STORMWATER MANAGEMENT REPORT

FOR

Meridian Furniture, Inc.

LOCATED AT

300-356 Enterprise Ave.
City of Trenton
Block 23203, Lot 1
Block 23102 Lots 2 & 9
Township of Lawrence
Block 602, Lots 1 & 2
Mercer County, New Jersey

PREPARED: September 19, 2025
REVISED: December 15, 2025

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Prepared by SESI Consulting Engineers., Dated June 5, 2025.

INSET POCKET

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PD-1: PROPOSED DRAINAGE AREA MAP (Dated: 09/17/2025)

1. DESCRIPTION OF PROJECT

PREPARED: September 19, 2025
REVISED: December 15, 2025

300-356 ENTERPRISE AVE.
CITY OF TRENTON
BLOCK 23203, LOT 1
BLOCK 23102 LOTS 2 & 9
TOWNSHIP OF LAWRENCE
BLOCK 602, LOTS 1 & 2
MERCER COUNTY, NEW JERSEY

1.1 INTRODUCTION

This Stormwater Management Report has been prepared for Meridian Furniture, Inc. as a requirement for the proposed development project. The property in question is located at 300-356 Enterprise Ave, City of Trenton, Block 23203, LOT 1, Block 23102 Lots 2 & 9 and Township of Lawrence, Block 602, Lots 1 & 2, Mercer County, New Jersey.

A set of plans entitled "Preliminary/Final Major Site Plan prepared for Meridian Furniture inc. 300- 356 Enterprise Avenue, City of Trenton and township of Lawrence, Mercer County, New Jersey.", dated 09/19/2025 by Gregory J. Redington P.E., is being submitted in conjunction with this report.

This Stormwater Management Report has been designed in accordance with Land Development Ordinance Article XVI: "Stormwater Management Controls" of the City of Trenton and Lawrence Township, New Jersey Stormwater Management Rules at N.J.A.C. 7:8 and Soil Erosion and Sediment Control Act, N.J.S.A. 4:24-39. This project follows the latest July 2023 NJ Stormwater Best Management Practices Manual release.

This project will disturb more than one (1) Acre of land; therefore, because of this condition the project is classified as Major Development and it falls within the jurisdictional thresholds of the Storm Management Rules N.J.A.C. 7:8.

The drainage area analyzed in this report contains12.116 acres.

1.2 SOILS AND TOPOGRAPHY

According to NRCS/USDA's Soil Survey of Mercer County, New Jersey, soils in the area are identified as follows:

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
UdgB	Udorthents, gravelly substratum, 0 to 8 percent slopes	D	18.6	80.8%
UdstB	Udorthents, stratified substratum, 0 to 8 percent slopes	D	0.1	0.4%
WATER	Water		4.3	18.8%
Totals for Area of Interest			**23.0**	**100.0%**

Boundary and areas of soils are shown on a map attached in the ***Maps & Diagrams*** section of this report.

Specific site soil conditions were evaluated by SESI Consulting Engineers and recorded in a Subsurface Soil Investigation and report prepared on June 5, 2025; attached at the end of this report.

1.3 METHODOLOGY

This report will address the design of the Stormwater collection, detention and conveyance system. Runoff and volume values have been calculated under both pre and post development conditions in accordance with the USDA Natural Resources Conservation Service methodology as described in Chapter 5 of New Jersey Stormwater Best Management Practices Manual and described in the Urban Hydrology for Small Watersheds (TR-55) publication.

Runoff curve numbers (CN Values) have been established by use of the hydrologic soil groupings associated with the soils found on the NRCS Online Soil Survey. A composite soil survey map is provided for review of the general soil characteristics and it is attached to this report in section Maps and Charts. Run-off coefficients Table 2-1a: Runoff curve numbers for urban areas (CN Values) as per USDA Urban Hydrology for Small Watersheds TR-55. Values can be found in ***Charts and Tables*** section of this report.

One (1) existing point of analysis have been delineated and the time of concentration has been computed using the McCuen-Spiess limitation for each sub drainage area within the drainage areas. The drainage area E-DA as shown on the Existing Drainage Area Map is attached to the inset pocket located at the end of this report. Times of concentration have been calculated using TR-55 methodology with maximum sheet flow lengths of 100 feet.

Storm analysis and calculations were performed with HydroCAD Stormwater modeling version 10.20-6a the storm flows for the 2, 10 and 100-year recurrence interval storms were analyzed for the pre and post development conditions. Stormwater outfall will not exceed of the 2, 10 and 100-year peak existing values respectfully.

The rainfall amounts used in the calculations for quantity and quality design storms were as found per NOAA Point Precipitation Frequency Estimates data attached in the ***Charts & Tables*** section of this report and summarized as follows:

Design Storm Recurrence Interval	Inches of Rainfall	Adjustment Factor	Adjusted Rainfall Depth
NJ WQ Design Storm	**1.25 in (*)**	**---**	**1.25 in**
2-Year Event	**3.33 in**	**1.01**	**3.36 in**
10-Year Event	**5.00 in**	**1.02**	**5.10 in**
25-Year Event	**6.13 in**	**---**	**---**
100-Year Event	**8.19 in**	**1.04**	**8.51 in**
(*) The 1-year storm event used is based on the New Jersey Department of Environmental Protection 1.25 inch/2-Hour Stormwater Quality Design Storm.			

Calculation of the water quality storm discharges for a 1.25-inch rainfall in 2 hours and computations of stormwater discharge rates and volumes for 2-year, 10-year, and 100-year storm events were obtained by using the latest NCRS 24 Hour Design Rainfall Depths for a NOAA Type C rainfall distribution.

The existing and proposed rainfall depth was retrieved from the NOAA Point Precipitation Frequency Estimates. Additionally, the applicable multiplier as set forth in Table 5-6 of N.J.A.C. 7:8-5.7 to adjust the precipitation values. The proposed depth of flow, multiplier and adjusted depth of flow are summarized below:

Proposed Design Storm Recurrence Interval (Year 2100 Rainfall Data)	Inches of Rainfall	Adjustment Factor	Adjusted Rainfall Depth
2-Year Event	**3.33 in**	**1.16**	**3.86 in**
10-Year Event	**5.00 in**	**1.17**	**5.85 in**
100-Year Event	**8.19 in**	**1.36**	**11.14 in**

1.4 PRE-DEVELOPMENT CONDITIONS

The property in question has a total area of 12.116 acres as per survey of existing conditions prepared by Insite Surveying, LLC last revised 07/15/2025 in which the property contains a demolished and capped industrial site, now consisting of natural grass and wooded areas. Offsite drainage areas consisting of buildings, asphalt, grass and wooded regions also are calculated in the existing conditions as these regions also convey to a Point of Analysis.

A summary of existing coverage areas is shown as follows:

EXISTING AREA COVERAGES					
Imp. Concrete/ Asphalt	18,621.12	**S.F.**	0.427	**Ac.**	3.52%
Water, HSG D	39,293.28	**S.F.**	0.902	**Ac.**	7.44%
Wood/Grass. Good, HSG D	421,905.89	**S.F.**	9.686	**Ac.**	79.96%
50-75% Grass , Good, HSG D	47,968.77	**S.F.**	1.101	**Ac.**	9.09%
TOTAL DRAINAGE AREA…	**527,789.06**	**S.F.**	**12.116**	**Ac.**	***100.00%***

As shown on the ***Existing Drainage Area Map*** supplied with this report (see inset pocket) the Pre-development drainage area has been detailed below:

Existing Drainage Area E-DA Onsite (12.116 Ac.): This is mostly covered by grass and woods/grass areas, with a small amount of impervious asphalt. The runoff from this area primarily sheet flows northeast towards a yard inlet located in the back of the property above the retaining

wall, where it is collected and discharges out of a 36" CMP pipe at the edge of the Assunpink Creek.

Allowable peak runoffs to respective point of analysis have been calculated and summarized below:

Allowable Peak Flow Analysis at Point "POA-1" ADJUSTED						
	Existing P.O.A. "E-DA"	Existing disturbed Area Runoff	Existing calculated undisturbed Area Runoff	Reduction Factor	Allowable Disturbed	Allowable P.O.A. "E-DA"
	A	*B*	*C = A - B*	*D*	*E = (B x D)*	*(C + E)*
2-Year	13.68 cfs	10.95 cfs	2.73 cfs	50%	5.48 cfs	**8.21 cfs**
10-Year	26.36 cfs	21.78 cfs	4.58 cfs	75%	16.34 cfs	**20.92 cfs**
100-Year	52.56 cfs	44.37 cfs	8.19 cfs	80%	35.50 cfs	**43.69 cfs**

Allowable Peak Flow Analysis at Point "POA-1" PROJECTED YEAR 2100						
	Existing P.O.A. "E-DA"	Existing disturbed Area Runoff	Existing calculated undisturbed Area Runoff	Reduction Factor	Allowable Disturbed	Allowable P.O.A. "E-DA"
	A	*B*	*C = A - B*	*D*	*E = (B x D)*	*(C + E)*
2-Year	17.78 cfs	14.41 cfs	3.37 cfs	50%	7.51 cfs	**10.88 cfs**
10-Year	33.08 cfs	27.53 cfs	5.55 cfs	75%	21.19 cfs	**26.74 cfs**
100-Year	75.07 cfs	63.83 cfs	11.24 cfs	80%	51.66 cfs	**62.90 cfs**

1.5 POST-DEVELOPMENT CONDITIONS

The applicant proposes to construct a 221,902 sf. warehouse building. In addition to the proposed buildings, there will be accompanying loading docks of various lengths, car parking areas, and associated landscaping and lighting amenities. The disturbance due to construction has been limited to 12.11 Acres of the current area; this includes a portion that is within the right-of-way of Enterprise Drive.

A summary of post development areas is shown below:

PROPOSED AREA COVERAGES					
Imp. Asphalt	77,6690	S.F.	1.783	Ac.	*14.72%*
Imp. Concrete	19,592	S.F.	0.450	Ac.	*3.71%*
Imp. Roof	221,902	S.F.	5.094	Ac.	*42.05%*
Water, HSG D	39,293	S.F.	0.902	Ac.	*3.47%*
< 50% Grass, Poor, HSG D	169,214	S.F.	3.885	Ac.	32.07%
TOTAL DRAINAGE AREA…	**527,670**	**S.F.**	**12.114**	**Ac.**	***100.00%***

As shown on the ***Proposed Drainage Area Map*** supplied with this report (See inset pocket), the Post-development drainage area has been detailed below:

Proposed Drainage Area P-DA (12.114 Ac.): This area is composed generally by existing undisturbed pervious areas, roofs, grass, overland brush, and wooded areas. It is also composed of proposed roofs, grassy areas, and proposed motor vehicle surfaces in the form of pedestrian parking, drive aisles, truck parking, and loading docks.

The western portion of the roof runoff from the proposed building is conveyed via a roof-leader system and is pretreated with leaf-screens before discharging into a large-scale bioretention basin. While the runoff from the western portion of the captured Motor Vehicle Surface is collected and pretreated via a small-scale bioretention basin and discharges into the same large-scale bioretention basin as the roof. The large-scale bioretention basin discharges into the existing drainage system that discharges into the Assunpink Creek.

The eastern portion of the roof runoff from the proposed building is conveyed via a roof-leader system and is pretreated with leaf-screens before discharging into a large-scale bioretention basin. While the runoff from the eastern portion of the captured Motor Vehicle Surface is collected and pretreated via a small-scall bioretention basin and discharges into the same large-scale bioretention basin as the roof. The large-scale bioretention basin discharges into the other existing drainage system that discharges into the Assunpink Creek.

Portions of onsite pervious and onsite impervious areas sheet flow into inlets within the Enterprise Drive right-of-way, which then discharges into the stormwater system that has been relocated through the subject property before discharging into the Assunpink Creek. The Time of Concentration used for this area has been calculated utilizing the McCuen-Spiess formula for each individual sub-area.

Proposed Analysis With Rainfall Adjustment Factor					
STORM EVENT	POINT OF ANALYSIS "POA-1"				
	ALLOWABLE		PROPOSED		COMPLY
2-Year	8.21	cfs	5.85	cfs	YES
10-Year	20.92	cfs	10.74	cfs	YES
100-Year	43.69	cfs	30.55	cfs	YES

Proposed Analysis With Rainfall 2100 Projected Factor			
STORM EVENT	POINT OF ANALYSIS "POA-1"		
	ALLOWABLE	PROPOSED	COMPLY
2-Year	10.88 cfs	7.25 cfs	YES
10-Year	26.74 cfs	13.13 cfs	YES
100-Year	62.90 cfs	61.95 cfs	YES

1.6 STORMWATER COLLECTION SYSTEM

The stormwater collection system consists of proposed stormwater inlets and other structures connected by high density polyethylene (HDPE) pipes. All storm sewer pipes upstream of the detention basin have been sized to pass the peak flow rates of a 25-year storm; and there are storm sewer pipes downstream of the detention facility which acts as the discharge pipe sized for the 100-year storm.

Pipe Capacity calculations can be found in section 6 of this report.

1.7 GROUNDWATER RECHARGE ANALYSIS

The development analyzed in this report is within the "Urban Redevelopment Area" and can be found within the Metropolitan Planning Area (PA-1) as a predeveloped site. According to N.J.A.C. 7:8-5.4.b.2: "This groundwater recharge requirement does not apply to projects within the "urban redevelopment area", therefore groundwater recharge analysis is not required for this site.

1.8 WATER QUALITY STANDARDS

The water quality design is based on a 1.25", 2-hour design storm, in accordance with NJDEP Stormwater Management Regulations. The TR-55 method was utilized for the water quality analysis in accordance with the NJDEP Best Management Practices Manual.

This major development project requires a minimum of 80% TSS Removal of the total proposed motor vehicle surface area, and a minimum of 50% of the total Redeveloped area. This requirement is achieved by directing the western portion of regulated motor vehicle surface area, 1.146 ac, and a total area of 1.455 ac through a small-scale bioretention basin. The eastern portion of regulated motor vehicle surface area (and total area) of 0.695 ac is conveyed through a second small-scale bioretention basin. Each of the small-scale bioretention basins provide 80% TSS removal.

The design criteria for the proposed Small-scale Bioretention Basin as described in the NJ BMP manual chapter 9.7 is summarized as follows:

CRITERIA	PROPOSED Small-scale Bioretention Basin #112	PROPOSED Small-scale Bioretention Basin #206
TSS Removal Rate	80%	80%
Design Parameters	• See Construction Details	• See Construction Details
Total Area Tributary	1.397 Ac.	0.773 Ac.
Pavement Area to be treated	1.128 Ac.	0.638 Ac.
Wq. Volume Capacity	4,683 ft^3	2,640 ft^3
Maximum Storage (100-yr)	13,929 ft^3	6,069 ft^3
Wq. Elevation	45.80	45.82
Overflow Elevation	48.50	48.50
Groundwater Recharge	No	No
Infiltration rate	N/A	N/A
Bottom Elevation	44.83	44.83
Bottom Area	2,461 ft^2	1,435 ft^2
Time to empty	6.528 hrs	6.312 hrs

All hydrograph calculations using the NJ Quality Storm (i=1.25" in 2 hours) and details have been attached under Water Quality section 8 in this report.

The water quality design is based on a 1.25", 2-hour design storm, in accordance with NJDEP Stormwater Management Regulations. The TR-55 method was utilized for the water quality analysis in accordance with the NJDEP Best Management Practices Manual.

1.9 GREEN INFRASTRUCTURE STANDARDS

Per N.J.A.C. 7:8-5.2(a), The minimum design and performance standards for groundwater recharge, stormwater runoff quality, and stormwater runoff quantity at N.J.A.C. 7:8-5.4, 5.5, and 5.6 shall be met by incorporating green infrastructure in accordance with N.J.A.C. 7:8- 5.3. As described above, the proposed improvements are exempt from groundwater recharge and but must meet stormwater runoff quality standards. As such, Green Infrastructure is required in the design to address stormwater quality standards. The proposed improvements incorporate two (2) small-scale bioretention basins as part of the stormwater quality design and two (2) large-scale bioretention basins as part of the stormwater quantity design; which are Green Infrastructure components in accordance with the standards

.

1.10 SOIL EROSION AND SEDIMENT CONTROL

The Soil Erosion and Sediment Control Measures for this project include appropriately installed perimeter silt fencing, inlet filters, and permanent seeding and mulching. All provisions are to be

in accordance with the "Standards for Soil Erosion and Sediment Control in New Jersey, last revised 2014".

The Soil Erosion and Sediment Control Measures for this project include appropriately installed perimeter silt fencing, inlet filters, and permanent seeding and mulching. All provisions are to be in accordance with the "Standards for Soil Erosion and Sediment Control in New Jersey, last revised 2014".

Conduit outlet protection has been designed per Standards for Soil Erosion and Sediment Control in New Jersey Engineering Standards 12-1 for Flared End Sections. Calculations and details are provided on Section 8 of this report.

Emergency Spillways have been designed to perform under the Adjusted 100 Year Storm plus 50%. As stated in the Standards for Soil Erosion and sediment control in New Jersey table 11-1, the allowable velocity for clay and fine gravel is 5.0 ft/s. It was confirmed that the velocities at the spillway were acceptable and that water elevation remained well below the top of berm elevations. These calculations are shown in Section 7 of the Appendix and can be summarized as follows:

Basin 104: 50'X 7' Spillway; velocity=1.55 fps

Basin 112: 20' X 8' Spillway; velocity= 1.07 fps

Basin 203: 50'X 7' Spillway; velocity= 1.40 fps

Basin 206: 16'X 6' Spillway; velocity= 0.33 fps

1.11 CONCLUSION

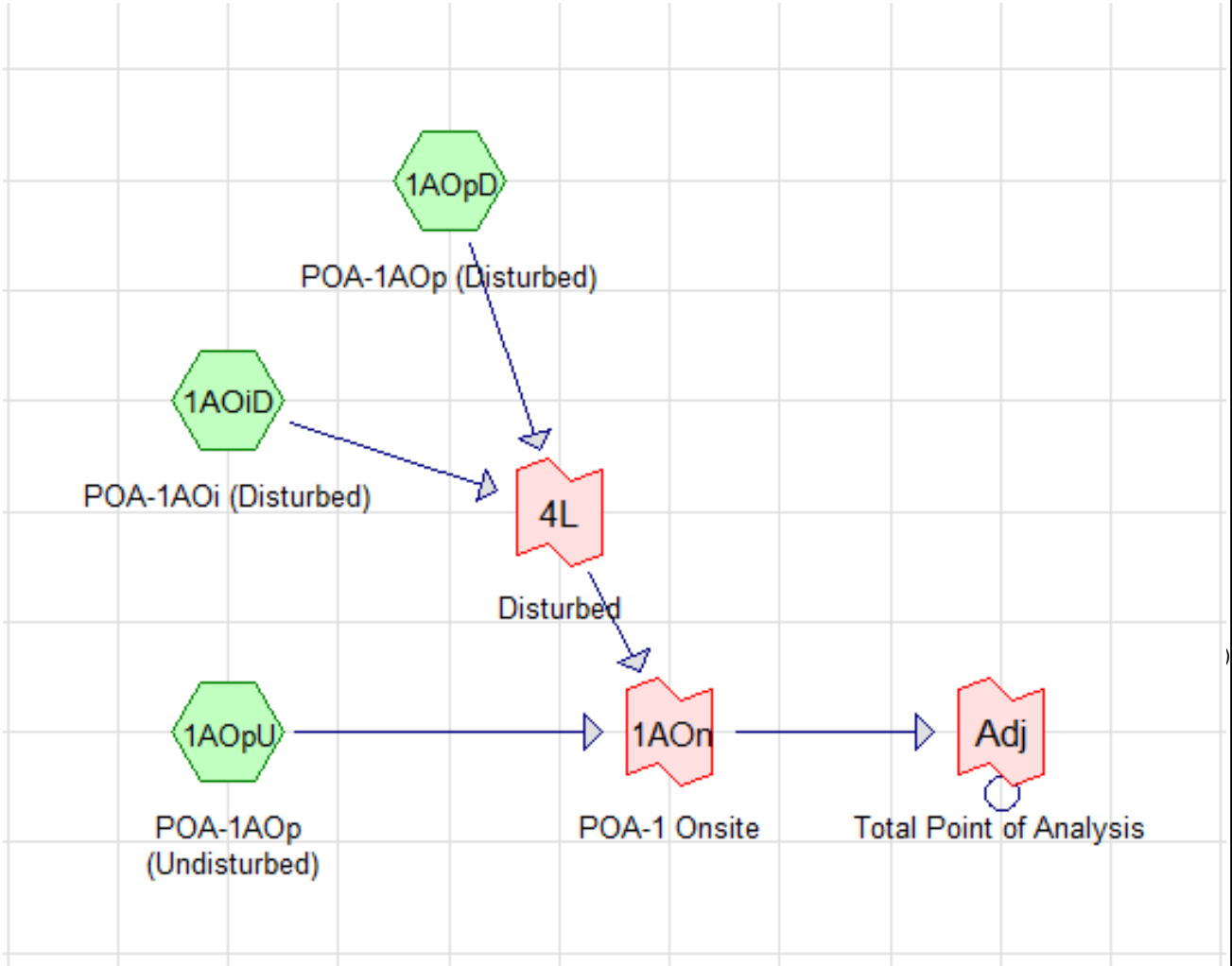
This Stormwater Management Plan report has been prepared to describe the existing and proposed development conditions of the site in question.

The project uses different engineering practices to meet the standards for groundwater recharge, water quality, and green infrastructure as set forth in N.J.A.C. 7:8. Compliance with these standards is designed to minimize the impact of development on the receiving drainage areas.

2. EXISTING & PROPOSED RUNOFF MODELS

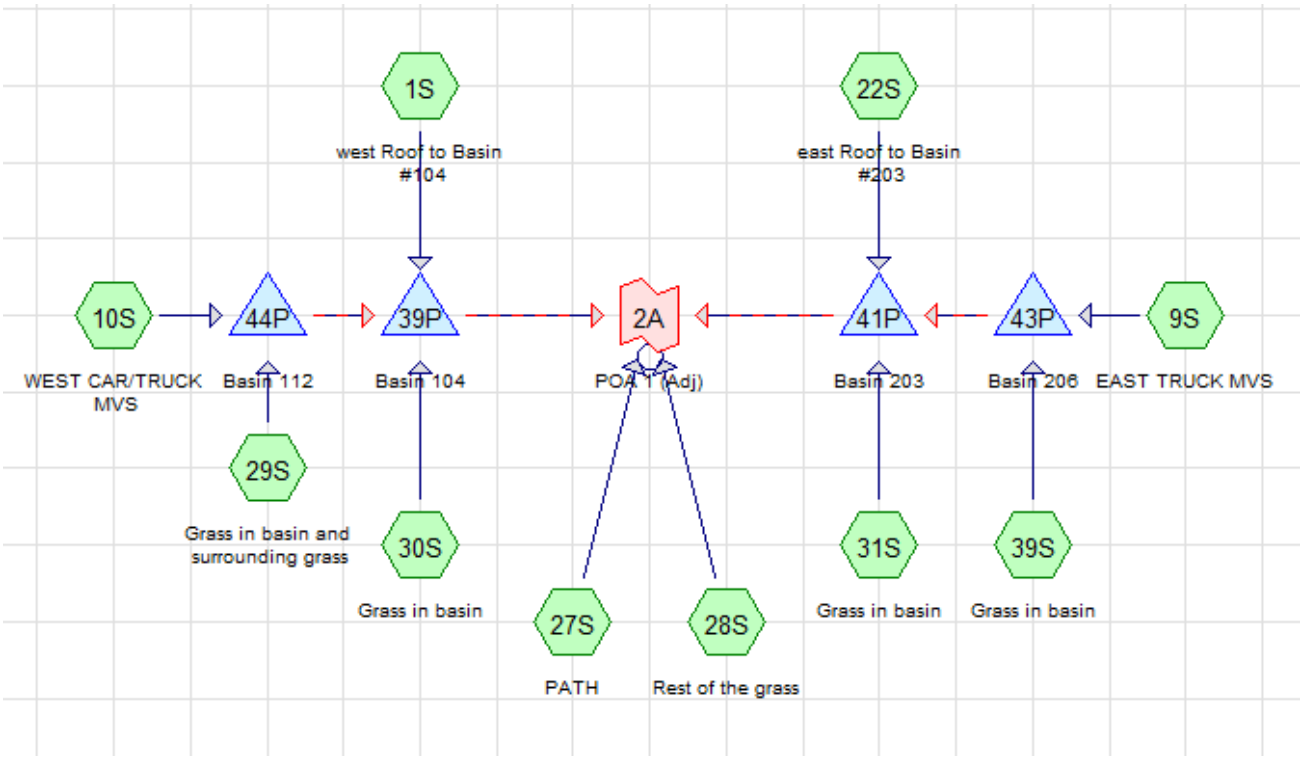
PREPARED: September 19, 2025
REVISED: December 15, 2025

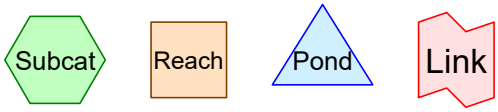
300-356 ENTERPRISE AVE.
CITY OF TRENTON
BLOCK 23203, LOT 1
BLOCK 23102 LOTS 2 & 9
TOWNSHIP OF LAWRENCE
BLOCK 602, LOTS 1 & 2
MERCER COUNTY, NEW JERSEY



Subcat Reach Pond Link

Routing Diagram for 2025.08.19 Existing Conditions
Prepared by REDCOM Engineering & Const, Printed 9/16/2025
HydroCAD® 10.20-7a s/n 02701 © 2025 HydroCAD Software Solutions LLC





Routing Diagram for 2025.09.14 Proposed Conditions
Prepared by REDCOM Engineering & Const, Printed 9/23/2025
HydroCAD® 10.20-7a s/n 02701 © 2025 HydroCAD Software Solutions LLC

3.1 RUNOFF & HYDROGRAPH ANALYSIS: EXISTING 2-YEAR ADJUSTED STORM EVENT

PREPARED: September 19, 2025
REVISED: December 15, 2025

300-356 ENTERPRISE AVE.
CITY OF TRENTON
BLOCK 23203, LOT 1
BLOCK 23102 LOTS 2 & 9
TOWNSHIP OF LAWRENCE
BLOCK 602, LOTS 1 & 2
MERCER COUNTY, NEW JERSEY

Summary for Subcatchment 1AOiD: POA-1AOi (Disturbed)

[49] Hint: Tc<2dt may require smaller dt

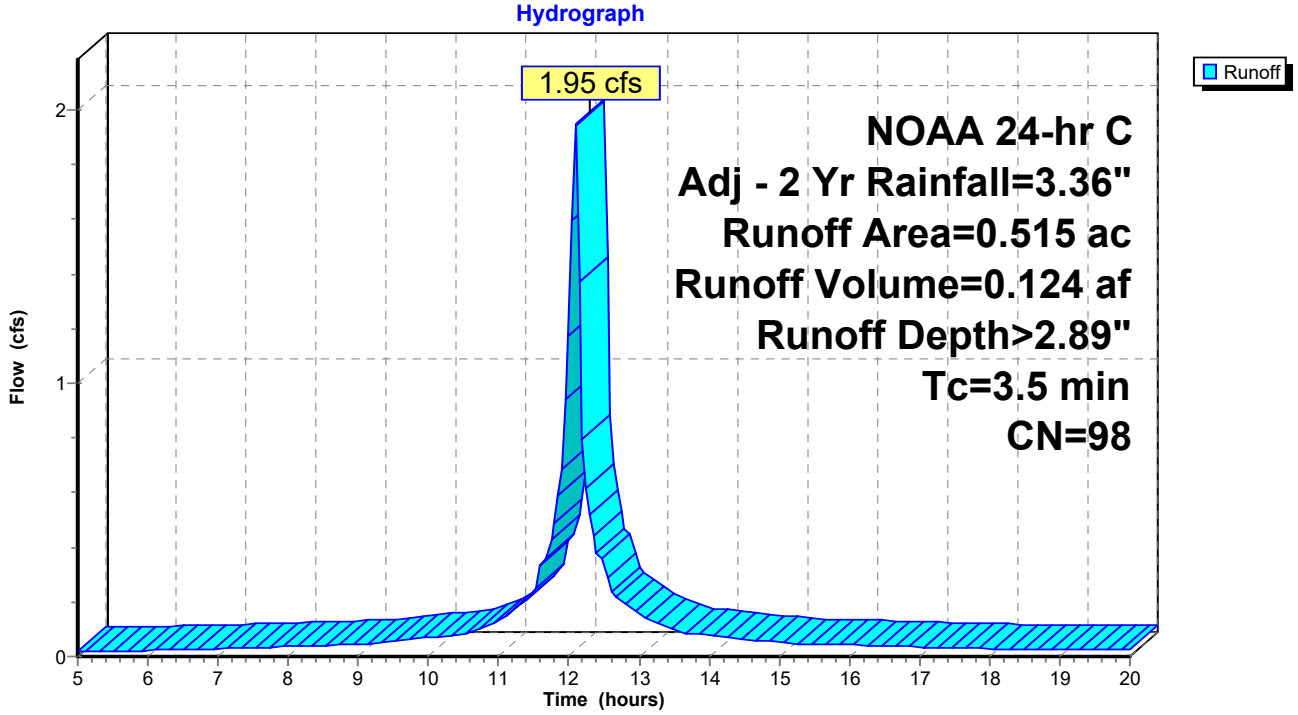
Runoff = 1.95 cfs @ 12.09 hrs, Volume= 0.124 af, Depth> 2.89"
Routed to Link 4L : Disturbed

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 2 Yr Rainfall=3.36"

Area (ac)	CN	Description
0.515	98	Paved parking, HSG D
0.515		100.00% Impervious Area

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

Subcatchment 1AOiD: POA-1AOi (Disturbed)



Summary for Subcatchment 1AOpD: POA-1AOp (Disturbed)

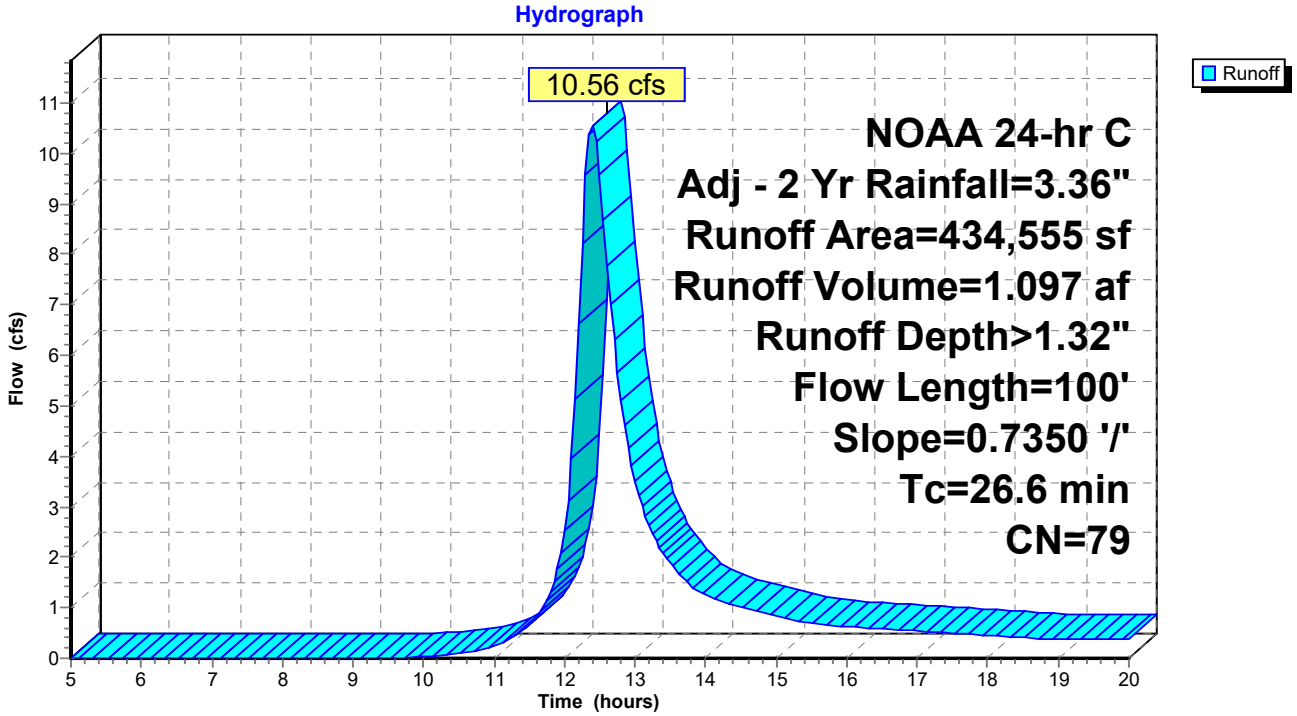
Runoff = 10.56 cfs @ 12.39 hrs, Volume= 1.097 af, Depth> 1.32"
Routed to Link 4L : Disturbed

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 2 Yr Rainfall=3.36"

Area (sf)	CN	Description
308,492	79	Woods/grass comb., Good, HSG D
47,960	80	>75% Grass cover, Good, HSG D
78,103	80	>75% Grass cover, Good, HSG D
434,555	79	Weighted Average
434,555		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.6					**Direct Entry, Tc Direct**
0.0	100	0.7350	80.90	571.82	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
26.6	100	Total			

Subcatchment 1AOpD: POA-1AOp (Disturbed)



Summary for Subcatchment 1AOpU: POA-1AOp (Undisturbed)

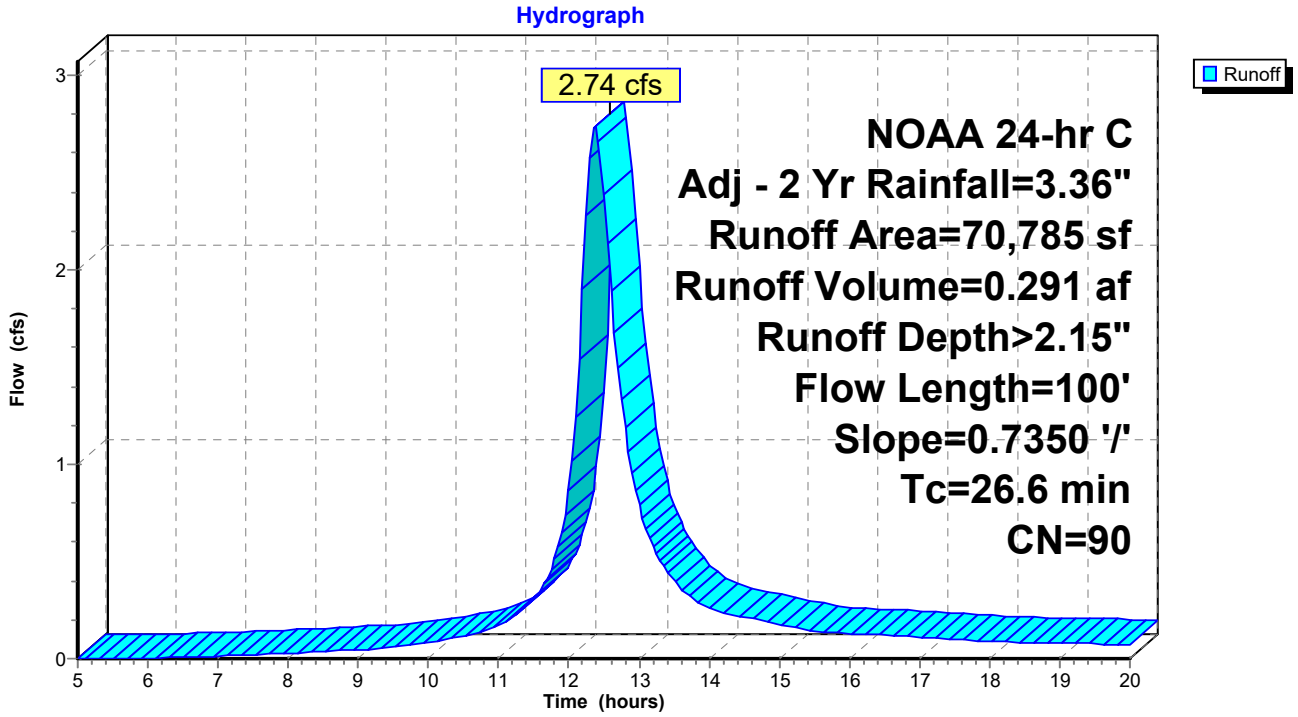
Runoff = 2.74 cfs @ 12.37 hrs, Volume= 0.291 af, Depth> 2.15"
Routed to Link 1AOn : POA-1 Onsite

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 2 Yr Rainfall=3.36"

Area (sf)	CN	Description
31,494	79	Woods/grass comb., Good, HSG D
39,291	98	Water Surface, 0% imp, HSG D
70,785	90	Weighted Average
70,785		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.6					**Direct Entry, Tc Direct**
0.0	100	0.7350	80.90	571.82	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
26.6	100	Total			

Subcatchment 1AOpU: POA-1AOp (Undisturbed)

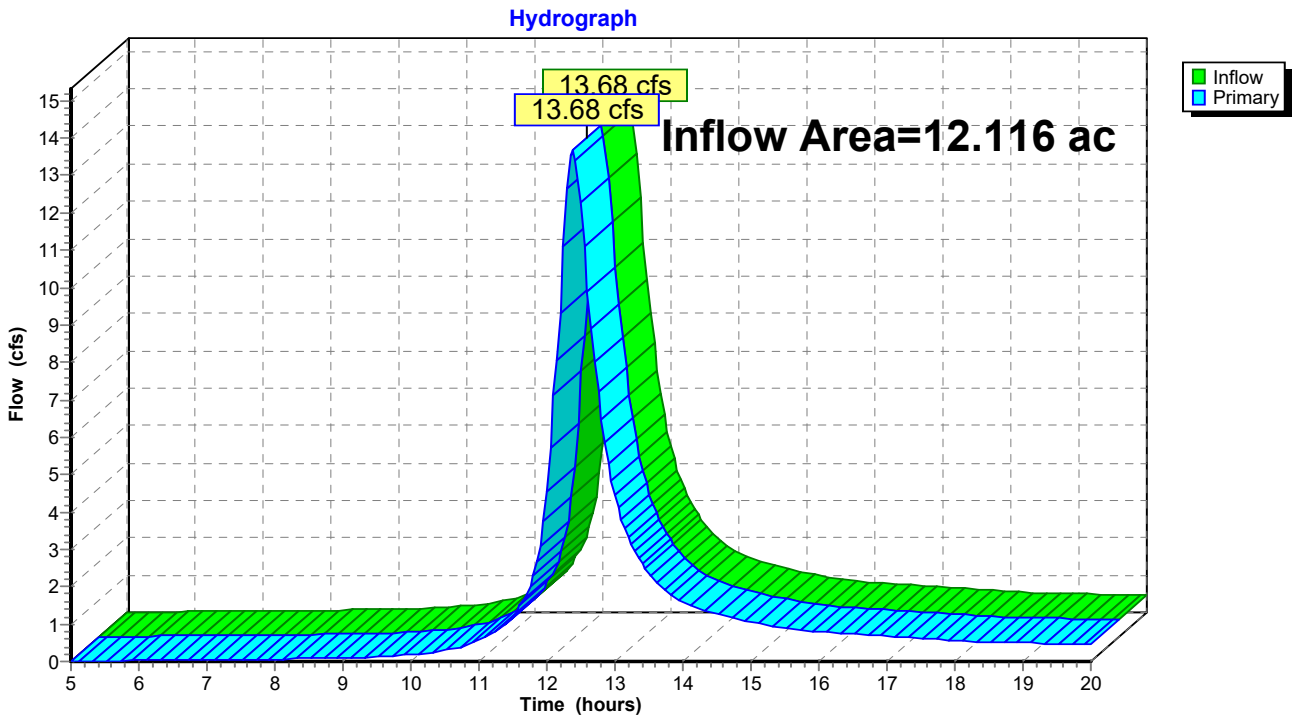


Summary for Link 1AOn: POA-1 Onsite

Inflow Area = 12.116 ac, 4.25% Impervious, Inflow Depth > 1.50" for Adj - 2 Yr event
Inflow = 13.68 cfs @ 12.39 hrs, Volume= 1.511 af
Primary = 13.68 cfs @ 12.39 hrs, Volume= 1.511 af, Atten= 0%, Lag= 0.0 min
Routed to Link Adj : Total Point of Analysis

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 1AOn: POA-1 Onsite

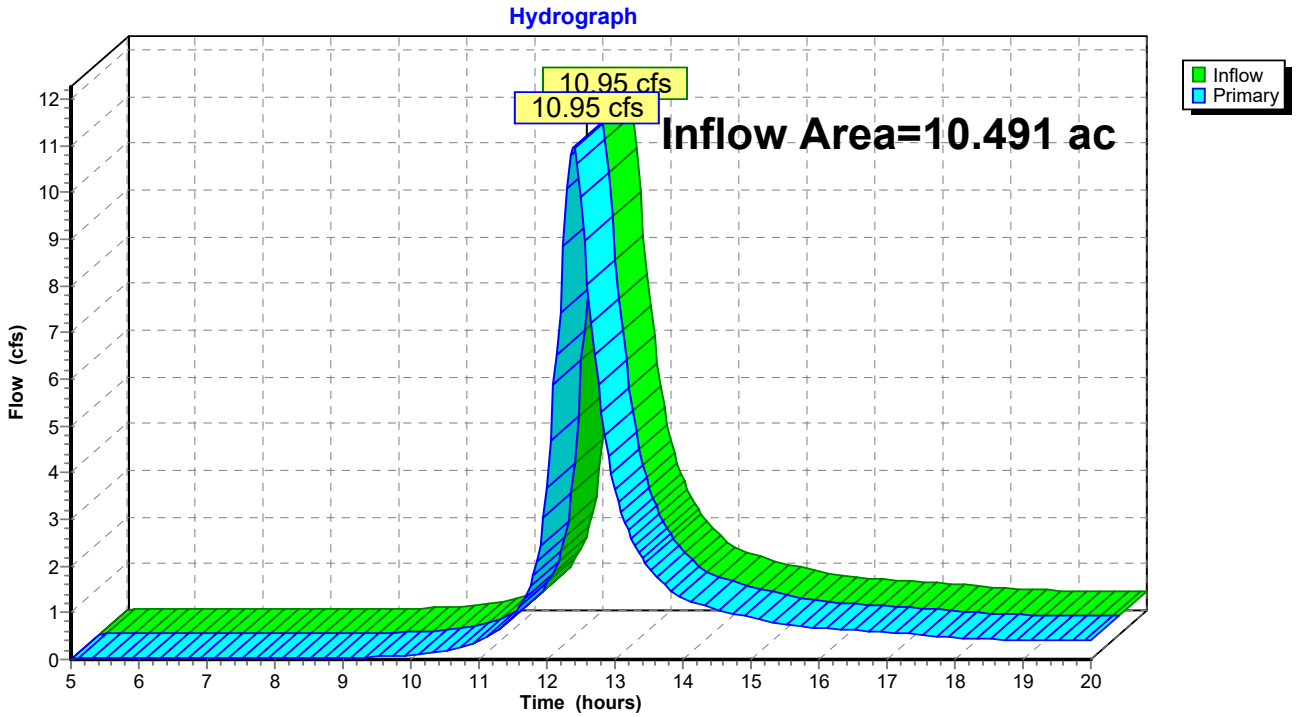


Summary for Link 4L: Disturbed

Inflow Area = 10.491 ac, 4.91% Impervious, Inflow Depth > 1.40" for Adj - 2 Yr event
Inflow = 10.95 cfs @ 12.39 hrs, Volume= 1.221 af
Primary = 10.95 cfs @ 12.39 hrs, Volume= 1.221 af, Atten= 0%, Lag= 0.0 min
Routed to Link 1AOn : POA-1 Onsite

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 4L: Disturbed

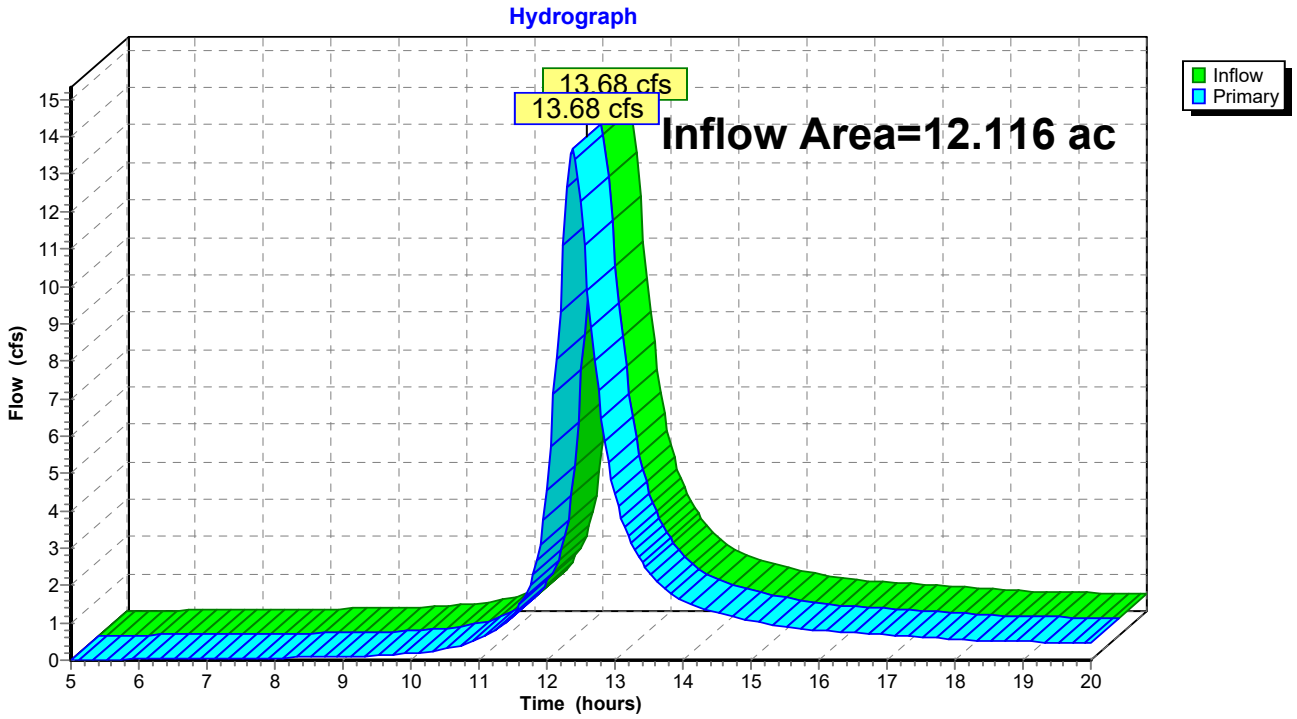


Summary for Link Adj: Total Point of Analysis

Inflow Area = 12.116 ac, 4.25% Impervious, Inflow Depth > 1.50" for Adj - 2 Yr event
Inflow = 13.68 cfs @ 12.39 hrs, Volume= 1.511 af
Primary = 13.68 cfs @ 12.39 hrs, Volume= 1.511 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link Adj: Total Point of Analysis



3.2 RUNOFF & HYDROGRAPH ANALYSIS: EXISTING 10-YEAR ADJUSTED STORM EVENT

PREPARED: September 19, 2025
REVISED: December 15, 2025

300-356 ENTERPRISE AVE.
CITY OF TRENTON
BLOCK 23203, LOT 1
BLOCK 23102 LOTS 2 & 9
TOWNSHIP OF LAWRENCE
BLOCK 602, LOTS 1 & 2
MERCER COUNTY, NEW JERSEY

Summary for Subcatchment 1AOiD: POA-1AOi (Disturbed)

[49] Hint: Tc<2dt may require smaller dt

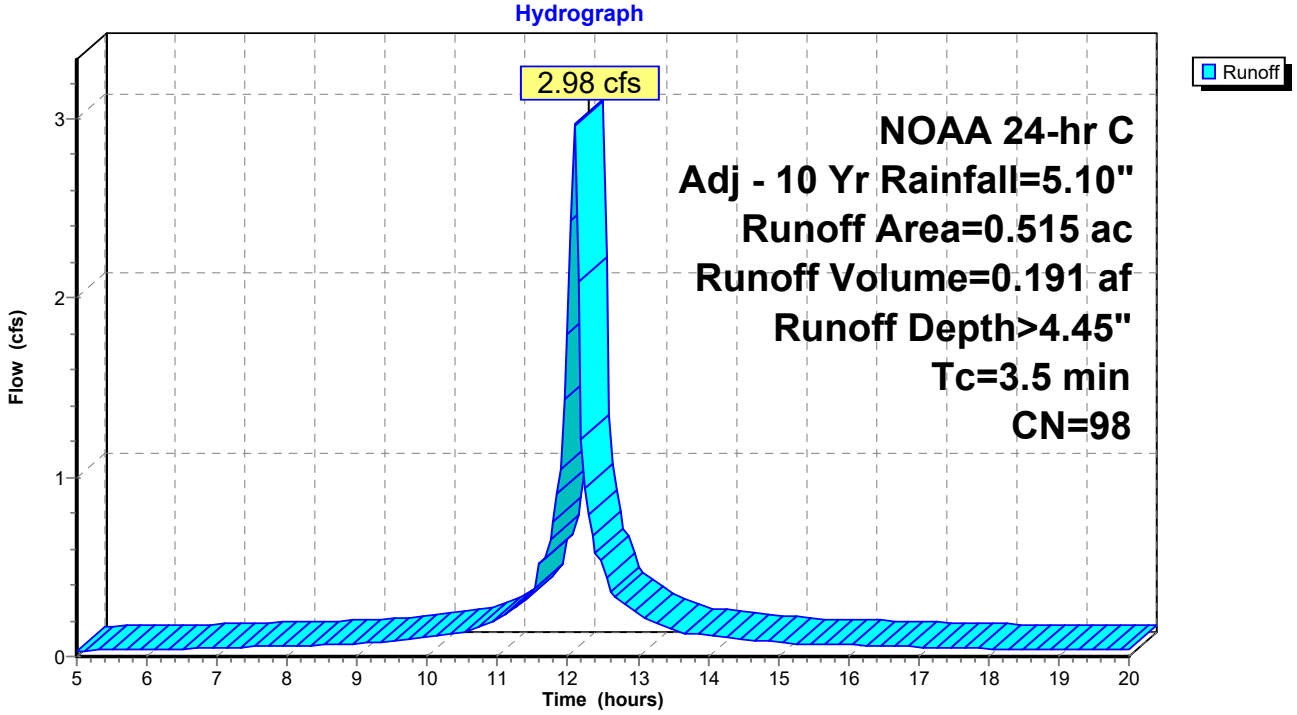
Runoff = 2.98 cfs @ 12.09 hrs, Volume= 0.191 af, Depth> 4.45"
Routed to Link 4L : Disturbed

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 10 Yr Rainfall=5.10"

Area (ac)	CN	Description
0.515	98	Paved parking, HSG D
0.515		100.00% Impervious Area

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

Subcatchment 1AOiD: POA-1AOi (Disturbed)



Summary for Subcatchment 1AOpD: POA-1AOp (Disturbed)

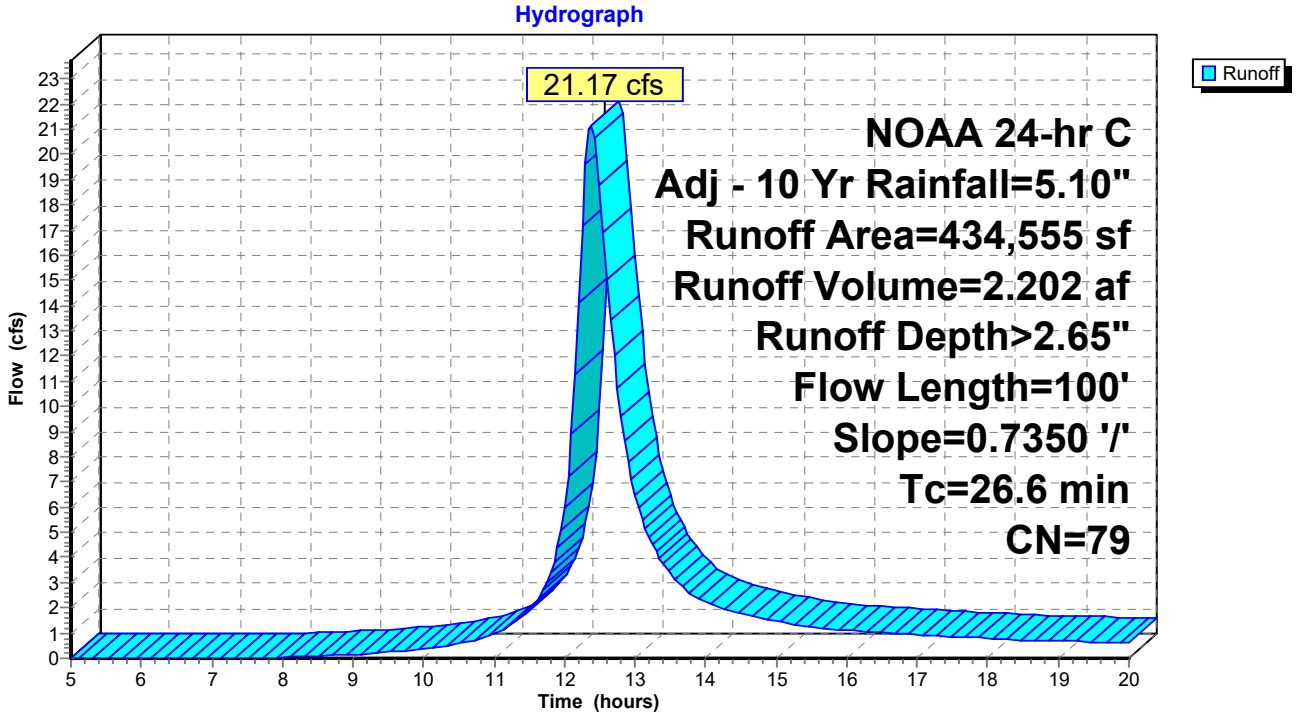
Runoff = 21.17 cfs @ 12.38 hrs, Volume= 2.202 af, Depth> 2.65"
Routed to Link 4L : Disturbed

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 10 Yr Rainfall=5.10"

Area (sf)	CN	Description
308,492	79	Woods/grass comb., Good, HSG D
47,960	80	>75% Grass cover, Good, HSG D
78,103	80	>75% Grass cover, Good, HSG D
434,555	79	Weighted Average
434,555		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.6					**Direct Entry, Tc Direct**
0.0	100	0.7350	80.90	571.82	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
26.6	100	Total			

Subcatchment 1AOpD: POA-1AOp (Disturbed)



Summary for Subcatchment 1AOpU: POA-1AOp (Undisturbed)

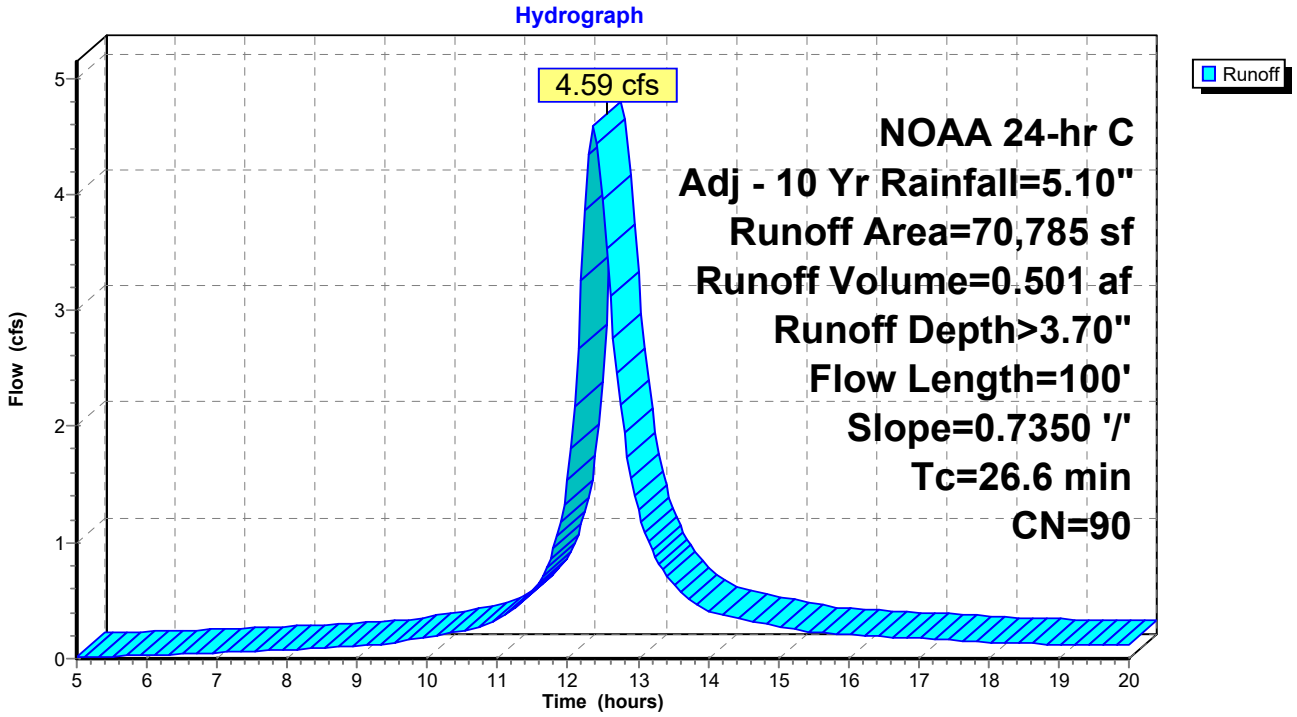
Runoff = 4.59 cfs @ 12.37 hrs, Volume= 0.501 af, Depth> 3.70"
Routed to Link 1AOn : POA-1 Onsite

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 10 Yr Rainfall=5.10"

Area (sf)	CN	Description
31,494	79	Woods/grass comb., Good, HSG D
39,291	98	Water Surface, 0% imp, HSG D
70,785	90	Weighted Average
70,785		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.6					**Direct Entry, Tc Direct**
0.0	100	0.7350	80.90	571.82	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
26.6	100	Total			

Subcatchment 1AOpU: POA-1AOp (Undisturbed)

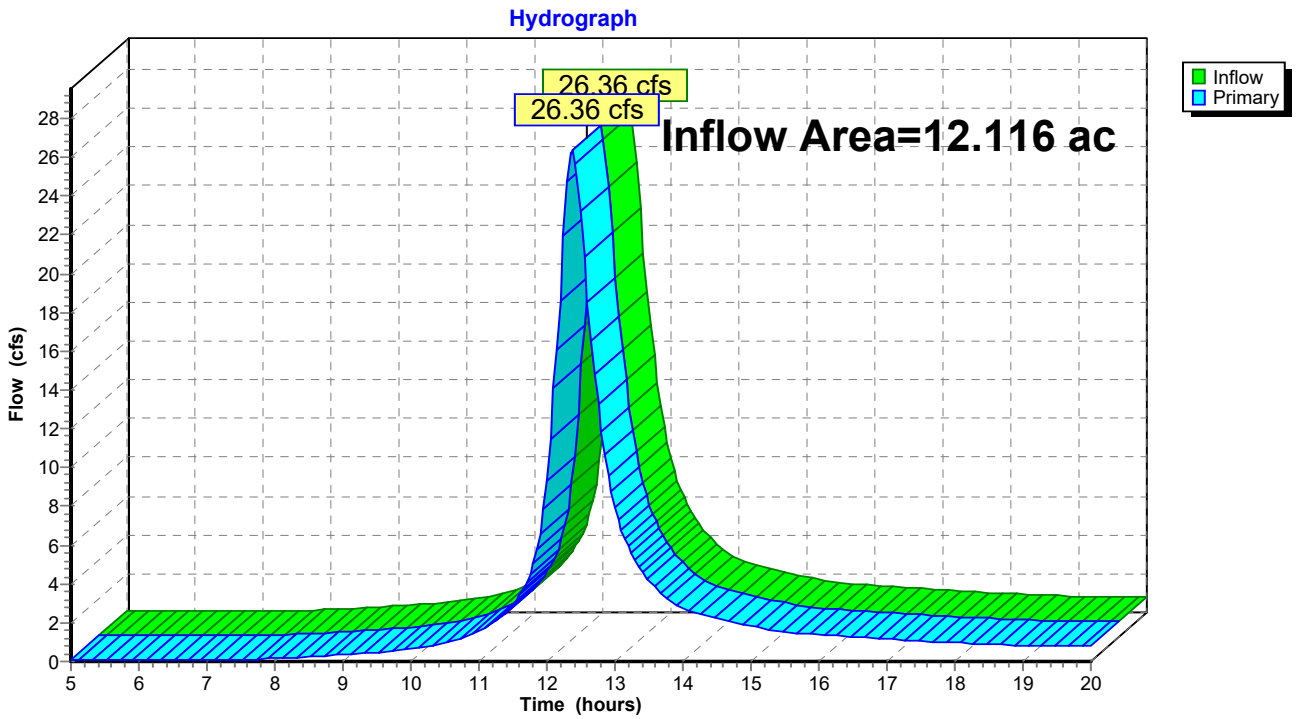


Summary for Link 1AOn: POA-1 Onsite

Inflow Area = 12.116 ac, 4.25% Impervious, Inflow Depth > 2.87" for Adj - 10 Yr event
Inflow = 26.36 cfs @ 12.38 hrs, Volume= 2.894 af
Primary = 26.36 cfs @ 12.38 hrs, Volume= 2.894 af, Atten= 0%, Lag= 0.0 min
Routed to Link Adj : Total Point of Analysis

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 1AOn: POA-1 Onsite

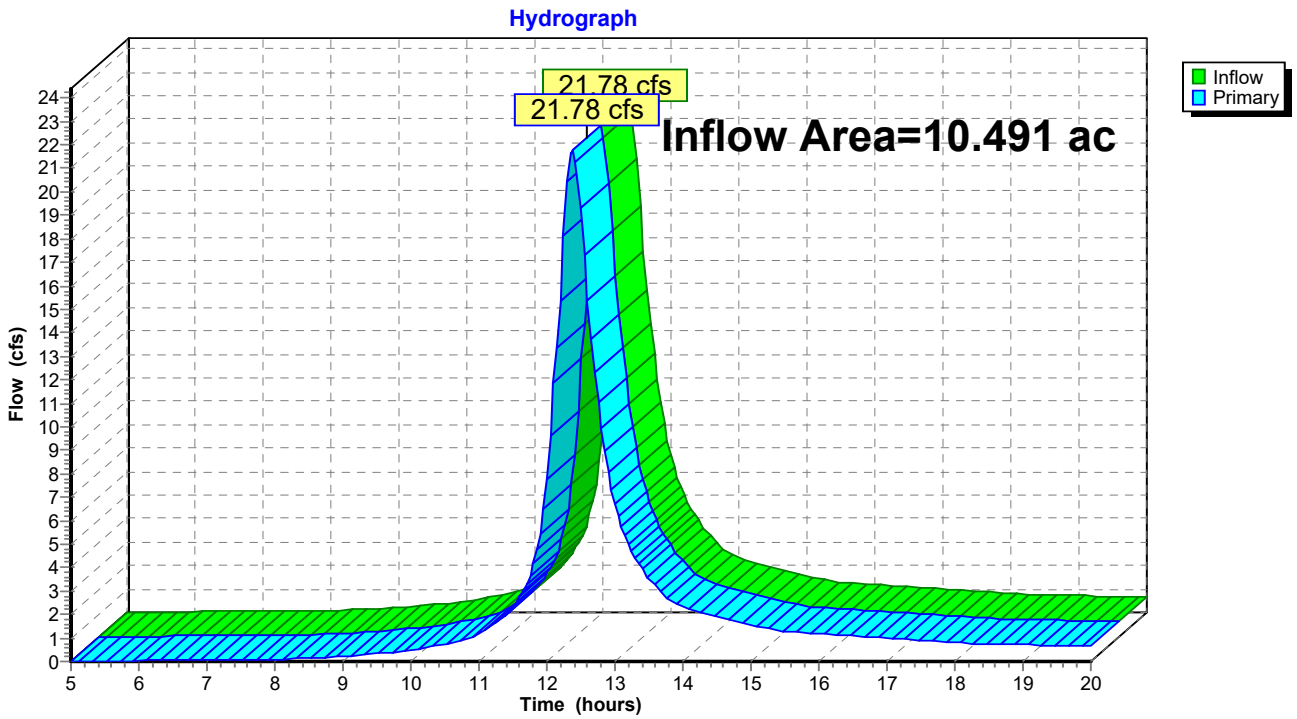


Summary for Link 4L: Disturbed

Inflow Area = 10.491 ac, 4.91% Impervious, Inflow Depth > 2.74" for Adj - 10 Yr event
Inflow = 21.78 cfs @ 12.38 hrs, Volume= 2.393 af
Primary = 21.78 cfs @ 12.38 hrs, Volume= 2.393 af, Atten= 0%, Lag= 0.0 min
Routed to Link 1AOn : POA-1 Onsite

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 4L: Disturbed

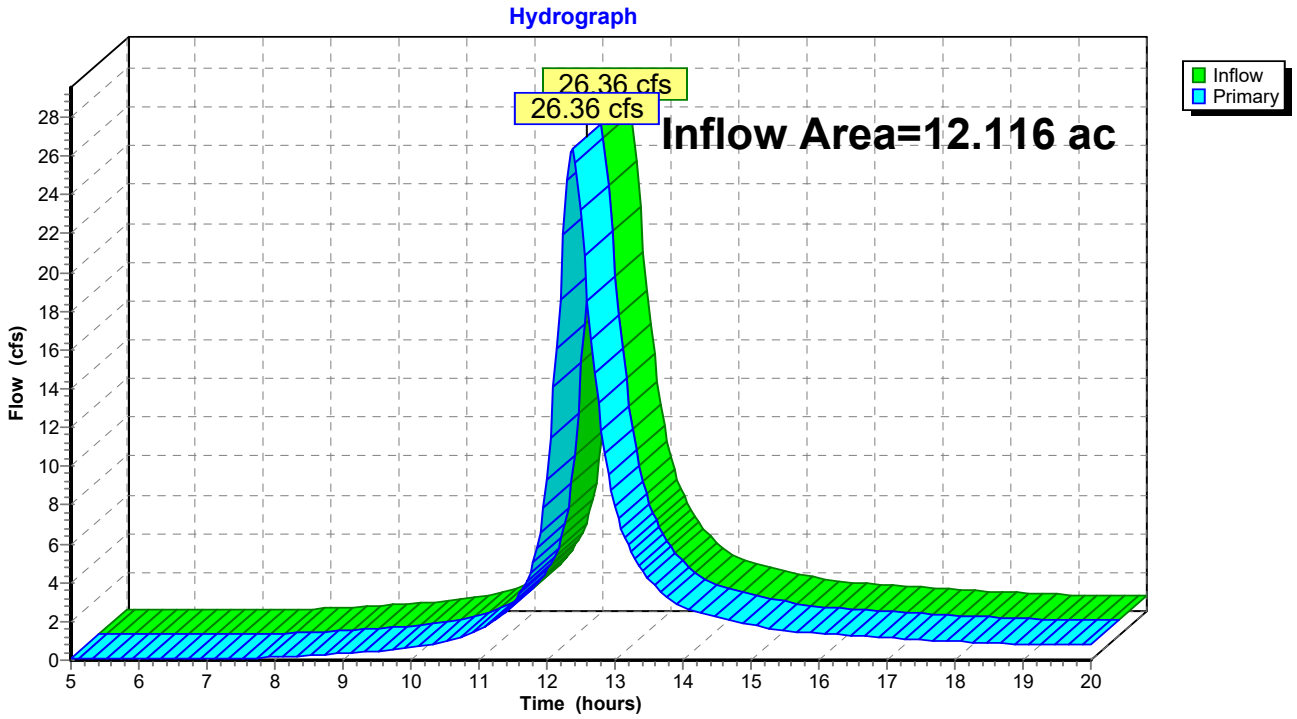


Summary for Link Adj: Total Point of Analysis

Inflow Area = 12.116 ac, 4.25% Impervious, Inflow Depth > 2.87" for Adj - 10 Yr event
Inflow = 26.36 cfs @ 12.38 hrs, Volume= 2.894 af
Primary = 26.36 cfs @ 12.38 hrs, Volume= 2.894 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link Adj: Total Point of Analysis



Summary for Subcatchment 1AOiD: POA-1AOi (Disturbed)

[49] Hint: Tc<2dt may require smaller dt

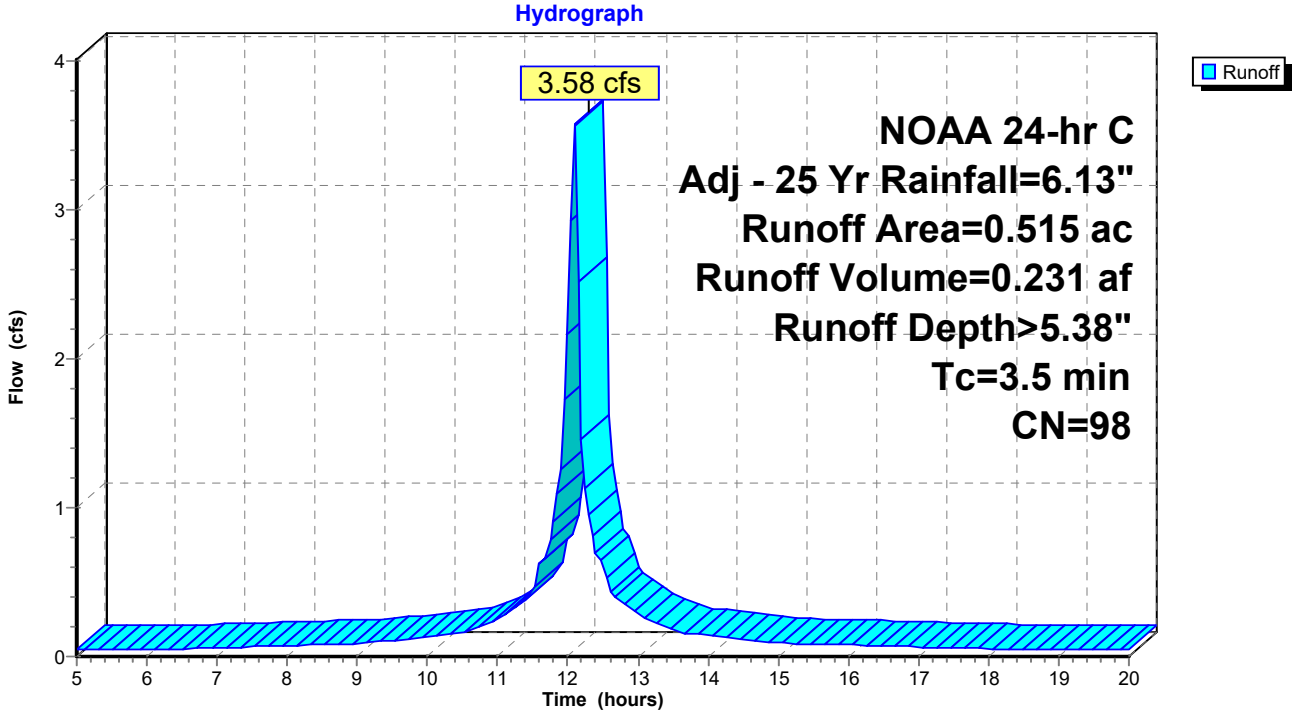
Runoff = 3.58 cfs @ 12.09 hrs, Volume= 0.231 af, Depth> 5.38"
Routed to Link 4L : Disturbed

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 25 Yr Rainfall=6.13"

Area (ac)	CN	Description
0.515	98	Paved parking, HSG D
0.515		100.00% Impervious Area

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

Subcatchment 1AOiD: POA-1AOi (Disturbed)



Summary for Subcatchment 1AOpD: POA-1AOp (Disturbed)

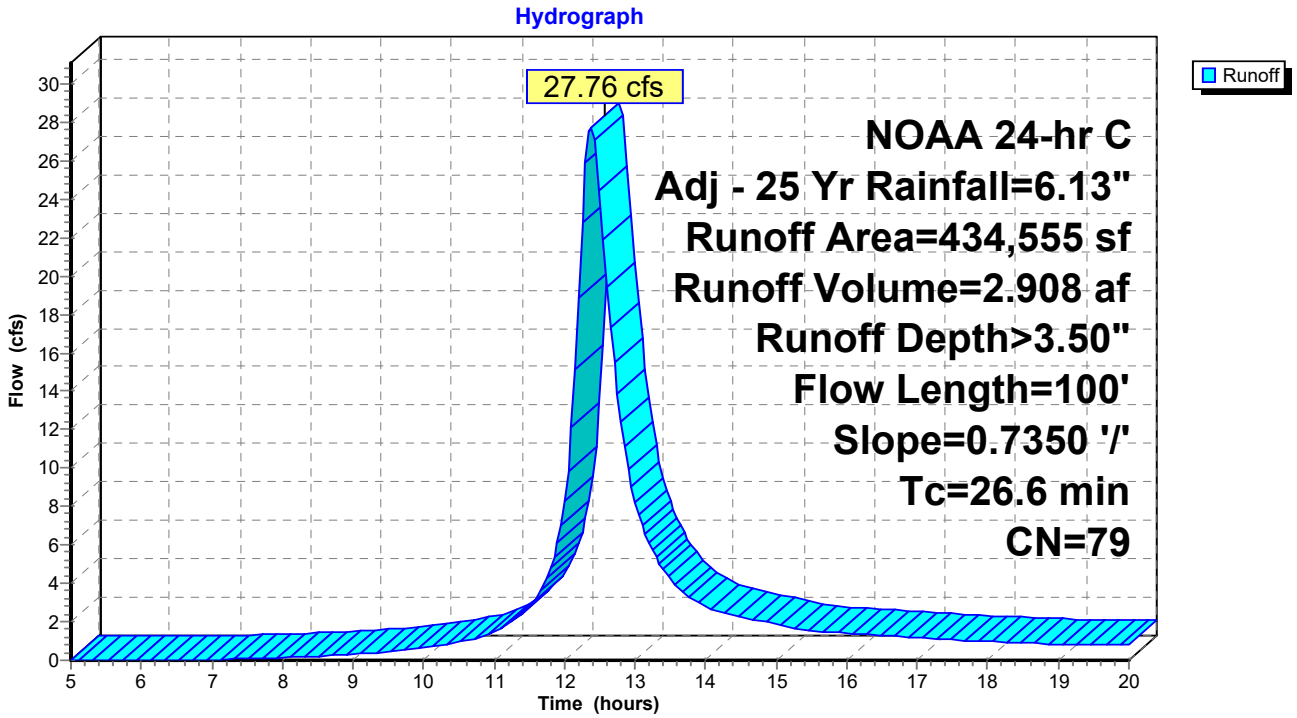
Runoff = 27.76 cfs @ 12.38 hrs, Volume= 2.908 af, Depth> 3.50"
Routed to Link 4L : Disturbed

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 25 Yr Rainfall=6.13"

Area (sf)	CN	Description
308,492	79	Woods/grass comb., Good, HSG D
47,960	80	>75% Grass cover, Good, HSG D
78,103	80	>75% Grass cover, Good, HSG D
434,555	79	Weighted Average
434,555		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.6					**Direct Entry, Tc Direct**
0.0	100	0.7350	80.90	571.82	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
26.6	100	Total			

Subcatchment 1AOpD: POA-1AOp (Disturbed)



Summary for Subcatchment 1AOpU: POA-1AOp (Undisturbed)

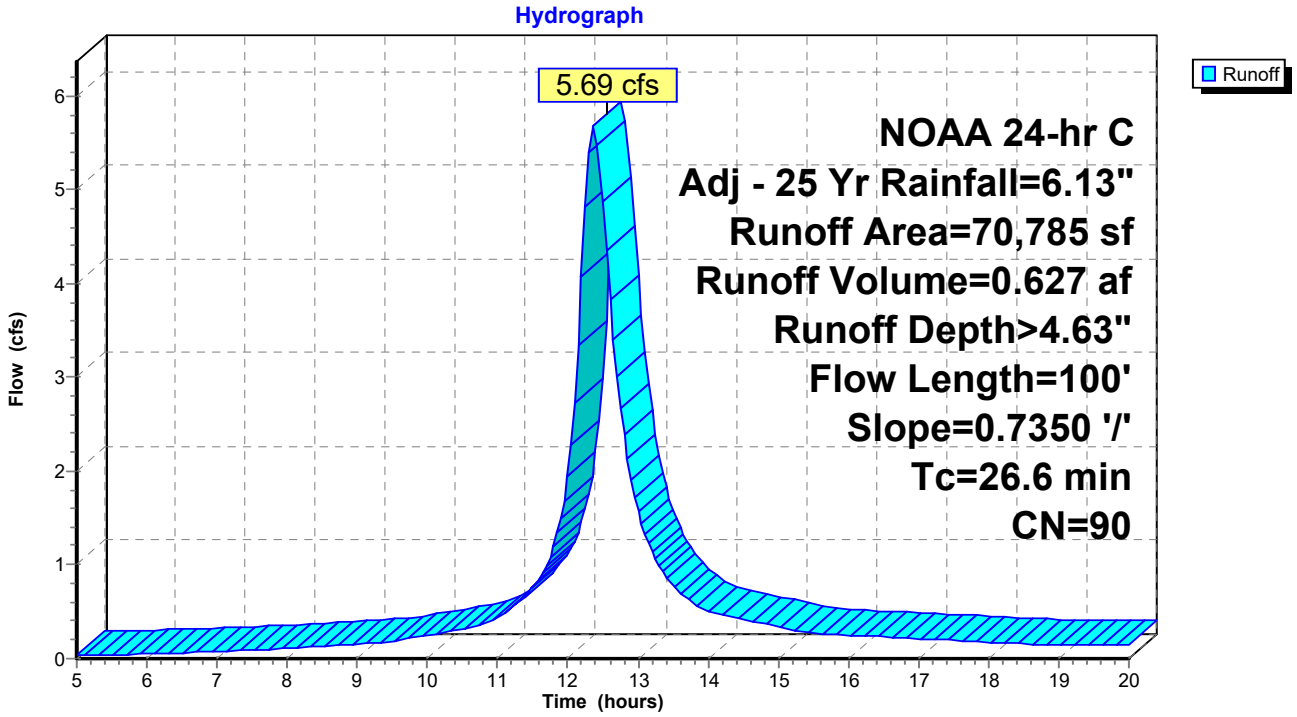
Runoff = 5.69 cfs @ 12.37 hrs, Volume= 0.627 af, Depth> 4.63"
Routed to Link 1AOn : POA-1 Onsite

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 25 Yr Rainfall=6.13"

Area (sf)	CN	Description
31,494	79	Woods/grass comb., Good, HSG D
39,291	98	Water Surface, 0% imp, HSG D
70,785	90	Weighted Average
70,785		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.6					**Direct Entry, Tc Direct**
0.0	100	0.7350	80.90	571.82	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
26.6	100	Total			

Subcatchment 1AOpU: POA-1AOp (Undisturbed)

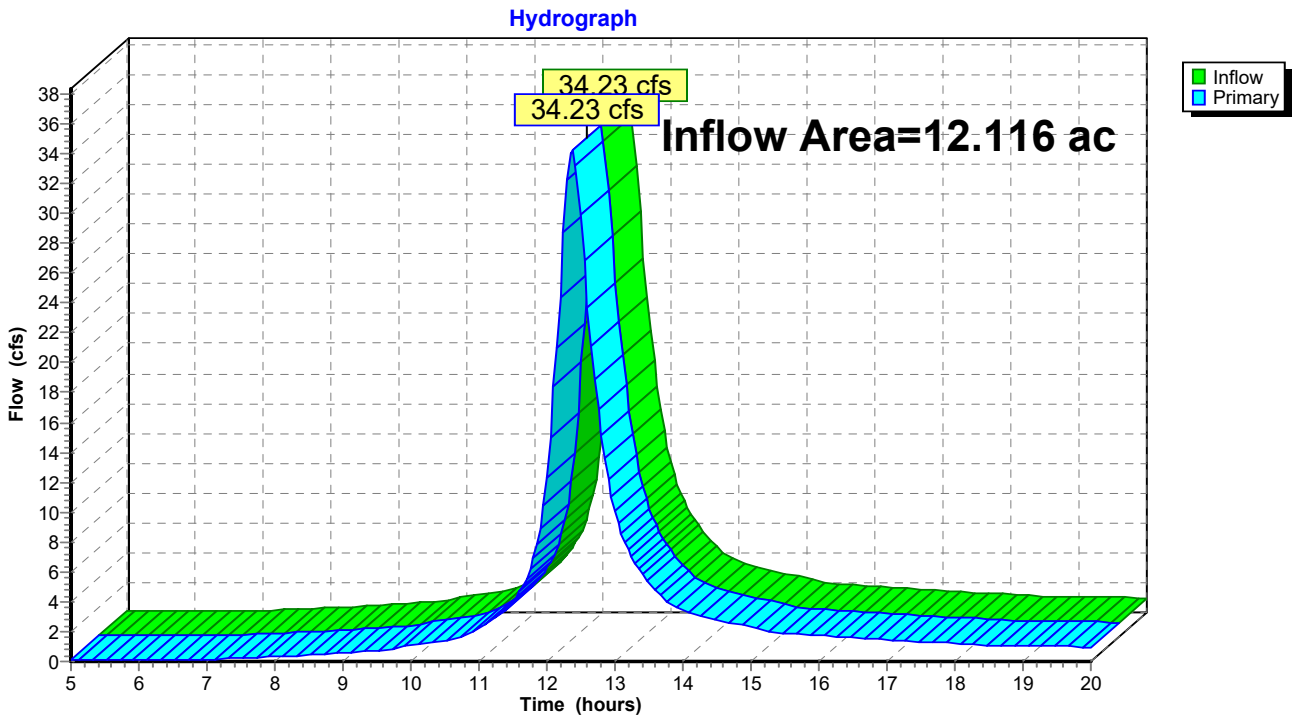


Summary for Link 1AOn: POA-1 Onsite

Inflow Area = 12.116 ac, 4.25% Impervious, Inflow Depth > 3.73" for Adj - 25 Yr event
Inflow = 34.23 cfs @ 12.37 hrs, Volume= 3.766 af
Primary = 34.23 cfs @ 12.37 hrs, Volume= 3.766 af, Atten= 0%, Lag= 0.0 min
Routed to Link Adj : Total Point of Analysis

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 1AOn: POA-1 Onsite

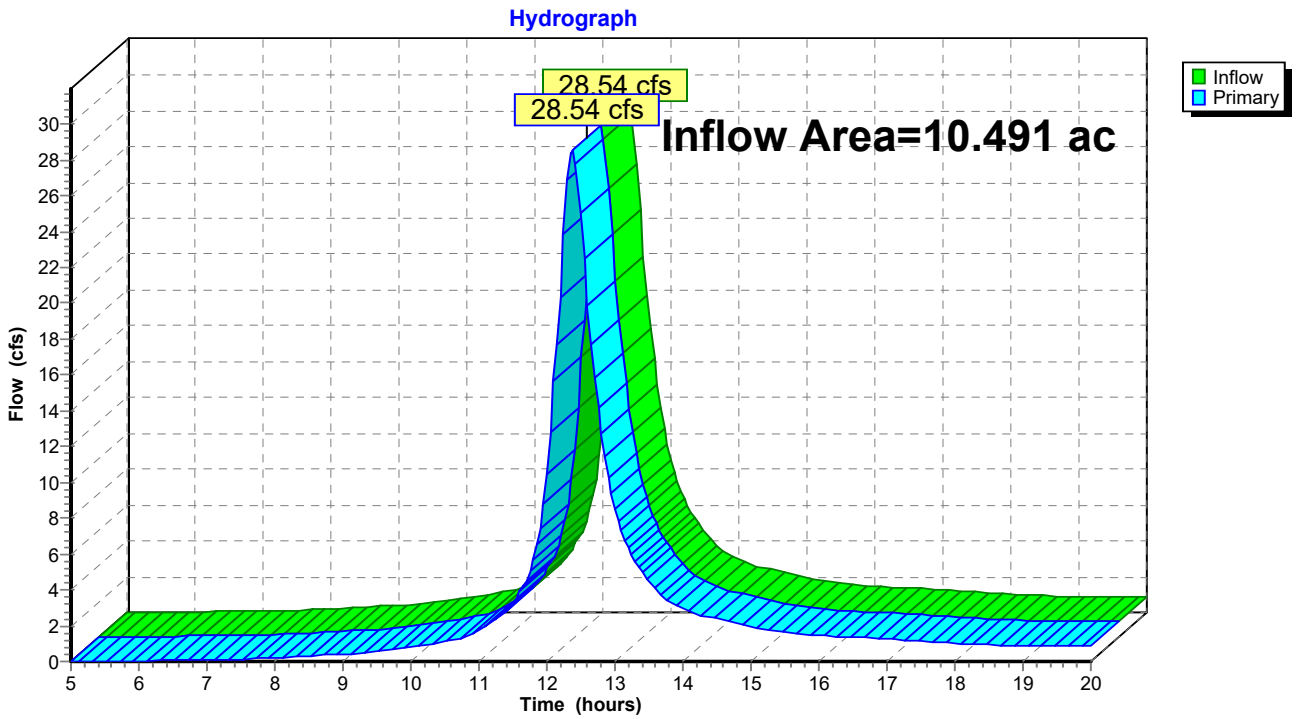


Summary for Link 4L: Disturbed

Inflow Area = 10.491 ac, 4.91% Impervious, Inflow Depth > 3.59" for Adj - 25 Yr event
Inflow = 28.54 cfs @ 12.37 hrs, Volume= 3.139 af
Primary = 28.54 cfs @ 12.37 hrs, Volume= 3.139 af, Atten= 0%, Lag= 0.0 min
Routed to Link 1AOn : POA-1 Onsite

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 4L: Disturbed

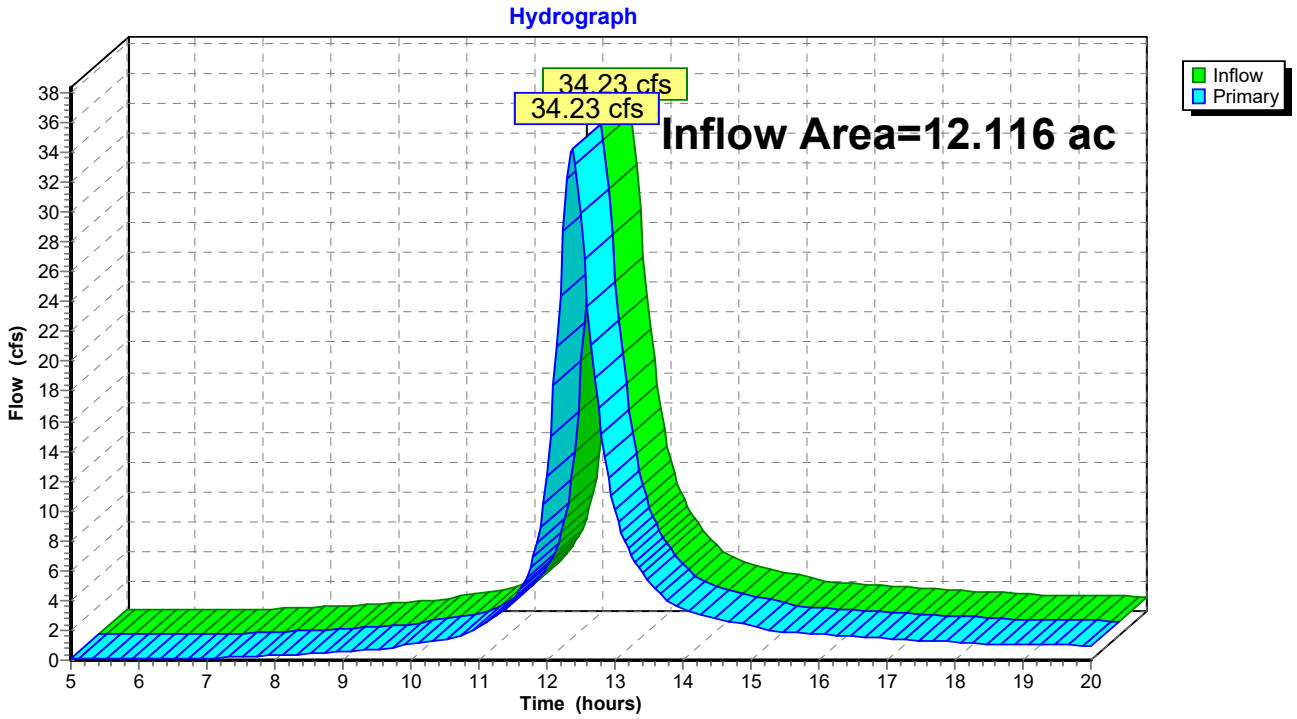


Summary for Link Adj: Total Point of Analysis

Inflow Area = 12.116 ac, 4.25% Impervious, Inflow Depth > 3.73" for Adj - 25 Yr event
Inflow = 34.23 cfs @ 12.37 hrs, Volume= 3.766 af
Primary = 34.23 cfs @ 12.37 hrs, Volume= 3.766 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link Adj: Total Point of Analysis



3.3 RUNOFF & HYDROGRAPH ANALYSIS: EXISTING 100-YEAR ADJUSTED STORM EVENT

PREPARED: September 19, 2025
REVISED: December 15, 2025

300-356 ENTERPRISE AVE.
CITY OF TRENTON
BLOCK 23203, LOT 1
BLOCK 23102 LOTS 2 & 9
TOWNSHIP OF LAWRENCE
BLOCK 602, LOTS 1 & 2
MERCER COUNTY, NEW JERSEY

Summary for Subcatchment 1AOiD: POA-1AOi (Disturbed)

[49] Hint: Tc<2dt may require smaller dt

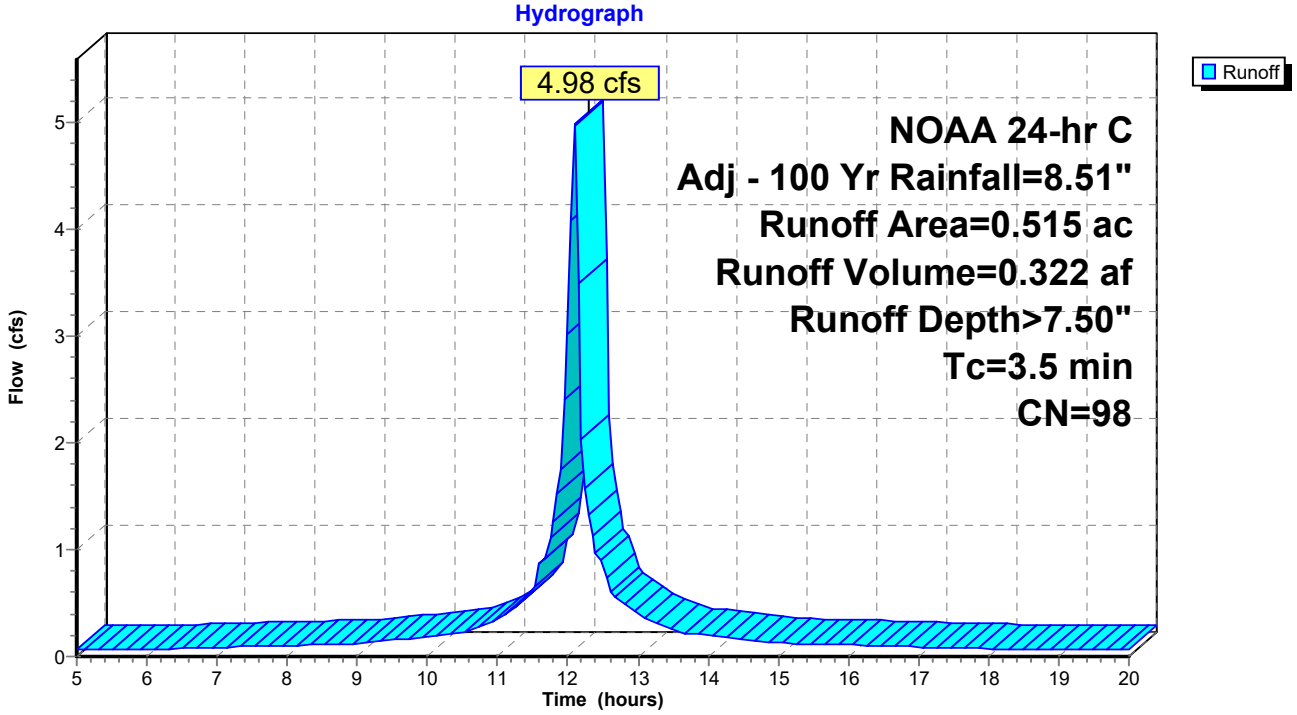
Runoff = 4.98 cfs @ 12.09 hrs, Volume= 0.322 af, Depth> 7.50"
Routed to Link 4L : Disturbed

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 100 Yr Rainfall=8.51"

Area (ac)	CN	Description
0.515	98	Paved parking, HSG D
0.515		100.00% Impervious Area

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

Subcatchment 1AOiD: POA-1AOi (Disturbed)



Summary for Subcatchment 1AOpD: POA-1AOp (Disturbed)

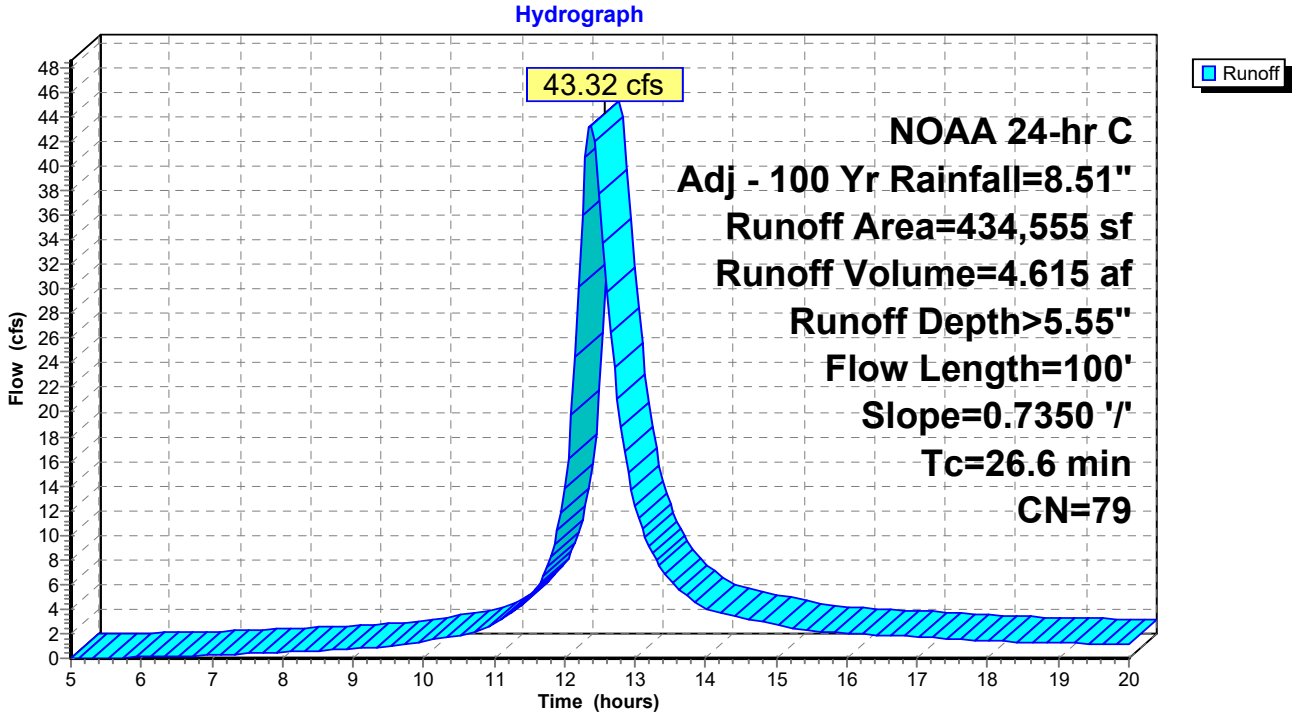
Runoff = 43.32 cfs @ 12.37 hrs, Volume= 4.615 af, Depth> 5.55"
Routed to Link 4L : Disturbed

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 100 Yr Rainfall=8.51"

Area (sf)	CN	Description
308,492	79	Woods/grass comb., Good, HSG D
47,960	80	>75% Grass cover, Good, HSG D
78,103	80	>75% Grass cover, Good, HSG D
434,555	79	Weighted Average
434,555		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.6					**Direct Entry, Tc Direct**
0.0	100	0.7350	80.90	571.82	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
26.6	100	Total			

Subcatchment 1AOpD: POA-1AOp (Disturbed)



Summary for Subcatchment 1AOpU: POA-1AOp (Undisturbed)

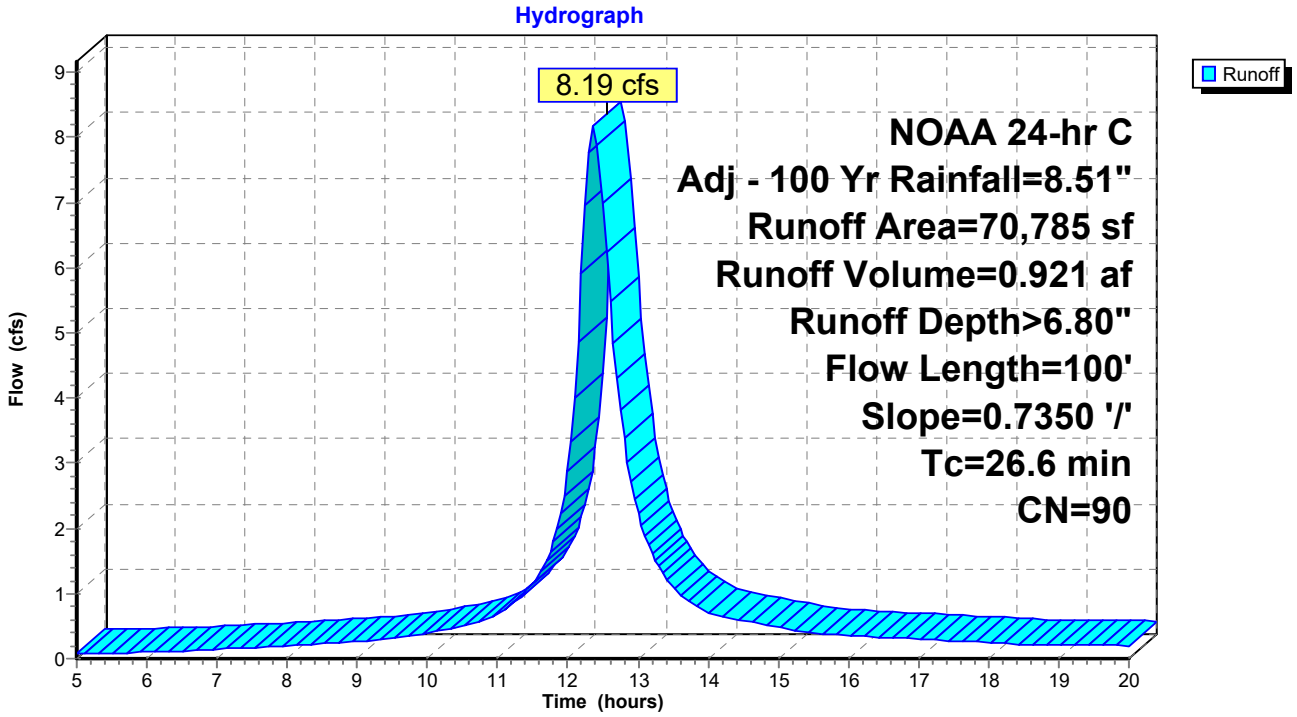
Runoff = 8.19 cfs @ 12.37 hrs, Volume= 0.921 af, Depth> 6.80"
Routed to Link 1AOn : POA-1 Onsite

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 100 Yr Rainfall=8.51"

Area (sf)	CN	Description
31,494	79	Woods/grass comb., Good, HSG D
39,291	98	Water Surface, 0% imp, HSG D
70,785	90	Weighted Average
70,785		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.6					**Direct Entry, Tc Direct**
0.0	100	0.7350	80.90	571.82	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
26.6	100	Total			

Subcatchment 1AOpU: POA-1AOp (Undisturbed)

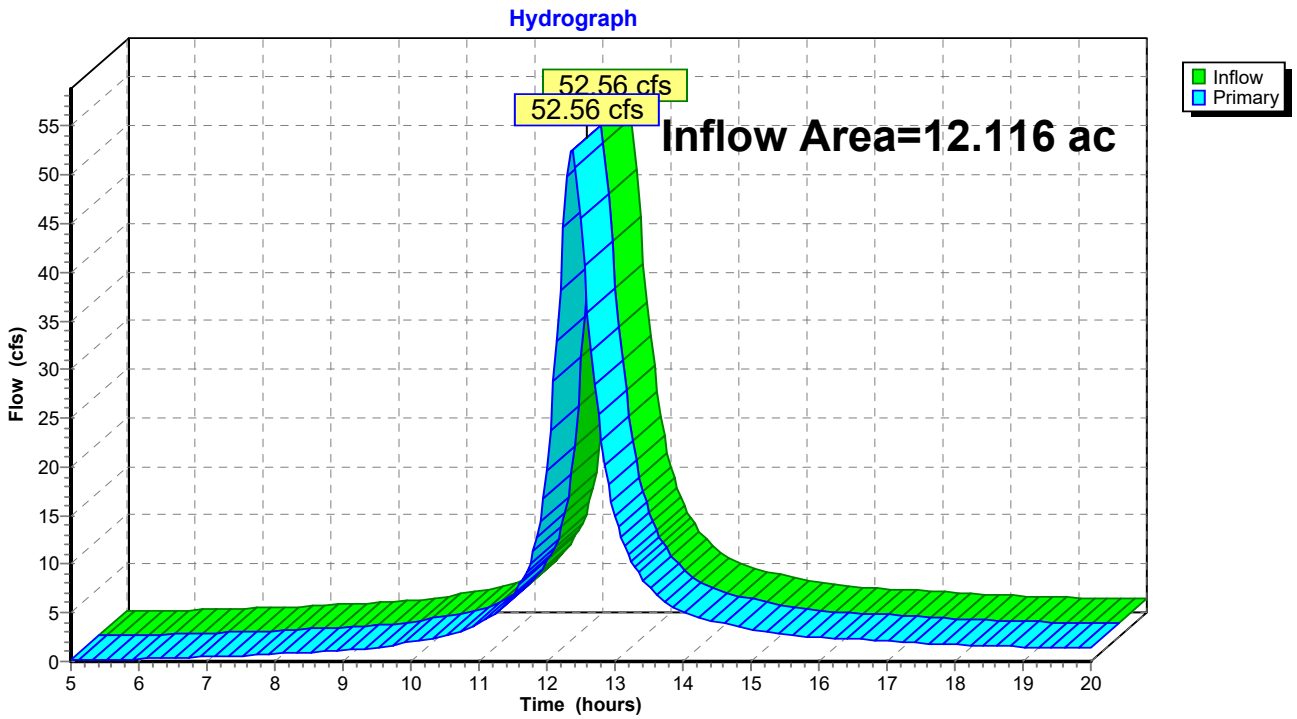


Summary for Link 1AOn: POA-1 Onsite

Inflow Area = 12.116 ac, 4.25% Impervious, Inflow Depth > 5.80" for Adj - 100 Yr event
Inflow = 52.56 cfs @ 12.37 hrs, Volume= 5.858 af
Primary = 52.56 cfs @ 12.37 hrs, Volume= 5.858 af, Atten= 0%, Lag= 0.0 min
Routed to Link Adj : Total Point of Analysis

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 1AOn: POA-1 Onsite

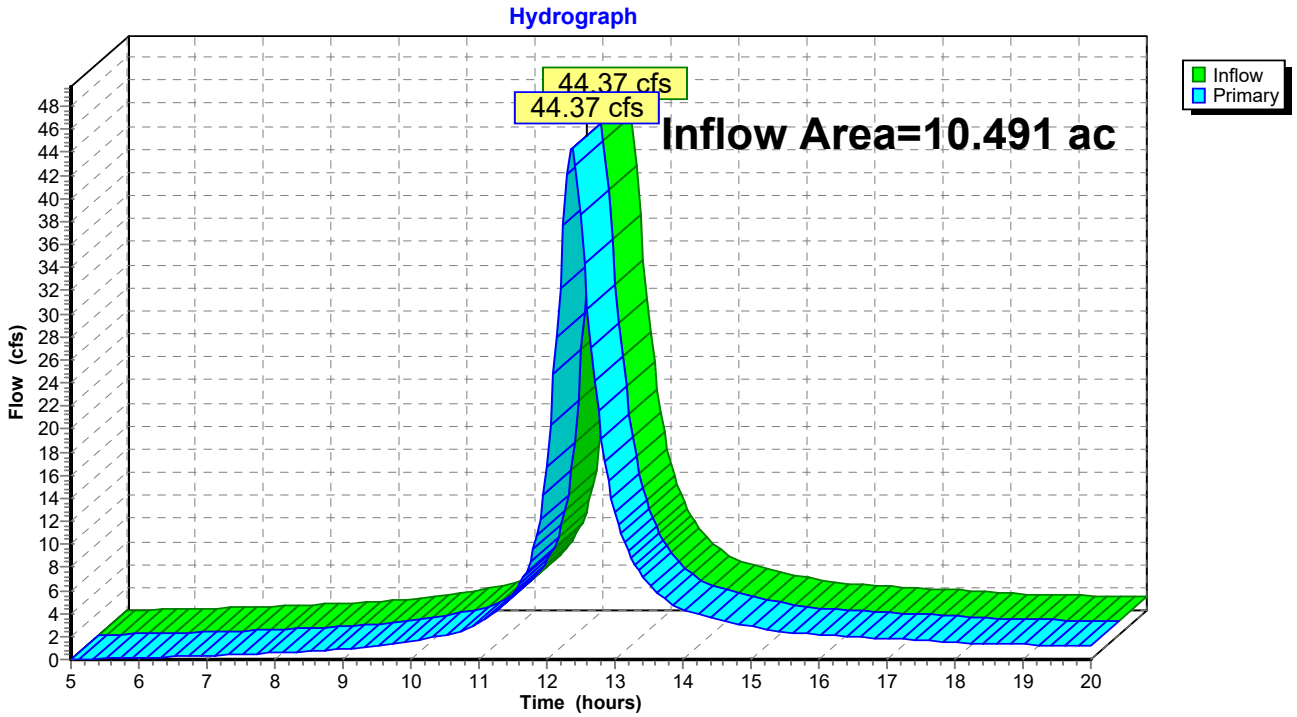


Summary for Link 4L: Disturbed

Inflow Area = 10.491 ac, 4.91% Impervious, Inflow Depth > 5.65" for Adj - 100 Yr event
Inflow = 44.37 cfs @ 12.37 hrs, Volume= 4.937 af
Primary = 44.37 cfs @ 12.37 hrs, Volume= 4.937 af, Atten= 0%, Lag= 0.0 min
Routed to Link 1AOn : POA-1 Onsite

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 4L: Disturbed

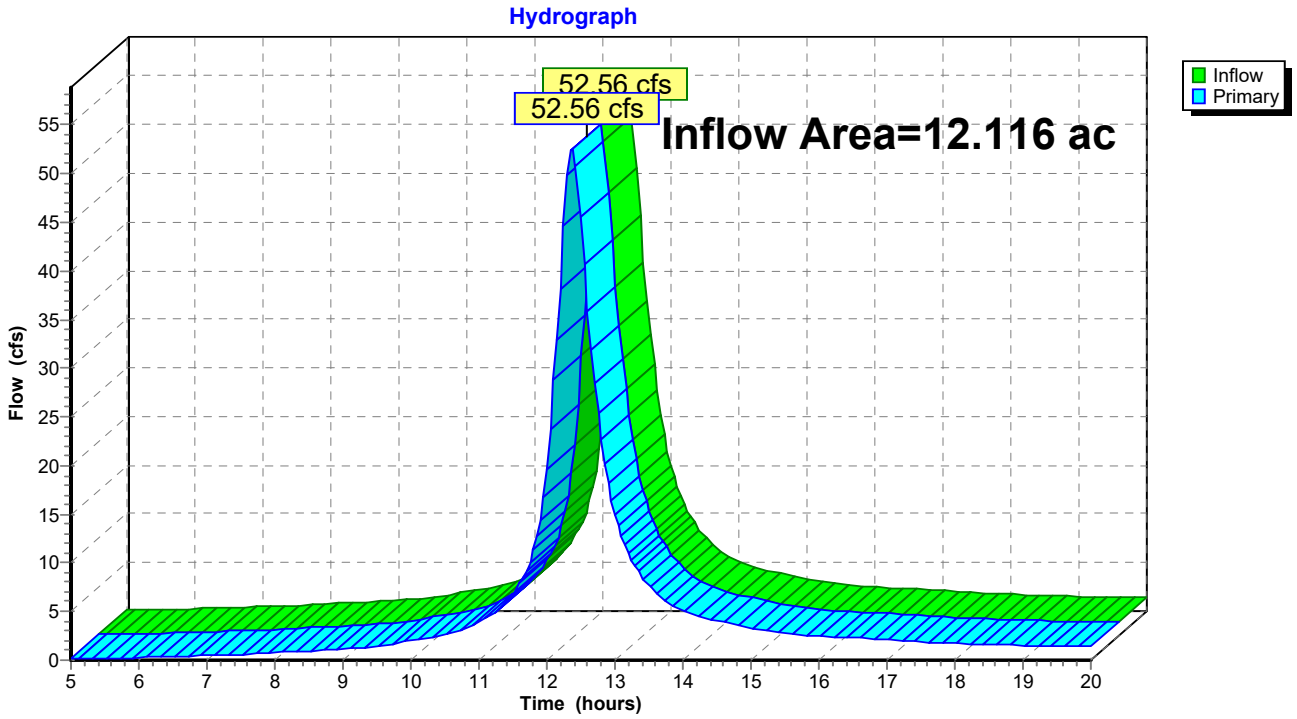


Summary for Link Adj: Total Point of Analysis

Inflow Area = 12.116 ac, 4.25% Impervious, Inflow Depth > 5.80" for Adj - 100 Yr event
Inflow = 52.56 cfs @ 12.37 hrs, Volume= 5.858 af
Primary = 52.56 cfs @ 12.37 hrs, Volume= 5.858 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link Adj: Total Point of Analysis



3.4 RUNOFF & HYDROGRAPH ANALYSIS: EXISTING 2-YEAR STORM EVENT YEAR 2100 PROJECTION

PREPARED: September 19, 2025
REVISED: December 15, 2025

300-356 ENTERPRISE AVE.
CITY OF TRENTON
BLOCK 23203, LOT 1
BLOCK 23102 LOTS 2 & 9
TOWNSHIP OF LAWRENCE
BLOCK 602, LOTS 1 & 2
MERCER COUNTY, NEW JERSEY

Summary for Subcatchment 1OiD: POA-1Oi (Disturbed)

[49] Hint: Tc<2dt may require smaller dt

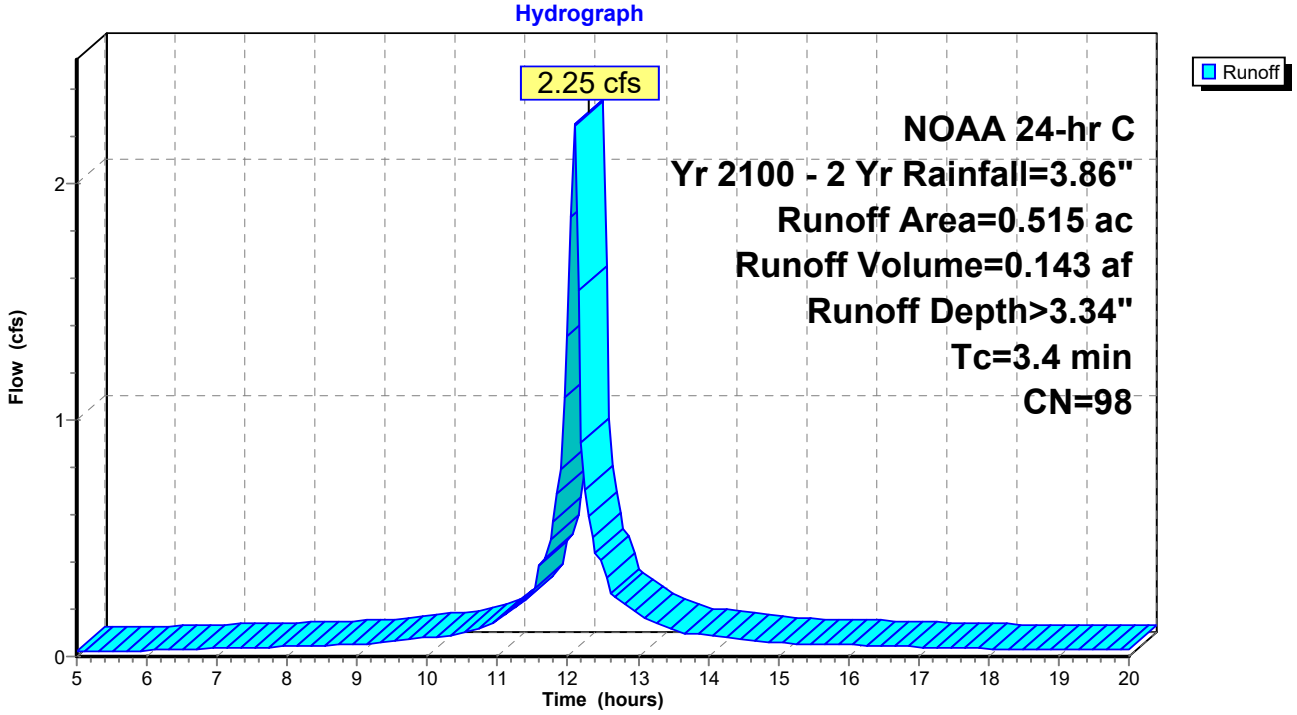
Runoff = 2.25 cfs @ 12.09 hrs, Volume= 0.143 af, Depth> 3.34"
Routed to Link 5L : Disturbed

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Yr 2100 - 2 Yr Rainfall=3.86"

Area (ac)	CN	Description
0.515	98	Paved parking, HSG D
0.515		100.00% Impervious Area

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

Subcatchment 1OiD: POA-1Oi (Disturbed)



Summary for Subcatchment 1OpD: POA-1Op (Disturbed)

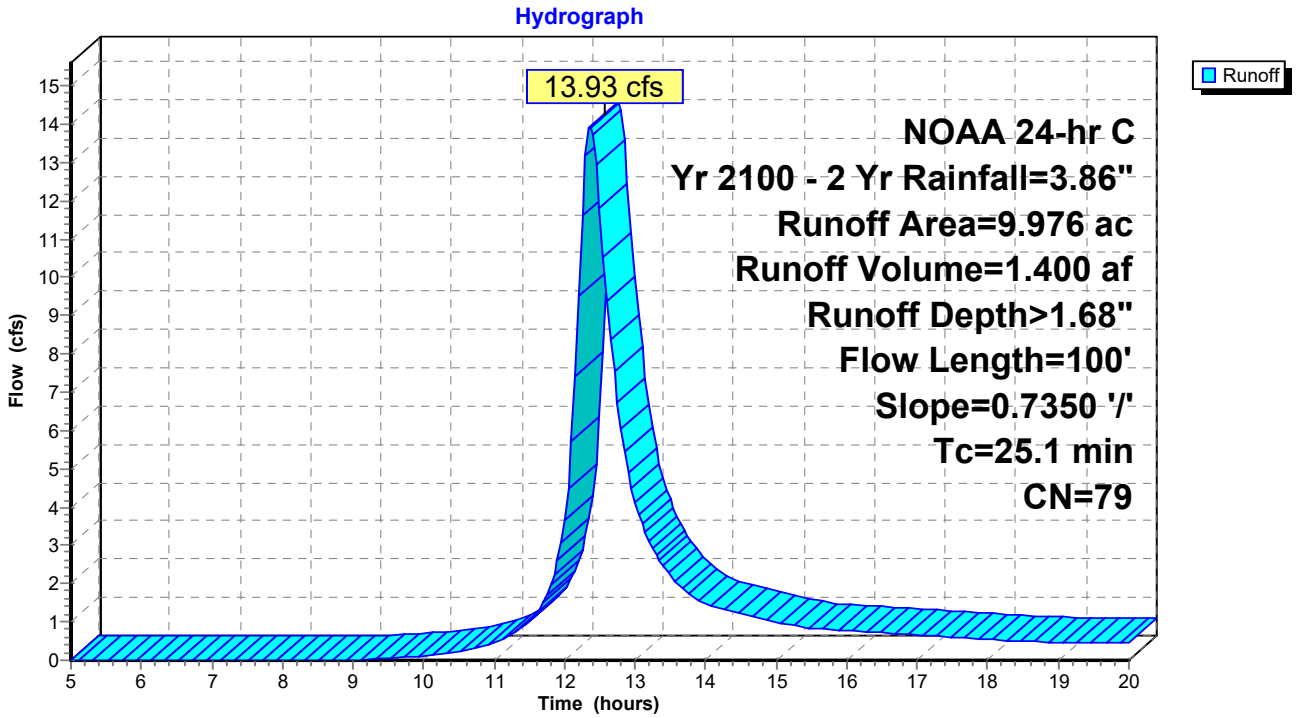
Runoff = 13.93 cfs @ 12.37 hrs, Volume= 1.400 af, Depth> 1.68"
Routed to Link 5L : Disturbed

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Yr 2100 - 2 Yr Rainfall=3.86"

Area (ac)	CN	Description
7.082	79	Woods/grass comb., Good, HSG D
1.101	80	>75% Grass cover, Good, HSG D
1.793	80	>75% Grass cover, Good, HSG D
9.976	79	Weighted Average
9.976		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1					**Direct Entry, Tc Direct**
0.0	100	0.7350	80.90	571.82	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
25.1	100	Total			

Subcatchment 1OpD: POA-1Op (Disturbed)



Summary for Subcatchment 1OpU: POA-1Op (Undisturbed)

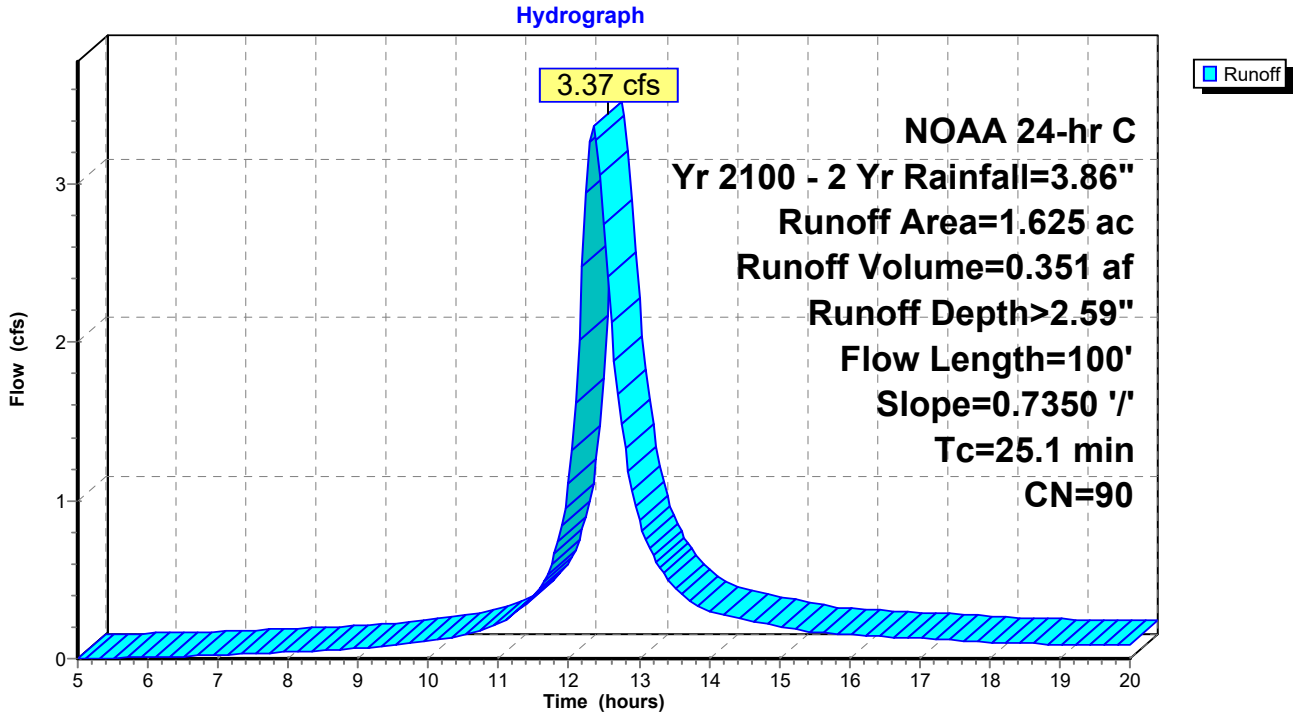
Runoff = 3.37 cfs @ 12.35 hrs, Volume= 0.351 af, Depth> 2.59"
Routed to Link 1On : POA-1 Onsite

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Yr 2100 - 2 Yr Rainfall=3.86"

Area (ac)	CN	Description
0.723	79	Woods/grass comb., Good, HSG D
0.902	98	Water Surface, 0% imp, HSG D
1.625	90	Weighted Average
1.625		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1					**Direct Entry, Tc Direct**
0.0	100	0.7350	80.90	571.82	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
25.1	100	Total			

Subcatchment 1OpU: POA-1Op (Undisturbed)

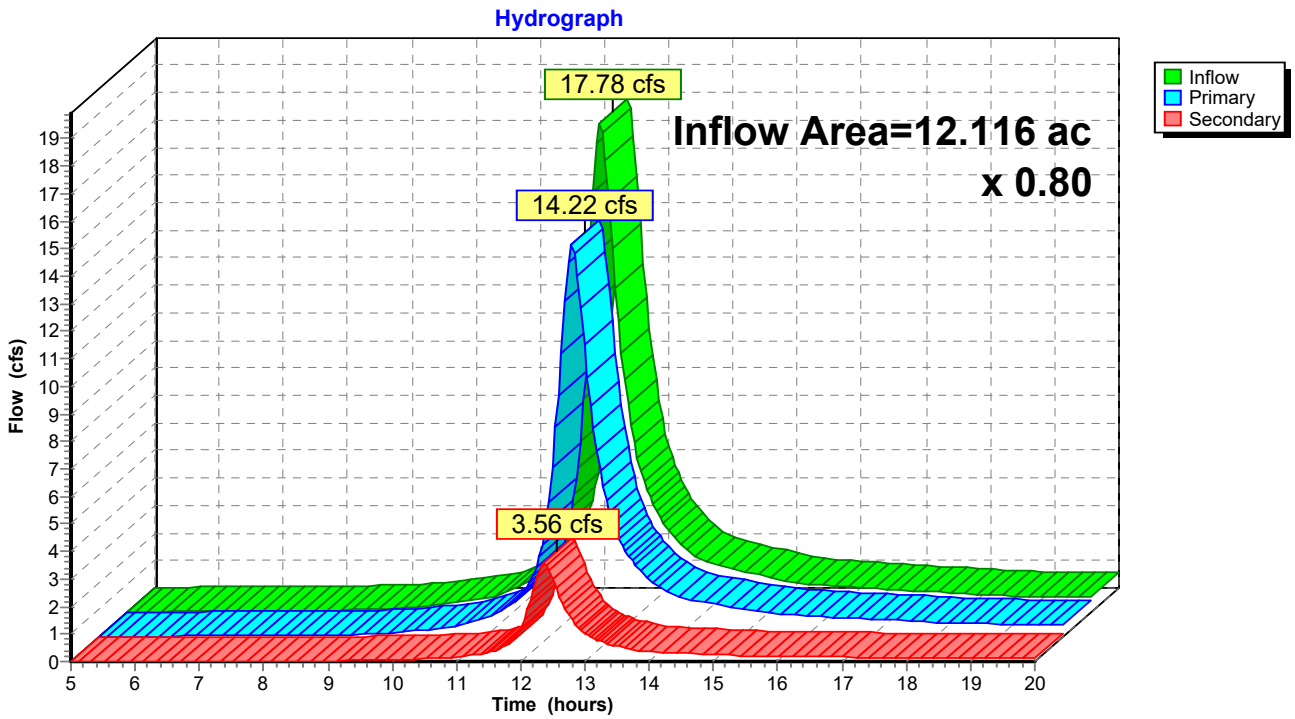


Summary for Link 1On: POA-1 Onsite

Inflow Area = 12.116 ac, 4.25% Impervious, Inflow Depth > 1.88" for Yr 2100 - 2 Yr event
Inflow = 17.78 cfs @ 12.36 hrs, Volume= 1.894 af
Primary = 14.22 cfs @ 12.36 hrs, Volume= 1.515 af, Atten= 20%, Lag= 0.0 min
Routed to Link 2100 : Total Point of Analysis
Secondary = 3.56 cfs @ 12.36 hrs, Volume= 0.379 af
Routed to Link 2100 : Total Point of Analysis

Primary outflow = Inflow x 0.80, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 1On: POA-1 Onsite

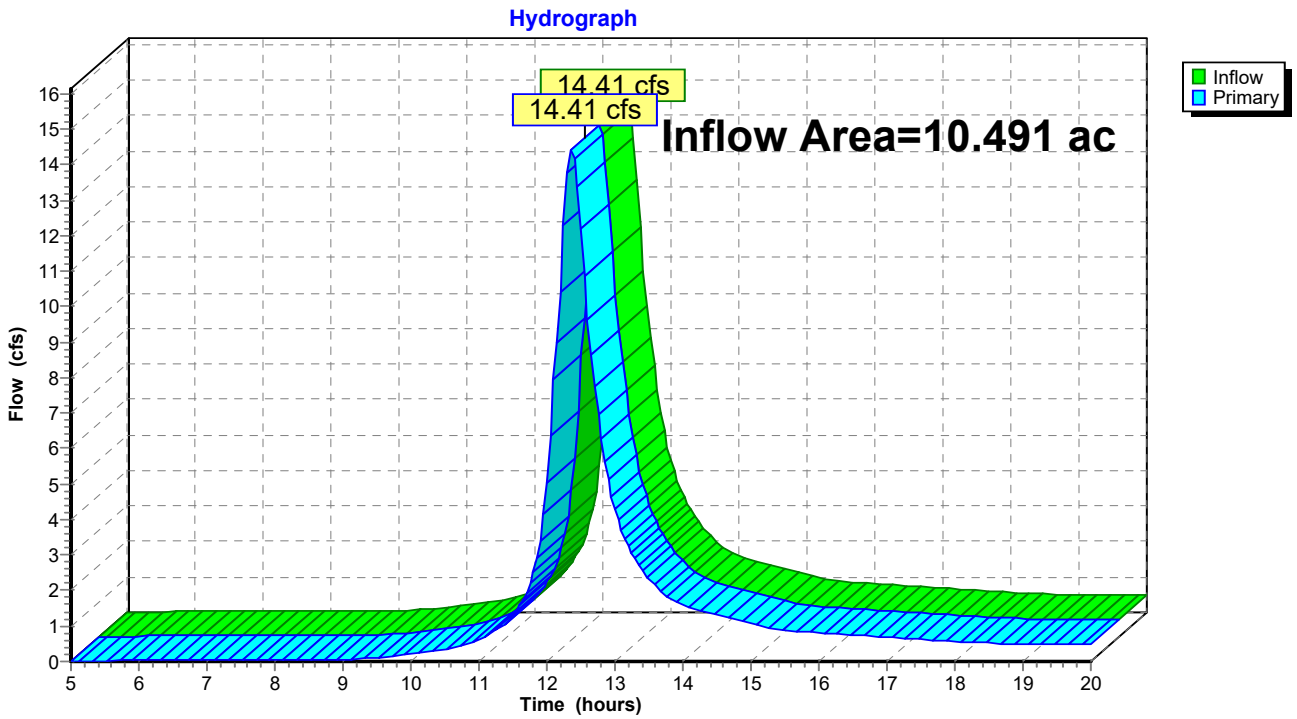


Summary for Link 5L: Disturbed

Inflow Area = 10.491 ac, 4.91% Impervious, Inflow Depth > 1.77" for Yr 2100 - 2 Yr event
Inflow = 14.41 cfs @ 12.36 hrs, Volume= 1.543 af
Primary = 14.41 cfs @ 12.36 hrs, Volume= 1.543 af, Atten= 0%, Lag= 0.0 min
Routed to Link 1On : POA-1 Onsite

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 5L: Disturbed

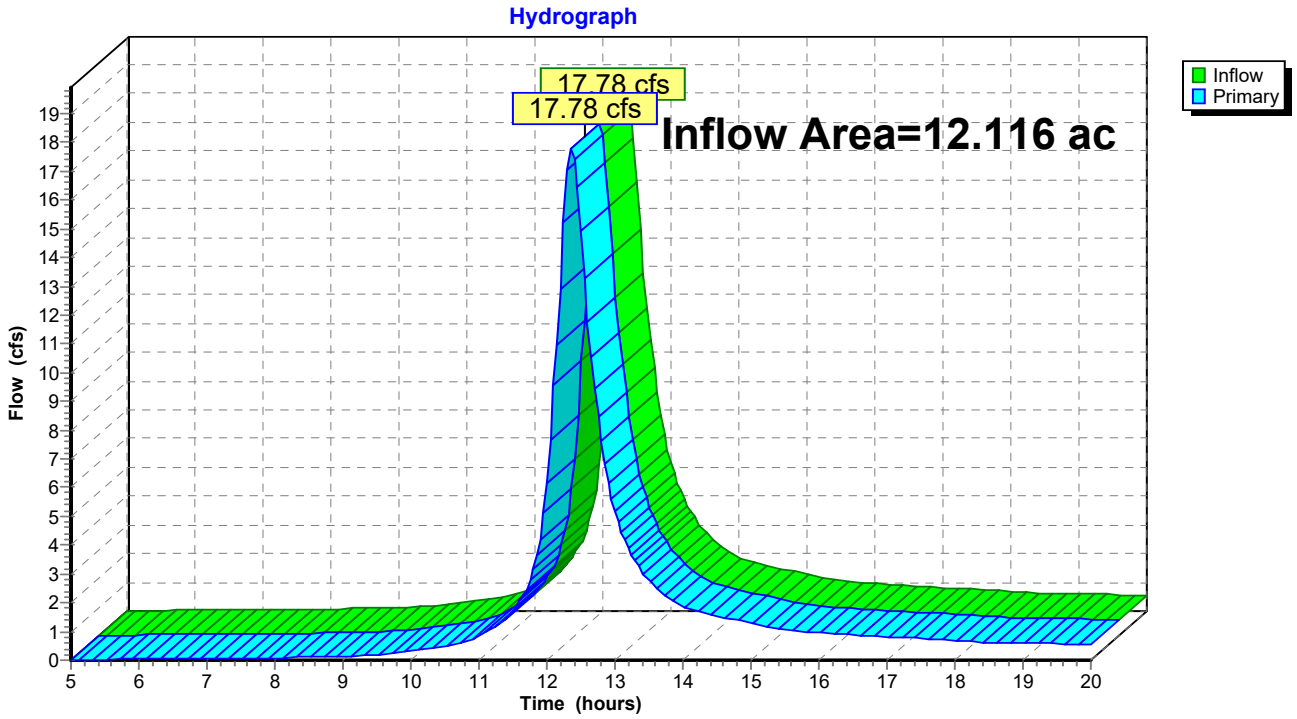


Summary for Link 2100: Total Point of Analysis

Inflow Area = 12.116 ac, 4.25% Impervious, Inflow Depth > 1.88" for Yr 2100 - 2 Yr event
Inflow = 17.78 cfs @ 12.36 hrs, Volume= 1.894 af
Primary = 17.78 cfs @ 12.36 hrs, Volume= 1.894 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 2100: Total Point of Analysis



Summary for Subcatchment 1OiD: POA-1Oi (Disturbed)

[49] Hint: Tc<2dt may require smaller dt

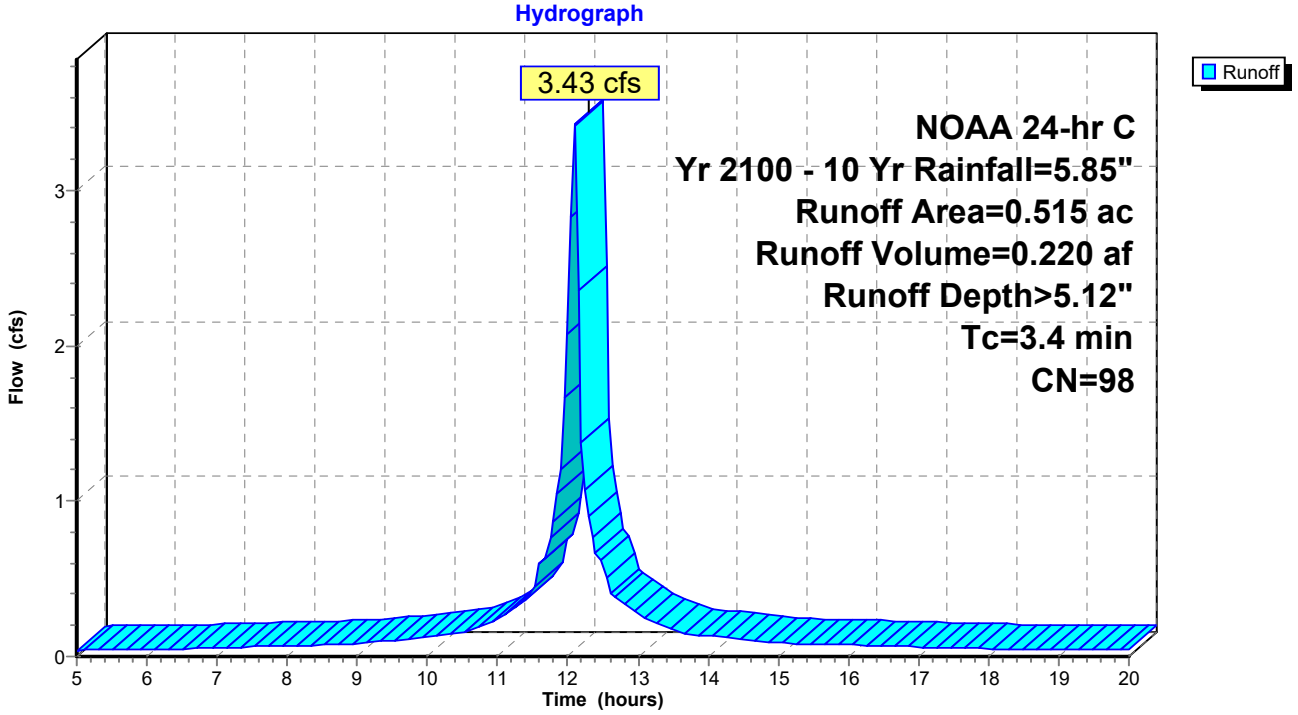
Runoff = 3.43 cfs @ 12.09 hrs, Volume= 0.220 af, Depth> 5.12"
Routed to Link 5L : Disturbed

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Yr 2100 - 10 Yr Rainfall=5.85"

Area (ac)	CN	Description
0.515	98	Paved parking, HSG D
0.515		100.00% Impervious Area

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

Subcatchment 1OiD: POA-1Oi (Disturbed)



Summary for Subcatchment 1OpD: POA-1Op (Disturbed)

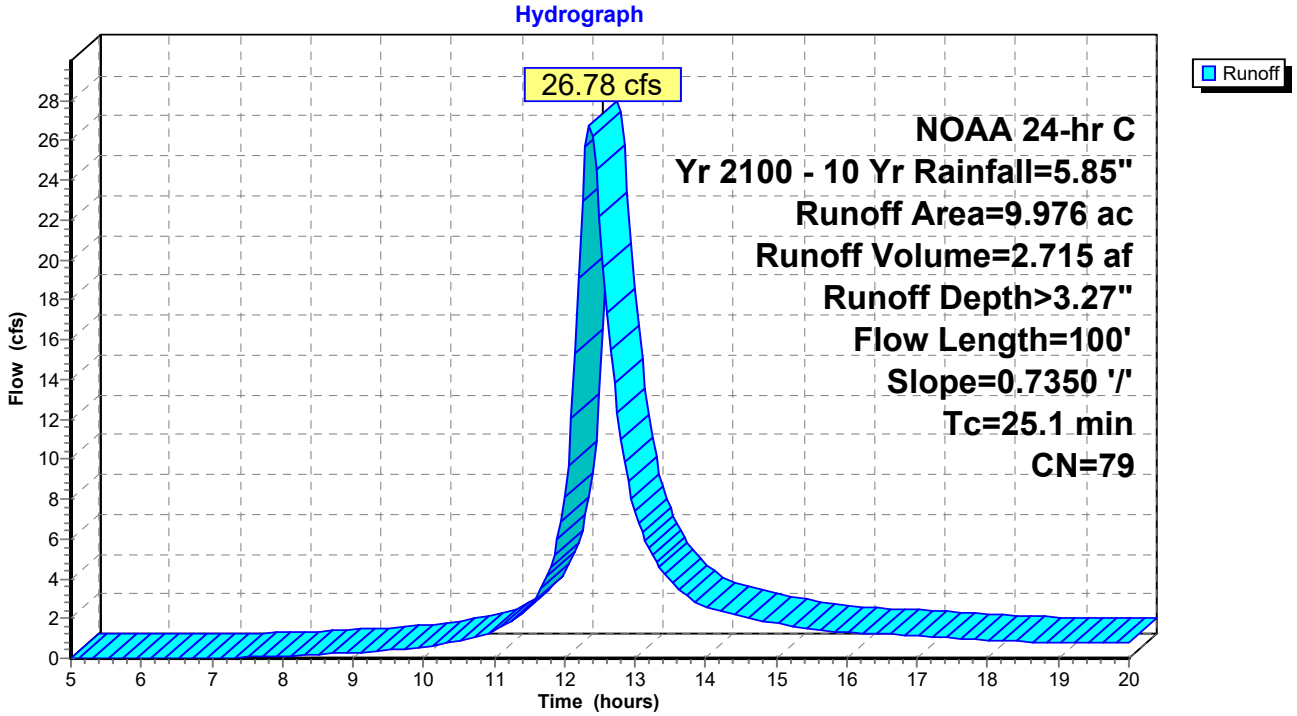
Runoff = 26.78 cfs @ 12.36 hrs, Volume= 2.715 af, Depth> 3.27"
Routed to Link 5L : Disturbed

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Yr 2100 - 10 Yr Rainfall=5.85"

Area (ac)	CN	Description
7.082	79	Woods/grass comb., Good, HSG D
1.101	80	>75% Grass cover, Good, HSG D
1.793	80	>75% Grass cover, Good, HSG D
9.976	79	Weighted Average
9.976		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1					**Direct Entry, Tc Direct**
0.0	100	0.7350	80.90	571.82	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
25.1	100	Total			

Subcatchment 1OpD: POA-1Op (Disturbed)



Summary for Subcatchment 1OpU: POA-1Op (Undisturbed)

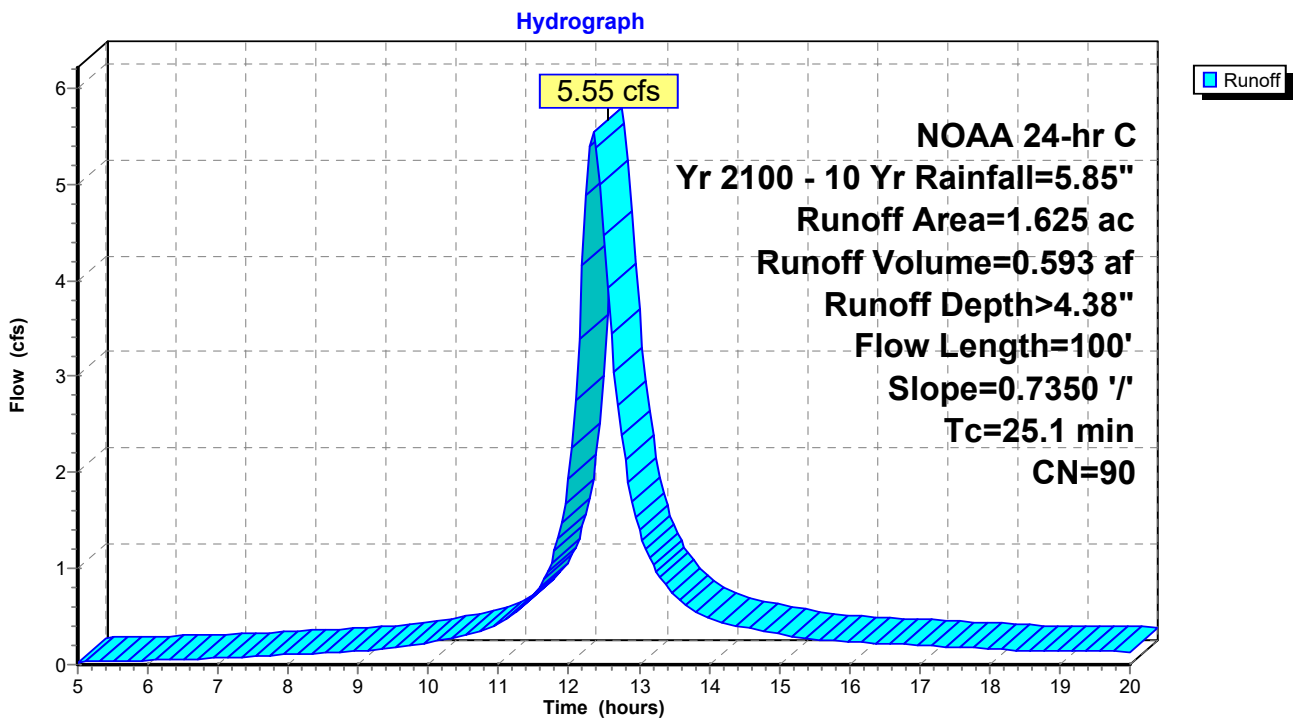
Runoff = 5.55 cfs @ 12.35 hrs, Volume= 0.593 af, Depth> 4.38"
Routed to Link 1On : POA-1 Onsite

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Yr 2100 - 10 Yr Rainfall=5.85"

Area (ac)	CN	Description
0.723	79	Woods/grass comb., Good, HSG D
0.902	98	Water Surface, 0% imp, HSG D
1.625	90	Weighted Average
1.625		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1					**Direct Entry, Tc Direct**
0.0	100	0.7350	80.90	571.82	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
25.1	100	Total			

Subcatchment 1OpU: POA-1Op (Undisturbed)

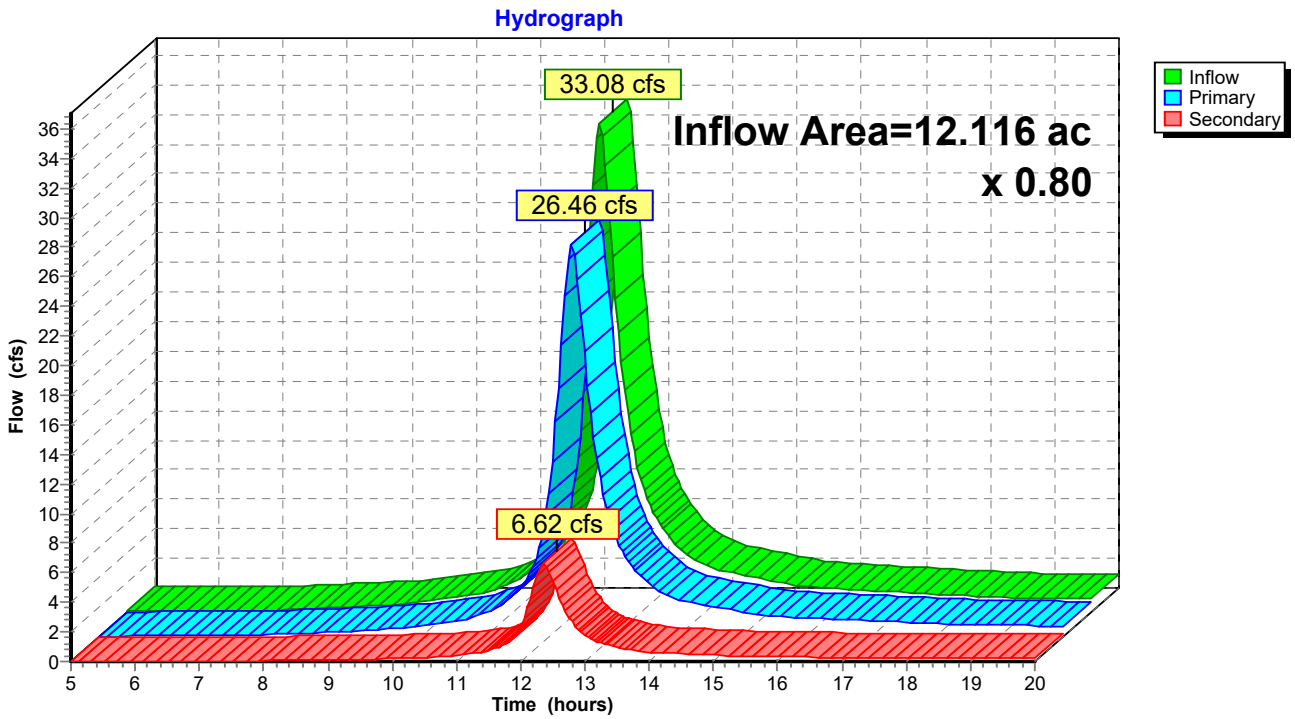


Summary for Link 1On: POA-1 Onsite

Inflow Area = 12.116 ac, 4.25% Impervious, Inflow Depth > 3.49" for Yr 2100 - 10 Yr event
Inflow = 33.08 cfs @ 12.35 hrs, Volume= 3.528 af
Primary = 26.46 cfs @ 12.35 hrs, Volume= 2.823 af, Atten= 20%, Lag= 0.0 min
Routed to Link 2100 : Total Point of Analysis
Secondary = 6.62 cfs @ 12.35 hrs, Volume= 0.706 af
Routed to Link 2100 : Total Point of Analysis

Primary outflow = Inflow x 0.80, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 1On: POA-1 Onsite

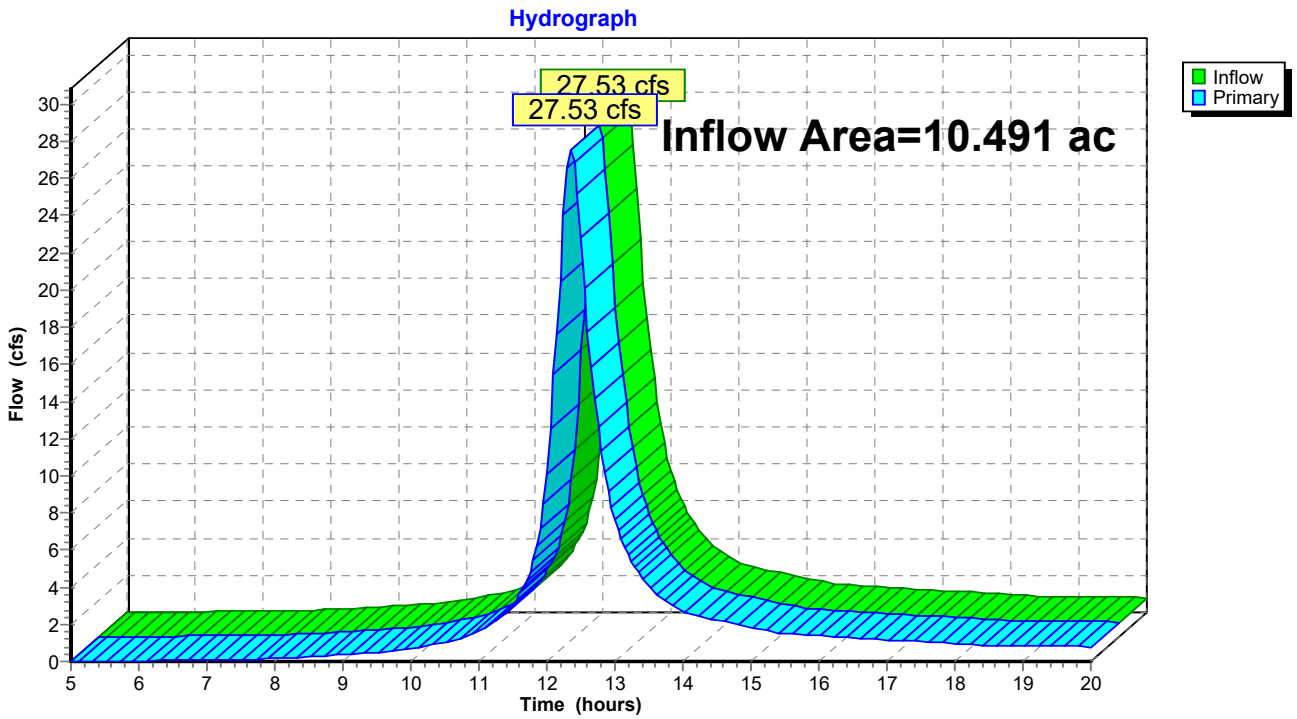


Summary for Link 5L: Disturbed

Inflow Area = 10.491 ac, 4.91% Impervious, Inflow Depth > 3.36" for Yr 2100 - 10 Yr event
Inflow = 27.53 cfs @ 12.35 hrs, Volume= 2.935 af
Primary = 27.53 cfs @ 12.35 hrs, Volume= 2.935 af, Atten= 0%, Lag= 0.0 min
Routed to Link 1On : POA-1 Onsite

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 5L: Disturbed

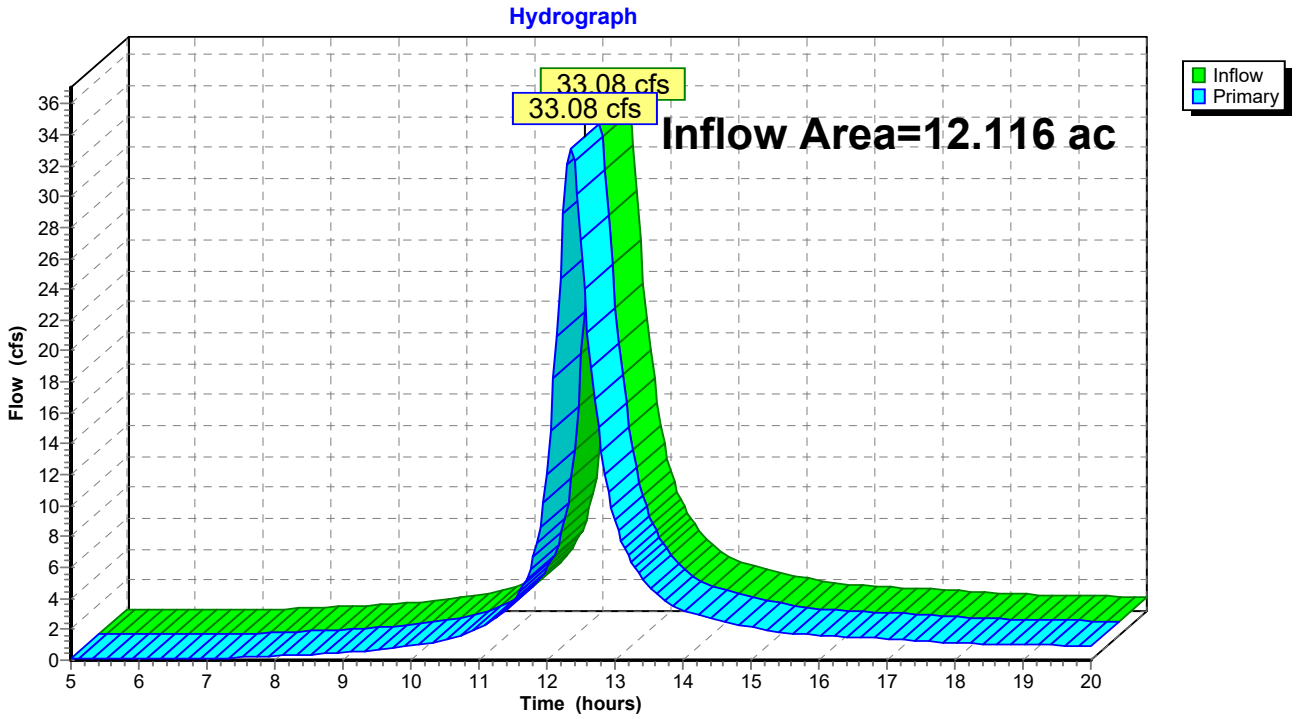


Summary for Link 2100: Total Point of Analysis

Inflow Area = 12.116 ac, 4.25% Impervious, Inflow Depth > 3.49" for Yr 2100 - 10 Yr event
Inflow = 33.08 cfs @ 12.35 hrs, Volume= 3.528 af
Primary = 33.08 cfs @ 12.35 hrs, Volume= 3.528 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 2100: Total Point of Analysis



Summary for Subcatchment 1OiD: POA-1Oi (Disturbed)

[49] Hint: Tc<2dt may require smaller dt

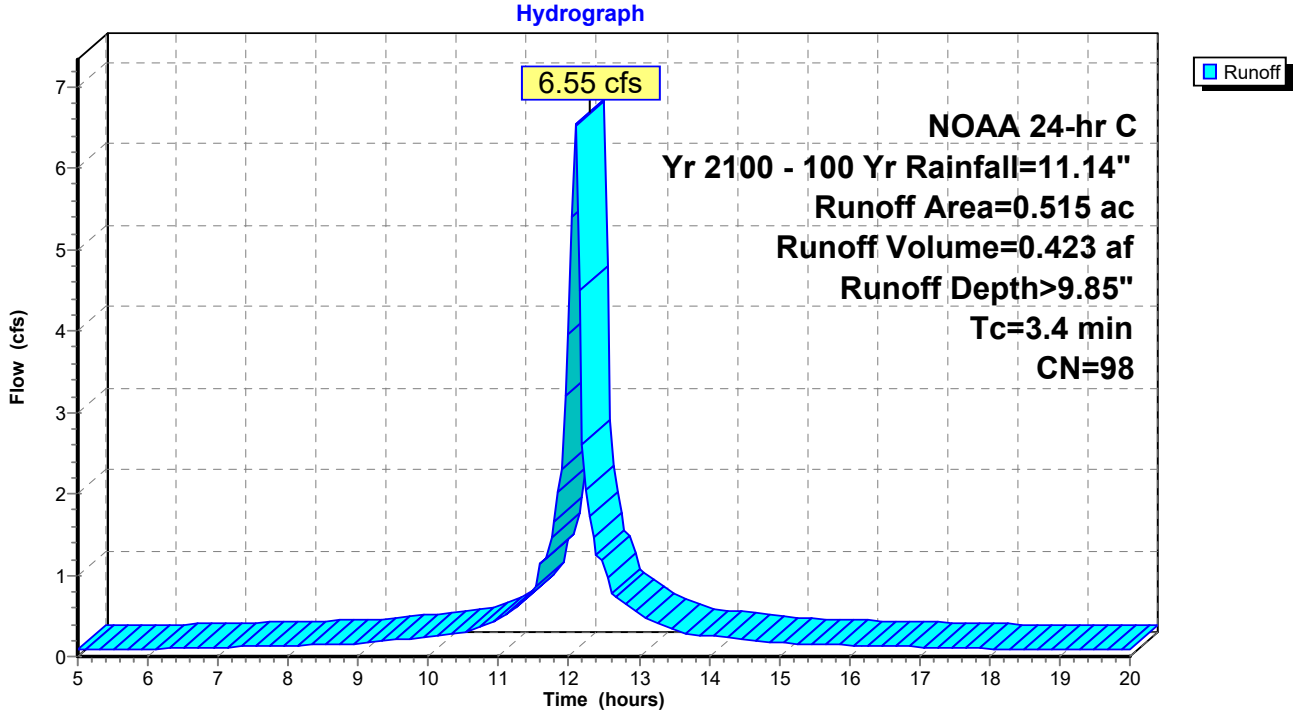
Runoff = 6.55 cfs @ 12.09 hrs, Volume= 0.423 af, Depth> 9.85"
Routed to Link 5L : Disturbed

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Yr 2100 - 100 Yr Rainfall=11.14"

Area (ac)	CN	Description
0.515	98	Paved parking, HSG D
0.515		100.00% Impervious Area

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

Subcatchment 1OiD: POA-1Oi (Disturbed)



Summary for Subcatchment 1OpD: POA-1Op (Disturbed)

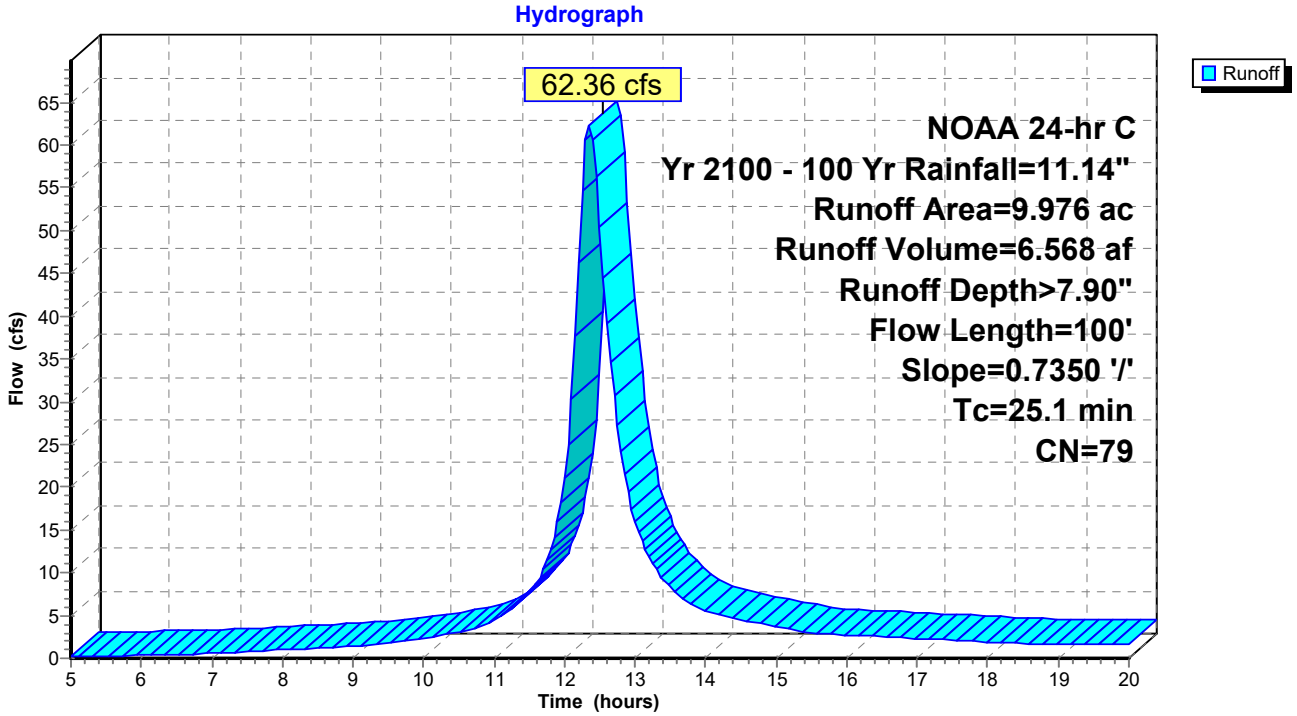
Runoff = 62.36 cfs @ 12.35 hrs, Volume= 6.568 af, Depth> 7.90"
Routed to Link 5L : Disturbed

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Yr 2100 - 100 Yr Rainfall=11.14"

Area (ac)	CN	Description
7.082	79	Woods/grass comb., Good, HSG D
1.101	80	>75% Grass cover, Good, HSG D
1.793	80	>75% Grass cover, Good, HSG D
9.976	79	Weighted Average
9.976		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1					**Direct Entry, Tc Direct**
0.0	100	0.7350	80.90	571.82	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
25.1	100	Total			

Subcatchment 1OpD: POA-1Op (Disturbed)



Summary for Subcatchment 1OpU: POA-1Op (Undisturbed)

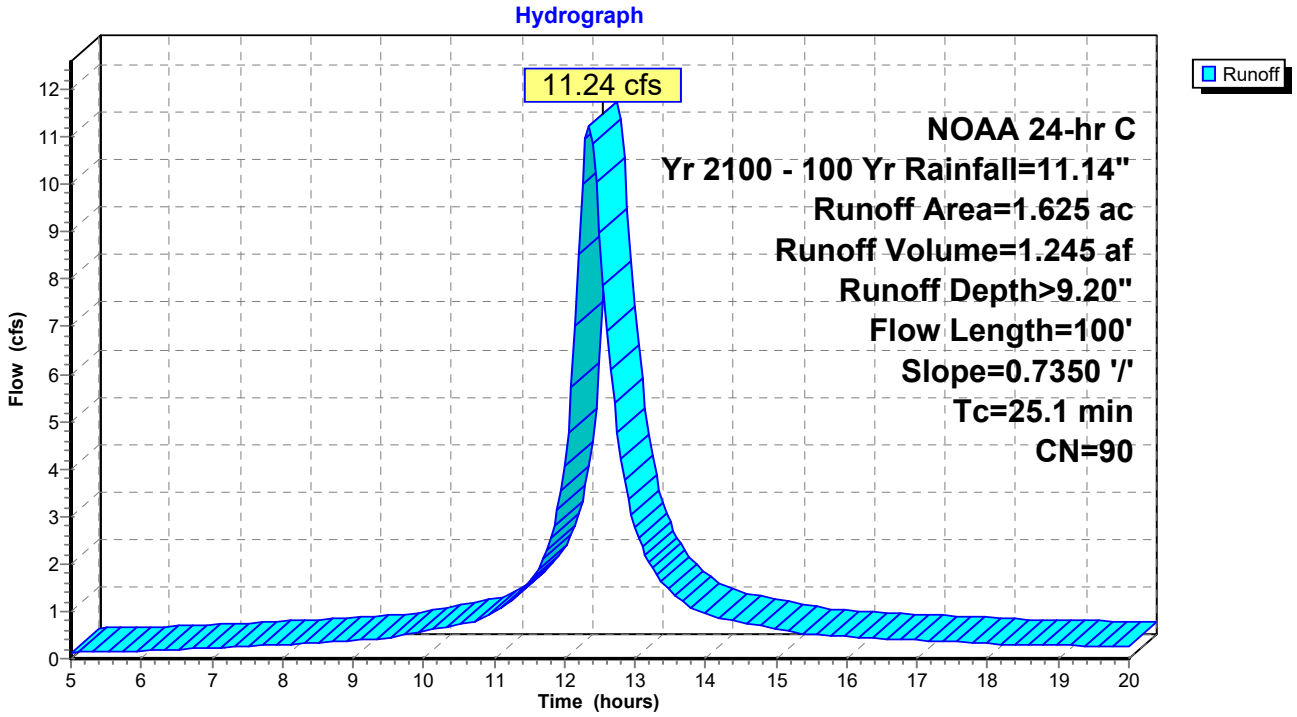
Runoff = 11.24 cfs @ 12.35 hrs, Volume= 1.245 af, Depth> 9.20"
Routed to Link 1On : POA-1 Onsite

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Yr 2100 - 100 Yr Rainfall=11.14"

Area (ac)	CN	Description
0.723	79	Woods/grass comb., Good, HSG D
0.902	98	Water Surface, 0% imp, HSG D
1.625	90	Weighted Average
1.625		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1					**Direct Entry, Tc Direct**
0.0	100	0.7350	80.90	571.82	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
25.1	100	Total			

Subcatchment 1OpU: POA-1Op (Undisturbed)

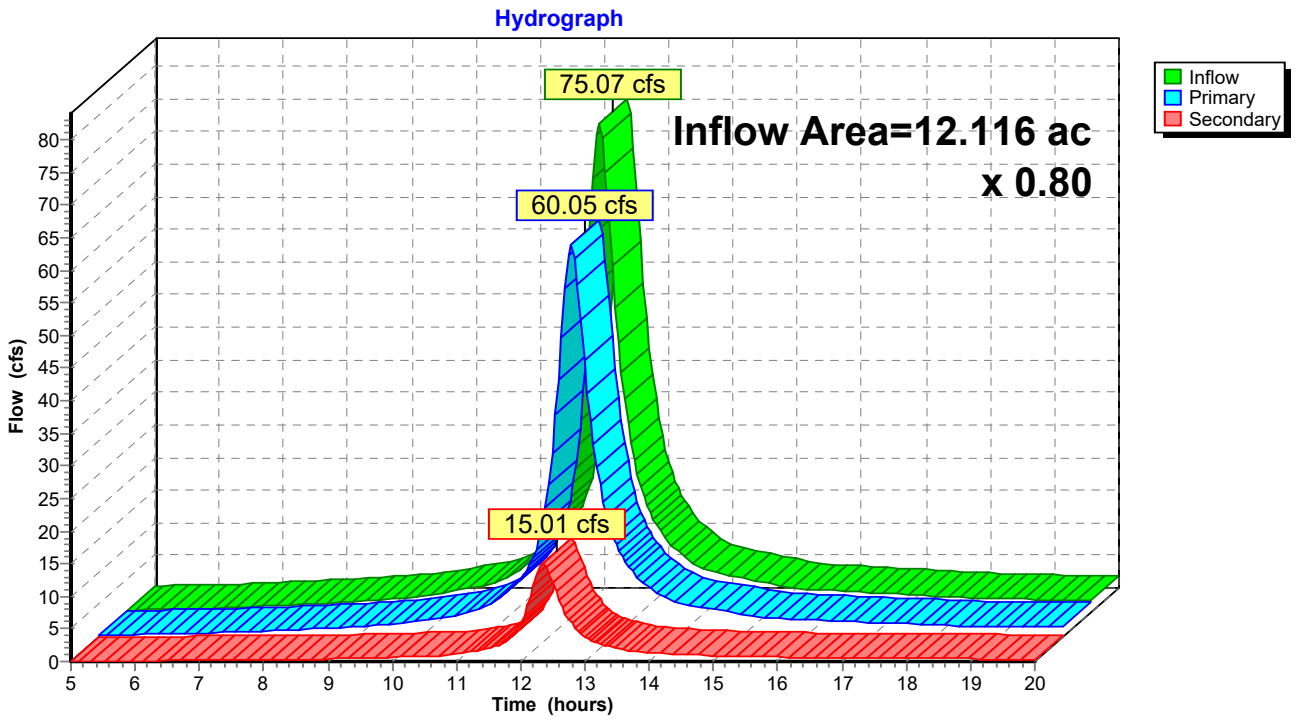


Summary for Link 1On: POA-1 Onsite

Inflow Area = 12.116 ac, 4.25% Impervious, Inflow Depth > 8.16" for Yr 2100 - 100 Yr event
Inflow = 75.07 cfs @ 12.35 hrs, Volume= 8.236 af
Primary = 60.05 cfs @ 12.35 hrs, Volume= 6.589 af, Atten= 20%, Lag= 0.0 min
Routed to Link 2100 : Total Point of Analysis
Secondary = 15.01 cfs @ 12.35 hrs, Volume= 1.647 af
Routed to Link 2100 : Total Point of Analysis

Primary outflow = Inflow x 0.80, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 1On: POA-1 Onsite

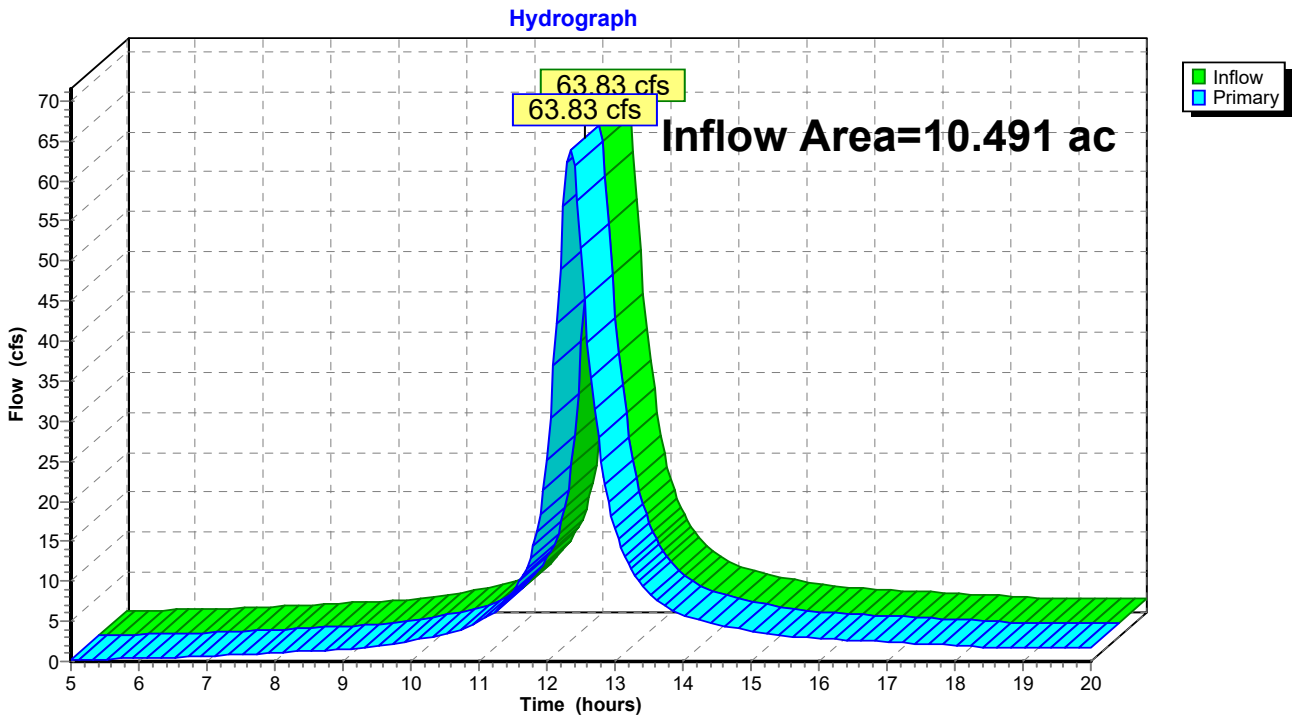


Summary for Link 5L: Disturbed

Inflow Area = 10.491 ac, 4.91% Impervious, Inflow Depth > 8.00" for Yr 2100 - 100 Yr event
Inflow = 63.83 cfs @ 12.35 hrs, Volume= 6.990 af
Primary = 63.83 cfs @ 12.35 hrs, Volume= 6.990 af, Atten= 0%, Lag= 0.0 min
Routed to Link 1On : POA-1 Onsite

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 5L: Disturbed

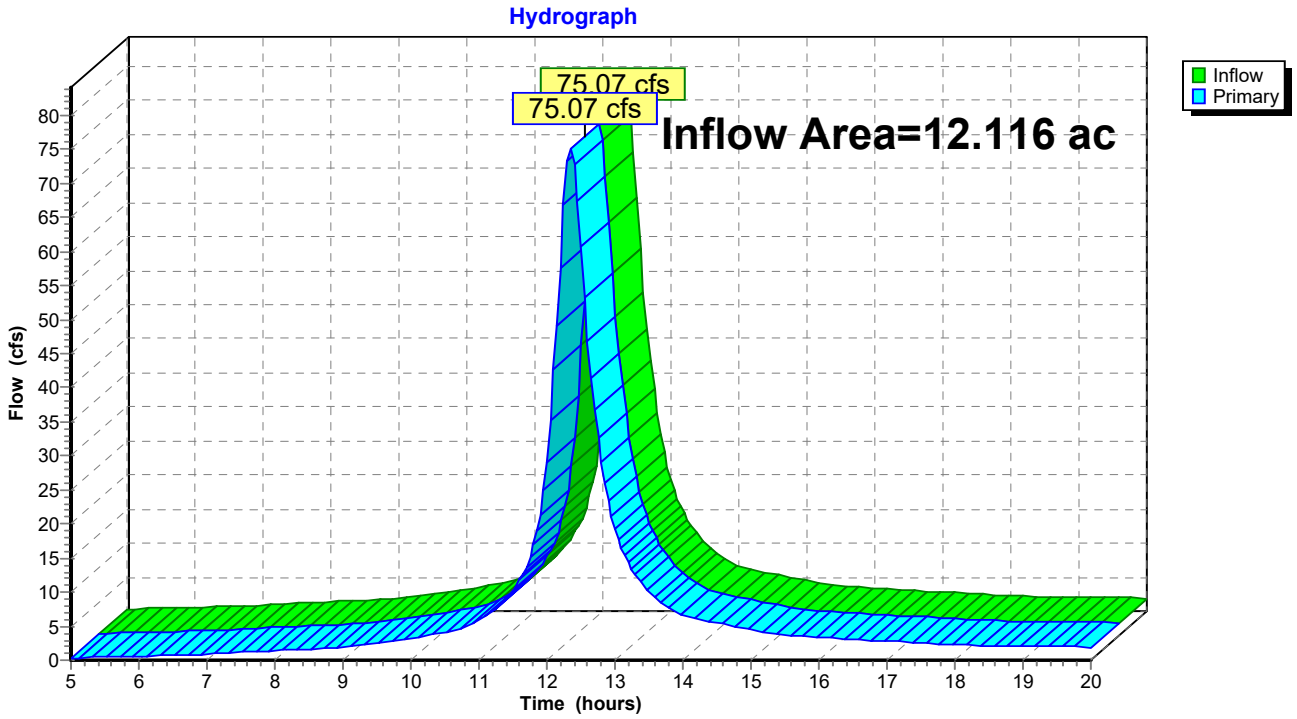


Summary for Link 2100: Total Point of Analysis

Inflow Area = 12.116 ac, 4.25% Impervious, Inflow Depth > 8.16" for Yr 2100 - 100 Yr event
Inflow = 75.07 cfs @ 12.35 hrs, Volume= 8.236 af
Primary = 75.07 cfs @ 12.35 hrs, Volume= 8.236 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 2100: Total Point of Analysis



3.5 RUNOFF & HYDROGRAPH ANALYSIS: EXISTING 10-YEAR STORM EVENT YEAR 2100 PROJECTION

PREPARED: September 19, 2025
REVISED: December 15, 2025

300-356 ENTERPRISE AVE.
CITY OF TRENTON
BLOCK 23203, LOT 1
BLOCK 23102 LOTS 2 & 9
TOWNSHIP OF LAWRENCE
BLOCK 602, LOTS 1 & 2
MERCER COUNTY, NEW JERSEY

Summary for Subcatchment 1OiD: POA-1Oi (Disturbed)

[49] Hint: Tc<2dt may require smaller dt

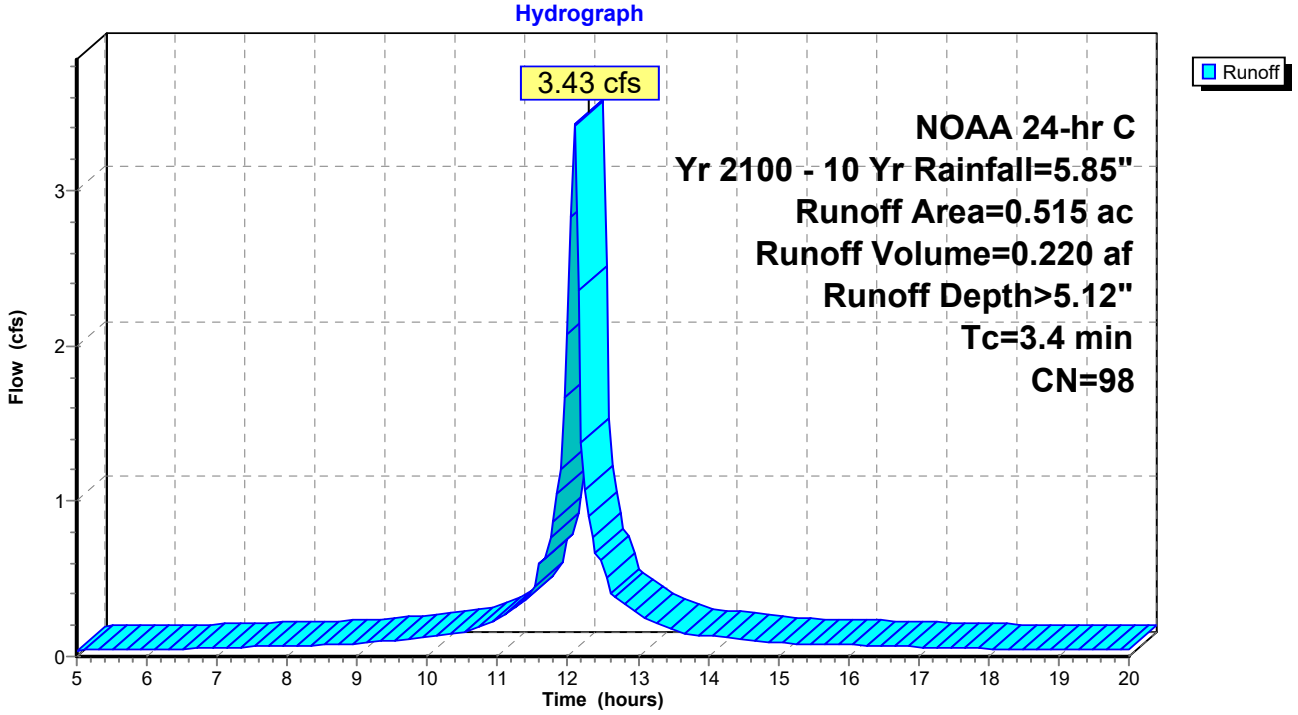
Runoff = 3.43 cfs @ 12.09 hrs, Volume= 0.220 af, Depth> 5.12"
Routed to Link 5L : Disturbed

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Yr 2100 - 10 Yr Rainfall=5.85"

Area (ac)	CN	Description
0.515	98	Paved parking, HSG D
0.515		100.00% Impervious Area

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

Subcatchment 1OiD: POA-1Oi (Disturbed)



Summary for Subcatchment 1OpD: POA-1Op (Disturbed)

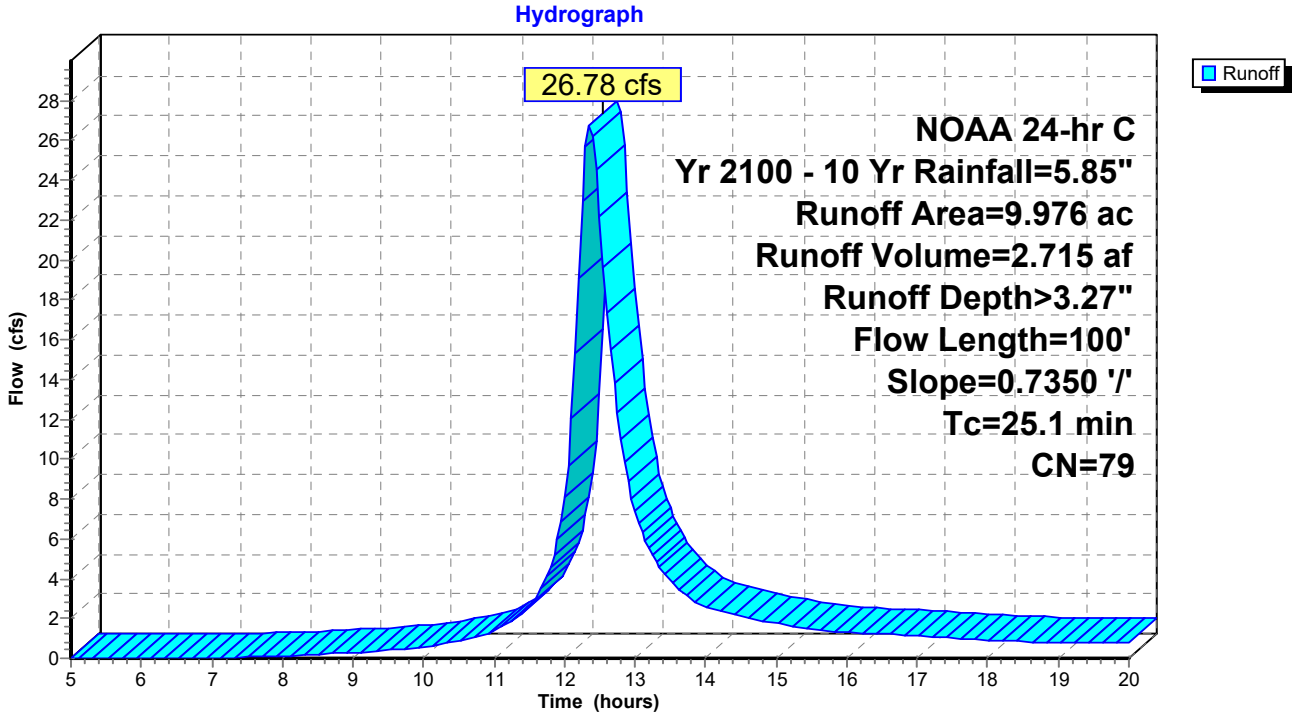
Runoff = 26.78 cfs @ 12.36 hrs, Volume= 2.715 af, Depth> 3.27"
Routed to Link 5L : Disturbed

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Yr 2100 - 10 Yr Rainfall=5.85"

Area (ac)	CN	Description
7.082	79	Woods/grass comb., Good, HSG D
1.101	80	>75% Grass cover, Good, HSG D
1.793	80	>75% Grass cover, Good, HSG D
9.976	79	Weighted Average
9.976		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1					**Direct Entry, Tc Direct**
0.0	100	0.7350	80.90	571.82	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
25.1	100	Total			

Subcatchment 1OpD: POA-1Op (Disturbed)



Summary for Subcatchment 1OpU: POA-1Op (Undisturbed)

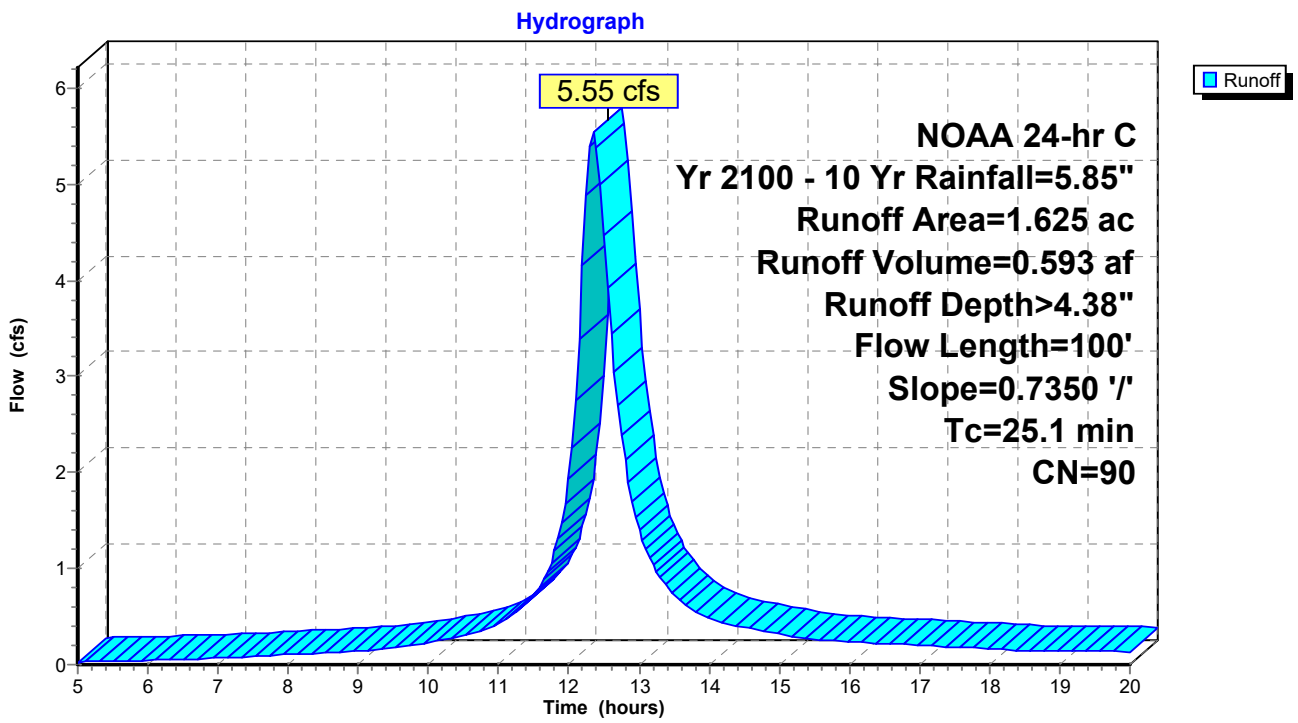
Runoff = 5.55 cfs @ 12.35 hrs, Volume= 0.593 af, Depth> 4.38"
Routed to Link 1On : POA-1 Onsite

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Yr 2100 - 10 Yr Rainfall=5.85"

Area (ac)	CN	Description
0.723	79	Woods/grass comb., Good, HSG D
0.902	98	Water Surface, 0% imp, HSG D
1.625	90	Weighted Average
1.625		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1					**Direct Entry, Tc Direct**
0.0	100	0.7350	80.90	571.82	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
25.1	100	Total			

Subcatchment 1OpU: POA-1Op (Undisturbed)

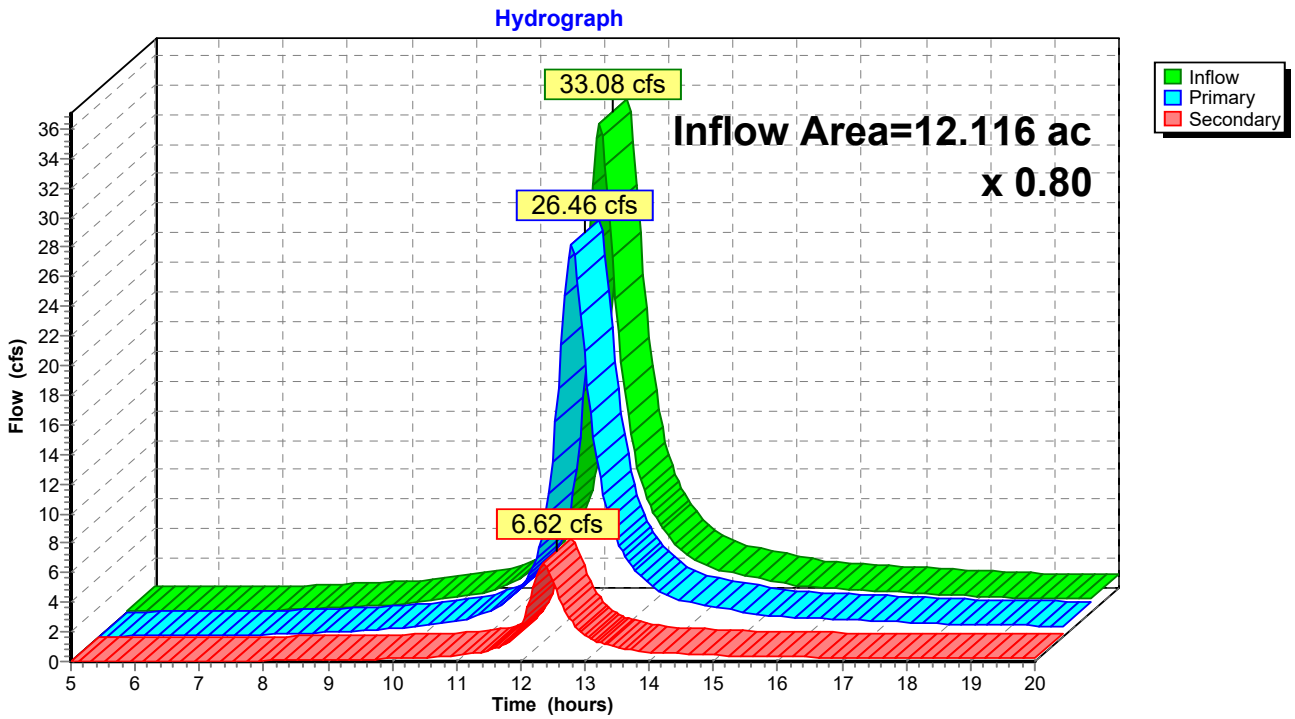


Summary for Link 1On: POA-1 Onsite

Inflow Area = 12.116 ac, 4.25% Impervious, Inflow Depth > 3.49" for Yr 2100 - 10 Yr event
Inflow = 33.08 cfs @ 12.35 hrs, Volume= 3.528 af
Primary = 26.46 cfs @ 12.35 hrs, Volume= 2.823 af, Atten= 20%, Lag= 0.0 min
Routed to Link 2100 : Total Point of Analysis
Secondary = 6.62 cfs @ 12.35 hrs, Volume= 0.706 af
Routed to Link 2100 : Total Point of Analysis

Primary outflow = Inflow x 0.80, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 1On: POA-1 Onsite

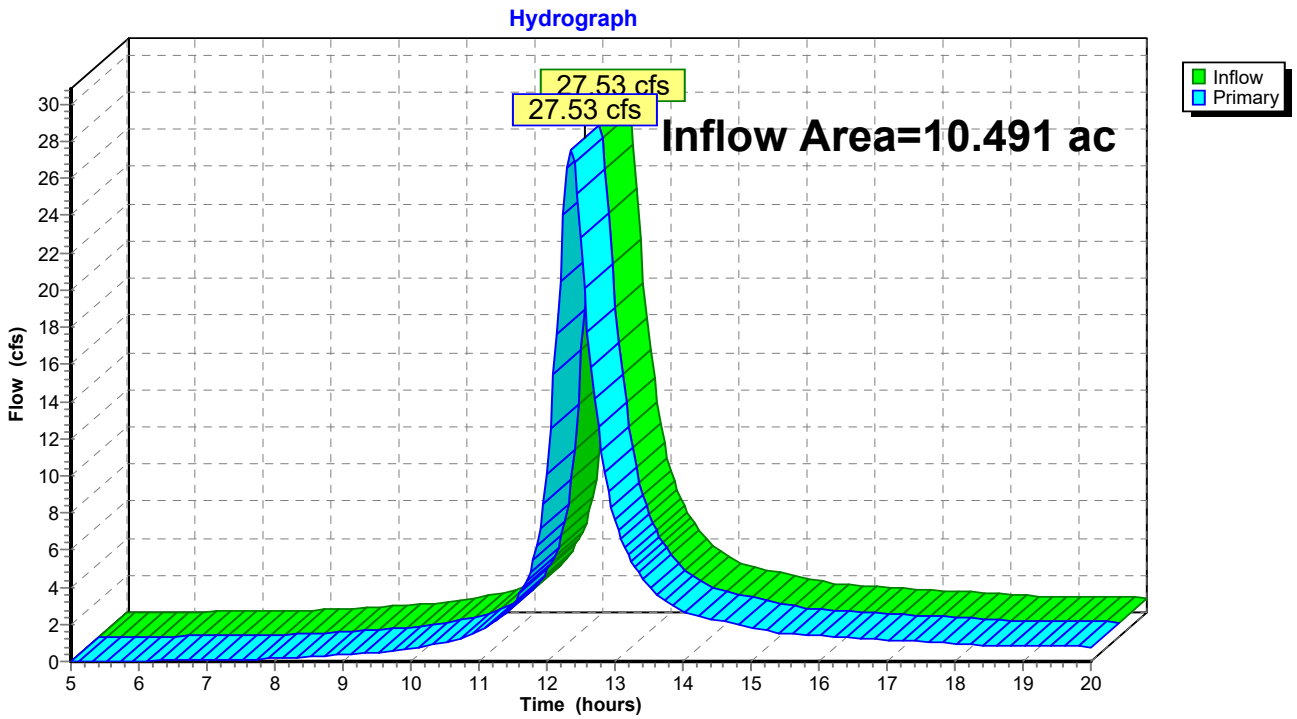


Summary for Link 5L: Disturbed

Inflow Area = 10.491 ac, 4.91% Impervious, Inflow Depth > 3.36" for Yr 2100 - 10 Yr event
Inflow = 27.53 cfs @ 12.35 hrs, Volume= 2.935 af
Primary = 27.53 cfs @ 12.35 hrs, Volume= 2.935 af, Atten= 0%, Lag= 0.0 min
Routed to Link 1On : POA-1 Onsite

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 5L: Disturbed

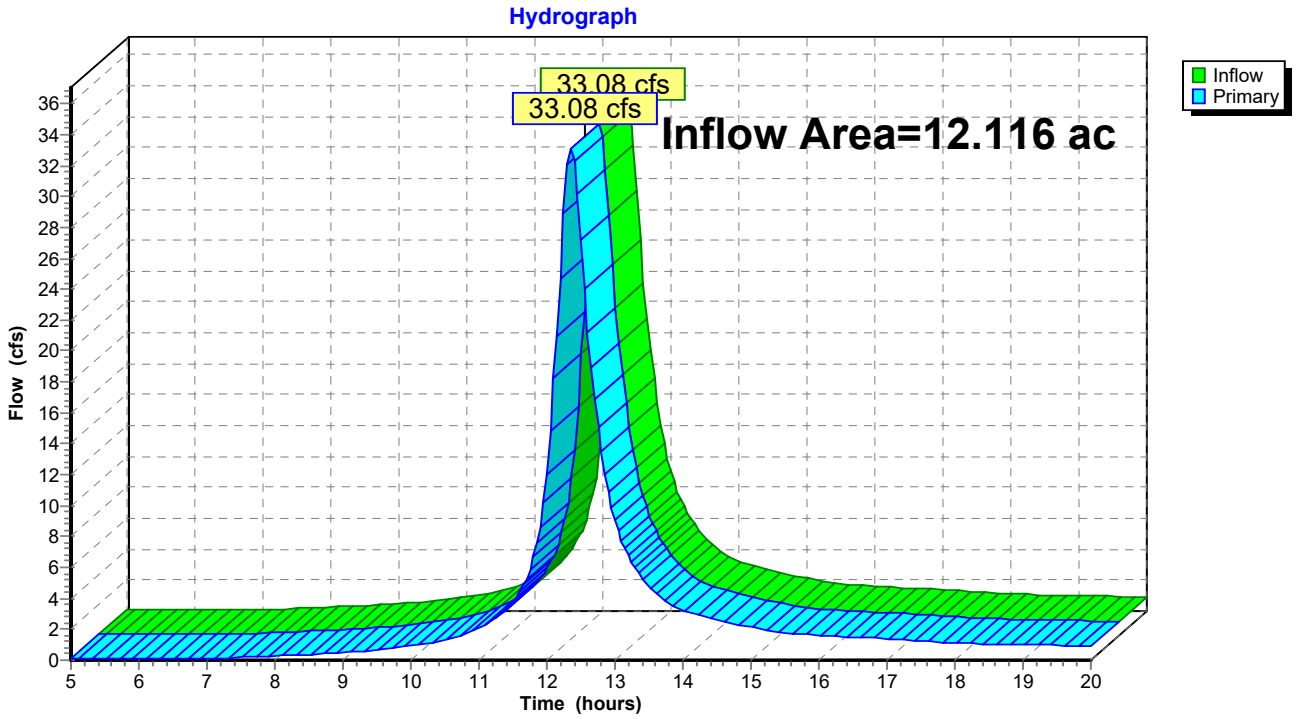


Summary for Link 2100: Total Point of Analysis

Inflow Area = 12.116 ac, 4.25% Impervious, Inflow Depth > 3.49" for Yr 2100 - 10 Yr event
Inflow = 33.08 cfs @ 12.35 hrs, Volume= 3.528 af
Primary = 33.08 cfs @ 12.35 hrs, Volume= 3.528 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 2100: Total Point of Analysis



3.6 RUNOFF & HYDROGRAPH ANALYSIS: EXISTING 100-YEAR STORM EVENT YEAR 2100 PROJECTION

PREPARED: September 19, 2025
REVISED: December 15, 2025

300-356 ENTERPRISE AVE.
CITY OF TRENTON
BLOCK 23203, LOT 1
BLOCK 23102 LOTS 2 & 9
TOWNSHIP OF LAWRENCE
BLOCK 602, LOTS 1 & 2
MERCER COUNTY, NEW JERSEY

Summary for Subcatchment 1OiD: POA-1Oi (Disturbed)

[49] Hint: Tc<2dt may require smaller dt

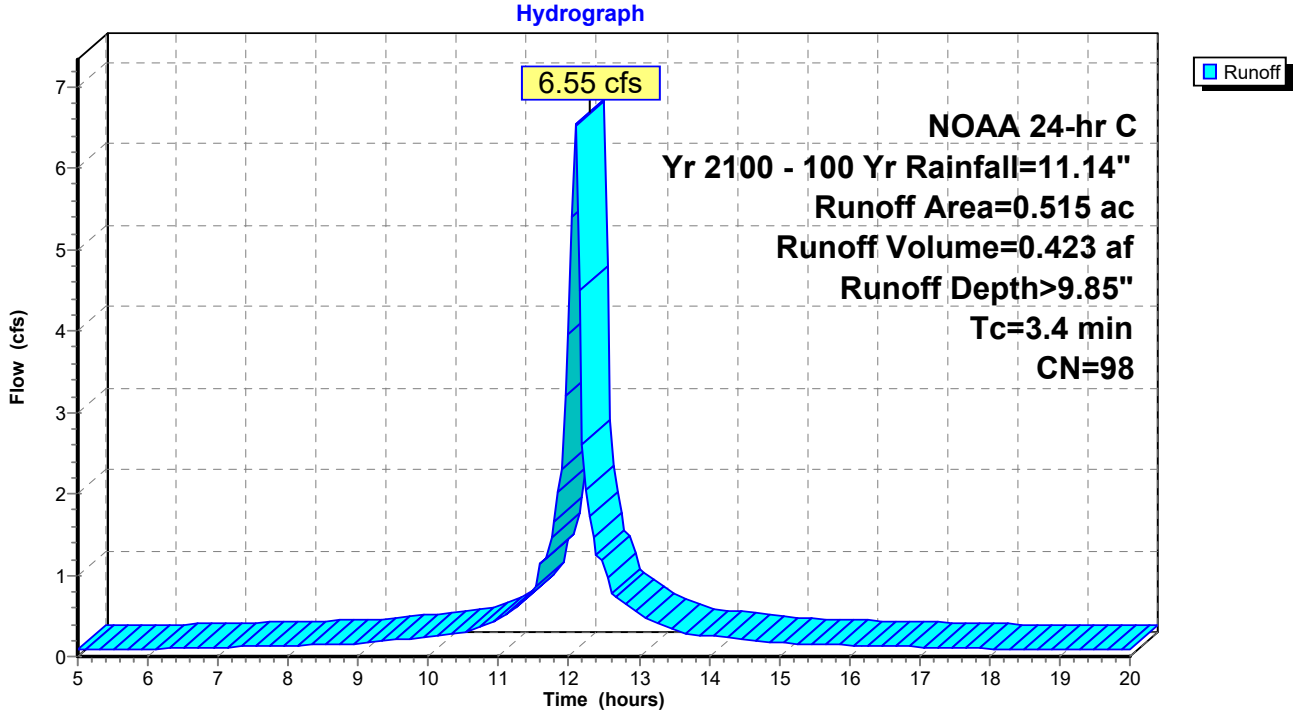
Runoff = 6.55 cfs @ 12.09 hrs, Volume= 0.423 af, Depth> 9.85"
Routed to Link 5L : Disturbed

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Yr 2100 - 100 Yr Rainfall=11.14"

Area (ac)	CN	Description
0.515	98	Paved parking, HSG D
0.515		100.00% Impervious Area

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

Subcatchment 1OiD: POA-1Oi (Disturbed)



Summary for Subcatchment 1OpD: POA-1Op (Disturbed)

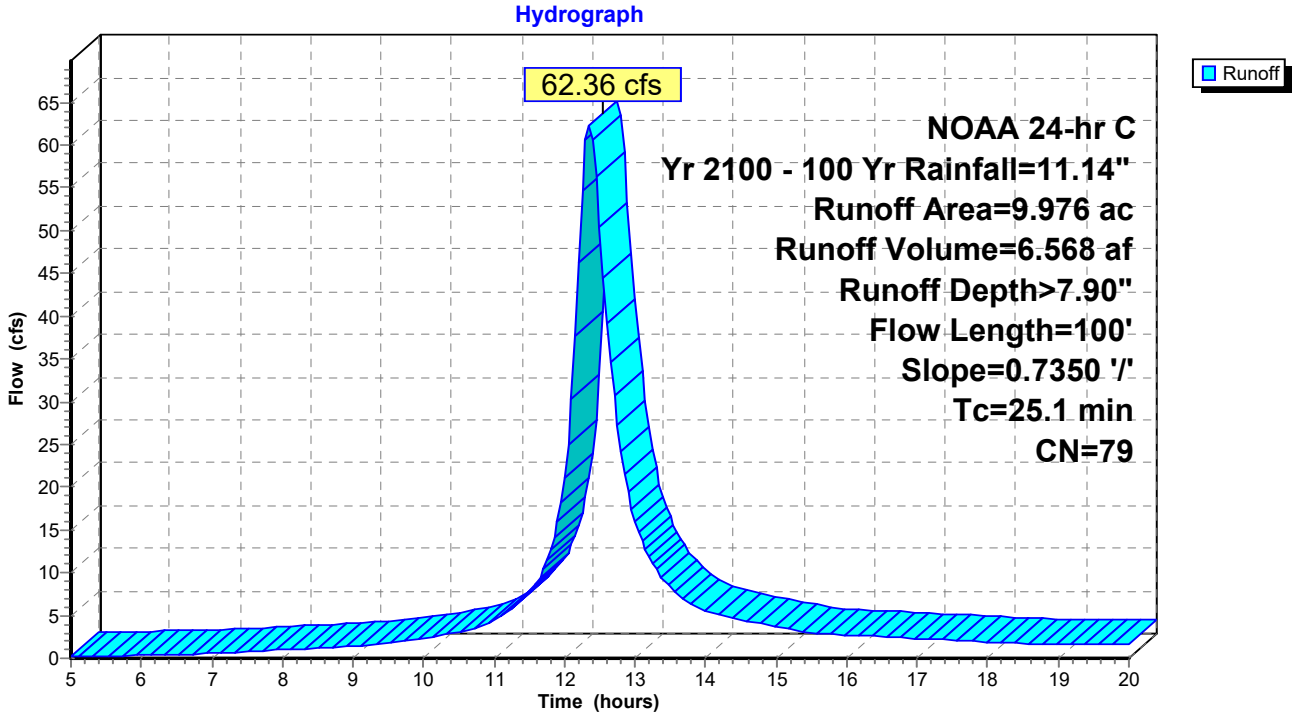
Runoff = 62.36 cfs @ 12.35 hrs, Volume= 6.568 af, Depth> 7.90"
Routed to Link 5L : Disturbed

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Yr 2100 - 100 Yr Rainfall=11.14"

Area (ac)	CN	Description
7.082	79	Woods/grass comb., Good, HSG D
1.101	80	>75% Grass cover, Good, HSG D
1.793	80	>75% Grass cover, Good, HSG D
9.976	79	Weighted Average
9.976		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1					**Direct Entry, Tc Direct**
0.0	100	0.7350	80.90	571.82	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
25.1	100	Total			

Subcatchment 1OpD: POA-1Op (Disturbed)



Summary for Subcatchment 1OpU: POA-1Op (Undisturbed)

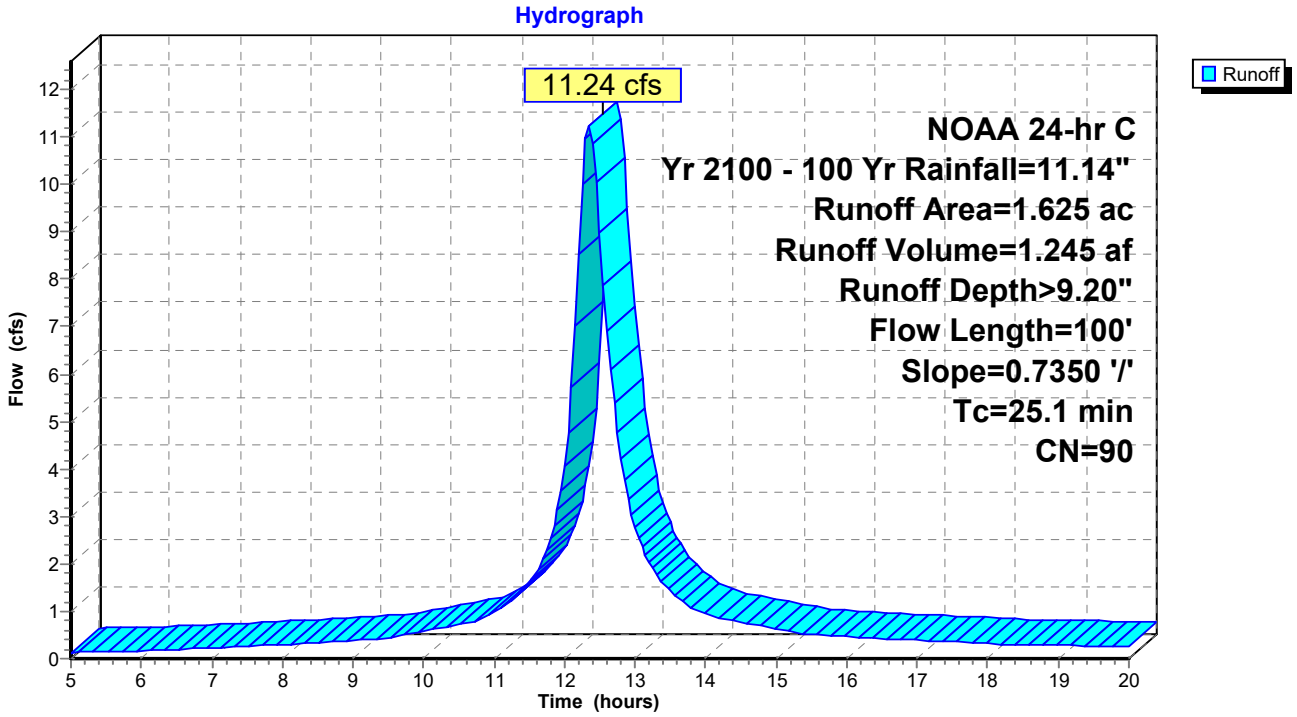
Runoff = 11.24 cfs @ 12.35 hrs, Volume= 1.245 af, Depth> 9.20"
Routed to Link 1On : POA-1 Onsite

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Yr 2100 - 100 Yr Rainfall=11.14"

Area (ac)	CN	Description
0.723	79	Woods/grass comb., Good, HSG D
0.902	98	Water Surface, 0% imp, HSG D
1.625	90	Weighted Average
1.625		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1					**Direct Entry, Tc Direct**
0.0	100	0.7350	80.90	571.82	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
25.1	100	Total			

Subcatchment 1OpU: POA-1Op (Undisturbed)

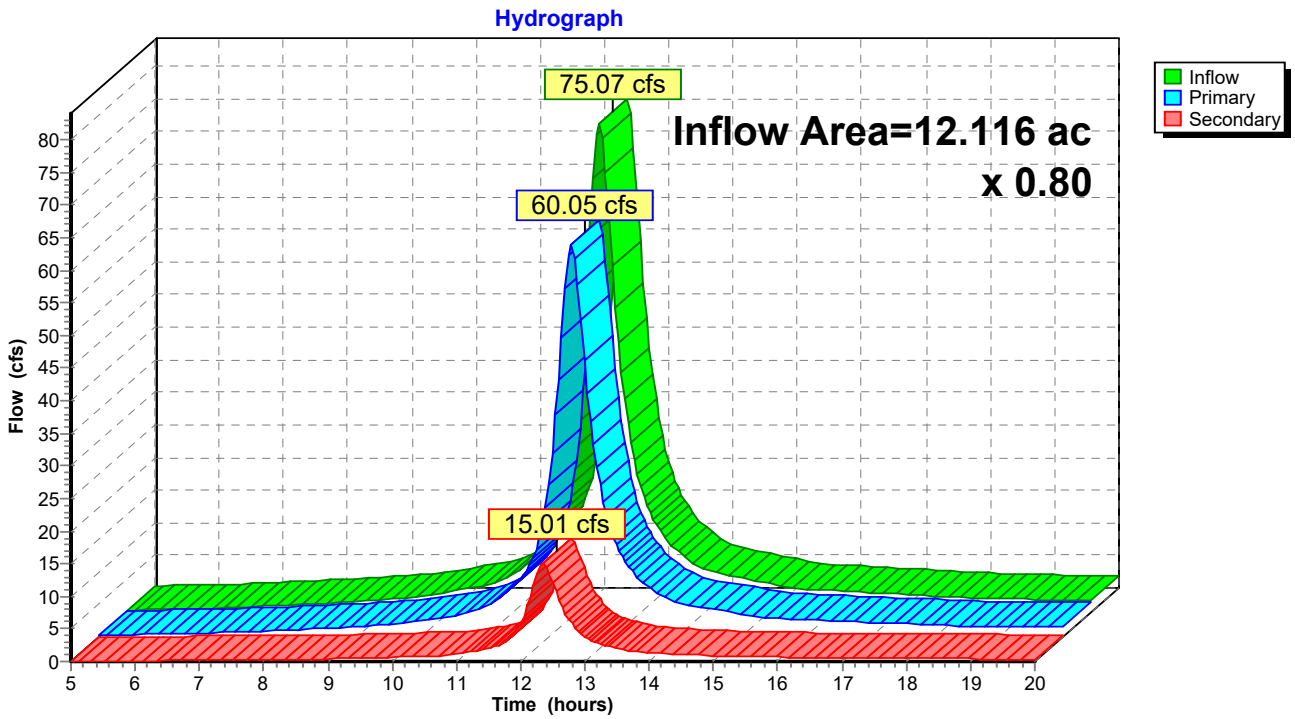


Summary for Link 1On: POA-1 Onsite

Inflow Area = 12.116 ac, 4.25% Impervious, Inflow Depth > 8.16" for Yr 2100 - 100 Yr event
Inflow = 75.07 cfs @ 12.35 hrs, Volume= 8.236 af
Primary = 60.05 cfs @ 12.35 hrs, Volume= 6.589 af, Atten= 20%, Lag= 0.0 min
Routed to Link 2100 : Total Point of Analysis
Secondary = 15.01 cfs @ 12.35 hrs, Volume= 1.647 af
Routed to Link 2100 : Total Point of Analysis

Primary outflow = Inflow x 0.80, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 1On: POA-1 Onsite

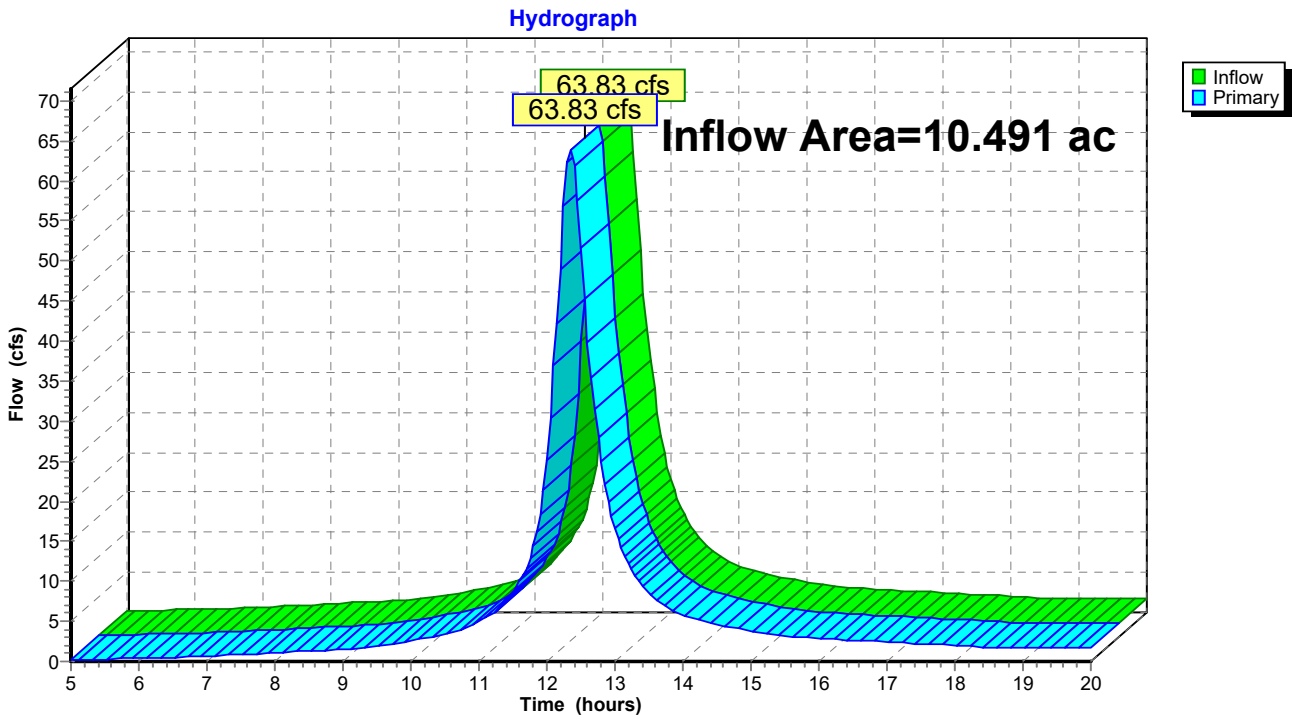


Summary for Link 5L: Disturbed

Inflow Area = 10.491 ac, 4.91% Impervious, Inflow Depth > 8.00" for Yr 2100 - 100 Yr event
Inflow = 63.83 cfs @ 12.35 hrs, Volume= 6.990 af
Primary = 63.83 cfs @ 12.35 hrs, Volume= 6.990 af, Atten= 0%, Lag= 0.0 min
Routed to Link 1On : POA-1 Onsite

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 5L: Disturbed

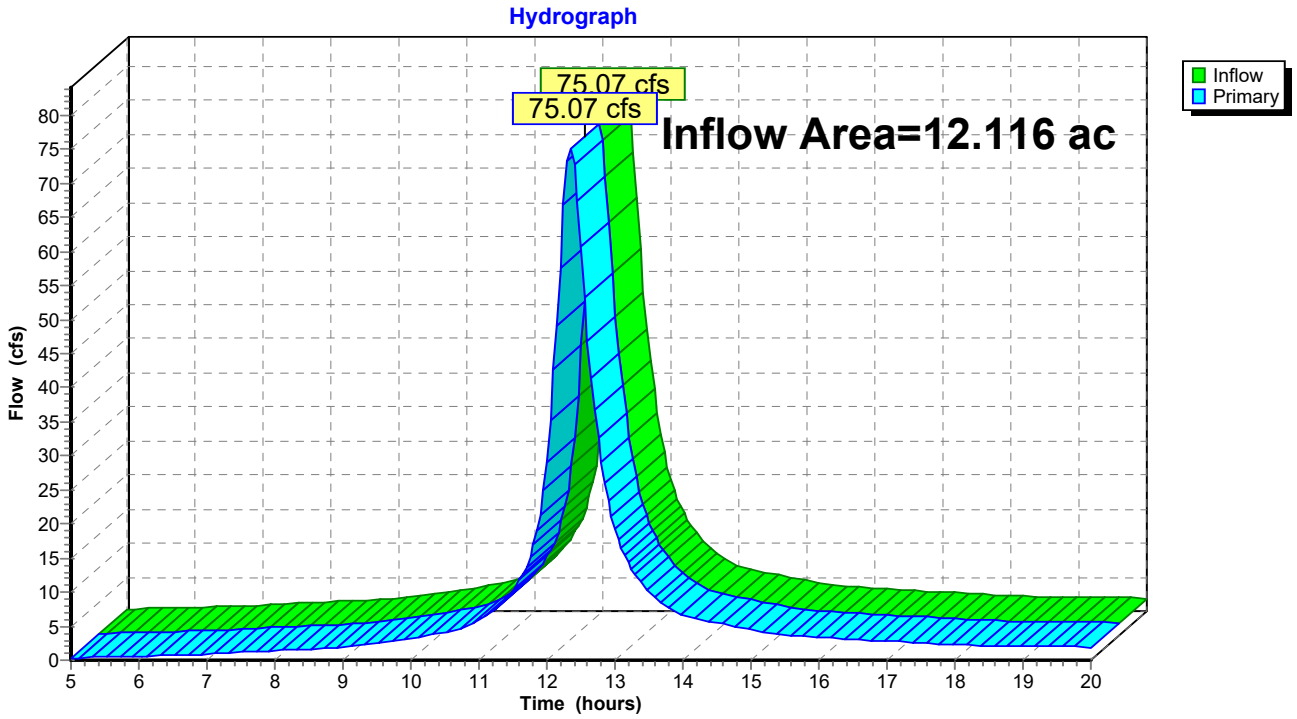


Summary for Link 2100: Total Point of Analysis

Inflow Area = 12.116 ac, 4.25% Impervious, Inflow Depth > 8.16" for Yr 2100 - 100 Yr event
Inflow = 75.07 cfs @ 12.35 hrs, Volume= 8.236 af
Primary = 75.07 cfs @ 12.35 hrs, Volume= 8.236 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 2100: Total Point of Analysis



4.1 RUNOFF & HYDROGRAPH ANALYSIS: PROPOSED 2-YEAR ADJUSTED STORM EVENT

PREPARED: September 19, 2025
REVISED: December 15, 2025

300-356 ENTERPRISE AVE.
CITY OF TRENTON
BLOCK 23203, LOT 1
BLOCK 23102 LOTS 2 & 9
TOWNSHIP OF LAWRENCE
BLOCK 602, LOTS 1 & 2
MERCER COUNTY, NEW JERSEY

Summary for Subcatchment 1S: west Roof to Basin #104

[47] Hint: Peak is 2335% of capacity of segment #2
[47] Hint: Peak is 1084% of capacity of segment #3
[47] Hint: Peak is 598% of capacity of segment #4
[47] Hint: Peak is 411% of capacity of segment #5
[47] Hint: Peak is 227% of capacity of segment #6
[47] Hint: Peak is 125% of capacity of segment #7

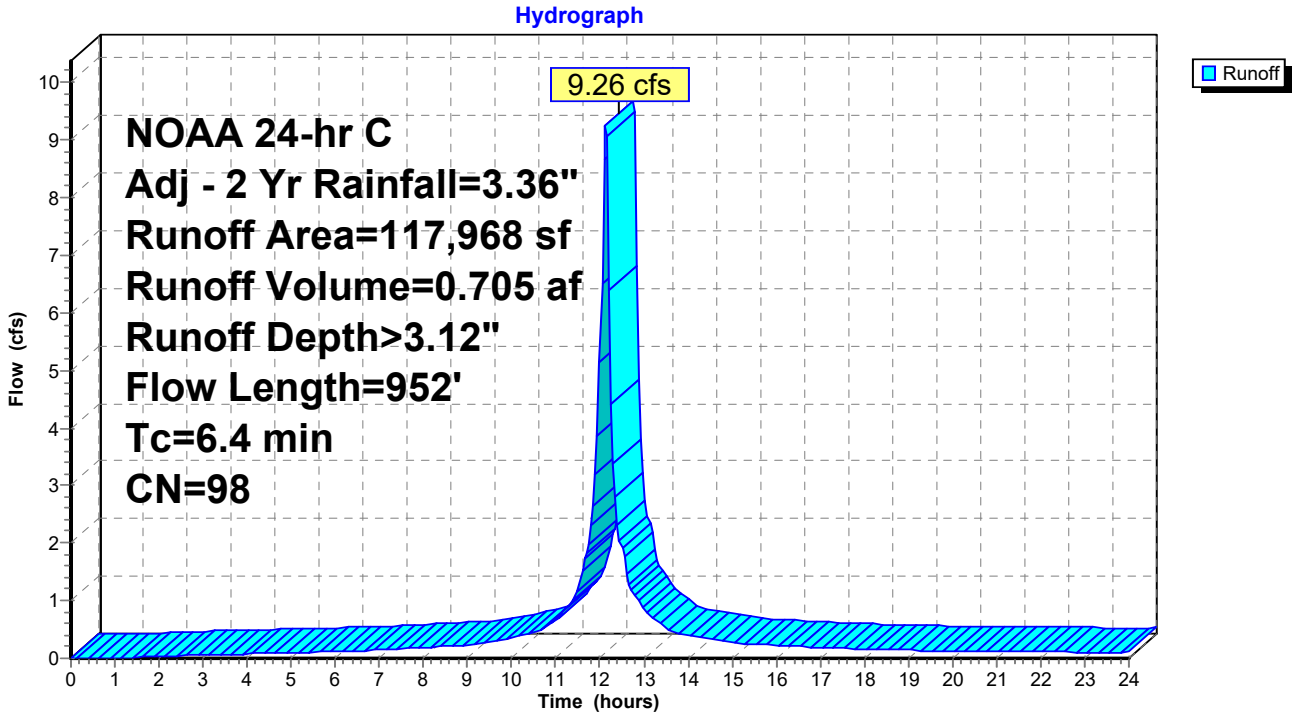
Runoff = 9.26 cfs @ 12.13 hrs, Volume= 0.705 af, Depth> 3.12"
Routed to Pond 39P : Basin 104

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 2 Yr Rainfall=3.36"

	Area (sf)	CN	Description
*	117,968	98	bldg
	117,968		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1					**Direct Entry, Tc Direct**
0.7	90	0.0050	2.02	0.40	**Pipe Channel, CMP_Round 6"** 6.0" Round Area= 0.2 sf Perim= 1.6' r= 0.13' n= 0.013 Corrugated PE, smooth interior
0.4	60	0.0050	2.45	0.85	**Pipe Channel, CMP_Round 8"** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.013 Corrugated PE, smooth interior
0.5	90	0.0050	2.84	1.55	**Pipe Channel, CMP_Round 10"** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.013 Corrugated PE, smooth interior
0.5	90	0.0040	2.87	2.25	**Pipe Channel, CMP_Round 12"** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.5	90	0.0040	3.33	4.09	**Pipe Channel, CMP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
1.1	275	0.0050	4.20	7.43	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.6	257	0.0050	6.67	47.16	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
6.4	952	Total			

Subcatchment 1S: west Roof to Basin #104



Summary for Subcatchment 9S: EAST TRUCK MVS

[49] Hint: Tc<2dt may require smaller dt

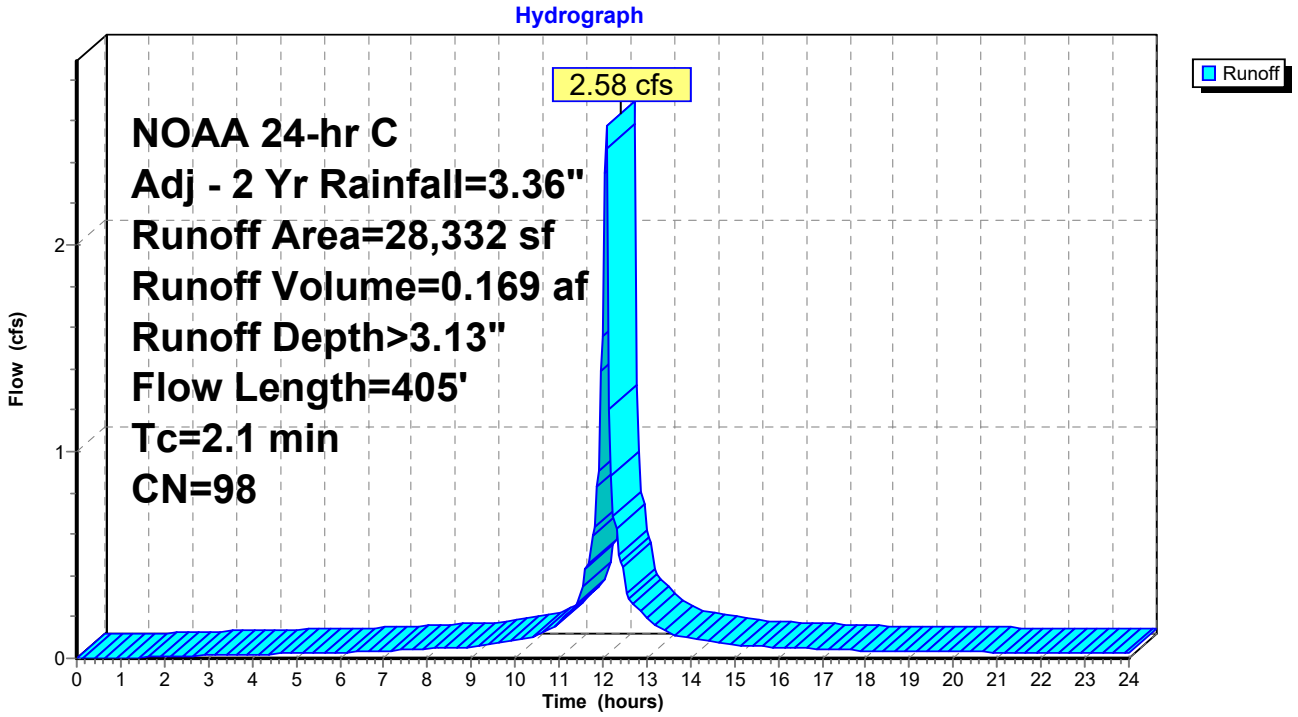
Runoff = 2.58 cfs @ 12.08 hrs, Volume= 0.169 af, Depth> 3.13"
Routed to Pond 43P : Basin 206

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 2 Yr Rainfall=3.36"

Area (sf)	CN	Description
28,332	98	Paved roads w/curbs & sewers, HSG D
28,332		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9					**Direct Entry, Tc Direct**
0.3	70	0.0050	3.72	4.57	**Pipe Channel, CMP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
0.2	56	0.0050	4.20	7.43	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.1	16	0.0050	4.20	7.43	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.5	163	0.0050	5.09	16.00	**Pipe Channel, CMP_Round 24"** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
0.1	100	0.0736	30.25	213.85	**Pipe Channel, RCP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.011 Concrete pipe, straight & clean
2.1	405	Total			

Subcatchment 9S: EAST TRUCK MVS



Summary for Subcatchment 10S: WEST CAR/TRUCK MVS

[49] Hint: Tc<2dt may require smaller dt

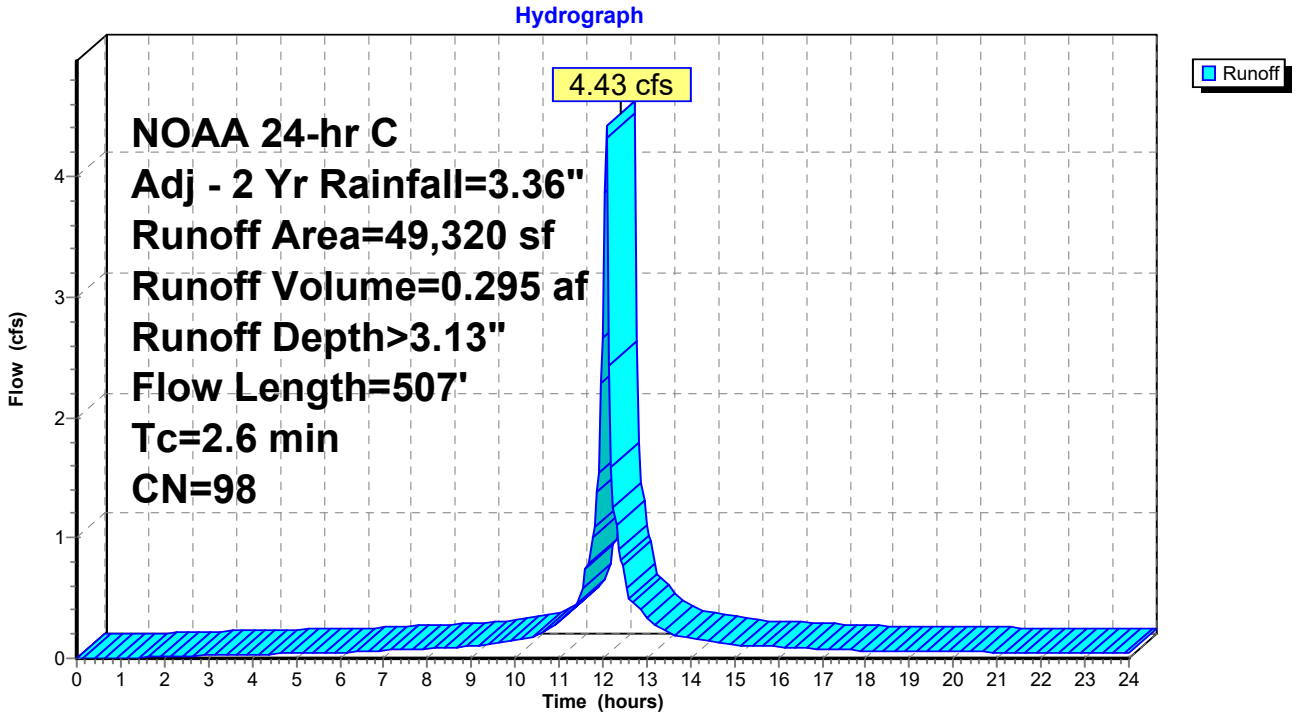
Runoff = 4.43 cfs @ 12.08 hrs, Volume= 0.295 af, Depth> 3.13"
Routed to Pond 44P : Basin 112

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 2 Yr Rainfall=3.36"

Area (sf)	CN	Description
49,320	98	Paved roads w/curbs & sewers, HSG D
49,320		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9					**Direct Entry, Tc Direct**
0.4	89	0.0051	3.76	4.61	**Pipe Channel, CMP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
0.6	131	0.0038	3.66	6.48	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.1	30	0.0050	4.20	7.43	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.6	257	0.0050	6.67	47.16	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
2.6	507	Total			

Subcatchment 10S: WEST CAR/TRUCK MVS



Summary for Subcatchment 22S: east Roof to Basin #203

[47] Hint: Peak is 2067% of capacity of segment #2
[47] Hint: Peak is 960% of capacity of segment #3
[47] Hint: Peak is 529% of capacity of segment #4
[47] Hint: Peak is 326% of capacity of segment #5
[47] Hint: Peak is 180% of capacity of segment #6
[47] Hint: Peak is 180% of capacity of segment #7

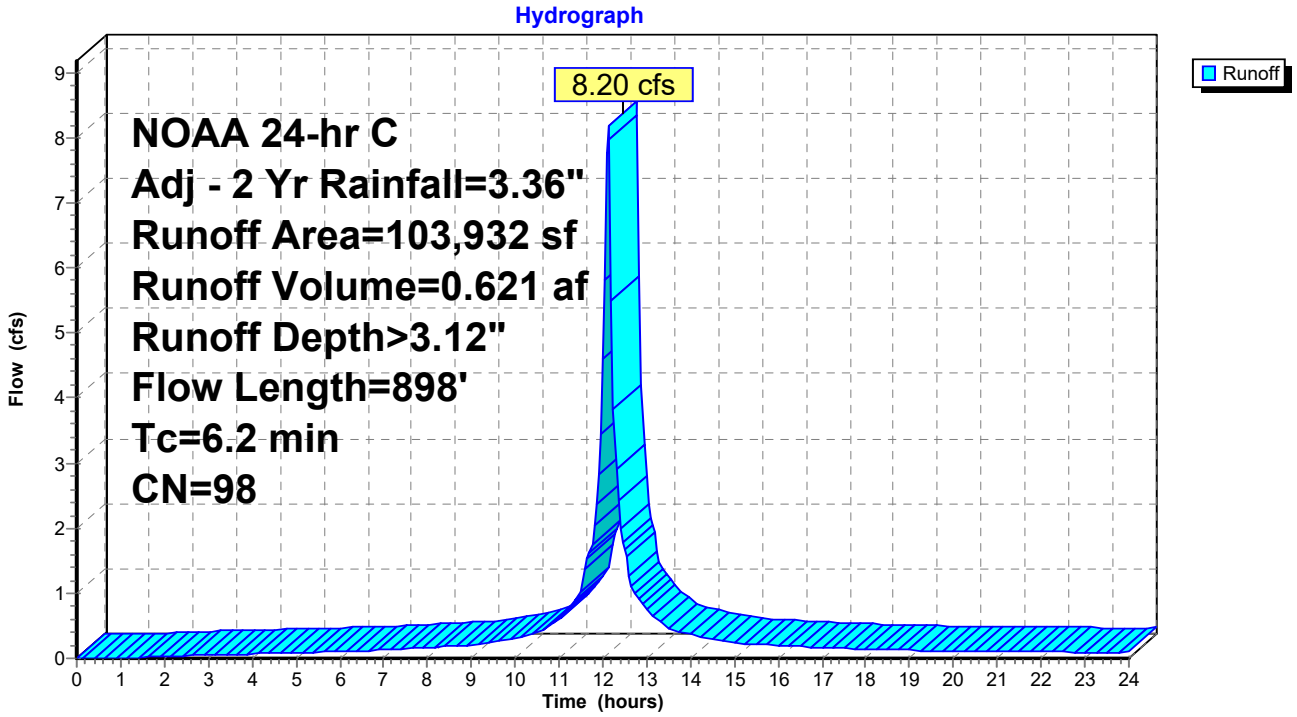
Runoff = 8.20 cfs @ 12.13 hrs, Volume= 0.621 af, Depth> 3.12"
Routed to Pond 41P : Basin 203

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 2 Yr Rainfall=3.36"

	Area (sf)	CN	Description
*	103,932	98	bldg
	103,932		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1					**Direct Entry, Tc Direct**
0.7	90	0.0050	2.02	0.40	**Pipe Channel, CMP_Round 6"** 6.0" Round Area= 0.2 sf Perim= 1.6' r= 0.13' n= 0.013 Corrugated PE, smooth interior
0.4	60	0.0050	2.45	0.85	**Pipe Channel, CMP_Round 8"** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.013 Corrugated PE, smooth interior
0.5	90	0.0050	2.84	1.55	**Pipe Channel, CMP_Round 10"** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.013 Corrugated PE, smooth interior
0.5	90	0.0050	3.21	2.52	**Pipe Channel, CMP_Round 12"** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.4	90	0.0050	3.72	4.57	**Pipe Channel, CMP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
1.0	215	0.0050	3.72	4.57	**Pipe Channel, CMP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
0.5	163	0.0050	5.09	16.00	**Pipe Channel, CMP_Round 24"** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
0.1	100	0.0736	25.60	180.95	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
6.2	898	Total			

Subcatchment 22S: east Roof to Basin #203



Summary for Subcatchment 27S: PATH

[49] Hint: Tc<2dt may require smaller dt

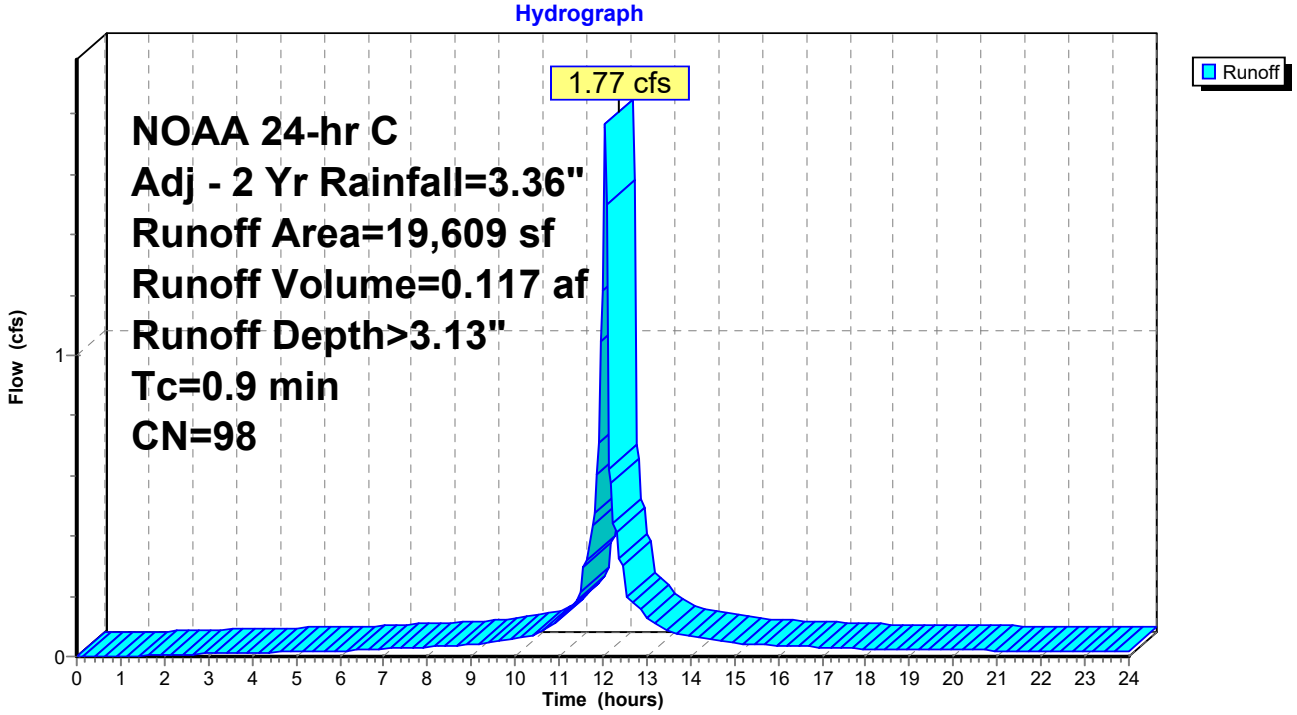
Runoff = 1.77 cfs @ 12.06 hrs, Volume= 0.117 af, Depth> 3.13"
Routed to Link 2A : POA 1 (Adj)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 2 Yr Rainfall=3.36"

Area (sf)	CN	Description
19,609	98	Paved roads w/curbs & sewers, HSG D
19,609		100.00% Impervious Area

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

Subcatchment 27S: PATH



Summary for Subcatchment 28S: Rest of the grass

[49] Hint: Tc<2dt may require smaller dt

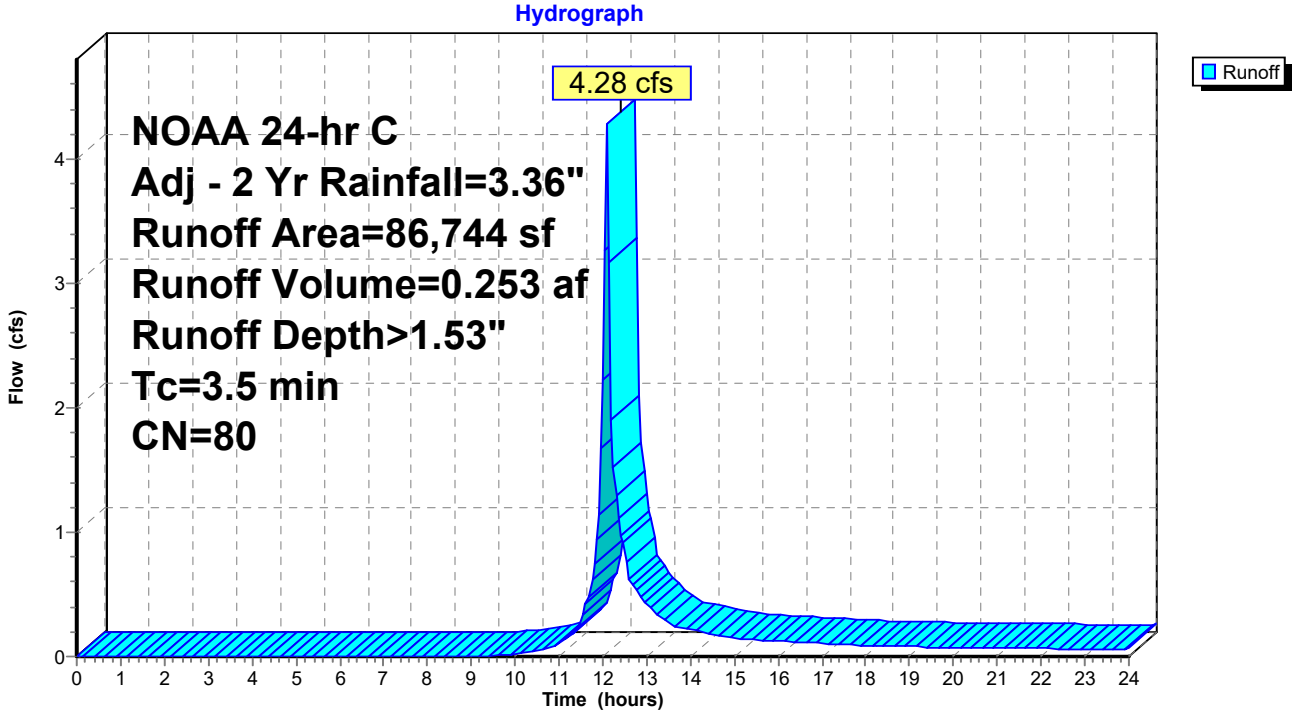
Runoff = 4.28 cfs @ 12.10 hrs, Volume= 0.253 af, Depth> 1.53"
Routed to Link 2A : POA 1 (Adj)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 2 Yr Rainfall=3.36"

Area (sf)	CN	Description
86,744	80	>75% Grass cover, Good, HSG D
86,744		100.00% Pervious Area

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

Subcatchment 28S: Rest of the grass



Summary for Subcatchment 29S: Grass in basin and surrounding grass

[49] Hint: Tc<2dt may require smaller dt

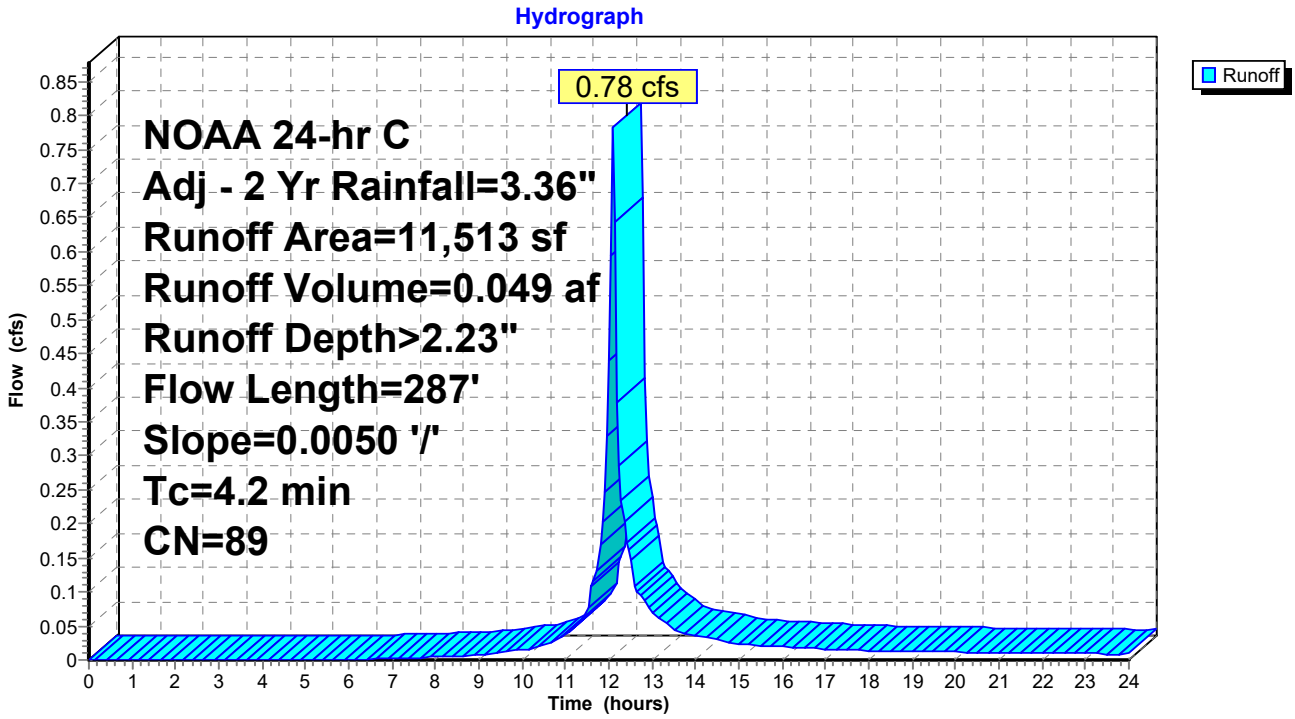
Runoff = 0.78 cfs @ 12.10 hrs, Volume= 0.049 af, Depth> 2.23"
Routed to Pond 44P : Basin 112

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 2 Yr Rainfall=3.36"

Area (sf)	CN	Description
11,513	89	<50% Grass cover, Poor, HSG D
11,513		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5					**Direct Entry, Tc Direct**
0.1	30	0.0050	4.20	7.43	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.6	257	0.0050	6.67	47.16	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
4.2	287	Total			

Subcatchment 29S: Grass in basin and surrounding grass



Summary for Subcatchment 30S: Grass in basin

[49] Hint: Tc<2dt may require smaller dt

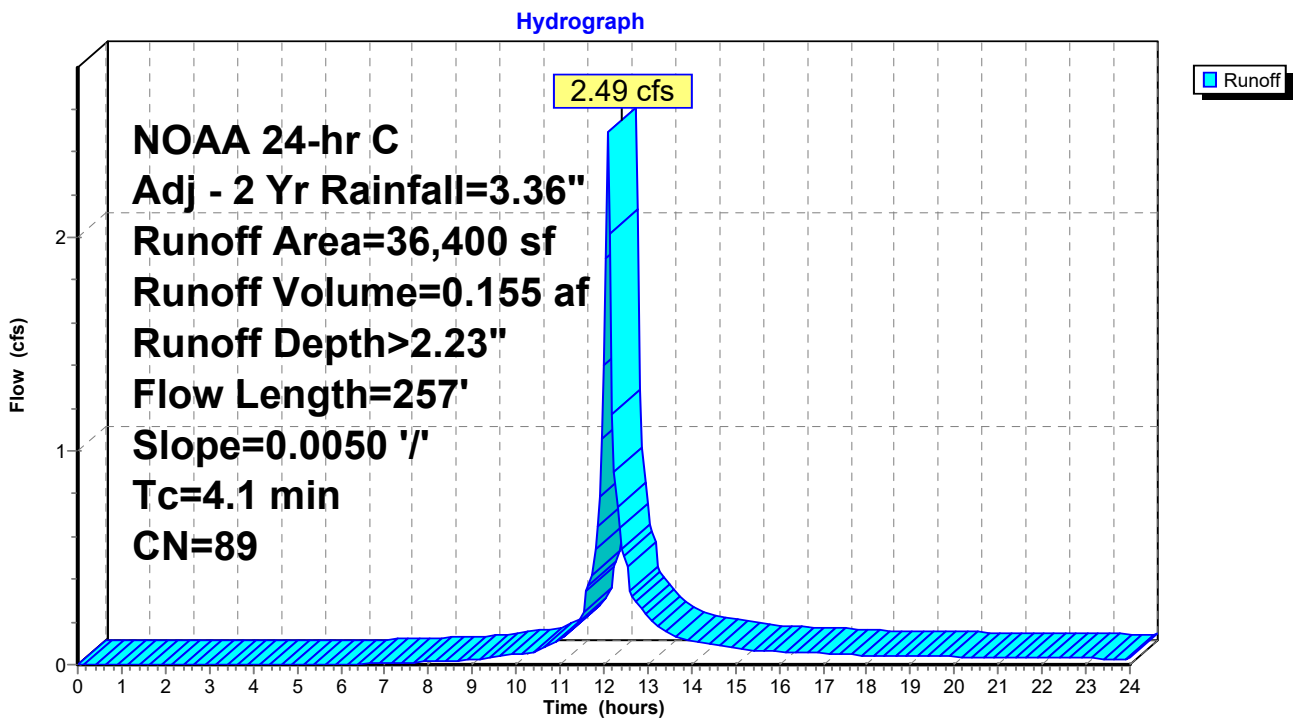
Runoff = 2.49 cfs @ 12.10 hrs, Volume= 0.155 af, Depth> 2.23"
Routed to Pond 39P : Basin 104

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 2 Yr Rainfall=3.36"

Area (sf)	CN	Description
36,400	89	<50% Grass cover, Poor, HSG D
36,400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5					**Direct Entry, Tc Direct**
0.6	257	0.0050	6.67	47.16	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
4.1	257	Total			

Subcatchment 30S: Grass in basin



Summary for Subcatchment 31S: Grass in basin

[49] Hint: Tc<2dt may require smaller dt

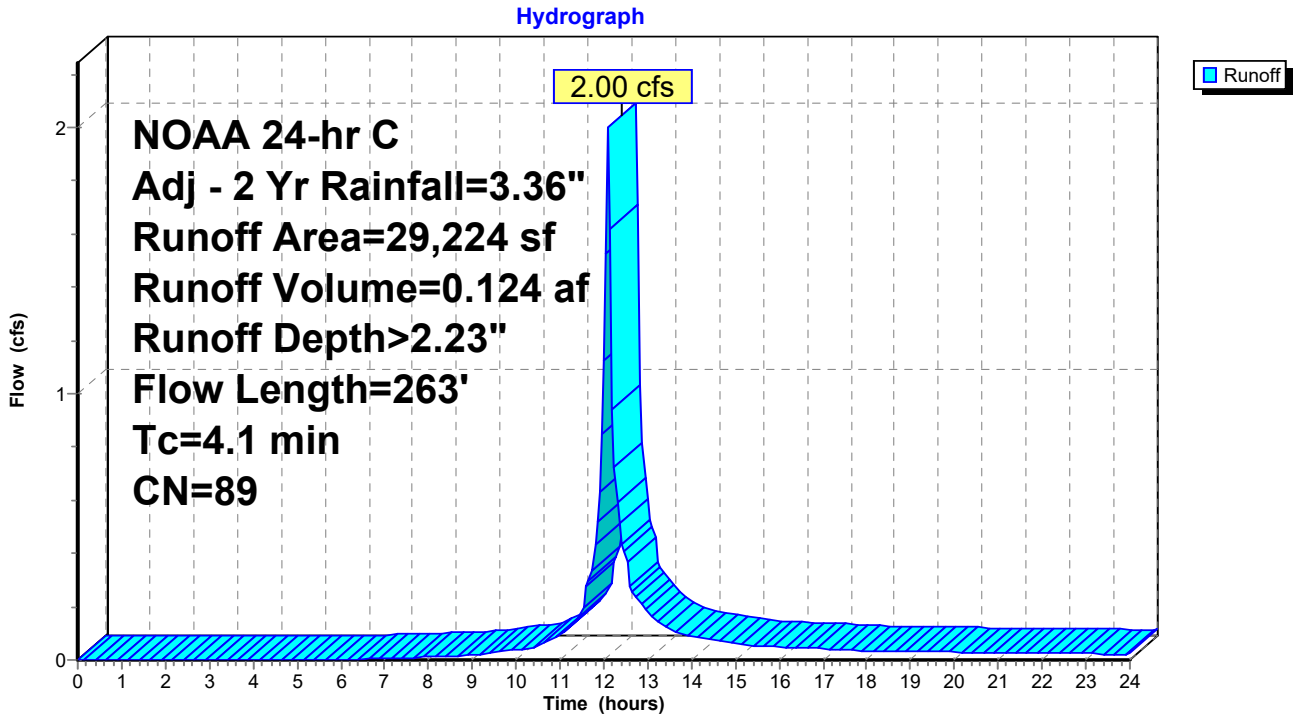
Runoff = 2.00 cfs @ 12.10 hrs, Volume= 0.124 af, Depth> 2.23"
Routed to Pond 41P : Basin 203

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 2 Yr Rainfall=3.36"

Area (sf)	CN	Description
29,224	89	<50% Grass cover, Poor, HSG D
29,224		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5					**Direct Entry, Tc Direct**
0.5	163	0.0050	5.09	16.00	**Pipe Channel, CMP_Round 24"** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
0.1	100	0.0736	25.60	180.95	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
4.1	263	Total			

Subcatchment 31S: Grass in basin



Summary for Subcatchment 39S: Grass in basin

[49] Hint: Tc<2dt may require smaller dt

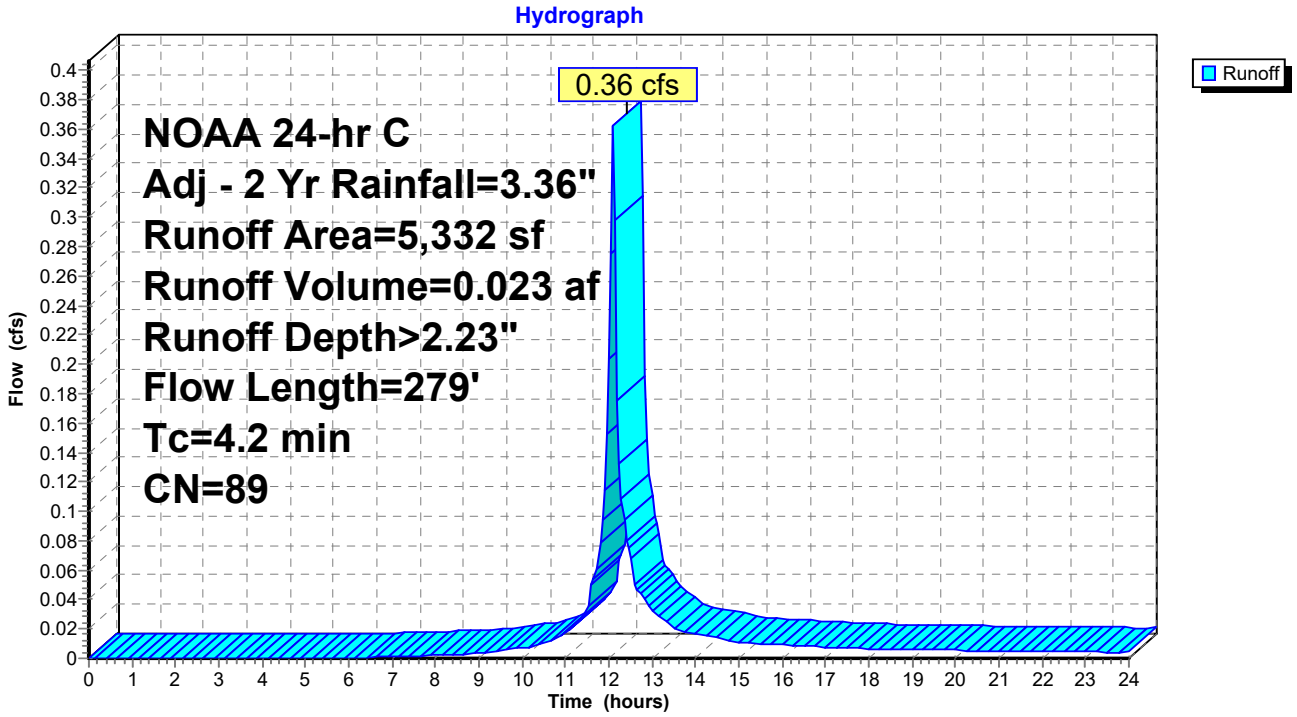
Runoff = 0.36 cfs @ 12.10 hrs, Volume= 0.023 af, Depth> 2.23"
Routed to Pond 43P : Basin 206

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 2 Yr Rainfall=3.36"

Area (sf)	CN	Description
5,332	89	<50% Grass cover, Poor, HSG D
5,332		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5					**Direct Entry, Tc Direct**
0.1	16	0.0050	4.20	7.43	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.5	163	0.0050	5.09	16.00	**Pipe Channel, CMP_Round 24"** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
0.1	100	0.0736	25.60	180.95	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
4.2	279	Total			

Subcatchment 39S: Grass in basin



Summary for Pond 39P: Basin 104

[92] Warning: Device #2 is above defined storage
[81] Warning: Exceeded Pond 44P by 0.26' @ 23.90 hrs

Inflow Area = 4.940 ac, 77.74% Impervious, Inflow Depth > 2.63" for Adj - 2 Yr event
Inflow = 12.10 cfs @ 12.13 hrs, Volume= 1.084 af
Outflow = 0.21 cfs @ 21.88 hrs, Volume= 0.151 af, Atten= 98%, Lag= 584.9 min
Primary = 0.21 cfs @ 21.88 hrs, Volume= 0.151 af
Routed to Link 2A : POA 1 (Adj)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 2A : POA 1 (Adj)

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 46.24' @ 21.88 hrs Surf.Area= 20,611 sf Storage= 40,754 cf

Plug-Flow detention time= 664.4 min calculated for 0.151 af (14% of inflow)
Center-of-Mass det. time= 378.7 min (1,174.5 - 795.8)

Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	87,112 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

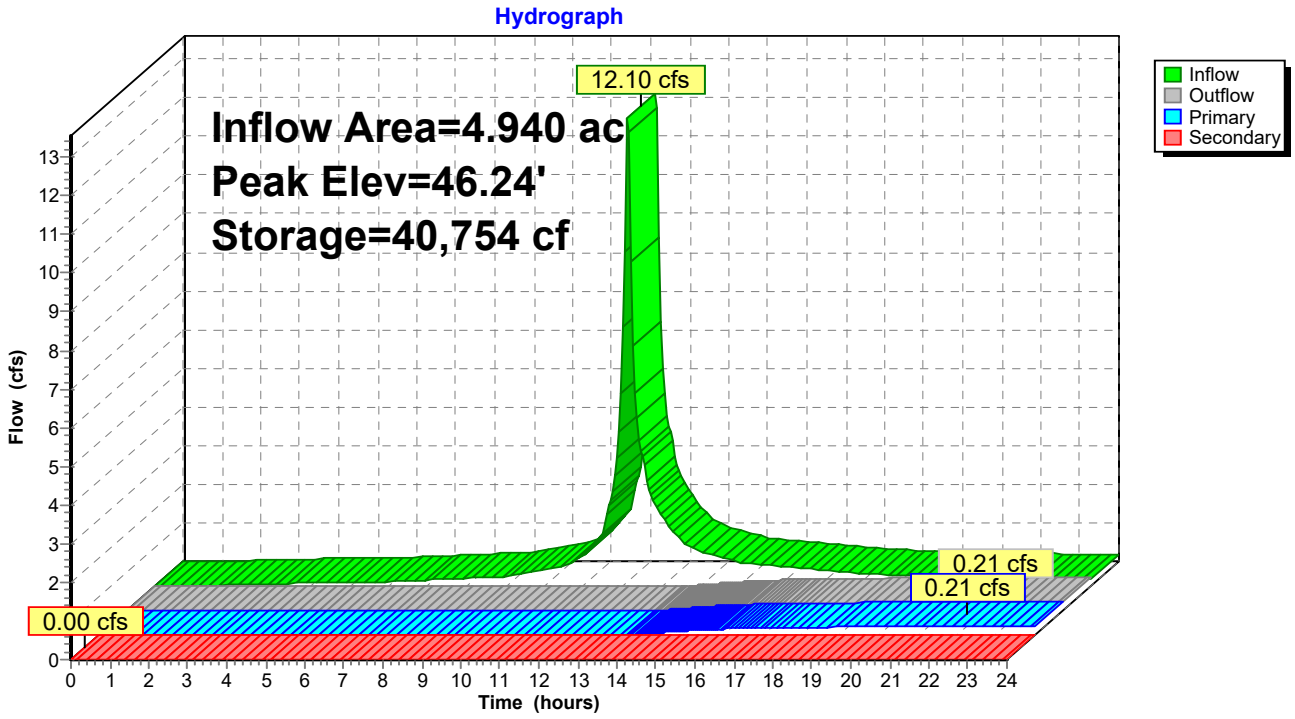
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	17,239	897.0	0.0	0	0	17,239
42.84	17,239	897.0	40.0	69	69	17,248
43.00	17,239	897.0	40.0	1,103	1,172	17,391
44.00	17,239	897.0	40.0	6,896	8,068	18,288
44.83	17,239	897.0	40.0	5,723	13,791	19,033
44.84	17,239	897.0	100.0	172	13,964	19,042
45.00	17,690	902.0	100.0	2,794	16,758	19,772
46.00	20,420	926.0	100.0	19,039	35,797	23,381
47.00	21,216	939.0	100.0	20,817	56,613	25,524
48.00	22,029	952.0	100.0	21,621	78,234	27,697
48.40	22,357	957.0	100.0	8,877	87,112	28,547

Device	Routing	Invert	Outlet Devices
#1	Primary	44.00'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 44.00' / 44.00' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#2	Secondary	48.40'	**50.0' long x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#3	Device 1	46.65'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.40'	**18.0" W x 3.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.21 cfs @ 21.88 hrs HW=46.24' (Free Discharge)
└─**1=Culvert** (Passes 0.21 cfs of 9.87 cfs potential flow)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  ├─**4=Orifice/Grate** (Controls 0.00 cfs)
  └─**5=Orifice/Grate** (Orifice Controls 0.21 cfs @ 2.43 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 39P: Basin 104



Summary for Pond 41P: Basin 203

[92] Warning: Device #2 is above defined storage
[81] Warning: Exceeded Pond 43P by 0.38' @ 18.45 hrs

Inflow Area = 3.830 ac, 79.29% Impervious, Inflow Depth > 2.74" for Adj - 2 Yr event
Inflow = 10.89 cfs @ 12.12 hrs, Volume= 0.875 af
Outflow = 0.26 cfs @ 17.17 hrs, Volume= 0.216 af, Atten= 98%, Lag= 302.5 min
Primary = 0.26 cfs @ 17.17 hrs, Volume= 0.216 af
Routed to Link 2A : POA 1 (Adj)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 2A : POA 1 (Adj)

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 46.35' @ 17.17 hrs Surf.Area= 15,084 sf Storage= 30,152 cf

Plug-Flow detention time= 529.0 min calculated for 0.216 af (25% of inflow)
Center-of-Mass det. time= 329.4 min (1,110.1 - 780.7)

Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	64,356 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

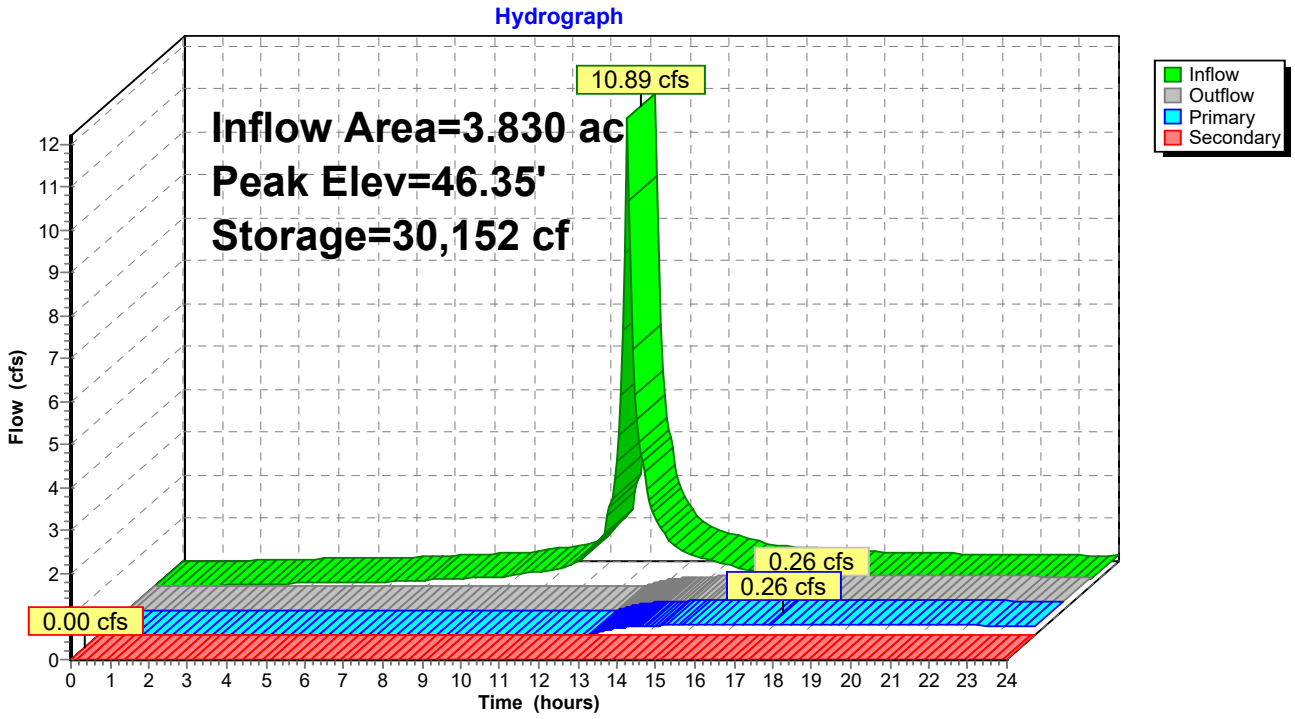
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	11,929	737.0	0.0	0	0	11,929
42.84	11,929	737.0	40.0	48	48	11,936
43.00	11,929	737.0	40.0	763	811	12,054
44.00	11,929	737.0	40.0	4,772	5,583	12,791
44.83	11,929	737.0	40.0	3,960	9,543	13,403
44.84	11,929	737.0	100.0	119	9,662	13,410
45.00	12,301	741.0	100.0	1,938	11,601	13,895
46.00	14,572	762.0	100.0	13,420	25,021	16,517
47.00	16,075	784.0	100.0	15,317	40,339	19,332
48.00	17,607	806.0	100.0	16,835	57,174	22,227
48.40	18,306	815.0	100.0	7,182	64,356	23,432

Device	Routing	Invert	Outlet Devices
#1	Primary	39.00'	**21.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 39.00' / 39.00' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 2.41 sf
#2	Secondary	48.40'	**50.0' long x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#3	Device 1	47.70'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.30'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.26 cfs @ 17.17 hrs HW=46.35' (Free Discharge)
└─**1=Culvert** (Passes 0.26 cfs of 29.46 cfs potential flow)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  ├─**4=Orifice/Grate** (Orifice Controls 0.01 cfs @ 0.73 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.25 cfs @ 2.89 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 41P: Basin 203



Summary for Pond 43P: Basin 206

[92] Warning: Device #2 is above defined storage

Inflow Area = 0.773 ac, 84.16% Impervious, Inflow Depth > 2.98" for Adj - 2 Yr event
Inflow = 2.93 cfs @ 12.08 hrs, Volume= 0.192 af
Outflow = 1.00 cfs @ 12.22 hrs, Volume= 0.129 af, Atten= 66%, Lag= 8.2 min
Primary = 1.00 cfs @ 12.22 hrs, Volume= 0.129 af
Routed to Pond 41P : Basin 203
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 41P : Basin 203

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 46.93' @ 12.22 hrs Surf.Area= 1,603 sf Storage= 4,298 cf

Plug-Flow detention time= 211.0 min calculated for 0.129 af (67% of inflow)
Center-of-Mass det. time= 111.4 min (871.0 - 759.6)

Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	7,008 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

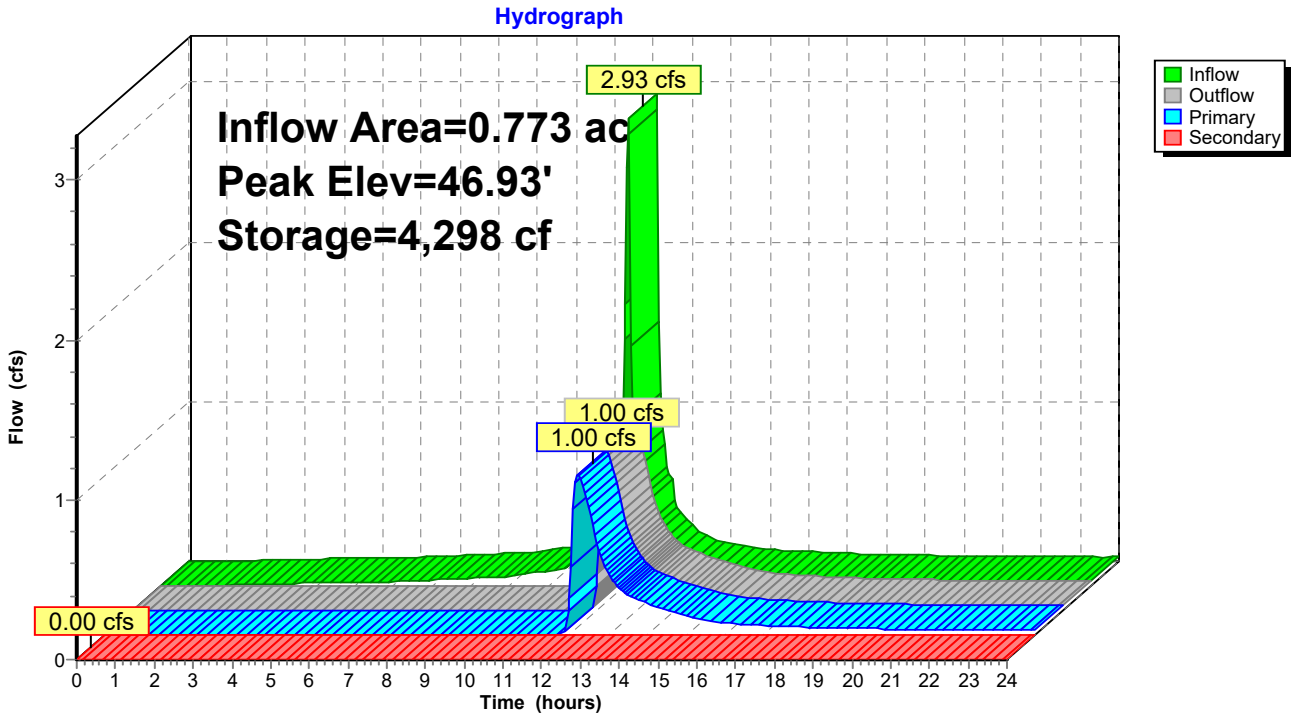
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	1,435	180.0	0.0	0	0	1,435
42.84	1,435	180.0	40.0	6	6	1,437
43.00	1,435	180.0	40.0	92	98	1,466
44.00	1,435	180.0	40.0	574	672	1,646
44.83	1,435	180.0	40.0	476	1,148	1,795
44.84	1,435	180.0	100.0	14	1,162	1,797
45.00	1,435	180.0	100.0	230	1,392	1,826
46.00	1,489	190.0	100.0	1,462	2,854	2,173
47.00	1,611	213.0	100.0	1,550	4,403	2,938
48.00	1,777	233.0	100.0	1,693	6,097	3,682
48.50	1,869	240.0	100.0	911	7,008	3,971

Device	Routing	Invert	Outlet Devices
#1	Primary	45.10'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 45.10' / 45.10' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#2	Secondary	48.50'	**16.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#3	Device 1	48.20'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.30'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.99 cfs @ 12.22 hrs HW=46.93' (Free Discharge)
└─**1=Culvert** (Passes 0.99 cfs of 7.45 cfs potential flow)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  ├─**4=Orifice/Grate** (Orifice Controls 0.58 cfs @ 2.97 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.41 cfs @ 4.68 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 43P: Basin 206



Summary for Pond 44P: Basin 112

[92] Warning: Device #2 is above defined storage

Inflow Area = 1.397 ac, 81.07% Impervious, Inflow Depth > 2.96" for Adj - 2 Yr event
Inflow = 5.20 cfs @ 12.09 hrs, Volume= 0.344 af
Outflow = 0.92 cfs @ 12.48 hrs, Volume= 0.224 af, Atten= 82%, Lag= 23.5 min
Primary = 0.92 cfs @ 12.48 hrs, Volume= 0.224 af
Routed to Pond 39P : Basin 104
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 39P : Basin 104

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 46.95' @ 12.48 hrs Surf.Area= 3,654 sf Storage= 8,596 cf

Plug-Flow detention time= 252.2 min calculated for 0.224 af (65% of inflow)
Center-of-Mass det. time= 149.7 min (911.0 - 761.3)

Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	14,810 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

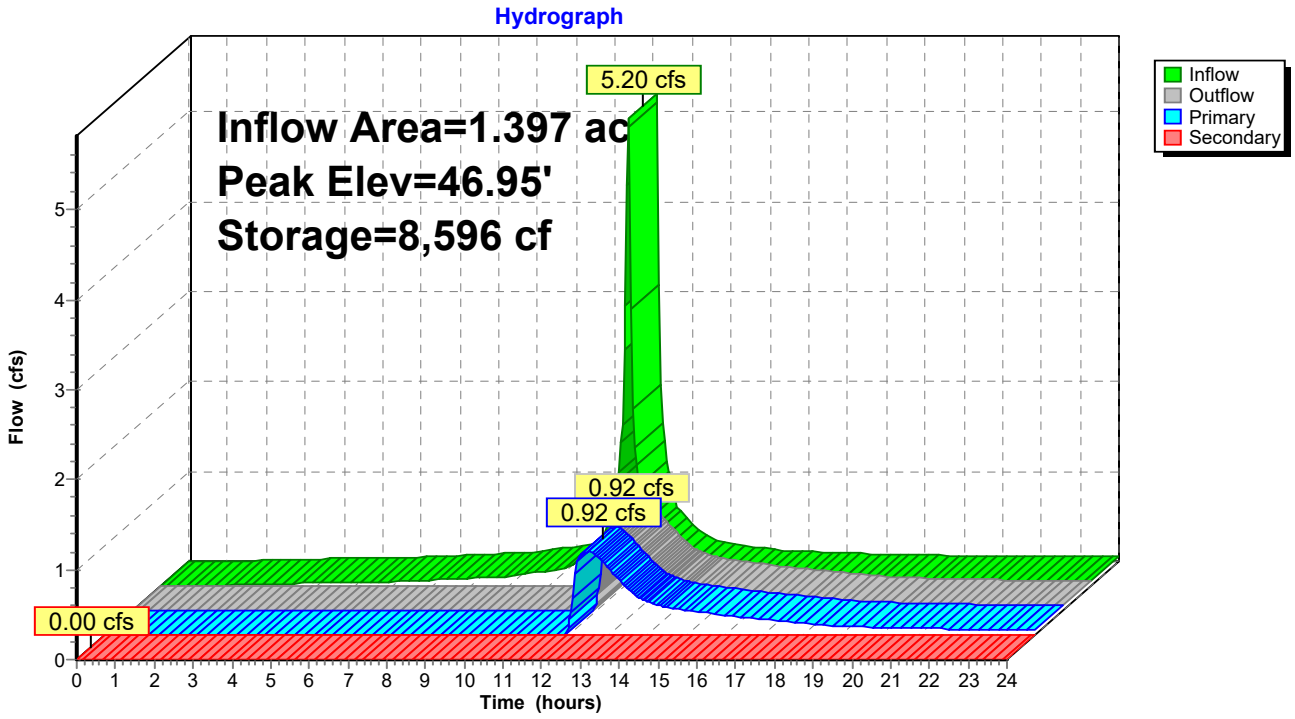
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	2,461	213.0	0.0	0	0	2,461
42.84	2,461	213.0	40.0	10	10	2,463
43.00	2,461	213.0	40.0	158	167	2,497
44.00	2,461	213.0	40.0	984	1,152	2,710
44.83	2,461	213.0	40.0	817	1,969	2,887
44.84	2,461	213.0	100.0	25	1,993	2,889
45.00	2,568	216.0	100.0	402	2,396	2,997
46.00	3,287	251.0	100.0	2,920	5,316	4,319
47.00	3,676	265.7	100.0	3,480	8,796	4,976
48.00	4,082	276.0	100.0	3,877	12,673	5,496
48.50	4,468	290.0	100.0	2,137	14,810	6,142

Device	Routing	Invert	Outlet Devices
#1	Primary	45.10'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 45.10' / 45.10' S= 0.0000 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf
#2	Secondary	48.50'	**20.0' long + 0.3 '/' SideZ x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#3	Device 1	47.95'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.40'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.92 cfs @ 12.48 hrs HW=46.94' (Free Discharge)
└─**1=Culvert** (Passes 0.92 cfs of 7.52 cfs potential flow)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  ├─**4=Orifice/Grate** (Orifice Controls 0.51 cfs @ 2.61 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.41 cfs @ 4.71 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 44P: Basin 112

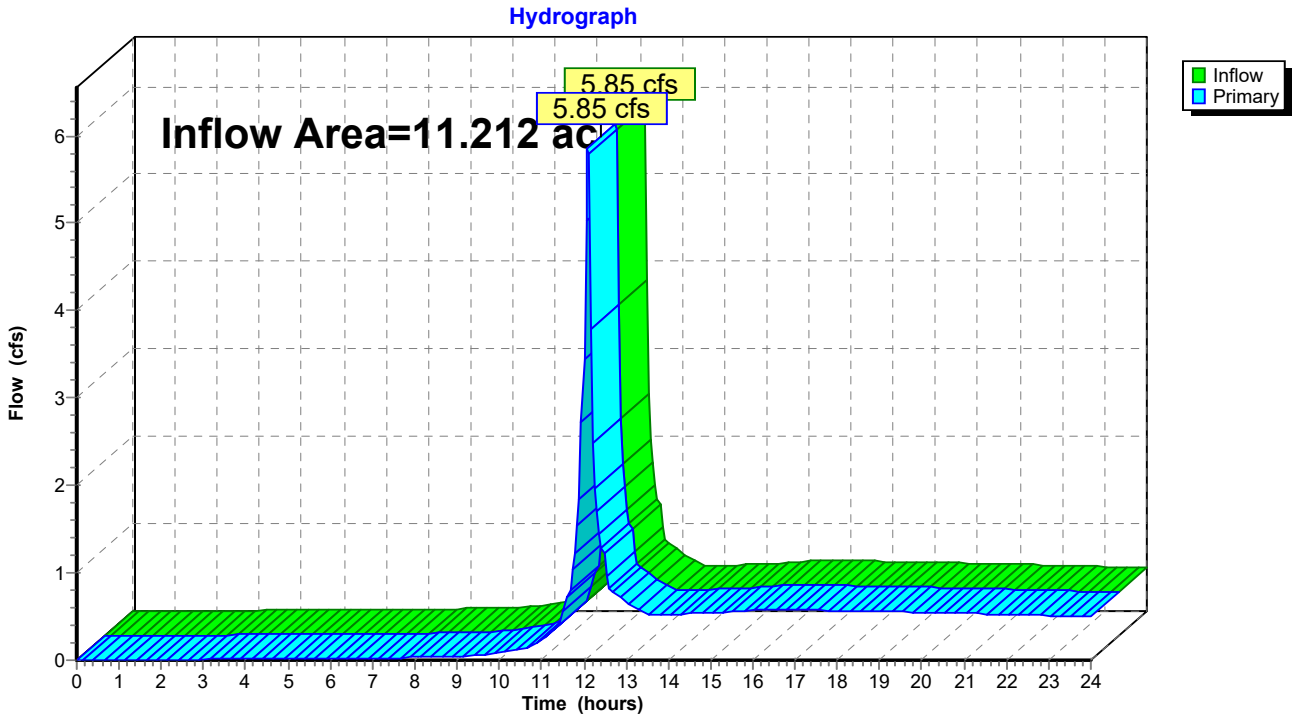


Summary for Link 2A: POA 1 (Adj)

Inflow Area = 11.212 ac, 65.35% Impervious, Inflow Depth > 0.79" for Adj - 2 Yr event
Inflow = 5.85 cfs @ 12.09 hrs, Volume= 0.738 af
Primary = 5.85 cfs @ 12.09 hrs, Volume= 0.738 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 2A: POA 1 (Adj)



4.2 RUNOFF & HYDROGRAPH ANALYSIS: PROPOSED 10-YEAR ADJUSTED STORM EVENT

PREPARED: September 19, 2025
REVISED: December 15, 2025

300-356 ENTERPRISE AVE.
CITY OF TRENTON
BLOCK 23203, LOT 1
BLOCK 23102 LOTS 2 & 9
TOWNSHIP OF LAWRENCE
BLOCK 602, LOTS 1 & 2
MERCER COUNTY, NEW JERSEY

Summary for Subcatchment 1S: west Roof to Basin #104

[47] Hint: Peak is 3566% of capacity of segment #2
[47] Hint: Peak is 1656% of capacity of segment #3
[47] Hint: Peak is 913% of capacity of segment #4
[47] Hint: Peak is 628% of capacity of segment #5
[47] Hint: Peak is 346% of capacity of segment #6
[47] Hint: Peak is 190% of capacity of segment #7

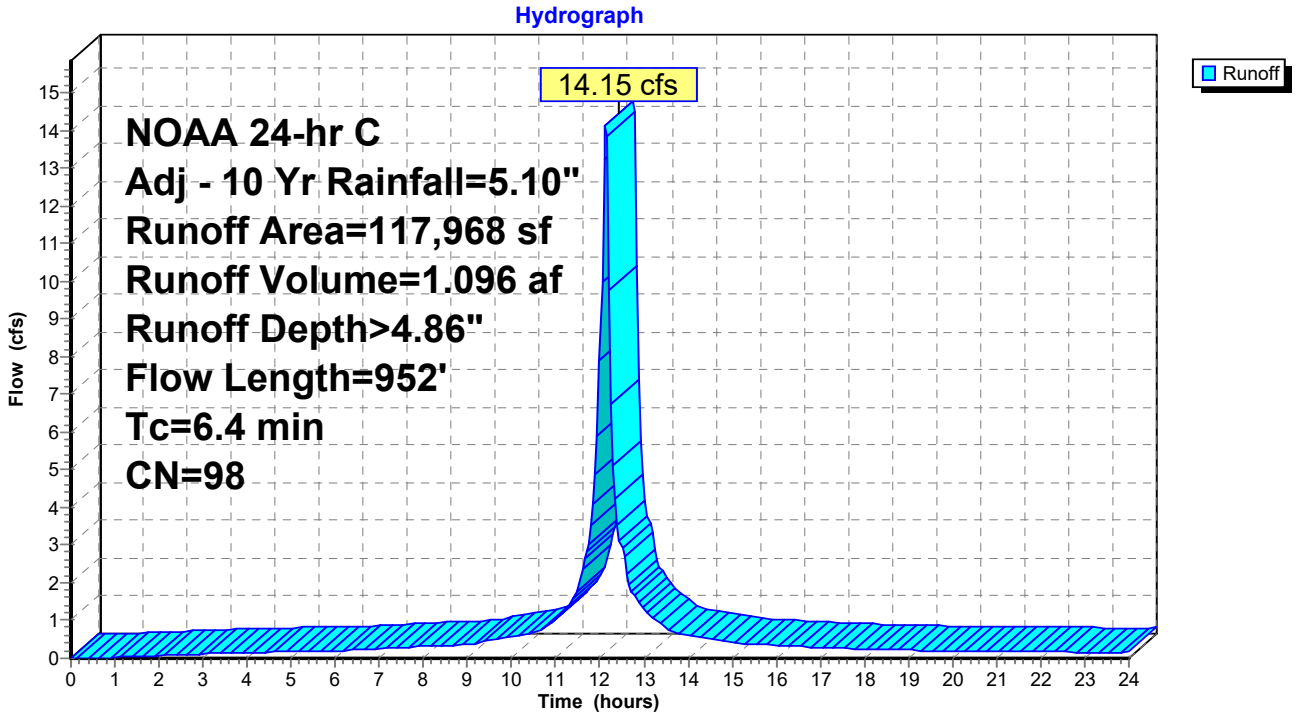
Runoff = 14.15 cfs @ 12.13 hrs, Volume= 1.096 af, Depth> 4.86"
Routed to Pond 39P : Basin 104

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 10 Yr Rainfall=5.10"

	Area (sf)	CN	Description
*	117,968	98	bldg
	117,968		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1					**Direct Entry, Tc Direct**
0.7	90	0.0050	2.02	0.40	**Pipe Channel, CMP_Round 6"** 6.0" Round Area= 0.2 sf Perim= 1.6' r= 0.13' n= 0.013 Corrugated PE, smooth interior
0.4	60	0.0050	2.45	0.85	**Pipe Channel, CMP_Round 8"** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.013 Corrugated PE, smooth interior
0.5	90	0.0050	2.84	1.55	**Pipe Channel, CMP_Round 10"** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.013 Corrugated PE, smooth interior
0.5	90	0.0040	2.87	2.25	**Pipe Channel, CMP_Round 12"** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.5	90	0.0040	3.33	4.09	**Pipe Channel, CMP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
1.1	275	0.0050	4.20	7.43	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.6	257	0.0050	6.67	47.16	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
6.4	952	Total			

Subcatchment 1S: west Roof to Basin #104



Summary for Subcatchment 9S: EAST TRUCK MVS

[49] Hint: Tc<2dt may require smaller dt

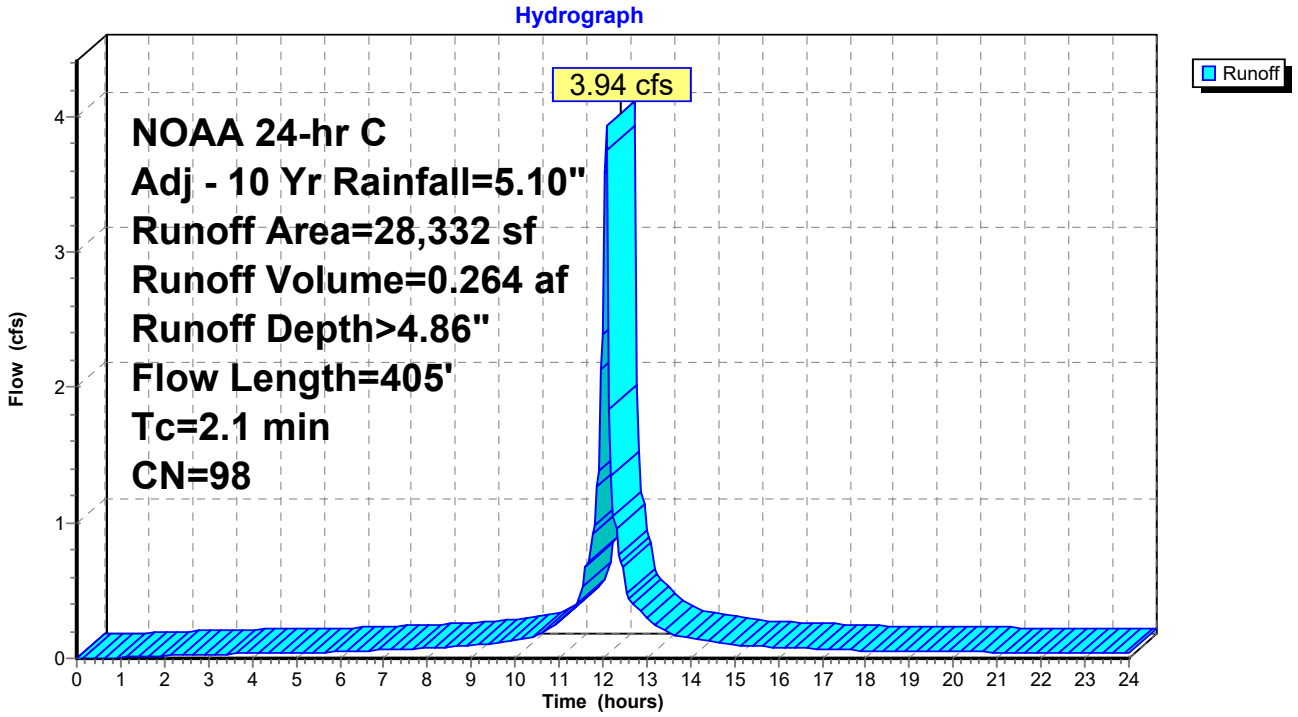
Runoff = 3.94 cfs @ 12.08 hrs, Volume= 0.264 af, Depth> 4.86"
Routed to Pond 43P : Basin 206

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 10 Yr Rainfall=5.10"

Area (sf)	CN	Description
28,332	98	Paved roads w/curbs & sewers, HSG D
28,332		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9					**Direct Entry, Tc Direct**
0.3	70	0.0050	3.72	4.57	**Pipe Channel, CMP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
0.2	56	0.0050	4.20	7.43	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.1	16	0.0050	4.20	7.43	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.5	163	0.0050	5.09	16.00	**Pipe Channel, CMP_Round 24"** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
0.1	100	0.0736	30.25	213.85	**Pipe Channel, RCP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.011 Concrete pipe, straight & clean
2.1	405	Total			

Subcatchment 9S: EAST TRUCK MVS



Summary for Subcatchment 10S: WEST CAR/TRUCK MVS

[49] Hint: Tc<2dt may require smaller dt
[47] Hint: Peak is 147% of capacity of segment #2
[47] Hint: Peak is 105% of capacity of segment #3

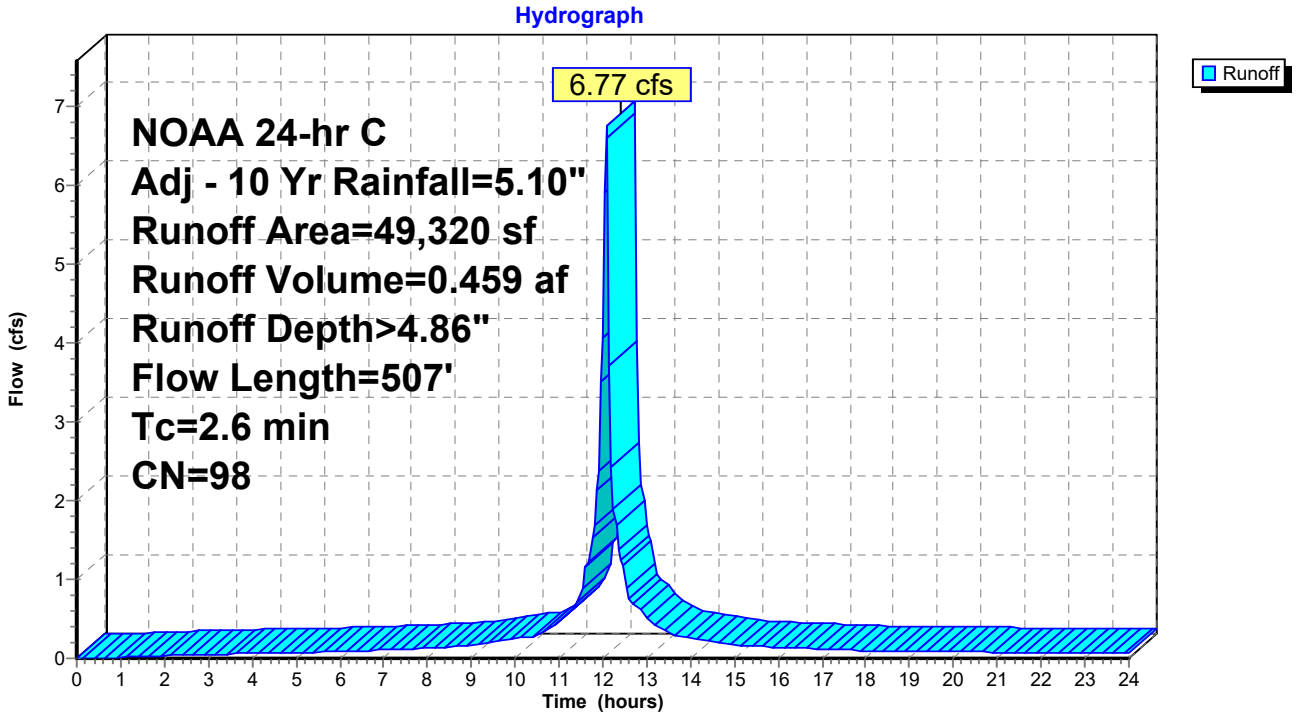
Runoff = 6.77 cfs @ 12.08 hrs, Volume= 0.459 af, Depth> 4.86"
Routed to Pond 44P : Basin 112

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 10 Yr Rainfall=5.10"

Area (sf)	CN	Description
49,320	98	Paved roads w/curbs & sewers, HSG D
49,320		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9					**Direct Entry, Tc Direct**
0.4	89	0.0051	3.76	4.61	**Pipe Channel, CMP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
0.6	131	0.0038	3.66	6.48	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.1	30	0.0050	4.20	7.43	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.6	257	0.0050	6.67	47.16	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
2.6	507	Total			

Subcatchment 10S: WEST CAR/TRUCK MVS



Summary for Subcatchment 22S: east Roof to Basin #203

[47] Hint: Peak is 3157% of capacity of segment #2
[47] Hint: Peak is 1466% of capacity of segment #3
[47] Hint: Peak is 808% of capacity of segment #4
[47] Hint: Peak is 497% of capacity of segment #5
[47] Hint: Peak is 274% of capacity of segment #6
[47] Hint: Peak is 274% of capacity of segment #7

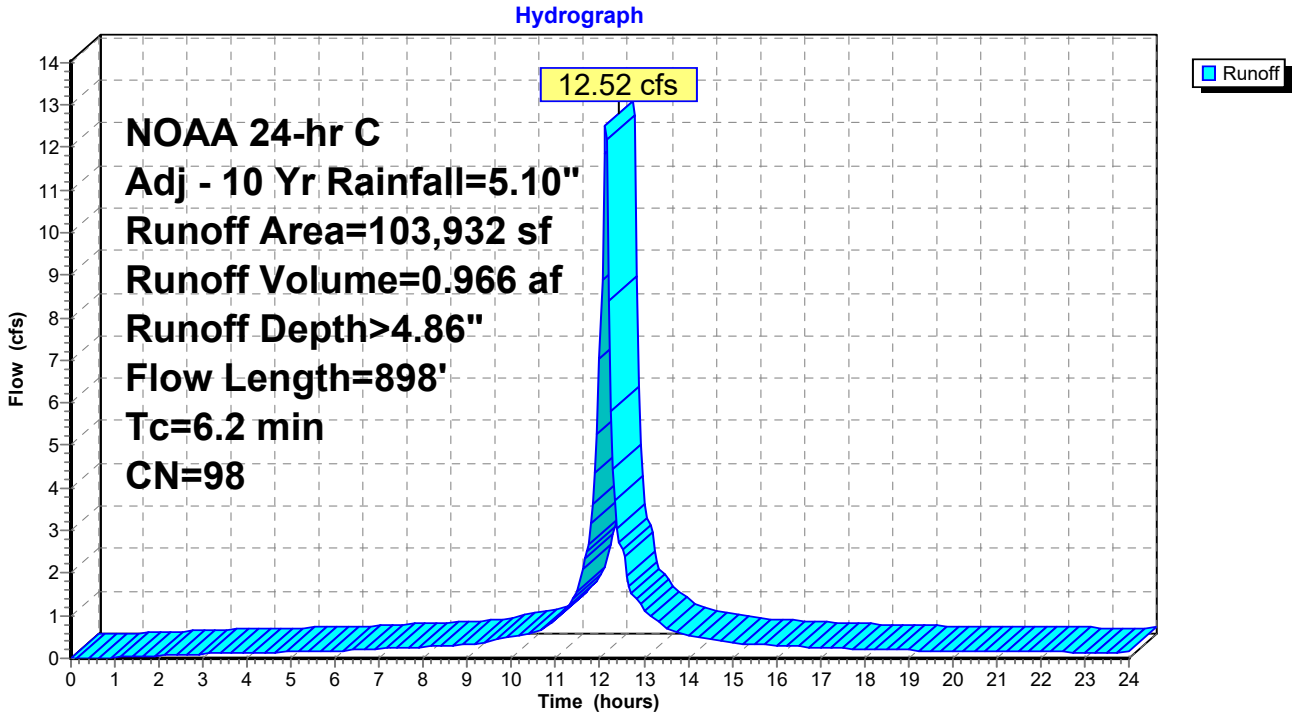
Runoff = 12.52 cfs @ 12.13 hrs, Volume= 0.966 af, Depth> 4.86"
Routed to Pond 41P : Basin 203

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 10 Yr Rainfall=5.10"

	Area (sf)	CN	Description
*	103,932	98	bldg
	103,932		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1					**Direct Entry, Tc Direct**
0.7	90	0.0050	2.02	0.40	**Pipe Channel, CMP_Round 6"** 6.0" Round Area= 0.2 sf Perim= 1.6' r= 0.13' n= 0.013 Corrugated PE, smooth interior
0.4	60	0.0050	2.45	0.85	**Pipe Channel, CMP_Round 8"** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.013 Corrugated PE, smooth interior
0.5	90	0.0050	2.84	1.55	**Pipe Channel, CMP_Round 10"** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.013 Corrugated PE, smooth interior
0.5	90	0.0050	3.21	2.52	**Pipe Channel, CMP_Round 12"** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.4	90	0.0050	3.72	4.57	**Pipe Channel, CMP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
1.0	215	0.0050	3.72	4.57	**Pipe Channel, CMP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
0.5	163	0.0050	5.09	16.00	**Pipe Channel, CMP_Round 24"** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
0.1	100	0.0736	25.60	180.95	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
6.2	898	Total			

Subcatchment 22S: east Roof to Basin #203



Summary for Subcatchment 27S: PATH

[49] Hint: Tc<2dt may require smaller dt

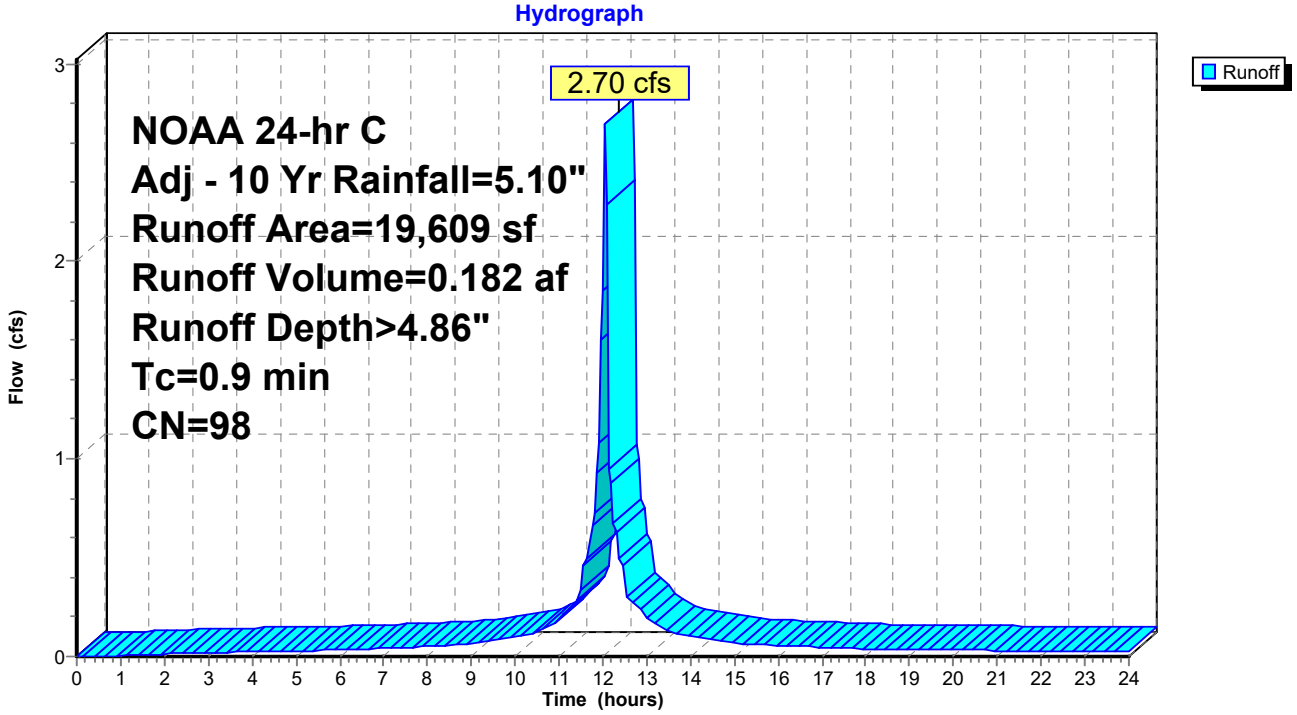
Runoff = 2.70 cfs @ 12.06 hrs, Volume= 0.182 af, Depth> 4.86"
Routed to Link 2A : POA 1 (Adj)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 10 Yr Rainfall=5.10"

Area (sf)	CN	Description
19,609	98	Paved roads w/curbs & sewers, HSG D
19,609		100.00% Impervious Area

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

Subcatchment 27S: PATH



Summary for Subcatchment 28S: Rest of the grass

[49] Hint: Tc<2dt may require smaller dt

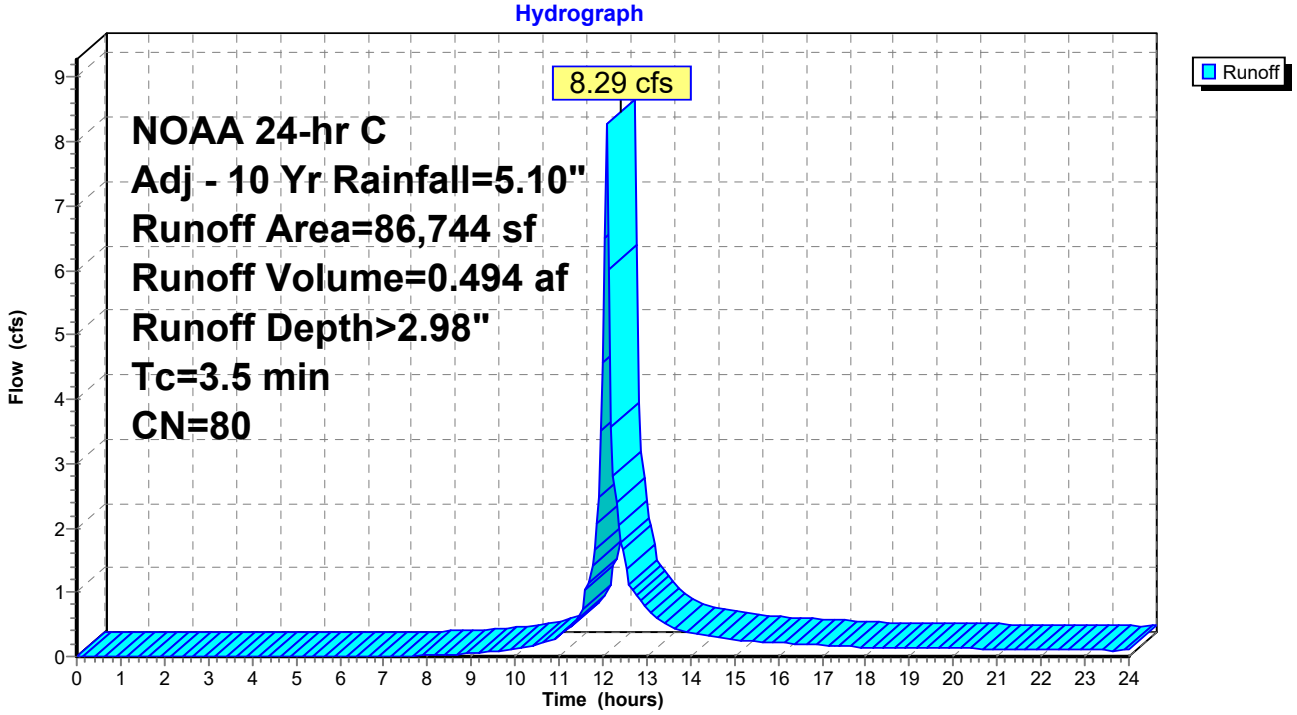
Runoff = 8.29 cfs @ 12.10 hrs, Volume= 0.494 af, Depth> 2.98"
Routed to Link 2A : POA 1 (Adj)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 10 Yr Rainfall=5.10"

Area (sf)	CN	Description
86,744	80	>75% Grass cover, Good, HSG D
86,744		100.00% Pervious Area

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

Subcatchment 28S: Rest of the grass



Summary for Subcatchment 29S: Grass in basin and surrounding grass

[49] Hint: Tc<2dt may require smaller dt

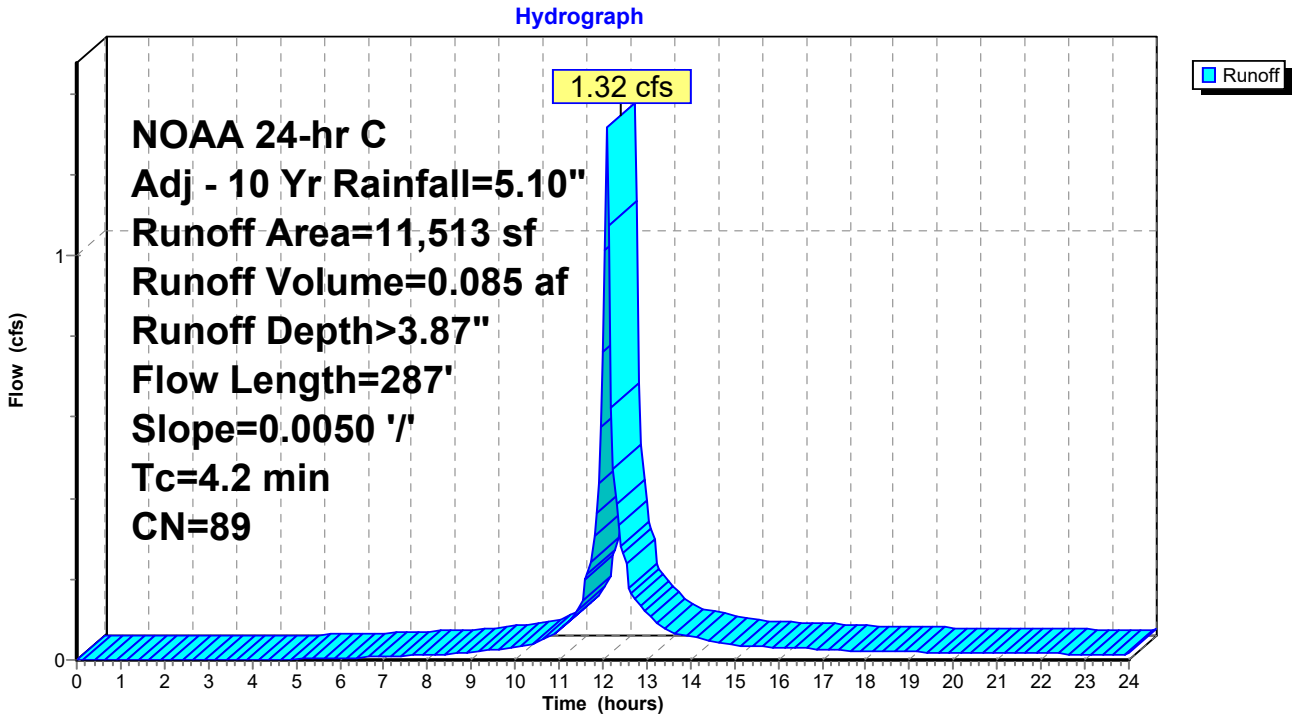
Runoff = 1.32 cfs @ 12.10 hrs, Volume= 0.085 af, Depth> 3.87"
Routed to Pond 44P : Basin 112

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 10 Yr Rainfall=5.10"

Area (sf)	CN	Description
11,513	89	<50% Grass cover, Poor, HSG D
11,513		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5					**Direct Entry, Tc Direct**
0.1	30	0.0050	4.20	7.43	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.6	257	0.0050	6.67	47.16	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
4.2	287	Total			

Subcatchment 29S: Grass in basin and surrounding grass



Summary for Subcatchment 30S: Grass in basin

[49] Hint: Tc<2dt may require smaller dt

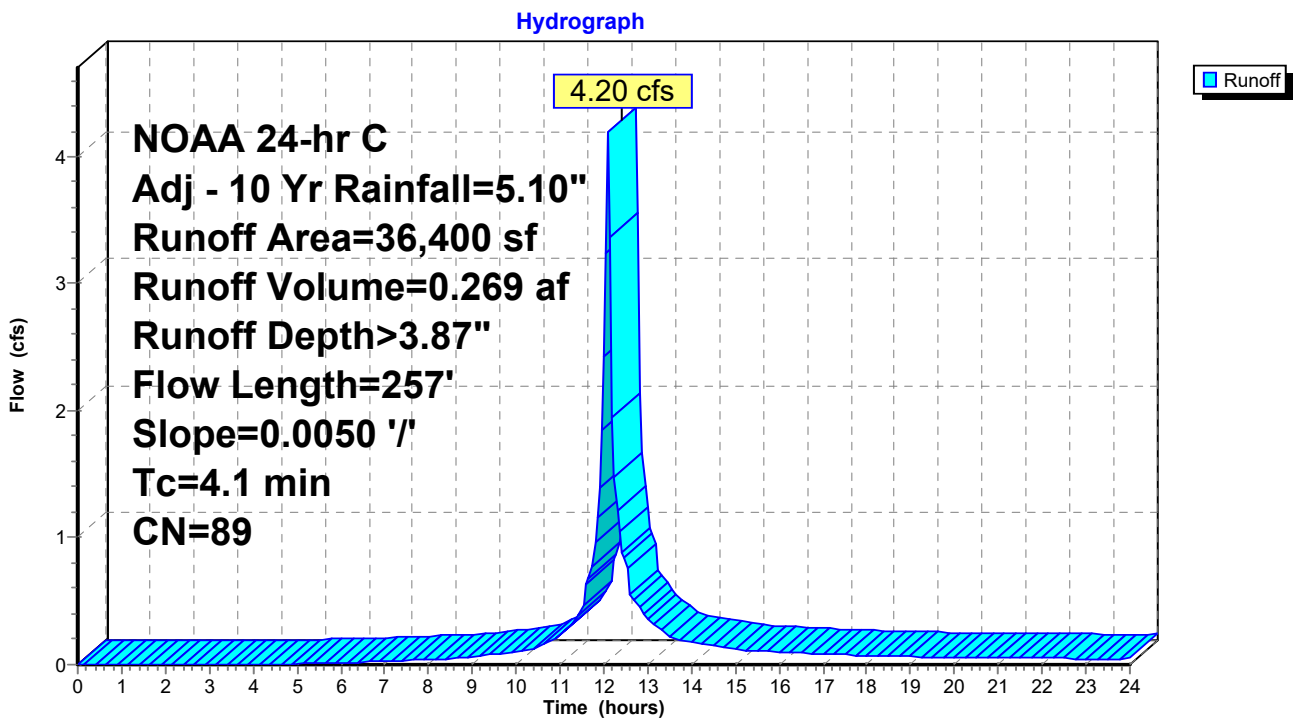
Runoff = 4.20 cfs @ 12.10 hrs, Volume= 0.269 af, Depth> 3.87"
Routed to Pond 39P : Basin 104

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 10 Yr Rainfall=5.10"

Area (sf)	CN	Description
36,400	89	<50% Grass cover, Poor, HSG D
36,400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5					**Direct Entry, Tc Direct**
0.6	257	0.0050	6.67	47.16	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
4.1	257	Total			

Subcatchment 30S: Grass in basin



Summary for Subcatchment 31S: Grass in basin

[49] Hint: Tc<2dt may require smaller dt

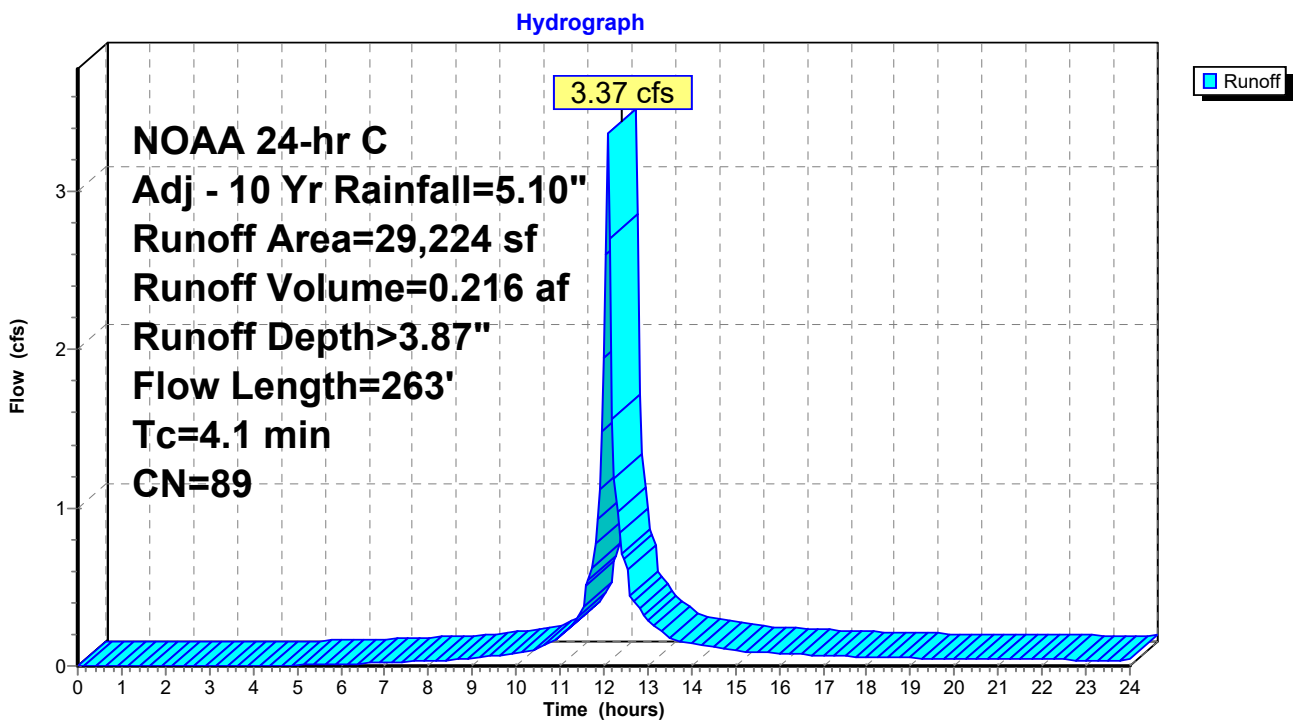
Runoff = 3.37 cfs @ 12.10 hrs, Volume= 0.216 af, Depth> 3.87"
Routed to Pond 41P : Basin 203

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 10 Yr Rainfall=5.10"

Area (sf)	CN	Description
29,224	89	<50% Grass cover, Poor, HSG D
29,224		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5					**Direct Entry, Tc Direct**
0.5	163	0.0050	5.09	16.00	**Pipe Channel, CMP_Round 24"** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
0.1	100	0.0736	25.60	180.95	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
4.1	263	Total			

Subcatchment 31S: Grass in basin



Summary for Subcatchment 39S: Grass in basin

[49] Hint: Tc<2dt may require smaller dt

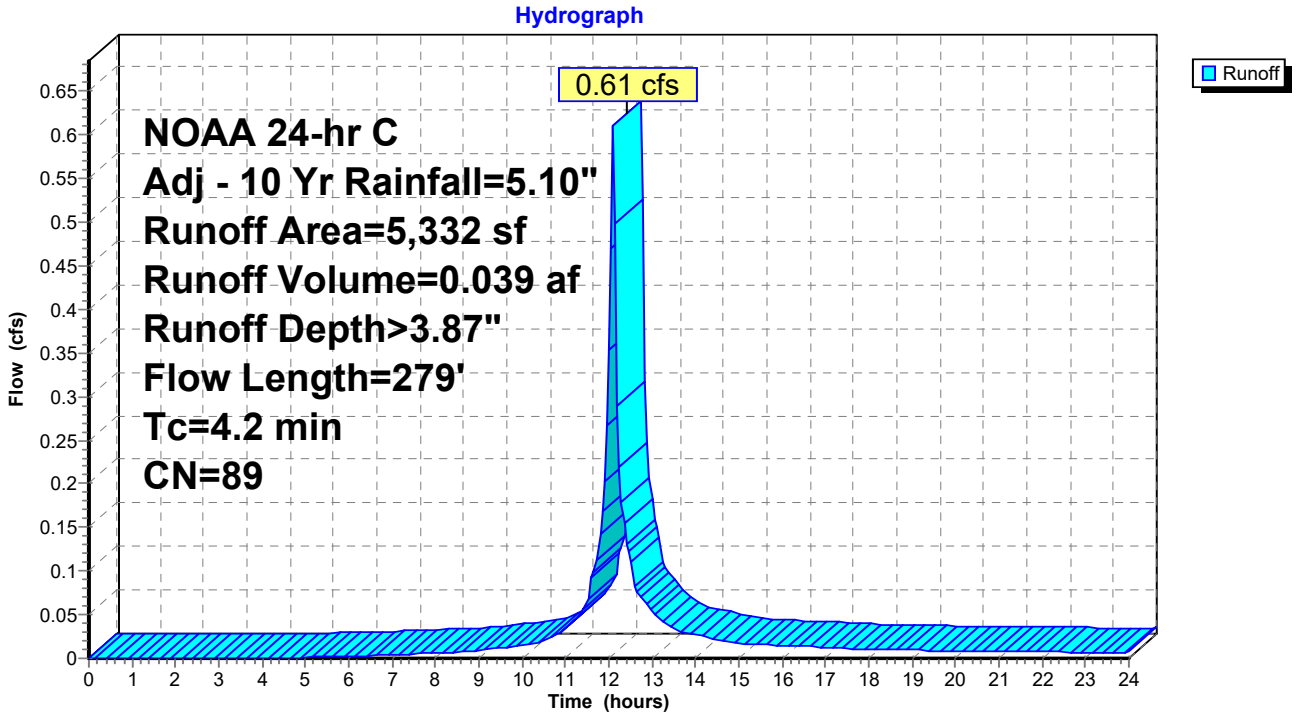
Runoff = 0.61 cfs @ 12.10 hrs, Volume= 0.039 af, Depth> 3.87"
Routed to Pond 43P : Basin 206

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 10 Yr Rainfall=5.10"

Area (sf)	CN	Description
5,332	89	<50% Grass cover, Poor, HSG D
5,332		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5					**Direct Entry, Tc Direct**
0.1	16	0.0050	4.20	7.43	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.5	163	0.0050	5.09	16.00	**Pipe Channel, CMP_Round 24"** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
0.1	100	0.0736	25.60	180.95	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
4.2	279	Total			

Subcatchment 39S: Grass in basin



Summary for Pond 39P: Basin 104

[92] Warning: Device #2 is above defined storage
[81] Warning: Exceeded Pond 44P by 0.44' @ 21.65 hrs

Inflow Area = 4.940 ac, 77.74% Impervious, Inflow Depth > 4.34" for Adj - 10 Yr event
Inflow = 19.36 cfs @ 12.12 hrs, Volume= 1.786 af
Outflow = 2.12 cfs @ 13.57 hrs, Volume= 0.749 af, Atten= 89%, Lag= 86.7 min
Primary = 2.12 cfs @ 13.57 hrs, Volume= 0.749 af
Routed to Link 2A : POA 1 (Adj)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 2A : POA 1 (Adj)

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 46.72' @ 13.57 hrs Surf.Area= 20,991 sf Storage= 50,681 cf

Plug-Flow detention time= 367.4 min calculated for 0.749 af (42% of inflow)
Center-of-Mass det. time= 218.3 min (1,005.2 - 786.9)

Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	87,112 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

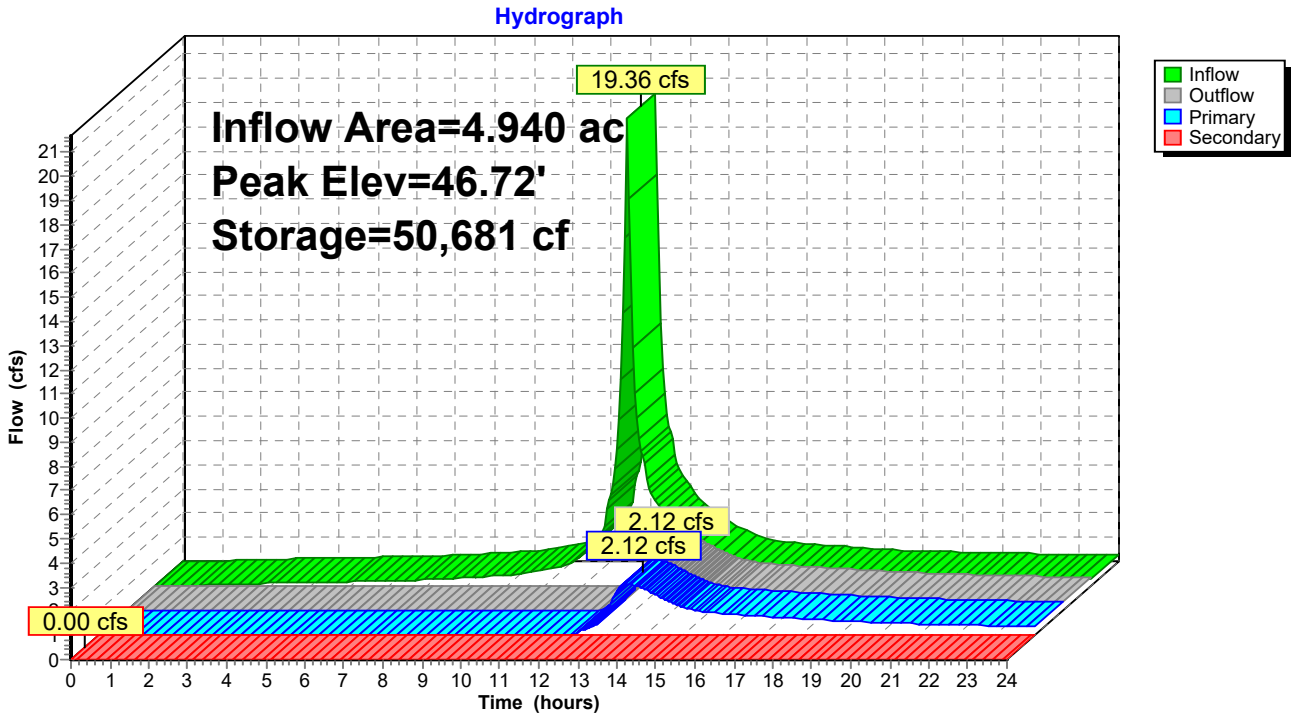
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	17,239	897.0	0.0	0	0	17,239
42.84	17,239	897.0	40.0	69	69	17,248
43.00	17,239	897.0	40.0	1,103	1,172	17,391
44.00	17,239	897.0	40.0	6,896	8,068	18,288
44.83	17,239	897.0	40.0	5,723	13,791	19,033
44.84	17,239	897.0	100.0	172	13,964	19,042
45.00	17,690	902.0	100.0	2,794	16,758	19,772
46.00	20,420	926.0	100.0	19,039	35,797	23,381
47.00	21,216	939.0	100.0	20,817	56,613	25,524
48.00	22,029	952.0	100.0	21,621	78,234	27,697
48.40	22,357	957.0	100.0	8,877	87,112	28,547

Device	Routing	Invert	Outlet Devices
#1	Primary	44.00'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 44.00' / 44.00' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#2	Secondary	48.40'	**50.0' long x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#3	Device 1	46.65'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.40'	**18.0" W x 3.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.08 cfs @ 13.57 hrs HW=46.72' (Free Discharge)
└─**1=Culvert** (Passes 2.08 cfs of 11.94 cfs potential flow)
  ├─**3=Orifice/Grate** (Weir Controls 0.94 cfs @ 0.86 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 0.78 cfs @ 2.08 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.36 cfs @ 4.12 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 39P: Basin 104



Summary for Pond 41P: Basin 203

[92] Warning: Device #2 is above defined storage
[81] Warning: Exceeded Pond 43P by 0.70' @ 15.30 hrs

Inflow Area = 3.830 ac, 79.29% Impervious, Inflow Depth > 4.45" for Adj - 10 Yr event
Inflow = 17.12 cfs @ 12.12 hrs, Volume= 1.421 af
Outflow = 1.48 cfs @ 13.35 hrs, Volume= 0.713 af, Atten= 91%, Lag= 73.8 min
Primary = 1.48 cfs @ 13.35 hrs, Volume= 0.713 af
Routed to Link 2A : POA 1 (Adj)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 2A : POA 1 (Adj)

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 47.02' @ 13.35 hrs Surf.Area= 16,110 sf Storage= 40,717 cf

Plug-Flow detention time= 340.5 min calculated for 0.713 af (50% of inflow)
Center-of-Mass det. time= 214.3 min (985.6 - 771.3)

Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	64,356 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

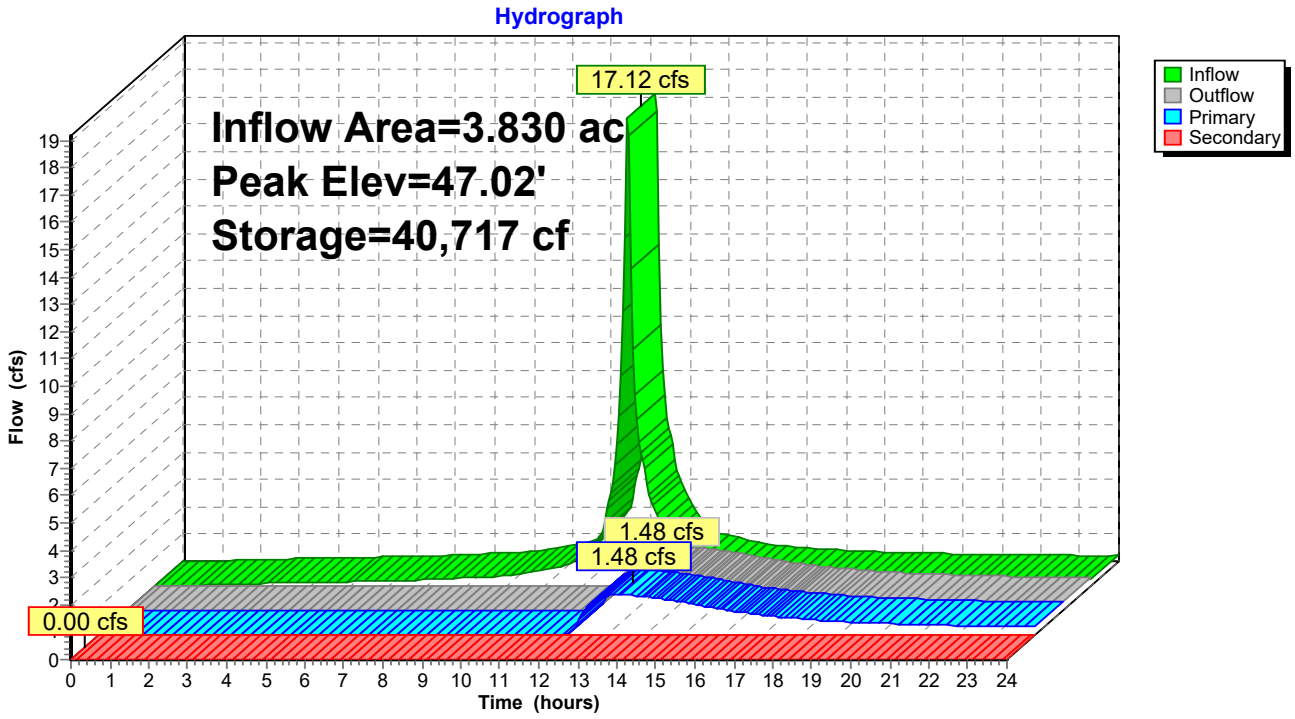
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	11,929	737.0	0.0	0	0	11,929
42.84	11,929	737.0	40.0	48	48	11,936
43.00	11,929	737.0	40.0	763	811	12,054
44.00	11,929	737.0	40.0	4,772	5,583	12,791
44.83	11,929	737.0	40.0	3,960	9,543	13,403
44.84	11,929	737.0	100.0	119	9,662	13,410
45.00	12,301	741.0	100.0	1,938	11,601	13,895
46.00	14,572	762.0	100.0	13,420	25,021	16,517
47.00	16,075	784.0	100.0	15,317	40,339	19,332
48.00	17,607	806.0	100.0	16,835	57,174	22,227
48.40	18,306	815.0	100.0	7,182	64,356	23,432

Device	Routing	Invert	Outlet Devices
#1	Primary	39.00'	**21.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 39.00' / 39.00' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 2.41 sf
#2	Secondary	48.40'	**50.0' long x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#3	Device 1	47.70'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.30'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.48 cfs @ 13.35 hrs HW=47.02' (Free Discharge)
└─**1=Culvert** (Passes 1.48 cfs of 30.96 cfs potential flow)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  ├─**4=Orifice/Grate** (Orifice Controls 1.05 cfs @ 3.01 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.43 cfs @ 4.90 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 41P: Basin 203



Summary for Pond 43P: Basin 206

[92] Warning: Device #2 is above defined storage

Inflow Area = 0.773 ac, 84.16% Impervious, Inflow Depth > 4.70" for Adj - 10 Yr event
Inflow = 4.53 cfs @ 12.08 hrs, Volume= 0.303 af
Outflow = 1.63 cfs @ 12.21 hrs, Volume= 0.239 af, Atten= 64%, Lag= 7.6 min
Primary = 1.63 cfs @ 12.21 hrs, Volume= 0.239 af
Routed to Pond 41P : Basin 203
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 41P : Basin 203

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 47.81' @ 12.21 hrs Surf.Area= 1,745 sf Storage= 5,763 cf

Plug-Flow detention time= 174.2 min calculated for 0.238 af (79% of inflow)
Center-of-Mass det. time= 93.4 min (844.6 - 751.2)

Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	7,008 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

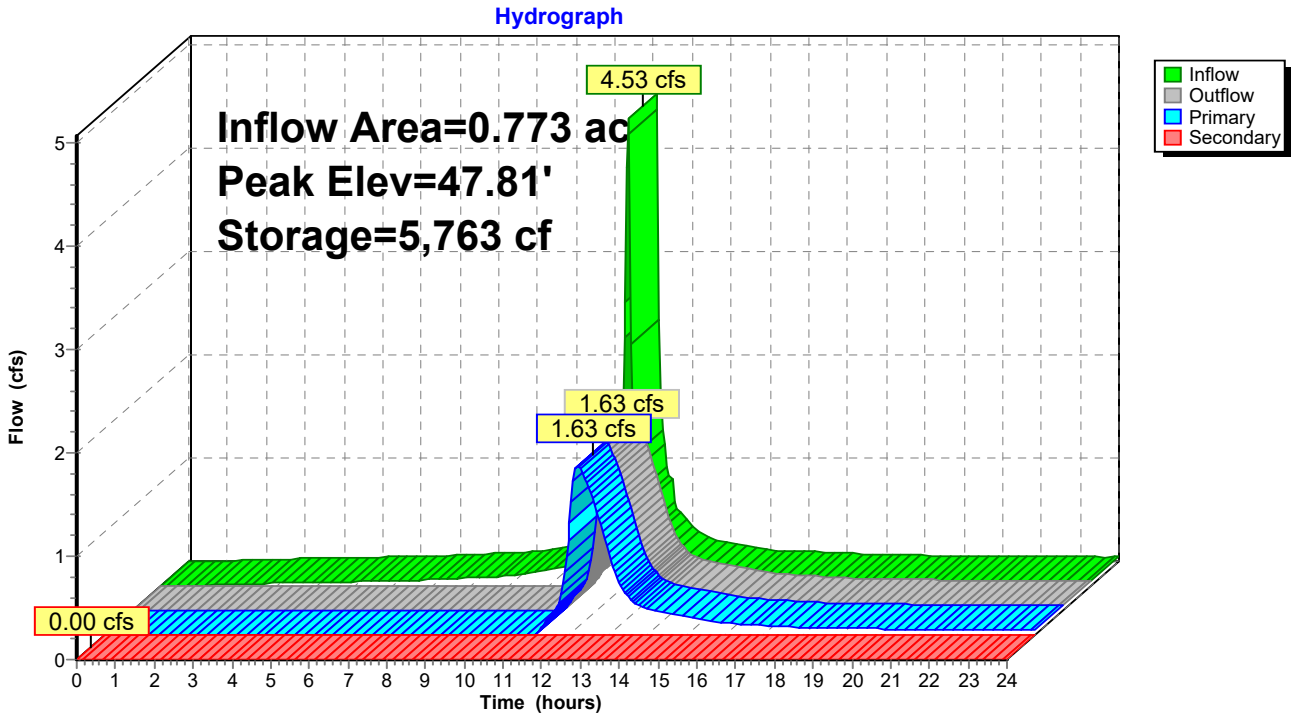
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	1,435	180.0	0.0	0	0	1,435
42.84	1,435	180.0	40.0	6	6	1,437
43.00	1,435	180.0	40.0	92	98	1,466
44.00	1,435	180.0	40.0	574	672	1,646
44.83	1,435	180.0	40.0	476	1,148	1,795
44.84	1,435	180.0	100.0	14	1,162	1,797
45.00	1,435	180.0	100.0	230	1,392	1,826
46.00	1,489	190.0	100.0	1,462	2,854	2,173
47.00	1,611	213.0	100.0	1,550	4,403	2,938
48.00	1,777	233.0	100.0	1,693	6,097	3,682
48.50	1,869	240.0	100.0	911	7,008	3,971

Device	Routing	Invert	Outlet Devices
#1	Primary	45.10'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 45.10' / 45.10' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#2	Secondary	48.50'	**16.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#3	Device 1	48.20'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.30'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.63 cfs @ 12.21 hrs HW=47.81' (Free Discharge)
└─**1=Culvert** (Passes 1.63 cfs of 11.90 cfs potential flow)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  ├─**4=Orifice/Grate** (Orifice Controls 1.06 cfs @ 5.40 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.57 cfs @ 6.50 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 43P: Basin 206



Summary for Pond 44P: Basin 112

[92] Warning: Device #2 is above defined storage

Inflow Area = 1.397 ac, 81.07% Impervious, Inflow Depth > 4.67" for Adj - 10 Yr event
Inflow = 8.06 cfs @ 12.09 hrs, Volume= 0.544 af
Outflow = 1.67 cfs @ 12.37 hrs, Volume= 0.420 af, Atten= 79%, Lag= 16.8 min
Primary = 1.67 cfs @ 12.37 hrs, Volume= 0.420 af
Routed to Pond 39P : Basin 104
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 39P : Basin 104

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 47.95' @ 12.37 hrs Surf.Area= 4,060 sf Storage= 12,458 cf

Plug-Flow detention time= 213.9 min calculated for 0.419 af (77% of inflow)
Center-of-Mass det. time= 130.2 min (883.1 - 752.9)

Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	14,810 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

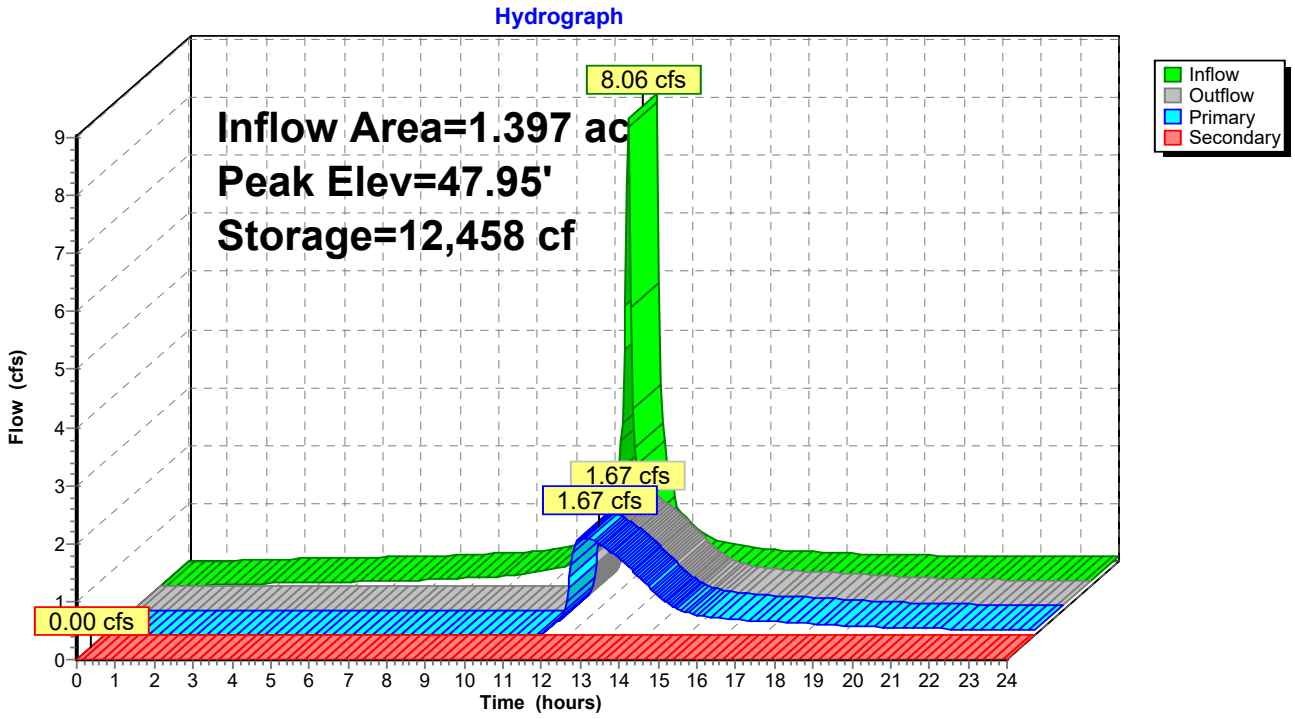
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	2,461	213.0	0.0	0	0	2,461
42.84	2,461	213.0	40.0	10	10	2,463
43.00	2,461	213.0	40.0	158	167	2,497
44.00	2,461	213.0	40.0	984	1,152	2,710
44.83	2,461	213.0	40.0	817	1,969	2,887
44.84	2,461	213.0	100.0	25	1,993	2,889
45.00	2,568	216.0	100.0	402	2,396	2,997
46.00	3,287	251.0	100.0	2,920	5,316	4,319
47.00	3,676	265.7	100.0	3,480	8,796	4,976
48.00	4,082	276.0	100.0	3,877	12,673	5,496
48.50	4,468	290.0	100.0	2,137	14,810	6,142

Device	Routing	Invert	Outlet Devices
#1	Primary	45.10'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 45.10' / 45.10' S= 0.0000 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf
#2	Secondary	48.50'	**20.0' long + 0.3 '/' SideZ x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#3	Device 1	47.95'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.40'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.66 cfs @ 12.37 hrs HW=47.95' (Free Discharge)
└─**1=Culvert** (Passes 1.66 cfs of 12.32 cfs potential flow)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  ├─**4=Orifice/Grate** (Orifice Controls 1.08 cfs @ 5.48 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.59 cfs @ 6.74 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 44P: Basin 112

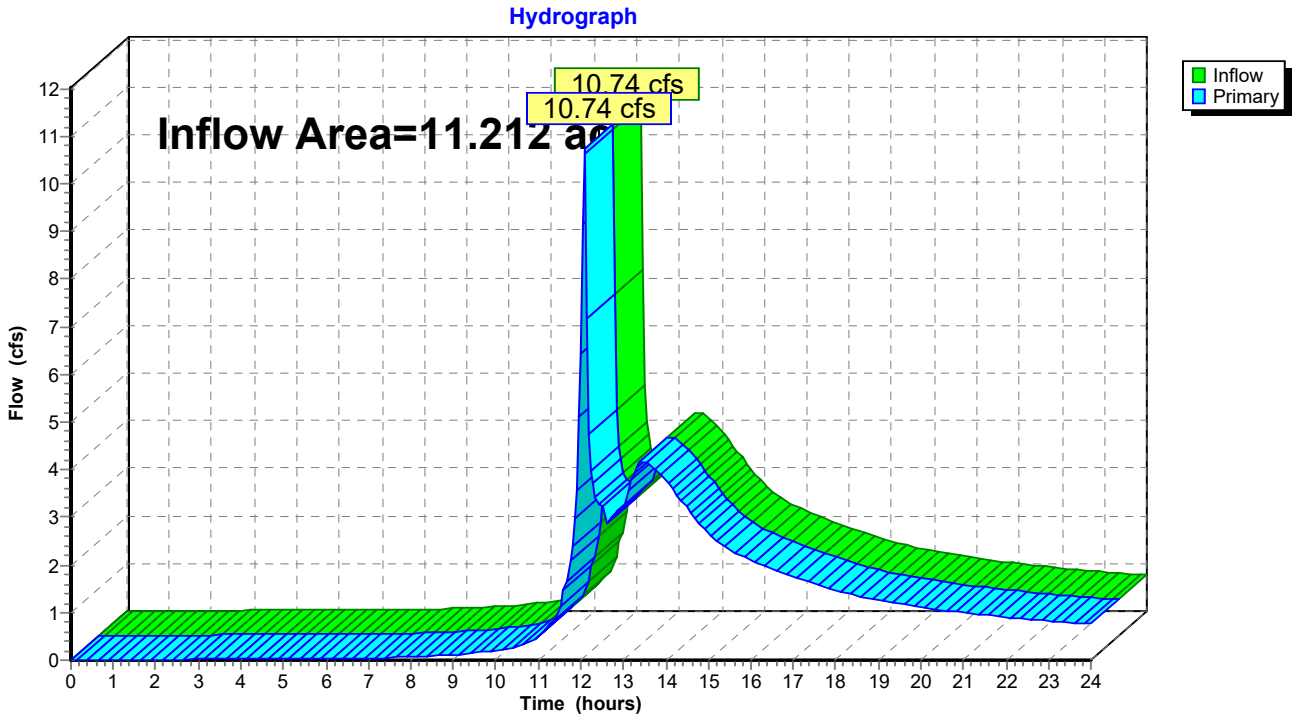


Summary for Link 2A: POA 1 (Adj)

Inflow Area = 11.212 ac, 65.35% Impervious, Inflow Depth > 2.29" for Adj - 10 Yr event
Inflow = 10.74 cfs @ 12.09 hrs, Volume= 2.139 af
Primary = 10.74 cfs @ 12.09 hrs, Volume= 2.139 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 2A: POA 1 (Adj)



4.3 RUNOFF & HYDROGRAPH ANALYSIS: PROPOSED 25-YEAR ADJUSTED STORM EVENT

PREPARED: September 19, 2025
REVISED: December 15, 2025

300-356 ENTERPRISE AVE.
CITY OF TRENTON
BLOCK 23203, LOT 1
BLOCK 23102 LOTS 2 & 9
TOWNSHIP OF LAWRENCE
BLOCK 602, LOTS 1 & 2
MERCER COUNTY, NEW JERSEY

Summary for Subcatchment 1S: west Roof to Basin #104

[47] Hint: Peak is 4293% of capacity of segment #2
[47] Hint: Peak is 1993% of capacity of segment #3
[47] Hint: Peak is 1099% of capacity of segment #4
[47] Hint: Peak is 756% of capacity of segment #5
[47] Hint: Peak is 417% of capacity of segment #6
[47] Hint: Peak is 229% of capacity of segment #7

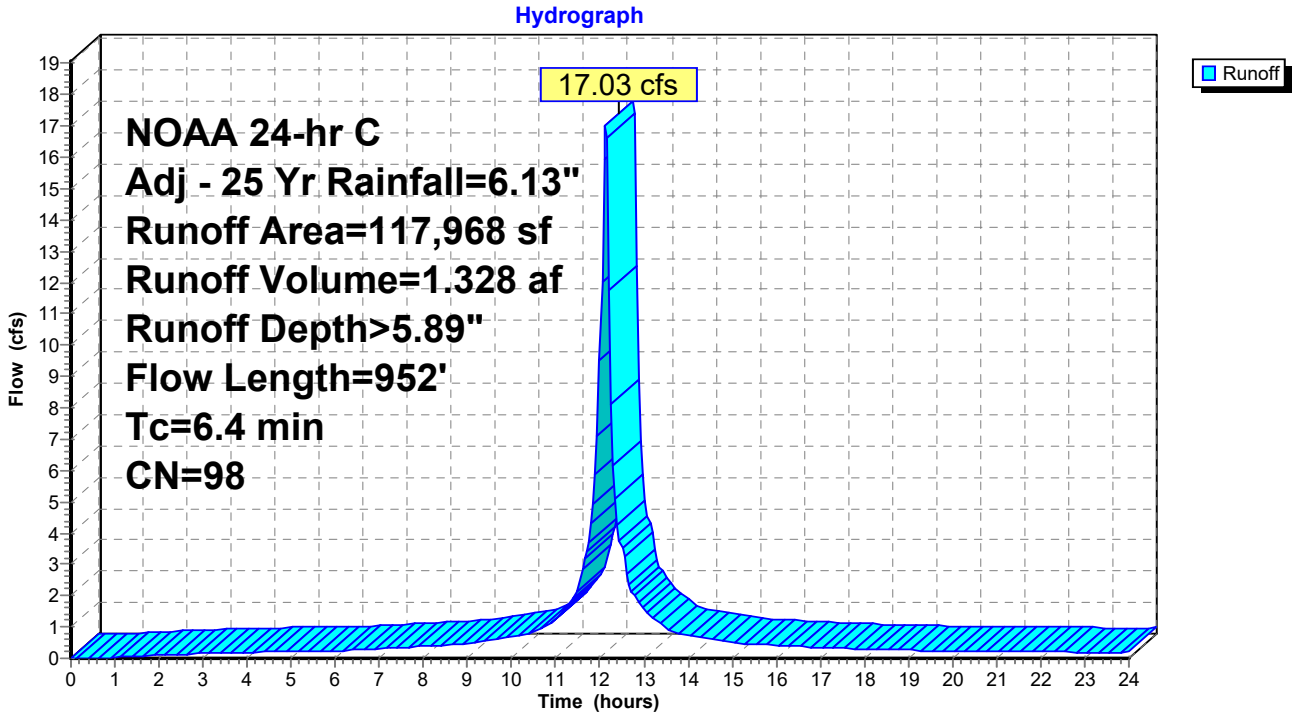
Runoff = 17.03 cfs @ 12.13 hrs, Volume= 1.328 af, Depth> 5.89"
Routed to Pond 39P : Basin 104

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 25 Yr Rainfall=6.13"

	Area (sf)	CN	Description
*	117,968	98	bldg
	117,968		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1					**Direct Entry, Tc Direct**
0.7	90	0.0050	2.02	0.40	**Pipe Channel, CMP_Round 6"** 6.0" Round Area= 0.2 sf Perim= 1.6' r= 0.13' n= 0.013 Corrugated PE, smooth interior
0.4	60	0.0050	2.45	0.85	**Pipe Channel, CMP_Round 8"** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.013 Corrugated PE, smooth interior
0.5	90	0.0050	2.84	1.55	**Pipe Channel, CMP_Round 10"** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.013 Corrugated PE, smooth interior
0.5	90	0.0040	2.87	2.25	**Pipe Channel, CMP_Round 12"** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.5	90	0.0040	3.33	4.09	**Pipe Channel, CMP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
1.1	275	0.0050	4.20	7.43	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.6	257	0.0050	6.67	47.16	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
6.4	952	Total			

Subcatchment 1S: west Roof to Basin #104



Summary for Subcatchment 9S: EAST TRUCK MVS

[49] Hint: Tc<2dt may require smaller dt
[47] Hint: Peak is 104% of capacity of segment #2

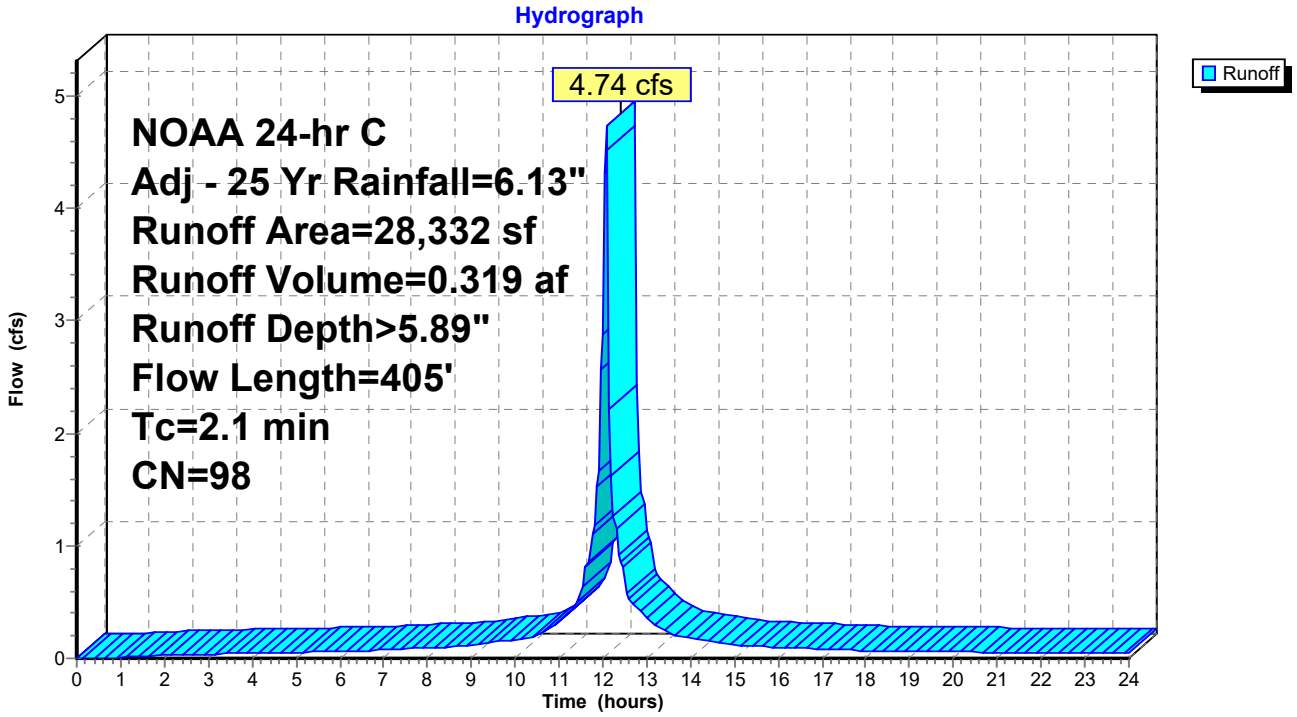
Runoff = 4.74 cfs @ 12.08 hrs, Volume= 0.319 af, Depth> 5.89"
Routed to Pond 43P : Basin 206

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 25 Yr Rainfall=6.13"

Area (sf)	CN	Description
28,332	98	Paved roads w/curbs & sewers, HSG D
28,332		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9					**Direct Entry, Tc Direct**
0.3	70	0.0050	3.72	4.57	**Pipe Channel, CMP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
0.2	56	0.0050	4.20	7.43	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.1	16	0.0050	4.20	7.43	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.5	163	0.0050	5.09	16.00	**Pipe Channel, CMP_Round 24"** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
0.1	100	0.0736	30.25	213.85	**Pipe Channel, RCP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.011 Concrete pipe, straight & clean
2.1	405	Total			

Subcatchment 9S: EAST TRUCK MVS



Summary for Subcatchment 10S: WEST CAR/TRUCK MVS

[49] Hint: Tc<2dt may require smaller dt
[47] Hint: Peak is 177% of capacity of segment #2
[47] Hint: Peak is 126% of capacity of segment #3
[47] Hint: Peak is 110% of capacity of segment #4

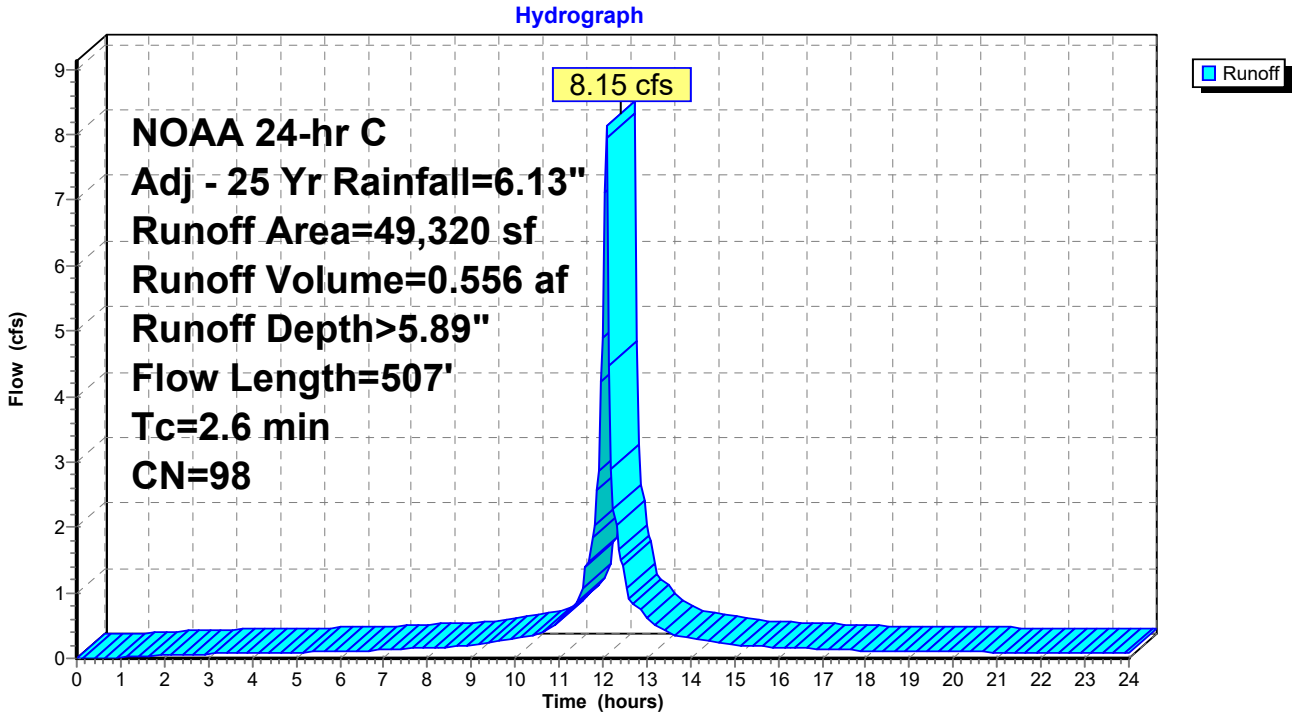
Runoff = 8.15 cfs @ 12.08 hrs, Volume= 0.556 af, Depth> 5.89"
Routed to Pond 44P : Basin 112

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 25 Yr Rainfall=6.13"

Area (sf)	CN	Description
49,320	98	Paved roads w/curbs & sewers, HSG D
49,320		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9					**Direct Entry, Tc Direct**
0.4	89	0.0051	3.76	4.61	**Pipe Channel, CMP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
0.6	131	0.0038	3.66	6.48	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.1	30	0.0050	4.20	7.43	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.6	257	0.0050	6.67	47.16	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
2.6	507	Total			

Subcatchment 10S: WEST CAR/TRUCK MVS



Summary for Subcatchment 22S: east Roof to Basin #203

[47] Hint: Peak is 3800% of capacity of segment #2
[47] Hint: Peak is 1765% of capacity of segment #3
[47] Hint: Peak is 973% of capacity of segment #4
[47] Hint: Peak is 598% of capacity of segment #5
[47] Hint: Peak is 330% of capacity of segment #6
[47] Hint: Peak is 330% of capacity of segment #7

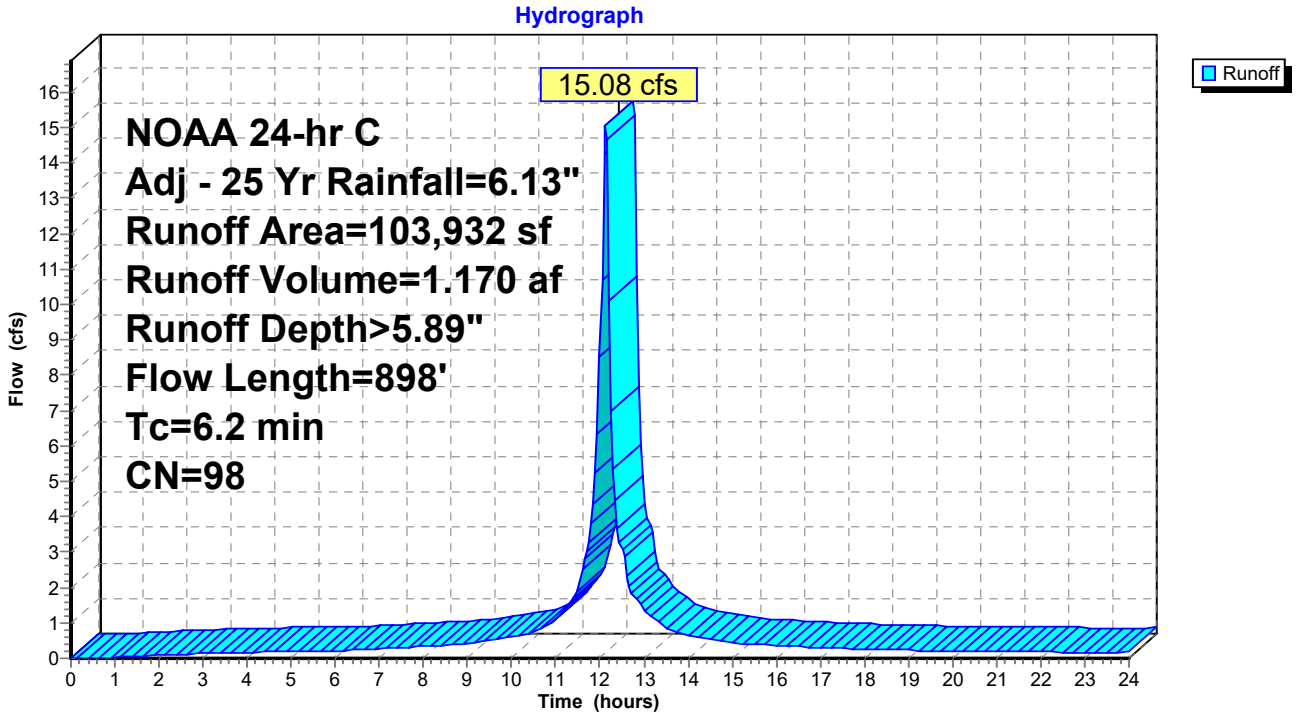
Runoff = 15.08 cfs @ 12.13 hrs, Volume= 1.170 af, Depth> 5.89"
Routed to Pond 41P : Basin 203

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 25 Yr Rainfall=6.13"

	Area (sf)	CN	Description
*	103,932	98	bldg
	103,932		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1					**Direct Entry, Tc Direct**
0.7	90	0.0050	2.02	0.40	**Pipe Channel, CMP_Round 6"** 6.0" Round Area= 0.2 sf Perim= 1.6' r= 0.13' n= 0.013 Corrugated PE, smooth interior
0.4	60	0.0050	2.45	0.85	**Pipe Channel, CMP_Round 8"** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.013 Corrugated PE, smooth interior
0.5	90	0.0050	2.84	1.55	**Pipe Channel, CMP_Round 10"** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.013 Corrugated PE, smooth interior
0.5	90	0.0050	3.21	2.52	**Pipe Channel, CMP_Round 12"** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.4	90	0.0050	3.72	4.57	**Pipe Channel, CMP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
1.0	215	0.0050	3.72	4.57	**Pipe Channel, CMP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
0.5	163	0.0050	5.09	16.00	**Pipe Channel, CMP_Round 24"** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
0.1	100	0.0736	25.60	180.95	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
6.2	898	Total			

Subcatchment 22S: east Roof to Basin #203



Summary for Subcatchment 27S: PATH

[49] Hint: Tc<2dt may require smaller dt

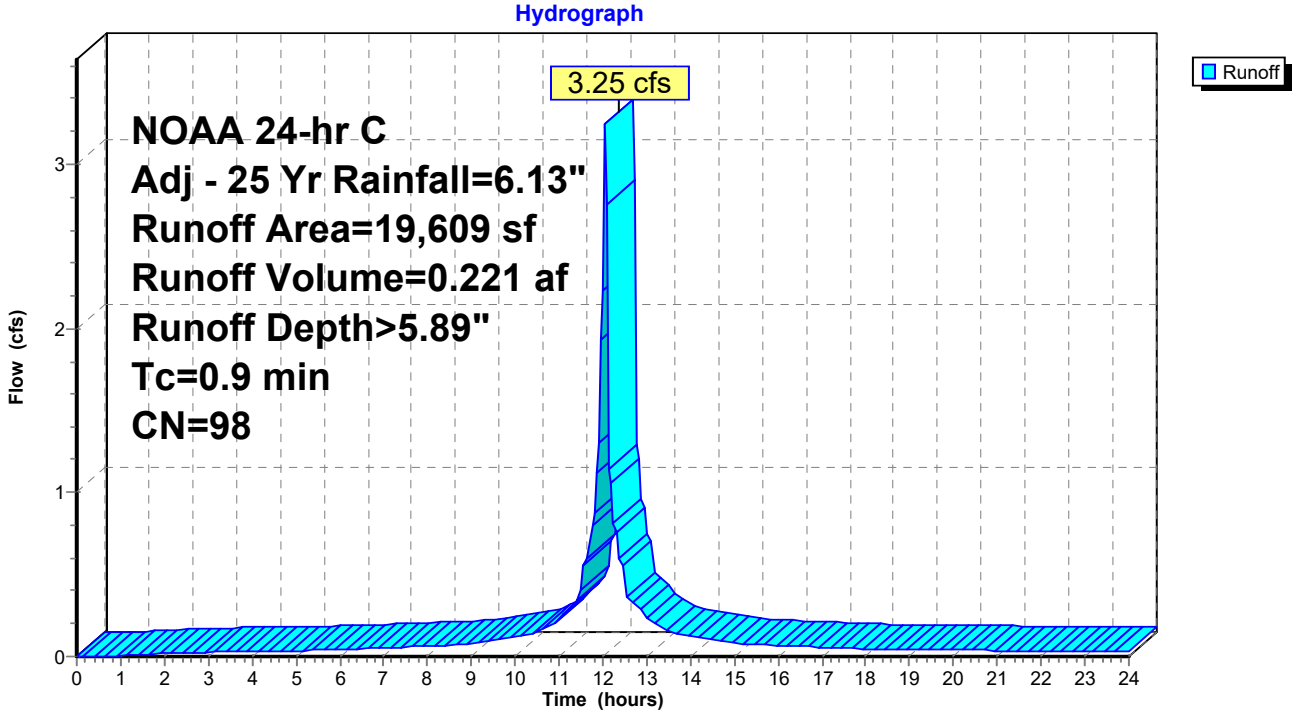
Runoff = 3.25 cfs @ 12.06 hrs, Volume= 0.221 af, Depth> 5.89"
Routed to Link 2A : POA 1 (Adj)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 25 Yr Rainfall=6.13"

Area (sf)	CN	Description
19,609	98	Paved roads w/curbs & sewers, HSG D
19,609		100.00% Impervious Area

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

Subcatchment 27S: PATH



Summary for Subcatchment 28S: Rest of the grass

[49] Hint: Tc<2dt may require smaller dt

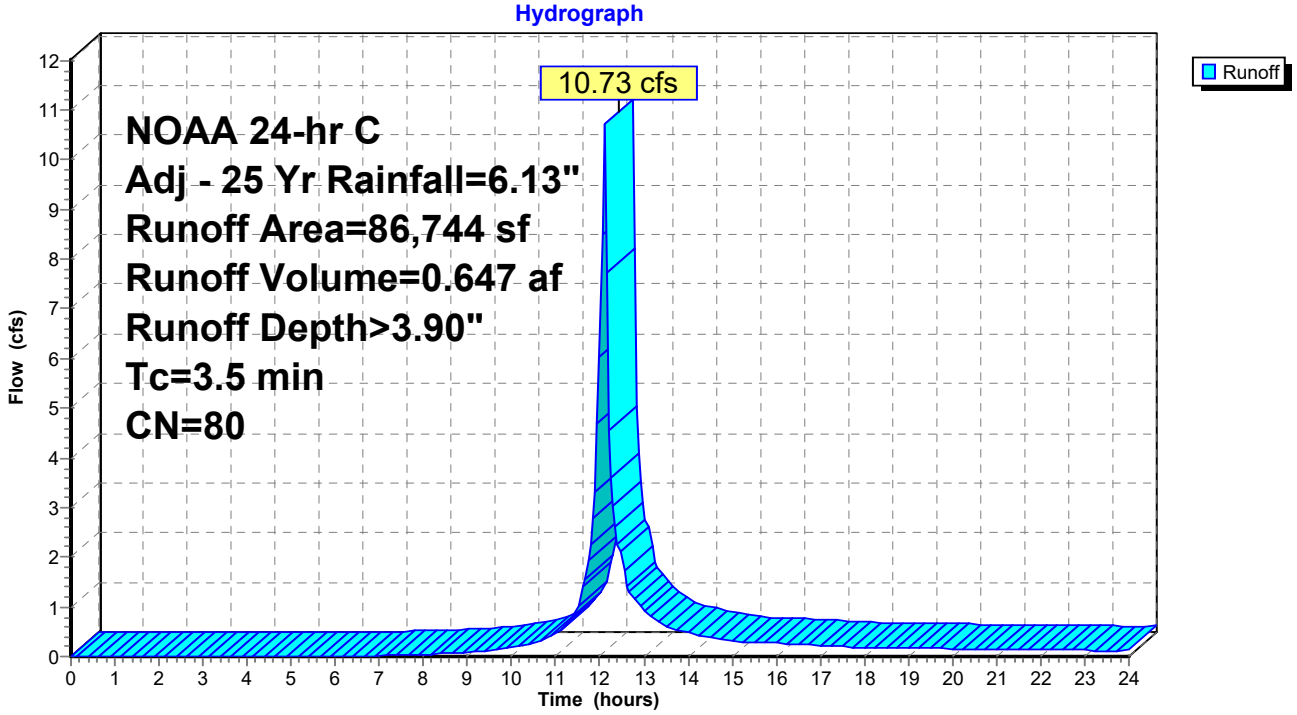
Runoff = 10.73 cfs @ 12.10 hrs, Volume= 0.647 af, Depth> 3.90"
Routed to Link 2A : POA 1 (Adj)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 25 Yr Rainfall=6.13"

Area (sf)	CN	Description
86,744	80	>75% Grass cover, Good, HSG D
86,744		100.00% Pervious Area

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

Subcatchment 28S: Rest of the grass



Summary for Subcatchment 29S: Grass in basin and surrounding grass

[49] Hint: Tc<2dt may require smaller dt

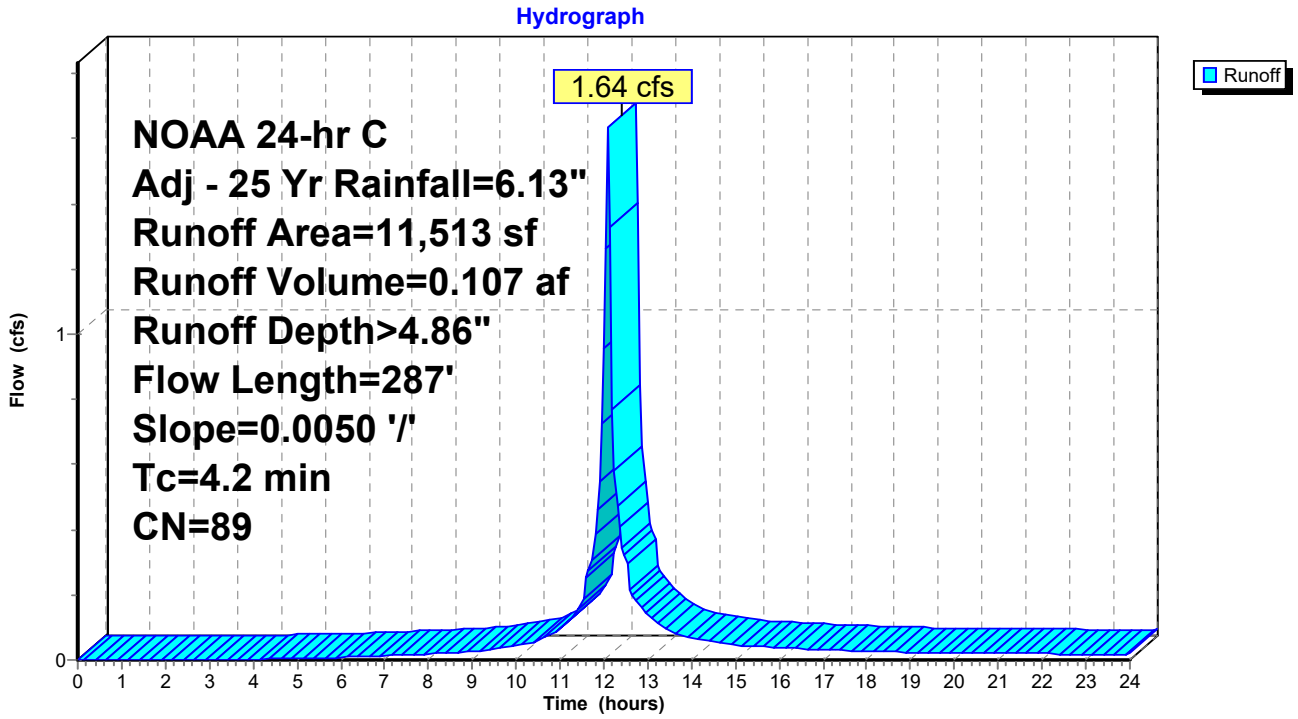
Runoff = 1.64 cfs @ 12.10 hrs, Volume= 0.107 af, Depth> 4.86"
Routed to Pond 44P : Basin 112

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 25 Yr Rainfall=6.13"

Area (sf)	CN	Description
11,513	89	<50% Grass cover, Poor, HSG D
11,513		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5					**Direct Entry, Tc Direct**
0.1	30	0.0050	4.20	7.43	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.6	257	0.0050	6.67	47.16	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
4.2	287	Total			

Subcatchment 29S: Grass in basin and surrounding grass



Summary for Subcatchment 30S: Grass in basin

[49] Hint: Tc<2dt may require smaller dt

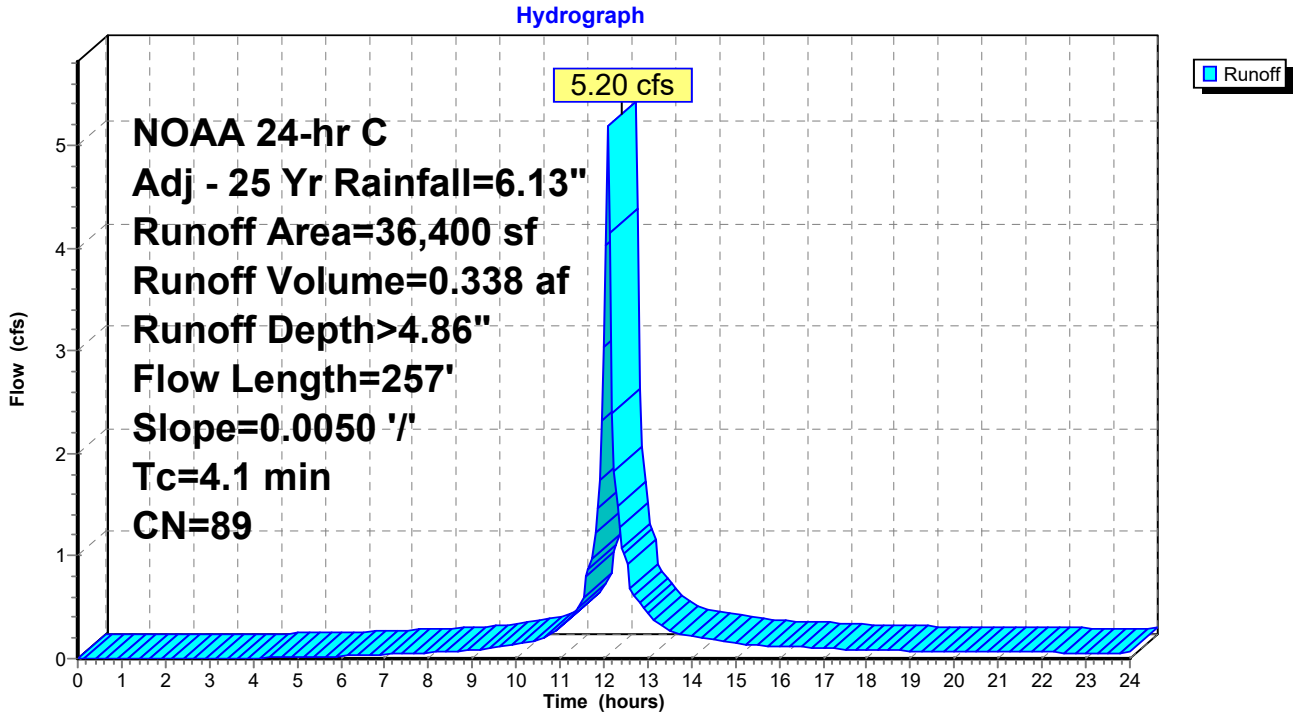
Runoff = 5.20 cfs @ 12.10 hrs, Volume= 0.338 af, Depth> 4.86"
Routed to Pond 39P : Basin 104

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 25 Yr Rainfall=6.13"

Area (sf)	CN	Description
36,400	89	<50% Grass cover, Poor, HSG D
36,400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5					**Direct Entry, Tc Direct**
0.6	257	0.0050	6.67	47.16	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
4.1	257	Total			

Subcatchment 30S: Grass in basin



Summary for Subcatchment 31S: Grass in basin

[49] Hint: Tc<2dt may require smaller dt

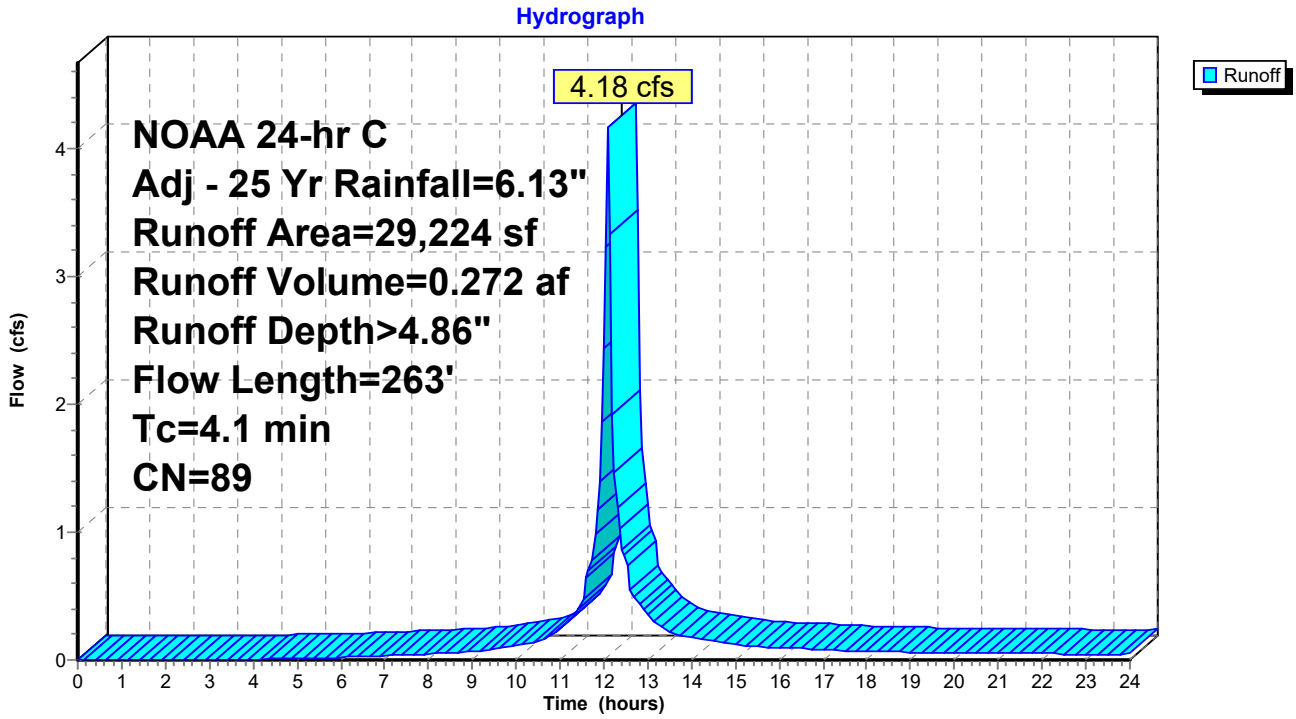
Runoff = 4.18 cfs @ 12.10 hrs, Volume= 0.272 af, Depth> 4.86"
Routed to Pond 41P : Basin 203

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 25 Yr Rainfall=6.13"

Area (sf)	CN	Description
29,224	89	<50% Grass cover, Poor, HSG D
29,224		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5					**Direct Entry, Tc Direct**
0.5	163	0.0050	5.09	16.00	**Pipe Channel, CMP_Round 24"** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
0.1	100	0.0736	25.60	180.95	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
4.1	263	Total			

Subcatchment 31S: Grass in basin



Summary for Subcatchment 39S: Grass in basin

[49] Hint: Tc<2dt may require smaller dt

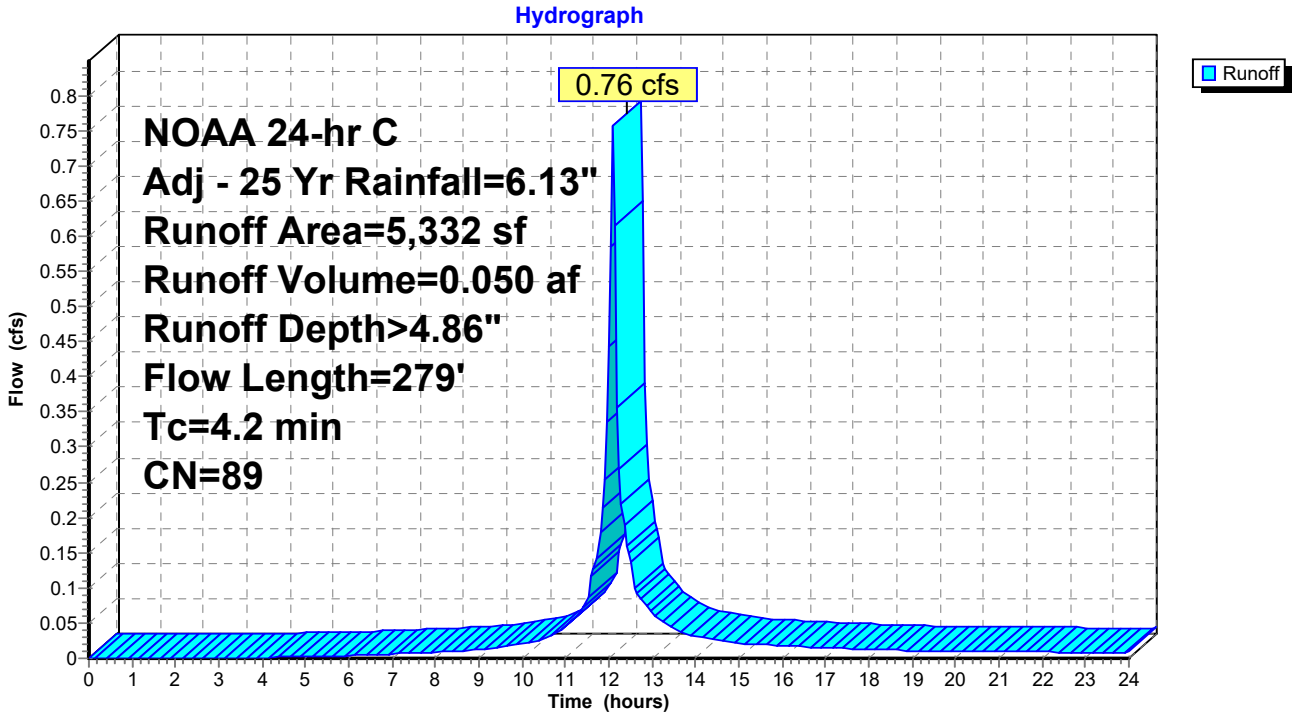
Runoff = 0.76 cfs @ 12.10 hrs, Volume= 0.050 af, Depth> 4.86"
Routed to Pond 43P : Basin 206

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 25 Yr Rainfall=6.13"

Area (sf)	CN	Description
5,332	89	<50% Grass cover, Poor, HSG D
5,332		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5					**Direct Entry, Tc Direct**
0.1	16	0.0050	4.20	7.43	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.5	163	0.0050	5.09	16.00	**Pipe Channel, CMP_Round 24"** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
0.1	100	0.0736	25.60	180.95	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
4.2	279	Total			

Subcatchment 39S: Grass in basin



Summary for Pond 39P: Basin 104

[92] Warning: Device #2 is above defined storage
[81] Warning: Exceeded Pond 44P by 0.44' @ 23.30 hrs

Inflow Area = 4.940 ac, 77.74% Impervious, Inflow Depth > 5.35" for Adj - 25 Yr event
Inflow = 26.91 cfs @ 12.14 hrs, Volume= 2.204 af
Outflow = 5.18 cfs @ 12.60 hrs, Volume= 1.155 af, Atten= 81%, Lag= 27.5 min
Primary = 5.18 cfs @ 12.60 hrs, Volume= 1.155 af
Routed to Link 2A : POA 1 (Adj)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 2A : POA 1 (Adj)

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 46.82' @ 12.60 hrs Surf.Area= 21,075 sf Storage= 52,886 cf

Plug-Flow detention time= 290.2 min calculated for 1.155 af (52% of inflow)
Center-of-Mass det. time= 162.1 min (943.8 - 781.6)

Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	87,112 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

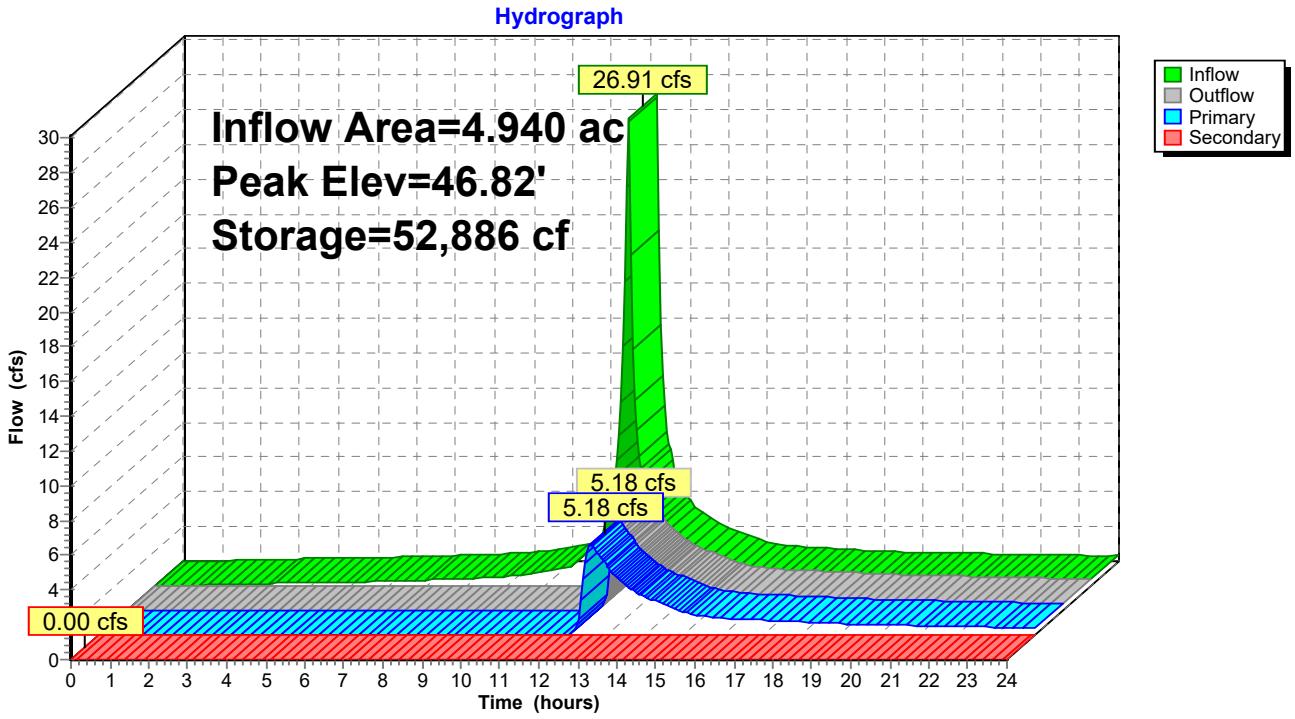
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	17,239	897.0	0.0	0	0	17,239
42.84	17,239	897.0	40.0	69	69	17,248
43.00	17,239	897.0	40.0	1,103	1,172	17,391
44.00	17,239	897.0	40.0	6,896	8,068	18,288
44.83	17,239	897.0	40.0	5,723	13,791	19,033
44.84	17,239	897.0	100.0	172	13,964	19,042
45.00	17,690	902.0	100.0	2,794	16,758	19,772
46.00	20,420	926.0	100.0	19,039	35,797	23,381
47.00	21,216	939.0	100.0	20,817	56,613	25,524
48.00	22,029	952.0	100.0	21,621	78,234	27,697
48.40	22,357	957.0	100.0	8,877	87,112	28,547

Device	Routing	Invert	Outlet Devices
#1	Primary	44.00'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 44.00' / 44.00' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#2	Secondary	48.40'	**50.0' long x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#3	Device 1	46.65'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.40'	**18.0" W x 3.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.15 cfs @ 12.60 hrs HW=46.82' (Free Discharge)
└─**1=Culvert** (Passes 5.15 cfs of 12.25 cfs potential flow)
  ├─**3=Orifice/Grate** (Weir Controls 3.79 cfs @ 1.36 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 0.98 cfs @ 2.61 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.38 cfs @ 4.41 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 39P: Basin 104



Summary for Pond 41P: Basin 203

[92] Warning: Device #2 is above defined storage
[81] Warning: Exceeded Pond 43P by 1.01' @ 14.05 hrs

Inflow Area = 3.830 ac, 79.29% Impervious, Inflow Depth > 5.47" for Adj - 25 Yr event
Inflow = 20.62 cfs @ 12.12 hrs, Volume= 1.746 af
Outflow = 2.07 cfs @ 13.26 hrs, Volume= 1.023 af, Atten= 90%, Lag= 68.4 min
Primary = 2.07 cfs @ 13.26 hrs, Volume= 1.023 af
Routed to Link 2A : POA 1 (Adj)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 2A : POA 1 (Adj)

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 47.49' @ 13.26 hrs Surf.Area= 16,816 sf Storage= 48,385 cf

Plug-Flow detention time= 315.6 min calculated for 1.023 af (59% of inflow)
Center-of-Mass det. time= 202.6 min (970.3 - 767.6)

Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	64,356 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

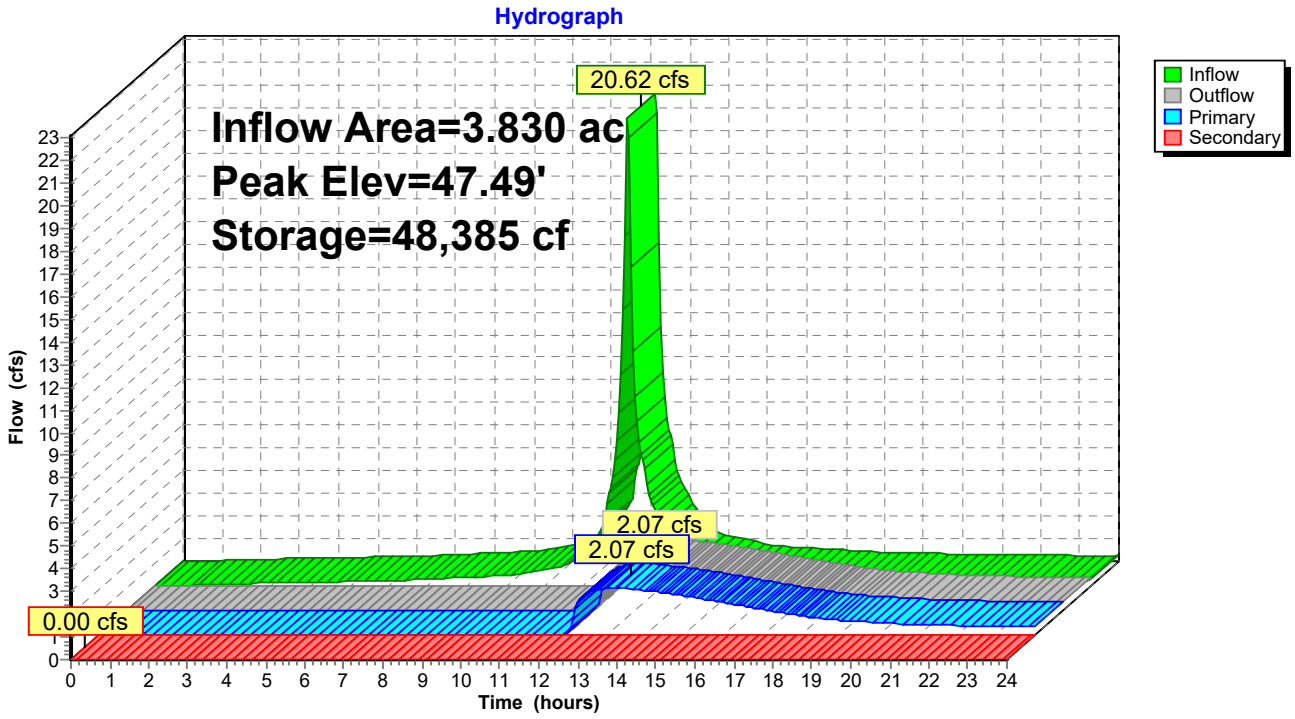
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	11,929	737.0	0.0	0	0	11,929
42.84	11,929	737.0	40.0	48	48	11,936
43.00	11,929	737.0	40.0	763	811	12,054
44.00	11,929	737.0	40.0	4,772	5,583	12,791
44.83	11,929	737.0	40.0	3,960	9,543	13,403
44.84	11,929	737.0	100.0	119	9,662	13,410
45.00	12,301	741.0	100.0	1,938	11,601	13,895
46.00	14,572	762.0	100.0	13,420	25,021	16,517
47.00	16,075	784.0	100.0	15,317	40,339	19,332
48.00	17,607	806.0	100.0	16,835	57,174	22,227
48.40	18,306	815.0	100.0	7,182	64,356	23,432

Device	Routing	Invert	Outlet Devices
#1	Primary	39.00'	**21.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 39.00' / 39.00' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 2.41 sf
#2	Secondary	48.40'	**50.0' long x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#3	Device 1	47.70'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.30'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.07 cfs @ 13.26 hrs HW=47.49' (Free Discharge)
└─**1=Culvert** (Passes 2.07 cfs of 31.96 cfs potential flow)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  ├─**4=Orifice/Grate** (Orifice Controls 1.55 cfs @ 4.45 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.52 cfs @ 5.90 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 41P: Basin 203



Summary for Pond 43P: Basin 206

[92] Warning: Device #2 is above defined storage

Inflow Area = 0.773 ac, 84.16% Impervious, Inflow Depth > 5.73" for Adj - 25 Yr event
Inflow = 5.47 cfs @ 12.08 hrs, Volume= 0.369 af
Outflow = 2.04 cfs @ 12.20 hrs, Volume= 0.304 af, Atten= 63%, Lag= 7.2 min
Primary = 2.04 cfs @ 12.20 hrs, Volume= 0.304 af
Routed to Pond 41P : Basin 203
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 41P : Basin 203

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 48.22' @ 12.21 hrs Surf.Area= 1,818 sf Storage= 6,497 cf

Plug-Flow detention time= 161.7 min calculated for 0.304 af (82% of inflow)
Center-of-Mass det. time= 88.4 min (836.4 - 748.0)

Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	7,008 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

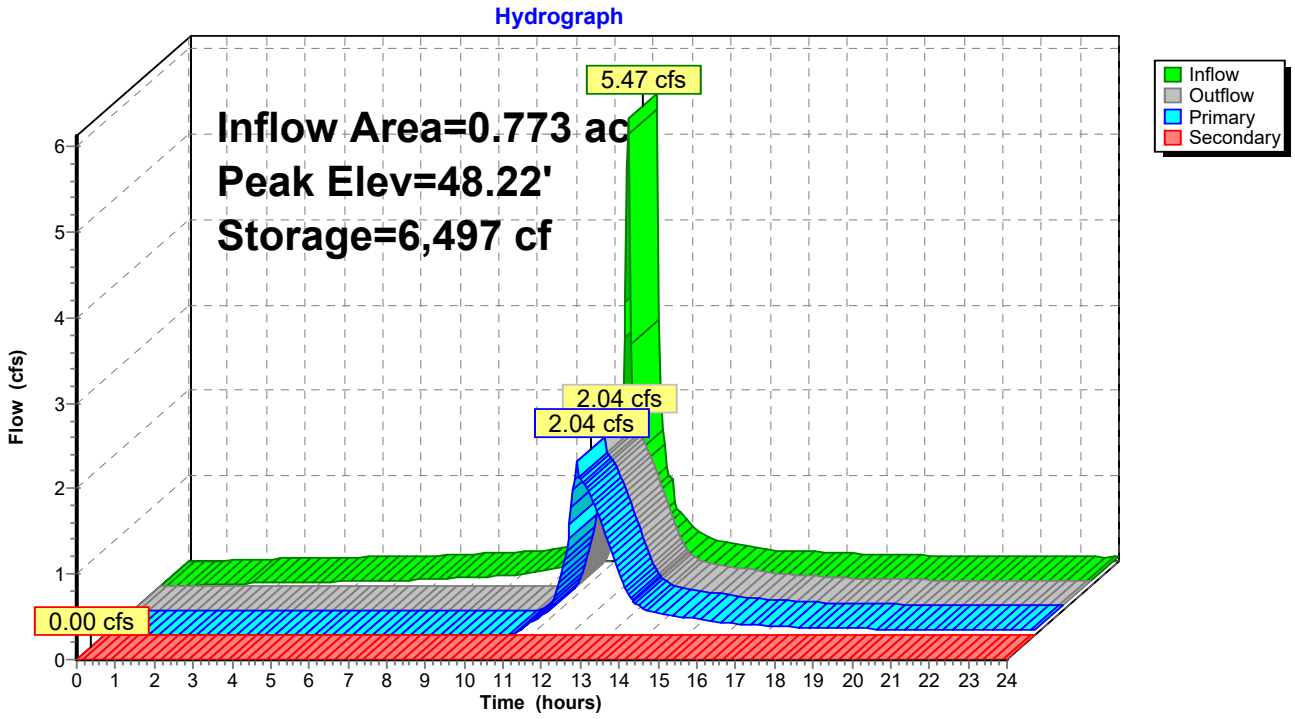
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	1,435	180.0	0.0	0	0	1,435
42.84	1,435	180.0	40.0	6	6	1,437
43.00	1,435	180.0	40.0	92	98	1,466
44.00	1,435	180.0	40.0	574	672	1,646
44.83	1,435	180.0	40.0	476	1,148	1,795
44.84	1,435	180.0	100.0	14	1,162	1,797
45.00	1,435	180.0	100.0	230	1,392	1,826
46.00	1,489	190.0	100.0	1,462	2,854	2,173
47.00	1,611	213.0	100.0	1,550	4,403	2,938
48.00	1,777	233.0	100.0	1,693	6,097	3,682
48.50	1,869	240.0	100.0	911	7,008	3,971

Device	Routing	Invert	Outlet Devices
#1	Primary	45.10'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 45.10' / 45.10' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#2	Secondary	48.50'	**16.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#3	Device 1	48.20'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.30'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.00 cfs @ 12.20 hrs HW=48.22' (Free Discharge)
└─**1=Culvert** (Passes 2.00 cfs of 13.10 cfs potential flow)
  ├─**3=Orifice/Grate** (Weir Controls 0.15 cfs @ 0.47 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 1.22 cfs @ 6.22 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.63 cfs @ 7.20 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 43P: Basin 206



Summary for Pond 44P: Basin 112

[92] Warning: Device #2 is above defined storage

Inflow Area = 1.397 ac, 81.07% Impervious, Inflow Depth > 5.70" for Adj - 25 Yr event
Inflow = 9.75 cfs @ 12.09 hrs, Volume= 0.663 af
Outflow = 6.17 cfs @ 12.17 hrs, Volume= 0.537 af, Atten= 37%, Lag= 4.7 min
Primary = 6.17 cfs @ 12.17 hrs, Volume= 0.537 af
Routed to Pond 39P : Basin 104
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 39P : Basin 104

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 48.15' @ 12.17 hrs Surf.Area= 4,193 sf Storage= 13,277 cf

Plug-Flow detention time= 195.4 min calculated for 0.537 af (81% of inflow)
Center-of-Mass det. time= 118.2 min (867.7 - 749.6)

Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	14,810 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

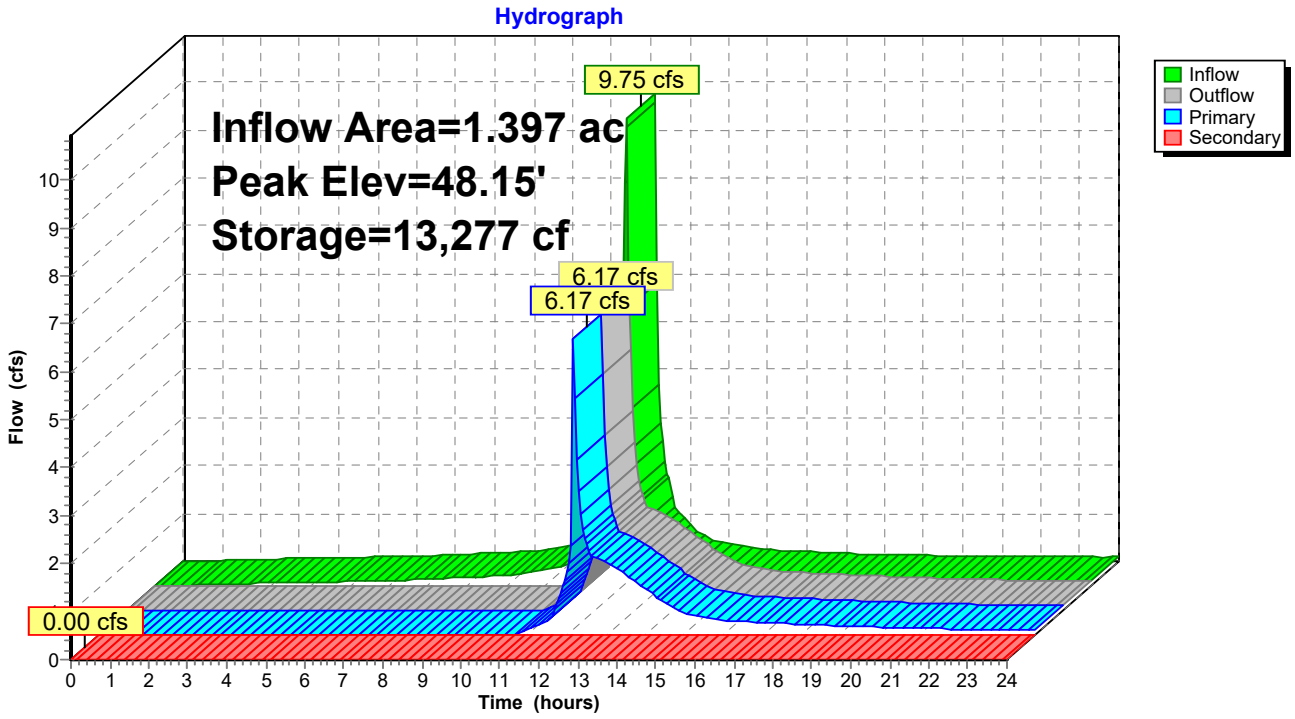
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	2,461	213.0	0.0	0	0	2,461
42.84	2,461	213.0	40.0	10	10	2,463
43.00	2,461	213.0	40.0	158	167	2,497
44.00	2,461	213.0	40.0	984	1,152	2,710
44.83	2,461	213.0	40.0	817	1,969	2,887
44.84	2,461	213.0	100.0	25	1,993	2,889
45.00	2,568	216.0	100.0	402	2,396	2,997
46.00	3,287	251.0	100.0	2,920	5,316	4,319
47.00	3,676	265.7	100.0	3,480	8,796	4,976
48.00	4,082	276.0	100.0	3,877	12,673	5,496
48.50	4,468	290.0	100.0	2,137	14,810	6,142

Device	Routing	Invert	Outlet Devices
#1	Primary	45.10'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 45.10' / 45.10' S= 0.0000 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf
#2	Secondary	48.50'	**20.0' long + 0.3 '/' SideZ x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#3	Device 1	47.95'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.40'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.60 cfs @ 12.17 hrs HW=48.13' (Free Discharge)
└─**1=Culvert** (Passes 5.60 cfs of 12.83 cfs potential flow)
  ├─**3=Orifice/Grate** (Weir Controls 3.84 cfs @ 1.37 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 1.15 cfs @ 5.85 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.61 cfs @ 7.04 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 44P: Basin 112

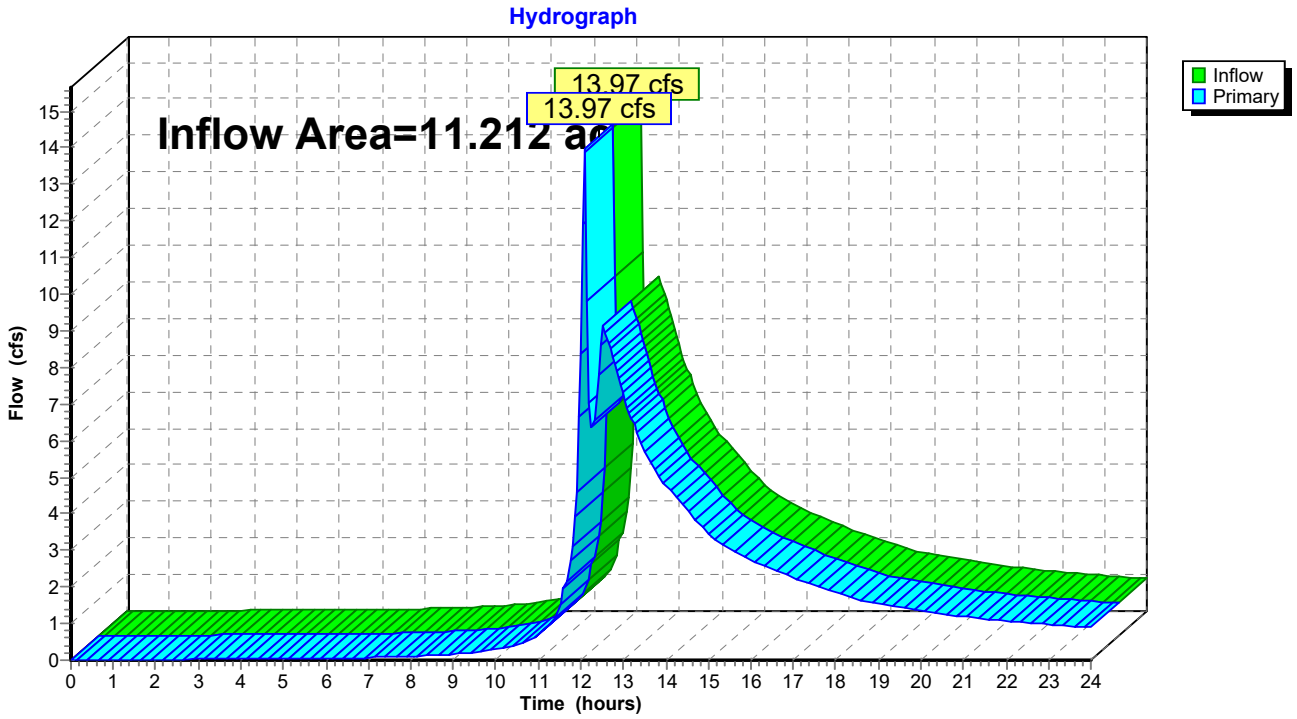


Summary for Link 2A: POA 1 (Adj)

Inflow Area = 11.212 ac, 65.35% Impervious, Inflow Depth > 3.26" for Adj - 25 Yr event
Inflow = 13.97 cfs @ 12.09 hrs, Volume= 3.045 af
Primary = 13.97 cfs @ 12.09 hrs, Volume= 3.045 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 2A: POA 1 (Adj)



4.4 RUNOFF & HYDROGRAPH ANALYSIS: PROPOSED 100-YEAR ADJUSTED STORM EVENT

PREPARED: September 19, 2025
REVISED: December 15, 2025

300-356 ENTERPRISE AVE.
CITY OF TRENTON
BLOCK 23203, LOT 1
BLOCK 23102 LOTS 2 & 9
TOWNSHIP OF LAWRENCE
BLOCK 602, LOTS 1 & 2
MERCER COUNTY, NEW JERSEY

Summary for Subcatchment 1S: west Roof to Basin #104

[47] Hint: Peak is 5970% of capacity of segment #2
[47] Hint: Peak is 2772% of capacity of segment #3
[47] Hint: Peak is 1529% of capacity of segment #4
[47] Hint: Peak is 1051% of capacity of segment #5
[47] Hint: Peak is 580% of capacity of segment #6
[47] Hint: Peak is 319% of capacity of segment #7

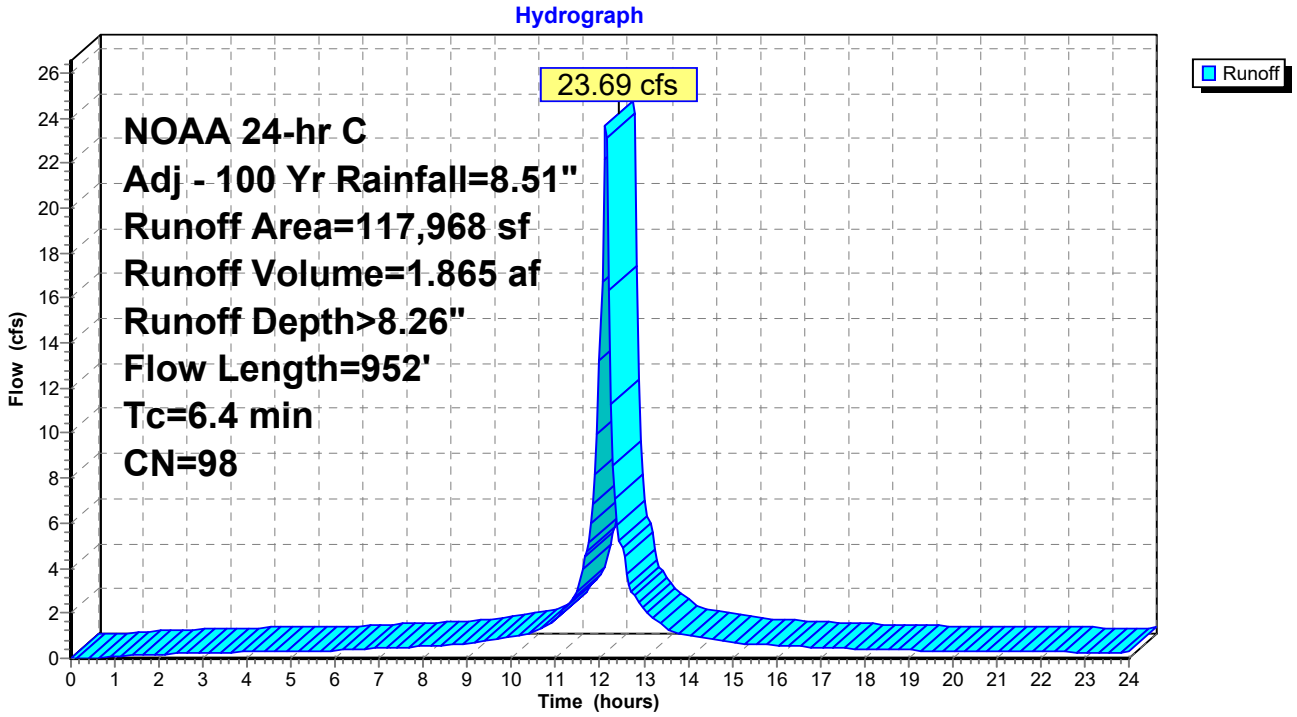
Runoff = 23.69 cfs @ 12.13 hrs, Volume= 1.865 af, Depth> 8.26"
Routed to Pond 39P : Basin 104

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 100 Yr Rainfall=8.51"

	Area (sf)	CN	Description
*	117,968	98	bldg
	117,968		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1					**Direct Entry, Tc Direct**
0.7	90	0.0050	2.02	0.40	**Pipe Channel, CMP_Round 6"** 6.0" Round Area= 0.2 sf Perim= 1.6' r= 0.13' n= 0.013 Corrugated PE, smooth interior
0.4	60	0.0050	2.45	0.85	**Pipe Channel, CMP_Round 8"** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.013 Corrugated PE, smooth interior
0.5	90	0.0050	2.84	1.55	**Pipe Channel, CMP_Round 10"** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.013 Corrugated PE, smooth interior
0.5	90	0.0040	2.87	2.25	**Pipe Channel, CMP_Round 12"** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.5	90	0.0040	3.33	4.09	**Pipe Channel, CMP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
1.1	275	0.0050	4.20	7.43	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.6	257	0.0050	6.67	47.16	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
6.4	952	Total			

Subcatchment 1S: west Roof to Basin #104



Summary for Subcatchment 9S: EAST TRUCK MVS

[49] Hint: Tc<2dt may require smaller dt
[47] Hint: Peak is 144% of capacity of segment #2

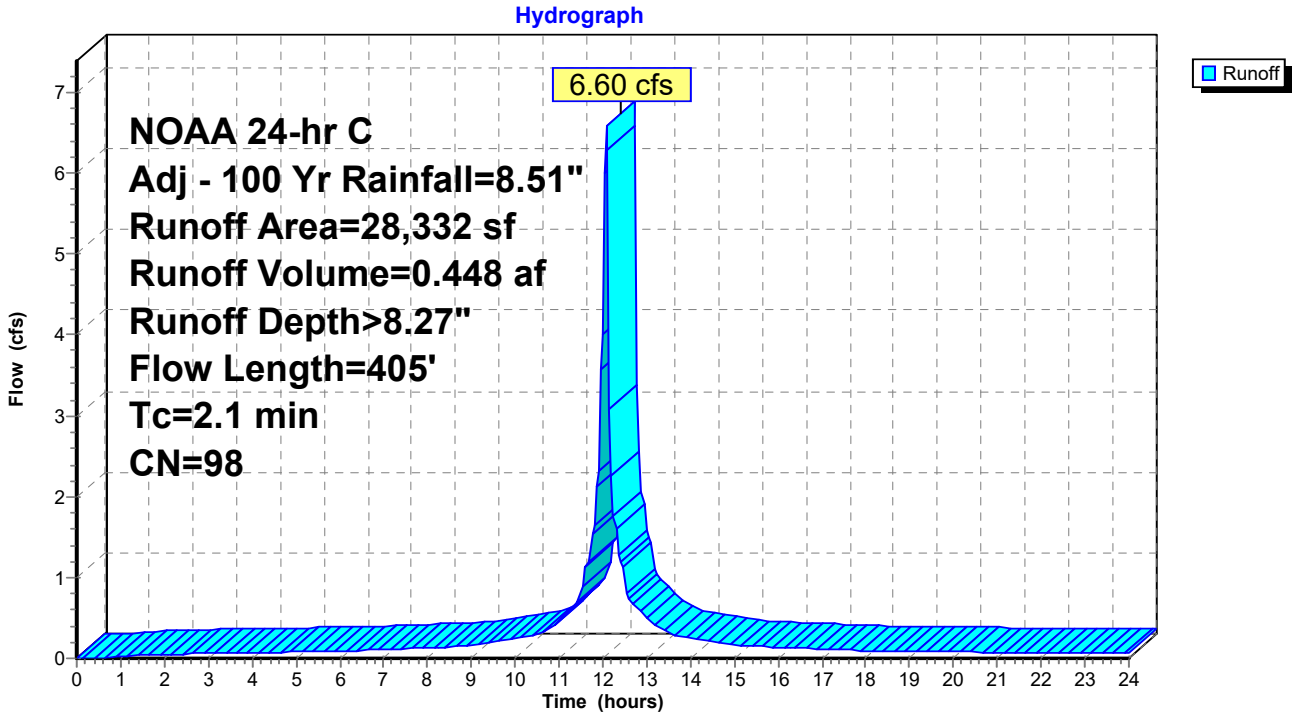
Runoff = 6.60 cfs @ 12.08 hrs, Volume= 0.448 af, Depth> 8.27"
Routed to Pond 43P : Basin 206

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 100 Yr Rainfall=8.51"

Area (sf)	CN	Description
28,332	98	Paved roads w/curbs & sewers, HSG D
28,332		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9					**Direct Entry, Tc Direct**
0.3	70	0.0050	3.72	4.57	**Pipe Channel, CMP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
0.2	56	0.0050	4.20	7.43	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.1	16	0.0050	4.20	7.43	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.5	163	0.0050	5.09	16.00	**Pipe Channel, CMP_Round 24"** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
0.1	100	0.0736	30.25	213.85	**Pipe Channel, RCP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.011 Concrete pipe, straight & clean
2.1	405	Total			

Subcatchment 9S: EAST TRUCK MVS



Summary for Subcatchment 10S: WEST CAR/TRUCK MVS

[49] Hint: Tc<2dt may require smaller dt
[47] Hint: Peak is 246% of capacity of segment #2
[47] Hint: Peak is 175% of capacity of segment #3
[47] Hint: Peak is 153% of capacity of segment #4

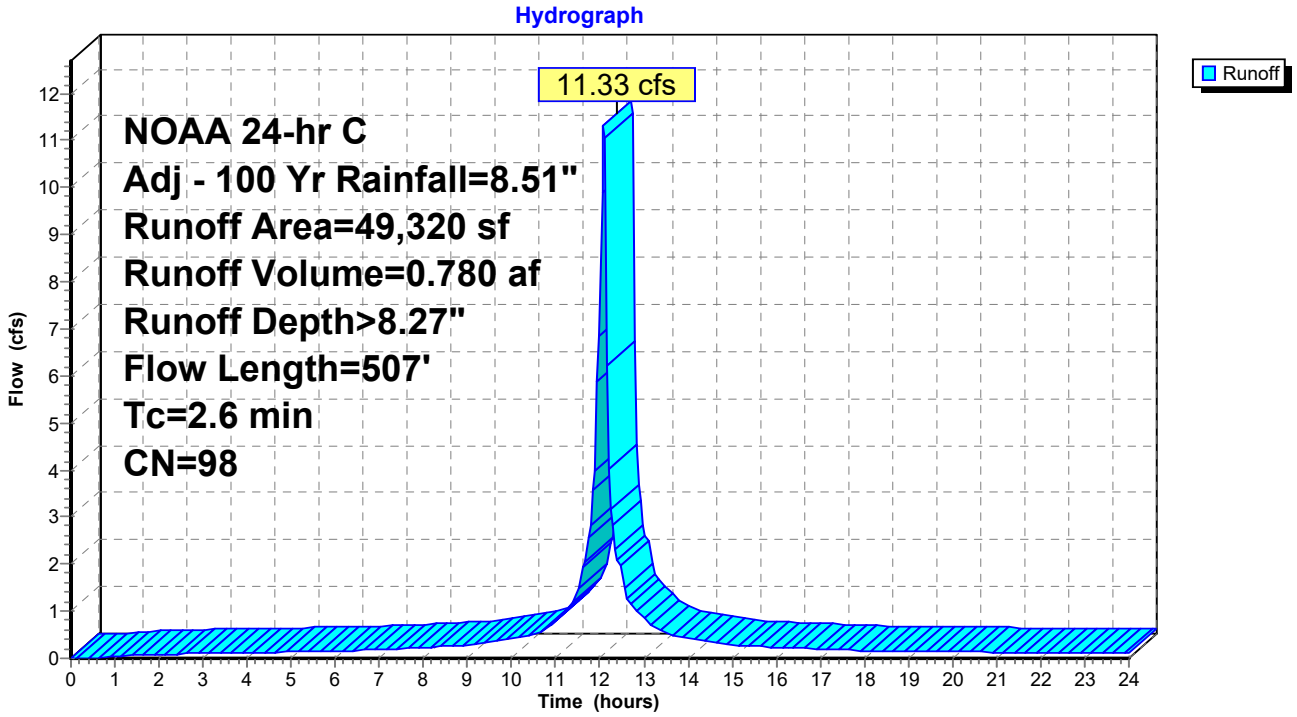
Runoff = 11.33 cfs @ 12.08 hrs, Volume= 0.780 af, Depth> 8.27"
Routed to Pond 44P : Basin 112

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 100 Yr Rainfall=8.51"

Area (sf)	CN	Description
49,320	98	Paved roads w/curbs & sewers, HSG D
49,320		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9					**Direct Entry, Tc Direct**
0.4	89	0.0051	3.76	4.61	**Pipe Channel, CMP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
0.6	131	0.0038	3.66	6.48	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.1	30	0.0050	4.20	7.43	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.6	257	0.0050	6.67	47.16	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
2.6	507	Total			

Subcatchment 10S: WEST CAR/TRUCK MVS



Summary for Subcatchment 22S: east Roof to Basin #203

[47] Hint: Peak is 5285% of capacity of segment #2
[47] Hint: Peak is 2454% of capacity of segment #3
[47] Hint: Peak is 1353% of capacity of segment #4
[47] Hint: Peak is 832% of capacity of segment #5
[47] Hint: Peak is 459% of capacity of segment #6
[47] Hint: Peak is 459% of capacity of segment #7
[47] Hint: Peak is 131% of capacity of segment #8

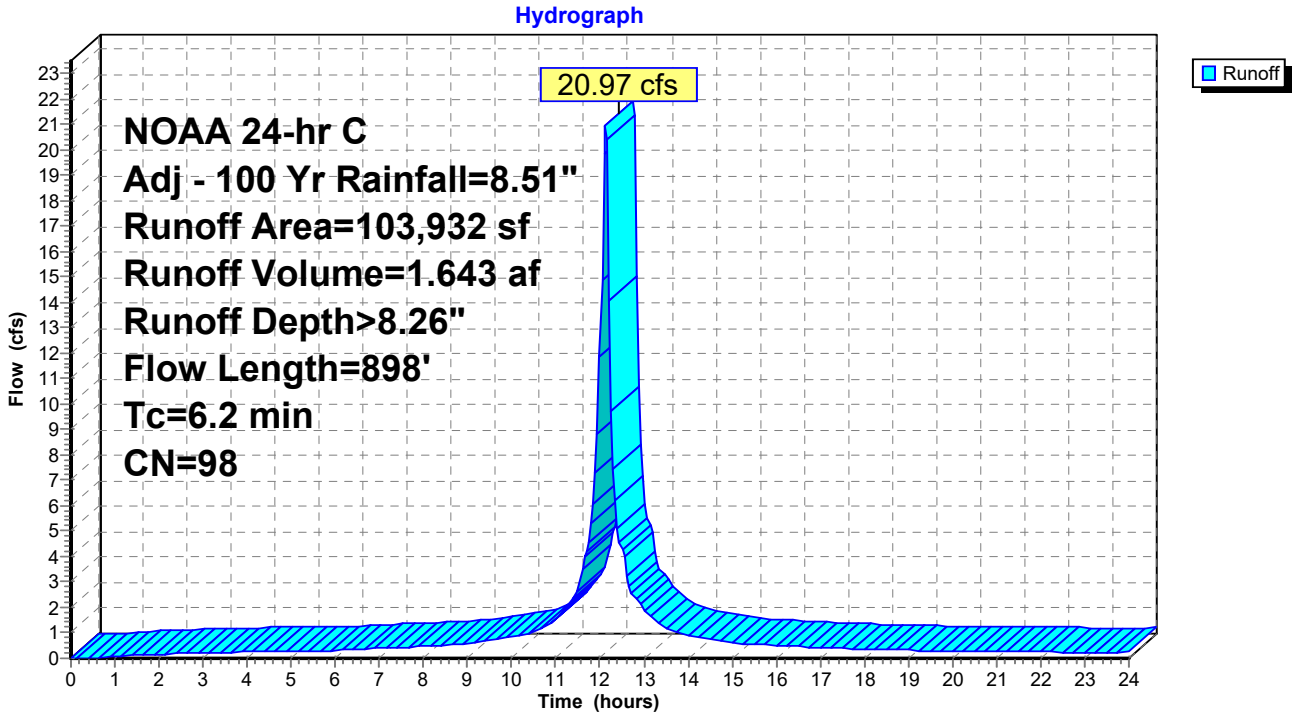
Runoff = 20.97 cfs @ 12.13 hrs, Volume= 1.643 af, Depth> 8.26"
Routed to Pond 41P : Basin 203

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 100 Yr Rainfall=8.51"

	Area (sf)	CN	Description
*	103,932	98	bldg
	103,932		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1					**Direct Entry, Tc Direct**
0.7	90	0.0050	2.02	0.40	**Pipe Channel, CMP_Round 6"** 6.0" Round Area= 0.2 sf Perim= 1.6' r= 0.13' n= 0.013 Corrugated PE, smooth interior
0.4	60	0.0050	2.45	0.85	**Pipe Channel, CMP_Round 8"** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.013 Corrugated PE, smooth interior
0.5	90	0.0050	2.84	1.55	**Pipe Channel, CMP_Round 10"** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.013 Corrugated PE, smooth interior
0.5	90	0.0050	3.21	2.52	**Pipe Channel, CMP_Round 12"** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.4	90	0.0050	3.72	4.57	**Pipe Channel, CMP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
1.0	215	0.0050	3.72	4.57	**Pipe Channel, CMP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
0.5	163	0.0050	5.09	16.00	**Pipe Channel, CMP_Round 24"** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
0.1	100	0.0736	25.60	180.95	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
6.2	898	Total			

Subcatchment 22S: east Roof to Basin #203



Summary for Subcatchment 27S: PATH

[49] Hint: Tc<2dt may require smaller dt

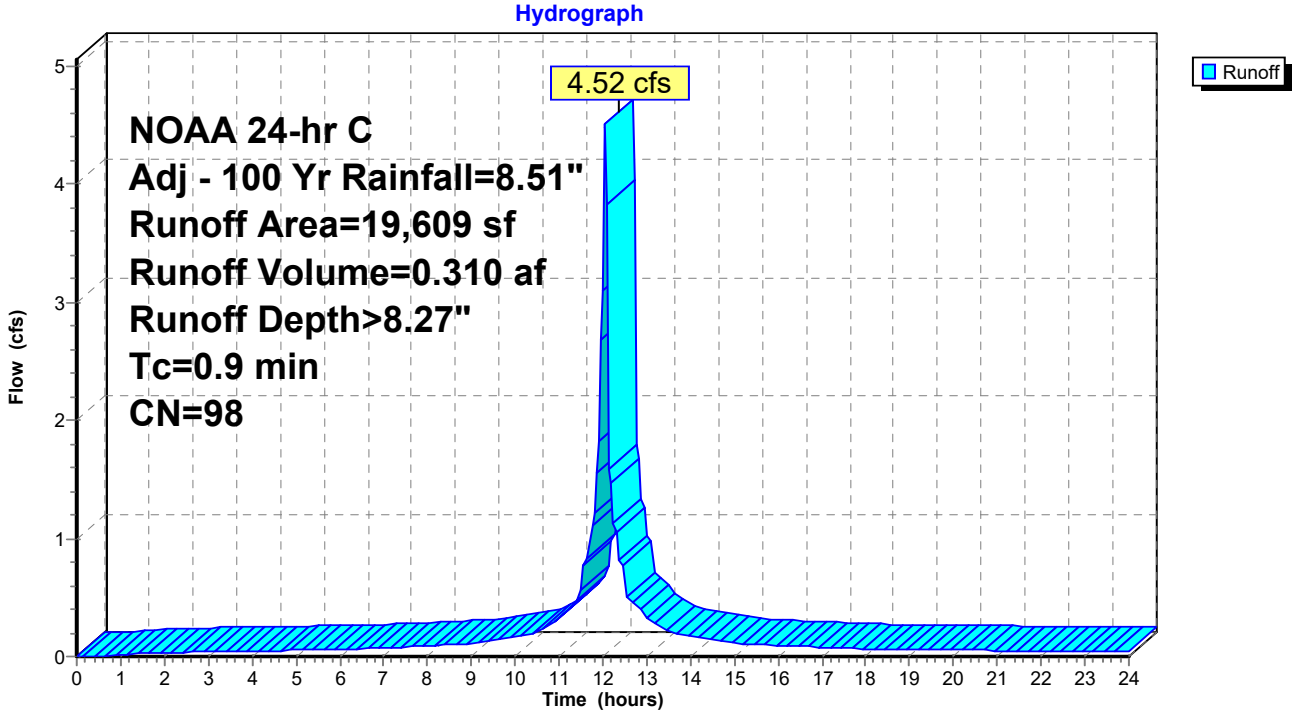
Runoff = 4.52 cfs @ 12.06 hrs, Volume= 0.310 af, Depth> 8.27"
Routed to Link 2A : POA 1 (Adj)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 100 Yr Rainfall=8.51"

Area (sf)	CN	Description
19,609	98	Paved roads w/curbs & sewers, HSG D
19,609		100.00% Impervious Area

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

Subcatchment 27S: PATH



Summary for Subcatchment 28S: Rest of the grass

[49] Hint: Tc<2dt may require smaller dt

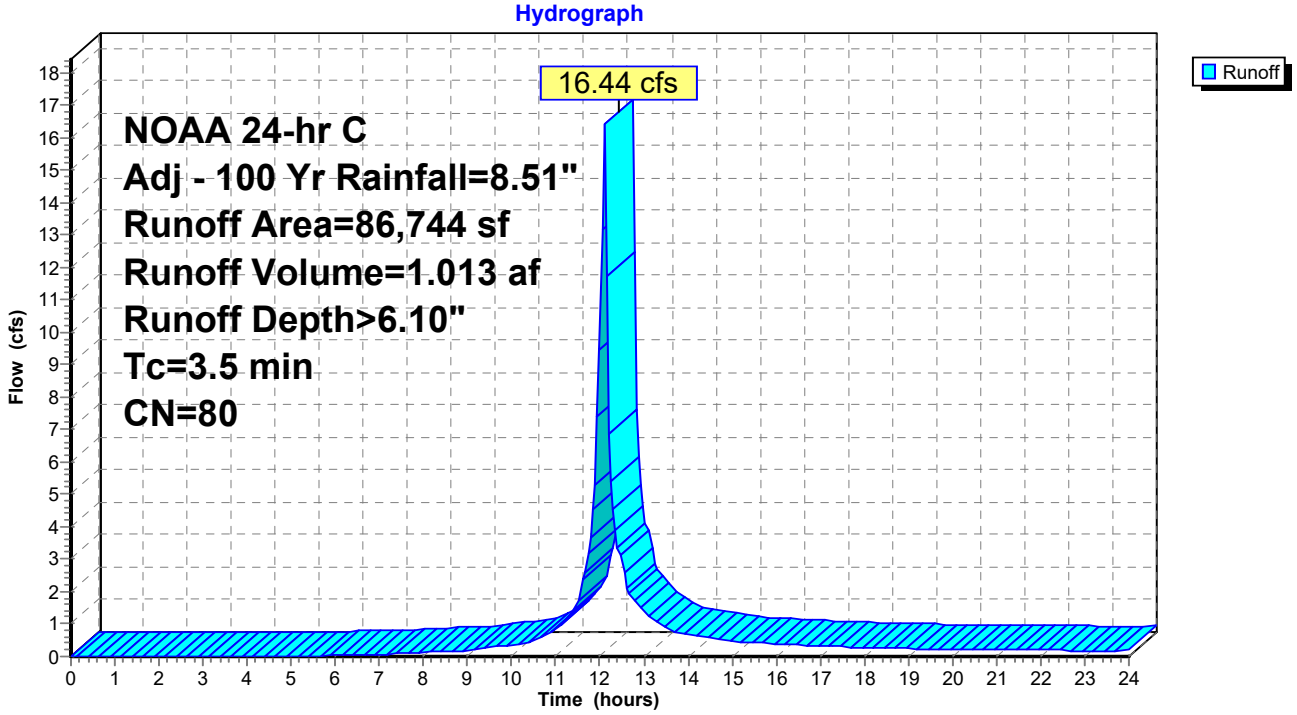
Runoff = 16.44 cfs @ 12.10 hrs, Volume= 1.013 af, Depth> 6.10"
Routed to Link 2A : POA 1 (Adj)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 100 Yr Rainfall=8.51"

Area (sf)	CN	Description
86,744	80	>75% Grass cover, Good, HSG D
86,744		100.00% Pervious Area

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

Subcatchment 28S: Rest of the grass



Summary for Subcatchment 29S: Grass in basin and surrounding grass

[49] Hint: Tc<2dt may require smaller dt

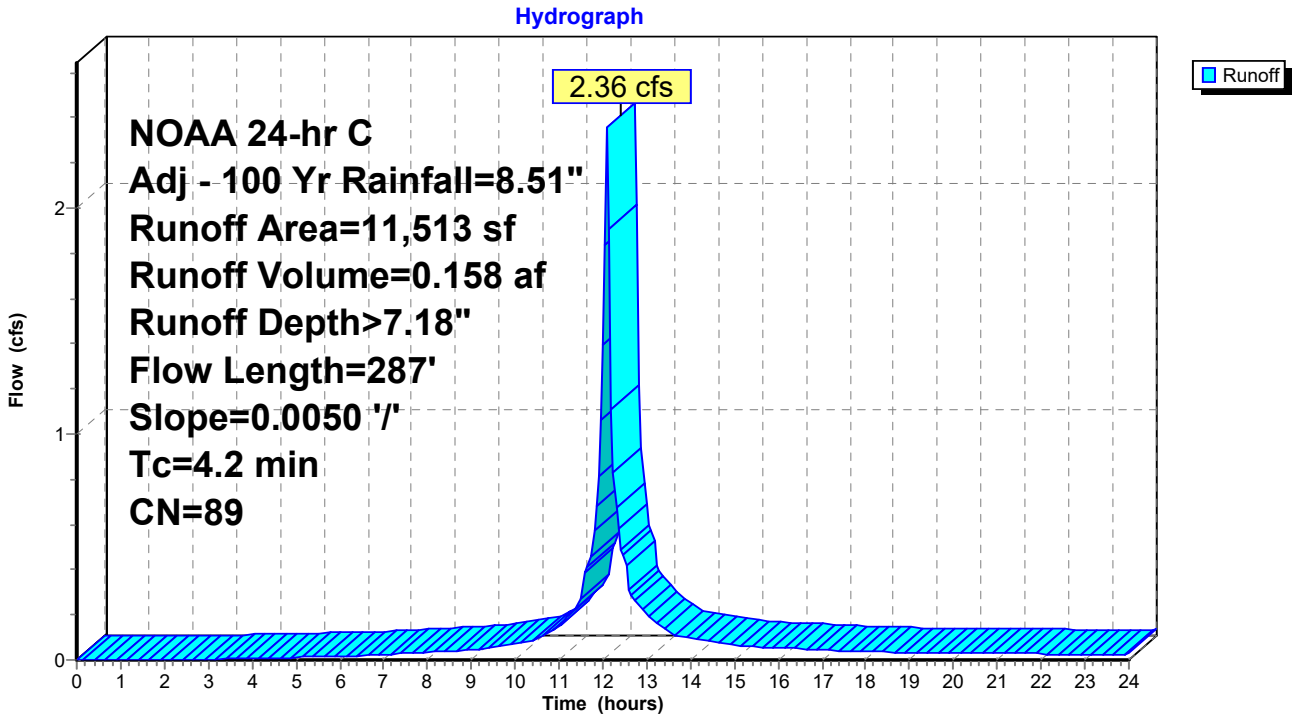
Runoff = 2.36 cfs @ 12.10 hrs, Volume= 0.158 af, Depth> 7.18"
Routed to Pond 44P : Basin 112

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 100 Yr Rainfall=8.51"

Area (sf)	CN	Description
11,513	89	<50% Grass cover, Poor, HSG D
11,513		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5					**Direct Entry, Tc Direct**
0.1	30	0.0050	4.20	7.43	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.6	257	0.0050	6.67	47.16	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
4.2	287	Total			

Subcatchment 29S: Grass in basin and surrounding grass



Summary for Subcatchment 30S: Grass in basin

[49] Hint: Tc<2dt may require smaller dt

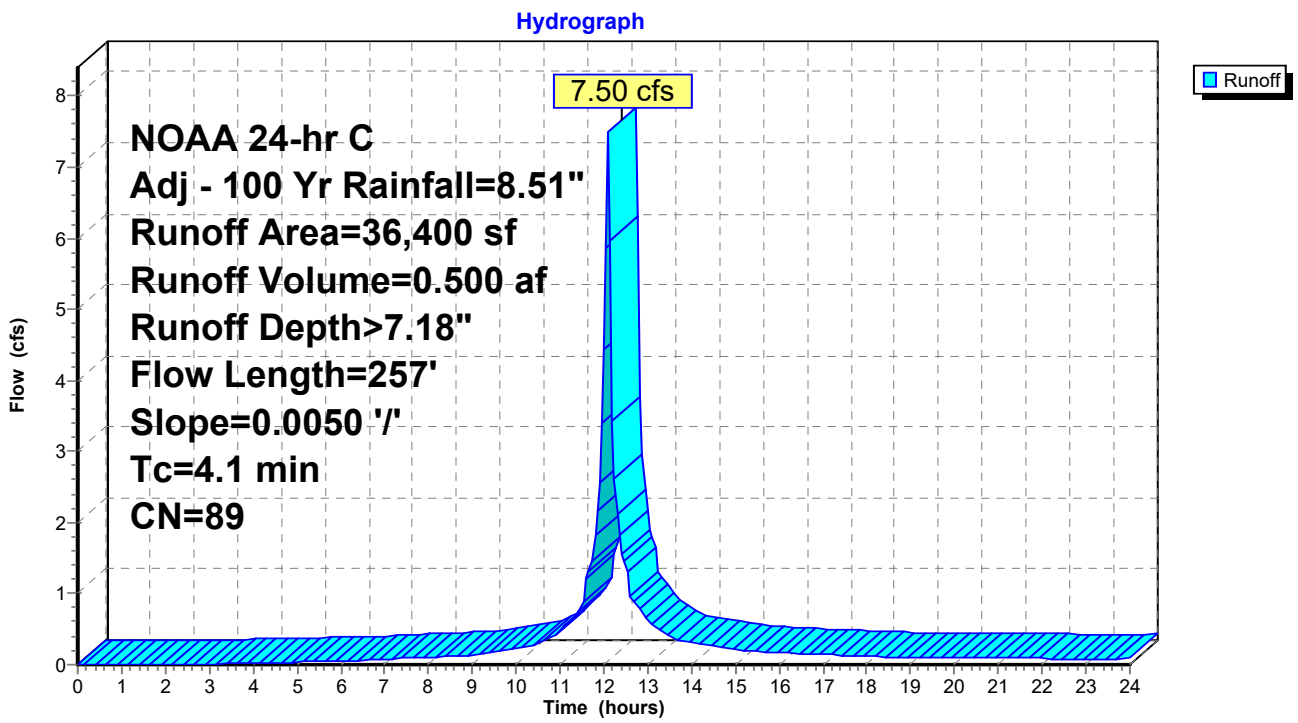
Runoff = 7.50 cfs @ 12.10 hrs, Volume= 0.500 af, Depth> 7.18"
Routed to Pond 39P : Basin 104

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 100 Yr Rainfall=8.51"

Area (sf)	CN	Description
36,400	89	<50% Grass cover, Poor, HSG D
36,400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5					**Direct Entry, Tc Direct**
0.6	257	0.0050	6.67	47.16	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
4.1	257	Total			

Subcatchment 30S: Grass in basin



Summary for Subcatchment 31S: Grass in basin

[49] Hint: Tc<2dt may require smaller dt

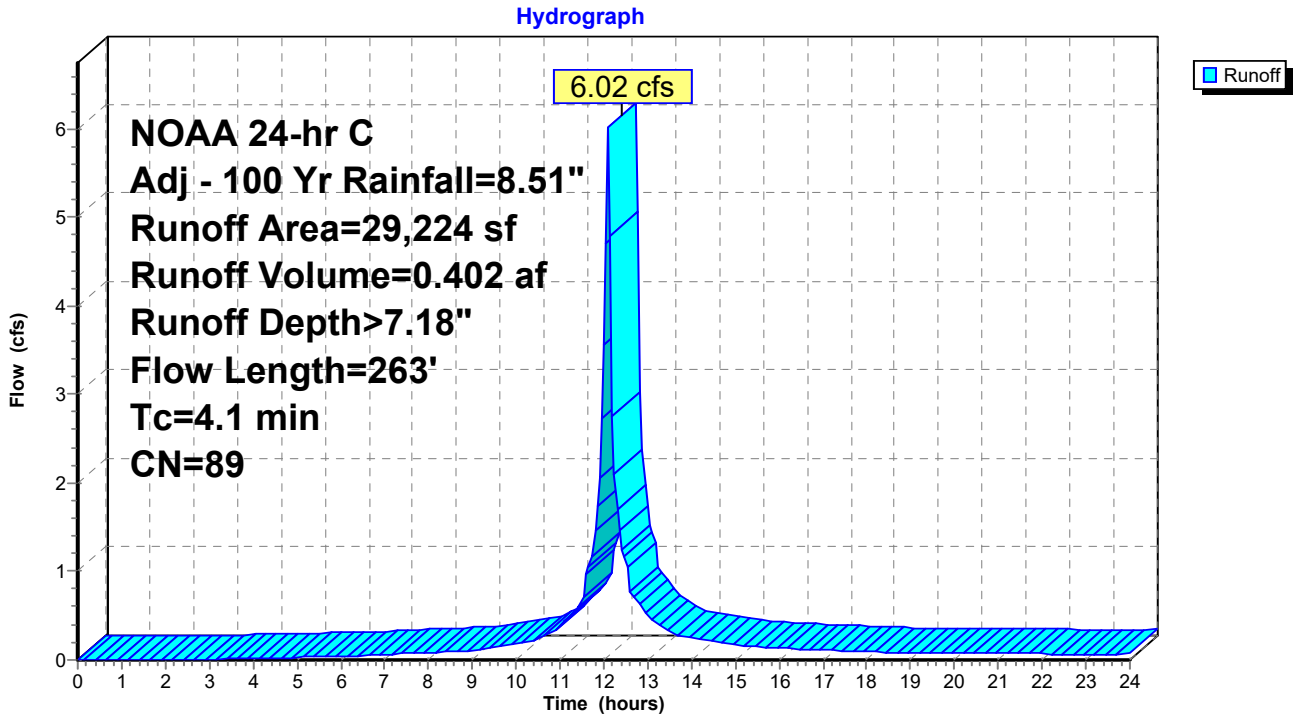
Runoff = 6.02 cfs @ 12.10 hrs, Volume= 0.402 af, Depth> 7.18"
Routed to Pond 41P : Basin 203

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 100 Yr Rainfall=8.51"

Area (sf)	CN	Description
29,224	89	<50% Grass cover, Poor, HSG D
29,224		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5					**Direct Entry, Tc Direct**
0.5	163	0.0050	5.09	16.00	**Pipe Channel, CMP_Round 24"** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
0.1	100	0.0736	25.60	180.95	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
4.1	263	Total			

Subcatchment 31S: Grass in basin



Summary for Subcatchment 39S: Grass in basin

[49] Hint: Tc<2dt may require smaller dt

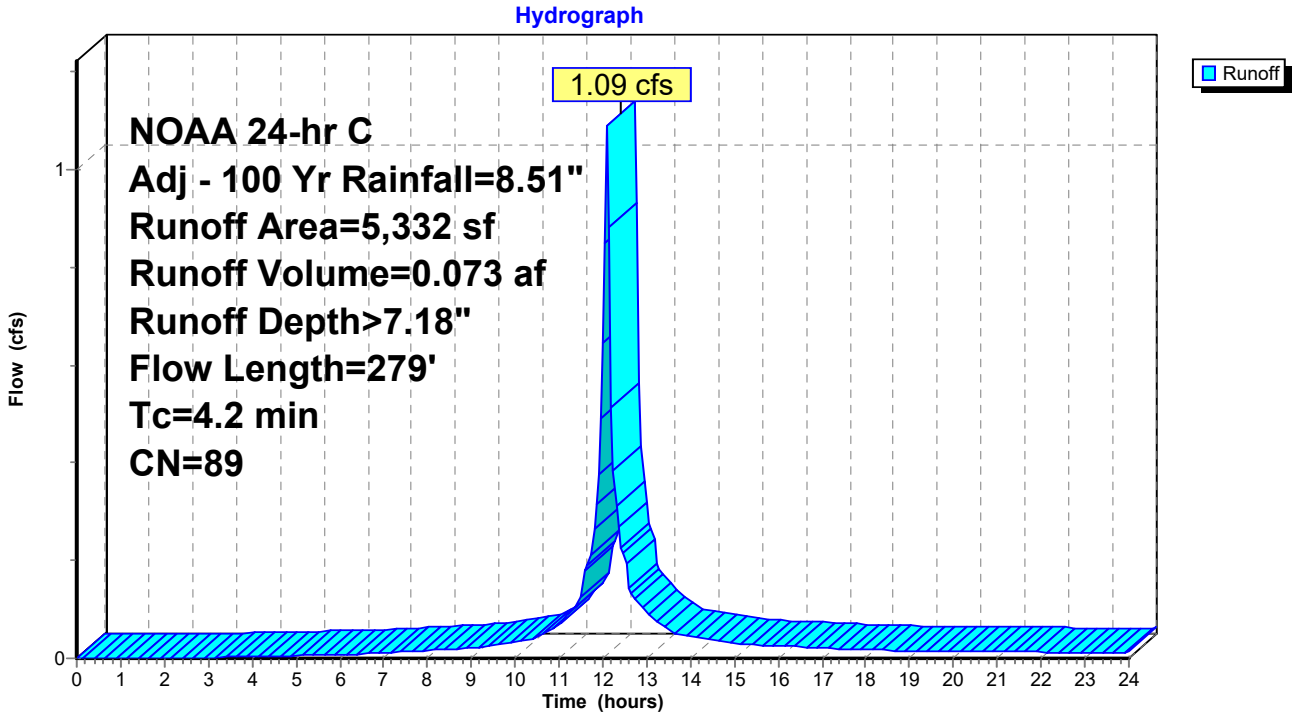
Runoff = 1.09 cfs @ 12.10 hrs, Volume= 0.073 af, Depth> 7.18"
Routed to Pond 43P : Basin 206

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Adj - 100 Yr Rainfall=8.51"

Area (sf)	CN	Description
5,332	89	<50% Grass cover, Poor, HSG D
5,332		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5					**Direct Entry, Tc Direct**
0.1	16	0.0050	4.20	7.43	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.5	163	0.0050	5.09	16.00	**Pipe Channel, CMP_Round 24"** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
0.1	100	0.0736	25.60	180.95	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
4.2	279	Total			

Subcatchment 39S: Grass in basin



Summary for Pond 39P: Basin 104

[92] Warning: Device #2 is above defined storage
[81] Warning: Exceeded Pond 44P by 0.42' @ 23.95 hrs

Inflow Area = 4.940 ac, 77.74% Impervious, Inflow Depth > 7.71" for Adj - 100 Yr event
Inflow = 42.71 cfs @ 12.12 hrs, Volume= 3.173 af
Outflow = 13.93 cfs @ 12.32 hrs, Volume= 2.098 af, Atten= 67%, Lag= 12.1 min
Primary = 13.93 cfs @ 12.32 hrs, Volume= 2.098 af
Routed to Link 2A : POA 1 (Adj)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 2A : POA 1 (Adj)

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 47.43' @ 12.32 hrs Surf.Area= 21,564 sf Storage= 65,808 cf

Plug-Flow detention time= 216.8 min calculated for 2.094 af (66% of inflow)
Center-of-Mass det. time= 112.3 min (885.1 - 772.8)

Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	87,112 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

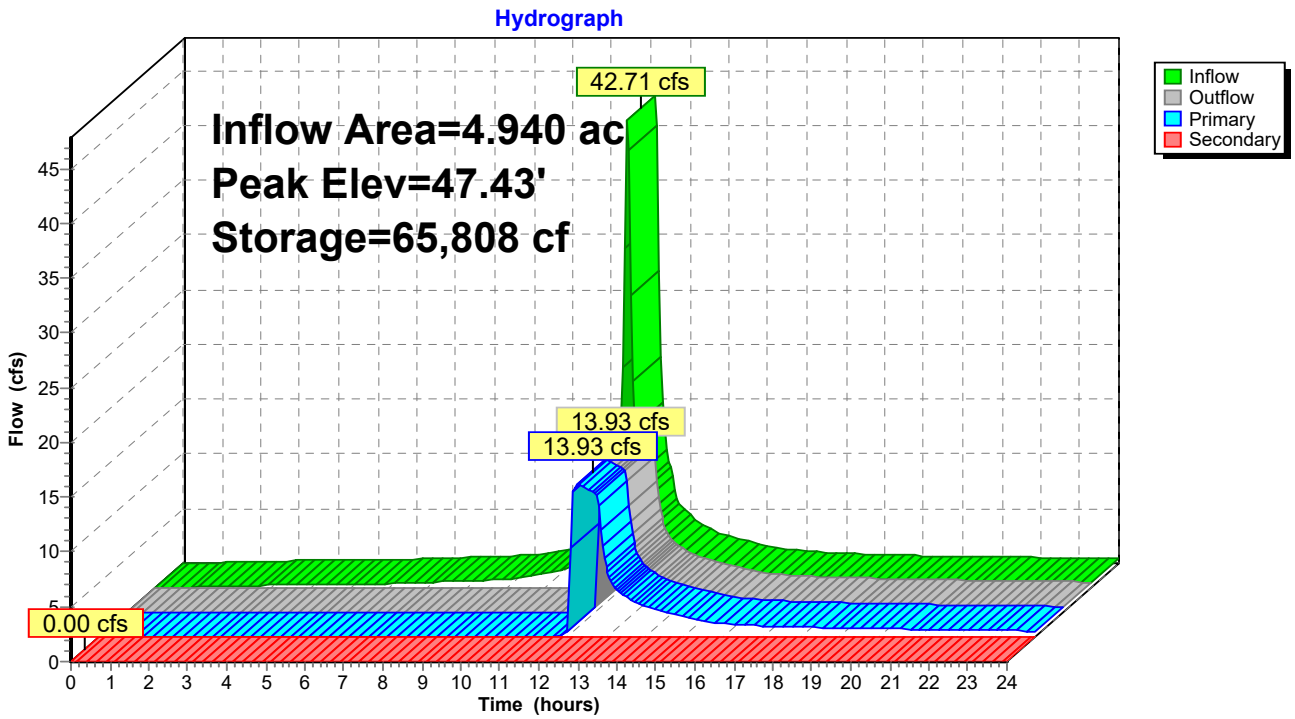
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	17,239	897.0	0.0	0	0	17,239
42.84	17,239	897.0	40.0	69	69	17,248
43.00	17,239	897.0	40.0	1,103	1,172	17,391
44.00	17,239	897.0	40.0	6,896	8,068	18,288
44.83	17,239	897.0	40.0	5,723	13,791	19,033
44.84	17,239	897.0	100.0	172	13,964	19,042
45.00	17,690	902.0	100.0	2,794	16,758	19,772
46.00	20,420	926.0	100.0	19,039	35,797	23,381
47.00	21,216	939.0	100.0	20,817	56,613	25,524
48.00	22,029	952.0	100.0	21,621	78,234	27,697
48.40	22,357	957.0	100.0	8,877	87,112	28,547

Device	Routing	Invert	Outlet Devices
#1	Primary	44.00'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 44.00' / 44.00' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#2	Secondary	48.40'	**50.0' long x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#3	Device 1	46.65'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.40'	**18.0" W x 3.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=13.92 cfs @ 12.32 hrs HW=47.43' (Free Discharge)
└─**1=Culvert** (Inlet Controls 13.92 cfs @ 7.88 fps)
  ├─**3=Orifice/Grate** (Passes < 35.81 cfs potential flow)
  ├─**4=Orifice/Grate** (Passes < 1.71 cfs potential flow)
  └─**5=Orifice/Grate** (Passes < 0.50 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 39P: Basin 104



Summary for Pond 41P: Basin 203

[92] Warning: Device #2 is above defined storage
[81] Warning: Exceeded Pond 43P by 1.20' @ 14.20 hrs

Inflow Area = 3.830 ac, 79.29% Impervious, Inflow Depth > 7.83" for Adj - 100 Yr event
Inflow = 34.27 cfs @ 12.11 hrs, Volume= 2.500 af
Outflow = 11.00 cfs @ 12.32 hrs, Volume= 1.750 af, Atten= 68%, Lag= 12.1 min
Primary = 11.00 cfs @ 12.32 hrs, Volume= 1.750 af
Routed to Link 2A : POA 1 (Adj)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 2A : POA 1 (Adj)

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 48.00' @ 12.32 hrs Surf.Area= 17,601 sf Storage= 57,107 cf

Plug-Flow detention time= 257.5 min calculated for 1.746 af (70% of inflow)
Center-of-Mass det. time= 162.2 min (923.0 - 760.8)

Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	64,356 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

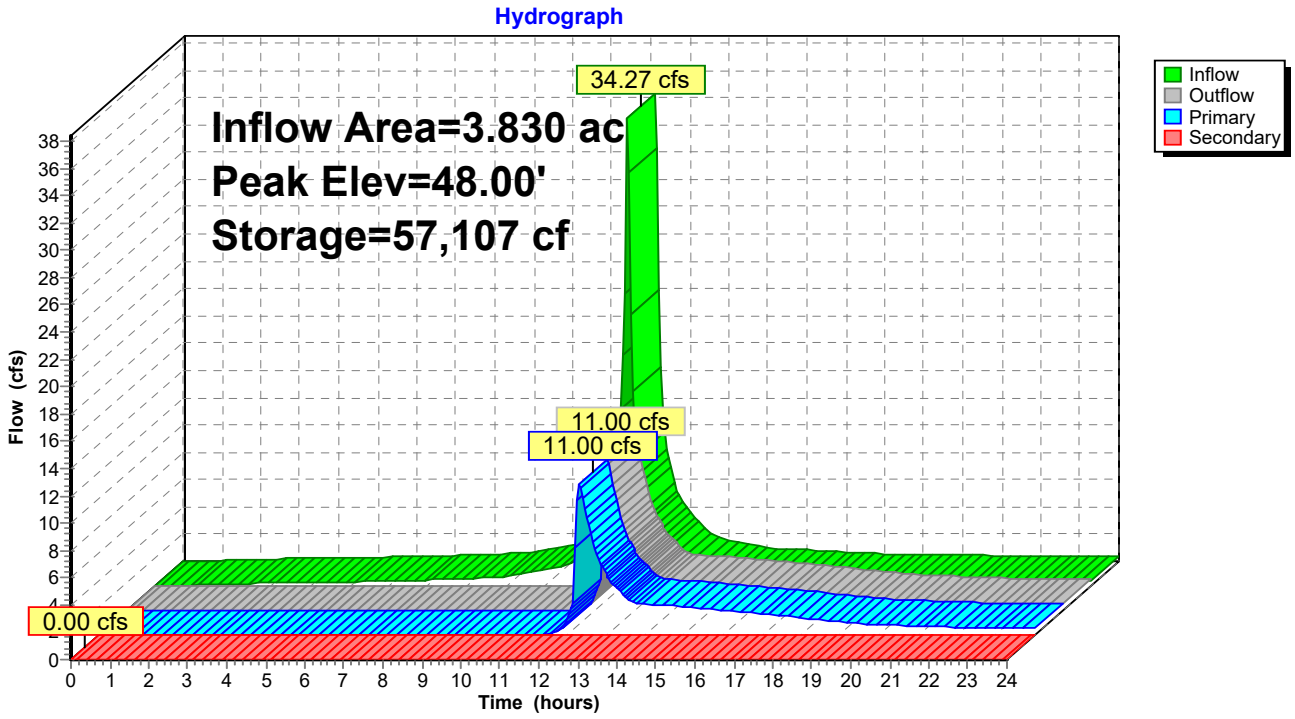
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	11,929	737.0	0.0	0	0	11,929
42.84	11,929	737.0	40.0	48	48	11,936
43.00	11,929	737.0	40.0	763	811	12,054
44.00	11,929	737.0	40.0	4,772	5,583	12,791
44.83	11,929	737.0	40.0	3,960	9,543	13,403
44.84	11,929	737.0	100.0	119	9,662	13,410
45.00	12,301	741.0	100.0	1,938	11,601	13,895
46.00	14,572	762.0	100.0	13,420	25,021	16,517
47.00	16,075	784.0	100.0	15,317	40,339	19,332
48.00	17,607	806.0	100.0	16,835	57,174	22,227
48.40	18,306	815.0	100.0	7,182	64,356	23,432

Device	Routing	Invert	Outlet Devices
#1	Primary	39.00'	**21.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 39.00' / 39.00' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 2.41 sf
#2	Secondary	48.40'	**50.0' long x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#3	Device 1	47.70'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.30'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=10.86 cfs @ 12.32 hrs HW=47.99' (Free Discharge)
└─**1=Culvert** (Passes 10.86 cfs of 33.00 cfs potential flow)
  ├─**3=Orifice/Grate** (Weir Controls 8.30 cfs @ 1.77 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 1.96 cfs @ 5.61 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.60 cfs @ 6.82 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 41P: Basin 203



Summary for Pond 43P: Basin 206

[92] Warning: Device #2 is above defined storage
[88] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 0.773 ac, 84.16% Impervious, Inflow Depth > 8.10" for Adj - 100 Yr event
Inflow = 7.65 cfs @ 12.08 hrs, Volume= 0.521 af
Outflow = 7.94 cfs @ 12.11 hrs, Volume= 0.456 af, Atten= 0%, Lag= 1.7 min
Primary = 7.94 cfs @ 12.11 hrs, Volume= 0.456 af
Routed to Pond 41P : Basin 203
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 41P : Basin 203

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 48.44' @ 12.11 hrs Surf.Area= 1,858 sf Storage= 6,896 cf

Plug-Flow detention time= 137.2 min calculated for 0.456 af (87% of inflow)
Center-of-Mass det. time= 76.2 min (819.1 - 742.9)

Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	7,008 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

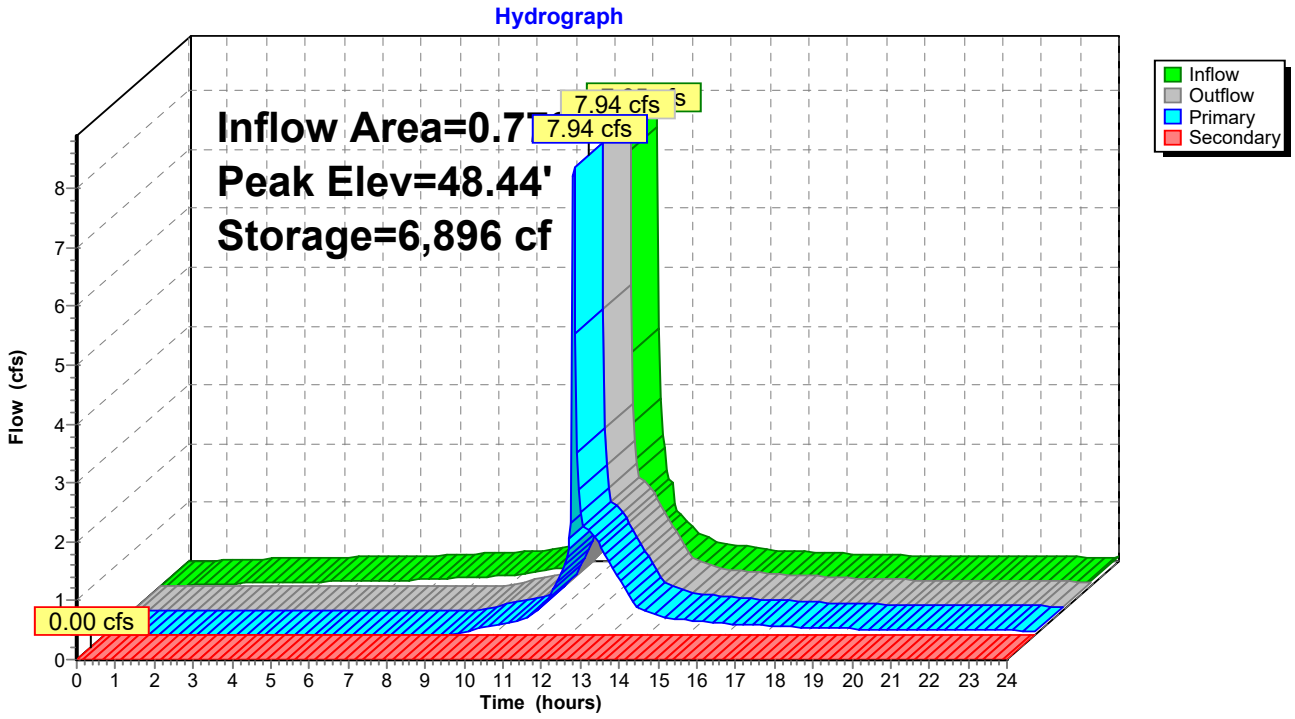
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	1,435	180.0	0.0	0	0	1,435
42.84	1,435	180.0	40.0	6	6	1,437
43.00	1,435	180.0	40.0	92	98	1,466
44.00	1,435	180.0	40.0	574	672	1,646
44.83	1,435	180.0	40.0	476	1,148	1,795
44.84	1,435	180.0	100.0	14	1,162	1,797
45.00	1,435	180.0	100.0	230	1,392	1,826
46.00	1,489	190.0	100.0	1,462	2,854	2,173
47.00	1,611	213.0	100.0	1,550	4,403	2,938
48.00	1,777	233.0	100.0	1,693	6,097	3,682
48.50	1,869	240.0	100.0	911	7,008	3,971

Device	Routing	Invert	Outlet Devices
#1	Primary	45.10'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 45.10' / 45.10' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#2	Secondary	48.50'	**16.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#3	Device 1	48.20'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.30'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=7.22 cfs @ 12.11 hrs HW=48.42' (Free Discharge)
└─**1=Culvert** (Passes 7.22 cfs of 13.63 cfs potential flow)
  ├─**3=Orifice/Grate** (Weir Controls 5.28 cfs @ 1.52 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 1.29 cfs @ 6.58 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.66 cfs @ 7.51 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 43P: Basin 206



Summary for Pond 44P: Basin 112

[92] Warning: Device #2 is above defined storage

Inflow Area = 1.397 ac, 81.07% Impervious, Inflow Depth > 8.06" for Adj - 100 Yr event
Inflow = 13.64 cfs @ 12.09 hrs, Volume= 0.938 af
Outflow = 12.39 cfs @ 12.11 hrs, Volume= 0.808 af, Atten= 9%, Lag= 1.5 min
Primary = 12.39 cfs @ 12.11 hrs, Volume= 0.808 af
Routed to Pond 39P : Basin 104
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 39P : Basin 104

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 48.30' @ 12.11 hrs Surf.Area= 4,311 sf Storage= 13,929 cf

Plug-Flow detention time= 164.0 min calculated for 0.806 af (86% of inflow)
Center-of-Mass det. time= 99.8 min (844.2 - 744.4)

Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	14,810 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

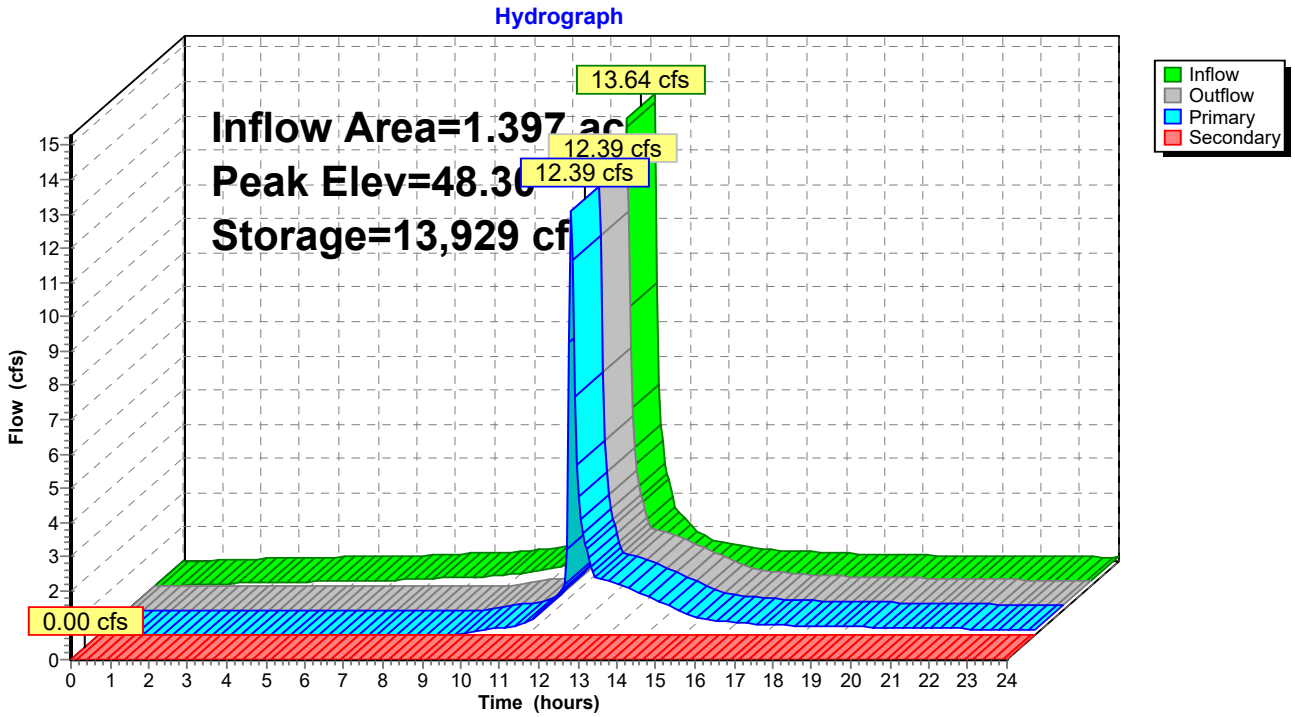
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	2,461	213.0	0.0	0	0	2,461
42.84	2,461	213.0	40.0	10	10	2,463
43.00	2,461	213.0	40.0	158	167	2,497
44.00	2,461	213.0	40.0	984	1,152	2,710
44.83	2,461	213.0	40.0	817	1,969	2,887
44.84	2,461	213.0	100.0	25	1,993	2,889
45.00	2,568	216.0	100.0	402	2,396	2,997
46.00	3,287	251.0	100.0	2,920	5,316	4,319
47.00	3,676	265.7	100.0	3,480	8,796	4,976
48.00	4,082	276.0	100.0	3,877	12,673	5,496
48.50	4,468	290.0	100.0	2,137	14,810	6,142

Device	Routing	Invert	Outlet Devices
#1	Primary	45.10'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 45.10' / 45.10' S= 0.0000 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf
#2	Secondary	48.50'	**20.0' long + 0.3 '/' SideZ x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#3	Device 1	47.95'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.40'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=12.12 cfs @ 12.11 hrs HW=48.29' (Free Discharge)
└─**1=Culvert** (Passes 12.12 cfs of 13.29 cfs potential flow)
  ├─**3=Orifice/Grate** (Weir Controls 10.27 cfs @ 1.90 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 1.21 cfs @ 6.16 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.64 cfs @ 7.30 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 44P: Basin 112

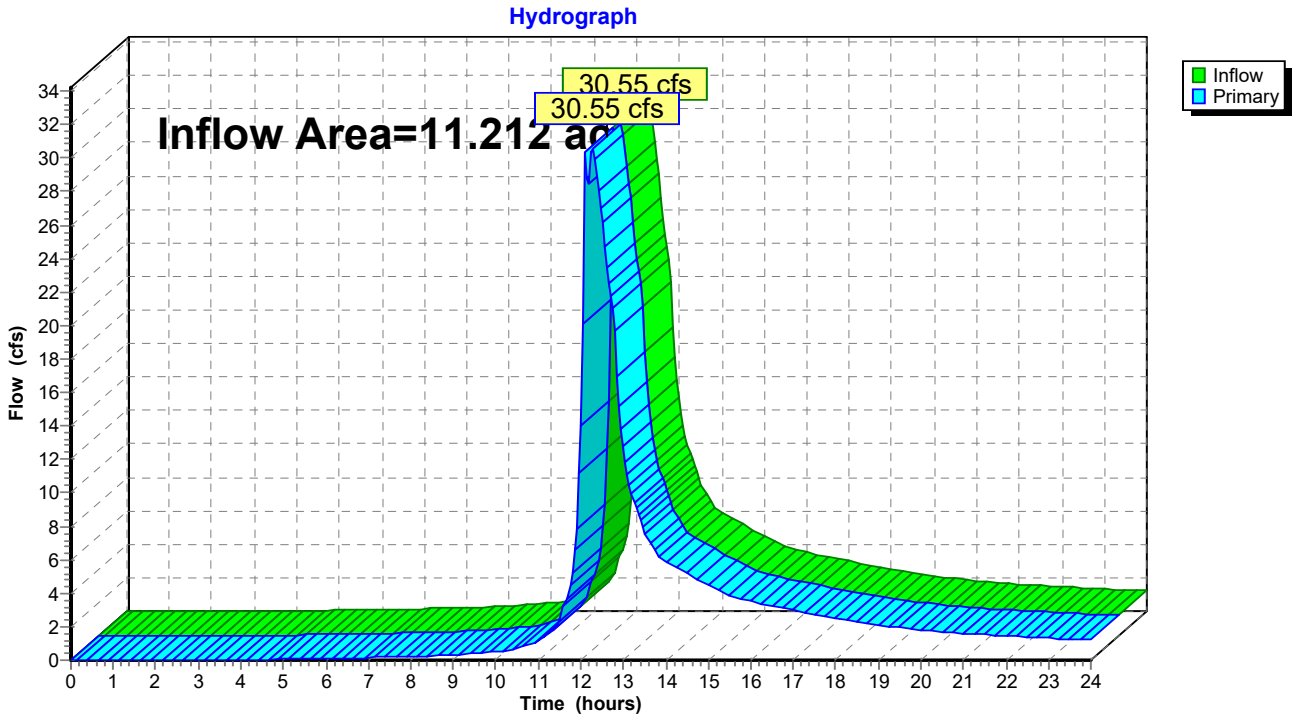


Summary for Link 2A: POA 1 (Adj)

Inflow Area = 11.212 ac, 65.35% Impervious, Inflow Depth > 5.53" for Adj - 100 Yr event
Inflow = 30.55 cfs @ 12.28 hrs, Volume= 5.171 af
Primary = 30.55 cfs @ 12.28 hrs, Volume= 5.171 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 2A: POA 1 (Adj)



4.5 RUNOFF & HYDROGRAPH ANALYSIS: PROPOSED 2-YEAR STORM EVENTYEAR 2100 PROJECTION

PREPARED: September 19, 2025
REVISED: December 15, 2025

300-356 ENTERPRISE AVE.
CITY OF TRENTON
BLOCK 23203, LOT 1
BLOCK 23102 LOTS 2 & 9
TOWNSHIP OF LAWRENCE
BLOCK 602, LOTS 1 & 2
MERCER COUNTY, NEW JERSEY

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment11S: WEST CAR/TRUCK Runoff Area=49,320 sf 100.00% Impervious Runoff Depth>3.62"
Flow Length=507' Tc=2.5 min CN=98 Runoff=5.13 cfs 0.342 af

Subcatchment14S: PATH Runoff Area=19,609 sf 100.00% Impervious Runoff Depth>3.63"
Tc=0.8 min CN=98 Runoff=2.03 cfs 0.136 af

Subcatchment15S: Rest of the grass Runoff Area=86,744 sf 0.00% Impervious Runoff Depth>1.93"
Tc=3.3 min CN=80 Runoff=5.46 cfs 0.320 af

Subcatchment16S: Grass in basin and Runoff Area=11,513 sf 0.00% Impervious Runoff Depth>2.69"
Flow Length=287' Slope=0.0050 '/' Tc=4.0 min CN=89 Runoff=0.95 cfs 0.059 af

Subcatchment17S: Grass in basin Runoff Area=36,400 sf 0.00% Impervious Runoff Depth>2.69"
Flow Length=257' Slope=0.0050 '/' Tc=3.9 min CN=89 Runoff=3.01 cfs 0.187 af

Subcatchment41S: east Roof to Basin Runoff Area=103,932 sf 100.00% Impervious Runoff Depth>3.62"
Flow Length=898' Tc=6.0 min CN=98 Runoff=9.48 cfs 0.720 af

Subcatchment42S: EAST TRUCK MVS Runoff Area=28,332 sf 100.00% Impervious Runoff Depth>3.63"
Flow Length=405' Tc=2.0 min CN=98 Runoff=2.98 cfs 0.196 af

Subcatchment43S: west Roof to Basin Runoff Area=117,968 sf 100.00% Impervious Runoff Depth>3.62"
Flow Length=892' Slope=0.0050 '/' Tc=5.7 min CN=98 Runoff=10.75 cfs 0.818 af

Subcatchment44S: Grass in basin Runoff Area=5,332 sf 0.00% Impervious Runoff Depth>2.69"
Flow Length=279' Tc=4.0 min CN=89 Runoff=0.44 cfs 0.027 af

Subcatchment45S: Grass in basin Runoff Area=29,224 sf 0.00% Impervious Runoff Depth>2.69"
Flow Length=263' Tc=3.9 min CN=89 Runoff=2.41 cfs 0.150 af

Pond 47P: Basin 112 Peak Elev=47.24' Storage=9,699 cf Inflow=6.05 cfs 0.401 af
Primary=1.20 cfs 0.280 af Secondary=0.00 cfs 0.000 af Outflow=1.20 cfs 0.280 af

Pond 48P: Basin 104 Peak Elev=46.46' Storage=45,291 cf Inflow=14.63 cfs 1.285 af
Primary=0.36 cfs 0.272 af Secondary=0.00 cfs 0.000 af Outflow=0.36 cfs 0.272 af

Pond 49P: Basin 203 Peak Elev=46.55' Storage=33,213 cf Inflow=12.85 cfs 1.031 af
Primary=0.51 cfs 0.348 af Secondary=0.00 cfs 0.000 af Outflow=0.51 cfs 0.348 af

Pond 51P: Basin 206 Peak Elev=47.22' Storage=4,761 cf Inflow=3.40 cfs 0.224 af
Primary=1.24 cfs 0.160 af Secondary=0.00 cfs 0.000 af Outflow=1.24 cfs 0.160 af

Link 24L: POA 1 (2100) Inflow=7.25 cfs 1.076 af
Primary=7.25 cfs 1.076 af

Total Runoff Area = 11.212 ac Runoff Volume = 2.956 af Average Runoff Depth = 3.16"
34.65% Pervious = 3.885 ac 65.35% Impervious = 7.327 ac

Summary for Subcatchment 11S: WEST CAR/TRUCK MVS

[49] Hint: Tc<2dt may require smaller dt
[47] Hint: Peak is 111% of capacity of segment #2

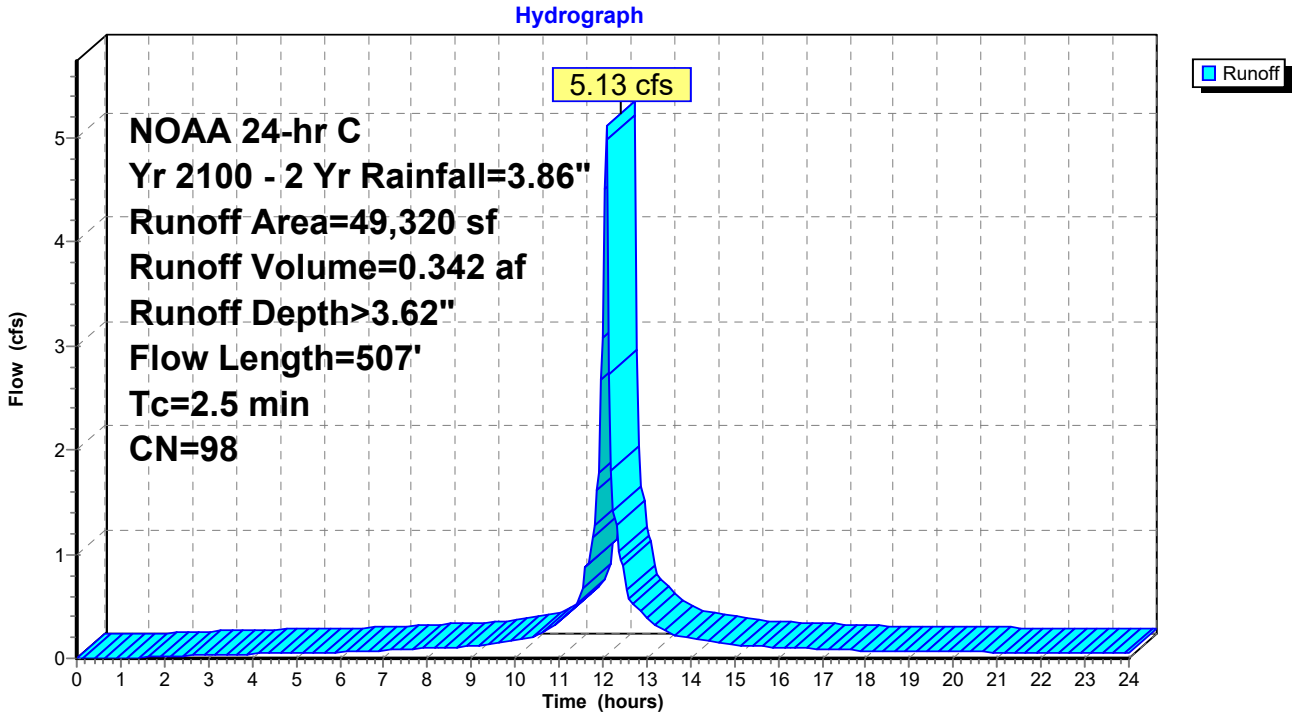
Runoff = 5.13 cfs @ 12.08 hrs, Volume= 0.342 af, Depth> 3.62"
Routed to Pond 47P : Basin 112

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Yr 2100 - 2 Yr Rainfall=3.86"

Area (sf)	CN	Description
49,320	98	Paved roads w/curbs & sewers, HSG D
49,320		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8					**Direct Entry, Tc Direct**
0.4	89	0.0051	3.76	4.61	**Pipe Channel, CMP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
0.6	131	0.0038	3.66	6.48	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.1	30	0.0050	4.20	7.43	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.6	257	0.0050	6.67	47.16	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
2.5	507	Total			

Subcatchment 11S: WEST CAR/TRUCK MVS



Summary for Subcatchment 14S: PATH

[49] Hint: Tc<2dt may require smaller dt

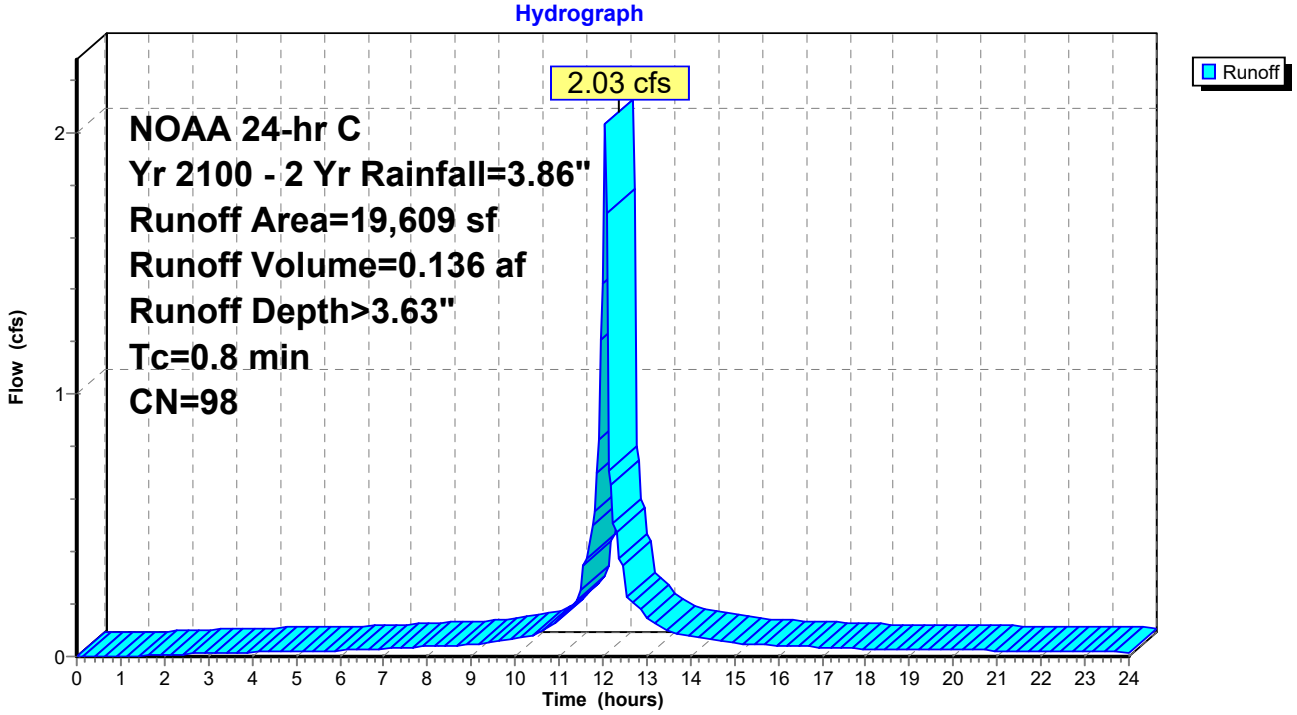
Runoff = 2.03 cfs @ 12.06 hrs, Volume= 0.136 af, Depth> 3.63"
Routed to Link 24L : POA 1 (2100)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Yr 2100 - 2 Yr Rainfall=3.86"

Area (sf)	CN	Description
19,609	98	Paved roads w/curbs & sewers, HSG D
19,609		100.00% Impervious Area

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

Subcatchment 14S: PATH



Summary for Subcatchment 15S: Rest of the grass

[49] Hint: Tc<2dt may require smaller dt

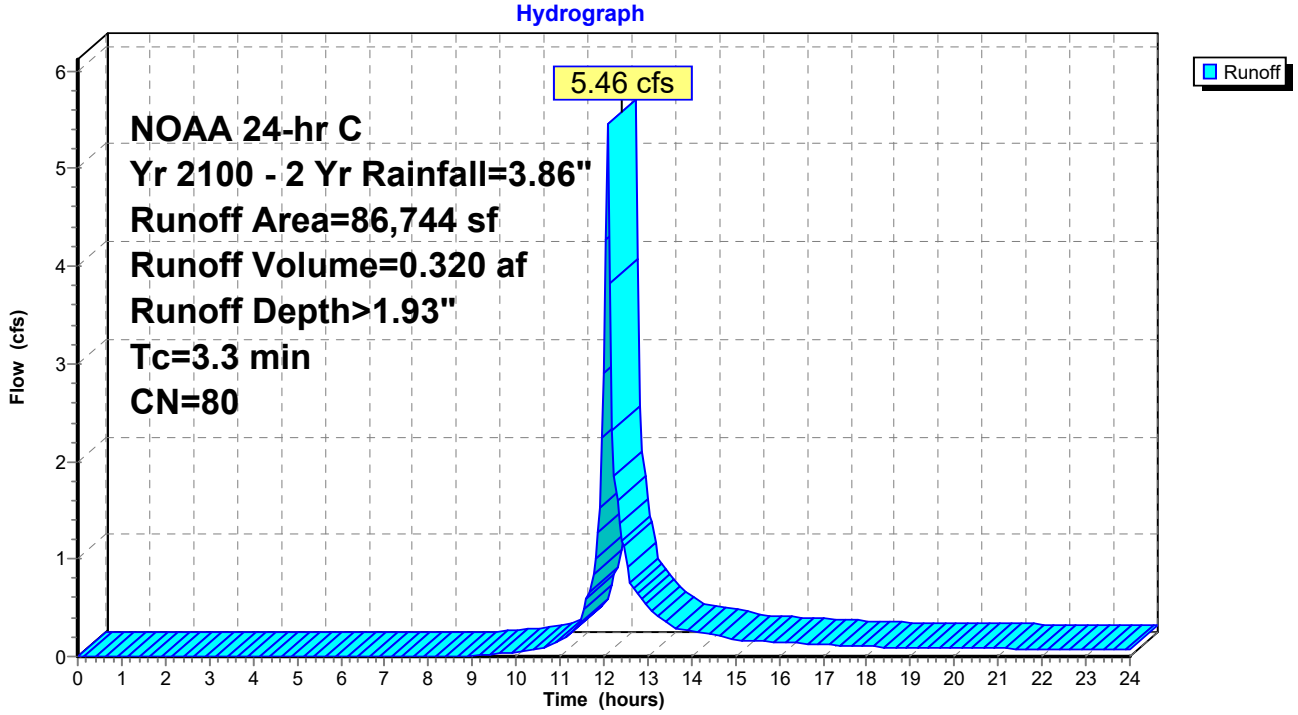
Runoff = 5.46 cfs @ 12.10 hrs, Volume= 0.320 af, Depth> 1.93"
Routed to Link 24L : POA 1 (2100)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Yr 2100 - 2 Yr Rainfall=3.86"

Area (sf)	CN	Description
86,744	80	>75% Grass cover, Good, HSG D
86,744		100.00% Pervious Area

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

Subcatchment 15S: Rest of the grass



Summary for Subcatchment 16S: Grass in basin and surrounding grass

[49] Hint: Tc<2dt may require smaller dt

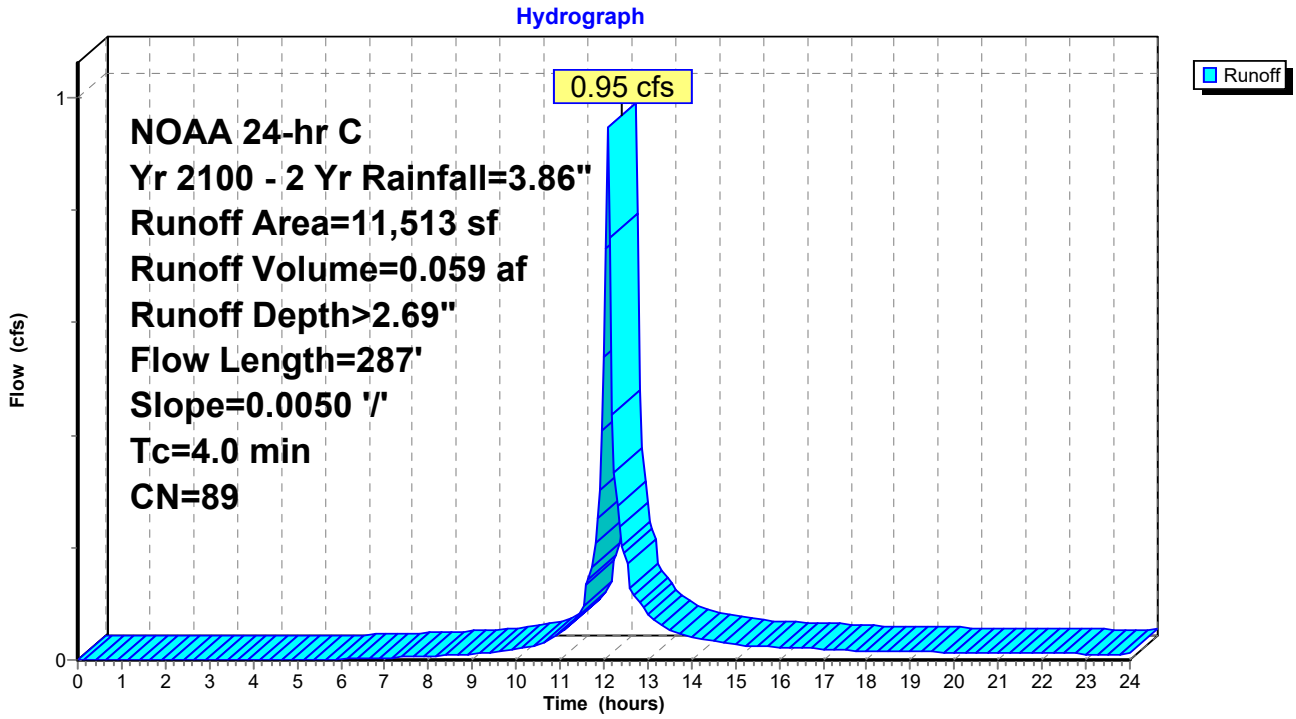
Runoff = 0.95 cfs @ 12.10 hrs, Volume= 0.059 af, Depth> 2.69"
Routed to Pond 47P : Basin 112

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Yr 2100 - 2 Yr Rainfall=3.86"

Area (sf)	CN	Description
11,513	89	<50% Grass cover, Poor, HSG D
11,513		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3					**Direct Entry, Tc Direct**
0.1	30	0.0050	4.20	7.43	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.6	257	0.0050	6.67	47.16	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
4.0	287	Total			

Subcatchment 16S: Grass in basin and surrounding grass



Summary for Subcatchment 17S: Grass in basin

[49] Hint: Tc<2dt may require smaller dt

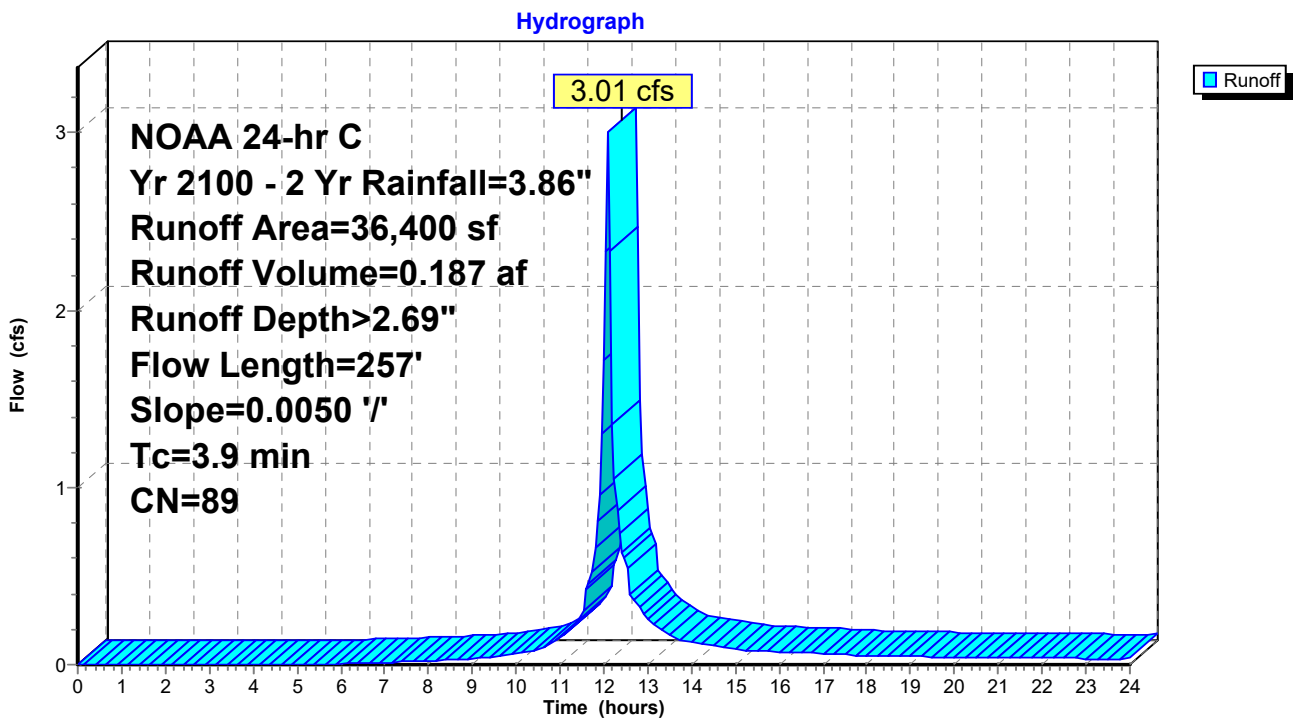
Runoff = 3.01 cfs @ 12.10 hrs, Volume= 0.187 af, Depth> 2.69"
Routed to Pond 48P : Basin 104

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Yr 2100 - 2 Yr Rainfall=3.86"

Area (sf)	CN	Description
36,400	89	<50% Grass cover, Poor, HSG D
36,400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3					**Direct Entry, Tc Direct**
0.6	257	0.0050	6.67	47.16	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
3.9	257	Total			

Subcatchment 17S: Grass in basin



Summary for Subcatchment 41S: east Roof to Basin #203

[47] Hint: Peak is 2388% of capacity of segment #2
[47] Hint: Peak is 1109% of capacity of segment #3
[47] Hint: Peak is 612% of capacity of segment #4
[47] Hint: Peak is 376% of capacity of segment #5
[47] Hint: Peak is 207% of capacity of segment #6
[47] Hint: Peak is 207% of capacity of segment #7

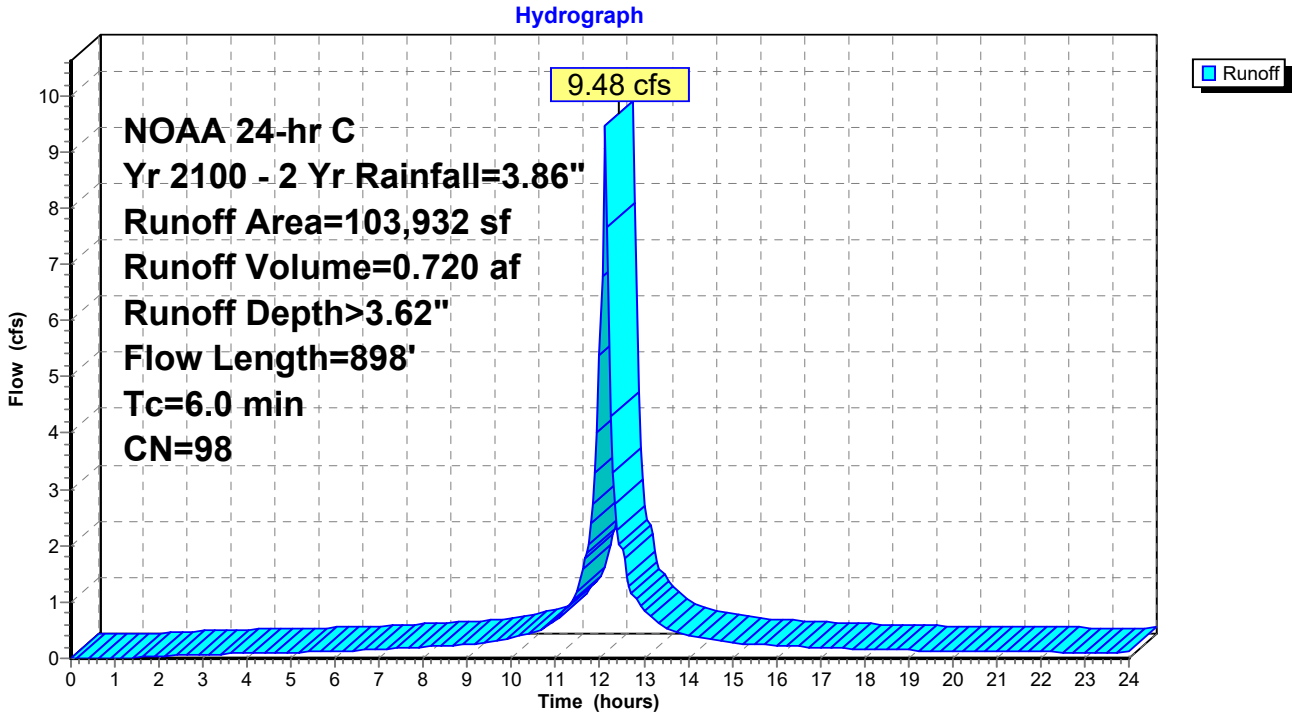
Runoff = 9.48 cfs @ 12.13 hrs, Volume= 0.720 af, Depth> 3.62"
Routed to Pond 49P : Basin 203

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Yr 2100 - 2 Yr Rainfall=3.86"

	Area (sf)	CN	Description
*	103,932	98	bldg
	103,932		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9					**Direct Entry, Tc Direct**
0.7	90	0.0050	2.02	0.40	**Pipe Channel, CMP_Round 6"** 6.0" Round Area= 0.2 sf Perim= 1.6' r= 0.13' n= 0.013 Corrugated PE, smooth interior
0.4	60	0.0050	2.45	0.85	**Pipe Channel, CMP_Round 8"** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.013 Corrugated PE, smooth interior
0.5	90	0.0050	2.84	1.55	**Pipe Channel, CMP_Round 10"** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.013 Corrugated PE, smooth interior
0.5	90	0.0050	3.21	2.52	**Pipe Channel, CMP_Round 12"** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.4	90	0.0050	3.72	4.57	**Pipe Channel, CMP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
1.0	215	0.0050	3.72	4.57	**Pipe Channel, CMP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
0.5	163	0.0050	5.09	16.00	**Pipe Channel, CMP_Round 24"** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
0.1	100	0.0736	25.60	180.95	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
6.0	898	Total			

Subcatchment 41S: east Roof to Basin #203



Summary for Subcatchment 42S: EAST TRUCK MVS

[49] Hint: Tc<2dt may require smaller dt

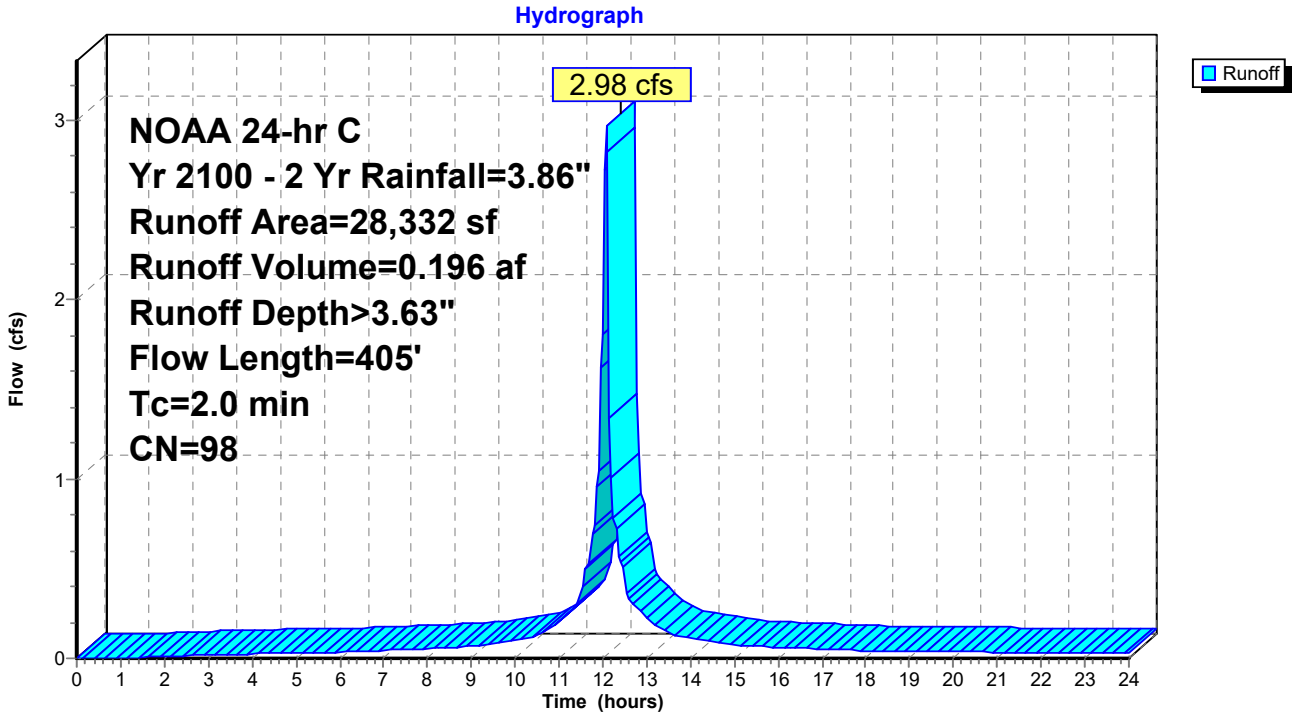
Runoff = 2.98 cfs @ 12.08 hrs, Volume= 0.196 af, Depth> 3.63"
Routed to Pond 51P : Basin 206

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Yr 2100 - 2 Yr Rainfall=3.86"

Area (sf)	CN	Description
28,332	98	Paved roads w/curbs & sewers, HSG D
28,332		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8					**Direct Entry, Tc Direct**
0.3	70	0.0050	3.72	4.57	**Pipe Channel, CMP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
0.2	56	0.0050	4.20	7.43	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.1	16	0.0050	4.20	7.43	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.5	163	0.0050	5.09	16.00	**Pipe Channel, CMP_Round 24"** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
0.1	100	0.0736	30.25	213.85	**Pipe Channel, RCP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.011 Concrete pipe, straight & clean
2.0	405	Total			

Subcatchment 42S: EAST TRUCK MVS



Summary for Subcatchment 43S: west Roof to Basin #104

[49] Hint: Tc<2dt may require smaller dt
[47] Hint: Peak is 2709% of capacity of segment #2
[47] Hint: Peak is 694% of capacity of segment #3
[47] Hint: Peak is 427% of capacity of segment #4
[47] Hint: Peak is 235% of capacity of segment #5
[47] Hint: Peak is 145% of capacity of segment #6

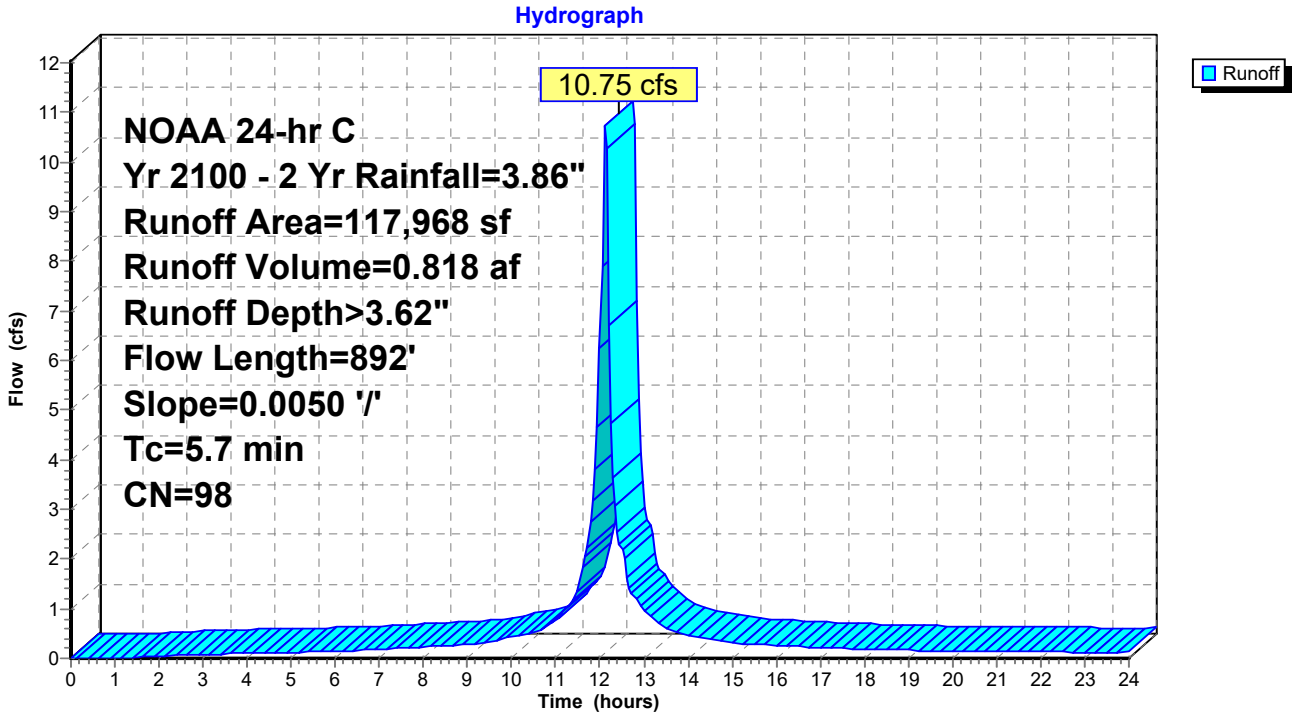
Runoff = 10.75 cfs @ 12.12 hrs, Volume= 0.818 af, Depth> 3.62"
Routed to Pond 48P : Basin 104

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Yr 2100 - 2 Yr Rainfall=3.86"

	Area (sf)	CN	Description
*	117,968	98	bldg
	117,968		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9					**Direct Entry, Tc Direct**
0.7	90	0.0050	2.02	0.40	**Pipe Channel, CMP_Round 6"** 6.0" Round Area= 0.2 sf Perim= 1.6' r= 0.13' n= 0.013 Corrugated PE, smooth interior
0.5	90	0.0050	2.84	1.55	**Pipe Channel, CMP_Round 10"** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.013 Corrugated PE, smooth interior
0.5	90	0.0050	3.21	2.52	**Pipe Channel, CMP_Round 12"** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.4	90	0.0050	3.72	4.57	**Pipe Channel, CMP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
1.1	275	0.0050	4.20	7.43	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.6	257	0.0050	6.67	47.16	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
5.7	892	Total			

Subcatchment 43S: west Roof to Basin #104



Summary for Subcatchment 44S: Grass in basin

[49] Hint: Tc<2dt may require smaller dt

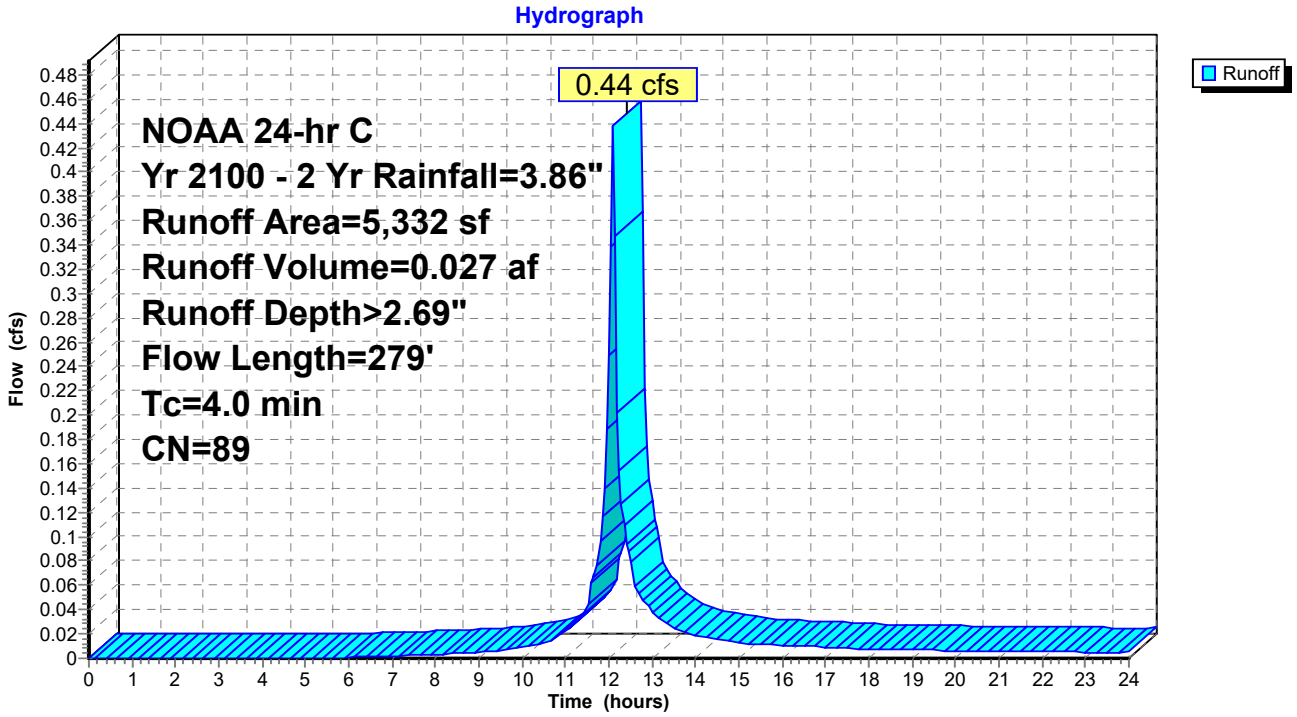
Runoff = 0.44 cfs @ 12.10 hrs, Volume= 0.027 af, Depth> 2.69"
Routed to Pond 51P : Basin 206

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Yr 2100 - 2 Yr Rainfall=3.86"

Area (sf)	CN	Description
5,332	89	<50% Grass cover, Poor, HSG D
5,332		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3					**Direct Entry, Tc Direct**
0.1	16	0.0050	4.20	7.43	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.5	163	0.0050	5.09	16.00	**Pipe Channel, CMP_Round 24"** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
0.1	100	0.0736	25.60	180.95	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
4.0	279	Total			

Subcatchment 44S: Grass in basin



Summary for Subcatchment 45S: Grass in basin

[49] Hint: Tc<2dt may require smaller dt

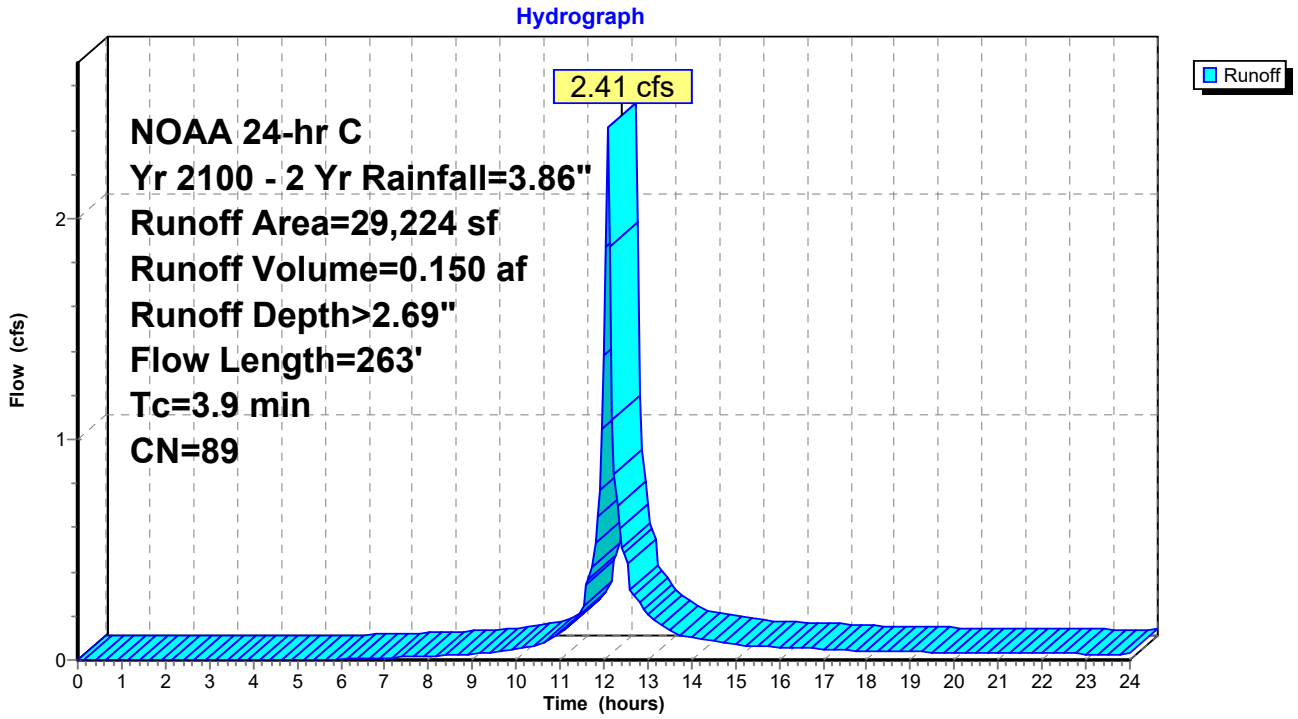
Runoff = 2.41 cfs @ 12.10 hrs, Volume= 0.150 af, Depth> 2.69"
Routed to Pond 49P : Basin 203

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Yr 2100 - 2 Yr Rainfall=3.86"

Area (sf)	CN	Description
29,224	89	<50% Grass cover, Poor, HSG D
29,224		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3					**Direct Entry, Tc Direct**
0.5	163	0.0050	5.09	16.00	**Pipe Channel, CMP_Round 24"** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
0.1	100	0.0736	25.60	180.95	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
3.9	263	Total			

Subcatchment 45S: Grass in basin



Summary for Pond 47P: Basin 112

[92] Warning: Device #2 is above defined storage

Inflow Area = 1.397 ac, 81.07% Impervious, Inflow Depth > 3.45" for Yr 2100 - 2 Yr event
Inflow = 6.05 cfs @ 12.09 hrs, Volume= 0.401 af
Outflow = 1.20 cfs @ 12.38 hrs, Volume= 0.280 af, Atten= 80%, Lag= 17.5 min
Primary = 1.20 cfs @ 12.38 hrs, Volume= 0.280 af
Routed to Pond 48P : Basin 104
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 48P : Basin 104

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 47.24' @ 12.38 hrs Surf.Area= 3,773 sf Storage= 9,699 cf

Plug-Flow detention time= 235.4 min calculated for 0.279 af (70% of inflow)
Center-of-Mass det. time= 140.1 min (898.3 - 758.3)

Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	14,810 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

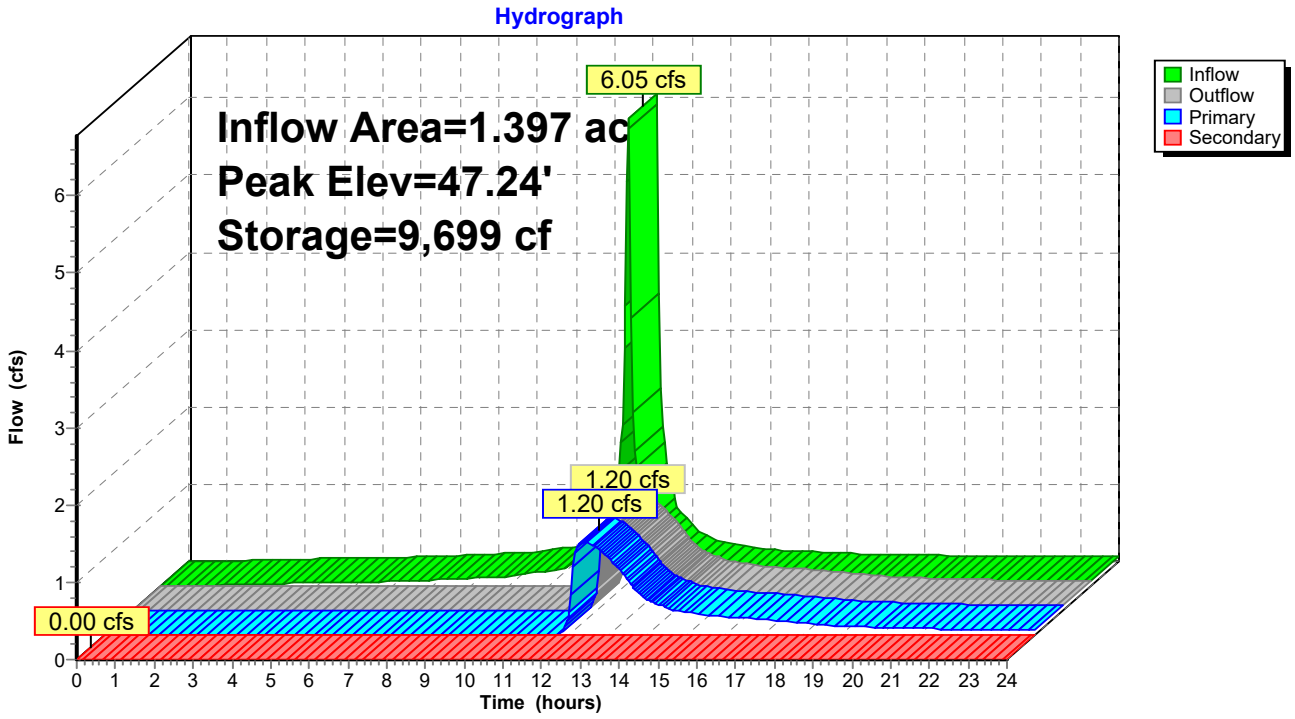
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	2,461	213.0	0.0	0	0	2,461
42.84	2,461	213.0	40.0	10	10	2,463
43.00	2,461	213.0	40.0	158	167	2,497
44.00	2,461	213.0	40.0	984	1,152	2,710
44.83	2,461	213.0	40.0	817	1,969	2,887
44.84	2,461	213.0	100.0	25	1,993	2,889
45.00	2,568	216.0	100.0	402	2,396	2,997
46.00	3,287	251.0	100.0	2,920	5,316	4,319
47.00	3,676	265.7	100.0	3,480	8,796	4,976
48.00	4,082	276.0	100.0	3,877	12,673	5,496
48.50	4,468	290.0	100.0	2,137	14,810	6,142

Device	Routing	Invert	Outlet Devices
#1	Primary	45.10'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 45.10' / 45.10' S= 0.0000 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf
#2	Secondary	48.50'	**20.0' long + 0.3 '/' SideZ x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#3	Device 1	47.95'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.40'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.20 cfs @ 12.38 hrs HW=47.24' (Free Discharge)
└─**1=Culvert** (Passes 1.20 cfs of 9.18 cfs potential flow)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  ├─**4=Orifice/Grate** (Orifice Controls 0.73 cfs @ 3.71 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.47 cfs @ 5.40 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 47P: Basin 112



Summary for Pond 48P: Basin 104

[92] Warning: Device #2 is above defined storage
[81] Warning: Exceeded Pond 47P by 0.42' @ 21.65 hrs

Inflow Area = 4.940 ac, 77.74% Impervious, Inflow Depth > 3.12" for Yr 2100 - 2 Yr event
Inflow = 14.63 cfs @ 12.12 hrs, Volume= 1.285 af
Outflow = 0.36 cfs @ 18.21 hrs, Volume= 0.272 af, Atten= 98%, Lag= 365.8 min
Primary = 0.36 cfs @ 18.21 hrs, Volume= 0.272 af
Routed to Link 24L : POA 1 (2100)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 24L : POA 1 (2100)

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 46.46' @ 18.21 hrs Surf.Area= 20,785 sf Storage= 45,291 cf

Plug-Flow detention time= 563.8 min calculated for 0.272 af (21% of inflow)
Center-of-Mass det. time= 338.1 min (1,130.1 - 792.0)

Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	87,112 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

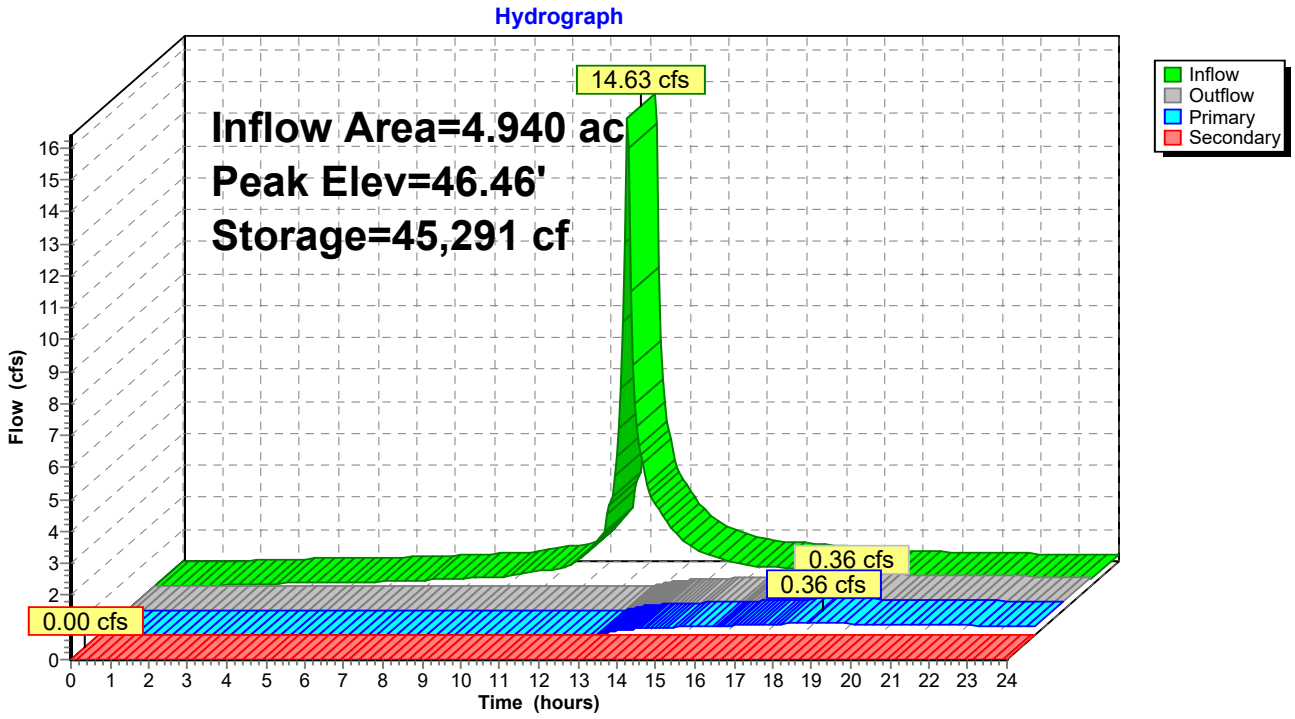
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	17,239	897.0	0.0	0	0	17,239
42.84	17,239	897.0	40.0	69	69	17,248
43.00	17,239	897.0	40.0	1,103	1,172	17,391
44.00	17,239	897.0	40.0	6,896	8,068	18,288
44.83	17,239	897.0	40.0	5,723	13,791	19,033
44.84	17,239	897.0	100.0	172	13,964	19,042
45.00	17,690	902.0	100.0	2,794	16,758	19,772
46.00	20,420	926.0	100.0	19,039	35,797	23,381
47.00	21,216	939.0	100.0	20,817	56,613	25,524
48.00	22,029	952.0	100.0	21,621	78,234	27,697
48.40	22,357	957.0	100.0	8,877	87,112	28,547

Device	Routing	Invert	Outlet Devices
#1	Primary	44.00'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 44.00' / 44.00' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#2	Secondary	48.40'	**50.0' long x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#3	Device 1	46.65'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.40'	**18.0" W x 3.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.36 cfs @ 18.21 hrs HW=46.46' (Free Discharge)
└─**1=Culvert** (Passes 0.36 cfs of 11.13 cfs potential flow)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  ├─**4=Orifice/Grate** (Orifice Controls 0.07 cfs @ 0.79 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.29 cfs @ 3.32 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 48P: Basin 104



Summary for Pond 49P: Basin 203

[92] Warning: Device #2 is above defined storage
[81] Warning: Exceeded Pond 51P by 0.50' @ 16.35 hrs

Inflow Area = 3.830 ac, 79.29% Impervious, Inflow Depth > 3.23" for Yr 2100 - 2 Yr event
Inflow = 12.85 cfs @ 12.12 hrs, Volume= 1.031 af
Outflow = 0.51 cfs @ 14.89 hrs, Volume= 0.348 af, Atten= 96%, Lag= 166.1 min
Primary = 0.51 cfs @ 14.89 hrs, Volume= 0.348 af
Routed to Link 24L : POA 1 (2100)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 24L : POA 1 (2100)

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 46.55' @ 14.89 hrs Surf.Area= 15,385 sf Storage= 33,213 cf

Plug-Flow detention time= 447.3 min calculated for 0.347 af (34% of inflow)
Center-of-Mass det. time= 284.1 min (1,061.3 - 777.2)

Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	64,356 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

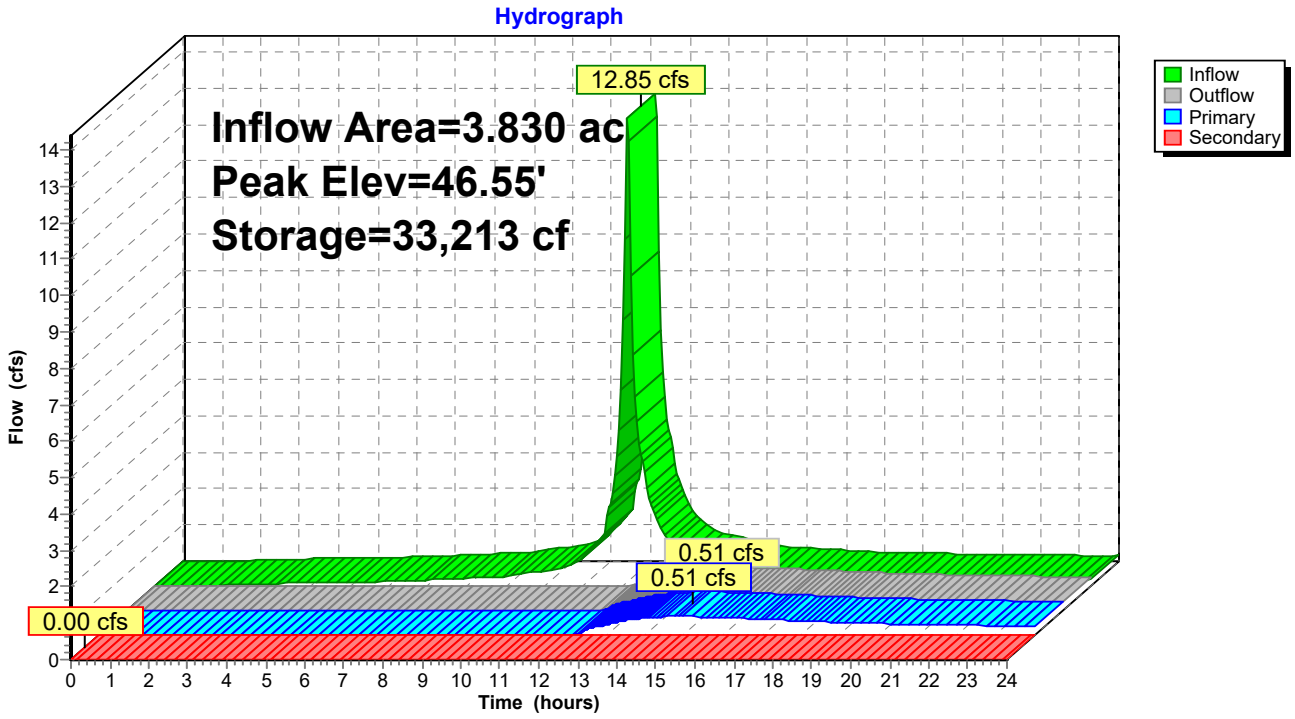
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	11,929	737.0	0.0	0	0	11,929
42.84	11,929	737.0	40.0	48	48	11,936
43.00	11,929	737.0	40.0	763	811	12,054
44.00	11,929	737.0	40.0	4,772	5,583	12,791
44.83	11,929	737.0	40.0	3,960	9,543	13,403
44.84	11,929	737.0	100.0	119	9,662	13,410
45.00	12,301	741.0	100.0	1,938	11,601	13,895
46.00	14,572	762.0	100.0	13,420	25,021	16,517
47.00	16,075	784.0	100.0	15,317	40,339	19,332
48.00	17,607	806.0	100.0	16,835	57,174	22,227
48.40	18,306	815.0	100.0	7,182	64,356	23,432

Device	Routing	Invert	Outlet Devices
#1	Primary	39.00'	**21.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 39.00' / 39.00' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 2.41 sf
#2	Secondary	48.40'	**50.0' long x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#3	Device 1	47.70'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.30'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.51 cfs @ 14.89 hrs HW=46.55' (Free Discharge)
└─**1=Culvert** (Passes 0.51 cfs of 29.91 cfs potential flow)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  ├─**4=Orifice/Grate** (Orifice Controls 0.20 cfs @ 1.69 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.31 cfs @ 3.60 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 49P: Basin 203



Summary for Pond 51P: Basin 206

[92] Warning: Device #2 is above defined storage

Inflow Area = 0.773 ac, 84.16% Impervious, Inflow Depth > 3.48" for Yr 2100 - 2 Yr event
Inflow = 3.40 cfs @ 12.08 hrs, Volume= 0.224 af
Outflow = 1.24 cfs @ 12.20 hrs, Volume= 0.160 af, Atten= 63%, Lag= 7.4 min
Primary = 1.24 cfs @ 12.20 hrs, Volume= 0.160 af
Routed to Pond 49P : Basin 203
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 49P : Basin 203

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 47.22' @ 12.20 hrs Surf.Area= 1,647 sf Storage= 4,761 cf

Plug-Flow detention time= 197.0 min calculated for 0.160 af (72% of inflow)
Center-of-Mass det. time= 103.5 min (860.1 - 756.5)

Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	7,008 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

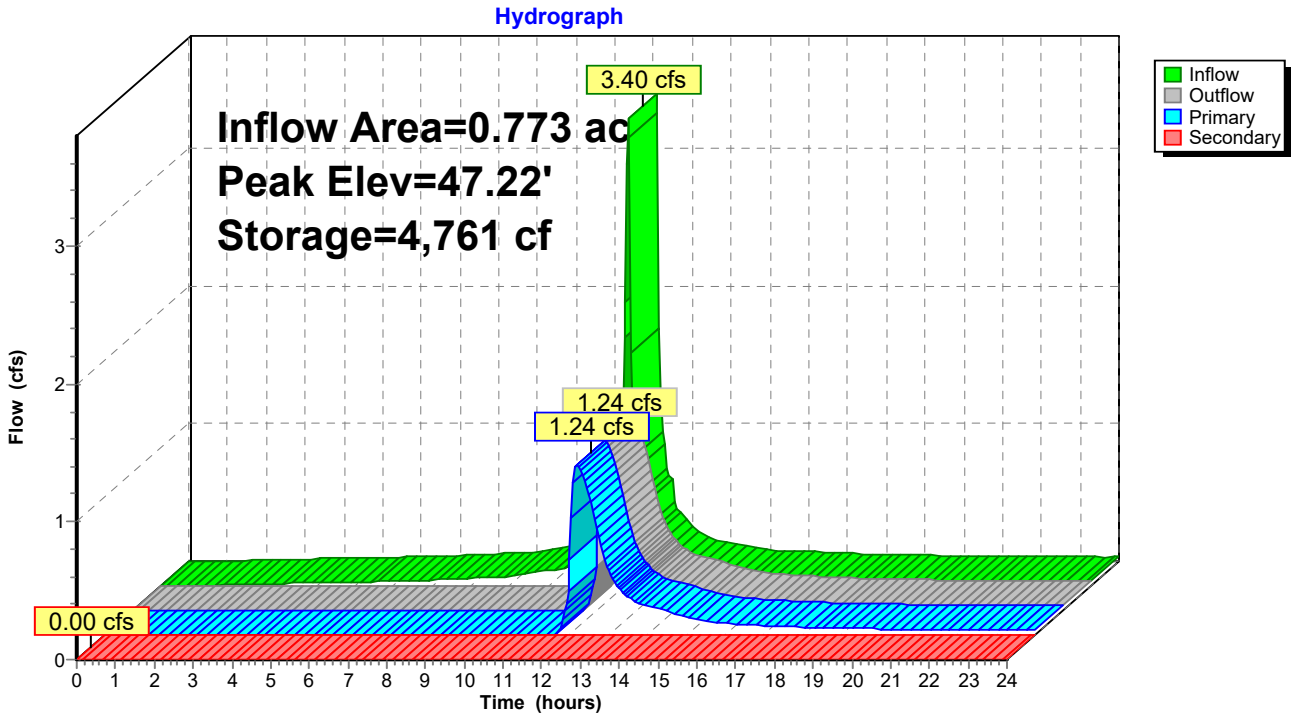
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	1,435	180.0	0.0	0	0	1,435
42.84	1,435	180.0	40.0	6	6	1,437
43.00	1,435	180.0	40.0	92	98	1,466
44.00	1,435	180.0	40.0	574	672	1,646
44.83	1,435	180.0	40.0	476	1,148	1,795
44.84	1,435	180.0	100.0	14	1,162	1,797
45.00	1,435	180.0	100.0	230	1,392	1,826
46.00	1,489	190.0	100.0	1,462	2,854	2,173
47.00	1,611	213.0	100.0	1,550	4,403	2,938
48.00	1,777	233.0	100.0	1,693	6,097	3,682
48.50	1,869	240.0	100.0	911	7,008	3,971

Device	Routing	Invert	Outlet Devices
#1	Primary	45.10'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 45.10' / 45.10' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#2	Secondary	48.50'	**16.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#3	Device 1	48.20'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.30'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.24 cfs @ 12.20 hrs HW=47.22' (Free Discharge)
└─**1=Culvert** (Passes 1.24 cfs of 9.00 cfs potential flow)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  ├─**4=Orifice/Grate** (Orifice Controls 0.77 cfs @ 3.93 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.47 cfs @ 5.34 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 51P: Basin 206

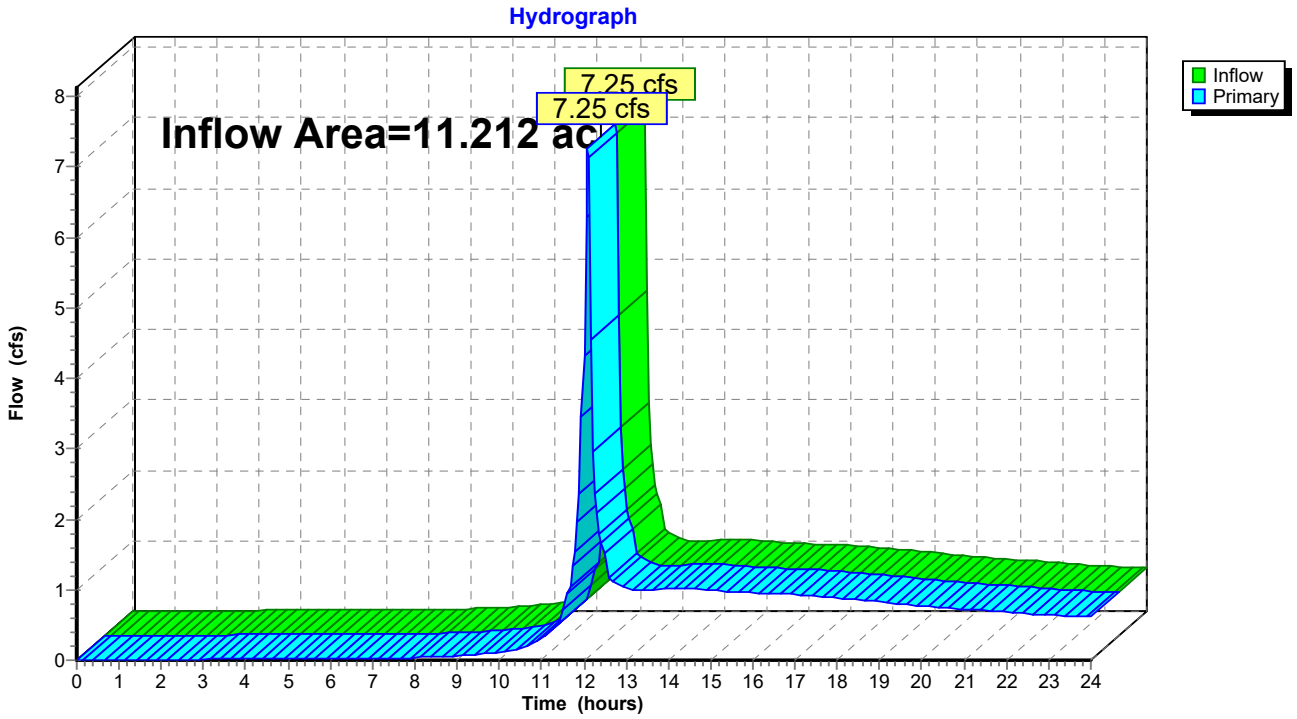


Summary for Link 24L: POA 1 (2100)

Inflow Area = 11.212 ac, 65.35% Impervious, Inflow Depth > 1.15" for Yr 2100 - 2 Yr event
Inflow = 7.25 cfs @ 12.09 hrs, Volume= 1.076 af
Primary = 7.25 cfs @ 12.09 hrs, Volume= 1.076 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 24L: POA 1 (2100)



4.6 RUNOFF & HYDROGRAPH ANALYSIS: PROPOSED 10-YEAR STORM EVENT YEAR 2100 PROJECTION

PREPARED: September 19, 2025
REVISED: December 15, 2025

300-356 ENTERPRISE AVE.
CITY OF TRENTON
BLOCK 23203, LOT 1
BLOCK 23102 LOTS 2 & 9
TOWNSHIP OF LAWRENCE
BLOCK 602, LOTS 1 & 2
MERCER COUNTY, NEW JERSEY

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment11S: WEST CAR/TRUCK Runoff Area=49,320 sf 100.00% Impervious Runoff Depth>5.61"
Flow Length=507' Tc=2.5 min CN=98 Runoff=7.81 cfs 0.529 af

Subcatchment14S: PATH Runoff Area=19,609 sf 100.00% Impervious Runoff Depth>5.61"
Tc=0.8 min CN=98 Runoff=3.10 cfs 0.211 af

Subcatchment15S: Rest of the grass Runoff Area=86,744 sf 0.00% Impervious Runoff Depth>3.64"
Tc=3.3 min CN=80 Runoff=10.17 cfs 0.605 af

Subcatchment16S: Grass in basin and Runoff Area=11,513 sf 0.00% Impervious Runoff Depth>4.59"
Flow Length=287' Slope=0.0050 '/' Tc=4.0 min CN=89 Runoff=1.57 cfs 0.101 af

Subcatchment17S: Grass in basin Runoff Area=36,400 sf 0.00% Impervious Runoff Depth>4.59"
Flow Length=257' Slope=0.0050 '/' Tc=3.9 min CN=89 Runoff=4.97 cfs 0.319 af

Subcatchment41S: east Roof to Basin Runoff Area=103,932 sf 100.00% Impervious Runoff Depth>5.61"
Flow Length=898' Tc=6.0 min CN=98 Runoff=14.43 cfs 1.115 af

Subcatchment42S: EAST TRUCK MVS Runoff Area=28,332 sf 100.00% Impervious Runoff Depth>5.61"
Flow Length=405' Tc=2.0 min CN=98 Runoff=4.53 cfs 0.304 af

Subcatchment43S: west Roof to Basin Runoff Area=117,968 sf 100.00% Impervious Runoff Depth>5.61"
Flow Length=892' Slope=0.0050 '/' Tc=5.7 min CN=98 Runoff=16.37 cfs 1.265 af

Subcatchment44S: Grass in basin Runoff Area=5,332 sf 0.00% Impervious Runoff Depth>4.59"
Flow Length=279' Tc=4.0 min CN=89 Runoff=0.73 cfs 0.047 af

Subcatchment45S: Grass in basin Runoff Area=29,224 sf 0.00% Impervious Runoff Depth>4.59"
Flow Length=263' Tc=3.9 min CN=89 Runoff=3.99 cfs 0.256 af

Pond 47P: Basin 112 Peak Elev=48.08' Storage=13,017 cf Inflow=9.34 cfs 0.630 af
Primary=4.34 cfs 0.506 af Secondary=0.00 cfs 0.000 af Outflow=4.34 cfs 0.506 af

Pond 48P: Basin 104 Peak Elev=46.79' Storage=52,109 cf Inflow=24.00 cfs 2.090 af
Primary=3.94 cfs 1.044 af Secondary=0.00 cfs 0.000 af Outflow=3.94 cfs 1.044 af

Pond 49P: Basin 203 Peak Elev=47.36' Storage=46,223 cf Inflow=19.80 cfs 1.658 af
Primary=1.92 cfs 0.939 af Secondary=0.00 cfs 0.000 af Outflow=1.92 cfs 0.939 af

Pond 51P: Basin 206 Peak Elev=48.12' Storage=6,316 cf Inflow=5.23 cfs 0.351 af
Primary=1.80 cfs 0.286 af Secondary=0.00 cfs 0.000 af Outflow=1.80 cfs 0.286 af

Link 24L: POA 1 (2100) Inflow=13.13 cfs 2.798 af
Primary=13.13 cfs 2.798 af

Total Runoff Area = 11.212 ac Runoff Volume = 4.753 af Average Runoff Depth = 5.09"
34.65% Pervious = 3.885 ac 65.35% Impervious = 7.327 ac

Summary for Subcatchment 11S: WEST CAR/TRUCK MVS

[49] Hint: Tc<2dt may require smaller dt
[47] Hint: Peak is 169% of capacity of segment #2
[47] Hint: Peak is 121% of capacity of segment #3
[47] Hint: Peak is 105% of capacity of segment #4

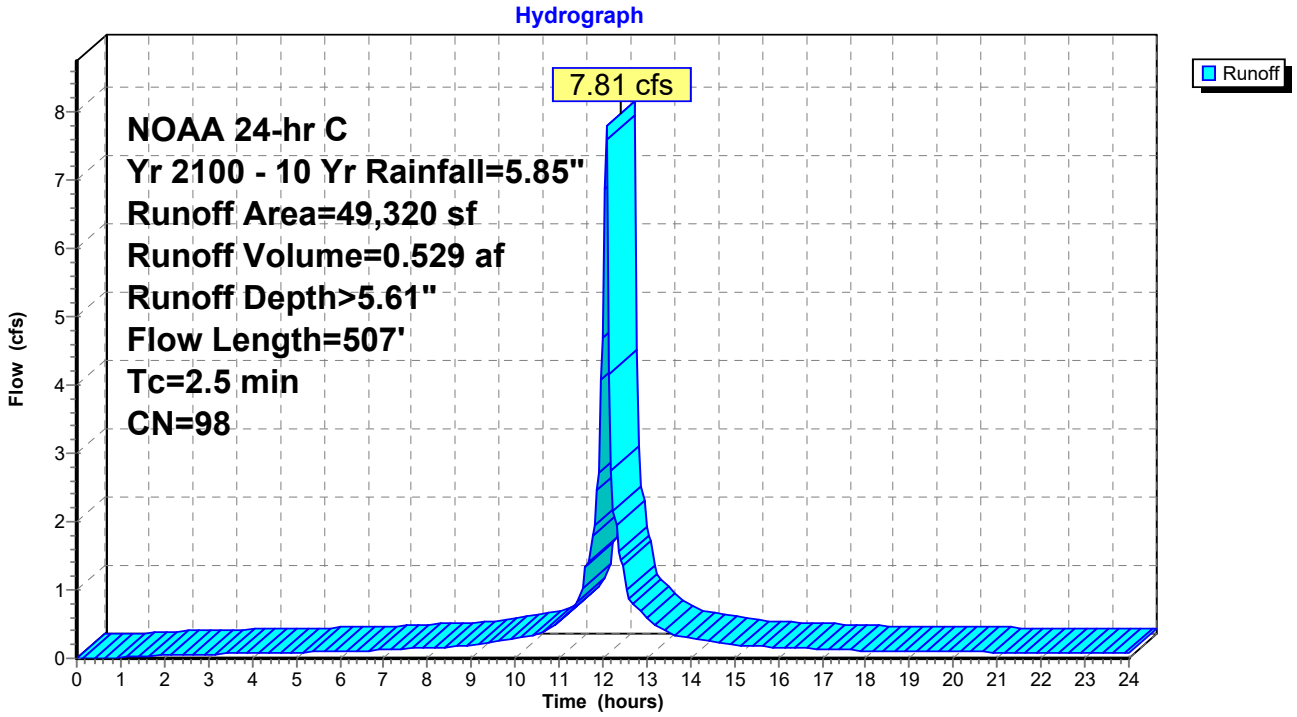
Runoff = 7.81 cfs @ 12.08 hrs, Volume= 0.529 af, Depth> 5.61"
Routed to Pond 47P : Basin 112

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Yr 2100 - 10 Yr Rainfall=5.85"

Area (sf)	CN	Description
49,320	98	Paved roads w/curbs & sewers, HSG D
49,320		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8					**Direct Entry, Tc Direct**
0.4	89	0.0051	3.76	4.61	**Pipe Channel, CMP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
0.6	131	0.0038	3.66	6.48	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.1	30	0.0050	4.20	7.43	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.6	257	0.0050	6.67	47.16	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
2.5	507	Total			

Subcatchment 11S: WEST CAR/TRUCK MVS



Summary for Subcatchment 14S: PATH

[49] Hint: Tc<2dt may require smaller dt

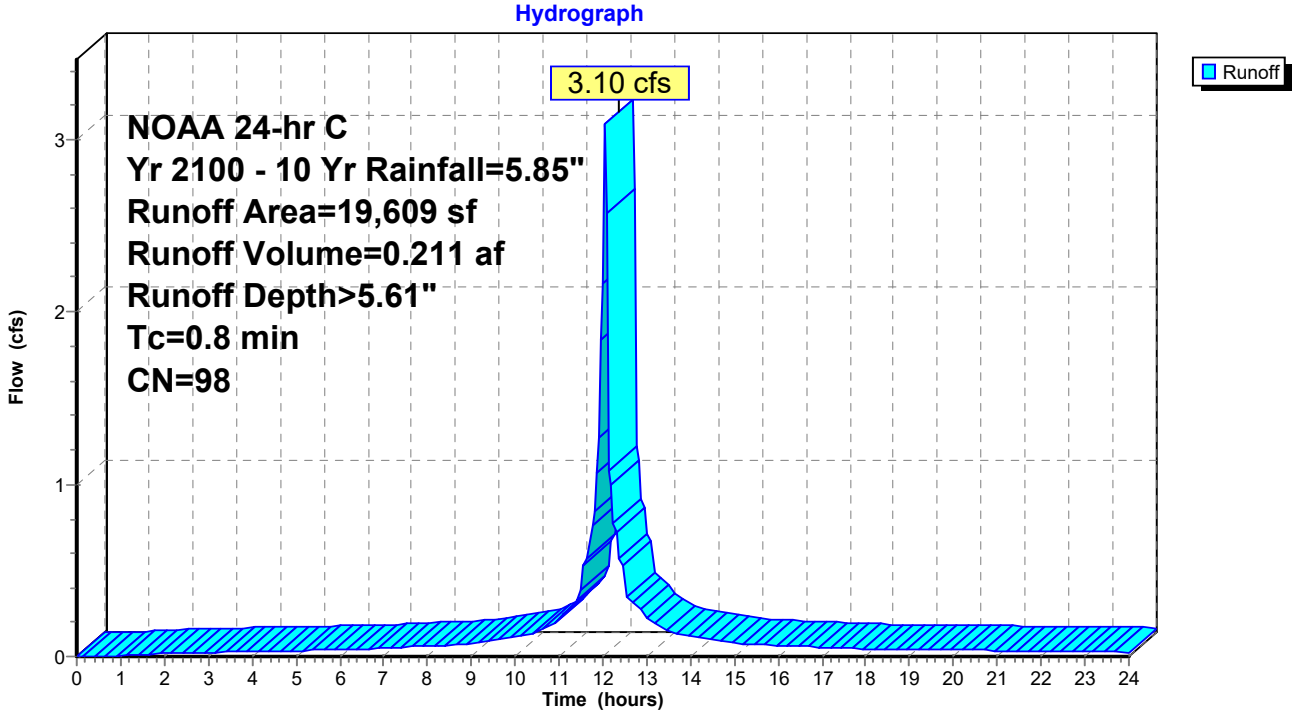
Runoff = 3.10 cfs @ 12.06 hrs, Volume= 0.211 af, Depth> 5.61"
Routed to Link 24L : POA 1 (2100)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Yr 2100 - 10 Yr Rainfall=5.85"

Area (sf)	CN	Description
19,609	98	Paved roads w/curbs & sewers, HSG D
19,609		100.00% Impervious Area

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

Subcatchment 14S: PATH



Summary for Subcatchment 15S: Rest of the grass

[49] Hint: Tc<2dt may require smaller dt

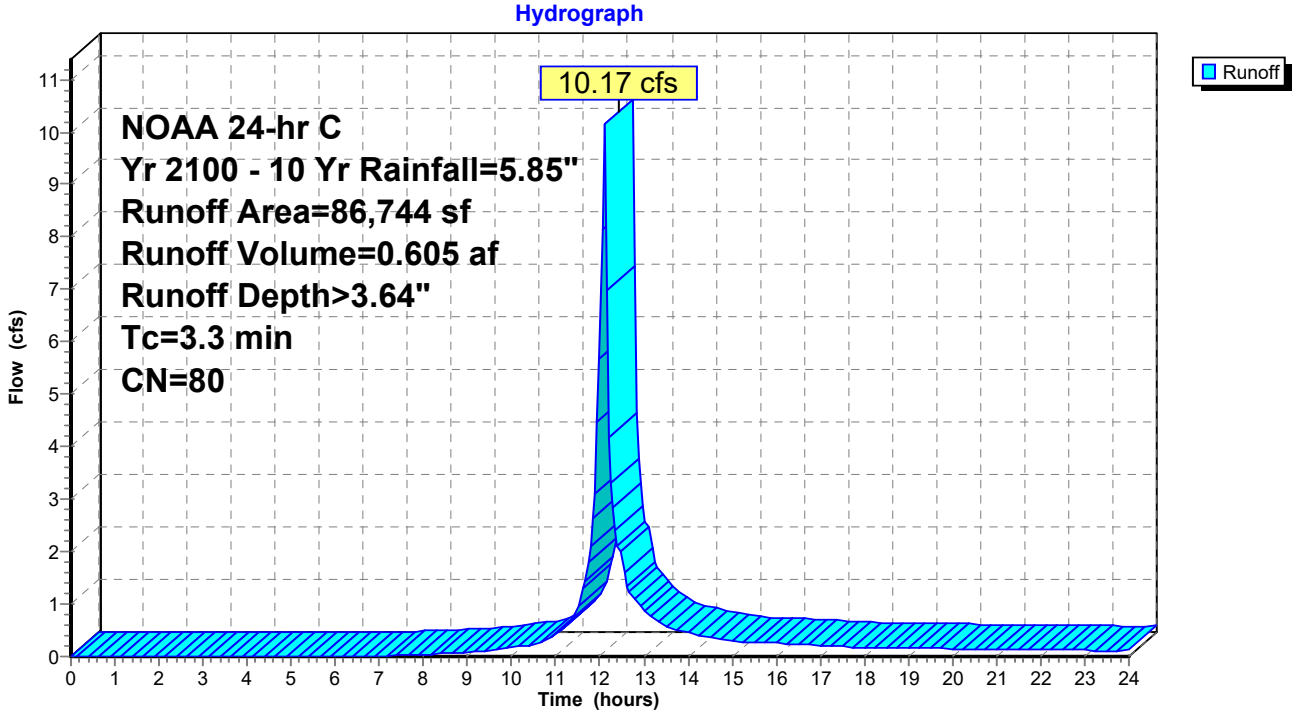
Runoff = 10.17 cfs @ 12.09 hrs, Volume= 0.605 af, Depth> 3.64"
Routed to Link 24L : POA 1 (2100)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Yr 2100 - 10 Yr Rainfall=5.85"

Area (sf)	CN	Description
86,744	80	>75% Grass cover, Good, HSG D
86,744		100.00% Pervious Area

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

Subcatchment 15S: Rest of the grass



Summary for Subcatchment 16S: Grass in basin and surrounding grass

[49] Hint: Tc<2dt may require smaller dt

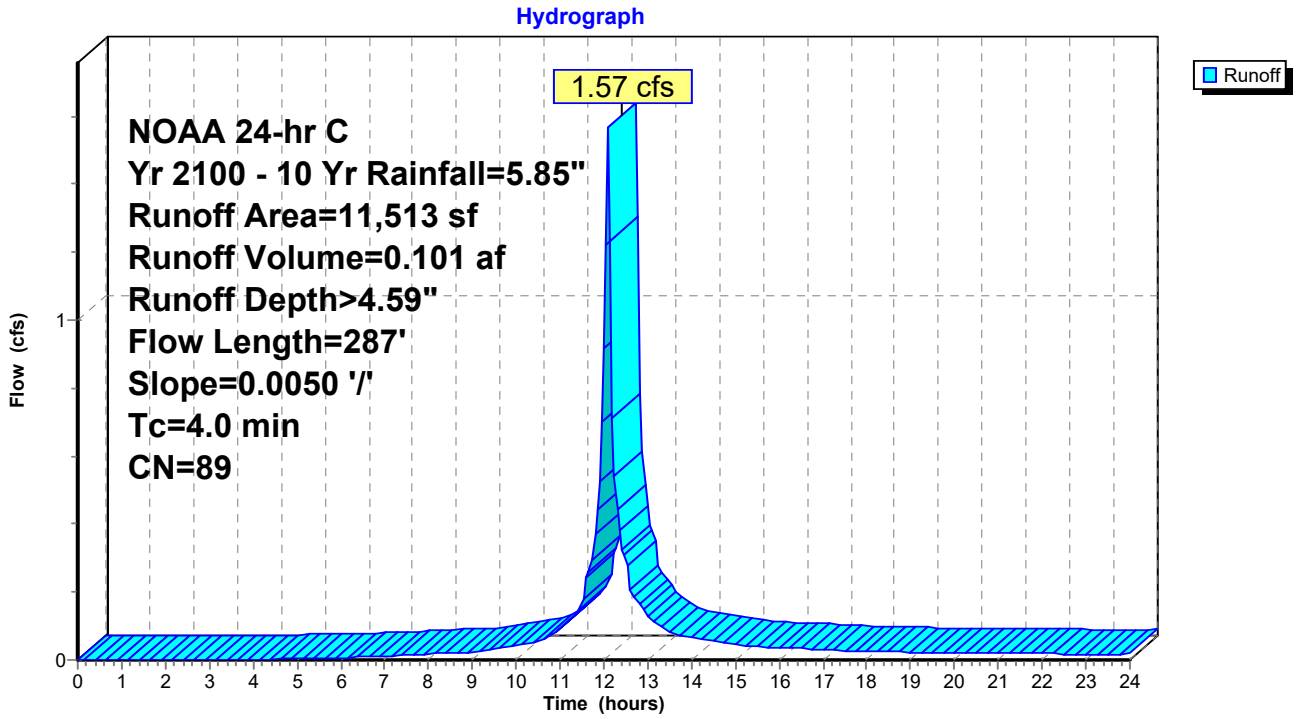
Runoff = 1.57 cfs @ 12.10 hrs, Volume= 0.101 af, Depth> 4.59"
Routed to Pond 47P : Basin 112

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Yr 2100 - 10 Yr Rainfall=5.85"

Area (sf)	CN	Description
11,513	89	<50% Grass cover, Poor, HSG D
11,513		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3					**Direct Entry, Tc Direct**
0.1	30	0.0050	4.20	7.43	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.6	257	0.0050	6.67	47.16	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
4.0	287	Total			

Subcatchment 16S: Grass in basin and surrounding grass



Summary for Subcatchment 17S: Grass in basin

[49] Hint: Tc<2dt may require smaller dt

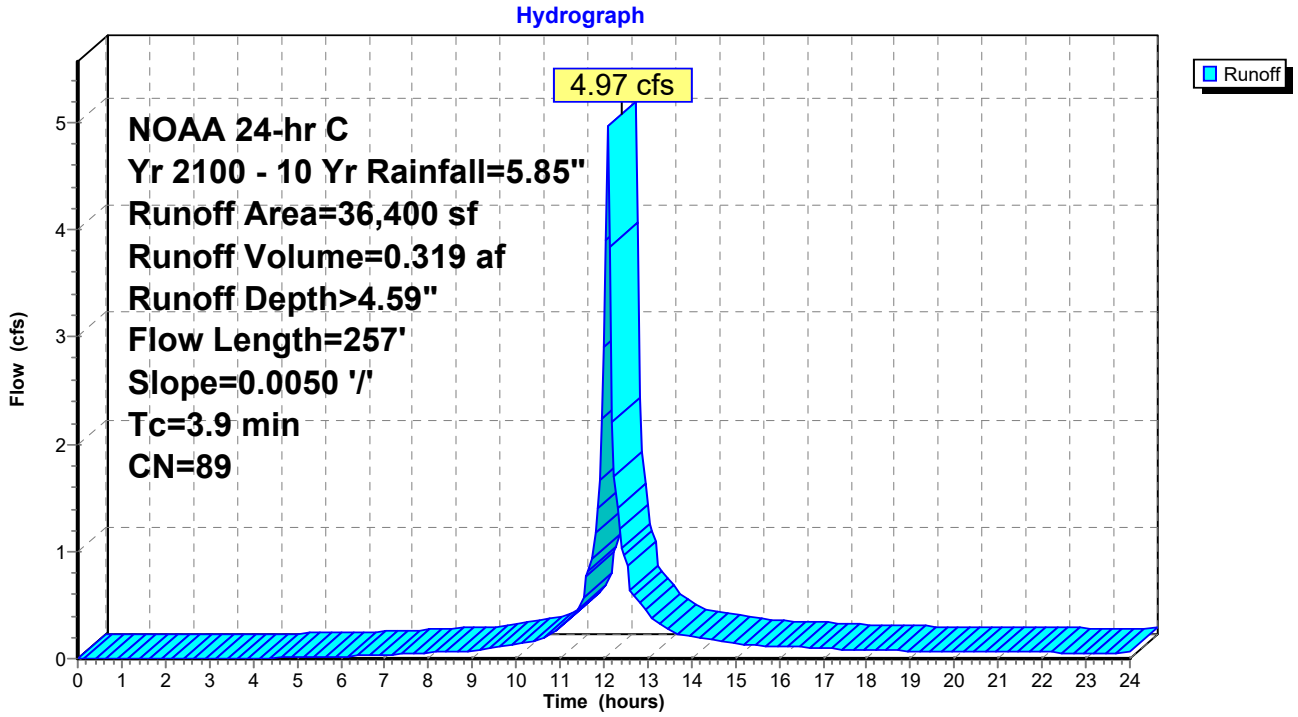
Runoff = 4.97 cfs @ 12.10 hrs, Volume= 0.319 af, Depth> 4.59"
Routed to Pond 48P : Basin 104

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Yr 2100 - 10 Yr Rainfall=5.85"

Area (sf)	CN	Description
36,400	89	<50% Grass cover, Poor, HSG D
36,400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3					**Direct Entry, Tc Direct**
0.6	257	0.0050	6.67	47.16	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
3.9	257	Total			

Subcatchment 17S: Grass in basin



Summary for Subcatchment 41S: east Roof to Basin #203

[47] Hint: Peak is 3637% of capacity of segment #2
[47] Hint: Peak is 1689% of capacity of segment #3
[47] Hint: Peak is 931% of capacity of segment #4
[47] Hint: Peak is 573% of capacity of segment #5
[47] Hint: Peak is 316% of capacity of segment #6
[47] Hint: Peak is 316% of capacity of segment #7

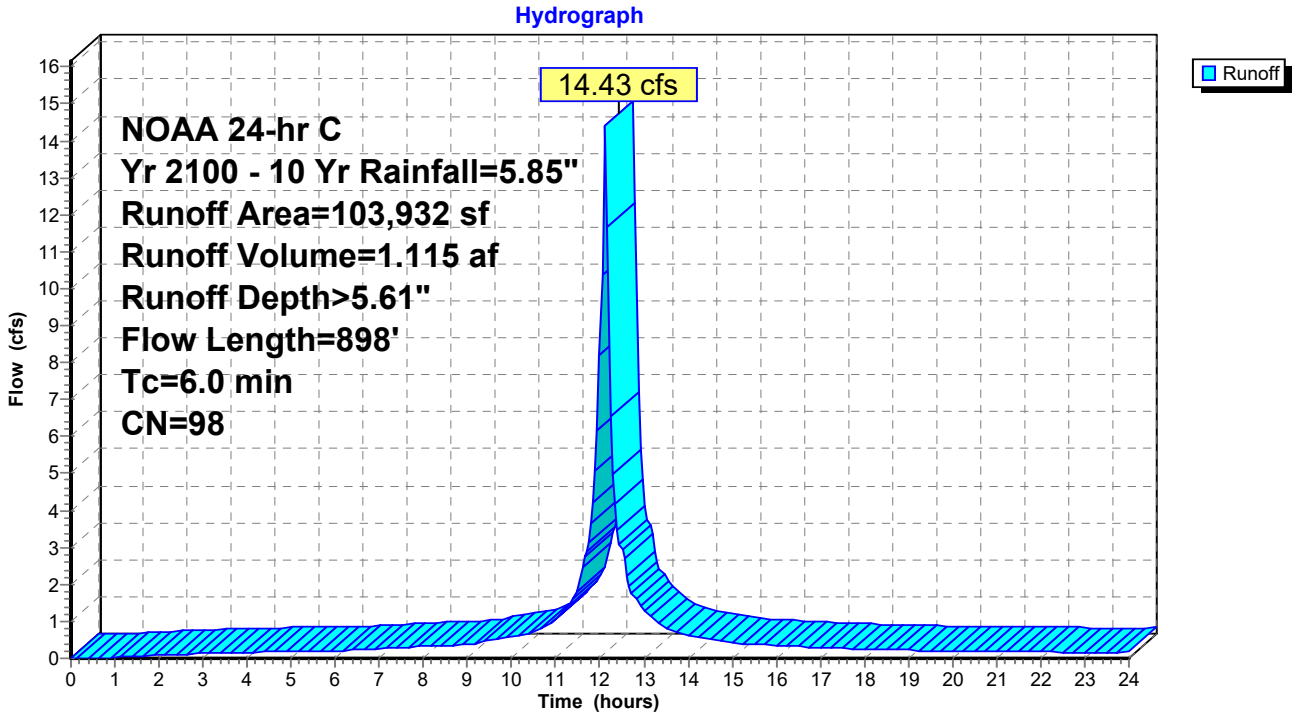
Runoff = 14.43 cfs @ 12.13 hrs, Volume= 1.115 af, Depth> 5.61"
Routed to Pond 49P : Basin 203

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Yr 2100 - 10 Yr Rainfall=5.85"

	Area (sf)	CN	Description
*	103,932	98	bldg
	103,932		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9					**Direct Entry, Tc Direct**
0.7	90	0.0050	2.02	0.40	**Pipe Channel, CMP_Round 6"** 6.0" Round Area= 0.2 sf Perim= 1.6' r= 0.13' n= 0.013 Corrugated PE, smooth interior
0.4	60	0.0050	2.45	0.85	**Pipe Channel, CMP_Round 8"** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.013 Corrugated PE, smooth interior
0.5	90	0.0050	2.84	1.55	**Pipe Channel, CMP_Round 10"** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.013 Corrugated PE, smooth interior
0.5	90	0.0050	3.21	2.52	**Pipe Channel, CMP_Round 12"** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.4	90	0.0050	3.72	4.57	**Pipe Channel, CMP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
1.0	215	0.0050	3.72	4.57	**Pipe Channel, CMP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
0.5	163	0.0050	5.09	16.00	**Pipe Channel, CMP_Round 24"** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
0.1	100	0.0736	25.60	180.95	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
6.0	898	Total			

Subcatchment 41S: east Roof to Basin #203



Summary for Subcatchment 42S: EAST TRUCK MVS

[49] Hint: Tc<2dt may require smaller dt

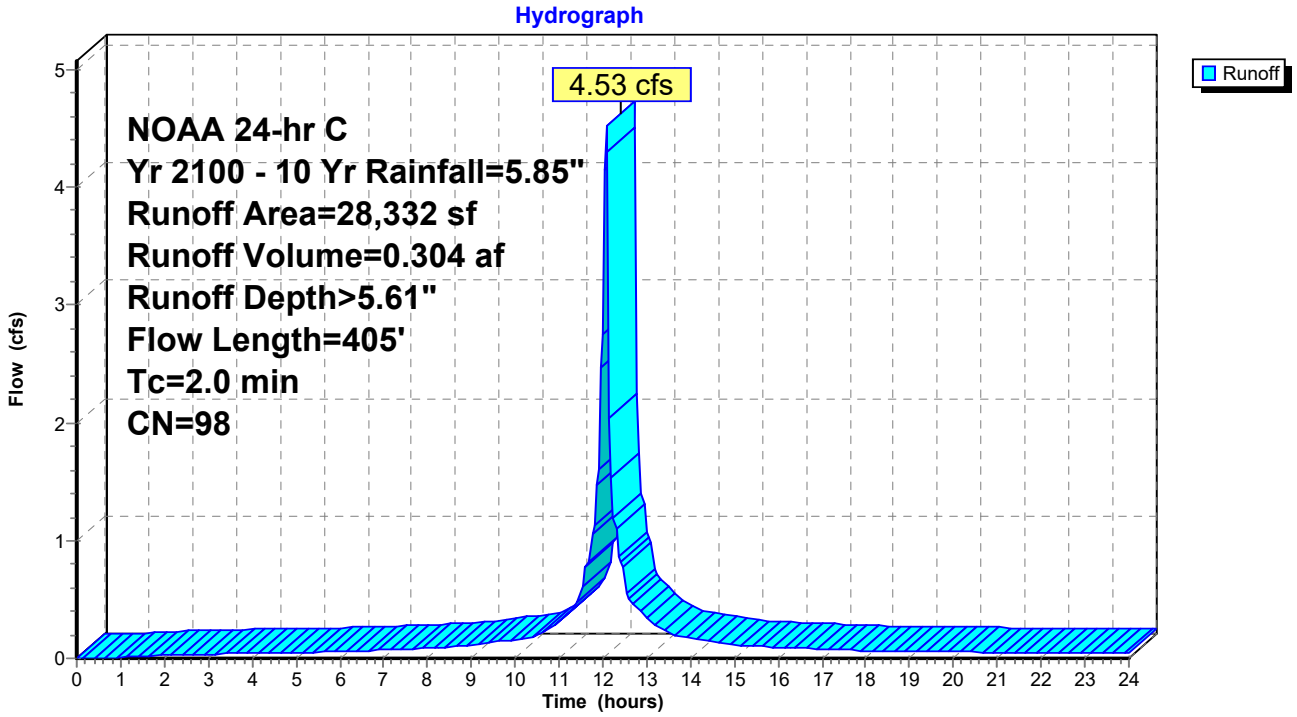
Runoff = 4.53 cfs @ 12.08 hrs, Volume= 0.304 af, Depth> 5.61"
Routed to Pond 51P : Basin 206

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Yr 2100 - 10 Yr Rainfall=5.85"

Area (sf)	CN	Description
28,332	98	Paved roads w/curbs & sewers, HSG D
28,332		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8					**Direct Entry, Tc Direct**
0.3	70	0.0050	3.72	4.57	**Pipe Channel, CMP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
0.2	56	0.0050	4.20	7.43	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.1	16	0.0050	4.20	7.43	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.5	163	0.0050	5.09	16.00	**Pipe Channel, CMP_Round 24"** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
0.1	100	0.0736	30.25	213.85	**Pipe Channel, RCP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.011 Concrete pipe, straight & clean
2.0	405	Total			

Subcatchment 42S: EAST TRUCK MVS



Summary for Subcatchment 43S: west Roof to Basin #104

[49] Hint: Tc<2dt may require smaller dt
[47] Hint: Peak is 4126% of capacity of segment #2
[47] Hint: Peak is 1057% of capacity of segment #3
[47] Hint: Peak is 650% of capacity of segment #4
[47] Hint: Peak is 358% of capacity of segment #5
[47] Hint: Peak is 220% of capacity of segment #6

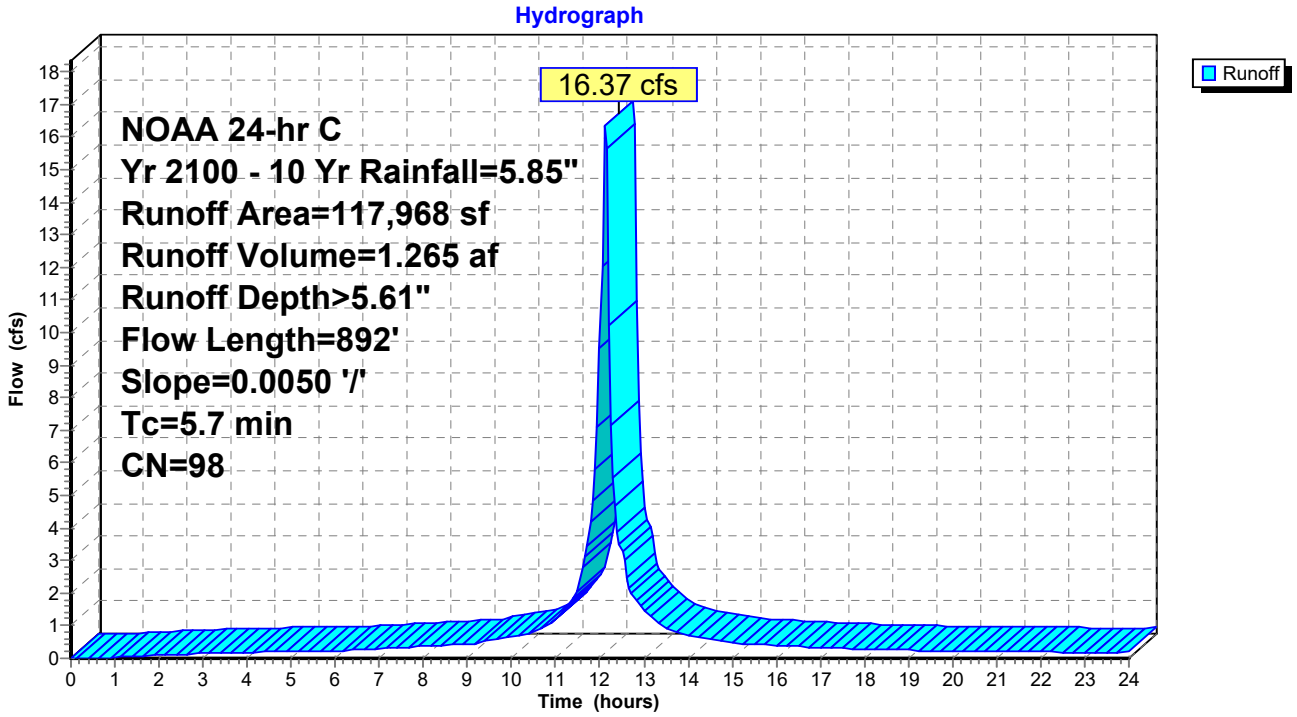
Runoff = 16.37 cfs @ 12.12 hrs, Volume= 1.265 af, Depth> 5.61"
Routed to Pond 48P : Basin 104

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Yr 2100 - 10 Yr Rainfall=5.85"

	Area (sf)	CN	Description
*	117,968	98	bldg
	117,968		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9					**Direct Entry, Tc Direct**
0.7	90	0.0050	2.02	0.40	**Pipe Channel, CMP_Round 6"** 6.0" Round Area= 0.2 sf Perim= 1.6' r= 0.13' n= 0.013 Corrugated PE, smooth interior
0.5	90	0.0050	2.84	1.55	**Pipe Channel, CMP_Round 10"** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.013 Corrugated PE, smooth interior
0.5	90	0.0050	3.21	2.52	**Pipe Channel, CMP_Round 12"** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.4	90	0.0050	3.72	4.57	**Pipe Channel, CMP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
1.1	275	0.0050	4.20	7.43	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.6	257	0.0050	6.67	47.16	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
5.7	892	Total			

Subcatchment 43S: west Roof to Basin #104



Summary for Subcatchment 44S: Grass in basin

[49] Hint: Tc<2dt may require smaller dt

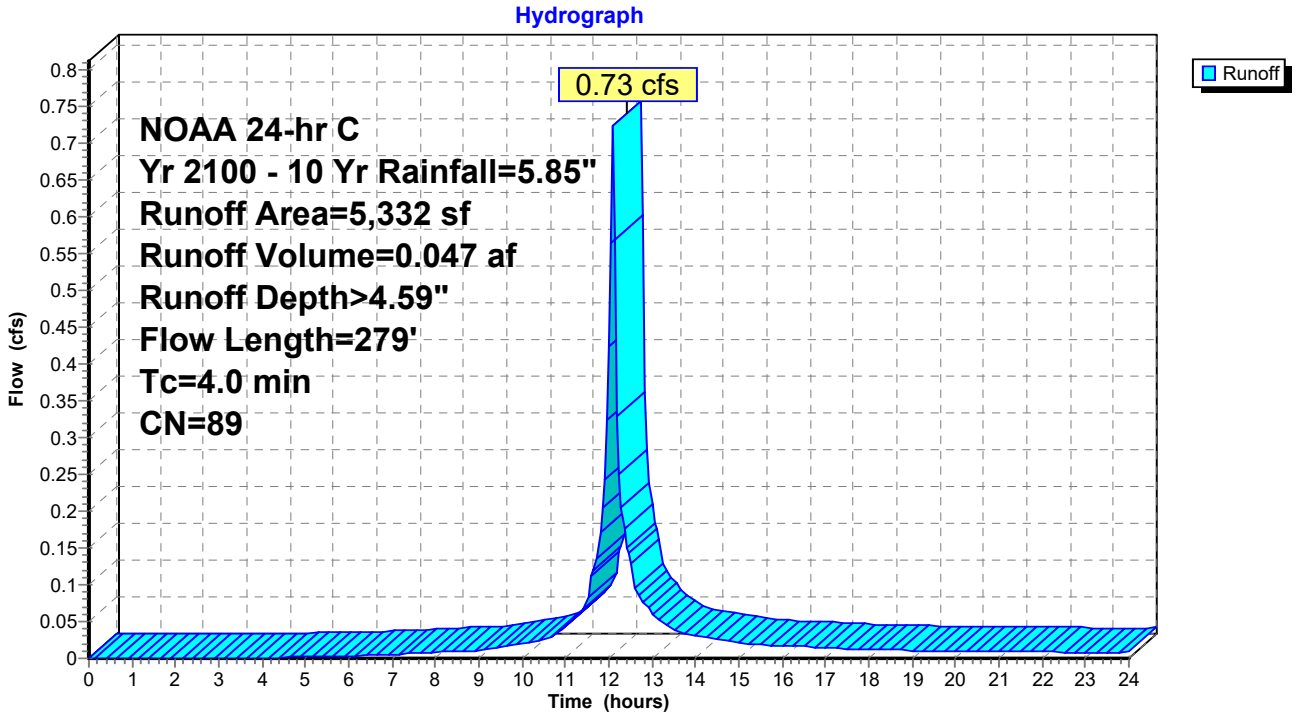
Runoff = 0.73 cfs @ 12.10 hrs, Volume= 0.047 af, Depth> 4.59"
Routed to Pond 51P : Basin 206

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Yr 2100 - 10 Yr Rainfall=5.85"

Area (sf)	CN	Description
5,332	89	<50% Grass cover, Poor, HSG D
5,332		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3					**Direct Entry, Tc Direct**
0.1	16	0.0050	4.20	7.43	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.5	163	0.0050	5.09	16.00	**Pipe Channel, CMP_Round 24"** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
0.1	100	0.0736	25.60	180.95	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
4.0	279	Total			

Subcatchment 44S: Grass in basin



Summary for Subcatchment 45S: Grass in basin

[49] Hint: Tc<2dt may require smaller dt

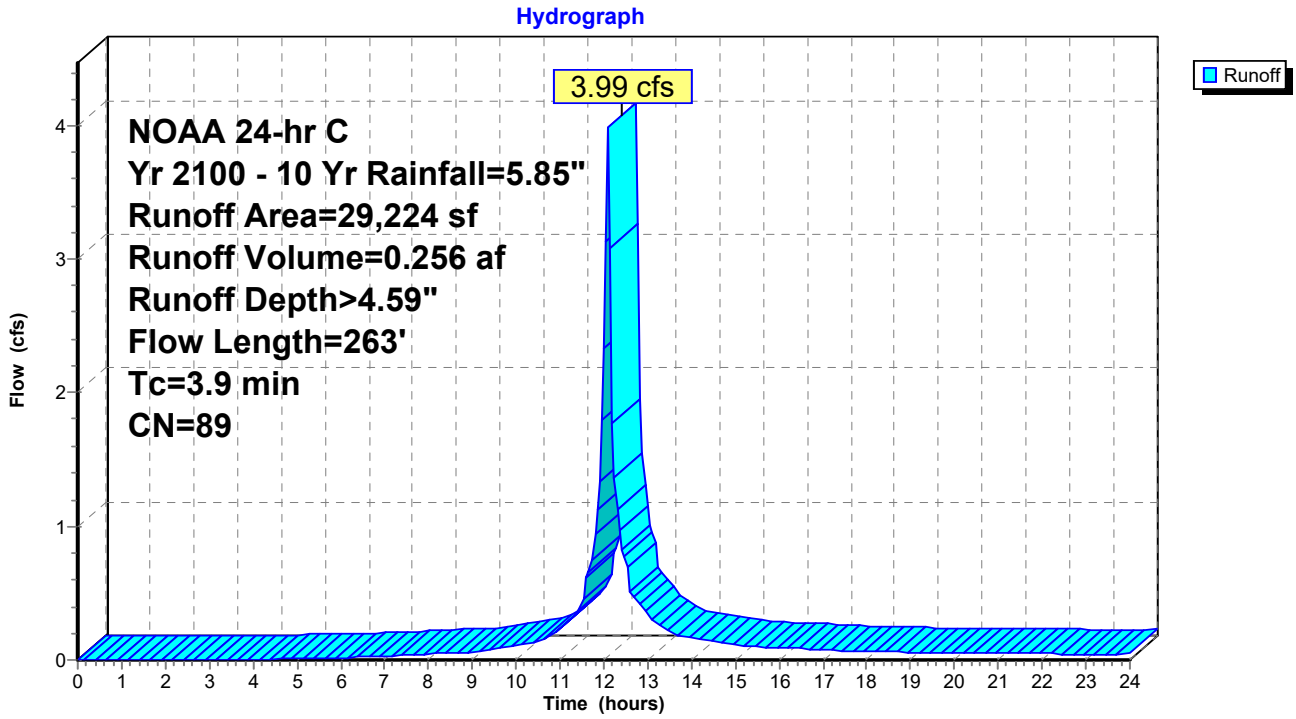
Runoff = 3.99 cfs @ 12.10 hrs, Volume= 0.256 af, Depth> 4.59"
Routed to Pond 49P : Basin 203

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Yr 2100 - 10 Yr Rainfall=5.85"

Area (sf)	CN	Description
29,224	89	<50% Grass cover, Poor, HSG D
29,224		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3					**Direct Entry, Tc Direct**
0.5	163	0.0050	5.09	16.00	**Pipe Channel, CMP_Round 24"** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
0.1	100	0.0736	25.60	180.95	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
3.9	263	Total			

Subcatchment 45S: Grass in basin



Summary for Pond 47P: Basin 112

[92] Warning: Device #2 is above defined storage

Inflow Area = 1.397 ac, 81.07% Impervious, Inflow Depth > 5.42" for Yr 2100 - 10 Yr event
Inflow = 9.34 cfs @ 12.09 hrs, Volume= 0.630 af
Outflow = 4.34 cfs @ 12.19 hrs, Volume= 0.506 af, Atten= 54%, Lag= 6.2 min
Primary = 4.34 cfs @ 12.19 hrs, Volume= 0.506 af
Routed to Pond 48P : Basin 104
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 48P : Basin 104

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 48.08' @ 12.19 hrs Surf.Area= 4,145 sf Storage= 13,017 cf

Plug-Flow detention time= 200.2 min calculated for 0.506 af (80% of inflow)
Center-of-Mass det. time= 121.1 min (871.4 - 750.3)

Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	14,810 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

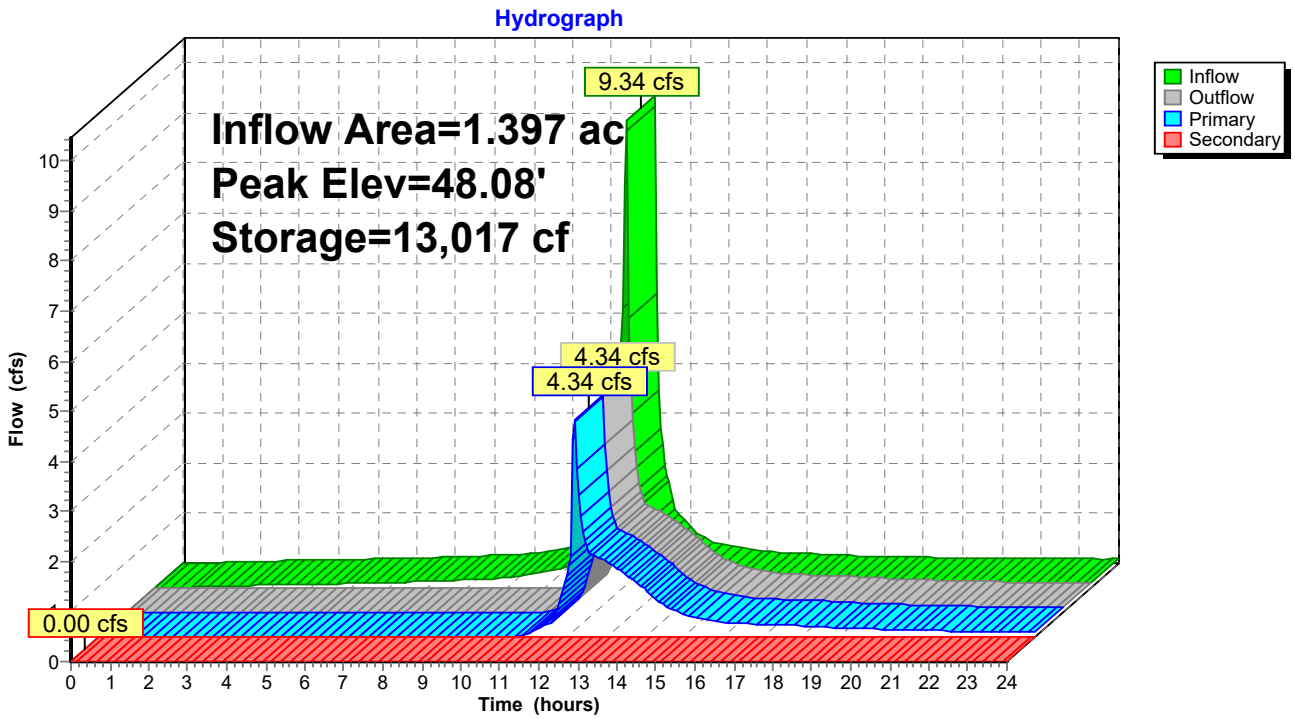
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	2,461	213.0	0.0	0	0	2,461
42.84	2,461	213.0	40.0	10	10	2,463
43.00	2,461	213.0	40.0	158	167	2,497
44.00	2,461	213.0	40.0	984	1,152	2,710
44.83	2,461	213.0	40.0	817	1,969	2,887
44.84	2,461	213.0	100.0	25	1,993	2,889
45.00	2,568	216.0	100.0	402	2,396	2,997
46.00	3,287	251.0	100.0	2,920	5,316	4,319
47.00	3,676	265.7	100.0	3,480	8,796	4,976
48.00	4,082	276.0	100.0	3,877	12,673	5,496
48.50	4,468	290.0	100.0	2,137	14,810	6,142

Device	Routing	Invert	Outlet Devices
#1	Primary	45.10'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 45.10' / 45.10' S= 0.0000 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf
#2	Secondary	48.50'	**20.0' long + 0.3 '/' SideZ x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#3	Device 1	47.95'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.40'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.18 cfs @ 12.19 hrs HW=48.08' (Free Discharge)
└─**1=Culvert** (Passes 4.18 cfs of 12.71 cfs potential flow)
  ├─**3=Orifice/Grate** (Weir Controls 2.44 cfs @ 1.18 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 1.13 cfs @ 5.76 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.61 cfs @ 6.97 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 47P: Basin 112



Summary for Pond 48P: Basin 104

[92] Warning: Device #2 is above defined storage
[81] Warning: Exceeded Pond 47P by 0.44' @ 22.85 hrs

Inflow Area = 4.940 ac, 77.74% Impervious, Inflow Depth > 5.08" for Yr 2100 - 10 Yr event
Inflow = 24.00 cfs @ 12.13 hrs, Volume= 2.090 af
Outflow = 3.94 cfs @ 12.81 hrs, Volume= 1.044 af, Atten= 84%, Lag= 40.7 min
Primary = 3.94 cfs @ 12.81 hrs, Volume= 1.044 af
Routed to Link 24L : POA 1 (2100)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 24L : POA 1 (2100)

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 46.79' @ 12.81 hrs Surf.Area= 21,045 sf Storage= 52,109 cf

Plug-Flow detention time= 306.7 min calculated for 1.044 af (50% of inflow)
Center-of-Mass det. time= 174.1 min (956.7 - 782.6)

Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	87,112 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

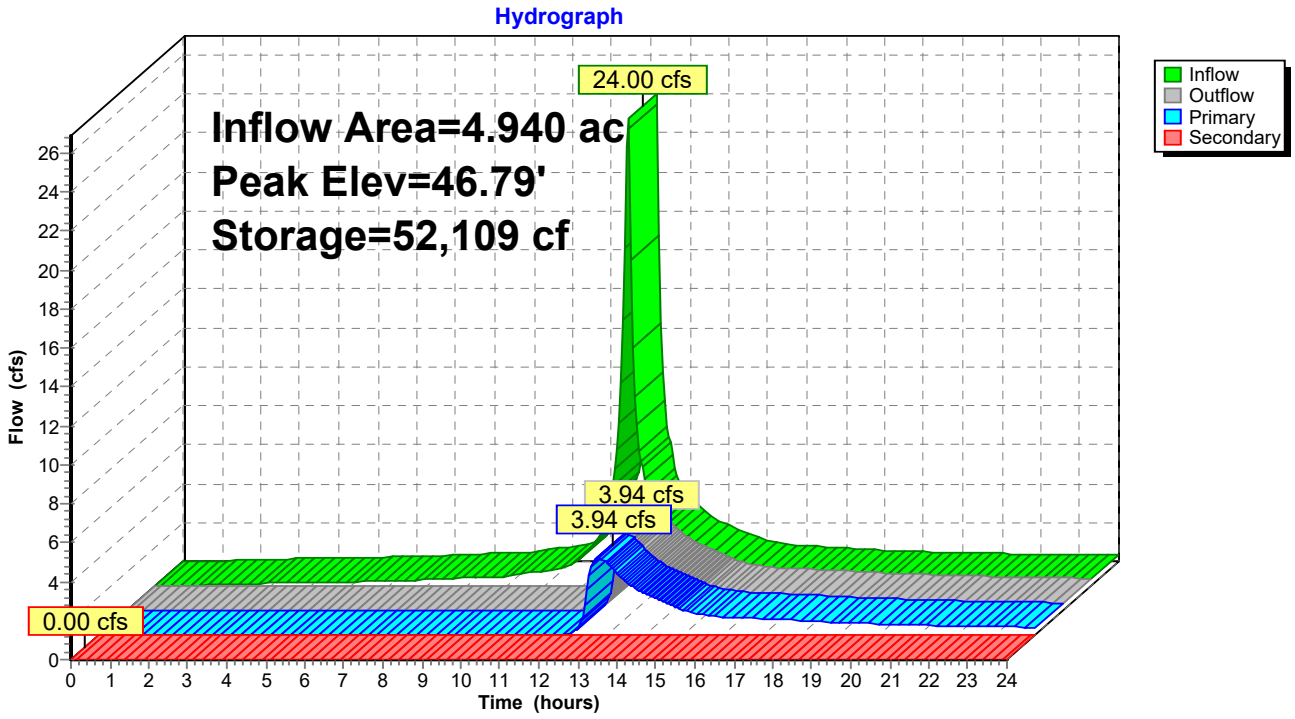
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	17,239	897.0	0.0	0	0	17,239
42.84	17,239	897.0	40.0	69	69	17,248
43.00	17,239	897.0	40.0	1,103	1,172	17,391
44.00	17,239	897.0	40.0	6,896	8,068	18,288
44.83	17,239	897.0	40.0	5,723	13,791	19,033
44.84	17,239	897.0	100.0	172	13,964	19,042
45.00	17,690	902.0	100.0	2,794	16,758	19,772
46.00	20,420	926.0	100.0	19,039	35,797	23,381
47.00	21,216	939.0	100.0	20,817	56,613	25,524
48.00	22,029	952.0	100.0	21,621	78,234	27,697
48.40	22,357	957.0	100.0	8,877	87,112	28,547

Device	Routing	Invert	Outlet Devices
#1	Primary	44.00'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 44.00' / 44.00' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#2	Secondary	48.40'	**50.0' long x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#3	Device 1	46.65'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.40'	**18.0" W x 3.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.94 cfs @ 12.81 hrs HW=46.79' (Free Discharge)
└─**1=Culvert** (Passes 3.94 cfs of 12.14 cfs potential flow)
  ├─**3=Orifice/Grate** (Weir Controls 2.65 cfs @ 1.21 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 0.91 cfs @ 2.44 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.38 cfs @ 4.31 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 48P: Basin 104



Summary for Pond 49P: Basin 203

[92] Warning: Device #2 is above defined storage
[81] Warning: Exceeded Pond 51P by 0.90' @ 14.15 hrs

Inflow Area = 3.830 ac, 79.29% Impervious, Inflow Depth > 5.19" for Yr 2100 - 10 Yr event
Inflow = 19.80 cfs @ 12.12 hrs, Volume= 1.658 af
Outflow = 1.92 cfs @ 13.27 hrs, Volume= 0.939 af, Atten= 90%, Lag= 68.9 min
Primary = 1.92 cfs @ 13.27 hrs, Volume= 0.939 af
Routed to Link 24L : POA 1 (2100)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 24L : POA 1 (2100)

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 47.36' @ 13.27 hrs Surf.Area= 16,619 sf Storage= 46,223 cf

Plug-Flow detention time= 318.9 min calculated for 0.937 af (56% of inflow)
Center-of-Mass det. time= 203.7 min (972.1 - 768.4)

Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	64,356 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

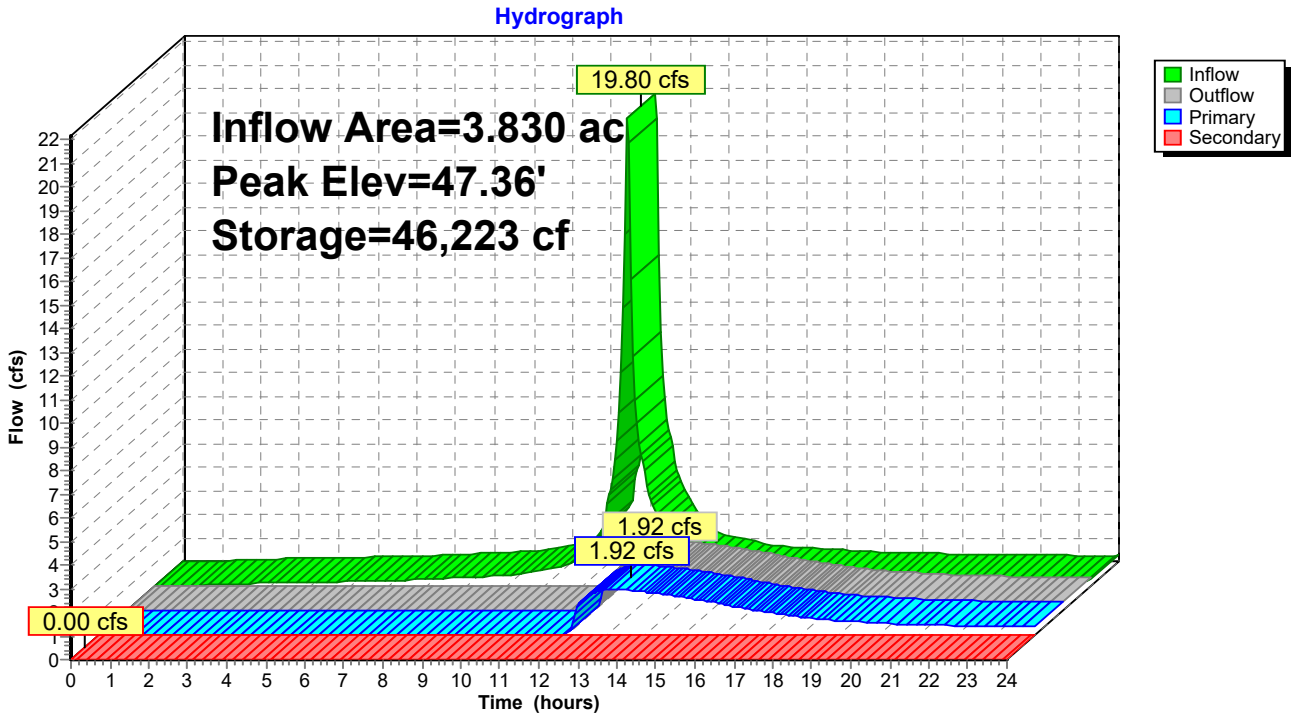
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	11,929	737.0	0.0	0	0	11,929
42.84	11,929	737.0	40.0	48	48	11,936
43.00	11,929	737.0	40.0	763	811	12,054
44.00	11,929	737.0	40.0	4,772	5,583	12,791
44.83	11,929	737.0	40.0	3,960	9,543	13,403
44.84	11,929	737.0	100.0	119	9,662	13,410
45.00	12,301	741.0	100.0	1,938	11,601	13,895
46.00	14,572	762.0	100.0	13,420	25,021	16,517
47.00	16,075	784.0	100.0	15,317	40,339	19,332
48.00	17,607	806.0	100.0	16,835	57,174	22,227
48.40	18,306	815.0	100.0	7,182	64,356	23,432

Device	Routing	Invert	Outlet Devices
#1	Primary	39.00'	**21.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 39.00' / 39.00' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 2.41 sf
#2	Secondary	48.40'	**50.0' long x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#3	Device 1	47.70'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.30'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.93 cfs @ 13.27 hrs HW=47.36' (Free Discharge)
└─**1=Culvert** (Passes 1.93 cfs of 31.68 cfs potential flow)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  ├─**4=Orifice/Grate** (Orifice Controls 1.43 cfs @ 4.10 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.49 cfs @ 5.64 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 49P: Basin 203



Summary for Pond 51P: Basin 206

[92] Warning: Device #2 is above defined storage

Inflow Area = 0.773 ac, 84.16% Impervious, Inflow Depth > 5.45" for Yr 2100 - 10 Yr event
Inflow = 5.23 cfs @ 12.08 hrs, Volume= 0.351 af
Outflow = 1.80 cfs @ 12.21 hrs, Volume= 0.286 af, Atten= 66%, Lag= 8.0 min
Primary = 1.80 cfs @ 12.21 hrs, Volume= 0.286 af
Routed to Pond 49P : Basin 203
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 49P : Basin 203

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 48.12' @ 12.21 hrs Surf.Area= 1,799 sf Storage= 6,316 cf

Plug-Flow detention time= 165.8 min calculated for 0.286 af (82% of inflow)
Center-of-Mass det. time= 89.7 min (838.4 - 748.7)

Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	7,008 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

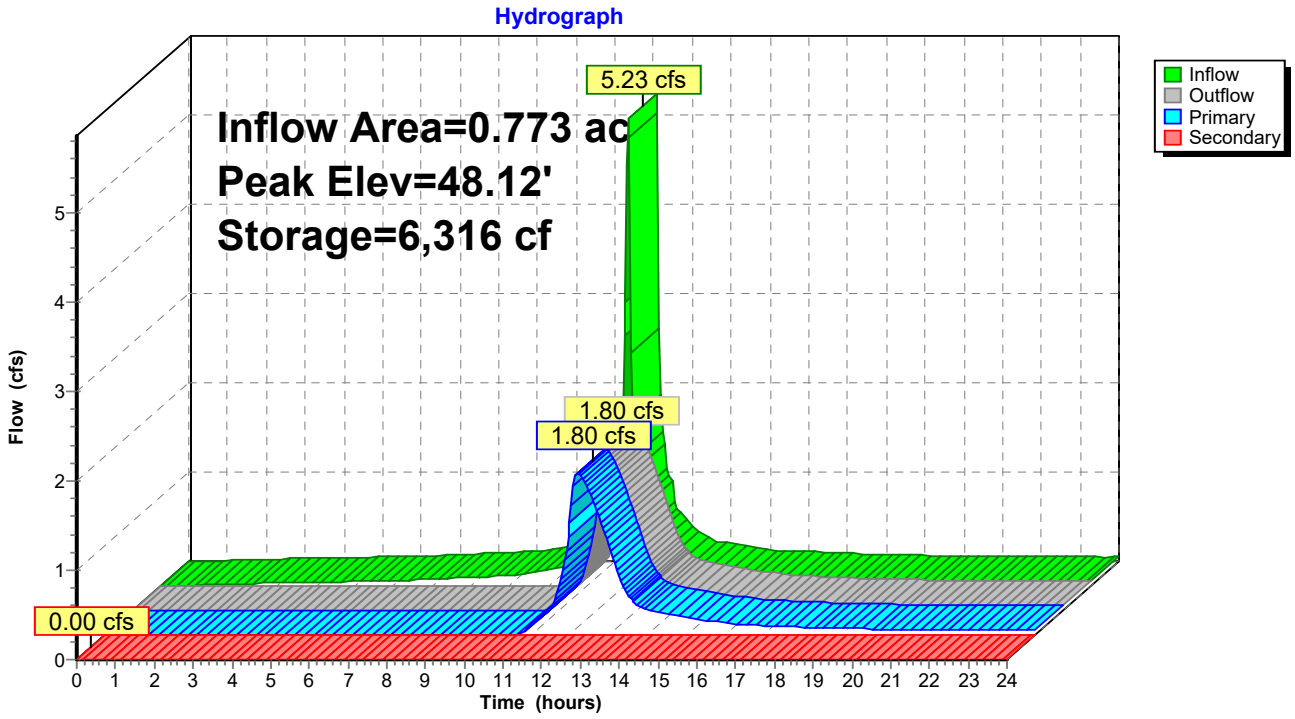
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	1,435	180.0	0.0	0	0	1,435
42.84	1,435	180.0	40.0	6	6	1,437
43.00	1,435	180.0	40.0	92	98	1,466
44.00	1,435	180.0	40.0	574	672	1,646
44.83	1,435	180.0	40.0	476	1,148	1,795
44.84	1,435	180.0	100.0	14	1,162	1,797
45.00	1,435	180.0	100.0	230	1,392	1,826
46.00	1,489	190.0	100.0	1,462	2,854	2,173
47.00	1,611	213.0	100.0	1,550	4,403	2,938
48.00	1,777	233.0	100.0	1,693	6,097	3,682
48.50	1,869	240.0	100.0	911	7,008	3,971

Device	Routing	Invert	Outlet Devices
#1	Primary	45.10'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 45.10' / 45.10' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#2	Secondary	48.50'	**16.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#3	Device 1	48.20'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.30'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.80 cfs @ 12.21 hrs HW=48.12' (Free Discharge)
└─**1=Culvert** (Passes 1.80 cfs of 12.81 cfs potential flow)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  ├─**4=Orifice/Grate** (Orifice Controls 1.18 cfs @ 6.03 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.61 cfs @ 7.03 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 51P: Basin 206

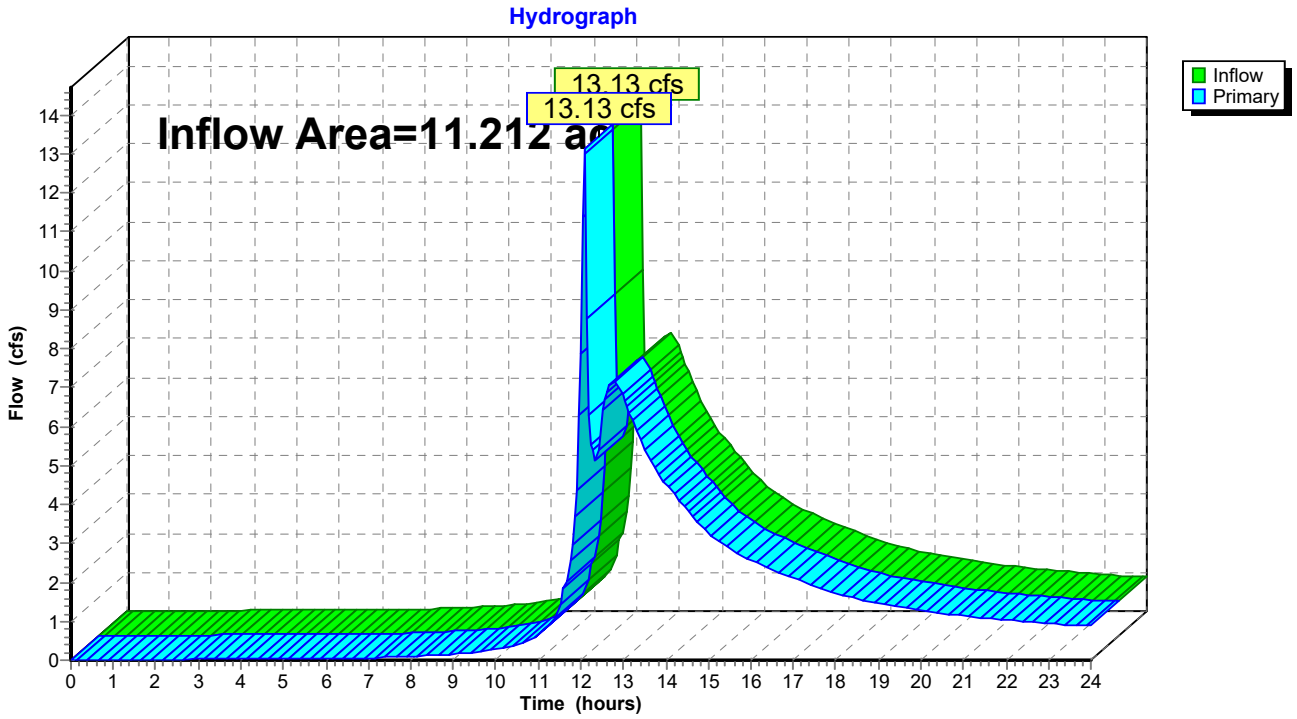


Summary for Link 24L: POA 1 (2100)

Inflow Area = 11.212 ac, 65.35% Impervious, Inflow Depth > 3.00" for Yr 2100 - 10 Yr event
Inflow = 13.13 cfs @ 12.09 hrs, Volume= 2.798 af
Primary = 13.13 cfs @ 12.09 hrs, Volume= 2.798 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 24L: POA 1 (2100)



4.7 RUNOFF & HYDROGRAPH ANALYSIS: PROPOSED 100-YEAR STORM EVENT YEAR 2100 PROJECTION

PREPARED: September 19, 2025
REVISED: December 15, 2025

300-356 ENTERPRISE AVE.
CITY OF TRENTON
BLOCK 23203, LOT 1
BLOCK 23102 LOTS 2 & 9
TOWNSHIP OF LAWRENCE
BLOCK 602, LOTS 1 & 2
MERCER COUNTY, NEW JERSEY

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment11S: WEST CAR/TRUCK Runoff Area=49,320 sf 100.00% Impervious Runoff Depth>10.90"
Flow Length=507' Tc=2.5 min CN=98 Runoff=14.91 cfs 1.028 af

Subcatchment14S: PATH Runoff Area=19,609 sf 100.00% Impervious Runoff Depth>10.90"
Tc=0.8 min CN=98 Runoff=5.91 cfs 0.409 af

Subcatchment15S: Rest of the grass Runoff Area=86,744 sf 0.00% Impervious Runoff Depth>8.61"
Tc=3.3 min CN=80 Runoff=22.93 cfs 1.429 af

Subcatchment16S: Grass in basin and Runoff Area=11,513 sf 0.00% Impervious Runoff Depth>9.78"
Flow Length=287' Slope=0.0050 '/' Tc=4.0 min CN=89 Runoff=3.18 cfs 0.215 af

Subcatchment17S: Grass in basin Runoff Area=36,400 sf 0.00% Impervious Runoff Depth>9.78"
Flow Length=257' Slope=0.0050 '/' Tc=3.9 min CN=89 Runoff=10.09 cfs 0.681 af

Subcatchment41S: east Roof to Basin Runoff Area=103,932 sf 100.00% Impervious Runoff Depth>10.89"
Flow Length=898' Tc=6.0 min CN=98 Runoff=27.56 cfs 2.165 af

Subcatchment42S: EAST TRUCK MVS Runoff Area=28,332 sf 100.00% Impervious Runoff Depth>10.90"
Flow Length=405' Tc=2.0 min CN=98 Runoff=8.65 cfs 0.591 af

Subcatchment43S: west Roof to Basin Runoff Area=117,968 sf 100.00% Impervious Runoff Depth>10.89"
Flow Length=892' Slope=0.0050 '/' Tc=5.7 min CN=98 Runoff=31.26 cfs 2.458 af

Subcatchment44S: Grass in basin Runoff Area=5,332 sf 0.00% Impervious Runoff Depth>9.78"
Flow Length=279' Tc=4.0 min CN=89 Runoff=1.47 cfs 0.100 af

Subcatchment45S: Grass in basin Runoff Area=29,224 sf 0.00% Impervious Runoff Depth>9.78"
Flow Length=263' Tc=3.9 min CN=89 Runoff=8.10 cfs 0.547 af

Pond 47P: Basin 112 Peak Elev=48.48' Storage=14,729 cf Inflow=18.03 cfs 1.243 af
Primary=13.98 cfs 1.105 af Secondary=0.00 cfs 0.000 af Outflow=13.98 cfs 1.105 af

Pond 48P: Basin 104 Peak Elev=48.32' Storage=85,305 cf Inflow=54.87 cfs 4.244 af
Primary=16.07 cfs 3.146 af Secondary=0.00 cfs 0.000 af Outflow=16.07 cfs 3.146 af

Pond 49P: Basin 203 Peak Elev=48.36' Storage=63,575 cf Inflow=44.33 cfs 3.335 af
Primary=30.74 cfs 2.561 af Secondary=0.00 cfs 0.000 af Outflow=30.74 cfs 2.561 af

Pond 51P: Basin 206 Peak Elev=48.48' Storage=6,973 cf Inflow=10.07 cfs 0.690 af
Primary=9.78 cfs 0.624 af Secondary=0.00 cfs 0.000 af Outflow=9.78 cfs 0.624 af

Link 24L: POA 1 (2100) Inflow=61.95 cfs 7.545 af
Primary=61.95 cfs 7.545 af

Total Runoff Area = 11.212 ac Runoff Volume = 9.622 af Average Runoff Depth = 10.30"
34.65% Pervious = 3.885 ac 65.35% Impervious = 7.327 ac

Summary for Subcatchment 11S: WEST CAR/TRUCK MVS

[49] Hint: Tc<2dt may require smaller dt
[47] Hint: Peak is 323% of capacity of segment #2
[47] Hint: Peak is 230% of capacity of segment #3
[47] Hint: Peak is 201% of capacity of segment #4

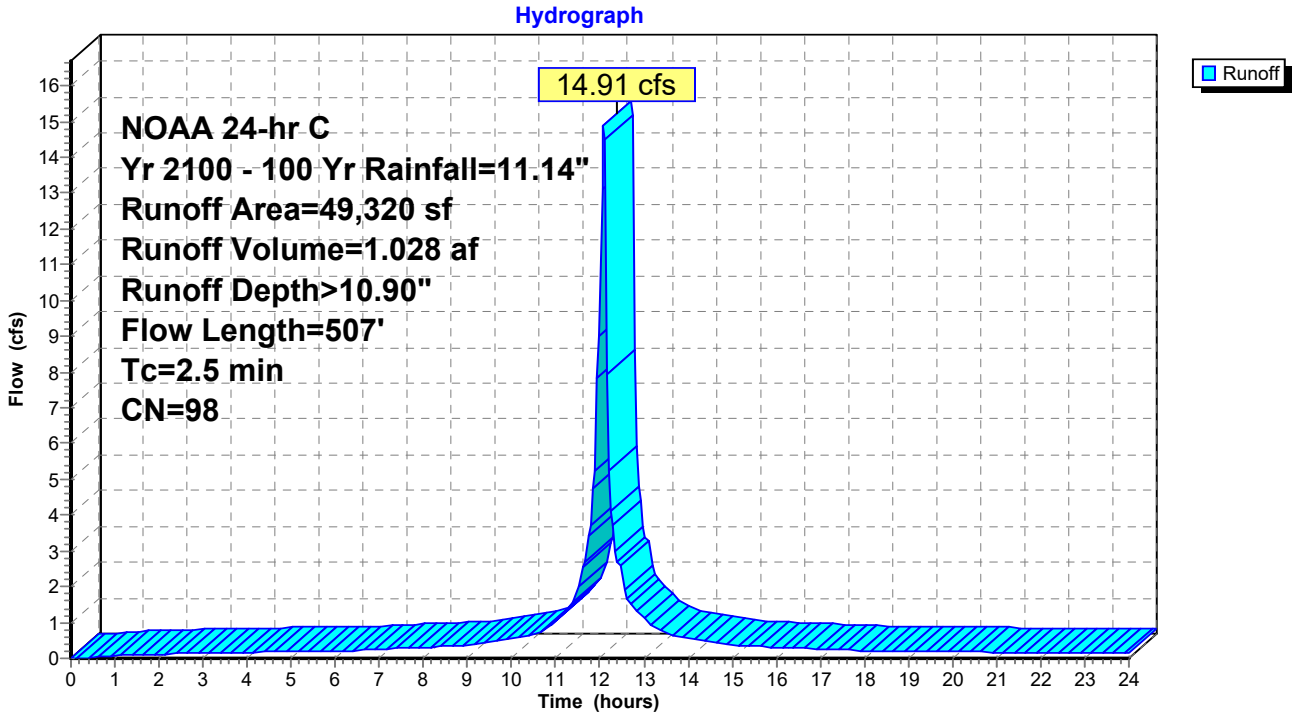
Runoff = 14.91 cfs @ 12.08 hrs, Volume= 1.028 af, Depth>10.90"
Routed to Pond 47P : Basin 112

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Yr 2100 - 100 Yr Rainfall=11.14"

Area (sf)	CN	Description
49,320	98	Paved roads w/curbs & sewers, HSG D
49,320		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8					**Direct Entry, Tc Direct**
0.4	89	0.0051	3.76	4.61	**Pipe Channel, CMP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
0.6	131	0.0038	3.66	6.48	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.1	30	0.0050	4.20	7.43	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.6	257	0.0050	6.67	47.16	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
2.5	507	Total			

Subcatchment 11S: WEST CAR/TRUCK MVS



Summary for Subcatchment 14S: PATH

[49] Hint: Tc<2dt may require smaller dt

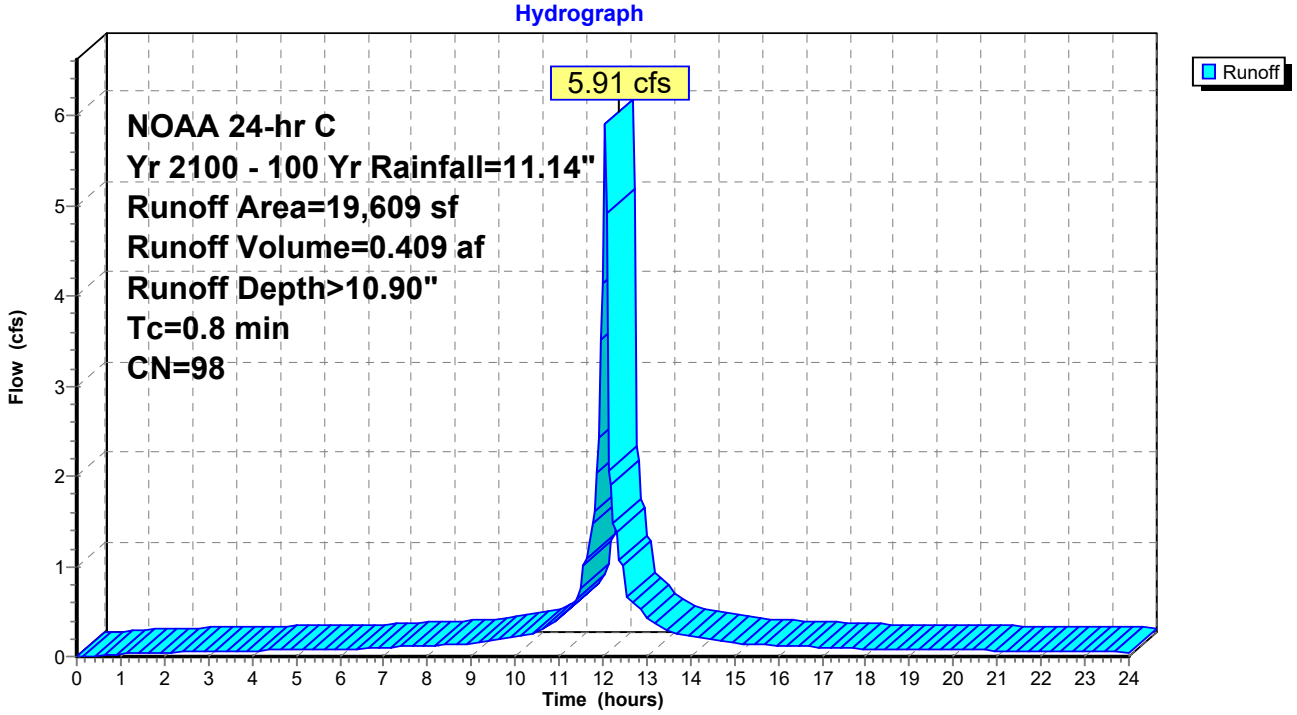
Runoff = 5.91 cfs @ 12.06 hrs, Volume= 0.409 af, Depth>10.90"
Routed to Link 24L : POA 1 (2100)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Yr 2100 - 100 Yr Rainfall=11.14"

Area (sf)	CN	Description
19,609	98	Paved roads w/curbs & sewers, HSG D
19,609		100.00% Impervious Area

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

Subcatchment 14S: PATH



Summary for Subcatchment 15S: Rest of the grass

[49] Hint: Tc<2dt may require smaller dt

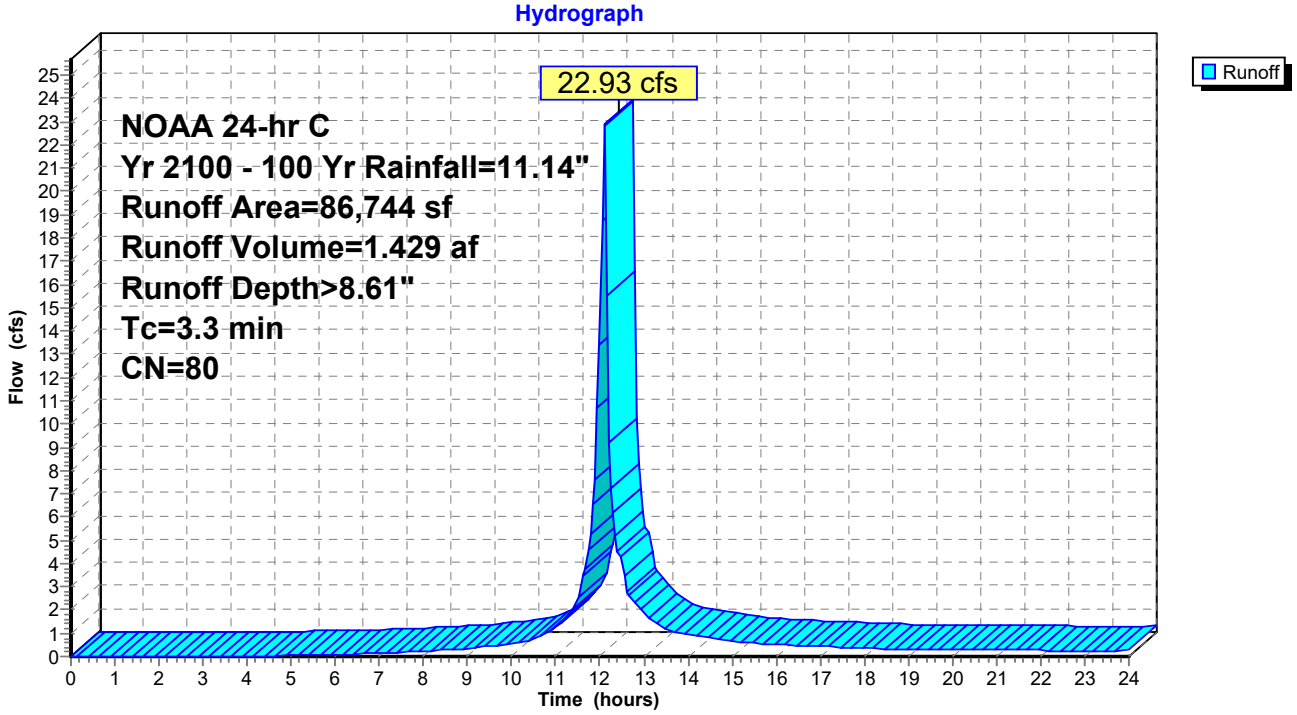
Runoff = 22.93 cfs @ 12.09 hrs, Volume= 1.429 af, Depth> 8.61"
Routed to Link 24L : POA 1 (2100)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Yr 2100 - 100 Yr Rainfall=11.14"

Area (sf)	CN	Description
86,744	80	>75% Grass cover, Good, HSG D
86,744		100.00% Pervious Area

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

Subcatchment 15S: Rest of the grass



Summary for Subcatchment 16S: Grass in basin and surrounding grass

[49] Hint: Tc<2dt may require smaller dt

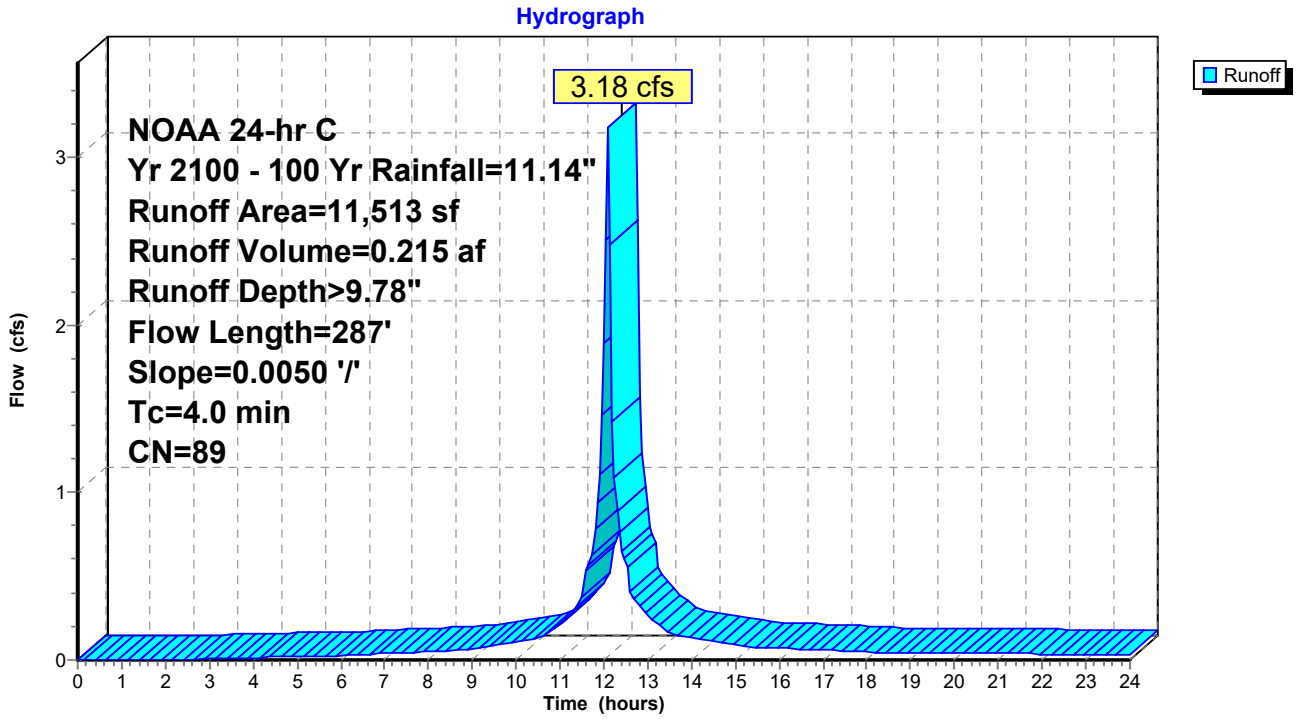
Runoff = 3.18 cfs @ 12.10 hrs, Volume= 0.215 af, Depth> 9.78"
Routed to Pond 47P : Basin 112

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Yr 2100 - 100 Yr Rainfall=11.14"

Area (sf)	CN	Description
11,513	89	<50% Grass cover, Poor, HSG D
11,513		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3					**Direct Entry, Tc Direct**
0.1	30	0.0050	4.20	7.43	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.6	257	0.0050	6.67	47.16	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
4.0	287	Total			

Subcatchment 16S: Grass in basin and surrounding grass



Summary for Subcatchment 17S: Grass in basin

[49] Hint: Tc<2dt may require smaller dt

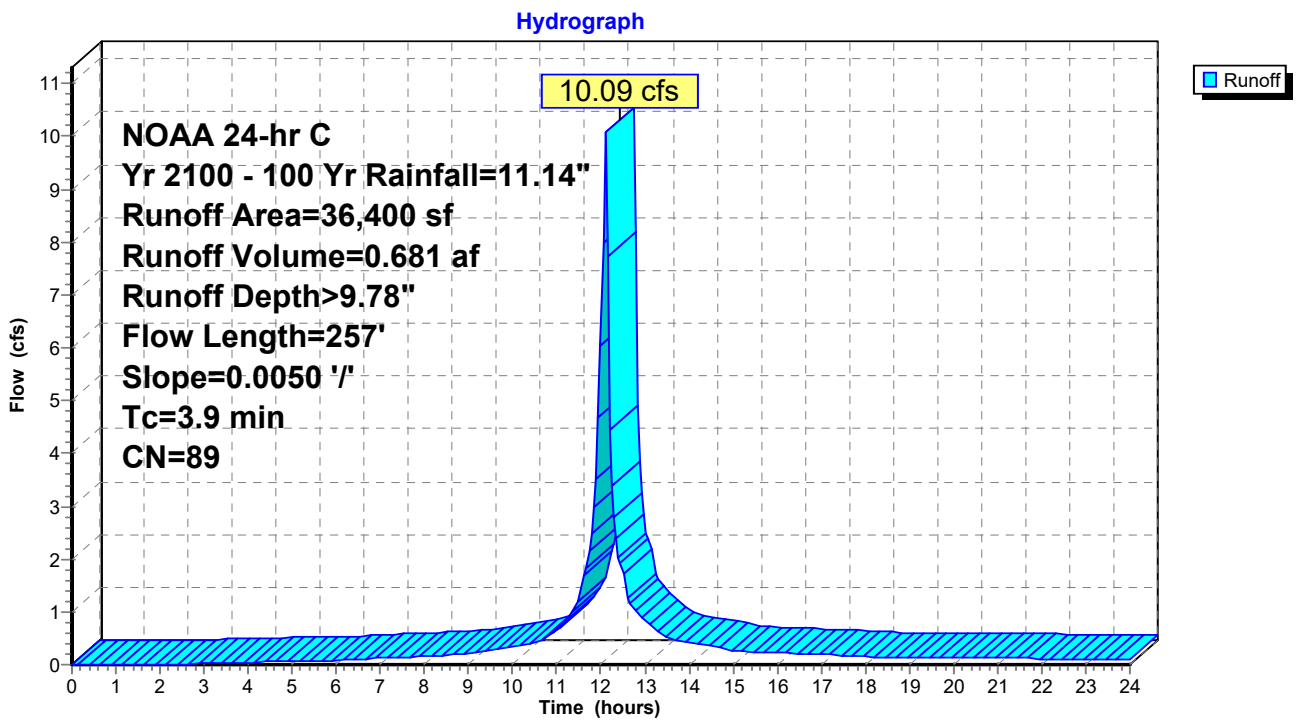
Runoff = 10.09 cfs @ 12.10 hrs, Volume= 0.681 af, Depth> 9.78"
Routed to Pond 48P : Basin 104

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Yr 2100 - 100 Yr Rainfall=11.14"

Area (sf)	CN	Description
36,400	89	<50% Grass cover, Poor, HSG D
36,400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3					**Direct Entry, Tc Direct**
0.6	257	0.0050	6.67	47.16	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
3.9	257	Total			

Subcatchment 17S: Grass in basin



Summary for Subcatchment 41S: east Roof to Basin #203

[47] Hint: Peak is 6945% of capacity of segment #2
[47] Hint: Peak is 3225% of capacity of segment #3
[47] Hint: Peak is 1779% of capacity of segment #4
[47] Hint: Peak is 1094% of capacity of segment #5
[47] Hint: Peak is 603% of capacity of segment #6
[47] Hint: Peak is 603% of capacity of segment #7
[47] Hint: Peak is 172% of capacity of segment #8

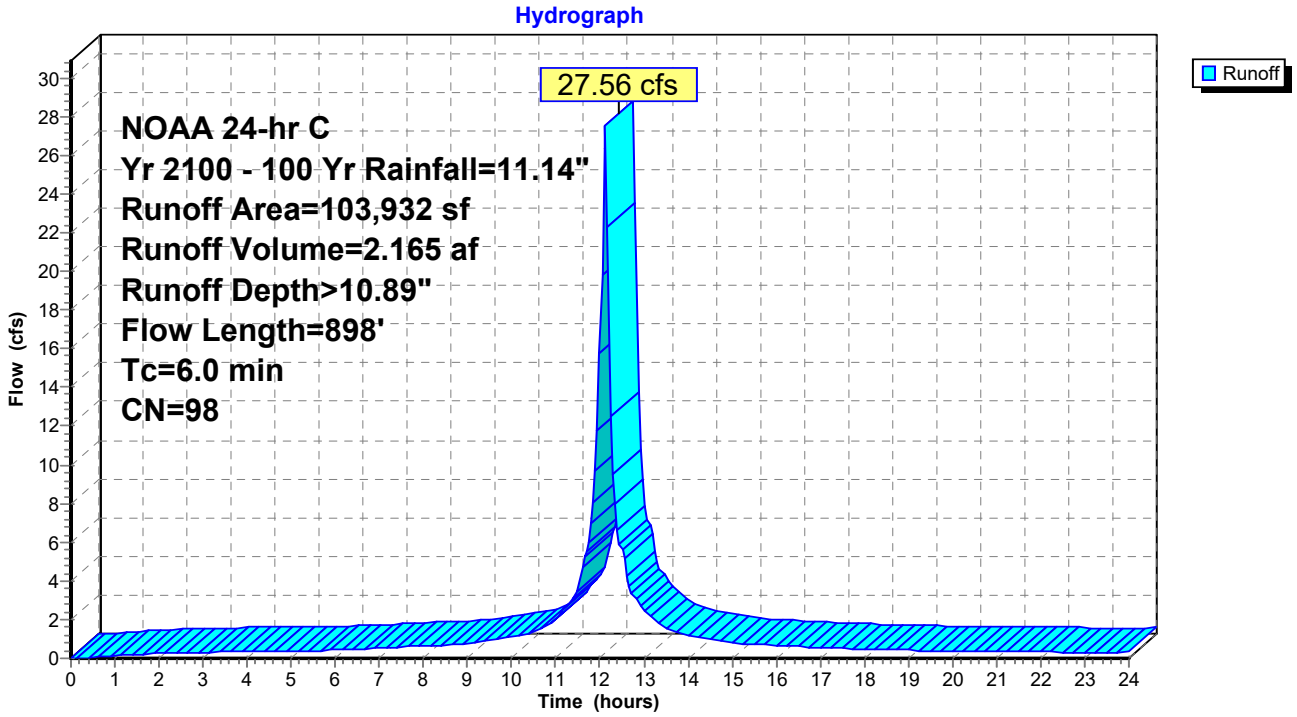
Runoff = 27.56 cfs @ 12.13 hrs, Volume= 2.165 af, Depth>10.89"
Routed to Pond 49P : Basin 203

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Yr 2100 - 100 Yr Rainfall=11.14"

	Area (sf)	CN	Description
*	103,932	98	bldg
	103,932		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9					**Direct Entry, Tc Direct**
0.7	90	0.0050	2.02	0.40	**Pipe Channel, CMP_Round 6"** 6.0" Round Area= 0.2 sf Perim= 1.6' r= 0.13' n= 0.013 Corrugated PE, smooth interior
0.4	60	0.0050	2.45	0.85	**Pipe Channel, CMP_Round 8"** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.013 Corrugated PE, smooth interior
0.5	90	0.0050	2.84	1.55	**Pipe Channel, CMP_Round 10"** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.013 Corrugated PE, smooth interior
0.5	90	0.0050	3.21	2.52	**Pipe Channel, CMP_Round 12"** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.4	90	0.0050	3.72	4.57	**Pipe Channel, CMP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
1.0	215	0.0050	3.72	4.57	**Pipe Channel, CMP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
0.5	163	0.0050	5.09	16.00	**Pipe Channel, CMP_Round 24"** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
0.1	100	0.0736	25.60	180.95	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
6.0	898	Total			

Subcatchment 41S: east Roof to Basin #203



Summary for Subcatchment 42S: EAST TRUCK MVS

[49] Hint: Tc<2dt may require smaller dt
[47] Hint: Peak is 189% of capacity of segment #2
[47] Hint: Peak is 116% of capacity of segment #3
[47] Hint: Peak is 116% of capacity of segment #4

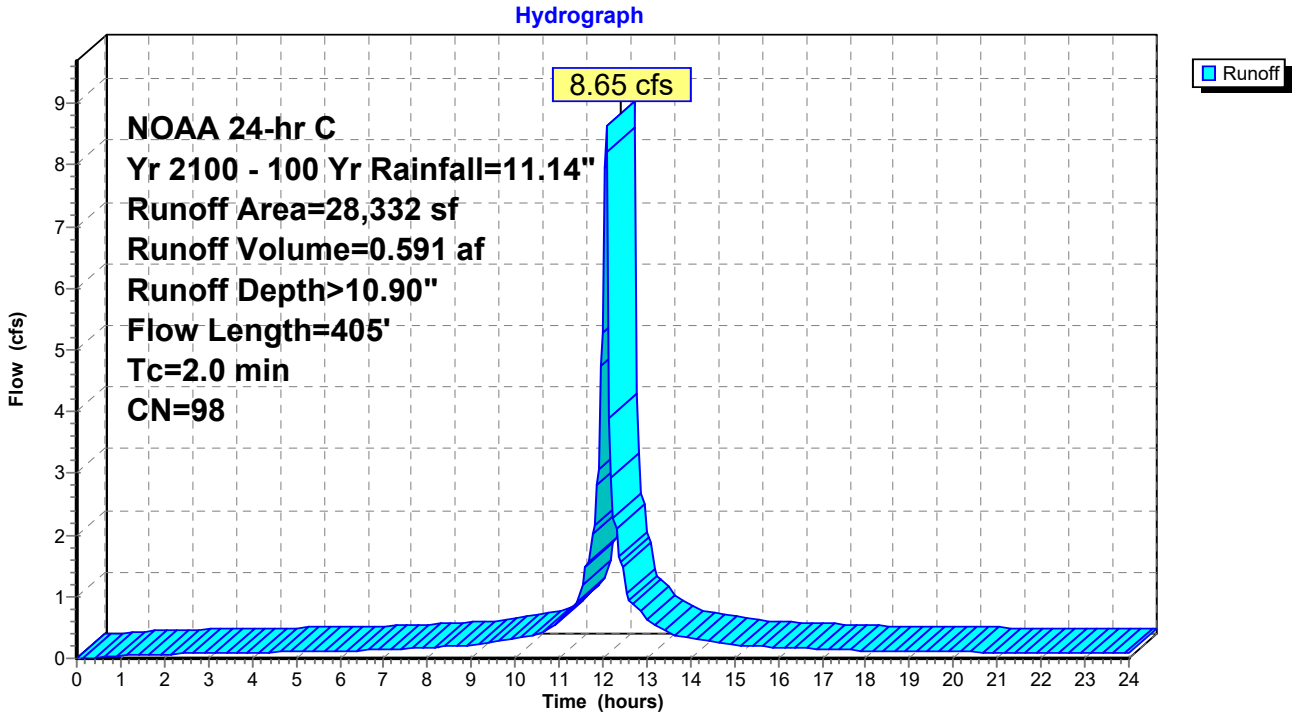
Runoff = 8.65 cfs @ 12.08 hrs, Volume= 0.591 af, Depth>10.90"
Routed to Pond 51P : Basin 206

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Yr 2100 - 100 Yr Rainfall=11.14"

Area (sf)	CN	Description
28,332	98	Paved roads w/curbs & sewers, HSG D
28,332		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8					**Direct Entry, Tc Direct**
0.3	70	0.0050	3.72	4.57	**Pipe Channel, CMP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
0.2	56	0.0050	4.20	7.43	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.1	16	0.0050	4.20	7.43	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.5	163	0.0050	5.09	16.00	**Pipe Channel, CMP_Round 24"** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
0.1	100	0.0736	30.25	213.85	**Pipe Channel, RCP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.011 Concrete pipe, straight & clean
2.0	405	Total			

Subcatchment 42S: EAST TRUCK MVS



Summary for Subcatchment 43S: west Roof to Basin #104

[49] Hint: Tc<2dt may require smaller dt
[47] Hint: Peak is 7879% of capacity of segment #2
[47] Hint: Peak is 2018% of capacity of segment #3
[47] Hint: Peak is 1241% of capacity of segment #4
[47] Hint: Peak is 684% of capacity of segment #5
[47] Hint: Peak is 421% of capacity of segment #6

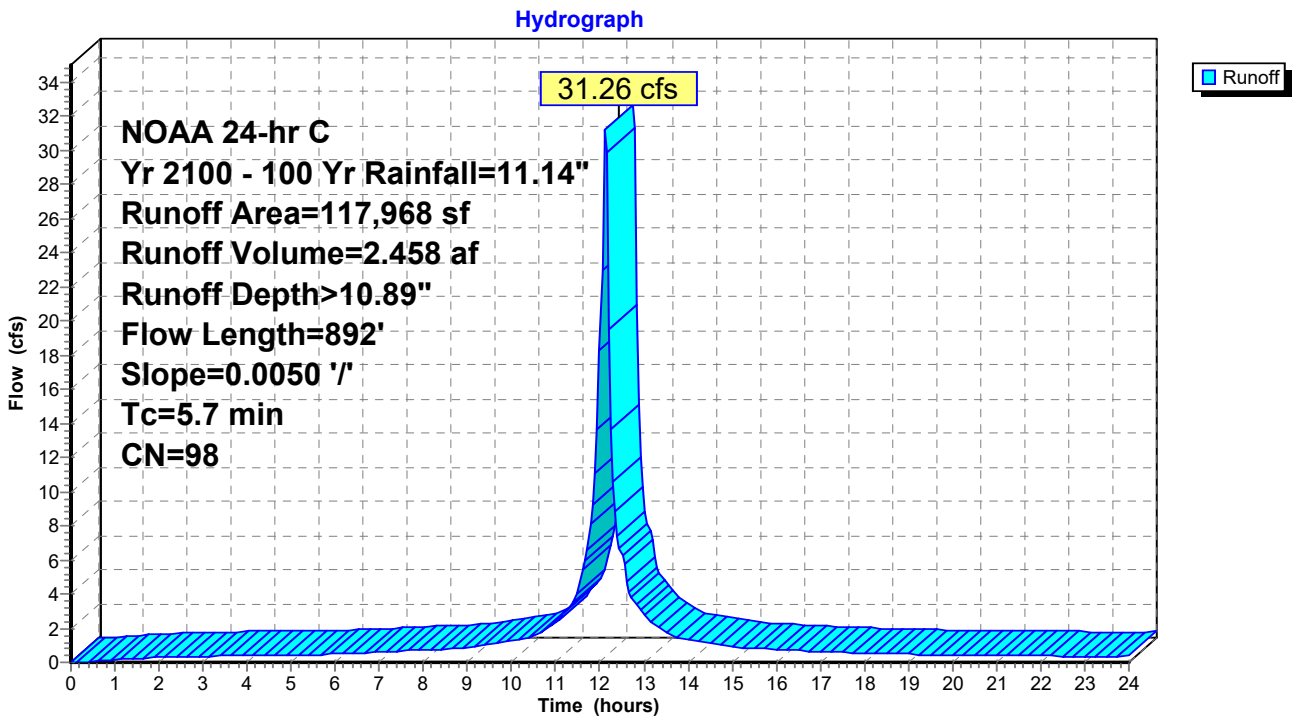
Runoff = 31.26 cfs @ 12.12 hrs, Volume= 2.458 af, Depth>10.89"
Routed to Pond 48P : Basin 104

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Yr 2100 - 100 Yr Rainfall=11.14"

	Area (sf)	CN	Description
*	117,968	98	bldg
	117,968		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9					**Direct Entry, Tc Direct**
0.7	90	0.0050	2.02	0.40	**Pipe Channel, CMP_Round 6"** 6.0" Round Area= 0.2 sf Perim= 1.6' r= 0.13' n= 0.013 Corrugated PE, smooth interior
0.5	90	0.0050	2.84	1.55	**Pipe Channel, CMP_Round 10"** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.013 Corrugated PE, smooth interior
0.5	90	0.0050	3.21	2.52	**Pipe Channel, CMP_Round 12"** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.4	90	0.0050	3.72	4.57	**Pipe Channel, CMP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
1.1	275	0.0050	4.20	7.43	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.6	257	0.0050	6.67	47.16	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
5.7	892	Total			

Subcatchment 43S: west Roof to Basin #104



Summary for Subcatchment 44S: Grass in basin

[49] Hint: Tc<2dt may require smaller dt

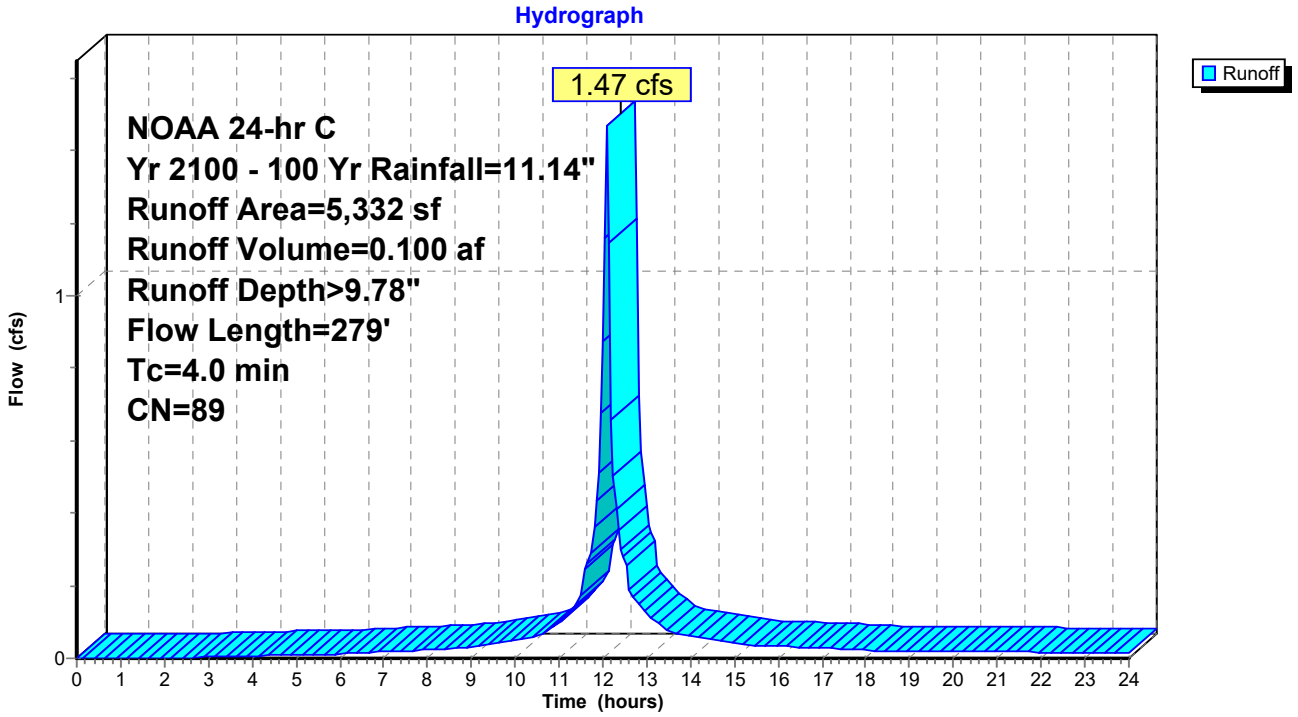
Runoff = 1.47 cfs @ 12.10 hrs, Volume= 0.100 af, Depth> 9.78"
Routed to Pond 51P : Basin 206

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Yr 2100 - 100 Yr Rainfall=11.14"

Area (sf)	CN	Description
5,332	89	<50% Grass cover, Poor, HSG D
5,332		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3					**Direct Entry, Tc Direct**
0.1	16	0.0050	4.20	7.43	**Pipe Channel, CMP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
0.5	163	0.0050	5.09	16.00	**Pipe Channel, CMP_Round 24"** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
0.1	100	0.0736	25.60	180.95	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
4.0	279	Total			

Subcatchment 44S: Grass in basin



Summary for Subcatchment 45S: Grass in basin

[49] Hint: Tc<2dt may require smaller dt

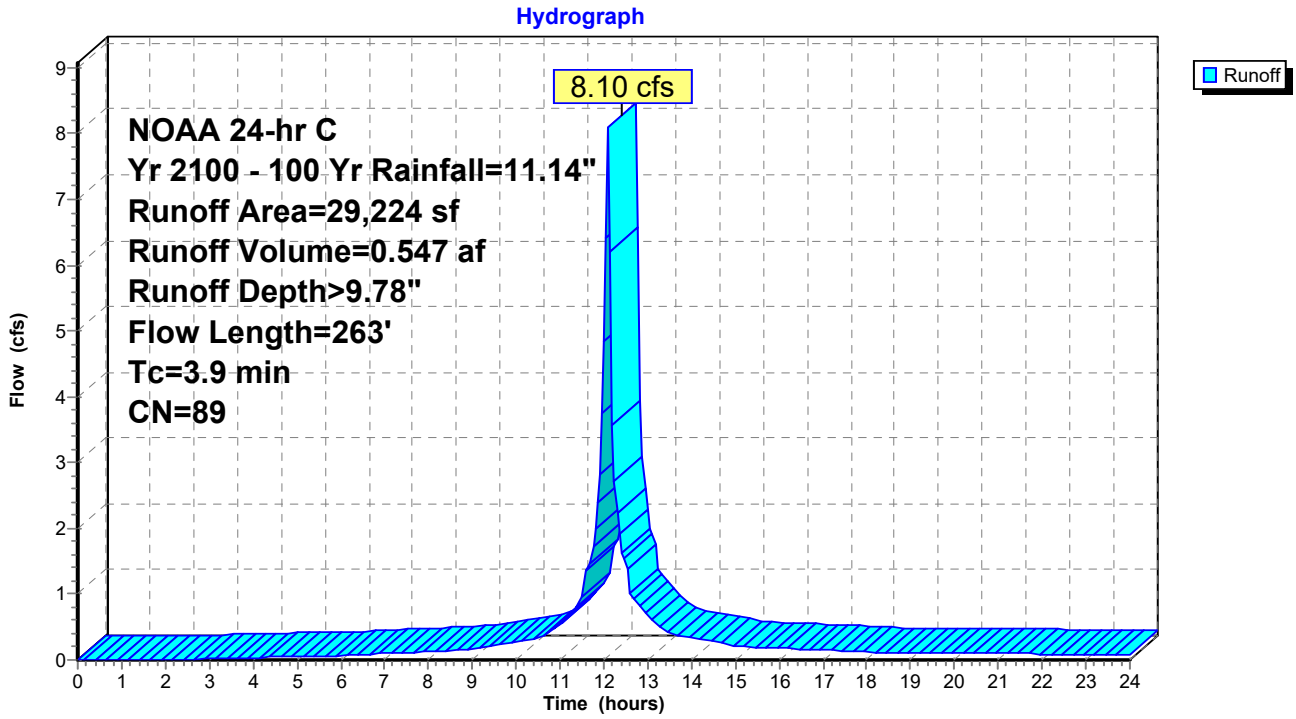
Runoff = 8.10 cfs @ 12.10 hrs, Volume= 0.547 af, Depth> 9.78"
Routed to Pond 49P : Basin 203

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NOAA 24-hr C Yr 2100 - 100 Yr Rainfall=11.14"

Area (sf)	CN	Description
29,224	89	<50% Grass cover, Poor, HSG D
29,224		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3					**Direct Entry, Tc Direct**
0.5	163	0.0050	5.09	16.00	**Pipe Channel, CMP_Round 24"** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013 Corrugated PE, smooth interior
0.1	100	0.0736	25.60	180.95	**Pipe Channel, CMP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.013 Corrugated PE, smooth interior
3.9	263	Total			

Subcatchment 45S: Grass in basin



Summary for Pond 47P: Basin 112

[92] Warning: Device #2 is above defined storage

Inflow Area = 1.397 ac, 81.07% Impervious, Inflow Depth > 10.68" for Yr 2100 - 100 Yr event
Inflow = 18.03 cfs @ 12.09 hrs, Volume= 1.243 af
Outflow = 13.98 cfs @ 12.13 hrs, Volume= 1.105 af, Atten= 22%, Lag= 2.4 min
Primary = 13.98 cfs @ 12.13 hrs, Volume= 1.105 af
Routed to Pond 48P : Basin 104
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 48P : Basin 104

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 48.48' @ 12.13 hrs Surf.Area= 4,454 sf Storage= 14,729 cf

Plug-Flow detention time= 141.8 min calculated for 1.105 af (89% of inflow)
Center-of-Mass det. time= 85.6 min (826.2 - 740.6)

Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	14,810 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

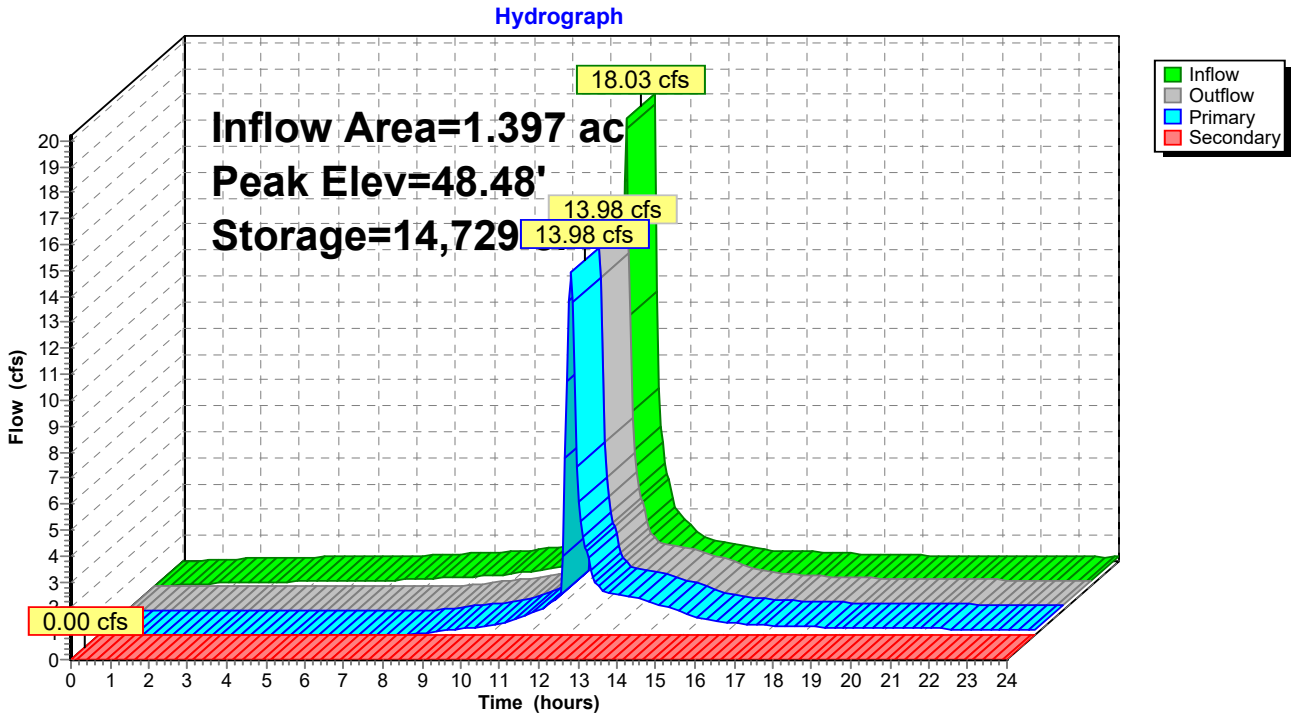
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	2,461	213.0	0.0	0	0	2,461
42.84	2,461	213.0	40.0	10	10	2,463
43.00	2,461	213.0	40.0	158	167	2,497
44.00	2,461	213.0	40.0	984	1,152	2,710
44.83	2,461	213.0	40.0	817	1,969	2,887
44.84	2,461	213.0	100.0	25	1,993	2,889
45.00	2,568	216.0	100.0	402	2,396	2,997
46.00	3,287	251.0	100.0	2,920	5,316	4,319
47.00	3,676	265.7	100.0	3,480	8,796	4,976
48.00	4,082	276.0	100.0	3,877	12,673	5,496
48.50	4,468	290.0	100.0	2,137	14,810	6,142

Device	Routing	Invert	Outlet Devices
#1	Primary	45.10'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 45.10' / 45.10' S= 0.0000 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf
#2	Secondary	48.50'	**20.0' long + 0.3 '/' SideZ x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#3	Device 1	47.95'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.40'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=13.74 cfs @ 12.13 hrs HW=48.46' (Free Discharge)
└─**1=Culvert** (Inlet Controls 13.74 cfs @ 7.78 fps)
  ├─**3=Orifice/Grate** (Passes < 18.95 cfs potential flow)
  ├─**4=Orifice/Grate** (Passes < 1.27 cfs potential flow)
  └─**5=Orifice/Grate** (Passes < 0.66 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 47P: Basin 112



Summary for Pond 48P: Basin 104

[92] Warning: Device #2 is above defined storage
[81] Warning: Exceeded Pond 47P by 0.37' @ 23.95 hrs

Inflow Area = 4.940 ac, 77.74% Impervious, Inflow Depth > 10.31" for Yr 2100 - 100 Yr event
Inflow = 54.87 cfs @ 12.11 hrs, Volume= 4.244 af
Outflow = 16.07 cfs @ 12.34 hrs, Volume= 3.146 af, Atten= 71%, Lag= 13.8 min
Primary = 16.07 cfs @ 12.34 hrs, Volume= 3.146 af
Routed to Link 24L : POA 1 (2100)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 24L : POA 1 (2100)

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 48.32' @ 12.34 hrs Surf.Area= 22,290 sf Storage= 85,305 cf

Plug-Flow detention time= 189.7 min calculated for 3.140 af (74% of inflow)
Center-of-Mass det. time= 98.9 min (864.3 - 765.5)

Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	87,112 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

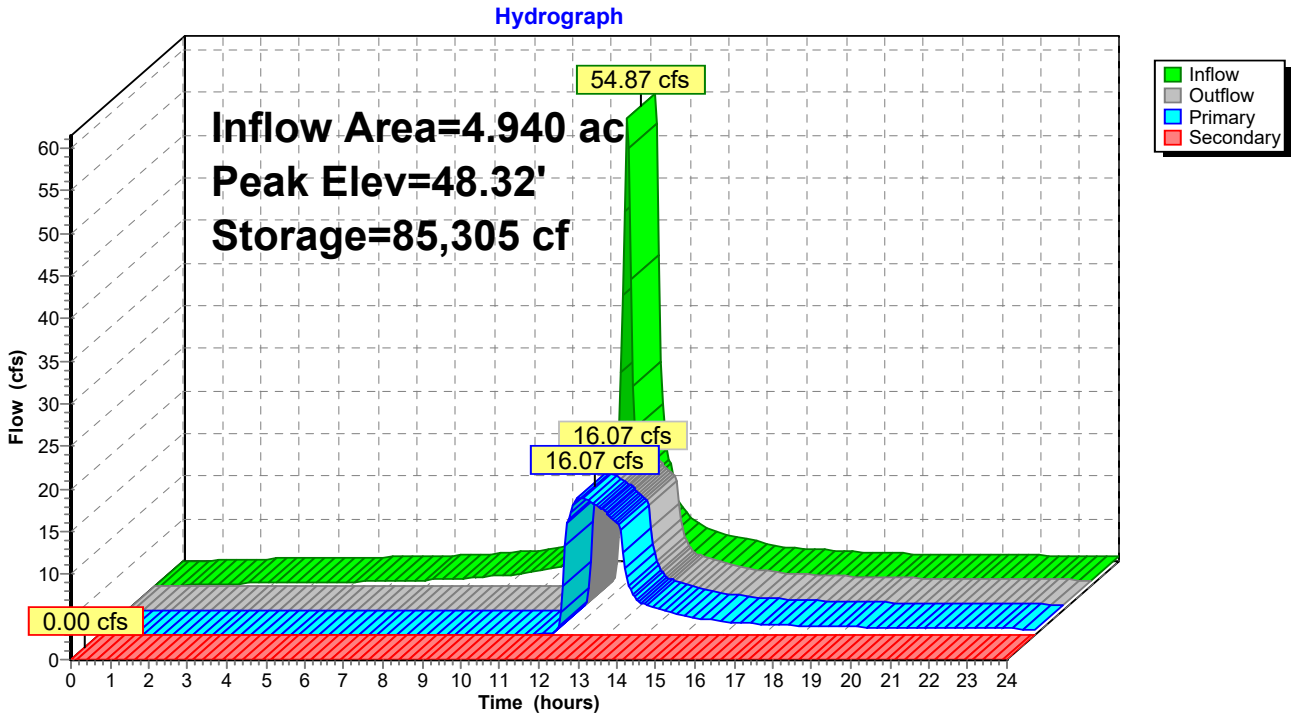
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	17,239	897.0	0.0	0	0	17,239
42.84	17,239	897.0	40.0	69	69	17,248
43.00	17,239	897.0	40.0	1,103	1,172	17,391
44.00	17,239	897.0	40.0	6,896	8,068	18,288
44.83	17,239	897.0	40.0	5,723	13,791	19,033
44.84	17,239	897.0	100.0	172	13,964	19,042
45.00	17,690	902.0	100.0	2,794	16,758	19,772
46.00	20,420	926.0	100.0	19,039	35,797	23,381
47.00	21,216	939.0	100.0	20,817	56,613	25,524
48.00	22,029	952.0	100.0	21,621	78,234	27,697
48.40	22,357	957.0	100.0	8,877	87,112	28,547

Device	Routing	Invert	Outlet Devices
#1	Primary	44.00'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 44.00' / 44.00' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#2	Secondary	48.40'	**50.0' long x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#3	Device 1	46.65'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.40'	**18.0" W x 3.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=16.07 cfs @ 12.34 hrs HW=48.32' (Free Discharge)
└─**1=Culvert** (Inlet Controls 16.07 cfs @ 9.09 fps)
  ├─**3=Orifice/Grate** (Passes < 99.49 cfs potential flow)
  ├─**4=Orifice/Grate** (Passes < 2.42 cfs potential flow)
  └─**5=Orifice/Grate** (Passes < 0.64 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 48P: Basin 104



Summary for Pond 49P: Basin 203

[92] Warning: Device #2 is above defined storage
[81] Warning: Exceeded Pond 51P by 1.20' @ 14.55 hrs

Inflow Area = 3.830 ac, 79.29% Impervious, Inflow Depth > 10.45" for Yr 2100 - 100 Yr event
Inflow = 44.33 cfs @ 12.11 hrs, Volume= 3.335 af
Outflow = 30.74 cfs @ 12.19 hrs, Volume= 2.561 af, Atten= 31%, Lag= 4.9 min
Primary = 30.74 cfs @ 12.19 hrs, Volume= 2.561 af
Routed to Link 24L : POA 1 (2100)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 24L : POA 1 (2100)

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 48.36' @ 12.19 hrs Surf.Area= 18,231 sf Storage= 63,575 cf

Plug-Flow detention time= 217.5 min calculated for 2.556 af (77% of inflow)
Center-of-Mass det. time= 133.1 min (888.5 - 755.4)

Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	64,356 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

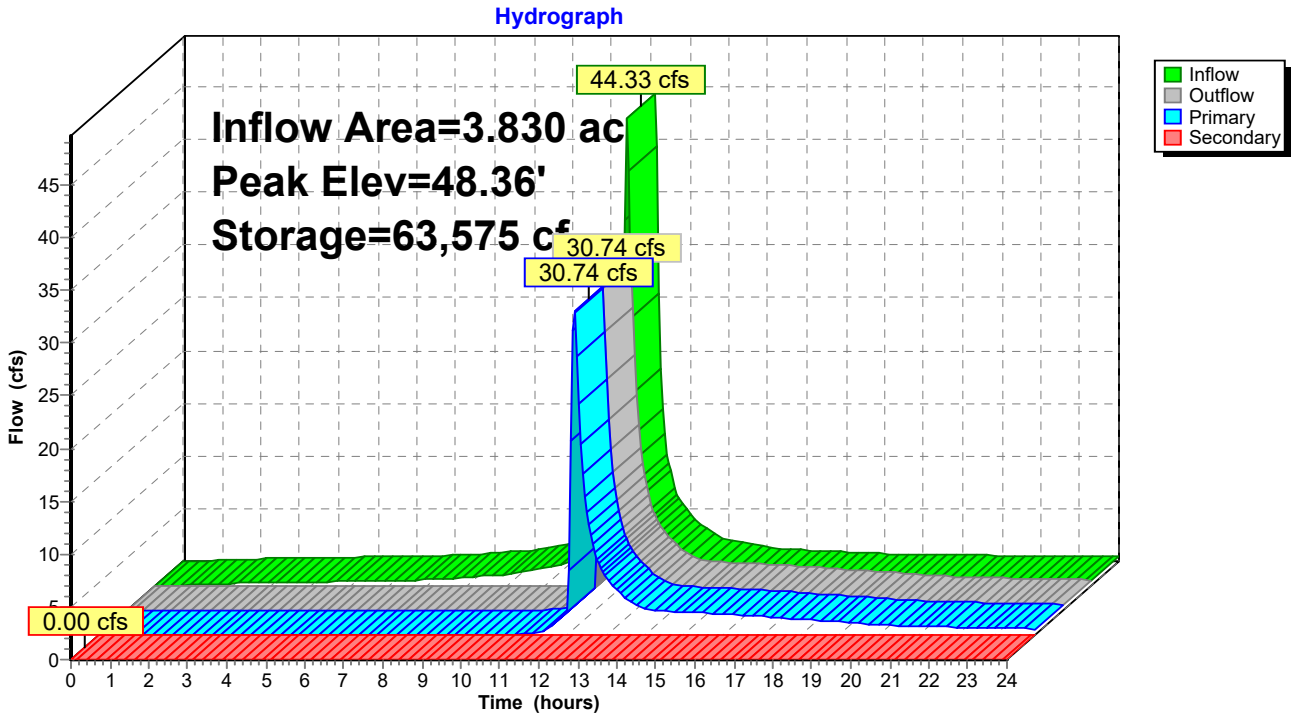
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	11,929	737.0	0.0	0	0	11,929
42.84	11,929	737.0	40.0	48	48	11,936
43.00	11,929	737.0	40.0	763	811	12,054
44.00	11,929	737.0	40.0	4,772	5,583	12,791
44.83	11,929	737.0	40.0	3,960	9,543	13,403
44.84	11,929	737.0	100.0	119	9,662	13,410
45.00	12,301	741.0	100.0	1,938	11,601	13,895
46.00	14,572	762.0	100.0	13,420	25,021	16,517
47.00	16,075	784.0	100.0	15,317	40,339	19,332
48.00	17,607	806.0	100.0	16,835	57,174	22,227
48.40	18,306	815.0	100.0	7,182	64,356	23,432

Device	Routing	Invert	Outlet Devices
#1	Primary	39.00'	**21.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 39.00' / 39.00' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 2.41 sf
#2	Secondary	48.40'	**50.0' long x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#3	Device 1	47.70'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.30'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=30.23 cfs @ 12.19 hrs HW=48.35' (Free Discharge)
└─**1=Culvert** (Passes 30.23 cfs of 33.71 cfs potential flow)
  ├─**3=Orifice/Grate** (Weir Controls 27.38 cfs @ 2.64 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 2.20 cfs @ 6.31 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.65 cfs @ 7.40 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 49P: Basin 203



Summary for Pond 51P: Basin 206

[92] Warning: Device #2 is above defined storage

Inflow Area = 0.773 ac, 84.16% Impervious, Inflow Depth > 10.72" for Yr 2100 - 100 Yr event
Inflow = 10.07 cfs @ 12.08 hrs, Volume= 0.690 af
Outflow = 9.78 cfs @ 12.09 hrs, Volume= 0.624 af, Atten= 3%, Lag= 0.5 min
Primary = 9.78 cfs @ 12.09 hrs, Volume= 0.624 af
Routed to Pond 49P : Basin 203
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 49P : Basin 203

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 48.48' @ 12.09 hrs Surf.Area= 1,865 sf Storage= 6,973 cf

Plug-Flow detention time= 117.1 min calculated for 0.622 af (90% of inflow)
Center-of-Mass det. time= 66.7 min (806.0 - 739.2)

Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	7,008 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

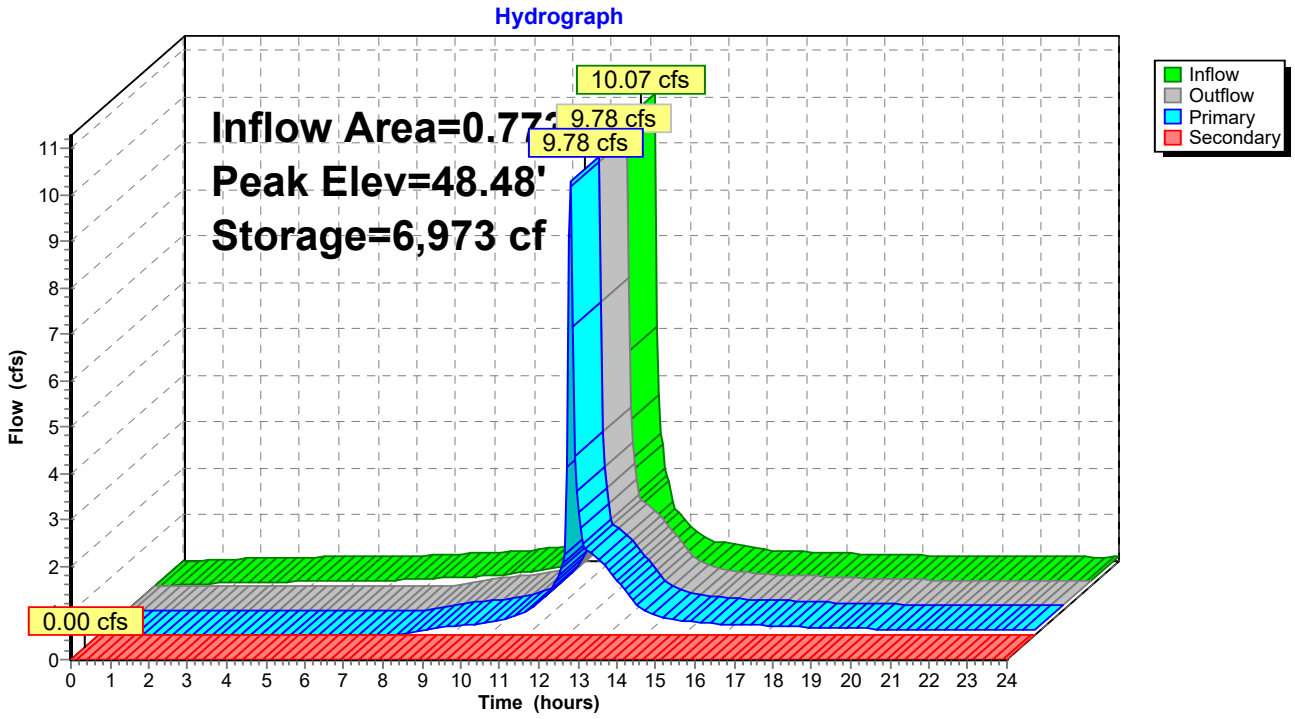
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	1,435	180.0	0.0	0	0	1,435
42.84	1,435	180.0	40.0	6	6	1,437
43.00	1,435	180.0	40.0	92	98	1,466
44.00	1,435	180.0	40.0	574	672	1,646
44.83	1,435	180.0	40.0	476	1,148	1,795
44.84	1,435	180.0	100.0	14	1,162	1,797
45.00	1,435	180.0	100.0	230	1,392	1,826
46.00	1,489	190.0	100.0	1,462	2,854	2,173
47.00	1,611	213.0	100.0	1,550	4,403	2,938
48.00	1,777	233.0	100.0	1,693	6,097	3,682
48.50	1,869	240.0	100.0	911	7,008	3,971

Device	Routing	Invert	Outlet Devices
#1	Primary	45.10'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 45.10' / 45.10' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#2	Secondary	48.50'	**16.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#3	Device 1	48.20'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.30'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=9.38 cfs @ 12.09 hrs HW=48.47' (Free Discharge)
└─**1=Culvert** (Passes 9.38 cfs of 13.78 cfs potential flow)
  ├─**3=Orifice/Grate** (Weir Controls 7.41 cfs @ 1.70 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 1.31 cfs @ 6.67 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.66 cfs @ 7.59 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 51P: Basin 206

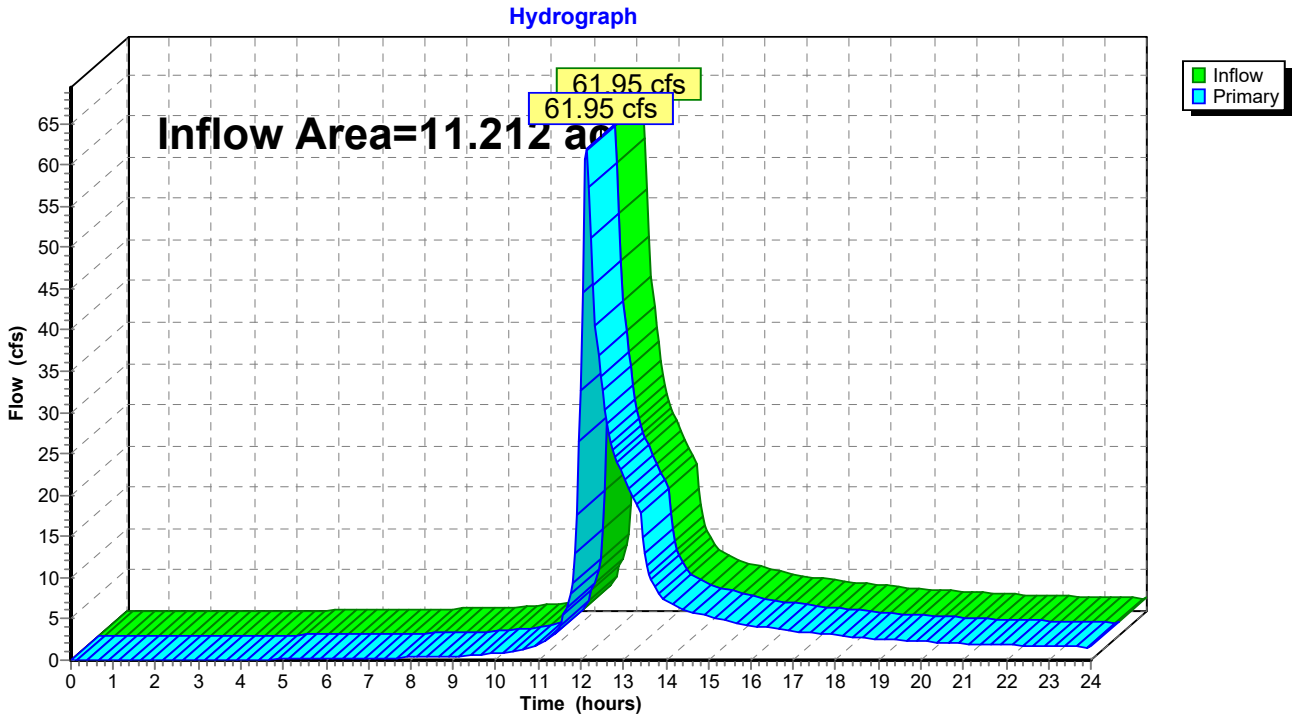


Summary for Link 24L: POA 1 (2100)

Inflow Area = 11.212 ac, 65.35% Impervious, Inflow Depth > 8.08" for Yr 2100 - 100 Yr event
Inflow = 61.95 cfs @ 12.14 hrs, Volume= 7.545 af
Primary = 61.95 cfs @ 12.14 hrs, Volume= 7.545 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 24L: POA 1 (2100)



5.1 STORM MANAGEMENT DESIGN POND ROUTINGS (2, 10 AND 100-YEAR ADJUSTED STORM EVENTS)

PREPARED: September 19, 2025
REVISED: December 15, 2025

300-356 ENTERPRISE AVE.
CITY OF TRENTON
BLOCK 23203, LOT 1
BLOCK 23102 LOTS 2 & 9
TOWNSHIP OF LAWRENCE
BLOCK 602, LOTS 1 & 2
MERCER COUNTY, NEW JERSEY

Summary for Pond 39P: Basin 104

[92] Warning: Device #2 is above defined storage
[81] Warning: Exceeded Pond 44P by 0.26' @ 23.90 hrs

Inflow Area = 4.940 ac, 77.74% Impervious, Inflow Depth > 2.63" for Adj - 2 Yr event
Inflow = 12.10 cfs @ 12.13 hrs, Volume= 1.084 af
Outflow = 0.21 cfs @ 21.88 hrs, Volume= 0.151 af, Atten= 98%, Lag= 584.9 min
Primary = 0.21 cfs @ 21.88 hrs, Volume= 0.151 af
Routed to Link 2A : POA 1 (Adj)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 2A : POA 1 (Adj)

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 46.24' @ 21.88 hrs Surf.Area= 20,611 sf Storage= 40,754 cf

Plug-Flow detention time= 664.4 min calculated for 0.151 af (14% of inflow)
Center-of-Mass det. time= 378.7 min (1,174.5 - 795.8)

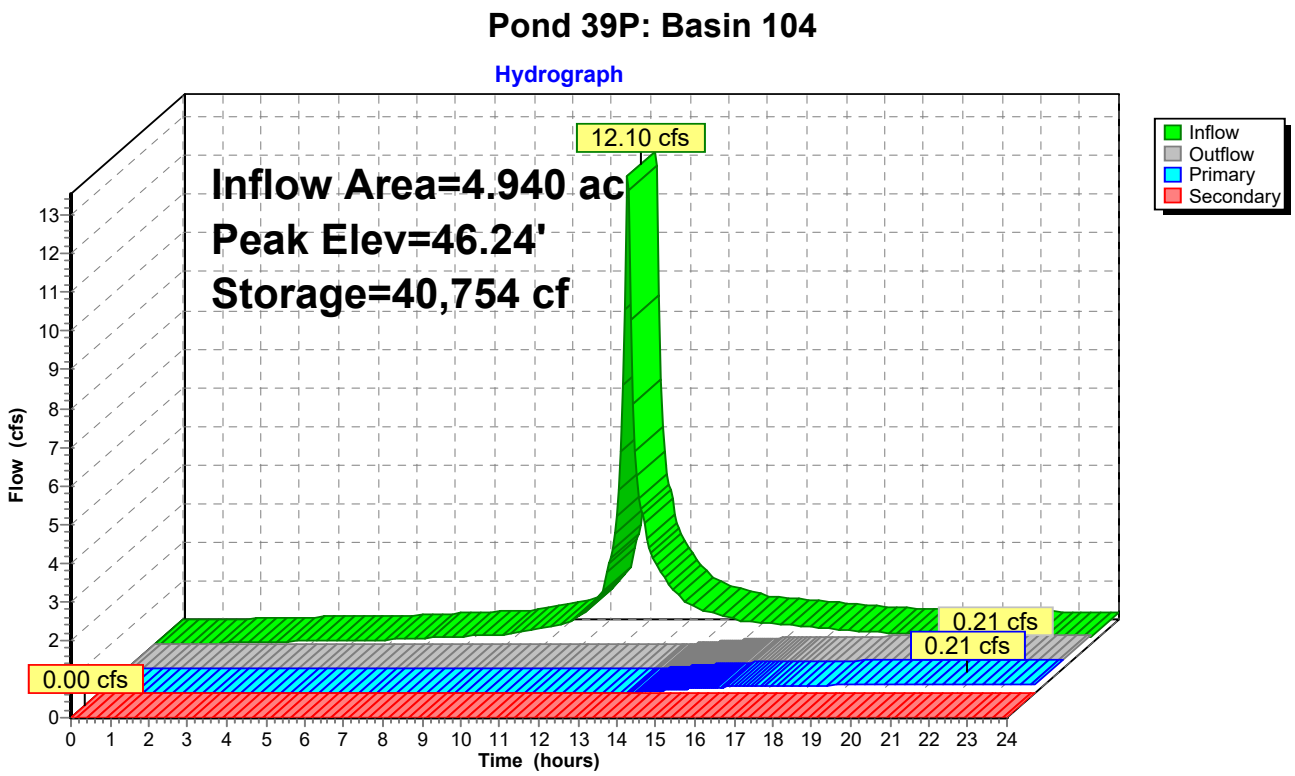
Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	87,112 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	17,239	897.0	0.0	0	0	17,239
42.84	17,239	897.0	40.0	69	69	17,248
43.00	17,239	897.0	40.0	1,103	1,172	17,391
44.00	17,239	897.0	40.0	6,896	8,068	18,288
44.83	17,239	897.0	40.0	5,723	13,791	19,033
44.84	17,239	897.0	100.0	172	13,964	19,042
45.00	17,690	902.0	100.0	2,794	16,758	19,772
46.00	20,420	926.0	100.0	19,039	35,797	23,381
47.00	21,216	939.0	100.0	20,817	56,613	25,524
48.00	22,029	952.0	100.0	21,621	78,234	27,697
48.40	22,357	957.0	100.0	8,877	87,112	28,547

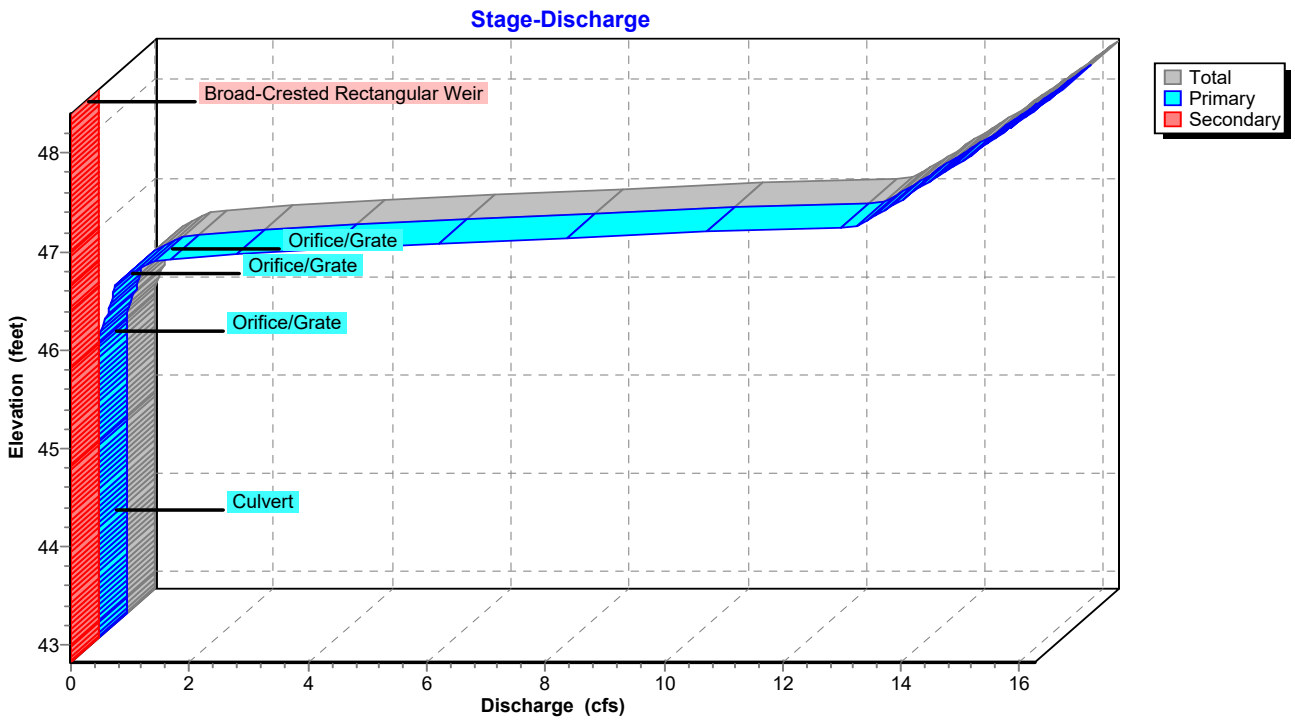
Device	Routing	Invert	Outlet Devices
#1	Primary	44.00'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 44.00' / 44.00' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#2	Secondary	48.40'	**50.0' long x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#3	Device 1	46.65'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.40'	**18.0" W x 3.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.21 cfs @ 21.88 hrs HW=46.24' (Free Discharge)
└─**1=Culvert** (Passes 0.21 cfs of 9.87 cfs potential flow)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  ├─**4=Orifice/Grate** (Controls 0.00 cfs)
  └─**5=Orifice/Grate** (Orifice Controls 0.21 cfs @ 2.43 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)



Pond 39P: Basin 104



Hydrograph for Pond 39P: Basin 104

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	42.83	0.00	0.00	**0.00**
0.50	0.00	0	42.83	0.00	0.00	0.00
1.00	0.00	0	42.83	0.00	0.00	0.00
1.50	0.01	6	42.83	0.00	0.00	0.00
2.00	0.03	41	42.84	0.00	0.00	0.00
2.50	0.04	103	42.84	0.00	0.00	0.00
3.00	0.05	191	42.86	0.00	0.00	0.00
3.50	0.07	301	42.87	0.00	0.00	0.00
4.00	0.08	431	42.89	0.00	0.00	0.00
4.50	0.09	579	42.91	0.00	0.00	0.00
5.00	0.10	745	42.94	0.00	0.00	0.00
5.50	0.11	926	42.96	0.00	0.00	0.00
6.00	0.11	1,124	42.99	0.00	0.00	0.00
6.50	0.13	1,346	43.03	0.00	0.00	0.00
7.00	0.16	1,608	43.06	0.00	0.00	0.00
7.50	0.18	1,910	43.11	0.00	0.00	0.00
8.00	0.20	2,255	43.16	0.00	0.00	0.00
8.50	0.23	2,643	43.21	0.00	0.00	0.00
9.00	0.25	3,077	43.28	0.00	0.00	0.00
9.50	0.33	3,594	43.35	0.00	0.00	0.00
10.00	0.41	4,255	43.45	0.00	0.00	0.00
10.50	0.50	5,067	43.56	0.00	0.00	0.00
11.00	0.79	6,201	43.73	0.00	0.00	0.00
11.50	1.34	8,102	44.00	0.00	0.00	0.00
12.00	**6.72**	13,368	44.77	0.00	0.00	0.00
12.50	**3.34**	25,637	45.48	0.00	0.00	0.00
13.00	1.83	29,908	45.71	0.00	0.00	0.00
13.50	1.19	32,574	45.84	0.00	0.00	0.00
14.00	0.90	34,378	45.93	0.03	0.03	0.00
14.50	0.74	35,765	46.00	0.07	0.07	0.00
15.00	0.62	36,834	46.05	0.11	0.11	0.00
15.50	0.56	37,666	46.09	0.13	0.13	0.00
16.00	0.51	38,362	46.13	0.16	0.16	0.00
16.50	0.46	38,943	46.15	0.17	0.17	0.00
17.00	0.42	39,418	46.18	0.18	0.18	0.00
17.50	0.37	39,794	46.20	0.19	0.19	0.00
18.00	0.33	40,076	46.21	0.20	0.20	0.00
18.50	0.30	40,276	46.22	0.20	0.20	0.00
19.00	0.28	40,428	46.23	0.21	0.21	0.00
19.50	0.26	40,544	46.23	0.21	0.21	0.00
20.00	0.25	40,630	46.24	0.21	0.21	0.00
20.50	0.24	40,691	46.24	0.21	0.21	0.00
21.00	0.23	40,730	46.24	0.21	0.21	0.00
21.50	0.22	**40,750**	**46.24**	**0.21**	**0.21**	0.00
22.00	0.21	**40,754**	**46.24**	**0.21**	**0.21**	0.00
22.50	0.20	40,742	46.24	0.21	0.21	0.00
23.00	0.19	40,715	46.24	0.21	0.21	0.00
23.50	0.18	40,674	46.24	0.21	0.21	0.00
24.00	0.19	40,622	46.24	0.21	0.21	0.00

Stage-Discharge for Pond 39P: Basin 104

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
42.83	0.00	0.00	**0.00**
42.93	0.00	0.00	0.00
43.03	0.00	0.00	0.00
43.13	0.00	0.00	0.00
43.23	0.00	0.00	0.00
43.33	0.00	0.00	0.00
43.43	0.00	0.00	0.00
43.53	0.00	0.00	0.00
43.63	0.00	0.00	0.00
43.73	0.00	0.00	0.00
43.83	0.00	0.00	0.00
43.93	0.00	0.00	0.00
44.03	0.00	0.00	0.00
44.13	0.00	0.00	0.00
44.23	0.00	0.00	0.00
44.33	0.00	0.00	0.00
44.43	0.00	0.00	0.00
44.53	0.00	0.00	0.00
44.63	0.00	0.00	0.00
44.73	0.00	0.00	0.00
44.83	0.00	0.00	0.00
44.93	0.00	0.00	0.00
45.03	0.00	0.00	0.00
45.13	0.00	0.00	0.00
45.23	0.00	0.00	0.00
45.33	0.00	0.00	0.00
45.43	0.00	0.00	0.00
45.53	0.00	0.00	0.00
45.63	0.00	0.00	0.00
45.73	0.00	0.00	0.00
45.83	0.00	0.00	0.00
45.93	0.03	0.03	0.00
46.03	0.09	0.09	0.00
46.13	0.16	0.16	0.00
46.23	0.21	0.21	0.00
46.33	0.25	0.25	0.00
46.43	0.30	0.30	0.00
46.53	0.54	0.54	0.00
46.63	0.87	0.87	0.00
46.73	2.35	2.35	0.00
46.83	5.37	5.37	0.00
46.93	9.30	9.30	0.00
47.03	12.85	12.85	0.00
47.13	13.13	13.13	0.00
47.23	13.40	13.40	0.00
47.33	13.67	13.67	0.00
47.43	13.93	13.93	0.00
47.53	14.19	14.19	0.00
47.63	14.44	14.44	0.00
47.73	14.69	14.69	0.00
47.83	14.93	14.93	0.00
47.93	15.17	15.17	0.00
48.03	15.41	15.41	0.00
48.13	15.64	15.64	0.00
48.23	15.87	15.87	0.00
48.33	**16.10**	**16.10**	0.00

Summary for Pond 41P: Basin 203

[92] Warning: Device #2 is above defined storage
[81] Warning: Exceeded Pond 43P by 0.38' @ 18.45 hrs

Inflow Area = 3.830 ac, 79.29% Impervious, Inflow Depth > 2.74" for Adj - 2 Yr event
Inflow = 10.89 cfs @ 12.12 hrs, Volume= 0.875 af
Outflow = 0.26 cfs @ 17.17 hrs, Volume= 0.216 af, Atten= 98%, Lag= 302.5 min
Primary = 0.26 cfs @ 17.17 hrs, Volume= 0.216 af
Routed to Link 2A : POA 1 (Adj)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 2A : POA 1 (Adj)

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 46.35' @ 17.17 hrs Surf.Area= 15,084 sf Storage= 30,152 cf

Plug-Flow detention time= 529.0 min calculated for 0.216 af (25% of inflow)
Center-of-Mass det. time= 329.4 min (1,110.1 - 780.7)

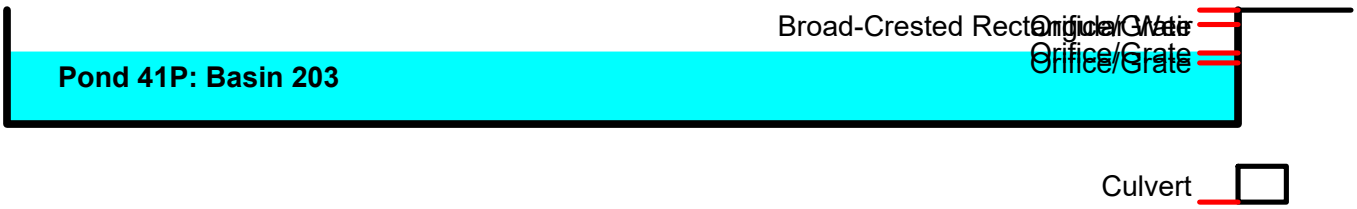
Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	64,356 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

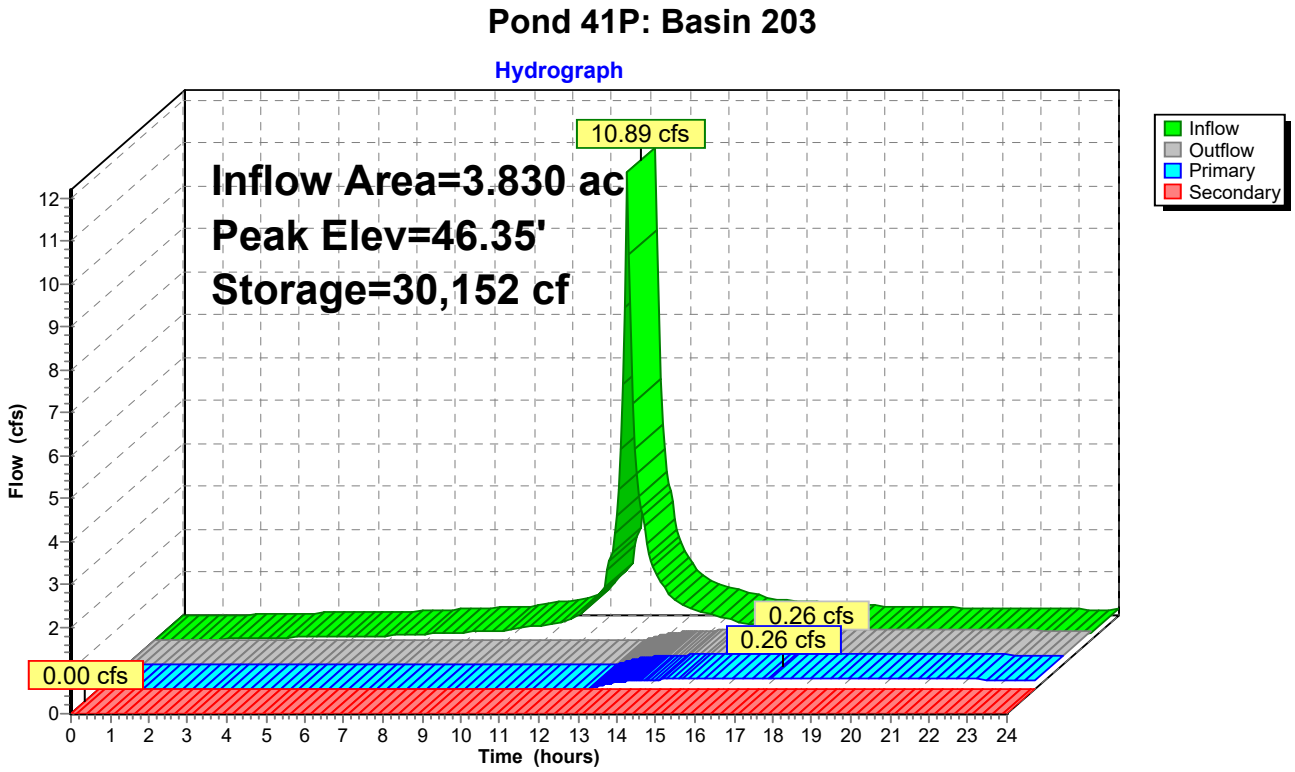
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	11,929	737.0	0.0	0	0	11,929
42.84	11,929	737.0	40.0	48	48	11,936
43.00	11,929	737.0	40.0	763	811	12,054
44.00	11,929	737.0	40.0	4,772	5,583	12,791
44.83	11,929	737.0	40.0	3,960	9,543	13,403
44.84	11,929	737.0	100.0	119	9,662	13,410
45.00	12,301	741.0	100.0	1,938	11,601	13,895
46.00	14,572	762.0	100.0	13,420	25,021	16,517
47.00	16,075	784.0	100.0	15,317	40,339	19,332
48.00	17,607	806.0	100.0	16,835	57,174	22,227
48.40	18,306	815.0	100.0	7,182	64,356	23,432

Device	Routing	Invert	Outlet Devices
#1	Primary	39.00'	**21.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 39.00' / 39.00' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 2.41 sf
#2	Secondary	48.40'	**50.0' long x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#3	Device 1	47.70'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.30'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

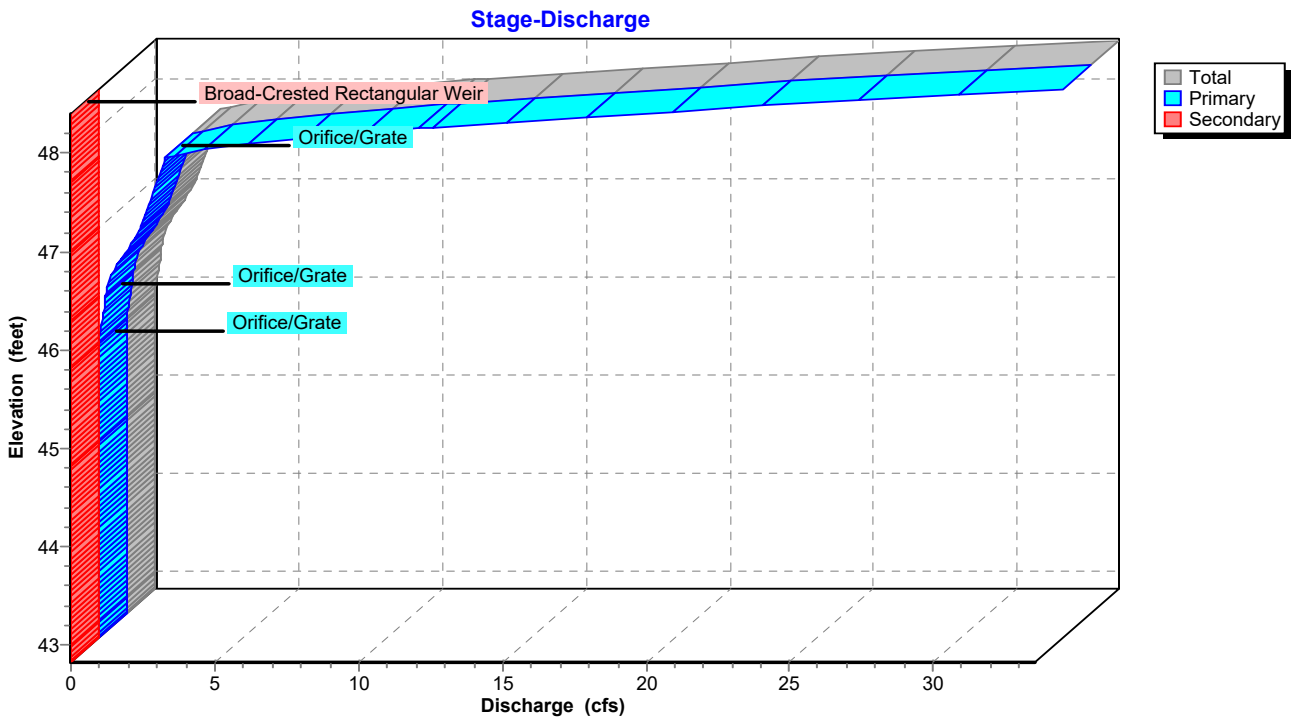
Primary OutFlow Max=0.26 cfs @ 17.17 hrs HW=46.35' (Free Discharge)
└─**1=Culvert** (Passes 0.26 cfs of 29.46 cfs potential flow)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  ├─**4=Orifice/Grate** (Orifice Controls 0.01 cfs @ 0.73 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.25 cfs @ 2.89 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)





Pond 41P: Basin 203



Hydrograph for Pond 41P: Basin 203

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	42.83	0.00	0.00	**0.00**
0.50	0.00	0	42.83	0.00	0.00	0.00
1.00	0.00	0	42.83	0.00	0.00	0.00
1.50	0.01	5	42.83	0.00	0.00	0.00
2.00	0.02	36	42.84	0.00	0.00	0.00
2.50	0.04	91	42.85	0.00	0.00	0.00
3.00	0.05	169	42.87	0.00	0.00	0.00
3.50	0.06	265	42.89	0.00	0.00	0.00
4.00	0.07	380	42.91	0.00	0.00	0.00
4.50	0.08	511	42.94	0.00	0.00	0.00
5.00	0.09	657	42.97	0.00	0.00	0.00
5.50	0.09	817	43.00	0.00	0.00	0.00
6.00	0.10	991	43.04	0.00	0.00	0.00
6.50	0.12	1,187	43.08	0.00	0.00	0.00
7.00	0.14	1,417	43.13	0.00	0.00	0.00
7.50	0.16	1,682	43.18	0.00	0.00	0.00
8.00	0.18	1,985	43.25	0.00	0.00	0.00
8.50	0.20	2,325	43.32	0.00	0.00	0.00
9.00	0.22	2,704	43.40	0.00	0.00	0.00
9.50	0.29	3,156	43.49	0.00	0.00	0.00
10.00	0.36	3,733	43.61	0.00	0.00	0.00
10.50	0.43	4,442	43.76	0.00	0.00	0.00
11.00	0.68	5,430	43.97	0.00	0.00	0.00
11.50	1.17	7,086	44.32	0.00	0.00	0.00
12.00	**5.96**	11,712	45.01	0.00	0.00	0.00
12.50	**2.88**	22,678	45.84	0.00	0.00	0.00
13.00	1.32	25,942	46.06	0.11	0.11	0.00
13.50	0.84	27,548	46.17	0.18	0.18	0.00
14.00	0.65	28,497	46.24	0.21	0.21	0.00
14.50	0.54	29,172	46.28	0.23	0.23	0.00
15.00	0.42	29,608	46.31	0.24	0.24	0.00
15.50	0.36	29,855	46.33	0.25	0.25	0.00
16.00	0.32	30,014	46.34	0.25	0.25	0.00
16.50	0.29	30,110	46.34	0.26	0.26	0.00
17.00	0.27	**30,150**	**46.35**	**0.26**	**0.26**	0.00
17.50	0.24	**30,142**	**46.35**	**0.26**	**0.26**	0.00
18.00	0.22	30,091	46.34	0.26	0.26	0.00
18.50	0.20	30,008	46.34	0.25	0.25	0.00
19.00	0.20	29,915	46.33	0.25	0.25	0.00
19.50	0.19	29,814	46.32	0.25	0.25	0.00
20.00	0.18	29,708	46.32	0.24	0.24	0.00
20.50	0.18	29,596	46.31	0.24	0.24	0.00
21.00	0.17	29,480	46.30	0.24	0.24	0.00
21.50	0.16	29,360	46.29	0.23	0.23	0.00
22.00	0.16	29,234	46.29	0.23	0.23	0.00
22.50	0.15	29,103	46.28	0.23	0.23	0.00
23.00	0.15	28,967	46.27	0.22	0.22	0.00
23.50	0.14	28,827	46.26	0.22	0.22	0.00
24.00	0.15	28,684	46.25	0.21	0.21	0.00

Stage-Discharge for Pond 41P: Basin 203

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
42.83	0.00	0.00	**0.00**
42.93	0.00	0.00	0.00
43.03	0.00	0.00	0.00
43.13	0.00	0.00	0.00
43.23	0.00	0.00	0.00
43.33	0.00	0.00	0.00
43.43	0.00	0.00	0.00
43.53	0.00	0.00	0.00
43.63	0.00	0.00	0.00
43.73	0.00	0.00	0.00
43.83	0.00	0.00	0.00
43.93	0.00	0.00	0.00
44.03	0.00	0.00	0.00
44.13	0.00	0.00	0.00
44.23	0.00	0.00	0.00
44.33	0.00	0.00	0.00
44.43	0.00	0.00	0.00
44.53	0.00	0.00	0.00
44.63	0.00	0.00	0.00
44.73	0.00	0.00	0.00
44.83	0.00	0.00	0.00
44.93	0.00	0.00	0.00
45.03	0.00	0.00	0.00
45.13	0.00	0.00	0.00
45.23	0.00	0.00	0.00
45.33	0.00	0.00	0.00
45.43	0.00	0.00	0.00
45.53	0.00	0.00	0.00
45.63	0.00	0.00	0.00
45.73	0.00	0.00	0.00
45.83	0.00	0.00	0.00
45.93	0.03	0.03	0.00
46.03	0.09	0.09	0.00
46.13	0.16	0.16	0.00
46.23	0.21	0.21	0.00
46.33	0.25	0.25	0.00
46.43	0.34	0.34	0.00
46.53	0.48	0.48	0.00
46.63	0.67	0.67	0.00
46.73	0.89	0.89	0.00
46.83	1.12	1.12	0.00
46.93	1.33	1.33	0.00
47.03	1.49	1.49	0.00
47.13	1.63	1.63	0.00
47.23	1.77	1.77	0.00
47.33	1.89	1.89	0.00
47.43	2.00	2.00	0.00
47.53	2.11	2.11	0.00
47.63	2.22	2.22	0.00
47.73	2.59	2.59	0.00
47.83	4.86	4.86	0.00
47.93	8.27	8.27	0.00
48.03	12.51	12.51	0.00
48.13	17.42	17.42	0.00
48.23	22.94	22.94	0.00
48.33	**28.99**	**28.99**	0.00

Summary for Pond 43P: Basin 206

[92] Warning: Device #2 is above defined storage

Inflow Area = 0.773 ac, 84.16% Impervious, Inflow Depth > 2.98" for Adj - 2 Yr event
Inflow = 2.93 cfs @ 12.08 hrs, Volume= 0.192 af
Outflow = 1.00 cfs @ 12.22 hrs, Volume= 0.129 af, Atten= 66%, Lag= 8.2 min
Primary = 1.00 cfs @ 12.22 hrs, Volume= 0.129 af
Routed to Pond 41P : Basin 203
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 41P : Basin 203

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 46.93' @ 12.22 hrs Surf.Area= 1,603 sf Storage= 4,298 cf

Plug-Flow detention time= 211.0 min calculated for 0.129 af (67% of inflow)
Center-of-Mass det. time= 111.4 min (871.0 - 759.6)

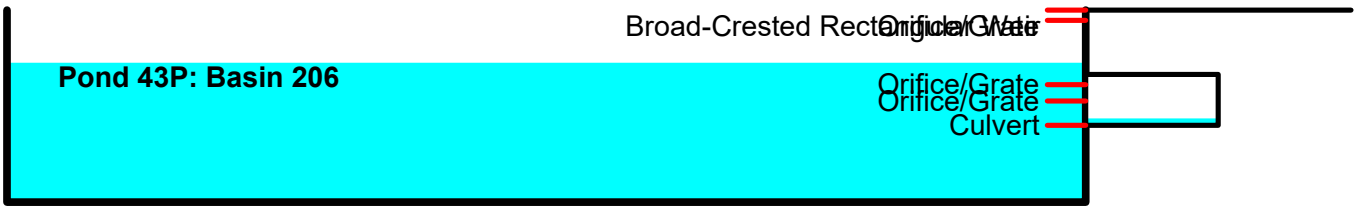
Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	7,008 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

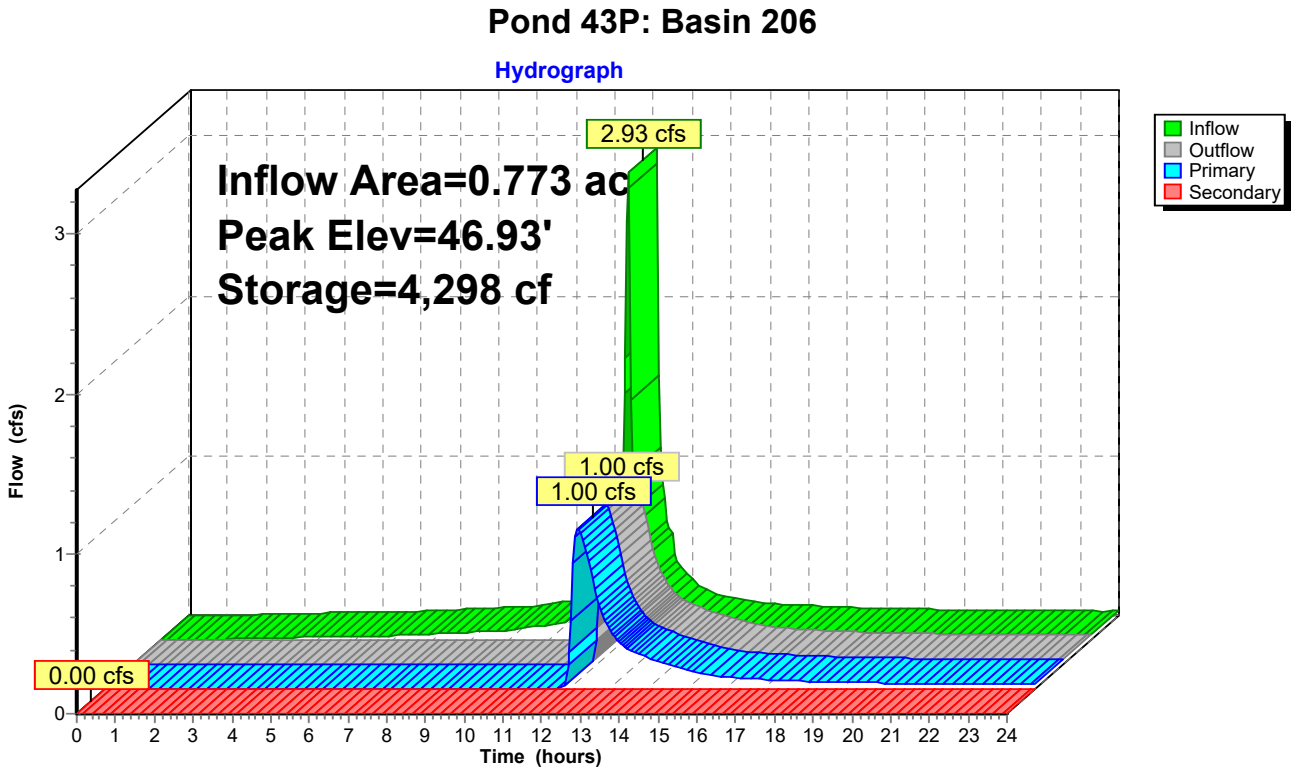
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	1,435	180.0	0.0	0	0	1,435
42.84	1,435	180.0	40.0	6	6	1,437
43.00	1,435	180.0	40.0	92	98	1,466
44.00	1,435	180.0	40.0	574	672	1,646
44.83	1,435	180.0	40.0	476	1,148	1,795
44.84	1,435	180.0	100.0	14	1,162	1,797
45.00	1,435	180.0	100.0	230	1,392	1,826
46.00	1,489	190.0	100.0	1,462	2,854	2,173
47.00	1,611	213.0	100.0	1,550	4,403	2,938
48.00	1,777	233.0	100.0	1,693	6,097	3,682
48.50	1,869	240.0	100.0	911	7,008	3,971

Device	Routing	Invert	Outlet Devices
#1	Primary	45.10'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 45.10' / 45.10' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#2	Secondary	48.50'	**16.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#3	Device 1	48.20'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.30'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

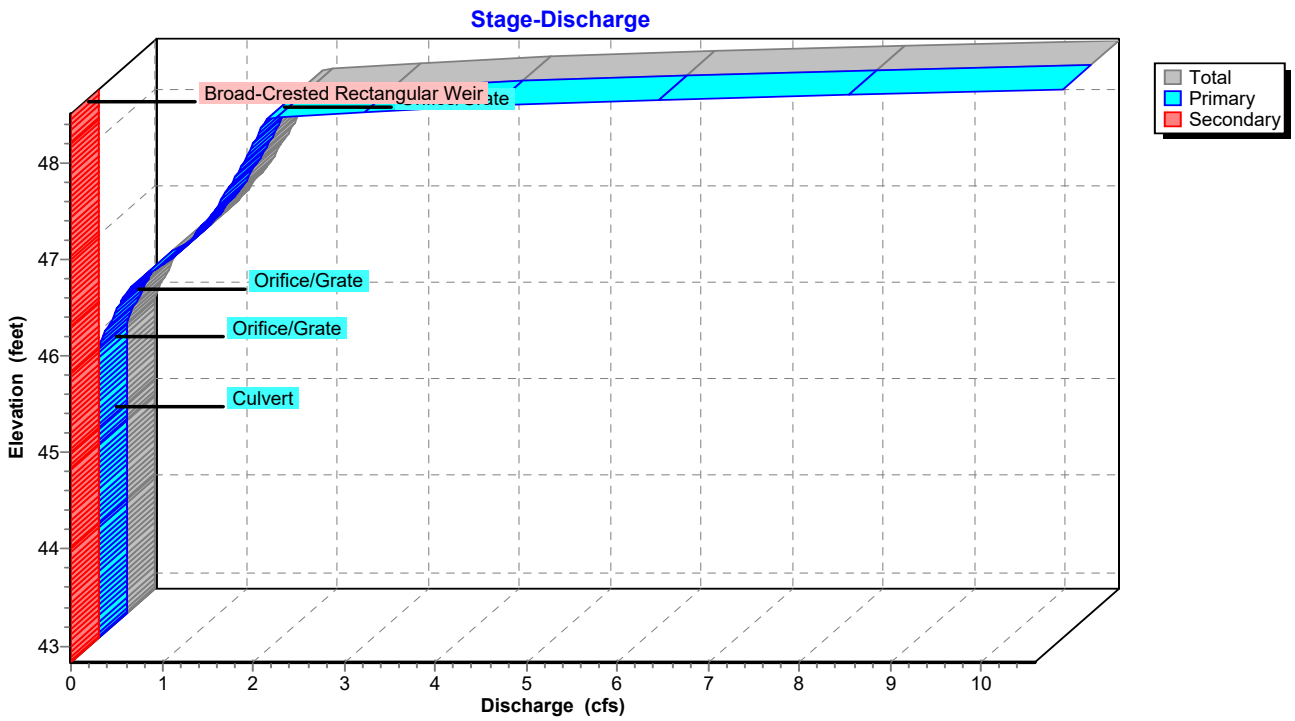
Primary OutFlow Max=0.99 cfs @ 12.22 hrs HW=46.93' (Free Discharge)
└─**1=Culvert** (Passes 0.99 cfs of 7.45 cfs potential flow)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  ├─**4=Orifice/Grate** (Orifice Controls 0.58 cfs @ 2.97 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.41 cfs @ 4.68 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)





Pond 43P: Basin 206



Hydrograph for Pond 43P: Basin 206

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	42.83	0.00	0.00	**0.00**
0.50	0.00	0	42.83	0.00	0.00	0.00
1.00	0.00	0	42.83	0.00	0.00	0.00
1.50	0.00	2	42.83	0.00	0.00	0.00
2.00	0.01	11	42.85	0.00	0.00	0.00
2.50	0.01	27	42.88	0.00	0.00	0.00
3.00	0.01	49	42.92	0.00	0.00	0.00
3.50	0.02	76	42.96	0.00	0.00	0.00
4.00	0.02	108	43.02	0.00	0.00	0.00
4.50	0.02	144	43.08	0.00	0.00	0.00
5.00	0.02	184	43.15	0.00	0.00	0.00
5.50	0.03	229	43.23	0.00	0.00	0.00
6.00	0.03	276	43.31	0.00	0.00	0.00
6.50	0.03	330	43.41	0.00	0.00	0.00
7.00	0.04	394	43.52	0.00	0.00	0.00
7.50	0.04	466	43.64	0.00	0.00	0.00
8.00	0.05	548	43.78	0.00	0.00	0.00
8.50	0.05	640	43.94	0.00	0.00	0.00
9.00	0.06	741	44.12	0.00	0.00	0.00
9.50	0.08	864	44.34	0.00	0.00	0.00
10.00	0.10	1,020	44.61	0.00	0.00	0.00
10.50	0.12	1,210	44.87	0.00	0.00	0.00
11.00	0.18	1,481	45.06	0.00	0.00	0.00
11.50	0.32	1,936	45.38	0.00	0.00	0.00
12.00	**1.77**	**3,292**	**46.29**	**0.23**	**0.23**	0.00
12.50	**0.51**	**4,021**	**46.76**	**0.80**	**0.80**	0.00
13.00	0.23	3,572	46.47	0.38	0.38	0.00
13.50	0.14	3,351	46.33	0.25	0.25	0.00
14.00	0.11	3,173	46.21	0.20	0.20	0.00
14.50	0.10	3,041	46.12	0.16	0.16	0.00
15.00	0.08	2,950	46.06	0.12	0.12	0.00
15.50	0.07	2,896	46.03	0.09	0.09	0.00
16.00	0.06	2,866	46.01	0.08	0.08	0.00
16.50	0.06	2,847	46.00	0.07	0.07	0.00
17.00	0.05	2,832	45.99	0.06	0.06	0.00
17.50	0.05	2,818	45.98	0.05	0.05	0.00
18.00	0.04	2,805	45.97	0.05	0.05	0.00
18.50	0.04	2,795	45.96	0.04	0.04	0.00
19.00	0.04	2,788	45.96	0.04	0.04	0.00
19.50	0.04	2,783	45.95	0.04	0.04	0.00
20.00	0.04	2,779	45.95	0.04	0.04	0.00
20.50	0.04	2,775	45.95	0.04	0.04	0.00
21.00	0.03	2,772	45.94	0.04	0.04	0.00
21.50	0.03	2,768	45.94	0.03	0.03	0.00
22.00	0.03	2,764	45.94	0.03	0.03	0.00
22.50	0.03	2,759	45.94	0.03	0.03	0.00
23.00	0.03	2,755	45.93	0.03	0.03	0.00
23.50	0.03	2,751	45.93	0.03	0.03	0.00
24.00	0.03	2,748	45.93	0.03	0.03	0.00

Stage-Discharge for Pond 43P: Basin 206

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
42.83	0.00	0.00	**0.00**
42.93	0.00	0.00	0.00
43.03	0.00	0.00	0.00
43.13	0.00	0.00	0.00
43.23	0.00	0.00	0.00
43.33	0.00	0.00	0.00
43.43	0.00	0.00	0.00
43.53	0.00	0.00	0.00
43.63	0.00	0.00	0.00
43.73	0.00	0.00	0.00
43.83	0.00	0.00	0.00
43.93	0.00	0.00	0.00
44.03	0.00	0.00	0.00
44.13	0.00	0.00	0.00
44.23	0.00	0.00	0.00
44.33	0.00	0.00	0.00
44.43	0.00	0.00	0.00
44.53	0.00	0.00	0.00
44.63	0.00	0.00	0.00
44.73	0.00	0.00	0.00
44.83	0.00	0.00	0.00
44.93	0.00	0.00	0.00
45.03	0.00	0.00	0.00
45.13	0.00	0.00	0.00
45.23	0.00	0.00	0.00
45.33	0.00	0.00	0.00
45.43	0.00	0.00	0.00
45.53	0.00	0.00	0.00
45.63	0.00	0.00	0.00
45.73	0.00	0.00	0.00
45.83	0.00	0.00	0.00
45.93	0.03	0.03	0.00
46.03	0.09	0.09	0.00
46.13	0.16	0.16	0.00
46.23	0.21	0.21	0.00
46.33	0.25	0.25	0.00
46.43	0.33	0.33	0.00
46.53	0.45	0.45	0.00
46.63	0.61	0.61	0.00
46.73	0.76	0.76	0.00
46.83	0.89	0.89	0.00
46.93	0.99	0.99	0.00
47.03	1.08	1.08	0.00
47.13	1.17	1.17	0.00
47.23	1.25	1.25	0.00
47.33	1.32	1.32	0.00
47.43	1.39	1.39	0.00
47.53	1.46	1.46	0.00
47.63	1.52	1.52	0.00
47.73	1.58	1.58	0.00
47.83	1.64	1.64	0.00
47.93	1.70	1.70	0.00
48.03	1.75	1.75	0.00
48.13	1.80	1.80	0.00
48.23	2.13	2.13	0.00
48.33	4.36	4.36	0.00
48.43	**7.72**	**7.72**	0.00

Summary for Pond 44P: Basin 112

[92] Warning: Device #2 is above defined storage

Inflow Area = 1.397 ac, 81.07% Impervious, Inflow Depth > 2.96" for Adj - 2 Yr event
Inflow = 5.20 cfs @ 12.09 hrs, Volume= 0.344 af
Outflow = 0.92 cfs @ 12.48 hrs, Volume= 0.224 af, Atten= 82%, Lag= 23.5 min
Primary = 0.92 cfs @ 12.48 hrs, Volume= 0.224 af
Routed to Pond 39P : Basin 104
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 39P : Basin 104

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 46.95' @ 12.48 hrs Surf.Area= 3,654 sf Storage= 8,596 cf

Plug-Flow detention time= 252.2 min calculated for 0.224 af (65% of inflow)
Center-of-Mass det. time= 149.7 min (911.0 - 761.3)

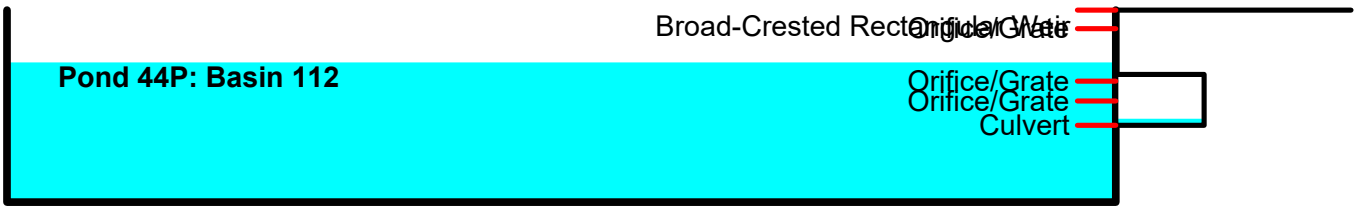
Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	14,810 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

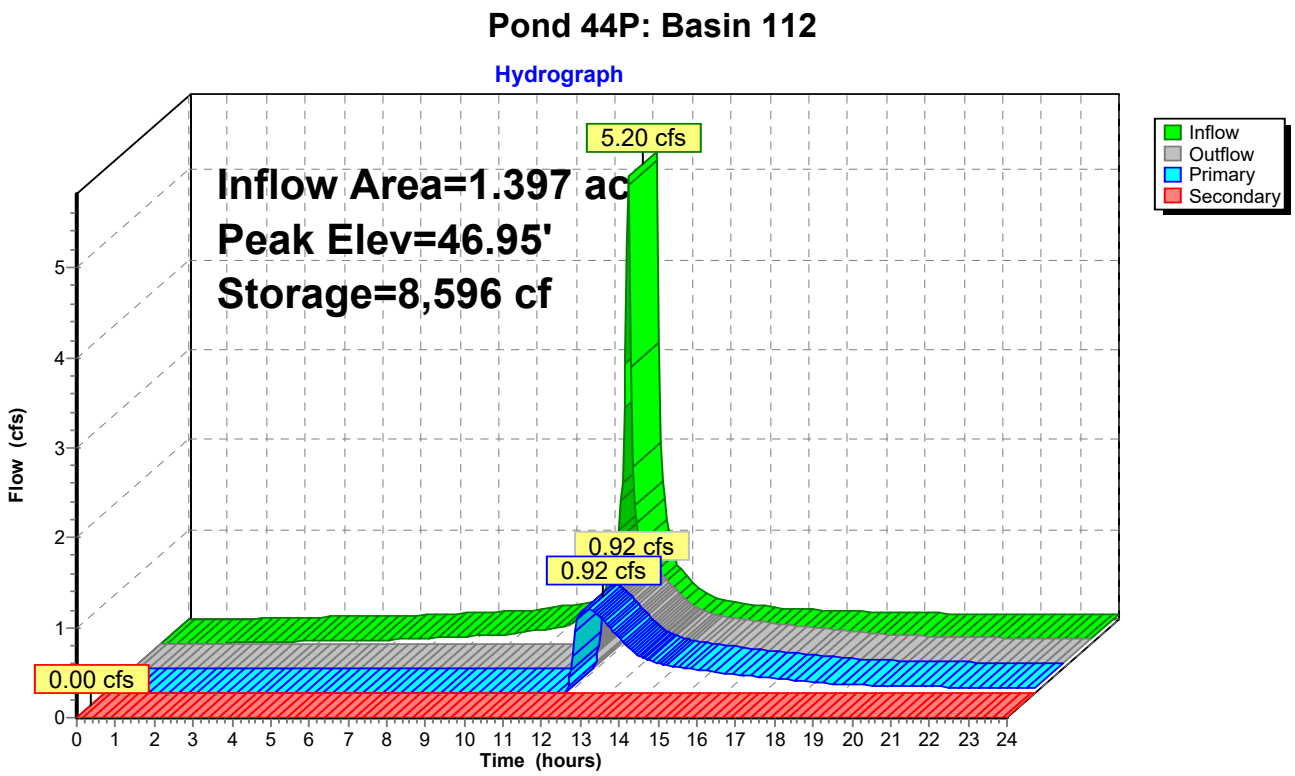
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	2,461	213.0	0.0	0	0	2,461
42.84	2,461	213.0	40.0	10	10	2,463
43.00	2,461	213.0	40.0	158	167	2,497
44.00	2,461	213.0	40.0	984	1,152	2,710
44.83	2,461	213.0	40.0	817	1,969	2,887
44.84	2,461	213.0	100.0	25	1,993	2,889
45.00	2,568	216.0	100.0	402	2,396	2,997
46.00	3,287	251.0	100.0	2,920	5,316	4,319
47.00	3,676	265.7	100.0	3,480	8,796	4,976
48.00	4,082	276.0	100.0	3,877	12,673	5,496
48.50	4,468	290.0	100.0	2,137	14,810	6,142

Device	Routing	Invert	Outlet Devices
#1	Primary	45.10'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 45.10' / 45.10' S= 0.0000 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf
#2	Secondary	48.50'	**20.0' long + 0.3 '/' SideZ x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#3	Device 1	47.95'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.40'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

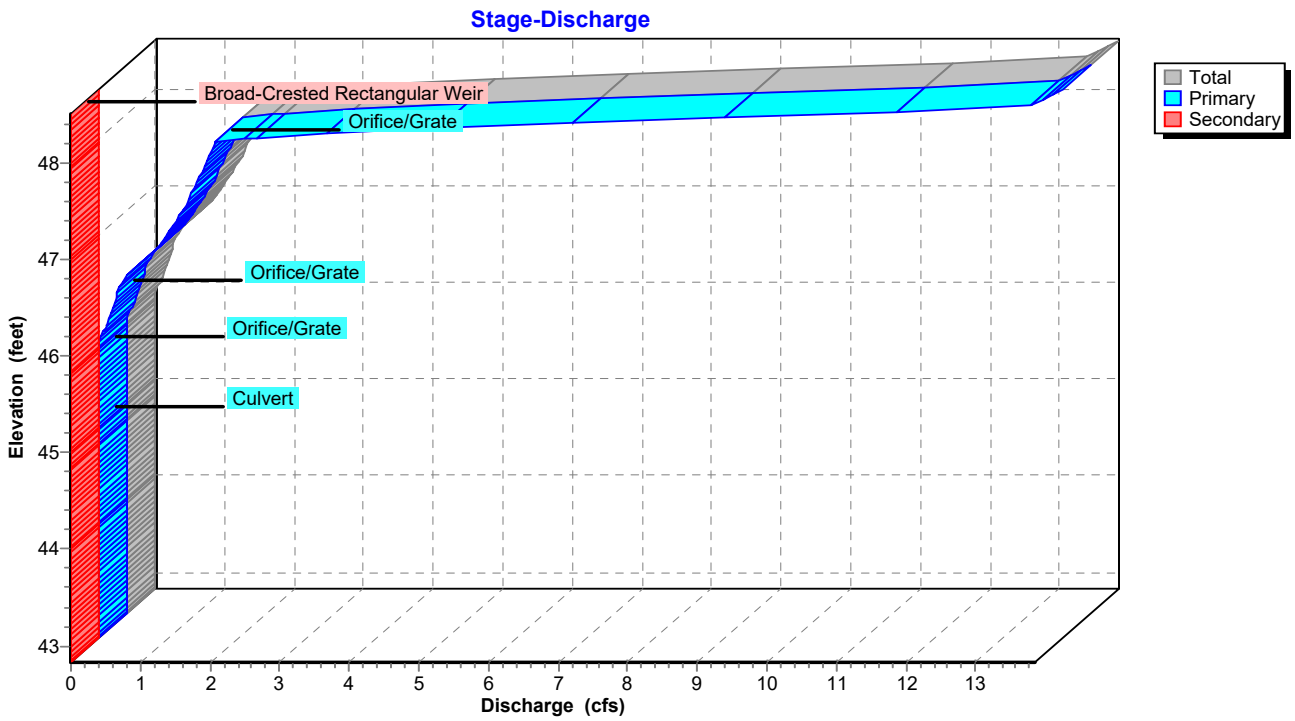
Primary OutFlow Max=0.92 cfs @ 12.48 hrs HW=46.94' (Free Discharge)
└─**1=Culvert** (Passes 0.92 cfs of 7.52 cfs potential flow)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  ├─**4=Orifice/Grate** (Orifice Controls 0.51 cfs @ 2.61 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.41 cfs @ 4.71 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)





Pond 44P: Basin 112



Hydrograph for Pond 44P: Basin 112

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	42.83	0.00	0.00	**0.00**
0.50	0.00	0	42.83	0.00	0.00	0.00
1.00	0.00	0	42.83	0.00	0.00	0.00
1.50	0.01	3	42.83	0.00	0.00	0.00
2.00	0.01	19	42.85	0.00	0.00	0.00
2.50	0.02	47	42.88	0.00	0.00	0.00
3.00	0.02	85	42.92	0.00	0.00	0.00
3.50	0.03	132	42.96	0.00	0.00	0.00
4.00	0.03	187	43.02	0.00	0.00	0.00
4.50	0.04	250	43.08	0.00	0.00	0.00
5.00	0.04	320	43.16	0.00	0.00	0.00
5.50	0.04	397	43.23	0.00	0.00	0.00
6.00	0.05	480	43.32	0.00	0.00	0.00
6.50	0.06	574	43.41	0.00	0.00	0.00
7.00	0.07	684	43.52	0.00	0.00	0.00
7.50	0.08	811	43.65	0.00	0.00	0.00
8.00	0.08	955	43.80	0.00	0.00	0.00
8.50	0.09	1,116	43.96	0.00	0.00	0.00
9.00	0.10	1,295	44.15	0.00	0.00	0.00
9.50	0.14	1,511	44.37	0.00	0.00	0.00
10.00	0.17	1,786	44.64	0.00	0.00	0.00
10.50	0.20	2,122	44.89	0.00	0.00	0.00
11.00	0.33	2,601	45.08	0.00	0.00	0.00
11.50	0.56	3,406	45.37	0.00	0.00	0.00
12.00	**3.11**	5,837	46.16	0.17	0.17	0.00
12.50	**0.92**	**8,594**	**46.94**	**0.92**	**0.92**	0.00
13.00	0.41	8,069	46.80	0.74	0.74	0.00
13.50	0.26	7,539	46.65	0.51	0.51	0.00
14.00	0.21	7,159	46.54	0.38	0.38	0.00
14.50	0.17	6,891	46.47	0.31	0.31	0.00
15.00	0.14	6,652	46.40	0.27	0.27	0.00
15.50	0.12	6,417	46.33	0.25	0.25	0.00
16.00	0.11	6,208	46.27	0.22	0.22	0.00
16.50	0.10	6,023	46.21	0.20	0.20	0.00
17.00	0.09	5,863	46.16	0.18	0.18	0.00
17.50	0.09	5,726	46.12	0.16	0.16	0.00
18.00	0.08	5,612	46.09	0.13	0.13	0.00
18.50	0.07	5,523	46.06	0.11	0.11	0.00
19.00	0.07	5,460	46.04	0.10	0.10	0.00
19.50	0.07	5,413	46.03	0.09	0.09	0.00
20.00	0.07	5,378	46.02	0.08	0.08	0.00
20.50	0.06	5,351	46.01	0.08	0.08	0.00
21.00	0.06	5,330	46.00	0.07	0.07	0.00
21.50	0.06	5,311	46.00	0.07	0.07	0.00
22.00	0.06	5,295	45.99	0.07	0.07	0.00
22.50	0.05	5,279	45.99	0.06	0.06	0.00
23.00	0.05	5,265	45.98	0.06	0.06	0.00
23.50	0.05	5,251	45.98	0.06	0.06	0.00
24.00	0.06	5,240	45.98	0.06	0.06	0.00

Stage-Discharge for Pond 44P: Basin 112

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
42.83	0.00	0.00	**0.00**
42.93	0.00	0.00	0.00
43.03	0.00	0.00	0.00
43.13	0.00	0.00	0.00
43.23	0.00	0.00	0.00
43.33	0.00	0.00	0.00
43.43	0.00	0.00	0.00
43.53	0.00	0.00	0.00
43.63	0.00	0.00	0.00
43.73	0.00	0.00	0.00
43.83	0.00	0.00	0.00
43.93	0.00	0.00	0.00
44.03	0.00	0.00	0.00
44.13	0.00	0.00	0.00
44.23	0.00	0.00	0.00
44.33	0.00	0.00	0.00
44.43	0.00	0.00	0.00
44.53	0.00	0.00	0.00
44.63	0.00	0.00	0.00
44.73	0.00	0.00	0.00
44.83	0.00	0.00	0.00
44.93	0.00	0.00	0.00
45.03	0.00	0.00	0.00
45.13	0.00	0.00	0.00
45.23	0.00	0.00	0.00
45.33	0.00	0.00	0.00
45.43	0.00	0.00	0.00
45.53	0.00	0.00	0.00
45.63	0.00	0.00	0.00
45.73	0.00	0.00	0.00
45.83	0.00	0.00	0.00
45.93	0.03	0.03	0.00
46.03	0.09	0.09	0.00
46.13	0.16	0.16	0.00
46.23	0.21	0.21	0.00
46.33	0.25	0.25	0.00
46.43	0.28	0.28	0.00
46.53	0.36	0.36	0.00
46.63	0.48	0.48	0.00
46.73	0.63	0.63	0.00
46.83	0.79	0.79	0.00
46.93	0.91	0.91	0.00
47.03	1.01	1.01	0.00
47.13	1.10	1.10	0.00
47.23	1.19	1.19	0.00
47.33	1.27	1.27	0.00
47.43	1.34	1.34	0.00
47.53	1.41	1.41	0.00
47.63	1.47	1.47	0.00
47.73	1.54	1.54	0.00
47.83	1.60	1.60	0.00
47.93	1.66	1.66	0.00
48.03	2.90	2.90	0.00
48.13	5.76	5.76	0.00
48.23	9.57	9.57	0.00
48.33	13.40	13.40	0.00
48.43	**13.67**	**13.67**	0.00

Summary for Pond 39P: Basin 104

[92] Warning: Device #2 is above defined storage
[81] Warning: Exceeded Pond 44P by 0.44' @ 21.65 hrs

Inflow Area = 4.940 ac, 77.74% Impervious, Inflow Depth > 4.34" for Adj - 10 Yr event
Inflow = 19.36 cfs @ 12.12 hrs, Volume= 1.786 af
Outflow = 2.12 cfs @ 13.57 hrs, Volume= 0.749 af, Atten= 89%, Lag= 86.7 min
Primary = 2.12 cfs @ 13.57 hrs, Volume= 0.749 af
Routed to Link 2A : POA 1 (Adj)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 2A : POA 1 (Adj)

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 46.72' @ 13.57 hrs Surf.Area= 20,991 sf Storage= 50,681 cf

Plug-Flow detention time= 367.4 min calculated for 0.749 af (42% of inflow)
Center-of-Mass det. time= 218.3 min (1,005.2 - 786.9)

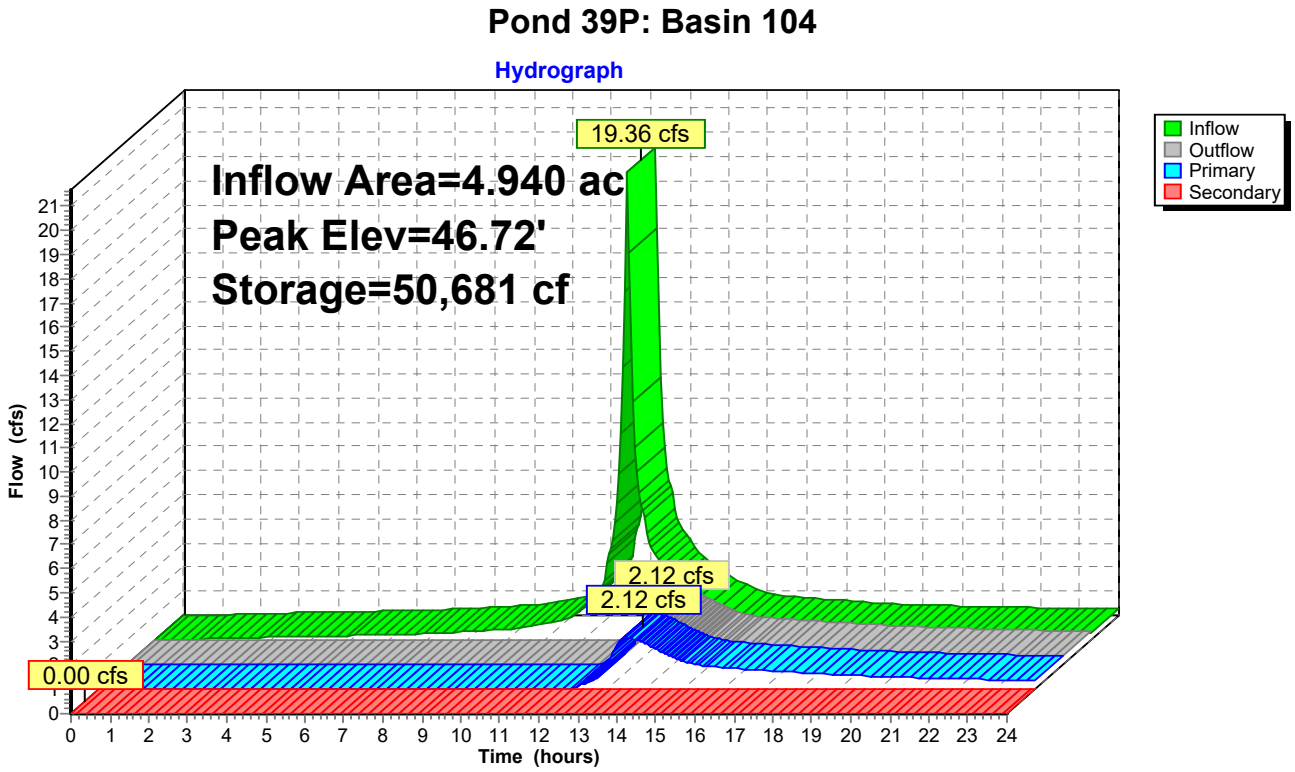
Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	87,112 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	17,239	897.0	0.0	0	0	17,239
42.84	17,239	897.0	40.0	69	69	17,248
43.00	17,239	897.0	40.0	1,103	1,172	17,391
44.00	17,239	897.0	40.0	6,896	8,068	18,288
44.83	17,239	897.0	40.0	5,723	13,791	19,033
44.84	17,239	897.0	100.0	172	13,964	19,042
45.00	17,690	902.0	100.0	2,794	16,758	19,772
46.00	20,420	926.0	100.0	19,039	35,797	23,381
47.00	21,216	939.0	100.0	20,817	56,613	25,524
48.00	22,029	952.0	100.0	21,621	78,234	27,697
48.40	22,357	957.0	100.0	8,877	87,112	28,547

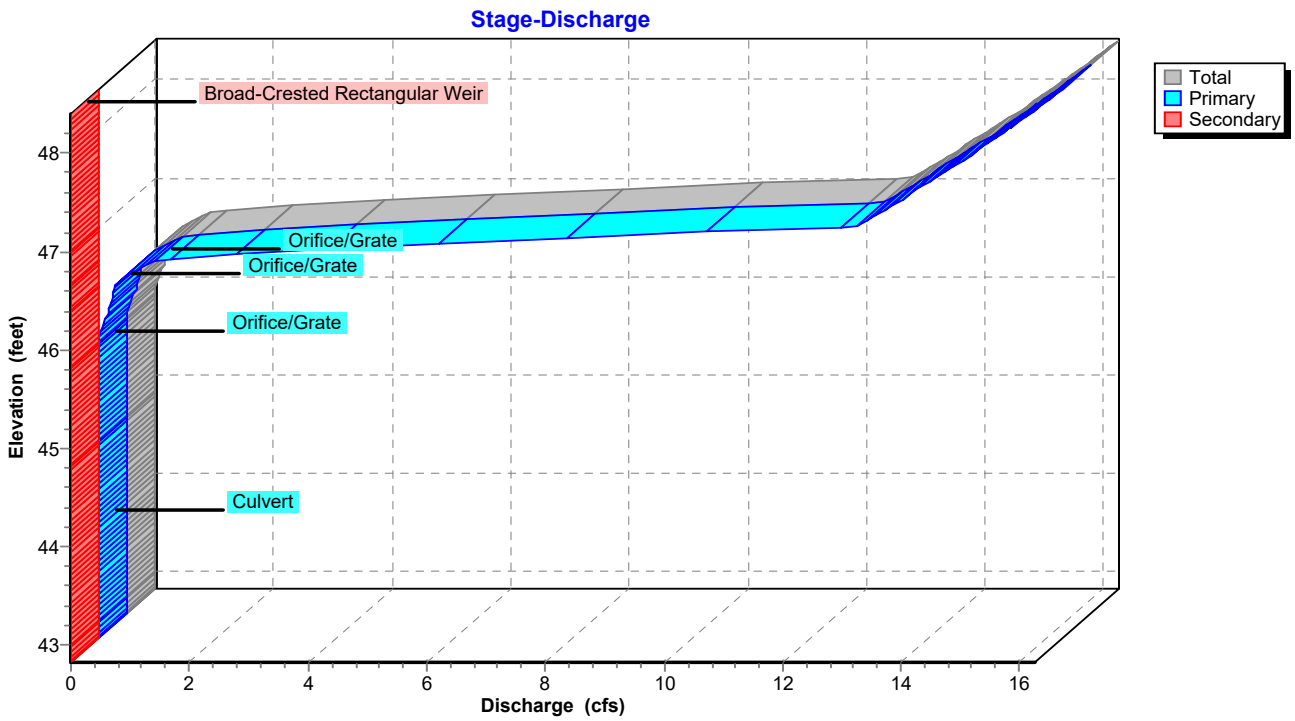
Device	Routing	Invert	Outlet Devices
#1	Primary	44.00'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 44.00' / 44.00' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#2	Secondary	48.40'	**50.0' long x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#3	Device 1	46.65'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.40'	**18.0" W x 3.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.08 cfs @ 13.57 hrs HW=46.72' (Free Discharge)
└─**1=Culvert** (Passes 2.08 cfs of 11.94 cfs potential flow)
  ├─**3=Orifice/Grate** (Weir Controls 0.94 cfs @ 0.86 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 0.78 cfs @ 2.08 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.36 cfs @ 4.12 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)



Pond 39P: Basin 104



Hydrograph for Pond 39P: Basin 104

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	42.83	0.00	0.00	**0.00**
0.50	0.00	0	42.83	0.00	0.00	0.00
1.00	0.01	4	42.83	0.00	0.00	0.00
1.50	0.05	60	42.84	0.00	0.00	0.00
2.00	0.07	169	42.85	0.00	0.00	0.00
2.50	0.10	322	42.88	0.00	0.00	0.00
3.00	0.11	513	42.90	0.00	0.00	0.00
3.50	0.13	735	42.94	0.00	0.00	0.00
4.00	0.15	986	42.97	0.00	0.00	0.00
4.50	0.16	1,264	43.01	0.00	0.00	0.00
5.00	0.18	1,572	43.06	0.00	0.00	0.00
5.50	0.19	1,907	43.11	0.00	0.00	0.00
6.00	0.21	2,269	43.16	0.00	0.00	0.00
6.50	0.24	2,671	43.22	0.00	0.00	0.00
7.00	0.28	3,135	43.28	0.00	0.00	0.00
7.50	0.31	3,664	43.36	0.00	0.00	0.00
8.00	0.35	4,259	43.45	0.00	0.00	0.00
8.50	0.39	4,922	43.54	0.00	0.00	0.00
9.00	0.43	5,654	43.65	0.00	0.00	0.00
9.50	0.54	6,521	43.78	0.00	0.00	0.00
10.00	0.67	7,617	43.93	0.00	0.00	0.00
10.50	0.81	8,951	44.13	0.00	0.00	0.00
11.00	1.27	10,797	44.40	0.00	0.00	0.00
11.50	2.30	13,935	44.84	0.00	0.00	0.00
12.00	**11.32**	22,941	45.34	0.00	0.00	0.00
12.50	**5.38**	42,589	46.33	0.25	0.25	0.00
13.00	3.15	48,751	46.63	0.86	0.86	0.00
13.50	2.23	**50,667**	**46.72**	**2.11**	**2.11**	0.00
14.00	1.67	**50,442**	**46.71**	**1.89**	**1.89**	0.00
14.50	1.23	50,006	46.69	1.47	1.47	0.00
15.00	0.94	49,622	46.67	1.15	1.15	0.00
15.50	0.80	49,267	46.65	0.96	0.96	0.00
16.00	0.72	48,967	46.64	0.90	0.90	0.00
16.50	0.67	48,654	46.62	0.84	0.84	0.00
17.00	0.61	48,342	46.61	0.79	0.79	0.00
17.50	0.56	48,025	46.59	0.74	0.74	0.00
18.00	0.50	47,704	46.58	0.68	0.68	0.00
18.50	0.47	47,389	46.56	0.63	0.63	0.00
19.00	0.44	47,105	46.55	0.59	0.59	0.00
19.50	0.42	46,844	46.54	0.56	0.56	0.00
20.00	0.39	46,603	46.52	0.52	0.52	0.00
20.50	0.37	46,380	46.51	0.49	0.49	0.00
21.00	0.35	46,177	46.50	0.46	0.46	0.00
21.50	0.34	45,985	46.49	0.44	0.44	0.00
22.00	0.32	45,802	46.49	0.42	0.42	0.00
22.50	0.31	45,628	46.48	0.40	0.40	0.00
23.00	0.30	45,463	46.47	0.38	0.38	0.00
23.50	0.28	45,306	46.46	0.37	0.37	0.00
24.00	0.30	45,160	46.45	0.35	0.35	0.00

Stage-Discharge for Pond 39P: Basin 104

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
42.83	0.00	0.00	**0.00**
42.93	0.00	0.00	0.00
43.03	0.00	0.00	0.00
43.13	0.00	0.00	0.00
43.23	0.00	0.00	0.00
43.33	0.00	0.00	0.00
43.43	0.00	0.00	0.00
43.53	0.00	0.00	0.00
43.63	0.00	0.00	0.00
43.73	0.00	0.00	0.00
43.83	0.00	0.00	0.00
43.93	0.00	0.00	0.00
44.03	0.00	0.00	0.00
44.13	0.00	0.00	0.00
44.23	0.00	0.00	0.00
44.33	0.00	0.00	0.00
44.43	0.00	0.00	0.00
44.53	0.00	0.00	0.00
44.63	0.00	0.00	0.00
44.73	0.00	0.00	0.00
44.83	0.00	0.00	0.00
44.93	0.00	0.00	0.00
45.03	0.00	0.00	0.00
45.13	0.00	0.00	0.00
45.23	0.00	0.00	0.00
45.33	0.00	0.00	0.00
45.43	0.00	0.00	0.00
45.53	0.00	0.00	0.00
45.63	0.00	0.00	0.00
45.73	0.00	0.00	0.00
45.83	0.00	0.00	0.00
45.93	0.03	0.03	0.00
46.03	0.09	0.09	0.00
46.13	0.16	0.16	0.00
46.23	0.21	0.21	0.00
46.33	0.25	0.25	0.00
46.43	0.30	0.30	0.00
46.53	0.54	0.54	0.00
46.63	0.87	0.87	0.00
46.73	2.35	2.35	0.00
46.83	5.37	5.37	0.00
46.93	9.30	9.30	0.00
47.03	12.85	12.85	0.00
47.13	13.13	13.13	0.00
47.23	13.40	13.40	0.00
47.33	13.67	13.67	0.00
47.43	13.93	13.93	0.00
47.53	14.19	14.19	0.00
47.63	14.44	14.44	0.00
47.73	14.69	14.69	0.00
47.83	14.93	14.93	0.00
47.93	15.17	15.17	0.00
48.03	15.41	15.41	0.00
48.13	15.64	15.64	0.00
48.23	15.87	15.87	0.00
48.33	**16.10**	**16.10**	0.00

Summary for Pond 41P: Basin 203

[92] Warning: Device #2 is above defined storage
[81] Warning: Exceeded Pond 43P by 0.70' @ 15.30 hrs

Inflow Area = 3.830 ac, 79.29% Impervious, Inflow Depth > 4.45" for Adj - 10 Yr event
Inflow = 17.12 cfs @ 12.12 hrs, Volume= 1.421 af
Outflow = 1.48 cfs @ 13.35 hrs, Volume= 0.713 af, Atten= 91%, Lag= 73.8 min
Primary = 1.48 cfs @ 13.35 hrs, Volume= 0.713 af
Routed to Link 2A : POA 1 (Adj)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 2A : POA 1 (Adj)

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 47.02' @ 13.35 hrs Surf.Area= 16,110 sf Storage= 40,717 cf

Plug-Flow detention time= 340.5 min calculated for 0.713 af (50% of inflow)
Center-of-Mass det. time= 214.3 min (985.6 - 771.3)

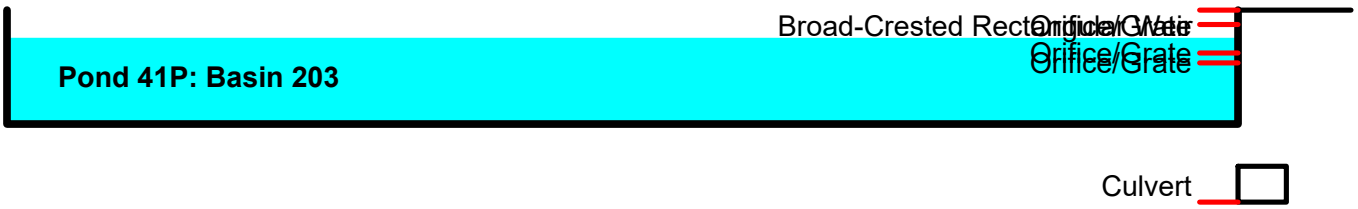
Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	64,356 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

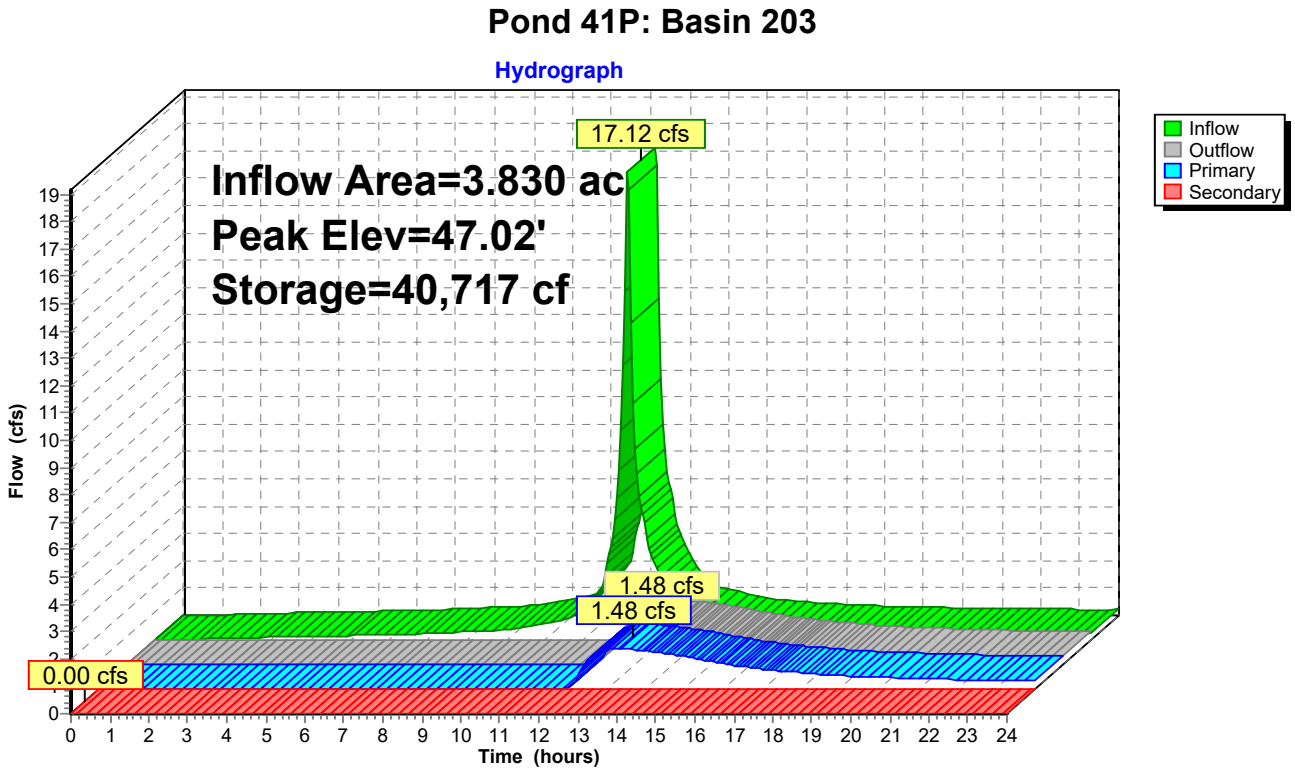
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	11,929	737.0	0.0	0	0	11,929
42.84	11,929	737.0	40.0	48	48	11,936
43.00	11,929	737.0	40.0	763	811	12,054
44.00	11,929	737.0	40.0	4,772	5,583	12,791
44.83	11,929	737.0	40.0	3,960	9,543	13,403
44.84	11,929	737.0	100.0	119	9,662	13,410
45.00	12,301	741.0	100.0	1,938	11,601	13,895
46.00	14,572	762.0	100.0	13,420	25,021	16,517
47.00	16,075	784.0	100.0	15,317	40,339	19,332
48.00	17,607	806.0	100.0	16,835	57,174	22,227
48.40	18,306	815.0	100.0	7,182	64,356	23,432

Device	Routing	Invert	Outlet Devices
#1	Primary	39.00'	**21.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 39.00' / 39.00' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 2.41 sf
#2	Secondary	48.40'	**50.0' long x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#3	Device 1	47.70'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.30'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

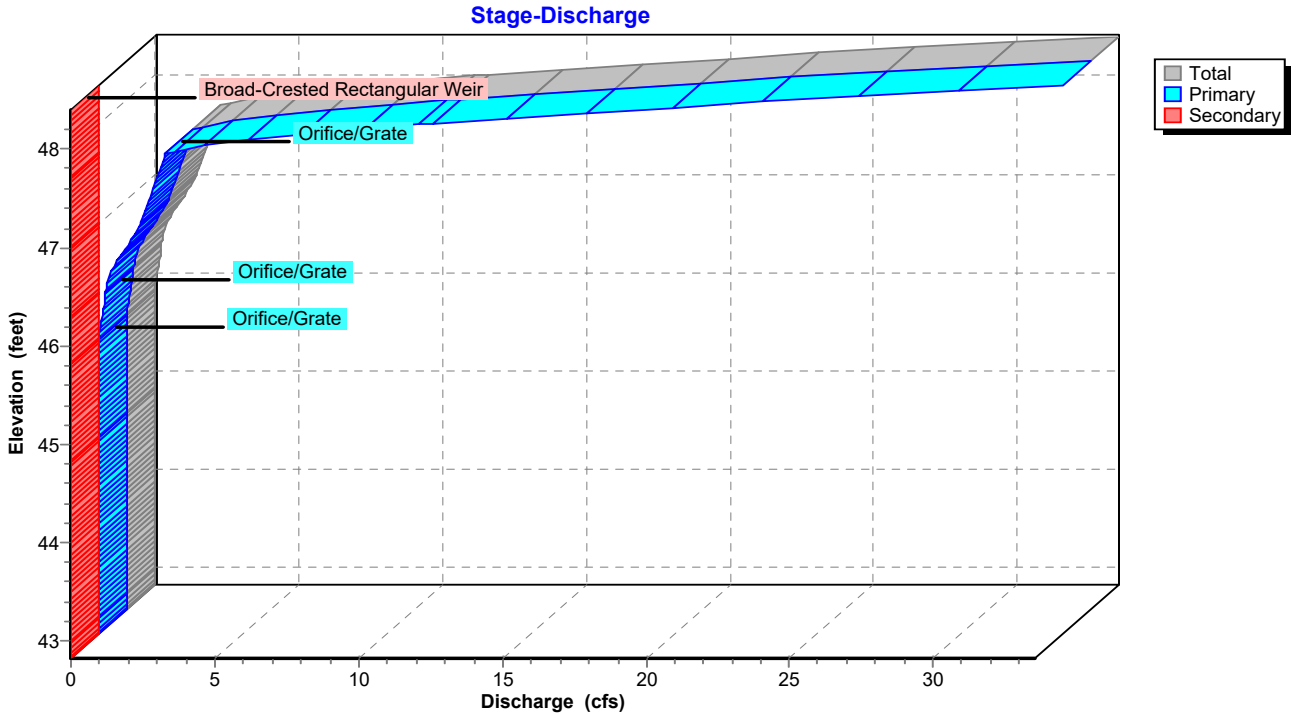
Primary OutFlow Max=1.48 cfs @ 13.35 hrs HW=47.02' (Free Discharge)
└─**1=Culvert** (Passes 1.48 cfs of 30.96 cfs potential flow)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  ├─**4=Orifice/Grate** (Orifice Controls 1.05 cfs @ 3.01 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.43 cfs @ 4.90 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)





Pond 41P: Basin 203



Hydrograph for Pond 41P: Basin 203

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	42.83	0.00	0.00	**0.00**
0.50	0.00	0	42.83	0.00	0.00	0.00
1.00	0.01	4	42.83	0.00	0.00	0.00
1.50	0.04	53	42.84	0.00	0.00	0.00
2.00	0.07	150	42.86	0.00	0.00	0.00
2.50	0.08	285	42.89	0.00	0.00	0.00
3.00	0.10	453	42.92	0.00	0.00	0.00
3.50	0.12	649	42.97	0.00	0.00	0.00
4.00	0.13	870	43.01	0.00	0.00	0.00
4.50	0.14	1,115	43.06	0.00	0.00	0.00
5.00	0.16	1,385	43.12	0.00	0.00	0.00
5.50	0.17	1,680	43.18	0.00	0.00	0.00
6.00	0.18	1,997	43.25	0.00	0.00	0.00
6.50	0.21	2,349	43.32	0.00	0.00	0.00
7.00	0.24	2,755	43.41	0.00	0.00	0.00
7.50	0.27	3,217	43.50	0.00	0.00	0.00
8.00	0.31	3,736	43.61	0.00	0.00	0.00
8.50	0.34	4,314	43.73	0.00	0.00	0.00
9.00	0.37	4,952	43.87	0.00	0.00	0.00
9.50	0.47	5,707	44.03	0.00	0.00	0.00
10.00	0.59	6,660	44.23	0.00	0.00	0.00
10.50	0.70	7,820	44.47	0.00	0.00	0.00
11.00	1.11	9,424	44.81	0.00	0.00	0.00
11.50	2.05	12,215	45.05	0.00	0.00	0.00
12.00	**10.09**	20,319	45.67	0.00	0.00	0.00
12.50	**4.64**	36,936	46.79	1.02	1.02	0.00
13.00	2.26	**40,279**	**47.00**	**1.44**	**1.44**	0.00
13.50	1.27	**40,662**	**47.02**	**1.47**	**1.47**	0.00
14.00	0.95	39,988	46.98	1.41	1.41	0.00
14.50	0.80	39,106	46.92	1.31	1.31	0.00
15.00	0.65	38,143	46.86	1.19	1.19	0.00
15.50	0.56	37,183	46.80	1.06	1.06	0.00
16.00	0.50	36,340	46.75	0.94	0.94	0.00
16.50	0.45	35,612	46.70	0.83	0.83	0.00
17.00	0.41	34,980	46.66	0.74	0.74	0.00
17.50	0.37	34,422	46.63	0.66	0.66	0.00
18.00	0.33	33,920	46.59	0.60	0.60	0.00
18.50	0.31	33,468	46.56	0.54	0.54	0.00
19.00	0.30	33,082	46.54	0.50	0.50	0.00
19.50	0.29	32,748	46.52	0.46	0.46	0.00
20.00	0.28	32,458	46.50	0.43	0.43	0.00
20.50	0.27	32,197	46.48	0.41	0.41	0.00
21.00	0.26	31,962	46.47	0.39	0.39	0.00
21.50	0.25	31,747	46.45	0.37	0.37	0.00
22.00	0.24	31,547	46.44	0.35	0.35	0.00
22.50	0.23	31,356	46.43	0.34	0.34	0.00
23.00	0.22	31,173	46.41	0.32	0.32	0.00
23.50	0.21	30,997	46.40	0.31	0.31	0.00
24.00	0.23	30,831	46.39	0.30	0.30	0.00

Stage-Discharge for Pond 41P: Basin 203

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
42.83	0.00	0.00	**0.00**
42.93	0.00	0.00	0.00
43.03	0.00	0.00	0.00
43.13	0.00	0.00	0.00
43.23	0.00	0.00	0.00
43.33	0.00	0.00	0.00
43.43	0.00	0.00	0.00
43.53	0.00	0.00	0.00
43.63	0.00	0.00	0.00
43.73	0.00	0.00	0.00
43.83	0.00	0.00	0.00
43.93	0.00	0.00	0.00
44.03	0.00	0.00	0.00
44.13	0.00	0.00	0.00
44.23	0.00	0.00	0.00
44.33	0.00	0.00	0.00
44.43	0.00	0.00	0.00
44.53	0.00	0.00	0.00
44.63	0.00	0.00	0.00
44.73	0.00	0.00	0.00
44.83	0.00	0.00	0.00
44.93	0.00	0.00	0.00
45.03	0.00	0.00	0.00
45.13	0.00	0.00	0.00
45.23	0.00	0.00	0.00
45.33	0.00	0.00	0.00
45.43	0.00	0.00	0.00
45.53	0.00	0.00	0.00
45.63	0.00	0.00	0.00
45.73	0.00	0.00	0.00
45.83	0.00	0.00	0.00
45.93	0.03	0.03	0.00
46.03	0.09	0.09	0.00
46.13	0.16	0.16	0.00
46.23	0.21	0.21	0.00
46.33	0.25	0.25	0.00
46.43	0.34	0.34	0.00
46.53	0.48	0.48	0.00
46.63	0.67	0.67	0.00
46.73	0.89	0.89	0.00
46.83	1.12	1.12	0.00
46.93	1.33	1.33	0.00
47.03	1.49	1.49	0.00
47.13	1.63	1.63	0.00
47.23	1.77	1.77	0.00
47.33	1.89	1.89	0.00
47.43	2.00	2.00	0.00
47.53	2.11	2.11	0.00
47.63	2.22	2.22	0.00
47.73	2.59	2.59	0.00
47.83	4.86	4.86	0.00
47.93	8.27	8.27	0.00
48.03	12.51	12.51	0.00
48.13	17.42	17.42	0.00
48.23	22.94	22.94	0.00
48.33	**28.99**	**28.99**	0.00

Summary for Pond 43P: Basin 206

[92] Warning: Device #2 is above defined storage

Inflow Area = 0.773 ac, 84.16% Impervious, Inflow Depth > 4.70" for Adj - 10 Yr event
Inflow = 4.53 cfs @ 12.08 hrs, Volume= 0.303 af
Outflow = 1.63 cfs @ 12.21 hrs, Volume= 0.239 af, Atten= 64%, Lag= 7.6 min
Primary = 1.63 cfs @ 12.21 hrs, Volume= 0.239 af
Routed to Pond 41P : Basin 203
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 41P : Basin 203

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 47.81' @ 12.21 hrs Surf.Area= 1,745 sf Storage= 5,763 cf

Plug-Flow detention time= 174.2 min calculated for 0.238 af (79% of inflow)
Center-of-Mass det. time= 93.4 min (844.6 - 751.2)

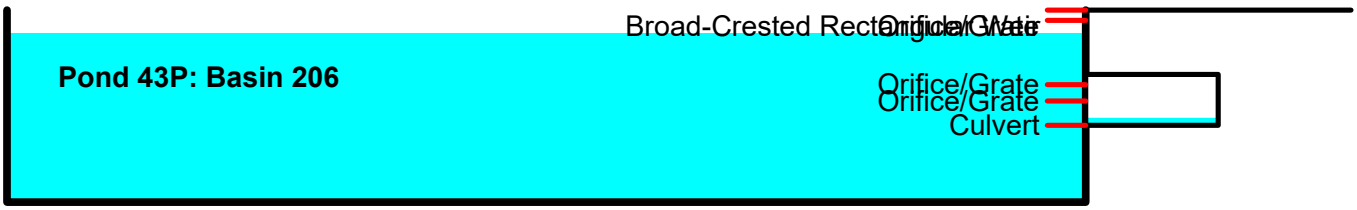
Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	7,008 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	1,435	180.0	0.0	0	0	1,435
42.84	1,435	180.0	40.0	6	6	1,437
43.00	1,435	180.0	40.0	92	98	1,466
44.00	1,435	180.0	40.0	574	672	1,646
44.83	1,435	180.0	40.0	476	1,148	1,795
44.84	1,435	180.0	100.0	14	1,162	1,797
45.00	1,435	180.0	100.0	230	1,392	1,826
46.00	1,489	190.0	100.0	1,462	2,854	2,173
47.00	1,611	213.0	100.0	1,550	4,403	2,938
48.00	1,777	233.0	100.0	1,693	6,097	3,682
48.50	1,869	240.0	100.0	911	7,008	3,971

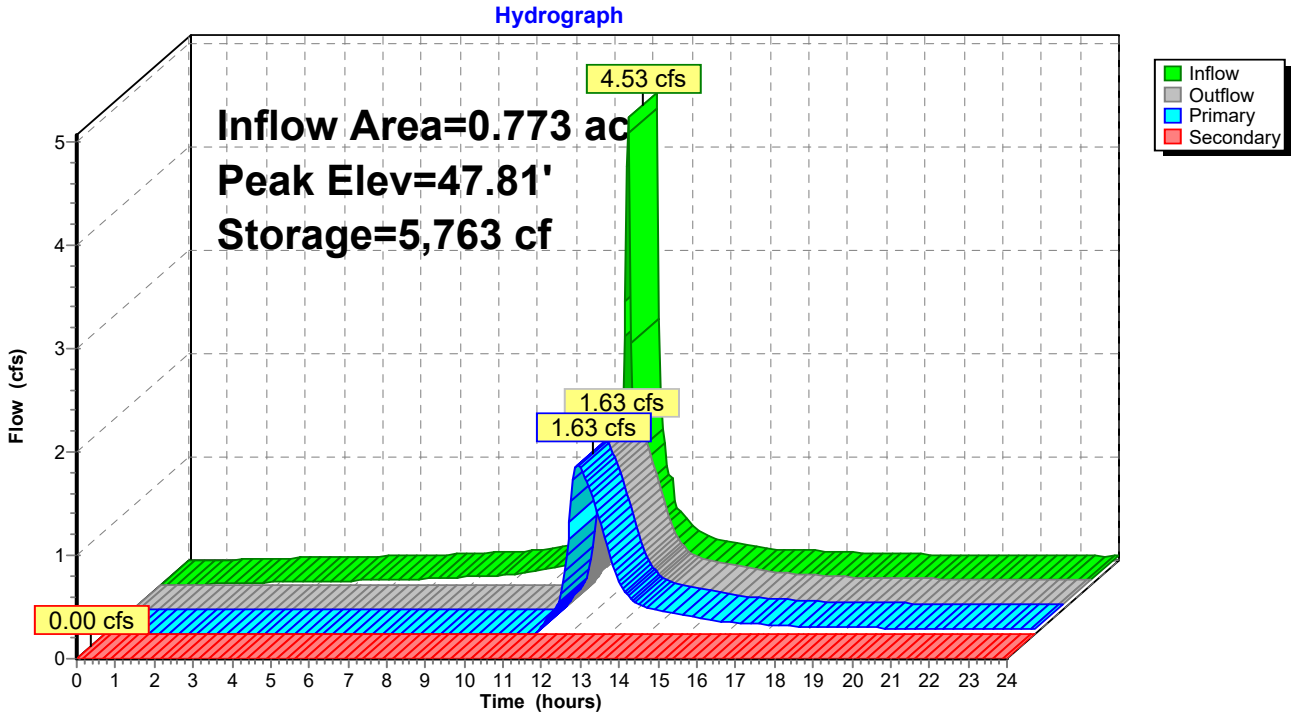
Device	Routing	Invert	Outlet Devices
#1	Primary	45.10'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 45.10' / 45.10' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#2	Secondary	48.50'	**16.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#3	Device 1	48.20'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.30'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.63 cfs @ 12.21 hrs HW=47.81' (Free Discharge)
└─**1=Culvert** (Passes 1.63 cfs of 11.90 cfs potential flow)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  ├─**4=Orifice/Grate** (Orifice Controls 1.06 cfs @ 5.40 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.57 cfs @ 6.50 fps)

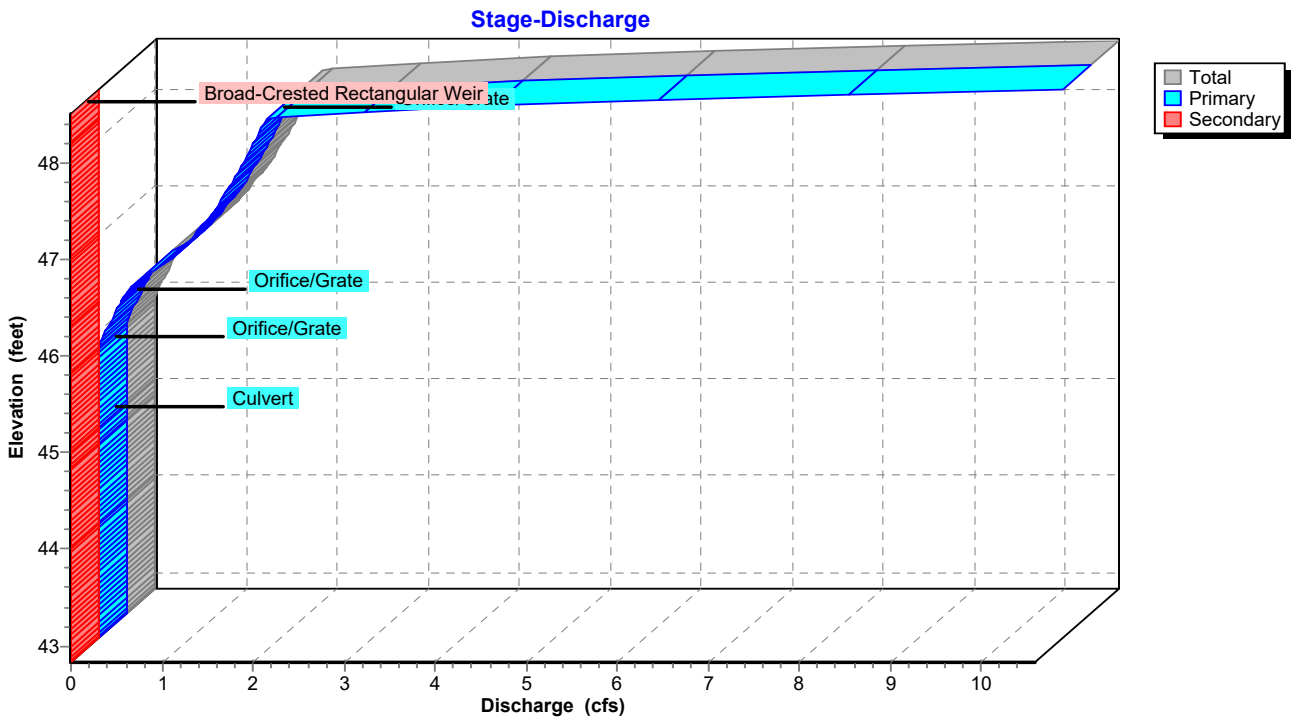
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)



Pond 43P: Basin 206



Pond 43P: Basin 206



Hydrograph for Pond 43P: Basin 206

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	42.83	0.00	0.00	**0.00**
0.50	0.00	0	42.83	0.00	0.00	0.00
1.00	0.00	2	42.83	0.00	0.00	0.00
1.50	0.01	17	42.86	0.00	0.00	0.00
2.00	0.02	45	42.91	0.00	0.00	0.00
2.50	0.02	83	42.97	0.00	0.00	0.00
3.00	0.03	130	43.06	0.00	0.00	0.00
3.50	0.03	184	43.15	0.00	0.00	0.00
4.00	0.04	245	43.26	0.00	0.00	0.00
4.50	0.04	313	43.37	0.00	0.00	0.00
5.00	0.04	386	43.50	0.00	0.00	0.00
5.50	0.05	466	43.64	0.00	0.00	0.00
6.00	0.05	551	43.79	0.00	0.00	0.00
6.50	0.06	647	43.96	0.00	0.00	0.00
7.00	0.06	756	44.15	0.00	0.00	0.00
7.50	0.07	880	44.36	0.00	0.00	0.00
8.00	0.08	1,018	44.60	0.00	0.00	0.00
8.50	0.09	1,171	44.85	0.00	0.00	0.00
9.00	0.10	1,340	44.96	0.00	0.00	0.00
9.50	0.13	1,542	45.10	0.00	0.00	0.00
10.00	0.15	1,795	45.28	0.00	0.00	0.00
10.50	0.19	2,101	45.49	0.00	0.00	0.00
11.00	0.29	2,536	45.79	0.00	0.00	0.00
11.50	0.50	3,126	46.18	0.19	0.19	0.00
12.00	**2.75**	**4,466**	**47.04**	**1.09**	**1.09**	0.00
12.50	**0.78**	**5,200**	**47.48**	**1.43**	**1.43**	0.00
13.00	0.35	4,021	46.76	0.80	0.80	0.00
13.50	0.22	3,554	46.46	0.36	0.36	0.00
14.00	0.17	3,361	46.34	0.25	0.25	0.00
14.50	0.15	3,229	46.25	0.22	0.22	0.00
15.00	0.12	3,108	46.17	0.18	0.18	0.00
15.50	0.10	3,012	46.11	0.14	0.14	0.00
16.00	0.10	2,957	46.07	0.12	0.12	0.00
16.50	0.09	2,924	46.05	0.10	0.10	0.00
17.00	0.08	2,901	46.03	0.09	0.09	0.00
17.50	0.07	2,882	46.02	0.08	0.08	0.00
18.00	0.06	2,864	46.01	0.07	0.07	0.00
18.50	0.06	2,850	46.00	0.07	0.07	0.00
19.00	0.06	2,841	45.99	0.06	0.06	0.00
19.50	0.06	2,834	45.99	0.06	0.06	0.00
20.00	0.06	2,828	45.98	0.06	0.06	0.00
20.50	0.05	2,823	45.98	0.06	0.06	0.00
21.00	0.05	2,818	45.98	0.05	0.05	0.00
21.50	0.05	2,813	45.97	0.05	0.05	0.00
22.00	0.05	2,809	45.97	0.05	0.05	0.00
22.50	0.05	2,804	45.97	0.05	0.05	0.00
23.00	0.04	2,799	45.96	0.05	0.05	0.00
23.50	0.04	2,794	45.96	0.04	0.04	0.00
24.00	0.05	2,792	45.96	0.04	0.04	0.00

Stage-Discharge for Pond 43P: Basin 206

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
42.83	0.00	0.00	**0.00**
42.93	0.00	0.00	0.00
43.03	0.00	0.00	0.00
43.13	0.00	0.00	0.00
43.23	0.00	0.00	0.00
43.33	0.00	0.00	0.00
43.43	0.00	0.00	0.00
43.53	0.00	0.00	0.00
43.63	0.00	0.00	0.00
43.73	0.00	0.00	0.00
43.83	0.00	0.00	0.00
43.93	0.00	0.00	0.00
44.03	0.00	0.00	0.00
44.13	0.00	0.00	0.00
44.23	0.00	0.00	0.00
44.33	0.00	0.00	0.00
44.43	0.00	0.00	0.00
44.53	0.00	0.00	0.00
44.63	0.00	0.00	0.00
44.73	0.00	0.00	0.00
44.83	0.00	0.00	0.00
44.93	0.00	0.00	0.00
45.03	0.00	0.00	0.00
45.13	0.00	0.00	0.00
45.23	0.00	0.00	0.00
45.33	0.00	0.00	0.00
45.43	0.00	0.00	0.00
45.53	0.00	0.00	0.00
45.63	0.00	0.00	0.00
45.73	0.00	0.00	0.00
45.83	0.00	0.00	0.00
45.93	0.03	0.03	0.00
46.03	0.09	0.09	0.00
46.13	0.16	0.16	0.00
46.23	0.21	0.21	0.00
46.33	0.25	0.25	0.00
46.43	0.33	0.33	0.00
46.53	0.45	0.45	0.00
46.63	0.61	0.61	0.00
46.73	0.76	0.76	0.00
46.83	0.89	0.89	0.00
46.93	0.99	0.99	0.00
47.03	1.08	1.08	0.00
47.13	1.17	1.17	0.00
47.23	1.25	1.25	0.00
47.33	1.32	1.32	0.00
47.43	1.39	1.39	0.00
47.53	1.46	1.46	0.00
47.63	1.52	1.52	0.00
47.73	1.58	1.58	0.00
47.83	1.64	1.64	0.00
47.93	1.70	1.70	0.00
48.03	1.75	1.75	0.00
48.13	1.80	1.80	0.00
48.23	2.13	2.13	0.00
48.33	4.36	4.36	0.00
48.43	**7.72**	**7.72**	0.00

Summary for Pond 44P: Basin 112

[92] Warning: Device #2 is above defined storage

Inflow Area = 1.397 ac, 81.07% Impervious, Inflow Depth > 4.67" for Adj - 10 Yr event
Inflow = 8.06 cfs @ 12.09 hrs, Volume= 0.544 af
Outflow = 1.67 cfs @ 12.37 hrs, Volume= 0.420 af, Atten= 79%, Lag= 16.8 min
Primary = 1.67 cfs @ 12.37 hrs, Volume= 0.420 af
Routed to Pond 39P : Basin 104
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 39P : Basin 104

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 47.95' @ 12.37 hrs Surf.Area= 4,060 sf Storage= 12,458 cf

Plug-Flow detention time= 213.9 min calculated for 0.419 af (77% of inflow)
Center-of-Mass det. time= 130.2 min (883.1 - 752.9)

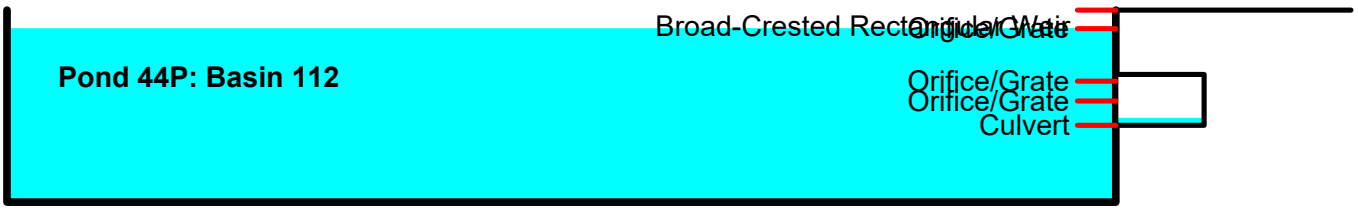
Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	14,810 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	2,461	213.0	0.0	0	0	2,461
42.84	2,461	213.0	40.0	10	10	2,463
43.00	2,461	213.0	40.0	158	167	2,497
44.00	2,461	213.0	40.0	984	1,152	2,710
44.83	2,461	213.0	40.0	817	1,969	2,887
44.84	2,461	213.0	100.0	25	1,993	2,889
45.00	2,568	216.0	100.0	402	2,396	2,997
46.00	3,287	251.0	100.0	2,920	5,316	4,319
47.00	3,676	265.7	100.0	3,480	8,796	4,976
48.00	4,082	276.0	100.0	3,877	12,673	5,496
48.50	4,468	290.0	100.0	2,137	14,810	6,142

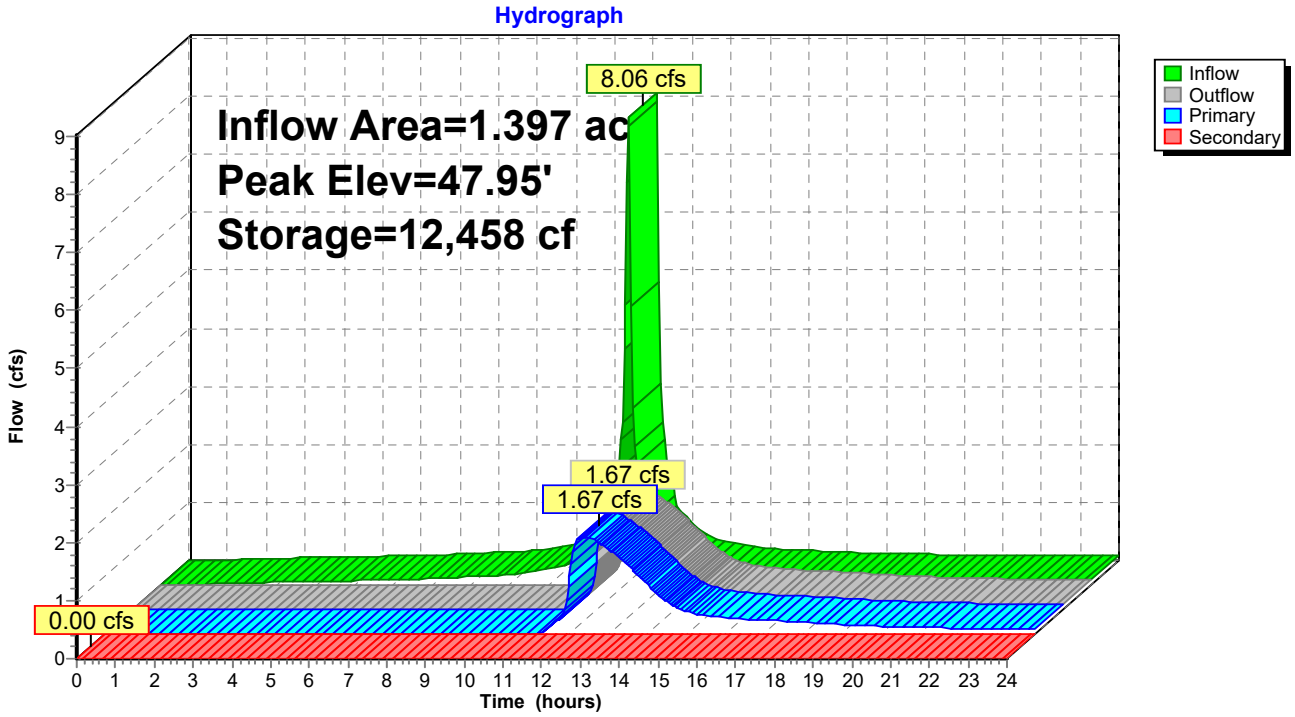
Device	Routing	Invert	Outlet Devices
#1	Primary	45.10'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 45.10' / 45.10' S= 0.0000 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf
#2	Secondary	48.50'	**20.0' long + 0.3 '/' SideZ x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#3	Device 1	47.95'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.40'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.66 cfs @ 12.37 hrs HW=47.95' (Free Discharge)
└─**1=Culvert** (Passes 1.66 cfs of 12.32 cfs potential flow)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  ├─**4=Orifice/Grate** (Orifice Controls 1.08 cfs @ 5.48 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.59 cfs @ 6.74 fps)

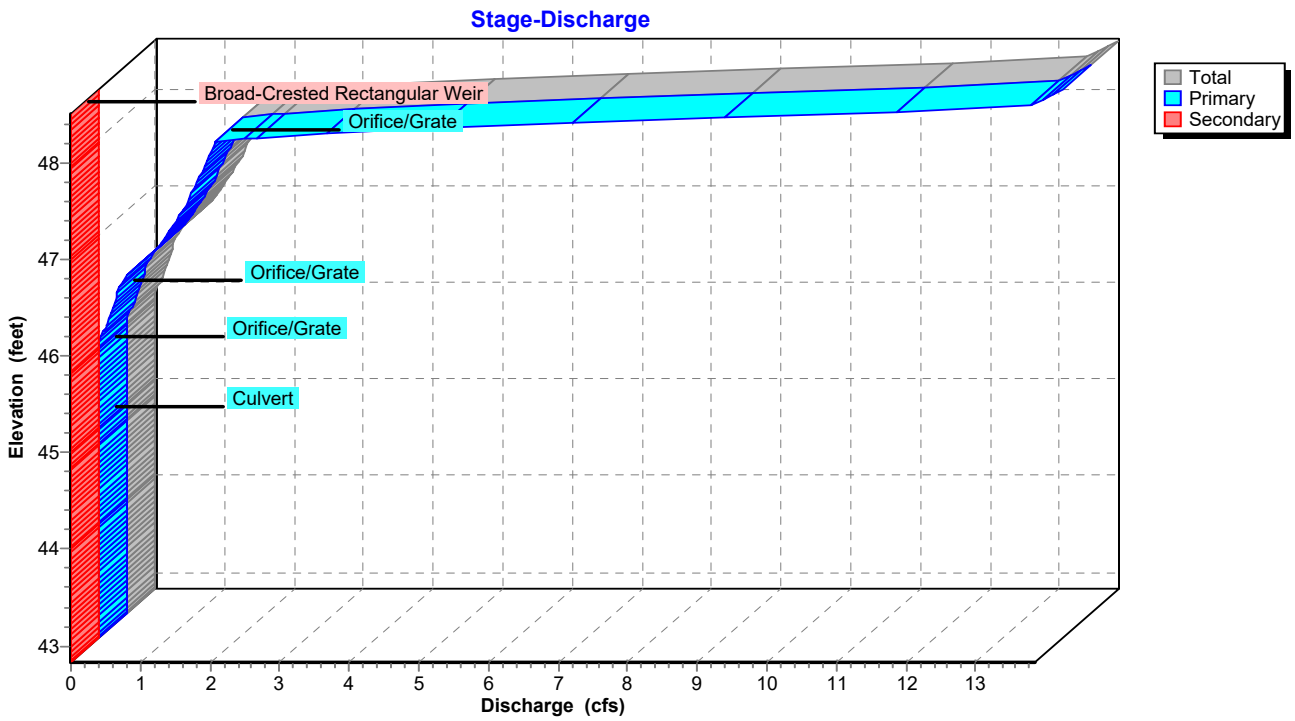
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)



Pond 44P: Basin 112



Pond 44P: Basin 112



Hydrograph for Pond 44P: Basin 112

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	42.83	0.00	0.00	**0.00**
0.50	0.00	0	42.83	0.00	0.00	0.00
1.00	0.01	3	42.83	0.00	0.00	0.00
1.50	0.02	29	42.86	0.00	0.00	0.00
2.00	0.03	77	42.91	0.00	0.00	0.00
2.50	0.04	143	42.98	0.00	0.00	0.00
3.00	0.05	225	43.06	0.00	0.00	0.00
3.50	0.06	319	43.15	0.00	0.00	0.00
4.00	0.06	425	43.26	0.00	0.00	0.00
4.50	0.07	542	43.38	0.00	0.00	0.00
5.00	0.07	671	43.51	0.00	0.00	0.00
5.50	0.08	811	43.65	0.00	0.00	0.00
6.00	0.09	960	43.81	0.00	0.00	0.00
6.50	0.10	1,128	43.98	0.00	0.00	0.00
7.00	0.11	1,320	44.17	0.00	0.00	0.00
7.50	0.13	1,539	44.39	0.00	0.00	0.00
8.00	0.14	1,783	44.64	0.00	0.00	0.00
8.50	0.16	2,055	44.86	0.00	0.00	0.00
9.00	0.17	2,354	44.98	0.00	0.00	0.00
9.50	0.22	2,712	45.12	0.00	0.00	0.00
10.00	0.28	3,162	45.29	0.00	0.00	0.00
10.50	0.33	3,707	45.48	0.00	0.00	0.00
11.00	0.53	4,479	45.74	0.00	0.00	0.00
11.50	0.89	5,686	46.11	0.15	0.15	0.00
12.00	**4.84**	**8,856**	**47.02**	**1.00**	**1.00**	0.00
12.50	**1.42**	**12,376**	**47.93**	**1.65**	**1.65**	0.00
13.00	0.64	11,097	47.61	1.46	1.46	0.00
13.50	0.40	9,616	47.22	1.18	1.18	0.00
14.00	0.32	8,395	46.89	0.86	0.86	0.00
14.50	0.26	7,651	46.68	0.56	0.56	0.00
15.00	0.21	7,231	46.56	0.40	0.40	0.00
15.50	0.19	6,947	46.48	0.32	0.32	0.00
16.00	0.17	6,737	46.42	0.28	0.28	0.00
16.50	0.16	6,553	46.37	0.26	0.26	0.00
17.00	0.15	6,376	46.32	0.24	0.24	0.00
17.50	0.13	6,208	46.27	0.22	0.22	0.00
18.00	0.12	6,048	46.22	0.20	0.20	0.00
18.50	0.11	5,906	46.18	0.18	0.18	0.00
19.00	0.11	5,789	46.14	0.17	0.17	0.00
19.50	0.10	5,696	46.11	0.15	0.15	0.00
20.00	0.10	5,624	46.09	0.14	0.14	0.00
20.50	0.10	5,569	46.08	0.12	0.12	0.00
21.00	0.09	5,527	46.06	0.12	0.12	0.00
21.50	0.09	5,493	46.05	0.11	0.11	0.00
22.00	0.09	5,464	46.04	0.10	0.10	0.00
22.50	0.08	5,440	46.04	0.10	0.10	0.00
23.00	0.08	5,418	46.03	0.09	0.09	0.00
23.50	0.08	5,398	46.02	0.09	0.09	0.00
24.00	0.09	5,382	46.02	0.08	0.08	0.00

Stage-Discharge for Pond 44P: Basin 112

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
42.83	0.00	0.00	**0.00**
42.93	0.00	0.00	0.00
43.03	0.00	0.00	0.00
43.13	0.00	0.00	0.00
43.23	0.00	0.00	0.00
43.33	0.00	0.00	0.00
43.43	0.00	0.00	0.00
43.53	0.00	0.00	0.00
43.63	0.00	0.00	0.00
43.73	0.00	0.00	0.00
43.83	0.00	0.00	0.00
43.93	0.00	0.00	0.00
44.03	0.00	0.00	0.00
44.13	0.00	0.00	0.00
44.23	0.00	0.00	0.00
44.33	0.00	0.00	0.00
44.43	0.00	0.00	0.00
44.53	0.00	0.00	0.00
44.63	0.00	0.00	0.00
44.73	0.00	0.00	0.00
44.83	0.00	0.00	0.00
44.93	0.00	0.00	0.00
45.03	0.00	0.00	0.00
45.13	0.00	0.00	0.00
45.23	0.00	0.00	0.00
45.33	0.00	0.00	0.00
45.43	0.00	0.00	0.00
45.53	0.00	0.00	0.00
45.63	0.00	0.00	0.00
45.73	0.00	0.00	0.00
45.83	0.00	0.00	0.00
45.93	0.03	0.03	0.00
46.03	0.09	0.09	0.00
46.13	0.16	0.16	0.00
46.23	0.21	0.21	0.00
46.33	0.25	0.25	0.00
46.43	0.28	0.28	0.00
46.53	0.36	0.36	0.00
46.63	0.48	0.48	0.00
46.73	0.63	0.63	0.00
46.83	0.79	0.79	0.00
46.93	0.91	0.91	0.00
47.03	1.01	1.01	0.00
47.13	1.10	1.10	0.00
47.23	1.19	1.19	0.00
47.33	1.27	1.27	0.00
47.43	1.34	1.34	0.00
47.53	1.41	1.41	0.00
47.63	1.47	1.47	0.00
47.73	1.54	1.54	0.00
47.83	1.60	1.60	0.00
47.93	1.66	1.66	0.00
48.03	2.90	2.90	0.00
48.13	5.76	5.76	0.00
48.23	9.57	9.57	0.00
48.33	13.40	13.40	0.00
48.43	**13.67**	**13.67**	0.00

Summary for Pond 39P: Basin 104

[92] Warning: Device #2 is above defined storage
[81] Warning: Exceeded Pond 44P by 0.42' @ 23.95 hrs

Inflow Area = 4.940 ac, 77.74% Impervious, Inflow Depth > 7.71" for Adj - 100 Yr event
Inflow = 42.71 cfs @ 12.12 hrs, Volume= 3.173 af
Outflow = 13.93 cfs @ 12.32 hrs, Volume= 2.098 af, Atten= 67%, Lag= 12.1 min
Primary = 13.93 cfs @ 12.32 hrs, Volume= 2.098 af
Routed to Link 2A : POA 1 (Adj)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 2A : POA 1 (Adj)

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 47.43' @ 12.32 hrs Surf.Area= 21,564 sf Storage= 65,808 cf

Plug-Flow detention time= 216.8 min calculated for 2.094 af (66% of inflow)
Center-of-Mass det. time= 112.3 min (885.1 - 772.8)

Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	87,112 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

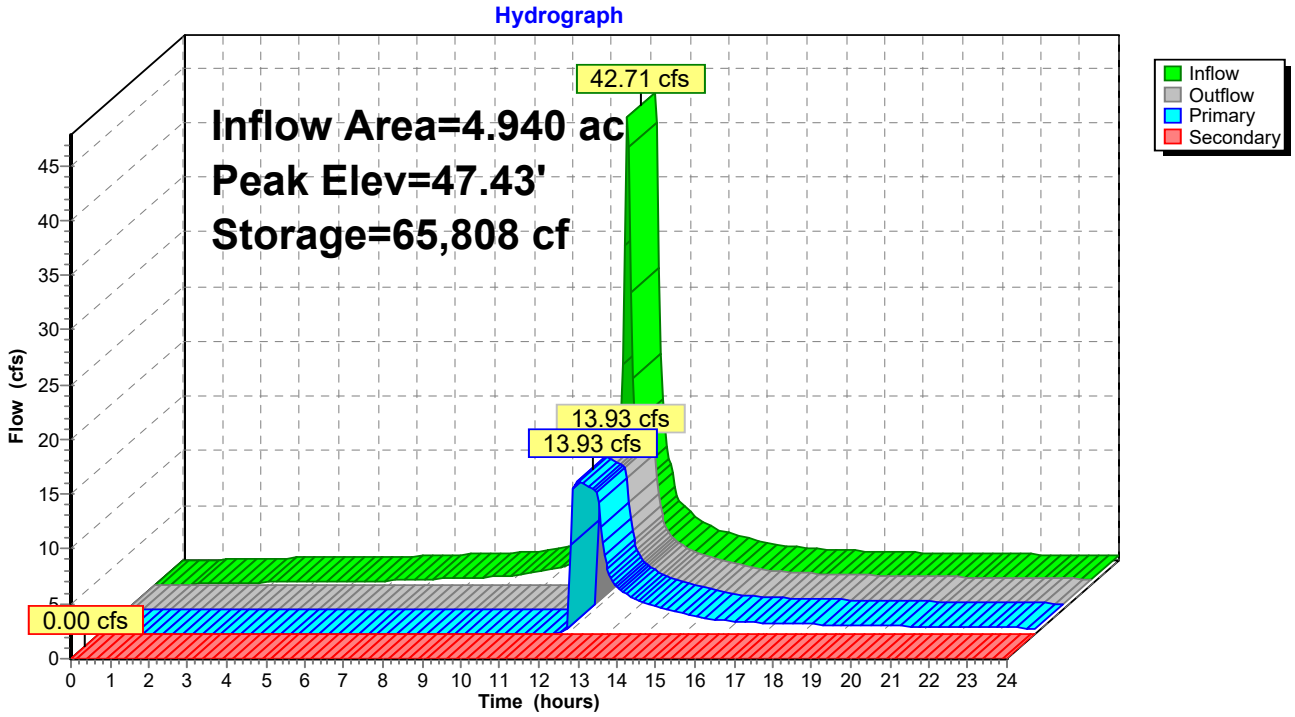
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	17,239	897.0	0.0	0	0	17,239
42.84	17,239	897.0	40.0	69	69	17,248
43.00	17,239	897.0	40.0	1,103	1,172	17,391
44.00	17,239	897.0	40.0	6,896	8,068	18,288
44.83	17,239	897.0	40.0	5,723	13,791	19,033
44.84	17,239	897.0	100.0	172	13,964	19,042
45.00	17,690	902.0	100.0	2,794	16,758	19,772
46.00	20,420	926.0	100.0	19,039	35,797	23,381
47.00	21,216	939.0	100.0	20,817	56,613	25,524
48.00	22,029	952.0	100.0	21,621	78,234	27,697
48.40	22,357	957.0	100.0	8,877	87,112	28,547

Device	Routing	Invert	Outlet Devices
#1	Primary	44.00'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 44.00' / 44.00' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#2	Secondary	48.40'	**50.0' long x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#3	Device 1	46.65'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.40'	**18.0" W x 3.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

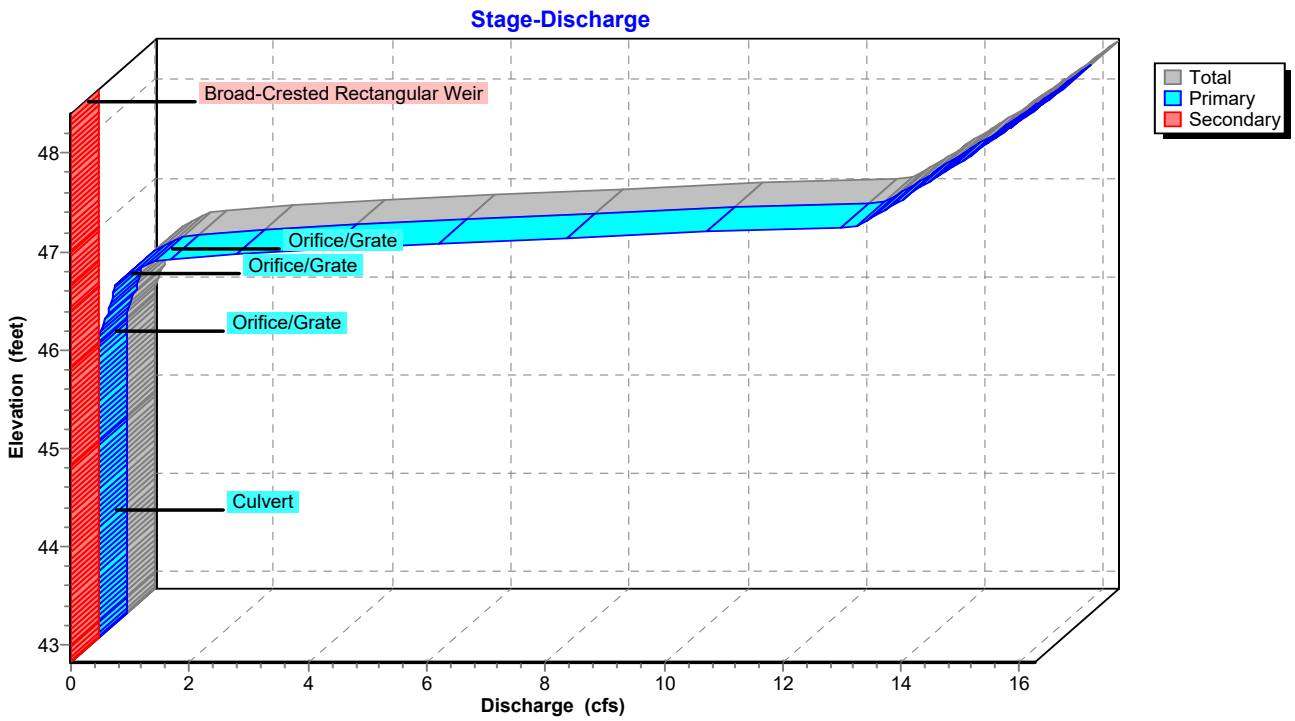
Primary OutFlow Max=13.92 cfs @ 12.32 hrs HW=47.43' (Free Discharge)
└─**1=Culvert** (Inlet Controls 13.92 cfs @ 7.88 fps)
  ├─**3=Orifice/Grate** (Passes < 35.81 cfs potential flow)
  ├─**4=Orifice/Grate** (Passes < 1.71 cfs potential flow)
  └─**5=Orifice/Grate** (Passes < 0.50 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 39P: Basin 104



Pond 39P: Basin 104



Hydrograph for Pond 39P: Basin 104

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	42.83	0.00	0.00	**0.00**
0.50	0.00	0	42.83	0.00	0.00	0.00
1.00	0.08	74	42.84	0.00	0.00	0.00
1.50	0.14	277	42.87	0.00	0.00	0.00
2.00	0.18	569	42.91	0.00	0.00	0.00
2.50	0.22	929	42.96	0.00	0.00	0.00
3.00	0.25	1,346	43.03	0.00	0.00	0.00
3.50	0.28	1,821	43.09	0.00	0.00	0.00
4.00	0.31	2,348	43.17	0.00	0.00	0.00
4.50	0.33	2,924	43.25	0.00	0.00	0.00
5.00	0.36	3,543	43.34	0.00	0.00	0.00
5.50	0.38	4,205	43.44	0.00	0.00	0.00
6.00	0.40	4,907	43.54	0.00	0.00	0.00
6.50	0.46	5,678	43.65	0.00	0.00	0.00
7.00	0.52	6,555	43.78	0.00	0.00	0.00
7.50	0.58	7,545	43.92	0.00	0.00	0.00
8.00	0.64	8,646	44.08	0.00	0.00	0.00
8.50	0.71	9,861	44.26	0.00	0.00	0.00
9.00	0.77	11,191	44.45	0.00	0.00	0.00
9.50	1.03	12,780	44.68	0.00	0.00	0.00
10.00	1.37	14,942	44.90	0.00	0.00	0.00
10.50	1.67	17,684	45.05	0.00	0.00	0.00
11.00	2.62	21,466	45.26	0.00	0.00	0.00
11.50	4.58	27,898	45.60	0.00	0.00	0.00
12.00	**20.15**	**44,318**	**46.41**	**0.29**	**0.29**	0.00
12.50	**8.80**	**63,684**	**47.33**	**13.67**	**13.67**	0.00
13.00	4.45	53,641	46.86	6.48	6.48	0.00
13.50	3.18	51,930	46.78	3.70	3.70	0.00
14.00	2.53	51,242	46.75	2.79	2.79	0.00
14.50	2.05	50,840	46.73	2.27	2.27	0.00
15.00	1.56	50,381	46.70	1.83	1.83	0.00
15.50	1.28	49,975	46.69	1.45	1.45	0.00
16.00	1.14	49,754	46.67	1.23	1.23	0.00
16.50	1.03	49,584	46.67	1.13	1.13	0.00
17.00	0.94	49,407	46.66	1.04	1.04	0.00
17.50	0.85	49,238	46.65	0.94	0.94	0.00
18.00	0.78	49,037	46.64	0.91	0.91	0.00
18.50	0.73	48,792	46.63	0.86	0.86	0.00
19.00	0.71	48,570	46.62	0.82	0.82	0.00
19.50	0.68	48,365	46.61	0.79	0.79	0.00
20.00	0.65	48,171	46.60	0.76	0.76	0.00
20.50	0.63	47,985	46.59	0.73	0.73	0.00
21.00	0.60	47,807	46.58	0.70	0.70	0.00
21.50	0.58	47,634	46.57	0.67	0.67	0.00
22.00	0.55	47,468	46.57	0.64	0.64	0.00
22.50	0.53	47,304	46.56	0.62	0.62	0.00
23.00	0.51	47,140	46.55	0.60	0.60	0.00
23.50	0.48	46,975	46.54	0.57	0.57	0.00
24.00	0.51	46,817	46.53	0.55	0.55	0.00

Stage-Discharge for Pond 39P: Basin 104

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
42.83	0.00	0.00	**0.00**
42.93	0.00	0.00	0.00
43.03	0.00	0.00	0.00
43.13	0.00	0.00	0.00
43.23	0.00	0.00	0.00
43.33	0.00	0.00	0.00
43.43	0.00	0.00	0.00
43.53	0.00	0.00	0.00
43.63	0.00	0.00	0.00
43.73	0.00	0.00	0.00
43.83	0.00	0.00	0.00
43.93	0.00	0.00	0.00
44.03	0.00	0.00	0.00
44.13	0.00	0.00	0.00
44.23	0.00	0.00	0.00
44.33	0.00	0.00	0.00
44.43	0.00	0.00	0.00
44.53	0.00	0.00	0.00
44.63	0.00	0.00	0.00
44.73	0.00	0.00	0.00
44.83	0.00	0.00	0.00
44.93	0.00	0.00	0.00
45.03	0.00	0.00	0.00
45.13	0.00	0.00	0.00
45.23	0.00	0.00	0.00
45.33	0.00	0.00	0.00
45.43	0.00	0.00	0.00
45.53	0.00	0.00	0.00
45.63	0.00	0.00	0.00
45.73	0.00	0.00	0.00
45.83	0.00	0.00	0.00
45.93	0.03	0.03	0.00
46.03	0.09	0.09	0.00
46.13	0.16	0.16	0.00
46.23	0.21	0.21	0.00
46.33	0.25	0.25	0.00
46.43	0.30	0.30	0.00
46.53	0.54	0.54	0.00
46.63	0.87	0.87	0.00
46.73	2.35	2.35	0.00
46.83	5.37	5.37	0.00
46.93	9.30	9.30	0.00
47.03	12.85	12.85	0.00
47.13	13.13	13.13	0.00
47.23	13.40	13.40	0.00
47.33	13.67	13.67	0.00
47.43	13.93	13.93	0.00
47.53	14.19	14.19	0.00
47.63	14.44	14.44	0.00
47.73	14.69	14.69	0.00
47.83	14.93	14.93	0.00
47.93	15.17	15.17	0.00
48.03	15.41	15.41	0.00
48.13	15.64	15.64	0.00
48.23	15.87	15.87	0.00
48.33	**16.10**	**16.10**	0.00

Summary for Pond 41P: Basin 203

[92] Warning: Device #2 is above defined storage
[81] Warning: Exceeded Pond 43P by 1.20' @ 14.20 hrs

Inflow Area = 3.830 ac, 79.29% Impervious, Inflow Depth > 7.83" for Adj - 100 Yr event
Inflow = 34.27 cfs @ 12.11 hrs, Volume= 2.500 af
Outflow = 11.00 cfs @ 12.32 hrs, Volume= 1.750 af, Atten= 68%, Lag= 12.1 min
Primary = 11.00 cfs @ 12.32 hrs, Volume= 1.750 af
Routed to Link 2A : POA 1 (Adj)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 2A : POA 1 (Adj)

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 48.00' @ 12.32 hrs Surf.Area= 17,601 sf Storage= 57,107 cf

Plug-Flow detention time= 257.5 min calculated for 1.746 af (70% of inflow)
Center-of-Mass det. time= 162.2 min (923.0 - 760.8)

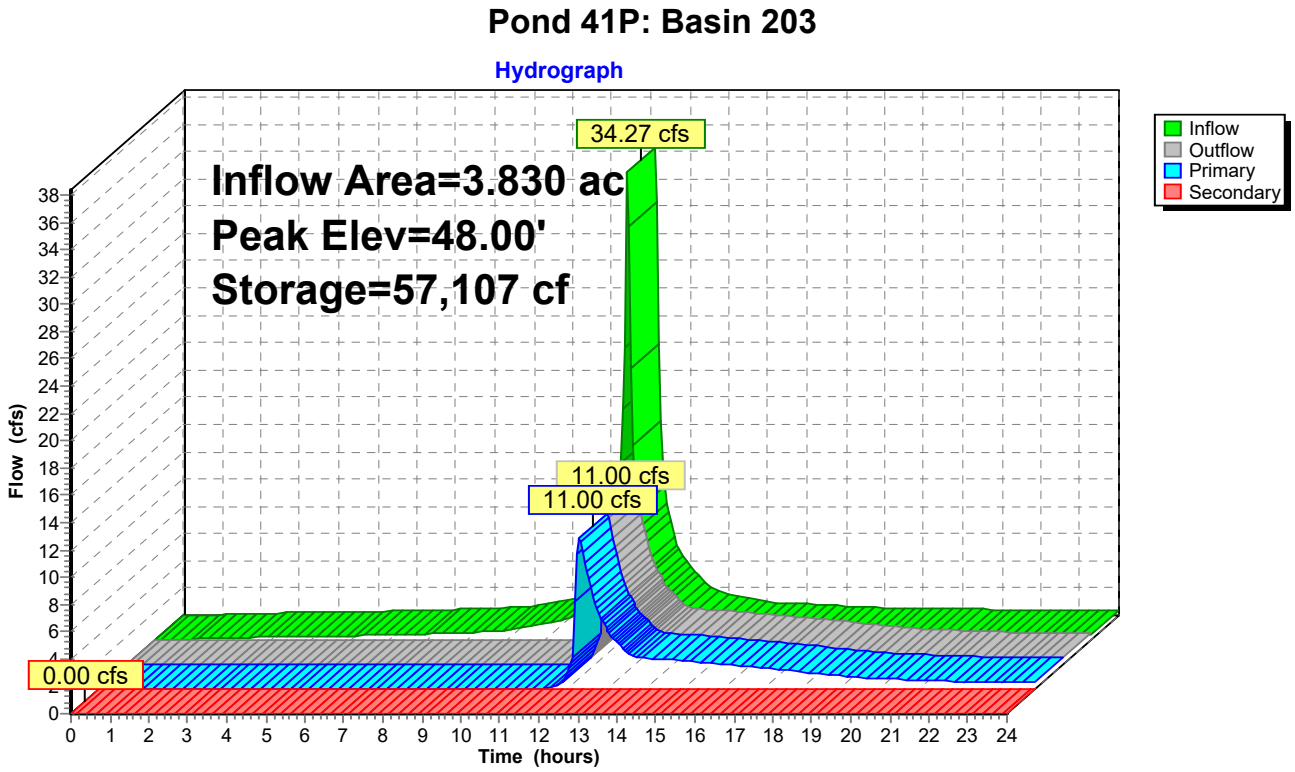
Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	64,356 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	11,929	737.0	0.0	0	0	11,929
42.84	11,929	737.0	40.0	48	48	11,936
43.00	11,929	737.0	40.0	763	811	12,054
44.00	11,929	737.0	40.0	4,772	5,583	12,791
44.83	11,929	737.0	40.0	3,960	9,543	13,403
44.84	11,929	737.0	100.0	119	9,662	13,410
45.00	12,301	741.0	100.0	1,938	11,601	13,895
46.00	14,572	762.0	100.0	13,420	25,021	16,517
47.00	16,075	784.0	100.0	15,317	40,339	19,332
48.00	17,607	806.0	100.0	16,835	57,174	22,227
48.40	18,306	815.0	100.0	7,182	64,356	23,432

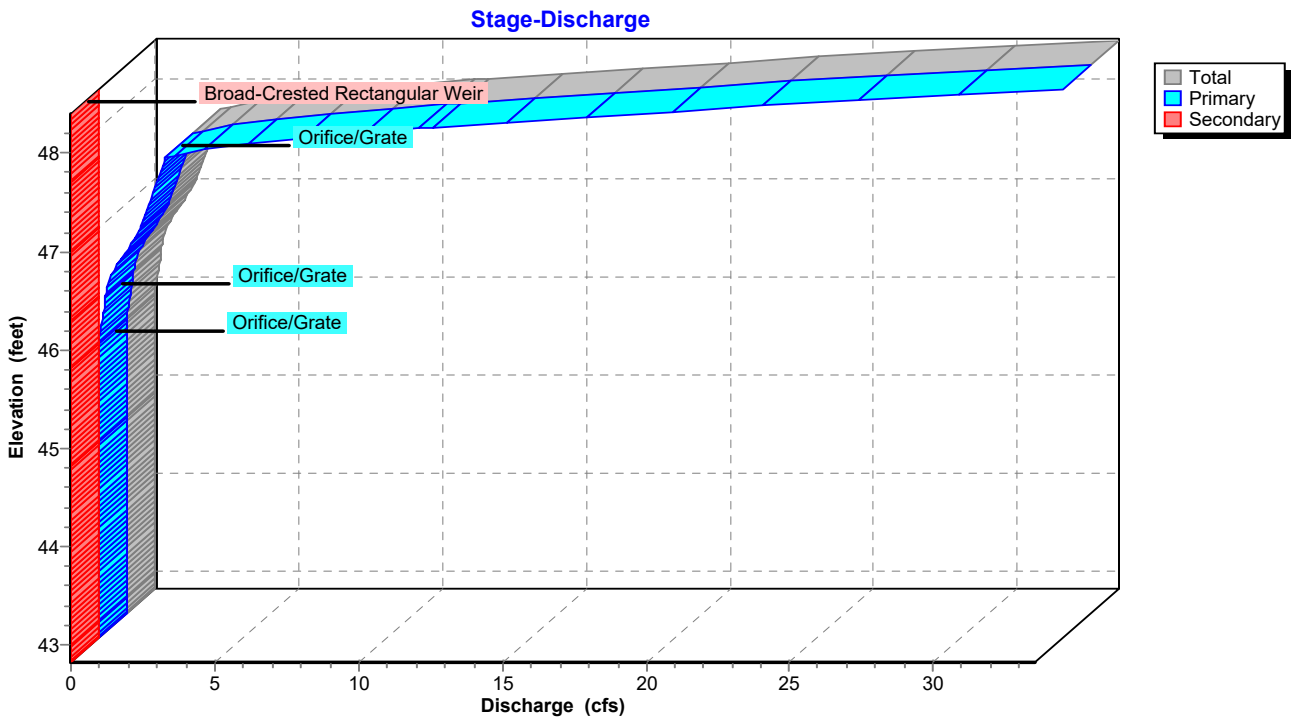
Device	Routing	Invert	Outlet Devices
#1	Primary	39.00'	**21.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 39.00' / 39.00' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 2.41 sf
#2	Secondary	48.40'	**50.0' long x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#3	Device 1	47.70'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.30'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=10.86 cfs @ 12.32 hrs HW=47.99' (Free Discharge)
└─**1=Culvert** (Passes 10.86 cfs of 33.00 cfs potential flow)
  ├─**3=Orifice/Grate** (Weir Controls 8.30 cfs @ 1.77 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 1.96 cfs @ 5.61 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.60 cfs @ 6.82 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)



Pond 41P: Basin 203



Hydrograph for Pond 41P: Basin 203

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	42.83	0.00	0.00	**0.00**
0.50	0.00	0	42.83	0.00	0.00	0.00
1.00	0.07	66	42.84	0.00	0.00	0.00
1.50	0.12	245	42.88	0.00	0.00	0.00
2.00	0.16	503	42.94	0.00	0.00	0.00
2.50	0.19	820	43.00	0.00	0.00	0.00
3.00	0.22	1,188	43.08	0.00	0.00	0.00
3.50	0.25	1,605	43.17	0.00	0.00	0.00
4.00	0.27	2,067	43.26	0.00	0.00	0.00
4.50	0.29	2,571	43.37	0.00	0.00	0.00
5.00	0.31	3,112	43.48	0.00	0.00	0.00
5.50	0.33	3,690	43.60	0.00	0.00	0.00
6.00	0.35	4,302	43.73	0.00	0.00	0.00
6.50	0.40	4,973	43.87	0.00	0.00	0.00
7.00	0.45	5,737	44.03	0.00	0.00	0.00
7.50	0.51	6,597	44.21	0.00	0.00	0.00
8.00	0.56	7,554	44.41	0.00	0.00	0.00
8.50	0.61	8,609	44.63	0.00	0.00	0.00
9.00	0.67	9,763	44.85	0.00	0.00	0.00
9.50	0.94	11,184	44.97	0.00	0.00	0.00
10.00	1.22	13,130	45.12	0.00	0.00	0.00
10.50	1.47	15,543	45.31	0.00	0.00	0.00
11.00	2.28	18,850	45.56	0.00	0.00	0.00
11.50	3.90	24,366	45.95	0.04	0.04	0.00
12.00	**17.01**	**38,077**	**46.86**	**1.19**	**1.19**	0.00
12.50	**7.19**	**56,098**	**47.94**	**8.63**	**8.63**	0.00
13.00	3.74	53,958	47.82	4.50	4.50	0.00
13.50	2.22	52,734	47.74	2.88	2.88	0.00
14.00	1.56	51,568	47.68	2.26	2.26	0.00
14.50	1.28	50,115	47.59	2.18	2.18	0.00
15.00	1.04	48,373	47.49	2.07	2.07	0.00
15.50	0.92	46,491	47.38	1.94	1.94	0.00
16.00	0.84	44,692	47.27	1.81	1.81	0.00
16.50	0.77	43,000	47.16	1.68	1.68	0.00
17.00	0.70	41,423	47.07	1.54	1.54	0.00
17.50	0.63	39,970	46.98	1.41	1.41	0.00
18.00	0.56	38,640	46.89	1.26	1.26	0.00
18.50	0.53	37,486	46.82	1.10	1.10	0.00
19.00	0.51	36,555	46.76	0.97	0.97	0.00
19.50	0.49	35,808	46.71	0.86	0.86	0.00
20.00	0.47	35,206	46.68	0.77	0.77	0.00
20.50	0.45	34,711	46.64	0.70	0.70	0.00
21.00	0.44	34,298	46.62	0.65	0.65	0.00
21.50	0.42	33,945	46.59	0.60	0.60	0.00
22.00	0.40	33,637	46.57	0.56	0.56	0.00
22.50	0.39	33,365	46.56	0.53	0.53	0.00
23.00	0.37	33,118	46.54	0.50	0.50	0.00
23.50	0.36	32,889	46.53	0.48	0.48	0.00
24.00	0.38	32,682	46.51	0.46	0.46	0.00

Stage-Discharge for Pond 41P: Basin 203

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
42.83	0.00	0.00	**0.00**
42.93	0.00	0.00	0.00
43.03	0.00	0.00	0.00
43.13	0.00	0.00	0.00
43.23	0.00	0.00	0.00
43.33	0.00	0.00	0.00
43.43	0.00	0.00	0.00
43.53	0.00	0.00	0.00
43.63	0.00	0.00	0.00
43.73	0.00	0.00	0.00
43.83	0.00	0.00	0.00
43.93	0.00	0.00	0.00
44.03	0.00	0.00	0.00
44.13	0.00	0.00	0.00
44.23	0.00	0.00	0.00
44.33	0.00	0.00	0.00
44.43	0.00	0.00	0.00
44.53	0.00	0.00	0.00
44.63	0.00	0.00	0.00
44.73	0.00	0.00	0.00
44.83	0.00	0.00	0.00
44.93	0.00	0.00	0.00
45.03	0.00	0.00	0.00
45.13	0.00	0.00	0.00
45.23	0.00	0.00	0.00
45.33	0.00	0.00	0.00
45.43	0.00	0.00	0.00
45.53	0.00	0.00	0.00
45.63	0.00	0.00	0.00
45.73	0.00	0.00	0.00
45.83	0.00	0.00	0.00
45.93	0.03	0.03	0.00
46.03	0.09	0.09	0.00
46.13	0.16	0.16	0.00
46.23	0.21	0.21	0.00
46.33	0.25	0.25	0.00
46.43	0.34	0.34	0.00
46.53	0.48	0.48	0.00
46.63	0.67	0.67	0.00
46.73	0.89	0.89	0.00
46.83	1.12	1.12	0.00
46.93	1.33	1.33	0.00
47.03	1.49	1.49	0.00
47.13	1.63	1.63	0.00
47.23	1.77	1.77	0.00
47.33	1.89	1.89	0.00
47.43	2.00	2.00	0.00
47.53	2.11	2.11	0.00
47.63	2.22	2.22	0.00
47.73	2.59	2.59	0.00
47.83	4.86	4.86	0.00
47.93	8.27	8.27	0.00
48.03	12.51	12.51	0.00
48.13	17.42	17.42	0.00
48.23	22.94	22.94	0.00
48.33	**28.99**	**28.99**	0.00

Summary for Pond 43P: Basin 206

[92] Warning: Device #2 is above defined storage
[88] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 0.773 ac, 84.16% Impervious, Inflow Depth > 8.10" for Adj - 100 Yr event
Inflow = 7.65 cfs @ 12.08 hrs, Volume= 0.521 af
Outflow = 7.94 cfs @ 12.11 hrs, Volume= 0.456 af, Atten= 0%, Lag= 1.7 min
Primary = 7.94 cfs @ 12.11 hrs, Volume= 0.456 af
Routed to Pond 41P : Basin 203
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 41P : Basin 203

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 48.44' @ 12.11 hrs Surf.Area= 1,858 sf Storage= 6,896 cf

Plug-Flow detention time= 137.2 min calculated for 0.456 af (87% of inflow)
Center-of-Mass det. time= 76.2 min (819.1 - 742.9)

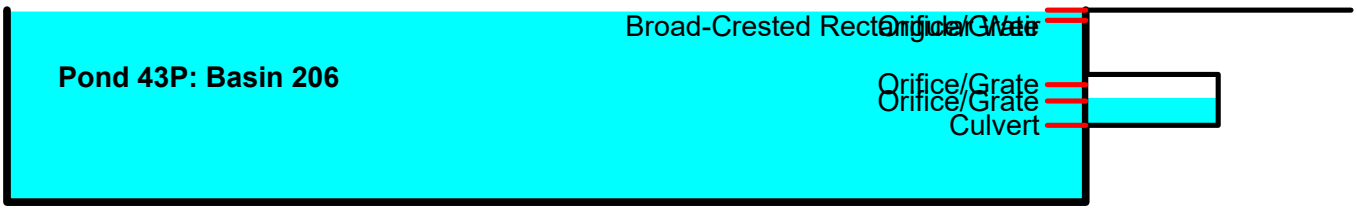
Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	7,008 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

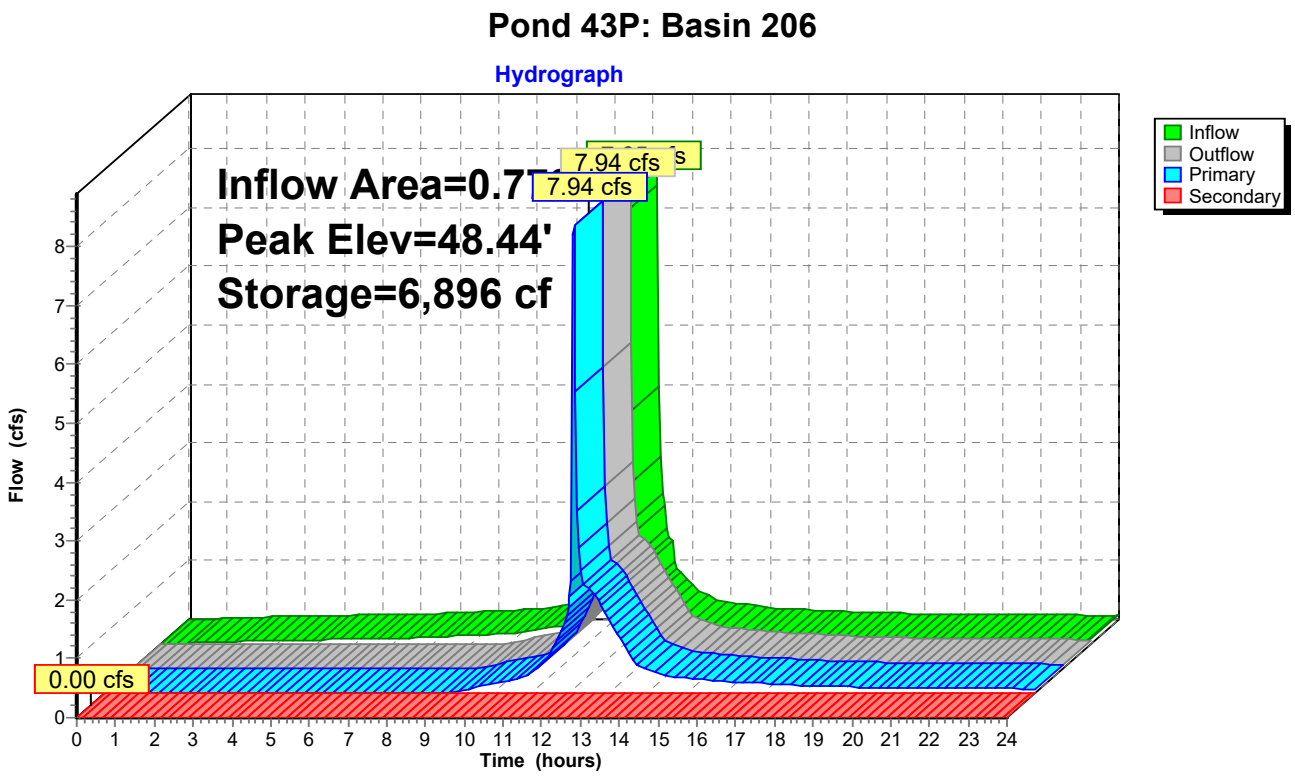
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	1,435	180.0	0.0	0	0	1,435
42.84	1,435	180.0	40.0	6	6	1,437
43.00	1,435	180.0	40.0	92	98	1,466
44.00	1,435	180.0	40.0	574	672	1,646
44.83	1,435	180.0	40.0	476	1,148	1,795
44.84	1,435	180.0	100.0	14	1,162	1,797
45.00	1,435	180.0	100.0	230	1,392	1,826
46.00	1,489	190.0	100.0	1,462	2,854	2,173
47.00	1,611	213.0	100.0	1,550	4,403	2,938
48.00	1,777	233.0	100.0	1,693	6,097	3,682
48.50	1,869	240.0	100.0	911	7,008	3,971

Device	Routing	Invert	Outlet Devices
#1	Primary	45.10'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 45.10' / 45.10' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#2	Secondary	48.50'	**16.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#3	Device 1	48.20'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.30'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

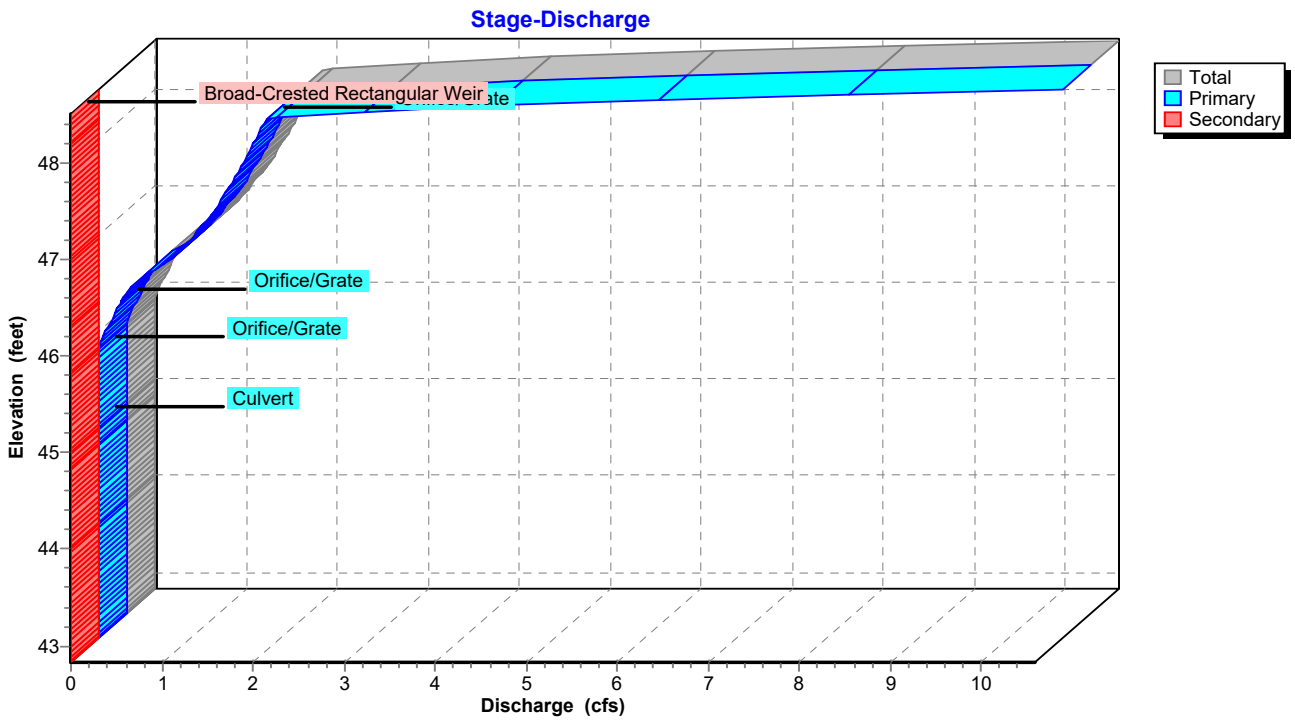
Primary OutFlow Max=7.22 cfs @ 12.11 hrs HW=48.42' (Free Discharge)
└─**1=Culvert** (Passes 7.22 cfs of 13.63 cfs potential flow)
  ├─**3=Orifice/Grate** (Weir Controls 5.28 cfs @ 1.52 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 1.29 cfs @ 6.58 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.66 cfs @ 7.51 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)





Pond 43P: Basin 206



Hydrograph for Pond 43P: Basin 206

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	42.83	0.00	0.00	**0.00**
0.50	0.00	0	42.83	0.00	0.00	0.00
1.00	0.02	23	42.87	0.00	0.00	0.00
1.50	0.04	75	42.96	0.00	0.00	0.00
2.00	0.04	147	43.09	0.00	0.00	0.00
2.50	0.05	235	43.24	0.00	0.00	0.00
3.00	0.06	337	43.42	0.00	0.00	0.00
3.50	0.07	450	43.61	0.00	0.00	0.00
4.00	0.07	575	43.83	0.00	0.00	0.00
4.50	0.08	710	44.07	0.00	0.00	0.00
5.00	0.08	854	44.32	0.00	0.00	0.00
5.50	0.09	1,007	44.58	0.00	0.00	0.00
6.00	0.09	1,169	44.84	0.00	0.00	0.00
6.50	0.11	1,347	44.97	0.00	0.00	0.00
7.00	0.12	1,548	45.11	0.00	0.00	0.00
7.50	0.13	1,775	45.27	0.00	0.00	0.00
8.00	0.15	2,025	45.44	0.00	0.00	0.00
8.50	0.16	2,301	45.63	0.00	0.00	0.00
9.00	0.17	2,601	45.83	0.00	0.00	0.00
9.50	0.22	2,894	46.03	0.09	0.09	0.00
10.00	0.27	3,093	46.16	0.17	0.17	0.00
10.50	0.32	3,267	46.27	0.23	0.23	0.00
11.00	0.51	3,531	46.45	0.35	0.35	0.00
11.50	0.86	3,878	46.67	0.67	0.67	0.00
12.00	**4.65**	**5,754**	**47.81**	**1.63**	**1.63**	0.00
12.50	**1.32**	**6,234**	**48.08**	**1.78**	**1.78**	0.00
13.00	0.59	4,867	47.28	1.29	1.29	0.00
13.50	0.37	3,909	46.69	0.70	0.70	0.00
14.00	0.29	3,579	46.48	0.39	0.39	0.00
14.50	0.24	3,456	46.40	0.30	0.30	0.00
15.00	0.19	3,356	46.33	0.25	0.25	0.00
15.50	0.17	3,258	46.27	0.22	0.22	0.00
16.00	0.16	3,179	46.22	0.20	0.20	0.00
16.50	0.15	3,113	46.17	0.18	0.18	0.00
17.00	0.14	3,059	46.14	0.16	0.16	0.00
17.50	0.12	3,013	46.11	0.14	0.14	0.00
18.00	0.11	2,976	46.08	0.13	0.13	0.00
18.50	0.10	2,949	46.06	0.11	0.11	0.00
19.00	0.10	2,933	46.05	0.11	0.11	0.00
19.50	0.10	2,922	46.05	0.10	0.10	0.00
20.00	0.09	2,914	46.04	0.10	0.10	0.00
20.50	0.09	2,907	46.04	0.09	0.09	0.00
21.00	0.09	2,900	46.03	0.09	0.09	0.00
21.50	0.08	2,893	46.03	0.09	0.09	0.00
22.00	0.08	2,886	46.02	0.08	0.08	0.00
22.50	0.08	2,879	46.02	0.08	0.08	0.00
23.00	0.07	2,872	46.01	0.08	0.08	0.00
23.50	0.07	2,865	46.01	0.07	0.07	0.00
24.00	0.08	2,862	46.01	0.07	0.07	0.00

Stage-Discharge for Pond 43P: Basin 206

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
42.83	0.00	0.00	**0.00**
42.93	0.00	0.00	0.00
43.03	0.00	0.00	0.00
43.13	0.00	0.00	0.00
43.23	0.00	0.00	0.00
43.33	0.00	0.00	0.00
43.43	0.00	0.00	0.00
43.53	0.00	0.00	0.00
43.63	0.00	0.00	0.00
43.73	0.00	0.00	0.00
43.83	0.00	0.00	0.00
43.93	0.00	0.00	0.00
44.03	0.00	0.00	0.00
44.13	0.00	0.00	0.00
44.23	0.00	0.00	0.00
44.33	0.00	0.00	0.00
44.43	0.00	0.00	0.00
44.53	0.00	0.00	0.00
44.63	0.00	0.00	0.00
44.73	0.00	0.00	0.00
44.83	0.00	0.00	0.00
44.93	0.00	0.00	0.00
45.03	0.00	0.00	0.00
45.13	0.00	0.00	0.00
45.23	0.00	0.00	0.00
45.33	0.00	0.00	0.00
45.43	0.00	0.00	0.00
45.53	0.00	0.00	0.00
45.63	0.00	0.00	0.00
45.73	0.00	0.00	0.00
45.83	0.00	0.00	0.00
45.93	0.03	0.03	0.00
46.03	0.09	0.09	0.00
46.13	0.16	0.16	0.00
46.23	0.21	0.21	0.00
46.33	0.25	0.25	0.00
46.43	0.33	0.33	0.00
46.53	0.45	0.45	0.00
46.63	0.61	0.61	0.00
46.73	0.76	0.76	0.00
46.83	0.89	0.89	0.00
46.93	0.99	0.99	0.00
47.03	1.08	1.08	0.00
47.13	1.17	1.17	0.00
47.23	1.25	1.25	0.00
47.33	1.32	1.32	0.00
47.43	1.39	1.39	0.00
47.53	1.46	1.46	0.00
47.63	1.52	1.52	0.00
47.73	1.58	1.58	0.00
47.83	1.64	1.64	0.00
47.93	1.70	1.70	0.00
48.03	1.75	1.75	0.00
48.13	1.80	1.80	0.00
48.23	2.13	2.13	0.00
48.33	4.36	4.36	0.00
48.43	**7.72**	**7.72**	0.00

Summary for Pond 44P: Basin 112

[92] Warning: Device #2 is above defined storage

Inflow Area = 1.397 ac, 81.07% Impervious, Inflow Depth > 8.06" for Adj - 100 Yr event
Inflow = 13.64 cfs @ 12.09 hrs, Volume= 0.938 af
Outflow = 12.39 cfs @ 12.11 hrs, Volume= 0.808 af, Atten= 9%, Lag= 1.5 min
Primary = 12.39 cfs @ 12.11 hrs, Volume= 0.808 af
Routed to Pond 39P : Basin 104
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 39P : Basin 104

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 48.30' @ 12.11 hrs Surf.Area= 4,311 sf Storage= 13,929 cf

Plug-Flow detention time= 164.0 min calculated for 0.806 af (86% of inflow)
Center-of-Mass det. time= 99.8 min (844.2 - 744.4)

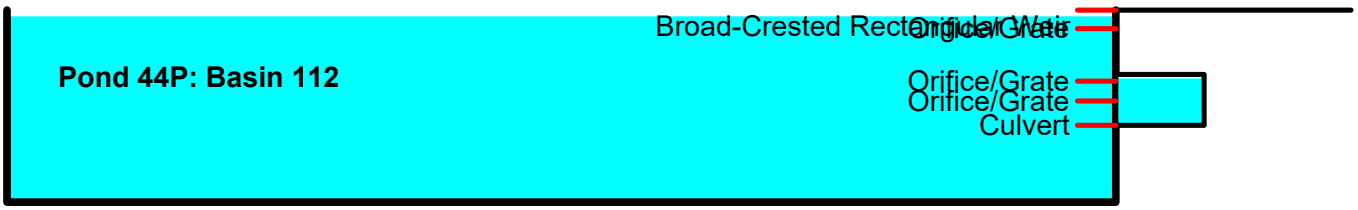
Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	14,810 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	2,461	213.0	0.0	0	0	2,461
42.84	2,461	213.0	40.0	10	10	2,463
43.00	2,461	213.0	40.0	158	167	2,497
44.00	2,461	213.0	40.0	984	1,152	2,710
44.83	2,461	213.0	40.0	817	1,969	2,887
44.84	2,461	213.0	100.0	25	1,993	2,889
45.00	2,568	216.0	100.0	402	2,396	2,997
46.00	3,287	251.0	100.0	2,920	5,316	4,319
47.00	3,676	265.7	100.0	3,480	8,796	4,976
48.00	4,082	276.0	100.0	3,877	12,673	5,496
48.50	4,468	290.0	100.0	2,137	14,810	6,142

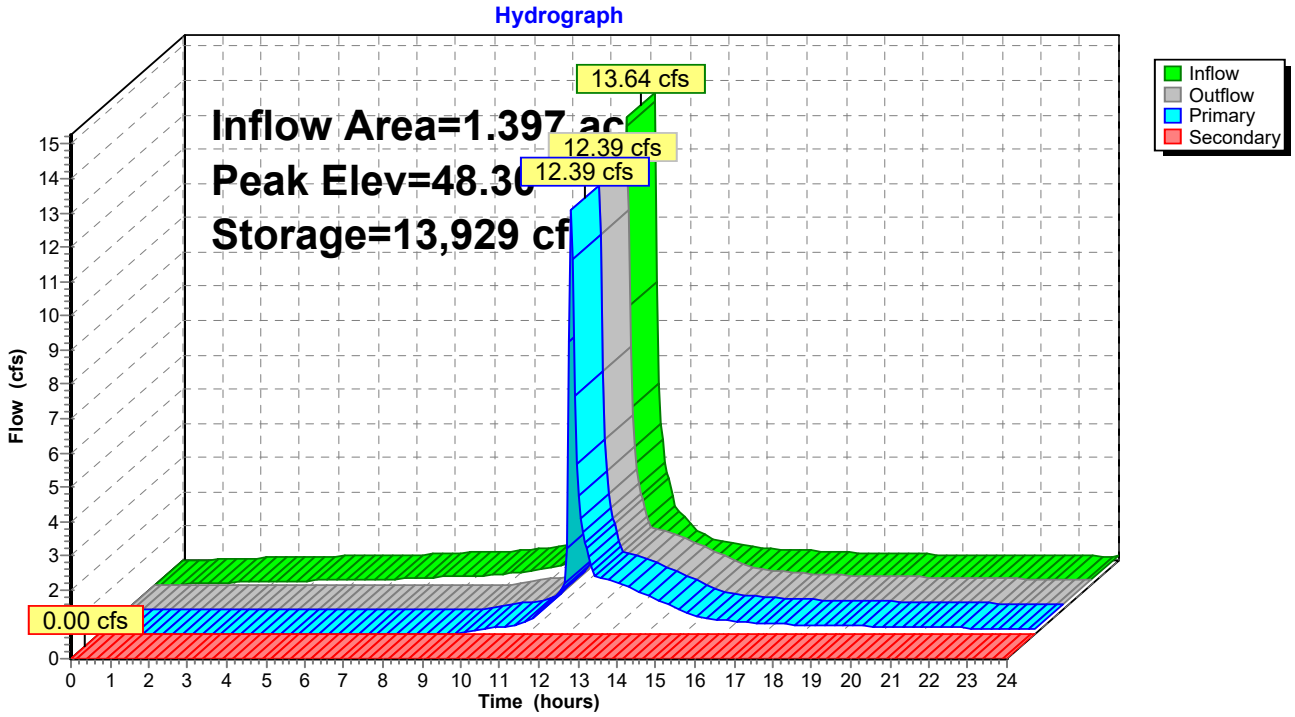
Device	Routing	Invert	Outlet Devices
#1	Primary	45.10'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 45.10' / 45.10' S= 0.0000 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf
#2	Secondary	48.50'	**20.0' long + 0.3 '/' SideZ x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#3	Device 1	47.95'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.40'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=12.12 cfs @ 12.11 hrs HW=48.29' (Free Discharge)
└─**1=Culvert** (Passes 12.12 cfs of 13.29 cfs potential flow)
  ├─**3=Orifice/Grate** (Weir Controls 10.27 cfs @ 1.90 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 1.21 cfs @ 6.16 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.64 cfs @ 7.30 fps)

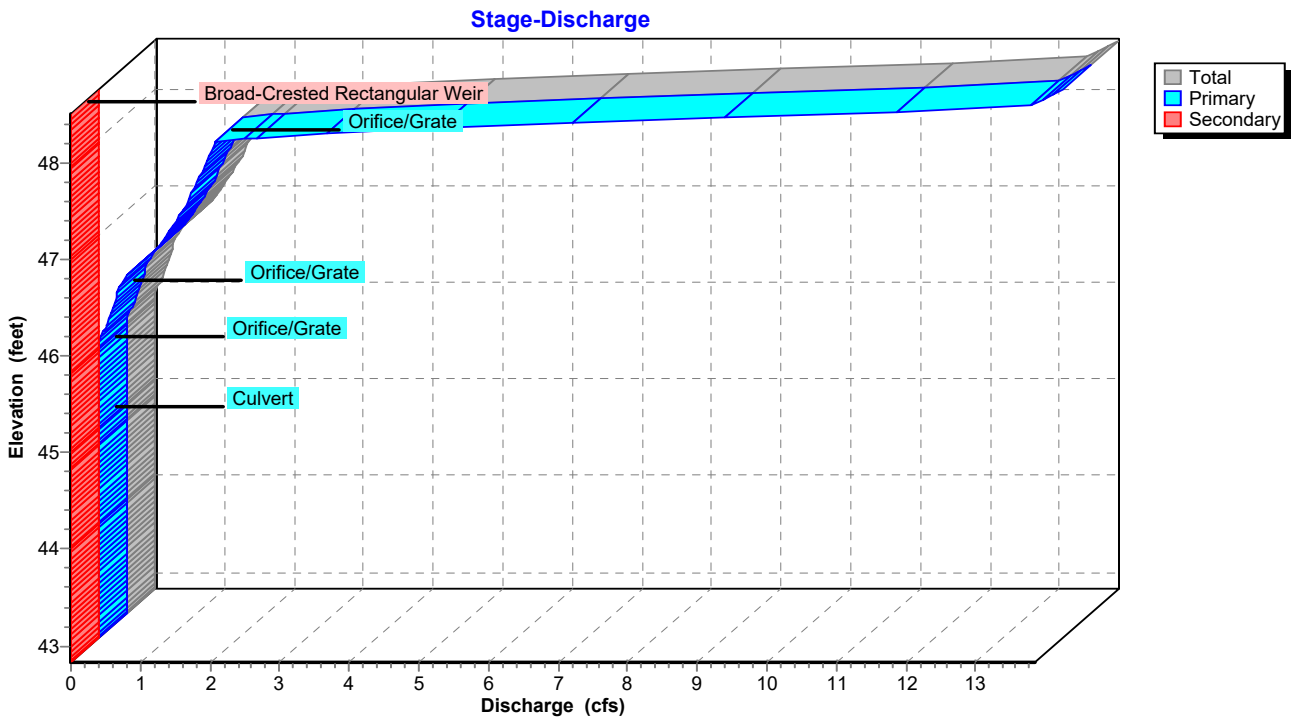
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)



Pond 44P: Basin 112



Pond 44P: Basin 112



Hydrograph for Pond 44P: Basin 112

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	42.83	0.00	0.00	**0.00**
0.50	0.00	0	42.83	0.00	0.00	0.00
1.00	0.04	38	42.87	0.00	0.00	0.00
1.50	0.06	128	42.96	0.00	0.00	0.00
2.00	0.08	254	43.09	0.00	0.00	0.00
2.50	0.09	407	43.24	0.00	0.00	0.00
3.00	0.10	584	43.42	0.00	0.00	0.00
3.50	0.12	782	43.62	0.00	0.00	0.00
4.00	0.13	1,001	43.85	0.00	0.00	0.00
4.50	0.14	1,239	44.09	0.00	0.00	0.00
5.00	0.15	1,493	44.35	0.00	0.00	0.00
5.50	0.15	1,764	44.62	0.00	0.00	0.00
6.00	0.16	2,050	44.86	0.00	0.00	0.00
6.50	0.19	2,365	44.99	0.00	0.00	0.00
7.00	0.21	2,724	45.13	0.00	0.00	0.00
7.50	0.24	3,126	45.27	0.00	0.00	0.00
8.00	0.26	3,573	45.43	0.00	0.00	0.00
8.50	0.29	4,064	45.60	0.00	0.00	0.00
9.00	0.31	4,601	45.78	0.00	0.00	0.00
9.50	0.40	5,214	45.97	0.05	0.05	0.00
10.00	0.49	5,809	46.15	0.17	0.17	0.00
10.50	0.58	6,393	46.32	0.24	0.24	0.00
11.00	0.91	7,208	46.56	0.39	0.39	0.00
11.50	1.53	8,338	46.87	0.85	0.85	0.00
12.00	**8.23**	**12,713**	**48.01**	**2.49**	**2.49**	0.00
12.50	**2.39**	**12,716**	**48.01**	**2.51**	**2.51**	0.00
13.00	1.07	12,060	47.85	1.61	1.61	0.00
13.50	0.67	10,844	47.54	1.42	1.42	0.00
14.00	0.53	9,559	47.21	1.17	1.17	0.00
14.50	0.44	8,558	46.94	0.91	0.91	0.00
15.00	0.35	7,862	46.74	0.65	0.65	0.00
15.50	0.32	7,455	46.63	0.48	0.48	0.00
16.00	0.29	7,223	46.56	0.39	0.39	0.00
16.50	0.27	7,062	46.52	0.35	0.35	0.00
17.00	0.24	6,929	46.48	0.31	0.31	0.00
17.50	0.22	6,804	46.44	0.29	0.29	0.00
18.00	0.20	6,674	46.40	0.27	0.27	0.00
18.50	0.19	6,540	46.36	0.26	0.26	0.00
19.00	0.18	6,418	46.33	0.25	0.25	0.00
19.50	0.18	6,308	46.30	0.23	0.23	0.00
20.00	0.17	6,208	46.27	0.22	0.22	0.00
20.50	0.16	6,117	46.24	0.21	0.21	0.00
21.00	0.16	6,035	46.22	0.20	0.20	0.00
21.50	0.15	5,961	46.19	0.19	0.19	0.00
22.00	0.15	5,894	46.17	0.18	0.18	0.00
22.50	0.14	5,832	46.16	0.17	0.17	0.00
23.00	0.13	5,776	46.14	0.16	0.16	0.00
23.50	0.13	5,724	46.12	0.16	0.16	0.00
24.00	0.15	5,682	46.11	0.15	0.15	0.00

Stage-Discharge for Pond 44P: Basin 112

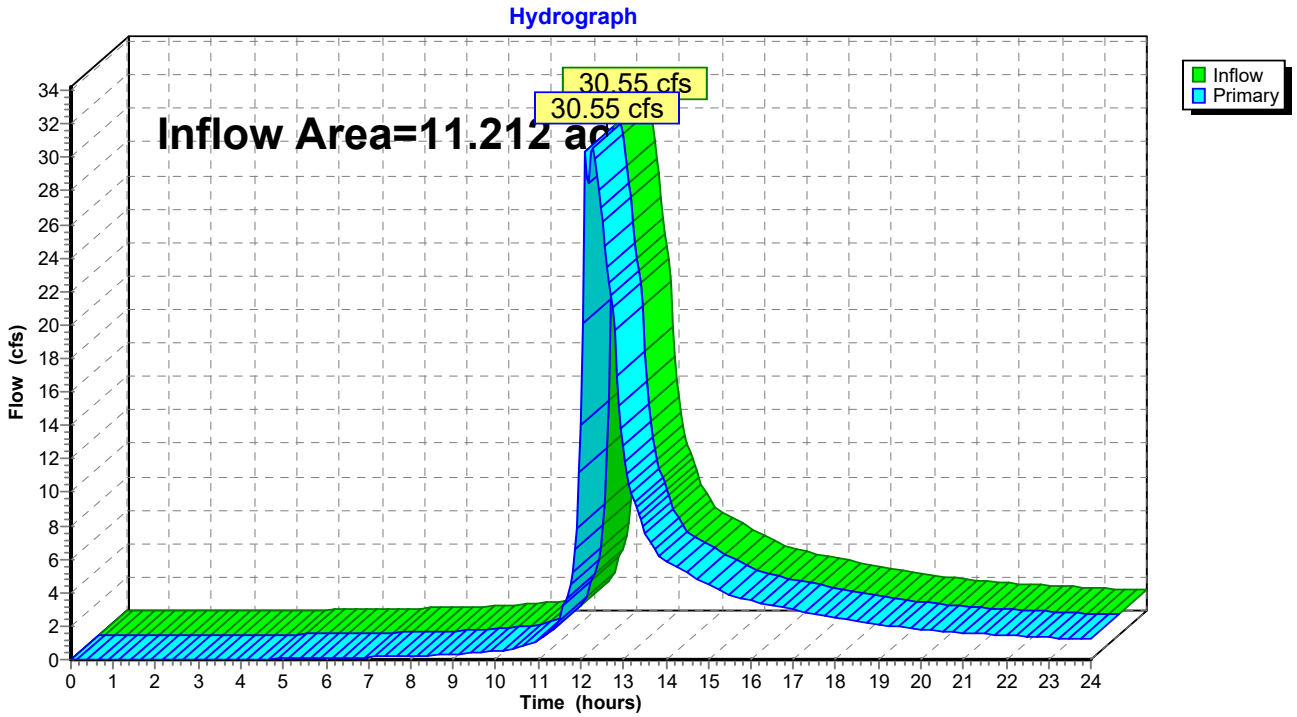
Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
42.83	0.00	0.00	**0.00**
42.93	0.00	0.00	0.00
43.03	0.00	0.00	0.00
43.13	0.00	0.00	0.00
43.23	0.00	0.00	0.00
43.33	0.00	0.00	0.00
43.43	0.00	0.00	0.00
43.53	0.00	0.00	0.00
43.63	0.00	0.00	0.00
43.73	0.00	0.00	0.00
43.83	0.00	0.00	0.00
43.93	0.00	0.00	0.00
44.03	0.00	0.00	0.00
44.13	0.00	0.00	0.00
44.23	0.00	0.00	0.00
44.33	0.00	0.00	0.00
44.43	0.00	0.00	0.00
44.53	0.00	0.00	0.00
44.63	0.00	0.00	0.00
44.73	0.00	0.00	0.00
44.83	0.00	0.00	0.00
44.93	0.00	0.00	0.00
45.03	0.00	0.00	0.00
45.13	0.00	0.00	0.00
45.23	0.00	0.00	0.00
45.33	0.00	0.00	0.00
45.43	0.00	0.00	0.00
45.53	0.00	0.00	0.00
45.63	0.00	0.00	0.00
45.73	0.00	0.00	0.00
45.83	0.00	0.00	0.00
45.93	0.03	0.03	0.00
46.03	0.09	0.09	0.00
46.13	0.16	0.16	0.00
46.23	0.21	0.21	0.00
46.33	0.25	0.25	0.00
46.43	0.28	0.28	0.00
46.53	0.36	0.36	0.00
46.63	0.48	0.48	0.00
46.73	0.63	0.63	0.00
46.83	0.79	0.79	0.00
46.93	0.91	0.91	0.00
47.03	1.01	1.01	0.00
47.13	1.10	1.10	0.00
47.23	1.19	1.19	0.00
47.33	1.27	1.27	0.00
47.43	1.34	1.34	0.00
47.53	1.41	1.41	0.00
47.63	1.47	1.47	0.00
47.73	1.54	1.54	0.00
47.83	1.60	1.60	0.00
47.93	1.66	1.66	0.00
48.03	2.90	2.90	0.00
48.13	5.76	5.76	0.00
48.23	9.57	9.57	0.00
48.33	13.40	13.40	0.00
48.43	**13.67**	**13.67**	0.00

Summary for Link 2A: POA 1 (Adj)

Inflow Area = 11.212 ac, 65.35% Impervious, Inflow Depth > 5.53" for Adj - 100 Yr event
Inflow = 30.55 cfs @ 12.28 hrs, Volume= 5.171 af
Primary = 30.55 cfs @ 12.28 hrs, Volume= 5.171 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 2A: POA 1 (Adj)



Hydrograph for Link 2A: POA 1 (Adj)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00
0.25	0.00	0.00	0.00
0.50	0.00	0.00	0.00
0.75	0.01	0.00	0.01
1.00	0.02	0.00	0.02
1.25	0.02	0.00	0.02
1.50	0.02	0.00	0.02
1.75	0.03	0.00	0.03
2.00	0.03	0.00	0.03
2.25	0.03	0.00	0.03
2.50	0.04	0.00	0.04
2.75	0.04	0.00	0.04
3.00	0.04	0.00	0.04
3.25	0.04	0.00	0.04
3.50	0.04	0.00	0.04
3.75	0.05	0.00	0.05
4.00	0.05	0.00	0.05
4.25	0.05	0.00	0.05
4.50	0.05	0.00	0.05
4.75	0.05	0.00	0.05
5.00	0.06	0.00	0.06
5.25	0.07	0.00	0.07
5.50	0.08	0.00	0.08
5.75	0.08	0.00	0.08
6.00	0.09	0.00	0.09
6.25	0.11	0.00	0.11
6.50	0.12	0.00	0.12
6.75	0.13	0.00	0.13
7.00	0.15	0.00	0.15
7.25	0.16	0.00	0.16
7.50	0.18	0.00	0.18
7.75	0.20	0.00	0.20
8.00	0.22	0.00	0.22
8.25	0.24	0.00	0.24
8.50	0.26	0.00	0.26
8.75	0.28	0.00	0.28
9.00	0.30	0.00	0.30
9.25	0.35	0.00	0.35
9.50	0.41	0.00	0.41
9.75	0.47	0.00	0.47
10.00	0.53	0.00	0.53
10.25	0.60	0.00	0.60
10.50	0.67	0.00	0.67
10.75	0.90	0.00	0.90
11.00	1.14	0.00	1.14
11.25	1.60	0.00	1.60
11.50	2.14	0.00	2.14
11.75	4.52	0.00	4.52
12.00	14.04	0.00	14.04
12.25	**30.30**	0.00	**30.30**
12.50	**26.13**	0.00	**26.13**
12.75	21.03	0.00	21.03
13.00	12.73	0.00	12.73
13.25	9.46	0.00	9.46
13.50	7.67	0.00	7.67
13.75	6.49	0.00	6.49
14.00	5.92	0.00	5.92
14.25	5.53	0.00	5.53
14.50	5.18	0.00	5.18
14.75	4.85	0.00	4.85
15.00	4.48	0.00	4.48
15.25	4.16	0.00	4.16
15.50	3.91	0.00	3.91
15.75	3.70	0.00	3.70
16.00	3.53	0.00	3.53
16.25	3.39	0.00	3.39
16.50	3.25	0.00	3.25
16.75	3.12	0.00	3.12
17.00	2.99	0.00	2.99
17.25	2.85	0.00	2.85
17.50	2.72	0.00	2.72
17.75	2.61	0.00	2.61
18.00	2.50	0.00	2.50
18.25	2.38	0.00	2.38
18.50	2.28	0.00	2.28
18.75	2.18	0.00	2.18
19.00	2.09	0.00	2.09
19.25	2.01	0.00	2.01
19.50	1.94	0.00	1.94
19.75	1.88	0.00	1.88
20.00	1.81	0.00	1.81
20.25	1.76	0.00	1.76
20.50	1.71	0.00	1.71
20.75	1.66	0.00	1.66
21.00	1.61	0.00	1.61
21.25	1.57	0.00	1.57
21.50	1.53	0.00	1.53
21.75	1.49	0.00	1.49
22.00	1.45	0.00	1.45
22.25	1.42	0.00	1.42
22.50	1.38	0.00	1.38
22.75	1.35	0.00	1.35
23.00	1.33	0.00	1.33
23.25	1.29	0.00	1.29
23.50	1.27	0.00	1.27
23.75	1.24	0.00	1.24
24.00	1.25	0.00	1.25

5.2 STORM MANAGEMENT DESIGN
STORM STORAGE DESIGN

PREPARED: September 19, 2025
REVISED: December 15, 2025

300-356 ENTERPRISE AVE.
CITY OF TRENTON
BLOCK 23203, LOT 1
BLOCK 23102 LOTS 2 & 9
TOWNSHIP OF LAWRENCE
BLOCK 602, LOTS 1 & 2
MERCER COUNTY, NEW JERSEY

Summary for Pond 39P: Basin 104

[92] Warning: Device #2 is above defined storage
[81] Warning: Exceeded Pond 44P by 0.26' @ 23.90 hrs

Inflow Area = 4.940 ac, 77.74% Impervious, Inflow Depth > 2.63" for Adj - 2 Yr event
Inflow = 12.10 cfs @ 12.13 hrs, Volume= 1.084 af
Outflow = 0.21 cfs @ 21.88 hrs, Volume= 0.151 af, Atten= 98%, Lag= 584.9 min
Primary = 0.21 cfs @ 21.88 hrs, Volume= 0.151 af
Routed to Link 2A : POA 1 (Adj)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 2A : POA 1 (Adj)

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 46.24' @ 21.88 hrs Surf.Area= 20,611 sf Storage= 40,754 cf

Plug-Flow detention time= 664.4 min calculated for 0.151 af (14% of inflow)
Center-of-Mass det. time= 378.7 min (1,174.5 - 795.8)

Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	87,112 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

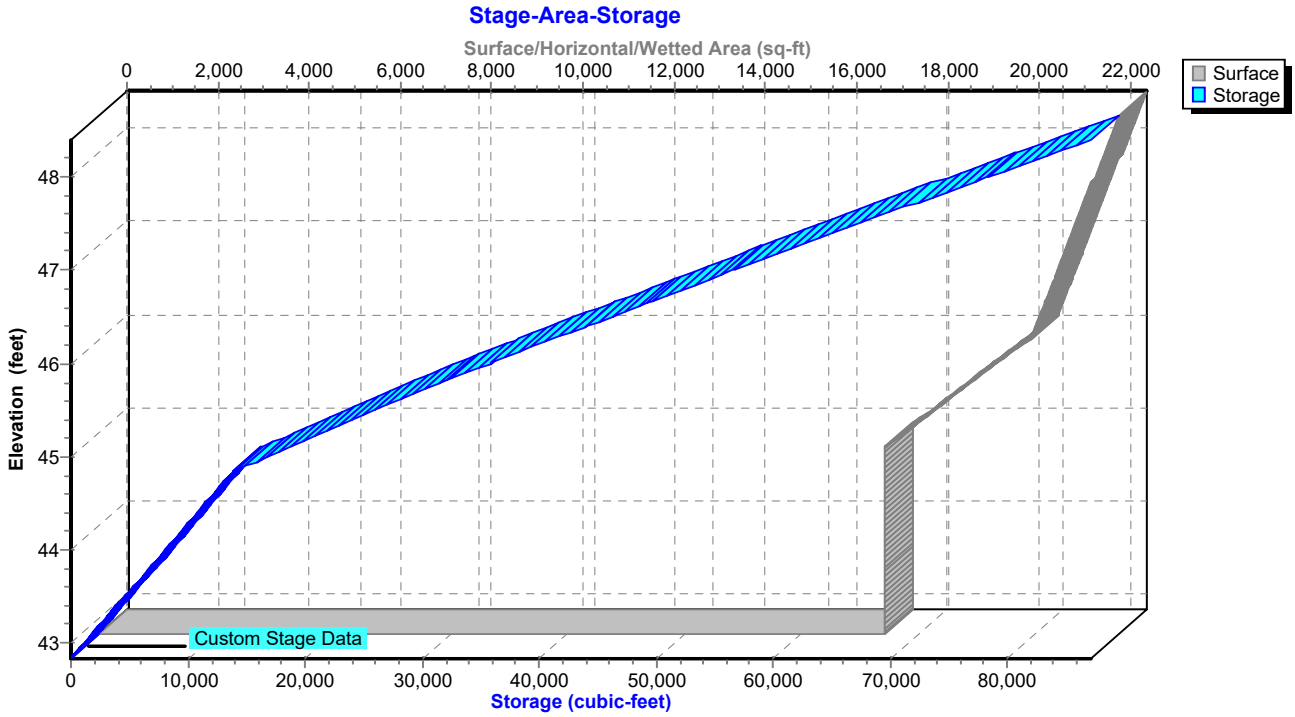
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	17,239	897.0	0.0	0	0	17,239
42.84	17,239	897.0	40.0	69	69	17,248
43.00	17,239	897.0	40.0	1,103	1,172	17,391
44.00	17,239	897.0	40.0	6,896	8,068	18,288
44.83	17,239	897.0	40.0	5,723	13,791	19,033
44.84	17,239	897.0	100.0	172	13,964	19,042
45.00	17,690	902.0	100.0	2,794	16,758	19,772
46.00	20,420	926.0	100.0	19,039	35,797	23,381
47.00	21,216	939.0	100.0	20,817	56,613	25,524
48.00	22,029	952.0	100.0	21,621	78,234	27,697
48.40	22,357	957.0	100.0	8,877	87,112	28,547

Device	Routing	Invert	Outlet Devices
#1	Primary	44.00'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 44.00' / 44.00' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#2	Secondary	48.40'	**50.0' long x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#3	Device 1	46.65'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.40'	**18.0" W x 3.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.21 cfs @ 21.88 hrs HW=46.24' (Free Discharge)
└─**1=Culvert** (Passes 0.21 cfs of 9.87 cfs potential flow)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  ├─**4=Orifice/Grate** (Controls 0.00 cfs)
  └─**5=Orifice/Grate** (Orifice Controls 0.21 cfs @ 2.43 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 39P: Basin 104



Stage-Area-Storage for Pond 39P: Basin 104

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
42.83	17,239	0
42.93	17,239	690
43.03	17,239	1,379
43.13	17,239	2,069
43.23	17,239	2,758
43.33	17,239	3,448
43.43	17,239	4,137
43.53	17,239	4,827
43.63	17,239	5,516
43.73	17,239	6,206
43.83	17,239	6,896
43.93	17,239	7,585
44.03	17,239	8,275
44.13	17,239	8,964
44.23	17,239	9,654
44.33	17,239	10,343
44.43	17,239	11,033
44.53	17,239	11,723
44.63	17,239	12,412
44.73	17,239	13,102
44.83	17,239	13,791
44.93	17,492	15,526
45.03	17,769	17,290
45.13	18,034	19,080
45.23	18,301	20,897
45.33	18,569	22,740
45.43	18,840	24,610
45.53	19,113	26,508
45.63	19,387	28,433
45.73	19,664	30,386
45.83	19,942	32,366
45.93	20,223	34,374
46.03	20,444	36,409
46.13	20,523	38,458
46.23	20,602	40,514
46.33	20,681	42,578
46.43	20,760	44,650
46.53	20,840	46,730
46.63	20,920	48,818
46.73	21,000	50,914
46.83	21,080	53,018
46.93	21,160	55,130
47.03	21,240	57,250
47.13	21,321	59,378
47.23	21,402	61,514
47.33	21,483	63,658
47.43	21,564	65,811
47.53	21,645	67,971
47.63	21,726	70,140
47.73	21,808	72,317
47.83	21,890	74,501
47.93	21,972	76,694
48.03	22,054	78,896
48.13	22,135	81,105
48.23	22,217	83,323
48.33	**22,299**	**85,549**

Summary for Pond 39P: Basin 104

[92] Warning: Device #2 is above defined storage
[81] Warning: Exceeded Pond 44P by 0.44' @ 21.65 hrs

Inflow Area = 4.940 ac, 77.74% Impervious, Inflow Depth > 4.34" for Adj - 10 Yr event
Inflow = 19.36 cfs @ 12.12 hrs, Volume= 1.786 af
Outflow = 2.12 cfs @ 13.57 hrs, Volume= 0.749 af, Atten= 89%, Lag= 86.7 min
Primary = 2.12 cfs @ 13.57 hrs, Volume= 0.749 af
Routed to Link 2A : POA 1 (Adj)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 2A : POA 1 (Adj)

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 46.72' @ 13.57 hrs Surf.Area= 20,991 sf Storage= 50,681 cf

Plug-Flow detention time= 367.4 min calculated for 0.749 af (42% of inflow)
Center-of-Mass det. time= 218.3 min (1,005.2 - 786.9)

Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	87,112 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

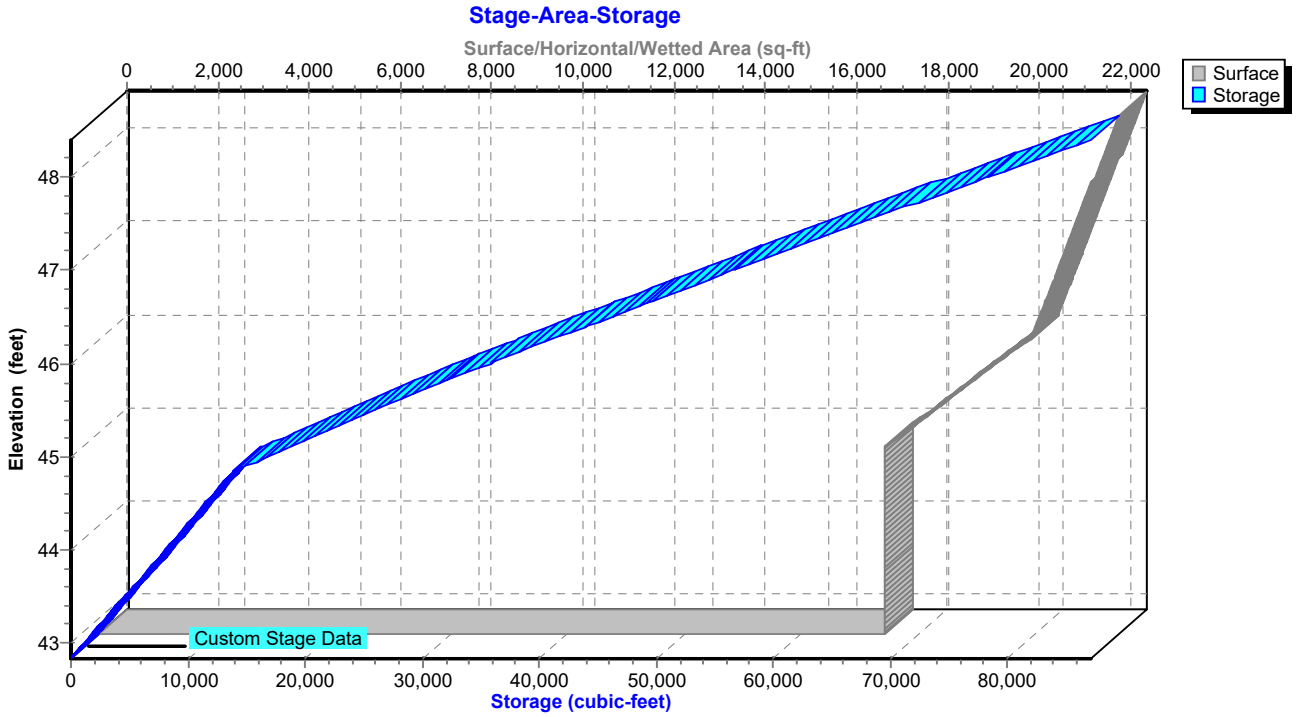
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	17,239	897.0	0.0	0	0	17,239
42.84	17,239	897.0	40.0	69	69	17,248
43.00	17,239	897.0	40.0	1,103	1,172	17,391
44.00	17,239	897.0	40.0	6,896	8,068	18,288
44.83	17,239	897.0	40.0	5,723	13,791	19,033
44.84	17,239	897.0	100.0	172	13,964	19,042
45.00	17,690	902.0	100.0	2,794	16,758	19,772
46.00	20,420	926.0	100.0	19,039	35,797	23,381
47.00	21,216	939.0	100.0	20,817	56,613	25,524
48.00	22,029	952.0	100.0	21,621	78,234	27,697
48.40	22,357	957.0	100.0	8,877	87,112	28,547

Device	Routing	Invert	Outlet Devices
#1	Primary	44.00'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 44.00' / 44.00' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#2	Secondary	48.40'	**50.0' long x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#3	Device 1	46.65'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.40'	**18.0" W x 3.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.08 cfs @ 13.57 hrs HW=46.72' (Free Discharge)
└─**1=Culvert** (Passes 2.08 cfs of 11.94 cfs potential flow)
  ├─**3=Orifice/Grate** (Weir Controls 0.94 cfs @ 0.86 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 0.78 cfs @ 2.08 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.36 cfs @ 4.12 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 39P: Basin 104



Stage-Area-Storage for Pond 39P: Basin 104

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
42.83	17,239	0
42.93	17,239	690
43.03	17,239	1,379
43.13	17,239	2,069
43.23	17,239	2,758
43.33	17,239	3,448
43.43	17,239	4,137
43.53	17,239	4,827
43.63	17,239	5,516
43.73	17,239	6,206
43.83	17,239	6,896
43.93	17,239	7,585
44.03	17,239	8,275
44.13	17,239	8,964
44.23	17,239	9,654
44.33	17,239	10,343
44.43	17,239	11,033
44.53	17,239	11,723
44.63	17,239	12,412
44.73	17,239	13,102
44.83	17,239	13,791
44.93	17,492	15,526
45.03	17,769	17,290
45.13	18,034	19,080
45.23	18,301	20,897
45.33	18,569	22,740
45.43	18,840	24,610
45.53	19,113	26,508
45.63	19,387	28,433
45.73	19,664	30,386
45.83	19,942	32,366
45.93	20,223	34,374
46.03	20,444	36,409
46.13	20,523	38,458
46.23	20,602	40,514
46.33	20,681	42,578
46.43	20,760	44,650
46.53	20,840	46,730
46.63	20,920	48,818
46.73	21,000	50,914
46.83	21,080	53,018
46.93	21,160	55,130
47.03	21,240	57,250
47.13	21,321	59,378
47.23	21,402	61,514
47.33	21,483	63,658
47.43	21,564	65,811
47.53	21,645	67,971
47.63	21,726	70,140
47.73	21,808	72,317
47.83	21,890	74,501
47.93	21,972	76,694
48.03	22,054	78,896
48.13	22,135	81,105
48.23	22,217	83,323
48.33	**22,299**	**85,549**

Summary for Pond 39P: Basin 104

[92] Warning: Device #2 is above defined storage
[81] Warning: Exceeded Pond 44P by 0.42' @ 23.95 hrs

Inflow Area = 4.940 ac, 77.74% Impervious, Inflow Depth > 7.71" for Adj - 100 Yr event
Inflow = 42.71 cfs @ 12.12 hrs, Volume= 3.173 af
Outflow = 13.93 cfs @ 12.32 hrs, Volume= 2.098 af, Atten= 67%, Lag= 12.1 min
Primary = 13.93 cfs @ 12.32 hrs, Volume= 2.098 af
Routed to Link 2A : POA 1 (Adj)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 2A : POA 1 (Adj)

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 47.43' @ 12.32 hrs Surf.Area= 21,564 sf Storage= 65,808 cf

Plug-Flow detention time= 216.8 min calculated for 2.094 af (66% of inflow)
Center-of-Mass det. time= 112.3 min (885.1 - 772.8)

Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	87,112 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

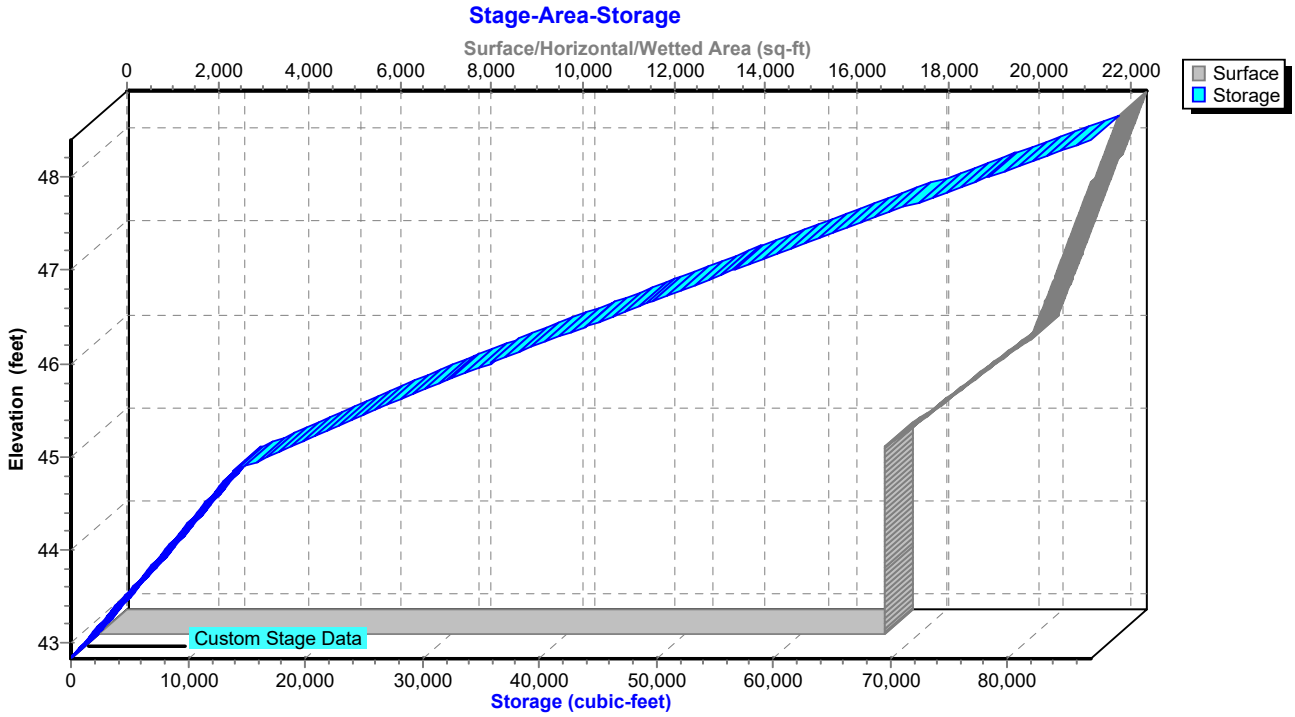
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	17,239	897.0	0.0	0	0	17,239
42.84	17,239	897.0	40.0	69	69	17,248
43.00	17,239	897.0	40.0	1,103	1,172	17,391
44.00	17,239	897.0	40.0	6,896	8,068	18,288
44.83	17,239	897.0	40.0	5,723	13,791	19,033
44.84	17,239	897.0	100.0	172	13,964	19,042
45.00	17,690	902.0	100.0	2,794	16,758	19,772
46.00	20,420	926.0	100.0	19,039	35,797	23,381
47.00	21,216	939.0	100.0	20,817	56,613	25,524
48.00	22,029	952.0	100.0	21,621	78,234	27,697
48.40	22,357	957.0	100.0	8,877	87,112	28,547

Device	Routing	Invert	Outlet Devices
#1	Primary	44.00'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 44.00' / 44.00' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#2	Secondary	48.40'	**50.0' long x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#3	Device 1	46.65'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.40'	**18.0" W x 3.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=13.92 cfs @ 12.32 hrs HW=47.43' (Free Discharge)
└─**1=Culvert** (Inlet Controls 13.92 cfs @ 7.88 fps)
  ├─**3=Orifice/Grate** (Passes < 35.81 cfs potential flow)
  ├─**4=Orifice/Grate** (Passes < 1.71 cfs potential flow)
  └─**5=Orifice/Grate** (Passes < 0.50 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 39P: Basin 104



Stage-Area-Storage for Pond 39P: Basin 104

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
42.83	17,239	0
42.93	17,239	690
43.03	17,239	1,379
43.13	17,239	2,069
43.23	17,239	2,758
43.33	17,239	3,448
43.43	17,239	4,137
43.53	17,239	4,827
43.63	17,239	5,516
43.73	17,239	6,206
43.83	17,239	6,896
43.93	17,239	7,585
44.03	17,239	8,275
44.13	17,239	8,964
44.23	17,239	9,654
44.33	17,239	10,343
44.43	17,239	11,033
44.53	17,239	11,723
44.63	17,239	12,412
44.73	17,239	13,102
44.83	17,239	13,791
44.93	17,492	15,526
45.03	17,769	17,290
45.13	18,034	19,080
45.23	18,301	20,897
45.33	18,569	22,740
45.43	18,840	24,610
45.53	19,113	26,508
45.63	19,387	28,433
45.73	19,664	30,386
45.83	19,942	32,366
45.93	20,223	34,374
46.03	20,444	36,409
46.13	20,523	38,458
46.23	20,602	40,514
46.33	20,681	42,578
46.43	20,760	44,650
46.53	20,840	46,730
46.63	20,920	48,818
46.73	21,000	50,914
46.83	21,080	53,018
46.93	21,160	55,130
47.03	21,240	57,250
47.13	21,321	59,378
47.23	21,402	61,514
47.33	21,483	63,658
47.43	21,564	65,811
47.53	21,645	67,971
47.63	21,726	70,140
47.73	21,808	72,317
47.83	21,890	74,501
47.93	21,972	76,694
48.03	22,054	78,896
48.13	22,135	81,105
48.23	22,217	83,323
48.33	**22,299**	**85,549**

Summary for Pond 44P: Basin 112

[92] Warning: Device #2 is above defined storage

Inflow Area = 1.397 ac, 81.07% Impervious, Inflow Depth > 2.96" for Adj - 2 Yr event
Inflow = 5.20 cfs @ 12.09 hrs, Volume= 0.344 af
Outflow = 0.92 cfs @ 12.48 hrs, Volume= 0.224 af, Atten= 82%, Lag= 23.5 min
Primary = 0.92 cfs @ 12.48 hrs, Volume= 0.224 af
Routed to Pond 39P : Basin 104
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 39P : Basin 104

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 46.95' @ 12.48 hrs Surf.Area= 3,654 sf Storage= 8,596 cf

Plug-Flow detention time= 252.2 min calculated for 0.224 af (65% of inflow)
Center-of-Mass det. time= 149.7 min (911.0 - 761.3)

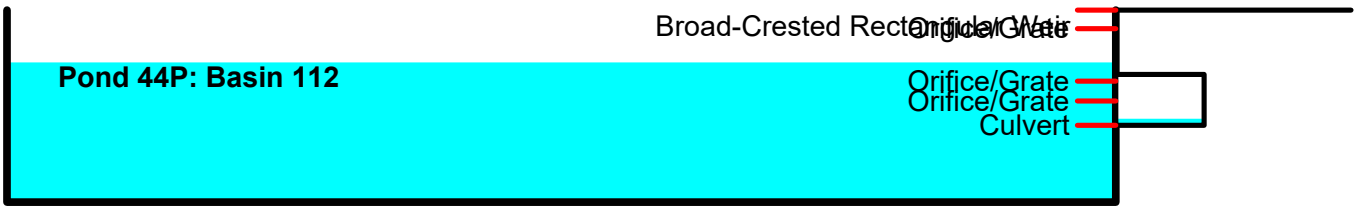
Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	14,810 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	2,461	213.0	0.0	0	0	2,461
42.84	2,461	213.0	40.0	10	10	2,463
43.00	2,461	213.0	40.0	158	167	2,497
44.00	2,461	213.0	40.0	984	1,152	2,710
44.83	2,461	213.0	40.0	817	1,969	2,887
44.84	2,461	213.0	100.0	25	1,993	2,889
45.00	2,568	216.0	100.0	402	2,396	2,997
46.00	3,287	251.0	100.0	2,920	5,316	4,319
47.00	3,676	265.7	100.0	3,480	8,796	4,976
48.00	4,082	276.0	100.0	3,877	12,673	5,496
48.50	4,468	290.0	100.0	2,137	14,810	6,142

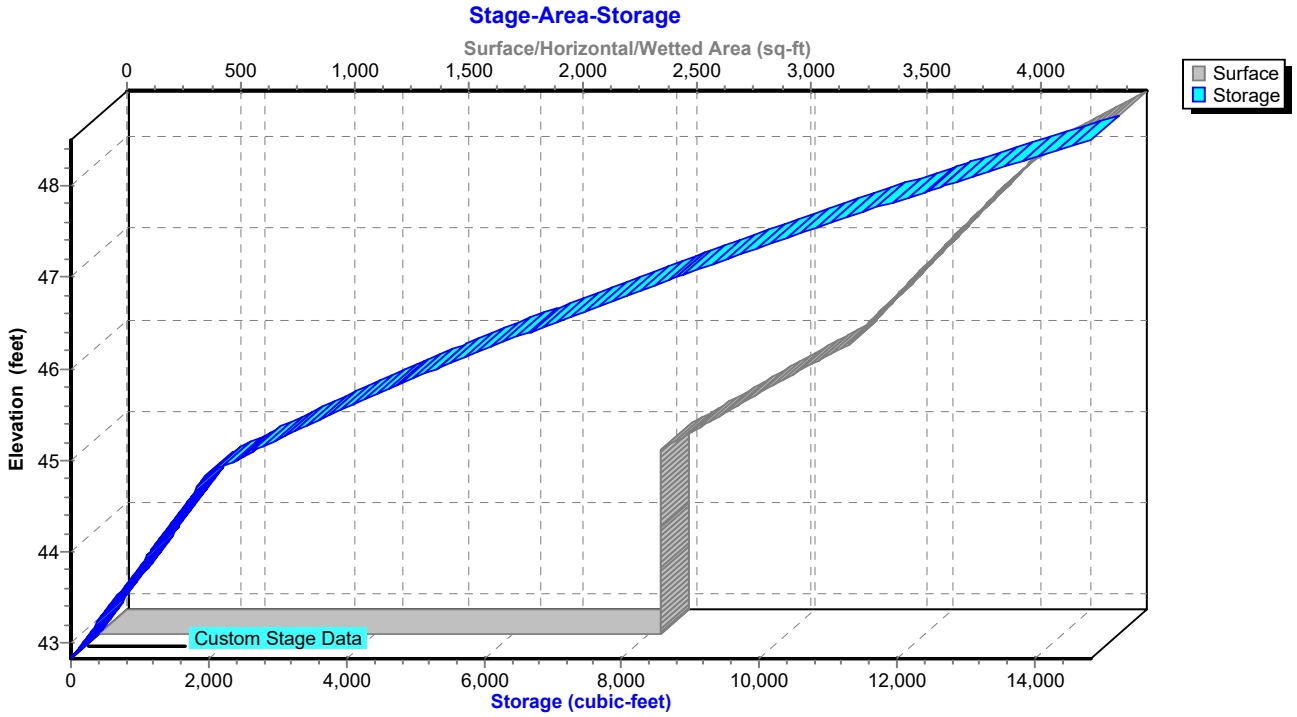
Device	Routing	Invert	Outlet Devices
#1	Primary	45.10'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 45.10' / 45.10' S= 0.0000 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf
#2	Secondary	48.50'	**20.0' long + 0.3 '/' SideZ x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#3	Device 1	47.95'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.40'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.92 cfs @ 12.48 hrs HW=46.94' (Free Discharge)
└─**1=Culvert** (Passes 0.92 cfs of 7.52 cfs potential flow)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  ├─**4=Orifice/Grate** (Orifice Controls 0.51 cfs @ 2.61 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.41 cfs @ 4.71 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)



Pond 44P: Basin 112



Stage-Area-Storage for Pond 44P: Basin 112

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
42.83	2,461	0
42.93	2,461	98
43.03	2,461	197
43.13	2,461	295
43.23	2,461	394
43.33	2,461	492
43.43	2,461	591
43.53	2,461	689
43.63	2,461	788
43.73	2,461	886
43.83	2,461	984
43.93	2,461	1,083
44.03	2,461	1,181
44.13	2,461	1,280
44.23	2,461	1,378
44.33	2,461	1,477
44.43	2,461	1,575
44.53	2,461	1,673
44.63	2,461	1,772
44.73	2,461	1,870
44.83	2,461	1,969
44.93	2,521	2,218
45.03	2,588	2,473
45.13	2,656	2,735
45.23	2,726	3,004
45.33	2,795	3,280
45.43	2,866	3,563
45.53	2,938	3,854
45.63	3,011	4,151
45.73	3,084	4,456
45.83	3,159	4,768
45.93	3,234	5,088
46.03	3,298	5,415
46.13	3,336	5,746
46.23	3,375	6,082
46.33	3,413	6,421
46.43	3,452	6,764
46.53	3,490	7,112
46.63	3,530	7,463
46.73	3,569	7,817
46.83	3,608	8,176
46.93	3,648	8,539
47.03	3,688	8,906
47.13	3,728	9,277
47.23	3,767	9,651
47.33	3,808	10,030
47.43	3,848	10,413
47.53	3,889	10,800
47.63	3,929	11,191
47.73	3,970	11,586
47.83	4,011	11,985
47.93	4,053	12,388
48.03	4,105	12,796
48.13	4,181	13,210
48.23	4,257	13,632
48.33	4,335	14,061
48.43	**4,413**	**14,499**

Summary for Pond 44P: Basin 112

[92] Warning: Device #2 is above defined storage

Inflow Area = 1.397 ac, 81.07% Impervious, Inflow Depth > 4.67" for Adj - 10 Yr event
Inflow = 8.06 cfs @ 12.09 hrs, Volume= 0.544 af
Outflow = 1.67 cfs @ 12.37 hrs, Volume= 0.420 af, Atten= 79%, Lag= 16.8 min
Primary = 1.67 cfs @ 12.37 hrs, Volume= 0.420 af
Routed to Pond 39P : Basin 104
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 39P : Basin 104

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 47.95' @ 12.37 hrs Surf.Area= 4,060 sf Storage= 12,458 cf

Plug-Flow detention time= 213.9 min calculated for 0.419 af (77% of inflow)
Center-of-Mass det. time= 130.2 min (883.1 - 752.9)

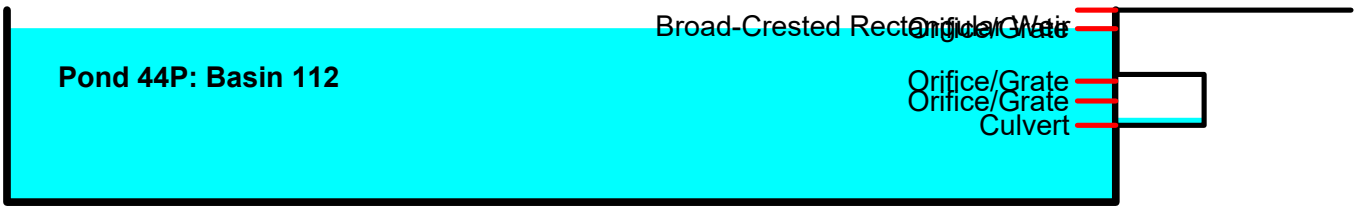
Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	14,810 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	2,461	213.0	0.0	0	0	2,461
42.84	2,461	213.0	40.0	10	10	2,463
43.00	2,461	213.0	40.0	158	167	2,497
44.00	2,461	213.0	40.0	984	1,152	2,710
44.83	2,461	213.0	40.0	817	1,969	2,887
44.84	2,461	213.0	100.0	25	1,993	2,889
45.00	2,568	216.0	100.0	402	2,396	2,997
46.00	3,287	251.0	100.0	2,920	5,316	4,319
47.00	3,676	265.7	100.0	3,480	8,796	4,976
48.00	4,082	276.0	100.0	3,877	12,673	5,496
48.50	4,468	290.0	100.0	2,137	14,810	6,142

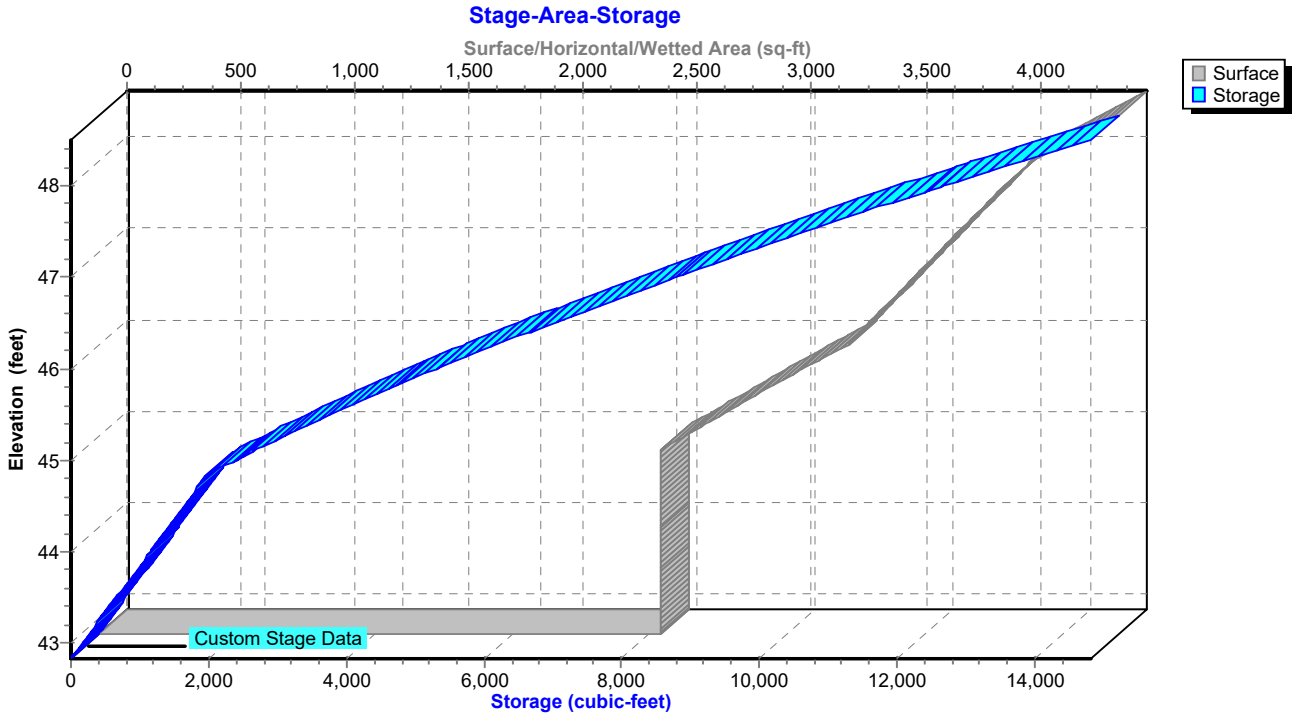
Device	Routing	Invert	Outlet Devices
#1	Primary	45.10'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 45.10' / 45.10' S= 0.0000 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf
#2	Secondary	48.50'	**20.0' long + 0.3 '/' SideZ x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#3	Device 1	47.95'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.40'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.66 cfs @ 12.37 hrs HW=47.95' (Free Discharge)
└─**1=Culvert** (Passes 1.66 cfs of 12.32 cfs potential flow)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  ├─**4=Orifice/Grate** (Orifice Controls 1.08 cfs @ 5.48 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.59 cfs @ 6.74 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)



Pond 44P: Basin 112



Stage-Area-Storage for Pond 44P: Basin 112

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
42.83	2,461	0
42.93	2,461	98
43.03	2,461	197
43.13	2,461	295
43.23	2,461	394
43.33	2,461	492
43.43	2,461	591
43.53	2,461	689
43.63	2,461	788
43.73	2,461	886
43.83	2,461	984
43.93	2,461	1,083
44.03	2,461	1,181
44.13	2,461	1,280
44.23	2,461	1,378
44.33	2,461	1,477
44.43	2,461	1,575
44.53	2,461	1,673
44.63	2,461	1,772
44.73	2,461	1,870
44.83	2,461	1,969
44.93	2,521	2,218
45.03	2,588	2,473
45.13	2,656	2,735
45.23	2,726	3,004
45.33	2,795	3,280
45.43	2,866	3,563
45.53	2,938	3,854
45.63	3,011	4,151
45.73	3,084	4,456
45.83	3,159	4,768
45.93	3,234	5,088
46.03	3,298	5,415
46.13	3,336	5,746
46.23	3,375	6,082
46.33	3,413	6,421
46.43	3,452	6,764
46.53	3,490	7,112
46.63	3,530	7,463
46.73	3,569	7,817
46.83	3,608	8,176
46.93	3,648	8,539
47.03	3,688	8,906
47.13	3,728	9,277
47.23	3,767	9,651
47.33	3,808	10,030
47.43	3,848	10,413
47.53	3,889	10,800
47.63	3,929	11,191
47.73	3,970	11,586
47.83	4,011	11,985
47.93	4,053	12,388
48.03	4,105	12,796
48.13	4,181	13,210
48.23	4,257	13,632
48.33	4,335	14,061
48.43	**4,413**	**14,499**

Summary for Pond 44P: Basin 112

[92] Warning: Device #2 is above defined storage

Inflow Area = 1.397 ac, 81.07% Impervious, Inflow Depth > 8.06" for Adj - 100 Yr event
Inflow = 13.64 cfs @ 12.09 hrs, Volume= 0.938 af
Outflow = 12.39 cfs @ 12.11 hrs, Volume= 0.808 af, Atten= 9%, Lag= 1.5 min
Primary = 12.39 cfs @ 12.11 hrs, Volume= 0.808 af
Routed to Pond 39P : Basin 104
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 39P : Basin 104

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 48.30' @ 12.11 hrs Surf.Area= 4,311 sf Storage= 13,929 cf

Plug-Flow detention time= 164.0 min calculated for 0.806 af (86% of inflow)
Center-of-Mass det. time= 99.8 min (844.2 - 744.4)

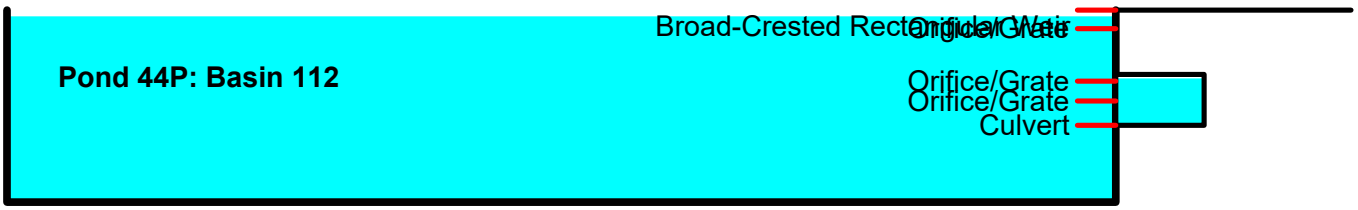
Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	14,810 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	2,461	213.0	0.0	0	0	2,461
42.84	2,461	213.0	40.0	10	10	2,463
43.00	2,461	213.0	40.0	158	167	2,497
44.00	2,461	213.0	40.0	984	1,152	2,710
44.83	2,461	213.0	40.0	817	1,969	2,887
44.84	2,461	213.0	100.0	25	1,993	2,889
45.00	2,568	216.0	100.0	402	2,396	2,997
46.00	3,287	251.0	100.0	2,920	5,316	4,319
47.00	3,676	265.7	100.0	3,480	8,796	4,976
48.00	4,082	276.0	100.0	3,877	12,673	5,496
48.50	4,468	290.0	100.0	2,137	14,810	6,142

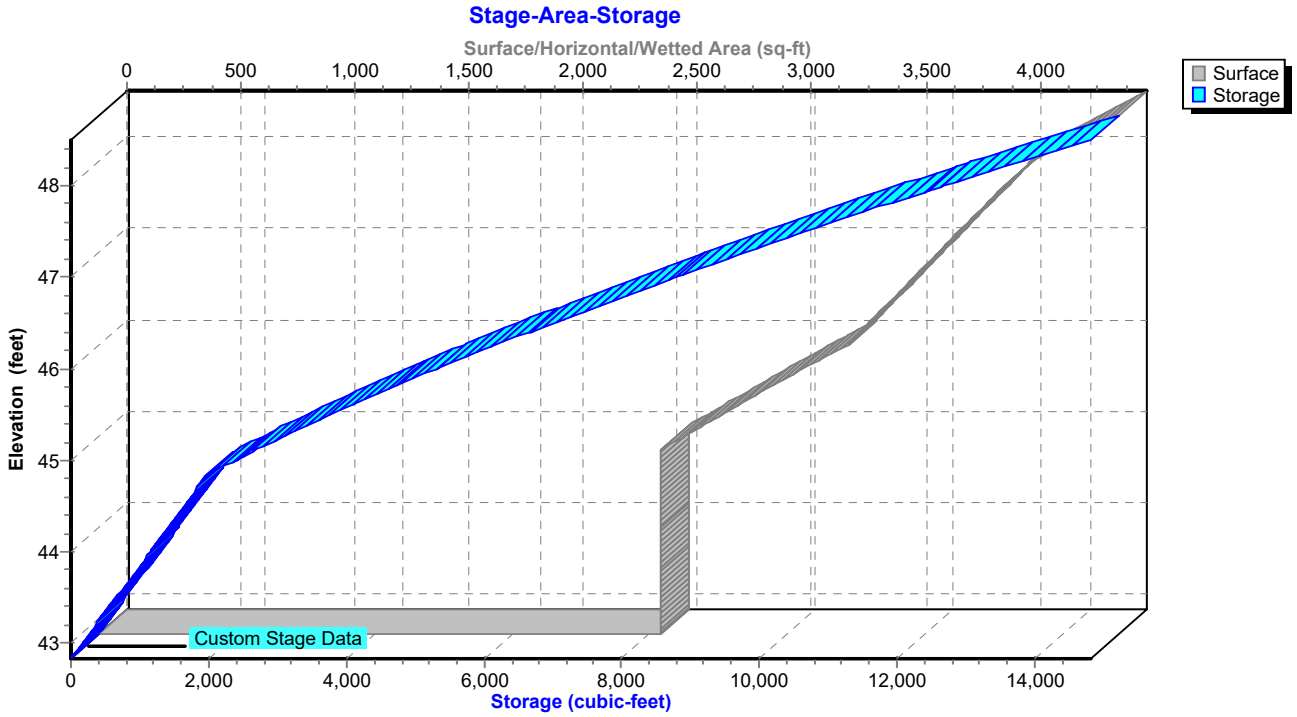
Device	Routing	Invert	Outlet Devices
#1	Primary	45.10'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 45.10' / 45.10' S= 0.0000 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf
#2	Secondary	48.50'	**20.0' long + 0.3 '/' SideZ x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#3	Device 1	47.95'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.40'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=12.12 cfs @ 12.11 hrs HW=48.29' (Free Discharge)
└─**1=Culvert** (Passes 12.12 cfs of 13.29 cfs potential flow)
  ├─**3=Orifice/Grate** (Weir Controls 10.27 cfs @ 1.90 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 1.21 cfs @ 6.16 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.64 cfs @ 7.30 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)



Pond 44P: Basin 112



Stage-Area-Storage for Pond 44P: Basin 112

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
42.83	2,461	0
42.93	2,461	98
43.03	2,461	197
43.13	2,461	295
43.23	2,461	394
43.33	2,461	492
43.43	2,461	591
43.53	2,461	689
43.63	2,461	788
43.73	2,461	886
43.83	2,461	984
43.93	2,461	1,083
44.03	2,461	1,181
44.13	2,461	1,280
44.23	2,461	1,378
44.33	2,461	1,477
44.43	2,461	1,575
44.53	2,461	1,673
44.63	2,461	1,772
44.73	2,461	1,870
44.83	2,461	1,969
44.93	2,521	2,218
45.03	2,588	2,473
45.13	2,656	2,735
45.23	2,726	3,004
45.33	2,795	3,280
45.43	2,866	3,563
45.53	2,938	3,854
45.63	3,011	4,151
45.73	3,084	4,456
45.83	3,159	4,768
45.93	3,234	5,088
46.03	3,298	5,415
46.13	3,336	5,746
46.23	3,375	6,082
46.33	3,413	6,421
46.43	3,452	6,764
46.53	3,490	7,112
46.63	3,530	7,463
46.73	3,569	7,817
46.83	3,608	8,176
46.93	3,648	8,539
47.03	3,688	8,906
47.13	3,728	9,277
47.23	3,767	9,651
47.33	3,808	10,030
47.43	3,848	10,413
47.53	3,889	10,800
47.63	3,929	11,191
47.73	3,970	11,586
47.83	4,011	11,985
47.93	4,053	12,388
48.03	4,105	12,796
48.13	4,181	13,210
48.23	4,257	13,632
48.33	4,335	14,061
48.43	**4,413**	**14,499**

Summary for Pond 41P: Basin 203

[92] Warning: Device #2 is above defined storage
[81] Warning: Exceeded Pond 43P by 0.38' @ 18.45 hrs

Inflow Area = 3.830 ac, 79.29% Impervious, Inflow Depth > 2.74" for Adj - 2 Yr event
Inflow = 10.89 cfs @ 12.12 hrs, Volume= 0.875 af
Outflow = 0.26 cfs @ 17.17 hrs, Volume= 0.216 af, Atten= 98%, Lag= 302.5 min
Primary = 0.26 cfs @ 17.17 hrs, Volume= 0.216 af
Routed to Link 2A : POA 1 (Adj)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 2A : POA 1 (Adj)

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 46.35' @ 17.17 hrs Surf.Area= 15,084 sf Storage= 30,152 cf

Plug-Flow detention time= 529.0 min calculated for 0.216 af (25% of inflow)
Center-of-Mass det. time= 329.4 min (1,110.1 - 780.7)

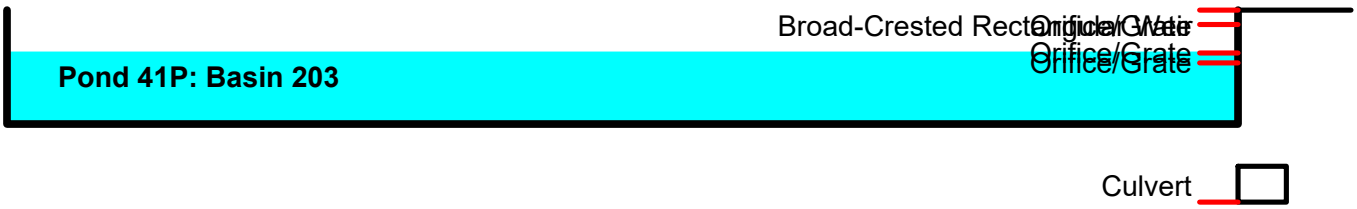
Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	64,356 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	11,929	737.0	0.0	0	0	11,929
42.84	11,929	737.0	40.0	48	48	11,936
43.00	11,929	737.0	40.0	763	811	12,054
44.00	11,929	737.0	40.0	4,772	5,583	12,791
44.83	11,929	737.0	40.0	3,960	9,543	13,403
44.84	11,929	737.0	100.0	119	9,662	13,410
45.00	12,301	741.0	100.0	1,938	11,601	13,895
46.00	14,572	762.0	100.0	13,420	25,021	16,517
47.00	16,075	784.0	100.0	15,317	40,339	19,332
48.00	17,607	806.0	100.0	16,835	57,174	22,227
48.40	18,306	815.0	100.0	7,182	64,356	23,432

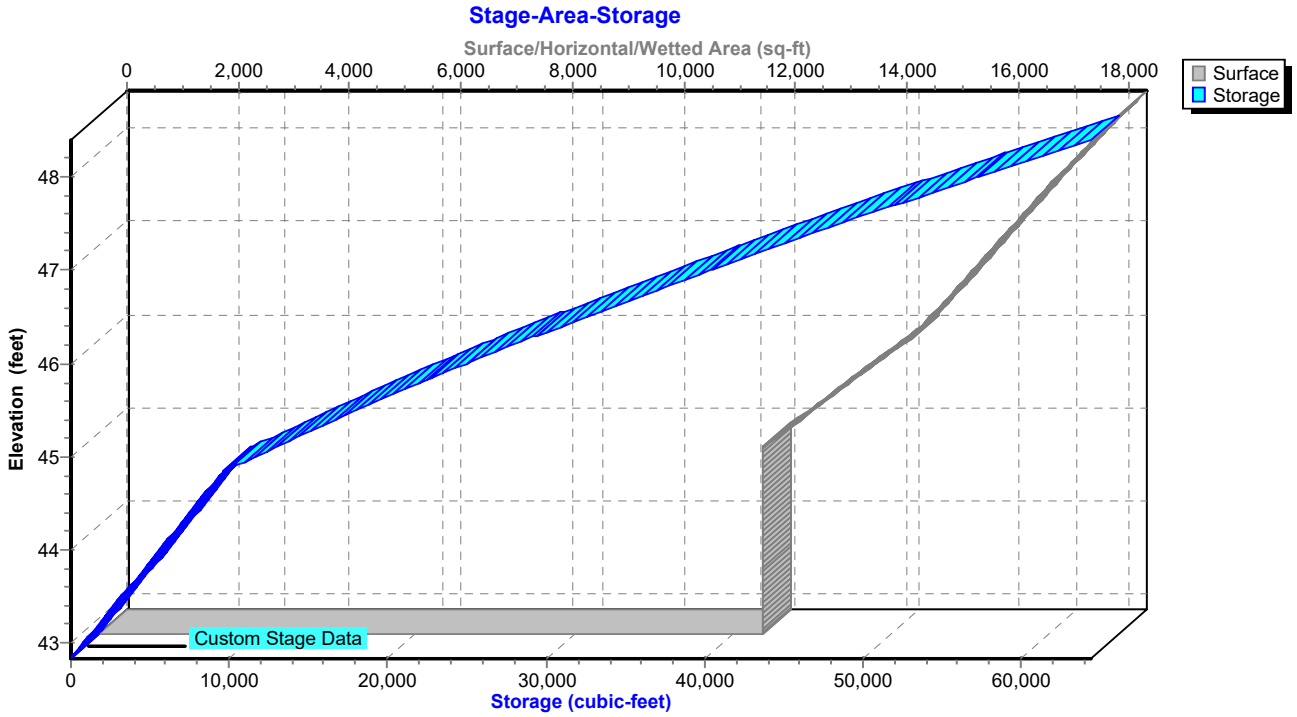
Device	Routing	Invert	Outlet Devices
#1	Primary	39.00'	**21.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 39.00' / 39.00' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 2.41 sf
#2	Secondary	48.40'	**50.0' long x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#3	Device 1	47.70'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.30'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.26 cfs @ 17.17 hrs HW=46.35' (Free Discharge)
└─**1=Culvert** (Passes 0.26 cfs of 29.46 cfs potential flow)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  ├─**4=Orifice/Grate** (Orifice Controls 0.01 cfs @ 0.73 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.25 cfs @ 2.89 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)



Pond 41P: Basin 203



Stage-Area-Storage for Pond 41P: Basin 203

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
42.83	11,929	0
42.93	11,929	477
43.03	11,929	954
43.13	11,929	1,431
43.23	11,929	1,909
43.33	11,929	2,386
43.43	11,929	2,863
43.53	11,929	3,340
43.63	11,929	3,817
43.73	11,929	4,294
43.83	11,929	4,772
43.93	11,929	5,249
44.03	11,929	5,726
44.13	11,929	6,203
44.23	11,929	6,680
44.33	11,929	7,157
44.43	11,929	7,635
44.53	11,929	8,112
44.63	11,929	8,589
44.73	11,929	9,066
44.83	11,929	9,543
44.93	12,138	10,745
45.03	12,366	11,971
45.13	12,585	13,218
45.23	12,806	14,488
45.33	13,029	15,780
45.43	13,254	17,094
45.53	13,481	18,431
45.63	13,709	19,790
45.73	13,940	21,173
45.83	14,172	22,578
45.93	14,407	24,007
46.03	14,616	25,459
46.13	14,763	26,928
46.23	14,911	28,412
46.33	15,060	29,910
46.43	15,209	31,424
46.53	15,359	32,952
46.63	15,510	34,496
46.73	15,662	36,054
46.83	15,814	37,628
46.93	15,967	39,217
47.03	16,120	40,822
47.13	16,270	42,441
47.23	16,421	44,076
47.33	16,573	45,725
47.43	16,725	47,390
47.53	16,878	49,070
47.63	17,032	50,766
47.73	17,186	52,477
47.83	17,342	54,203
47.93	17,497	55,945
48.03	17,659	57,703
48.13	17,833	59,477
48.23	18,007	61,269
48.33	**18,183**	**63,079**

Summary for Pond 41P: Basin 203

[92] Warning: Device #2 is above defined storage
[81] Warning: Exceeded Pond 43P by 0.70' @ 15.30 hrs

Inflow Area = 3.830 ac, 79.29% Impervious, Inflow Depth > 4.45" for Adj - 10 Yr event
Inflow = 17.12 cfs @ 12.12 hrs, Volume= 1.421 af
Outflow = 1.48 cfs @ 13.35 hrs, Volume= 0.713 af, Atten= 91%, Lag= 73.8 min
Primary = 1.48 cfs @ 13.35 hrs, Volume= 0.713 af
Routed to Link 2A : POA 1 (Adj)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 2A : POA 1 (Adj)

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 47.02' @ 13.35 hrs Surf.Area= 16,110 sf Storage= 40,717 cf

Plug-Flow detention time= 340.5 min calculated for 0.713 af (50% of inflow)
Center-of-Mass det. time= 214.3 min (985.6 - 771.3)

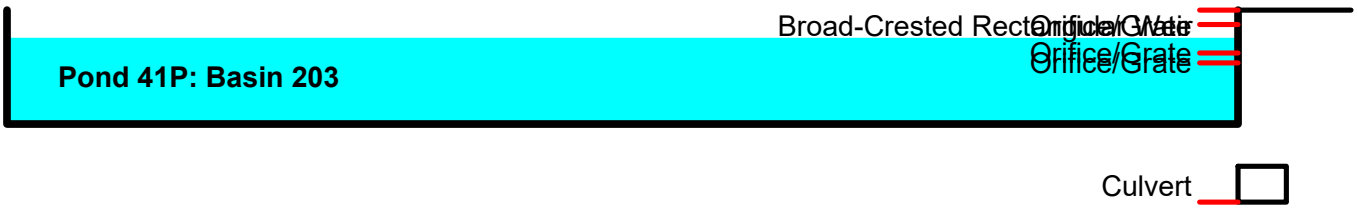
Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	64,356 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	11,929	737.0	0.0	0	0	11,929
42.84	11,929	737.0	40.0	48	48	11,936
43.00	11,929	737.0	40.0	763	811	12,054
44.00	11,929	737.0	40.0	4,772	5,583	12,791
44.83	11,929	737.0	40.0	3,960	9,543	13,403
44.84	11,929	737.0	100.0	119	9,662	13,410
45.00	12,301	741.0	100.0	1,938	11,601	13,895
46.00	14,572	762.0	100.0	13,420	25,021	16,517
47.00	16,075	784.0	100.0	15,317	40,339	19,332
48.00	17,607	806.0	100.0	16,835	57,174	22,227
48.40	18,306	815.0	100.0	7,182	64,356	23,432

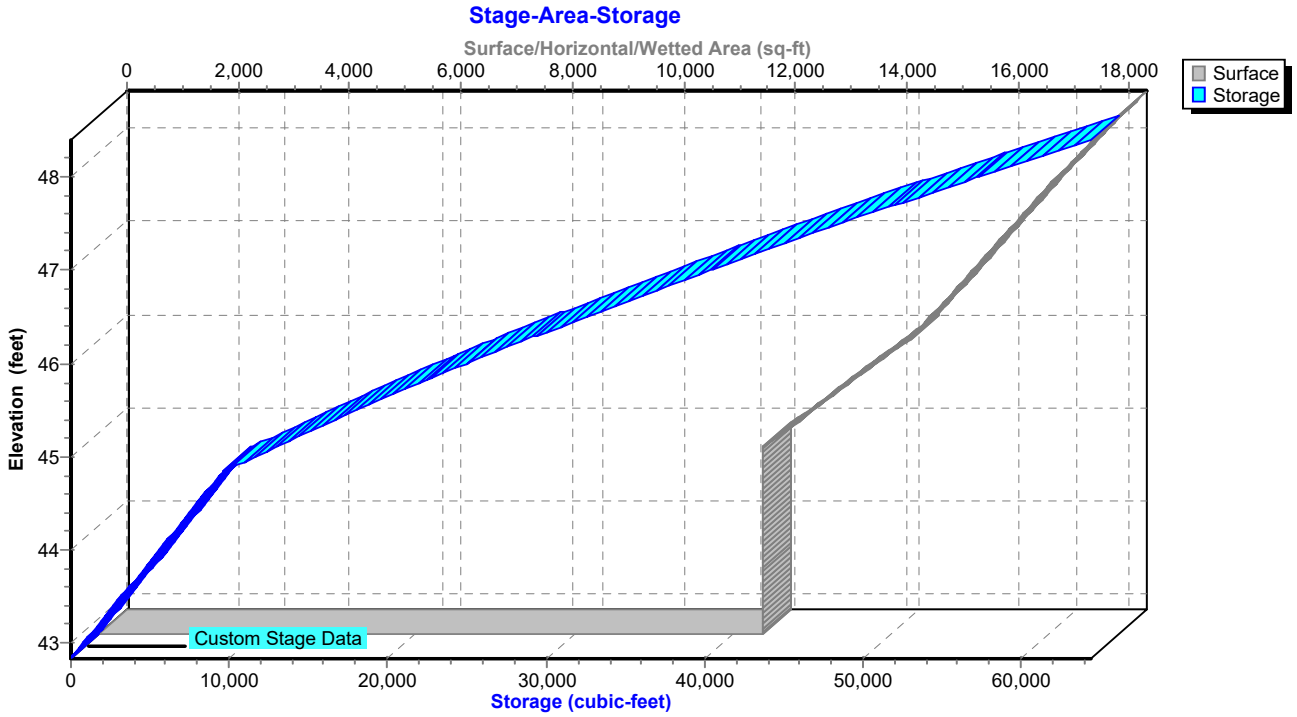
Device	Routing	Invert	Outlet Devices
#1	Primary	39.00'	**21.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 39.00' / 39.00' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 2.41 sf
#2	Secondary	48.40'	**50.0' long x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#3	Device 1	47.70'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.30'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.48 cfs @ 13.35 hrs HW=47.02' (Free Discharge)
└─**1=Culvert** (Passes 1.48 cfs of 30.96 cfs potential flow)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  ├─**4=Orifice/Grate** (Orifice Controls 1.05 cfs @ 3.01 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.43 cfs @ 4.90 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)



Pond 41P: Basin 203



Stage-Area-Storage for Pond 41P: Basin 203

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
42.83	11,929	0
42.93	11,929	477
43.03	11,929	954
43.13	11,929	1,431
43.23	11,929	1,909
43.33	11,929	2,386
43.43	11,929	2,863
43.53	11,929	3,340
43.63	11,929	3,817
43.73	11,929	4,294
43.83	11,929	4,772
43.93	11,929	5,249
44.03	11,929	5,726
44.13	11,929	6,203
44.23	11,929	6,680
44.33	11,929	7,157
44.43	11,929	7,635
44.53	11,929	8,112
44.63	11,929	8,589
44.73	11,929	9,066
44.83	11,929	9,543
44.93	12,138	10,745
45.03	12,366	11,971
45.13	12,585	13,218
45.23	12,806	14,488
45.33	13,029	15,780
45.43	13,254	17,094
45.53	13,481	18,431
45.63	13,709	19,790
45.73	13,940	21,173
45.83	14,172	22,578
45.93	14,407	24,007
46.03	14,616	25,459
46.13	14,763	26,928
46.23	14,911	28,412
46.33	15,060	29,910
46.43	15,209	31,424
46.53	15,359	32,952
46.63	15,510	34,496
46.73	15,662	36,054
46.83	15,814	37,628
46.93	15,967	39,217
47.03	16,120	40,822
47.13	16,270	42,441
47.23	16,421	44,076
47.33	16,573	45,725
47.43	16,725	47,390
47.53	16,878	49,070
47.63	17,032	50,766
47.73	17,186	52,477
47.83	17,342	54,203
47.93	17,497	55,945
48.03	17,659	57,703
48.13	17,833	59,477
48.23	18,007	61,269
48.33	**18,183**	**63,079**

Summary for Pond 41P: Basin 203

[92] Warning: Device #2 is above defined storage
[81] Warning: Exceeded Pond 43P by 1.20' @ 14.20 hrs

Inflow Area = 3.830 ac, 79.29% Impervious, Inflow Depth > 7.83" for Adj - 100 Yr event
Inflow = 34.27 cfs @ 12.11 hrs, Volume= 2.500 af
Outflow = 11.00 cfs @ 12.32 hrs, Volume= 1.750 af, Atten= 68%, Lag= 12.1 min
Primary = 11.00 cfs @ 12.32 hrs, Volume= 1.750 af
Routed to Link 2A : POA 1 (Adj)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 2A : POA 1 (Adj)

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 48.00' @ 12.32 hrs Surf.Area= 17,601 sf Storage= 57,107 cf

Plug-Flow detention time= 257.5 min calculated for 1.746 af (70% of inflow)
Center-of-Mass det. time= 162.2 min (923.0 - 760.8)

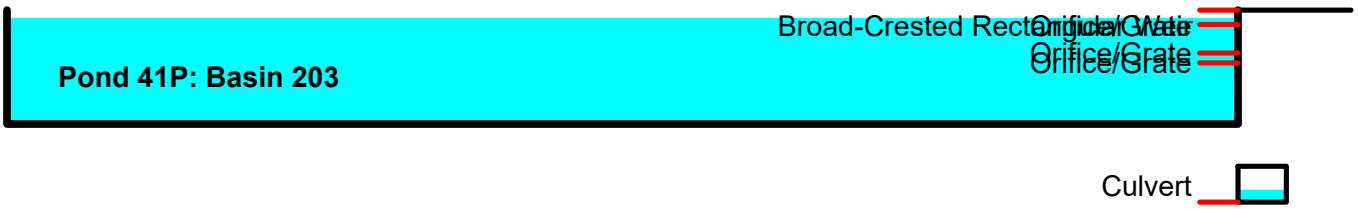
Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	64,356 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	11,929	737.0	0.0	0	0	11,929
42.84	11,929	737.0	40.0	48	48	11,936
43.00	11,929	737.0	40.0	763	811	12,054
44.00	11,929	737.0	40.0	4,772	5,583	12,791
44.83	11,929	737.0	40.0	3,960	9,543	13,403
44.84	11,929	737.0	100.0	119	9,662	13,410
45.00	12,301	741.0	100.0	1,938	11,601	13,895
46.00	14,572	762.0	100.0	13,420	25,021	16,517
47.00	16,075	784.0	100.0	15,317	40,339	19,332
48.00	17,607	806.0	100.0	16,835	57,174	22,227
48.40	18,306	815.0	100.0	7,182	64,356	23,432

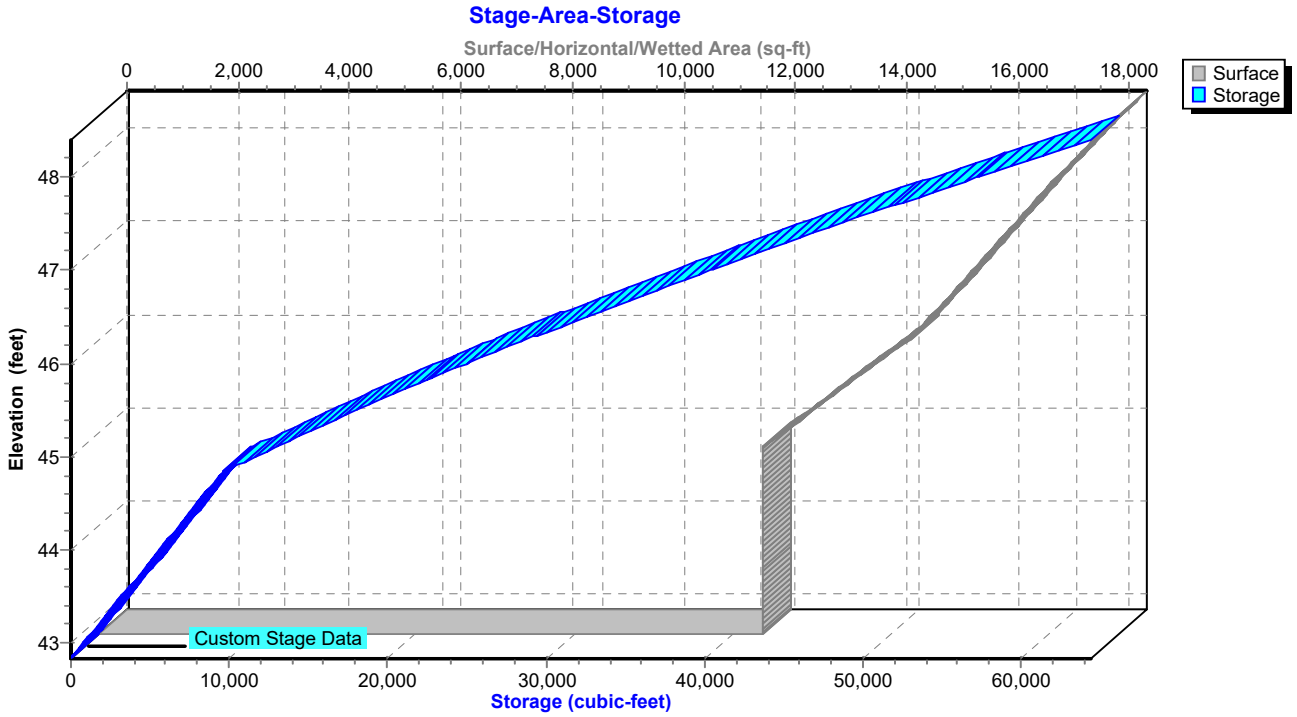
Device	Routing	Invert	Outlet Devices
#1	Primary	39.00'	**21.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 39.00' / 39.00' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 2.41 sf
#2	Secondary	48.40'	**50.0' long x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#3	Device 1	47.70'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.30'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=10.86 cfs @ 12.32 hrs HW=47.99' (Free Discharge)
└─**1=Culvert** (Passes 10.86 cfs of 33.00 cfs potential flow)
  ├─**3=Orifice/Grate** (Weir Controls 8.30 cfs @ 1.77 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 1.96 cfs @ 5.61 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.60 cfs @ 6.82 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)



Pond 41P: Basin 203



Stage-Area-Storage for Pond 41P: Basin 203

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
42.83	11,929	0
42.93	11,929	477
43.03	11,929	954
43.13	11,929	1,431
43.23	11,929	1,909
43.33	11,929	2,386
43.43	11,929	2,863
43.53	11,929	3,340
43.63	11,929	3,817
43.73	11,929	4,294
43.83	11,929	4,772
43.93	11,929	5,249
44.03	11,929	5,726
44.13	11,929	6,203
44.23	11,929	6,680
44.33	11,929	7,157
44.43	11,929	7,635
44.53	11,929	8,112
44.63	11,929	8,589
44.73	11,929	9,066
44.83	11,929	9,543
44.93	12,138	10,745
45.03	12,366	11,971
45.13	12,585	13,218
45.23	12,806	14,488
45.33	13,029	15,780
45.43	13,254	17,094
45.53	13,481	18,431
45.63	13,709	19,790
45.73	13,940	21,173
45.83	14,172	22,578
45.93	14,407	24,007
46.03	14,616	25,459
46.13	14,763	26,928
46.23	14,911	28,412
46.33	15,060	29,910
46.43	15,209	31,424
46.53	15,359	32,952
46.63	15,510	34,496
46.73	15,662	36,054
46.83	15,814	37,628
46.93	15,967	39,217
47.03	16,120	40,822
47.13	16,270	42,441
47.23	16,421	44,076
47.33	16,573	45,725
47.43	16,725	47,390
47.53	16,878	49,070
47.63	17,032	50,766
47.73	17,186	52,477
47.83	17,342	54,203
47.93	17,497	55,945
48.03	17,659	57,703
48.13	17,833	59,477
48.23	18,007	61,269
48.33	**18,183**	**63,079**

Summary for Pond 43P: Basin 206

[92] Warning: Device #2 is above defined storage

Inflow Area = 0.773 ac, 84.16% Impervious, Inflow Depth > 2.98" for Adj - 2 Yr event
Inflow = 2.93 cfs @ 12.08 hrs, Volume= 0.192 af
Outflow = 1.00 cfs @ 12.22 hrs, Volume= 0.129 af, Atten= 66%, Lag= 8.2 min
Primary = 1.00 cfs @ 12.22 hrs, Volume= 0.129 af
Routed to Pond 41P : Basin 203
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 41P : Basin 203

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 46.93' @ 12.22 hrs Surf.Area= 1,603 sf Storage= 4,298 cf

Plug-Flow detention time= 211.0 min calculated for 0.129 af (67% of inflow)
Center-of-Mass det. time= 111.4 min (871.0 - 759.6)

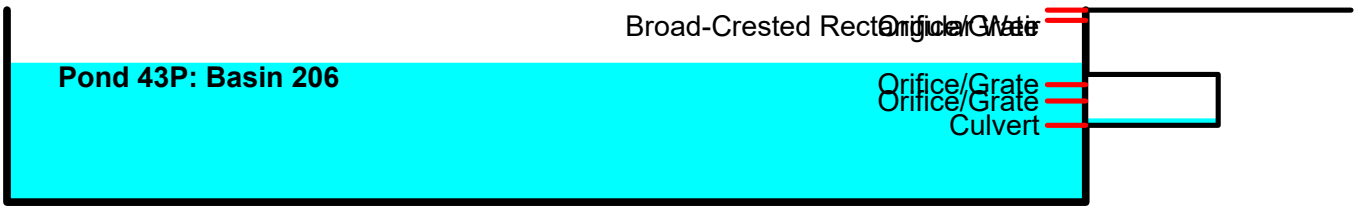
Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	7,008 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	1,435	180.0	0.0	0	0	1,435
42.84	1,435	180.0	40.0	6	6	1,437
43.00	1,435	180.0	40.0	92	98	1,466
44.00	1,435	180.0	40.0	574	672	1,646
44.83	1,435	180.0	40.0	476	1,148	1,795
44.84	1,435	180.0	100.0	14	1,162	1,797
45.00	1,435	180.0	100.0	230	1,392	1,826
46.00	1,489	190.0	100.0	1,462	2,854	2,173
47.00	1,611	213.0	100.0	1,550	4,403	2,938
48.00	1,777	233.0	100.0	1,693	6,097	3,682
48.50	1,869	240.0	100.0	911	7,008	3,971

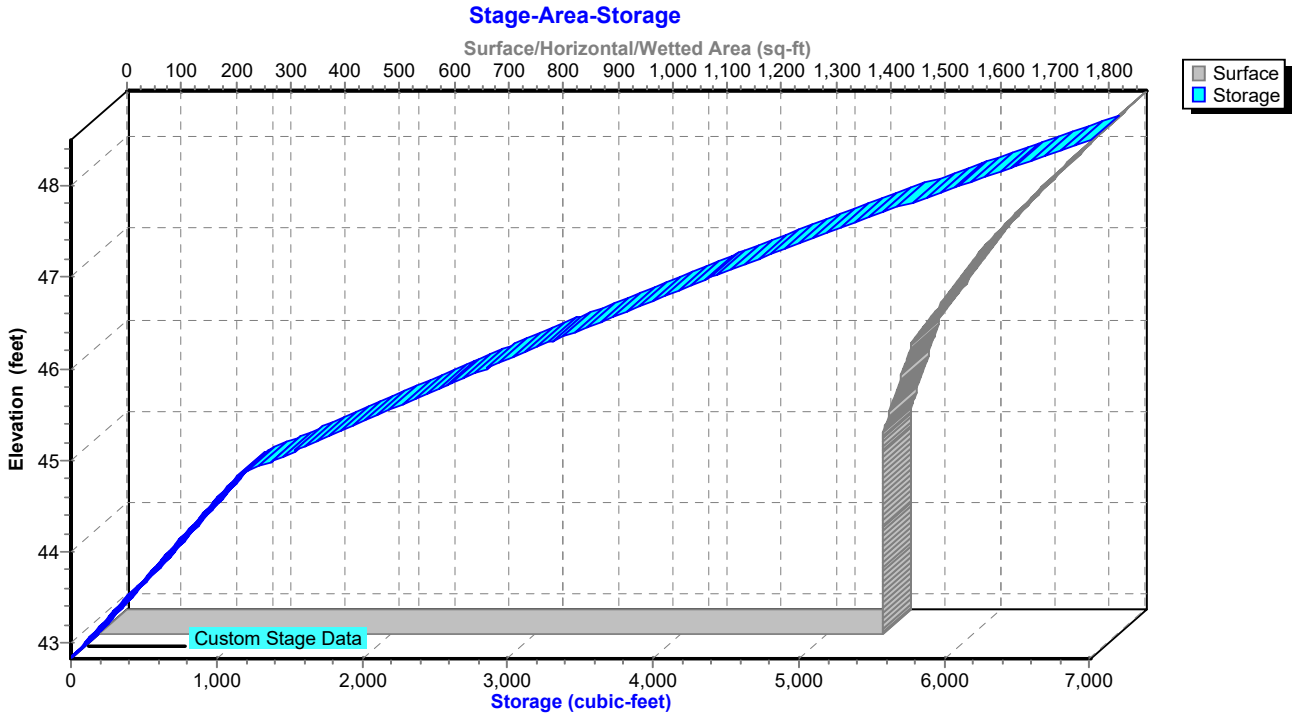
Device	Routing	Invert	Outlet Devices
#1	Primary	45.10'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 45.10' / 45.10' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#2	Secondary	48.50'	**16.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#3	Device 1	48.20'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.30'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.99 cfs @ 12.22 hrs HW=46.93' (Free Discharge)
└─**1=Culvert** (Passes 0.99 cfs of 7.45 cfs potential flow)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  ├─**4=Orifice/Grate** (Orifice Controls 0.58 cfs @ 2.97 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.41 cfs @ 4.68 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)



Pond 43P: Basin 206



Stage-Area-Storage for Pond 43P: Basin 206

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
42.83	1,435	0
42.93	1,435	57
43.03	1,435	115
43.13	1,435	172
43.23	1,435	230
43.33	1,435	287
43.43	1,435	344
43.53	1,435	402
43.63	1,435	459
43.73	1,435	517
43.83	1,435	574
43.93	1,435	631
44.03	1,435	689
44.13	1,435	746
44.23	1,435	804
44.33	1,435	861
44.43	1,435	918
44.53	1,435	976
44.63	1,435	1,033
44.73	1,435	1,091
44.83	1,435	1,148
44.93	1,435	1,292
45.03	1,437	1,435
45.13	1,442	1,579
45.23	1,447	1,723
45.33	1,453	1,868
45.43	1,458	2,014
45.53	1,463	2,160
45.63	1,469	2,307
45.73	1,474	2,454
45.83	1,480	2,602
45.93	1,485	2,750
46.03	1,493	2,899
46.13	1,505	3,048
46.23	1,517	3,200
46.33	1,529	3,352
46.43	1,541	3,505
46.53	1,553	3,660
46.63	1,565	3,816
46.73	1,578	3,973
46.83	1,590	4,131
46.93	1,602	4,291
47.03	1,616	4,452
47.13	1,632	4,614
47.23	1,648	4,778
47.33	1,665	4,944
47.43	1,681	5,111
47.53	1,698	5,280
47.63	1,715	5,451
47.73	1,731	5,623
47.83	1,748	5,797
47.93	1,765	5,973
48.03	1,782	6,150
48.13	1,801	6,329
48.23	1,819	6,510
48.33	1,837	6,693
48.43	**1,856**	**6,878**

Summary for Pond 43P: Basin 206

[92] Warning: Device #2 is above defined storage

Inflow Area = 0.773 ac, 84.16% Impervious, Inflow Depth > 4.70" for Adj - 10 Yr event
Inflow = 4.53 cfs @ 12.08 hrs, Volume= 0.303 af
Outflow = 1.63 cfs @ 12.21 hrs, Volume= 0.239 af, Atten= 64%, Lag= 7.6 min
Primary = 1.63 cfs @ 12.21 hrs, Volume= 0.239 af
Routed to Pond 41P : Basin 203
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 41P : Basin 203

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 47.81' @ 12.21 hrs Surf.Area= 1,745 sf Storage= 5,763 cf

Plug-Flow detention time= 174.2 min calculated for 0.238 af (79% of inflow)
Center-of-Mass det. time= 93.4 min (844.6 - 751.2)

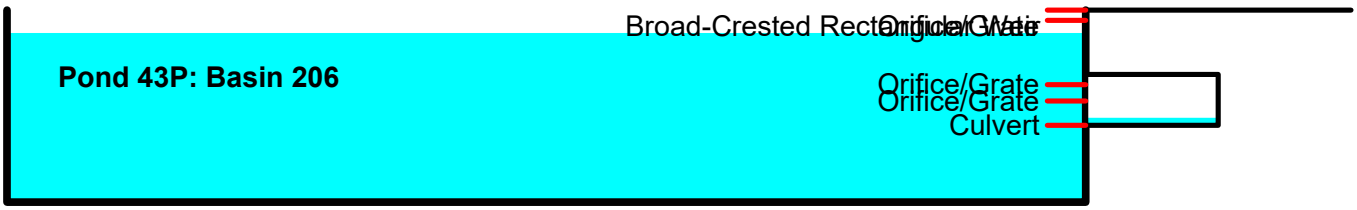
Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	7,008 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	1,435	180.0	0.0	0	0	1,435
42.84	1,435	180.0	40.0	6	6	1,437
43.00	1,435	180.0	40.0	92	98	1,466
44.00	1,435	180.0	40.0	574	672	1,646
44.83	1,435	180.0	40.0	476	1,148	1,795
44.84	1,435	180.0	100.0	14	1,162	1,797
45.00	1,435	180.0	100.0	230	1,392	1,826
46.00	1,489	190.0	100.0	1,462	2,854	2,173
47.00	1,611	213.0	100.0	1,550	4,403	2,938
48.00	1,777	233.0	100.0	1,693	6,097	3,682
48.50	1,869	240.0	100.0	911	7,008	3,971

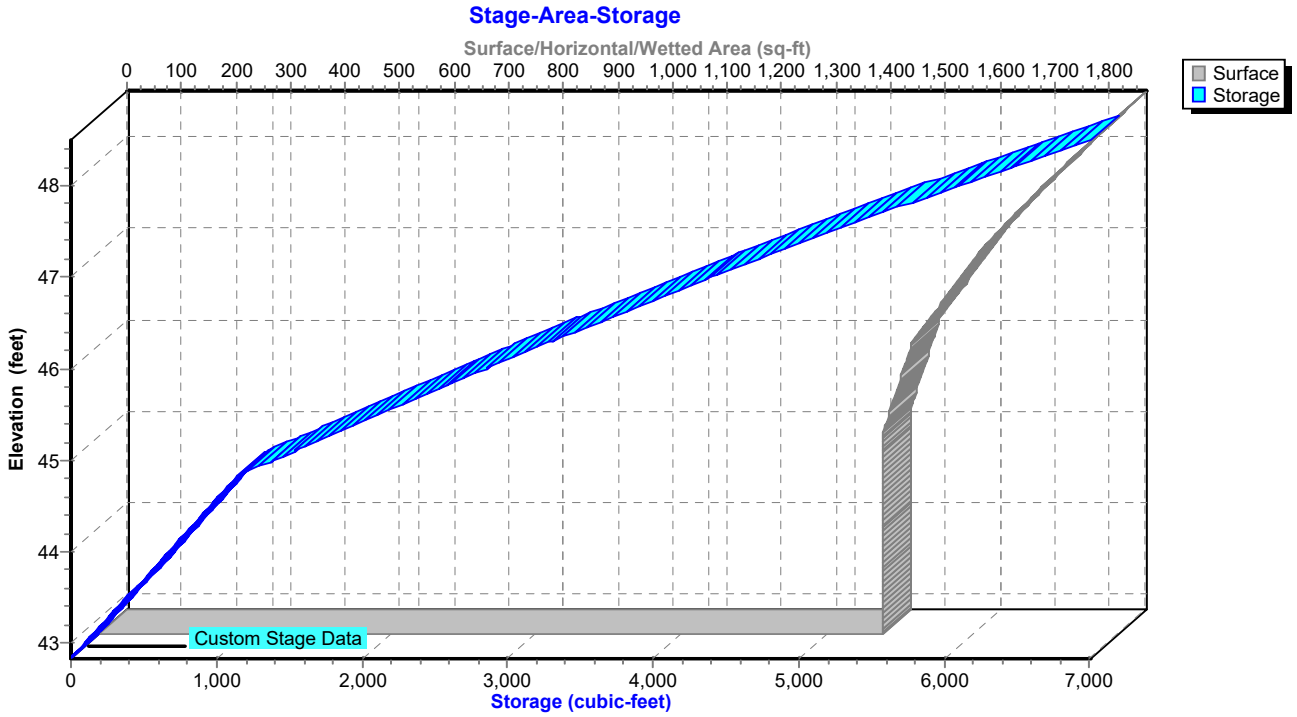
Device	Routing	Invert	Outlet Devices
#1	Primary	45.10'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 45.10' / 45.10' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#2	Secondary	48.50'	**16.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#3	Device 1	48.20'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.30'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.63 cfs @ 12.21 hrs HW=47.81' (Free Discharge)
└─**1=Culvert** (Passes 1.63 cfs of 11.90 cfs potential flow)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  ├─**4=Orifice/Grate** (Orifice Controls 1.06 cfs @ 5.40 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.57 cfs @ 6.50 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)



Pond 43P: Basin 206



Stage-Area-Storage for Pond 43P: Basin 206

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
42.83	1,435	0
42.93	1,435	57
43.03	1,435	115
43.13	1,435	172
43.23	1,435	230
43.33	1,435	287
43.43	1,435	344
43.53	1,435	402
43.63	1,435	459
43.73	1,435	517
43.83	1,435	574
43.93	1,435	631
44.03	1,435	689
44.13	1,435	746
44.23	1,435	804
44.33	1,435	861
44.43	1,435	918
44.53	1,435	976
44.63	1,435	1,033
44.73	1,435	1,091
44.83	1,435	1,148
44.93	1,435	1,292
45.03	1,437	1,435
45.13	1,442	1,579
45.23	1,447	1,723
45.33	1,453	1,868
45.43	1,458	2,014
45.53	1,463	2,160
45.63	1,469	2,307
45.73	1,474	2,454
45.83	1,480	2,602
45.93	1,485	2,750
46.03	1,493	2,899
46.13	1,505	3,048
46.23	1,517	3,200
46.33	1,529	3,352
46.43	1,541	3,505
46.53	1,553	3,660
46.63	1,565	3,816
46.73	1,578	3,973
46.83	1,590	4,131
46.93	1,602	4,291
47.03	1,616	4,452
47.13	1,632	4,614
47.23	1,648	4,778
47.33	1,665	4,944
47.43	1,681	5,111
47.53	1,698	5,280
47.63	1,715	5,451
47.73	1,731	5,623
47.83	1,748	5,797
47.93	1,765	5,973
48.03	1,782	6,150
48.13	1,801	6,329
48.23	1,819	6,510
48.33	1,837	6,693
48.43	**1,856**	**6,878**

Summary for Pond 43P: Basin 206

[92] Warning: Device #2 is above defined storage
[88] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 0.773 ac, 84.16% Impervious, Inflow Depth > 8.10" for Adj - 100 Yr event
Inflow = 7.65 cfs @ 12.08 hrs, Volume= 0.521 af
Outflow = 7.94 cfs @ 12.11 hrs, Volume= 0.456 af, Atten= 0%, Lag= 1.7 min
Primary = 7.94 cfs @ 12.11 hrs, Volume= 0.456 af
Routed to Pond 41P : Basin 203
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 41P : Basin 203

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 48.44' @ 12.11 hrs Surf.Area= 1,858 sf Storage= 6,896 cf

Plug-Flow detention time= 137.2 min calculated for 0.456 af (87% of inflow)
Center-of-Mass det. time= 76.2 min (819.1 - 742.9)

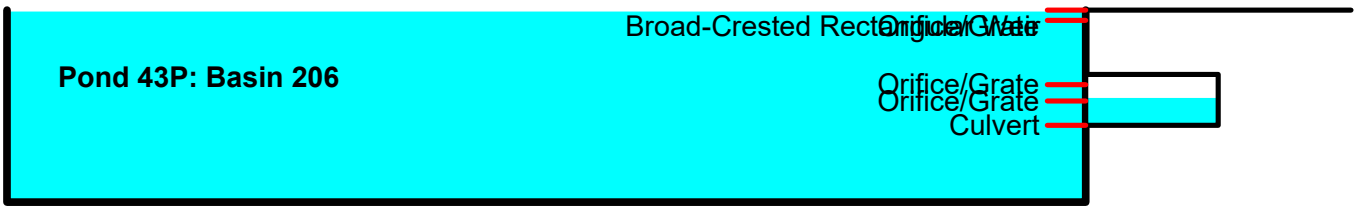
Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	7,008 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	1,435	180.0	0.0	0	0	1,435
42.84	1,435	180.0	40.0	6	6	1,437
43.00	1,435	180.0	40.0	92	98	1,466
44.00	1,435	180.0	40.0	574	672	1,646
44.83	1,435	180.0	40.0	476	1,148	1,795
44.84	1,435	180.0	100.0	14	1,162	1,797
45.00	1,435	180.0	100.0	230	1,392	1,826
46.00	1,489	190.0	100.0	1,462	2,854	2,173
47.00	1,611	213.0	100.0	1,550	4,403	2,938
48.00	1,777	233.0	100.0	1,693	6,097	3,682
48.50	1,869	240.0	100.0	911	7,008	3,971

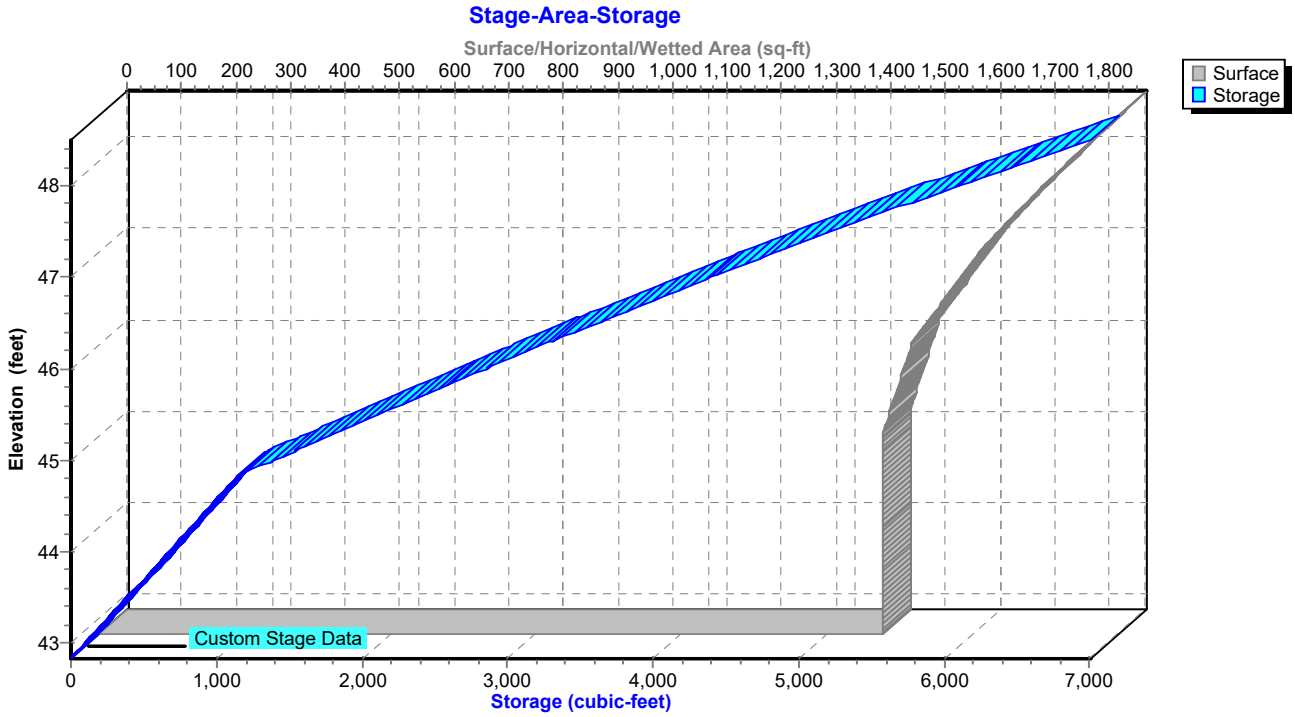
Device	Routing	Invert	Outlet Devices
#1	Primary	45.10'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 45.10' / 45.10' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#2	Secondary	48.50'	**16.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#3	Device 1	48.20'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.30'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=7.22 cfs @ 12.11 hrs HW=48.42' (Free Discharge)
└─**1=Culvert** (Passes 7.22 cfs of 13.63 cfs potential flow)
  ├─**3=Orifice/Grate** (Weir Controls 5.28 cfs @ 1.52 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 1.29 cfs @ 6.58 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.66 cfs @ 7.51 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)



Pond 43P: Basin 206



Stage-Area-Storage for Pond 43P: Basin 206

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
42.83	1,435	0
42.93	1,435	57
43.03	1,435	115
43.13	1,435	172
43.23	1,435	230
43.33	1,435	287
43.43	1,435	344
43.53	1,435	402
43.63	1,435	459
43.73	1,435	517
43.83	1,435	574
43.93	1,435	631
44.03	1,435	689
44.13	1,435	746
44.23	1,435	804
44.33	1,435	861
44.43	1,435	918
44.53	1,435	976
44.63	1,435	1,033
44.73	1,435	1,091
44.83	1,435	1,148
44.93	1,435	1,292
45.03	1,437	1,435
45.13	1,442	1,579
45.23	1,447	1,723
45.33	1,453	1,868
45.43	1,458	2,014
45.53	1,463	2,160
45.63	1,469	2,307
45.73	1,474	2,454
45.83	1,480	2,602
45.93	1,485	2,750
46.03	1,493	2,899
46.13	1,505	3,048
46.23	1,517	3,200
46.33	1,529	3,352
46.43	1,541	3,505
46.53	1,553	3,660
46.63	1,565	3,816
46.73	1,578	3,973
46.83	1,590	4,131
46.93	1,602	4,291
47.03	1,616	4,452
47.13	1,632	4,614
47.23	1,648	4,778
47.33	1,665	4,944
47.43	1,681	5,111
47.53	1,698	5,280
47.63	1,715	5,451
47.73	1,731	5,623
47.83	1,748	5,797
47.93	1,765	5,973
48.03	1,782	6,150
48.13	1,801	6,329
48.23	1,819	6,510
48.33	1,837	6,693
48.43	**1,856**	**6,878**

Summary for Pond 48P: Basin 104

[92] Warning: Device #2 is above defined storage
[81] Warning: Exceeded Pond 47P by 0.42' @ 21.65 hrs

Inflow Area = 4.940 ac, 77.74% Impervious, Inflow Depth > 3.12" for Yr 2100 - 2 Yr event
Inflow = 14.63 cfs @ 12.12 hrs, Volume= 1.285 af
Outflow = 0.36 cfs @ 18.21 hrs, Volume= 0.272 af, Atten= 98%, Lag= 365.8 min
Primary = 0.36 cfs @ 18.21 hrs, Volume= 0.272 af
Routed to Link 24L : POA 1 (2100)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 24L : POA 1 (2100)

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 46.46' @ 18.21 hrs Surf.Area= 20,785 sf Storage= 45,291 cf

Plug-Flow detention time= 563.8 min calculated for 0.272 af (21% of inflow)
Center-of-Mass det. time= 338.1 min (1,130.1 - 792.0)

Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	87,112 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

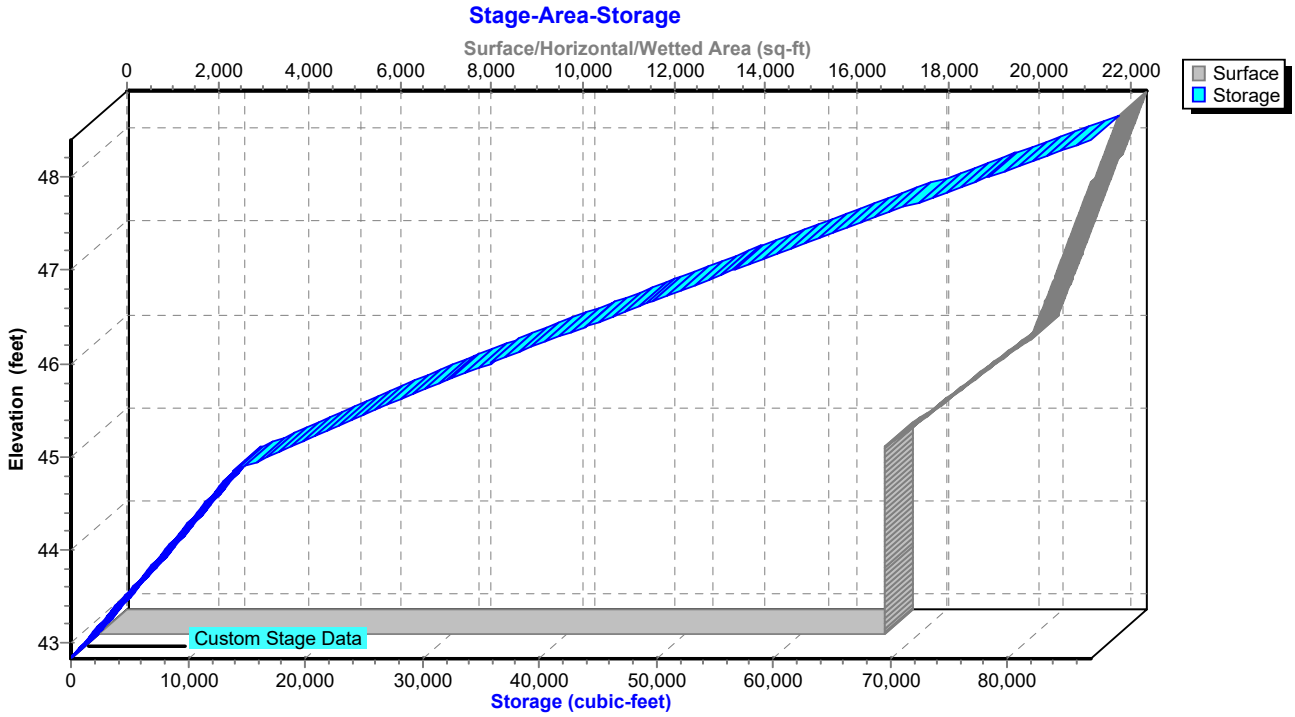
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	17,239	897.0	0.0	0	0	17,239
42.84	17,239	897.0	40.0	69	69	17,248
43.00	17,239	897.0	40.0	1,103	1,172	17,391
44.00	17,239	897.0	40.0	6,896	8,068	18,288
44.83	17,239	897.0	40.0	5,723	13,791	19,033
44.84	17,239	897.0	100.0	172	13,964	19,042
45.00	17,690	902.0	100.0	2,794	16,758	19,772
46.00	20,420	926.0	100.0	19,039	35,797	23,381
47.00	21,216	939.0	100.0	20,817	56,613	25,524
48.00	22,029	952.0	100.0	21,621	78,234	27,697
48.40	22,357	957.0	100.0	8,877	87,112	28,547

Device	Routing	Invert	Outlet Devices
#1	Primary	44.00'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 44.00' / 44.00' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#2	Secondary	48.40'	**50.0' long x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#3	Device 1	46.65'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.40'	**18.0" W x 3.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.36 cfs @ 18.21 hrs HW=46.46' (Free Discharge)
└─**1=Culvert** (Passes 0.36 cfs of 11.13 cfs potential flow)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  ├─**4=Orifice/Grate** (Orifice Controls 0.07 cfs @ 0.79 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.29 cfs @ 3.32 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 48P: Basin 104



Stage-Area-Storage for Pond 48P: Basin 104

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
42.83	17,239	0
42.93	17,239	690
43.03	17,239	1,379
43.13	17,239	2,069
43.23	17,239	2,758
43.33	17,239	3,448
43.43	17,239	4,137
43.53	17,239	4,827
43.63	17,239	5,516
43.73	17,239	6,206
43.83	17,239	6,896
43.93	17,239	7,585
44.03	17,239	8,275
44.13	17,239	8,964
44.23	17,239	9,654
44.33	17,239	10,343
44.43	17,239	11,033
44.53	17,239	11,723
44.63	17,239	12,412
44.73	17,239	13,102
44.83	17,239	13,791
44.93	17,492	15,526
45.03	17,769	17,290
45.13	18,034	19,080
45.23	18,301	20,897
45.33	18,569	22,740
45.43	18,840	24,610
45.53	19,113	26,508
45.63	19,387	28,433
45.73	19,664	30,386
45.83	19,942	32,366
45.93	20,223	34,374
46.03	20,444	36,409
46.13	20,523	38,458
46.23	20,602	40,514
46.33	20,681	42,578
46.43	20,760	44,650
46.53	20,840	46,730
46.63	20,920	48,818
46.73	21,000	50,914
46.83	21,080	53,018
46.93	21,160	55,130
47.03	21,240	57,250
47.13	21,321	59,378
47.23	21,402	61,514
47.33	21,483	63,658
47.43	21,564	65,811
47.53	21,645	67,971
47.63	21,726	70,140
47.73	21,808	72,317
47.83	21,890	74,501
47.93	21,972	76,694
48.03	22,054	78,896
48.13	22,135	81,105
48.23	22,217	83,323
48.33	**22,299**	**85,549**

Summary for Pond 48P: Basin 104

[92] Warning: Device #2 is above defined storage
[81] Warning: Exceeded Pond 47P by 0.44' @ 22.85 hrs

Inflow Area = 4.940 ac, 77.74% Impervious, Inflow Depth > 5.08" for Yr 2100 - 10 Yr event
Inflow = 24.00 cfs @ 12.13 hrs, Volume= 2.090 af
Outflow = 3.94 cfs @ 12.81 hrs, Volume= 1.044 af, Atten= 84%, Lag= 40.7 min
Primary = 3.94 cfs @ 12.81 hrs, Volume= 1.044 af
Routed to Link 24L : POA 1 (2100)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 24L : POA 1 (2100)

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 46.79' @ 12.81 hrs Surf.Area= 21,045 sf Storage= 52,109 cf

Plug-Flow detention time= 306.7 min calculated for 1.044 af (50% of inflow)
Center-of-Mass det. time= 174.1 min (956.7 - 782.6)

Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	87,112 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

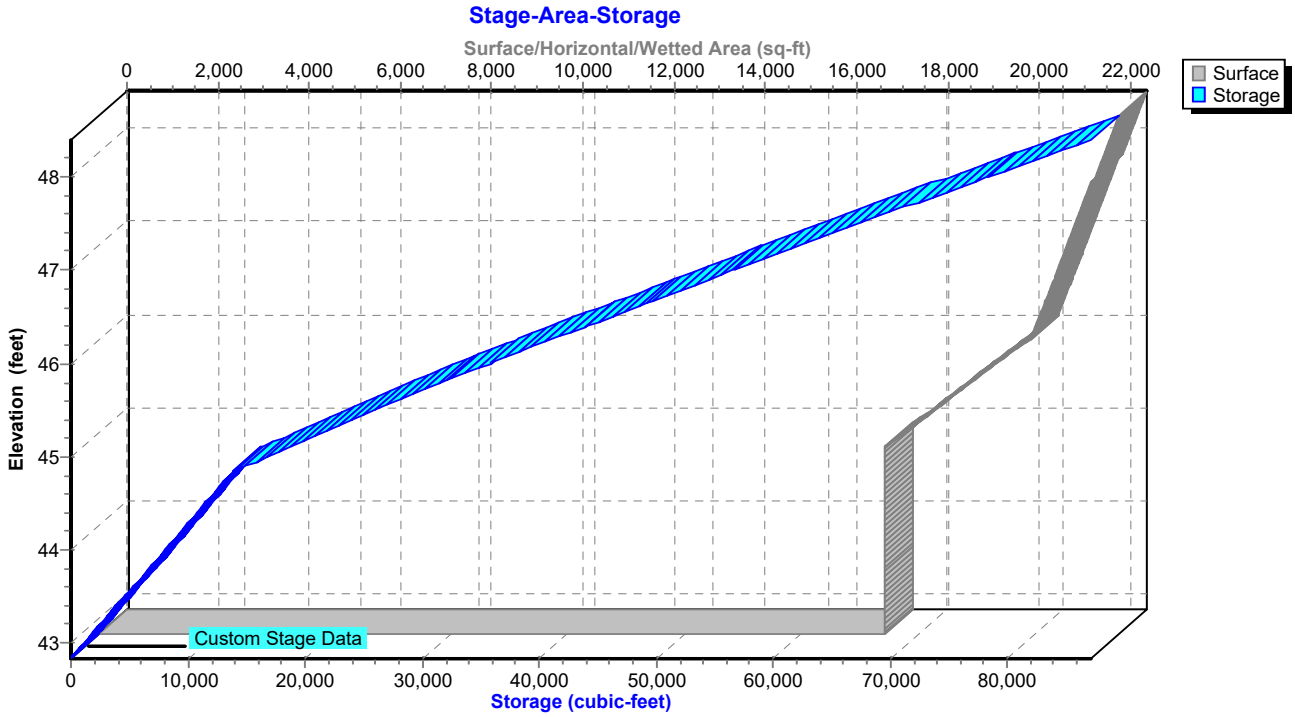
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	17,239	897.0	0.0	0	0	17,239
42.84	17,239	897.0	40.0	69	69	17,248
43.00	17,239	897.0	40.0	1,103	1,172	17,391
44.00	17,239	897.0	40.0	6,896	8,068	18,288
44.83	17,239	897.0	40.0	5,723	13,791	19,033
44.84	17,239	897.0	100.0	172	13,964	19,042
45.00	17,690	902.0	100.0	2,794	16,758	19,772
46.00	20,420	926.0	100.0	19,039	35,797	23,381
47.00	21,216	939.0	100.0	20,817	56,613	25,524
48.00	22,029	952.0	100.0	21,621	78,234	27,697
48.40	22,357	957.0	100.0	8,877	87,112	28,547

Device	Routing	Invert	Outlet Devices
#1	Primary	44.00'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 44.00' / 44.00' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#2	Secondary	48.40'	**50.0' long x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#3	Device 1	46.65'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.40'	**18.0" W x 3.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.94 cfs @ 12.81 hrs HW=46.79' (Free Discharge)
└─**1=Culvert** (Passes 3.94 cfs of 12.14 cfs potential flow)
  ├─**3=Orifice/Grate** (Weir Controls 2.65 cfs @ 1.21 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 0.91 cfs @ 2.44 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.38 cfs @ 4.31 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 48P: Basin 104



Stage-Area-Storage for Pond 48P: Basin 104

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
42.83	17,239	0
42.93	17,239	690
43.03	17,239	1,379
43.13	17,239	2,069
43.23	17,239	2,758
43.33	17,239	3,448
43.43	17,239	4,137
43.53	17,239	4,827
43.63	17,239	5,516
43.73	17,239	6,206
43.83	17,239	6,896
43.93	17,239	7,585
44.03	17,239	8,275
44.13	17,239	8,964
44.23	17,239	9,654
44.33	17,239	10,343
44.43	17,239	11,033
44.53	17,239	11,723
44.63	17,239	12,412
44.73	17,239	13,102
44.83	17,239	13,791
44.93	17,492	15,526
45.03	17,769	17,290
45.13	18,034	19,080
45.23	18,301	20,897
45.33	18,569	22,740
45.43	18,840	24,610
45.53	19,113	26,508
45.63	19,387	28,433
45.73	19,664	30,386
45.83	19,942	32,366
45.93	20,223	34,374
46.03	20,444	36,409
46.13	20,523	38,458
46.23	20,602	40,514
46.33	20,681	42,578
46.43	20,760	44,650
46.53	20,840	46,730
46.63	20,920	48,818
46.73	21,000	50,914
46.83	21,080	53,018
46.93	21,160	55,130
47.03	21,240	57,250
47.13	21,321	59,378
47.23	21,402	61,514
47.33	21,483	63,658
47.43	21,564	65,811
47.53	21,645	67,971
47.63	21,726	70,140
47.73	21,808	72,317
47.83	21,890	74,501
47.93	21,972	76,694
48.03	22,054	78,896
48.13	22,135	81,105
48.23	22,217	83,323
48.33	**22,299**	**85,549**

Summary for Pond 48P: Basin 104

[92] Warning: Device #2 is above defined storage
[81] Warning: Exceeded Pond 47P by 0.37' @ 23.95 hrs

Inflow Area = 4.940 ac, 77.74% Impervious, Inflow Depth > 10.31" for Yr 2100 - 100 Yr event
Inflow = 54.87 cfs @ 12.11 hrs, Volume= 4.244 af
Outflow = 16.07 cfs @ 12.34 hrs, Volume= 3.146 af, Atten= 71%, Lag= 13.8 min
Primary = 16.07 cfs @ 12.34 hrs, Volume= 3.146 af
Routed to Link 24L : POA 1 (2100)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 24L : POA 1 (2100)

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 48.32' @ 12.34 hrs Surf.Area= 22,290 sf Storage= 85,305 cf

Plug-Flow detention time= 189.7 min calculated for 3.140 af (74% of inflow)
Center-of-Mass det. time= 98.9 min (864.3 - 765.5)

Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	87,112 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

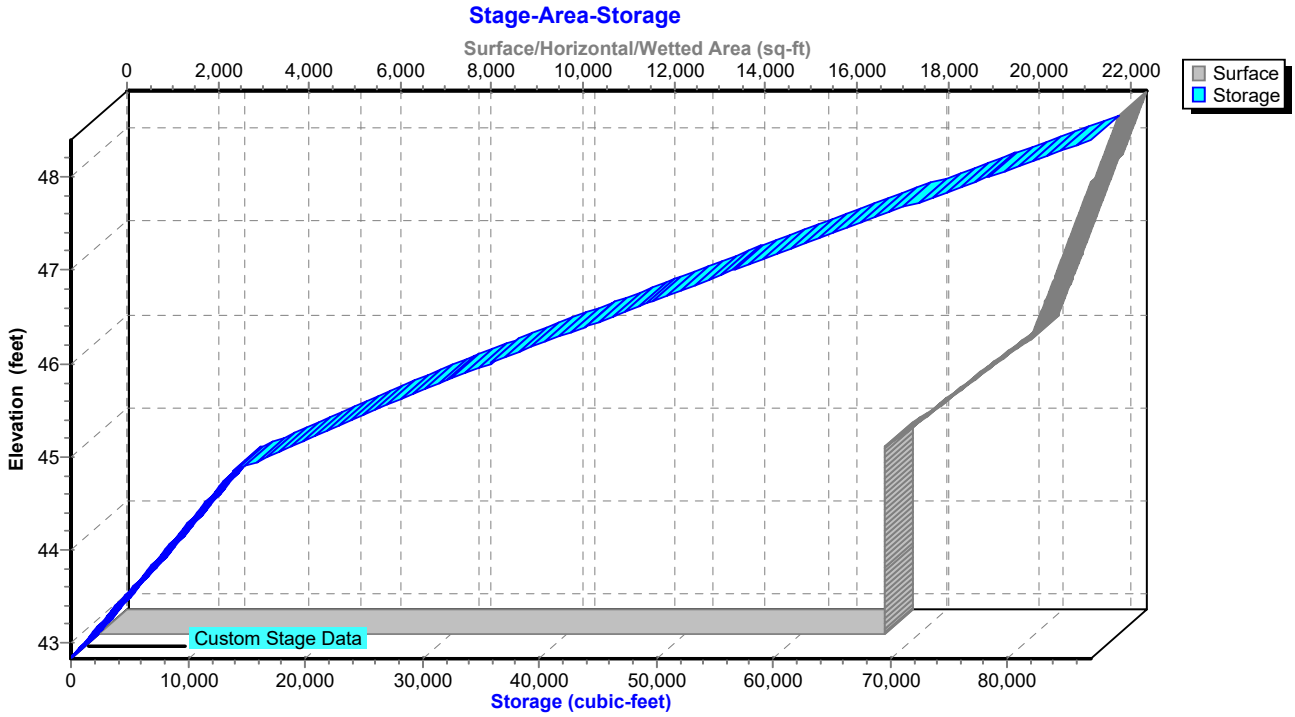
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	17,239	897.0	0.0	0	0	17,239
42.84	17,239	897.0	40.0	69	69	17,248
43.00	17,239	897.0	40.0	1,103	1,172	17,391
44.00	17,239	897.0	40.0	6,896	8,068	18,288
44.83	17,239	897.0	40.0	5,723	13,791	19,033
44.84	17,239	897.0	100.0	172	13,964	19,042
45.00	17,690	902.0	100.0	2,794	16,758	19,772
46.00	20,420	926.0	100.0	19,039	35,797	23,381
47.00	21,216	939.0	100.0	20,817	56,613	25,524
48.00	22,029	952.0	100.0	21,621	78,234	27,697
48.40	22,357	957.0	100.0	8,877	87,112	28,547

Device	Routing	Invert	Outlet Devices
#1	Primary	44.00'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 44.00' / 44.00' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#2	Secondary	48.40'	**50.0' long x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#3	Device 1	46.65'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.40'	**18.0" W x 3.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=16.07 cfs @ 12.34 hrs HW=48.32' (Free Discharge)
└─**1=Culvert** (Inlet Controls 16.07 cfs @ 9.09 fps)
  ├─**3=Orifice/Grate** (Passes < 99.49 cfs potential flow)
  ├─**4=Orifice/Grate** (Passes < 2.42 cfs potential flow)
  └─**5=Orifice/Grate** (Passes < 0.64 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 48P: Basin 104



Stage-Area-Storage for Pond 48P: Basin 104

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
42.83	17,239	0
42.93	17,239	690
43.03	17,239	1,379
43.13	17,239	2,069
43.23	17,239	2,758
43.33	17,239	3,448
43.43	17,239	4,137
43.53	17,239	4,827
43.63	17,239	5,516
43.73	17,239	6,206
43.83	17,239	6,896
43.93	17,239	7,585
44.03	17,239	8,275
44.13	17,239	8,964
44.23	17,239	9,654
44.33	17,239	10,343
44.43	17,239	11,033
44.53	17,239	11,723
44.63	17,239	12,412
44.73	17,239	13,102
44.83	17,239	13,791
44.93	17,492	15,526
45.03	17,769	17,290
45.13	18,034	19,080
45.23	18,301	20,897
45.33	18,569	22,740
45.43	18,840	24,610
45.53	19,113	26,508
45.63	19,387	28,433
45.73	19,664	30,386
45.83	19,942	32,366
45.93	20,223	34,374
46.03	20,444	36,409
46.13	20,523	38,458
46.23	20,602	40,514
46.33	20,681	42,578
46.43	20,760	44,650
46.53	20,840	46,730
46.63	20,920	48,818
46.73	21,000	50,914
46.83	21,080	53,018
46.93	21,160	55,130
47.03	21,240	57,250
47.13	21,321	59,378
47.23	21,402	61,514
47.33	21,483	63,658
47.43	21,564	65,811
47.53	21,645	67,971
47.63	21,726	70,140
47.73	21,808	72,317
47.83	21,890	74,501
47.93	21,972	76,694
48.03	22,054	78,896
48.13	22,135	81,105
48.23	22,217	83,323
48.33	**22,299**	**85,549**

Summary for Pond 47P: Basin 112

[92] Warning: Device #2 is above defined storage

Inflow Area = 1.397 ac, 81.07% Impervious, Inflow Depth > 3.45" for Yr 2100 - 2 Yr event
Inflow = 6.05 cfs @ 12.09 hrs, Volume= 0.401 af
Outflow = 1.20 cfs @ 12.38 hrs, Volume= 0.280 af, Atten= 80%, Lag= 17.5 min
Primary = 1.20 cfs @ 12.38 hrs, Volume= 0.280 af
Routed to Pond 48P : Basin 104
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 48P : Basin 104

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 47.24' @ 12.38 hrs Surf.Area= 3,773 sf Storage= 9,699 cf

Plug-Flow detention time= 235.4 min calculated for 0.279 af (70% of inflow)
Center-of-Mass det. time= 140.1 min (898.3 - 758.3)

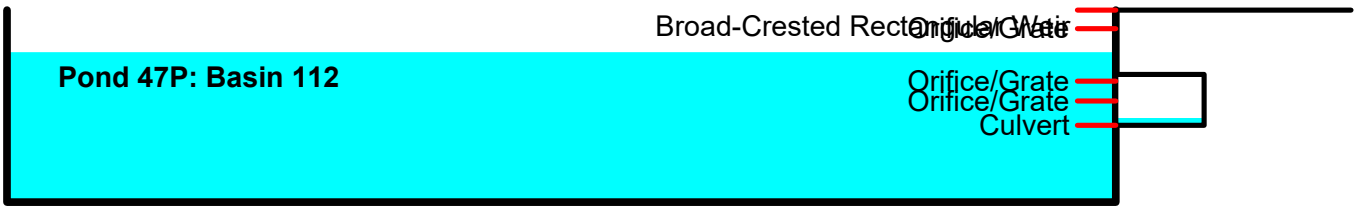
Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	14,810 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	2,461	213.0	0.0	0	0	2,461
42.84	2,461	213.0	40.0	10	10	2,463
43.00	2,461	213.0	40.0	158	167	2,497
44.00	2,461	213.0	40.0	984	1,152	2,710
44.83	2,461	213.0	40.0	817	1,969	2,887
44.84	2,461	213.0	100.0	25	1,993	2,889
45.00	2,568	216.0	100.0	402	2,396	2,997
46.00	3,287	251.0	100.0	2,920	5,316	4,319
47.00	3,676	265.7	100.0	3,480	8,796	4,976
48.00	4,082	276.0	100.0	3,877	12,673	5,496
48.50	4,468	290.0	100.0	2,137	14,810	6,142

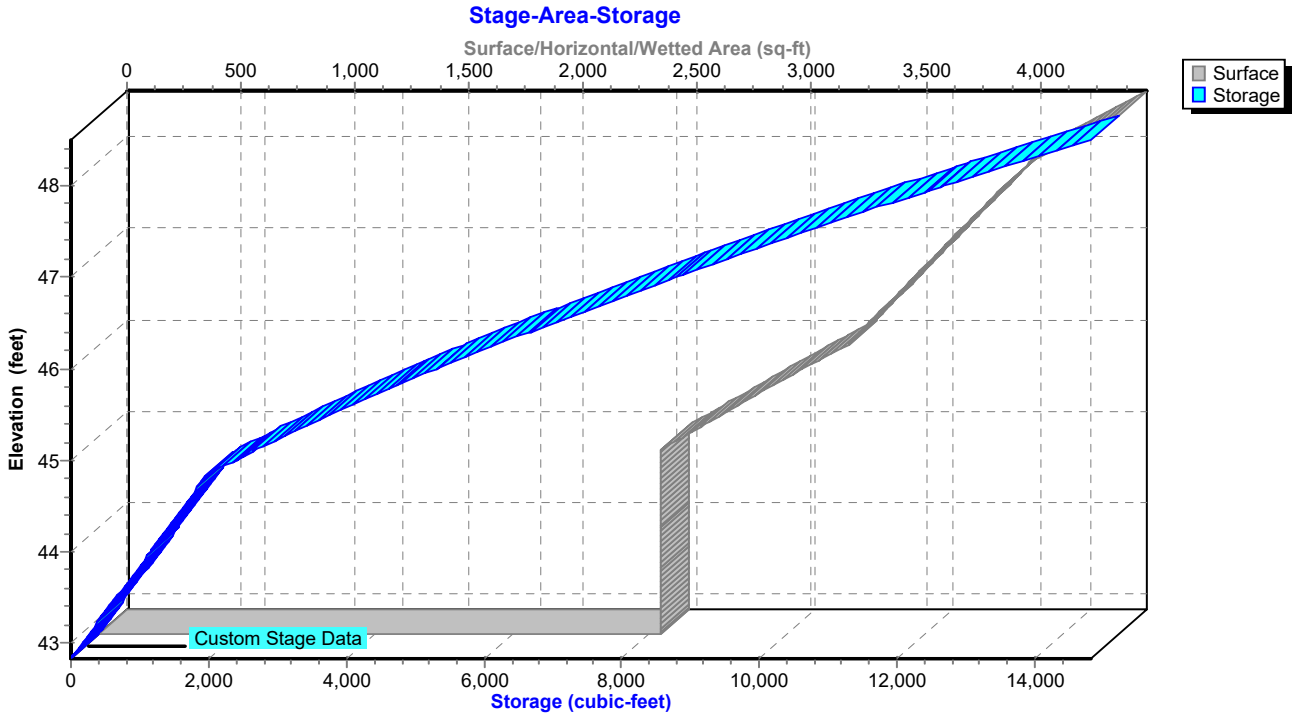
Device	Routing	Invert	Outlet Devices
#1	Primary	45.10'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 45.10' / 45.10' S= 0.0000 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf
#2	Secondary	48.50'	**20.0' long + 0.3 '/' SideZ x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#3	Device 1	47.95'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.40'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.20 cfs @ 12.38 hrs HW=47.24' (Free Discharge)
└─**1=Culvert** (Passes 1.20 cfs of 9.18 cfs potential flow)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  ├─**4=Orifice/Grate** (Orifice Controls 0.73 cfs @ 3.71 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.47 cfs @ 5.40 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)



Pond 47P: Basin 112



Stage-Area-Storage for Pond 47P: Basin 112

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
42.83	2,461	0
42.93	2,461	98
43.03	2,461	197
43.13	2,461	295
43.23	2,461	394
43.33	2,461	492
43.43	2,461	591
43.53	2,461	689
43.63	2,461	788
43.73	2,461	886
43.83	2,461	984
43.93	2,461	1,083
44.03	2,461	1,181
44.13	2,461	1,280
44.23	2,461	1,378
44.33	2,461	1,477
44.43	2,461	1,575
44.53	2,461	1,673
44.63	2,461	1,772
44.73	2,461	1,870
44.83	2,461	1,969
44.93	2,521	2,218
45.03	2,588	2,473
45.13	2,656	2,735
45.23	2,726	3,004
45.33	2,795	3,280
45.43	2,866	3,563
45.53	2,938	3,854
45.63	3,011	4,151
45.73	3,084	4,456
45.83	3,159	4,768
45.93	3,234	5,088
46.03	3,298	5,415
46.13	3,336	5,746
46.23	3,375	6,082
46.33	3,413	6,421
46.43	3,452	6,764
46.53	3,490	7,112
46.63	3,530	7,463
46.73	3,569	7,817
46.83	3,608	8,176
46.93	3,648	8,539
47.03	3,688	8,906
47.13	3,728	9,277
47.23	3,767	9,651
47.33	3,808	10,030
47.43	3,848	10,413
47.53	3,889	10,800
47.63	3,929	11,191
47.73	3,970	11,586
47.83	4,011	11,985
47.93	4,053	12,388
48.03	4,105	12,796
48.13	4,181	13,210
48.23	4,257	13,632
48.33	4,335	14,061
48.43	**4,413**	**14,499**

Summary for Pond 47P: Basin 112

[92] Warning: Device #2 is above defined storage

Inflow Area = 1.397 ac, 81.07% Impervious, Inflow Depth > 5.42" for Yr 2100 - 10 Yr event
Inflow = 9.34 cfs @ 12.09 hrs, Volume= 0.630 af
Outflow = 4.34 cfs @ 12.19 hrs, Volume= 0.506 af, Atten= 54%, Lag= 6.2 min
Primary = 4.34 cfs @ 12.19 hrs, Volume= 0.506 af
Routed to Pond 48P : Basin 104
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 48P : Basin 104

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 48.08' @ 12.19 hrs Surf.Area= 4,145 sf Storage= 13,017 cf

Plug-Flow detention time= 200.2 min calculated for 0.506 af (80% of inflow)
Center-of-Mass det. time= 121.1 min (871.4 - 750.3)

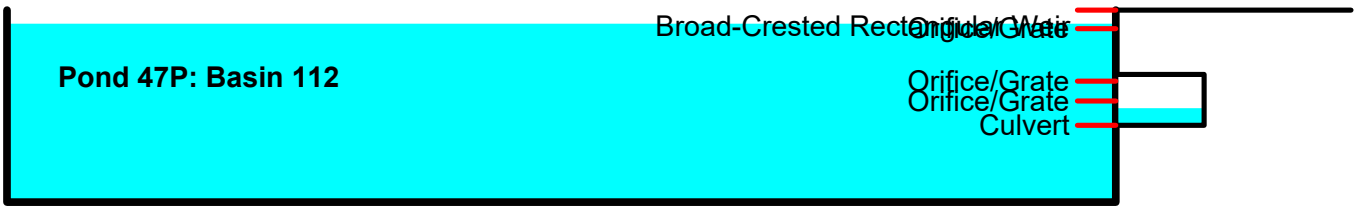
Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	14,810 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	2,461	213.0	0.0	0	0	2,461
42.84	2,461	213.0	40.0	10	10	2,463
43.00	2,461	213.0	40.0	158	167	2,497
44.00	2,461	213.0	40.0	984	1,152	2,710
44.83	2,461	213.0	40.0	817	1,969	2,887
44.84	2,461	213.0	100.0	25	1,993	2,889
45.00	2,568	216.0	100.0	402	2,396	2,997
46.00	3,287	251.0	100.0	2,920	5,316	4,319
47.00	3,676	265.7	100.0	3,480	8,796	4,976
48.00	4,082	276.0	100.0	3,877	12,673	5,496
48.50	4,468	290.0	100.0	2,137	14,810	6,142

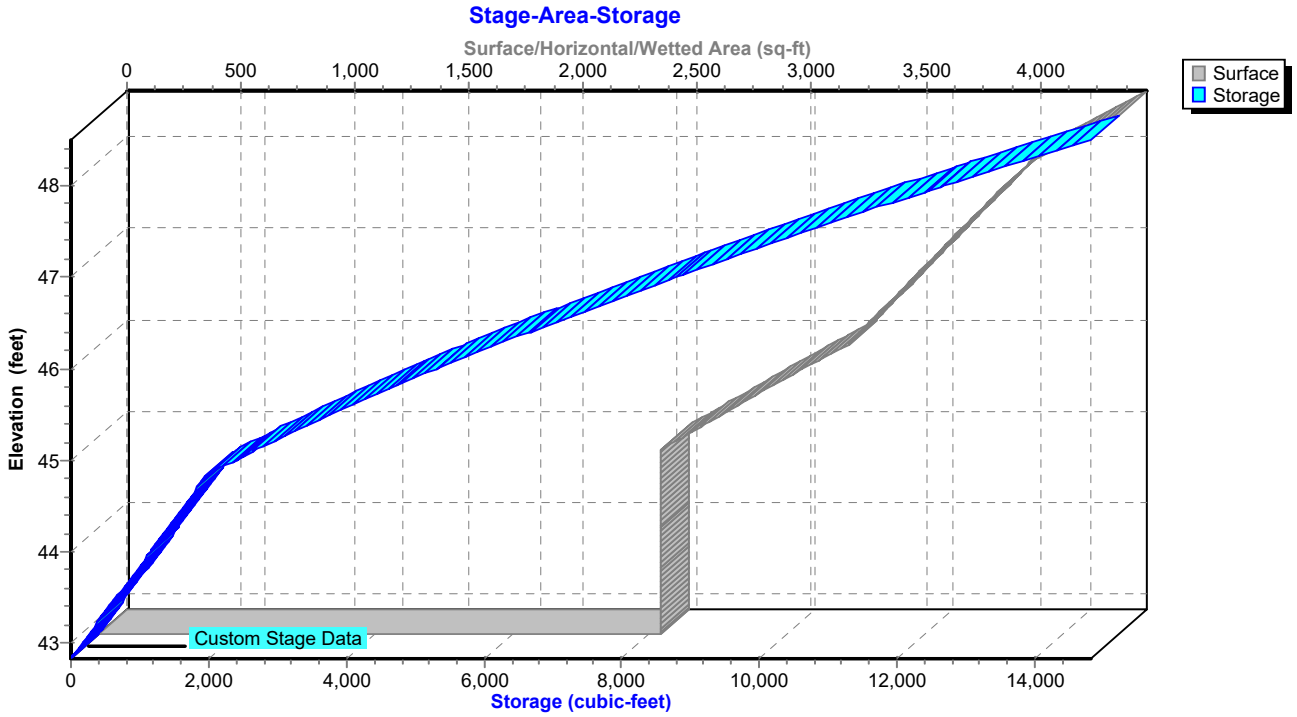
Device	Routing	Invert	Outlet Devices
#1	Primary	45.10'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 45.10' / 45.10' S= 0.0000 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf
#2	Secondary	48.50'	**20.0' long + 0.3 '/' SideZ x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#3	Device 1	47.95'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.40'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.18 cfs @ 12.19 hrs HW=48.08' (Free Discharge)
└─**1=Culvert** (Passes 4.18 cfs of 12.71 cfs potential flow)
  ├─**3=Orifice/Grate** (Weir Controls 2.44 cfs @ 1.18 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 1.13 cfs @ 5.76 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.61 cfs @ 6.97 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)



Pond 47P: Basin 112



Stage-Area-Storage for Pond 47P: Basin 112

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
42.83	2,461	0
42.93	2,461	98
43.03	2,461	197
43.13	2,461	295
43.23	2,461	394
43.33	2,461	492
43.43	2,461	591
43.53	2,461	689
43.63	2,461	788
43.73	2,461	886
43.83	2,461	984
43.93	2,461	1,083
44.03	2,461	1,181
44.13	2,461	1,280
44.23	2,461	1,378
44.33	2,461	1,477
44.43	2,461	1,575
44.53	2,461	1,673
44.63	2,461	1,772
44.73	2,461	1,870
44.83	2,461	1,969
44.93	2,521	2,218
45.03	2,588	2,473
45.13	2,656	2,735
45.23	2,726	3,004
45.33	2,795	3,280
45.43	2,866	3,563
45.53	2,938	3,854
45.63	3,011	4,151
45.73	3,084	4,456
45.83	3,159	4,768
45.93	3,234	5,088
46.03	3,298	5,415
46.13	3,336	5,746
46.23	3,375	6,082
46.33	3,413	6,421
46.43	3,452	6,764
46.53	3,490	7,112
46.63	3,530	7,463
46.73	3,569	7,817
46.83	3,608	8,176
46.93	3,648	8,539
47.03	3,688	8,906
47.13	3,728	9,277
47.23	3,767	9,651
47.33	3,808	10,030
47.43	3,848	10,413
47.53	3,889	10,800
47.63	3,929	11,191
47.73	3,970	11,586
47.83	4,011	11,985
47.93	4,053	12,388
48.03	4,105	12,796
48.13	4,181	13,210
48.23	4,257	13,632
48.33	4,335	14,061
48.43	**4,413**	**14,499**

Summary for Pond 47P: Basin 112

[92] Warning: Device #2 is above defined storage

Inflow Area = 1.397 ac, 81.07% Impervious, Inflow Depth > 10.68" for Yr 2100 - 100 Yr event
Inflow = 18.03 cfs @ 12.09 hrs, Volume= 1.243 af
Outflow = 13.98 cfs @ 12.13 hrs, Volume= 1.105 af, Atten= 22%, Lag= 2.4 min
Primary = 13.98 cfs @ 12.13 hrs, Volume= 1.105 af
Routed to Pond 48P : Basin 104
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 48P : Basin 104

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 48.48' @ 12.13 hrs Surf.Area= 4,454 sf Storage= 14,729 cf

Plug-Flow detention time= 141.8 min calculated for 1.105 af (89% of inflow)
Center-of-Mass det. time= 85.6 min (826.2 - 740.6)

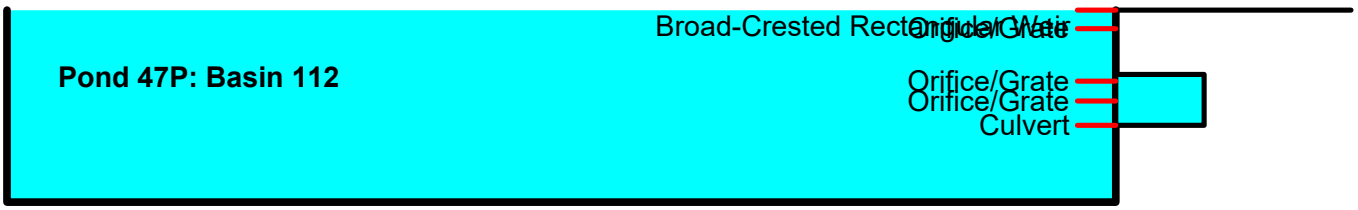
Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	14,810 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	2,461	213.0	0.0	0	0	2,461
42.84	2,461	213.0	40.0	10	10	2,463
43.00	2,461	213.0	40.0	158	167	2,497
44.00	2,461	213.0	40.0	984	1,152	2,710
44.83	2,461	213.0	40.0	817	1,969	2,887
44.84	2,461	213.0	100.0	25	1,993	2,889
45.00	2,568	216.0	100.0	402	2,396	2,997
46.00	3,287	251.0	100.0	2,920	5,316	4,319
47.00	3,676	265.7	100.0	3,480	8,796	4,976
48.00	4,082	276.0	100.0	3,877	12,673	5,496
48.50	4,468	290.0	100.0	2,137	14,810	6,142

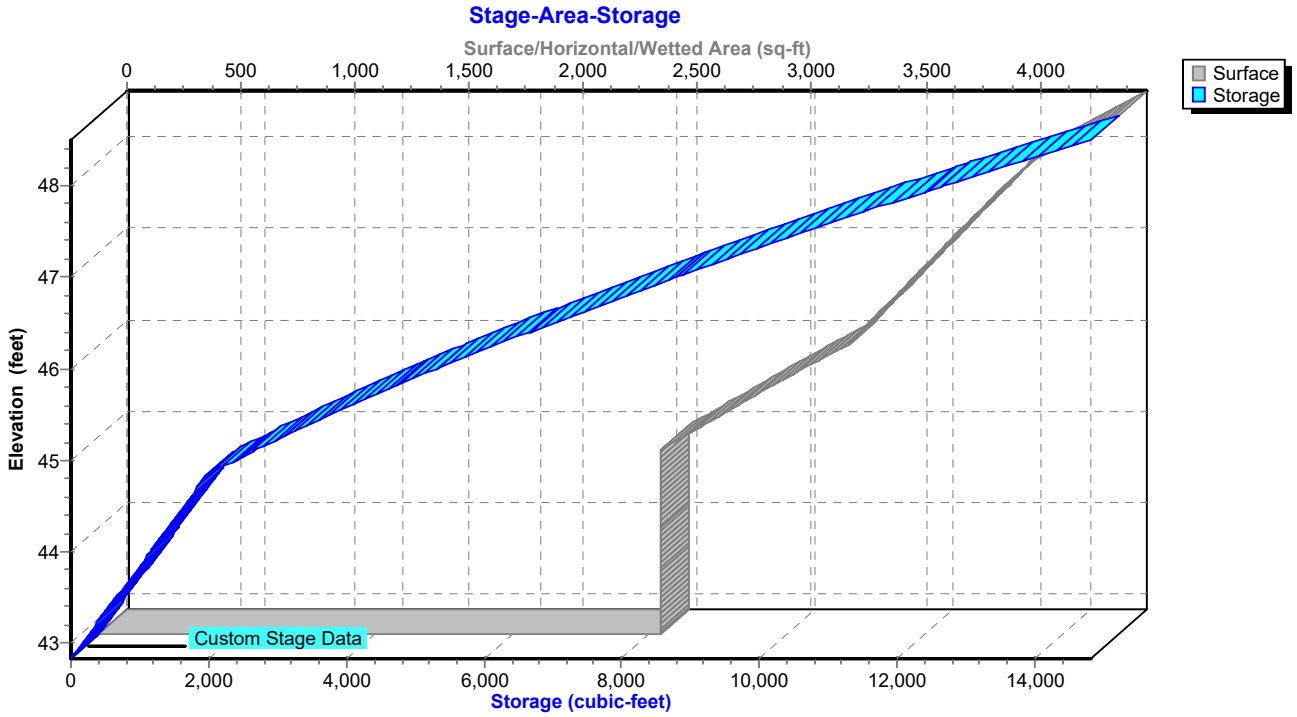
Device	Routing	Invert	Outlet Devices
#1	Primary	45.10'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 45.10' / 45.10' S= 0.0000 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf
#2	Secondary	48.50'	**20.0' long + 0.3 '/' SideZ x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#3	Device 1	47.95'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.40'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=13.74 cfs @ 12.13 hrs HW=48.46' (Free Discharge)
└─**1=Culvert** (Inlet Controls 13.74 cfs @ 7.78 fps)
  ├─**3=Orifice/Grate** (Passes < 18.95 cfs potential flow)
  ├─**4=Orifice/Grate** (Passes < 1.27 cfs potential flow)
  └─**5=Orifice/Grate** (Passes < 0.66 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)



Pond 47P: Basin 112



Stage-Area-Storage for Pond 47P: Basin 112

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
42.83	2,461	0
42.93	2,461	98
43.03	2,461	197
43.13	2,461	295
43.23	2,461	394
43.33	2,461	492
43.43	2,461	591
43.53	2,461	689
43.63	2,461	788
43.73	2,461	886
43.83	2,461	984
43.93	2,461	1,083
44.03	2,461	1,181
44.13	2,461	1,280
44.23	2,461	1,378
44.33	2,461	1,477
44.43	2,461	1,575
44.53	2,461	1,673
44.63	2,461	1,772
44.73	2,461	1,870
44.83	2,461	1,969
44.93	2,521	2,218
45.03	2,588	2,473
45.13	2,656	2,735
45.23	2,726	3,004
45.33	2,795	3,280
45.43	2,866	3,563
45.53	2,938	3,854
45.63	3,011	4,151
45.73	3,084	4,456
45.83	3,159	4,768
45.93	3,234	5,088
46.03	3,298	5,415
46.13	3,336	5,746
46.23	3,375	6,082
46.33	3,413	6,421
46.43	3,452	6,764
46.53	3,490	7,112
46.63	3,530	7,463
46.73	3,569	7,817
46.83	3,608	8,176
46.93	3,648	8,539
47.03	3,688	8,906
47.13	3,728	9,277
47.23	3,767	9,651
47.33	3,808	10,030
47.43	3,848	10,413
47.53	3,889	10,800
47.63	3,929	11,191
47.73	3,970	11,586
47.83	4,011	11,985
47.93	4,053	12,388
48.03	4,105	12,796
48.13	4,181	13,210
48.23	4,257	13,632
48.33	4,335	14,061
48.43	**4,413**	**14,499**

Summary for Pond 49P: Basin 203

[92] Warning: Device #2 is above defined storage
[81] Warning: Exceeded Pond 51P by 0.50' @ 16.35 hrs

Inflow Area = 3.830 ac, 79.29% Impervious, Inflow Depth > 3.23" for Yr 2100 - 2 Yr event
Inflow = 12.85 cfs @ 12.12 hrs, Volume= 1.031 af
Outflow = 0.51 cfs @ 14.89 hrs, Volume= 0.348 af, Atten= 96%, Lag= 166.1 min
Primary = 0.51 cfs @ 14.89 hrs, Volume= 0.348 af
Routed to Link 24L : POA 1 (2100)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 24L : POA 1 (2100)

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 46.55' @ 14.89 hrs Surf.Area= 15,385 sf Storage= 33,213 cf

Plug-Flow detention time= 447.3 min calculated for 0.347 af (34% of inflow)
Center-of-Mass det. time= 284.1 min (1,061.3 - 777.2)

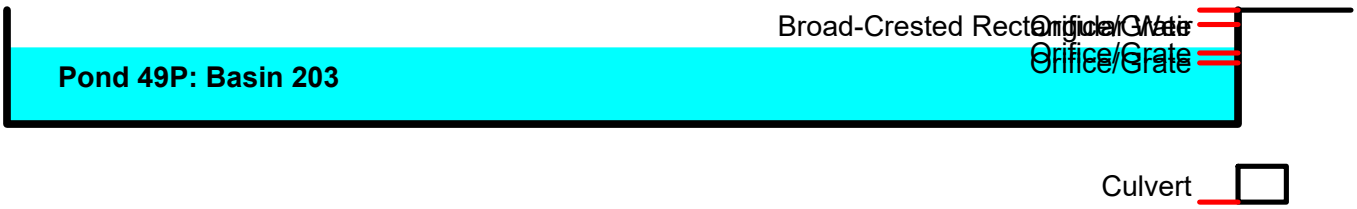
Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	64,356 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	11,929	737.0	0.0	0	0	11,929
42.84	11,929	737.0	40.0	48	48	11,936
43.00	11,929	737.0	40.0	763	811	12,054
44.00	11,929	737.0	40.0	4,772	5,583	12,791
44.83	11,929	737.0	40.0	3,960	9,543	13,403
44.84	11,929	737.0	100.0	119	9,662	13,410
45.00	12,301	741.0	100.0	1,938	11,601	13,895
46.00	14,572	762.0	100.0	13,420	25,021	16,517
47.00	16,075	784.0	100.0	15,317	40,339	19,332
48.00	17,607	806.0	100.0	16,835	57,174	22,227
48.40	18,306	815.0	100.0	7,182	64,356	23,432

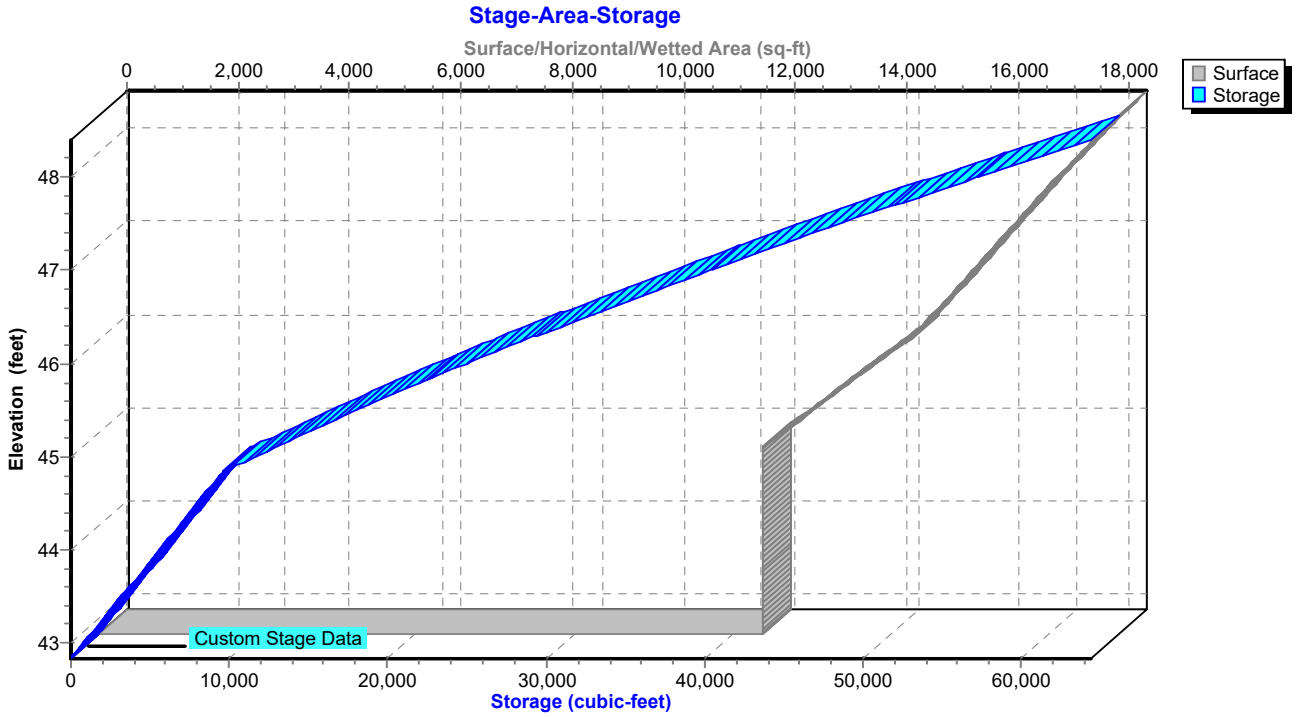
Device	Routing	Invert	Outlet Devices
#1	Primary	39.00'	**21.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 39.00' / 39.00' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 2.41 sf
#2	Secondary	48.40'	**50.0' long x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#3	Device 1	47.70'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.30'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.51 cfs @ 14.89 hrs HW=46.55' (Free Discharge)
└─**1=Culvert** (Passes 0.51 cfs of 29.91 cfs potential flow)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  ├─**4=Orifice/Grate** (Orifice Controls 0.20 cfs @ 1.69 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.31 cfs @ 3.60 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)



Pond 49P: Basin 203



Stage-Area-Storage for Pond 49P: Basin 203

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
42.83	11,929	0
42.93	11,929	477
43.03	11,929	954
43.13	11,929	1,431
43.23	11,929	1,909
43.33	11,929	2,386
43.43	11,929	2,863
43.53	11,929	3,340
43.63	11,929	3,817
43.73	11,929	4,294
43.83	11,929	4,772
43.93	11,929	5,249
44.03	11,929	5,726
44.13	11,929	6,203
44.23	11,929	6,680
44.33	11,929	7,157
44.43	11,929	7,635
44.53	11,929	8,112
44.63	11,929	8,589
44.73	11,929	9,066
44.83	11,929	9,543
44.93	12,138	10,745
45.03	12,366	11,971
45.13	12,585	13,218
45.23	12,806	14,488
45.33	13,029	15,780
45.43	13,254	17,094
45.53	13,481	18,431
45.63	13,709	19,790
45.73	13,940	21,173
45.83	14,172	22,578
45.93	14,407	24,007
46.03	14,616	25,459
46.13	14,763	26,928
46.23	14,911	28,412
46.33	15,060	29,910
46.43	15,209	31,424
46.53	15,359	32,952
46.63	15,510	34,496
46.73	15,662	36,054
46.83	15,814	37,628
46.93	15,967	39,217
47.03	16,120	40,822
47.13	16,270	42,441
47.23	16,421	44,076
47.33	16,573	45,725
47.43	16,725	47,390
47.53	16,878	49,070
47.63	17,032	50,766
47.73	17,186	52,477
47.83	17,342	54,203
47.93	17,497	55,945
48.03	17,659	57,703
48.13	17,833	59,477
48.23	18,007	61,269
48.33	**18,183**	**63,079**

Summary for Pond 49P: Basin 203

[92] Warning: Device #2 is above defined storage
[81] Warning: Exceeded Pond 51P by 0.90' @ 14.15 hrs

Inflow Area = 3.830 ac, 79.29% Impervious, Inflow Depth > 5.19" for Yr 2100 - 10 Yr event
Inflow = 19.80 cfs @ 12.12 hrs, Volume= 1.658 af
Outflow = 1.92 cfs @ 13.27 hrs, Volume= 0.939 af, Atten= 90%, Lag= 68.9 min
Primary = 1.92 cfs @ 13.27 hrs, Volume= 0.939 af
Routed to Link 24L : POA 1 (2100)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 24L : POA 1 (2100)

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 47.36' @ 13.27 hrs Surf.Area= 16,619 sf Storage= 46,223 cf

Plug-Flow detention time= 318.9 min calculated for 0.937 af (56% of inflow)
Center-of-Mass det. time= 203.7 min (972.1 - 768.4)

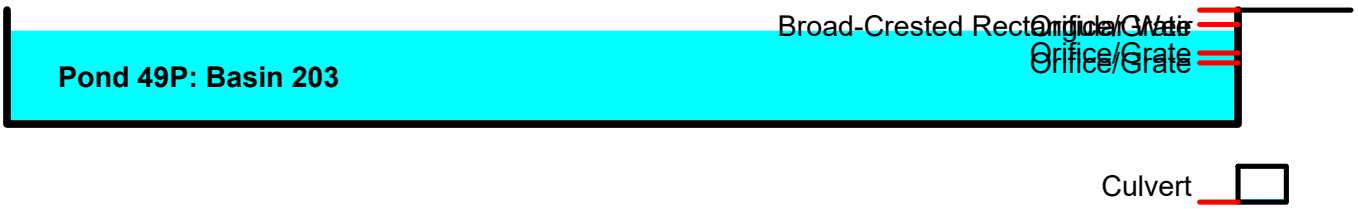
Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	64,356 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	11,929	737.0	0.0	0	0	11,929
42.84	11,929	737.0	40.0	48	48	11,936
43.00	11,929	737.0	40.0	763	811	12,054
44.00	11,929	737.0	40.0	4,772	5,583	12,791
44.83	11,929	737.0	40.0	3,960	9,543	13,403
44.84	11,929	737.0	100.0	119	9,662	13,410
45.00	12,301	741.0	100.0	1,938	11,601	13,895
46.00	14,572	762.0	100.0	13,420	25,021	16,517
47.00	16,075	784.0	100.0	15,317	40,339	19,332
48.00	17,607	806.0	100.0	16,835	57,174	22,227
48.40	18,306	815.0	100.0	7,182	64,356	23,432

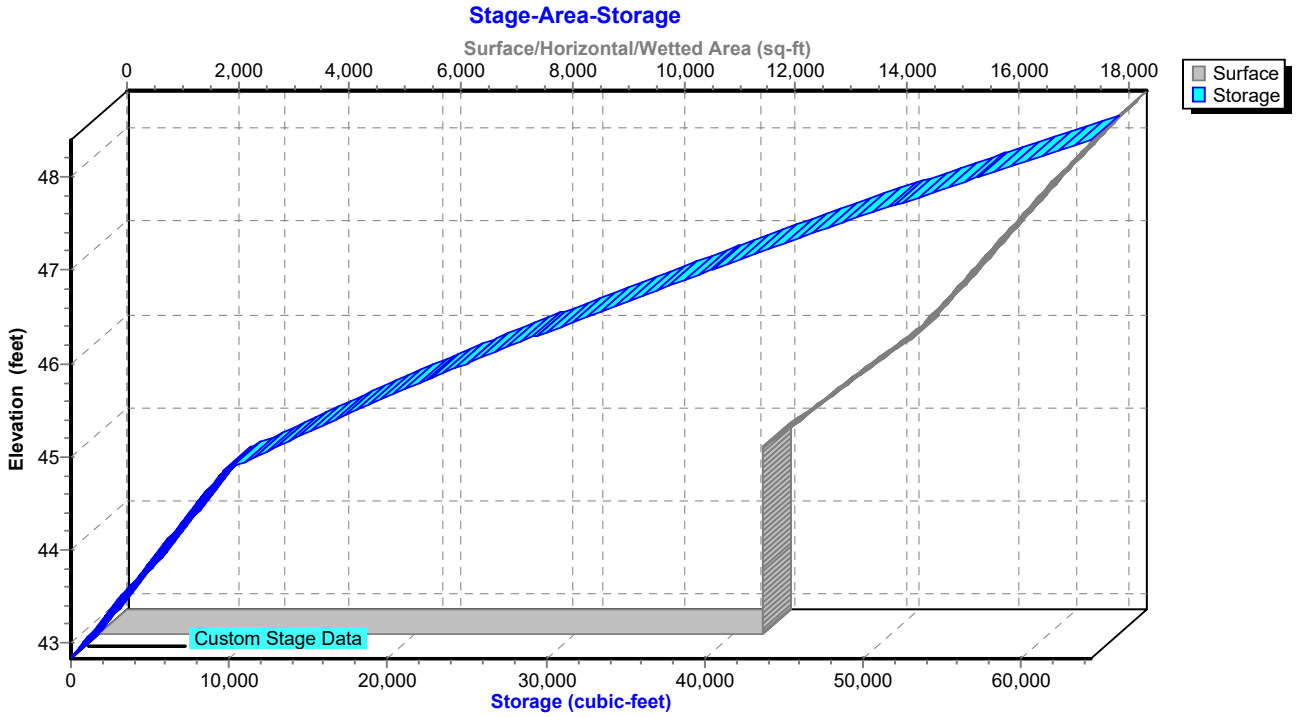
Device	Routing	Invert	Outlet Devices
#1	Primary	39.00'	**21.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 39.00' / 39.00' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 2.41 sf
#2	Secondary	48.40'	**50.0' long x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#3	Device 1	47.70'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.30'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.93 cfs @ 13.27 hrs HW=47.36' (Free Discharge)
└─**1=Culvert** (Passes 1.93 cfs of 31.68 cfs potential flow)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  ├─**4=Orifice/Grate** (Orifice Controls 1.43 cfs @ 4.10 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.49 cfs @ 5.64 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)



Pond 49P: Basin 203



Stage-Area-Storage for Pond 49P: Basin 203

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
42.83	11,929	0
42.93	11,929	477
43.03	11,929	954
43.13	11,929	1,431
43.23	11,929	1,909
43.33	11,929	2,386
43.43	11,929	2,863
43.53	11,929	3,340
43.63	11,929	3,817
43.73	11,929	4,294
43.83	11,929	4,772
43.93	11,929	5,249
44.03	11,929	5,726
44.13	11,929	6,203
44.23	11,929	6,680
44.33	11,929	7,157
44.43	11,929	7,635
44.53	11,929	8,112
44.63	11,929	8,589
44.73	11,929	9,066
44.83	11,929	9,543
44.93	12,138	10,745
45.03	12,366	11,971
45.13	12,585	13,218
45.23	12,806	14,488
45.33	13,029	15,780
45.43	13,254	17,094
45.53	13,481	18,431
45.63	13,709	19,790
45.73	13,940	21,173
45.83	14,172	22,578
45.93	14,407	24,007
46.03	14,616	25,459
46.13	14,763	26,928
46.23	14,911	28,412
46.33	15,060	29,910
46.43	15,209	31,424
46.53	15,359	32,952
46.63	15,510	34,496
46.73	15,662	36,054
46.83	15,814	37,628
46.93	15,967	39,217
47.03	16,120	40,822
47.13	16,270	42,441
47.23	16,421	44,076
47.33	16,573	45,725
47.43	16,725	47,390
47.53	16,878	49,070
47.63	17,032	50,766
47.73	17,186	52,477
47.83	17,342	54,203
47.93	17,497	55,945
48.03	17,659	57,703
48.13	17,833	59,477
48.23	18,007	61,269
48.33	**18,183**	**63,079**

Summary for Pond 49P: Basin 203

[92] Warning: Device #2 is above defined storage
[81] Warning: Exceeded Pond 51P by 1.20' @ 14.55 hrs

Inflow Area = 3.830 ac, 79.29% Impervious, Inflow Depth > 10.45" for Yr 2100 - 100 Yr event
Inflow = 44.33 cfs @ 12.11 hrs, Volume= 3.335 af
Outflow = 30.74 cfs @ 12.19 hrs, Volume= 2.561 af, Atten= 31%, Lag= 4.9 min
Primary = 30.74 cfs @ 12.19 hrs, Volume= 2.561 af
Routed to Link 24L : POA 1 (2100)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 24L : POA 1 (2100)

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 48.36' @ 12.19 hrs Surf.Area= 18,231 sf Storage= 63,575 cf

Plug-Flow detention time= 217.5 min calculated for 2.556 af (77% of inflow)
Center-of-Mass det. time= 133.1 min (888.5 - 755.4)

Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	64,356 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

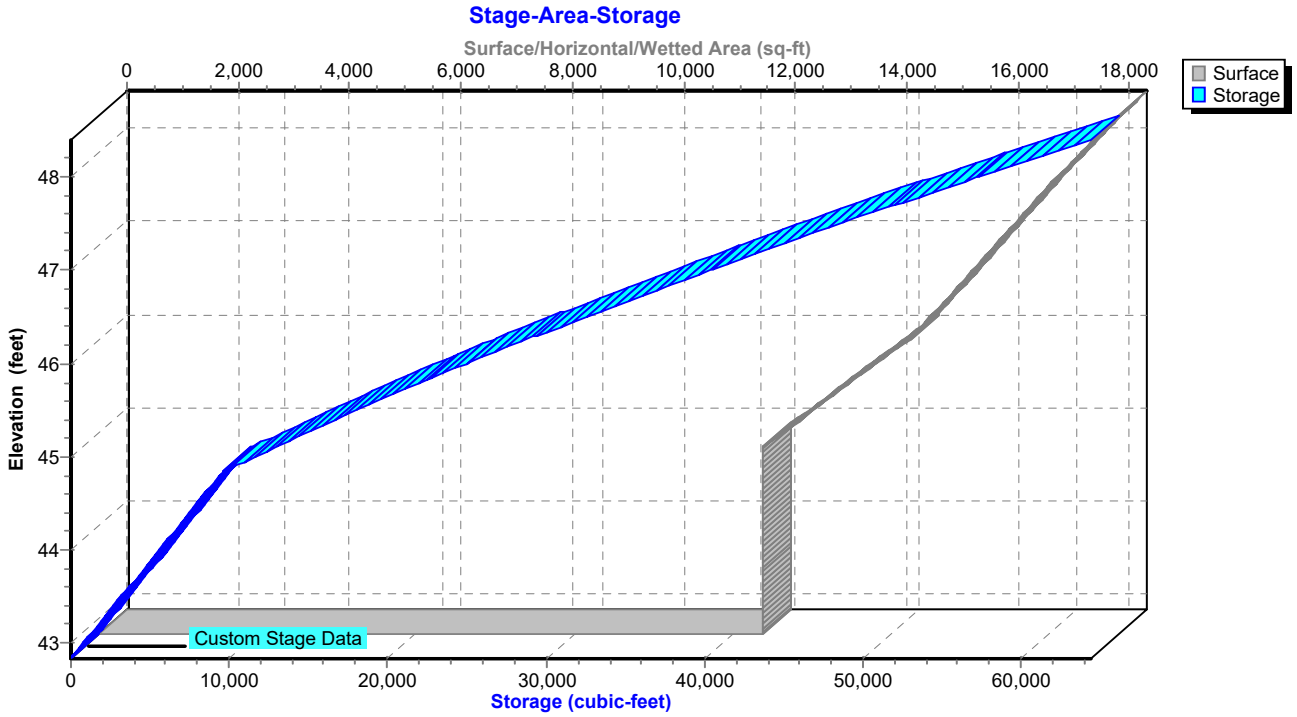
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	11,929	737.0	0.0	0	0	11,929
42.84	11,929	737.0	40.0	48	48	11,936
43.00	11,929	737.0	40.0	763	811	12,054
44.00	11,929	737.0	40.0	4,772	5,583	12,791
44.83	11,929	737.0	40.0	3,960	9,543	13,403
44.84	11,929	737.0	100.0	119	9,662	13,410
45.00	12,301	741.0	100.0	1,938	11,601	13,895
46.00	14,572	762.0	100.0	13,420	25,021	16,517
47.00	16,075	784.0	100.0	15,317	40,339	19,332
48.00	17,607	806.0	100.0	16,835	57,174	22,227
48.40	18,306	815.0	100.0	7,182	64,356	23,432

Device	Routing	Invert	Outlet Devices
#1	Primary	39.00'	**21.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 39.00' / 39.00' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 2.41 sf
#2	Secondary	48.40'	**50.0' long x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#3	Device 1	47.70'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.30'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=30.23 cfs @ 12.19 hrs HW=48.35' (Free Discharge)
└─**1=Culvert** (Passes 30.23 cfs of 33.71 cfs potential flow)
  ├─**3=Orifice/Grate** (Weir Controls 27.38 cfs @ 2.64 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 2.20 cfs @ 6.31 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.65 cfs @ 7.40 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 49P: Basin 203



Stage-Area-Storage for Pond 49P: Basin 203

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
42.83	11,929	0
42.93	11,929	477
43.03	11,929	954
43.13	11,929	1,431
43.23	11,929	1,909
43.33	11,929	2,386
43.43	11,929	2,863
43.53	11,929	3,340
43.63	11,929	3,817
43.73	11,929	4,294
43.83	11,929	4,772
43.93	11,929	5,249
44.03	11,929	5,726
44.13	11,929	6,203
44.23	11,929	6,680
44.33	11,929	7,157
44.43	11,929	7,635
44.53	11,929	8,112
44.63	11,929	8,589
44.73	11,929	9,066
44.83	11,929	9,543
44.93	12,138	10,745
45.03	12,366	11,971
45.13	12,585	13,218
45.23	12,806	14,488
45.33	13,029	15,780
45.43	13,254	17,094
45.53	13,481	18,431
45.63	13,709	19,790
45.73	13,940	21,173
45.83	14,172	22,578
45.93	14,407	24,007
46.03	14,616	25,459
46.13	14,763	26,928
46.23	14,911	28,412
46.33	15,060	29,910
46.43	15,209	31,424
46.53	15,359	32,952
46.63	15,510	34,496
46.73	15,662	36,054
46.83	15,814	37,628
46.93	15,967	39,217
47.03	16,120	40,822
47.13	16,270	42,441
47.23	16,421	44,076
47.33	16,573	45,725
47.43	16,725	47,390
47.53	16,878	49,070
47.63	17,032	50,766
47.73	17,186	52,477
47.83	17,342	54,203
47.93	17,497	55,945
48.03	17,659	57,703
48.13	17,833	59,477
48.23	18,007	61,269
48.33	**18,183**	**63,079**

Summary for Pond 51P: Basin 206

[92] Warning: Device #2 is above defined storage

Inflow Area = 0.773 ac, 84.16% Impervious, Inflow Depth > 3.48" for Yr 2100 - 2 Yr event
Inflow = 3.40 cfs @ 12.08 hrs, Volume= 0.224 af
Outflow = 1.24 cfs @ 12.20 hrs, Volume= 0.160 af, Atten= 63%, Lag= 7.4 min
Primary = 1.24 cfs @ 12.20 hrs, Volume= 0.160 af
Routed to Pond 49P : Basin 203
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 49P : Basin 203

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 47.22' @ 12.20 hrs Surf.Area= 1,647 sf Storage= 4,761 cf

Plug-Flow detention time= 197.0 min calculated for 0.160 af (72% of inflow)
Center-of-Mass det. time= 103.5 min (860.1 - 756.5)

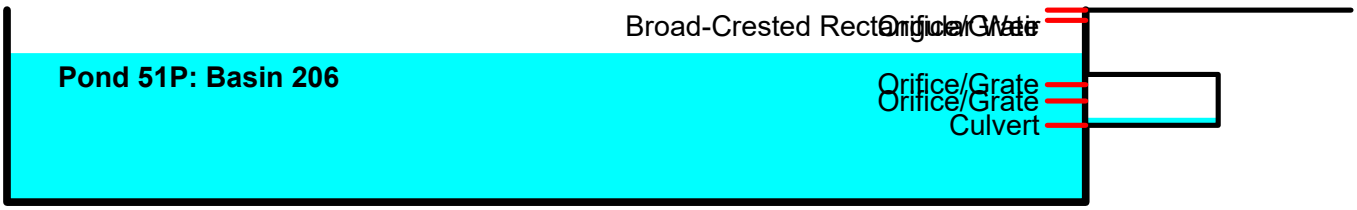
Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	7,008 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	1,435	180.0	0.0	0	0	1,435
42.84	1,435	180.0	40.0	6	6	1,437
43.00	1,435	180.0	40.0	92	98	1,466
44.00	1,435	180.0	40.0	574	672	1,646
44.83	1,435	180.0	40.0	476	1,148	1,795
44.84	1,435	180.0	100.0	14	1,162	1,797
45.00	1,435	180.0	100.0	230	1,392	1,826
46.00	1,489	190.0	100.0	1,462	2,854	2,173
47.00	1,611	213.0	100.0	1,550	4,403	2,938
48.00	1,777	233.0	100.0	1,693	6,097	3,682
48.50	1,869	240.0	100.0	911	7,008	3,971

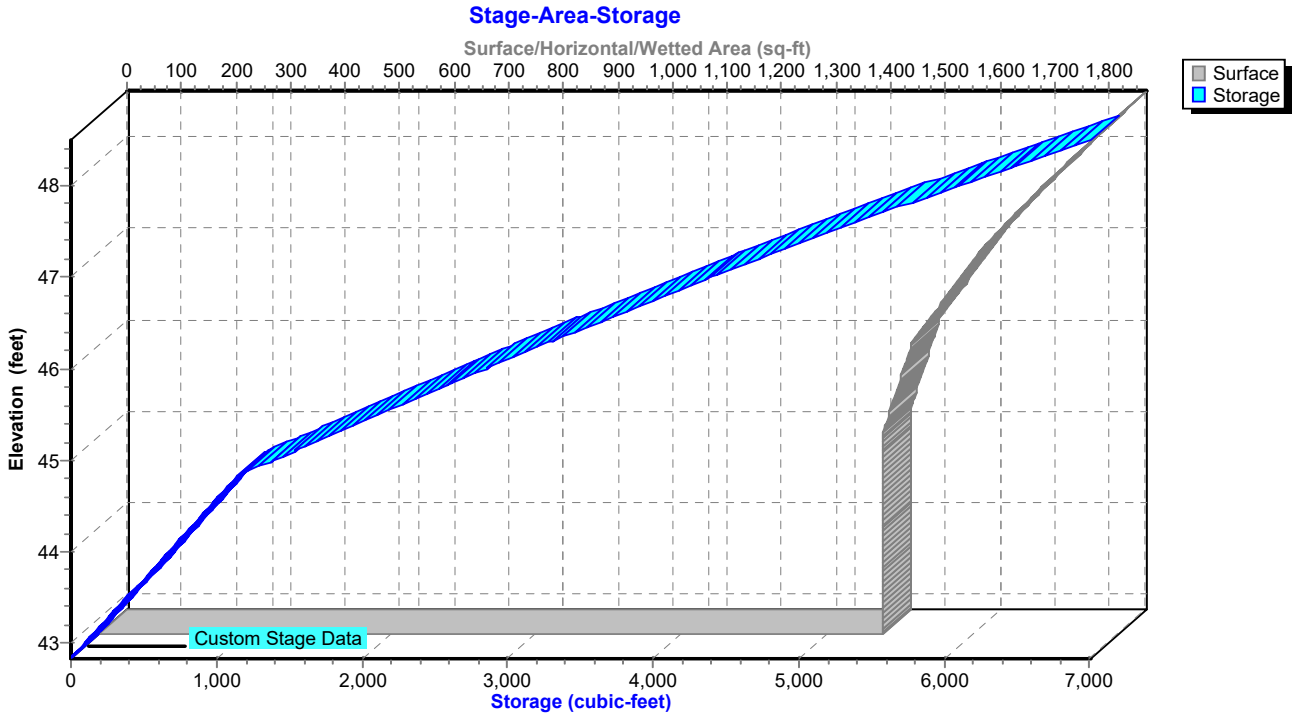
Device	Routing	Invert	Outlet Devices
#1	Primary	45.10'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 45.10' / 45.10' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#2	Secondary	48.50'	**16.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#3	Device 1	48.20'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.30'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.24 cfs @ 12.20 hrs HW=47.22' (Free Discharge)
└─**1=Culvert** (Passes 1.24 cfs of 9.00 cfs potential flow)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  ├─**4=Orifice/Grate** (Orifice Controls 0.77 cfs @ 3.93 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.47 cfs @ 5.34 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)



Pond 51P: Basin 206



Stage-Area-Storage for Pond 51P: Basin 206

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
42.83	1,435	0
42.93	1,435	57
43.03	1,435	115
43.13	1,435	172
43.23	1,435	230
43.33	1,435	287
43.43	1,435	344
43.53	1,435	402
43.63	1,435	459
43.73	1,435	517
43.83	1,435	574
43.93	1,435	631
44.03	1,435	689
44.13	1,435	746
44.23	1,435	804
44.33	1,435	861
44.43	1,435	918
44.53	1,435	976
44.63	1,435	1,033
44.73	1,435	1,091
44.83	1,435	1,148
44.93	1,435	1,292
45.03	1,437	1,435
45.13	1,442	1,579
45.23	1,447	1,723
45.33	1,453	1,868
45.43	1,458	2,014
45.53	1,463	2,160
45.63	1,469	2,307
45.73	1,474	2,454
45.83	1,480	2,602
45.93	1,485	2,750
46.03	1,493	2,899
46.13	1,505	3,048
46.23	1,517	3,200
46.33	1,529	3,352
46.43	1,541	3,505
46.53	1,553	3,660
46.63	1,565	3,816
46.73	1,578	3,973
46.83	1,590	4,131
46.93	1,602	4,291
47.03	1,616	4,452
47.13	1,632	4,614
47.23	1,648	4,778
47.33	1,665	4,944
47.43	1,681	5,111
47.53	1,698	5,280
47.63	1,715	5,451
47.73	1,731	5,623
47.83	1,748	5,797
47.93	1,765	5,973
48.03	1,782	6,150
48.13	1,801	6,329
48.23	1,819	6,510
48.33	1,837	6,693
48.43	**1,856**	**6,878**

Summary for Pond 51P: Basin 206

[92] Warning: Device #2 is above defined storage

Inflow Area = 0.773 ac, 84.16% Impervious, Inflow Depth > 5.45" for Yr 2100 - 10 Yr event
Inflow = 5.23 cfs @ 12.08 hrs, Volume= 0.351 af
Outflow = 1.80 cfs @ 12.21 hrs, Volume= 0.286 af, Atten= 66%, Lag= 8.0 min
Primary = 1.80 cfs @ 12.21 hrs, Volume= 0.286 af
Routed to Pond 49P : Basin 203
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 49P : Basin 203

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 48.12' @ 12.21 hrs Surf.Area= 1,799 sf Storage= 6,316 cf

Plug-Flow detention time= 165.8 min calculated for 0.286 af (82% of inflow)
Center-of-Mass det. time= 89.7 min (838.4 - 748.7)

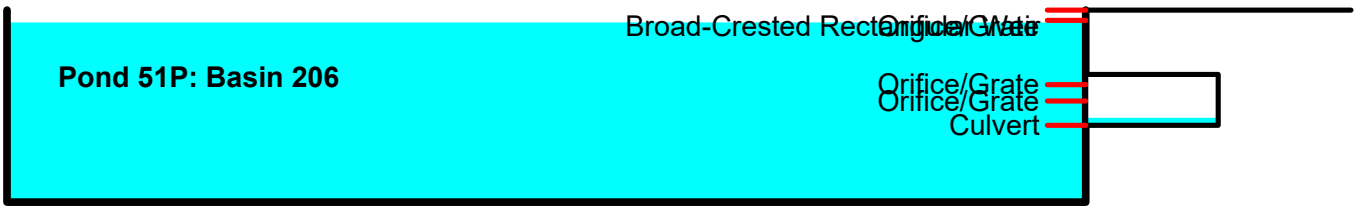
Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	7,008 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	1,435	180.0	0.0	0	0	1,435
42.84	1,435	180.0	40.0	6	6	1,437
43.00	1,435	180.0	40.0	92	98	1,466
44.00	1,435	180.0	40.0	574	672	1,646
44.83	1,435	180.0	40.0	476	1,148	1,795
44.84	1,435	180.0	100.0	14	1,162	1,797
45.00	1,435	180.0	100.0	230	1,392	1,826
46.00	1,489	190.0	100.0	1,462	2,854	2,173
47.00	1,611	213.0	100.0	1,550	4,403	2,938
48.00	1,777	233.0	100.0	1,693	6,097	3,682
48.50	1,869	240.0	100.0	911	7,008	3,971

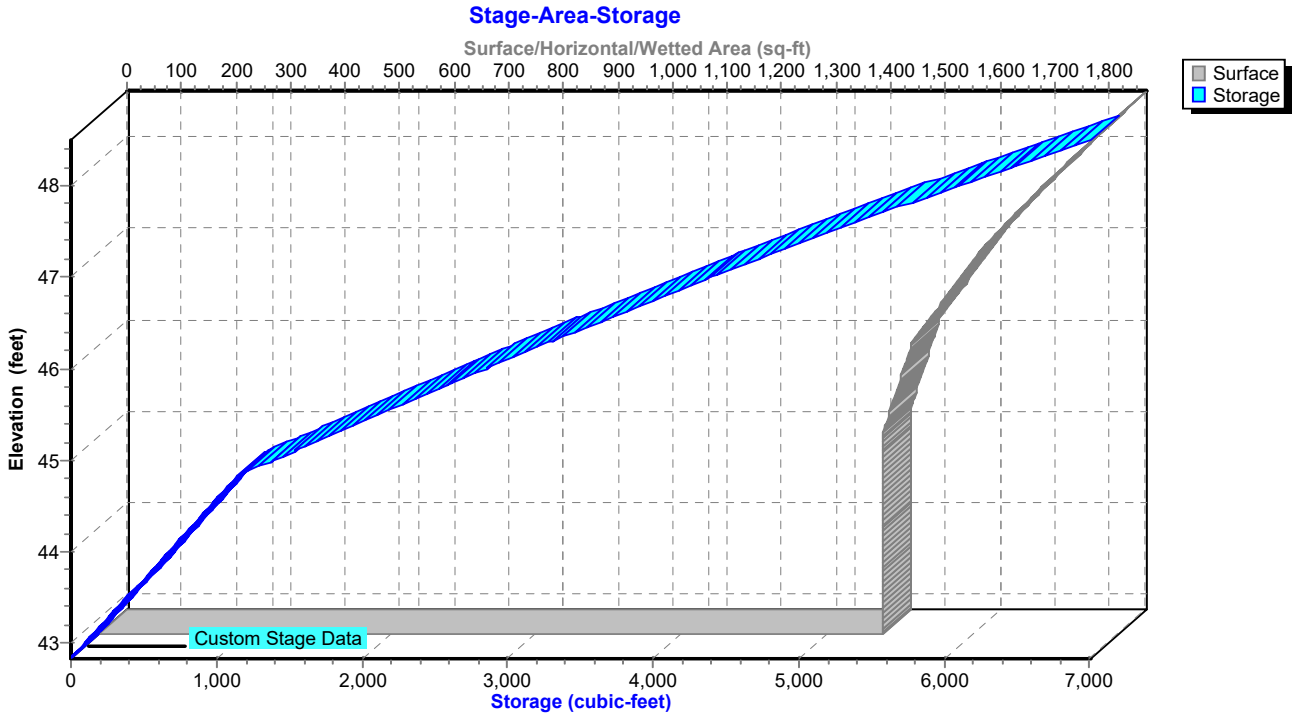
Device	Routing	Invert	Outlet Devices
#1	Primary	45.10'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 45.10' / 45.10' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#2	Secondary	48.50'	**16.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#3	Device 1	48.20'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.30'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.80 cfs @ 12.21 hrs HW=48.12' (Free Discharge)
└─**1=Culvert** (Passes 1.80 cfs of 12.81 cfs potential flow)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  ├─**4=Orifice/Grate** (Orifice Controls 1.18 cfs @ 6.03 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.61 cfs @ 7.03 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)



Pond 51P: Basin 206



Stage-Area-Storage for Pond 51P: Basin 206

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
42.83	1,435	0
42.93	1,435	57
43.03	1,435	115
43.13	1,435	172
43.23	1,435	230
43.33	1,435	287
43.43	1,435	344
43.53	1,435	402
43.63	1,435	459
43.73	1,435	517
43.83	1,435	574
43.93	1,435	631
44.03	1,435	689
44.13	1,435	746
44.23	1,435	804
44.33	1,435	861
44.43	1,435	918
44.53	1,435	976
44.63	1,435	1,033
44.73	1,435	1,091
44.83	1,435	1,148
44.93	1,435	1,292
45.03	1,437	1,435
45.13	1,442	1,579
45.23	1,447	1,723
45.33	1,453	1,868
45.43	1,458	2,014
45.53	1,463	2,160
45.63	1,469	2,307
45.73	1,474	2,454
45.83	1,480	2,602
45.93	1,485	2,750
46.03	1,493	2,899
46.13	1,505	3,048
46.23	1,517	3,200
46.33	1,529	3,352
46.43	1,541	3,505
46.53	1,553	3,660
46.63	1,565	3,816
46.73	1,578	3,973
46.83	1,590	4,131
46.93	1,602	4,291
47.03	1,616	4,452
47.13	1,632	4,614
47.23	1,648	4,778
47.33	1,665	4,944
47.43	1,681	5,111
47.53	1,698	5,280
47.63	1,715	5,451
47.73	1,731	5,623
47.83	1,748	5,797
47.93	1,765	5,973
48.03	1,782	6,150
48.13	1,801	6,329
48.23	1,819	6,510
48.33	1,837	6,693
48.43	**1,856**	**6,878**

Summary for Pond 51P: Basin 206

[92] Warning: Device #2 is above defined storage

Inflow Area = 0.773 ac, 84.16% Impervious, Inflow Depth > 10.72" for Yr 2100 - 100 Yr event
Inflow = 10.07 cfs @ 12.08 hrs, Volume= 0.690 af
Outflow = 9.78 cfs @ 12.09 hrs, Volume= 0.624 af, Atten= 3%, Lag= 0.5 min
Primary = 9.78 cfs @ 12.09 hrs, Volume= 0.624 af
Routed to Pond 49P : Basin 203
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 49P : Basin 203

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 48.48' @ 12.09 hrs Surf.Area= 1,865 sf Storage= 6,973 cf

Plug-Flow detention time= 117.1 min calculated for 0.622 af (90% of inflow)
Center-of-Mass det. time= 66.7 min (806.0 - 739.2)

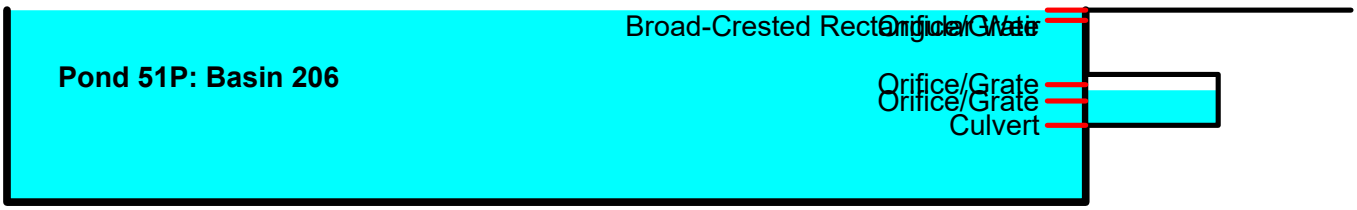
Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	7,008 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	1,435	180.0	0.0	0	0	1,435
42.84	1,435	180.0	40.0	6	6	1,437
43.00	1,435	180.0	40.0	92	98	1,466
44.00	1,435	180.0	40.0	574	672	1,646
44.83	1,435	180.0	40.0	476	1,148	1,795
44.84	1,435	180.0	100.0	14	1,162	1,797
45.00	1,435	180.0	100.0	230	1,392	1,826
46.00	1,489	190.0	100.0	1,462	2,854	2,173
47.00	1,611	213.0	100.0	1,550	4,403	2,938
48.00	1,777	233.0	100.0	1,693	6,097	3,682
48.50	1,869	240.0	100.0	911	7,008	3,971

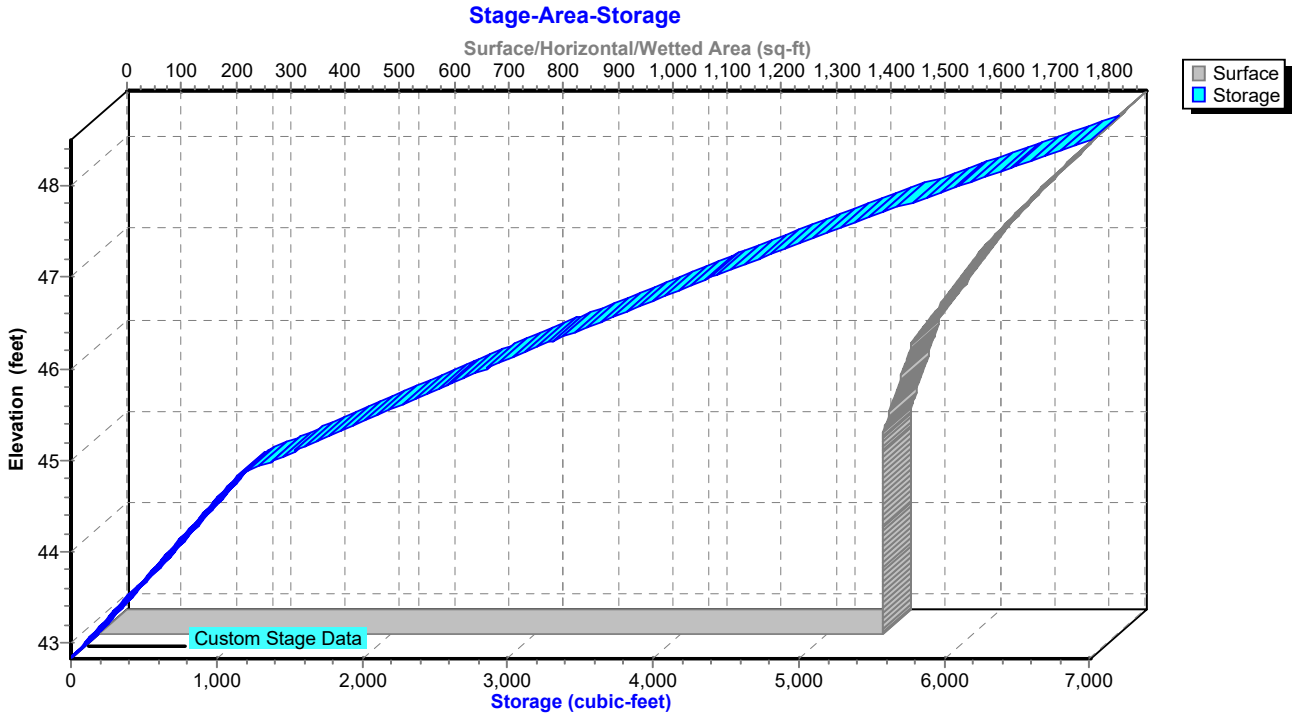
Device	Routing	Invert	Outlet Devices
#1	Primary	45.10'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 45.10' / 45.10' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#2	Secondary	48.50'	**16.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#3	Device 1	48.20'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.30'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=9.38 cfs @ 12.09 hrs HW=48.47' (Free Discharge)
└─**1=Culvert** (Passes 9.38 cfs of 13.78 cfs potential flow)
  ├─**3=Orifice/Grate** (Weir Controls 7.41 cfs @ 1.70 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 1.31 cfs @ 6.67 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.66 cfs @ 7.59 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.83' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)



Pond 51P: Basin 206



Stage-Area-Storage for Pond 51P: Basin 206

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
42.83	1,435	0
42.93	1,435	57
43.03	1,435	115
43.13	1,435	172
43.23	1,435	230
43.33	1,435	287
43.43	1,435	344
43.53	1,435	402
43.63	1,435	459
43.73	1,435	517
43.83	1,435	574
43.93	1,435	631
44.03	1,435	689
44.13	1,435	746
44.23	1,435	804
44.33	1,435	861
44.43	1,435	918
44.53	1,435	976
44.63	1,435	1,033
44.73	1,435	1,091
44.83	1,435	1,148
44.93	1,435	1,292
45.03	1,437	1,435
45.13	1,442	1,579
45.23	1,447	1,723
45.33	1,453	1,868
45.43	1,458	2,014
45.53	1,463	2,160
45.63	1,469	2,307
45.73	1,474	2,454
45.83	1,480	2,602
45.93	1,485	2,750
46.03	1,493	2,899
46.13	1,505	3,048
46.23	1,517	3,200
46.33	1,529	3,352
46.43	1,541	3,505
46.53	1,553	3,660
46.63	1,565	3,816
46.73	1,578	3,973
46.83	1,590	4,131
46.93	1,602	4,291
47.03	1,616	4,452
47.13	1,632	4,614
47.23	1,648	4,778
47.33	1,665	4,944
47.43	1,681	5,111
47.53	1,698	5,280
47.63	1,715	5,451
47.73	1,731	5,623
47.83	1,748	5,797
47.93	1,765	5,973
48.03	1,782	6,150
48.13	1,801	6,329
48.23	1,819	6,510
48.33	1,837	6,693
48.43	**1,856**	**6,878**

5.4 STORM MANAGEMENT DESIGN
Tc CALCULATIONS EXISTING AND PROPOSED

PREPARED: September 19, 2025
REVISED: December 15, 2025

300-356 ENTERPRISE AVE.
CITY OF TRENTON
BLOCK 23203, LOT 1
BLOCK 23102 LOTS 2 & 9
TOWNSHIP OF LAWRENCE
BLOCK 602, LOTS 1 & 2
MERCER COUNTY, NEW JERSEY

REDCOM DESIGN & CONSTRUCTION LLC

TR55 TIME OF CONCENTRATION CALCULATION
EXISTING AREA POA-1 (Adj Onsite Pervious)

2 YR RAINFALL, INCHES	Surface Code	Mannings N-Value	Cover Description
3.36			
Maximum Sheet Flow Length to be less than or equal to 100 feet.	A	0.011	Smooth Surfaces (Concrete, Asphalt, Gravel, Bare Soil)
	B	0.050	Fallow (No Residue)
	C	0.060	Cultivated Soils, (Residue Cover less than or equal to 20%)
	D	0.170	Cultivated Soils, (Residue Cover Greater than or equal to 20%)
	E	0.150	Grass, Short
	F	0.240	Grass, Dense
	G	0.410	Grass, Bermuda
	H	0.400	Woods, Light Underbrush
	I	0.800	Woods, Dense Underbrush
	J	0.130	Range(Natural)
Shallow Concentrated Flow Length < 1000 Feet Recommended.	U	---------	Unpaved Shallow Concentrated Flow
	P	---------	Paved Shallow Concentrated Flow

Tt Flow Type	Flow Length, ft	Slope % grade	Manning's N - Value	Surface Code	Velocity feet / second	Travel Time hours	Travel Time minutes
Sheet	100	0.21%	0.150	E	---------	0.393	23.6
Sheet	0	21.00%	0.011	A	---------	0.000	0.0
Shallow Concentrated	365	1.90%	---------	U	2.22	0.046	2.7
Shallow Concentrated	70	4.30%		U	3.35	0.006	0.3
Shallow Concentrated	0	0.00%	---------	U	0.00	0.000	0.0
Open Channel	0	---------	---------	---------	0.00	0.000	0.0
Open Channel	0	---------	---------	---------	0.00	0.000	0.0
AREA POA-1Op (Adj)			**Time of concentration, Tc =**			**0.44**	**26.6**

Sheet Flow, Tt = $\dfrac{0.007(nL)^{0.8}}{P^{0.5}\,S^{0.4}}$

Unpaved Shallow Concentrated Flow Velocity,fps = 16.1345(S)^0.5

Paved Shallow Concentrated Flow Velocity, fps = 20.3282(S)^0.5

Tt = Travel Time in hours, L = Flow Length in feet, n = Manning's N, P = 2 year rainfall in inches, S = Slope in (ft/ft)

REDCOM DESIGN & CONSTRUCTION LLC

TR55 TIME OF CONCENTRATION CALCULATION
EXISTING AREA POA-1 (Adj Onsite Impervious)

2 YR RAINFALL, INCHES	Surface Code	Mannings N-Value	Cover Description
3.36			
Maximum Sheet Flow Length to be less than or equal to 100 feet.	A	0.011	Smooth Surfaces (Concrete, Asphalt, Gravel, Bare Soil)
	B	0.050	Fallow (No Residue)
	C	0.060	Cultivated Soils, (Residue Cover less than or equal to 20%)
	D	0.170	Cultivated Soils, (Residue Cover Greater than or equal to 20%)
	E	0.150	Grass, Short
	F	0.240	Grass, Dense
	G	0.410	Grass, Bermuda
	H	0.400	Woods, Light Underbrush
	I	0.800	Woods, Dense Underbrush
	J	0.130	Range(Natural)
Shallow Concentrated Flow Length < 1000 Feet Recommended.	U	---------	Unpaved Shallow Concentrated Flow
	P	---------	Paved Shallow Concentrated Flow

Tt Flow Type	Flow Length, ft	Slope % grade	Manning's N - Value	Surface Code	Velocity feet / second	Travel Time hours	Travel Time minutes
Sheet	100	1.10%	0.011	A	---------	0.025	1.5
Sheet	0	0.00%	0.011	A	---------	0.000	0.0
Shallow Concentrated	189.06	1.10%	---------	P	2.13	0.025	1.5
Shallow Concentrated	143.3	8.30%		U	4.65	0.009	0.5
Shallow Concentrated			---------	U	0.00	0.000	0.0
Open Channel	0	---------	---------	---------	0.00	0.000	0.0
Open Channel	0	---------	---------	---------	0.00	0.000	0.0
AREA POA-1Oi (Adj)			**Time of concentration, Tc =**			**0.06**	**3.5**

Sheet Flow, Tt = $\frac{0.007(nL)^{0.8}}{P^{0.5}\,S^{0.4}}$

Unpaved Shallow Concentrated Flow Velocity,fps = 16.1345(S)^0.5

Paved Shallow Concentrated Flow Velocity, fps = 20.3282(S)^0.5

Tt = Travel Time in hours, L = Flow Length in feet, n = Manning's N, P = 2 year rainfall in inches, S = Slope in (ft/ft)

REDCOM DESIGN & CONSTRUCTION LLC

TR55 TIME OF CONCENTRATION CALCULATION
EXISTING AREA POA-1 (2100 Onsite Pervious)

2 YR RAINFALL, INCHES	Surface Code	Mannings N-Value	Cover Description
3.85			
Maximum Sheet Flow Length to be less than or equal to 100 feet.	A	0.011	Smooth Surfaces (Concrete, Asphalt, Gravel, Bare Soil)
	B	0.050	Fallow (No Residue)
	C	0.060	Cultivated Soils, (Residue Cover less than or equal to 20%)
	D	0.170	Cultivated Soils, (Residue Cover Greater than or equal to 20%)
	E	0.150	Grass, Short
	F	0.240	Grass, Dense
	G	0.410	Grass, Bermuda
	H	0.400	Woods, Light Underbrush
	I	0.800	Woods, Dense Underbrush
	J	0.130	Range(Natural)
Shallow Concentrated Flow Length < 1000 Feet Recommended.	U	---------	Unpaved Shallow Concentrated Flow
	P	---------	Paved Shallow Concentrated Flow

Tt Flow Type	Flow Length, ft	Slope % grade	Manning's N - Value	Surface Code	Velocity feet / second	Travel Time hours	Travel Time minutes
Sheet	100	0.21%	0.150	E	---------	0.367	22.0
Sheet	0	0.00%	0.011	A	---------	0.000	0.0
Shallow Concentrated	365	1.90%	---------	U	2.22	0.046	2.7
Shallow Concentrated	70	4.30%		U	3.35	0.006	0.3
Shallow Concentrated	0	0.00%	---------	U	0.00	0.000	0.0
Open Channel	0	---------	---------	---------	0.00	0.000	0.0
Open Channel	0	---------	---------	---------	0.00	0.000	0.0
AREA POA-1Op (2100)			**Time of concentration, Tc =**			**0.42**	**25.1**

Sheet Flow, Tt = $\frac{0.007(nL)^{0.8}}{P^{0.5}\,S^{0.4}}$

Unpaved Shallow Concentrated Flow Velocity,fps = 16.1345(S)^0.5

Paved Shallow Concentrated Flow Velocity, fps = 20.3282(S)^0.5

Tt = Travel Time in hours, L = Flow Length in feet, n = Manning's N, P = 2 year rainfall in inches, S = Slope in (ft/ft)

REDCOM DESIGN & CONSTRUCTION LLC

TR55 TIME OF CONCENTRATION CALCULATION
EXISTING AREA POA-1 (2100 Onsite Impervious)

2 YR RAINFALL, INCHES	Surface Code	Mannings N-Value	Cover Description
3.86			
Maximum Sheet Flow Length to be less than or equal to 100 feet.	A	0.011	Smooth Surfaces (Concrete, Asphalt, Gravel, Bare Soil)
	B	0.050	Fallow (No Residue)
	C	0.060	Cultivated Soils, (Residue Cover less than or equal to 20%)
	D	0.170	Cultivated Soils, (Residue Cover Greater than or equal to 20%)
	E	0.150	Grass, Short
	F	0.240	Grass, Dense
	G	0.410	Grass, Bermuda
	H	0.400	Woods, Light Underbrush
	I	0.800	Woods, Dense Underbrush
	J	0.130	Range(Natural)
Shallow Concentrated Flow Length < 1000 Feet Recommended.	U	---------	Unpaved Shallow Concentrated Flow
	P	---------	Paved Shallow Concentrated Flow

Tt Flow Type	Flow Length, ft	Slope % grade	Manning's N - Value	Surface Code	Velocity feet / second	Travel Time hours	Travel Time minutes
Sheet	100	1.10%	0.011	A	---------	0.023	1.4
Sheet	0	0.00%	0.011	A	---------	0.000	0.0
Shallow Concentrated	189.06	1.10%	---------	P	2.13	0.025	1.5
Shallow Concentrated	143.3	8.30%		U	4.65	0.009	0.5
Shallow Concentrated	0	0.00%	---------	U	0.00	0.000	0.0
Open Channel	0	---------	---------	---------	0.00	0.000	0.0
Open Channel	0	---------	---------	---------	0.00	0.000	0.0
AREA POA-1Oi (2100)			**Time of concentration, Tc =**			**0.06**	**3.4**

Sheet Flow, Tt = $\dfrac{0.007(nL)^{0.8}}{P^{0.5}\,S^{0.4}}$

Unpaved Shallow Concentrated Flow Velocity,fps = 16.1345(S)^0.5

Paved Shallow Concentrated Flow Velocity, fps = 20.3282(S)^0.5

Tt = Travel Time in hours, L = Flow Length in feet, n = Manning's N, P = 2 year rainfall in inches, S = Slope in (ft/ft)

REDCOM DESIGN & CONSTRUCTION LLC

TR55 TIME OF CONCENTRATION CALCULATION
PROPOSED AREA - Onsite Impervious (Adjusted)

2 YR RAINFALL, INCHES	Surface Code	Mannings N-Value	Cover Description
3.36			
Maximum Sheet Flow Length to be less than or equal to 100 feet.	A	0.011	Smooth Surfaces (Concrete, Asphalt, Gravel, Bare Soil)
	B	0.050	Fallow (No Residue)
	C	0.060	Cultivated Soils, (Residue Cover less than or equal to 20%)
	D	0.170	Cultivated Soils, (Residue Cover Greater than or equal to 20%)
	E	0.150	Grass, Short
	F	0.240	Grass, Dense
	G	0.410	Grass, Bermuda
	H	0.400	Woods, Light Underbrush
	I	0.800	Woods, Dense Underbrush
	J	0.130	Range(Natural)
Shallow Concentrated Flow Length < 1000 Feet Recommended.	U	---------	Unpaved Shallow Concentrated Flow
	P	---------	Paved Shallow Concentrated Flow

Tt Flow Type	Flow Length, ft	Slope % grade	Manning's N - Value	Surface Code	Velocity feet / second	Travel Time hours	Travel Time minutes
Sheet	93	3.80%	0.011	A	---------	0.014	0.9
Sheet	0	0.00%	0.011	A	---------	0.000	0.0
Shallow Concentrated	0	0.00%	---------	P	0.00	0.000	0.0
Shallow Concentrated				U	0.00	0.000	0.0
Shallow Concentrated	0	0.00%	---------	U	0.00	0.000	0.0
Open Channel	0	---------	---------	---------	0.00	0.000	0.0
Open Channel	0	---------	---------	---------	0.00	0.000	0.0
AREA Onsite - Impervious			**Time of concentration, Tc =**			**0.01**	**0.9**

Sheet Flow, Tt = $\dfrac{0.007(nL)^{0.8}}{P^{0.5}\,S^{0.4}}$

Unpaved Shallow Concentrated Flow Velocity,fps = 16.1345(S)^0.5

Paved Shallow Concentrated Flow Velocity, fps = 20.3282(S)^0.5

Tt = Travel Time in hours, L = Flow Length in feet, n = Manning's N, P = 2 year rainfall in inches, S = Slope in (ft/ft)

REDCOM DESIGN & CONSTRUCTION LLC

TR55 TIME OF CONCENTRATION CALCULATION
PROPOSED AREA - Onsite Pervious (Adjusted)

2 YR RAINFALL, INCHES	Surface Code	Mannings N-Value	Cover Description
3.36			
Maximum Sheet Flow Length to be less than or equal to 100 feet.	A	0.011	Smooth Surfaces (Concrete, Asphalt, Gravel, Bare Soil)
	B	0.050	Fallow (No Residue)
	C	0.060	Cultivated Soils, (Residue Cover less than or equal to 20%)
	D	0.170	Cultivated Soils, (Residue Cover Greater than or equal to 20%)
	E	0.150	Grass, Short
	F	0.240	Grass, Dense
	G	0.410	Grass, Bermuda
	H	0.400	Woods, Light Underbrush
	I	0.800	Woods, Dense Underbrush
	J	0.130	Range(Natural)
Shallow Concentrated Flow Length < 1000 Feet Recommended.	U	---------	Unpaved Shallow Concentrated Flow
	P	---------	Paved Shallow Concentrated Flow

Tt Flow Type	Flow Length, ft	Slope % grade	Manning's N - Value	Surface Code	Velocity feet / second	Travel Time hours	Travel Time minutes
Sheet	19	2.04%	0.150	E	---------	0.042	2.5
Sheet	77	1.94%	0.011	A	---------	0.016	1.0
Shallow Concentrated	0	1.94%	---------	P	2.83	0.000	0.0
Shallow Concentrated		0.00%		U	0.00	0.000	0.0
Shallow Concentrated	0	0.00%	---------	U	0.00	0.000	0.0
Open Channel	0	---------	---------	---------	0.00	0.000	0.0
Open Channel	0	---------	---------	---------	0.00	0.000	0.0
AREA Onsite - Pervious			**Time of concentration, Tc =**			**0.06**	**3.5**

Sheet Flow, Tt = $\dfrac{0.007(nL)^{0.8}}{P^{0.5}\,S^{0.4}}$

Unpaved Shallow Concentrated Flow Velocity,fps = 16.1345(S)^0.5

Paved Shallow Concentrated Flow Velocity, fps = 20.3282(S)^0.5

Tt = Travel Time in hours, L = Flow Length in feet, n = Manning's N, P = 2 year rainfall in inches, S = Slope in (ft/ft)

REDCOM DESIGN & CONSTRUCTION LLC

TR55 TIME OF CONCENTRATION CALCULATION
PROPOSED AREA - Onsite Impervious Roof (Adjusted)

2 YR RAINFALL, INCHES	Surface Code	Mannings N-Value	Cover Description
3.36			
Maximum Sheet Flow Length to be less than or equal to 100 feet.	A	0.011	Smooth Surfaces (Concrete, Asphalt, Gravel, Bare Soil)
	B	0.050	Fallow (No Residue)
	C	0.060	Cultivated Soils, (Residue Cover less than or equal to 20%)
	D	0.170	Cultivated Soils, (Residue Cover Greater than or equal to 20%)
	E	0.150	Grass, Short
	F	0.240	Grass, Dense
	G	0.410	Grass, Bermuda
	H	0.400	Woods, Light Underbrush
	I	0.800	Woods, Dense Underbrush
	J	0.130	Range(Natural)
Shallow Concentrated Flow Length < 1000 Feet Recommended.	U	---------	Unpaved Shallow Concentrated Flow
	P	---------	Paved Shallow Concentrated Flow

Tt Flow Type	Flow Length, ft	Slope % grade	Manning's N - Value	Surface Code	Velocity feet / second	Travel Time hours	Travel Time minutes
Sheet	100	0.50%	0.011	A	---------	0.034	2.1
Sheet	0	0.00%	0.011	A	---------	0.000	0.0
Shallow Concentrated	0	0.50%	---------	P	1.44	0.000	0.0
Shallow Concentrated		0.00%		P	0.00	0.000	0.0
Shallow Concentrated	0	0.00%	---------	U	0.00	0.000	0.0
Open Channel	0	---------	---------	---------	0.00	0.000	0.0
Open Channel	0	---------	---------	---------	0.00	0.000	0.0
AREA Onsite roof			**Time of concentration, Tc =**			**0.03**	**2.1**

Sheet Flow, Tt = $\frac{0.007(nL)^{0.8}}{P^{0.5}\,S^{0.4}}$

Unpaved Shallow Concentrated Flow Velocity,fps = 16.1345(S)^0.5

Paved Shallow Concentrated Flow Velocity, fps = 20.3282(S)^0.5

Tt = Travel Time in hours, L = Flow Length in feet, n = Manning's N, P = 2 year rainfall in inches, S = Slope in (ft/ft)

REDCOM DESIGN & CONSTRUCTION LLC

TR55 TIME OF CONCENTRATION CALCULATION
PROPOSED AREA - Onsite Impervious (2100 yr)

2 YR RAINFALL, INCHES	Surface Code	Mannings N-Value	Cover Description
3.86			
Maximum Sheet Flow Length to be less than or equal to 100 feet.	A	0.011	Smooth Surfaces (Concrete, Asphalt, Gravel, Bare Soil)
	B	0.050	Fallow (No Residue)
	C	0.060	Cultivated Soils, (Residue Cover less than or equal to 20%)
	D	0.170	Cultivated Soils, (Residue Cover Greater than or equal to 20%)
	E	0.150	Grass, Short
	F	0.240	Grass, Dense
	G	0.410	Grass, Bermuda
	H	0.400	Woods, Light Underbrush
	I	0.800	Woods, Dense Underbrush
	J	0.130	Range(Natural)
Shallow Concentrated Flow Length < 1000 Feet Recommended.	U	---------	Unpaved Shallow Concentrated Flow
	P	---------	Paved Shallow Concentrated Flow

Tt Flow Type	Flow Length, ft	Slope % grade	Manning's N - Value	Surface Code	Velocity feet / second	Travel Time hours	Travel Time minutes
Sheet	93	3.80%	0.011	A	---------	0.013	0.8
Sheet	0	0.00%	0.011	A	---------	0.000	0.0
Shallow Concentrated	0	1.22%	---------	P	2.25	0.000	0.0
Shallow Concentrated				U	0.00	0.000	0.0
Shallow Concentrated	0	0.00%	---------	U	0.00	0.000	0.0
Open Channel	0	---------	---------	---------	0.00	0.000	0.0
Open Channel	0	---------	---------	---------	0.00	0.000	0.0
AREA Onsite - Impervious			**Time of concentration, Tc =**			**0.01**	**0.8**

Sheet Flow, Tt = $\frac{0.007(nL)^{0.8}}{P^{0.5}\,S^{0.4}}$

Unpaved Shallow Concentrated Flow Velocity,fps = 16.1345(S)^0.5

Paved Shallow Concentrated Flow Velocity, fps = 20.3282(S)^0.5

Tt = Travel Time in hours, L = Flow Length in feet, n = Manning's N, P = 2 year rainfall in inches, S = Slope in (ft/ft)

TR55 TIME OF CONCENTRATION CALCULATION
PROPOSED AREA - Onsite Pervious (2100 yr)

2 YR RAINFALL, INCHES 3.86	Surface Code	Mannings N-Value	Cover Description
Maximum Sheet Flow Length to be less than or equal to 100 feet.	A	0.011	Smooth Surfaces (Concrete, Asphalt, Gravel, Bare Soil)
	B	0.050	Fallow (No Residue)
	C	0.060	Cultivated Soils, (Residue Cover less than or equal to 20%)
	D	0.170	Cultivated Soils, (Residue Cover Greater than or equal to 20%)
	E	0.150	Grass, Short
	F	0.240	Grass, Dense
	G	0.410	Grass, Bermuda
	H	0.400	Woods, Light Underbrush
	I	0.800	Woods, Dense Underbrush
	J	0.130	Range(Natural)
Shallow Concentrated Flow Length < 1000 Feet Recommended.	U	---------	Unpaved Shallow Concentrated Flow
	P	---------	Paved Shallow Concentrated Flow

Tt Flow Type	Flow Length, ft	Slope % grade	Manning's N - Value	Surface Code	Velocity feet / second	Travel Time hours	Travel Time minutes
Sheet	19	2.04%	0.150	E	---------	0.039	2.3
Sheet	77	1.94%	0.011	A	---------	0.015	0.9
Shallow Concentrated		1.49%	---------	P	2.48	0.000	0.0
Shallow Concentrated				U	0.00	0.000	0.0
Shallow Concentrated	0	0.00%	---------	U	0.00	0.000	0.0
Open Channel	0	---------	---------	---------	0.00	0.000	0.0
Open Channel	0	---------	---------	---------	0.00	0.000	0.0
AREA Onsite - Pervious			**Time of concentration, Tc =**			**0.05**	**3.3**

Sheet Flow, Tt = $\dfrac{0.007(nL)^{0.8}}{P^{0.5}\,S^{0.4}}$

Unpaved Shallow Concentrated Flow Velocity,fps = 16.1345(S)^0.5

Paved Shallow Concentrated Flow Velocity, fps = 20.3282(S)^0.5

Tt = Travel Time in hours, L = Flow Length in feet, n = Manning's N, P = 2 year rainfall in inches, S = Slope in (ft/ft)

REDCOM DESIGN & CONSTRUCTION LLC

TR55 TIME OF CONCENTRATION CALCULATION
PROPOSED AREA - Onsite Impervious Roof (2100 yr)

2 YR RAINFALL, INCHES	Surface Code	Mannings N-Value	Cover Description
3.86			
Maximum Sheet Flow Length to be less than or equal to 100 feet.	A	0.011	Smooth Surfaces (Concrete, Asphalt, Gravel, Bare Soil)
	B	0.050	Fallow (No Residue)
	C	0.060	Cultivated Soils, (Residue Cover less than or equal to 20%)
	D	0.170	Cultivated Soils, (Residue Cover Greater than or equal to 20%)
	E	0.150	Grass, Short
	F	0.240	Grass, Dense
	G	0.410	Grass, Bermuda
	H	0.400	Woods, Light Underbrush
	I	0.800	Woods, Dense Underbrush
	J	0.130	Range(Natural)
Shallow Concentrated Flow Length < 1000 Feet Recommended.	U	---------	Unpaved Shallow Concentrated Flow
	P	---------	Paved Shallow Concentrated Flow

Tt Flow Type	Flow Length, ft	Slope % grade	Manning's N - Value	Surface Code	Velocity feet / second	Travel Time hours	Travel Time minutes
Sheet	100	0.50%	0.011	A	---------	0.032	1.9
Sheet	0	0.00%	0.011	A	---------	0.000	0.0
Shallow Concentrated	0	0.50%	---------	P	1.44	0.000	0.0
Shallow Concentrated				P	0.00	0.000	0.0
Shallow Concentrated	0	0.00%	---------	U	0.00	0.000	0.0
Open Channel	0	---------	---------	---------	0.00	0.000	0.0
Open Channel	0	---------	---------	---------	0.00	0.000	0.0
AREA Onsite roof			**Time of concentration, Tc =**			**0.03**	**1.9**

Sheet Flow, Tt = $\dfrac{0.007(nL)^{0.8}}{P^{0.5}\,S^{0.4}}$

Unpaved Shallow Concentrated Flow Velocity,fps = 16.1345(S)^0.5

Paved Shallow Concentrated Flow Velocity, fps = 20.3282(S)^0.5

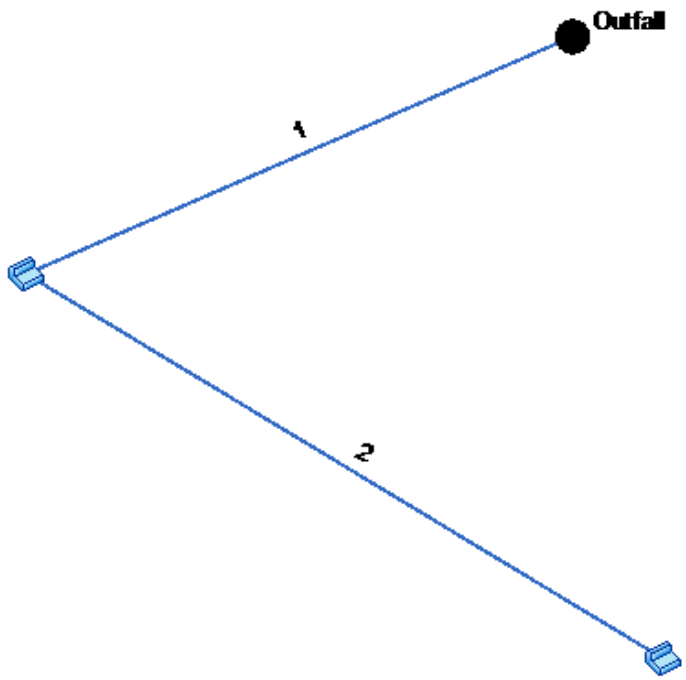
Tt = Travel Time in hours, L = Flow Length in feet, n = Manning's N, P = 2 year rainfall in inches, S = Slope in (ft/ft)

6. STORM PIPE CAPACITY CALCULATIONS

PREPARED: September 19, 2025
REVISED: December 15, 2025

300-356 ENTERPRISE AVE.
CITY OF TRENTON
BLOCK 23203, LOT 1
BLOCK 23102 LOTS 2 & 9
TOWNSHIP OF LAWRENCE
BLOCK 602, LOTS 1 & 2
MERCER COUNTY, NEW JERSEY

Pipe Capacity- Line 2 East



Project File: New.stm	Number of lines: 2	Date: 10/20/2025

Storm Sewers v2026.00

Structure Report

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
2		Grate	0.00	Cir	4.00	4.00	15	Cir	45.70			
1		Grate	0.00	Cir	4.00	4.00	18	Cir	45.35	15	Cir	45.35

Pipe Capacity- Line 2 East | Number of Structures: 2 | Run Date: 10/20/2025

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
2	1	70.000	0.27	0.27	0.00	0.00	0.00	0.0	0.0	0.0	1.96	4.57	2.83	15	0.50	45.35	45.70	46.19	46.29	0.00	0.00	
1	End	56.000	0.39	0.66	0.00	0.00	0.00	0.0	0.4	0.0	4.79	8.30	4.70	18	0.62	45.00	45.35	45.84	46.19	0.00	0.00	

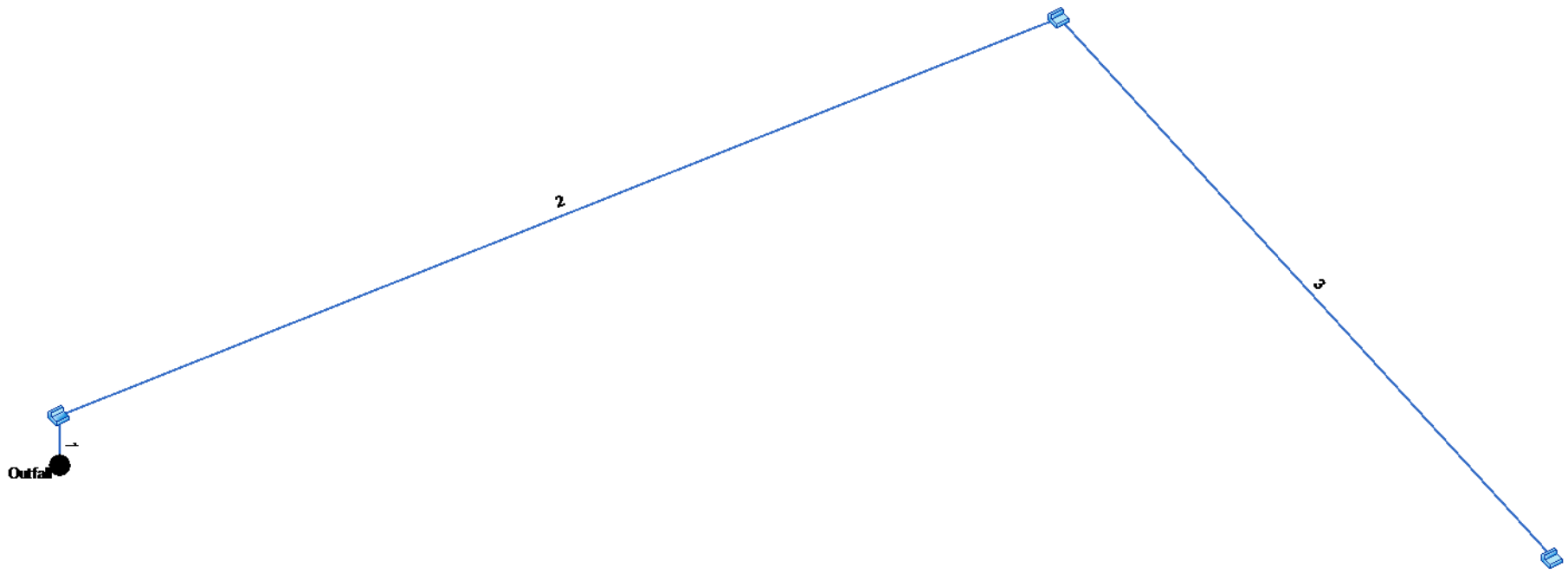
Pipe Capacity- Line 2 East

Number of lines: 2

Run Date: 10/20/2025

NOTES:Known Qs only ; c = cir e = ellip b = box

Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: Pipe Capacity- Line 1 West.stm	Number of lines: 3	Date: 10/20/2025

Storm Sewers v2026.00

Structure Report

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
3		Grate	0.00	Cir	4.00	4.00	15	Cir	46.00			
2		Grate	0.00	Cir	4.00	4.00	18	Cir	45.55	15	Cir	45.55
1		Curb-Horiz	0.00	Cir	4.00	4.00	18	Cir	45.05	18	Cir	45.05

Project File: Pipe Capacity- Line 1 West.stm | Number of Structures: 3 | Run Date: 10/20/2025

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
3	2	89.000	0.28	0.28	0.00	0.00	0.00	0.0	0.0	0.0	2.06	4.59	1.68	15	0.51	45.55	46.00	47.15	47.23	0.00	0.00	
2	1	131.000	0.61	0.89	0.00	0.00	0.00	0.0	0.9	0.0	6.40	6.49	4.18	18	0.38	45.05	45.55	46.26	46.76	0.00	0.00	
1	End	6.000	0.29	1.18	0.00	0.00	0.00	0.0	1.4	0.0	8.47	9.59	5.94	18	0.83	45.00	45.05	46.13	46.18	0.00	0.00	114

Project File: Pipe Capacity- Line 1 West.stm

Number of lines: 3

Run Date: 10/20/2025

NOTES:Known Qs only ; c = cir e = ellip b = box

7. EMERGENCY SPILLWAY CALCULATIONS

PREPARED: September 19, 2025
REVISED: December 15, 2025

300-356 ENTERPRISE AVE.
CITY OF TRENTON
BLOCK 23203, LOT 1
BLOCK 23102 LOTS 2 & 9
TOWNSHIP OF LAWRENCE
BLOCK 602, LOTS 1 & 2
MERCER COUNTY, NEW JERSEY

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	ES Storm	NOAA 24-hr	C	Default	24.00	1	12.77	2

Summary for Pond 39P: Basin 104

[92] Warning: Device #2 is above defined storage
[93] Warning: Storage range exceeded by 0.41'
[81] Warning: Exceeded Pond 44P by 0.47' @ 12.30 hrs
[81] Warning: Exceeded Pond 44P by 0.47' @ 12.30 hrs

Inflow Area = 4.940 ac, 77.74% Impervious, Inflow Depth > 11.92" for ES Storm event
Inflow = 64.03 cfs @ 12.11 hrs, Volume= 4.907 af
Outflow = 48.86 cfs @ 12.20 hrs, Volume= 3.797 af, Atten= 24%, Lag= 5.5 min
Primary = 17.15 cfs @ 12.21 hrs, Volume= 3.594 af
Routed to Link 2A : POA 1 (Adj)
Secondary = 31.73 cfs @ 12.20 hrs, Volume= 0.204 af
Routed to Link 2A : POA 1 (Adj)

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 48.81' @ 12.21 hrs Surf.Area= 22,357 sf Storage= 87,112 cf

Plug-Flow detention time= 176.8 min calculated for 3.797 af (77% of inflow)
Center-of-Mass det. time= 91.4 min (853.8 - 762.4)

Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	87,112 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

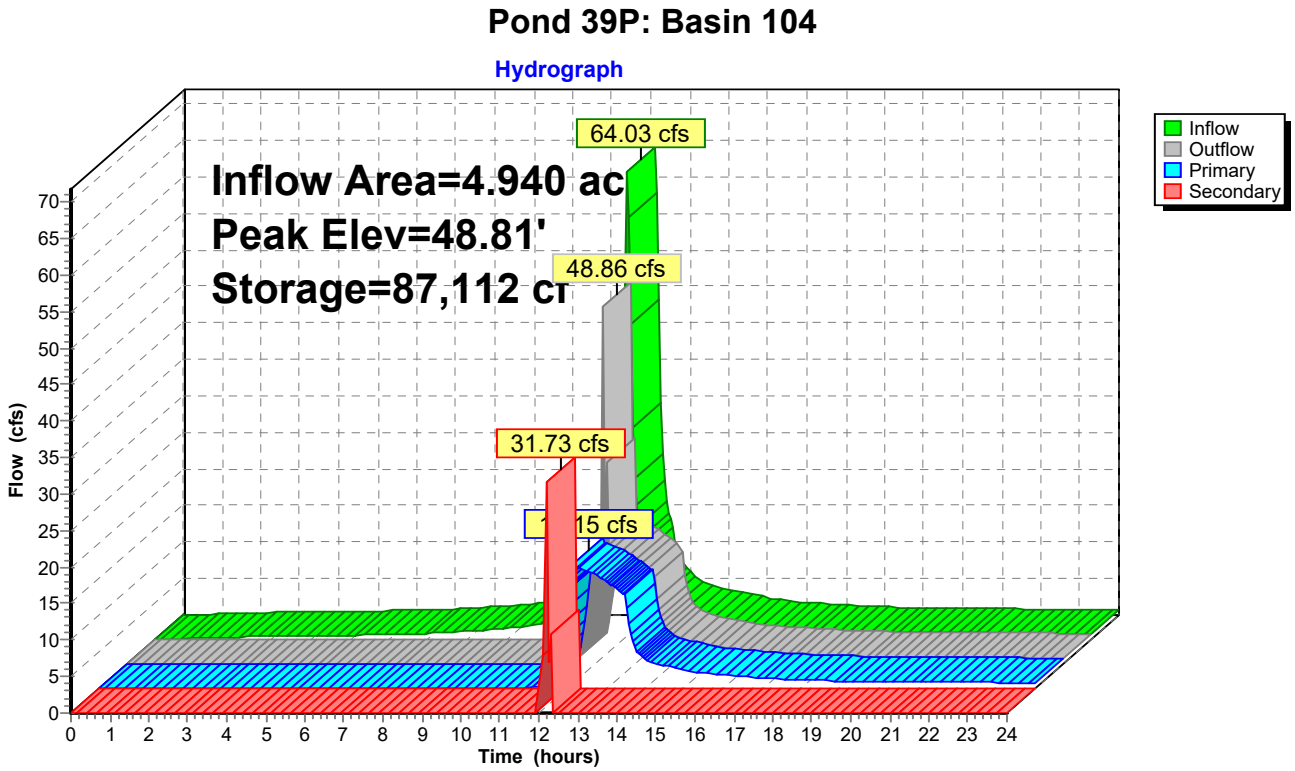
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	17,239	897.0	0.0	0	0	17,239
42.84	17,239	897.0	40.0	69	69	17,248
43.00	17,239	897.0	40.0	1,103	1,172	17,391
44.00	17,239	897.0	40.0	6,896	8,068	18,288
44.83	17,239	897.0	40.0	5,723	13,791	19,033
44.84	17,239	897.0	100.0	172	13,964	19,042
45.00	17,690	902.0	100.0	2,794	16,758	19,772
46.00	20,420	926.0	100.0	19,039	35,797	23,381
47.00	21,216	939.0	100.0	20,817	56,613	25,524
48.00	22,029	952.0	100.0	21,621	78,234	27,697
48.40	22,357	957.0	100.0	8,877	87,112	28,547

Device	Routing	Invert	Outlet Devices
#1	Primary	44.00'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 44.00' / 44.00' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#2	Secondary	48.40'	**50.0' long x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#3	Device 1	46.65'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.40'	**18.0" W x 3.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

#5 Device 1 45.82' **4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=17.02 cfs @ 12.21 hrs HW=48.75' (Free Discharge)
└─**1=Culvert** (Inlet Controls 17.02 cfs @ 9.63 fps)
  ├─**3=Orifice/Grate** (Passes < 111.64 cfs potential flow)
  ├─**4=Orifice/Grate** (Passes < 2.69 cfs potential flow)
  └─**5=Orifice/Grate** (Passes < 0.70 cfs potential flow)

Secondary OutFlow Max=29.65 cfs @ 12.20 hrs HW=48.78' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 29.65 cfs @ 1.55 fps)



Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	ES Storm	NOAA 24-hr	C	Default	24.00	1	12.77	2

Summary for Pond 44P: Basin 112

[92] Warning: Device #2 is above defined storage
[93] Warning: Storage range exceeded by 0.20'

Inflow Area = 1.397 ac, 81.07% Impervious, Inflow Depth > 12.31" for ES Storm event
Inflow = 20.59 cfs @ 12.09 hrs, Volume= 1.433 af
Outflow = 18.55 cfs @ 12.10 hrs, Volume= 1.289 af, Atten= 10%, Lag= 0.8 min
Primary = 14.36 cfs @ 12.11 hrs, Volume= 1.272 af
Routed to Pond 39P : Basin 104
Secondary = 4.20 cfs @ 12.10 hrs, Volume= 0.018 af
Routed to Pond 39P : Basin 104

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 48.70' @ 12.11 hrs Surf.Area= 4,468 sf Storage= 14,810 cf

Plug-Flow detention time= 130.9 min calculated for 1.289 af (90% of inflow)
Center-of-Mass det. time= 78.5 min (817.5 - 739.0)

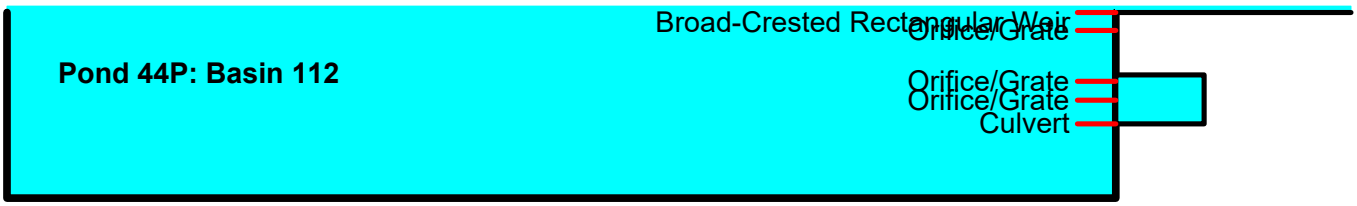
Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	14,810 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

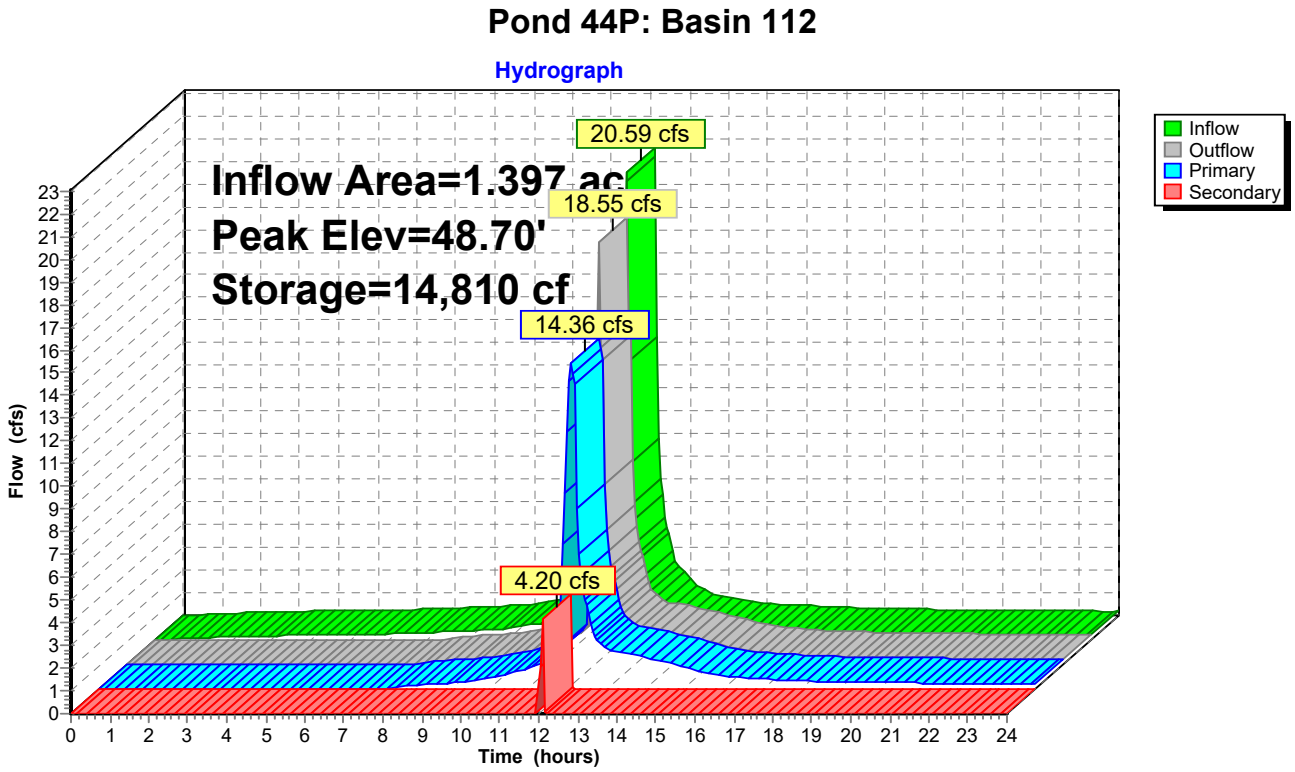
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	2,461	213.0	0.0	0	0	2,461
42.84	2,461	213.0	40.0	10	10	2,463
43.00	2,461	213.0	40.0	158	167	2,497
44.00	2,461	213.0	40.0	984	1,152	2,710
44.83	2,461	213.0	40.0	817	1,969	2,887
44.84	2,461	213.0	100.0	25	1,993	2,889
45.00	2,568	216.0	100.0	402	2,396	2,997
46.00	3,287	251.0	100.0	2,920	5,316	4,319
47.00	3,676	265.7	100.0	3,480	8,796	4,976
48.00	4,082	276.0	100.0	3,877	12,673	5,496
48.50	4,468	290.0	100.0	2,137	14,810	6,142

Device	Routing	Invert	Outlet Devices
#1	Primary	45.10'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 45.10' / 45.10' S= 0.0000 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf
#2	Secondary	48.50'	**20.0' long + 0.3 '/' SideZ x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#3	Device 1	47.95'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.40'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=14.29 cfs @ 12.11 hrs HW=48.67' (Free Discharge)
└─**1=Culvert** (Inlet Controls 14.29 cfs @ 8.08 fps)
  ├─**3=Orifice/Grate** (Passes < 31.93 cfs potential flow)
  ├─**4=Orifice/Grate** (Passes < 1.34 cfs potential flow)
  └─**5=Orifice/Grate** (Passes < 0.69 cfs potential flow)

Secondary OutFlow Max=4.12 cfs @ 12.10 hrs HW=48.69' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 4.12 cfs @ 1.07 fps)





Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	ES Storm	NOAA 24-hr	C	Default	24.00	1	12.77	2

Summary for Pond 41P: Basin 203

[92] Warning: Device #2 is above defined storage
[93] Warning: Storage range exceeded by 0.32'
[88] Warning: Qout>Qin may require smaller dt or Finer Routing
[81] Warning: Exceeded Pond 43P by 1.20' @ 14.85 hrs
[81] Warning: Exceeded Pond 43P by 0.31' @ 12.15 hrs

Inflow Area = 3.830 ac, 79.29% Impervious, Inflow Depth > 12.07" for ES Storm event
Inflow = 51.00 cfs @ 12.11 hrs, Volume= 3.853 af
Outflow = 57.13 cfs @ 12.15 hrs, Volume= 3.065 af, Atten= 0%, Lag= 2.4 min
Primary = 34.48 cfs @ 12.15 hrs, Volume= 2.971 af
Routed to Link 2A : POA 1 (Adj)
Secondary = 22.67 cfs @ 12.15 hrs, Volume= 0.094 af
Routed to Link 2A : POA 1 (Adj)

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 48.72' @ 12.15 hrs Surf.Area= 18,306 sf Storage= 64,356 cf

Plug-Flow detention time= 202.3 min calculated for 3.065 af (80% of inflow)
Center-of-Mass det. time= 122.1 min (875.2 - 753.0)

Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	64,356 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

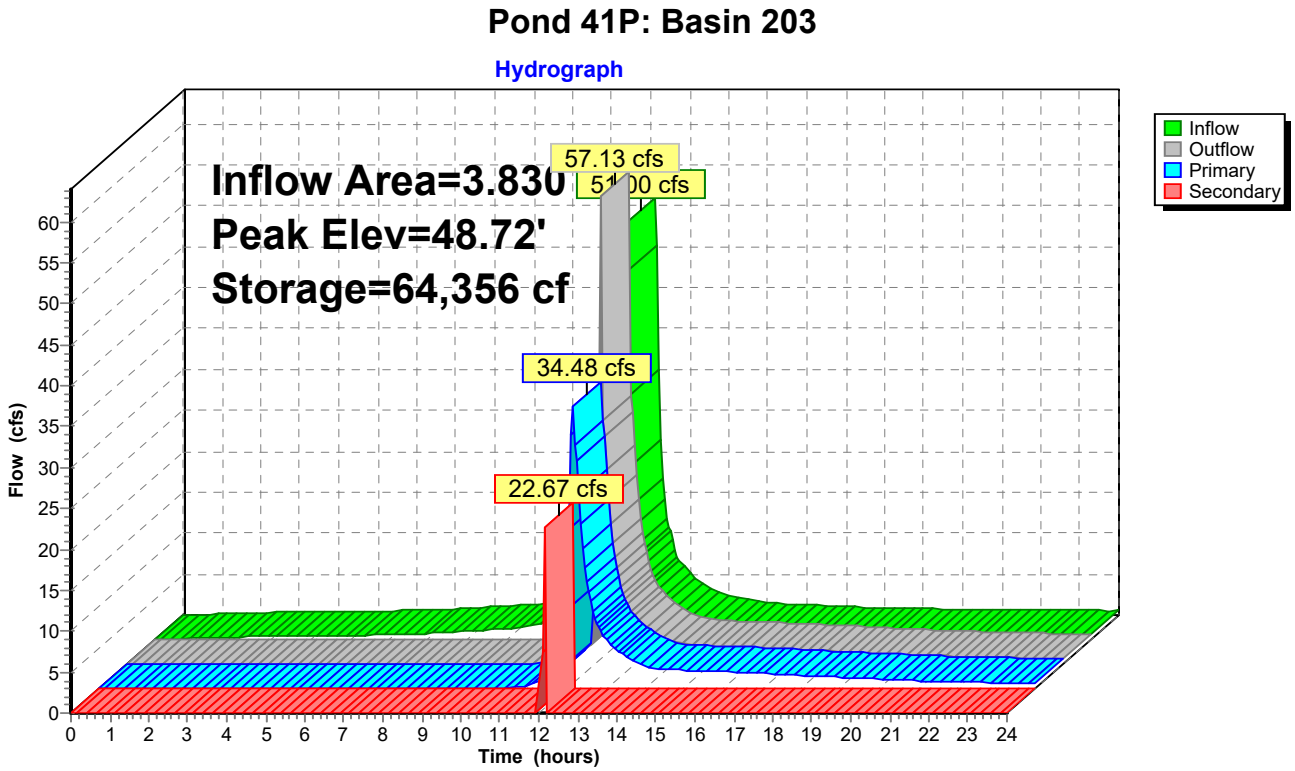
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	11,929	737.0	0.0	0	0	11,929
42.84	11,929	737.0	40.0	48	48	11,936
43.00	11,929	737.0	40.0	763	811	12,054
44.00	11,929	737.0	40.0	4,772	5,583	12,791
44.83	11,929	737.0	40.0	3,960	9,543	13,403
44.84	11,929	737.0	100.0	119	9,662	13,410
45.00	12,301	741.0	100.0	1,938	11,601	13,895
46.00	14,572	762.0	100.0	13,420	25,021	16,517
47.00	16,075	784.0	100.0	15,317	40,339	19,332
48.00	17,607	806.0	100.0	16,835	57,174	22,227
48.40	18,306	815.0	100.0	7,182	64,356	23,432

Device	Routing	Invert	Outlet Devices
#1	Primary	39.00'	**21.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 39.00' / 39.00' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 2.41 sf
#2	Secondary	48.40'	**50.0' long x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#3	Device 1	47.70'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.30'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

#5 Device 1 45.82' **4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=34.39 cfs @ 12.15 hrs HW=48.69' (Free Discharge)
└─**1=Culvert** (Inlet Controls 34.39 cfs @ 14.30 fps)
  ├─**3=Orifice/Grate** (Passes < 51.75 cfs potential flow)
  ├─**4=Orifice/Grate** (Passes < 2.41 cfs potential flow)
  └─**5=Orifice/Grate** (Passes < 0.69 cfs potential flow)

Secondary OutFlow Max=22.62 cfs @ 12.15 hrs HW=48.72' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 22.62 cfs @ 1.40 fps)



Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	ES Storm	NOAA 24-hr	C	Default	24.00	1	12.77	2

Summary for Pond 43P: Basin 206

[92] Warning: Device #2 is above defined storage
[93] Warning: Storage range exceeded by 0.02'
[88] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 0.773 ac, 84.16% Impervious, Inflow Depth > 12.35" for ES Storm event
Inflow = 11.53 cfs @ 12.08 hrs, Volume= 0.795 af
Outflow = 11.67 cfs @ 12.09 hrs, Volume= 0.728 af, Atten= 0%, Lag= 0.7 min
Primary = 11.51 cfs @ 12.09 hrs, Volume= 0.727 af
Routed to Pond 41P : Basin 203
Secondary = 0.17 cfs @ 12.10 hrs, Volume= 0.001 af
Routed to Pond 41P : Basin 203

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 48.52' @ 12.09 hrs Surf.Area= 1,869 sf Storage= 7,008 cf

Plug-Flow detention time= 107.9 min calculated for 0.726 af (91% of inflow)
Center-of-Mass det. time= 62.0 min (799.8 - 737.7)

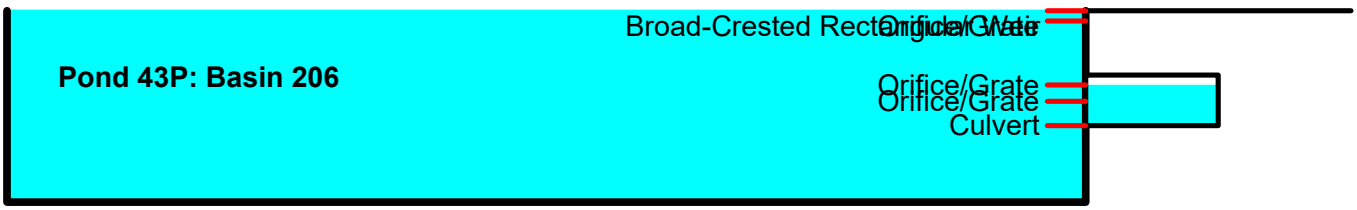
Volume	Invert	Avail.Storage	Storage Description
#1	42.83'	7,008 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
42.83	1,435	180.0	0.0	0	0	1,435
42.84	1,435	180.0	40.0	6	6	1,437
43.00	1,435	180.0	40.0	92	98	1,466
44.00	1,435	180.0	40.0	574	672	1,646
44.83	1,435	180.0	40.0	476	1,148	1,795
44.84	1,435	180.0	100.0	14	1,162	1,797
45.00	1,435	180.0	100.0	230	1,392	1,826
46.00	1,489	190.0	100.0	1,462	2,854	2,173
47.00	1,611	213.0	100.0	1,550	4,403	2,938
48.00	1,777	233.0	100.0	1,693	6,097	3,682
48.50	1,869	240.0	100.0	911	7,008	3,971

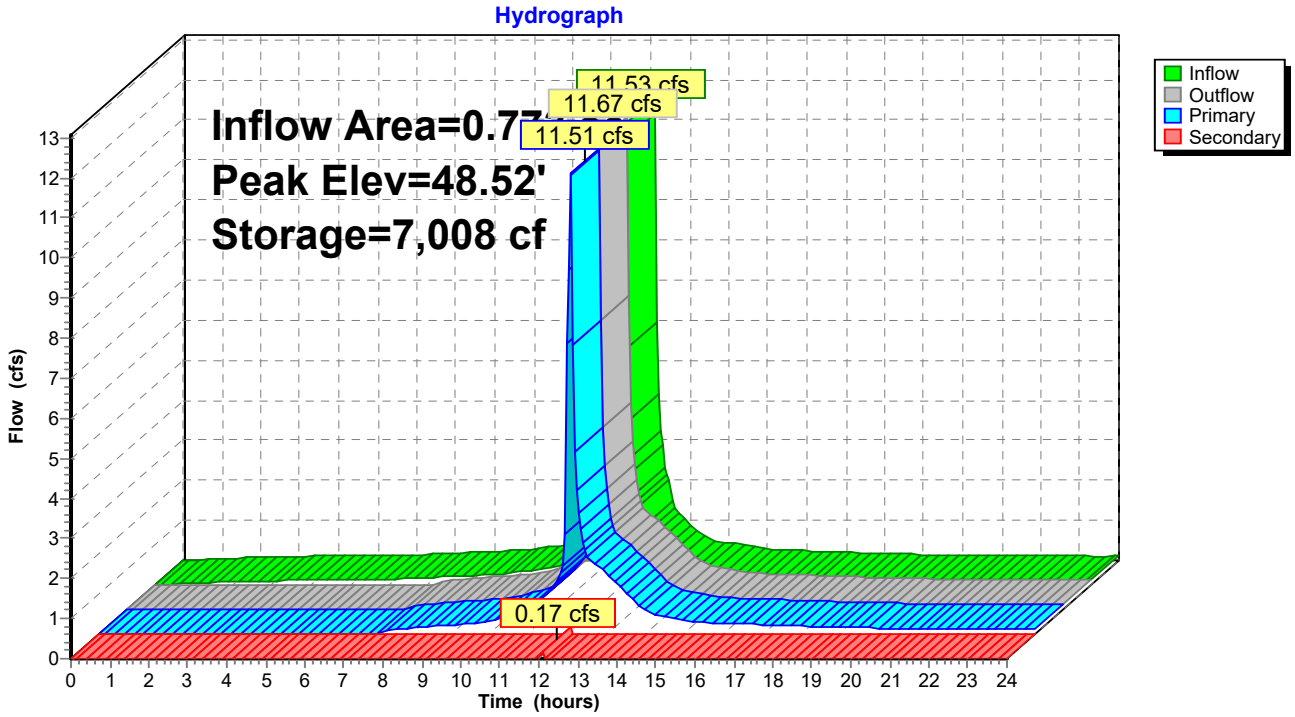
Device	Routing	Invert	Outlet Devices
#1	Primary	45.10'	**18.0" Round Culvert** L= 3.0' Ke= 0.500 Inlet / Outlet Invert= 45.10' / 45.10' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#2	Secondary	48.50'	**16.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#3	Device 1	48.20'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.30'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	45.82'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=11.07 cfs @ 12.09 hrs HW=48.51' (Free Discharge)
└─**1=Culvert** (Passes 11.07 cfs of 13.88 cfs potential flow)
  ├─**3=Orifice/Grate** (Weir Controls 9.07 cfs @ 1.82 fps)
  ├─**4=Orifice/Grate** (Orifice Controls 1.32 cfs @ 6.74 fps)
  └─**5=Orifice/Grate** (Orifice Controls 0.67 cfs @ 7.65 fps)

Secondary OutFlow Max=0.10 cfs @ 12.10 hrs HW=48.52' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 0.10 cfs @ 0.33 fps)



Pond 43P: Basin 206



8. MAPS & DIAGRAMS

PREPARED: September 19, 2025
REVISED: December 15, 2025

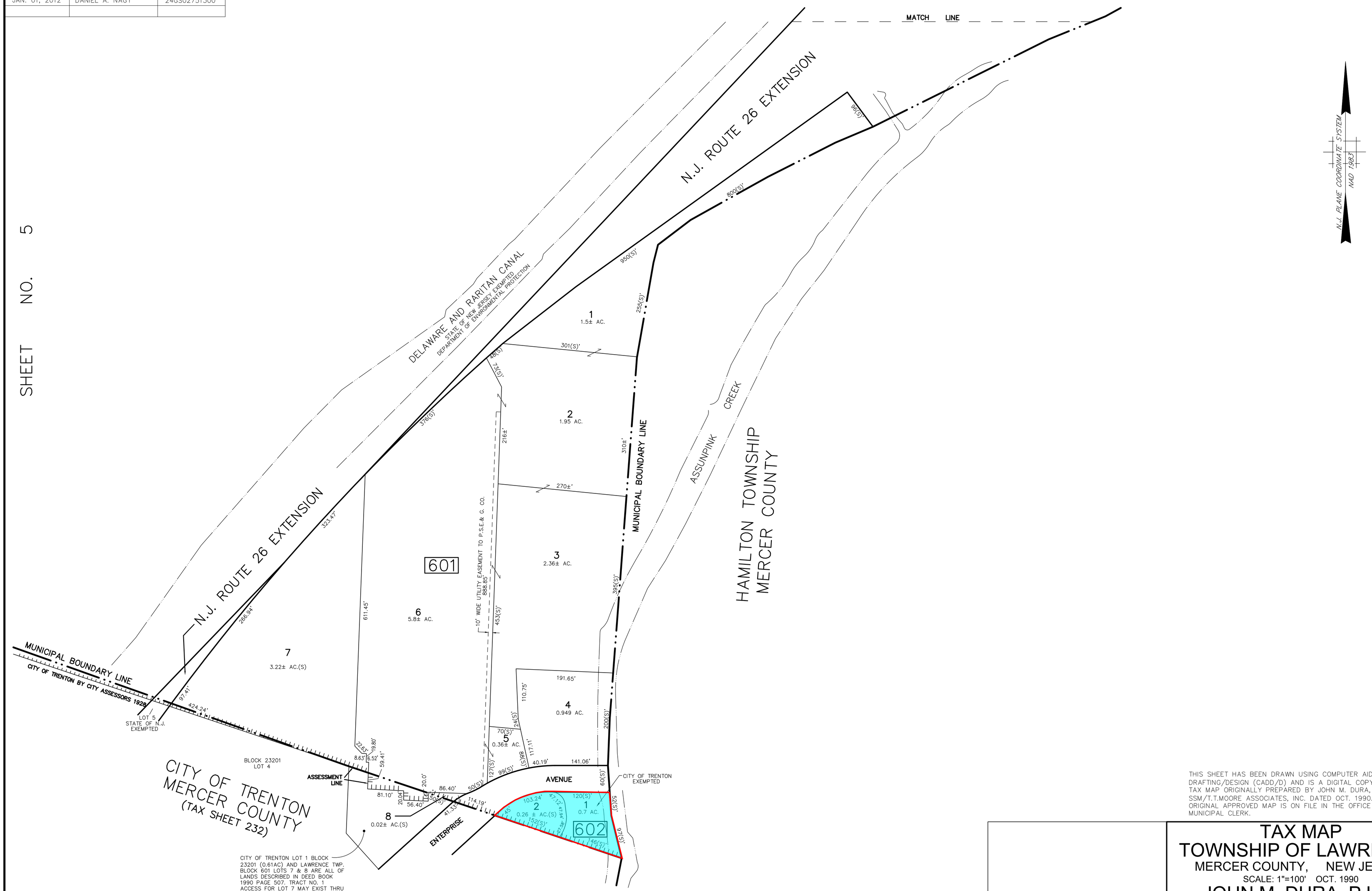
300-356 ENTERPRISE AVE.
CITY OF TRENTON
BLOCK 23203, LOT 1
BLOCK 23102 LOTS 2 & 9
TOWNSHIP OF LAWRENCE
BLOCK 602, LOTS 1 & 2
MERCER COUNTY, NEW JERSEY

REVISIONS		
DATE	NAME	NO.
JAN. 01, 2012	DANIEL A. NAGY	24GS02751300

SHEET NO. 5

SHEET NO. 12

MATCH LINE



THIS SHEET HAS BEEN DRAWN USING COMPUTER AIDED DRAFTING/DESIGN (CADD/D) AND IS A DIGITAL COPY OF THE TAX MAP ORIGINALLY PREPARED BY JOHN M. DURA, P.L.S., SSM/T.T.MOORE ASSOCIATES, INC. DATED OCT. 1990. THE ORIGINAL APPROVED MAP IS ON FILE IN THE OFFICE OF THE MUNICIPAL CLERK.

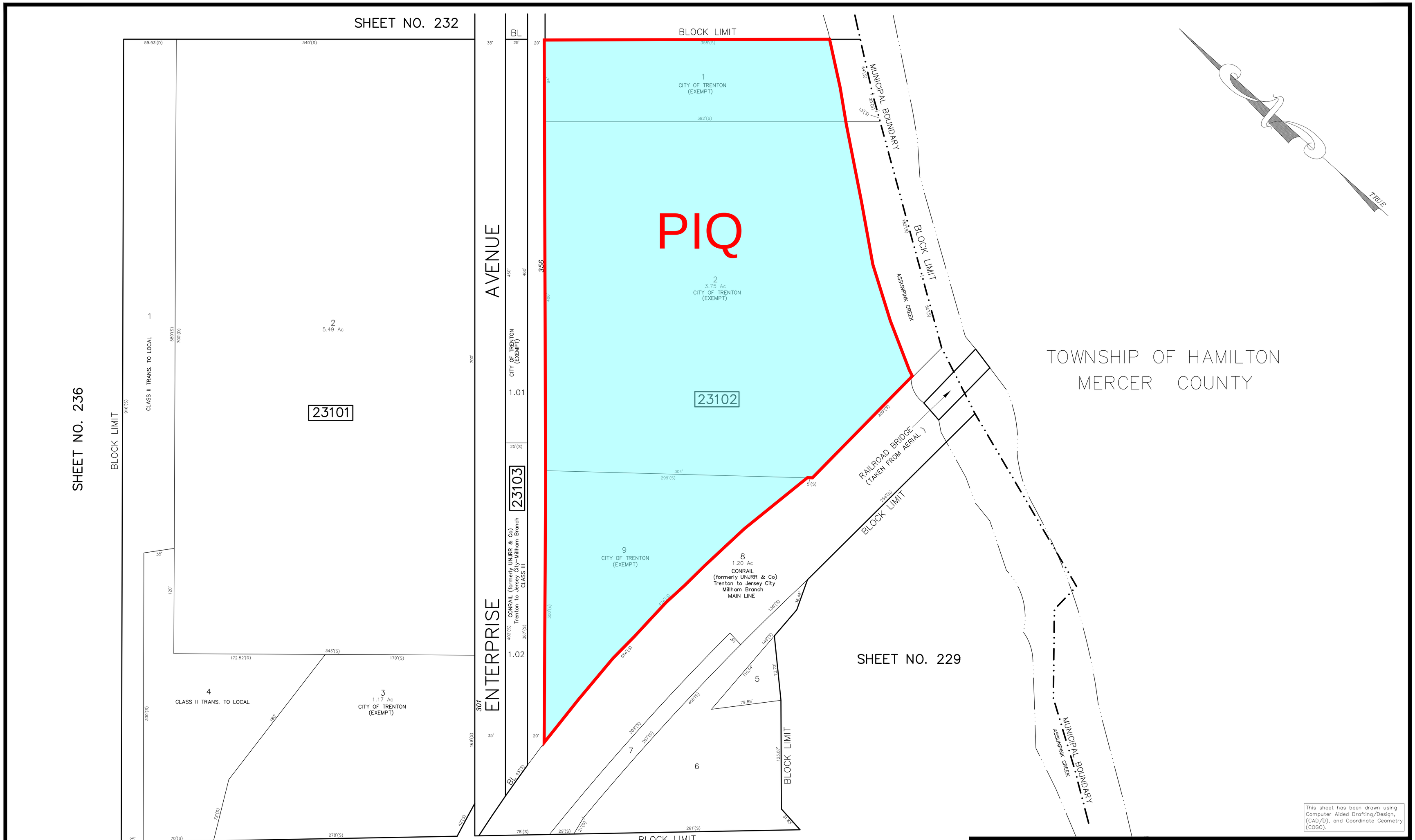
TAX MAP
TOWNSHIP OF LAWRENCE
MERCER COUNTY, NEW JERSEY

SCALE: 1"=100' OCT. 1990

JOHN M. DURA, P.L.S.

TO SHOW CONDITIONS AS OF JAN. 01, 2012

SSM/T.T.MOORE ASSOCIATES, INC.	A.D.R. ASSOCIATES, INC.
67 SCOTCH RD. WEST TRENTON N.J. 08628 883-2313	9285 COMMERCE HIGHWAY PENNSAUKEN N.J. 08110 663-7200



REVISIONS		
DATE	NAME	LIC. NO.
06/14/10	Robert R. Heggan (ARH)	17775
01/15/15	Charles A. Atkinson	33994
1/15/2020	CHARLES E. ADAMSON	42627

THIS MAP HAS BEEN GIVEN A FORMAL CERTIFICATION BY THE DIVISION OF TAXATION ON JANUARY 9, 2003, SIGNED BY SANTO C. DiDONATO, CTA AND ASSIGNED SERIAL NUMBER 811

This sheet has been drawn using Computer Aided Drafting/Design, (CAD/D), and Coordinate Geometry (COGO).

TAX MAP
CITY OF TRENTON

MERCER COUNTY, NEW JERSEY

SCALE 1"=50' MARCH 2000

HARRY J. SYPNIEWSKI

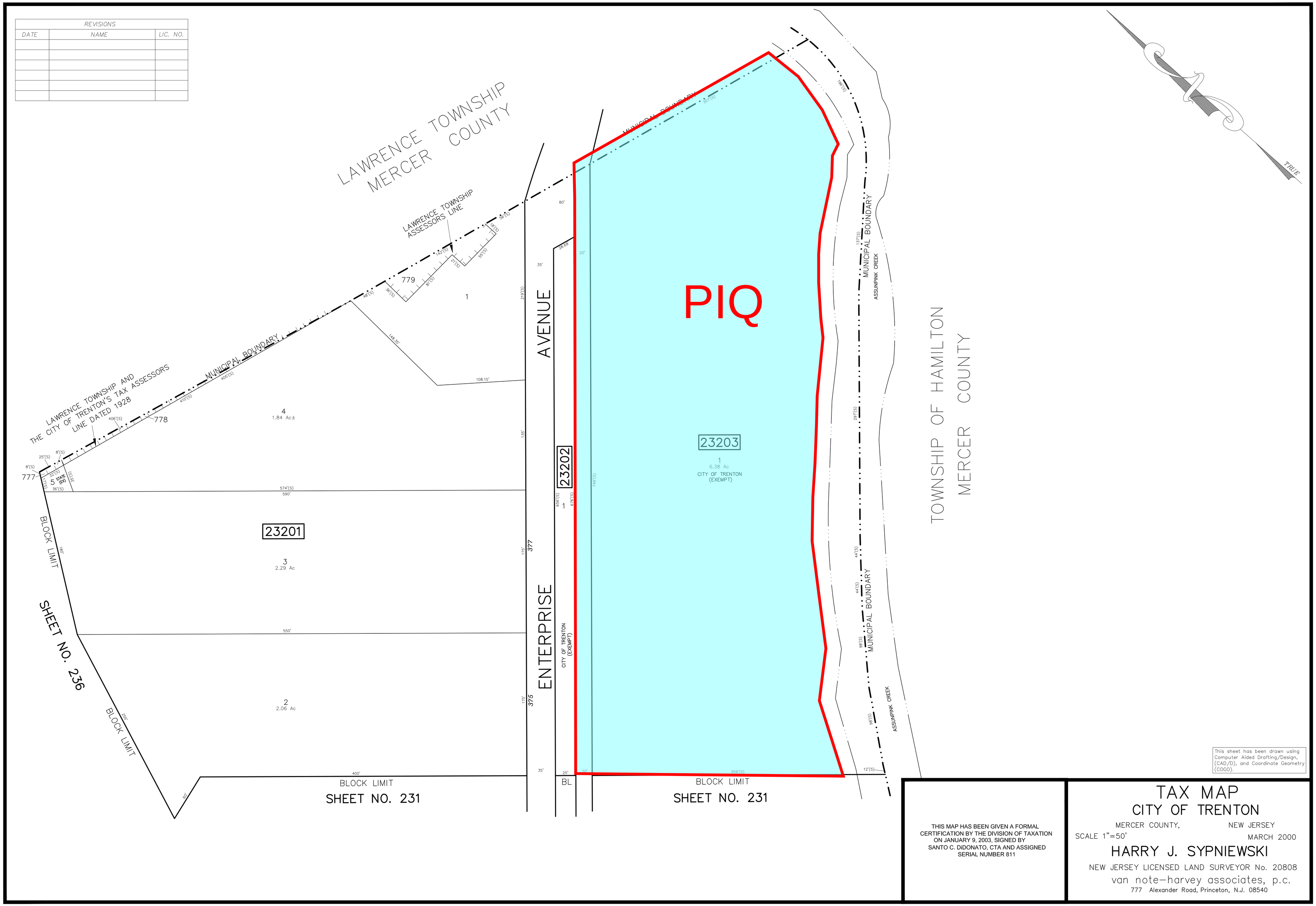
NEW JERSEY LICENSED LAND SURVEYOR No. 20808

van note–harvey associates, p.c.

777 Alexander Road, Princeton, N.J. 08540

ARH – COA#24GA27973300

REVISIONS		
DATE	NAME	LIC. NO.



This sheet has been drawn using Computer Aided Drafting/Design, (CAD/D), and Coordinate Geometry (COGO).

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TAX MAP
CITY OF TRENTON

MERCER COUNTY, NEW JERSEY

SCALE 1"=50' MARCH 2000

HARRY J. SYPNIEWSKI

NEW JERSEY LICENSED LAND SURVEYOR No. 20808

van note–harvey associates, p.c.

777 Alexander Road, Princeton, N.J. 08540

8TH TAX AREA

SHEET NO. 232

Land Resource Protection Web Map

3/6/2025, 1:16:29 PM

1:4,514

0 160 320 640 ft

0 45 90 180 m

Maxar

Parcel (Block and Lot)

County

Flood Hazard Zones

1% Annual Chance Flood Hazard

Regulatory Floodway

0.2% Annual Chance Flood Hazard

Flood Hazard Boundaries

SFHA / Flood Zone Boundary

Cross-Sections

FIRM Panels

New Jersey Department of Environmental Protection

NJDEP, FEMA Edition 20210224 | FEMA | New Jersey Office of Information Technology (NJOIT), Office of Geographic Information Systems | NJDEP | New Jersey Department of Environmental Protection (NJDEP), Fish and Wildlife (FW), Office of Fish and Wildlife

Hydrologic Soil Group—Mercer County, New Jersey

Map Scale: 1:3,440 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

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

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

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

Soil Rating Lines

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

Soil Rating Points

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

Water Features

Streams and Canals

Transportation

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

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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

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

Soil Survey Area: Mercer County, New Jersey
Survey Area Data: Version 20, Sep 3, 2024

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

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

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
UdgB	Udorthents, gravelly substratum, 0 to 8 percent slopes	D	18.6	80.8%
UdstB	Udorthents, stratified substratum, 0 to 8 percent slopes	D	0.1	0.4%
WATER	Water		4.3	18.8%
Totals for Area of Interest			**23.0**	**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.

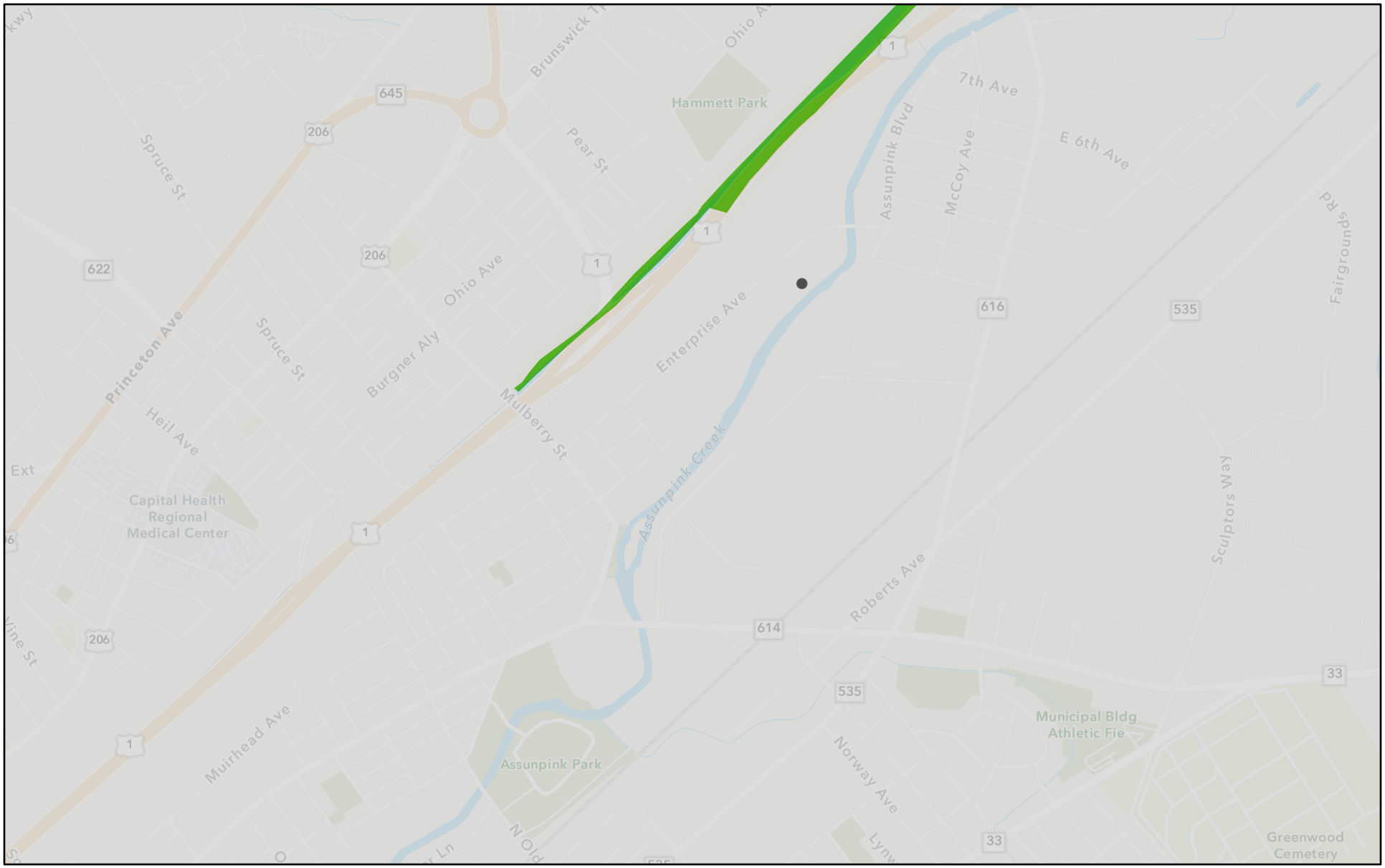
Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

NJ-GeoWeb



9/30/2025, 8:31:55 AM

1:18,056

0 0.1 0.2 0.4 mi

0 0.17 0.35 0.7 km

State Planning Area Boundaries

Metropolitan Planning Area (PA 1)

Parks and Natural Areas (PA 6,7,8)

County Boundaries

Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

New Jersey Department of Environmental Protection

Esri Community Maps Contributors, Bucks County, PA, data.pa.gov, New Jersey Office of GIS, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS | NJDEP | NJDEP Edition 20241101 | NJ

9. CHARTS & TABLES

PREPARED: September 19, 2025
REVISED: December 15, 2025

300-356 ENTERPRISE AVE.
CITY OF TRENTON
BLOCK 23203, LOT 1
BLOCK 23102 LOTS 2 & 9
TOWNSHIP OF LAWRENCE
BLOCK 602, LOTS 1 & 2
MERCER COUNTY, NEW JERSEY

Table 2-2a Runoff curve numbers for urban areas [1]

Cover description: Cover type and hydrologic condition	Average percent impervious area [2]	Curve numbers for hydrologic soil group: A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.) [3]:					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only) [4]		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82
Developing urban areas					
Newly graded areas (pervious areas only, no vegetation) [5]		77	86	91	94
Idle lands (CN's are determined using cover types similar to those in table 2-2c).					

1 Average runoff condition, and $I_a = 0.2S$.
2 The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.
3 CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.
4 Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.
5 Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4 based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.

Table 2-2b Runoff curve numbers for cultivated agricultural lands [1]

Cover description			Curve numbers for hydrologic soil group			
Cover type	Treatment [2]	Hydrologic condition [3]	A	B	C	D
Fallow	Bare soil	—	77	86	91	94
	Crop residue cover (CR)	Poor	76	85	90	93
		Good	74	83	88	90
Row crops	Straight row (SR)	Poor	72	81	88	91
		Good	67	78	85	89
	SR + CR	Poor	71	80	87	90
		Good	64	75	82	85
	Contoured (C)	Poor	70	79	84	88
		Good	65	75	82	86
	C + CR	Poor	69	78	83	87
		Good	64	74	81	85
	Contoured & terraced (C&T)	Poor	66	74	80	82
		Good	62	71	78	81
	C&T+ CR	Poor	65	73	79	81
		Good	61	70	77	80
Small grain	SR	Poor	65	76	84	88
		Good	63	75	83	87
	SR + CR	Poor	64	75	83	86
		Good	60	72	80	84
	C	Poor	63	74	82	85
		Good	61	73	81	84
	C + CR	Poor	62	73	81	84
		Good	60	72	80	83
	C&T	Poor	61	72	79	82
		Good	59	70	78	81
	C&T+ CR	Poor	60	71	78	81
		Good	58	69	77	80
Close-seeded or broadcast legumes or rotation meadow	SR	Poor	66	77	85	89
		Good	58	72	81	85
	C	Poor	64	75	83	85
		Good	55	69	78	83
	C&T	Poor	63	73	80	83
		Good	51	67	76	80

[1] Average runoff condition, and I_a=0.2S

[2] Crop residue cover applies only if residue is on at least 5% of the surface throughout the year.

[3] Hydraulic condition is based on combination factors that affect infiltration and runoff, including (a) density and canopy of vegetative areas, (b) amount of year-round cover, (c) amount of grass or close-seeded legumes, (d) percent of residue cover on the land surface (good ≥ 20%), and (e) degree of surface roughness.

Poor: Factors impair infiltration and tend to increase runoff.

Good: Factors encourage average and better than average infiltration and tend to decrease runoff.

Table 2-2c Runoff curve numbers for other agricultural lands [1]

Cover description		Curve numbers for hydrologic soil group			
Cover type	Hydrologic condition	A	B	C	D
Pasture, grassland, or range—continuous forage for grazing. [2]	Poor	68	79	86	89
	Fair	49	69	79	84
	Good	39	61	74	80
Meadow—continuous grass, protected from grazing and generally mowed for hay.	—	30	58	71	78
Brush—brush-weed-grass mixture with brush the major element. [3]	Poor	48	67	77	83
	Fair	35	56	70	77
	Good	30 [4]	48	65	73
Woods—grass combination (orchard or tree farm). [5]	Poor	57	73	82	86
	Fair	43	65	76	82
	Good	32	58	72	79
Woods. [6]	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	30 [4]	55	70	77
Farmsteads—buildings, lanes, driveways, and surrounding lots.	—	59	74	82	86

1 Average runoff condition, and $I_a = 0.2S$.
2 *Poor:* <50%) ground cover or heavily grazed with no mulch.
Fair: 50 to 75% ground cover and not heavily grazed.
Good: > 75% ground cover and lightly or only occasionally grazed.
3 *Poor*: <50% ground cover.
Fair: 50 to 75% ground cover.
Good: >75% ground cover.
4 Actual curve number is less than 30; use CN = 30 for runoff computations.
5 CN's shown were computed for areas with 50% woods and 50% grass (pasture) cover. Other combinations of conditions may be computed from the CN's for woods and pasture.
6 *Poor:* Forest litter, small trees, and brush are destroyed by heavy grazing or regular burning.
Fair: Woods are grazed but not burned, and some forest litter covers the soil.
Good: Woods are protected from grazing, and litter and brush adequately cover the soil.

Table 2-2d Runoff curve numbers for arid and semiarid rangelands [1]

Cover description		Curve numbers for hydrologic soil group			
Cover type	Hydrologic condition [2]	A [3]	B	C	D
Herbaceous—mixture of grass, weeds, and low-growing brush, with brush the minor element.	Poor		80	87	93
	Fair		71	81	89
	Good		62	74	85
Oak-aspen—mountain brush mixture of oak brush, aspen, mountain mahogany, bitter brush, maple, and other brush.	Poor		66	74	79
	Fair		48	57	63
	Good		30	41	48
Pinyon-juniper—pinyon, juniper, or both; grass understory.	Poor		75	85	89
	Fair		58	73	80
	Good		41	61	71
Sagebrush with grass understory.	Poor		67	80	85
	Fair		51	63	70
	Good		35	47	55
Desert shrub—major plants include saltbush, greasewood, creosotebush, blackbrush, bursage, palo verde, mesquite, and cactus.	Poor	63	77	85	88
	Fair	55	72	81	86
	Good	49	68	79	84

1 Average runoff condition, and I_a, = 0.2S. For range in humid regions, use table 2-2c.
2 Poor: <30% ground cover (litter, grass, and brush overstory).
Fair: 30 to 70% ground cover.
Good: > 70% ground cover.
3 Curve numbers for group A have been developed only for desert shrub.

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NOAA ATLAS 14 POINT PRECIPITATION FREQUENCY ESTIMATES: NJ

Data description

Data type: Precipitation depth **Units:** English **Time series type:** Partial duration

Select location

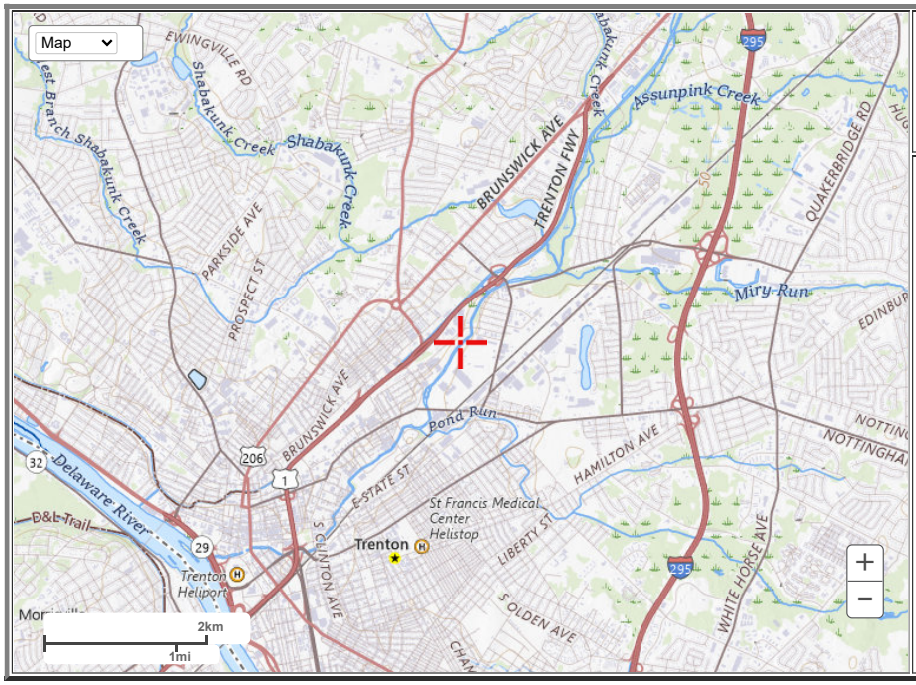
1) Manually:

a) By location (decimal degrees, use "-" for S and W): Latitude: Longitude: Submit

b) By station (list of NJ stations): Select station

c) By address 310 Enterprise Ave, Trenton, NJ, 0863

2) Use map:



a) Select location
Move crosshair or double click

b) Click on station icon
Show stations on map

Location information:
Name: Trenton, New Jersey, USA*
Latitude: 40.2411°
Longitude: -74.7335°
Elevation: 47 ft **

* Source: ESRI Maps
** Source: USGS

POINT PRECIPITATION FREQUENCY (PF) ESTIMATES

WITH 90% CONFIDENCE INTERVALS AND SUPPLEMENTARY INFORMATION
NOAA Atlas 14, Volume 2, Version 3

PF tabular PF graphical Supplementary information Print page

PDS-based precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.341** (0.310-0.377)	**0.408** (0.371-0.450)	**0.485** (0.438-0.534)	**0.541** (0.489-0.596)	**0.610** (0.548-0.672)	**0.661** (0.591-0.728)	**0.712** (0.633-0.786)	**0.759** (0.671-0.840)	**0.818** (0.717-0.911)	**0.864** (0.750-0.968)
10-min	**0.545** (0.495-0.602)	**0.652** (0.593-0.719)	**0.776** (0.702-0.855)	**0.865** (0.781-0.952)	**0.972** (0.874-1.07)	**1.05** (0.942-1.16)	**1.13** (1.01-1.25)	**1.20** (1.06-1.33)	**1.29** (1.13-1.44)	**1.36** (1.18-1.52)
15-min	**0.682** (0.619-0.752)	**0.819** (0.745-0.904)	**0.982** (0.888-1.08)	**1.09** (0.988-1.20)	**1.23** (1.11-1.36)	**1.33** (1.19-1.47)	**1.43** (1.27-1.58)	**1.52** (1.34-1.68)	**1.63** (1.43-1.82)	**1.71** (1.48-1.91)
30-min	**0.934** (0.849-1.03)	**1.13** (1.03-1.25)	**1.40** (1.26-1.54)	**1.58** (1.43-1.75)	**1.83** (1.64-2.01)	**2.01** (1.80-2.21)	**2.19** (1.95-2.42)	**2.36** (2.09-2.62)	**2.59** (2.27-2.89)	**2.76** (2.40-3.10)
60-min	**1.16** (1.06-1.29)	**1.42** (1.29-1.57)	**1.79** (1.62-1.97)	**2.06** (1.86-2.27)	**2.43** (2.18-2.68)	**2.72** (2.43-3.00)	**3.02** (2.68-3.33)	**3.31** (2.93-3.67)	**3.72** (3.26-4.14)	**4.04** (3.50-4.52)
2-hr	**1.41** (1.28-1.56)	**1.72** (1.56-1.90)	**2.18** (1.97-2.40)	**2.53** (2.28-2.79)	**3.02** (2.70-3.32)	**3.41** (3.04-3.75)	**3.81** (3.37-4.20)	**4.22** (3.72-4.67)	**4.80** (4.17-5.34)	**5.25** (4.53-5.89)
3-hr	**1.55** (1.40-1.72)	**1.89** (1.71-2.10)	**2.39** (2.16-2.66)	**2.79** (2.50-3.10)	**3.34** (2.99-3.71)	**3.79** (3.36-4.21)	**4.26** (3.75-4.74)	**4.75** (4.15-5.30)	**5.43** (4.68-6.09)	**5.99** (5.09-6.75)
6-hr	**1.96** (1.77-2.19)	**2.38** (2.15-2.66)	**3.01** (2.71-3.35)	**3.52** (3.15-3.92)	**4.26** (3.78-4.74)	**4.88** (4.30-5.43)	**5.55** (4.84-6.18)	**6.27** (5.40-6.99)	**7.30** (6.18-8.19)	**8.16** (6.82-9.22)
12-hr	**2.38** (2.15-2.67)	**2.88** (2.60-3.23)	**3.66** (3.29-4.11)	**4.33** (3.87-4.85)	**5.32** (4.71-5.95)	**6.19** (5.43-6.92)	**7.14** (6.18-7.97)	**8.19** (6.98-9.19)	**9.76** (8.15-11.0)	**11.1** (9.11-12.6)
24-hr	**2.75** (2.54-3.00)	**3.33** (3.07-3.63)	**4.23** (3.90-4.60)	**5.00** (4.59-5.43)	**6.13** (5.59-6.65)	**7.11** (6.42-7.70)	**8.19** (7.34-8.87)	**9.37** (8.31-10.2)	**11.1** (9.72-12.1)	**12.6** (10.9-13.8)
2-day	**3.18** (2.93-3.48)	**3.86** (3.55-4.22)	**4.91** (4.50-5.37)	**5.78** (5.28-6.32)	**7.06** (6.41-7.69)	**8.14** (7.34-8.86)	**9.31** (8.33-10.1)	**10.6** (9.38-11.6)	**12.5** (10.9-13.7)	**14.0** (12.1-15.4)
3-day	**3.38** (3.12-3.68)	**4.08** (3.77-4.45)	**5.16** (4.76-5.63)	**6.06** (5.56-6.59)	**7.35** (6.71-7.98)	**8.43** (7.65-9.15)	**9.60** (8.65-10.4)	**10.9** (9.70-11.8)	**12.7** (11.2-13.9)	**14.2** (12.4-15.6)
4-day	**3.57** (3.30-3.87)	**4.31** (3.98-4.68)	**5.42** (5.01-5.89)	**6.33** (5.84-6.87)	**7.64** (7.00-8.28)	**8.73** (7.96-9.45)	**9.90** (8.96-10.7)	**11.1** (10.0-12.1)	**12.9** (11.5-14.1)	**14.4** (12.7-15.7)

7-day	**4.18** (3.86-4.55)	**5.01** (4.63-5.46)	**6.22** (5.75-6.77)	**7.22** (6.65-7.85)	**8.66** (7.94-9.40)	**9.86** (8.99-10.7)	**11.1** (10.1-12.1)	**12.5** (11.2-13.5)	**14.4** (12.9-15.7)	**16.1** (14.2-17.5)
10-day	**4.76** (4.43-5.14)	**5.69** (5.29-6.14)	**6.96** (6.47-7.51)	**7.99** (7.41-8.62)	**9.44** (8.71-10.2)	**10.6** (9.77-11.4)	**11.8** (10.8-12.8)	**13.1** (12.0-14.2)	**14.9** (13.5-16.2)	**16.4** (14.7-17.8)
20-day	**6.42** (6.04-6.84)	**7.62** (7.17-8.12)	**9.11** (8.56-9.70)	**10.3** (9.65-11.0)	**11.9** (11.1-12.6)	**13.1** (12.3-14.0)	**14.4** (13.4-15.3)	**15.7** (14.5-16.7)	**17.4** (16.0-18.6)	**18.8** (17.1-20.1)
30-day	**8.00** (7.57-8.45)	**9.44** (8.92-9.97)	**11.0** (10.4-11.7)	**12.3** (11.6-13.0)	**13.9** (13.1-14.7)	**15.2** (14.3-16.0)	**16.4** (15.4-17.3)	**17.6** (16.5-18.6)	**19.2** (17.9-20.4)	**20.4** (18.9-21.7)
45-day	**10.2** (9.69-10.7)	**12.0** (11.4-12.6)	**13.8** (13.1-14.5)	**15.2** (14.4-16.0)	**17.0** (16.1-17.9)	**18.3** (17.3-19.2)	**19.6** (18.4-20.6)	**20.8** (19.5-21.9)	**22.3** (20.9-23.5)	**23.3** (21.8-24.7)
60-day	**12.2** (11.7-12.8)	**14.3** (13.7-15.0)	**16.4** (15.6-17.2)	**17.9** (17.0-18.8)	**19.8** (18.8-20.8)	**21.2** (20.1-22.2)	**22.5** (21.3-23.6)	**23.7** (22.5-24.9)	**25.2** (23.8-26.5)	**26.3** (24.7-27.7)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

Estimates from the table in CSV format: Precipitation frequency estimates Submit

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10. SUBSURFACE SOIL INVESTIGATION & REPORT

PREPARED: September 19, 2025
REVISED: December 15, 2025

300-356 ENTERPRISE AVE.
CITY OF TRENTON
BLOCK 23203, LOT 1
BLOCK 23102 LOTS 2 & 9
TOWNSHIP OF LAWRENCE
BLOCK 602, LOTS 1 & 2
MERCER COUNTY, NEW JERSEY

SESI CONSULTING ENGINEERS
GEOTECHNICAL | ENVIRONMENTAL | SITE CIVIL

Principals:
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Justin M. Protasiewicz, PE
Jose M. Rodriguez, PE
Michael St. Pierre, PE

June 5, 2025 ***via email:*** josh@redcomllc.com

Mr. Joshua Tiner, PE
REDCOM Design & Construction LLC
433 North Avenue East
Westfield NJ, 07090

RE:

Preliminary Geotechnical Investigation Letter
Proposed Warehouse
310-356 Enterprise Avenue
Trenton, New Jersey, 08638
SESI Project No. 14039

Dear Mr. Tiner:

In accordance with our Professional Service Agreement, dated March 10, 2025, we have performed a Seasonal High Water Table (SHWT) investigation for the proposed warehouse development located at 310–356 Enterprise Avenue, Trenton, New Jersey. This letter provides a summary of the site description and topography, our subsurface investigation, groundwater and SHGWT observations, and exploration logs. Additional recommendations for further investigations and any relevant comments or concerns are also included as necessary.

SITE DESCRIPTION

The project site is bounded to the north by Enterprise Avenue with industrial facilities beyond, to the west by Enterprise Avenue with industrial facilities, the Delaware and Raritan Canal and Route 1 beyond, to the south by Assunpink Creek, railroad tracks and the Whitehead Road Extension with warehouses beyond, and to the east by Assunpink Creek. The Assunpink Creek runs along the southern and eastern boundaries of the site, while the Delaware and Raritan Canal is approximately 500 feet northwest of the Site.

Based on a review of the drawing titled *Site Sketch 2* prepared by REDCOM Design & Construction dated April 15, 2025, the proposed stormwater management system at the Site will include four bioretention basins. Bioretention basins No. 1 through 3 are situated south of the proposed 236,178 square-foot warehouse, while bioretention basin No. 4 is located to the north. All proposed basins are positioned next to the loading and parking areas. The proposed development also includes parking, driveways, walkways, retaining walls, and ADA-accessible infrastructure. The existing elevations within the proposed basin areas generally range between EL 49.0 and EL 51.0, according to Boundary & Topographic Survey prepared by InSite Surveying, LLC dated March 12, 2025. Generally the site is flat along Enterprise Avenue, at EL 46± at the north and EL 49± at the south portion of the site. From East to West, the site is generally flat between EL.47 to EL.50, with a steep slope along the Assunpink Creek down to EL 37±. It should be noted there are several stockpiles and pits scattered throughout the site.

AVAILABLE INFORMATION REVIEW

We have reviewed the following documents in preparation for this letter:

- Deed notice prepared by Zigurds J Zingis LSRP from Sadat Associates, Inc. dated November 21, 2013.
- A letter titled Classification Exception Area/Well Restriction Area (CEA/WRA) prepared by the Department of Environmental Protection Bureau of Remedial Action Permitting dated May 23, 2014.
- A letter titled Soil Remedial Action Permit prepared by the Department of Environmental Protection Bureau of Remedial Action Permitting dated May 23, 2014.
- A letter title Youngs Rubber Company prepared by the Department of Environmental Protection Bureau of Enforcement & Investigations dated September 11, 2014.
- A letter titled Response Action Outcome prepared by Sadat Associates, Inc. dated October 8, 2014.
- A letter titled Biennial Certification Form- Soil prepared by Sadat Associates, Inc. dated June 9, 2023.
- Sheet No. 2.01 titled Constraints Analysis Plan prepared by MidAtlantic Engineering Partners dated September 20, 2024.
- The Engineering Soil Map of Mercer County Sheet 2 of 4 prepared by the Joint Highway Research Project NJ State Highway Department and Rutgers University dated October 1953.(referenced in this letter as the Rutgers Soil Survey for Mercer County)
- USDA NRCS Web Soil Survey Report prepared for 310-356 Enterprise Avenue in Trenton New Jersey.
- FEMA Flood Map: We researched and reviewed the FEMA Flood Insurance Rate Map, Map Number 34021C0226F (effective as of July 20, 2016) which indicates that the Site is located within zone AE. Zone AE is determined to be inside a special flood hazard area with a base flood elevation of approximately EL. 44 to 46 expanding from the Assunpink Creek. A letter Map revision was issued August 9, 2018 with an effective date of December 21, 2018. The Map revision corresponds to changes south of the Site and does not indicate any changes for the Site.

Based on information provided to us, the Site has undergone a comprehensive environmental cleanup in response to contamination from historical industrial operations. Major environmental concerns included petroleum hydrocarbons (PHCs) from underground storage tanks, polychlorinated biphenyls (PCBs) from transformers, and widespread contamination from historic fill, including heavy metals (cadmium, lead, arsenic), asbestos-containing materials, and polycyclic aromatic hydrocarbons (PAHs). Soil remediation was conducted in phases, with over 21,000 tons of impacted soil removed and two deed-restricted areas established. A Soil Remedial Action Permit (RAP140001) was issued by NJDEP in 2014, requiring long-term monitoring, maintenance, and institutional controls to remain protective of human health and the environment.

Based on our understanding, a Classification Exception Area (CEA) was designated for cadmium-impacted groundwater attributed to historic fill, covering approximately 11 acres and extending to

a depth of 100 feet in the underlying crystalline rock aquifer. No further active groundwater remediation was required, given the regional nature of the contamination. A Deed Notice was filed in 2013 and supplemented by engineering controls such as perimeter fencing, signage, and placement of clean fill.

An analysis of updated Soil Remediation Standards (2021) showed no contaminants requiring revised action based on order-of-magnitude changes. Contaminants of emerging concern (e.g., PFAS, 1,4-dioxane) were evaluated and determined not to be present. This should be reviewed by the project environmental engineer or Licensed Site Remediation Professional (LSRP) for ongoing oversight.

We reviewed the Rutgers Soil Survey Map for Mercer County, which identifies the surficial geology at the Site as being mapped primarily as GO-24, a soil unit derived from stratified drift deposited by glacial meltwaters during the Wisconsin glacial period. These soils are predominantly composed of sand and silt with some pebbles and cobbles, typically occurring in well-defined layers or beds. The underlying formations north of Assunpink Creek, where the site is located, include Triassic shale, argillite, sandstone, diabase, and localized areas of Cambrian quartzite, gneiss, and gabbro.

We reviewed the USDA NRCS Web Soil Survey Report, for the Site, which identifies the surficial soils at the Site as primarily “Udorthents, gravelly substratum, 0 to 8 percent slopes (UdgB).” These soils are derived from loamy lateral spread deposits over gravelly layers and are commonly found on low hills with linear slope profiles. The soil profile typically consists of gravelly sand from 0 to 10 inches and gravelly coarse sand extending to 72 inches.

SUMMARY OF INVESTIGATION

This investigation was conducted for the purpose of identifying the subsurface stratigraphy and the hydrological characteristics of the Site, specifically the type of soils including hydraulically restrictive stratum, and the SHWT. The investigation was performed in accordance with the New Jersey Best Management Practice (NJ BMP) Manual, March 2024 edition. The results of our SHWT investigation are described below.

The investigation was completed on April 30, 2025, which was within the “wet season” as determined by the NJ BMP Manual. Per the NJ BMP Manual, the SHWT shall be taken as the highest level at which the mottling is observed, except when the water table is observed at a level higher than the level of the redoximorphic depletions or concentrations. Where mottling showing redoximorphic features is not observed, the SHWT shall be determined directly by measuring water levels within soil profile pits. Our investigation included the drilling of five (5) borings using a subcontracted 7822Dt Geoprobe, to depths ranging from approximately 10 to 27± feet below the ground surface. Boring B-1 was not explored due to consistent refusal at a few inches below the ground surface, after multiple attempts in the immediate area. Boring B-2 encountered refusal at 12 feet below the ground surface even after offsetting the boring location three times.

The approximate locations of the borings with the corresponding approximate SHWT elevation are shown on the ***Exploration Location Plan***, which is included as **Drawing 1**. The individual boring logs, which describe the materials encountered along with a key to soil terminology are presented in **Appendix A**.

The fieldwork was performed under the direct technical observation of a geotechnical engineer from SESI Consulting Engineers. Our representative maintained continuous logs of the borings

and coordinated the soil sampling operations in order to develop the required subsurface information. All soil samples were taken to our soil's laboratory for additional classification.

All field work was conducted in accordance with the Site-Specific Health and Safety Plan (HASP) Rider prepared by SESI Consulting Engineers. The HASP outlined specific procedures to identify, mitigate, and respond to potential site hazards, including physical risks associated with heavy equipment, chemical exposure from historic fill materials, and heat or weather-related stressors. Field staff were trained in OSHA 1910.120 standards, utilized Modified Level D personal protective equipment, and followed strict communication, emergency response, and monitoring protocols throughout the duration of the investigation.

GENERALIZED SUBSURFACE CONDITIONS

The following subsurface conditions were encountered in order of increasing depth:

Surface Material Topsoil was encountered in all borings with thicknesses ranging from 2 to 6-inches. It should be noted that there are areas near and at Boring B-1 where topsoil was not observed, this area consisted of construction debris.

Fill: Fill material was encountered beneath the surface material in all completed borings and extended to depths ranging from 5± to 10± ft below ground surface (bgs). This correlates to ground surface elevations ranging from EL 39± to EL 42±. Other areas of uncontrolled fill may be present due to previous construction and remediation activities throughout the site.

The fill material generally consists of black, brown, dark brown, gray, light brown, yellow, and yellow-brown coarse/medium to fine sand with variable amounts of gravel, silt, and clay. Construction debris consisting of ashes, concrete and brick were encountered throughout all borings. Possible cobbles were encountered within the fill layer in boring B-6.

Based on the observed SPT N-values, the uncontrolled fill was generally found to be in a loose to dense consistency, which is typical for an uncontrolled fill.

Natural Soils: Natural glacial soils were encountered beneath the fill material in all borings~~,~~. The natural soils extended to depths ranging from 10± to 27± ft bgs. This correlates to EL 22± to 38±.

The natural glacial soils encountered generally consisted of black, brown, dark green, gray, gray-brown, light brown and red-brown coarse to fine sand with variable amounts of gravel, silt, clay, and possible cobbles. A possible boulder was encountered in boring B-4 at 21 ft bgs. An approximately three (3) ± foot thick clayey silt layer was encountered in boring B-5 at a depth of 11 ft bgs.

Based on the observed SPT N-values, the glacial soils were generally found to be in a medium dense consistency, with the exception of boring B-6 which encountered a loose condition at 10 to 12 ft bgs. This is believed to be a result of an unbalanced hydraulic head, during the sampling as groundwater was encountered near this depth for boring B-6.

Groundwater: Groundwater was encountered in all borings at depths ranging from 5± to 10± ft bgs during the short period of time that the holes were left open. This correlates to approximate groundwater elevations of EL.37.5± to EL.43±. South of the site, the Assunpink Creek leads into Delaware River. Additionally, the Delaware Raritan Canal is located north of the Site and also leads into the Delaware River. Fluctuations of a few feet in the groundwater elevations should be anticipated based on the time of year and the amount of recent precipitation. We do not believe that the groundwater at the site is tidally impacted. Mottling was encountered in boring B-5 at a

depth of 15 ft bgs, corresponding to EL. 33, however, water was observed to be at a depth of 5 ft bgs.

CONCLUSIONS

Based on the results of our preliminary geotechnical study, from a soils standpoint, this Site can be considered fair with respect to providing satisfactory support for the proposed warehouse. The primary negative aspects of the Site soils are the varying thickness of the uncontrolled fill layer. The second is the amount of fines encountered in the fill, if planned to be reused on site during construction. Additional investigations should be performed throughout the building footprint to prepare foundation and site preparation recommendations for the development.

In general, the Site preparation procedures should consist of removing old building foundations (if present), demolition debris, stockpiles, topsoil, trees, and wooded overgrowth, where present, from within and at least five (5) feet beyond the limits of the proposed buildings and pavement areas. The former foundations and/or demolition debris should be excavated and staged on-Site until proper environmental evaluation is completed, and disposal can be arranged. As an alternative, concrete encountered on-Site can be crushed and reused on-Site as fill only if approved by the site LSRP.

Some of the uncontrolled fill was considered to be moisture sensitive. The reuse of the material will be affected by the weather and the presence of water in the fill layer. Moisture sensitive soils, when wet, will need to dry prior to being reused. The need to replace the moisture sensitive soil with non-moisture sensitive granular fill should be considered as part of the site preparation.

Based on the available information, the SHWT is estimated to slope down between elevations EL.41± to EL.43 ± for the Site. This estimate is supported by observed groundwater elevations recorded during the wet season, and a review of the FEMA Flood Map. Further review of the FEMA data indicates that the groundwater elevation trends from northeast to southwest, generally following the path of the Assunpink Creek.

For preliminary stormwater management system design purposes, the SHWT should be considered to be approximately EL. 41 ± south of the proposed warehouse and EL. 43 ± north of the proposed warehouse. We understand that in the area of boring B-5 permeable pavement may be proposed. SHWT was observed to be EL. 43 in the proposed area of the permeable pavement. Boring B-6 indicated an elevation of EL 37.5 for the SHWT. The lower SHWT elevation of EL 37.5 was recorded in the test pit located closer to Assunpink Creek, indicating a likely hydraulic connection between the groundwater and the adjacent surface water body. Since groundwater tends to flow toward lower elevations and discharge into nearby streams, it is reasonable to interpret the EL 37.5 reading as representative of actual groundwater conditions in that portion of the Site. Given that the boring B-6 location also coincides with the footprint of the proposed stormwater basin, it would be considered appropriate to adopt EL 37.5 as the SHWT for design purposes in that area. However, to maintain a conservative approach and account for potential variability in subsurface conditions observed across the site, we recommend using EL 41.0 as the design SHWT for the basin. This provides a balance between observed data and protective design considerations. We have provided a table on the next page for the SHWT Elevation for each basin.

Table 1: SHWT EL for Basin Design	
Basin No.	SHWT EL.
Bioretention Basin No. 1	41
Bioretention Basin No. 2	41
Bioretention Basin No. 3	41
Bioretention Basin No. 4	41

According to New Jersey law, stormwater infiltration is prohibited in areas with known or suspected groundwater contamination, as specified in the NJDEP Stormwater Management Rules (N.J.A.C. 7:8-5.4.3).

RECOMMENDATIONS

SESI recommends conducting further evaluations of the proposed BMPs and proposed warehouse development to meet the requirements outlined in Chapter 12 of the New Jersey BMP Manual. Additional test pits are necessary to satisfy the minimum number prescribed for each BMP system. We recommend performing these test pits once there is sufficient fill debris removed from the areas of interest. Furthermore, supplemental soil borings or test pits should be performed within the warehouse footprint to provide an adequate foundation design recommendation along with additional construction recommendations.

We hope the information provided aids in the preliminary design development for the Site's BMP system.

If you have any questions, please call.

Sincerely,

SESI CONSULTING ENGINEERS

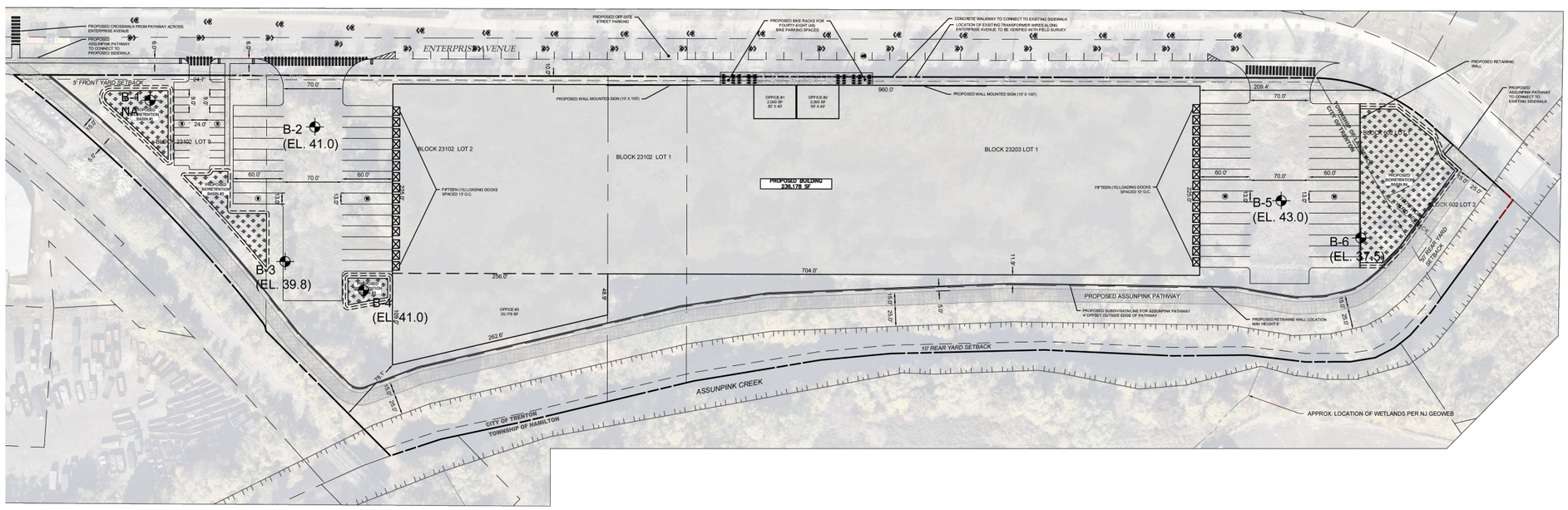
Jose Rodriguez, PE
Principal

Michael B. Garcia
Assistant Project Engineer I

Attachments:

Drawing-1 – Exploration Location Plan
Appendix A – Soil Logs and Key to Soil Terminology

14039_shwt investigation summary letter_2025.06.05



NOTE:
THIS PLAN IS FOR LOCATING BORING LOCATIONS.
OTHER SITE WORK SHOWN HERE IS NOT INTENDED FOR CONSTRUCTION.

SCALE: 1"=150'

0 150 300

LEGEND:

- PROPOSED BIORETENTION SYSTEM

B-5 - BORING NUMBER & APPROX. LOCATION
(EL. 43.0) APPROXIMATE ELEVATION FOR SHWT

REFERENCE
1. PROPOSED CONDITIONS & BOUNDARY LINES ARE TAKEN FROM "SITE SKETCH 2" PREPARED BY REDCOM DESIGN AND CONSTRUCTION, DATED APRIL 15, 2025

dwg by: EC
chk by: JMR
scale: AS NOTED
date: 06/04/25

Cert of Auth #24GA27934700
SESI CONSULTING ENGINEERS
GEOTECHNICAL | ENVIRONMENTAL | SITE CIVIL
959 ROUTE 46E, 3RD FLOOR, PARSIPPANY, NJ 07054 PH: 973.808.9050

project: PROPOSED REDEVELOPMENT
310 356 ENTERPRISE AVENUE
TRENTON, NEW JERSEY, 08638

title: EXPLORATION LOCATION PLAN

job no: 14039
drawing no:

DWG-1

N:\ACAD\14039\CAD\GEOTECH\LOCATION PLANS\14039.DWG.EXPO LOCATION PLAN.DWG 06/04/25 11:19:15AM, pinnacle, LAYOUT:DWG-1

Appendix A
Soil logs and Key to Soil Terminology

SESI CONSULTING ENGINEERS
GEOTECHNICAL | ENVIRONMENTAL | SITE CIVIL

BOREHOLE NUMBER: B-1

PROJECT NAME	Proposed Warehouse	**PROJECT LOCATION**	310-356 Enterprise Avenue, Trenton, NJ
PROJECT NO.	14039	**ELEVATION DATUM**	NAVD-88 **GROUND ELEVATION** 48.0±
DATE STARTED	04-30-2025 **COMPLETED** 04-30-2025	**DRILLING METHOD**	HSA
DRILLING CONTRACTOR	GPi	**SAMPLE HAMMER**	Auto
SAMPLER	Split Spoon	**AUGER INNER DIAMETER**	3.25 in **OUTER DIAMETER** 6.00 in
EQUIPMENT	7822DT	**ROTARY BIT DIAMETER**	**DEPTH TO GROUNDWATER:**
DRILLING FOREMAN	Clay **HELPER** Jimmy	**CASING DIAMETER**	▽ **AT TIME OF DRILLING** Not Measured
LOGGED BY	M. Zwingle **CHECKED BY** M. Garcia	**CASING DEPTH**	▼ **AT END OF DRILLING** Not Measured
LATITUDE	40.240039 **LONGITUDE** -74.360740	**FINAL DEPTH**	0.5± ft ▼ **24 HR AFTER DRILLING** Not Measured

Material Symbol	EL (ft)	Sample Description	Depth (ft)	Sample Data: Number	Type	Rec. (in)	Moisture	Blows/6-in Core time/ft	N-Value (Blows/ft) 20 40 60 80	Remarks
		Fill: Demolition/concrete debris								Refusal at 6"
		BORING COMPLETED AT 0.5± FEET DUE TO REFUSAL								
	43		5							
	38		10							
	33		15							
	28		20							
	23		25							
	18		30							

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BOREHOLE NUMBER: B-2

PROJECT NAME	Proposed Warehouse	**PROJECT LOCATION**	310-356 Enterprise Avenue, Trenton, NJ
PROJECT NO.	14039	**ELEVATION DATUM**	NAVD-88 **GROUND ELEVATION** 51.0±
DATE STARTED	04-30-2025 **COMPLETED** 04-30-2025	**DRILLING METHOD**	HSA
DRILLING CONTRACTOR	GPi	**SAMPLE HAMMER**	Auto
SAMPLER	Split spoon	**AUGER INNER DIAMETER**	3.25 in **OUTER DIAMETER** 6.00 in
EQUIPMENT	7822DT	**ROTARY BIT DIAMETER**	**DEPTH TO GROUNDWATER:**
DRILLING FOREMAN	Clay **HELPER** Jimmy	**CASING DIAMETER**	▽ **AT TIME OF DRILLING** 10.00± ft
LOGGED BY	M. Zwingle **CHECKED BY** M. Garcia	**CASING DEPTH**	▼ **AT END OF DRILLING** Not Measured
LATITUDE	40.240147 **LONGITUDE** -74.719133	**FINAL DEPTH**	12.0± ft ▼ **24 HR AFTER DRILLING** Not Measured

Material Symbol	EL (ft)	Sample Description	Depth (ft)	Sample Data: Number	Type	Rec. (in)	Moisture	Blows/6-in Core time/ft	N-Value (Blows/ft) 20 40 60 80	Remarks
		4" Topsoil								
		Fill: Light brown medium to fine SAND, trace Silt, trace coarse to fine Gravel, with trace Brick, Concrete		S-1		17	Moist	2-6-8-7 (14)		
		Fill: Light brown medium to fine SAND, trace Silt, trace fine Gravel, with Brick and Concrete fragments		S-2		12	Moist	8-6-3-5 (9)		Split sampled to 12', auger refusal at 3.5-4' due to fill (Concrete)
		...same as above								
	46		5	S-3		10	Moist	41-14-23-13 (37)		
		...same as above		S-4			Moist	6-7-6-8 (13)		
		...same as above		S-5			Moist	6-10-7-8 (17)		Wet in tip
	41	Brown coarse to fine SAND, trace Silt, trace fine Gravel	10	S-6			Wet	8-5-7-6 (12)		
		BORING COMPLETED AT 12± FEET								
	36		15							Boring B-2 encountered auger refusal at 15'. Boring was offset 5 ft south and encountered refusal at ±12 ft. Boring was offset west from original location and encountered refusal at ±12 ft.
	31		20							
	26		25							
	21		30							

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BOREHOLE NUMBER: B-3

PROJECT NAME	Proposed Warehouse	**PROJECT LOCATION**	310-356 Enterprise Avenue, Trenton, NJ
PROJECT NO.	14039	**ELEVATION DATUM**	NAVD-88
DATE STARTED	04-30-2025	**COMPLETED**	04-30-2025
DRILLING CONTRACTOR	GPi	**DRILLING METHOD**	HSA
SAMPLER	Split spoon	**SAMPLE HAMMER**	Auto
EQUIPMENT	7822DT	**AUGER INNER DIAMETER**	3.25 in
DRILLING FOREMAN	Clay	**ROTARY BIT DIAMETER**	
HELPER	Jimmy	**CASING DIAMETER**	
LOGGED BY	M. Zwingle	**CASING DEPTH**	
CHECKED BY	M. Garcia	**FINAL DEPTH**	10.0± ft
LATITUDE	40.239756	**LONGITUDE**	-74.718869

GROUND ELEVATION 49.8±
OUTER DIAMETER 6.00 in
DEPTH TO GROUNDWATER:
AT TIME OF DRILLING 10.00± ft
AT END OF DRILLING 10.00± ft
24 HR AFTER DRILLING Not Measured

Material Symbol	EL (ft)	Sample Description	Depth (ft)	Sample Data: Number	Type	Rec. (in)	Moisture	Blows/6-in Core time/ft	N-Value (Blows/ft)	Remarks
		6" Topsoil								
		Fill: Black to yellow brown coarse to fine SAND, trace Silt, trace fine Gravel, trace ashes		S-1		16	Moist	4-8-9-6 (17)		
		Fill: ...same as above, grading to medium to fine SAND, little Silt, trace organics		S-2		15	Moist	3-3-5-6 (8)		
		Fill: Brown medium to fine Sand, trace Silt								
	45		5	S-3		14	Moist	4-4-3-3 (7)		
		Light brown coarse to fine Sand, trace Silt, trace fine Gravel		S-4		7	Moist	3-5-6-11 (11)		
		Brown to black coarse to fine Sand, trace Silt, trace medium to fine Gravel		S-5		10	Wet	12-14-6-6 (20)		Possible cobble 2.7 ppm Petroleum odor
	40	BORING COMPLETED AT 10± FEET	10							
	35		15							
	30		20							
	25		25							
	20		30							

N-Value (Blows/ft) scale: 20 40 60 80

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BOREHOLE NUMBER: B-4

PROJECT NAME	Proposed Warehouse	**PROJECT LOCATION**	310-356 Enterprise Avenue, Trenton, NJ
PROJECT NO.	14039	**ELEVATION DATUM**	NAVD-88
DATE STARTED	04-30-2025	**COMPLETED**	04-30-2025
DRILLING CONTRACTOR	GPi	**DRILLING METHOD**	HSA
SAMPLER	Split spoon	**SAMPLE HAMMER**	Auto
EQUIPMENT	7822DT	**AUGER INNER DIAMETER**	3.25 in
DRILLING FOREMAN	Clay	**ROTARY BIT DIAMETER**	
HELPER	Jimmy	**CASING DIAMETER**	
LOGGED BY	M. Zwingle	**CASING DEPTH**	
CHECKED BY	M. Garcia	**FINAL DEPTH**	27.0± ft
LATITUDE	40.239867	**LONGITUDE**	-74.718539

GROUND ELEVATION 49.0±

OUTER DIAMETER 6.00 in

DEPTH TO GROUNDWATER:

- **AT TIME OF DRILLING** 8.00± ft
- **AT END OF DRILLING** 8.00± ft
- **24 HR AFTER DRILLING** Not Measured

Material Symbol	EL (ft)	Sample Description	Depth (ft)	Sample Data: Number	Type	Rec. (in)	Moisture	Blows/6-in Core time/ft	N-Value (Blows/ft) 20 40 60 80	Remarks
		4" Topsoil								
		Fill: Black to yellow-brown coarse to fine SAND, trace Silt		S-1		17	Moist	2-7-10-5 (17)		
		...same as above, trace Brick		S-2		7	Moist	2-2-1-1 (3)		
		No Recovery								
	44		5	S-3		0		2-9-7-10 (16)		
		Fill: Dark brown medium to fine Sand, trace Silt, little medium to fine Gravel		S-4		4	Moist	9-7-8-6 (15)		
		Fill: Dark brown medium to fine Sand, trace Silt, trace fine Gravel, trace Brick		S-5		4	Wet	5-7-11-15 (18)		
	39	Brown medium to fine SAND, some medium to fine Gravel, trace Silt	10	S-6		4	Wet	5-7-6-4 (13)		
	34	Brown medium to fine Sand, trace Silt	15	S-7		21	Wet	24-17-10-7 (27)		Auger to 15'
	29	Light brown coarse to fine Sand, little medium Gravel, trace Silt	20	S-8		5	Wet	33-50/4"		Auger to 20' Broken rock in tip Possible boulder
	24	Gray-brown/dark green medium to fine Sand, trace Silt	25	S-9		19	Wet	6-9-16-22 (25)		Auger to 25' (possible fall in)
		BORING COMPLETED AT 27± FEET								
	19		30							

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BOREHOLE NUMBER: B-5

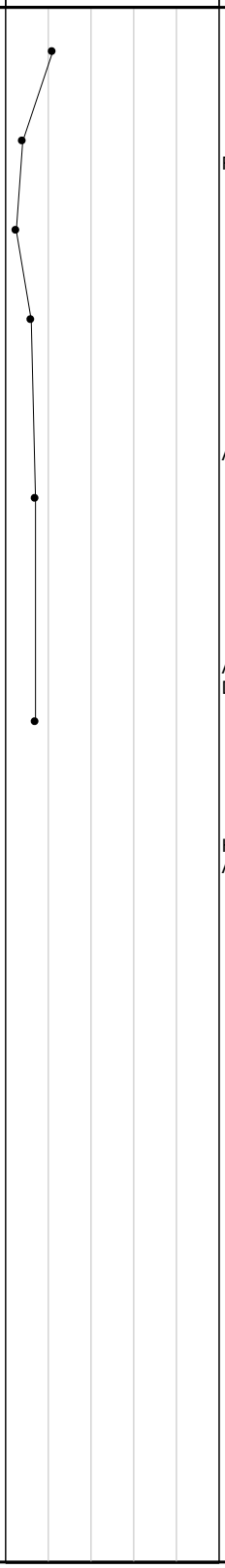
PROJECT NAME	Proposed Warehouse	**PROJECT LOCATION**	310-356 Enterprise Avenue, Trenton, NJ
PROJECT NO.	14039	**ELEVATION DATUM**	NAVD-88
DATE STARTED	04-30-2025	**COMPLETED**	04-30-2025
DRILLING CONTRACTOR	GPi	**DRILLING METHOD**	HSA
SAMPLER	Split spoon	**SAMPLE HAMMER**	Auto
EQUIPMENT	7822DT	**AUGER INNER DIAMETER**	3.25 in
DRILLING FOREMAN	Clay	**ROTARY BIT DIAMETER**	
HELPER	Jimmy	**CASING DIAMETER**	
LOGGED BY	M. Zwingle	**CASING DEPTH**	
CHECKED BY	M. Garcia	**FINAL DEPTH**	19.0± ft
LATITUDE	40.242072	**LONGITUDE**	-74.732581

GROUND ELEVATION 48.0±
OUTER DIAMETER 6.00 in
DEPTH TO GROUNDWATER:
AT TIME OF DRILLING 6.00± ft
AT END OF DRILLING 5.00± ft
24 HR AFTER DRILLING Not Measured

EL (ft)	Sample Description	Depth (ft)	Number	Type	Rec. (in)	Moisture	Blows/6-in Core time/ft	Remarks
	2" Topsoil							
	Fill: Light brown medium to fine SAND, little Silt, trace fine Gravel, trace Brick, trace Concrete		S-1		18	Moist	3-10-12-10 (22)	
	Fill: Brown Clayey SILT, some medium to fine Sand, trace medium Gravel		S-2		16	Moist	6-5-3-2 (8)	Rig chatter at 3-4'
43	Fill: Brown medium to fine SAND, little Silt, trace medium to fine Gravel, trace Brick	5	S-3		11	Moist	2-1-4-1 (5)	
	Brown coarse to fine SAND, trace Silt, trace medium to fine Gravel		S-4		13	Wet	4-5-7-6 (12)	
38	...same as above	10	S-5		14	Wet	6-7-7-2 (14)	Auger to 15'
	Black/gray to gray Clayey Silt, trace medium to fine Sand, trace fine Gravel							
33	Gray medium to fine Sand, trace Silt, trace Mica Distinct red-brown mottling	15	S-6		23	Wet	3-6-8-9 (14)	Auger to 20' Distinct mottling from 15 ft
	No Recovery		S-7		0		50/0"	Hard drilling at 19' Attempt split spoon
28	BORING COMPLETED AT 19± FEET DUE TO AUGER & SPLIT SPOON REFUSAL	20						
23		25						
18		30						

Sample Data

N-Value (Blows/ft)



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BOREHOLE NUMBER: B-6

PROJECT NAME	Proposed Warehouse	**PROJECT LOCATION**	310-356 Enterprise Avenue, Trenton, NJ
PROJECT NO.	14039	**ELEVATION DATUM**	NAVD-88
DATE STARTED	04-30-2025	**COMPLETED**	04-30-2025
DRILLING CONTRACTOR	GPi	**DRILLING METHOD**	HSA
SAMPLER	Split spoon	**SAMPLE HAMMER**	Auto
EQUIPMENT	7822DT	**AUGER INNER DIAMETER**	3.25 in
DRILLING FOREMAN	Clay	**ROTARY BIT DIAMETER**	
HELPER	Jimmy	**CASING DIAMETER**	
LOGGED BY	M. Zwingle	**CASING DEPTH**	
CHECKED BY	M. Garcia	**FINAL DEPTH**	12.0± ft
LATITUDE	40.242161	**LONGITUDE**	-74.732153

GROUND ELEVATION 46.0±
OUTER DIAMETER 6.00 in
DEPTH TO GROUNDWATER:
AT TIME OF DRILLING 10.00± ft
AT END OF DRILLING 8.50± ft
24 HR AFTER DRILLING Not Measured

Material Symbol	EL (ft)	Sample Description	Depth (ft)	Sample Number	Type	Rec. (in)	Moisture	Blows/6-in Core time/ft	N-Value (Blows/ft)	Remarks
		6" Topsoil								
		Fill: Dark brown coarse to fine SAND, little Silt, trace medium to fine Gravel, with Brick, Concrete fragments		S-1		16		2-6-6-6 (12)		
		Fill: Dark brown coarse to fine SAND, little Silt, trace fine Gravel		S-2		12	Moist	4-3-3-4 (6)		
		...same as above								
	41	Gray coarse to fine SAND, trace medium to fine Gravel, trace Silt	5	S-3		14		6-25-20-10 (45)		Possible Cobbles
		Brown medium to fine SAND, trace Silt		S-4		17	Moist	8-11-9-12 (20)		
		...same as above		S-5		16	Moist	10-9-6-7 (15)		
	36	...same as above	10	S-6		16	Wet	4-3-3-2 (6)		Wet soil conditions encountered 10'
		BORING COMPLETED AT 12± FEET								
	31		15							
	26		20							
	21		25							
	16		30							

N-Value (Blows/ft) scale: 20 40 60 80

SESI CONSULTING ENGINEERS
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SOILS CLASSIFICATION AND EXPLORATION LOG KEY

Our experience has shown that the following field identification system, which is pattered somewhat after the Burmister System, permits a more detailed breakdown of the components within a soil sample than other identification systems allow. It also compels the supervising technician to examine a sample quite closely in order to accurately describe the components within the sample.

Grain Size and Classifications

Gravel:
Coarse gravel ranges from 3-in to 1-in
Medium gravel ranges from 1-in to 3/8-in
Fine gravel ranges from 3/8-in to No. 10 sieve

Sand:
Coarse sand ranges from No. 10 to No. 30 sieve
Medium sand ranges from No. 30 to No. 60 sieve
Fine sand ranges from No. 60 to No. 200 sieve

Silt:
Material which passes the No. 200 sieve
Exhibits little to no plasticity

Clay:
Material which passes the No. 200 Sieve
Exhibits varying degrees of plasticity

Component Classification

CAPITALS	More than 50% of the sample by weight
Proper Case	Less than 50% of the sample by weight

Proportion Terms

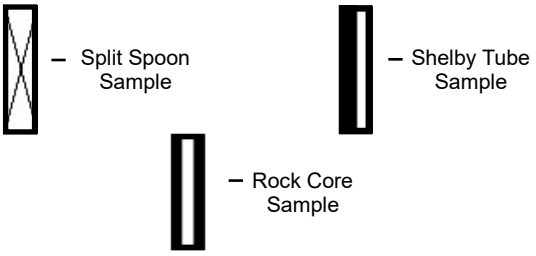
and	Component ranges from 35% to 50% of the sample by weight
some	Component ranges from 20% to 35% of the sample by weight
little	Component ranges from 10% to 20% of the sample by weight
trace	Component ranges from 0% to 10% of the sample by weight

Gradation Designation

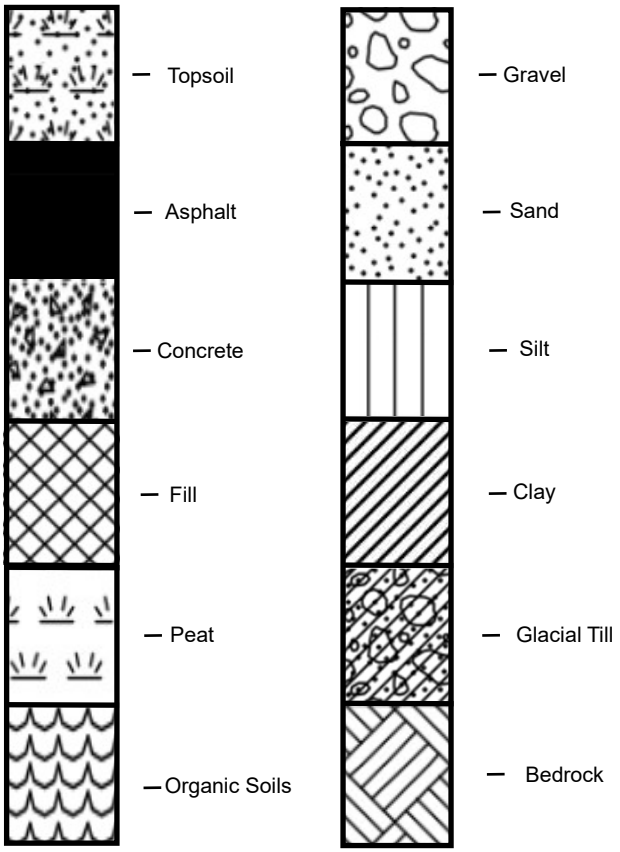
Coarse to fine (c-f)	All fractions greater than 10% of the component
Coarse to Medium (c-m)	Less than 10% of the component is fine
Medium to fine (m-f)	Less than 10% of the component is coarse
Coarse (c)	Less than 10% of the component is medium or fine
Medium (m)	Less than 10% of the component is coarse or fine
Fine (f)	Less than 10% of the component is coarse or medium

The subsurface information shown hereon was obtained for the design and estimating purposes for our client. It is made available to authorized users only that they may have access to the same information available to our client. It is presented in good faith, but it is not intended as a substitute for investigations, interpretations or judgement of such authorized users. Information on the logs should not be relied upon without the geotechnical engineer's recommendations contained in the report from which these logs were extracted.

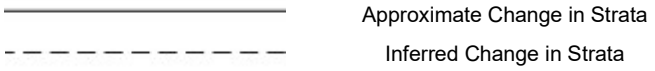
Sampling Types

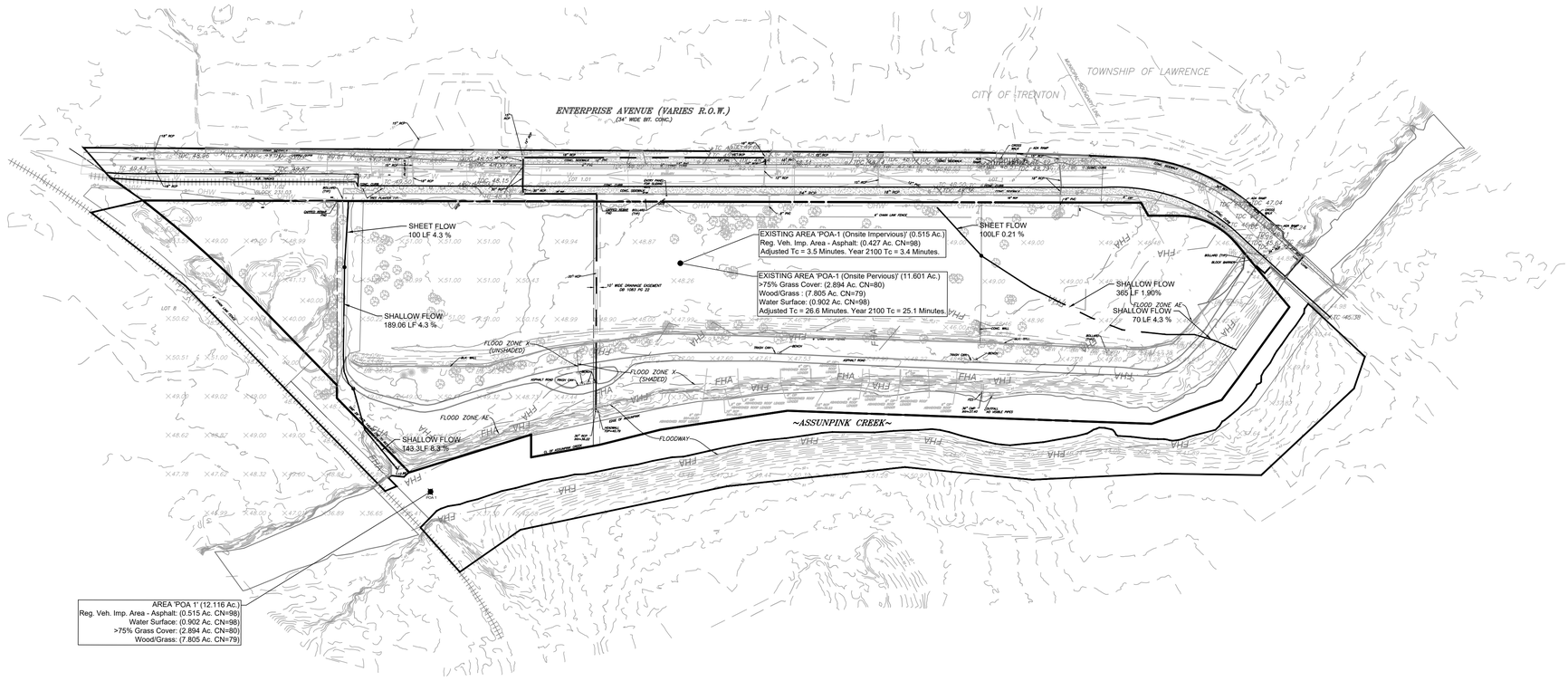


Generalized Stratum Types



Strata Separation





100 50 0 100 200

HORIZONTAL SCALE: 1"=100'

REVISIONS

1. 10/10/2025 REVISED FOR PSEG POLE RELOCATION REQS.

GREGORY J. REDINGTON, P.E.
NEW JERSEY PROFESSIONAL ENGINEER LIC. No. 37543

300- 356 ENTERPRISE AVE

BLOCK 23203, LOT 1
BLOCK 23102, LOTS 2 & 9
CITY OF TRENTON

BLOCK 602, LOTS 1 & 2
TOWNSHIP OF LAWRENCE

MERCER COUNTY
NEW JERSEY

300-356 ENTERPRISE AVE, TRENTON

EXISTING DRAINAGE AREA MAP

REDCOM
DESIGN & CONSTRUCTION LLC

STATE OF NEW JERSEY CERTIFICATE OF AUTHORIZATION
24GA28021900 & 21AC00094200

433 NORTH AVE EAST
WESTFIELD, NJ 07090

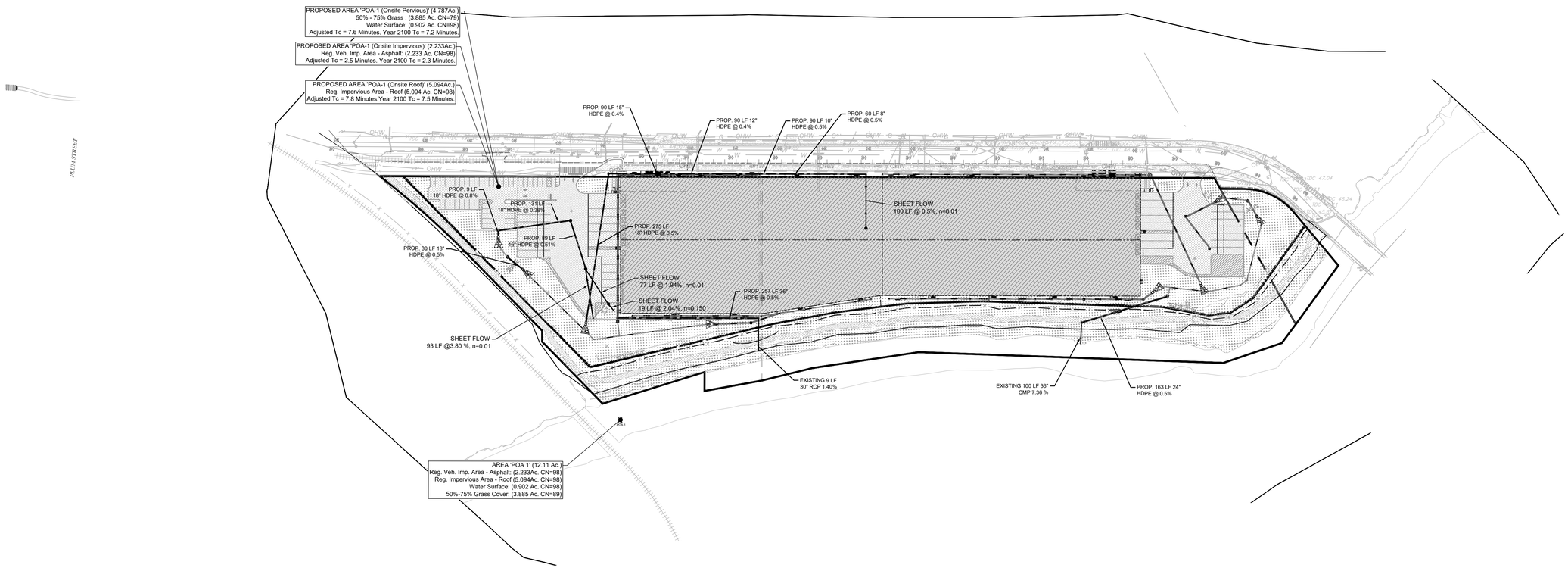
T. 908.233.4030
F. 908.233.8837

WWW.REDCOMLLC.COM

DRAWN:	APL
CHECKED:	WMH
DATE:	09.22.2025
SCALE	1" = 100'

ED

S:_JOBS\2505-310ENTR - 310-356 ENTERPRISE AVE. TRENTON\ENGINEERING\REPORTS (IN HOUSE)\DRAINAGE REPORT\MAPS\CAD FILES



100 50 0 100 200

HORIZONTAL SCALE: 1"=100'

REVISIONS

1.	10/10/2025	REVISED FOR PSEG POLE RELOCATION REQS.
2.	12/12/2025	REVISED PER NJDEP REVIEW.

GREGORY J. REDINGTON, P.E.
NEW JERSEY PROFESSIONAL ENGINEER LIC. No. 37543

300- 356 ENTERPRISE AVE

BLOCK 23203, LOT 1
BLOCK 23102, LOTS 2 & 9
CITY OF TRENTON

BLOCK 602, LOTS 1 & 2
TOWNSHIP OF LAWRENCE

MERCER COUNTY
NEW JERSEY

300-356 ENTERPRISE AVE, TRENTON

PROPOSED DRAINAGE AREA MAP

REDCOM
DESIGN & CONSTRUCTION LLC

STATE OF NEW JERSEY CERTIFICATE OF AUTHORIZATION
24GA28221900 & 21AC00094500

433 NORTH AVE EAST
WESTFIELD, NJ 07090

T. 908.233.4030
F. 908.233.8837

DRAWN:	APL
CHECKED:	WMH
DATE:	09.22.2025
SCALE	1" = 100'

WWW.REDCOMLLC.COM

PD

S:_JOBS\2505-310ENTR - 310-356 ENTERPRISE AVE, TRENTON\ENGINEERING\REPORTS (IN HOUSE)\DRAINAGE REPORT\MAPS\CAD FILES