DRAINAGE DESIGN SUMMARY

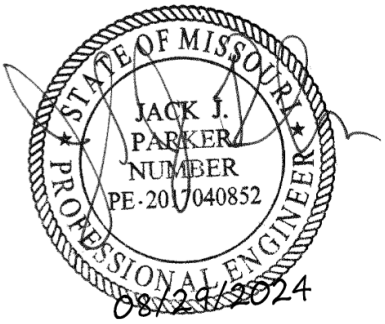
FOR

HCA LEE'S SUMMIT MEDICAL CENTER

REMOTE PARKING LOT & DIETARY EXPANSION

Lee's Summit, Missouri

August 29, 2024



Prepared by:

Catalyst Design Group
1524 Williams Drive, Suite 201
Murfreesboro, TN 37129
615.622.7200

Drainage Design Summary

Overview

The proposed project consists of constructing a remote parking lot, pedestrian bridge, and dietary building addition within the HCA Lee's Summit Medical Center hospital campus in Lee's Summit. The project site is identified on Jackson County Tax Map 60 as Parcel 60-420-99-15-00-0-00-000. The development takes place in two areas of the hospital campus. The remote parking lot and pedestrian bridge will be constructed on the western portion of the undeveloped parcel, adjacent to SE Cumberland Drive, while the dietary expansion will take place within the hospital's current building envelop.

Pre-Development Conditions

Currently, the 24.48-acre site is mostly developed with peripheral areas along SE Cumberland Drive remaining undeveloped. The existing hospital campus directs its stormwater runoff to an extended detention pond for treatment and attenuation. Situated between the hospital campus and undeveloped area is a tributary of Prairie Lee Lake, which is the properties discharge outfall. The undeveloped portion of the site drains via sheet and shallow concentrated flow to the tributary, while the developed campus is collected via a storm sewer collection system, directed to an extended detention pond, and discharges to the tributary through an outlet control structure.

Due to the fact that the dietary expansion will have its runoff discharge to existing storm sewer infrastructure, which was sized to accommodate its expansion, this report will only analyze the remote parking lot expansion area. See the attached predevelopment drainage area map for a detailed view of the predeveloped 1.34 acre remote parking lot site.

The existing site consists of all C-group soils (CN 79), within the Hospital Campus property.

The overall pre-development flows to the outfall are as follows:

PREDEVELOPMENT PEAK FLOWS	
Storm Event	**Flow (cfs)**
2-year	4.693
5-year	7.023
10-year	9.146
25-year	12.24
50-year	14.77
100-year	17.43

Pre-development flows were calculated using the SCS/NRCS Curve Number method, and results were prepared by Hydrology Studio software. Routing calculations produced by this software are attached.

Post-Development Conditions

The proposed remote parking lot project consists of constructing a 75-space parking lot with a pedestrian bridge providing connectivity to the existing hospital campus. The post-development site will have a much larger quantity of impervious areas than the pre-development site; however, a combination of low-impact development BMPs will provide stormwater treatment and a reduction in post-developed run-off. Stormwater runoff will discharge into a dry extended detention pond with a pre-treatment forebay, by sheet flowing through curb cuts.

The proposed dry extended detention pond will provide 40-hour extended detention of the 90% mean annual event (1.37"/24-hour rainfall) with the use of a low flow orifice. The pond will also utilize an outlet control structure to detain the runoff from the parking lot to provide attenuation of the 2-year through 100—year storm events.

In post-development condition, the impervious area the site is treated by the onsite LID BMPs and conveyed by the proposed stormwater management system to the site outfall. However, a peripheral area will bypass the onsite system to the outfall. These areas are outlined in detail on the attached post-development drainage area map.

The overall post-development peak flows to the outfall are as follows:

POST-DEVELOPMENT PEAK FLOWS		
Storm Event	**Proposed Flow (cfs)**	**Max. Allowed Flow (cfs)**
2-year	0.503	0.665 (0.5 cfs / ac.)
5-year	1.492	
10-year	2.432	2.66 (2.0 cfs / ac.)
25-year	3.375	
50-year	3.672	
100-year	4.005	4.02 (3.0 cfs / ac.)

Please see the attached routing calculations for a detailed breakdown of the peak flows from each contributing drainage area.

Post-development flows were calculated using the SCS/NRCS Curve Number Method, and results were prepared by Hydrology Studio software. Routing calculations produced by this software are attached.

Conclusion

The stormwater management system for the proposed development maintains post-development peak flows below pre-development levels, as required by the City of Lee's Summit, while simultaneously meeting the City's Comprehensive Control Strategy. In addition, the use of low-impact development BMPs as part of the stormwater management system results in runoff reduction and 40-hour extended detention of the 90% mean annual storm event as required by The City of Lee's Summit stormwater regulations.

PRE- AND POST-PEAK FLOW COMPARISON			
Storm Event	**Post-Development Flow (cfs)**	**Pre-Development Flow (cfs)**	**Difference +/- (cfs)**
2-year	0.503	2.631	-2.128
5-year	1.492	3.937	-2.445
10-year	2.432	5.127	-2.695
25-year	3.375	6.863	-3.488
50-year	3.672	8.281	-4.609
100-year	4.005	9.772	-5.767

Attachment(s):

- Attachment 1 – Site Drainage Area Maps
- Attachment 2 – Hydraflow Hydrographs Routing Calculations

Attachment 1

Site Drainage Area Maps

LEGEND	
EXISTING PERVIOUS AREA	

PROJECT AREA	
EXISTING PERVIOUS AREA	58,370 SQ FT (1.34 AC)

Catalyst DESIGN GROUP
5100 TENNESSEE AVENUE, NASHVILLE, TN 37209
(615) 622-7200 | WWW.CATALYST-DG.COM

HCA LEE'S SUMMIT MEDICAL CENTER

2100 SE BLUE PKWY, LEE'S SUMMIT, MO 64063

NO.	DATE	DESCRIPTION

DRAWING TITLE

PRE-DEVELOPMENT IMPERVIOUS EXHIBIT

PROJECT NUMBER
20240037

DRAWING NUMBER
1 OF 2

P:\2024\20240037_Devenney - HCA Lee's Summit Medical Center_Med Surg Exp\Engineering\dwg\Pre & Post Dev\20240037_PreDev Impervious.dwg-C1.0 EXISTING CONDITIONS OR SITE SURVEY Sep 09, 2024 whilssard

LEGEND	
PROPOSED PERVIOUS AREA	
PROPOSED IMPERVIOUS AREA	

PROJECT AREA	
PROPOSED PERVIOUS AREA	23,958 FT (0.55 AC)
PROPOSED IMPERVIOUS AREA	34,412 SQ FT (0.79 AC)

PROJECT AREA

TEMPORARY GRAVEL PARKING LOT

POND TREATMENT AREA: 1.34 AC.
CN: 91

60' STREAM BUFFER

60' STREAM BUFFER

SE CUMBERLAND DR

N

0 15 30 60 90
GRAPHIC SCALE

Catalyst DESIGN GROUP
5100 TENNESSEE AVENUE, NASHVILLE, TN 37209
(615) 522-7200 | WWW.CATALYST-DG.COM

HCA LEE'S SUMMIT MEDICAL CENTER

2100 SE BLUE PKWY, LEE'S SUMMIT, MO 64063

NO.	DATE	DESCRIPTION

DRAWING TITLE

POST-DEVELOPMENT IMPERVIOUS EXHIBIT

PROJECT NUMBER
20240037

DRAWING NUMBER
2 OF 2

P:\2024\20240037_Devenney - HCA Lee's Summit Medical Center_Med Surg Exp\Engineering\dwg\Pre & Post Dev\20240037_PostDev_Impervious.dwgC5.0 LAYOUT PLAN Sep 09, 2024 vblissard

Hydrologic Soil Group—Jackson County, Missouri
(HCA Lee's Summit)

Map Scale: 1:2,550 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 35 70 140 210

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N 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: Jackson County, Missouri
Survey Area Data: Version 25, Aug 22, 2023

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

Date(s) aerial images were photographed: Aug 30, 2022—Sep 8, 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
10082	Arisburg-Urban land complex, 1 to 5 percent slopes	C	10.9	44.7%
10180	Udarents-Urban land-Sampsel complex, 2 to 5 percent slopes	C	13.5	55.3%
Totals for Area of Interest			**24.5**	**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

National Flood Hazard Layer FIRMette

FEMA

94°20'15"W 38°54'26"N

94°19'38"W 38°53'58"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/28/2024 at 5:10 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Attachment 2

Hydraflow Hydrographs Routing Calculations

Table of Contents

Project Name:

Hydrology Studio v 3.0.0.33

09-09-2024

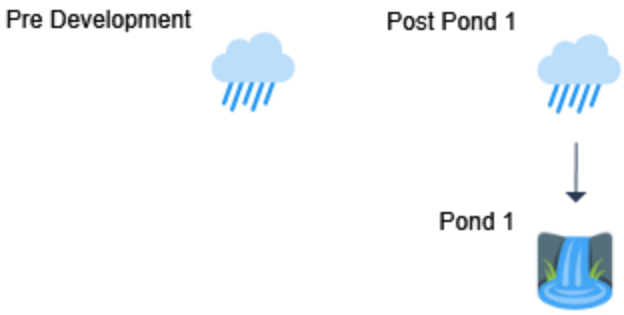
Contents continued...

Basin Model

Hydrology Studio v 3.0.0.33

Project Name:

09-09-2024



Hydrograph by Return Period

Project Name:

09-09-2024

Hydrology Studio v 3.0.0.33

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Outflow (cfs)							
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
1	NRCS Runoff	Pre Development		2.631		3.937	5.127	6.863	8.281	9.772
2	NRCS Runoff	Post Pond 1		4.691		6.274	7.658	9.627	11.21	12.86
3	Pond Route	Pond 1		0.503		1.492	2.432	3.374	3.671	4.001

Hydrograph 2-yr Summary

Project Name:

09-09-2024

Hydrology Studio v 3.0.0.33

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Flow (cfs)	Time to Peak (hrs)	Hydrograph Volume (cuft)	Inflow Hyd(s)	Maximum Elevation (ft)	Maximum Storage (cuft)
1	NRCS Runoff	Pre Development	2.631	12.03	7,412	----		
2	NRCS Runoff	Post Pond 1	4.691	12.00	12,512	----		
3	Pond Route	Pond 1	0.503	12.53	11,849	2	992.44	7,172

Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.33

09-09-2024

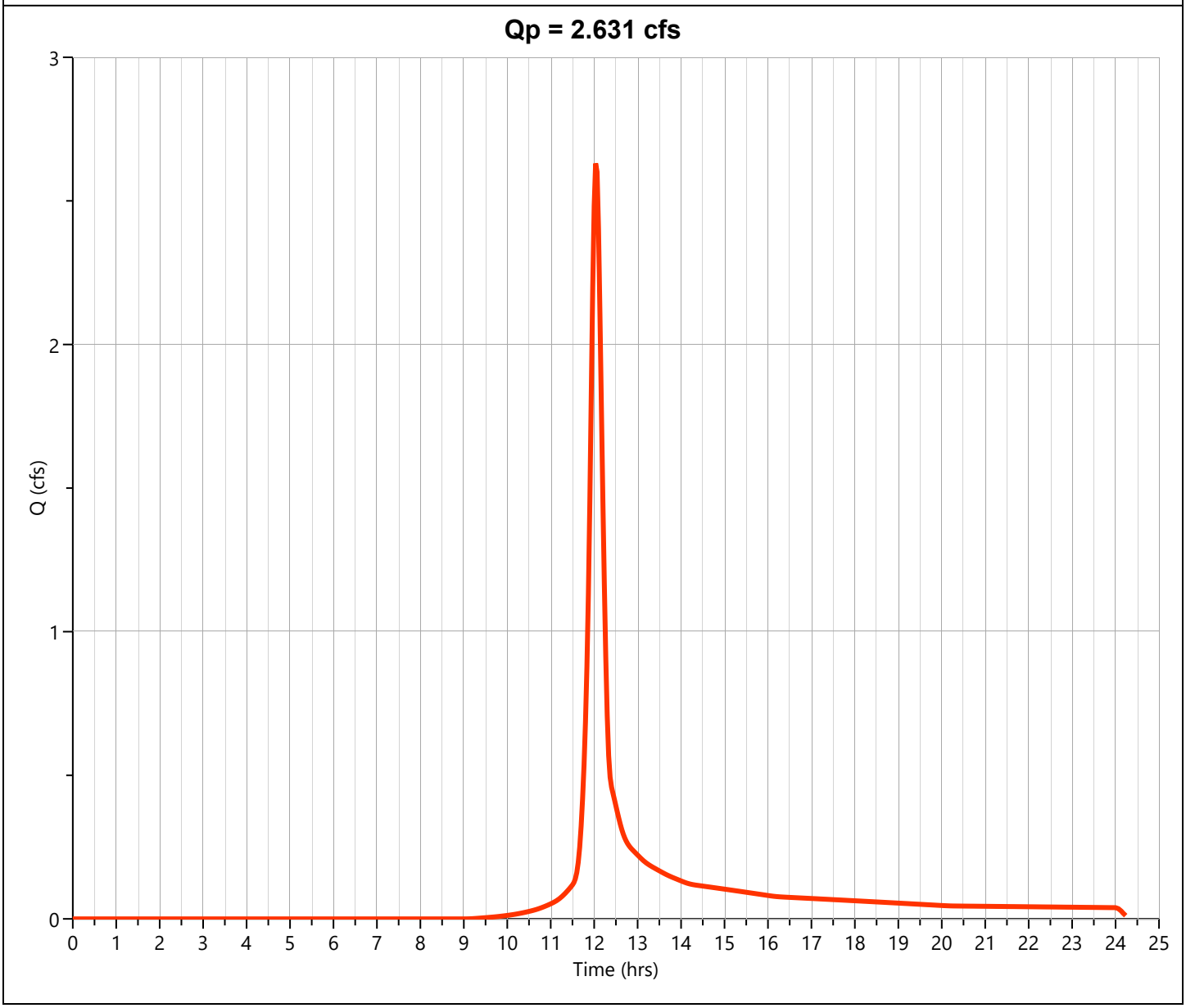
Pre Development

Hyd. No. 1

Hydrograph Type	= NRCS Runoff	Peak Flow	= 2.631 cfs
Storm Frequency	= 2-yr	Time to Peak	= 12.03 hrs
Time Interval	= 2 min	Runoff Volume	= 7,412 cuft
Drainage Area	= 1.25 ac	Curve Number	= 79*
Tc Method	= User	Time of Conc. (Tc)	= 15.39 min
Total Rainfall	= 3.64 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

*** Composite CN Worksheet**

AREA (ac)	CN	DESCRIPTION
1.34	79	Pervious
1.25	**79**	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.33

09-09-2024

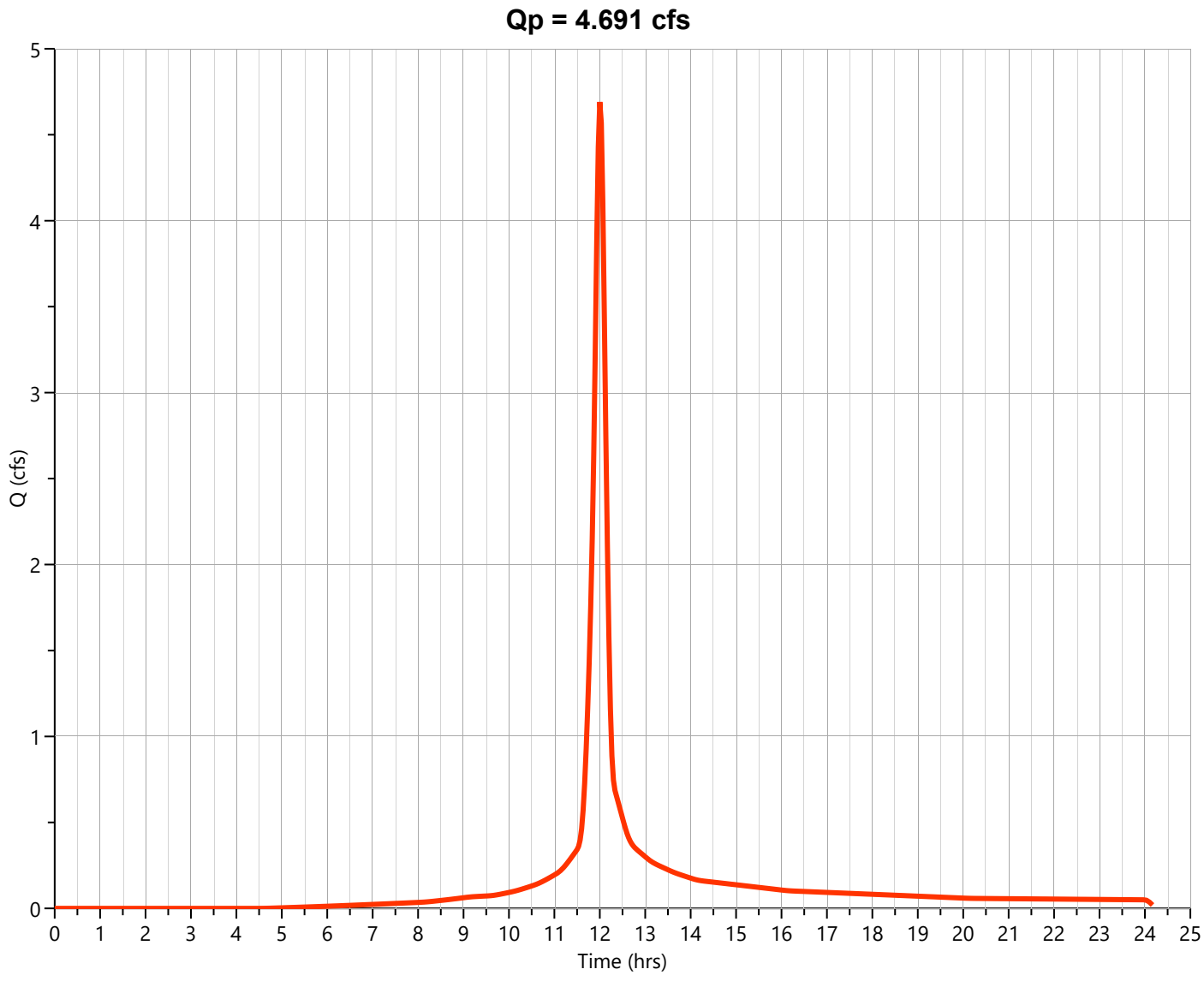
Post Pond 1

Hyd. No. 2

Hydrograph Type	= NRCS Runoff	Peak Flow	= 4.691 cfs
Storm Frequency	= 2-yr	Time to Peak	= 12.00 hrs
Time Interval	= 2 min	Runoff Volume	= 12,512 cuft
Drainage Area	= 1.25 ac	Curve Number	= 91*
Tc Method	= User	Time of Conc. (Tc)	= 10.0 min
Total Rainfall	= 3.64 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

*** Composite CN Worksheet**

AREA (ac)	CN	DESCRIPTION
0.47	79	Pervious
0.78	98	Impervious
1.25	**91**	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.33

09-09-2024

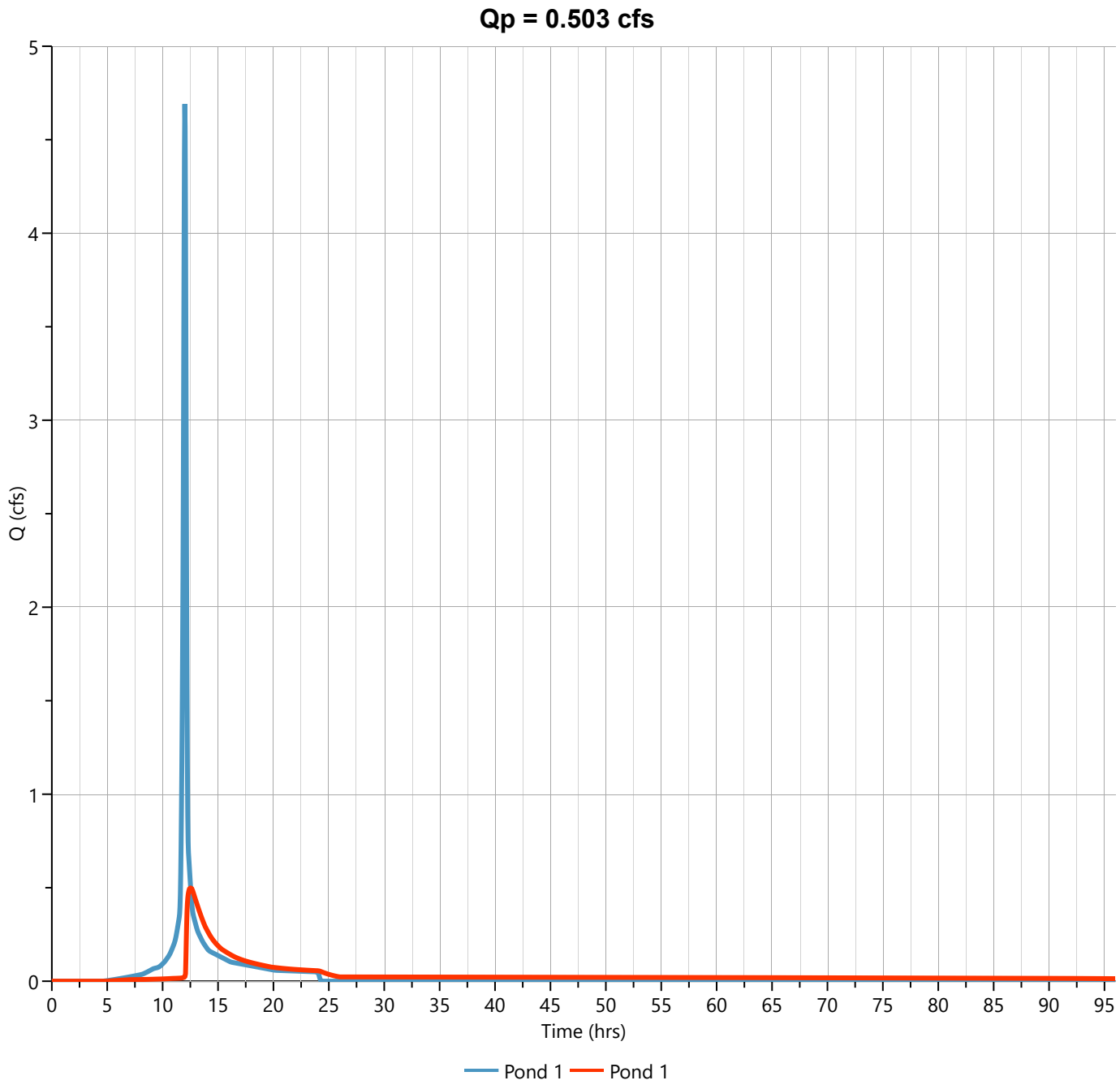
Pond 1

Hyd. No. 3

Hydrograph Type	= Pond Route	Peak Flow	= 0.503 cfs
Storm Frequency	= 2-yr	Time to Peak	= 12.53 hrs
Time Interval	= 2 min	Hydrograph Volume	= 11,849 cuft
Inflow Hydrograph	= 2 - Pond 1	Max. Elevation	= 992.44 ft
Pond Name	= Pond 1	Max. Storage	= 7,172 cuft

Pond Routing by Storage Indication Method

Center of mass detention time = 19.81 hrs



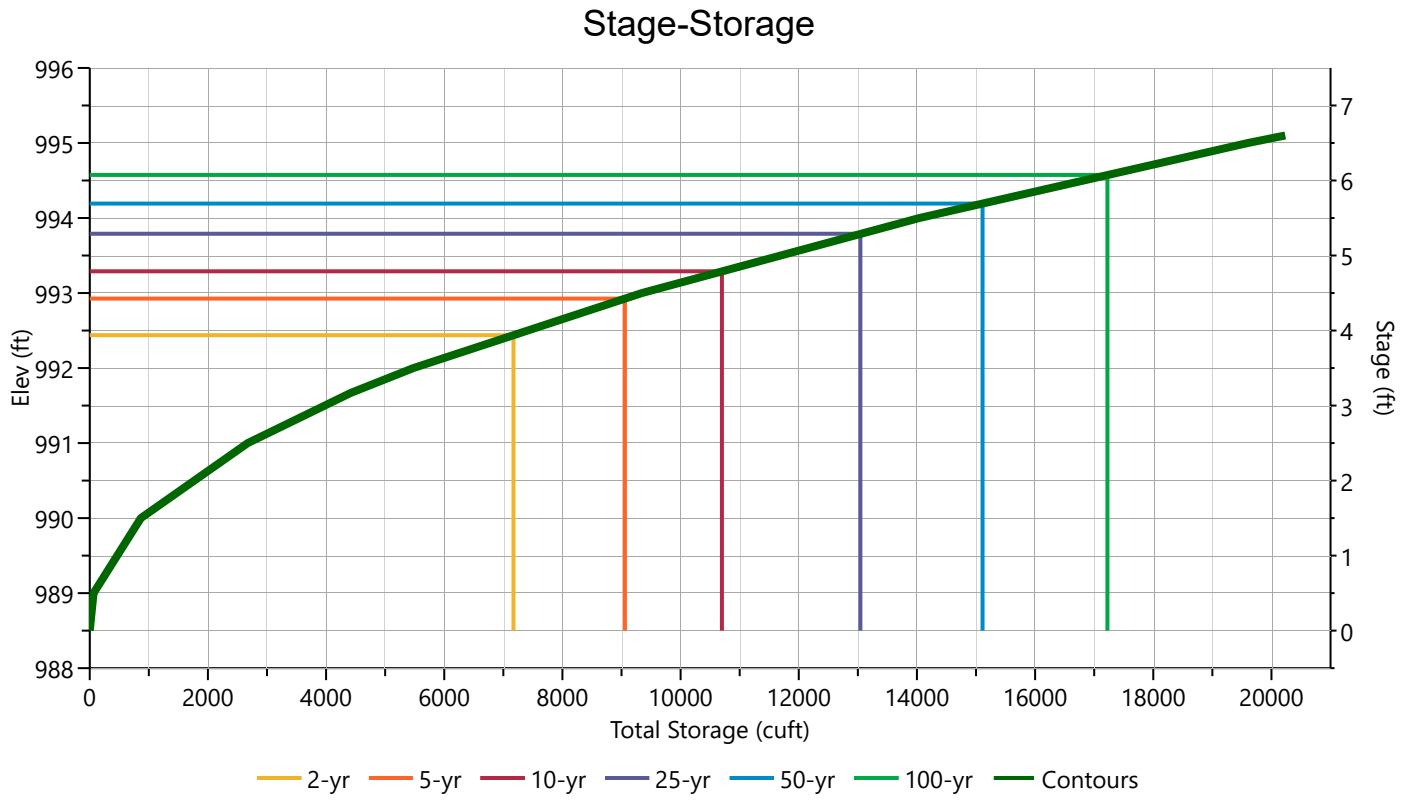
Pond 1

Stage-Storage

User Defined Contours	
Description	**Input**
Bottom Elevation, ft	988.50
Voids (%)	100.00
Volume Calc	Ave End Area

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour Area (sqft)	Incr. Storage (cuft)	Total Storage (cuft)
0.00	988.50	1	0.000	0.000
0.50	989.00	258	64.8	64.8
1.50	990.00	1,343	801	865
2.50	991.00	2,275	1,809	2,674
3.17	991.67	2,939	1,747	4,421
3.50	992.00	3,466	1,057	5,478
4.50	993.00	4,271	3,869	9,346
5.50	994.00	5,118	4,695	14,041
6.50	995.00	6,006	5,562	19,603
6.60	995.10	6,622	631	20,234



Pond Report

Project Name:

Hydrology Studio v 3.0.0.33

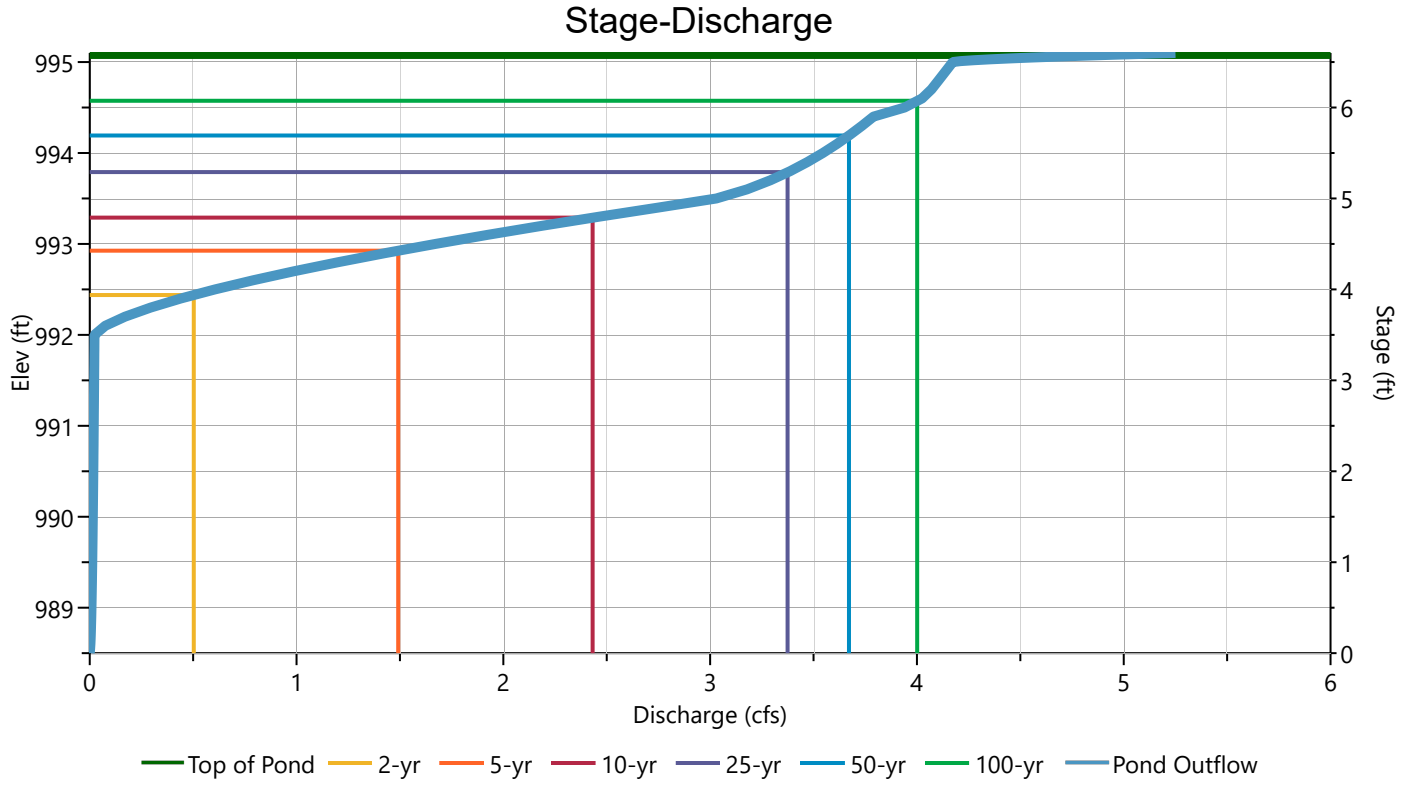
09-09-2024

Pond 1

Stage-Discharge

Culvert / Orifices	Culvert	Orifice			Orifice Plate	
		1 (m)	2	3		
Rise, in	8	.69			Orifice Dia, in	
Span, in	8	.69			No. Orifices	
No. Barrels	1	1			Invert Elevation, ft	
Invert Elevation, ft	988.50	988.50			Height, ft	
Orifice Coefficient, Co	0.60	0.60			Orifice Coefficient, Co	
Length, ft	20					
Barrel Slope, %	.5					
N-Value, n	0.013					
Weirs	**Riser**	**Weir**			**Ancillary**	
		1 (m)	2 (i)	3		
Shape / Type	Circular	Compound	Broad Crested		Exfiltration, in/hr	
Crest Elevation, ft	994.4	992.5 U 992 L	995	992.5		
Crest Length, ft	12	.5 Total .5 L	10			
Angle, deg						
Weir Coefficient, Cw	3.3	3.3	3.3	3.3		

m = Flows through Culvert, i = Independent



Pond 1

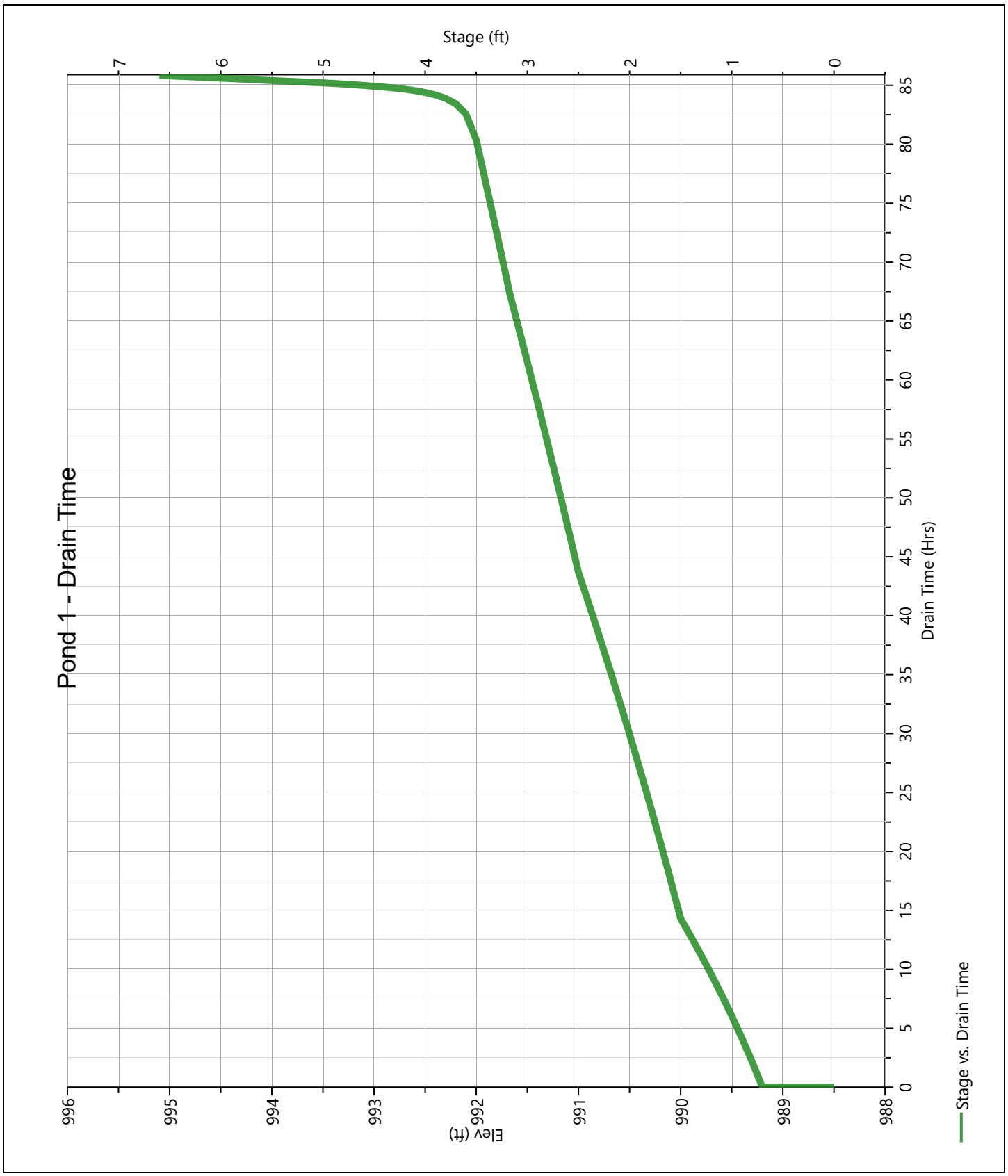
Stage-Storage-Discharge Summary

Stage (ft)	Elev. (ft)	Storage (cuft)	Culvert (cfs)	Orifices, cfs			Riser (cfs)	Weirs, cfs			Pf Riser (cfs)	Exfil (cfs)	User (cfs)	Total (cfs)
				1	2	3		1	2	3				
0.00	988.50	0.000	0.000	0.000			0.000	0.000	0.000	0.000				0.000
0.50	989.00	64.8	0.008 ic	0.008			0.000	0.000	0.000	0.000				0.008
1.50	990.00	865	0.015 ic	0.015			0.000	0.000	0.000	0.000				0.015
2.50	991.00	2,674	0.019 ic	0.019			0.000	0.000	0.000	0.000				0.019
3.17	991.67	4,421	0.022 ic	0.022			0.000	0.000	0.000	0.000				0.022
3.50	992.00	5,478	0.023 ic	0.023			0.000	0.000	0.000	0.000				0.023
4.50	993.00	9,346	1.672 oc	0.022			0.000	1.650	0.000	0.000				1.672
5.50	994.00	14,041	3.545 ic	0.011			0.000	3.535 s	0.000	0.000				3.545
6.50	995.00	19,603	4.173 ic	0.000			0.000	0.000	0.000	0.000				4.173
6.60	995.10	20,234	4.207 ic	0.000			0.000	0.000	1.043	0.000				5.250

Suffix key: ic = inlet control, oc = outlet control, s = submerged weir

Pond 1

Pond Drawdown



Hydrograph 5-yr Summary

Project Name:

09-09-2024

Hydrology Studio v 3.0.0.33

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Flow (cfs)	Time to Peak (hrs)	Hydrograph Volume (cuft)	Inflow Hyd(s)	Maximum Elevation (ft)	Maximum Storage (cuft)
1	NRCS Runoff	Pre Development	3.937	12.03	11,035	----		
2	NRCS Runoff	Post Pond 1	6.274	12.00	17,001	----		
3	Pond Route	Pond 1	1.492	12.23	16,315	2	992.93	9,058

Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.33

09-09-2024

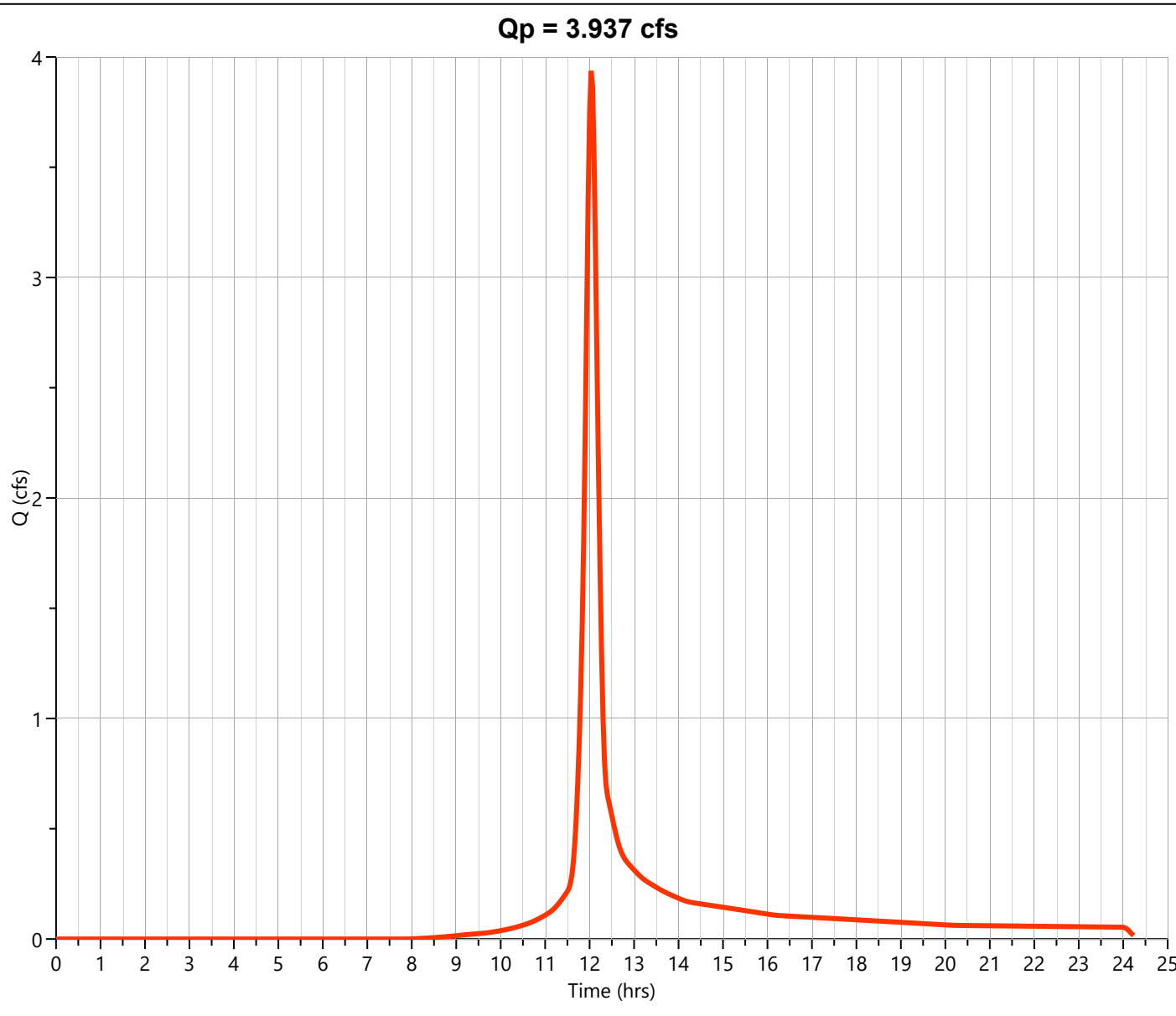
Pre Development

Hyd. No. 1

Hydrograph Type	= NRCS Runoff	Peak Flow	= 3.937 cfs
Storm Frequency	= 5-yr	Time to Peak	= 12.03 hrs
Time Interval	= 2 min	Runoff Volume	= 11,035 cuft
Drainage Area	= 1.25 ac	Curve Number	= 79*
Tc Method	= User	Time of Conc. (Tc)	= 15.39 min
Total Rainfall	= 4.64 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

*** Composite CN Worksheet**

AREA (ac)	CN	DESCRIPTION
1.34	79	Pervious
1.25	**79**	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.33

09-09-2024

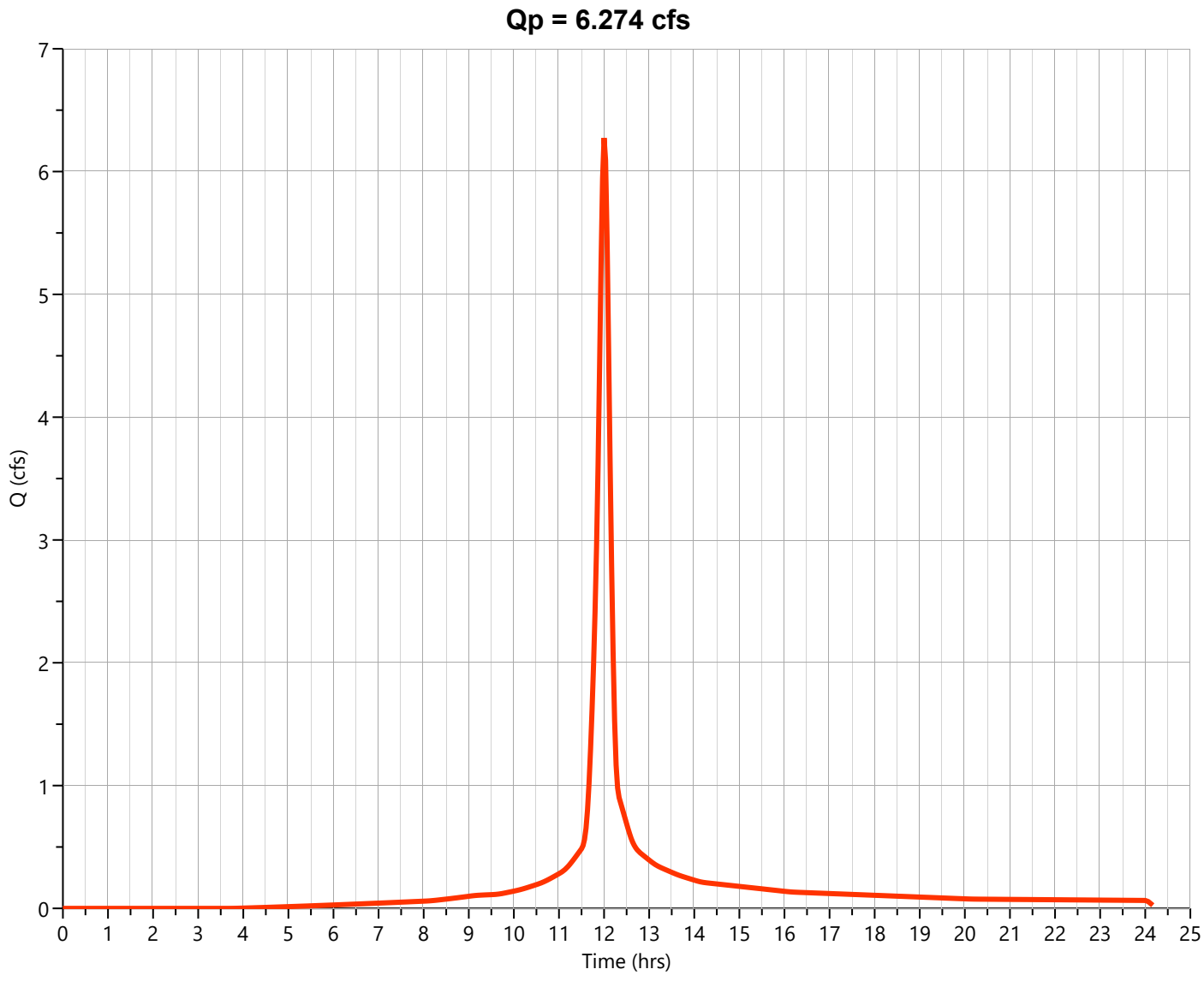
Post Pond 1

Hyd. No. 2

Hydrograph Type	= NRCS Runoff	Peak Flow	= 6.274 cfs
Storm Frequency	= 5-yr	Time to Peak	= 12.00 hrs
Time Interval	= 2 min	Runoff Volume	= 17,001 cuft
Drainage Area	= 1.25 ac	Curve Number	= 91*
Tc Method	= User	Time of Conc. (Tc)	= 10.0 min
Total Rainfall	= 4.64 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

*** Composite CN Worksheet**

AREA (ac)	CN	DESCRIPTION
0.47	79	Pervious
0.78	98	Impervious
1.25	**91**	Weighted CN Method Employed



Hydrograph Report

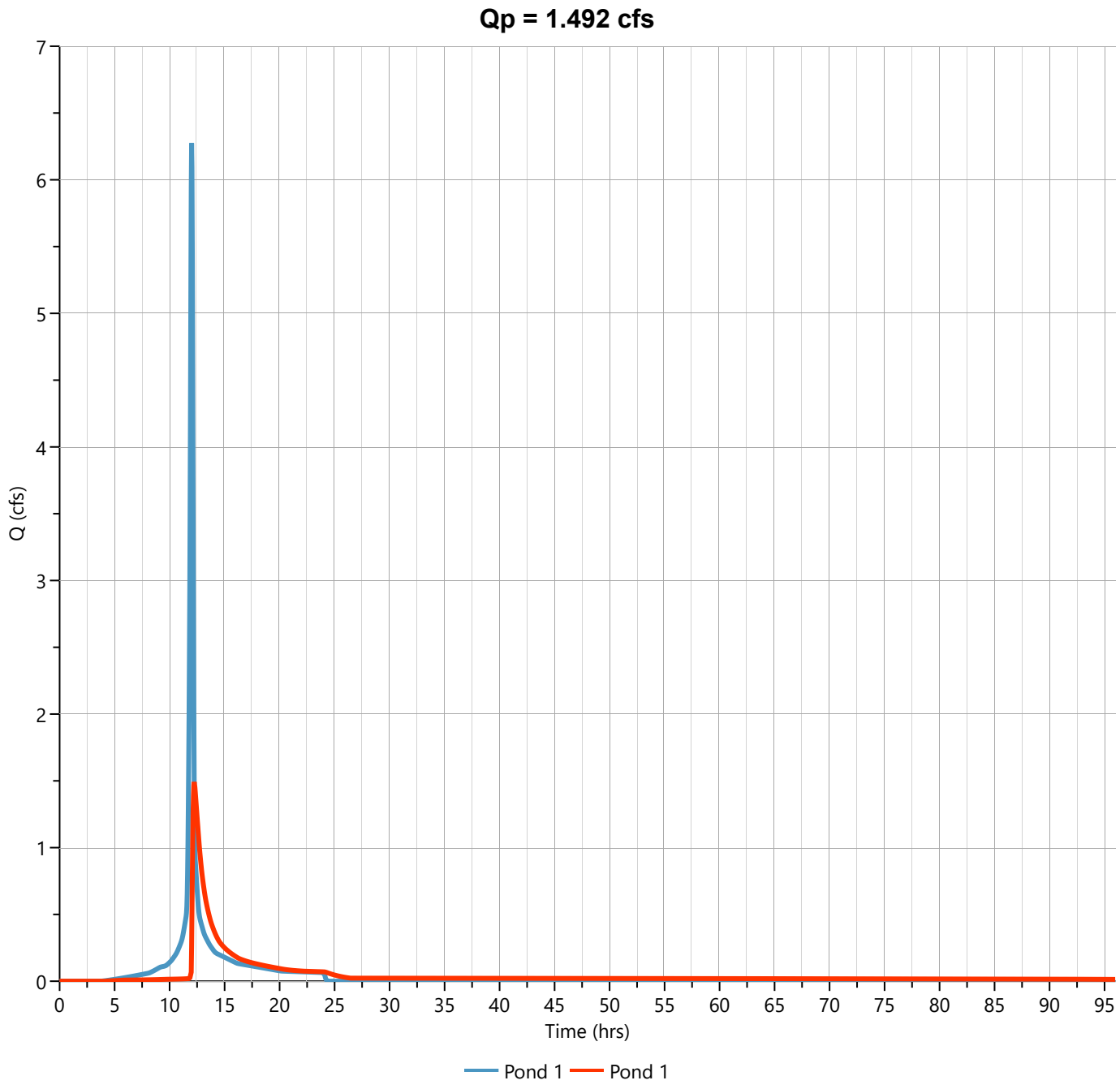
Pond 1

Hyd. No. 3

Hydrograph Type	= Pond Route	Peak Flow	= 1.492 cfs
Storm Frequency	= 5-yr	Time to Peak	= 12.23 hrs
Time Interval	= 2 min	Hydrograph Volume	= 16,315 cuft
Inflow Hydrograph	= 2 - Pond 1	Max. Elevation	= 992.93 ft
Pond Name	= Pond 1	Max. Storage	= 9,058 cuft

Pond Routing by Storage Indication Method

Center of mass detention time = 13.96 hrs



Hydrograph 10-yr Summary

Project Name:

09-09-2024

Hydrology Studio v 3.0.0.33

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Flow (cfs)	Time to Peak (hrs)	Hydrograph Volume (cuft)	Inflow Hyd(s)	Maximum Elevation (ft)	Maximum Storage (cuft)
1	NRCS Runoff	Pre Development	5.127	12.03	14,397	----		
2	NRCS Runoff	Post Pond 1	7.658	12.00	21,001	----		
3	Pond Route	Pond 1	2.432	12.20	20,303	2	993.29	10,699

Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.33

09-09-2024

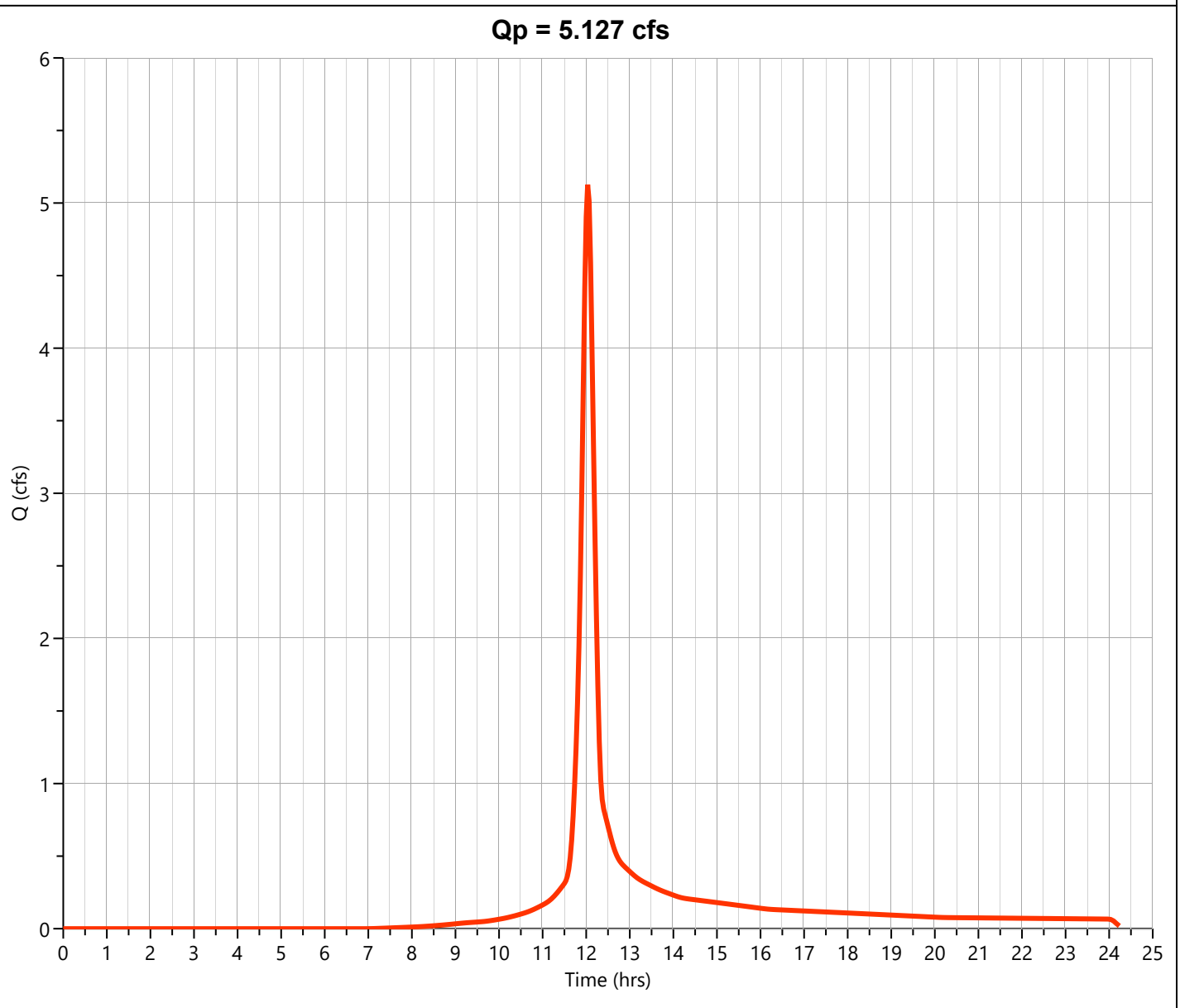
Pre Development

Hyd. No. 1

Hydrograph Type	= NRCS Runoff	Peak Flow	= 5.127 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.03 hrs
Time Interval	= 2 min	Runoff Volume	= 14,397 cuft
Drainage Area	= 1.25 ac	Curve Number	= 79*
Tc Method	= User	Time of Conc. (Tc)	= 15.39 min
Total Rainfall	= 5.52 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

*** Composite CN Worksheet**

AREA (ac)	CN	DESCRIPTION
1.34	79	Pervious
1.25	**79**	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.33

09-09-2024

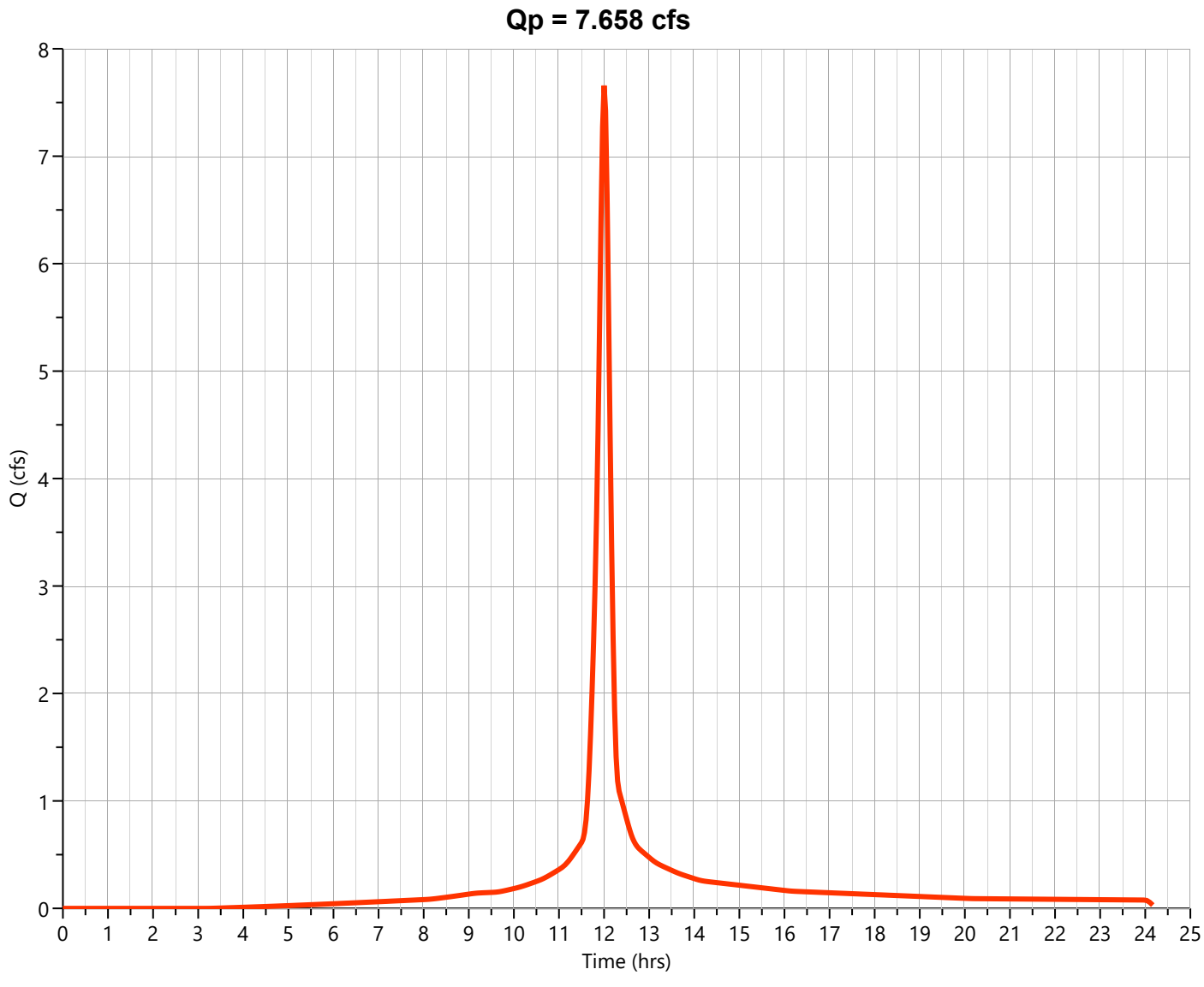
Post Pond 1

Hyd. No. 2

Hydrograph Type	= NRCS Runoff	Peak Flow	= 7.658 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.00 hrs
Time Interval	= 2 min	Runoff Volume	= 21,001 cuft
Drainage Area	= 1.25 ac	Curve Number	= 91*
Tc Method	= User	Time of Conc. (Tc)	= 10.0 min
Total Rainfall	= 5.52 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

*** Composite CN Worksheet**

AREA (ac)	CN	DESCRIPTION
0.47	79	Pervious
0.78	98	Impervious
1.25	**91**	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.33

09-09-2024

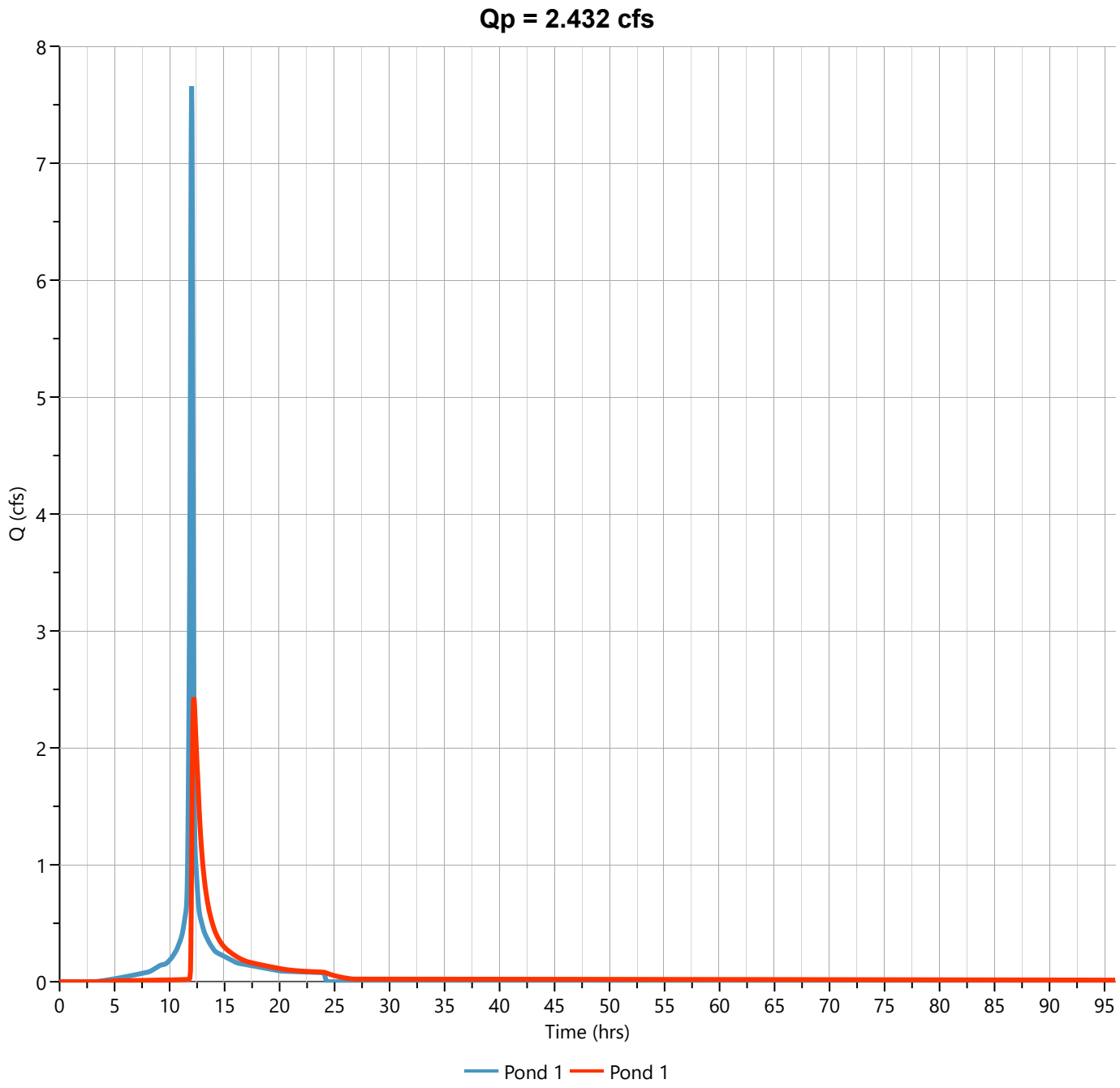
Pond 1

Hyd. No. 3

Hydrograph Type	= Pond Route	Peak Flow	= 2.432 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.20 hrs
Time Interval	= 2 min	Hydrograph Volume	= 20,303 cuft
Inflow Hydrograph	= 2 - Pond 1	Max. Elevation	= 993.29 ft
Pond Name	= Pond 1	Max. Storage	= 10,699 cuft

Pond Routing by Storage Indication Method

Center of mass detention time = 1.77 hrs



Hydrograph 25-yr Summary

Project Name:

09-09-2024

Hydrology Studio v 3.0.0.33

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Flow (cfs)	Time to Peak (hrs)	Hydrograph Volume (cuft)	Inflow Hyd(s)	Maximum Elevation (ft)	Maximum Storage (cuft)
1	NRCS Runoff	Pre Development	6.863	12.03	19,393	----		
2	NRCS Runoff	Post Pond 1	9.627	12.00	26,777	----		
3	Pond Route	Pond 1	3.374	12.20	26,067	2	993.79	13,043

Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.33

09-09-2024

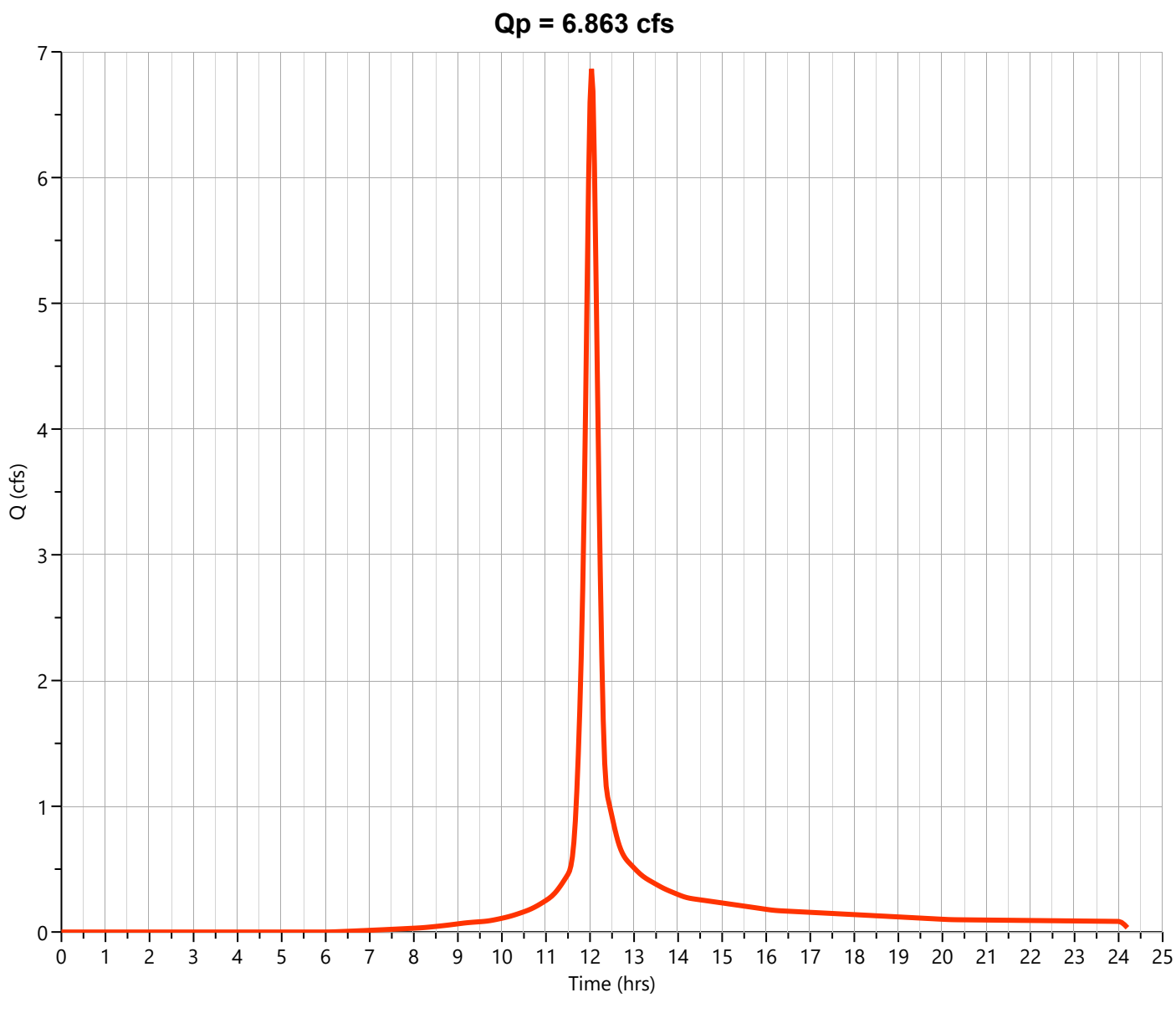
Pre Development

Hyd. No. 1

Hydrograph Type	= NRCS Runoff	Peak Flow	= 6.863 cfs
Storm Frequency	= 25-yr	Time to Peak	= 12.03 hrs
Time Interval	= 2 min	Runoff Volume	= 19,393 cuft
Drainage Area	= 1.25 ac	Curve Number	= 79*
Tc Method	= User	Time of Conc. (Tc)	= 15.39 min
Total Rainfall	= 6.78 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

*** Composite CN Worksheet**

AREA (ac)	CN	DESCRIPTION
1.34	79	Pervious
1.25	**79**	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.33

09-09-2024

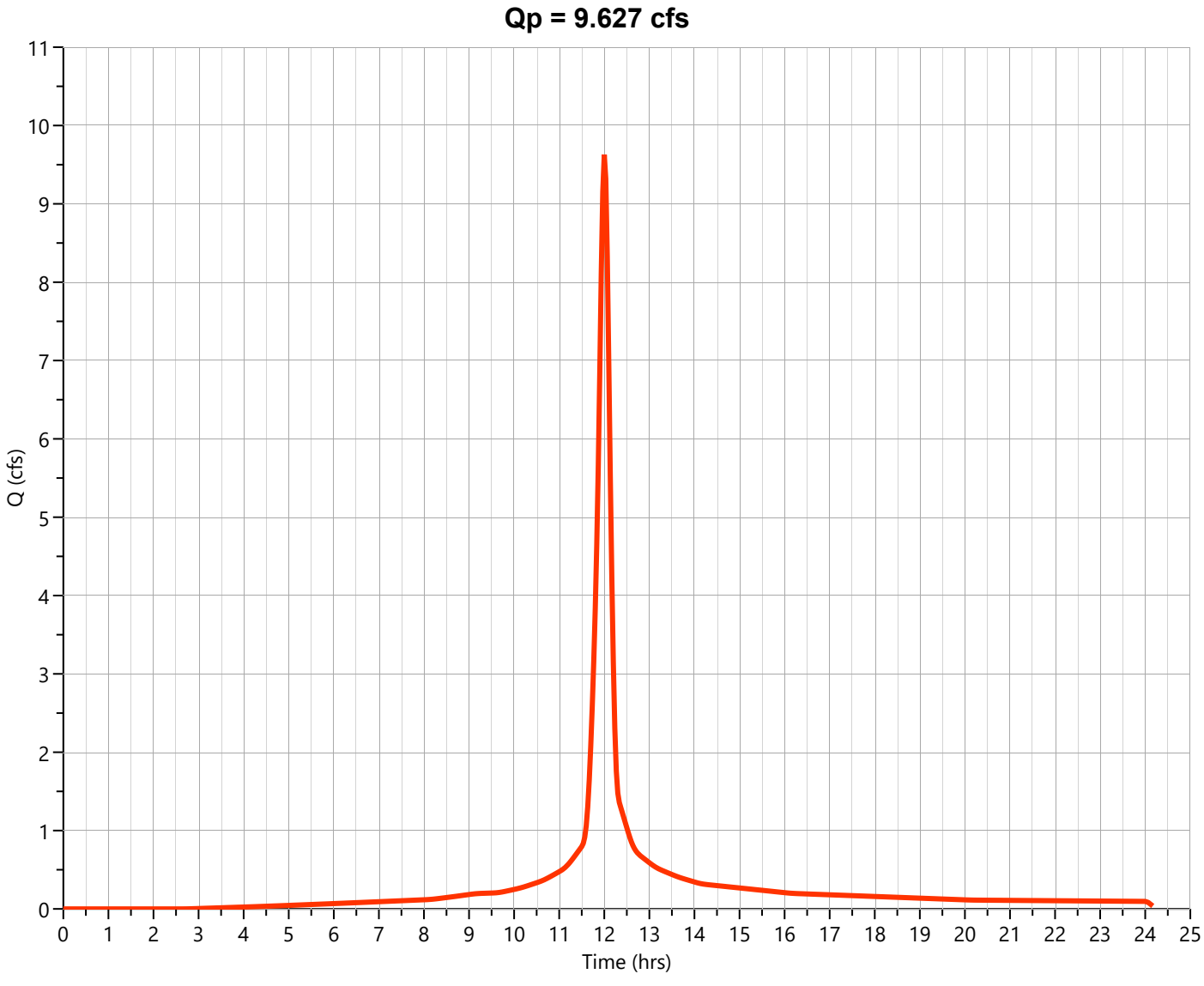
Post Pond 1

Hyd. No. 2

Hydrograph Type	= NRCS Runoff	Peak Flow	= 9.627 cfs
Storm Frequency	= 25-yr	Time to Peak	= 12.00 hrs
Time Interval	= 2 min	Runoff Volume	= 26,777 cuft
Drainage Area	= 1.25 ac	Curve Number	= 91*
Tc Method	= User	Time of Conc. (Tc)	= 10.0 min
Total Rainfall	= 6.78 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

*** Composite CN Worksheet**

AREA (ac)	CN	DESCRIPTION
0.47	79	Pervious
0.78	98	Impervious
1.25	**91**	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.33

09-09-2024

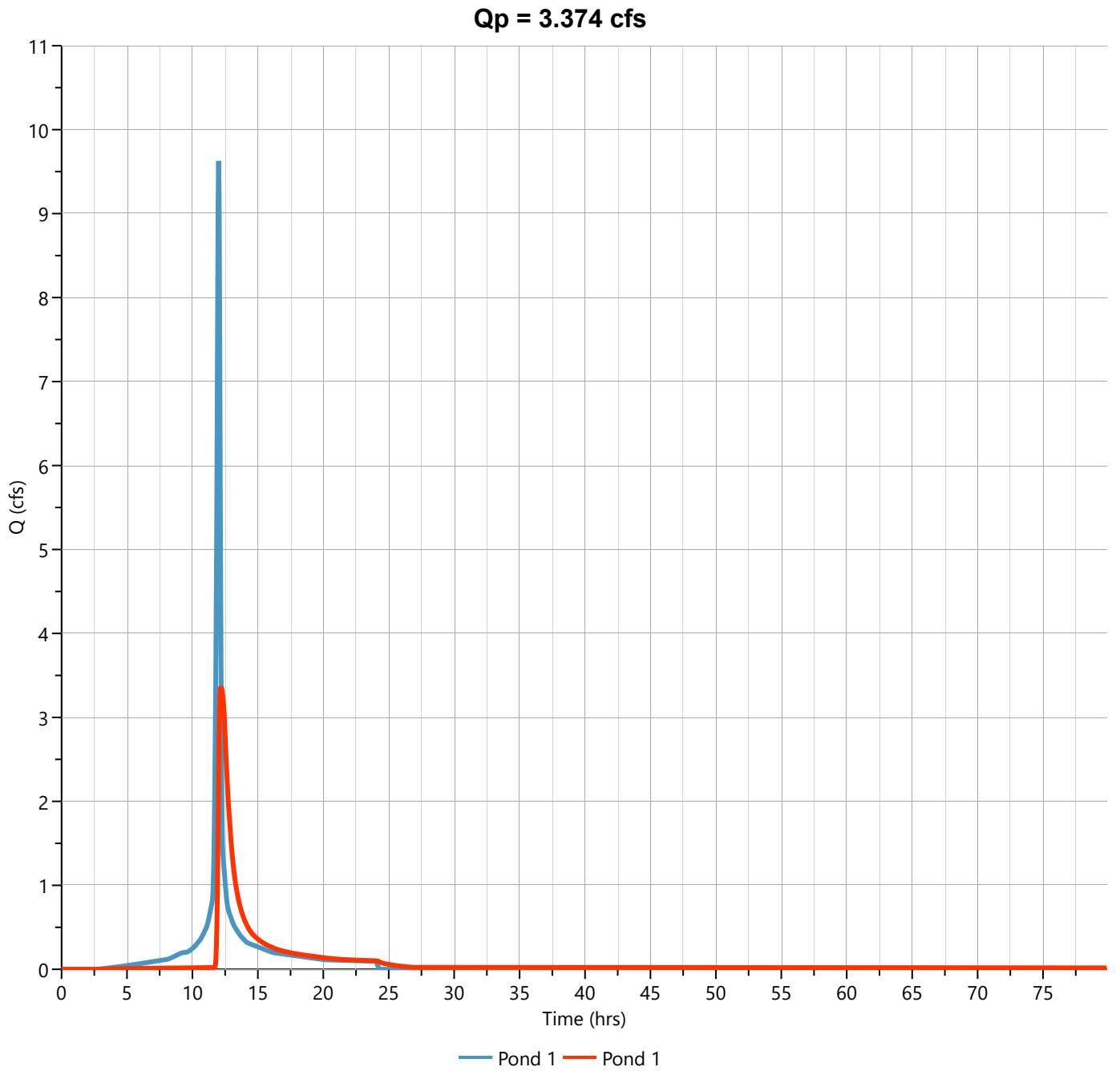
Pond 1

Hyd. No. 3

Hydrograph Type	= Pond Route	Peak Flow	= 3.374 cfs
Storm Frequency	= 25-yr	Time to Peak	= 12.20 hrs
Time Interval	= 2 min	Hydrograph Volume	= 26,067 cuft
Inflow Hydrograph	= 2 - Pond 1	Max. Elevation	= 993.79 ft
Pond Name	= Pond 1	Max. Storage	= 13,043 cuft

Pond Routing by Storage Indication Method

Center of mass detention time = 1.58 hrs



Hydrograph 50-yr Summary

Project Name:

09-09-2024

Hydrology Studio v 3.0.0.33

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Flow (cfs)	Time to Peak (hrs)	Hydrograph Volume (cuft)	Inflow Hyd(s)	Maximum Elevation (ft)	Maximum Storage (cuft)
1	NRCS Runoff	Pre Development	8.281	12.03	23,545	----		
2	NRCS Runoff	Post Pond 1	11.21	12.00	31,478	----		
3	Pond Route	Pond 1	3.671	12.20	30,760	2	994.19	15,110

Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.33

09-09-2024

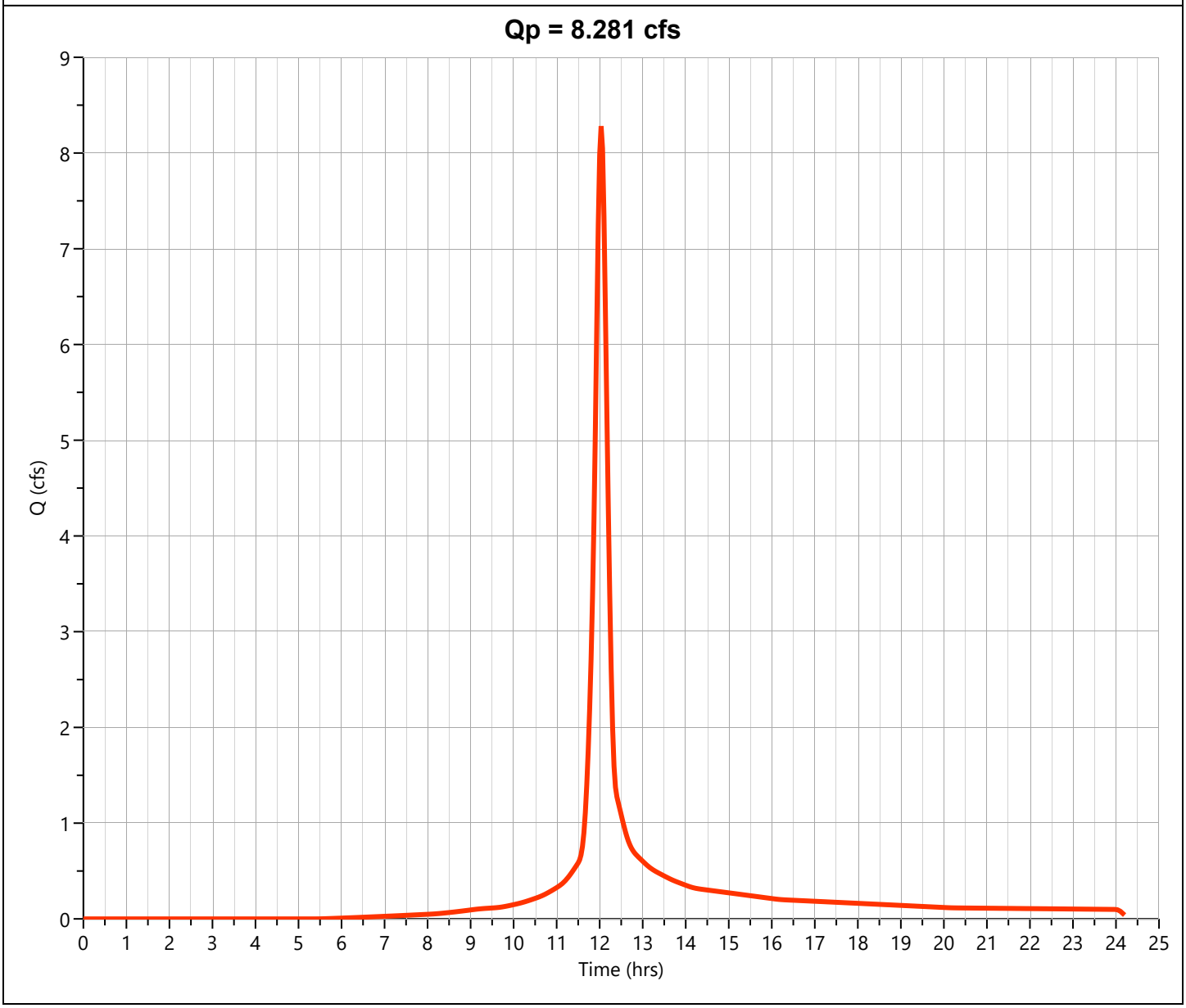
Pre Development

Hyd. No. 1

Hydrograph Type	= NRCS Runoff	Peak Flow	= 8.281 cfs
Storm Frequency	= 50-yr	Time to Peak	= 12.03 hrs
Time Interval	= 2 min	Runoff Volume	= 23,545 cuft
Drainage Area	= 1.25 ac	Curve Number	= 79*
Tc Method	= User	Time of Conc. (Tc)	= 15.39 min
Total Rainfall	= 7.80 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

*** Composite CN Worksheet**

AREA (ac)	CN	DESCRIPTION
1.34	79	Pervious
1.25	**79**	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.33

09-09-2024

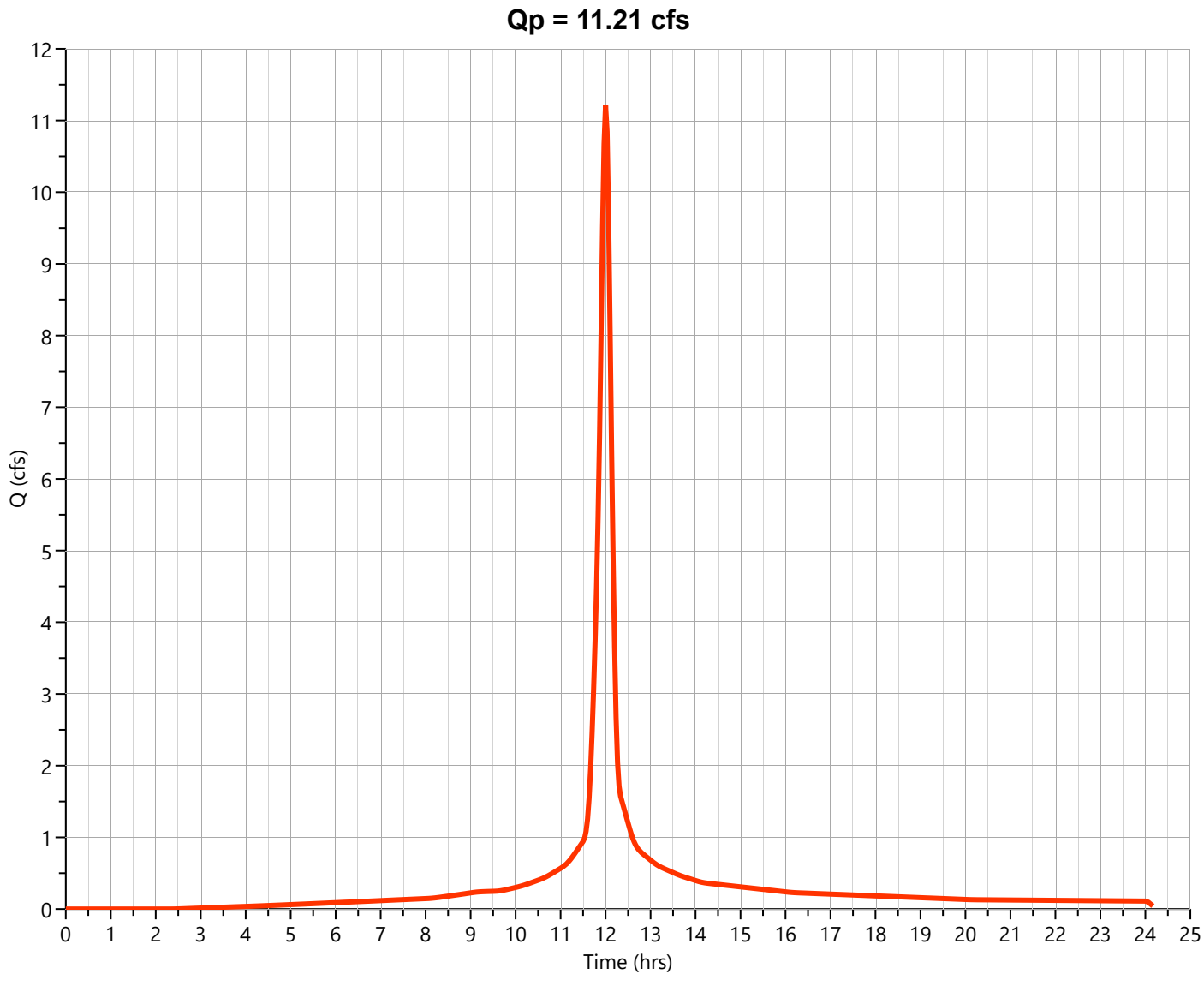
Post Pond 1

Hyd. No. 2

Hydrograph Type	= NRCS Runoff	Peak Flow	= 11.21 cfs
Storm Frequency	= 50-yr	Time to Peak	= 12.00 hrs
Time Interval	= 2 min	Runoff Volume	= 31,478 cuft
Drainage Area	= 1.25 ac	Curve Number	= 91*
Tc Method	= User	Time of Conc. (Tc)	= 10.0 min
Total Rainfall	= 7.80 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

*** Composite CN Worksheet**

AREA (ac)	CN	DESCRIPTION
0.47	79	Pervious
0.78	98	Impervious
1.25	**91**	Weighted CN Method Employed



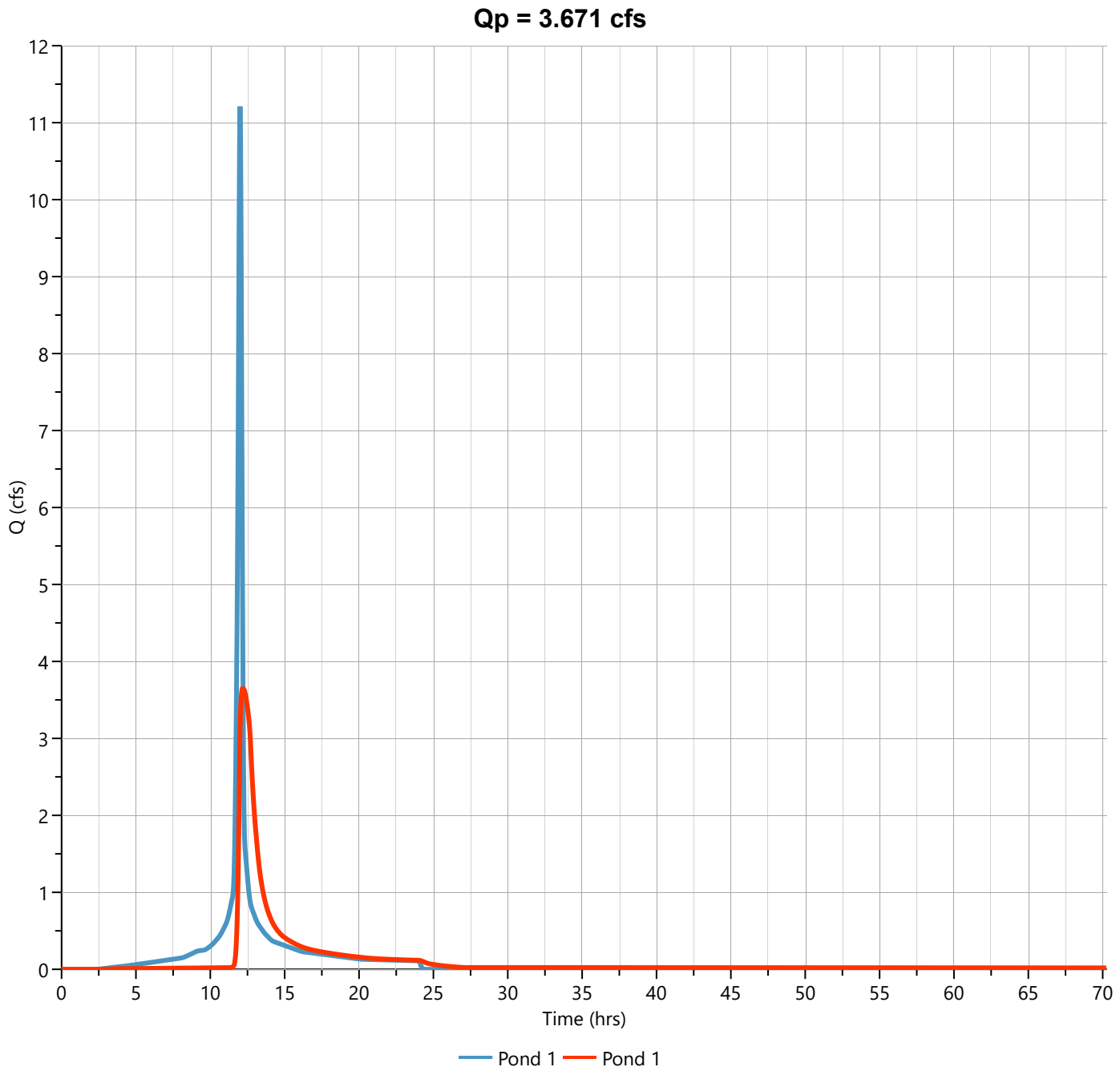
Pond 1

Hyd. No. 3

Hydrograph Type	= Pond Route	Peak Flow	= 3.671 cfs
Storm Frequency	= 50-yr	Time to Peak	= 12.20 hrs
Time Interval	= 2 min	Hydrograph Volume	= 30,760 cuft
Inflow Hydrograph	= 2 - Pond 1	Max. Elevation	= 994.19 ft
Pond Name	= Pond 1	Max. Storage	= 15,110 cuft

Pond Routing by Storage Indication Method

Center of mass detention time = 1.55 hrs



Hydrograph 100-yr Summary

Project Name:

09-09-2024

Hydrology Studio v 3.0.0.33

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Flow (cfs)	Time to Peak (hrs)	Hydrograph Volume (cuft)	Inflow Hyd(s)	Maximum Elevation (ft)	Maximum Storage (cuft)
1	NRCS Runoff	Pre Development	9.772	12.03	27,972	----		
2	NRCS Runoff	Post Pond 1	12.86	12.00	36,426	----		
3	Pond Route	Pond 1	4.001	12.20	35,700	2	994.57	17,224

Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.33

09-09-2024

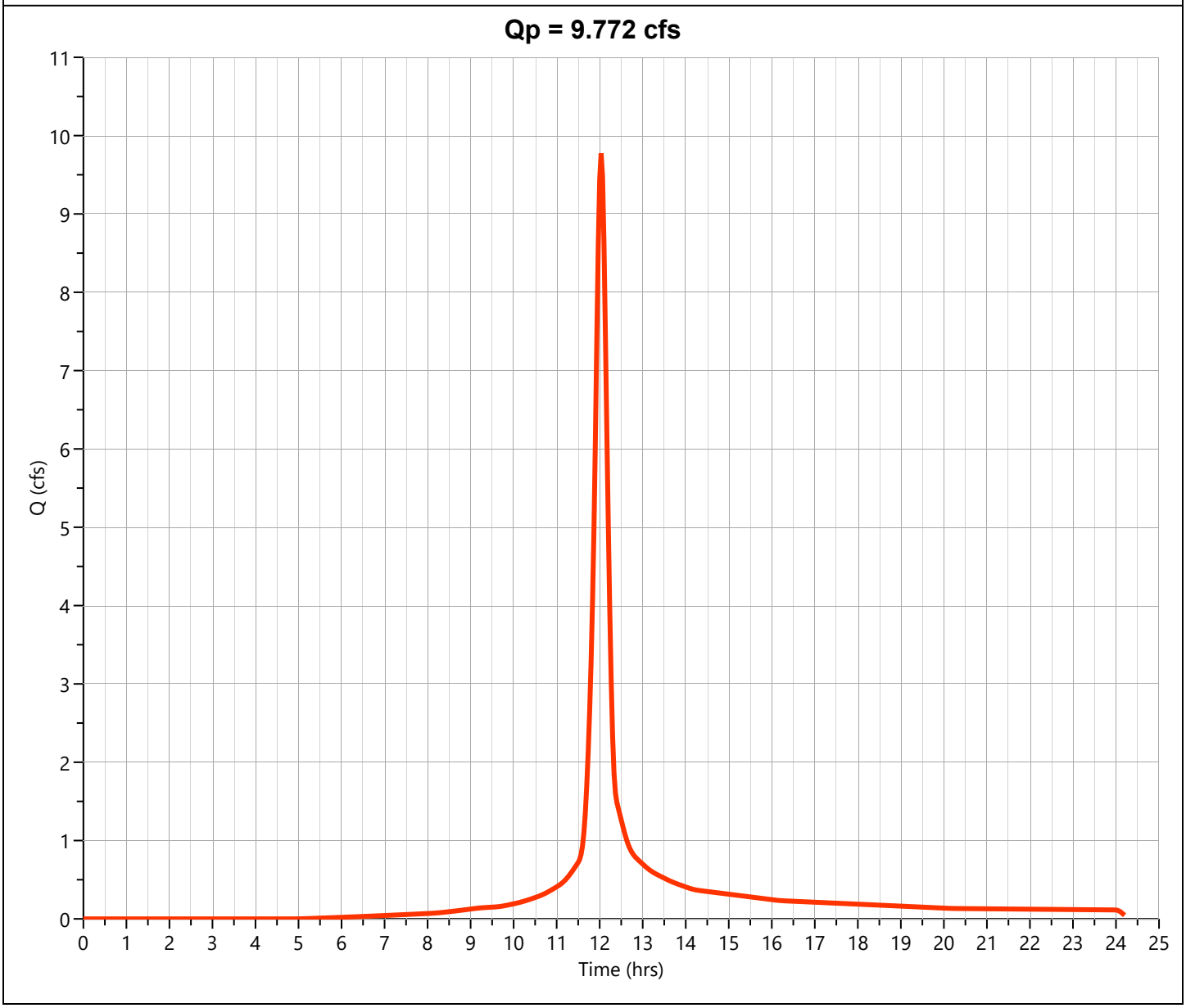
Pre Development

Hyd. No. 1

Hydrograph Type	= NRCS Runoff	Peak Flow	= 9.772 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.03 hrs
Time Interval	= 2 min	Runoff Volume	= 27,972 cuft
Drainage Area	= 1.25 ac	Curve Number	= 79*
Tc Method	= User	Time of Conc. (Tc)	= 15.39 min
Total Rainfall	= 8.87 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

*** Composite CN Worksheet**

AREA (ac)	CN	DESCRIPTION
1.34	79	Pervious
1.25	**79**	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.33

09-09-2024

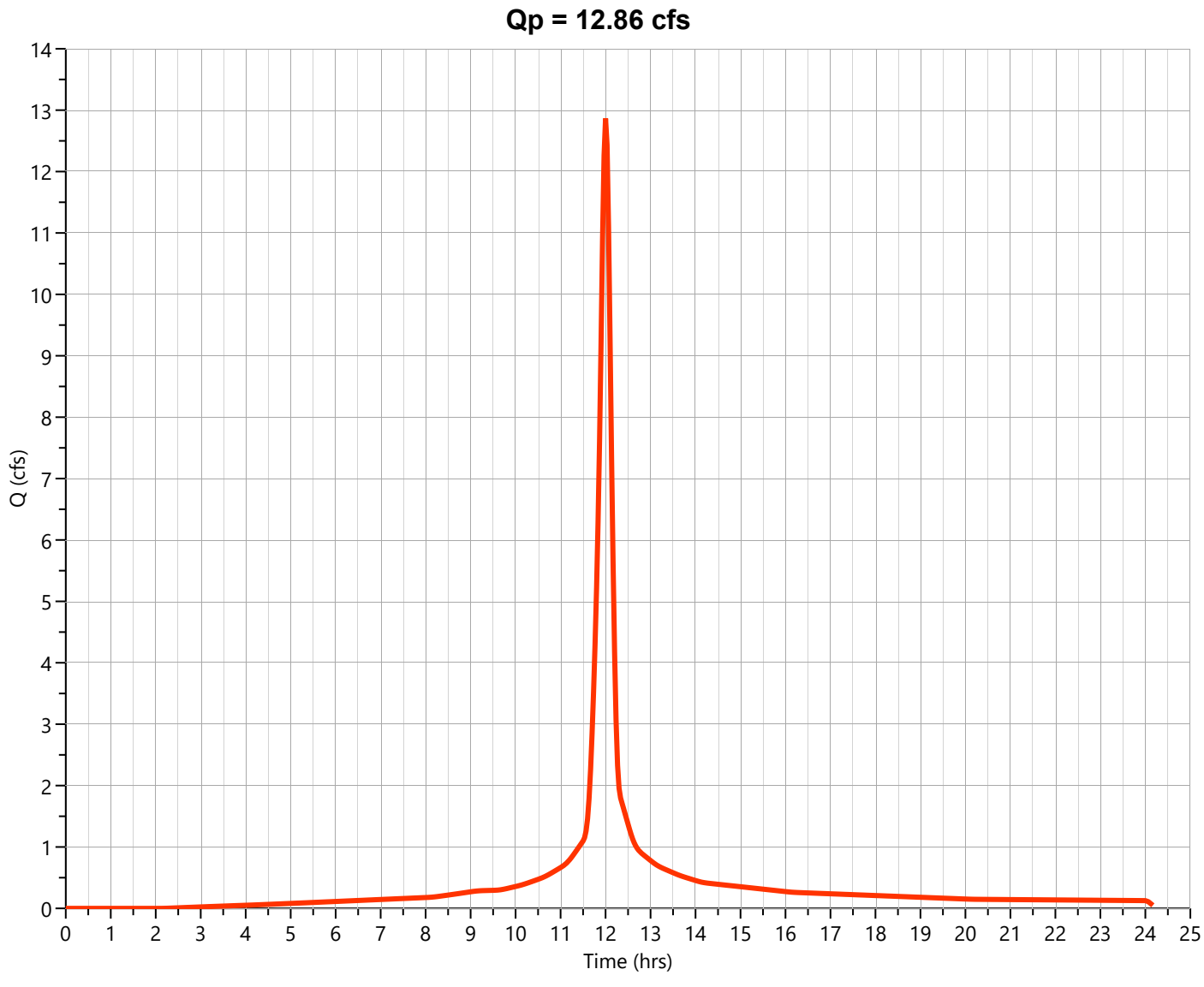
Post Pond 1

Hyd. No. 2

Hydrograph Type	= NRCS Runoff	Peak Flow	= 12.86 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.00 hrs
Time Interval	= 2 min	Runoff Volume	= 36,426 cuft
Drainage Area	= 1.25 ac	Curve Number	= 91*
Tc Method	= User	Time of Conc. (Tc)	= 10.0 min
Total Rainfall	= 8.87 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

*** Composite CN Worksheet**

AREA (ac)	CN	DESCRIPTION
0.47	79	Pervious
0.78	98	Impervious
1.25	**91**	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.33

09-09-2024

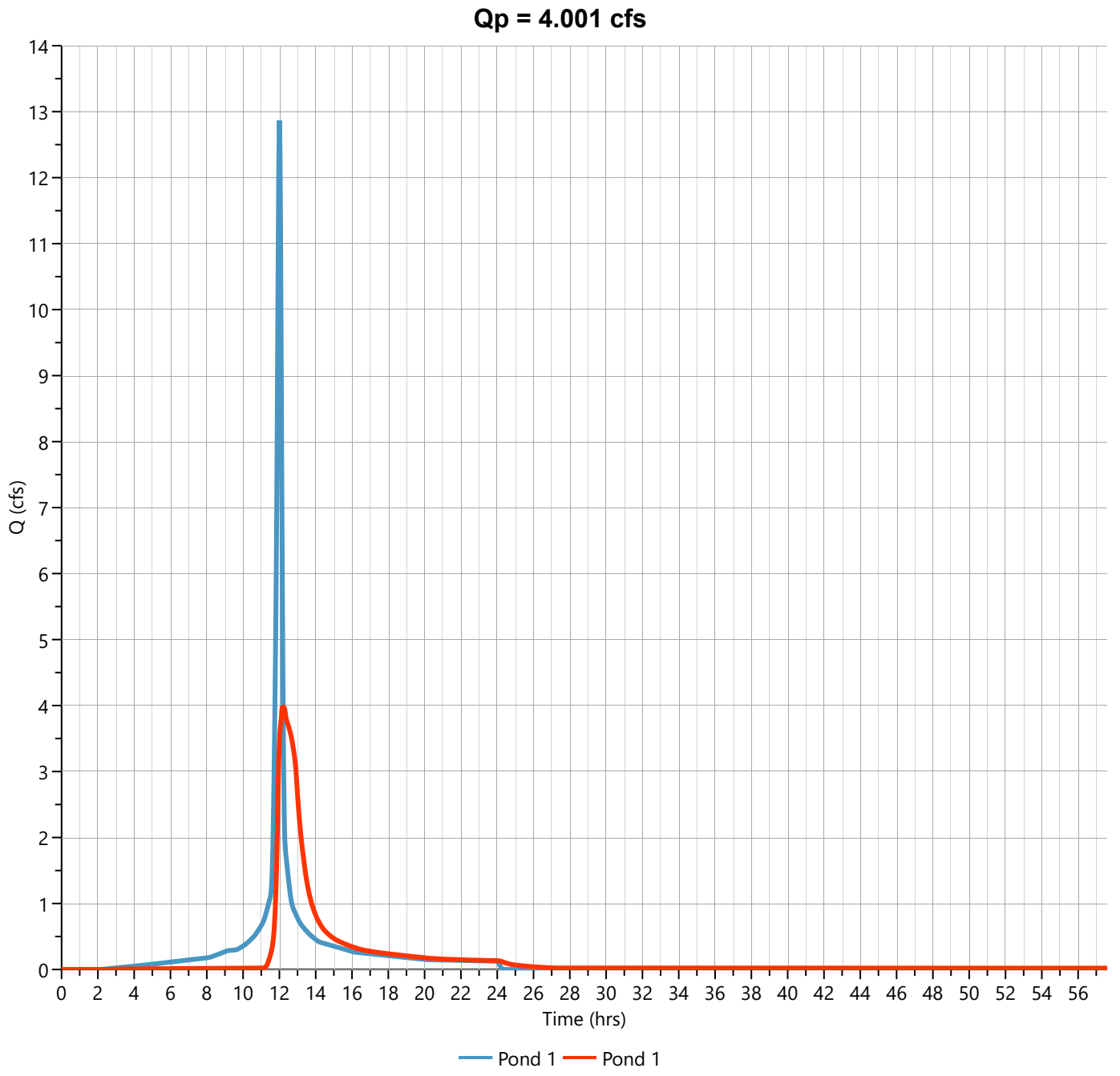
Pond 1

Hyd. No. 3

Hydrograph Type	= Pond Route	Peak Flow	= 4.001 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.20 hrs
Time Interval	= 2 min	Hydrograph Volume	= 35,700 cuft
Inflow Hydrograph	= 2 - Pond 1	Max. Elevation	= 994.57 ft
Pond Name	= Pond 1	Max. Storage	= 17,224 cuft

Pond Routing by Storage Indication Method

Center of mass detention time = 1.55 hrs



IDF Report

IDF filename: KansasCityMO.idf

Hydrology Studio v 3.0.0.33

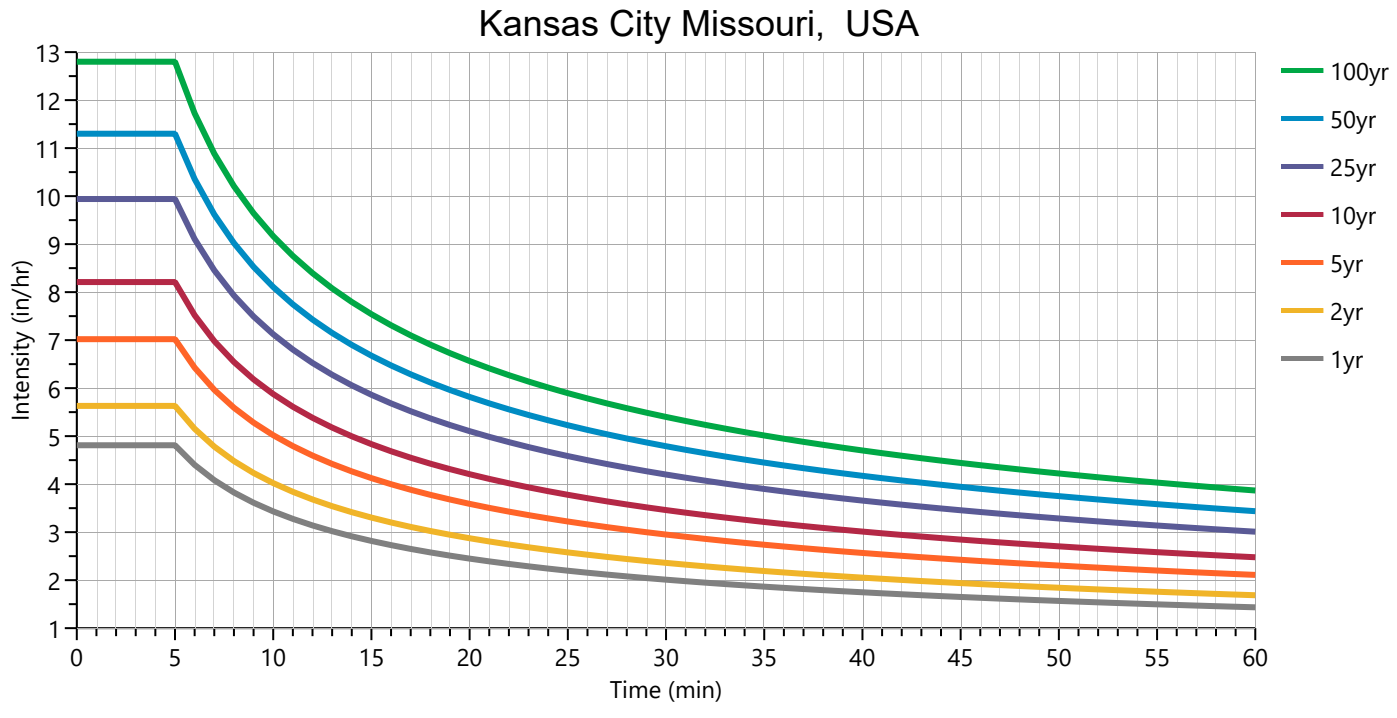
09-09-2024

Equation Coefficients	Intensity = B / (Tc + D)^E (in/hr)								
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
B	10.5326	12.2937	0.0000	15.2947	17.8412	21.5503	24.4283	27.7899	
D	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
E	0.4870	0.4852	0.0000	0.4839	0.4823	0.4808	0.4790	0.4817	

Minimum Tc = 5 minutes

Tc (min)	Intensity Values (in/hr)								
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
Cf	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
5	4.81	5.63	0	7.02	8.21	9.94	11.30	12.80	
10	3.43	4.02	0	5.02	5.88	7.12	8.11	9.17	
15	2.82	3.30	0	4.13	4.83	5.86	6.68	7.54	
20	2.45	2.87	0	3.59	4.21	5.10	5.82	6.56	
25	2.20	2.58	0	3.22	3.78	4.58	5.23	5.90	
30	2.01	2.36	0	2.95	3.46	4.20	4.79	5.40	
35	1.86	2.19	0	2.74	3.21	3.90	4.45	5.01	
40	1.75	2.05	0	2.57	3.01	3.66	4.17	4.70	
45	1.65	1.94	0	2.42	2.85	3.46	3.94	4.44	
50	1.57	1.84	0	2.30	2.70	3.29	3.75	4.22	
55	1.50	1.76	0	2.20	2.58	3.14	3.58	4.03	
60	1.43	1.69	0	2.11	2.48	3.01	3.44	3.87	

Cf = Correction Factor applied to Rational Method runoff coefficient.



Precipitation Report

Precipitation filename: KansasCityMO.pcp

Hydrology Studio v 3.0.0.33 (Rainfall totals in Inches)

09-09-2024

	Active	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
Active			✔		✔	✔	✔	✔	✔
SCS Storms	**> SCS Dimensionless Storms**								
SCS 6hr		2.21	2.66	0	3.42	4.08	5.03	5.80	6.61
Type I, 24-hr		3.06	3.64	0	4.64	5.52	6.78	7.80	8.87
Type IA, 24-hr		3.06	3.64	0	4.64	5.52	6.78	7.80	8.87
Type II, 24-hr	✔	3.06	3.64	0	4.64	5.52	6.78	7.80	8.87
Type II FL, 24-hr		3.06	3.64	0	4.64	5.52	6.78	7.80	8.87
Type III, 24-hr		3.06	3.64	0	4.64	5.52	6.78	7.80	8.87
Synthetic Storms	**> IDF-Based Synthetic Storms**								
1-hr		1.43	1.69	0	2.11	2.48	3.01	3.44	3.87
2-hr		2.05	2.41	0	3.02	3.55	4.31	4.93	5.54
3-hr		2.52	2.97	0	3.72	4.37	5.32	6.09	6.83
6-hr		3.60	4.24	0	5.32	6.26	7.63	8.74	9.79
12-hr		5.13	6.06	0	7.61	8.97	10.94	12.54	14.02
24-hr		7.32	8.66	0	10.88	12.84	15.67	18.00	20.08
Huff Distribution	**> 1st Quartile (0 to 6 hrs)**								
1-hr		1.32	1.56	0	1.97	2.32	2.83	3.24	3.66
2-hr		1.63	1.93	0	2.46	2.91	3.56	4.09	4.63
3-hr		1.83	2.19	0	2.80	3.33	4.09	4.71	5.35
6-hr		2.21	2.66	0	3.42	4.08	5.03	5.80	6.61
Huff Distribution	**> 2nd Quartile (>6 to 12 hrs)**								
8-hr		0	0	0	0	0	0	0	0
12-hr		2.61	3.14	0	4.04	4.82	5.96	6.87	7.83
Huff Distribution	**> 3rd Quartile (>12 to 24 hrs)**								
18-hr		0	0	0	0	0	0	0	0
24-hr		3.06	3.64	0	4.64	5.52	6.78	7.80	8.87
Custom Storms	**> Custom Storm Distributions**								
My Custom Storm 1		0	0	0	0	0	0	0	0
My Custom Storm 2		0	0	0	0	0	0	0	0
My Custom Storm 3		0	0	0	0	0	0	0	0
My Custom Storm 4		0	0	0	0	0	0	0	0
My Custom Storm 5		0	0	0	0	0	0	0	0
My Custom Storm 6		0	0	0	0	0	0	0	0
My Custom Storm 7		0	0	0	0	0	0	0	0
My Custom Storm 8		0	0	0	0	0	0	0	0
My Custom Storm 9		0	0	0	0	0	0	0	0
My Custom Storm 10		0	0	0	0	0	0	0	0

Precipitation Report Cont'd

Precipitation filename: KansasCityMO.pcp

Rainfall totals in Inches

09-09-2024

	Active	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
Active			✔		✔	✔	✔	✔	✔
Huff Indiana	**> Indianapolis**								
30-min		1.01	1.18	0	1.48	1.73	2.10	2.39	2.70
1-hr		1.32	1.56	0	1.97	2.32	2.83	3.24	3.66
2-hr		1.63	1.93	0	2.46	2.91	3.56	4.09	4.63
3-hr		1.83	2.19	0	2.80	3.33	4.09	4.71	5.35
6-hr		2.21	2.66	0	3.42	4.08	5.03	5.80	6.61
12-hr		2.61	3.14	0	4.04	4.82	5.96	6.87	7.83
24-hr		3.06	3.64	0	4.64	5.52	6.78	7.80	8.87
Huff Indiana	**> Evansville**								
30-min		1.01	1.18	0	1.48	1.73	2.10	2.39	2.70
1-hr		1.32	1.56	0	1.97	2.32	2.83	3.24	3.66
2-hr		1.63	1.93	0	2.46	2.91	3.56	4.09	4.63
3-hr		1.83	2.19	0	2.80	3.33	4.09	4.71	5.35
6-hr		2.21	2.66	0	3.42	4.08	5.03	5.80	6.61
12-hr		2.61	3.14	0	4.04	4.82	5.96	6.87	7.83
24-hr		3.06	3.64	0	4.64	5.52	6.78	7.80	8.87
Huff Indiana	**> Fort Wayne**								
30-min		1.01	1.18	0	1.48	1.73	2.10	2.39	2.70
1-hr		1.32	1.56	0	1.97	2.32	2.83	3.24	3.66
2-hr		1.63	1.93	0	2.46	2.91	3.56	4.09	4.63
3-hr		1.83	2.19	0	2.80	3.33	4.09	4.71	5.35
6-hr		2.21	2.66	0	3.42	4.08	5.03	5.80	6.61
12-hr		2.61	3.14	0	4.04	4.82	5.96	6.87	7.83
24-hr		3.06	3.64	0	4.64	5.52	6.78	7.80	8.87
Huff Indiana	**> South Bend**								
30-min		1.01	1.18	0	1.48	1.73	2.10	2.39	2.70
1-hr		1.32	1.56	0	1.97	2.32	2.83	3.24	3.66
2-hr		1.63	1.93	0	2.46	2.91	3.56	4.09	4.63
3-hr		1.83	2.19	0	2.80	3.33	4.09	4.71	5.35
6-hr		2.21	2.66	0	3.42	4.08	5.03	5.80	6.61
12-hr		2.61	3.14	0	4.04	4.82	5.96	6.87	7.83
24-hr		3.06	3.64	0	4.64	5.52	6.78	7.80	8.87

Precipitation Report Cont'd

Precipitation filename: KansasCityMO.pcp

Rainfall totals in Inches

09-09-2024

	Active	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
Active			✔		✔	✔	✔	✔	✔
NRCS Storms	**> NRCS Dimensionless Storms**								
NRCS MSE1, 24-hr		3.06	3.64	0	4.64	5.52	6.78	7.80	8.87
NRCS MSE2, 24-hr		3.06	3.64	0	4.64	5.52	6.78	7.80	8.87
NRCS MSE3, 24-hr		3.06	3.64	0	4.64	5.52	6.78	7.80	8.87
NRCS MSE4, 24-hr		3.06	3.64	0	4.64	5.52	6.78	7.80	8.87
NRCS MSE5, 24-hr		3.06	3.64	0	4.64	5.52	6.78	7.80	8.87
NRCS MSE6, 24-hr		3.06	3.64	0	4.64	5.52	6.78	7.80	8.87
NOAA-A, 24-hr		3.06	3.64	0	4.64	5.52	6.78	7.80	8.87
NOAA-B, 24-hr		3.06	3.64	0	4.64	5.52	6.78	7.80	8.87
NOAA-C, 24-hr		3.06	3.64	0	4.64	5.52	6.78	7.80	8.87
NOAA-D, 24-hr		3.06	3.64	0	4.64	5.52	6.78	7.80	8.87
NRCC-A, 24-hr		3.06	3.64	0	4.64	5.52	6.78	7.80	8.87
NRCC-B, 24-hr		3.06	3.64	0	4.64	5.52	6.78	7.80	8.87
NRCC-C, 24-hr		3.06	3.64	0	4.64	5.52	6.78	7.80	8.87
NRCC-D, 24-hr		3.06	3.64	0	4.64	5.52	6.78	7.80	8.87
CA-1, 24-hr		3.06	3.64	0	4.64	5.52	6.78	7.80	8.87
CA-2, 24-hr		3.06	3.64	0	4.64	5.52	6.78	7.80	8.87
CA-3, 24-hr		3.06	3.64	0	4.64	5.52	6.78	7.80	8.87
CA-4, 24-hr		3.06	3.64	0	4.64	5.52	6.78	7.80	8.87
CA-5, 24-hr		3.06	3.64	0	4.64	5.52	6.78	7.80	8.87
CA-6, 24-hr		3.06	3.64	0	4.64	5.52	6.78	7.80	8.87
FDOT Storms	**> Florida DOT Storms**								
FDOT, 1-hr		0	2.14	2.36	2.58	2.92	3.35	3.66	3.95
FDOT, 2-hr		0	2.70	3.00	3.26	3.69	4.24	4.64	5.00
FDOT, 4-hr		0	3.28	3.76	4.00	4.80	5.50	6.20	6.80
FDOT, 8-hr		0	3.76	4.32	4.80	5.60	6.20	7.20	8.00
FDOT, 24-hr		0	4.28	4.75	5.21	6.11	7.53	8.78	10.20
FDOT, 72-hr		0	5.44	6.10	6.74	7.98	9.92	11.60	13.40
SFWMD, 72-hr		0	5.44	6.10	6.74	7.98	9.92	11.60	13.40
Austin Storms	**> Austin Frequency Storms**								
Austin Zone 1, 24-hr		0	4.14	0	5.51	6.84	8.90	10.69	12.80
Austin Zone 2, 24-hr		0	4.06	0	5.38	6.65	8.59	10.28	12.23

Table of Contents

Project Name:

Hydrology Studio v 3.0.0.33

09-09-2024

Basin Model

Hydrology Studio v 3.0.0.33

Project Name:

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Hydrograph by Return Period

Project Name:

09-09-2024

Hydrology Studio v 3.0.0.33

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Outflow (cfs)							
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
1	NRCS Runoff	Post Pond 1		4.691		6.274	7.658	9.627	11.21	12.86
2	Pond Route	Pond 1		3.664		5.769	7.324	9.248	10.78	12.46

Hydrograph 100-yr Summary

Project Name:

09-09-2024

Hydrology Studio v 3.0.0.33

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Flow (cfs)	Time to Peak (hrs)	Hydrograph Volume (cuft)	Inflow Hyd(s)	Maximum Elevation (ft)	Maximum Storage (cuft)
1	NRCS Runoff	Post Pond 1	12.86	12.00	36,426	----		
2	Pond Route	Pond 1	12.46	12.03	32,467	1	995.23	6,387

Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.33

09-09-2024

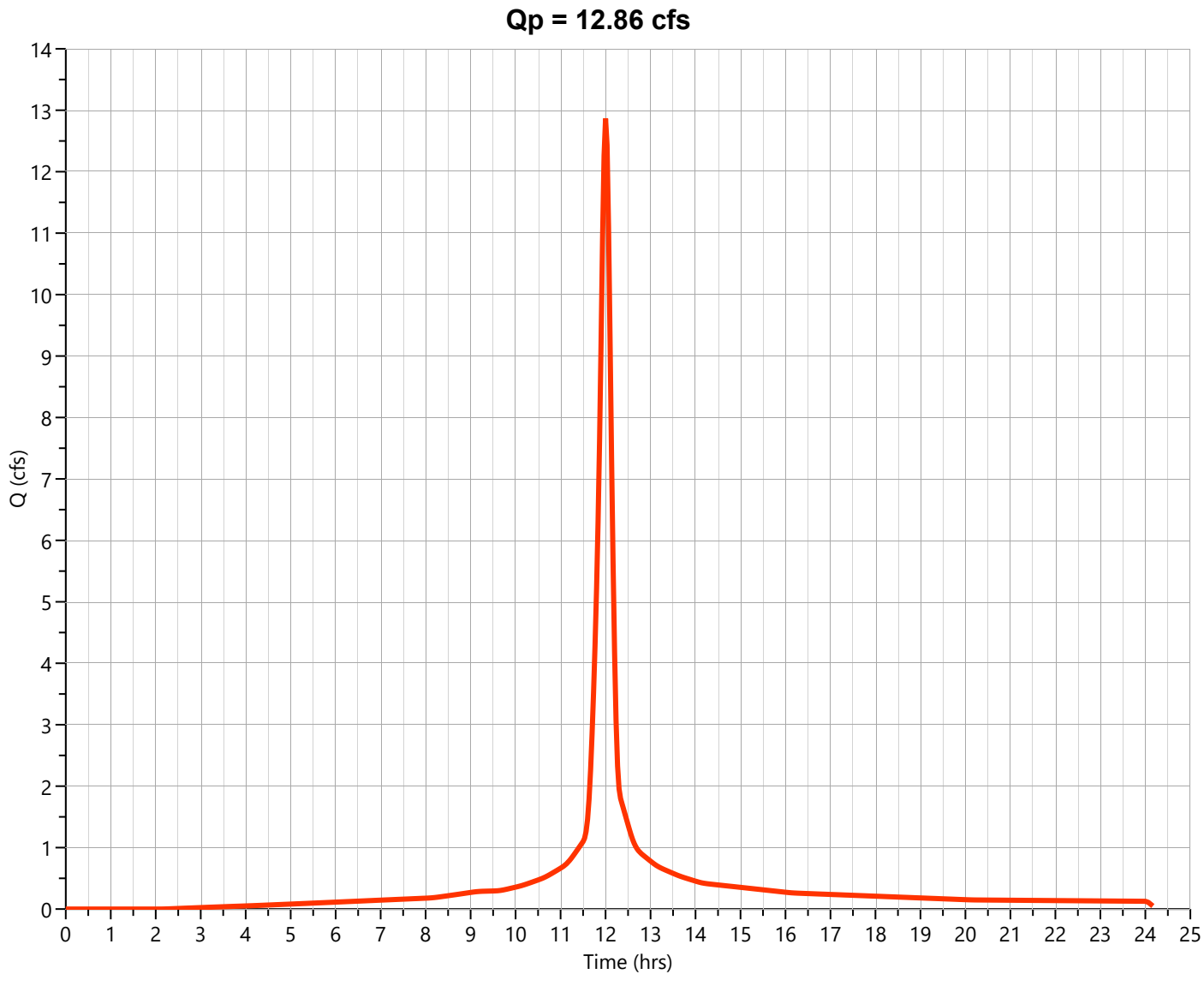
Post Pond 1

Hyd. No. 1

Hydrograph Type	= NRCS Runoff	Peak Flow	= 12.86 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.00 hrs
Time Interval	= 2 min	Runoff Volume	= 36,426 cuft
Drainage Area	= 1.25 ac	Curve Number	= 91*
Tc Method	= User	Time of Conc. (Tc)	= 10.0 min
Total Rainfall	= 8.87 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

*** Composite CN Worksheet**

AREA (ac)	CN	DESCRIPTION
0.47	79	Pervious
0.78	98	Impervious
1.25	**91**	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.33

09-09-2024

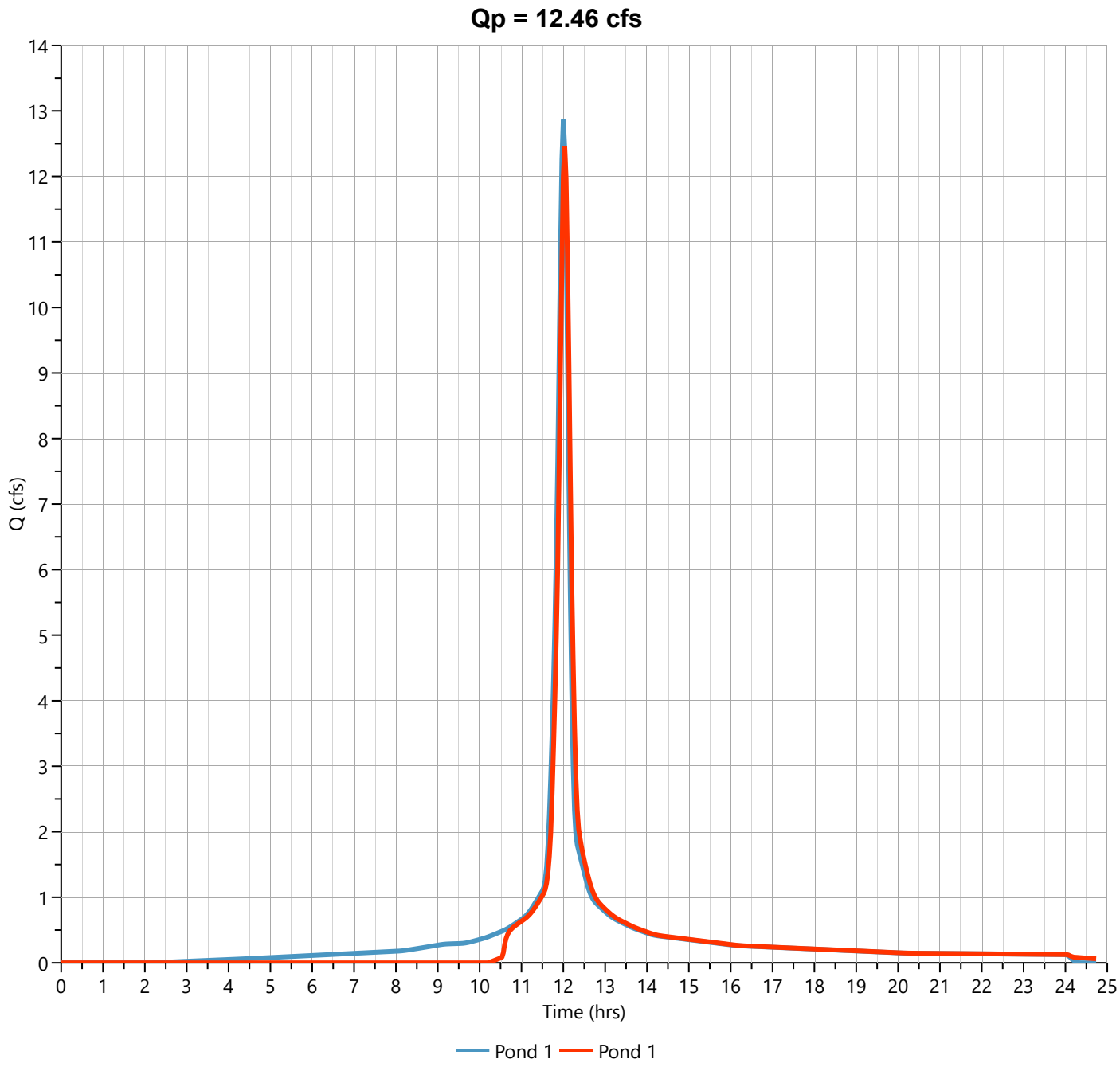
Pond 1

Hyd. No. 2

Hydrograph Type	= Pond Route	Peak Flow	= 12.46 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.03 hrs
Time Interval	= 2 min	Hydrograph Volume	= 32,467 cuft
Inflow Hydrograph	= 1 - Pond 1	Max. Elevation	= 995.23 ft
Pond Name	= Pond 1	Max. Storage	= 6,387 cuft

Pond Routing by Storage Indication Method

Center of mass detention time = 46 min



Pond Report

Project Name:

Hydrology Studio v 3.0.0.33

09-09-2024

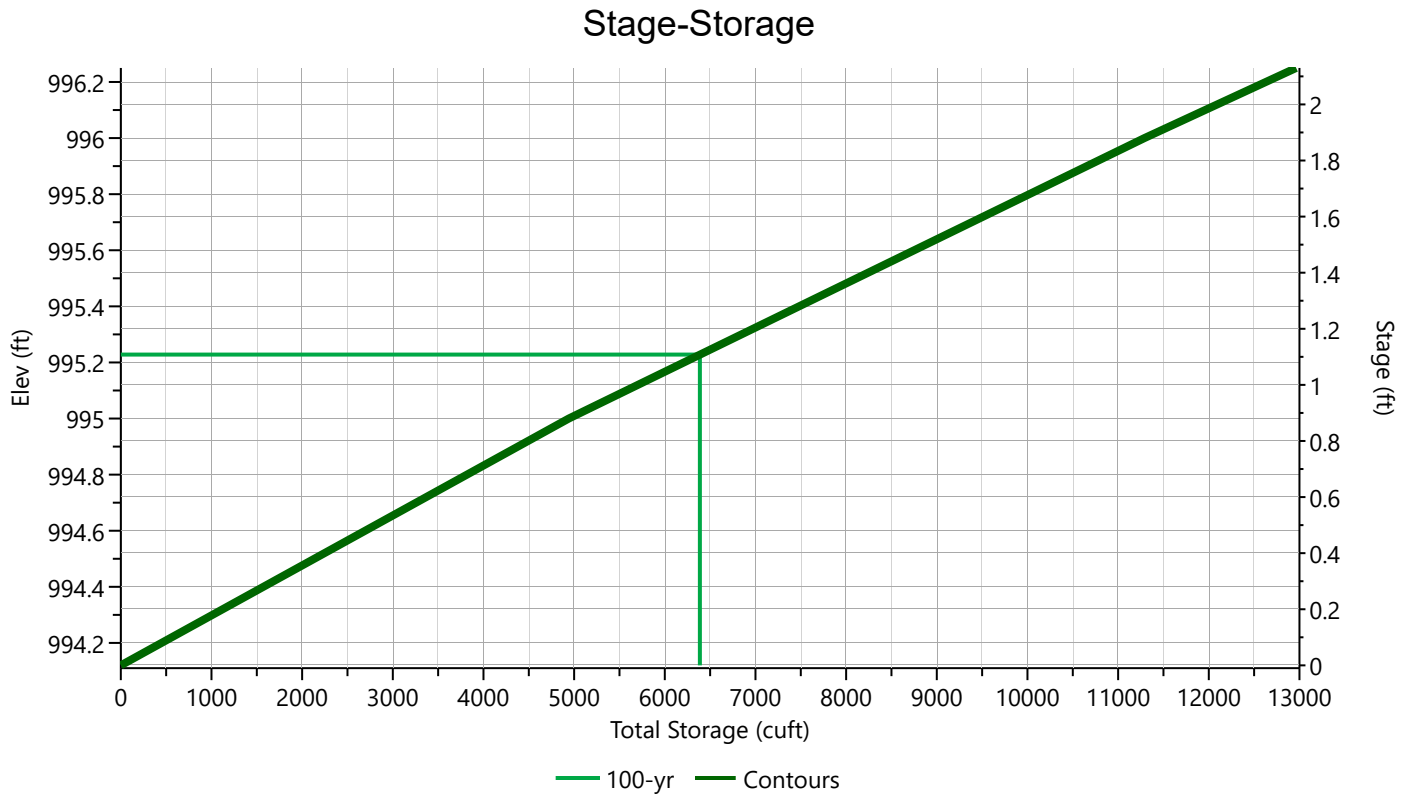
Pond 1

Stage-Storage

User Defined Contours	
Description	**Input**
Bottom Elevation, ft	994.12
Voids (%)	100.00
Volume Calc	Ave End Area

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour Area (sqft)	Incr. Storage (cuft)	Total Storage (cuft)
0.00	994.12	5,223	0.000	0.000
0.88	995.00	6,006	4,941	4,941
1.88	996.00	6,693	6,350	11,290
2.13	996.25	6,693	1,673	12,964



Pond Report

Project Name:

Hydrology Studio v 3.0.0.33

09-09-2024

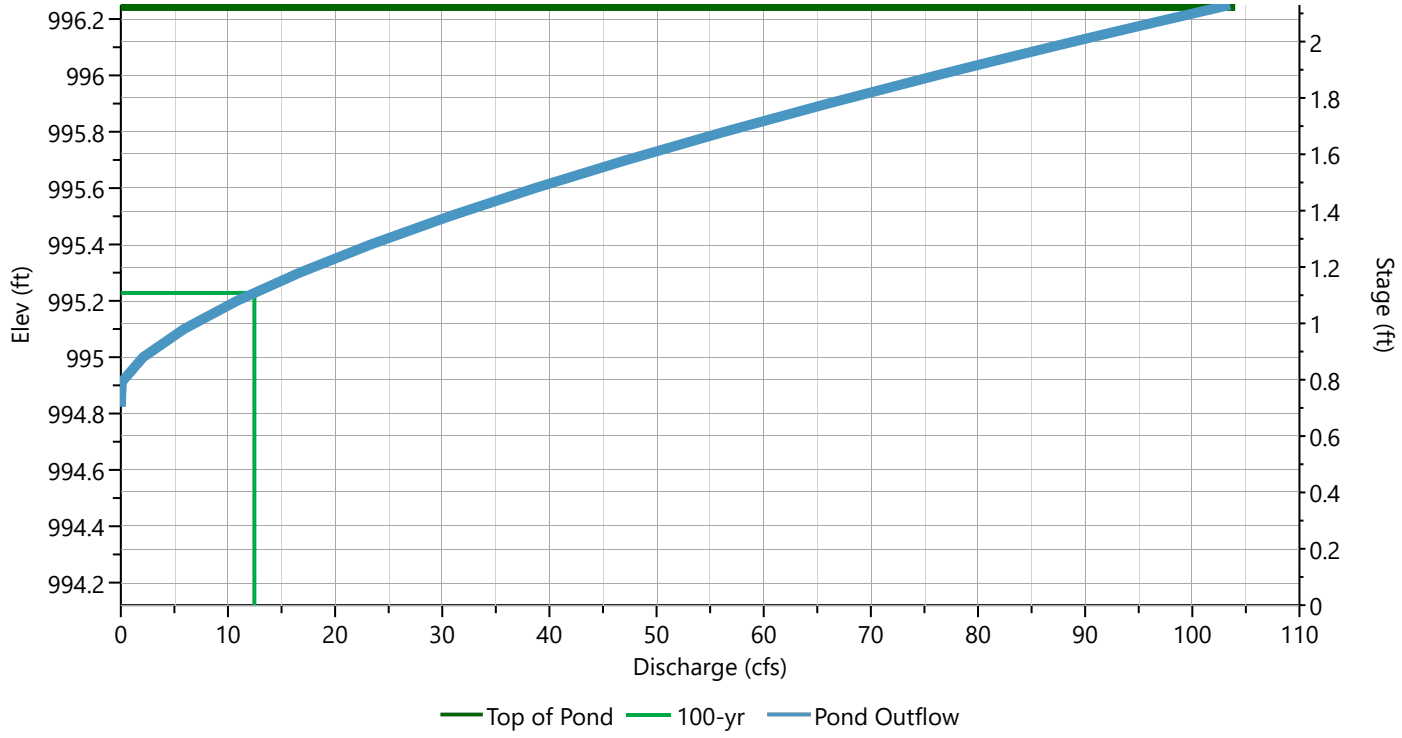
Pond 1

Stage-Discharge

Culvert / Orifices	Culvert	Orifice			Orifice Plate	
		1	2	3		
Rise, in	30	.81			Orifice Dia, in	
Span, in	30	.81			No. Orifices	
No. Barrels	1	1			Invert Elevation, ft	
Invert Elevation, ft	988.50	988.50			Height, ft	
Orifice Coefficient, Co	0.60	0.60			Orifice Coefficient, Co	
Length, ft	20					
Barrel Slope, %	.5					
N-Value, n	0.013					

Weirs	Riser	Weir			Ancillary	
		1 (m)	2 (i)	3		
Shape / Type	Circular	Rectangular	Broad Crested		Exfiltration, in/hr	
Crest Elevation, ft	994.4	994.12	994.9	992.5		
Crest Length, ft	12	.5	20			
Angle, deg						
Weir Coefficient, Cw	3.3	3.3	3.3	3.3		

m = Flows through Culvert, i = Independent



Pond 1

Stage-Storage-Discharge Summary

Stage (ft)	Elev. (ft)	Storage (cuft)	Culvert (cfs)	Orifices, cfs			Riser (cfs)	Weirs, cfs			Pf Riser (cfs)	Exfil (cfs)	User (cfs)	Total (cfs)
				1	2	3		1	2	3				
0.00	994.12	0.000	0.000	0.000			0.000	0.000	0.000	0.000				0.000
0.88	995.00	4,941	0.000	0.000			0.000	0.000	2.086	0.000				2.086
1.88	996.00	11,290	0.000	0.000			0.000	0.000	76.14	0.000				76.14
2.13	996.25	12,964	0.000	0.000			0.000	0.000	103.5	0.000				103.5

Suffix key: ic = inlet control, oc = outlet control, s = submerged weir

Pond Report

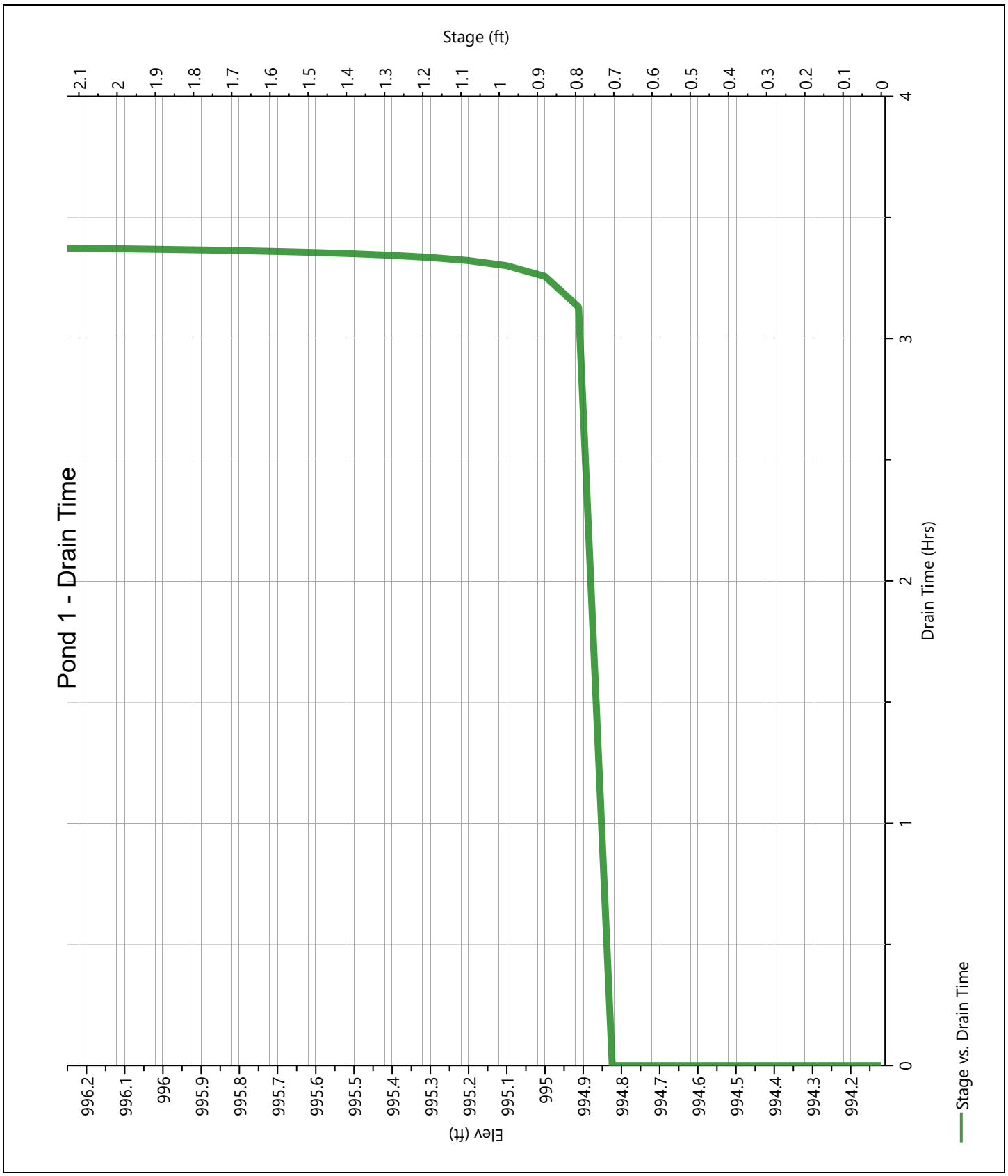
Project Name:

Hydrology Studio v 3.0.0.33

09-09-2024

Pond 1

Pond Drawdown

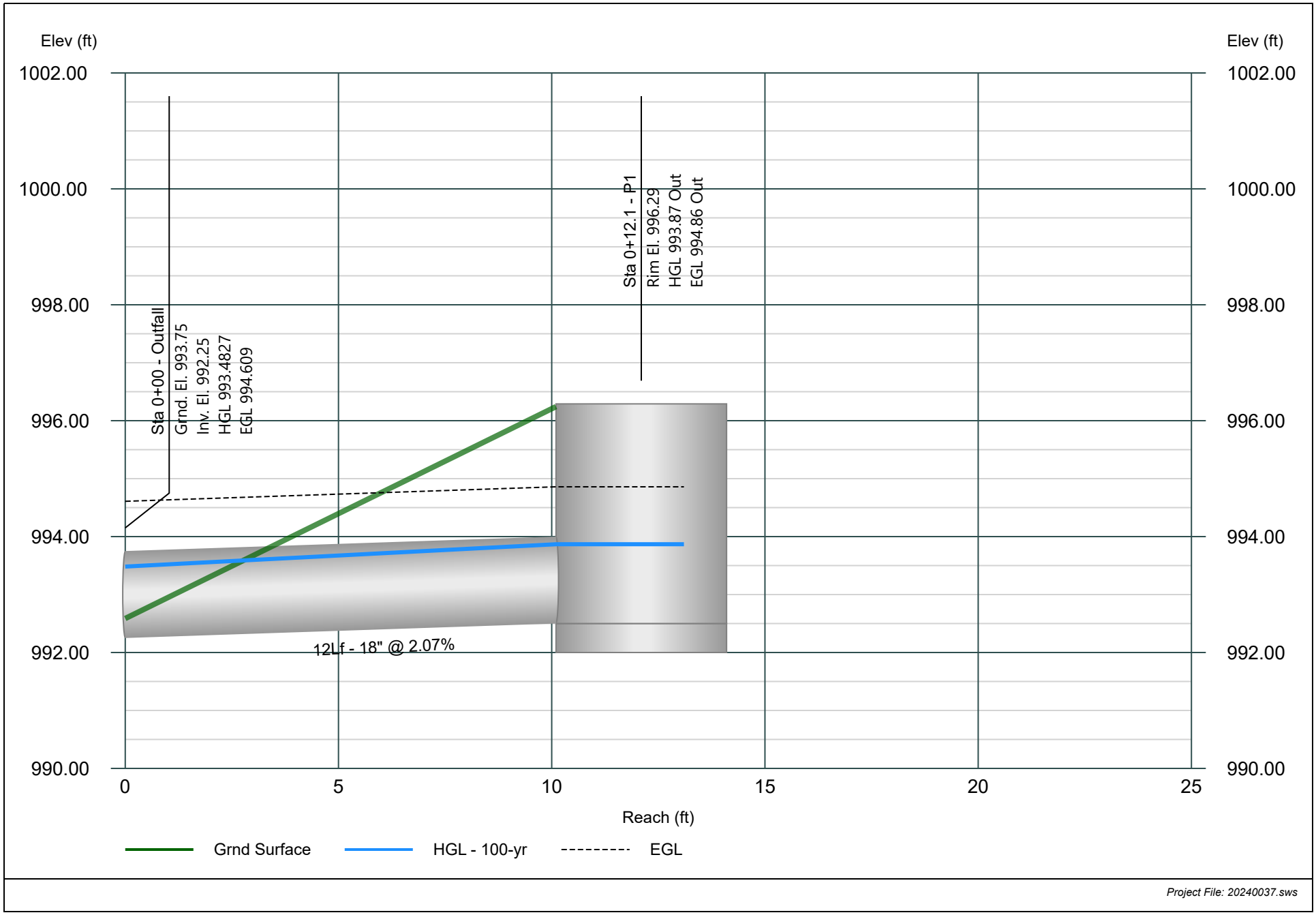


Line 1 - Pipe - (27)

Stormwater Studio 2024 v 3.0.0.35

Project Name: STORM

09-09-2024



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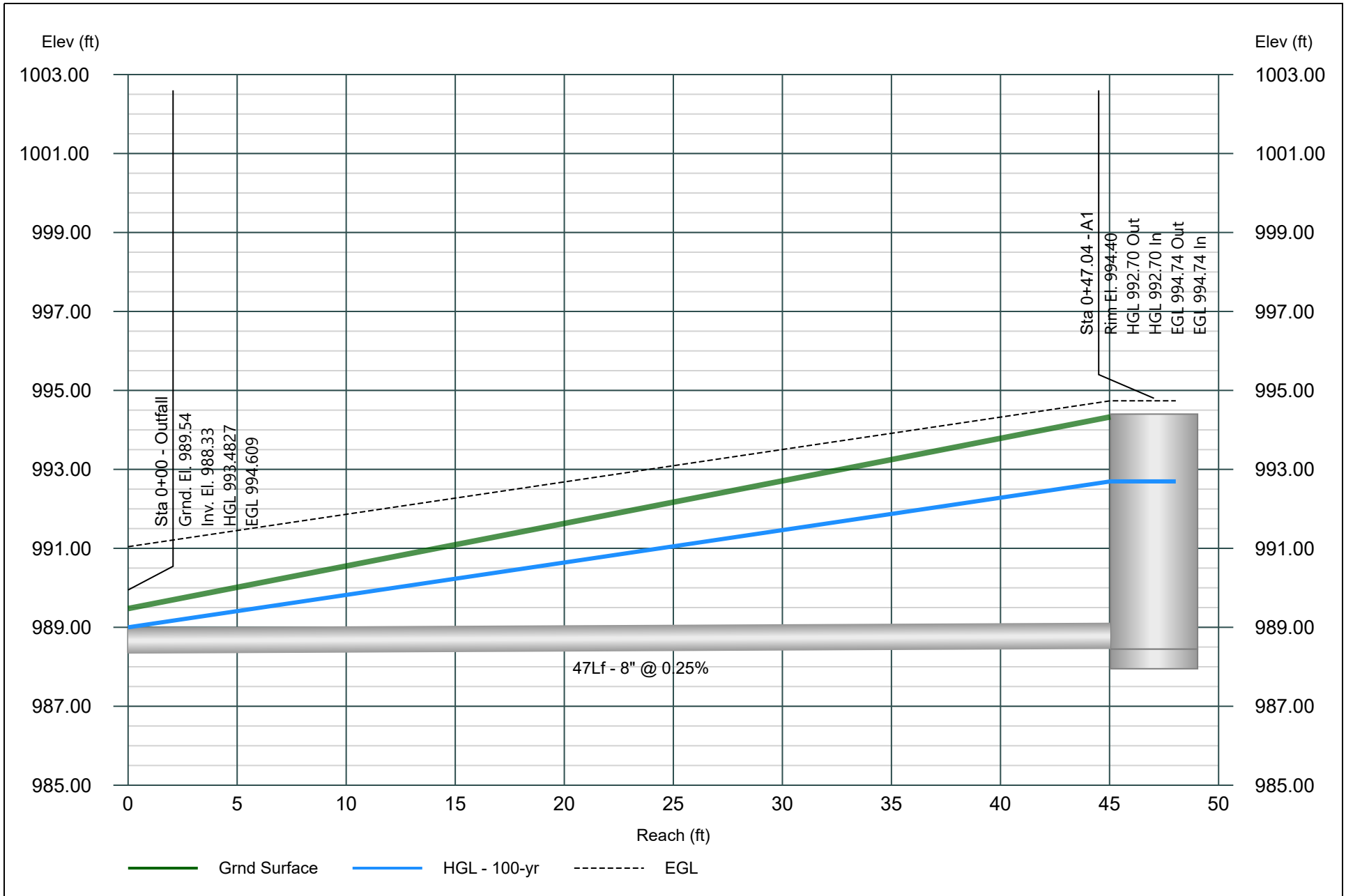
Line 2 - Pipe - (26)

Stormwater Studio 2024 v 3.0.0.35

Project Name: STORM

09-09-2024



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