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STORMWATER MANAGEMENT REPORT

For

City of Dublin

Dublin Scioto High School Addition

mike.couvreur@kleingers.com

January 20, 2025

Dublin Scioto High School Addition

STORMWATER MANAGEMENT PLAN

Site Description

This project scope includes an academic wing expansion and a cafeteria expansion at the existing Dublin Scioto High School building. The academic wing expansion is approximately 30,000 sf and the cafeteria expansion is approximately 3,500 sf. Exterior walks will also be installed to improve pedestrian circulation around the perimeter of the building. Stormwater detention areas are proposed on both the east and west side of the academic wing expansion to manage the increased stormwater runoff.

The existing high school campus site generally drains from north to south toward existing stormwater management facilities adjacent to Hard Road. The building expansions are both contained within Sub-Basin 950 of the City of Dublin Stormwater Master Plan.

Hydrologic Methodologies

The City of Dublin requires projects to adhere to the stormwater management requirements provided in the "Stormwater Management Design Manual (January 2019)". While these regulations stipulate a critical storm method, the City has agreed to allow this design to adhere to the requirements at the time of the original site development where the impacted areas were considered grass condition. As such, the post-developed peak release rates shall be controlled such that they do not exceed the pre-developed peak release rates for the same given storm event frequency. This design will not increase runoff from the existing grass condition and have no impact on the existing downstream stormwater management facilities. Further, this development will not be restricted to the release rates as stipulated in the City of Dublin Stormwater Master Plan for the impacted sub-basins.

The stormwater detention calculations contained in this report were performed by using the SCS Unit Hydrograph hydrologic method in the HydroCAD, Version 10.20-5c Software. The calculations and supporting information for the detention system are as follows, continuing with output data. Subbasins are named to reference the outlet structure number from record plans 96-007-COM. Hydrographs were generated as follows:

- Pre-developed condition hydrographs were generated for the "PRE EX4", "PRE EX24", " PRE EX6", & "PRE EX37" tributary areas for storm frequencies of 1, 2, 5, 10, 25, 50, and 100-year storms. Please refer to the drainage map at the back of this report for a delineation of the drainage areas.
- Post-developed condition hydrographs were generated for the "POST EX4", "POST EX24", "POST EX6", & "POST EX37" tributary areas for storm frequencies of 1, 2, 5, 10, 25, 50, and 100-year storms. Please refer to the drainage map at the back of this report for a delineation of the drainage areas.

Soil in the proposed development area is primarily identified as Glynwood clay loam with a HSG D.

Calculations for the pre-developed and post developed flow rates and stormwater detention for each drainage area can be found in the Appendix.

Existing Hydrologic Conditions

The pre-developed land cover is primarily grass with minor areas of concrete walk and gravel. Pre-developed runoff rates are detailed in Table 1. HydroCAD output calculations and area delineation can be found in the drainage maps of the appendix.

Table 1: Existing Hydrologic Conditions

	Area (ac)	CN	Tc (min)	Q1 (cfs)	Q2 (cfs)	Q5 (cfs)	Q10 (cfs)	Q25 (cfs)	Q50 (cfs)	Q100 (cfs)
PRE EX4	1.377	82	11.4	1.56	2.20	3.17	4.00	5.19	6.19	7.25
PRE EX24	2.430	85	17.0	2.77	3.78	5.30	6.57	8.38	9.89	11.49
PRE EX6	1.017	87	16.6	1.80	2.40	3.26	3.98	4.99	5.82	6.70
PRE EX37	2.095	86	7.9	2.58	3.48	4.83	5.95	7.54	8.87	10.26

Proposed Hydrologic Conditions

Post-developed subbasin characteristics and flows are detailed in Table 2. HydroCAD output calculations and drainage maps are provided in the appendix.

Table 2: Proposed Hydrologic Conditions

	Area (ac)	CN	Tc (min)	Q1 (cfs)	Q2 (cfs)	Q5 (cfs)	Q10 (cfs)	Q25 (cfs)	Q50 (cfs)	Q100 (cfs)
POST EX4	1.377	84	11.4	1.78	2.46	3.46	4.31	5.52	6.53	7.60
POST EX24	2.715	89	17.0	3.95	5.17	6.93	8.39	10.44	12.13	13.91
POST EX6	0.927	88	7.9	1.74	2.29	3.08	3.74	4.66	5.42	6.22
POST EX37	1.901	89	5.0	4.19	5.44	7.24	8.72	10.79	12.51	14.30

Applicable Permits

Pursuant to the Ohio Environmental Protection Agency (OEPA) General Permit No: OHC000006, the project is required to provide water quality treatment due to the proposed disturbance being greater than one acre. The permit requires projects to capture and treat stormwater for a storm event of 0.90 inches. Water quality will be provided by utilizing an underground storage facility BMP with 24 hr minimum drawdown in accordance with the Rainwater Land Development Manual. The outlet is designed to drain the water quality volume (WQv) over a minimum of 24 hours while not discharging more than the first half of the WQv in less than one-third of the drain time. Pretreatment for sediment storage/retention will be accomplished with ADS Stormtech SC-310 chambers and isolator rows. The isolator rows will function as a geotextile filter forebay.

A 29,000 sf portion of the existing building's roof area will be tributary to the BMP to meet the required water quality volume that must be treated. The BMP is located downstream of existing catch basin #24.

The following table summarizes the required and provided water quality volume treatment for the three sites. For stage discharge information, required WQv calculations, and WQv treatment calculations, please reference the appendix.

Table 3: Water Quality Treatment Summary

Total Required WQv = 3,151 CF
Total Treatment Volume = 4,325 CF

Stormwater Management Plan

The stormwater management plan utilizes two separate detention basins. The basin on the west side of the academic wing expansion is located downstream of existing catch basin #24 and the post construction BMP. Proposed catch basin #1 will have two 36" wide by 6" high windows that act as a secondary release structure from the basin. Surface ponding will provide the required storage capacity for the basin.

The basin on the east side of the academic wing expansion is located at existing catch basin #37. A 6" diameter orifice plate will be installed over the outlet pipe inside the catch basin to restrict outflows. Surface ponding will provide the required storage capacity for the basin.

The following tables summarize peak outflows and elevations for the two detention areas:

Table 4: DETENTION CB24 Storage Summary

	Peak Water Surface Elevation	Detention Storage Volume (cu-ft)	Outlet Peak Flow (cfs)
1-yr	898.37	5,167	1.36
2-yr	898.50	5,737	3.15
5-yr	898.64	6,397	5.62
10-yr	898.73	6,832	7.32
25-yr	898.85	7,476	9.05
50-yr	898.96	8,066	10.28
100-yr	899.08	8,748	11.46

Table 5: DETENTION CB37 Storage Summary

	Peak Water Surface Elevation	Detention Storage Volume (cu-ft)	Outlet Peak Flow (cfs)
1-yr	897.50	1,085	1.92
2-yr	897.82	1,883	1.99
5-yr	898.22	3,198	2.08
10-yr	898.54	4,378	2.14
25-yr	898.94	6,118	2.23
50-yr	899.23	7,613	2.28
100-yr	899.47	9,224	2.33

Results Summary

The proposed release rates for each site are restricted to that of the existing condition. The following tables summarize and compare existing and proposed release rates for the two detention areas and associated undetained areas:

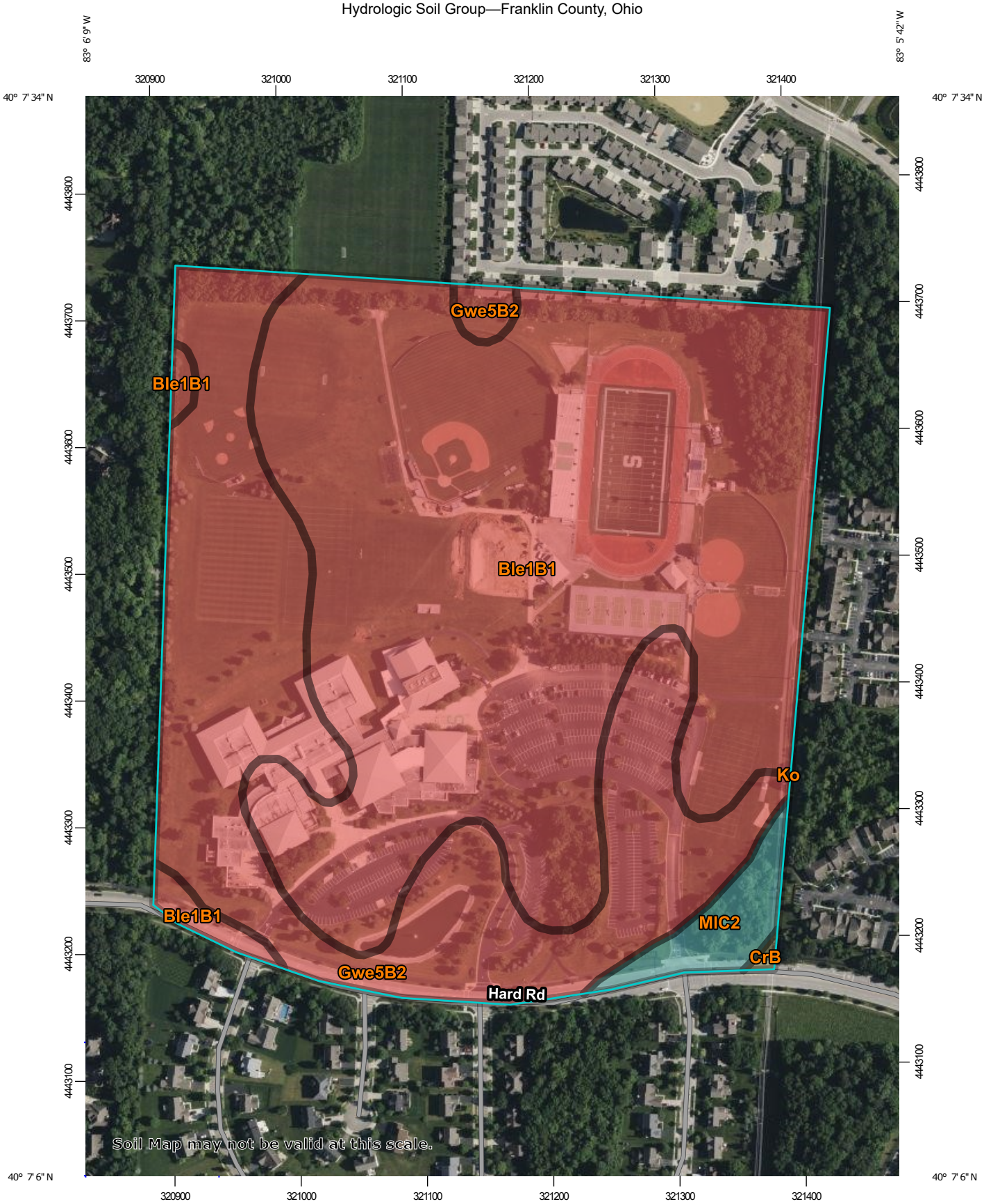
Table 6: West Watershed Results Summary

Storm Event	Detained Release Rate (cfs) DETENTION CB24	Undetained Release Rate (cfs) POST EX4	Allowable Release Rate (cfs) PRE WEST	Proposed Release Rate (cfs) POST WEST
1-yr	1.36	1.78	4.18	1.84
2-yr	3.15	2.46	5.79	3.95
5-yr	5.62	3.46	8.19	7.40
10-yr	7.32	4.31	10.22	10.10
25-yr	9.05	5.52	13.12	13.06
50-yr	10.28	6.53	15.55	15.09
100-yr	11.46	7.60	18.13	17.06

Table 7: East Watershed Results Summary

Storm Event	Detained Release Rate (cfs) DETENTION CB37	Undetained Release Rate (cfs) POST EX6	Allowable Release Rate (cfs) PRE EAST	Proposed Release Rate (cfs) POST EAST
1-yr	1.92	1.74	3.91	3.64
2-yr	1.99	2.29	5.28	4.25
5-yr	2.08	3.08	7.28	5.12
10-yr	2.14	3.74	8.95	5.83
25-yr	2.23	4.66	11.33	6.83
50-yr	2.28	5.42	13.30	7.64
100-yr	2.33	6.22	15.38	8.50

APPENDIX



Map Scale: 1:4,150 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

Streams and Canals

Transportation

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

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

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

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

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

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

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

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

Soil Survey Area: Franklin County, Ohio
Survey Area Data: Version 22, Sep 6, 2023

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

Date(s) aerial images were photographed: May 21, 2023—Aug 8, 2023

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Ble1B1	Blount silt loam, end moraine, 2 to 4 percent slopes	D	44.7	65.3%
CrB	Crosby silt loam, Southern Ohio Till Plain, 2 to 6 percent slopes	C/D	0.1	0.1%
Gwe5B2	Glynwood clay loam, end moraine, 2 to 6 percent slopes, eroded	D	21.9	32.0%
Ko	Kokomo silty clay loam, 0 to 2 percent slopes	C/D	0.0	0.0%
MIC2	Miamian silty clay loam, 6 to 12 percent slopes, eroded	C	1.8	2.6%
Totals for Area of Interest			**68.6**	**100.0%**

Description

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

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

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

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

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

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

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

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Post-Construction Water Quality Volume
As Required Under Ohio NPDES Construction General Permit No. OHC000006

version 1.2 2023-5-15

This spreadsheet calculates the Water Quality Volume required for both new development and redevelopment projects. Green boxes indicate user input for 1) the total area disturbed, 2) planned total impervious surface and, if redevelopment, 3) total existing impervious surface, each in acres. The user must select new or redevelopment from the dropdown menu to apply the proper equation. Use the separate BMP Compliance Spreadsheets to verify a designed practice or combination of practices meets the applicable requirements including the required Water Quality Volume calculated here. This spreadsheet does not account for factors that may affect the final practice design, including offsite run-on or sediment storage volume.

Project Details

Project Name:	**Dublin Scioto HS Addition**		
Project ID:	**240782**		
Project Location:	**4000 Hard Road** **Dublin, OH 43016**		
Project Latitude:	**N40°07'16.07"**	**Longitude:**	**W83°06'0.36"**
NPDES Permit Applicant:			
Submitted By:			
Date:	**1/20/2025**		

Required Water Quality Volume Calculation

Total Disturbed Area, A = **2.500** **acres**

Type of Development: Redevelopment

Water Quality Volume Equation: WQvr = 0.90 in. * A * [(Rv1*0.2)+(Rv2-Rv1)] / 12 [Equation 3]

where, Rv = 0.05 + 0.9(i)

PRE-CONSTRUCTION CONDITIONS

Ex. Impervious Surface = **0.060** **acres**

Ex. Impervious Fraction, i = **0.024**

Rv1 = **0.072**

PROPOSED POST-CONSTRUCTION CONDITIONS

Total Impervious Surface Area = **1.092** **acres**

Impervious Fraction, i = **0.437**

Volumetric Runoff Coefficient, Rv2 = **0.443**

ΔRv = **519 %**

Water Quality Volume, WQv = **0.072 ac-ft** = **3,151 cu. ft.**

Message Center: *The minimum impervious area to treat with a practice is 1.015 acres*

Project and Watershed Information; WQv Calculation

version 3.2 2020-07-07

Project Details

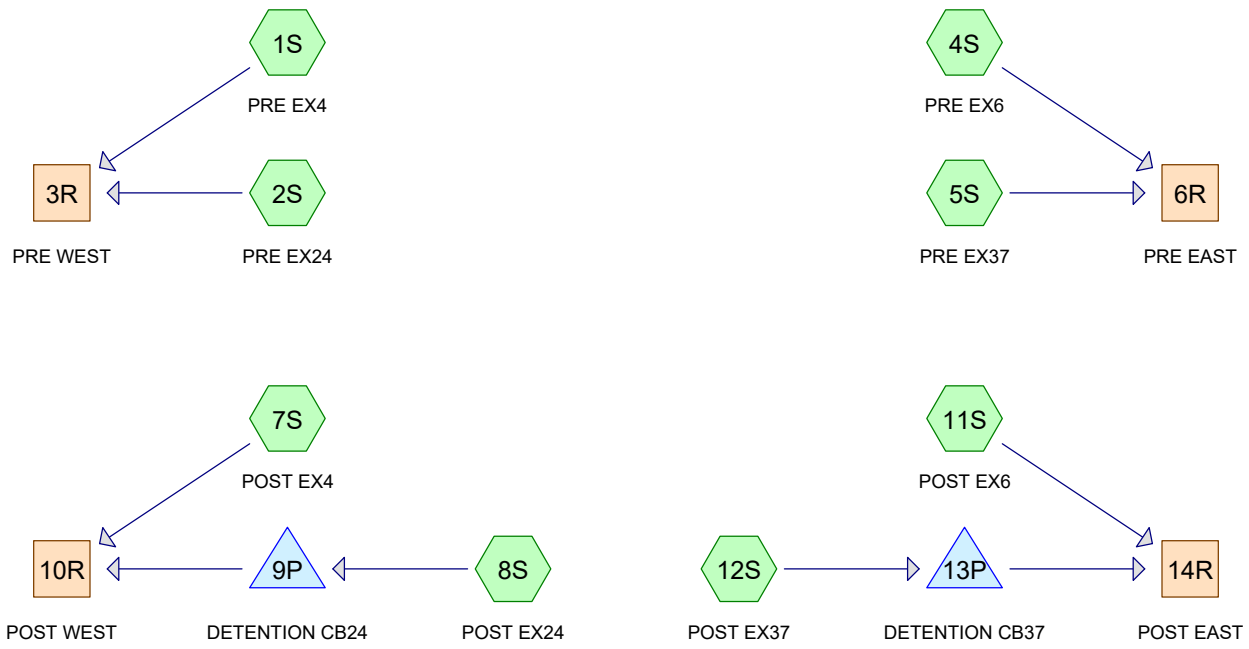
Project Name:	Dublin Scioto HS Addition
Project Location:	4000 Hard Road
	Dublin, OH 43016
Project Latitude:	N40°07'16.07"
Project Longitude:	W83°06'0.36"
NPDES Permit Applicant:	
Submitted by:	
Date:	1/20/2025

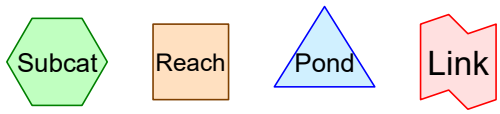
Subwatershed Details

Subwatershed ID/Label:	EX24				
Subwatershed Drainage Area, A_{total} =	**2.72**	**acres**	**=**	**118,265**	**ft^2**
Subwatershed Impervious Area, A_{imp} =	**1.32**	**acres**	**=**	**57,499**	**ft^2**
Imperviousness fraction, i =	**0.49**		**=**	**49**	**%**
Volumetric Runoff Coefficient, Rv =	**0.49**				
Water Quality Volume, WQv =	**4,325**	**ft^3**	**=**	**0.099**	**ac-ft**

Hydrograph for Pond 15P: CB24 WQ Check

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)	
0.00	**0.00**	**4,334**	**898.16**	**0.06**	WQv=4,325 cf
1.00	0.00	4,103	898.10	0.06	
2.00	0.00	3,873	898.04	0.06	
3.00	0.00	3,645	897.97	0.06	
4.00	0.00	3,418	897.90	0.06	
5.00	0.00	3,192	897.83	0.06	
6.00	0.00	2,967	897.76	0.06	
7.00	0.00	2,745	897.68	0.06	
8.00	0.00	2,523	897.59	0.06	1/2 WQv=2,162 cf < 2,523 cf
9.00	0.00	2,304	897.50	0.06	
10.00	0.00	2,087	897.39	0.06	
11.00	0.00	1,872	897.27	0.06	
12.00	0.00	1,659	897.13	0.06	
13.00	0.00	1,451	896.92	0.06	
14.00	0.00	1,274	894.30	0.04	
15.00	0.00	1,141	893.97	0.04	
16.00	0.00	1,019	893.70	0.03	
17.00	0.00	905	893.51	0.03	
18.00	0.00	799	893.36	0.03	
19.00	0.00	698	893.22	0.03	
20.00	0.00	604	893.10	0.03	
21.00	0.00	515	892.99	0.02	
22.00	0.00	431	892.89	0.02	
23.00	0.00	353	892.80	0.02	
24.00	0.00	280	892.71	0.02	280 cf > 0 cf
25.00	0.00	213	892.64	0.02	
26.00	0.00	152	892.50	0.02	
27.00	0.00	103	892.38	0.01	
28.00	0.00	64	892.28	0.01	
29.00	0.00	37	892.21	0.01	
30.00	0.00	21	892.17	0.00	
31.00	0.00	14	892.16	0.00	
32.00	0.00	10	892.15	0.00	
33.00	0.00	8	892.14	0.00	
34.00	0.00	7	892.14	0.00	
35.00	0.00	6	892.13	0.00	
36.00	0.00	5	892.13	0.00	
37.00	0.00	4	892.13	0.00	
38.00	0.00	4	892.13	0.00	
39.00	0.00	3	892.13	0.00	
40.00	0.00	3	892.13	0.00	
41.00	0.00	3	892.13	0.00	
42.00	0.00	3	892.13	0.00	
43.00	0.00	2	892.13	0.00	
44.00	0.00	2	892.13	0.00	
45.00	0.00	2	892.13	0.00	
46.00	0.00	2	892.13	0.00	
47.00	0.00	2	892.12	0.00	
48.00	0.00	2	892.12	0.00	





Routing Diagram for 240782DET000
Prepared by The Kleingers Group Inc, Printed 1/19/2025
HydroCAD® 10.20-5c s/n 12654 © 2023 HydroCAD Software Solutions LLC

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-Year	Type II 24-hr		Default	24.00	1	2.20	2
2	2-Year	Type II 24-hr		Default	24.00	1	2.63	2
3	5-Year	Type II 24-hr		Default	24.00	1	3.24	2
4	10-Year	Type II 24-hr		Default	24.00	1	3.74	2
5	25-Year	Type II 24-hr		Default	24.00	1	4.44	2
6	50-Year	Type II 24-hr		Default	24.00	1	5.02	2
7	100-Year	Type II 24-hr		Default	24.00	1	5.63	2

Summary for Subcatchment 1S: PRE EX4

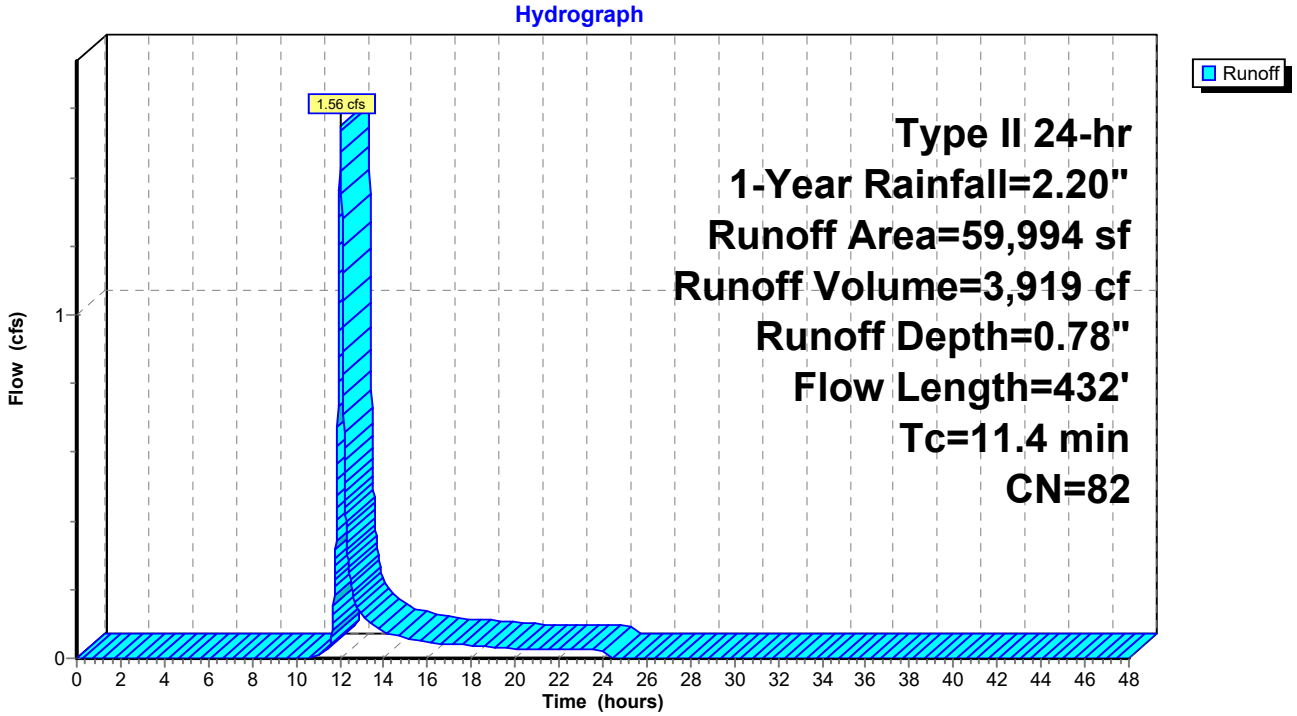
Runoff = 1.56 cfs @ 12.04 hrs, Volume= 3,919 cf, Depth= 0.78"
Routed to Reach 3R : PRE WEST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=2.20"

Area (sf)	CN	Description
53,090	80	>75% Grass cover, Good, HSG D
6,904	98	Paved parking, HSG D
59,994	82	Weighted Average
53,090		88.49% Pervious Area
6,904		11.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.0700	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
4.9	332	0.0265	1.14		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.4	432	Total			

Subcatchment 1S: PRE EX4



Summary for Subcatchment 2S: PRE EX24

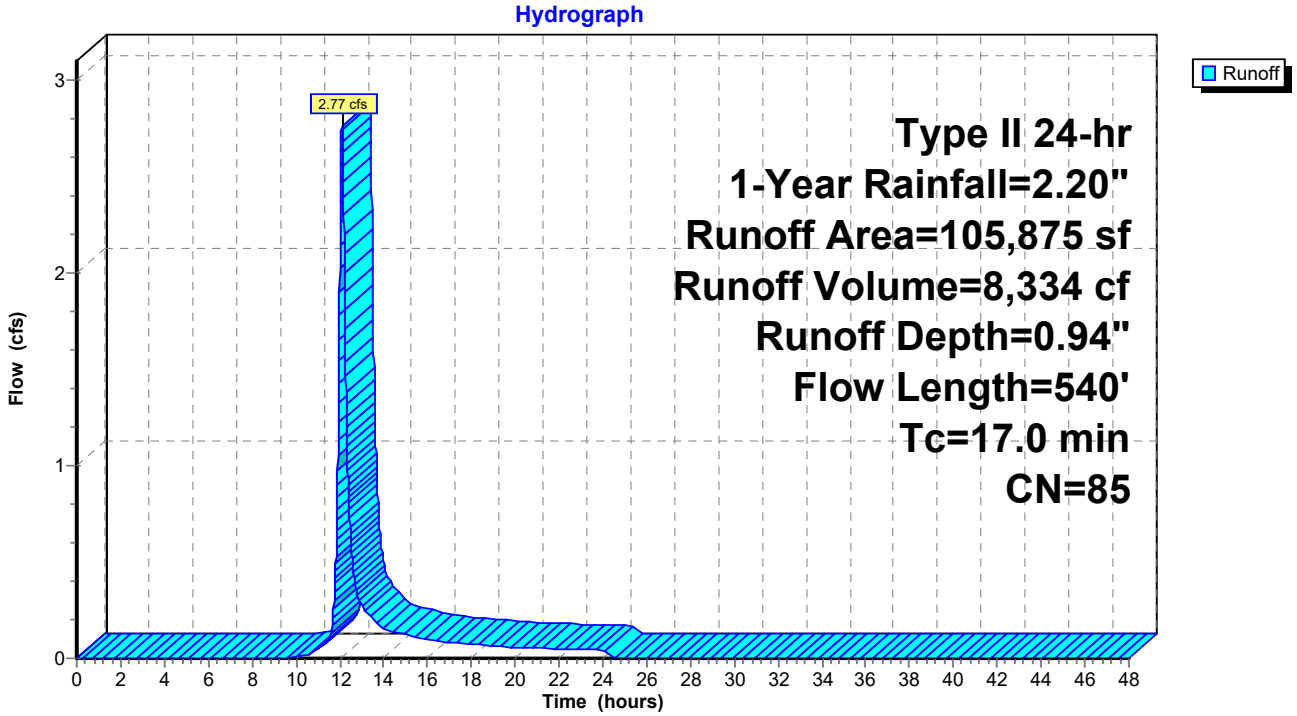
Runoff = 2.77 cfs @ 12.10 hrs, Volume= 8,334 cf, Depth= 0.94"
Routed to Reach 3R : PRE WEST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=2.20"

Area (sf)	CN	Description
76,614	80	>75% Grass cover, Good, HSG D
29,261	98	Paved parking, HSG D
105,875	85	Weighted Average
76,614		72.36% Pervious Area
29,261		27.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	100	0.0181	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
5.8	440	0.0330	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.0	540	Total			

Subcatchment 2S: PRE EX24

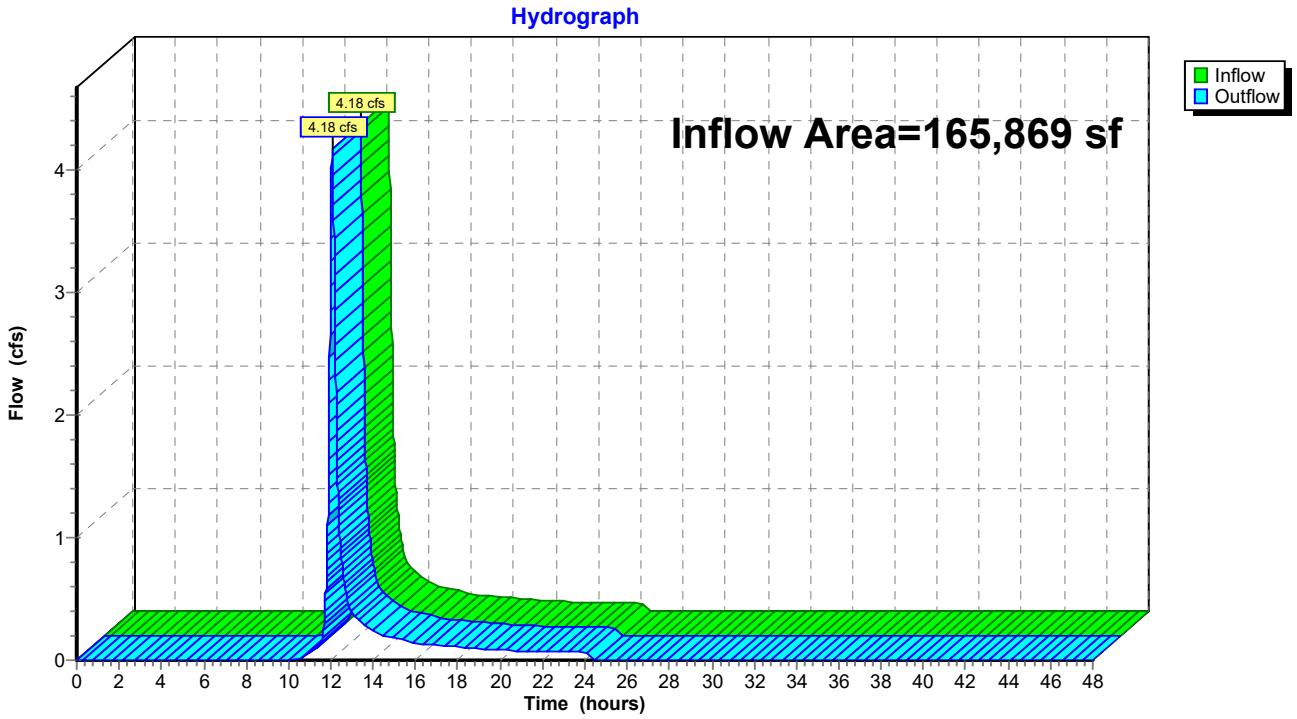


Summary for Reach 3R: PRE WEST

Inflow Area = 165,869 sf, 21.80% Impervious, Inflow Depth = 0.89" for 1-Year event
Inflow = 4.18 cfs @ 12.07 hrs, Volume= 12,253 cf
Outflow = 4.18 cfs @ 12.07 hrs, Volume= 12,253 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 3R: PRE WEST



Summary for Subcatchment 4S: PRE EX6

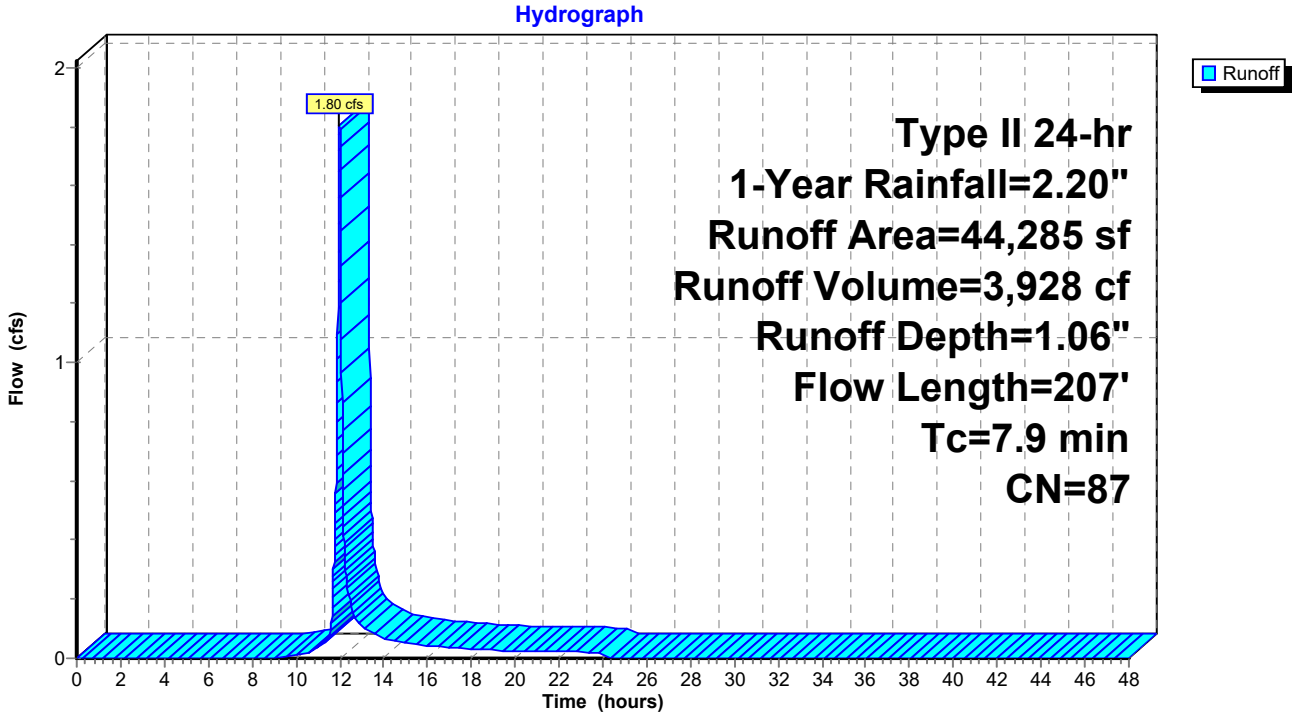
Runoff = 1.80 cfs @ 12.00 hrs, Volume= 3,928 cf, Depth= 1.06"
Routed to Reach 6R : PRE EAST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=2.20"

Area (sf)	CN	Description
27,617	80	>75% Grass cover, Good, HSG D
16,668	98	Paved parking, HSG D
44,285	87	Weighted Average
27,617		62.36% Pervious Area
16,668		37.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	100	0.0681	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
1.3	107	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.9	207	Total			

Subcatchment 4S: PRE EX6



Summary for Subcatchment 5S: PRE EX37

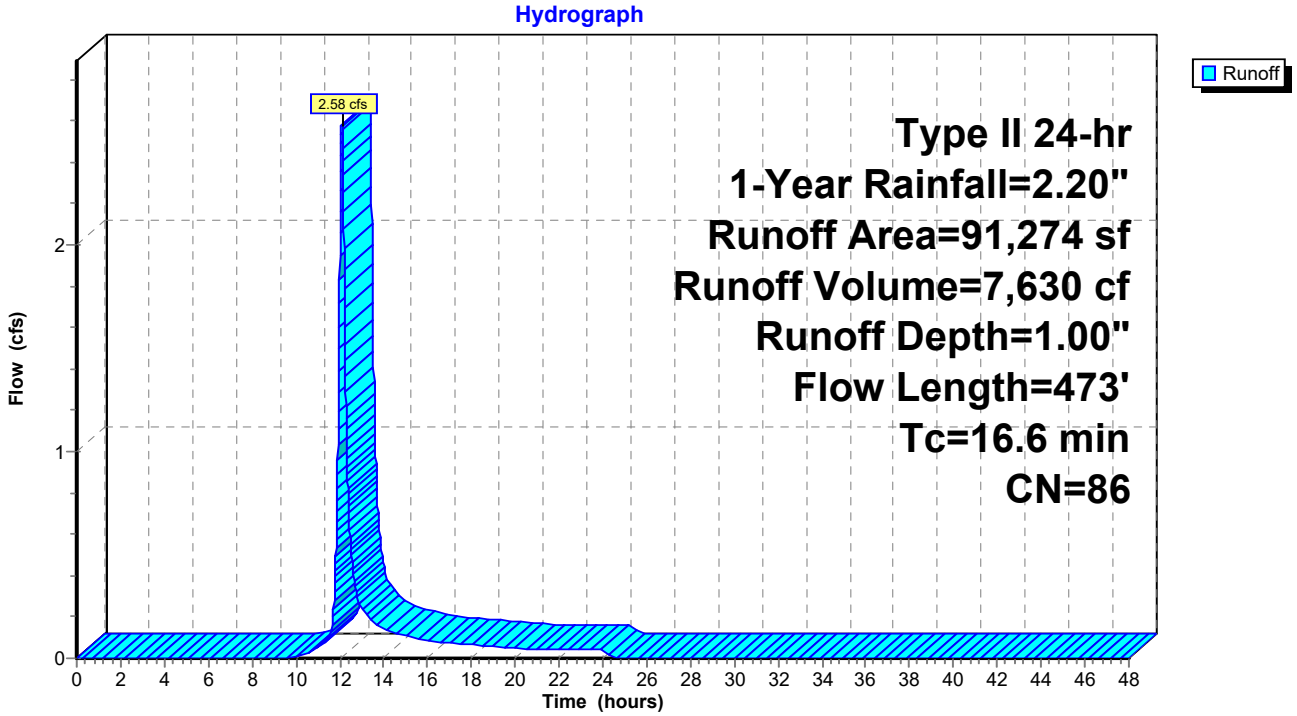
Runoff = 2.58 cfs @ 12.09 hrs, Volume= 7,630 cf, Depth= 1.00"
Routed to Reach 6R : PRE EAST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=2.20"

Area (sf)	CN	Description
59,996	80	>75% Grass cover, Good, HSG D
31,278	98	Paved parking, HSG D
91,274	86	Weighted Average
59,996		65.73% Pervious Area
31,278		34.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0	100	0.0154	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
4.6	373	0.0366	1.34		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
16.6	473	Total			

Subcatchment 5S: PRE EX37

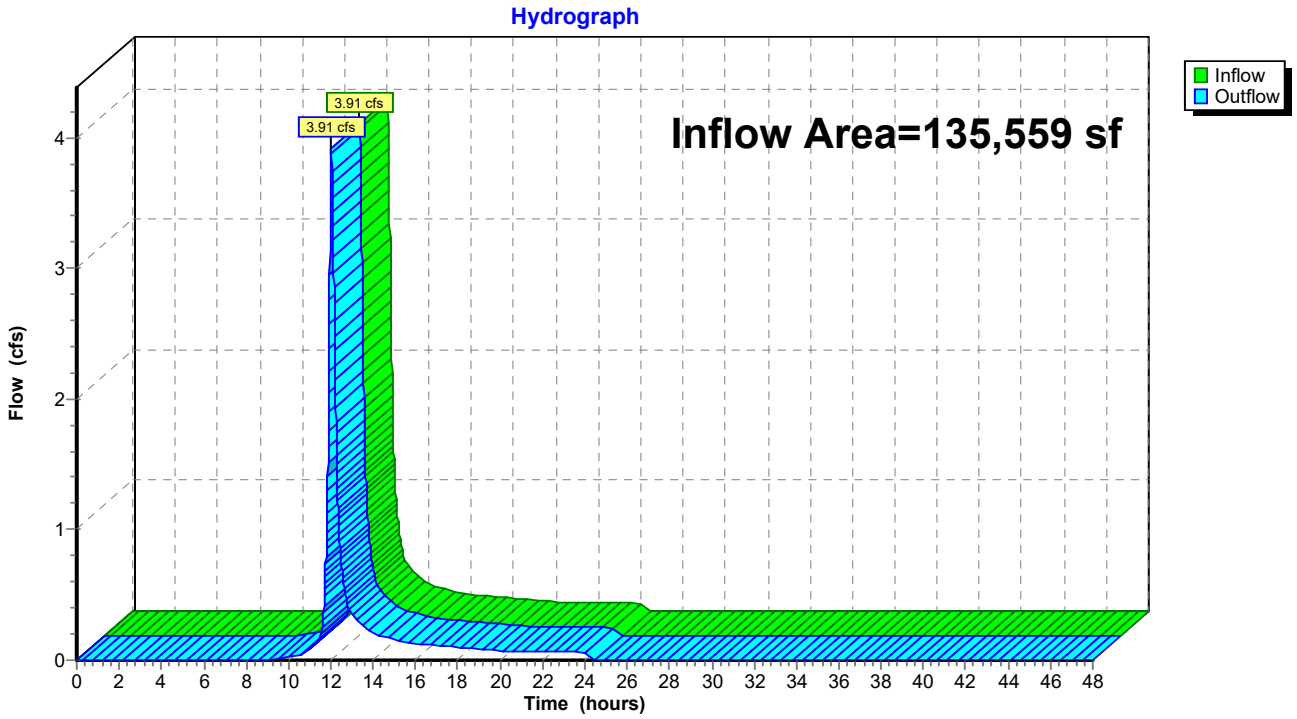


Summary for Reach 6R: PRE EAST

Inflow Area = 135,559 sf, 35.37% Impervious, Inflow Depth = 1.02" for 1-Year event
Inflow = 3.91 cfs @ 12.03 hrs, Volume= 11,559 cf
Outflow = 3.91 cfs @ 12.03 hrs, Volume= 11,559 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 6R: PRE EAST



Summary for Subcatchment 7S: POST EX4

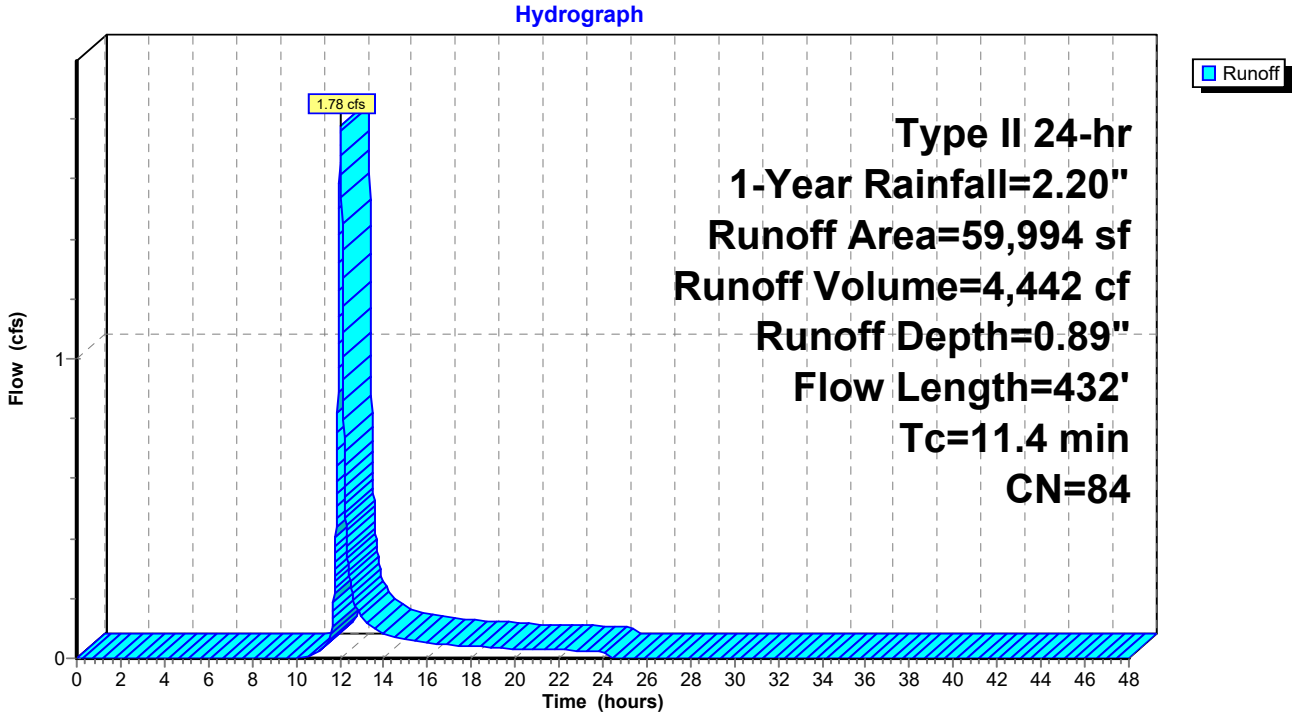
Runoff = 1.78 cfs @ 12.04 hrs, Volume= 4,442 cf, Depth= 0.89"
Routed to Reach 10R : POST WEST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=2.20"

Area (sf)	CN	Description
47,032	80	>75% Grass cover, Good, HSG D
12,962	98	Paved parking, HSG D
59,994	84	Weighted Average
47,032		78.39% Pervious Area
12,962		21.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.0700	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
4.9	332	0.0265	1.14		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.4	432	Total			

Subcatchment 7S: POST EX4



Summary for Subcatchment 8S: POST EX24

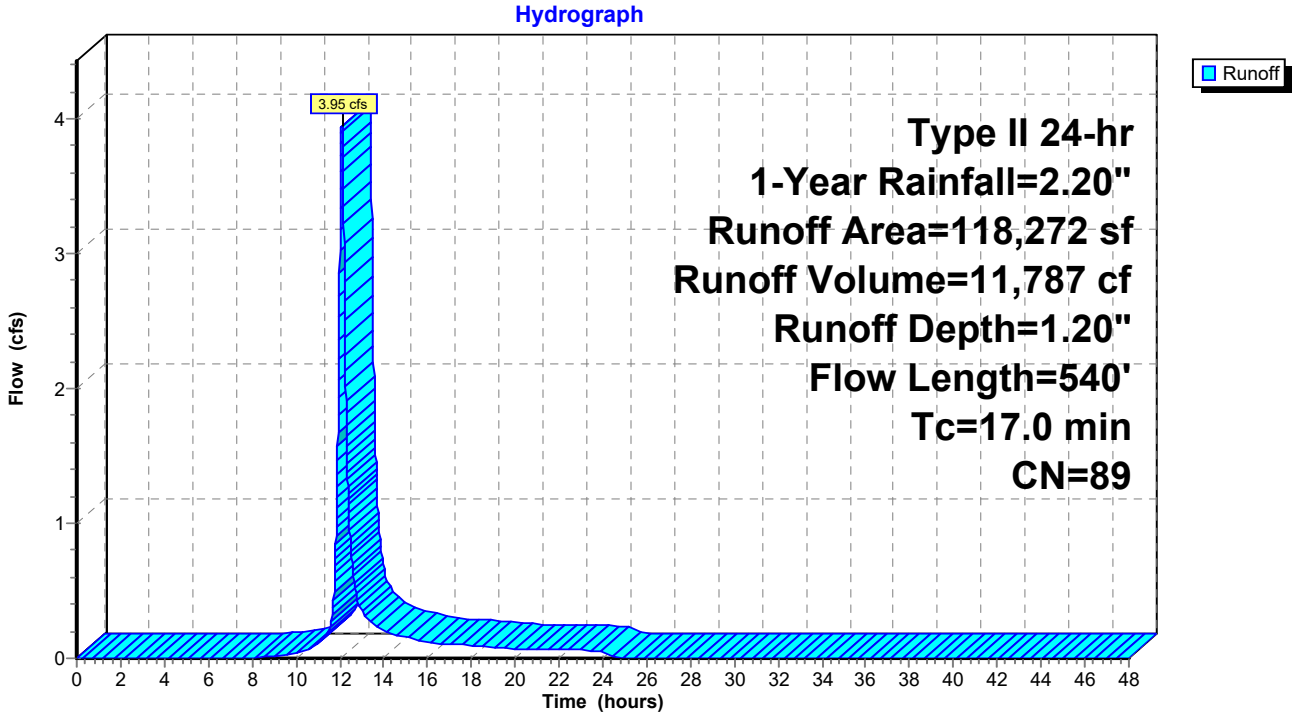
Runoff = 3.95 cfs @ 12.09 hrs, Volume= 11,787 cf, Depth= 1.20"
Routed to Pond 9P : DETENTION CB24

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=2.20"

Area (sf)	CN	Description
60,730	80	>75% Grass cover, Good, HSG D
57,542	98	Paved parking, HSG D
118,272	89	Weighted Average
60,730		51.35% Pervious Area
57,542		48.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	100	0.0181	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
5.8	440	0.0330	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.0	540	Total			

Subcatchment 8S: POST EX24



Summary for Pond 9P: DETENTION CB24

Inflow Area = 118,272 sf, 48.65% Impervious, Inflow Depth = 1.20" for 1-Year event
Inflow = 3.95 cfs @ 12.09 hrs, Volume= 11,787 cf
Outflow = 1.36 cfs @ 12.35 hrs, Volume= 11,453 cf, Atten= 66%, Lag= 15.6 min
Primary = 1.36 cfs @ 12.35 hrs, Volume= 11,453 cf
Routed to Reach 10R : POST WEST

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 898.37' @ 12.35 hrs Surf.Area= 5,403 sf Storage= 5,167 cf

Plug-Flow detention time= 504.3 min calculated for 11,453 cf (97% of inflow)
Center-of-Mass det. time= 487.6 min (1,321.6 - 834.0)

Volume	Invert	Avail.Storage	Storage Description
#1	896.62'	15,305 cf	**Storage (Prismatic)**Listed below (Recalc)
#2A	892.12'	715 cf	**21.50'W x 53.04'L x 2.33'H Field A** 2,661 cf Overall - 619 cf Embedded = 2,042 cf x 35.0% Voids
#3A	892.62'	619 cf	**ADS_StormTech RC-310 +Cap**x 42 Inside #2 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 42 Chambers in 6 Rows
		16,639 cf	Total Available Storage

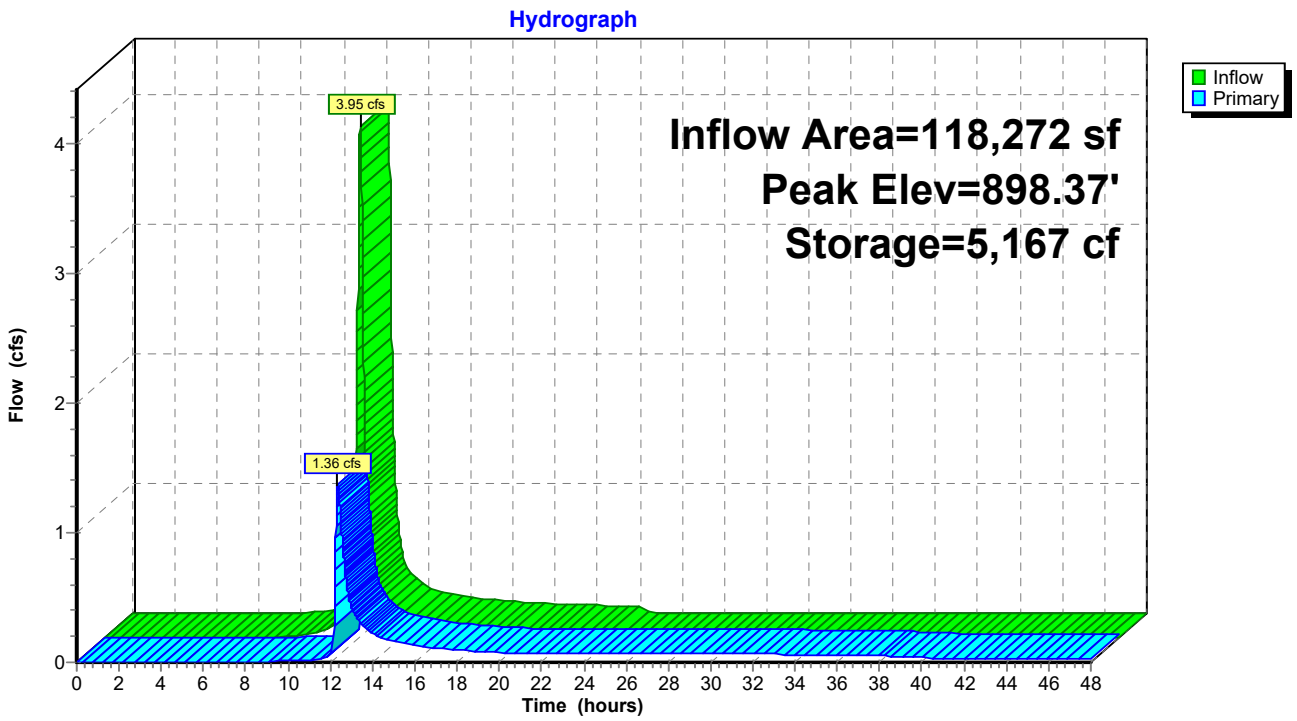
Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
896.62	9	0	0
897.00	944	181	181
898.00	3,517	2,231	2,412
899.00	5,558	4,538	6,949
900.00	11,154	8,356	15,305

Device	Routing	Invert	Outlet Devices
#1	Primary	892.12'	**15.00" Round Culvert** L= 71.2' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 892.12' / 890.79' S= 0.0187 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	892.12'	**1.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	898.20'	**36.00" W x 6.00" H Vert. Window X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.36 cfs @ 12.35 hrs HW=898.37' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.36 cfs of 13.93 cfs potential flow)
  ├─**2=Orifice** (Orifice Controls 0.07 cfs @ 11.99 fps)
  └─**3=Window** (Orifice Controls 1.30 cfs @ 1.31 fps)

Pond 9P: DETENTION CB24

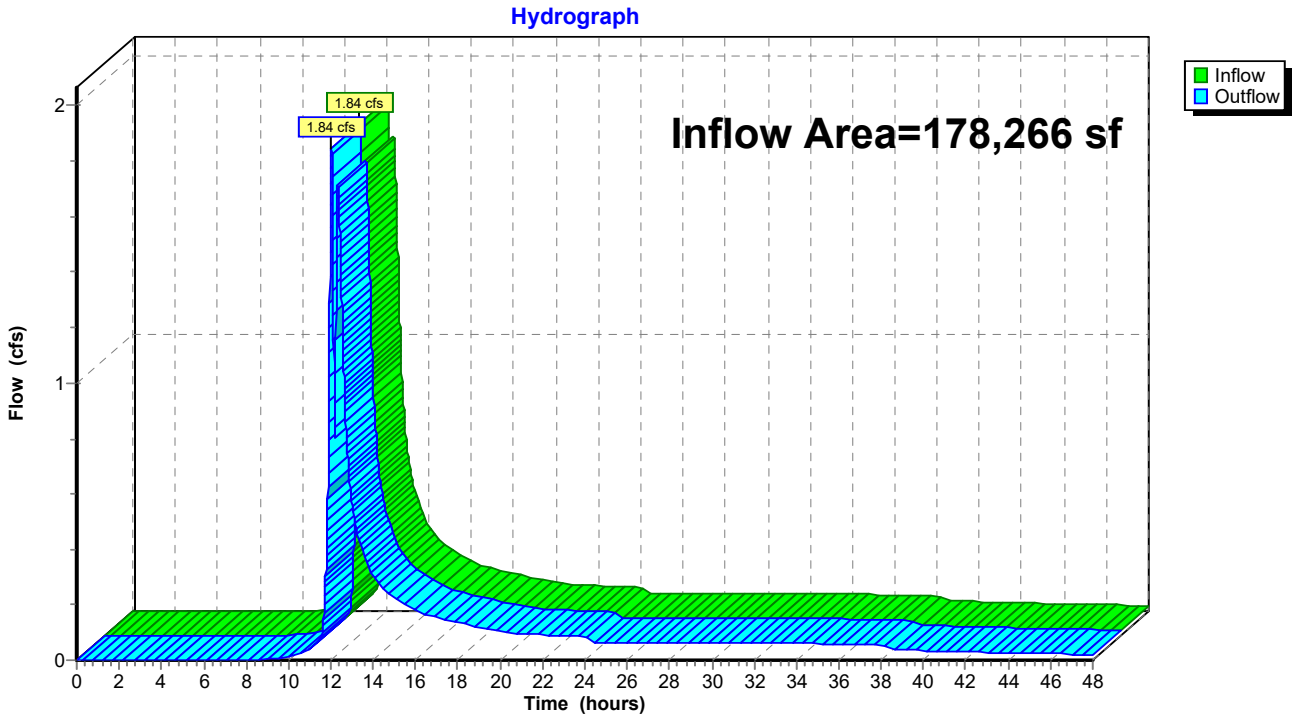


Summary for Reach 10R: POST WEST

Inflow Area = 178,266 sf, 39.55% Impervious, Inflow Depth > 1.07" for 1-Year event
Inflow = 1.84 cfs @ 12.04 hrs, Volume= 15,896 cf
Outflow = 1.84 cfs @ 12.04 hrs, Volume= 15,896 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 10R: POST WEST



Summary for Subcatchment 11S: POST EX6

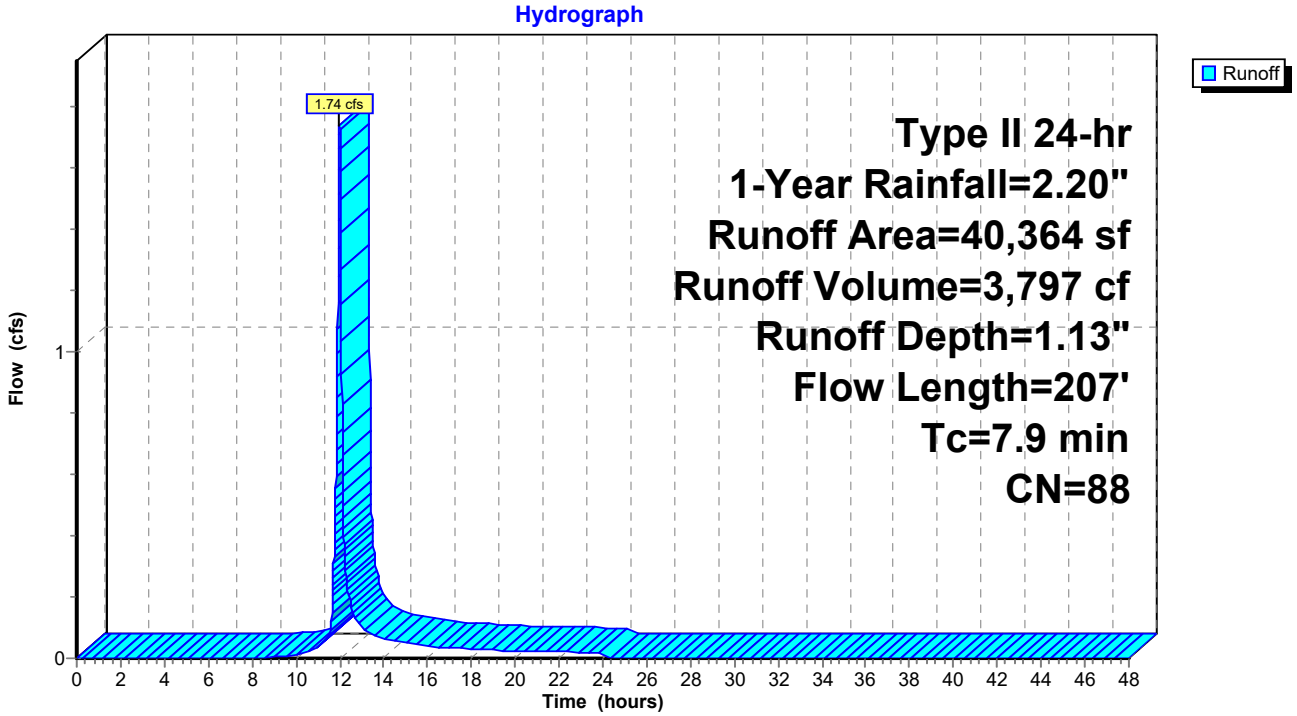
Runoff = 1.74 cfs @ 12.00 hrs, Volume= 3,797 cf, Depth= 1.13"
Routed to Reach 14R : POST EAST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=2.20"

Area (sf)	CN	Description
21,901	80	>75% Grass cover, Good, HSG D
18,463	98	Paved parking, HSG D
40,364	88	Weighted Average
21,901		54.26% Pervious Area
18,463		45.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	100	0.0681	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
1.3	107	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.9	207	Total			

Subcatchment 11S: POST EX6



Summary for Subcatchment 12S: POST EX37

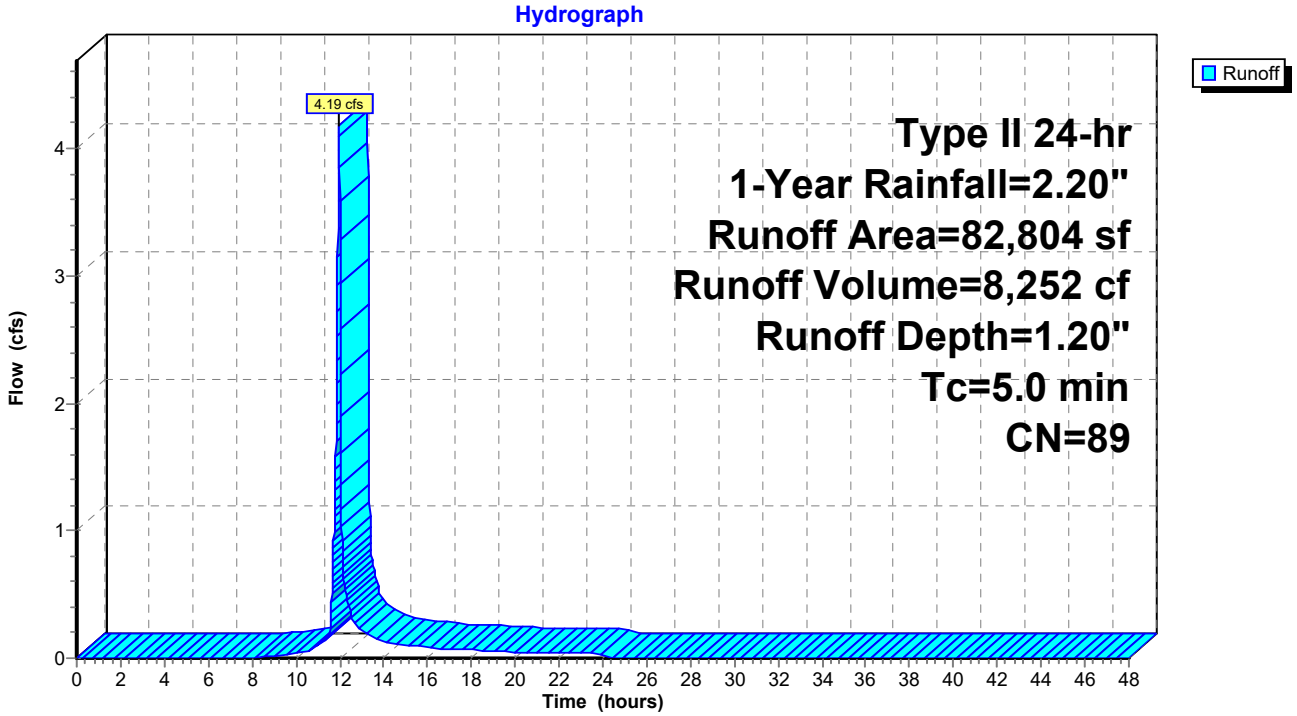
Runoff = 4.19 cfs @ 11.96 hrs, Volume= 8,252 cf, Depth= 1.20"
Routed to Pond 13P : DETENTION CB37

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=2.20"

Area (sf)	CN	Description
41,997	80	>75% Grass cover, Good, HSG D
40,807	98	Paved parking, HSG D
82,804	89	Weighted Average
41,997		50.72% Pervious Area
40,807		49.28% Impervious Area

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

Subcatchment 12S: POST EX37



Summary for Pond 13P: DETENTION CB37

Inflow Area = 82,804 sf, 49.28% Impervious, Inflow Depth = 1.20" for 1-Year event
Inflow = 4.19 cfs @ 11.96 hrs, Volume= 8,252 cf
Outflow = 1.92 cfs @ 12.05 hrs, Volume= 8,252 cf, Atten= 54%, Lag= 5.3 min
Primary = 1.92 cfs @ 12.05 hrs, Volume= 8,252 cf
Routed to Reach 14R : POST EAST

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 897.50' @ 12.05 hrs Surf.Area= 2,193 sf Storage= 1,085 cf

Plug-Flow detention time= 2.1 min calculated for 8,250 cf (100% of inflow)
Center-of-Mass det. time= 2.1 min (825.0 - 822.9)

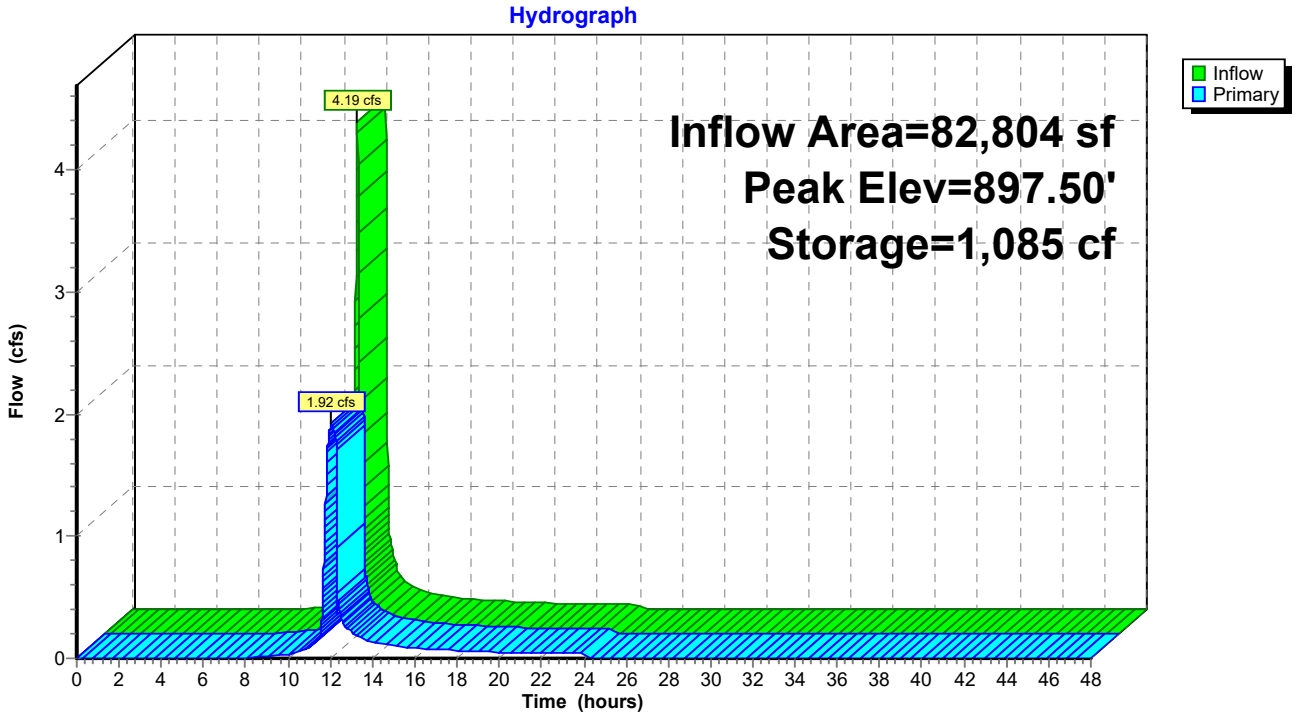
Volume	Invert	Avail.Storage	Storage Description
#1	893.40'	13,925 cf	**Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
893.40	9	0	0
896.60	9	29	29
897.00	1,110	224	253
898.00	3,258	2,184	2,437
899.00	4,617	3,938	6,374
900.00	10,484	7,551	13,925

Device	Routing	Invert	Outlet Devices
#1	Primary	893.40'	**18.00" Round Culvert** L= 104.4' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 893.40' / 891.88' S= 0.0146 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	843.40'	**6.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.92 cfs @ 12.05 hrs HW=897.50' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.92 cfs of 15.58 cfs potential flow)
└─**2=Orifice** (Orifice Controls 1.92 cfs @ 9.75 fps)

Pond 13P: DETENTION CB37

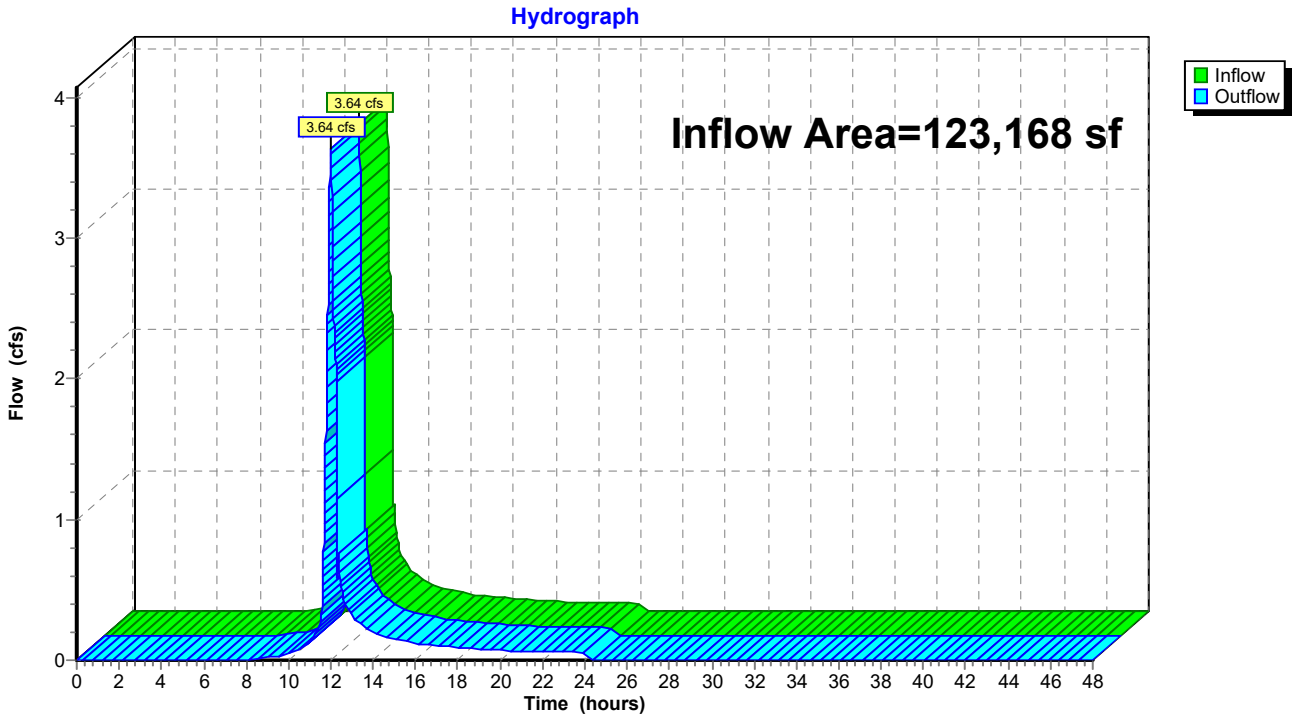


Summary for Reach 14R: POST EAST

Inflow Area = 123,168 sf, 48.12% Impervious, Inflow Depth = 1.17" for 1-Year event
Inflow = 3.64 cfs @ 12.00 hrs, Volume= 12,049 cf
Outflow = 3.64 cfs @ 12.00 hrs, Volume= 12,049 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 14R: POST EAST



Summary for Subcatchment 1S: PRE EX4

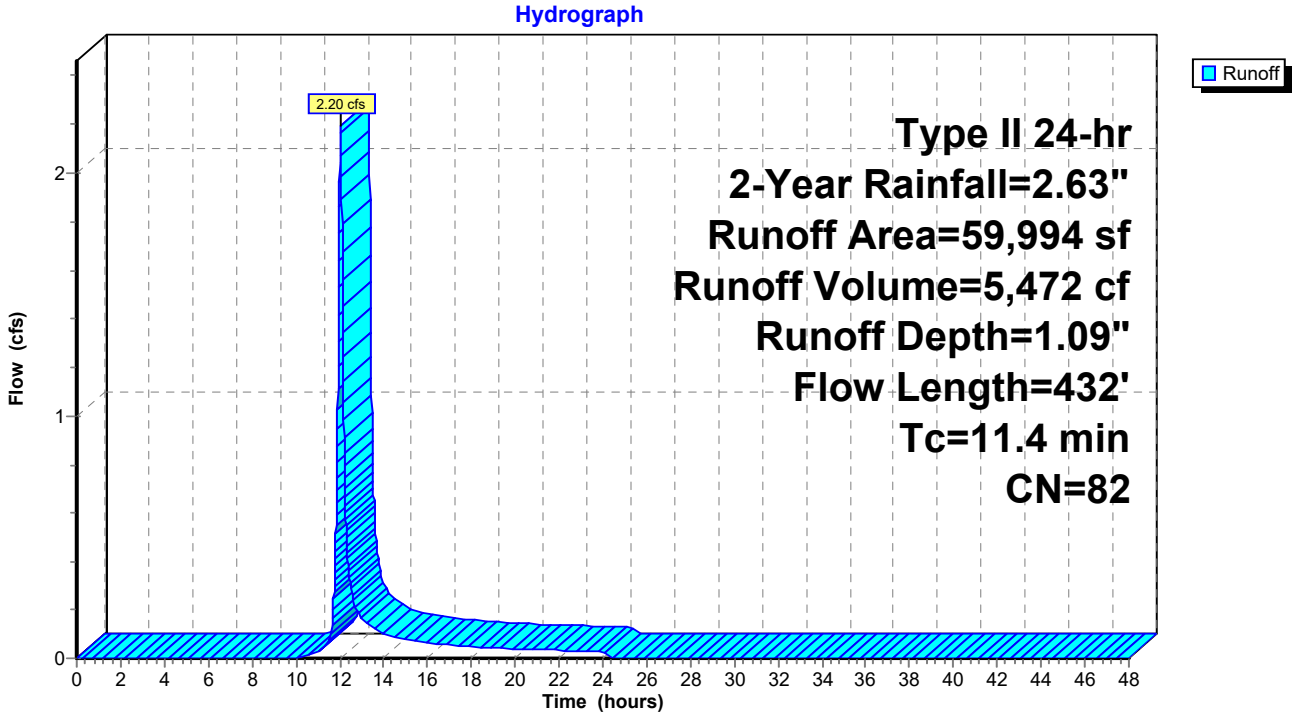
Runoff = 2.20 cfs @ 12.04 hrs, Volume= 5,472 cf, Depth= 1.09"
Routed to Reach 3R : PRE WEST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Year Rainfall=2.63"

Area (sf)	CN	Description
53,090	80	>75% Grass cover, Good, HSG D
6,904	98	Paved parking, HSG D
59,994	82	Weighted Average
53,090		88.49% Pervious Area
6,904		11.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.0700	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
4.9	332	0.0265	1.14		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.4	432	Total			

Subcatchment 1S: PRE EX4



Summary for Subcatchment 2S: PRE EX24

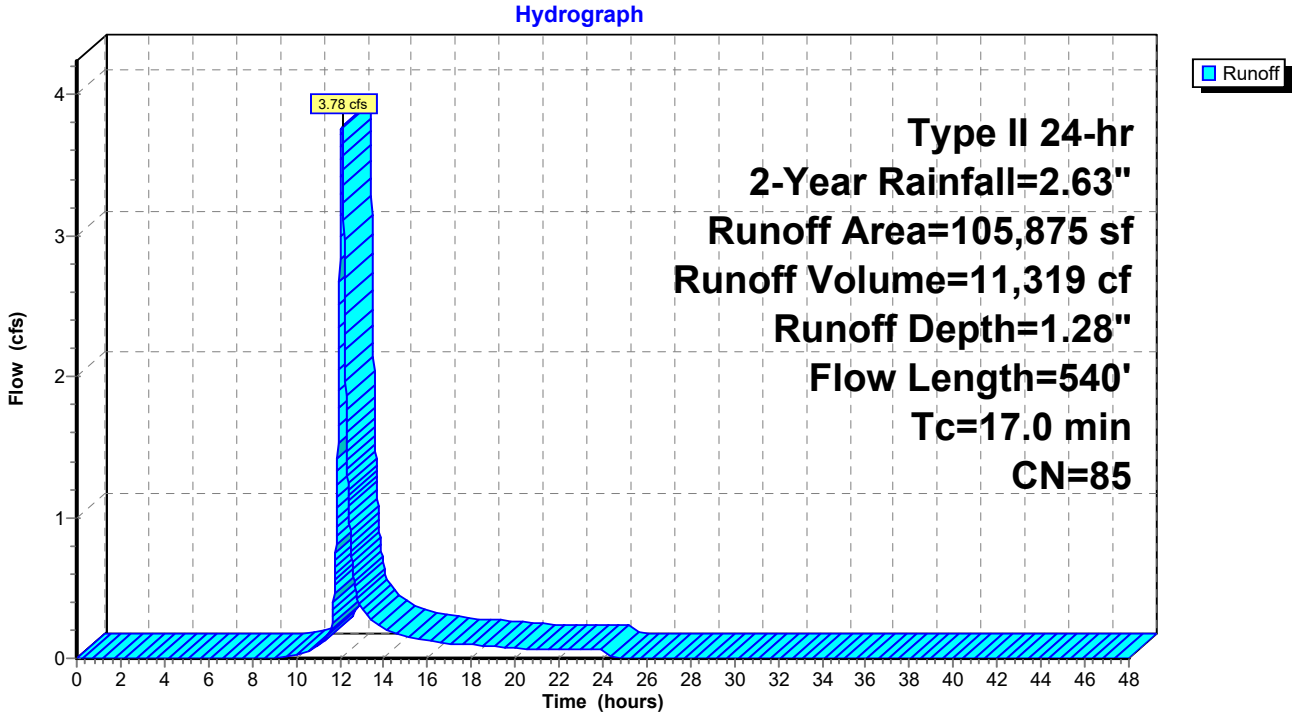
Runoff = 3.78 cfs @ 12.10 hrs, Volume= 11,319 cf, Depth= 1.28"
Routed to Reach 3R : PRE WEST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Year Rainfall=2.63"

Area (sf)	CN	Description
76,614	80	>75% Grass cover, Good, HSG D
29,261	98	Paved parking, HSG D
105,875	85	Weighted Average
76,614		72.36% Pervious Area
29,261		27.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	100	0.0181	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
5.8	440	0.0330	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.0	540	Total			

Subcatchment 2S: PRE EX24

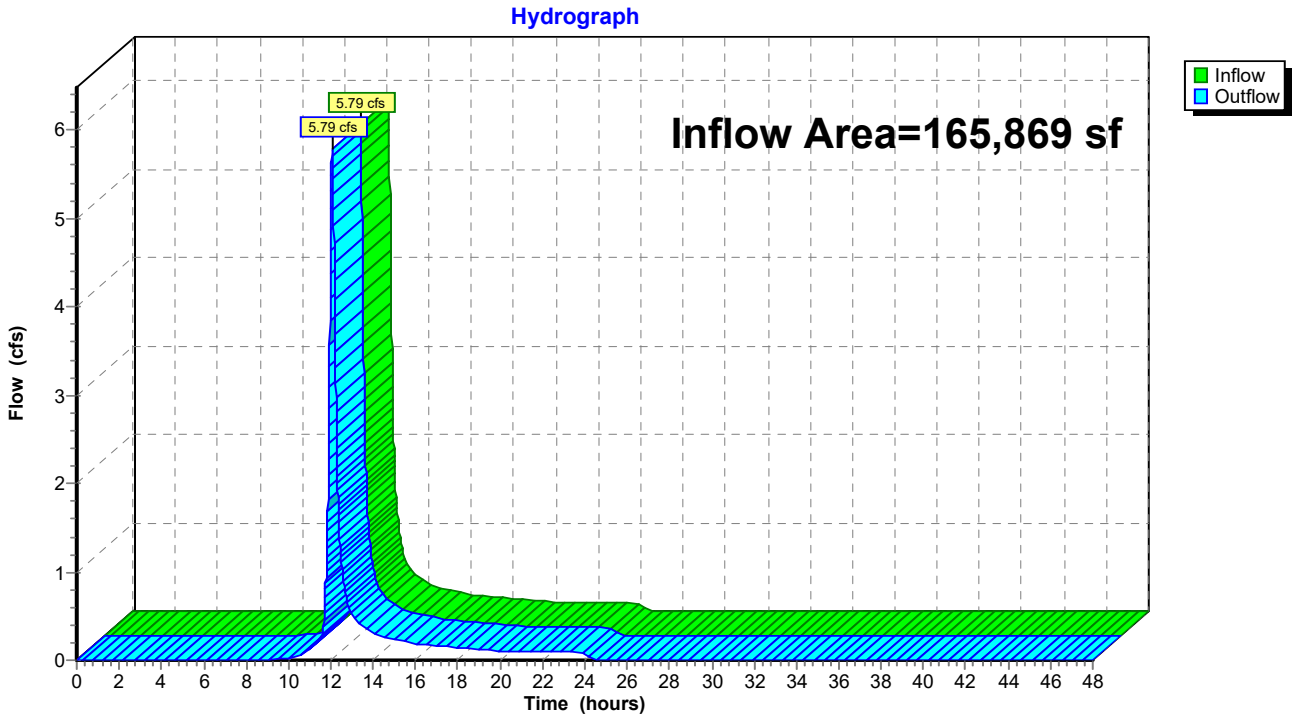


Summary for Reach 3R: PRE WEST

Inflow Area = 165,869 sf, 21.80% Impervious, Inflow Depth = 1.21" for 2-Year event
Inflow = 5.79 cfs @ 12.07 hrs, Volume= 16,790 cf
Outflow = 5.79 cfs @ 12.07 hrs, Volume= 16,790 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 3R: PRE WEST



Summary for Subcatchment 4S: PRE EX6

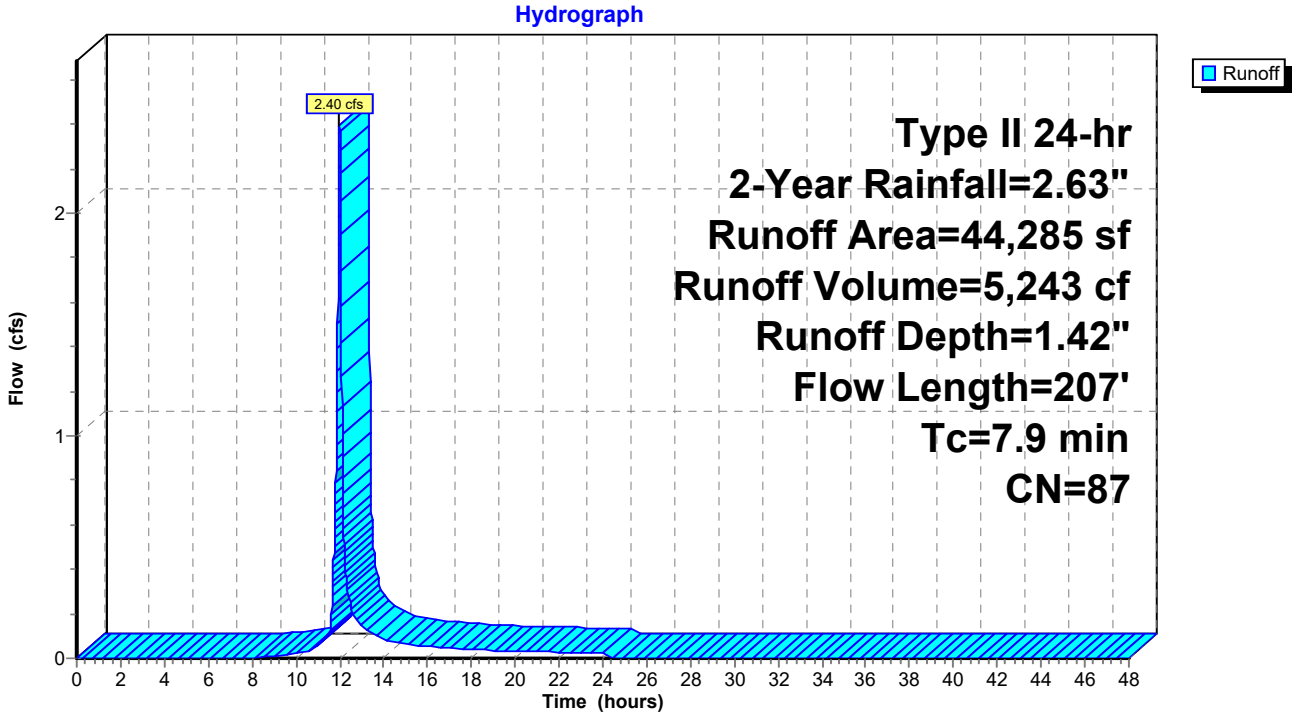
Runoff = 2.40 cfs @ 12.00 hrs, Volume= 5,243 cf, Depth= 1.42"
Routed to Reach 6R : PRE EAST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Year Rainfall=2.63"

Area (sf)	CN	Description
27,617	80	>75% Grass cover, Good, HSG D
16,668	98	Paved parking, HSG D
44,285	87	Weighted Average
27,617		62.36% Pervious Area
16,668		37.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	100	0.0681	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
1.3	107	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.9	207	Total			

Subcatchment 4S: PRE EX6



Summary for Subcatchment 5S: PRE EX37

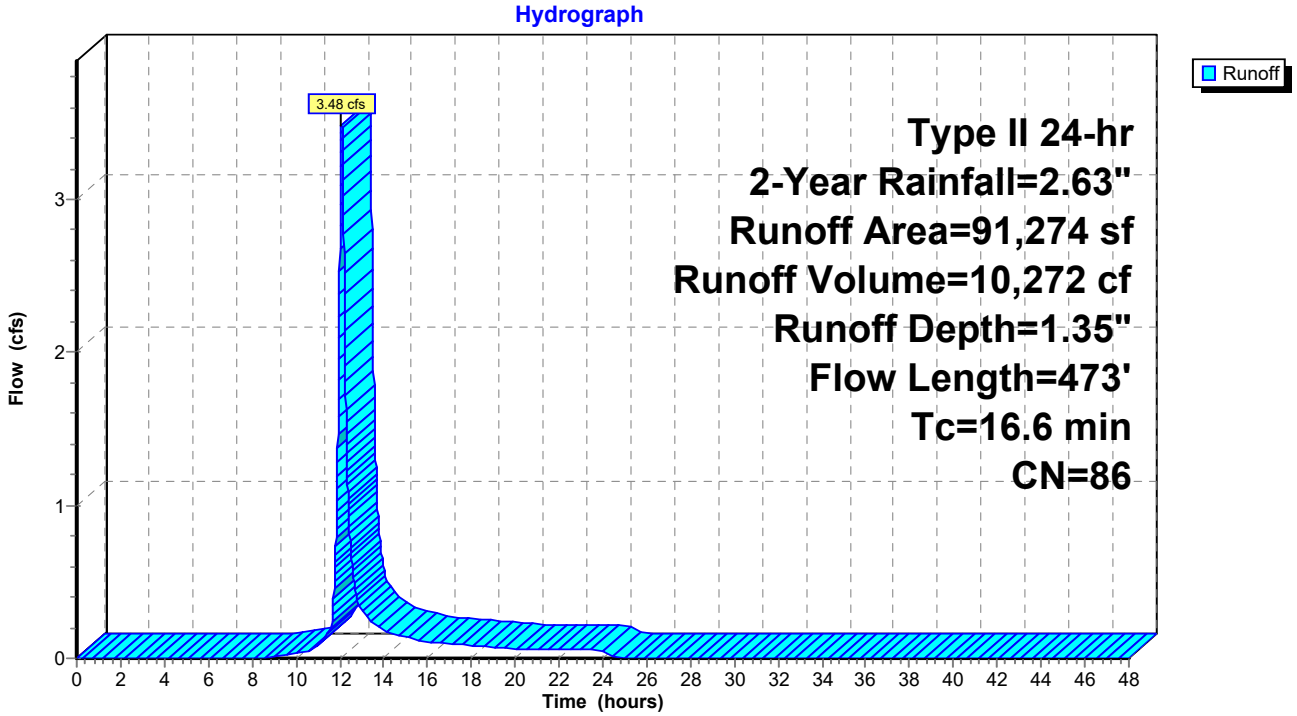
Runoff = 3.48 cfs @ 12.09 hrs, Volume= 10,272 cf, Depth= 1.35"
Routed to Reach 6R : PRE EAST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Year Rainfall=2.63"

Area (sf)	CN	Description
59,996	80	>75% Grass cover, Good, HSG D
31,278	98	Paved parking, HSG D
91,274	86	Weighted Average
59,996		65.73% Pervious Area
31,278		34.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0	100	0.0154	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
4.6	373	0.0366	1.34		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
16.6	473	Total			

Subcatchment 5S: PRE EX37

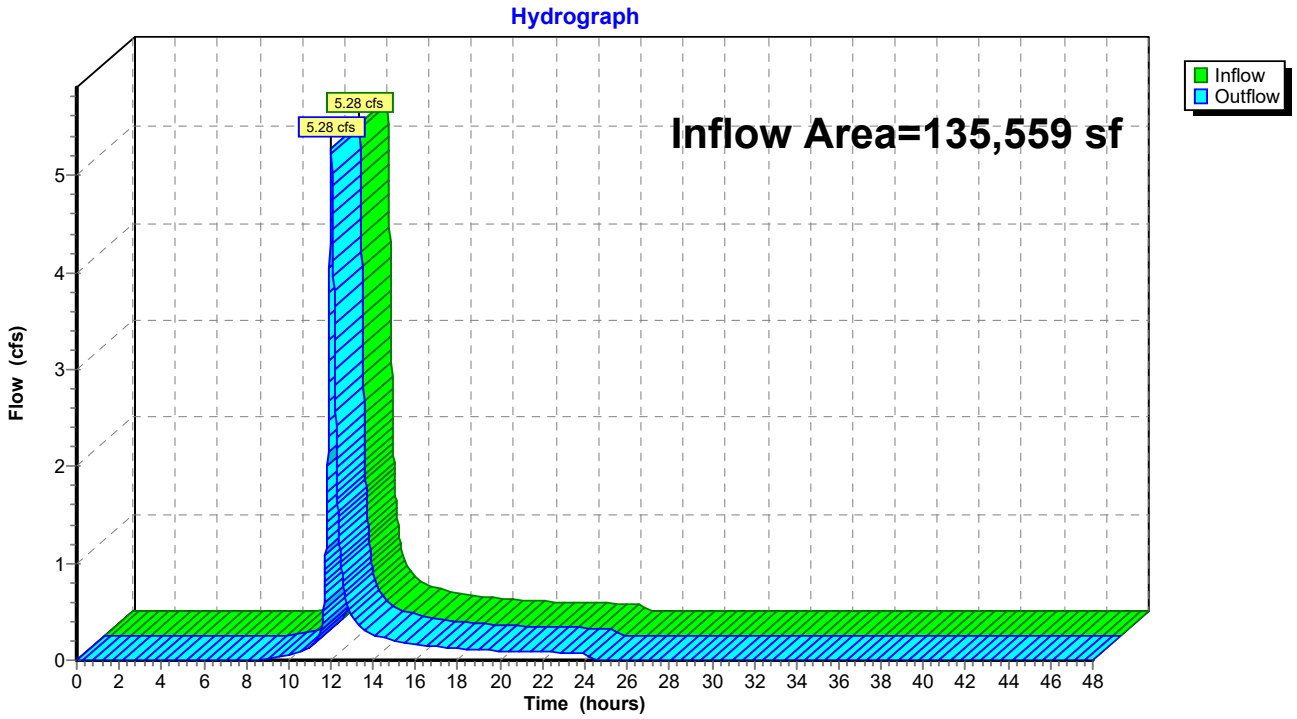


Summary for Reach 6R: PRE EAST

Inflow Area = 135,559 sf, 35.37% Impervious, Inflow Depth = 1.37" for 2-Year event
Inflow = 5.28 cfs @ 12.03 hrs, Volume= 15,514 cf
Outflow = 5.28 cfs @ 12.03 hrs, Volume= 15,514 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 6R: PRE EAST



Summary for Subcatchment 7S: POST EX4

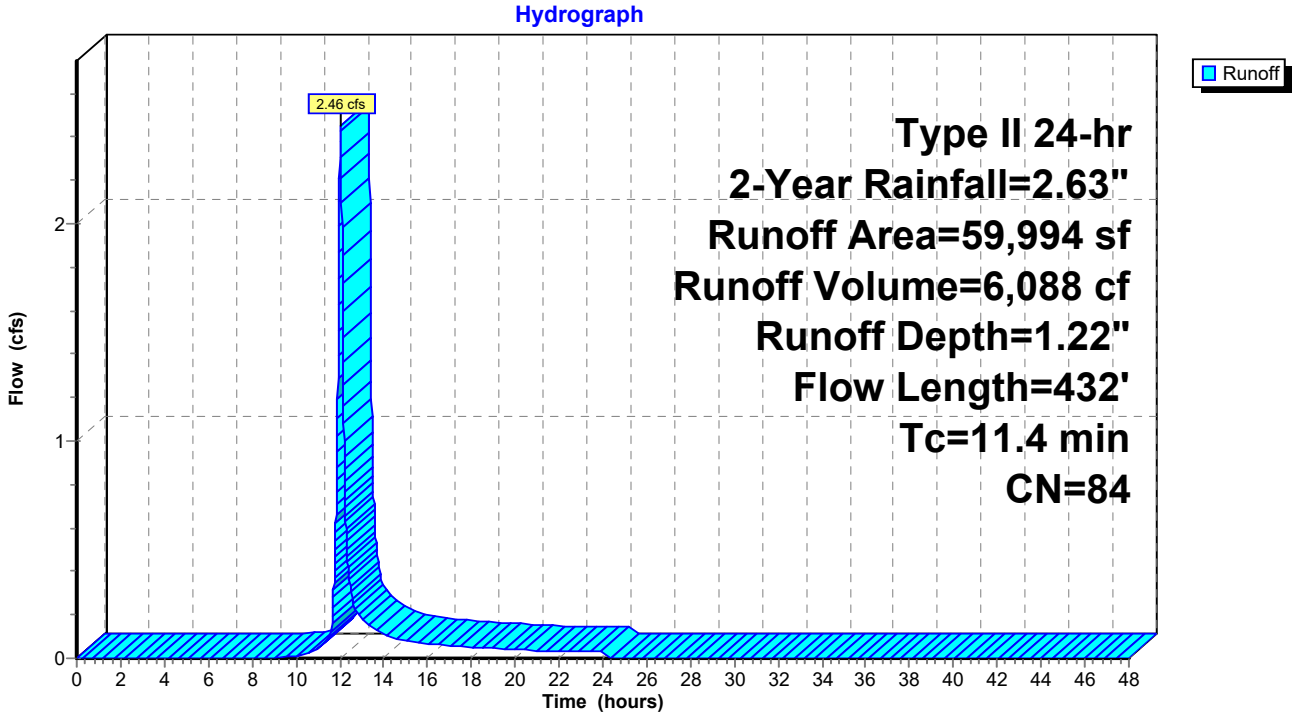
Runoff = 2.46 cfs @ 12.04 hrs, Volume= 6,088 cf, Depth= 1.22"
Routed to Reach 10R : POST WEST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Year Rainfall=2.63"

Area (sf)	CN	Description
47,032	80	>75% Grass cover, Good, HSG D
12,962	98	Paved parking, HSG D
59,994	84	Weighted Average
47,032		78.39% Pervious Area
12,962		21.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.0700	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
4.9	332	0.0265	1.14		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.4	432	Total			

Subcatchment 7S: POST EX4



Summary for Subcatchment 8S: POST EX24

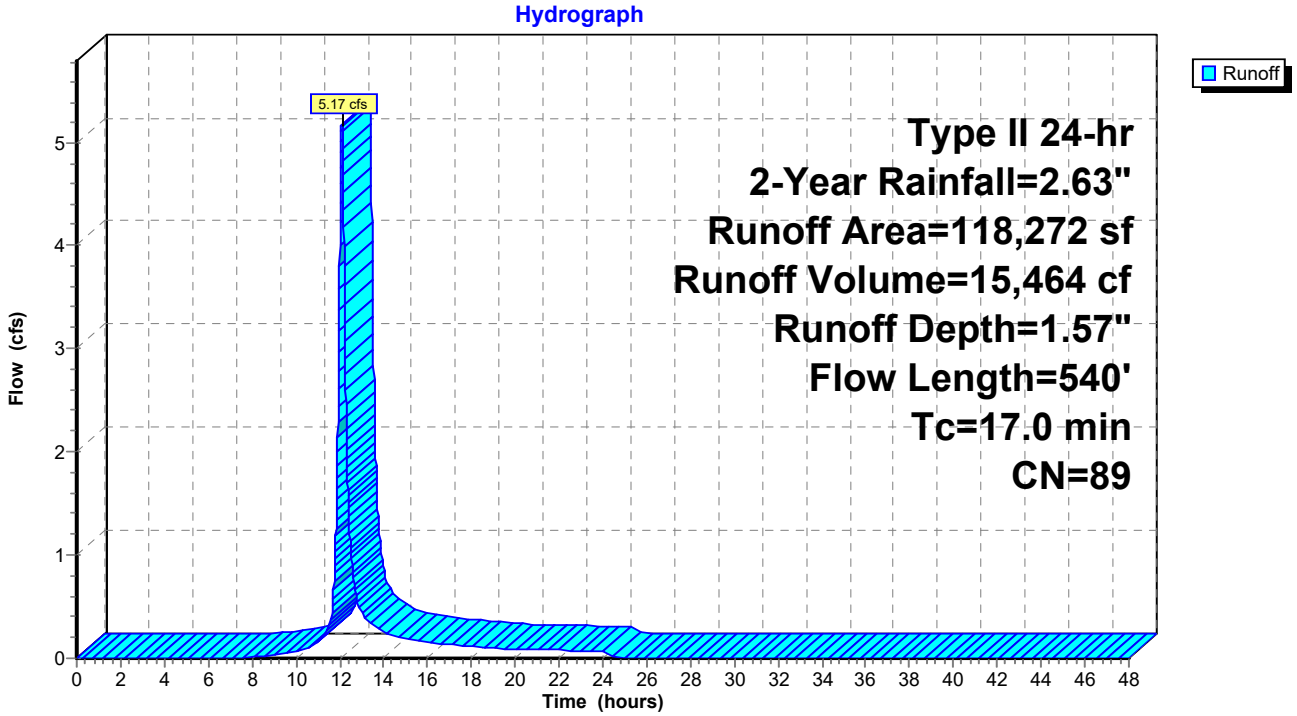
Runoff = 5.17 cfs @ 12.09 hrs, Volume= 15,464 cf, Depth= 1.57"
Routed to Pond 9P : DETENTION CB24

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Year Rainfall=2.63"

Area (sf)	CN	Description
60,730	80	>75% Grass cover, Good, HSG D
57,542	98	Paved parking, HSG D
118,272	89	Weighted Average
60,730		51.35% Pervious Area
57,542		48.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	100	0.0181	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
5.8	440	0.0330	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.0	540	Total			

Subcatchment 8S: POST EX24



Summary for Pond 9P: DETENTION CB24

Inflow Area = 118,272 sf, 48.65% Impervious, Inflow Depth = 1.57" for 2-Year event
Inflow = 5.17 cfs @ 12.09 hrs, Volume= 15,464 cf
Outflow = 3.15 cfs @ 12.24 hrs, Volume= 15,109 cf, Atten= 39%, Lag= 8.6 min
Primary = 3.15 cfs @ 12.24 hrs, Volume= 15,109 cf
Routed to Reach 10R : POST WEST

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 898.50' @ 12.24 hrs Surf.Area= 5,668 sf Storage= 5,737 cf

Plug-Flow detention time= 390.7 min calculated for 15,106 cf (98% of inflow)
Center-of-Mass det. time= 377.2 min (1,203.4 - 826.3)

Volume	Invert	Avail.Storage	Storage Description
#1	896.62'	15,305 cf	**Storage (Prismatic)**Listed below (Recalc)
#2A	892.12'	715 cf	**21.50'W x 53.04'L x 2.33'H Field A** 2,661 cf Overall - 619 cf Embedded = 2,042 cf x 35.0% Voids
#3A	892.62'	619 cf	**ADS_StormTech RC-310 +Cap**x 42 Inside #2 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 42 Chambers in 6 Rows
		16,639 cf	Total Available Storage

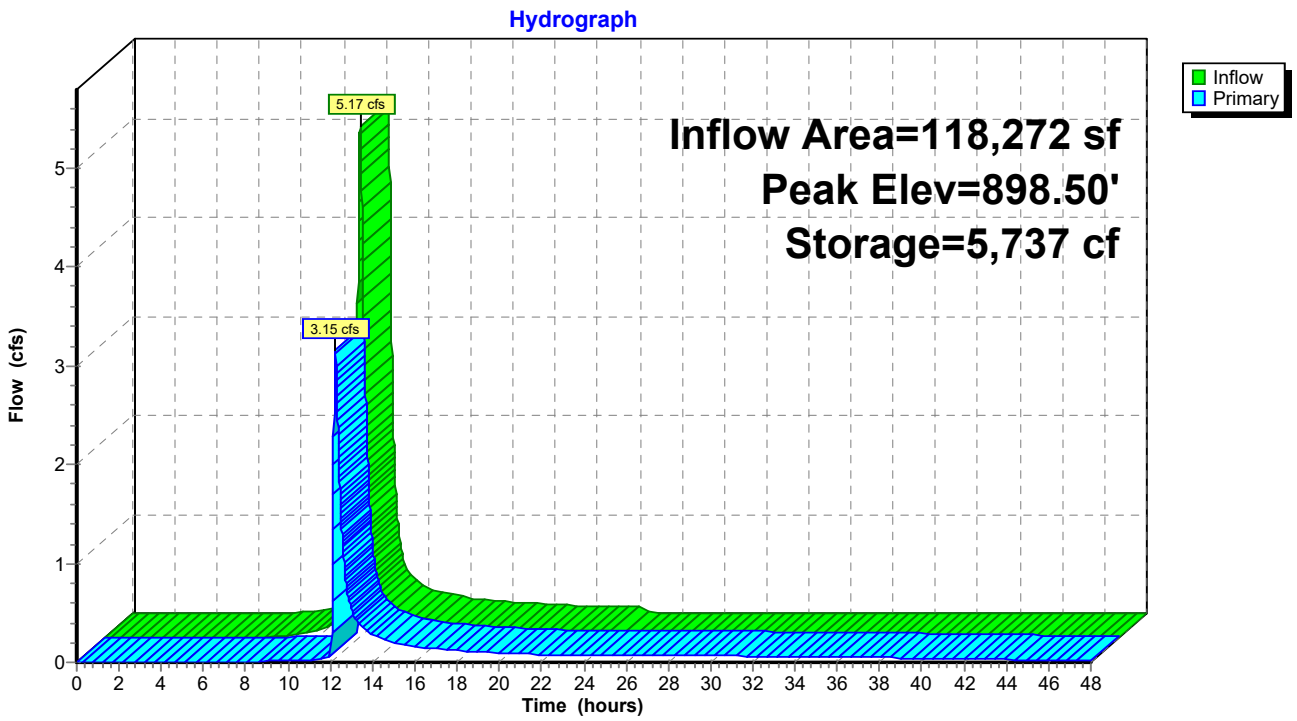
Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
896.62	9	0	0
897.00	944	181	181
898.00	3,517	2,231	2,412
899.00	5,558	4,538	6,949
900.00	11,154	8,356	15,305

Device	Routing	Invert	Outlet Devices
#1	Primary	892.12'	**15.00" Round Culvert** L= 71.2' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 892.12' / 890.79' S= 0.0187 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	892.12'	**1.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	898.20'	**36.00" W x 6.00" H Vert. Window X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.15 cfs @ 12.24 hrs HW=898.50' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 3.15 cfs of 14.07 cfs potential flow)
  ├─**2=Orifice** (Orifice Controls 0.07 cfs @ 12.12 fps)
  └─**3=Window** (Orifice Controls 3.09 cfs @ 1.74 fps)

Pond 9P: DETENTION CB24

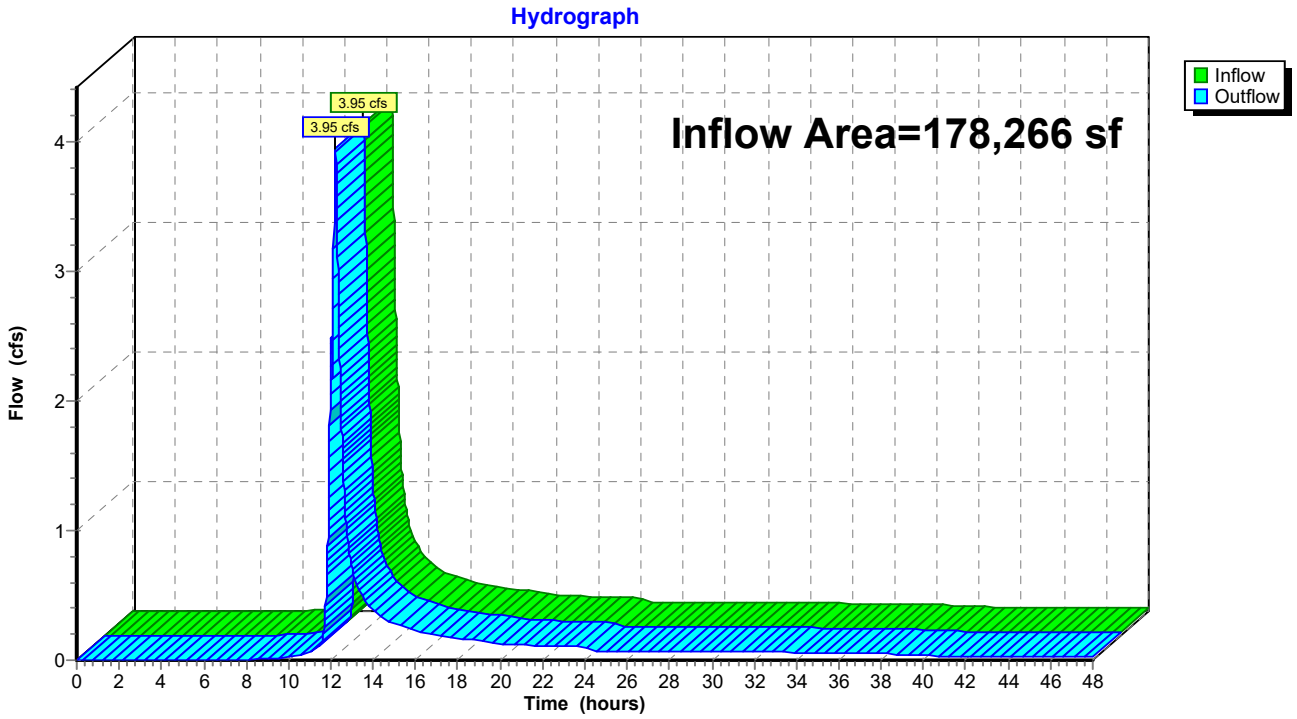


Summary for Reach 10R: POST WEST

Inflow Area = 178,266 sf, 39.55% Impervious, Inflow Depth > 1.43" for 2-Year event
Inflow = 3.95 cfs @ 12.21 hrs, Volume= 21,197 cf
Outflow = 3.95 cfs @ 12.21 hrs, Volume= 21,197 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 10R: POST WEST



Summary for Subcatchment 11S: POST EX6

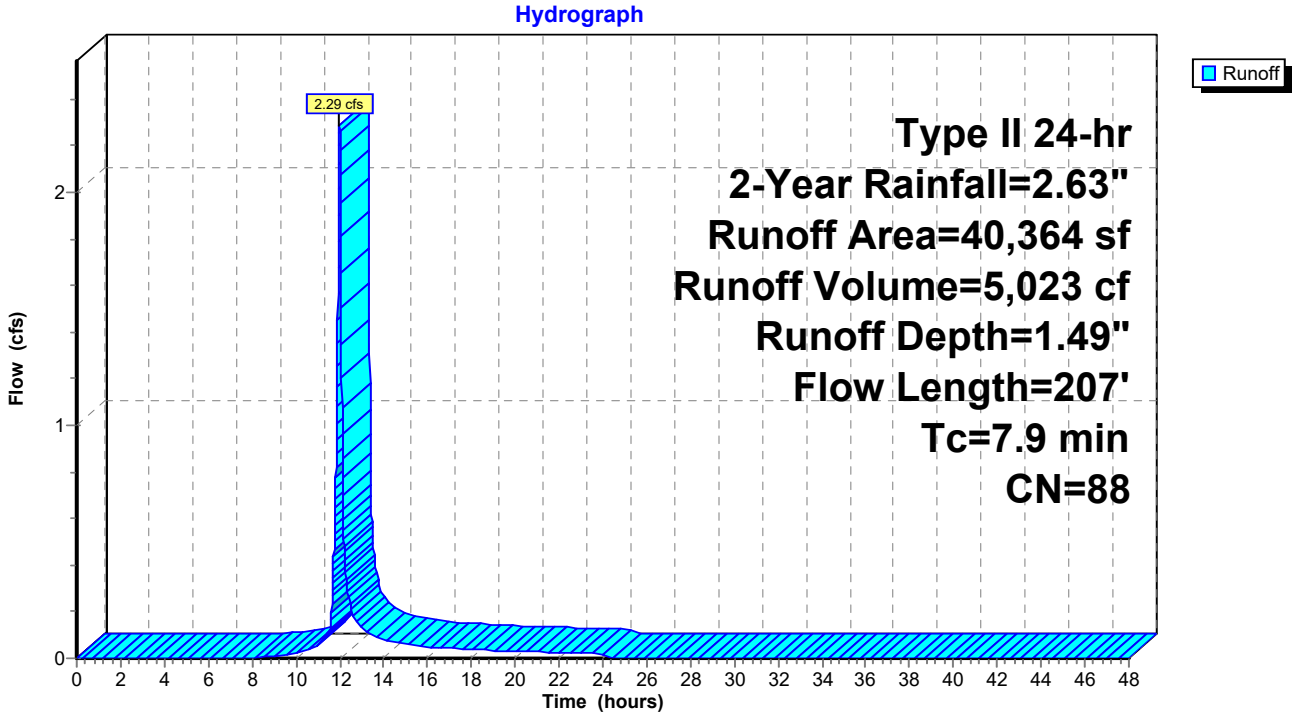
Runoff = 2.29 cfs @ 11.99 hrs, Volume= 5,023 cf, Depth= 1.49"
Routed to Reach 14R : POST EAST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Year Rainfall=2.63"

Area (sf)	CN	Description
21,901	80	>75% Grass cover, Good, HSG D
18,463	98	Paved parking, HSG D
40,364	88	Weighted Average
21,901		54.26% Pervious Area
18,463		45.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	100	0.0681	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
1.3	107	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.9	207	Total			

Subcatchment 11S: POST EX6



Summary for Subcatchment 12S: POST EX37

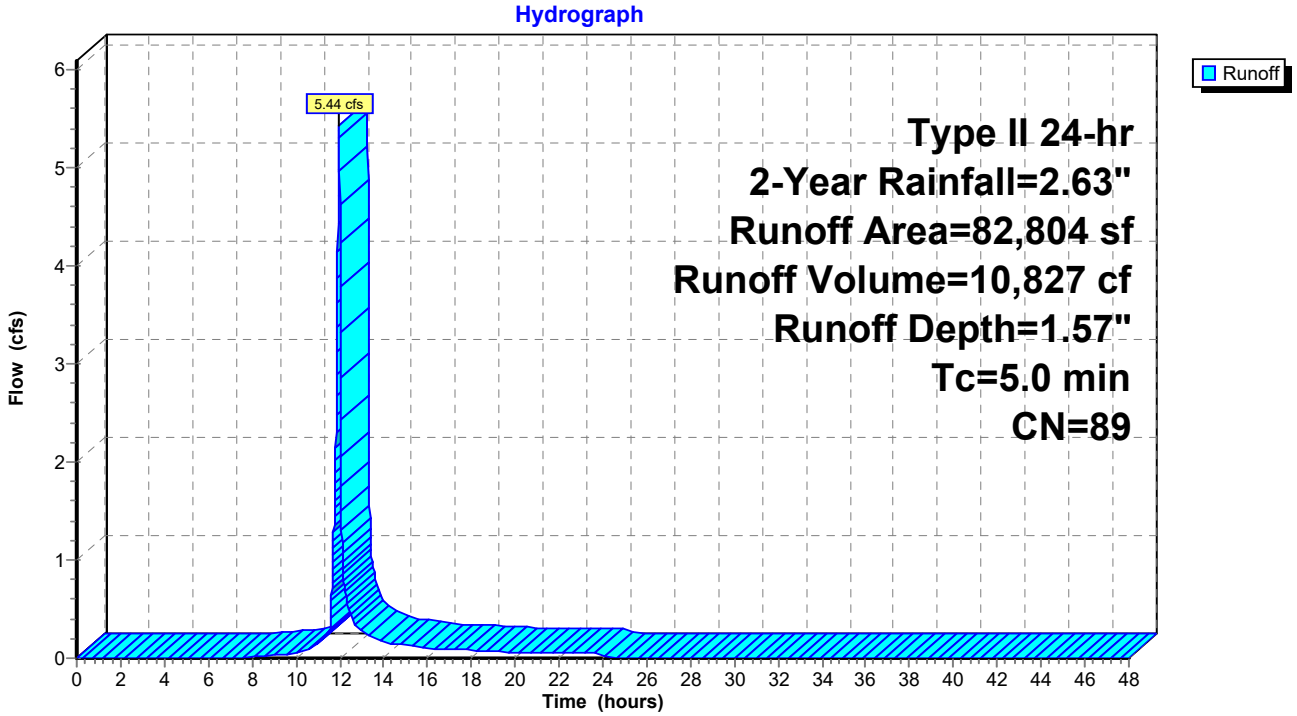
Runoff = 5.44 cfs @ 11.96 hrs, Volume= 10,827 cf, Depth= 1.57"
Routed to Pond 13P : DETENTION CB37

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Year Rainfall=2.63"

Area (sf)	CN	Description
41,997	80	>75% Grass cover, Good, HSG D
40,807	98	Paved parking, HSG D
82,804	89	Weighted Average
41,997		50.72% Pervious Area
40,807		49.28% Impervious Area

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

Subcatchment 12S: POST EX37



Summary for Pond 13P: DETENTION CB37

Inflow Area = 82,804 sf, 49.28% Impervious, Inflow Depth = 1.57" for 2-Year event
Inflow = 5.44 cfs @ 11.96 hrs, Volume= 10,827 cf
Outflow = 1.99 cfs @ 12.06 hrs, Volume= 10,827 cf, Atten= 63%, Lag= 6.1 min
Primary = 1.99 cfs @ 12.06 hrs, Volume= 10,827 cf
Routed to Reach 14R : POST EAST

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 897.82' @ 12.06 hrs Surf.Area= 2,870 sf Storage= 1,883 cf

Plug-Flow detention time= 4.1 min calculated for 10,827 cf (100% of inflow)
Center-of-Mass det. time= 3.9 min (819.0 - 815.1)

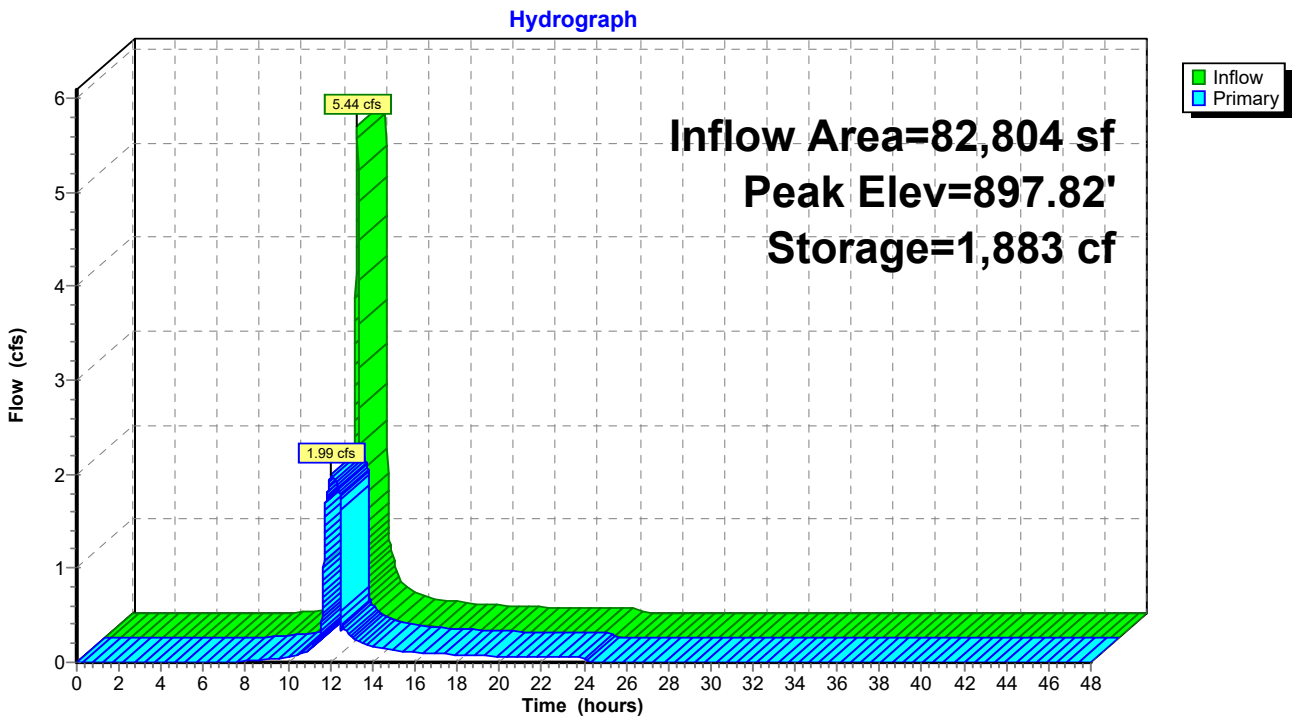
Volume	Invert	Avail.Storage	Storage Description
#1	893.40'	13,925 cf	**Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
893.40	9	0	0
896.60	9	29	29
897.00	1,110	224	253
898.00	3,258	2,184	2,437
899.00	4,617	3,938	6,374
900.00	10,484	7,551	13,925

Device	Routing	Invert	Outlet Devices
#1	Primary	893.40'	**18.00" Round Culvert** L= 104.4' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 893.40' / 891.88' S= 0.0146 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	843.40'	**6.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.99 cfs @ 12.06 hrs HW=897.82' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.99 cfs of 16.18 cfs potential flow)
└─**2=Orifice** (Orifice Controls 1.99 cfs @ 10.12 fps)

Pond 13P: DETENTION CB37

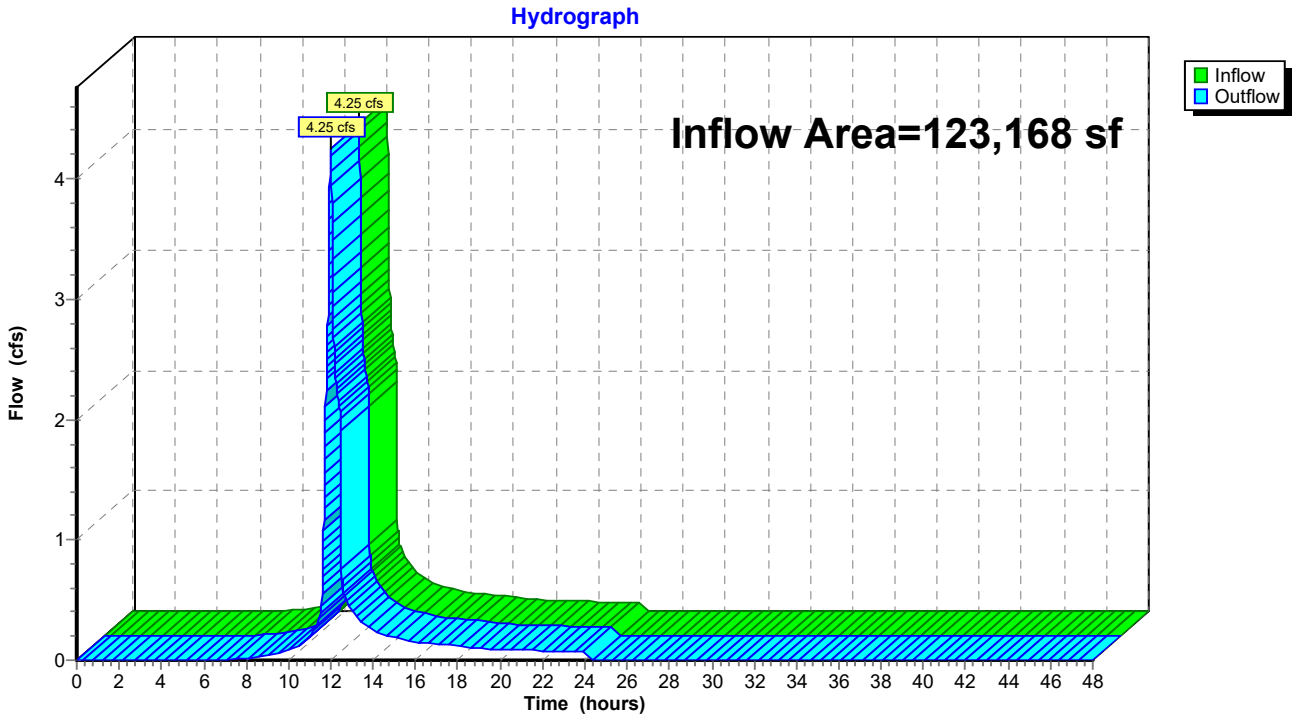


Summary for Reach 14R: POST EAST

Inflow Area = 123,168 sf, 48.12% Impervious, Inflow Depth = 1.54" for 2-Year event
Inflow = 4.25 cfs @ 12.00 hrs, Volume= 15,850 cf
Outflow = 4.25 cfs @ 12.00 hrs, Volume= 15,850 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 14R: POST EAST



Summary for Subcatchment 1S: PRE EX4

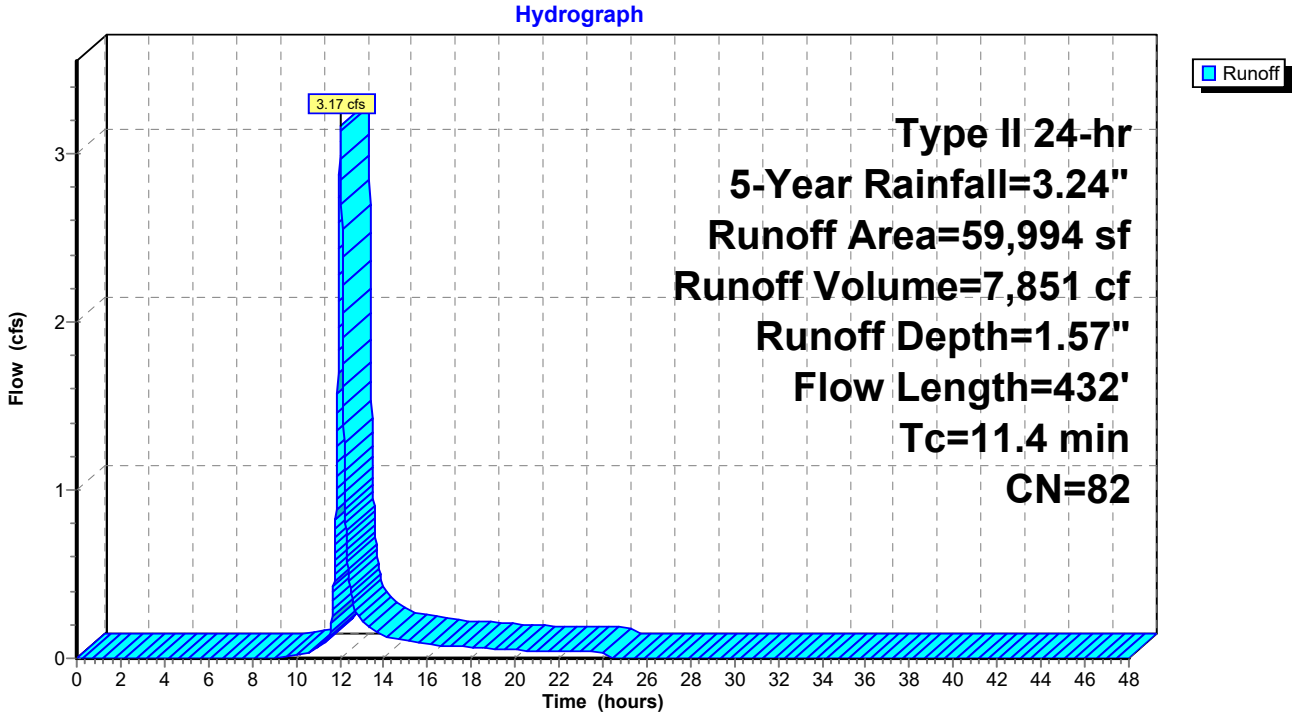
Runoff = 3.17 cfs @ 12.03 hrs, Volume= 7,851 cf, Depth= 1.57"
Routed to Reach 3R : PRE WEST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-Year Rainfall=3.24"

Area (sf)	CN	Description
53,090	80	>75% Grass cover, Good, HSG D
6,904	98	Paved parking, HSG D
59,994	82	Weighted Average
53,090		88.49% Pervious Area
6,904		11.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.0700	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
4.9	332	0.0265	1.14		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.4	432	Total			

Subcatchment 1S: PRE EX4



Summary for Subcatchment 2S: PRE EX24

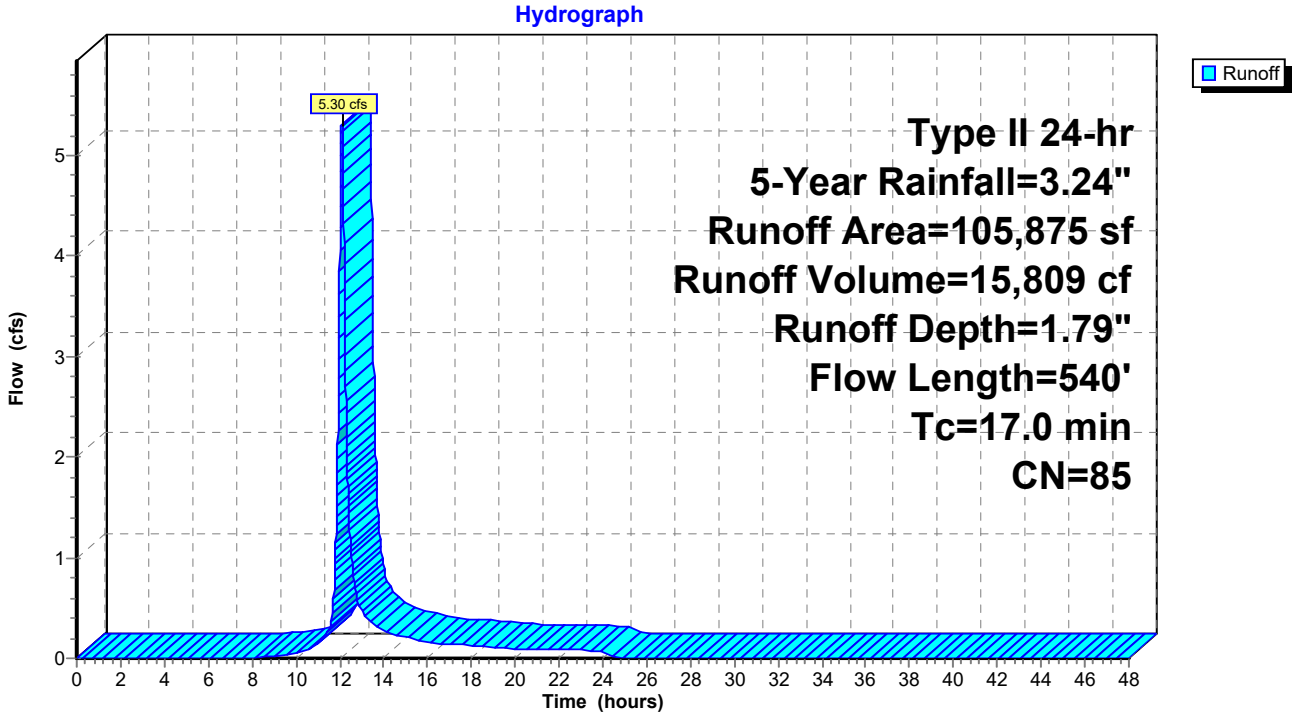
Runoff = 5.30 cfs @ 12.09 hrs, Volume= 15,809 cf, Depth= 1.79"
Routed to Reach 3R : PRE WEST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-Year Rainfall=3.24"

Area (sf)	CN	Description
76,614	80	>75% Grass cover, Good, HSG D
29,261	98	Paved parking, HSG D
105,875	85	Weighted Average
76,614		72.36% Pervious Area
29,261		27.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	100	0.0181	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
5.8	440	0.0330	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.0	540	Total			

Subcatchment 2S: PRE EX24

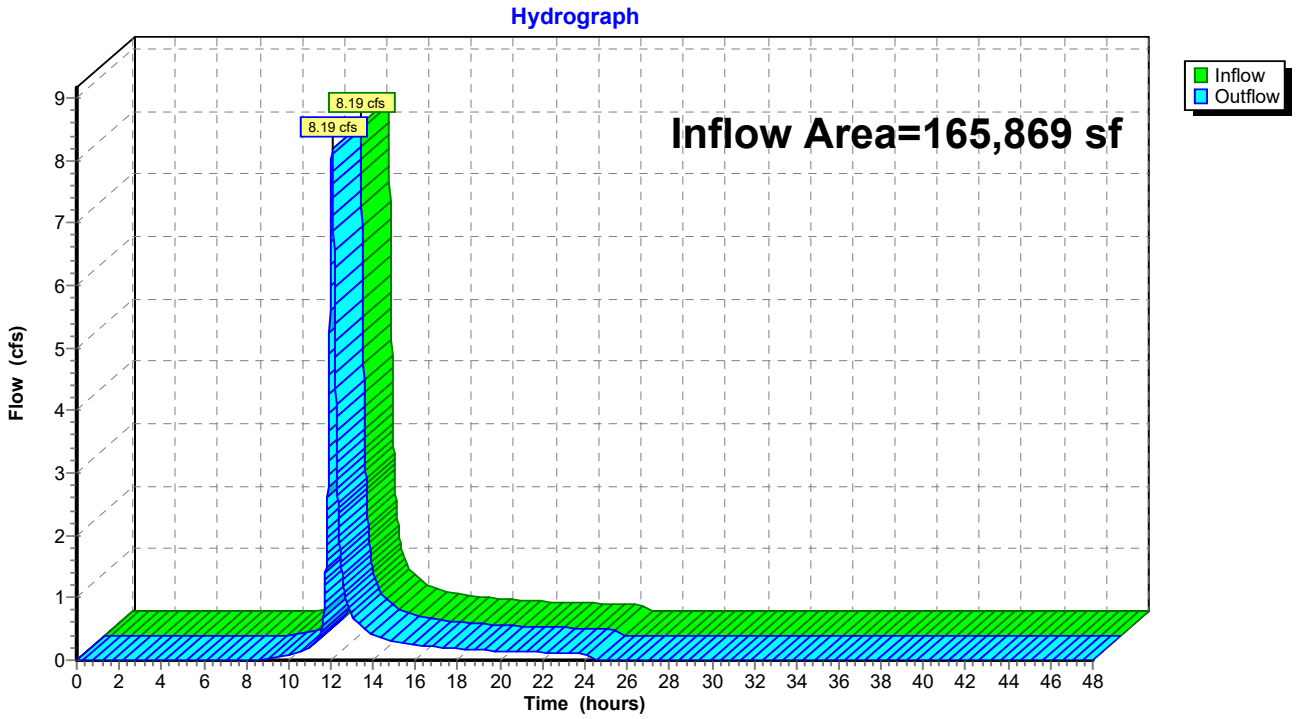


Summary for Reach 3R: PRE WEST

Inflow Area = 165,869 sf, 21.80% Impervious, Inflow Depth = 1.71" for 5-Year event
Inflow = 8.19 cfs @ 12.07 hrs, Volume= 23,660 cf
Outflow = 8.19 cfs @ 12.07 hrs, Volume= 23,660 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 3R: PRE WEST



Summary for Subcatchment 4S: PRE EX6

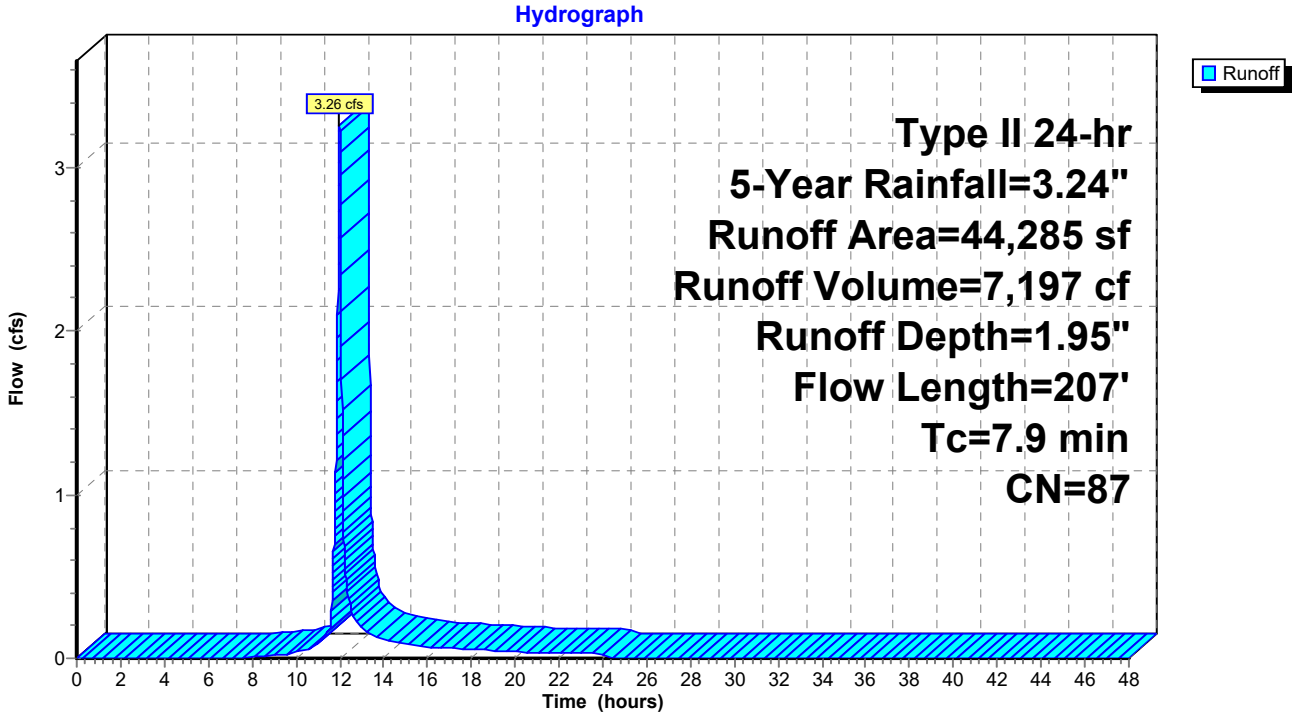
Runoff = 3.26 cfs @ 11.99 hrs, Volume= 7,197 cf, Depth= 1.95"
Routed to Reach 6R : PRE EAST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-Year Rainfall=3.24"

Area (sf)	CN	Description
27,617	80	>75% Grass cover, Good, HSG D
16,668	98	Paved parking, HSG D
44,285	87	Weighted Average
27,617		62.36% Pervious Area
16,668		37.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	100	0.0681	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
1.3	107	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.9	207	Total			

Subcatchment 4S: PRE EX6



Summary for Subcatchment 5S: PRE EX37

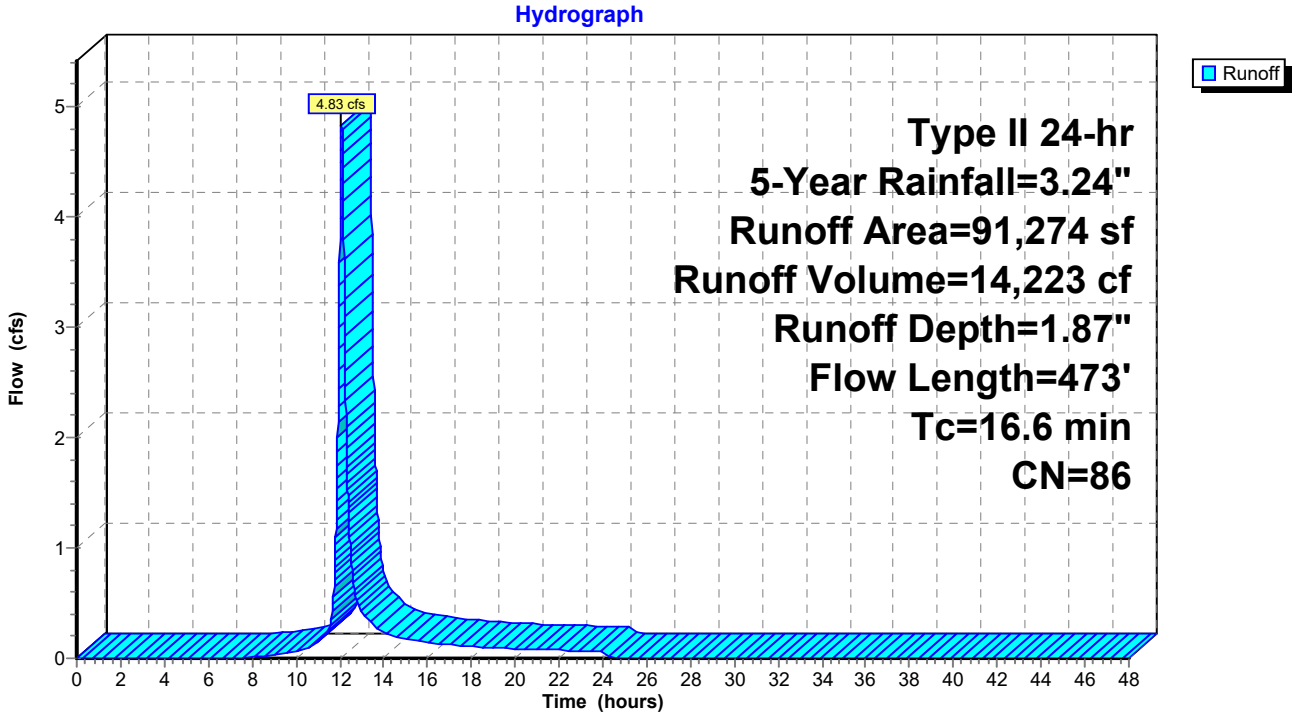
Runoff = 4.83 cfs @ 12.08 hrs, Volume= 14,223 cf, Depth= 1.87"
Routed to Reach 6R : PRE EAST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-Year Rainfall=3.24"

Area (sf)	CN	Description
59,996	80	>75% Grass cover, Good, HSG D
31,278	98	Paved parking, HSG D
91,274	86	Weighted Average
59,996		65.73% Pervious Area
31,278		34.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0	100	0.0154	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
4.6	373	0.0366	1.34		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
16.6	473	Total			

Subcatchment 5S: PRE EX37

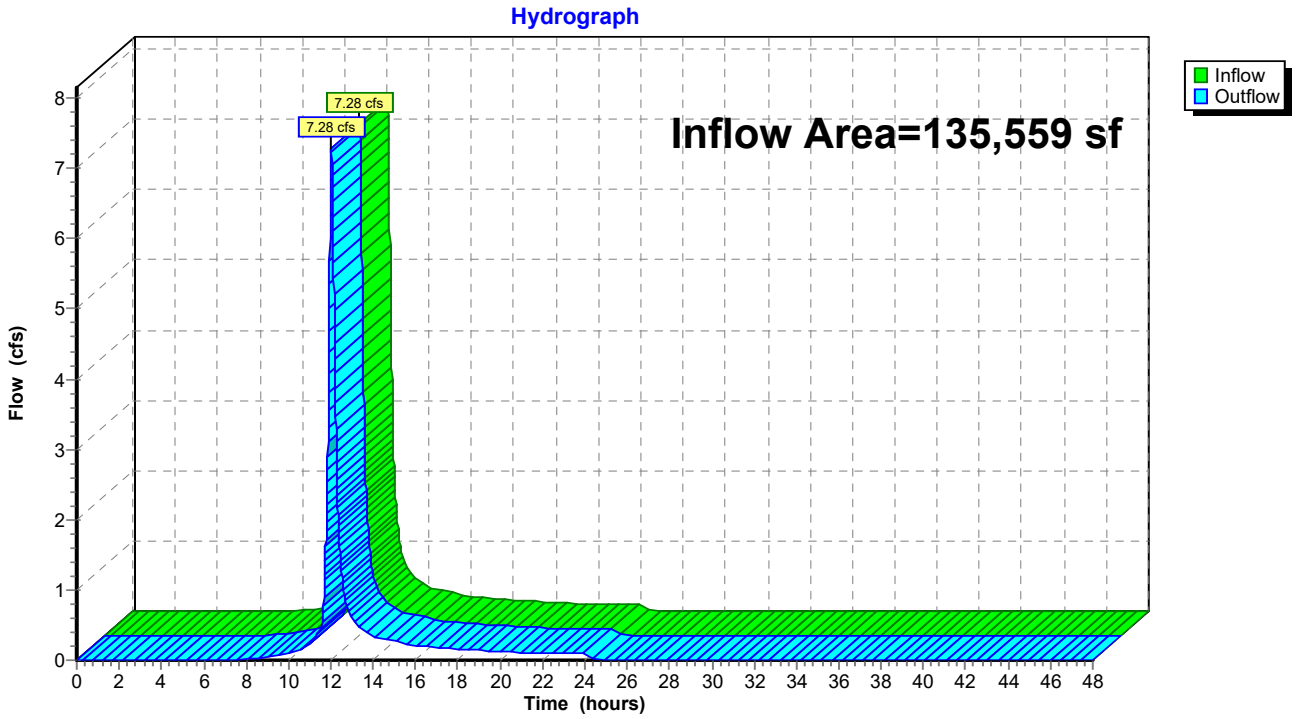


Summary for Reach 6R: PRE EAST

Inflow Area = 135,559 sf, 35.37% Impervious, Inflow Depth = 1.90" for 5-Year event
Inflow = 7.28 cfs @ 12.03 hrs, Volume= 21,420 cf
Outflow = 7.28 cfs @ 12.03 hrs, Volume= 21,420 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 6R: PRE EAST



Summary for Subcatchment 7S: POST EX4

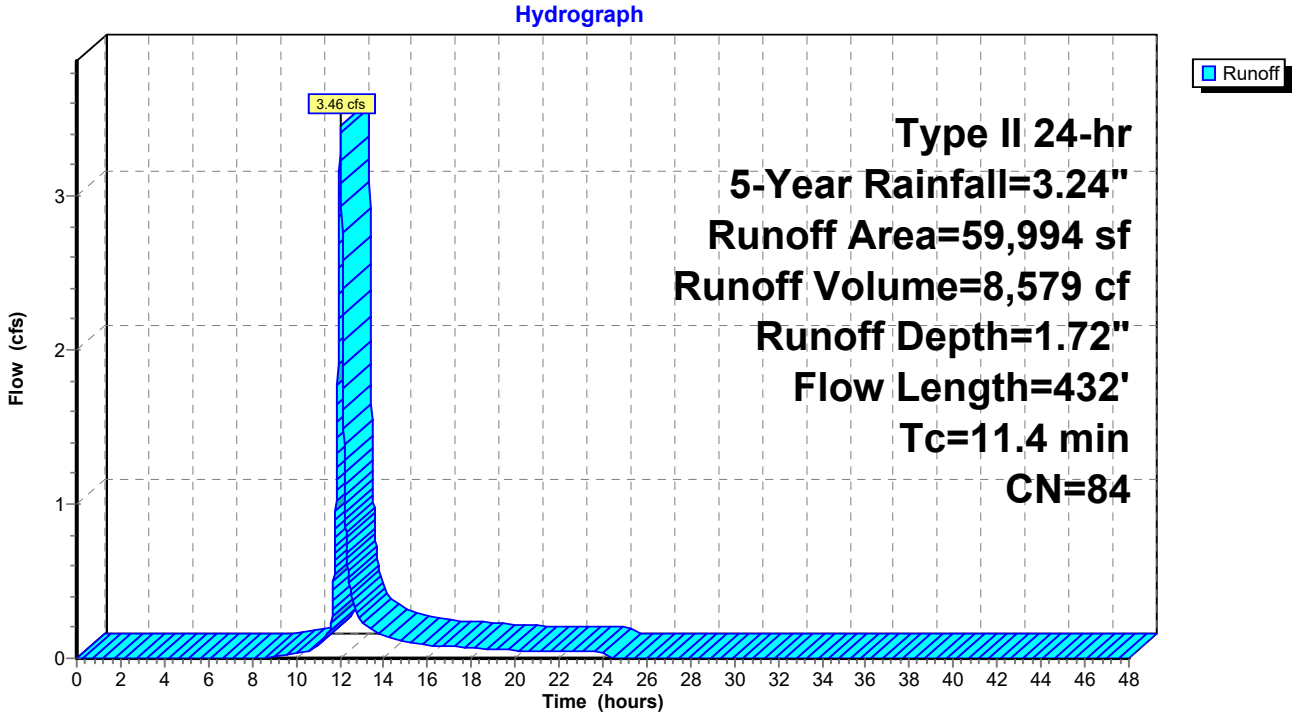
Runoff = 3.46 cfs @ 12.03 hrs, Volume= 8,579 cf, Depth= 1.72"
Routed to Reach 10R : POST WEST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-Year Rainfall=3.24"

Area (sf)	CN	Description
47,032	80	>75% Grass cover, Good, HSG D
12,962	98	Paved parking, HSG D
59,994	84	Weighted Average
47,032		78.39% Pervious Area
12,962		21.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.0700	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
4.9	332	0.0265	1.14		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.4	432	Total			

Subcatchment 7S: POST EX4



Summary for Subcatchment 8S: POST EX24

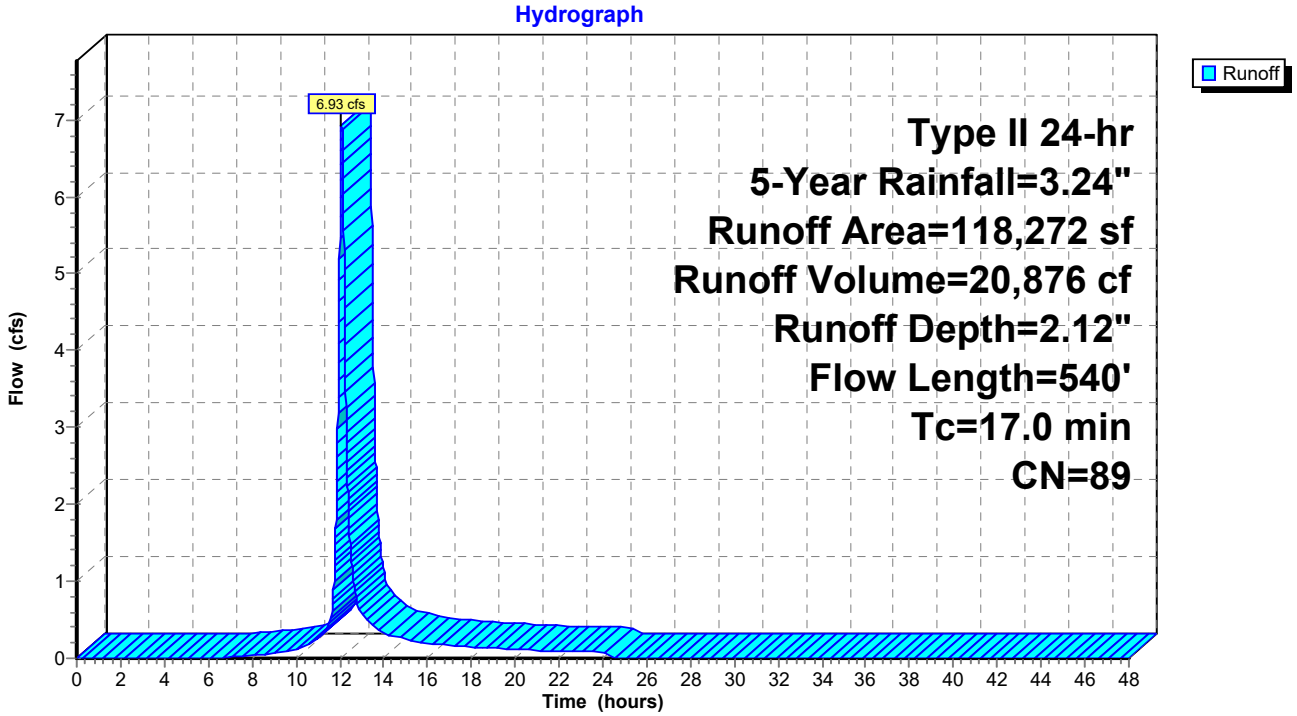
Runoff = 6.93 cfs @ 12.09 hrs, Volume= 20,876 cf, Depth= 2.12"
Routed to Pond 9P : DETENTION CB24

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-Year Rainfall=3.24"

Area (sf)	CN	Description
60,730	80	>75% Grass cover, Good, HSG D
57,542	98	Paved parking, HSG D
118,272	89	Weighted Average
60,730		51.35% Pervious Area
57,542		48.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	100	0.0181	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
5.8	440	0.0330	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.0	540	Total			

Subcatchment 8S: POST EX24



Summary for Pond 9P: DETENTION CB24

Inflow Area = 118,272 sf, 48.65% Impervious, Inflow Depth = 2.12" for 5-Year event
Inflow = 6.93 cfs @ 12.09 hrs, Volume= 20,876 cf
Outflow = 5.62 cfs @ 12.18 hrs, Volume= 20,513 cf, Atten= 19%, Lag= 5.3 min
Primary = 5.62 cfs @ 12.18 hrs, Volume= 20,513 cf
Routed to Reach 10R : POST WEST

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 898.64' @ 12.18 hrs Surf.Area= 5,956 sf Storage= 6,397 cf

Plug-Flow detention time= 294.9 min calculated for 20,509 cf (98% of inflow)
Center-of-Mass det. time= 284.4 min (1,102.1 - 817.7)

Volume	Invert	Avail.Storage	Storage Description
#1	896.62'	15,305 cf	**Storage (Prismatic)**Listed below (Recalc)
#2A	892.12'	715 cf	**21.50'W x 53.04'L x 2.33'H Field A** 2,661 cf Overall - 619 cf Embedded = 2,042 cf x 35.0% Voids
#3A	892.62'	619 cf	**ADS_StormTech RC-310 +Cap**x 42 Inside #2 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 42 Chambers in 6 Rows
		16,639 cf	Total Available Storage

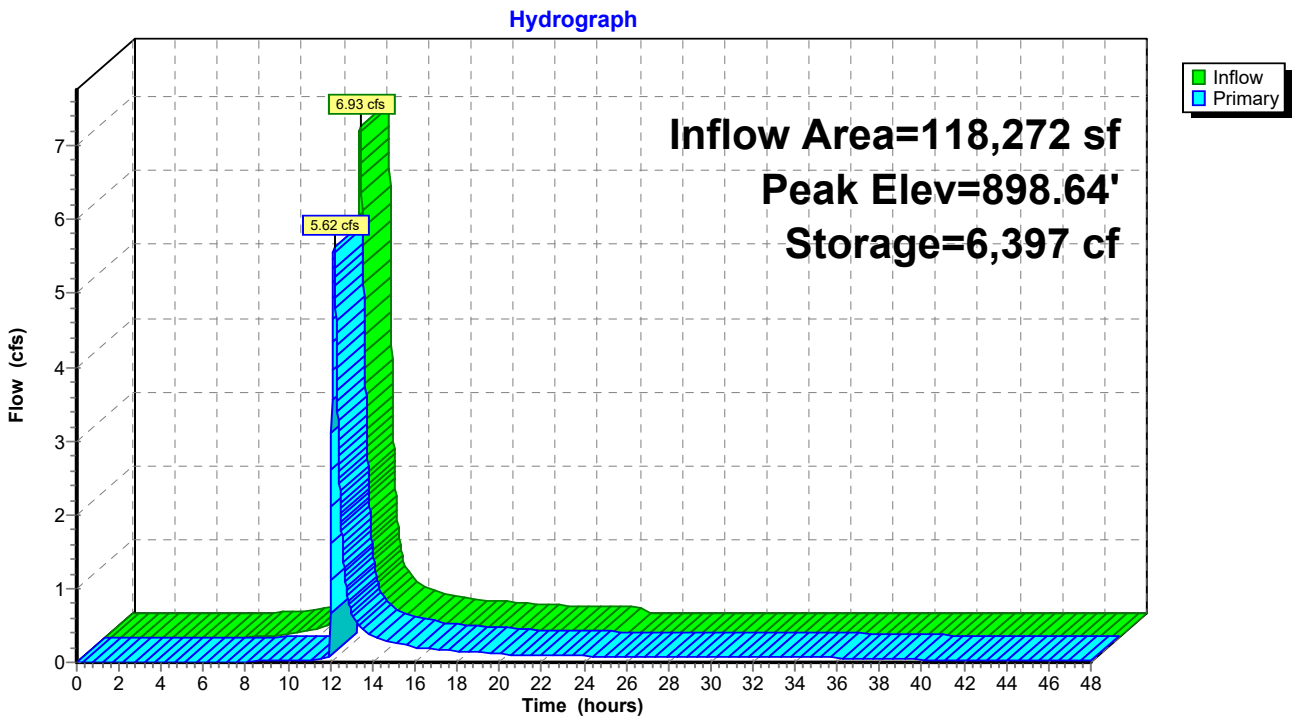
Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
896.62	9	0	0
897.00	944	181	181
898.00	3,517	2,231	2,412
899.00	5,558	4,538	6,949
900.00	11,154	8,356	15,305

Device	Routing	Invert	Outlet Devices
#1	Primary	892.12'	**15.00" Round Culvert** L= 71.2' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 892.12' / 890.79' S= 0.0187 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	892.12'	**1.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	898.20'	**36.00" W x 6.00" H Vert. Window X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.62 cfs @ 12.18 hrs HW=898.64' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 5.62 cfs of 14.23 cfs potential flow)
  ├─**2=Orifice** (Orifice Controls 0.07 cfs @ 12.25 fps)
  └─**3=Window** (Orifice Controls 5.55 cfs @ 2.12 fps)

Pond 9P: DETENTION CB24

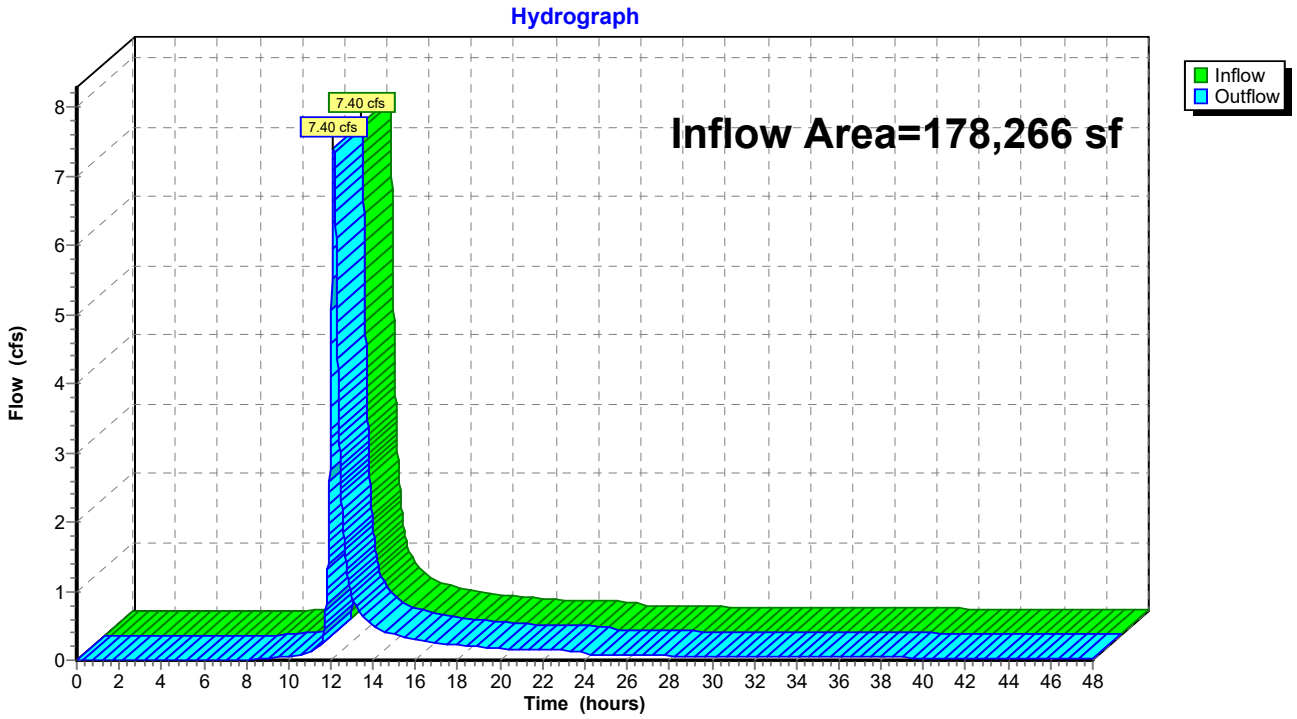


Summary for Reach 10R: POST WEST

Inflow Area = 178,266 sf, 39.55% Impervious, Inflow Depth > 1.96" for 5-Year event
Inflow = 7.40 cfs @ 12.14 hrs, Volume= 29,092 cf
Outflow = 7.40 cfs @ 12.14 hrs, Volume= 29,092 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 10R: POST WEST



Summary for Subcatchment 11S: POST EX6

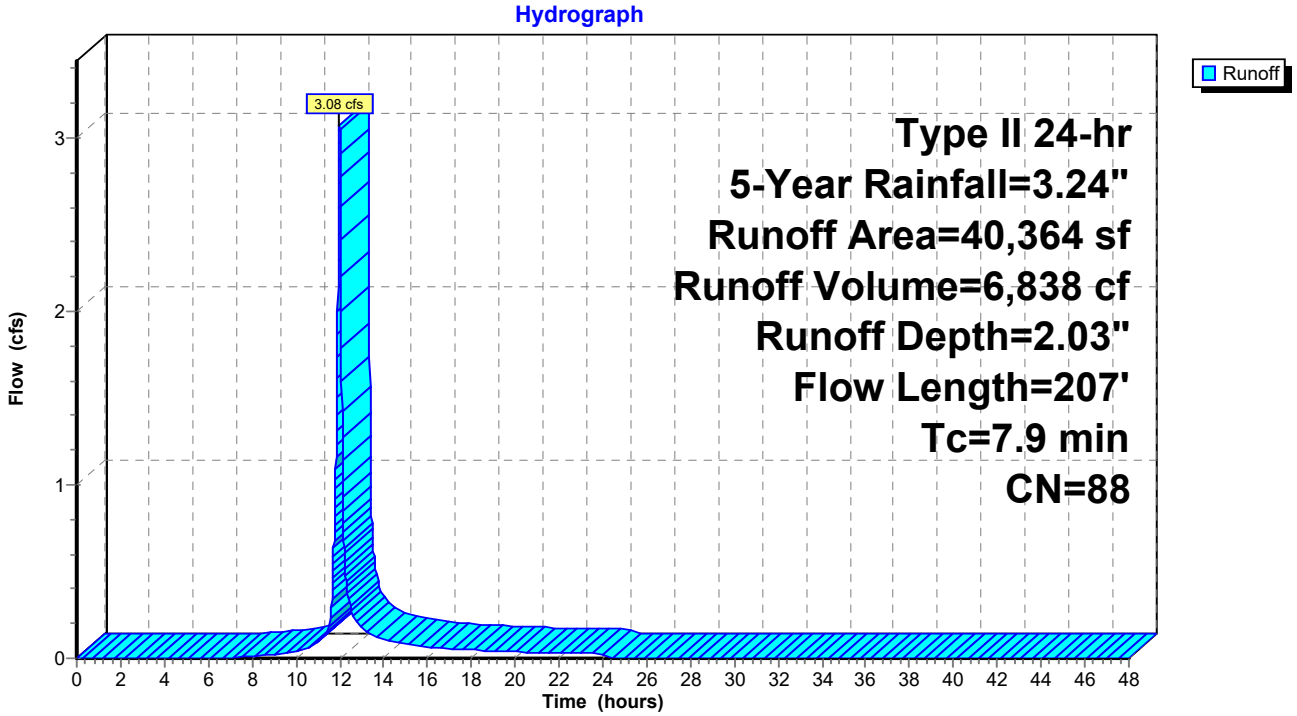
Runoff = 3.08 cfs @ 11.99 hrs, Volume= 6,838 cf, Depth= 2.03"
Routed to Reach 14R : POST EAST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-Year Rainfall=3.24"

Area (sf)	CN	Description
21,901	80	>75% Grass cover, Good, HSG D
18,463	98	Paved parking, HSG D
40,364	88	Weighted Average
21,901		54.26% Pervious Area
18,463		45.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	100	0.0681	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
1.3	107	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.9	207	Total			

Subcatchment 11S: POST EX6



Summary for Subcatchment 12S: POST EX37

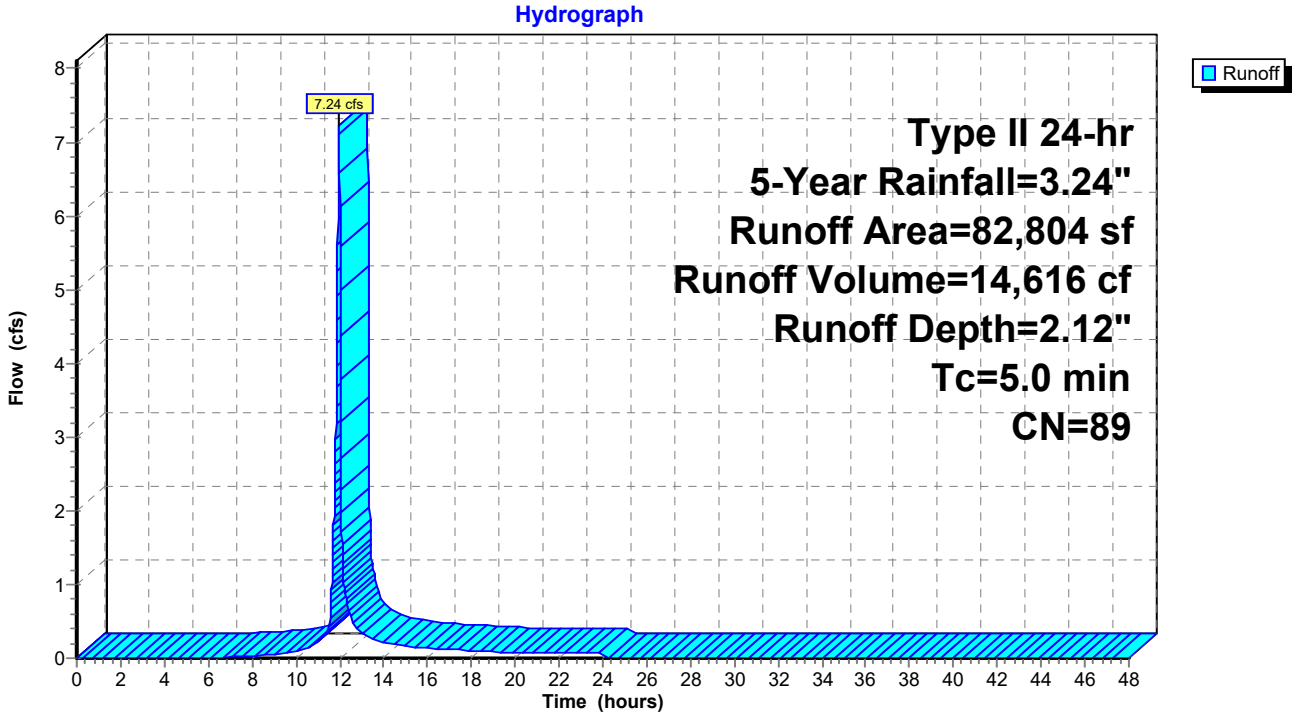
Runoff = 7.24 cfs @ 11.96 hrs, Volume= 14,616 cf, Depth= 2.12"
Routed to Pond 13P : DETENTION CB37

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-Year Rainfall=3.24"

Area (sf)	CN	Description
41,997	80	>75% Grass cover, Good, HSG D
40,807	98	Paved parking, HSG D
82,804	89	Weighted Average
41,997		50.72% Pervious Area
40,807		49.28% Impervious Area

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

Subcatchment 12S: POST EX37



Summary for Pond 13P: DETENTION CB37

Inflow Area = 82,804 sf, 49.28% Impervious, Inflow Depth = 2.12" for 5-Year event
Inflow = 7.24 cfs @ 11.96 hrs, Volume= 14,616 cf
Outflow = 2.08 cfs @ 12.08 hrs, Volume= 14,616 cf, Atten= 71%, Lag= 7.0 min
Primary = 2.08 cfs @ 12.08 hrs, Volume= 14,616 cf
Routed to Reach 14R : POST EAST

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 898.22' @ 12.08 hrs Surf.Area= 3,562 sf Storage= 3,198 cf

Plug-Flow detention time= 7.1 min calculated for 14,612 cf (100% of inflow)
Center-of-Mass det. time= 7.1 min (813.7 - 806.6)

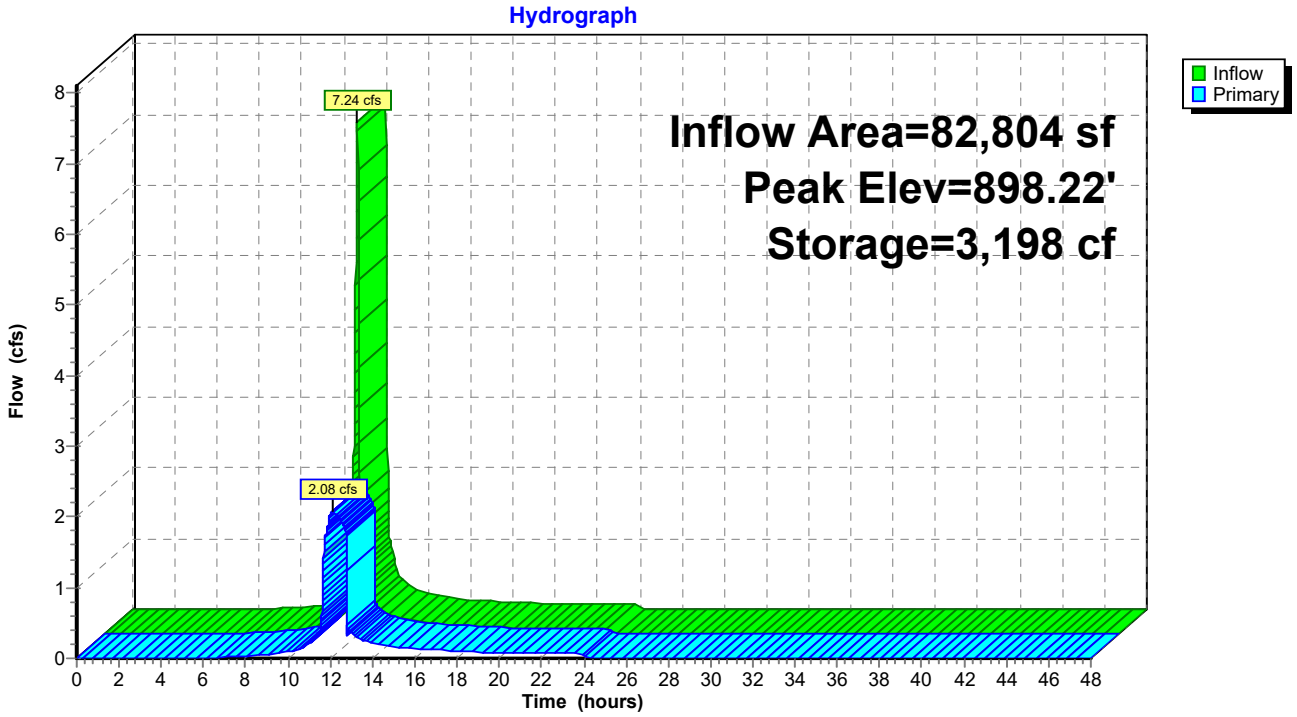
Volume	Invert	Avail.Storage	Storage Description
#1	893.40'	13,925 cf	**Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
893.40	9	0	0
896.60	9	29	29
897.00	1,110	224	253
898.00	3,258	2,184	2,437
899.00	4,617	3,938	6,374
900.00	10,484	7,551	13,925

Device	Routing	Invert	Outlet Devices
#1	Primary	893.40'	**18.00" Round Culvert** L= 104.4' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 893.40' / 891.88' S= 0.0146 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	843.40'	**6.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.08 cfs @ 12.08 hrs HW=898.22' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 2.08 cfs of 16.90 cfs potential flow)
└─**2=Orifice** (Orifice Controls 2.08 cfs @ 10.57 fps)

Pond 13P: DETENTION CB37

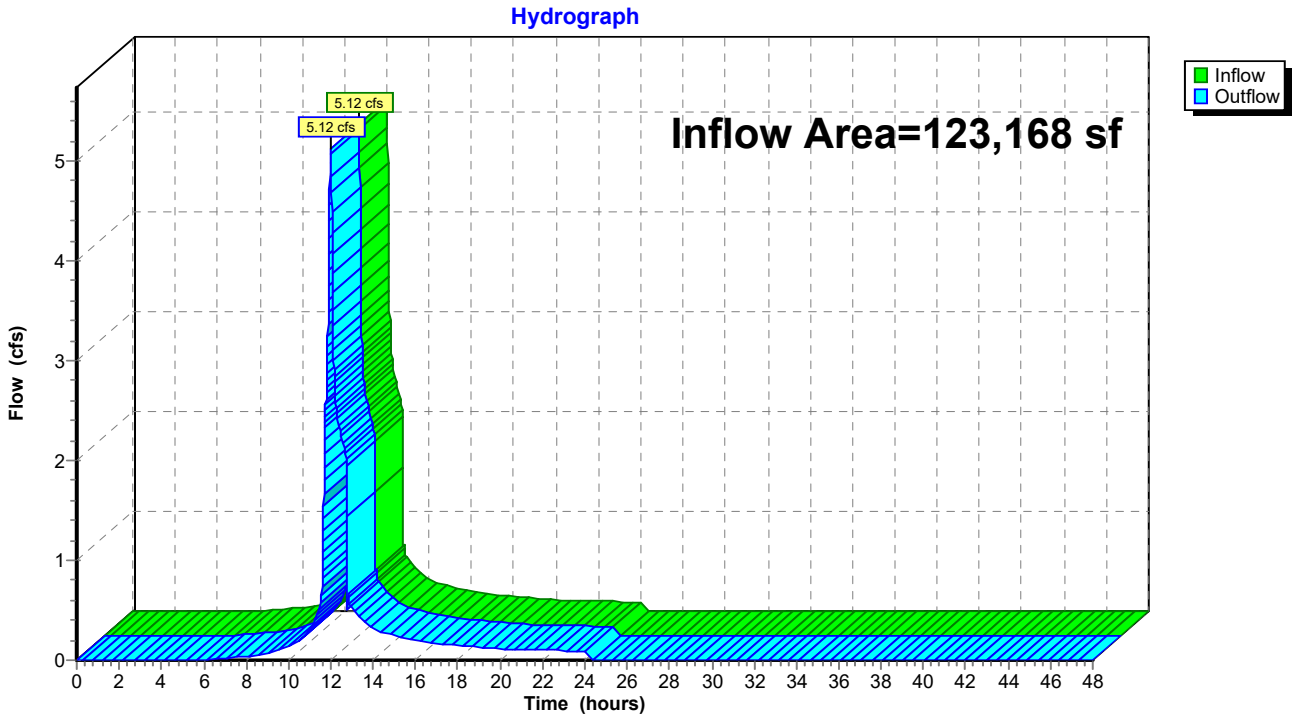


Summary for Reach 14R: POST EAST

Inflow Area = 123,168 sf, 48.12% Impervious, Inflow Depth = 2.09" for 5-Year event
Inflow = 5.12 cfs @ 12.00 hrs, Volume= 21,454 cf
Outflow = 5.12 cfs @ 12.00 hrs, Volume= 21,454 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 14R: POST EAST



Summary for Subcatchment 1S: PRE EX4

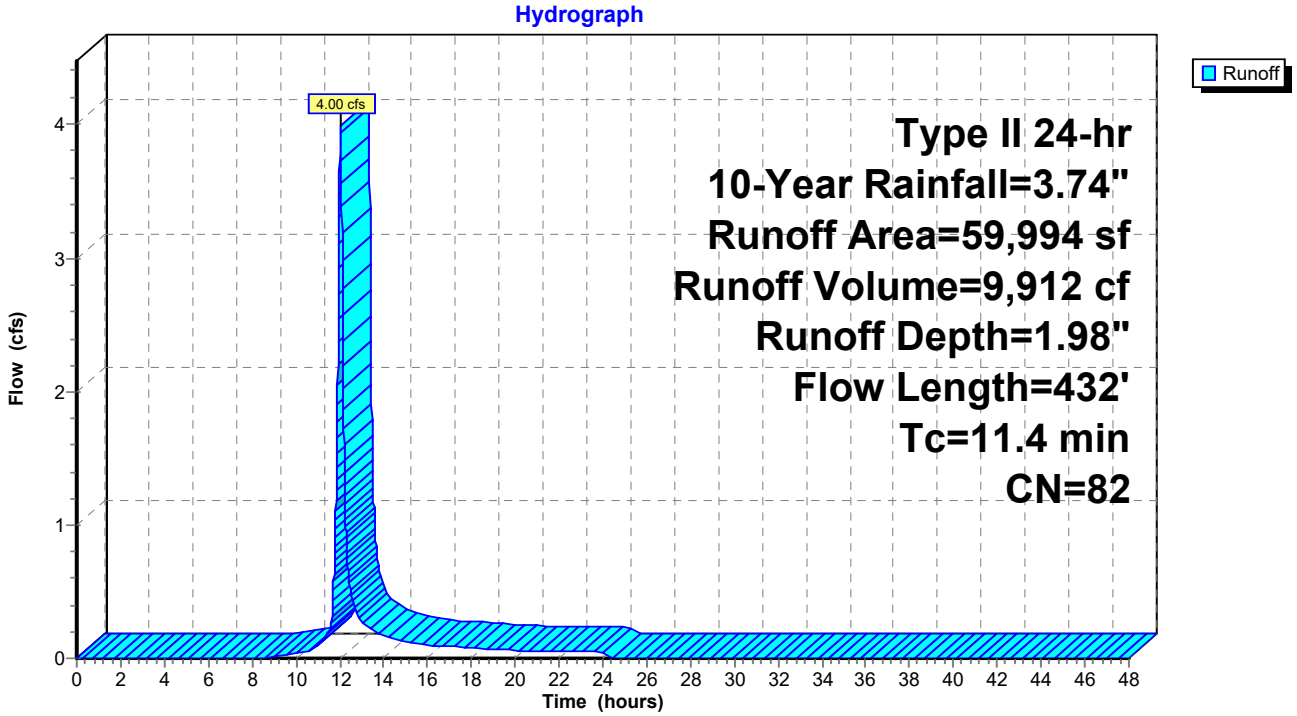
Runoff = 4.00 cfs @ 12.03 hrs, Volume= 9,912 cf, Depth= 1.98"
Routed to Reach 3R : PRE WEST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Year Rainfall=3.74"

Area (sf)	CN	Description
53,090	80	>75% Grass cover, Good, HSG D
6,904	98	Paved parking, HSG D
59,994	82	Weighted Average
53,090		88.49% Pervious Area
6,904		11.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.0700	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
4.9	332	0.0265	1.14		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.4	432	Total			

Subcatchment 1S: PRE EX4



Summary for Subcatchment 2S: PRE EX24

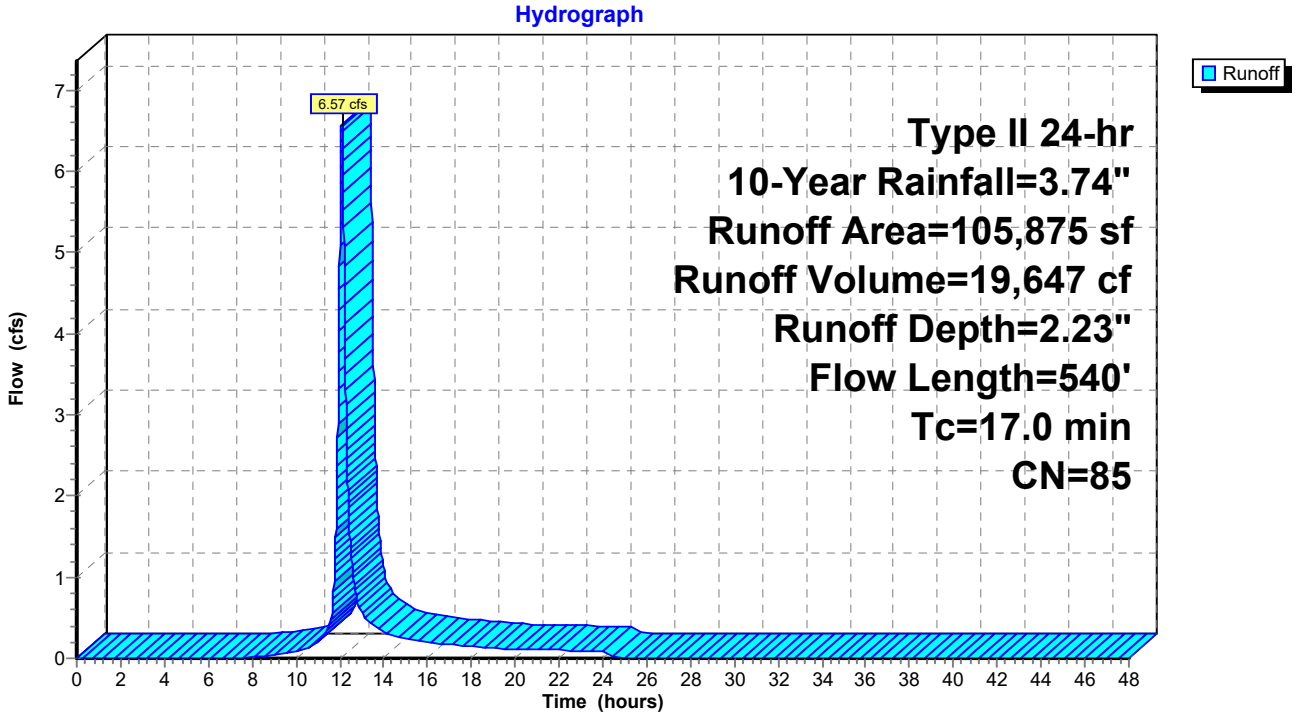
Runoff = 6.57 cfs @ 12.09 hrs, Volume= 19,647 cf, Depth= 2.23"
Routed to Reach 3R : PRE WEST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Year Rainfall=3.74"

Area (sf)	CN	Description
76,614	80	>75% Grass cover, Good, HSG D
29,261	98	Paved parking, HSG D
105,875	85	Weighted Average
76,614		72.36% Pervious Area
29,261		27.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	100	0.0181	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
5.8	440	0.0330	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.0	540	Total			

Subcatchment 2S: PRE EX24

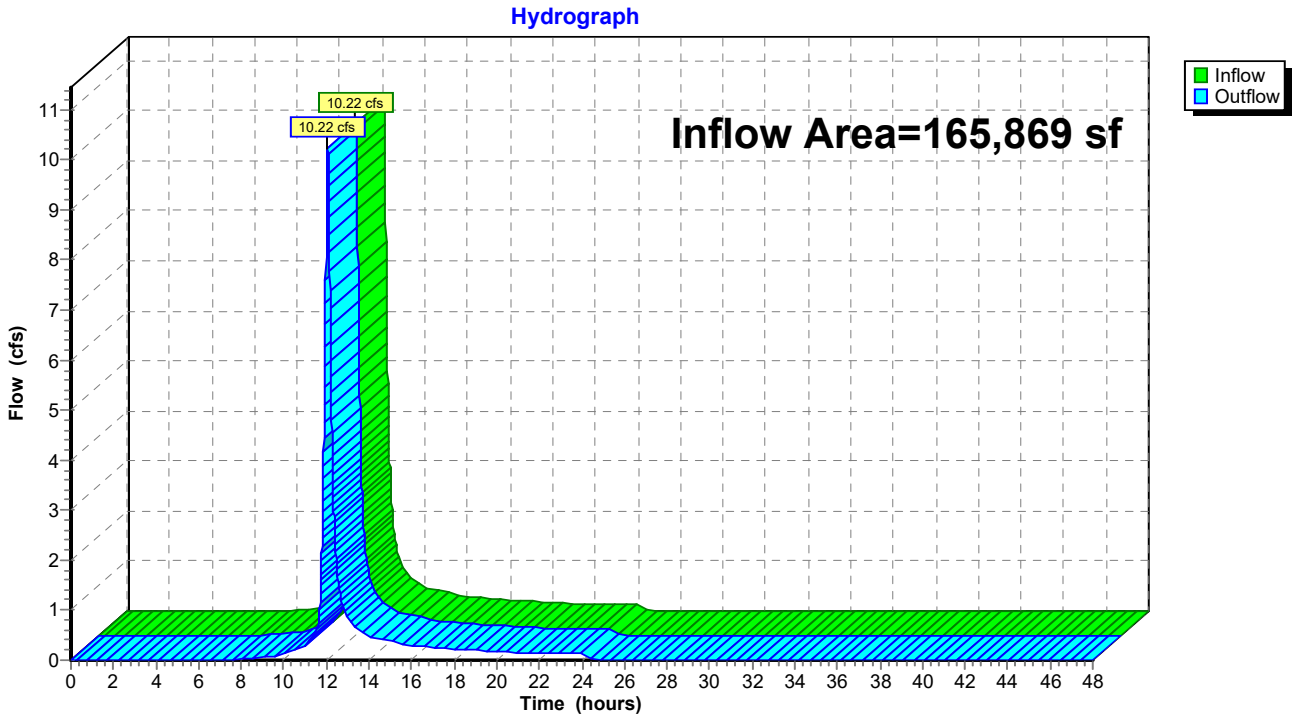


Summary for Reach 3R: PRE WEST

Inflow Area = 165,869 sf, 21.80% Impervious, Inflow Depth = 2.14" for 10-Year event
Inflow = 10.22 cfs @ 12.06 hrs, Volume= 29,559 cf
Outflow = 10.22 cfs @ 12.06 hrs, Volume= 29,559 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 3R: PRE WEST



Summary for Subcatchment 4S: PRE EX6

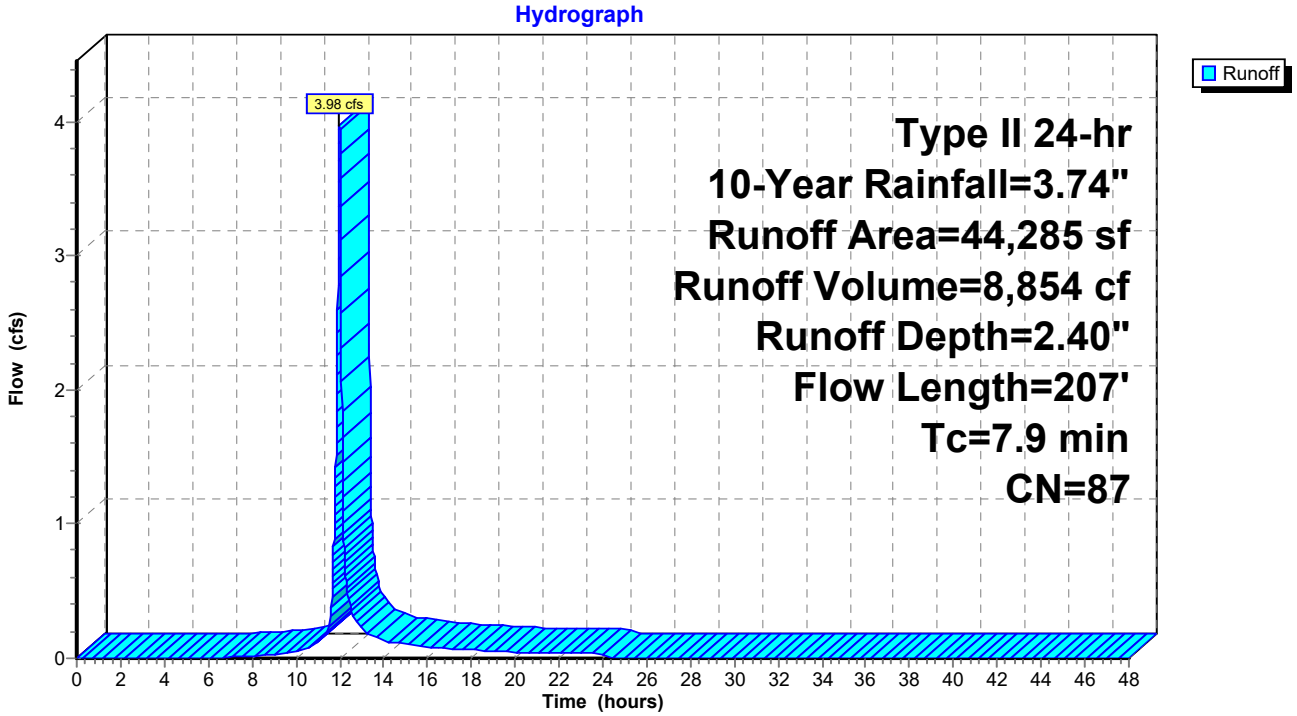
Runoff = 3.98 cfs @ 11.99 hrs, Volume= 8,854 cf, Depth= 2.40"
Routed to Reach 6R : PRE EAST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Year Rainfall=3.74"

Area (sf)	CN	Description
27,617	80	>75% Grass cover, Good, HSG D
16,668	98	Paved parking, HSG D
44,285	87	Weighted Average
27,617		62.36% Pervious Area
16,668		37.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	100	0.0681	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
1.3	107	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.9	207	Total			

Subcatchment 4S: PRE EX6



Summary for Subcatchment 5S: PRE EX37

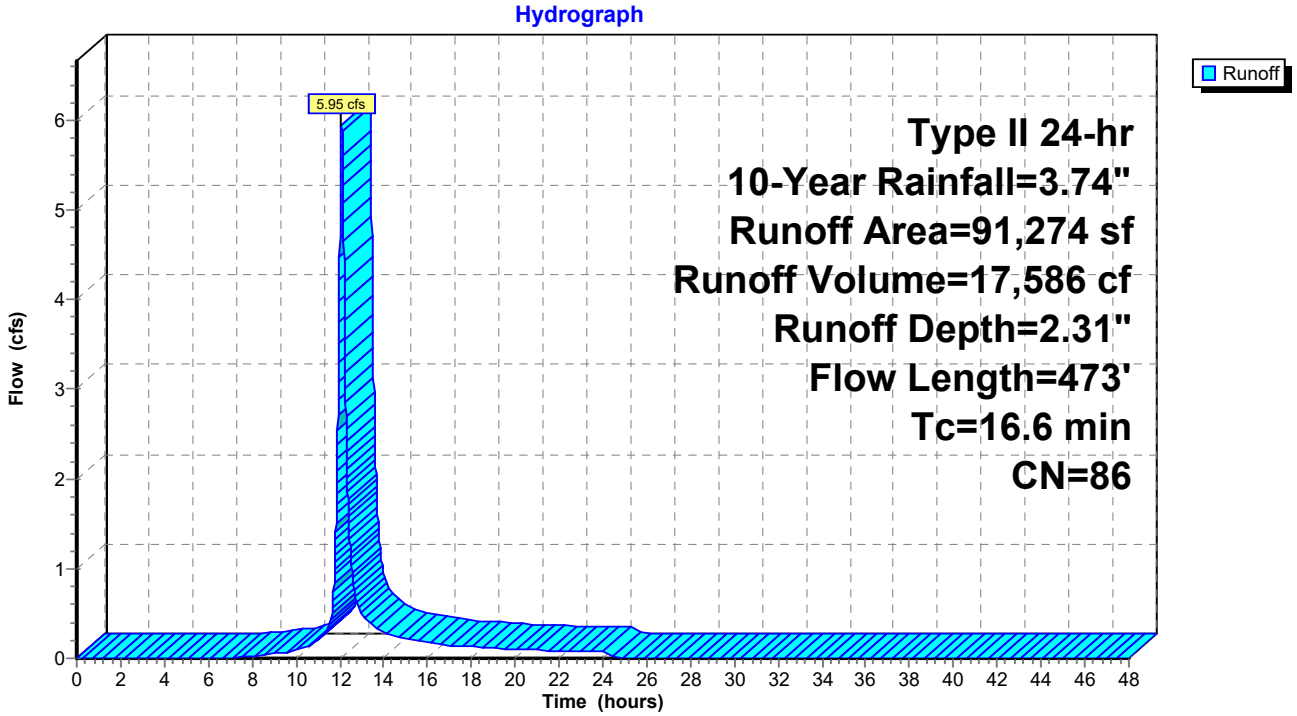
Runoff = 5.95 cfs @ 12.08 hrs, Volume= 17,586 cf, Depth= 2.31"
Routed to Reach 6R : PRE EAST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Year Rainfall=3.74"

Area (sf)	CN	Description
59,996	80	>75% Grass cover, Good, HSG D
31,278	98	Paved parking, HSG D
91,274	86	Weighted Average
59,996		65.73% Pervious Area
31,278		34.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0	100	0.0154	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
4.6	373	0.0366	1.34		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
16.6	473	Total			

Subcatchment 5S: PRE EX37

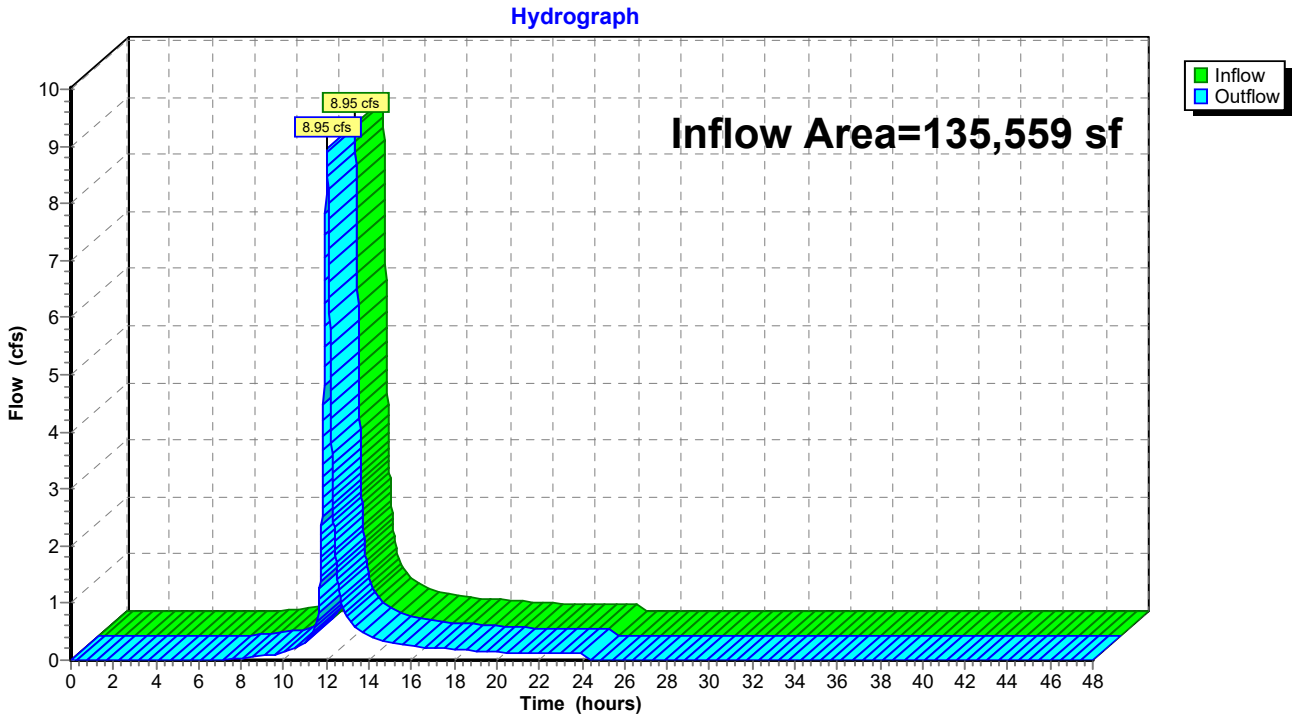


Summary for Reach 6R: PRE EAST

Inflow Area = 135,559 sf, 35.37% Impervious, Inflow Depth = 2.34" for 10-Year event
Inflow = 8.95 cfs @ 12.03 hrs, Volume= 26,440 cf
Outflow = 8.95 cfs @ 12.03 hrs, Volume= 26,440 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 6R: PRE EAST



Summary for Subcatchment 7S: POST EX4

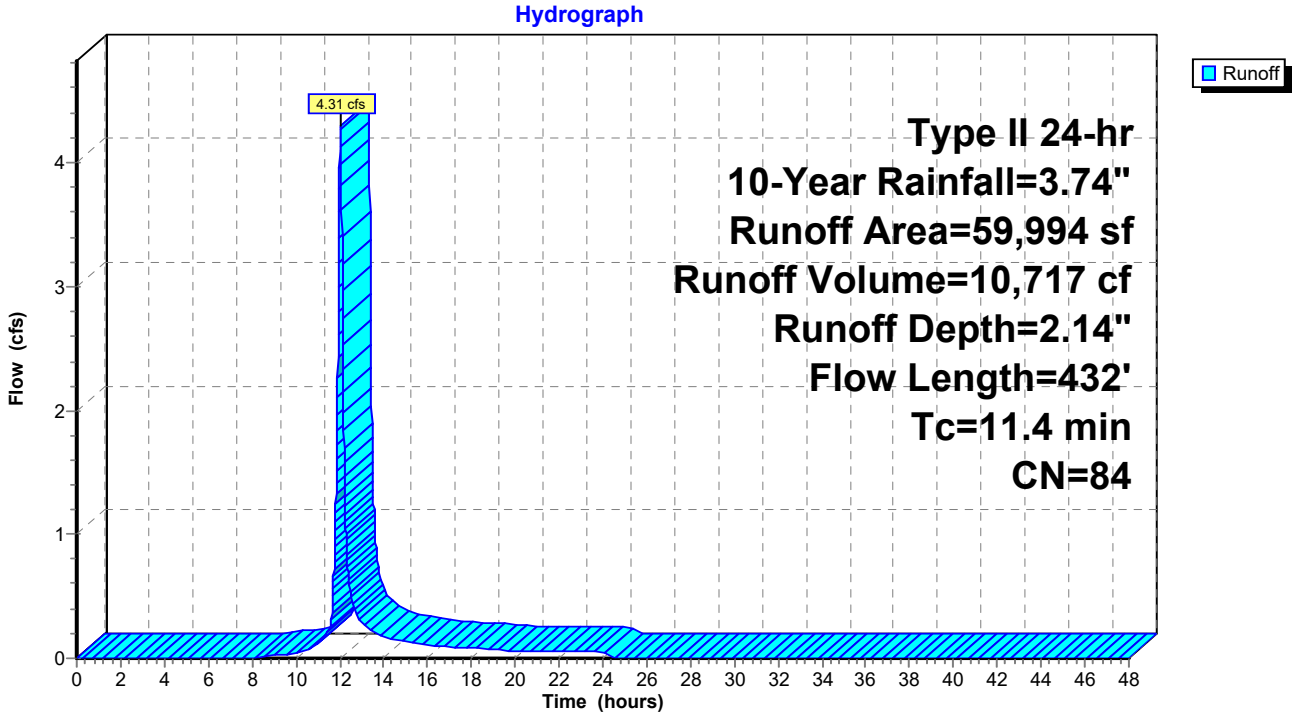
Runoff = 4.31 cfs @ 12.03 hrs, Volume= 10,717 cf, Depth= 2.14"
Routed to Reach 10R : POST WEST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Year Rainfall=3.74"

Area (sf)	CN	Description
47,032	80	>75% Grass cover, Good, HSG D
12,962	98	Paved parking, HSG D
59,994	84	Weighted Average
47,032		78.39% Pervious Area
12,962		21.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.0700	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
4.9	332	0.0265	1.14		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.4	432	Total			

Subcatchment 7S: POST EX4



Summary for Subcatchment 8S: POST EX24

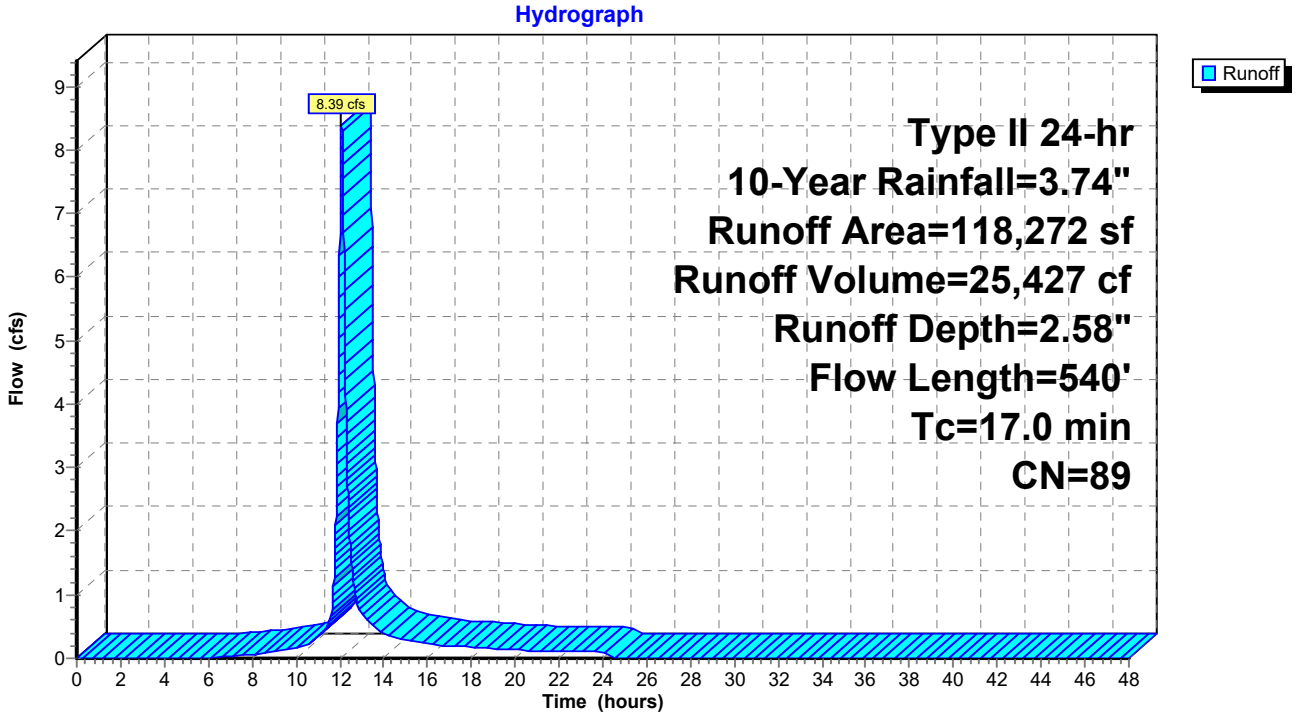
Runoff = 8.39 cfs @ 12.09 hrs, Volume= 25,427 cf, Depth= 2.58"
Routed to Pond 9P : DETENTION CB24

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Year Rainfall=3.74"

Area (sf)	CN	Description
60,730	80	>75% Grass cover, Good, HSG D
57,542	98	Paved parking, HSG D
118,272	89	Weighted Average
60,730		51.35% Pervious Area
57,542		48.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	100	0.0181	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
5.8	440	0.0330	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.0	540	Total			

Subcatchment 8S: POST EX24



Summary for Pond 9P: DETENTION CB24

Inflow Area = 118,272 sf, 48.65% Impervious, Inflow Depth = 2.58" for 10-Year event
Inflow = 8.39 cfs @ 12.09 hrs, Volume= 25,427 cf
Outflow = 7.32 cfs @ 12.16 hrs, Volume= 25,060 cf, Atten= 13%, Lag= 4.2 min
Primary = 7.32 cfs @ 12.16 hrs, Volume= 25,060 cf
Routed to Reach 10R : POST WEST

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 898.73' @ 12.16 hrs Surf.Area= 6,137 sf Storage= 6,832 cf

Plug-Flow detention time= 246.2 min calculated for 25,055 cf (99% of inflow)
Center-of-Mass det. time= 237.5 min (1,049.6 - 812.1)

Volume	Invert	Avail.Storage	Storage Description
#1	896.62'	15,305 cf	**Storage (Prismatic)**Listed below (Recalc)
#2A	892.12'	715 cf	**21.50'W x 53.04'L x 2.33'H Field A** 2,661 cf Overall - 619 cf Embedded = 2,042 cf x 35.0% Voids
#3A	892.62'	619 cf	**ADS_StormTech RC-310 +Cap**x 42 Inside #2 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 42 Chambers in 6 Rows
		16,639 cf	Total Available Storage

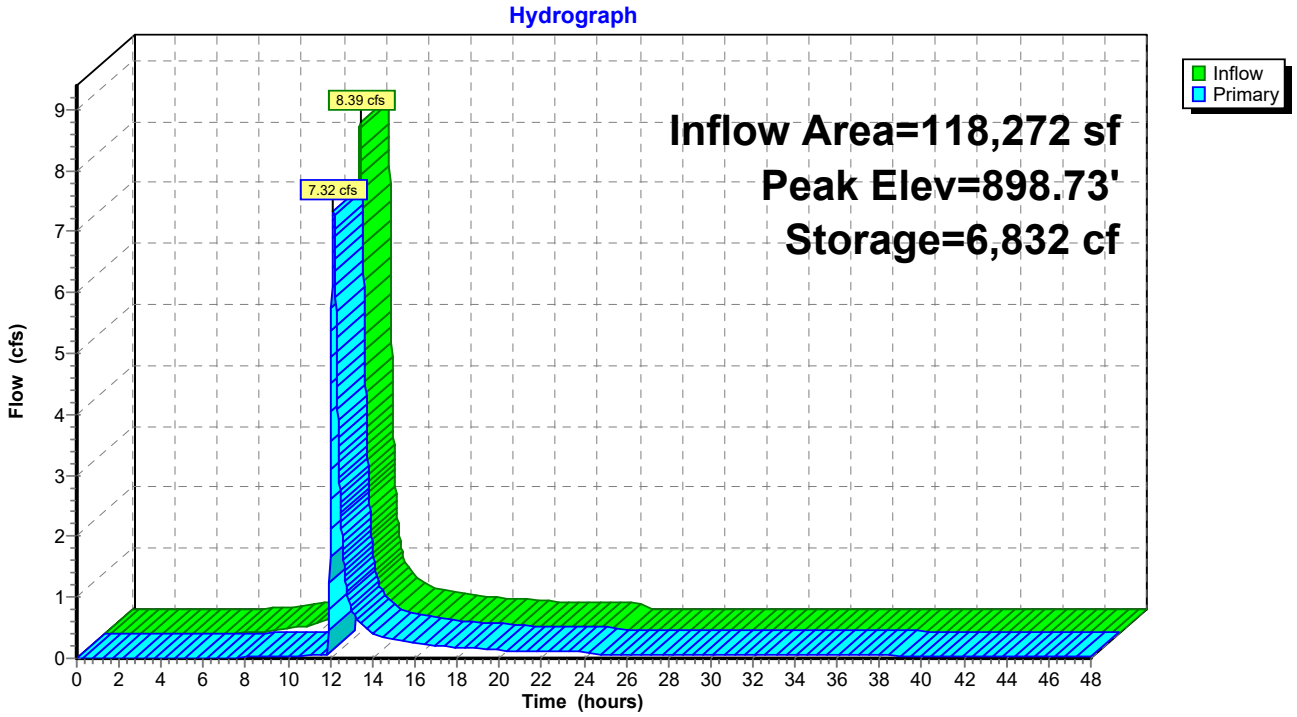
Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
896.62	9	0	0
897.00	944	181	181
898.00	3,517	2,231	2,412
899.00	5,558	4,538	6,949
900.00	11,154	8,356	15,305

Device	Routing	Invert	Outlet Devices
#1	Primary	892.12'	**15.00" Round Culvert** L= 71.2' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 892.12' / 890.79' S= 0.0187 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	892.12'	**1.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	898.20'	**36.00" W x 6.00" H Vert. Window X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=7.32 cfs @ 12.16 hrs HW=898.72' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 7.32 cfs of 14.32 cfs potential flow)
  ├─**2=Orifice** (Orifice Controls 0.07 cfs @ 12.34 fps)
  └─**3=Window** (Orifice Controls 7.25 cfs @ 2.42 fps)

Pond 9P: DETENTION CB24

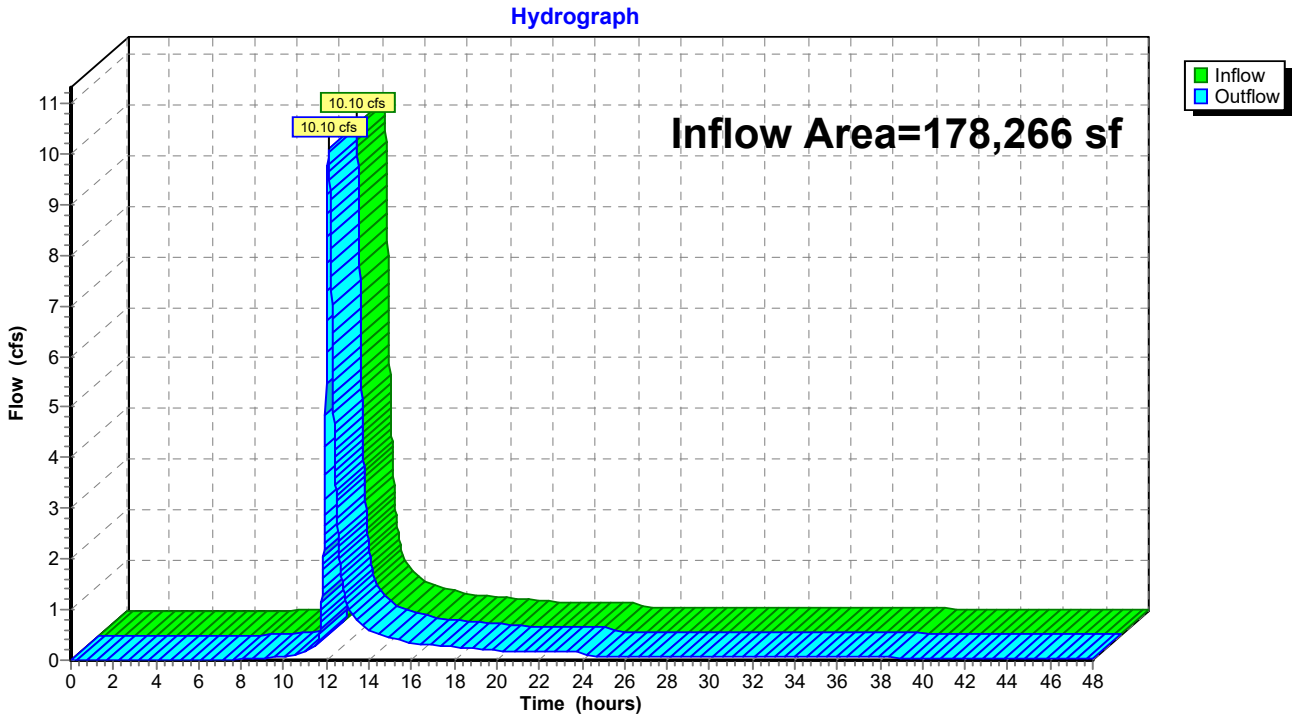


Summary for Reach 10R: POST WEST

Inflow Area = 178,266 sf, 39.55% Impervious, Inflow Depth > 2.41" for 10-Year event
Inflow = 10.10 cfs @ 12.11 hrs, Volume= 35,777 cf
Outflow = 10.10 cfs @ 12.11 hrs, Volume= 35,777 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 10R: POST WEST



Summary for Subcatchment 11S: POST EX6

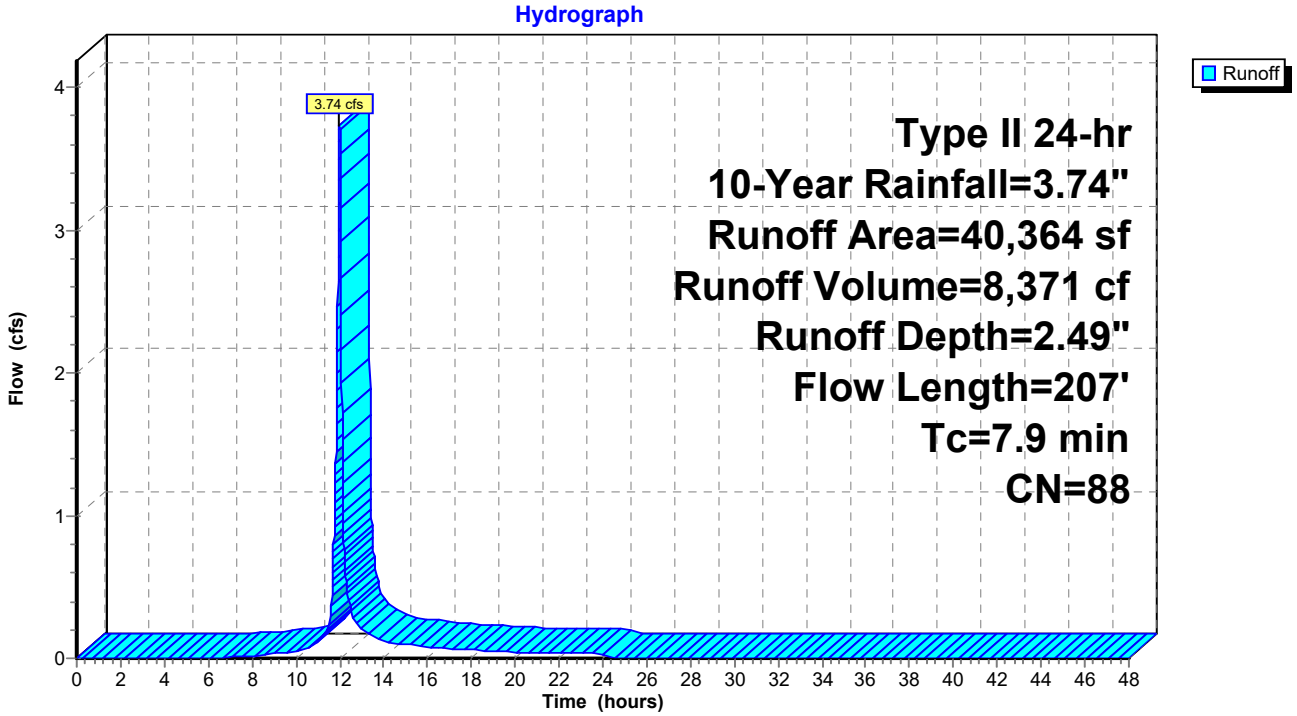
Runoff = 3.74 cfs @ 11.99 hrs, Volume= 8,371 cf, Depth= 2.49"
Routed to Reach 14R : POST EAST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Year Rainfall=3.74"

Area (sf)	CN	Description
21,901	80	>75% Grass cover, Good, HSG D
18,463	98	Paved parking, HSG D
40,364	88	Weighted Average
21,901		54.26% Pervious Area
18,463		45.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	100	0.0681	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
1.3	107	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.9	207	Total			

Subcatchment 11S: POST EX6



Summary for Subcatchment 12S: POST EX37

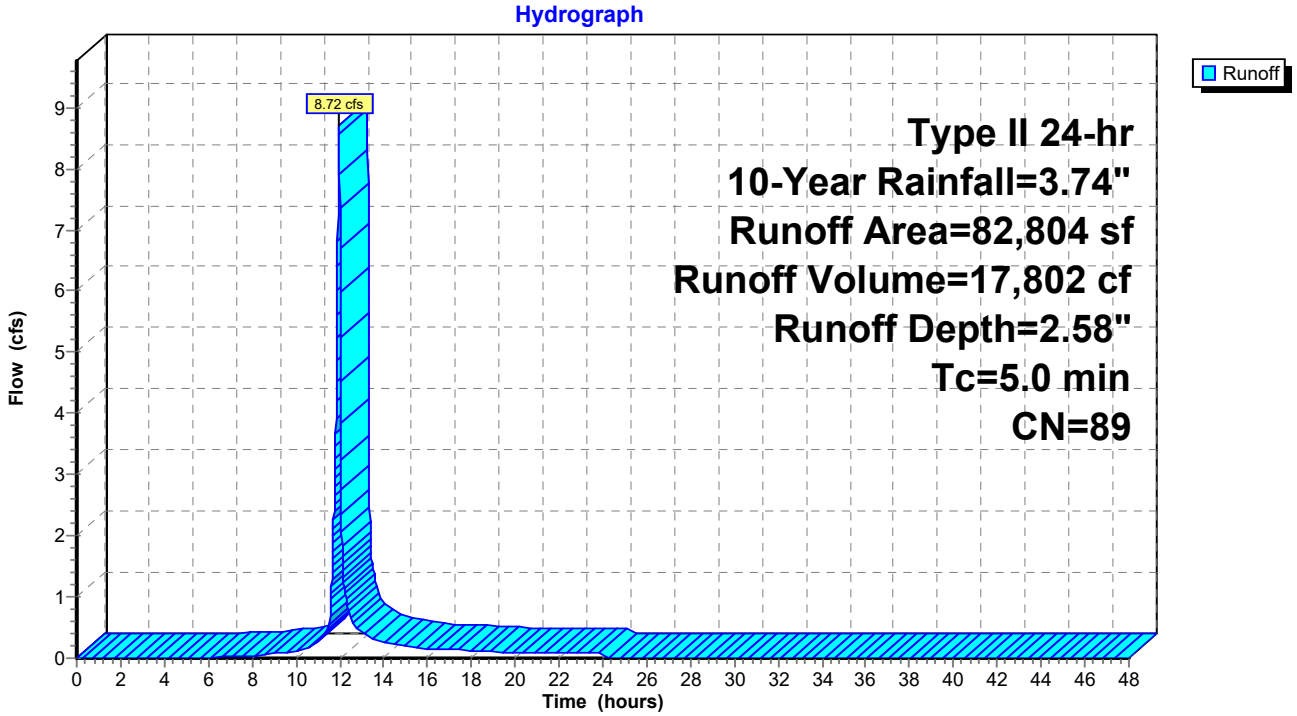
Runoff = 8.72 cfs @ 11.96 hrs, Volume= 17,802 cf, Depth= 2.58"
Routed to Pond 13P : DETENTION CB37

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Year Rainfall=3.74"

Area (sf)	CN	Description
41,997	80	>75% Grass cover, Good, HSG D
40,807	98	Paved parking, HSG D
82,804	89	Weighted Average
41,997		50.72% Pervious Area
40,807		49.28% Impervious Area

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

Subcatchment 12S: POST EX37



Summary for Pond 13P: DETENTION CB37

Inflow Area = 82,804 sf, 49.28% Impervious, Inflow Depth = 2.58" for 10-Year event
Inflow = 8.72 cfs @ 11.96 hrs, Volume= 17,802 cf
Outflow = 2.14 cfs @ 12.09 hrs, Volume= 17,802 cf, Atten= 75%, Lag= 7.7 min
Primary = 2.14 cfs @ 12.09 hrs, Volume= 17,802 cf
Routed to Reach 14R : POST EAST

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 898.54' @ 12.09 hrs Surf.Area= 3,986 sf Storage= 4,378 cf

Plug-Flow detention time= 10.3 min calculated for 17,802 cf (100% of inflow)
Center-of-Mass det. time= 10.1 min (811.1 - 801.0)

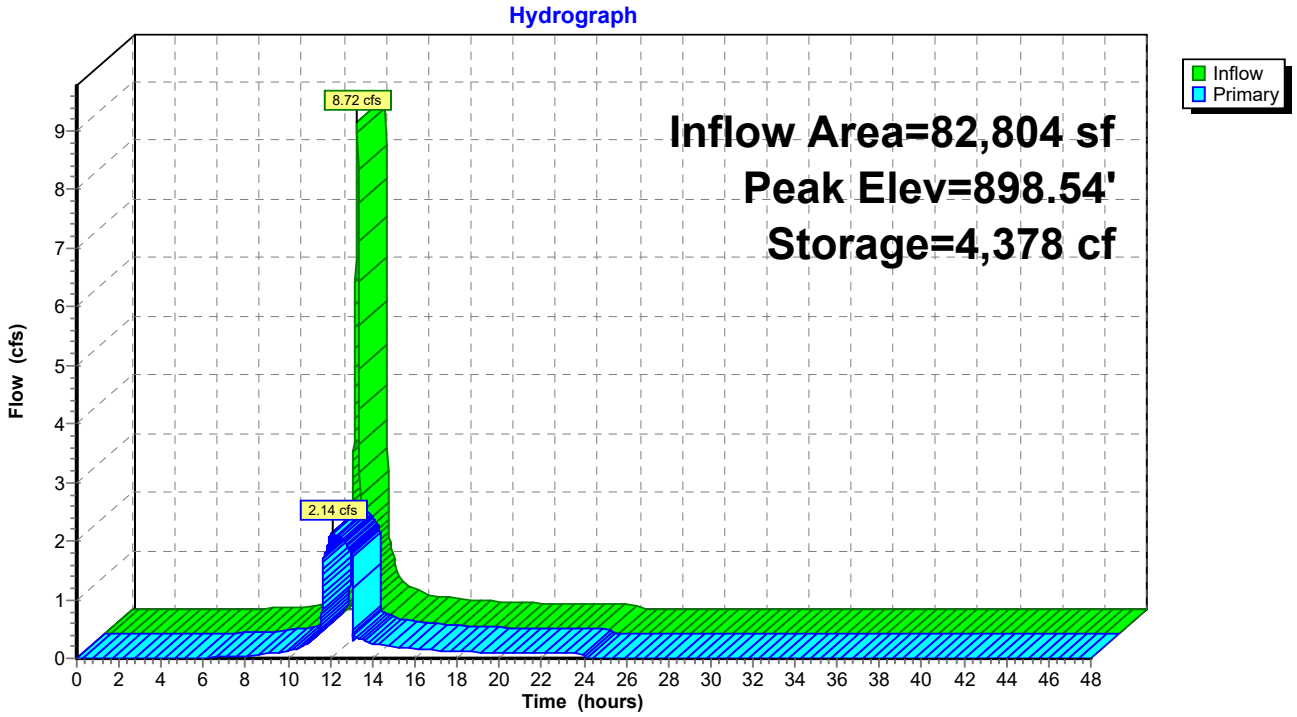
Volume	Invert	Avail.Storage	Storage Description
#1	893.40'	13,925 cf	**Storage (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
893.40	9	0	0
896.60	9	29	29
897.00	1,110	224	253
898.00	3,258	2,184	2,437
899.00	4,617	3,938	6,374
900.00	10,484	7,551	13,925

Device	Routing	Invert	Outlet Devices
#1	Primary	893.40'	**18.00" Round Culvert** L= 104.4' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 893.40' / 891.88' S= 0.0146 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	843.40'	**6.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.14 cfs @ 12.09 hrs HW=898.54' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 2.14 cfs of 17.44 cfs potential flow)
└─**2=Orifice** (Orifice Controls 2.14 cfs @ 10.91 fps)

Pond 13P: DETENTION CB37

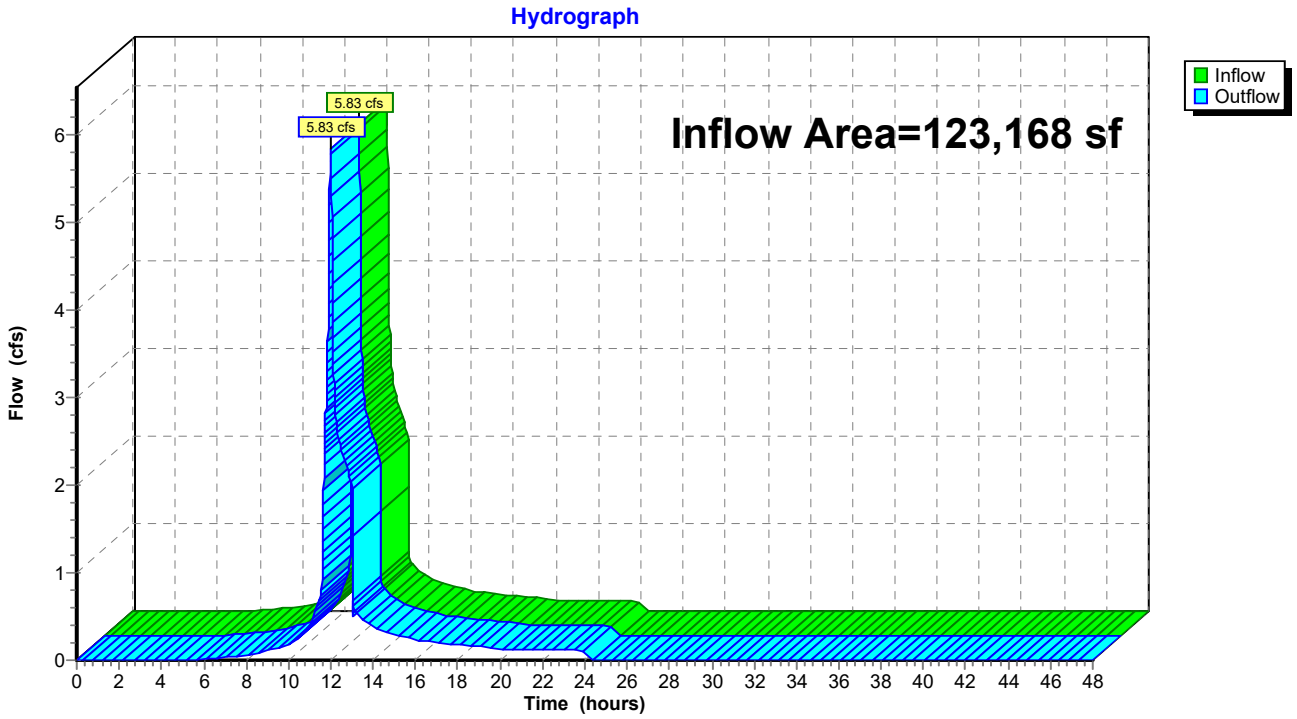


Summary for Reach 14R: POST EAST

Inflow Area = 123,168 sf, 48.12% Impervious, Inflow Depth = 2.55" for 10-Year event
Inflow = 5.83 cfs @ 11.99 hrs, Volume= 26,173 cf
Outflow = 5.83 cfs @ 11.99 hrs, Volume= 26,173 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 14R: POST EAST



Summary for Subcatchment 1S: PRE EX4

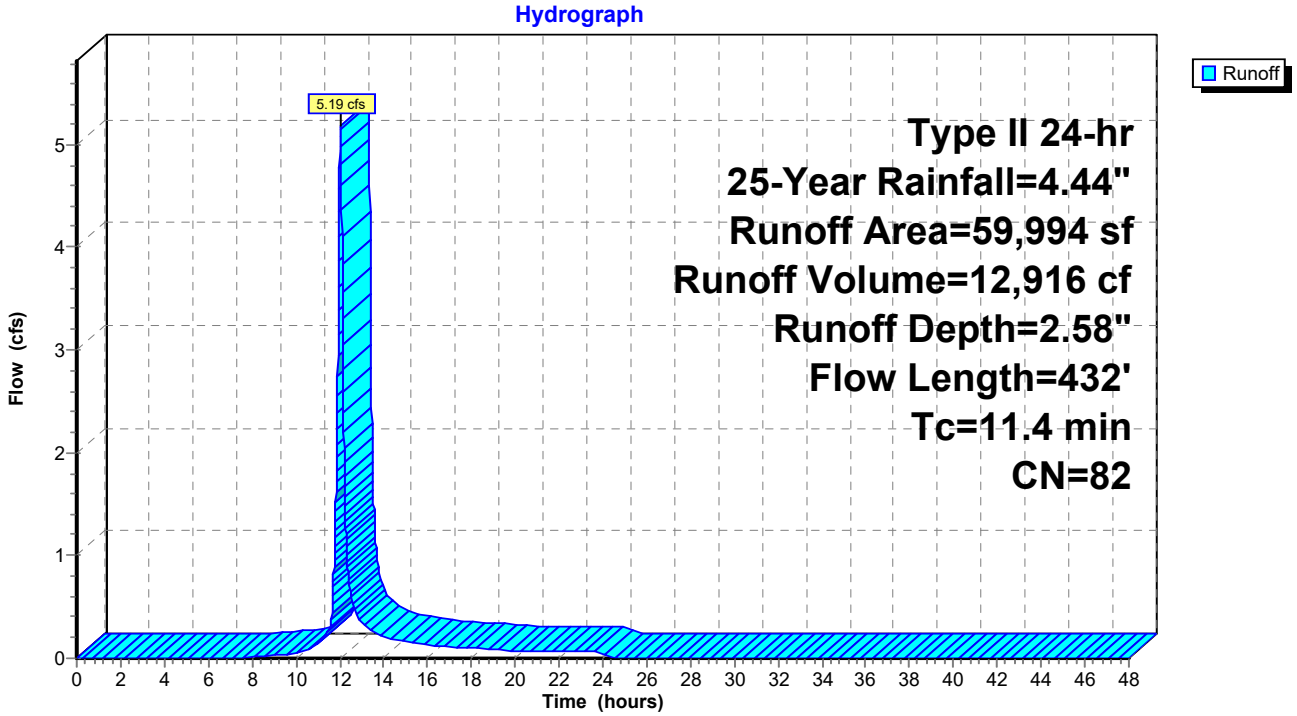
Runoff = 5.19 cfs @ 12.03 hrs, Volume= 12,916 cf, Depth= 2.58"
Routed to Reach 3R : PRE WEST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-Year Rainfall=4.44"

Area (sf)	CN	Description
53,090	80	>75% Grass cover, Good, HSG D
6,904	98	Paved parking, HSG D
59,994	82	Weighted Average
53,090		88.49% Pervious Area
6,904		11.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.0700	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
4.9	332	0.0265	1.14		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.4	432	Total			

Subcatchment 1S: PRE EX4



Summary for Subcatchment 2S: PRE EX24

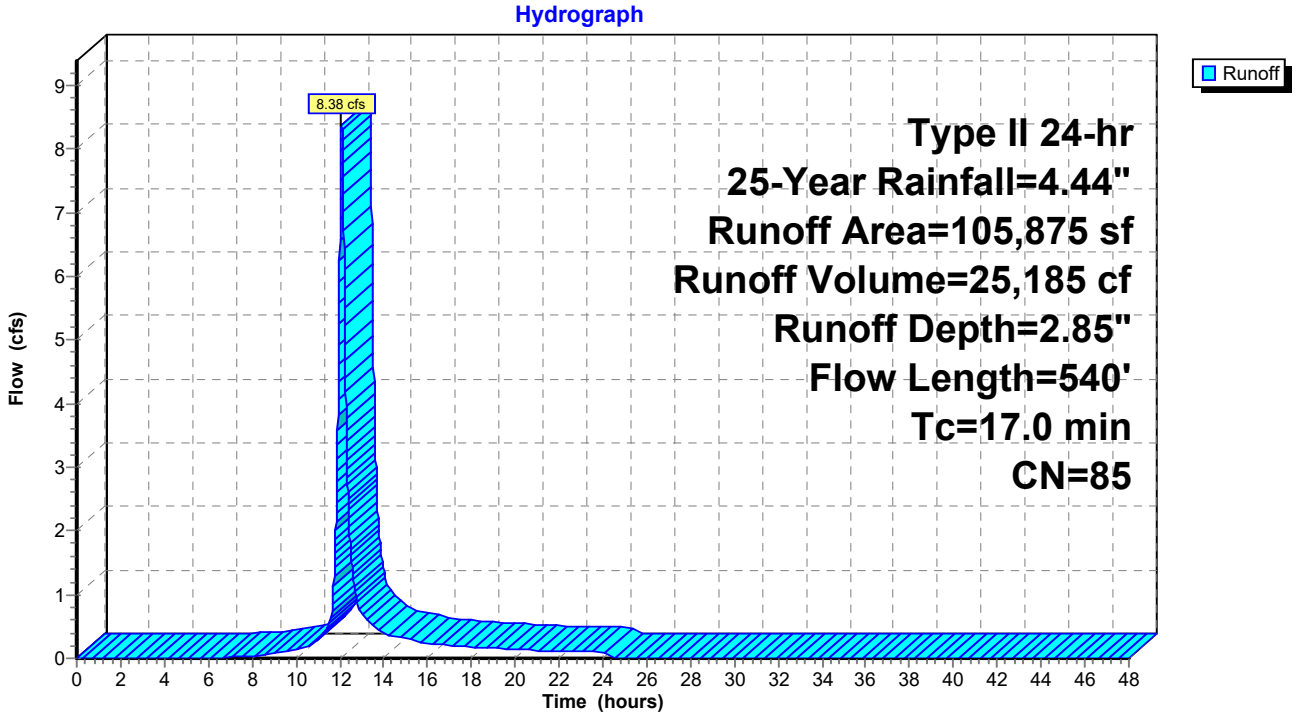
Runoff = 8.38 cfs @ 12.09 hrs, Volume= 25,185 cf, Depth= 2.85"
Routed to Reach 3R : PRE WEST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-Year Rainfall=4.44"

Area (sf)	CN	Description
76,614	80	>75% Grass cover, Good, HSG D
29,261	98	Paved parking, HSG D
105,875	85	Weighted Average
76,614		72.36% Pervious Area
29,261		27.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	100	0.0181	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
5.8	440	0.0330	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.0	540	Total			

Subcatchment 2S: PRE EX24

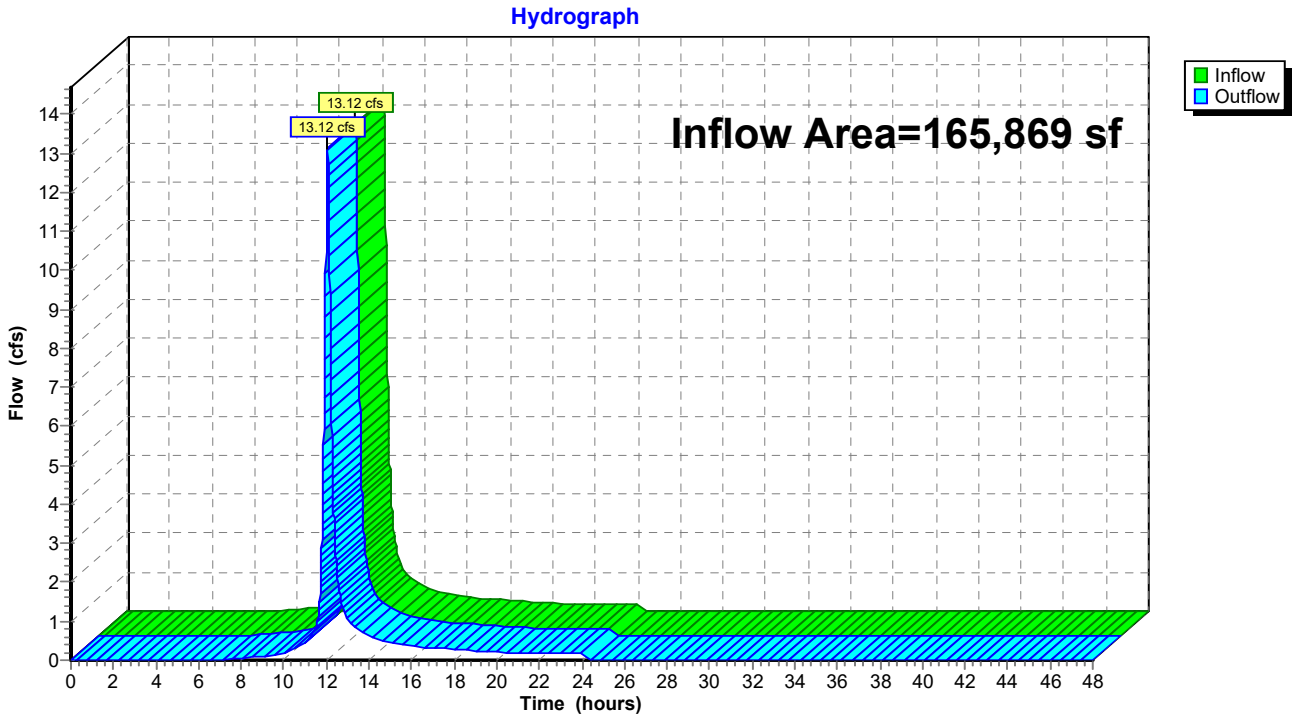


Summary for Reach 3R: PRE WEST

Inflow Area = 165,869 sf, 21.80% Impervious, Inflow Depth = 2.76" for 25-Year event
Inflow = 13.12 cfs @ 12.06 hrs, Volume= 38,102 cf
Outflow = 13.12 cfs @ 12.06 hrs, Volume= 38,102 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 3R: PRE WEST



Summary for Subcatchment 4S: PRE EX6

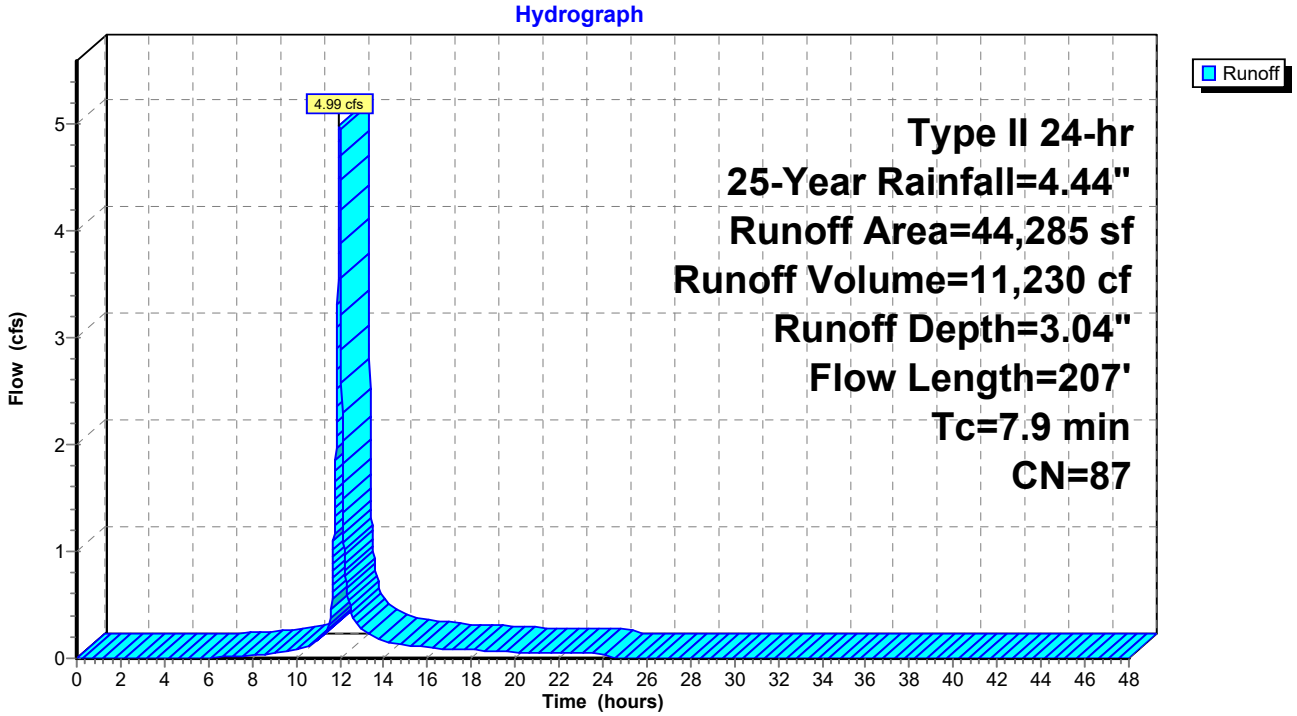
Runoff = 4.99 cfs @ 11.99 hrs, Volume= 11,230 cf, Depth= 3.04"
Routed to Reach 6R : PRE EAST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-Year Rainfall=4.44"

Area (sf)	CN	Description
27,617	80	>75% Grass cover, Good, HSG D
16,668	98	Paved parking, HSG D
44,285	87	Weighted Average
27,617		62.36% Pervious Area
16,668		37.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	100	0.0681	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
1.3	107	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.9	207	Total			

Subcatchment 4S: PRE EX6



Summary for Subcatchment 5S: PRE EX37

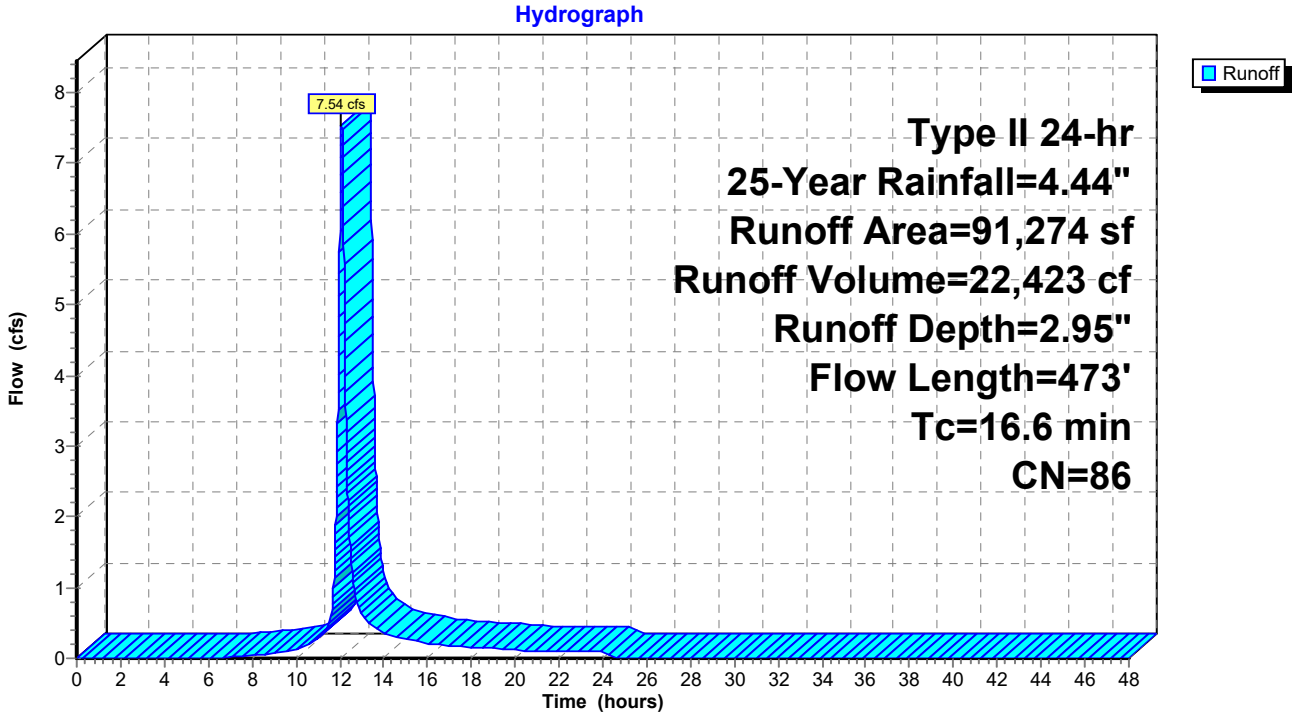
Runoff = 7.54 cfs @ 12.08 hrs, Volume= 22,423 cf, Depth= 2.95"
Routed to Reach 6R : PRE EAST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-Year Rainfall=4.44"

Area (sf)	CN	Description
59,996	80	>75% Grass cover, Good, HSG D
31,278	98	Paved parking, HSG D
91,274	86	Weighted Average
59,996		65.73% Pervious Area
31,278		34.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0	100	0.0154	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
4.6	373	0.0366	1.34		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
16.6	473	Total			

Subcatchment 5S: PRE EX37

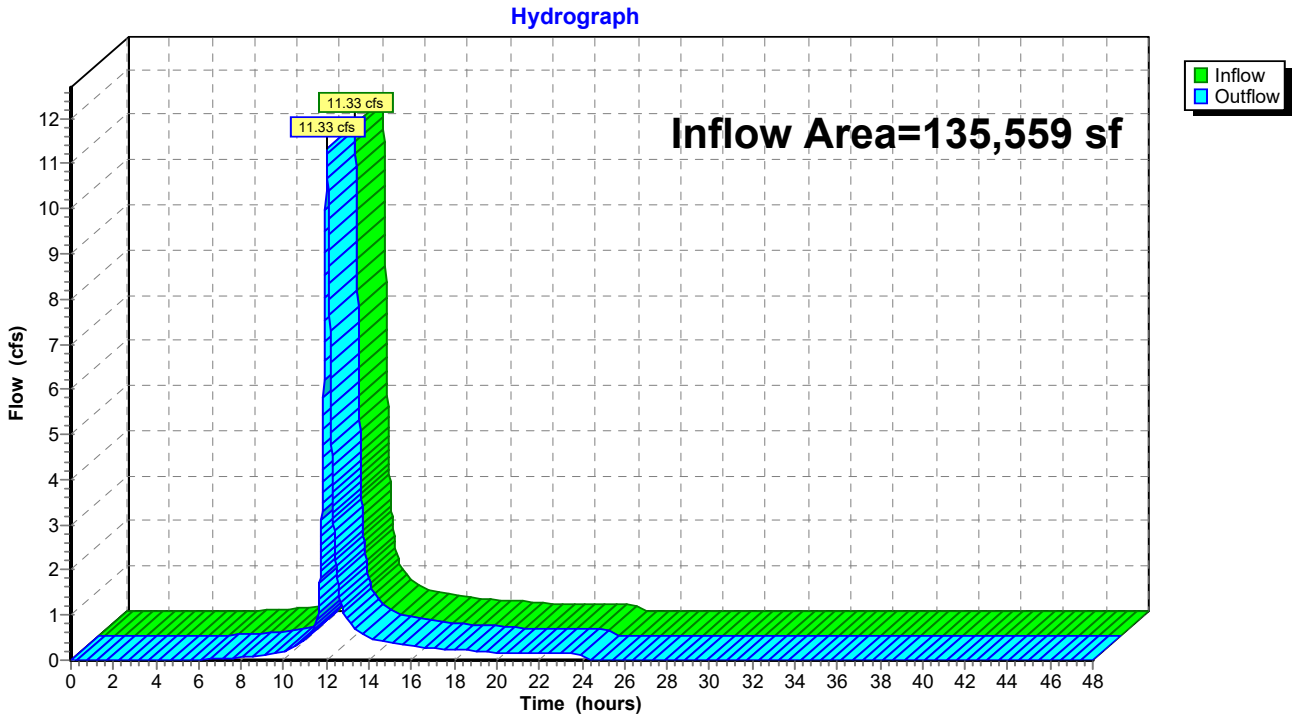


Summary for Reach 6R: PRE EAST

Inflow Area = 135,559 sf, 35.37% Impervious, Inflow Depth = 2.98" for 25-Year event
Inflow = 11.33 cfs @ 12.03 hrs, Volume= 33,653 cf
Outflow = 11.33 cfs @ 12.03 hrs, Volume= 33,653 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 6R: PRE EAST



Summary for Subcatchment 7S: POST EX4

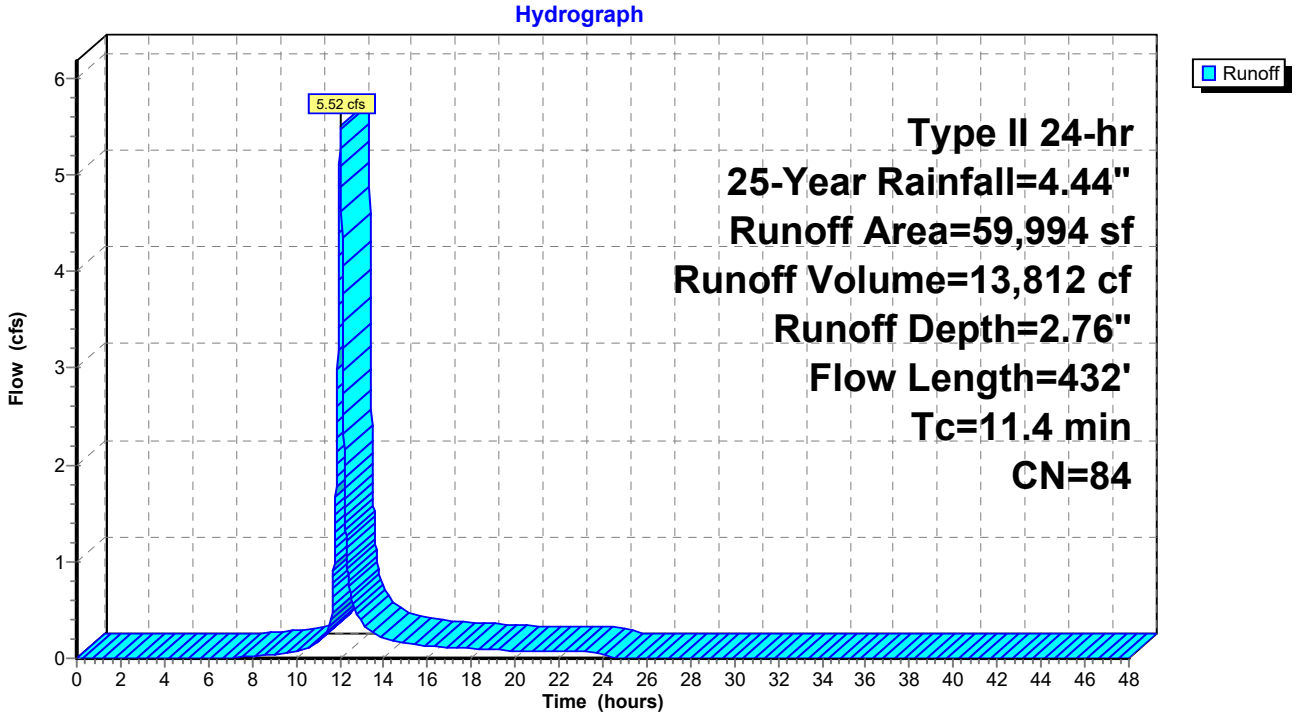
Runoff = 5.52 cfs @ 12.03 hrs, Volume= 13,812 cf, Depth= 2.76"
Routed to Reach 10R : POST WEST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-Year Rainfall=4.44"

Area (sf)	CN	Description
47,032	80	>75% Grass cover, Good, HSG D
12,962	98	Paved parking, HSG D
59,994	84	Weighted Average
47,032		78.39% Pervious Area
12,962		21.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.0700	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
4.9	332	0.0265	1.14		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.4	432	Total			

Subcatchment 7S: POST EX4



Summary for Subcatchment 8S: POST EX24

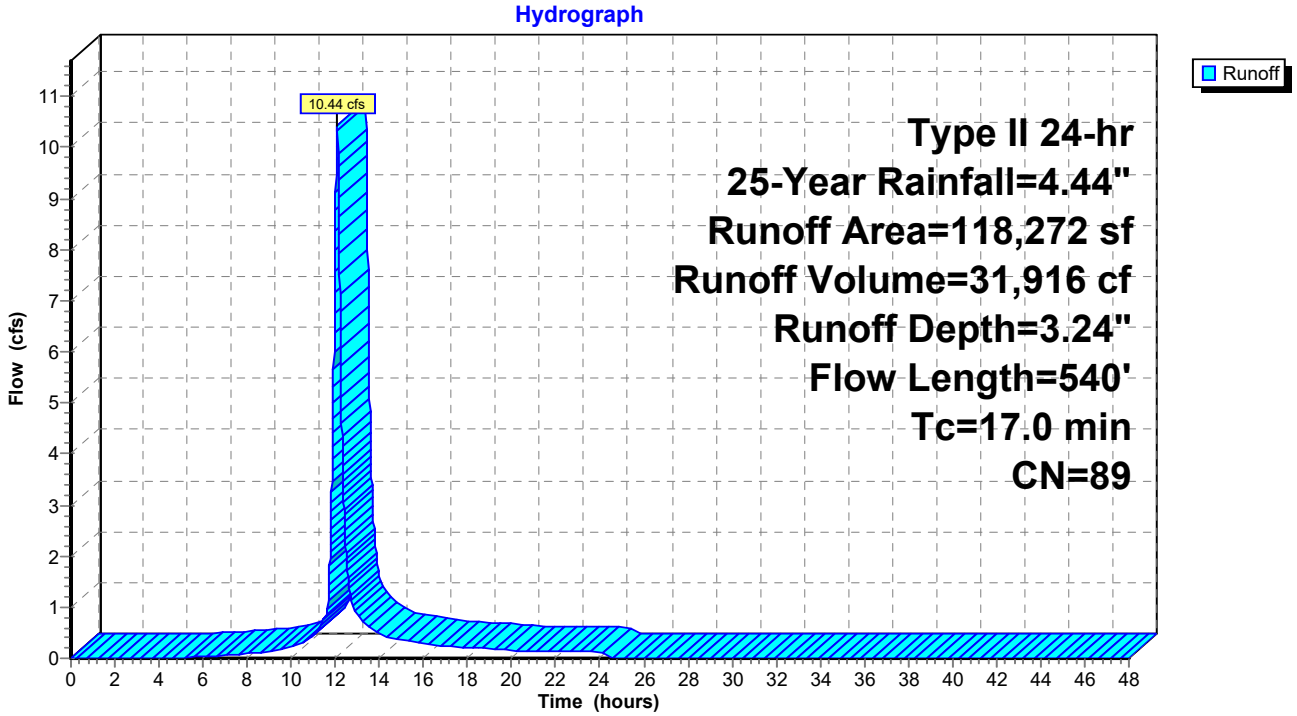
Runoff = 10.44 cfs @ 12.09 hrs, Volume= 31,916 cf, Depth= 3.24"
Routed to Pond 9P : DETENTION CB24

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-Year Rainfall=4.44"

Area (sf)	CN	Description
60,730	80	>75% Grass cover, Good, HSG D
57,542	98	Paved parking, HSG D
118,272	89	Weighted Average
60,730		51.35% Pervious Area
57,542		48.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	100	0.0181	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
5.8	440	0.0330	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.0	540	Total			

Subcatchment 8S: POST EX24



Summary for Pond 9P: DETENTION CB24

Inflow Area = 118,272 sf, 48.65% Impervious, Inflow Depth = 3.24" for 25-Year event
Inflow = 10.44 cfs @ 12.09 hrs, Volume= 31,916 cf
Outflow = 9.05 cfs @ 12.16 hrs, Volume= 31,545 cf, Atten= 13%, Lag= 4.3 min
Primary = 9.05 cfs @ 12.16 hrs, Volume= 31,545 cf
Routed to Reach 10R : POST WEST

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 898.85' @ 12.16 hrs Surf.Area= 6,394 sf Storage= 7,476 cf

Plug-Flow detention time= 201.7 min calculated for 31,545 cf (99% of inflow)
Center-of-Mass det. time= 194.3 min (1,000.0 - 805.7)

Volume	Invert	Avail.Storage	Storage Description
#1	896.62'	15,305 cf	**Storage (Prismatic)**Listed below (Recalc)
#2A	892.12'	715 cf	**21.50'W x 53.04'L x 2.33'H Field A** 2,661 cf Overall - 619 cf Embedded = 2,042 cf x 35.0% Voids
#3A	892.62'	619 cf	**ADS_StormTech RC-310 +Cap**x 42 Inside #2 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 42 Chambers in 6 Rows
		16,639 cf	Total Available Storage

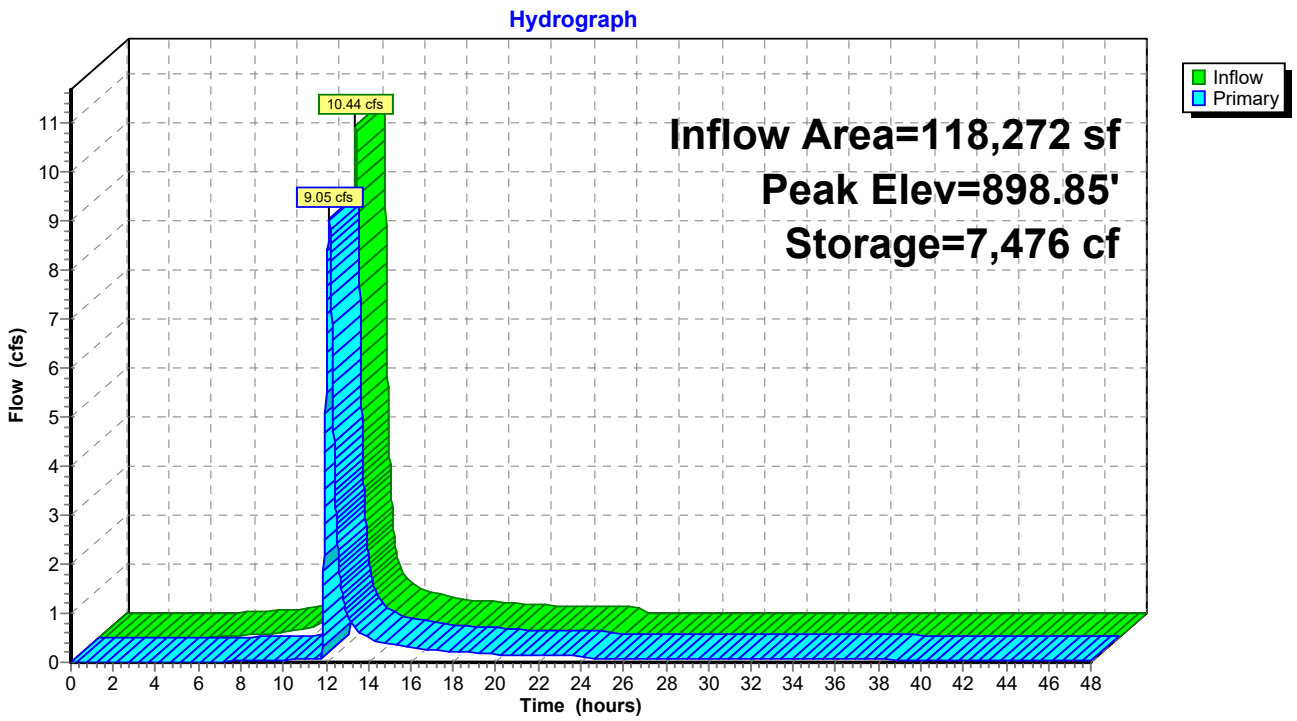
Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
896.62	9	0	0
897.00	944	181	181
898.00	3,517	2,231	2,412
899.00	5,558	4,538	6,949
900.00	11,154	8,356	15,305

Device	Routing	Invert	Outlet Devices
#1	Primary	892.12'	**15.00" Round Culvert** L= 71.2' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 892.12' / 890.79' S= 0.0187 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	892.12'	**1.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	898.20'	**36.00" W x 6.00" H Vert. Window X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=9.05 cfs @ 12.16 hrs HW=898.85' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 9.05 cfs of 14.46 cfs potential flow)
  ├─**2=Orifice** (Orifice Controls 0.07 cfs @ 12.45 fps)
  └─**3=Window** (Orifice Controls 8.98 cfs @ 2.99 fps)

Pond 9P: DETENTION CB24

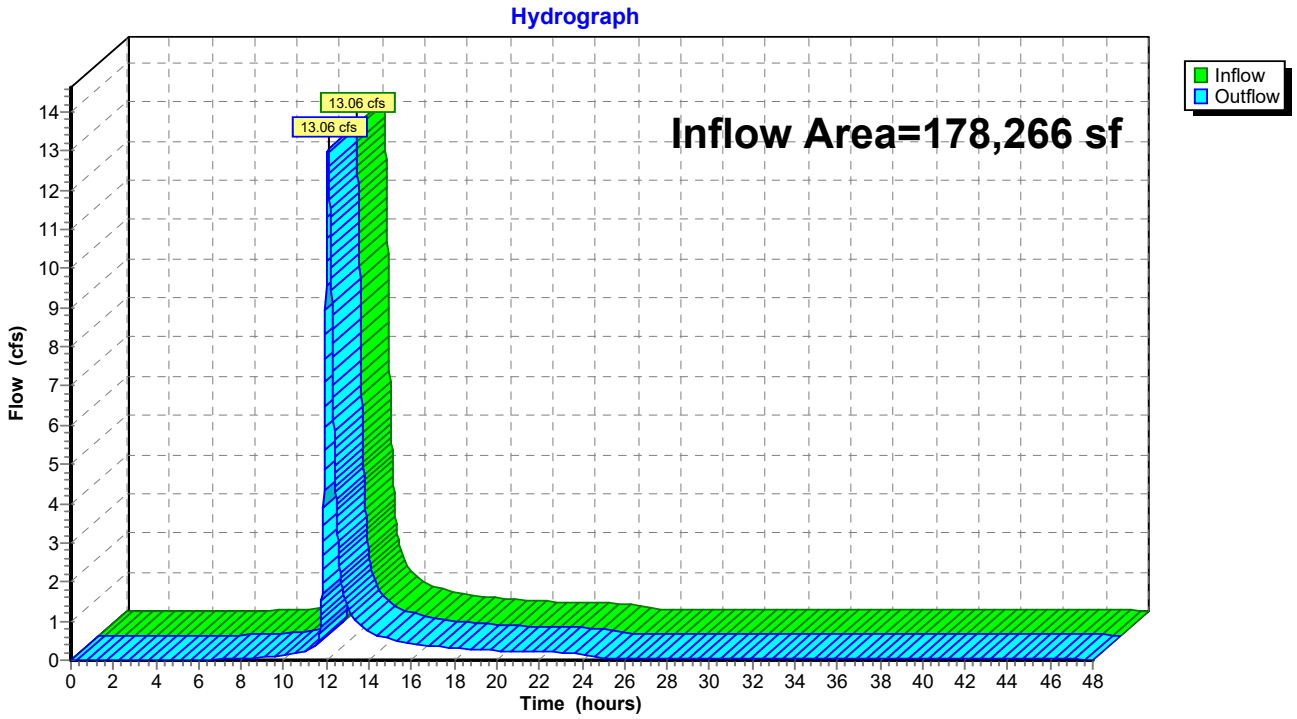


Summary for Reach 10R: POST WEST

Inflow Area = 178,266 sf, 39.55% Impervious, Inflow Depth > 3.05" for 25-Year event
Inflow = 13.06 cfs @ 12.08 hrs, Volume= 45,357 cf
Outflow = 13.06 cfs @ 12.08 hrs, Volume= 45,357 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 10R: POST WEST



Summary for Subcatchment 11S: POST EX6

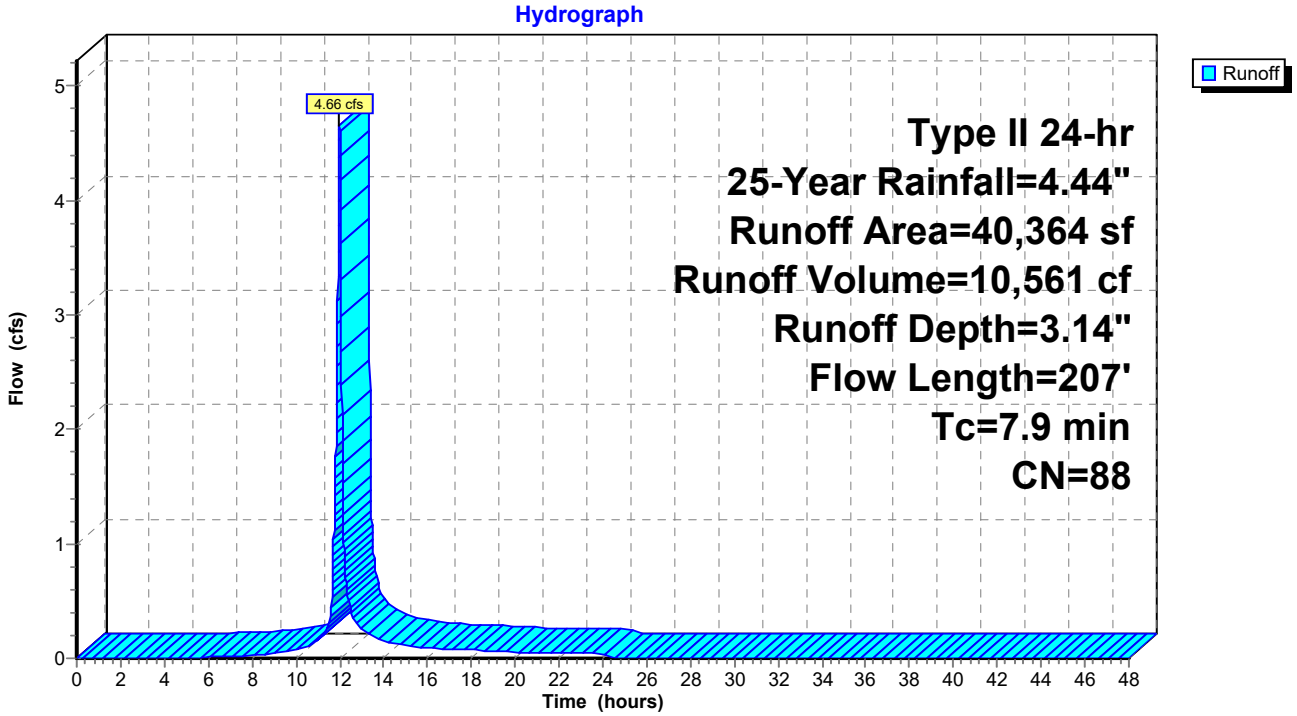
Runoff = 4.66 cfs @ 11.99 hrs, Volume= 10,561 cf, Depth= 3.14"
Routed to Reach 14R : POST EAST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-Year Rainfall=4.44"

Area (sf)	CN	Description
21,901	80	>75% Grass cover, Good, HSG D
18,463	98	Paved parking, HSG D
40,364	88	Weighted Average
21,901		54.26% Pervious Area
18,463		45.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	100	0.0681	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
1.3	107	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.9	207	Total			

Subcatchment 11S: POST EX6



Summary for Subcatchment 12S: POST EX37

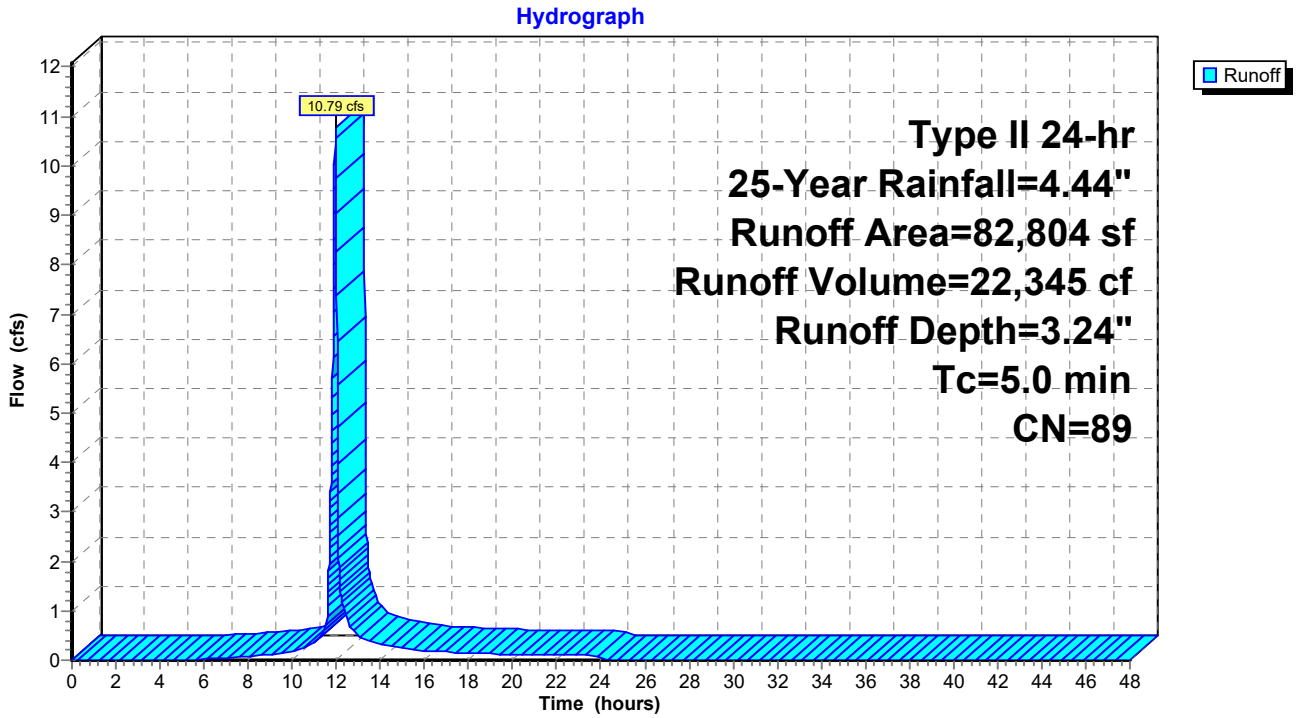
Runoff = 10.79 cfs @ 11.96 hrs, Volume= 22,345 cf, Depth= 3.24"
Routed to Pond 13P : DETENTION CB37

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-Year Rainfall=4.44"

Area (sf)	CN	Description
41,997	80	>75% Grass cover, Good, HSG D
40,807	98	Paved parking, HSG D
82,804	89	Weighted Average
41,997		50.72% Pervious Area
40,807		49.28% Impervious Area

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

Subcatchment 12S: POST EX37



Summary for Pond 13P: DETENTION CB37

Inflow Area = 82,804 sf, 49.28% Impervious, Inflow Depth = 3.24" for 25-Year event
Inflow = 10.79 cfs @ 11.96 hrs, Volume= 22,345 cf
Outflow = 2.23 cfs @ 12.10 hrs, Volume= 22,345 cf, Atten= 79%, Lag= 8.6 min
Primary = 2.23 cfs @ 12.10 hrs, Volume= 22,345 cf
Routed to Reach 14R : POST EAST

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 898.94' @ 12.10 hrs Surf.Area= 4,541 sf Storage= 6,118 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 14.7 min (809.2 - 794.6)

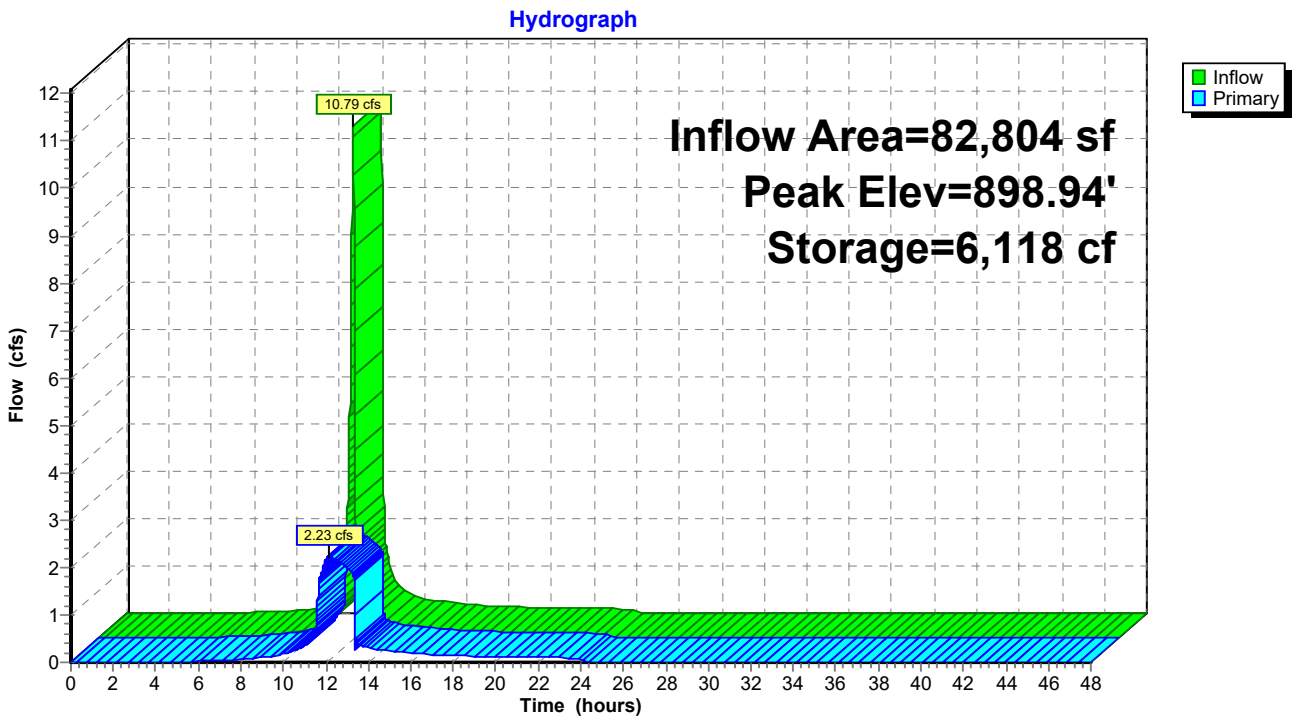
Volume	Invert	Avail.Storage	Storage Description
#1	893.40'	13,925 cf	**Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
893.40	9	0	0
896.60	9	29	29
897.00	1,110	224	253
898.00	3,258	2,184	2,437
899.00	4,617	3,938	6,374
900.00	10,484	7,551	13,925

Device	Routing	Invert	Outlet Devices
#1	Primary	893.40'	**18.00" Round Culvert** L= 104.4' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 893.40' / 891.88' S= 0.0146 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	843.40'	**6.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.23 cfs @ 12.10 hrs HW=898.94' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 2.23 cfs of 18.12 cfs potential flow)
└─**2=Orifice** (Orifice Controls 2.23 cfs @ 11.34 fps)

Pond 13P: DETENTION CB37

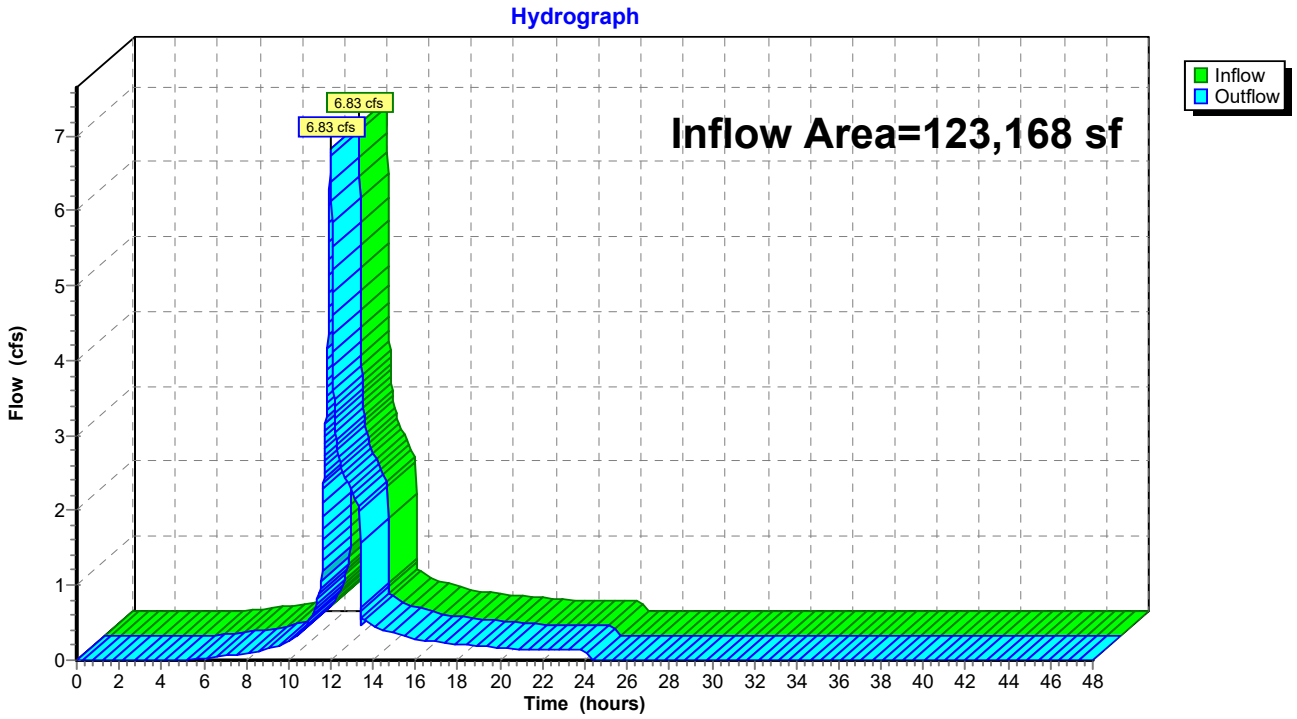


Summary for Reach 14R: POST EAST

Inflow Area = 123,168 sf, 48.12% Impervious, Inflow Depth = 3.21" for 25-Year event
Inflow = 6.83 cfs @ 11.99 hrs, Volume= 32,906 cf
Outflow = 6.83 cfs @ 11.99 hrs, Volume= 32,906 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 14R: POST EAST



Summary for Subcatchment 1S: PRE EX4

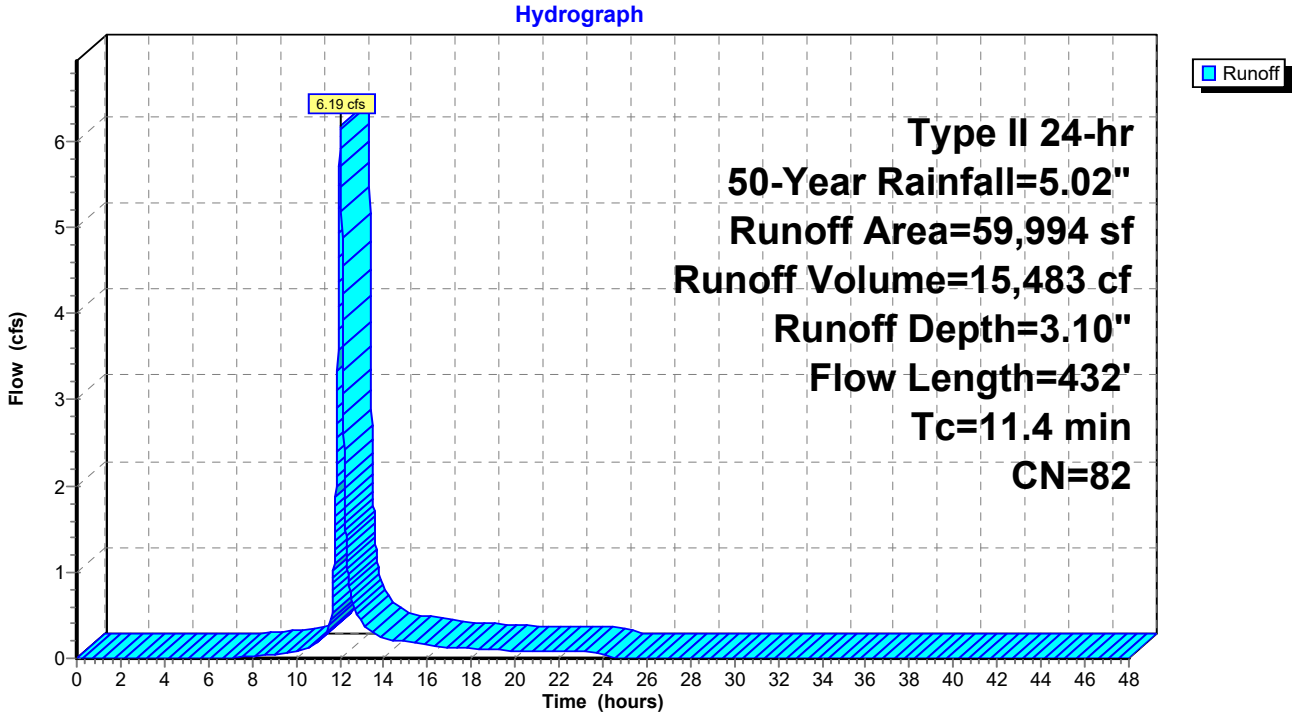
Runoff = 6.19 cfs @ 12.03 hrs, Volume= 15,483 cf, Depth= 3.10"
Routed to Reach 3R : PRE WEST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-Year Rainfall=5.02"

Area (sf)	CN	Description
53,090	80	>75% Grass cover, Good, HSG D
6,904	98	Paved parking, HSG D
59,994	82	Weighted Average
53,090		88.49% Pervious Area
6,904		11.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.0700	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
4.9	332	0.0265	1.14		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.4	432	Total			

Subcatchment 1S: PRE EX4



Summary for Subcatchment 2S: PRE EX24

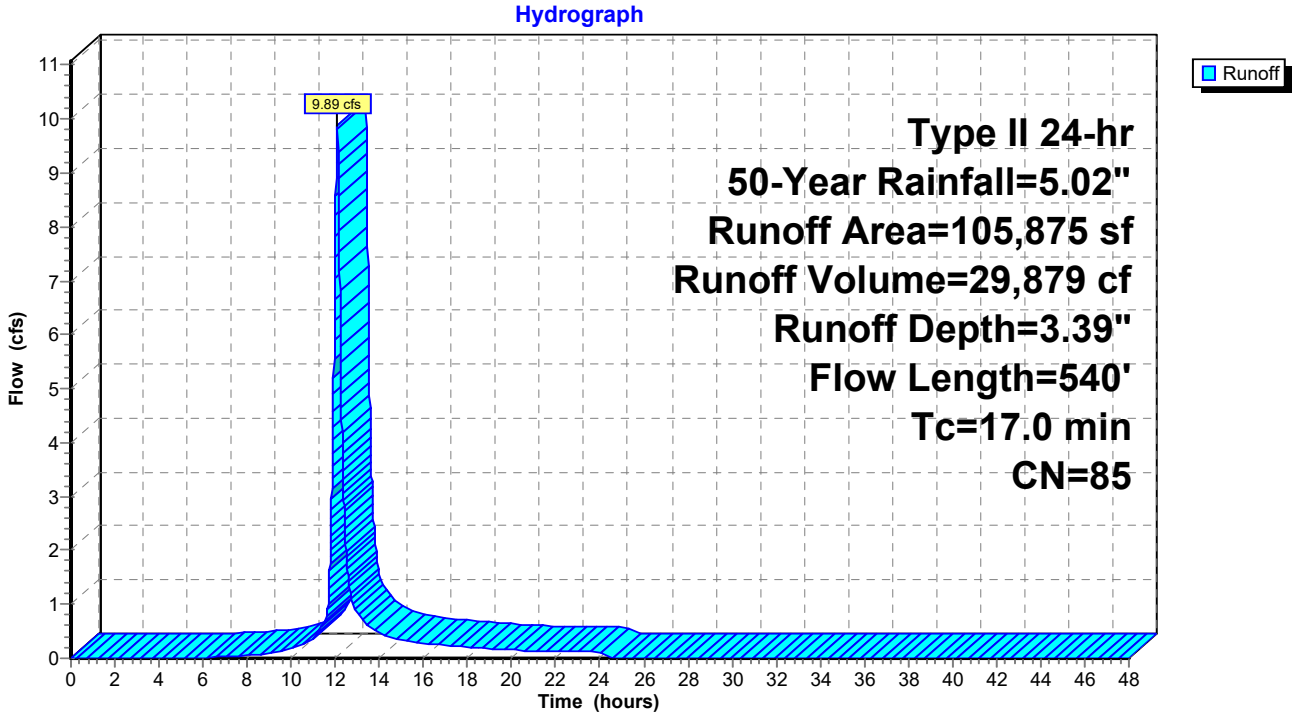
Runoff = 9.89 cfs @ 12.09 hrs, Volume= 29,879 cf, Depth= 3.39"
Routed to Reach 3R : PRE WEST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-Year Rainfall=5.02"

Area (sf)	CN	Description
76,614	80	>75% Grass cover, Good, HSG D
29,261	98	Paved parking, HSG D
105,875	85	Weighted Average
76,614		72.36% Pervious Area
29,261		27.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	100	0.0181	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
5.8	440	0.0330	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.0	540	Total			

Subcatchment 2S: PRE EX24

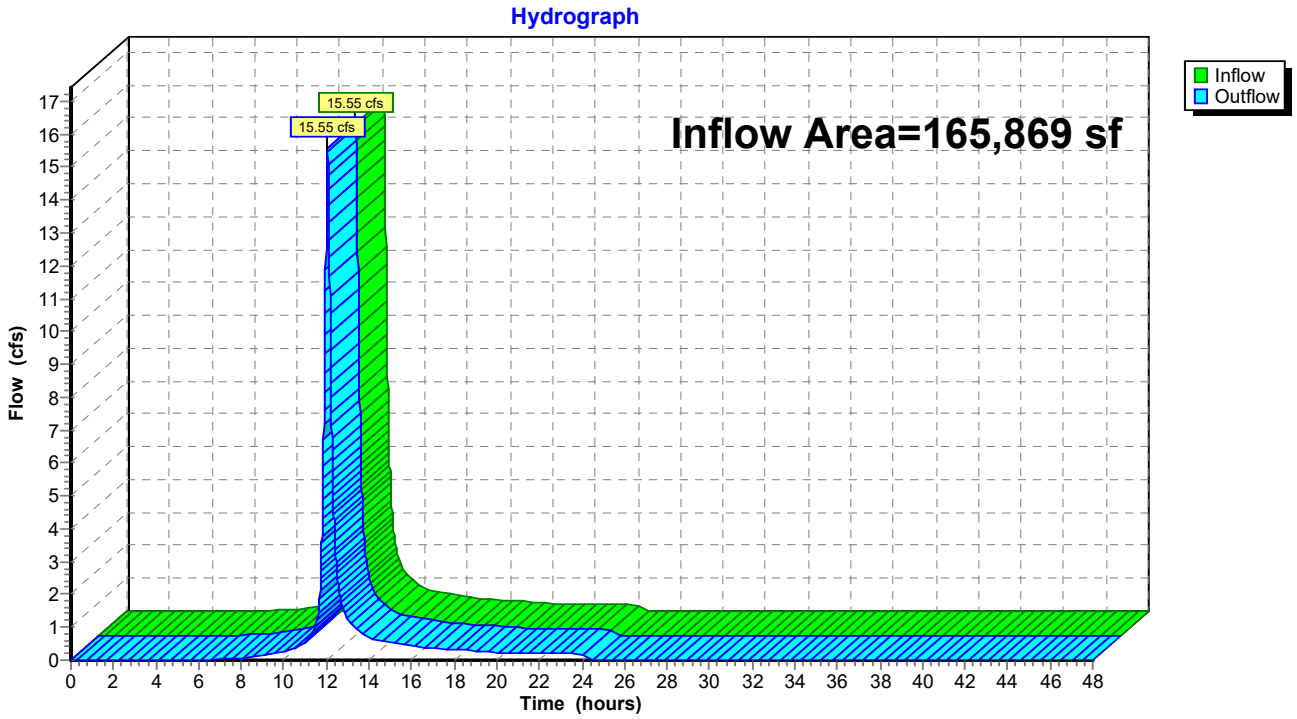


Summary for Reach 3R: PRE WEST

Inflow Area = 165,869 sf, 21.80% Impervious, Inflow Depth = 3.28" for 50-Year event
Inflow = 15.55 cfs @ 12.06 hrs, Volume= 45,362 cf
Outflow = 15.55 cfs @ 12.06 hrs, Volume= 45,362 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 3R: PRE WEST



Summary for Subcatchment 4S: PRE EX6

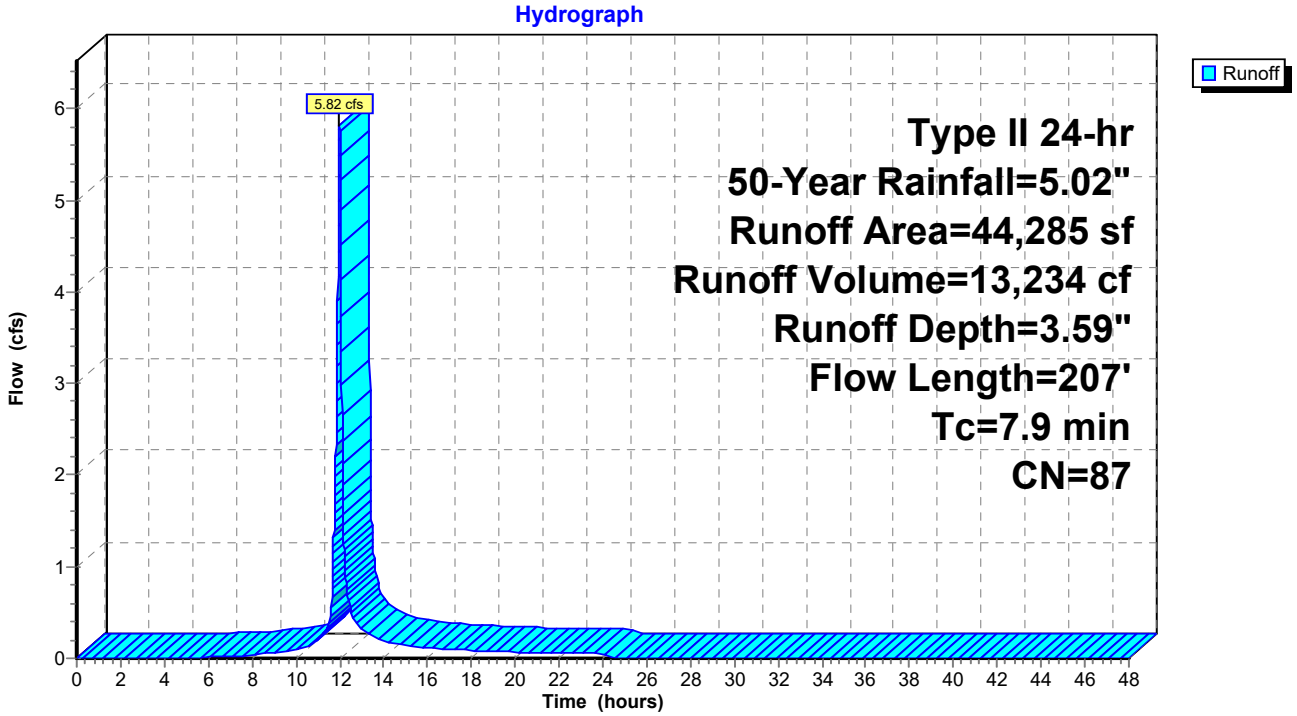
Runoff = 5.82 cfs @ 11.99 hrs, Volume= 13,234 cf, Depth= 3.59"
Routed to Reach 6R : PRE EAST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-Year Rainfall=5.02"

Area (sf)	CN	Description
27,617	80	>75% Grass cover, Good, HSG D
16,668	98	Paved parking, HSG D
44,285	87	Weighted Average
27,617		62.36% Pervious Area
16,668		37.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	100	0.0681	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
1.3	107	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.9	207	Total			

Subcatchment 4S: PRE EX6



Summary for Subcatchment 5S: PRE EX37

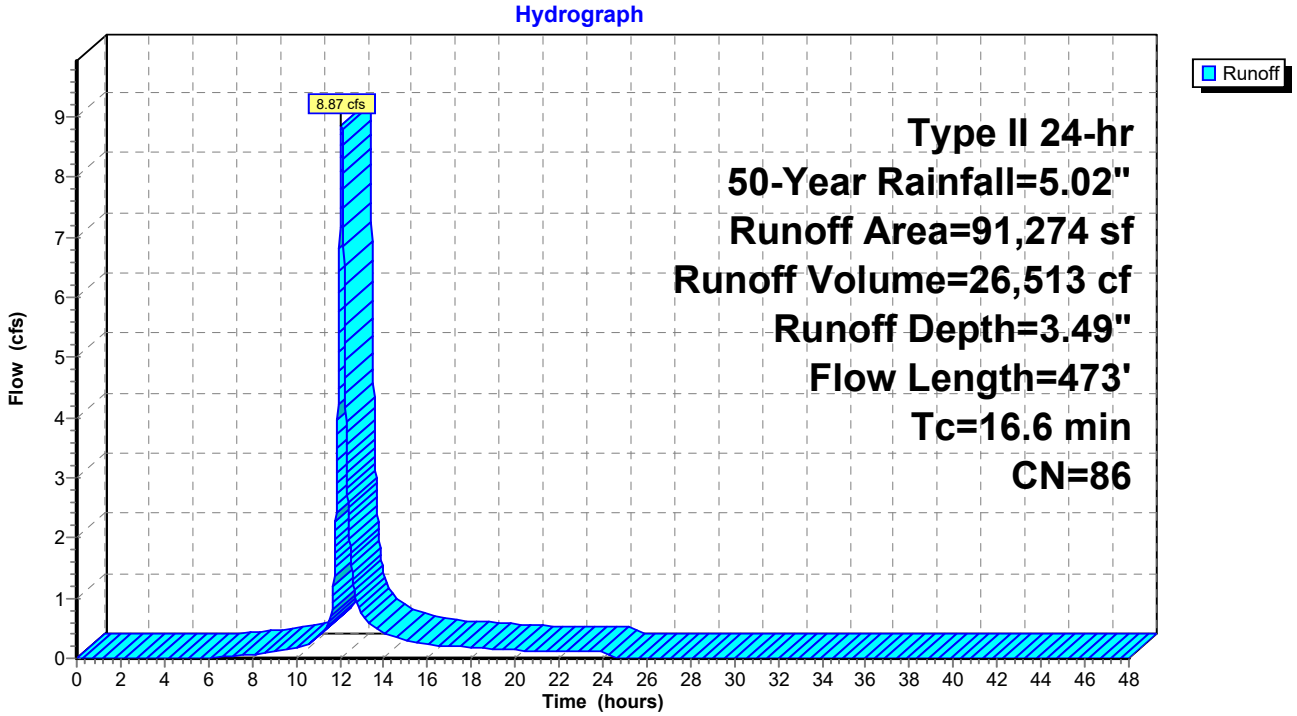
Runoff = 8.87 cfs @ 12.08 hrs, Volume= 26,513 cf, Depth= 3.49"
Routed to Reach 6R : PRE EAST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-Year Rainfall=5.02"

Area (sf)	CN	Description
59,996	80	>75% Grass cover, Good, HSG D
31,278	98	Paved parking, HSG D
91,274	86	Weighted Average
59,996		65.73% Pervious Area
31,278		34.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0	100	0.0154	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
4.6	373	0.0366	1.34		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
16.6	473	Total			

Subcatchment 5S: PRE EX37

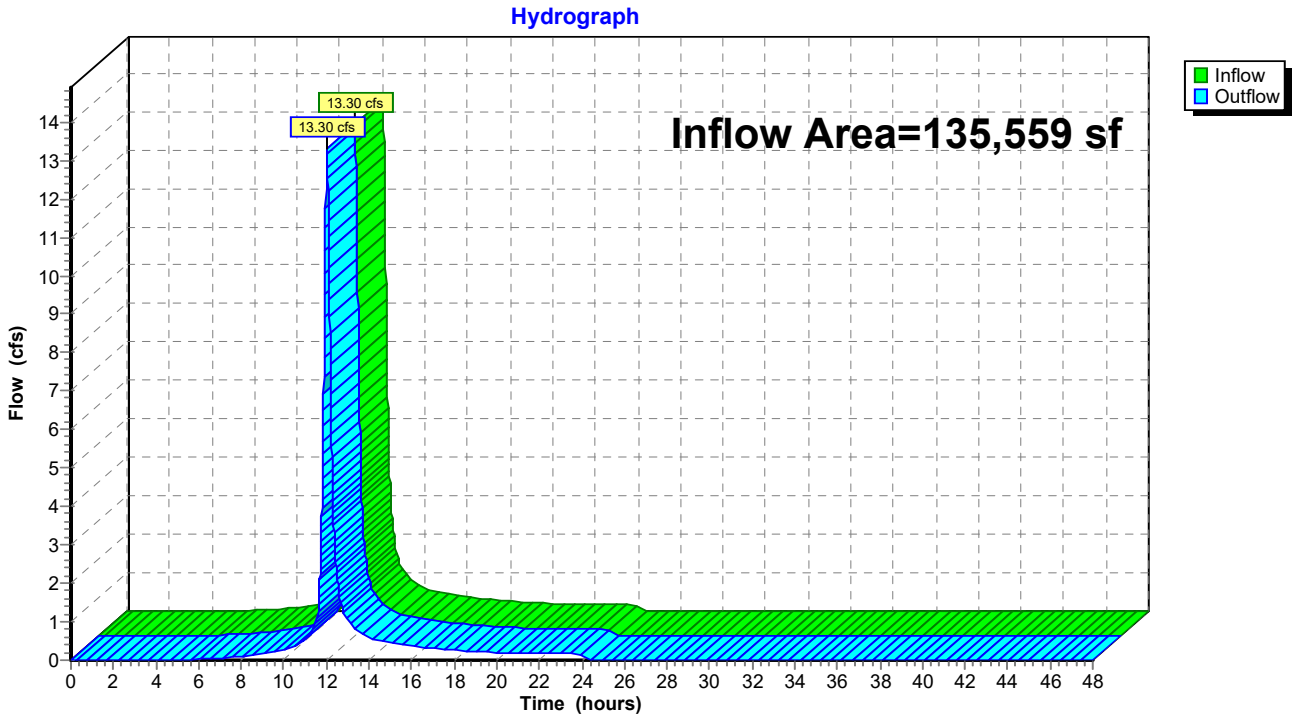


Summary for Reach 6R: PRE EAST

Inflow Area = 135,559 sf, 35.37% Impervious, Inflow Depth = 3.52" for 50-Year event
Inflow = 13.30 cfs @ 12.03 hrs, Volume= 39,747 cf
Outflow = 13.30 cfs @ 12.03 hrs, Volume= 39,747 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 6R: PRE EAST



Summary for Subcatchment 7S: POST EX4

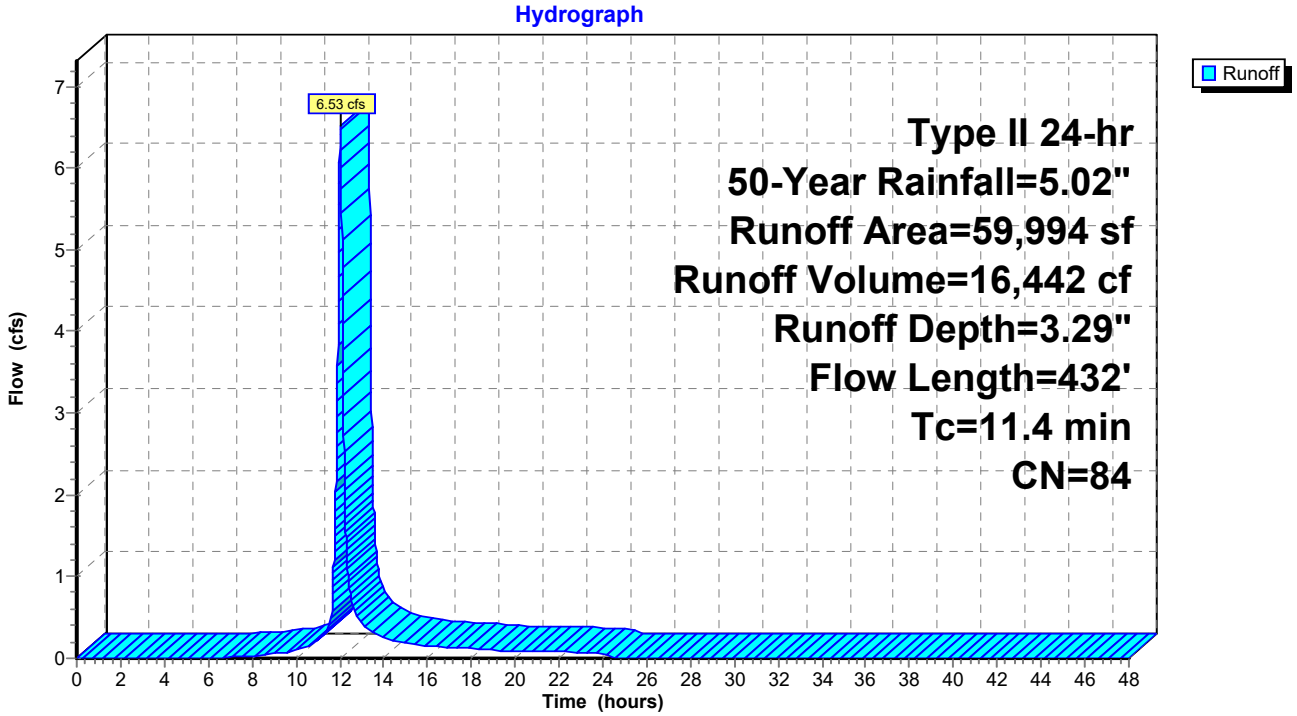
Runoff = 6.53 cfs @ 12.03 hrs, Volume= 16,442 cf, Depth= 3.29"
Routed to Reach 10R : POST WEST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-Year Rainfall=5.02"

Area (sf)	CN	Description
47,032	80	>75% Grass cover, Good, HSG D
12,962	98	Paved parking, HSG D
59,994	84	Weighted Average
47,032		78.39% Pervious Area
12,962		21.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.0700	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
4.9	332	0.0265	1.14		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.4	432	Total			

Subcatchment 7S: POST EX4



Summary for Subcatchment 8S: POST EX24

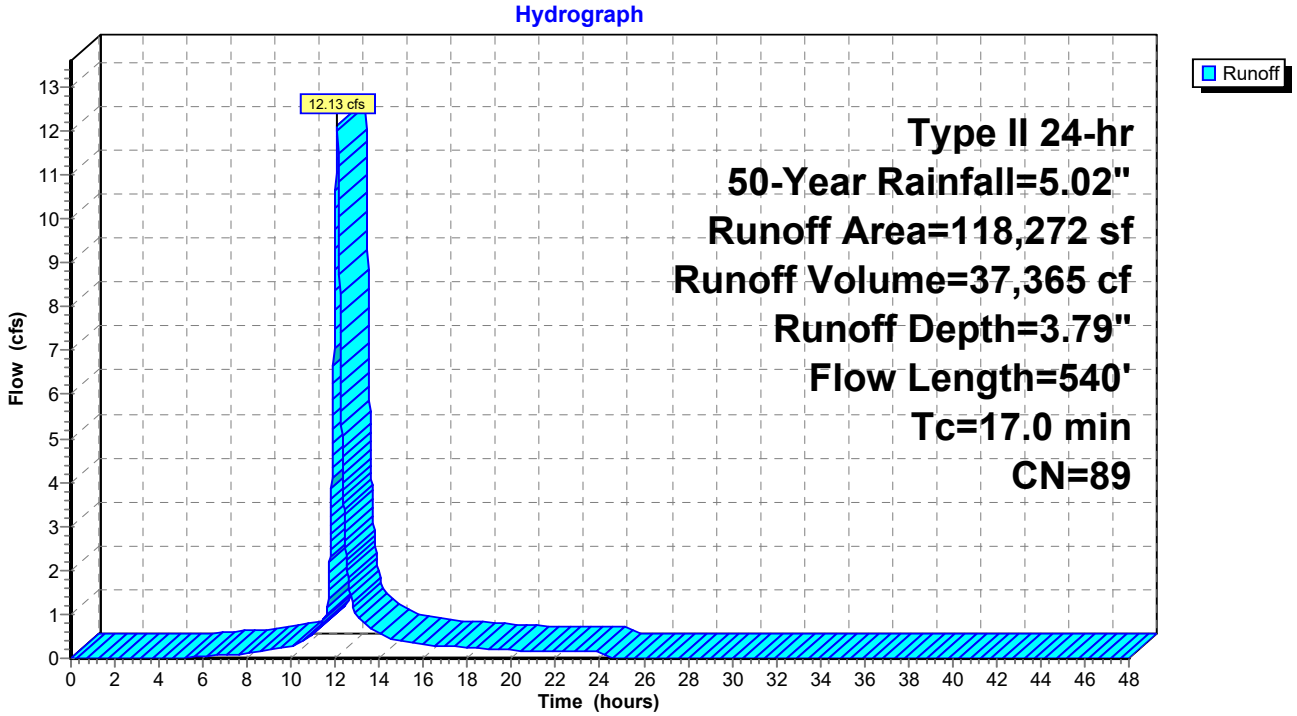
Runoff = 12.13 cfs @ 12.09 hrs, Volume= 37,365 cf, Depth= 3.79"
Routed to Pond 9P : DETENTION CB24

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-Year Rainfall=5.02"

Area (sf)	CN	Description
60,730	80	>75% Grass cover, Good, HSG D
57,542	98	Paved parking, HSG D
118,272	89	Weighted Average
60,730		51.35% Pervious Area
57,542		48.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	100	0.0181	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
5.8	440	0.0330	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.0	540	Total			

Subcatchment 8S: POST EX24



Summary for Pond 9P: DETENTION CB24

Inflow Area = 118,272 sf, 48.65% Impervious, Inflow Depth = 3.79" for 50-Year event
Inflow = 12.13 cfs @ 12.09 hrs, Volume= 37,365 cf
Outflow = 10.28 cfs @ 12.16 hrs, Volume= 36,991 cf, Atten= 15%, Lag= 4.6 min
Primary = 10.28 cfs @ 12.16 hrs, Volume= 36,991 cf
Routed to Reach 10R : POST WEST

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 898.96' @ 12.16 hrs Surf.Area= 6,618 sf Storage= 8,066 cf

Plug-Flow detention time= 176.4 min calculated for 36,991 cf (99% of inflow)
Center-of-Mass det. time= 170.0 min (971.3 - 801.3)

Volume	Invert	Avail.Storage	Storage Description
#1	896.62'	15,305 cf	**Storage (Prismatic)**Listed below (Recalc)
#2A	892.12'	715 cf	**21.50'W x 53.04'L x 2.33'H Field A** 2,661 cf Overall - 619 cf Embedded = 2,042 cf x 35.0% Voids
#3A	892.62'	619 cf	**ADS_StormTech RC-310 +Cap**x 42 Inside #2 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 42 Chambers in 6 Rows
		16,639 cf	Total Available Storage

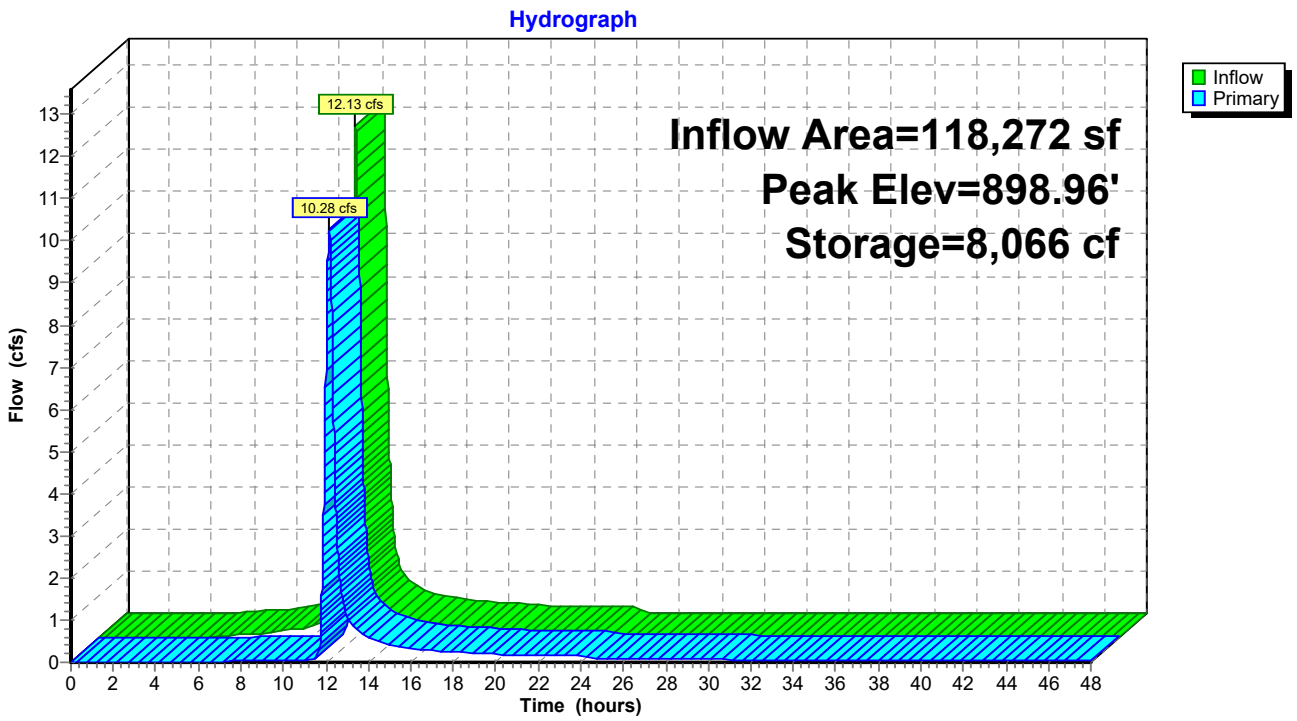
Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
896.62	9	0	0
897.00	944	181	181
898.00	3,517	2,231	2,412
899.00	5,558	4,538	6,949
900.00	11,154	8,356	15,305

Device	Routing	Invert	Outlet Devices
#1	Primary	892.12'	**15.00" Round Culvert** L= 71.2' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 892.12' / 890.79' S= 0.0187 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	892.12'	**1.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	898.20'	**36.00" W x 6.00" H Vert. Window X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=10.28 cfs @ 12.16 hrs HW=898.96' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 10.28 cfs of 14.57 cfs potential flow)
  ├─**2=Orifice** (Orifice Controls 0.07 cfs @ 12.55 fps)
  └─**3=Window** (Orifice Controls 10.21 cfs @ 3.40 fps)

Pond 9P: DETENTION CB24

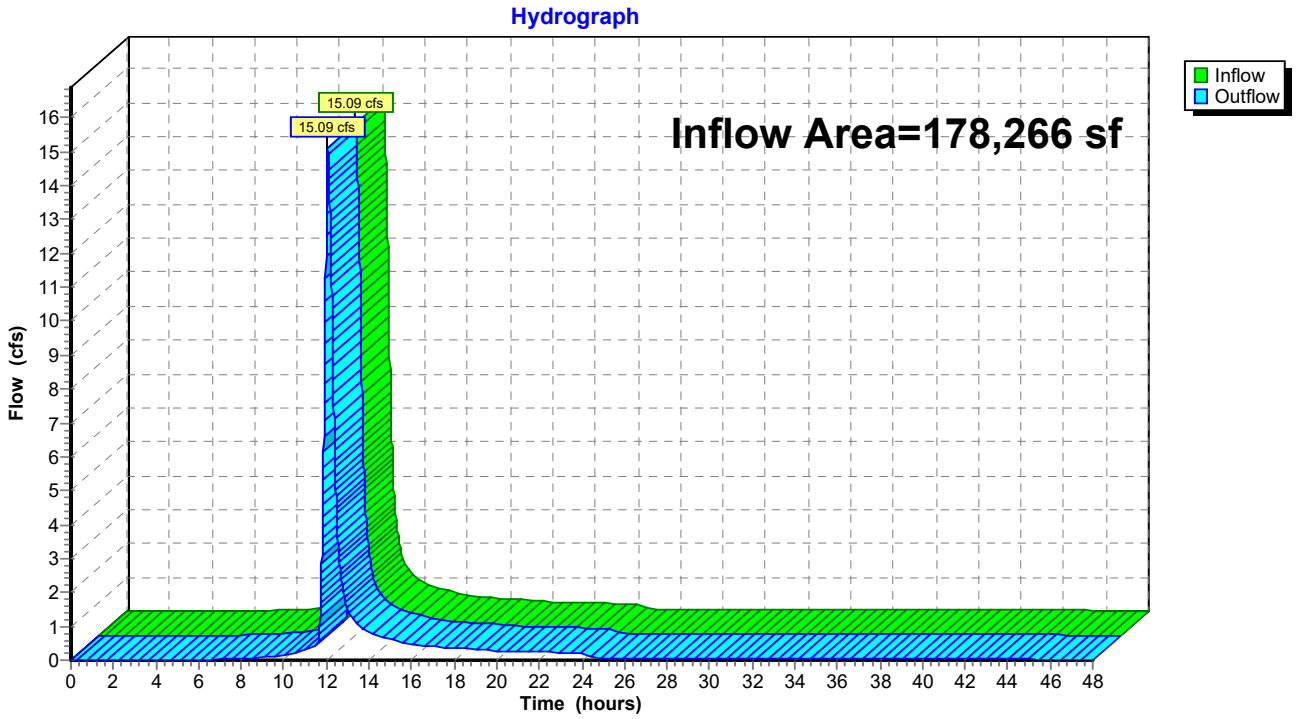


Summary for Reach 10R: POST WEST

Inflow Area = 178,266 sf, 39.55% Impervious, Inflow Depth > 3.60" for 50-Year event
Inflow = 15.09 cfs @ 12.07 hrs, Volume= 53,433 cf
Outflow = 15.09 cfs @ 12.07 hrs, Volume= 53,433 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 10R: POST WEST



Summary for Subcatchment 11S: POST EX6

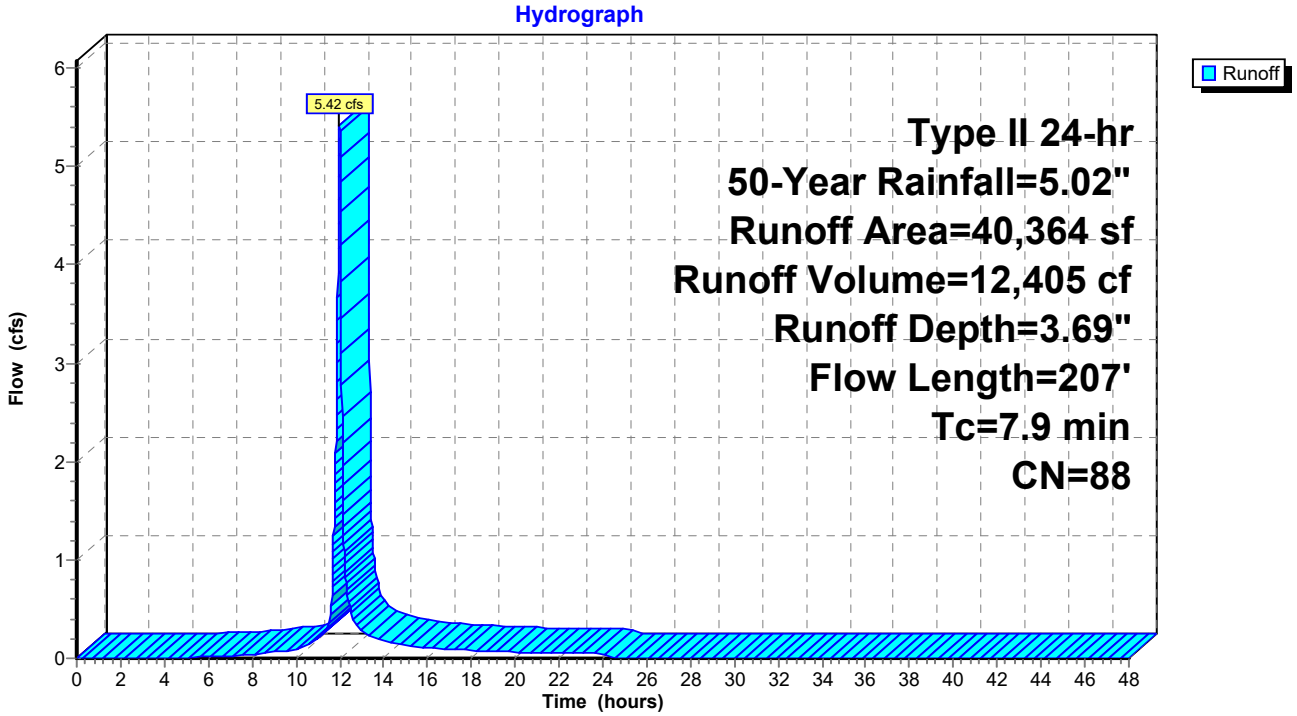
Runoff = 5.42 cfs @ 11.99 hrs, Volume= 12,405 cf, Depth= 3.69"
Routed to Reach 14R : POST EAST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-Year Rainfall=5.02"

Area (sf)	CN	Description
21,901	80	>75% Grass cover, Good, HSG D
18,463	98	Paved parking, HSG D
40,364	88	Weighted Average
21,901		54.26% Pervious Area
18,463		45.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	100	0.0681	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
1.3	107	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.9	207	Total			

Subcatchment 11S: POST EX6



Summary for Subcatchment 12S: POST EX37

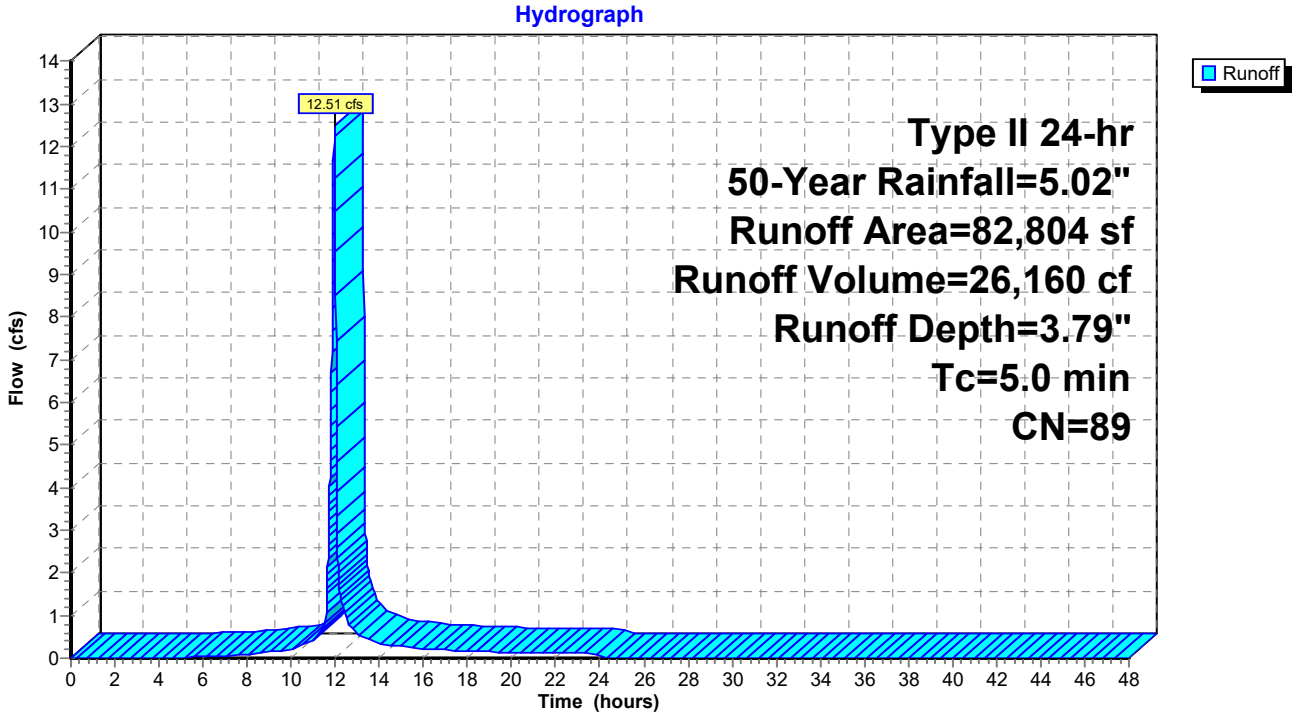
Runoff = 12.51 cfs @ 11.96 hrs, Volume= 26,160 cf, Depth= 3.79"
Routed to Pond 13P : DETENTION CB37

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-Year Rainfall=5.02"

Area (sf)	CN	Description
41,997	80	>75% Grass cover, Good, HSG D
40,807	98	Paved parking, HSG D
82,804	89	Weighted Average
41,997		50.72% Pervious Area
40,807		49.28% Impervious Area

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

Subcatchment 12S: POST EX37



Summary for Pond 13P: DETENTION CB37

Inflow Area = 82,804 sf, 49.28% Impervious, Inflow Depth = 3.79" for 50-Year event
Inflow = 12.51 cfs @ 11.96 hrs, Volume= 26,160 cf
Outflow = 2.28 cfs @ 12.11 hrs, Volume= 26,160 cf, Atten= 82%, Lag= 9.4 min
Primary = 2.28 cfs @ 12.11 hrs, Volume= 26,160 cf
Routed to Reach 14R : POST EAST

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 899.23' @ 12.11 hrs Surf.Area= 5,988 sf Storage= 7,613 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 18.6 min (808.7 - 790.1)

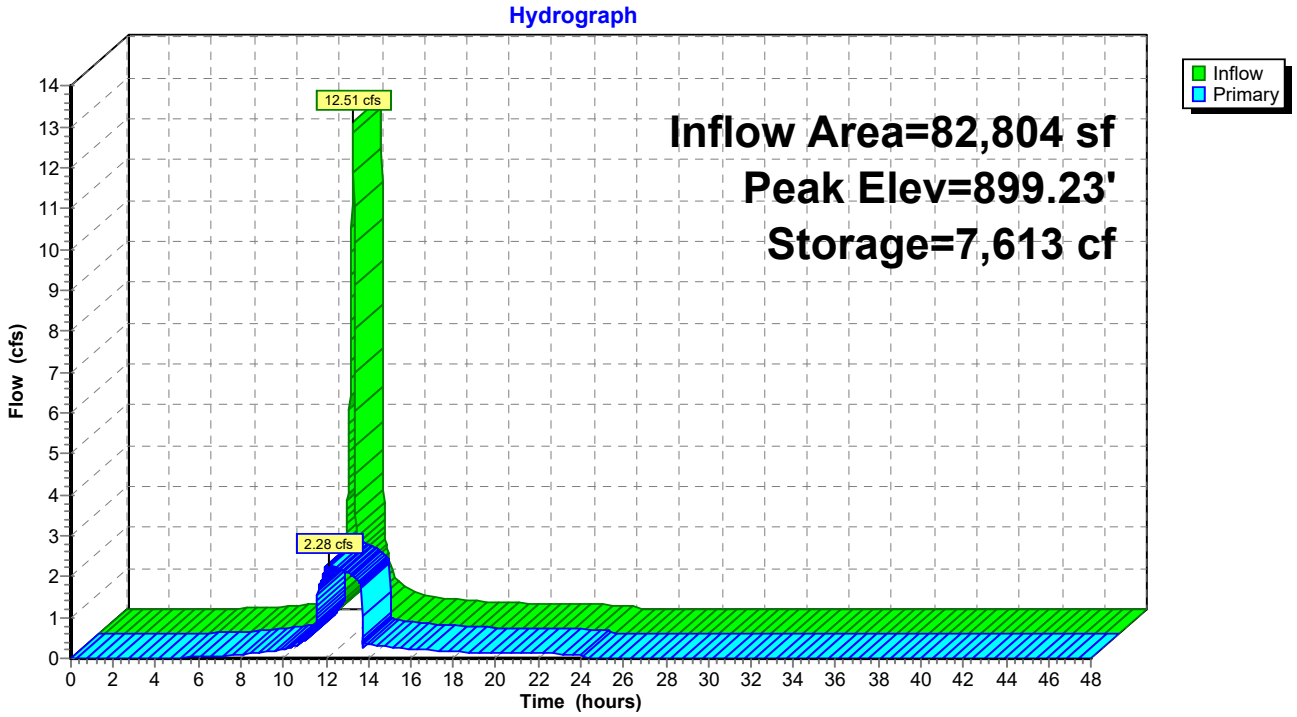
Volume	Invert	Avail.Storage	Storage Description
#1	893.40'	13,925 cf	**Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
893.40	9	0	0
896.60	9	29	29
897.00	1,110	224	253
898.00	3,258	2,184	2,437
899.00	4,617	3,938	6,374
900.00	10,484	7,551	13,925

Device	Routing	Invert	Outlet Devices
#1	Primary	893.40'	**18.00" Round Culvert** L= 104.4' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 893.40' / 891.88' S= 0.0146 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	843.40'	**6.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.28 cfs @ 12.11 hrs HW=899.23' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 2.28 cfs of 18.58 cfs potential flow)
└─**2=Orifice** (Orifice Controls 2.28 cfs @ 11.63 fps)

Pond 13P: DETENTION CB37

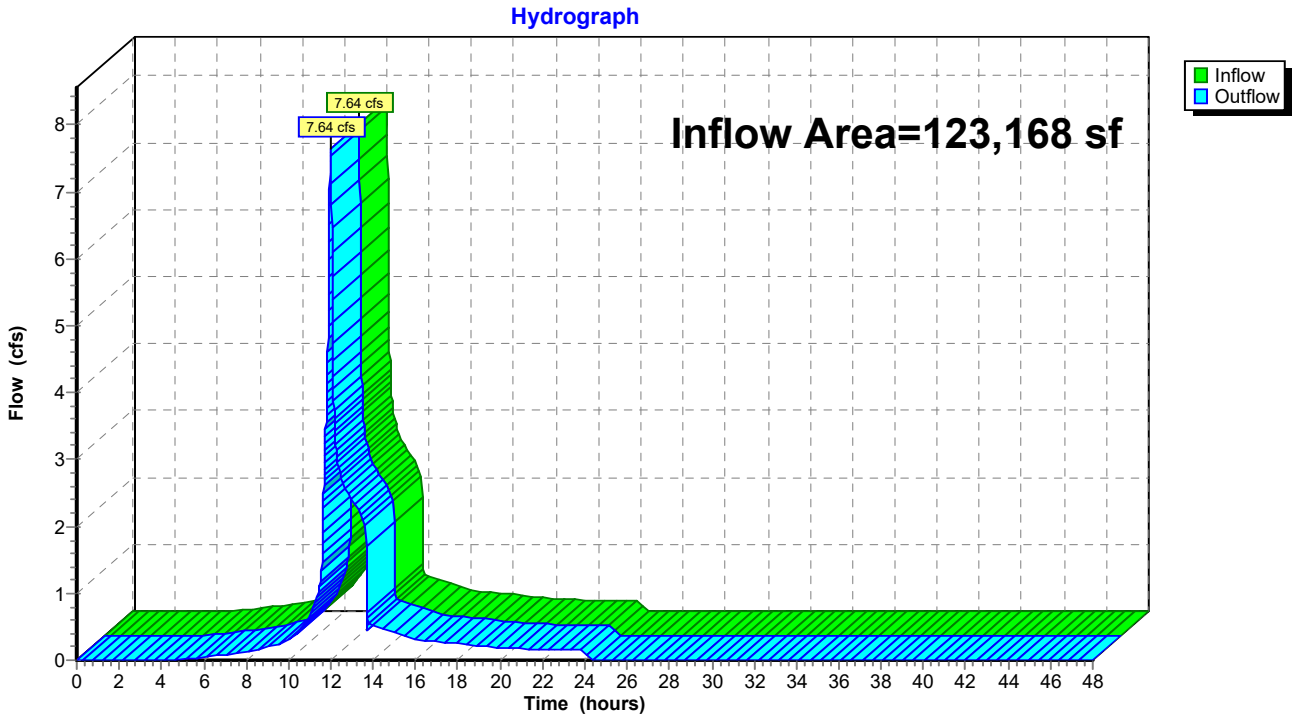


Summary for Reach 14R: POST EAST

Inflow Area = 123,168 sf, 48.12% Impervious, Inflow Depth = 3.76" for 50-Year event
Inflow = 7.64 cfs @ 11.99 hrs, Volume= 38,565 cf
Outflow = 7.64 cfs @ 11.99 hrs, Volume= 38,565 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 14R: POST EAST



Summary for Subcatchment 1S: PRE EX4

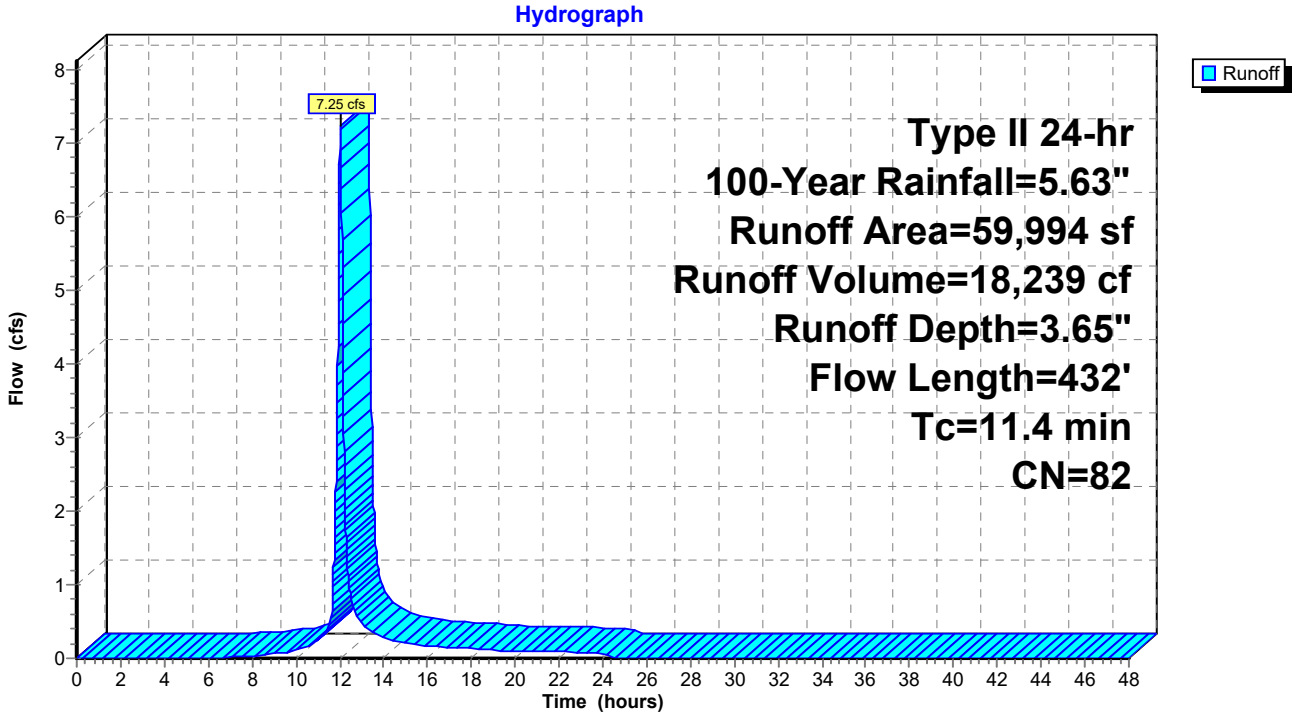
Runoff = 7.25 cfs @ 12.03 hrs, Volume= 18,239 cf, Depth= 3.65"
Routed to Reach 3R : PRE WEST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Year Rainfall=5.63"

Area (sf)	CN	Description
53,090	80	>75% Grass cover, Good, HSG D
6,904	98	Paved parking, HSG D
59,994	82	Weighted Average
53,090		88.49% Pervious Area
6,904		11.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.0700	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
4.9	332	0.0265	1.14		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.4	432	Total			

Subcatchment 1S: PRE EX4



Summary for Subcatchment 2S: PRE EX24

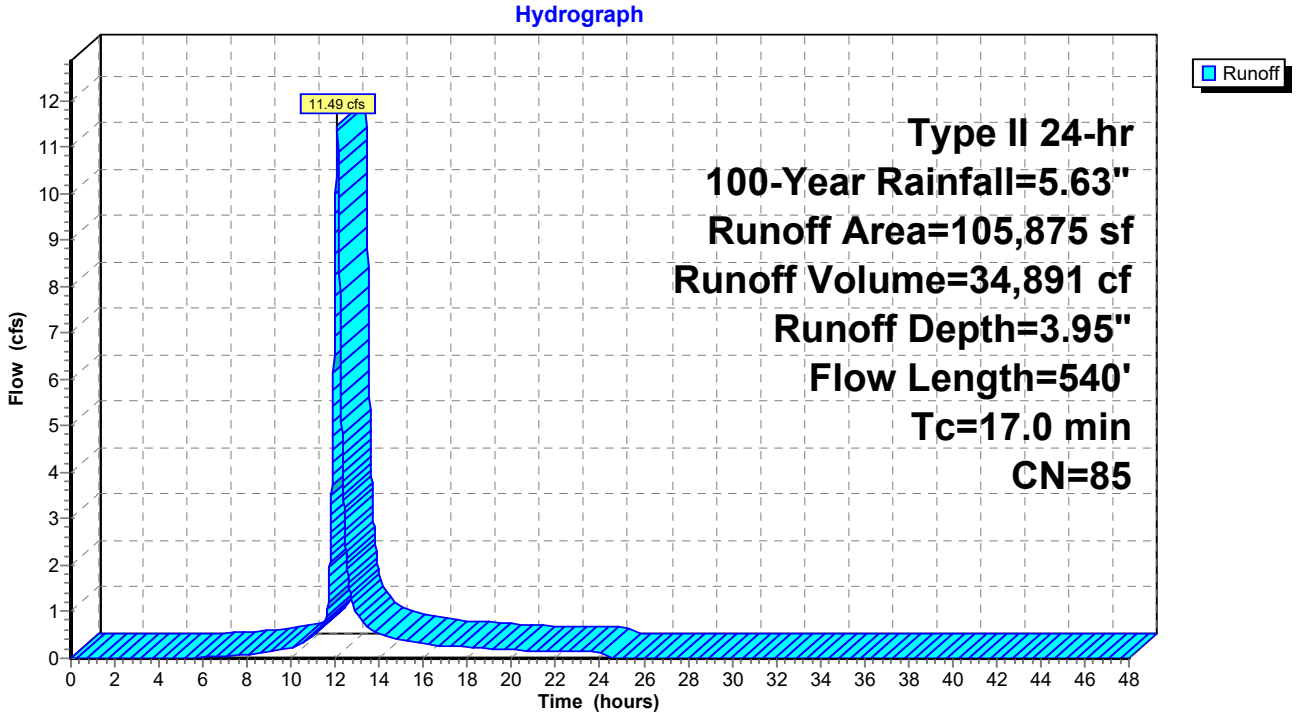
Runoff = 11.49 cfs @ 12.09 hrs, Volume= 34,891 cf, Depth= 3.95"
Routed to Reach 3R : PRE WEST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Year Rainfall=5.63"

Area (sf)	CN	Description
76,614	80	>75% Grass cover, Good, HSG D
29,261	98	Paved parking, HSG D
105,875	85	Weighted Average
76,614		72.36% Pervious Area
29,261		27.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	100	0.0181	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
5.8	440	0.0330	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.0	540	Total			

Subcatchment 2S: PRE EX24

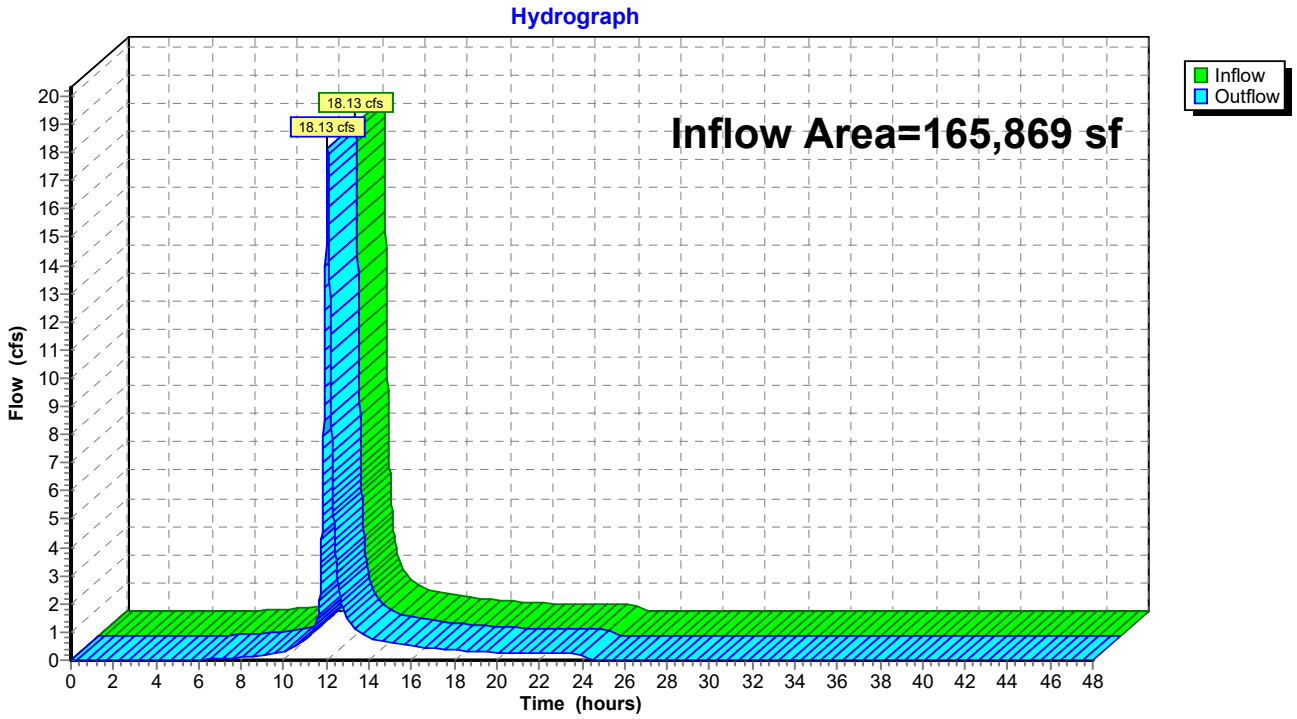


Summary for Reach 3R: PRE WEST

Inflow Area = 165,869 sf, 21.80% Impervious, Inflow Depth = 3.84" for 100-Year event
Inflow = 18.13 cfs @ 12.06 hrs, Volume= 53,130 cf
Outflow = 18.13 cfs @ 12.06 hrs, Volume= 53,130 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 3R: PRE WEST



Summary for Subcatchment 4S: PRE EX6

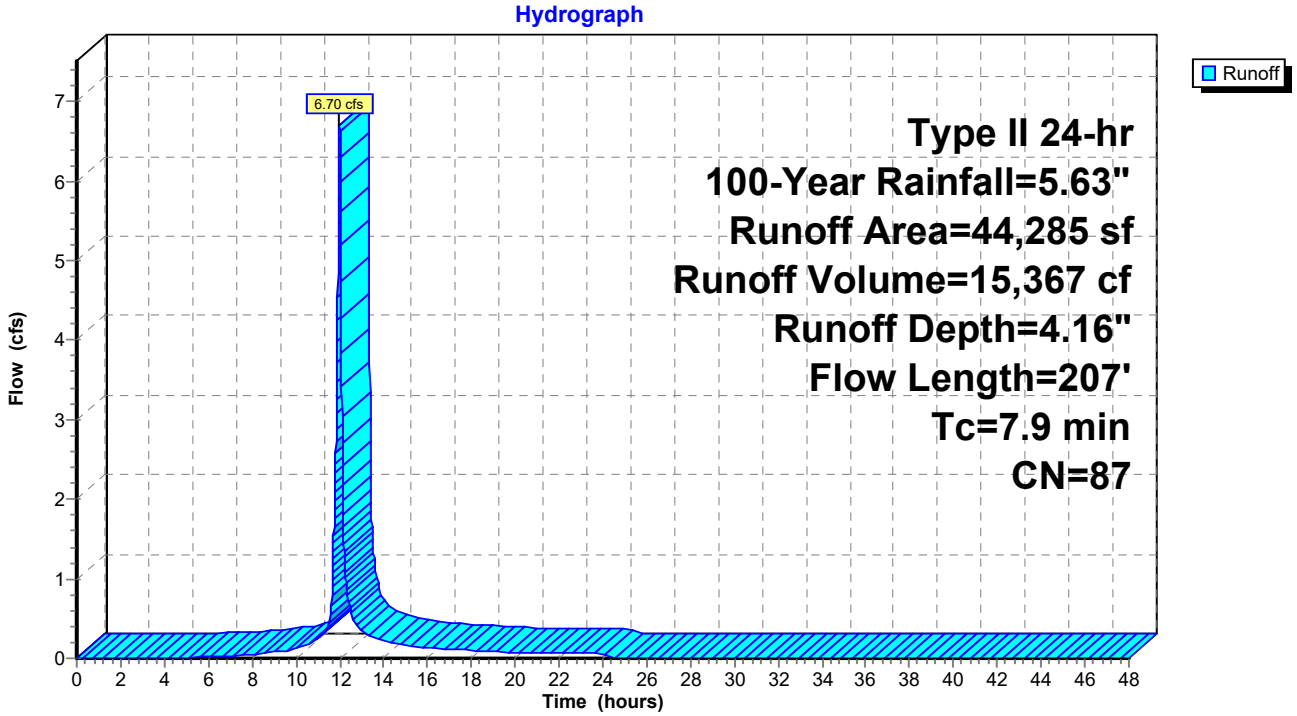
Runoff = 6.70 cfs @ 11.99 hrs, Volume= 15,367 cf, Depth= 4.16"
Routed to Reach 6R : PRE EAST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Year Rainfall=5.63"

Area (sf)	CN	Description
27,617	80	>75% Grass cover, Good, HSG D
16,668	98	Paved parking, HSG D
44,285	87	Weighted Average
27,617		62.36% Pervious Area
16,668		37.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	100	0.0681	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
1.3	107	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.9	207	Total			

Subcatchment 4S: PRE EX6



Summary for Subcatchment 5S: PRE EX37

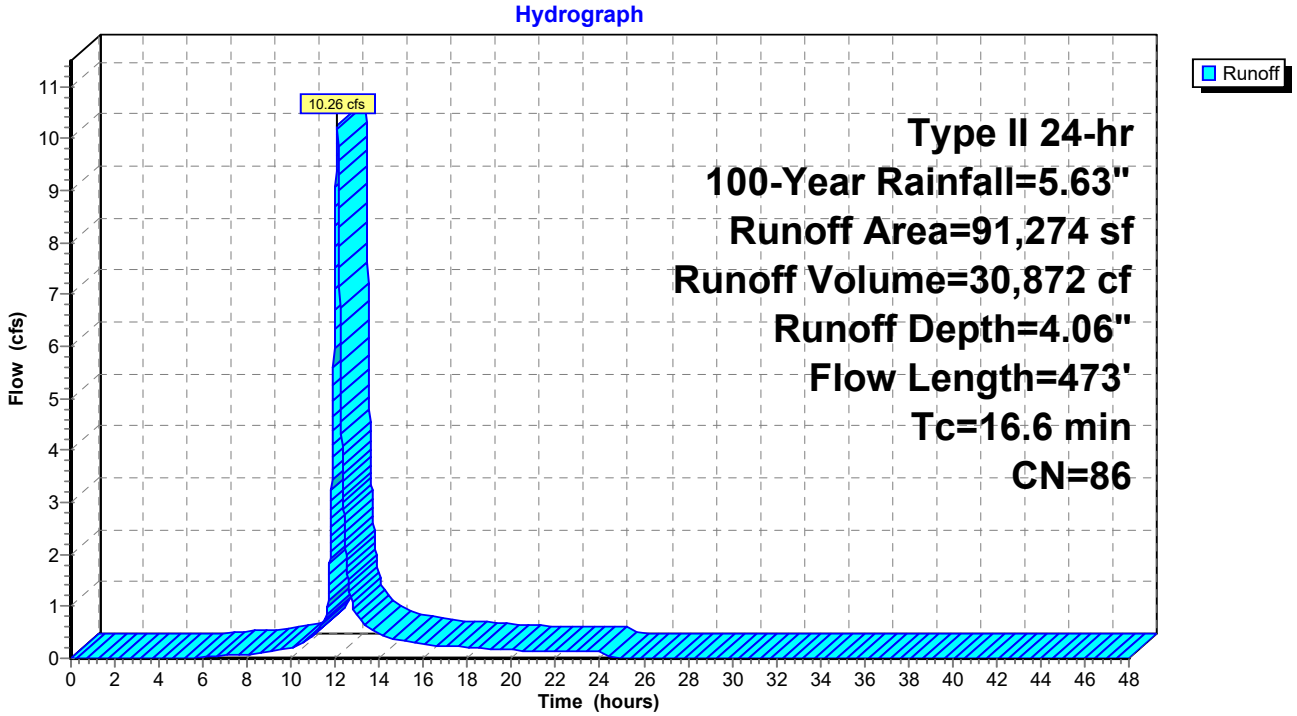
Runoff = 10.26 cfs @ 12.08 hrs, Volume= 30,872 cf, Depth= 4.06"
Routed to Reach 6R : PRE EAST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Year Rainfall=5.63"

Area (sf)	CN	Description
59,996	80	>75% Grass cover, Good, HSG D
31,278	98	Paved parking, HSG D
91,274	86	Weighted Average
59,996		65.73% Pervious Area
31,278		34.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0	100	0.0154	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
4.6	373	0.0366	1.34		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
16.6	473	Total			

Subcatchment 5S: PRE EX37

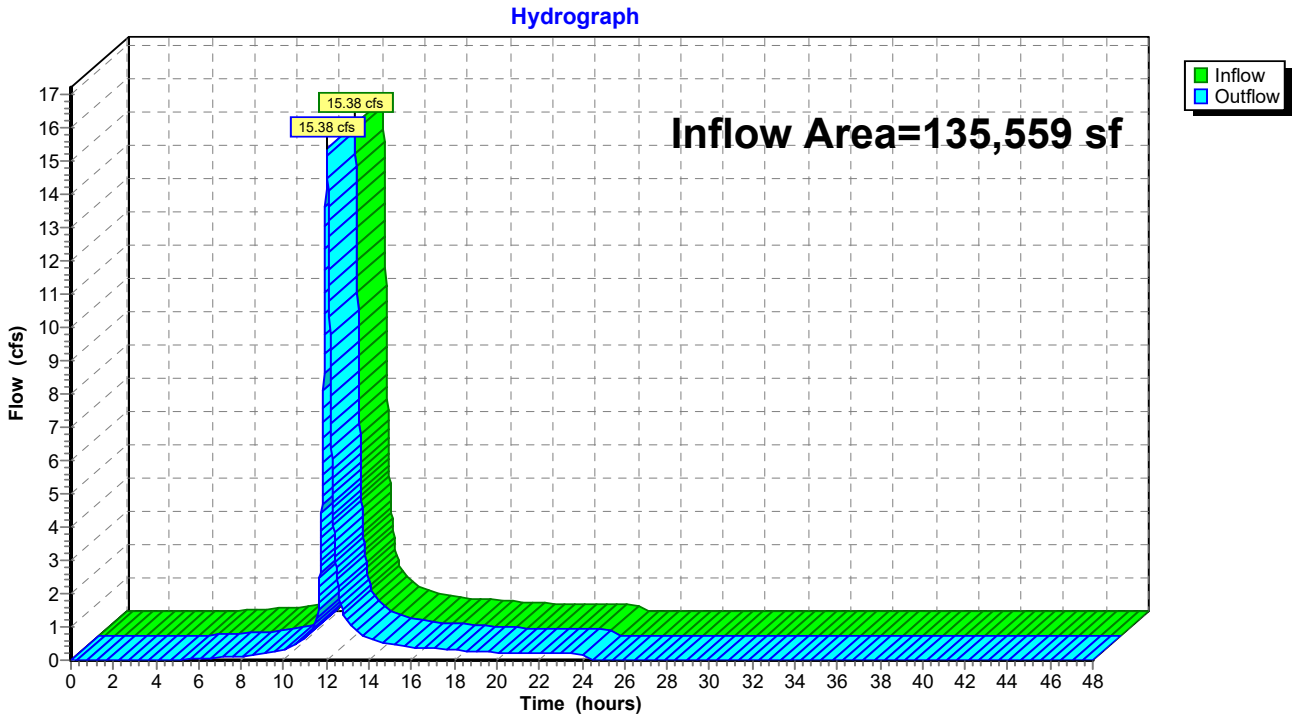


Summary for Reach 6R: PRE EAST

Inflow Area = 135,559 sf, 35.37% Impervious, Inflow Depth = 4.09" for 100-Year event
Inflow = 15.38 cfs @ 12.03 hrs, Volume= 46,239 cf
Outflow = 15.38 cfs @ 12.03 hrs, Volume= 46,239 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 6R: PRE EAST



Summary for Subcatchment 7S: POST EX4

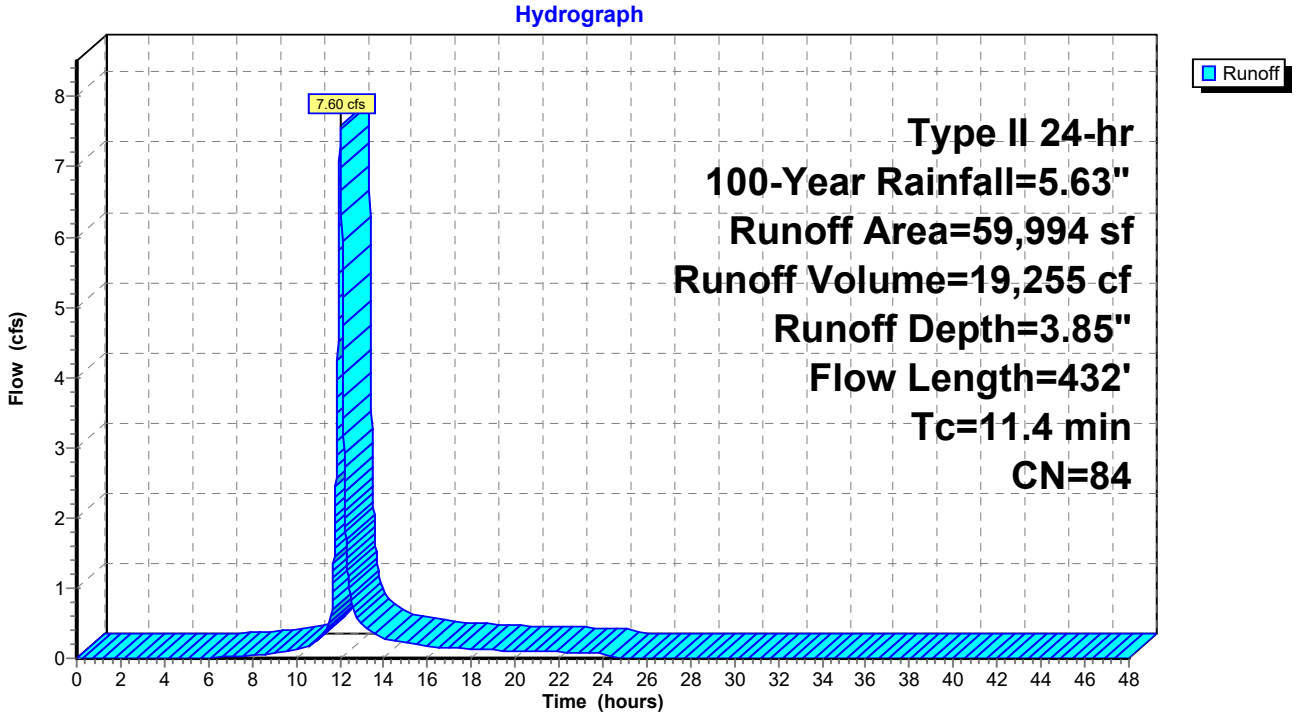
Runoff = 7.60 cfs @ 12.03 hrs, Volume= 19,255 cf, Depth= 3.85"
Routed to Reach 10R : POST WEST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Year Rainfall=5.63"

Area (sf)	CN	Description
47,032	80	>75% Grass cover, Good, HSG D
12,962	98	Paved parking, HSG D
59,994	84	Weighted Average
47,032		78.39% Pervious Area
12,962		21.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.0700	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
4.9	332	0.0265	1.14		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.4	432	Total			

Subcatchment 7S: POST EX4



Summary for Subcatchment 8S: POST EX24

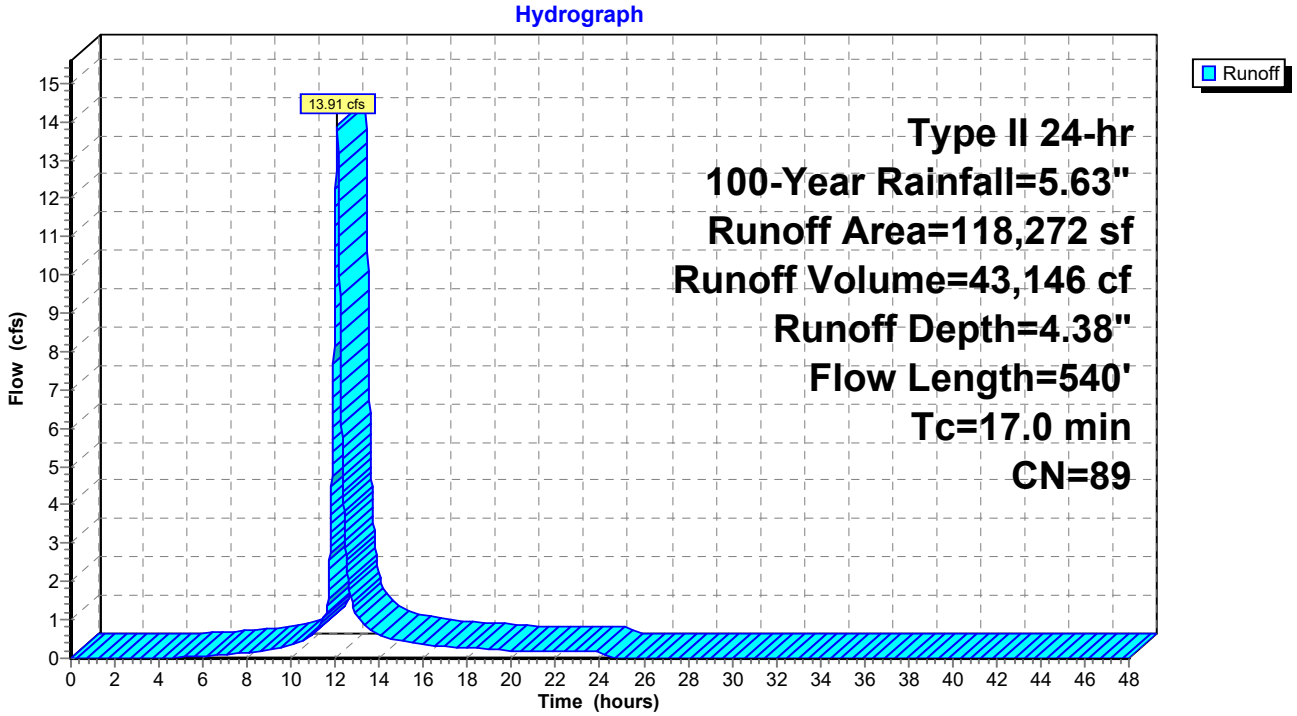
Runoff = 13.91 cfs @ 12.09 hrs, Volume= 43,146 cf, Depth= 4.38"
Routed to Pond 9P : DETENTION CB24

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Year Rainfall=5.63"

Area (sf)	CN	Description
60,730	80	>75% Grass cover, Good, HSG D
57,542	98	Paved parking, HSG D
118,272	89	Weighted Average
60,730		51.35% Pervious Area
57,542		48.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	100	0.0181	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
5.8	440	0.0330	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.0	540	Total			

Subcatchment 8S: POST EX24



Summary for Pond 9P: DETENTION CB24

Inflow Area = 118,272 sf, 48.65% Impervious, Inflow Depth = 4.38" for 100-Year event
Inflow = 13.91 cfs @ 12.09 hrs, Volume= 43,146 cf
Outflow = 11.46 cfs @ 12.17 hrs, Volume= 42,770 cf, Atten= 18%, Lag= 5.0 min
Primary = 11.46 cfs @ 12.17 hrs, Volume= 42,770 cf
Routed to Reach 10R : POST WEST

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 899.08' @ 12.17 hrs Surf.Area= 7,148 sf Storage= 8,748 cf

Plug-Flow detention time= 156.4 min calculated for 42,761 cf (99% of inflow)
Center-of-Mass det. time= 151.0 min (948.3 - 797.3)

Volume	Invert	Avail.Storage	Storage Description
#1	896.62'	15,305 cf	**Storage (Prismatic)**Listed below (Recalc)
#2A	892.12'	715 cf	**21.50'W x 53.04'L x 2.33'H Field A** 2,661 cf Overall - 619 cf Embedded = 2,042 cf x 35.0% Voids
#3A	892.62'	619 cf	**ADS_StormTech RC-310 +Cap**x 42 Inside #2 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 42 Chambers in 6 Rows
		16,639 cf	Total Available Storage

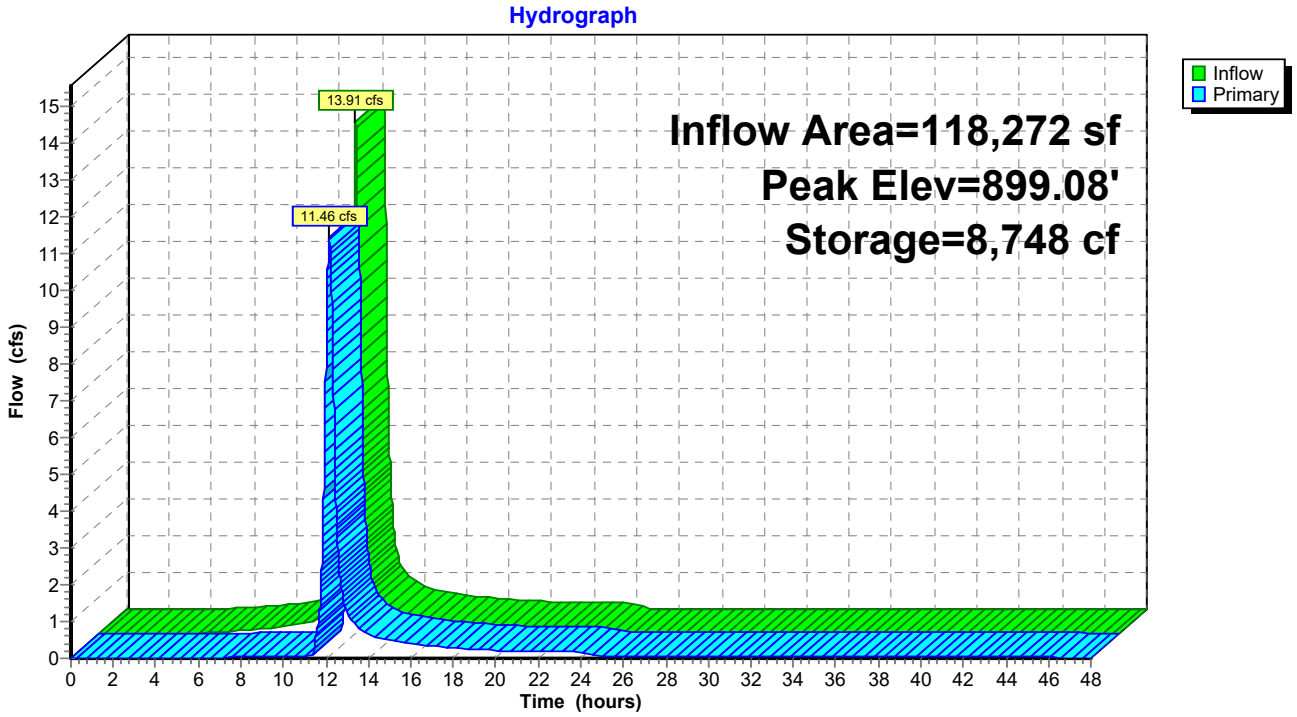
Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
896.62	9	0	0
897.00	944	181	181
898.00	3,517	2,231	2,412
899.00	5,558	4,538	6,949
900.00	11,154	8,356	15,305

Device	Routing	Invert	Outlet Devices
#1	Primary	892.12'	**15.00" Round Culvert** L= 71.2' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 892.12' / 890.79' S= 0.0187 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	892.12'	**1.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	898.20'	**36.00" W x 6.00" H Vert. Window X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=11.46 cfs @ 12.17 hrs HW=899.08' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 11.46 cfs of 14.70 cfs potential flow)
  ├─**2=Orifice** (Orifice Controls 0.07 cfs @ 12.66 fps)
  └─**3=Window** (Orifice Controls 11.39 cfs @ 3.80 fps)

Pond 9P: DETENTION CB24

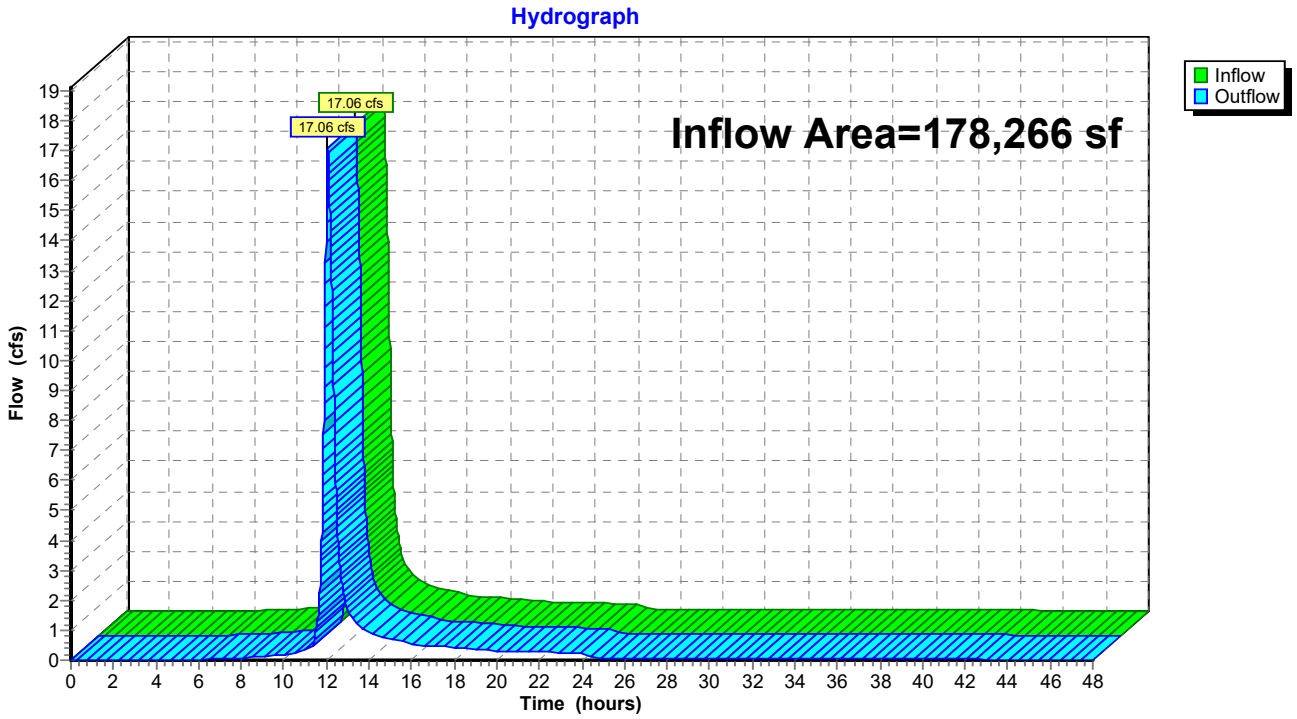


Summary for Reach 10R: POST WEST

Inflow Area = 178,266 sf, 39.55% Impervious, Inflow Depth > 4.18" for 100-Year event
Inflow = 17.06 cfs @ 12.07 hrs, Volume= 62,025 cf
Outflow = 17.06 cfs @ 12.07 hrs, Volume= 62,025 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 10R: POST WEST



Summary for Subcatchment 11S: POST EX6

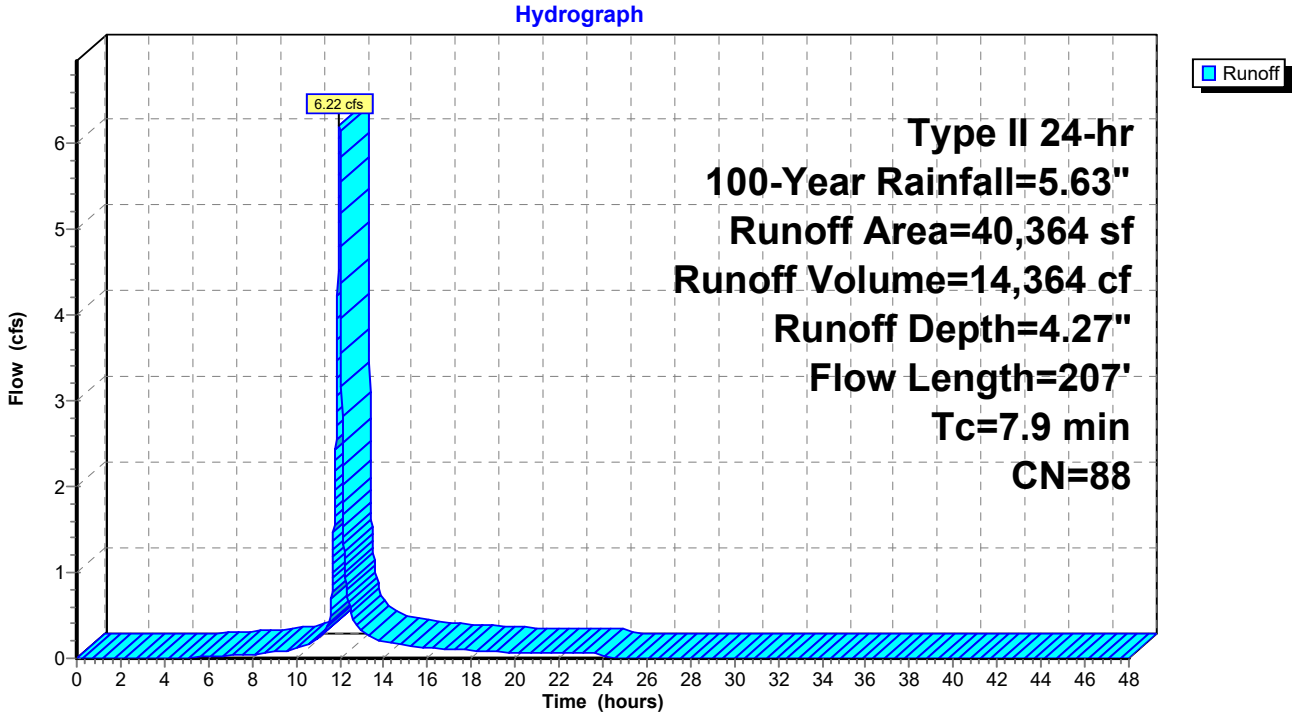
Runoff = 6.22 cfs @ 11.99 hrs, Volume= 14,364 cf, Depth= 4.27"
Routed to Reach 14R : POST EAST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Year Rainfall=5.63"

Area (sf)	CN	Description
21,901	80	>75% Grass cover, Good, HSG D
18,463	98	Paved parking, HSG D
40,364	88	Weighted Average
21,901		54.26% Pervious Area
18,463		45.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	100	0.0681	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
1.3	107	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.9	207	Total			

Subcatchment 11S: POST EX6



Summary for Subcatchment 12S: POST EX37

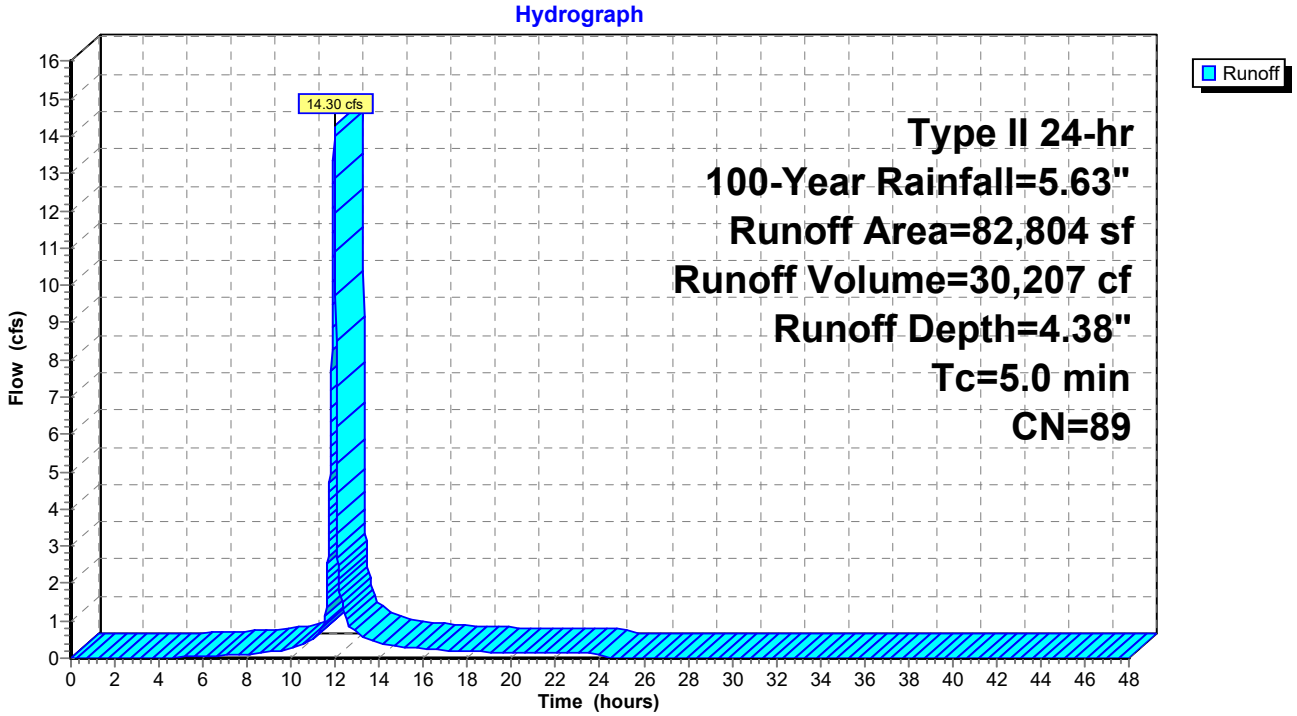
Runoff = 14.30 cfs @ 11.96 hrs, Volume= 30,207 cf, Depth= 4.38"
Routed to Pond 13P : DETENTION CB37

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Year Rainfall=5.63"

Area (sf)	CN	Description
41,997	80	>75% Grass cover, Good, HSG D
40,807	98	Paved parking, HSG D
82,804	89	Weighted Average
41,997		50.72% Pervious Area
40,807		49.28% Impervious Area

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

Subcatchment 12S: POST EX37



Summary for Pond 13P: DETENTION CB37

Inflow Area = 82,804 sf, 49.28% Impervious, Inflow Depth = 4.38" for 100-Year event
Inflow = 14.30 cfs @ 11.96 hrs, Volume= 30,207 cf
Outflow = 2.33 cfs @ 12.13 hrs, Volume= 30,207 cf, Atten= 84%, Lag= 10.3 min
Primary = 2.33 cfs @ 12.13 hrs, Volume= 30,207 cf
Routed to Reach 14R : POST EAST

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 899.47' @ 12.13 hrs Surf.Area= 7,400 sf Storage= 9,224 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 22.9 min (809.0 - 786.1)

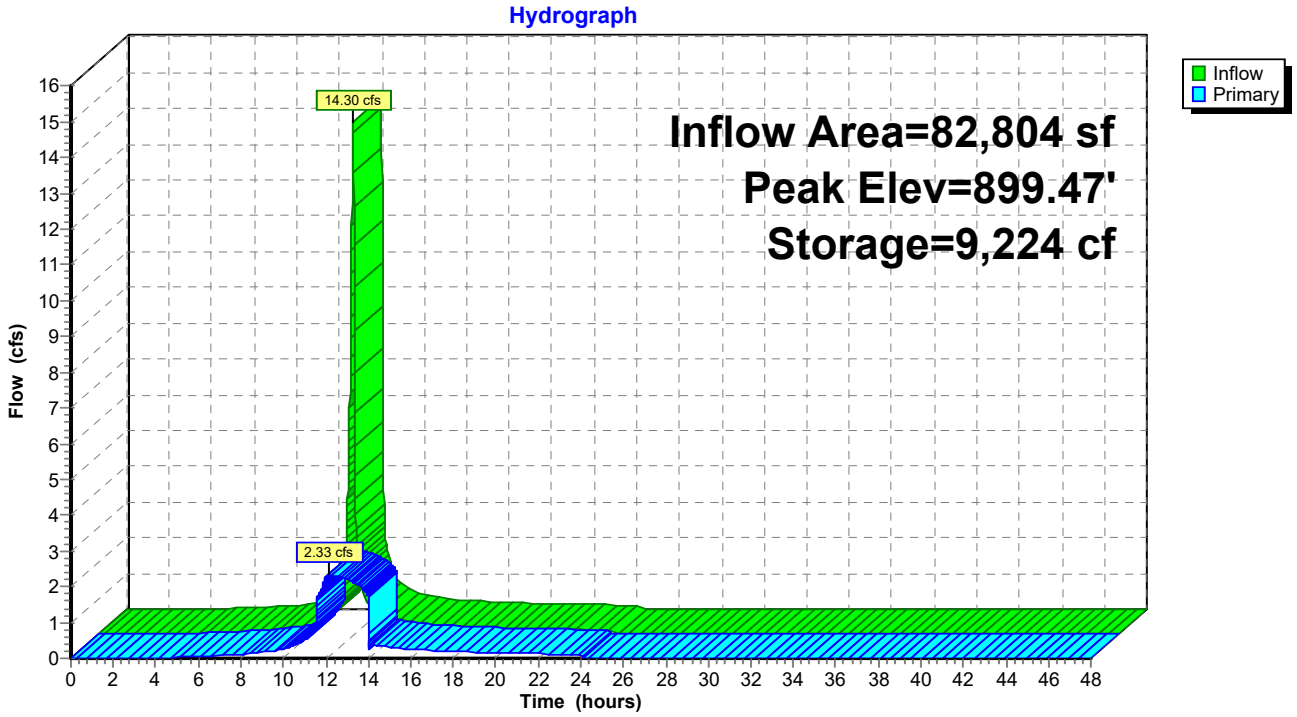
Volume	Invert	Avail.Storage	Storage Description
#1	893.40'	13,925 cf	**Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
893.40	9	0	0
896.60	9	29	29
897.00	1,110	224	253
898.00	3,258	2,184	2,437
899.00	4,617	3,938	6,374
900.00	10,484	7,551	13,925

Device	Routing	Invert	Outlet Devices
#1	Primary	893.40'	**18.00" Round Culvert** L= 104.4' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 893.40' / 891.88' S= 0.0146 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	843.40'	**6.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.33 cfs @ 12.13 hrs HW=899.47' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 2.33 cfs of 18.96 cfs potential flow)
└─**2=Orifice** (Orifice Controls 2.33 cfs @ 11.87 fps)

Pond 13P: DETENTION CB37

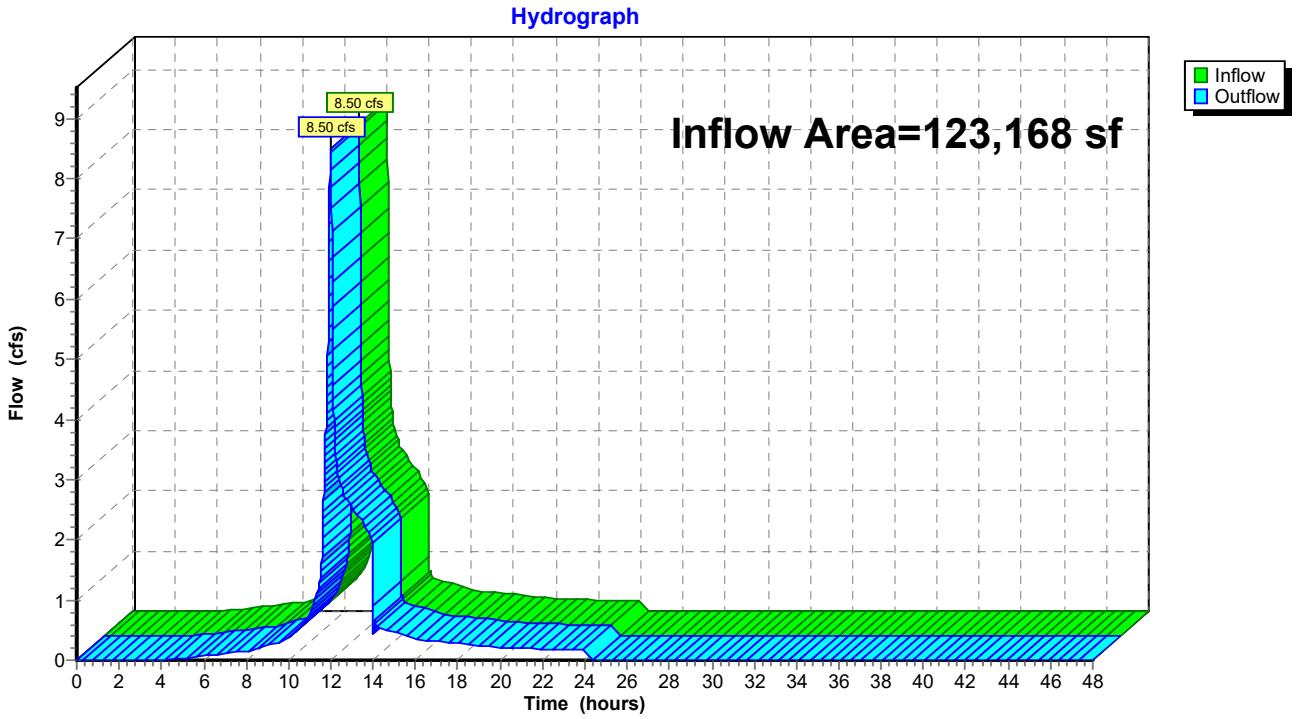


Summary for Reach 14R: POST EAST

Inflow Area = 123,168 sf, 48.12% Impervious, Inflow Depth = 4.34" for 100-Year event
Inflow = 8.50 cfs @ 11.99 hrs, Volume= 44,571 cf
Outflow = 8.50 cfs @ 11.99 hrs, Volume= 44,571 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach 14R: POST EAST



Events for Subcatchment 1S: PRE EX4

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
1-Year	2.20	1.56	3,919	0.78
2-Year	2.63	2.20	5,472	1.09
5-Year	3.24	3.17	7,851	1.57
10-Year	3.74	4.00	9,912	1.98
25-Year	4.44	5.19	12,916	2.58
50-Year	5.02	6.19	15,483	3.10
100-Year	**5.63**	**7.25**	**18,239**	**3.65**

Events for Subcatchment 2S: PRE EX24

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
1-Year	2.20	2.77	8,334	0.94
2-Year	2.63	3.78	11,319	1.28
5-Year	3.24	5.30	15,809	1.79
10-Year	3.74	6.57	19,647	2.23
25-Year	4.44	8.38	25,185	2.85
50-Year	5.02	9.89	29,879	3.39
100-Year	**5.63**	**11.49**	**34,891**	**3.95**

Events for Reach 3R: PRE WEST

Event	Inflow (cfs)	Outflow (cfs)	Elevation (feet)	Storage (cubic-feet)
1-Year	4.18	4.18	**0.00**	**0**
2-Year	5.79	5.79	0.00	0
5-Year	8.19	8.19	0.00	0
10-Year	10.22	10.22	0.00	0
25-Year	13.12	13.12	0.00	0
50-Year	15.55	15.55	0.00	0
100-Year	**18.13**	**18.13**	0.00	0

Events for Subcatchment 4S: PRE EX6

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
1-Year	2.20	1.80	3,928	1.06
2-Year	2.63	2.40	5,243	1.42
5-Year	3.24	3.26	7,197	1.95
10-Year	3.74	3.98	8,854	2.40
25-Year	4.44	4.99	11,230	3.04
50-Year	5.02	5.82	13,234	3.59
100-Year	**5.63**	**6.70**	**15,367**	**4.16**

Events for Subcatchment 5S: PRE EX37

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
1-Year	2.20	2.58	7,630	1.00
2-Year	2.63	3.48	10,272	1.35
5-Year	3.24	4.83	14,223	1.87
10-Year	3.74	5.95	17,586	2.31
25-Year	4.44	7.54	22,423	2.95
50-Year	5.02	8.87	26,513	3.49
100-Year	**5.63**	**10.26**	**30,872**	**4.06**

Events for Reach 6R: PRE EAST

Event	Inflow (cfs)	Outflow (cfs)	Elevation (feet)	Storage (cubic-feet)
1-Year	3.91	3.91	**0.00**	**0**
2-Year	5.28	5.28	0.00	0
5-Year	7.28	7.28	0.00	0
10-Year	8.95	8.95	0.00	0
25-Year	11.33	11.33	0.00	0
50-Year	13.30	13.30	0.00	0
100-Year	**15.38**	**15.38**	0.00	0

Events for Subcatchment 7S: POST EX4

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
1-Year	2.20	1.78	4,442	0.89
2-Year	2.63	2.46	6,088	1.22
5-Year	3.24	3.46	8,579	1.72
10-Year	3.74	4.31	10,717	2.14
25-Year	4.44	5.52	13,812	2.76
50-Year	5.02	6.53	16,442	3.29
100-Year	**5.63**	**7.60**	**19,255**	**3.85**

Events for Subcatchment 8S: POST EX24

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
1-Year	2.20	3.95	11,787	1.20
2-Year	2.63	5.17	15,464	1.57
5-Year	3.24	6.93	20,876	2.12
10-Year	3.74	8.39	25,427	2.58
25-Year	4.44	10.44	31,916	3.24
50-Year	5.02	12.13	37,365	3.79
100-Year	**5.63**	**13.91**	**43,146**	**4.38**

Events for Pond 9P: DETENTION CB24

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
1-Year	3.95	1.36	898.37	5,167
2-Year	5.17	3.15	898.50	5,737
5-Year	6.93	5.62	898.64	6,397
10-Year	8.39	7.32	898.73	6,832
25-Year	10.44	9.05	898.85	7,476
50-Year	12.13	10.28	898.96	8,066
100-Year	**13.91**	**11.46**	**899.08**	**8,748**

Events for Reach 10R: POST WEST

Event	Inflow (cfs)	Outflow (cfs)	Elevation (feet)	Storage (cubic-feet)
1-Year	1.84	1.84	**0.00**	**0**
2-Year	3.95	3.95	0.00	0
5-Year	7.40	7.40	0.00	0
10-Year	10.10	10.10	0.00	0
25-Year	13.06	13.06	0.00	0
50-Year	15.09	15.09	0.00	0
100-Year	**17.06**	**17.06**	0.00	0

Events for Subcatchment 11S: POST EX6

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
1-Year	2.20	1.74	3,797	1.13
2-Year	2.63	2.29	5,023	1.49
5-Year	3.24	3.08	6,838	2.03
10-Year	3.74	3.74	8,371	2.49
25-Year	4.44	4.66	10,561	3.14
50-Year	5.02	5.42	12,405	3.69
100-Year	**5.63**	**6.22**	**14,364**	**4.27**

Events for Subcatchment 12S: POST EX37

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
1-Year	2.20	4.19	8,252	1.20
2-Year	2.63	5.44	10,827	1.57
5-Year	3.24	7.24	14,616	2.12
10-Year	3.74	8.72	17,802	2.58
25-Year	4.44	10.79	22,345	3.24
50-Year	5.02	12.51	26,160	3.79
100-Year	**5.63**	**14.30**	**30,207**	**4.38**

Events for Pond 13P: DETENTION CB37

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
1-Year	4.19	1.92	897.50	1,085
2-Year	5.44	1.99	897.82	1,883
5-Year	7.24	2.08	898.22	3,198
10-Year	8.72	2.14	898.54	4,378
25-Year	10.79	2.23	898.94	6,118
50-Year	12.51	2.28	899.23	7,613
100-Year	**14.30**	**2.33**	**899.47**	**9,224**

Events for Reach 14R: POST EAST

Event	Inflow (cfs)	Outflow (cfs)	Elevation (feet)	Storage (cubic-feet)
1-Year	3.64	3.64	**0.00**	**0**
2-Year	4.25	4.25	0.00	0
5-Year	5.12	5.12	0.00	0
10-Year	5.83	5.83	0.00	0
25-Year	6.83	6.83	0.00	0
50-Year	7.64	7.64	0.00	0
100-Year	**8.50**	**8.50**	0.00	0

THE KLEINGERS GROUP
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614.882.4311

STORM SEWER COMPUTATIONS

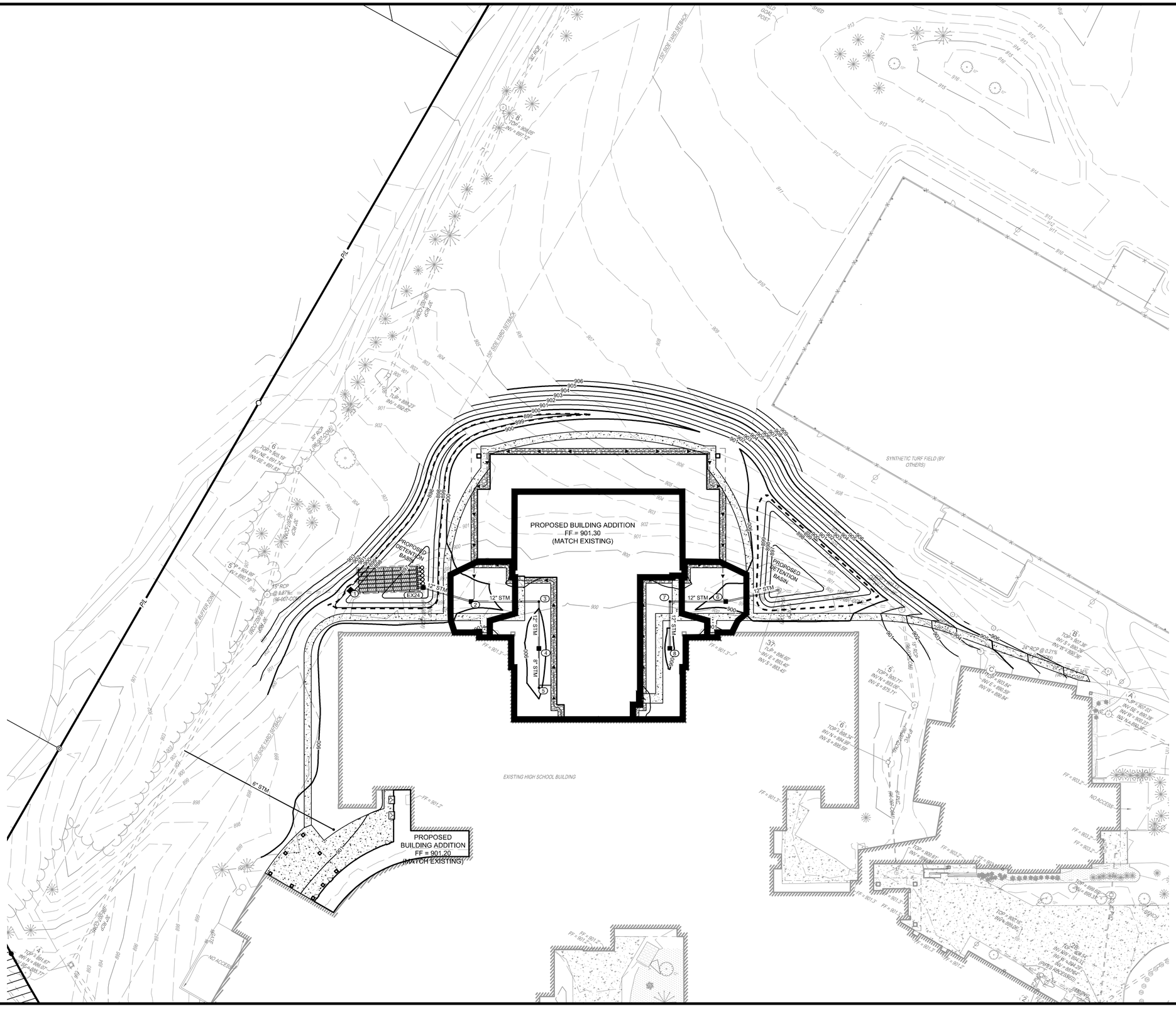
1/21/2025
i = SWDM

Project: Dublin Scioto HS Addition
Project Number: 240782.000

Design Storm: 2 yr
Check Storm: 5 yr
Manning's n: 0.013

LOCATION			BASIN DATA									PIPE DATA										HGL CHECK							
Inlet	Station	Outlet	ΔA (ac)	ΣA (ac)	ΔT_c (min)	ΣT_c (min)	Design i (in/hr)	Runoff Coeff. C	ΔCA (ac)	ΣCA (ac)	Design Q (cfs)	Pipe Size (in)	Pipe Length (ft)	Pipe Slope (ft/ft)	Manning n	US Invert (ft)	DS Invert (ft)	Mean Velocity (ft/sec)	Time in Pipe (min)	∑ Time (min)	Pipe Full Q (cfs)	Check i (in/hr)	Check Q (cfs)	Mean Velocity (ft/sec)2	Friction Slope (ft/ft)	Head Loss (ft)	TW Elevation (ft)	HW Elevation (ft)	Grate Elevation (ft)
8		7	0.11	0.11	5.00	5.00	5.05	0.59	0.06	0.06	**0.33**	12	39	0.0104	0.0130	895.35	894.95	**4.64**	0.14	5.14	**3.64**	6.05	0.39	4.64	0.0104	0.41	899.19	**899.59**	**899.65**
7		6	0.00	0.11	5.00	5.14	5.01	0.00	0.00	0.06	**0.32**	12	47	0.0104	0.0130	894.95	894.46	**4.64**	0.17	5.31	**3.64**	6.00	0.39	4.64	0.0104	0.49	898.70	**899.19**	**900.57**
6		EX37	0.06	0.17	5.00	5.31	4.96	0.52	0.03	0.10	**0.48**	12	46	0.0104	0.0130	894.46	**893.98**	**4.64**	0.16	5.48	**3.64**	5.94	0.58	4.64	0.0104	0.48	**898.22**	**898.70**	**899.47**
4		3	0.53	0.53	5.00	5.00	5.05	0.86	0.46	0.46	**2.31**	12	39	0.0104	0.0130	895.26	894.85	**4.64**	0.14	5.14	**3.64**	6.05	2.77	4.64	0.0104	0.41	899.67	**900.08**	**900.26**
3		2	0.00	0.53	5.00	5.14	5.01	0.00	0.00	0.46	**2.30**	12	57	0.0104	0.0130	894.85	894.25	**4.64**	0.20	5.35	**3.64**	6.00	2.75	4.64	0.0104	0.59	899.07	**899.67**	**900.14**
2		EX24	0.06	0.60	5.00	5.35	4.95	0.52	0.03	0.49	**2.44**	12	42	0.0104	0.0130	894.25	**893.82**	**4.64**	0.15	5.50	**3.64**	5.93	2.92	4.64	0.0104	0.43	**898.64**	**899.07**	**899.42**

Designed: EJK
Checked: MJC



INLET	AREA (AC)	C
1	0.00	0.00
2	0.06	0.52
3	0.00	0.00
4	0.53	0.86
5	0.00	0.00
6	0.06	0.52
7	0.00	0.00
8	0.11	0.59

0 20 40 80

REVISION RECORD

NO.	DATE	REVISION DESCRIPTION	ENG	DUB

CIVIL ENGINEERING
SURVEYING
LANDSCAPE
ARCHITECTURE
www.kleingers.com
350 Worthington Rd
Suite H
Westerville, OH 43082
614.882.4311
THE KLEINGERS GROUP

PRIVATE SITE IMPROVEMENT PLAN
DUBLIN SCIOTO HIGH SCHOOL ADDITION
4000 HARD ROAD
CITY OF DUBLIN, FRANKLIN COUNTY, OHIO 43016

LOCAL DRAINAGE MAP

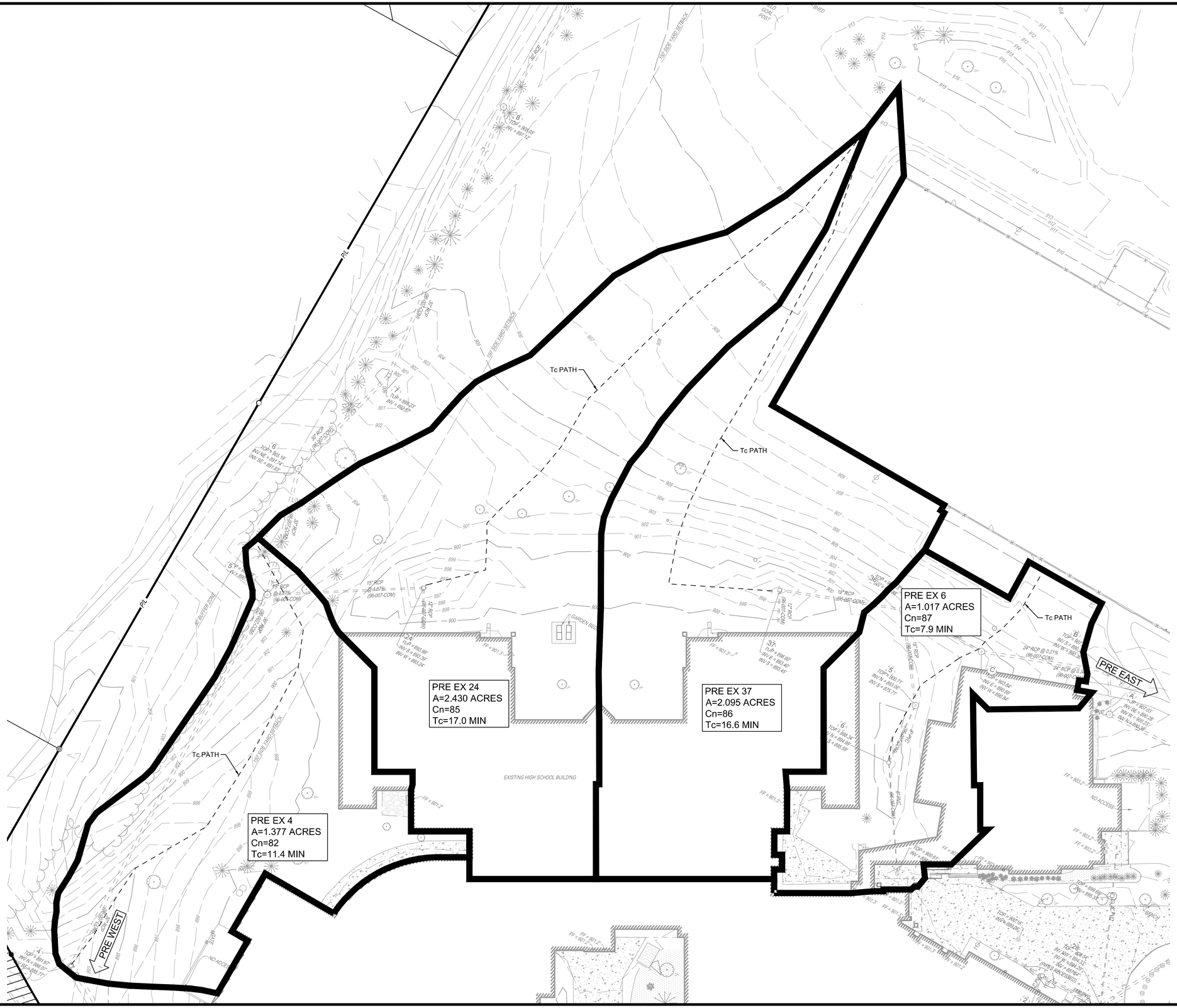
DATE: 01-23-2025

CITY OF DUBLIN PROJECT NUMBER
25-XXX-COM

DRAWING NUMBER

SHEET NUMBER
1 OF 1

H:\Columbus\2024\24078\24078_DWGS_Misc\24078DRN003.dwg, 1/21/2025 2:34 PM, Mike Courmier



NO.	DATE	REVISION DESCRIPTION	ENG	DUB

REVISION RECORD

THE KLEINGERS GROUP
CIVIL ENGINEERING
SURVEYING
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www.kleingers.com
350 Worthington Rd
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614.882.4311

PRIVATE SITE IMPROVEMENT PLAN

DUBLIN SCIOTO HIGH SCHOOL ADDITION

4000 HARD ROAD
CITY OF DUBLIN, FRANKLIN COUNTY, OHIO 43016

PRE-DEVELOPED DRAINAGE MAP

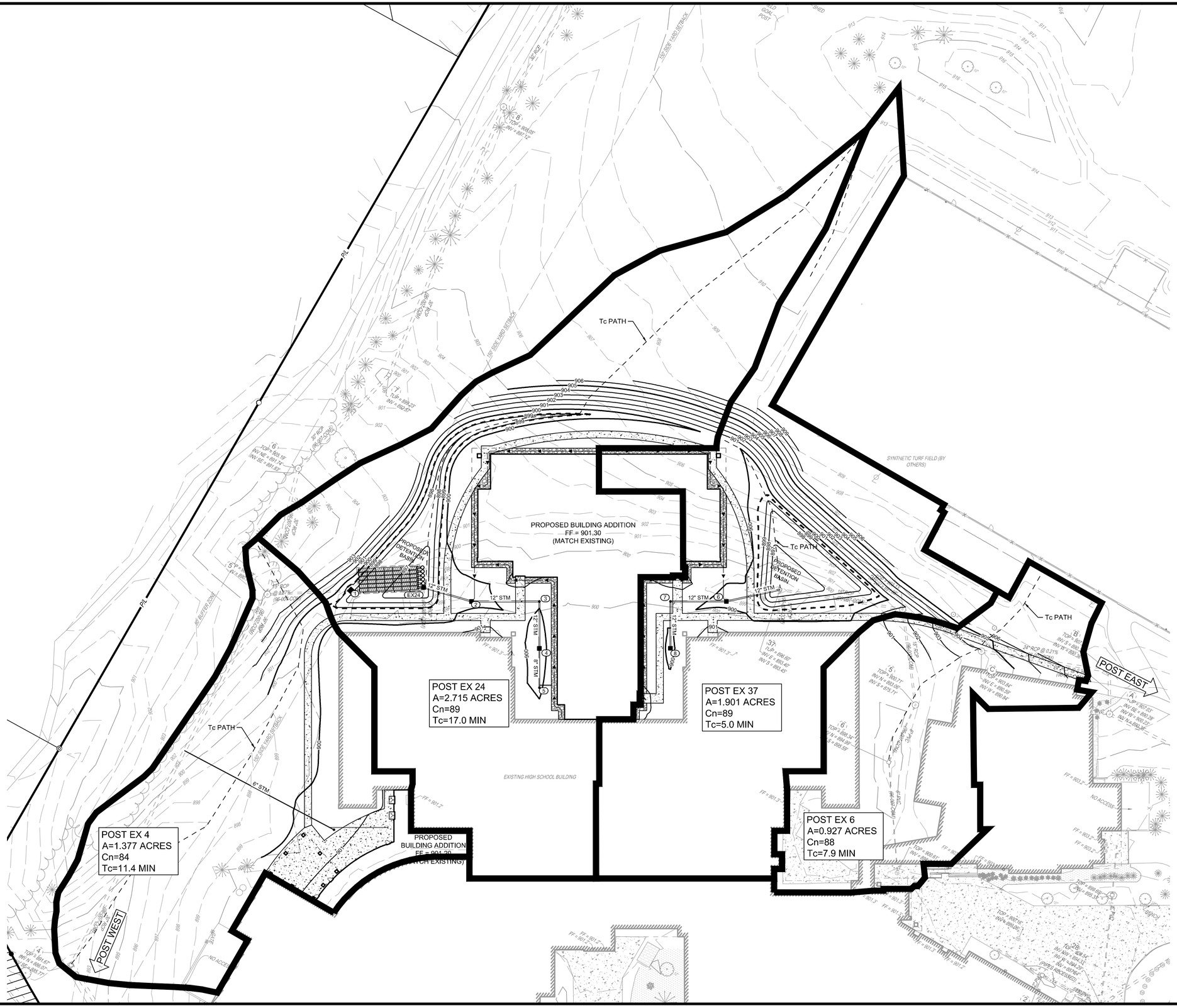
DATE: 01-17-2025

CITY OF DUBLIN PROJECT NUMBER
25-XXX-COM

DRAWING NUMBER

SHEET NUMBER
1 OF 1

I:\Columbus\2024\24078200_DWG_Mac\24078200\00.dwg 12/20/2025 8:11 AM Mike Colomer



NO.	DATE	REVISION DESCRIPTION	ENG	DUB

REVISION RECORD

CIVIL ENGINEERING
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THE KLEINGERS GROUP

PRIVATE SITE IMPROVEMENT PLAN

DUBLIN SCIOTO HIGH SCHOOL ADDITION

4000 HARD ROAD
CITY OF DUBLIN, FRANKLIN COUNTY, OHIO 43016

POST-DEVELOPED DRAINAGE MAP

DATE: 01-23-2025

CITY OF DUBLIN PROJECT NUMBER
25-XXX-COM

DRAWING NUMBER

SHEET NUMBER
1 OF 1

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