=6.10"
 Flow Length=530' Tc=3.0 min CN=0/98 Runoff=3.13 cfs 11,539 cf

Subcatchment9S: Prop. Drainage Area-3 Runoff Area=70,251 sf 0.00% Impervious Runoff Depth=0.55"
 Flow Length=717' Tc=12.5 min CN=39/0 Runoff=0.23 cfs 3,203 cf

Subcatchment10S: Prop. Drainage Runoff Area=12,530 sf 100.00% Impervious Runoff Depth=6.10"
 Tc=2.0 min CN=0/98 Runoff=1.84 cfs 6,371 cf

Subcatchment11S: Prop. Drainage Runoff Area=33,921 sf 0.00% Impervious Runoff Depth=0.11"
 Flow Length=50' Slope=0.0250 '/' Tc=10.9 min CN=30/0 Runoff=0.01 cfs 317 cf

SubcatchmentP-1I: Prop. Drainage Runoff Area=24,003 sf 100.00% Impervious Runoff Depth=6.10"
 Flow Length=430' Tc=3.6 min CN=0/98 Runoff=3.18 cfs 12,205 cf

SubcatchmentP-1P: Prop. Drainage Area-1 Runoff Area=72,415 sf 0.00% Impervious Runoff Depth=0.55"
 Flow Length=530' Tc=13.1 min CN=39/0 Runoff=0.23 cfs 3,302 cf

SubcatchmentP-1R: Prop. Drainage Runoff Area=12,530 sf 100.00% Impervious Runoff Depth=6.10"
 Tc=2.0 min CN=0/98 Runoff=1.84 cfs 6,371 cf

SubcatchmentP-2R: Prop. Drainage Runoff Area=10,024 sf 100.00% Impervious Runoff Depth=6.10"
 Tc=2.0 min CN=0/98 Runoff=1.47 cfs 5,097 cf

SubcatchmentP1A: Prop. Drainage Runoff Area=25,206 sf 0.00% Impervious Runoff Depth=0.11"
 Flow Length=470' Tc=24.2 min CN=30/0 Runoff=0.01 cfs 235 cf

SubcatchmentP1B: Prop. Drainage Area-1 Runoff Area=18,385 sf 0.00% Impervious Runoff Depth=0.55"
 Flow Length=50' Slope=0.1000 '/' Tc=4.2 min CN=39/0 Runoff=0.08 cfs 838 cf

SubcatchmentP1W: Prop. Drainage Runoff Area=74,786 sf 0.00% Impervious Runoff Depth=0.11"
 Flow Length=285' Tc=26.7 min CN=30/0 Runoff=0.02 cfs 698 cf

SubcatchmentP2B: Prop. Drainage Area-2 Runoff Area=18,844 sf 0.00% Impervious Runoff Depth=0.55"
 Flow Length=50' Slope=0.1000 '/' Tc=4.2 min CN=39/0 Runoff=0.08 cfs 859 cf

SubcatchmentP2I: Prop. Drainage Area-2 Runoff Area=15,753 sf 100.00% Impervious Runoff Depth=6.10"
 Flow Length=745' Tc=5.1 min CN=0/98 Runoff=1.89 cfs 8,010 cf

SubcatchmentP2P: Prop. Drainage Area-2 Runoff Area=56,947 sf 0.00% Impervious Runoff Depth=0.55"
 Flow Length=835' Tc=18.5 min CN=39/0 Runoff=0.16 cfs 2,597 cf

SubcatchmentP2W: Prop. Drainage Area-2 Runoff Area=28,444 sf 0.00% Impervious Runoff Depth=0.11"
 Flow Length=880' Tc=15.5 min CN=30/0 Runoff=0.01 cfs 265 cf

Pond 8P: Roof Recharge Peak Elev=78.43' Storage=1,252 cf Inflow=1.47 cfs 5,097 cf
Discarded=0.19 cfs 5,097 cf Primary=0.00 cfs 0 cf Outflow=0.19 cfs 5,097 cf

Pond 12P: Roof Recharge Peak Elev=81.02' Storage=1,791 cf Inflow=1.84 cfs 6,371 cf
Discarded=0.19 cfs 6,351 cf Primary=0.05 cfs 20 cf Outflow=0.24 cfs 6,371 cf

Pond B1: Basin #1 Peak Elev=78.04' Storage=5,210 cf Inflow=3.25 cfs 16,580 cf
Discarded=0.28 cfs 14,515 cf Primary=0.12 cfs 2,065 cf Outflow=0.38 cfs 16,580 cf

Pond B2: Basin #2 Peak Elev=77.83' Storage=3,506 cf Inflow=1.99 cfs 13,796 cf
Discarded=0.23 cfs 11,515 cf Primary=0.17 cfs 2,281 cf Outflow=0.40 cfs 13,796 cf

Pond B3: Basin #3 Peak Elev=67.68' Storage=7,653 cf Inflow=3.20 cfs 18,185 cf
Discarded=0.24 cfs 18,185 cf Primary=0.00 cfs 0 cf Outflow=0.24 cfs 18,185 cf

Pond R-1: Roof Recharge Peak Elev=78.43' Storage=1,565 cf Inflow=1.84 cfs 6,371 cf
Discarded=0.24 cfs 6,371 cf Primary=0.00 cfs 0 cf Outflow=0.24 cfs 6,371 cf

Link PT1: Proposed Total (AP-1) Inflow=0.02 cfs 698 cf
Primary=0.02 cfs 698 cf

Link PT2: Proposed Total (AP-2) Inflow=0.00 cfs 0 cf
Primary=0.00 cfs 0 cf

Total Runoff Area = 514,837 sf Runoff Volume = 62,732 cf Average Runoff Depth = 1.46"
81.06% Pervious = 417,303 sf 18.94% Impervious = 97,534 sf

Summary for Subcatchment 7S: Prop. Drainage Area-3 (Basin Area) (Non-Contributory)

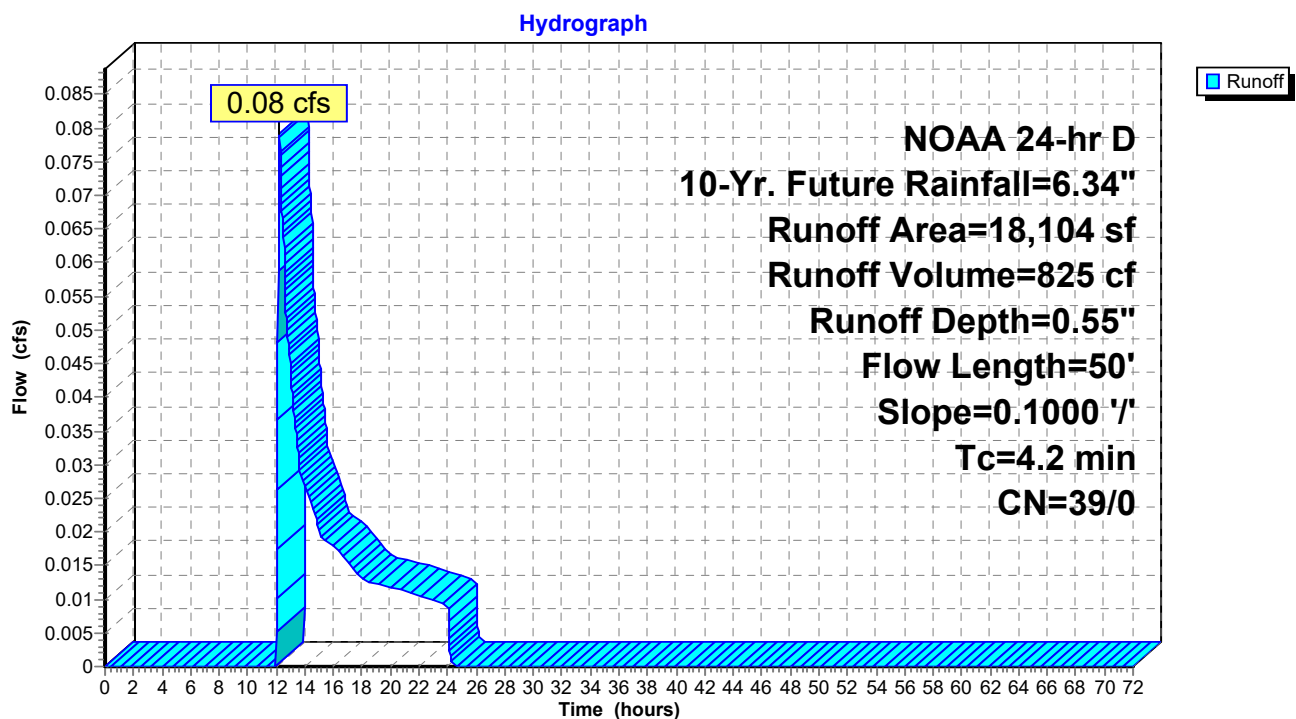
Runoff = 0.08 cfs @ 12.23 hrs, Volume= 825 cf, Depth= 0.55"
 Routed to Pond B3 : Basin #3

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Future Rainfall=6.34"

Area (sf)	CN	Description
* 18,104	39	Basin Area-Non-contributory, HSG A
18,104	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.1000	0.20		Sheet Flow, Sheet Grass
Grass: Dense n= 0.240 P2= 3.42"					

Subcatchment 7S: Prop. Drainage Area-3 (Basin Area) (Non-Contributory)



Summary for Subcatchment 8S: Prop. Drainage Area-3 (Impervious)

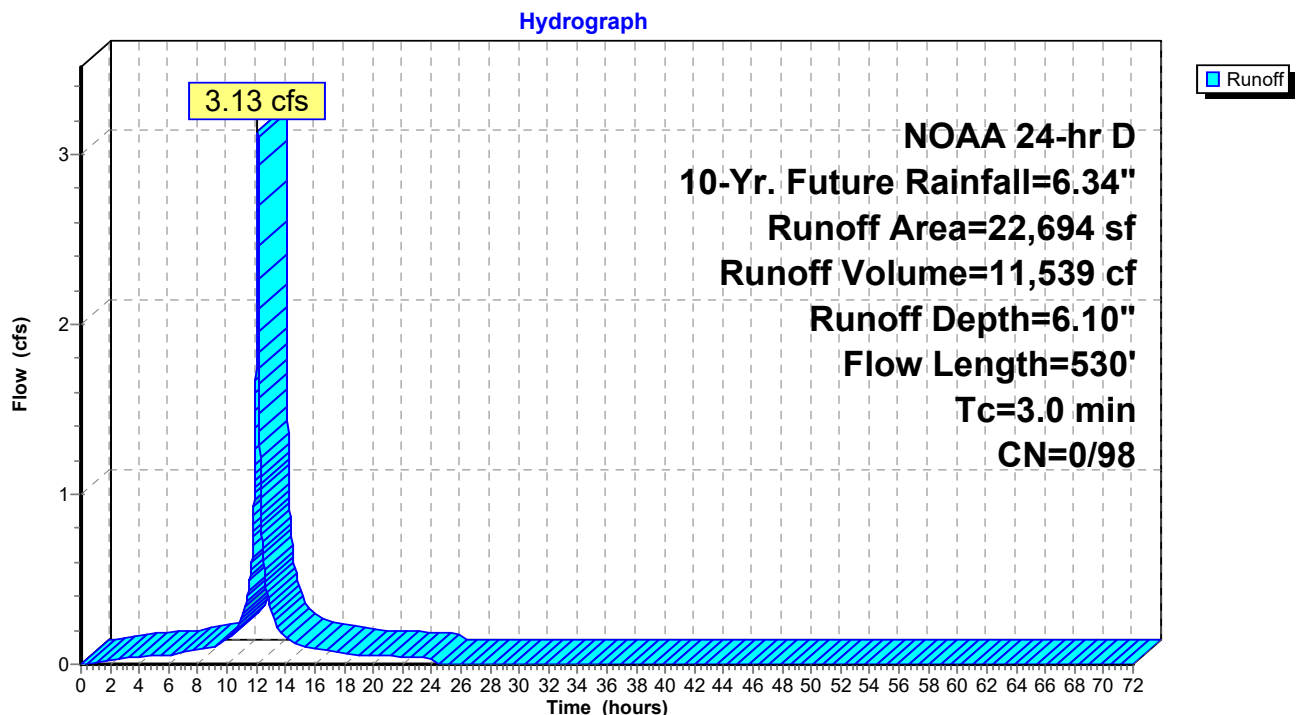
Runoff = 3.13 cfs @ 12.11 hrs, Volume= 11,539 cf, Depth= 6.10"
 Routed to Pond B3 : Basin #3

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Future Rainfall=6.34"

Area (sf)	CN	Description
13,555	98	Paved roads w/curbs & sewers, HSG A
* 3,626	98	Sidewalks, HSG A
* 5,513	98	Driveways, HSG A
22,694	98	Weighted Average
22,694	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	100	0.0292	1.65		Sheet Flow, Sheet Pvmt Smooth surfaces n= 0.011 P2= 3.42"
1.1	233	0.0292	3.47		Shallow Concentrated Flow, Shallow Pvmt Paved Kv= 20.3 fps
0.9	197	0.0040	3.76	6.64	Pipe Channel, Pipe 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
3.0	530	Total			

Subcatchment 8S: Prop. Drainage Area-3 (Impervious)



Summary for Subcatchment 9S: Prop. Drainage Area-3 (Pervious)

Runoff = 0.23 cfs @ 12.58 hrs, Volume= 3,203 cf, Depth= 0.55"
 Routed to Pond B3 : Basin #3

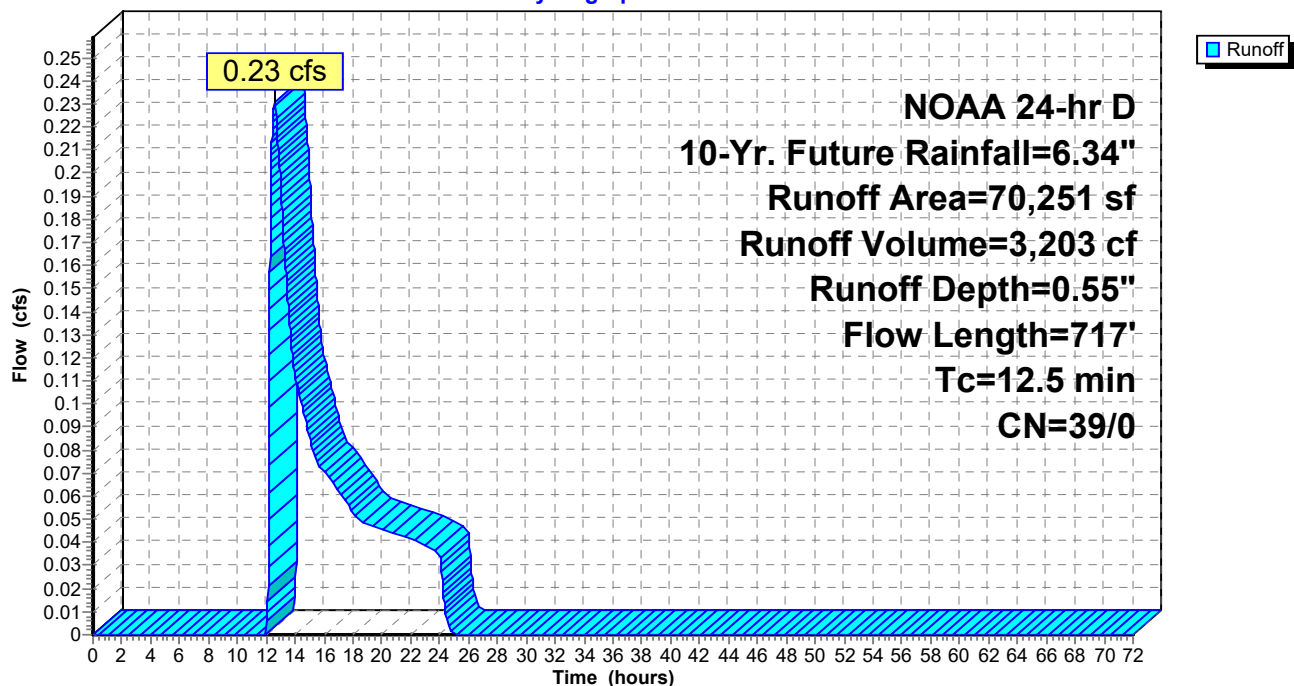
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Future Rainfall=6.34"

Area (sf)	CN	Description
70,251	39	>75% Grass cover, Good, HSG A
70,251	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	100	0.0500	0.17		Sheet Flow, Sheet Grass Grass: Dense n= 0.240 P2= 3.42"
0.1	20	0.0500	3.60		Shallow Concentrated Flow, Shallow Grass Unpaved Kv= 16.1 fps
1.9	400	0.0292	3.47		Shallow Concentrated Flow, Shallow Pvmnt Paved Kv= 20.3 fps
0.9	197	0.0040	3.76	6.64	Pipe Channel, Pipe 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
12.5	717	Total			

Subcatchment 9S: Prop. Drainage Area-3 (Pervious)

Hydrograph



Summary for Subcatchment 10S: Prop. Drainage Area-3 (Roof)

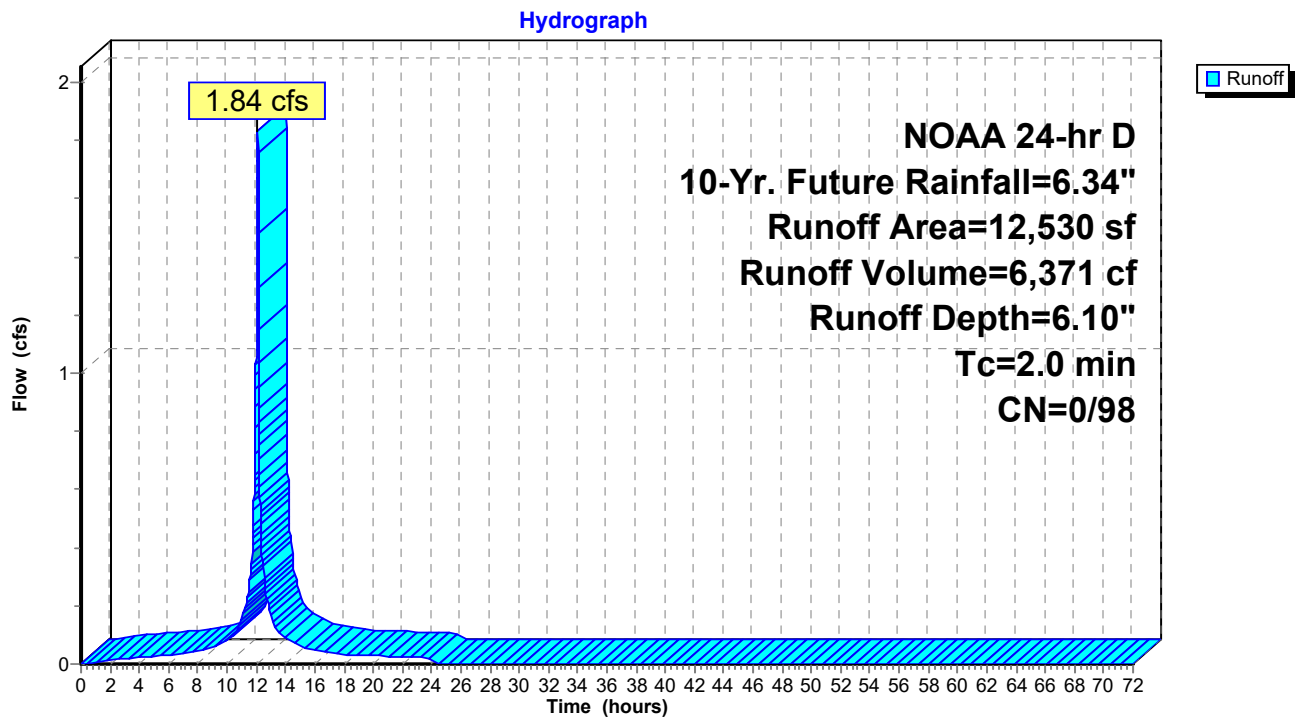
Runoff = 1.84 cfs @ 12.10 hrs, Volume= 6,371 cf, Depth= 6.10"
 Routed to Pond 12P : Roof Recharge

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Future Rainfall=6.34"

Area (sf)	CN	Description
12,530	98	Roofs, HSG A
12,530	98	100.00% Impervious Area

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

Subcatchment 10S: Prop. Drainage Area-3 (Roof)



Summary for Subcatchment 11S: Prop. Drainage Area-3-A (Woods) (Undisturbed)

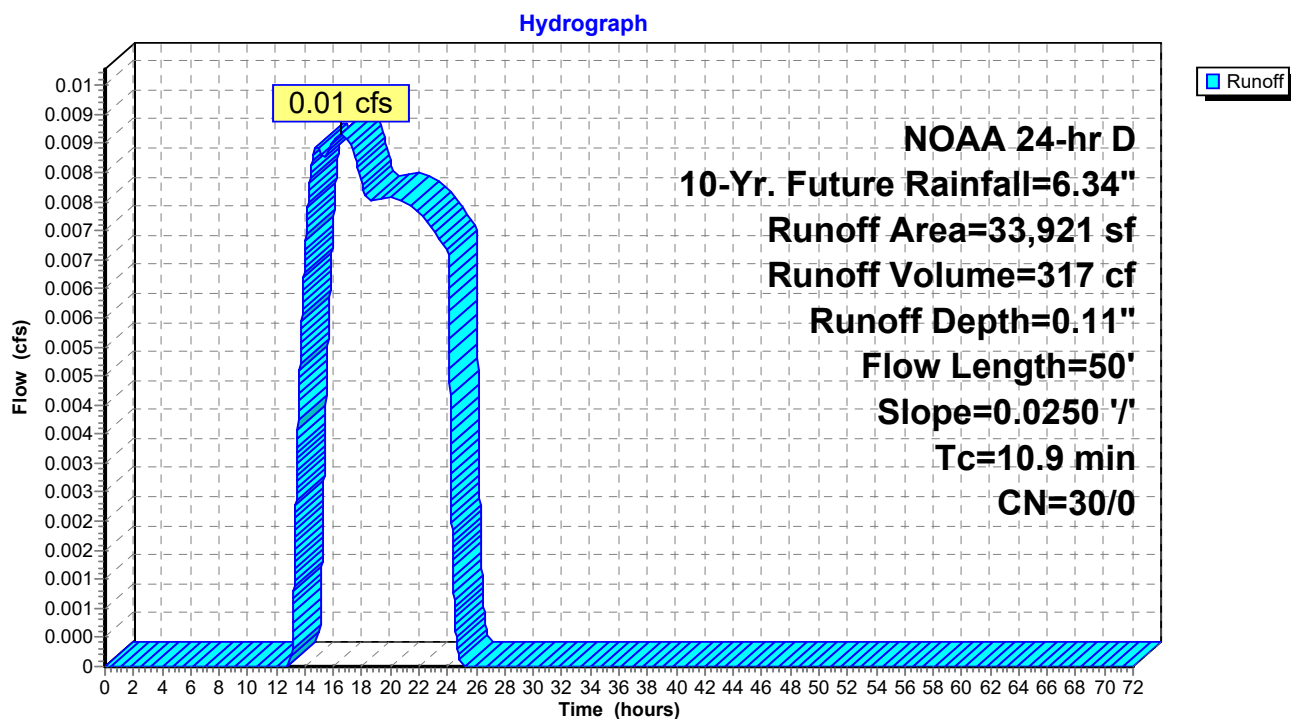
Runoff = 0.01 cfs @ 16.47 hrs, Volume= 317 cf, Depth= 0.11"
 Routed to Pond B3 : Basin #3

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Future Rainfall=6.34"

Area (sf)	CN	Description
33,921	30	Woods, Good, HSG A
33,921	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	50	0.0250	0.08		Sheet Flow, Sheet woods Woods: Light underbrush n= 0.400 P2= 3.42"

Subcatchment 11S: Prop. Drainage Area-3-A (Woods) (Undisturbed)



Summary for Subcatchment P-1I: Prop. Drainage Area-1 (Impervious)

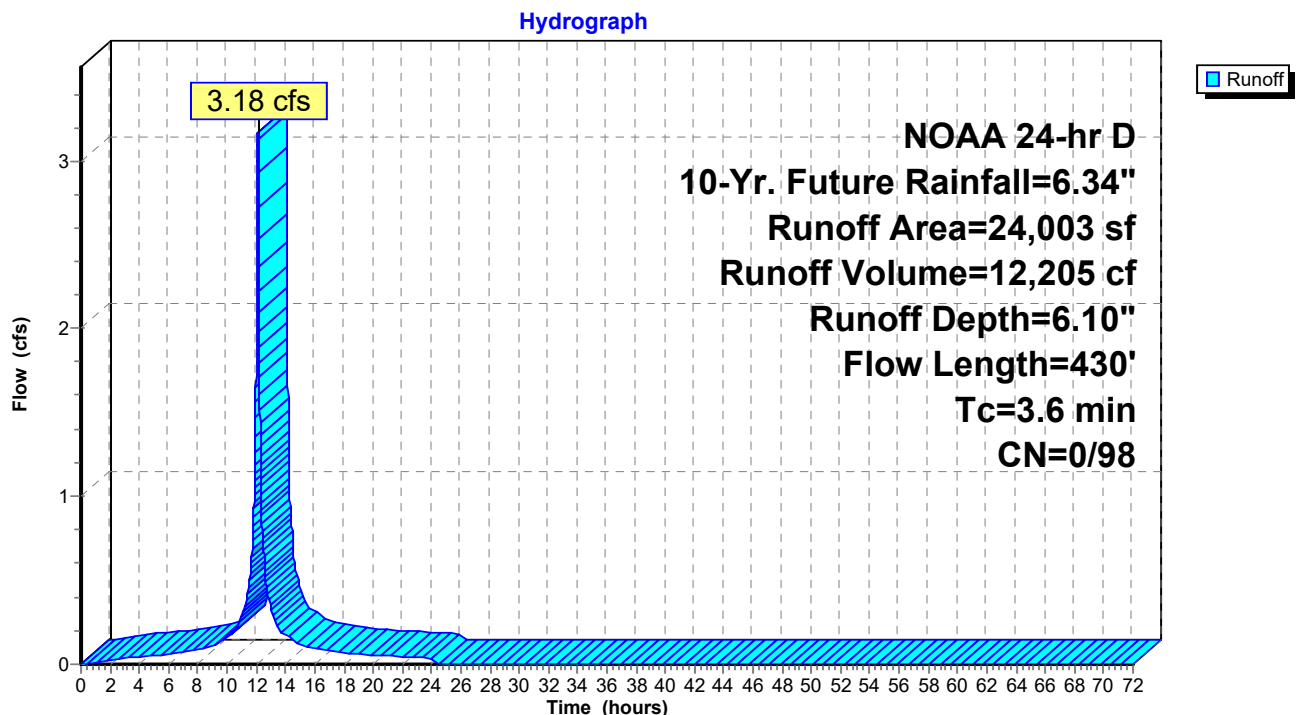
Runoff = 3.18 cfs @ 12.12 hrs, Volume= 12,205 cf, Depth= 6.10"
 Routed to Pond B1 : Basin #1

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Future Rainfall=6.34"

Area (sf)	CN	Description
15,941	98	Paved roads w/curbs & sewers, HSG A
* 2,588	98	Sidewalks, HSG A
* 5,474	98	Driveways, HSG A
24,003	98	Weighted Average
24,003	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	100	0.0083	1.00		Sheet Flow, Sheet Pvmt Smooth surfaces n= 0.011 P2= 3.42"
0.7	60	0.0050	1.44		Shallow Concentrated Flow, Shallow Pvmt Paved Kv= 20.3 fps
1.2	270	0.0050	3.72	4.57	Pipe Channel, Pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
3.6	430	Total			

Subcatchment P-1I: Prop. Drainage Area-1 (Impervious)



Summary for Subcatchment P-1P: Prop. Drainage Area-1 (Pervious)

Runoff = 0.23 cfs @ 12.60 hrs, Volume= 3,302 cf, Depth= 0.55"
 Routed to Pond B1 : Basin #1

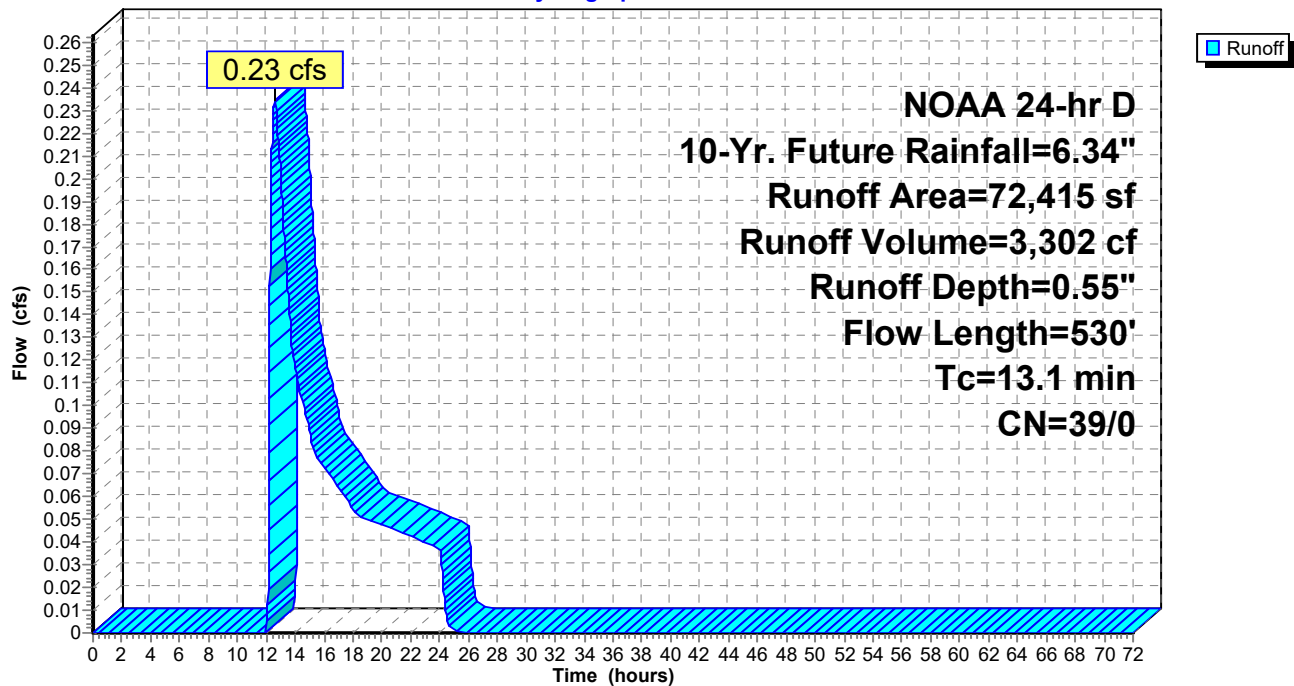
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Future Rainfall=6.34"

Area (sf)	CN	Description
72,415	39	>75% Grass cover, Good, HSG A
72,415	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0400	0.16		Sheet Flow, Sheet Grass Grass: Dense n= 0.240 P2= 3.42"
1.4	160	0.0083	1.85		Shallow Concentrated Flow, Shallow Pvmnt Paved Kv= 20.3 fps
1.2	270	0.0050	3.72	4.57	Pipe Channel, Pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
13.1	530	Total			

Subcatchment P-1P: Prop. Drainage Area-1 (Pervious)

Hydrograph



Summary for Subcatchment P-1R: Prop. Drainage Area-1 (Roof)

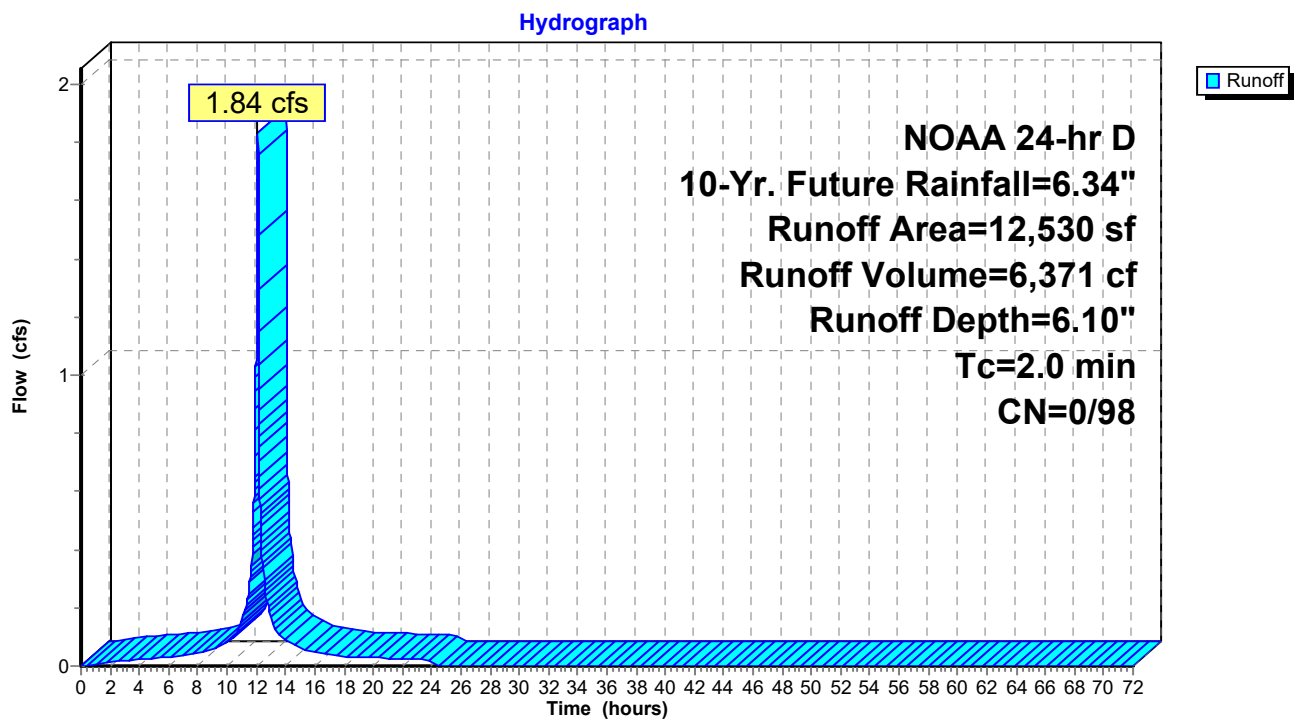
Runoff = 1.84 cfs @ 12.10 hrs, Volume= 6,371 cf, Depth= 6.10"
 Routed to Pond R-1 : Roof Recharge

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Future Rainfall=6.34"

Area (sf)	CN	Description
12,530	98	Roofs, HSG A
12,530	98	100.00% Impervious Area

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

Subcatchment P-1R: Prop. Drainage Area-1 (Roof)



Summary for Subcatchment P-2R: Prop. Drainage Area-2 (Roof)

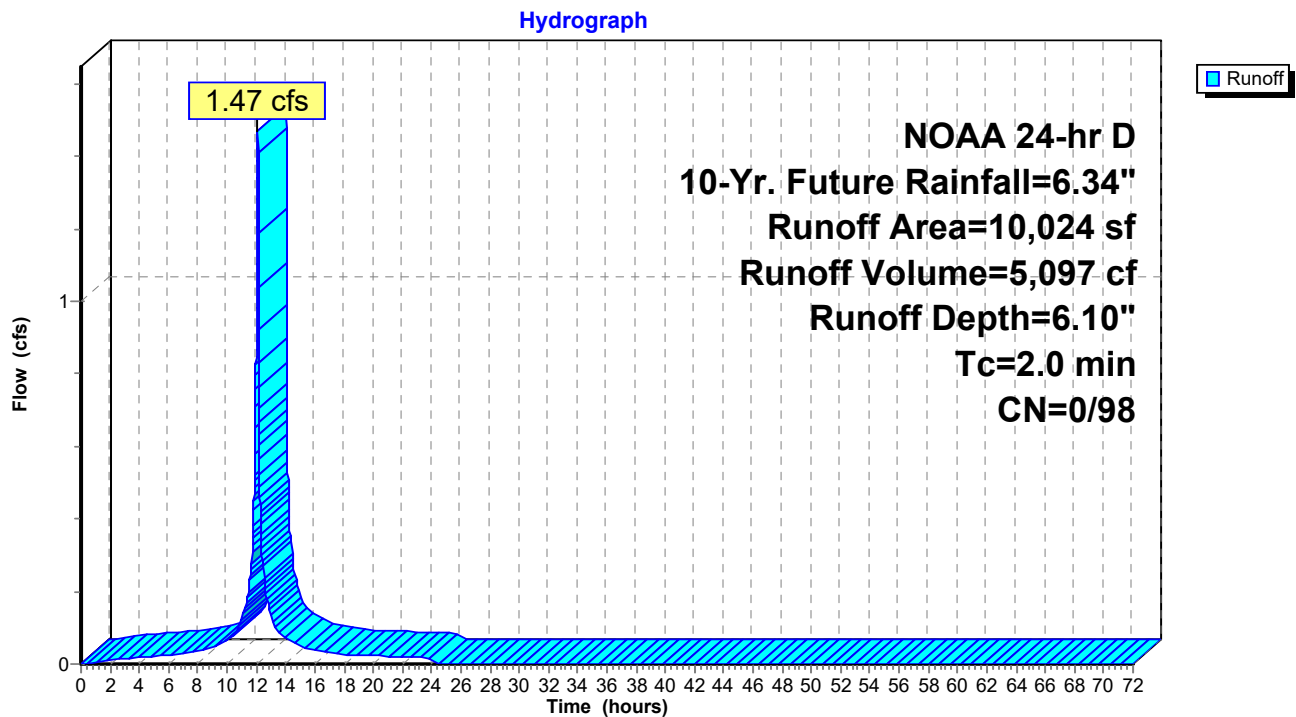
Runoff = 1.47 cfs @ 12.10 hrs, Volume= 5,097 cf, Depth= 6.10"
 Routed to Pond 8P : Roof Recharge

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Future Rainfall=6.34"

Area (sf)	CN	Description
10,024	98	Roofs, HSG A
10,024	98	100.00% Impervious Area

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

Subcatchment P-2R: Prop. Drainage Area-2 (Roof)



Summary for Subcatchment P1A: Prop. Drainage Area-1-A (Woods) (Undisturbed)

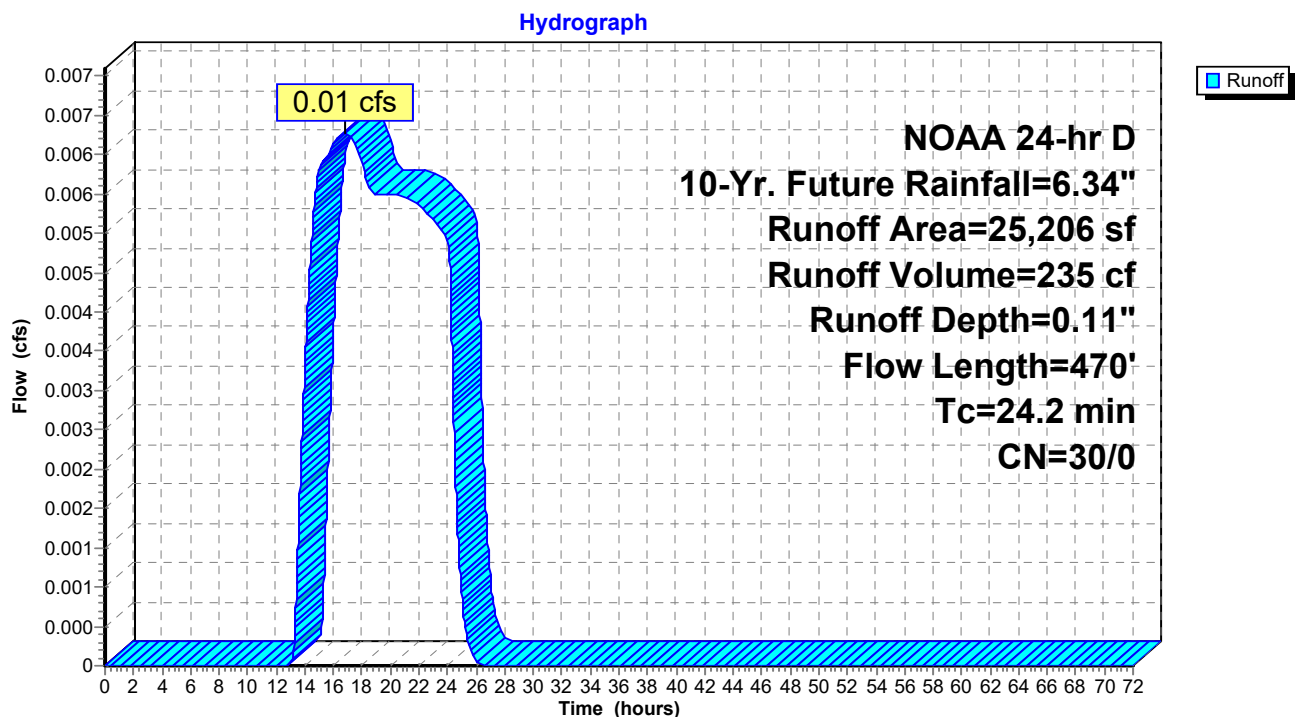
Runoff = 0.01 cfs @ 16.83 hrs, Volume= 235 cf, Depth= 0.11"
 Routed to Pond B1 : Basin #1

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Future Rainfall=6.34"

Area (sf)	CN	Description
25,206	30	Woods, Good, HSG A
25,206	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2	100	0.0170	0.08		Sheet Flow, Sheet woods Woods: Light underbrush n= 0.400 P2= 3.42"
0.4	60	0.0200	2.28		Shallow Concentrated Flow, Shallow Grass Unpaved Kv= 16.1 fps
0.4	40	0.0062	1.60		Shallow Concentrated Flow, shallow Pvmt Paved Kv= 20.3 fps
1.2	270	0.0050	3.72	4.57	Pipe Channel, pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
24.2	470	Total			

Subcatchment P1A: Prop. Drainage Area-1-A (Woods) (Undisturbed)



Summary for Subcatchment P1B: Prop. Drainage Area-1 (Basin Area) (Non-Contributory)

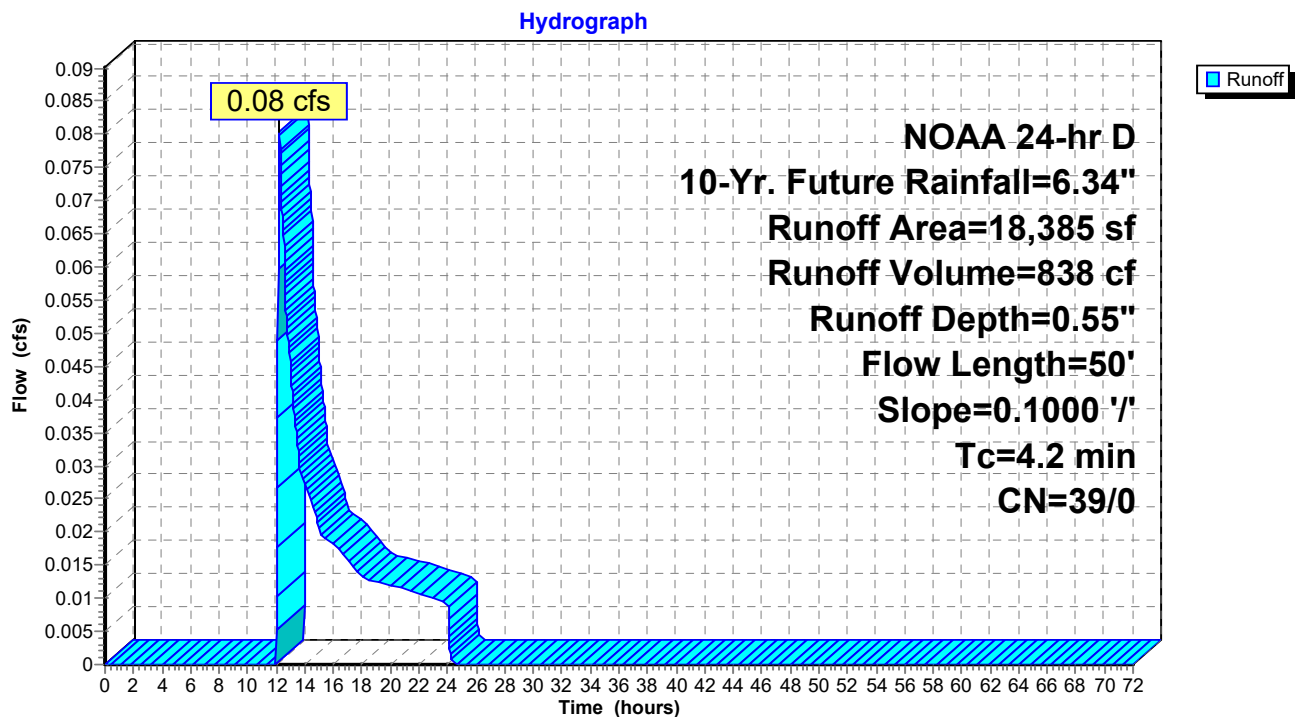
Runoff = 0.08 cfs @ 12.23 hrs, Volume= 838 cf, Depth= 0.55"
 Routed to Pond B1 : Basin #1

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Future Rainfall=6.34"

Area (sf)	CN	Description
* 18,385	39	Basin Area-Non-contributory, HSG A
18,385	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.1000	0.20		Sheet Flow, Sheet Grass
Grass: Dense n= 0.240 P2= 3.42"					

Subcatchment P1B: Prop. Drainage Area-1 (Basin Area) (Non-Contributory)



Summary for Subcatchment P1W: Prop. Drainage Area-1-B (Woods) (undetained)

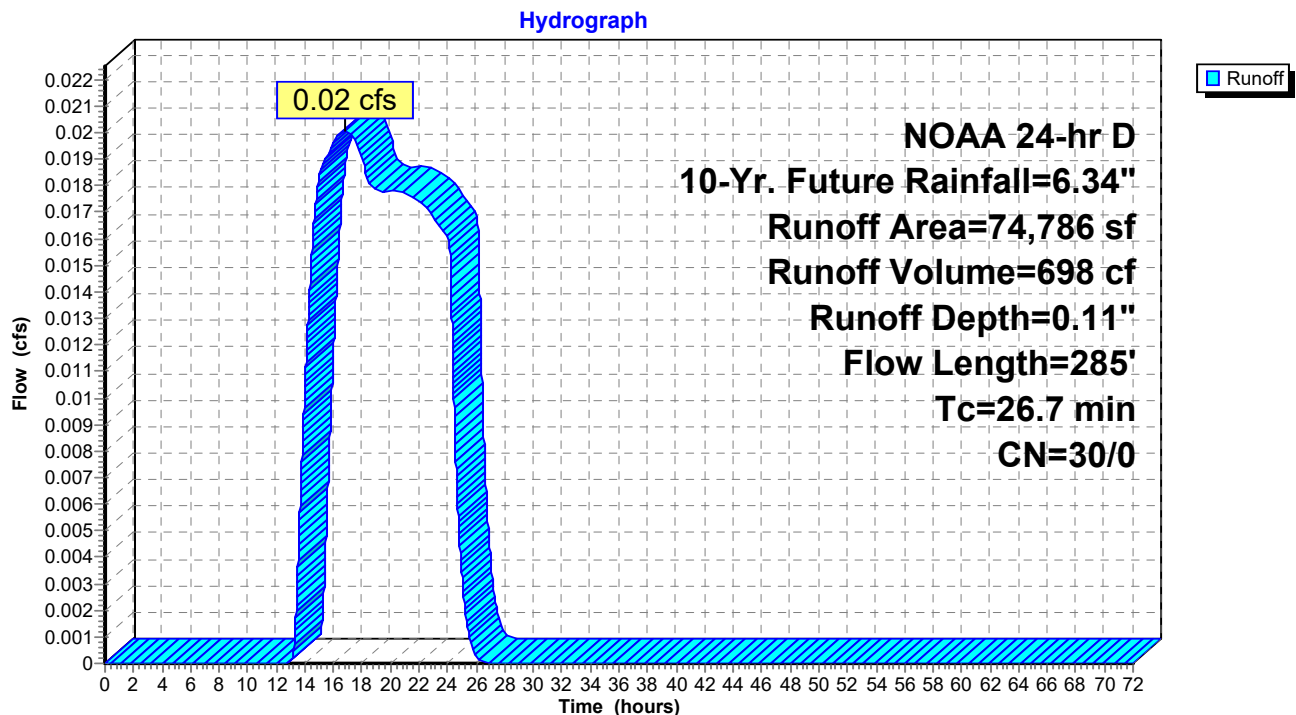
Runoff = 0.02 cfs @ 16.85 hrs, Volume= 698 cf, Depth= 0.11"
 Routed to Link PT1 : Proposed Total (AP-1)

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Future Rainfall=6.34"

Area (sf)	CN	Description
74,786	30	Woods, Good, HSG A
74,786	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.8	100	0.0200	0.08		Sheet Flow, Sheet woods
					Woods: Light underbrush n= 0.400 P2= 3.42"
5.9	185	0.0110	0.52		Shallow Concentrated Flow, Shallow Woods
					Woodland Kv= 5.0 fps
26.7	285	Total			

Subcatchment P1W: Prop. Drainage Area-1-B (Woods) (undetained)



Summary for Subcatchment P2B: Prop. Drainage Area-2 (Basin)(Non-Contributory)

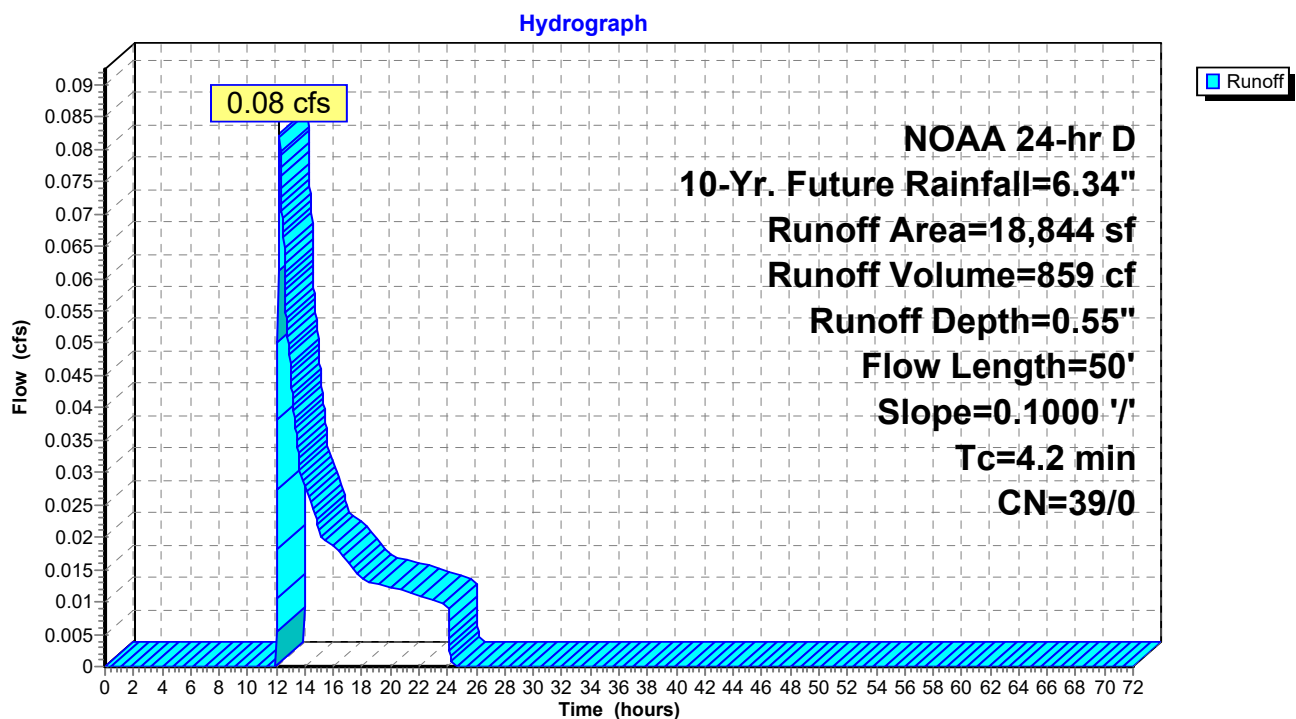
Runoff = 0.08 cfs @ 12.23 hrs, Volume= 859 cf, Depth= 0.55"
 Routed to Pond B2 : Basin #2

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Future Rainfall=6.34"

Area (sf)	CN	Description
* 18,844	39	Basin Area-Non-contributory, HSG A
18,844	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.1000	0.20		Sheet Flow, Sheet Grass
Grass: Dense n= 0.240 P2= 3.42"					

Subcatchment P2B: Prop. Drainage Area-2 (Basin)(Non-Contributory)



Summary for Subcatchment P2I: Prop. Drainage Area-2 (Impervious)

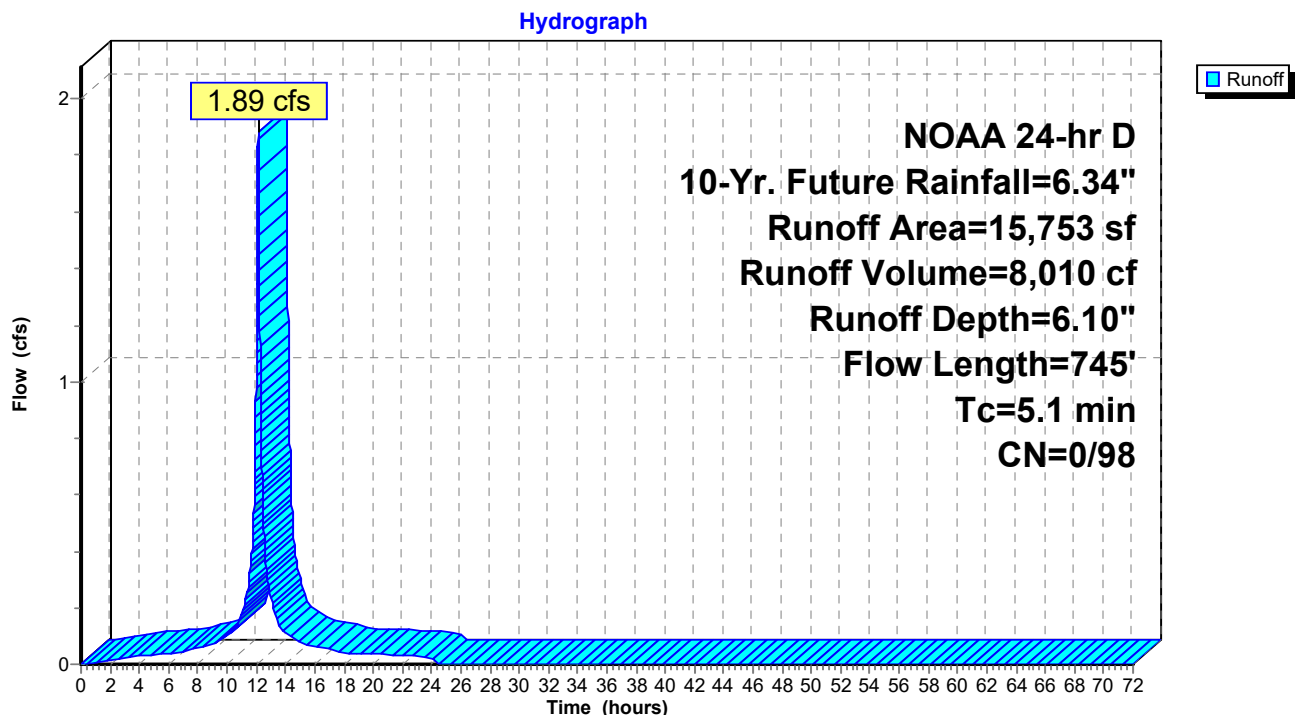
Runoff = 1.89 cfs @ 12.13 hrs, Volume= 8,010 cf, Depth= 6.10"
 Routed to Pond B2 : Basin #2

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Future Rainfall=6.34"

Area (sf)	CN	Description
9,010	98	Paved roads w/curbs & sewers, HSG A
* 2,394	98	Sidewalks, HSG A
* 4,349	98	Driveways, HSG A
15,753	98	Weighted Average
15,753	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	100	0.0083	1.00		Sheet Flow, Sheet Pvmt Smooth surfaces n= 0.011 P2= 3.42"
0.9	95	0.0083	1.85		Shallow Concentrated Flow, Shallow Pvmt Paved Kv= 20.3 fps
2.5	550	0.0050	3.72	4.57	Pipe Channel, Pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
5.1	745	Total			

Subcatchment P2I: Prop. Drainage Area-2 (Impervious)



Summary for Subcatchment P2P: Prop. Drainage Area-2 (Pervious)

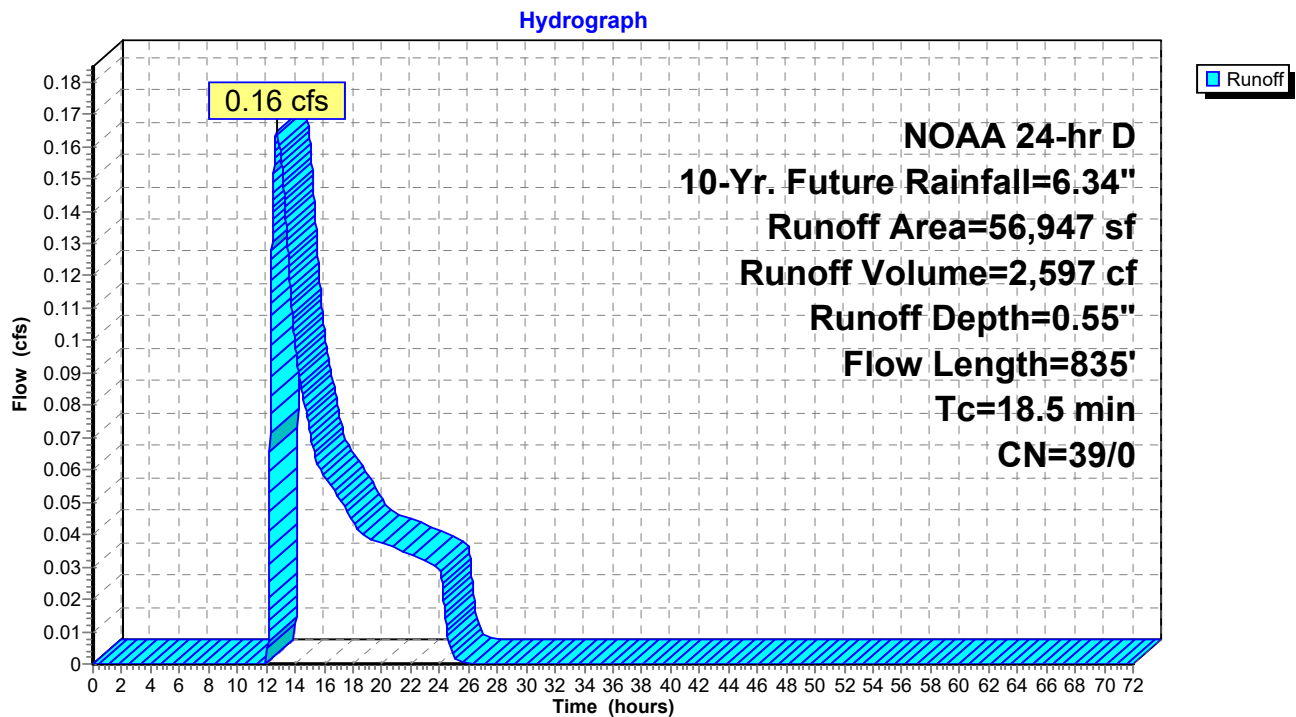
Runoff = 0.16 cfs @ 12.70 hrs, Volume= 2,597 cf, Depth= 0.55"
 Routed to Pond B2 : Basin #2

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Future Rainfall=6.34"

Area (sf)	CN	Description
56,947	39	>75% Grass cover, Good, HSG A
56,947	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	90	0.0150	0.11		Sheet Flow, Sheet Grass Grass: Dense n= 0.240 P2= 3.42"
1.8	195	0.0083	1.85		Shallow Concentrated Flow, Shallow Pvmnt Paved Kv= 20.3 fps
2.5	550	0.0050	3.72	4.57	Pipe Channel, Pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
18.5	835	Total			

Subcatchment P2P: Prop. Drainage Area-2 (Pervious)



Summary for Subcatchment P2W: Prop. Drainage Area-2 (Woods) (Undisturbed)

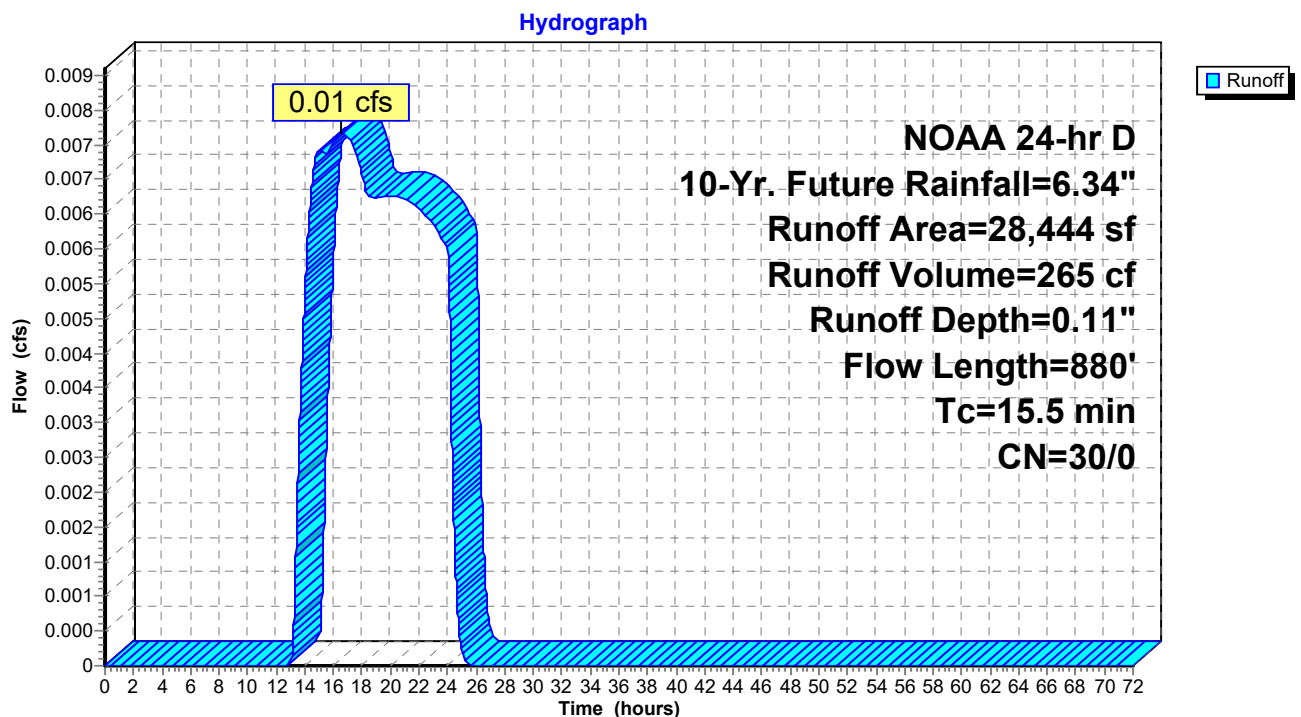
Runoff = 0.01 cfs @ 16.57 hrs, Volume= 265 cf, Depth= 0.11"
 Routed to Pond B2 : Basin #2

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Yr. Future Rainfall=6.34"

Area (sf)	CN	Description
28,444	30	Woods, Good, HSG A
28,444	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	50	0.0250	0.08		Sheet Flow, Sheet woods Woods: Light underbrush n= 0.400 P2= 3.42"
0.6	120	0.0400	3.22		Shallow Concentrated Flow, Shallow Grass Unpaved Kv= 16.1 fps
1.7	190	0.0083	1.85		Shallow Concentrated Flow, shallow Pvmt Paved Kv= 20.3 fps
2.3	520	0.0050	3.72	4.57	Pipe Channel, pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
15.5	880	Total			

Subcatchment P2W: Prop. Drainage Area-2 (Woods) (Undisturbed)



Summary for Pond 8P: Roof Recharge

Inflow Area = 10,024 sf, 100.00% Impervious, Inflow Depth = 6.10" for 10-Yr. Future event
 Inflow = 1.47 cfs @ 12.10 hrs, Volume= 5,097 cf
 Outflow = 0.19 cfs @ 11.61 hrs, Volume= 5,097 cf, Atten= 87%, Lag= 0.0 min
 Discarded = 0.19 cfs @ 11.61 hrs, Volume= 5,097 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to Pond B2 : Basin #2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 78.43' @ 12.65 hrs Surf.Area= 822 sf Storage= 1,252 cf

Plug-Flow detention time= 35.9 min calculated for 5,096 cf (100% of inflow)
 Center-of-Mass det. time= 35.9 min (778.7 - 742.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	76.00'	219 cf	6.25'W x 32.23'L x 3.75'H Field A 755 cf Overall - 209 cf Embedded = 546 cf x 40.0% Voids
#2A	76.50'	209 cf	ADS_StormTech SC-800 +Cap x 4 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap Cap Storage= 3.4 cf x 2 x 1 rows = 6.8 cf
#3	76.00'	24 cf	2.00'W x 2.00'L x 6.00'H Prismatic
			452 cf x 4.00 = 1,807 cf Total Available Storage

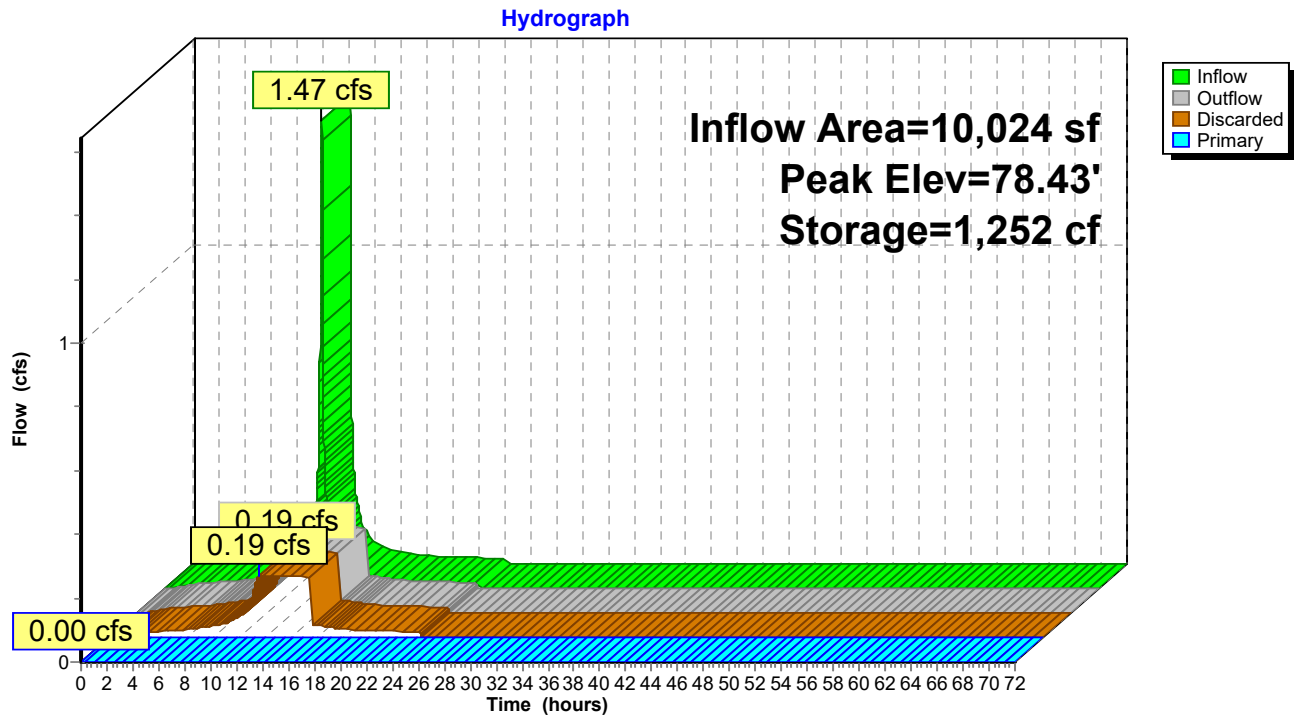
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	81.00'	24.0" x 24.0" Horiz. Grate 24" C= 0.600 Limited to weir flow at low heads
#2	Discarded	76.00'	10.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.19 cfs @ 11.61 hrs HW=76.06' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=76.00' TW=77.00' (Dynamic Tailwater)
 ↑ **1=Grate 24"** (Controls 0.00 cfs)

Pond 8P: Roof Recharge



Summary for Pond 12P: Roof Recharge

Inflow Area = 12,530 sf, 100.00% Impervious, Inflow Depth = 6.10" for 10-Yr. Future event
 Inflow = 1.84 cfs @ 12.10 hrs, Volume= 6,371 cf
 Outflow = 0.24 cfs @ 12.67 hrs, Volume= 6,371 cf, Atten= 87%, Lag= 34.2 min
 Discarded = 0.19 cfs @ 11.44 hrs, Volume= 6,351 cf
 Primary = 0.05 cfs @ 12.67 hrs, Volume= 20 cf
 Routed to Pond B3 : Basin #3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 81.02' @ 12.67 hrs Surf.Area= 822 sf Storage= 1,791 cf

Plug-Flow detention time= 56.0 min calculated for 6,370 cf (100% of inflow)
 Center-of-Mass det. time= 56.0 min (798.9 - 742.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	76.00'	219 cf	6.25'W x 32.23'L x 3.75'H Field A 755 cf Overall - 209 cf Embedded = 546 cf x 40.0% Voids
#2A	76.50'	209 cf	ADS_StormTech SC-800 +Cap x 4 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap Cap Storage= 3.4 cf x 2 x 1 rows = 6.8 cf
#3	76.00'	24 cf	2.00'W x 2.00'L x 6.00'H Prismatic
			452 cf x 4.00 = 1,807 cf Total Available Storage

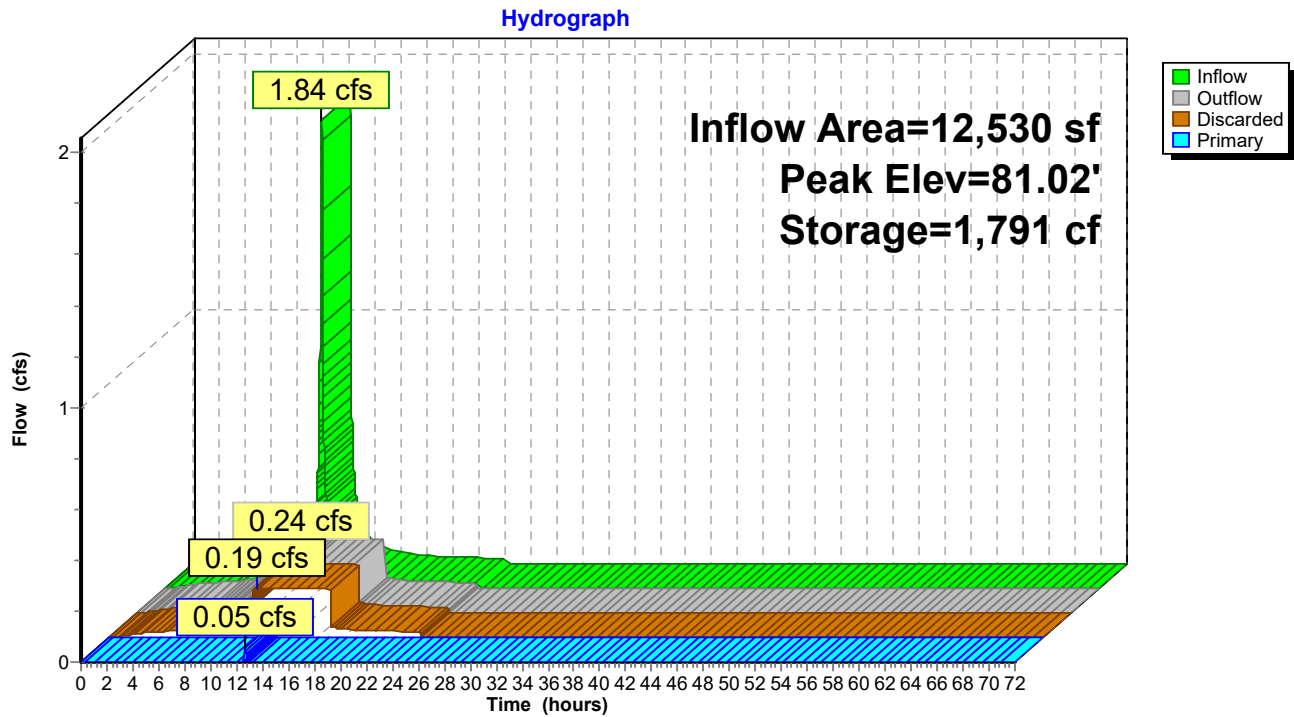
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	81.00'	24.0" x 24.0" Horiz. Grate 24" C= 0.600 Limited to weir flow at low heads
#2	Discarded	76.00'	10.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.19 cfs @ 11.44 hrs HW=76.06' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=0.05 cfs @ 12.67 hrs HW=81.01' TW=67.11' (Dynamic Tailwater)
 ↑ **1=Grate 24"** (Weir Controls 0.05 cfs @ 0.40 fps)

Pond 12P: Roof Recharge



Summary for Pond B1: Basin #1

Inflow Area = 152,539 sf, 23.95% Impervious, Inflow Depth = 1.30" for 10-Yr. Future event
 Inflow = 3.25 cfs @ 12.12 hrs, Volume= 16,580 cf
 Outflow = 0.38 cfs @ 13.44 hrs, Volume= 16,580 cf, Atten= 88%, Lag= 79.3 min
 Discarded = 0.28 cfs @ 13.56 hrs, Volume= 14,515 cf
 Primary = 0.12 cfs @ 12.41 hrs, Volume= 2,065 cf
 Routed to Pond B2 : Basin #2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 78.04' @ 13.56 hrs Surf.Area= 5,945 sf Storage= 5,210 cf

Plug-Flow detention time= 137.4 min calculated for 16,578 cf (100% of inflow)
 Center-of-Mass det. time= 137.4 min (947.1 - 809.7)

Volume	Invert	Avail.Storage	Storage Description
#1	77.00'	20,548 cf	Basin 1 (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
77.00	4,060	0	0
78.00	5,865	4,963	4,963
79.00	7,766	6,816	11,778
80.00	9,773	8,770	20,548

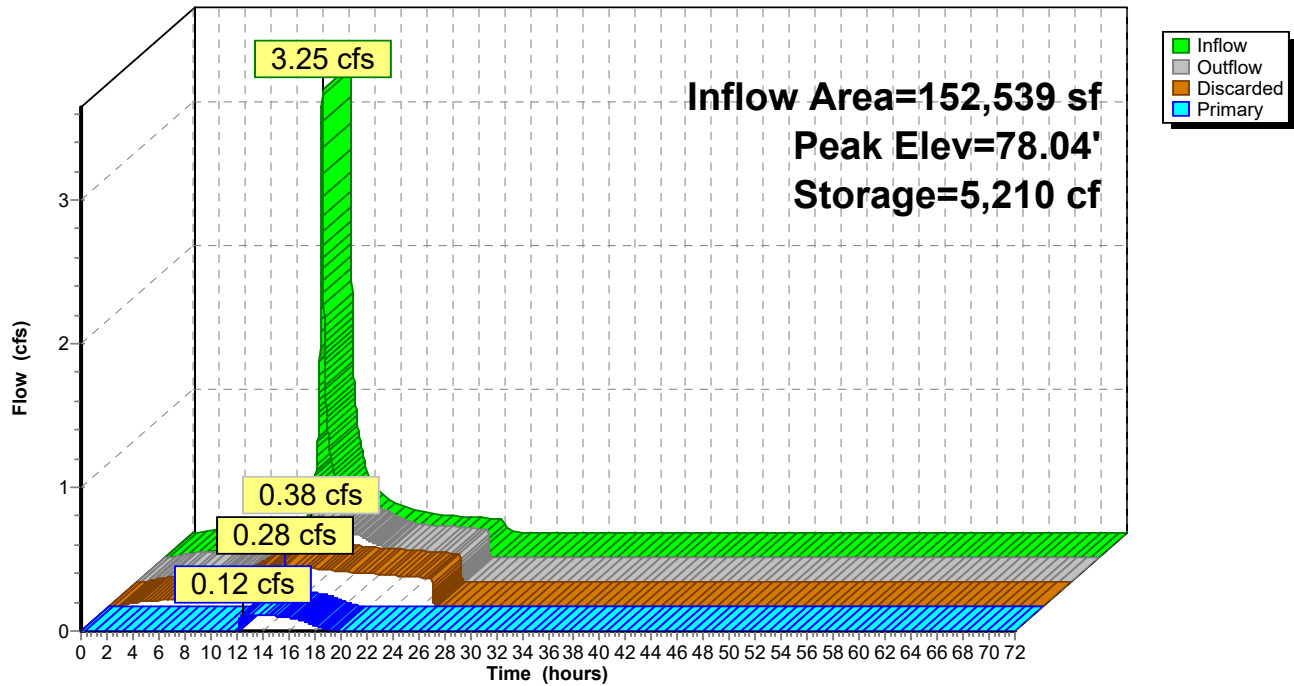
Device	Routing	Invert	Outlet Devices
#1	Primary	77.34'	15.0" Round Culvert 15" L= 69.0' Ke= 0.500 Inlet / Outlet Invert= 77.34' / 77.00' S= 0.0049 ' S= 0.0049 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.23 sf
#2	Device 1	77.50'	3.0" Vert. Orifice 3" C= 0.600 Limited to weir flow at low heads
#3	Device 1	80.00'	42.0" x 42.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	80.20'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	77.00'	2.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.28 cfs @ 13.56 hrs HW=78.04' (Free Discharge)
 ↳ **5=Exfiltration** (Exfiltration Controls 0.28 cfs)

Primary OutFlow Max=0.11 cfs @ 12.41 hrs HW=77.86' TW=77.63' (Dynamic Tailwater)
 ↳ **1=Culvert 15"** (Passes 0.11 cfs of 0.64 cfs potential flow)
 ↳ **2=Orifice 3"** (Orifice Controls 0.11 cfs @ 2.32 fps)
 ↳ **3=Grate** (Controls 0.00 cfs)
 ↳ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B1: Basin #1

Hydrograph



Summary for Pond B2: Basin #2

Inflow Area = 282,551 sf, 22.05% Impervious, Inflow Depth = 0.59" for 10-Yr. Future event
 Inflow = 1.99 cfs @ 12.13 hrs, Volume= 13,796 cf
 Outflow = 0.40 cfs @ 13.62 hrs, Volume= 13,796 cf, Atten= 80%, Lag= 89.4 min
 Discarded = 0.23 cfs @ 13.62 hrs, Volume= 11,515 cf
 Primary = 0.17 cfs @ 13.62 hrs, Volume= 2,281 cf
 Routed to Pond B3 : Basin #3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 77.83' @ 13.62 hrs Surf.Area= 4,882 sf Storage= 3,506 cf

Plug-Flow detention time= 114.9 min calculated for 13,794 cf (100% of inflow)
 Center-of-Mass det. time= 114.9 min (952.1 - 837.2)

Volume	Invert	Avail.Storage	Storage Description
#1	77.00'	18,035 cf	Basin 2 (Prismatic) Listed below (Recalc)

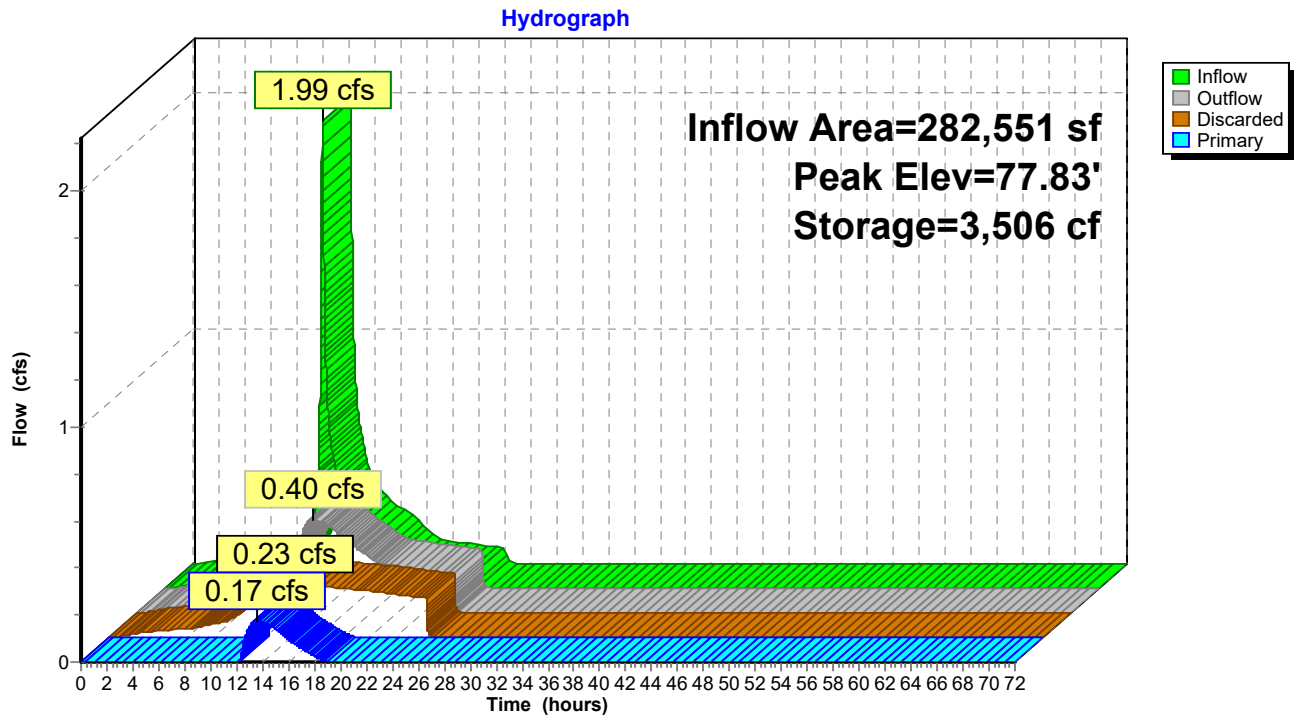
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
77.00	3,573	0	0
78.00	5,151	4,362	4,362
79.00	6,815	5,983	10,345
80.00	8,565	7,690	18,035

Device	Routing	Invert	Outlet Devices
#1	Primary	77.00'	18.0" Round Culvert 15" L= 69.0' Ke= 0.500 Inlet / Outlet Invert= 77.00' / 66.00' S= 0.1594 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf
#2	Device 1	77.50'	4.0" Vert. Orifice 4" C= 0.600 Limited to weir flow at low heads
#3	Device 1	80.00'	42.0" x 42.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	80.30'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	77.00'	2.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.23 cfs @ 13.62 hrs HW=77.83' (Free Discharge)
 ↳ **5=Exfiltration** (Exfiltration Controls 0.23 cfs)

Primary OutFlow Max=0.17 cfs @ 13.62 hrs HW=77.83' TW=67.42' (Dynamic Tailwater)
 ↳ **1=Culvert 15"** (Passes 0.17 cfs of 3.11 cfs potential flow)
 ↳ **2=Orifice 4"** (Orifice Controls 0.17 cfs @ 1.95 fps)
 ↳ **3=Grate** (Controls 0.00 cfs)
 ↳ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B2: Basin #2



Summary for Pond B3: Basin #3

Inflow Area = 440,051 sf, 22.16% Impervious, Inflow Depth = 0.50" for 10-Yr. Future event
 Inflow = 3.20 cfs @ 12.11 hrs, Volume= 18,185 cf
 Outflow = 0.24 cfs @ 16.64 hrs, Volume= 18,185 cf, Atten= 92%, Lag= 271.5 min
 Discarded = 0.24 cfs @ 16.64 hrs, Volume= 18,185 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to Link PT2 : Proposed Total (AP-2)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 67.68' @ 16.64 hrs Surf.Area= 5,237 sf Storage= 7,653 cf

Plug-Flow detention time= 311.1 min calculated for 18,183 cf (100% of inflow)
 Center-of-Mass det. time= 311.1 min (1,131.8 - 820.7)

Volume	Invert	Avail.Storage	Storage Description
#1	66.00'	34,230 cf	Basin 3 (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
66.00	3,879	0	0
67.00	4,673	4,276	4,276
68.00	5,501	5,087	9,363
69.00	6,379	5,940	15,303
70.00	7,310	6,845	22,148
71.00	8,291	7,801	29,948
71.50	8,836	4,282	34,230

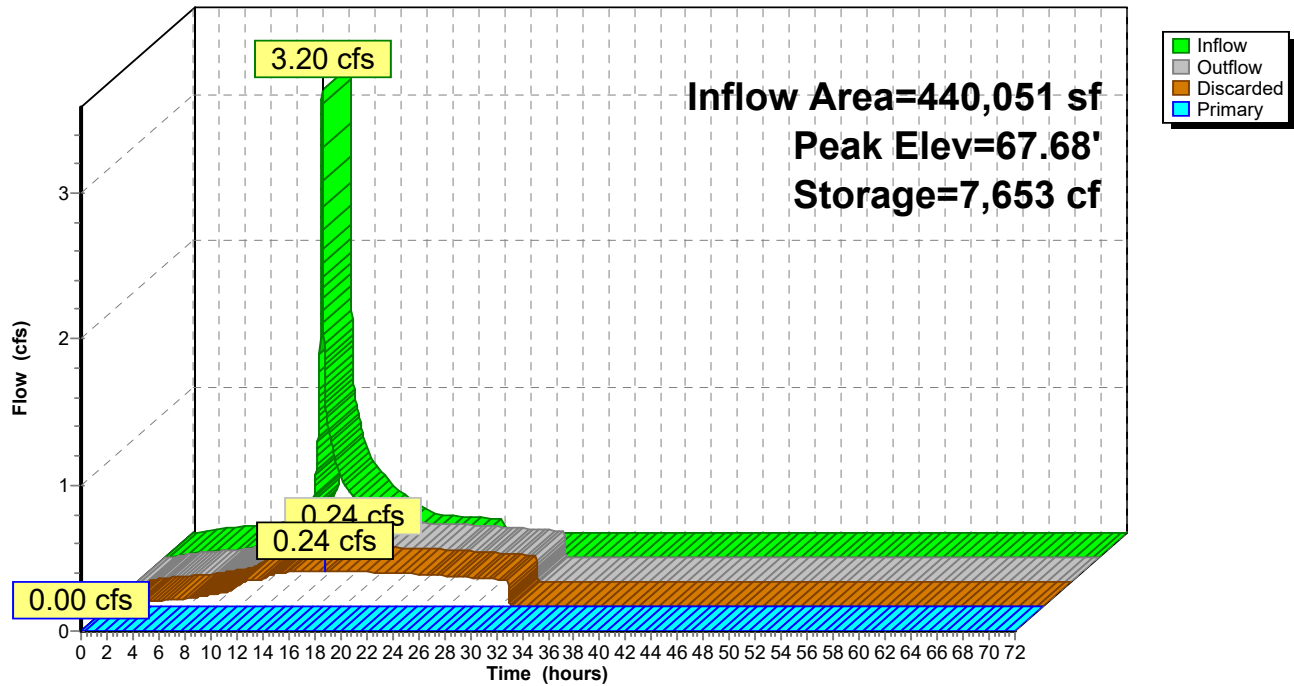
Device	Routing	Invert	Outlet Devices
#1	Primary	67.49'	15.0" Round Culvert 15" L= 360.0' Ke= 0.500 Inlet / Outlet Invert= 67.49' / 66.00' S= 0.0041 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.23 sf
#2	Device 1	68.00'	4.0" Vert. Orifice 4" C= 0.600 Limited to weir flow at low heads
#3	Device 1	70.50'	42.0" x 42.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	71.50'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	66.00'	2.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.24 cfs @ 16.64 hrs HW=67.68' (Free Discharge)
 ↳ **5=Exfiltration** (Exfiltration Controls 0.24 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=66.00' TW=0.00' (Dynamic Tailwater)
 ↳ **1=Culvert 15"** (Controls 0.00 cfs)
 ↳ **2=Orifice 4"** (Controls 0.00 cfs)
 ↳ **3=Grate** (Controls 0.00 cfs)
 ↳ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B3: Basin #3

Hydrograph



Summary for Pond R-1: Roof Recharge

Inflow Area = 12,530 sf, 100.00% Impervious, Inflow Depth = 6.10" for 10-Yr. Future event
 Inflow = 1.84 cfs @ 12.10 hrs, Volume= 6,371 cf
 Outflow = 0.24 cfs @ 11.61 hrs, Volume= 6,371 cf, Atten= 87%, Lag= 0.0 min
 Discarded = 0.24 cfs @ 11.61 hrs, Volume= 6,371 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to Pond B1 : Basin #1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 78.43' @ 12.65 hrs Surf.Area= 1,027 sf Storage= 1,565 cf

Plug-Flow detention time= 35.9 min calculated for 6,370 cf (100% of inflow)
 Center-of-Mass det. time= 35.9 min (778.7 - 742.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	76.00'	219 cf	6.25'W x 32.23'L x 3.75'H Field A 755 cf Overall - 209 cf Embedded = 546 cf x 40.0% Voids
#2A	76.50'	209 cf	ADS_StormTech SC-800 +Cap x 4 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap Cap Storage= 3.4 cf x 2 x 1 rows = 6.8 cf
#3	76.00'	24 cf	2.00'W x 2.00'L x 6.00'H Prismatic
		452 cf	x 5.00 = 2,259 cf Total Available Storage

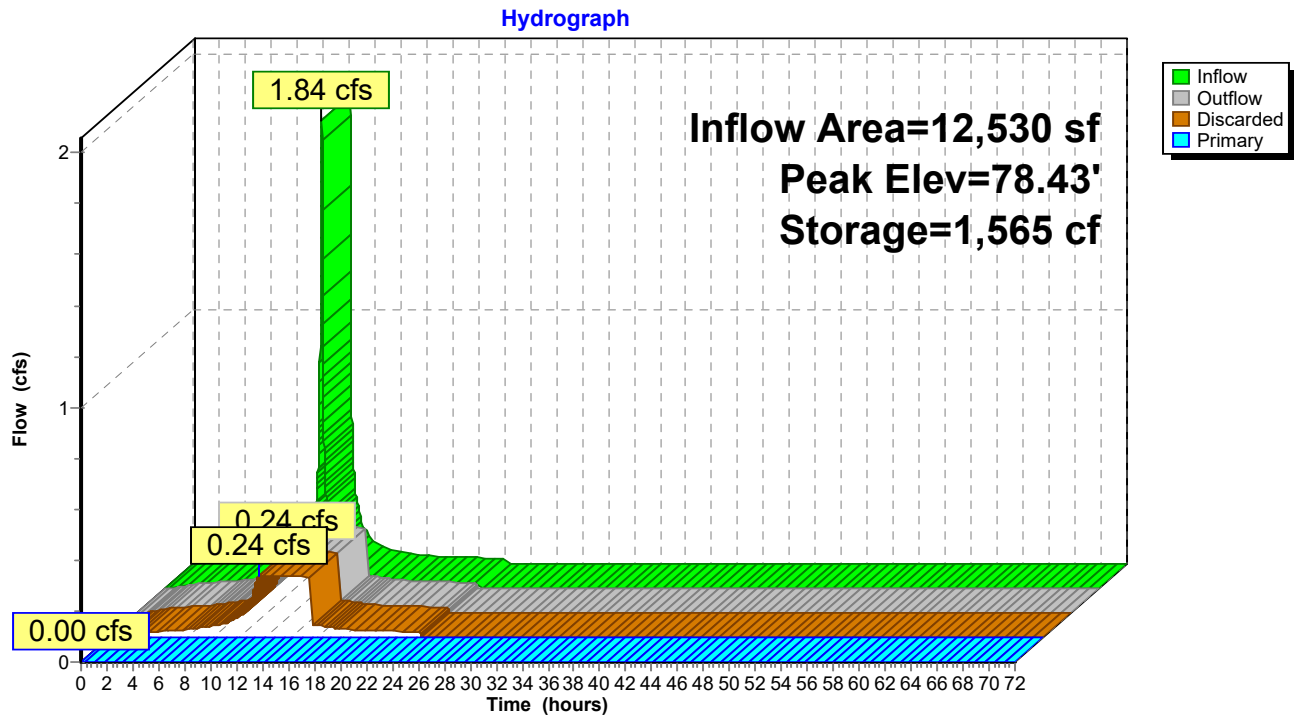
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	81.00'	24.0" x 24.0" Horiz. Grate 24" C= 0.600 Limited to weir flow at low heads
#2	Discarded	76.00'	10.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.24 cfs @ 11.61 hrs HW=76.06' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.24 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=76.00' TW=77.00' (Dynamic Tailwater)
 ↑ **1=Grate 24"** (Controls 0.00 cfs)

Pond R-1: Roof Recharge

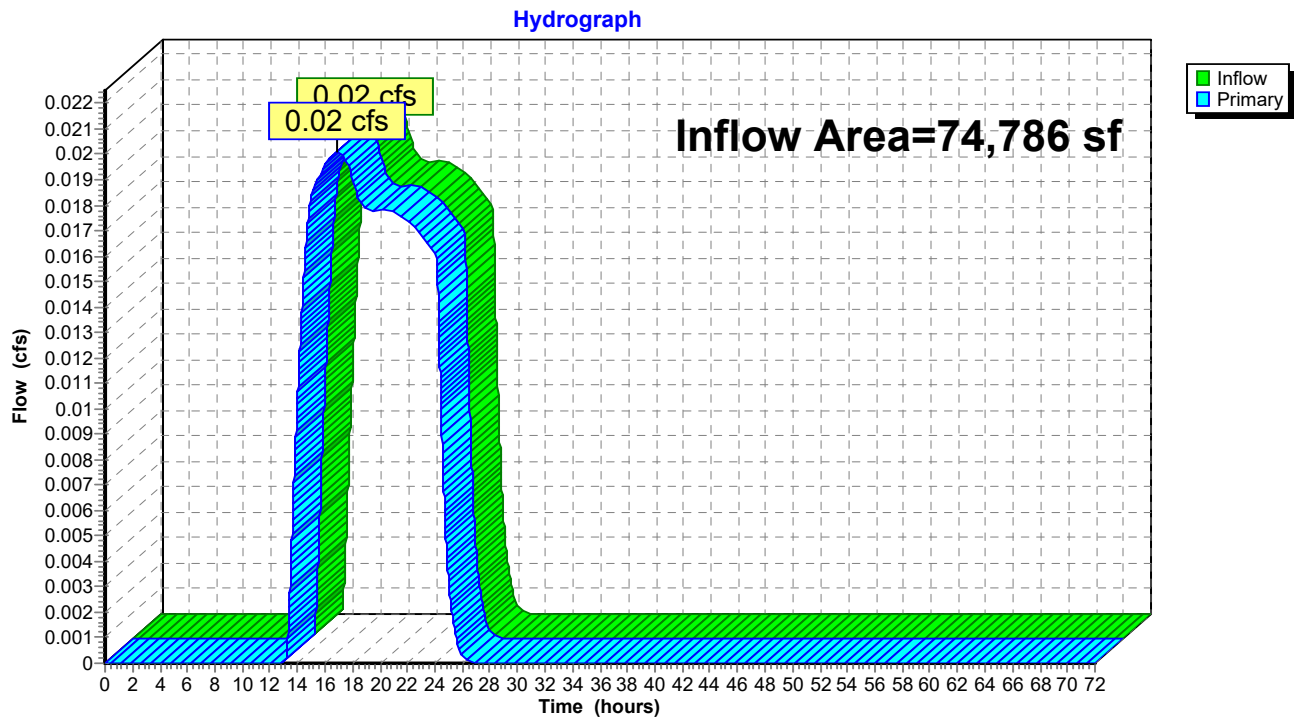


Summary for Link PT1: Proposed Total (AP-1)

Inflow Area = 74,786 sf, 0.00% Impervious, Inflow Depth = 0.11" for 10-Yr. Future event
 Inflow = 0.02 cfs @ 16.85 hrs, Volume= 698 cf
 Primary = 0.02 cfs @ 16.85 hrs, Volume= 698 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link PT1: Proposed Total (AP-1)

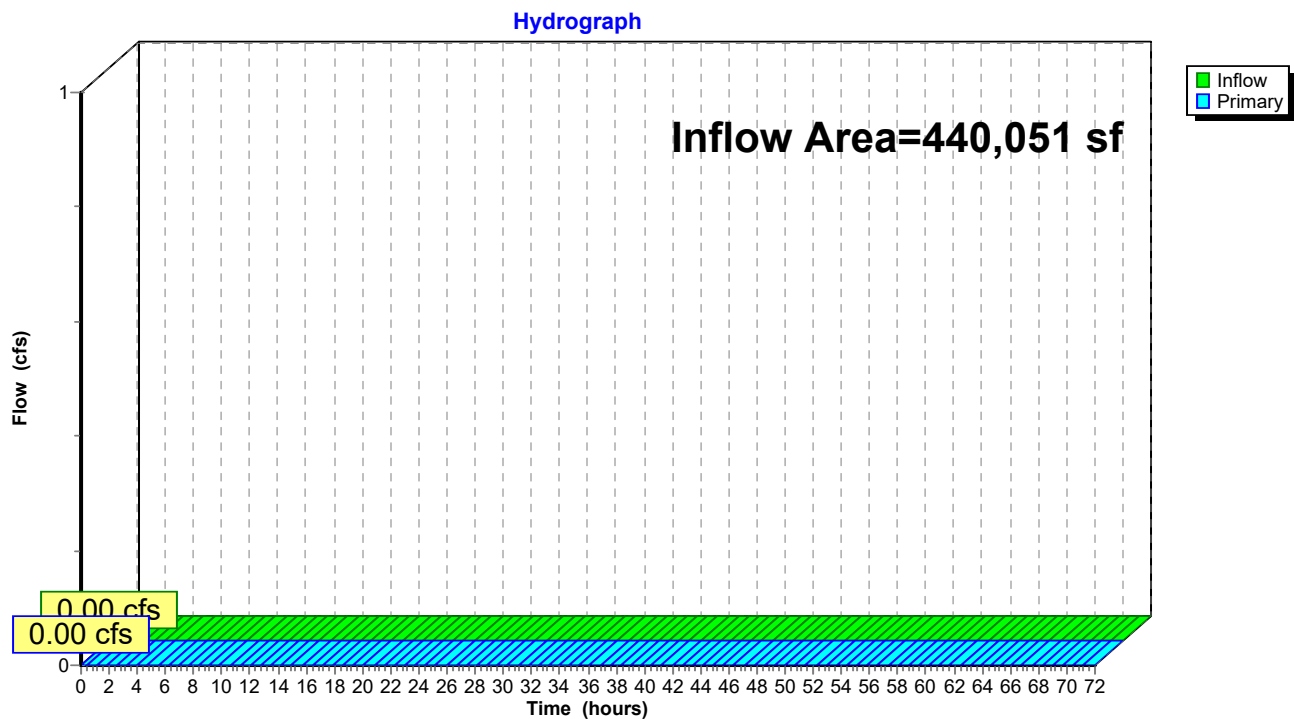


Summary for Link PT2: Proposed Total (AP-2)

Inflow Area = 440,051 sf, 22.16% Impervious, Inflow Depth = 0.00" for 10-Yr. Future event
 Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link PT2: Proposed Total (AP-2)



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
 Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv.
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment7S: Prop. Drainage Area-3 Runoff Area=18,104 sf 0.00% Impervious Runoff Depth=2.87"
 Flow Length=50' Slope=0.1000 '/' Tc=4.2 min CN=39/0 Runoff=1.16 cfs 4,325 cf

Subcatchment8S: Prop. Drainage Runoff Area=22,694 sf 100.00% Impervious Runoff Depth=11.17"
 Flow Length=530' Tc=3.0 min CN=0/98 Runoff=5.65 cfs 21,122 cf

Subcatchment9S: Prop. Drainage Area-3 Runoff Area=70,251 sf 0.00% Impervious Runoff Depth=2.87"
 Flow Length=717' Tc=12.5 min CN=39/0 Runoff=2.67 cfs 16,784 cf

Subcatchment10S: Prop. Drainage Runoff Area=12,530 sf 100.00% Impervious Runoff Depth=11.17"
 Tc=2.0 min CN=0/98 Runoff=3.31 cfs 11,662 cf

Subcatchment11S: Prop. Drainage Runoff Area=33,921 sf 0.00% Impervious Runoff Depth=1.51"
 Flow Length=50' Slope=0.0250 '/' Tc=10.9 min CN=30/0 Runoff=0.48 cfs 4,274 cf

SubcatchmentP-1I: Prop. Drainage Runoff Area=24,003 sf 100.00% Impervious Runoff Depth=11.17"
 Flow Length=430' Tc=3.6 min CN=0/98 Runoff=5.73 cfs 22,340 cf

SubcatchmentP-1P: Prop. Drainage Area-1 Runoff Area=72,415 sf 0.00% Impervious Runoff Depth=2.87"
 Flow Length=530' Tc=13.1 min CN=39/0 Runoff=2.68 cfs 17,302 cf

SubcatchmentP-1R: Prop. Drainage Runoff Area=12,530 sf 100.00% Impervious Runoff Depth=11.17"
 Tc=2.0 min CN=0/98 Runoff=3.31 cfs 11,662 cf

SubcatchmentP-2R: Prop. Drainage Runoff Area=10,024 sf 100.00% Impervious Runoff Depth=11.17"
 Tc=2.0 min CN=0/98 Runoff=2.65 cfs 9,330 cf

SubcatchmentP1A: Prop. Drainage Runoff Area=25,206 sf 0.00% Impervious Runoff Depth=1.51"
 Flow Length=470' Tc=24.2 min CN=30/0 Runoff=0.24 cfs 3,176 cf

SubcatchmentP1B: Prop. Drainage Area-1 Runoff Area=18,385 sf 0.00% Impervious Runoff Depth=2.87"
 Flow Length=50' Slope=0.1000 '/' Tc=4.2 min CN=39/0 Runoff=1.17 cfs 4,393 cf

SubcatchmentP1W: Prop. Drainage Runoff Area=74,786 sf 0.00% Impervious Runoff Depth=1.51"
 Flow Length=285' Tc=26.7 min CN=30/0 Runoff=0.69 cfs 9,422 cf

SubcatchmentP2B: Prop. Drainage Area-2 Runoff Area=18,844 sf 0.00% Impervious Runoff Depth=2.87"
 Flow Length=50' Slope=0.1000 '/' Tc=4.2 min CN=39/0 Runoff=1.20 cfs 4,502 cf

SubcatchmentP2I: Prop. Drainage Runoff Area=15,753 sf 100.00% Impervious Runoff Depth=11.17"
 Flow Length=745' Tc=5.1 min CN=0/98 Runoff=3.41 cfs 14,662 cf

SubcatchmentP2P: Prop. Drainage Area-2 Runoff Area=56,947 sf 0.00% Impervious Runoff Depth=2.87"
 Flow Length=835' Tc=18.5 min CN=39/0 Runoff=1.74 cfs 13,606 cf

SubcatchmentP2W: Prop. Drainage Area-2 Runoff Area=28,444 sf 0.00% Impervious Runoff Depth=1.51"
 Flow Length=880' Tc=15.5 min CN=30/0 Runoff=0.34 cfs 3,584 cf

Pond 8P: Roof Recharge Peak Elev=81.31' Storage=1,796 cf Inflow=2.65 cfs 9,330 cf
 Discarded=0.19 cfs 7,885 cf Primary=4.53 cfs 1,444 cf Outflow=4.72 cfs 9,330 cf

Pond 12P: Roof Recharge Peak Elev=81.27' Storage=1,795 cf Inflow=3.31 cfs 11,662 cf
 Discarded=0.19 cfs 8,940 cf Primary=3.75 cfs 2,722 cf Outflow=3.94 cfs 11,662 cf

Pond B1: Basin #1 Peak Elev=80.12' Storage=20,548 cf Inflow=13.69 cfs 49,015 cf
 Discarded=0.45 cfs 33,823 cf Primary=2.11 cfs 15,192 cf Outflow=2.56 cfs 49,015 cf

Pond B2: Basin #2 Peak Elev=80.06' Storage=18,035 cf Inflow=9.70 cfs 52,990 cf
 Discarded=0.40 cfs 25,658 cf Primary=1.30 cfs 27,331 cf Outflow=1.69 cfs 52,990 cf

Pond B3: Basin #3 Peak Elev=70.57' Storage=26,472 cf Inflow=12.43 cfs 76,559 cf
 Discarded=0.36 cfs 37,316 cf Primary=1.50 cfs 39,243 cf Outflow=1.86 cfs 76,559 cf

Pond R-1: Roof Recharge Peak Elev=81.36' Storage=2,246 cf Inflow=3.31 cfs 11,662 cf
 Discarded=0.24 cfs 9,857 cf Primary=5.62 cfs 1,805 cf Outflow=5.86 cfs 11,662 cf

Link PT1: Proposed Total (AP-1) Inflow=0.69 cfs 9,422 cf
 Primary=0.69 cfs 9,422 cf

Link PT2: Proposed Total (AP-2) Inflow=1.50 cfs 39,243 cf
 Primary=1.50 cfs 39,243 cf

Total Runoff Area = 514,837 sf Runoff Volume = 172,145 cf Average Runoff Depth = 4.01"
81.06% Pervious = 417,303 sf 18.94% Impervious = 97,534 sf

Summary for Subcatchment 7S: Prop. Drainage Area-3 (Basin Area) (Non-Contributory)

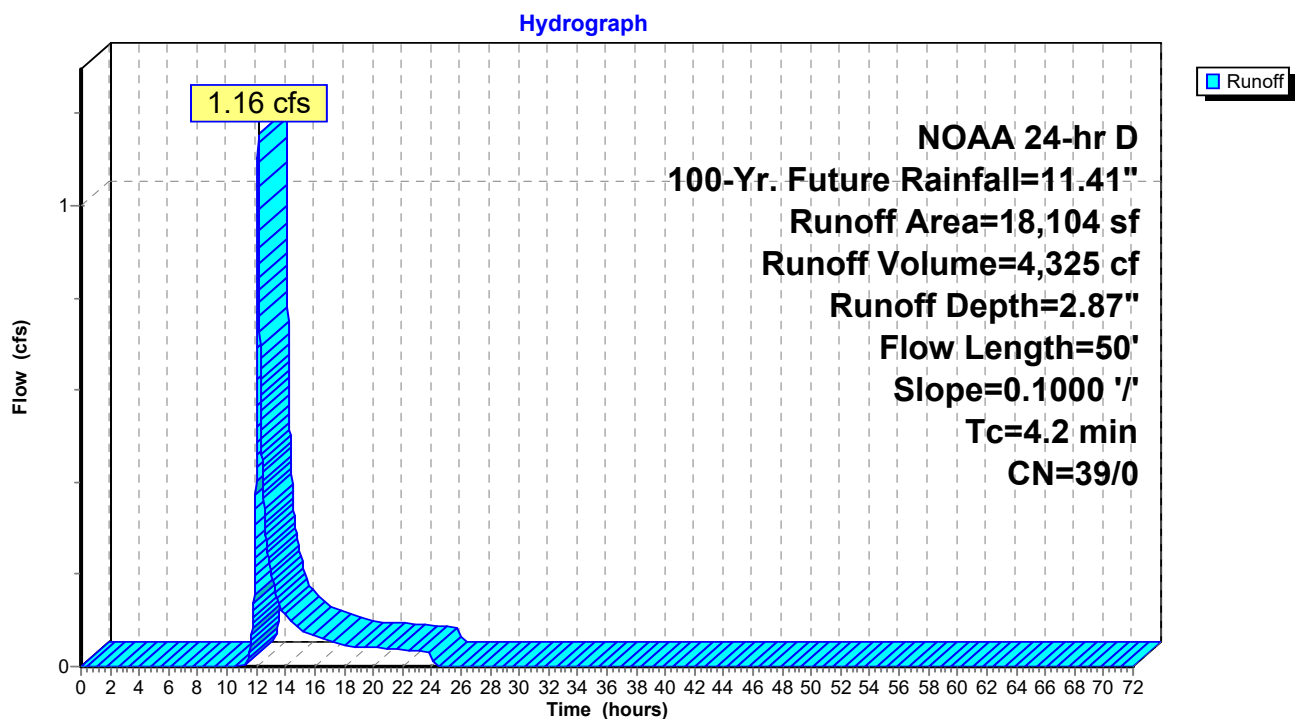
Runoff = 1.16 cfs @ 12.13 hrs, Volume= 4,325 cf, Depth= 2.87"
 Routed to Pond B3 : Basin #3

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 100-Yr. Future Rainfall=11.41"

Area (sf)	CN	Description
* 18,104	39	Basin Area-Non-contributory, HSG A
18,104	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.1000	0.20		Sheet Flow, Sheet Grass
Grass: Dense n= 0.240 P2= 3.42"					

Subcatchment 7S: Prop. Drainage Area-3 (Basin Area) (Non-Contributory)



Summary for Subcatchment 8S: Prop. Drainage Area-3 (Impervious)

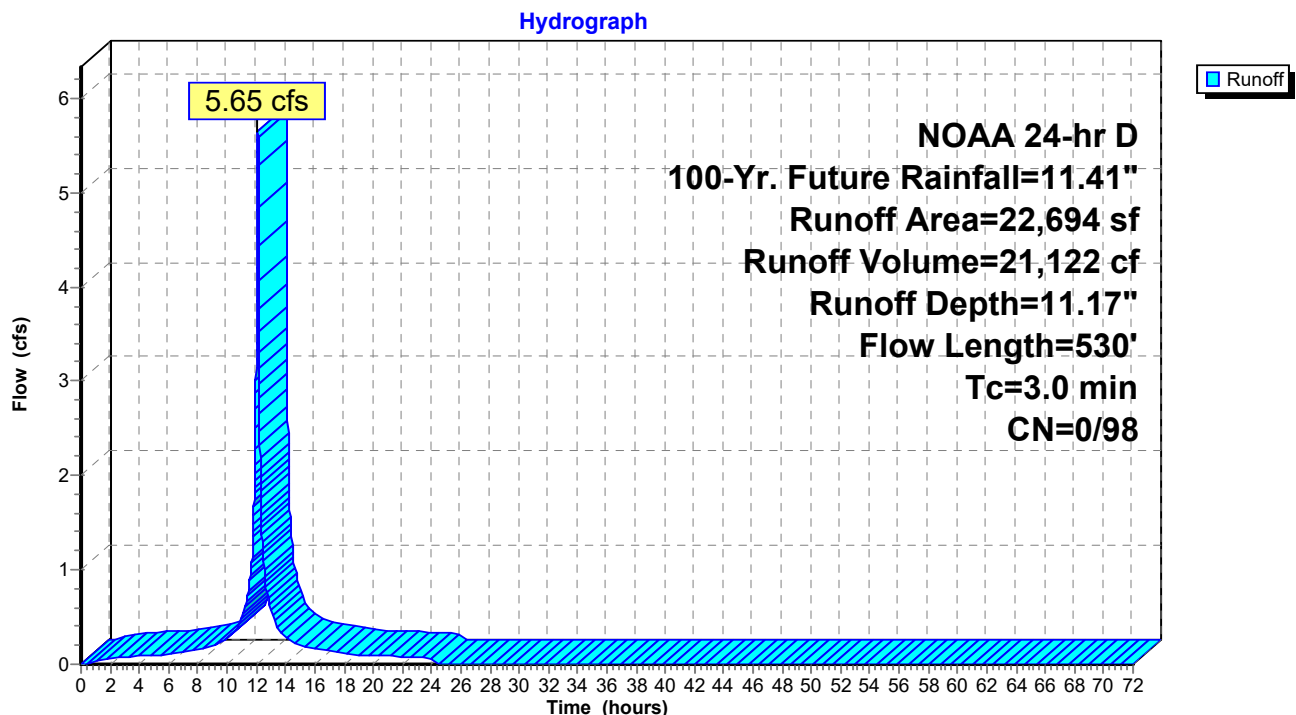
Runoff = 5.65 cfs @ 12.11 hrs, Volume= 21,122 cf, Depth=11.17"
 Routed to Pond B3 : Basin #3

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 100-Yr. Future Rainfall=11.41"

Area (sf)	CN	Description
13,555	98	Paved roads w/curbs & sewers, HSG A
* 3,626	98	Sidewalks, HSG A
* 5,513	98	Driveways, HSG A
22,694	98	Weighted Average
22,694	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	100	0.0292	1.65		Sheet Flow, Sheet Pvmt Smooth surfaces n= 0.011 P2= 3.42"
1.1	233	0.0292	3.47		Shallow Concentrated Flow, Shallow Pvmt Paved Kv= 20.3 fps
0.9	197	0.0040	3.76	6.64	Pipe Channel, Pipe 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
3.0	530	Total			

Subcatchment 8S: Prop. Drainage Area-3 (Impervious)



Summary for Subcatchment 9S: Prop. Drainage Area-3 (Pervious)

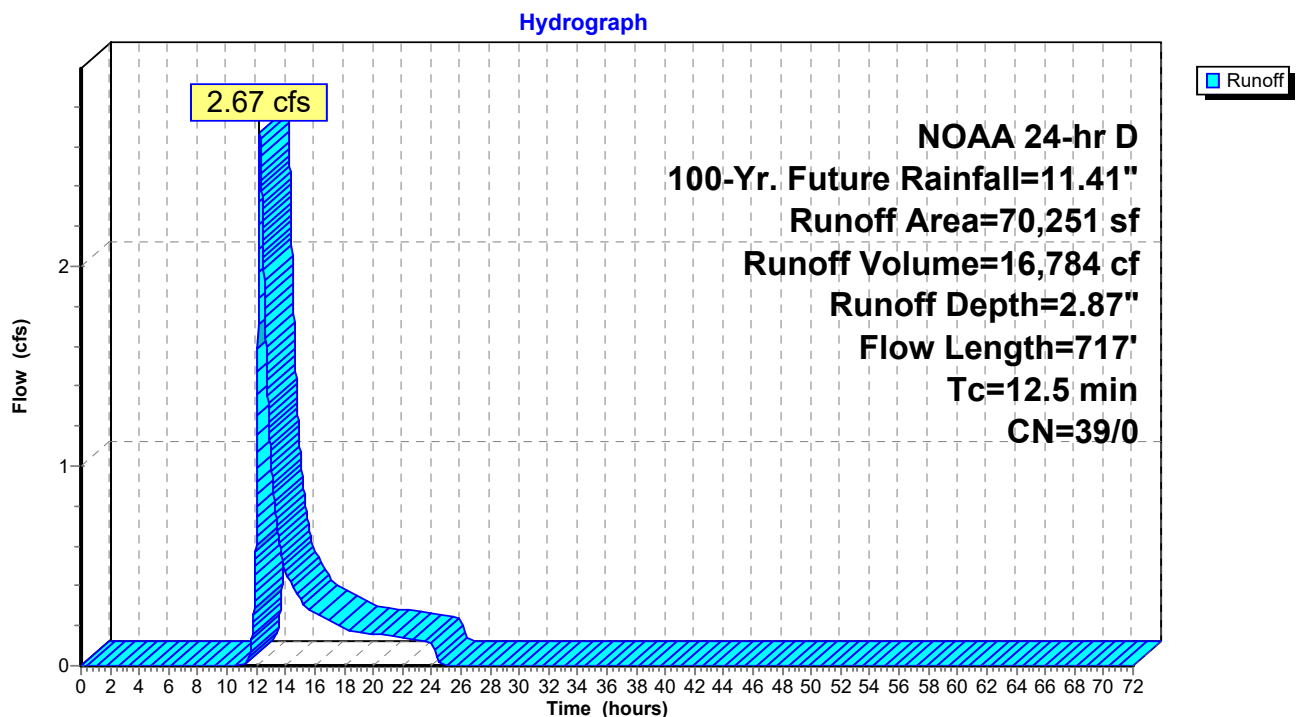
Runoff = 2.67 cfs @ 12.25 hrs, Volume= 16,784 cf, Depth= 2.87"
 Routed to Pond B3 : Basin #3

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 100-Yr. Future Rainfall=11.41"

Area (sf)	CN	Description
70,251	39	>75% Grass cover, Good, HSG A
70,251	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	100	0.0500	0.17		Sheet Flow, Sheet Grass Grass: Dense n= 0.240 P2= 3.42"
0.1	20	0.0500	3.60		Shallow Concentrated Flow, Shallow Grass Unpaved Kv= 16.1 fps
1.9	400	0.0292	3.47		Shallow Concentrated Flow, Shallow Pvmnt Paved Kv= 20.3 fps
0.9	197	0.0040	3.76	6.64	Pipe Channel, Pipe 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Concrete pipe, bends & connections
12.5	717	Total			

Subcatchment 9S: Prop. Drainage Area-3 (Pervious)



Summary for Subcatchment 10S: Prop. Drainage Area-3 (Roof)

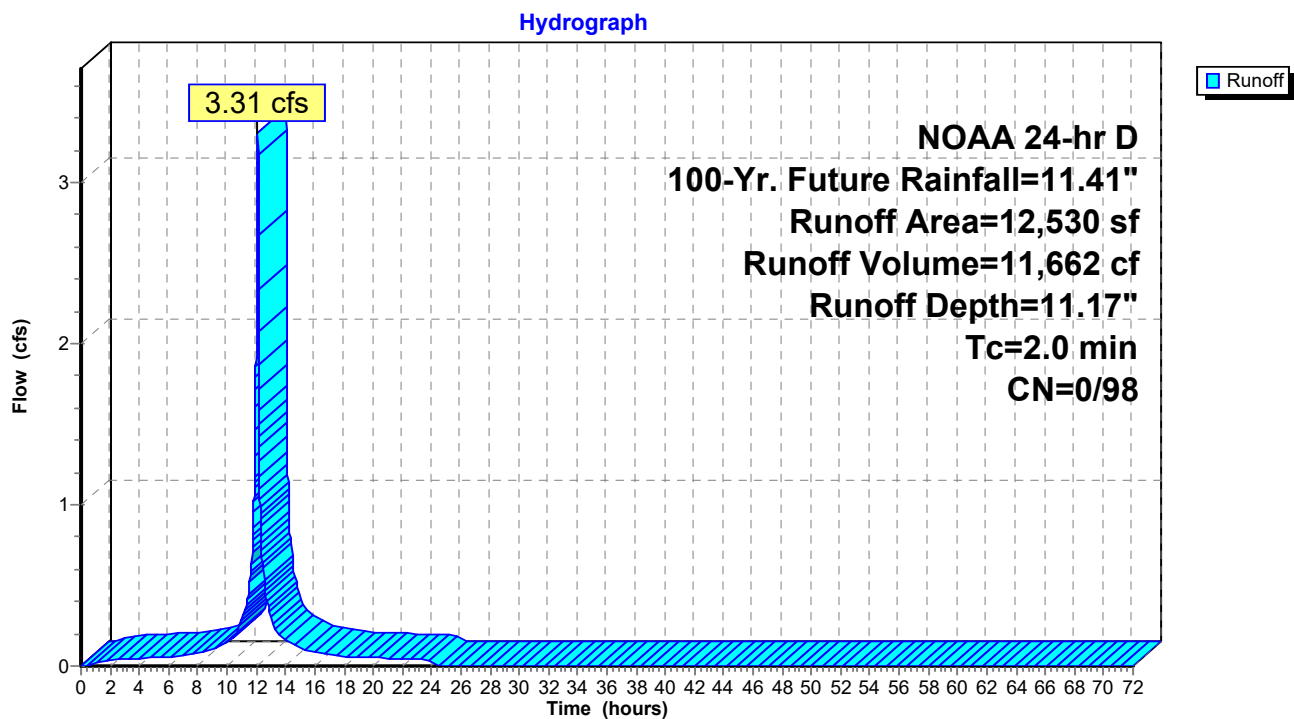
Runoff = 3.31 cfs @ 12.10 hrs, Volume= 11,662 cf, Depth=11.17"
 Routed to Pond 12P : Roof Recharge

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 100-Yr. Future Rainfall=11.41"

Area (sf)	CN	Description
12,530	98	Roofs, HSG A
12,530	98	100.00% Impervious Area

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

Subcatchment 10S: Prop. Drainage Area-3 (Roof)



Summary for Subcatchment 11S: Prop. Drainage Area-3-A (Woods) (Undisturbed)

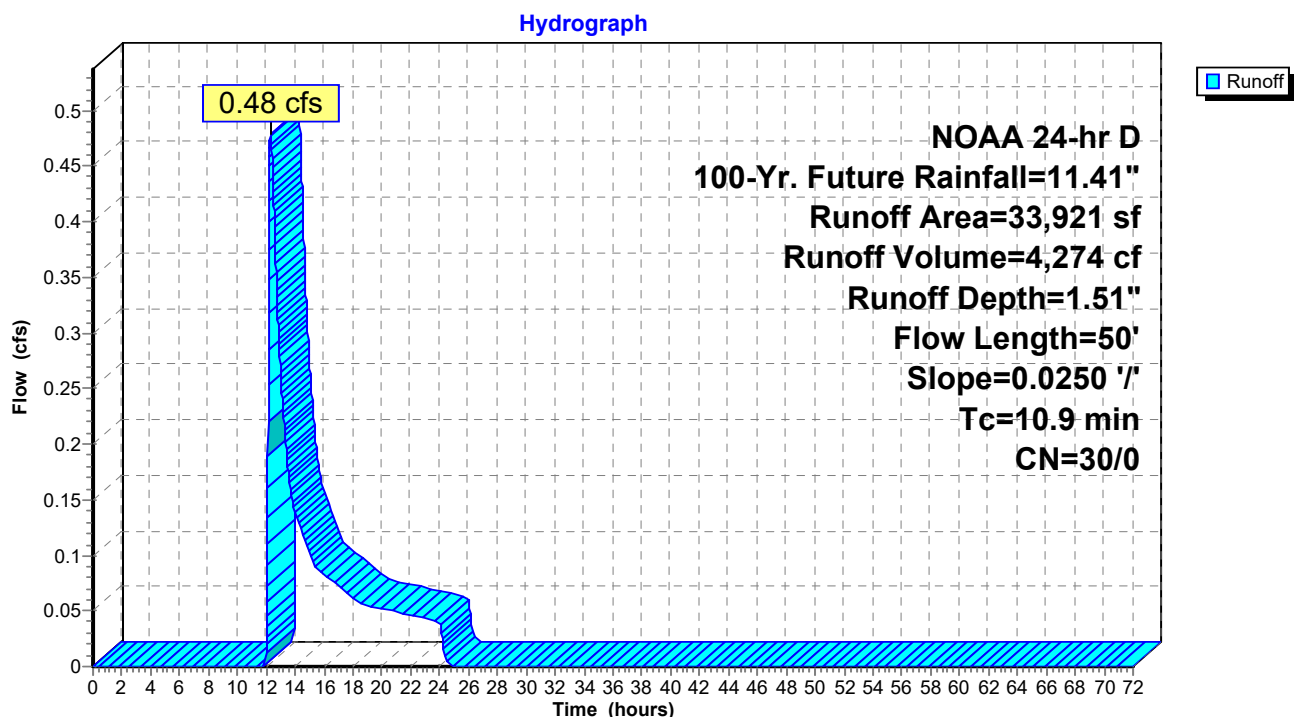
Runoff = 0.48 cfs @ 12.30 hrs, Volume= 4,274 cf, Depth= 1.51"
 Routed to Pond B3 : Basin #3

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 100-Yr. Future Rainfall=11.41"

Area (sf)	CN	Description
33,921	30	Woods, Good, HSG A
33,921	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	50	0.0250	0.08		Sheet Flow, Sheet woods Woods: Light underbrush n= 0.400 P2= 3.42"

Subcatchment 11S: Prop. Drainage Area-3-A (Woods) (Undisturbed)



Summary for Subcatchment P-1I: Prop. Drainage Area-1 (Impervious)

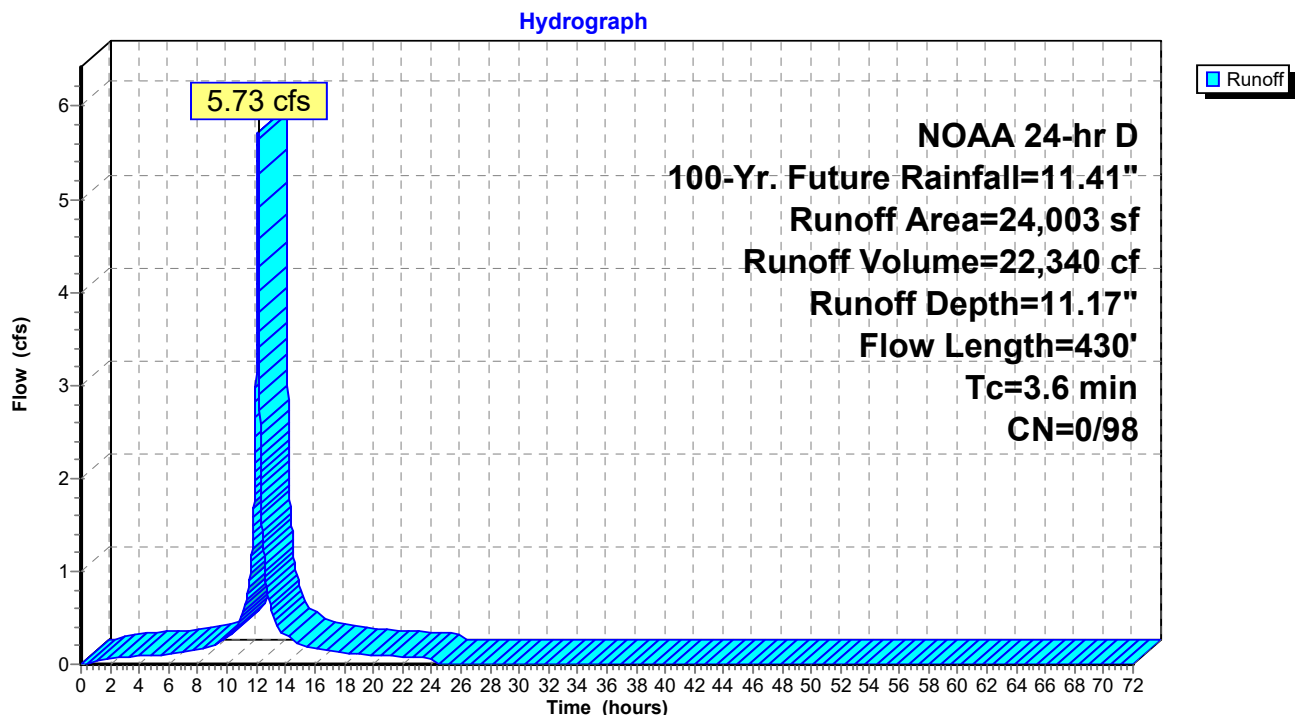
Runoff = 5.73 cfs @ 12.12 hrs, Volume= 22,340 cf, Depth=11.17"
 Routed to Pond B1 : Basin #1

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 100-Yr. Future Rainfall=11.41"

Area (sf)	CN	Description
15,941	98	Paved roads w/curbs & sewers, HSG A
* 2,588	98	Sidewalks, HSG A
* 5,474	98	Driveways, HSG A
24,003	98	Weighted Average
24,003	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	100	0.0083	1.00		Sheet Flow, Sheet Pvmt Smooth surfaces n= 0.011 P2= 3.42"
0.7	60	0.0050	1.44		Shallow Concentrated Flow, Shallow Pvmt Paved Kv= 20.3 fps
1.2	270	0.0050	3.72	4.57	Pipe Channel, Pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
3.6	430	Total			

Subcatchment P-1I: Prop. Drainage Area-1 (Impervious)



Summary for Subcatchment P-1P: Prop. Drainage Area-1 (Pervious)

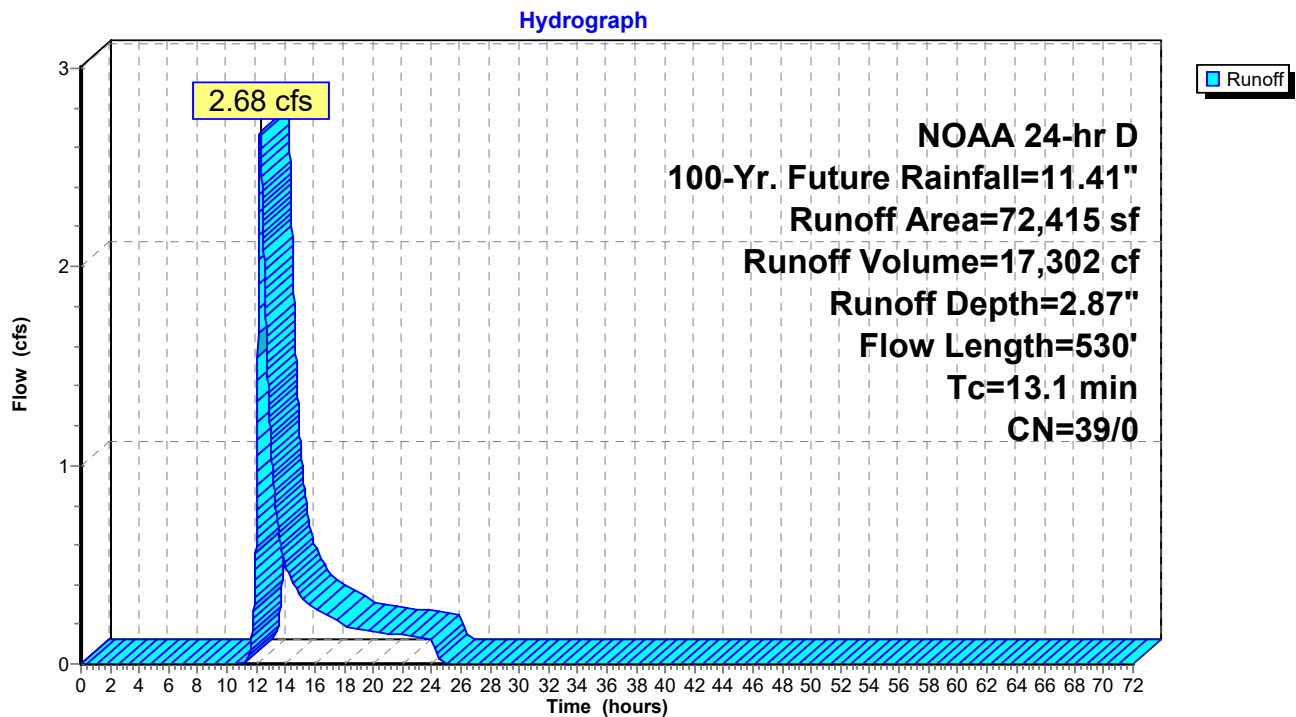
Runoff = 2.68 cfs @ 12.26 hrs, Volume= 17,302 cf, Depth= 2.87"
 Routed to Pond B1 : Basin #1

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 100-Yr. Future Rainfall=11.41"

Area (sf)	CN	Description
72,415	39	>75% Grass cover, Good, HSG A
72,415	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0400	0.16		Sheet Flow, Sheet Grass Grass: Dense n= 0.240 P2= 3.42"
1.4	160	0.0083	1.85		Shallow Concentrated Flow, Shallow Pvmnt Paved Kv= 20.3 fps
1.2	270	0.0050	3.72	4.57	Pipe Channel, Pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
13.1	530	Total			

Subcatchment P-1P: Prop. Drainage Area-1 (Pervious)



Summary for Subcatchment P-1R: Prop. Drainage Area-1 (Roof)

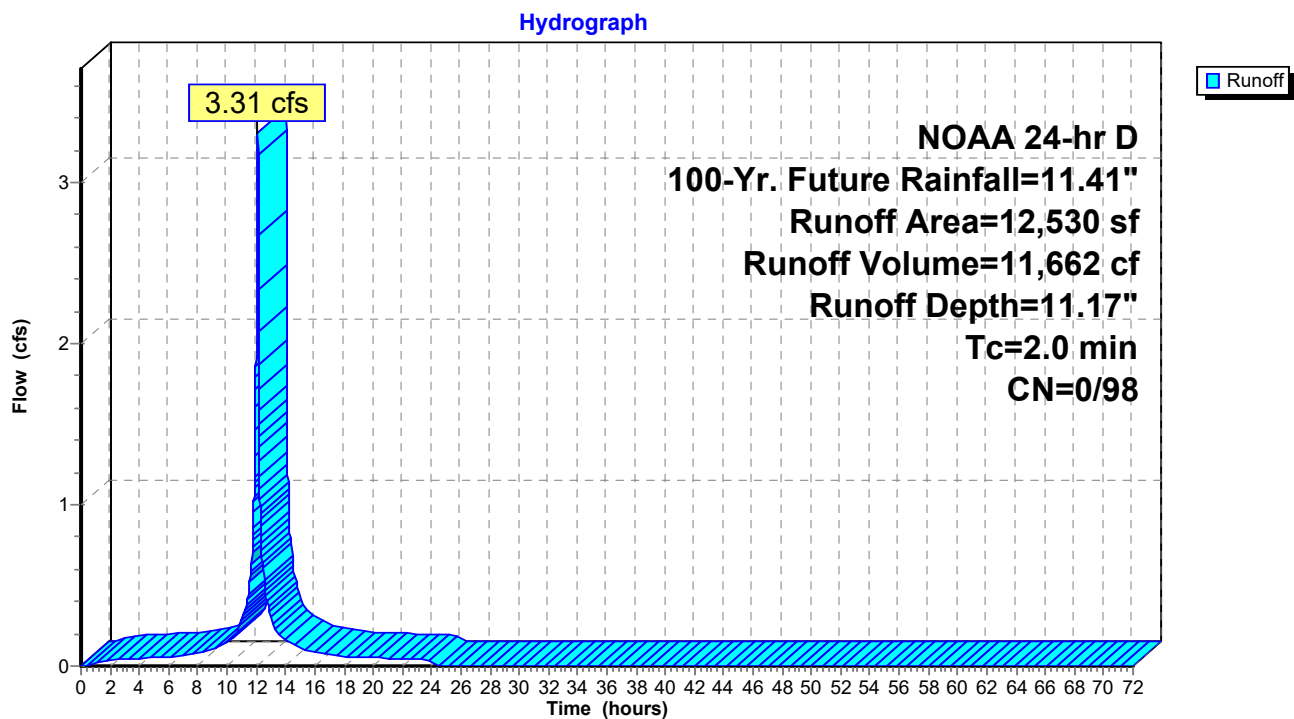
Runoff = 3.31 cfs @ 12.10 hrs, Volume= 11,662 cf, Depth=11.17"
 Routed to Pond R-1 : Roof Recharge

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 100-Yr. Future Rainfall=11.41"

Area (sf)	CN	Description
12,530	98	Roofs, HSG A
12,530	98	100.00% Impervious Area

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

Subcatchment P-1R: Prop. Drainage Area-1 (Roof)



Summary for Subcatchment P-2R: Prop. Drainage Area-2 (Roof)

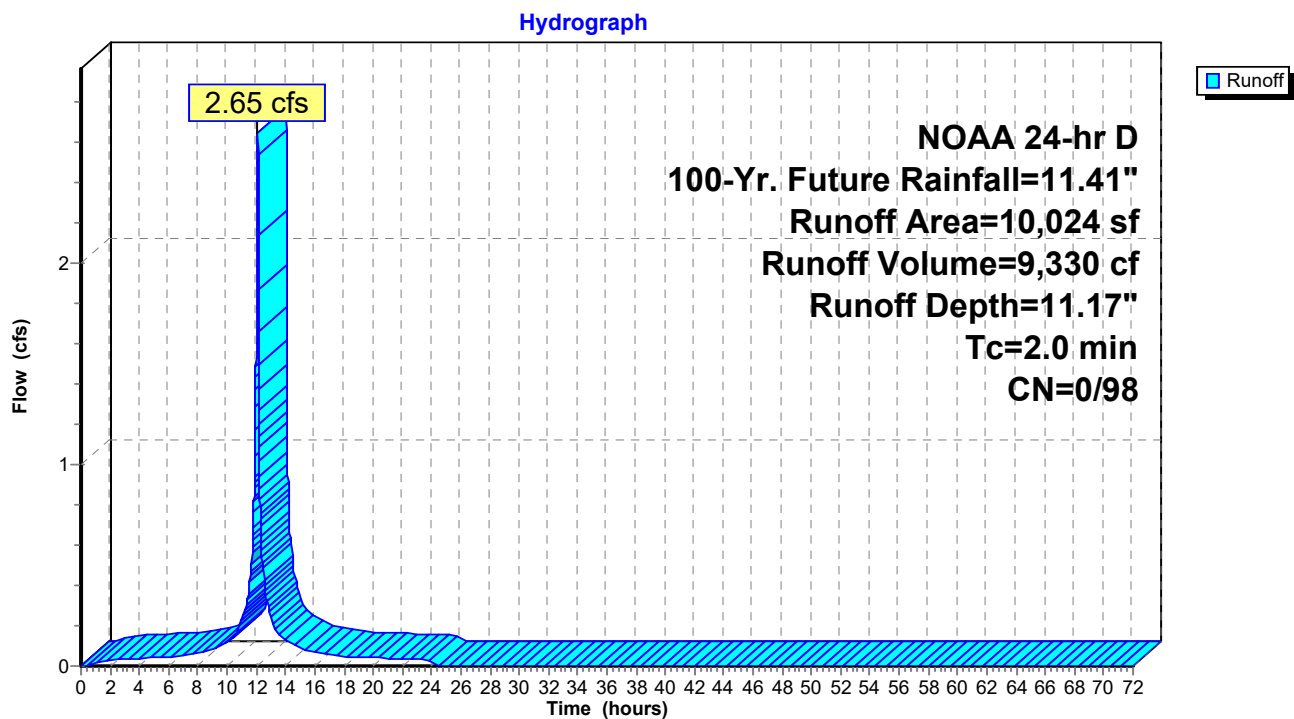
Runoff = 2.65 cfs @ 12.10 hrs, Volume= 9,330 cf, Depth=11.17"
 Routed to Pond 8P : Roof Recharge

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 100-Yr. Future Rainfall=11.41"

Area (sf)	CN	Description
10,024	98	Roofs, HSG A
10,024	98	100.00% Impervious Area

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

Subcatchment P-2R: Prop. Drainage Area-2 (Roof)



Summary for Subcatchment P1A: Prop. Drainage Area-1-A (Woods) (Undisturbed)

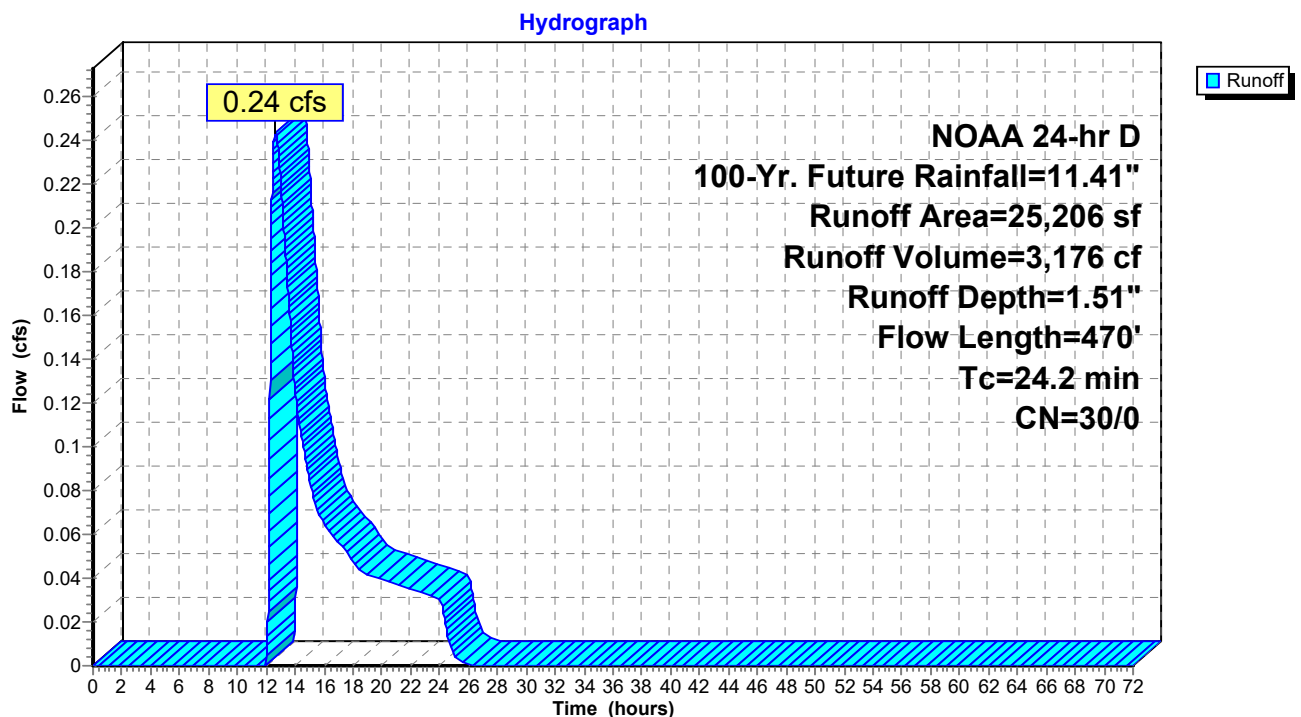
Runoff = 0.24 cfs @ 12.64 hrs, Volume= 3,176 cf, Depth= 1.51"
 Routed to Pond B1 : Basin #1

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 100-Yr. Future Rainfall=11.41"

Area (sf)	CN	Description
25,206	30	Woods, Good, HSG A
25,206	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2	100	0.0170	0.08		Sheet Flow, Sheet woods Woods: Light underbrush n= 0.400 P2= 3.42"
0.4	60	0.0200	2.28		Shallow Concentrated Flow, Shallow Grass Unpaved Kv= 16.1 fps
0.4	40	0.0062	1.60		Shallow Concentrated Flow, shallow Pvmt Paved Kv= 20.3 fps
1.2	270	0.0050	3.72	4.57	Pipe Channel, pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
24.2	470	Total			

Subcatchment P1A: Prop. Drainage Area-1-A (Woods) (Undisturbed)



Summary for Subcatchment P1B: Prop. Drainage Area-1 (Basin Area) (Non-Contributory)

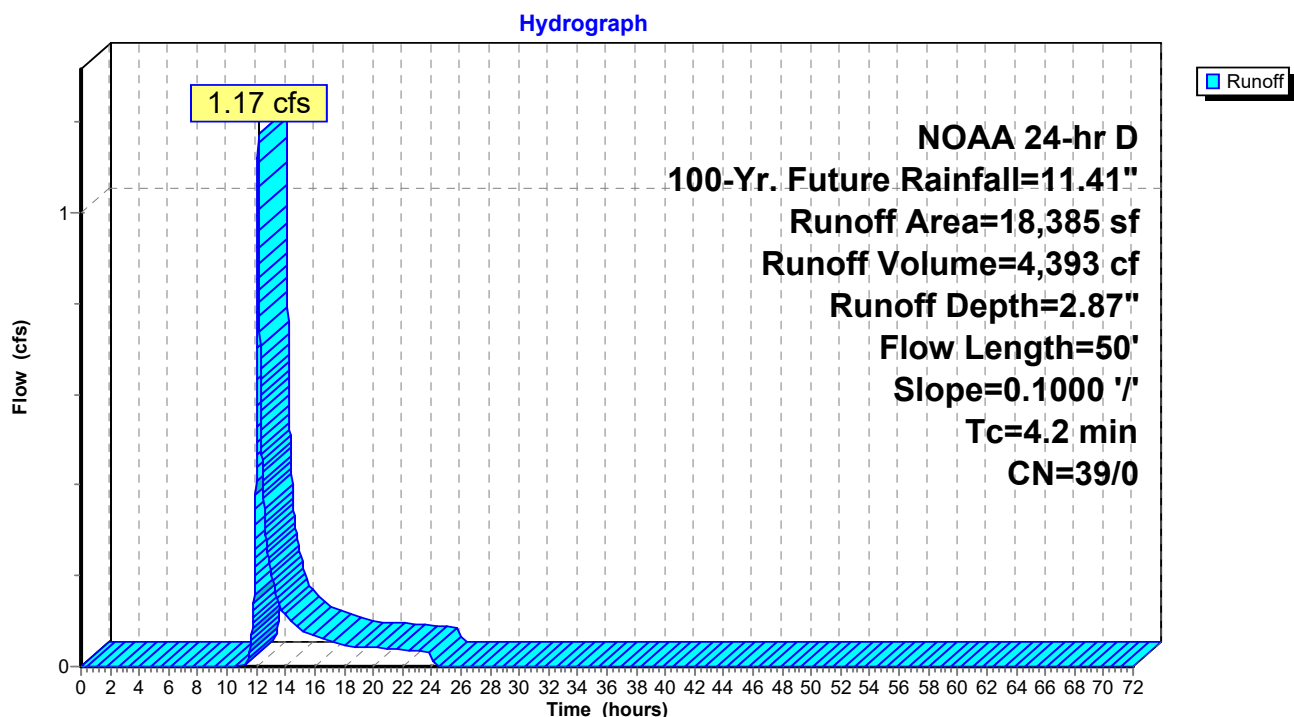
Runoff = 1.17 cfs @ 12.13 hrs, Volume= 4,393 cf, Depth= 2.87"
 Routed to Pond B1 : Basin #1

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 100-Yr. Future Rainfall=11.41"

Area (sf)	CN	Description
* 18,385	39	Basin Area-Non-contributory, HSG A
18,385	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.1000	0.20		Sheet Flow, Sheet Grass
Grass: Dense n= 0.240 P2= 3.42"					

Subcatchment P1B: Prop. Drainage Area-1 (Basin Area) (Non-Contributory)



Summary for Subcatchment P1W: Prop. Drainage Area-1-B (Woods) (undetained)

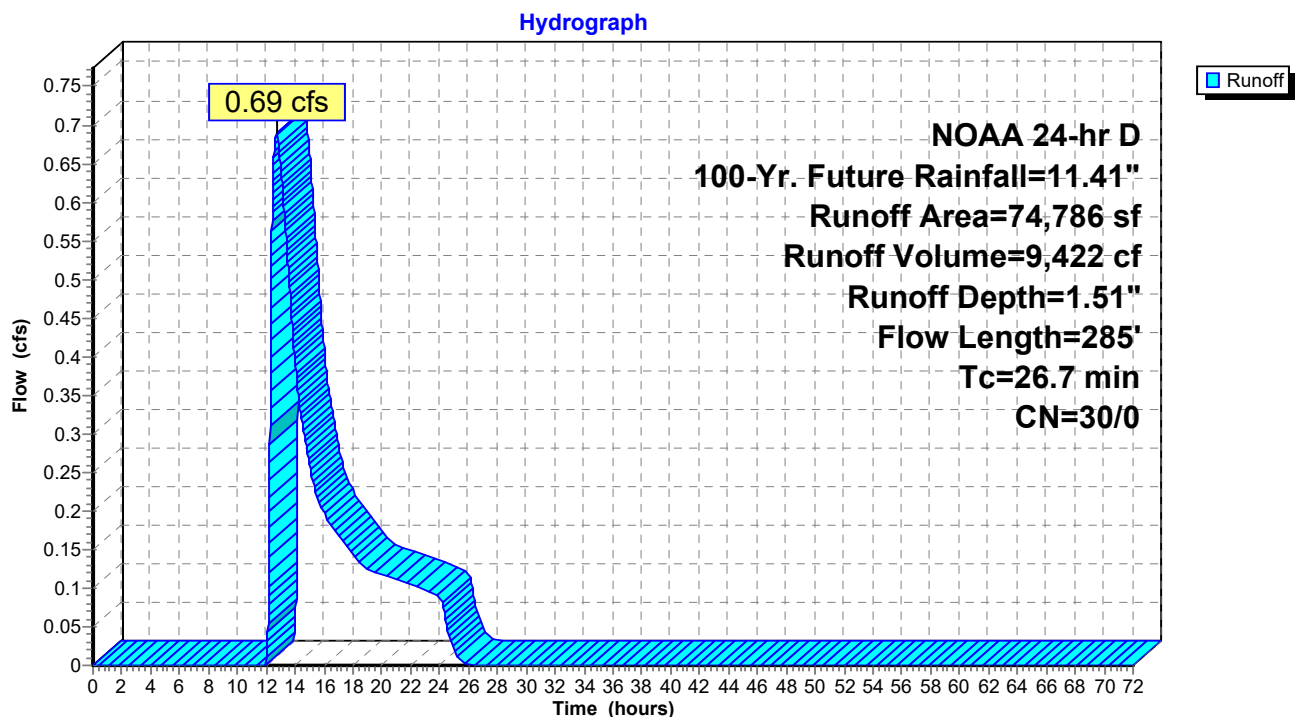
Runoff = 0.69 cfs @ 12.70 hrs, Volume= 9,422 cf, Depth= 1.51"
 Routed to Link PT1 : Proposed Total (AP-1)

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 100-Yr. Future Rainfall=11.41"

Area (sf)	CN	Description
74,786	30	Woods, Good, HSG A
74,786	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.8	100	0.0200	0.08		Sheet Flow, Sheet woods
					Woods: Light underbrush n= 0.400 P2= 3.42"
5.9	185	0.0110	0.52		Shallow Concentrated Flow, Shallow Woods
					Woodland Kv= 5.0 fps
26.7	285	Total			

Subcatchment P1W: Prop. Drainage Area-1-B (Woods) (undetained)



Summary for Subcatchment P2B: Prop. Drainage Area-2 (Basin)(Non-Contributory)

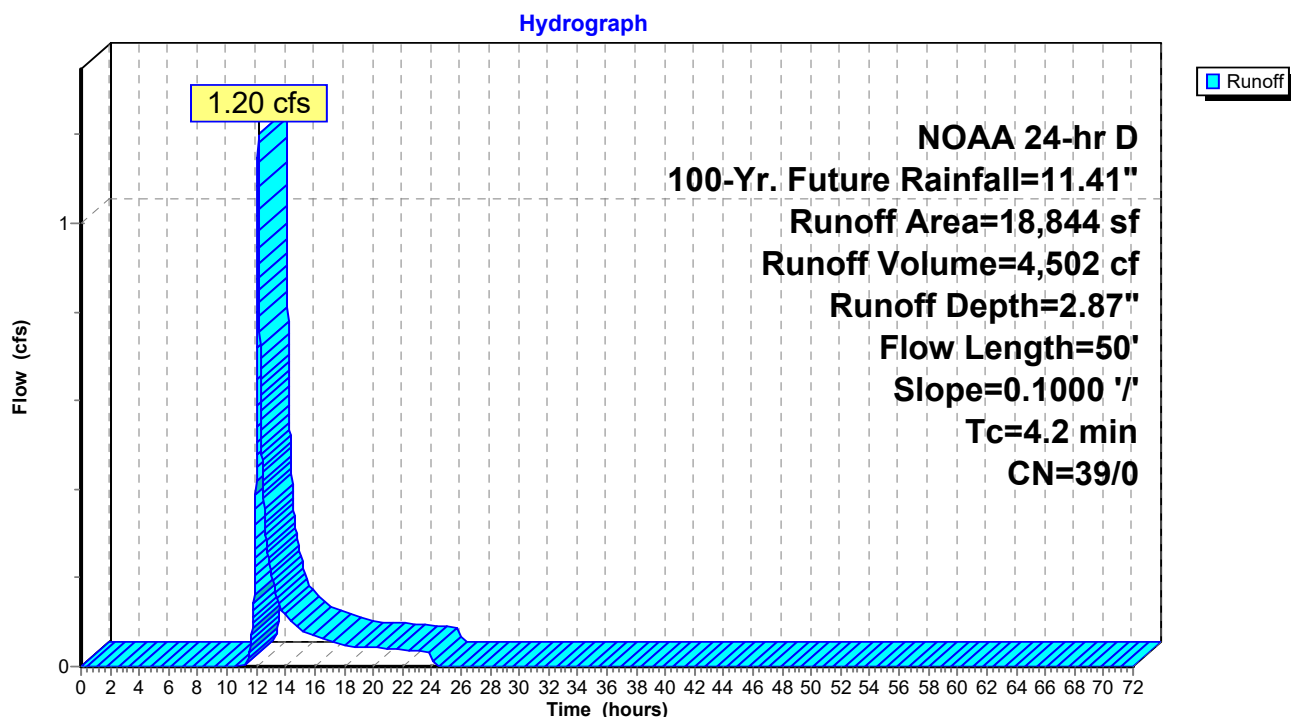
Runoff = 1.20 cfs @ 12.13 hrs, Volume= 4,502 cf, Depth= 2.87"
 Routed to Pond B2 : Basin #2

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 100-Yr. Future Rainfall=11.41"

Area (sf)	CN	Description
* 18,844	39	Basin Area-Non-contributory, HSG A
18,844	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.1000	0.20		Sheet Flow, Sheet Grass
Grass: Dense n= 0.240 P2= 3.42"					

Subcatchment P2B: Prop. Drainage Area-2 (Basin)(Non-Contributory)



Summary for Subcatchment P2I: Prop. Drainage Area-2 (Impervious)

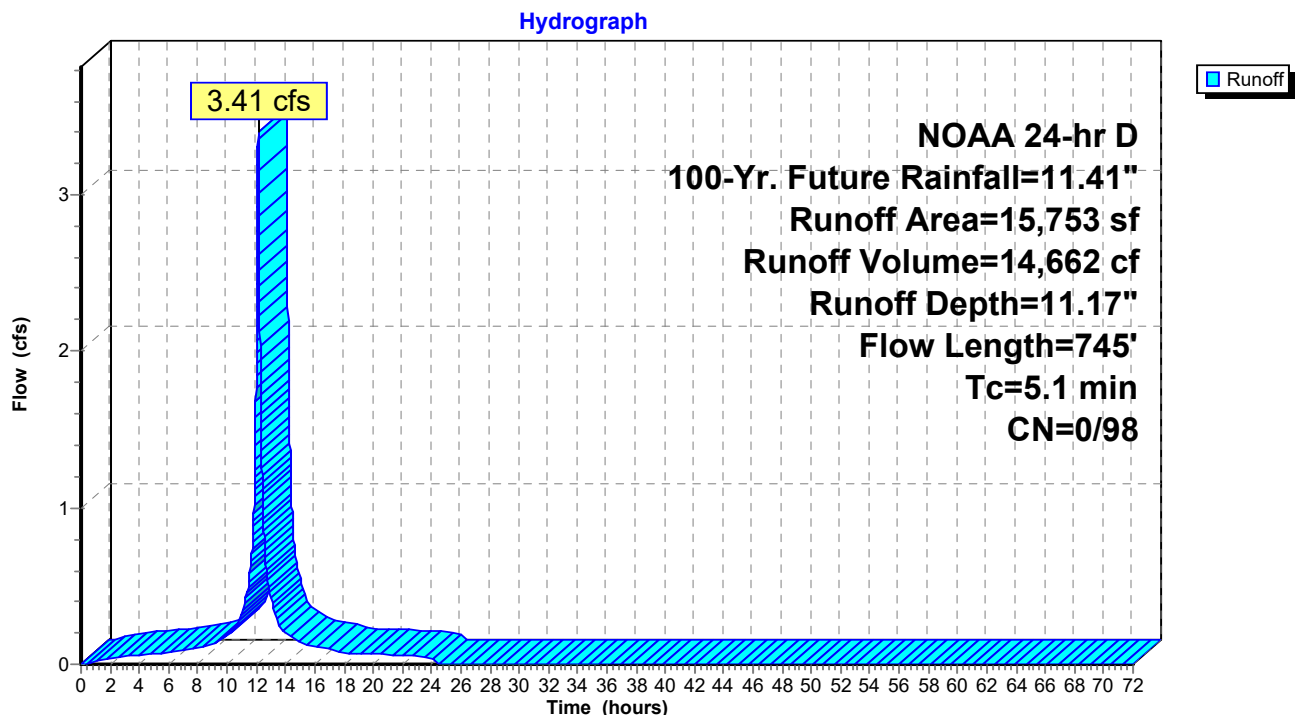
Runoff = 3.41 cfs @ 12.13 hrs, Volume= 14,662 cf, Depth=11.17"
 Routed to Pond B2 : Basin #2

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 100-Yr. Future Rainfall=11.41"

Area (sf)	CN	Description
9,010	98	Paved roads w/curbs & sewers, HSG A
* 2,394	98	Sidewalks, HSG A
* 4,349	98	Driveways, HSG A
15,753	98	Weighted Average
15,753	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	100	0.0083	1.00		Sheet Flow, Sheet Pvmt Smooth surfaces n= 0.011 P2= 3.42"
0.9	95	0.0083	1.85		Shallow Concentrated Flow, Shallow Pvmt Paved Kv= 20.3 fps
2.5	550	0.0050	3.72	4.57	Pipe Channel, Pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
5.1	745	Total			

Subcatchment P2I: Prop. Drainage Area-2 (Impervious)



Summary for Subcatchment P2P: Prop. Drainage Area-2 (Pervious)

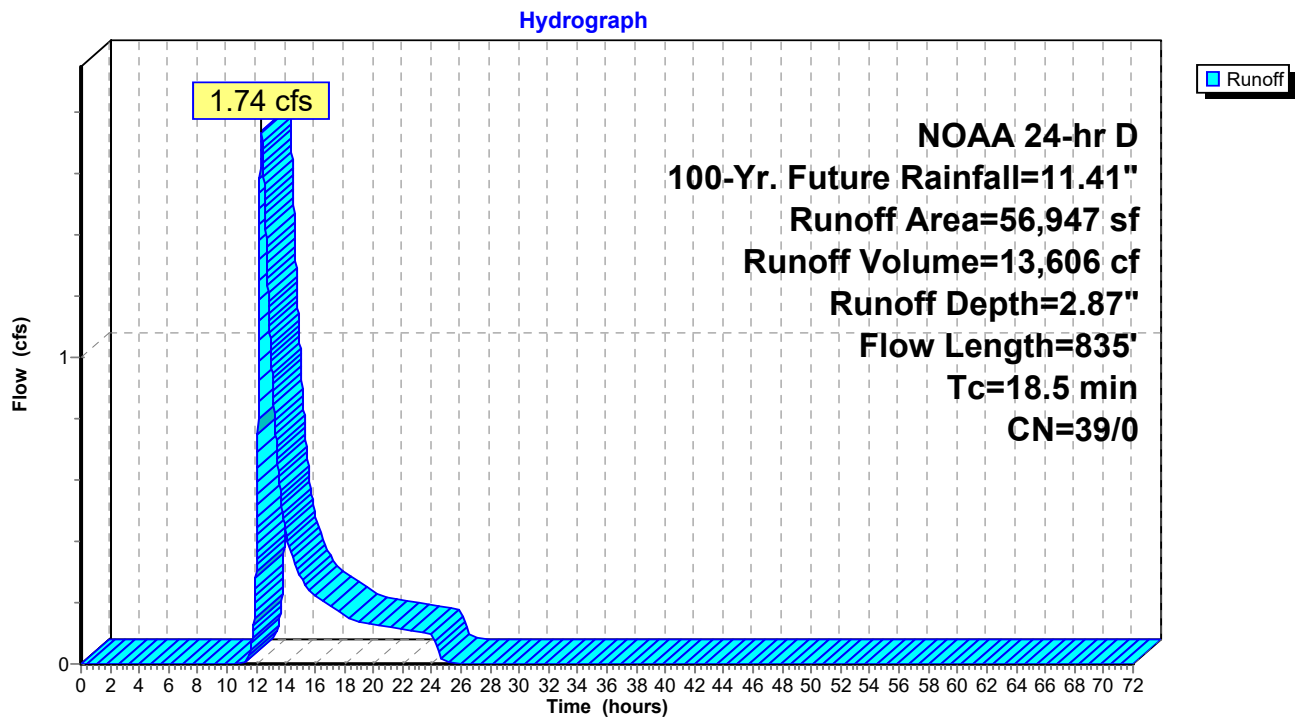
Runoff = 1.74 cfs @ 12.34 hrs, Volume= 13,606 cf, Depth= 2.87"
 Routed to Pond B2 : Basin #2

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 100-Yr. Future Rainfall=11.41"

Area (sf)	CN	Description
56,947	39	>75% Grass cover, Good, HSG A
56,947	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	90	0.0150	0.11		Sheet Flow, Sheet Grass Grass: Dense n= 0.240 P2= 3.42"
1.8	195	0.0083	1.85		Shallow Concentrated Flow, Shallow Pvmnt Paved Kv= 20.3 fps
2.5	550	0.0050	3.72	4.57	Pipe Channel, Pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
18.5	835	Total			

Subcatchment P2P: Prop. Drainage Area-2 (Pervious)



Summary for Subcatchment P2W: Prop. Drainage Area-2 (Woods) (Undisturbed)

Runoff = 0.34 cfs @ 12.40 hrs, Volume= 3,584 cf, Depth= 1.51"
 Routed to Pond B2 : Basin #2

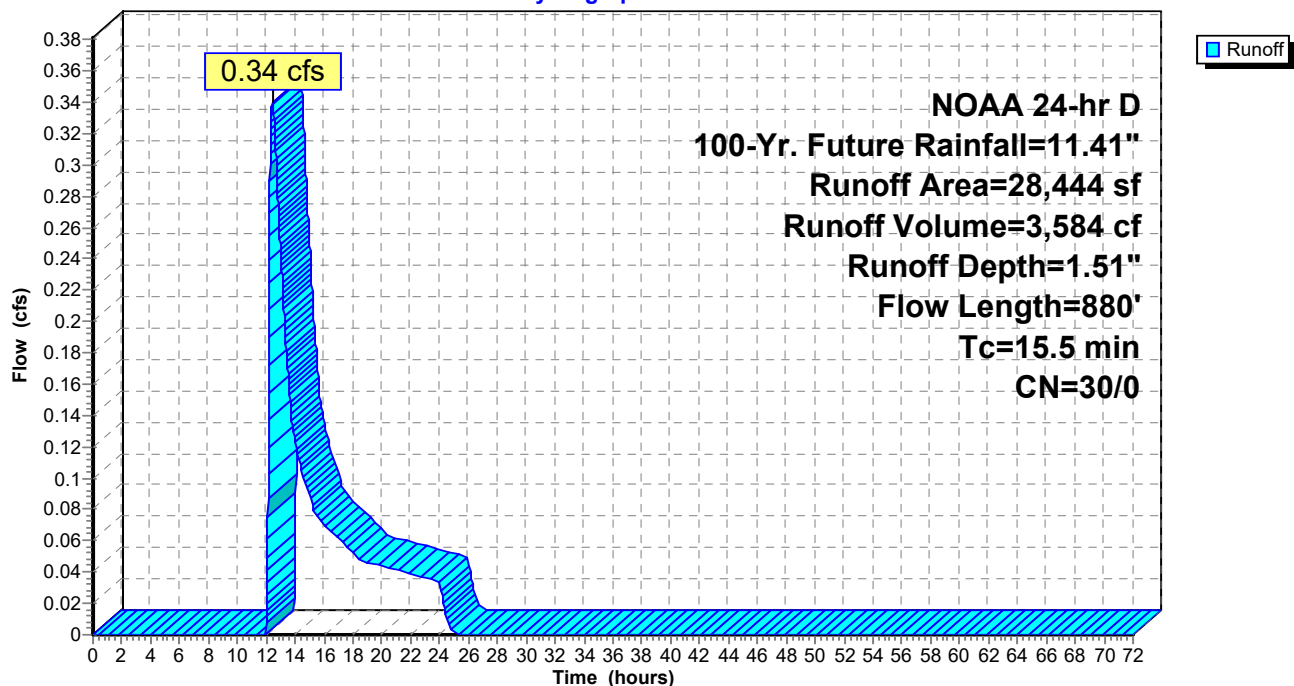
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 100-Yr. Future Rainfall=11.41"

Area (sf)	CN	Description
28,444	30	Woods, Good, HSG A
28,444	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	50	0.0250	0.08		Sheet Flow, Sheet woods Woods: Light underbrush n= 0.400 P2= 3.42"
0.6	120	0.0400	3.22		Shallow Concentrated Flow, Shallow Grass Unpaved Kv= 16.1 fps
1.7	190	0.0083	1.85		Shallow Concentrated Flow, shallow Pvmt Paved Kv= 20.3 fps
2.3	520	0.0050	3.72	4.57	Pipe Channel, pipe 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
15.5	880	Total			

Subcatchment P2W: Prop. Drainage Area-2 (Woods) (Undisturbed)

Hydrograph



Summary for Pond 8P: Roof Recharge

Inflow Area = 10,024 sf, 100.00% Impervious, Inflow Depth = 11.17" for 100-Yr. Future event
 Inflow = 2.65 cfs @ 12.10 hrs, Volume= 9,330 cf
 Outflow = 4.72 cfs @ 12.10 hrs, Volume= 9,330 cf, Atten= 0%, Lag= 0.0 min
 Discarded = 0.19 cfs @ 11.05 hrs, Volume= 7,885 cf
 Primary = 4.53 cfs @ 12.10 hrs, Volume= 1,444 cf
 Routed to Pond B2 : Basin #2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 81.31' @ 12.10 hrs Surf.Area= 822 sf Storage= 1,796 cf

Plug-Flow detention time= 49.1 min calculated for 9,328 cf (100% of inflow)
 Center-of-Mass det. time= 49.1 min (784.4 - 735.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	76.00'	219 cf	6.25'W x 32.23'L x 3.75'H Field A 755 cf Overall - 209 cf Embedded = 546 cf x 40.0% Voids
#2A	76.50'	209 cf	ADS_StormTech SC-800 +Cap x 4 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap Cap Storage= 3.4 cf x 2 x 1 rows = 6.8 cf
#3	76.00'	24 cf	2.00'W x 2.00'L x 6.00'H Prismatic
			452 cf x 4.00 = 1,807 cf Total Available Storage

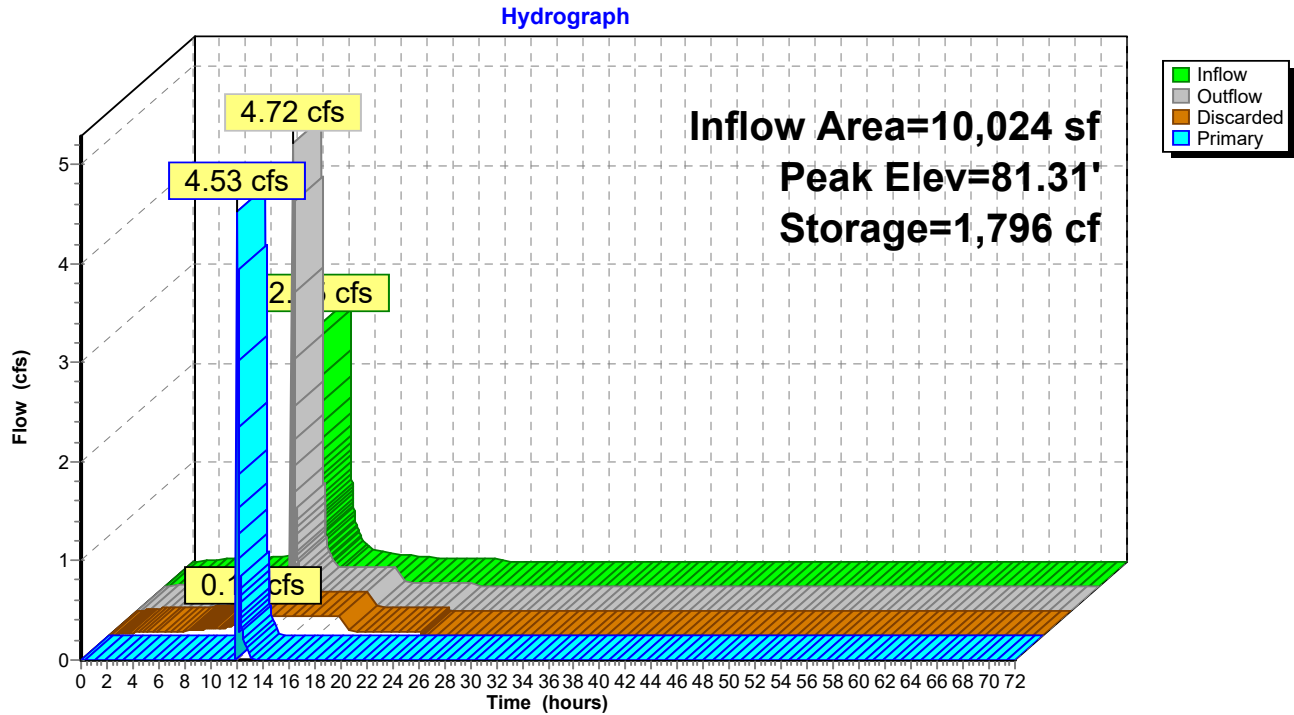
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	81.00'	24.0" x 24.0" Horiz. Grate 24" C= 0.600 Limited to weir flow at low heads
#2	Discarded	76.00'	10.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.19 cfs @ 11.05 hrs HW=76.06' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=4.38 cfs @ 12.10 hrs HW=81.30' TW=77.92' (Dynamic Tailwater)
 ↑ **1=Grate 24"** (Weir Controls 4.38 cfs @ 1.80 fps)

Pond 8P: Roof Recharge



Summary for Pond 12P: Roof Recharge

Inflow Area = 12,530 sf, 100.00% Impervious, Inflow Depth = 11.17" for 100-Yr. Future event
 Inflow = 3.31 cfs @ 12.10 hrs, Volume= 11,662 cf
 Outflow = 3.94 cfs @ 12.09 hrs, Volume= 11,662 cf, Atten= 0%, Lag= 0.0 min
 Discarded = 0.19 cfs @ 10.78 hrs, Volume= 8,940 cf
 Primary = 3.75 cfs @ 12.09 hrs, Volume= 2,722 cf
 Routed to Pond B3 : Basin #3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 81.27' @ 12.09 hrs Surf.Area= 822 sf Storage= 1,795 cf

Plug-Flow detention time= 46.2 min calculated for 11,660 cf (100% of inflow)
 Center-of-Mass det. time= 46.2 min (781.6 - 735.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	76.00'	219 cf	6.25'W x 32.23'L x 3.75'H Field A 755 cf Overall - 209 cf Embedded = 546 cf x 40.0% Voids
#2A	76.50'	209 cf	ADS_StormTech SC-800 +Cap x 4 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap Cap Storage= 3.4 cf x 2 x 1 rows = 6.8 cf
#3	76.00'	24 cf	2.00'W x 2.00'L x 6.00'H Prismatic
			452 cf x 4.00 = 1,807 cf Total Available Storage

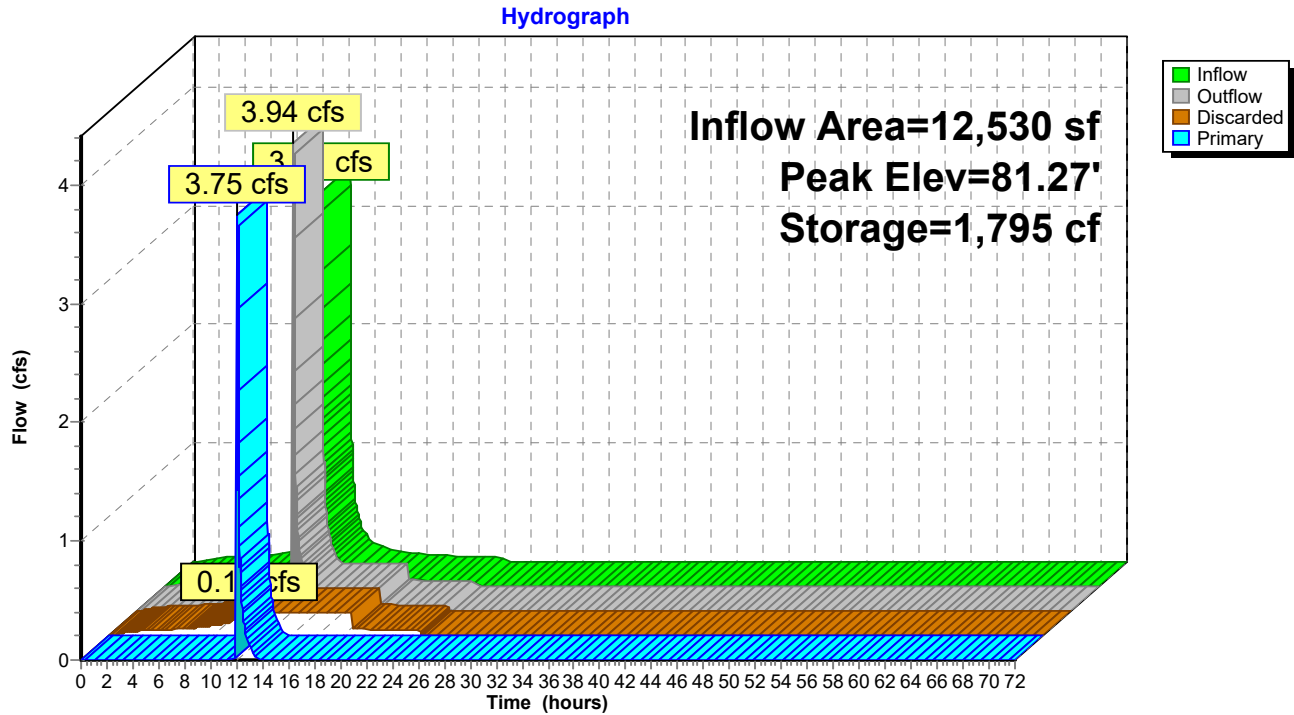
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	81.00'	24.0" x 24.0" Horiz. Grate 24" C= 0.600 Limited to weir flow at low heads
#2	Discarded	76.00'	10.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.19 cfs @ 10.78 hrs HW=76.06' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=3.69 cfs @ 12.09 hrs HW=81.27' TW=67.61' (Dynamic Tailwater)
 ↑ **1=Grate 24"** (Weir Controls 3.69 cfs @ 1.70 fps)

Pond 12P: Roof Recharge



Summary for Pond B1: Basin #1

Inflow Area = 152,539 sf, 23.95% Impervious, Inflow Depth = 3.86" for 100-Yr. Future event
 Inflow = 13.69 cfs @ 12.10 hrs, Volume= 49,015 cf
 Outflow = 2.56 cfs @ 13.07 hrs, Volume= 49,015 cf, Atten= 81%, Lag= 58.2 min
 Discarded = 0.45 cfs @ 13.06 hrs, Volume= 33,823 cf
 Primary = 2.11 cfs @ 13.07 hrs, Volume= 15,192 cf
 Routed to Pond B2 : Basin #2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 80.12' @ 13.07 hrs Surf.Area= 9,773 sf Storage= 20,548 cf

Plug-Flow detention time= 338.9 min calculated for 49,008 cf (100% of inflow)
 Center-of-Mass det. time= 338.9 min (1,165.1 - 826.2)

Volume	Invert	Avail.Storage	Storage Description
#1	77.00'	20,548 cf	Basin 1 (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
77.00	4,060	0	0
78.00	5,865	4,963	4,963
79.00	7,766	6,816	11,778
80.00	9,773	8,770	20,548

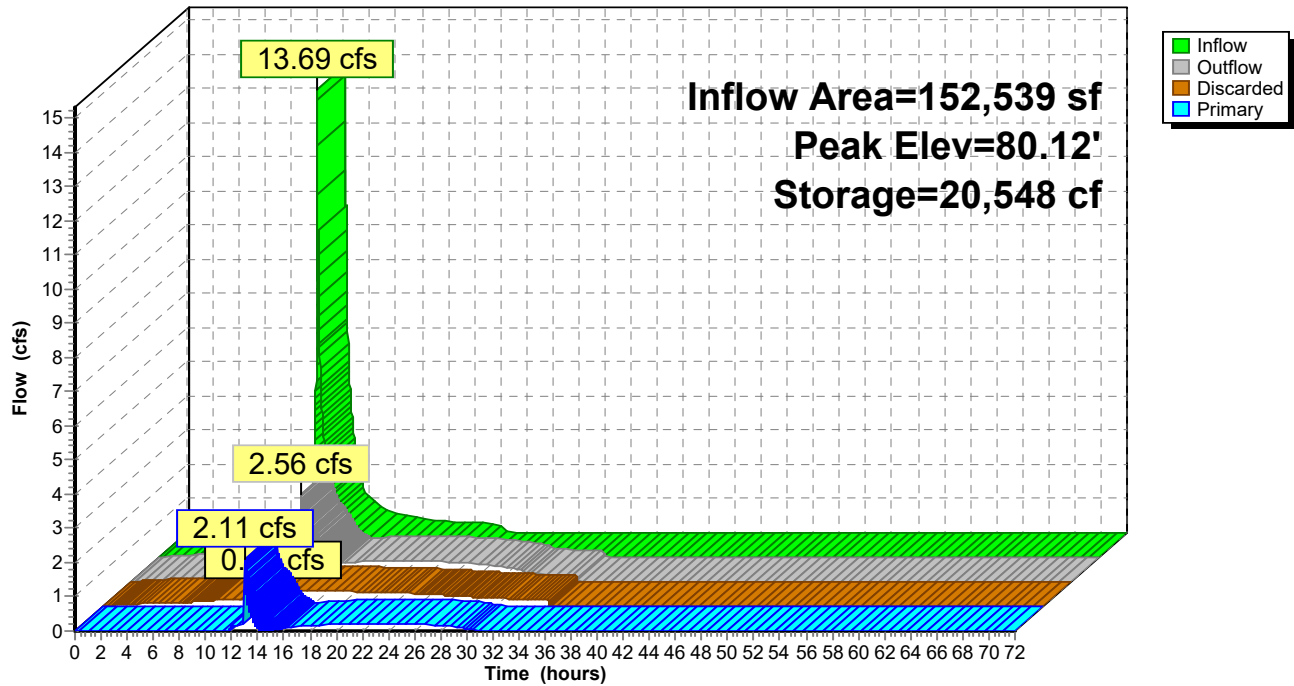
Device	Routing	Invert	Outlet Devices
#1	Primary	77.34'	15.0" Round Culvert 15" L= 69.0' Ke= 0.500 Inlet / Outlet Invert= 77.34' / 77.00' S= 0.0049 ' S= 0.0049 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.23 sf
#2	Device 1	77.50'	3.0" Vert. Orifice 3" C= 0.600 Limited to weir flow at low heads
#3	Device 1	80.00'	42.0" x 42.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	80.20'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	77.00'	2.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.45 cfs @ 13.06 hrs HW=80.08' (Free Discharge)
 ↳ **5=Exfiltration** (Exfiltration Controls 0.45 cfs)

Primary OutFlow Max=2.11 cfs @ 13.07 hrs HW=80.12' TW=79.54' (Dynamic Tailwater)
 ↳ **1=Culvert 15"** (Passes 2.11 cfs of 4.24 cfs potential flow)
 ↳ **2=Orifice 3"** (Orifice Controls 0.18 cfs @ 3.66 fps)
 ↳ **3=Grate** (Weir Controls 1.93 cfs @ 1.14 fps)
 ↳ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B1: Basin #1

Hydrograph



Summary for Pond B2: Basin #2

Inflow Area = 282,551 sf, 22.05% Impervious, Inflow Depth = 2.25" for 100-Yr. Future event
 Inflow = 9.70 cfs @ 12.10 hrs, Volume= 52,990 cf
 Outflow = 1.69 cfs @ 13.86 hrs, Volume= 52,990 cf, Atten= 83%, Lag= 105.6 min
 Discarded = 0.40 cfs @ 13.85 hrs, Volume= 25,658 cf
 Primary = 1.30 cfs @ 13.86 hrs, Volume= 27,331 cf
 Routed to Pond B3 : Basin #3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 80.06' @ 13.86 hrs Surf.Area= 8,565 sf Storage= 18,035 cf

Plug-Flow detention time= 203.9 min calculated for 52,982 cf (100% of inflow)
 Center-of-Mass det. time= 203.9 min (1,136.5 - 932.7)

Volume	Invert	Avail.Storage	Storage Description
#1	77.00'	18,035 cf	Basin 2 (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
77.00	3,573	0	0
78.00	5,151	4,362	4,362
79.00	6,815	5,983	10,345
80.00	8,565	7,690	18,035

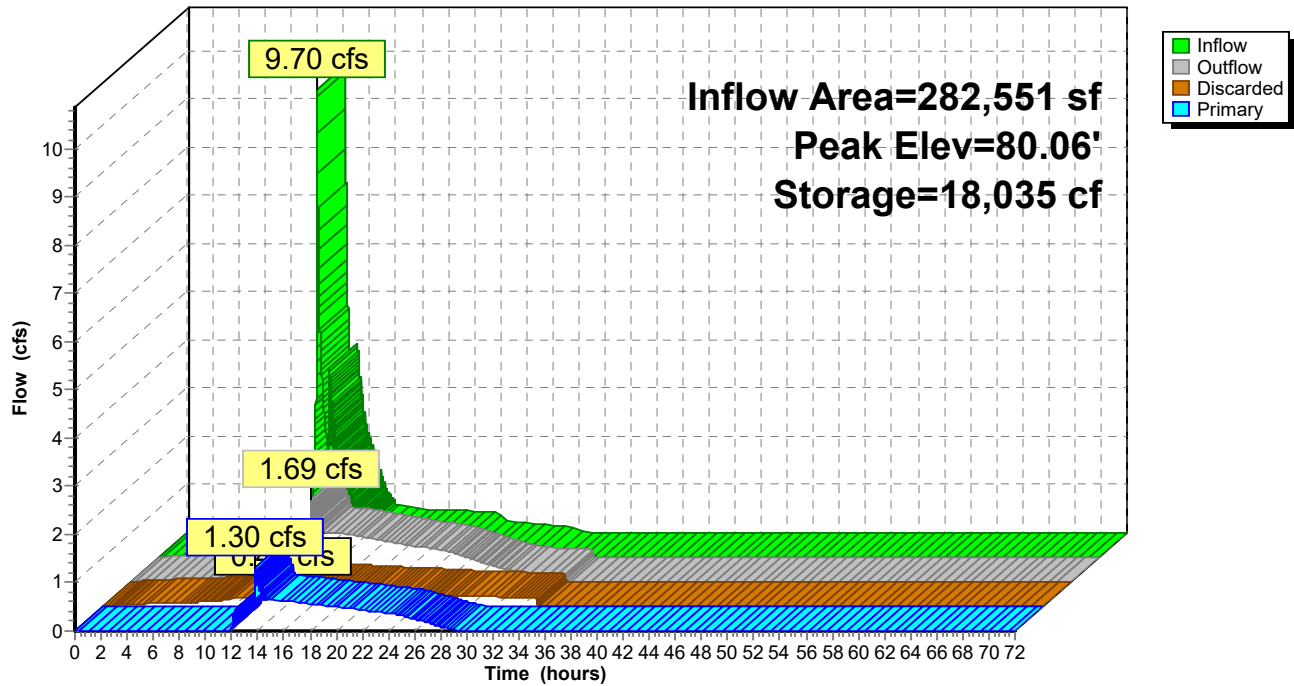
Device	Routing	Invert	Outlet Devices
#1	Primary	77.00'	18.0" Round Culvert 15" L= 69.0' Ke= 0.500 Inlet / Outlet Invert= 77.00' / 66.00' S= 0.1594 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf
#2	Device 1	77.50'	4.0" Vert. Orifice 4" C= 0.600 Limited to weir flow at low heads
#3	Device 1	80.00'	42.0" x 42.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	80.30'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	77.00'	2.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.40 cfs @ 13.85 hrs HW=80.05' (Free Discharge)
 ↳ **5=Exfiltration** (Exfiltration Controls 0.40 cfs)

Primary OutFlow Max=1.30 cfs @ 13.86 hrs HW=80.06' TW=70.49' (Dynamic Tailwater)
 ↳ **1=Culvert 15"** (Passes 1.30 cfs of 12.93 cfs potential flow)
 ↳ **2=Orifice 4"** (Orifice Controls 0.65 cfs @ 7.45 fps)
 ↳ **3=Grate** (Weir Controls 0.65 cfs @ 0.79 fps)
 ↳ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B2: Basin #2

Hydrograph



Summary for Pond B3: Basin #3

Inflow Area = 440,051 sf, 22.16% Impervious, Inflow Depth = 2.09" for 100-Yr. Future event
 Inflow = 12.43 cfs @ 12.11 hrs, Volume= 76,559 cf
 Outflow = 1.86 cfs @ 14.22 hrs, Volume= 76,559 cf, Atten= 85%, Lag= 126.4 min
 Discarded = 0.36 cfs @ 14.22 hrs, Volume= 37,316 cf
 Primary = 1.50 cfs @ 14.22 hrs, Volume= 39,243 cf
 Routed to Link PT2 : Proposed Total (AP-2)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 70.57' @ 14.22 hrs Surf.Area= 7,869 sf Storage= 26,472 cf

Plug-Flow detention time= 360.8 min calculated for 76,549 cf (100% of inflow)
 Center-of-Mass det. time= 360.9 min (1,291.9 - 931.0)

Volume	Invert	Avail.Storage	Storage Description
#1	66.00'	34,230 cf	Basin 3 (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
66.00	3,879	0	0
67.00	4,673	4,276	4,276
68.00	5,501	5,087	9,363
69.00	6,379	5,940	15,303
70.00	7,310	6,845	22,148
71.00	8,291	7,801	29,948
71.50	8,836	4,282	34,230

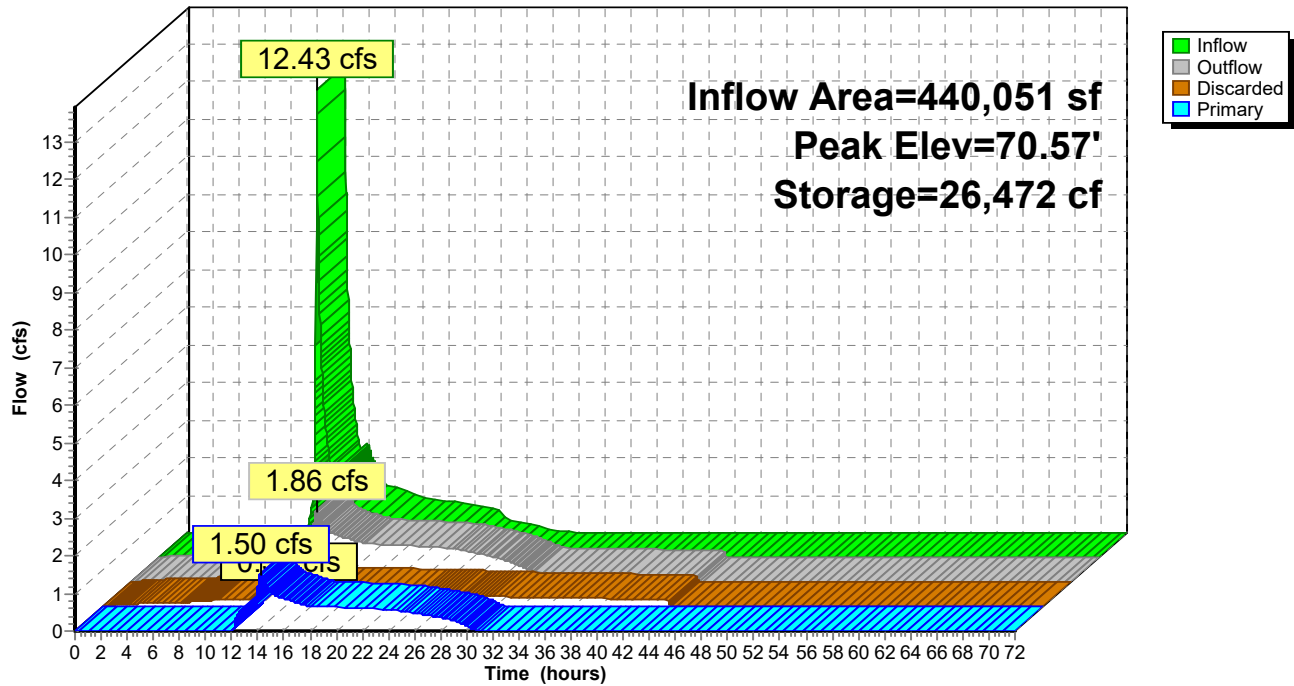
Device	Routing	Invert	Outlet Devices
#1	Primary	67.49'	15.0" Round Culvert 15" L= 360.0' Ke= 0.500 Inlet / Outlet Invert= 67.49' / 66.00' S= 0.0041 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.23 sf
#2	Device 1	68.00'	4.0" Vert. Orifice 4" C= 0.600 Limited to weir flow at low heads
#3	Device 1	70.50'	42.0" x 42.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	71.50'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	66.00'	2.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.36 cfs @ 14.22 hrs HW=70.57' (Free Discharge)
 ↳ **5=Exfiltration** (Exfiltration Controls 0.36 cfs)

Primary OutFlow Max=1.49 cfs @ 14.22 hrs HW=70.57' TW=0.00' (Dynamic Tailwater)
 ↳ **1=Culvert 15"** (Passes 1.49 cfs of 5.70 cfs potential flow)
 ↳ **2=Orifice 4"** (Orifice Controls 0.65 cfs @ 7.46 fps)
 ↳ **3=Grate** (Weir Controls 0.84 cfs @ 0.86 fps)
 ↳ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B3: Basin #3

Hydrograph



Summary for Pond R-1: Roof Recharge

Inflow Area = 12,530 sf, 100.00% Impervious, Inflow Depth = 11.17" for 100-Yr. Future event
 Inflow = 3.31 cfs @ 12.10 hrs, Volume= 11,662 cf
 Outflow = 5.86 cfs @ 12.10 hrs, Volume= 11,662 cf, Atten= 0%, Lag= 0.0 min
 Discarded = 0.24 cfs @ 11.05 hrs, Volume= 9,857 cf
 Primary = 5.62 cfs @ 12.10 hrs, Volume= 1,805 cf
 Routed to Pond B1 : Basin #1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 81.36' @ 12.10 hrs Surf.Area= 1,027 sf Storage= 2,246 cf

Plug-Flow detention time= 49.1 min calculated for 11,660 cf (100% of inflow)
 Center-of-Mass det. time= 49.1 min (784.4 - 735.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	76.00'	219 cf	6.25'W x 32.23'L x 3.75'H Field A 755 cf Overall - 209 cf Embedded = 546 cf x 40.0% Voids
#2A	76.50'	209 cf	ADS_StormTech SC-800 +Cap x 4 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap Cap Storage= 3.4 cf x 2 x 1 rows = 6.8 cf
#3	76.00'	24 cf	2.00'W x 2.00'L x 6.00'H Prismatic
		452 cf	x 5.00 = 2,259 cf Total Available Storage

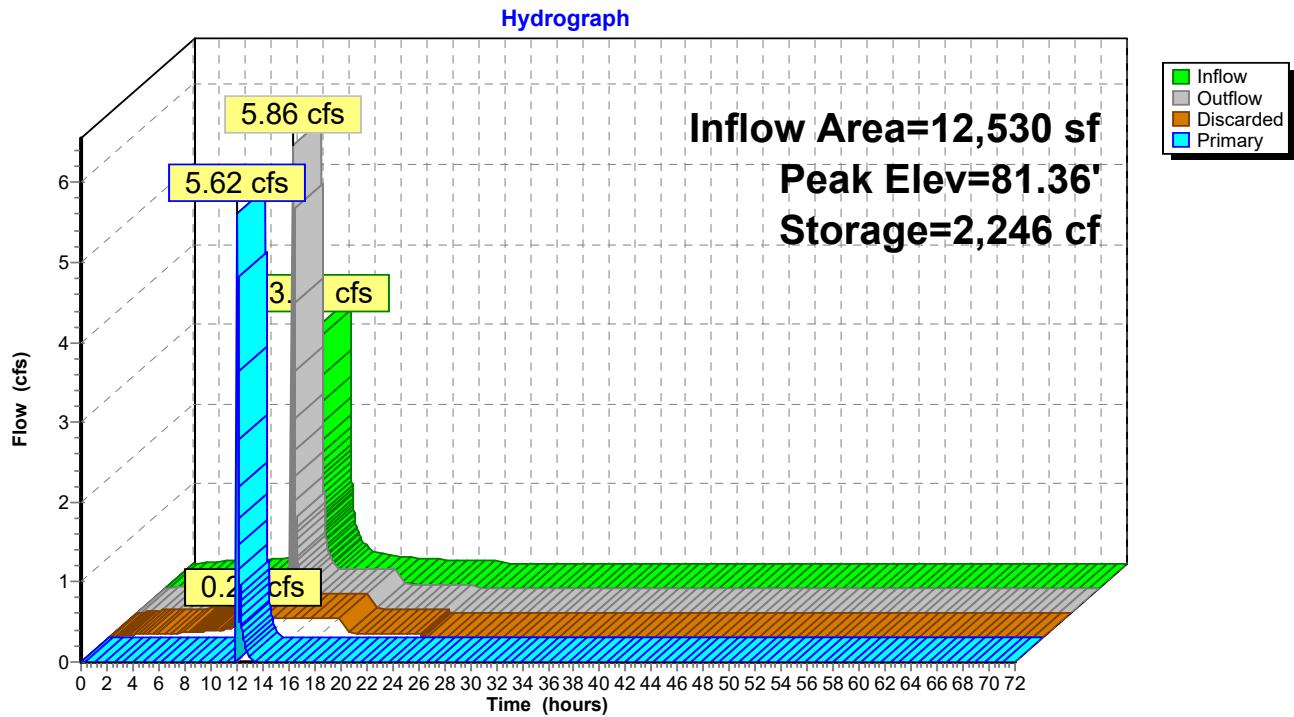
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	81.00'	24.0" x 24.0" Horiz. Grate 24" C= 0.600 Limited to weir flow at low heads
#2	Discarded	76.00'	10.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.24 cfs @ 11.05 hrs HW=76.06' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.24 cfs)

Primary OutFlow Max=5.41 cfs @ 12.10 hrs HW=81.35' TW=78.30' (Dynamic Tailwater)
 ↑ **1=Grate 24"** (Weir Controls 5.41 cfs @ 1.93 fps)

Pond R-1: Roof Recharge

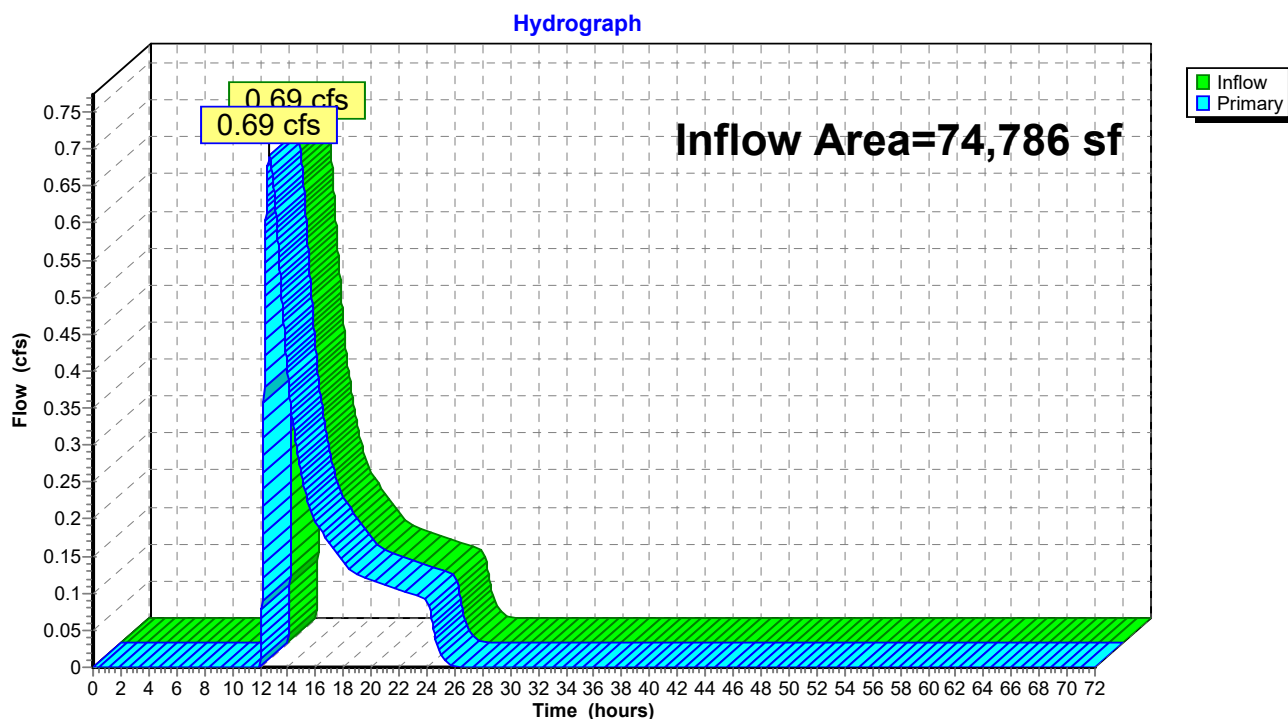


Summary for Link PT1: Proposed Total (AP-1)

Inflow Area = 74,786 sf, 0.00% Impervious, Inflow Depth = 1.51" for 100-Yr. Future event
 Inflow = 0.69 cfs @ 12.70 hrs, Volume= 9,422 cf
 Primary = 0.69 cfs @ 12.70 hrs, Volume= 9,422 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link PT1: Proposed Total (AP-1)

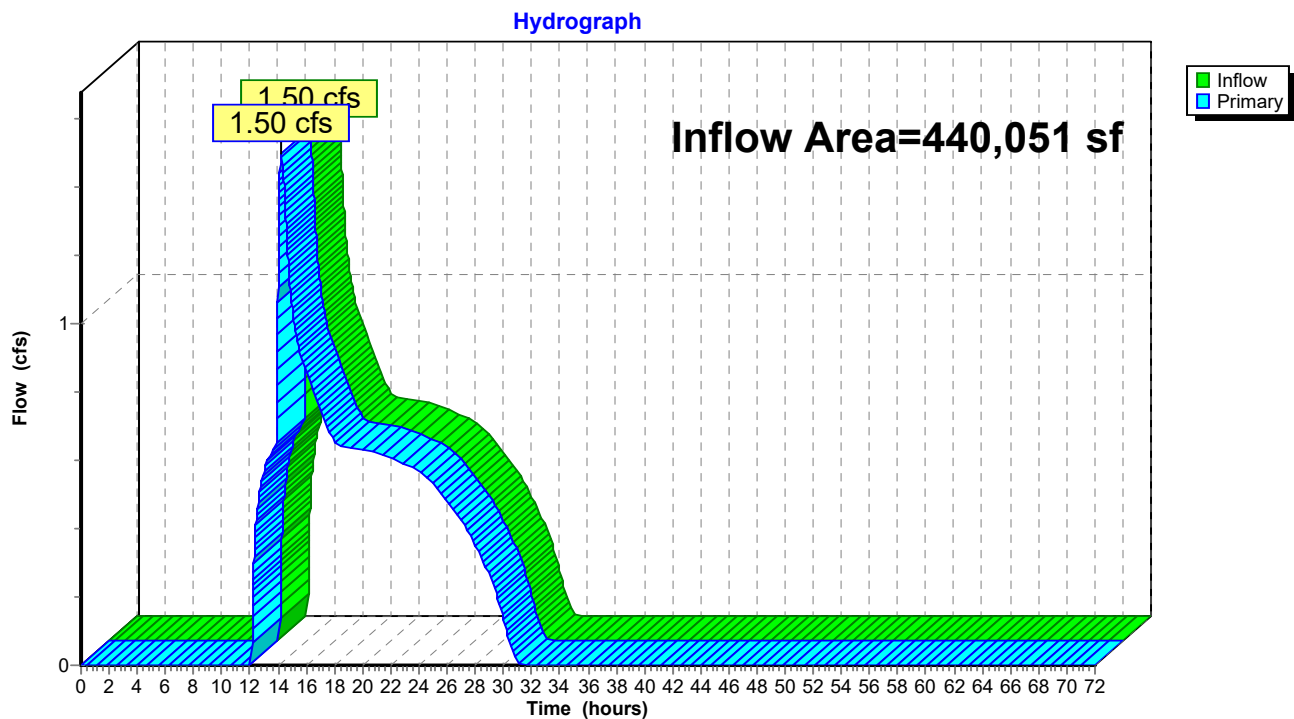


Summary for Link PT2: Proposed Total (AP-2)

Inflow Area = 440,051 sf, 22.16% Impervious, Inflow Depth = 1.07" for 100-Yr. Future event
 Inflow = 1.50 cfs @ 14.22 hrs, Volume= 39,243 cf
 Primary = 1.50 cfs @ 14.22 hrs, Volume= 39,243 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link PT2: Proposed Total (AP-2)



APPENDIX 12