



May 1, 2026

RFG-251

## STORMWATER MANAGEMENT REPORT

FOR

**501 EVESBORO – MEDFORD ROAD  
BLOCK 16, LOT 1.03  
EVESHAM TOWNSHIP, BURLINGTON COUNTY, NEW JERSEY**

PREPARED BY:

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**I. SITE DESCRIPTION**

The subject property is known and designated as Block 16, Lot 1.03 as shown on the current tax assessment map of Evesham Township, Burlington County, New Jersey. The 5.37-acre parcel fronts along Evesboro-Medford Road (C.R. 618) and is site of the former township public works yard. Across the road to the north, in an east to west orientation, lies a wooded area, a single-family home development, Sharp Road and the current township public works yard. Bordered on the west, south and east of the site lies the Barclay Chase at Marlton (BCM) residential development.

The applicant, Pine Street Ventures, LLC proposes a 4-story, 74-unit senior affordable housing building and a stand-alone 2,600 SF commercial building.

**II. STORMWATER DESIGN OVERVIEW**

This report describes and analyzes how the proposed stormwater management system has been designed in accordance with the applicable stormwater management rules and regulations established under N.J.A.C. 7:8 and the Evesham Township Ordinance to minimize the adverse impacts of development runoff. While there is a substantial decrease of impervious coverage, the overall disturbance is greater than one acre. Therefore, the proposed project is considered a major development and must abide by the applicable regulations.

The proposed stormwater management system consists of overland flow and some conventional piped systems feeding into one of two (2) small-scale bioretention systems, which ultimately discharge to wetland areas.

### III. PRE-DEVELOPMENT CONDITIONS

The subject property is the site of the former township public works. Elevations range from a high of ±70 to ±71 ft near the east side of the site’s disturbed area to lows of ± 66 to ±67 ft along the site’s perimeter. There does not appear to be an existing stormwater collection system along the Evesboro – Medford Road (the “road”) frontage.

The total analysis area contains the entire 5.37-acre site. That area is then divided into four separate drainage areas for analysis, as follows:

- EA-1, containing 1.801 acres, which flows north / east to the road and / or to the adjacent easterly wetland pocket on the BCM site.
- EA-2, containing 2.664 acres, which flows south / west to the onsite wetland pocket / basin at the very SW corner of the site.
- EA-3, contains 0.330 acres, flows south onto the BCM site, into a series of yard inlets and into the south / central BCM basin.
- EA-4, contains 0.584 acres, flows south / east onto the BCM site, into a series of inlets and into the far east BCM basin.

Time of concentration was calculated assuming a maximum of 100 linear feet of sheet flow and the remaining calculated as shallow concentrated flow. The USDA NRCS web soil survey classifies two types of onsite soils. Primarily, Adelphia high glauconite variant fine sandy loam (Admma) and partially, Holmdel loamy sand (HoaB), both of which are designated HSG C. The Delmarva unit hydrograph was utilized to accurately represent the site topography and the Coastal Plain.

The pre- (and post-) development flows were calculated using the USDA Natural Resources Conservation Service methodology, as presented in Technical Release 55 (TR-55). Runoff from the drainage area was modeled using HydroCAD v10.10 modeling software to determine the peak runoff rates during the 2, 10 and 100-year storms. The calculated peak runoff rates and volumes are as follows:

Storm Event	Rainfall Data	Pre-Dev Runoff (cfs)
2-Year	2019	3.37
	2100	4.07
10-Year	2019	5.54
	2100	6.59
100-Year	2019	10.13
	2100	13.11

**Table 1: Pre-Dev EA-1**

Storm Event	Rainfall Data	Pre-Dev Runoff (cfs)
2-Year	2019	6.47
	2100	7.71
10-Year	2019	10.32
	2100	12.15
100-Year	2019	18.25
	2100	23.34

**Table 2: Pre-Dev EA-2**

Storm Event	Rainfall Data	Pre-Dev Runoff (cfs)
2-Year	2019	0.81
	2100	0.98
10-Year	2019	1.35
	2100	1.62
100-Year	2019	2.50
	2100	3.24

Table 3: Pre-Dev EA-3

Storm Event	Rainfall Data	Pre-Dev Runoff (cfs)
2-Year	2019	0.87
	2100	1.07
10-Year	2019	1.50
	2100	1.81
100-Year	2019	2.86
	2100	3.75

Table 4: Pre-Dev EA-4

**IV. POST-DEVELOPMENT SUMMARY**

**A. RUNOFF QUANTITY**

Mirroring the pre-development scenario, the proposed development analyzes the same 5.37-acre site area, encompassing the same four drainage areas. During all storm events, rainfall occurring over the roads, parking areas, buildings and lawn areas is routed to one of two (2) proposed small-scale bioretention systems. System A is located toward the southwest site corner, while System B is located at the opposite northeast corner. Each system is comprised of a terrestrial forested community at the surface, underlain by an 18" soil bed and designed to infiltrate into the subsoil at a design rate of 1.0 in/hr. System A's means of discharge is via a spillway into the adjacent wetland area, which will remain undisturbed. System B's means of discharge is via an outlet structure and pipe along the road, connecting to an inlet ±400 ft east, which discharges into a wetland pocket on the BCM site.

The bioretention systems are designed to meet water quantity requirements. Post-construction runoff flow to each drainage area for the 2, 10 and 100-year storms is reduced to 50%, 75% & 80%, respectively, with regard to the pre-construction runoff (meeting the requirements of N.J.A.C. 7:8-5.6(b)3). Unattenuated flow, running overland and offsite / not being routed to one of the two (2) bioretention systems, has been accounted for in the HydroCAD model. The below tables summarize this information.

Storm Event	Rainfall Data	Pre-Dev Runoff (cfs)	Reduction	Allowable Runoff (cfs)	Post-Dev Runoff (cfs)
2-Year	2019	3.37	50%	1.69	1.13
	2100	4.07	50%	2.04	1.81
10-Year	2019	5.54	75%	4.16	3.26
	2100	6.59	75%	4.94	4.28
100-Year	2019	10.13	80%	8.10	7.59
	2100	13.11	80%	10.49	10.34

Table 5: Water Quantity – Area 1

Storm Event	Rainfall Data	Pre-Dev Runoff (cfs)	Reduction	Allowable Runoff (cfs)	Post-Dev Runoff (cfs)
2-Year	2019	6.47	50%	3.24	0.57
	2100	7.71	50%	3.86	0.79
10-Year	2019	10.32	75%	7.74	2.68
	2100	12.15	75%	9.11	4.72
100-Year	2019	18.25	80%	14.60	12.17
	2100	23.34	80%	18.67	17.55

**Table 6: Water Quantity – Area 2**

Storm Event	Rainfall Data	Pre-Dev Runoff (cfs)	Reduction	Allowable Runoff (cfs)	Post-Dev Runoff (cfs)
2-Year	2019	0.81	50%	0.41	0.26
	2100	0.98	50%	0.49	0.37
10-Year	2019	1.35	75%	1.01	0.60
	2100	1.62	75%	1.22	0.77
100-Year	2019	2.50	80%	2.00	1.36
	2100	3.24	80%	2.59	1.85

**Table 7: Water Quantity – Area 3**

Storm Event	Rainfall Data	Pre-Dev Runoff (cfs)	Reduction	Allowable Runoff (cfs)	Post-Dev Runoff (cfs)
2-Year	2019	0.87	50%	0.44	0.18
	2100	1.07	50%	0.54	0.25
10-Year	2019	1.50	75%	1.13	0.43
	2100	1.81	75%	1.36	0.56
100-Year	2019	2.86	80%	2.29	1.02
	2100	3.75	80%	3.00	1.42

**Table 8: Water Quantity – Area 4**

**B. GREEN INFRASTRUCTURE**

Table 5.1 under N.J.A.C. 7:8 provides a list of various Best Management Practices (BMPs) which qualify as Green Infrastructure, along with any design stipulations for each. The proposed stormwater management design utilizes two (2) small-scale bioretention systems, which qualify as Green Infrastructure. The maximum contributory drainage area to each basin is 2.5 acres, excluding the area of the feature itself (considered as the flat bottom). The table below summarizes this information.

Bioretention system	Drainage Area (ac)	Bottom Area (ac)	Net Drainage Area (ac)
A (NE)	1.010	0.087	0.923
B (SW)	2.090	0.224	1.866

**Table 9: Small-Scale Bioretention System Drainage Area Summary**

### C. WATER QUALITY

As previously mentioned, each system is comprised of a terrestrial forested community at the surface, underlain by an 18" soil bed and designed to infiltrate into the subsoil at a design rate of 1.0 in/hr. It is key to ensure that all water quality storm runoff permeates through the soil layer; that it is not prematurely discharged via higher elevation spillways or outlet orifices. Thus, the first outlet in each system has been established at or above the water quality storm elevations. During the water quality storm, a bioretention system may not have more than 1 ft of water before the first outlet, as demonstrated in the table below.

Bioretention system	Basin Bottom Elevation (ft)	WQ Storm Elevation (ft)	First Orifice / Spillway Elevation (ft)
A (SW)	67.50	67.79	68.40
B (NE)	66.00	66.36	66.36

**Table 10: Water Quality Elevation Summary**

### D. GROUNDWATER RECHARGE

N.J.A.C 7:8 requires that the project either maintain 100% of the average annual pre-construction groundwater recharge volume for the site or infiltrate the increase of stormwater runoff volume from pre- to post-construction for the projected two-year storm. The chart below details compliance with both of these methods for both year 2019 and 2100 rainfall. The substantial decrease in impervious coverage translates to a reduction in generated runoff volume and in increase in groundwater recharge volume. Volumes are provided in acre-ft.

Rainfall Data	Pre-Dev	Post-Dev	Difference	Post-Dev Infiltrated
2019	1.048	0.756	-0.292	0.483
2100	1.282	0.963	-0.319	0.583

**Table 11: Groundwater Recharge Summary (ac-ft)**

**E. SMALL-SCALE BIORETENTION SYSTEMS**

The two (2) small-scale bioretention systems have been designed to accept runoff during all storm events from the various surfaces. As previously mentioned, System A’s means of discharge is via a spillway into the adjacent wetland area, which will remain undisturbed. System B’s means of discharge is via an outlet structure and pipe along the road, connecting to an inlet ±400 east, which discharges into a wetland pocket on the BCM site. A summary of each system’s 100-yr (2100) inflow, outflow, storage volume and water surface elevation are provided in the table below.

Bioretention system	Basin Bottom Elevation (ft)	Basin Inflow (cfs)	Piped Basin Outflow (cfs)	Spillway Basin Outflow (cfs)	Storage Volume (cu-ft)	Water Surface Elevation (ft)
A (SW)	67.50	18.03	N/A	14.86	14,859	68.78
B (NE)	66.00	9.50	6.27	N/A	6,001	67.21

Table 12: 100-Year Storm (2100) Summary

**F. SOIL EROSION AND SEDIMENT CONTROL**

To minimize the effects of erosion, the proposed design and construction practices incorporate the standards for Soil Erosion and Sediment Control (SESC) in New Jersey. These erosion deterrents include but are not limited to the use of silt fence or other sediment barriers at downgrade slopes and inlet protection. In addition, dust control measures, stone tracking mats, and temporary and permanent vegetative cover will be utilized. General notes and guidelines are provided on the SESC Plans and Details for the contractor to safeguard against soil erosion during construction.

The SESC Plans will be reviewed by the local Soil Conservation District (SCD), which also monitors site activities during construction. The SCD will inspect the site and may also recommend additional SESC measures as appropriate.

**V. CONCLUSION**

As demonstrated throughout this report, the proposed development has been designed with provisions for the safe and efficient control of stormwater runoff in a manner that will not adversely impact the existing drainage patterns, adjacent roadways or adjacent properties.

The proposed stormwater management system incorporates two (2) small-scale bioretention systems, thus meeting the applicable requirements for green infrastructure, groundwater recharge, water quality and water quantity as outlined within N.J.A.C. 7:8.

## **APPENDIX A**

### **NOAA PRECIPITATION ESTIMATES**



**POINT PRECIPITATION FREQUENCY ESTIMATES**

G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M. Yekta, and D. Riley

NOAA, National Weather Service, Silver Spring, Maryland

[PF\\_tabular](#) | [PF\\_graphical](#) | [Maps & aerials](#)

**PF tabular**

<b>PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)<sup>1</sup></b>										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.350 (0.319-0.383)	0.416 (0.380-0.456)	0.493 (0.449-0.540)	0.550 (0.500-0.603)	0.620 (0.561-0.679)	0.671 (0.604-0.737)	0.722 (0.647-0.795)	0.769 (0.684-0.850)	0.827 (0.728-0.920)	0.873 (0.761-0.979)
10-min	0.558 (0.510-0.612)	0.666 (0.608-0.730)	0.790 (0.720-0.865)	0.880 (0.799-0.965)	0.988 (0.894-1.08)	1.07 (0.962-1.17)	1.15 (1.03-1.26)	1.22 (1.08-1.35)	1.31 (1.15-1.46)	1.38 (1.20-1.54)
15-min	0.698 (0.637-0.765)	0.837 (0.764-0.917)	1.00 (0.910-1.10)	1.11 (1.01-1.22)	1.25 (1.13-1.37)	1.35 (1.22-1.49)	1.45 (1.30-1.60)	1.54 (1.37-1.70)	1.65 (1.45-1.83)	1.73 (1.50-1.94)
30-min	0.957 (0.873-1.05)	1.16 (1.06-1.27)	1.42 (1.29-1.56)	1.61 (1.46-1.77)	1.86 (1.68-2.03)	2.04 (1.84-2.24)	2.22 (1.99-2.44)	2.40 (2.13-2.64)	2.62 (2.31-2.92)	2.80 (2.44-3.13)
60-min	1.19 (1.09-1.31)	1.45 (1.32-1.59)	1.82 (1.66-1.99)	2.10 (1.91-2.30)	2.47 (2.23-2.71)	2.76 (2.49-3.03)	3.06 (2.74-3.37)	3.36 (2.99-3.71)	3.76 (3.31-4.18)	4.08 (3.56-4.57)
2-hr	1.44 (1.30-1.59)	1.75 (1.59-1.93)	2.21 (2.00-2.43)	2.56 (2.31-2.82)	3.04 (2.73-3.35)	3.43 (3.06-3.78)	3.82 (3.39-4.23)	4.22 (3.72-4.70)	4.78 (4.15-5.35)	5.22 (4.49-5.89)
3-hr	1.58 (1.43-1.74)	1.92 (1.74-2.12)	2.42 (2.19-2.68)	2.82 (2.54-3.12)	3.37 (3.02-3.72)	3.82 (3.40-4.22)	4.28 (3.78-4.76)	4.77 (4.16-5.31)	5.44 (4.68-6.10)	5.99 (5.09-6.75)
6-hr	1.97 (1.79-2.19)	2.39 (2.16-2.66)	3.00 (2.71-3.34)	3.51 (3.16-3.90)	4.24 (3.78-4.70)	4.85 (4.29-5.38)	5.50 (4.82-6.11)	6.20 (5.37-6.91)	7.20 (6.12-8.09)	8.04 (6.73-9.11)
12-hr	2.40 (2.18-2.67)	2.90 (2.63-3.23)	3.67 (3.32-4.08)	4.33 (3.90-4.82)	5.32 (4.74-5.90)	6.17 (5.45-6.86)	7.11 (6.19-7.92)	8.14 (6.97-9.12)	9.68 (8.10-10.9)	11.0 (9.04-12.5)
24-hr	2.74 (2.54-2.97)	3.32 (3.08-3.60)	4.26 (3.95-4.62)	5.06 (4.67-5.48)	6.27 (5.74-6.76)	7.32 (6.65-7.87)	8.48 (7.63-9.11)	9.78 (8.72-10.5)	11.7 (10.3-12.6)	13.4 (11.6-14.5)
2-day	3.16 (2.92-3.44)	3.84 (3.55-4.17)	4.92 (4.55-5.35)	5.84 (5.38-6.34)	7.20 (6.59-7.79)	8.37 (7.60-9.05)	9.66 (8.70-10.4)	11.1 (9.88-12.0)	13.2 (11.6-14.3)	15.0 (13.0-16.3)
3-day	3.33 (3.10-3.61)	4.04 (3.75-4.37)	5.16 (4.78-5.58)	6.10 (5.64-6.58)	7.48 (6.88-8.05)	8.65 (7.91-9.31)	9.94 (9.02-10.7)	11.4 (10.2-12.2)	13.5 (11.9-14.5)	15.2 (13.4-16.5)
4-day	3.51 (3.27-3.78)	4.24 (3.96-4.57)	5.39 (5.02-5.80)	6.35 (5.90-6.82)	7.75 (7.16-8.31)	8.93 (8.21-9.57)	10.2 (9.34-10.9)	11.6 (10.5-12.5)	13.7 (12.3-14.7)	15.4 (13.7-16.6)
7-day	4.09 (3.83-4.39)	4.92 (4.61-5.28)	6.17 (5.77-6.61)	7.21 (6.72-7.71)	8.72 (8.10-9.33)	10.0 (9.24-10.7)	11.4 (10.5-12.2)	12.9 (11.7-13.8)	15.1 (13.6-16.1)	16.9 (15.1-18.1)
10-day	4.65 (4.37-4.96)	5.57 (5.24-5.94)	6.88 (6.46-7.33)	7.94 (7.45-8.46)	9.46 (8.84-10.1)	10.7 (9.96-11.4)	12.0 (11.1-12.8)	13.4 (12.4-14.3)	15.5 (14.1-16.5)	17.2 (15.6-18.4)
20-day	6.30 (5.98-6.65)	7.49 (7.11-7.91)	9.00 (8.54-9.50)	10.2 (9.67-10.8)	11.9 (11.2-12.5)	13.2 (12.4-13.9)	14.6 (13.6-15.3)	16.0 (14.9-16.8)	17.9 (16.5-18.9)	19.4 (17.8-20.5)
30-day	7.82 (7.45-8.21)	9.24 (8.80-9.71)	10.9 (10.4-11.4)	12.2 (11.6-12.8)	14.0 (13.2-14.6)	15.3 (14.5-16.1)	16.7 (15.7-17.5)	18.1 (17.0-19.0)	19.9 (18.6-20.9)	21.3 (19.8-22.5)
45-day	9.98 (9.53-10.5)	11.8 (11.2-12.3)	13.6 (13.0-14.3)	15.1 (14.4-15.8)	16.9 (16.1-17.7)	18.3 (17.4-19.2)	19.7 (18.7-20.6)	21.0 (19.8-22.0)	22.7 (21.3-23.8)	23.9 (22.4-25.1)
60-day	11.9 (11.4-12.5)	14.0 (13.4-14.7)	16.1 (15.4-16.9)	17.7 (16.9-18.5)	19.7 (18.8-20.5)	21.1 (20.1-22.1)	22.5 (21.4-23.5)	23.7 (22.5-24.9)	25.4 (24.0-26.6)	26.5 (25.0-27.9)

<sup>1</sup> Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

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**PF graphical**

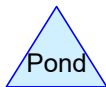
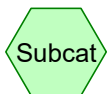
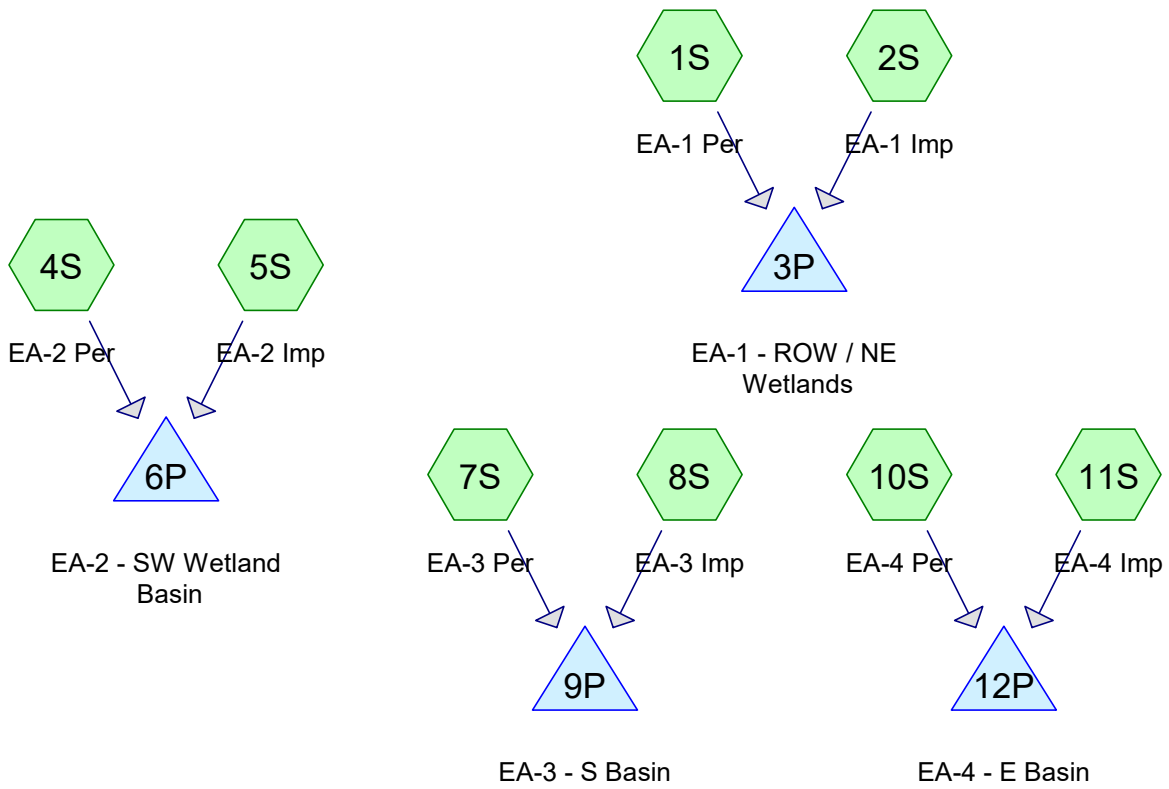
## **APPENDIX B**

### **PRECIPITATION ADJUSTMENT FACTORS PER N.J.A.C. 7:8**

	2012	Burlington County Adjustment Factor	2019	Burlington County Adjustment Factor	2100
2-Year	3.32	0.99	3.29	1.17	3.88
10-Year	5.06	1.01	5.11	1.18	5.97
100-Year	8.48	1.04	8.82	1.32	11.19

## **APPENDIX C**

### **PRE-DEVELOPMENT ANALYSIS**



**Summary for Subcatchment 1S: EA-1 Per**

Runoff = 0.44 cfs @ 12.39 hrs, Volume= 0.072 af, Depth= 0.99"

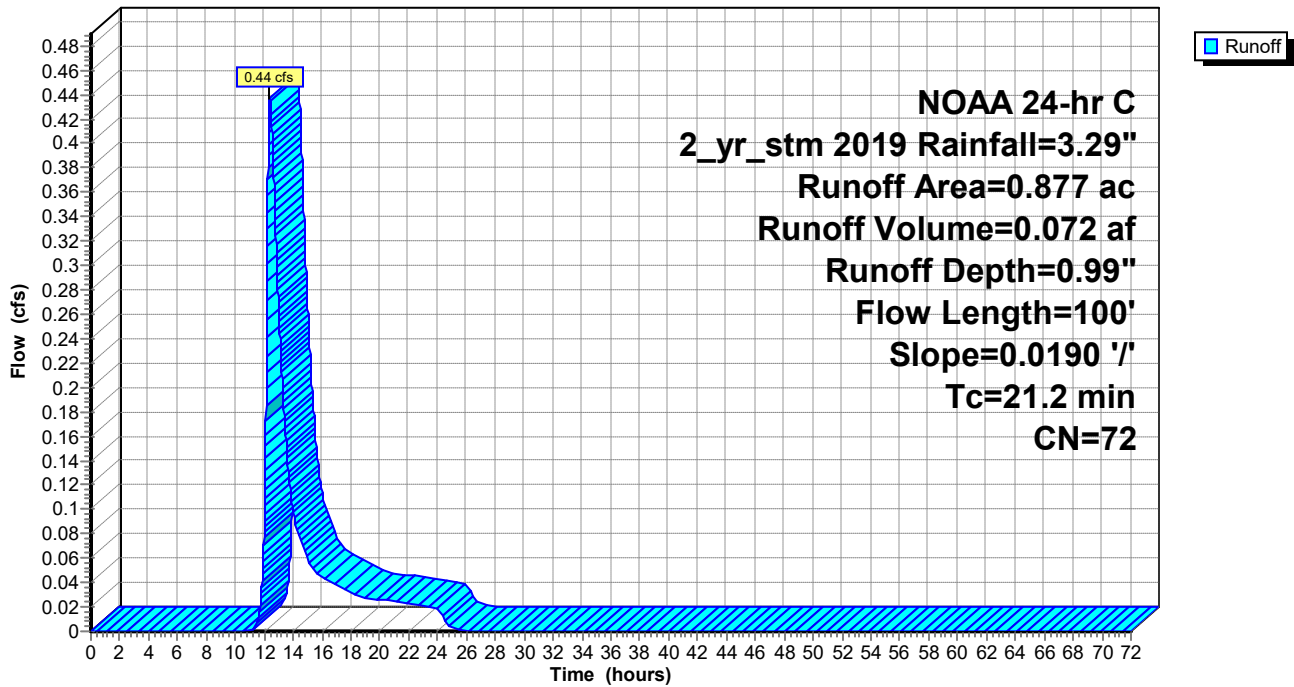
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 2\_yr\_stm 2019 Rainfall=3.29"

Area (ac)	CN	Description
0.502	74	>75% Grass cover, Good, HSG C
0.375	70	Woods, Good, HSG C
0.877	72	Weighted Average
0.877		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	13	0.0190	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 3.29"
19.3	87	0.0190	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.29"
21.2	100	Total			

**Subcatchment 1S: EA-1 Per**

Hydrograph



### Summary for Subcatchment 2S: EA-1 Imp

Runoff = 3.20 cfs @ 12.11 hrs, Volume= 0.235 af, Depth= 3.06"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 2\_yr\_stm 2019 Rainfall=3.29"

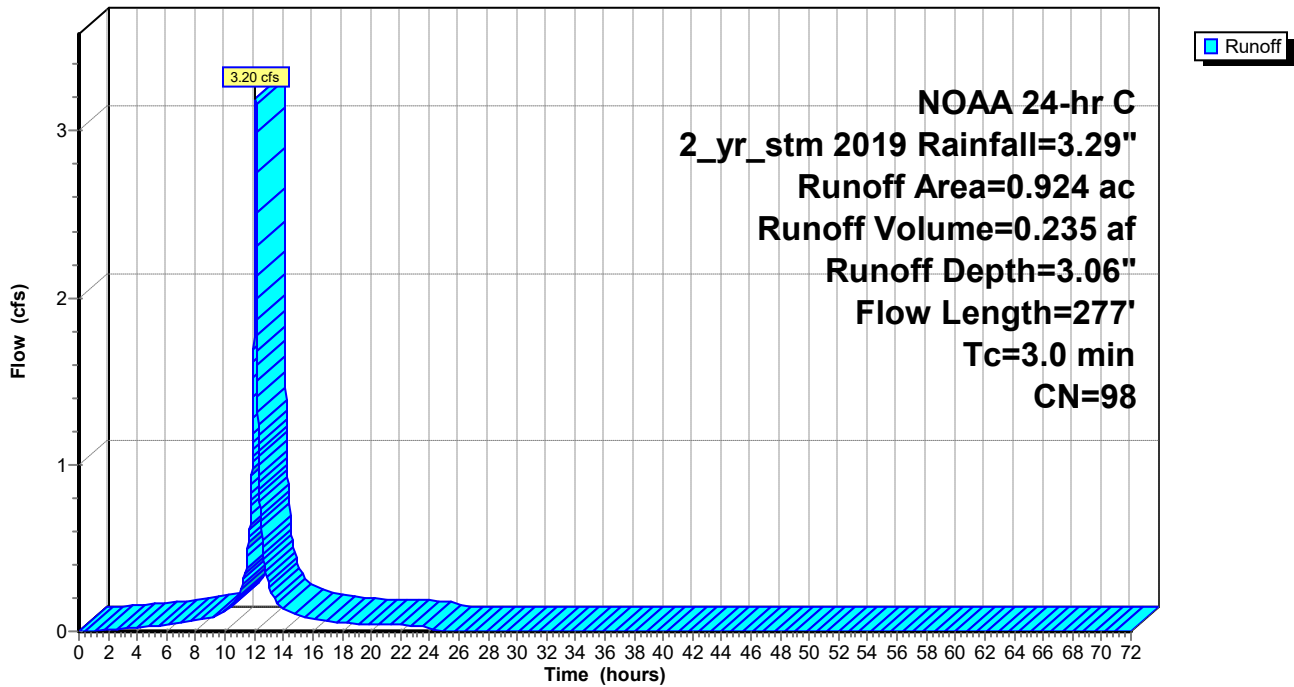
Area (ac)	CN	Description
0.727	98	Paved parking, HSG C
0.197	98	Roofs, HSG C
0.924	98	Weighted Average
0.924		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	100	0.0060	0.86		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
1.1	177	0.0180	2.72		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
3.0	277	Total			

### Subcatchment 2S: EA-1 Imp

Hydrograph



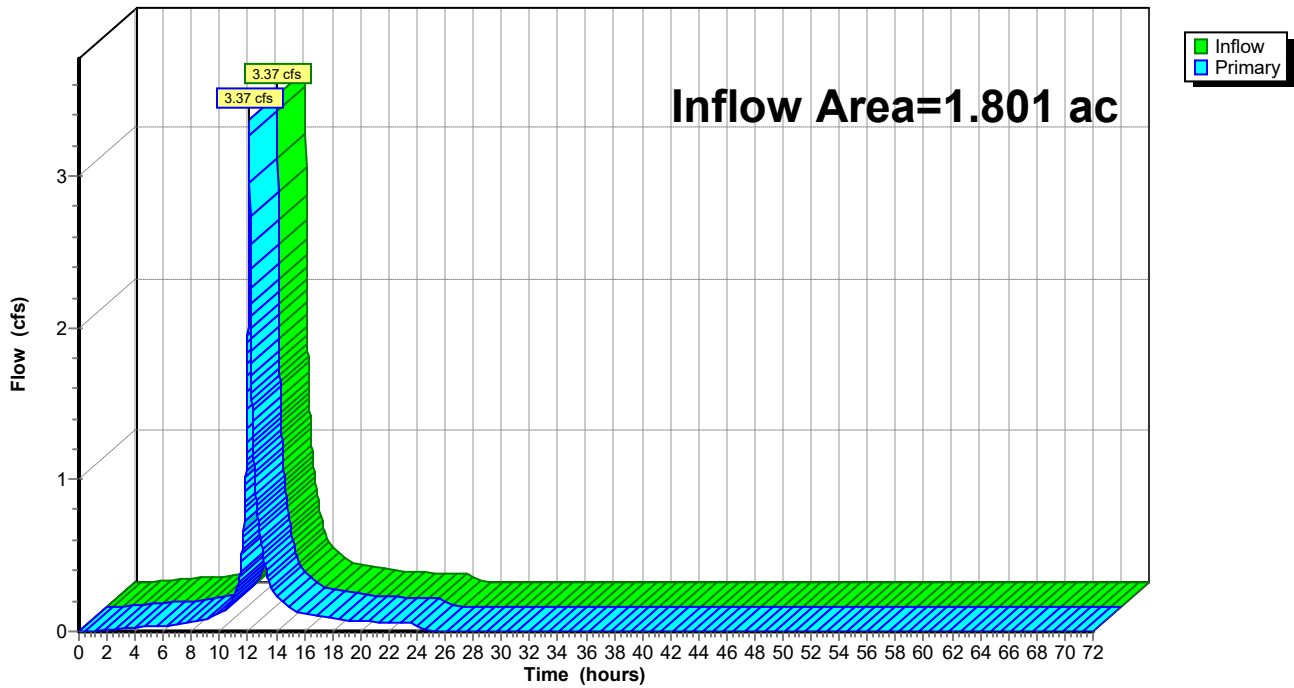
### Summary for Pond 3P: EA-1 - ROW / NE Wetlands

Inflow Area = 1.801 ac, 51.30% Impervious, Inflow Depth = 2.05" for 2\_yr\_stm 2019 event  
Inflow = 3.37 cfs @ 12.11 hrs, Volume= 0.307 af  
Primary = 3.37 cfs @ 12.11 hrs, Volume= 0.307 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Pond 3P: EA-1 - ROW / NE Wetlands

Hydrograph



**Summary for Subcatchment 4S: EA-2 Per**

Runoff = 0.33 cfs @ 12.32 hrs, Volume= 0.048 af, Depth= 1.10"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 2\_yr\_stm 2019 Rainfall=3.29"

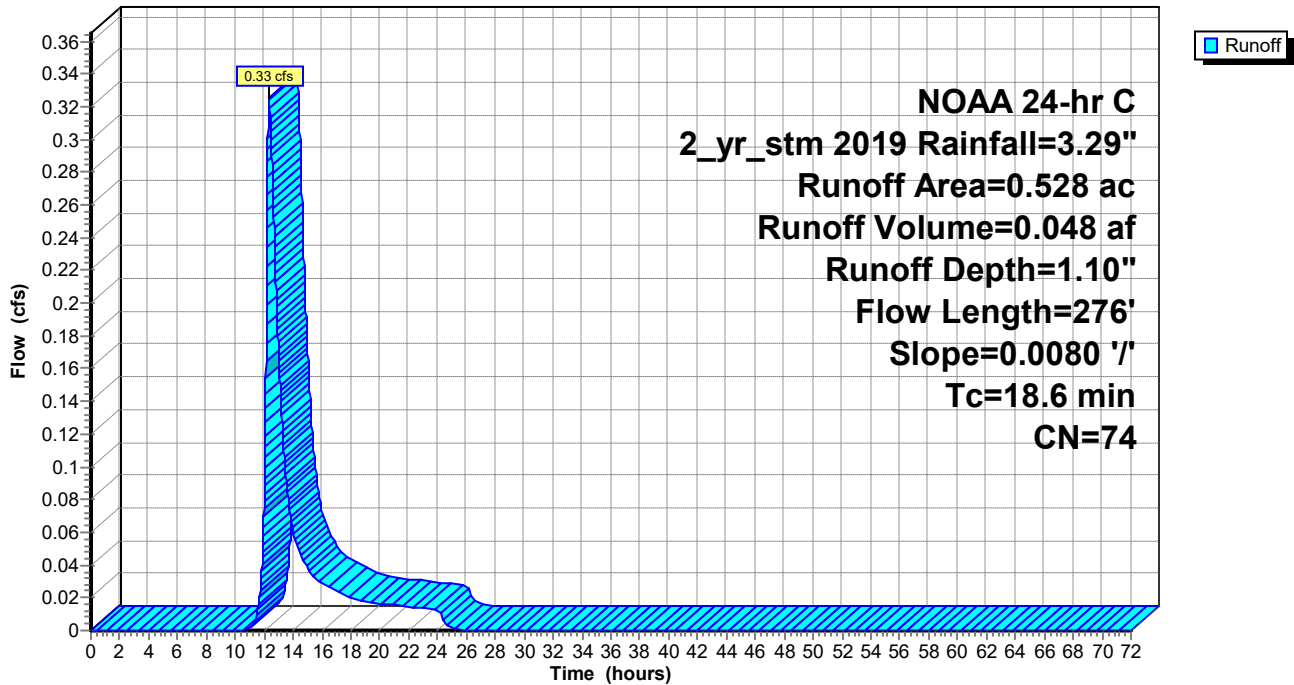
Area (ac)	CN	Description
0.528	74	>75% Grass cover, Good, HSG C
0.528		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9	100	0.0080	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
4.7	176	0.0080	0.63		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
18.6	276	Total			

**Subcatchment 4S: EA-2 Per**

Hydrograph



### Summary for Subcatchment 5S: EA-2 Imp

Runoff = 6.29 cfs @ 12.13 hrs, Volume= 0.544 af, Depth= 3.06"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 2\_yr\_stm 2019 Rainfall=3.29"

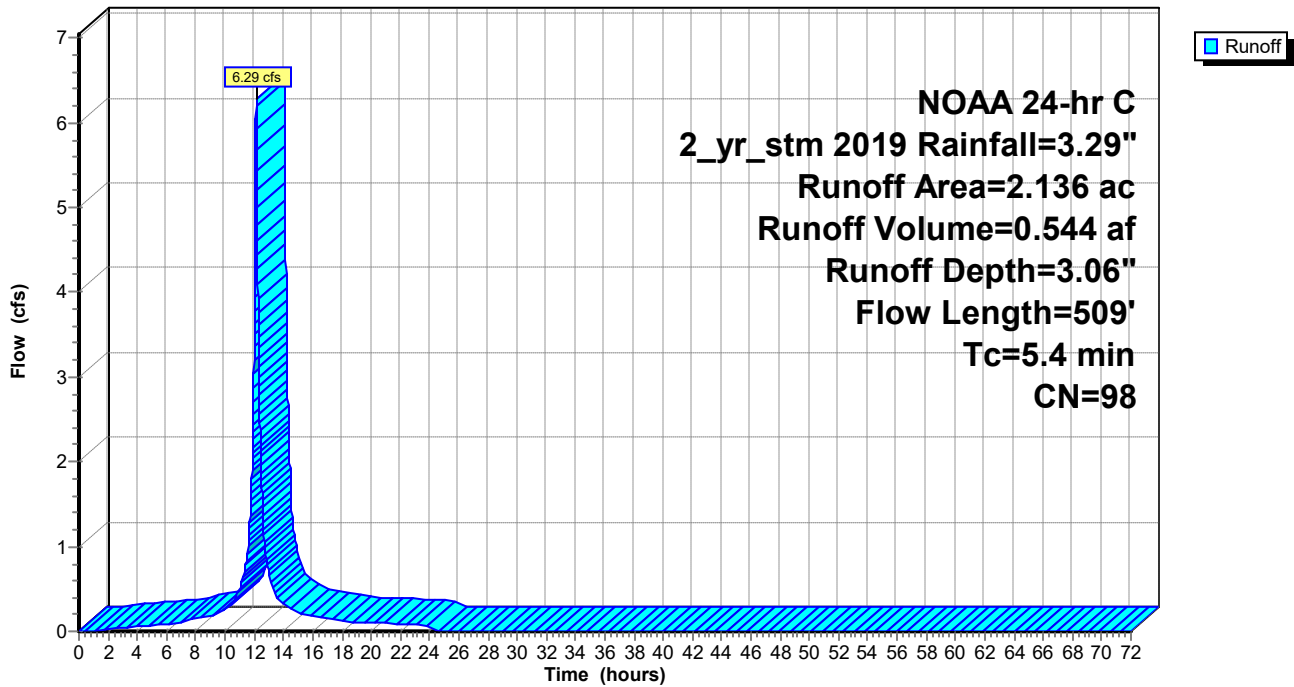
Area (ac)	CN	Description
1.577	98	Paved parking, HSG C
0.559	98	Roofs, HSG C
2.136	98	Weighted Average
2.136		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0100	1.06		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
3.8	409	0.0080	1.82		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
5.4	509	Total			

### Subcatchment 5S: EA-2 Imp

Hydrograph



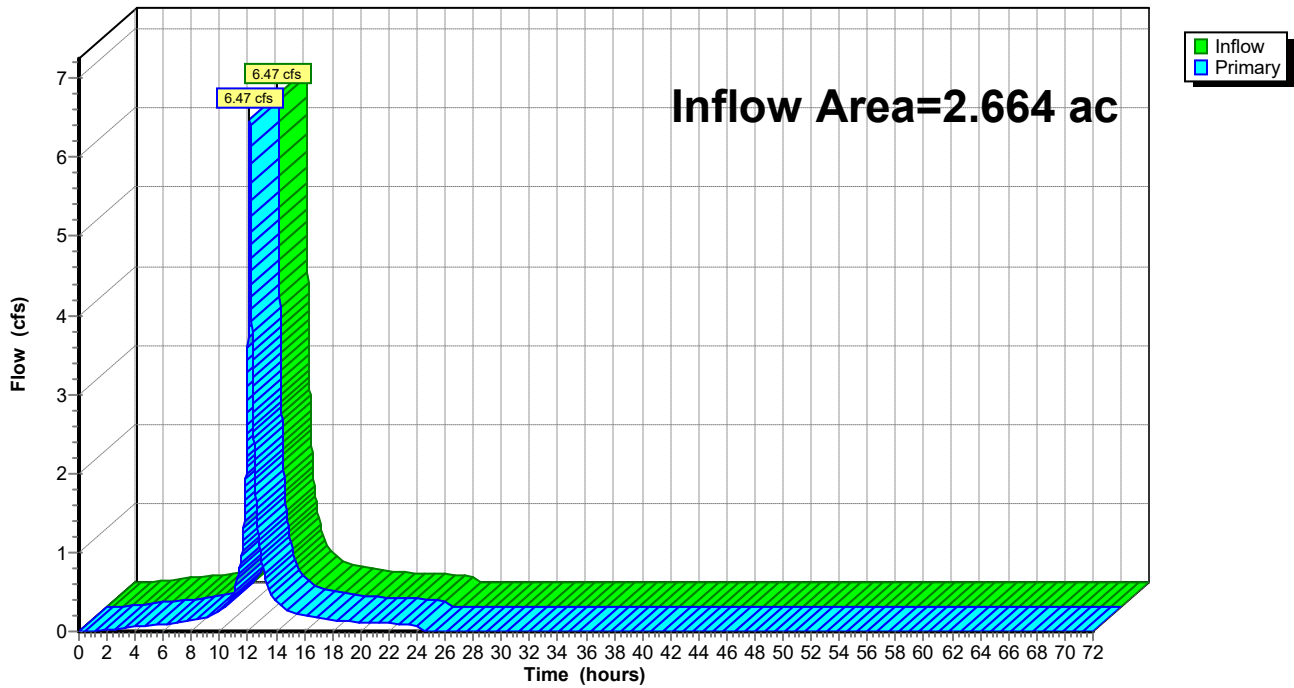
### Summary for Pond 6P: EA-2 - SW Wetland Basin

Inflow Area = 2.664 ac, 80.18% Impervious, Inflow Depth = 2.67" for 2\_yr\_stm 2019 event  
Inflow = 6.47 cfs @ 12.13 hrs, Volume= 0.592 af  
Primary = 6.47 cfs @ 12.13 hrs, Volume= 0.592 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Pond 6P: EA-2 - SW Wetland Basin

Hydrograph



**Summary for Subcatchment 7S: EA-3 Per**

Runoff = 0.13 cfs @ 12.18 hrs, Volume= 0.013 af, Depth= 1.10"

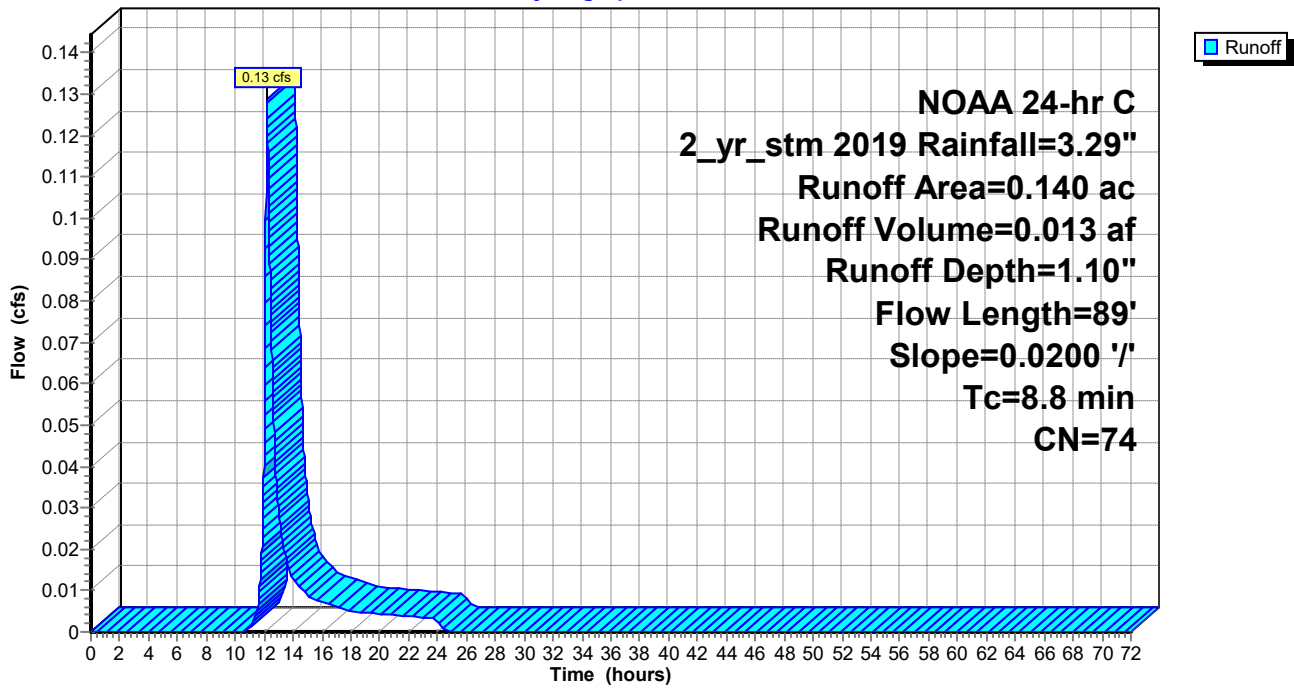
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 2\_yr\_stm 2019 Rainfall=3.29"

Area (ac)	CN	Description
0.140	74	>75% Grass cover, Good, HSG C
0.140		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	89	0.0200	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.29"

**Subcatchment 7S: EA-3 Per**

Hydrograph



**Summary for Subcatchment 8S: EA-3 Imp**

Runoff = 0.72 cfs @ 12.10 hrs, Volume= 0.048 af, Depth= 3.06"

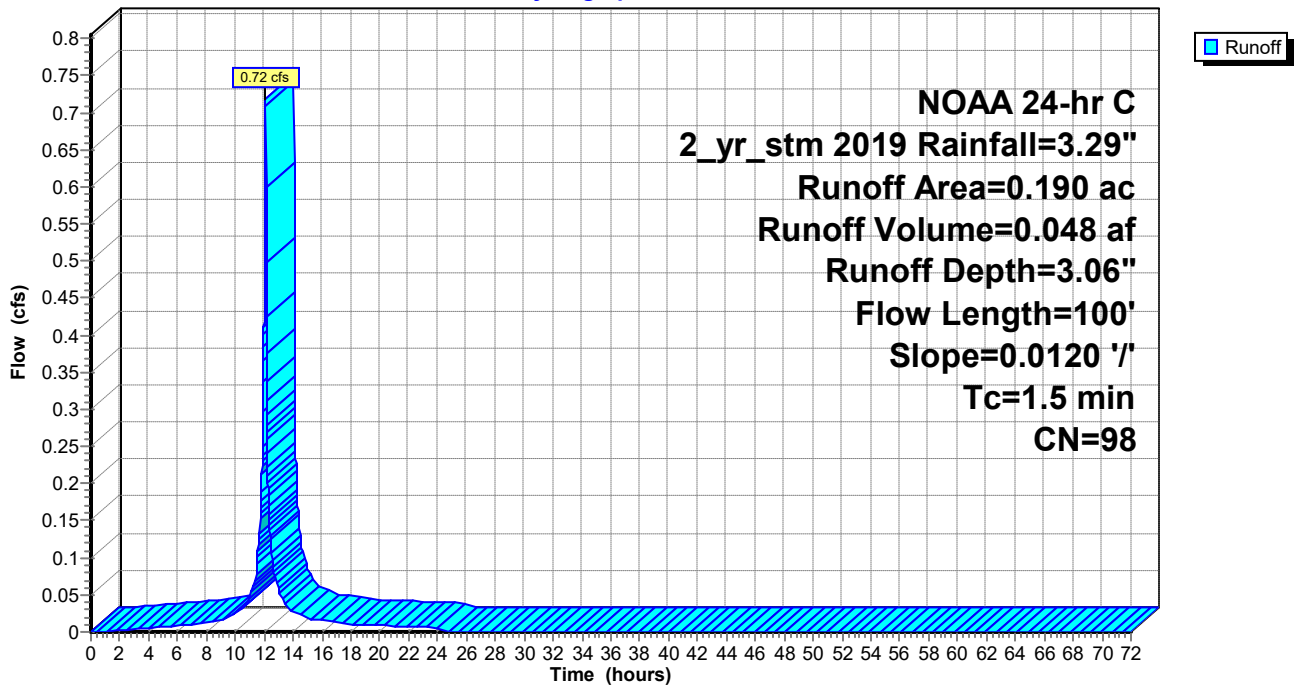
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 2\_yr\_stm 2019 Rainfall=3.29"

Area (ac)	CN	Description
0.190	98	Paved parking, HSG C
0.190		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	100	0.0120	1.14		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.29"

**Subcatchment 8S: EA-3 Imp**

Hydrograph



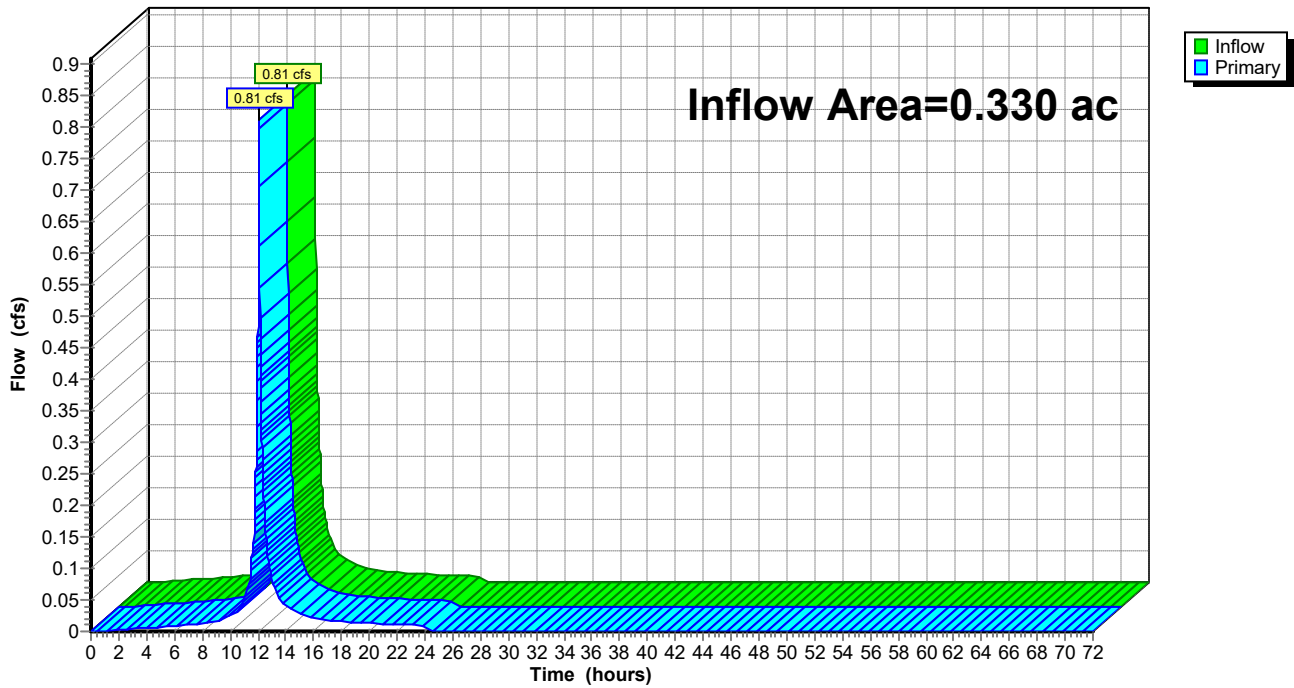
### Summary for Pond 9P: EA-3 - S Basin

Inflow Area = 0.330 ac, 57.58% Impervious, Inflow Depth = 2.23" for 2\_yr\_stm 2019 event  
Inflow = 0.81 cfs @ 12.10 hrs, Volume= 0.061 af  
Primary = 0.81 cfs @ 12.10 hrs, Volume= 0.061 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Pond 9P: EA-3 - S Basin

Hydrograph



**Summary for Subcatchment 10S: EA-4 Per**

Runoff = 0.20 cfs @ 12.31 hrs, Volume= 0.029 af, Depth= 0.99"

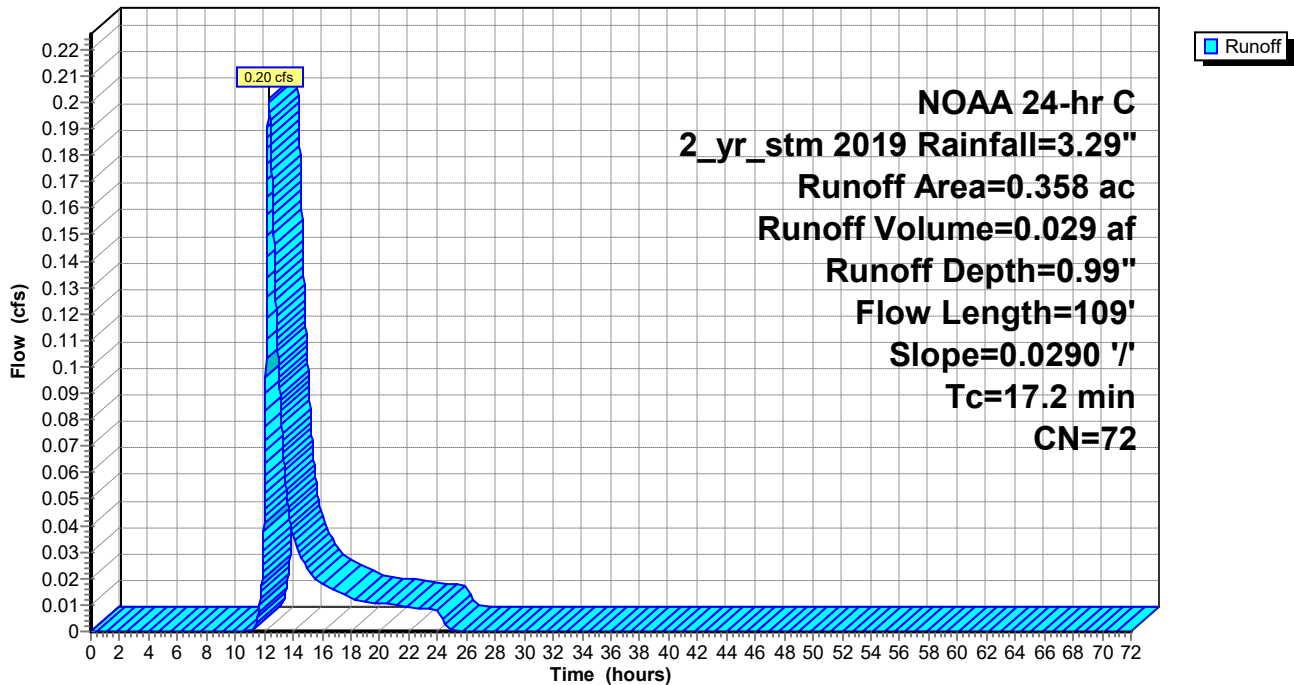
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 2\_yr\_stm 2019 Rainfall=3.29"

Area (ac)	CN	Description
0.155	74	>75% Grass cover, Good, HSG C
0.203	70	Woods, Good, HSG C
0.358	72	Weighted Average
0.358		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	28	0.0290	0.16		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
14.0	72	0.0290	0.09		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.29"
0.2	9	0.0290	0.85		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
17.2	109	Total			

**Subcatchment 10S: EA-4 Per**

Hydrograph



**Summary for Subcatchment 11S: EA-4 Imp**

Runoff = 0.77 cfs @ 12.11 hrs, Volume= 0.058 af, Depth= 3.06"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 2\_yr\_stm 2019 Rainfall=3.29"

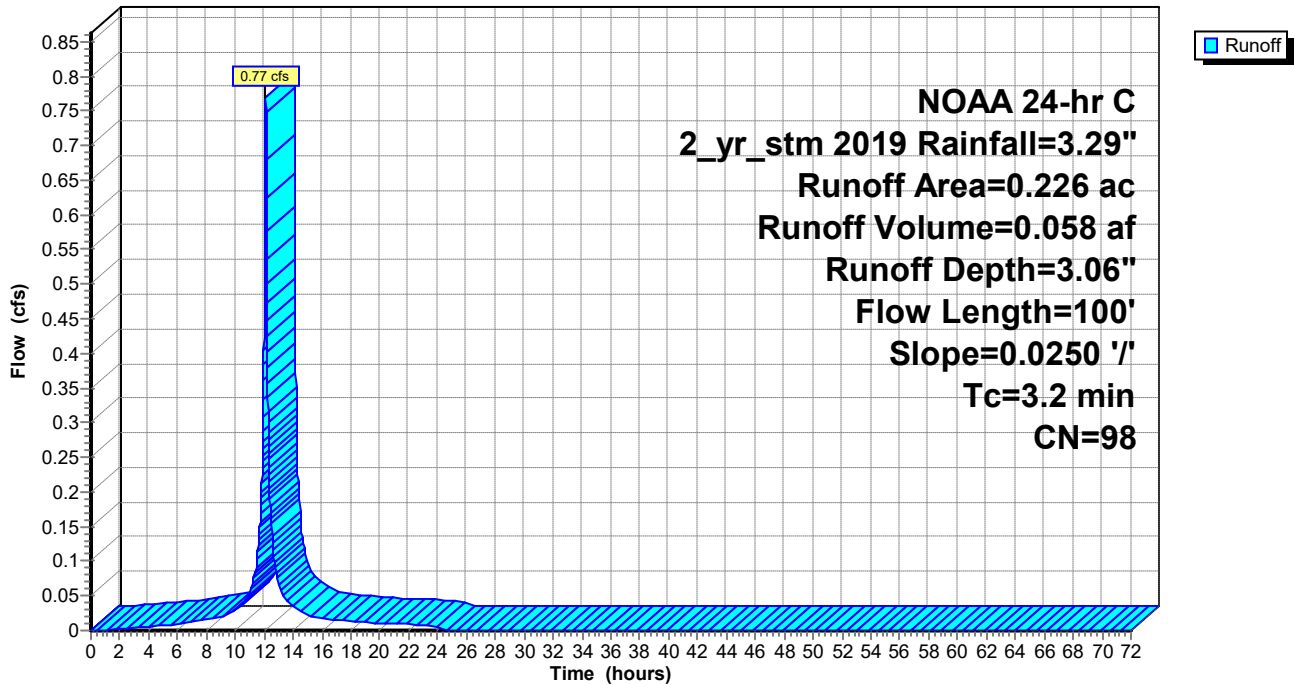
Area (ac)	CN	Description
0.226	98	Paved parking, HSG C
0.226		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	81	0.0250	1.46		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
2.3	19	0.0250	0.14		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
3.2	100	Total			

**Subcatchment 11S: EA-4 Imp**

Hydrograph



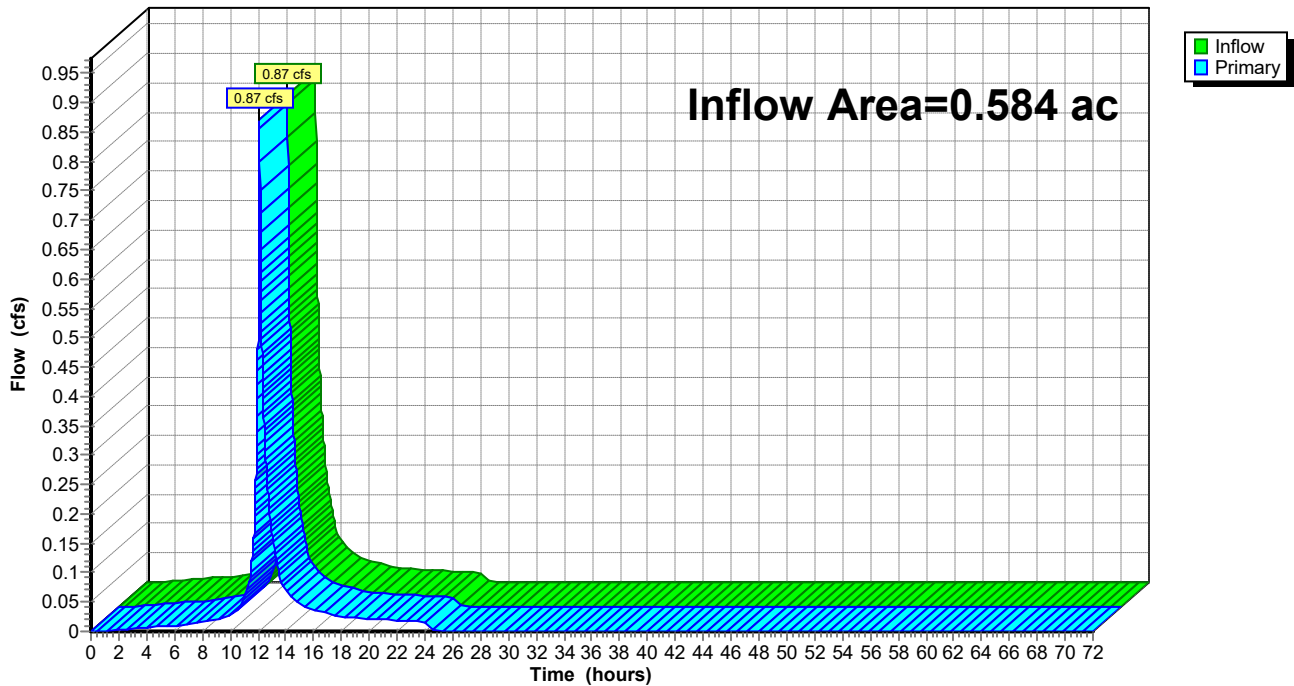
### Summary for Pond 12P: EA-4 - E Basin

Inflow Area = 0.584 ac, 38.70% Impervious, Inflow Depth = 1.79" for 2\_yr\_stm 2019 event  
Inflow = 0.87 cfs @ 12.12 hrs, Volume= 0.087 af  
Primary = 0.87 cfs @ 12.12 hrs, Volume= 0.087 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Pond 12P: EA-4 - E Basin

Hydrograph



**Summary for Subcatchment 1S: EA-1 Per**

Runoff = 0.64 cfs @ 12.35 hrs, Volume= 0.101 af, Depth= 1.38"

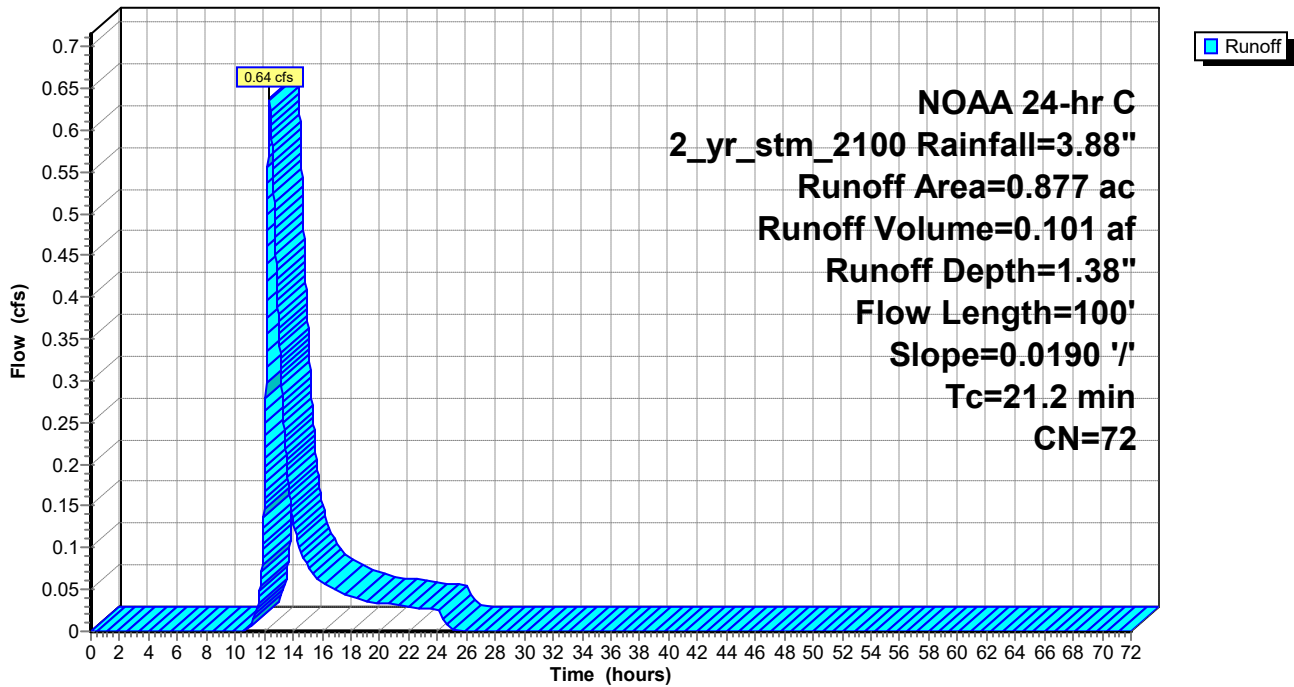
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 2\_yr\_stm\_2100 Rainfall=3.88"

Area (ac)	CN	Description
0.502	74	>75% Grass cover, Good, HSG C
0.375	70	Woods, Good, HSG C
0.877	72	Weighted Average
0.877		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	13	0.0190	0.11		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
19.3	87	0.0190	0.07		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.29"
21.2	100	Total			

**Subcatchment 1S: EA-1 Per**

Hydrograph



### Summary for Subcatchment 2S: EA-1 Imp

Runoff = 3.78 cfs @ 12.11 hrs, Volume= 0.281 af, Depth= 3.65"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 2\_yr\_stm\_2100 Rainfall=3.88"

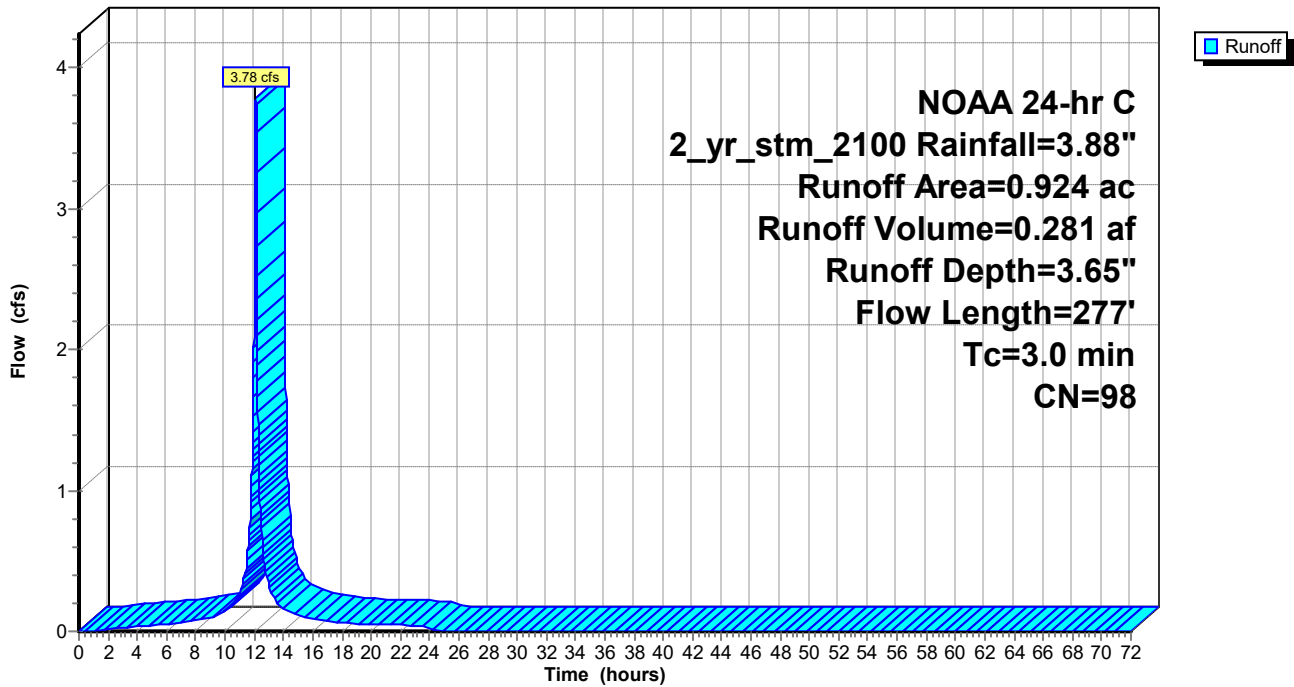
Area (ac)	CN	Description
0.727	98	Paved parking, HSG C
0.197	98	Roofs, HSG C
0.924	98	Weighted Average
0.924		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	100	0.0060	0.86		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
1.1	177	0.0180	2.72		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
3.0	277	Total			

### Subcatchment 2S: EA-1 Imp

Hydrograph



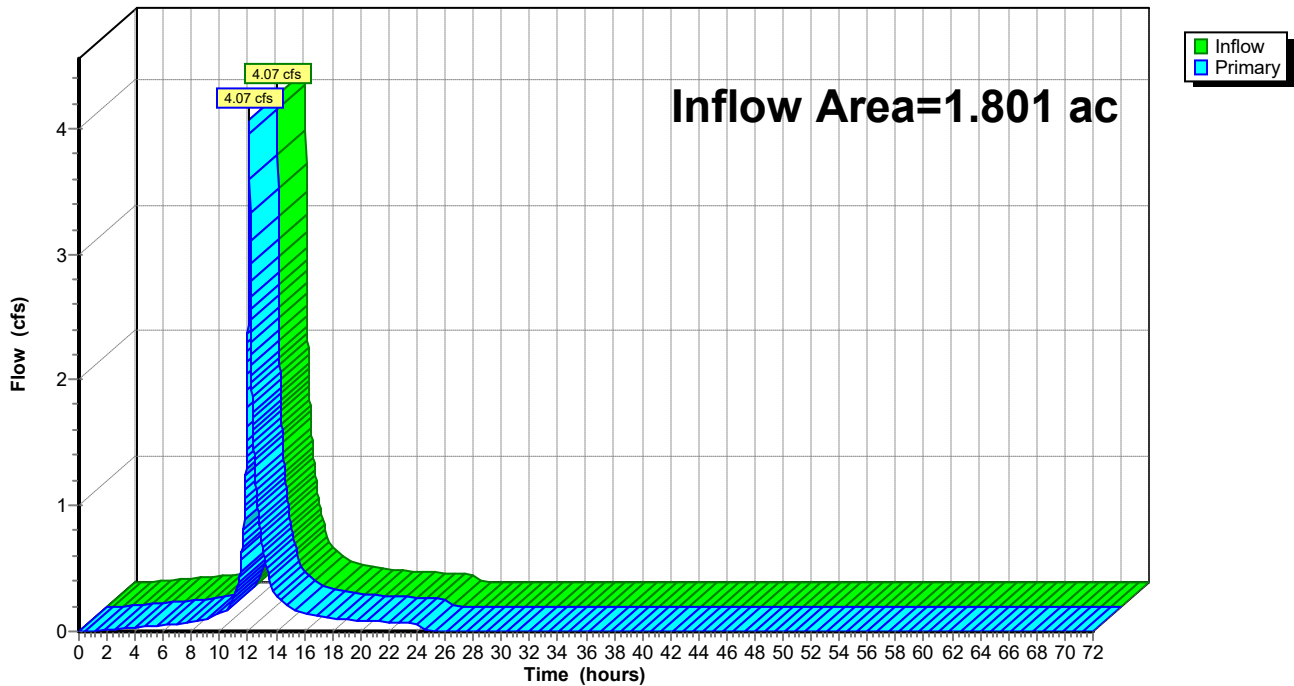
### Summary for Pond 3P: EA-1 - ROW / NE Wetlands

Inflow Area = 1.801 ac, 51.30% Impervious, Inflow Depth = 2.54" for 2\_yr\_stm\_2100 event  
Inflow = 4.07 cfs @ 12.11 hrs, Volume= 0.381 af  
Primary = 4.07 cfs @ 12.11 hrs, Volume= 0.381 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Pond 3P: EA-1 - ROW / NE Wetlands

Hydrograph



**Summary for Subcatchment 4S: EA-2 Per**

Runoff = 0.46 cfs @ 12.32 hrs, Volume= 0.066 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 2\_yr\_stm\_2100 Rainfall=3.88"

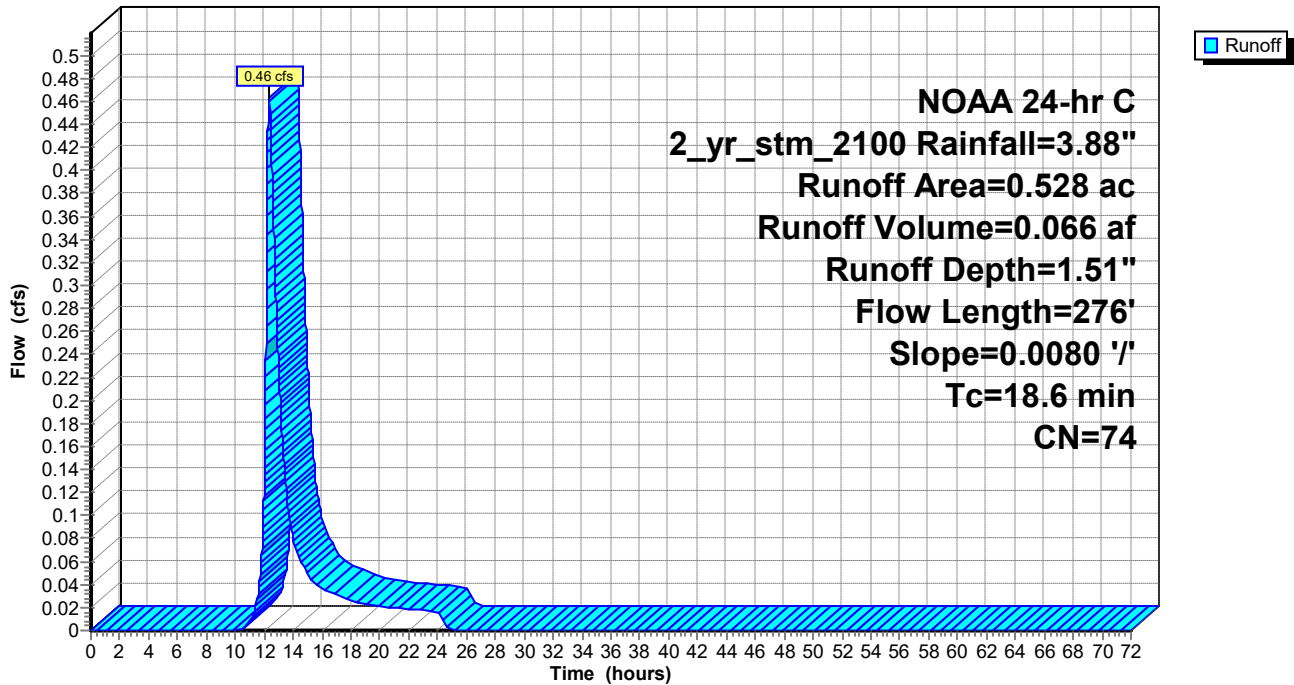
Area (ac)	CN	Description
0.528	74	>75% Grass cover, Good, HSG C
0.528		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9	100	0.0080	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
4.7	176	0.0080	0.63		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
18.6	276	Total			

**Subcatchment 4S: EA-2 Per**

Hydrograph



### Summary for Subcatchment 5S: EA-2 Imp

Runoff = 7.44 cfs @ 12.13 hrs, Volume= 0.649 af, Depth= 3.65"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 2\_yr\_stm\_2100 Rainfall=3.88"

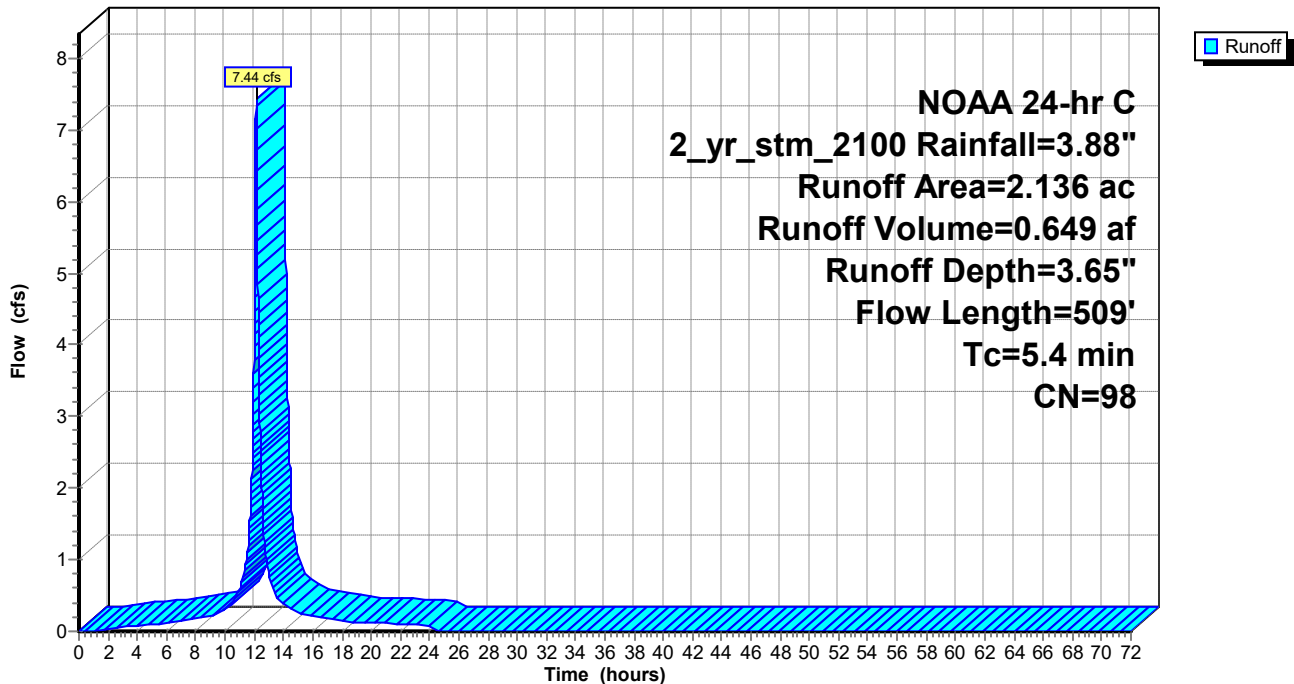
Area (ac)	CN	Description
1.577	98	Paved parking, HSG C
0.559	98	Roofs, HSG C
2.136	98	Weighted Average
2.136		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0100	1.06		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
3.8	409	0.0080	1.82		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
5.4	509	Total			

### Subcatchment 5S: EA-2 Imp

Hydrograph



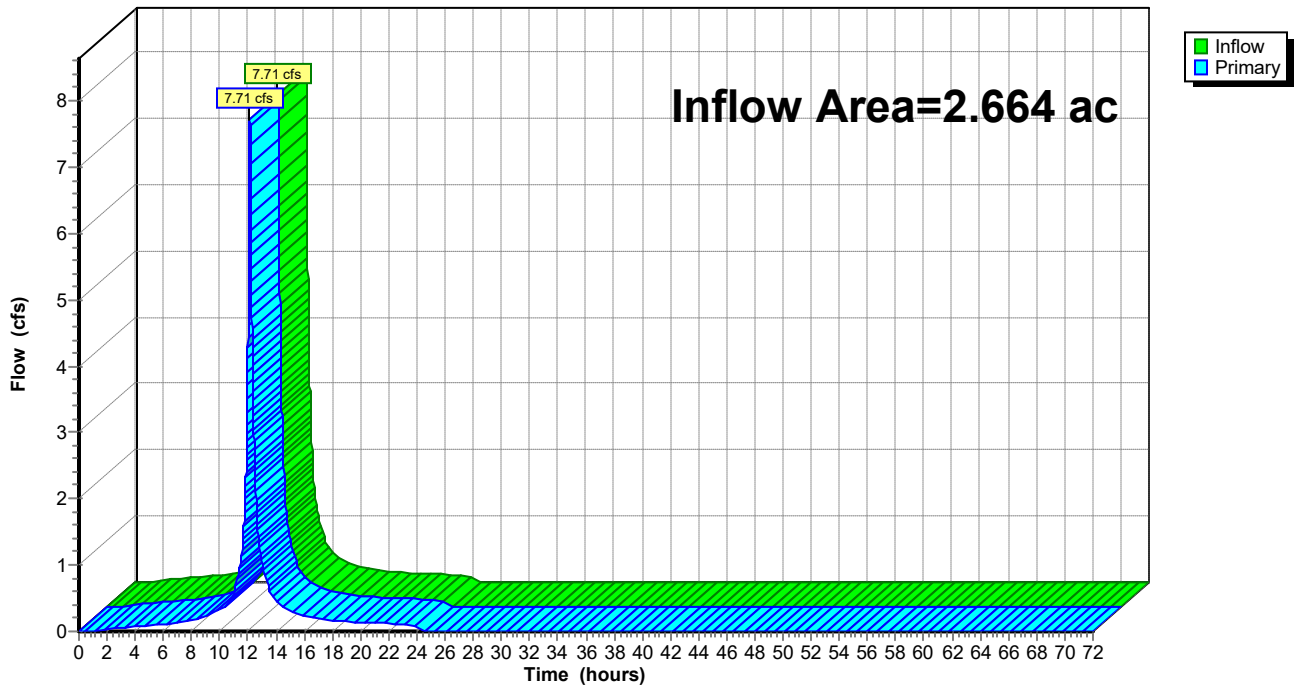
### Summary for Pond 6P: EA-2 - SW Wetland Basin

Inflow Area = 2.664 ac, 80.18% Impervious, Inflow Depth = 3.22" for 2\_yr\_stm\_2100 event  
Inflow = 7.71 cfs @ 12.13 hrs, Volume= 0.715 af  
Primary = 7.71 cfs @ 12.13 hrs, Volume= 0.715 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Pond 6P: EA-2 - SW Wetland Basin

Hydrograph



**Summary for Subcatchment 7S: EA-3 Per**

Runoff = 0.18 cfs @ 12.18 hrs, Volume= 0.018 af, Depth= 1.51"

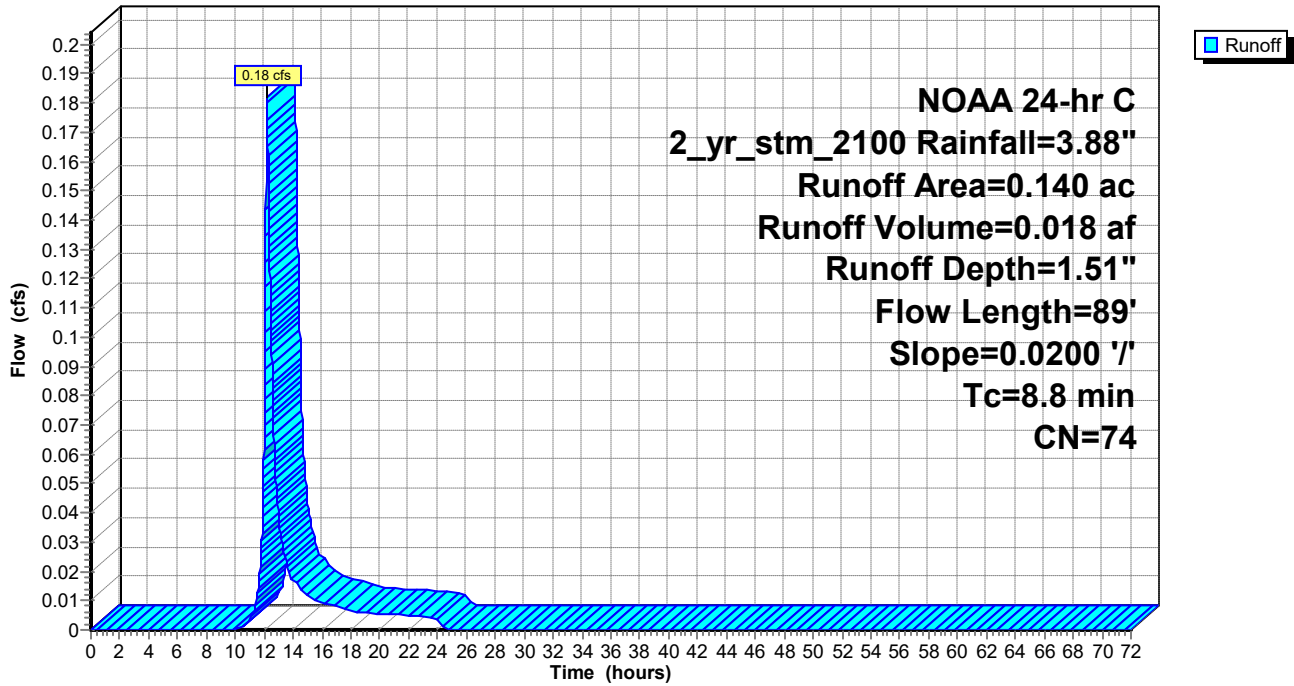
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 2\_yr\_stm\_2100 Rainfall=3.88"

Area (ac)	CN	Description
0.140	74	>75% Grass cover, Good, HSG C
0.140		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	89	0.0200	0.17		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"

**Subcatchment 7S: EA-3 Per**

Hydrograph



**Summary for Subcatchment 8S: EA-3 Imp**

Runoff = 0.85 cfs @ 12.10 hrs, Volume= 0.058 af, Depth= 3.65"

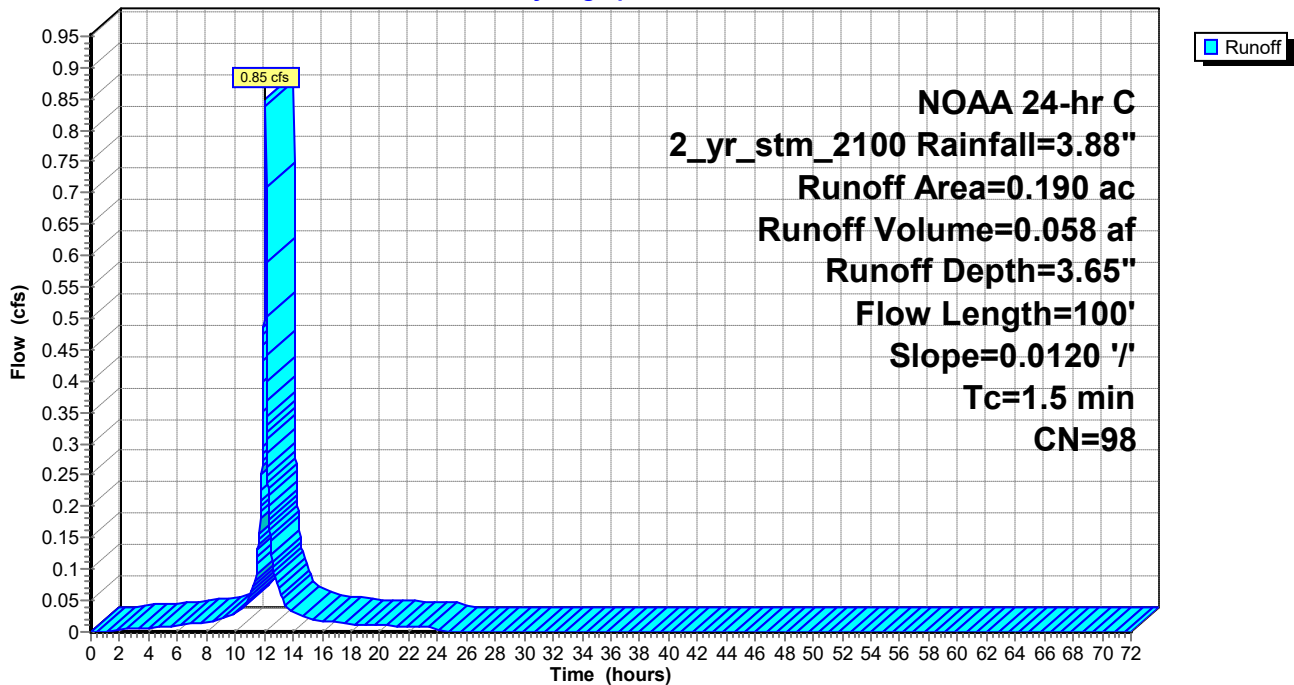
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 2\_yr\_stm\_2100 Rainfall=3.88"

Area (ac)	CN	Description
0.190	98	Paved parking, HSG C
0.190		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	100	0.0120	1.14		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.29"

**Subcatchment 8S: EA-3 Imp**

Hydrograph



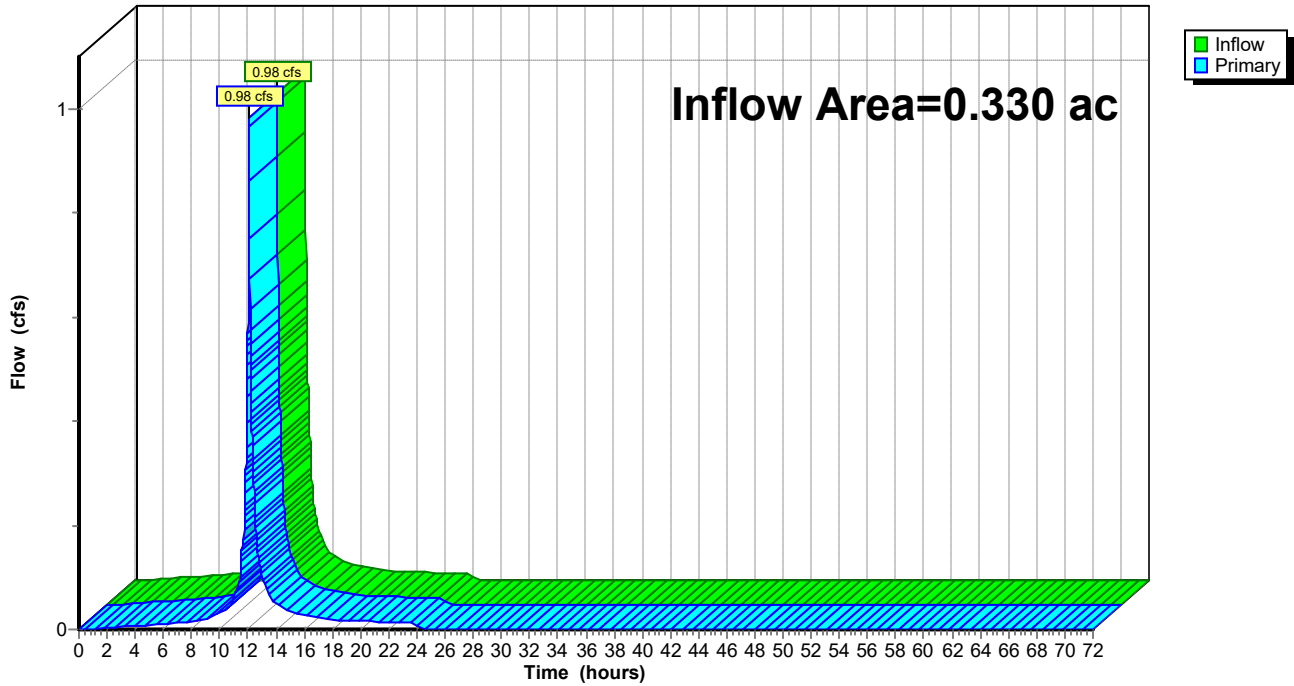
### Summary for Pond 9P: EA-3 - S Basin

Inflow Area = 0.330 ac, 57.58% Impervious, Inflow Depth = 2.74" for 2\_yr\_stm\_2100 event  
Inflow = 0.98 cfs @ 12.10 hrs, Volume= 0.075 af  
Primary = 0.98 cfs @ 12.10 hrs, Volume= 0.075 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Pond 9P: EA-3 - S Basin

Hydrograph



**Summary for Subcatchment 10S: EA-4 Per**

Runoff = 0.29 cfs @ 12.31 hrs, Volume= 0.041 af, Depth= 1.38"

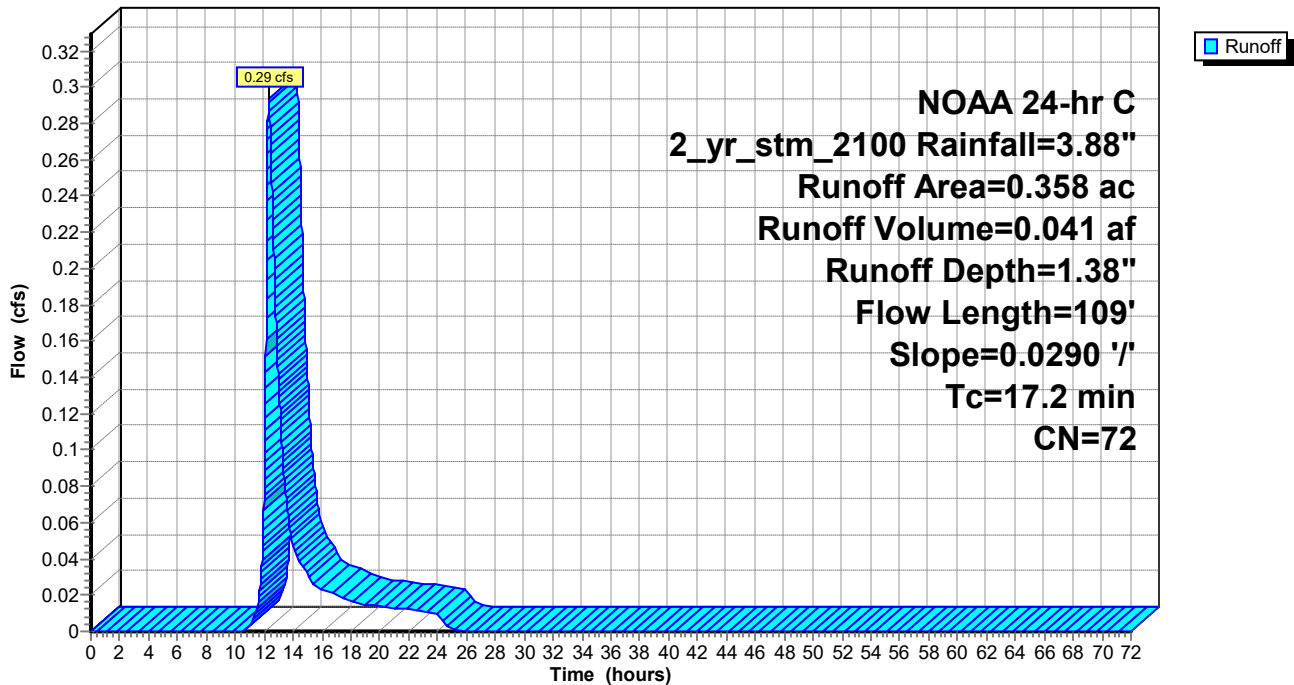
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 2\_yr\_stm\_2100 Rainfall=3.88"

Area (ac)	CN	Description
0.155	74	>75% Grass cover, Good, HSG C
0.203	70	Woods, Good, HSG C
0.358	72	Weighted Average
0.358		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	28	0.0290	0.16		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
14.0	72	0.0290	0.09		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.29"
0.2	9	0.0290	0.85		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
17.2	109	Total			

**Subcatchment 10S: EA-4 Per**

Hydrograph



**Summary for Subcatchment 11S: EA-4 Imp**

Runoff = 0.91 cfs @ 12.11 hrs, Volume= 0.069 af, Depth= 3.65"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 2\_yr\_stm\_2100 Rainfall=3.88"

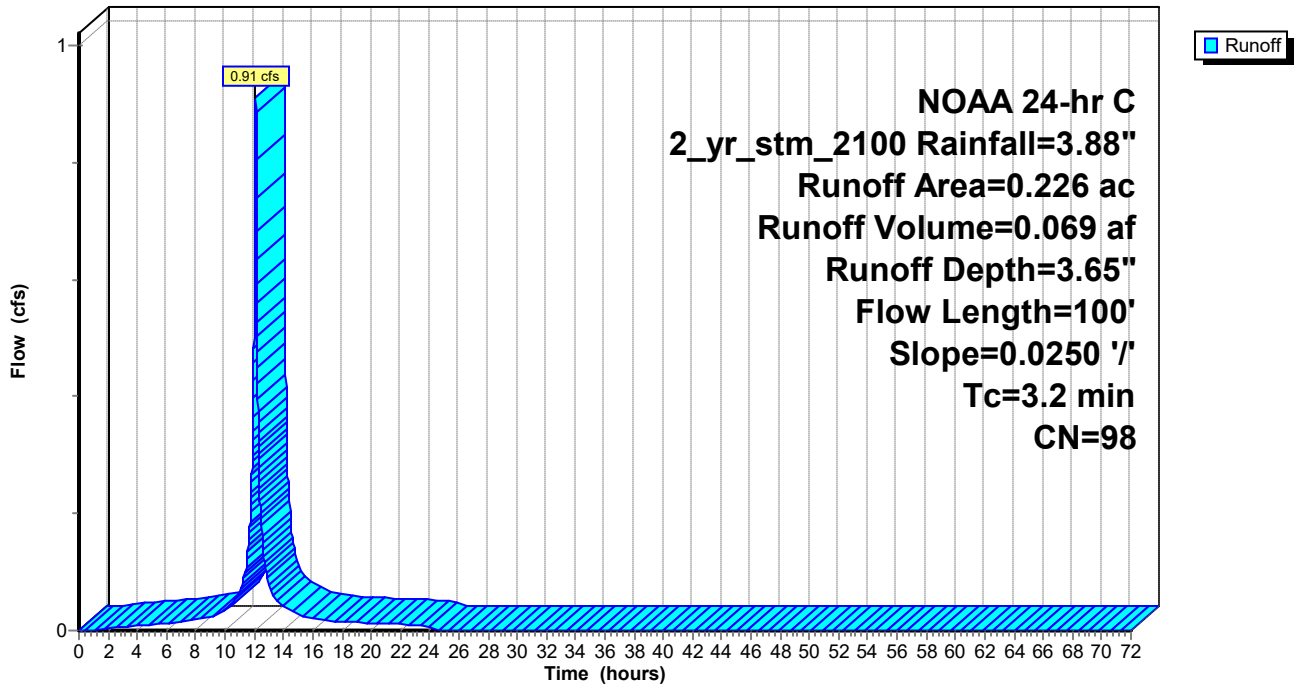
Area (ac)	CN	Description
0.226	98	Paved parking, HSG C
0.226		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	81	0.0250	1.46		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
2.3	19	0.0250	0.14		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
3.2	100	Total			

**Subcatchment 11S: EA-4 Imp**

Hydrograph



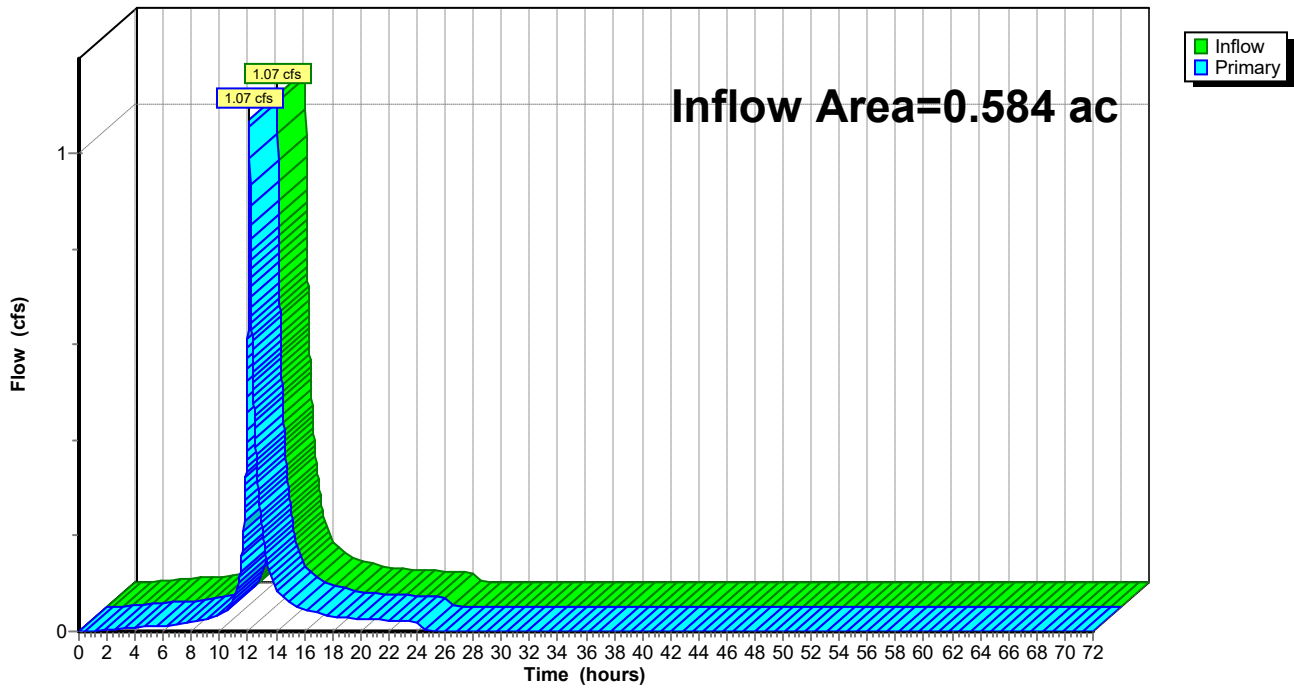
### Summary for Pond 12P: EA-4 - E Basin

Inflow Area = 0.584 ac, 38.70% Impervious, Inflow Depth = 2.25" for 2\_yr\_stm\_2100 event  
Inflow = 1.07 cfs @ 12.12 hrs, Volume= 0.110 af  
Primary = 1.07 cfs @ 12.12 hrs, Volume= 0.110 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Pond 12P: EA-4 - E Basin

Hydrograph



**Summary for Subcatchment 1S: EA-1 Per**

Runoff = 1.11 cfs @ 12.35 hrs, Volume= 0.167 af, Depth= 2.28"

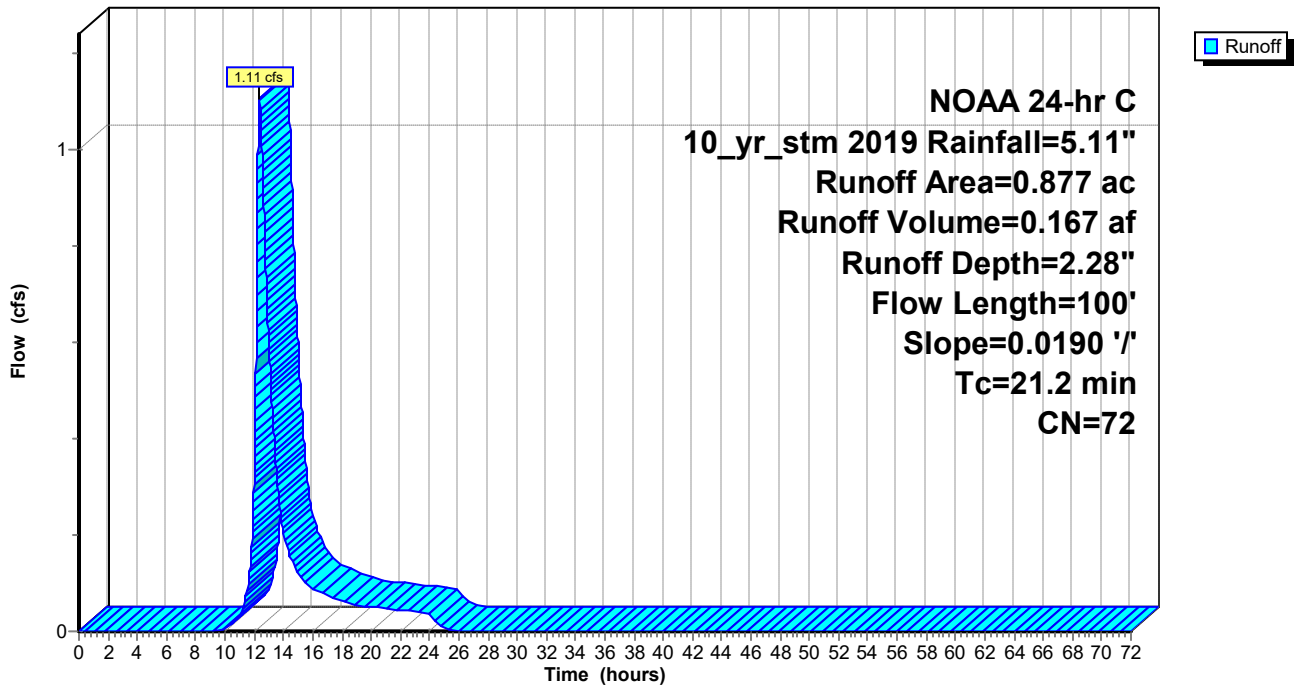
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 10\_yr\_stm 2019 Rainfall=5.11"

Area (ac)	CN	Description
0.502	74	>75% Grass cover, Good, HSG C
0.375	70	Woods, Good, HSG C
0.877	72	Weighted Average
0.877		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	13	0.0190	0.11		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
19.3	87	0.0190	0.07		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.29"
21.2	100	Total			

**Subcatchment 1S: EA-1 Per**

Hydrograph



### Summary for Subcatchment 2S: EA-1 Imp

Runoff = 5.00 cfs @ 12.11 hrs, Volume= 0.375 af, Depth= 4.87"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 10\_yr\_stm 2019 Rainfall=5.11"

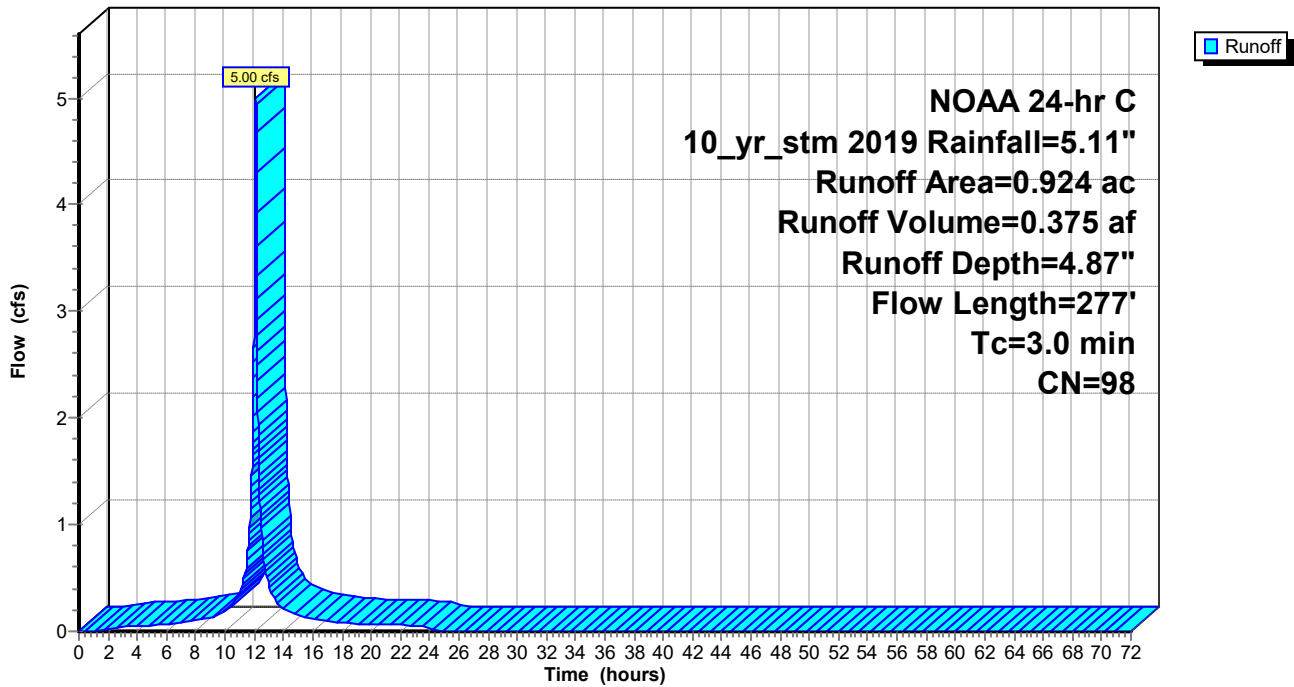
Area (ac)	CN	Description
0.727	98	Paved parking, HSG C
0.197	98	Roofs, HSG C
0.924	98	Weighted Average
0.924		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	100	0.0060	0.86		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
1.1	177	0.0180	2.72		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
3.0	277	Total			

### Subcatchment 2S: EA-1 Imp

Hydrograph



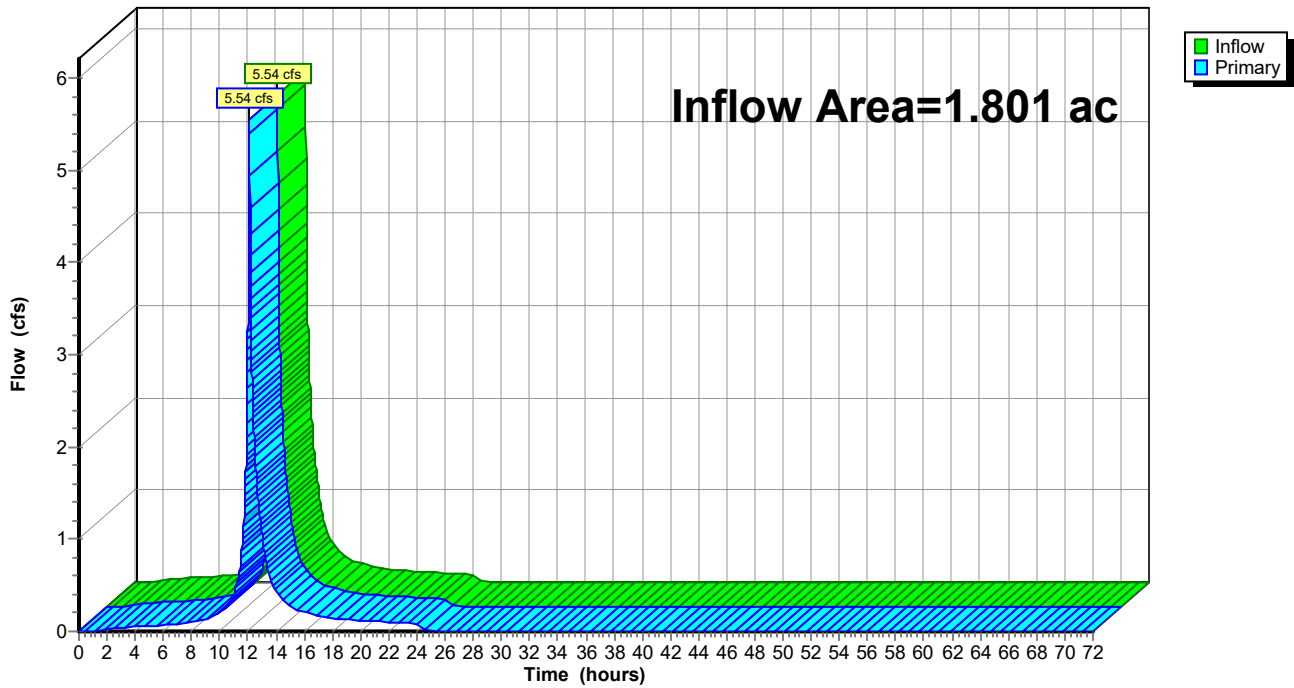
### Summary for Pond 3P: EA-1 - ROW / NE Wetlands

Inflow Area = 1.801 ac, 51.30% Impervious, Inflow Depth = 3.61" for 10\_yr\_stm 2019 event  
Inflow = 5.54 cfs @ 12.11 hrs, Volume= 0.542 af  
Primary = 5.54 cfs @ 12.11 hrs, Volume= 0.542 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Pond 3P: EA-1 - ROW / NE Wetlands

Hydrograph



**Summary for Subcatchment 4S: EA-2 Per**

Runoff = 0.78 cfs @ 12.32 hrs, Volume= 0.108 af, Depth= 2.45"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 10\_yr\_stm 2019 Rainfall=5.11"

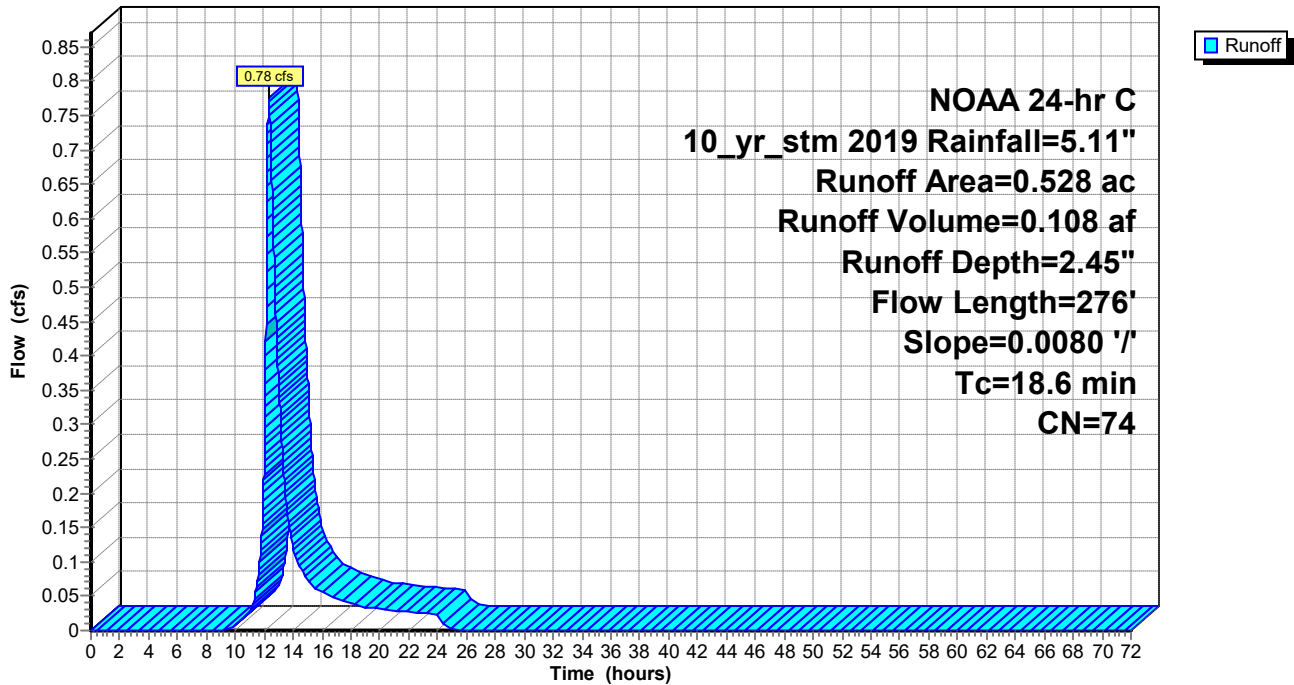
Area (ac)	CN	Description
0.528	74	>75% Grass cover, Good, HSG C
0.528		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9	100	0.0080	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
4.7	176	0.0080	0.63		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
18.6	276	Total			

**Subcatchment 4S: EA-2 Per**

Hydrograph



**Summary for Subcatchment 5S: EA-2 Imp**

Runoff = 9.84 cfs @ 12.13 hrs, Volume= 0.867 af, Depth= 4.87"

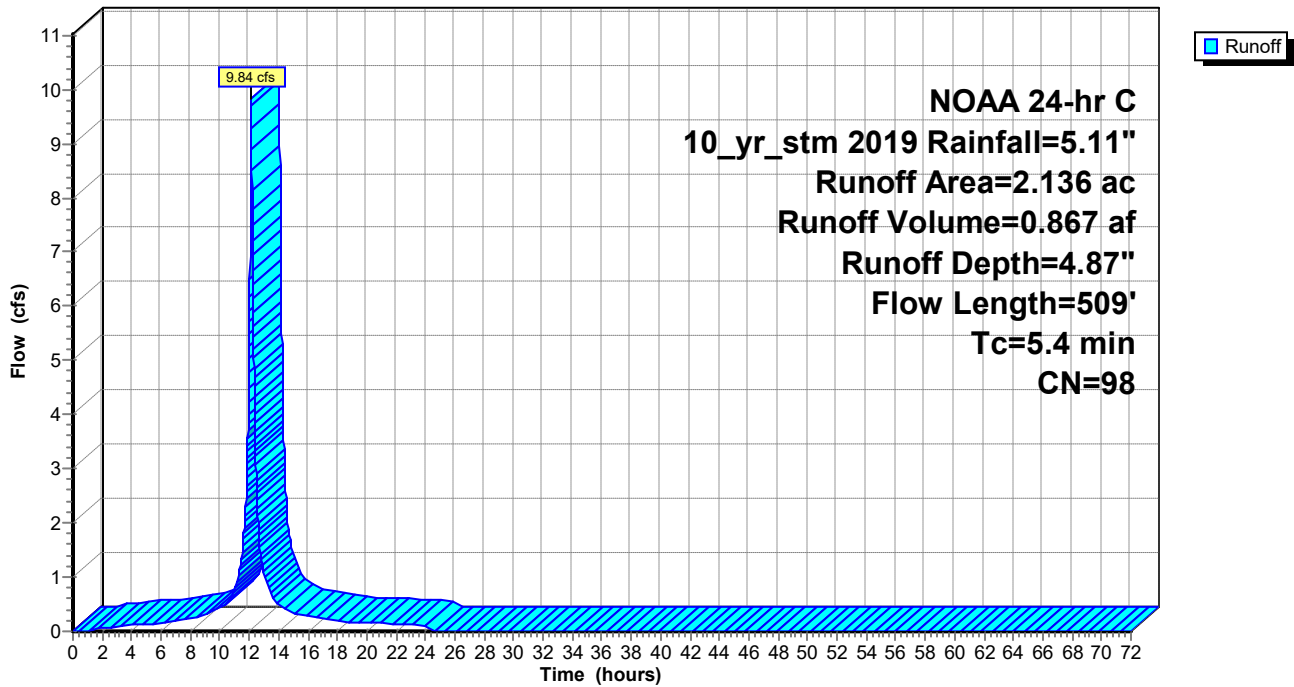
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 10\_yr\_stm 2019 Rainfall=5.11"

Area (ac)	CN	Description
1.577	98	Paved parking, HSG C
0.559	98	Roofs, HSG C
2.136	98	Weighted Average
2.136		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0100	1.06		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
3.8	409	0.0080	1.82		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
5.4	509	Total			

**Subcatchment 5S: EA-2 Imp**

Hydrograph



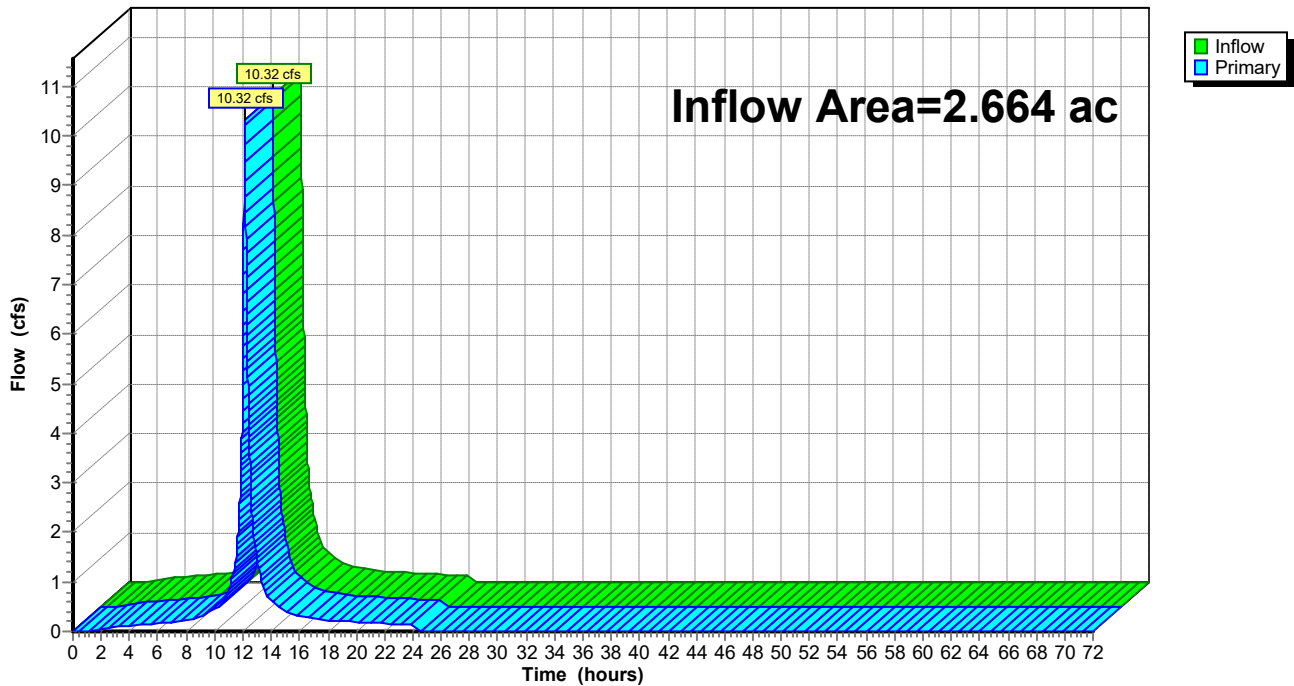
### Summary for Pond 6P: EA-2 - SW Wetland Basin

Inflow Area = 2.664 ac, 80.18% Impervious, Inflow Depth = 4.39" for 10\_yr\_stm 2019 event  
Inflow = 10.32 cfs @ 12.13 hrs, Volume= 0.975 af  
Primary = 10.32 cfs @ 12.13 hrs, Volume= 0.975 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Pond 6P: EA-2 - SW Wetland Basin

Hydrograph



**Summary for Subcatchment 7S: EA-3 Per**

Runoff = 0.30 cfs @ 12.18 hrs, Volume= 0.029 af, Depth= 2.45"

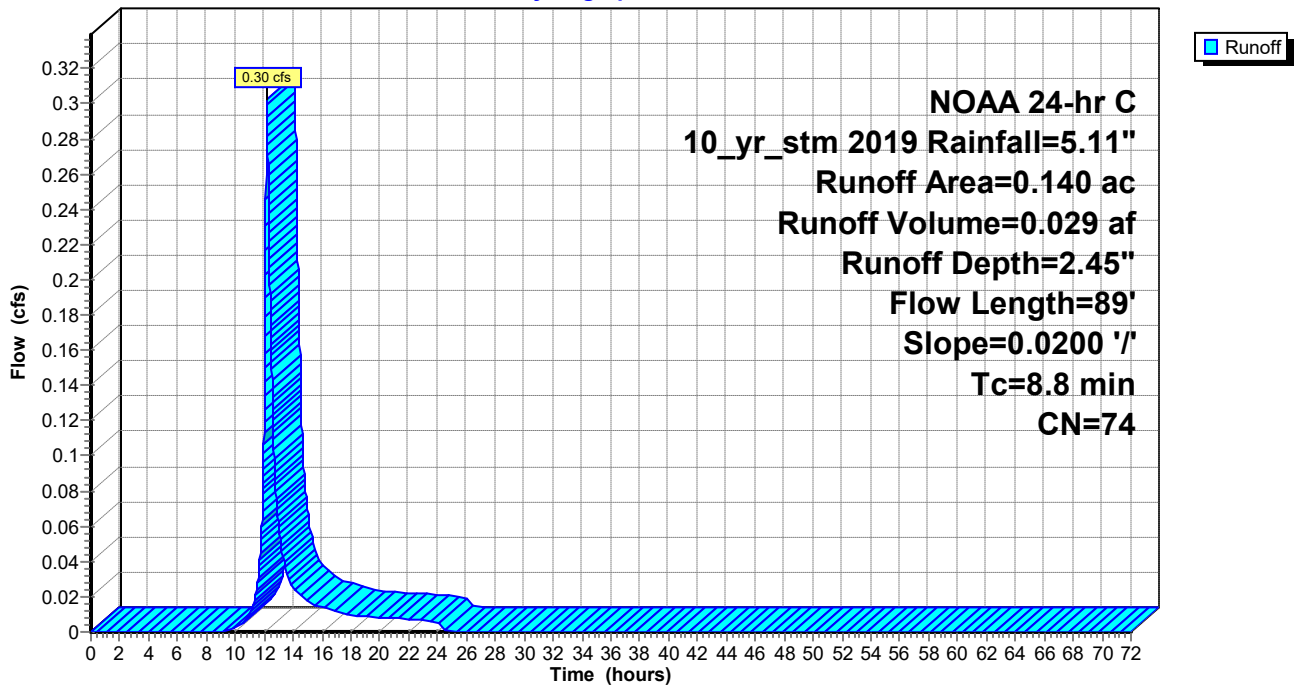
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 10\_yr\_stm 2019 Rainfall=5.11"

Area (ac)	CN	Description
0.140	74	>75% Grass cover, Good, HSG C
0.140		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	89	0.0200	0.17		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"

**Subcatchment 7S: EA-3 Per**

Hydrograph



### Summary for Subcatchment 8S: EA-3 Imp

Runoff = 1.12 cfs @ 12.10 hrs, Volume= 0.077 af, Depth= 4.87"

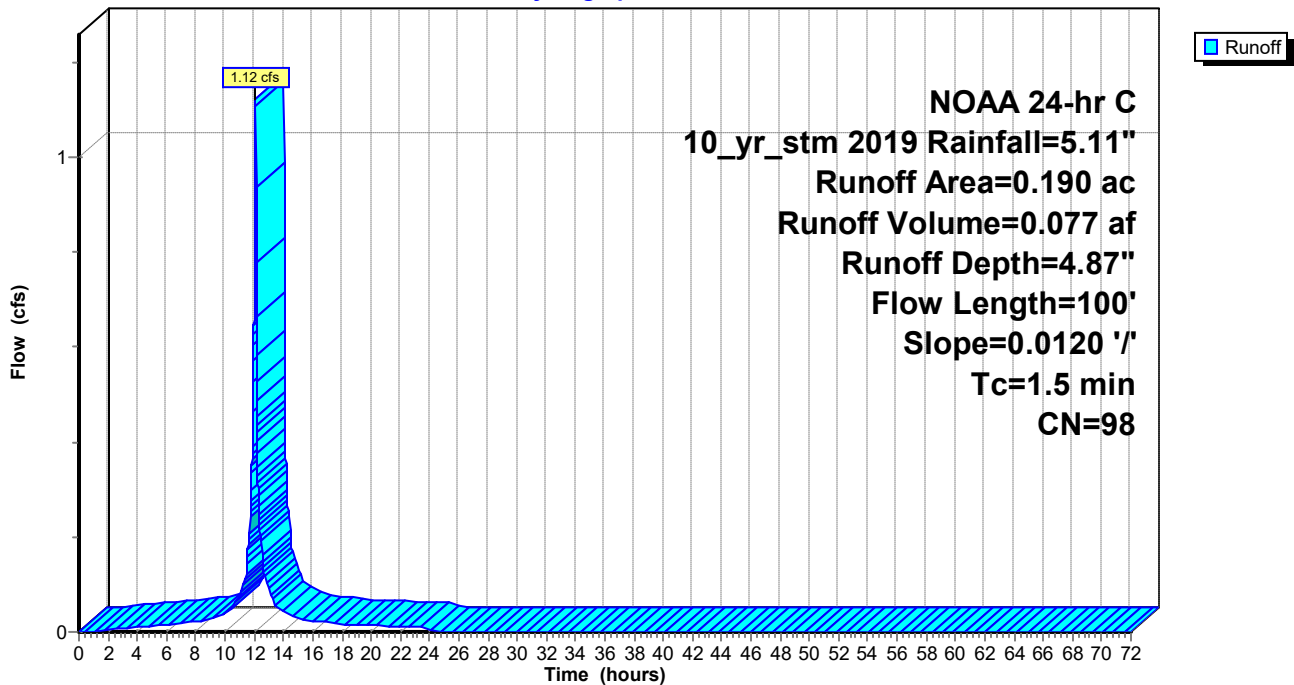
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 10\_yr\_stm 2019 Rainfall=5.11"

Area (ac)	CN	Description
0.190	98	Paved parking, HSG C
0.190		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	100	0.0120	1.14		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"

### Subcatchment 8S: EA-3 Imp

Hydrograph



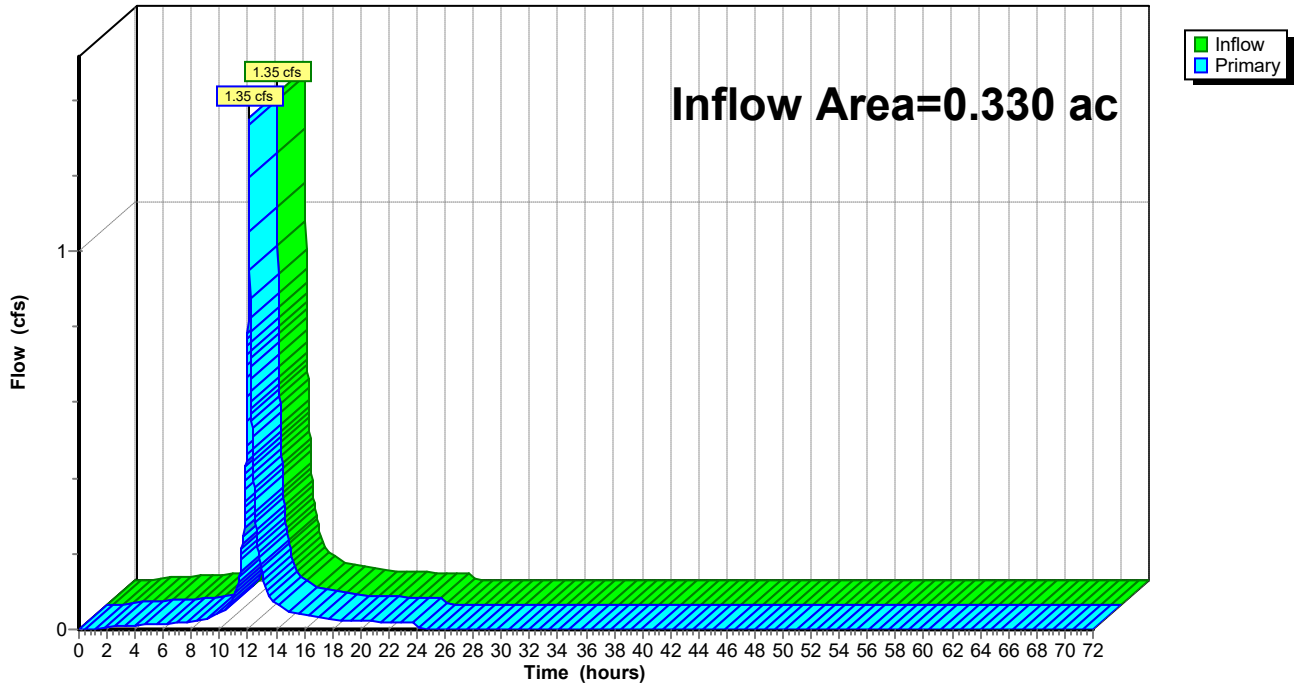
### Summary for Pond 9P: EA-3 - S Basin

Inflow Area = 0.330 ac, 57.58% Impervious, Inflow Depth = 3.85" for 10\_yr\_stm 2019 event  
Inflow = 1.35 cfs @ 12.10 hrs, Volume= 0.106 af  
Primary = 1.35 cfs @ 12.10 hrs, Volume= 0.106 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Pond 9P: EA-3 - S Basin

Hydrograph



**Summary for Subcatchment 10S: EA-4 Per**

Runoff = 0.51 cfs @ 12.30 hrs, Volume= 0.068 af, Depth= 2.28"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 10\_yr\_stm 2019 Rainfall=5.11"

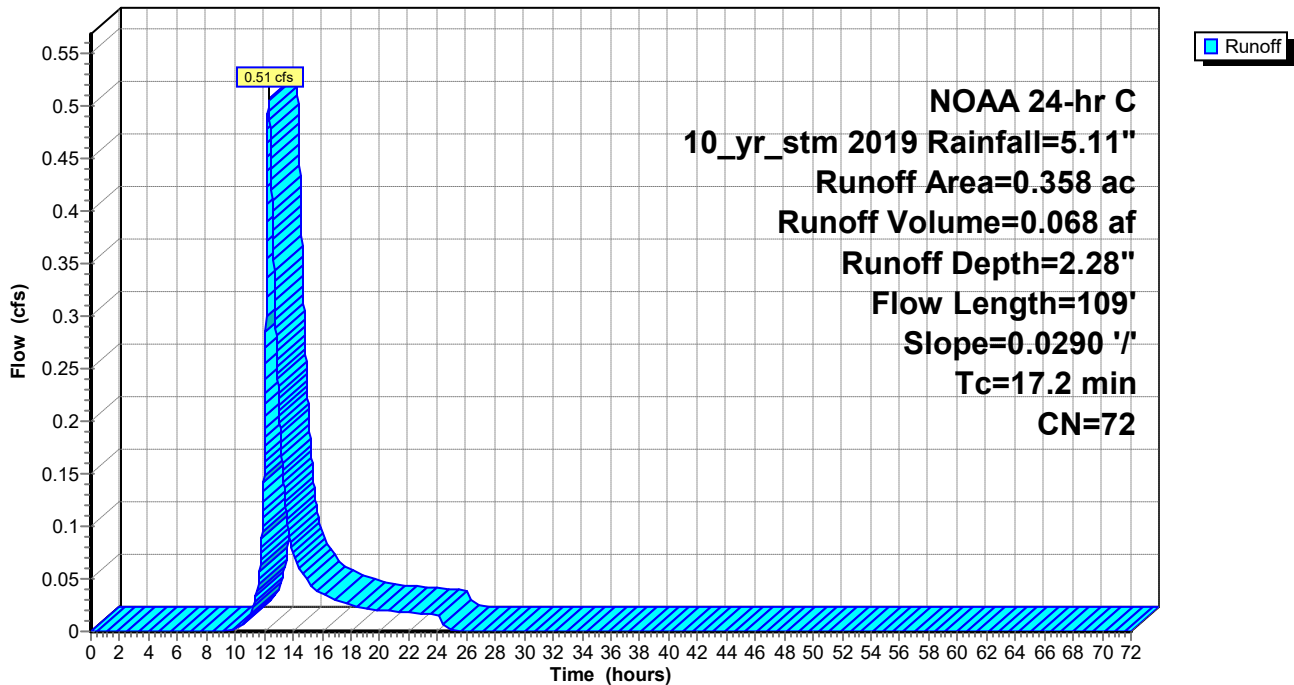
Area (ac)	CN	Description
0.155	74	>75% Grass cover, Good, HSG C
0.203	70	Woods, Good, HSG C
0.358	72	Weighted Average
0.358		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	28	0.0290	0.16		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
14.0	72	0.0290	0.09		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.29"
0.2	9	0.0290	0.85		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
17.2	109	Total			

**Subcatchment 10S: EA-4 Per**

Hydrograph



### Summary for Subcatchment 11S: EA-4 Imp

Runoff = 1.20 cfs @ 12.11 hrs, Volume= 0.092 af, Depth= 4.87"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 10\_yr\_stm 2019 Rainfall=5.11"

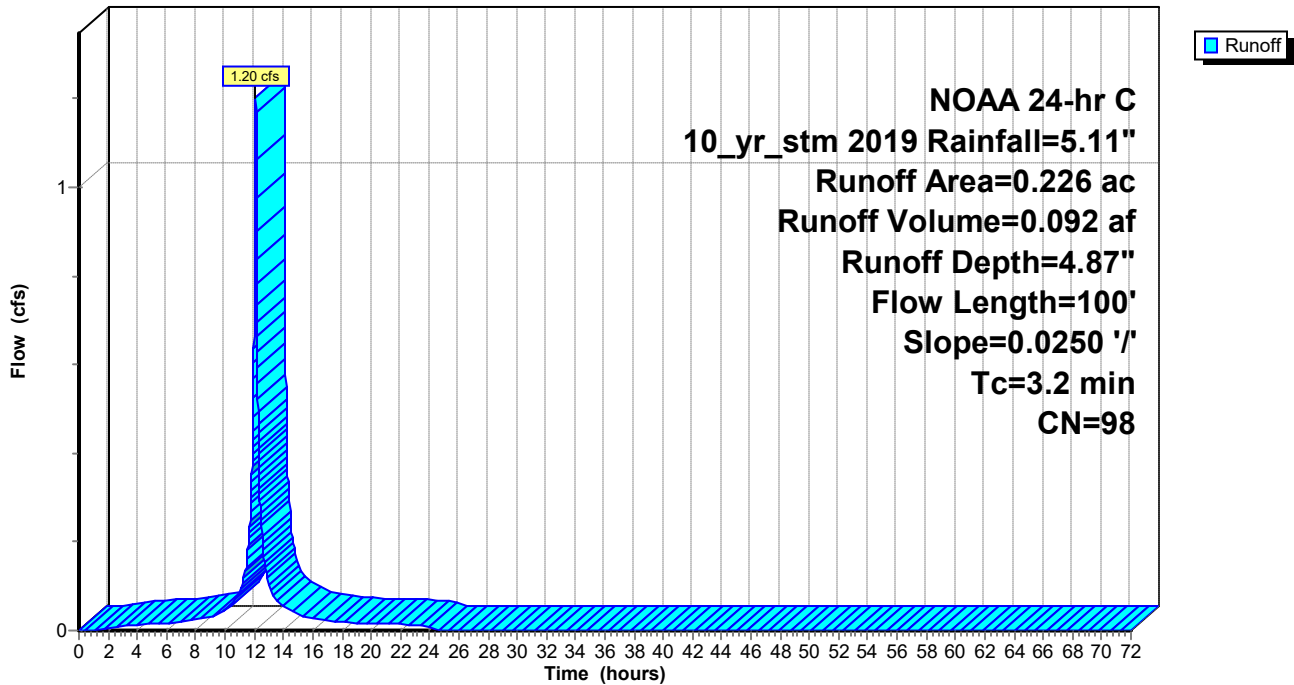
Area (ac)	CN	Description
0.226	98	Paved parking, HSG C
0.226		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	81	0.0250	1.46		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
2.3	19	0.0250	0.14		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
3.2	100	Total			

### Subcatchment 11S: EA-4 Imp

Hydrograph



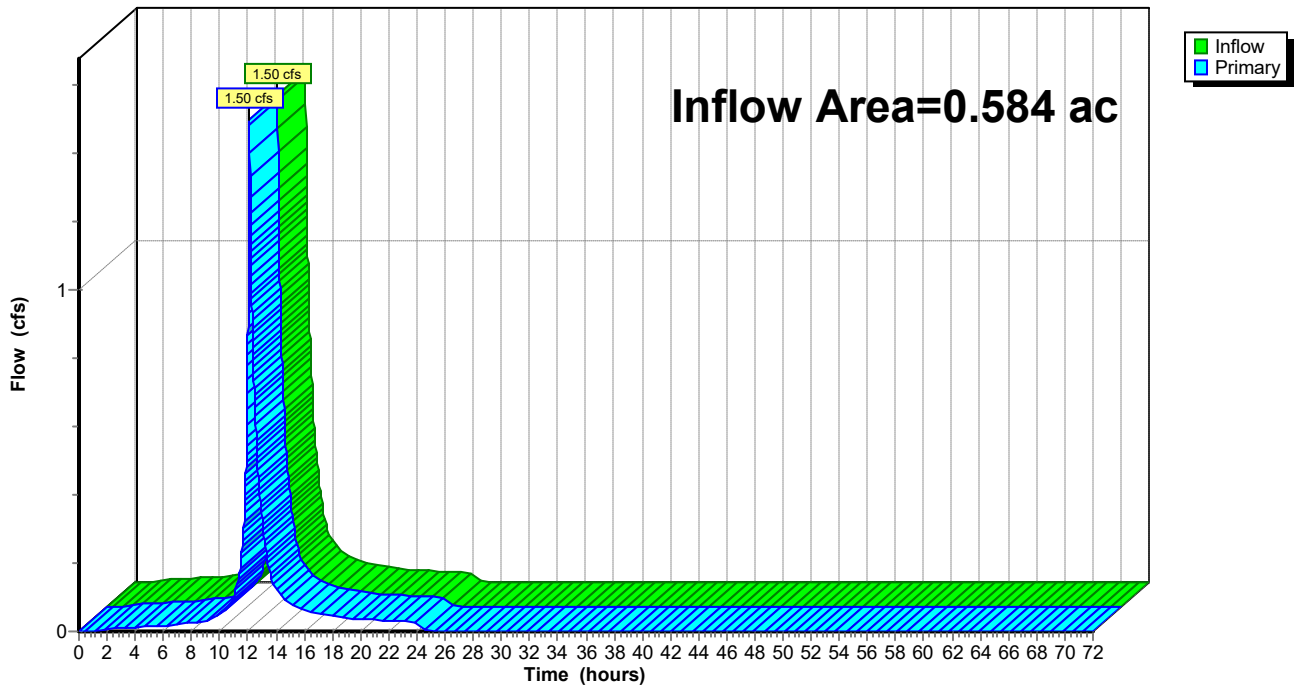
### Summary for Pond 12P: EA-4 - E Basin

Inflow Area = 0.584 ac, 38.70% Impervious, Inflow Depth = 3.29" for 10\_yr\_stm 2019 event  
Inflow = 1.50 cfs @ 12.12 hrs, Volume= 0.160 af  
Primary = 1.50 cfs @ 12.12 hrs, Volume= 0.160 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Pond 12P: EA-4 - E Basin

Hydrograph



**Summary for Subcatchment 1S: EA-1 Per**

Runoff = 1.46 cfs @ 12.34 hrs, Volume= 0.217 af, Depth= 2.97"

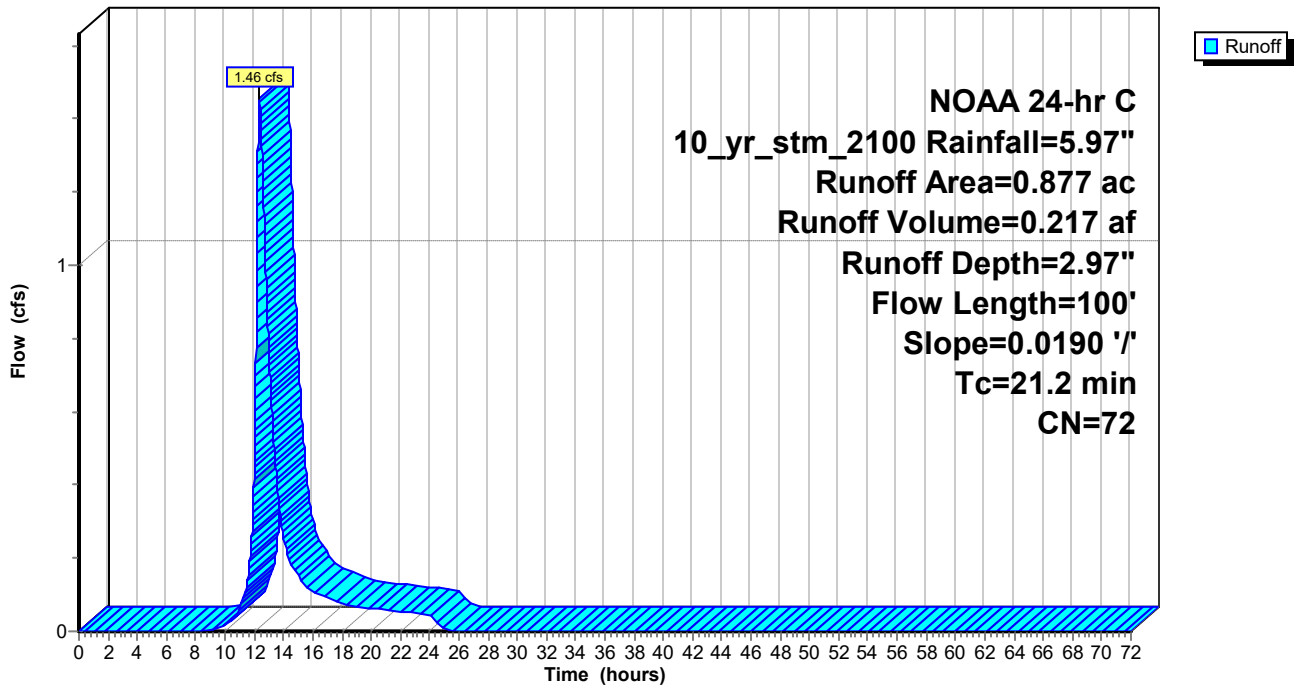
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 10\_yr\_stm\_2100 Rainfall=5.97"

Area (ac)	CN	Description
0.502	74	>75% Grass cover, Good, HSG C
0.375	70	Woods, Good, HSG C
0.877	72	Weighted Average
0.877		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	13	0.0190	0.11		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
19.3	87	0.0190	0.07		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.29"
21.2	100	Total			

**Subcatchment 1S: EA-1 Per**

Hydrograph



### Summary for Subcatchment 2S: EA-1 Imp

Runoff = 5.85 cfs @ 12.11 hrs, Volume= 0.441 af, Depth= 5.73"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 10\_yr\_stm\_2100 Rainfall=5.97"

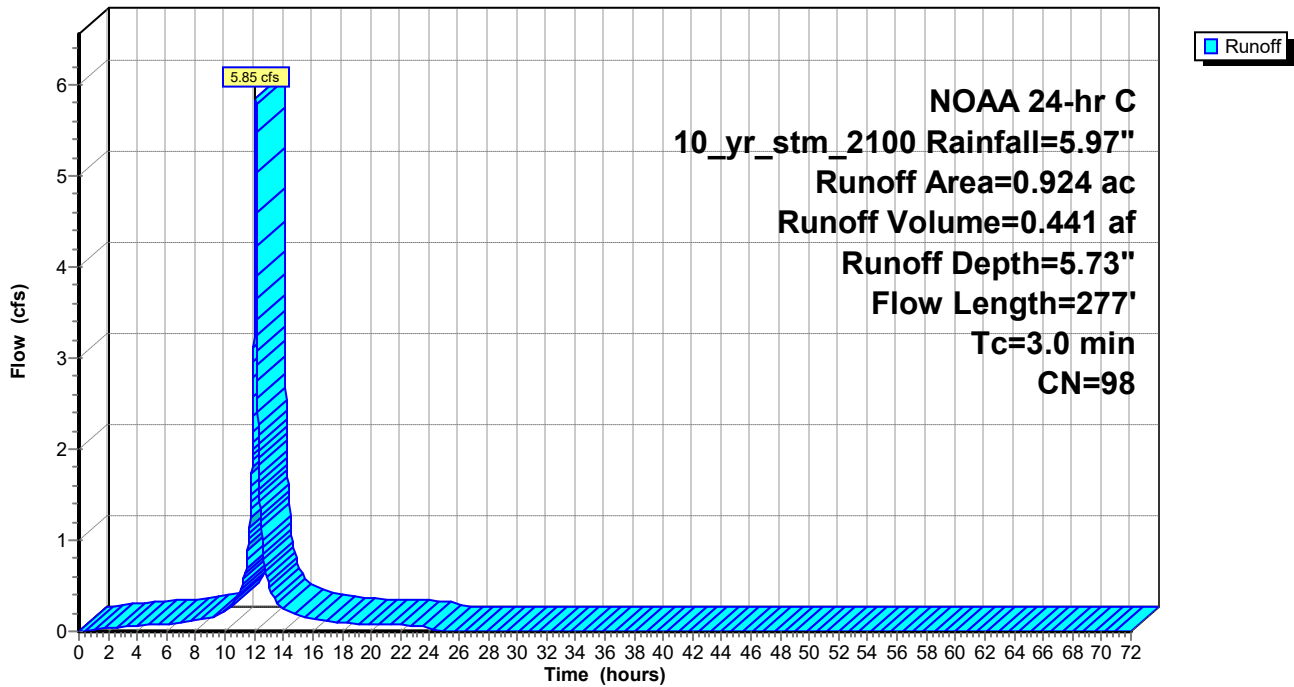
Area (ac)	CN	Description
0.727	98	Paved parking, HSG C
0.197	98	Roofs, HSG C
0.924	98	Weighted Average
0.924		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	100	0.0060	0.86		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
1.1	177	0.0180	2.72		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
3.0	277	Total			

### Subcatchment 2S: EA-1 Imp

Hydrograph



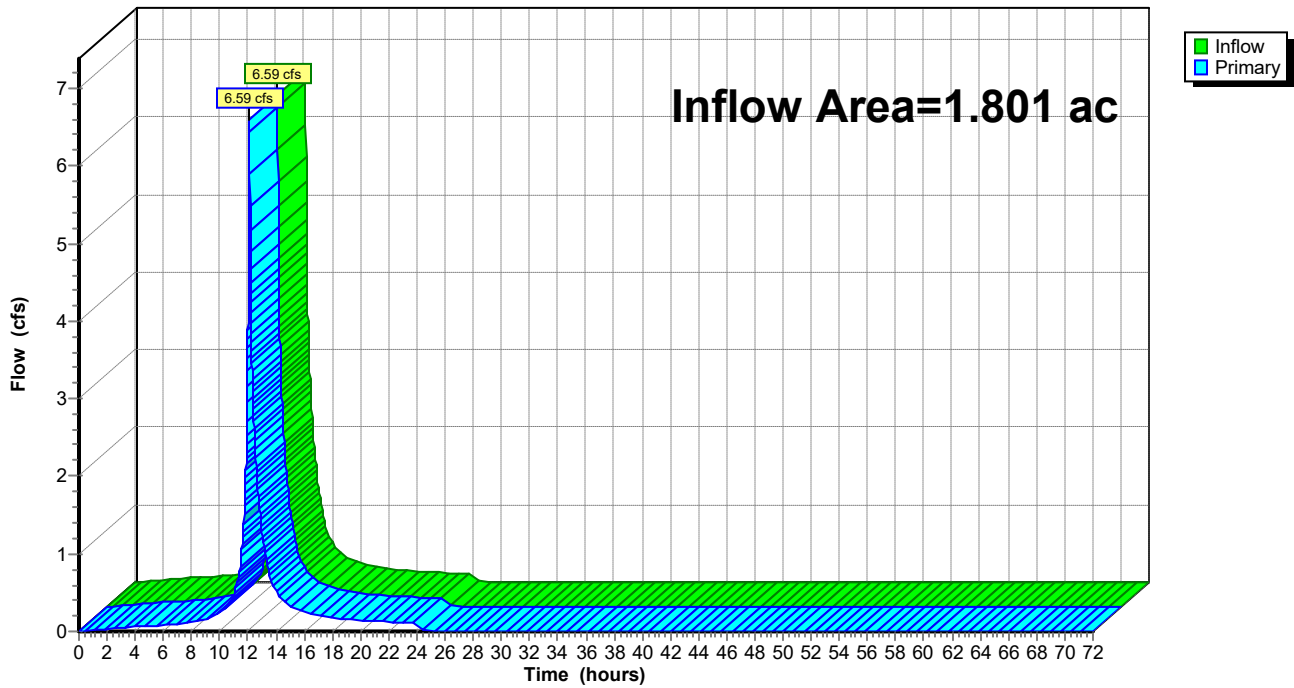
### Summary for Pond 3P: EA-1 - ROW / NE Wetlands

Inflow Area = 1.801 ac, 51.30% Impervious, Inflow Depth = 4.39" for 10\_yr\_stm\_2100 event  
Inflow = 6.59 cfs @ 12.11 hrs, Volume= 0.658 af  
Primary = 6.59 cfs @ 12.11 hrs, Volume= 0.658 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Pond 3P: EA-1 - ROW / NE Wetlands

Hydrograph



**Summary for Subcatchment 4S: EA-2 Per**

Runoff = 1.01 cfs @ 12.32 hrs, Volume= 0.139 af, Depth= 3.16"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 10\_yr\_stm\_2100 Rainfall=5.97"

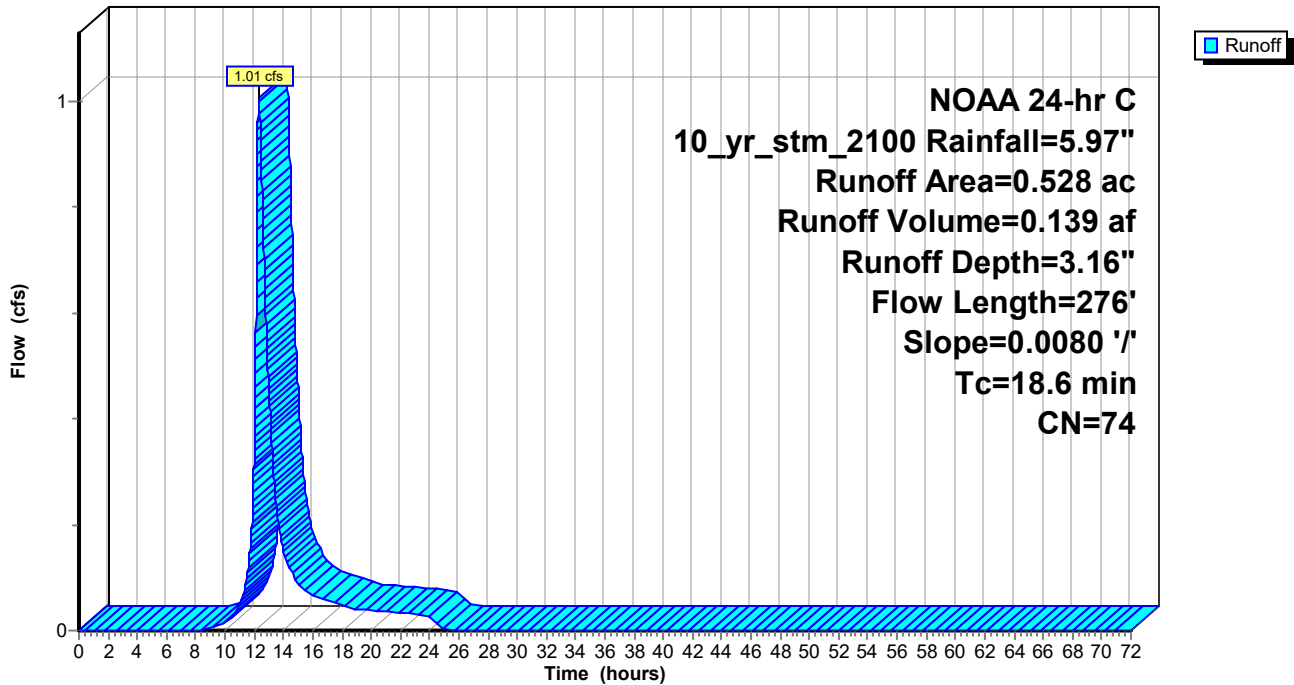
Area (ac)	CN	Description
0.528	74	>75% Grass cover, Good, HSG C
0.528		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9	100	0.0080	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
4.7	176	0.0080	0.63		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
18.6	276	Total			

**Subcatchment 4S: EA-2 Per**

Hydrograph



### Summary for Subcatchment 5S: EA-2 Imp

Runoff = 11.51 cfs @ 12.13 hrs, Volume= 1.020 af, Depth= 5.73"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 10\_yr\_stm\_2100 Rainfall=5.97"

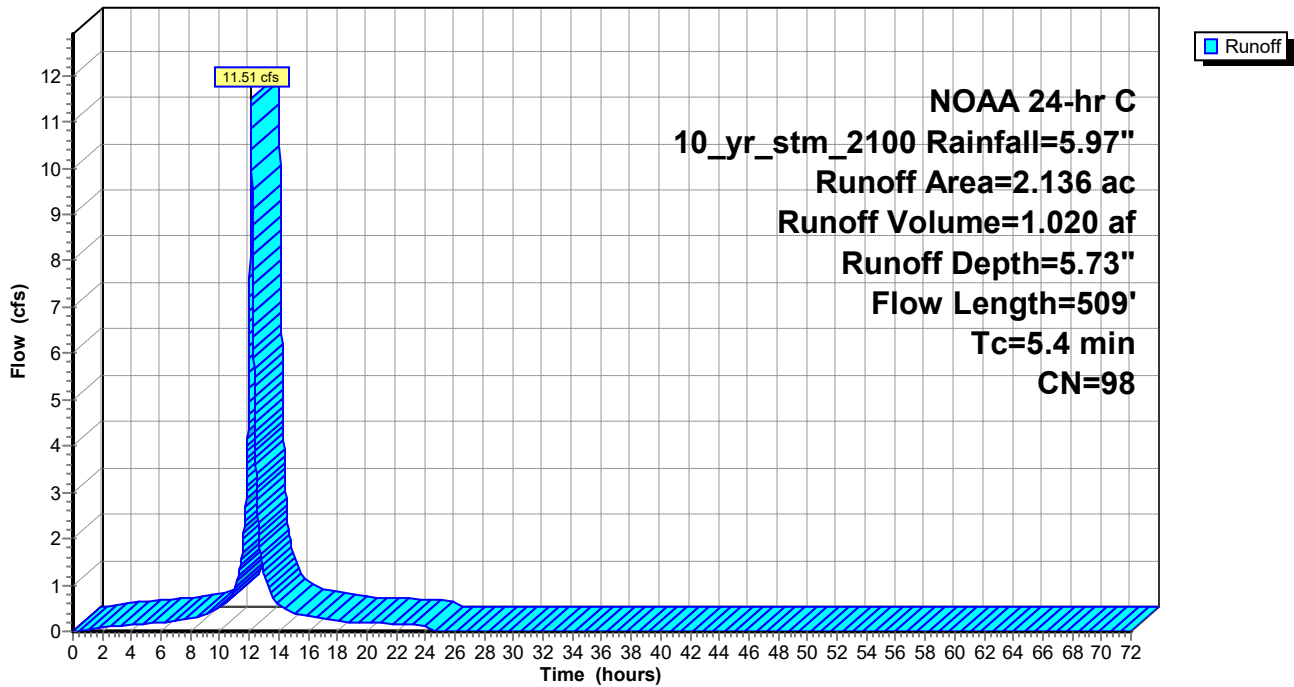
Area (ac)	CN	Description
1.577	98	Paved parking, HSG C
0.559	98	Roofs, HSG C
2.136	98	Weighted Average
2.136		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0100	1.06		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
3.8	409	0.0080	1.82		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
5.4	509	Total			

### Subcatchment 5S: EA-2 Imp

Hydrograph



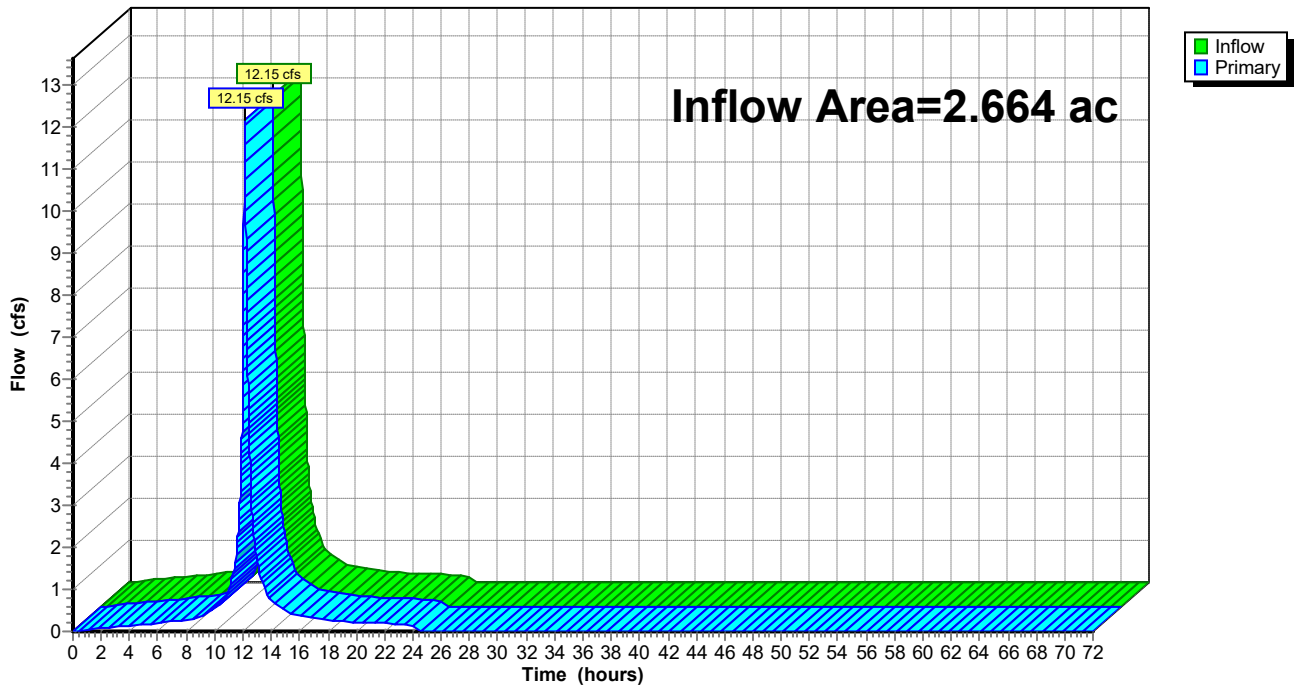
### Summary for Pond 6P: EA-2 - SW Wetland Basin

Inflow Area = 2.664 ac, 80.18% Impervious, Inflow Depth = 5.22" for 10\_yr\_stm\_2100 event  
Inflow = 12.15 cfs @ 12.13 hrs, Volume= 1.159 af  
Primary = 12.15 cfs @ 12.13 hrs, Volume= 1.159 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Pond 6P: EA-2 - SW Wetland Basin

Hydrograph



**Summary for Subcatchment 7S: EA-3 Per**

Runoff = 0.39 cfs @ 12.18 hrs, Volume= 0.037 af, Depth= 3.16"

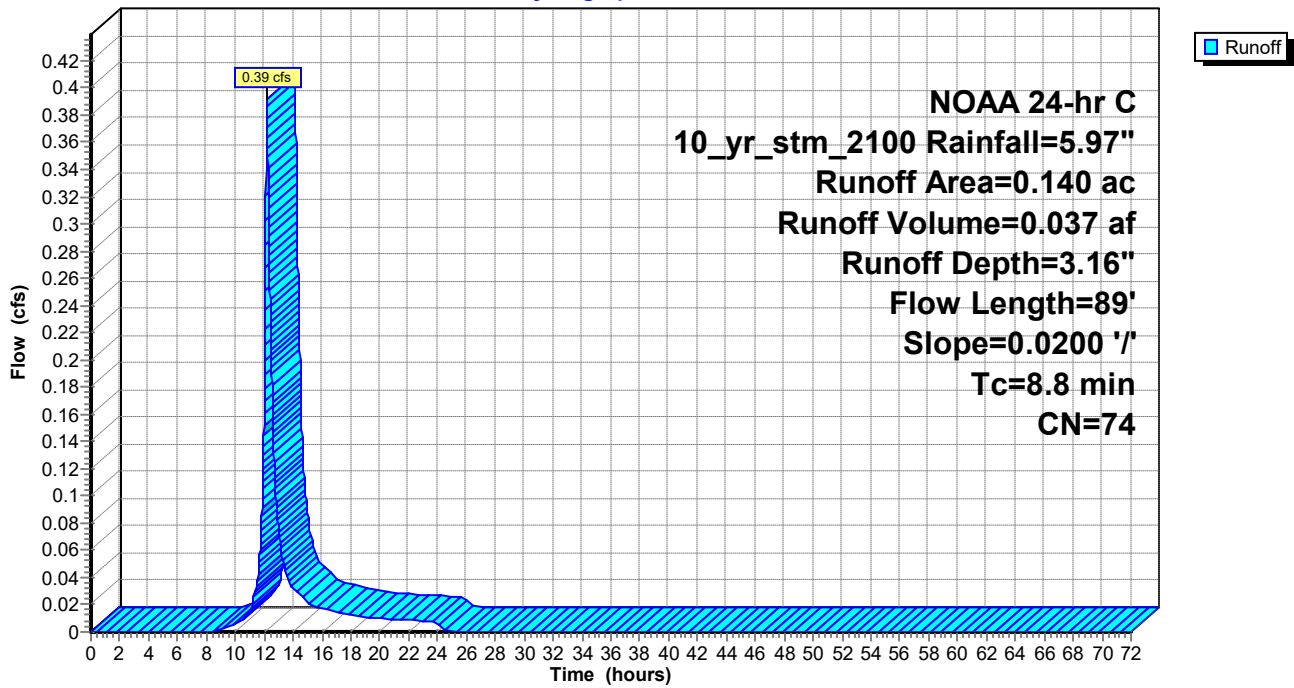
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 10\_yr\_stm\_2100 Rainfall=5.97"

Area (ac)	CN	Description
0.140	74	>75% Grass cover, Good, HSG C
0.140		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	89	0.0200	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.29"

**Subcatchment 7S: EA-3 Per**

Hydrograph



### Summary for Subcatchment 8S: EA-3 Imp

Runoff = 1.31 cfs @ 12.10 hrs, Volume= 0.091 af, Depth= 5.73"

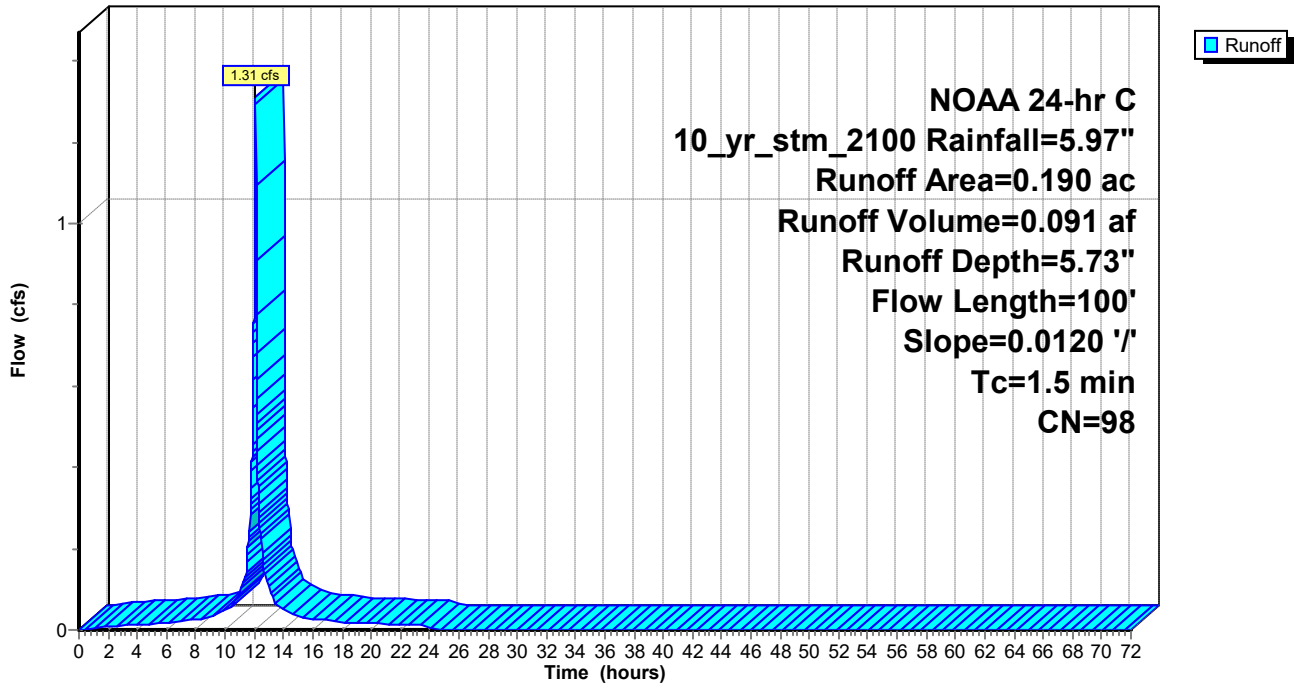
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 10\_yr\_stm\_2100 Rainfall=5.97"

Area (ac)	CN	Description
0.190	98	Paved parking, HSG C
0.190		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	100	0.0120	1.14		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.29"

### Subcatchment 8S: EA-3 Imp

Hydrograph



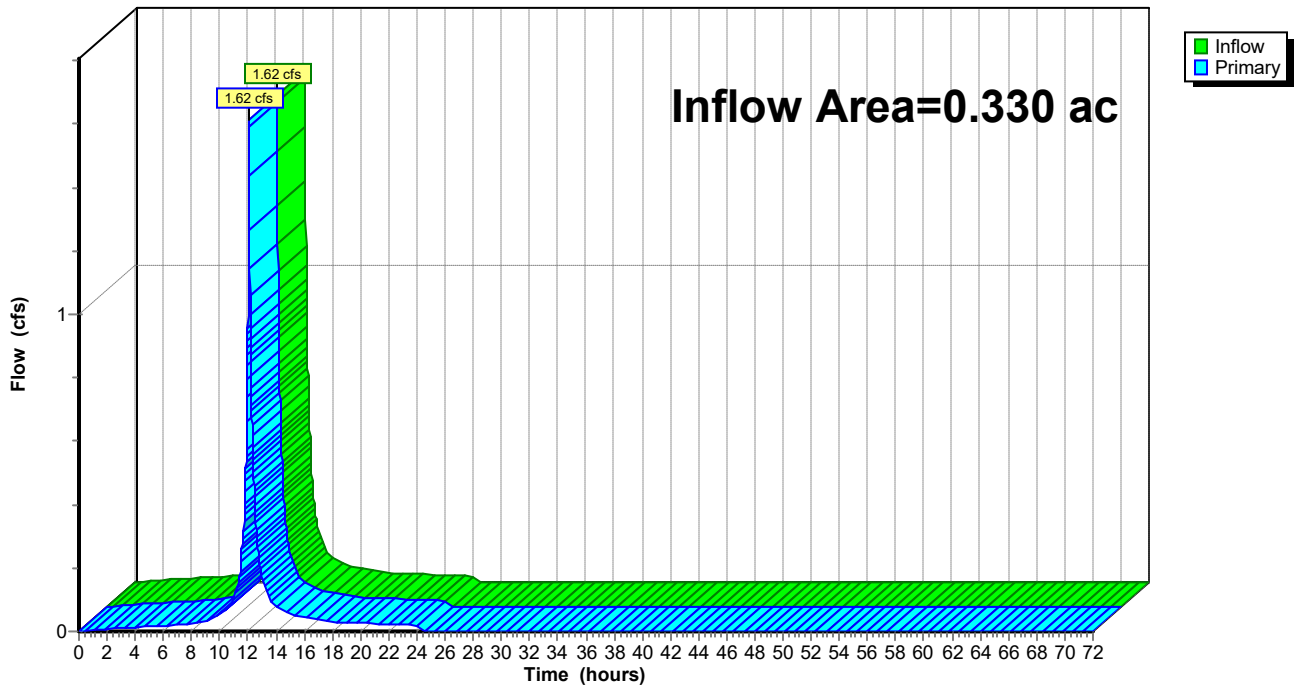
### Summary for Pond 9P: EA-3 - S Basin

Inflow Area = 0.330 ac, 57.58% Impervious, Inflow Depth = 4.64" for 10\_yr\_stm\_2100 event  
Inflow = 1.62 cfs @ 12.10 hrs, Volume= 0.128 af  
Primary = 1.62 cfs @ 12.10 hrs, Volume= 0.128 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Pond 9P: EA-3 - S Basin

Hydrograph



**Summary for Subcatchment 10S: EA-4 Per**

Runoff = 0.67 cfs @ 12.30 hrs, Volume= 0.089 af, Depth= 2.97"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 10\_yr\_stm\_2100 Rainfall=5.97"

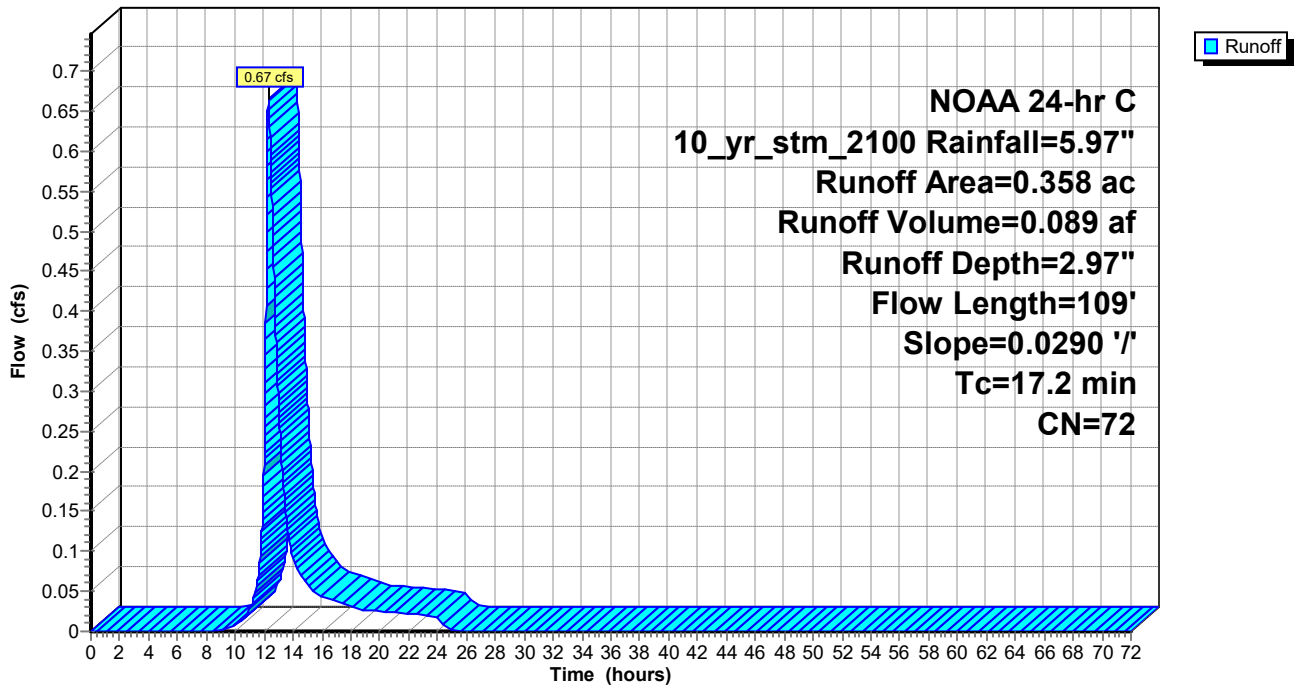
Area (ac)	CN	Description
0.155	74	>75% Grass cover, Good, HSG C
0.203	70	Woods, Good, HSG C
0.358	72	Weighted Average
0.358		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	28	0.0290	0.16		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
14.0	72	0.0290	0.09		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.29"
0.2	9	0.0290	0.85		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
17.2	109	Total			

**Subcatchment 10S: EA-4 Per**

Hydrograph



**Summary for Subcatchment 11S: EA-4 Imp**

Runoff = 1.41 cfs @ 12.11 hrs, Volume= 0.108 af, Depth= 5.73"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 10\_yr\_stm\_2100 Rainfall=5.97"

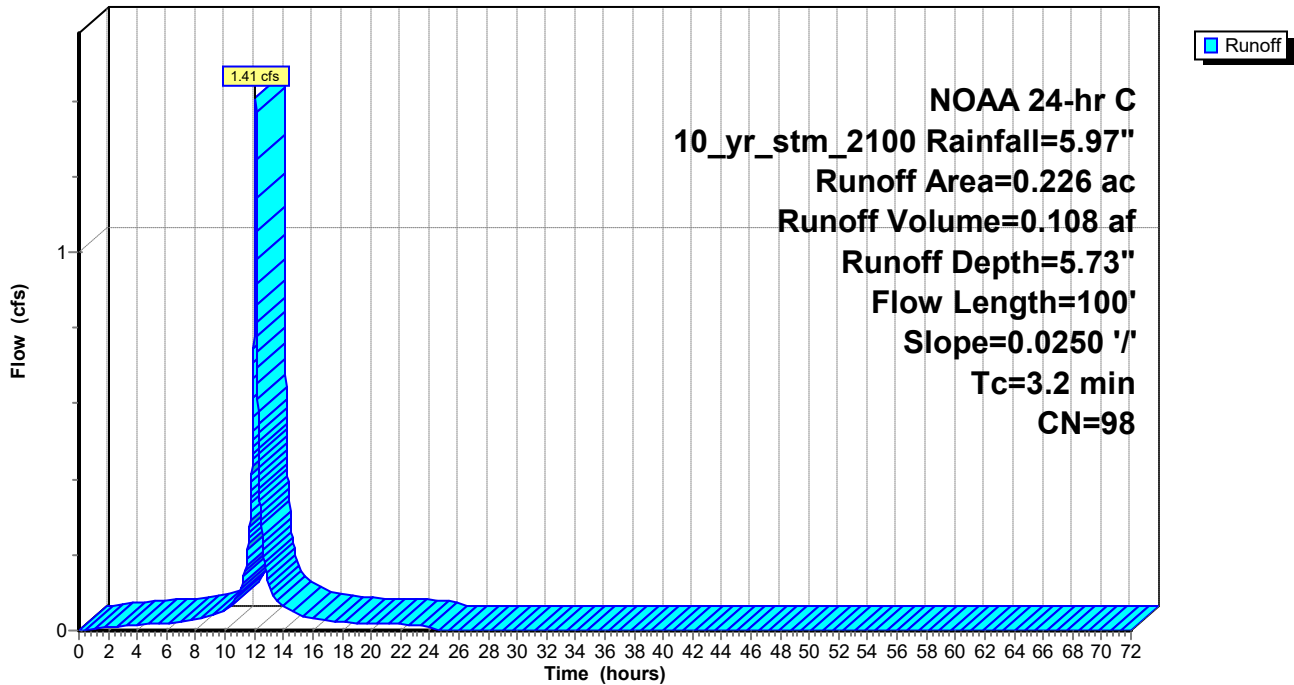
Area (ac)	CN	Description
0.226	98	Paved parking, HSG C
0.226		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	81	0.0250	1.46		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
2.3	19	0.0250	0.14		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
3.2	100	Total			

**Subcatchment 11S: EA-4 Imp**

Hydrograph



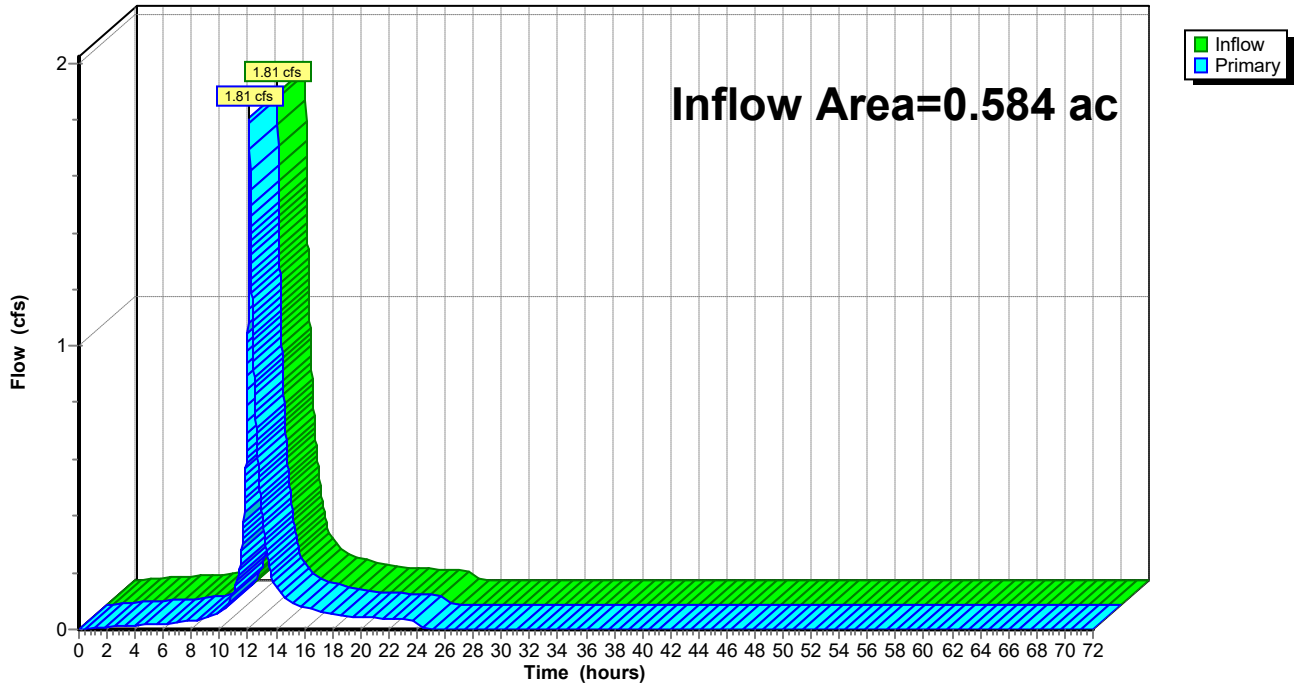
### Summary for Pond 12P: EA-4 - E Basin

Inflow Area = 0.584 ac, 38.70% Impervious, Inflow Depth = 4.04" for 10\_yr\_stm\_2100 event  
Inflow = 1.81 cfs @ 12.12 hrs, Volume= 0.197 af  
Primary = 1.81 cfs @ 12.12 hrs, Volume= 0.197 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Pond 12P: EA-4 - E Basin

Hydrograph



**Summary for Subcatchment 1S: EA-1 Per**

Runoff = 2.70 cfs @ 12.34 hrs, Volume= 0.396 af, Depth= 5.42"

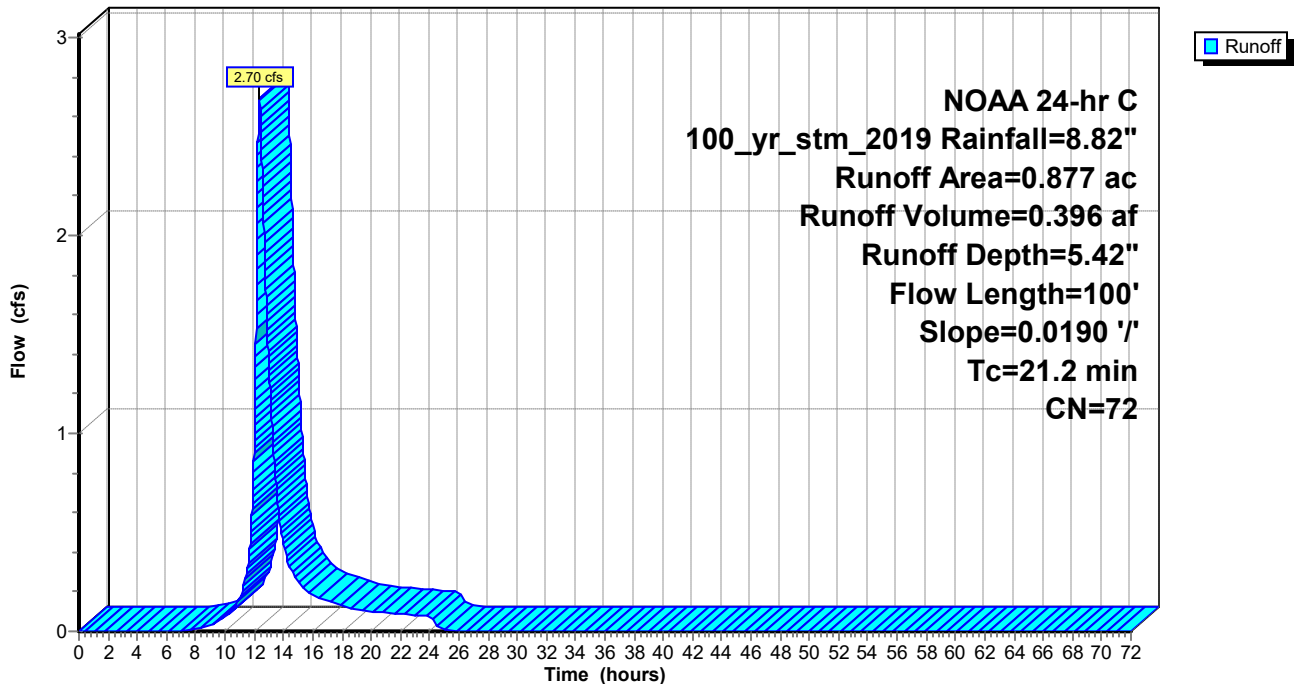
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 100\_yr\_stm\_2019 Rainfall=8.82"

Area (ac)	CN	Description
0.502	74	>75% Grass cover, Good, HSG C
0.375	70	Woods, Good, HSG C
0.877	72	Weighted Average
0.877		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	13	0.0190	0.11		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
19.3	87	0.0190	0.07		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.29"
21.2	100	Total			

**Subcatchment 1S: EA-1 Per**

Hydrograph



### Summary for Subcatchment 2S: EA-1 Imp

Runoff = 8.66 cfs @ 12.11 hrs, Volume= 0.661 af, Depth= 8.58"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 100\_yr\_stm\_2019 Rainfall=8.82"

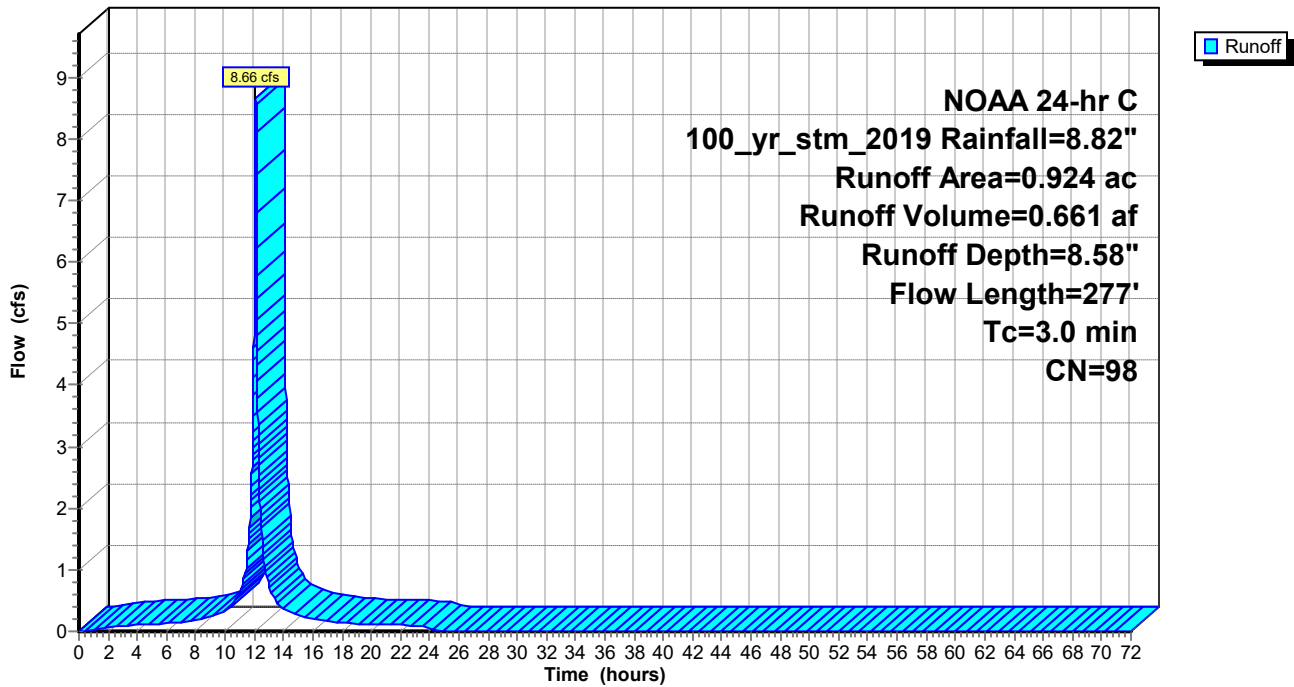
Area (ac)	CN	Description
0.727	98	Paved parking, HSG C
0.197	98	Roofs, HSG C
0.924	98	Weighted Average
0.924		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	100	0.0060	0.86		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
1.1	177	0.0180	2.72		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
3.0	277	Total			

### Subcatchment 2S: EA-1 Imp

Hydrograph



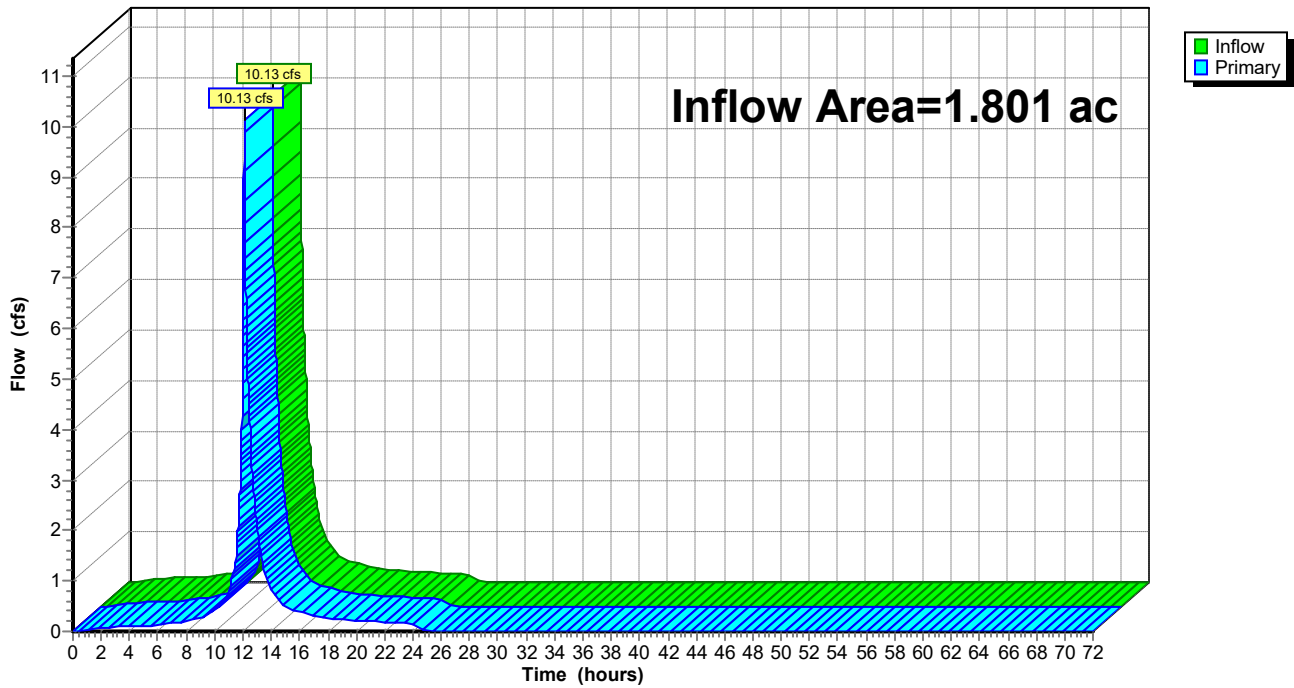
### Summary for Pond 3P: EA-1 - ROW / NE Wetlands

Inflow Area = 1.801 ac, 51.30% Impervious, Inflow Depth = 7.04" for 100\_yr\_stm\_2019 event  
Inflow = 10.13 cfs @ 12.11 hrs, Volume= 1.057 af  
Primary = 10.13 cfs @ 12.11 hrs, Volume= 1.057 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Pond 3P: EA-1 - ROW / NE Wetlands

Hydrograph



**Summary for Subcatchment 4S: EA-2 Per**

Runoff = 1.82 cfs @ 12.31 hrs, Volume= 0.249 af, Depth= 5.67"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 100\_yr\_stm\_2019 Rainfall=8.82"

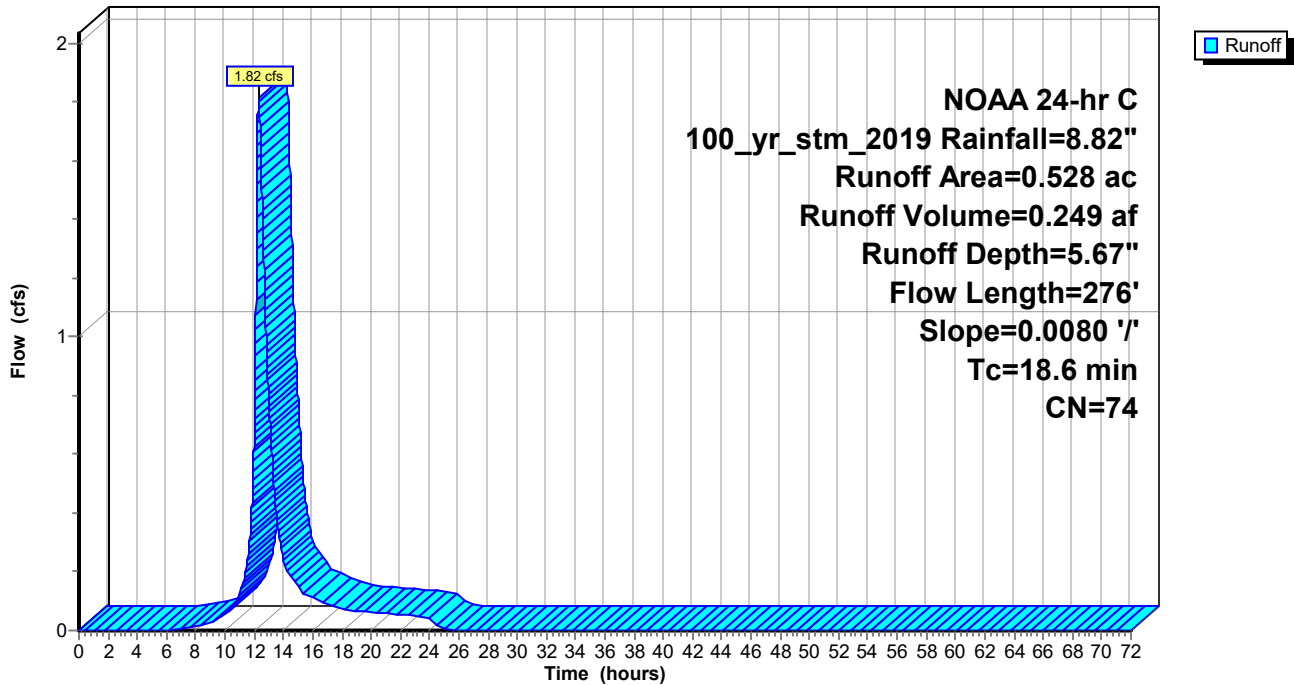
Area (ac)	CN	Description
0.528	74	>75% Grass cover, Good, HSG C
0.528		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9	100	0.0080	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
4.7	176	0.0080	0.63		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
18.6	276	Total			

**Subcatchment 4S: EA-2 Per**

Hydrograph



### Summary for Subcatchment 5S: EA-2 Imp

Runoff = 17.05 cfs @ 12.13 hrs, Volume= 1.527 af, Depth= 8.58"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 100\_yr\_stm\_2019 Rainfall=8.82"

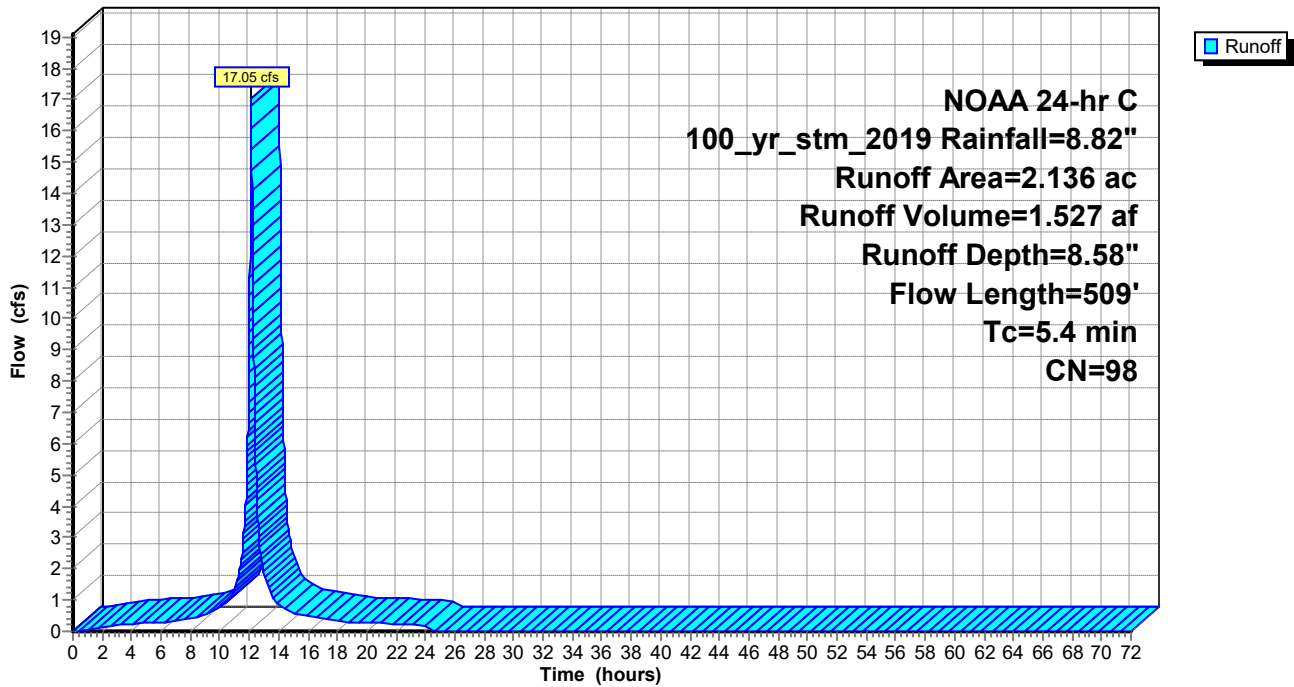
Area (ac)	CN	Description
1.577	98	Paved parking, HSG C
0.559	98	Roofs, HSG C
2.136	98	Weighted Average
2.136		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0100	1.06		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
3.8	409	0.0080	1.82		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
5.4	509	Total			

### Subcatchment 5S: EA-2 Imp

Hydrograph



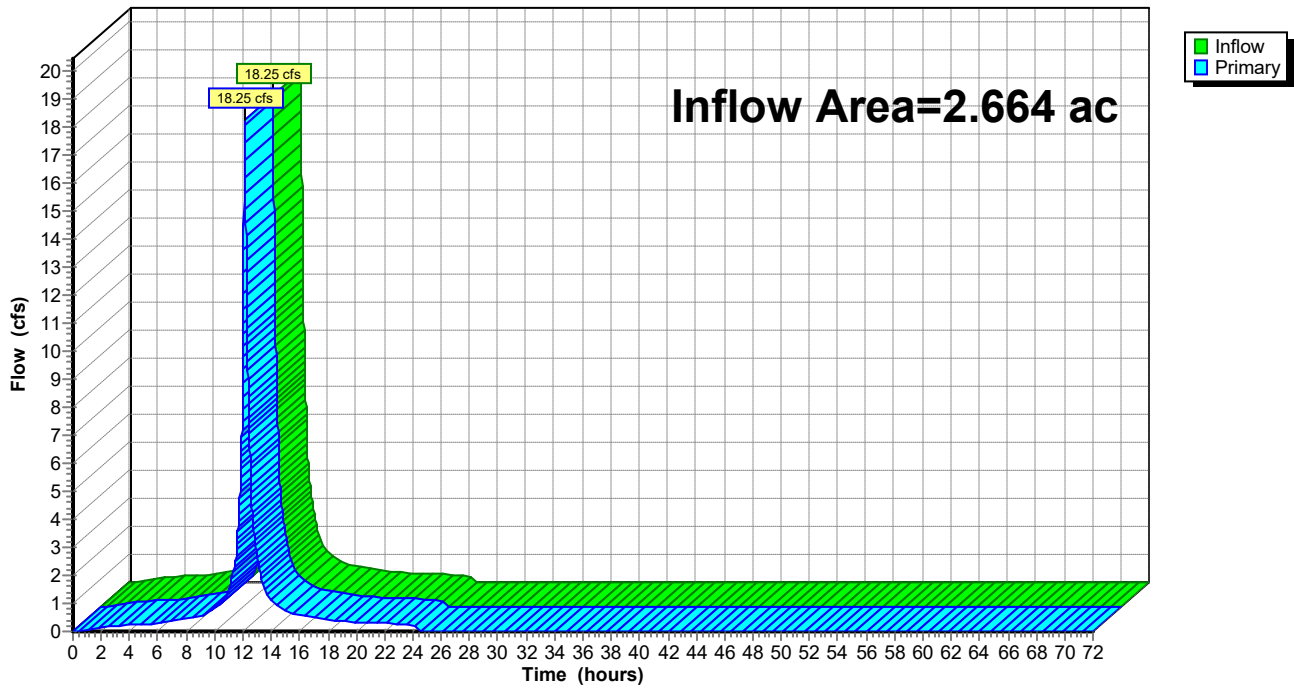
### Summary for Pond 6P: EA-2 - SW Wetland Basin

Inflow Area = 2.664 ac, 80.18% Impervious, Inflow Depth = 8.00" for 100\_yr\_stm\_2019 event  
Inflow = 18.25 cfs @ 12.13 hrs, Volume= 1.776 af  
Primary = 18.25 cfs @ 12.13 hrs, Volume= 1.776 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Pond 6P: EA-2 - SW Wetland Basin

Hydrograph



### Summary for Subcatchment 7S: EA-3 Per

Runoff = 0.70 cfs @ 12.17 hrs, Volume= 0.066 af, Depth= 5.67"

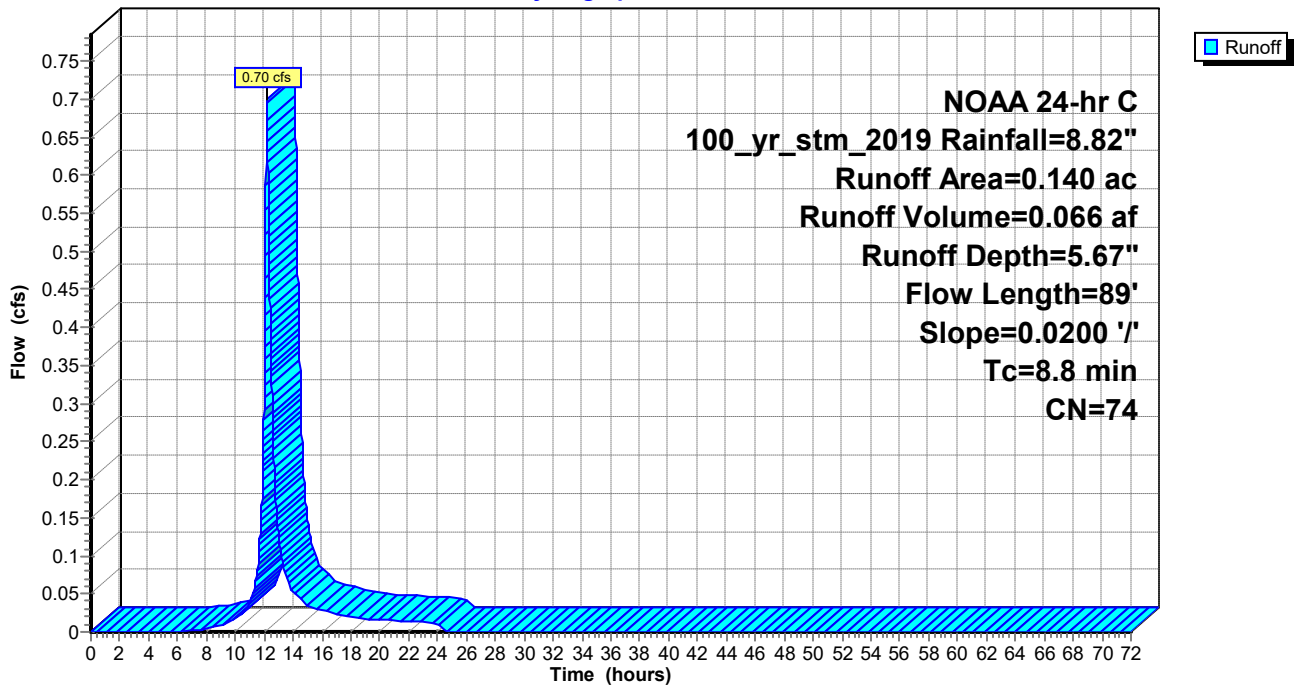
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 100\_yr\_stm\_2019 Rainfall=8.82"

Area (ac)	CN	Description
0.140	74	>75% Grass cover, Good, HSG C
0.140		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	89	0.0200	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.29"

### Subcatchment 7S: EA-3 Per

Hydrograph



### Summary for Subcatchment 8S: EA-3 Imp

Runoff = 1.95 cfs @ 12.10 hrs, Volume= 0.136 af, Depth= 8.58"

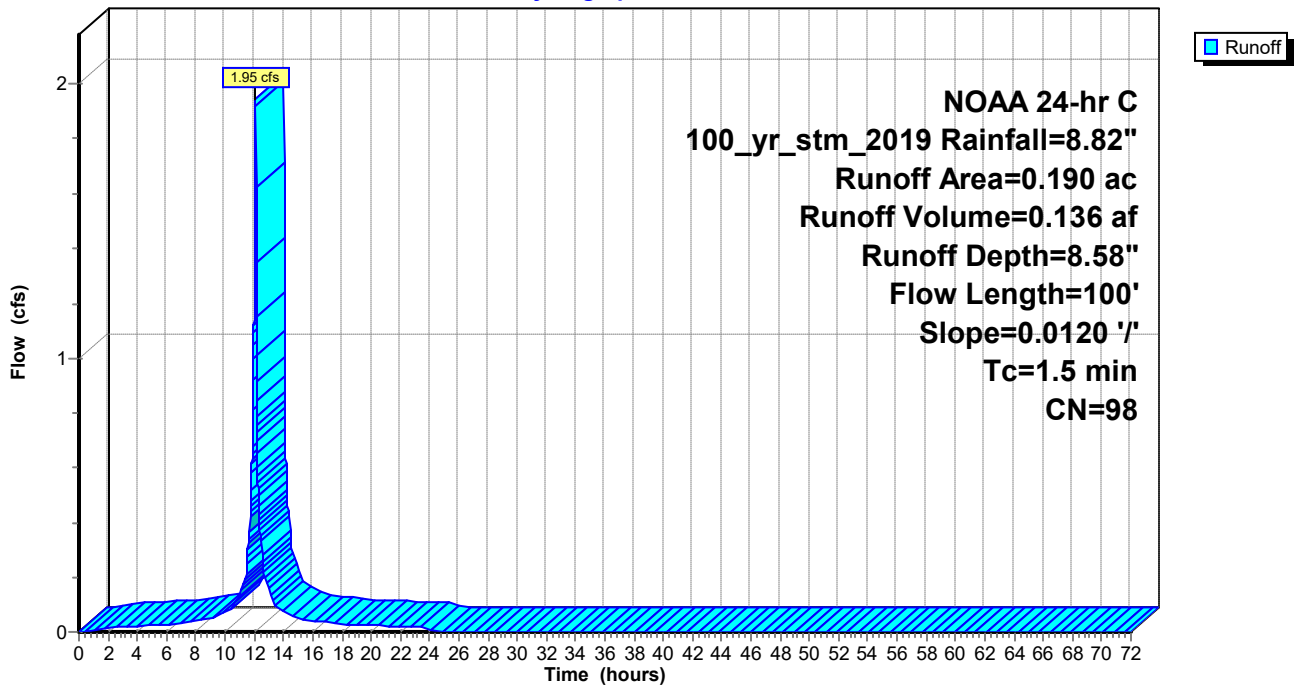
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 100\_yr\_stm\_2019 Rainfall=8.82"

Area (ac)	CN	Description
0.190	98	Paved parking, HSG C
0.190		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	100	0.0120	1.14		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"

### Subcatchment 8S: EA-3 Imp

Hydrograph



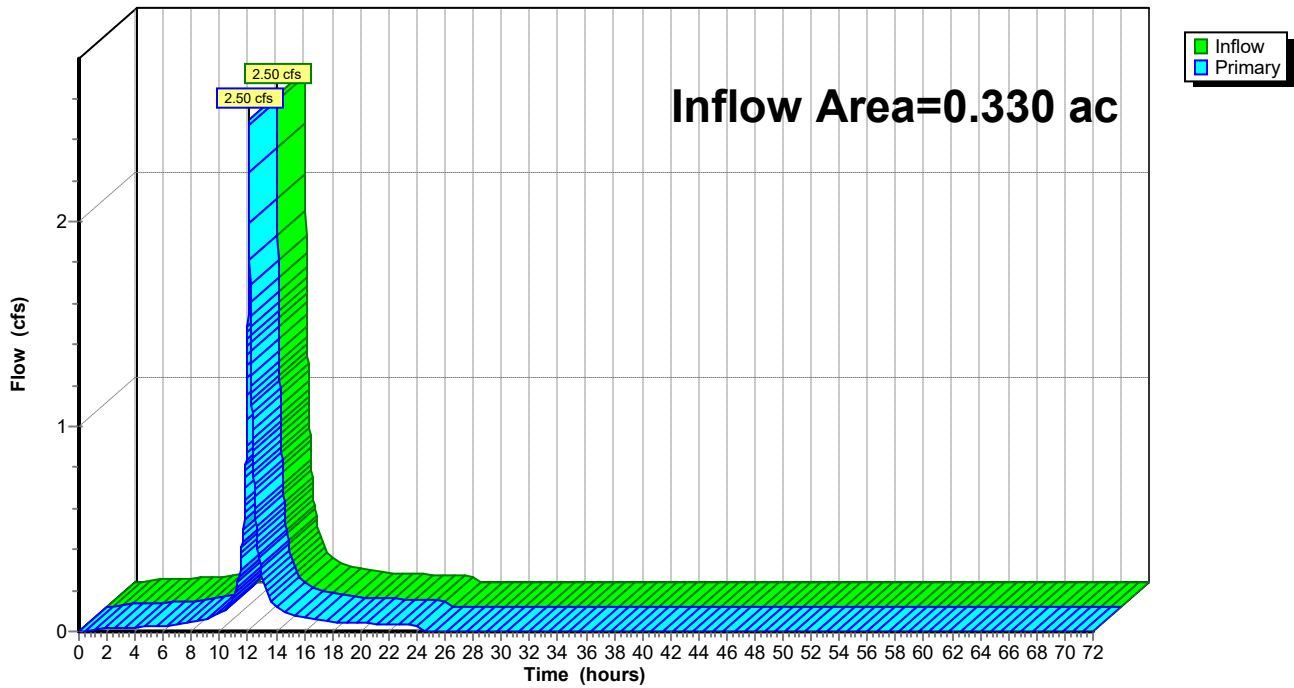
### Summary for Pond 9P: EA-3 - S Basin

Inflow Area = 0.330 ac, 57.58% Impervious, Inflow Depth = 7.34" for 100\_yr\_stm\_2019 event  
Inflow = 2.50 cfs @ 12.10 hrs, Volume= 0.202 af  
Primary = 2.50 cfs @ 12.10 hrs, Volume= 0.202 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Pond 9P: EA-3 - S Basin

Hydrograph



**Summary for Subcatchment 10S: EA-4 Per**

Runoff = 1.23 cfs @ 12.28 hrs, Volume= 0.162 af, Depth= 5.42"

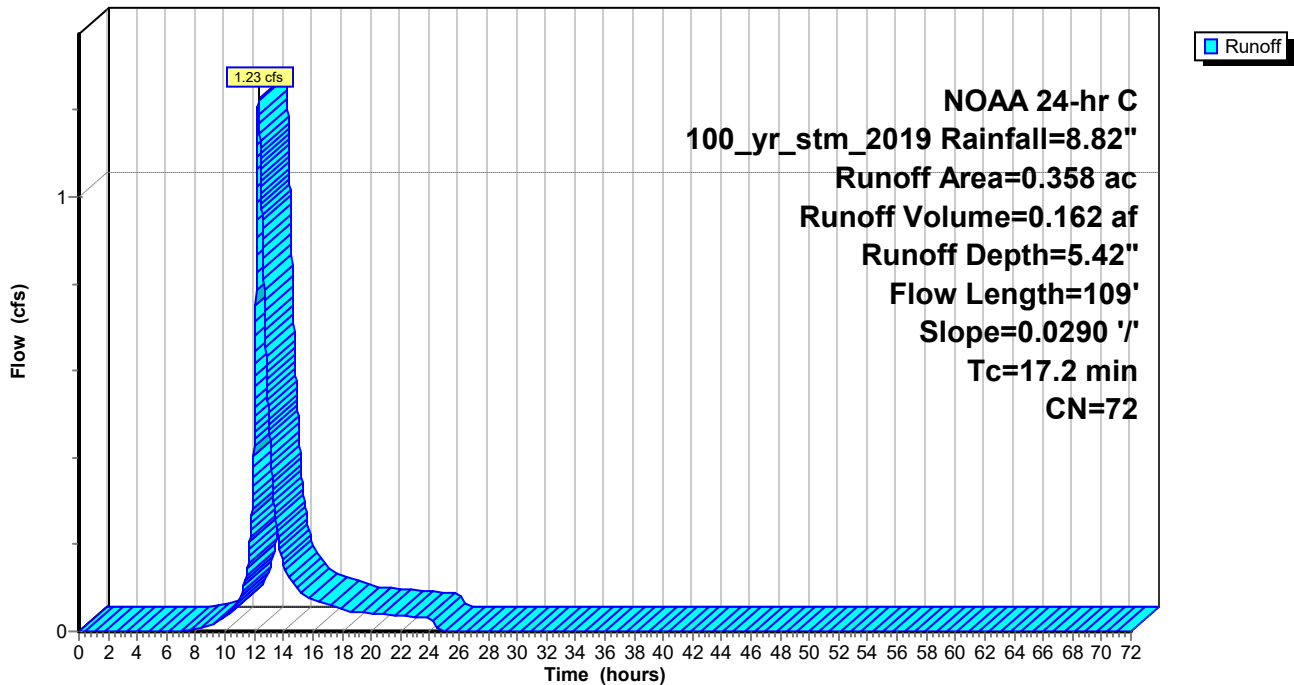
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 100\_yr\_stm\_2019 Rainfall=8.82"

Area (ac)	CN	Description
0.155	74	>75% Grass cover, Good, HSG C
0.203	70	Woods, Good, HSG C
0.358	72	Weighted Average
0.358		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	28	0.0290	0.16		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
14.0	72	0.0290	0.09		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.29"
0.2	9	0.0290	0.85		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
17.2	109	Total			

**Subcatchment 10S: EA-4 Per**

Hydrograph



**Summary for Subcatchment 11S: EA-4 Imp**

Runoff = 2.08 cfs @ 12.11 hrs, Volume= 0.162 af, Depth= 8.58"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 100\_yr\_stm\_2019 Rainfall=8.82"

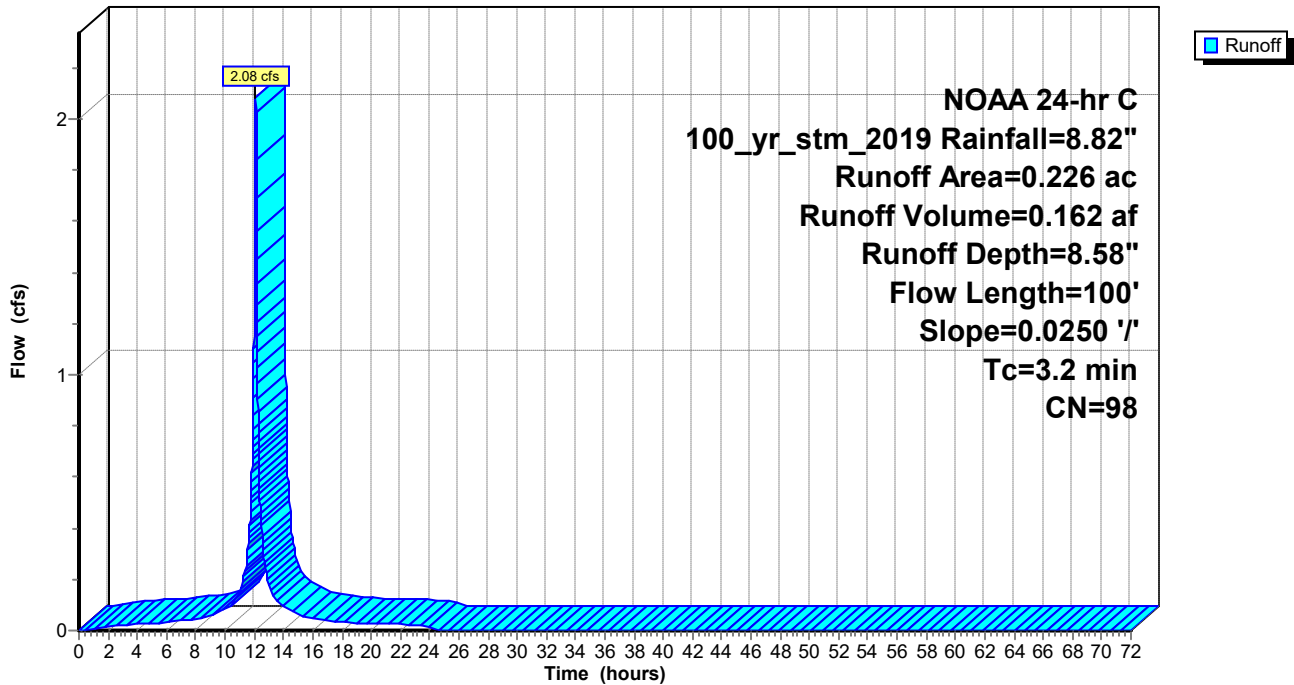
Area (ac)	CN	Description
0.226	98	Paved parking, HSG C
0.226		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	81	0.0250	1.46		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
2.3	19	0.0250	0.14		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
3.2	100	Total			

**Subcatchment 11S: EA-4 Imp**

Hydrograph



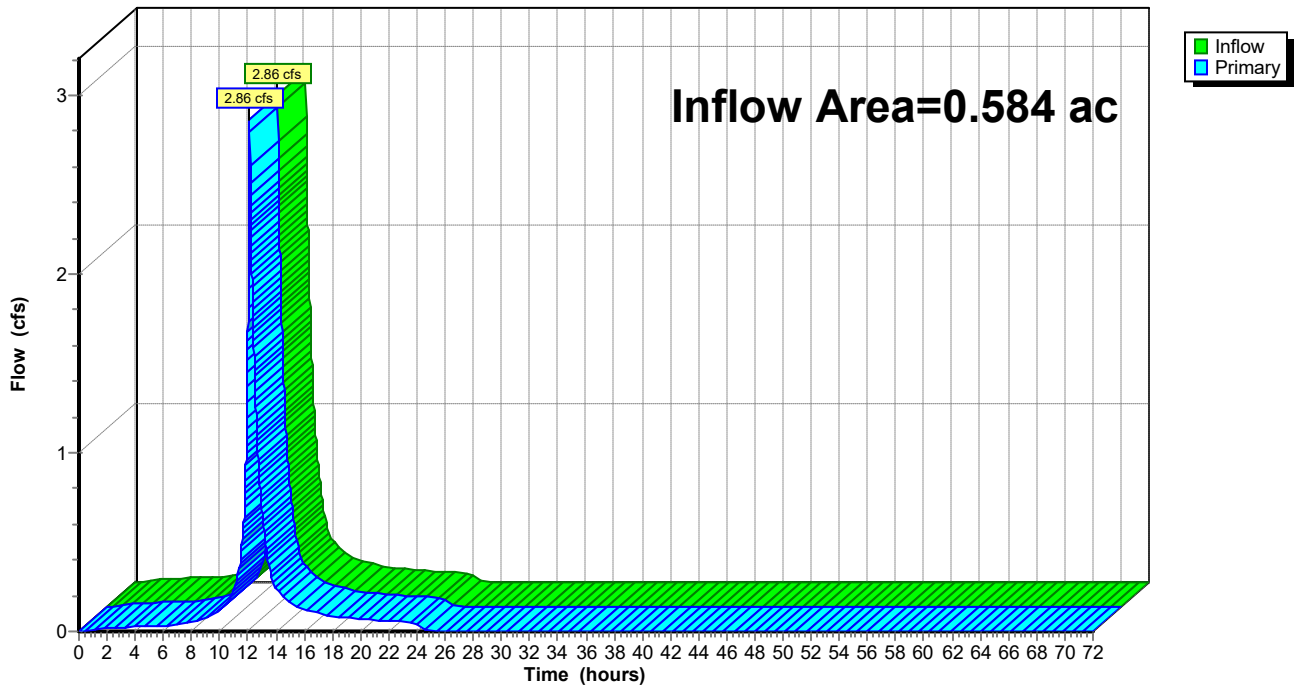
### Summary for Pond 12P: EA-4 - E Basin

Inflow Area = 0.584 ac, 38.70% Impervious, Inflow Depth = 6.64" for 100\_yr\_stm\_2019 event  
Inflow = 2.86 cfs @ 12.12 hrs, Volume= 0.323 af  
Primary = 2.86 cfs @ 12.12 hrs, Volume= 0.323 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Pond 12P: EA-4 - E Basin

Hydrograph



**Summary for Subcatchment 1S: EA-1 Per**

Runoff = 3.76 cfs @ 12.34 hrs, Volume= 0.554 af, Depth= 7.58"

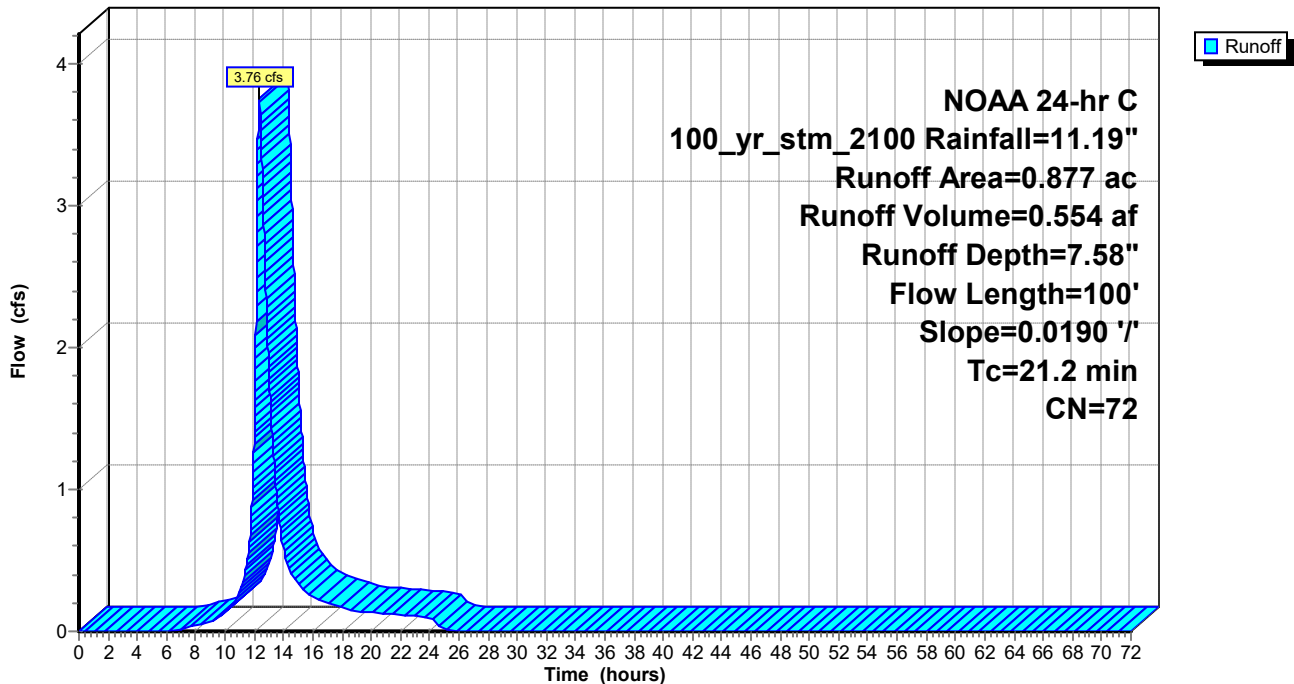
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 100\_yr\_stm\_2100 Rainfall=11.19"

Area (ac)	CN	Description
0.502	74	>75% Grass cover, Good, HSG C
0.375	70	Woods, Good, HSG C
0.877	72	Weighted Average
0.877		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	13	0.0190	0.11		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
19.3	87	0.0190	0.07		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.29"
21.2	100	Total			

**Subcatchment 1S: EA-1 Per**

Hydrograph



### Summary for Subcatchment 2S: EA-1 Imp

Runoff = 10.99 cfs @ 12.11 hrs, Volume= 0.843 af, Depth=10.95"

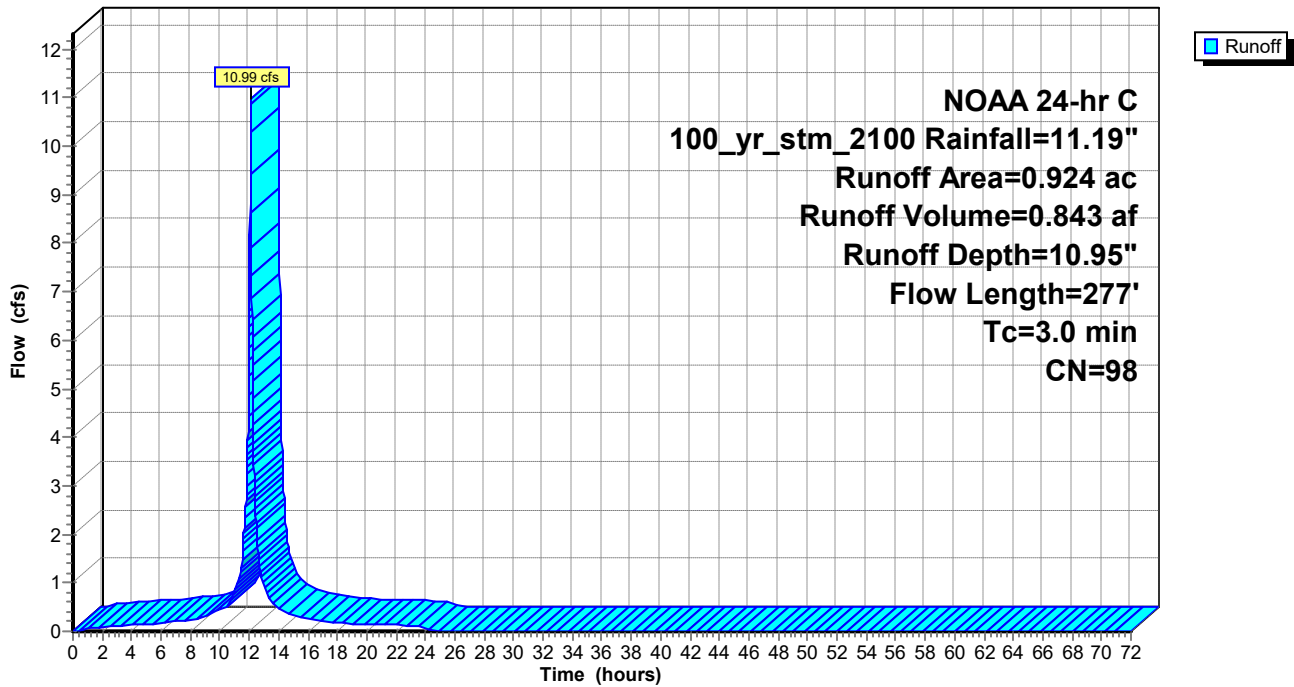
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 100\_yr\_stm\_2100 Rainfall=11.19"

Area (ac)	CN	Description
0.727	98	Paved parking, HSG C
0.197	98	Roofs, HSG C
0.924	98	Weighted Average
0.924		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	100	0.0060	0.86		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
1.1	177	0.0180	2.72		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
3.0	277	Total			

### Subcatchment 2S: EA-1 Imp

Hydrograph



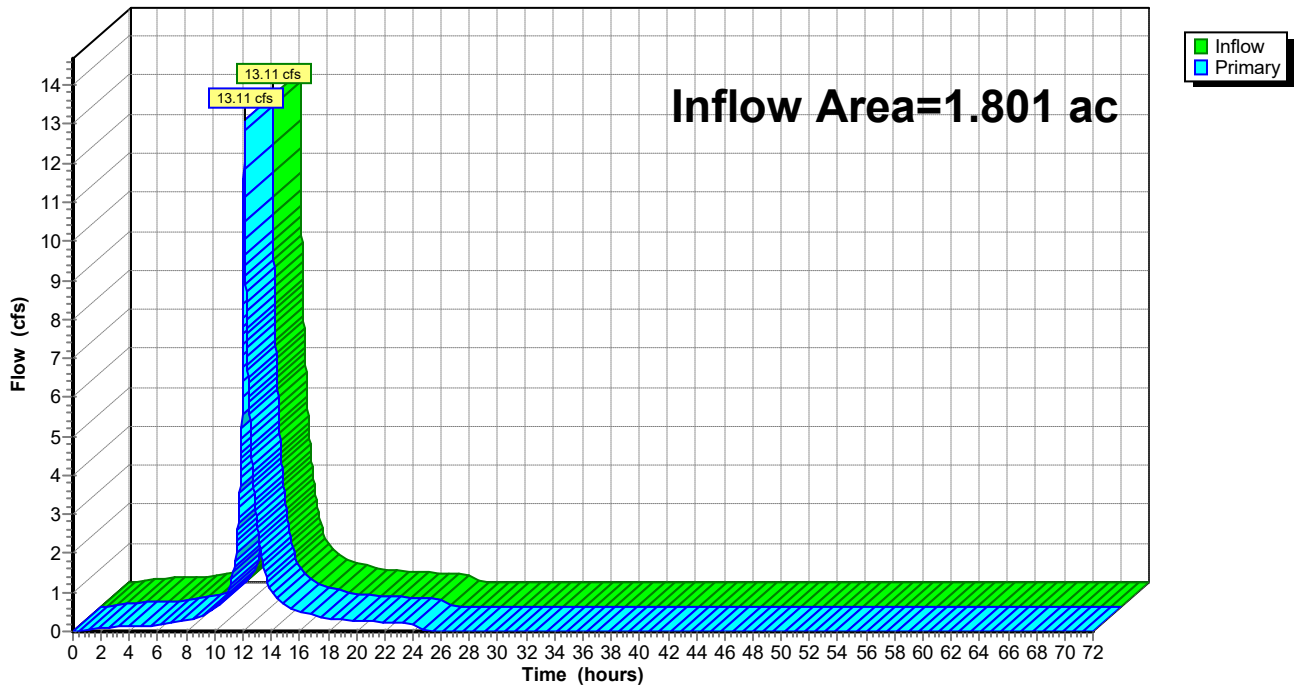
### Summary for Pond 3P: EA-1 - ROW / NE Wetlands

Inflow Area = 1.801 ac, 51.30% Impervious, Inflow Depth = 9.31" for 100\_yr\_stm\_2100 event  
Inflow = 13.11 cfs @ 12.11 hrs, Volume= 1.397 af  
Primary = 13.11 cfs @ 12.11 hrs, Volume= 1.397 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Pond 3P: EA-1 - ROW / NE Wetlands

Hydrograph



**Summary for Subcatchment 4S: EA-2 Per**

Runoff = 2.51 cfs @ 12.31 hrs, Volume= 0.346 af, Depth= 7.86"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 100\_yr\_stm\_2100 Rainfall=11.19"

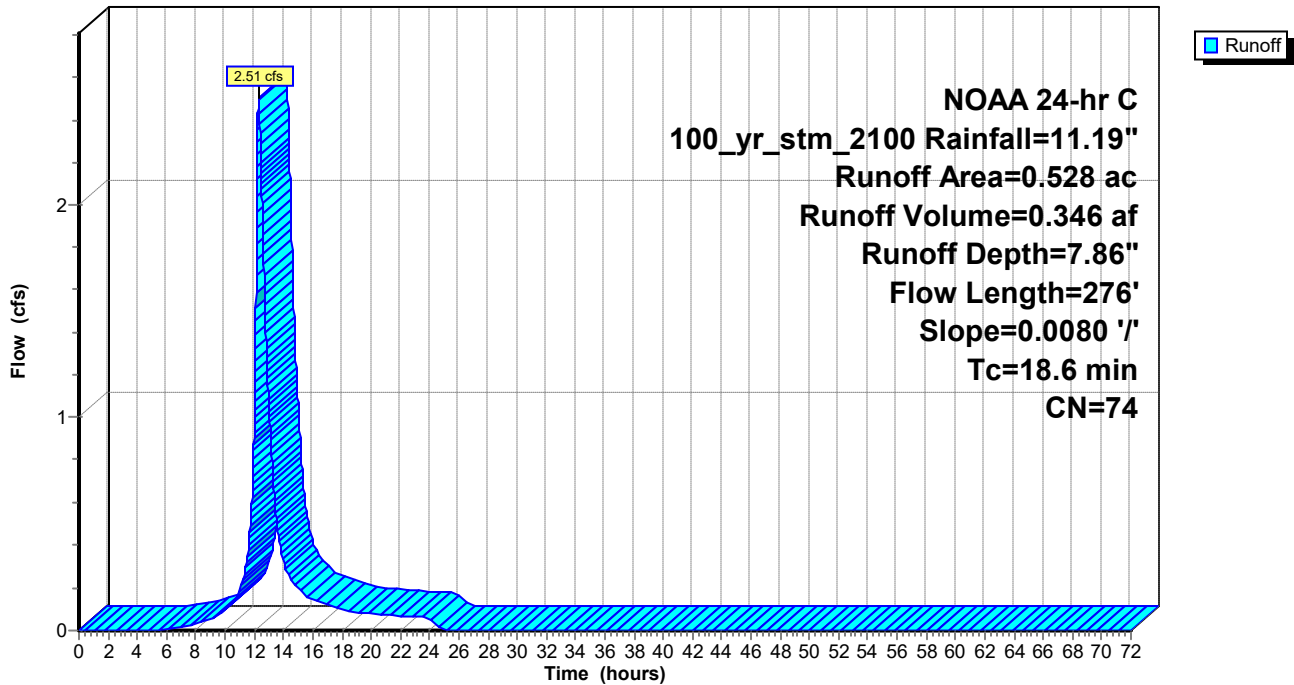
Area (ac)	CN	Description
0.528	74	>75% Grass cover, Good, HSG C
0.528		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9	100	0.0080	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
4.7	176	0.0080	0.63		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
18.6	276	Total			

**Subcatchment 4S: EA-2 Per**

Hydrograph



**Summary for Subcatchment 5S: EA-2 Imp**

Runoff = 21.65 cfs @ 12.13 hrs, Volume= 1.949 af, Depth=10.95"

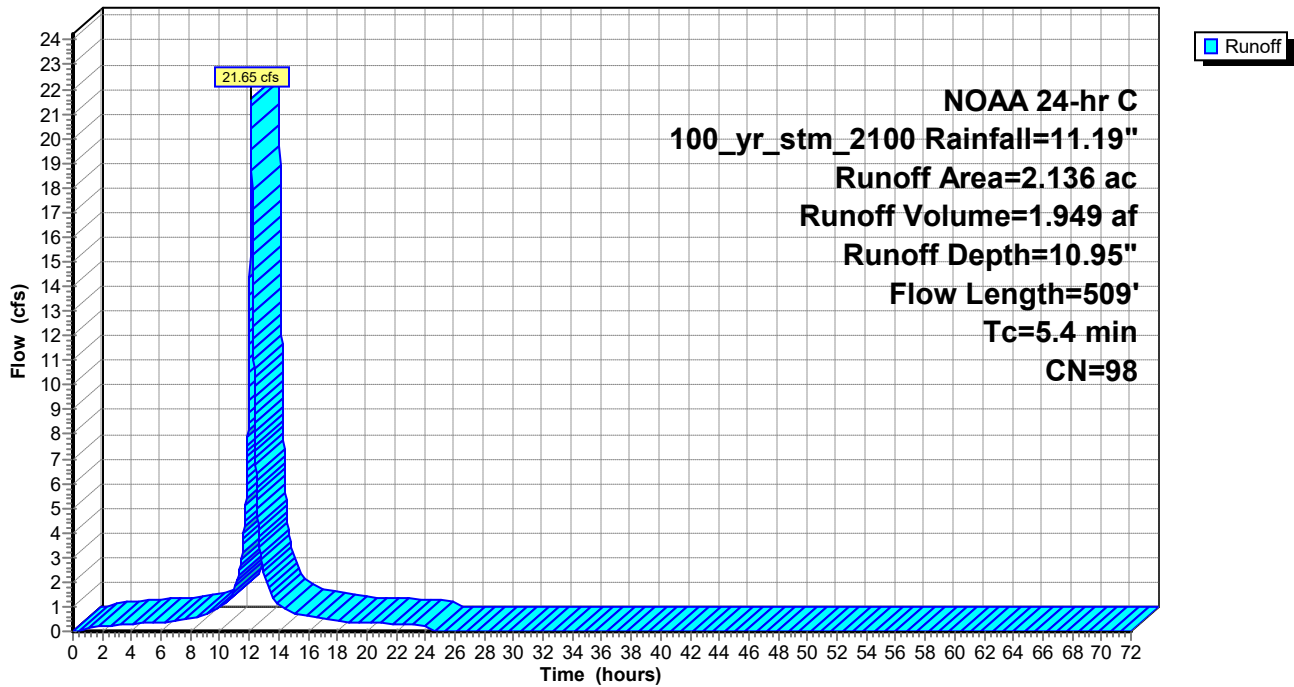
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 100\_yr\_stm\_2100 Rainfall=11.19"

Area (ac)	CN	Description
1.577	98	Paved parking, HSG C
0.559	98	Roofs, HSG C
2.136	98	Weighted Average
2.136		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0100	1.06		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
3.8	409	0.0080	1.82		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
5.4	509	Total			

**Subcatchment 5S: EA-2 Imp**

Hydrograph



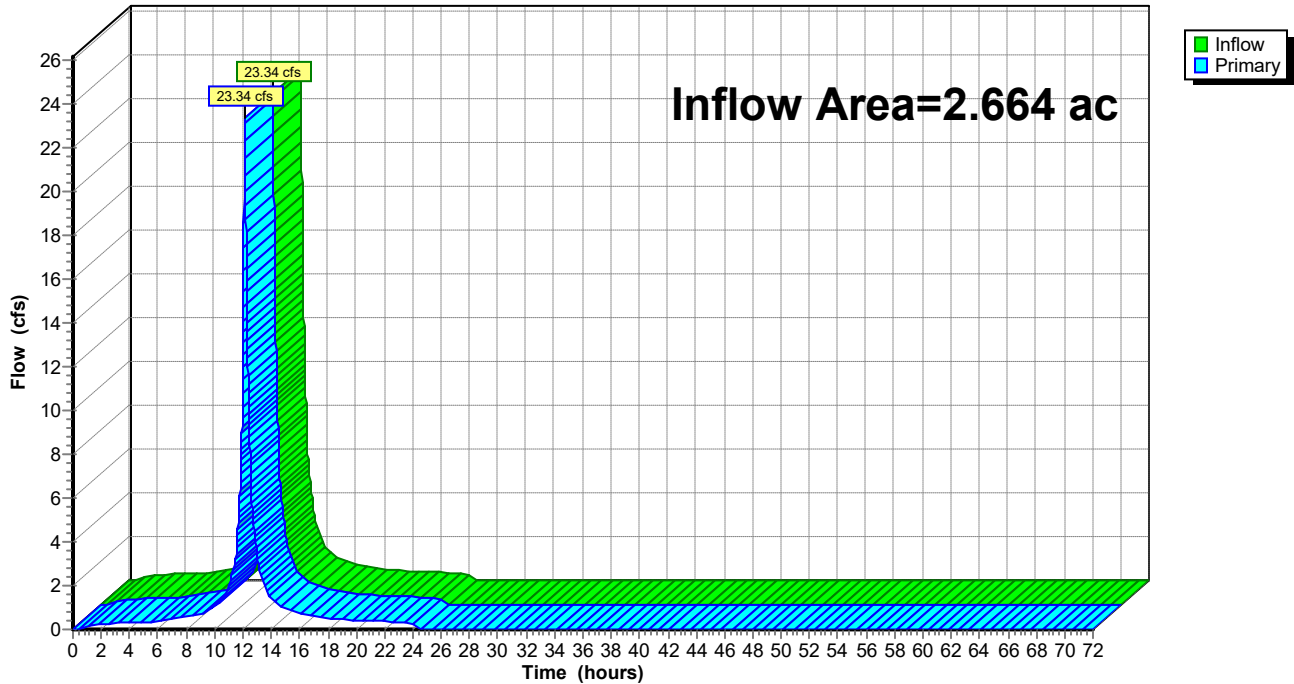
### Summary for Pond 6P: EA-2 - SW Wetland Basin

Inflow Area = 2.664 ac, 80.18% Impervious, Inflow Depth = 10.34" for 100\_yr\_stm\_2100 event  
Inflow = 23.34 cfs @ 12.13 hrs, Volume= 2.295 af  
Primary = 23.34 cfs @ 12.13 hrs, Volume= 2.295 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Pond 6P: EA-2 - SW Wetland Basin

Hydrograph



**Summary for Subcatchment 7S: EA-3 Per**

Runoff = 0.96 cfs @ 12.17 hrs, Volume= 0.092 af, Depth= 7.86"

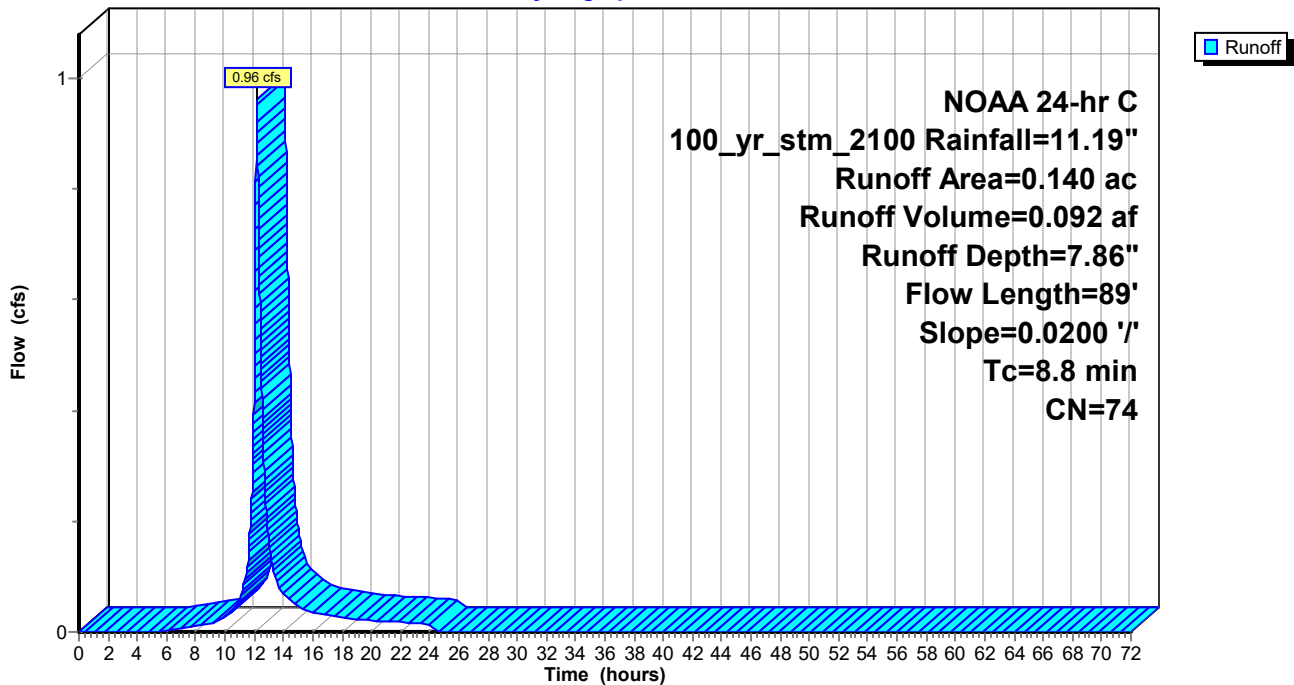
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 100\_yr\_stm\_2100 Rainfall=11.19"

Area (ac)	CN	Description
0.140	74	>75% Grass cover, Good, HSG C
0.140		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	89	0.0200	0.17		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"

**Subcatchment 7S: EA-3 Per**

Hydrograph



**Summary for Subcatchment 8S: EA-3 Imp**

Runoff = 2.47 cfs @ 12.10 hrs, Volume= 0.173 af, Depth=10.95"

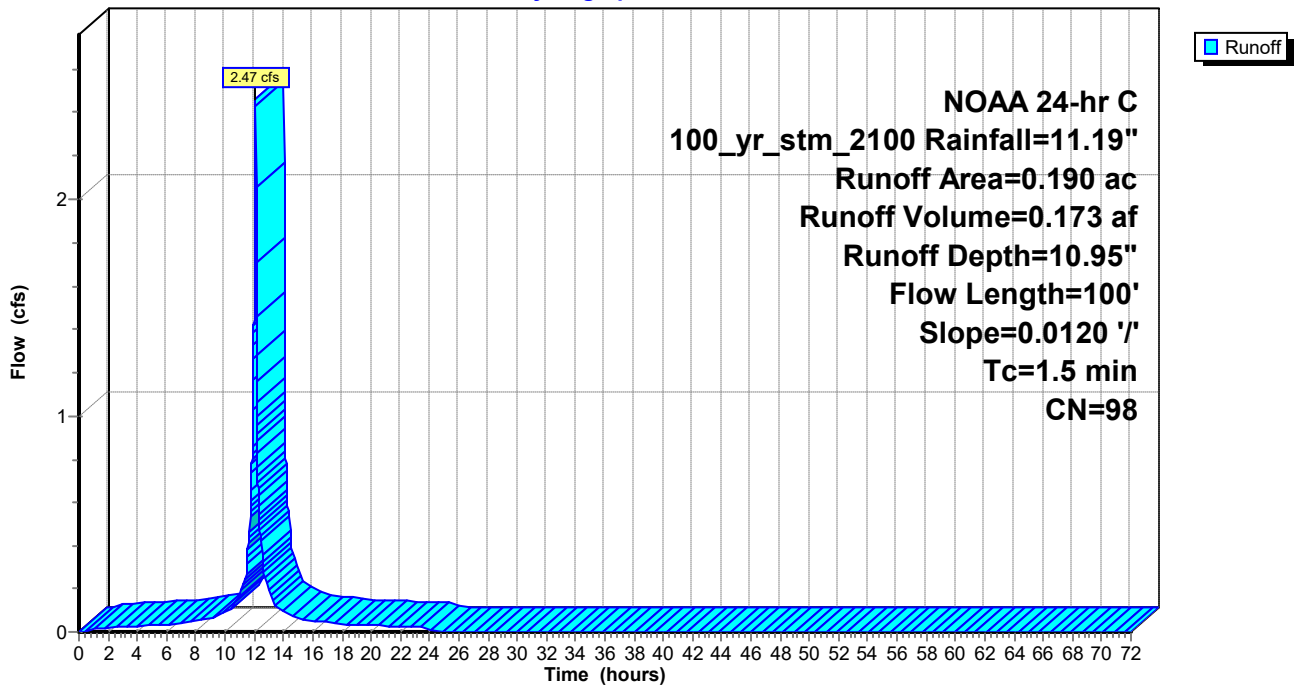
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 100\_yr\_stm\_2100 Rainfall=11.19"

Area (ac)	CN	Description
0.190	98	Paved parking, HSG C
0.190		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	100	0.0120	1.14		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"

**Subcatchment 8S: EA-3 Imp**

Hydrograph



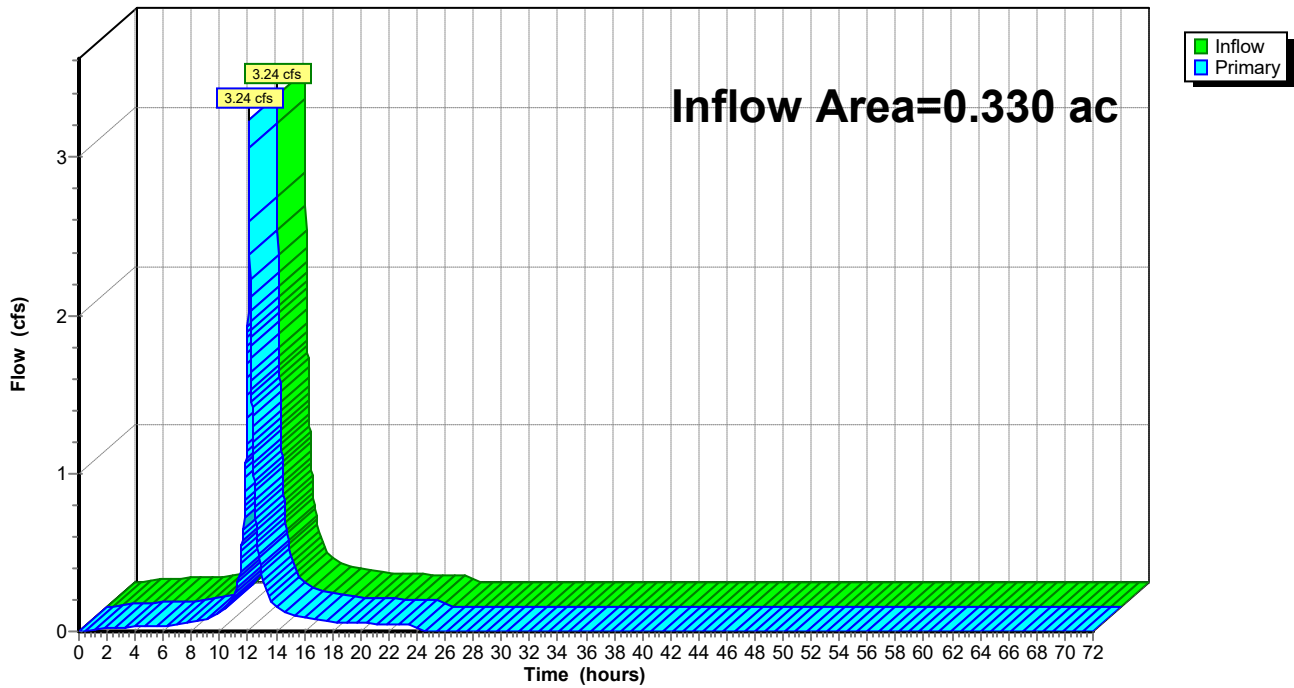
### Summary for Pond 9P: EA-3 - S Basin

Inflow Area = 0.330 ac, 57.58% Impervious, Inflow Depth = 9.64" for 100\_yr\_stm\_2100 event  
Inflow = 3.24 cfs @ 12.10 hrs, Volume= 0.265 af  
Primary = 3.24 cfs @ 12.10 hrs, Volume= 0.265 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Pond 9P: EA-3 - S Basin

Hydrograph



**Summary for Subcatchment 10S: EA-4 Per**

Runoff = 1.72 cfs @ 12.27 hrs, Volume= 0.226 af, Depth= 7.58"

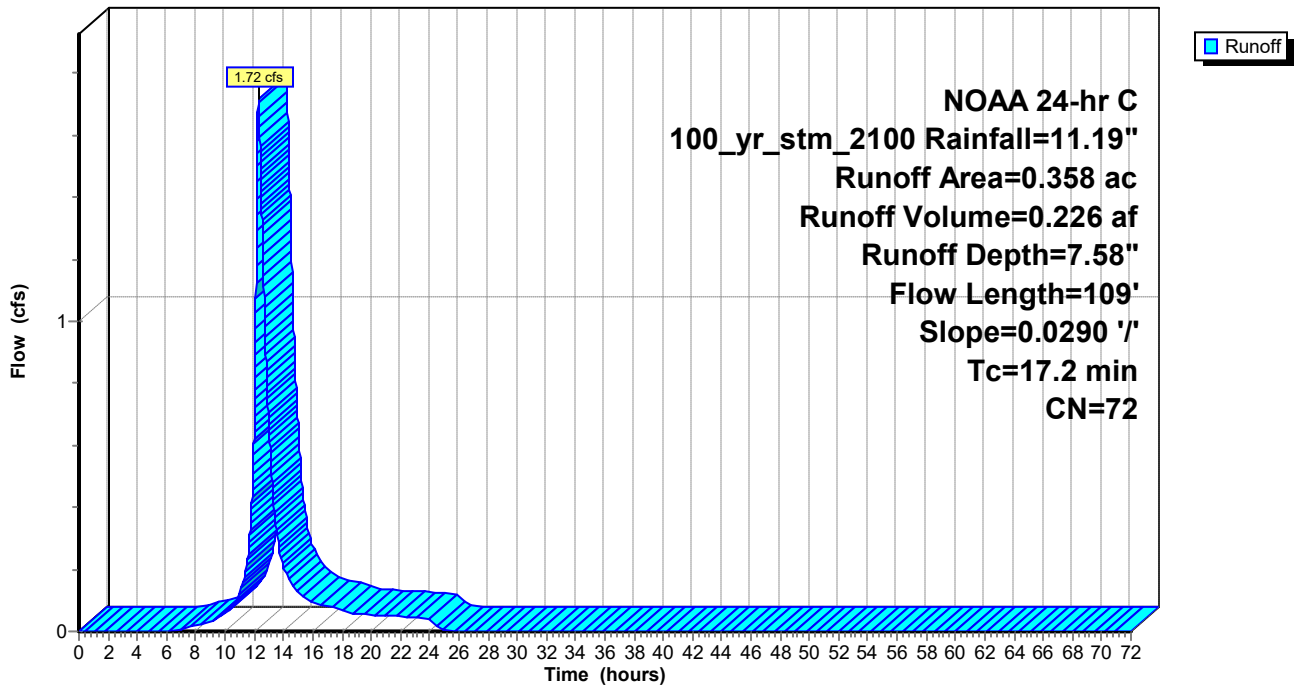
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 100\_yr\_stm\_2100 Rainfall=11.19"

Area (ac)	CN	Description
0.155	74	>75% Grass cover, Good, HSG C
0.203	70	Woods, Good, HSG C
0.358	72	Weighted Average
0.358		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	28	0.0290	0.16		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
14.0	72	0.0290	0.09		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.29"
0.2	9	0.0290	0.85		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
17.2	109	Total			

**Subcatchment 10S: EA-4 Per**

Hydrograph



**Summary for Subcatchment 11S: EA-4 Imp**

Runoff = 2.65 cfs @ 12.11 hrs, Volume= 0.206 af, Depth=10.95"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 100\_yr\_stm\_2100 Rainfall=11.19"

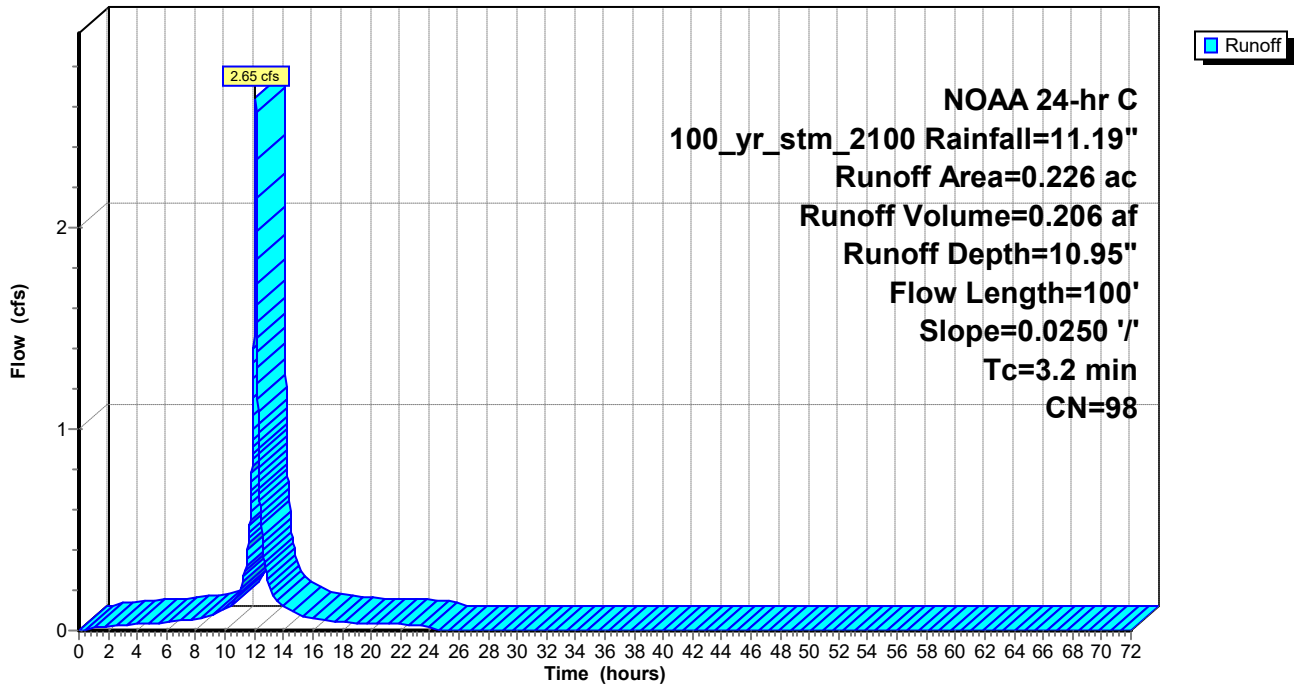
Area (ac)	CN	Description
0.226	98	Paved parking, HSG C
0.226		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	81	0.0250	1.46		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
2.3	19	0.0250	0.14		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
3.2	100	Total			

**Subcatchment 11S: EA-4 Imp**

Hydrograph



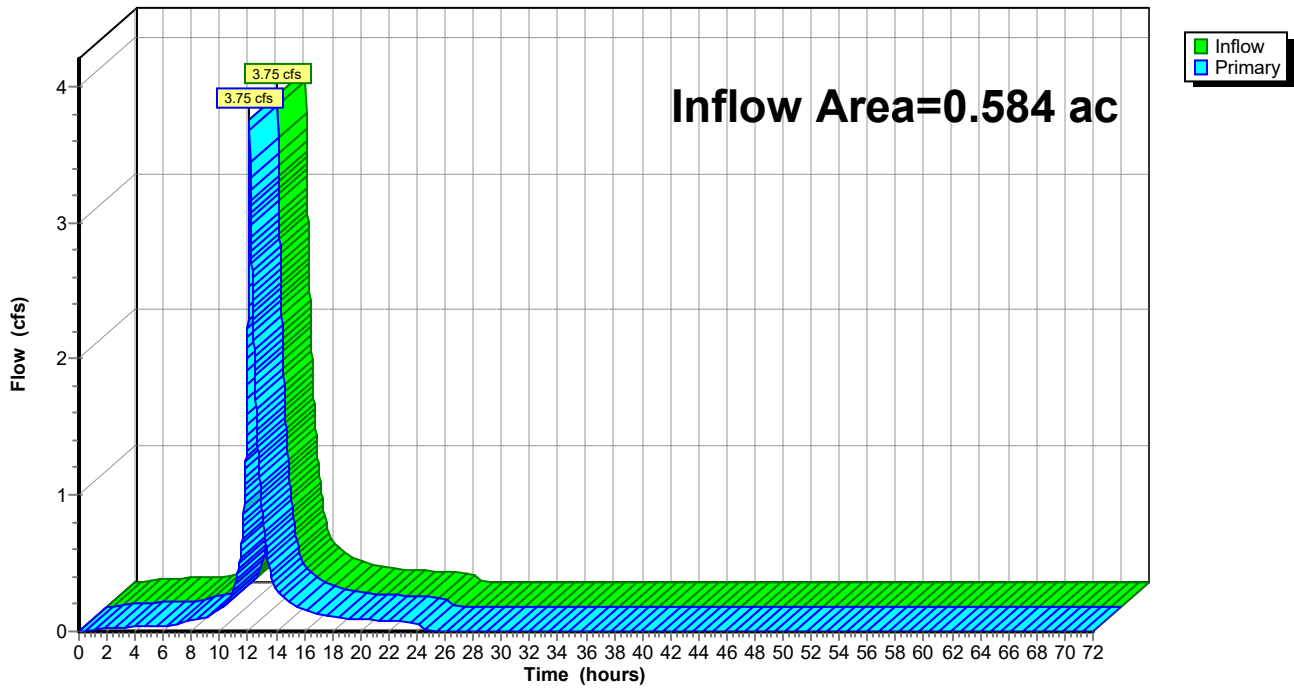
### Summary for Pond 12P: EA-4 - E Basin

Inflow Area = 0.584 ac, 38.70% Impervious, Inflow Depth = 8.88" for 100\_yr\_stm\_2100 event  
Inflow = 3.75 cfs @ 12.12 hrs, Volume= 0.432 af  
Primary = 3.75 cfs @ 12.12 hrs, Volume= 0.432 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

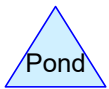
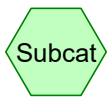
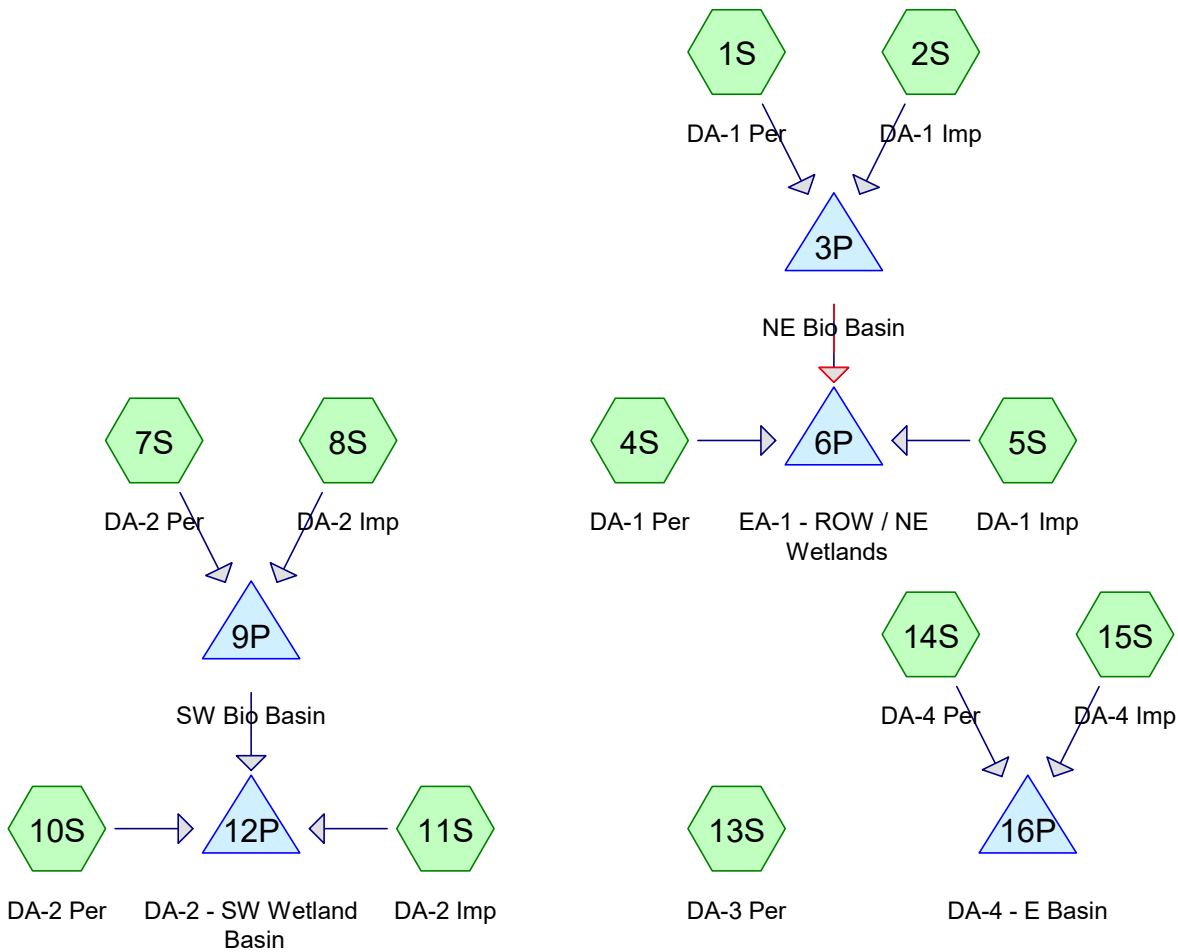
### Pond 12P: EA-4 - E Basin

Hydrograph



## **APPENDIX D**

### **POST-DEVELOPMENT ANALYSIS**



**2026-04-27 Post-Development**

Prepared by HP Inc.

HydroCAD® 10.10-3a s/n 11244 © 2020 HydroCAD Software Solutions LLC

NJ DEP 2-hr .WQ Rainfall=1.25"

Printed 5/1/2026

**Summary for Subcatchment 1S: DA-1 Per**

Runoff = 0.05 cfs @ 1.29 hrs, Volume= 0.003 af, Depth= 0.07"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr .WQ Rainfall=1.25"

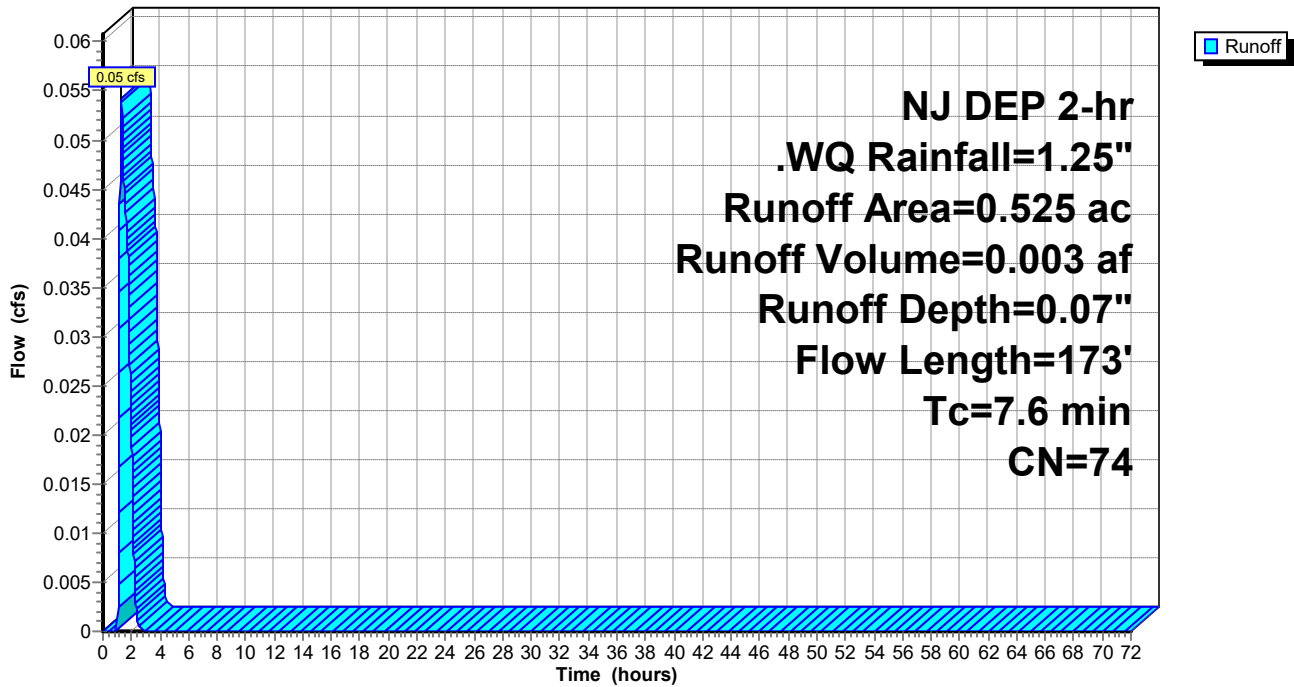
Area (ac)	CN	Description
0.525	74	>75% Grass cover, Good, HSG C
0.525		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	60	0.0200	0.16		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
0.7	40	0.0125	0.96		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.5	73	0.0125	2.27		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
7.6	173	Total			

**Subcatchment 1S: DA-1 Per**

Hydrograph



**2026-04-27 Post-Development**

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NJ DEP 2-hr .WQ Rainfall=1.25"

Printed 5/1/2026

**Summary for Subcatchment 2S: DA-1 Imp**

Runoff = 1.48 cfs @ 1.09 hrs, Volume= 0.042 af, Depth= 1.03"

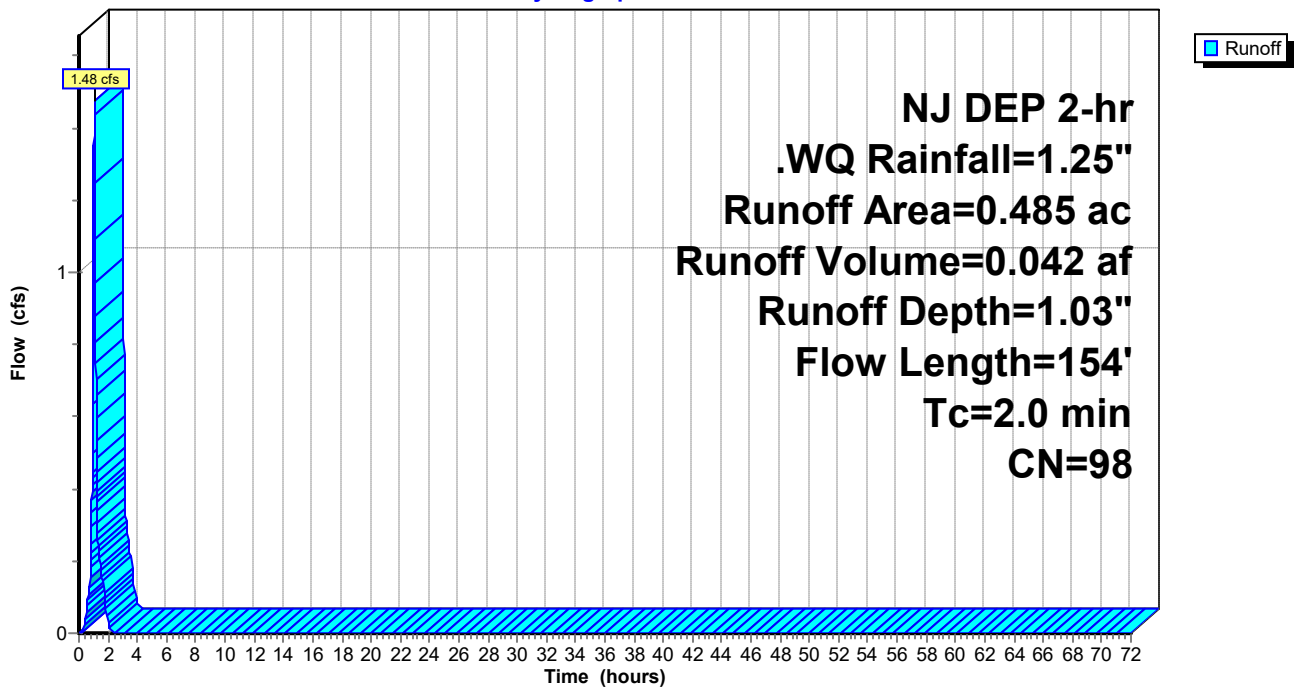
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr .WQ Rainfall=1.25"

Area (ac)	CN	Description
0.426	98	Paved parking, HSG C
* 0.059	98	Sidewalk
0.485	98	Weighted Average
0.485		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.91		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.7	46	0.0180	1.14		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.7	42	0.0125	0.97		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.4	54	0.0125	2.27		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
2.0	154	Total			

**Subcatchment 2S: DA-1 Imp**

Hydrograph



**2026-04-27 Post-Development**

NJ DEP 2-hr .WQ Rainfall=1.25"

Prepared by HP Inc.

Printed 5/1/2026

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**Summary for Pond 3P: NE Bio Basin**

Inflow Area = 1.010 ac, 48.02% Impervious, Inflow Depth = 0.54" for .WQ event  
 Inflow = 1.48 cfs @ 1.09 hrs, Volume= 0.045 af  
 Outflow = 0.10 cfs @ 1.82 hrs, Volume= 0.045 af, Atten= 93%, Lag= 44.3 min  
 Discarded = 0.10 cfs @ 1.82 hrs, Volume= 0.045 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 66.36' @ 1.82 hrs Surf.Area= 4,484 sf Storage= 1,474 cf

Plug-Flow detention time= 135.0 min calculated for 0.045 af (100% of inflow)  
 Center-of-Mass det. time= 135.0 min ( 204.6 - 69.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	66.00'	11,468 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
66.00	3,792	0	0
68.00	7,676	11,468	11,468

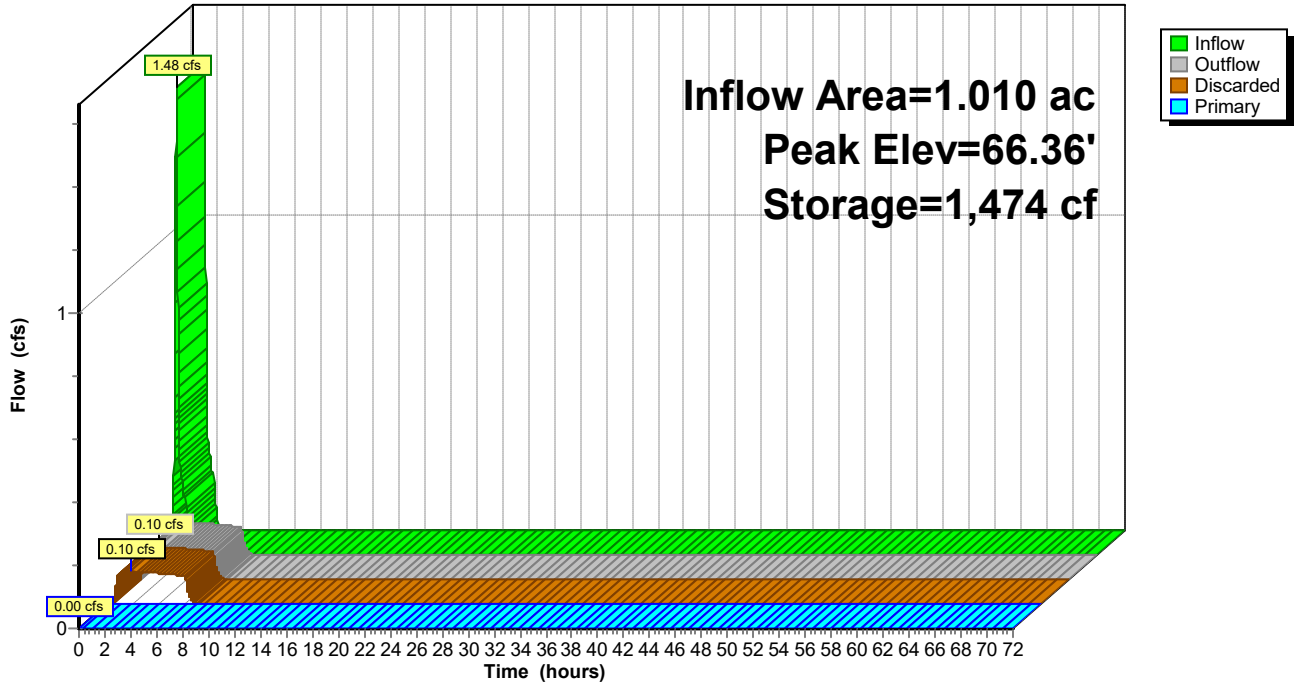
Device	Routing	Invert	Outlet Devices
#1	Discarded	66.00'	<b>1.000 in/hr Exfiltration over Surface area</b>
#2	Primary	63.64'	<b>15.0" Round Culvert</b> L= 57.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 63.64' / 63.50' S= 0.0025 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#3	Device 2	66.36'	<b>30.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads

**Discarded OutFlow** Max=0.10 cfs @ 1.82 hrs HW=66.36' (Free Discharge)  
 ↑1=Exfiltration (Exfiltration Controls 0.10 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=66.00' (Free Discharge)  
 ↑2=Culvert (Passes 0.00 cfs of 6.55 cfs potential flow)  
 ↑3=Orifice/Grate ( Controls 0.00 cfs)

### Pond 3P: NE Bio Basin

#### Hydrograph



**Summary for Subcatchment 4S: DA-1 Per**

Runoff = 0.05 cfs @ 1.83 hrs, Volume= 0.004 af, Depth= 0.05"

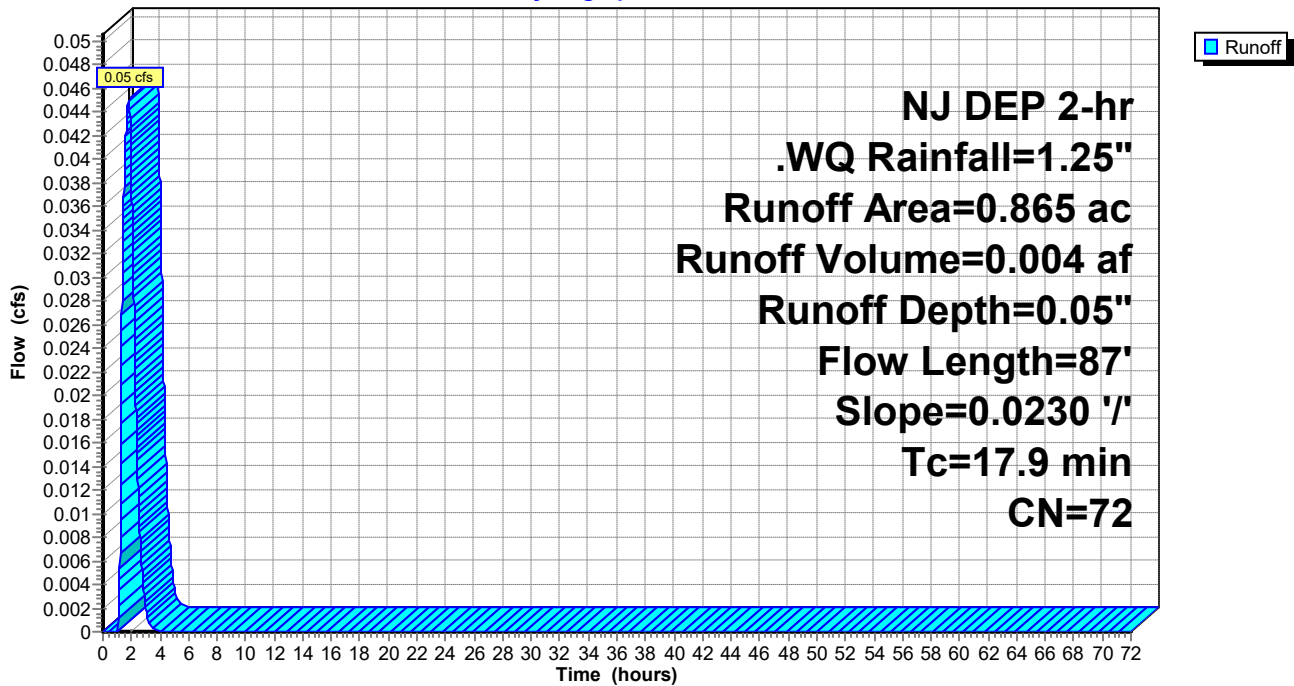
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr .WQ Rainfall=1.25"

Area (ac)	CN	Description
0.531	74	>75% Grass cover, Good, HSG C
0.334	70	Woods, Good, HSG C
0.865	72	Weighted Average
0.865		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.9	87	0.0230	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.29"

**Subcatchment 4S: DA-1 Per**

Hydrograph



**Summary for Subcatchment 5S: DA-1 Imp**

Runoff = 0.30 cfs @ 1.08 hrs, Volume= 0.008 af, Depth= 1.03"

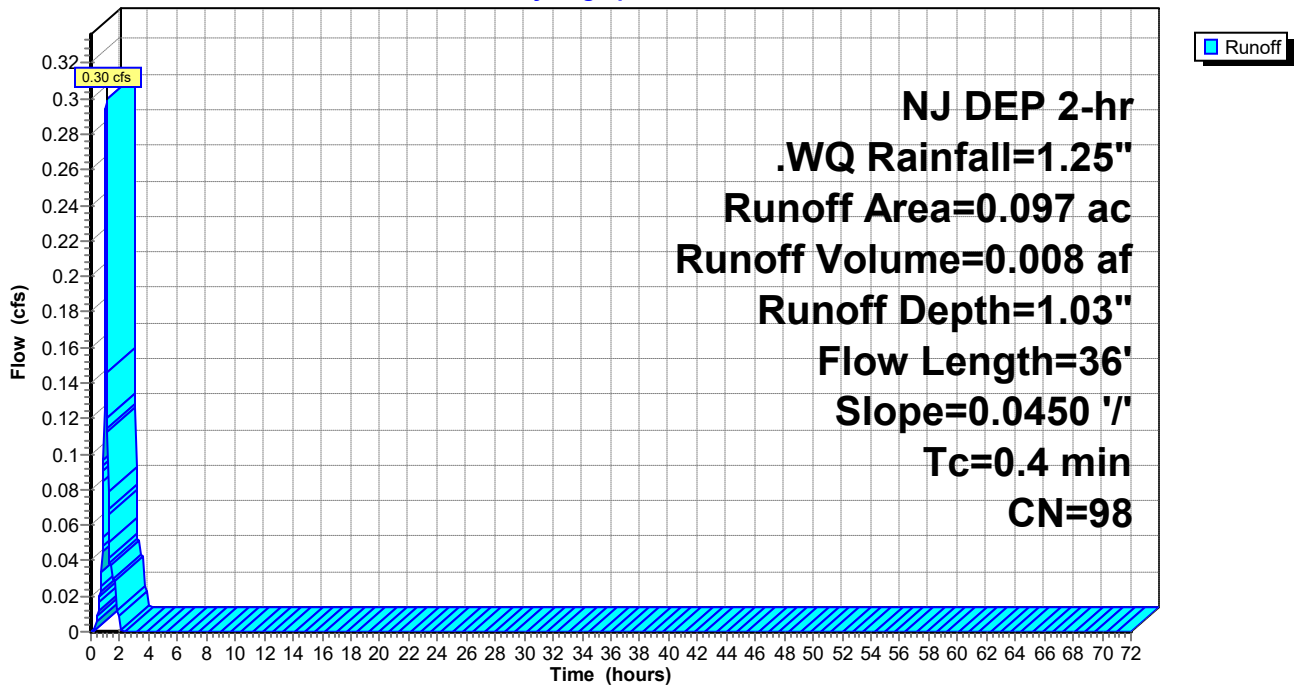
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr .WQ Rainfall=1.25"

Area (ac)	CN	Description
0.038	98	Paved parking, HSG C
* 0.059	98	Sidewalk
0.097	98	Weighted Average
0.097		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	36	0.0450	1.57		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.29"

**Subcatchment 5S: DA-1 Imp**

Hydrograph



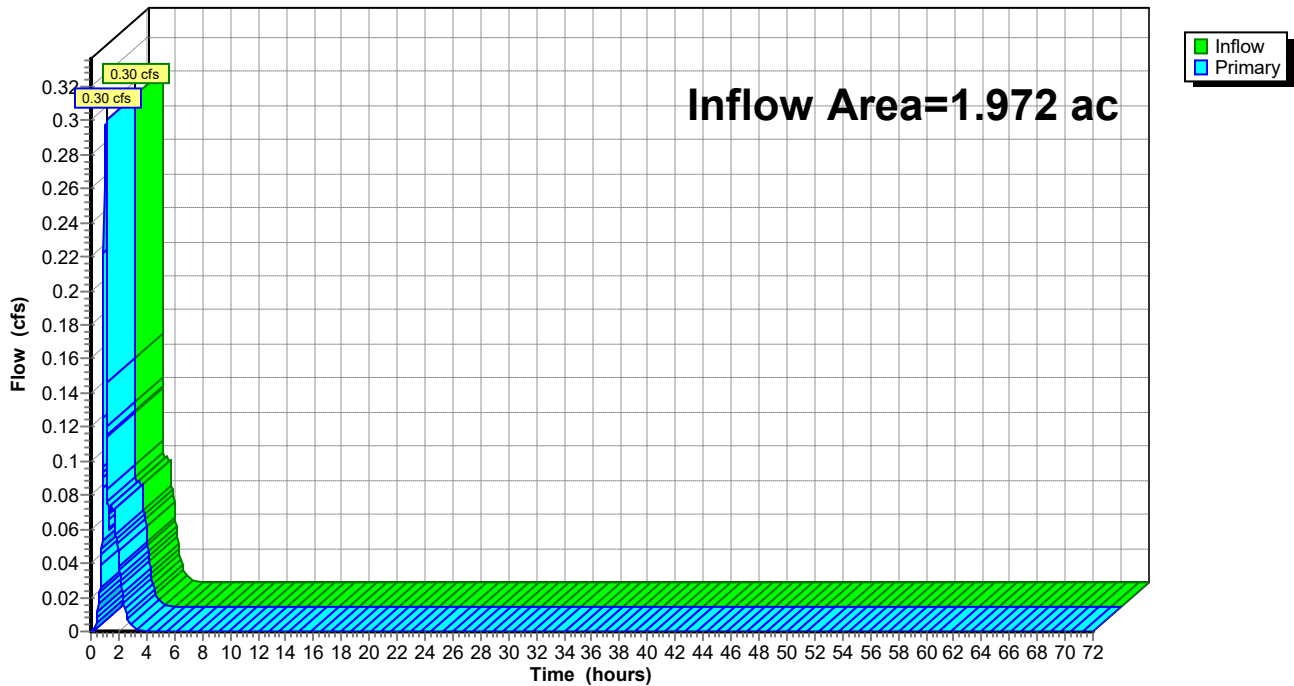
### Summary for Pond 6P: EA-1 - ROW / NE Wetlands

Inflow Area = 1.972 ac, 29.51% Impervious, Inflow Depth = 0.07" for .WQ event  
Inflow = 0.30 cfs @ 1.08 hrs, Volume= 0.012 af  
Primary = 0.30 cfs @ 1.08 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Pond 6P: EA-1 - ROW / NE Wetlands

Hydrograph



**Summary for Subcatchment 7S: DA-2 Per**

Runoff = 0.09 cfs @ 1.36 hrs, Volume= 0.007 af, Depth= 0.07"

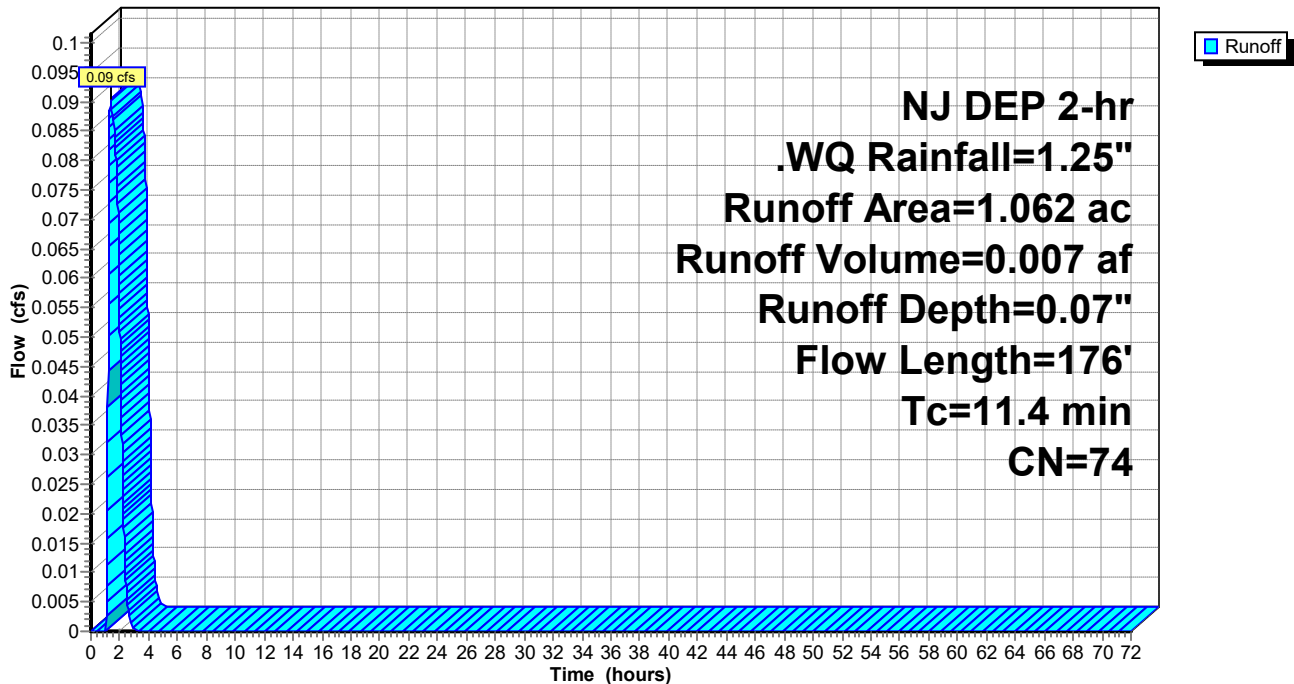
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr .WQ Rainfall=1.25"

Area (ac)	CN	Description
1.062	74	>75% Grass cover, Good, HSG C
1.062		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0160	0.16		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
0.4	16	0.0110	0.73		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.4	60	0.0125	2.27		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
11.4	176	Total			

**Subcatchment 7S: DA-2 Per**

Hydrograph



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NJ DEP 2-hr .WQ Rainfall=1.25"

Printed 5/1/2026

**Summary for Subcatchment 8S: DA-2 Imp**

Runoff = 3.13 cfs @ 1.08 hrs, Volume= 0.089 af, Depth= 1.03"

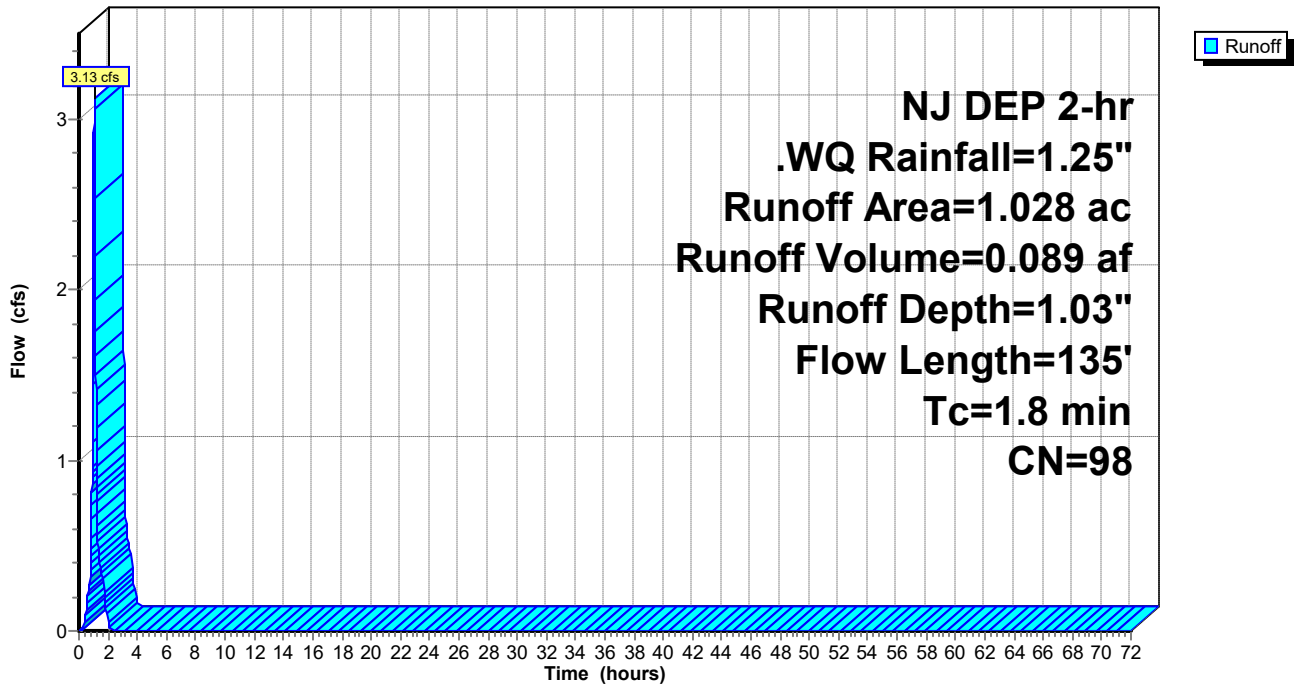
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
NJ DEP 2-hr .WQ Rainfall=1.25"

Area (ac)	CN	Description
0.516	98	Paved parking, HSG C
0.446	98	Roofs, HSG C
* 0.066	98	Sidewalks
1.028	98	Weighted Average
1.028		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	60	0.0180	1.21		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.7	40	0.0125	0.96		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.3	35	0.0125	2.27		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
1.8	135	Total			

**Subcatchment 8S: DA-2 Imp**

Hydrograph



**2026-04-27 Post-Development**

NJ DEP 2-hr .WQ Rainfall=1.25"

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**Summary for Pond 9P: SW Bio Basin**

Inflow Area = 2.090 ac, 49.19% Impervious, Inflow Depth = 0.55" for .WQ event  
 Inflow = 3.13 cfs @ 1.08 hrs, Volume= 0.095 af  
 Outflow = 0.25 cfs @ 1.80 hrs, Volume= 0.095 af, Atten= 92%, Lag= 43.3 min  
 Discarded = 0.25 cfs @ 1.80 hrs, Volume= 0.095 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 67.79' @ 1.80 hrs Surf.Area= 10,586 sf Storage= 2,981 cf

Plug-Flow detention time= 115.1 min calculated for 0.095 af (100% of inflow)  
 Center-of-Mass det. time= 115.1 min ( 184.8 - 69.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	67.50'	25,174 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
67.50	9,756	0	0
69.50	15,418	25,174	25,174

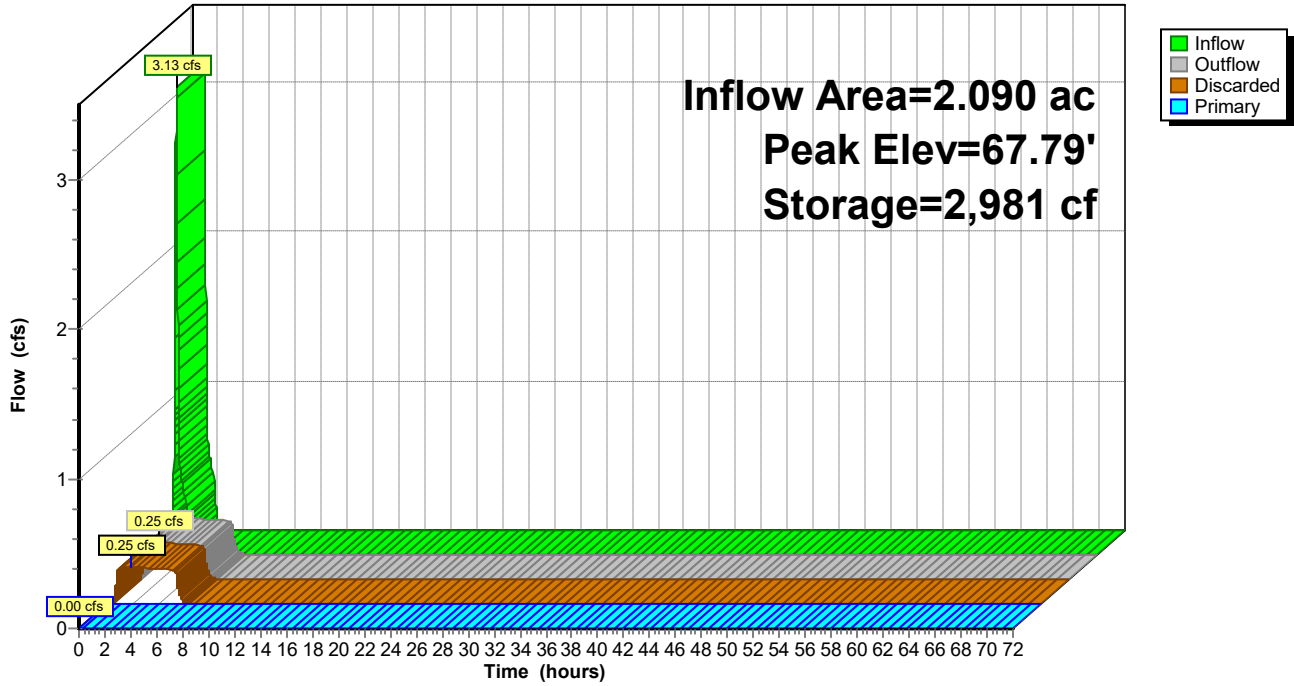
Device	Routing	Invert	Outlet Devices
#1	Discarded	67.50'	<b>1.000 in/hr Exfiltration over Surface area</b>
#2	Primary	68.40'	<b>25.0' long x 6.0' breadth Broad-Crested Rectangular Weir</b>
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00
			2.50 3.00 3.50 4.00 4.50 5.00 5.50
			Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65
			2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

**Discarded OutFlow** Max=0.25 cfs @ 1.80 hrs HW=67.79' (Free Discharge)  
 ↑1=**Exfiltration** (Exfiltration Controls 0.25 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=67.50' (Free Discharge)  
 ↑2=**Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

### Pond 9P: SW Bio Basin

Hydrograph



**2026-04-27 Post-Development**

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NJ DEP 2-hr .WQ Rainfall=1.25"

Printed 5/1/2026

**Summary for Subcatchment 10S: DA-2 Per**

Runoff = 0.05 cfs @ 1.69 hrs, Volume= 0.005 af, Depth= 0.07"

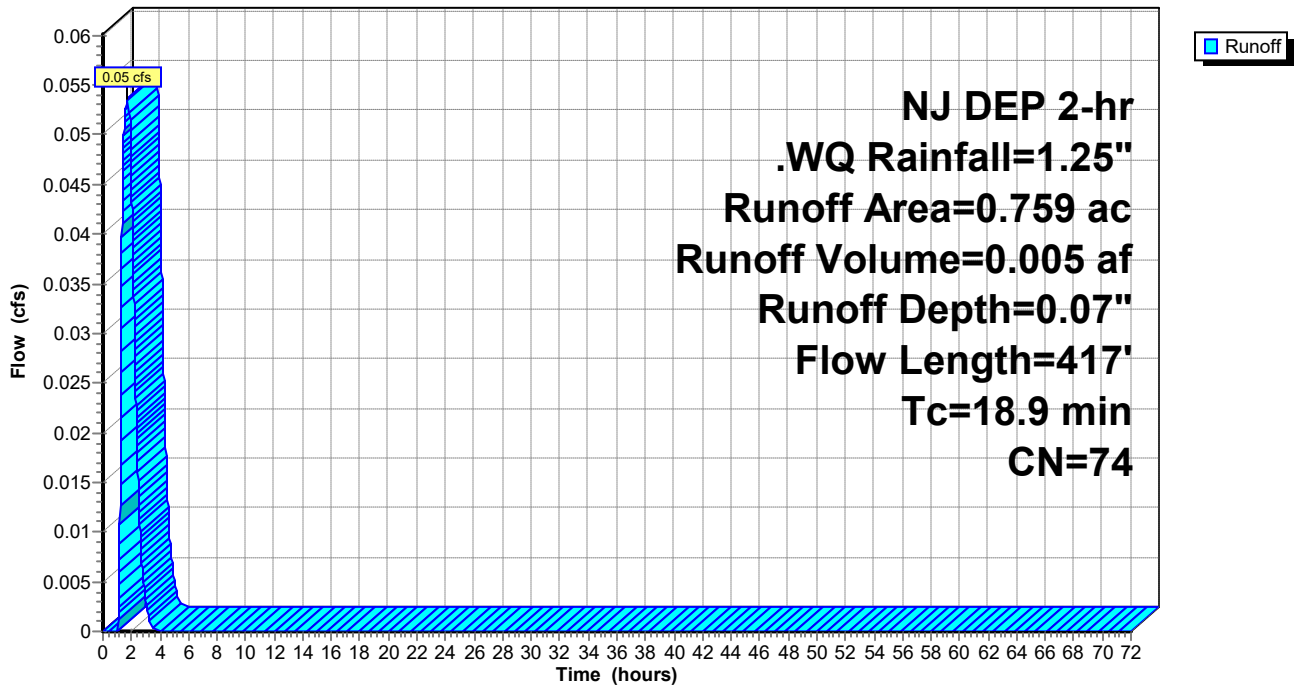
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr .WQ Rainfall=1.25"

Area (ac)	CN	Description
0.759	74	>75% Grass cover, Good, HSG C
0.759		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	78	0.0140	0.14		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
2.9	22	0.0190	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
0.8	47	0.0190	0.96		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.1	270	0.0110	0.73		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
18.9	417	Total			

**Subcatchment 10S: DA-2 Per**

Hydrograph



**Summary for Subcatchment 11S: DA-2 Imp**

Runoff = 0.08 cfs @ 1.30 hrs, Volume= 0.006 af, Depth= 1.03"

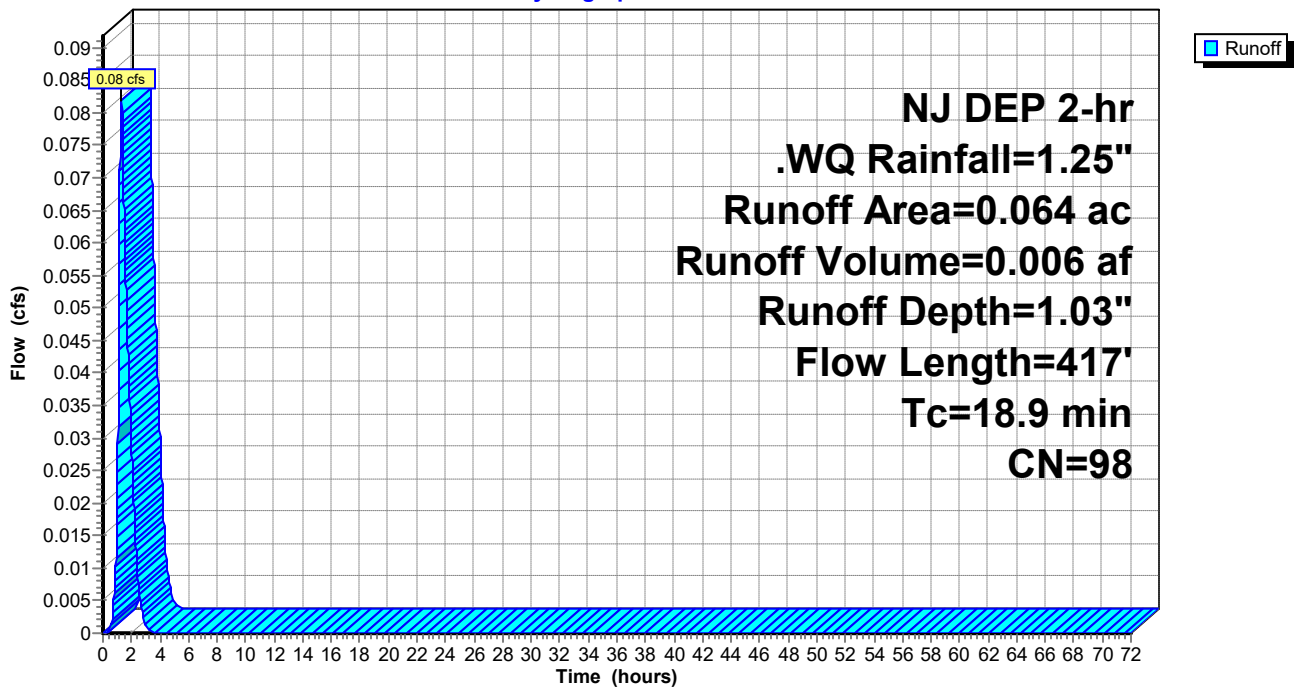
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr .WQ Rainfall=1.25"

Area (ac)	CN	Description
* 0.034	98	Sidewalks
* 0.030	98	Roofs
0.064	98	Weighted Average
0.064		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	78	0.0140	0.14		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
2.9	22	0.0190	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
0.8	47	0.0190	0.96		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.1	270	0.0110	0.73		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
18.9	417	Total			

**Subcatchment 11S: DA-2 Imp**

Hydrograph



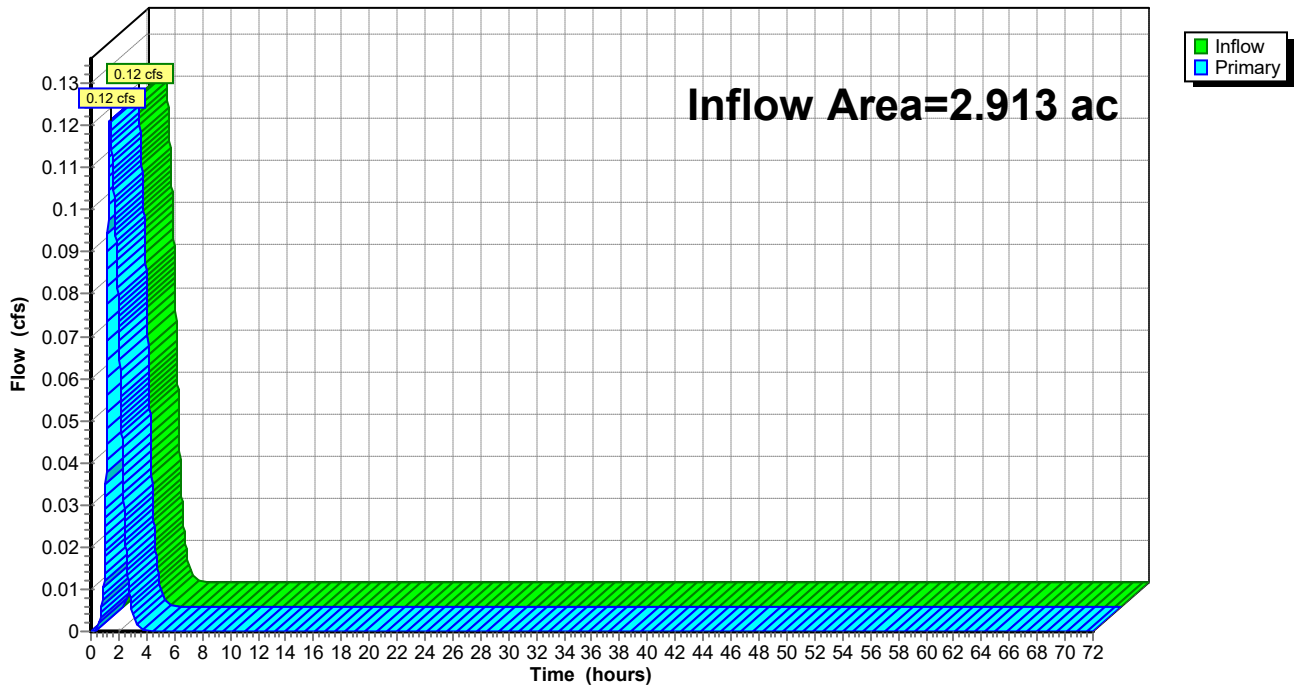
### Summary for Pond 12P: DA-2 - SW Wetland Basin

Inflow Area = 2.913 ac, 37.49% Impervious, Inflow Depth = 0.04" for .WQ event  
Inflow = 0.12 cfs @ 1.38 hrs, Volume= 0.010 af  
Primary = 0.12 cfs @ 1.38 hrs, Volume= 0.010 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Pond 12P: DA-2 - SW Wetland Basin

Hydrograph



**Summary for Subcatchment 13S: DA-3 Per**

Runoff = 0.03 cfs @ 1.18 hrs, Volume= 0.001 af, Depth= 0.07"

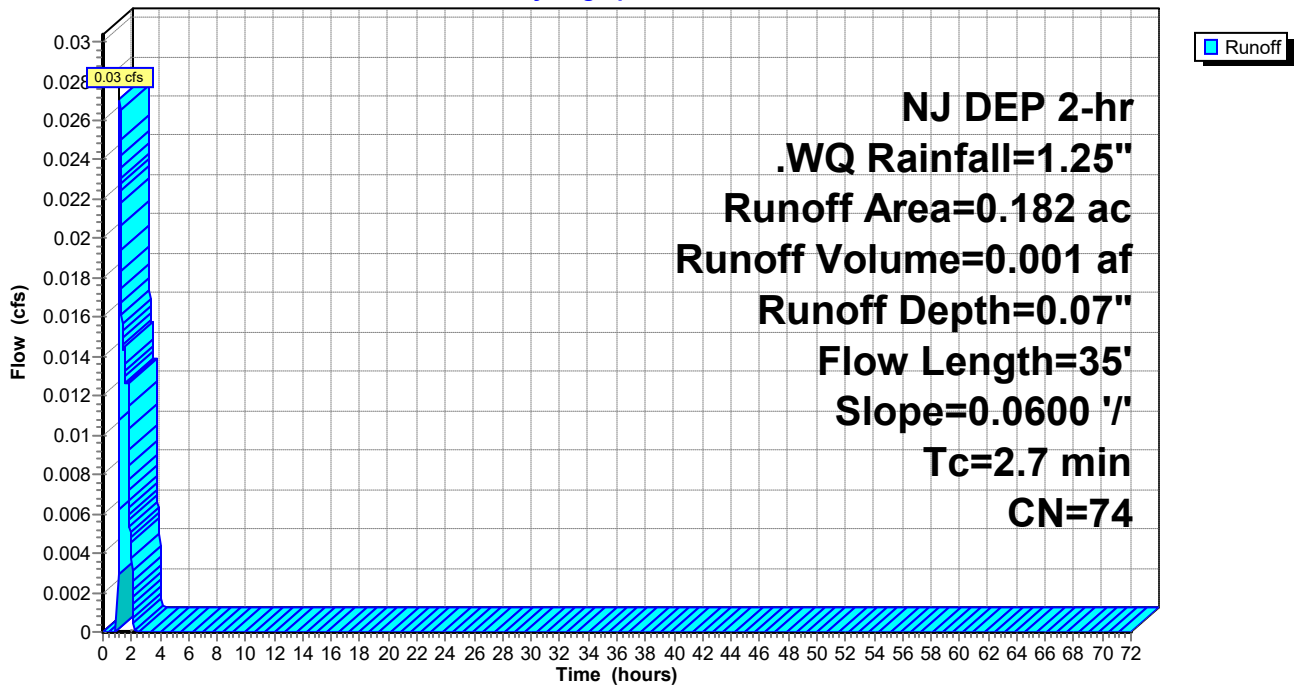
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr .WQ Rainfall=1.25"

Area (ac)	CN	Description
0.182	74	>75% Grass cover, Good, HSG C
0.182		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	35	0.0600	0.22		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"

**Subcatchment 13S: DA-3 Per**

Hydrograph



**Summary for Subcatchment 14S: DA-4 Per**

Runoff = 0.02 cfs @ 1.82 hrs, Volume= 0.001 af, Depth= 0.05"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr .WQ Rainfall=1.25"

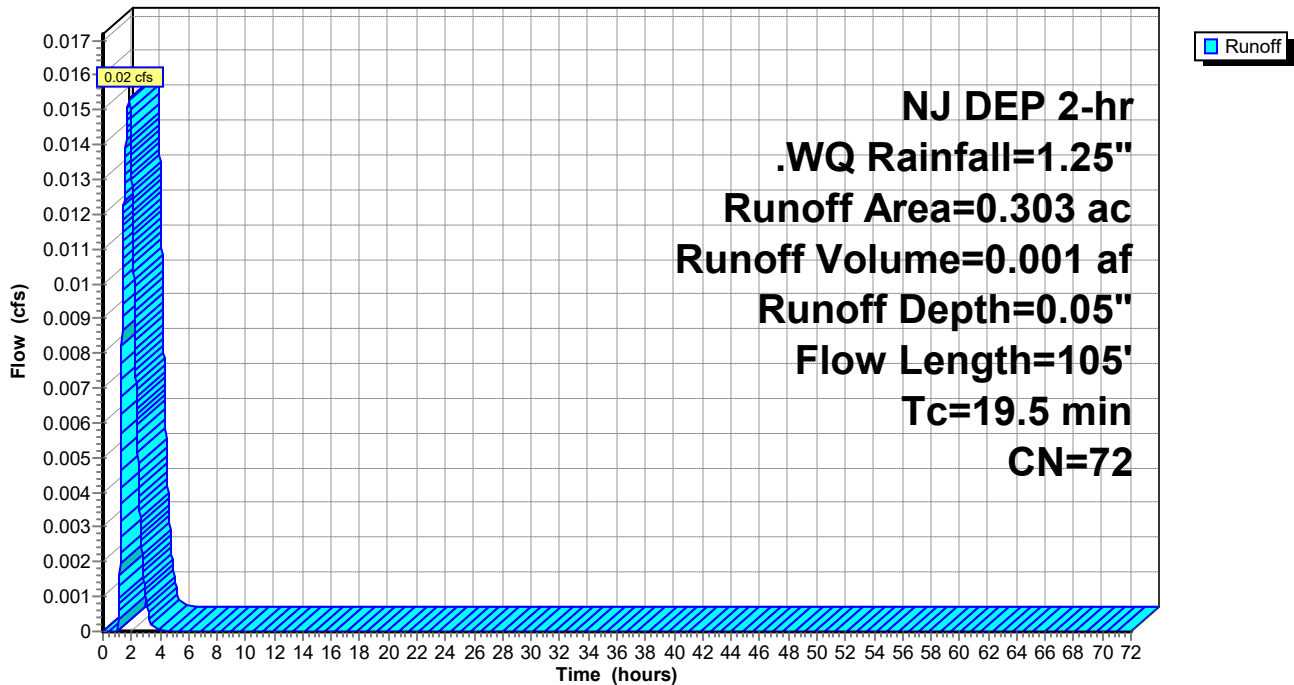
Area (ac)	CN	Description
0.168	74	>75% Grass cover, Good, HSG C
0.135	70	Woods, Good, HSG C
0.303	72	Weighted Average
0.303		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	13	0.1800	0.28		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
18.6	87	0.0210	0.08		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.29"
0.1	5	0.0210	0.72		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
19.5	105	Total			

**Subcatchment 14S: DA-4 Per**

Hydrograph



**Summary for Subcatchment 15S: DA-4 Imp**

Runoff = 0.02 cfs @ 1.20 hrs, Volume= 0.001 af, Depth= 1.03"

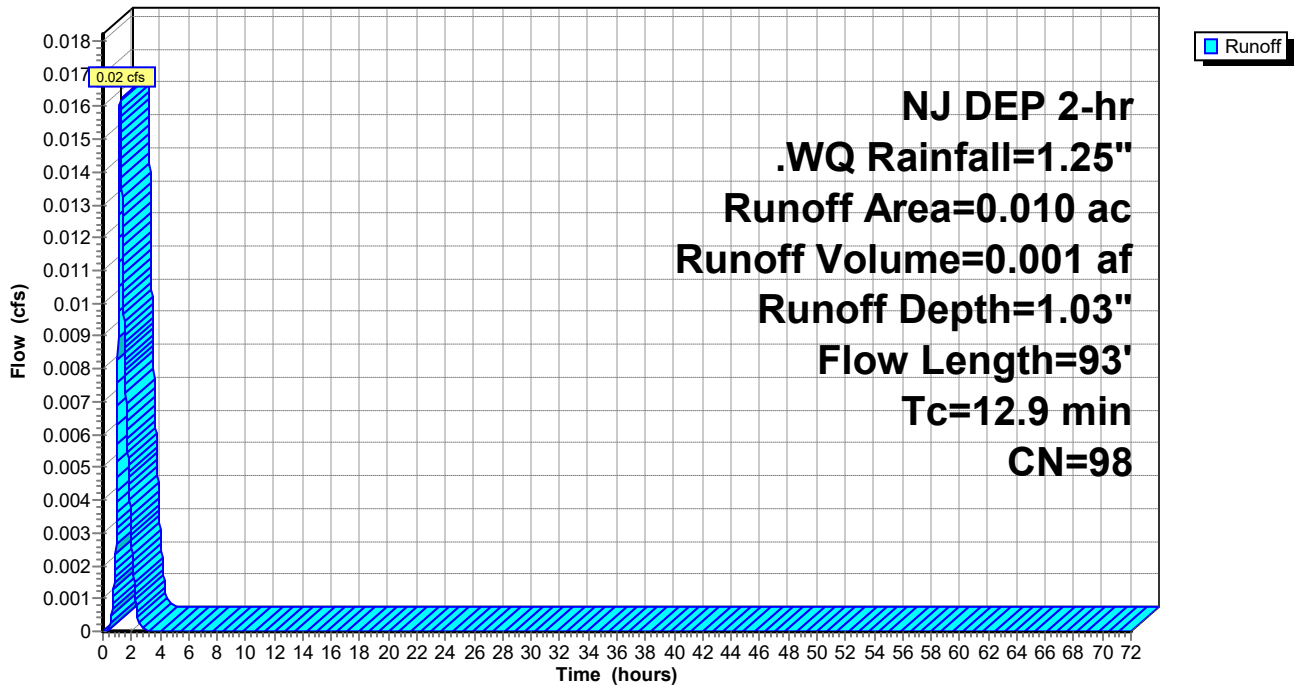
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NJ DEP 2-hr .WQ Rainfall=1.25"

Area (ac)	CN	Description
* 0.010	98	Sidewalk
0.010		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	37	0.0280	1.31		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.5	10	0.3300	0.33		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
11.9	46	0.0180	0.06		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.29"
12.9	93	Total			

**Subcatchment 15S: DA-4 Imp**

Hydrograph



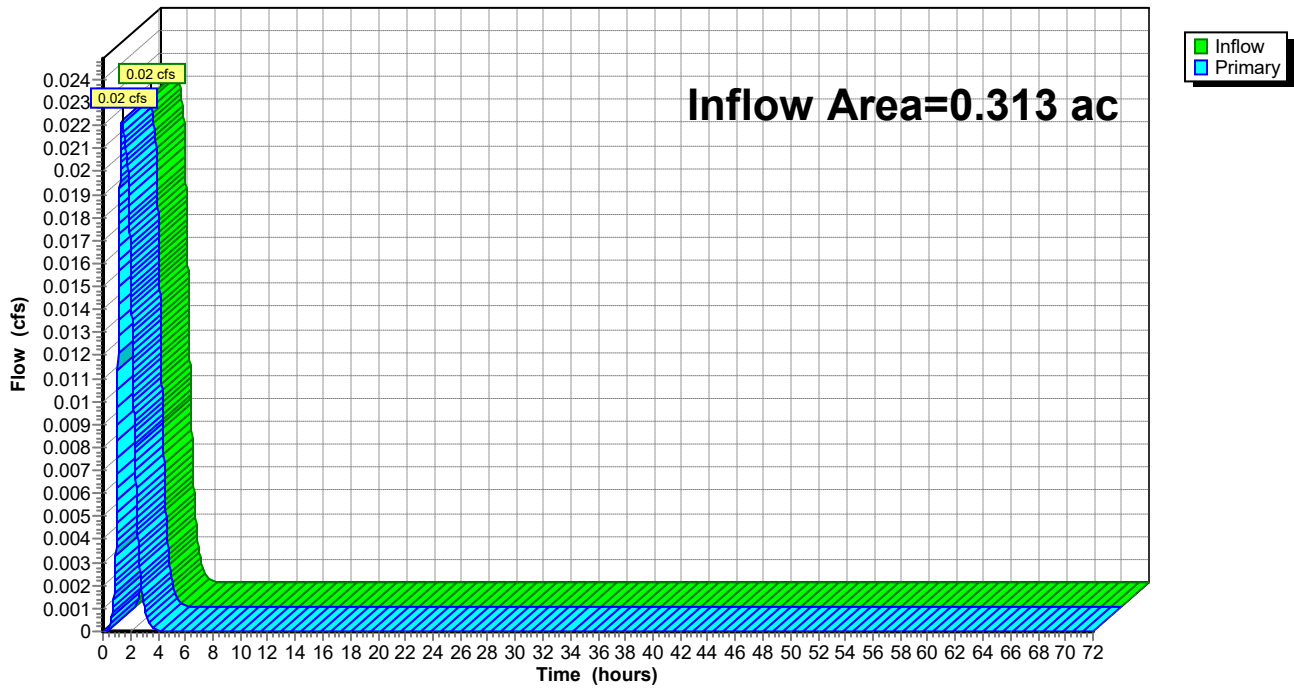
### Summary for Pond 16P: DA-4 - E Basin

Inflow Area = 0.313 ac, 3.19% Impervious, Inflow Depth = 0.08" for .WQ event  
Inflow = 0.02 cfs @ 1.39 hrs, Volume= 0.002 af  
Primary = 0.02 cfs @ 1.39 hrs, Volume= 0.002 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Pond 16P: DA-4 - E Basin

Hydrograph



**Summary for Subcatchment 1S: DA-1 Per**

Runoff = 0.52 cfs @ 12.17 hrs, Volume= 0.048 af, Depth= 1.10"

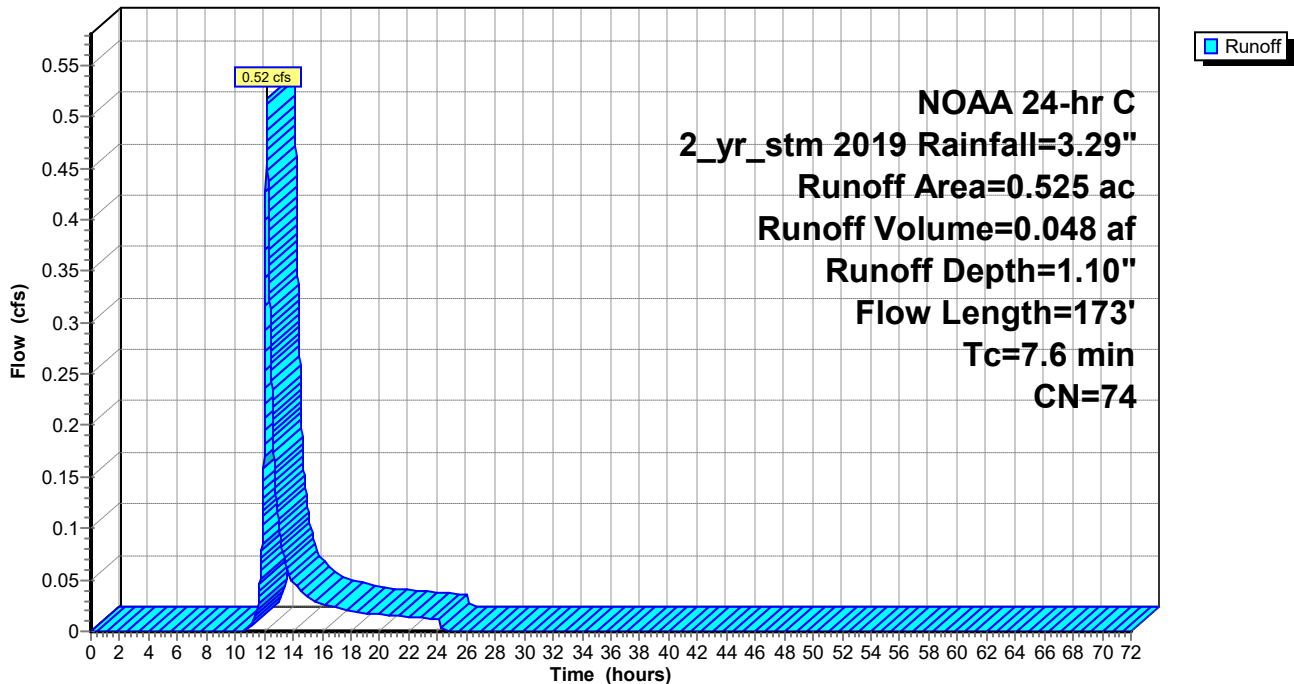
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 2\_yr\_stm 2019 Rainfall=3.29"

Area (ac)	CN	Description
0.525	74	>75% Grass cover, Good, HSG C
0.525		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	60	0.0200	0.16		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
0.7	40	0.0125	0.96		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.5	73	0.0125	2.27		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
7.6	173	Total			

**Subcatchment 1S: DA-1 Per**

Hydrograph



**Summary for Subcatchment 2S: DA-1 Imp**

Runoff = 1.78 cfs @ 12.10 hrs, Volume= 0.124 af, Depth= 3.06"

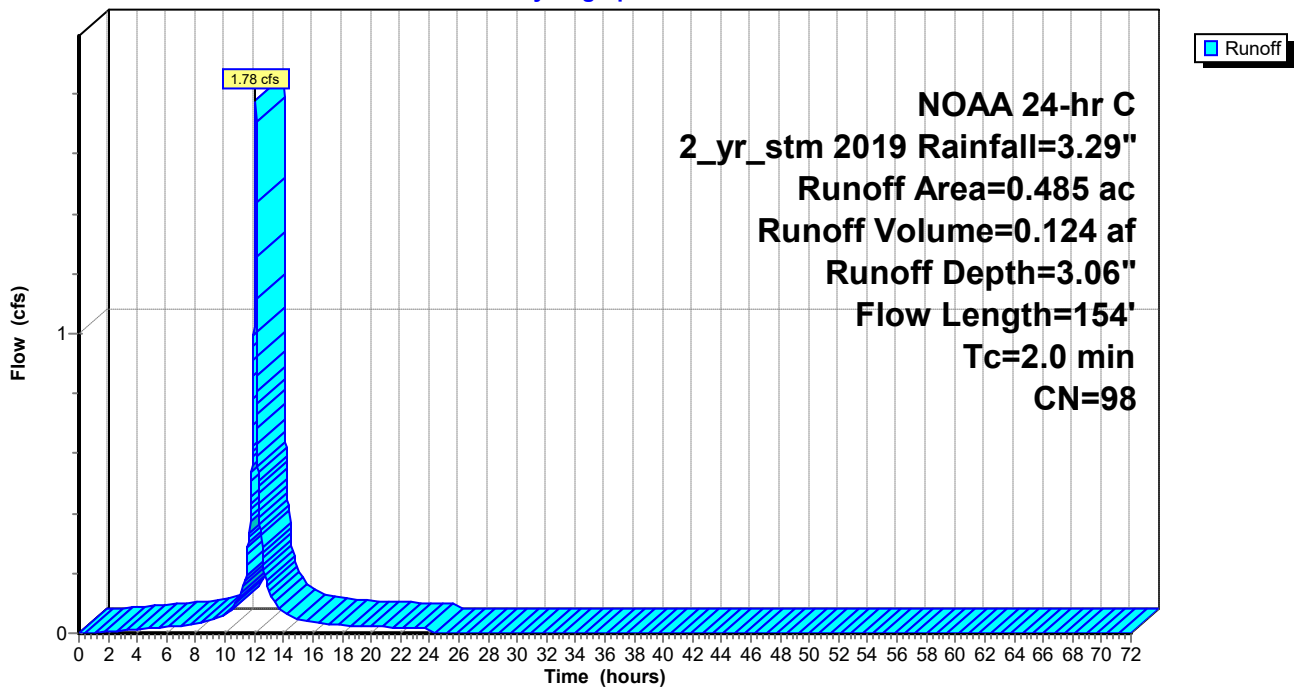
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 2\_yr\_stm 2019 Rainfall=3.29"

Area (ac)	CN	Description
0.426	98	Paved parking, HSG C
* 0.059	98	Sidewalk
0.485	98	Weighted Average
0.485		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.91		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.7	46	0.0180	1.14		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.7	42	0.0125	0.97		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.4	54	0.0125	2.27		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
2.0	154	Total			

**Subcatchment 2S: DA-1 Imp**

Hydrograph



**Summary for Pond 3P: NE Bio Basin**

Inflow Area = 1.010 ac, 48.02% Impervious, Inflow Depth = 2.04" for 2\_yr\_stm 2019 event  
 Inflow = 2.21 cfs @ 12.11 hrs, Volume= 0.172 af  
 Outflow = 0.71 cfs @ 12.37 hrs, Volume= 0.172 af, Atten= 68%, Lag= 15.9 min  
 Discarded = 0.11 cfs @ 12.37 hrs, Volume= 0.124 af  
 Primary = 0.59 cfs @ 12.37 hrs, Volume= 0.048 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 66.54' @ 12.37 hrs Surf.Area= 4,833 sf Storage= 2,312 cf

Plug-Flow detention time= 103.9 min calculated for 0.172 af (100% of inflow)  
 Center-of-Mass det. time= 103.9 min ( 890.7 - 786.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	66.00'	11,468 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
66.00	3,792	0	0
68.00	7,676	11,468	11,468

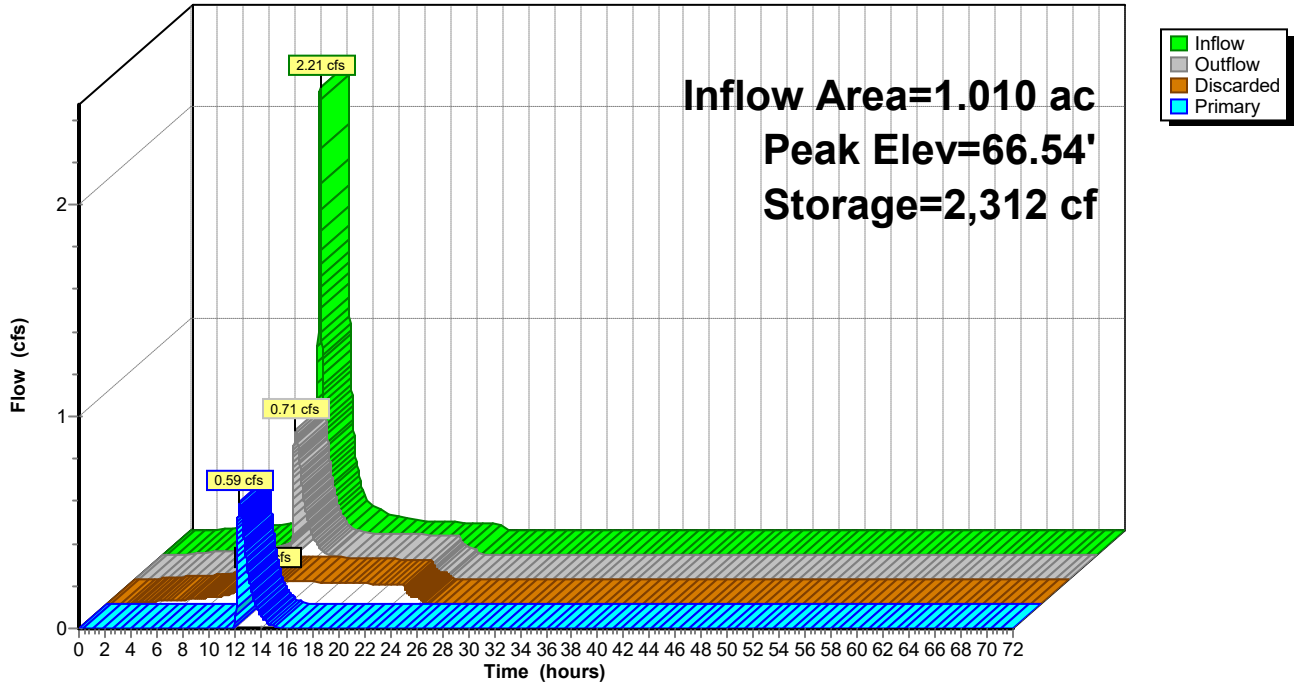
Device	Routing	Invert	Outlet Devices
#1	Discarded	66.00'	<b>1.000 in/hr Exfiltration over Surface area</b>
#2	Primary	63.64'	<b>15.0" Round Culvert</b> L= 57.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 63.64' / 63.50' S= 0.0025 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#3	Device 2	66.36'	<b>30.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads

**Discarded OutFlow** Max=0.11 cfs @ 12.37 hrs HW=66.54' (Free Discharge)  
 ↑**1=Exfiltration** (Exfiltration Controls 0.11 cfs)

**Primary OutFlow** Max=0.59 cfs @ 12.37 hrs HW=66.54' (Free Discharge)  
 ↑**2=Culvert** (Passes 0.59 cfs of 7.82 cfs potential flow)  
 ↑**3=Orifice/Grate** (Orifice Controls 0.59 cfs @ 1.35 fps)

### Pond 3P: NE Bio Basin

#### Hydrograph



### Summary for Subcatchment 4S: DA-1 Per

Runoff = 0.48 cfs @ 12.33 hrs, Volume= 0.071 af, Depth= 0.99"

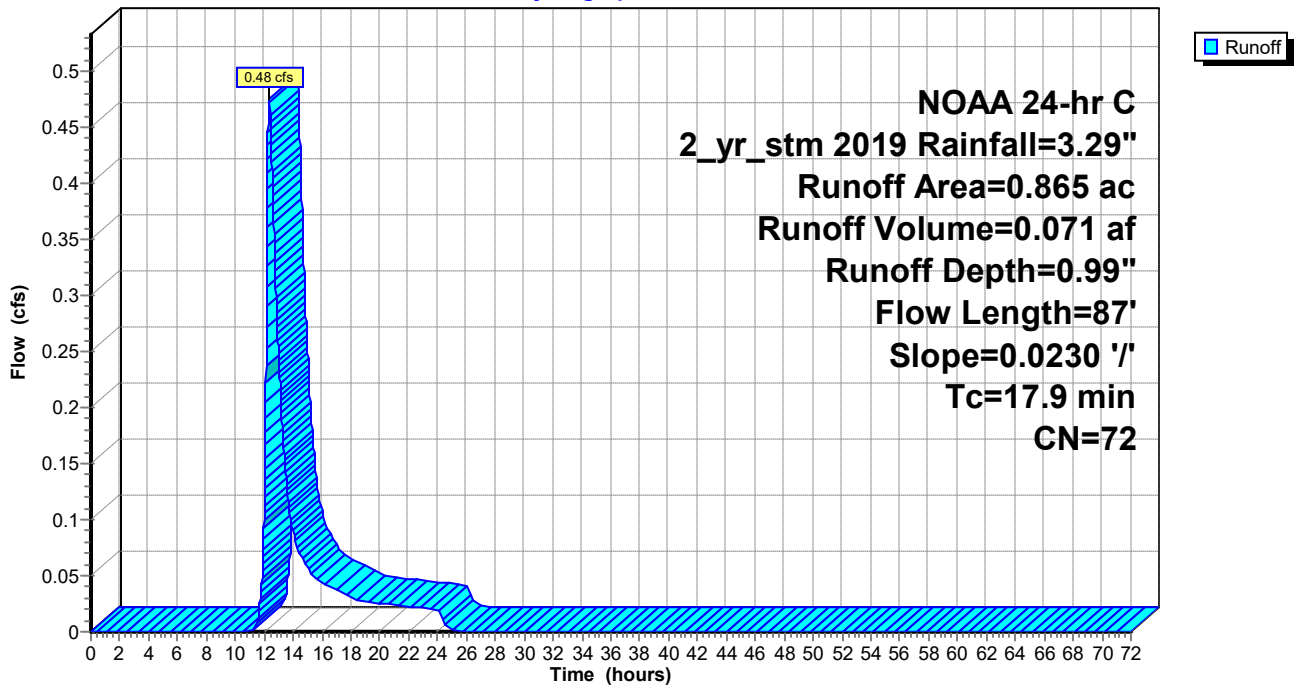
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 2\_yr\_stm 2019 Rainfall=3.29"

Area (ac)	CN	Description
0.531	74	>75% Grass cover, Good, HSG C
0.334	70	Woods, Good, HSG C
0.865	72	Weighted Average
0.865		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.9	87	0.0230	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.29"

### Subcatchment 4S: DA-1 Per

Hydrograph



**Summary for Subcatchment 5S: DA-1 Imp**

Runoff = 0.37 cfs @ 12.09 hrs, Volume= 0.025 af, Depth= 3.06"

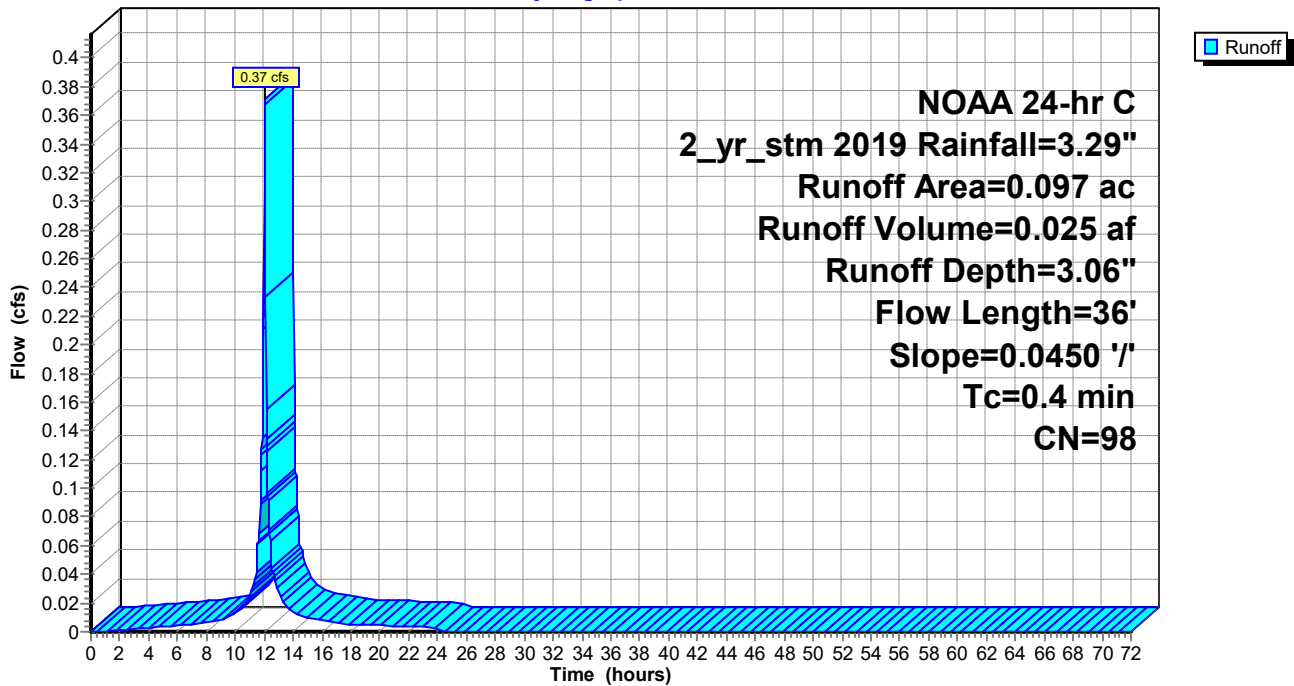
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 2\_yr\_stm 2019 Rainfall=3.29"

Area (ac)	CN	Description
0.038	98	Paved parking, HSG C
* 0.059	98	Sidewalk
0.097	98	Weighted Average
0.097		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	36	0.0450	1.57		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.29"

**Subcatchment 5S: DA-1 Imp**

Hydrograph



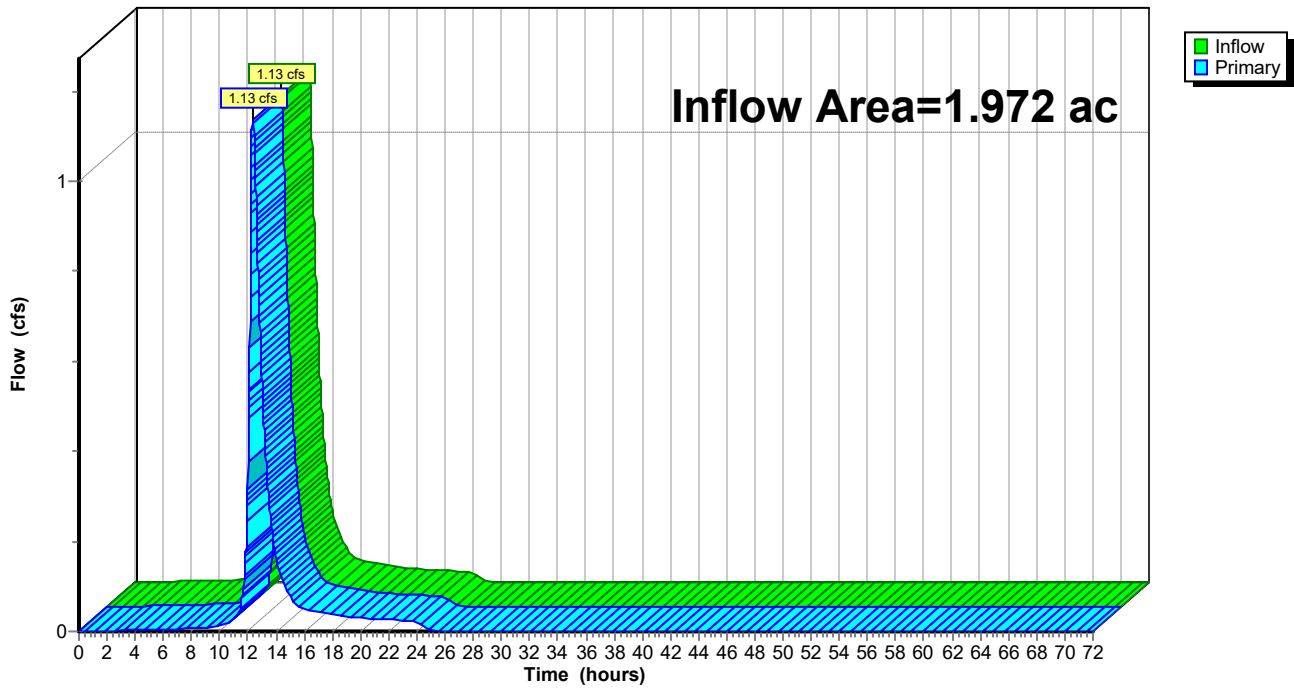
### Summary for Pond 6P: EA-1 - ROW / NE Wetlands

Inflow Area = 1.972 ac, 29.51% Impervious, Inflow Depth = 0.87" for 2\_yr\_stm 2019 event  
Inflow = 1.13 cfs @ 12.30 hrs, Volume= 0.143 af  
Primary = 1.13 cfs @ 12.30 hrs, Volume= 0.143 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Pond 6P: EA-1 - ROW / NE Wetlands

Hydrograph



**Summary for Subcatchment 7S: DA-2 Per**

Runoff = 0.85 cfs @ 12.22 hrs, Volume= 0.097 af, Depth= 1.10"

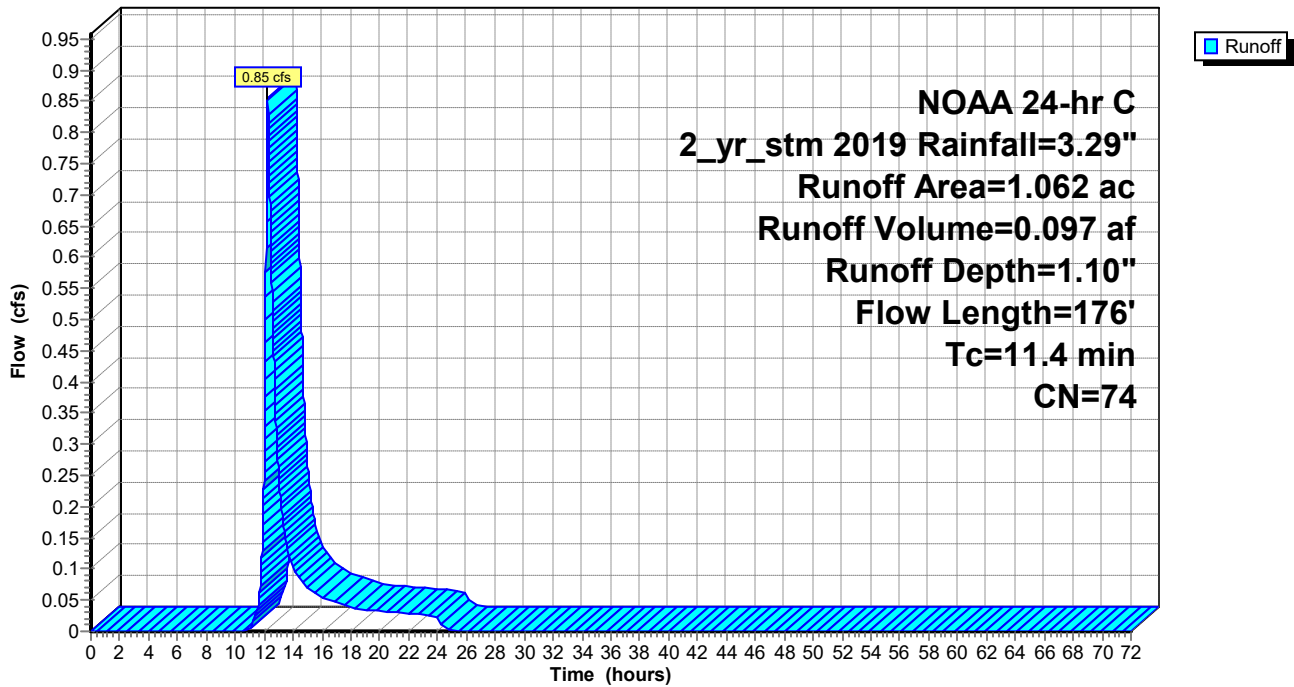
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 2\_yr\_stm 2019 Rainfall=3.29"

Area (ac)	CN	Description
1.062	74	>75% Grass cover, Good, HSG C
1.062		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0160	0.16		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
0.4	16	0.0110	0.73		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.4	60	0.0125	2.27		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
11.4	176	Total			

**Subcatchment 7S: DA-2 Per**

Hydrograph



**Summary for Subcatchment 8S: DA-2 Imp**

Runoff = 3.82 cfs @ 12.10 hrs, Volume= 0.262 af, Depth= 3.06"

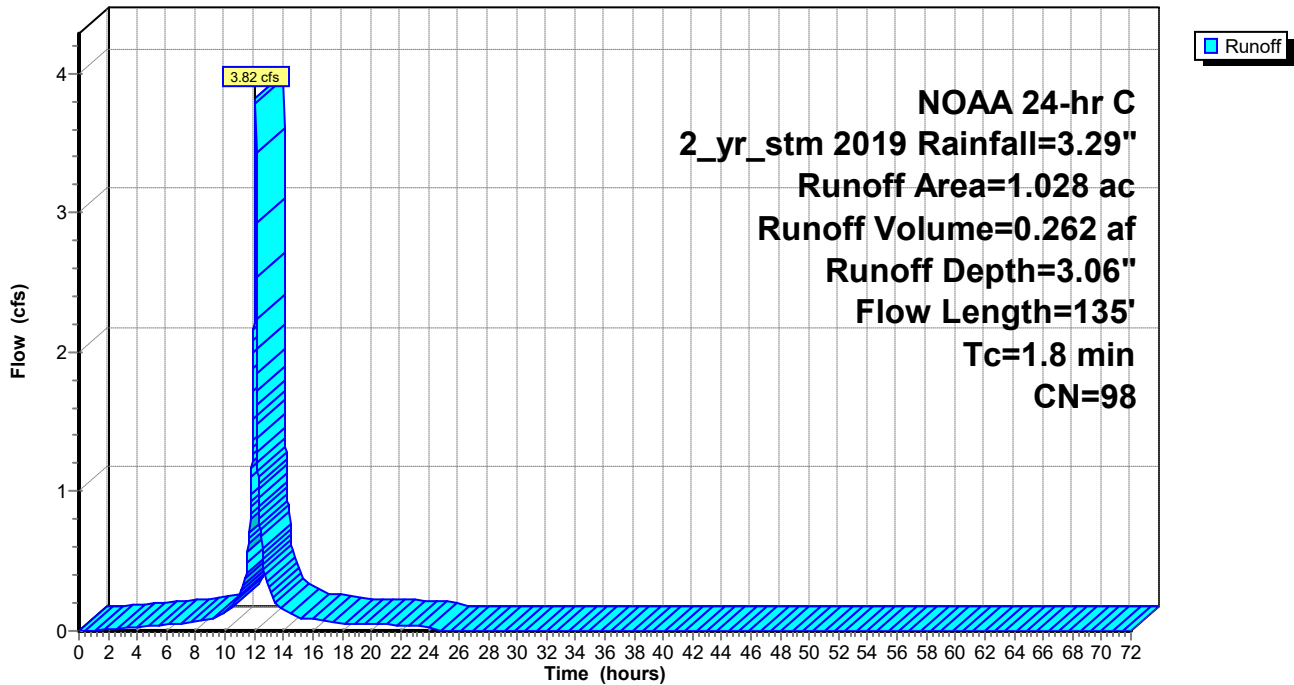
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 2\_yr\_stm 2019 Rainfall=3.29"

Area (ac)	CN	Description
0.516	98	Paved parking, HSG C
0.446	98	Roofs, HSG C
* 0.066	98	Sidewalks
1.028	98	Weighted Average
1.028		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	60	0.0180	1.21		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.7	40	0.0125	0.96		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.3	35	0.0125	2.27		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
1.8	135	Total			

**Subcatchment 8S: DA-2 Imp**

Hydrograph



**Summary for Pond 9P: SW Bio Basin**

Inflow Area = 2.090 ac, 49.19% Impervious, Inflow Depth = 2.06" for 2\_yr\_stm 2019 event  
 Inflow = 4.37 cfs @ 12.10 hrs, Volume= 0.359 af  
 Outflow = 0.27 cfs @ 13.84 hrs, Volume= 0.359 af, Atten= 94%, Lag= 103.9 min  
 Discarded = 0.27 cfs @ 13.84 hrs, Volume= 0.359 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 68.17' @ 13.84 hrs Surf.Area= 11,642 sf Storage= 7,126 cf

Plug-Flow detention time= 240.5 min calculated for 0.359 af (100% of inflow)  
 Center-of-Mass det. time= 240.5 min ( 1,027.6 - 787.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	67.50'	25,174 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
67.50	9,756	0	0
69.50	15,418	25,174	25,174

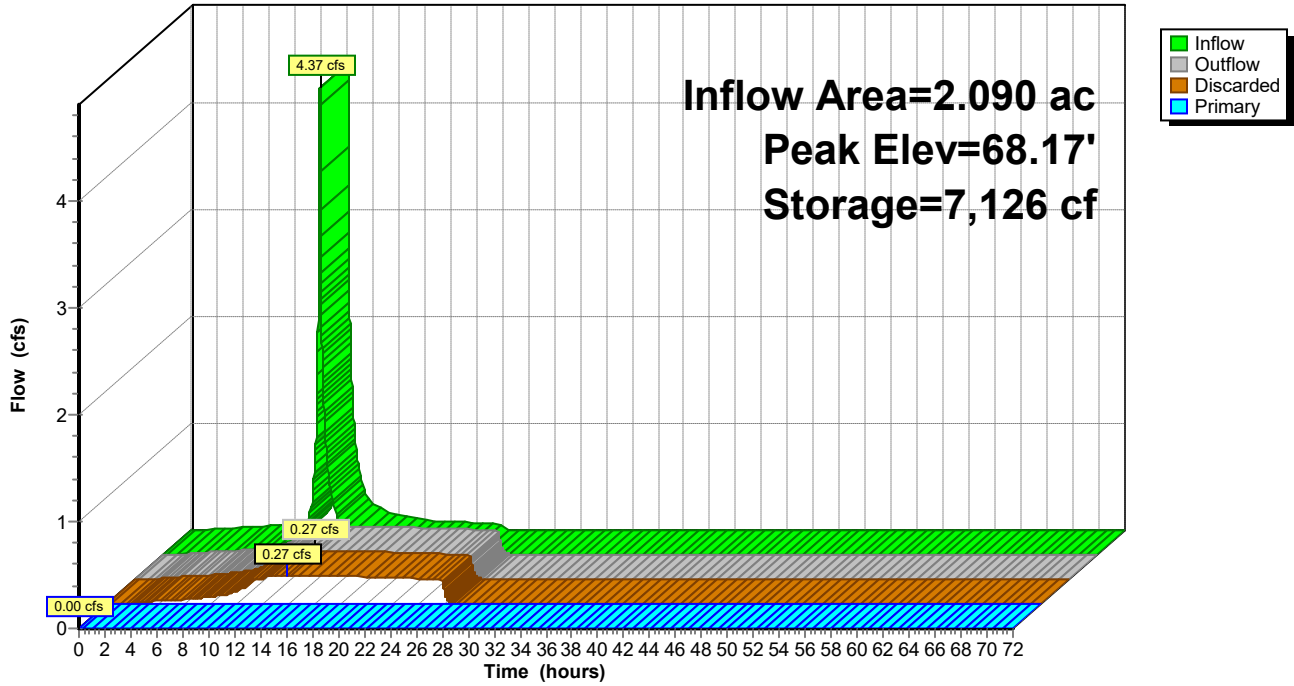
Device	Routing	Invert	Outlet Devices
#1	Discarded	67.50'	<b>1.000 in/hr Exfiltration over Surface area</b>
#2	Primary	68.40'	<b>25.0' long x 6.0' breadth Broad-Crested Rectangular Weir</b>
Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00			
2.50 3.00 3.50 4.00 4.50 5.00 5.50			
Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65			
2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83			

**Discarded OutFlow** Max=0.27 cfs @ 13.84 hrs HW=68.17' (Free Discharge)  
 ↑1=**Exfiltration** (Exfiltration Controls 0.27 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=67.50' (Free Discharge)  
 ↑2=**Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

### Pond 9P: SW Bio Basin

Hydrograph



**Summary for Subcatchment 10S: DA-2 Per**

Runoff = 0.46 cfs @ 12.34 hrs, Volume= 0.069 af, Depth= 1.10"

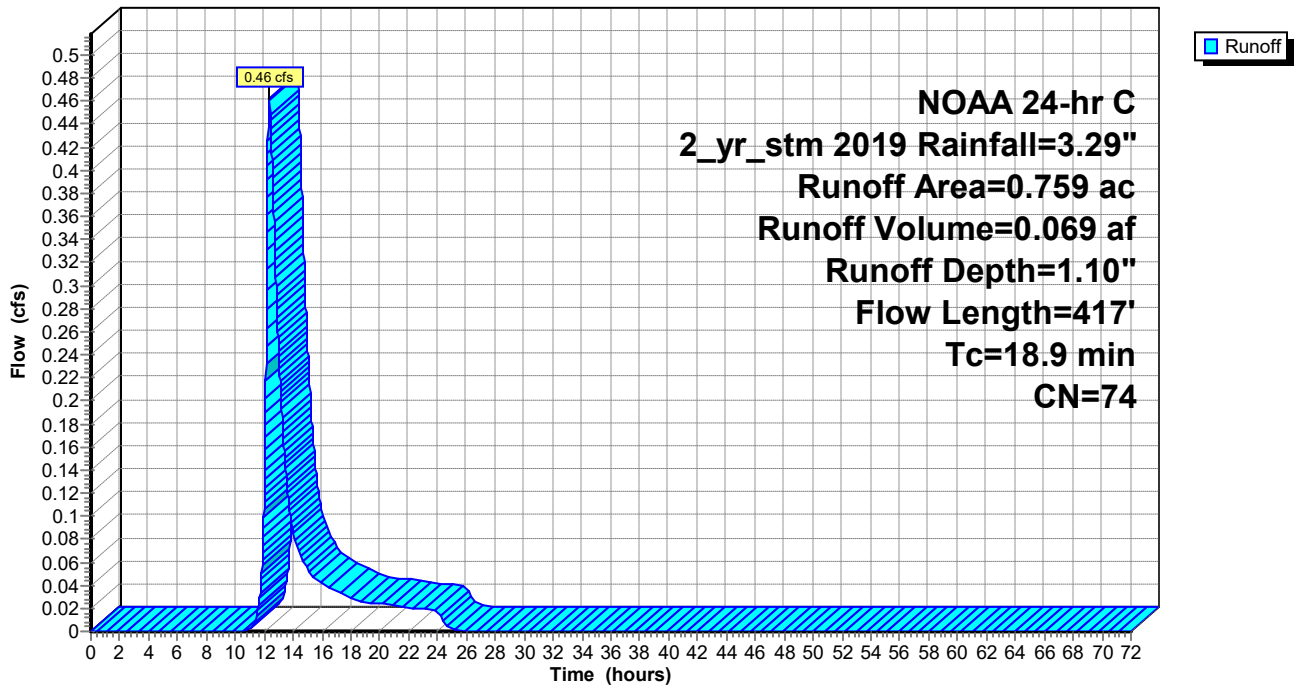
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 2\_yr\_stm 2019 Rainfall=3.29"

Area (ac)	CN	Description
0.759	74	>75% Grass cover, Good, HSG C
0.759		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	78	0.0140	0.14		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
2.9	22	0.0190	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
0.8	47	0.0190	0.96		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.1	270	0.0110	0.73		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
18.9	417	Total			

**Subcatchment 10S: DA-2 Per**

Hydrograph



**Summary for Subcatchment 11S: DA-2 Imp**

Runoff = 0.11 cfs @ 12.30 hrs, Volume= 0.016 af, Depth= 3.06"

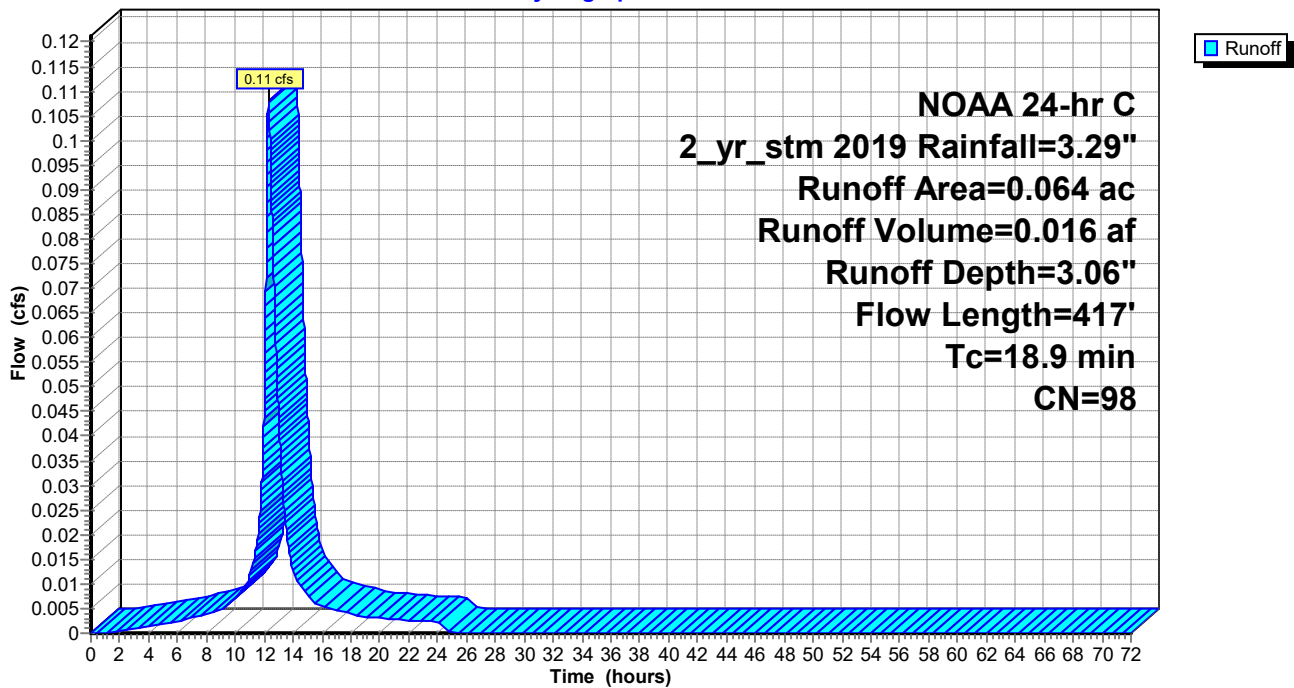
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 2\_yr\_stm 2019 Rainfall=3.29"

Area (ac)	CN	Description
* 0.034	98	Sidewalks
* 0.030	98	Roofs
0.064	98	Weighted Average
0.064		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	78	0.0140	0.14		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
2.9	22	0.0190	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
0.8	47	0.0190	0.96		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.1	270	0.0110	0.73		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
18.9	417	Total			

**Subcatchment 11S: DA-2 Imp**

Hydrograph



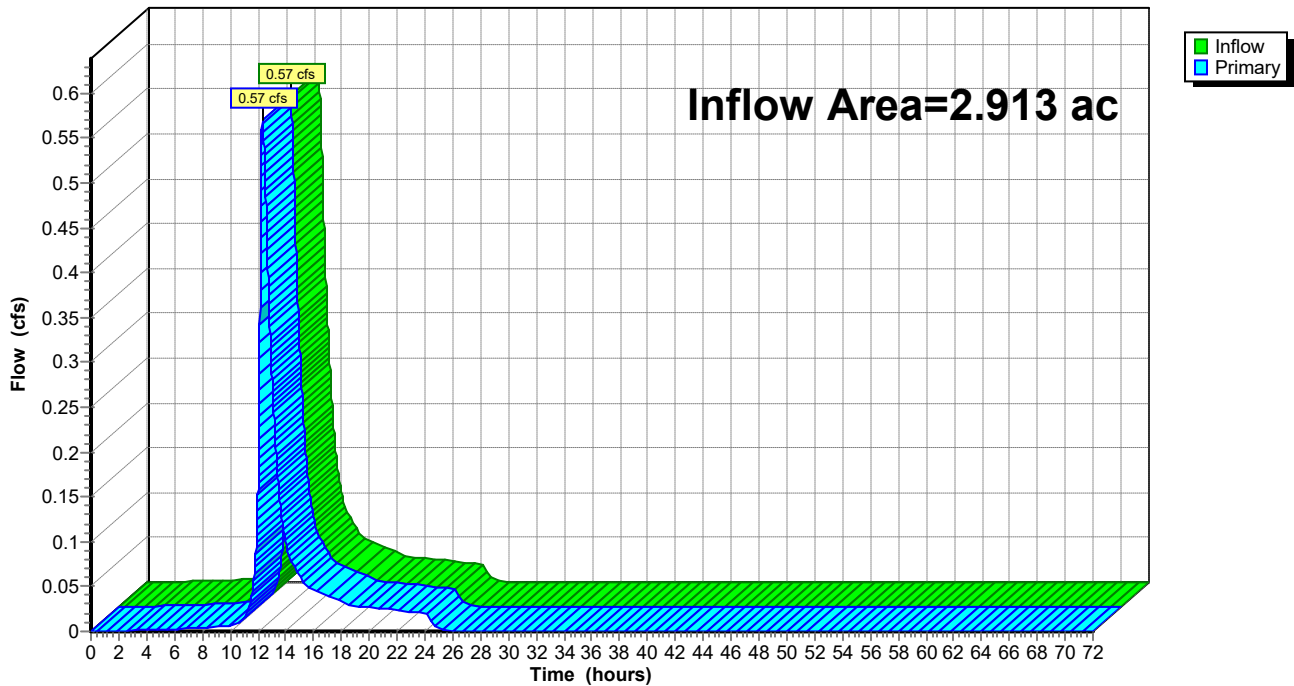
### Summary for Pond 12P: DA-2 - SW Wetland Basin

Inflow Area = 2.913 ac, 37.49% Impervious, Inflow Depth = 0.35" for 2\_yr\_stm 2019 event  
Inflow = 0.57 cfs @ 12.31 hrs, Volume= 0.086 af  
Primary = 0.57 cfs @ 12.31 hrs, Volume= 0.086 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Pond 12P: DA-2 - SW Wetland Basin

Hydrograph



**Summary for Subcatchment 13S: DA-3 Per**

Runoff = 0.26 cfs @ 12.11 hrs, Volume= 0.017 af, Depth= 1.10"

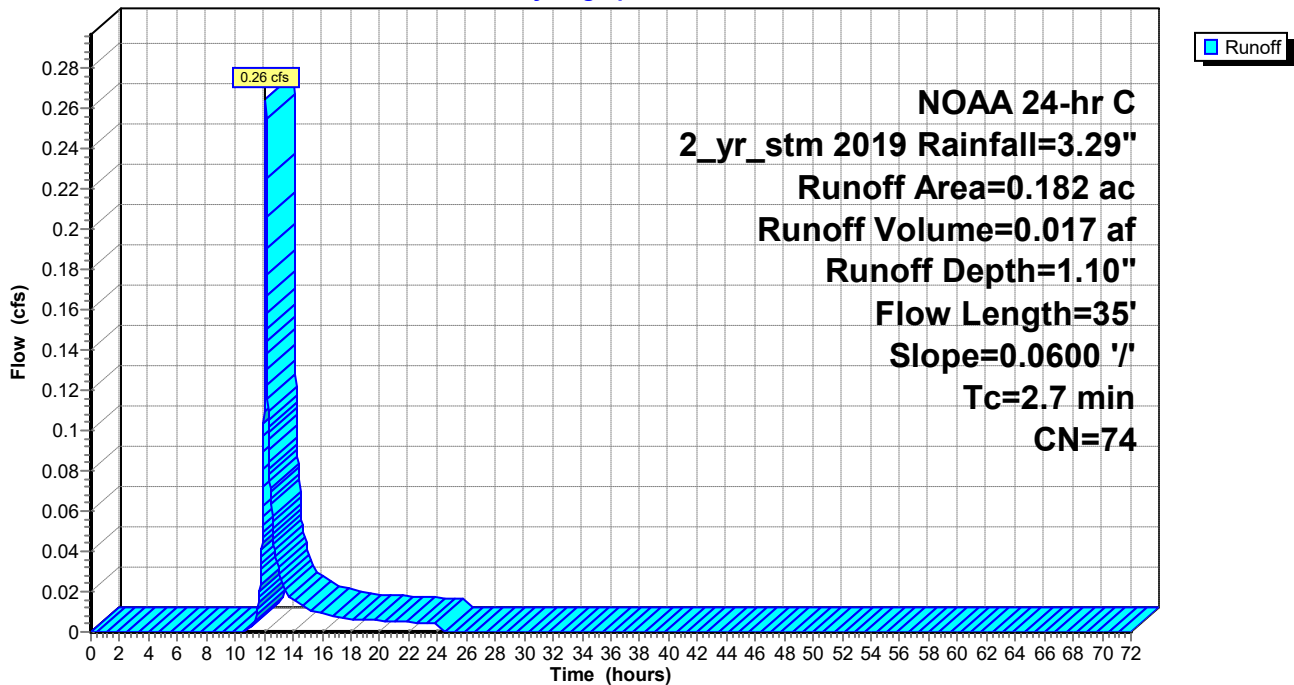
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 2\_yr\_stm 2019 Rainfall=3.29"

Area (ac)	CN	Description
0.182	74	>75% Grass cover, Good, HSG C
0.182		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	35	0.0600	0.22		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"

**Subcatchment 13S: DA-3 Per**

Hydrograph



**Summary for Subcatchment 14S: DA-4 Per**

Runoff = 0.16 cfs @ 12.35 hrs, Volume= 0.025 af, Depth= 0.99"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 2\_yr\_stm 2019 Rainfall=3.29"

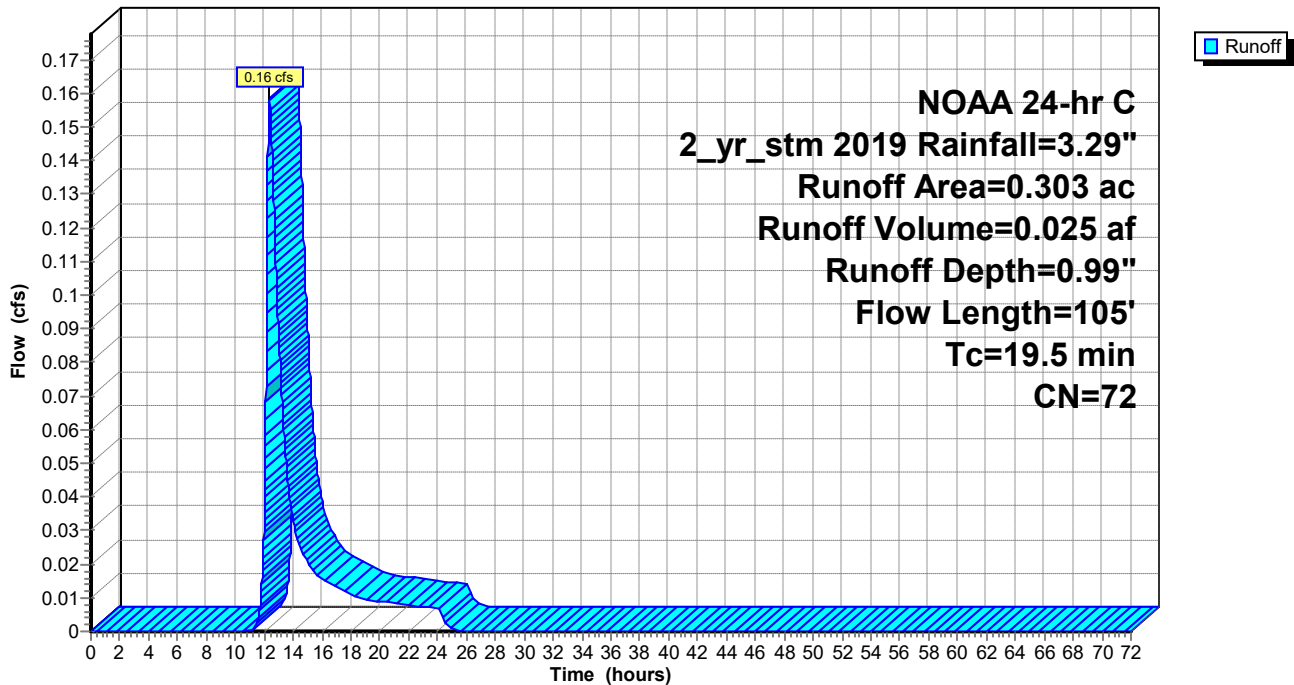
Area (ac)	CN	Description
0.168	74	>75% Grass cover, Good, HSG C
0.135	70	Woods, Good, HSG C
0.303	72	Weighted Average
0.303		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	13	0.1800	0.28		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
18.6	87	0.0210	0.08		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.29"
0.1	5	0.0210	0.72		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
19.5	105	Total			

**Subcatchment 14S: DA-4 Per**

Hydrograph



**Summary for Subcatchment 15S: DA-4 Imp**

Runoff = 0.02 cfs @ 12.21 hrs, Volume= 0.003 af, Depth= 3.06"

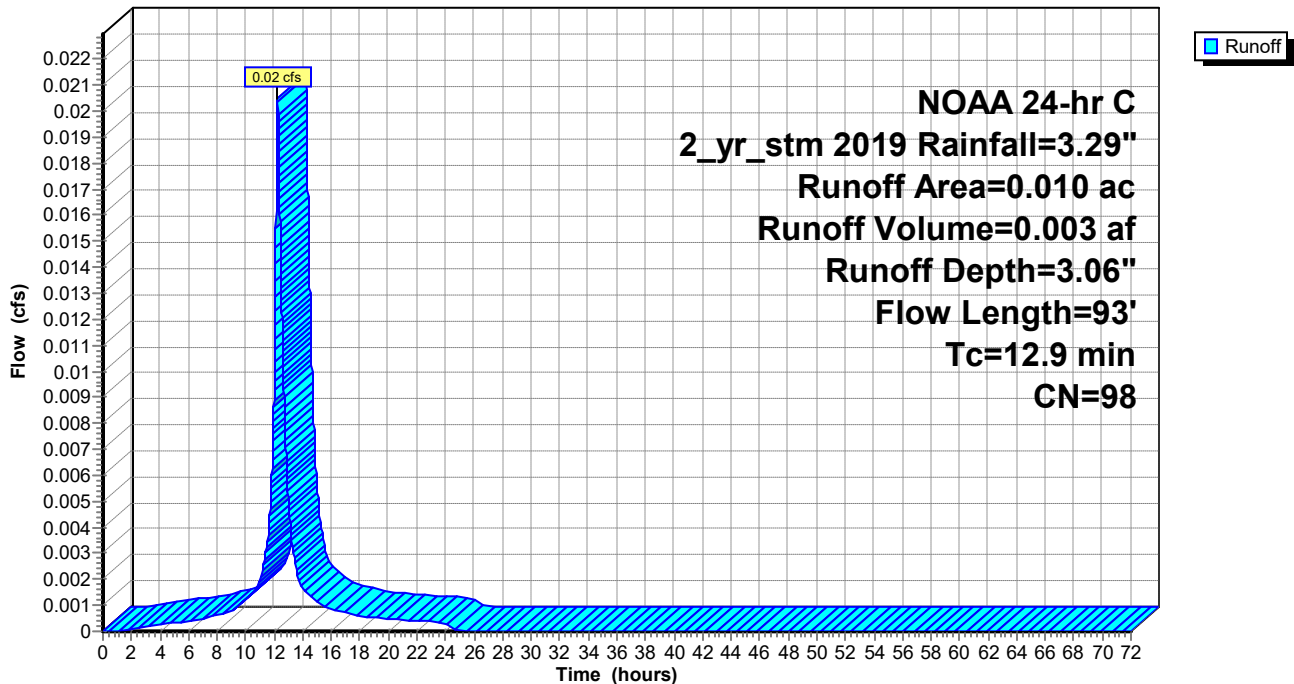
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 2\_yr\_stm 2019 Rainfall=3.29"

Area (ac)	CN	Description
* 0.010	98	Sidewalk
0.010		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	37	0.0280	1.31		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.5	10	0.3300	0.33		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
11.9	46	0.0180	0.06		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.29"
12.9	93	Total			

**Subcatchment 15S: DA-4 Imp**

Hydrograph



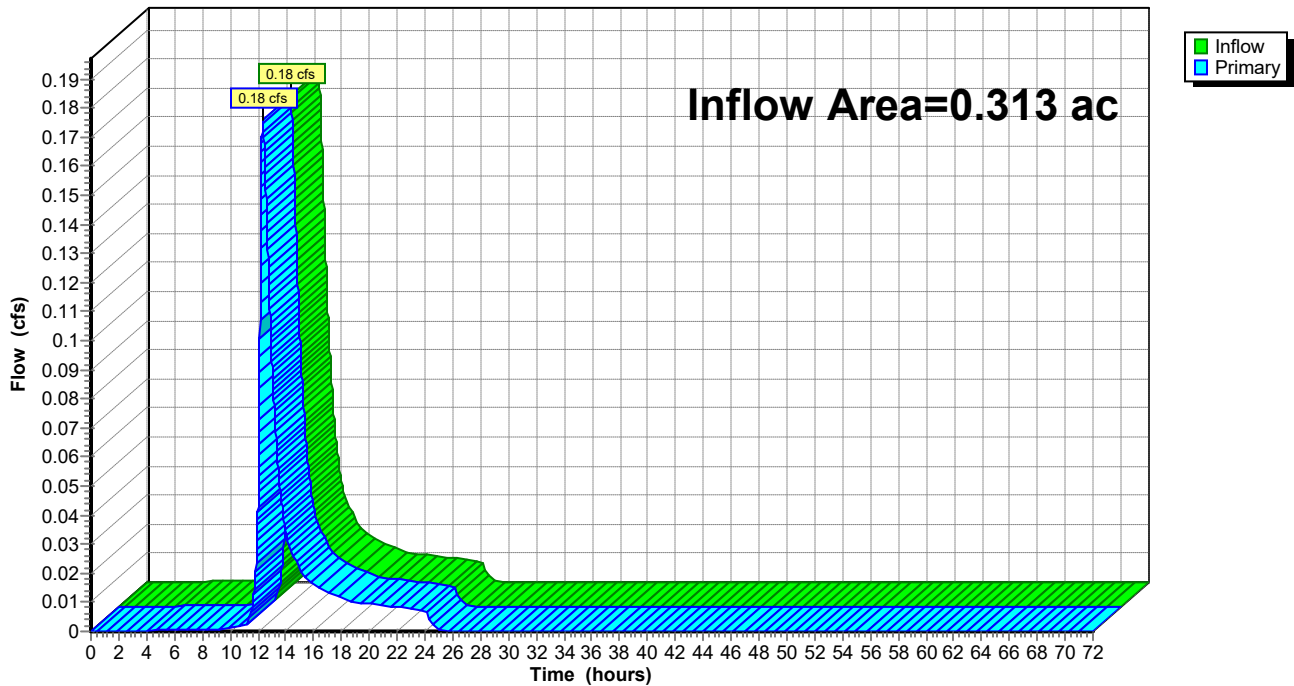
### Summary for Pond 16P: DA-4 - E Basin

Inflow Area = 0.313 ac, 3.19% Impervious, Inflow Depth = 1.05" for 2\_yr\_stm 2019 event  
Inflow = 0.18 cfs @ 12.35 hrs, Volume= 0.027 af  
Primary = 0.18 cfs @ 12.35 hrs, Volume= 0.027 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Pond 16P: DA-4 - E Basin

Hydrograph



**Summary for Subcatchment 1S: DA-1 Per**

Runoff = 0.73 cfs @ 12.16 hrs, Volume= 0.066 af, Depth= 1.51"

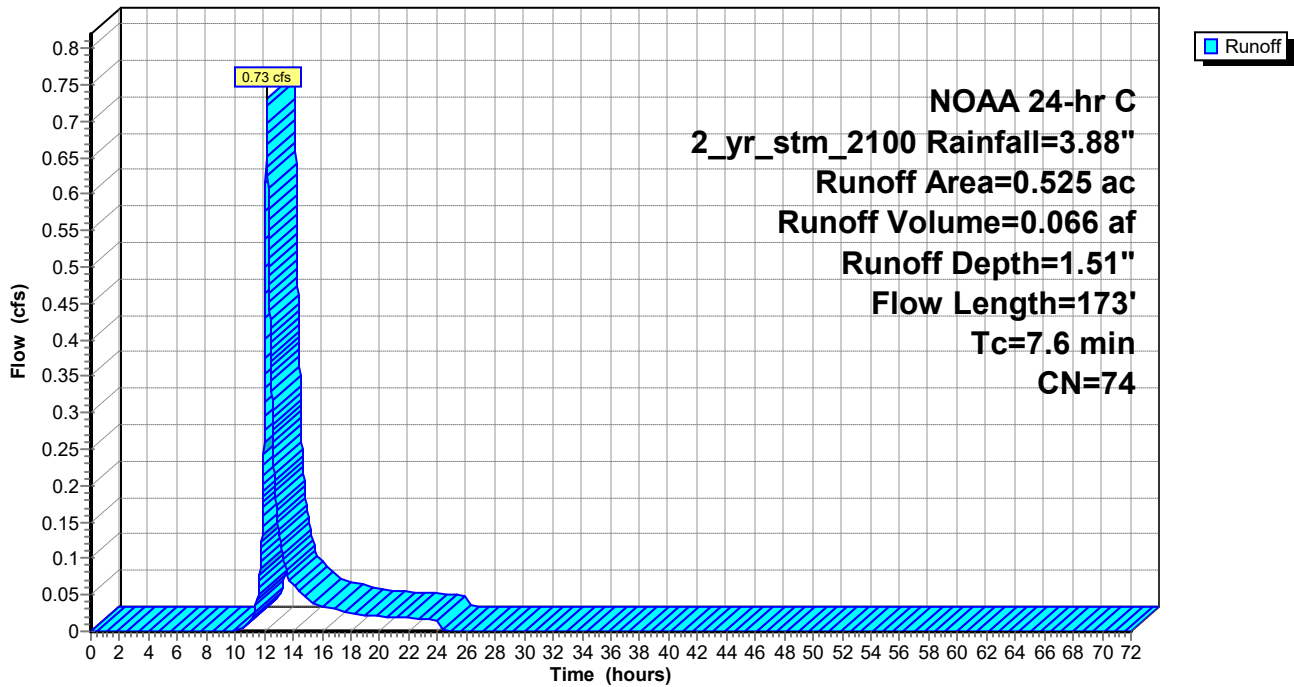
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 2\_yr\_stm\_2100 Rainfall=3.88"

Area (ac)	CN	Description
0.525	74	>75% Grass cover, Good, HSG C
0.525		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	60	0.0200	0.16		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
0.7	40	0.0125	0.96		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.5	73	0.0125	2.27		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
7.6	173	Total			

**Subcatchment 1S: DA-1 Per**

Hydrograph



**Summary for Subcatchment 2S: DA-1 Imp**

Runoff = 2.11 cfs @ 12.10 hrs, Volume= 0.147 af, Depth= 3.65"

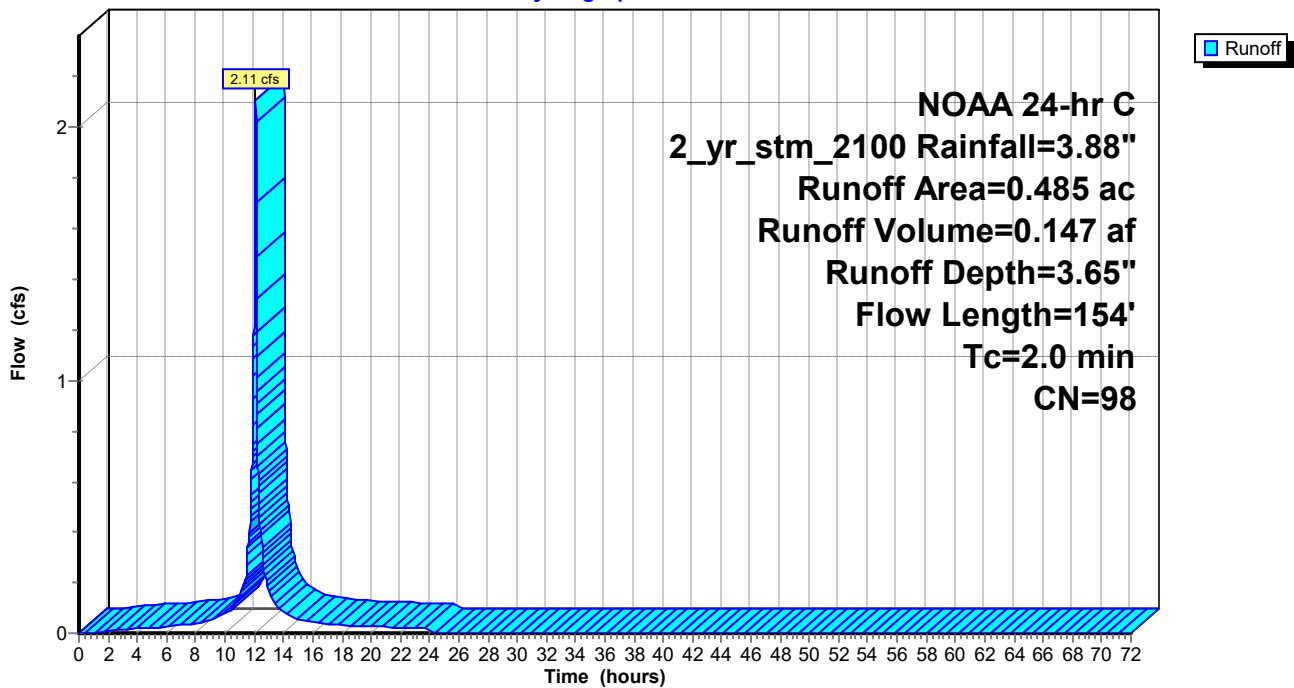
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 2\_yr\_stm\_2100 Rainfall=3.88"

Area (ac)	CN	Description
0.426	98	Paved parking, HSG C
* 0.059	98	Sidewalk
0.485	98	Weighted Average
0.485		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.91		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.7	46	0.0180	1.14		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.7	42	0.0125	0.97		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.4	54	0.0125	2.27		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
2.0	154	Total			

**Subcatchment 2S: DA-1 Imp**

Hydrograph



**Summary for Pond 3P: NE Bio Basin**

Inflow Area = 1.010 ac, 48.02% Impervious, Inflow Depth = 2.53" for 2\_yr\_stm\_2100 event  
 Inflow = 2.72 cfs @ 12.11 hrs, Volume= 0.213 af  
 Outflow = 1.12 cfs @ 12.30 hrs, Volume= 0.213 af, Atten= 59%, Lag= 11.7 min  
 Discarded = 0.12 cfs @ 12.30 hrs, Volume= 0.137 af  
 Primary = 1.01 cfs @ 12.30 hrs, Volume= 0.076 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 66.61' @ 12.30 hrs Surf.Area= 4,977 sf Storage= 2,676 cf

Plug-Flow detention time= 98.1 min calculated for 0.213 af (100% of inflow)  
 Center-of-Mass det. time= 98.1 min ( 882.9 - 784.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	66.00'	11,468 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
66.00	3,792	0	0
68.00	7,676	11,468	11,468

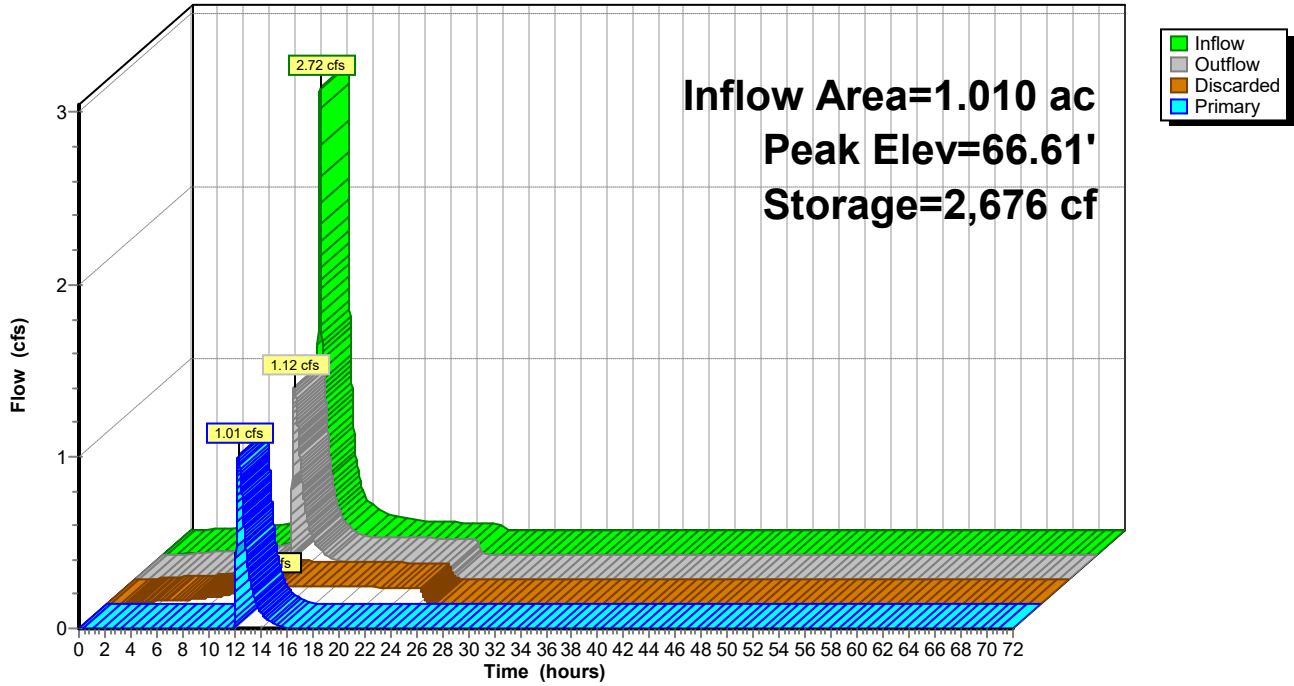
Device	Routing	Invert	Outlet Devices
#1	Discarded	66.00'	<b>1.000 in/hr Exfiltration over Surface area</b>
#2	Primary	63.64'	<b>15.0" Round Culvert</b> L= 57.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 63.64' / 63.50' S= 0.0025 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#3	Device 2	66.36'	<b>30.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads

**Discarded OutFlow** Max=0.12 cfs @ 12.30 hrs HW=66.61' (Free Discharge)  
 ↑1=Exfiltration (Exfiltration Controls 0.12 cfs)

**Primary OutFlow** Max=1.00 cfs @ 12.30 hrs HW=66.61' (Free Discharge)  
 ↑2=Culvert (Passes 1.00 cfs of 7.99 cfs potential flow)  
 ↑3=Orifice/Grate (Orifice Controls 1.00 cfs @ 1.61 fps)

### Pond 3P: NE Bio Basin

Hydrograph



**Summary for Subcatchment 4S: DA-1 Per**

Runoff = 0.69 cfs @ 12.32 hrs, Volume= 0.099 af, Depth= 1.38"

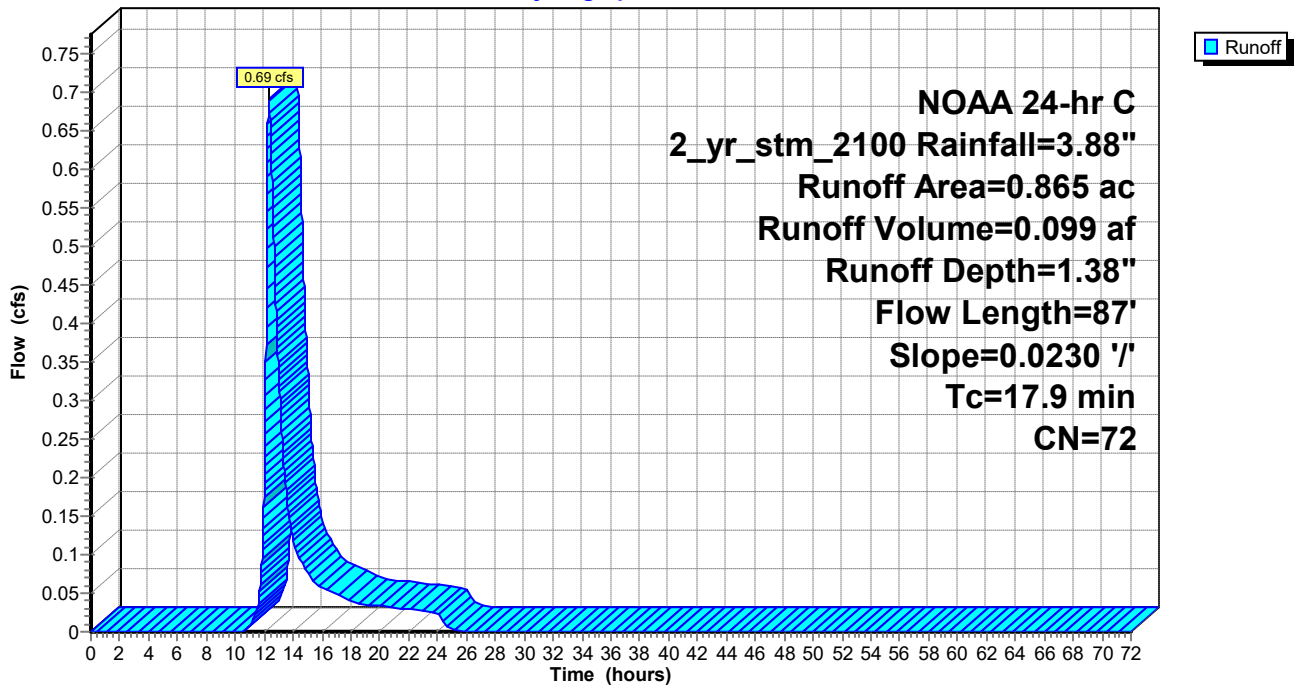
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 2\_yr\_stm\_2100 Rainfall=3.88"

Area (ac)	CN	Description
0.531	74	>75% Grass cover, Good, HSG C
0.334	70	Woods, Good, HSG C
0.865	72	Weighted Average
0.865		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.9	87	0.0230	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.29"

**Subcatchment 4S: DA-1 Per**

Hydrograph



### Summary for Subcatchment 5S: DA-1 Imp

Runoff = 0.44 cfs @ 12.09 hrs, Volume= 0.029 af, Depth= 3.65"

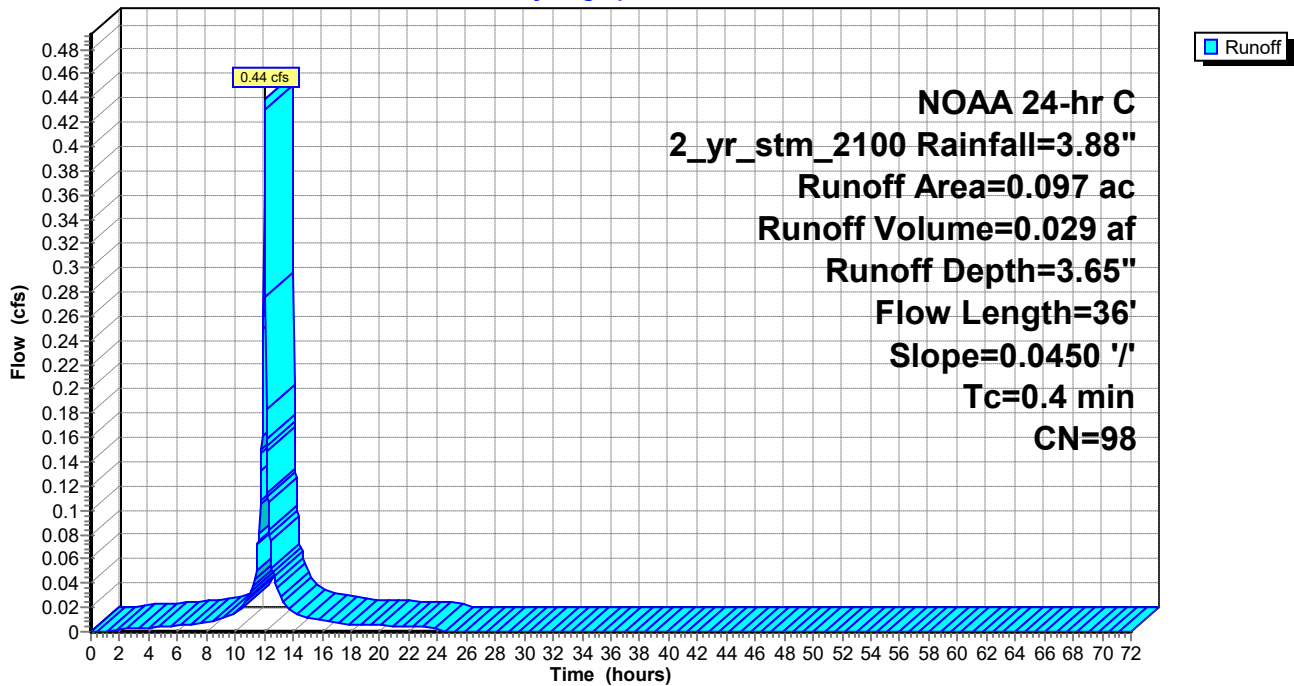
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 2\_yr\_stm\_2100 Rainfall=3.88"

Area (ac)	CN	Description
0.038	98	Paved parking, HSG C
* 0.059	98	Sidewalk
0.097	98	Weighted Average
0.097		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	36	0.0450	1.57		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.29"

### Subcatchment 5S: DA-1 Imp

Hydrograph



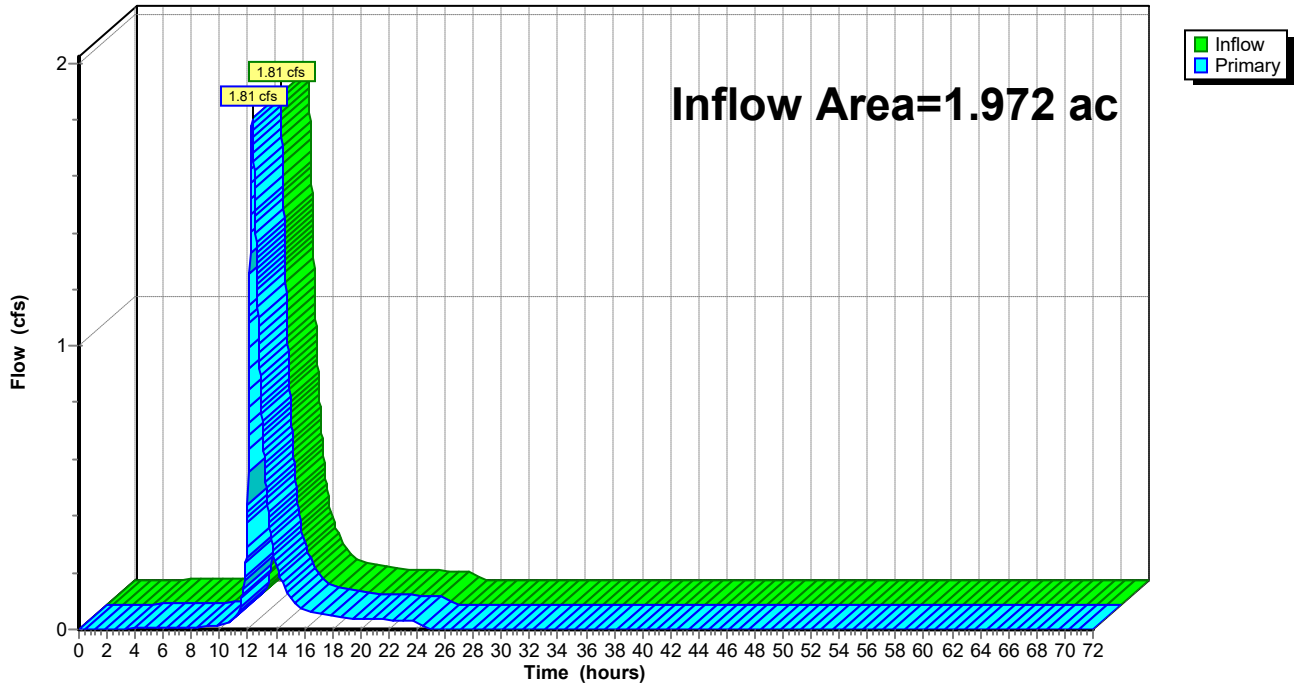
### Summary for Pond 6P: EA-1 - ROW / NE Wetlands

Inflow Area = 1.972 ac, 29.51% Impervious, Inflow Depth = 1.25" for 2\_yr\_stm\_2100 event  
Inflow = 1.81 cfs @ 12.30 hrs, Volume= 0.205 af  
Primary = 1.81 cfs @ 12.30 hrs, Volume= 0.205 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Pond 6P: EA-1 - ROW / NE Wetlands

Hydrograph



**Summary for Subcatchment 7S: DA-2 Per**

Runoff = 1.21 cfs @ 12.21 hrs, Volume= 0.134 af, Depth= 1.51"

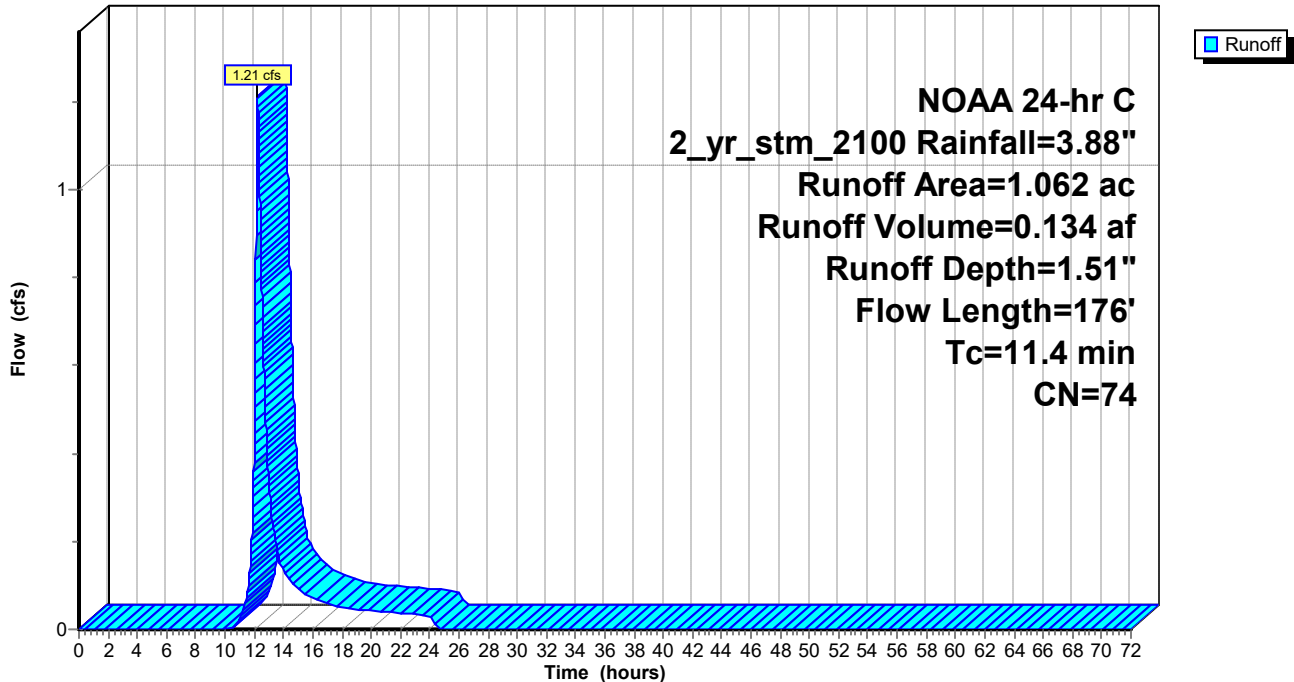
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 2\_yr\_stm\_2100 Rainfall=3.88"

Area (ac)	CN	Description
1.062	74	>75% Grass cover, Good, HSG C
1.062		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0160	0.16		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
0.4	16	0.0110	0.73		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.4	60	0.0125	2.27		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
11.4	176	Total			

**Subcatchment 7S: DA-2 Per**

Hydrograph



**Summary for Subcatchment 8S: DA-2 Imp**

Runoff = 4.52 cfs @ 12.10 hrs, Volume= 0.312 af, Depth= 3.65"

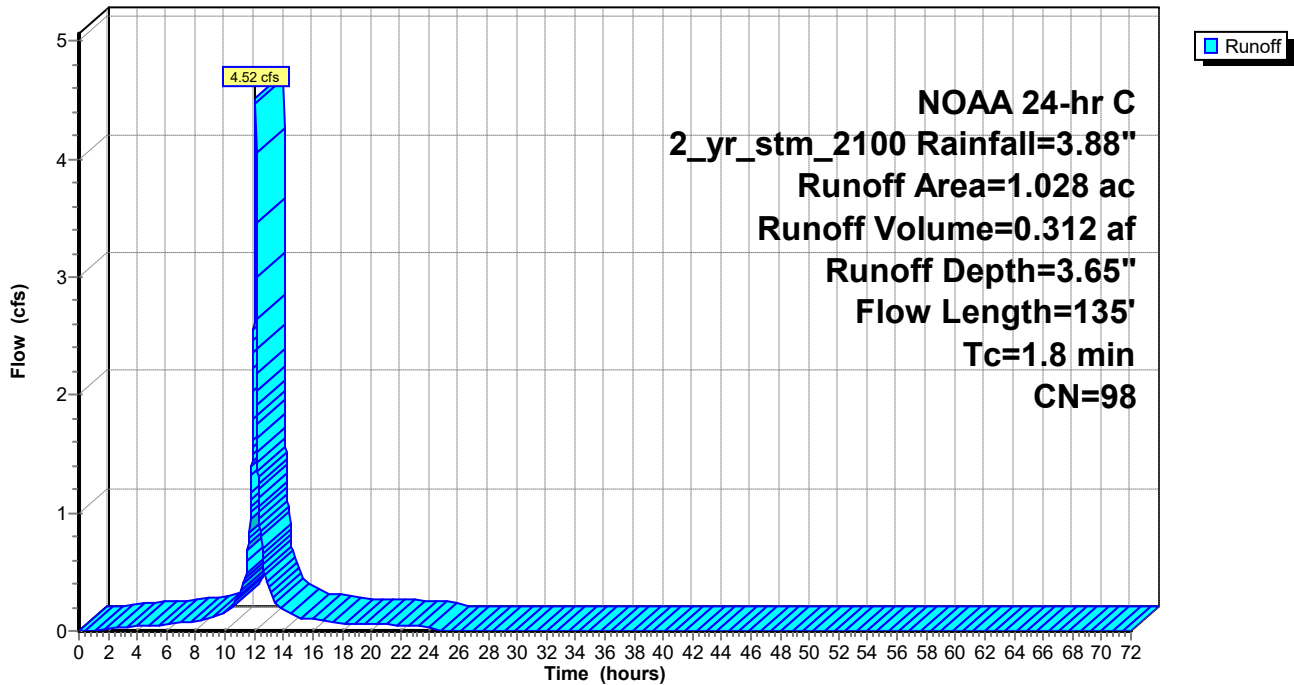
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 2\_yr\_stm\_2100 Rainfall=3.88"

Area (ac)	CN	Description
0.516	98	Paved parking, HSG C
0.446	98	Roofs, HSG C
* 0.066	98	Sidewalks
1.028	98	Weighted Average
1.028		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	60	0.0180	1.21		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.7	40	0.0125	0.96		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.3	35	0.0125	2.27		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
1.8	135	Total			

**Subcatchment 8S: DA-2 Imp**

Hydrograph



**Summary for Pond 9P: SW Bio Basin**

Inflow Area = 2.090 ac, 49.19% Impervious, Inflow Depth = 2.56" for 2\_yr\_stm\_2100 event  
 Inflow = 5.36 cfs @ 12.11 hrs, Volume= 0.446 af  
 Outflow = 0.28 cfs @ 14.26 hrs, Volume= 0.446 af, Atten= 95%, Lag= 129.6 min  
 Discarded = 0.28 cfs @ 14.26 hrs, Volume= 0.446 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 68.37' @ 14.26 hrs Surf.Area= 12,207 sf Storage= 9,508 cf

Plug-Flow detention time= 317.1 min calculated for 0.446 af (100% of inflow)  
 Center-of-Mass det. time= 317.1 min ( 1,102.4 - 785.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	67.50'	25,174 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
67.50	9,756	0	0
69.50	15,418	25,174	25,174

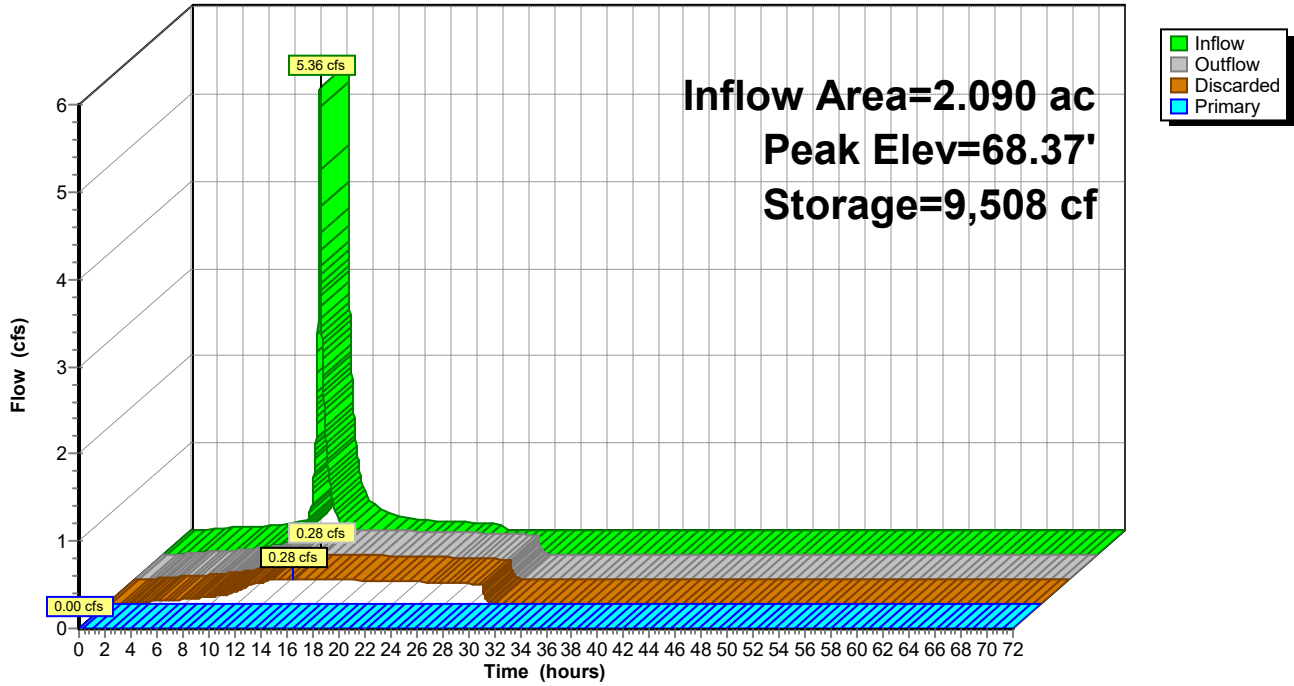
Device	Routing	Invert	Outlet Devices
#1	Discarded	67.50'	<b>1.000 in/hr Exfiltration over Surface area</b>
#2	Primary	68.40'	<b>25.0' long x 6.0' breadth Broad-Crested Rectangular Weir</b>
Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00			
2.50 3.00 3.50 4.00 4.50 5.00 5.50			
Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65			
2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83			

**Discarded OutFlow** Max=0.28 cfs @ 14.26 hrs HW=68.37' (Free Discharge)  
 ↑1=**Exfiltration** (Exfiltration Controls 0.28 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=67.50' (Free Discharge)  
 ↑2=**Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

### Pond 9P: SW Bio Basin

Hydrograph



**Summary for Subcatchment 10S: DA-2 Per**

Runoff = 0.66 cfs @ 12.31 hrs, Volume= 0.095 af, Depth= 1.51"

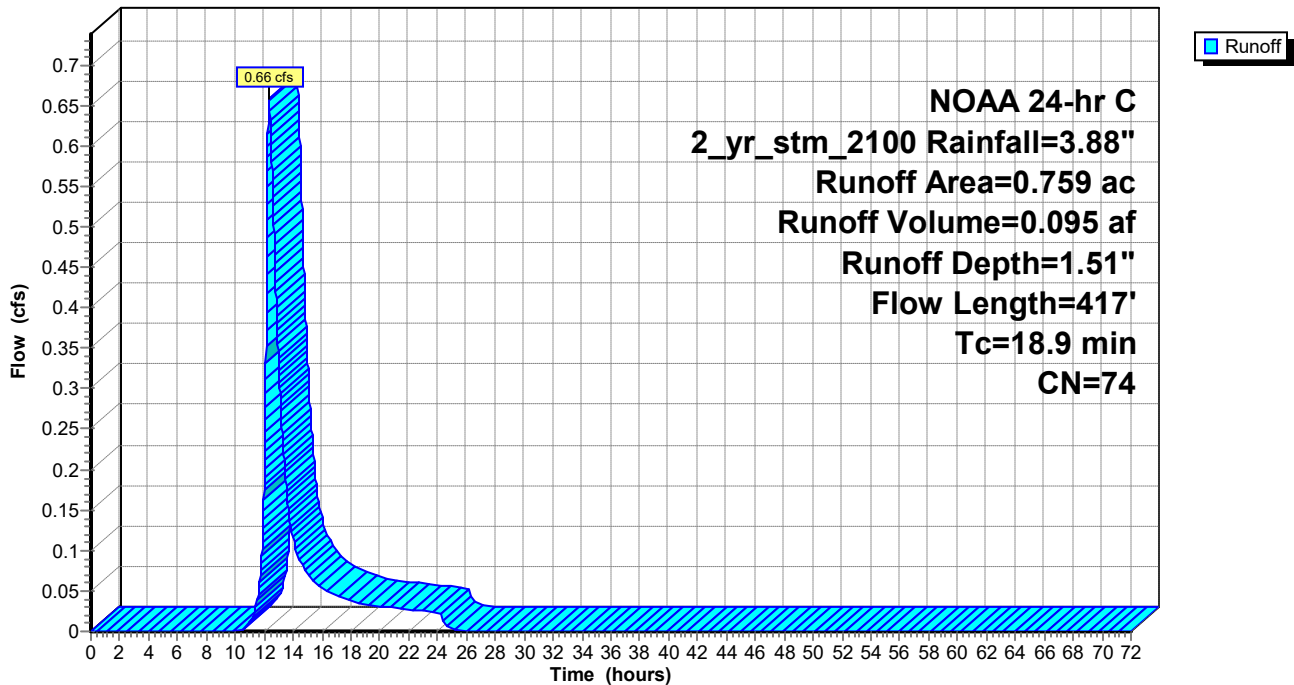
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 2\_yr\_stm\_2100 Rainfall=3.88"

Area (ac)	CN	Description
0.759	74	>75% Grass cover, Good, HSG C
0.759		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	78	0.0140	0.14		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
2.9	22	0.0190	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
0.8	47	0.0190	0.96		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.1	270	0.0110	0.73		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
18.9	417	Total			

**Subcatchment 10S: DA-2 Per**

Hydrograph



**Summary for Subcatchment 11S: DA-2 Imp**

Runoff = 0.13 cfs @ 12.30 hrs, Volume= 0.019 af, Depth= 3.65"

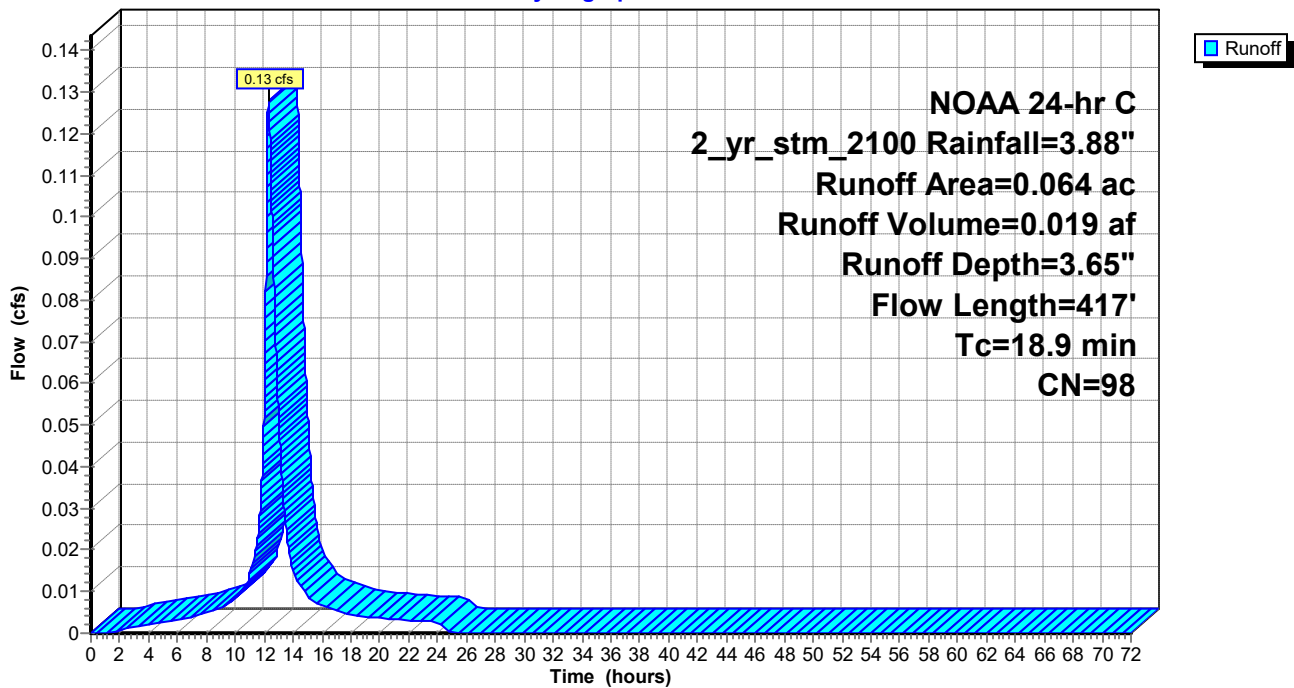
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 2\_yr\_stm\_2100 Rainfall=3.88"

Area (ac)	CN	Description
* 0.034	98	Sidewalks
* 0.030	98	Roofs
0.064	98	Weighted Average
0.064		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	78	0.0140	0.14		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
2.9	22	0.0190	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
0.8	47	0.0190	0.96		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.1	270	0.0110	0.73		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
18.9	417	Total			

**Subcatchment 11S: DA-2 Imp**

Hydrograph



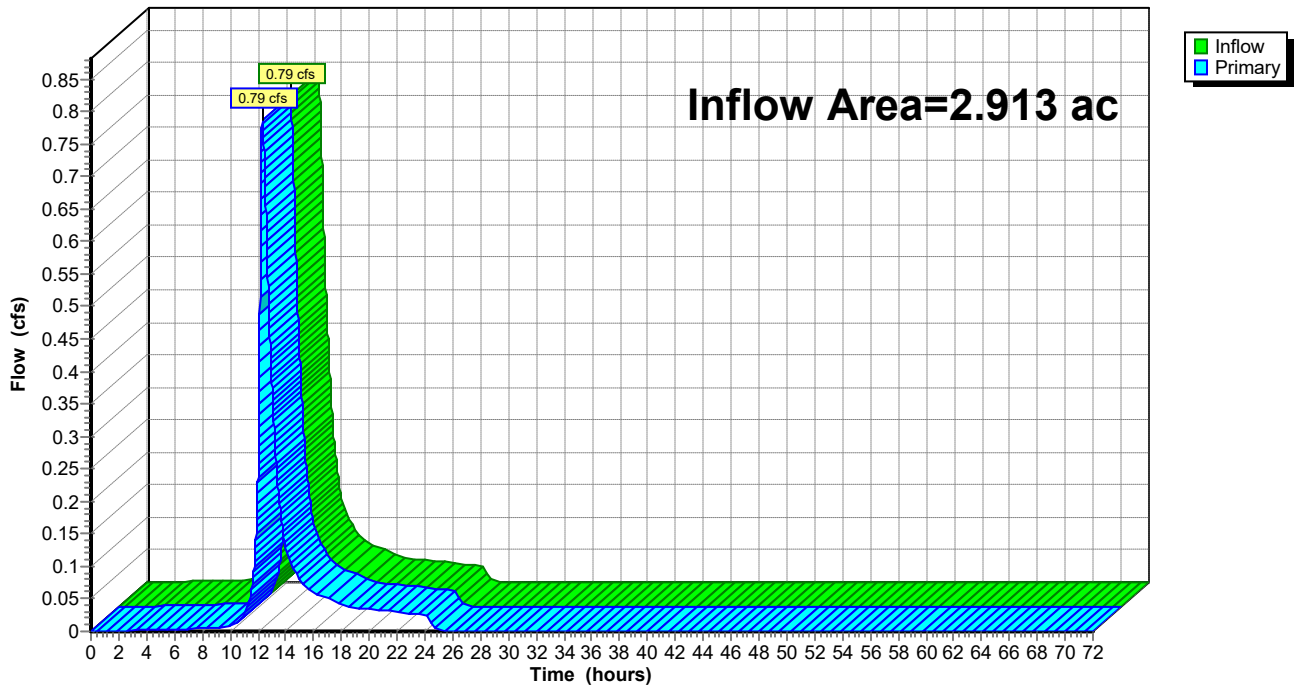
### Summary for Pond 12P: DA-2 - SW Wetland Basin

Inflow Area = 2.913 ac, 37.49% Impervious, Inflow Depth = 0.47" for 2\_yr\_stm\_2100 event  
Inflow = 0.79 cfs @ 12.31 hrs, Volume= 0.115 af  
Primary = 0.79 cfs @ 12.31 hrs, Volume= 0.115 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Pond 12P: DA-2 - SW Wetland Basin

Hydrograph



**Summary for Subcatchment 13S: DA-3 Per**

Runoff = 0.37 cfs @ 12.11 hrs, Volume= 0.023 af, Depth= 1.51"

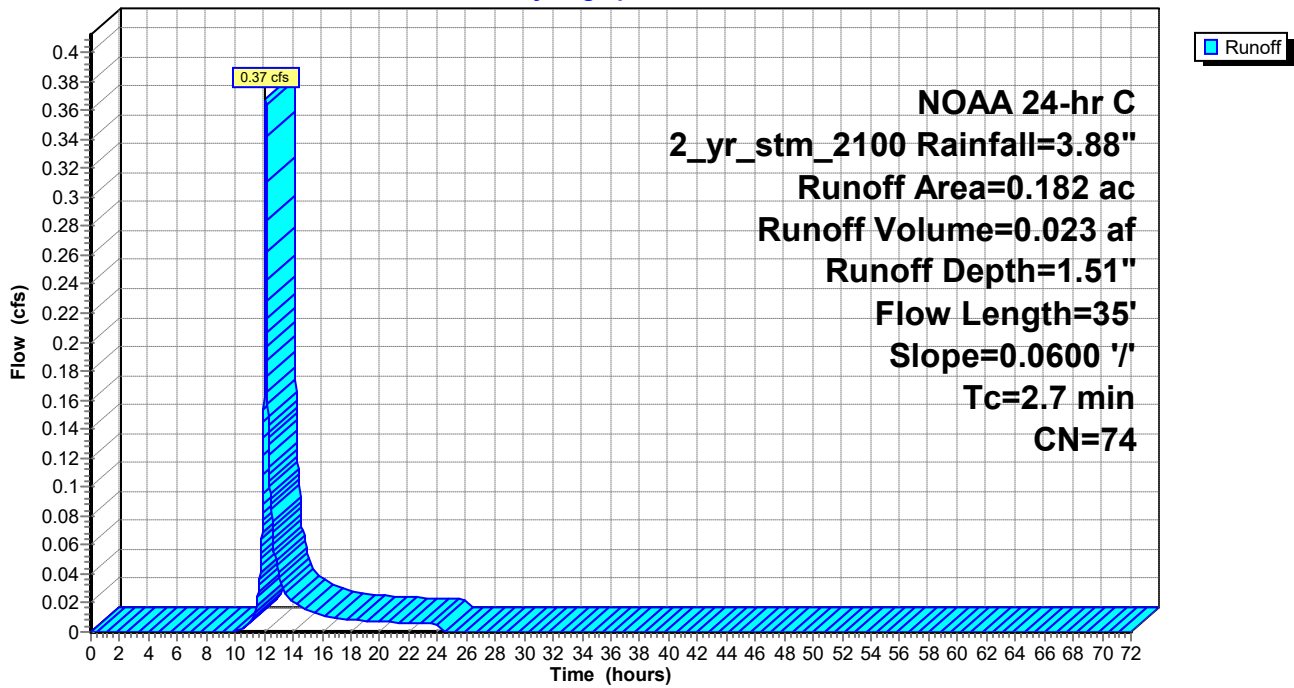
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 2\_yr\_stm\_2100 Rainfall=3.88"

Area (ac)	CN	Description
0.182	74	>75% Grass cover, Good, HSG C
0.182		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	35	0.0600	0.22		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"

**Subcatchment 13S: DA-3 Per**

Hydrograph



**Summary for Subcatchment 14S: DA-4 Per**

Runoff = 0.23 cfs @ 12.35 hrs, Volume= 0.035 af, Depth= 1.38"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 2\_yr\_stm\_2100 Rainfall=3.88"

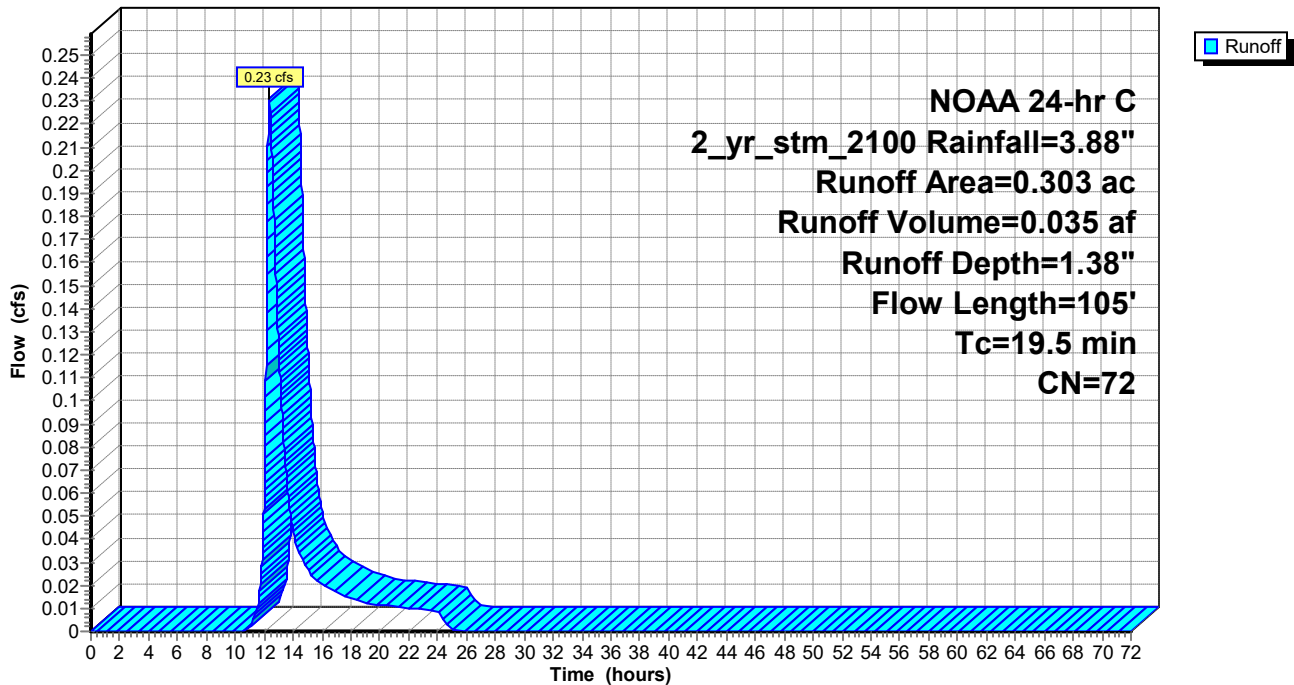
Area (ac)	CN	Description
0.168	74	>75% Grass cover, Good, HSG C
0.135	70	Woods, Good, HSG C
0.303	72	Weighted Average
0.303		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	13	0.1800	0.28		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
18.6	87	0.0210	0.08		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.29"
0.1	5	0.0210	0.72		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
19.5	105	Total			

**Subcatchment 14S: DA-4 Per**

Hydrograph



**Summary for Subcatchment 15S: DA-4 Imp**

Runoff = 0.02 cfs @ 12.21 hrs, Volume= 0.003 af, Depth= 3.65"

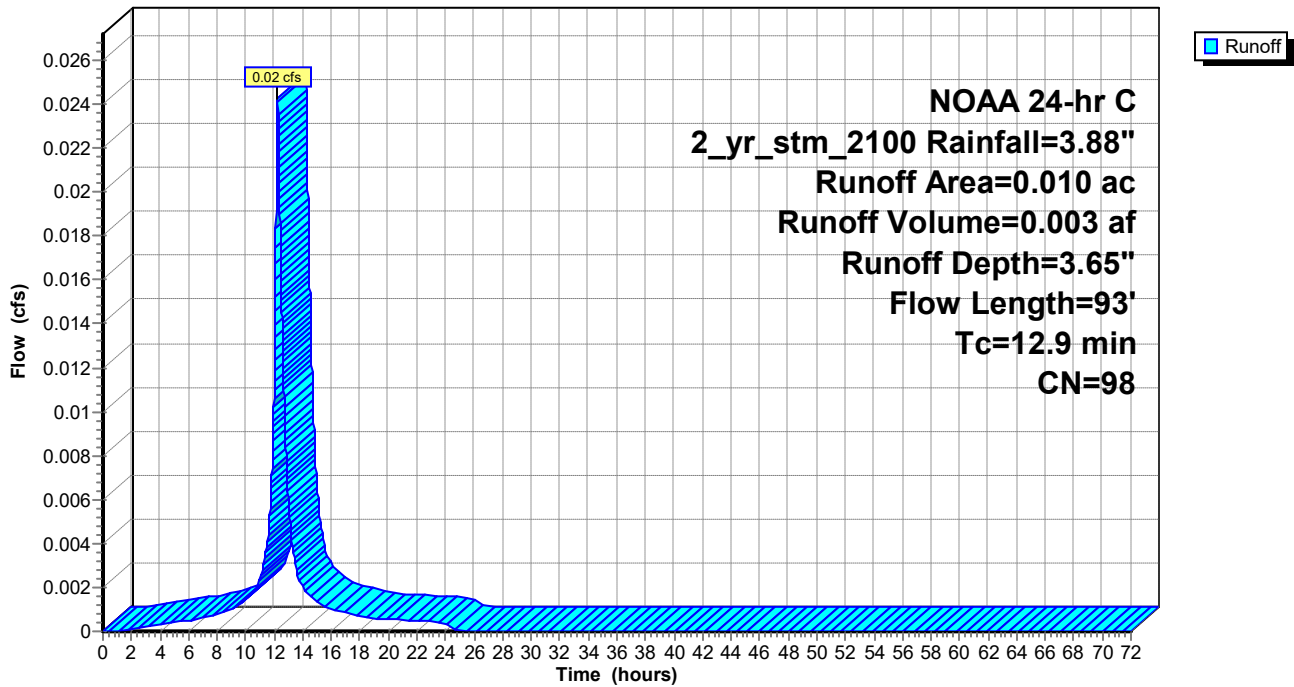
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 2\_yr\_stm\_2100 Rainfall=3.88"

Area (ac)	CN	Description
* 0.010	98	Sidewalk
0.010		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	37	0.0280	1.31		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.5	10	0.3300	0.33		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
11.9	46	0.0180	0.06		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.29"
12.9	93	Total			

**Subcatchment 15S: DA-4 Imp**

Hydrograph



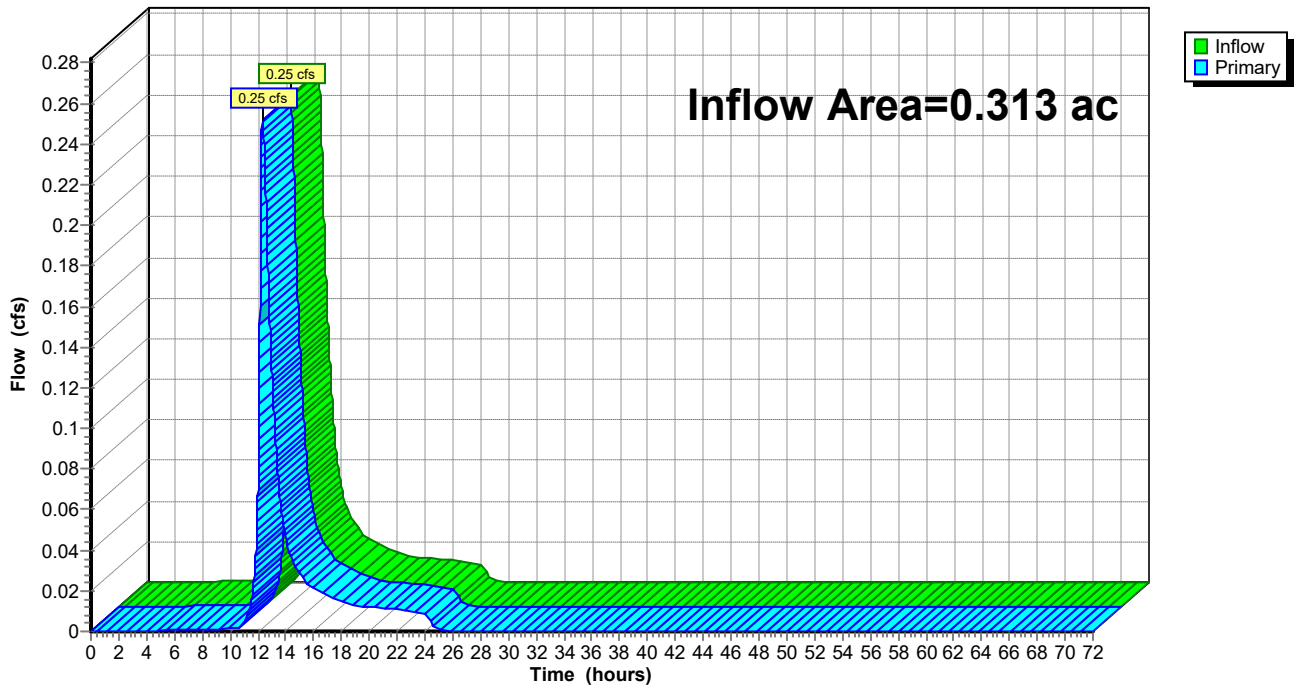
### Summary for Pond 16P: DA-4 - E Basin

Inflow Area = 0.313 ac, 3.19% Impervious, Inflow Depth = 1.45" for 2\_yr\_stm\_2100 event  
Inflow = 0.25 cfs @ 12.33 hrs, Volume= 0.038 af  
Primary = 0.25 cfs @ 12.33 hrs, Volume= 0.038 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Pond 16P: DA-4 - E Basin

Hydrograph



**Summary for Subcatchment 1S: DA-1 Per**

Runoff = 1.21 cfs @ 12.16 hrs, Volume= 0.107 af, Depth= 2.45"

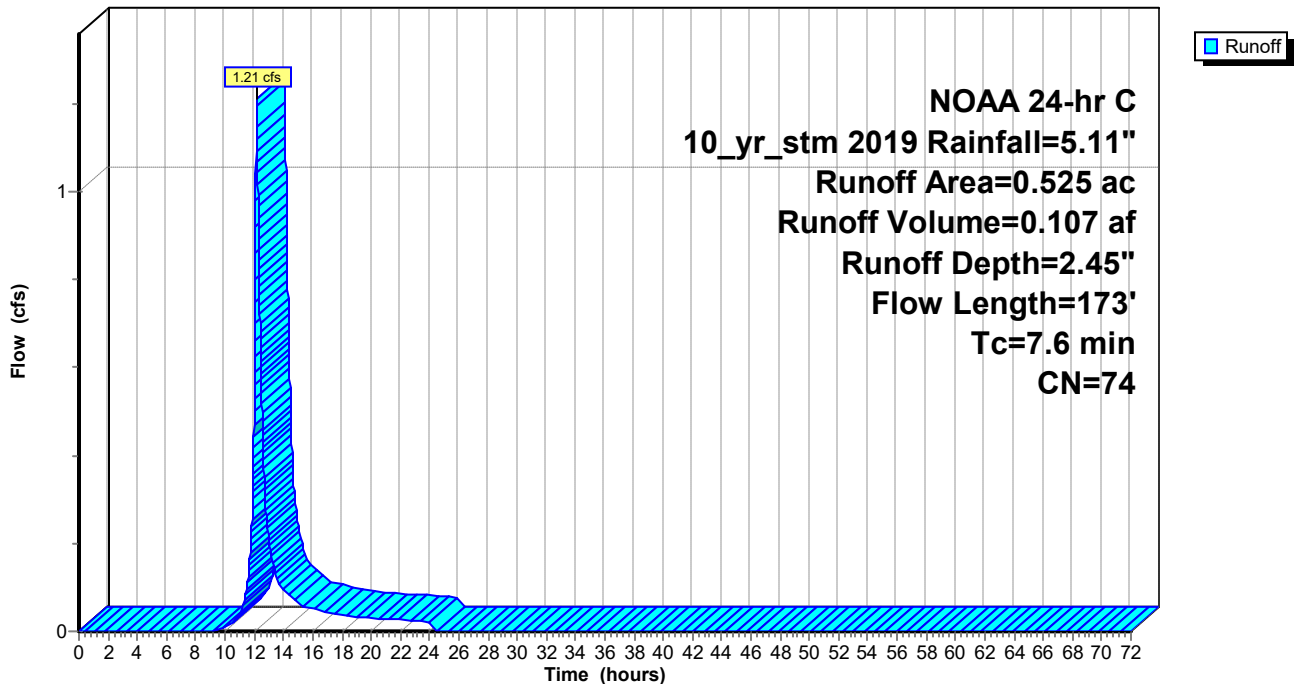
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 10\_yr\_stm 2019 Rainfall=5.11"

Area (ac)	CN	Description
0.525	74	>75% Grass cover, Good, HSG C
0.525		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	60	0.0200	0.16		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
0.7	40	0.0125	0.96		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.5	73	0.0125	2.27		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
7.6	173	Total			

**Subcatchment 1S: DA-1 Per**

Hydrograph



**Summary for Subcatchment 2S: DA-1 Imp**

Runoff = 2.79 cfs @ 12.10 hrs, Volume= 0.197 af, Depth= 4.87"

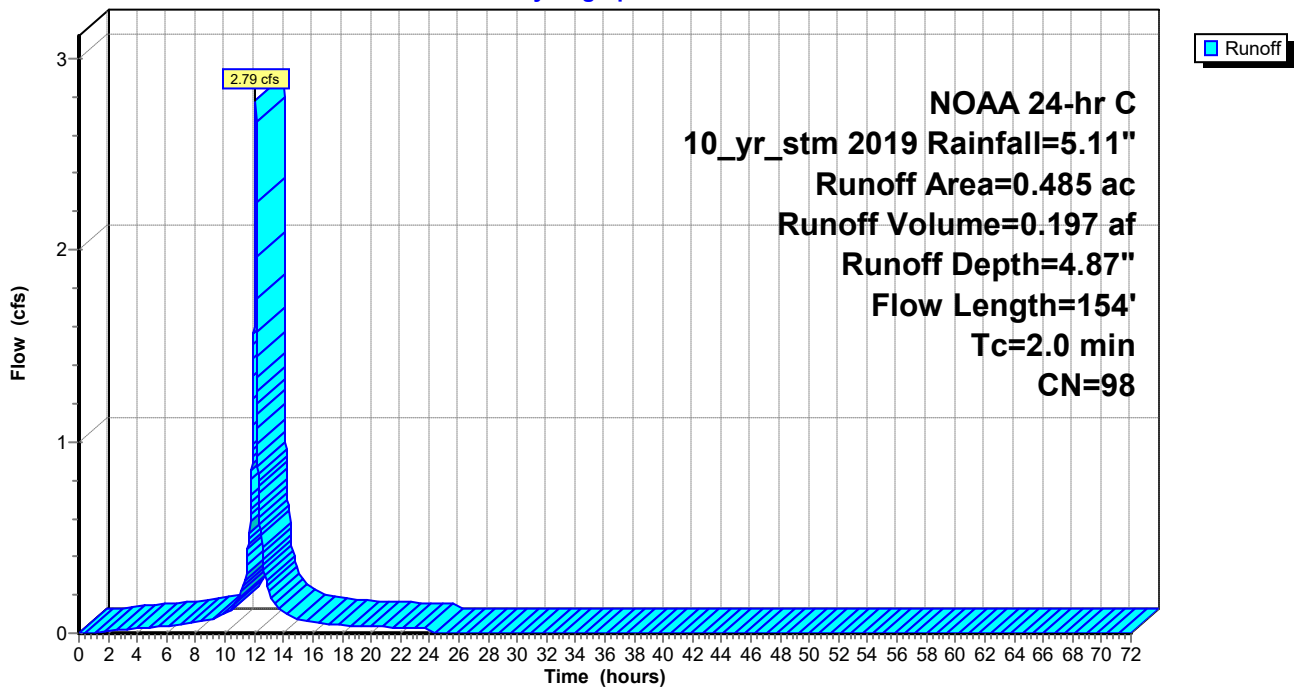
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 10\_yr\_stm 2019 Rainfall=5.11"

Area (ac)	CN	Description
0.426	98	Paved parking, HSG C
* 0.059	98	Sidewalk
0.485	98	Weighted Average
0.485		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.91		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.7	46	0.0180	1.14		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.7	42	0.0125	0.97		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.4	54	0.0125	2.27		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
2.0	154	Total			

**Subcatchment 2S: DA-1 Imp**

Hydrograph



**Summary for Pond 3P: NE Bio Basin**

Inflow Area = 1.010 ac, 48.02% Impervious, Inflow Depth = 3.61" for 10\_yr\_stm 2019 event  
 Inflow = 3.82 cfs @ 12.11 hrs, Volume= 0.304 af  
 Outflow = 2.09 cfs @ 12.23 hrs, Volume= 0.304 af, Atten= 45%, Lag= 7.2 min  
 Discarded = 0.12 cfs @ 12.23 hrs, Volume= 0.160 af  
 Primary = 1.97 cfs @ 12.23 hrs, Volume= 0.144 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 66.75' @ 12.23 hrs Surf.Area= 5,252 sf Storage= 3,399 cf

Plug-Flow detention time= 89.4 min calculated for 0.304 af (100% of inflow)  
 Center-of-Mass det. time= 89.4 min ( 870.6 - 781.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	66.00'	11,468 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
66.00	3,792	0	0
68.00	7,676	11,468	11,468

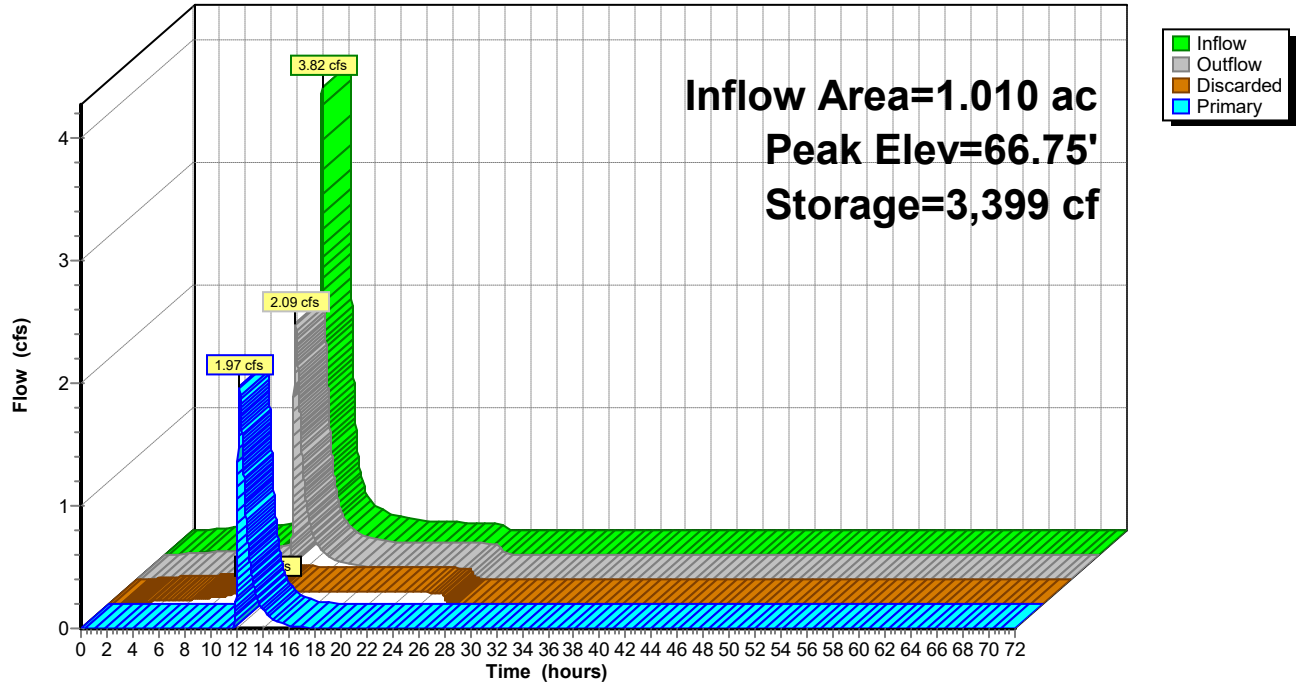
Device	Routing	Invert	Outlet Devices
#1	Discarded	66.00'	<b>1.000 in/hr Exfiltration over Surface area</b>
#2	Primary	63.64'	<b>15.0" Round Culvert</b> L= 57.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 63.64' / 63.50' S= 0.0025 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#3	Device 2	66.36'	<b>30.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads

**Discarded OutFlow** Max=0.12 cfs @ 12.23 hrs HW=66.75' (Free Discharge)  
 ↑1=Exfiltration (Exfiltration Controls 0.12 cfs)

**Primary OutFlow** Max=1.97 cfs @ 12.23 hrs HW=66.75' (Free Discharge)  
 ↑2=Culvert (Passes 1.97 cfs of 8.28 cfs potential flow)  
 ↑3=Orifice/Grate (Orifice Controls 1.97 cfs @ 2.01 fps)

### Pond 3P: NE Bio Basin

Hydrograph



### Summary for Subcatchment 4S: DA-1 Per

Runoff = 1.20 cfs @ 12.30 hrs, Volume= 0.165 af, Depth= 2.28"

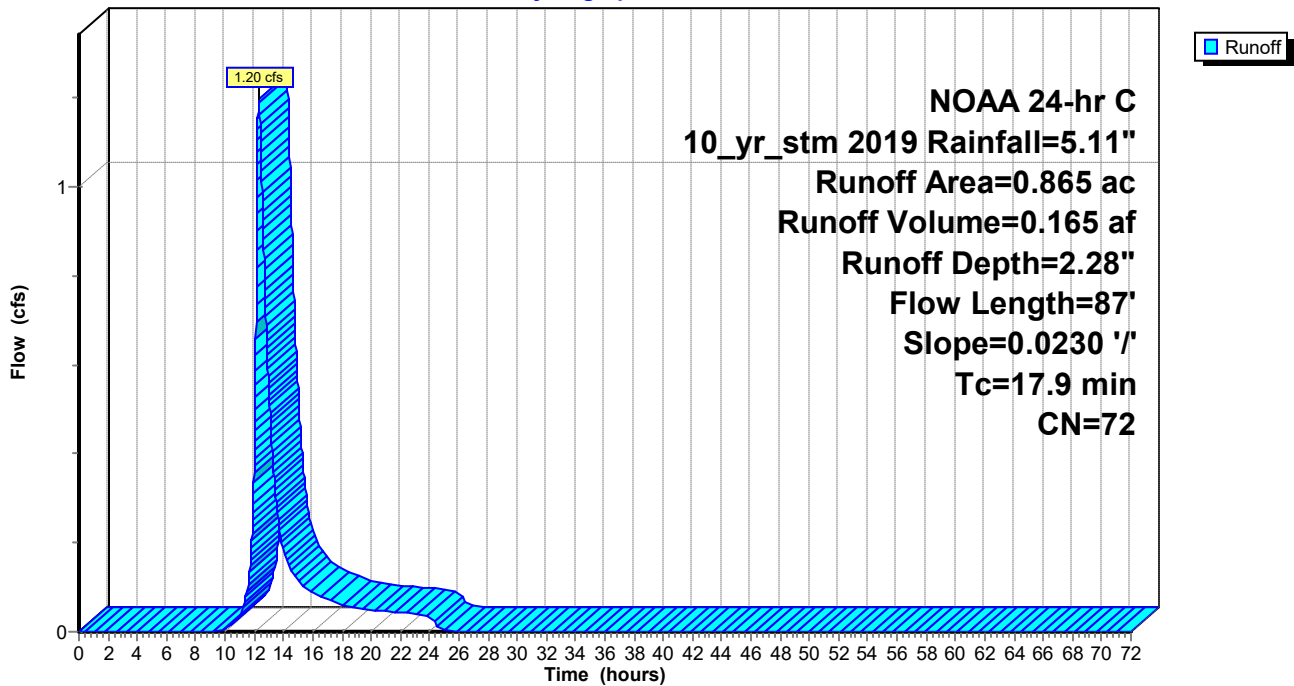
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 10\_yr\_stm 2019 Rainfall=5.11"

Area (ac)	CN	Description
0.531	74	>75% Grass cover, Good, HSG C
0.334	70	Woods, Good, HSG C
0.865	72	Weighted Average
0.865		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.9	87	0.0230	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.29"

### Subcatchment 4S: DA-1 Per

Hydrograph



### Summary for Subcatchment 5S: DA-1 Imp

Runoff = 0.58 cfs @ 12.09 hrs, Volume= 0.039 af, Depth= 4.87"

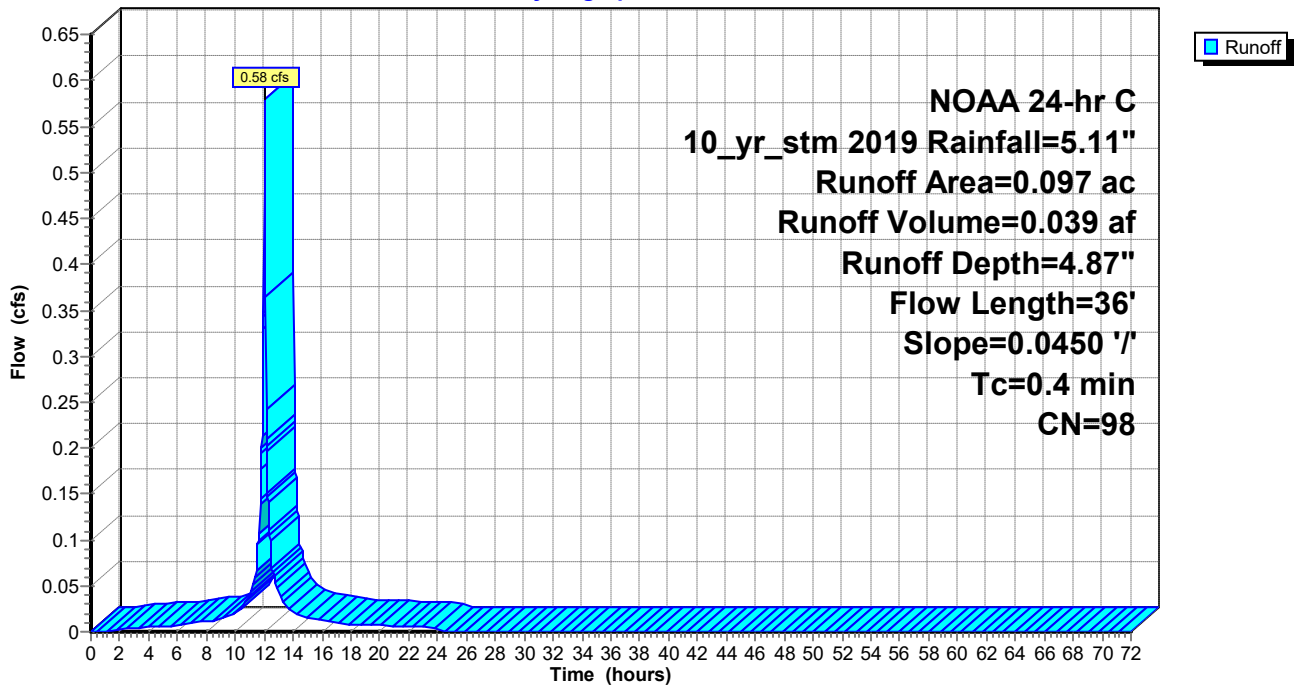
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 10\_yr\_stm 2019 Rainfall=5.11"

Area (ac)	CN	Description
0.038	98	Paved parking, HSG C
* 0.059	98	Sidewalk
0.097	98	Weighted Average
0.097		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	36	0.0450	1.57		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.29"

### Subcatchment 5S: DA-1 Imp

Hydrograph



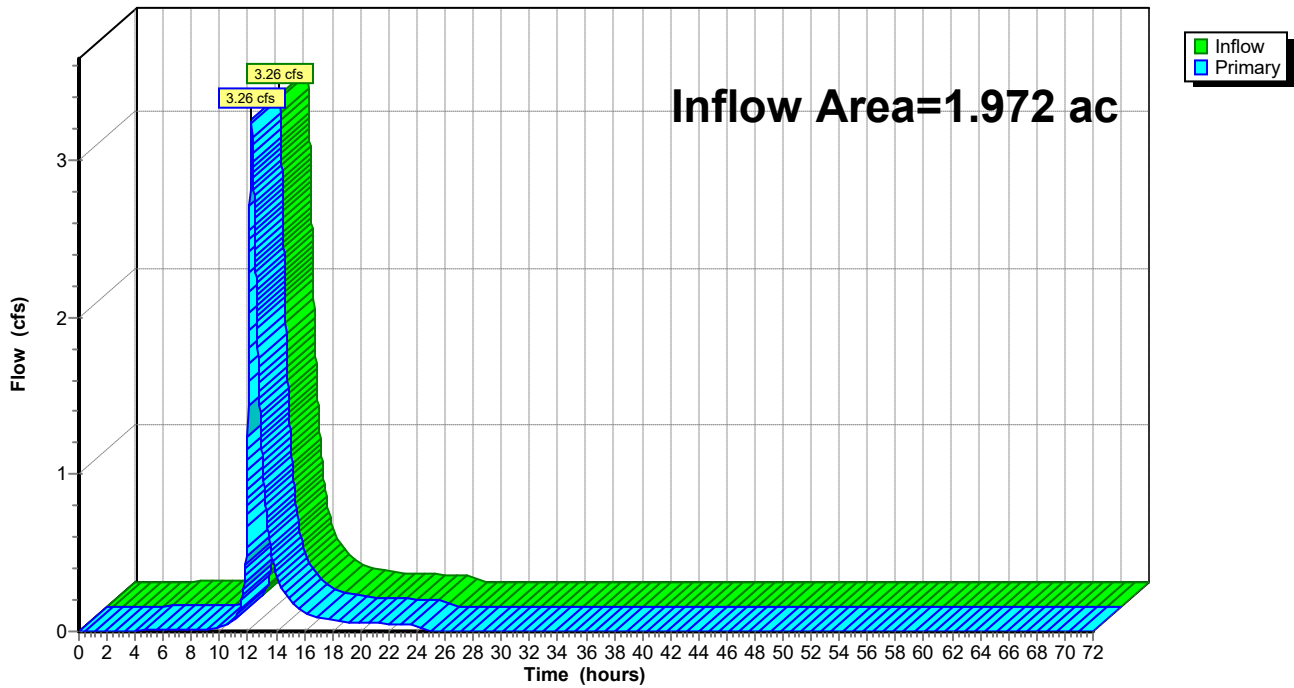
### Summary for Pond 6P: EA-1 - ROW / NE Wetlands

Inflow Area = 1.972 ac, 29.51% Impervious, Inflow Depth = 2.12" for 10\_yr\_stm 2019 event  
Inflow = 3.26 cfs @ 12.26 hrs, Volume= 0.348 af  
Primary = 3.26 cfs @ 12.26 hrs, Volume= 0.348 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Pond 6P: EA-1 - ROW / NE Wetlands

Hydrograph



**Summary for Subcatchment 7S: DA-2 Per**

Runoff = 2.02 cfs @ 12.21 hrs, Volume= 0.217 af, Depth= 2.45"

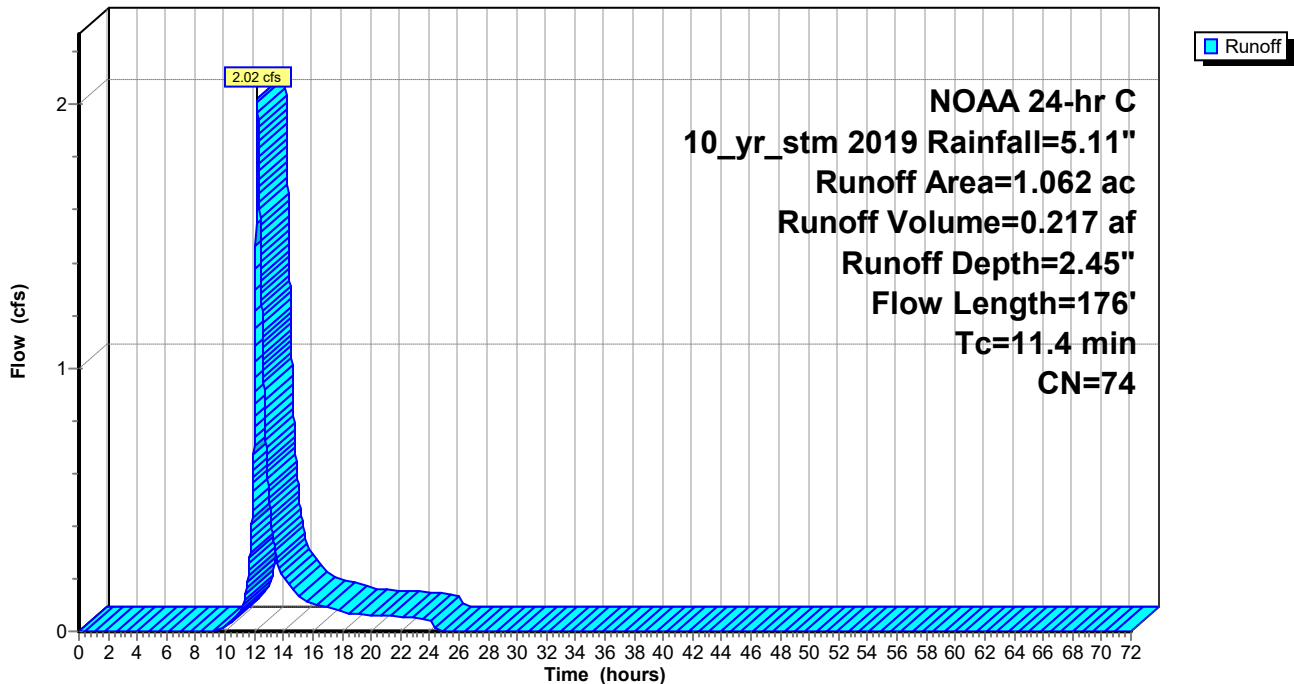
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 10\_yr\_stm 2019 Rainfall=5.11"

Area (ac)	CN	Description
1.062	74	>75% Grass cover, Good, HSG C
1.062		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0160	0.16		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
0.4	16	0.0110	0.73		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.4	60	0.0125	2.27		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
11.4	176	Total			

**Subcatchment 7S: DA-2 Per**

Hydrograph



**Summary for Subcatchment 8S: DA-2 Imp**

Runoff = 5.98 cfs @ 12.10 hrs, Volume= 0.417 af, Depth= 4.87"

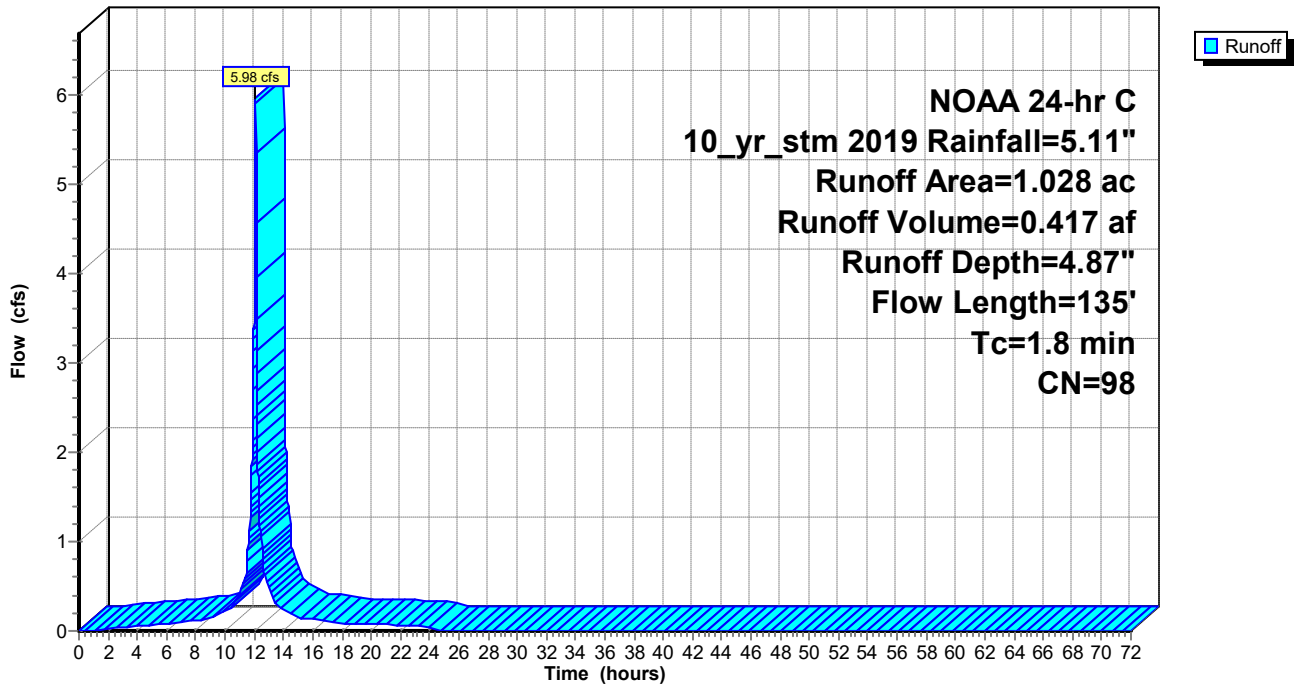
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 10\_yr\_stm 2019 Rainfall=5.11"

Area (ac)	CN	Description
0.516	98	Paved parking, HSG C
0.446	98	Roofs, HSG C
* 0.066	98	Sidewalks
1.028	98	Weighted Average
1.028		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	60	0.0180	1.21		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.7	40	0.0125	0.96		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.3	35	0.0125	2.27		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
1.8	135	Total			

**Subcatchment 8S: DA-2 Imp**

Hydrograph



**Summary for Pond 9P: SW Bio Basin**

Inflow Area = 2.090 ac, 49.19% Impervious, Inflow Depth = 3.64" for 10\_yr\_stm 2019 event  
 Inflow = 7.42 cfs @ 12.11 hrs, Volume= 0.634 af  
 Outflow = 1.92 cfs @ 12.56 hrs, Volume= 0.634 af, Atten= 74%, Lag= 27.6 min  
 Discarded = 0.29 cfs @ 12.56 hrs, Volume= 0.515 af  
 Primary = 1.63 cfs @ 12.56 hrs, Volume= 0.120 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 68.49' @ 12.56 hrs Surf.Area= 12,561 sf Storage= 11,058 cf

Plug-Flow detention time= 281.9 min calculated for 0.634 af (100% of inflow)  
 Center-of-Mass det. time= 281.9 min ( 1,063.8 - 781.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	67.50'	25,174 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
67.50	9,756	0	0
69.50	15,418	25,174	25,174

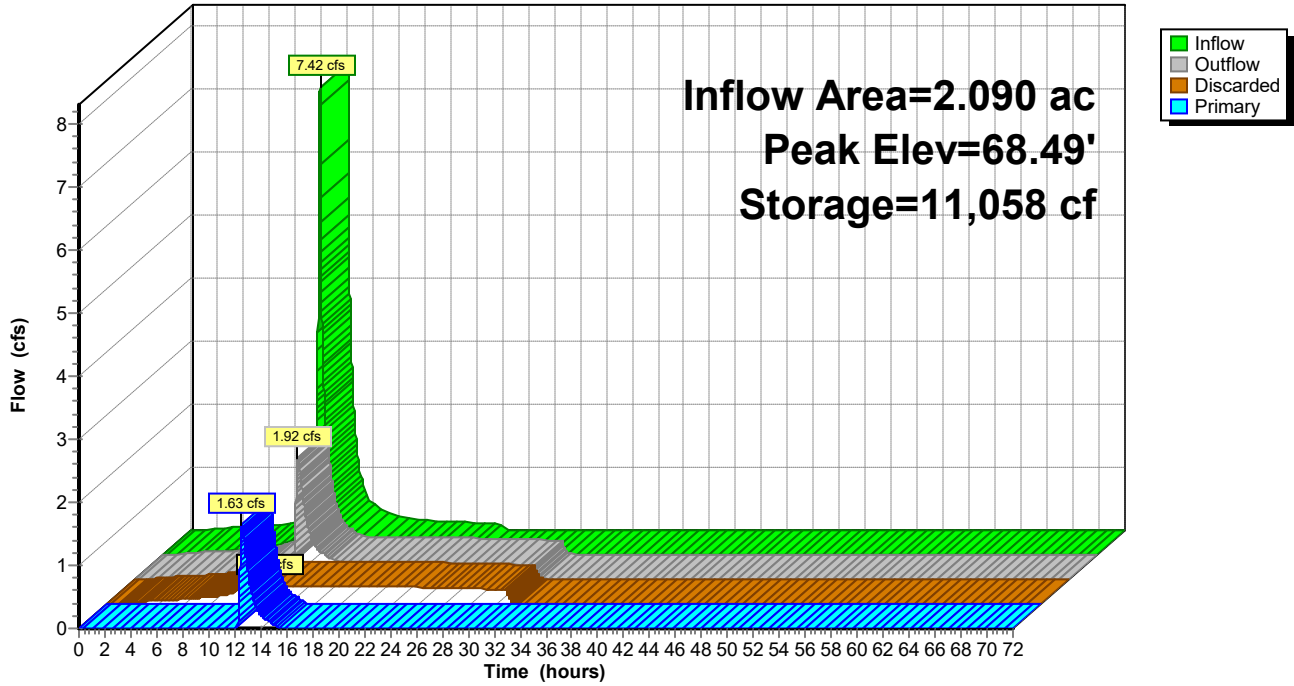
Device	Routing	Invert	Outlet Devices
#1	Discarded	67.50'	<b>1.000 in/hr Exfiltration over Surface area</b>
#2	Primary	68.40'	<b>25.0' long x 6.0' breadth Broad-Crested Rectangular Weir</b>
Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00			
2.50 3.00 3.50 4.00 4.50 5.00 5.50			
Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65			
2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83			

**Discarded OutFlow** Max=0.29 cfs @ 12.56 hrs HW=68.49' (Free Discharge)  
 ↑1=**Exfiltration** (Exfiltration Controls 0.29 cfs)

**Primary OutFlow** Max=1.62 cfs @ 12.56 hrs HW=68.49' (Free Discharge)  
 ↑2=**Broad-Crested Rectangular Weir** (Weir Controls 1.62 cfs @ 0.71 fps)

### Pond 9P: SW Bio Basin

Hydrograph



**Summary for Subcatchment 10S: DA-2 Per**

Runoff = 1.11 cfs @ 12.31 hrs, Volume= 0.155 af, Depth= 2.45"

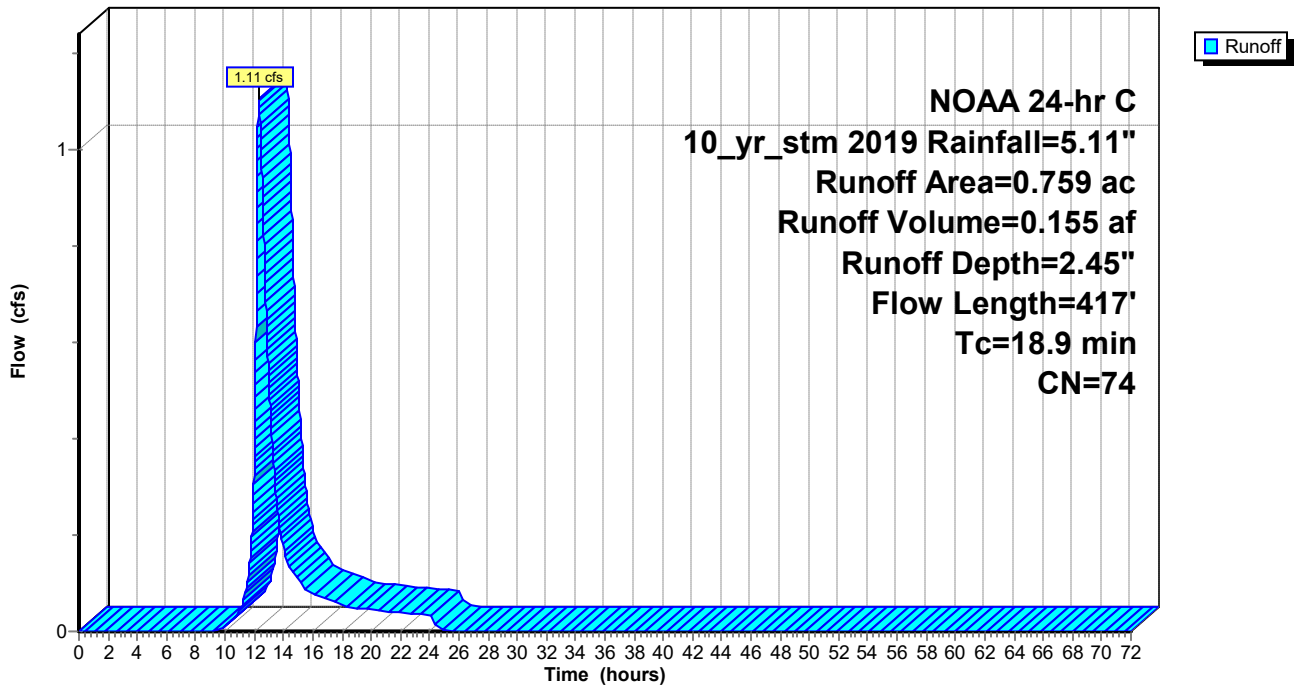
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 10\_yr\_stm 2019 Rainfall=5.11"

Area (ac)	CN	Description
0.759	74	>75% Grass cover, Good, HSG C
0.759		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	78	0.0140	0.14		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
2.9	22	0.0190	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
0.8	47	0.0190	0.96		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.1	270	0.0110	0.73		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
18.9	417	Total			

**Subcatchment 10S: DA-2 Per**

Hydrograph



**Summary for Subcatchment 11S: DA-2 Imp**

Runoff = 0.17 cfs @ 12.30 hrs, Volume= 0.026 af, Depth= 4.87"

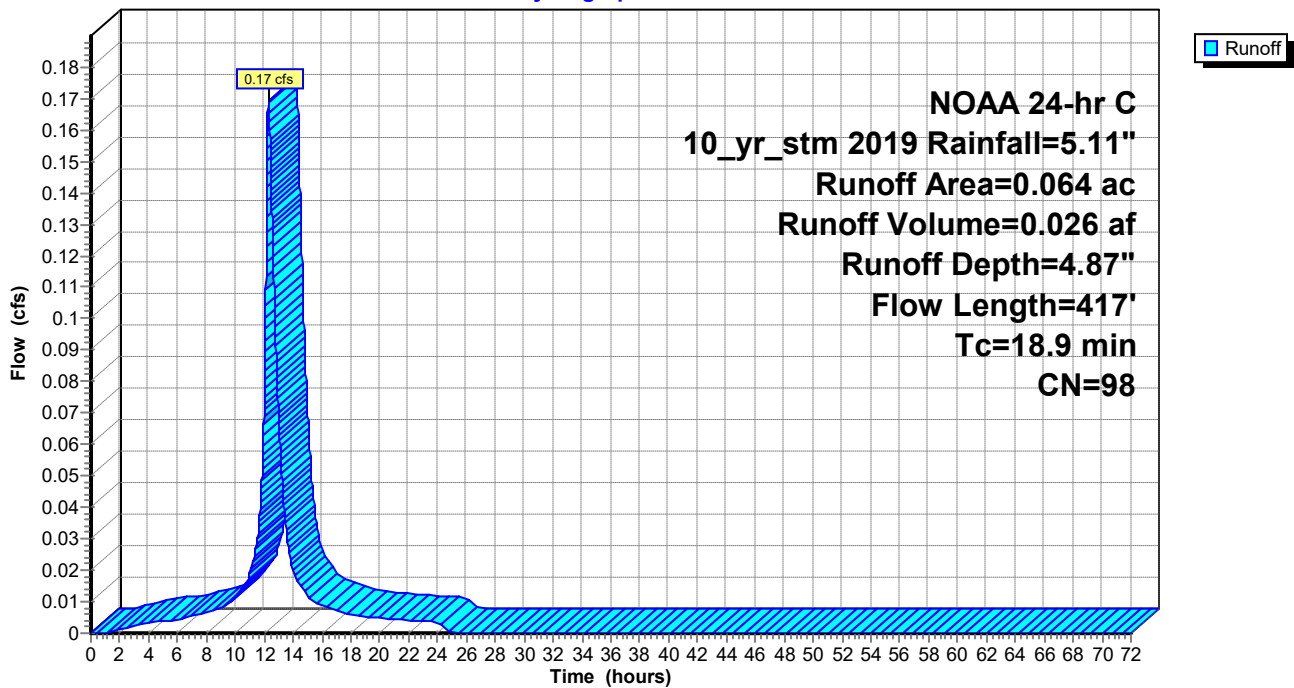
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 10\_yr\_stm 2019 Rainfall=5.11"

Area (ac)	CN	Description
* 0.034	98	Sidewalks
* 0.030	98	Roofs
0.064	98	Weighted Average
0.064		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	78	0.0140	0.14		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
2.9	22	0.0190	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
0.8	47	0.0190	0.96		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.1	270	0.0110	0.73		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
18.9	417	Total			

**Subcatchment 11S: DA-2 Imp**

Hydrograph



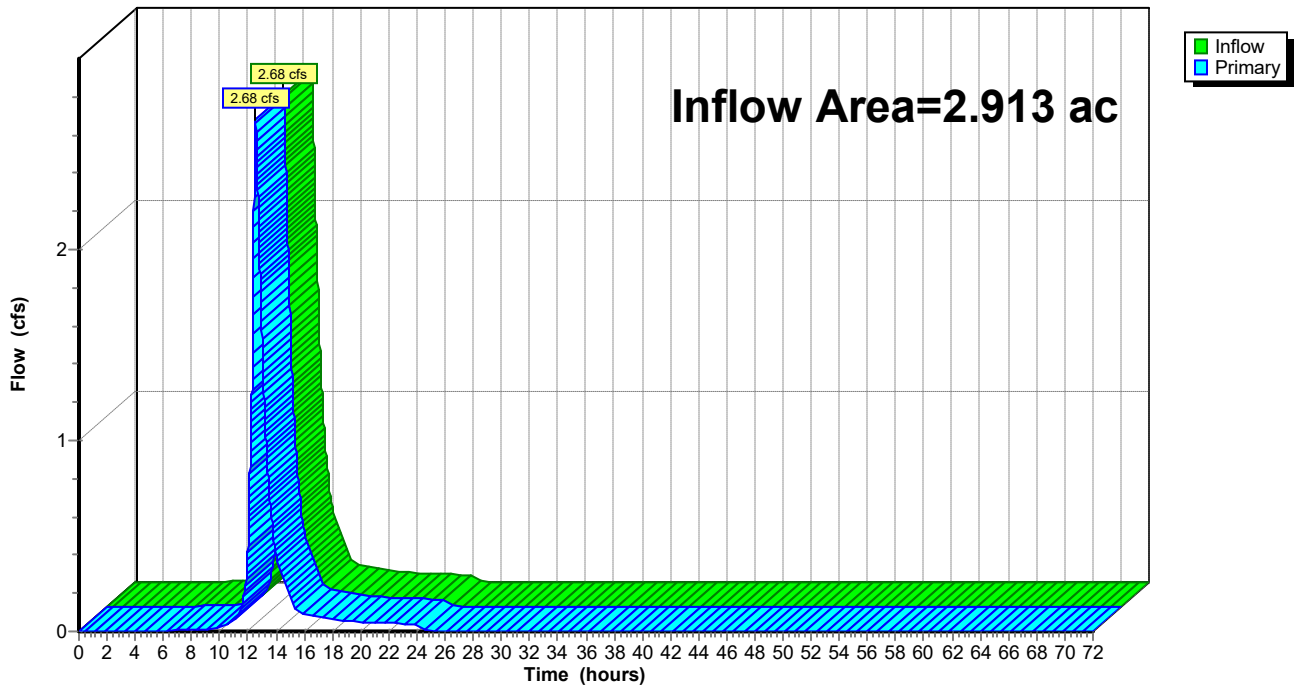
### Summary for Pond 12P: DA-2 - SW Wetland Basin

Inflow Area = 2.913 ac, 37.49% Impervious, Inflow Depth = 1.24" for 10\_yr\_stm 2019 event  
Inflow = 2.68 cfs @ 12.54 hrs, Volume= 0.301 af  
Primary = 2.68 cfs @ 12.54 hrs, Volume= 0.301 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Pond 12P: DA-2 - SW Wetland Basin

Hydrograph



**Summary for Subcatchment 13S: DA-3 Per**

Runoff = 0.60 cfs @ 12.11 hrs, Volume= 0.037 af, Depth= 2.45"

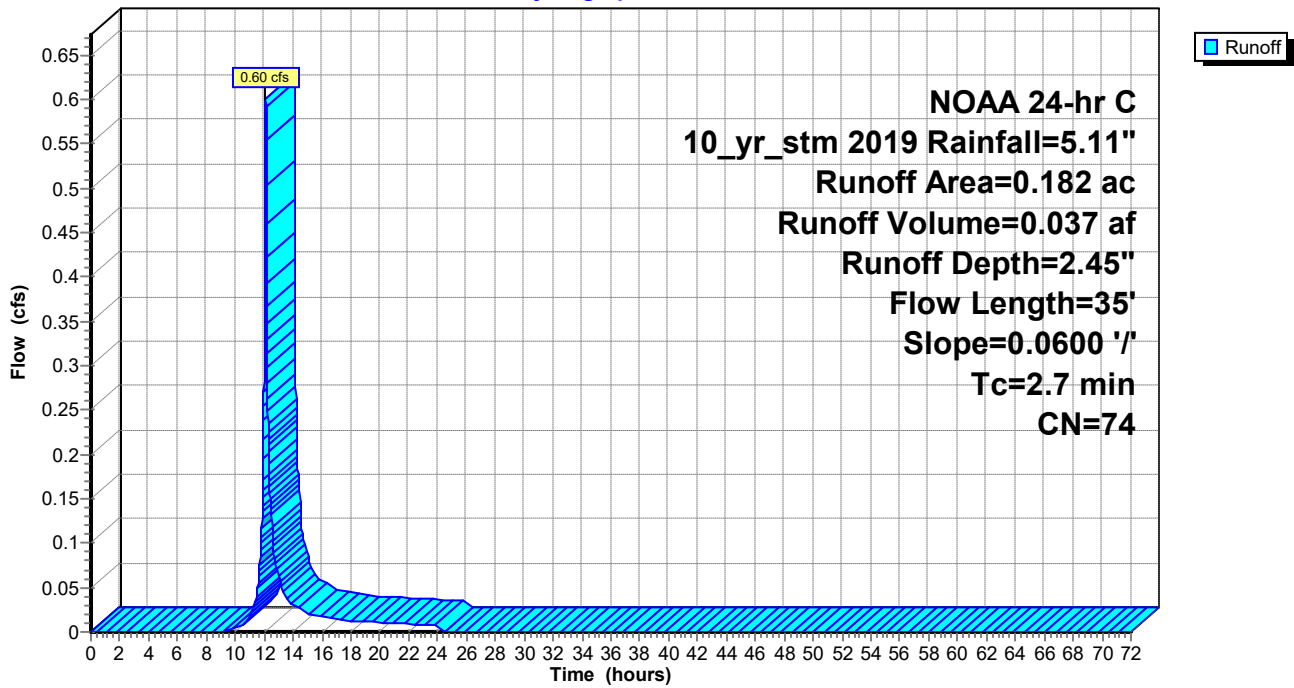
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 10\_yr\_stm 2019 Rainfall=5.11"

Area (ac)	CN	Description
0.182	74	>75% Grass cover, Good, HSG C
0.182		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	35	0.0600	0.22		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"

**Subcatchment 13S: DA-3 Per**

Hydrograph



**Summary for Subcatchment 14S: DA-4 Per**

Runoff = 0.40 cfs @ 12.31 hrs, Volume= 0.058 af, Depth= 2.28"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 10\_yr\_stm 2019 Rainfall=5.11"

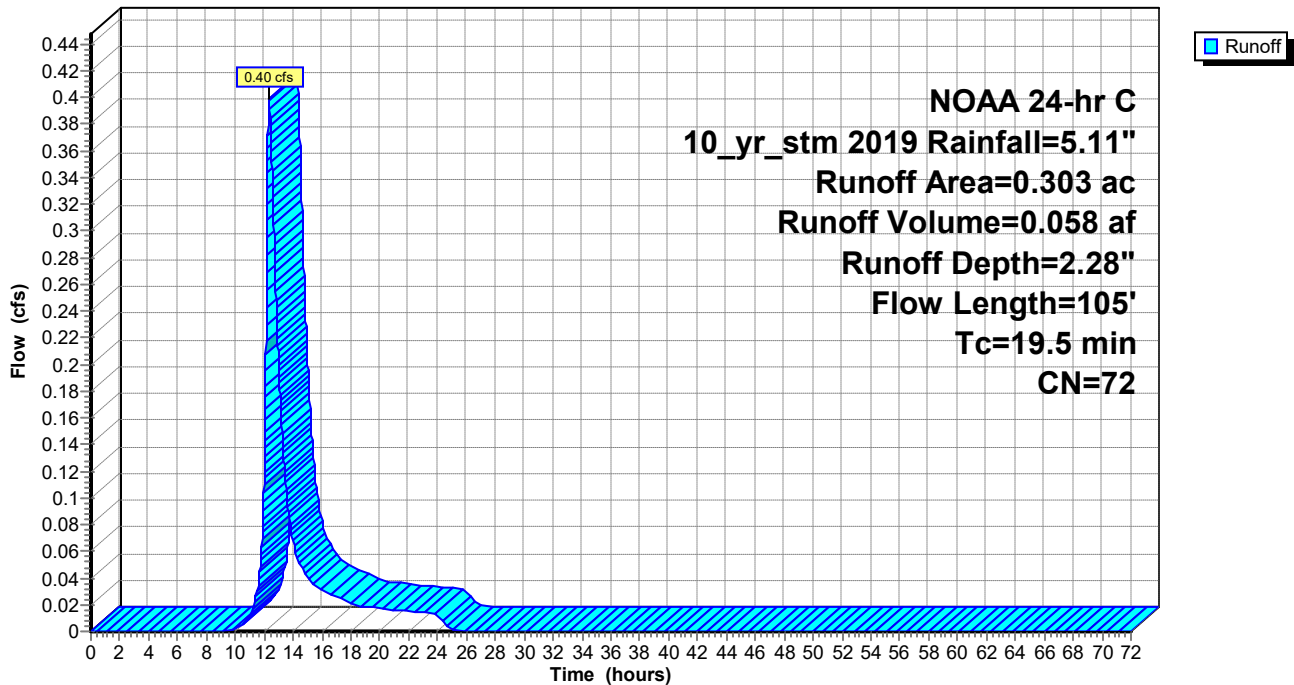
Area (ac)	CN	Description
0.168	74	>75% Grass cover, Good, HSG C
0.135	70	Woods, Good, HSG C
0.303	72	Weighted Average
0.303		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	13	0.1800	0.28		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
18.6	87	0.0210	0.08		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.29"
0.1	5	0.0210	0.72		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
19.5	105	Total			

**Subcatchment 14S: DA-4 Per**

Hydrograph



**Summary for Subcatchment 15S: DA-4 Imp**

Runoff = 0.03 cfs @ 12.21 hrs, Volume= 0.004 af, Depth= 4.87"

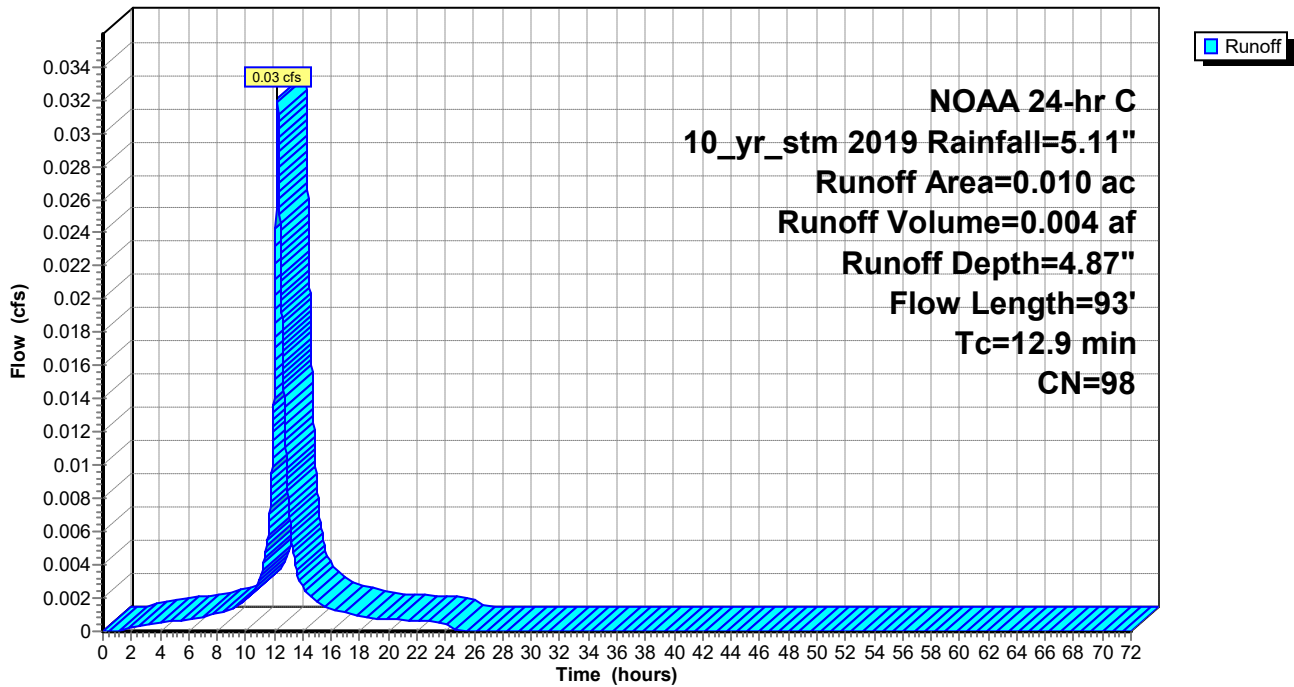
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 10\_yr\_stm 2019 Rainfall=5.11"

Area (ac)	CN	Description
* 0.010	98	Sidewalk
0.010		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	37	0.0280	1.31		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.5	10	0.3300	0.33		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
11.9	46	0.0180	0.06		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.29"
12.9	93	Total			

**Subcatchment 15S: DA-4 Imp**

Hydrograph



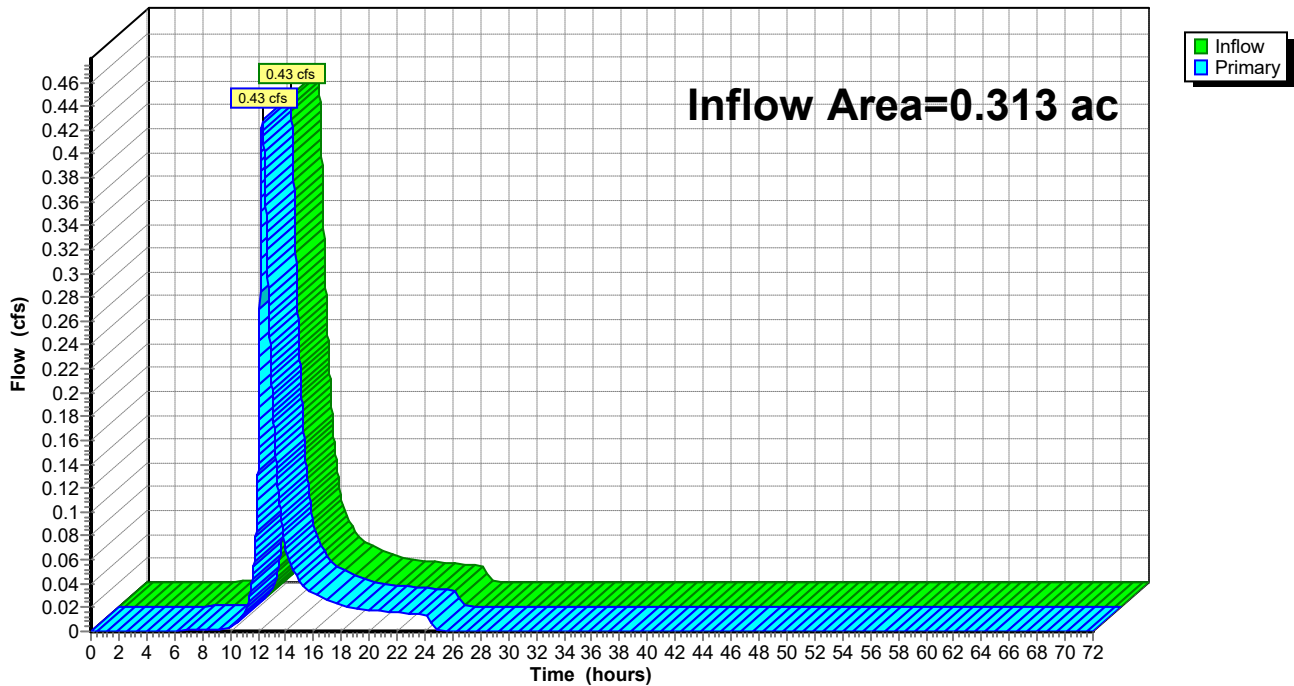
### Summary for Pond 16P: DA-4 - E Basin

Inflow Area = 0.313 ac, 3.19% Impervious, Inflow Depth = 2.37" for 10\_yr\_stm 2019 event  
Inflow = 0.43 cfs @ 12.31 hrs, Volume= 0.062 af  
Primary = 0.43 cfs @ 12.31 hrs, Volume= 0.062 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Pond 16P: DA-4 - E Basin

Hydrograph



**Summary for Subcatchment 1S: DA-1 Per**

Runoff = 1.57 cfs @ 12.16 hrs, Volume= 0.138 af, Depth= 3.16"

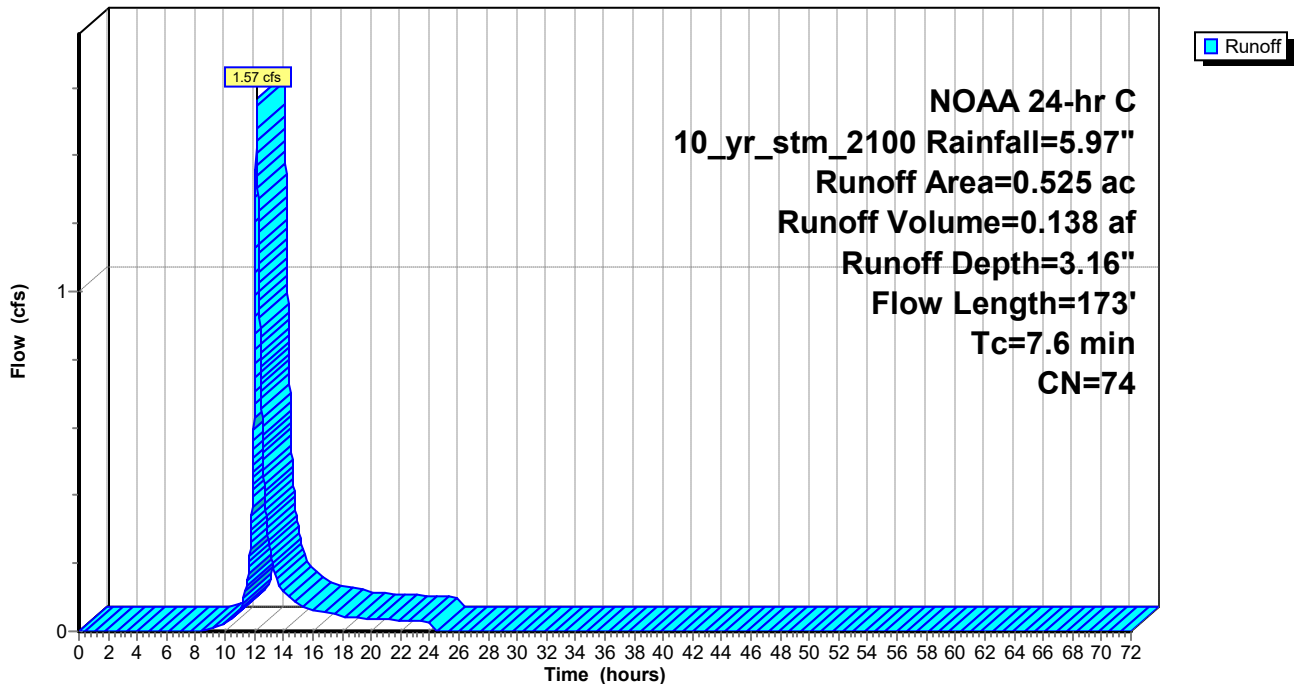
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 10\_yr\_stm\_2100 Rainfall=5.97"

Area (ac)	CN	Description
0.525	74	>75% Grass cover, Good, HSG C
0.525		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	60	0.0200	0.16		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
0.7	40	0.0125	0.96		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.5	73	0.0125	2.27		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
7.6	173	Total			

**Subcatchment 1S: DA-1 Per**

Hydrograph



**Summary for Subcatchment 2S: DA-1 Imp**

Runoff = 3.26 cfs @ 12.10 hrs, Volume= 0.232 af, Depth= 5.73"

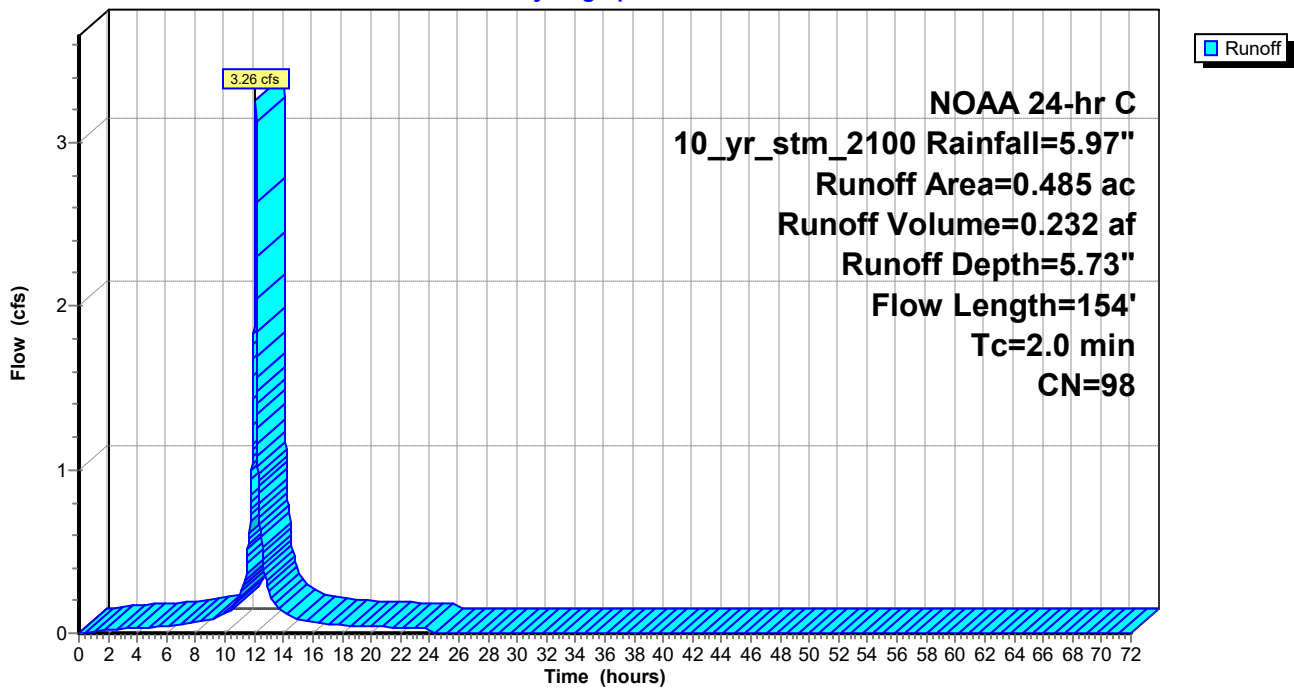
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 10\_yr\_stm\_2100 Rainfall=5.97"

Area (ac)	CN	Description
0.426	98	Paved parking, HSG C
* 0.059	98	Sidewalk
0.485	98	Weighted Average
0.485		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.91		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.7	46	0.0180	1.14		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.7	42	0.0125	0.97		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.4	54	0.0125	2.27		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
2.0	154	Total			

**Subcatchment 2S: DA-1 Imp**

Hydrograph



**Summary for Pond 3P: NE Bio Basin**

Inflow Area = 1.010 ac, 48.02% Impervious, Inflow Depth = 4.39" for 10\_yr\_stm\_2100 event  
 Inflow = 4.60 cfs @ 12.11 hrs, Volume= 0.370 af  
 Outflow = 2.75 cfs @ 12.21 hrs, Volume= 0.370 af, Atten= 40%, Lag= 6.3 min  
 Discarded = 0.13 cfs @ 12.21 hrs, Volume= 0.174 af  
 Primary = 2.63 cfs @ 12.21 hrs, Volume= 0.196 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 66.83' @ 12.21 hrs Surf.Area= 5,413 sf Storage= 3,842 cf

Plug-Flow detention time= 84.3 min calculated for 0.370 af (100% of inflow)  
 Center-of-Mass det. time= 84.3 min ( 863.2 - 779.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	66.00'	11,468 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
66.00	3,792	0	0
68.00	7,676	11,468	11,468

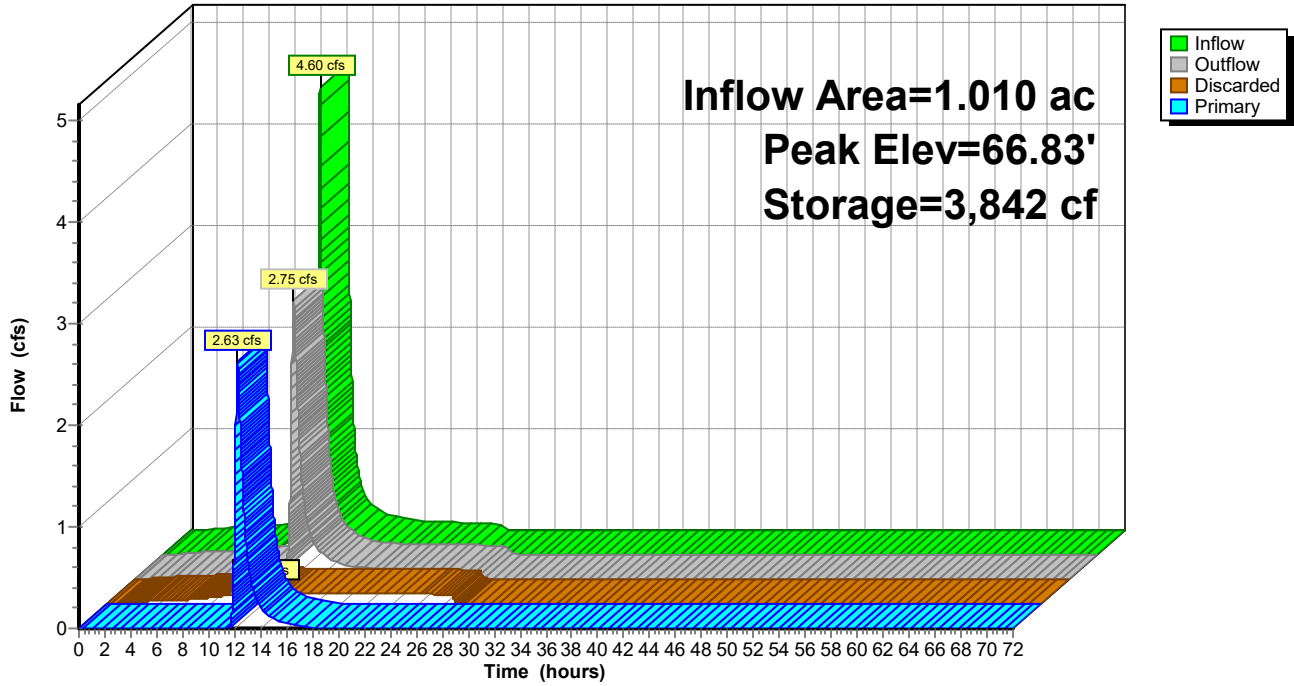
Device	Routing	Invert	Outlet Devices
#1	Discarded	66.00'	<b>1.000 in/hr Exfiltration over Surface area</b>
#2	Primary	63.64'	<b>15.0" Round Culvert</b> L= 57.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 63.64' / 63.50' S= 0.0025 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#3	Device 2	66.36'	<b>30.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads

**Discarded OutFlow** Max=0.13 cfs @ 12.21 hrs HW=66.83' (Free Discharge)  
 ↑1=Exfiltration (Exfiltration Controls 0.13 cfs)

**Primary OutFlow** Max=2.62 cfs @ 12.21 hrs HW=66.83' (Free Discharge)  
 ↑2=Culvert (Passes 2.62 cfs of 8.45 cfs potential flow)  
 ↑3=Orifice/Grate (Orifice Controls 2.62 cfs @ 2.21 fps)

### Pond 3P: NE Bio Basin

Hydrograph



**Summary for Subcatchment 4S: DA-1 Per**

Runoff = 1.58 cfs @ 12.29 hrs, Volume= 0.214 af, Depth= 2.97"

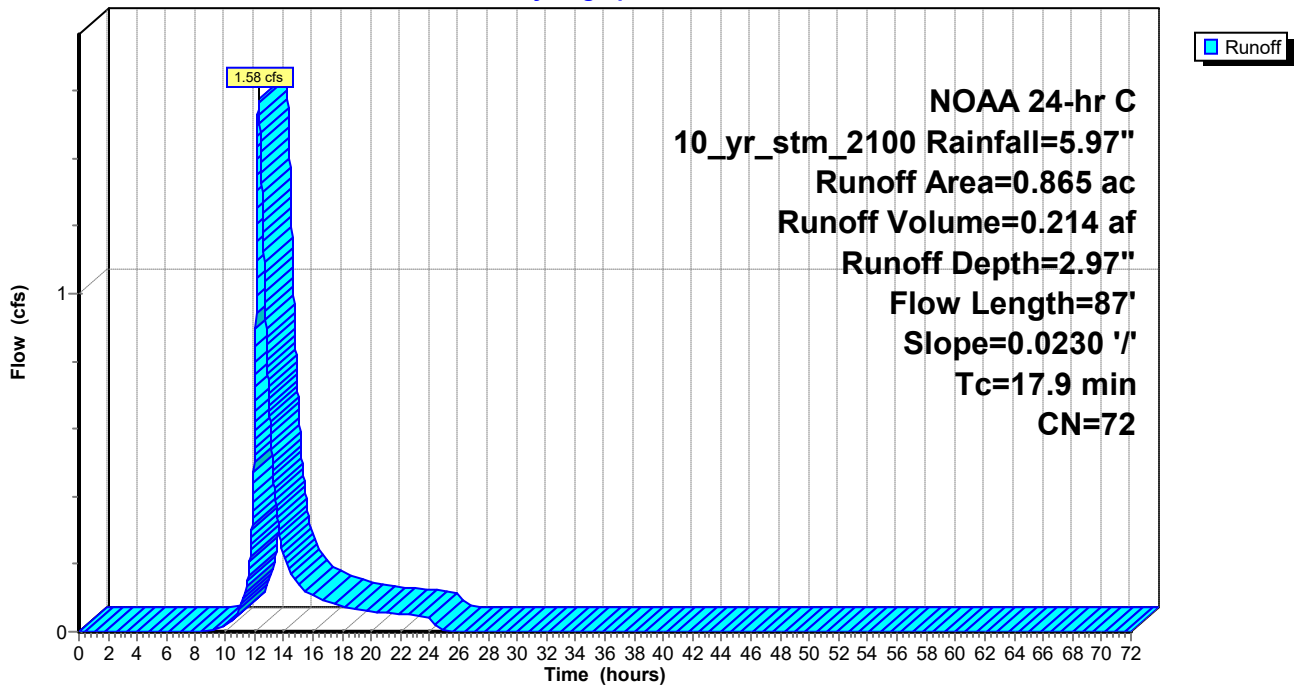
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 10\_yr\_stm\_2100 Rainfall=5.97"

Area (ac)	CN	Description
0.531	74	>75% Grass cover, Good, HSG C
0.334	70	Woods, Good, HSG C
0.865	72	Weighted Average
0.865		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.9	87	0.0230	0.08		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.29"

**Subcatchment 4S: DA-1 Per**

Hydrograph



### Summary for Subcatchment 5S: DA-1 Imp

Runoff = 0.68 cfs @ 12.09 hrs, Volume= 0.046 af, Depth= 5.73"

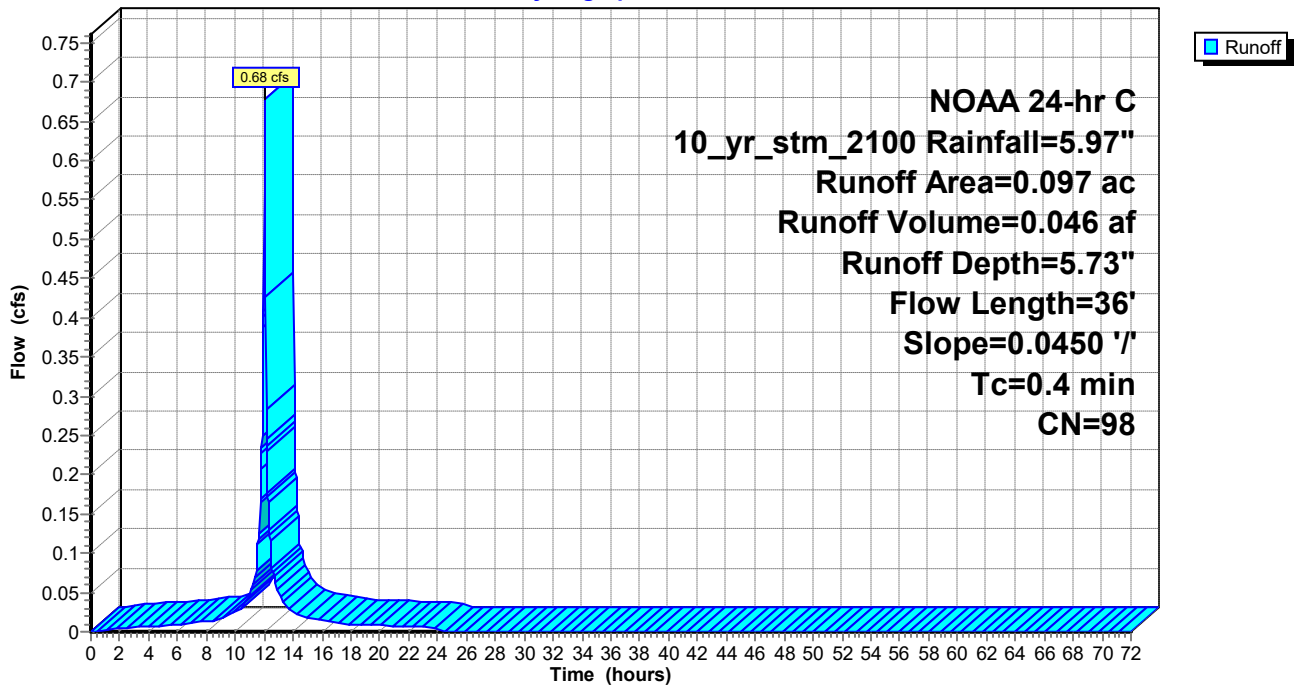
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 10\_yr\_stm\_2100 Rainfall=5.97"

Area (ac)	CN	Description
0.038	98	Paved parking, HSG C
* 0.059	98	Sidewalk
0.097	98	Weighted Average
0.097		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	36	0.0450	1.57		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.29"

### Subcatchment 5S: DA-1 Imp

Hydrograph



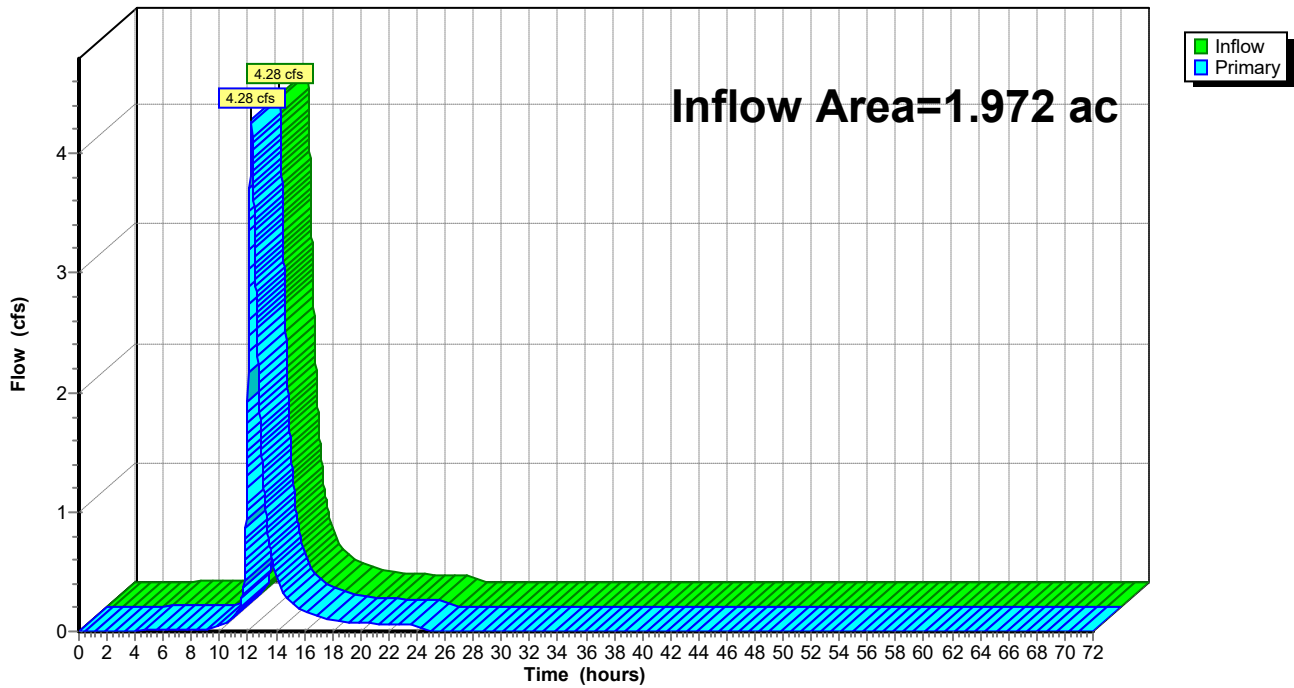
### Summary for Pond 6P: EA-1 - ROW / NE Wetlands

Inflow Area = 1.972 ac, 29.51% Impervious, Inflow Depth = 2.77" for 10\_yr\_stm\_2100 event  
Inflow = 4.28 cfs @ 12.25 hrs, Volume= 0.456 af  
Primary = 4.28 cfs @ 12.25 hrs, Volume= 0.456 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Pond 6P: EA-1 - ROW / NE Wetlands

Hydrograph



**Summary for Subcatchment 7S: DA-2 Per**

Runoff = 2.63 cfs @ 12.21 hrs, Volume= 0.280 af, Depth= 3.16"

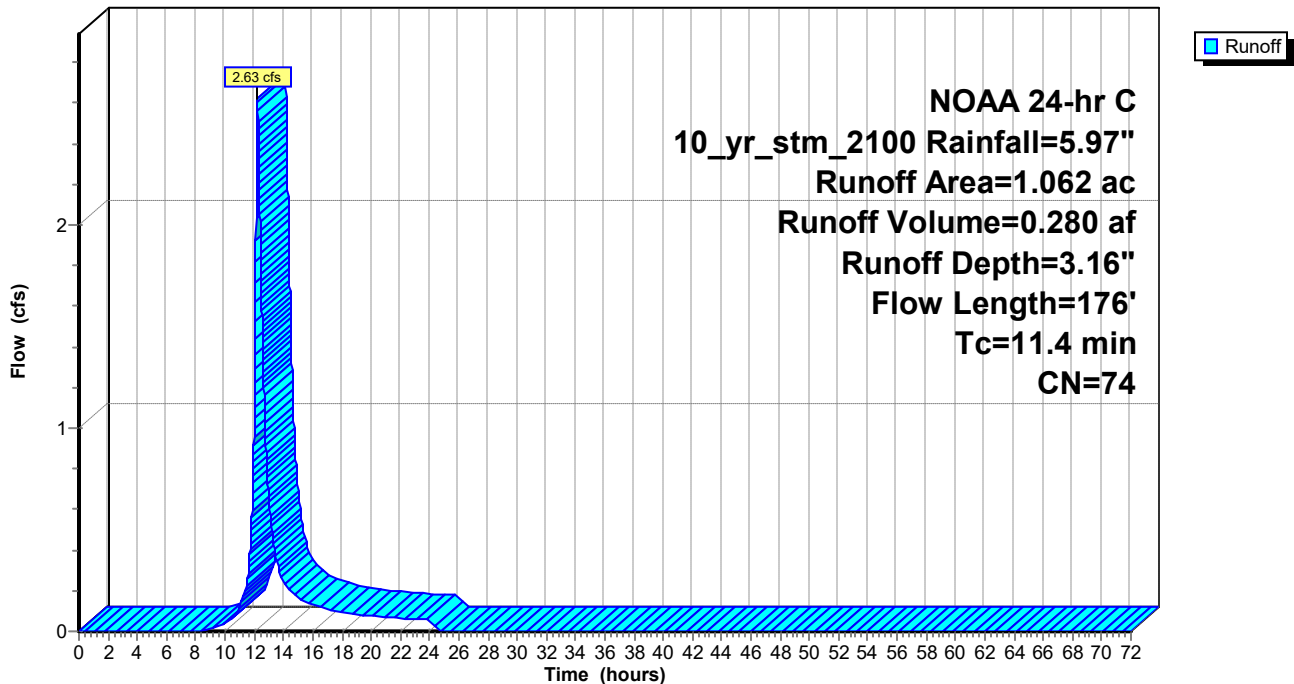
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 10\_yr\_stm\_2100 Rainfall=5.97"

Area (ac)	CN	Description
1.062	74	>75% Grass cover, Good, HSG C
1.062		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0160	0.16		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
0.4	16	0.0110	0.73		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.4	60	0.0125	2.27		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
11.4	176	Total			

**Subcatchment 7S: DA-2 Per**

Hydrograph



**Summary for Subcatchment 8S: DA-2 Imp**

Runoff = 6.99 cfs @ 12.10 hrs, Volume= 0.491 af, Depth= 5.73"

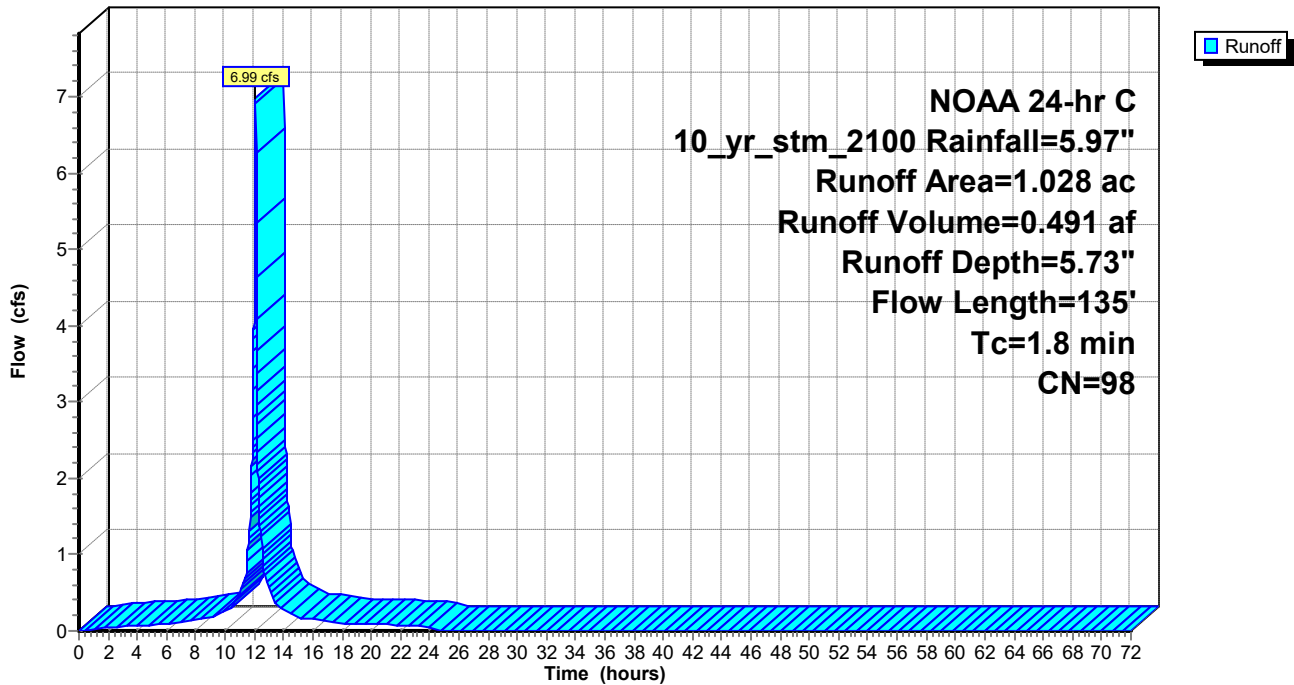
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 10\_yr\_stm\_2100 Rainfall=5.97"

Area (ac)	CN	Description
0.516	98	Paved parking, HSG C
0.446	98	Roofs, HSG C
* 0.066	98	Sidewalks
1.028	98	Weighted Average
1.028		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	60	0.0180	1.21		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.7	40	0.0125	0.96		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.3	35	0.0125	2.27		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
1.8	135	Total			

**Subcatchment 8S: DA-2 Imp**

Hydrograph



**Summary for Pond 9P: SW Bio Basin**

Inflow Area = 2.090 ac, 49.19% Impervious, Inflow Depth = 4.42" for 10\_yr\_stm\_2100 event  
 Inflow = 8.90 cfs @ 12.11 hrs, Volume= 0.771 af  
 Outflow = 3.42 cfs @ 12.38 hrs, Volume= 0.771 af, Atten= 62%, Lag= 16.6 min  
 Discarded = 0.29 cfs @ 12.38 hrs, Volume= 0.550 af  
 Primary = 3.13 cfs @ 12.38 hrs, Volume= 0.221 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 68.54' @ 12.38 hrs Surf.Area= 12,702 sf Storage= 11,687 cf

Plug-Flow detention time= 253.6 min calculated for 0.771 af (100% of inflow)  
 Center-of-Mass det. time= 253.6 min ( 1,033.5 - 779.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	67.50'	25,174 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
67.50	9,756	0	0
69.50	15,418	25,174	25,174

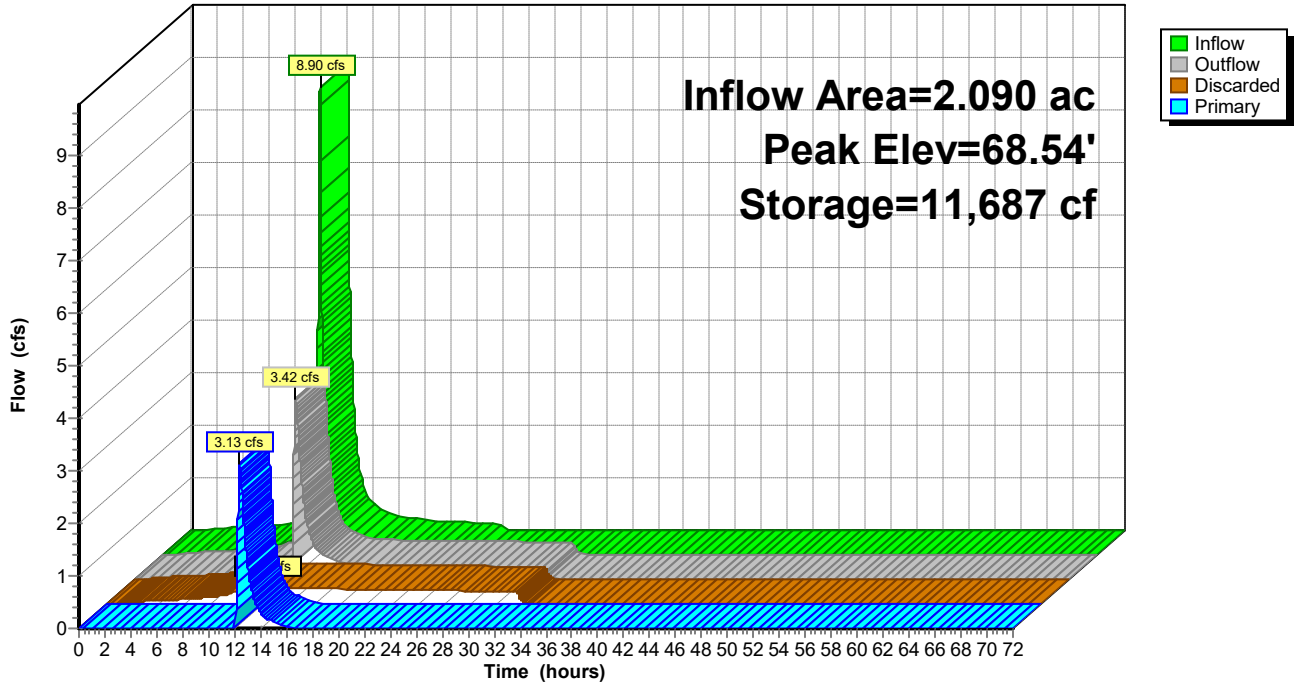
Device	Routing	Invert	Outlet Devices
#1	Discarded	67.50'	<b>1.000 in/hr Exfiltration over Surface area</b>
#2	Primary	68.40'	<b>25.0' long x 6.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

**Discarded OutFlow** Max=0.29 cfs @ 12.38 hrs HW=68.54' (Free Discharge)  
 ↑1=**Exfiltration** (Exfiltration Controls 0.29 cfs)

**Primary OutFlow** Max=3.13 cfs @ 12.38 hrs HW=68.54' (Free Discharge)  
 ↑2=**Broad-Crested Rectangular Weir** (Weir Controls 3.13 cfs @ 0.89 fps)

### Pond 9P: SW Bio Basin

Hydrograph



**Summary for Subcatchment 10S: DA-2 Per**

Runoff = 1.44 cfs @ 12.31 hrs, Volume= 0.200 af, Depth= 3.16"

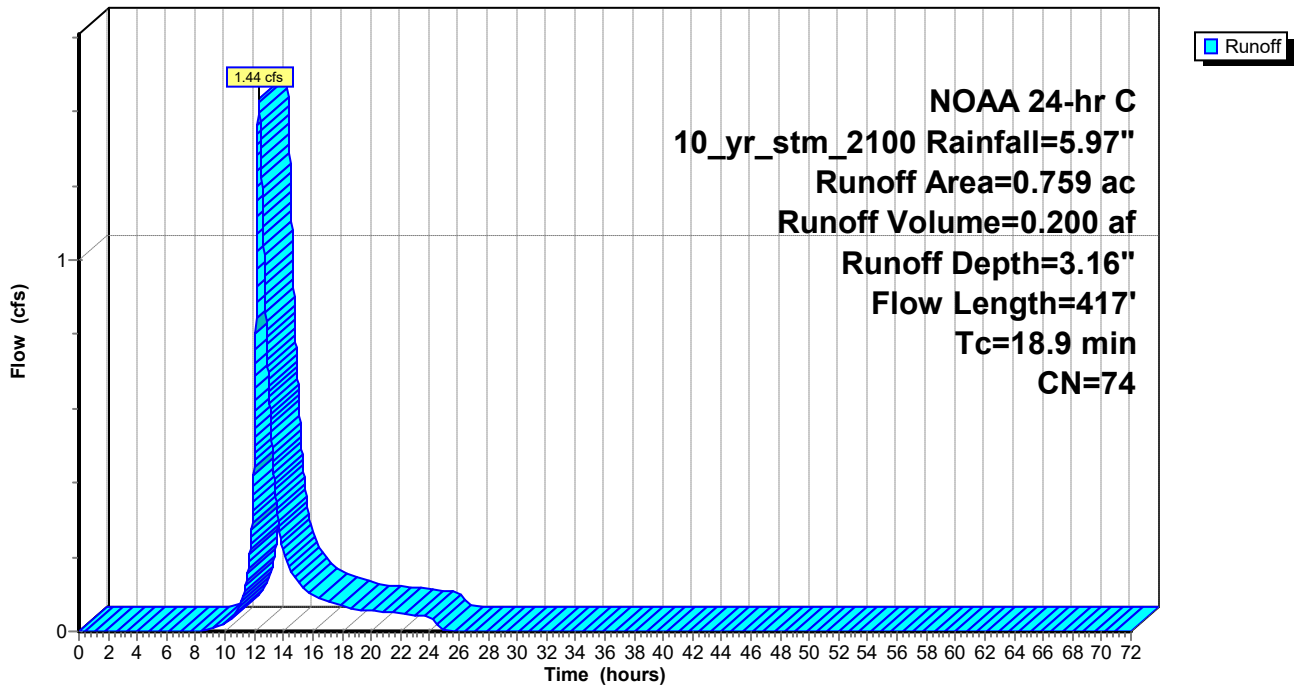
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 10\_yr\_stm\_2100 Rainfall=5.97"

Area (ac)	CN	Description
0.759	74	>75% Grass cover, Good, HSG C
0.759		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	78	0.0140	0.14		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
2.9	22	0.0190	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
0.8	47	0.0190	0.96		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.1	270	0.0110	0.73		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
18.9	417	Total			

**Subcatchment 10S: DA-2 Per**

Hydrograph



**Summary for Subcatchment 11S: DA-2 Imp**

Runoff = 0.20 cfs @ 12.30 hrs, Volume= 0.031 af, Depth= 5.73"

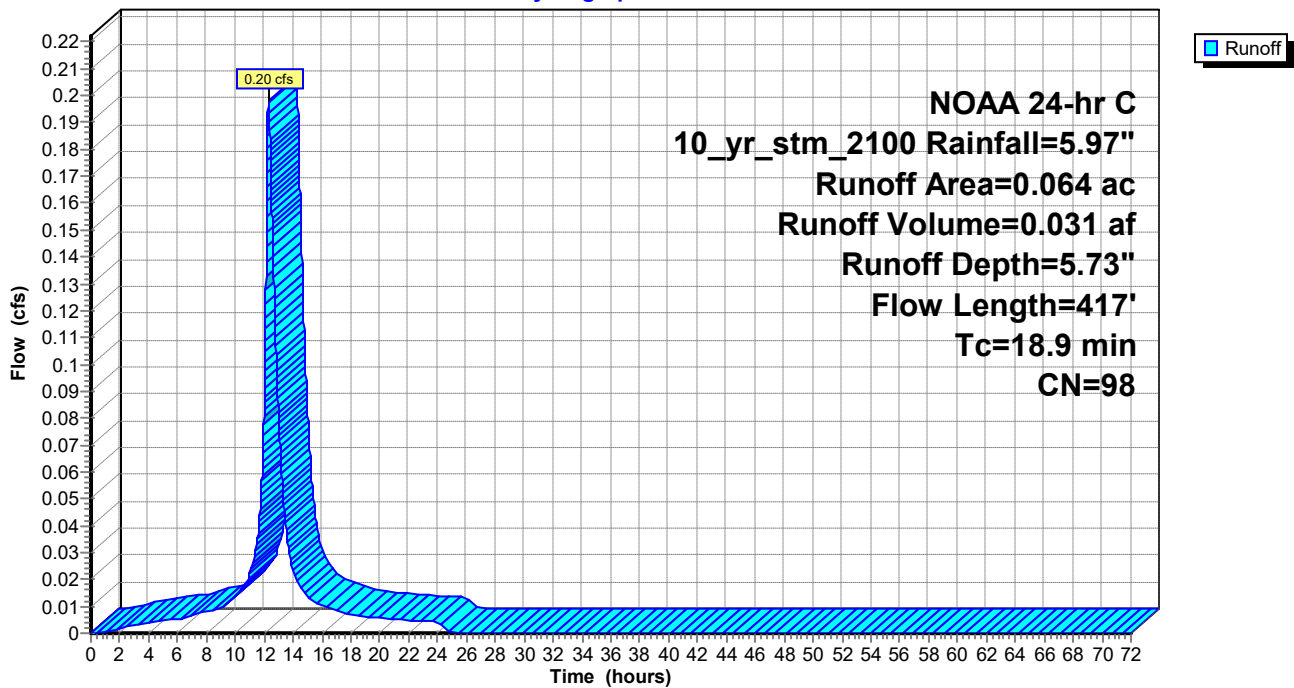
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 10\_yr\_stm\_2100 Rainfall=5.97"

Area (ac)	CN	Description
* 0.034	98	Sidewalks
* 0.030	98	Roofs
0.064	98	Weighted Average
0.064		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	78	0.0140	0.14		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
2.9	22	0.0190	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
0.8	47	0.0190	0.96		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.1	270	0.0110	0.73		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
18.9	417	Total			

**Subcatchment 11S: DA-2 Imp**

Hydrograph



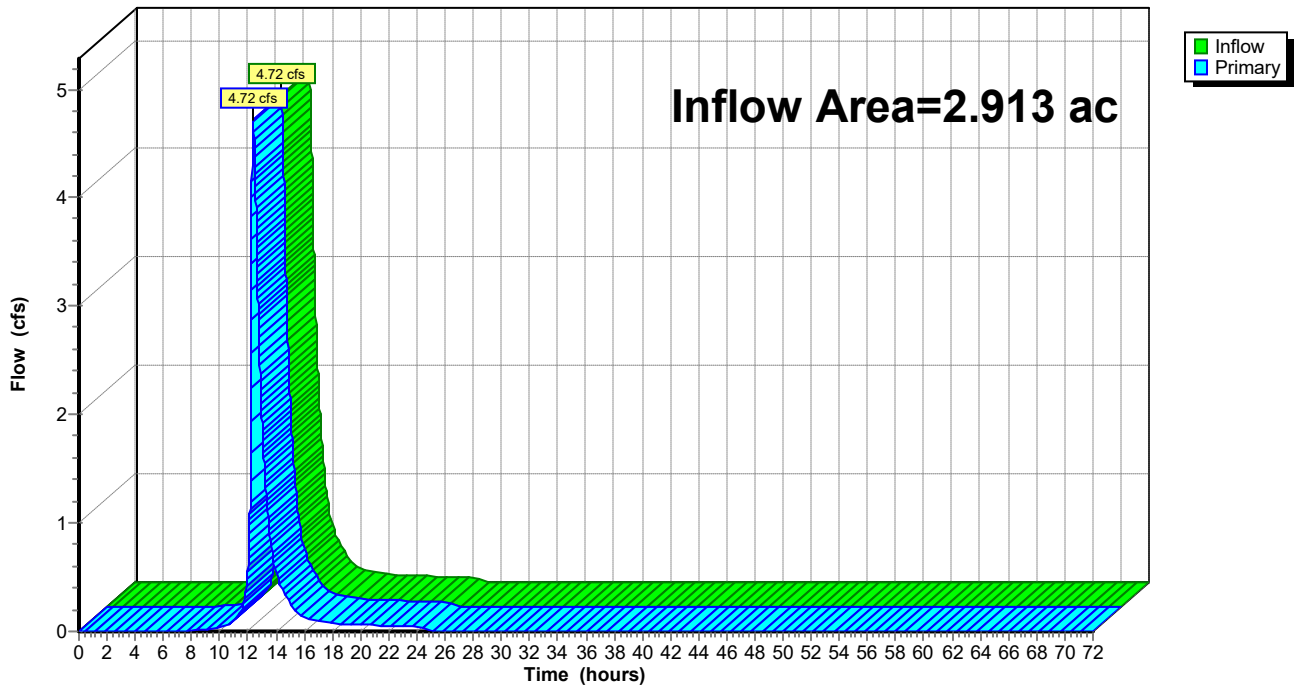
### Summary for Pond 12P: DA-2 - SW Wetland Basin

Inflow Area = 2.913 ac, 37.49% Impervious, Inflow Depth = 1.86" for 10\_yr\_stm\_2100 event  
Inflow = 4.72 cfs @ 12.37 hrs, Volume= 0.451 af  
Primary = 4.72 cfs @ 12.37 hrs, Volume= 0.451 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Pond 12P: DA-2 - SW Wetland Basin

Hydrograph



**Summary for Subcatchment 13S: DA-3 Per**

Runoff = 0.77 cfs @ 12.11 hrs, Volume= 0.048 af, Depth= 3.16"

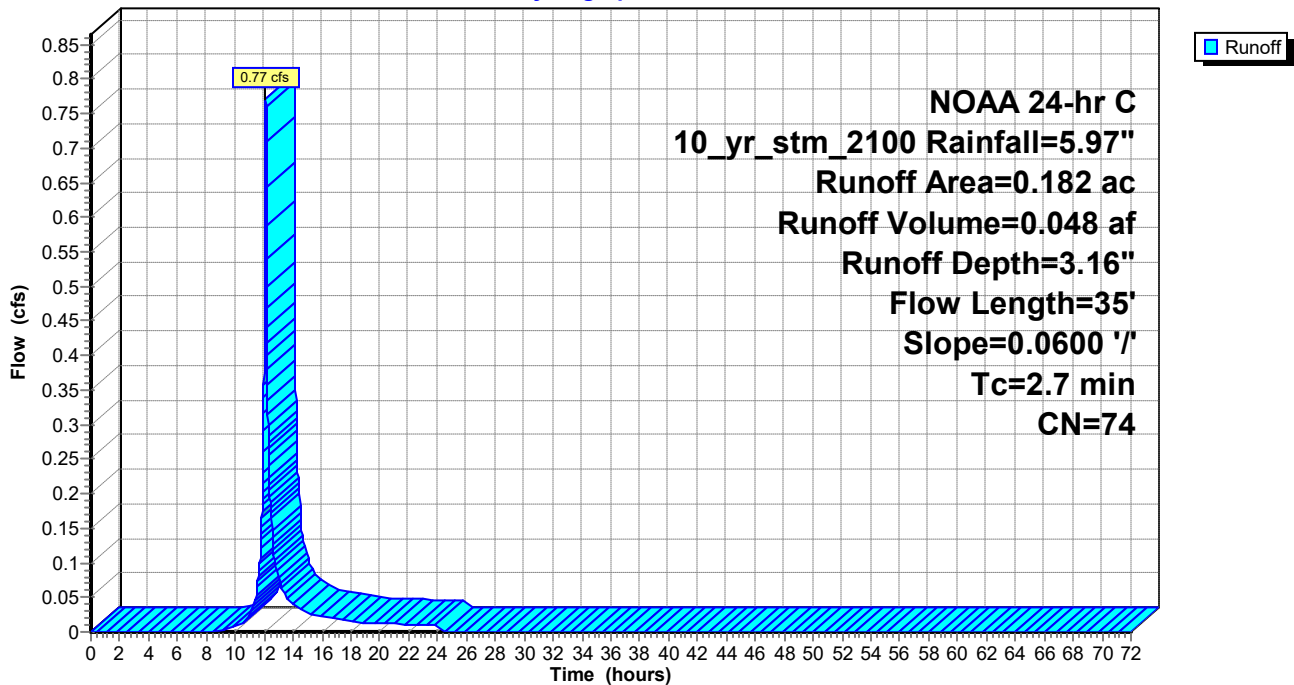
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 10\_yr\_stm\_2100 Rainfall=5.97"

Area (ac)	CN	Description
0.182	74	>75% Grass cover, Good, HSG C
0.182		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	35	0.0600	0.22		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"

**Subcatchment 13S: DA-3 Per**

Hydrograph



**Summary for Subcatchment 14S: DA-4 Per**

Runoff = 0.53 cfs @ 12.31 hrs, Volume= 0.075 af, Depth= 2.97"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 10\_yr\_stm\_2100 Rainfall=5.97"

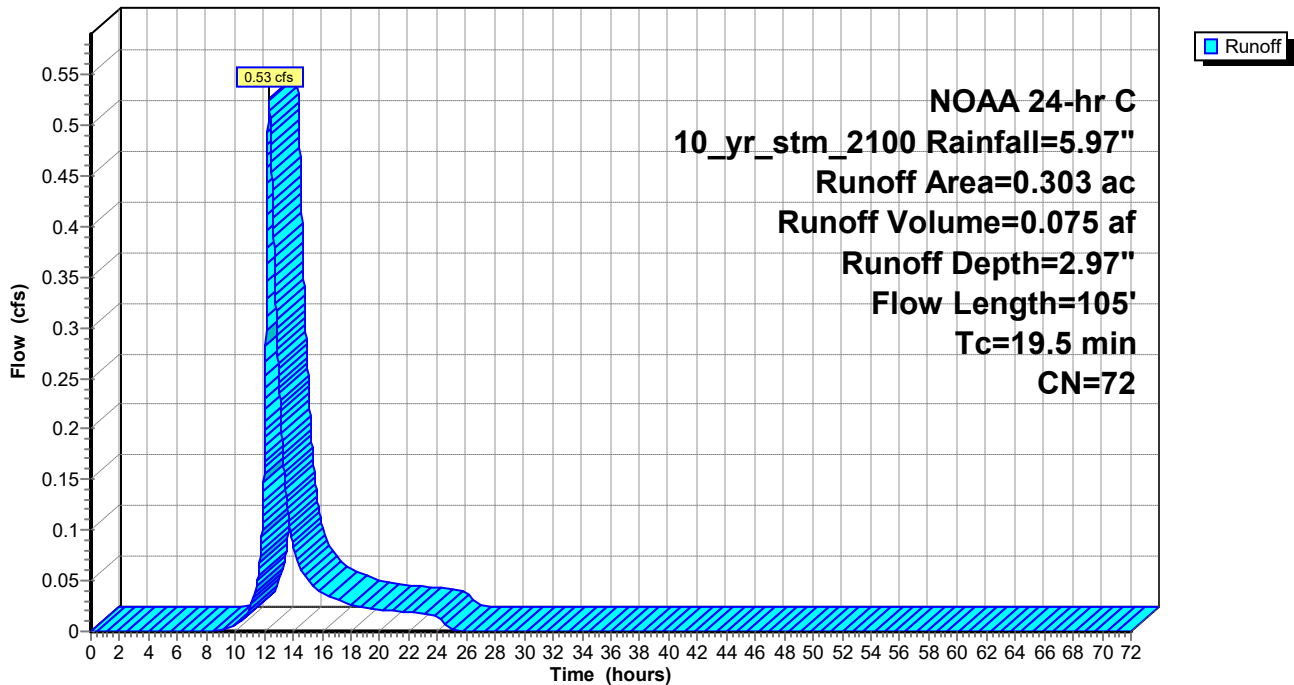
Area (ac)	CN	Description
0.168	74	>75% Grass cover, Good, HSG C
0.135	70	Woods, Good, HSG C
0.303	72	Weighted Average
0.303		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	13	0.1800	0.28		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
18.6	87	0.0210	0.08		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.29"
0.1	5	0.0210	0.72		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
19.5	105	Total			

**Subcatchment 14S: DA-4 Per**

Hydrograph



**Summary for Subcatchment 15S: DA-4 Imp**

Runoff = 0.04 cfs @ 12.21 hrs, Volume= 0.005 af, Depth= 5.73"

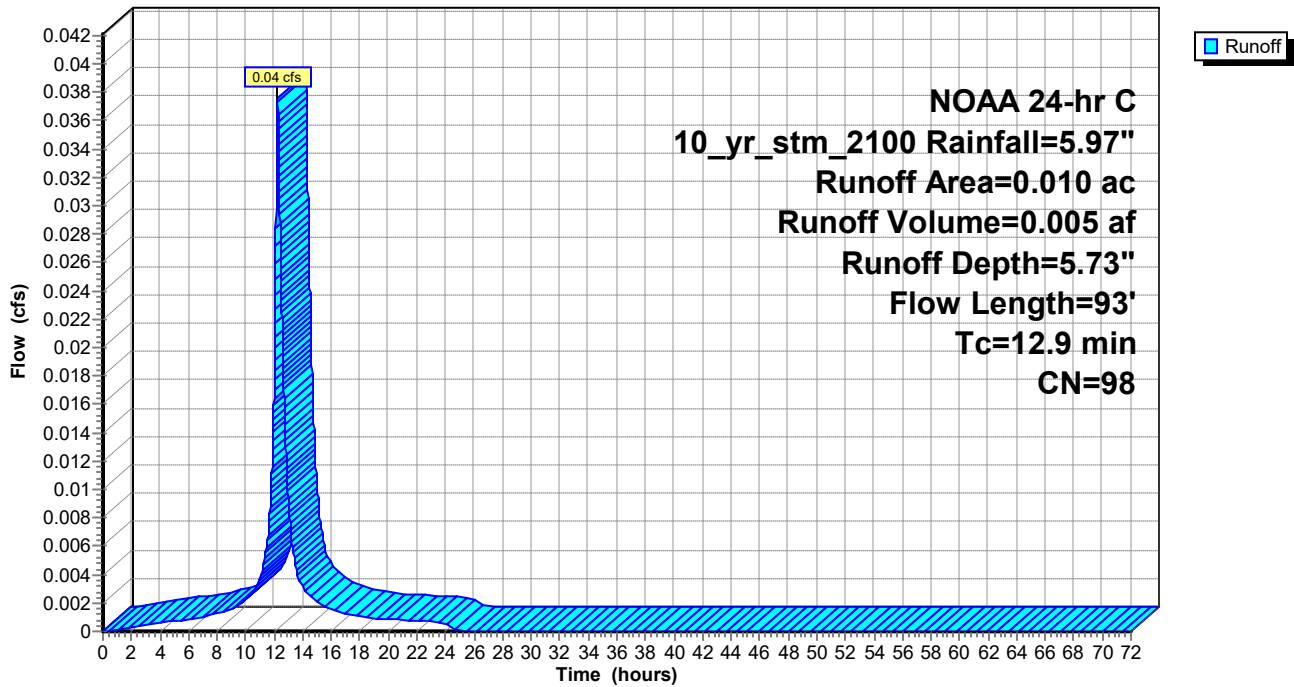
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 10\_yr\_stm\_2100 Rainfall=5.97"

Area (ac)	CN	Description
* 0.010	98	Sidewalk
0.010		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	37	0.0280	1.31		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.5	10	0.3300	0.33		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
11.9	46	0.0180	0.06		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.29"
12.9	93	Total			

**Subcatchment 15S: DA-4 Imp**

Hydrograph



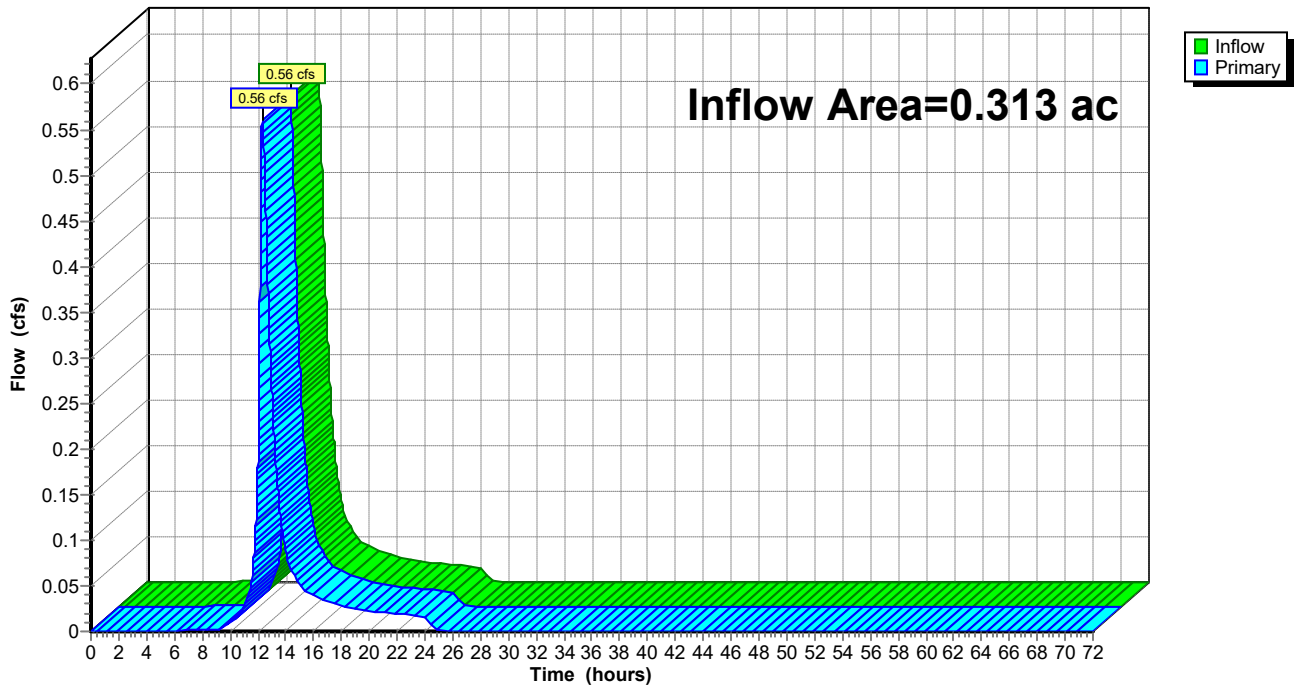
### Summary for Pond 16P: DA-4 - E Basin

Inflow Area = 0.313 ac, 3.19% Impervious, Inflow Depth = 3.06" for 10\_yr\_stm\_2100 event  
Inflow = 0.56 cfs @ 12.31 hrs, Volume= 0.080 af  
Primary = 0.56 cfs @ 12.31 hrs, Volume= 0.080 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Pond 16P: DA-4 - E Basin

Hydrograph



**Summary for Subcatchment 1S: DA-1 Per**

Runoff = 2.80 cfs @ 12.16 hrs, Volume= 0.248 af, Depth= 5.67"

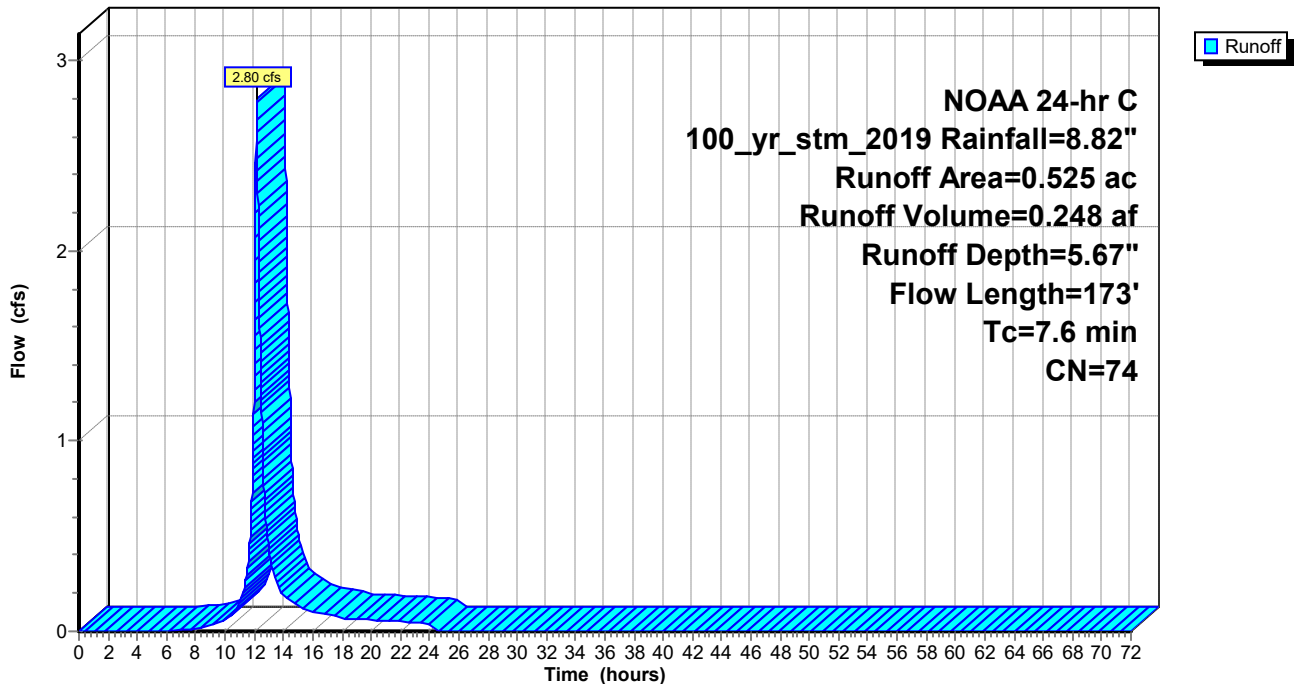
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 100\_yr\_stm\_2019 Rainfall=8.82"

Area (ac)	CN	Description
0.525	74	>75% Grass cover, Good, HSG C
0.525		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	60	0.0200	0.16		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
0.7	40	0.0125	0.96		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.5	73	0.0125	2.27		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
7.6	173	Total			

**Subcatchment 1S: DA-1 Per**

Hydrograph



**Summary for Subcatchment 2S: DA-1 Imp**

Runoff = 4.82 cfs @ 12.10 hrs, Volume= 0.347 af, Depth= 8.58"

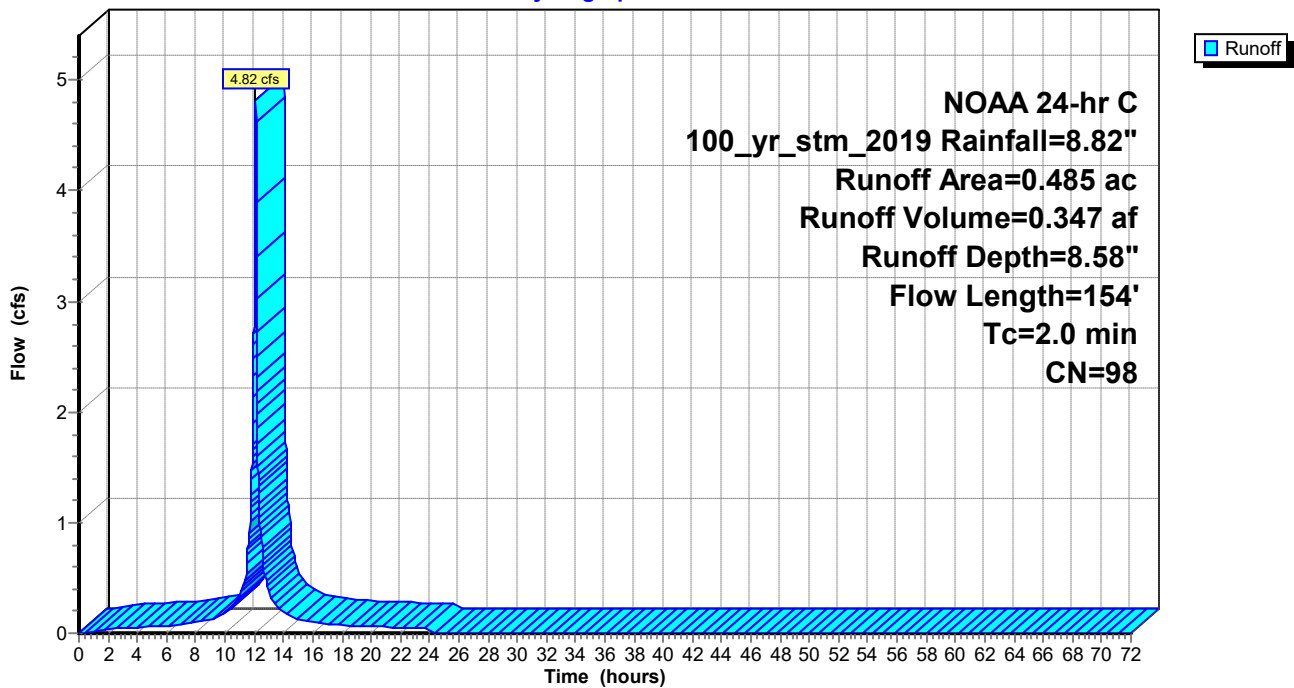
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 100\_yr\_stm\_2019 Rainfall=8.82"

Area (ac)	CN	Description
0.426	98	Paved parking, HSG C
* 0.059	98	Sidewalk
0.485	98	Weighted Average
0.485		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.91		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.7	46	0.0180	1.14		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.7	42	0.0125	0.97		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.4	54	0.0125	2.27		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
2.0	154	Total			

**Subcatchment 2S: DA-1 Imp**

Hydrograph



**Summary for Pond 3P: NE Bio Basin**

Inflow Area = 1.010 ac, 48.02% Impervious, Inflow Depth = 7.06" for 100\_yr\_stm\_2019 event  
 Inflow = 7.26 cfs @ 12.11 hrs, Volume= 0.595 af  
 Outflow = 4.78 cfs @ 12.20 hrs, Volume= 0.595 af, Atten= 34%, Lag= 5.2 min  
 Discarded = 0.14 cfs @ 12.20 hrs, Volume= 0.206 af  
 Primary = 4.64 cfs @ 12.20 hrs, Volume= 0.389 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 67.05' @ 12.20 hrs Surf.Area= 5,839 sf Storage= 5,076 cf

Plug-Flow detention time= 69.9 min calculated for 0.595 af (100% of inflow)  
 Center-of-Mass det. time= 69.9 min ( 842.8 - 772.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	66.00'	11,468 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
66.00	3,792	0	0
68.00	7,676	11,468	11,468

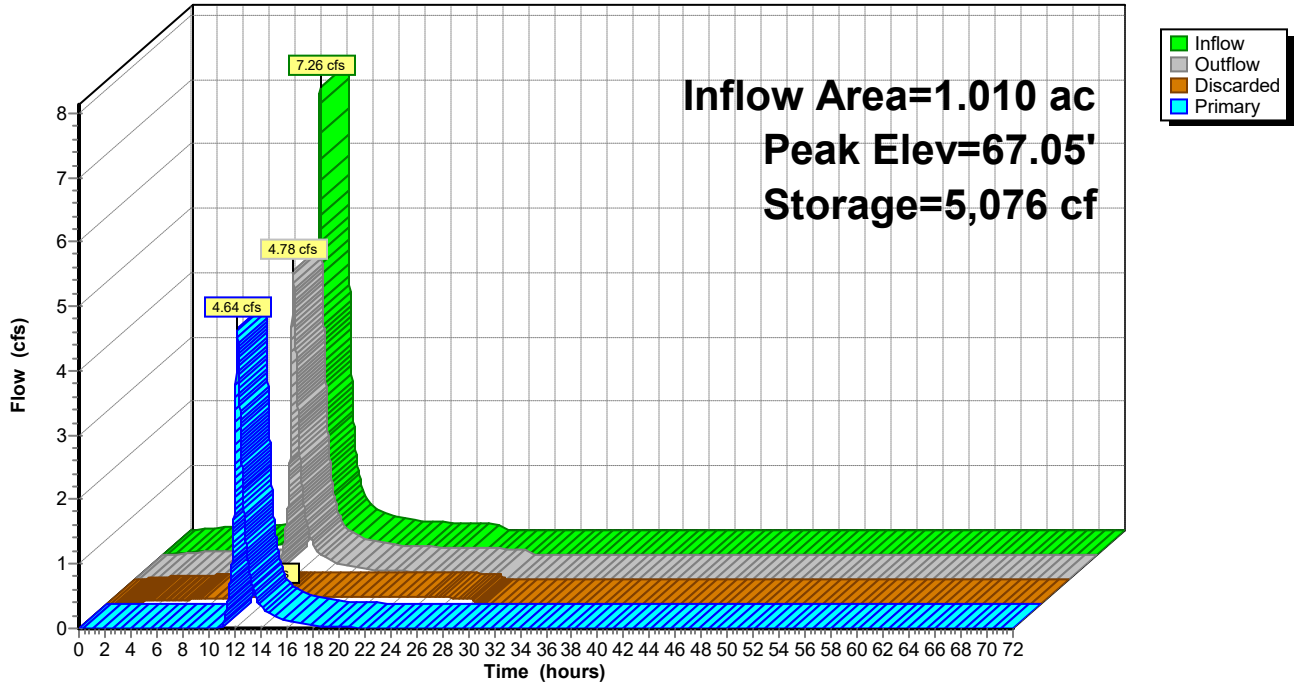
Device	Routing	Invert	Outlet Devices
#1	Discarded	66.00'	<b>1.000 in/hr Exfiltration over Surface area</b>
#2	Primary	63.64'	<b>15.0" Round Culvert</b> L= 57.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 63.64' / 63.50' S= 0.0025 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#3	Device 2	66.36'	<b>30.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads

**Discarded OutFlow** Max=0.14 cfs @ 12.20 hrs HW=67.05' (Free Discharge)  
 ↑**1=Exfiltration** (Exfiltration Controls 0.14 cfs)

**Primary OutFlow** Max=4.64 cfs @ 12.20 hrs HW=67.05' (Free Discharge)  
 ↑**2=Culvert** (Passes 4.64 cfs of 8.89 cfs potential flow)  
 ↑**3=Orifice/Grate** (Orifice Controls 4.64 cfs @ 2.67 fps)

### Pond 3P: NE Bio Basin

Hydrograph



### Summary for Subcatchment 4S: DA-1 Per

Runoff = 2.91 cfs @ 12.29 hrs, Volume= 0.391 af, Depth= 5.42"

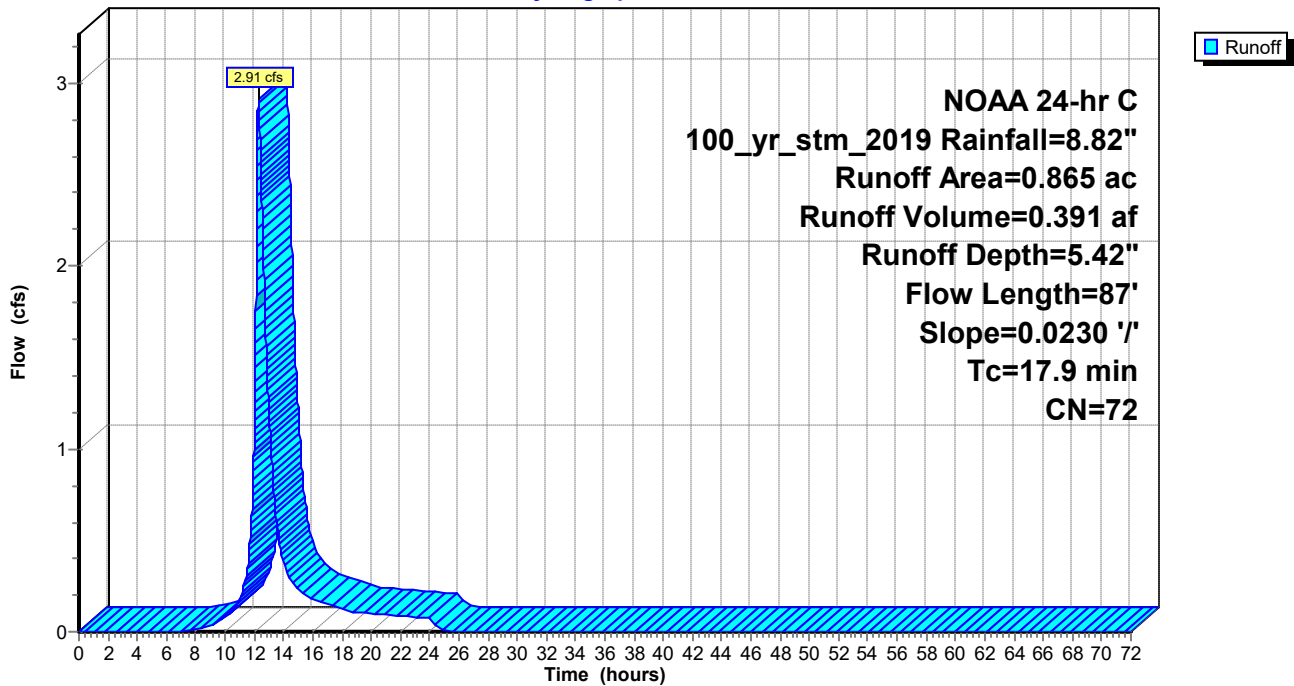
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 100\_yr\_stm\_2019 Rainfall=8.82"

Area (ac)	CN	Description
0.531	74	>75% Grass cover, Good, HSG C
0.334	70	Woods, Good, HSG C
0.865	72	Weighted Average
0.865		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.9	87	0.0230	0.08		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.29"

### Subcatchment 4S: DA-1 Per

Hydrograph



**Summary for Subcatchment 5S: DA-1 Imp**

Runoff = 1.01 cfs @ 12.09 hrs, Volume= 0.069 af, Depth= 8.58"

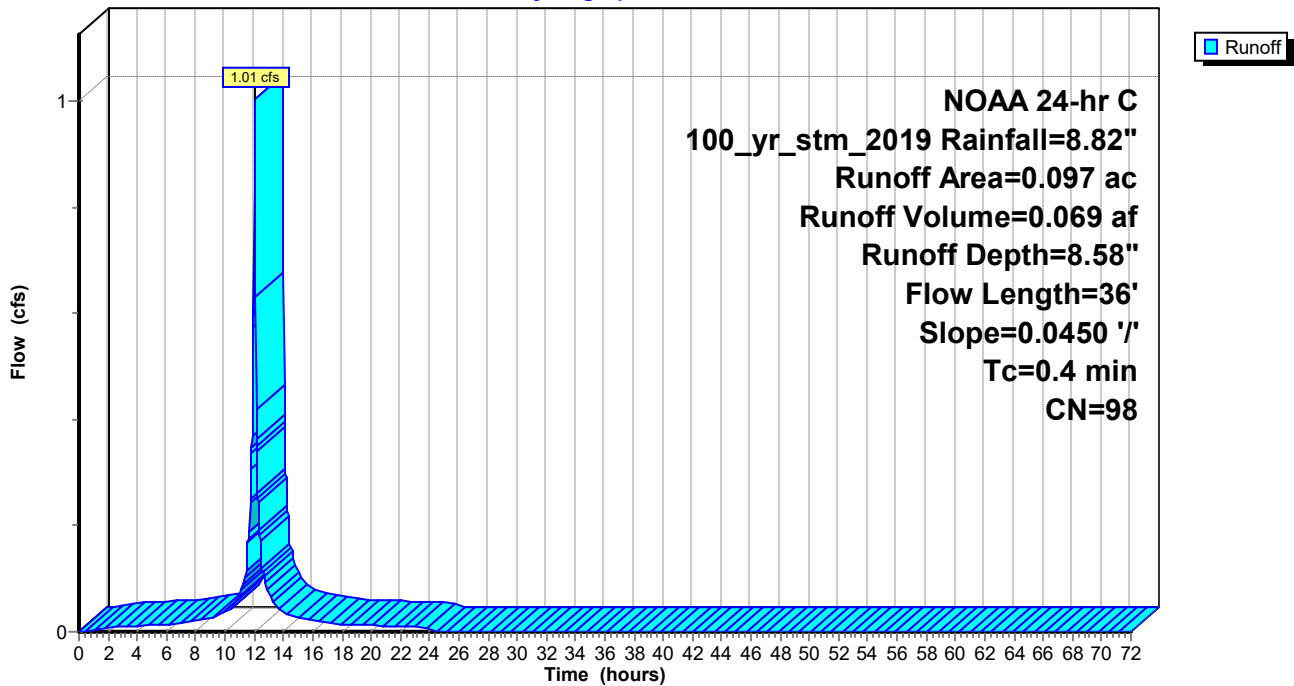
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 100\_yr\_stm\_2019 Rainfall=8.82"

Area (ac)	CN	Description
0.038	98	Paved parking, HSG C
* 0.059	98	Sidewalk
0.097	98	Weighted Average
0.097		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	36	0.0450	1.57		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"

**Subcatchment 5S: DA-1 Imp**

Hydrograph



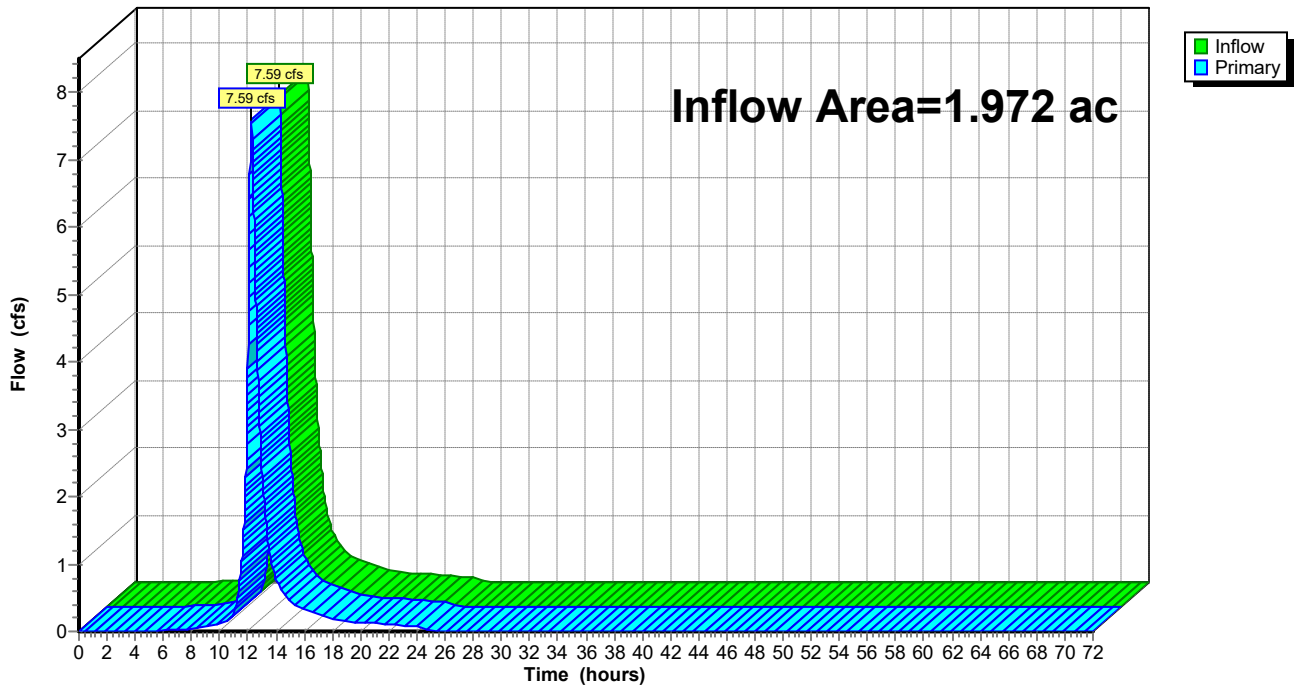
### Summary for Pond 6P: EA-1 - ROW / NE Wetlands

Inflow Area = 1.972 ac, 29.51% Impervious, Inflow Depth = 5.17" for 100\_yr\_stm\_2019 event  
Inflow = 7.59 cfs @ 12.25 hrs, Volume= 0.849 af  
Primary = 7.59 cfs @ 12.25 hrs, Volume= 0.849 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Pond 6P: EA-1 - ROW / NE Wetlands

Hydrograph



**Summary for Subcatchment 7S: DA-2 Per**

Runoff = 4.71 cfs @ 12.21 hrs, Volume= 0.501 af, Depth= 5.67"

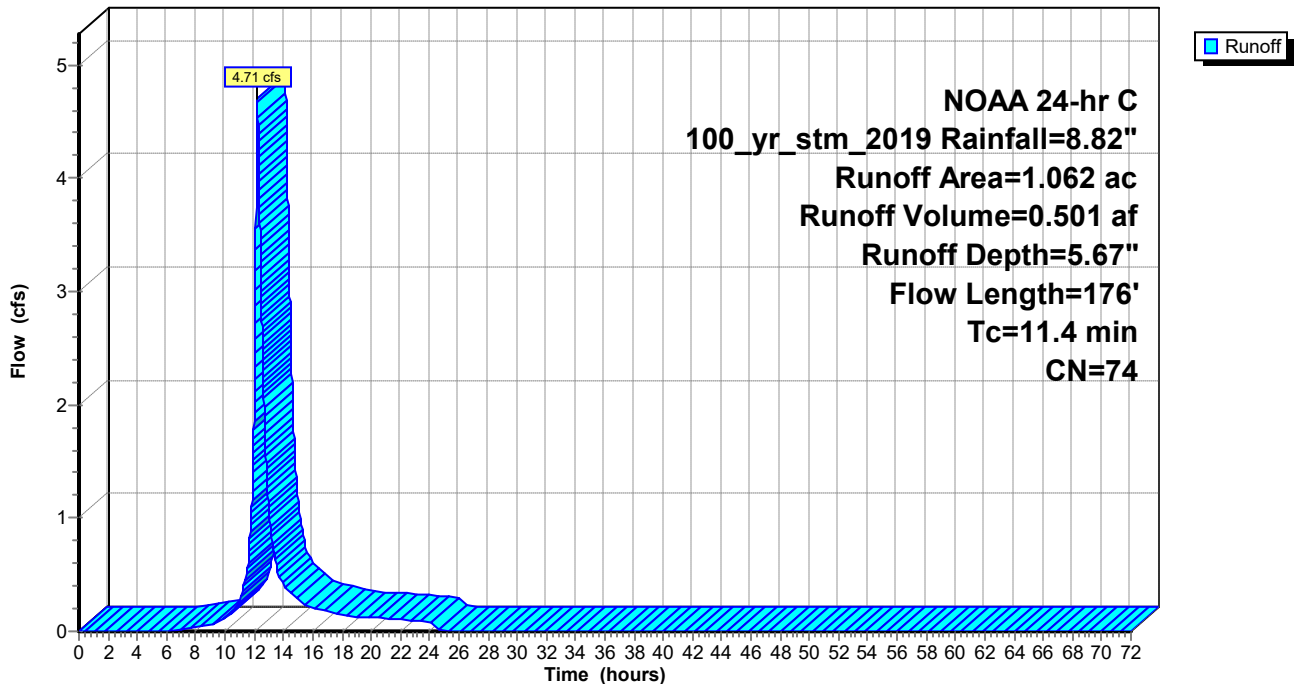
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 100\_yr\_stm\_2019 Rainfall=8.82"

Area (ac)	CN	Description
1.062	74	>75% Grass cover, Good, HSG C
1.062		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0160	0.16		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
0.4	16	0.0110	0.73		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.4	60	0.0125	2.27		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
11.4	176	Total			

**Subcatchment 7S: DA-2 Per**

Hydrograph



**Summary for Subcatchment 8S: DA-2 Imp**

Runoff = 10.35 cfs @ 12.10 hrs, Volume= 0.735 af, Depth= 8.58"

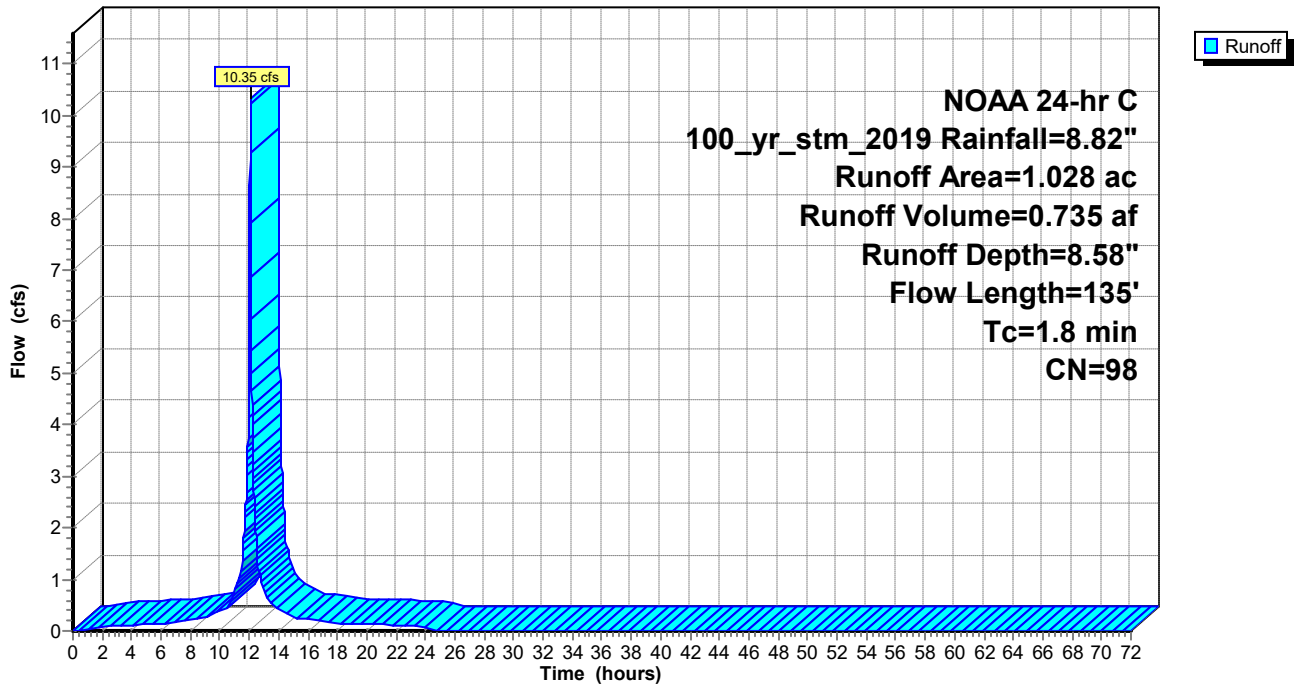
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 100\_yr\_stm\_2019 Rainfall=8.82"

Area (ac)	CN	Description
0.516	98	Paved parking, HSG C
0.446	98	Roofs, HSG C
* 0.066	98	Sidewalks
1.028	98	Weighted Average
1.028		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	60	0.0180	1.21		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.7	40	0.0125	0.96		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.3	35	0.0125	2.27		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
1.8	135	Total			

**Subcatchment 8S: DA-2 Imp**

Hydrograph



**Summary for Pond 9P: SW Bio Basin**

Inflow Area = 2.090 ac, 49.19% Impervious, Inflow Depth = 7.10" for 100\_yr\_stm\_2019 event  
 Inflow = 13.86 cfs @ 12.11 hrs, Volume= 1.236 af  
 Outflow = 10.36 cfs @ 12.15 hrs, Volume= 1.236 af, Atten= 25%, Lag= 2.7 min  
 Discarded = 0.30 cfs @ 12.15 hrs, Volume= 0.639 af  
 Primary = 10.05 cfs @ 12.15 hrs, Volume= 0.598 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 68.70' @ 12.15 hrs Surf.Area= 13,155 sf Storage= 13,753 cf

Plug-Flow detention time= 193.2 min calculated for 1.236 af (100% of inflow)  
 Center-of-Mass det. time= 193.2 min ( 967.3 - 774.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	67.50'	25,174 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
67.50	9,756	0	0
69.50	15,418	25,174	25,174

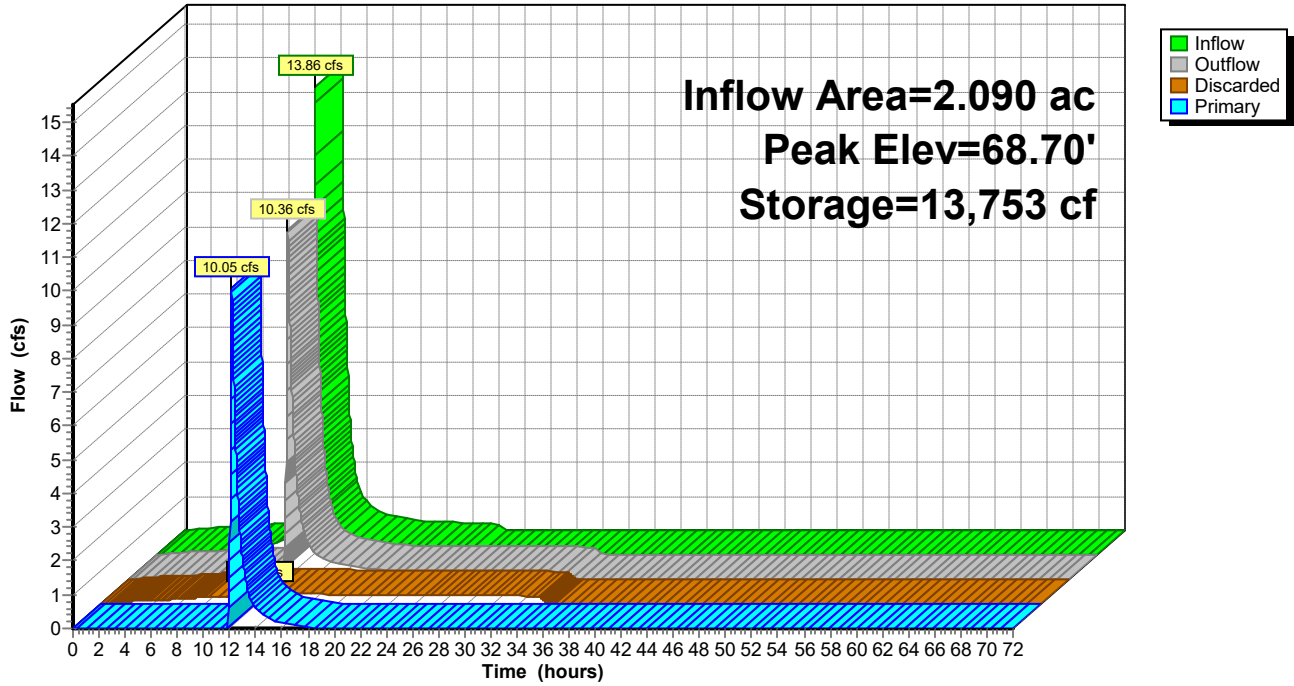
Device	Routing	Invert	Outlet Devices
#1	Discarded	67.50'	<b>1.000 in/hr Exfiltration over Surface area</b>
#2	Primary	68.40'	<b>25.0' long x 6.0' breadth Broad-Crested Rectangular Weir</b>
Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00			
2.50 3.00 3.50 4.00 4.50 5.00 5.50			
Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65			
2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83			

**Discarded OutFlow** Max=0.30 cfs @ 12.15 hrs HW=68.70' (Free Discharge)  
 ↑1=**Exfiltration** (Exfiltration Controls 0.30 cfs)

**Primary OutFlow** Max=10.05 cfs @ 12.15 hrs HW=68.70' (Free Discharge)  
 ↑2=**Broad-Crested Rectangular Weir** (Weir Controls 10.05 cfs @ 1.34 fps)

### Pond 9P: SW Bio Basin

Hydrograph



**Summary for Subcatchment 10S: DA-2 Per**

Runoff = 2.59 cfs @ 12.31 hrs, Volume= 0.358 af, Depth= 5.67"

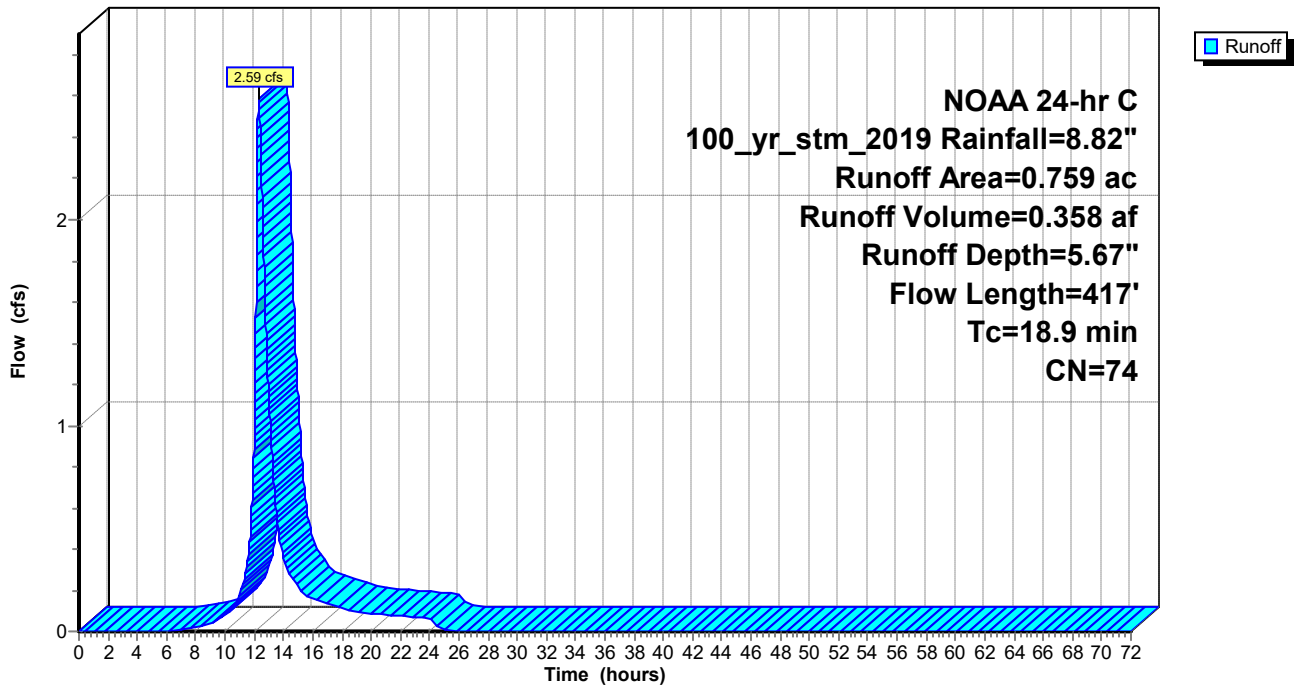
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 100\_yr\_stm\_2019 Rainfall=8.82"

Area (ac)	CN	Description
0.759	74	>75% Grass cover, Good, HSG C
0.759		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	78	0.0140	0.14		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
2.9	22	0.0190	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
0.8	47	0.0190	0.96		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.1	270	0.0110	0.73		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
18.9	417	Total			

**Subcatchment 10S: DA-2 Per**

Hydrograph



**Summary for Subcatchment 11S: DA-2 Imp**

Runoff = 0.29 cfs @ 12.30 hrs, Volume= 0.046 af, Depth= 8.58"

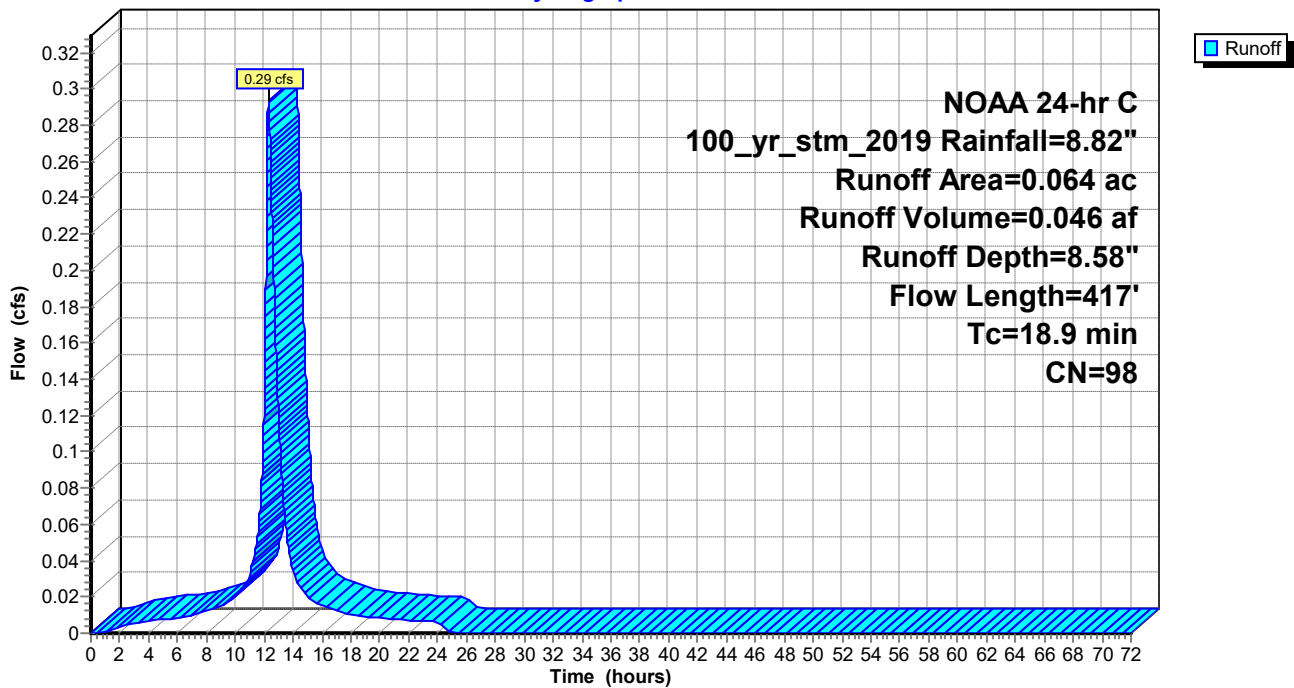
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 100\_yr\_stm\_2019 Rainfall=8.82"

Area (ac)	CN	Description
* 0.034	98	Sidewalks
* 0.030	98	Roofs
0.064	98	Weighted Average
0.064		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	78	0.0140	0.14		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
2.9	22	0.0190	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
0.8	47	0.0190	0.96		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.1	270	0.0110	0.73		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
18.9	417	Total			

**Subcatchment 11S: DA-2 Imp**

Hydrograph



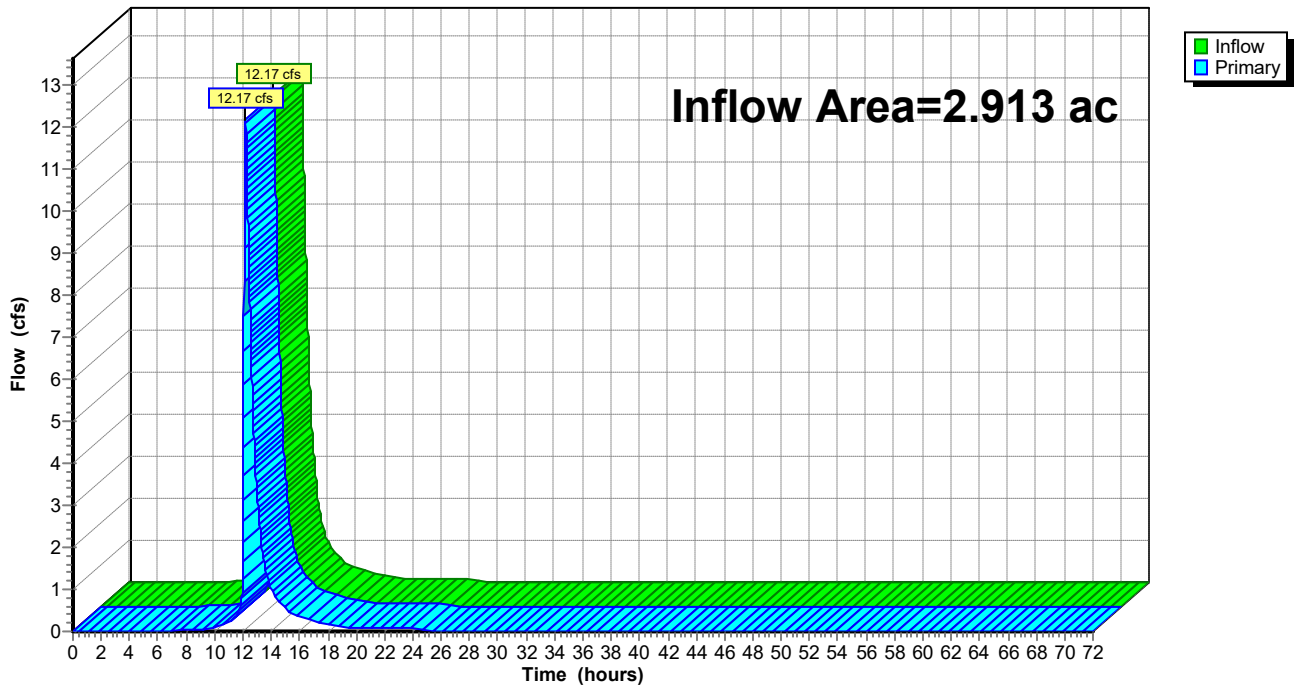
### Summary for Pond 12P: DA-2 - SW Wetland Basin

Inflow Area = 2.913 ac, 37.49% Impervious, Inflow Depth = 4.13" for 100\_yr\_stm\_2019 event  
Inflow = 12.17 cfs @ 12.17 hrs, Volume= 1.002 af  
Primary = 12.17 cfs @ 12.17 hrs, Volume= 1.002 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Pond 12P: DA-2 - SW Wetland Basin

Hydrograph



**Summary for Subcatchment 13S: DA-3 Per**

Runoff = 1.36 cfs @ 12.11 hrs, Volume= 0.086 af, Depth= 5.67"

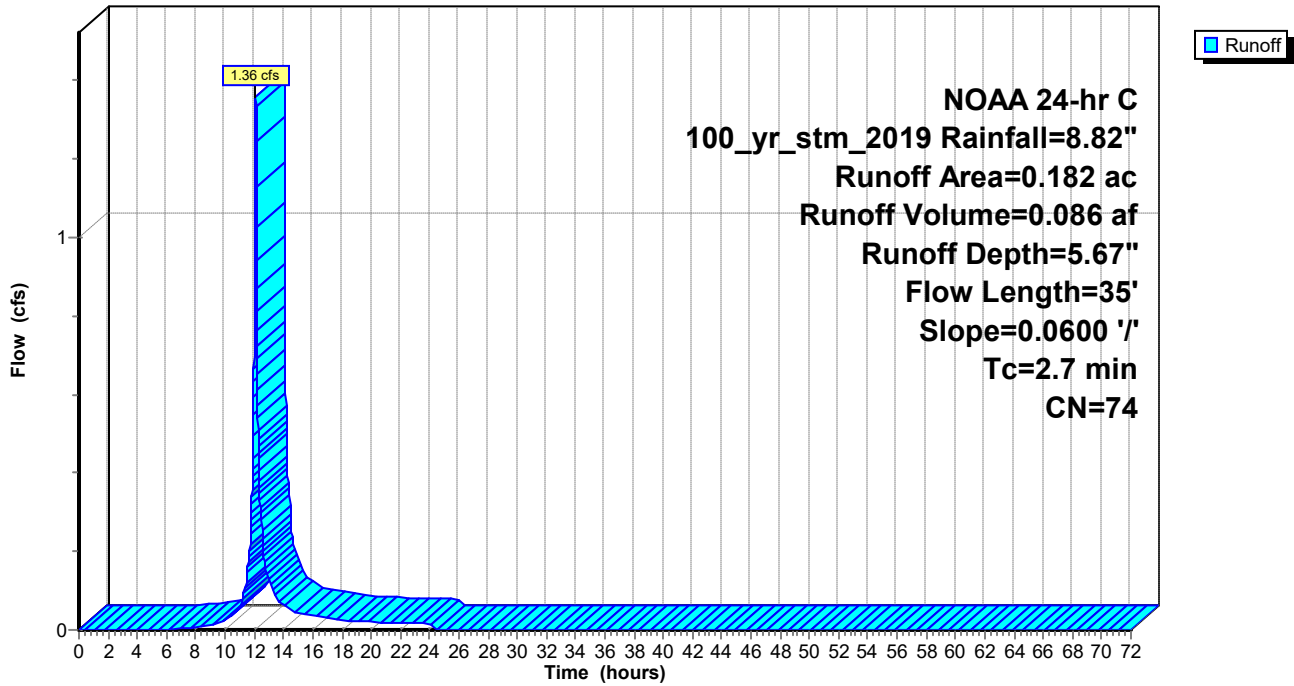
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 100\_yr\_stm\_2019 Rainfall=8.82"

Area (ac)	CN	Description
0.182	74	>75% Grass cover, Good, HSG C
0.182		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	35	0.0600	0.22		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"

**Subcatchment 13S: DA-3 Per**

Hydrograph



**Summary for Subcatchment 14S: DA-4 Per**

Runoff = 0.97 cfs @ 12.31 hrs, Volume= 0.137 af, Depth= 5.42"

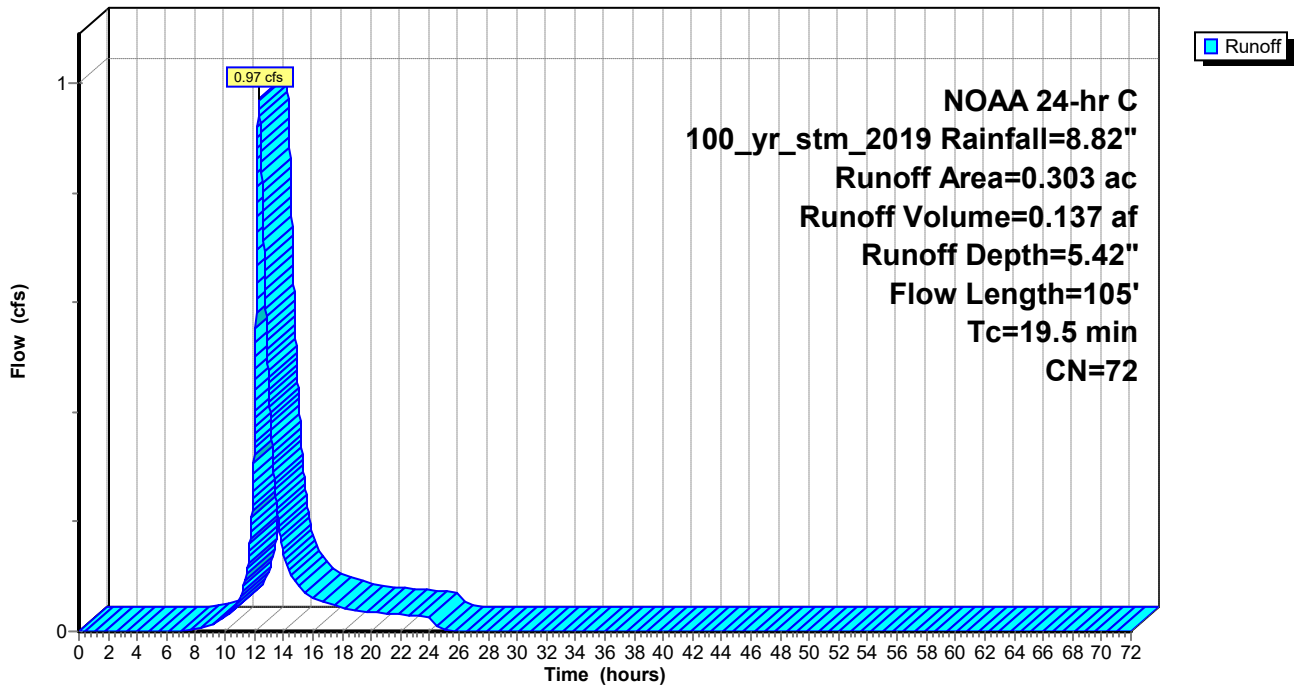
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 100\_yr\_stm\_2019 Rainfall=8.82"

Area (ac)	CN	Description
0.168	74	>75% Grass cover, Good, HSG C
0.135	70	Woods, Good, HSG C
0.303	72	Weighted Average
0.303		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	13	0.1800	0.28		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
18.6	87	0.0210	0.08		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.29"
0.1	5	0.0210	0.72		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
19.5	105	Total			

**Subcatchment 14S: DA-4 Per**

Hydrograph



**Summary for Subcatchment 15S: DA-4 Imp**

Runoff = 0.06 cfs @ 12.21 hrs, Volume= 0.007 af, Depth= 8.58"

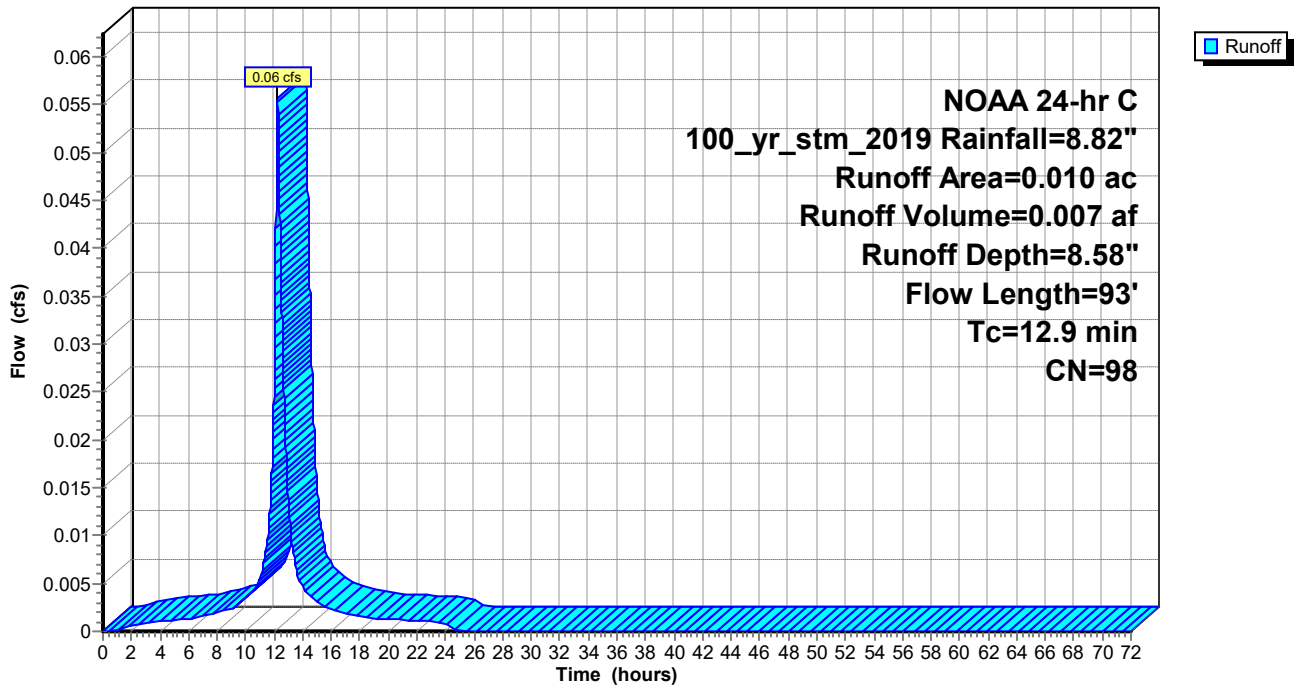
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 100\_yr\_stm\_2019 Rainfall=8.82"

Area (ac)	CN	Description
* 0.010	98	Sidewalk
0.010		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	37	0.0280	1.31		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.5	10	0.3300	0.33		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
11.9	46	0.0180	0.06		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.29"
12.9	93	Total			

**Subcatchment 15S: DA-4 Imp**

Hydrograph



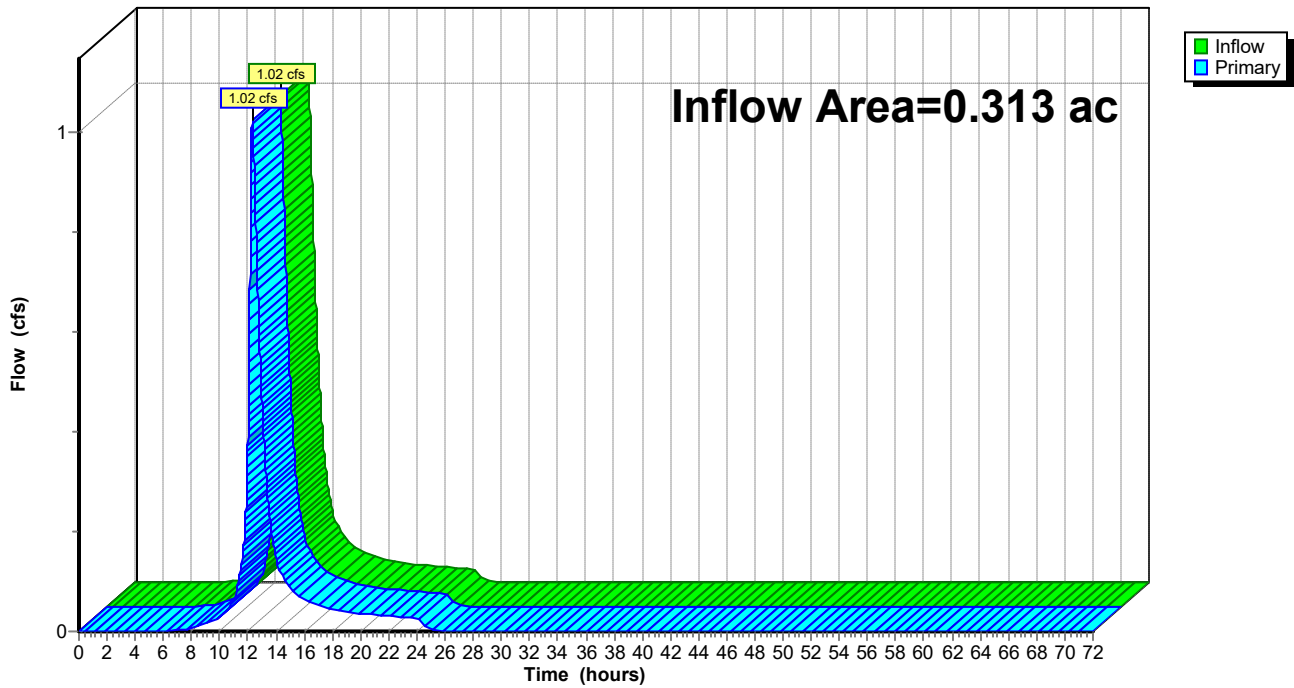
### Summary for Pond 16P: DA-4 - E Basin

Inflow Area = 0.313 ac, 3.19% Impervious, Inflow Depth = 5.52" for 100\_yr\_stm\_2019 event  
Inflow = 1.02 cfs @ 12.31 hrs, Volume= 0.144 af  
Primary = 1.02 cfs @ 12.31 hrs, Volume= 0.144 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Pond 16P: DA-4 - E Basin

Hydrograph



**Summary for Subcatchment 1S: DA-1 Per**

Runoff = 3.85 cfs @ 12.16 hrs, Volume= 0.344 af, Depth= 7.86"

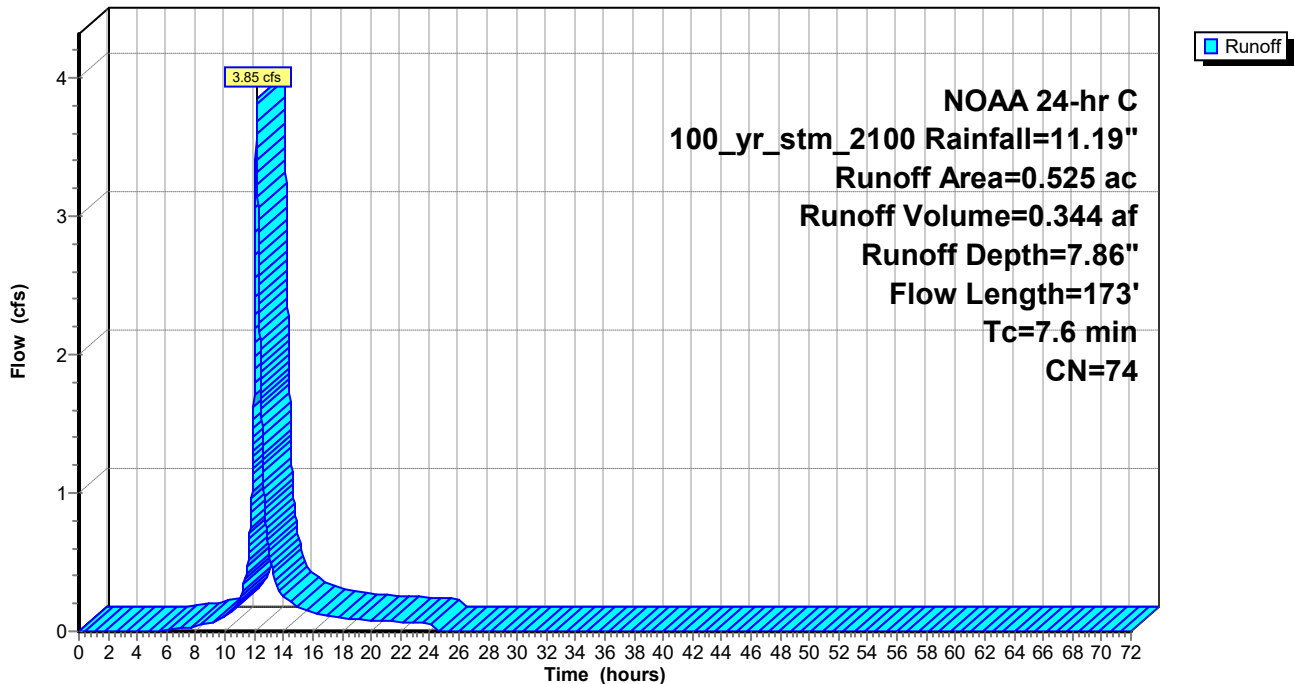
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 100\_yr\_stm\_2100 Rainfall=11.19"

Area (ac)	CN	Description
0.525	74	>75% Grass cover, Good, HSG C
0.525		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	60	0.0200	0.16		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
0.7	40	0.0125	0.96		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.5	73	0.0125	2.27		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
7.6	173	Total			

**Subcatchment 1S: DA-1 Per**

Hydrograph



**Summary for Subcatchment 2S: DA-1 Imp**

Runoff = 6.12 cfs @ 12.10 hrs, Volume= 0.443 af, Depth=10.95"

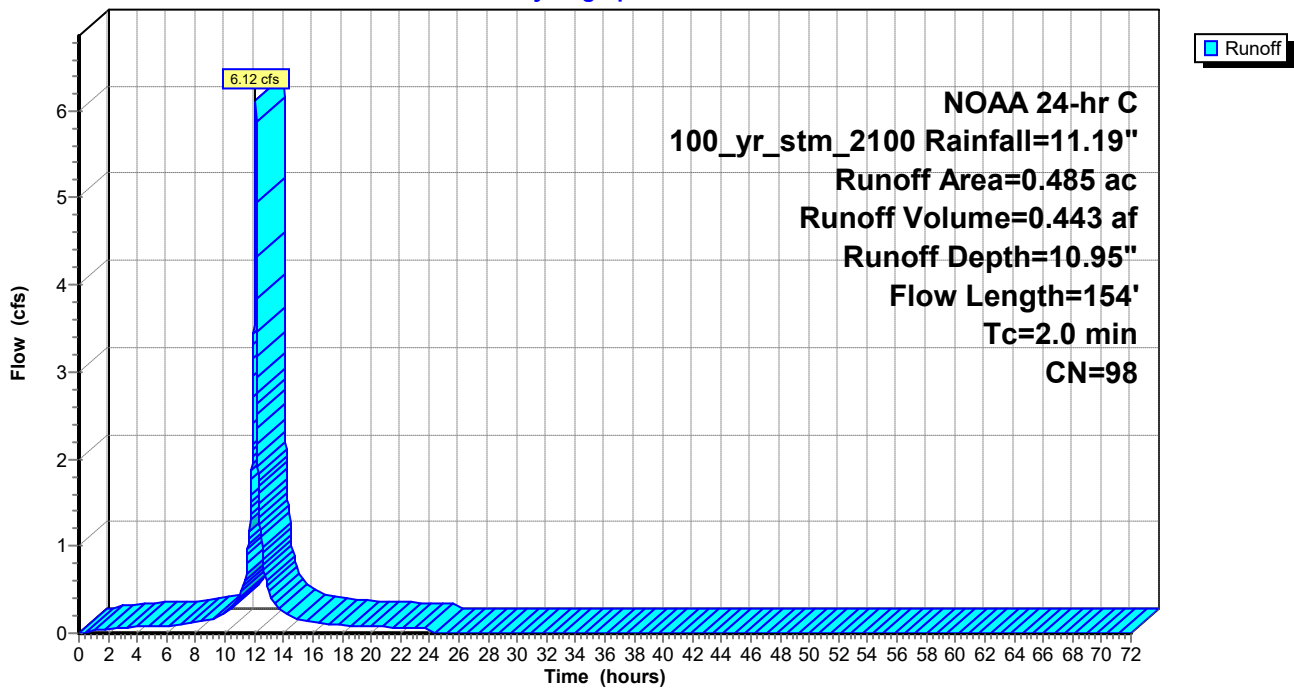
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 100\_yr\_stm\_2100 Rainfall=11.19"

Area (ac)	CN	Description
0.426	98	Paved parking, HSG C
* 0.059	98	Sidewalk
0.485	98	Weighted Average
0.485		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.91		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.7	46	0.0180	1.14		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.7	42	0.0125	0.97		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.4	54	0.0125	2.27		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
2.0	154	Total			

**Subcatchment 2S: DA-1 Imp**

Hydrograph



**Summary for Pond 3P: NE Bio Basin**

Inflow Area = 1.010 ac, 48.02% Impervious, Inflow Depth = 9.34" for 100\_yr\_stm\_2100 event  
 Inflow = 9.50 cfs @ 12.11 hrs, Volume= 0.786 af  
 Outflow = 6.42 cfs @ 12.19 hrs, Volume= 0.786 af, Atten= 32%, Lag= 5.0 min  
 Discarded = 0.14 cfs @ 12.19 hrs, Volume= 0.220 af  
 Primary = 6.27 cfs @ 12.19 hrs, Volume= 0.566 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 67.21' @ 12.19 hrs Surf.Area= 6,139 sf Storage= 6,001 cf

Plug-Flow detention time= 60.4 min calculated for 0.786 af (100% of inflow)  
 Center-of-Mass det. time= 60.4 min ( 829.3 - 768.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	66.00'	11,468 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
66.00	3,792	0	0
68.00	7,676	11,468	11,468

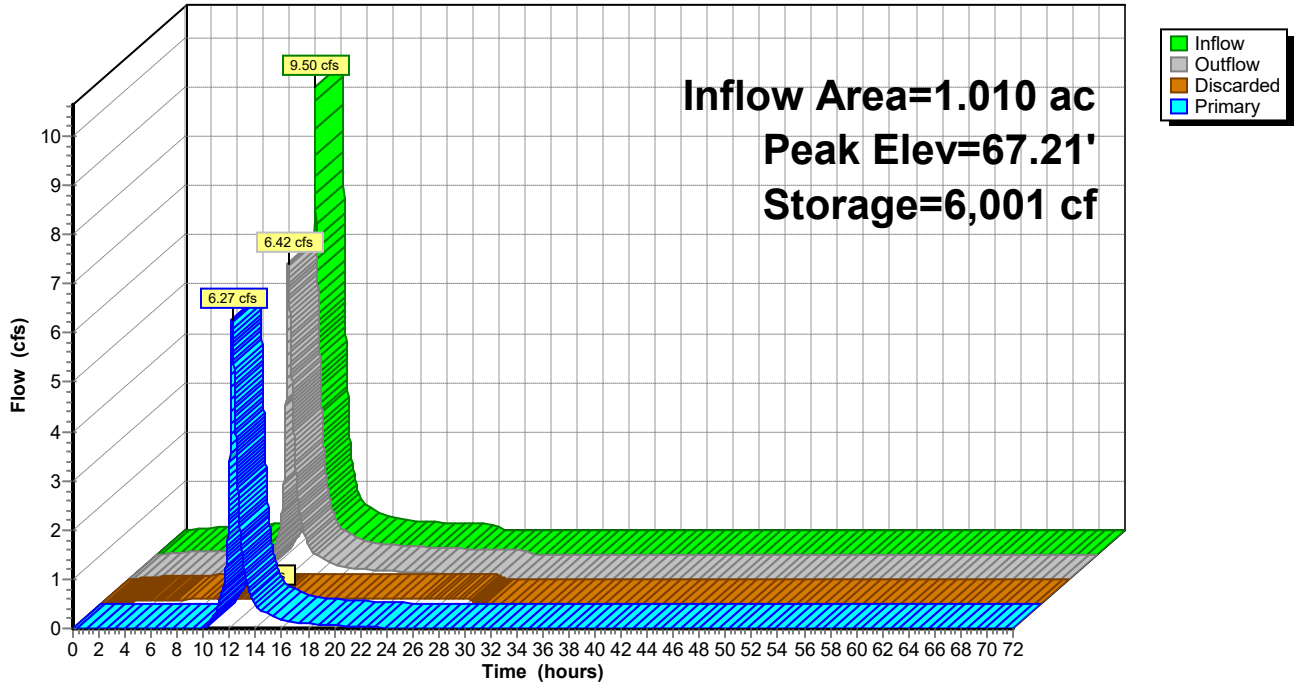
Device	Routing	Invert	Outlet Devices
#1	Discarded	66.00'	<b>1.000 in/hr Exfiltration over Surface area</b>
#2	Primary	63.64'	<b>15.0" Round Culvert</b> L= 57.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 63.64' / 63.50' S= 0.0025 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#3	Device 2	66.36'	<b>30.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads

**Discarded OutFlow** Max=0.14 cfs @ 12.19 hrs HW=67.21' (Free Discharge)  
 ↑1=Exfiltration (Exfiltration Controls 0.14 cfs)

**Primary OutFlow** Max=6.27 cfs @ 12.19 hrs HW=67.21' (Free Discharge)  
 ↑2=Culvert (Passes 6.27 cfs of 9.18 cfs potential flow)  
 ↑3=Orifice/Grate (Orifice Controls 6.27 cfs @ 2.96 fps)

### Pond 3P: NE Bio Basin

Hydrograph



**Hydrograph for Pond 3P: NE Bio Basin**

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0	66.00	0.00	0.00	0.00
2.00	0.05	39	66.01	0.05	0.05	0.00
4.00	0.07	59	66.02	0.07	0.07	0.00
6.00	0.09	76	66.02	0.09	0.09	0.00
8.00	0.17	348	66.09	0.09	0.09	0.00
10.00	0.34	1,317	66.32	0.10	0.10	0.00
12.00	<b>5.55</b>	<b>4,145</b>	<b>66.89</b>	<b>3.23</b>	<b>0.13</b>	<b>3.10</b>
14.00	<b>0.50</b>	<b>2,195</b>	<b>66.51</b>	<b>0.59</b>	<b>0.11</b>	<b>0.47</b>
16.00	0.27	1,857	66.44	0.29	0.11	0.18
18.00	0.18	1,728	66.41	0.20	0.11	0.10
20.00	0.16	1,658	66.40	0.16	0.11	0.06
22.00	0.14	1,612	66.39	0.14	0.11	0.04
24.00	0.13	1,565	66.38	0.12	0.10	0.02
26.00	0.00	880	66.22	0.10	0.10	0.00
28.00	0.00	204	66.05	0.09	0.09	0.00
30.00	0.00	0	66.00	0.00	0.00	0.00
32.00	0.00	0	66.00	0.00	0.00	0.00
34.00	0.00	0	66.00	0.00	0.00	0.00
36.00	0.00	0	66.00	0.00	0.00	0.00
38.00	0.00	0	66.00	0.00	0.00	0.00
40.00	0.00	0	66.00	0.00	0.00	0.00
42.00	0.00	0	66.00	0.00	0.00	0.00
44.00	0.00	0	66.00	0.00	0.00	0.00
46.00	0.00	0	66.00	0.00	0.00	0.00
48.00	0.00	0	66.00	0.00	0.00	0.00
50.00	0.00	0	66.00	0.00	0.00	0.00
52.00	0.00	0	66.00	0.00	0.00	0.00
54.00	0.00	0	66.00	0.00	0.00	0.00
56.00	0.00	0	66.00	0.00	0.00	0.00
58.00	0.00	0	66.00	0.00	0.00	0.00
60.00	0.00	0	66.00	0.00	0.00	0.00
62.00	0.00	0	66.00	0.00	0.00	0.00
64.00	0.00	0	66.00	0.00	0.00	0.00
66.00	0.00	0	66.00	0.00	0.00	0.00
68.00	0.00	0	66.00	0.00	0.00	0.00
70.00	0.00	0	66.00	0.00	0.00	0.00
72.00	0.00	0	66.00	0.00	0.00	0.00

### Summary for Subcatchment 4S: DA-1 Per

Runoff = 4.06 cfs @ 12.29 hrs, Volume= 0.546 af, Depth= 7.58"

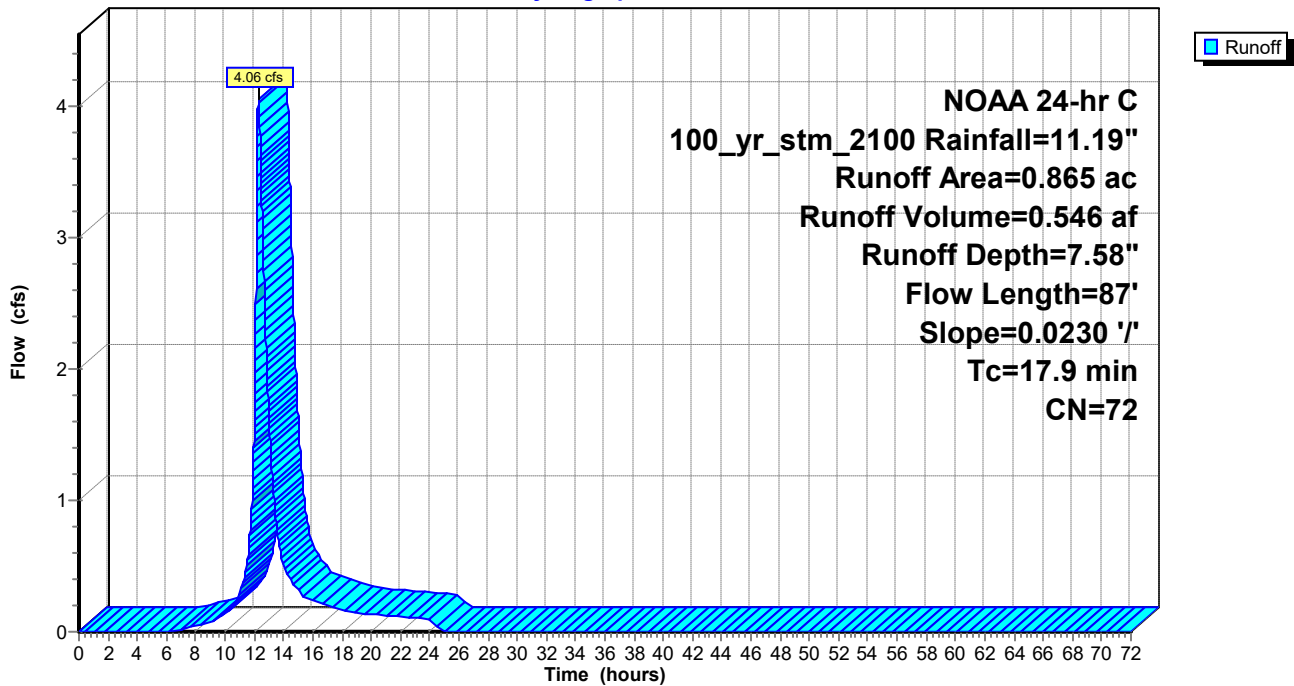
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 100\_yr\_stm\_2100 Rainfall=11.19"

Area (ac)	CN	Description
0.531	74	>75% Grass cover, Good, HSG C
0.334	70	Woods, Good, HSG C
0.865	72	Weighted Average
0.865		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.9	87	0.0230	0.08		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.29"

### Subcatchment 4S: DA-1 Per

Hydrograph



**Summary for Subcatchment 5S: DA-1 Imp**

Runoff = 1.28 cfs @ 12.09 hrs, Volume= 0.089 af, Depth=10.95"

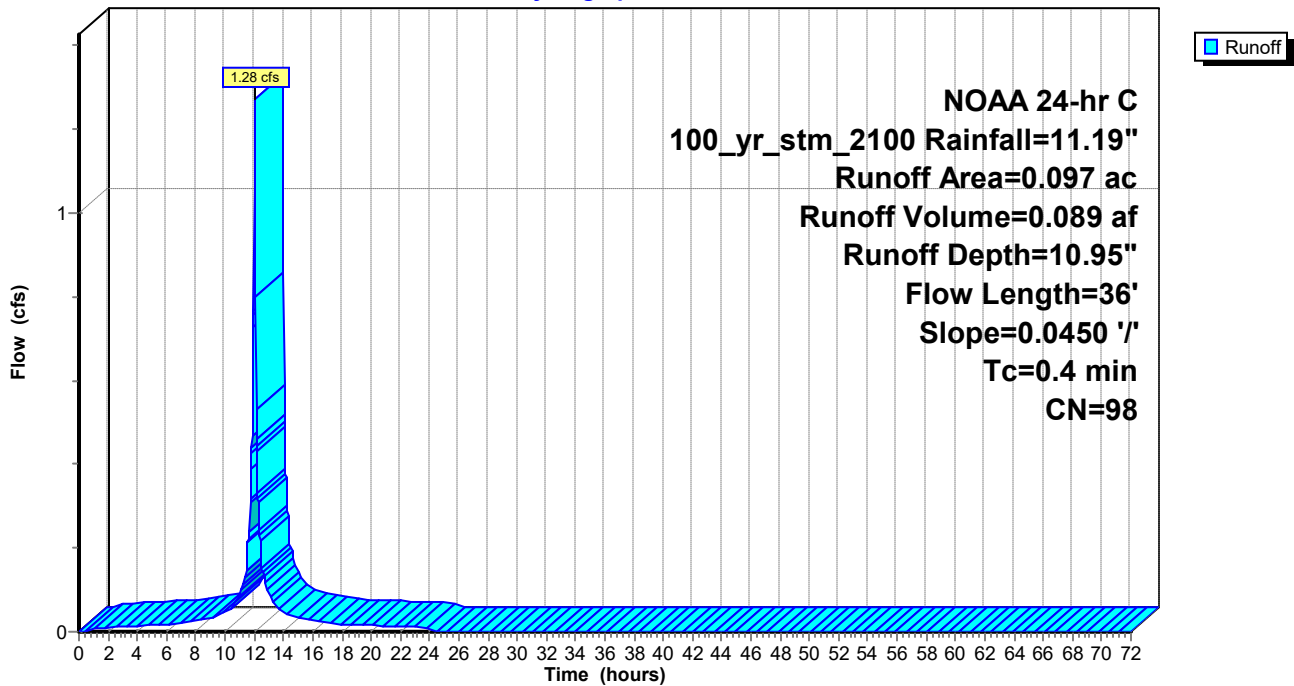
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 100\_yr\_stm\_2100 Rainfall=11.19"

Area (ac)	CN	Description
0.038	98	Paved parking, HSG C
* 0.059	98	Sidewalk
0.097	98	Weighted Average
0.097		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	36	0.0450	1.57		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"

**Subcatchment 5S: DA-1 Imp**

Hydrograph



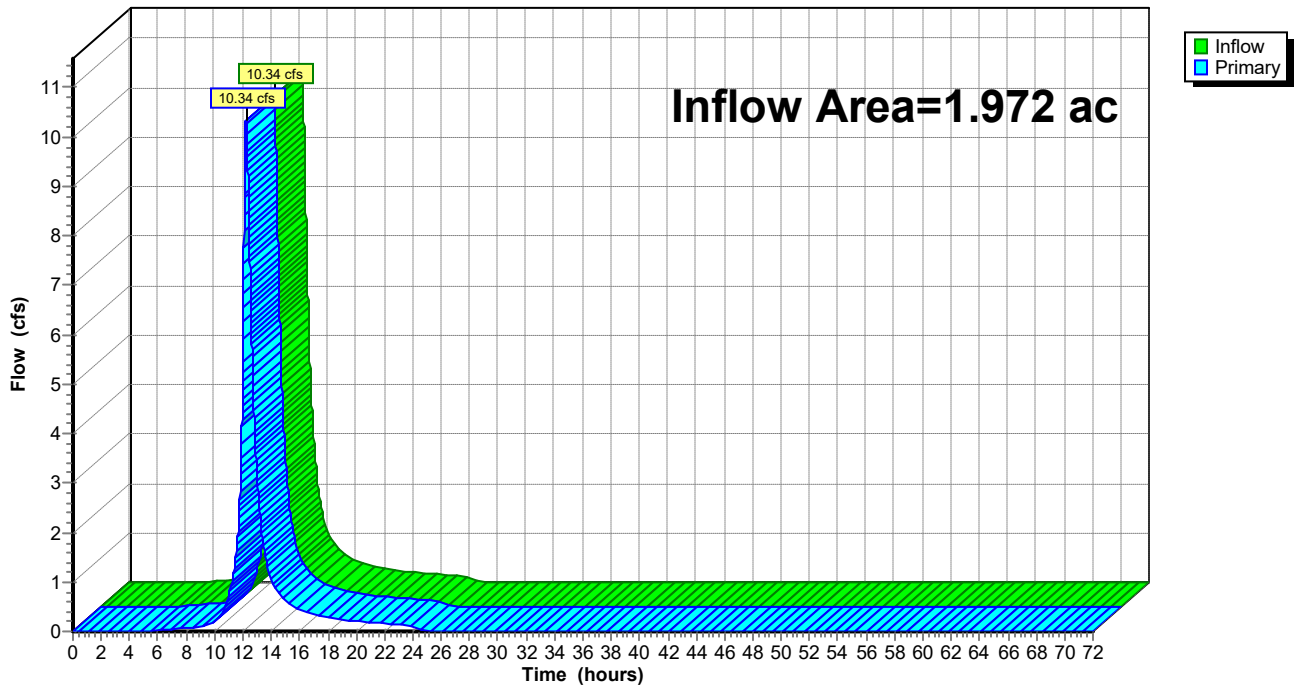
### Summary for Pond 6P: EA-1 - ROW / NE Wetlands

Inflow Area = 1.972 ac, 29.51% Impervious, Inflow Depth = 7.31" for 100\_yr\_stm\_2100 event  
Inflow = 10.34 cfs @ 12.24 hrs, Volume= 1.201 af  
Primary = 10.34 cfs @ 12.24 hrs, Volume= 1.201 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Pond 6P: EA-1 - ROW / NE Wetlands

Hydrograph



**Summary for Subcatchment 7S: DA-2 Per**

Runoff = 6.48 cfs @ 12.21 hrs, Volume= 0.695 af, Depth= 7.86"

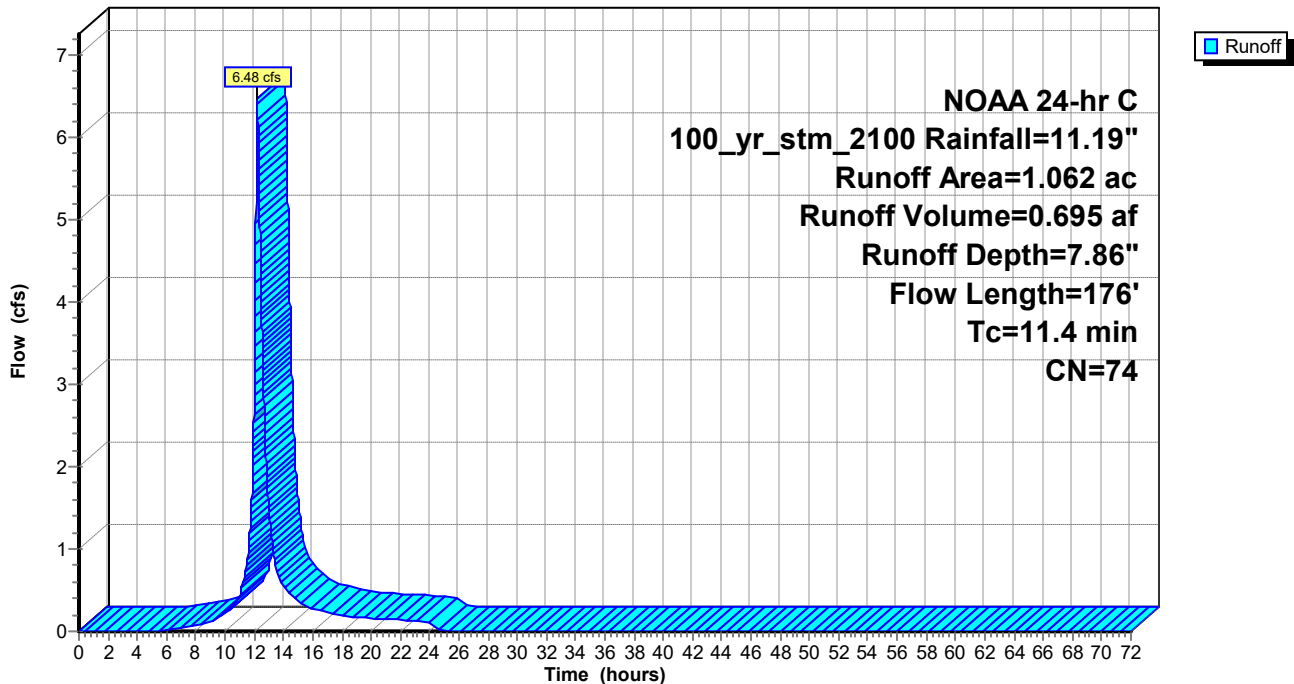
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 100\_yr\_stm\_2100 Rainfall=11.19"

Area (ac)	CN	Description
1.062	74	>75% Grass cover, Good, HSG C
1.062		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0160	0.16		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
0.4	16	0.0110	0.73		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.4	60	0.0125	2.27		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
11.4	176	Total			

**Subcatchment 7S: DA-2 Per**

Hydrograph



**Summary for Subcatchment 8S: DA-2 Imp**

Runoff = 13.14 cfs @ 12.10 hrs, Volume= 0.938 af, Depth=10.95"

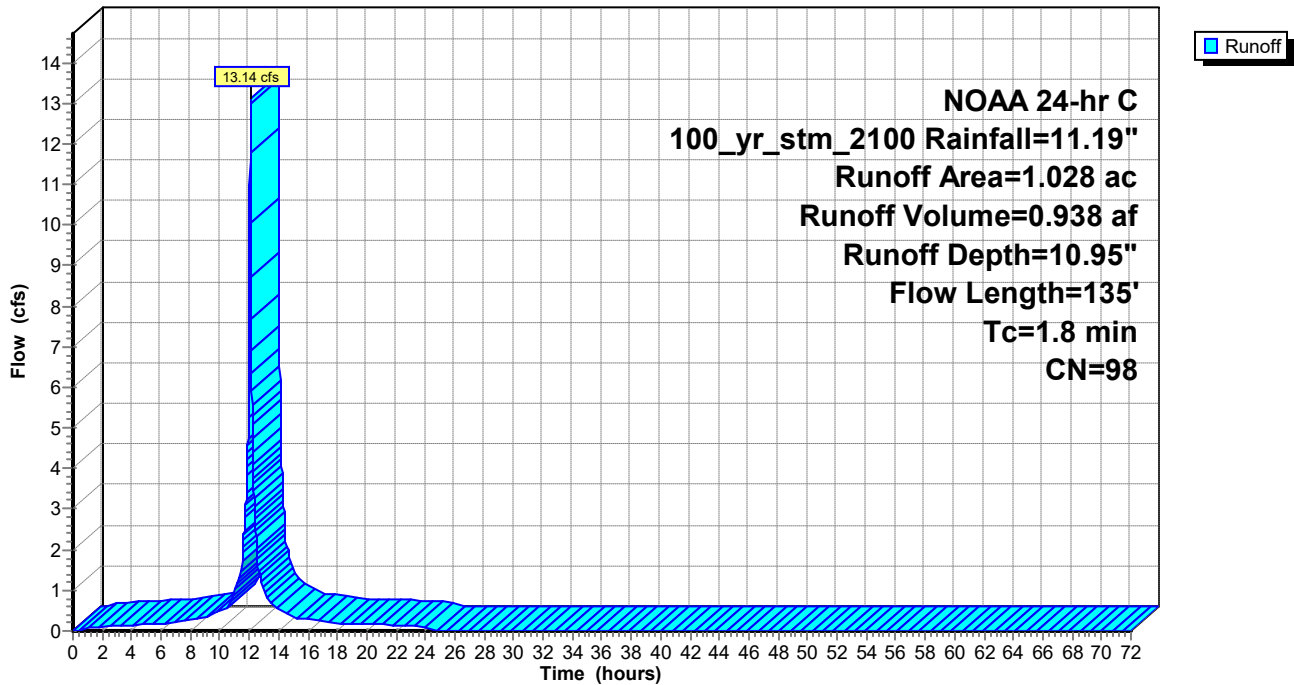
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 100\_yr\_stm\_2100 Rainfall=11.19"

Area (ac)	CN	Description
0.516	98	Paved parking, HSG C
0.446	98	Roofs, HSG C
* 0.066	98	Sidewalks
1.028	98	Weighted Average
1.028		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	60	0.0180	1.21		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.7	40	0.0125	0.96		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.3	35	0.0125	2.27		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
1.8	135	Total			

**Subcatchment 8S: DA-2 Imp**

Hydrograph



**Summary for Pond 9P: SW Bio Basin**

Inflow Area = 2.090 ac, 49.19% Impervious, Inflow Depth = 9.38" for 100\_yr\_stm\_2100 event  
 Inflow = 18.03 cfs @ 12.11 hrs, Volume= 1.633 af  
 Outflow = 15.17 cfs @ 12.13 hrs, Volume= 1.633 af, Atten= 16%, Lag= 1.7 min  
 Discarded = 0.31 cfs @ 12.13 hrs, Volume= 0.685 af  
 Primary = 14.86 cfs @ 12.13 hrs, Volume= 0.948 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 68.78' @ 12.13 hrs Surf.Area= 13,391 sf Storage= 14,859 cf

Plug-Flow detention time= 161.2 min calculated for 1.633 af (100% of inflow)  
 Center-of-Mass det. time= 161.3 min ( 931.6 - 770.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	67.50'	25,174 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
67.50	9,756	0	0
69.50	15,418	25,174	25,174

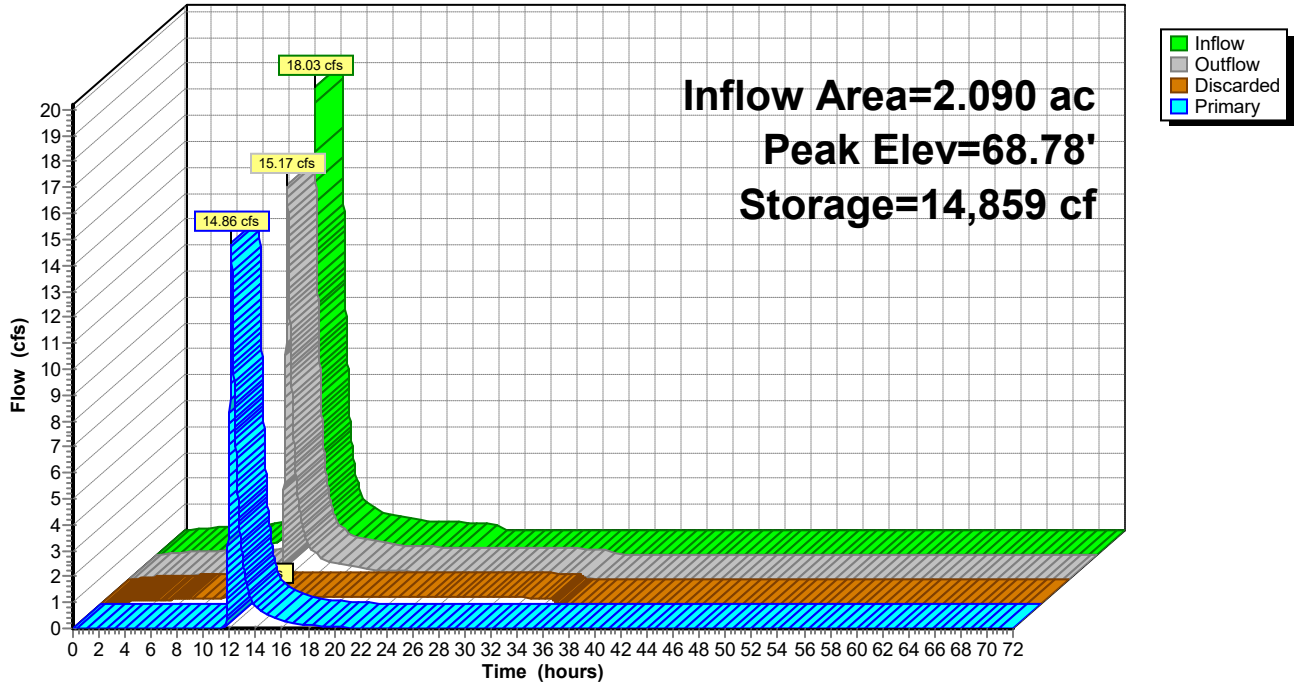
Device	Routing	Invert	Outlet Devices
#1	Discarded	67.50'	<b>1.000 in/hr Exfiltration over Surface area</b>
#2	Primary	68.40'	<b>25.0' long x 6.0' breadth Broad-Crested Rectangular Weir</b>
Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00			
2.50 3.00 3.50 4.00 4.50 5.00 5.50			
Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65			
2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83			

**Discarded OutFlow** Max=0.31 cfs @ 12.13 hrs HW=68.78' (Free Discharge)  
 ↑1=**Exfiltration** (Exfiltration Controls 0.31 cfs)

**Primary OutFlow** Max=14.83 cfs @ 12.13 hrs HW=68.78' (Free Discharge)  
 ↑2=**Broad-Crested Rectangular Weir** (Weir Controls 14.83 cfs @ 1.55 fps)

### Pond 9P: SW Bio Basin

Hydrograph



**Hydrograph for Pond 9P: SW Bio Basin**

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0	67.50	0.00	0.00	0.00
2.00	0.11	83	67.51	0.10	0.10	0.00
4.00	0.15	125	67.51	0.15	0.15	0.00
6.00	0.19	160	67.52	0.19	0.19	0.00
8.00	0.35	494	67.55	0.23	0.23	0.00
10.00	0.70	2,244	67.72	0.24	0.24	0.00
12.00	<b>10.73</b>	<b>13,085</b>	<b>68.65</b>	<b>7.80</b>	<b>0.30</b>	<b>7.50</b>
14.00	<b>1.06</b>	<b>10,660</b>	<b>68.46</b>	<b>1.14</b>	<b>0.29</b>	<b>0.85</b>
16.00	0.56	10,281	68.43	0.59	0.29	0.30
18.00	0.39	10,121	68.42	0.42	0.29	0.13
20.00	0.33	10,001	68.41	0.34	0.29	0.05
22.00	0.28	9,935	68.40	0.29	0.28	0.01
24.00	0.27	9,753	68.39	0.28	0.28	0.00
26.00	0.00	7,900	68.23	0.27	0.27	0.00
28.00	0.00	5,968	68.07	0.26	0.26	0.00
30.00	0.00	4,115	67.90	0.25	0.25	0.00
32.00	0.00	2,340	67.73	0.24	0.24	0.00
34.00	0.00	644	67.57	0.23	0.23	0.00
36.00	0.00	0	67.50	0.00	0.00	0.00
38.00	0.00	0	67.50	0.00	0.00	0.00
40.00	0.00	0	67.50	0.00	0.00	0.00
42.00	0.00	0	67.50	0.00	0.00	0.00
44.00	0.00	0	67.50	0.00	0.00	0.00
46.00	0.00	0	67.50	0.00	0.00	0.00
48.00	0.00	0	67.50	0.00	0.00	0.00
50.00	0.00	0	67.50	0.00	0.00	0.00
52.00	0.00	0	67.50	0.00	0.00	0.00
54.00	0.00	0	67.50	0.00	0.00	0.00
56.00	0.00	0	67.50	0.00	0.00	0.00
58.00	0.00	0	67.50	0.00	0.00	0.00
60.00	0.00	0	67.50	0.00	0.00	0.00
62.00	0.00	0	67.50	0.00	0.00	0.00
64.00	0.00	0	67.50	0.00	0.00	0.00
66.00	0.00	0	67.50	0.00	0.00	0.00
68.00	0.00	0	67.50	0.00	0.00	0.00
70.00	0.00	0	67.50	0.00	0.00	0.00
72.00	0.00	0	67.50	0.00	0.00	0.00

**Summary for Subcatchment 10S: DA-2 Per**

Runoff = 3.58 cfs @ 12.31 hrs, Volume= 0.497 af, Depth= 7.86"

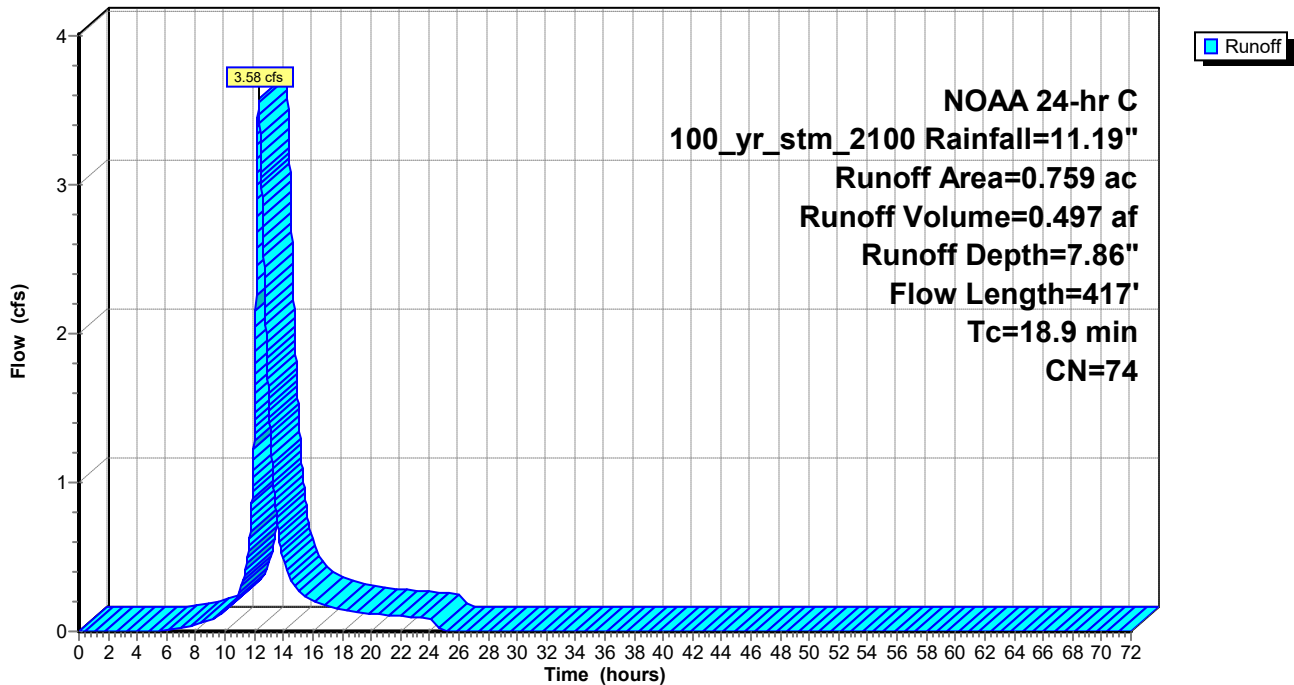
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 100\_yr\_stm\_2100 Rainfall=11.19"

Area (ac)	CN	Description
0.759	74	>75% Grass cover, Good, HSG C
0.759		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	78	0.0140	0.14		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
2.9	22	0.0190	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
0.8	47	0.0190	0.96		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.1	270	0.0110	0.73		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
18.9	417	Total			

**Subcatchment 10S: DA-2 Per**

Hydrograph



**Summary for Subcatchment 11S: DA-2 Imp**

Runoff = 0.37 cfs @ 12.30 hrs, Volume= 0.058 af, Depth=10.95"

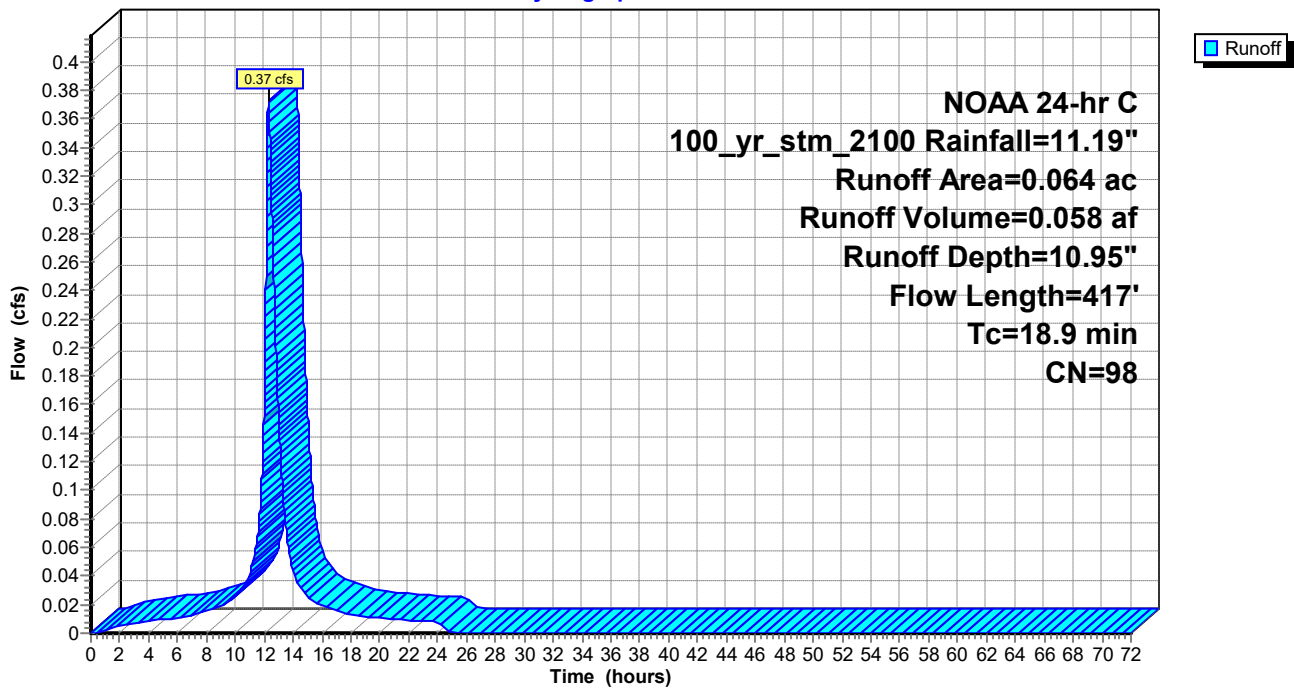
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 100\_yr\_stm\_2100 Rainfall=11.19"

Area (ac)	CN	Description
* 0.034	98	Sidewalks
* 0.030	98	Roofs
0.064	98	Weighted Average
0.064		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	78	0.0140	0.14		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
2.9	22	0.0190	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
0.8	47	0.0190	0.96		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.1	270	0.0110	0.73		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
18.9	417	Total			

**Subcatchment 11S: DA-2 Imp**

Hydrograph



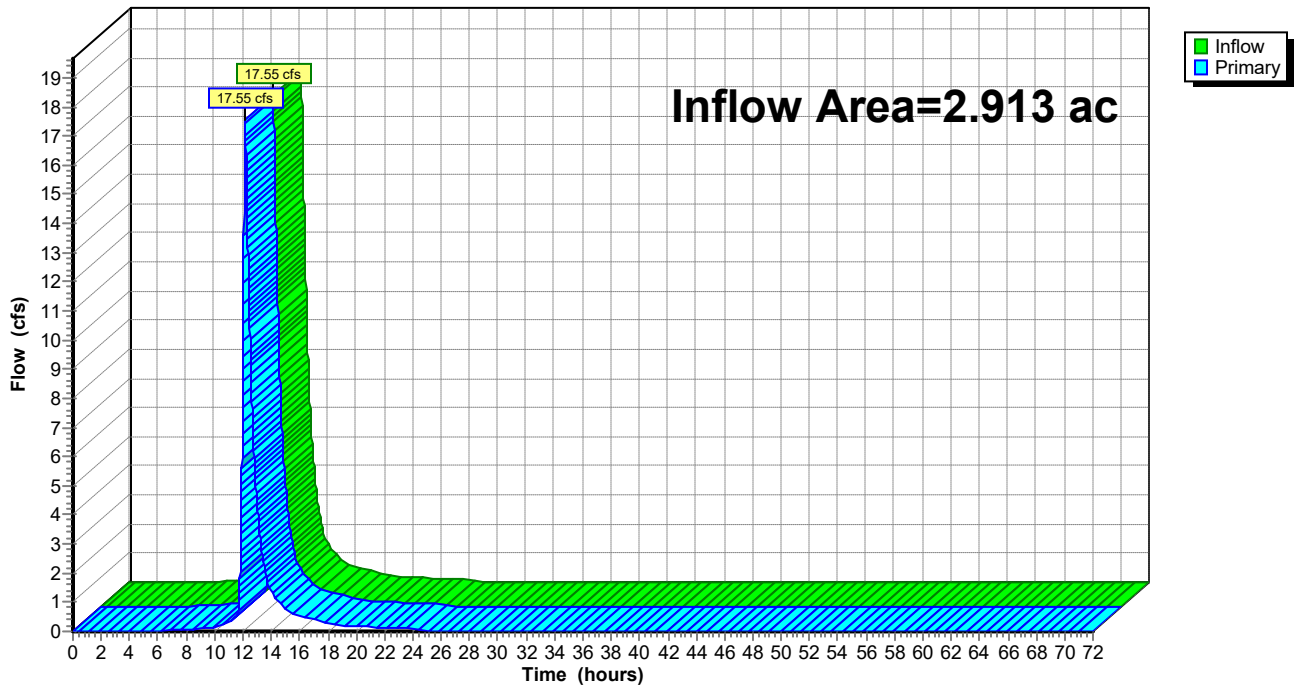
### Summary for Pond 12P: DA-2 - SW Wetland Basin

Inflow Area = 2.913 ac, 37.49% Impervious, Inflow Depth = 6.19" for 100\_yr\_stm\_2100 event  
Inflow = 17.55 cfs @ 12.14 hrs, Volume= 1.503 af  
Primary = 17.55 cfs @ 12.14 hrs, Volume= 1.503 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Pond 12P: DA-2 - SW Wetland Basin

Hydrograph



**Summary for Subcatchment 13S: DA-3 Per**

Runoff = 1.85 cfs @ 12.11 hrs, Volume= 0.119 af, Depth= 7.86"

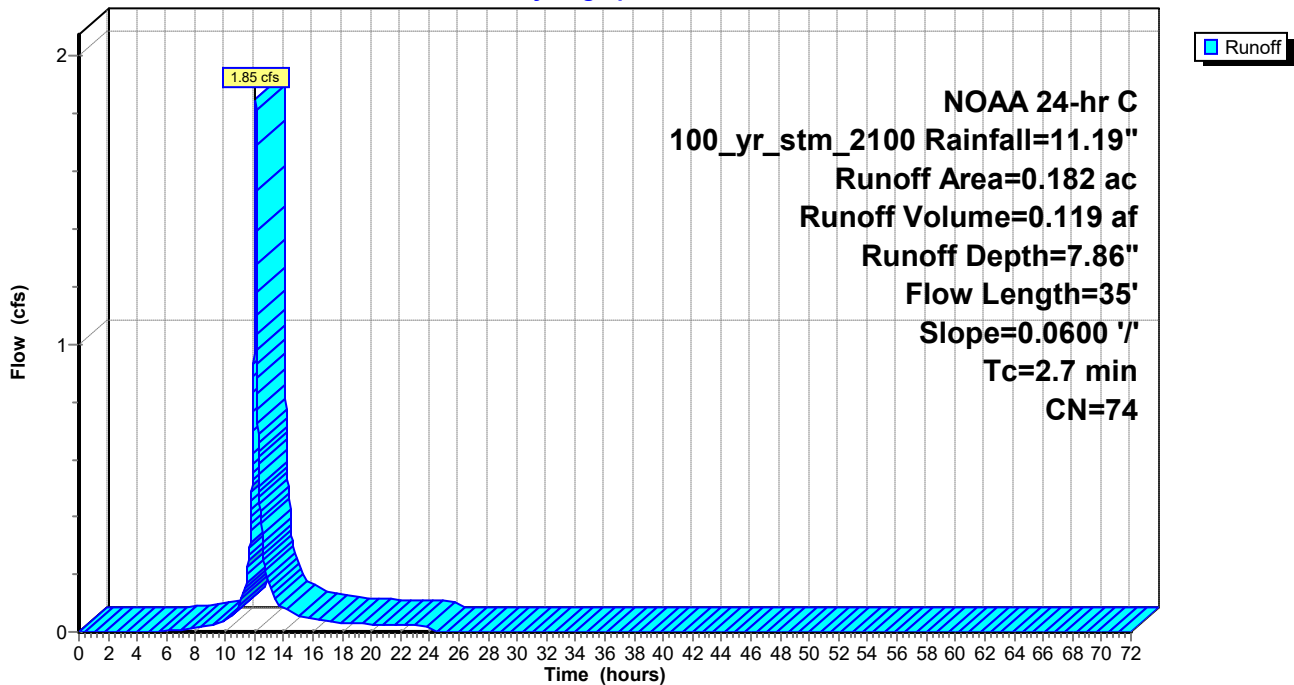
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 100\_yr\_stm\_2100 Rainfall=11.19"

Area (ac)	CN	Description
0.182	74	>75% Grass cover, Good, HSG C
0.182		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	35	0.0600	0.22		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"

**Subcatchment 13S: DA-3 Per**

Hydrograph



**Summary for Subcatchment 14S: DA-4 Per**

Runoff = 1.36 cfs @ 12.31 hrs, Volume= 0.191 af, Depth= 7.58"

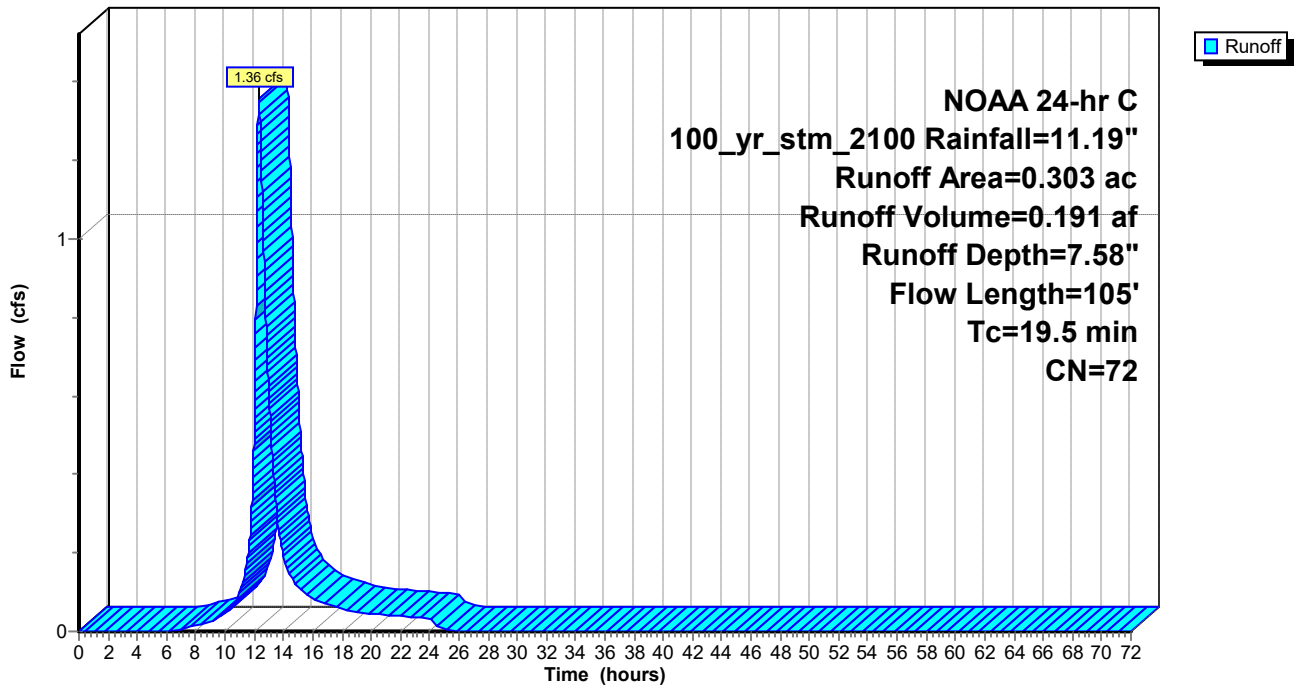
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 100\_yr\_stm\_2100 Rainfall=11.19"

Area (ac)	CN	Description
0.168	74	>75% Grass cover, Good, HSG C
0.135	70	Woods, Good, HSG C
0.303	72	Weighted Average
0.303		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	13	0.1800	0.28		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
18.6	87	0.0210	0.08		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.29"
0.1	5	0.0210	0.72		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
19.5	105	Total			

**Subcatchment 14S: DA-4 Per**

Hydrograph



**Summary for Subcatchment 15S: DA-4 Imp**

Runoff = 0.07 cfs @ 12.21 hrs, Volume= 0.009 af, Depth=10.95"

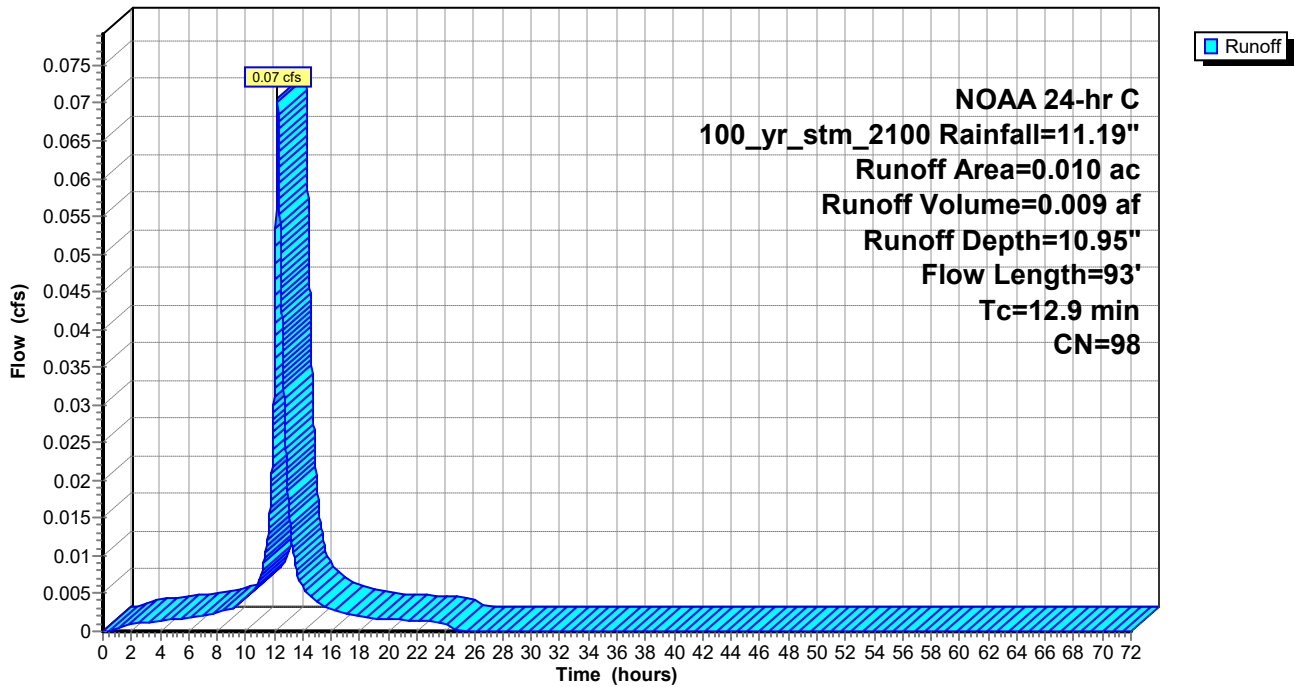
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 NOAA 24-hr C 100\_yr\_stm\_2100 Rainfall=11.19"

Area (ac)	CN	Description
* 0.010	98	Sidewalk
0.010		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	37	0.0280	1.31		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 3.29"
0.5	10	0.3300	0.33		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.29"
11.9	46	0.0180	0.06		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.29"
12.9	93	Total			

**Subcatchment 15S: DA-4 Imp**

Hydrograph



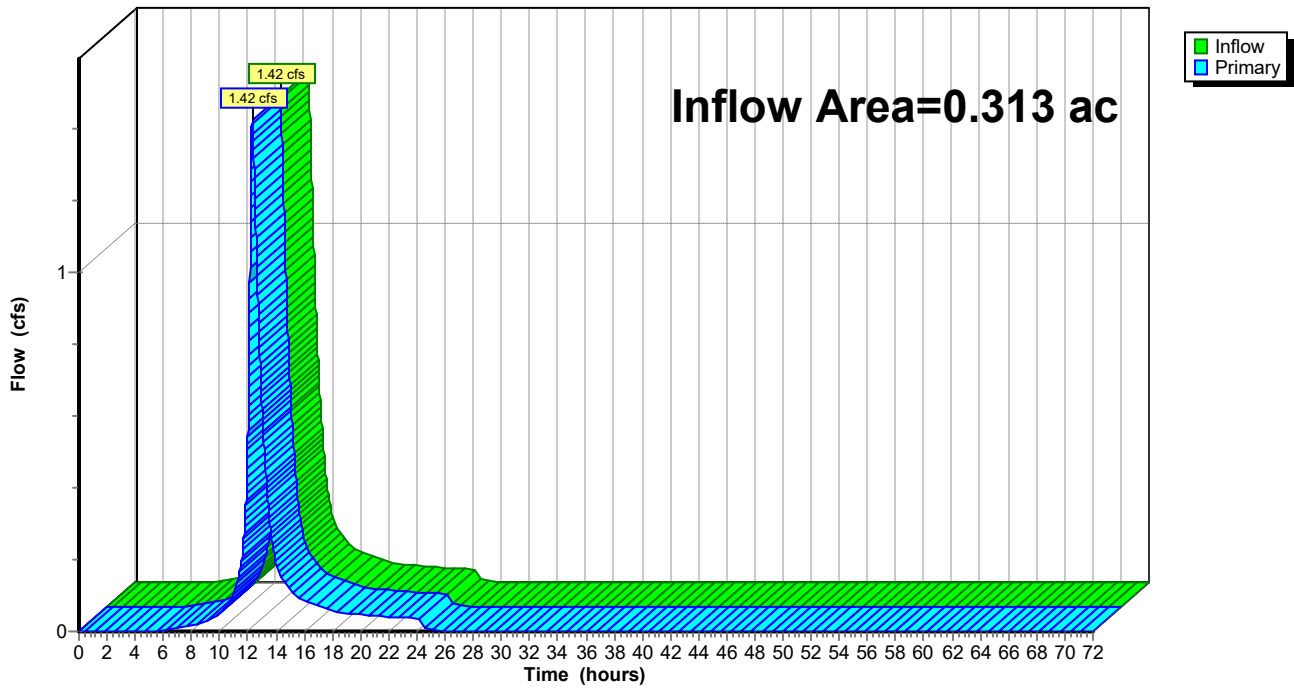
### Summary for Pond 16P: DA-4 - E Basin

Inflow Area = 0.313 ac, 3.19% Impervious, Inflow Depth = 7.69" for 100\_yr\_stm\_2100 event  
Inflow = 1.42 cfs @ 12.31 hrs, Volume= 0.201 af  
Primary = 1.42 cfs @ 12.31 hrs, Volume= 0.201 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

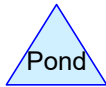
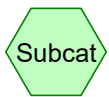
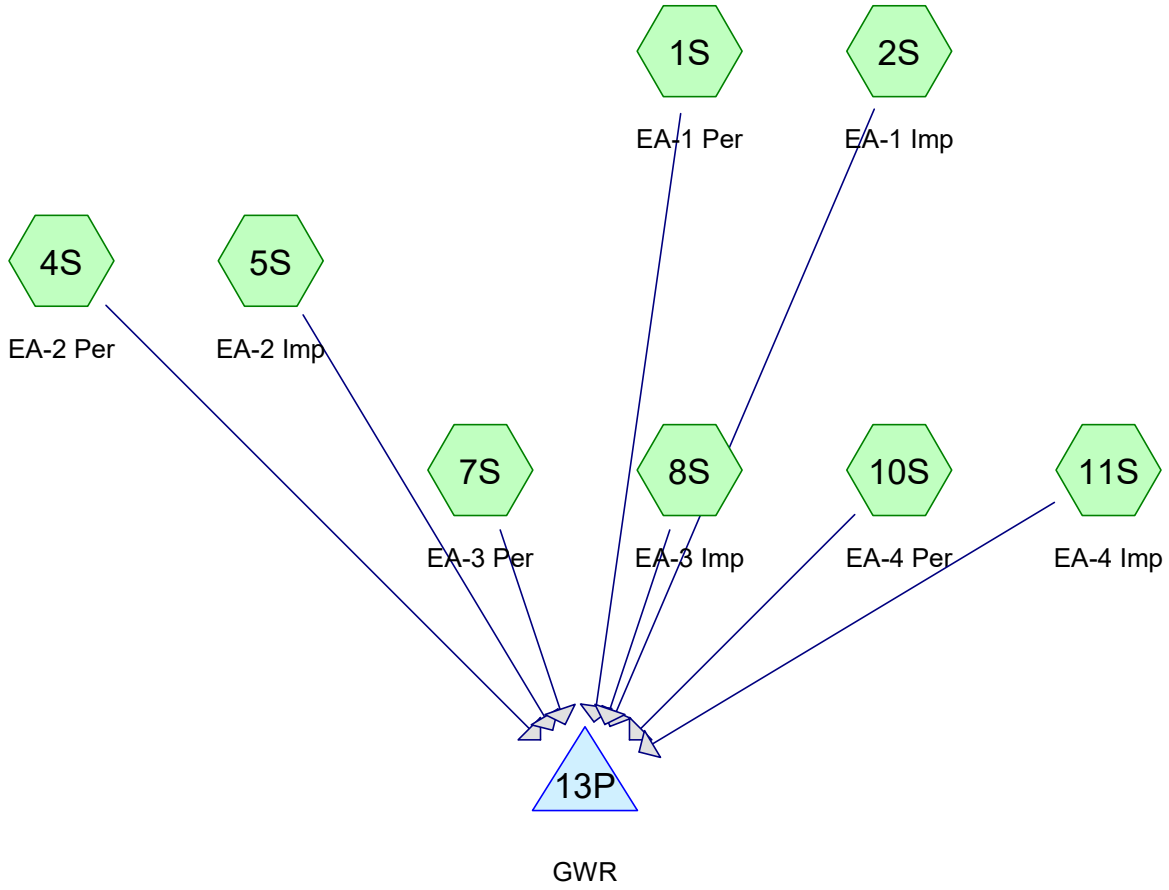
### Pond 16P: DA-4 - E Basin

Hydrograph



## **APPENDIX E**

### **GROUNDWATER RECHARGE ANALYSIS**



**Routing Diagram for 2026-04-27 Pre-Dev GWR**  
 Prepared by HP Inc., Printed 5/1/2026  
 HydroCAD® 10.10-3a s/n 11244 © 2020 HydroCAD Software Solutions LLC

### Summary for Pond 13P: GWR

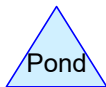
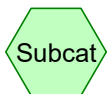
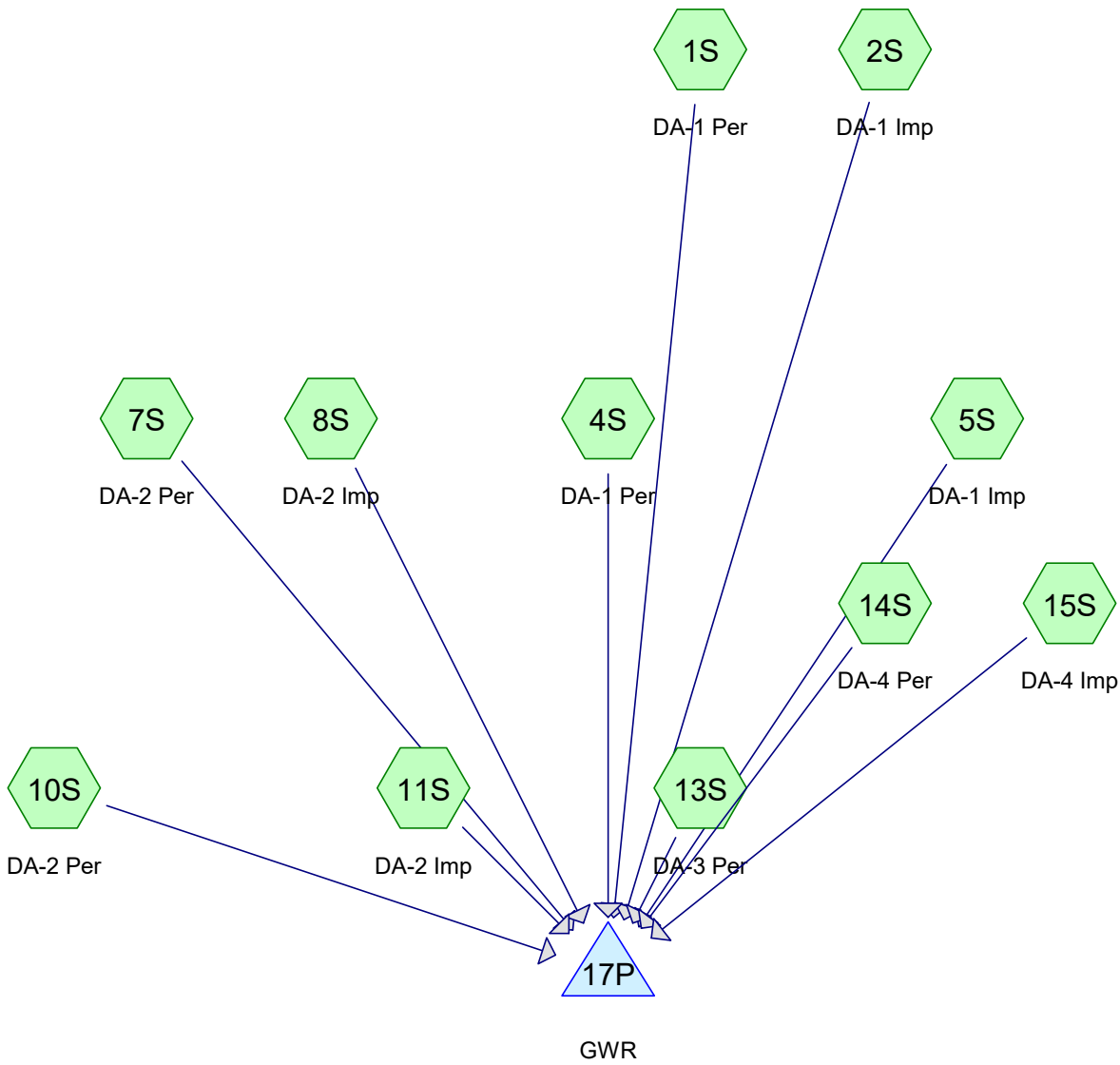
Inflow Area = 5.379 ac, 64.62% Impervious, Inflow Depth = 2.34" for 2\_yr\_stm 2019 event  
Inflow = 11.30 cfs @ 12.12 hrs, Volume= 1.048 af  
Primary = 11.30 cfs @ 12.12 hrs, Volume= 1.048 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Summary for Pond 13P: GWR

Inflow Area = 5.379 ac, 64.62% Impervious, Inflow Depth = 2.86" for 2\_yr\_stm\_2100 event  
Inflow = 13.57 cfs @ 12.12 hrs, Volume= 1.282 af  
Primary = 13.57 cfs @ 12.12 hrs, Volume= 1.282 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs



**Routing Diagram for 2026-04-30 Post-Dev GWR**  
 Prepared by HP Inc., Printed 5/1/2026  
 HydroCAD® 10.10-3a s/n 11244 © 2020 HydroCAD Software Solutions LLC

### Summary for Pond 17P: GWR

Inflow Area = 5.380 ac, 31.30% Impervious, Inflow Depth = 1.69" for 2\_yr\_stm 2019 event  
Inflow = 7.72 cfs @ 12.10 hrs, Volume= 0.756 af  
Primary = 7.72 cfs @ 12.10 hrs, Volume= 0.756 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

### Summary for Pond 17P: GWR

Inflow Area = 5.380 ac, 31.30% Impervious, Inflow Depth = 2.15" for 2\_yr\_stm\_2100 event  
Inflow = 9.63 cfs @ 12.10 hrs, Volume= 0.963 af  
Primary = 9.63 cfs @ 12.10 hrs, Volume= 0.963 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

## **APPENDIX F**

### **DRAINAGE AREA MAPS**