



## **BRIDGE PARK – BLOCK Y**

Stormwater Management Report (SWMR)

Prepared For: Crawford Hoying

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Engineers, Surveyors, Planners, Scientists  
5500 New Albany Rd., Columbus, OH 43054  
p. 614.775.4500 f. 614.775.4800  
emht.com

JN: 2022-0867



## **PROJECT SUMMARY**

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Project Name: Bridge Park – Block Y  
Location: City of Dublin, Franklin County, Ohio  
Type: Stormwater Management Report  
Reviewing Agency: City of Dublin, Ohio EPA

## **HYDROLOGIC SUMMARY**

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Rainfall Data: NOAA Atlas 14, Volume 2, Version 3, 2004

1-yr	2.20"
2-yr	2.63"
5-yr	3.24"
10-yr	3.74"
25-yr	4.44"
50-yr	5.02"
100-yr	5.63"

Rainfall Distribution: NRCS Type II 24 hour  
Detention Policy: City of Dublin  
Water Quality: City of Dublin, Ohio EPA  
Hydrology Modeling Program: HydroCAD 10.20  
Autodesk Storm and Sanitary Analysis (SSA) 2024

## **DESIGN SUMMARY**

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Detention: Underground detention (UGD) systems  
Water Quality: Underground detention (UGD) systems with hydrodynamic separators (pre-treatment)  
Receiving Water Body: Scioto River

## **REVISIONS**

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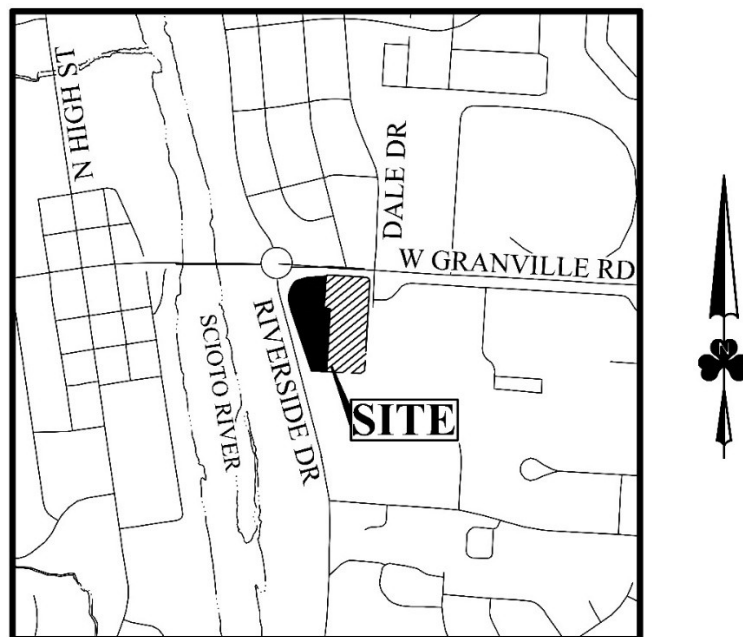
<b>APPENDIX A:</b>	<b>USDA Soils Report</b>
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**EXHIBITS**

- Exhibit 1: Pre-Developed Tributary Map
- Exhibit 2: Post-Developed Tributary Map

## 1.0 INTRODUCTION

The following report provides a detailed analysis and design of the Stormwater Management Plan for Bridge Park Block Y. The proposed site is located on the southeast corner of State Route 161 and Riverside Drive, outside of the Bridge Street District Dublin master planned area (which is north of State Route 161). During the preliminary development phase of the project EMH&T presented four compliance alternatives to the City. The City of Dublin granted an extension of the Bridge Street District master planned area to this site meaning that areas east of Dale Drive will comply with the master plan release rates, while areas to the west of Dale Drive will be exempt from detention. The proposed Bridge Park Block Y project will consist of the redevelopment of a vacant lot, existing surface detention, and several commercial lots into a hotel with an underground parking structure. The Stormwater Management Report was prepared in accordance with the requirements of both the City of Dublin and the Ohio EPA. The runoff from this site will be routed through underground detention systems to replace the storage of the existing pond and to support the additional impervious area created from the redevelopment. Hydrodynamic separators will be used upstream of the system for water quality compliance (pre-treatment) before outletting to the Scioto River.



**FIGURE 1-1**  
Site Location Map

## 2.0 HYDROLOGIC ANALYSIS

Hydrologic parameters such as Runoff Curve Number (RCN) and Time of Concentration were determined using standard Natural Resources Conservation Service (NRCS) methodology. The 1-, 2-, 5-, 10-, 25-, 50-, and 100-year storm event discharge amounts were calculated using the NRCS TR-55 method. This analysis reflects the NRCS Type II distribution, 24-hr storm duration. Rainfall depths were obtained from NOAA Atlas 14, Volume 2, Version 3, 2004. The peak flow rates were computed using the HydroCAD 10.20 computer program. Hydraulic capacities were computed using the Autodesk Storm and Sanitary Analysis (SSA) 2024 computer program.

### 3.0 PRE-DEVELOPED ANALYSIS

The existing conditions, as seen on Exhibit 1 in Appendix F, paved lots and meadow land in Type “C” and “D” soils (primarily Miamian silt loam, Milton silt loam, and Ritchey silt loam). The existing site contains two outfalls before combining in existing City of Dublin storm sewers upstream of Riverside Drive that eventually outlet to the Scioto.

Given the existing developed site has detention that no longer follows the current detention policy and plans to redevelop the entire parcel, EMH&T developed four alternatives for the City of Dublin to consider with the *Bridge Park Block Y – Detention Compliance Options* memo dated October 10, 2025. The City of Dublin has granted this site to move forward with analyzing only the areas to the east of Dale Drive with the Master Plan cfs/acre release rate. This delineation follows the boundary set for the “Bridge Street District East A Exemption Area” per the City of Dublin’s Stormwater Management Design Manual.

The current phase of development will be disturbing approximately 5 acres of the portion of the site located west of Dale Drive and will be removing the existing onsite basin. Future phases of development will redevelop the areas east of Dale Drive. In order to size the proposed detention features, the pre-developed tributary characteristics based on *The Shoppes at River Ridge – Stormwater Detention Design Report (2006)* by EMH&T were utilized for the existing condition. The tributary areas have been updated to divide the site between area west of Dale Drive that would be exempt from water quantity control, and area east of Dale Drive that would have the Dublin Watershed Master Plan cfs/acre release rates applied, summarized in Table 3-1.

As seen on Exhibit 1 in Appendix F, the pre-developed site is located within subareas 2630, 2635, and 2640 of the East Unconsolidated Watershed and subarea 20 of the Martin Road Watershed per the City of Dublin’s Stormwater Master Plan. The peak flow rates produced from the City of Dublin’s Stormwater Master Plan cfs/acre release rates for the portion of the tributary east of Dale Drive can be seen in Table 3-2. West of Dale Drive follows the Bridge Street District East A detention exemption and will be considered offsite bypass.

**TABLE 3-1**  
**\*Pre-Developed Subarea Characteristics**

Subarea Identifier	Tributary Area (acres)	Land Usage	Runoff Curve Number	% Impervious (%)	1-year Runoff Volume (ac-ft)
Pre West of Dale Drive (Bridge Street District A)	5.94	-	80	0%	0.341
Pre East of Dale Drive (Bridge Street District B)	8.75	-	80	0%	0.502
<b>Total</b>	<b>14.69</b>	<b>-</b>	<b>80</b>	<b>0%</b>	<b>0.843</b>

\*Pre-developed characteristics from *The Shoppes at River Ridge – Stormwater Detention Design Report (2006)* by EMH&T and updated based on the existing boundary between Bridge Street District East A and Bridge Street District East B along Dale Drive.

**TABLE 3-2**  
**East of Dale Drive – City of Dublin Stormwater Master Plan Allowable Release Rates**

Allowable Release Rates per Acre (cfs/acre)

*Unconsolidated East & Martin Road*

Sub-Basin	1-year	2-year	5-year	10-year	25-year	50-year	100-year
UC-2630	0.70	0.90	1.30	1.80	2.70	4.00	5.20
UC-2635	0.30	0.40	0.80	1.40	2.20	3.20	4.10
UC-2640	1.50	1.80	2.50	3.10	4.00	5.00	6.00
MR-20	0.60	0.80	1.00	1.40	1.90	2.80	3.60

Pre-Developed Area per Sub-Basin (acres)

Sub-Basin	Total Onsite East of Dale Drive
UC-2630	4.84
UC-2635	1.27
UC-2640	0.14
MR-20	2.50

Allowable Release Rates (cfs)

*Unconsolidated East & Martin Road*

Sub-Basin	1-year	2-year	5-year	10-year	25-year	50-year	100-year
UC-2630	3.39	4.36	6.29	8.71	13.07	19.36	25.17
UC-2635	0.38	0.51	1.02	1.78	2.79	4.06	5.21
UC-2640	0.21	0.26	0.36	0.44	0.57	0.72	0.86
MR-20	1.50	2.00	2.50	3.50	4.74	6.99	8.99
<b>Total</b>	<b>5.48</b>	<b>7.12</b>	<b>10.16</b>	<b>14.43</b>	<b>21.18</b>	<b>31.13</b>	<b>40.22</b>

#### 4.0 POST-DEVELOPED ANALYSIS

##### 4.1 Post-Developed Site Characteristics

Exhibit 2, provided within Appendix F, shows the post-developed condition. The Bridge Park Block Y project will utilize three underground detention systems (abbreviated to UGD), as well as hydrodynamic devices to provide water quality and quantity control for the proposed development.

Post 01 and Post 02 consist of the proposed development for this phase of the project and will drain to UGD 01. Post 03 consists of the proposed development and will drain to UGD 02 which will outlet to existing storm sewers along SR-161. Future 01 and Future 03 will be developed in future phases of the project and will drain to future UGD 03 which will outlet to UGD 01. Future 02 will drain to UGD 01 before outletting to the existing 24-inch storm pipe. Undetained 01 consists of the proposed development and will drain to existing City of Dublin storm sewers along SR-161.

Individual post-developed subarea characteristics have been provided in the PCM SSA Output and can be seen on Exhibit 2 in Appendix F. The post-developed subarea characteristics for the existing City of Dublin detention exemption boundary along Dale Drive are summarized in Tables 4-1.

**TABLE 4-1  
Post-Developed Subarea Characteristics**

Subarea Identifier	Tributary Area (acres)	Land Usage	Runoff Curve Number	% Impervious (%)	1-year Runoff Volume (ac-ft)
Post 01	3.47	Open Space, Impervious cover	94	84%	0.458
Post 02	1.34	Open Space, Impervious cover	91	72%	0.150
Post 03	0.28	Open Space, Impervious cover	85	45%	0.022
Undetained 01	0.27	Open Space, Impervious cover	84	43%	0.020
Future 03	0.78	Open Space, Existing impervious	96	91%	0.115
<b>Total West of Dale Drive</b>	<b>6.14</b>	<b>-</b>	<b>93</b>	<b>79%</b>	<b>0.765</b>
Future 01	3.25	Open Space, Existing impervious	95	86%	0.454
Future 02	5.53	Open Space, Existing impervious	93	78%	0.691
<b>Total East of Dale Drive</b>	<b>8.78</b>	<b>-</b>	<b>93</b>	<b>81%</b>	<b>1.145</b>
<b>Total Site</b>	<b>14.92</b>	<b>-</b>	<b>93</b>	<b>80%</b>	<b>1.910</b>

#### 4.2 Post-Developed Detention Requirements

The analysis follows the City of Dublin’s detention policy for project proposing detention by holding release rates to Dublin Watershed’s cfs/acre applied to the existing (pre-developed) tributary area characteristics falling east of Dale Drive. As granted by the City of Dublin, the analysis considers the stormwater management requirements for the districts north of SR-161.

The City of Dublin follows the critical storm method for detention. The 1-year runoff volume for the post-developed site east of Dale Drive increases to 1.145 ac-ft per Table 4-1, an increase of 128.09% from the existing condition, which results in a 25-year critical storm event.

$$\% \text{ Increase} = [(1.145 - 0.502)/0.502] \times 100 = 128.09\%$$

25-Yr Critical Storm

The post-developed allowable release rates and proposed release rates based on the outlet structure information provided in Section 4.3 can be found in Table 4-2. Individual flow into the systems (peak inflow rates), release rates, water surface elevations, and volume utilized are provided in Tables 4-3, 4-4, and 4-5. The resulting PCM SSA Output is provided in Appendix E.

**TABLE 4-2**  
**Allowable vs. Proposed Release Rates**

Storm Event (Recurrence Interval)	Pre-developed Dublin Watershed Release Rates* (cfs)	Onsite Allowable Release Rates** (cfs)	Offsite Bypass Peak Flow Rates*** (cfs)	Total Allowable Release Rates (cfs)	Proposed Release Rates**** (cfs)
1-year	5.48	5.48	12.69	18.17	5.49
2-year	7.12	5.48	15.95	21.43	11.58
5-year	10.16	5.48	20.62	26.10	19.80
10-year	14.43	5.48	24.43	29.91	24.90
25-year	21.18	5.48	29.77	35.25	31.11
50-year	31.13	31.13	34.16	65.29	39.07
100-year	40.22	40.22	38.76	78.98	55.60

\*Pre East of Dale Drive flow rates from Table 3-2.

\*\*Applying the critical storm event based on pre-developed conditions.

\*\*\*Post West of Dale Drive flow rates from the summation of "POST-01", "POST-02", "POST-03", "UNDETAINED 01", and "FUTURE-03" subbasins in SSA Output in Appendix E.

\*\*\*\*Summation of peak flow rates from UGD 01, UGD 02, and Undetained 01; "13002", "302" nodes and "UNDETAINED-01" subbasin in SSA Output in Appendix E.

**TABLE 4-3**  
**UGD 01 (StormTrap) Performance Summary**

Storm Event (Recurrence Interval)	Peak Inflow Rates (cfs)	UGD 01 Proposed Release Rates (cfs)	Maximum W.S.E., T.O.S. = 805.00 (feet)	Storage Volume Utilized (cu-ft)
1-year	24.18	5.10	797.98	40,540
2-year	30.04	11.05	798.49	43,155
5-year	38.25	19.06	799.88	50,223
10-year	44.88	23.99	801.12	56,498
25-year	54.11	29.54	802.85	65,314
50-year	61.65	36.67	804.13	71,795
100-year	69.56	51.20	804.79	75,142

Storage Utilized (100-yr event): 75,142 cu-ft  
 Storage Provided (Top of System = 805.00 ft.): 76,245 cu-ft

**TABLE 4-4  
UGD 02 (StormTech) Performance Summary**

Storm Event (Recurrence Interval)	Peak Inflow Rates (cfs)	UGD 02 Proposed Release Rates (cfs)	Maximum W.S.E., T.O.S. = 809.25 (feet)	Storage Volume Utilized (cu-ft)
1	0.42	0.01	804.40	631
2	0.57	0.01	805.07	902
5	0.80	0.01	806.16	1,317
10	0.99	0.00	806.29	1,363
25	1.26	0.40	806.50	1,438
50	1.49	1.01	806.73	1,517
100	2.77	2.78	807.34	1,618

Storage Utilized (100-yr event): 1,618 cu-ft  
 Storage Provided (Top of System = 809.25 ft.): 2,157 cu-ft

**TABLE 4-5  
UGD 03 (AquaBox) Performance Summary**

Storm Event (Recurrence Interval)	Peak Inflow Rates (cfs)	UGD 03 Proposed Release Rates (cfs)	Maximum W.S.E., T.O.S. = 821.50 (feet)	Storage Volume Utilized (cu-ft)
1	8.96	3.62	815.93	7,402
2	11.05	4.16	816.54	9,354
5	13.99	4.85	817.44	12,230
10	16.41	5.36	818.20	14,643
25	19.72	6.01	819.27	18,072
50	22.48	6.51	820.18	20,982
100	25.39	7.00	821.15	24,100

Storage Utilized (100-yr event): 24,100 cu-ft  
 Storage Provided (Top of System = 821.50 ft.): 25,216 cu-ft

### 4.3 Outlet Structure Design

The outlet structures for the proposed UGD 01, UGD 02, and UGD 03 were designed with consideration for the future full-build development. The outlet structure for UGD 01 will be located on the west side of the system. The outlet structure for UGD 02 will be located on the north side of the system. The outlet structure for UGD 03 will be located on the west side of the system. The location of these structures can be seen on Exhibit 2 in Appendix F.

UGD 01 15'-0" StormTrap – Outlet Control Structure

- Bottom of System – 790.00 ft.
- Top of System – 805.00 ft.
- 100-year elevation – 804.79 ft.
- StormTrap 15'-0" Modules – 5,647 sq-ft of storage, 90% void space, invert at 790.00 ft.
- 1<sup>st</sup> stage outlet – 3-inch orifice drilled into weir wall, invert at 790.00 ft.
- 2<sup>nd</sup> stage outlet – 8-inch high by 48-inch wide window cut into weir wall, invert at 797.50 ft.
- 3<sup>rd</sup> stage outlet – 6-foot weir wall, crest at 803.75 ft.
- Tailwater Control – 36-inch outlet pipe with 0.55% slope, invert at 790.00 ft. (controls 1<sup>st</sup> through 3<sup>rd</sup> stage outlets)
- Ultimate Tailwater Control – 36-inch outlet pipe with 0.91% slope, invert at 782.33 ft. (controls the existing 24" outlet pipe and existing 15" outlet pipe).

UGD 02 MC-7200 Chambers – Outlet Control Structure

- Bottom of Stone – 802.50 ft.
- Bottom of Chamber – 803.25 ft.
- Top of Stone – 809.25 ft.
- 100-year elevation – 807.34 ft.
- StormTech SC-800 Chambers – 6 total chambers, 2 rows of 3 chambers each, invert at 803.25 ft.
- 1<sup>st</sup> stage outlet – 0.5-inch orifice drilled into cap of 6-inch underdrain, invert at 802.50 ft.
- 2<sup>nd</sup> stage outlet – (1) 12-inch manifold with top connection, invert at 806.22 ft.
- Tailwater Control – 12-inch outlet pipe with 0.40% slope, invert at 802.50 ft. (controls 1<sup>st</sup> through 2<sup>nd</sup> stage outlets)

UGD 03 AquaBox Modules – Outlet Control Structure

- Bottom of System – 813.62 ft.
- Top of System – 821.50 ft.
- 100-year elevation – 821.15 ft.
- AquaBox Modules – 3,400 sq-ft of storage, invert at 814.12 ft.
- 1<sup>st</sup> stage outlet – 10-inch stub, invert at 813.62 ft.
- Tailwater Control – 12-inch outlet pipe with 0.44% slope, invert at 790.00 ft. (controls 1<sup>st</sup> through 3<sup>rd</sup> stage outlets)
- Ultimate Tailwater Control – UGD 01

#### **4.4 Post-Developed Water Quality**

The Ohio EPA requires that the water quality volume be detained for a period of 24 hours while not discharging more than the first half of the water quality volume in less than 8 hours. Water quality drawdown for UGD 01 and UGD 02 will be provided by the systems' 1<sup>st</sup> stage outlet listed in Section 4.3. Water quality calculations are listed in Table 4-6 below and provided in Appendix C.

**TABLE 4-6  
Water Quality Calculations**

Basin Identifier	Tributary area (acres)	Percent Impervious (%)	Water Quality Volume (ac-ft)	Water Quality Elevation (feet)
UGD 01	14.37	81%	0.841	797.21
UGD 02	0.28	45%	0.010	803.87

In order to avoid a permanent sediment pool within UGD 01, the site will install proprietary hydrodynamic separators at each of the inflow points as pretreatment (at a rate of 50% TSS removal). The proposed device located at Structure 101 will provide 50% TSS removal of Post 01, Future 01, and Future 02. The device located at Structure 201 will provide 50% TSS removal of Post 02, and Future 02. Post 03 will achieve the required 80% TSS removal within UGD 02 through the StormTech SC-800 Isolator Row as pretreatment with 24-hour drawdown.

Structure 101 and Structure 201 will both utilize a StormSettler-12 (or approved equivalent for 50% TSS removal) to treat the water quality flow from their respective tributary areas. The model selection ensured the proposed water quality flow for the current and future development is less than the design capacity of the water quality structure (up to 12.70 cfs for the StormSettler-12). A StormSettler sizing chart is included in Appendix C for reference.

**TABLE 4-7  
Hydrodynamic Device Sizing Calculations**

Pretreatment Structure Identifier	Tributary area (acres)	Calculated Water Quality Volume (ac-ft)	Water Quality Peak Flow (cfs)	Required Model	Provided Water Quality Peak Flow (cfs)
101	7.50	0.461	11.37	StormSettler-12	12.70
201	6.87	0.381	9.39	StormSettler-12	12.70

## 5.0 SEDIMENT BASIN CALCULATIONS

The Ohio EPA requires that during construction a site must provide a means by which to control the sediment laden runoff from the construction site. For each acre of drainage area that is tributary to the sediment basin, a drawdown volume of 67 yd<sup>3</sup>/acre is provided above the normal pool elevation. The basin will additionally provide more than the required 37 yd<sup>3</sup>/acre of settling volume below the normal pool elevation for each acre of disturbed area tributary to the basin.

UGD 01 will be used as a sediment basin during construction and has been sized for the full-build development. During sediment conditions, the system will utilize a temporary outlet configuration internal to the system to create a temporary sediment pool at elevation 793.00 feet. The 1<sup>st</sup> stage outlet will consist of the skimmer specified for dewatering. The 2<sup>nd</sup> stage outlet will consist of a temporary concrete weir wall (at an elevation of 802.00 feet). Sediment Basin Calculations are described in Table 5-1 below and provided within Appendix C.

**TABLE 5-1  
Sediment Basin Calculations**

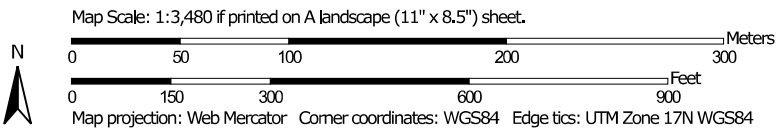
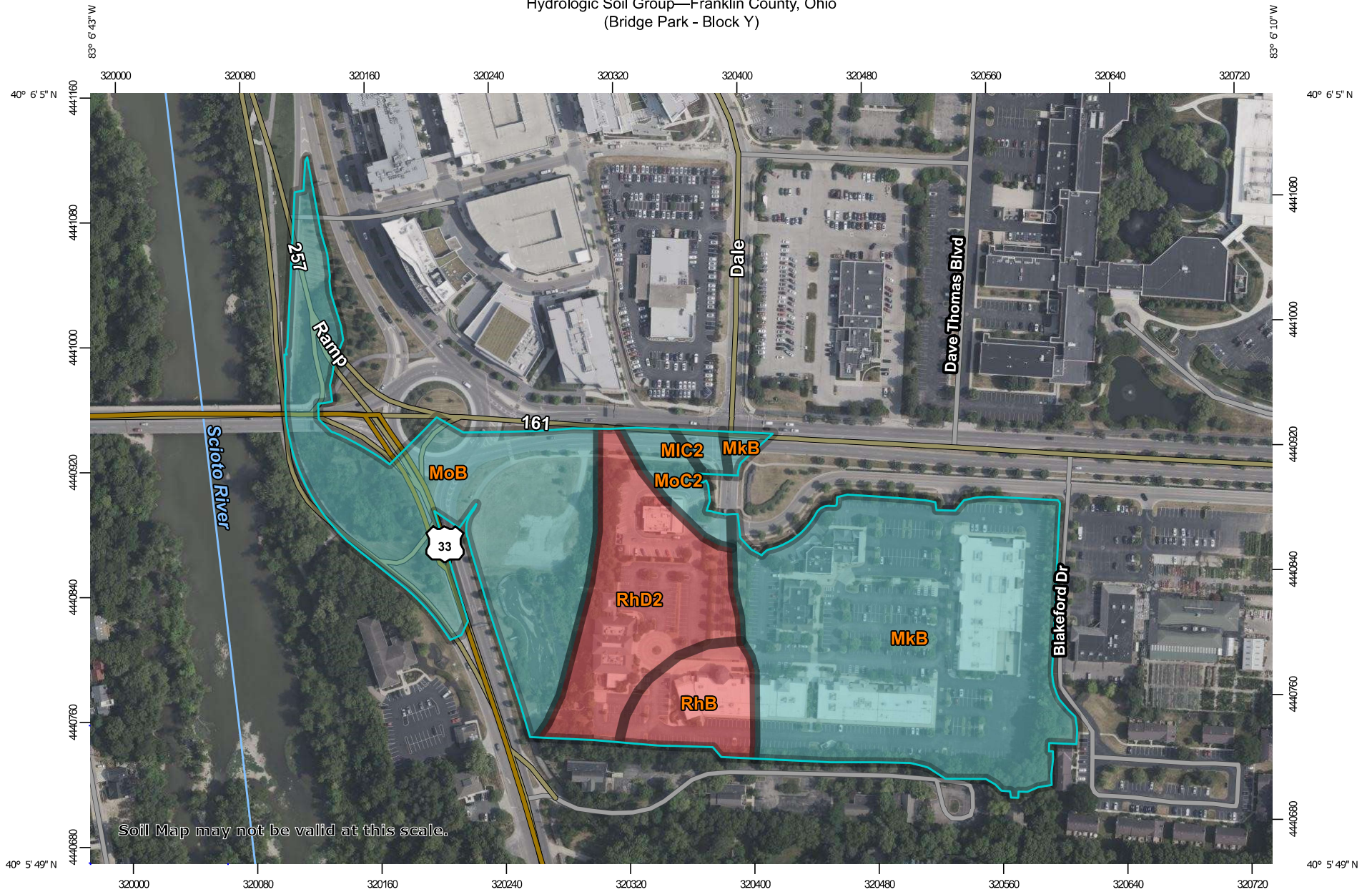
Basin Identifier	Tributary area (acres)	Disturbed area (acres)	Required Dewatering Volume (ac-ft)	Provided Dewatering Volume (ac-ft)	Provided Dewatering Volume Elevation (ft)	Required Sediment Storage Volume (ac-ft)	Provided Sediment Storage Volume (ac-ft)	Skimmer Orifice Size (inches)
UGD 01	14.37	14.37	0.597	0.597	798.12	0.330	0.350	4" Marlee Float Skimmer with 2.5" orifice

**6.0 CONCLUSION**

The proposed stormwater management report for the Bridge Park Block Y project meets all requirements for detention and water quality as set forth by the City of Dublin and the Ohio EPA.


APPENDIX A:  
USDA Soils Report

Hydrologic Soil Group—Franklin County, Ohio  
(Bridge Park - Block Y)



## MAP LEGEND

### Area of Interest (AOI)









 Area of Interest (AOI)

### Soils

#### Soil Rating Polygons





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

#### Soil Rating Lines


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

#### Soil Rating Points





 A  
 A/D  
 B  
 B/D

 C  
 C/D  
 D  
 Not rated or not available

### Water Features

 Streams and Canals

### Transportation

 Rails  
 Interstate Highways  
 US Routes  
 Major Roads  
 Local Roads

### Background

 Aerial Photography

## MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Franklin County, Ohio  
 Survey Area Data: Version 23, Aug 27, 2024

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

Date(s) aerial images were photographed: Mar 1, 2024—Jul 1, 2024

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
MkB	Miamian silt loam, 2 to 6 percent slopes	C	8.5	43.4%
MIC2	Miamian silty clay loam, 6 to 12 percent slopes, eroded	C	0.2	0.8%
MoB	Milton silt loam, 2 to 6 percent slopes	C	6.1	31.1%
MoC2	Milton silt loam, 6 to 12 percent slopes, eroded	C	0.6	2.9%
RhB	Ritchey silt loam, 2 to 6 percent slopes	D	1.2	6.0%
RhD2	Ritchey silt loam, 12 to 18 percent slopes, eroded	D	3.1	15.9%
<b>Totals for Area of Interest</b>			<b>19.6</b>	<b>100.0%</b>

## Description

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

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

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

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

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

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

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

## Rating Options

*Aggregation Method:* Dominant Condition

*Component Percent Cutoff:* None Specified

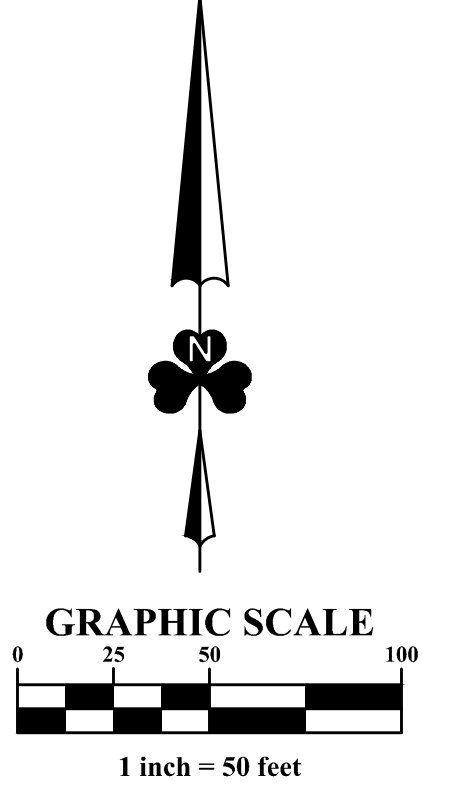
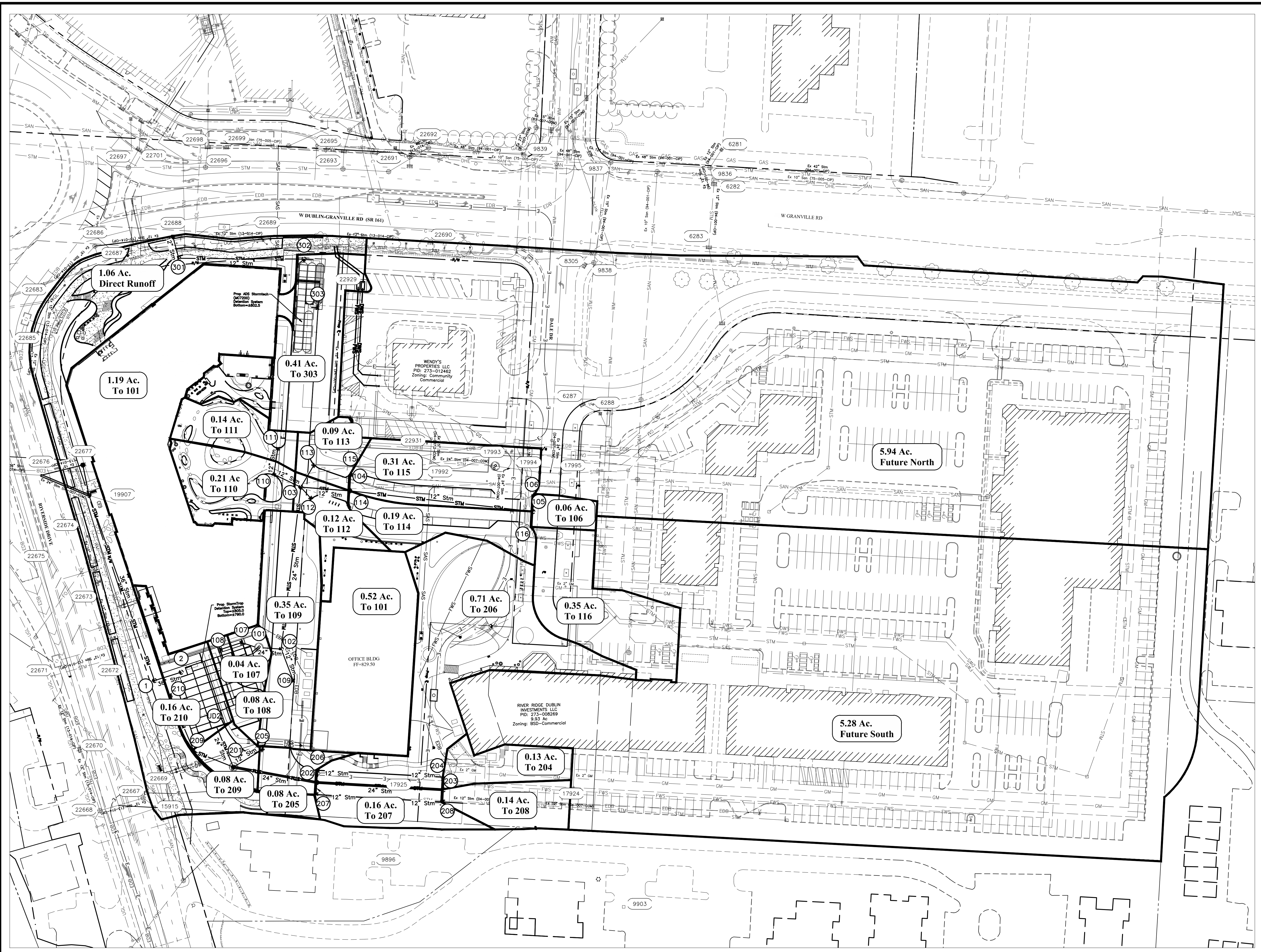
*Tie-break Rule:* Higher

APPENDIX B:

Storm Sewer Calculations

*Storm sewer calculations were prepared by the Site Improvement Plan Engineer of Record. PE seal from the Site Improvement Plan applies to the storm sewer calculations.*

J:\2022\2667\DWG\GIS\Drawings\Stormwater\_Tributary\_Map.dwg, Last Saved By: hwaizer, 4/1/2026 4:55 PM, Last Printed By: Boss, Dylan, 4/1/2026 5:14 PM



REVISION RECORD	
NO.	DATE

**EMHT**  
 ERIC M. HAMILTON & TERRY, INC.  
 ENGINEERS • SURVEYORS • PLANNERS • SCIENTISTS  
 5800 New Albany Road, Columbus, OH 43054  
 Phone: 614.775.5550 • Cell: 614.775.3368  
 emht.com

FINAL DEVELOPMENT PLAN  
**BRIDGE PARK Y BLOCK**  
 CITY OF DUBLIN, FRANKLIN COUNTY, OHIO  
 STORMWATER TRIBUTARY MAP

STORMWATER TRIBUTARY MAP  
 April 1, 2026

CITY OF DUBLIN  
 PROJECT NUMBER  
**25-005-COM**  
 DRAWING NUMBER

SHEET NUMBER  
**1 OF 1**



**STORM SEWER COMPUTATION SHEET**

SHT  
1

Project: **Bridge Park - Block Y**  
 Job No.: **22020867**  
 Intensity Reference: **Dublin**

Date: 4/1/26  
 By: **DB**  
 Checked: **HK**

Revised:  
 Revised:

**2** Yr Design Storm n=**0.013**

**5 YEAR HYDRAULIC GRADE LINE**

Struc.	Struc. Index	Sta.	Drainage Area				Time		Intensity in/hr	Des Q CFS	Length ft.	Dia. In	Slope %	Vel fps	Cap. Flowing Full	In	Out	TC	Remarks	5 Yr Rainfall Intensity	Discharge Q	Slope %	Minor Losses	5 Yr HGL w/ minor losses	
			Trib	Cumul.	C	Cumul CA	Delta t Min.	Sum t Min.																	
204	CI2	2+91.53	0.13	0.13	0.90			5.00	5.06	0.59								823.50		827.94					
C&G Inlet AA-S125A			0.00		0.90	0.12					13.07	12	1.00%	4.5	3.6										
																							ok		
203	MH2	2+78.46	0.14	5.69	0.90			5.05	5.05	25.84								822.37	823.37	828.11	1.00	DROP			
Manhole Type C AA-S102			5.42		0.90	5.12					138.50	24	6.50%	18.4	57.8										
																							ok		
202	MH2	1+39.96	0.00	6.56	0.90			5.01	5.01	29.58								813.27	813.37	818.96	0.10	DROP			
Manhole Type C AA-S102			0.87		0.90	5.90					92.71	24	7.00%	19.1	60.0										
																							ok		
201	MH2	0+47.25	0.00	6.88	0.90			4.99	4.99	30.89								802.89	806.78	813.83	3.89	DROP			
Manhole Type C AA-S102			0.32		0.90	6.19					47.25	24	2.00%	10.2	32.1										
																							ok		
UD2	UGD	0+00.00	0.00	6.88	0.90			4.99	4.99	29.45									801.95	813.25	801.95	813.25	801.95	DROP	
Underground Detention			0.00		0.90	5.90																			
																								#DIV/0!	
																								#DIV/0!	
205	CI2	0+36.77	0.08	0.08	0.90			5.00	5.06	0.36								810.82		816.36	0.10	DROP			
C&G Inlet AA-S125A			0.00		0.90	0.07					36.77	12	1.00%	4.5	3.6										
																								ok	
201	MH2	0+00.00	0.00	6.88	0.90			5.02	5.02	31.09								802.89	810.45	813.83	7.56	DROP			
Manhole Type C AA-S102			6.80		0.90	6.19						24													
																								ok	
206	CI2	0+12.55	0.71	0.71	0.90			5.00	5.06	3.23								815.50		819.15	0.10	DROP			
C&G Inlet AA-S125A			0.00		0.90	0.64					12.55	12	1.00%	4.5	3.6										
																								ok	
202	MH2	0+00.00	0.00	6.56	0.90			5.05	5.05	29.80								813.27	815.37	818.96	2.10	DROP			
Manhole Type C AA-S102			5.85		0.90	5.90						24													
																								ok	



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2 Yr Design Storm n= 0.013

**STORM SEWER COMPUTATION SHEET**

Project: **Bridge Park - Block Y**  
Job No.: **22020867**  
Intensity Reference: **Dublin**

Date: 4/1/26  
By: **DB**  
Checked: **HK**

SHT  
1

Revised:  
Revised:

**5 YEAR HYDRAULIC GRADE LINE**

Struc.	Struc. Index	Sta.	Drainage Area				Time		Intensity in/hr	Des Q CFS	Length ft.	Dia. In	Slope %	Vel fps	Cap. Flowing Full	In	Out	TC	Remarks	5 Yr Rainfall	Discharge	Slope	Minor	5 Yr HGL		
			Trib	Cumul.	C	Cumul CA	Delta t Min.	Sum t Min.												Intensity	Q	%	Losses	w/ minor losses		
207	CI2	0+12.55	0.16	0.16	0.90		5.00	5.00	5.06	0.73					815.50		819.15	0.10	DROP							
C&G Inlet			0.00		0.90	0.14				12.55	12	0.50%	3.2	2.5						2.48	ft. cover	6.06	0.87	0.0597	0.0000	816.30
AA-S125A																				3.65	ft. depth				ok	
202	MH2	0+00.00	0.00	6.56	0.90		0.07	5.07	5.04	29.76					813.27	815.44	818.96	2.17	DROP							
Manhole Type C			6.40		0.90	5.90					24									2.35	ft. cover	6.04	35.64	2.4689	0.0000	814.87
AA-S102																				5.69	ft. depth				ok	
208	CI2	0+12.57	0.14	0.14	0.90		5.00	5.00	5.06	0.64					823.50		828.22	0.10	DROP							
C&G Inlet			0.00		0.90	0.13					12.57	12	0.50%	3.2	2.5					3.55	ft. cover	6.06	0.76	0.0457	0.0000	824.30
AA-S125A																				4.72	ft. depth				ok	
203	CI2	0+00.00	0.00	5.83	0.90		0.07	5.07	5.04	26.45					822.37	823.44	828.11	1.07	DROP							
C&G Inlet			5.69		0.90	5.25					24									3.49	ft. cover	6.04	31.68	1.9500	0.0000	823.97
AA-S125A																				5.74	ft. depth				ok	
210	CI2	1+12.50	0.16	0.16	0.90		5.00	5.00	5.06	0.73					804.50		808.79	0.10	DROP							
C&G Inlet			0.00		0.90	0.14					66.25	12	0.50%	3.2	2.5					3.12	ft. cover	6.06	0.87	0.0597	0.0000	805.30
AA-S125A																				4.29	ft. depth				ok	
209	CI2	0+46.25	0.08	0.24	0.90		0.34	5.34	4.96	1.07					804.07	804.17	811.13	0.10	DROP							
C&G Inlet			0.00		0.90	0.22					46.25	12	0.50%	3.2	2.5					5.79	ft. cover	5.94	1.28	0.1290	0.0000	804.87
AA-S125A																				7.06	ft. depth				ok	
201	MH2	0+00.00	0.00	6.88	0.90		0.24	5.58	4.90	30.33					802.89	803.84	813.83	0.95	DROP							
Manhole Type C			6.64		0.90	6.19					24									8.69	ft. cover	5.86	36.28	2.5584	0.0000	804.49
AA-S102																				10.94	ft. depth				ok	



**STORM SEWER COMPUTATION SHEET**

SHT  
2

Project: **Bridge Park - Block Y**  
 Job No.: **22020867**  
 Intensity Reference: Dublin

Date: 4/1/26  
 By: DB  
 Checked: HK

Revised:  
Revised:

2 Yr Design Storm n= 0.013

**5 YEAR HYDRAULIC GRADE LINE**

Struc.	Struc. Index	Sta.	Drainage Area				Time		Intensity in/hr	Des Q CFS	Length ft.	Dia. In	Slope %	Vel fps	Cap. Flowing Full	In	Out	TC	Remarks	5 Yr Rainfall Intensity	Discharge Q	Slope %	Minor Losses	5 Yr HGL w/ minor losses
			Trib	Cumul.	C	Cumul CA	Delta t Min.	Sum t Min.																
106	CI2	4+75.13	0.06	0.06	0.90		5.00	5.00	5.06	0.27					825.00		829.46							
			0.00		0.90	0.05					17.46	12	0.50%	3.2	2.5					6.06	0.33	0.0084	0.0000	825.80
																								ok
105	MH2	4+57.67	0.00	0.41	0.90		0.09	5.09	5.03	1.86					824.81	824.91	829.94	0.10						
			0.35		0.90	0.37					201.32	12	3.00%	7.9	6.2					6.03	2.22	0.3877	0.0000	825.61
																								ok
104	MH2	2+56.35	0.00	0.91	0.90		0.43	5.52	4.92	4.03					818.67	818.77	823.73	0.10						
			0.50		0.90	0.82					53.71	12	4.00%	9.1	7.1					5.88	4.82	1.8182	0.0000	819.47
																								ok
103	MH2	2+02.64	0.00	7.41	0.90		0.10	5.61	4.89	32.61					815.52	816.52	822.05	1.00						
			6.50		0.90	6.67					178.16	24	4.00%	14.4	45.4					5.85	39.01	2.9571	0.0000	817.12
																								ok
102	MH2	0+24.48	0.00	7.76	0.90		0.21	5.82	4.84	33.78					808.29	808.39	814.74	0.10						
			0.35		0.90	6.98					24.48	24	3.00%	12.5	39.3					5.78	40.38	3.1691	0.0000	809.89
																								ok
101	MH2	0+00.00	0.00	7.88	0.90		0.03	5.85	4.83	34.24					802.00	807.56	814.15	5.56						
			0.12		0.90	7.09						24								5.77	40.93	3.2560	0.0000	803.60
																								ok
108	CI2	0+43.59	0.08	0.08	0.90		5.00	5.00	5.06	0.36					806.00		810.28	0.10						
			0.00		0.90	0.07					24.00	12	0.50%	3.2	2.5					6.06	0.44	0.0149	0.0000	806.80
																								ok
107	CI2	0+19.59	0.04	0.12	0.90		0.12	5.12	5.02	0.54					805.78	805.88	810.28	0.10						
			0.00		0.90	0.11					19.59	12	0.50%	3.2	2.5					6.02	0.65	0.0331	0.0000	806.58
																								ok
101	MH2	0+00.00	0.00	7.88	0.90		0.10	5.23	5.00	35.43					802.00	805.68	814.15	3.68						
			7.76		0.90	7.09						24								5.98	42.41	3.4962	0.0000	803.60
																								ok
109	CI2	0+36.75	0.35	0.35	0.90		5.00	5.00	5.06	1.59					810.00		814.40	0.10						
			0.00		0.90	0.32					36.75	12	0.50%	3.2	2.5					6.06	1.91	0.2855	0.0000	810.80
																								ok
102	MH2	0+00.00	0.00	7.76	0.90		0.19	5.19	5.01	34.96					808.29	809.82	814.15	1.53						
			7.41		0.90	6.98						24								5.99	41.85	3.4045	0.0000	809.89
																								ok
111	CI2	0+60.97	0.14	0.14	0.90		5.00	5.00	5.06	0.64					817.00		822.01	0.10						
			0.00		0.90	0.13					28.35	12	0.50%	3.2	2.5					6.06	0.76	0.0457	0.0000	817.80
																								ok
110	CI2	0+32.62	0.21	0.35	0.90		0.15	5.15	5.02	1.58					816.76	816.86	822.08	0.10						
			0.00		0.90	0.32					32.62	12	0.50%	3.2	2.5					6.01	1.89	0.2807	0.0000	817.56
																								ok
103	MH2	0+00.00	0.00	7.41	0.90		0.17	5.32	4.97	33.15					815.52	816.60	822.05	1.08						
			7.06		0.90	6.67						24								5.95	39.68	3.0596	0.0000	817.12
																								ok



**STORM SEWER COMPUTATION SHEET**

SHT  
2

Project: **Bridge Park - Block Y**  
Job No.: **22020867**  
Intensity Reference: Dublin

Date: 4/1/26  
By: DB  
Checked: HK

Revised:  
Revised:

Struc.	Struc. Index	Sta.	Drainage Area				Time		Intensity in/hr	Des Q CFS	Length ft.	Dia. In	Slope %	Vel fps	Cap. Flowing Full	In	Out	TC	Remarks	5 YEAR HYDRAULIC GRADE LINE				
			Trib	Cumul.	C	Cumul CA	Delta t Min.	Sum t Min.												5 Yr Rainfall Intensity	Discharge Q	Slope %	Minor Losses	5 Yr HGL w/ minor losses
112	CI2	0+16.44	0.12	0.12	0.90		5.00	5.00	5.06	0.55					817.00		821.95	0.10 DROP						
			0.00		0.90	0.11				16.44	12	0.50%	3.2	2.5					3.78 ft. cover	6.06	0.65	0.0336	0.0000	817.80
																			4.95 ft. depth					ok
103	MH2	0+00.00	0.00	7.41	0.90		0.09	5.09	5.04	33.58					815.52	816.92	822.05	1.40 DROP						
			7.29		0.90	6.67					24								3.96 ft. cover	6.03	40.21	3.1427	0.0000	817.12
																			6.53 ft. depth					ok
113	CI2	0+27.69	0.09	6.03	0.90		5.00	5.00	5.06	27.46					816.50		822.08	0.10 DROP						
			5.94		0.90	5.43				27.69	24	1.50%	8.8	27.8					3.33 ft. cover	6.06	32.89	2.1021	0.0000	818.10
																			5.58 ft. depth					ok
103	MH2	0+00.00	0.00	7.41	0.90		0.05	5.05	5.05	33.65					815.52	816.08	822.05	0.56 DROP						
			1.38		0.90	6.67					24								3.72 ft. cover	6.04	40.29	3.1549	0.0000	817.12
																			6.53 ft. depth					ok
114	CI2	0+16.79	0.19	0.19	0.90		5.00	5.00	5.06	0.87					819.00		823.85	0.10 DROP						
			0.00		0.90	0.17					16.79	12	0.50%	3.2	2.5				3.68 ft. cover	6.06	1.04	0.0841	0.0000	819.80
																			4.85 ft. depth					ok
104	MH2	0+00.00	0.00	0.91	0.90		0.09	5.09	5.04	4.12					818.67	818.92	823.73	0.25 DROP						
			0.72		0.90	0.82					12								3.64 ft. cover	6.03	4.94	1.9105	0.0000	819.47
																			5.06 ft. depth					ok
115	CI2	0+16.79	0.31	0.31	0.90		5.00	5.00	5.06	1.41					819.00		823.64	0.10 DROP						
			0.00		0.90	0.28					16.79	12	0.50%	3.2	2.5				3.47 ft. cover	6.06	1.69	0.2240	0.0000	819.80
																			4.64 ft. depth					ok
104	MH2	0+00.00	0.00	0.91	0.90		0.09	5.09	5.04	4.12					818.67	818.92	823.73	0.25 DROP						
			0.60		0.90	0.82					12								3.64 ft. cover	6.03	4.94	1.9105	0.0000	819.47
																			5.06 ft. depth					ok
116	CI2	0+17.46	0.35	0.35	0.90		5.00	5.00	5.06	1.59					826.00		830.37	0.10 DROP						
			0.00		0.90	0.32					17.46	12	2.00%	6.4	5.1				3.20 ft. cover	6.06	1.91	0.2855	0.0000	826.80
																			4.37 ft. depth					ok
105	MH2	0+00.00	0.00	0.41	0.90		0.05	5.05	5.05	1.86					824.81	825.65	829.94	0.84 DROP						
			0.06		0.90	0.37					12								3.12 ft. cover	6.04	2.23	0.3897	0.0000	825.61
																			5.13 ft. depth					ok
H		0+00.00	5.94	5.94	0.90		5.00	5.00	5.06	27.05					-0.10				0.10 DROP					
			0.00		0.90	5.35					0.01	24	1.50%	8.8	27.8				-2.15 ft. cover	6.06	32.40	2.0398	0.0000	1.50
															816.50				0.10 ft. depth					problem
			0.09																					



100 Yr Design Storm n= 0.013

**STORM SEWER COMPUTATION SHEET**

Project: **Bridge Park - Block Y**  
 Job No.: **22020867**  
 Intensity Reference: Dublin

Date: 4/1/26  
 By: DB  
 Checked: HK

SHT  
3

Revised:  
Revised:

**100 YEAR HYDRAULIC GRADE LINE**

Struc.	Struc. Index	Sta.	Drainage Area				Time		Intensity in/hr	Des Q CFS	Length ft.	Dia. In	Slope %	Vel fps	Cap. Flowing Full	In	Out	TC	Remarks	100 Yr Rainfall	Discharge	Slope	Minor	100 Yr HGL				
			Trib	Cumul.	C	Cumul CA	Delta t Min.	Sum t Min.												Intensity	Q	%	Losses	w/ minor losses				
303	CI2	0+00.00	0.41	0.41	0.90		5.00	5.00	9.37	3.46								802.50		812.58								
C&G Inlet AA-S125A			0.00		0.90	0.37					0.00	12	0.00%	0.1	0.1						8.91 ft. cover 10.08 ft. depth	9.37	3.46	0.9367	0.0000	#REF!		
																									#REF!			
302	MH2	1+61.56	0.00	0.41	0.90		5.00	5.00	9.37	3.04								802.50		814.73	0.10	DROP						
Manhole Type C AA-S102			0.41		0.90	0.37					137.00	12	0.60%	3.5	2.8							11.06 ft. cover 12.23 ft. depth	9.37	3.04	0.7241	0.0000	803.37	
																										ok		
301	MH2	0+24.56	0.00	0.41	0.90		0.65	5.65	8.95	3.04								801.58	801.68	810.70	0.10	DROP						
Manhole Type C AA-S102			0.00		0.90	0.37					24.56	12	0.60%	3.5	2.8								7.85 ft. cover 9.12 ft. depth	8.95	3.30	0.8552	0.0000	802.38
																										ok		
22688	MH0	0+00.00	0.00	0.41	0.90													800.57	801.43	809.15	0.86	DROP						
Existing Manhole			0.00		0.90	0.37						12											6.55 ft. cover 8.58 ft. depth	16.67	6.15	2.9635	0.0000	801.37
																										ok		
From SWMR																												



**STORM SEWER COMPUTATION SHEET**

SHT  
4

Project: **Bridge Park - Block Y**  
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 Intensity Reference: Dublin

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Revised:  
 Revised:

**100** Yr Design Storm n= **0.013**

**100 YEAR HYDRAULIC GRADE LINE**

Struc.	Struc. Index	Sta.	Drainage Area				Time		Intensity in/hr	Des Q CFS	Length ft.	Dia. In	Slope %	Vel fps	Cap. Flowing Full	In	Out	TC	Remarks	100 Yr Rainfall Intensity	Discharge Q	Slope %	Minor Losses	100 Yr HGL w/ minor losses
			Trib	Cumul.	C	Cumul CA	Delta t Min.	Sum t Min.																
2	UGD	3+01.95	14.76	14.76	0.90		5.00	5.00	9.37	47.57					790.00		807.02							
Underground Detention			0.00		0.90	13.28					30.49	36	0.55%	7.0	49.6					9.37	47.57	0.5059	0.0000	792.40
																							ok	
1	MH2	2+71.46	0.00	14.76	0.90		0.07	5.07	9.32	47.57					789.73	789.83	800.72	0.10						
Manhole Type C AA-S102			0.00		0.90	13.28					214.51	36	0.55%	7.0	49.6					9.32	47.57	0.5059	0.0000	792.13
																							ok	
19908	MH0	0+56.95	0.00	14.76	0.90		0.51	5.58	8.99	47.57					783.95	788.55	800.74	4.60						
Existing Manhole			0.00		0.90	13.28					56.95	24	2.11%	10.5	32.9					8.99	47.57	4.3980	0.0000	787.23
																							ok	
22676	MH0	0+00.00	0.00	14.76	0.90		0.09	5.67	8.94	47.57					782.33	782.75	798.46	0.42						
Existing Manhole			0.00		0.90	13.28						36								8.94	47.57	0.5059	0.0000	784.73
																							ok	

APPENDIX C:

Water Quality and Sediment Basin Calculations



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### BRIDGE PARK - BLOCK Y

WATER QUALITY VOLUME CALCULATIONS						
BMP	Subarea Identifier	Area (acres)	Percent Impervious (%)	Rv	Water Quality Volume (ac-ft)	Water Quality Volume Elevation (feet)
UGD 01 ("UGD-01")	POST-01	3.47	84%	0.80	0.209	-
	POST-02	1.34	72%	0.70	0.071	-
	FUTURE-01	3.25	86%	0.82	0.201	-
	FUTURE-02	5.53	78%	0.75	0.310	-
	FUTURE-03	0.78	91%	0.87	0.051	-
	<b>Total</b>	<b>14.37</b>	<b>81%</b>	<b>0.78</b>	<b>0.841</b>	<b>797.21</b>

Water Quality Volume calculated using the Ohio EPA formula:

$$WQ_v = \frac{R_v \times P \times A}{12}$$

where:

A = area draining into the BMP (acres)

P = 0.90" precipitation depth

Rv = the volumetric runoff coefficient

Rv = 0.05+0.9i

Where i = fraction of post-construction impervious surface

SEDIMENT BASIN CALCULATIONS					
BMP	Tributary Area (acres)	Disturbed Area (acres)	Required Dewatering Volume (67 CY/Tributary Acre) (ac-ft)	Dewatering Volume Elevation (feet)	Required Sediment Storage Volume (37 CY/Disturbed Acre) (ac-ft)
UGD 01	14.37	14.37	0.597	798.12	0.330



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## BRIDGE PARK - BLOCK Y

### STORMTECH ISOLATOR ROW CALCULATION

**POST-03 Isolator Row**

Rv =	0.45	
Tc =	5.00	minutes
intensity =	2.37	in/hr
Water Quality Flow =	0.30	cfs
Chamber Model =	MC-7200	
Flow Per Chamber =	0.11	cfs
Required Chambers =	3	
Provided Chambers =	TBD	

$R_v = 0.05 + 0.9i$

### WATER QUALITY VOLUME CALCULATIONS

BMP	Subarea Identifier	Area (acres)	Percent Impervious (%)	Rv	Water Quality Volume (ac-ft)	Water Quality Volume Elevation (feet)
UGD 02 ("UGD-02")	POST-03	0.28	45%	0.45	0.010	-
	<b>Total</b>	<b>0.28</b>	<b>45%</b>	<b>0.45</b>	<b>0.010</b>	<b>803.92</b>

Water Quality Volume calculated using the Ohio EPA formula:

$$WQ_v = \frac{R_v \times P \times A}{12}$$

where:

A = area draining into the BMP (acres)

P = 0.90" precipitation depth

Rv = the volumetric runoff coefficient

$R_v = 0.05 + 0.9i$

Where i = fraction of post-construction impervious surface



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## BRIDGE PARK - BLOCK Y

### HYDRODYNAMIC UNIT

Rv = 0.82  
 Tc = 10.00 minutes  
 intensity = 1.85 in/hr  
 Water Quality Flow = 11.37 cfs

Rv = 0.05+0.9i

### WATER QUALITY VOLUME CALCULATIONS

BMP	Subarea Identifier	Area (acres)	Percent Impervious (%)	Rv	Water Quality Volume (ac-ft)	Water Quality Volume Elevation (feet)
HDS #101	POST 01	3.47	84%	0.80	0.209	-
	FUTURE 01	3.25	86%	0.82	0.201	-
	FUTURE 03	0.78	91%	0.87	0.051	-
	<b>Total</b>	<b>7.50</b>	<b>85%</b>	<b>0.82</b>	<b>0.461</b>	N/A

Water Quality Volume calculated using the Ohio EPA formula:

$$WQ_v = \frac{R_v \times P \times A}{12}$$

where:

A = area draining into the BMP (acres)

P = 0.90" precipitation depth

Rv = the volumetric runoff coefficient

Rv = 0.05+0.9i

Where i = fraction of post-construction impervious surface



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## BRIDGE PARK - BLOCK Y

### HYDRODYNAMIC UNIT

$R_v = 0.74$   
 $T_c = 10.00$  minutes  
 intensity = 1.85 in/hr  
 Water Quality Flow = 9.39 cfs  
 $R_v = 0.05 + 0.9i$

### WATER QUALITY VOLUME CALCULATIONS

BMP	Subarea Identifier	Area (acres)	Percent Impervious (%)	$R_v$	Water Quality Volume (ac-ft)	Water Quality Volume Elevation (feet)
HDS #201	POST 02	1.34	72%	0.70	0.071	-
	FUTURE 02	5.53	78%	0.75	0.310	-
	<b>Total</b>	<b>6.87</b>	<b>77%</b>	<b>0.74</b>	<b>0.381</b>	N/A

Water Quality Volume calculated using the Ohio EPA formula:

$$WQ_v = \frac{R_v \times P \times A}{12}$$

where:

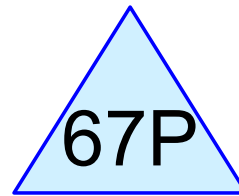
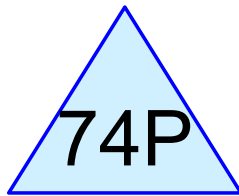
A = area draining into the BMP (acres)

P = 0.90" precipitation depth

$R_v$  = the volumetric runoff coefficient

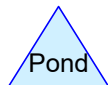
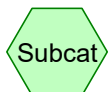
$R_v = 0.05 + 0.9i$

Where  $i$  = fraction of post-construction impervious surface



UGD-01 WQ @ 797.21

UGD-02 WQ @ 803.92



**Summary for Pond 67P: UGD-02 WQ @ 803.92**

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Outflow = 0.01 cfs @ 0.00 hrs, Volume= 0.010 af, Atten= 0%, Lag= 0.0 min  
 Primary = 0.01 cfs @ 0.00 hrs, Volume= 0.010 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
 Starting Elev= 803.92' Surf.Area= 529 sf Storage= 437 cf  
 Peak Elev= 803.92' @ 0.00 hrs Surf.Area= 529 sf Storage= 437 cf

Plug-Flow detention time= (not calculated: no plugs found)  
 Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1A	802.50'	943 cf	<b>19.42'W x 27.24'L x 6.75'H Field A</b> 3,570 cf Overall - 1,213 cf Embedded = 2,357 cf x 40.0% Voids
#2A	803.25'	1,213 cf	<b>ADS_StormTech MC-7200 +Cap</b> x 6 Inside #1 Effective Size= 91.2"W x 60.0"H => 26.68 sf x 6.59'L = 175.9 cf Overall Size= 100.0"W x 60.0"H x 6.95'L with 0.36' Overlap 6 Chambers in 2 Rows Cap Storage= 39.5 cf x 2 x 2 rows = 158.0 cf
		2,156 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	802.50'	<b>12.0" Round RCP_Round 12"</b> L= 136.9' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 802.50' / 801.95' S= 0.0040 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	802.50'	<b>0.5" Vert. WQ Orifice</b> C= 0.600 Limited to weir flow at low heads

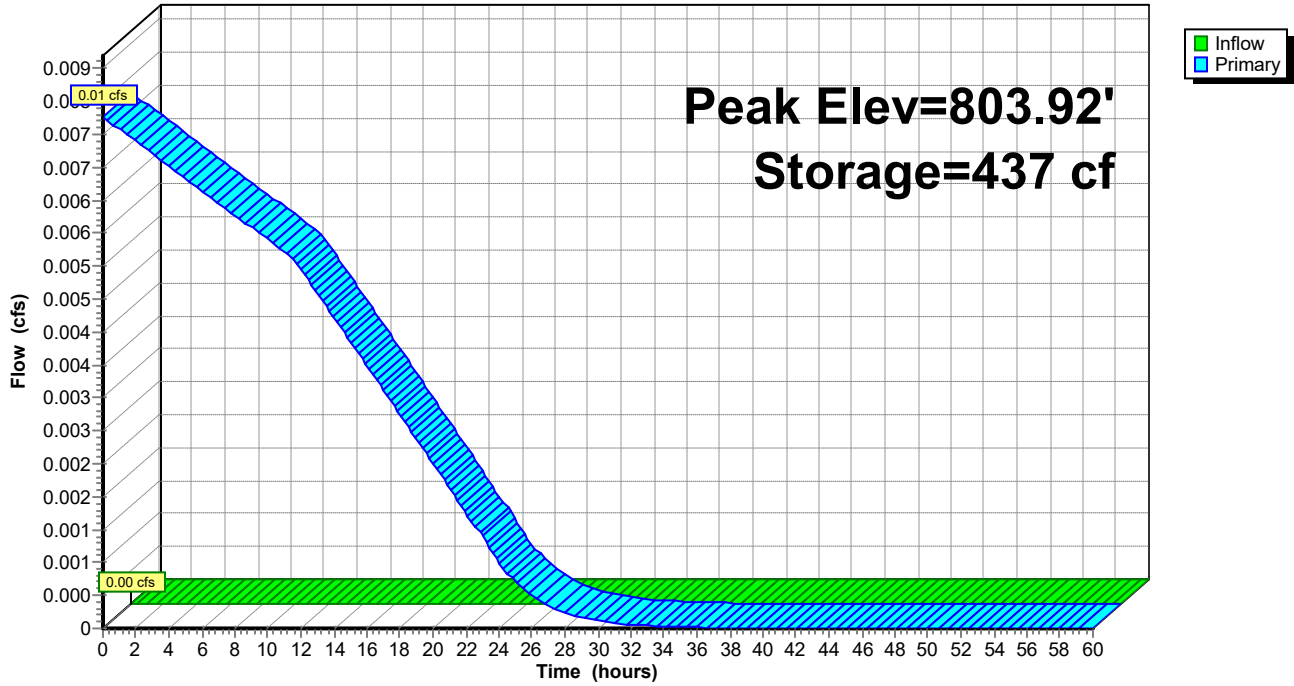
**Primary OutFlow** Max=0.01 cfs @ 0.00 hrs HW=803.92' (Free Discharge)

↑1=RCP\_Round 12" (Passes 0.01 cfs of 2.58 cfs potential flow)

↑2=WQ Orifice (Orifice Controls 0.01 cfs @ 5.70 fps)

Pond 67P: UGD-02 WQ @ 803.92

Hydrograph



**Hydrograph for Pond 67P: UGD-02 WQ @ 803.92**

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	<b>0.00</b>	<b>437</b>	<b>803.92</b>	<b>0.01</b>
2.00	0.00	383	803.79	0.01
4.00	0.00	331	803.66	0.01
6.00	0.00	282	803.54	0.01
8.00	0.00	235	803.43	0.01
10.00	0.00	191	803.33	0.01
12.00	0.00	150	803.21	0.01
14.00	0.00	114	803.04	0.00
16.00	0.00	82	802.89	0.00
18.00	0.00	56	802.77	0.00
20.00	0.00	36	802.67	0.00
22.00	0.00	20	802.60	0.00
24.00	0.00	10	802.55	0.00
26.00	0.00	5	802.52	0.00
28.00	0.00	2	802.51	0.00
30.00	0.00	1	802.51	0.00
32.00	0.00	1	802.50	0.00
34.00	0.00	0	802.50	0.00
36.00	0.00	0	802.50	0.00
38.00	0.00	0	802.50	0.00
40.00	0.00	0	802.50	0.00
42.00	0.00	0	802.50	0.00
44.00	0.00	0	802.50	0.00
46.00	0.00	0	802.50	0.00
48.00	0.00	0	802.50	0.00
50.00	0.00	0	802.50	0.00
52.00	0.00	0	802.50	0.00
54.00	0.00	0	802.50	0.00
56.00	0.00	0	802.50	0.00
58.00	0.00	0	802.50	0.00
60.00	0.00	0	802.50	0.00

**Summary for Pond 74P: UGD-01 WQ @ 797.21**

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Outflow = 0.63 cfs @ 0.00 hrs, Volume= 0.841 af, Atten= 0%, Lag= 0.0 min  
 Primary = 0.63 cfs @ 0.00 hrs, Volume= 0.841 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
 Starting Elev= 797.21' Surf.Area= 5,647 sf Storage= 36,643 cf  
 Peak Elev= 797.21' @ 0.00 hrs Surf.Area= 5,647 sf Storage= 36,643 cf

Plug-Flow detention time= (not calculated: no plugs found)  
 Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	790.00'	76,235 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) 84,705 cf Overall x 90.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
790.00	5,647	0	0
805.00	5,647	84,705	84,705

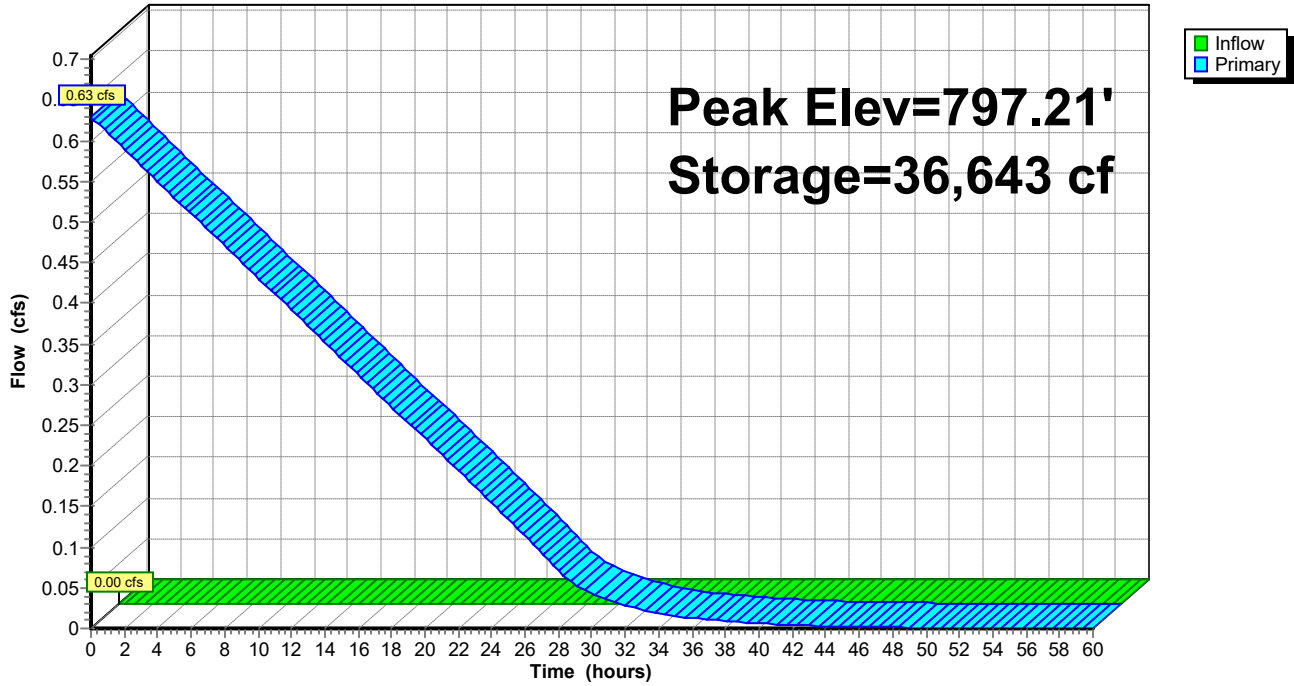
Device	Routing	Invert	Outlet Devices
#1	Primary	790.00'	<b>36.0" Round RCP_Round 36"</b> L= 30.5' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 790.00' / 789.85' S= 0.0049 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 7.07 sf
#2	Device 1	790.00'	<b>3.0" Vert. WQ Orifice</b> C= 0.600 Limited to weir flow at low heads
#3	Device 1	797.50'	<b>48.0" W x 8.0" H Vert. 2nd Stage</b> C= 0.600 Limited to weir flow at low heads
#4	Device 1	803.75'	<b>6.0' long x 0.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

**Primary OutFlow** Max=0.63 cfs @ 0.00 hrs HW=797.21' (Free Discharge)

- 1=RCP\_Round 36" (Passes 0.63 cfs of 81.33 cfs potential flow)
- 2=WQ Orifice (Orifice Controls 0.63 cfs @ 12.82 fps)
- 3=2nd Stage ( Controls 0.00 cfs)
- 4=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

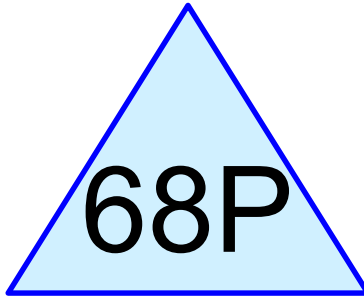
Pond 74P: UGD-01 WQ @ 797.21

Hydrograph

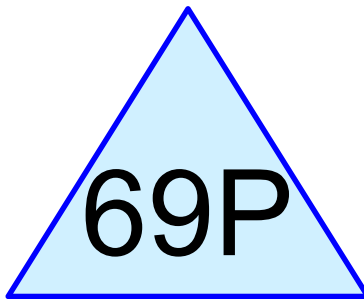


**Hydrograph for Pond 74P: UGD-01 WQ @ 797.21**

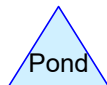
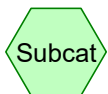
Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	36,643	797.21	0.63
2.00	0.00	32,256	796.35	0.59
4.00	0.00	28,154	795.54	0.55
6.00	0.00	24,337	794.79	0.51
8.00	0.00	20,804	794.09	0.47
10.00	0.00	17,557	793.45	0.43
12.00	0.00	14,594	792.87	0.39
14.00	0.00	11,917	792.34	0.35
16.00	0.00	9,524	791.87	0.31
18.00	0.00	7,416	791.46	0.27
20.00	0.00	5,594	791.10	0.23
22.00	0.00	4,056	790.80	0.19
24.00	0.00	2,804	790.55	0.15
26.00	0.00	1,840	790.36	0.11
28.00	0.00	1,167	790.23	0.07
30.00	0.00	771	790.15	0.04
32.00	0.00	526	790.10	0.03
34.00	0.00	359	790.07	0.02
36.00	0.00	244	790.05	0.01
38.00	0.00	167	790.03	0.01
40.00	0.00	114	790.02	0.01
42.00	0.00	77	790.02	0.00
44.00	0.00	53	790.01	0.00
46.00	0.00	36	790.01	0.00
48.00	0.00	25	790.00	0.00
50.00	0.00	17	790.00	0.00
52.00	0.00	11	790.00	0.00
54.00	0.00	8	790.00	0.00
56.00	0.00	5	790.00	0.00
58.00	0.00	4	790.00	0.00
60.00	0.00	2	790.00	0.00



UGD-01 Dewatering  
798.12



UGD-01 Sediment  
Storage (Temp NP @  
930.00)



**Summary for Pond 68P: UGD-01 Dewatering 798.12**

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Outflow = 0.12 cfs @ 0.00 hrs, Volume= 0.597 af, Atten= 0%, Lag= 0.0 min  
 Primary = 0.12 cfs @ 0.00 hrs, Volume= 0.597 af

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs  
 Starting Elev= 798.12' Surf.Area= 5,647 sf Storage= 26,021 cf  
 Peak Elev= 798.12' @ 0.00 hrs Surf.Area= 5,647 sf Storage= 26,021 cf

Plug-Flow detention time= (not calculated: no plugs found)  
 Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	793.00'	60,988 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) 67,764 cf Overall x 90.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
793.00	5,647	0	0
805.00	5,647	67,764	67,764

Device	Routing	Invert	Outlet Devices
#1	Primary	790.00'	<b>36.0" Round RCP_Round 36"</b> L= 30.5' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 790.00' / 789.85' S= 0.0049 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 7.07 sf
#2	Device 1	793.00'	<b>Marlee Float 4 in - 2.5 in orifice</b>

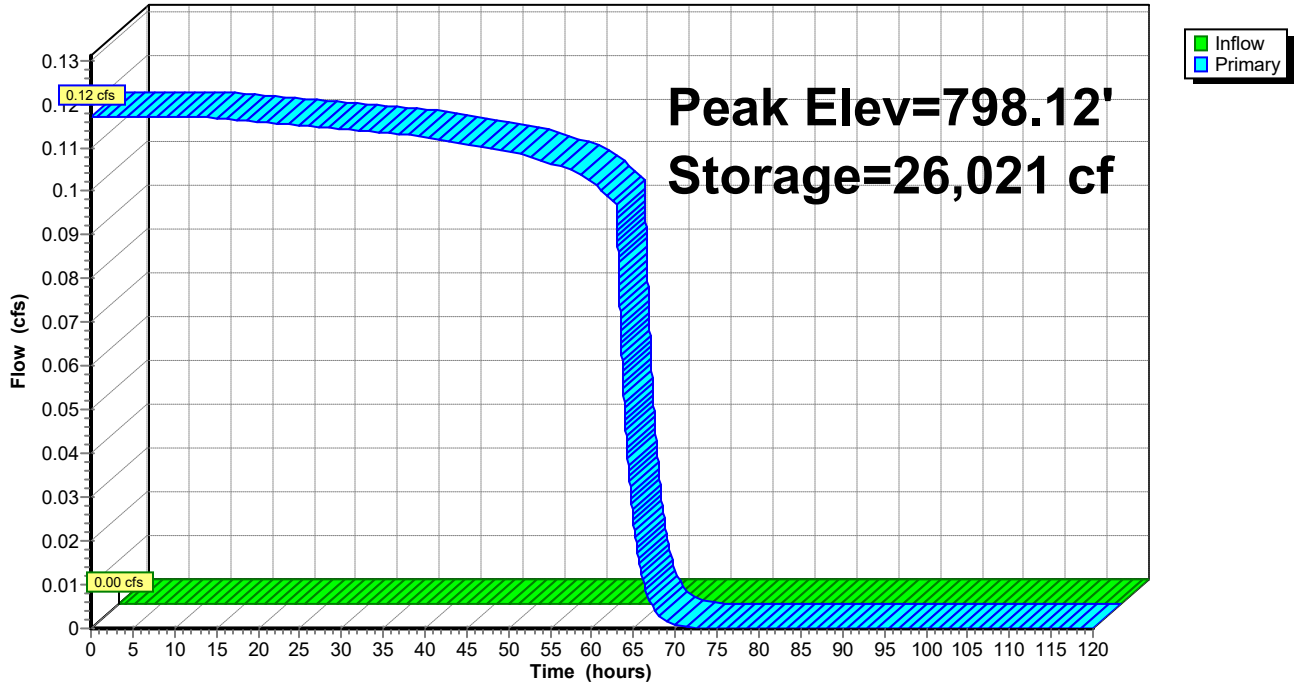
**Primary OutFlow** Max=0.12 cfs @ 0.00 hrs HW=798.12' (Free Discharge)

↑1=RCP\_Round 36" (Passes 0.12 cfs of 87.57 cfs potential flow)

↑2=Marlee Float 4 in - 2.5 in orifice (Custom Controls 0.12 cfs)

### Pond 68P: UGD-01 Dewatering 798.12

Hydrograph



**Hydrograph for Pond 68P: UGD-01 Dewatering 798.12**

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	<b>0.00</b>	<b>26,021</b>	<b>798.12</b>	<b>0.12</b>
5.00	0.00	23,915	797.71	0.12
10.00	0.00	21,809	797.29	0.12
15.00	0.00	19,704	796.88	0.12
20.00	0.00	17,610	796.46	0.12
25.00	0.00	15,531	796.06	0.12
30.00	0.00	13,466	795.65	0.11
35.00	0.00	11,416	795.25	0.11
40.00	0.00	9,381	794.85	0.11
45.00	0.00	7,373	794.45	0.11
50.00	0.00	5,392	794.06	0.11
55.00	0.00	3,449	793.68	0.11
60.00	0.00	1,567	793.31	0.10
65.00	0.00	125	793.02	0.02
70.00	0.00	4	793.00	0.00
75.00	0.00	0	793.00	0.00
80.00	0.00	0	793.00	0.00
85.00	0.00	0	793.00	0.00
90.00	0.00	0	793.00	0.00
95.00	0.00	0	793.00	0.00
100.00	0.00	0	793.00	0.00
105.00	0.00	0	793.00	0.00
110.00	0.00	0	793.00	0.00
115.00	0.00	0	793.00	0.00
120.00	0.00	0	793.00	0.00

**Summary for Pond 69P: UGD-01 Sediment Storage (Temp NP @ 930.00)**

Volume	Invert	Avail.Storage	Storage Description
#1	790.00'	15,247 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) 16,941 cf Overall x 90.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
790.00	5,647	0	0
793.00	5,647	16,941	16,941



# State of New Jersey

## DEPARTMENT OF ENVIRONMENTAL PROTECTION

PHILIP D. MURPHY  
*Governor*

DIVISION OF WATERSHED PROTECTION AND RESTORATION  
BUREAU OF NJPDES STORMWATER PERMITTING & WATER QUALITY MANAGEMENT

SHAWN M. LA TOURETTE  
*Commissioner*

SHEILA Y. OLIVER  
*Lt. Governor*

P.O. Box 420 Mail Code 501-02A  
Trenton, New Jersey 08625-0420  
609-633-7021 / Fax: 609-777-0432

[www.njstormwater.org](http://www.njstormwater.org)

January 27, 2023

Greg Williams, Ph.D., P.E.  
Director of Water Quality Technology  
Storm Trap LLC  
1287 Windham Parkway  
Romeoville, IL 60446

Re: MTD Lab Certification  
Storm Trap, LLC, StormSettler Hydrodynamic Separator  
Online Installation

### **TSS Removal Rate 50%**

Dear Dr. Williams:

The Stormwater Management rules under N.J.A.C. 7:8-5.2(f) and 5.2(j) allow the use of manufactured treatment devices (MTDs) for compliance with the design and performance standards at N.J.A.C. 7:8-5 if the pollutant removal rates have been verified by the New Jersey Corporation for Advanced Technology (NJCAT) and have been certified by the New Jersey Department of Environmental Protection (NJDEP). Storm Trap LLC, has requested a Laboratory Certification for the StormSettler Hydrodynamic Separator (StormSettler).

The project falls under the "Procedure for Obtaining Verification of a Stormwater Manufactured Treatment Device from New Jersey Corporation for Advance Technology" dated August 4, 2021. The applicable protocol is the "New Jersey Department of Environmental Protection Laboratory Protocol to Assess Total Suspended Solids Removal by a Hydrodynamic Sedimentation Manufactured Treatment Device" dated January 1, 2021.

NJCAT verification documents submitted to the NJDEP indicate that the requirements of the aforementioned protocol have been met or exceeded. The NJCAT letter also included a recommended certification TSS removal rate and the required maintenance plan. The NJCAT Verification Report with the Verification Appendix (dated December 2022) for this device is published online at <http://www.njcat.org/verification-process/technology-verification-database.html>.

**The NJDEP certifies the use of the StormSettler by Storm Trap LLC at a TSS removal rate of 50% when designed, operated, and maintained in accordance with the information provided in the Verification Appendix and the following conditions:**

1. The maximum treatment flow rate (MTFR) for the manufactured treatment device (MTD) is calculated using the New Jersey Water Quality Design Storm (1.25 inches in 2 hrs) in N.J.A.C. 7:8-5.5.
2. The StormSettler shall be installed, using the same configuration reviewed by NJCAT, and sized in accordance with the criteria specified in item 6 below.
3. This device cannot be used in series with another MTD or a media filter (such as a sand filter) to achieve an enhanced removal rate for total suspended solids (TSS) removal under N.J.A.C. 7:8-5.5.
4. Additional design criteria for MTDs can be found in Chapter 11.3 of the New Jersey Stormwater Best Management Practices (NJ Stormwater BMP) Manual, which can be found online at [www.njstormwater.org](http://www.njstormwater.org).
5. The maintenance plan for a site using this device shall incorporate, at a minimum, the maintenance requirements for the StormSettler, which is attached to this certification. However, it is recommended to review the maintenance website at <https://stormtrap.com/wp-content/uploads/2022/08/StormSettler-IM-Manual.pdf> for any changes to the maintenance requirements.
6. Sizing Requirement:

The example below demonstrates the sizing procedure for the StormSettler:

Example: A 0.25-acre impervious site is to be treated to 50% TSS removal using a StormSettler. The impervious site runoff (Q) based on the New Jersey Water Quality Design Storm was determined to be 0.79 cfs or 354.58 gpm.

Maximum Treatment Flow Rate (MTFR) Evaluation:

The site runoff (Q) was based on the following:

time of concentration = 10 minutes

$i = 3.2$  in/hr (page 74, Fig. 5-16 of Chapter 5 of the NJ Stormwater BMP Manual)

$c = 0.99$  (runoff coefficient for impervious)

$Q = ciA = 0.99 \times 3.2 \times 0.25 = 0.79$  cfs (354.58 gpm)

(Note: 1 cfs = 448.83 gpm)

Given the site runoff is 0.79 cfs and based on Table 1 below, the StormSettler Model StormSettler-3 with a MTFR of 0.79 cfs would be the smallest model approved that could be used for this site that could remove 50% of the TSS from the impervious area without exceeding the MTFR.

The sizing table corresponding to the available system models is noted below. Additional specifications regarding each model can be found in the Verification Appendix under Table A-1.

**Table 1. StormSettler Model MFRs**

StormSettler HDS Model	Manhole Diameter (ft)	Maximum Treatment Flowrate, MFR (cfs)
StormSettler-3	3	0.79
StormSettler-4	4	1.41
StormSettler-5	5	2.19
StormSettler-6	6	3.17
StormSettler-7	7	4.30
StormSettler-8	8	5.63
StormSettler-10	10	8.78
StormSettler-12	12	12.70

Be advised a detailed maintenance plan is mandatory for any project with a Stormwater BMP subject to the Stormwater Management Rules, N.J.A.C. 7:8. The plan must include all of the items identified in the Stormwater Management Rules, N.J.A.C. 7:8-5.8. Such items include, but are not limited to, the list of inspection and maintenance equipment and tools, specific corrective and preventative maintenance tasks, indication of problems in the system, and training of maintenance personnel. Additional information can be found in Chapter 8: Maintenance and Retrofit of Stormwater Management Measures.

If you have any questions regarding the above information, please contact Lisa Schaefer of my office at [lisa.schaefer@dep.nj.gov](mailto:lisa.schaefer@dep.nj.gov).

Sincerely,



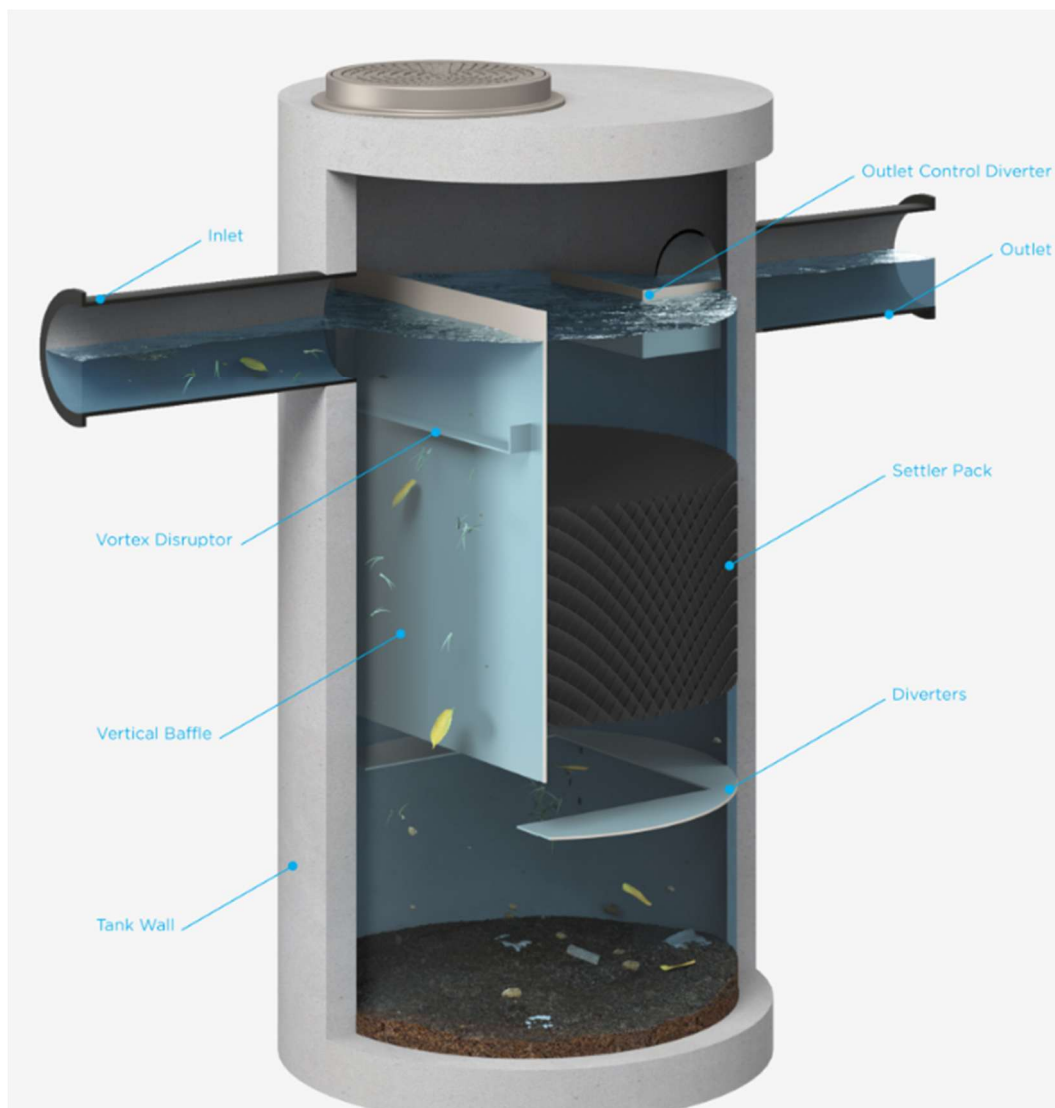
Gabriel Mahon, Chief  
Bureau of NJPDES Stormwater Permitting & Water Quality Management  
Division of Watershed Protection and Restoration  
New Jersey Department of Environmental Protection

Attachment: Maintenance Plan

cc: Richard Magee, NJCAT

# StormSettler®

## StormSettler® Inspection and Maintenance Manual





## **StormSettler® Manufacturer's Inspection and Maintenance Manual**

The StormSettler treatment device, manufactured by StormTrap, is a hydrodynamic separating device designed to capture and store pollutants from stormwater. StormSettler's maintenance frequency is site dependent and routine inspections are recommended to ensure that the system is functioning as designed. Please contact your authorized StormTrap representative if you have questions regarding the inspection and maintenance of the StormSettler system.

### **Inspection Scheduling**

StormSettler inspections are important to assess the condition of the system internals to ensure peak performance. The frequency of inspections and maintenance is dependent on site specific loading conditions and rainfall frequency. Within the first year of operation, it is recommended that the unit be inspected quarterly to determine the rate of pollutant accumulation in order to develop a more accurate maintenance schedule. Inspections should be performed during dry weather conditions when no flow is entering the system. StormSettler systems are recommended to be inspected whenever the upstream and downstream catch basins and stormwater pipes of the stormwater collection system are inspected or maintained. If checked on an annual basis, the inspection should be conducted before the stormwater season begins to ensure that the system is functioning properly for the upcoming storm season.

### **Inspection and Maintenance Equipment**

The following equipment is recommended to have during inspections:

- StormSettler Inspection and Maintenance Manual and Inspection Checklist
- Flashlight



- Manhole hook/lifter or pry bar to lift the manhole cover
- Measuring device(s) of sufficient length to reach the bottom of the device's sump
- Proper personal protective equipment
- Adequate traffic control signage
- Pole with skimmer or net (optional for maintenance procedure)
- Vacuum truck or similar trailer mounted equipment (for maintenance procedure)

### **Inspection Procedure**

Inspections should be done such that a sufficient time has lapsed since the most recent rain event to allow for a static water condition and rainfall is not anticipated to occur during the duration of the inspection procedure. StormSettler does not require entry into the system for inspection or maintenance; however, if entering the system is deemed necessary, it is prudent to note that prior to entry into any underground storm sewer or underground structure, appropriate OSHA and local safety regulations and guidelines should be followed.

To begin the inspection process, set up the necessary traffic control signage per local ordinances. Open all manhole covers using appropriate equipment and ensure the manhole covers are in a location that would not prohibit the inspection process. Visually inspect the system at all manhole access opening locations. During the visual inspection, ensure that all components are in working order. An inspection checklist is provided within this guide for ease and reference.

If any components are not in working order, contact your authorized StormTrap representative.

After the components are inspected, visually quantify the accumulation of trash, debris, and hydrocarbons within the system by using a measuring device such as a tape measure, grade stick, dipstick, etc. Measure and record the depth of trash, debris, and hydrocarbon



accumulation from the static water elevation (pipe elevation) to the average elevation of the trash and debris.

If sorbent materials are used for retention of hydrocarbons, the level of discoloration of the sorbent material should also be noted during the inspection process.

For sediment accumulation, utilize either a sludge sampler or a sediment pole to measure and document the amount of sediment accumulation. To determine the amount of sediment in the system with a sludge sampler, follow the manufacturer's instructions. If utilizing a sediment pole or similar device, first insert the pole to the top of the sediment layer and record the depth. Then, insert the pole to the bottom of the system and record the depth. The difference in the two measurements corresponds to the amount of sediment in the system. Alternatively, sediment depth can also be determined by taking a measurement from a known and consistent elevation (manhole frame, pipe invert, vertical baffle top, etc.) to the top of the sediment layer. That distance can then be compared to the measurement between the known elevation to the sump floor. The difference between these two measurements will correspond to the sediment layer depth.

After completion of the inspection process, ensure that manhole covers are replaced and securely seated in the manhole frame and remove traffic control signage.

StormSettler units can also be installed with remote monitoring technology that measures the current capacities within the system and reports the data to any internet capable device. If a remote monitoring device is used, proper maintenance of the device, such as replacement of batteries, cleaning sensor, etc. needs to be completed to ensure functionality of the remote monitoring technology.

If it is determined during the inspection process that the accumulation of trash and debris or sediment is at or near the capacities of the StormSettler device, maintenance should be performed to ensure performance is not impacted for subsequent storm events.



## Maintenance Procedure

Maintenance should be done such that a sufficient time has lapsed since the most recent rain event to allow for a static water condition and rainfall is not anticipated to occur during the duration of the maintenance procedure.

To begin the maintenance process, set up the necessary traffic control signage per local ordinances. Open all manhole covers using appropriate equipment and ensure the manhole covers are in a location that would not prohibit the maintenance process.

Visually inspect the system at all manhole access opening locations. During the visual inspection, ensure that all components are undamaged. If any components are not in working order, contact your authorized StormTrap representative.

After the components are inspected, remove all accumulated trash, debris, and hydrocarbons stored on the surface of the water using the vacuum hose or pole with attached skimmer or net.

If sorbent materials are used, the materials may have to be moved to not impact pollutant removal. If significant discoloration of the sorbent material has occurred, simply remove the sorbent materials and replace upon completion of maintenance activities.

To remove sediment, insert the vacuum truck's hose on the inlet side of the vertical baffle into the sump. The system should be completely drained, and all sediment should be removed from the sump. For smaller diameter devices (3' or 4' units), a 6" or smaller vacuum hose diameter may be required for effective cleaning due to maneuverability constraints. If the vacuum truck that is being utilized has a hose diameter greater than 6", a smaller tube can be affixed to the boom hose with duct tape to improve maneuverability within the device.

If excessive sediment or debris buildup occurs within the device, components can be washed with sewer jetting equipment or a spray lance to remove stubborn materials. Particular



attention must be taken when spraying the settler pack. A wide spray nozzle is recommended around the settler pack to ensure there is no damage to the material.

After completion of the maintenance procedure, complete a post maintenance inspection to ensure that all components are in good condition. Ensure that manhole covers are replaced and securely seated in the manhole frame and remove traffic control signage. Dispose of all pollutants removed during maintenance per local, state, and federal guidelines and regulations.

### **Inspection and Maintenance Documentation**

Proof of inspections and maintenance activities is the responsibility of the owner. All inspection and maintenance reports and any relevant data should be kept on site or at a location where they will be accessible in accordance with local requirements. It is a good practice to take time stamped photographs after every inspection and maintenance event to include within logs. It is also good practice to keep records of rainfall events between maintenance events and the weight of material removed, even if no report is required. Some municipalities may require inspection and maintenance reports be forwarded to the proper governmental permitting agency on an annual basis. Refer to your local regulations and ordinances for any additional maintenance requirements and schedules not contained herein. Inspections and maintenance activities should be performed to ensure performance is not impacted and the device performs as designed.

### Inspection Items

- StormSettler Maintenance Manual and Inspection Checklist
- Flashlight
- Manhole hook/lifter or pry bar to lift the manhole cover
- Measuring device(s) of sufficient length to reach the bottom of the device's sump
- Proper personal protective equipment
- Adequate traffic control signage

### Maintenance Items

- StormSettler Maintenance Manual and Inspection Checklist
- Flashlight
- Manhole hook/lifter or pry bar to lift the manhole cover
- Measuring device(s) of sufficient length to reach the bottom of the device's sump
- Proper personal protective equipment
- Adequate traffic control signage
- Pole with skimmer or net (optional for maintenance procedure)
- Vacuum truck or similar trailer mounted equipment (for maintenance procedure)

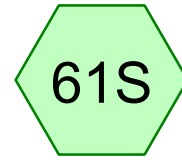
<b>StormSettler™</b>	<b>StormSettler Inspection Checklist</b>			
Structure ID:				
Location/Address:				
Inspector Name:				
Inspector Contact Information:				
Date:	Time:			
Weather Conditions:				
Rain in the Last 48hrs:				
If yes, list amount and timing:				
<p>*Do not enter underground chambers to inspect system unless Occupational Safety &amp; Health Administration (OSHA) regulations for confined space entry are followed.</p> <p>*Follow inspection and maintenance instructions provided by system manufacturer.</p> <p>*Please circle the condition of each inspection item below. 1 being the worst and 5 being the best condition.</p>				
Inspection Item	Condition	Comment	Action Needed	
<b>1.) Frames and Covers</b>				
Accumulation of debris and/or sediment	1 2 3 4 5		Yes	No
Component(s) structural condition	1 2 3 4 5		Yes	No
<b>2.) Inlet Pipe(s)</b>				
Accumulation of debris and/or sediment	1 2 3 4 5		Yes	No
Component(s) structural condition	1 2 3 4 5		Yes	No
<b>3.) Vortex Disruptor</b>				
Accumulation of debris and/or sediment	1 2 3 4 5		Yes	No
Component(s) structural condition	1 2 3 4 5		Yes	No
<b>4.) Verticle Baffle</b>				
Accumulation of debris and/or sediment	1 2 3 4 5		Yes	No
Component(s) structural condition	1 2 3 4 5		Yes	No
<b>5.) Enhanced Settling Pack</b>				
Accumulation of debris and/or sediment	1 2 3 4 5		Yes	No
Component(s) structural condition	1 2 3 4 5		Yes	No
<b>6.) Flow Modifiers</b>				
Accumulation of debris and/or sediment	1 2 3 4 5		Yes	No
Component(s) structural condition	1 2 3 4 5		Yes	No

<b>7.) Outlet Control Diverter</b>									
Excessive accumulation of debris and/or sediment present	1	2	3	4	5		Yes	No	
Component(s) structurally sound	1	2	3	4	5		Yes	No	
<b>8.) Outlet Pipe</b>									
Accumulation of debris and/or sediment	1	2	3	4	5		Yes	No	
Component(s) structurally sound	1	2	3	4	5		Yes	No	
<b>9.) Concrete Chamber</b>									
Component(s) structural condition	1	2	3	4	5		Yes	No	
<b>10.) Sediment Storage Capacity</b>									
Sediment storage capacity	1	2	3	4	5		Yes	No	
<b>Additional Notes:</b>									
Wet Weather Inspection Needed: Yes No									
Maintenance Activities Needed: Yes No									

APPENDIX D:  
HydroCAD Output



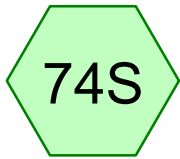
PRE W-DALE-DR



PRE E-DALE-DR



POST-01 (W)



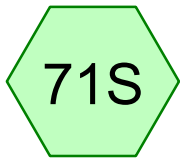
FUTURE-03 (W)



FUTURE-01 (E)



POST-02 (W)



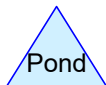
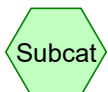
UNDETAINED-01 (W)



FUTURE-02 (E)



POST-03 (W)



**2022-0867 Block Y - PCM (2026-04-02)**

Prepared by EMH&T

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Page 2

**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-yr	Type II 24-hr		Default	24.00	1	2.20	2

### Summary for Subcatchment 61S: PRE E-DALE-DR

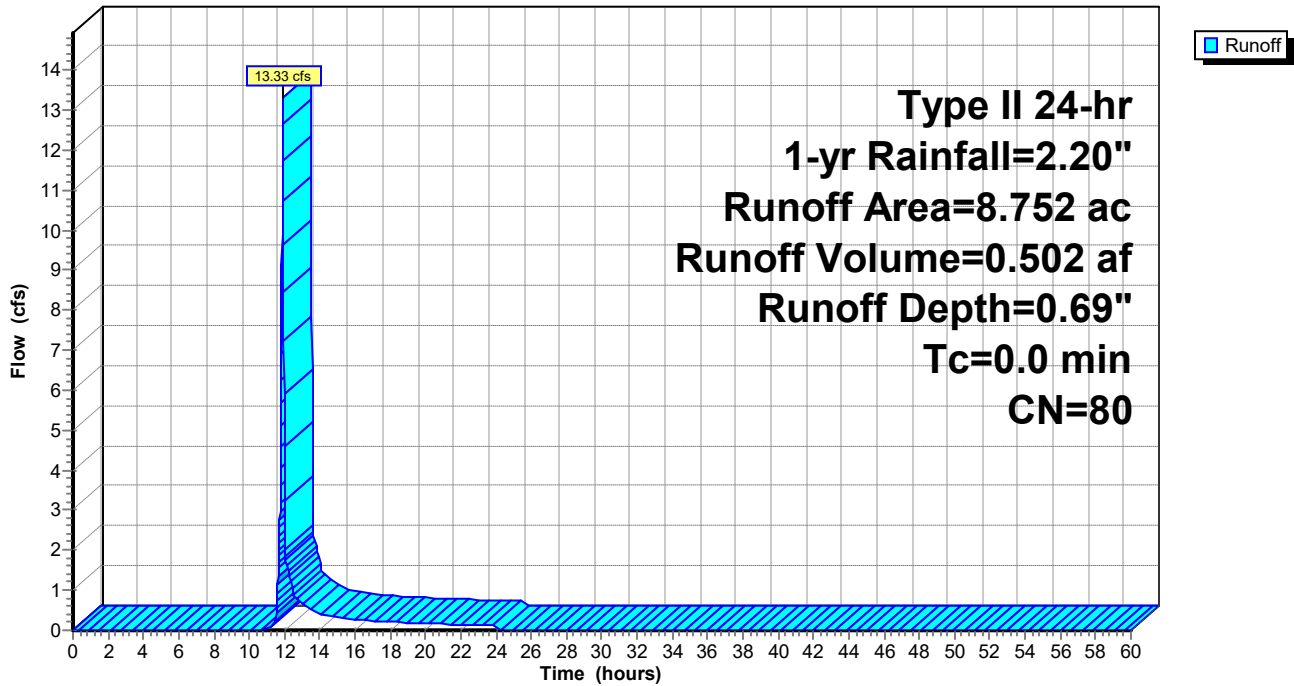
Runoff = 13.33 cfs @ 11.90 hrs, Volume= 0.502 af, Depth= 0.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Type II 24-hr 1-yr Rainfall=2.20"

Area (ac)	CN	Description
* 8.752	80	Dublin Master Planned Watershed
8.752		100.00% Pervious Area

### Subcatchment 61S: PRE E-DALE-DR

Hydrograph



**Summary for Subcatchment 66S: POST-01 (W)**

Runoff = 8.17 cfs @ 12.01 hrs, Volume= 0.458 af, Depth= 1.58"

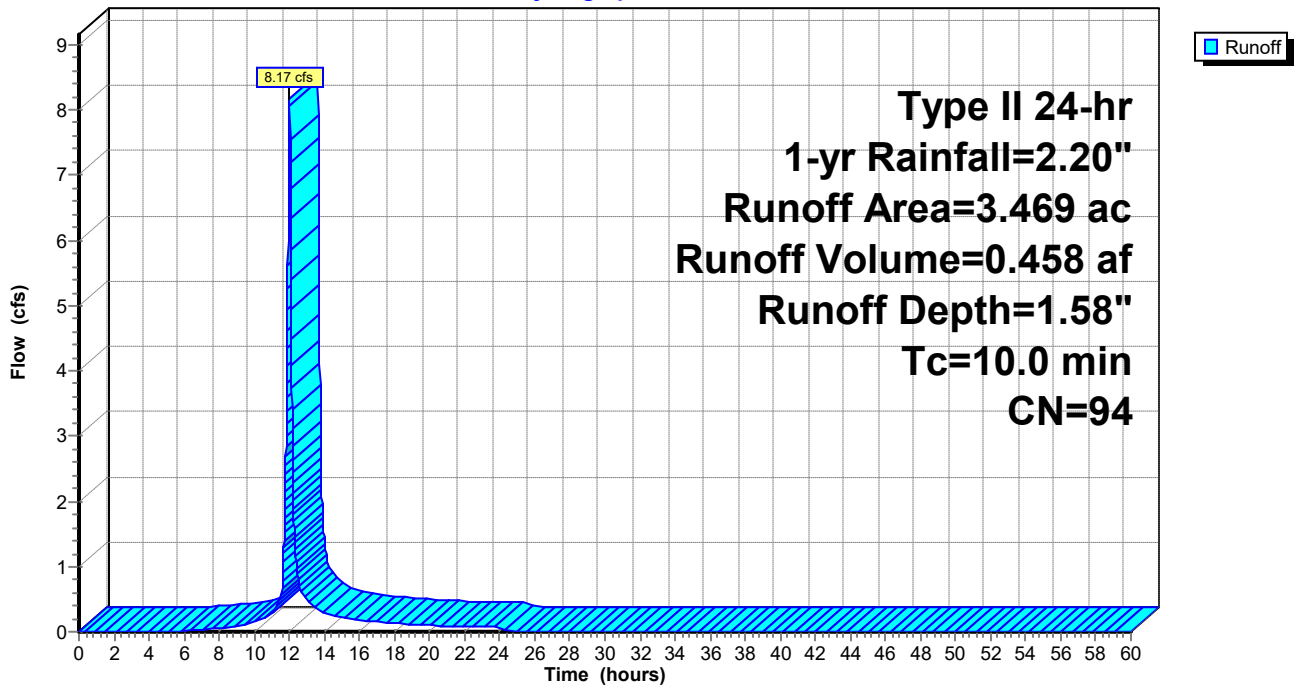
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
 Type II 24-hr 1-yr Rainfall=2.20"

Area (ac)	CN	Description
2.898	98	Paved parking, HSG C
0.571	74	>75% Grass cover, Good, HSG C
3.469	94	Weighted Average
0.571		16.46% Pervious Area
2.898		83.54% Impervious Area

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

**Subcatchment 66S: POST-01 (W)**

Hydrograph



**Summary for Subcatchment 67S: POST-02 (W)**

Runoff = 2.74 cfs @ 12.01 hrs, Volume= 0.150 af, Depth= 1.34"

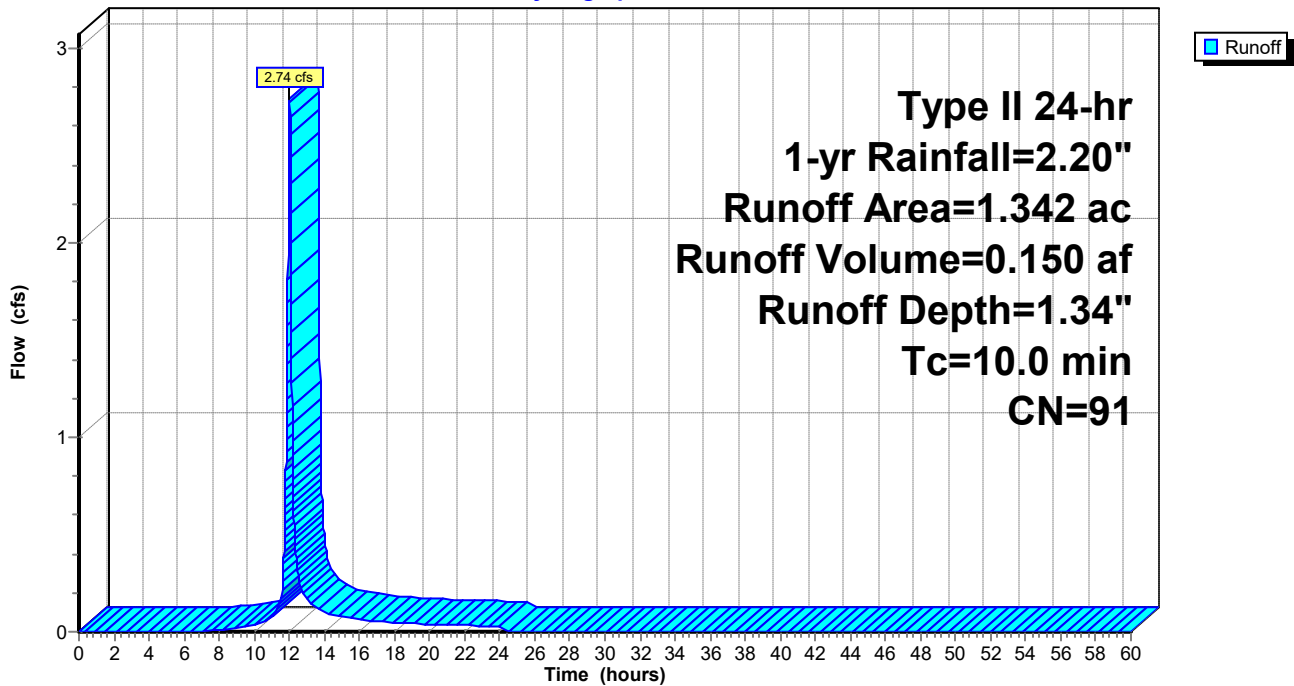
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
 Type II 24-hr 1-yr Rainfall=2.20"

Area (ac)	CN	Description
0.972	98	Paved parking, HSG C
0.370	74	>75% Grass cover, Good, HSG C
1.342	91	Weighted Average
0.370		27.57% Pervious Area
0.972		72.43% Impervious Area

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

**Subcatchment 67S: POST-02 (W)**

Hydrograph



**Summary for Subcatchment 68S: POST-03 (W)**

Runoff = 0.49 cfs @ 11.96 hrs, Volume= 0.022 af, Depth= 0.94"

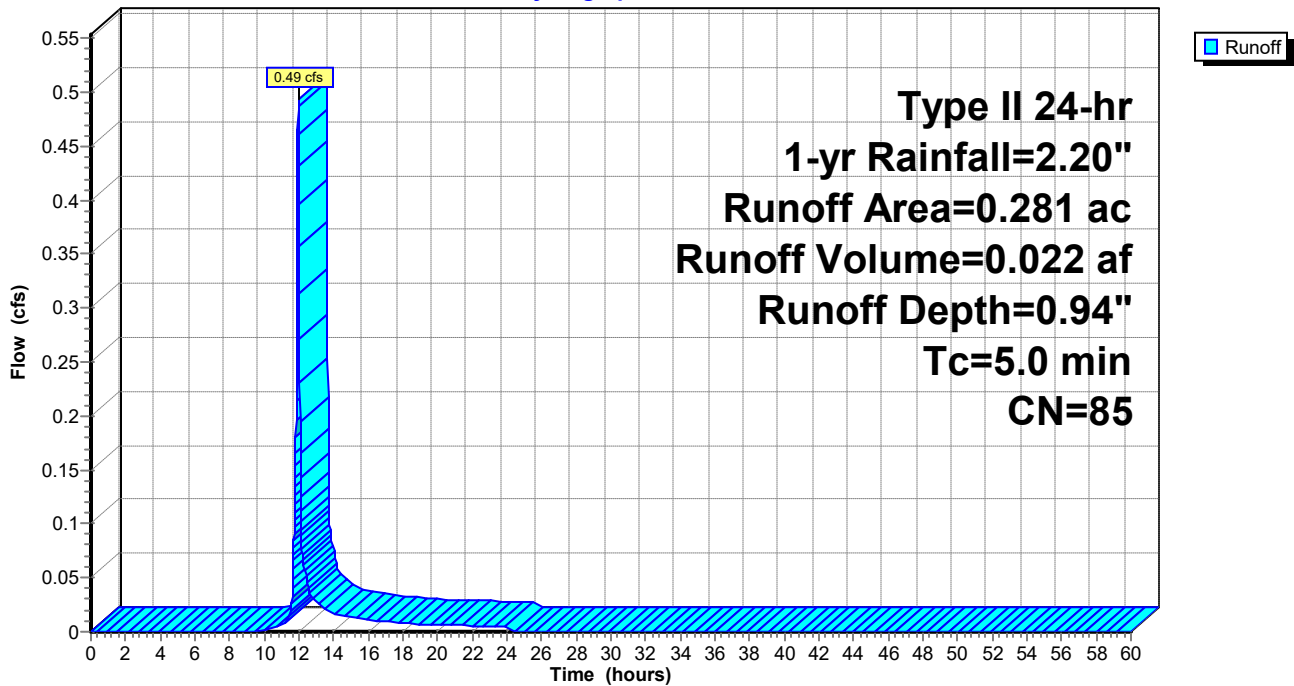
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
 Type II 24-hr 1-yr Rainfall=2.20"

Area (ac)	CN	Description
0.126	98	Paved parking, HSG C
0.155	74	>75% Grass cover, Good, HSG C
0.281	85	Weighted Average
0.155		55.16% Pervious Area
0.126		44.84% Impervious Area

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

**Subcatchment 68S: POST-03 (W)**

Hydrograph



**Summary for Subcatchment 70S: PRE W-DALE-DR**

Runoff = 6.14 cfs @ 12.03 hrs, Volume= 0.341 af, Depth= 0.69"

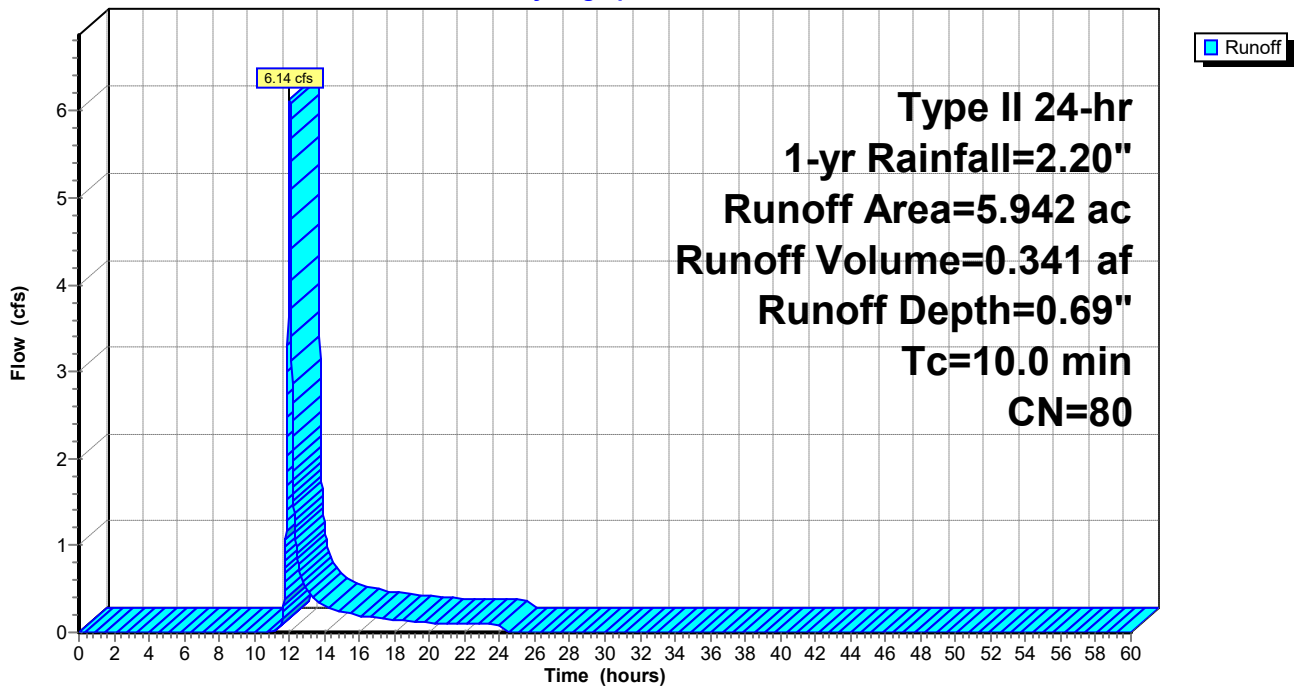
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
 Type II 24-hr 1-yr Rainfall=2.20"

Area (ac)	CN	Description
* 5.942	80	Dublin Master Planned Watershed
5.942		100.00% Pervious Area

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

**Subcatchment 70S: PRE W-DALE-DR**

Hydrograph



**Summary for Subcatchment 71S: UNDETAINED-01 (W)**

Runoff = 0.44 cfs @ 11.96 hrs, Volume= 0.020 af, Depth= 0.89"

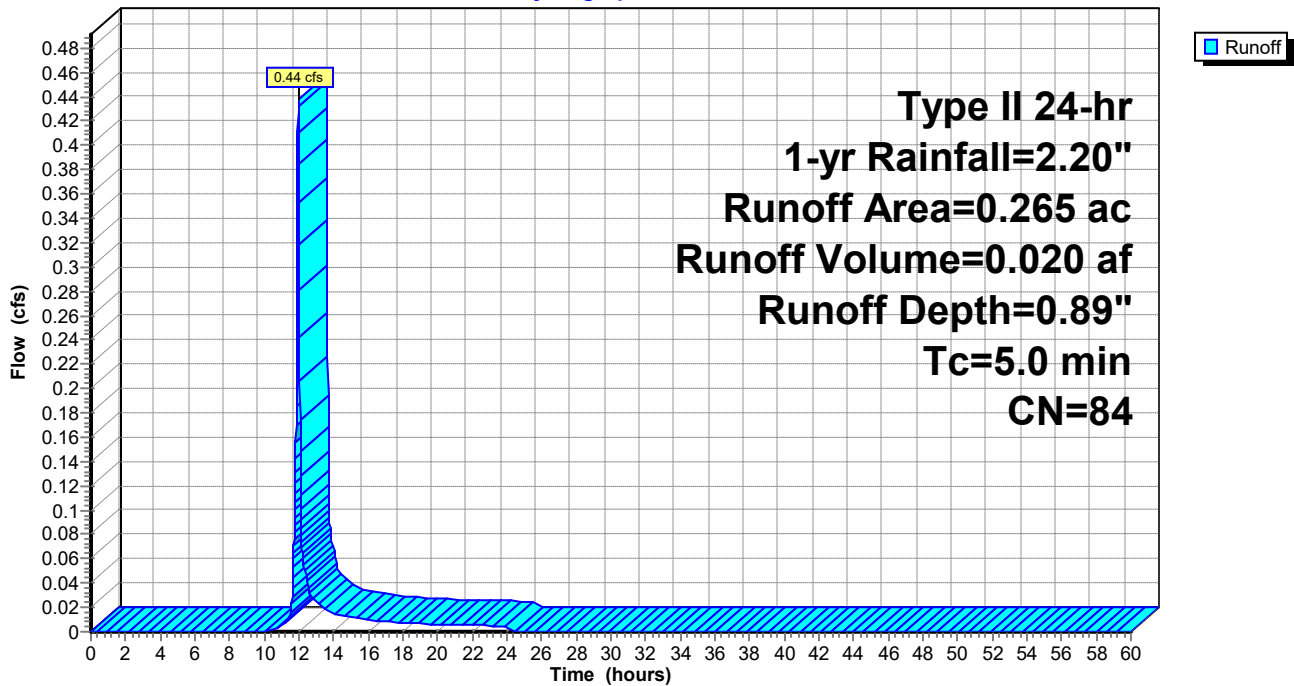
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
 Type II 24-hr 1-yr Rainfall=2.20"

Area (ac)	CN	Description
0.113	98	Paved parking, HSG C
0.152	74	>75% Grass cover, Good, HSG C
0.265	84	Weighted Average
0.152		57.36% Pervious Area
0.113		42.64% Impervious Area

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

**Subcatchment 71S: UNDETAINED-01 (W)**

Hydrograph



**Summary for Subcatchment 72S: FUTURE-01 (E)**

Runoff = 7.99 cfs @ 12.01 hrs, Volume= 0.454 af, Depth= 1.67"

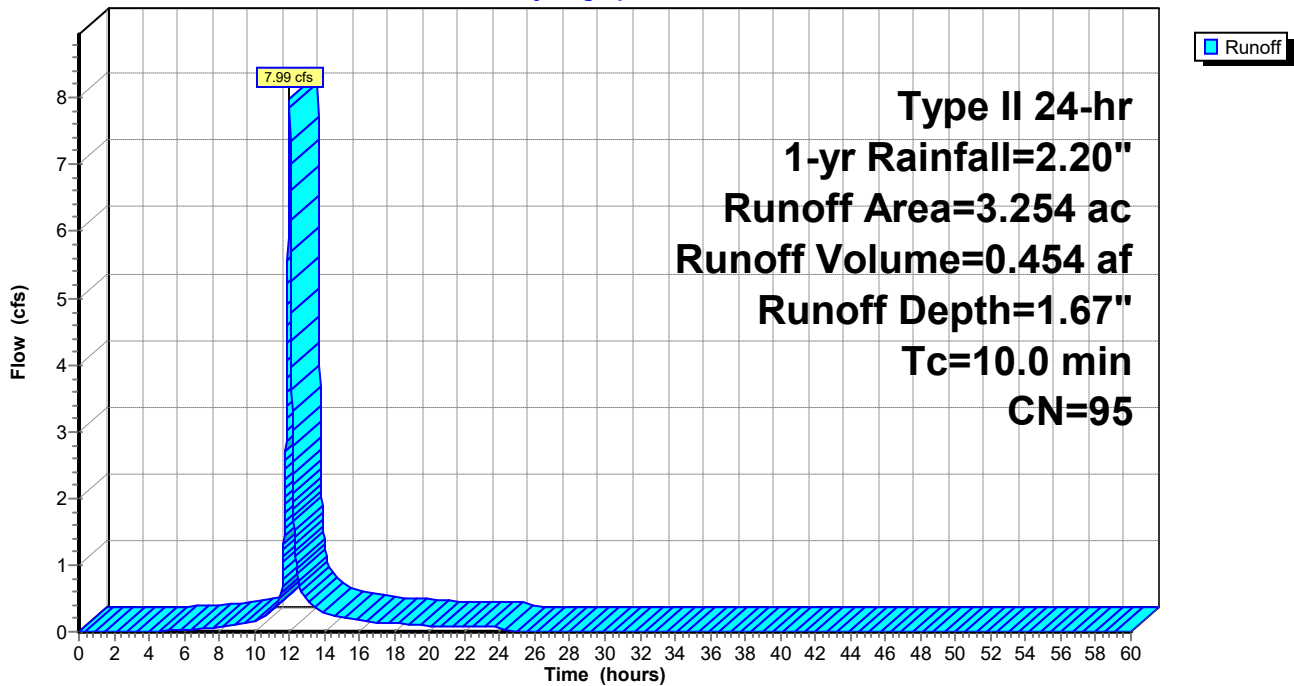
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
 Type II 24-hr 1-yr Rainfall=2.20"

Area (ac)	CN	Description
2.801	98	Paved parking, HSG C
0.453	74	>75% Grass cover, Good, HSG C
3.254	95	Weighted Average
0.453		13.92% Pervious Area
2.801		86.08% Impervious Area

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

**Subcatchment 72S: FUTURE-01 (E)**

Hydrograph



**Summary for Subcatchment 73S: FUTURE-02 (E)**

Runoff = 12.46 cfs @ 12.01 hrs, Volume= 0.691 af, Depth= 1.50"

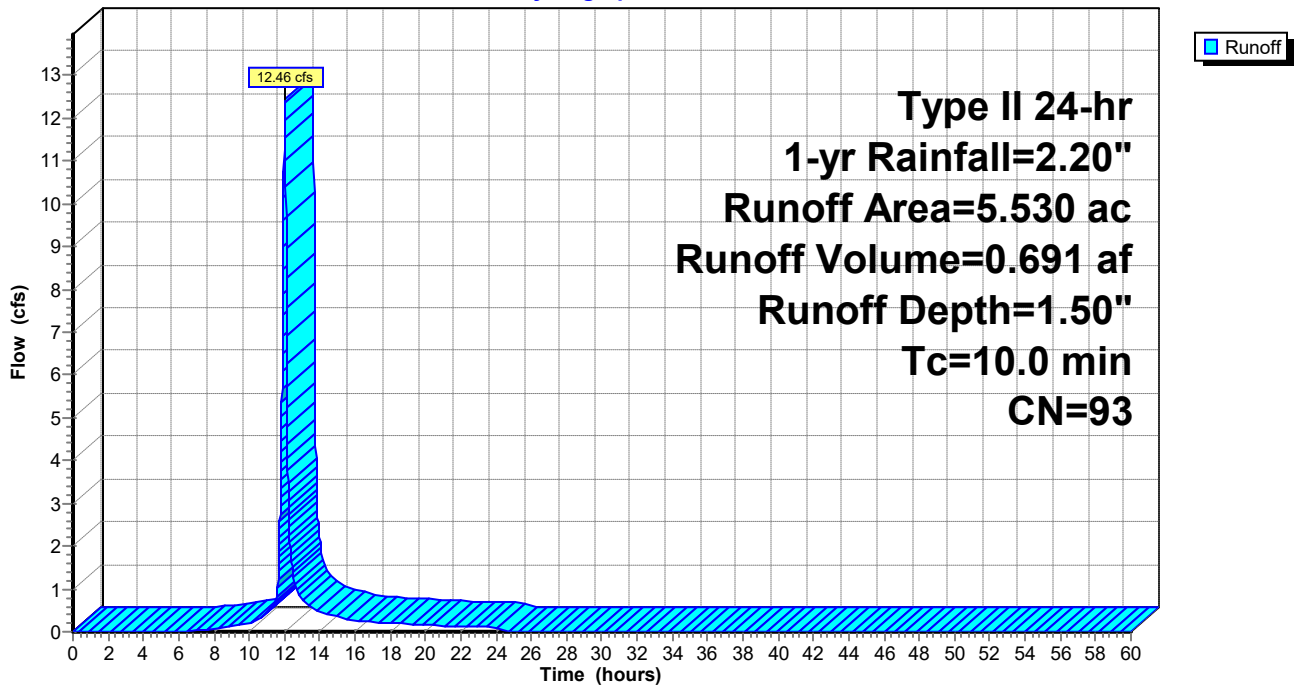
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
 Type II 24-hr 1-yr Rainfall=2.20"

Area (ac)	CN	Description
4.286	98	Paved parking, HSG C
1.244	74	>75% Grass cover, Good, HSG C
5.530	93	Weighted Average
1.244		22.50% Pervious Area
4.286		77.50% Impervious Area

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

**Subcatchment 73S: FUTURE-02 (E)**

Hydrograph



**Summary for Subcatchment 74S: FUTURE-03 (W)**

Runoff = 2.34 cfs @ 11.96 hrs, Volume= 0.115 af, Depth= 1.77"

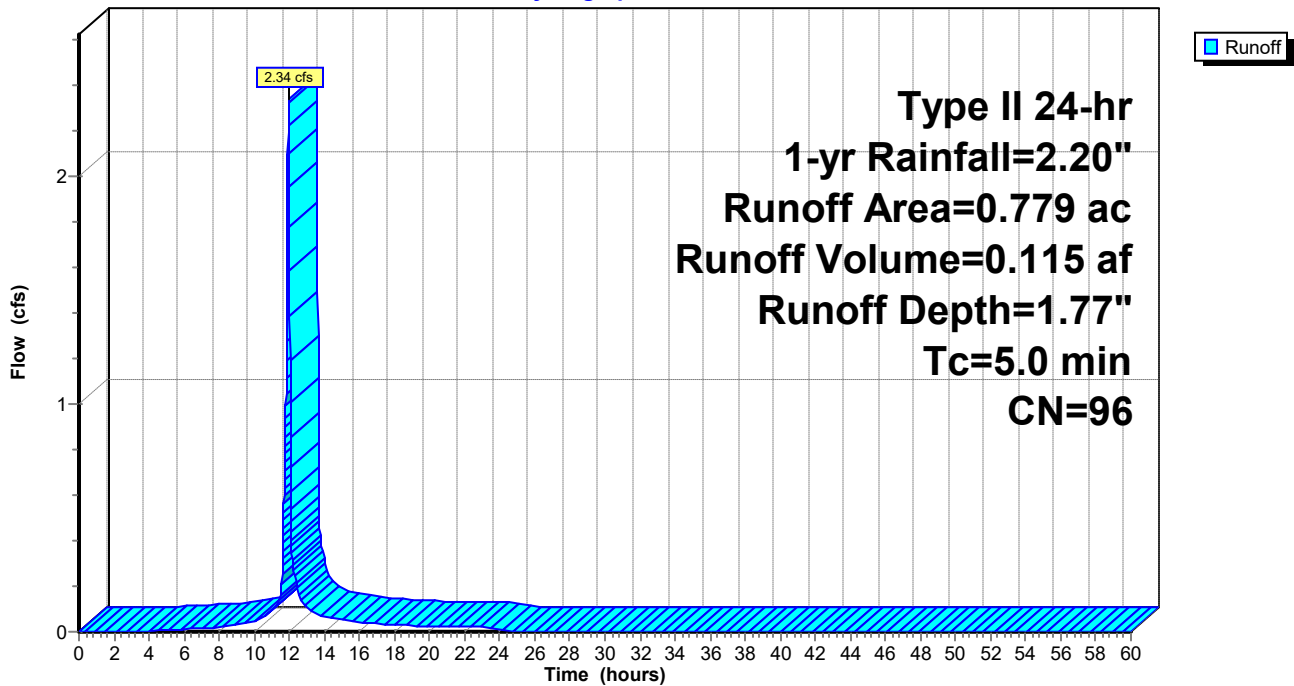
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
 Type II 24-hr 1-yr Rainfall=2.20"

Area (ac)	CN	Description
0.711	98	Paved parking, HSG C
0.068	74	>75% Grass cover, Good, HSG C
0.779	96	Weighted Average
0.068		8.73% Pervious Area
0.711		91.27% Impervious Area

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

**Subcatchment 74S: FUTURE-03 (W)**

Hydrograph



**Events for Subcatchment 61S: PRE E-DALE-DR**

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-yr	<b>2.20</b>	<b>13.33</b>	<b>0.502</b>	<b>0.69</b>

**2022-0867 Block Y - PCM (2026-04-02)**

Prepared by EMH&T

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*Multi-Event Tables*

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**Events for Subcatchment 66S: POST-01 (W)**

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-yr	<b>2.20</b>	<b>8.17</b>	<b>0.458</b>	<b>1.58</b>

**2022-0867 Block Y - PCM (2026-04-02)**

Prepared by EMH&T

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*Multi-Event Tables*

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**Events for Subcatchment 67S: POST-02 (W)**

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-yr	<b>2.20</b>	<b>2.74</b>	<b>0.150</b>	<b>1.34</b>

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Prepared by EMH&T

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*Multi-Event Tables*

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**Events for Subcatchment 68S: POST-03 (W)**

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-yr	<b>2.20</b>	<b>0.49</b>	<b>0.022</b>	<b>0.94</b>

**Events for Subcatchment 70S: PRE W-DALE-DR**

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-yr	<b>2.20</b>	<b>6.14</b>	<b>0.341</b>	<b>0.69</b>

**2022-0867 Block Y - PCM (2026-04-02)**

Prepared by EMH&T

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*Multi-Event Tables*

Printed 4/2/2026

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**Events for Subcatchment 71S: UNDETAINED-01 (W)**

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-yr	<b>2.20</b>	<b>0.44</b>	<b>0.020</b>	<b>0.89</b>

**Events for Subcatchment 72S: FUTURE-01 (E)**

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-yr	<b>2.20</b>	<b>7.99</b>	<b>0.454</b>	<b>1.67</b>

**Events for Subcatchment 73S: FUTURE-02 (E)**

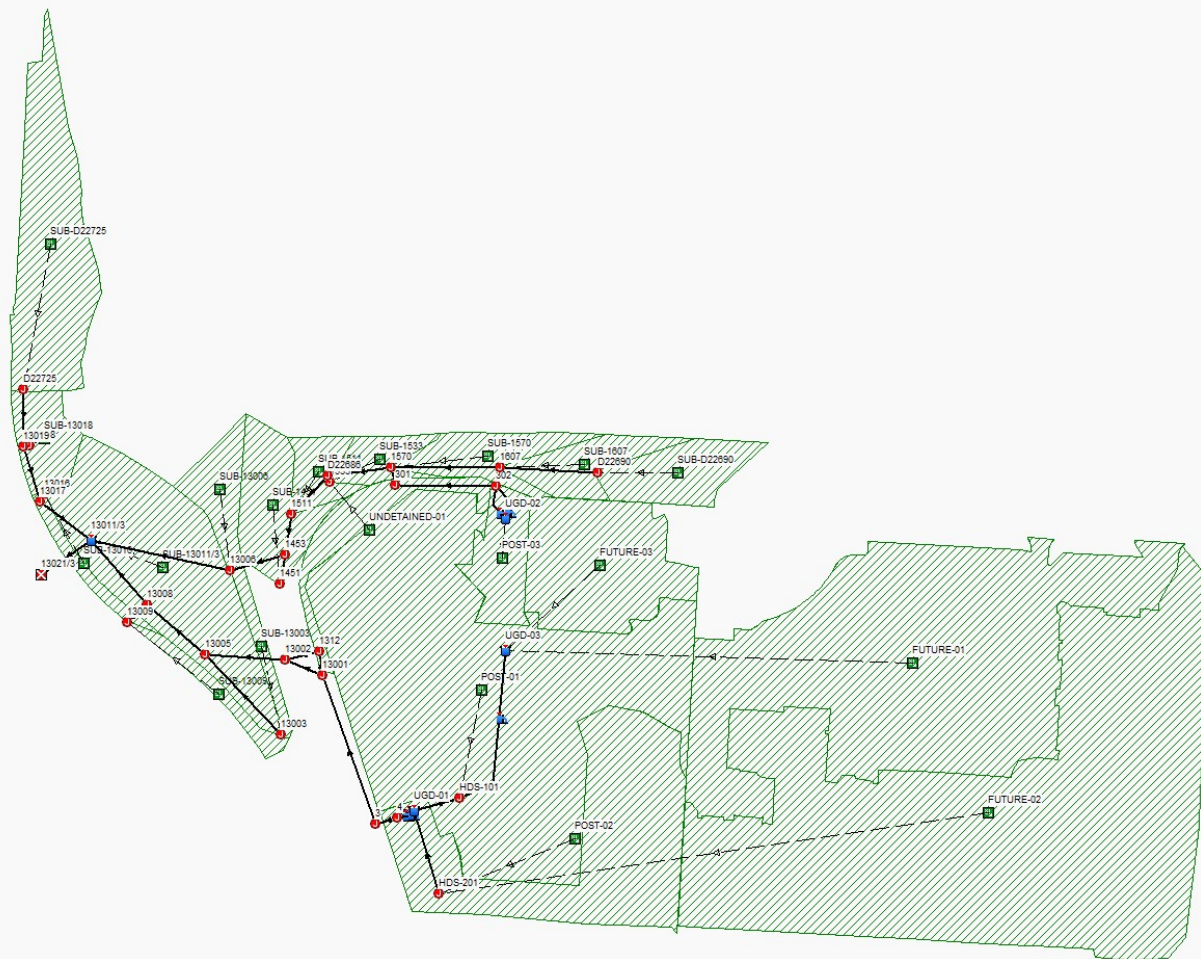
Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-yr	<b>2.20</b>	<b>12.46</b>	<b>0.691</b>	<b>1.50</b>

**Events for Subcatchment 74S: FUTURE-03 (W)**

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-yr	<b>2.20</b>	<b>2.34</b>	<b>0.115</b>	<b>1.77</b>

APPENDIX E:

Autodesk Storm and Sanitary Analysis (SSA) Output





<b>PROPOSED CONDITIONS (PCM) – SSA SUBBASINS</b>				
<b>Subarea_ID</b>	<b>Tributary Area (acres)</b>	<b>Runoff CN</b>	<b>Time of Concentration (minutes)</b>	<b>Outfall_ID</b>
POST-01	3.47	94	10.0	Site Outfall – “13002”
POST-02	1.34	91	10.0	Site Outfall – “13002”
POST-03	0.28	85	5.0	Site Outfall – “302”
UNDETAINED-01	0.27	84	5.0	Site Outfall – “1533”
FUTURE-03	0.78	96	5.0	Site Outfall – “13002”
FUTURE-01	3.25	95	10.0	Site Outfall – “13002”
FUTURE-02	5.53	93	10.0	Site Outfall – “13002”
SUB-13003	0.09	98	5.0	Scioto Outfall – “13021/3”
SUB-13006	0.21	90	5.0	Scioto Outfall – “13021/3”
SUB-13009	0.11	95	5.0	Scioto Outfall – “13021/3”
SUB-13011/3	1.18	74	10.0	Scioto Outfall – “13021/3”
SUB-13016	0.09	97	5.0	Scioto Outfall – “13021/3”
SUB-13018	0.22	88	5.0	Scioto Outfall – “13021/3”
SUB-1451	0.37	88	5.0	Scioto Outfall – “13021/3”
SUB-1511	0.16	92	5.0	Scioto Outfall – “13021/3”
SUB-1533	0.15	90	5.0	Scioto Outfall – “13021/3”
SUB-1570	0.26	92	5.0	Scioto Outfall – “13021/3”
SUB-1607	0.24	91	5.0	Scioto Outfall – “13021/3”
SUB-D22690	0.31	92	5.0	Scioto Outfall – “13021/3”
SUB-D22725	0.90	79	5.0	Scioto Outfall – “13021/3”

### Project Description

File Name ..... 20220867-PCM-ALT4\_two systems.SPF  
 Description .....  
 Bridge Park (Dublin) Block Y  
 Storm Sewer Capacity Analysis  
 EMH&T File 2022-0867  
 Proposed Conditions Model  
 Alternative 4  
 Created: 2025-09-10

### Project Options

Flow Units ..... CFS  
 Elevation Type ..... Elevation  
 Hydrology Method ..... SCS TR-55  
 Time of Concentration (TOC) Method ..... SCS TR-55  
 Link Routing Method ..... Hydrodynamic  
 Enable Overflow Ponding at Nodes ..... YES  
 Skip Steady State Analysis Time Periods ... NO

### Analysis Options

Start Analysis On ..... 00:00:00 0:00:00  
 End Analysis On ..... 00:00:00 0:00:00  
 Start Reporting On ..... 00:00:00 0:00:00  
 Antecedent Dry Days ..... 0 days  
 Runoff (Dry Weather) Time Step ..... 0 01:00:00 days hh:mm:ss  
 Runoff (Wet Weather) Time Step ..... 0 00:05:00 days hh:mm:ss  
 Reporting Time Step ..... 0 00:01:00 days hh:mm:ss  
 Routing Time Step ..... 1 seconds

### Number of Elements

Qty  
 Rain Gages ..... 1  
 Subbasins..... 20  
 Nodes..... 32  
     *Junctions* ..... 27  
     *Outfalls* ..... 1  
     *Flow Diversions* ..... 0  
     *Inlets* ..... 0  
     *Storage Nodes* ..... 4  
 Links..... 34  
     *Channels* ..... 0  
     *Pipes* ..... 28  
     *Pumps* ..... 0  
     *Orifices* ..... 5  
     *Weirs* ..... 1  
     *Outlets* ..... 0  
 Pollutants ..... 0  
 Land Uses ..... 0

### Rainfall Details

SN	Rain Gage ID	Data Source	Data Source ID	Rainfall Type	Rain Units	State	County	Return Period (years)	Rainfall Depth (inches)	Rainfall Distribution
49		Time Series	1-year	Cumulative	inches	Ohio	Franklin	1.00	2.20	SCS Type II 24-hr

## Subbasin Summary

SN	Subbasin ID	Area (ac)	Peak Rate Factor	Weighted Curve Number	Total Rainfall (in)	Total Runoff (in)	Total Runoff Volume (ac-in)	Peak Runoff (cfs)	Time of Concentration (days hh:mm:ss)
1	FUTURE-01	3.25	484.00	95.00	2.20	1.67	5.44	7.26	0 00:10:00
2	FUTURE-02	5.53	484.00	93.00	2.20	1.50	8.29	11.29	0 00:10:00
3	FUTURE-03	0.78	484.00	95.00	2.20	1.67	1.31	2.00	0 00:05:00
4	POST-01	3.47	484.00	94.00	2.20	1.58	5.50	7.42	0 00:10:00
5	POST-02	1.34	484.00	91.00	2.20	1.34	1.80	2.47	0 00:10:00
6	POST-03	0.28	484.00	85.00	2.20	0.94	0.26	0.42	0 00:05:00
7	SUB-13003	0.09	484.00	97.81	2.20	1.94	0.17	0.25	0 00:05:00
8	SUB-13006	0.21	484.00	90.17	2.20	1.28	0.27	0.43	0 00:05:00
9	SUB-13009	0.11	484.00	95.27	2.20	1.69	0.19	0.28	0 00:05:00
10	SUB-13011/3	1.18	484.00	74.32	2.20	0.46	0.54	0.67	0 00:10:00
11	SUB-13016	0.09	484.00	97.34	2.20	1.89	0.17	0.25	0 00:05:00
12	SUB-13018	0.22	484.00	87.75	2.20	1.11	0.24	0.38	0 00:05:00
13	SUB-1451	0.37	484.00	88.41	2.20	1.16	0.43	0.68	0 00:05:00
14	SUB-1511	0.16	484.00	92.08	2.20	1.42	0.23	0.36	0 00:05:00
15	SUB-1533	0.15	484.00	89.88	2.20	1.25	0.19	0.29	0 00:05:00
16	SUB-1570	0.26	484.00	92.05	2.20	1.42	0.37	0.59	0 00:05:00
17	SUB-1607	0.24	484.00	90.83	2.20	1.33	0.32	0.51	0 00:05:00
18	SUB-D22690	0.31	484.00	92.30	2.20	1.44	0.45	0.70	0 00:05:00
19	SUB-D22725	0.90	484.00	79.00	2.20	0.64	0.58	0.87	0 00:05:00
20	UNDETAINED-01	0.27	484.00	84.00	2.20	0.89	0.24	0.38	0 00:05:00

**Node Summary**

SN	Element ID	Element Type	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Initial Water Elevation (ft)	Surcharge Elevation (ft)	Ponded Area (ft <sup>2</sup> )	Peak Inflow (cfs)	Max HGL Elevation Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)	Time of Peak Flooding Occurrence (days hhmm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
1	1	Junction	789.63	800.72	789.63	800.72	10.00	5.10	790.39	0.00	10.33	0 00:00	0.00	0.00
2	2	Junction	789.90	810.97	789.90	810.97	0.00	5.10	790.73	0.00	20.24	0 00:00	0.00	0.00
3	301	Junction	801.75	810.70	801.75	810.70	10.00	0.01	801.88	0.00	8.82	0 00:00	0.00	0.00
4	302	Junction	800.50	814.72	800.50	814.72	10.00	0.01	802.55	0.00	12.17	0 00:00	0.00	0.00
5	1312	Junction	795.14	801.14	795.14	801.14	10.00	0.00	795.14	0.00	6.00	0 00:00	0.00	0.00
6	1451	Junction	796.16	801.58	796.16	801.58	10.00	0.68	796.35	0.00	5.23	0 00:00	0.00	0.00
7	1453	Junction	793.40	803.00	793.40	803.00	10.00	3.47	794.48	0.00	8.52	0 00:00	0.00	0.00
8	1511	Junction	794.03	805.54	794.03	805.54	10.00	2.80	794.80	0.00	10.74	0 00:00	0.00	0.00
9	1533	Junction	798.65	807.61	798.65	807.61	10.00	0.67	798.80	0.00	8.81	0 00:00	0.00	0.00
10	1570	Junction	800.57	809.15	800.57	809.15	10.00	1.78	800.92	0.00	8.23	0 00:00	0.00	0.00
11	1607	Junction	809.64	815.19	809.64	815.19	10.00	1.20	809.90	0.00	5.29	0 00:00	0.00	0.00
12	13001	Junction	783.95	800.74	783.95	800.74	10.00	5.10	784.51	0.00	16.23	0 00:00	0.00	0.00
13	13002	Junction	782.33	798.46	782.33	798.46	10.00	5.10	782.92	0.00	15.54	0 00:00	0.00	0.00
14	13003	Junction	787.40	796.61	787.40	796.61	10.00	0.25	787.55	0.00	9.06	0 00:00	0.00	0.00
15	13005	Junction	781.16	791.08	781.16	791.08	10.00	5.12	781.72	0.00	9.36	0 00:00	0.00	0.00
16	13006	Junction	793.19	802.62	793.19	802.62	10.00	3.87	794.17	0.00	8.45	0 00:00	0.00	0.00
17	13008	Junction	780.03	787.03	780.03	787.03	10.00	5.15	780.70	0.00	6.33	0 00:00	0.00	0.00
18	13009	Junction	782.93	787.81	782.93	787.81	10.00	0.28	783.10	0.00	4.71	0 00:00	0.00	0.00
19	13016	Junction	776.77	780.79	776.77	780.79	10.00	0.25	776.96	0.00	3.83	0 00:00	0.00	0.00
20	13017	Junction	776.14	780.49	776.14	780.49	10.00	1.49	776.65	0.00	3.84	0 00:00	0.00	0.00
21	13018	Junction	776.48	780.24	776.48	780.24	10.00	0.38	776.86	0.00	3.38	0 00:00	0.00	0.00
22	13019	Junction	776.36	779.72	776.36	779.72	10.00	1.25	776.86	0.00	2.86	0 00:00	0.00	0.00
23	D22686	Junction	797.40	807.27	797.40	807.27	10.00	2.44	797.79	0.00	9.48	0 00:00	0.00	0.00
24	D22690	Junction	815.71	820.04	815.71	820.04	10.00	0.69	815.91	0.00	4.13	0 00:00	0.00	0.00
25	D22725	Junction	776.89	781.00	776.89	781.00	10.00	0.87	777.29	0.00	3.71	0 00:00	0.00	0.00
26	HDS-101	Junction	801.90	814.15	801.90	814.15	10.00	10.48	803.10	0.00	11.05	0 00:00	0.00	0.00
27	HDS-201	Junction	802.79	815.53	802.79	815.53	10.00	13.75	804.00	0.00	11.53	0 00:00	0.00	0.00
28	13021/3	Outfall	766.01					6.79	766.24					
29	13011/3	Storage Node	771.15	780.00	771.15		0.00	6.79	771.48				0.00	0.00
30	UGD-01	Storage Node	790.00	805.00	790.00		0.00	24.18	797.98				0.00	0.00
31	UGD-02	Storage Node	802.50	809.25	802.50		0.00	0.42	804.40				0.00	0.00
32	UGD-03	Storage Node	813.62	821.50	0.00		0.00	8.96	815.93				0.00	0.00

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Diameter or Height (in)	Manning's Roughness	Peak Flow (cfs)	Design Flow Capacity (cfs)	Peak Flow/Design Flow Ratio	Peak Flow Velocity (ft/sec)	Peak Flow Depth (ft)	Peak Flow Depth/Total Depth Ratio	Total Time Reported Surcharged (min)	Reported Condition
1	Link-02	Pipe	13001	13002	56.93	783.95	782.75	2.1100	24.000	0.0130	5.10	32.84	0.16	7.33	0.55	0.27	0.00	Calculated
2	Link-03	Pipe	1312	13002	47.69	795.14	794.90	0.5000	15.000	0.0130	0.00	4.58	0.00	0.00	0.00	0.00	0.00	Calculated
3	Link-04	Pipe	13002	13005	108.25	782.33	781.35	0.9100	36.000	0.0130	5.10	63.46	0.08	5.28	0.58	0.19	0.00	Calculated
4	Link-05	Pipe	13003	13005	149.97	787.40	784.28	2.0800	12.000	0.0130	0.25	5.14	0.05	3.38	0.15	0.15	0.00	Calculated
5	Link-06	Pipe	13009	13008	36.78	782.93	782.29	1.7400	12.000	0.0130	0.28	4.70	0.06	3.19	0.17	0.17	0.00	Calculated
6	Link-07	Pipe	13005	13008	104.48	781.16	780.08	1.0300	36.000	0.0130	5.12	67.81	0.08	5.23	0.59	0.20	0.00	Calculated
7	Link-08	Pipe	D22725	13019	78.09	776.89	776.61	0.3600	15.000	0.0130	0.87	3.87	0.22	2.71	0.38	0.31	0.00	Calculated
8	Link-10	Pipe	13018	13019	7.77	776.48	776.36	1.5400	12.000	0.0130	0.38	4.43	0.09	1.44	0.44	0.44	0.00	Calculated
9	Link-11	Pipe	13019	13017	78.97	776.36	776.14	0.2800	18.000	0.0130	1.25	5.54	0.22	2.39	0.50	0.34	0.00	Calculated
10	Link-12	Pipe	13016	13017	12.35	776.77	776.64	1.0500	12.000	0.0130	0.25	3.66	0.07	2.48	0.19	0.19	0.00	Calculated
11	Link-13	Pipe	13017	13011/3	48.41	776.14	775.94	0.4100	18.000	0.0130	1.48	6.75	0.22	3.02	0.48	0.32	0.00	Calculated
12	Link-14	Pipe	13011/3	13021/3	82.97	771.22	766.00	6.2900	48.000	0.0130	6.79	310.16	0.02	9.29	0.24	0.06	0.00	Calculated
13	Link-15	Pipe	13008	13011/3	56.74	780.03	779.61	0.7400	36.000	0.0130	5.15	57.38	0.09	4.70	0.64	0.21	0.00	Calculated
14	Link-16	Pipe	D22690	1607	132.76	815.71	809.64	4.5700	12.000	0.0130	0.69	7.62	0.09	5.03	0.23	0.23	0.00	Calculated
15	Link-17	Pipe	1607	1570	148.78	809.65	800.57	6.1000	12.000	0.0130	1.20	8.80	0.14	6.09	0.30	0.30	0.00	Calculated
16	Link-18	Pipe	1570	D22686	85.84	800.57	797.40	3.6900	12.000	0.0130	1.78	6.85	0.26	6.78	0.37	0.37	0.00	Calculated
17	Link-19	Pipe	1533	D22686	9.27	798.65	797.40	13.4800	12.000	0.0130	0.67	13.08	0.05	3.89	0.27	0.27	0.00	Calculated
18	Link-20	Pipe	D22686	1511	72.00	797.40	794.08	4.6100	12.000	0.0130	2.44	7.65	0.32	5.47	0.56	0.56	0.00	Calculated
19	Link-21	Pipe	1511	1453	55.99	794.03	793.73	0.5400	15.000	0.0130	2.79	4.73	0.59	3.68	0.76	0.61	0.00	Calculated
20	Link-22	Pipe	1451	1453	40.69	796.16	793.81	5.7800	12.000	0.0130	0.68	8.56	0.08	4.53	0.43	0.43	0.00	Calculated
21	Link-23	Pipe	1453	13006	77.33	793.40	793.24	0.2100	15.000	0.0130	3.46	2.94	1.18	3.27	1.00	0.80	0.00	> CAPACITY
22	Link-24	Pipe	13006	13011/3	41.11	793.19	793.00	0.4600	15.000	0.0130	3.87	4.39	0.88	4.16	0.89	0.71	0.00	Calculated
23	Link-37	Pipe	302	301	136.92	802.50	801.95	0.4000	12.000	0.0130	0.01	2.26	0.00	0.75	0.04	0.04	0.00	Calculated
24	Link-38	Pipe	301	1570	24.56	801.85	800.75	4.4800	12.000	0.0130	0.01	7.54	0.00	1.60	0.08	0.08	0.00	Calculated
25	Link-39	Pipe	HDS-101	UGD-01	10.00	802.00	801.82	1.8000	24.000	0.0130	10.47	30.35	0.35	7.05	0.96	0.48	0.00	Calculated
26	Link-41	Pipe	HDS-201	UGD-01	47.26	802.89	801.95	1.9900	24.000	0.0130	13.75	31.90	0.43	8.59	1.01	0.51	0.00	Calculated
27	Link-42	Pipe	2	1	30.50	790.00	789.83	0.5600	36.000	0.0130	5.10	49.80	0.10	4.16	0.69	0.23	0.00	Calculated
28	Link-44	Pipe	1	13001	214.52	789.73	788.55	0.5500	36.000	0.0130	5.10	49.47	0.10	4.46	0.66	0.22	0.00	Calculated
29	UGD-01 -2ndStage	Orifice	UGD-01	2		790.00	789.90		8.000		4.47							
30	UGD-01-WQ	Orifice	UGD-01	2		790.00	789.90		3.000		0.64							
31	UGD-02-MANIFOLD	Orifice	UGD-02	302		802.50	800.50		12.000		0.00							
32	UGD-02-WQ	Orifice	UGD-02	302		802.50	800.50		0.500		0.01							
33	UGD-03-Orifice	Orifice	UGD-03	HDS-101		813.62	801.90		10.000		3.62							
34	UGD-01-Weir	Weir	UGD-01	2		790.00	789.90				0.00							

**Subbasin Hydrology**

**Subbasin : FUTURE-01**

**Input Data**

Area (ac) ..... 3.25  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 95  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	3.25	-	95
Composite Area & Weighted CN	3.25		95

**Time of Concentration**

TOC Method : SCS TR-55

Sheet Flow Equation :

$$T_c = (0.007 * ((n * L_f)^{0.8})) / ((P^{0.5}) * (Sf^{0.4}))$$

Where :

- Tc = Time of Concentration (hr)
- n = Manning's roughness
- Lf = Flow Length (ft)
- P = 2 yr, 24 hr Rainfall (inches)
- Sf = Slope (ft/ft)

Shallow Concentrated Flow Equation :

- V = 16.1345 \* (Sf<sup>0.5</sup>) (unpaved surface)
- V = 20.3282 \* (Sf<sup>0.5</sup>) (paved surface)
- V = 15.0 \* (Sf<sup>0.5</sup>) (grassed waterway surface)
- V = 10.0 \* (Sf<sup>0.5</sup>) (nearly bare & untilled surface)
- V = 9.0 \* (Sf<sup>0.5</sup>) (cultivated straight rows surface)
- V = 7.0 \* (Sf<sup>0.5</sup>) (short grass pasture surface)
- V = 5.0 \* (Sf<sup>0.5</sup>) (woodland surface)
- V = 2.5 \* (Sf<sup>0.5</sup>) (forest w/heavy litter surface)
- Tc = (Lf / V) / (3600 sec/hr)

Where:

- Tc = Time of Concentration (hr)
- Lf = Flow Length (ft)
- V = Velocity (ft/sec)
- Sf = Slope (ft/ft)

Channel Flow Equation :

$$V = (1.49 * (R^{2/3})) * (Sf^{0.5}) / n$$

$$R = A_q / W_p$$

$$T_c = (L_f / V) / (3600 \text{ sec/hr})$$

Where :

- Tc = Time of Concentration (hr)
- Lf = Flow Length (ft)
- R = Hydraulic Radius (ft)
- Aq = Flow Area (ft<sup>2</sup>)
- Wp = Wetted Perimeter (ft)
- V = Velocity (ft/sec)
- Sf = Slope (ft/ft)
- n = Manning's roughness

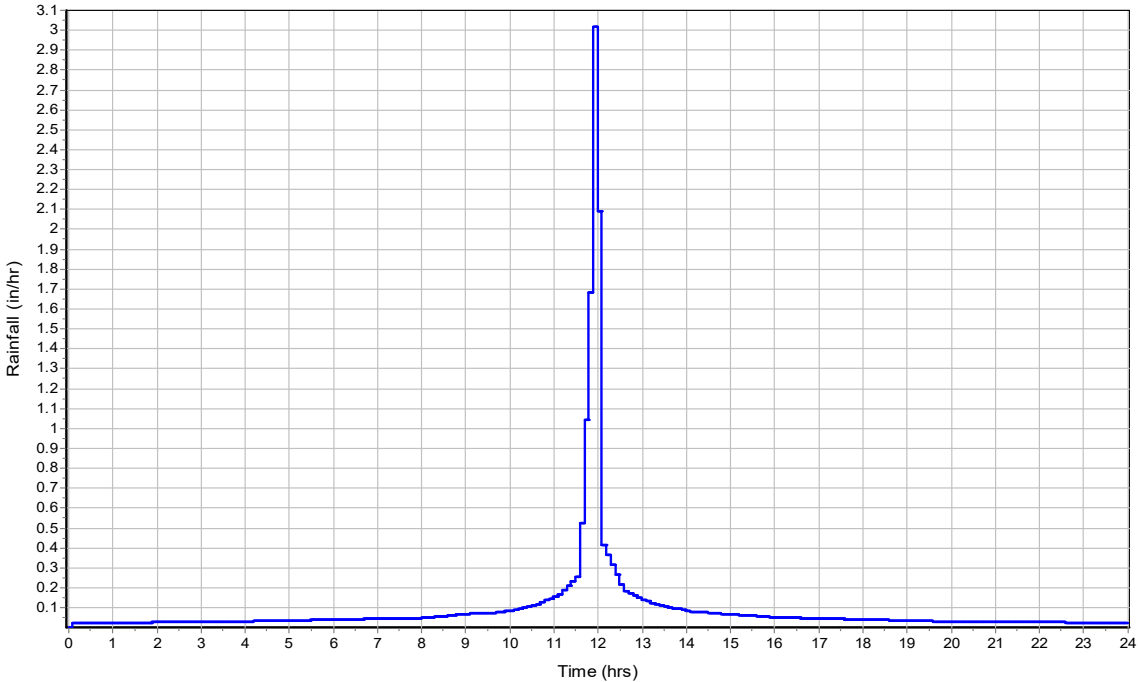
User-Defined TOC override (minutes): 10

**Subbasin Runoff Results**

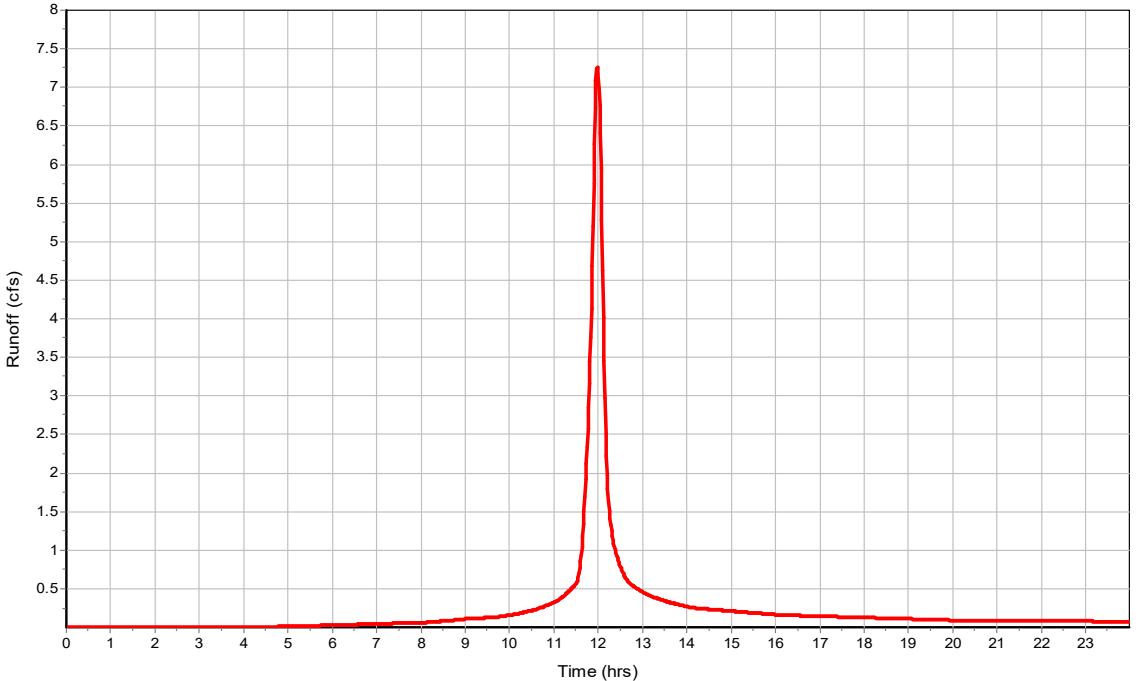
Total Rainfall (in) ..... 2.2  
 Total Runoff (in) ..... 1.67  
 Peak Runoff (cfs) ..... 7.26  
 Weighted Curve Number ..... 95  
 Time of Concentration (days hh:mm:ss) ..... 0 00:10:00

Subbasin : FUTURE-01

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : FUTURE-02**

**Input Data**

Area (ac) ..... 5.53  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 93  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	5.53	-	93
Composite Area & Weighted CN	5.53		93

**Time of Concentration**

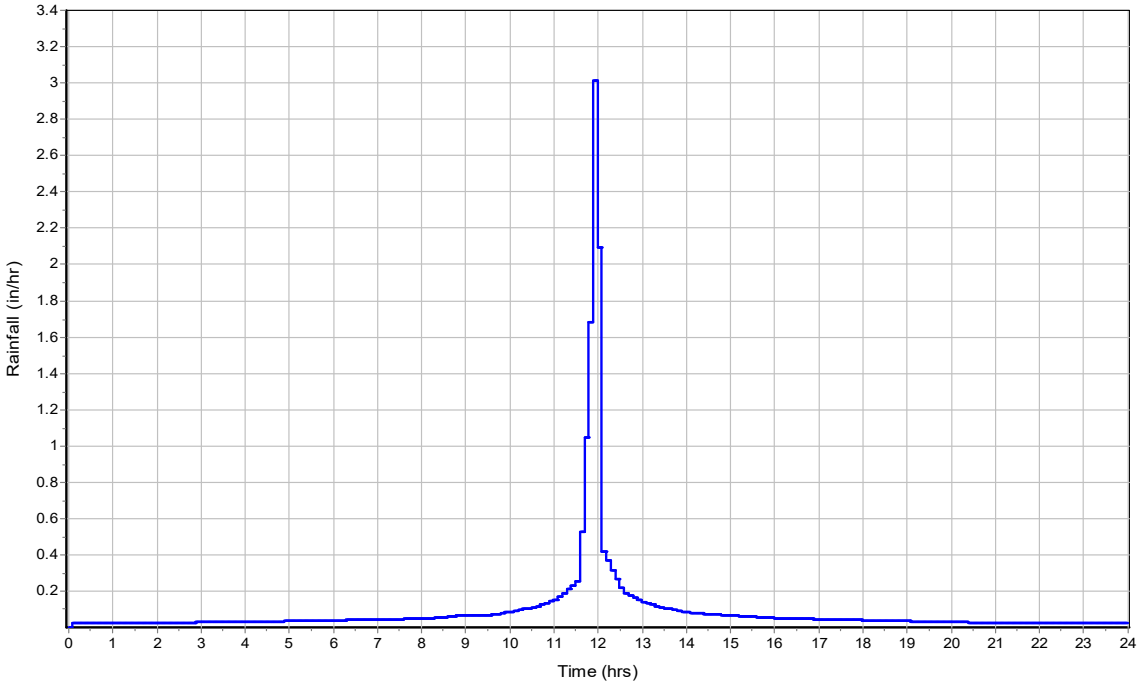
User-Defined TOC override (minutes): 10

**Subbasin Runoff Results**

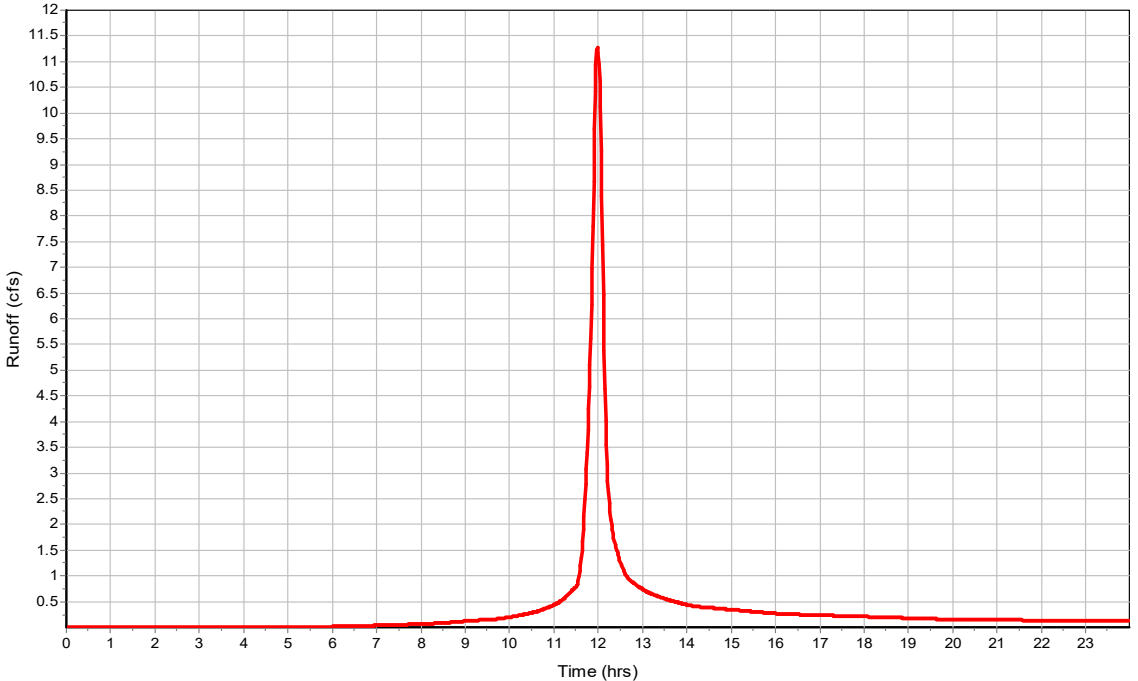
Total Rainfall (in) ..... 2.2  
 Total Runoff (in) ..... 1.5  
 Peak Runoff (cfs) ..... 11.29  
 Weighted Curve Number ..... 93  
 Time of Concentration (days hh:mm:ss) ..... 0 00:10:00

Subbasin : FUTURE-02

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : FUTURE-03**

**Input Data**

Area (ac) ..... 0.78  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 95  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	0.78	-	95
Composite Area & Weighted CN	0.78		95

**Time of Concentration**

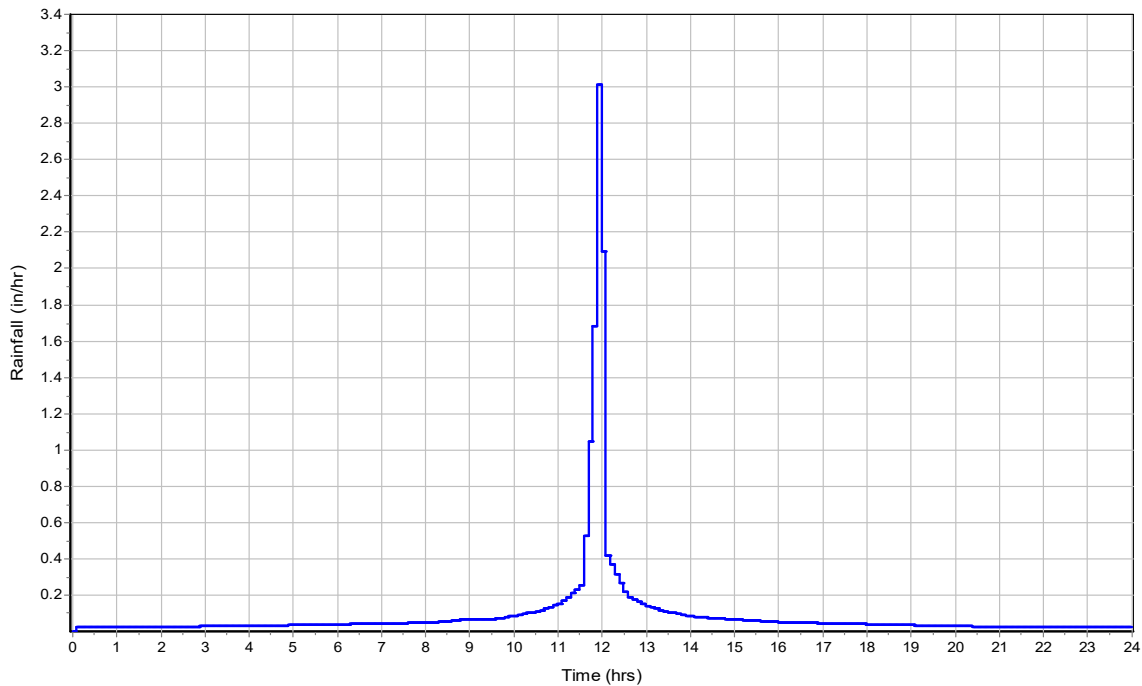
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

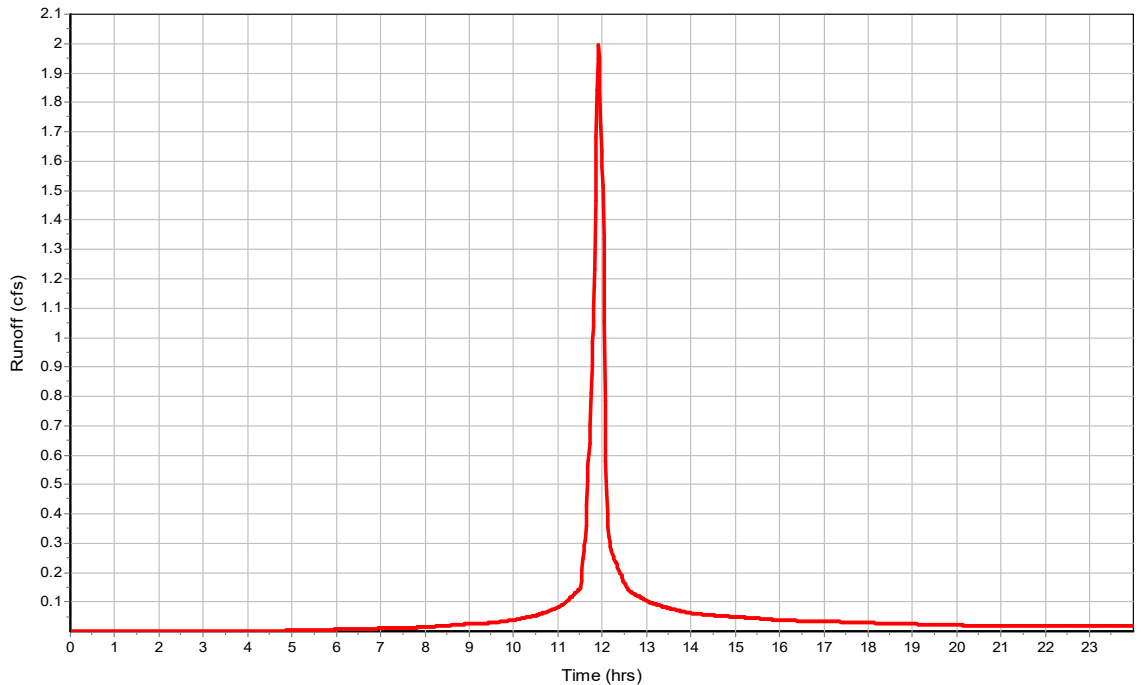
Total Rainfall (in) ..... 2.2  
 Total Runoff (in) ..... 1.67  
 Peak Runoff (cfs) ..... 2  
 Weighted Curve Number ..... 95  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : FUTURE-03

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : POST-01**

**Input Data**

Area (ac) ..... 3.47  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 94  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	3.47	-	94
Composite Area & Weighted CN	3.47		94

**Time of Concentration**

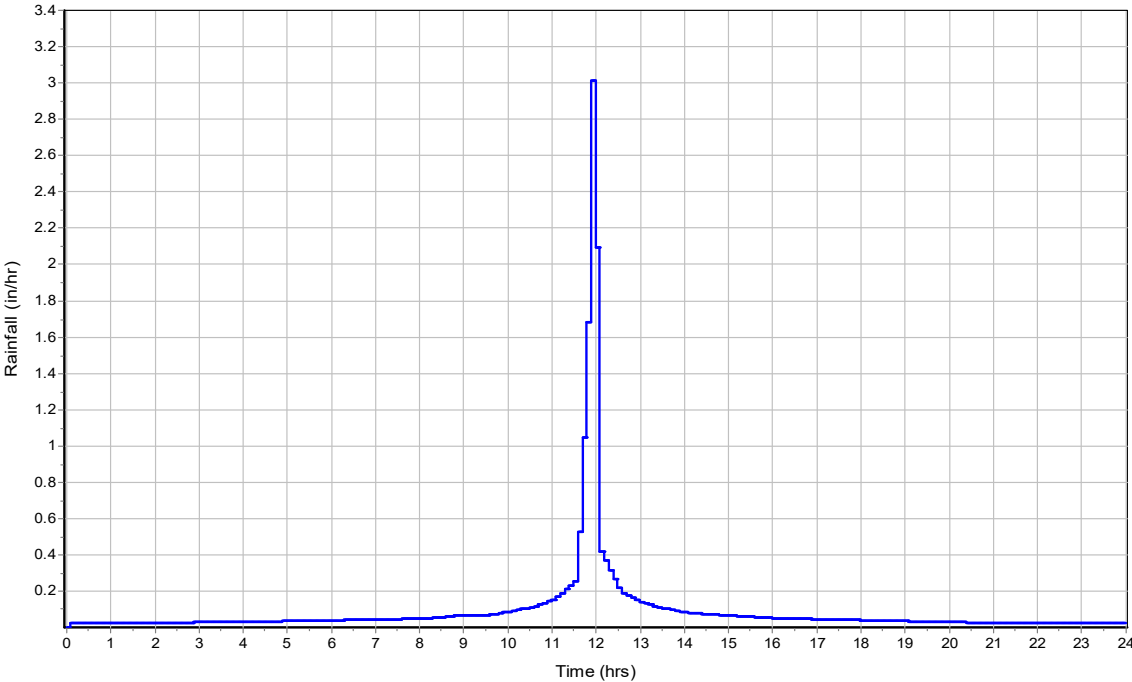
User-Defined TOC override (minutes): 10

**Subbasin Runoff Results**

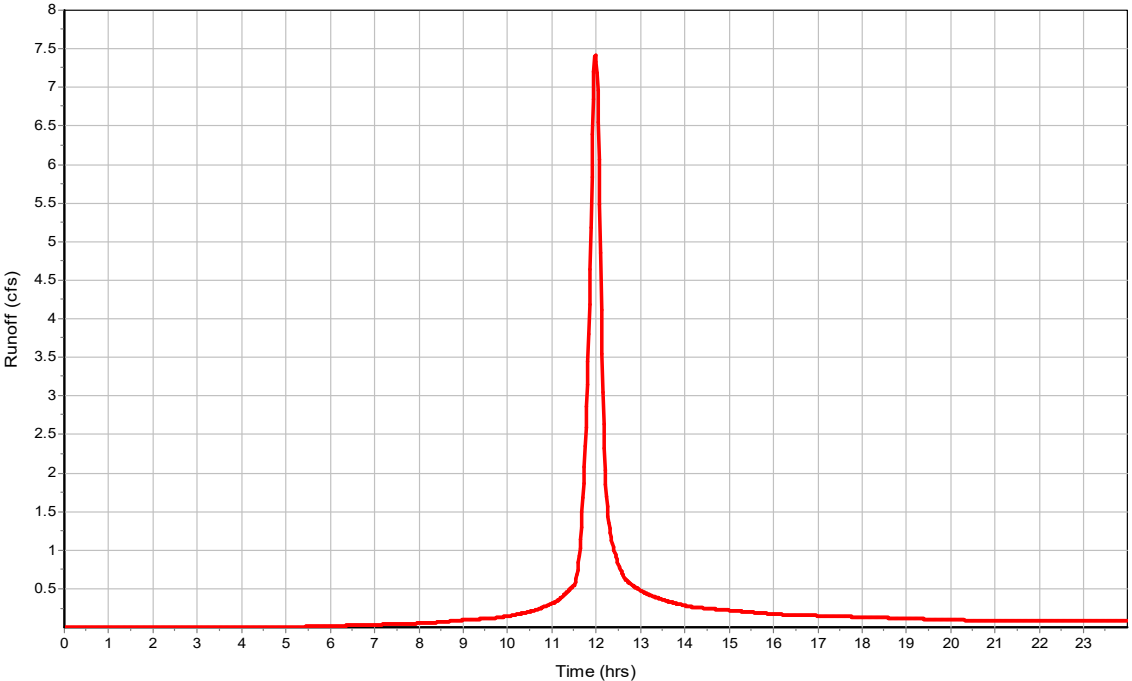
Total Rainfall (in) ..... 2.2  
 Total Runoff (in) ..... 1.58  
 Peak Runoff (cfs) ..... 7.42  
 Weighted Curve Number ..... 94  
 Time of Concentration (days hh:mm:ss) ..... 0 00:10:00

Subbasin : POST-01

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : POST-02**

**Input Data**

Area (ac) ..... 1.34  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 91  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	1.34	-	91
Composite Area & Weighted CN	1.34		91

**Time of Concentration**

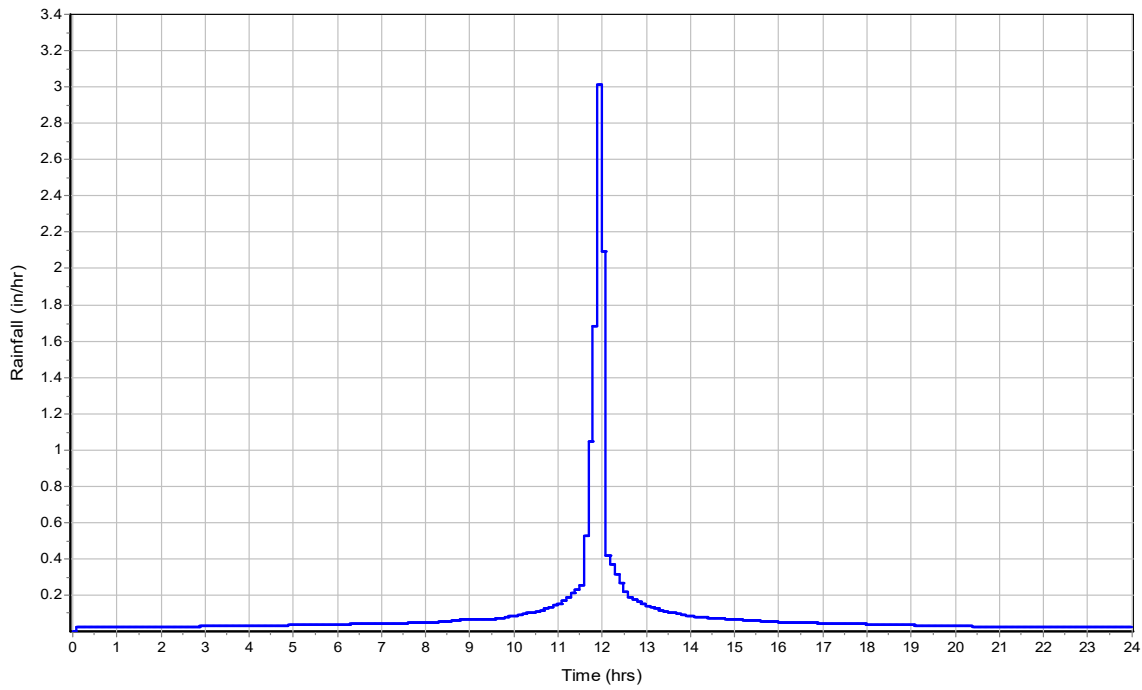
User-Defined TOC override (minutes): 10

**Subbasin Runoff Results**

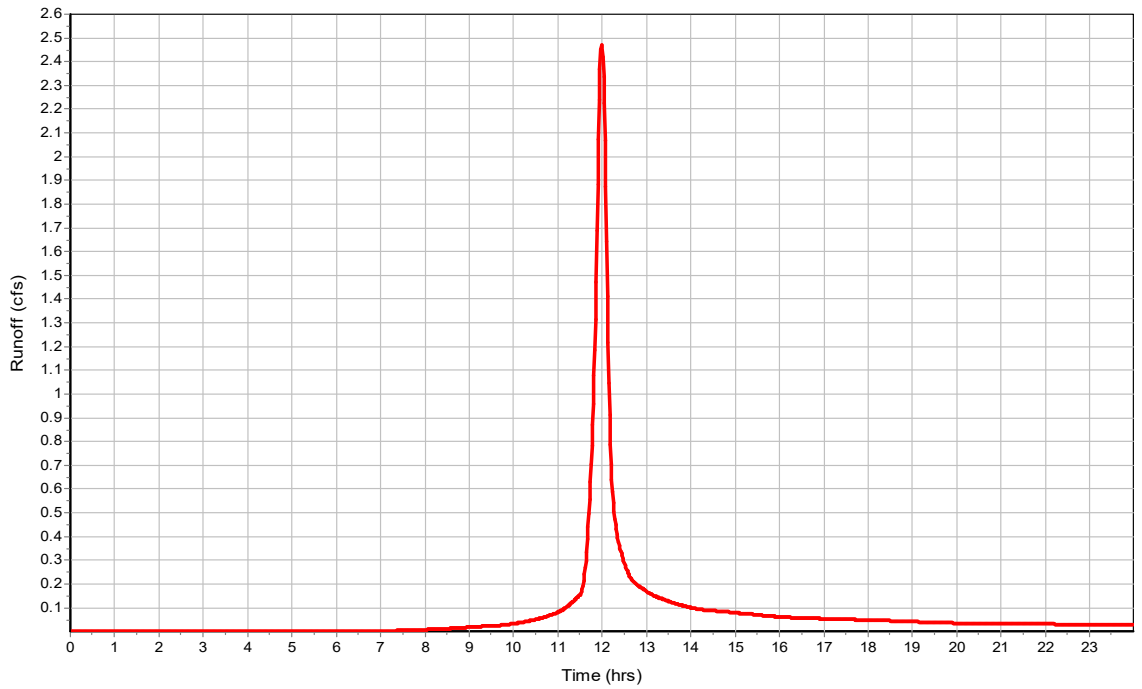
Total Rainfall (in) ..... 2.2  
 Total Runoff (in) ..... 1.34  
 Peak Runoff (cfs) ..... 2.47  
 Weighted Curve Number ..... 91  
 Time of Concentration (days hh:mm:ss) ..... 0 00:10:00

Subbasin : POST-02

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : POST-03**

**Input Data**

Area (ac) ..... 0.28  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 85  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	0.28	-	85
Composite Area & Weighted CN	0.28		85

**Time of Concentration**

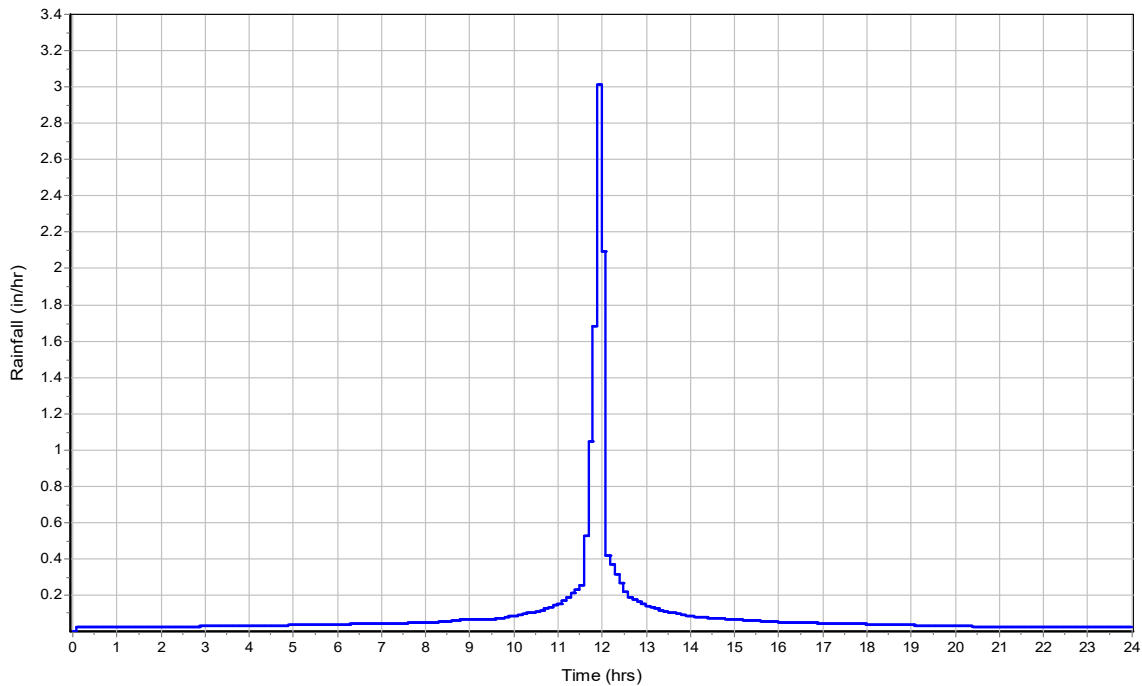
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

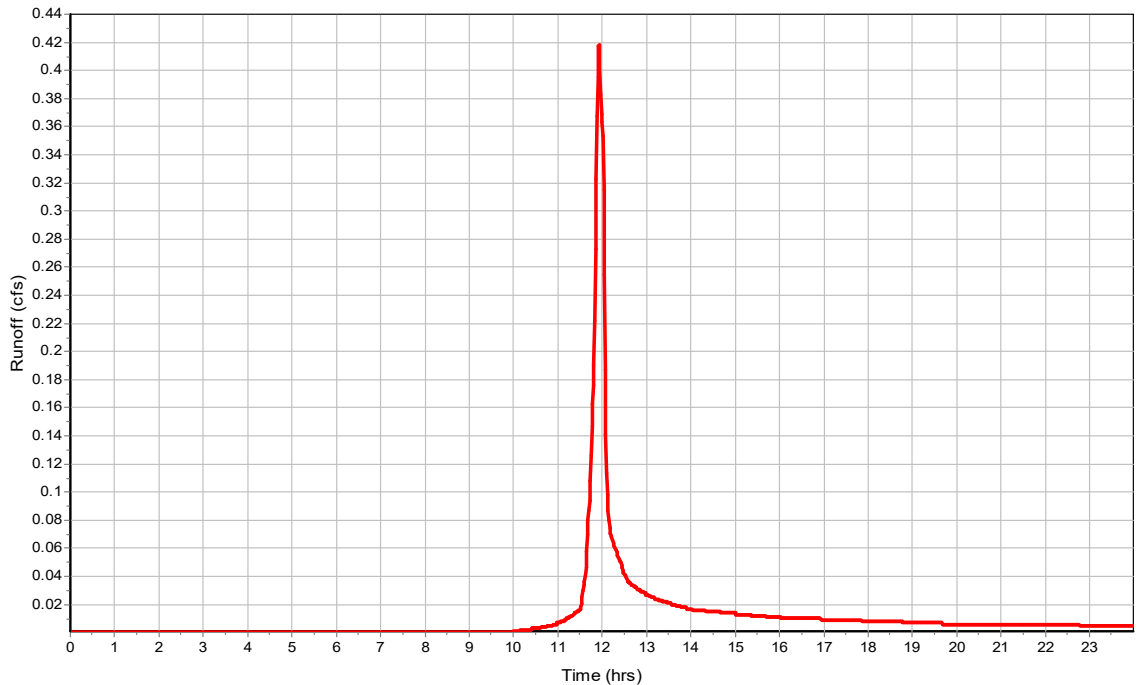
Total Rainfall (in) ..... 2.2  
 Total Runoff (in) ..... 0.94  
 Peak Runoff (cfs) ..... 0.42  
 Weighted Curve Number ..... 85  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : POST-03

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : SUB-13003

Input Data

Area (ac) ..... 0.09  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 97.81  
 Rain Gage ID ..... Rain Gage-01

Composite Curve Number

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	0.09	-	97.81
Composite Area & Weighted CN	0.09		97.81

Time of Concentration

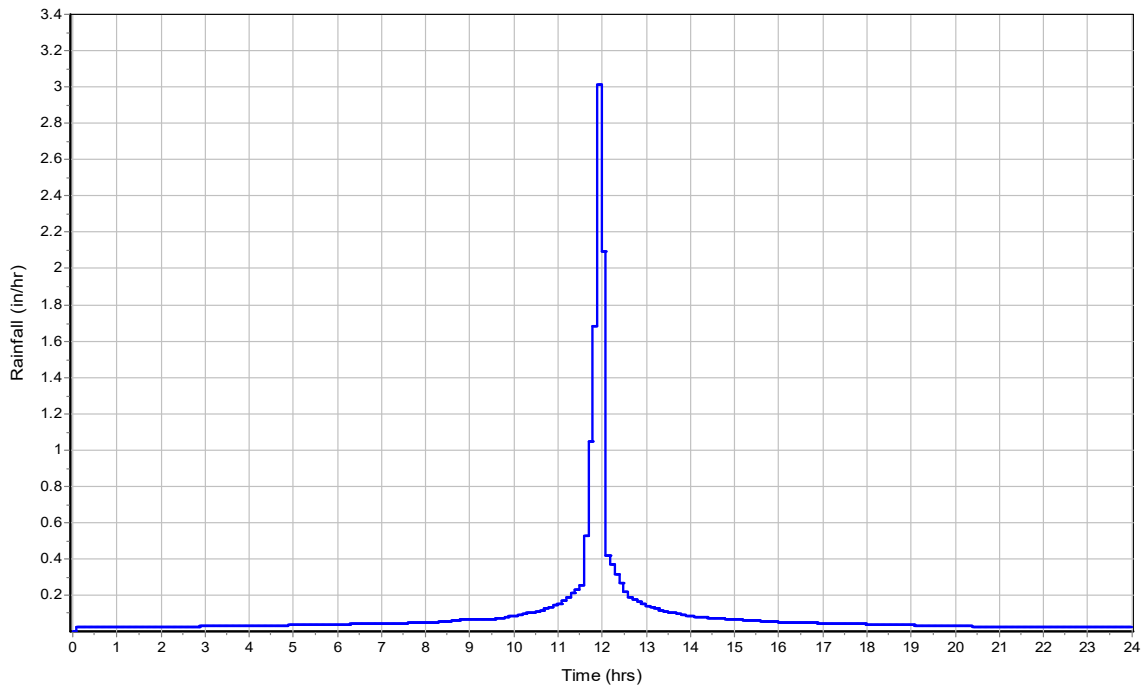
User-Defined TOC override (minutes): 5.00

Subbasin Runoff Results

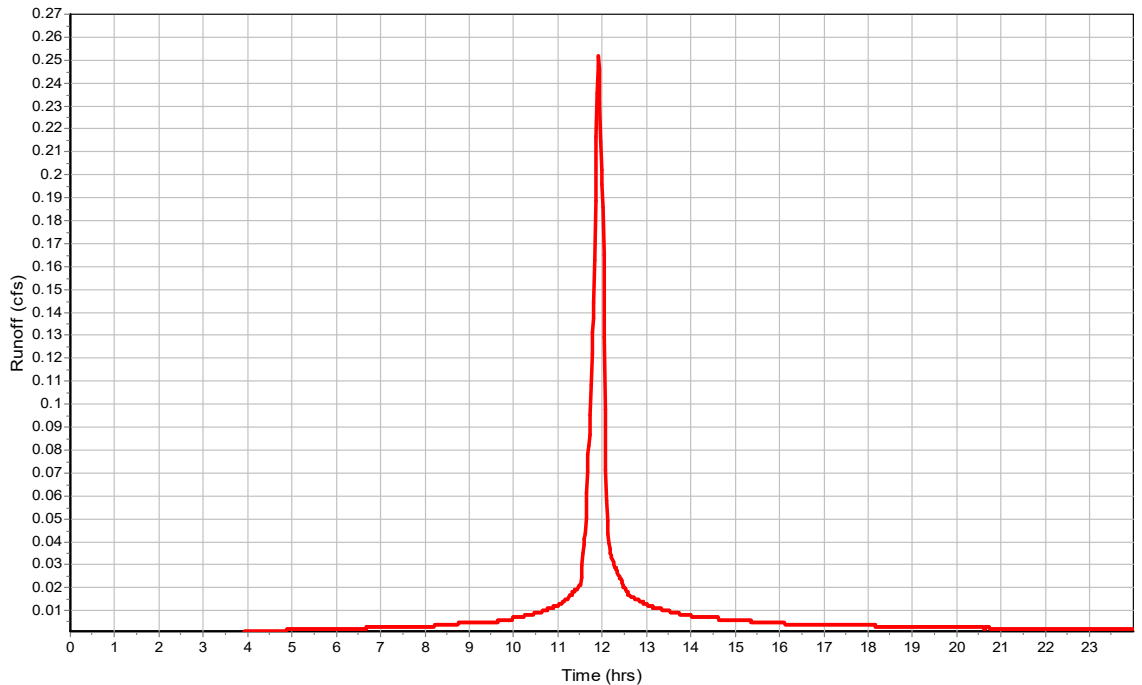
Total Rainfall (in) ..... 2.2  
 Total Runoff (in) ..... 1.94  
 Peak Runoff (cfs) ..... 0.25  
 Weighted Curve Number ..... 97.81  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-13003

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-13006**

**Input Data**

Area (ac) ..... 0.21  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 90.17  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
32	0.21	-	90.17
Composite Area & Weighted CN	0.21		90.17

**Time of Concentration**

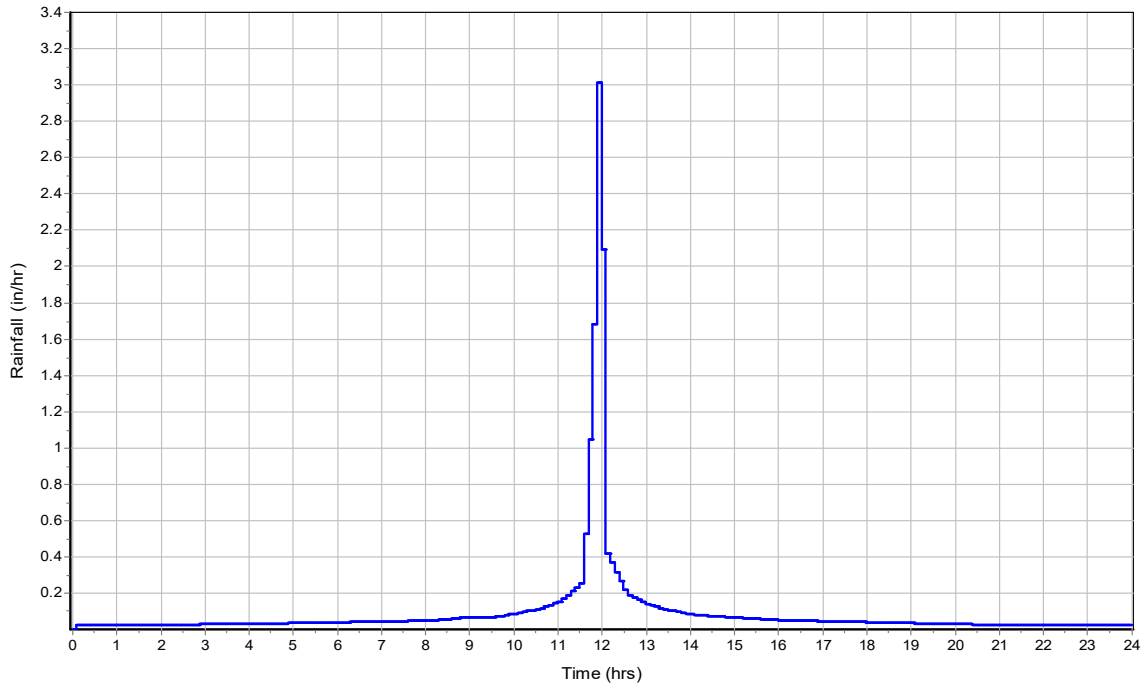
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

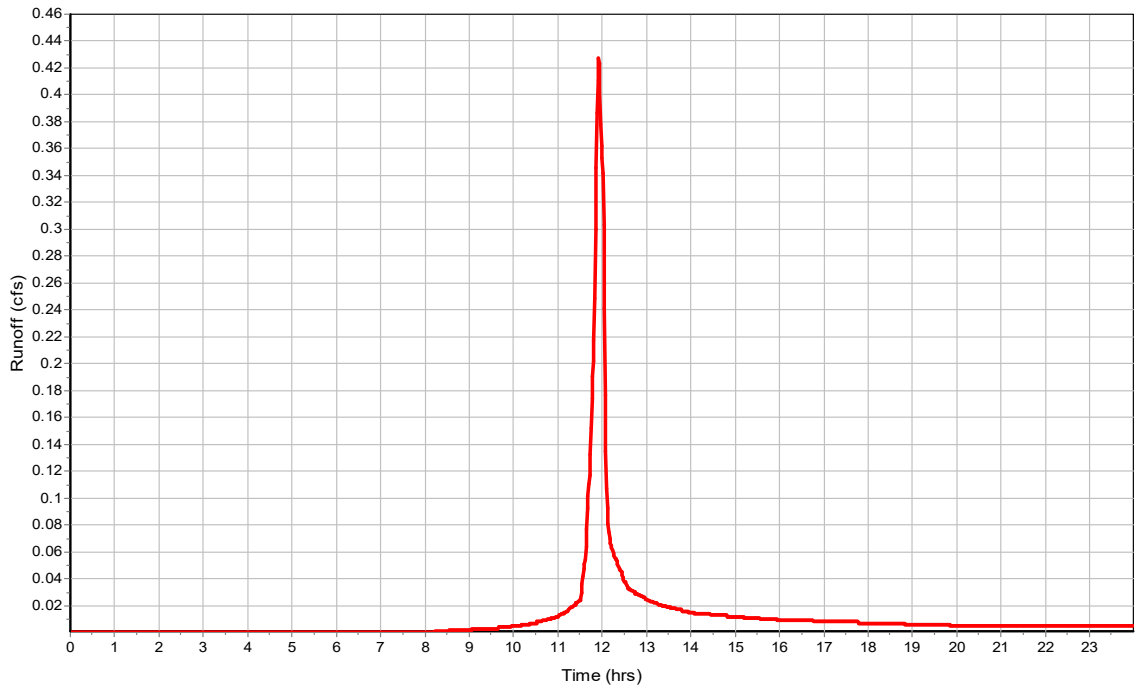
Total Rainfall (in) ..... 2.2  
 Total Runoff (in) ..... 1.28  
 Peak Runoff (cfs) ..... 0.43  
 Weighted Curve Number ..... 90.17  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-13006

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-13009**

**Input Data**

Area (ac) ..... 0.11  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 95.27  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	0.11	-	95.27
Composite Area & Weighted CN	0.11		95.27

**Time of Concentration**

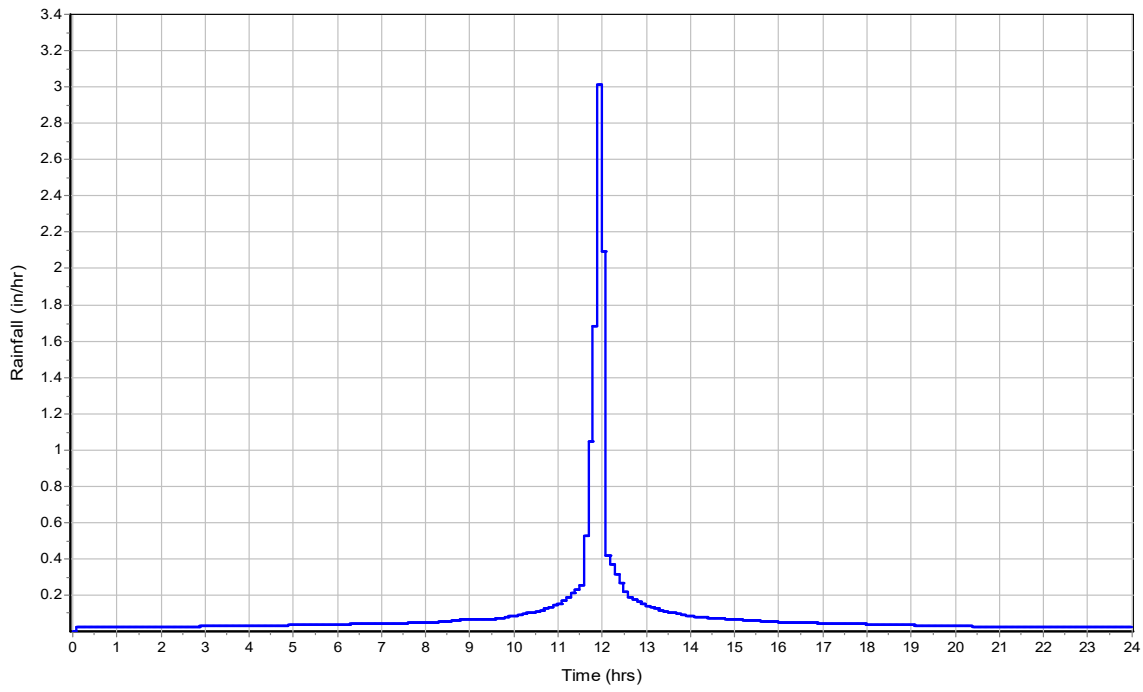
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

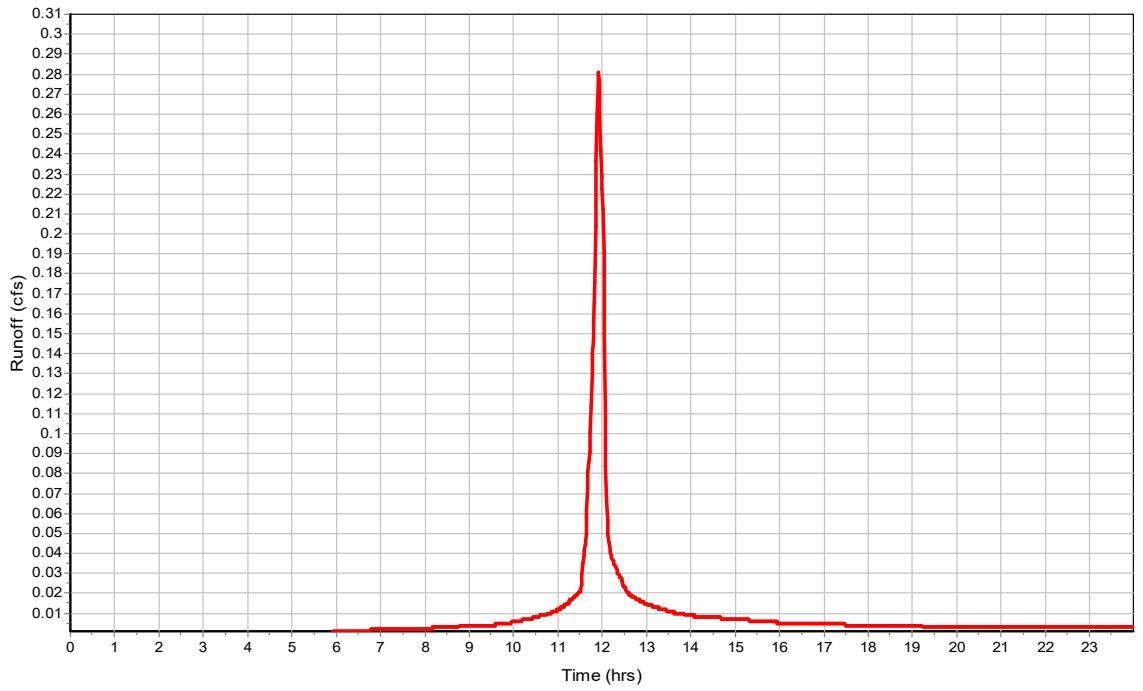
Total Rainfall (in) ..... 2.2  
 Total Runoff (in) ..... 1.69  
 Peak Runoff (cfs) ..... 0.28  
 Weighted Curve Number ..... 95.27  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-13009

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-13011/3**

**Input Data**

Area (ac) ..... 1.18  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 74.32  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	1.18	-	74.32
Composite Area & Weighted CN	1.18		74.32

**Time of Concentration**

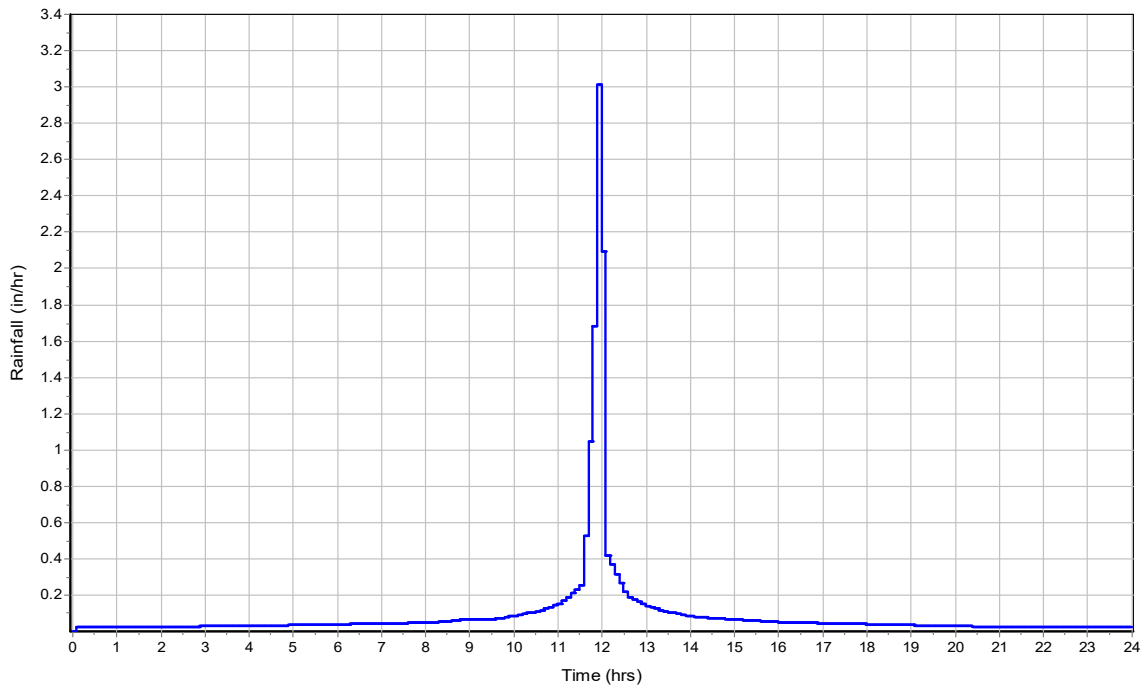
User-Defined TOC override (minutes): 10

**Subbasin Runoff Results**

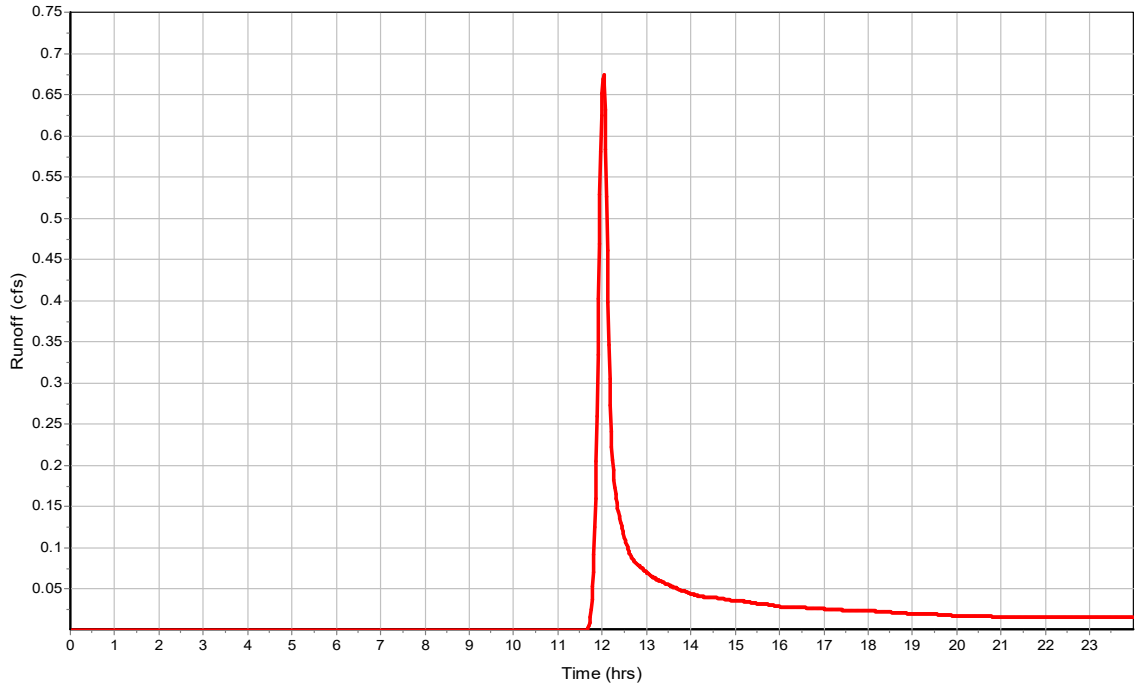
Total Rainfall (in) ..... 2.2  
 Total Runoff (in) ..... 0.46  
 Peak Runoff (cfs) ..... 0.67  
 Weighted Curve Number ..... 74.32  
 Time of Concentration (days hh:mm:ss) ..... 0 00:10:00

Subbasin : SUB-13011/3

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-13016**

**Input Data**

Area (ac) ..... 0.09  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 97.34  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.09	-	97.34
Composite Area & Weighted CN		0.09		97.34

**Time of Concentration**

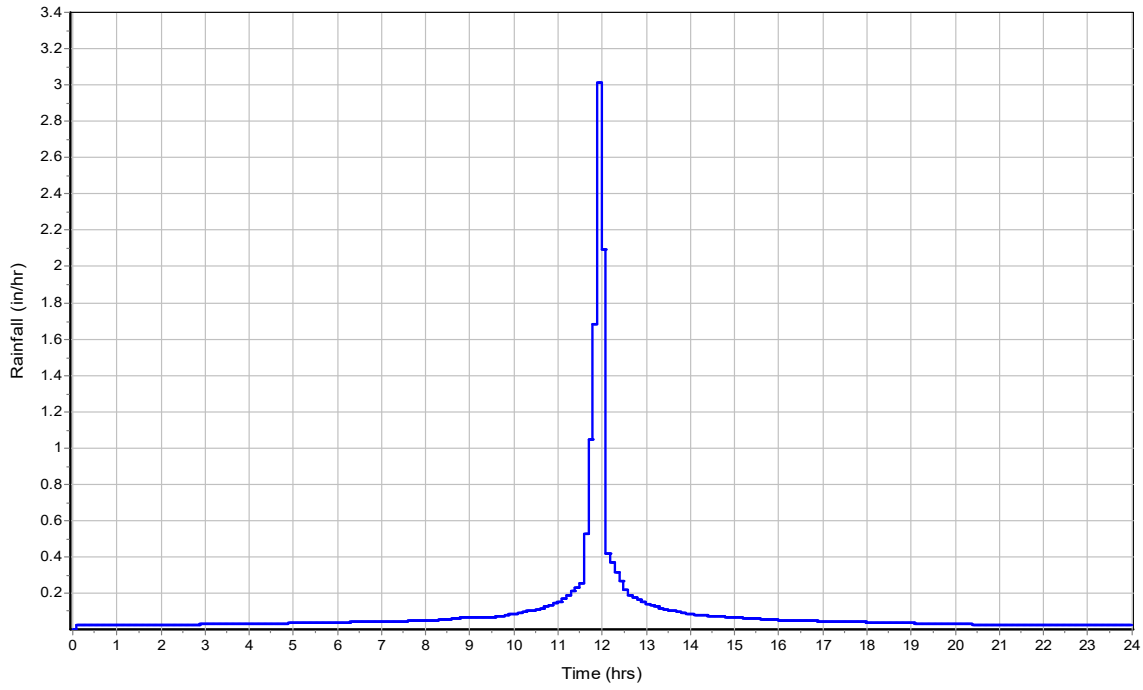
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

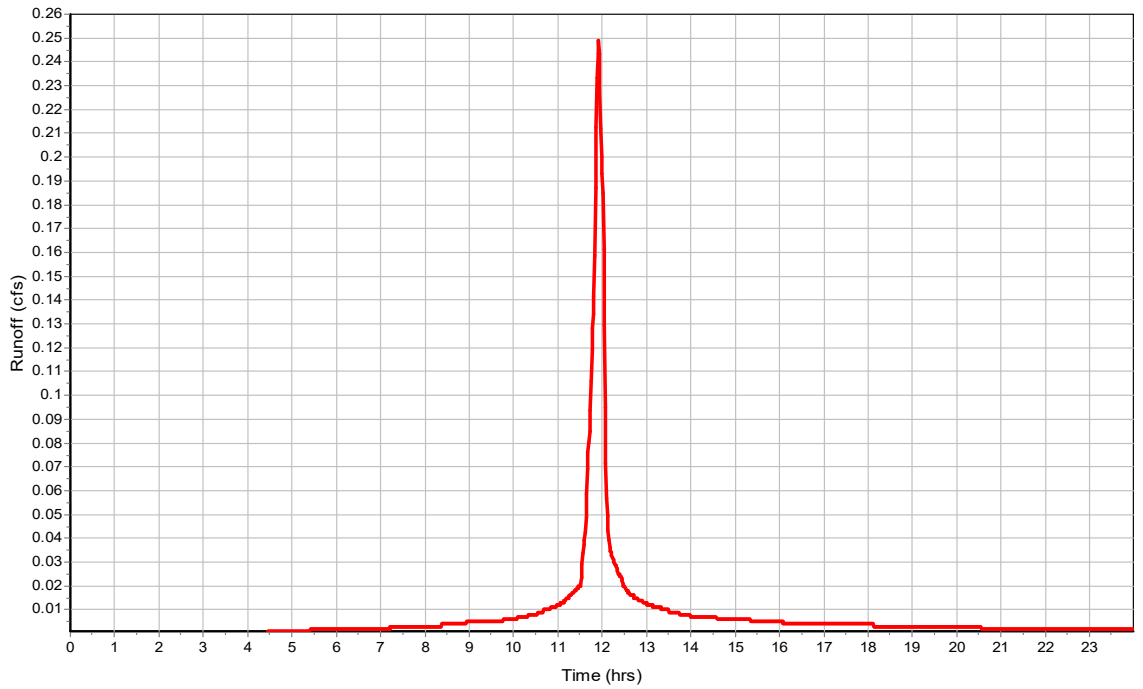
Total Rainfall (in) ..... 2.2  
 Total Runoff (in) ..... 1.89  
 Peak Runoff (cfs) ..... 0.25  
 Weighted Curve Number ..... 97.34  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-13016

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-13018**

**Input Data**

Area (ac) ..... 0.22  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 87.75  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.22	-	87.75
Composite Area & Weighted CN		0.22		87.75

**Time of Concentration**

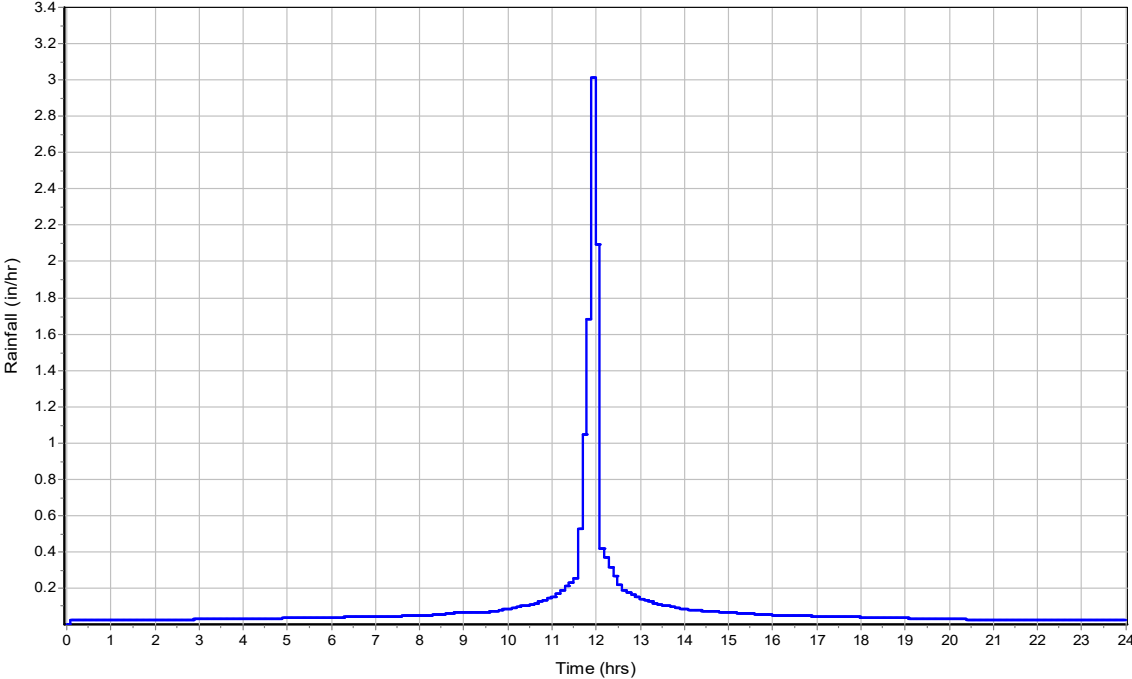
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

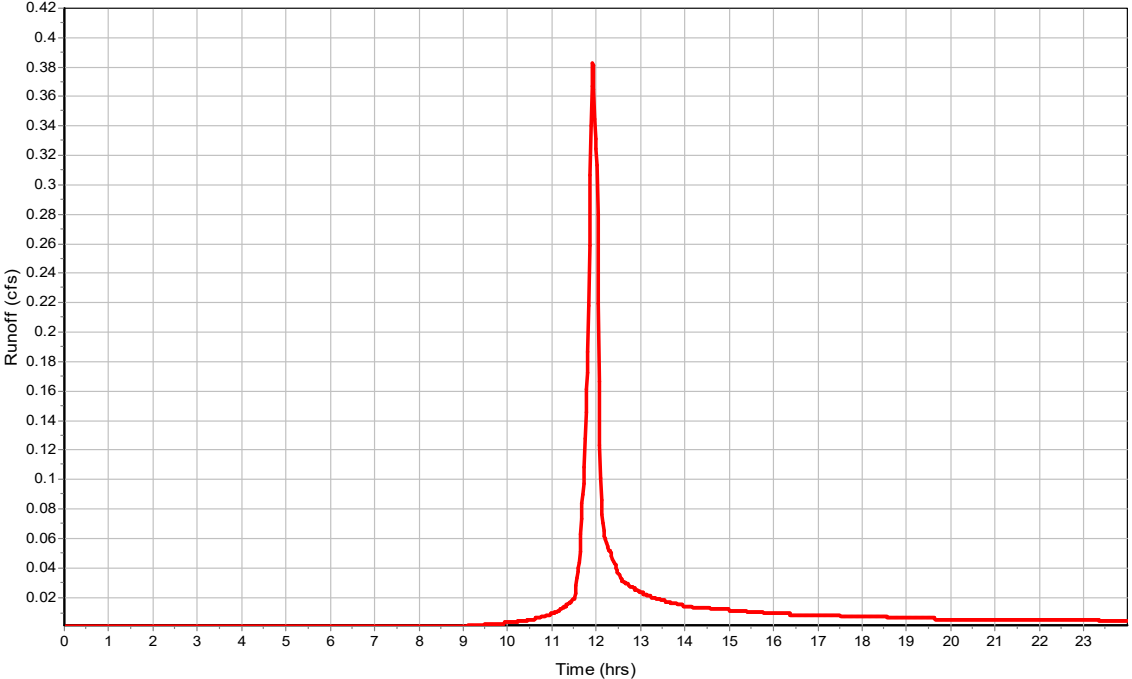
Total Rainfall (in) ..... 2.2  
 Total Runoff (in) ..... 1.11  
 Peak Runoff (cfs) ..... 0.38  
 Weighted Curve Number ..... 87.75  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-13018

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-1451**

**Input Data**

Area (ac) ..... 0.37  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 88.41  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.37	-	88.41
Composite Area & Weighted CN		0.37		88.41

**Time of Concentration**

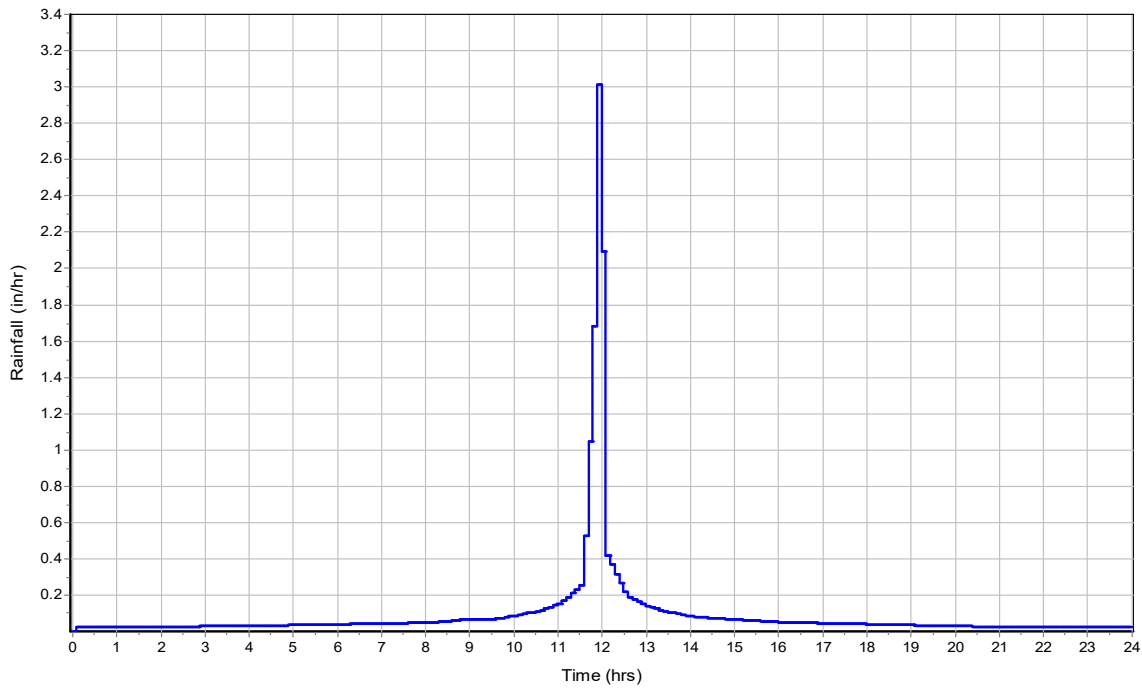
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

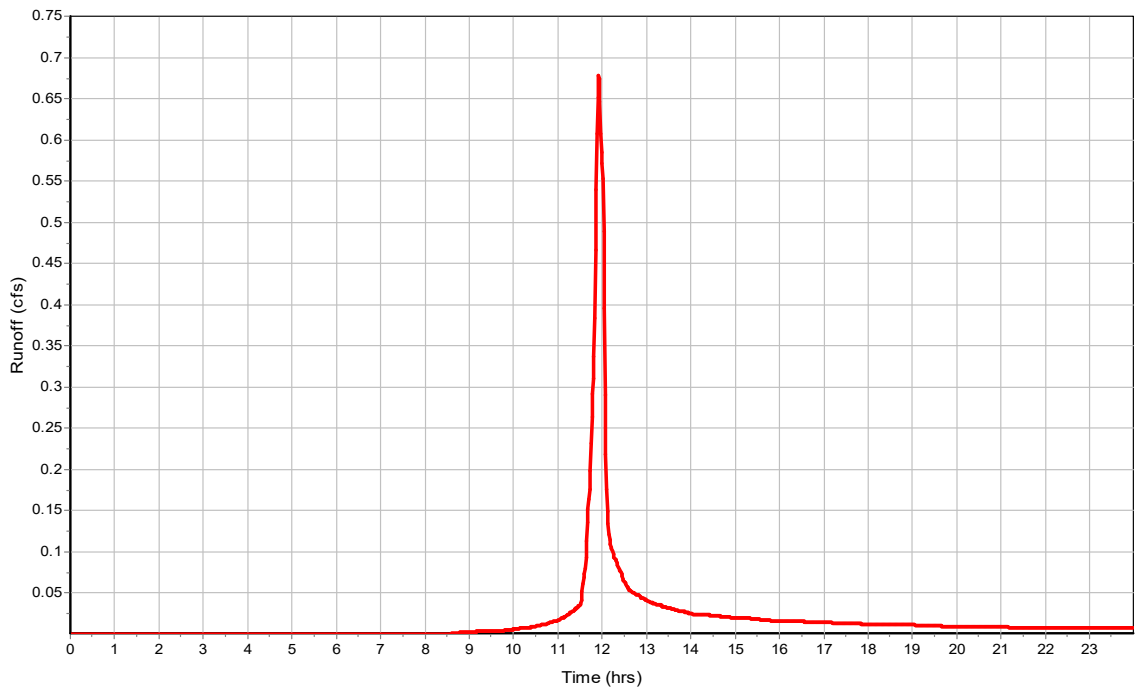
Total Rainfall (in) ..... 2.2  
 Total Runoff (in) ..... 1.16  
 Peak Runoff (cfs) ..... 0.68  
 Weighted Curve Number ..... 88.41  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-1451

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-1511**

**Input Data**

Area (ac) ..... 0.16  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 92.08  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.16	-	92.08
Composite Area & Weighted CN		0.16		92.08

**Time of Concentration**

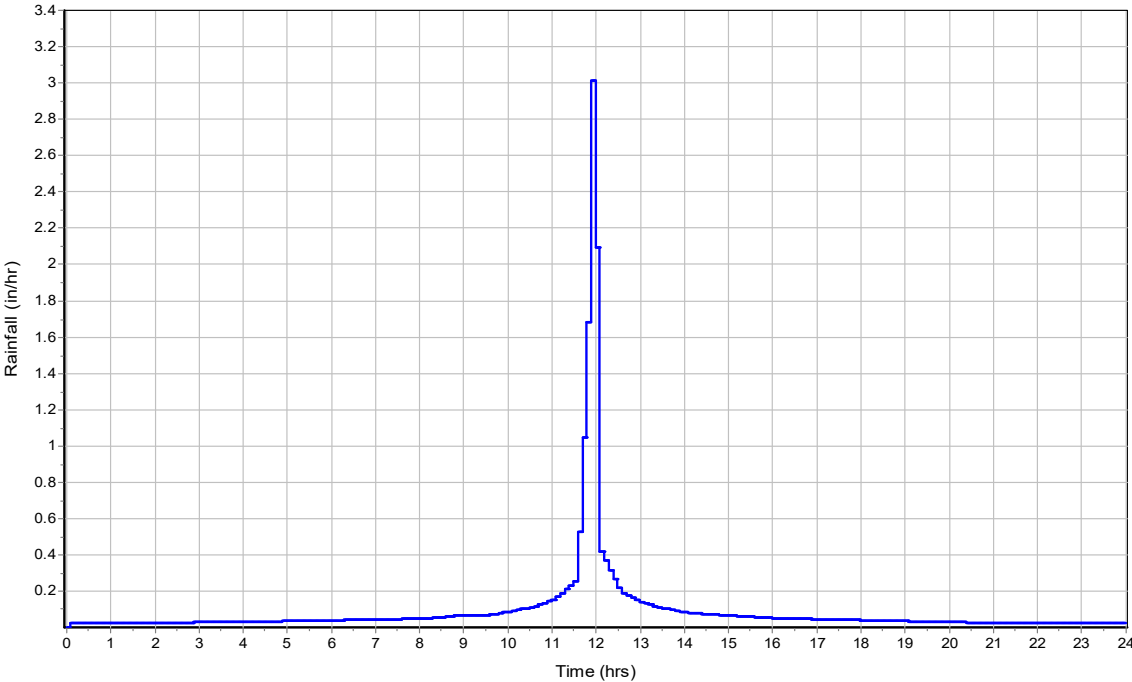
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

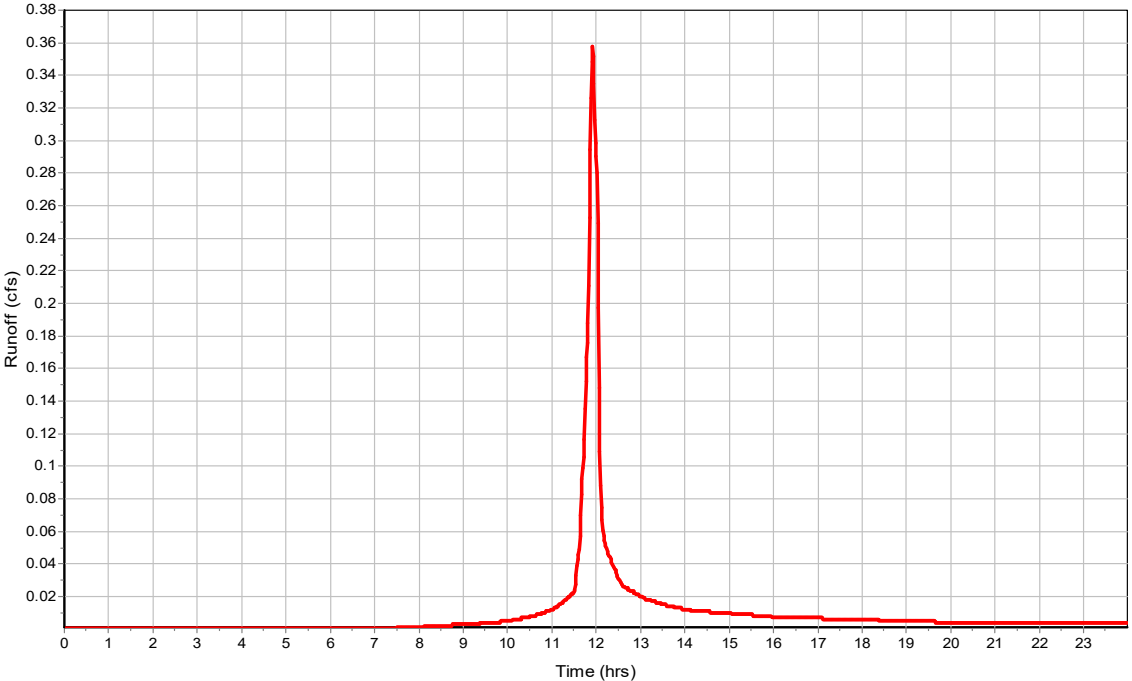
Total Rainfall (in) ..... 2.2  
 Total Runoff (in) ..... 1.42  
 Peak Runoff (cfs) ..... 0.36  
 Weighted Curve Number ..... 92.08  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-1511

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-1533**

**Input Data**

Area (ac) ..... 0.15  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 89.88  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.15	-	89.88
Composite Area & Weighted CN		0.15		89.88

**Time of Concentration**

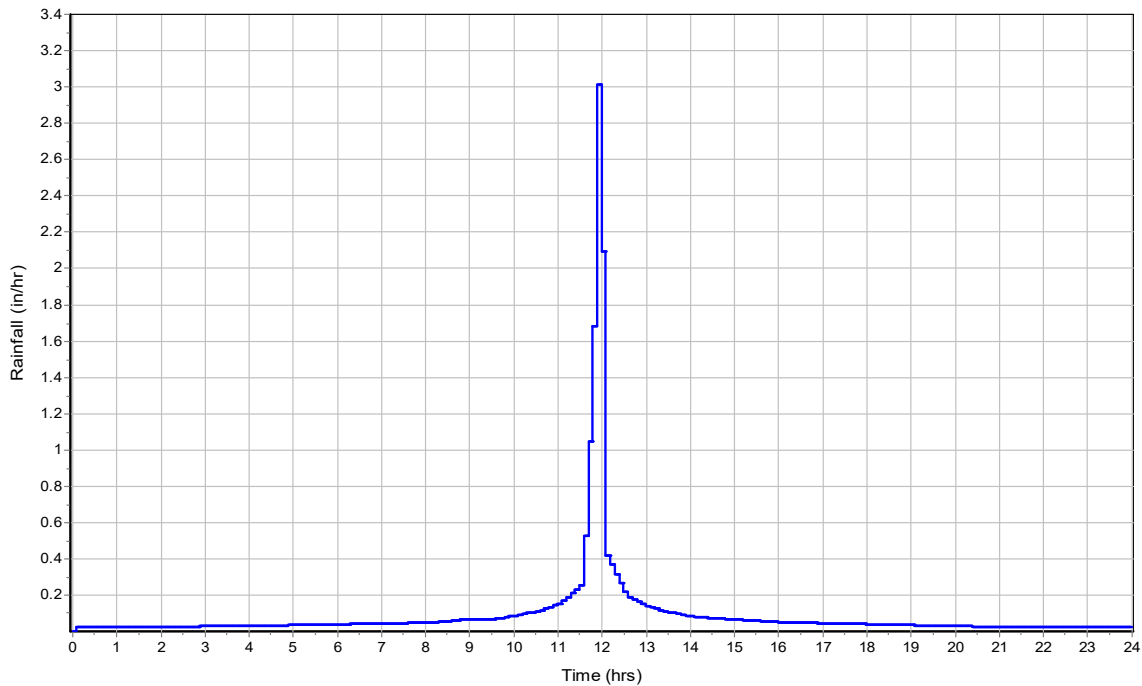
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

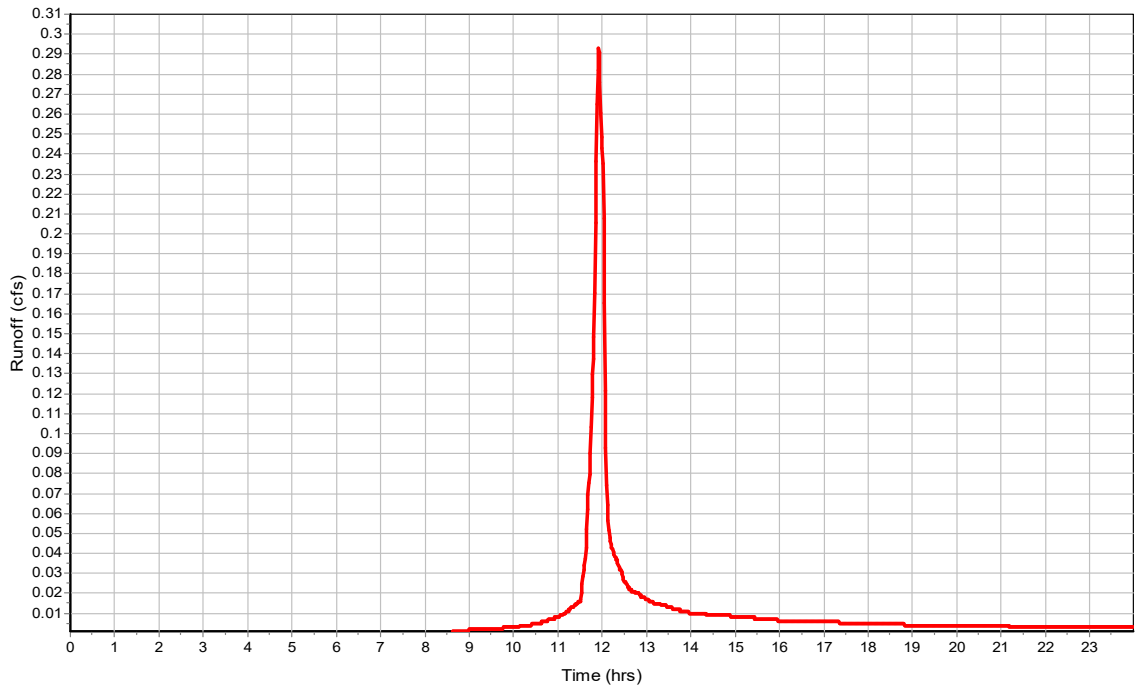
Total Rainfall (in) ..... 2.2  
 Total Runoff (in) ..... 1.25  
 Peak Runoff (cfs) ..... 0.29  
 Weighted Curve Number ..... 89.88  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-1533

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-1570**

**Input Data**

Area (ac) ..... 0.26  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 92.05  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.26	-	92.05
Composite Area & Weighted CN		0.26		92.05

**Time of Concentration**

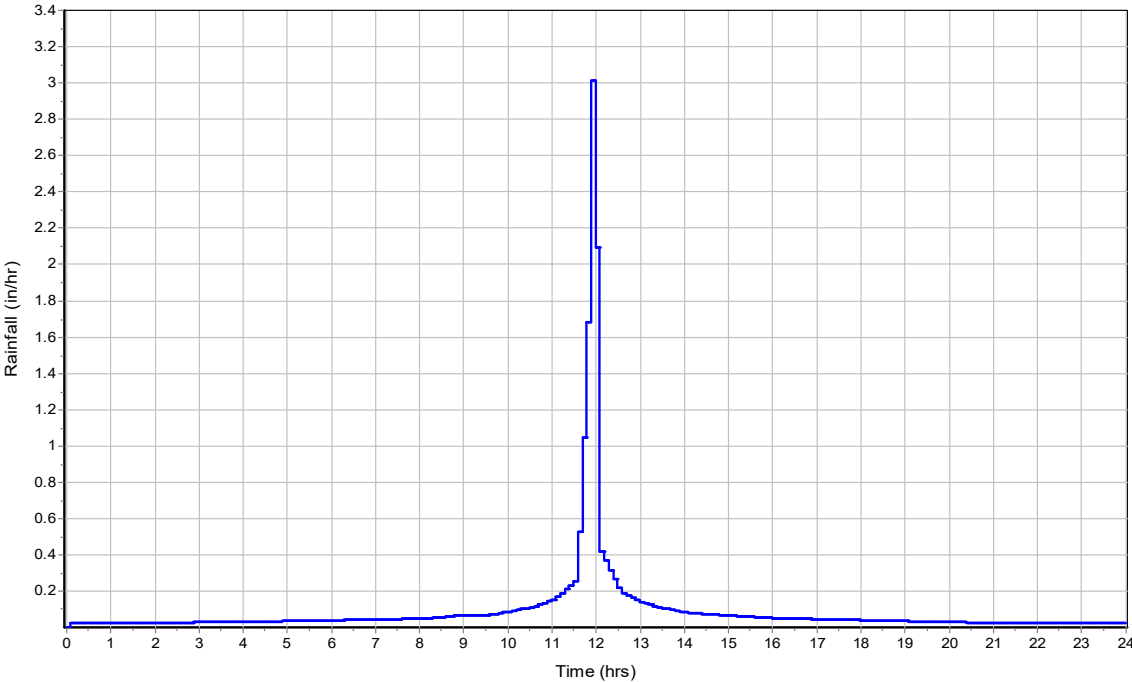
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

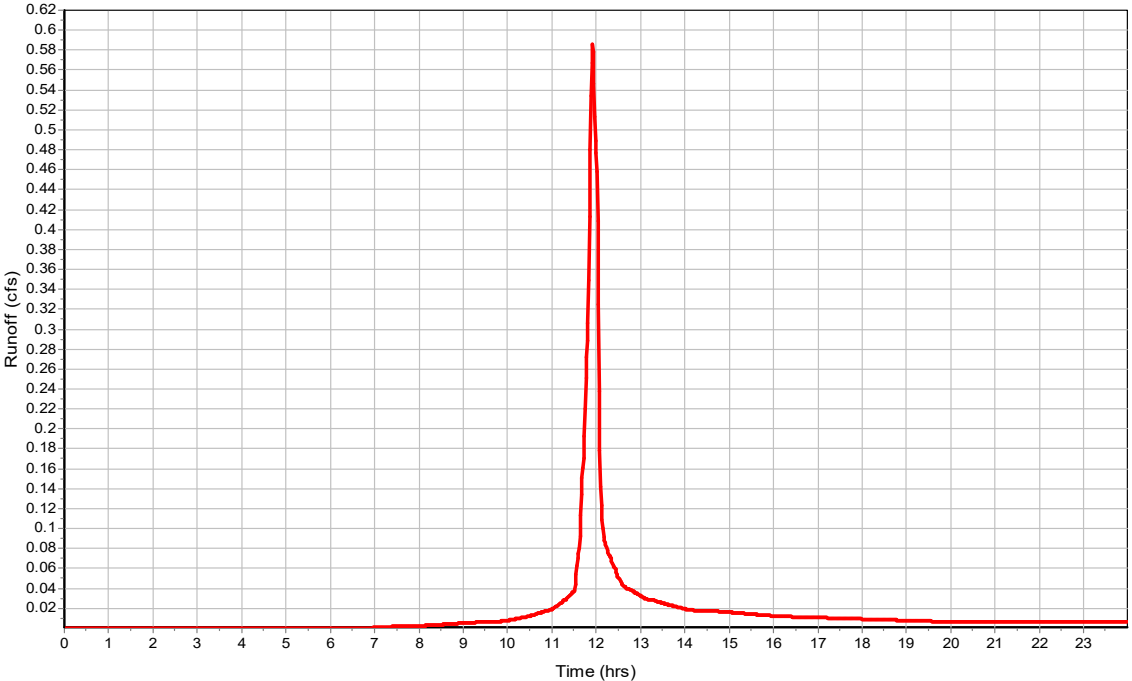
Total Rainfall (in) ..... 2.2  
 Total Runoff (in) ..... 1.42  
 Peak Runoff (cfs) ..... 0.59  
 Weighted Curve Number ..... 92.05  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-1570

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-1607**

**Input Data**

Area (ac) ..... 0.24  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 90.83  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.24	-	90.83
Composite Area & Weighted CN		0.24		90.83

**Time of Concentration**

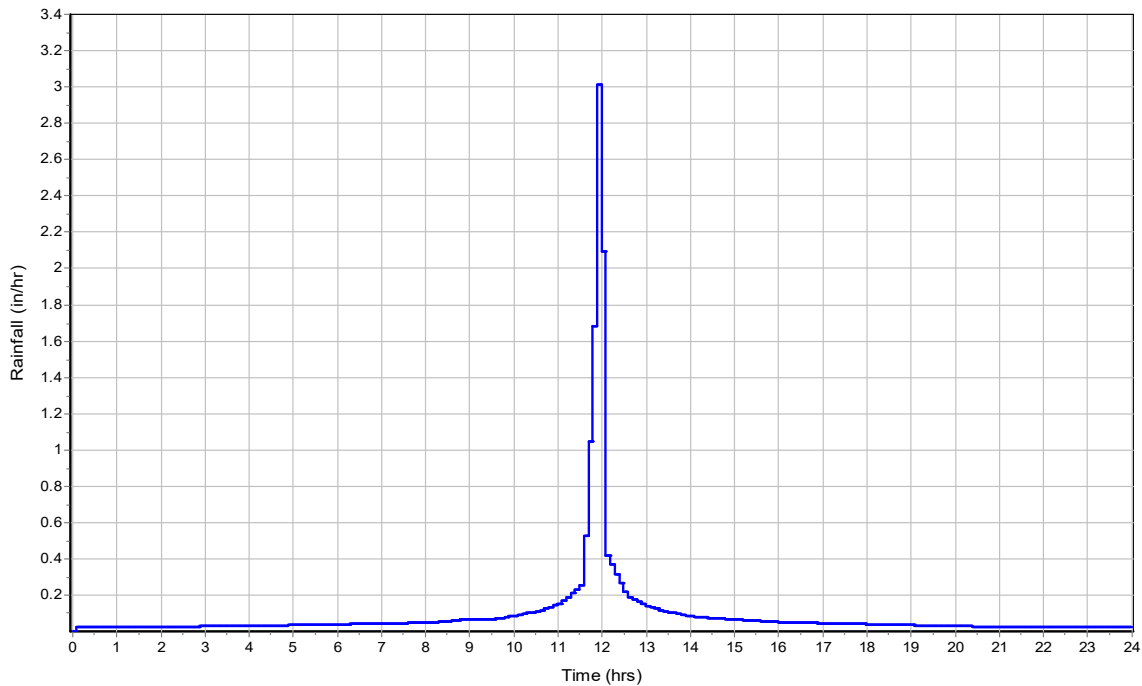
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

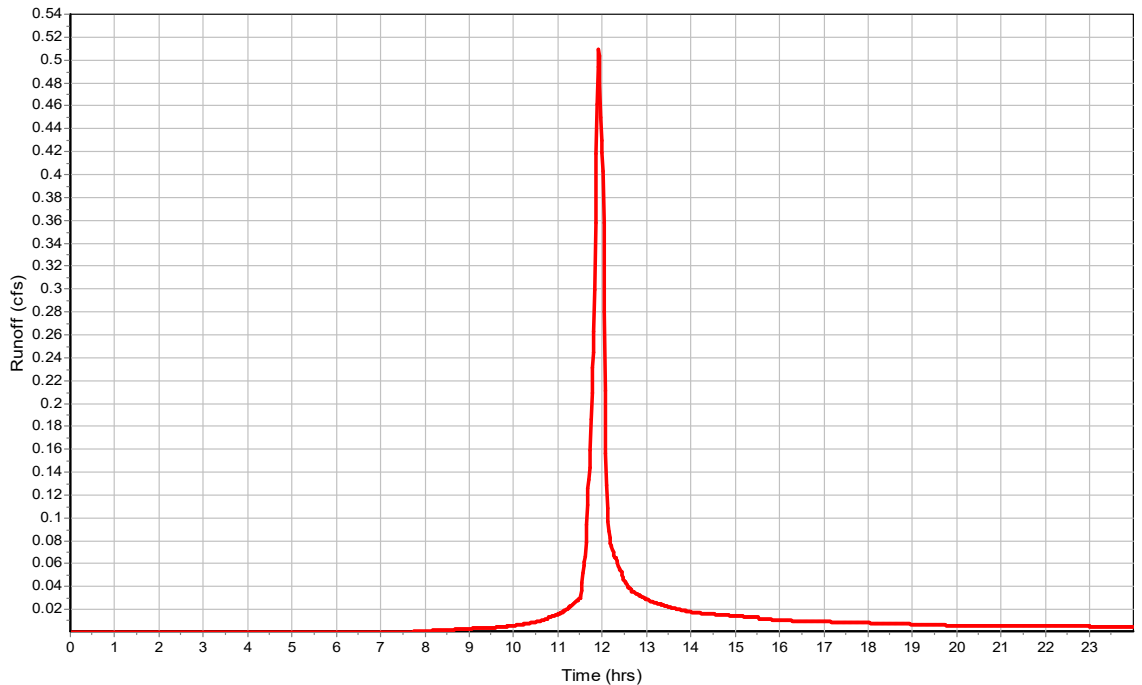
Total Rainfall (in) ..... 2.2  
 Total Runoff (in) ..... 1.33  
 Peak Runoff (cfs) ..... 0.51  
 Weighted Curve Number ..... 90.83  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-1607

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-D22690**

**Input Data**

Area (ac) ..... 0.31  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 92.3  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.31	-	92.3
Composite Area & Weighted CN		0.31		92.3

**Time of Concentration**

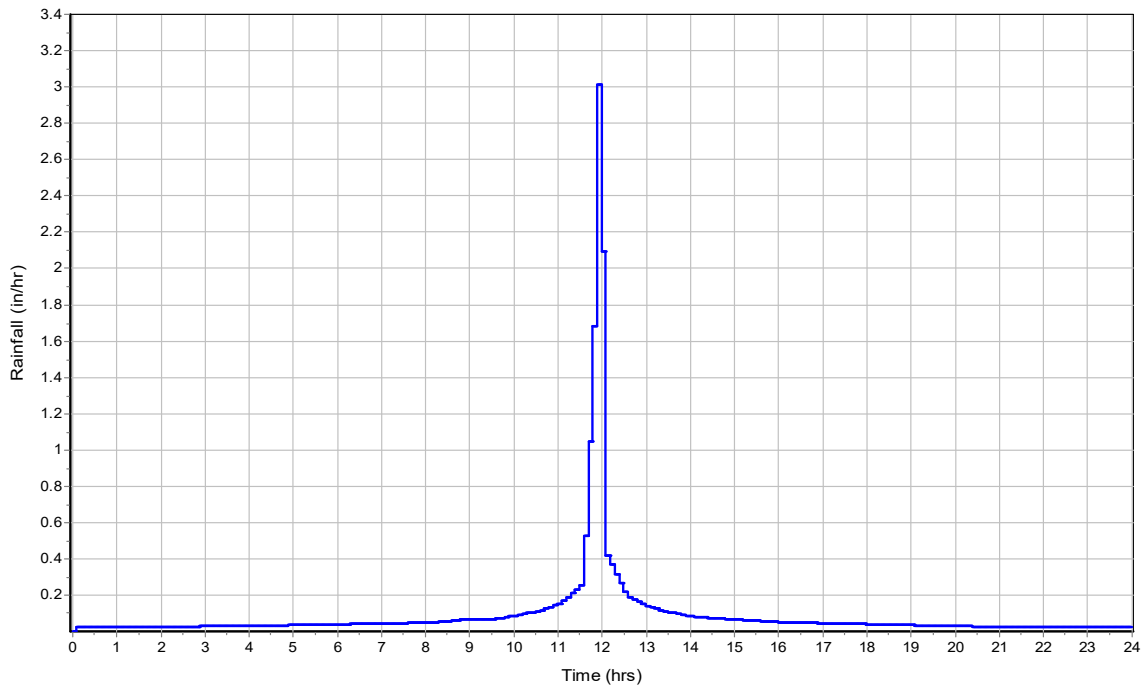
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

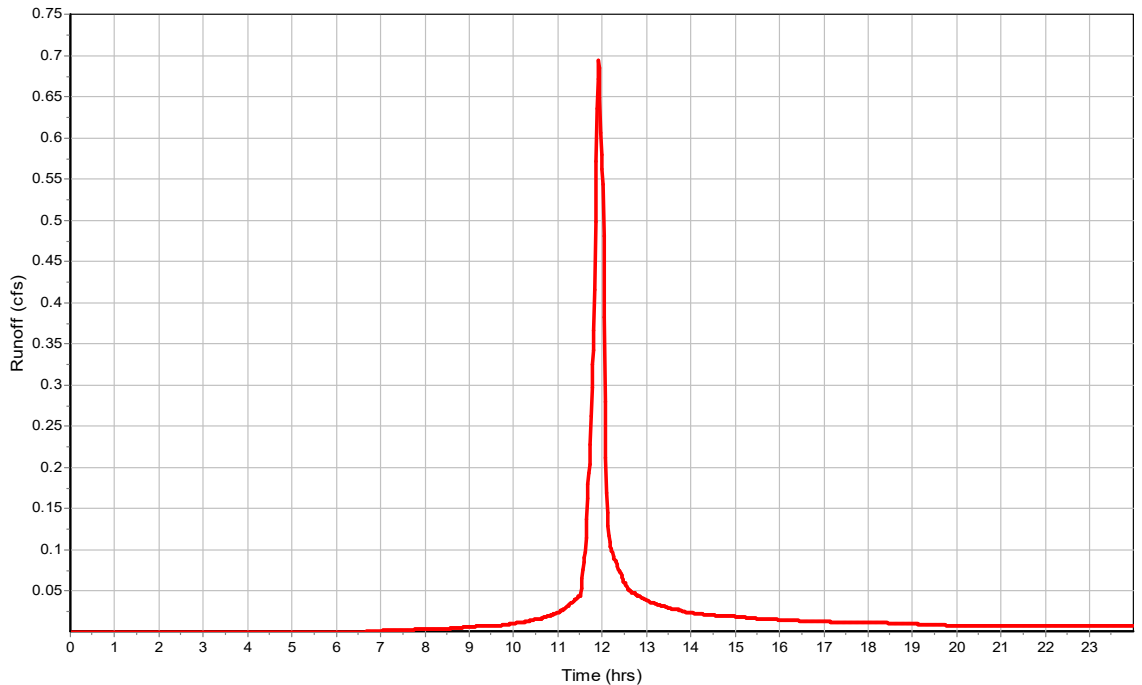
Total Rainfall (in) ..... 2.2  
 Total Runoff (in) ..... 1.44  
 Peak Runoff (cfs) ..... 0.7  
 Weighted Curve Number ..... 92.3  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-D22690

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : SUB-D22725

Input Data

Area (ac) .....	0.9
Peak Rate Factor .....	484
Weighted Curve Number .....	79
Rain Gage ID .....	Rain Gage-01

Composite Curve Number

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.9	-	79
Composite Area & Weighted CN		0.9		79

Time of Concentration

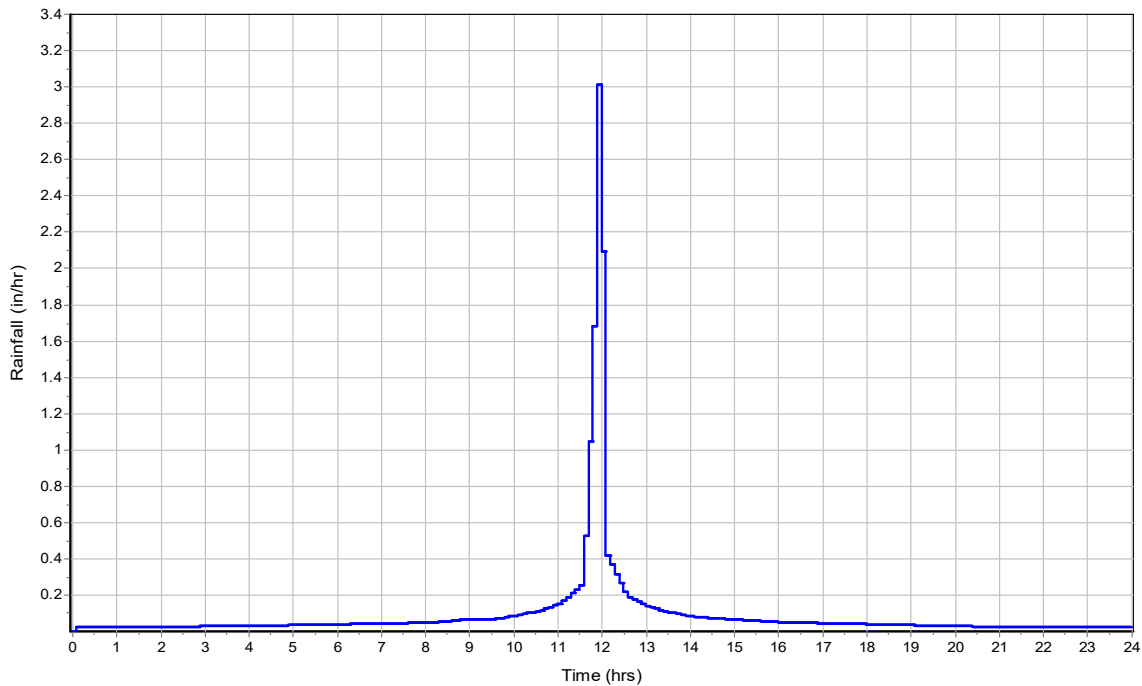
User-Defined TOC override (minutes): 5.00

Subbasin Runoff Results

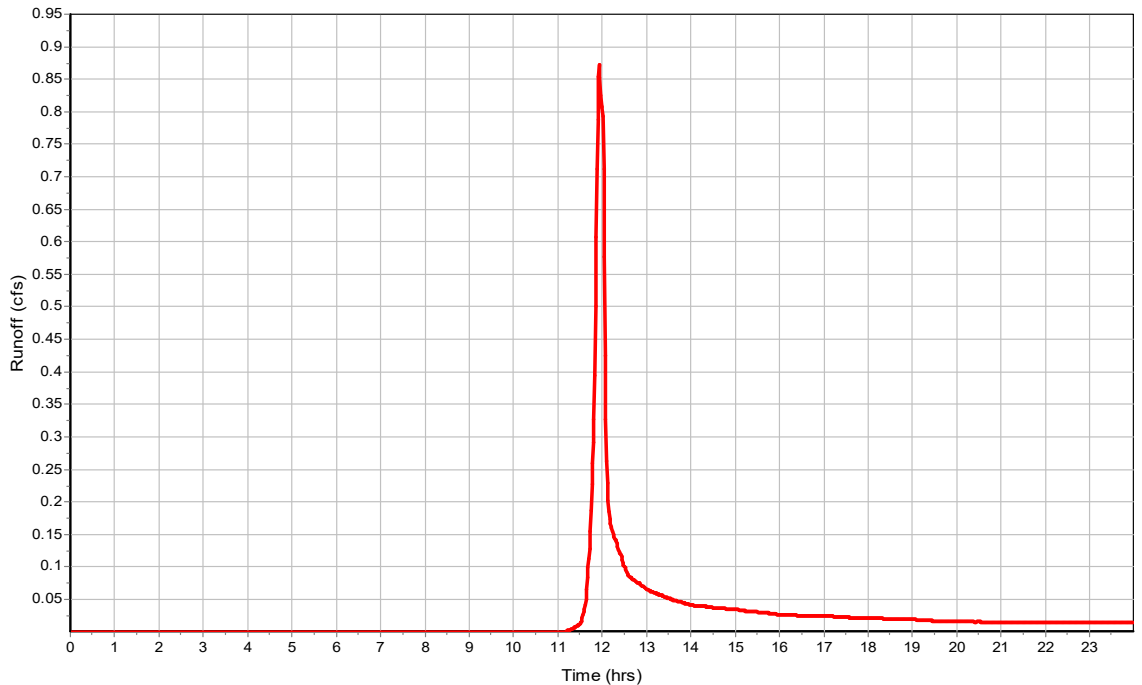
Total Rainfall (in) .....	2.2
Total Runoff (in) .....	0.64
Peak Runoff (cfs) .....	0.87
Weighted Curve Number .....	79
Time of Concentration (days hh:mm:ss) .....	0 00:05:00

Subbasin : SUB-D22725

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : UNDETAINED-01**

**Input Data**

Area (ac) ..... 0.27  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 84  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.27	-	84
Composite Area & Weighted CN		0.27		84

**Time of Concentration**

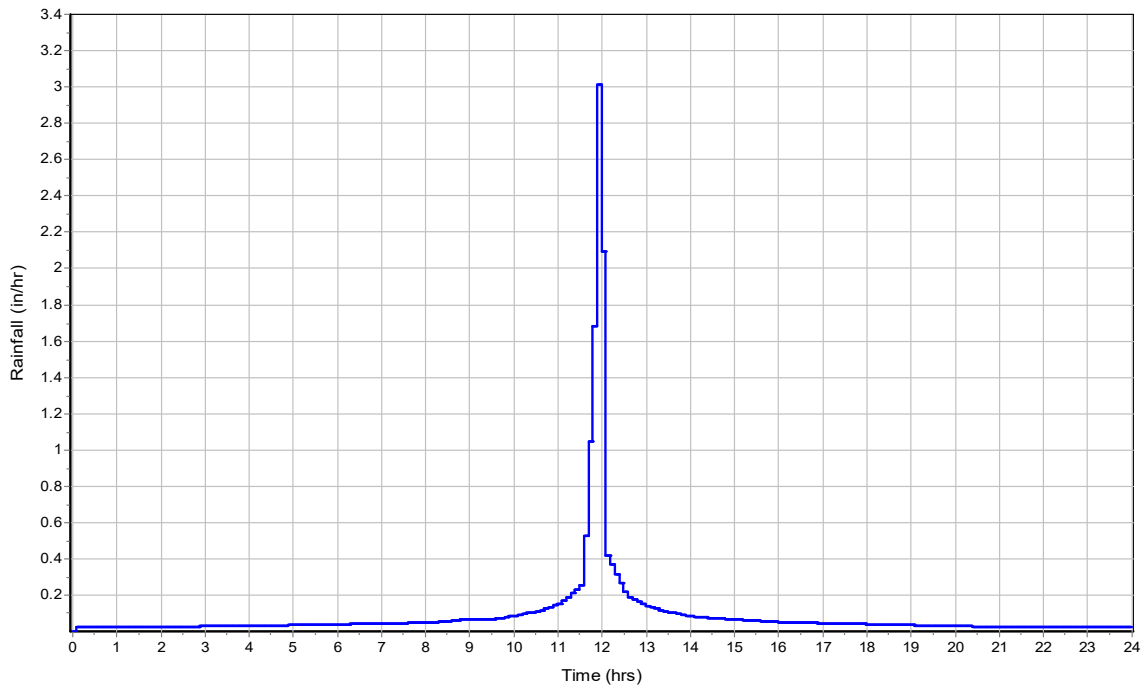
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

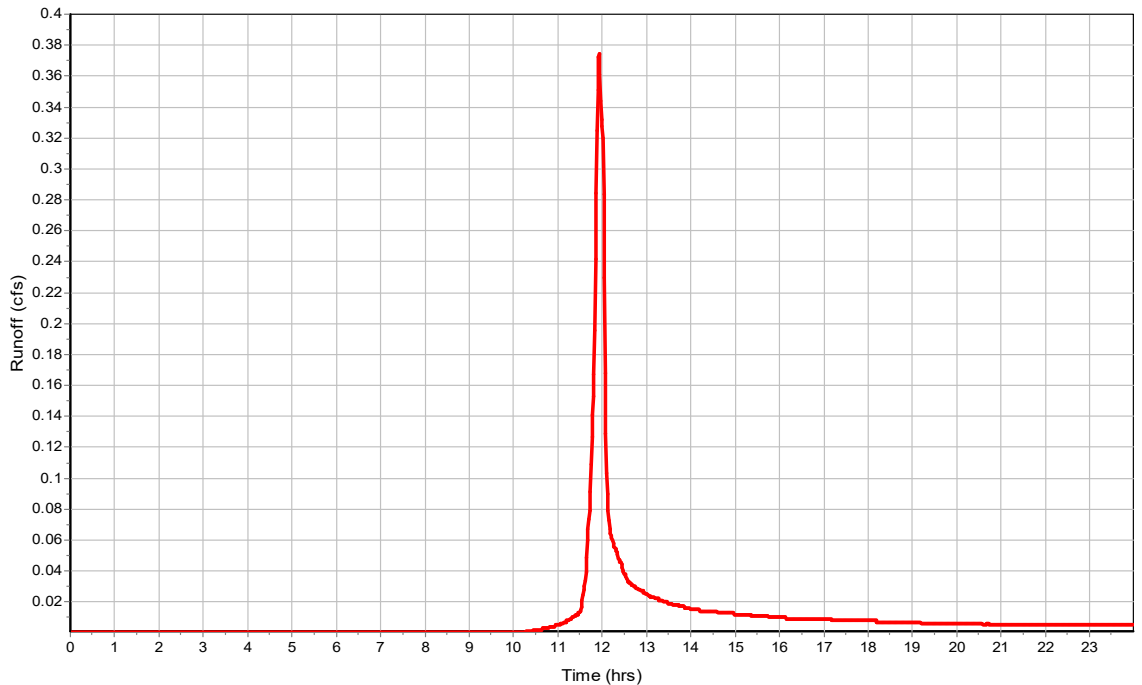
Total Rainfall (in) ..... 2.2  
 Total Runoff (in) ..... 0.89  
 Peak Runoff (cfs) ..... 0.38  
 Weighted Curve Number ..... 84  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : UNDETAINED-01

Rainfall Intensity Graph



Runoff Hydrograph



**Junction Input**

SN Element ID	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Ground/Rim (Max) Offset (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)	Surcharge Elevation (ft)	Surcharge Depth (ft)	Ponded Area (ft <sup>2</sup> )	Minimum Pipe Cover (in)
1 1	789.63	800.72	11.09	789.63	0.00	800.72	0.00	10.00	0.00
2 2	789.90	810.97	21.07	789.90	0.00	810.97	0.00	0.00	0.00
3 301	801.75	810.70	8.95	801.75	0.00	810.70	0.00	10.00	0.00
4 302	800.50	814.72	14.22	800.50	0.00	814.72	0.00	10.00	0.00
5 1312	795.14	801.14	6.00	795.14	0.00	801.14	0.00	10.00	0.00
6 1451	796.16	801.58	5.42	796.16	0.00	801.58	0.00	10.00	0.00
7 1453	793.40	803.00	9.60	793.40	0.00	803.00	0.00	10.00	0.00
8 1511	794.03	805.54	11.51	794.03	0.00	805.54	0.00	10.00	0.00
9 1533	798.65	807.61	8.96	798.65	0.00	807.61	0.00	10.00	0.00
10 1570	800.57	809.15	8.58	800.57	0.00	809.15	0.00	10.00	0.00
11 1607	809.64	815.19	5.55	809.64	0.00	815.19	0.00	10.00	0.00
12 13001	783.95	800.74	16.79	783.95	0.00	800.74	0.00	10.00	0.00
13 13002	782.33	798.46	16.13	782.33	0.00	798.46	0.00	10.00	0.00
14 13003	787.40	796.61	9.21	787.40	0.00	796.61	0.00	10.00	0.00
15 13005	781.16	791.08	9.92	781.16	0.00	791.08	0.00	10.00	0.00
16 13006	793.19	802.62	9.43	793.19	0.00	802.62	0.00	10.00	0.00
17 13008	780.03	787.03	7.00	780.03	0.00	787.03	0.00	10.00	0.00
18 13009	782.93	787.81	4.88	782.93	0.00	787.81	0.00	10.00	0.00
19 13016	776.77	780.79	4.02	776.77	0.00	780.79	0.00	10.00	0.00
20 13017	776.14	780.49	4.35	776.14	0.00	780.49	0.00	10.00	0.00
21 13018	776.48	780.24	3.76	776.48	0.00	780.24	0.00	10.00	0.00
22 13019	776.36	779.72	3.36	776.36	0.00	779.72	0.00	10.00	0.00
23 D22686	797.40	807.27	9.87	797.40	0.00	807.27	0.00	10.00	0.00
24 D22690	815.71	820.04	4.33	815.71	0.00	820.04	0.00	10.00	0.00
25 D22725	776.89	781.00	4.11	776.89	0.00	781.00	0.00	10.00	0.00
26 HDS-101	801.90	814.15	12.25	801.90	0.00	814.15	0.00	10.00	0.00
27 HDS-201	802.79	815.53	12.74	802.79	0.00	815.53	0.00	10.00	0.00

**Junction Results**

SN Element ID	Peak Inflow	Peak Lateral Inflow	Max HGL Elevation Attained	Max HGL Depth Attained	Max Surcharge Depth Attained	Min Freeboard Attained	Average HGL Elevation Attained	Average HGL Depth Attained	Time of Max HGL Occurrence	Time of Peak Flooding Occurrence	Total Flooded Volume	Total Time Flooded
	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(days hh:mm)	(days hh:mm)	(ac-in)	(min)
1 1	5.10	0.00	790.39	0.76	0.00	10.33	789.87	0.24	0 12:32	0 00:00	0.00	0.00
2 2	5.10	0.00	790.73	0.83	0.00	20.24	790.15	0.25	0 12:32	0 00:00	0.00	0.00
3 301	0.01	0.00	801.88	0.13	0.00	8.82	801.81	0.06	0 17:52	0 00:00	0.00	0.00
4 302	0.01	0.00	802.55	2.05	0.00	12.17	801.53	1.03	0 17:52	0 00:00	0.00	0.00
5 1312	0.00	0.00	795.14	0.00	0.00	6.00	795.14	0.00	0 00:00	0 00:00	0.00	0.00
6 1451	0.68	0.68	796.35	0.19	0.00	5.23	796.18	0.02	0 11:56	0 00:00	0.00	0.00
7 1453	3.47	0.00	794.48	1.08	0.00	8.52	793.52	0.12	0 11:57	0 00:00	0.00	0.00
8 1511	2.80	0.36	794.80	0.77	0.00	10.74	794.11	0.08	0 11:57	0 00:00	0.00	0.00
9 1533	0.67	0.67	798.80	0.15	0.00	8.81	798.67	0.02	0 11:57	0 00:00	0.00	0.00
10 1570	1.78	0.59	800.92	0.35	0.00	8.23	800.61	0.04	0 11:56	0 00:00	0.00	0.00
11 1607	1.20	0.51	809.90	0.26	0.00	5.29	809.68	0.04	0 11:56	0 00:00	0.00	0.00
12 13001	5.10	0.00	784.51	0.56	0.00	16.23	784.09	0.14	0 12:33	0 00:00	0.00	0.00
13 13002	5.10	0.00	782.92	0.59	0.00	15.54	782.48	0.15	0 12:33	0 00:00	0.00	0.00
14 13003	0.25	0.25	787.55	0.15	0.00	9.06	787.42	0.02	0 11:56	0 00:00	0.00	0.00
15 13005	5.12	0.00	781.72	0.56	0.00	9.36	781.31	0.15	0 12:33	0 00:00	0.00	0.00
16 13006	3.87	0.43	794.17	0.98	0.00	8.45	793.29	0.10	0 11:57	0 00:00	0.00	0.00
17 13008	5.15	0.00	780.70	0.67	0.00	6.33	780.20	0.17	0 12:33	0 00:00	0.00	0.00
18 13009	0.28	0.28	783.10	0.17	0.00	4.71	782.95	0.02	0 11:56	0 00:00	0.00	0.00
19 13016	0.25	0.25	776.96	0.19	0.00	3.83	776.80	0.03	0 11:56	0 00:00	0.00	0.00
20 13017	1.49	0.00	776.65	0.51	0.00	3.84	776.20	0.06	0 11:57	0 00:00	0.00	0.00
21 13018	0.38	0.38	776.86	0.38	0.00	3.38	776.51	0.03	0 11:57	0 00:00	0.00	0.00
22 13019	1.25	0.00	776.86	0.50	0.00	2.86	776.42	0.06	0 11:57	0 00:00	0.00	0.00
23 D22686	2.44	0.00	797.79	0.39	0.00	9.48	797.45	0.05	0 11:56	0 00:00	0.00	0.00
24 D22690	0.69	0.69	815.91	0.20	0.00	4.13	815.74	0.03	0 11:56	0 00:00	0.00	0.00
25 D22725	0.87	0.87	777.29	0.40	0.00	3.71	776.94	0.05	0 11:57	0 00:00	0.00	0.00
26 HDS-101	10.48	7.41	803.10	1.20	0.00	11.05	802.14	0.24	0 12:01	0 00:00	0.00	0.00
27 HDS-201	13.75	13.75	804.00	1.21	0.00	11.53	802.99	0.20	0 12:00	0 00:00	0.00	0.00

Pipe Input

SN Element ID	Length	Inlet Invert	Inlet Invert	Outlet Invert	Outlet Invert	Total Drop	Average Slope	Pipe Shape	Pipe Diameter or Height	Pipe Width	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Additional Losses	Initial Flow	Flap Gate	No. of Barrels
	(ft)	Elevation (ft)	Offset (ft)	Elevation (ft)	Offset (ft)	(ft)	(%)		(in)	(in)					(cfs)		
1 Link-02	56.93	783.95	0.00	782.75	0.42	1.20	2.1100	CIRCULAR	24.000	24.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
2 Link-03	47.69	795.14	0.00	794.90	12.57	0.24	0.5000	CIRCULAR	15.000	15.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
3 Link-04	108.25	782.33	0.00	781.35	0.19	0.98	0.9100	CIRCULAR	36.000	36.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
4 Link-05	149.97	787.40	0.00	784.28	3.12	3.12	2.0800	CIRCULAR	12.000	12.000	0.0130	0.0000	0.1000	0.0000	0.00	No	1
5 Link-06	36.78	782.93	0.00	782.29	2.26	0.64	1.7400	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
6 Link-07	104.48	781.16	0.00	780.08	0.05	1.08	1.0300	CIRCULAR	36.000	36.000	0.0130	0.0000	0.1000	0.0000	0.00	No	1
7 Link-08	78.09	776.89	0.00	776.61	0.25	0.28	0.3600	CIRCULAR	15.000	15.000	0.0130	0.0000	0.1000	0.0000	0.00	No	1
8 Link-10	7.77	776.48	0.00	776.36	0.00	0.12	1.5400	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
9 Link-11	78.97	776.36	0.00	776.14	0.00	0.22	0.2800	CIRCULAR	18.000	18.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
10 Link-12	12.35	776.77	0.00	776.64	0.50	0.13	1.0500	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
11 Link-13	48.41	776.14	0.00	775.94	4.79	0.20	0.4100	CIRCULAR	18.000	18.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
12 Link-14	82.97	771.22	0.07	766.00	-0.01	5.22	6.2900	Rectangular	48.000	36.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
13 Link-15	56.74	780.03	0.00	779.61	8.46	0.42	0.7400	CIRCULAR	36.000	36.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
14 Link-16	132.76	815.71	0.00	809.64	0.00	6.07	4.5700	CIRCULAR	12.000	12.000	0.0130	0.0000	0.1000	0.0000	0.00	No	1
15 Link-17	148.78	809.65	0.01	800.57	0.00	9.08	6.1000	CIRCULAR	12.000	12.000	0.0130	0.0000	0.1000	0.0000	0.00	No	1
16 Link-18	85.84	800.57	0.00	797.40	0.00	3.17	3.6900	CIRCULAR	12.000	12.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
17 Link-19	9.27	798.65	0.00	797.40	0.00	1.25	13.4800	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
18 Link-20	72.00	797.40	0.00	794.08	0.05	3.32	4.6100	CIRCULAR	12.000	12.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
19 Link-21	55.99	794.03	0.00	793.73	0.33	0.30	0.5400	CIRCULAR	15.000	15.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
20 Link-22	40.69	796.16	0.00	793.81	0.41	2.35	5.7800	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
21 Link-23	77.33	793.40	0.00	793.24	0.05	0.16	0.2100	CIRCULAR	15.000	15.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
22 Link-24	41.11	793.19	0.00	793.00	21.85	0.19	0.4600	CIRCULAR	15.000	15.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
23 Link-37	136.92	802.50	2.00	801.95	0.20	0.55	0.4000	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
24 Link-38	24.56	801.85	0.10	800.75	0.18	1.10	4.4800	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
25 Link-39	10.00	802.00	0.10	801.82	11.82	0.18	1.8000	CIRCULAR	24.000	24.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
26 Link-41	47.26	802.89	0.10	801.95	11.95	0.94	1.9900	CIRCULAR	24.000	24.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
27 Link-42	30.50	790.00	0.10	789.83	0.20	0.17	0.5600	CIRCULAR	36.000	36.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
28 Link-44	214.52	789.73	0.10	788.55	4.60	1.18	0.5500	CIRCULAR	36.000	36.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1

Pipe Results

SN	Element ID	Peak Flow (cfs)	Time of Peak Flow Occurrence (days hh:mm)	Design Flow Capacity (cfs)	Peak Flow/Design Flow Ratio	Peak Flow Velocity (ft/sec)	Travel Time (min)	Peak Flow Depth (ft)	Peak Flow Depth/Total Depth Ratio	Total Time Surcharged (min)	Froude Number	Reported Condition
1	Link-02	5.10	0 12:33	32.84	0.16	7.33	0.13	0.55	0.27	0.00		Calculated
2	Link-03	0.00	0 00:00	4.58	0.00	0.00		0.00	0.00	0.00		Calculated
3	Link-04	5.10	0 12:33	63.46	0.08	5.28	0.34	0.58	0.19	0.00		Calculated
4	Link-05	0.25	0 11:56	5.14	0.05	3.38	0.74	0.15	0.15	0.00		Calculated
5	Link-06	0.28	0 11:56	4.70	0.06	3.19	0.19	0.17	0.17	0.00		Calculated
6	Link-07	5.12	0 12:33	67.81	0.08	5.23	0.33	0.59	0.20	0.00		Calculated
7	Link-08	0.87	0 11:57	3.87	0.22	2.71	0.48	0.38	0.31	0.00		Calculated
8	Link-10	0.38	0 11:56	4.43	0.09	1.44	0.09	0.44	0.44	0.00		Calculated
9	Link-11	1.25	0 11:57	5.54	0.22	2.39	0.55	0.50	0.34	0.00		Calculated
10	Link-12	0.25	0 11:56	3.66	0.07	2.48	0.08	0.19	0.19	0.00		Calculated
11	Link-13	1.48	0 11:57	6.75	0.22	3.02	0.27	0.48	0.32	0.00		Calculated
12	Link-14	6.79	0 11:57	310.16	0.02	9.29	0.15	0.24	0.06	0.00		Calculated
13	Link-15	5.15	0 12:33	57.38	0.09	4.70	0.20	0.64	0.21	0.00		Calculated
14	Link-16	0.69	0 11:56	7.62	0.09	5.03	0.44	0.23	0.23	0.00		Calculated
15	Link-17	1.20	0 11:56	8.80	0.14	6.09	0.41	0.30	0.30	0.00		Calculated
16	Link-18	1.78	0 11:56	6.85	0.26	6.78	0.21	0.37	0.37	0.00		Calculated
17	Link-19	0.67	0 11:57	13.08	0.05	3.89	0.04	0.27	0.27	0.00		Calculated
18	Link-20	2.44	0 11:56	7.65	0.32	5.47	0.22	0.56	0.56	0.00		Calculated
19	Link-21	2.79	0 11:56	4.73	0.59	3.68	0.25	0.76	0.61	0.00		Calculated
20	Link-22	0.68	0 11:56	8.56	0.08	4.53	0.15	0.43	0.43	0.00		Calculated
21	Link-23	3.46	0 11:57	2.94	1.18	3.27	0.39	1.00	0.80	0.00		> CAPACITY
22	Link-24	3.87	0 11:57	4.39	0.88	4.16	0.16	0.89	0.71	0.00		Calculated
23	Link-37	0.01	0 17:52	2.26	0.00	0.75	3.04	0.04	0.04	0.00		Calculated
24	Link-38	0.01	0 17:52	7.54	0.00	1.60	0.26	0.08	0.08	0.00		Calculated
25	Link-39	10.47	0 12:01	30.35	0.35	7.05	0.02	0.96	0.48	0.00		Calculated
26	Link-41	13.75	0 12:00	31.90	0.43	8.59	0.09	1.01	0.51	0.00		Calculated
27	Link-42	5.10	0 12:32	49.80	0.10	4.16	0.12	0.69	0.23	0.00		Calculated
28	Link-44	5.10	0 12:33	49.47	0.10	4.46	0.80	0.66	0.22	0.00		Calculated

**Storage Nodes**

**Storage Node : 13011/3**

**Input Data**

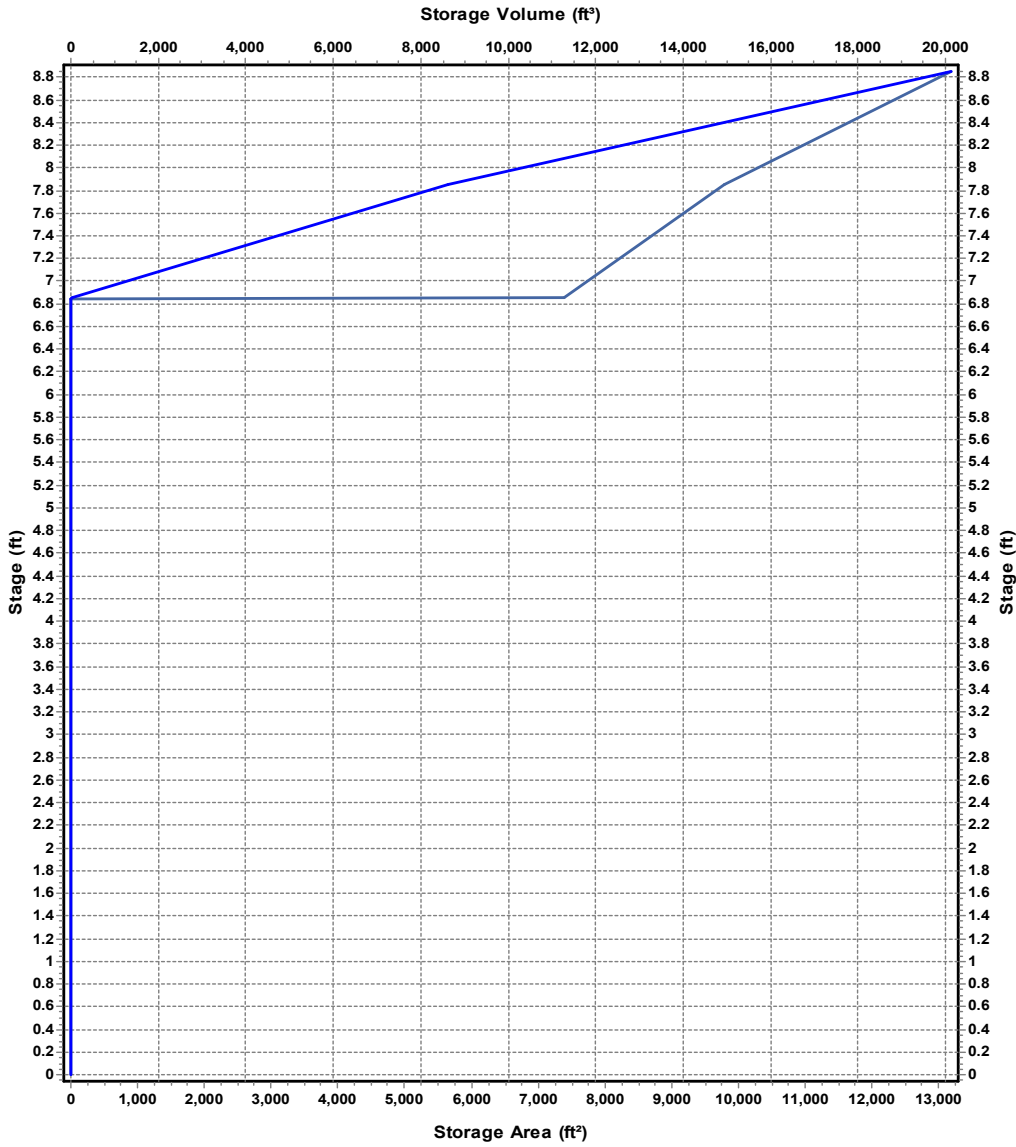
Invert Elevation (ft) .....	771.15
Max (Rim) Elevation (ft) .....	780.00
Max (Rim) Offset (ft) .....	8.85
Initial Water Elevation (ft) .....	771.15
Initial Water Depth (ft) .....	0.00
Ponded Area (ft <sup>2</sup> ) .....	0.00
Evaporation Loss .....	0.00

**Storage Area Volume Curves**

Storage Curve : Existing 02

Stage	Storage Area	Storage Volume
(ft)	(ft <sup>2</sup> )	(ft <sup>3</sup> )
0	0	0
6.84	1	3.42
6.85	7389	40.37
7.85	9796	8632.87
8.85	13187	20124.37

### Storage Area Volume Curves



— Storage Area — Storage Volume

**Storage Node : 13011/3 (continued)**

**Output Summary Results**

Peak Inflow (cfs) .....	6.79
Peak Lateral Inflow (cfs) .....	0.67
Peak Outflow (cfs) .....	6.79
Peak Exfiltration Flow Rate (cfm) .....	0
Max HGL Elevation Attained (ft) .....	771.48
Max HGL Depth Attained (ft) .....	0.33
Average HGL Elevation Attained (ft) .....	771.26
Average HGL Depth Attained (ft) .....	0.11
Time of Max HGL Occurrence (days hh:mm) .....	0 11:57
Total Exfiltration Volume (1000-ft <sup>3</sup> ) .....	0
Total Flooded Volume (ac-in) .....	0
Total Time Flooded (min) .....	0
Total Retention Time (sec) .....	0

**Storage Node : UGD-01**

**Input Data**

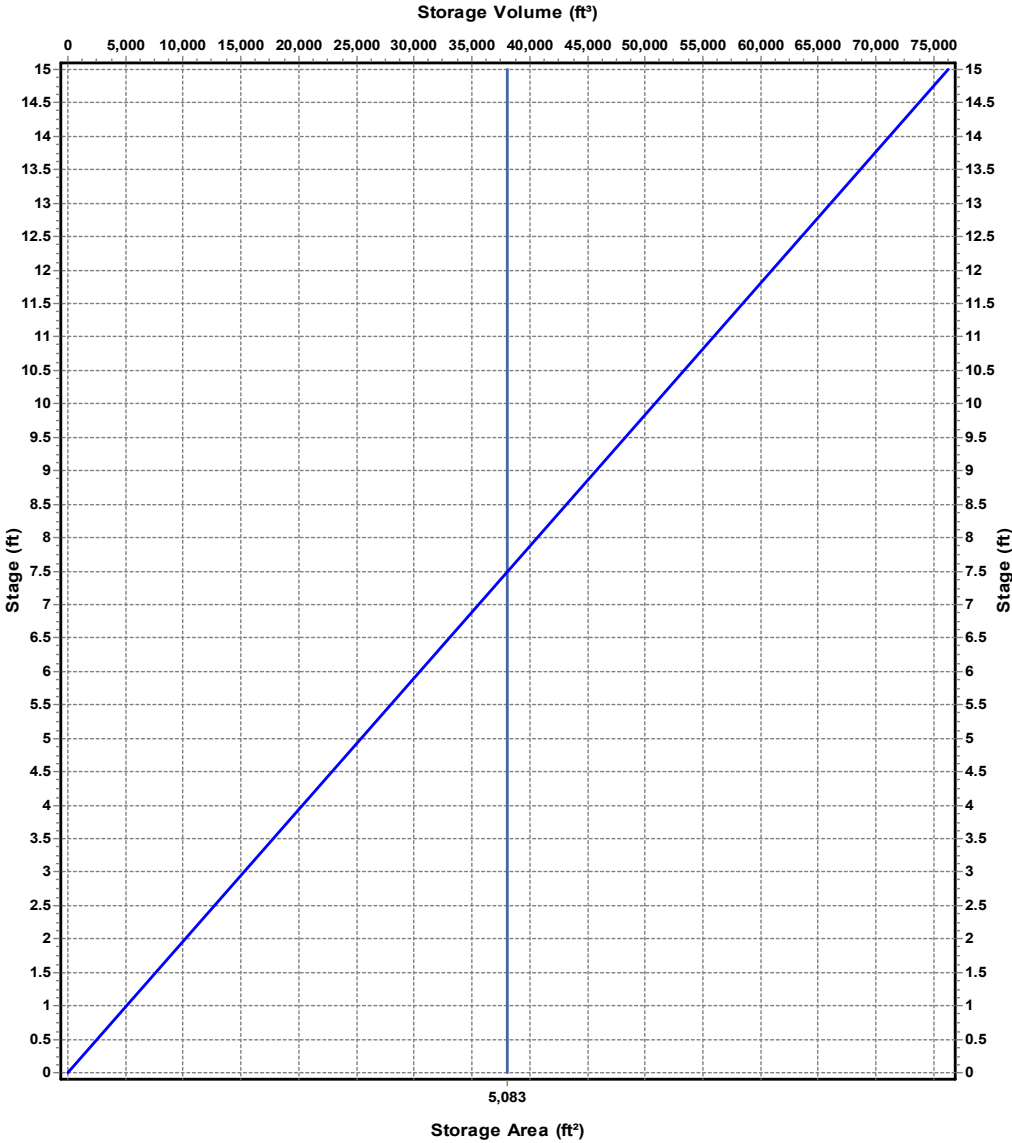
Invert Elevation (ft) .....	790.00
Max (Rim) Elevation (ft) .....	805.00
Max (Rim) Offset (ft) .....	15.00
Initial Water Elevation (ft) .....	790.00
Initial Water Depth (ft) .....	0.00
Ponded Area (ft <sup>2</sup> ) .....	0.00
Evaporation Loss .....	0.00

**Storage Area Volume Curves**

Storage Curve : UGD-01

Stage	Storage Area	Storage Volume
(ft)	(ft <sup>2</sup> )	(ft <sup>3</sup> )
0	5083	0
15	5083	76245

### Storage Area Volume Curves



Storage Area    Storage Volume

**Storage Node : UGD-01 (continued)**

**Outflow Weirs**

SN Element ID	Weir Type	Flap Gate	Crest Elevation (ft)	Crest Offset (ft)	Length (ft)	Weir Total Height (ft)	Discharge Coefficient
1 UGD-01-Weir	Rectangular	No	803.75	13.75	6.00	1.25	2.62

**Outflow Orifices**

SN Element ID	Orifice Type	Orifice Shape	Flap Gate	Circular Orifice Diameter (in)	Rectangular Orifice Height (in)	Rectangular Orifice Width (in)	Orifice Invert Elevation (ft)	Orifice Coefficient
1 UGD-01-2ndStage	Side	Rectangular	No		8.00	48.00	797.50	0.60
2 UGD-01-WQ	Side	CIRCULAR	No	3.00			790.00	0.60

**Output Summary Results**

Peak Inflow (cfs)	24.18
Peak Lateral Inflow (cfs)	0
Peak Outflow (cfs)	5.1
Peak Exfiltration Flow Rate (cfm)	0
Max HGL Elevation Attained (ft)	797.98
Max HGL Depth Attained (ft)	7.98
Average HGL Elevation Attained (ft)	793.82
Average HGL Depth Attained (ft)	3.82
Time of Max HGL Occurrence (days hh:mm)	0 12:32
Total Exfiltration Volume (1000-ft <sup>3</sup> )	0
Total Flooded Volume (ac-in)	0
Total Time Flooded (min)	0
Total Retention Time (sec)	0

**Storage Node : UGD-02**

**Input Data**

Invert Elevation (ft) .....	802.50
Max (Rim) Elevation (ft) .....	809.25
Max (Rim) Offset (ft) .....	6.75
Initial Water Elevation (ft) .....	802.50
Initial Water Depth (ft) .....	0.00
Ponded Area (ft <sup>2</sup> ) .....	0.00
Evaporation Loss .....	0.00

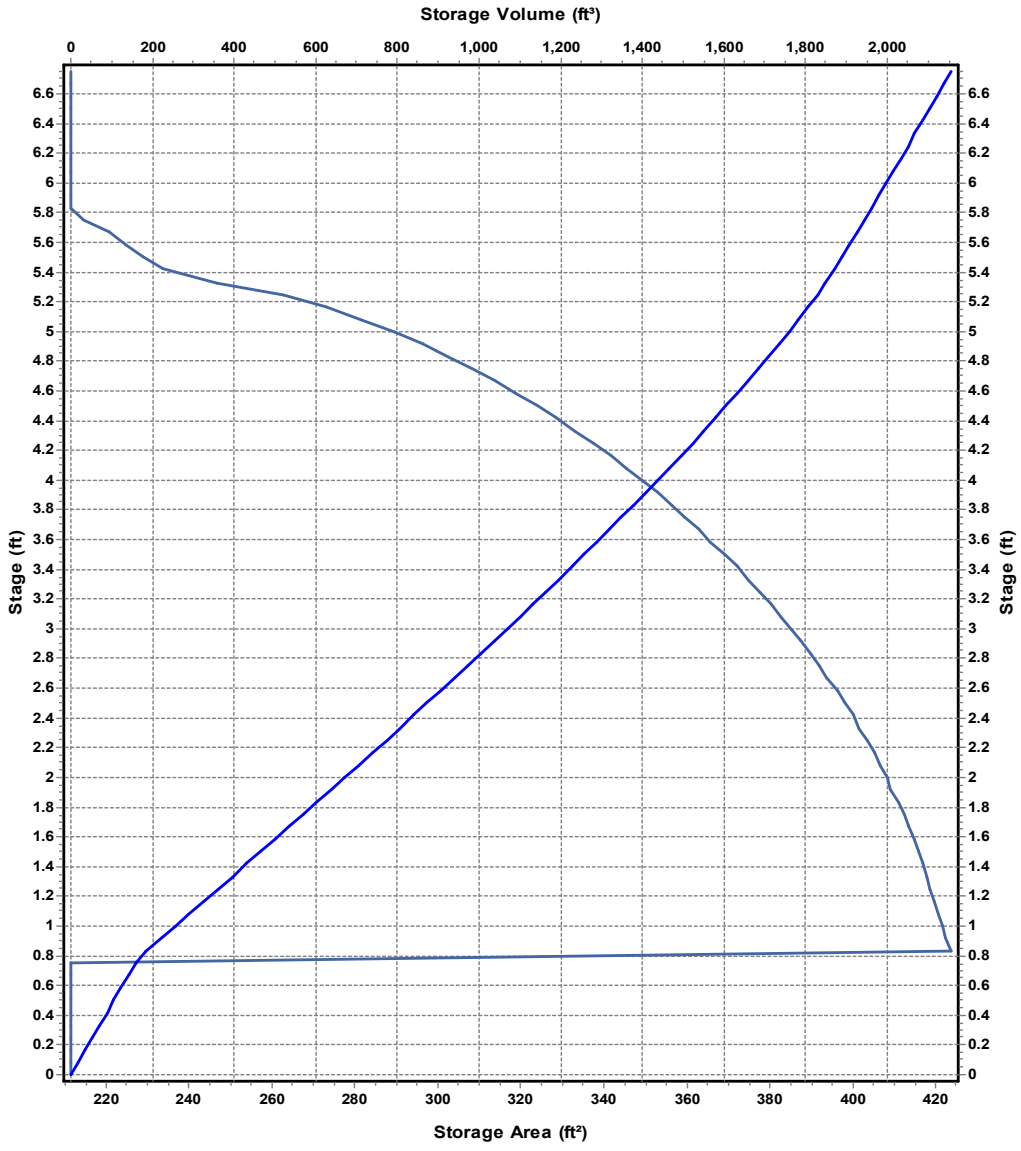
**Storage Area Volume Curves**

Storage Curve : UGD-MC7200

Stage (ft)	Storage Area (ft <sup>2</sup> )	Storage Volume (ft <sup>3</sup> )
0	211.6	0
0.08	211.6	16.93
0.17	211.6	35.97
0.25	211.6	52.9
0.33	211.6	69.83
0.42	211.6	88.87
0.5	211.6	105.8
0.58	211.6	122.73
0.67	211.6	141.77
0.75	211.6	158.7
0.83	423.65	184.11
0.92	422.22	222.17
1	421.48	255.92
1.08	420.65	289.61
1.17	419.44	327.41
1.25	418.56	360.93
1.33	417.93	394.39
1.42	416.93	431.96
1.5	415.88	465.27
1.58	414.76	498.5
1.67	413.55	535.77
1.75	412.31	568.8
1.83	411.06	601.73
1.92	409.06	638.64
2	408.23	671.33
2.08	406.69	703.93
2.17	405.1	740.46
2.25	403.45	772.8
2.33	401.43	805
2.42	399.96	841.06
2.5	398.13	872.98
2.58	396.19	904.75
2.67	393.75	940.3
2.75	391.88	971.73
2.83	389.81	1003
2.92	387.51	1037.98
3	385.18	1068.89
3.08	382.78	1099.61
3.17	380.2	1133.94
3.25	377.55	1164.25
3.33	374.81	1194.34
3.42	371.94	1227.94
3.5	368.99	1257.58
3.58	365.61	1286.96
3.67	362.8	1319.74
3.75	359.58	1348.64
3.83	356.26	1377.27
3.92	352.83	1409.18
4	349.25	1437.26
4.08	345.51	1465.05
4.17	341.57	1495.97
4.25	337.45	1523.13
4.33	333.12	1549.95
4.42	328.51	1579.72
4.5	323.87	1605.82
4.58	318.91	1631.53
4.67	313.71	1660
4.75	308.31	1684.88
4.83	302.46	1709.31
4.92	296.21	1736.25
5	289.37	1759.67

5.08	281.76	1782.52
5.17	273.2	1807.49
5.25	262.78	1828.93
5.33	246.67	1849.31
5.42	233.8	1870.93
5.5	228.93	1889.44
5.58	224.98	1907.6
5.67	220.79	1927.66
5.75	214.54	1945.07
5.83	211.6	1962.12
5.92	211.6	1981.16
6	211.6	1998.09
6.08	211.6	2015.02
6.17	211.6	2034.06
6.25	211.6	2050.99
6.33	211.6	2067.92
6.42	211.6	2086.96
6.5	211.6	2103.89
6.58	211.6	2120.82
6.67	211.6	2139.86
6.75	211.6	2156.79

### Storage Area Volume Curves



Storage Area Storage Volume

**Storage Node : UGD-02 (continued)**

**Outflow Orifices**

SN Element ID	Orifice Type	Orifice Shape	Flap Gate	Circular Orifice Diameter (in)	Rectangular Orifice Height (in)	Rectangular Orifice Width (in)	Orifice Invert Elevation (ft)	Orifice Coefficient
1 UGD-02-MANIFOLD	Side	CIRCULAR	No	12.00			806.22	0.60
2 UGD-02-WQ	Side	CIRCULAR	No	0.50			802.50	0.60

**Output Summary Results**

Peak Inflow (cfs) .....	0.42
Peak Lateral Inflow (cfs) .....	0.42
Peak Outflow (cfs) .....	0.01
Peak Exfiltration Flow Rate (cfm) .....	0
Max HGL Elevation Attained (ft) .....	804.4
Max HGL Depth Attained (ft) .....	1.9
Average HGL Elevation Attained (ft) .....	803.43
Average HGL Depth Attained (ft) .....	0.93
Time of Max HGL Occurrence (days hh:mm) .....	0 17:52
Total Exfiltration Volume (1000-ft <sup>3</sup> ) .....	0
Total Flooded Volume (ac-in) .....	0
Total Time Flooded (min) .....	0
Total Retention Time (sec) .....	0

**Storage Node : UGD-03**

**Input Data**

Invert Elevation (ft) ..... 813.62  
 Max (Rim) Elevation (ft) ..... 821.50  
 Max (Rim) Offset (ft) ..... 7.88  
 Initial Water Elevation (ft) ..... 0.00  
 Initial Water Depth (ft) ..... -813.62  
 Poned Area (ft<sup>2</sup>) ..... 0.00  
 Evaporation Loss ..... 0.00

**Outflow Orifices**

SN Element ID	Orifice Type	Orifice Shape	Flap Gate	Circular Orifice Diameter (in)	Rectangular Orifice Height (in)	Rectangular Orifice Width (in)	Orifice Invert Elevation (ft)	Orifice Coefficient
1 UGD-03-Orifice	Side	CIRCULAR	No	10.00			813.62	0.60

**Output Summary Results**

Peak Inflow (cfs) ..... 8.96  
 Peak Lateral Inflow (cfs) ..... 8.96  
 Peak Outflow (cfs) ..... 3.62  
 Peak Exfiltration Flow Rate (cfm) ..... 0  
 Max HGL Elevation Attained (ft) ..... 815.93  
 Max HGL Depth Attained (ft) ..... 2.31  
 Average HGL Elevation Attained (ft) ..... 813.85  
 Average HGL Depth Attained (ft) ..... 0.23  
 Time of Max HGL Occurrence (days hh:mm) ..... 0 12:09  
 Total Exfiltration Volume (1000-ft<sup>3</sup>) ..... 0  
 Total Flooded Volume (ac-in) ..... 0  
 Total Time Flooded (min) ..... 0  
 Total Retention Time (sec) ..... 0

### Project Description

File Name ..... 20220867-PCM-ALT4\_two systems.SPF  
 Description .....  
     Bridge Park (Dublin) Block Y  
     Storm Sewer Capacity Analysis  
     EMH&T File 2022-0867  
     Proposed Conditions Model  
     Alternative 4  
     Created: 2025-09-10

### Project Options

Flow Units ..... CFS  
 Elevation Type ..... Elevation  
 Hydrology Method ..... SCS TR-55  
 Time of Concentration (TOC) Method ..... SCS TR-55  
 Link Routing Method ..... Hydrodynamic  
 Enable Overflow Ponding at Nodes ..... YES  
 Skip Steady State Analysis Time Periods ... NO

### Analysis Options

Start Analysis On ..... 00:00:00   0:00:00  
 End Analysis On ..... 00:00:00   0:00:00  
 Start Reporting On ..... 00:00:00   0:00:00  
 Antecedent Dry Days ..... 0   days  
 Runoff (Dry Weather) Time Step ..... 0 01:00:00   days hh:mm:ss  
 Runoff (Wet Weather) Time Step ..... 0 00:05:00   days hh:mm:ss  
 Reporting Time Step ..... 0 00:01:00   days hh:mm:ss  
 Routing Time Step ..... 1   seconds

### Number of Elements

Qty  
 Rain Gages ..... 1  
 Subbasins..... 20  
 Nodes..... 32  
     Junctions ..... 27  
     Outfalls ..... 1  
     Flow Diversions ..... 0  
     Inlets ..... 0  
     Storage Nodes ..... 4  
 Links..... 34  
     Channels ..... 0  
     Pipes ..... 28  
     Pumps ..... 0  
     Orifices ..... 5  
     Weirs ..... 1  
     Outlets ..... 0  
 Pollutants ..... 0  
 Land Uses ..... 0

### Rainfall Details

SN	Rain Gage ID	Data Source	Data Source ID	Rainfall Type	Rain Units	State	County	Return Period (years)	Rainfall Depth (inches)	Rainfall Distribution
49		Time Series	2-year	Cumulative	inches	Ohio	Franklin	2.00	2.63	SCS Type II 24-hr

## Subbasin Summary

SN	Subbasin ID	Area (ac)	Peak Rate Factor	Weighted Curve Number	Total Rainfall (in)	Total Runoff (in)	Total Runoff Volume (ac-in)	Peak Runoff (cfs)	Time of Concentration (days hh:mm:ss)
1	FUTURE-01	3.25	484.00	95.00	2.63	2.09	6.79	8.96	0 00:10:00
2	FUTURE-02	5.53	484.00	93.00	2.63	1.90	10.52	14.19	0 00:10:00
3	FUTURE-03	0.78	484.00	95.00	2.63	2.09	1.63	2.46	0 00:05:00
4	POST-01	3.47	484.00	94.00	2.63	1.99	6.92	9.24	0 00:10:00
5	POST-02	1.34	484.00	91.00	2.63	1.73	2.32	3.16	0 00:10:00
6	POST-03	0.28	484.00	85.00	2.63	1.28	0.36	0.57	0 00:05:00
7	SUB-13003	0.09	484.00	97.81	2.63	2.37	0.21	0.30	0 00:05:00
8	SUB-13006	0.21	484.00	90.17	2.63	1.66	0.35	0.55	0 00:05:00
9	SUB-13009	0.11	484.00	95.27	2.63	2.11	0.23	0.35	0 00:05:00
10	SUB-13011/3	1.18	484.00	74.32	2.63	0.70	0.82	1.08	0 00:10:00
11	SUB-13016	0.09	484.00	97.34	2.63	2.32	0.21	0.30	0 00:05:00
12	SUB-13018	0.22	484.00	87.75	2.63	1.47	0.32	0.51	0 00:05:00
13	SUB-1451	0.37	484.00	88.41	2.63	1.52	0.56	0.90	0 00:05:00
14	SUB-1511	0.16	484.00	92.08	2.63	1.82	0.29	0.45	0 00:05:00
15	SUB-1533	0.15	484.00	89.88	2.63	1.63	0.24	0.38	0 00:05:00
16	SUB-1570	0.26	484.00	92.05	2.63	1.82	0.47	0.74	0 00:05:00
17	SUB-1607	0.24	484.00	90.83	2.63	1.71	0.41	0.66	0 00:05:00
18	SUB-D22690	0.31	484.00	92.30	2.63	1.84	0.57	0.88	0 00:05:00
19	SUB-D22725	0.90	484.00	79.00	2.63	0.93	0.83	1.30	0 00:05:00
20	UNDETAINED-01	0.27	484.00	84.00	2.63	1.22	0.33	0.52	0 00:05:00

Node Summary

SN	Element ID	Element Type	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Initial Water Elevation (ft)	Surcharge Elevation (ft)	Ponded Area (ft <sup>2</sup> )	Peak Inflow (cfs)	Max HGL Elevation Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)	Time of Peak Flooding Occurrence (days hhmm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
1	1	Junction	789.63	800.72	789.63	800.72	10.00	11.05	790.72	0.00	10.00	0 00:00	0.00	0.00
2	2	Junction	789.90	810.97	789.90	810.97	0.00	11.05	791.11	0.00	19.86	0 00:00	0.00	0.00
3	301	Junction	801.75	810.70	801.75	810.70	10.00	0.01	801.88	0.00	8.82	0 00:00	0.00	0.00
4	302	Junction	800.50	814.72	800.50	814.72	10.00	0.01	802.55	0.00	12.17	0 00:00	0.00	0.00
5	1312	Junction	795.14	801.14	795.14	801.14	10.00	0.00	795.14	0.00	6.00	0 00:00	0.00	0.00
6	1451	Junction	796.16	801.58	796.16	801.58	10.00	0.89	796.38	0.00	5.20	0 00:00	0.00	0.00
7	1453	Junction	793.40	803.00	793.40	803.00	10.00	4.47	794.79	0.00	8.21	0 00:00	0.00	0.00
8	1511	Junction	794.03	805.54	794.03	805.54	10.00	3.60	795.02	0.00	10.52	0 00:00	0.00	0.00
9	1533	Junction	798.65	807.61	798.65	807.61	10.00	0.90	798.83	0.00	8.78	0 00:00	0.00	0.00
10	1570	Junction	800.57	809.15	800.57	809.15	10.00	2.26	800.97	0.00	8.18	0 00:00	0.00	0.00
11	1607	Junction	809.64	815.19	809.64	815.19	10.00	1.53	809.93	0.00	5.26	0 00:00	0.00	0.00
12	13001	Junction	783.95	800.74	783.95	800.74	10.00	11.05	784.81	0.00	15.93	0 00:00	0.00	0.00
13	13002	Junction	782.33	798.46	782.33	798.46	10.00	11.05	783.22	0.00	15.24	0 00:00	0.00	0.00
14	13003	Junction	787.40	796.61	787.40	796.61	10.00	0.30	787.56	0.00	9.05	0 00:00	0.00	0.00
15	13005	Junction	781.16	791.08	781.16	791.08	10.00	11.10	782.00	0.00	9.08	0 00:00	0.00	0.00
16	13006	Junction	793.19	802.62	793.19	802.62	10.00	5.00	794.40	0.00	8.22	0 00:00	0.00	0.00
17	13008	Junction	780.03	787.03	780.03	787.03	10.00	11.14	781.05	0.00	5.98	0 00:00	0.00	0.00
18	13009	Junction	782.93	787.81	782.93	787.81	10.00	0.35	783.12	0.00	4.69	0 00:00	0.00	0.00
19	13016	Junction	776.77	780.79	776.77	780.79	10.00	0.30	776.98	0.00	3.81	0 00:00	0.00	0.00
20	13017	Junction	776.14	780.49	776.14	780.49	10.00	2.08	776.75	0.00	3.74	0 00:00	0.00	0.00
21	13018	Junction	776.48	780.24	776.48	780.24	10.00	0.51	776.97	0.00	3.27	0 00:00	0.00	0.00
22	13019	Junction	776.36	779.72	776.36	779.72	10.00	1.79	776.97	0.00	2.75	0 00:00	0.00	0.00
23	D22686	Junction	797.40	807.27	797.40	807.27	10.00	3.16	797.85	0.00	9.42	0 00:00	0.00	0.00
24	D22690	Junction	815.71	820.04	815.71	820.04	10.00	0.88	815.94	0.00	4.10	0 00:00	0.00	0.00
25	D22725	Junction	776.89	781.00	776.89	781.00	10.00	1.29	777.39	0.00	3.61	0 00:00	0.00	0.00
26	HDS-101	Junction	801.90	814.15	801.90	814.15	10.00	12.72	803.24	0.00	10.91	0 00:00	0.00	0.00
27	HDS-201	Junction	802.79	815.53	802.79	815.53	10.00	17.34	804.19	0.00	11.34	0 00:00	0.00	0.00
28	13021/3	Outfall	766.01					12.57	766.35					
29	13011/3	Storage Node	771.15	780.00	771.15		0.00	12.57	771.62				0.00	0.00
30	UGD-01	Storage Node	790.00	805.00	790.00		0.00	30.04	798.49				0.00	0.00
31	UGD-02	Storage Node	802.50	809.25	802.50		0.00	0.57	805.07				0.00	0.00
32	UGD-03	Storage Node	813.62	821.50	0.00		0.00	11.05	816.54				0.00	0.00

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Diameter or Height (in)	Manning's Roughness	Peak Flow (cfs)	Design Flow Capacity (cfs)	Peak Flow/Design Flow Ratio	Peak Flow Velocity (ft/sec)	Peak Flow Depth (ft)	Peak Flow Depth/Total Depth Ratio	Total Time Reported Surcharged (min)	Reported Condition
1	Link-02	Pipe	13001	13002	56.93	783.95	782.75	2.1100	24.000	0.0130	11.05	32.84	0.34	8.94	0.83	0.42	0.00	Calculated
2	Link-03	Pipe	1312	13002	47.69	795.14	794.90	0.5000	15.000	0.0130	0.00	4.58	0.00	0.00	0.00	0.00	0.00	Calculated
3	Link-04	Pipe	13002	13005	108.25	782.33	781.35	0.9100	36.000	0.0130	11.06	63.46	0.17	6.53	0.87	0.29	0.00	Calculated
4	Link-05	Pipe	13003	13005	149.97	787.40	784.28	2.0800	12.000	0.0130	0.30	5.14	0.06	3.57	0.16	0.16	0.00	Calculated
5	Link-06	Pipe	13009	13008	36.78	782.93	782.29	1.7400	12.000	0.0130	0.35	4.70	0.07	3.39	0.19	0.19	0.00	Calculated
6	Link-07	Pipe	13005	13008	104.48	781.16	780.08	1.0300	36.000	0.0130	11.10	67.81	0.16	6.19	0.90	0.30	0.00	Calculated
7	Link-08	Pipe	D22725	13019	78.09	776.89	776.61	0.3600	15.000	0.0130	1.29	3.87	0.33	3.04	0.47	0.38	0.00	Calculated
8	Link-10	Pipe	13018	13019	7.77	776.48	776.36	1.5400	12.000	0.0130	0.50	4.43	0.11	1.46	0.55	0.55	0.00	Calculated
9	Link-11	Pipe	13019	13017	78.97	776.36	776.14	0.2800	18.000	0.0130	1.79	5.54	0.32	2.64	0.61	0.41	0.00	Calculated
10	Link-12	Pipe	13016	13017	12.35	776.77	776.64	1.0500	12.000	0.0130	0.30	3.66	0.08	2.63	0.20	0.20	0.00	Calculated
11	Link-13	Pipe	13017	13011/3	48.41	776.14	775.94	0.4100	18.000	0.0130	2.08	6.75	0.31	3.31	0.58	0.39	0.00	Calculated
12	Link-14	Pipe	13011/3	13021/3	82.97	771.22	766.00	6.2900	48.000	0.0130	12.57	310.16	0.04	11.25	0.37	0.09	0.00	Calculated
13	Link-15	Pipe	13008	13011/3	56.74	780.03	779.61	0.7400	36.000	0.0130	11.14	57.38	0.19	5.75	0.96	0.32	0.00	Calculated
14	Link-16	Pipe	D22690	1607	132.76	815.71	809.64	4.5700	12.000	0.0130	0.88	7.62	0.11	5.39	0.26	0.26	0.00	Calculated
15	Link-17	Pipe	1607	1570	148.78	809.65	800.57	6.1000	12.000	0.0130	1.53	8.80	0.17	6.51	0.34	0.34	0.00	Calculated
16	Link-18	Pipe	1570	D22686	85.84	800.57	797.40	3.6900	12.000	0.0130	2.26	6.85	0.33	7.19	0.42	0.42	0.00	Calculated
17	Link-19	Pipe	1533	D22686	9.27	798.65	797.40	13.4800	12.000	0.0130	0.90	13.08	0.07	4.29	0.31	0.31	0.00	Calculated
18	Link-20	Pipe	D22686	1511	72.00	797.40	794.08	4.6100	12.000	0.0130	3.16	7.65	0.41	5.61	0.70	0.70	0.00	Calculated
19	Link-21	Pipe	1511	1453	55.99	794.03	793.73	0.5400	15.000	0.0130	3.58	4.73	0.76	3.67	1.02	0.82	0.00	Calculated
20	Link-22	Pipe	1451	1453	40.69	796.16	793.81	5.7800	12.000	0.0130	0.89	8.56	0.10	4.44	0.60	0.60	0.00	Calculated
21	Link-23	Pipe	1453	13006	77.33	793.40	793.24	0.2100	15.000	0.0130	4.46	2.94	1.52	3.68	1.20	0.96	0.00	> CAPACITY
22	Link-24	Pipe	13006	13011/3	41.11	793.19	793.00	0.4600	15.000	0.0130	4.99	4.39	1.14	4.51	1.06	0.85	0.00	> CAPACITY
23	Link-37	Pipe	302	301	136.92	802.50	801.95	0.4000	12.000	0.0130	0.01	2.26	0.00	0.78	0.05	0.05	0.00	Calculated
24	Link-38	Pipe	301	1570	24.56	801.85	800.75	4.4800	12.000	0.0130	0.01	7.54	0.00	1.68	0.11	0.11	0.00	Calculated
25	Link-39	Pipe	HDS-101	UGD-01	10.00	802.00	801.82	1.8000	24.000	0.0130	12.72	30.35	0.42	7.41	1.07	0.54	0.00	Calculated
26	Link-41	Pipe	HDS-201	UGD-01	47.26	802.89	801.95	1.9900	24.000	0.0130	17.34	31.90	0.54	9.03	1.18	0.59	0.00	Calculated
27	Link-42	Pipe	2	1	30.50	790.00	789.83	0.5600	36.000	0.0130	11.05	49.80	0.22	5.13	1.03	0.34	0.00	Calculated
28	Link-44	Pipe	1	13001	214.52	789.73	788.55	0.5500	36.000	0.0130	11.05	49.47	0.22	5.54	0.98	0.33	0.00	Calculated
29	UGD-01 -2ndStage	Orifice	UGD-01	2		790.00	789.90		8.000		10.41							
30	UGD-01-WQ	Orifice	UGD-01	2		790.00	789.90		3.000		0.64							
31	UGD-02-MANIFOLD	Orifice	UGD-02	302		802.50	800.50		12.000		0.00							
32	UGD-02-WQ	Orifice	UGD-02	302		802.50	800.50		0.500		0.01							
33	UGD-03-Orifice	Orifice	UGD-03	HDS-101		813.62	801.90		10.000		4.16							
34	UGD-01-Weir	Weir	UGD-01	2		790.00	789.90				0.00							

**Subbasin Hydrology**

**Subbasin : FUTURE-01**

**Input Data**

Area (ac) ..... 3.25  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 95  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	3.25	-	95
Composite Area & Weighted CN	3.25		95

**Time of Concentration**

TOC Method : SCS TR-55

Sheet Flow Equation :

$$T_c = (0.007 * ((n * L_f)^{0.8})) / ((P^{0.5}) * (S_f^{0.4}))$$

Where :

- Tc = Time of Concentration (hr)
- n = Manning's roughness
- Lf = Flow Length (ft)
- P = 2 yr, 24 hr Rainfall (inches)
- Sf = Slope (ft/ft)

Shallow Concentrated Flow Equation :

- V = 16.1345 \* (Sf<sup>0.5</sup>) (unpaved surface)
- V = 20.3282 \* (Sf<sup>0.5</sup>) (paved surface)
- V = 15.0 \* (Sf<sup>0.5</sup>) (grassed waterway surface)
- V = 10.0 \* (Sf<sup>0.5</sup>) (nearly bare & untilled surface)
- V = 9.0 \* (Sf<sup>0.5</sup>) (cultivated straight rows surface)
- V = 7.0 \* (Sf<sup>0.5</sup>) (short grass pasture surface)
- V = 5.0 \* (Sf<sup>0.5</sup>) (woodland surface)
- V = 2.5 \* (Sf<sup>0.5</sup>) (forest w/heavy litter surface)
- Tc = (Lf / V) / (3600 sec/hr)

Where:

- Tc = Time of Concentration (hr)
- Lf = Flow Length (ft)
- V = Velocity (ft/sec)
- Sf = Slope (ft/ft)

Channel Flow Equation :

$$V = (1.49 * (R^{2/3})) * (S_f^{0.5}) / n$$

$$R = A_q / W_p$$

$$T_c = (L_f / V) / (3600 \text{ sec/hr})$$

Where :

- Tc = Time of Concentration (hr)
- Lf = Flow Length (ft)
- R = Hydraulic Radius (ft)
- Aq = Flow Area (ft<sup>2</sup>)
- Wp = Wetted Perimeter (ft)
- V = Velocity (ft/sec)
- Sf = Slope (ft/ft)
- n = Manning's roughness

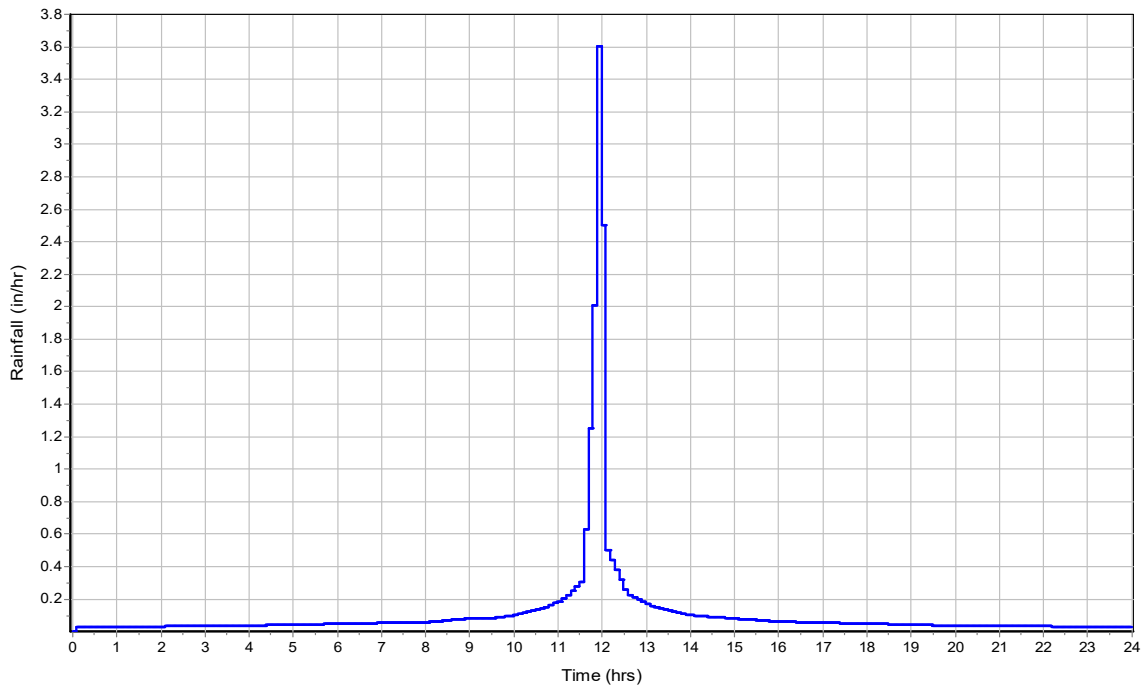
User-Defined TOC override (minutes): 10

**Subbasin Runoff Results**

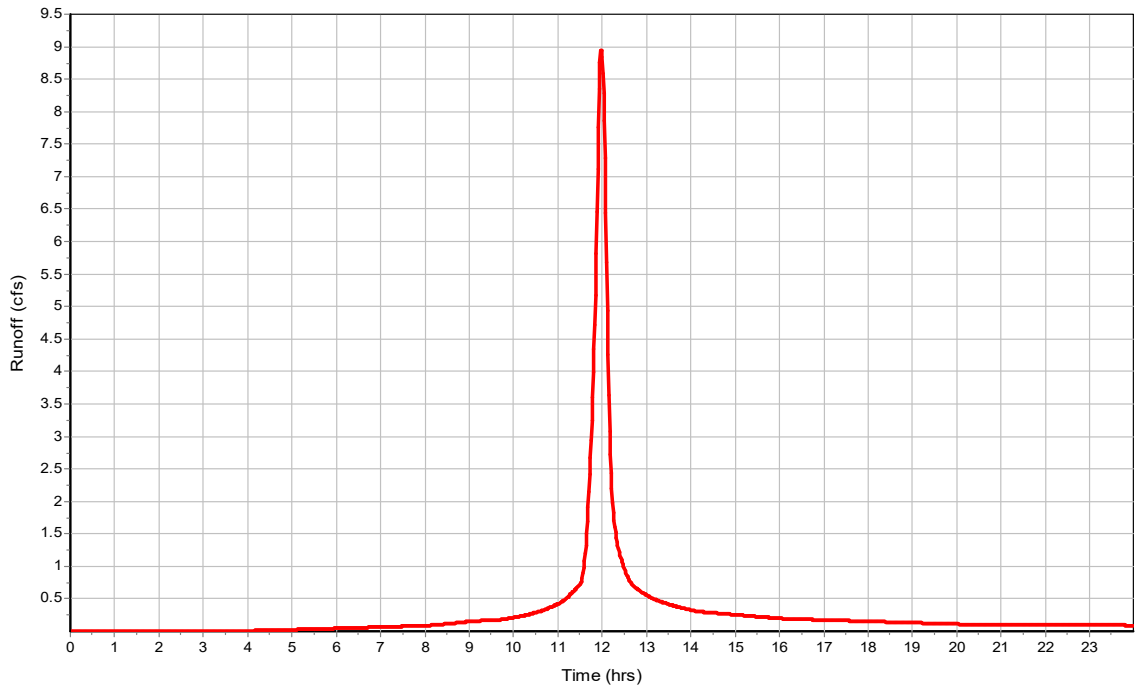
Total Rainfall (in) ..... 2.63  
 Total Runoff (in) ..... 2.09  
 Peak Runoff (cfs) ..... 8.96  
 Weighted Curve Number ..... 95  
 Time of Concentration (days hh:mm:ss) ..... 0 00:10:00

Subbasin : FUTURE-01

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : FUTURE-02**

**Input Data**

Area (ac) ..... 5.53  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 93  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	5.53	-	93
Composite Area & Weighted CN	5.53		93

**Time of Concentration**

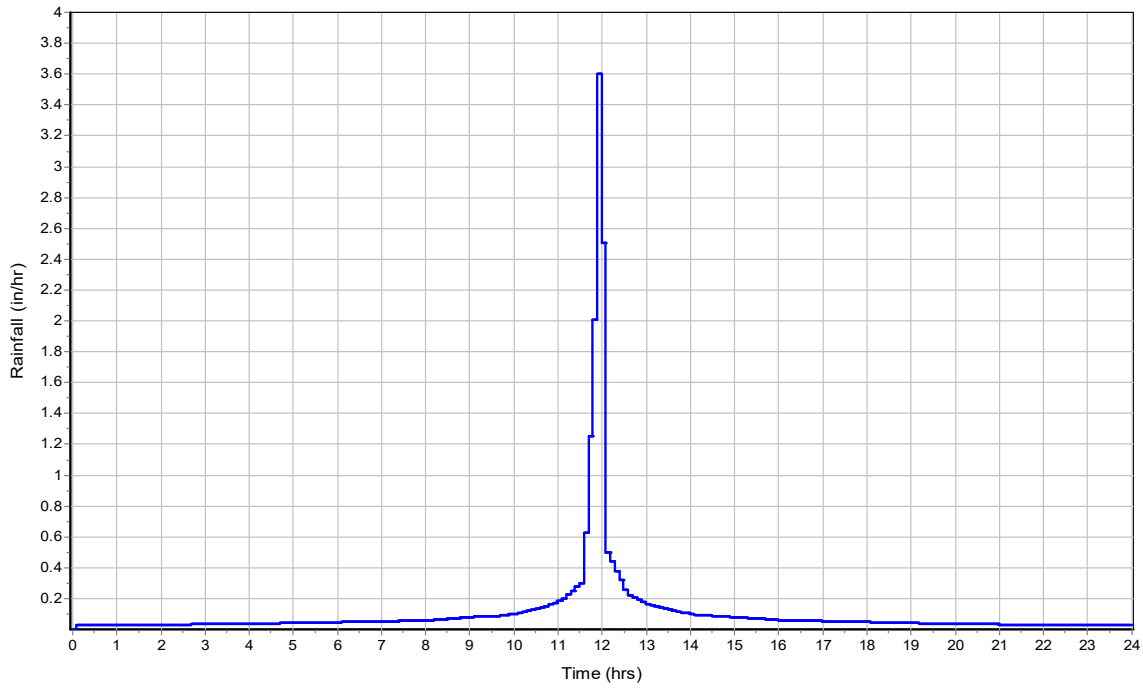
User-Defined TOC override (minutes): 10

**Subbasin Runoff Results**

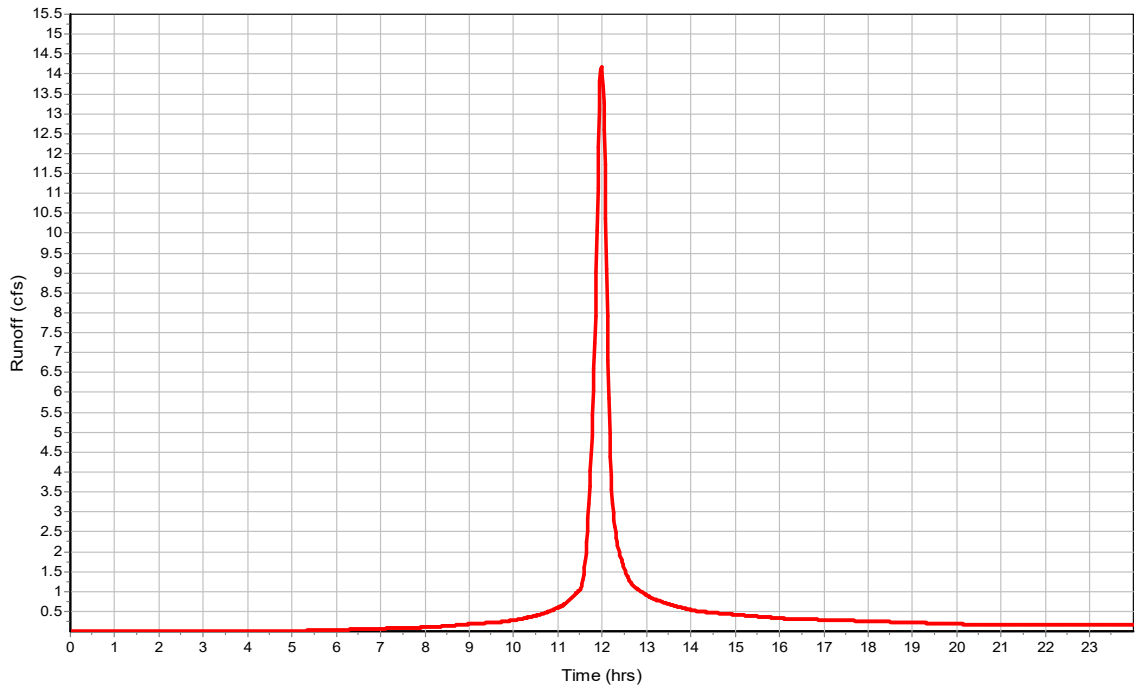
Total Rainfall (in) ..... 2.63  
 Total Runoff (in) ..... 1.9  
 Peak Runoff (cfs) ..... 14.19  
 Weighted Curve Number ..... 93  
 Time of Concentration (days hh:mm:ss) ..... 0 00:10:00

Subbasin : FUTURE-02

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : FUTURE-03**

**Input Data**

Area (ac) ..... 0.78  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 95  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	0.78	-	95
Composite Area & Weighted CN	0.78		95

**Time of Concentration**

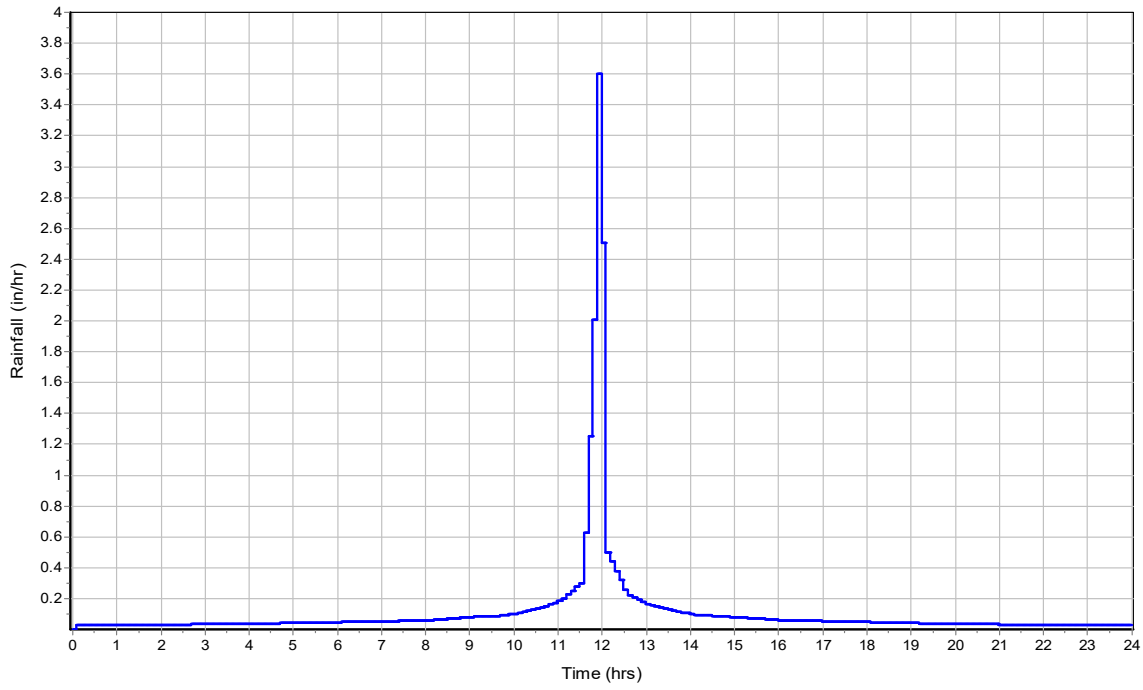
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

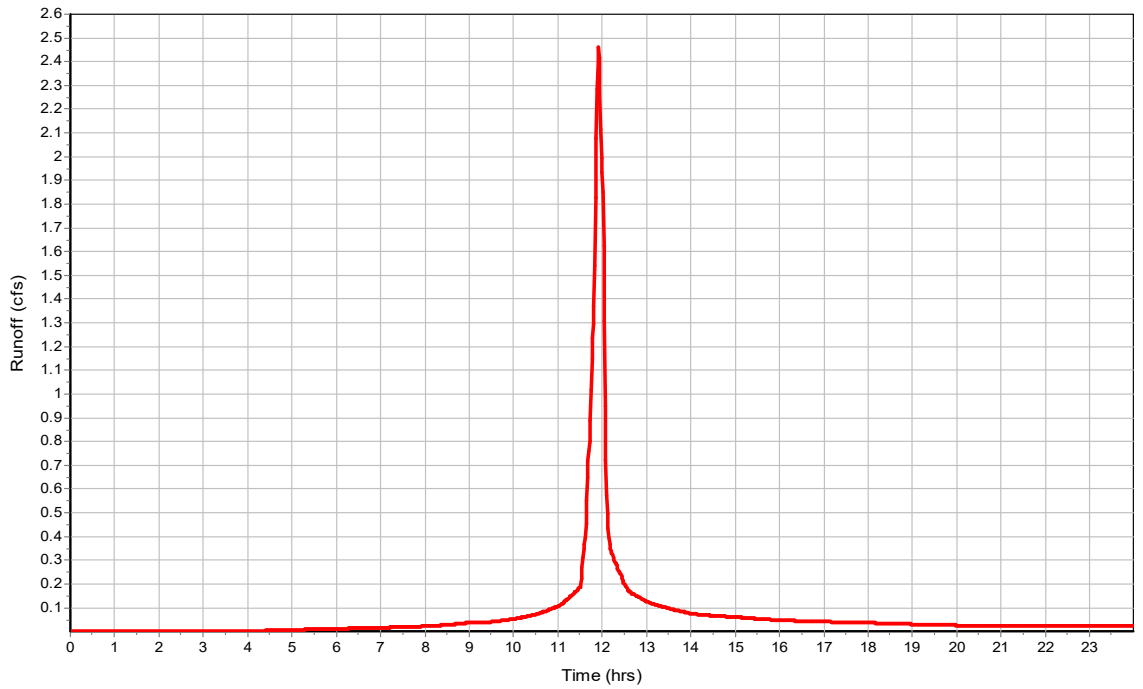
Total Rainfall (in) ..... 2.63  
 Total Runoff (in) ..... 2.09  
 Peak Runoff (cfs) ..... 2.46  
 Weighted Curve Number ..... 95  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : FUTURE-03

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : POST-01**

**Input Data**

Area (ac) ..... 3.47  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 94  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	3.47	-	94
Composite Area & Weighted CN	3.47		94

**Time of Concentration**

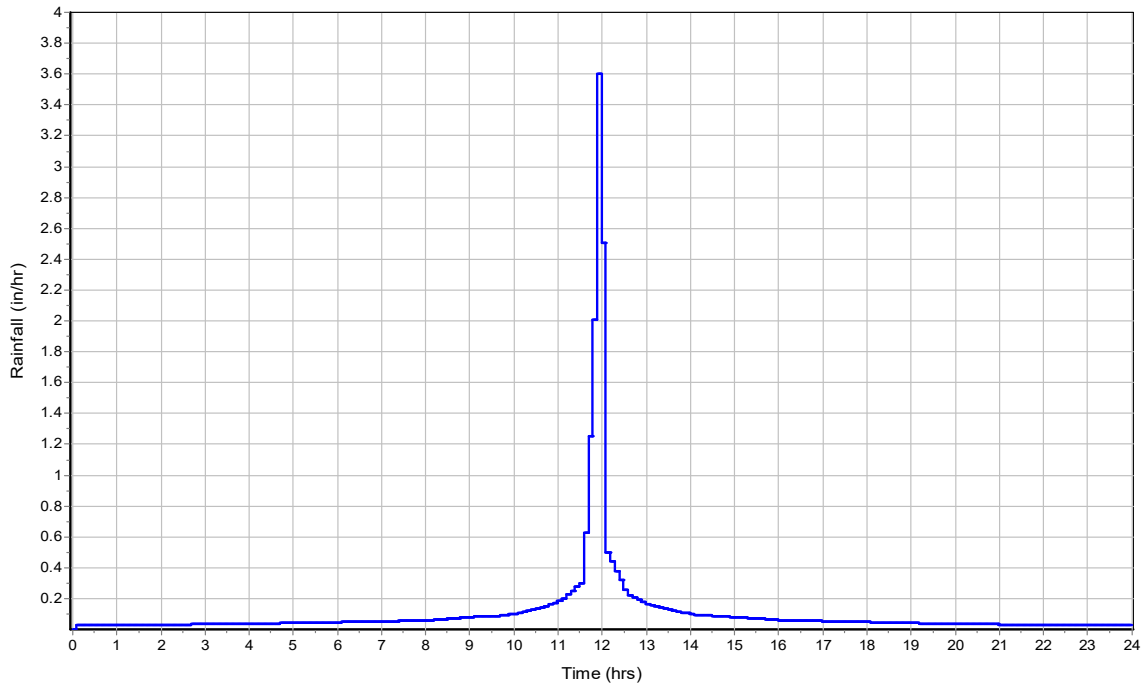
User-Defined TOC override (minutes): 10

**Subbasin Runoff Results**

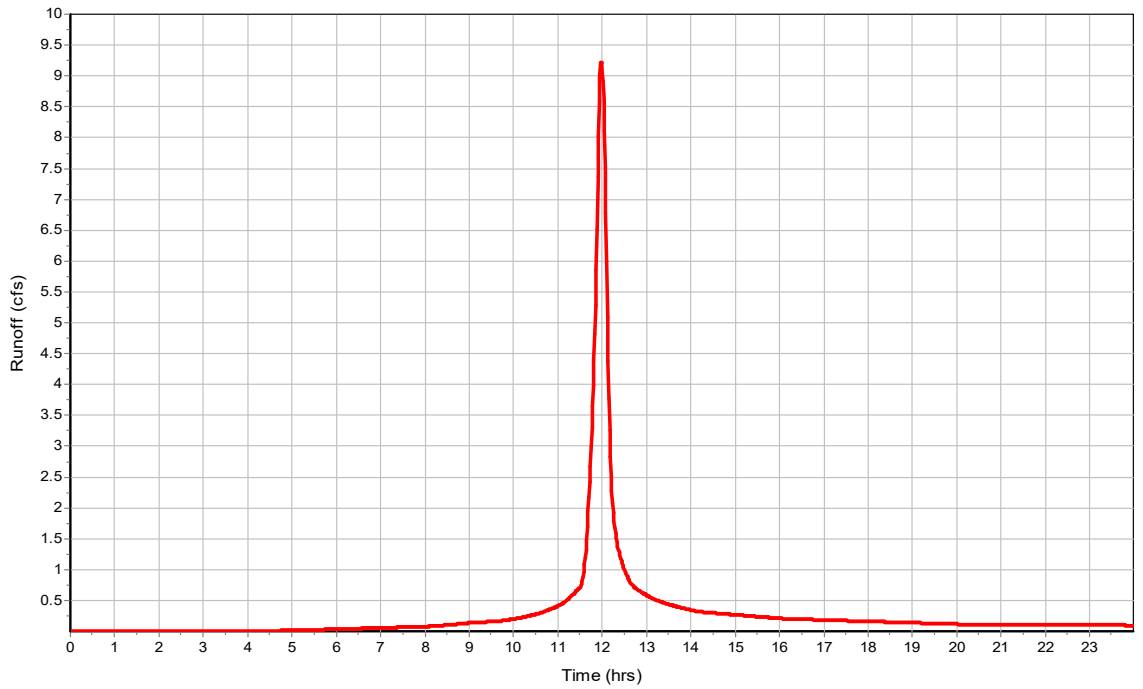
Total Rainfall (in) ..... 2.63  
 Total Runoff (in) ..... 1.99  
 Peak Runoff (cfs) ..... 9.24  
 Weighted Curve Number ..... 94  
 Time of Concentration (days hh:mm:ss) ..... 0 00:10:00

Subbasin : POST-01

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : POST-02**

**Input Data**

Area (ac) ..... 1.34  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 91  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	1.34	-	91
Composite Area & Weighted CN	1.34		91

**Time of Concentration**

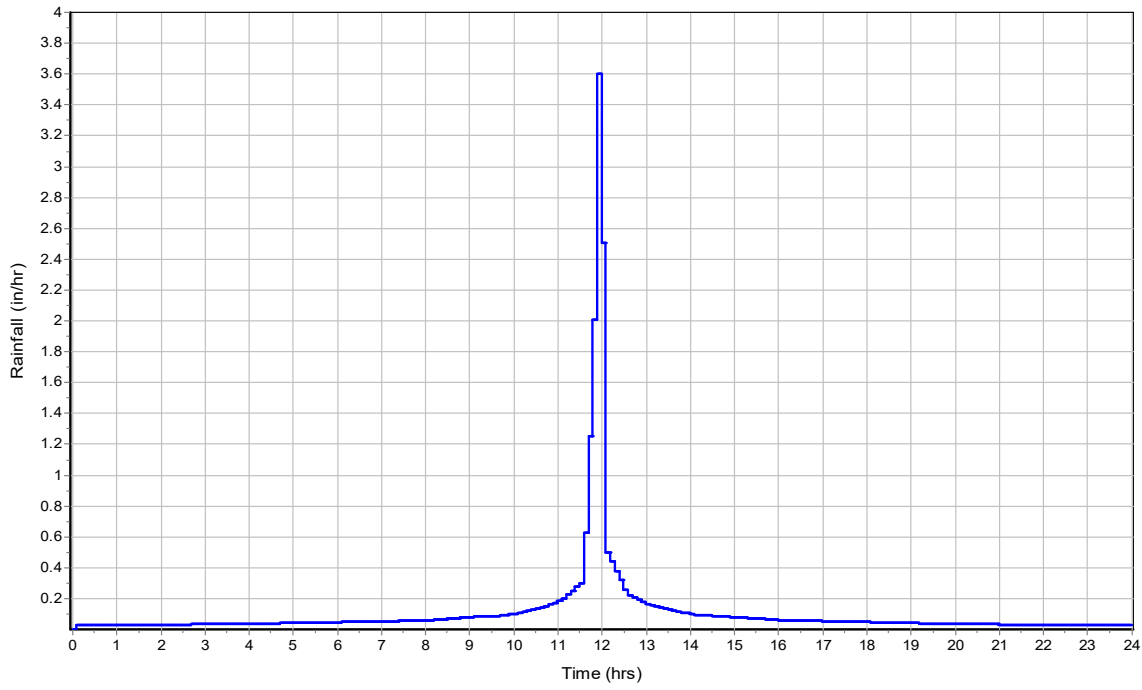
User-Defined TOC override (minutes): 10

**Subbasin Runoff Results**

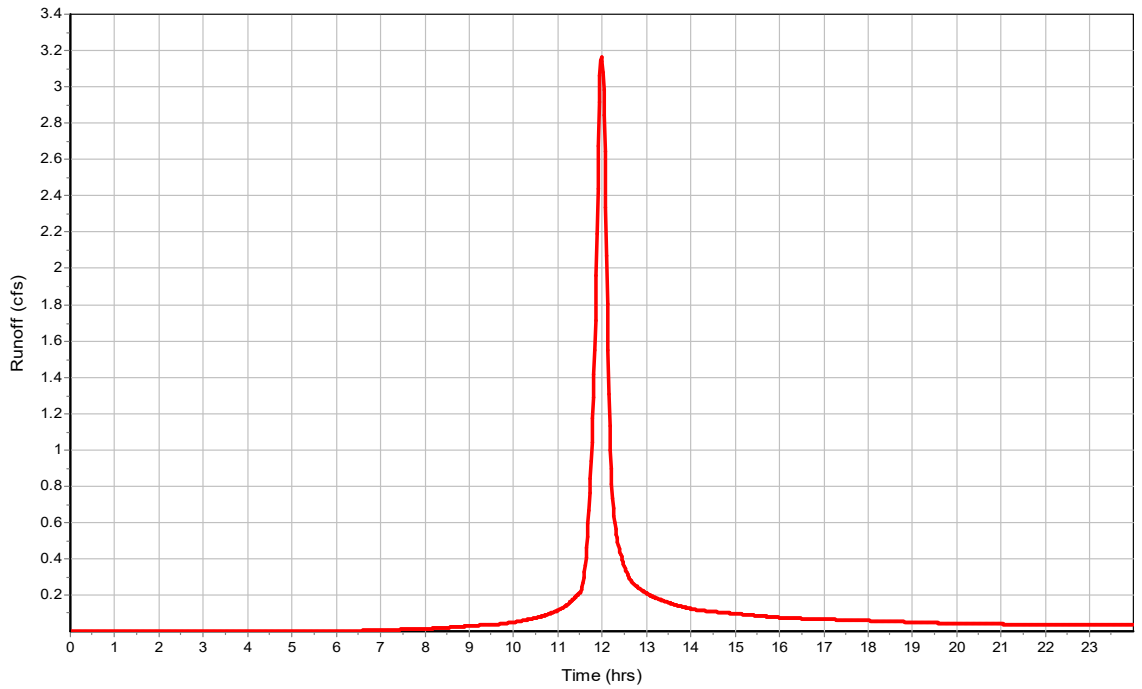
Total Rainfall (in) ..... 2.63  
 Total Runoff (in) ..... 1.73  
 Peak Runoff (cfs) ..... 3.16  
 Weighted Curve Number ..... 91  
 Time of Concentration (days hh:mm:ss) ..... 0 00:10:00

Subbasin : POST-02

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : POST-03**

**Input Data**

Area (ac) ..... 0.28  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 85  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	0.28	-	85
Composite Area & Weighted CN	0.28		85

**Time of Concentration**

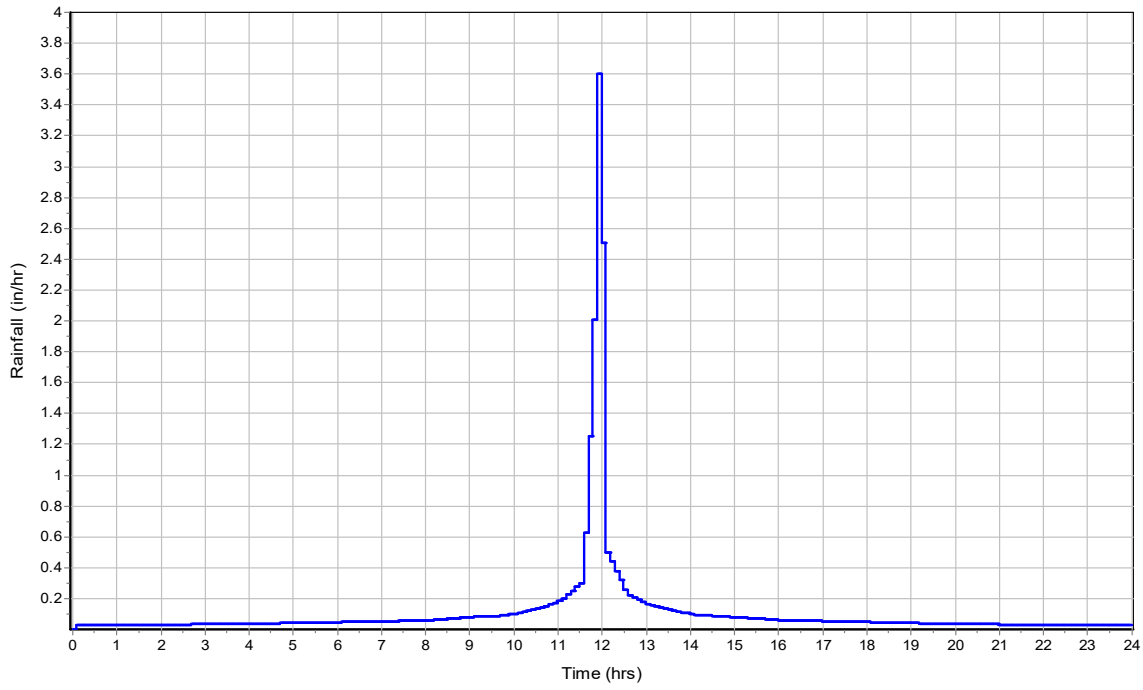
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

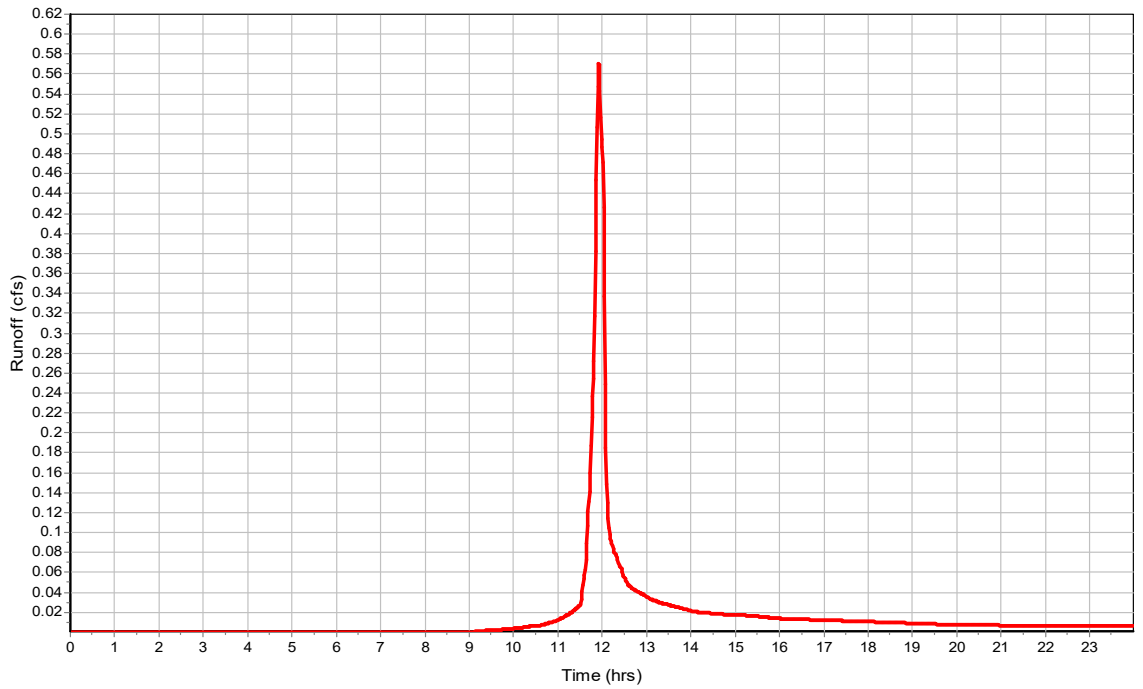
Total Rainfall (in) ..... 2.63  
 Total Runoff (in) ..... 1.28  
 Peak Runoff (cfs) ..... 0.57  
 Weighted Curve Number ..... 85  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : POST-03

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-13003**

**Input Data**

Area (ac) ..... 0.09  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 97.81  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	0.09	-	97.81
Composite Area & Weighted CN	0.09		97.81

**Time of Concentration**

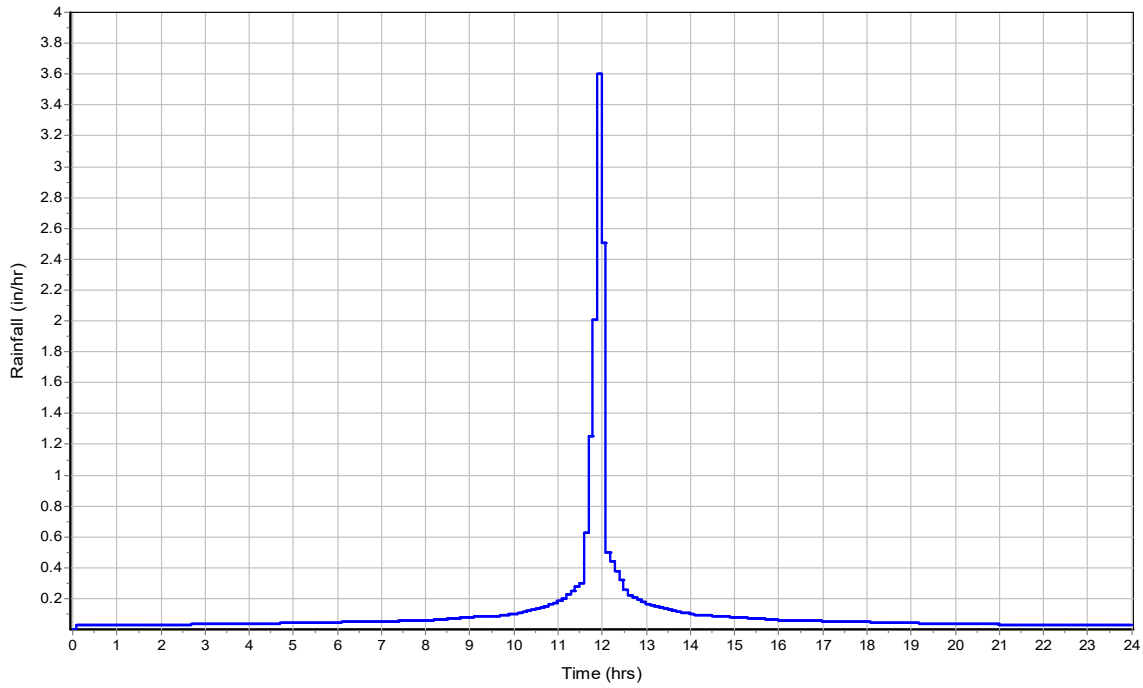
User-Defined TOC override (minutes): 5.00

**Subbasin Runoff Results**

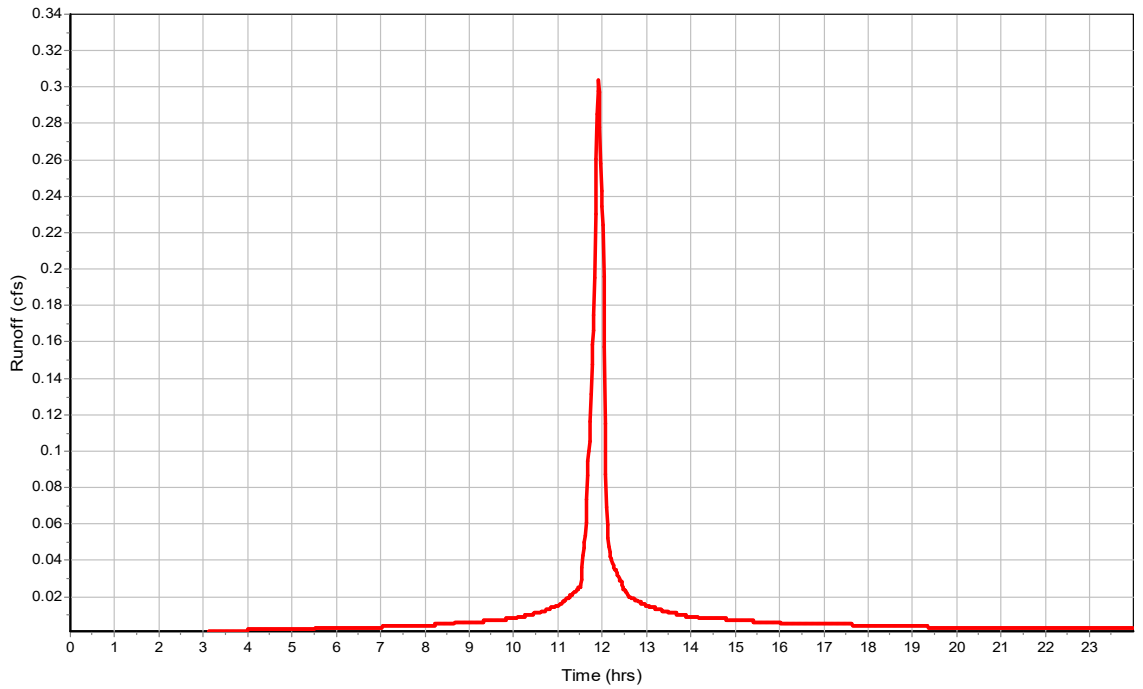
Total Rainfall (in) ..... 2.63  
 Total Runoff (in) ..... 2.37  
 Peak Runoff (cfs) ..... 0.3  
 Weighted Curve Number ..... 97.81  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-13003

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-13006**

**Input Data**

Area (ac) ..... 0.21  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 90.17  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	0.21	-	90.17
Composite Area & Weighted CN	0.21		90.17

**Time of Concentration**

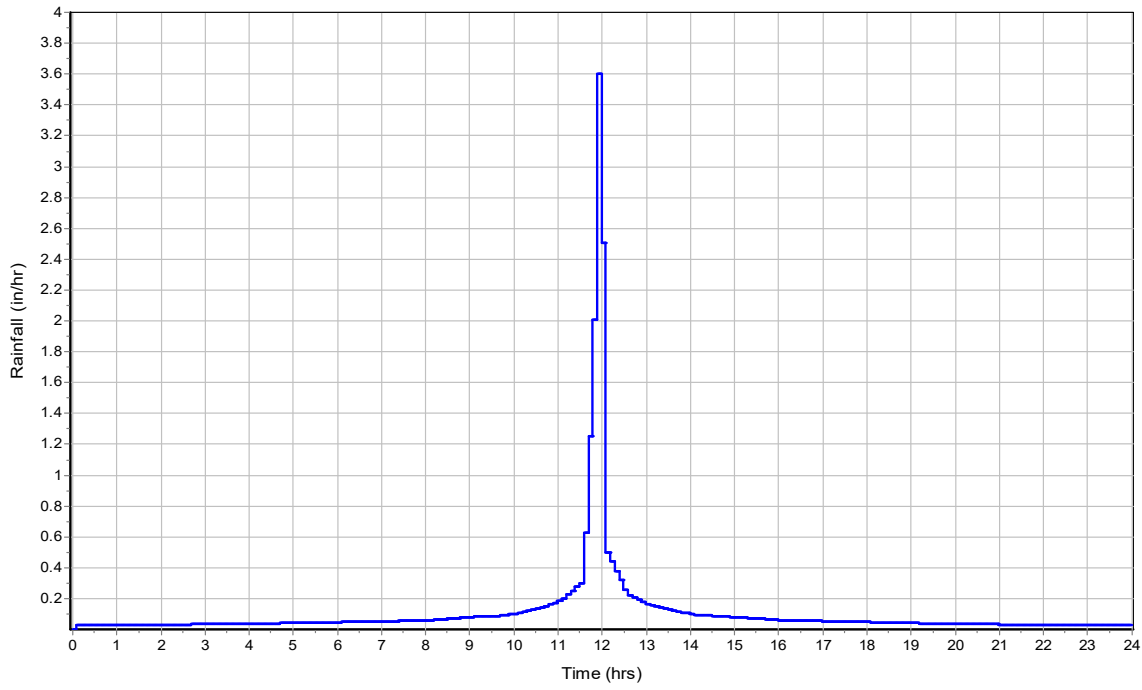
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

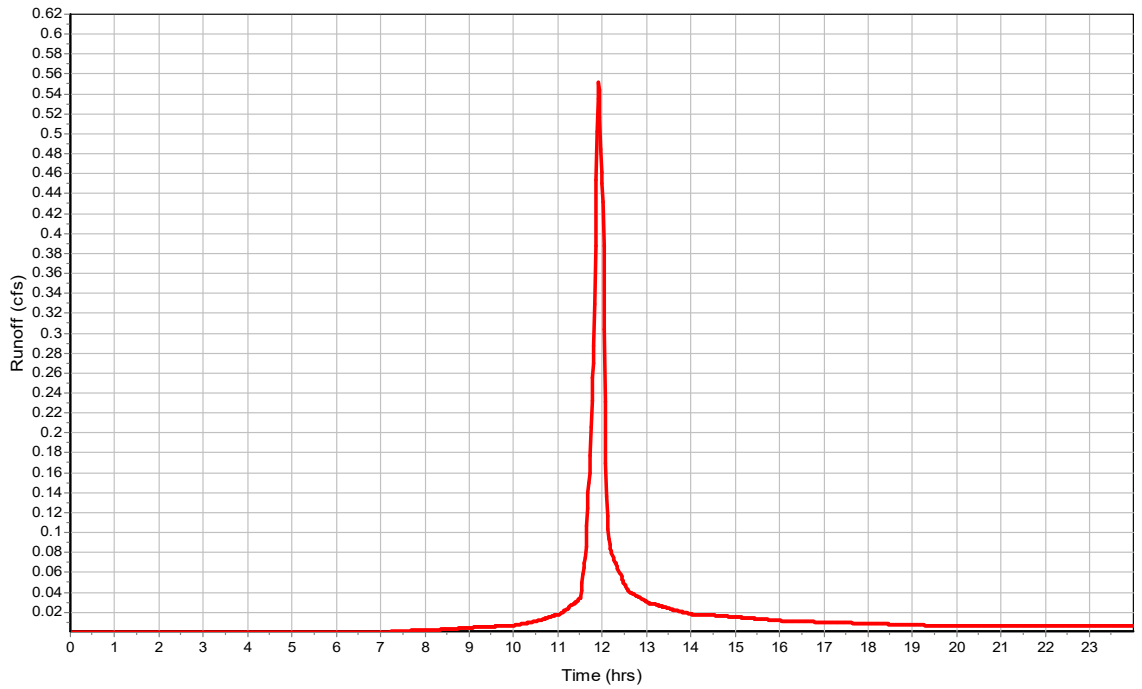
Total Rainfall (in) ..... 2.63  
 Total Runoff (in) ..... 1.66  
 Peak Runoff (cfs) ..... 0.55  
 Weighted Curve Number ..... 90.17  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-13006

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-13009**

**Input Data**

Area (ac) ..... 0.11  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 95.27  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	0.11	-	95.27
Composite Area & Weighted CN	0.11		95.27

**Time of Concentration**

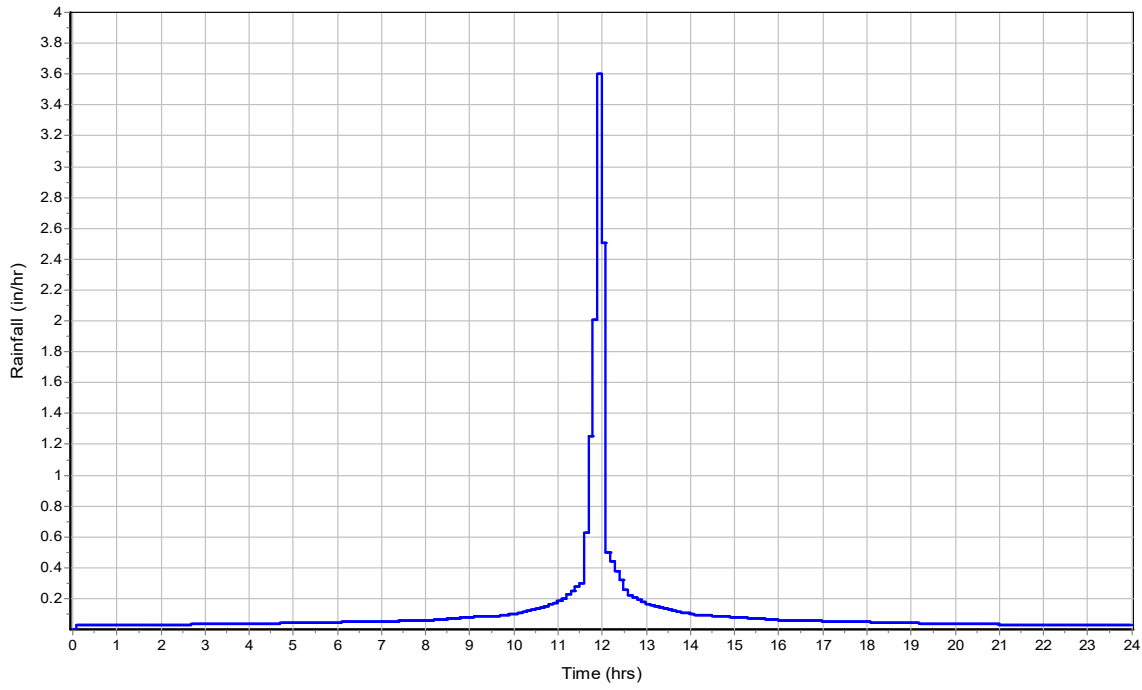
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

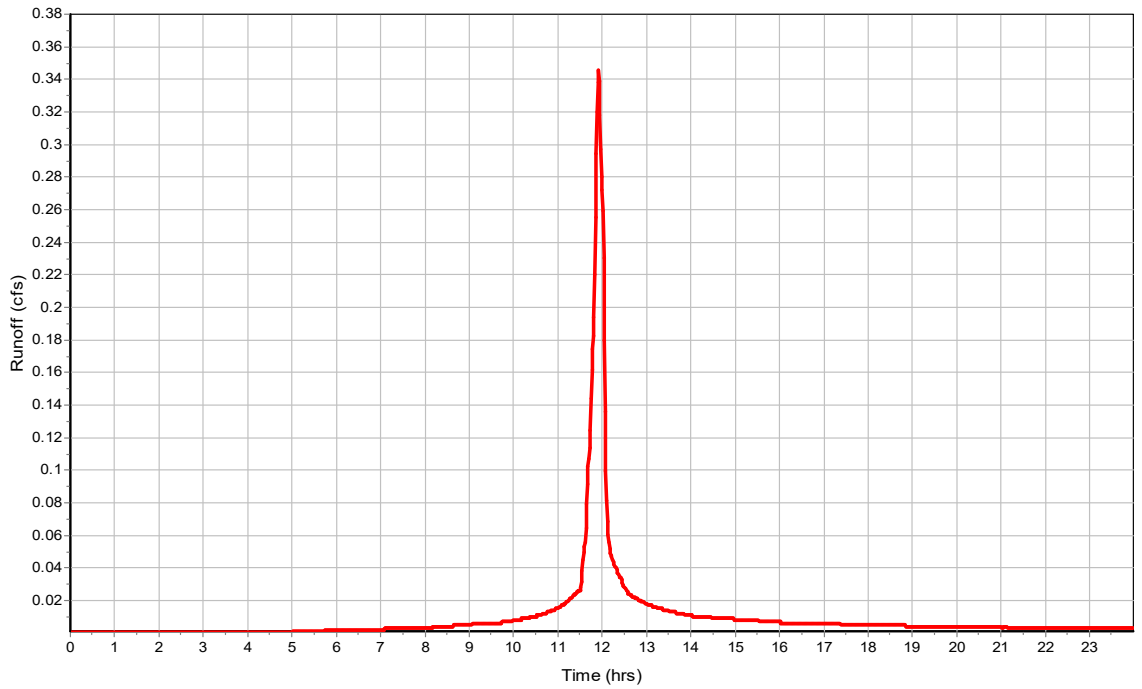
Total Rainfall (in) ..... 2.63  
 Total Runoff (in) ..... 2.11  
 Peak Runoff (cfs) ..... 0.35  
 Weighted Curve Number ..... 95.27  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-13009

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-13011/3**

**Input Data**

Area (ac) ..... 1.18  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 74.32  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	1.18	-	74.32
Composite Area & Weighted CN	1.18		74.32

**Time of Concentration**

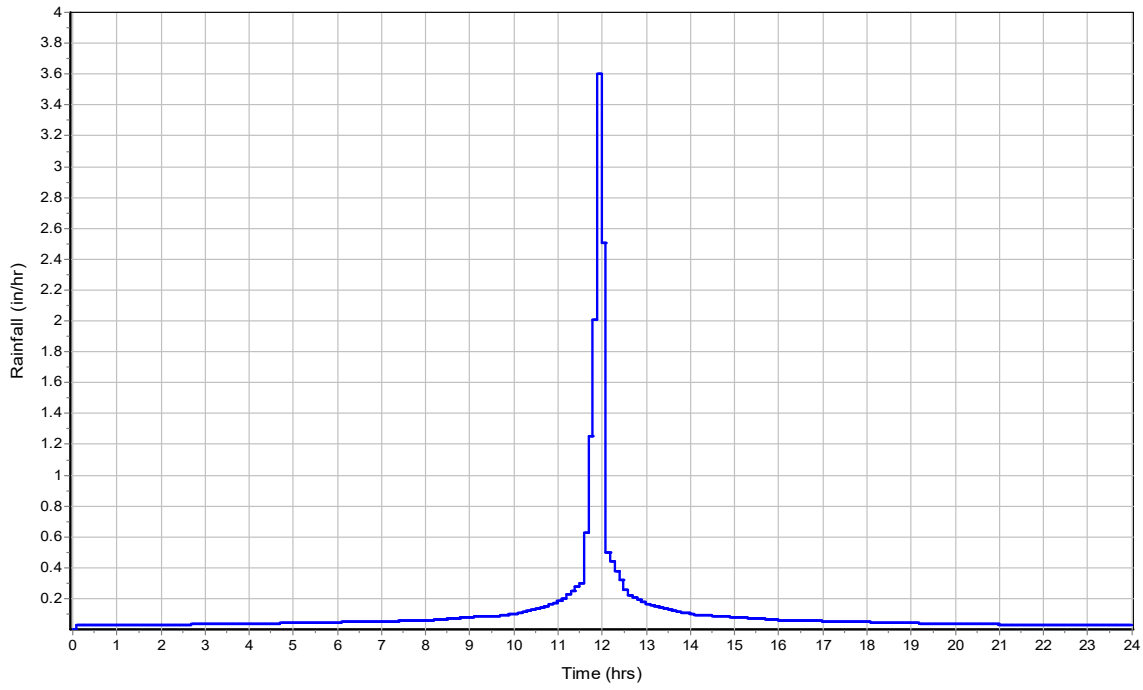
User-Defined TOC override (minutes): 10

**Subbasin Runoff Results**

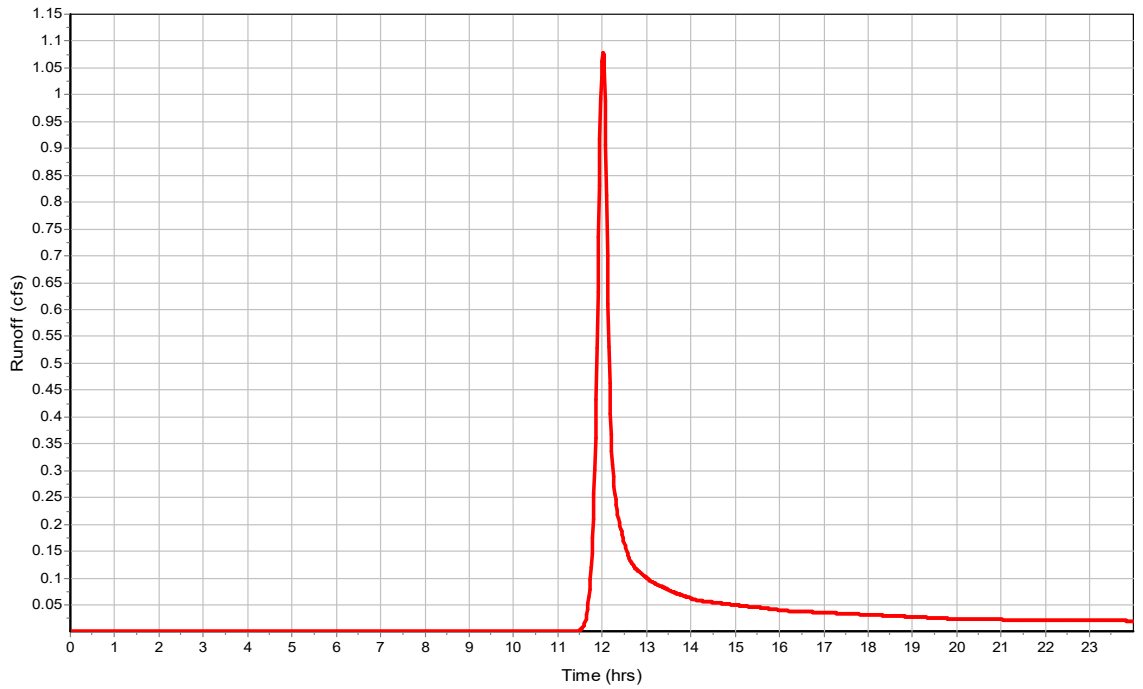
Total Rainfall (in) ..... 2.63  
 Total Runoff (in) ..... 0.7  
 Peak Runoff (cfs) ..... 1.08  
 Weighted Curve Number ..... 74.32  
 Time of Concentration (days hh:mm:ss) ..... 0 00:10:00

Subbasin : SUB-13011/3

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-13016**

**Input Data**

Area (ac) ..... 0.09  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 97.34  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.09	-	97.34
Composite Area & Weighted CN		0.09		97.34

**Time of Concentration**

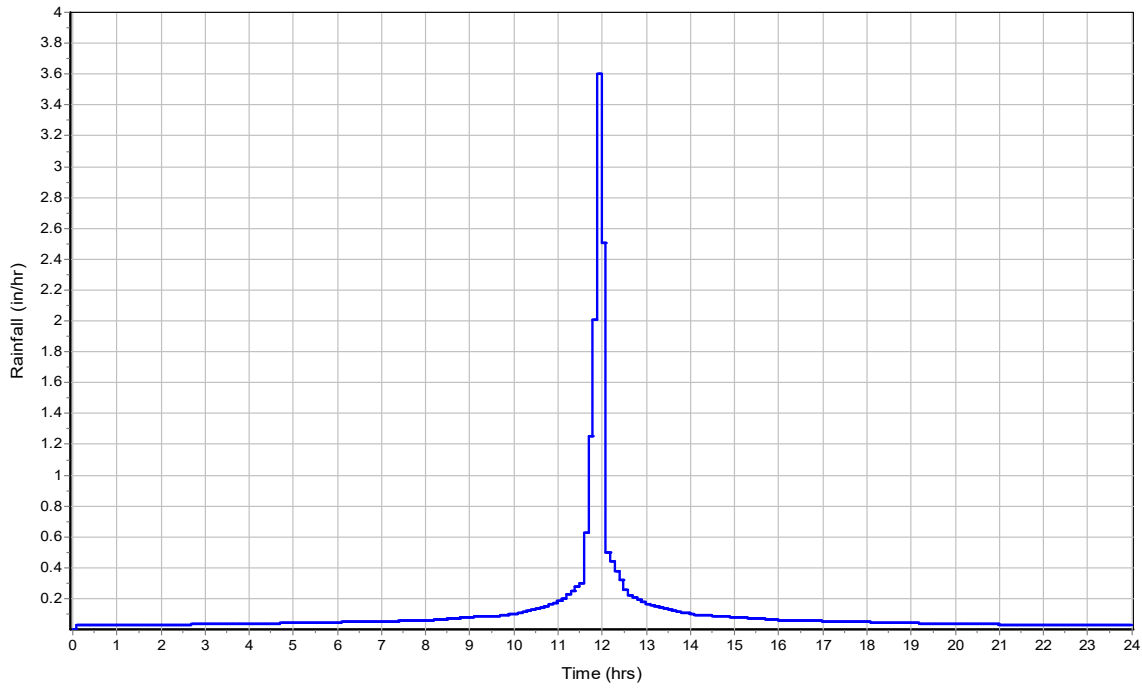
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

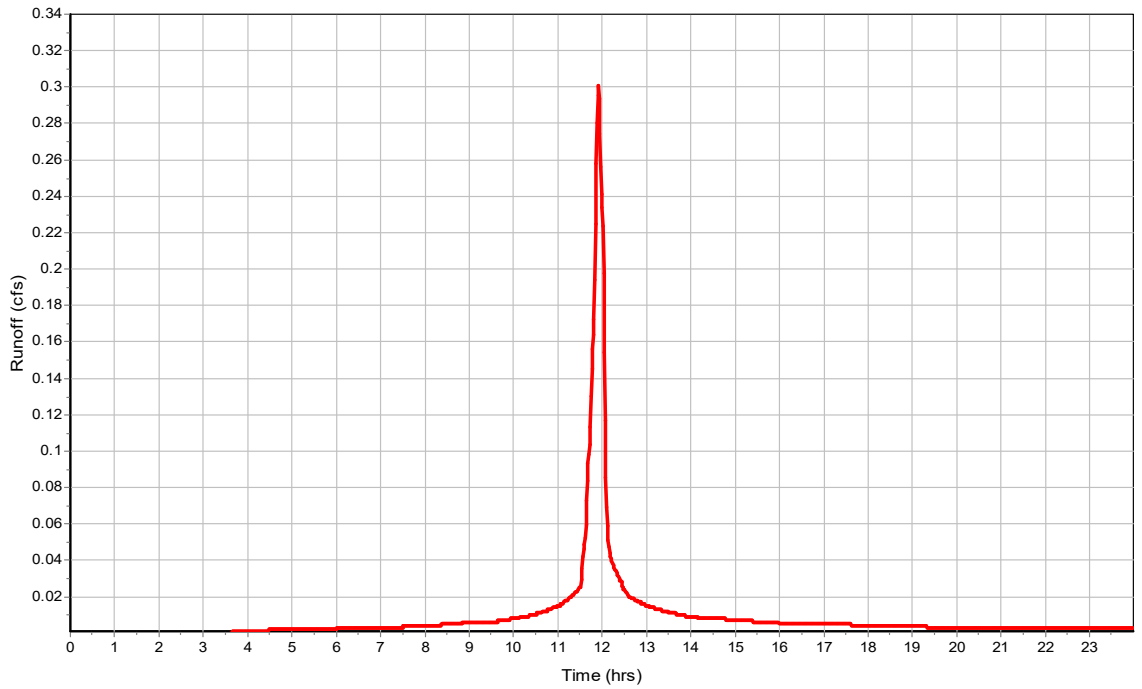
Total Rainfall (in) ..... 2.63  
 Total Runoff (in) ..... 2.32  
 Peak Runoff (cfs) ..... 0.3  
 Weighted Curve Number ..... 97.34  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-13016

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-13018**

**Input Data**

Area (ac) ..... 0.22  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 87.75  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.22	-	87.75
Composite Area & Weighted CN		0.22		87.75

**Time of Concentration**

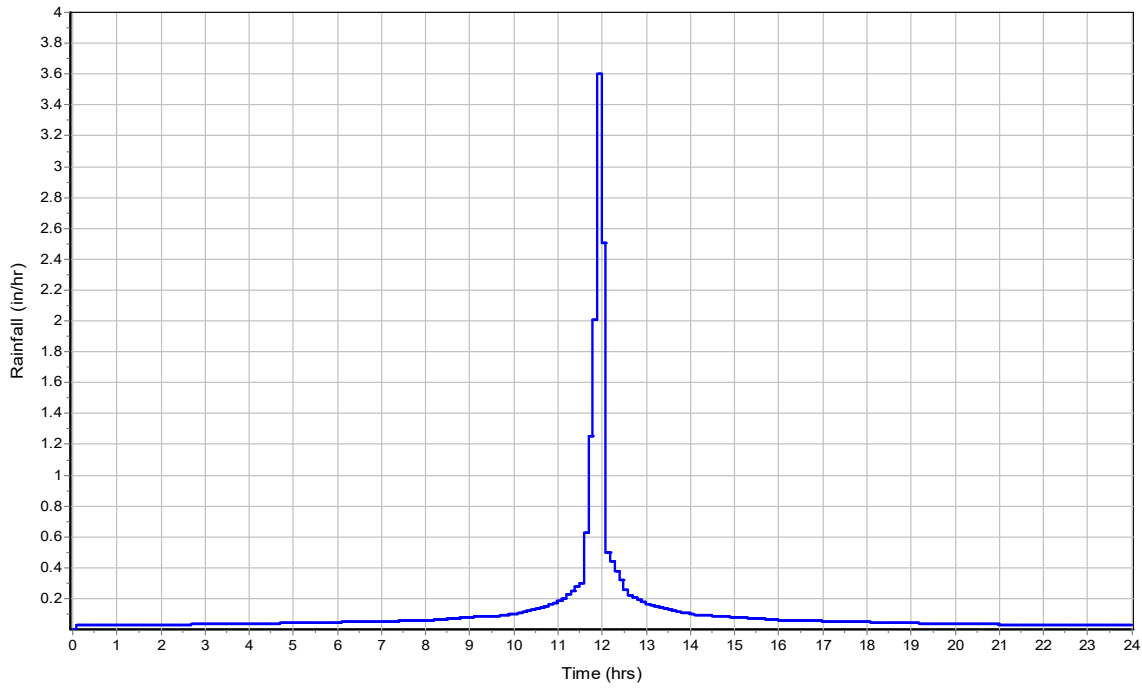
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

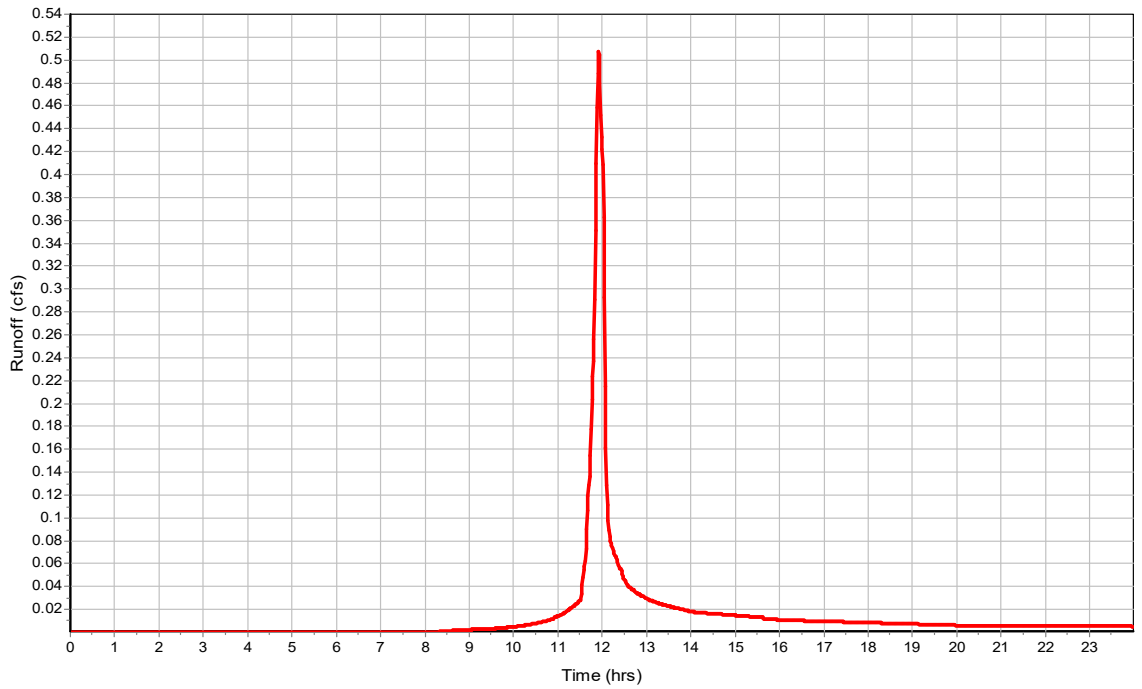
Total Rainfall (in) ..... 2.63  
 Total Runoff (in) ..... 1.47  
 Peak Runoff (cfs) ..... 0.51  
 Weighted Curve Number ..... 87.75  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-13018

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-1451**

**Input Data**

Area (ac) ..... 0.37  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 88.41  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.37	-	88.41
Composite Area & Weighted CN		0.37		88.41

**Time of Concentration**

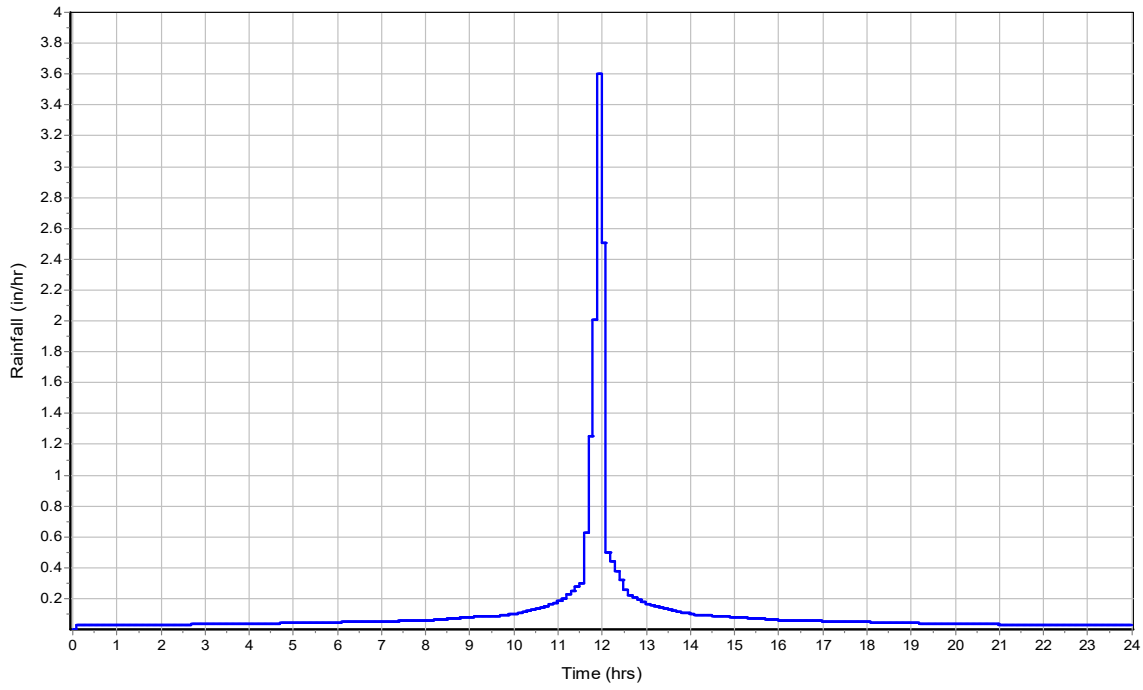
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

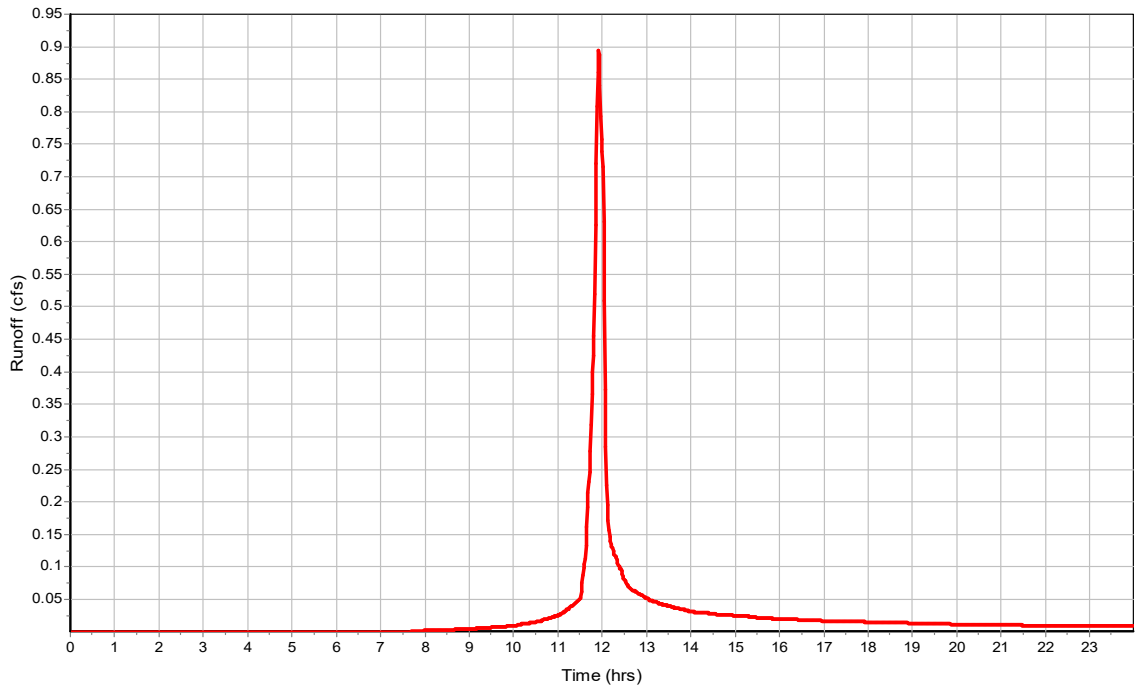
Total Rainfall (in) ..... 2.63  
 Total Runoff (in) ..... 1.52  
 Peak Runoff (cfs) ..... 0.9  
 Weighted Curve Number ..... 88.41  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-1451

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-1511**

**Input Data**

Area (ac) ..... 0.16  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 92.08  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.16	-	92.08
Composite Area & Weighted CN		0.16		92.08

**Time of Concentration**

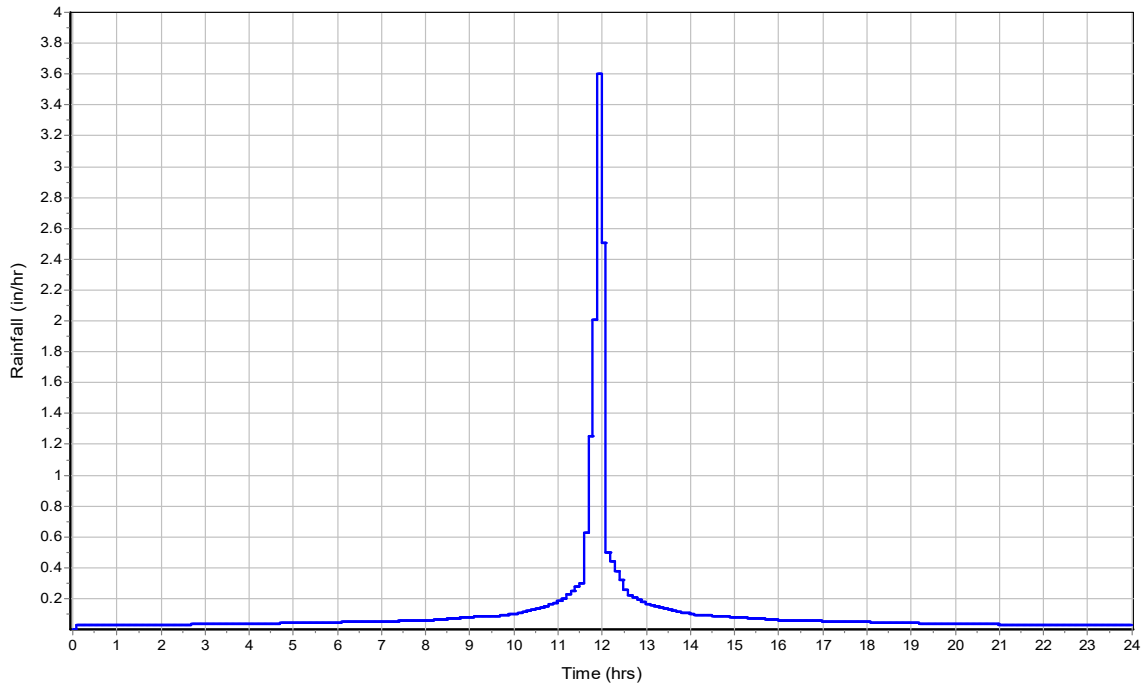
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

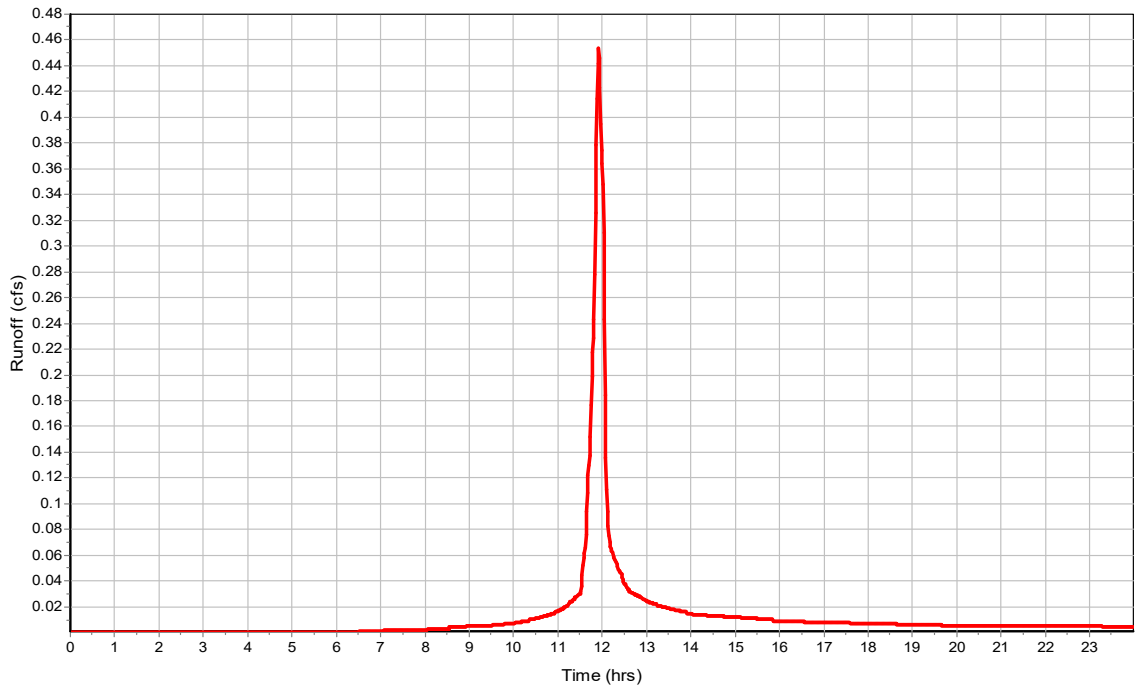
Total Rainfall (in) ..... 2.63  
 Total Runoff (in) ..... 1.82  
 Peak Runoff (cfs) ..... 0.45  
 Weighted Curve Number ..... 92.08  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-1511

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-1533**

**Input Data**

Area (ac) ..... 0.15  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 89.88  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.15	-	89.88
Composite Area & Weighted CN		0.15		89.88

**Time of Concentration**

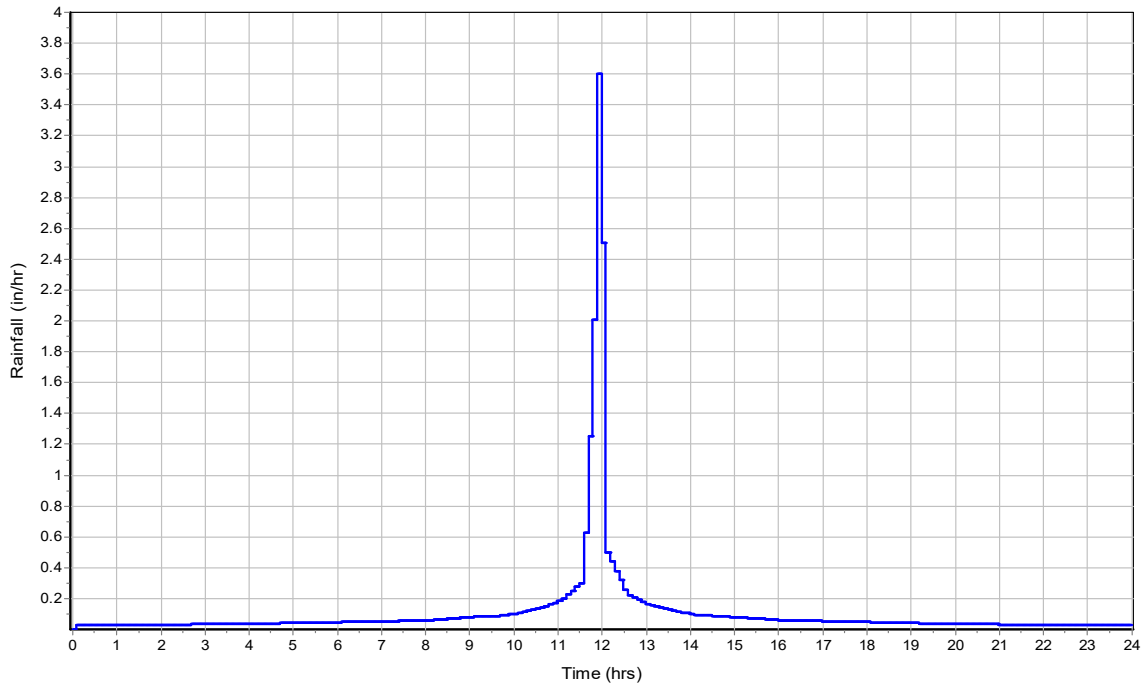
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

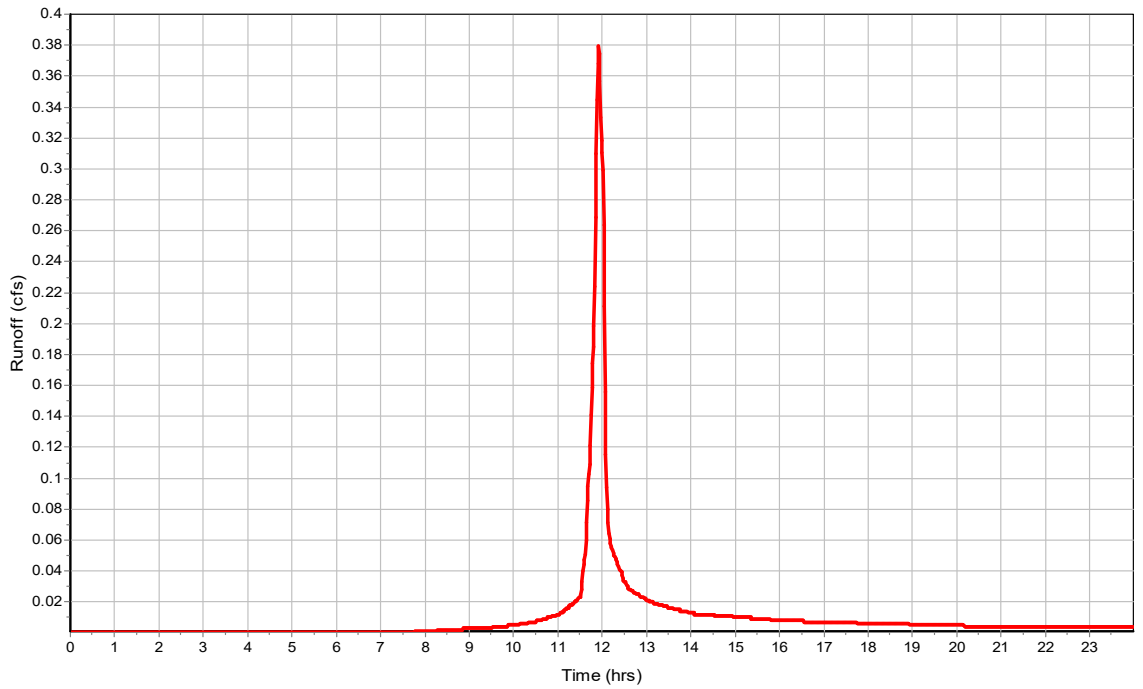
Total Rainfall (in) ..... 2.63  
 Total Runoff (in) ..... 1.63  
 Peak Runoff (cfs) ..... 0.38  
 Weighted Curve Number ..... 89.88  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-1533

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-1570**

**Input Data**

Area (ac) ..... 0.26  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 92.05  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.26	-	92.05
Composite Area & Weighted CN		0.26		92.05

**Time of Concentration**

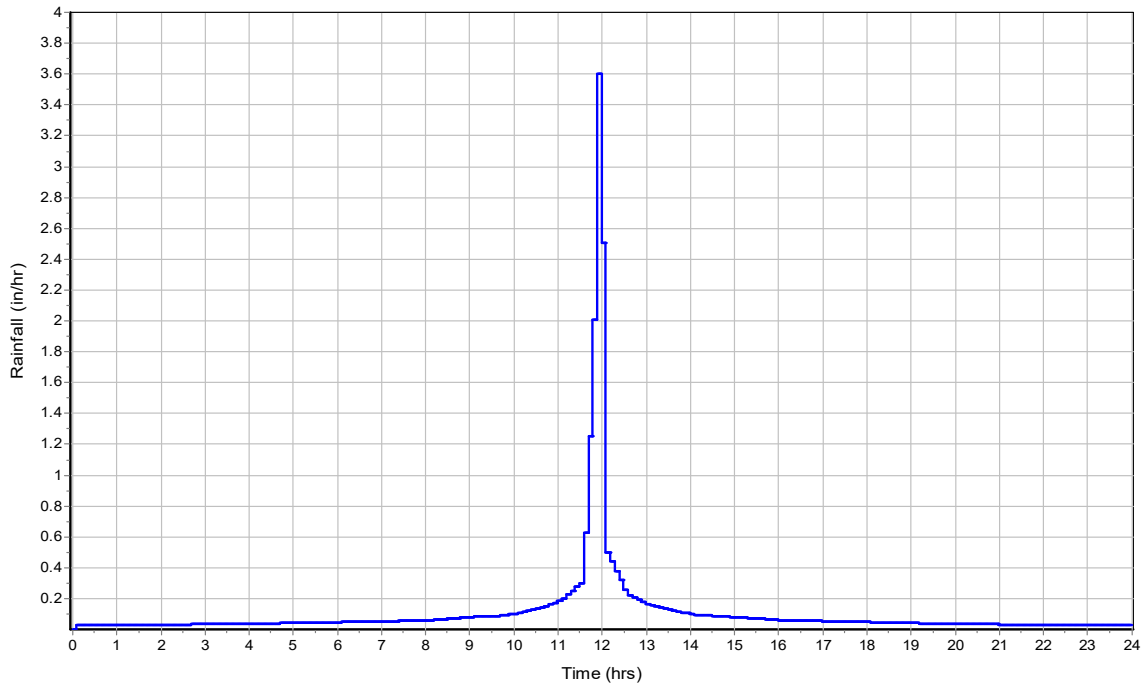
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

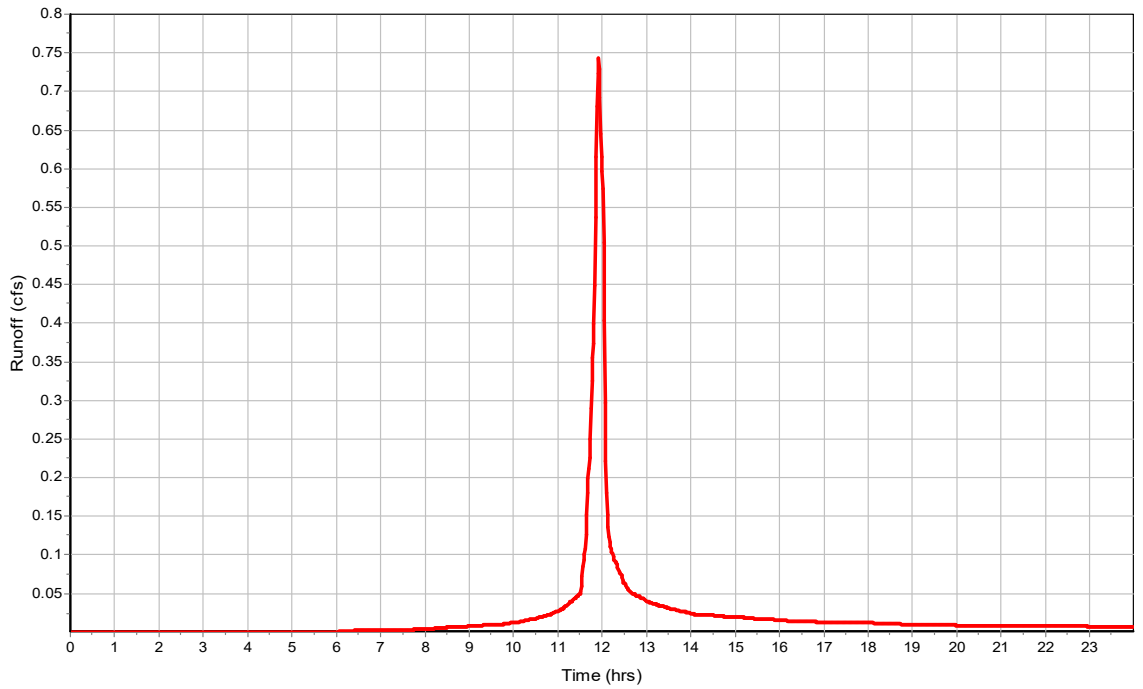
Total Rainfall (in) ..... 2.63  
 Total Runoff (in) ..... 1.82  
 Peak Runoff (cfs) ..... 0.74  
 Weighted Curve Number ..... 92.05  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-1570

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-1607**

**Input Data**

Area (ac) ..... 0.24  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 90.83  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.24	-	90.83
Composite Area & Weighted CN		0.24		90.83

**Time of Concentration**

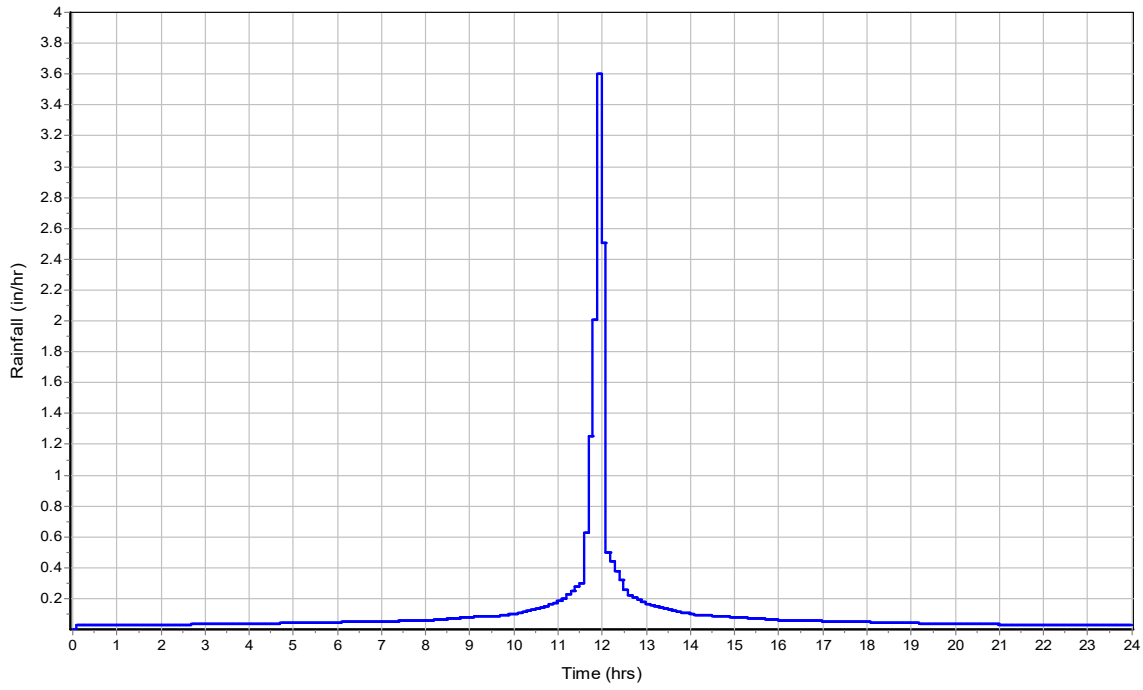
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

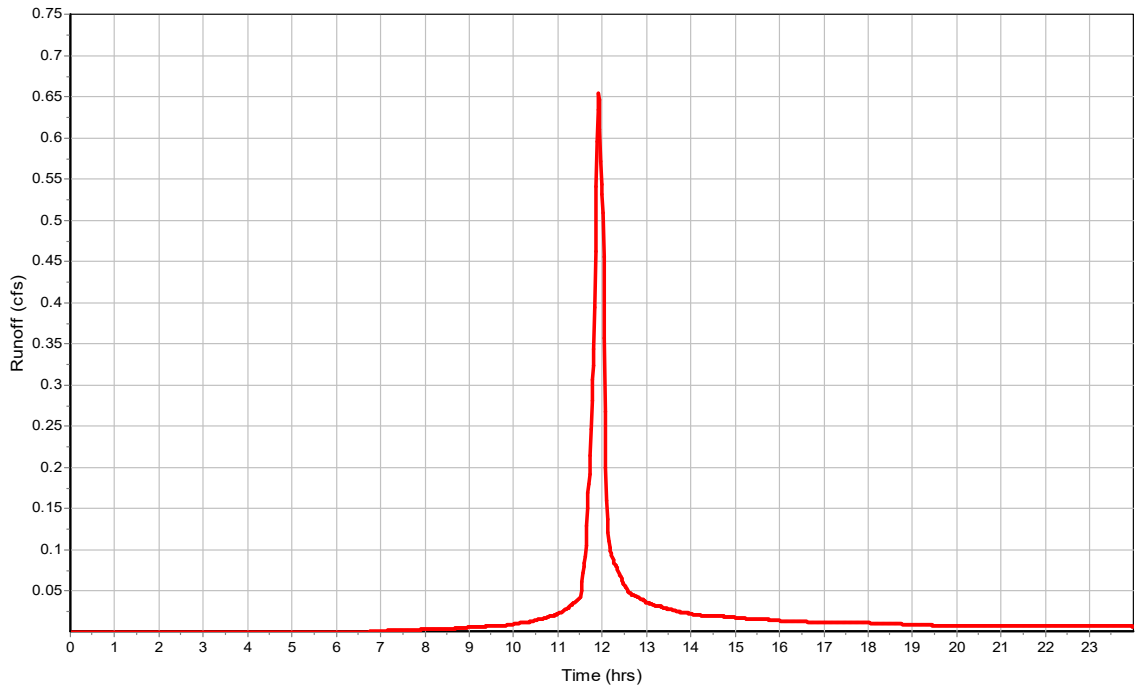
Total Rainfall (in) ..... 2.63  
 Total Runoff (in) ..... 1.71  
 Peak Runoff (cfs) ..... 0.66  
 Weighted Curve Number ..... 90.83  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-1607

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-D22690**

**Input Data**

Area (ac) ..... 0.31  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 92.3  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.31	-	92.3
Composite Area & Weighted CN		0.31		92.3

**Time of Concentration**

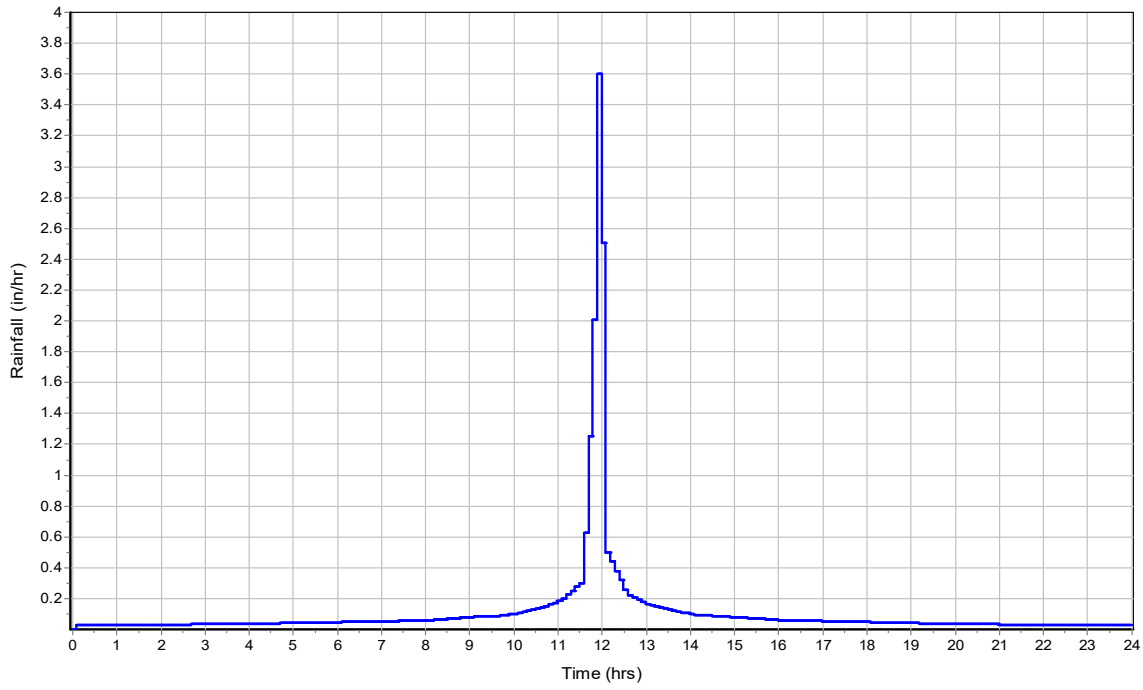
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

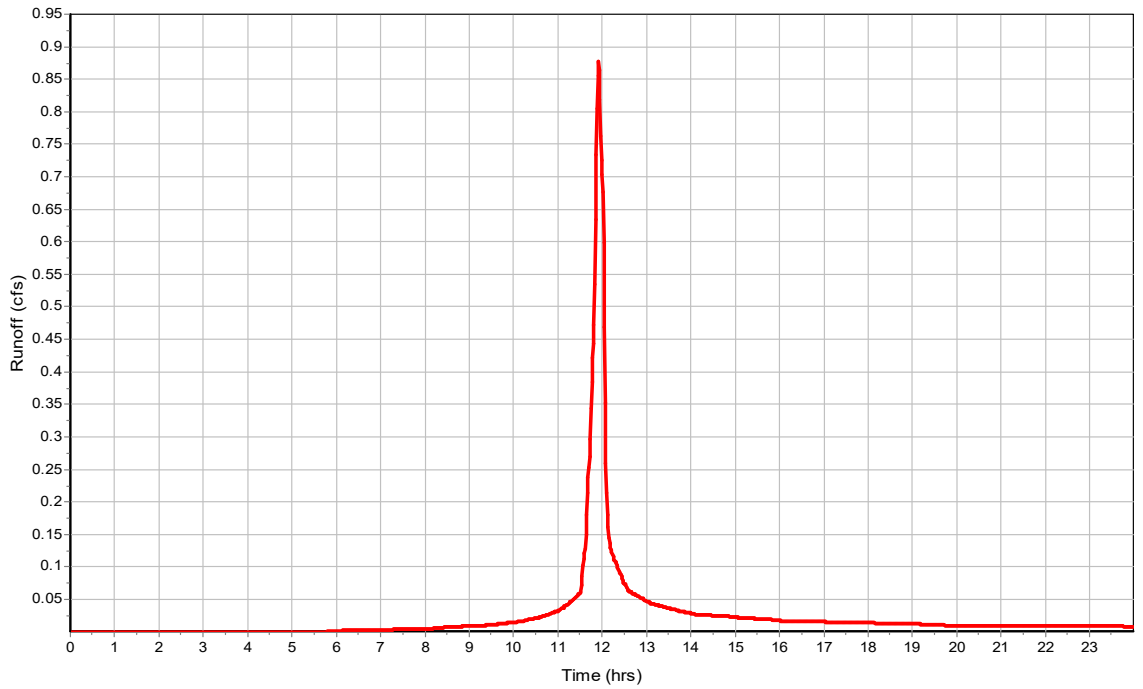
Total Rainfall (in) ..... 2.63  
 Total Runoff (in) ..... 1.84  
 Peak Runoff (cfs) ..... 0.88  
 Weighted Curve Number ..... 92.3  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-D22690

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-D22725**

**Input Data**

Area (ac) ..... 0.9  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 79  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.9	-	79
Composite Area & Weighted CN		0.9		79

**Time of Concentration**

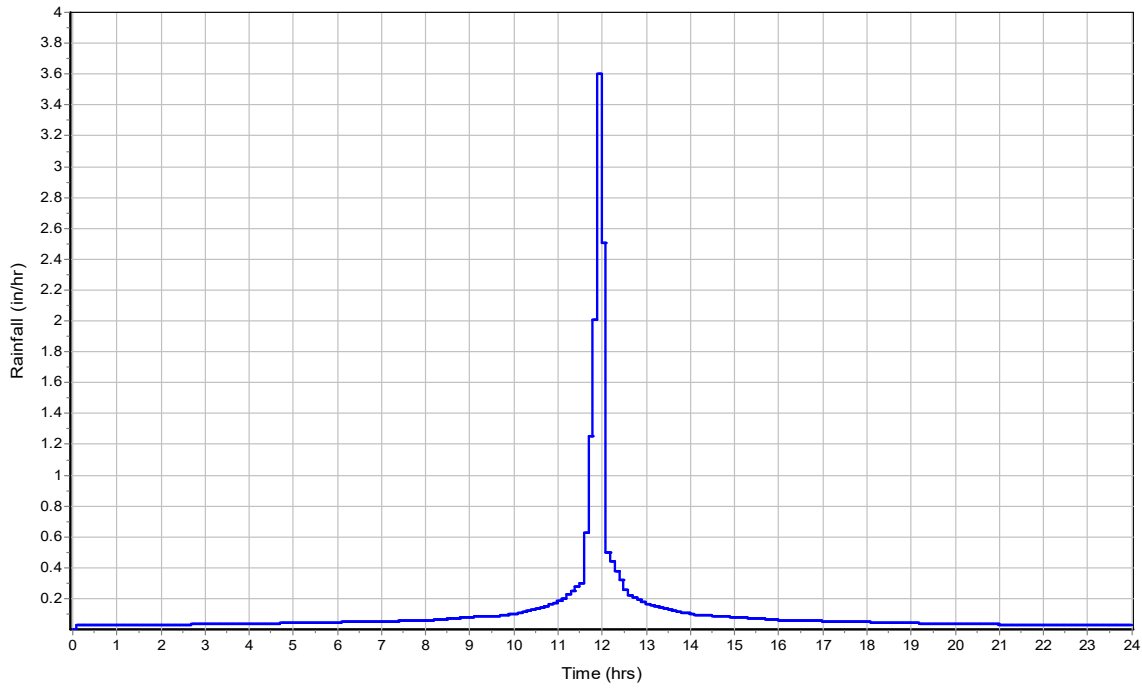
User-Defined TOC override (minutes): 5.00

**Subbasin Runoff Results**

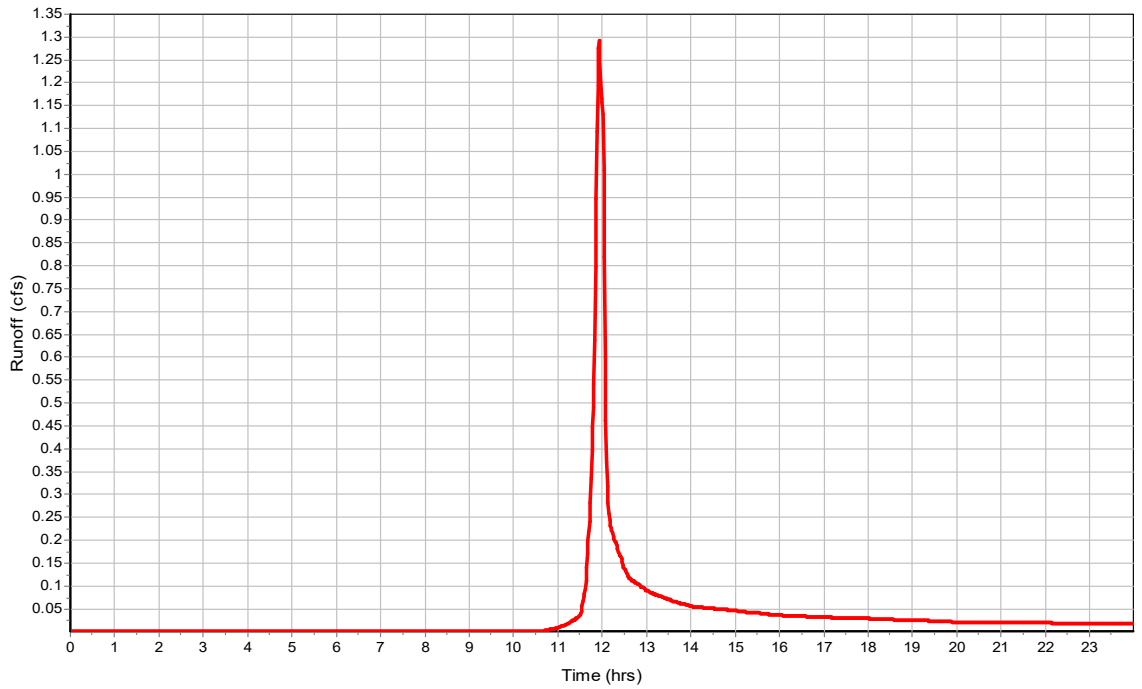
Total Rainfall (in) ..... 2.63  
 Total Runoff (in) ..... 0.93  
 Peak Runoff (cfs) ..... 1.3  
 Weighted Curve Number ..... 79  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-D22725

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : UNDETAINED-01**

**Input Data**

Area (ac) ..... 0.27  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 84  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.27	-	84
Composite Area & Weighted CN		0.27		84

**Time of Concentration**

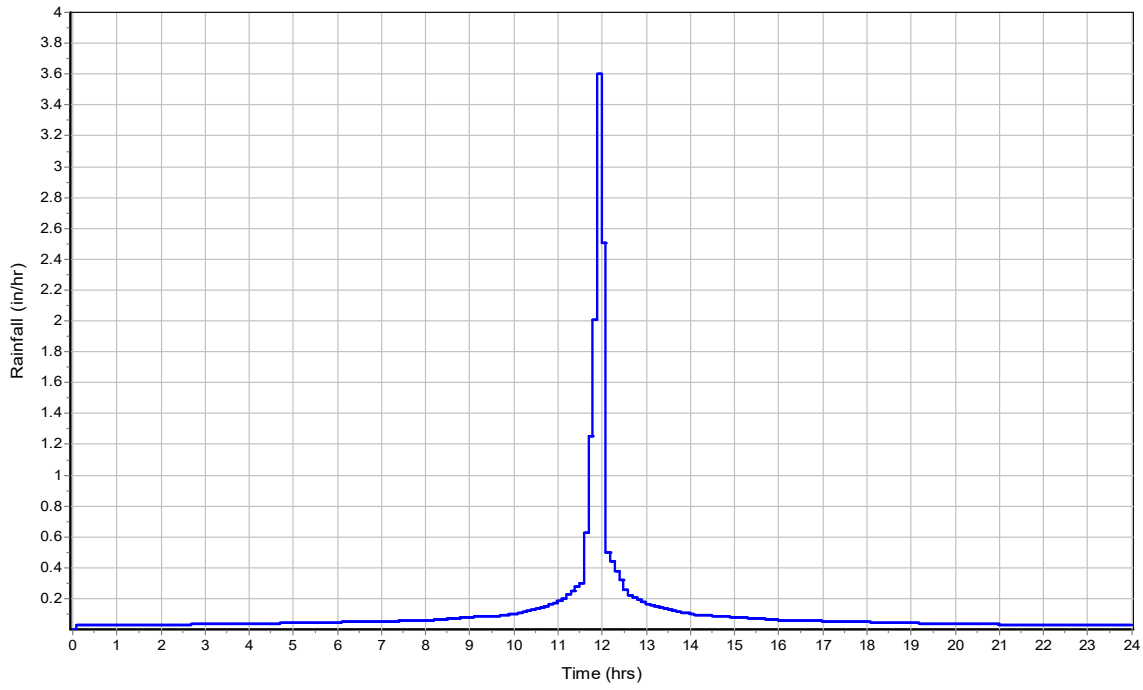
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

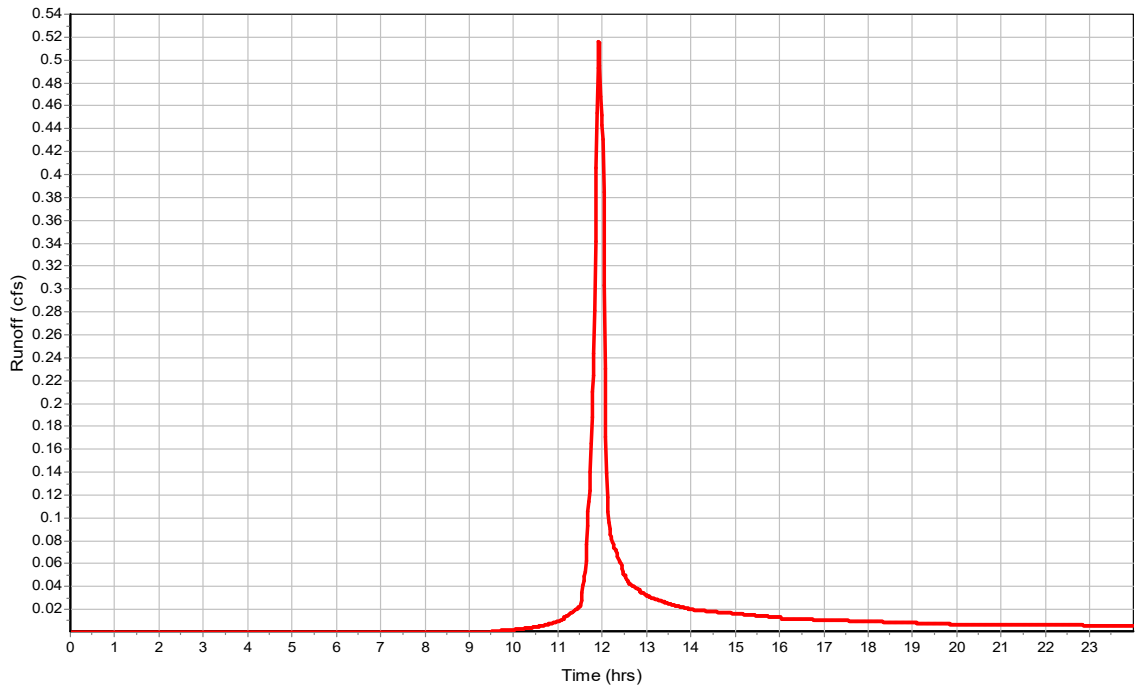
Total Rainfall (in) ..... 2.63  
 Total Runoff (in) ..... 1.22  
 Peak Runoff (cfs) ..... 0.52  
 Weighted Curve Number ..... 84  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : UNDETAINED-01

Rainfall Intensity Graph



Runoff Hydrograph



## Junction Input

SN Element ID	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Ground/Rim (Max) Offset (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)	Surcharge Elevation (ft)	Surcharge Depth (ft)	Ponded Area (ft <sup>2</sup> )	Minimum Pipe Cover (in)
1 1	789.63	800.72	11.09	789.63	0.00	800.72	0.00	10.00	94.68
2 2	789.90	810.97	21.07	789.90	0.00	810.97	0.00	0.00	0.00
3 301	801.75	810.70	8.95	801.75	0.00	810.70	0.00	10.00	93.00
4 302	800.50	814.72	14.22	800.50	0.00	814.72	0.00	10.00	0.00
5 1312	795.14	801.14	6.00	795.14	0.00	801.14	0.00	10.00	57.00
6 1451	796.16	801.58	5.42	796.16	0.00	801.58	0.00	10.00	53.04
7 1453	793.40	803.00	9.60	793.40	0.00	803.00	0.00	10.00	96.24
8 1511	794.03	805.54	11.51	794.03	0.00	805.54	0.00	10.00	123.12
9 1533	798.65	807.61	8.96	798.65	0.00	807.61	0.00	10.00	95.52
10 1570	800.57	809.15	8.58	800.57	0.00	809.15	0.00	10.00	88.80
11 1607	809.64	815.19	5.55	809.64	0.00	815.19	0.00	10.00	54.48
12 13001	783.95	800.74	16.79	783.95	0.00	800.74	0.00	10.00	110.28
13 13002	782.33	798.46	16.13	782.33	0.00	798.46	0.00	10.00	27.72
14 13003	787.40	796.61	9.21	787.40	0.00	796.61	0.00	10.00	98.52
15 13005	781.16	791.08	9.92	781.16	0.00	791.08	0.00	10.00	69.60
16 13006	793.19	802.62	9.43	793.19	0.00	802.62	0.00	10.00	97.56
17 13008	780.03	787.03	7.00	780.03	0.00	787.03	0.00	10.00	44.88
18 13009	782.93	787.81	4.88	782.93	0.00	787.81	0.00	10.00	46.56
19 13016	776.77	780.79	4.02	776.77	0.00	780.79	0.00	10.00	36.24
20 13017	776.14	780.49	4.35	776.14	0.00	780.49	0.00	10.00	34.20
21 13018	776.48	780.24	3.76	776.48	0.00	780.24	0.00	10.00	33.12
22 13019	776.36	779.72	3.36	776.36	0.00	779.72	0.00	10.00	22.32
23 D22686	797.40	807.27	9.87	797.40	0.00	807.27	0.00	10.00	106.44
24 D22690	815.71	820.04	4.33	815.71	0.00	820.04	0.00	10.00	39.96
25 D22725	776.89	781.00	4.11	776.89	0.00	781.00	0.00	10.00	34.32
26 HDS-101	801.90	814.15	12.25	801.90	0.00	814.15	0.00	10.00	0.00
27 HDS-201	802.79	815.53	12.74	802.79	0.00	815.53	0.00	10.00	127.68

**Junction Results**

SN Element ID	Peak Inflow	Peak Lateral Inflow	Max HGL Elevation Attained	Max HGL Depth Attained	Max Surcharge Depth Attained	Min Freeboard Attained	Average HGL Elevation Attained	Average HGL Depth Attained	Time of Max HGL Occurrence	Time of Peak Flooding Occurrence	Total Flooded Volume	Total Time Flooded
	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(days hh:mm)	(days hh:mm)	(ac-in)	(min)
1 1	11.05	0.00	790.72	1.09	0.00	10.00	789.90	0.27	0 12:13	0 00:00	0.00	0.00
2 2	11.05	0.00	791.11	1.21	0.00	19.86	790.19	0.29	0 12:13	0 00:00	0.00	0.00
3 301	0.01	0.00	801.88	0.13	0.00	8.82	801.81	0.06	0 18:12	0 00:00	0.00	0.00
4 302	0.01	0.00	802.55	2.05	0.00	12.17	801.58	1.08	0 18:12	0 00:00	0.00	0.00
5 1312	0.00	0.00	795.14	0.00	0.00	6.00	795.14	0.00	0 00:00	0 00:00	0.00	0.00
6 1451	0.89	0.89	796.38	0.22	0.00	5.20	796.19	0.03	0 11:56	0 00:00	0.00	0.00
7 1453	4.47	0.00	794.79	1.39	0.00	8.21	793.54	0.14	0 11:57	0 00:00	0.00	0.00
8 1511	3.60	0.45	795.02	0.99	0.00	10.52	794.13	0.10	0 11:57	0 00:00	0.00	0.00
9 1533	0.90	0.90	798.83	0.18	0.00	8.78	798.67	0.02	0 11:56	0 00:00	0.00	0.00
10 1570	2.26	0.74	800.97	0.40	0.00	8.18	800.62	0.05	0 11:56	0 00:00	0.00	0.00
11 1607	1.53	0.65	809.93	0.29	0.00	5.26	809.68	0.04	0 11:56	0 00:00	0.00	0.00
12 13001	11.05	0.00	784.81	0.86	0.00	15.93	784.11	0.16	0 12:14	0 00:00	0.00	0.00
13 13002	11.05	0.00	783.22	0.89	0.00	15.24	782.50	0.17	0 12:14	0 00:00	0.00	0.00
14 13003	0.30	0.30	787.56	0.16	0.00	9.05	787.43	0.03	0 11:56	0 00:00	0.00	0.00
15 13005	11.10	0.00	782.00	0.84	0.00	9.08	781.33	0.17	0 12:14	0 00:00	0.00	0.00
16 13006	5.00	0.55	794.40	1.21	0.00	8.22	793.31	0.12	0 11:57	0 00:00	0.00	0.00
17 13008	11.14	0.00	781.05	1.02	0.00	5.98	780.22	0.19	0 12:14	0 00:00	0.00	0.00
18 13009	0.35	0.35	783.12	0.19	0.00	4.69	782.96	0.03	0 11:56	0 00:00	0.00	0.00
19 13016	0.30	0.30	776.98	0.21	0.00	3.81	776.80	0.03	0 11:56	0 00:00	0.00	0.00
20 13017	2.08	0.00	776.75	0.61	0.00	3.74	776.22	0.08	0 11:57	0 00:00	0.00	0.00
21 13018	0.51	0.51	776.97	0.49	0.00	3.27	776.51	0.03	0 11:57	0 00:00	0.00	0.00
22 13019	1.79	0.00	776.97	0.61	0.00	2.75	776.43	0.07	0 11:57	0 00:00	0.00	0.00
23 D22686	3.16	0.00	797.85	0.45	0.00	9.42	797.46	0.06	0 11:56	0 00:00	0.00	0.00
24 D22690	0.88	0.88	815.94	0.23	0.00	4.10	815.74	0.03	0 11:56	0 00:00	0.00	0.00
25 D22725	1.29	1.29	777.39	0.50	0.00	3.61	776.95	0.06	0 11:57	0 00:00	0.00	0.00
26 HDS-101	12.72	9.22	803.24	1.34	0.00	10.91	802.16	0.26	0 12:01	0 00:00	0.00	0.00
27 HDS-201	17.34	17.34	804.19	1.40	0.00	11.34	803.01	0.22	0 12:00	0 00:00	0.00	0.00

Pipe Input

SN Element ID	Length	Inlet	Inlet	Outlet	Outlet	Total Drop	Average Pipe		Pipe Diameter or Height	Pipe Width	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Additional Losses	Initial Flow	Flap Gate	No. of Barrels
		Invert	Invert	Invert	Invert		Slope	Shape									
	(ft)	Elevation (ft)	Offset (ft)	Elevation (ft)	Offset (ft)	(ft)	(%)		(in)	(in)							(cfs)
1 Link-02	56.93	783.95	0.00	782.75	0.42	1.20	2.1100	CIRCULAR	24.000	24.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
2 Link-03	47.69	795.14	0.00	794.90	12.57	0.24	0.5000	CIRCULAR	15.000	15.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
3 Link-04	108.25	782.33	0.00	781.35	0.19	0.98	0.9100	CIRCULAR	36.000	36.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
4 Link-05	149.97	787.40	0.00	784.28	3.12	3.12	2.0800	CIRCULAR	12.000	12.000	0.0130	0.0000	0.1000	0.0000	0.00	No	1
5 Link-06	36.78	782.93	0.00	782.29	2.26	0.64	1.7400	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
6 Link-07	104.48	781.16	0.00	780.08	0.05	1.08	1.0300	CIRCULAR	36.000	36.000	0.0130	0.0000	0.1000	0.0000	0.00	No	1
7 Link-08	78.09	776.89	0.00	776.61	0.25	0.28	0.3600	CIRCULAR	15.000	15.000	0.0130	0.0000	0.1000	0.0000	0.00	No	1
8 Link-10	7.77	776.48	0.00	776.36	0.00	0.12	1.5400	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
9 Link-11	78.97	776.36	0.00	776.14	0.00	0.22	0.2800	CIRCULAR	18.000	18.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
10 Link-12	12.35	776.77	0.00	776.64	0.50	0.13	1.0500	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
11 Link-13	48.41	776.14	0.00	775.94	4.79	0.20	0.4100	CIRCULAR	18.000	18.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
12 Link-14	82.97	771.22	0.07	766.00	-0.01	5.22	6.2900	Rectangular	48.000	36.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
13 Link-15	56.74	780.03	0.00	779.61	8.46	0.42	0.7400	CIRCULAR	36.000	36.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
14 Link-16	132.76	815.71	0.00	809.64	0.00	6.07	4.5700	CIRCULAR	12.000	12.000	0.0130	0.0000	0.1000	0.0000	0.00	No	1
15 Link-17	148.78	809.65	0.01	800.57	0.00	9.08	6.1000	CIRCULAR	12.000	12.000	0.0130	0.0000	0.1000	0.0000	0.00	No	1
16 Link-18	85.84	800.57	0.00	797.40	0.00	3.17	3.6900	CIRCULAR	12.000	12.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
17 Link-19	9.27	798.65	0.00	797.40	0.00	1.25	13.4800	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
18 Link-20	72.00	797.40	0.00	794.08	0.05	3.32	4.6100	CIRCULAR	12.000	12.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
19 Link-21	55.99	794.03	0.00	793.73	0.33	0.30	0.5400	CIRCULAR	15.000	15.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
20 Link-22	40.69	796.16	0.00	793.81	0.41	2.35	5.7800	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
21 Link-23	77.33	793.40	0.00	793.24	0.05	0.16	0.2100	CIRCULAR	15.000	15.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
22 Link-24	41.11	793.19	0.00	793.00	21.85	0.19	0.4600	CIRCULAR	15.000	15.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
23 Link-37	136.92	802.50	2.00	801.95	0.20	0.55	0.4000	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
24 Link-38	24.56	801.85	0.10	800.75	0.18	1.10	4.4800	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
25 Link-39	10.00	802.00	0.10	801.82	11.82	0.18	1.8000	CIRCULAR	24.000	24.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
26 Link-41	47.26	802.89	0.10	801.95	11.95	0.94	1.9900	CIRCULAR	24.000	24.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
27 Link-42	30.50	790.00	0.10	789.83	0.20	0.17	0.5600	CIRCULAR	36.000	36.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
28 Link-44	214.52	789.73	0.10	788.55	4.60	1.18	0.5500	CIRCULAR	36.000	36.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1

## Pipe Results

SN Element ID	Peak Flow	Time of Peak Flow Occurrence	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Travel Time	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Time Surcharged	Froude Number	Reported Condition
	(cfs)	(days hh:mm)	(cfs)		(ft/sec)	(min)	(ft)		(min)		
1 Link-02	11.05	0 12:14	32.84	0.34	8.94	0.11	0.83	0.42	0.00		Calculated
2 Link-03	0.00	0 00:00	4.58	0.00	0.00		0.00	0.00	0.00		Calculated
3 Link-04	11.06	0 12:14	63.46	0.17	6.53	0.28	0.87	0.29	0.00		Calculated
4 Link-05	0.30	0 11:56	5.14	0.06	3.57	0.70	0.16	0.16	0.00		Calculated
5 Link-06	0.35	0 11:56	4.70	0.07	3.39	0.18	0.19	0.19	0.00		Calculated
6 Link-07	11.10	0 12:14	67.81	0.16	6.19	0.28	0.90	0.30	0.00		Calculated
7 Link-08	1.29	0 11:57	3.87	0.33	3.04	0.43	0.47	0.38	0.00		Calculated
8 Link-10	0.50	0 11:56	4.43	0.11	1.46	0.09	0.55	0.55	0.00		Calculated
9 Link-11	1.79	0 11:57	5.54	0.32	2.64	0.50	0.61	0.41	0.00		Calculated
10 Link-12	0.30	0 11:56	3.66	0.08	2.63	0.08	0.20	0.20	0.00		Calculated
11 Link-13	2.08	0 11:57	6.75	0.31	3.31	0.24	0.58	0.39	0.00		Calculated
12 Link-14	12.57	0 12:13	310.16	0.04	11.25	0.12	0.37	0.09	0.00		Calculated
13 Link-15	11.14	0 12:14	57.38	0.19	5.75	0.16	0.96	0.32	0.00		Calculated
14 Link-16	0.88	0 11:56	7.62	0.11	5.39	0.41	0.26	0.26	0.00		Calculated
15 Link-17	1.53	0 11:56	8.80	0.17	6.51	0.38	0.34	0.34	0.00		Calculated
16 Link-18	2.26	0 11:56	6.85	0.33	7.19	0.20	0.42	0.42	0.00		Calculated
17 Link-19	0.90	0 11:56	13.08	0.07	4.29	0.04	0.31	0.31	0.00		Calculated
18 Link-20	3.16	0 11:56	7.65	0.41	5.61	0.21	0.70	0.70	0.00		Calculated
19 Link-21	3.58	0 11:56	4.73	0.76	3.67	0.25	1.02	0.82	0.00		Calculated
20 Link-22	0.89	0 11:56	8.56	0.10	4.44	0.15	0.60	0.60	0.00		Calculated
21 Link-23	4.46	0 11:57	2.94	1.52	3.68	0.35	1.20	0.96	0.00		> CAPACITY
22 Link-24	4.99	0 11:57	4.39	1.14	4.51	0.15	1.06	0.85	0.00		> CAPACITY
23 Link-37	0.01	0 18:12	2.26	0.00	0.78	2.93	0.05	0.05	0.00		Calculated
24 Link-38	0.01	0 18:12	7.54	0.00	1.68	0.24	0.11	0.11	0.00		Calculated
25 Link-39	12.72	0 12:01	30.35	0.42	7.41	0.02	1.07	0.54	0.00		Calculated
26 Link-41	17.34	0 12:00	31.90	0.54	9.03	0.09	1.18	0.59	0.00		Calculated
27 Link-42	11.05	0 12:13	49.80	0.22	5.13	0.10	1.03	0.34	0.00		Calculated
28 Link-44	11.05	0 12:14	49.47	0.22	5.54	0.65	0.98	0.33	0.00		Calculated

**Storage Nodes**

**Storage Node : 13011/3**

**Input Data**

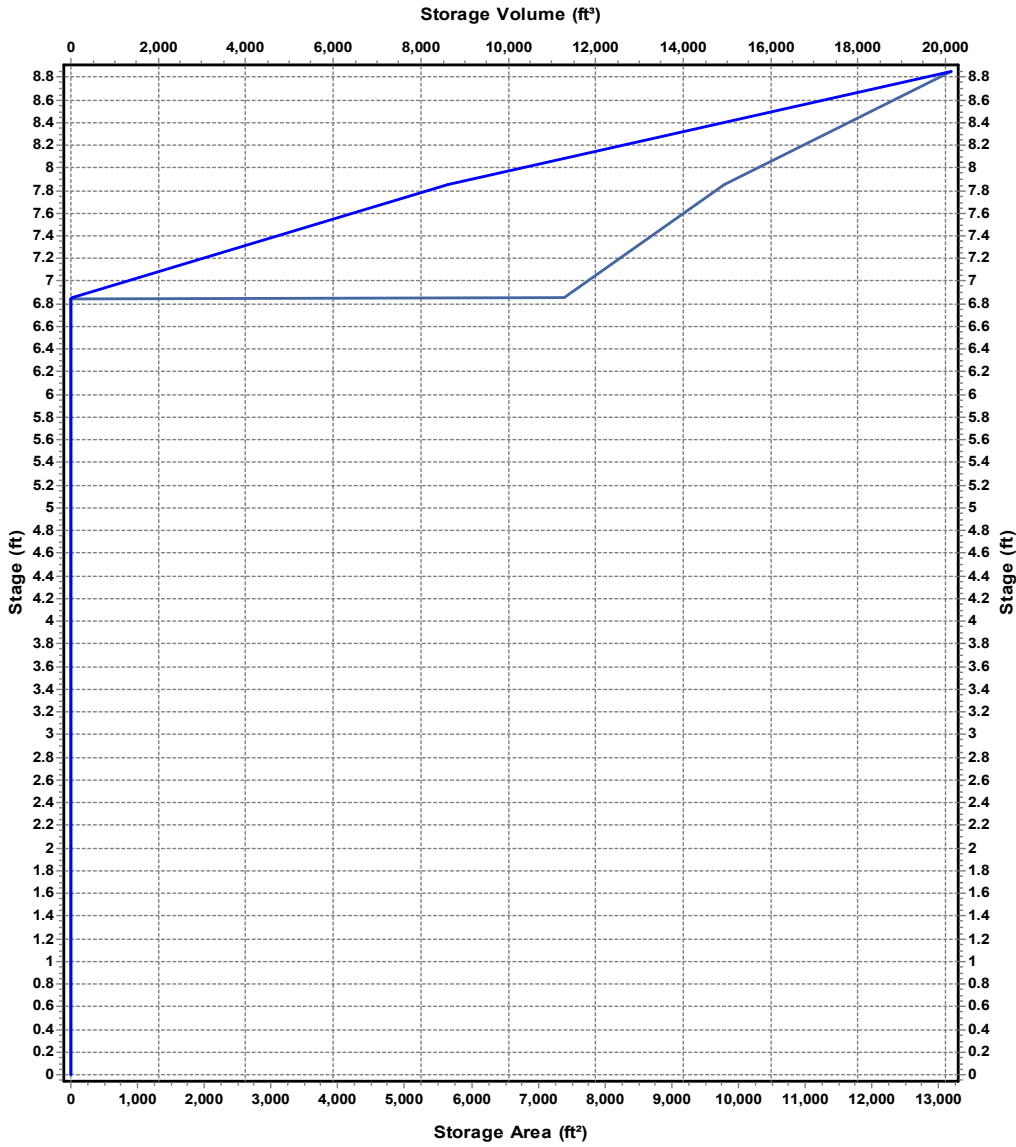
Invert Elevation (ft) ..... 771.15  
 Max (Rim) Elevation (ft) ..... 780.00  
 Max (Rim) Offset (ft) ..... 8.85  
 Initial Water Elevation (ft) ..... 771.15  
 Initial Water Depth (ft) ..... 0.00  
 Poned Area (ft<sup>2</sup>) ..... 0.00  
 Evaporation Loss ..... 0.00

**Storage Area Volume Curves**

Storage Curve : Existing 02

Stage (ft)	Storage Area (ft <sup>2</sup> )	Storage Volume (ft <sup>3</sup> )
0	0	0
6.84	1	3.42
6.85	7389	40.37
7.85	9796	8632.87
8.85	13187	20124.37

### Storage Area Volume Curves



Storage Area Storage Volume

**Storage Node : 13011/3 (continued)**

**Output Summary Results**

Peak Inflow (cfs) .....	12.57
Peak Lateral Inflow (cfs) .....	1.08
Peak Outflow (cfs) .....	12.57
Peak Exfiltration Flow Rate (cfm) .....	0
Max HGL Elevation Attained (ft) .....	771.62
Max HGL Depth Attained (ft) .....	0.47
Average HGL Elevation Attained (ft) .....	771.27
Average HGL Depth Attained (ft) .....	0.12
Time of Max HGL Occurrence (days hh:mm) .....	0 12:13
Total Exfiltration Volume (1000-ft <sup>3</sup> ) .....	0
Total Flooded Volume (ac-in) .....	0
Total Time Flooded (min) .....	0
Total Retention Time (sec) .....	0

**Storage Node : UGD-01**

**Input Data**

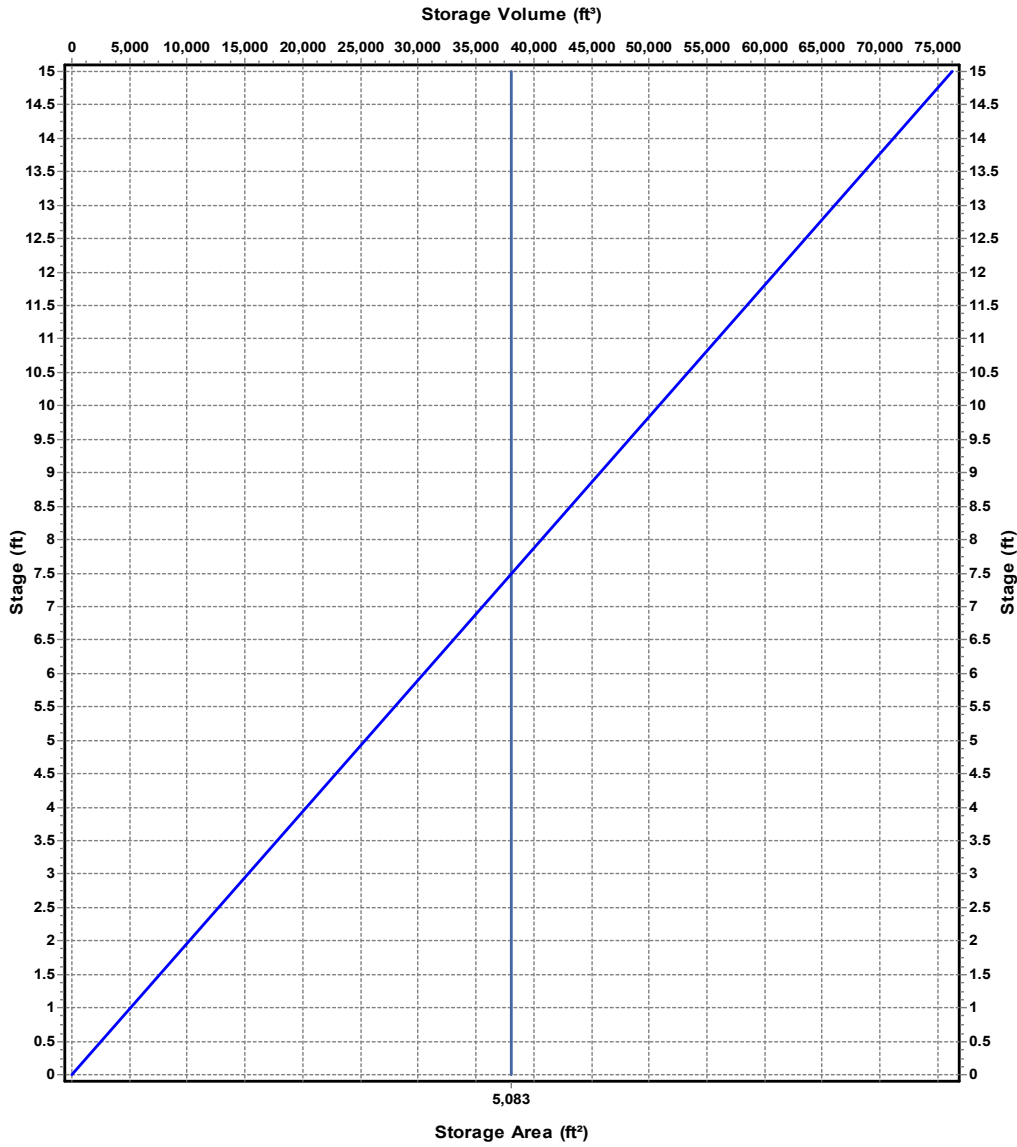
Invert Elevation (ft) .....	790.00
Max (Rim) Elevation (ft) .....	805.00
Max (Rim) Offset (ft) .....	15.00
Initial Water Elevation (ft) .....	790.00
Initial Water Depth (ft) .....	0.00
Ponded Area (ft <sup>2</sup> ) .....	0.00
Evaporation Loss .....	0.00

**Storage Area Volume Curves**

Storage Curve : UGD-01

Stage	Storage Area	Storage Volume
(ft)	(ft <sup>2</sup> )	(ft <sup>3</sup> )
0	5083	0
15	5083	76245

### Storage Area Volume Curves



Storage Area    Storage Volume

**Storage Node : UGD-01 (continued)**

**Outflow Weirs**

SN Element ID	Weir Type	Flap Gate	Crest Elevation (ft)	Crest Offset (ft)	Length (ft)	Weir Total Height (ft)	Discharge Coefficient
1 UGD-01-Weir	Rectangular	No	803.75	13.75	6.00	1.25	2.62

**Outflow Orifices**

SN Element ID	Orifice Type	Orifice Shape	Flap Gate	Circular Orifice Diameter (in)	Rectangular Orifice Height (in)	Rectangular Orifice Width (in)	Orifice Invert Elevation (ft)	Orifice Coefficient
1 UGD-01-2ndStage	Side	Rectangular	No		8.00	48.00	797.50	0.60
2 UGD-01-WQ	Side	CIRCULAR	No	3.00			790.00	0.60

**Output Summary Results**

Peak Inflow (cfs)	30.04
Peak Lateral Inflow (cfs)	0
Peak Outflow (cfs)	11.05
Peak Exfiltration Flow Rate (cfm)	0
Max HGL Elevation Attained (ft)	798.49
Max HGL Depth Attained (ft)	8.49
Average HGL Elevation Attained (ft)	793.99
Average HGL Depth Attained (ft)	3.99
Time of Max HGL Occurrence (days hh:mm)	0 12:13
Total Exfiltration Volume (1000-ft <sup>3</sup> )	0
Total Flooded Volume (ac-in)	0
Total Time Flooded (min)	0
Total Retention Time (sec)	0

**Storage Node : UGD-02**

**Input Data**

Invert Elevation (ft) .....	802.50
Max (Rim) Elevation (ft) .....	809.25
Max (Rim) Offset (ft) .....	6.75
Initial Water Elevation (ft) .....	802.50
Initial Water Depth (ft) .....	0.00
Ponded Area (ft <sup>2</sup> ) .....	0.00
Evaporation Loss .....	0.00

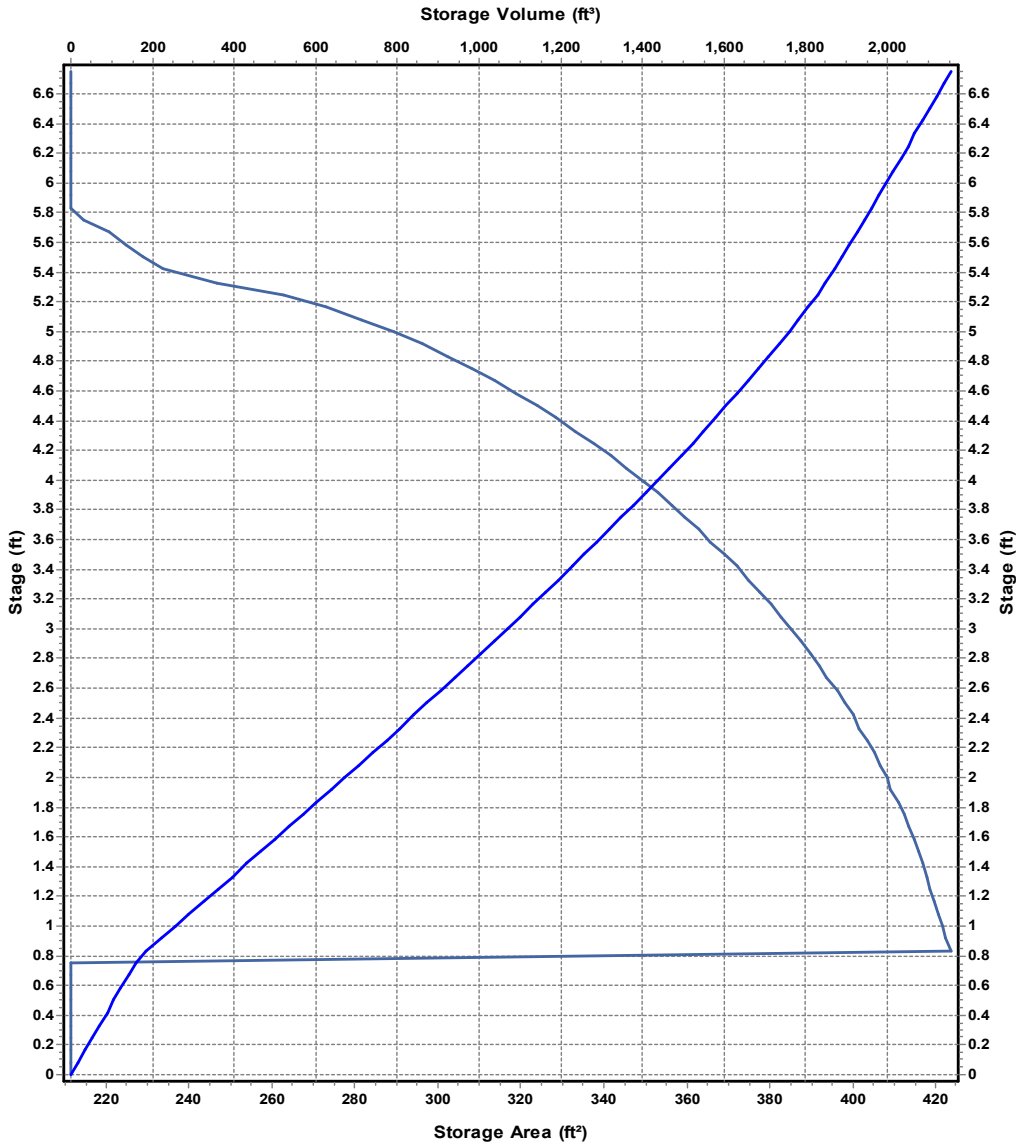
**Storage Area Volume Curves**

Storage Curve : UGD-MC7200

Stage (ft)	Storage Area (ft <sup>2</sup> )	Storage Volume (ft <sup>3</sup> )
0	211.6	0
0.08	211.6	16.93
0.17	211.6	35.97
0.25	211.6	52.9
0.33	211.6	69.83
0.42	211.6	88.87
0.5	211.6	105.8
0.58	211.6	122.73
0.67	211.6	141.77
0.75	211.6	158.7
0.83	423.65	184.11
0.92	422.22	222.17
1	421.48	255.92
1.08	420.65	289.61
1.17	419.44	327.41
1.25	418.56	360.93
1.33	417.93	394.39
1.42	416.93	431.96
1.5	415.88	465.27
1.58	414.76	498.5
1.67	413.55	535.77
1.75	412.31	568.8
1.83	411.06	601.73
1.92	409.06	638.64
2	408.23	671.33
2.08	406.69	703.93
2.17	405.1	740.46
2.25	403.45	772.8
2.33	401.43	805
2.42	399.96	841.06
2.5	398.13	872.98
2.58	396.19	904.75
2.67	393.75	940.3
2.75	391.88	971.73
2.83	389.81	1003
2.92	387.51	1037.98
3	385.18	1068.89
3.08	382.78	1099.61
3.17	380.2	1133.94
3.25	377.55	1164.25
3.33	374.81	1194.34
3.42	371.94	1227.94
3.5	368.99	1257.58
3.58	365.61	1286.96
3.67	362.8	1319.74
3.75	359.58	1348.64
3.83	356.26	1377.27
3.92	352.83	1409.18
4	349.25	1437.26
4.08	345.51	1465.05
4.17	341.57	1495.97
4.25	337.45	1523.13
4.33	333.12	1549.95
4.42	328.51	1579.72
4.5	323.87	1605.82
4.58	318.91	1631.53
4.67	313.71	1660
4.75	308.31	1684.88
4.83	302.46	1709.31
4.92	296.21	1736.25
5	289.37	1759.67

5.08	281.76	1782.52
5.17	273.2	1807.49
5.25	262.78	1828.93
5.33	246.67	1849.31
5.42	233.8	1870.93
5.5	228.93	1889.44
5.58	224.98	1907.6
5.67	220.79	1927.66
5.75	214.54	1945.07
5.83	211.6	1962.12
5.92	211.6	1981.16
6	211.6	1998.09
6.08	211.6	2015.02
6.17	211.6	2034.06
6.25	211.6	2050.99
6.33	211.6	2067.92
6.42	211.6	2086.96
6.5	211.6	2103.89
6.58	211.6	2120.82
6.67	211.6	2139.86
6.75	211.6	2156.79

### Storage Area Volume Curves



Storage Area Storage Volume

**Storage Node : UGD-02 (continued)**

**Outflow Orifices**

SN Element ID	Orifice Type	Orifice Shape	Flap Gate	Circular Orifice Diameter (in)	Rectangular Orifice Height (in)	Rectangular Orifice Width (in)	Orifice Invert Elevation (ft)	Orifice Coefficient
1 UGD-02-MANIFOLD	Side	CIRCULAR	No	12.00			806.22	0.60
2 UGD-02-WQ	Side	CIRCULAR	No	0.50			802.50	0.60

**Output Summary Results**

Peak Inflow (cfs)	0.57
Peak Lateral Inflow (cfs)	0.57
Peak Outflow (cfs)	0.01
Peak Exfiltration Flow Rate (cfm)	0
Max HGL Elevation Attained (ft)	805.07
Max HGL Depth Attained (ft)	2.57
Average HGL Elevation Attained (ft)	803.76
Average HGL Depth Attained (ft)	1.26
Time of Max HGL Occurrence (days hh:mm)	0 18:09
Total Exfiltration Volume (1000-ft <sup>3</sup> )	0
Total Flooded Volume (ac-in)	0
Total Time Flooded (min)	0
Total Retention Time (sec)	0

**Storage Node : UGD-03**

**Input Data**

Invert Elevation (ft) ..... 813.62  
 Max (Rim) Elevation (ft) ..... 821.50  
 Max (Rim) Offset (ft) ..... 7.88  
 Initial Water Elevation (ft) ..... 0.00  
 Initial Water Depth (ft) ..... -813.62  
 Poned Area (ft<sup>2</sup>) ..... 0.00  
 Evaporation Loss ..... 0.00

**Outflow Orifices**

SN Element ID	Orifice Type	Orifice Shape	Flap Gate	Circular Orifice Diameter (in)	Rectangular Orifice Height (in)	Rectangular Orifice Width (in)	Orifice Invert Elevation (ft)	Orifice Coefficient
1 UGD-03-Orifice	Side	CIRCULAR	No	10.00			813.62	0.60

**Output Summary Results**

Peak Inflow (cfs) ..... 11.05  
 Peak Lateral Inflow (cfs) ..... 11.05  
 Peak Outflow (cfs) ..... 4.16  
 Peak Exfiltration Flow Rate (cfm) ..... 0  
 Max HGL Elevation Attained (ft) ..... 816.54  
 Max HGL Depth Attained (ft) ..... 2.92  
 Average HGL Elevation Attained (ft) ..... 813.91  
 Average HGL Depth Attained (ft) ..... 0.29  
 Time of Max HGL Occurrence (days hh:mm) ..... 0 12:09  
 Total Exfiltration Volume (1000-ft<sup>3</sup>) ..... 0  
 Total Flooded Volume (ac-in) ..... 0  
 Total Time Flooded (min) ..... 0  
 Total Retention Time (sec) ..... 0



## Subbasin Summary

SN	Subbasin ID	Area (ac)	Peak Rate Factor	Weighted Curve Number	Total Rainfall (in)	Total Runoff (in)	Total Runoff Volume (ac-in)	Peak Runoff (cfs)	Time of Concentration (days hh:mm:ss)
1	FUTURE-01	3.25	484.00	95.00	3.24	2.68	8.72	11.36	0 00:10:00
2	FUTURE-02	5.53	484.00	93.00	3.24	2.48	13.74	18.30	0 00:10:00
3	FUTURE-03	0.78	484.00	95.00	3.24	2.68	2.09	3.12	0 00:05:00
4	POST-01	3.47	484.00	94.00	3.24	2.58	8.96	11.81	0 00:10:00
5	POST-02	1.34	484.00	91.00	3.24	2.30	3.08	4.16	0 00:10:00
6	POST-03	0.28	484.00	85.00	3.24	1.79	0.50	0.80	0 00:05:00
7	SUB-13003	0.09	484.00	97.81	3.24	2.98	0.27	0.38	0 00:05:00
8	SUB-13006	0.21	484.00	90.17	3.24	2.22	0.47	0.73	0 00:05:00
9	SUB-13009	0.11	484.00	95.27	3.24	2.71	0.30	0.44	0 00:05:00
10	SUB-13011/3	1.18	484.00	74.32	3.24	1.08	1.28	1.73	0 00:10:00
11	SUB-13016	0.09	484.00	97.34	3.24	2.93	0.26	0.37	0 00:05:00
12	SUB-13018	0.22	484.00	87.75	3.24	2.01	0.44	0.69	0 00:05:00
13	SUB-1451	0.37	484.00	88.41	3.24	2.07	0.76	1.21	0 00:05:00
14	SUB-1511	0.16	484.00	92.08	3.24	2.39	0.38	0.59	0 00:05:00
15	SUB-1533	0.15	484.00	89.88	3.24	2.19	0.33	0.51	0 00:05:00
16	SUB-1570	0.26	484.00	92.05	3.24	2.39	0.62	0.97	0 00:05:00
17	SUB-1607	0.24	484.00	90.83	3.24	2.28	0.55	0.86	0 00:05:00
18	SUB-D22690	0.31	484.00	92.30	3.24	2.42	0.75	1.14	0 00:05:00
19	SUB-D22725	0.90	484.00	79.00	3.24	1.37	1.23	1.95	0 00:05:00
20	UNDETAINED-01	0.27	484.00	84.00	3.24	1.72	0.46	0.73	0 00:05:00

**Node Summary**

SN	Element ID	Element Type	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Initial Water Elevation (ft)	Surcharge Elevation (ft)	Ponded Area (ft <sup>2</sup> )	Peak Inflow (cfs)	Max HGL Elevation Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)	Time of Peak Flooding Occurrence (days hhmm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
1	1	Junction	789.63	800.72	789.63	800.72	10.00	19.06	791.07	0.00	9.65	0 00:00	0.00	0.00
2	2	Junction	789.90	810.97	789.90	810.97	0.00	19.06	791.50	0.00	19.47	0 00:00	0.00	0.00
3	301	Junction	801.75	810.70	801.75	810.70	10.00	0.01	801.88	0.00	8.82	0 00:00	0.00	0.00
4	302	Junction	800.50	814.72	800.50	814.72	10.00	0.01	802.56	0.00	12.16	0 00:00	0.00	0.00
5	1312	Junction	795.14	801.14	795.14	801.14	10.00	0.00	795.14	0.00	6.00	0 00:00	0.00	0.00
6	1451	Junction	796.16	801.58	796.16	801.58	10.00	1.21	796.41	0.00	5.17	0 00:00	0.00	0.00
7	1453	Junction	793.40	803.00	793.40	803.00	10.00	5.97	796.01	0.00	6.99	0 00:00	0.00	0.00
8	1511	Junction	794.03	805.54	794.03	805.54	10.00	4.77	796.35	0.00	9.19	0 00:00	0.00	0.00
9	1533	Junction	798.65	807.61	798.65	807.61	10.00	1.23	798.86	0.00	8.75	0 00:00	0.00	0.00
10	1570	Junction	800.57	809.15	800.57	809.15	10.00	2.96	801.03	0.00	8.12	0 00:00	0.00	0.00
11	1607	Junction	809.64	815.19	809.64	815.19	10.00	2.00	809.97	0.00	5.22	0 00:00	0.00	0.00
12	13001	Junction	783.95	800.74	783.95	800.74	10.00	19.06	785.16	0.00	15.58	0 00:00	0.00	0.00
13	13002	Junction	782.33	798.46	782.33	798.46	10.00	19.06	783.52	0.00	14.94	0 00:00	0.00	0.00
14	13003	Junction	787.40	796.61	787.40	796.61	10.00	0.38	787.58	0.00	9.03	0 00:00	0.00	0.00
15	13005	Junction	781.16	791.08	781.16	791.08	10.00	19.12	782.30	0.00	8.78	0 00:00	0.00	0.00
16	13006	Junction	793.19	802.62	793.19	802.62	10.00	6.69	794.83	0.00	7.79	0 00:00	0.00	0.00
17	13008	Junction	780.03	787.03	780.03	787.03	10.00	19.19	781.42	0.00	5.61	0 00:00	0.00	0.00
18	13009	Junction	782.93	787.81	782.93	787.81	10.00	0.44	783.15	0.00	4.66	0 00:00	0.00	0.00
19	13016	Junction	776.77	780.79	776.77	780.79	10.00	0.37	777.01	0.00	3.78	0 00:00	0.00	0.00
20	13017	Junction	776.14	780.49	776.14	780.49	10.00	2.98	776.89	0.00	3.60	0 00:00	0.00	0.00
21	13018	Junction	776.48	780.24	776.48	780.24	10.00	0.69	777.13	0.00	3.11	0 00:00	0.00	0.00
22	13019	Junction	776.36	779.72	776.36	779.72	10.00	2.62	777.12	0.00	2.60	0 00:00	0.00	0.00
23	D22686	Junction	797.40	807.27	797.40	807.27	10.00	4.19	797.97	0.00	9.30	0 00:00	0.00	0.00
24	D22690	Junction	815.71	820.04	815.71	820.04	10.00	1.14	815.97	0.00	4.07	0 00:00	0.00	0.00
25	D22725	Junction	776.89	781.00	776.89	781.00	10.00	1.94	777.51	0.00	3.49	0 00:00	0.00	0.00
26	HDS-101	Junction	801.90	814.15	801.90	814.15	10.00	15.84	803.43	0.00	10.72	0 00:00	0.00	0.00
27	HDS-201	Junction	802.79	815.53	802.79	815.53	10.00	22.42	804.47	0.00	11.06	0 00:00	0.00	0.00
28	13021/3	Outfall	766.01					23.42	766.53					
29	13011/3	Storage Node	771.15	780.00	771.15		0.00	23.42	771.88				0.00	0.00
30	UGD-01	Storage Node	790.00	805.00	790.00		0.00	38.25	799.88				0.00	0.00
31	UGD-02	Storage Node	802.50	809.25	802.50		0.00	0.80	806.16				0.00	0.00
32	UGD-03	Storage Node	813.62	821.50	0.00		0.00	13.99	817.44				0.00	0.00

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Diameter or Height (in)	Manning's Roughness	Peak Flow (cfs)	Design Flow Capacity (cfs)	Peak Flow/Design Flow Ratio	Peak Flow Velocity (ft/sec)	Peak Flow Depth (ft)	Peak Flow Depth/Total Depth Ratio	Total Time Reported Surcharged (min)	Reported Condition
1	Link-02	Pipe	13001	13002	56.93	783.95	782.75	2.1100	24.000	0.0130	19.06	32.84	0.58	10.15	1.15	0.58	0.00	Calculated
2	Link-03	Pipe	1312	13002	47.69	795.14	794.90	0.5000	15.000	0.0130	0.00	4.58	0.00	0.00	0.00	0.00	0.00	Calculated
3	Link-04	Pipe	13002	13005	108.25	782.33	781.35	0.9100	36.000	0.0130	19.06	63.46	0.30	7.55	1.16	0.39	0.00	Calculated
4	Link-05	Pipe	13003	13005	149.97	787.40	784.28	2.0800	12.000	0.0130	0.37	5.14	0.07	3.81	0.18	0.18	0.00	Calculated
5	Link-06	Pipe	13009	13008	36.78	782.93	782.29	1.7400	12.000	0.0130	0.44	4.70	0.09	3.62	0.21	0.21	0.00	Calculated
6	Link-07	Pipe	13005	13008	104.48	781.16	780.08	1.0300	36.000	0.0130	19.13	67.81	0.28	6.93	1.24	0.41	0.00	Calculated
7	Link-08	Pipe	D22725	13019	78.09	776.89	776.61	0.3600	15.000	0.0130	1.94	3.87	0.50	3.42	0.59	0.47	0.00	Calculated
8	Link-10	Pipe	13018	13019	7.77	776.48	776.36	1.5400	12.000	0.0130	0.68	4.43	0.15	1.54	0.70	0.70	0.00	Calculated
9	Link-11	Pipe	13019	13017	78.97	776.36	776.14	0.2800	18.000	0.0130	2.62	5.54	0.47	2.93	0.76	0.50	0.00	Calculated
10	Link-12	Pipe	13016	13017	12.35	776.77	776.64	1.0500	12.000	0.0130	0.37	3.66	0.10	2.76	0.25	0.25	0.00	Calculated
11	Link-13	Pipe	13017	13011/3	48.41	776.14	775.94	0.4100	18.000	0.0130	2.98	6.75	0.44	3.65	0.70	0.47	0.00	Calculated
12	Link-14	Pipe	13011/3	13021/3	82.97	771.22	766.00	6.2900	48.000	0.0130	23.42	310.16	0.08	13.32	0.59	0.15	0.00	Calculated
13	Link-15	Pipe	13008	13011/3	56.74	780.03	779.61	0.7400	36.000	0.0130	19.19	57.38	0.33	6.60	1.29	0.43	0.00	Calculated
14	Link-16	Pipe	D22690	1607	132.76	815.71	809.64	4.5700	12.000	0.0130	1.14	7.62	0.15	5.81	0.30	0.30	0.00	Calculated
15	Link-17	Pipe	1607	1570	148.78	809.65	800.57	6.1000	12.000	0.0130	1.99	8.80	0.23	6.99	0.39	0.39	0.00	Calculated
16	Link-18	Pipe	1570	D22686	85.84	800.57	797.40	3.6900	12.000	0.0130	2.96	6.85	0.43	7.46	0.51	0.51	0.00	Calculated
17	Link-19	Pipe	1533	D22686	9.27	798.65	797.40	13.4800	12.000	0.0130	1.23	13.08	0.09	4.66	0.39	0.39	0.00	Calculated
18	Link-20	Pipe	D22686	1511	72.00	797.40	794.08	4.6100	12.000	0.0130	4.19	7.65	0.55	6.34	0.78	0.78	0.00	Calculated
19	Link-21	Pipe	1511	1453	55.99	794.03	793.73	0.5400	15.000	0.0130	4.77	4.73	1.01	3.89	1.25	1.00	7.00	SURCHARGED
20	Link-22	Pipe	1451	1453	40.69	796.16	793.81	5.7800	12.000	0.0130	1.20	8.56	0.14	4.66	0.63	0.63	0.00	Calculated
21	Link-23	Pipe	1453	13006	77.33	793.40	793.24	0.2100	15.000	0.0130	5.97	2.94	2.03	4.86	1.25	1.00	8.00	SURCHARGED
22	Link-24	Pipe	13006	13011/3	41.11	793.19	793.00	0.4600	15.000	0.0130	6.69	4.39	1.52	5.68	1.14	0.92	0.00	> CAPACITY
23	Link-37	Pipe	302	301	136.92	802.50	801.95	0.4000	12.000	0.0130	0.01	2.26	0.01	0.83	0.05	0.05	0.00	Calculated
24	Link-38	Pipe	301	1570	24.56	801.85	800.75	4.4800	12.000	0.0130	0.01	7.54	0.00	1.77	0.15	0.15	0.00	Calculated
25	Link-39	Pipe	HDS-101	UGD-01	10.00	802.00	801.82	1.8000	24.000	0.0130	15.84	30.35	0.52	7.85	1.23	0.61	0.00	Calculated
26	Link-41	Pipe	HDS-201	UGD-01	47.26	802.89	801.95	1.9900	24.000	0.0130	22.42	31.90	0.70	9.49	1.41	0.70	0.00	Calculated
27	Link-42	Pipe	2	1	30.50	790.00	789.83	0.5600	36.000	0.0130	19.06	49.80	0.38	5.92	1.39	0.46	0.00	Calculated
28	Link-44	Pipe	1	13001	214.52	789.73	788.55	0.5500	36.000	0.0130	19.06	49.47	0.39	6.39	1.32	0.44	0.00	Calculated
29	UGD-01 -2ndStage	Orifice	UGD-01	2		790.00	789.90		8.000		18.37							
30	UGD-01-WQ	Orifice	UGD-01	2		790.00	789.90		3.000		0.68							
31	UGD-02-MANIFOLD	Orifice	UGD-02	302		802.50	800.50		12.000		0.00							
32	UGD-02-WQ	Orifice	UGD-02	302		802.50	800.50		0.500		0.01							
33	UGD-03-Orifice	Orifice	UGD-03	HDS-101		813.62	801.90		10.000		4.85							
34	UGD-01-Weir	Weir	UGD-01	2		790.00	789.90				0.00							

**Subbasin Hydrology**

**Subbasin : FUTURE-01**

**Input Data**

Area (ac) ..... 3.25  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 95  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	3.25	-	95
Composite Area & Weighted CN	3.25		95

**Time of Concentration**

TOC Method : SCS TR-55

Sheet Flow Equation :

$$T_c = (0.007 * ((n * L_f)^{0.8})) / ((P^{0.5}) * (S_f^{0.4}))$$

Where :

- T<sub>c</sub> = Time of Concentration (hr)
- n = Manning's roughness
- L<sub>f</sub> = Flow Length (ft)
- P = 2 yr, 24 hr Rainfall (inches)
- S<sub>f</sub> = Slope (ft/ft)

Shallow Concentrated Flow Equation :

- V = 16.1345 \* (S<sub>f</sub><sup>0.5</sup>) (unpaved surface)
- V = 20.3282 \* (S<sub>f</sub><sup>0.5</sup>) (paved surface)
- V = 15.0 \* (S<sub>f</sub><sup>0.5</sup>) (grassed waterway surface)
- V = 10.0 \* (S<sub>f</sub><sup>0.5</sup>) (nearly bare & untilled surface)
- V = 9.0 \* (S<sub>f</sub><sup>0.5</sup>) (cultivated straight rows surface)
- V = 7.0 \* (S<sub>f</sub><sup>0.5</sup>) (short grass pasture surface)
- V = 5.0 \* (S<sub>f</sub><sup>0.5</sup>) (woodland surface)
- V = 2.5 \* (S<sub>f</sub><sup>0.5</sup>) (forest w/heavy litter surface)
- T<sub>c</sub> = (L<sub>f</sub> / V) / (3600 sec/hr)

Where:

- T<sub>c</sub> = Time of Concentration (hr)
- L<sub>f</sub> = Flow Length (ft)
- V = Velocity (ft/sec)
- S<sub>f</sub> = Slope (ft/ft)

Channel Flow Equation :

$$V = (1.49 * (R^{2/3})) * (S_f^{0.5}) / n$$

$$R = A_q / W_p$$

$$T_c = (L_f / V) / (3600 \text{ sec/hr})$$

Where :

- T<sub>c</sub> = Time of Concentration (hr)
- L<sub>f</sub> = Flow Length (ft)
- R = Hydraulic Radius (ft)
- A<sub>q</sub> = Flow Area (ft<sup>2</sup>)
- W<sub>p</sub> = Wetted Perimeter (ft)
- V = Velocity (ft/sec)
- S<sub>f</sub> = Slope (ft/ft)
- n = Manning's roughness

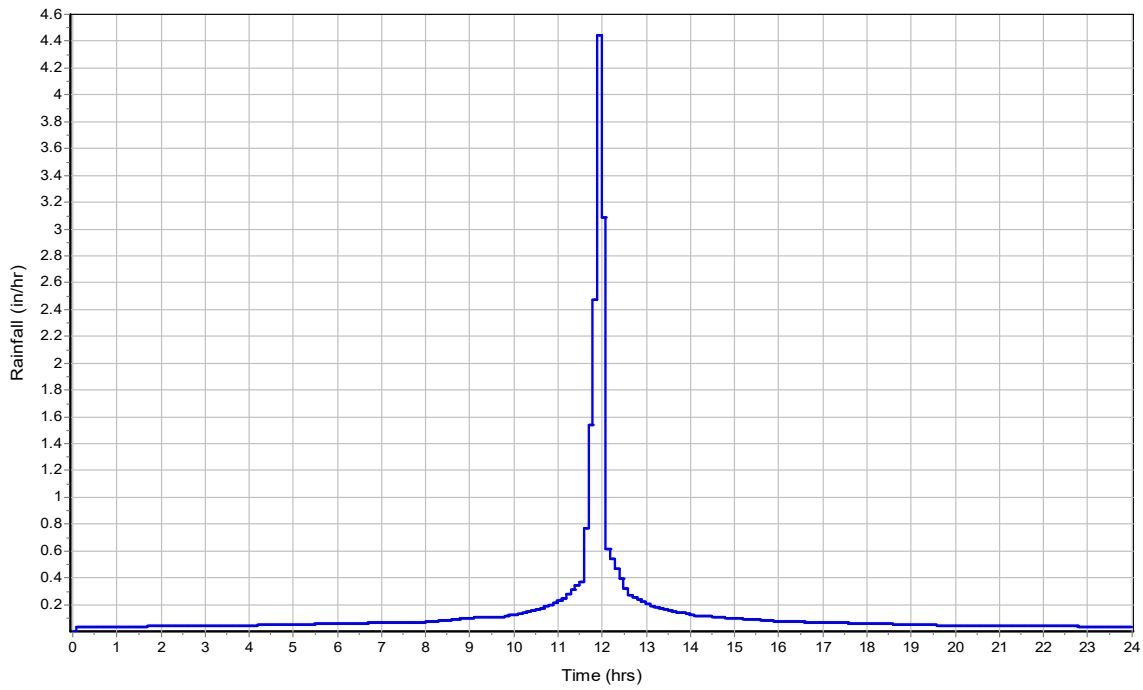
User-Defined TOC override (minutes): 10

**Subbasin Runoff Results**

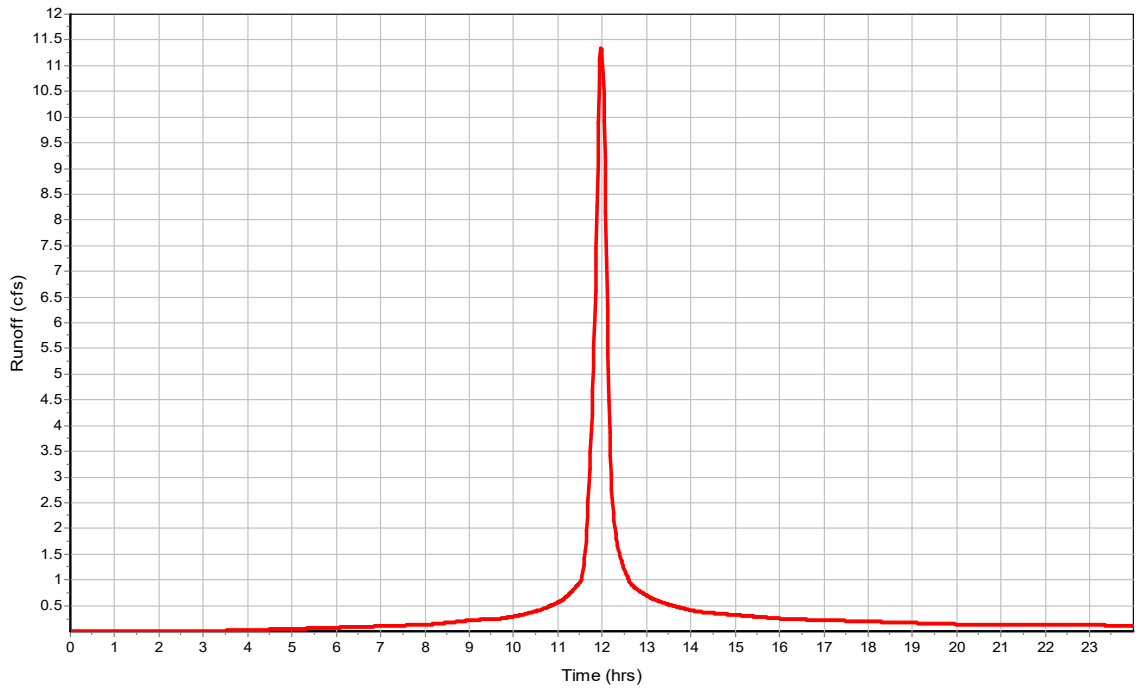
Total Rainfall (in) ..... 3.24  
 Total Runoff (in) ..... 2.68  
 Peak Runoff (cfs) ..... 11.36  
 Weighted Curve Number ..... 95  
 Time of Concentration (days hh:mm:ss) ..... 0 00:10:00

Subbasin : FUTURE-01

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : FUTURE-02**

**Input Data**

Area (ac) ..... 5.53  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 93  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	5.53	-	93
Composite Area & Weighted CN	5.53		93

**Time of Concentration**

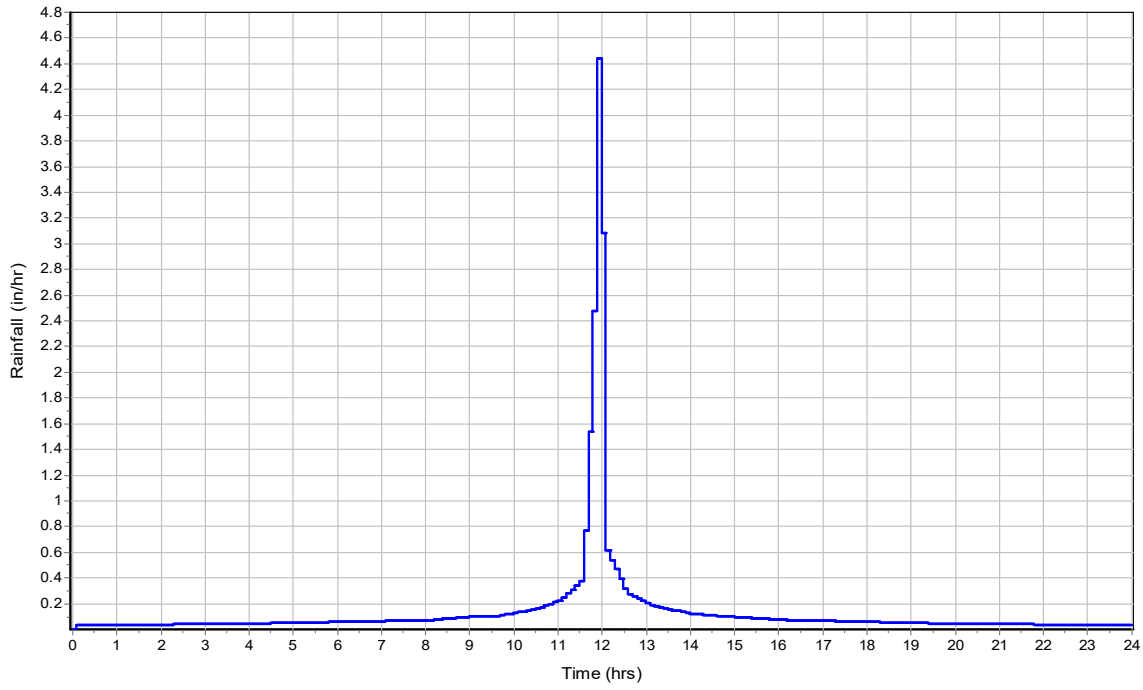
User-Defined TOC override (minutes): 10

**Subbasin Runoff Results**

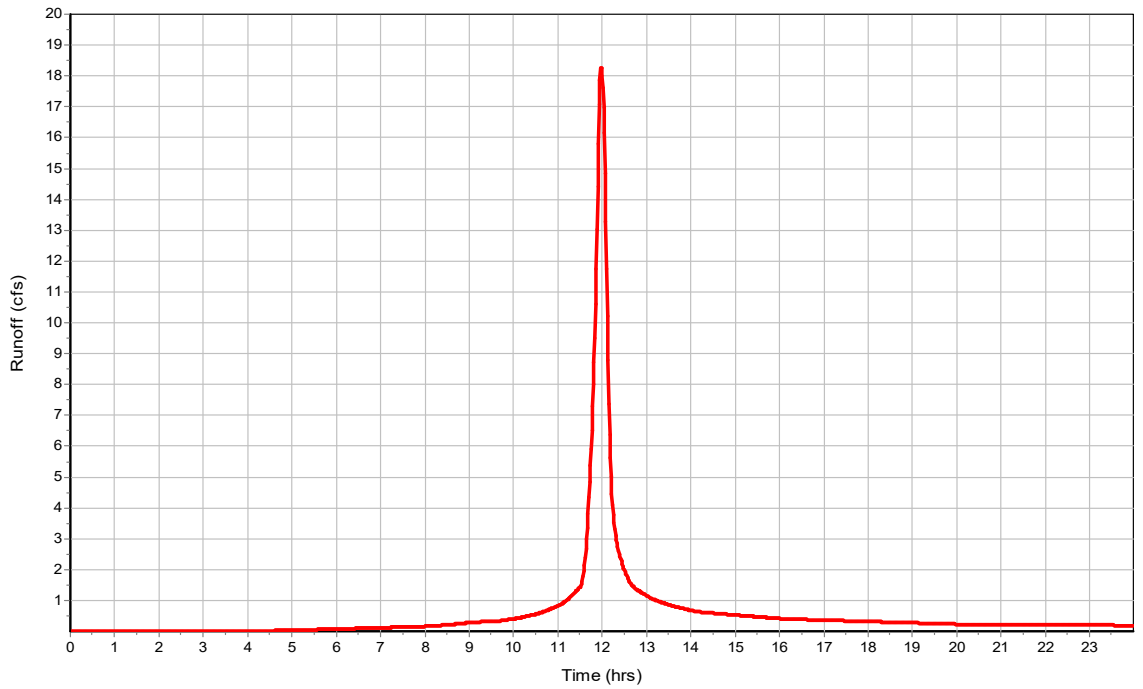
Total Rainfall (in) ..... 3.24  
 Total Runoff (in) ..... 2.48  
 Peak Runoff (cfs) ..... 18.3  
 Weighted Curve Number ..... 93  
 Time of Concentration (days hh:mm:ss) ..... 0 00:10:00

Subbasin : FUTURE-02

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : FUTURE-03**

**Input Data**

Area (ac) ..... 0.78  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 95  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	0.78	-	95
Composite Area & Weighted CN	0.78		95

**Time of Concentration**

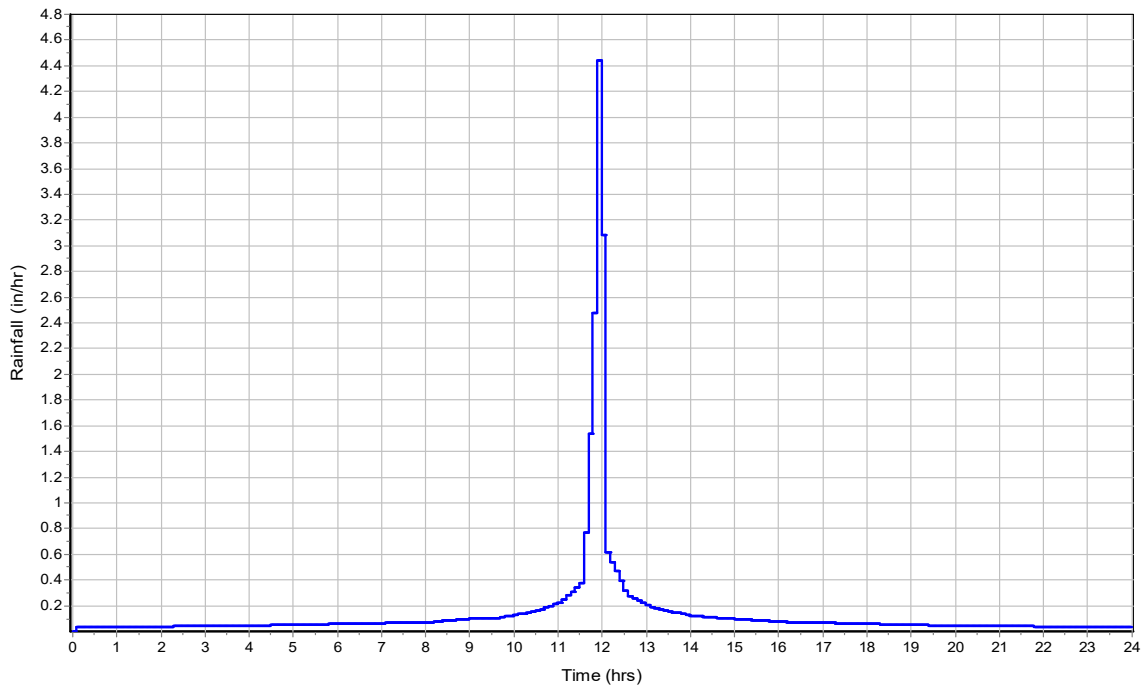
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

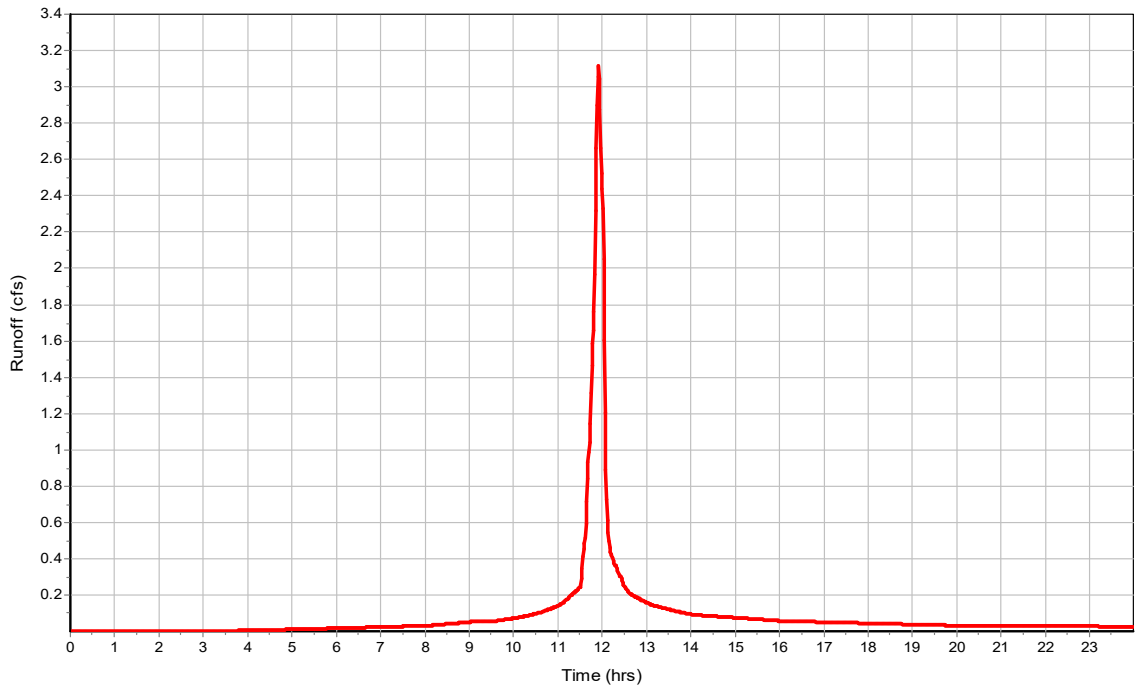
Total Rainfall (in) ..... 3.24  
 Total Runoff (in) ..... 2.68  
 Peak Runoff (cfs) ..... 3.12  
 Weighted Curve Number ..... 95  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : FUTURE-03

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : POST-01**

**Input Data**

Area (ac) ..... 3.47  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 94  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	3.47	-	94
Composite Area & Weighted CN	3.47		94

**Time of Concentration**

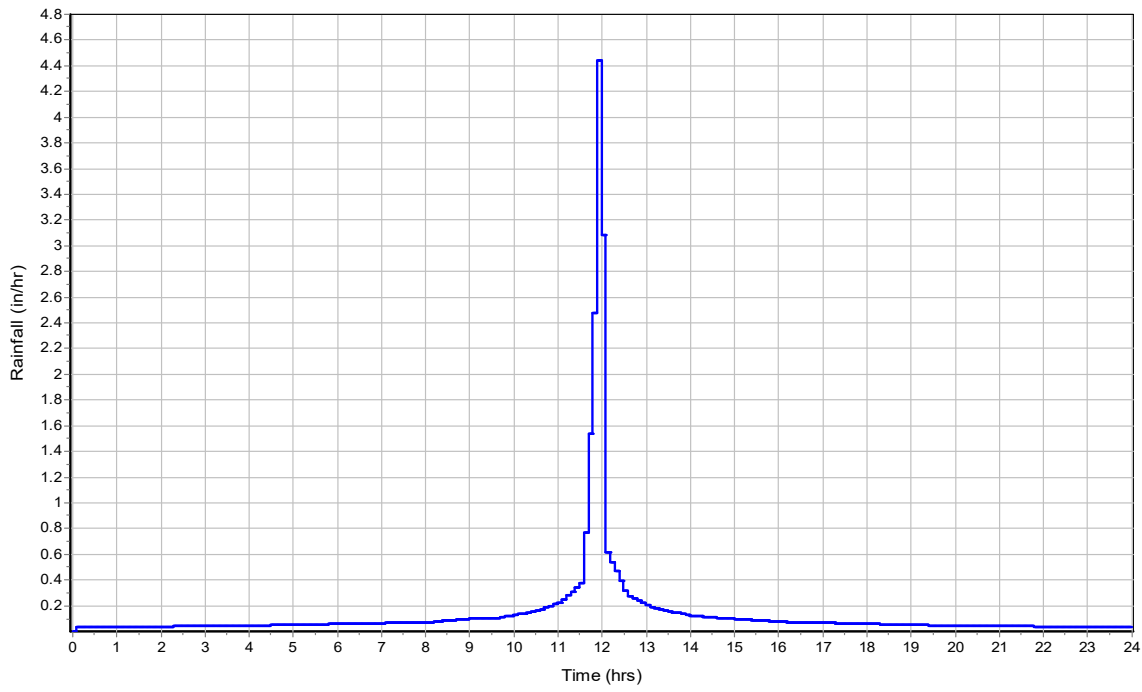
User-Defined TOC override (minutes): 10

**Subbasin Runoff Results**

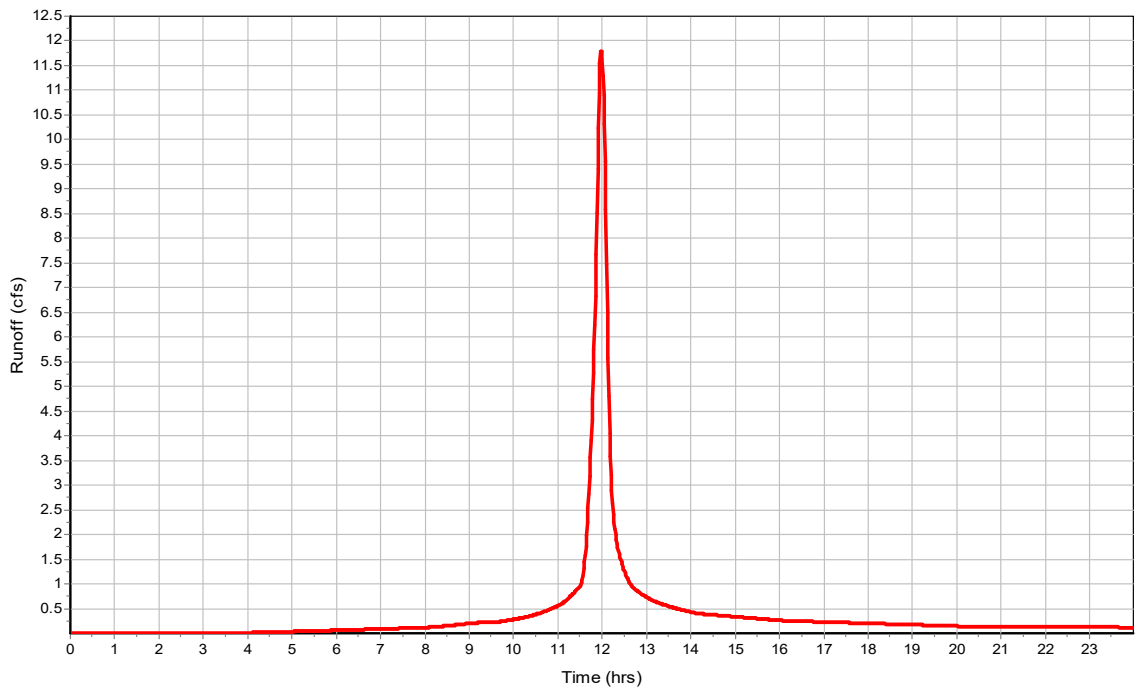
Total Rainfall (in) ..... 3.24  
 Total Runoff (in) ..... 2.58  
 Peak Runoff (cfs) ..... 11.81  
 Weighted Curve Number ..... 94  
 Time of Concentration (days hh:mm:ss) ..... 0 00:10:00

Subbasin : POST-01

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : POST-02**

**Input Data**

Area (ac) ..... 1.34  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 91  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	1.34	-	91
Composite Area & Weighted CN	1.34		91

**Time of Concentration**

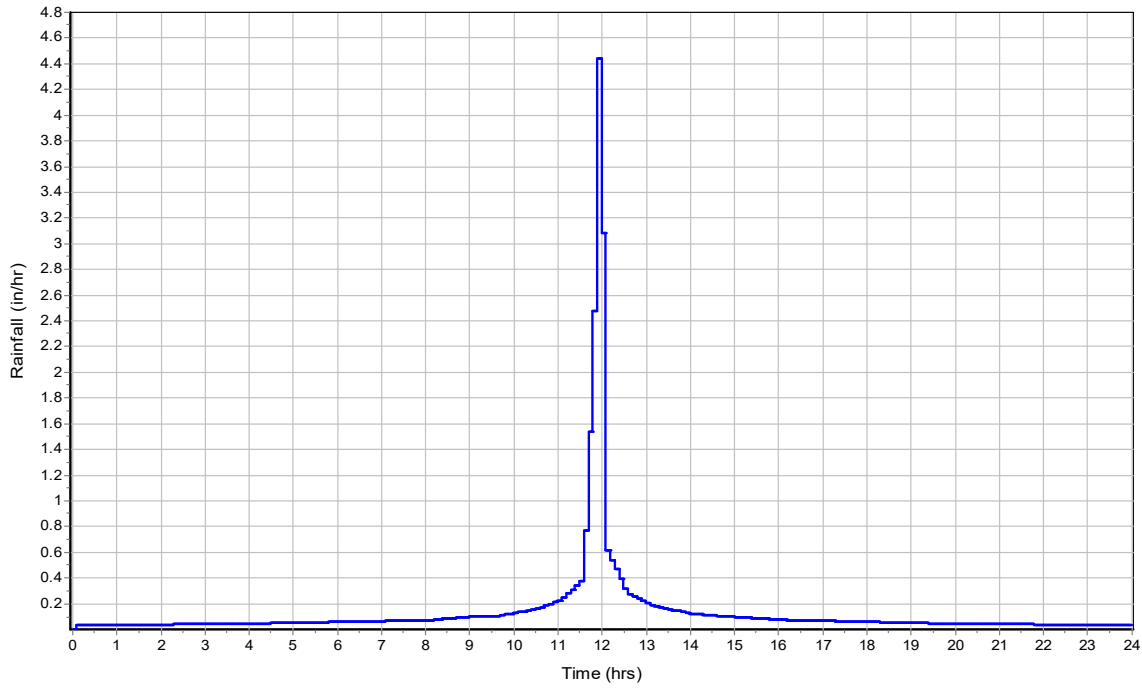
User-Defined TOC override (minutes): 10

**Subbasin Runoff Results**

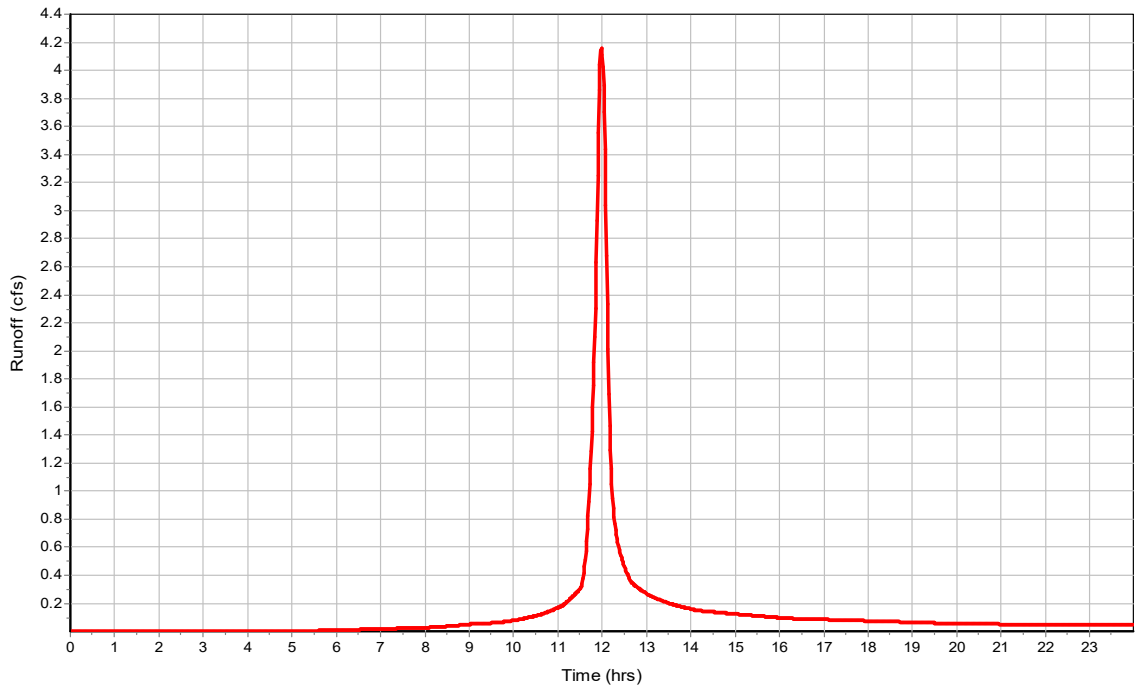
Total Rainfall (in) ..... 3.24  
 Total Runoff (in) ..... 2.3  
 Peak Runoff (cfs) ..... 4.16  
 Weighted Curve Number ..... 91  
 Time of Concentration (days hh:mm:ss) ..... 0 00:10:00

Subbasin : POST-02

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : POST-03**

**Input Data**

Area (ac) ..... 0.28  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 85  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	0.28	-	85
Composite Area & Weighted CN	0.28		85

**Time of Concentration**

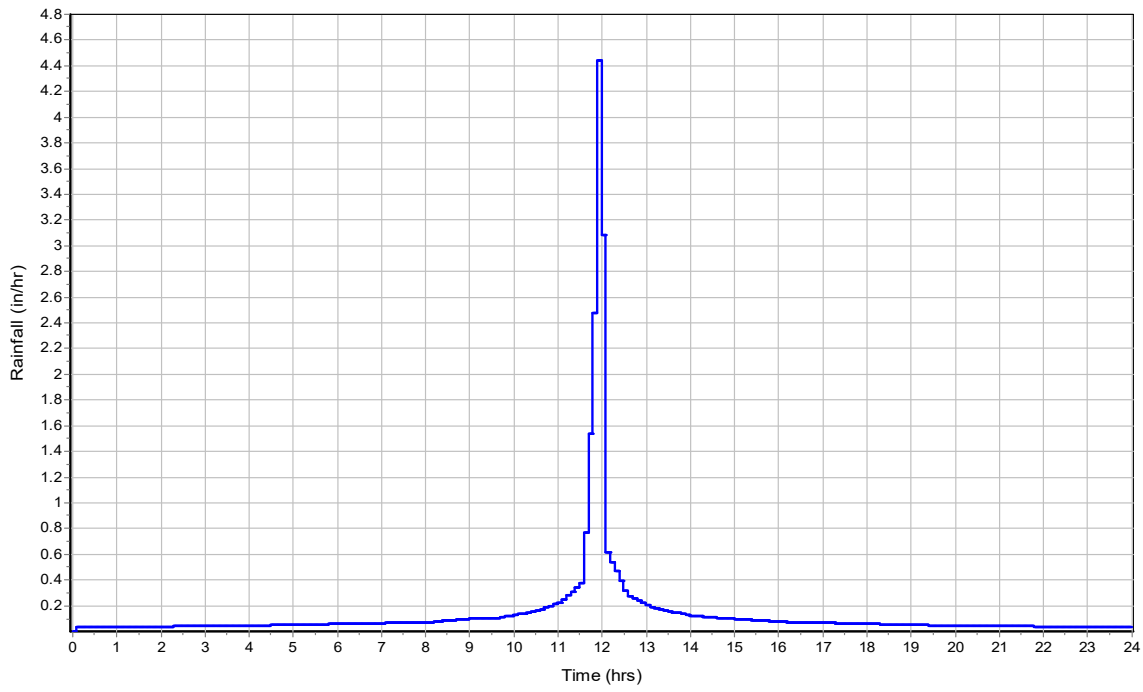
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

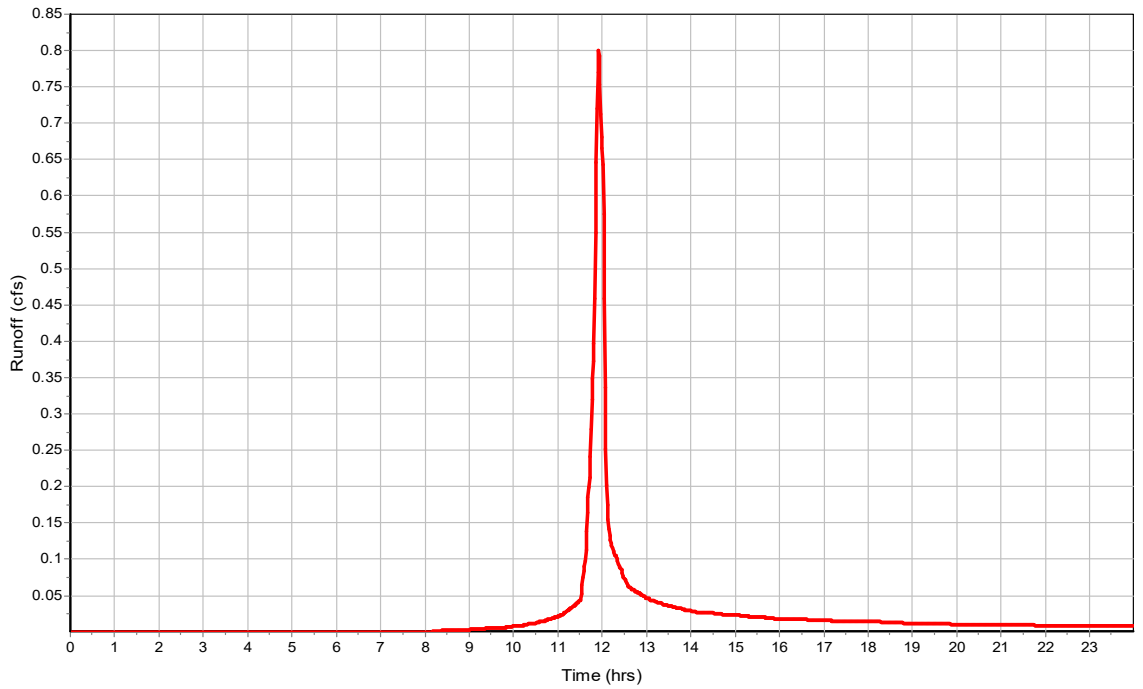
Total Rainfall (in) ..... 3.24  
 Total Runoff (in) ..... 1.79  
 Peak Runoff (cfs) ..... 0.8  
 Weighted Curve Number ..... 85  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : POST-03

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : SUB-13003

Input Data

Area (ac) ..... 0.09  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 97.81  
 Rain Gage ID ..... Rain Gage-01

Composite Curve Number

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	0.09	-	97.81
Composite Area & Weighted CN	0.09		97.81

Time of Concentration

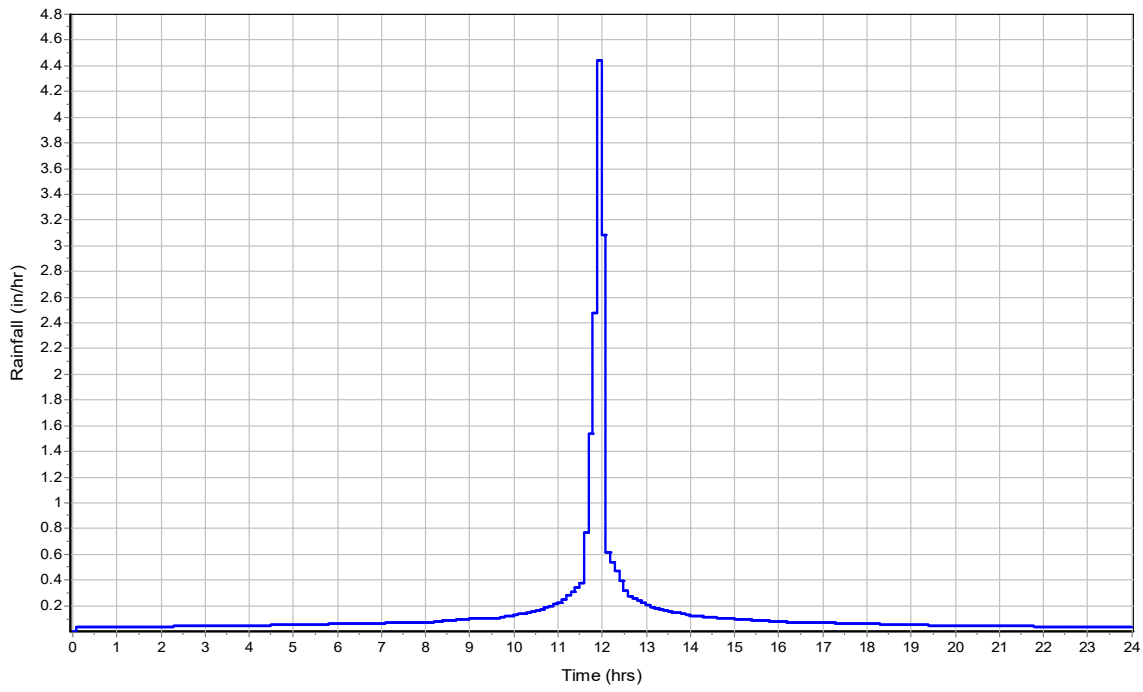
User-Defined TOC override (minutes): 5.00

Subbasin Runoff Results

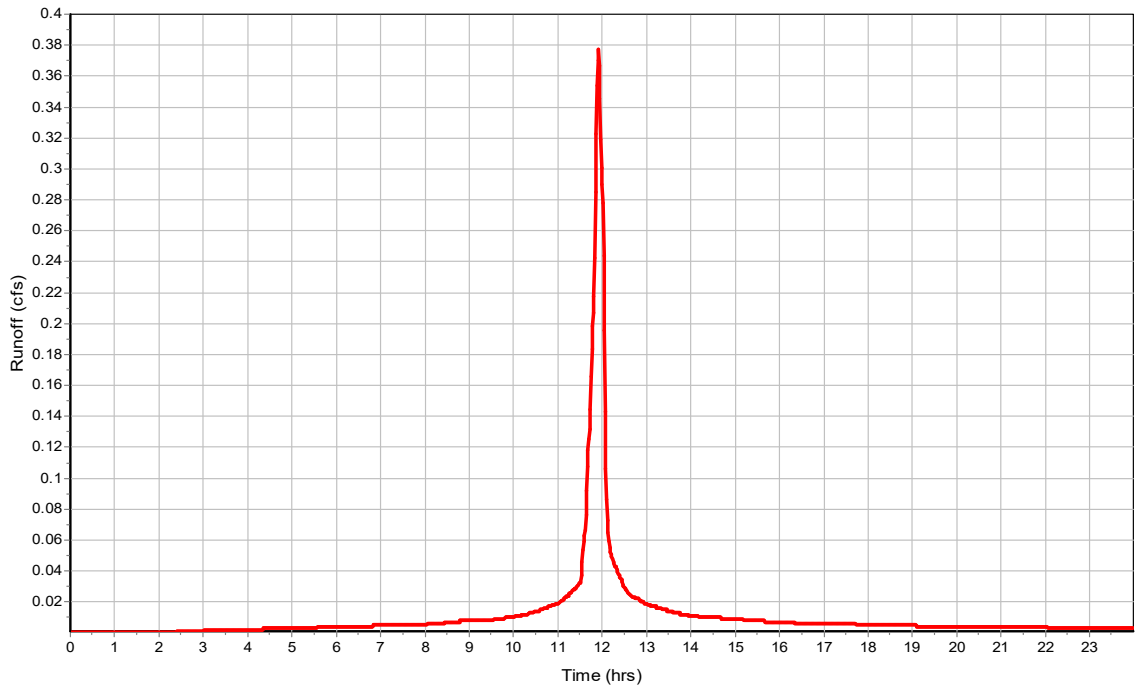
Total Rainfall (in) ..... 3.24  
 Total Runoff (in) ..... 2.98  
 Peak Runoff (cfs) ..... 0.38  
 Weighted Curve Number ..... 97.81  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-13003

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-13006**

**Input Data**

Area (ac) ..... 0.21  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 90.17  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	0.21	-	90.17
Composite Area & Weighted CN	0.21		90.17

**Time of Concentration**

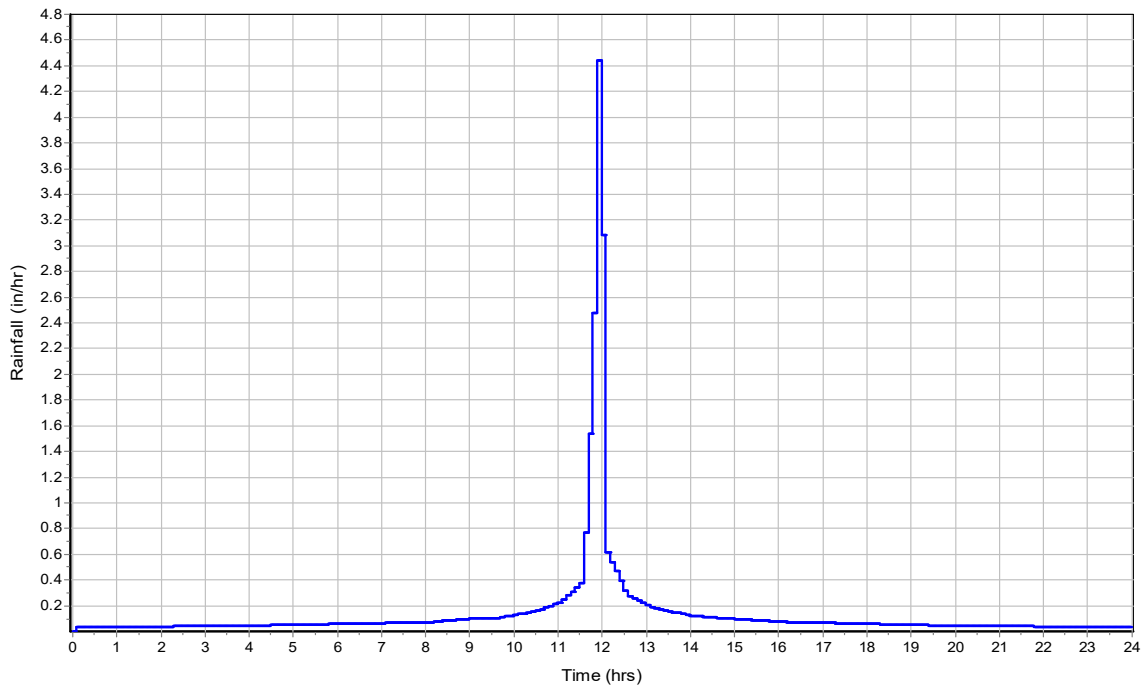
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

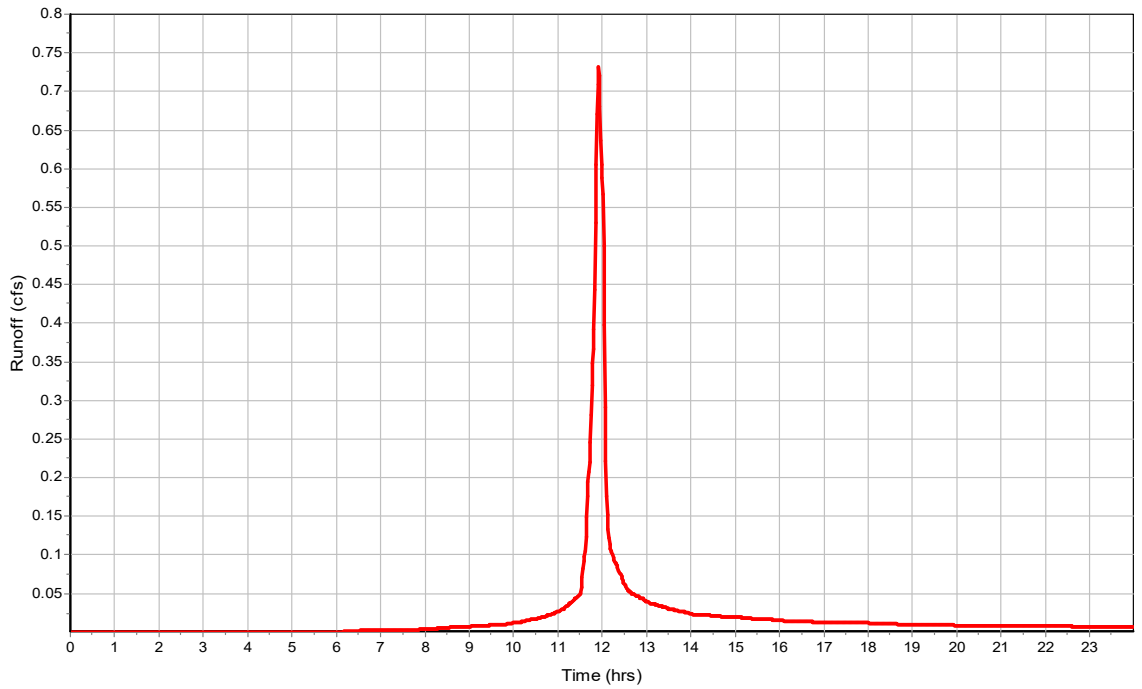
Total Rainfall (in) ..... 3.24  
 Total Runoff (in) ..... 2.22  
 Peak Runoff (cfs) ..... 0.73  
 Weighted Curve Number ..... 90.17  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-13006

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-13009**

**Input Data**

Area (ac) ..... 0.11  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 95.27  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	0.11	-	95.27
Composite Area & Weighted CN	0.11		95.27

**Time of Concentration**

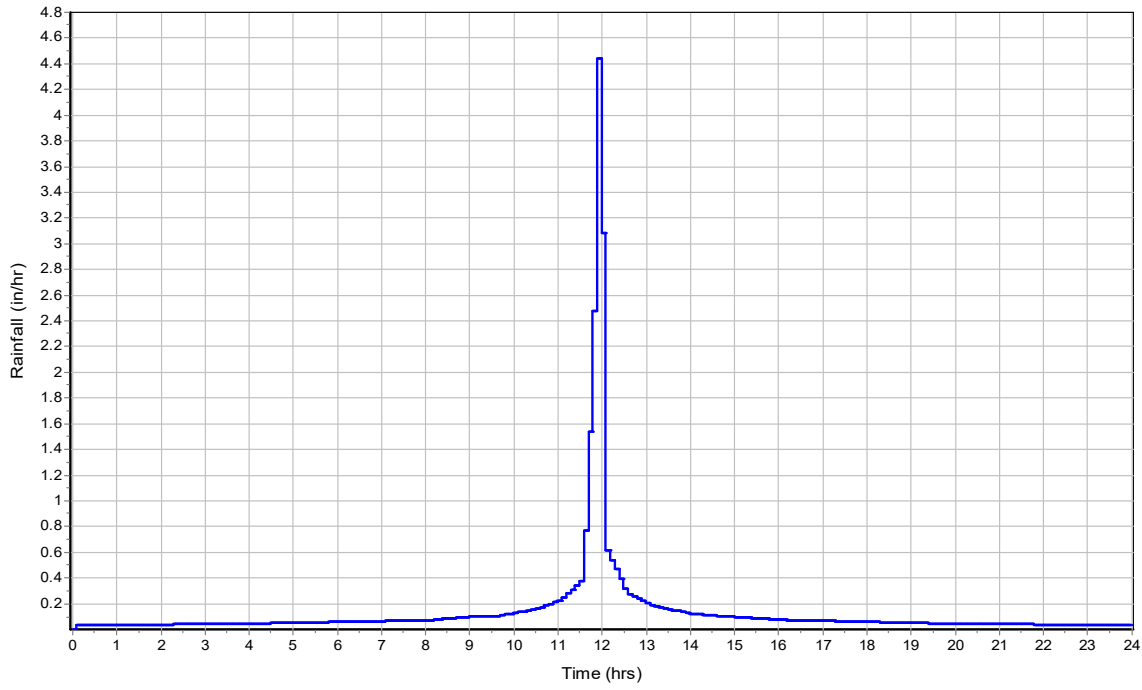
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

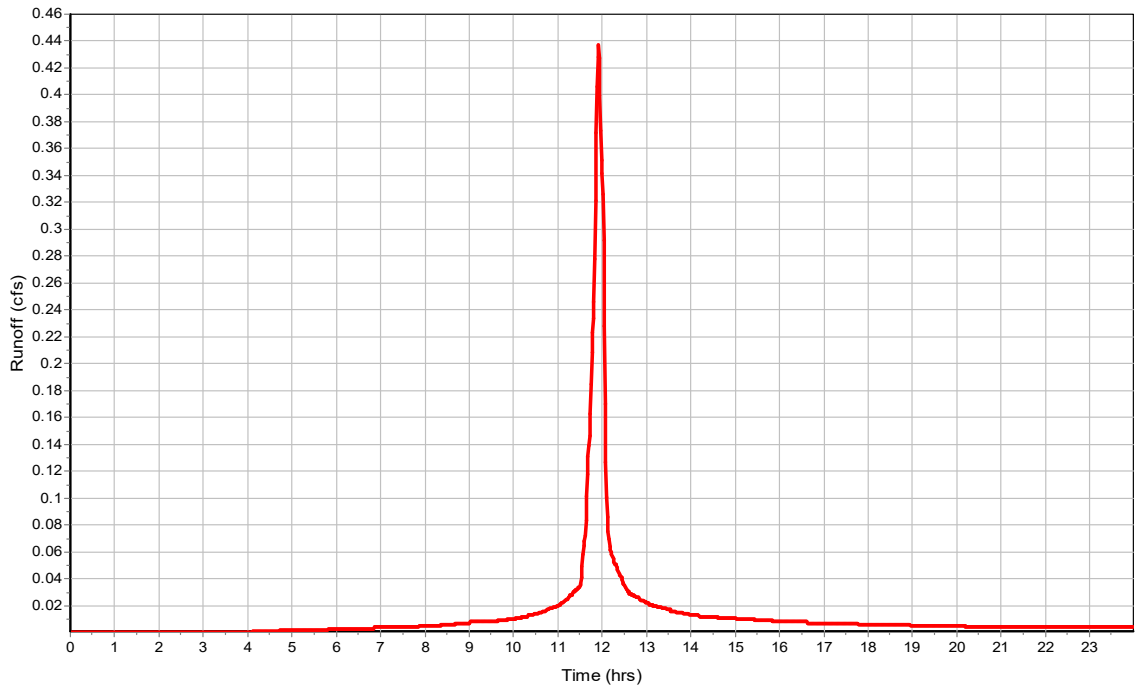
Total Rainfall (in) ..... 3.24  
 Total Runoff (in) ..... 2.71  
 Peak Runoff (cfs) ..... 0.44  
 Weighted Curve Number ..... 95.27  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-13009

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-13011/3**

**Input Data**

Area (ac) ..... 1.18  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 74.32  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	1.18	-	74.32
Composite Area & Weighted CN	1.18		74.32

**Time of Concentration**

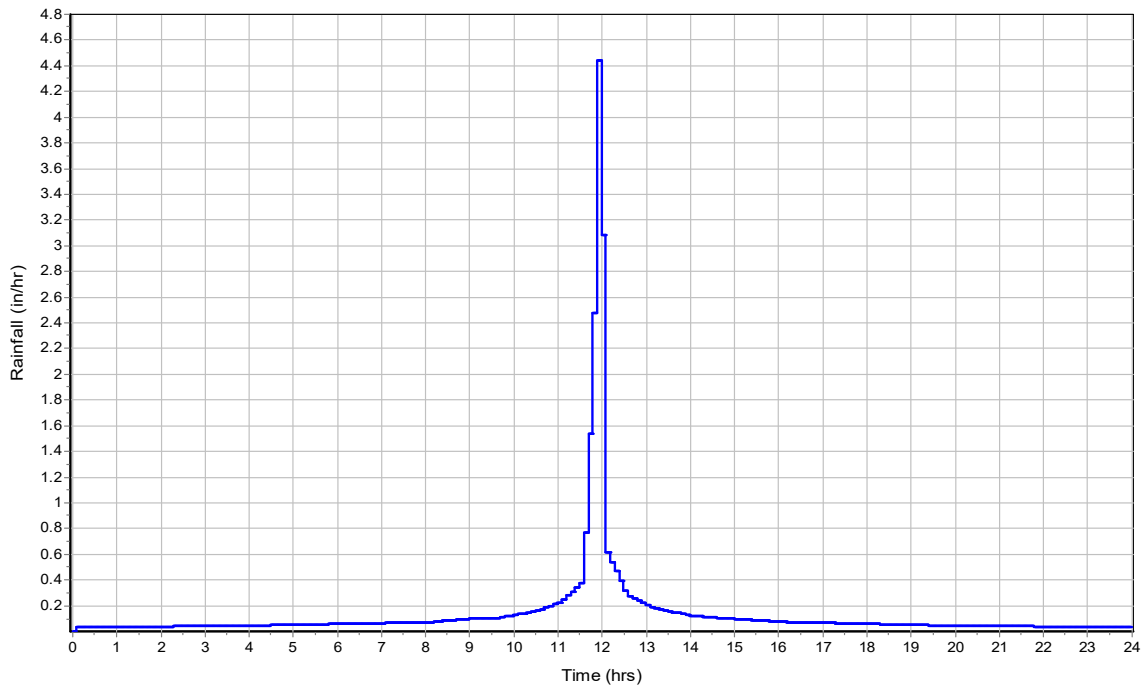
User-Defined TOC override (minutes): 10

**Subbasin Runoff Results**

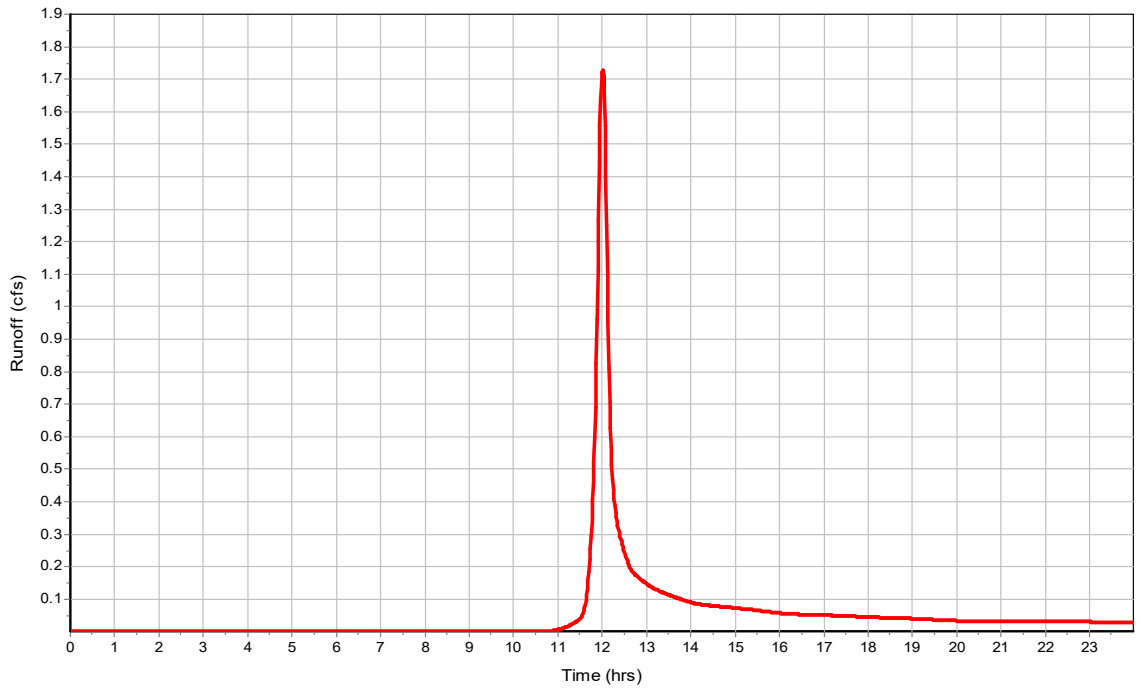
Total Rainfall (in) ..... 3.24  
 Total Runoff (in) ..... 1.08  
 Peak Runoff (cfs) ..... 1.73  
 Weighted Curve Number ..... 74.32  
 Time of Concentration (days hh:mm:ss) ..... 0 00:10:00

Subbasin : SUB-13011/3

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-13016**

**Input Data**

Area (ac) ..... 0.09  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 97.34  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.09	-	97.34
Composite Area & Weighted CN		0.09		97.34

**Time of Concentration**

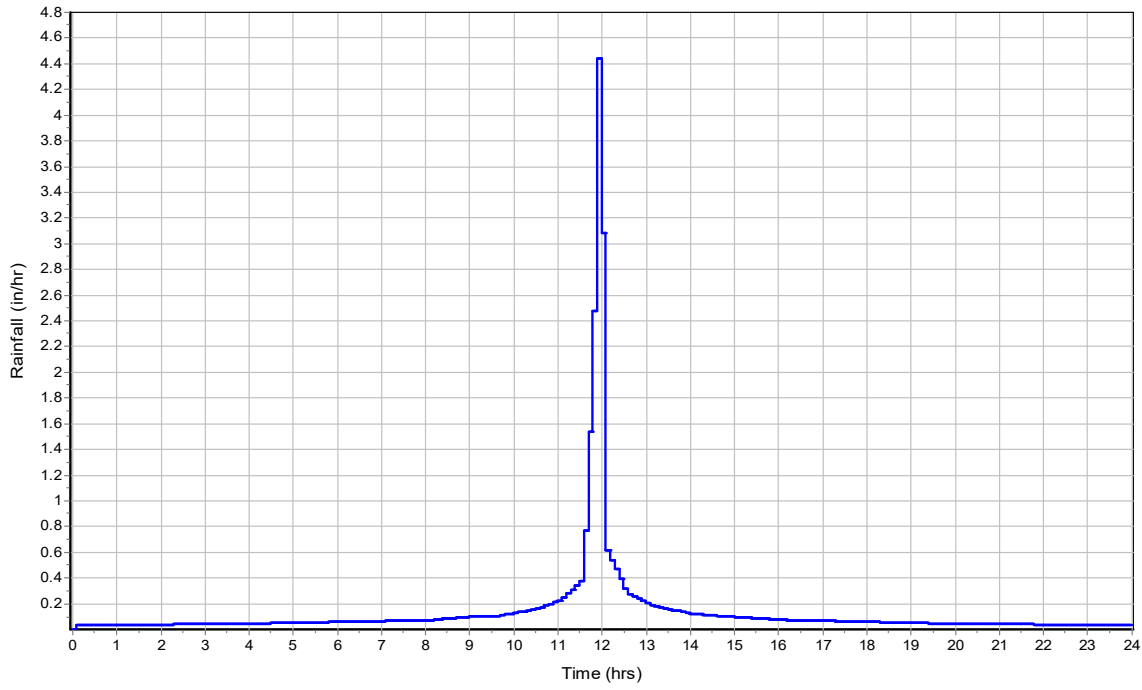
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

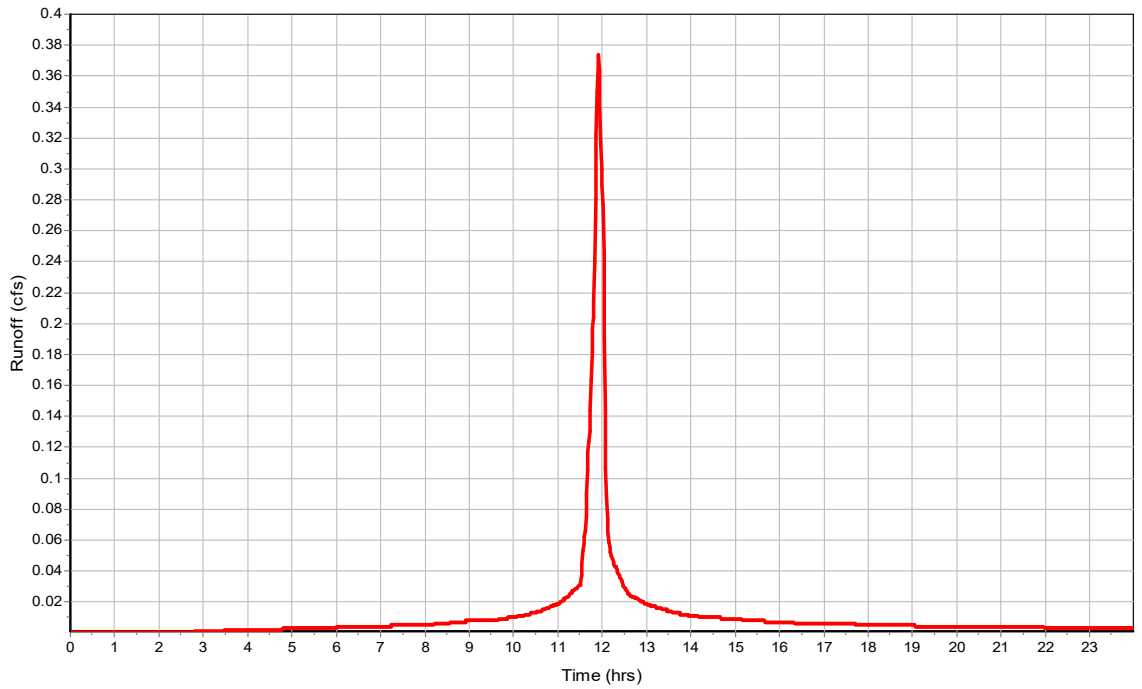
Total Rainfall (in) ..... 3.24  
 Total Runoff (in) ..... 2.93  
 Peak Runoff (cfs) ..... 0.37  
 Weighted Curve Number ..... 97.34  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-13016

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-13018**

**Input Data**

Area (ac) ..... 0.22  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 87.75  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.22	-	87.75
Composite Area & Weighted CN		0.22		87.75

**Time of Concentration**

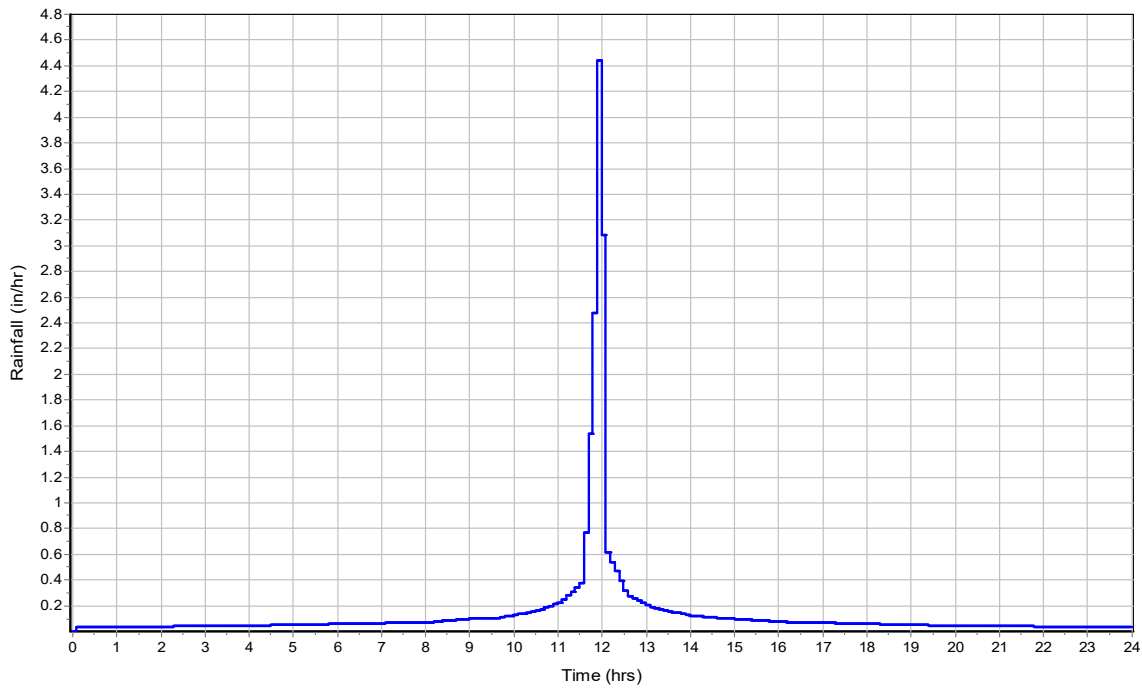
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

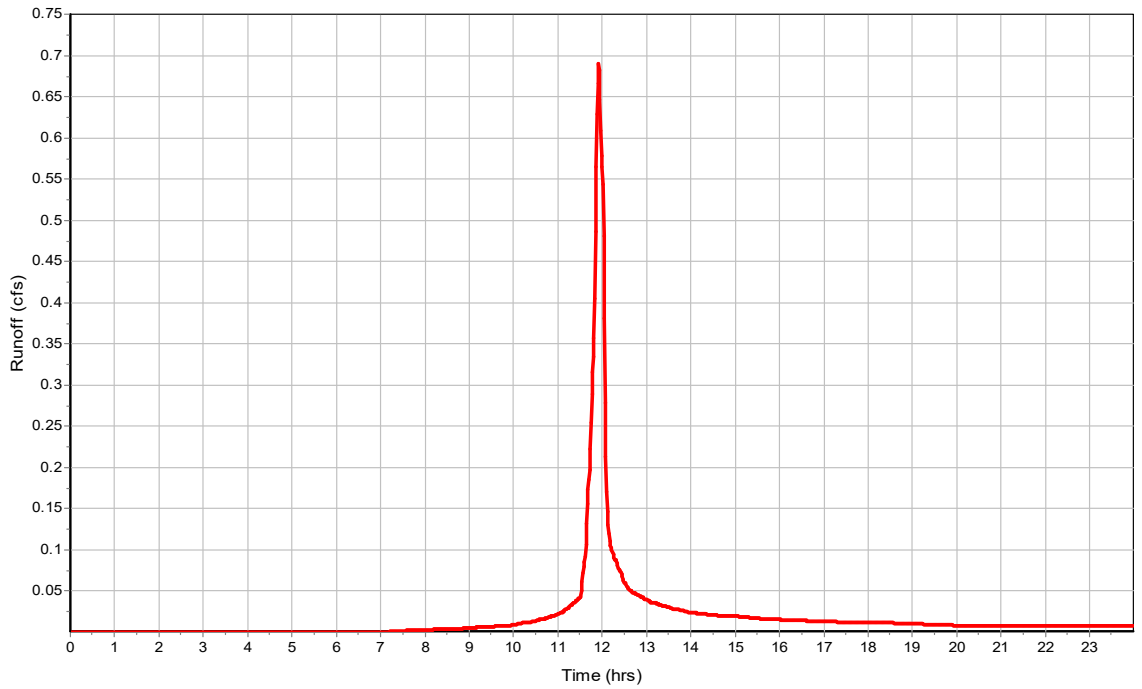
Total Rainfall (in) ..... 3.24  
 Total Runoff (in) ..... 2.01  
 Peak Runoff (cfs) ..... 0.69  
 Weighted Curve Number ..... 87.75  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-13018

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-1451**

**Input Data**

Area (ac) ..... 0.37  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 88.41  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.37	-	88.41
Composite Area & Weighted CN		0.37		88.41

**Time of Concentration**

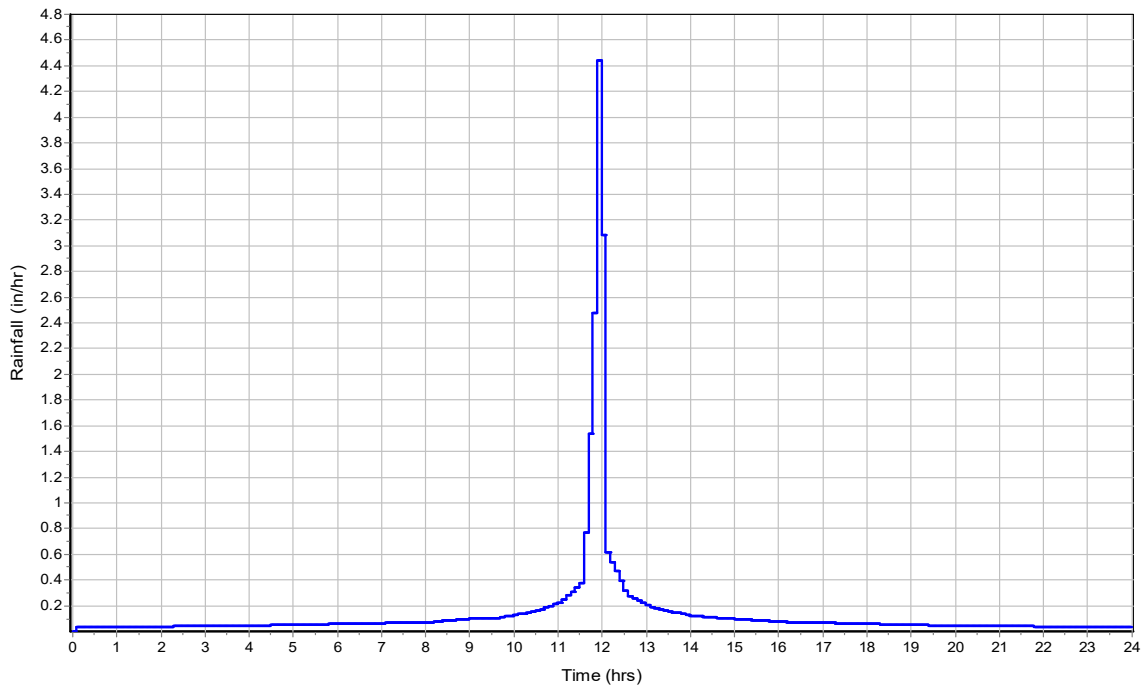
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

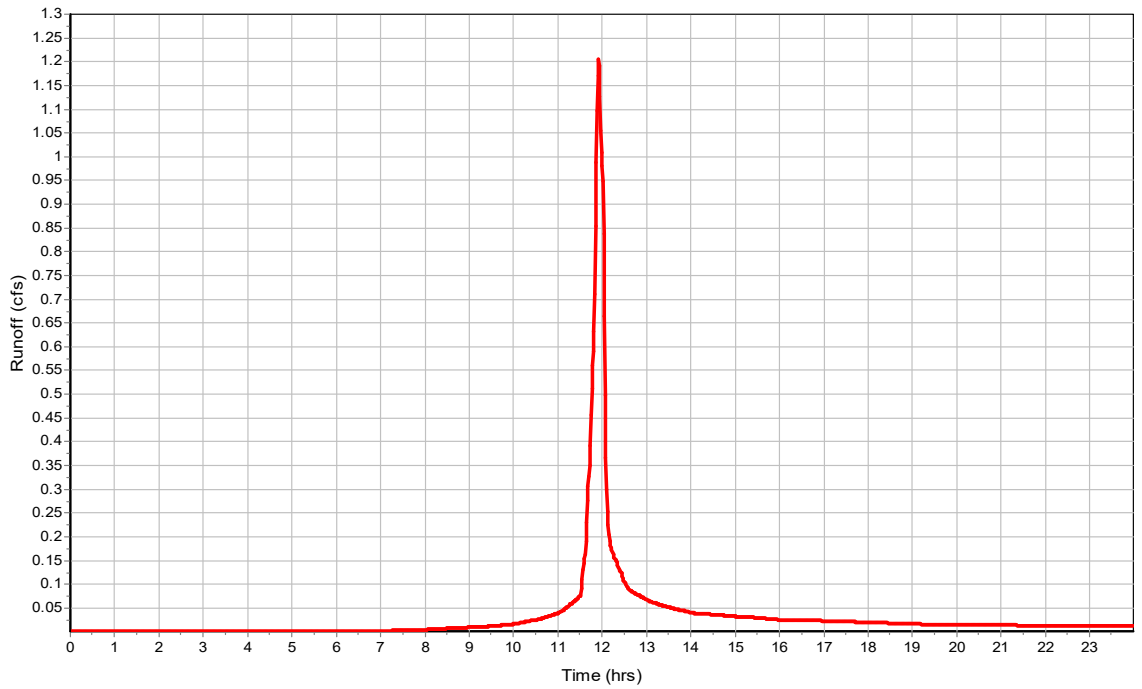
Total Rainfall (in) ..... 3.24  
 Total Runoff (in) ..... 2.07  
 Peak Runoff (cfs) ..... 1.21  
 Weighted Curve Number ..... 88.41  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-1451

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-1511**

**Input Data**

Area (ac) ..... 0.16  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 92.08  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.16	-	92.08
Composite Area & Weighted CN		0.16		92.08

**Time of Concentration**

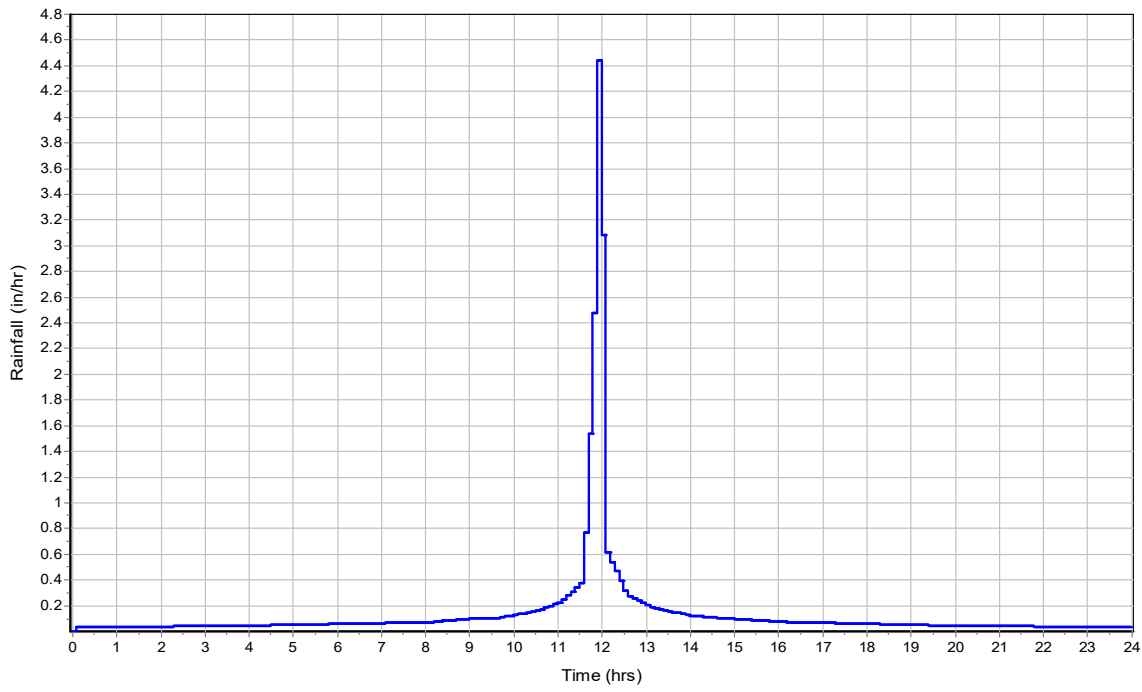
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

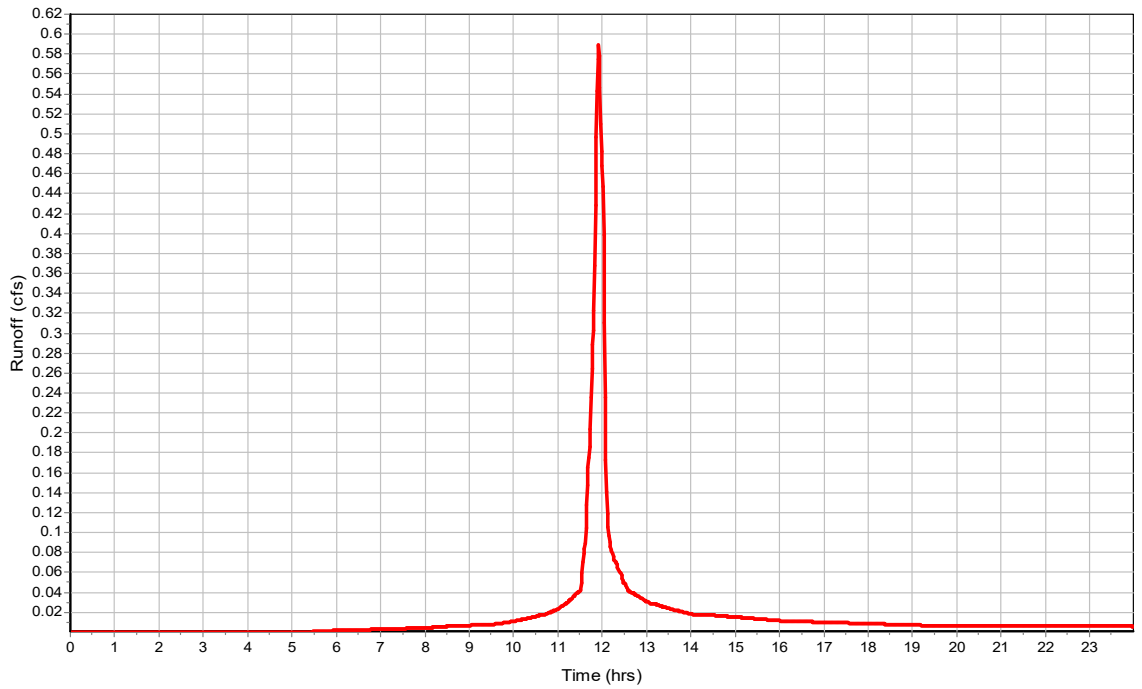
Total Rainfall (in) ..... 3.24  
 Total Runoff (in) ..... 2.39  
 Peak Runoff (cfs) ..... 0.59  
 Weighted Curve Number ..... 92.08  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-1511

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-1533**

**Input Data**

Area (ac) ..... 0.15  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 89.88  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.15	-	89.88
Composite Area & Weighted CN		0.15		89.88

**Time of Concentration**

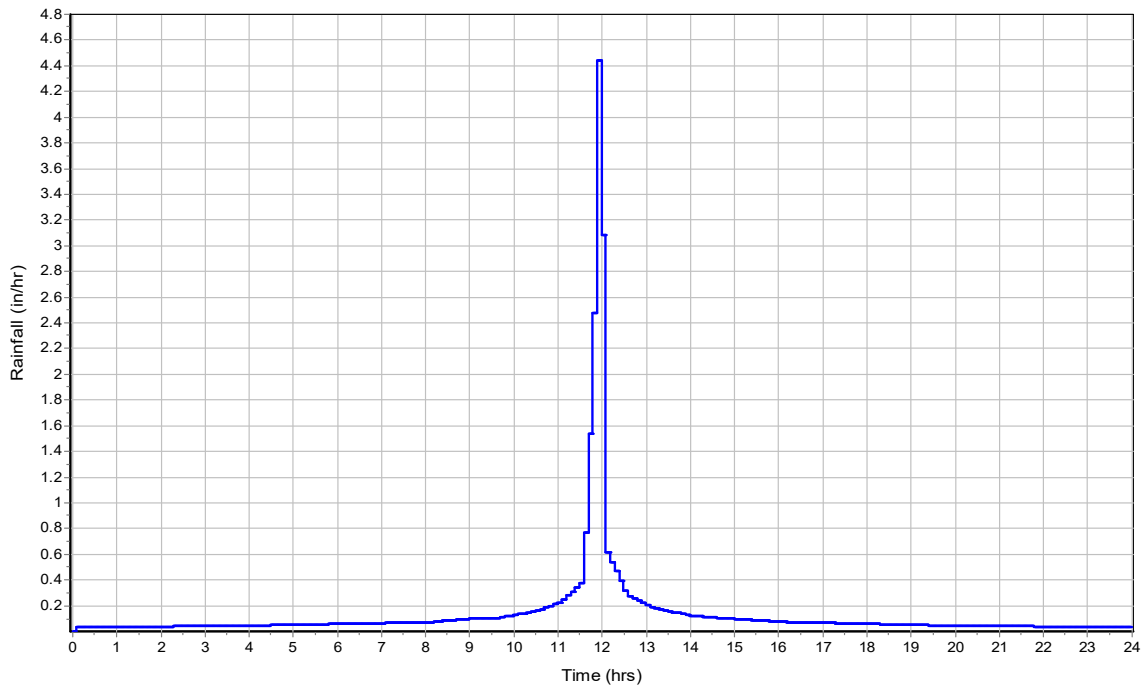
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

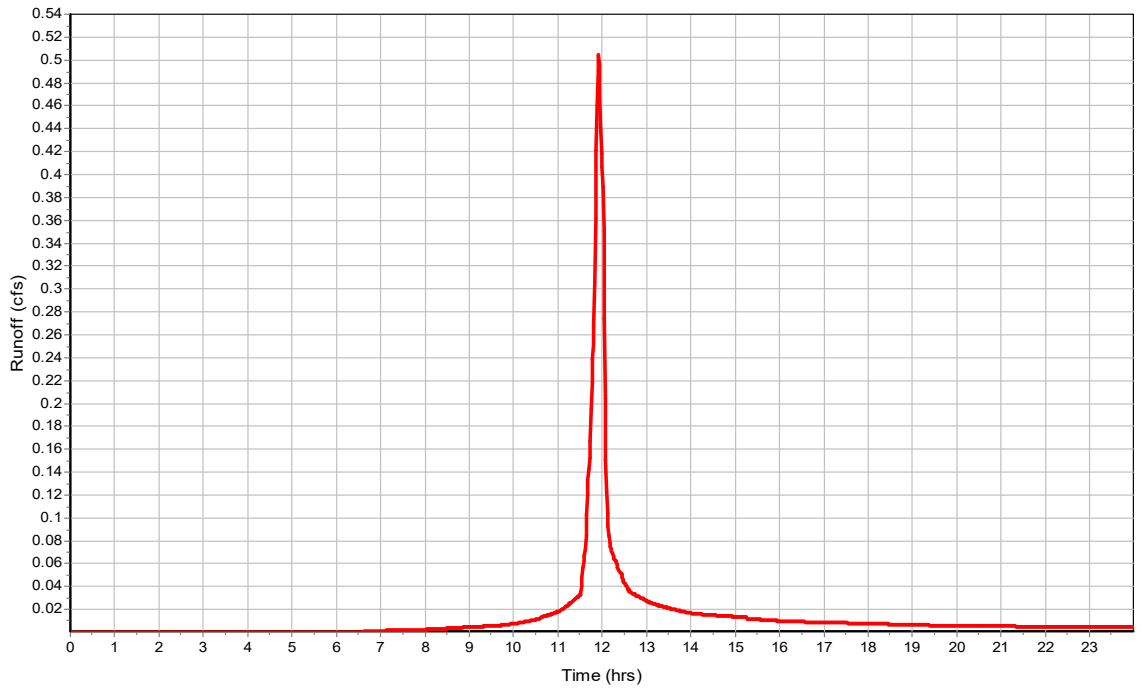
Total Rainfall (in) ..... 3.24  
 Total Runoff (in) ..... 2.19  
 Peak Runoff (cfs) ..... 0.51  
 Weighted Curve Number ..... 89.88  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-1533

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-1570**

**Input Data**

Area (ac) ..... 0.26  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 92.05  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.26	-	92.05
Composite Area & Weighted CN		0.26		92.05

**Time of Concentration**

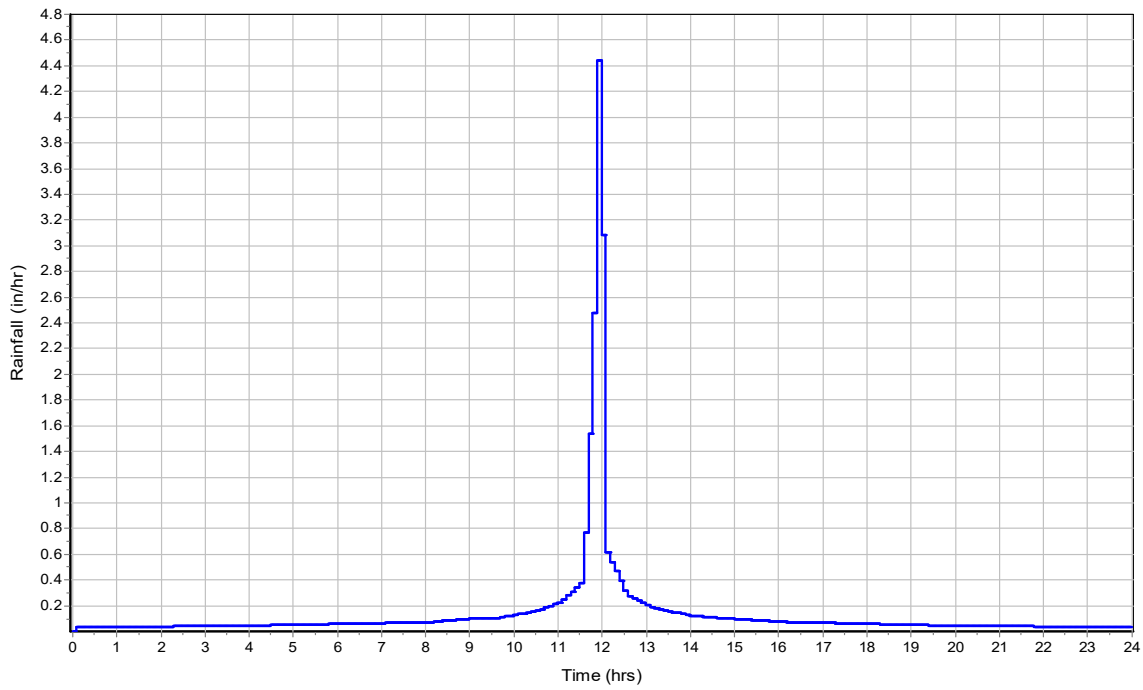
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

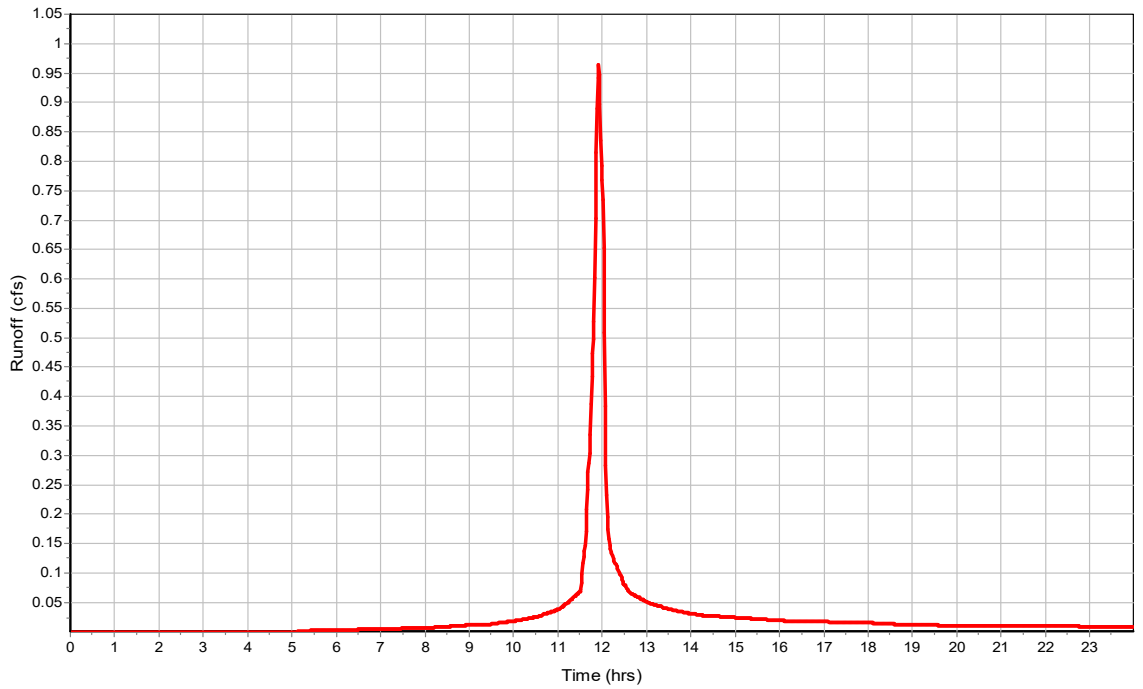
Total Rainfall (in) ..... 3.24  
 Total Runoff (in) ..... 2.39  
 Peak Runoff (cfs) ..... 0.97  
 Weighted Curve Number ..... 92.05  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-1570

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-1607**

**Input Data**

Area (ac) ..... 0.24  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 90.83  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.24	-	90.83
Composite Area & Weighted CN		0.24		90.83

**Time of Concentration**

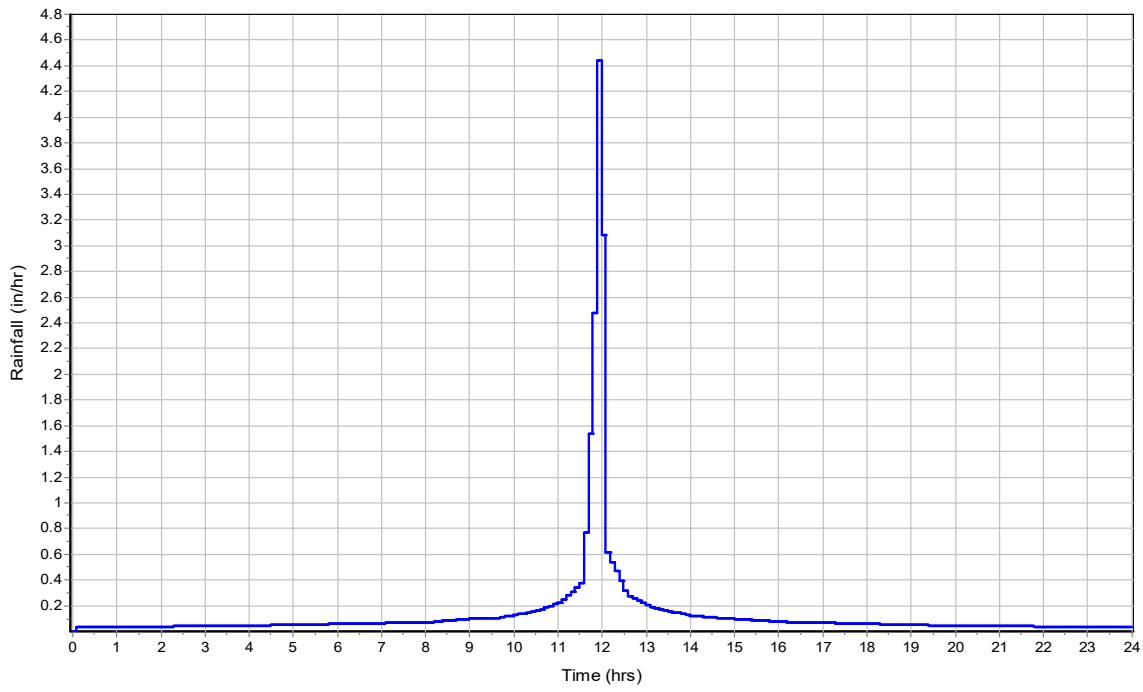
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

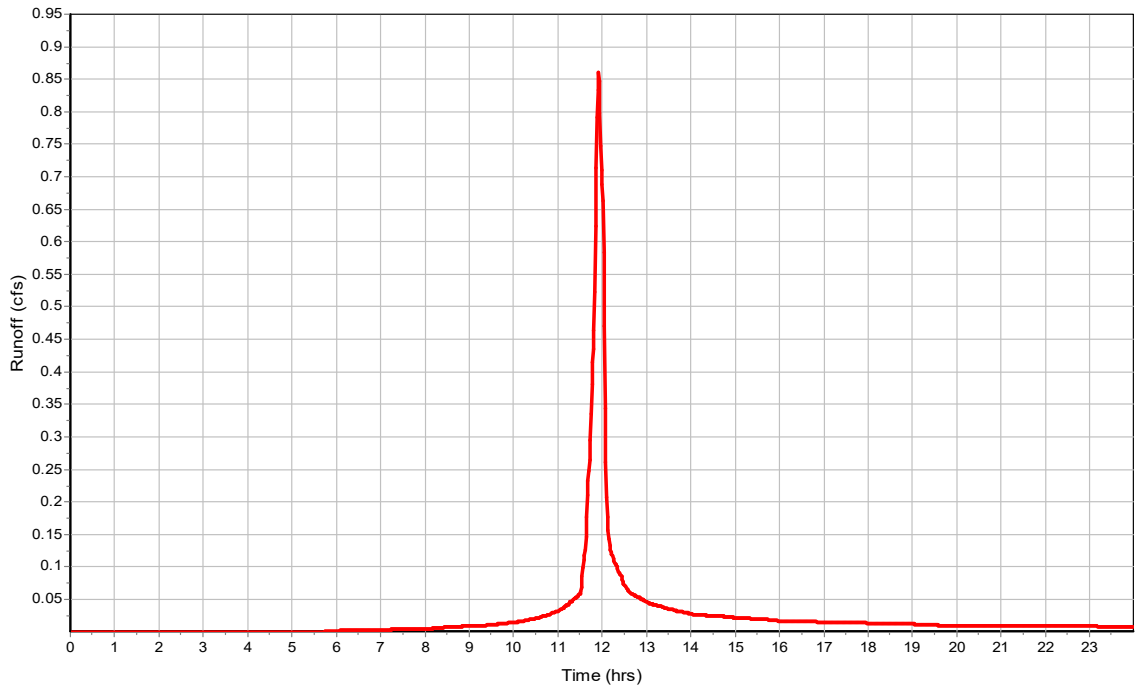
Total Rainfall (in) ..... 3.24  
 Total Runoff (in) ..... 2.28  
 Peak Runoff (cfs) ..... 0.86  
 Weighted Curve Number ..... 90.83  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-1607

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-D22690**

**Input Data**

Area (ac) ..... 0.31  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 92.3  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.31	-	92.3
Composite Area & Weighted CN		0.31		92.3

**Time of Concentration**

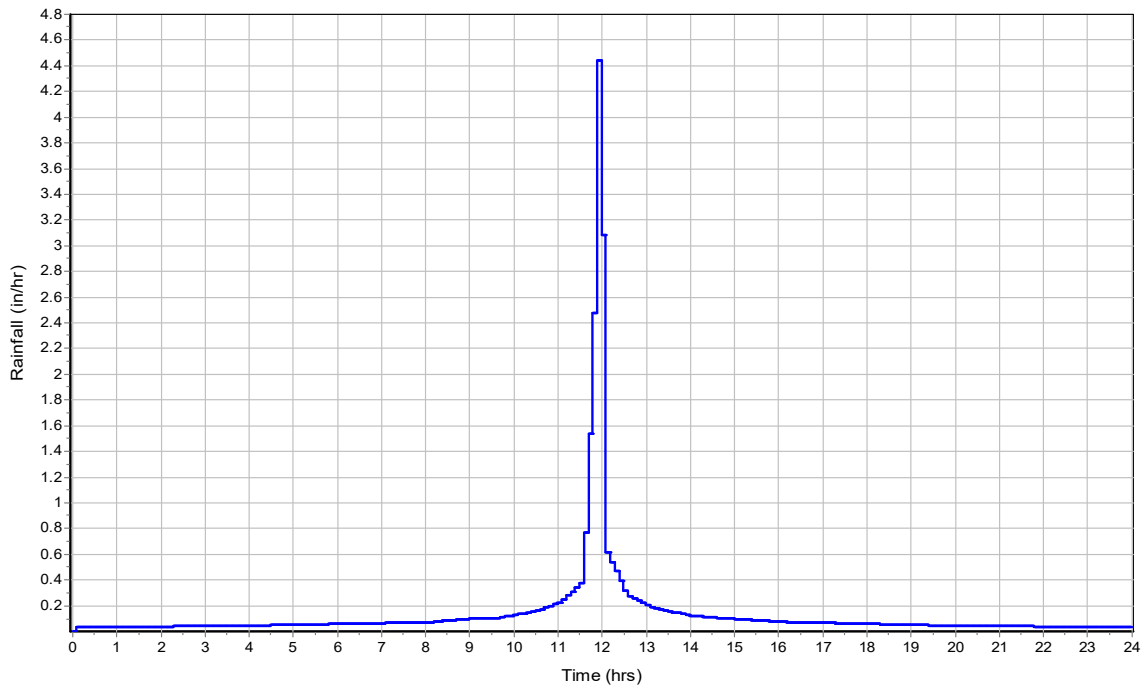
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

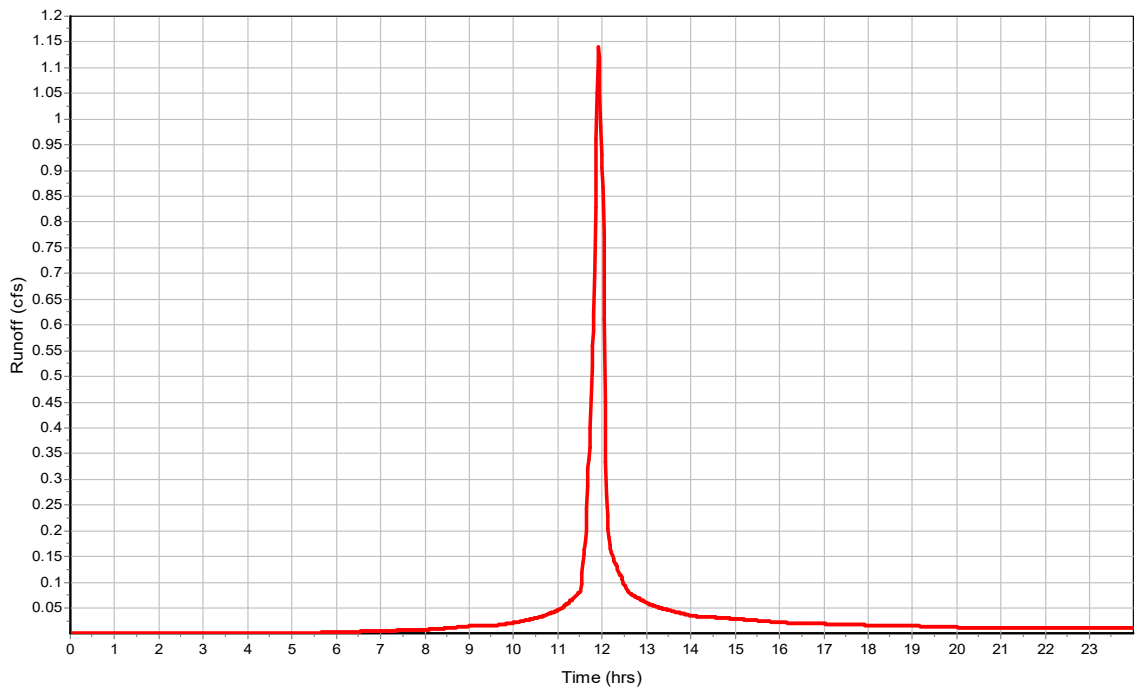
Total Rainfall (in) ..... 3.24  
 Total Runoff (in) ..... 2.42  
 Peak Runoff (cfs) ..... 1.14  
 Weighted Curve Number ..... 92.3  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-D22690

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-D22725**

**Input Data**

Area (ac) ..... 0.9  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 79  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.9	-	79
Composite Area & Weighted CN		0.9		79

**Time of Concentration**

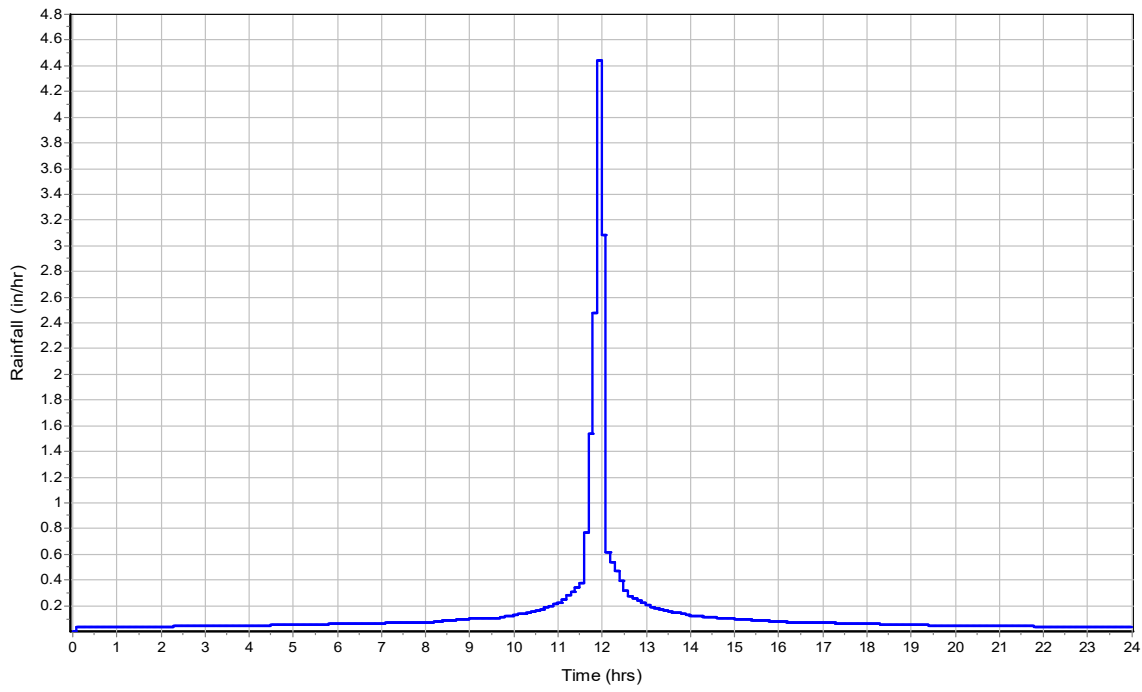
User-Defined TOC override (minutes): 5.00

**Subbasin Runoff Results**

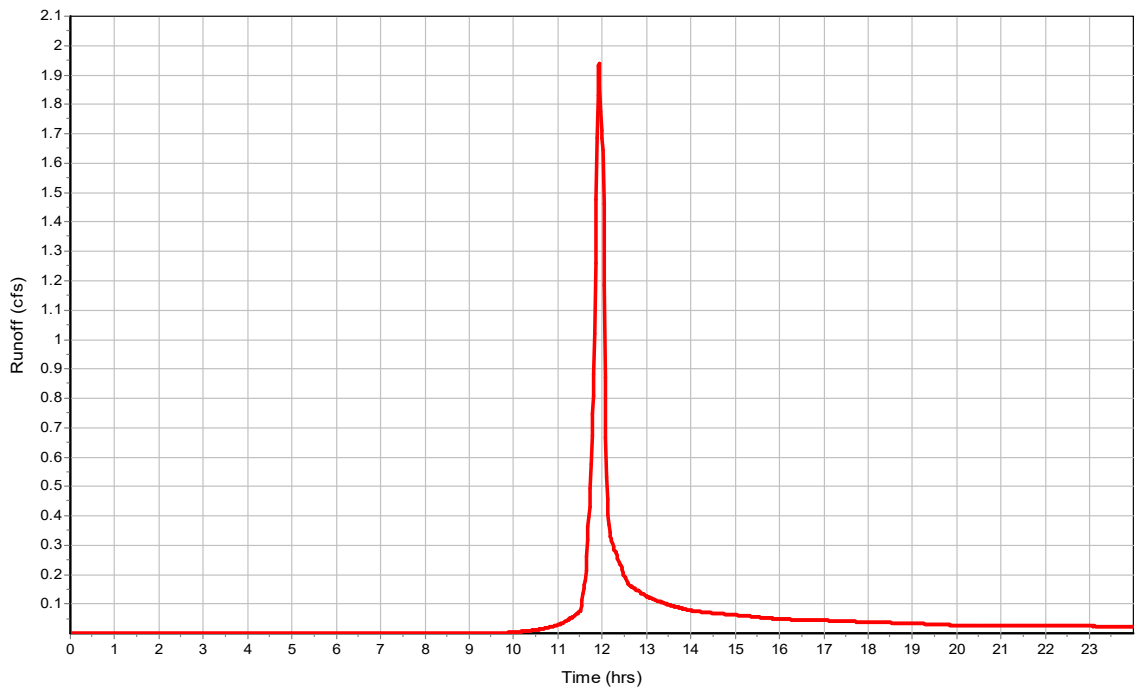
Total Rainfall (in) ..... 3.24  
 Total Runoff (in) ..... 1.37  
 Peak Runoff (cfs) ..... 1.95  
 Weighted Curve Number ..... 79  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-D22725

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : UNDETAINED-01**

**Input Data**

Area (ac) ..... 0.27  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 84  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.27	-	84
Composite Area & Weighted CN		0.27		84

**Time of Concentration**

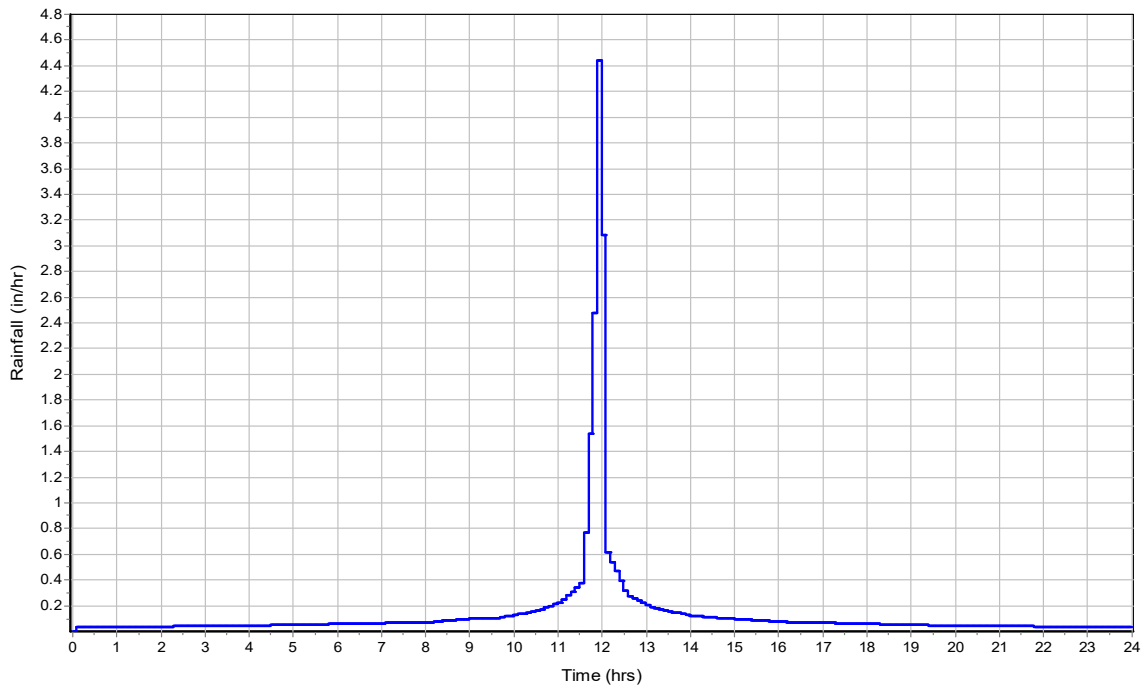
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

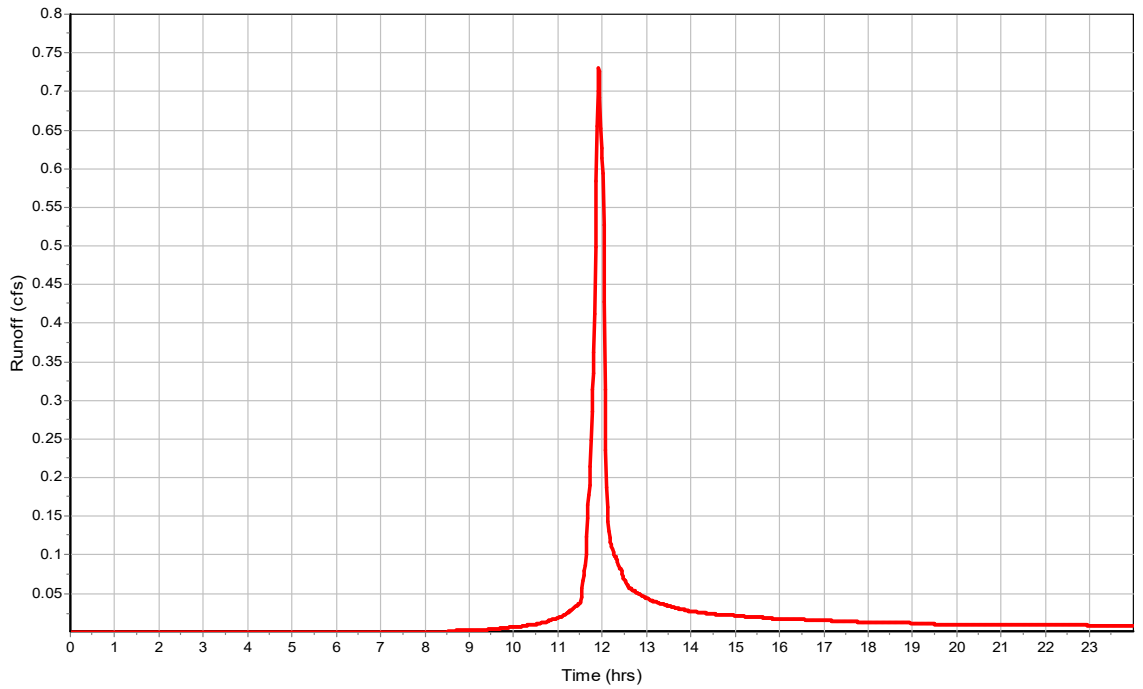
Total Rainfall (in) ..... 3.24  
 Total Runoff (in) ..... 1.72  
 Peak Runoff (cfs) ..... 0.73  
 Weighted Curve Number ..... 84  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : UNDETAINED-01

Rainfall Intensity Graph



Runoff Hydrograph



## Junction Input

SN Element ID	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Ground/Rim (Max) Offset (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)	Surcharge Elevation (ft)	Surcharge Depth (ft)	Ponded Area (ft <sup>2</sup> )	Minimum Pipe Cover (in)
1 1	789.63	800.72	11.09	789.63	0.00	800.72	0.00	10.00	94.68
2 2	789.90	810.97	21.07	789.90	0.00	810.97	0.00	0.00	0.00
3 301	801.75	810.70	8.95	801.75	0.00	810.70	0.00	10.00	93.00
4 302	800.50	814.72	14.22	800.50	0.00	814.72	0.00	10.00	0.00
5 1312	795.14	801.14	6.00	795.14	0.00	801.14	0.00	10.00	57.00
6 1451	796.16	801.58	5.42	796.16	0.00	801.58	0.00	10.00	53.04
7 1453	793.40	803.00	9.60	793.40	0.00	803.00	0.00	10.00	96.24
8 1511	794.03	805.54	11.51	794.03	0.00	805.54	0.00	10.00	123.12
9 1533	798.65	807.61	8.96	798.65	0.00	807.61	0.00	10.00	95.52
10 1570	800.57	809.15	8.58	800.57	0.00	809.15	0.00	10.00	88.80
11 1607	809.64	815.19	5.55	809.64	0.00	815.19	0.00	10.00	54.48
12 13001	783.95	800.74	16.79	783.95	0.00	800.74	0.00	10.00	110.28
13 13002	782.33	798.46	16.13	782.33	0.00	798.46	0.00	10.00	27.72
14 13003	787.40	796.61	9.21	787.40	0.00	796.61	0.00	10.00	98.52
15 13005	781.16	791.08	9.92	781.16	0.00	791.08	0.00	10.00	69.60
16 13006	793.19	802.62	9.43	793.19	0.00	802.62	0.00	10.00	97.56
17 13008	780.03	787.03	7.00	780.03	0.00	787.03	0.00	10.00	44.88
18 13009	782.93	787.81	4.88	782.93	0.00	787.81	0.00	10.00	46.56
19 13016	776.77	780.79	4.02	776.77	0.00	780.79	0.00	10.00	36.24
20 13017	776.14	780.49	4.35	776.14	0.00	780.49	0.00	10.00	34.20
21 13018	776.48	780.24	3.76	776.48	0.00	780.24	0.00	10.00	33.12
22 13019	776.36	779.72	3.36	776.36	0.00	779.72	0.00	10.00	22.32
23 D22686	797.40	807.27	9.87	797.40	0.00	807.27	0.00	10.00	106.44
24 D22690	815.71	820.04	4.33	815.71	0.00	820.04	0.00	10.00	39.96
25 D22725	776.89	781.00	4.11	776.89	0.00	781.00	0.00	10.00	34.32
26 HDS-101	801.90	814.15	12.25	801.90	0.00	814.15	0.00	10.00	0.00
27 HDS-201	802.79	815.53	12.74	802.79	0.00	815.53	0.00	10.00	127.68

**Junction Results**

SN Element ID	Peak Inflow (cfs)	Peak Lateral Inflow (cfs)	Max HGL Elevation Attained (ft)	Max HGL Depth Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)	Average HGL Elevation Attained (ft)	Average HGL Depth Attained (ft)	Time of Max HGL Occurrence (days hh:mm)	Time of Peak Flooding Occurrence (days hh:mm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
1 1	19.06	0.00	791.07	1.44	0.00	9.65	789.94	0.31	0 12:10	0 00:00	0.00	0.00
2 2	19.06	0.00	791.50	1.60	0.00	19.47	790.23	0.33	0 12:09	0 00:00	0.00	0.00
3 301	0.01	0.00	801.88	0.13	0.00	8.82	801.82	0.07	0 18:51	0 00:00	0.00	0.00
4 302	0.01	0.00	802.56	2.06	0.00	12.16	801.66	1.16	0 18:50	0 00:00	0.00	0.00
5 1312	0.00	0.00	795.14	0.00	0.00	6.00	795.14	0.00	0 00:00	0 00:00	0.00	0.00
6 1451	1.21	1.21	796.41	0.25	0.00	5.17	796.19	0.03	0 11:56	0 00:00	0.00	0.00
7 1453	5.97	0.00	796.01	2.61	0.00	6.99	793.57	0.17	0 11:54	0 00:00	0.00	0.00
8 1511	4.77	0.59	796.35	2.32	0.00	9.19	794.15	0.12	0 11:54	0 00:00	0.00	0.00
9 1533	1.23	1.23	798.86	0.21	0.00	8.75	798.68	0.03	0 11:56	0 00:00	0.00	0.00
10 1570	2.96	0.96	801.03	0.46	0.00	8.12	800.63	0.06	0 11:56	0 00:00	0.00	0.00
11 1607	2.00	0.86	809.97	0.33	0.00	5.22	809.69	0.05	0 11:56	0 00:00	0.00	0.00
12 13001	19.06	0.00	785.16	1.21	0.00	15.58	784.14	0.19	0 12:10	0 00:00	0.00	0.00
13 13002	19.06	0.00	783.52	1.19	0.00	14.94	782.54	0.21	0 12:10	0 00:00	0.00	0.00
14 13003	0.38	0.38	787.58	0.18	0.00	9.03	787.43	0.03	0 11:56	0 00:00	0.00	0.00
15 13005	19.12	0.00	782.30	1.14	0.00	8.78	781.36	0.20	0 12:10	0 00:00	0.00	0.00
16 13006	6.69	0.73	794.83	1.64	0.00	7.79	793.33	0.14	0 11:54	0 00:00	0.00	0.00
17 13008	19.19	0.00	781.42	1.39	0.00	5.61	780.26	0.23	0 12:10	0 00:00	0.00	0.00
18 13009	0.44	0.44	783.15	0.22	0.00	4.66	782.96	0.03	0 11:56	0 00:00	0.00	0.00
19 13016	0.37	0.37	777.01	0.24	0.00	3.78	776.80	0.03	0 11:56	0 00:00	0.00	0.00
20 13017	2.98	0.00	776.89	0.75	0.00	3.60	776.23	0.09	0 11:57	0 00:00	0.00	0.00
21 13018	0.69	0.69	777.13	0.65	0.00	3.11	776.52	0.04	0 11:57	0 00:00	0.00	0.00
22 13019	2.62	0.00	777.12	0.76	0.00	2.60	776.44	0.08	0 11:57	0 00:00	0.00	0.00
23 D22686	4.19	0.00	797.97	0.57	0.00	9.30	797.47	0.07	0 11:56	0 00:00	0.00	0.00
24 D22690	1.14	1.14	815.97	0.26	0.00	4.07	815.74	0.03	0 11:56	0 00:00	0.00	0.00
25 D22725	1.94	1.94	777.51	0.62	0.00	3.49	776.96	0.07	0 11:57	0 00:00	0.00	0.00
26 HDS-101	15.84	11.78	803.43	1.53	0.00	10.72	802.20	0.30	0 12:00	0 00:00	0.00	0.00
27 HDS-201	22.42	22.42	804.47	1.68	0.00	11.06	803.04	0.25	0 12:00	0 00:00	0.00	0.00

Pipe Input

SN Element ID	Length	Inlet Invert	Inlet Invert	Outlet Invert	Outlet Invert	Total Drop	Average Slope	Pipe Shape	Pipe Diameter or Height	Pipe Width	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Additional Losses	Initial Flow	Flap Gate	No. of Barrels
	(ft)	Elevation (ft)	Offset (ft)	Elevation (ft)	Offset (ft)	(ft)	(%)		(in)	(in)					(cfs)		
1 Link-02	56.93	783.95	0.00	782.75	0.42	1.20	2.1100	CIRCULAR	24.000	24.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
2 Link-03	47.69	795.14	0.00	794.90	12.57	0.24	0.5000	CIRCULAR	15.000	15.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
3 Link-04	108.25	782.33	0.00	781.35	0.19	0.98	0.9100	CIRCULAR	36.000	36.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
4 Link-05	149.97	787.40	0.00	784.28	3.12	3.12	2.0800	CIRCULAR	12.000	12.000	0.0130	0.0000	0.1000	0.0000	0.00	No	1
5 Link-06	36.78	782.93	0.00	782.29	2.26	0.64	1.7400	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
6 Link-07	104.48	781.16	0.00	780.08	0.05	1.08	1.0300	CIRCULAR	36.000	36.000	0.0130	0.0000	0.1000	0.0000	0.00	No	1
7 Link-08	78.09	776.89	0.00	776.61	0.25	0.28	0.3600	CIRCULAR	15.000	15.000	0.0130	0.0000	0.1000	0.0000	0.00	No	1
8 Link-10	7.77	776.48	0.00	776.36	0.00	0.12	1.5400	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
9 Link-11	78.97	776.36	0.00	776.14	0.00	0.22	0.2800	CIRCULAR	18.000	18.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
10 Link-12	12.35	776.77	0.00	776.64	0.50	0.13	1.0500	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
11 Link-13	48.41	776.14	0.00	775.94	4.79	0.20	0.4100	CIRCULAR	18.000	18.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
12 Link-14	82.97	771.22	0.07	766.00	-0.01	5.22	6.2900	Rectangular	48.000	36.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
13 Link-15	56.74	780.03	0.00	779.61	8.46	0.42	0.7400	CIRCULAR	36.000	36.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
14 Link-16	132.76	815.71	0.00	809.64	0.00	6.07	4.5700	CIRCULAR	12.000	12.000	0.0130	0.0000	0.1000	0.0000	0.00	No	1
15 Link-17	148.78	809.65	0.01	800.57	0.00	9.08	6.1000	CIRCULAR	12.000	12.000	0.0130	0.0000	0.1000	0.0000	0.00	No	1
16 Link-18	85.84	800.57	0.00	797.40	0.00	3.17	3.6900	CIRCULAR	12.000	12.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
17 Link-19	9.27	798.65	0.00	797.40	0.00	1.25	13.4800	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
18 Link-20	72.00	797.40	0.00	794.08	0.05	3.32	4.6100	CIRCULAR	12.000	12.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
19 Link-21	55.99	794.03	0.00	793.73	0.33	0.30	0.5400	CIRCULAR	15.000	15.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
20 Link-22	40.69	796.16	0.00	793.81	0.41	2.35	5.7800	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
21 Link-23	77.33	793.40	0.00	793.24	0.05	0.16	0.2100	CIRCULAR	15.000	15.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
22 Link-24	41.11	793.19	0.00	793.00	21.85	0.19	0.4600	CIRCULAR	15.000	15.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
23 Link-37	136.92	802.50	2.00	801.95	0.20	0.55	0.4000	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
24 Link-38	24.56	801.85	0.10	800.75	0.18	1.10	4.4800	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
25 Link-39	10.00	802.00	0.10	801.82	11.82	0.18	1.8000	CIRCULAR	24.000	24.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
26 Link-41	47.26	802.89	0.10	801.95	11.95	0.94	1.9900	CIRCULAR	24.000	24.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
27 Link-42	30.50	790.00	0.10	789.83	0.20	0.17	0.5600	CIRCULAR	36.000	36.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
28 Link-44	214.52	789.73	0.10	788.55	4.60	1.18	0.5500	CIRCULAR	36.000	36.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1

Pipe Results

SN Element ID	Peak Flow (cfs)	Time of Peak Flow Occurrence (days hh:mm)	Design Flow Capacity (cfs)	Peak Flow/Design Flow Ratio	Peak Flow Velocity (ft/sec)	Travel Time (min)	Peak Flow Depth (ft)	Peak Flow Depth/Total Depth Ratio	Total Time Surcharged (min)	Froude Number	Reported Condition
1 Link-02	19.06	0 12:10	32.84	0.58	10.15	0.09	1.15	0.58	0.00		Calculated
2 Link-03	0.00	0 00:00	4.58	0.00	0.00		0.00	0.00	0.00		Calculated
3 Link-04	19.06	0 12:10	63.46	0.30	7.55	0.24	1.16	0.39	0.00		Calculated
4 Link-05	0.37	0 11:56	5.14	0.07	3.81	0.66	0.18	0.18	0.00		Calculated
5 Link-06	0.44	0 11:56	4.70	0.09	3.62	0.17	0.21	0.21	0.00		Calculated
6 Link-07	19.13	0 12:10	67.81	0.28	6.93	0.25	1.24	0.41	0.00		Calculated
7 Link-08	1.94	0 11:57	3.87	0.50	3.42	0.38	0.59	0.47	0.00		Calculated
8 Link-10	0.68	0 11:56	4.43	0.15	1.54	0.08	0.70	0.70	0.00		Calculated
9 Link-11	2.62	0 11:57	5.54	0.47	2.93	0.45	0.76	0.50	0.00		Calculated
10 Link-12	0.37	0 11:56	3.66	0.10	2.76	0.07	0.25	0.25	0.00		Calculated
11 Link-13	2.98	0 11:57	6.75	0.44	3.65	0.22	0.70	0.47	0.00		Calculated
12 Link-14	23.42	0 12:04	310.16	0.08	13.32	0.10	0.59	0.15	0.00		Calculated
13 Link-15	19.19	0 12:10	57.38	0.33	6.60	0.14	1.29	0.43	0.00		Calculated
14 Link-16	1.14	0 11:56	7.62	0.15	5.81	0.38	0.30	0.30	0.00		Calculated
15 Link-17	1.99	0 11:56	8.80	0.23	6.99	0.35	0.39	0.39	0.00		Calculated
16 Link-18	2.96	0 11:56	6.85	0.43	7.46	0.19	0.51	0.51	0.00		Calculated
17 Link-19	1.23	0 11:56	13.08	0.09	4.66	0.03	0.39	0.39	0.00		Calculated
18 Link-20	4.19	0 11:56	7.65	0.55	6.34	0.19	0.78	0.78	0.00		Calculated
19 Link-21	4.77	0 11:56	4.73	1.01	3.89	0.24	1.25	1.00	7.00		SURCHARGED
20 Link-22	1.20	0 11:56	8.56	0.14	4.66	0.15	0.63	0.63	0.00		Calculated
21 Link-23	5.97	0 11:56	2.94	2.03	4.86	0.27	1.25	1.00	8.00		SURCHARGED
22 Link-24	6.69	0 11:56	4.39	1.52	5.68	0.12	1.14	0.92	0.00		> CAPACITY
23 Link-37	0.01	0 18:50	2.26	0.01	0.83	2.75	0.05	0.05	0.00		Calculated
24 Link-38	0.01	0 18:51	7.54	0.00	1.77	0.23	0.15	0.15	0.00		Calculated
25 Link-39	15.84	0 12:00	30.35	0.52	7.85	0.02	1.23	0.61	0.00		Calculated
26 Link-41	22.42	0 12:00	31.90	0.70	9.49	0.08	1.41	0.70	0.00		Calculated
27 Link-42	19.06	0 12:10	49.80	0.38	5.92	0.09	1.39	0.46	0.00		Calculated
28 Link-44	19.06	0 12:10	49.47	0.39	6.39	0.56	1.32	0.44	0.00		Calculated

**Storage Nodes**

**Storage Node : 13011/3**

**Input Data**

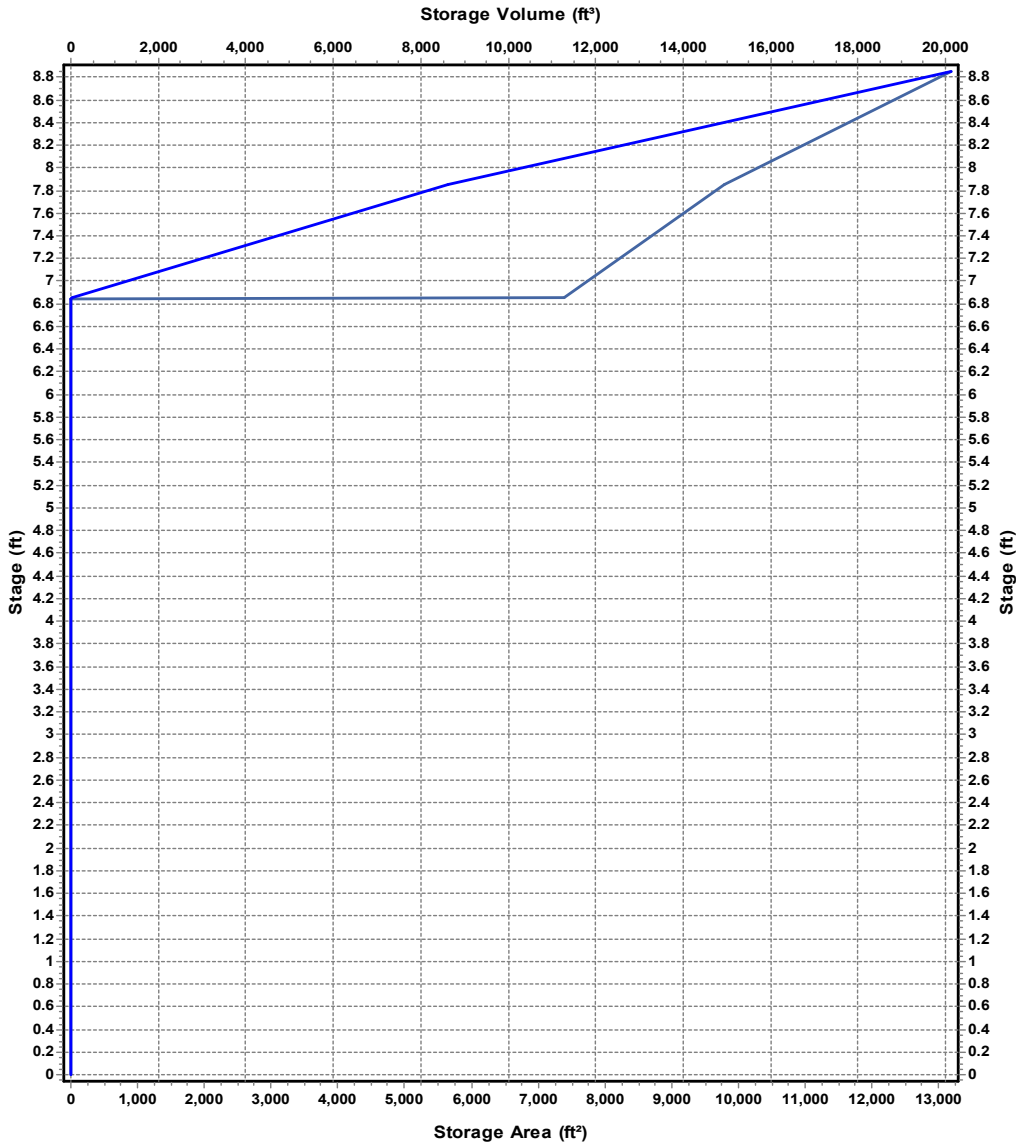
Invert Elevation (ft) .....	771.15
Max (Rim) Elevation (ft) .....	780.00
Max (Rim) Offset (ft) .....	8.85
Initial Water Elevation (ft) .....	771.15
Initial Water Depth (ft) .....	0.00
Ponded Area (ft <sup>2</sup> ) .....	0.00
Evaporation Loss .....	0.00

**Storage Area Volume Curves**

Storage Curve : Existing 02

Stage	Storage Area	Storage Volume
(ft)	(ft <sup>2</sup> )	(ft <sup>3</sup> )
0	0	0
6.84	1	3.42
6.85	7389	40.37
7.85	9796	8632.87
8.85	13187	20124.37

### Storage Area Volume Curves



— Storage Area — Storage Volume

**Storage Node : 13011/3 (continued)**

**Output Summary Results**

Peak Inflow (cfs) .....	23.42
Peak Lateral Inflow (cfs) .....	1.73
Peak Outflow (cfs) .....	23.42
Peak Exfiltration Flow Rate (cfm) .....	0
Max HGL Elevation Attained (ft) .....	771.88
Max HGL Depth Attained (ft) .....	0.73
Average HGL Elevation Attained (ft) .....	771.29
Average HGL Depth Attained (ft) .....	0.14
Time of Max HGL Occurrence (days hh:mm) .....	0 12:04
Total Exfiltration Volume (1000-ft <sup>3</sup> ) .....	0
Total Flooded Volume (ac-in) .....	0
Total Time Flooded (min) .....	0
Total Retention Time (sec) .....	0

**Storage Node : UGD-01**

**Input Data**

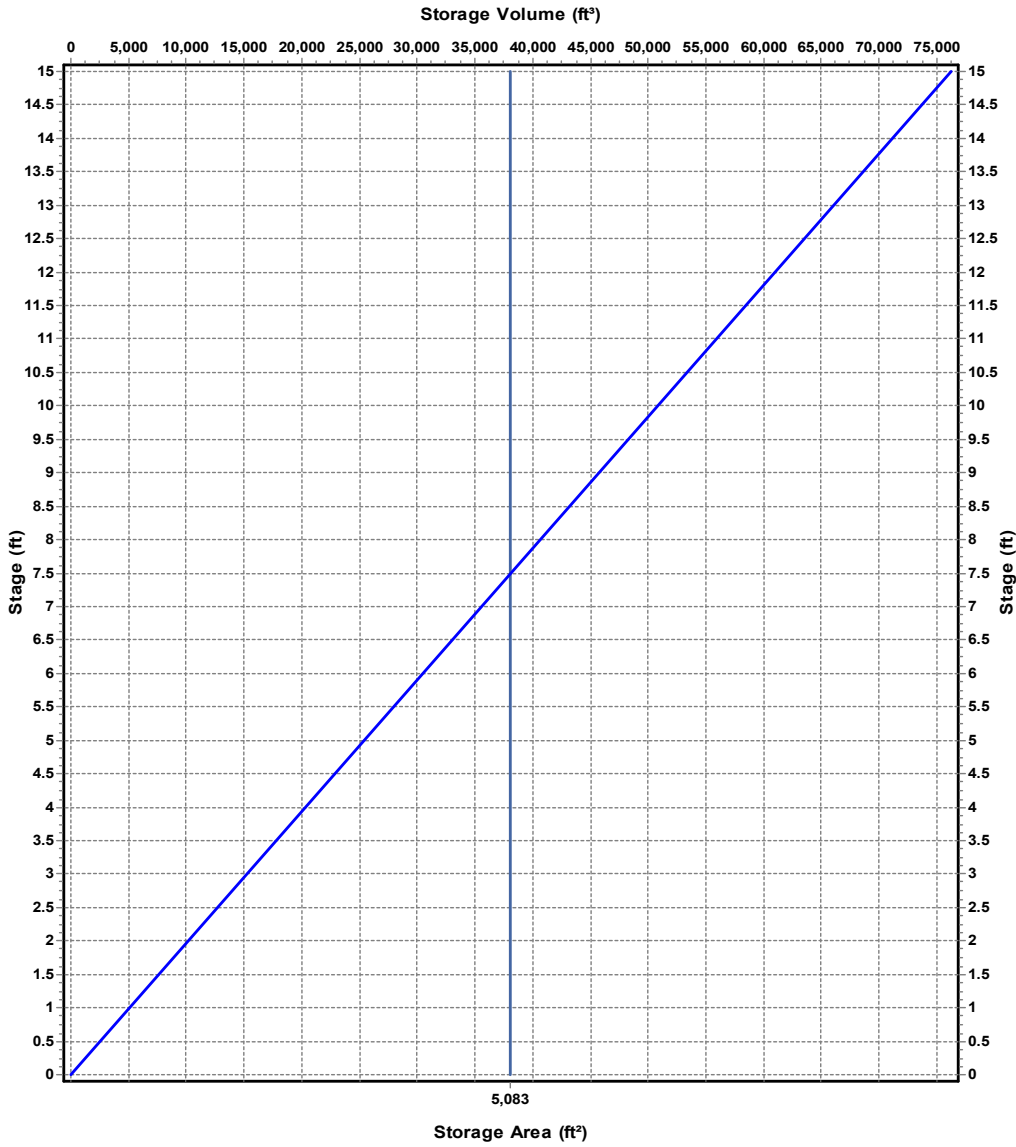
Invert Elevation (ft) .....	790.00
Max (Rim) Elevation (ft) .....	805.00
Max (Rim) Offset (ft) .....	15.00
Initial Water Elevation (ft) .....	790.00
Initial Water Depth (ft) .....	0.00
Ponded Area (ft <sup>2</sup> ) .....	0.00
Evaporation Loss .....	0.00

**Storage Area Volume Curves**

Storage Curve : UGD-01

Stage (ft)	Storage Area (ft <sup>2</sup> )	Storage Volume (ft <sup>3</sup> )
0	5083	0
15	5083	76245

### Storage Area Volume Curves



— Storage Area — Storage Volume

**Storage Node : UGD-01 (continued)**

**Outflow Weirs**

SN Element ID	Weir Type	Flap Gate	Crest Elevation (ft)	Crest Offset (ft)	Length (ft)	Weir Total Height (ft)	Discharge Coefficient
1 UGD-01-Weir	Rectangular	No	803.75	13.75	6.00	1.25	2.62

**Outflow Orifices**

SN Element ID	Orifice Type	Orifice Shape	Flap Gate	Circular Orifice Diameter (in)	Rectangular Orifice Height (in)	Rectangular Orifice Width (in)	Orifice Invert Elevation (ft)	Orifice Coefficient
1 UGD-01-2ndStage	Side	Rectangular	No		8.00	48.00	797.50	0.60
2 UGD-01-WQ	Side	CIRCULAR	No	3.00			790.00	0.60

**Output Summary Results**

Peak Inflow (cfs) .....	38.25
Peak Lateral Inflow (cfs) .....	0
Peak Outflow (cfs) .....	19.06
Peak Exfiltration Flow Rate (cfm) .....	0
Max HGL Elevation Attained (ft) .....	799.88
Max HGL Depth Attained (ft) .....	9.88
Average HGL Elevation Attained (ft) .....	794.22
Average HGL Depth Attained (ft) .....	4.22
Time of Max HGL Occurrence (days hh:mm) .....	0 12:09
Total Exfiltration Volume (1000-ft <sup>3</sup> ) .....	0
Total Flooded Volume (ac-in) .....	0
Total Time Flooded (min) .....	0
Total Retention Time (sec) .....	0

**Storage Node : UGD-02**

**Input Data**

Invert Elevation (ft) .....	802.50
Max (Rim) Elevation (ft) .....	809.25
Max (Rim) Offset (ft) .....	6.75
Initial Water Elevation (ft) .....	802.50
Initial Water Depth (ft) .....	0.00
Ponded Area (ft <sup>2</sup> ) .....	0.00
Evaporation Loss .....	0.00

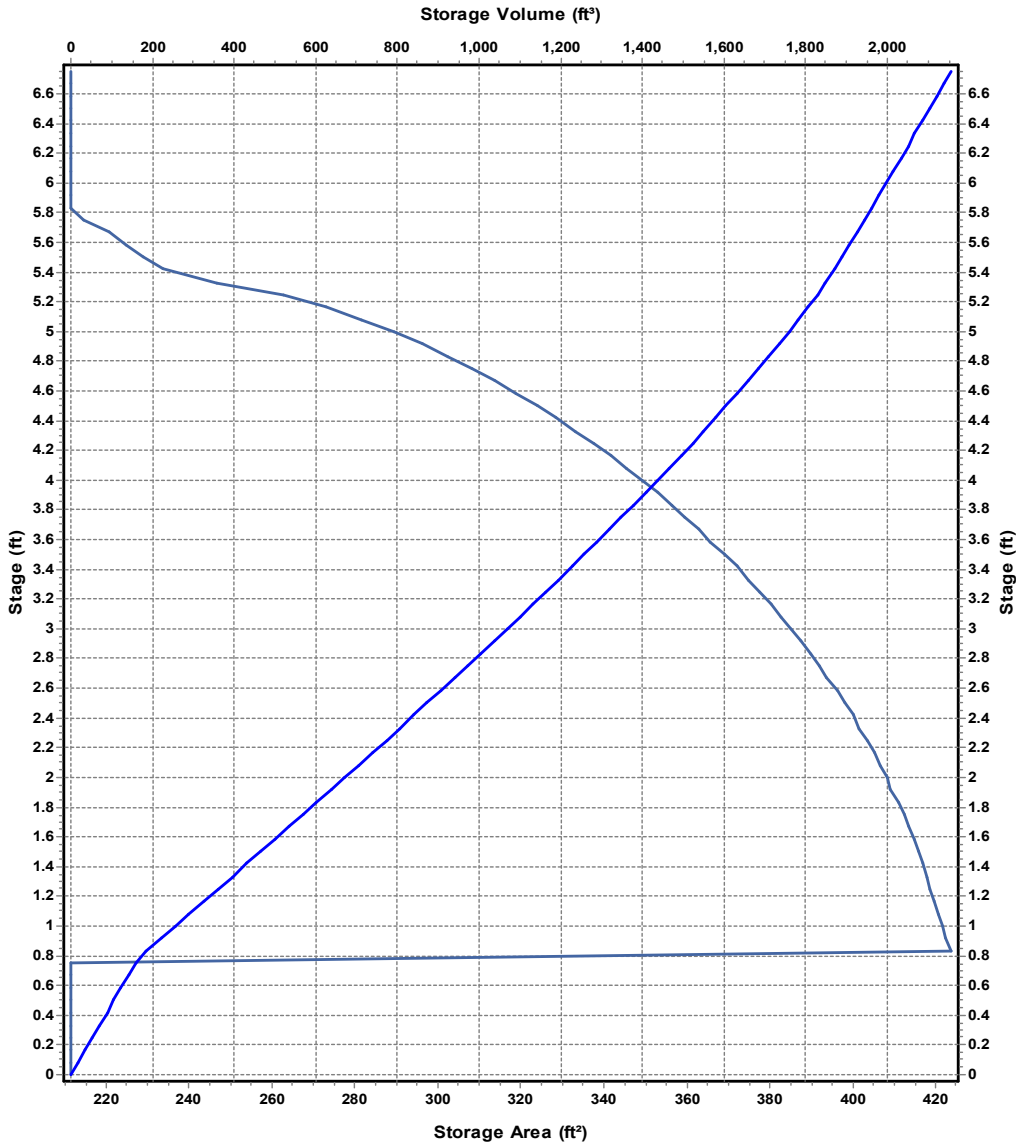
**Storage Area Volume Curves**

Storage Curve : UGD-MC7200

Stage (ft)	Storage Area (ft <sup>2</sup> )	Storage Volume (ft <sup>3</sup> )
0	211.6	0
0.08	211.6	16.93
0.17	211.6	35.97
0.25	211.6	52.9
0.33	211.6	69.83
0.42	211.6	88.87
0.5	211.6	105.8
0.58	211.6	122.73
0.67	211.6	141.77
0.75	211.6	158.7
0.83	423.65	184.11
0.92	422.22	222.17
1	421.48	255.92
1.08	420.65	289.61
1.17	419.44	327.41
1.25	418.56	360.93
1.33	417.93	394.39
1.42	416.93	431.96
1.5	415.88	465.27
1.58	414.76	498.5
1.67	413.55	535.77
1.75	412.31	568.8
1.83	411.06	601.73
1.92	409.06	638.64
2	408.23	671.33
2.08	406.69	703.93
2.17	405.1	740.46
2.25	403.45	772.8
2.33	401.43	805
2.42	399.96	841.06
2.5	398.13	872.98
2.58	396.19	904.75
2.67	393.75	940.3
2.75	391.88	971.73
2.83	389.81	1003
2.92	387.51	1037.98
3	385.18	1068.89
3.08	382.78	1099.61
3.17	380.2	1133.94
3.25	377.55	1164.25
3.33	374.81	1194.34
3.42	371.94	1227.94
3.5	368.99	1257.58
3.58	365.61	1286.96
3.67	362.8	1319.74
3.75	359.58	1348.64
3.83	356.26	1377.27
3.92	352.83	1409.18
4	349.25	1437.26
4.08	345.51	1465.05
4.17	341.57	1495.97
4.25	337.45	1523.13
4.33	333.12	1549.95
4.42	328.51	1579.72
4.5	323.87	1605.82
4.58	318.91	1631.53
4.67	313.71	1660
4.75	308.31	1684.88
4.83	302.46	1709.31
4.92	296.21	1736.25
5	289.37	1759.67

5.08	281.76	1782.52
5.17	273.2	1807.49
5.25	262.78	1828.93
5.33	246.67	1849.31
5.42	233.8	1870.93
5.5	228.93	1889.44
5.58	224.98	1907.6
5.67	220.79	1927.66
5.75	214.54	1945.07
5.83	211.6	1962.12
5.92	211.6	1981.16
6	211.6	1998.09
6.08	211.6	2015.02
6.17	211.6	2034.06
6.25	211.6	2050.99
6.33	211.6	2067.92
6.42	211.6	2086.96
6.5	211.6	2103.89
6.58	211.6	2120.82
6.67	211.6	2139.86
6.75	211.6	2156.79

### Storage Area Volume Curves



Storage Area Storage Volume

**Storage Node : UGD-02 (continued)**

**Outflow Orifices**

SN Element ID	Orifice Type	Orifice Shape	Flap Gate	Circular Orifice Diameter (in)	Rectangular Orifice Height (in)	Rectangular Orifice Width (in)	Orifice Invert Elevation (ft)	Orifice Coefficient
1 UGD-02-MANIFOLD	Side	CIRCULAR	No	12.00			806.22	0.60
2 UGD-02-WQ	Side	CIRCULAR	No	0.50			802.50	0.60

**Output Summary Results**

Peak Inflow (cfs) .....	0.8
Peak Lateral Inflow (cfs) .....	0.8
Peak Outflow (cfs) .....	0.01
Peak Exfiltration Flow Rate (cfm) .....	0
Max HGL Elevation Attained (ft) .....	806.16
Max HGL Depth Attained (ft) .....	3.66
Average HGL Elevation Attained (ft) .....	804.31
Average HGL Depth Attained (ft) .....	1.81
Time of Max HGL Occurrence (days hh:mm) .....	0 18:48
Total Exfiltration Volume (1000-ft <sup>3</sup> ) .....	0
Total Flooded Volume (ac-in) .....	0
Total Time Flooded (min) .....	0
Total Retention Time (sec) .....	0

**Storage Node : UGD-03**

**Input Data**

Invert Elevation (ft) ..... 813.62  
 Max (Rim) Elevation (ft) ..... 821.50  
 Max (Rim) Offset (ft) ..... 7.88  
 Initial Water Elevation (ft) ..... 0.00  
 Initial Water Depth (ft) ..... -813.62  
 Poned Area (ft<sup>2</sup>) ..... 0.00  
 Evaporation Loss ..... 0.00

**Outflow Orifices**

SN Element ID	Orifice Type	Orifice Shape	Flap Gate	Circular Orifice Diameter (in)	Rectangular Orifice Height (in)	Rectangular Orifice Width (in)	Orifice Invert Elevation (ft)	Orifice Coefficient
1 UGD-03-Orifice	Side	CIRCULAR	No	10.00			813.62	0.60

**Output Summary Results**

Peak Inflow (cfs) ..... 13.99  
 Peak Lateral Inflow (cfs) ..... 13.99  
 Peak Outflow (cfs) ..... 4.85  
 Peak Exfiltration Flow Rate (cfm) ..... 0  
 Max HGL Elevation Attained (ft) ..... 817.44  
 Max HGL Depth Attained (ft) ..... 3.82  
 Average HGL Elevation Attained (ft) ..... 814.01  
 Average HGL Depth Attained (ft) ..... 0.39  
 Time of Max HGL Occurrence (days hh:mm) ..... 0 12:10  
 Total Exfiltration Volume (1000-ft<sup>3</sup>) ..... 0  
 Total Flooded Volume (ac-in) ..... 0  
 Total Time Flooded (min) ..... 0  
 Total Retention Time (sec) ..... 0



**Subbasin Summary**

SN	Subbasin ID	Area (ac)	Peak Rate Factor	Weighted Curve Number	Total Rainfall (in)	Total Runoff (in)	Total Runoff Volume (ac-in)	Peak Runoff (cfs)	Time of Concentration (days hh:mm:ss)
1	FUTURE-01	3.25	484.00	95.00	3.74	3.18	10.32	13.29	0 00:10:00
2	FUTURE-02	5.53	484.00	93.00	3.74	2.97	16.41	21.66	0 00:10:00
3	FUTURE-03	0.78	484.00	95.00	3.74	3.18	2.48	3.65	0 00:05:00
4	POST-01	3.47	484.00	94.00	3.74	3.07	10.65	13.90	0 00:10:00
5	POST-02	1.34	484.00	91.00	3.74	2.77	3.71	4.98	0 00:10:00
6	POST-03	0.28	484.00	85.00	3.74	2.23	0.62	0.99	0 00:05:00
7	SUB-13003	0.09	484.00	97.81	3.74	3.48	0.31	0.44	0 00:05:00
8	SUB-13006	0.21	484.00	90.17	3.74	2.69	0.56	0.88	0 00:05:00
9	SUB-13009	0.11	484.00	95.27	3.74	3.20	0.35	0.51	0 00:05:00
10	SUB-13011/3	1.18	484.00	74.32	3.74	1.43	1.69	2.31	0 00:10:00
11	SUB-13016	0.09	484.00	97.34	3.74	3.43	0.31	0.43	0 00:05:00
12	SUB-13018	0.22	484.00	87.75	3.74	2.46	0.54	0.84	0 00:05:00
13	SUB-1451	0.37	484.00	88.41	3.74	2.53	0.93	1.47	0 00:05:00
14	SUB-1511	0.16	484.00	92.08	3.74	2.87	0.46	0.70	0 00:05:00
15	SUB-1533	0.15	484.00	89.88	3.74	2.66	0.40	0.61	0 00:05:00
16	SUB-1570	0.26	484.00	92.05	3.74	2.87	0.75	1.15	0 00:05:00
17	SUB-1607	0.24	484.00	90.83	3.74	2.75	0.66	1.03	0 00:05:00
18	SUB-D22690	0.31	484.00	92.30	3.74	2.90	0.90	1.35	0 00:05:00
19	SUB-D22725	0.90	484.00	79.00	3.74	1.76	1.58	2.51	0 00:05:00
20	UNDETAINED-01	0.27	484.00	84.00	3.74	2.14	0.58	0.91	0 00:05:00

**Node Summary**

SN	Element ID	Element Type	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Initial Water Elevation (ft)	Surcharge Elevation (ft)	Ponded Area (ft <sup>2</sup> )	Peak Inflow (cfs)	Max HGL Elevation Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)	Time of Peak Flooding Occurrence (days hhmm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
1	1	Junction	789.63	800.72	789.63	800.72	10.00	23.99	791.26	0.00	9.46	0 00:00	0.00	0.00
2	2	Junction	789.90	810.97	789.90	810.97	0.00	23.99	791.73	0.00	19.24	0 00:00	0.00	0.00
3	301	Junction	801.75	810.70	801.75	810.70	10.00	0.06	801.92	0.00	8.78	0 00:00	0.00	0.00
4	302	Junction	800.50	814.72	800.50	814.72	10.00	0.06	802.62	0.00	12.10	0 00:00	0.00	0.00
5	1312	Junction	795.14	801.14	795.14	801.14	10.00	0.00	795.14	0.00	6.00	0 00:00	0.00	0.00
6	1451	Junction	796.16	801.58	796.16	801.58	10.00	1.46	796.44	0.00	5.14	0 00:00	0.00	0.00
7	1453	Junction	793.40	803.00	793.40	803.00	10.00	7.16	796.71	0.00	6.29	0 00:00	0.00	0.00
8	1511	Junction	794.03	805.54	794.03	805.54	10.00	5.71	796.82	0.00	8.72	0 00:00	0.00	0.00
9	1533	Junction	798.65	807.61	798.65	807.61	10.00	1.52	798.88	0.00	8.73	0 00:00	0.00	0.00
10	1570	Junction	800.57	809.15	800.57	809.15	10.00	3.53	801.08	0.00	8.07	0 00:00	0.00	0.00
11	1607	Junction	809.64	815.19	809.64	815.19	10.00	2.38	810.00	0.00	5.19	0 00:00	0.00	0.00
12	13001	Junction	783.95	800.74	783.95	800.74	10.00	23.99	785.38	0.00	15.36	0 00:00	0.00	0.00
13	13002	Junction	782.33	798.46	782.33	798.46	10.00	23.99	783.69	0.00	14.77	0 00:00	0.00	0.00
14	13003	Junction	787.40	796.61	787.40	796.61	10.00	0.44	787.60	0.00	9.01	0 00:00	0.00	0.00
15	13005	Junction	781.16	791.08	781.16	791.08	10.00	24.07	782.48	0.00	8.60	0 00:00	0.00	0.00
16	13006	Junction	793.19	802.62	793.19	802.62	10.00	8.02	795.26	0.00	7.36	0 00:00	0.00	0.00
17	13008	Junction	780.03	787.03	780.03	787.03	10.00	24.15	781.62	0.00	5.41	0 00:00	0.00	0.00
18	13009	Junction	782.93	787.81	782.93	787.81	10.00	0.51	783.16	0.00	4.65	0 00:00	0.00	0.00
19	13016	Junction	776.77	780.79	776.77	780.79	10.00	0.43	777.05	0.00	3.74	0 00:00	0.00	0.00
20	13017	Junction	776.14	780.49	776.14	780.49	10.00	3.76	777.00	0.00	3.49	0 00:00	0.00	0.00
21	13018	Junction	776.48	780.24	776.48	780.24	10.00	0.84	777.25	0.00	2.99	0 00:00	0.00	0.00
22	13019	Junction	776.36	779.72	776.36	779.72	10.00	3.33	777.24	0.00	2.48	0 00:00	0.00	0.00
23	D22686	Junction	797.40	807.27	797.40	807.27	10.00	5.03	798.24	0.00	9.03	0 00:00	0.00	0.00
24	D22690	Junction	815.71	820.04	815.71	820.04	10.00	1.35	815.99	0.00	4.05	0 00:00	0.00	0.00
25	D22725	Junction	776.89	781.00	776.89	781.00	10.00	2.50	777.61	0.00	3.39	0 00:00	0.00	0.00
26	HDS-101	Junction	801.90	814.15	801.90	814.15	10.00	18.32	803.57	0.00	10.58	0 00:00	0.00	0.00
27	HDS-201	Junction	802.79	815.53	802.79	815.53	10.00	26.56	804.74	0.00	10.79	0 00:00	0.00	0.00
28	13021/3	Outfall	766.01					31.52	766.64					
29	13011/3	Storage Node	771.15	780.00	771.15		0.00	31.52	772.06				0.00	0.00
30	UGD-01	Storage Node	790.00	805.00	790.00		0.00	44.88	801.12				0.00	0.00
31	UGD-02	Storage Node	802.50	809.25	802.50		0.00	0.99	806.29				0.00	0.00
32	UGD-03	Storage Node	813.62	821.50	0.00		0.00	16.41	818.20				0.00	0.00

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Diameter or Height (in)	Manning's Roughness	Peak Flow (cfs)	Design Flow Capacity (cfs)	Peak Flow/Design Flow Ratio	Peak Flow Velocity (ft/sec)	Peak Flow Depth (ft)	Peak Flow Depth/Total Depth Ratio	Total Time Reported Surcharged (min)	Reported Condition
1	Link-02	Pipe	13001	13002	56.93	783.95	782.75	2.1100	24.000	0.0130	23.99	32.84	0.73	10.63	1.35	0.68	0.00	Calculated
2	Link-03	Pipe	1312	13002	47.69	795.14	794.90	0.5000	15.000	0.0130	0.00	4.58	0.00	0.00	0.00	0.00	0.00	Calculated
3	Link-04	Pipe	13002	13005	108.25	782.33	781.35	0.9100	36.000	0.0130	23.99	63.46	0.38	8.01	1.32	0.44	0.00	Calculated
4	Link-05	Pipe	13003	13005	149.97	787.40	784.28	2.0800	12.000	0.0130	0.43	5.14	0.08	3.98	0.20	0.20	0.00	Calculated
5	Link-06	Pipe	13009	13008	36.78	782.93	782.29	1.7400	12.000	0.0130	0.51	4.70	0.11	3.78	0.23	0.23	0.00	Calculated
6	Link-07	Pipe	13005	13008	104.48	781.16	780.08	1.0300	36.000	0.0130	24.07	67.81	0.35	7.25	1.43	0.48	0.00	Calculated
7	Link-08	Pipe	D22725	13019	78.09	776.89	776.61	0.3600	15.000	0.0130	2.50	3.87	0.65	3.70	0.68	0.54	0.00	Calculated
8	Link-10	Pipe	13018	13019	7.77	776.48	776.36	1.5400	12.000	0.0130	0.83	4.43	0.19	1.57	0.82	0.82	0.00	Calculated
9	Link-11	Pipe	13019	13017	78.97	776.36	776.14	0.2800	18.000	0.0130	3.33	5.54	0.60	3.13	0.87	0.58	0.00	Calculated
10	Link-12	Pipe	13016	13017	12.35	776.77	776.64	1.0500	12.000	0.0130	0.43	3.66	0.12	2.77	0.32	0.32	0.00	Calculated
11	Link-13	Pipe	13017	13011/3	48.41	776.14	775.94	0.4100	18.000	0.0130	3.76	6.75	0.56	3.90	0.80	0.53	0.00	Calculated
12	Link-14	Pipe	13011/3	13021/3	82.97	771.22	766.00	6.2900	48.000	0.0130	31.52	310.16	0.10	14.29	0.74	0.18	0.00	Calculated
13	Link-15	Pipe	13008	13011/3	56.74	780.03	779.61	0.7400	36.000	0.0130	24.15	57.38	0.42	6.99	1.47	0.49	0.00	Calculated
14	Link-16	Pipe	D22690	1607	132.76	815.71	809.64	4.5700	12.000	0.0130	1.35	7.62	0.18	6.10	0.32	0.32	0.00	Calculated
15	Link-17	Pipe	1607	1570	148.78	809.65	800.57	6.1000	12.000	0.0130	2.37	8.80	0.27	7.32	0.43	0.43	0.00	Calculated
16	Link-18	Pipe	1570	D22686	85.84	800.57	797.40	3.6900	12.000	0.0130	3.52	6.85	0.51	7.45	0.67	0.67	0.00	Calculated
17	Link-19	Pipe	1533	D22686	9.27	798.65	797.40	13.4800	12.000	0.0130	1.52	13.08	0.12	4.81	0.53	0.54	0.00	Calculated
18	Link-20	Pipe	D22686	1511	72.00	797.40	794.08	4.6100	12.000	0.0130	5.02	7.65	0.66	6.71	0.92	0.92	0.00	Calculated
19	Link-21	Pipe	1511	1453	55.99	794.03	793.73	0.5400	15.000	0.0130	5.71	4.73	1.21	4.65	1.25	1.00	11.00	SURCHARGED
20	Link-22	Pipe	1451	1453	40.69	796.16	793.81	5.7800	12.000	0.0130	1.46	8.56	0.17	4.58	0.64	0.64	0.00	Calculated
21	Link-23	Pipe	1453	13006	77.33	793.40	793.24	0.2100	15.000	0.0130	7.16	2.94	2.44	5.83	1.25	1.00	11.00	SURCHARGED
22	Link-24	Pipe	13006	13011/3	41.11	793.19	793.00	0.4600	15.000	0.0130	8.02	4.39	1.83	6.68	1.18	0.95	0.00	> CAPACITY
23	Link-37	Pipe	302	301	136.92	802.50	801.95	0.4000	12.000	0.0130	0.06	2.26	0.03	1.33	0.11	0.11	0.00	Calculated
24	Link-38	Pipe	301	1570	24.56	801.85	800.75	4.4800	12.000	0.0130	0.06	7.54	0.01	2.87	0.18	0.18	0.00	Calculated
25	Link-39	Pipe	HDS-101	UGD-01	10.00	802.00	801.82	1.8000	24.000	0.0130	18.32	30.35	0.60	8.15	1.35	0.67	0.00	Calculated
26	Link-41	Pipe	HDS-201	UGD-01	47.26	802.89	801.95	1.9900	24.000	0.0130	26.57	31.90	0.83	9.73	1.62	0.81	0.00	Calculated
27	Link-42	Pipe	2	1	30.50	790.00	789.83	0.5600	36.000	0.0130	23.99	49.80	0.48	6.26	1.60	0.53	0.00	Calculated
28	Link-44	Pipe	1	13001	214.52	789.73	788.55	0.5500	36.000	0.0130	23.99	49.47	0.48	6.77	1.50	0.50	0.00	Calculated
29	UGD-01-2ndStage	Orifice	UGD-01	2		790.00	789.90		8.000		23.26							
30	UGD-01-WQ	Orifice	UGD-01	2		790.00	789.90		3.000		0.72							
31	UGD-02-MANIFOLD	Orifice	UGD-02	302		802.50	800.50		12.000		0.05							
32	UGD-02-WQ	Orifice	UGD-02	302		802.50	800.50		0.500		0.01							
33	UGD-03-Orifice	Orifice	UGD-03	HDS-101		813.62	801.90		10.000		5.36							
34	UGD-01-Weir	Weir	UGD-01	2		790.00	789.90				0.00							

**Subbasin Hydrology**

**Subbasin : FUTURE-01**

**Input Data**

Area (ac) ..... 3.25  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 95  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	3.25	-	95
Composite Area & Weighted CN	3.25		95

**Time of Concentration**

TOC Method : SCS TR-55

Sheet Flow Equation :

$$T_c = (0.007 * ((n * L_f)^{0.8})) / ((P^{0.5}) * (S_f^{0.4}))$$

Where :

- Tc = Time of Concentration (hr)
- n = Manning's roughness
- Lf = Flow Length (ft)
- P = 2 yr, 24 hr Rainfall (inches)
- Sf = Slope (ft/ft)

Shallow Concentrated Flow Equation :

- V = 16.1345 \* (Sf<sup>0.5</sup>) (unpaved surface)
- V = 20.3282 \* (Sf<sup>0.5</sup>) (paved surface)
- V = 15.0 \* (Sf<sup>0.5</sup>) (grassed waterway surface)
- V = 10.0 \* (Sf<sup>0.5</sup>) (nearly bare & untilled surface)
- V = 9.0 \* (Sf<sup>0.5</sup>) (cultivated straight rows surface)
- V = 7.0 \* (Sf<sup>0.5</sup>) (short grass pasture surface)
- V = 5.0 \* (Sf<sup>0.5</sup>) (woodland surface)
- V = 2.5 \* (Sf<sup>0.5</sup>) (forest w/heavy litter surface)
- Tc = (Lf / V) / (3600 sec/hr)

Where:

- Tc = Time of Concentration (hr)
- Lf = Flow Length (ft)
- V = Velocity (ft/sec)
- Sf = Slope (ft/ft)

Channel Flow Equation :

$$V = (1.49 * (R^{2/3})) * (S_f^{0.5}) / n$$

$$R = A_q / W_p$$

$$T_c = (L_f / V) / (3600 \text{ sec/hr})$$

Where :

- Tc = Time of Concentration (hr)
- Lf = Flow Length (ft)
- R = Hydraulic Radius (ft)
- Aq = Flow Area (ft<sup>2</sup>)
- Wp = Wetted Perimeter (ft)
- V = Velocity (ft/sec)
- Sf = Slope (ft/ft)
- n = Manning's roughness

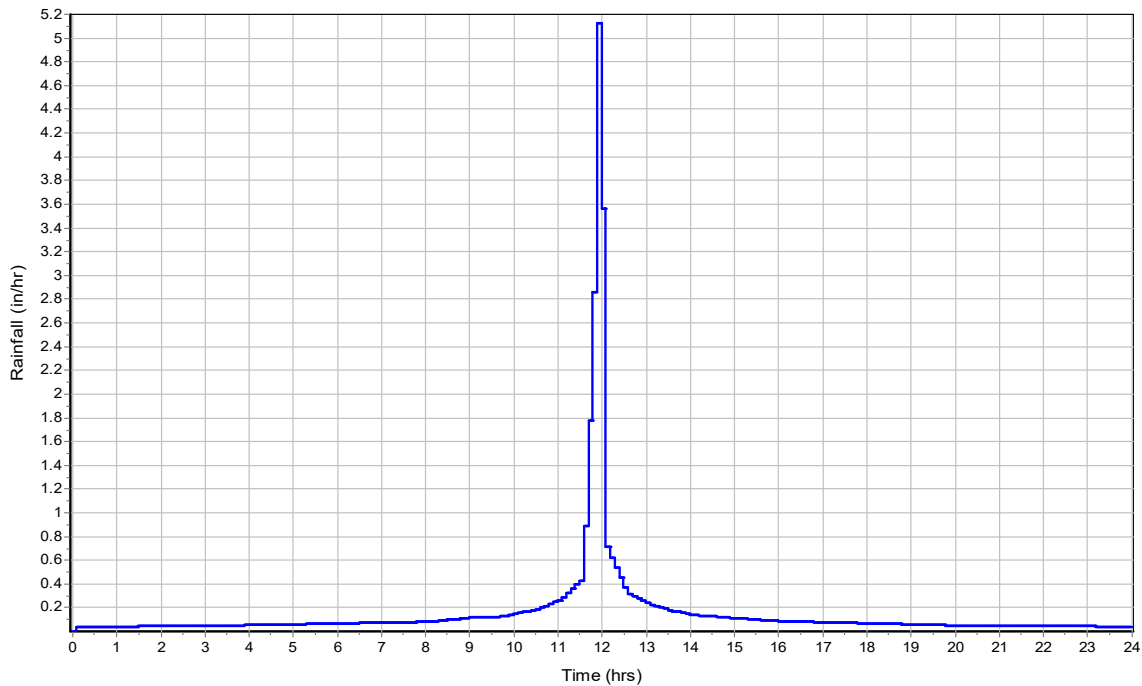
User-Defined TOC override (minutes): 10

**Subbasin Runoff Results**

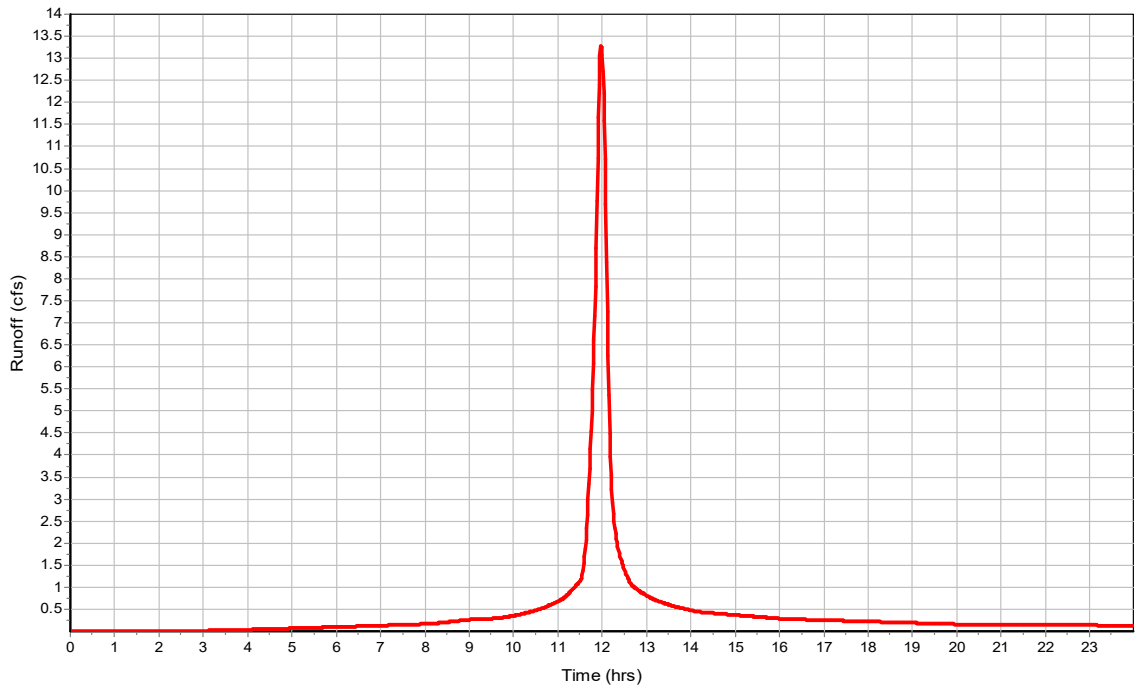
Total Rainfall (in) ..... 3.74  
 Total Runoff (in) ..... 3.18  
 Peak Runoff (cfs) ..... 13.29  
 Weighted Curve Number ..... 95  
 Time of Concentration (days hh:mm:ss) ..... 00:10:00

Subbasin : FUTURE-01

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : FUTURE-02**

**Input Data**

Area (ac) ..... 5.53  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 93  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	5.53	-	93
Composite Area & Weighted CN	5.53		93

**Time of Concentration**

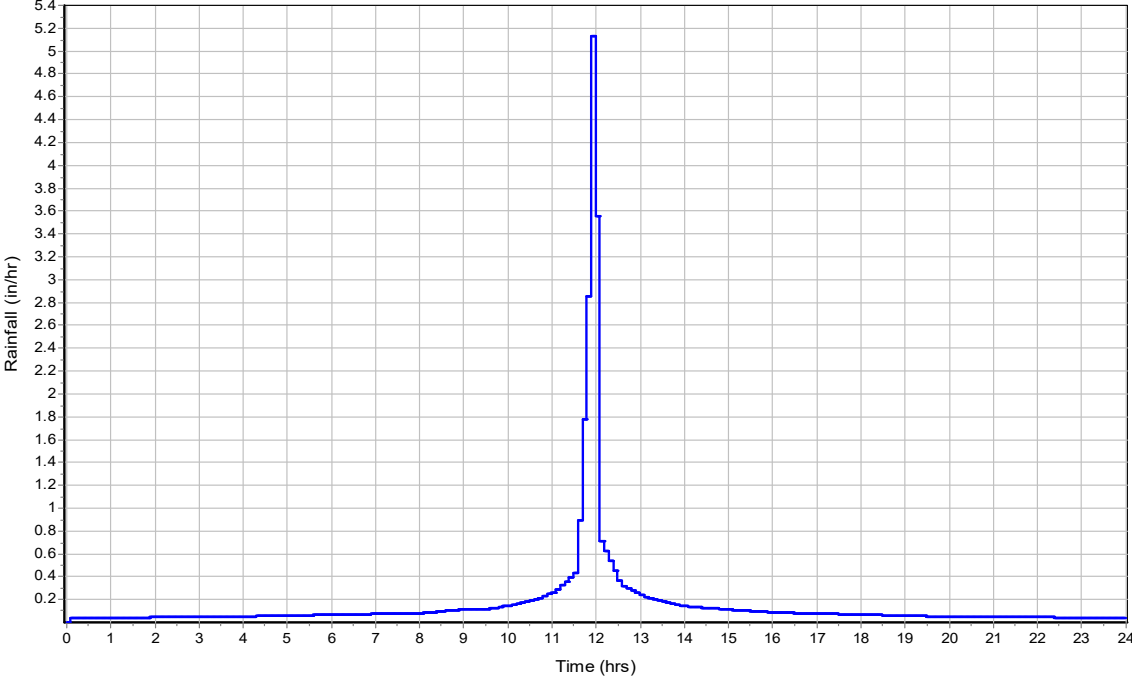
User-Defined TOC override (minutes): 10

**Subbasin Runoff Results**

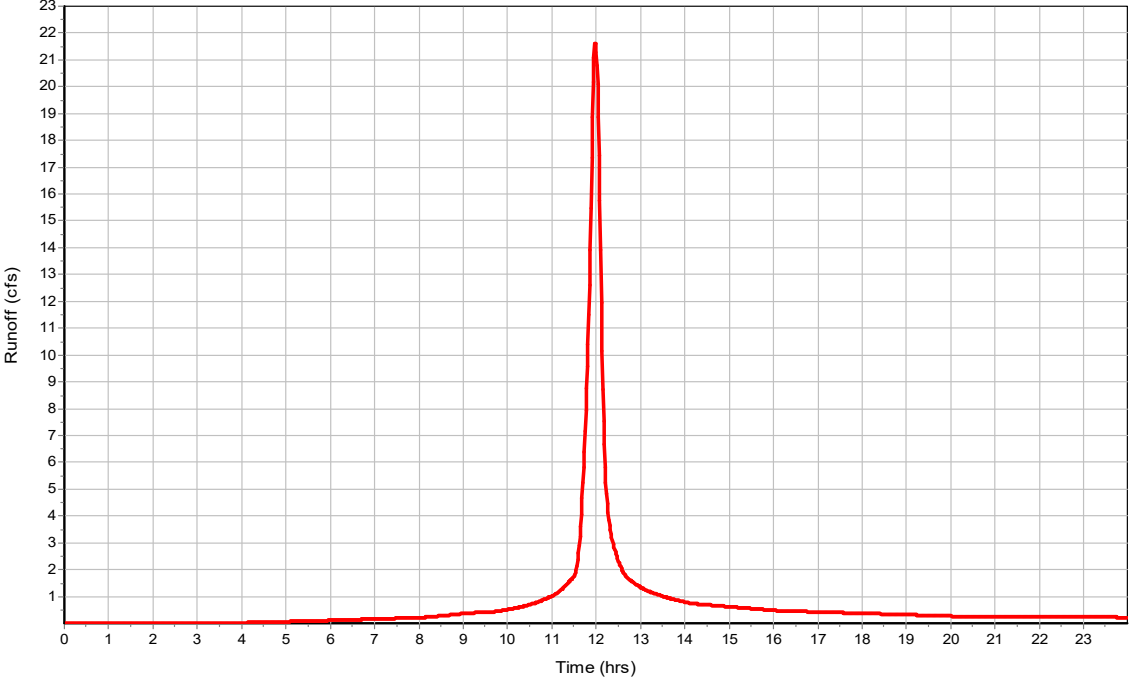
Total Rainfall (in) ..... 3.74  
 Total Runoff (in) ..... 2.97  
 Peak Runoff (cfs) ..... 21.66  
 Weighted Curve Number ..... 93  
 Time of Concentration (days hh:mm:ss) ..... 0 00:10:00

Subbasin : FUTURE-02

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : FUTURE-03**

**Input Data**

Area (ac) ..... 0.78  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 95  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	0.78	-	95
Composite Area & Weighted CN	0.78		95

**Time of Concentration**

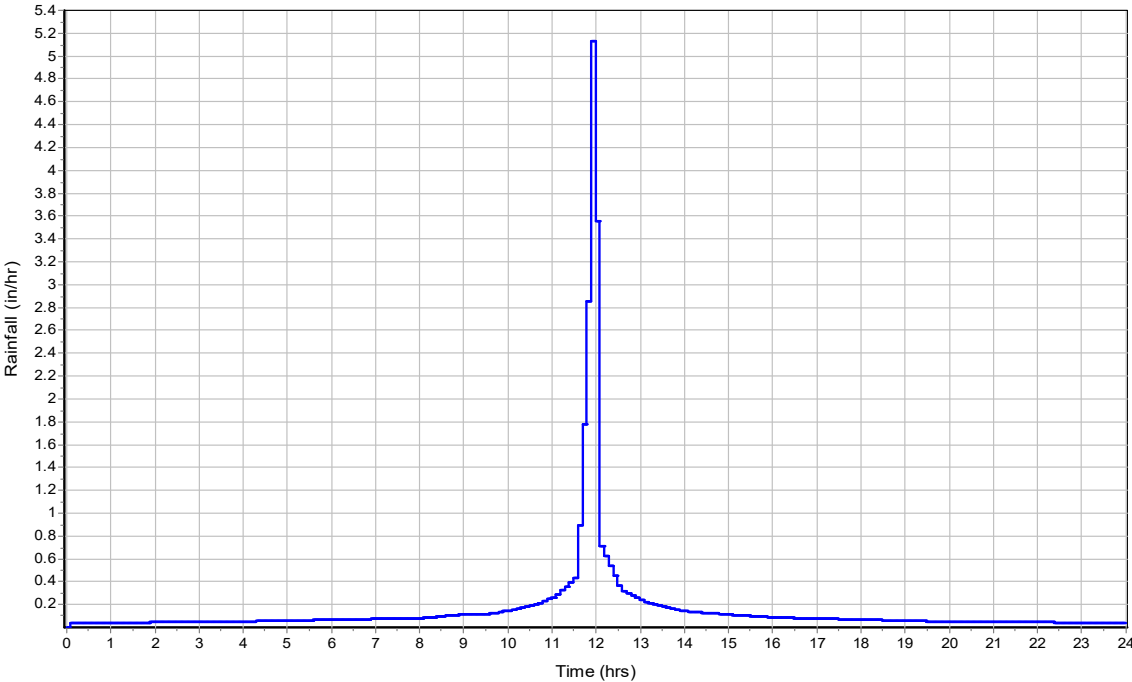
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

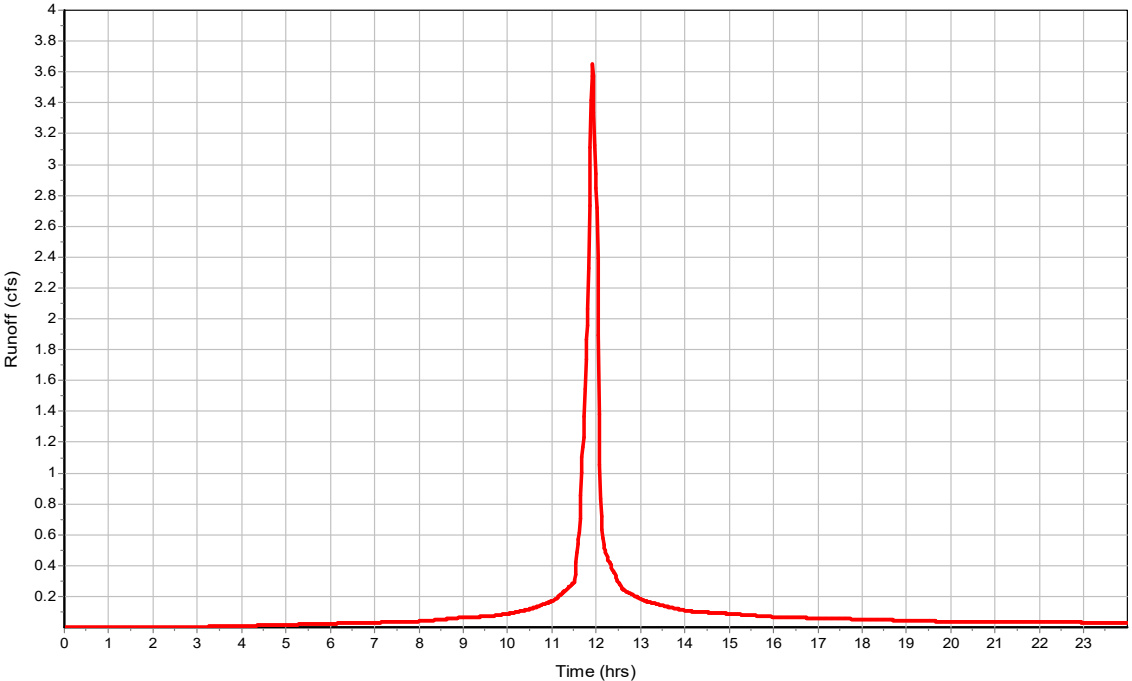
Total Rainfall (in) ..... 3.74  
 Total Runoff (in) ..... 3.18  
 Peak Runoff (cfs) ..... 3.65  
 Weighted Curve Number ..... 95  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : FUTURE-03

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : POST-01**

**Input Data**

Area (ac) ..... 3.47  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 94  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	3.47	-	94
Composite Area & Weighted CN	3.47		94

**Time of Concentration**

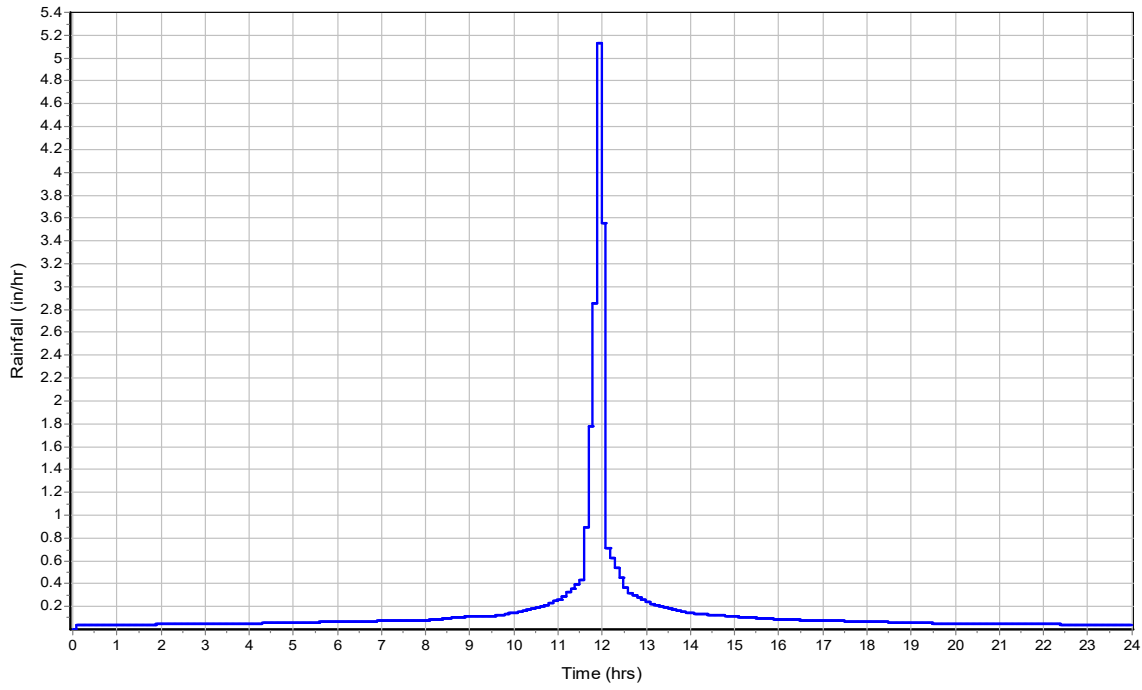
User-Defined TOC override (minutes): 10

**Subbasin Runoff Results**

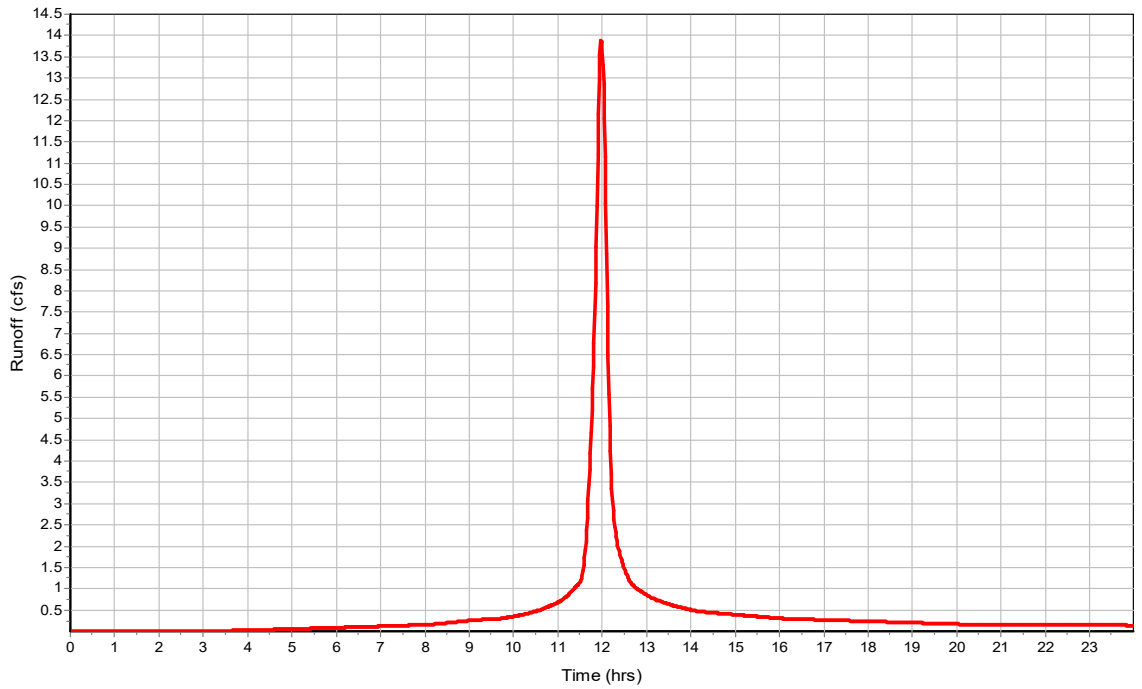
Total Rainfall (in) ..... 3.74  
 Total Runoff (in) ..... 3.07  
 Peak Runoff (cfs) ..... 13.9  
 Weighted Curve Number ..... 94  
 Time of Concentration (days hh:mm:ss) ..... 0 00:10:00

Subbasin : POST-01

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : POST-02**

**Input Data**

Area (ac) ..... 1.34  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 91  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	1.34	-	91
Composite Area & Weighted CN	1.34		91

**Time of Concentration**

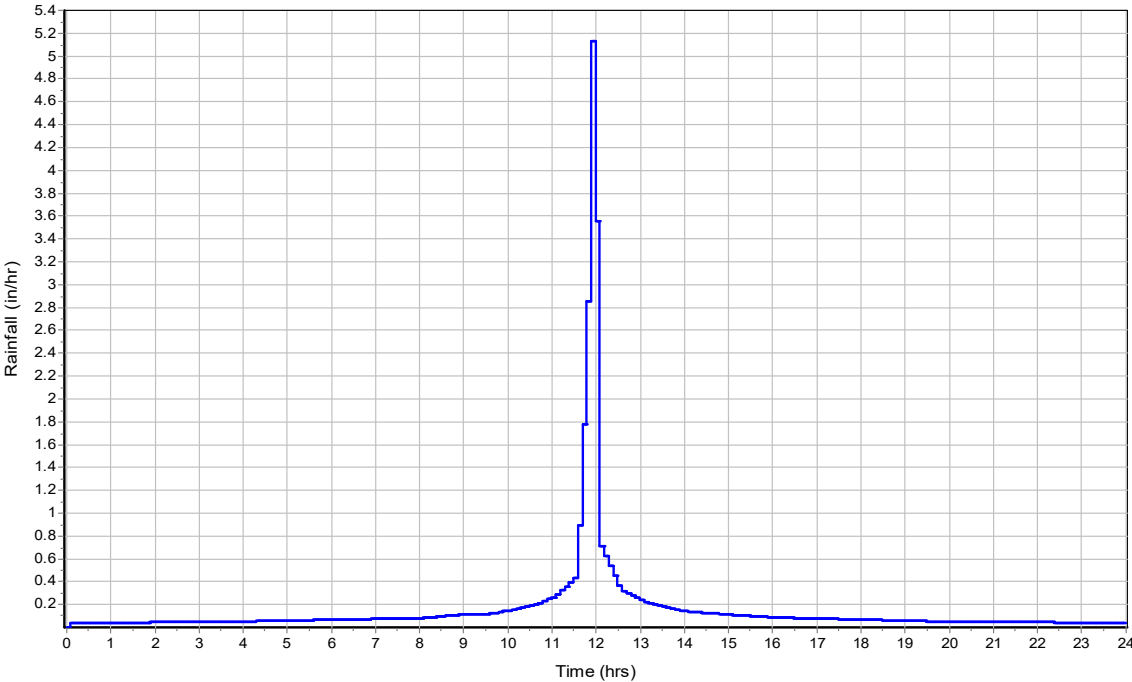
User-Defined TOC override (minutes): 10

**Subbasin Runoff Results**

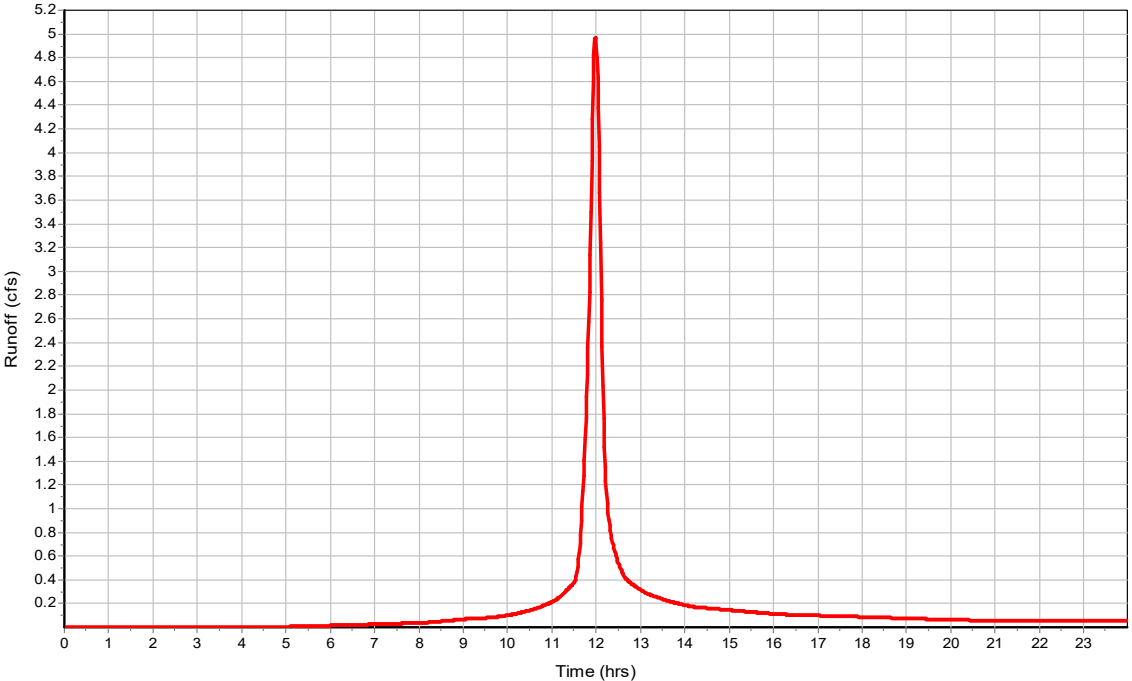
Total Rainfall (in) ..... 3.74  
 Total Runoff (in) ..... 2.77  
 Peak Runoff (cfs) ..... 4.98  
 Weighted Curve Number ..... 91  
 Time of Concentration (days hh:mm:ss) ..... 0 00:10:00

Subbasin : POST-02

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : POST-03**

**Input Data**

Area (ac) ..... 0.28  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 85  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	0.28	-	85
Composite Area & Weighted CN	0.28		85

**Time of Concentration**

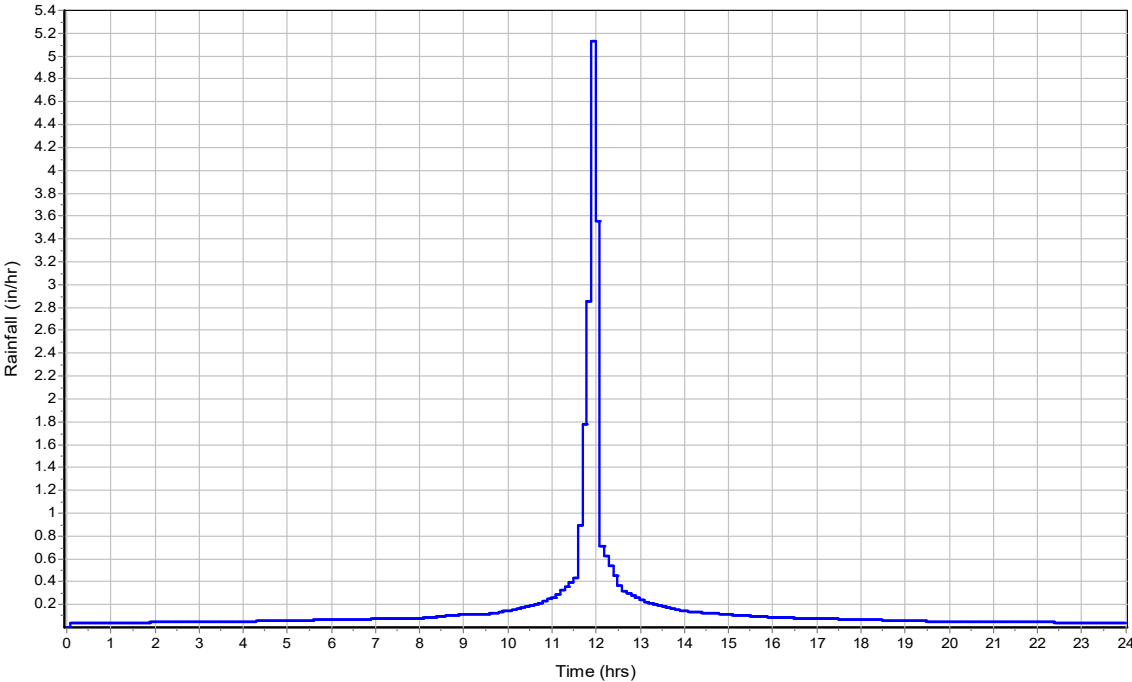
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

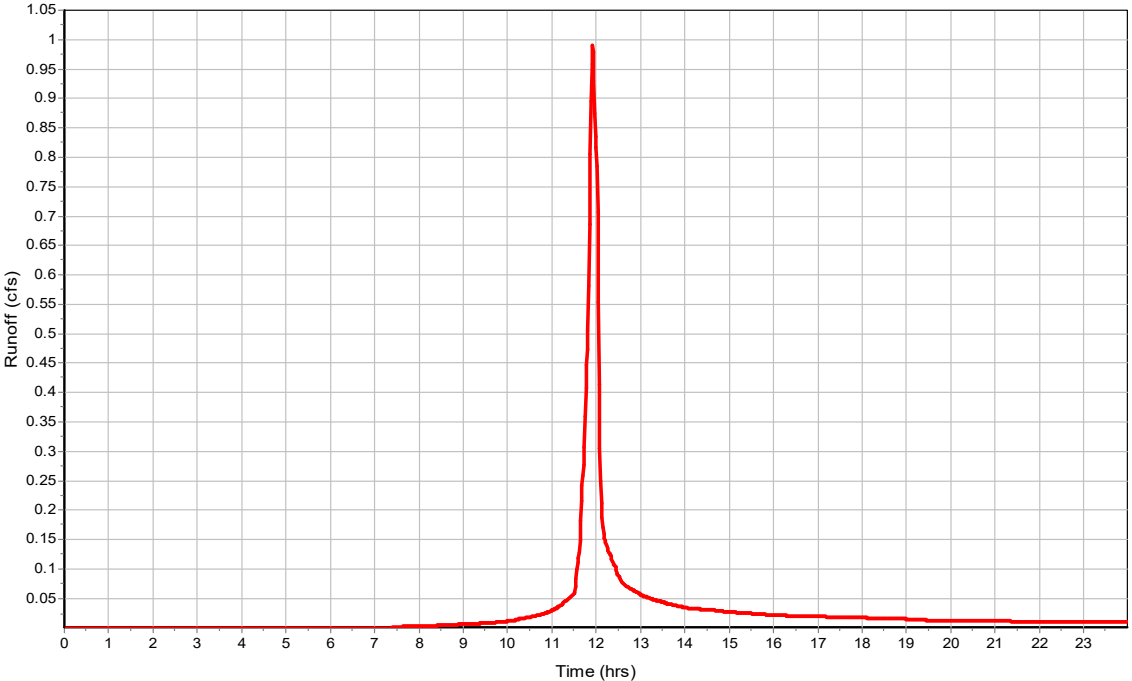
Total Rainfall (in) ..... 3.74  
 Total Runoff (in) ..... 2.23  
 Peak Runoff (cfs) ..... 0.99  
 Weighted Curve Number ..... 85  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : POST-03

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : SUB-13003

Input Data

Area (ac) ..... 0.09  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 97.81  
 Rain Gage ID ..... Rain Gage-01

Composite Curve Number

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	0.09	-	97.81
Composite Area & Weighted CN	0.09		97.81

Time of Concentration

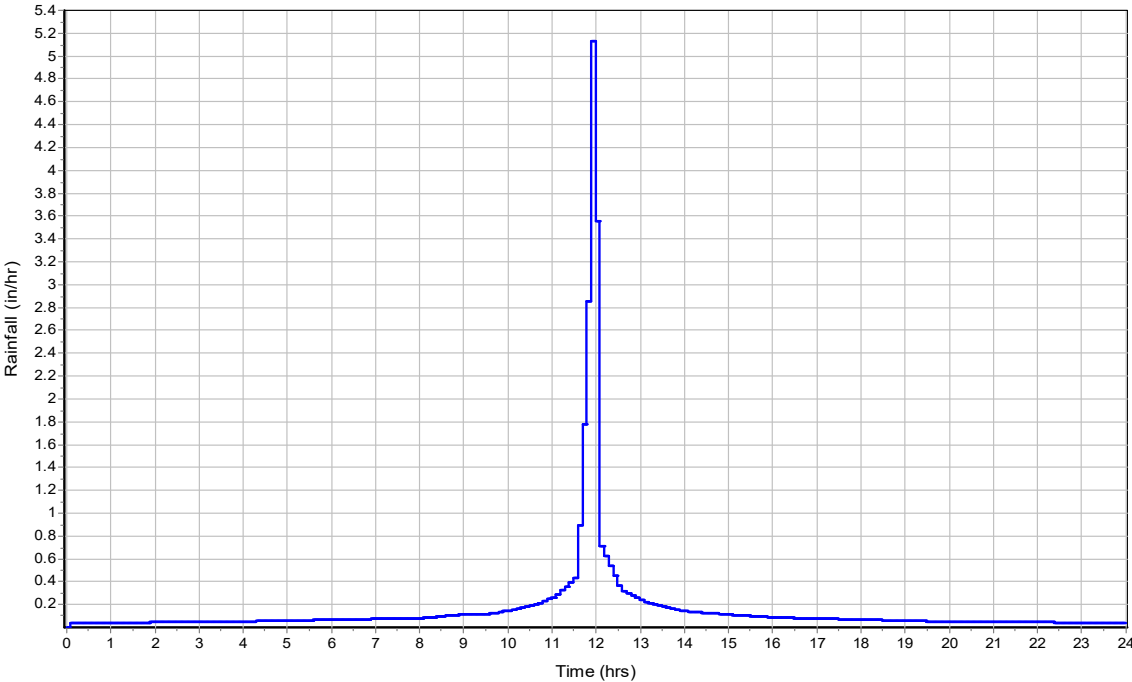
User-Defined TOC override (minutes): 5.00

Subbasin Runoff Results

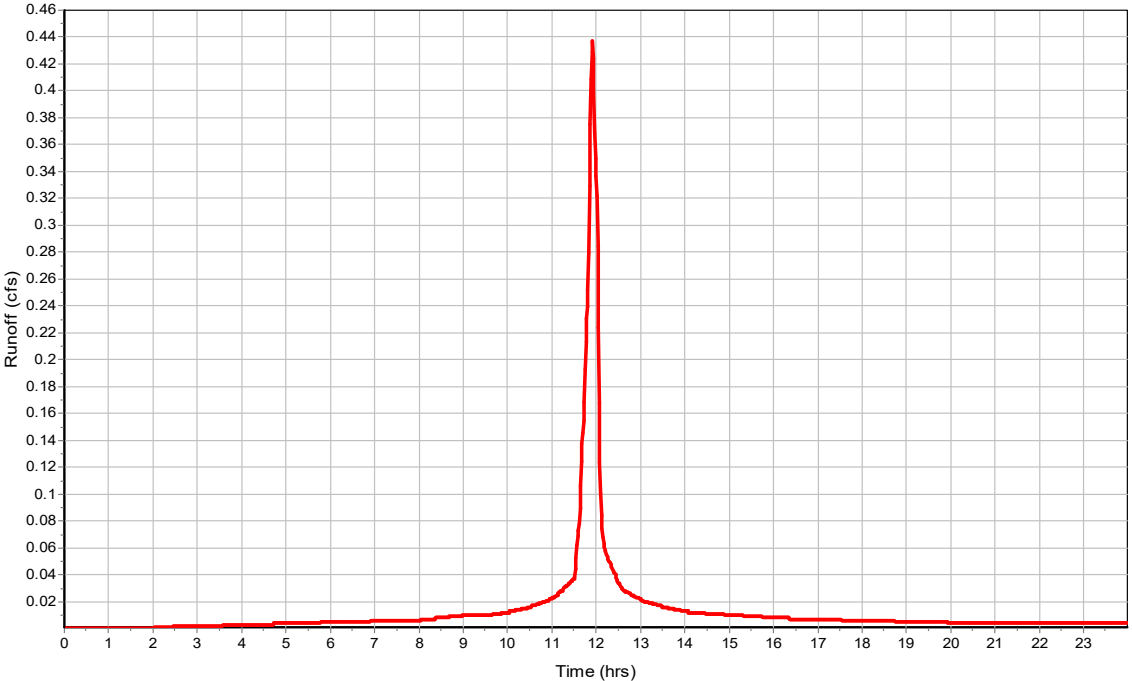
Total Rainfall (in) ..... 3.74  
 Total Runoff (in) ..... 3.48  
 Peak Runoff (cfs) ..... 0.44  
 Weighted Curve Number ..... 97.81  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-13003

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-13006**

**Input Data**

Area (ac) ..... 0.21  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 90.17  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.21	-	90.17
Composite Area & Weighted CN	0.21		90.17

**Time of Concentration**

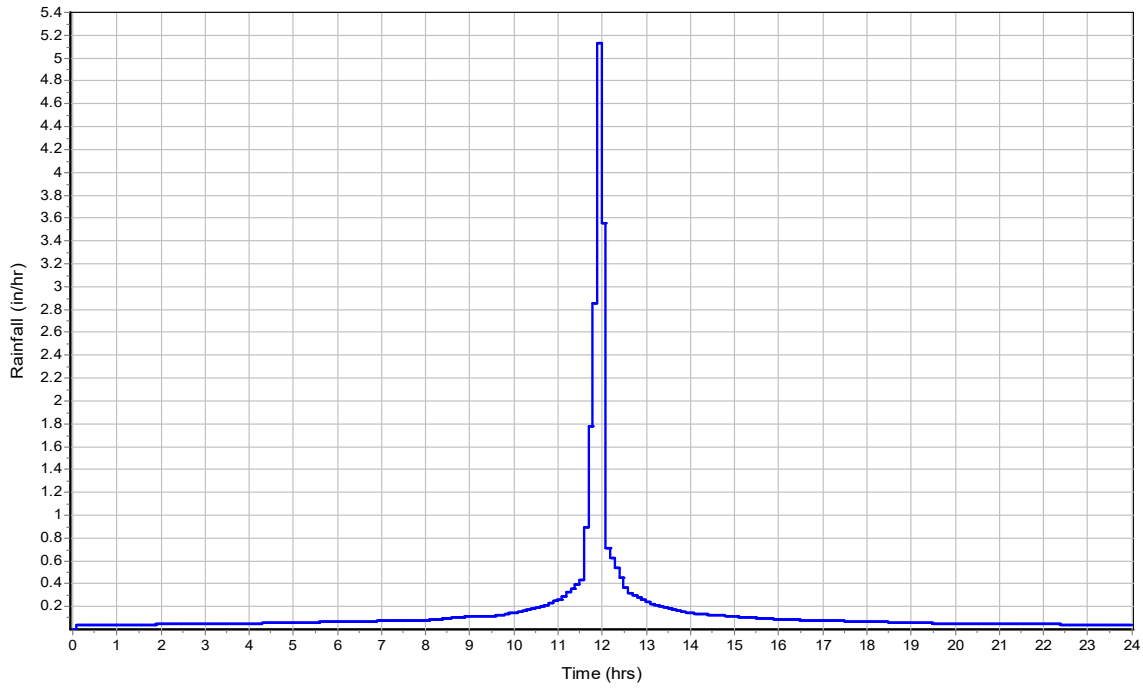
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

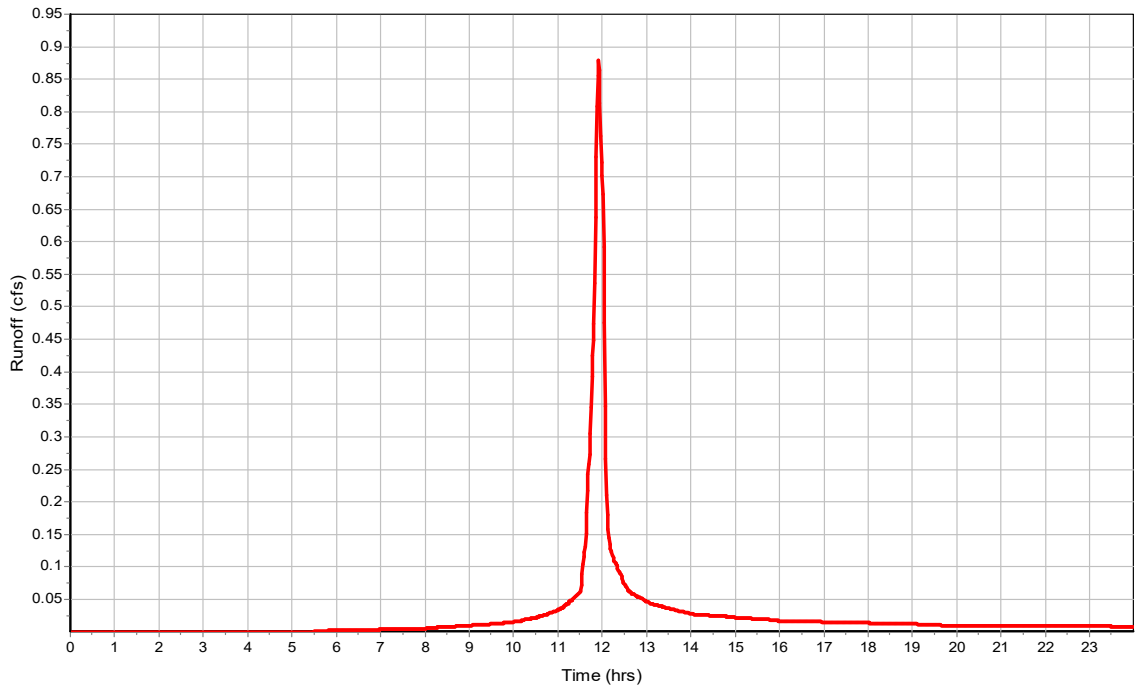
Total Rainfall (in) ..... 3.74  
 Total Runoff (in) ..... 2.69  
 Peak Runoff (cfs) ..... 0.88  
 Weighted Curve Number ..... 90.17  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-13006

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-13009**

**Input Data**

Area (ac) ..... 0.11  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 95.27  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	0.11	-	95.27
Composite Area & Weighted CN	0.11		95.27

**Time of Concentration**

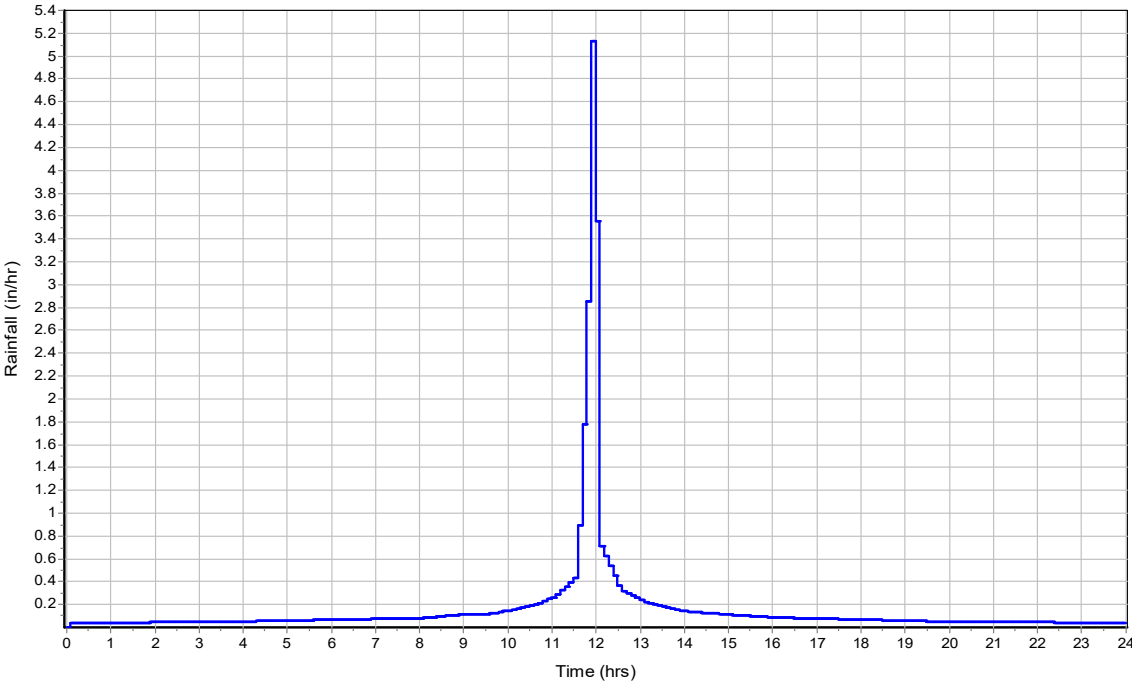
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

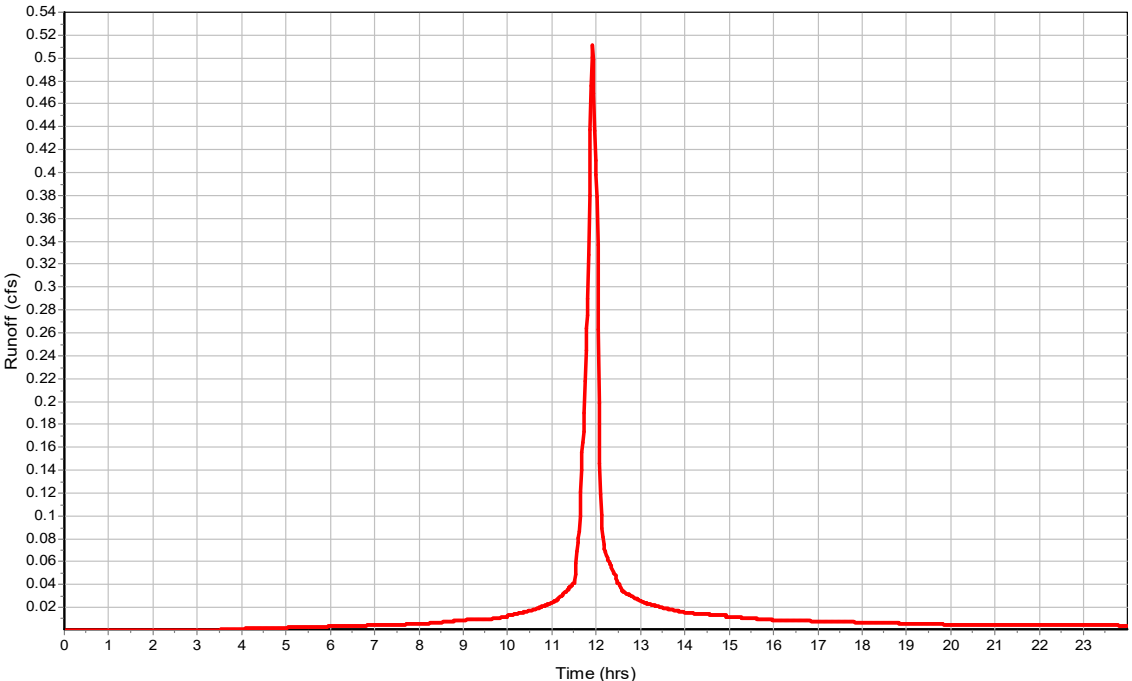
Total Rainfall (in) ..... 3.74  
 Total Runoff (in) ..... 3.2  
 Peak Runoff (cfs) ..... 0.51  
 Weighted Curve Number ..... 95.27  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-13009

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : SUB-13011/3

Input Data

Area (ac) ..... 1.18  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 74.32  
 Rain Gage ID ..... Rain Gage-01

Composite Curve Number

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	1.18	-	74.32
Composite Area & Weighted CN	1.18		74.32

Time of Concentration

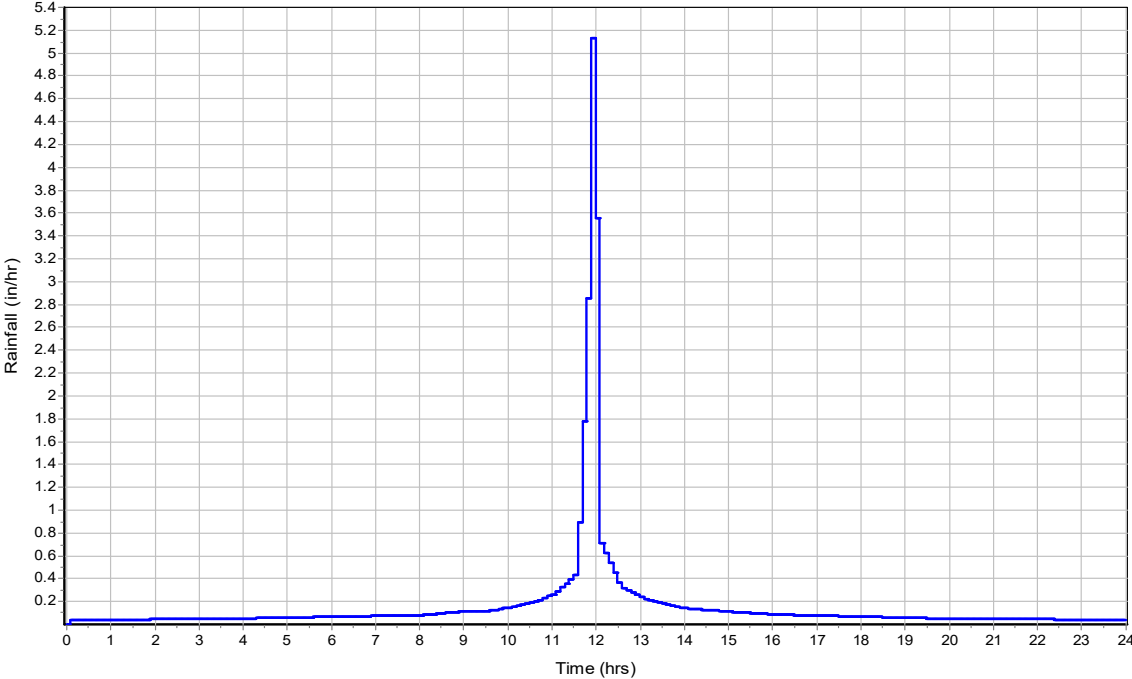
User-Defined TOC override (minutes): 10

Subbasin Runoff Results

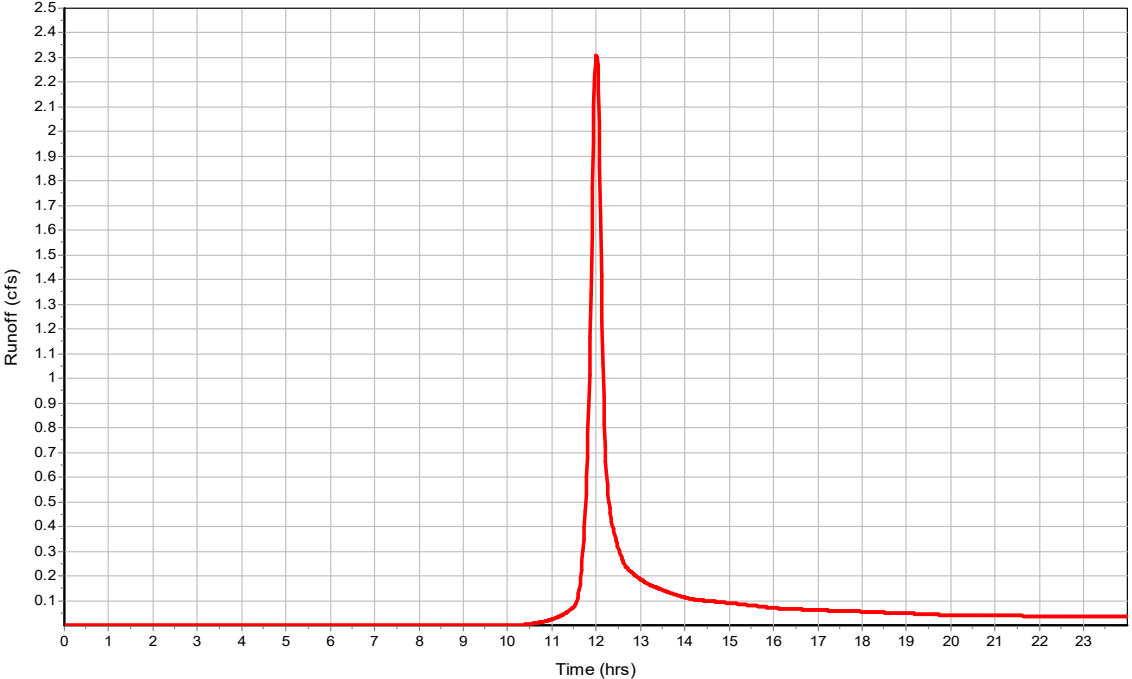
Total Rainfall (in) ..... 3.74  
 Total Runoff (in) ..... 1.43  
 Peak Runoff (cfs) ..... 2.31  
 Weighted Curve Number ..... 74.32  
 Time of Concentration (days hh:mm:ss) ..... 0 00:10:00

Subbasin : SUB-13011/3

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-13016**

**Input Data**

Area (ac) ..... 0.09  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 97.34  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.09	-	97.34
Composite Area & Weighted CN		0.09		97.34

**Time of Concentration**

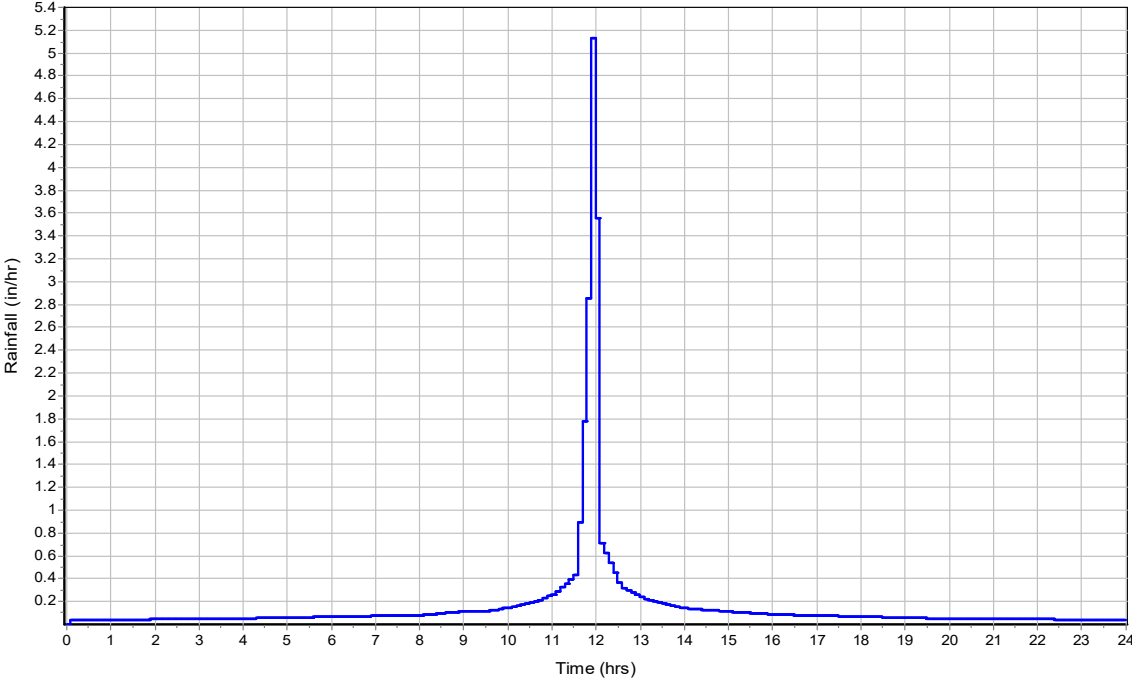
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

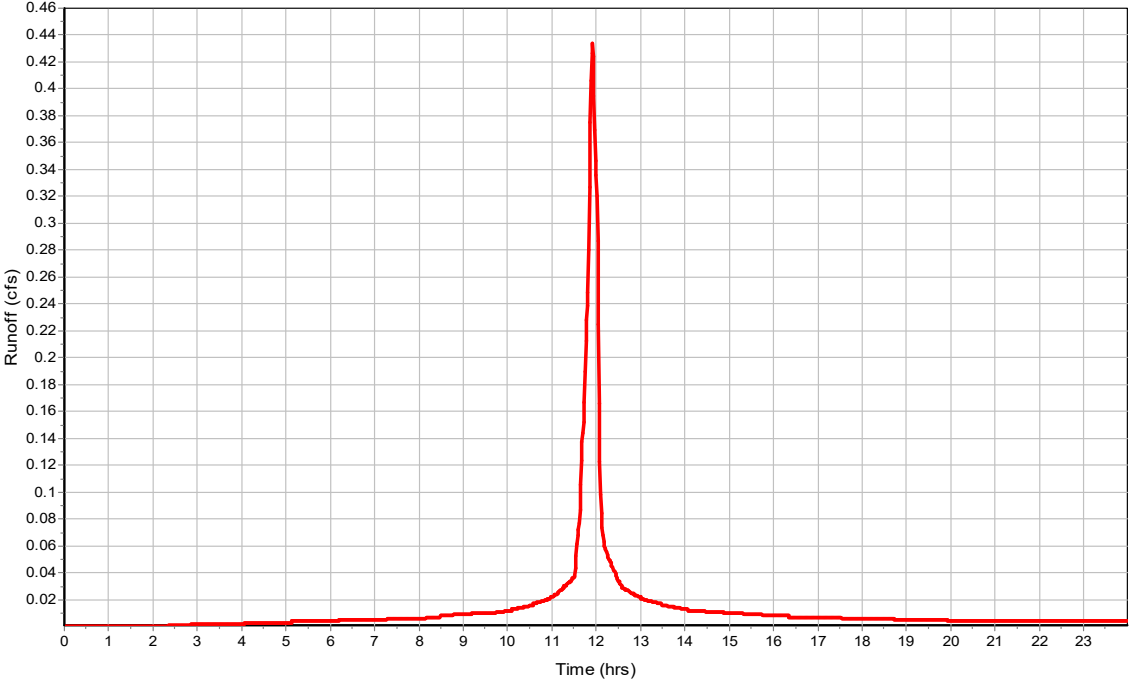
Total Rainfall (in) ..... 3.74  
 Total Runoff (in) ..... 3.43  
 Peak Runoff (cfs) ..... 0.43  
 Weighted Curve Number ..... 97.34  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-13016

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-13018**

**Input Data**

Area (ac) ..... 0.22  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 87.75  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.22	-	87.75
Composite Area & Weighted CN		0.22		87.75

**Time of Concentration**

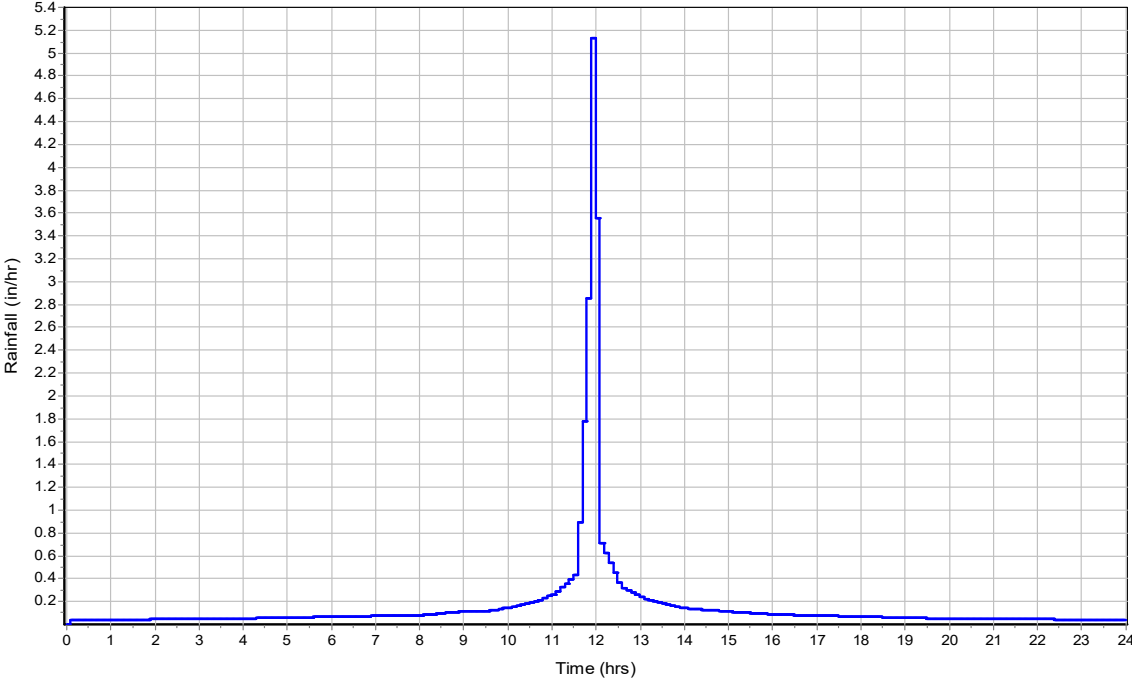
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

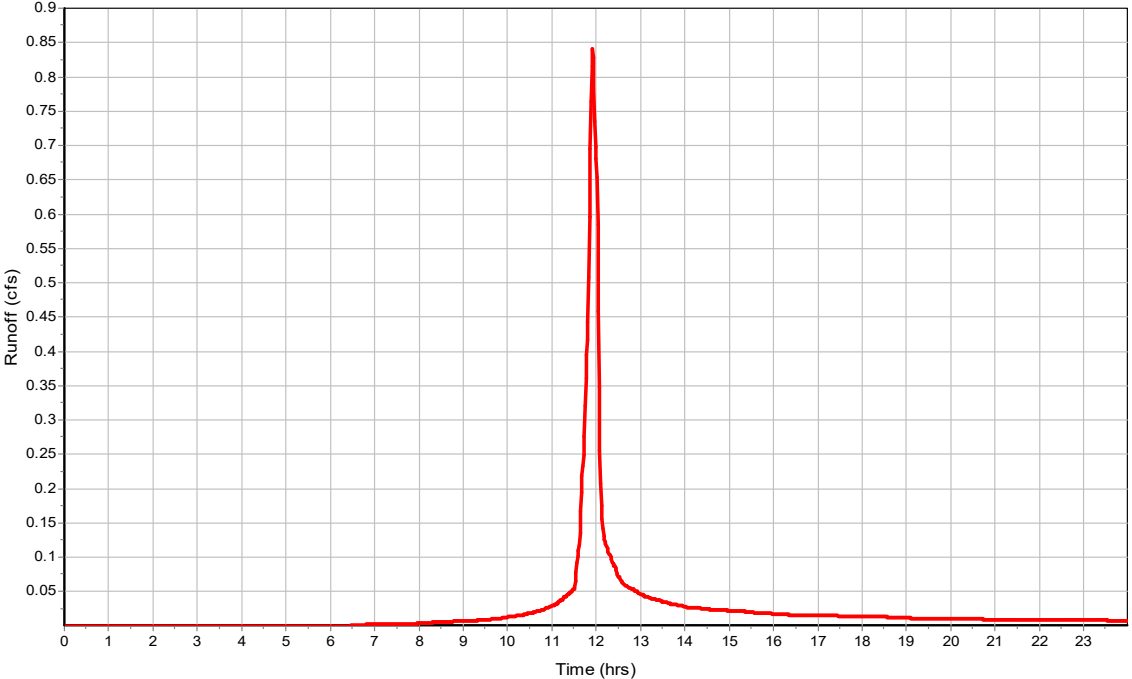
Total Rainfall (in) ..... 3.74  
 Total Runoff (in) ..... 2.46  
 Peak Runoff (cfs) ..... 0.84  
 Weighted Curve Number ..... 87.75  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-13018

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-1451**

**Input Data**

Area (ac) ..... 0.37  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 88.41  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.37	-	88.41
Composite Area & Weighted CN		0.37		88.41

**Time of Concentration**

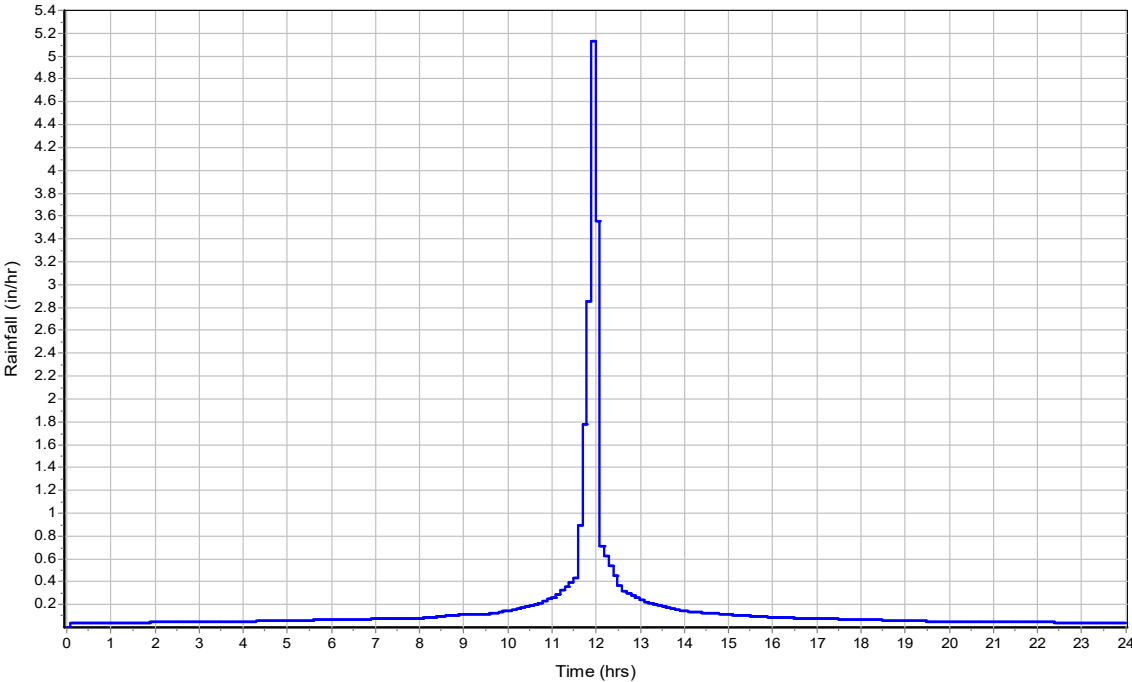
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

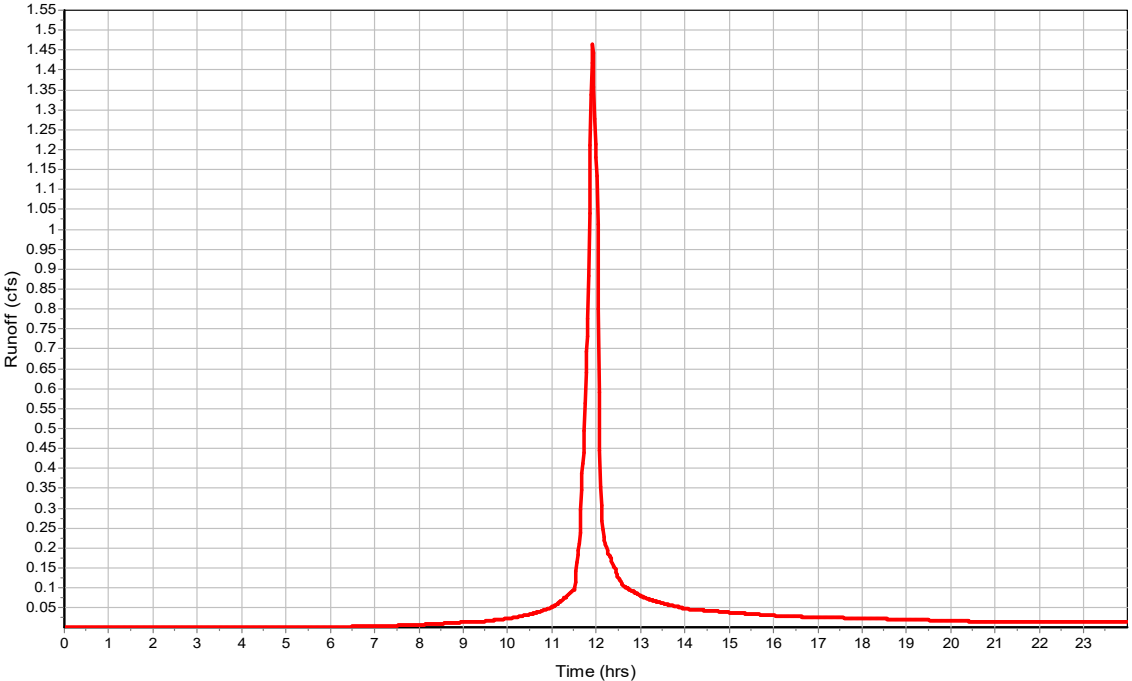
Total Rainfall (in) ..... 3.74  
 Total Runoff (in) ..... 2.53  
 Peak Runoff (cfs) ..... 1.47  
 Weighted Curve Number ..... 88.41  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-1451

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-1511**

**Input Data**

Area (ac) ..... 0.16  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 92.08  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.16	-	92.08
Composite Area & Weighted CN		0.16		92.08

**Time of Concentration**

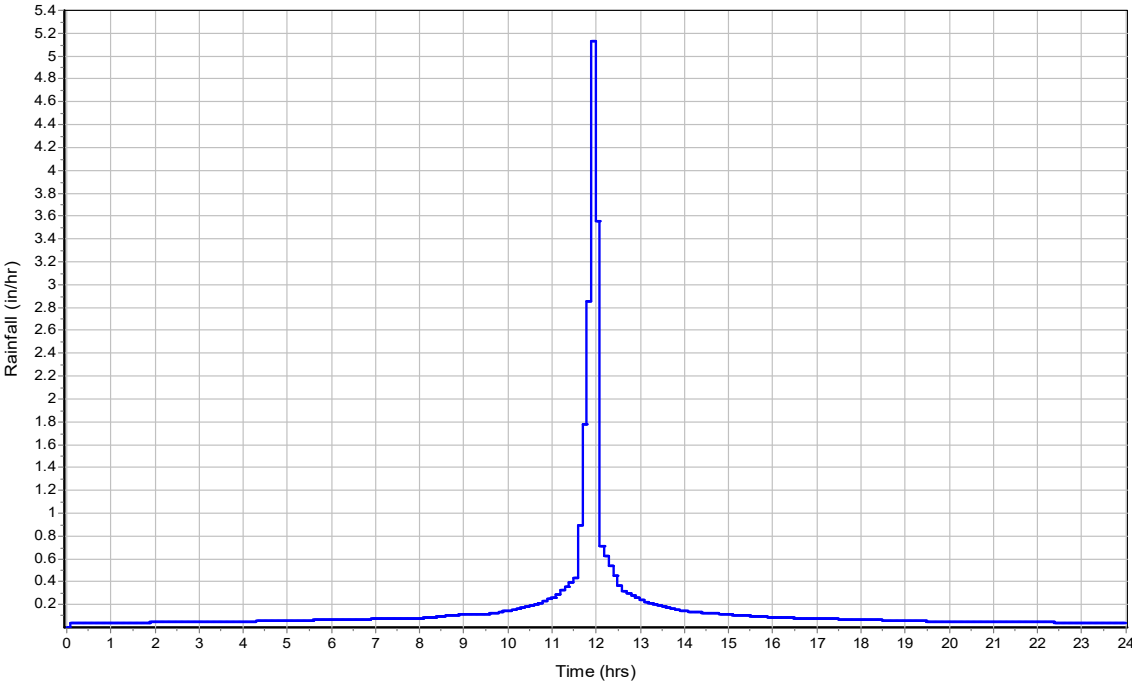
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

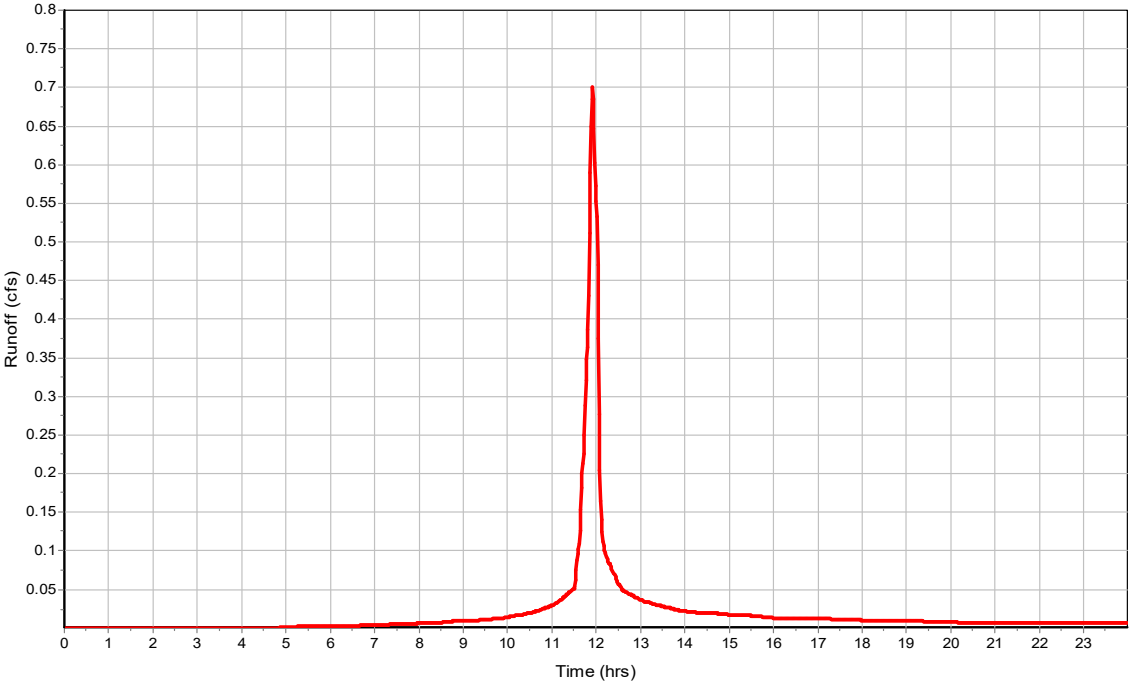
Total Rainfall (in) ..... 3.74  
 Total Runoff (in) ..... 2.87  
 Peak Runoff (cfs) ..... 0.7  
 Weighted Curve Number ..... 92.08  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-1511

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-1533**

**Input Data**

Area (ac) ..... 0.15  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 89.88  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.15	-	89.88
Composite Area & Weighted CN		0.15		89.88

**Time of Concentration**

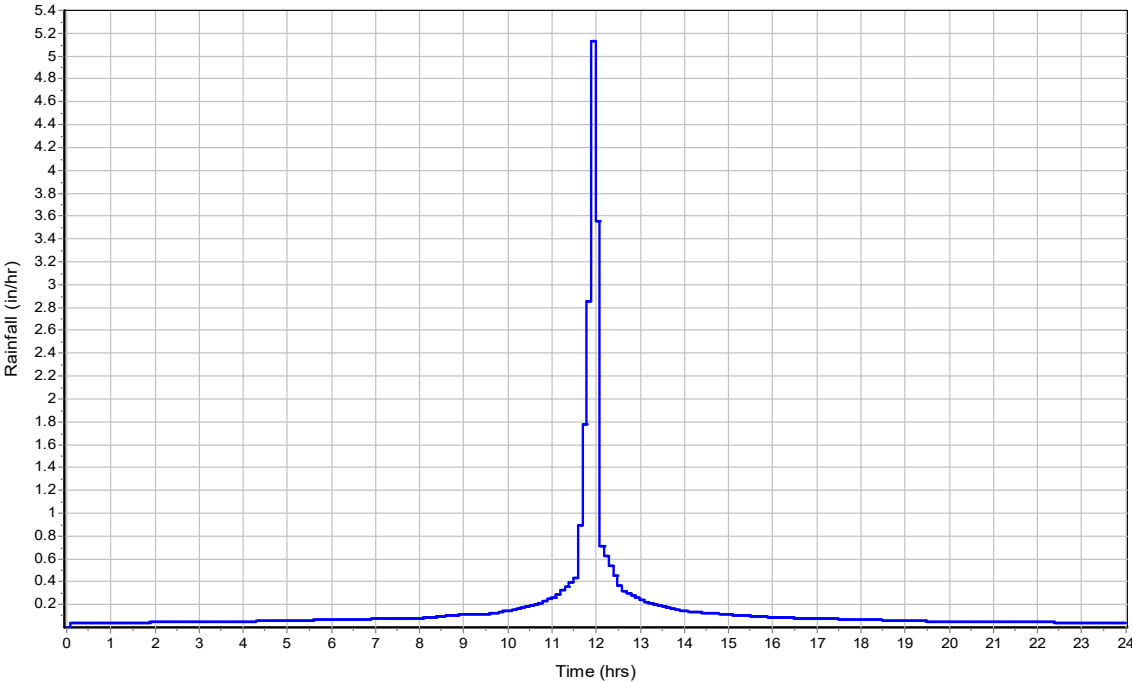
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

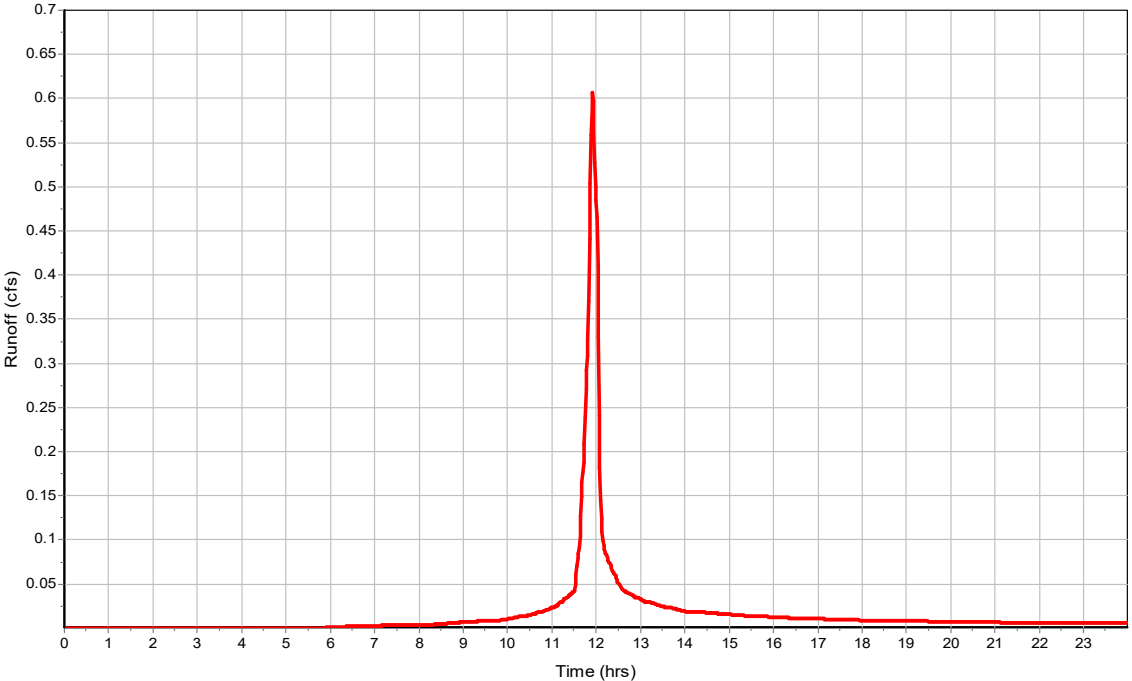
Total Rainfall (in) ..... 3.74  
 Total Runoff (in) ..... 2.66  
 Peak Runoff (cfs) ..... 0.61  
 Weighted Curve Number ..... 89.88  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-1533

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-1570**

**Input Data**

Area (ac) ..... 0.26  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 92.05  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.26	-	92.05
Composite Area & Weighted CN		0.26		92.05

**Time of Concentration**

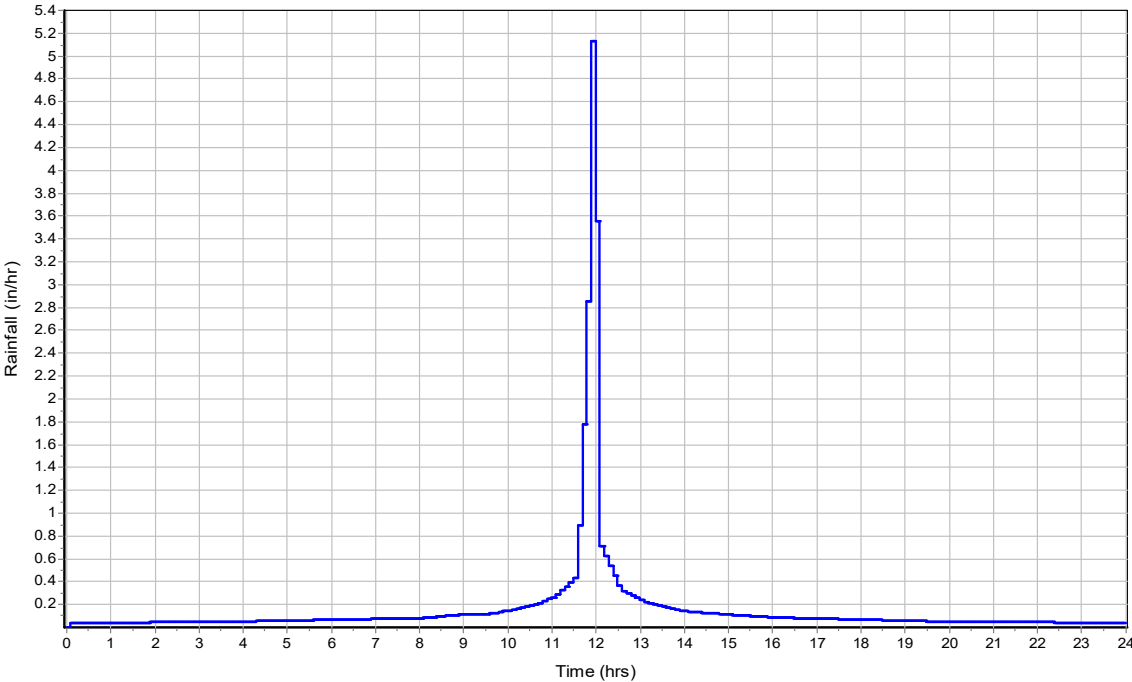
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

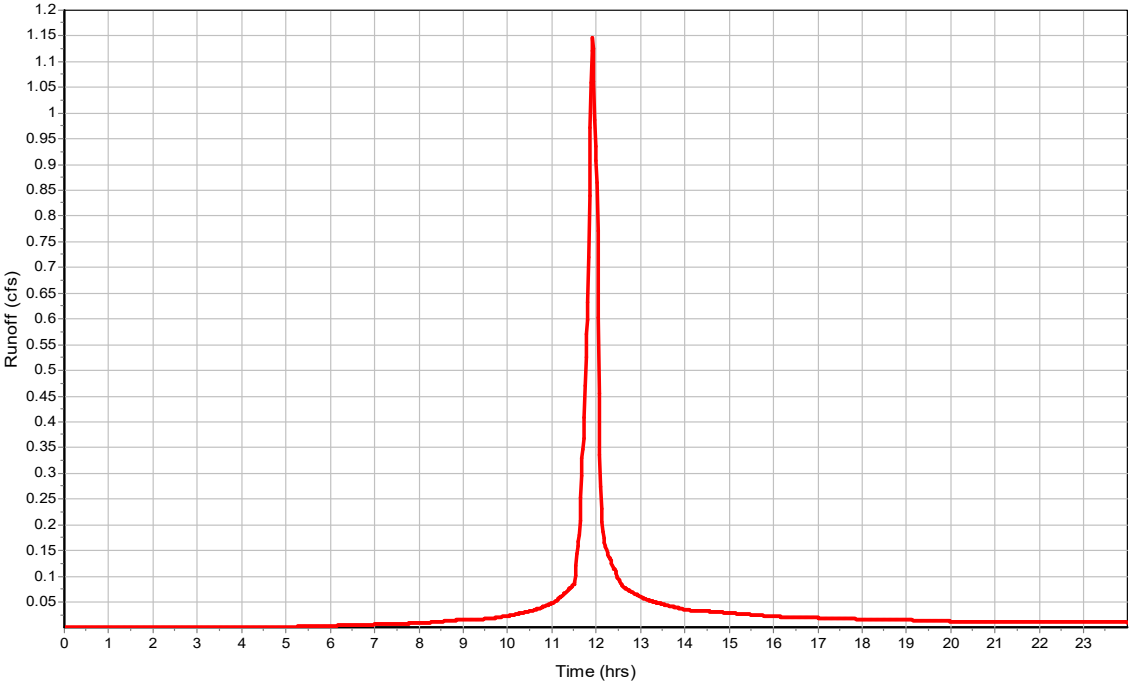
Total Rainfall (in) ..... 3.74  
 Total Runoff (in) ..... 2.87  
 Peak Runoff (cfs) ..... 1.15  
 Weighted Curve Number ..... 92.05  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-1570

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-1607**

**Input Data**

Area (ac) ..... 0.24  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 90.83  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.24	-	90.83
Composite Area & Weighted CN		0.24		90.83

**Time of Concentration**

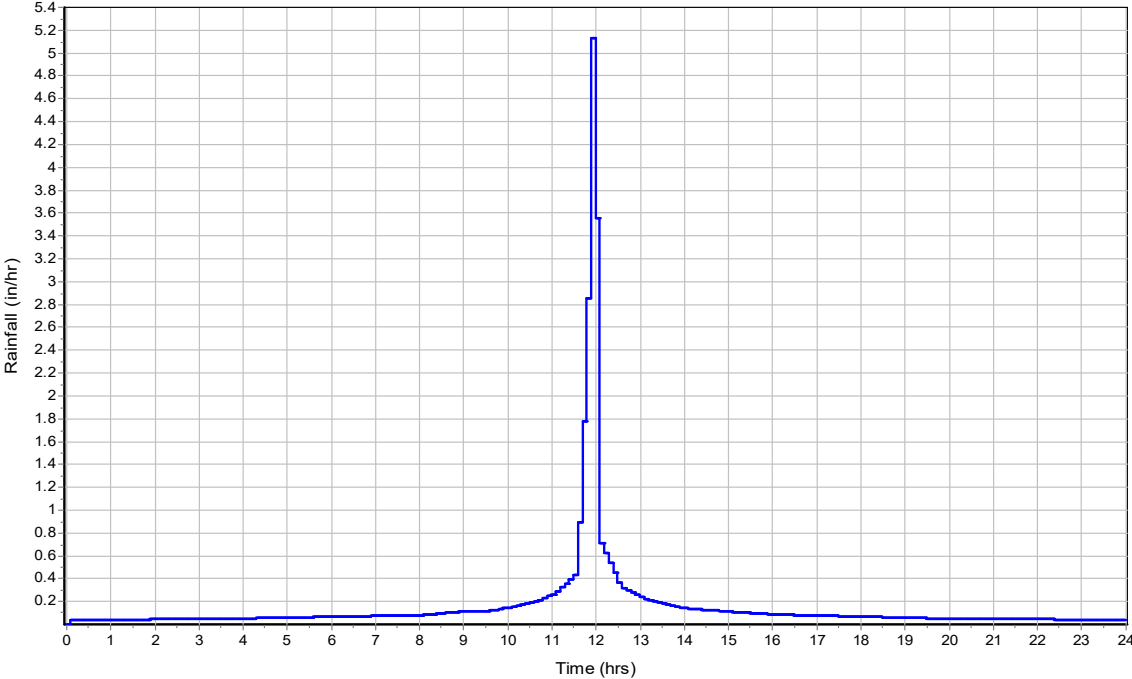
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

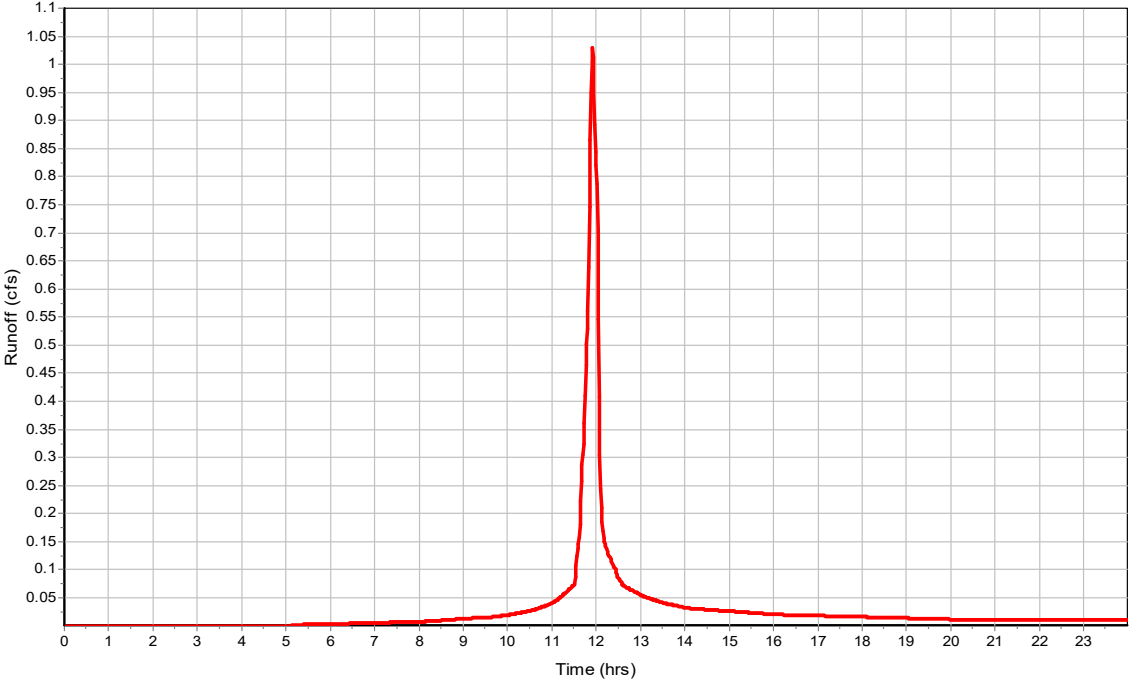
Total Rainfall (in) ..... 3.74  
 Total Runoff (in) ..... 2.75  
 Peak Runoff (cfs) ..... 1.03  
 Weighted Curve Number ..... 90.83  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-1607

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-D22690**

**Input Data**

Area (ac) ..... 0.31  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 92.3  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.31	-	92.3
Composite Area & Weighted CN		0.31		92.3

**Time of Concentration**

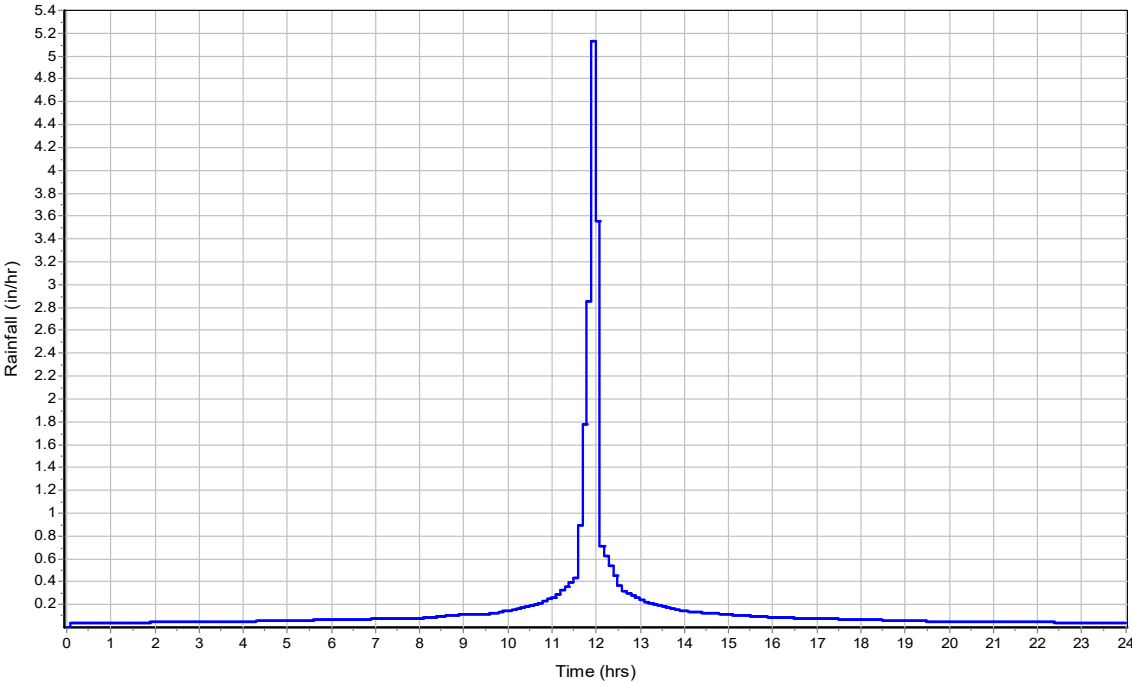
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

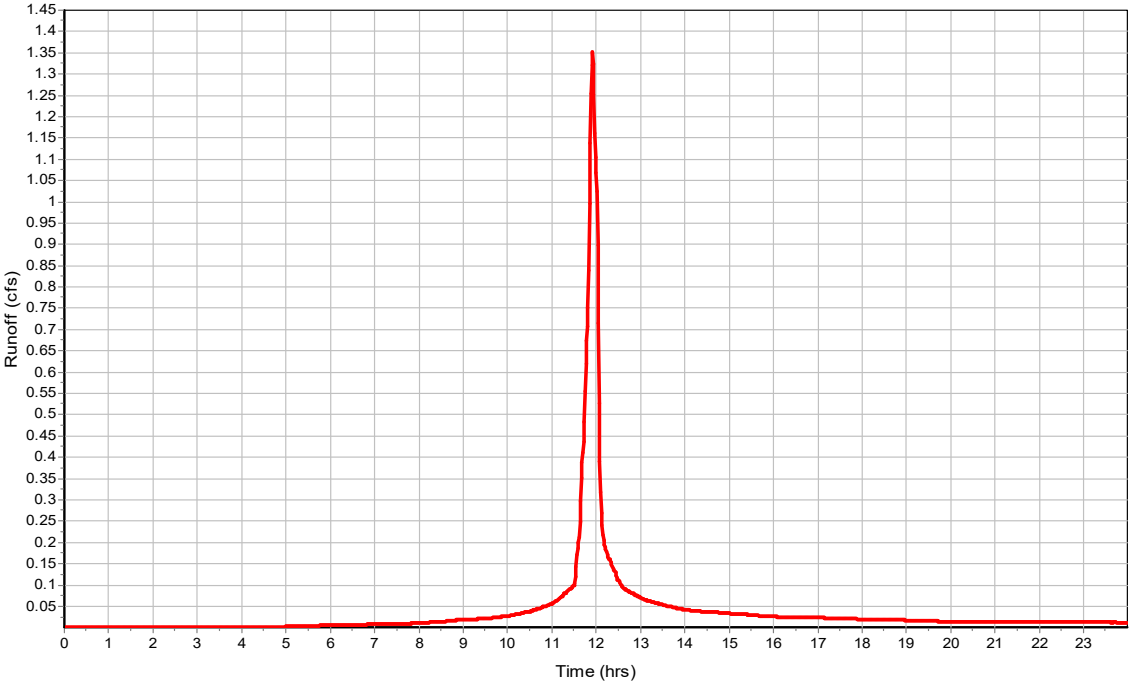
Total Rainfall (in) ..... 3.74  
 Total Runoff (in) ..... 2.9  
 Peak Runoff (cfs) ..... 1.35  
 Weighted Curve Number ..... 92.3  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-D22690

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-D22725**

**Input Data**

Area (ac) ..... 0.9  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 79  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.9	-	79
Composite Area & Weighted CN		0.9		79

**Time of Concentration**

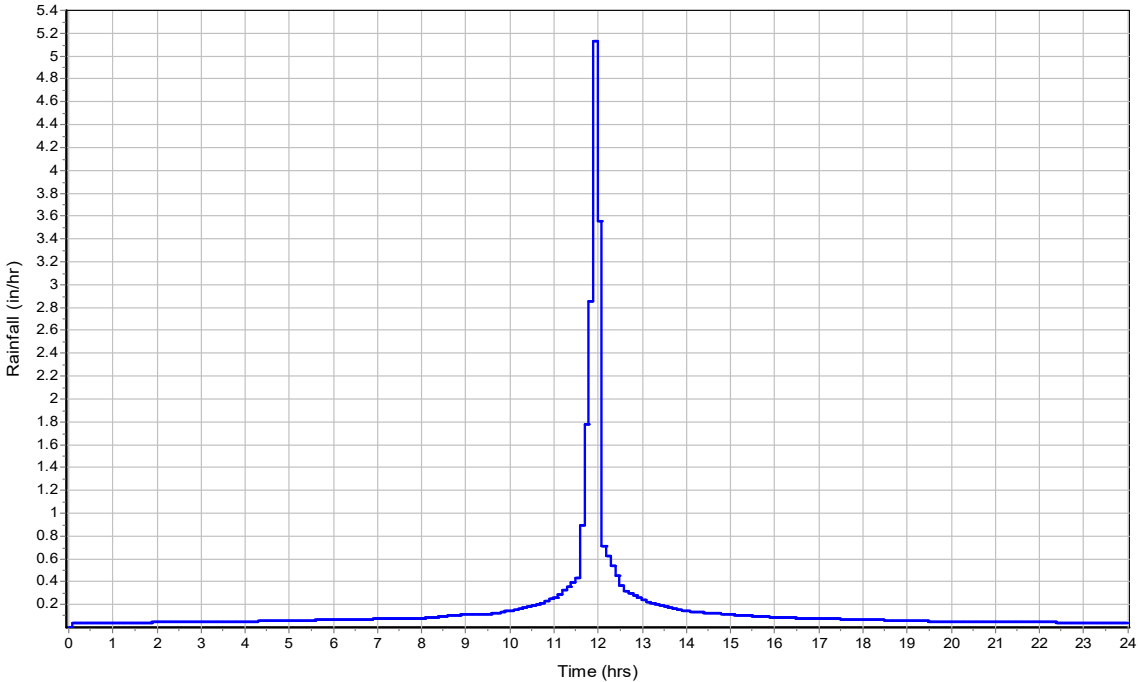
User-Defined TOC override (minutes): 5.00

**Subbasin Runoff Results**

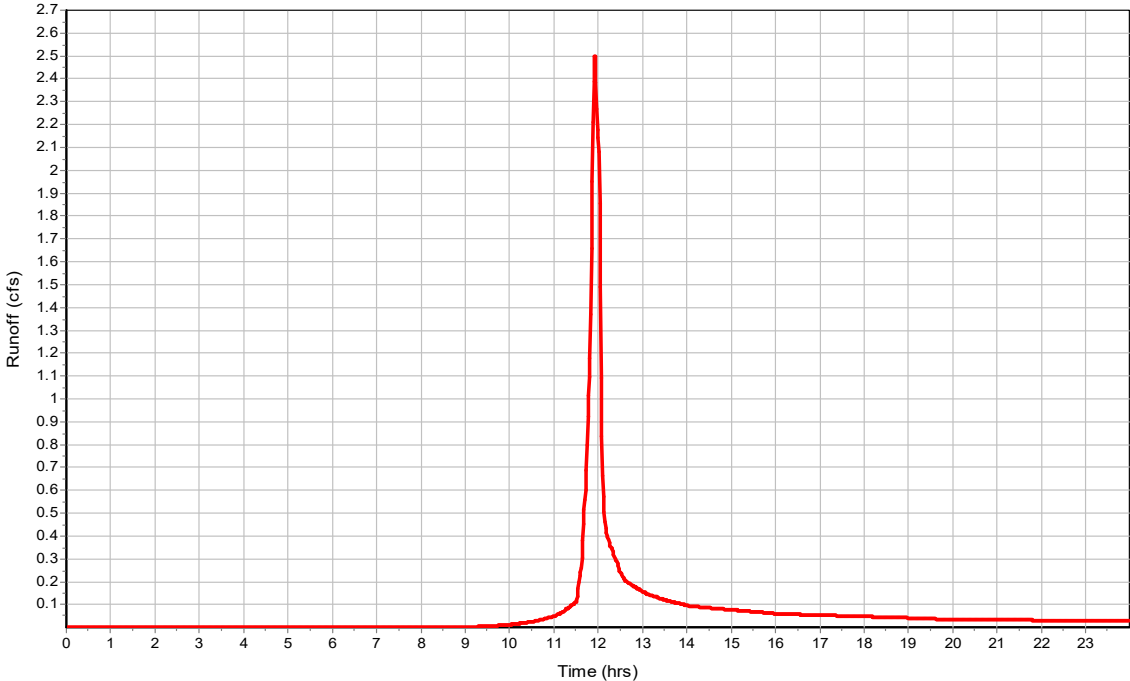
Total Rainfall (in) ..... 3.74  
 Total Runoff (in) ..... 1.76  
 Peak Runoff (cfs) ..... 2.51  
 Weighted Curve Number ..... 79  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-D22725

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : UNDETAINED-01**

**Input Data**

Area (ac) ..... 0.27  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 84  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.27	-	84
Composite Area & Weighted CN		0.27		84

**Time of Concentration**

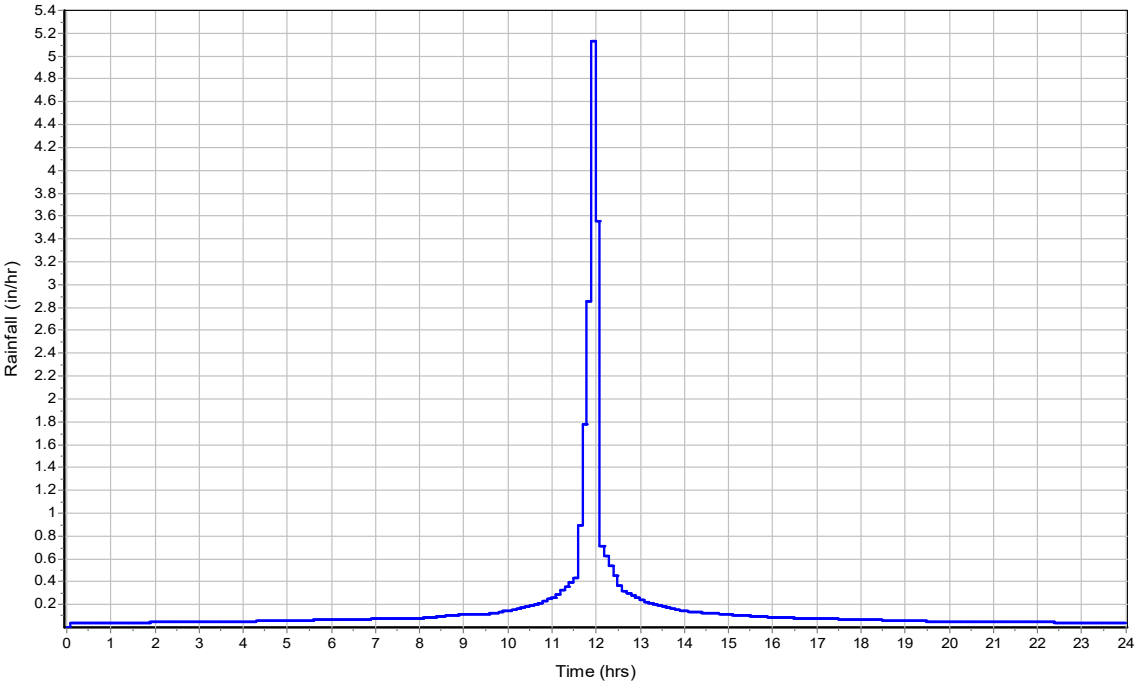
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

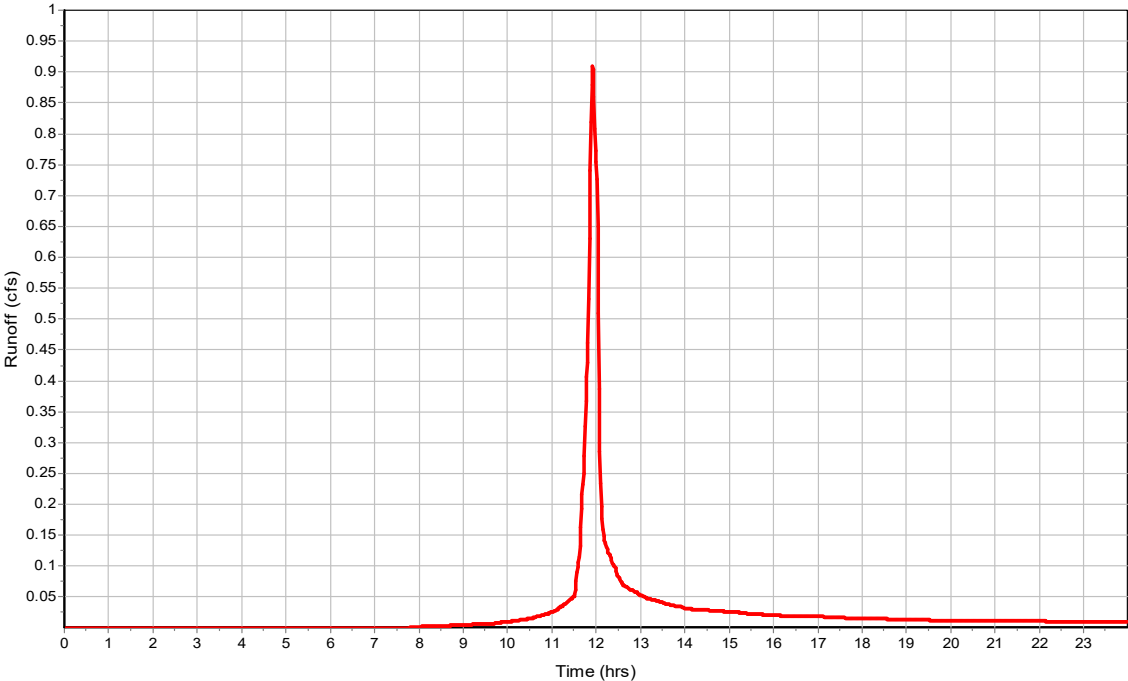
Total Rainfall (in) ..... 3.74  
 Total Runoff (in) ..... 2.14  
 Peak Runoff (cfs) ..... 0.91  
 Weighted Curve Number ..... 84  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : UNDETAINED-01

Rainfall Intensity Graph



Runoff Hydrograph



## Junction Input

SN Element ID	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Ground/Rim (Max) Offset (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)	Surcharge Elevation (ft)	Surcharge Depth (ft)	Ponded Area (ft <sup>2</sup> )	Minimum Pipe Cover (in)
1 1	789.63	800.72	11.09	789.63	0.00	800.72	0.00	10.00	94.68
2 2	789.90	810.97	21.07	789.90	0.00	810.97	0.00	0.00	0.00
3 301	801.75	810.70	8.95	801.75	0.00	810.70	0.00	10.00	93.00
4 302	800.50	814.72	14.22	800.50	0.00	814.72	0.00	10.00	0.00
5 1312	795.14	801.14	6.00	795.14	0.00	801.14	0.00	10.00	57.00
6 1451	796.16	801.58	5.42	796.16	0.00	801.58	0.00	10.00	53.04
7 1453	793.40	803.00	9.60	793.40	0.00	803.00	0.00	10.00	96.24
8 1511	794.03	805.54	11.51	794.03	0.00	805.54	0.00	10.00	123.12
9 1533	798.65	807.61	8.96	798.65	0.00	807.61	0.00	10.00	95.52
10 1570	800.57	809.15	8.58	800.57	0.00	809.15	0.00	10.00	88.80
11 1607	809.64	815.19	5.55	809.64	0.00	815.19	0.00	10.00	54.48
12 13001	783.95	800.74	16.79	783.95	0.00	800.74	0.00	10.00	110.28
13 13002	782.33	798.46	16.13	782.33	0.00	798.46	0.00	10.00	27.72
14 13003	787.40	796.61	9.21	787.40	0.00	796.61	0.00	10.00	98.52
15 13005	781.16	791.08	9.92	781.16	0.00	791.08	0.00	10.00	69.60
16 13006	793.19	802.62	9.43	793.19	0.00	802.62	0.00	10.00	97.56
17 13008	780.03	787.03	7.00	780.03	0.00	787.03	0.00	10.00	44.88
18 13009	782.93	787.81	4.88	782.93	0.00	787.81	0.00	10.00	46.56
19 13016	776.77	780.79	4.02	776.77	0.00	780.79	0.00	10.00	36.24
20 13017	776.14	780.49	4.35	776.14	0.00	780.49	0.00	10.00	34.20
21 13018	776.48	780.24	3.76	776.48	0.00	780.24	0.00	10.00	33.12
22 13019	776.36	779.72	3.36	776.36	0.00	779.72	0.00	10.00	22.32
23 D22686	797.40	807.27	9.87	797.40	0.00	807.27	0.00	10.00	106.44
24 D22690	815.71	820.04	4.33	815.71	0.00	820.04	0.00	10.00	39.96
25 D22725	776.89	781.00	4.11	776.89	0.00	781.00	0.00	10.00	34.32
26 HDS-101	801.90	814.15	12.25	801.90	0.00	814.15	0.00	10.00	0.00
27 HDS-201	802.79	815.53	12.74	802.79	0.00	815.53	0.00	10.00	127.68

**Junction Results**

SN Element ID	Peak Inflow	Peak Lateral Inflow	Max HGL Elevation Attained	Max HGL Depth Attained	Max Surcharge Depth Attained	Min Freeboard Attained	Average HGL Elevation Attained	Average HGL Depth Attained	Time of Max HGL Occurrence	Time of Peak Flooding Occurrence	Total Flooded Volume	Total Time Flooded
	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(days hh:mm)	(days hh:mm)	(ac-in)	(min)
1 1	23.99	0.00	791.26	1.63	0.00	9.46	789.98	0.35	0 12:09	0 00:00	0.00	0.00
2 2	23.99	0.00	791.73	1.83	0.00	19.24	790.27	0.37	0 12:09	0 00:00	0.00	0.00
3 301	0.06	0.00	801.92	0.17	0.00	8.78	801.82	0.07	0 12:54	0 00:00	0.00	0.00
4 302	0.06	0.00	802.62	2.12	0.00	12.10	801.72	1.22	0 12:54	0 00:00	0.00	0.00
5 1312	0.00	0.00	795.14	0.00	0.00	6.00	795.14	0.00	0 00:00	0 00:00	0.00	0.00
6 1451	1.46	1.46	796.44	0.28	0.00	5.14	796.20	0.04	0 11:56	0 00:00	0.00	0.00
7 1453	7.16	0.00	796.71	3.31	0.00	6.29	793.60	0.20	0 11:52	0 00:00	0.00	0.00
8 1511	5.71	0.70	796.82	2.79	0.00	8.72	794.18	0.15	0 11:52	0 00:00	0.00	0.00
9 1533	1.52	1.52	798.88	0.23	0.00	8.73	798.68	0.03	0 11:56	0 00:00	0.00	0.00
10 1570	3.53	1.15	801.08	0.51	0.00	8.07	800.64	0.07	0 11:56	0 00:00	0.00	0.00
11 1607	2.38	1.03	810.00	0.36	0.00	5.19	809.70	0.06	0 11:56	0 00:00	0.00	0.00
12 13001	23.99	0.00	785.38	1.43	0.00	15.36	784.17	0.22	0 12:09	0 00:00	0.00	0.00
13 13002	23.99	0.00	783.69	1.36	0.00	14.77	782.56	0.23	0 12:09	0 00:00	0.00	0.00
14 13003	0.44	0.44	787.60	0.20	0.00	9.01	787.43	0.03	0 11:56	0 00:00	0.00	0.00
15 13005	24.07	0.00	782.48	1.32	0.00	8.60	781.39	0.23	0 12:09	0 00:00	0.00	0.00
16 13006	8.02	0.88	795.26	2.07	0.00	7.36	793.36	0.17	0 11:52	0 00:00	0.00	0.00
17 13008	24.15	0.00	781.62	1.59	0.00	5.41	780.30	0.27	0 12:09	0 00:00	0.00	0.00
18 13009	0.51	0.51	783.16	0.23	0.00	4.65	782.96	0.03	0 11:56	0 00:00	0.00	0.00
19 13016	0.43	0.43	777.05	0.28	0.00	3.74	776.81	0.04	0 11:56	0 00:00	0.00	0.00
20 13017	3.76	0.00	777.00	0.86	0.00	3.49	776.24	0.10	0 11:57	0 00:00	0.00	0.00
21 13018	0.84	0.84	777.25	0.77	0.00	2.99	776.53	0.05	0 11:56	0 00:00	0.00	0.00
22 13019	3.33	0.00	777.24	0.88	0.00	2.48	776.46	0.10	0 11:56	0 00:00	0.00	0.00
23 D22686	5.03	0.00	798.24	0.84	0.00	9.03	797.48	0.08	0 11:56	0 00:00	0.00	0.00
24 D22690	1.35	1.35	815.99	0.28	0.00	4.05	815.75	0.04	0 11:56	0 00:00	0.00	0.00
25 D22725	2.50	2.50	777.61	0.72	0.00	3.39	776.97	0.08	0 11:56	0 00:00	0.00	0.00
26 HDS-101	18.32	13.87	803.57	1.67	0.00	10.58	802.23	0.33	0 12:00	0 00:00	0.00	0.00
27 HDS-201	26.56	26.56	804.74	1.95	0.00	10.79	803.07	0.28	0 11:59	0 00:00	0.00	0.00

Pipe Input

SN Element ID	Length	Inlet	Inlet	Outlet	Outlet	Total Drop	Average Pipe		Pipe Diameter or Height	Pipe Width	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Additional Losses	Initial Flow	Flap Gate	No. of Barrels
		Invert	Invert	Invert	Invert		Slope	Shape									
		Elevation (ft)	Offset (ft)	Elevation (ft)	Offset (ft)		(%)										
1 Link-02	56.93	783.95	0.00	782.75	0.42	1.20	2.1100	CIRCULAR	24.000	24.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
2 Link-03	47.69	795.14	0.00	794.90	12.57	0.24	0.5000	CIRCULAR	15.000	15.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
3 Link-04	108.25	782.33	0.00	781.35	0.19	0.98	0.9100	CIRCULAR	36.000	36.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
4 Link-05	149.97	787.40	0.00	784.28	3.12	3.12	2.0800	CIRCULAR	12.000	12.000	0.0130	0.0000	0.1000	0.0000	0.00	No	1
5 Link-06	36.78	782.93	0.00	782.29	2.26	0.64	1.7400	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
6 Link-07	104.48	781.16	0.00	780.08	0.05	1.08	1.0300	CIRCULAR	36.000	36.000	0.0130	0.0000	0.1000	0.0000	0.00	No	1
7 Link-08	78.09	776.89	0.00	776.61	0.25	0.28	0.3600	CIRCULAR	15.000	15.000	0.0130	0.0000	0.1000	0.0000	0.00	No	1
8 Link-10	7.77	776.48	0.00	776.36	0.00	0.12	1.5400	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
9 Link-11	78.97	776.36	0.00	776.14	0.00	0.22	0.2800	CIRCULAR	18.000	18.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
10 Link-12	12.35	776.77	0.00	776.64	0.50	0.13	1.0500	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
11 Link-13	48.41	776.14	0.00	775.94	4.79	0.20	0.4100	CIRCULAR	18.000	18.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
12 Link-14	82.97	771.22	0.07	766.00	-0.01	5.22	6.2900	Rectangular	48.000	36.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
13 Link-15	56.74	780.03	0.00	779.61	8.46	0.42	0.7400	CIRCULAR	36.000	36.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
14 Link-16	132.76	815.71	0.00	809.64	0.00	6.07	4.5700	CIRCULAR	12.000	12.000	0.0130	0.0000	0.1000	0.0000	0.00	No	1
15 Link-17	148.78	809.65	0.01	800.57	0.00	9.08	6.1000	CIRCULAR	12.000	12.000	0.0130	0.0000	0.1000	0.0000	0.00	No	1
16 Link-18	85.84	800.57	0.00	797.40	0.00	3.17	3.6900	CIRCULAR	12.000	12.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
17 Link-19	9.27	798.65	0.00	797.40	0.00	1.25	13.4800	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
18 Link-20	72.00	797.40	0.00	794.08	0.05	3.32	4.6100	CIRCULAR	12.000	12.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
19 Link-21	55.99	794.03	0.00	793.73	0.33	0.30	0.5400	CIRCULAR	15.000	15.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
20 Link-22	40.69	796.16	0.00	793.81	0.41	2.35	5.7800	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
21 Link-23	77.33	793.40	0.00	793.24	0.05	0.16	0.2100	CIRCULAR	15.000	15.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
22 Link-24	41.11	793.19	0.00	793.00	21.85	0.19	0.4600	CIRCULAR	15.000	15.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
23 Link-37	136.92	802.50	2.00	801.95	0.20	0.55	0.4000	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
24 Link-38	24.56	801.85	0.10	800.75	0.18	1.10	4.4800	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
25 Link-39	10.00	802.00	0.10	801.82	11.82	0.18	1.8000	CIRCULAR	24.000	24.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
26 Link-41	47.26	802.89	0.10	801.95	11.95	0.94	1.9900	CIRCULAR	24.000	24.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
27 Link-42	30.50	790.00	0.10	789.83	0.20	0.17	0.5600	CIRCULAR	36.000	36.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
28 Link-44	214.52	789.73	0.10	788.55	4.60	1.18	0.5500	CIRCULAR	36.000	36.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1

Pipe Results

SN Element ID	Peak Flow (cfs)	Time of Peak Flow Occurrence (days hh:mm)	Design Flow Capacity (cfs)	Peak Flow/Design Flow Ratio	Peak Flow Velocity (ft/sec)	Travel Time (min)	Peak Flow Depth (ft)	Peak Flow Depth/Total Depth Ratio	Total Time Surcharged (min)	Froude Number	Reported Condition
1 Link-02	23.99	0 12:09	32.84	0.73	10.63	0.09	1.35	0.68	0.00		Calculated
2 Link-03	0.00	0 00:00	4.58	0.00	0.00		0.00	0.00	0.00		Calculated
3 Link-04	23.99	0 12:09	63.46	0.38	8.01	0.23	1.32	0.44	0.00		Calculated
4 Link-05	0.43	0 11:56	5.14	0.08	3.98	0.63	0.20	0.20	0.00		Calculated
5 Link-06	0.51	0 11:56	4.70	0.11	3.78	0.16	0.23	0.23	0.00		Calculated
6 Link-07	24.07	0 12:10	67.81	0.35	7.25	0.24	1.43	0.48	0.00		Calculated
7 Link-08	2.50	0 11:56	3.87	0.65	3.70	0.35	0.68	0.54	0.00		Calculated
8 Link-10	0.83	0 11:56	4.43	0.19	1.57	0.08	0.82	0.82	0.00		Calculated
9 Link-11	3.33	0 11:56	5.54	0.60	3.13	0.42	0.87	0.58	0.00		Calculated
10 Link-12	0.43	0 11:56	3.66	0.12	2.77	0.07	0.32	0.32	0.00		Calculated
11 Link-13	3.76	0 11:57	6.75	0.56	3.90	0.21	0.80	0.53	0.00		Calculated
12 Link-14	31.52	0 12:04	310.16	0.10	14.29	0.10	0.74	0.18	0.00		Calculated
13 Link-15	24.15	0 12:10	57.38	0.42	6.99	0.14	1.47	0.49	0.00		Calculated
14 Link-16	1.35	0 11:56	7.62	0.18	6.10	0.36	0.32	0.32	0.00		Calculated
15 Link-17	2.37	0 11:56	8.80	0.27	7.32	0.34	0.43	0.43	0.00		Calculated
16 Link-18	3.52	0 11:56	6.85	0.51	7.45	0.19	0.67	0.67	0.00		Calculated
17 Link-19	1.52	0 11:56	13.08	0.12	4.81	0.03	0.53	0.54	0.00		Calculated
18 Link-20	5.02	0 11:57	7.65	0.66	6.71	0.18	0.92	0.92	0.00		Calculated
19 Link-21	5.71	0 11:56	4.73	1.21	4.65	0.20	1.25	1.00	11.00		SURCHARGED
20 Link-22	1.46	0 11:56	8.56	0.17	4.58	0.15	0.64	0.64	0.00		Calculated
21 Link-23	7.16	0 11:56	2.94	2.44	5.83	0.22	1.25	1.00	11.00		SURCHARGED
22 Link-24	8.02	0 11:56	4.39	1.83	6.68	0.10	1.18	0.95	0.00		> CAPACITY
23 Link-37	0.06	0 12:54	2.26	0.03	1.33	1.72	0.11	0.11	0.00		Calculated
24 Link-38	0.06	0 12:54	7.54	0.01	2.87	0.14	0.18	0.18	0.00		Calculated
25 Link-39	18.32	0 12:00	30.35	0.60	8.15	0.02	1.35	0.67	0.00		Calculated
26 Link-41	26.57	0 11:59	31.90	0.83	9.73	0.08	1.62	0.81	0.00		Calculated
27 Link-42	23.99	0 12:09	49.80	0.48	6.26	0.08	1.60	0.53	0.00		Calculated
28 Link-44	23.99	0 12:09	49.47	0.48	6.77	0.53	1.50	0.50	0.00		Calculated

**Storage Nodes**

**Storage Node : 13011/3**

**Input Data**

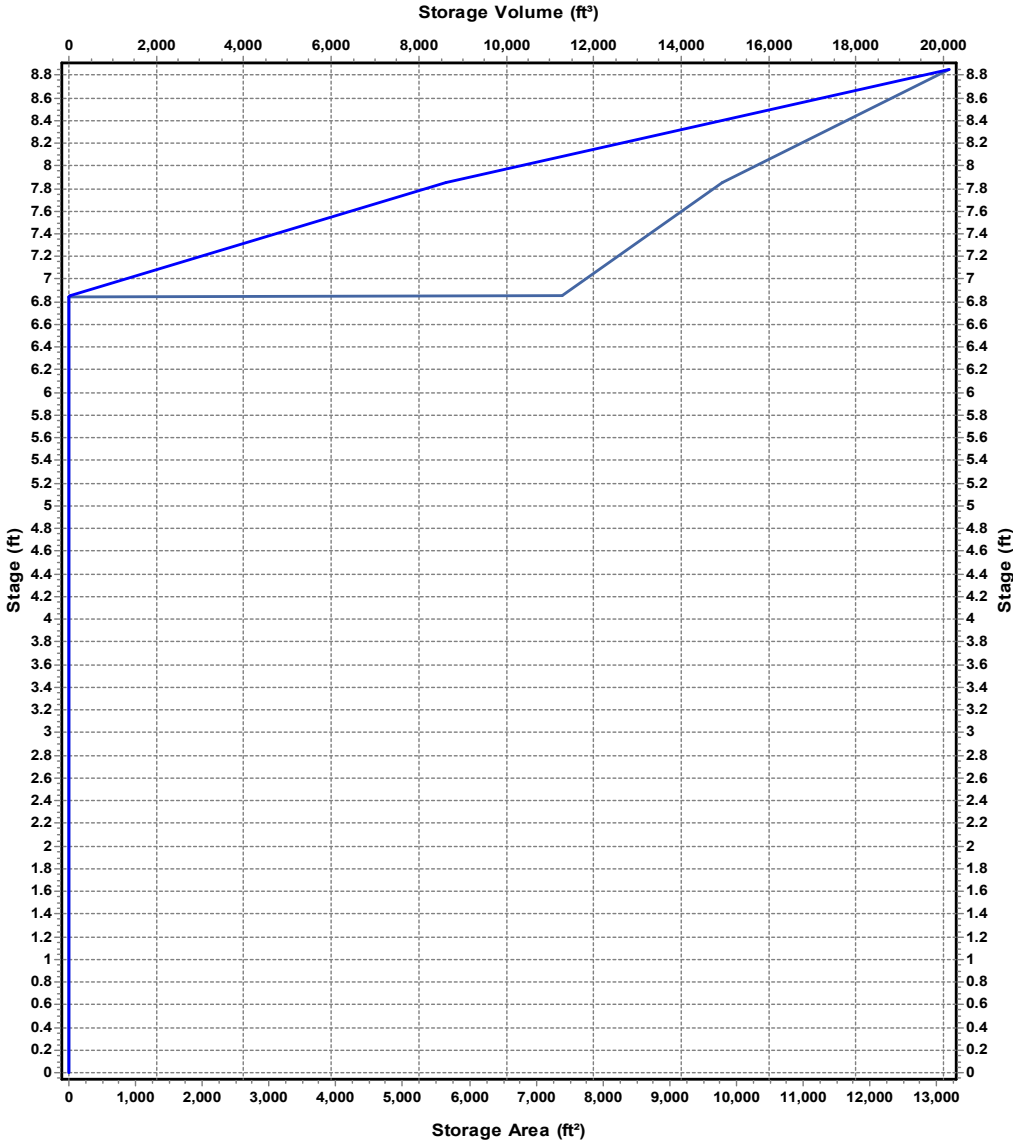
Invert Elevation (ft) .....	771.15
Max (Rim) Elevation (ft) .....	780.00
Max (Rim) Offset (ft) .....	8.85
Initial Water Elevation (ft) .....	771.15
Initial Water Depth (ft) .....	0.00
Ponded Area (ft <sup>2</sup> ) .....	0.00
Evaporation Loss .....	0.00

**Storage Area Volume Curves**

Storage Curve : Existing 02

Stage	Storage Area	Storage Volume
(ft)	(ft <sup>2</sup> )	(ft <sup>3</sup> )
0	0	0
6.84	1	3.42
6.85	7389	40.37
7.85	9796	8632.87
8.85	13187	20124.37

Storage Area Volume Curves



Storage Area Storage Volume

**Storage Node : 13011/3 (continued)**

**Output Summary Results**

Peak Inflow (cfs) .....	31.52
Peak Lateral Inflow (cfs) .....	2.31
Peak Outflow (cfs) .....	31.52
Peak Exfiltration Flow Rate (cfm) .....	0
Max HGL Elevation Attained (ft) .....	772.06
Max HGL Depth Attained (ft) .....	0.91
Average HGL Elevation Attained (ft) .....	771.31
Average HGL Depth Attained (ft) .....	0.16
Time of Max HGL Occurrence (days hh:mm) .....	0 12:04
Total Exfiltration Volume (1000-ft <sup>3</sup> ) .....	0
Total Flooded Volume (ac-in) .....	0
Total Time Flooded (min) .....	0
Total Retention Time (sec) .....	0

**Storage Node : UGD-01**

**Input Data**

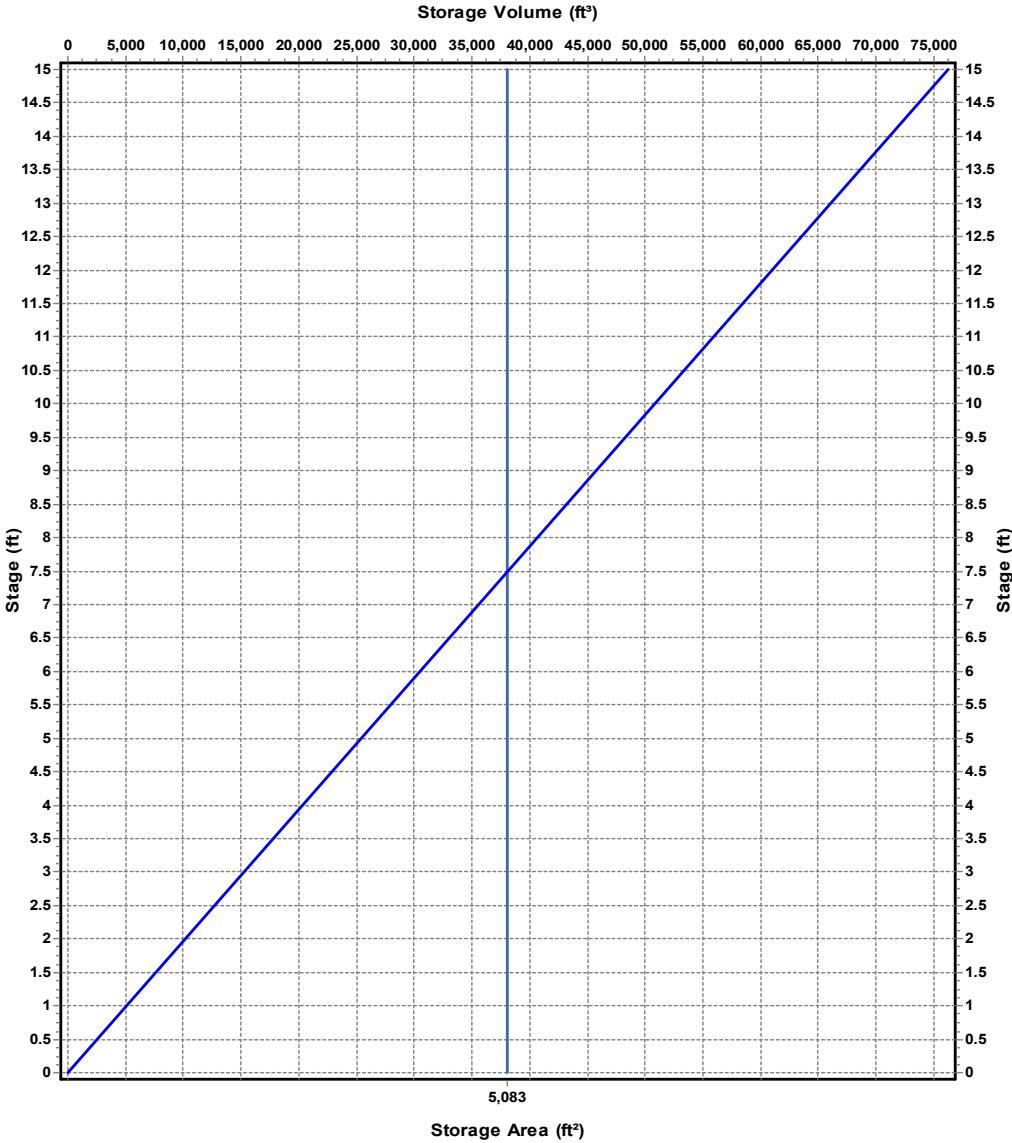
Invert Elevation (ft) .....	790.00
Max (Rim) Elevation (ft) .....	805.00
Max (Rim) Offset (ft) .....	15.00
Initial Water Elevation (ft) .....	790.00
Initial Water Depth (ft) .....	0.00
Ponded Area (ft <sup>2</sup> ) .....	0.00
Evaporation Loss .....	0.00

**Storage Area Volume Curves**

Storage Curve : UGD-01

Stage	Storage Area	Storage Volume
(ft)	(ft <sup>2</sup> )	(ft <sup>3</sup> )
0	5083	0
15	5083	76245

**Storage Area Volume Curves**



— Storage Area — Storage Volume

**Storage Node : UGD-01 (continued)**

**Outflow Weirs**

SN Element ID	Weir Type	Flap Gate	Crest Elevation (ft)	Crest Offset (ft)	Length (ft)	Weir Total Height (ft)	Discharge Coefficient
1 UGD-01-Weir	Rectangular	No	803.75	13.75	6.00	1.25	2.62

**Outflow Orifices**

SN Element ID	Orifice Type	Orifice Shape	Flap Gate	Circular Orifice Diameter (in)	Rectangular Orifice Height (in)	Rectangular Orifice Width (in)	Orifice Invert Elevation (ft)	Orifice Coefficient
1 UGD-01-2ndStage	Side	Rectangular	No		8.00	48.00	797.50	0.60
2 UGD-01-WQ	Side	CIRCULAR	No	3.00			790.00	0.60

**Output Summary Results**

Peak Inflow (cfs) .....	44.88
Peak Lateral Inflow (cfs) .....	0
Peak Outflow (cfs) .....	23.99
Peak Exfiltration Flow Rate (cfm) .....	0
Max HGL Elevation Attained (ft) .....	801.12
Max HGL Depth Attained (ft) .....	11.12
Average HGL Elevation Attained (ft) .....	794.41
Average HGL Depth Attained (ft) .....	4.41
Time of Max HGL Occurrence (days hh:mm) .....	0 12:09
Total Exfiltration Volume (1000-ft <sup>3</sup> ) .....	0
Total Flooded Volume (ac-in) .....	0
Total Time Flooded (min) .....	0
Total Retention Time (sec) .....	0

**Storage Node : UGD-02**

**Input Data**

Invert Elevation (ft) .....	802.50
Max (Rim) Elevation (ft) .....	809.25
Max (Rim) Offset (ft) .....	6.75
Initial Water Elevation (ft) .....	802.50
Initial Water Depth (ft) .....	0.00
Ponded Area (ft <sup>2</sup> ) .....	0.00
Evaporation Loss .....	0.00

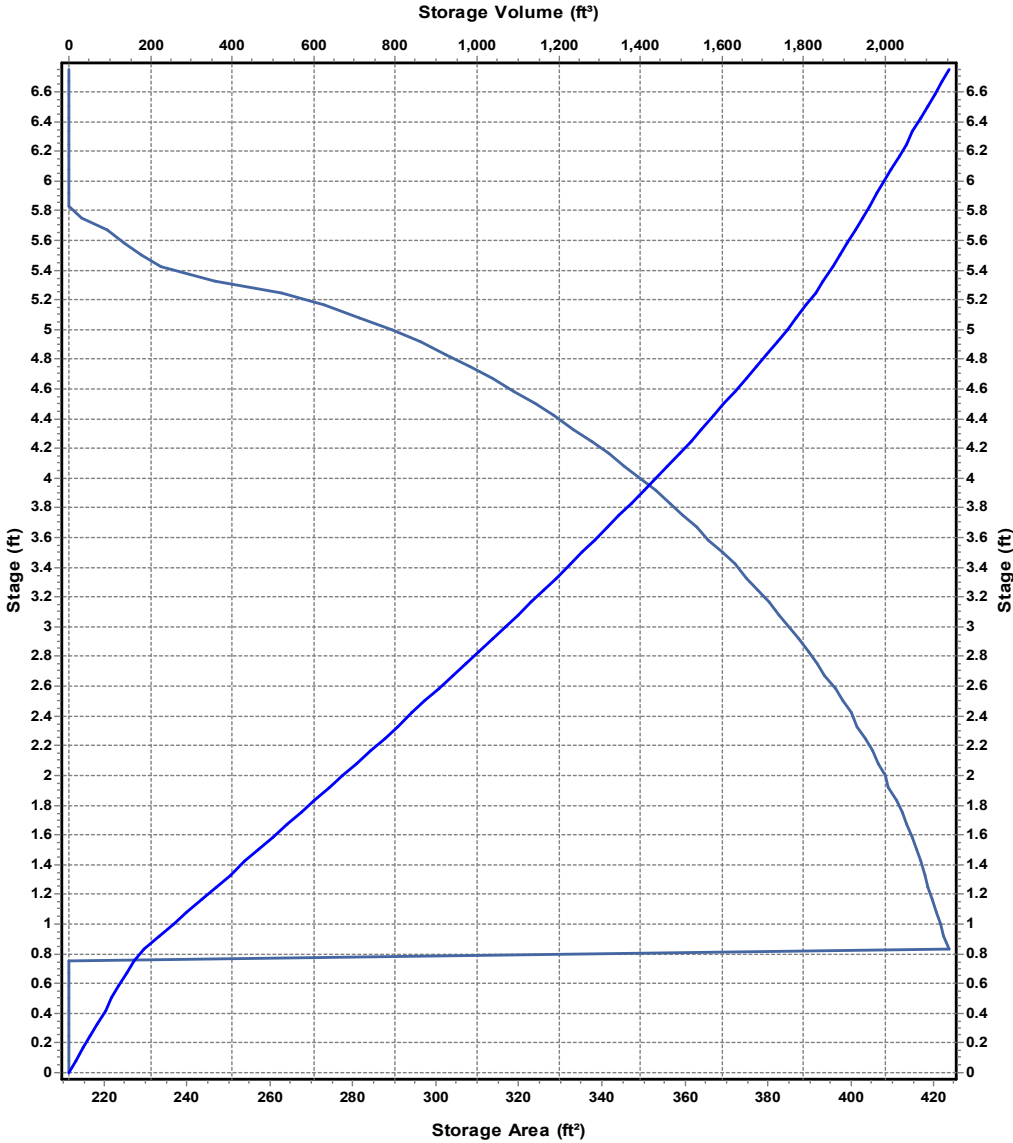
**Storage Area Volume Curves**

Storage Curve : UGD-MC7200

Stage (ft)	Storage Area (ft <sup>2</sup> )	Storage Volume (ft <sup>3</sup> )
0	211.6	0
0.08	211.6	16.93
0.17	211.6	35.97
0.25	211.6	52.9
0.33	211.6	69.83
0.42	211.6	88.87
0.5	211.6	105.8
0.58	211.6	122.73
0.67	211.6	141.77
0.75	211.6	158.7
0.83	423.65	184.11
0.92	422.22	222.17
1	421.48	255.92
1.08	420.65	289.61
1.17	419.44	327.41
1.25	418.56	360.93
1.33	417.93	394.39
1.42	416.93	431.96
1.5	415.88	465.27
1.58	414.76	498.5
1.67	413.55	535.77
1.75	412.31	568.8
1.83	411.06	601.73
1.92	409.06	638.64
2	408.23	671.33
2.08	406.69	703.93
2.17	405.1	740.46
2.25	403.45	772.8
2.33	401.43	805
2.42	399.96	841.06
2.5	398.13	872.98
2.58	396.19	904.75
2.67	393.75	940.3
2.75	391.88	971.73
2.83	389.81	1003
2.92	387.51	1037.98
3	385.18	1068.89
3.08	382.78	1099.61
3.17	380.2	1133.94
3.25	377.55	1164.25
3.33	374.81	1194.34
3.42	371.94	1227.94
3.5	368.99	1257.58
3.58	365.61	1286.96
3.67	362.8	1319.74
3.75	359.58	1348.64
3.83	356.26	1377.27
3.92	352.83	1409.18
4	349.25	1437.26
4.08	345.51	1465.05
4.17	341.57	1495.97
4.25	337.45	1523.13
4.33	333.12	1549.95
4.42	328.51	1579.72
4.5	323.87	1605.82
4.58	318.91	1631.53
4.67	313.71	1660
4.75	308.31	1684.88
4.83	302.46	1709.31
4.92	296.21	1736.25
5	289.37	1759.67

5.08	281.76	1782.52
5.17	273.2	1807.49
5.25	262.78	1828.93
5.33	246.67	1849.31
5.42	233.8	1870.93
5.5	228.93	1889.44
5.58	224.98	1907.6
5.67	220.79	1927.66
5.75	214.54	1945.07
5.83	211.6	1962.12
5.92	211.6	1981.16
6	211.6	1998.09
6.08	211.6	2015.02
6.17	211.6	2034.06
6.25	211.6	2050.99
6.33	211.6	2067.92
6.42	211.6	2086.96
6.5	211.6	2103.89
6.58	211.6	2120.82
6.67	211.6	2139.86
6.75	211.6	2156.79

### Storage Area Volume Curves



Storage Area Storage Volume

**Storage Node : UGD-02 (continued)**

**Outflow Orifices**

SN Element ID	Orifice Type	Orifice Shape	Flap Gate	Circular Orifice Diameter (in)	Rectangular Orifice Height (in)	Rectangular Orifice Width (in)	Orifice Invert Elevation (ft)	Orifice Coefficient
1 UGD-02-MANIFOLD	Side	CIRCULAR	No	12.00			806.22	0.60
2 UGD-02-WQ	Side	CIRCULAR	No	0.50			802.50	0.60

**Output Summary Results**

Peak Inflow (cfs) .....	0.99
Peak Lateral Inflow (cfs) .....	0.99
Peak Outflow (cfs) .....	0.06
Peak Exfiltration Flow Rate (cfm) .....	0
Max HGL Elevation Attained (ft) .....	806.29
Max HGL Depth Attained (ft) .....	3.79
Average HGL Elevation Attained (ft) .....	804.45
Average HGL Depth Attained (ft) .....	1.95
Time of Max HGL Occurrence (days hh:mm) .....	0 12:52
Total Exfiltration Volume (1000-ft <sup>3</sup> ) .....	0
Total Flooded Volume (ac-in) .....	0
Total Time Flooded (min) .....	0
Total Retention Time (sec) .....	0

**Storage Node : UGD-03**

**Input Data**

Invert Elevation (ft) ..... 813.62  
 Max (Rim) Elevation (ft) ..... 821.50  
 Max (Rim) Offset (ft) ..... 7.88  
 Initial Water Elevation (ft) ..... 0.00  
 Initial Water Depth (ft) ..... -813.62  
 Poned Area (ft<sup>2</sup>) ..... 0.00  
 Evaporation Loss ..... 0.00

**Outflow Orifices**

SN Element ID	Orifice Type	Orifice Shape	Flap Gate	Circular Orifice Diameter (in)	Rectangular Orifice Height (in)	Rectangular Orifice Width (in)	Orifice Invert Elevation (ft)	Orifice Coefficient
1 UGD-03-Orifice	Side	CIRCULAR	No	10.00			813.62	0.60

**Output Summary Results**

Peak Inflow (cfs) ..... 16.41  
 Peak Lateral Inflow (cfs) ..... 16.41  
 Peak Outflow (cfs) ..... 5.36  
 Peak Exfiltration Flow Rate (cfm) ..... 0  
 Max HGL Elevation Attained (ft) ..... 818.2  
 Max HGL Depth Attained (ft) ..... 4.58  
 Average HGL Elevation Attained (ft) ..... 814.09  
 Average HGL Depth Attained (ft) ..... 0.47  
 Time of Max HGL Occurrence (days hh:mm) ..... 0 12:10  
 Total Exfiltration Volume (1000-ft<sup>3</sup>) ..... 0  
 Total Flooded Volume (ac-in) ..... 0  
 Total Time Flooded (min) ..... 0  
 Total Retention Time (sec) ..... 0



## Subbasin Summary

SN Subbasin ID	Area (ac)	Peak Rate Factor	Weighted Curve Number	Total	Total	Total	Peak	Time of Concentration (days hh:mm:ss)
				Rainfall (in)	Runoff (in)	Runoff (ac-in)	Runoff (cfs)	
1 FUTURE-01	3.25	484.00	95.00	4.44	3.87	12.56	16.01	0 00:10:00
2 FUTURE-02	5.53	484.00	93.00	4.44	3.65	20.18	26.31	0 00:10:00
3 FUTURE-03	0.78	484.00	95.00	4.44	3.87	3.01	4.39	0 00:05:00
4 POST-01	3.47	484.00	94.00	4.44	3.76	13.03	16.82	0 00:10:00
5 POST-02	1.34	484.00	91.00	4.44	3.44	4.61	6.12	0 00:10:00
6 POST-03	0.28	484.00	85.00	4.44	2.85	0.80	1.27	0 00:05:00
7 SUB-13003	0.09	484.00	97.81	4.44	4.18	0.38	0.52	0 00:05:00
8 SUB-13006	0.21	484.00	90.17	4.44	3.35	0.70	1.08	0 00:05:00
9 SUB-13009	0.11	484.00	95.27	4.44	3.89	0.43	0.61	0 00:05:00
10 SUB-13011/3	1.18	484.00	74.32	4.44	1.95	2.30	3.18	0 00:10:00
11 SUB-13016	0.09	484.00	97.34	4.44	4.12	0.37	0.52	0 00:05:00
12 SUB-13018	0.22	484.00	87.75	4.44	3.11	0.69	1.05	0 00:05:00
13 SUB-1451	0.37	484.00	88.41	4.44	3.18	1.18	1.83	0 00:05:00
14 SUB-1511	0.16	484.00	92.08	4.44	3.55	0.57	0.86	0 00:05:00
15 SUB-1533	0.15	484.00	89.88	4.44	3.32	0.50	0.75	0 00:05:00
16 SUB-1570	0.26	484.00	92.05	4.44	3.55	0.92	1.40	0 00:05:00
17 SUB-1607	0.24	484.00	90.83	4.44	3.42	0.82	1.27	0 00:05:00
18 SUB-D22690	0.31	484.00	92.30	4.44	3.57	1.11	1.65	0 00:05:00
19 SUB-D22725	0.90	484.00	79.00	4.44	2.33	2.09	3.34	0 00:05:00
20 UNDETAINED-01	0.27	484.00	84.00	4.44	2.76	0.75	1.17	0 00:05:00

**Node Summary**

SN	Element ID	Element Type	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Initial Water Elevation (ft)	Surcharge Elevation (ft)	Ponded Area (ft <sup>2</sup> )	Peak Inflow (cfs)	Max HGL Elevation Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)	Time of Peak Flooding Occurrence (days hhmm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
1	1	Junction	789.63	800.72	789.63	800.72	10.00	29.54	791.47	0.00	9.25	0 00:00	0.00	0.00
2	2	Junction	789.90	810.97	789.90	810.97	0.00	29.54	791.98	0.00	18.99	0 00:00	0.00	0.00
3	301	Junction	801.75	810.70	801.75	810.70	10.00	0.40	802.01	0.00	8.69	0 00:00	0.00	0.00
4	302	Junction	800.50	814.72	800.50	814.72	10.00	0.42	802.80	0.00	11.92	0 00:00	0.00	0.00
5	1312	Junction	795.14	801.14	795.14	801.14	10.00	0.00	795.14	0.00	6.00	0 00:00	0.00	0.00
6	1451	Junction	796.16	801.58	796.16	801.58	10.00	1.83	797.58	0.00	4.00	0 00:00	0.00	0.00
7	1453	Junction	793.40	803.00	793.40	803.00	10.00	8.68	797.30	0.00	5.70	0 00:00	0.00	0.00
8	1511	Junction	794.03	805.54	794.03	805.54	10.00	6.88	798.11	0.00	7.43	0 00:00	0.00	0.00
9	1533	Junction	798.65	807.61	798.65	807.61	10.00	1.92	800.44	0.00	7.17	0 00:00	0.00	0.00
10	1570	Junction	800.57	809.15	800.57	809.15	10.00	4.31	801.47	0.00	7.68	0 00:00	0.00	0.00
11	1607	Junction	809.64	815.19	809.64	815.19	10.00	2.91	810.05	0.00	5.14	0 00:00	0.00	0.00
12	13001	Junction	783.95	800.74	783.95	800.74	10.00	29.54	785.67	0.00	15.07	0 00:00	0.00	0.00
13	13002	Junction	782.33	798.46	782.33	798.46	10.00	29.54	783.87	0.00	14.59	0 00:00	0.00	0.00
14	13003	Junction	787.40	796.61	787.40	796.61	10.00	0.52	787.61	0.00	9.00	0 00:00	0.00	0.00
15	13005	Junction	781.16	791.08	781.16	791.08	10.00	29.63	782.66	0.00	8.42	0 00:00	0.00	0.00
16	13006	Junction	793.19	802.62	793.19	802.62	10.00	9.74	795.63	0.00	6.99	0 00:00	0.00	0.00
17	13008	Junction	780.03	787.03	780.03	787.03	10.00	29.74	781.84	0.00	5.19	0 00:00	0.00	0.00
18	13009	Junction	782.93	787.81	782.93	787.81	10.00	0.61	783.19	0.00	4.62	0 00:00	0.00	0.00
19	13016	Junction	776.77	780.79	776.77	780.79	10.00	0.52	777.16	0.00	3.63	0 00:00	0.00	0.00
20	13017	Junction	776.14	780.49	776.14	780.49	10.00	4.86	777.15	0.00	3.34	0 00:00	0.00	0.00
21	13018	Junction	776.48	780.24	776.48	780.24	10.00	1.05	777.43	0.00	2.81	0 00:00	0.00	0.00
22	13019	Junction	776.36	779.72	776.36	779.72	10.00	4.36	777.41	0.00	2.31	0 00:00	0.00	0.00
23	D22686	Junction	797.40	807.27	797.40	807.27	10.00	6.07	800.37	0.00	6.90	0 00:00	0.00	0.00
24	D22690	Junction	815.71	820.04	815.71	820.04	10.00	1.65	816.03	0.00	4.01	0 00:00	0.00	0.00
25	D22725	Junction	776.89	781.00	776.89	781.00	10.00	3.32	777.77	0.00	3.23	0 00:00	0.00	0.00
26	HDS-101	Junction	801.90	814.15	801.90	814.15	10.00	21.76	803.77	0.00	10.38	0 00:00	0.00	0.00
27	HDS-201	Junction	802.79	815.53	802.79	815.53	10.00	32.37	805.98	0.00	9.55	0 00:00	0.00	0.00
28	13021/3	Outfall	766.01					40.84	766.76					
29	13011/3	Storage Node	771.15	780.00	771.15		0.00	40.84	772.27				0.00	0.00
30	UGD-01	Storage Node	790.00	805.00	790.00		0.00	54.11	802.85				0.00	0.00
31	UGD-02	Storage Node	802.50	809.25	802.50		0.00	1.26	806.50				0.00	0.00
32	UGD-03	Storage Node	813.62	821.50	0.00		0.00	19.72	819.27				0.00	0.00

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Diameter or Height (in)	Manning's Roughness	Peak Flow (cfs)	Design Flow Capacity (cfs)	Peak Flow/Design Flow Ratio	Peak Flow Velocity (ft/sec)	Peak Flow Depth (ft)	Peak Flow Depth/Total Depth Ratio	Total Time Surcharged (min)	Reported Condition
1	Link-02	Pipe	13001	13002	56.93	783.95	782.75	2.1100	24.000	0.0130	29.54	32.84	0.90	10.96	1.60	0.80	0.00	Calculated
2	Link-03	Pipe	1312	13002	47.69	795.14	794.90	0.5000	15.000	0.0130	0.00	4.58	0.00	0.00	0.00	0.00	0.00	Calculated
3	Link-04	Pipe	13002	13005	108.25	782.33	781.35	0.9100	36.000	0.0130	29.54	63.46	0.47	8.42	1.49	0.50	0.00	Calculated
4	Link-05	Pipe	13003	13005	149.97	787.40	784.28	2.0800	12.000	0.0130	0.52	5.14	0.10	4.18	0.21	0.21	0.00	Calculated
5	Link-06	Pipe	13009	13008	36.78	782.93	782.29	1.7400	12.000	0.0130	0.61	4.70	0.13	3.97	0.25	0.25	0.00	Calculated
6	Link-07	Pipe	13005	13008	104.48	781.16	780.08	1.0300	36.000	0.0130	29.64	67.81	0.44	7.54	1.63	0.54	0.00	Calculated
7	Link-08	Pipe	D22725	13019	78.09	776.89	776.61	0.3600	15.000	0.0130	3.32	3.87	0.86	3.80	0.84	0.67	0.00	Calculated
8	Link-10	Pipe	13018	13019	7.77	776.48	776.36	1.5400	12.000	0.0130	1.05	4.43	0.24	1.58	0.97	0.97	0.00	Calculated
9	Link-11	Pipe	13019	13017	78.97	776.36	776.14	0.2800	18.000	0.0130	4.35	5.54	0.79	3.36	1.03	0.69	0.00	Calculated
10	Link-12	Pipe	13016	13017	12.35	776.77	776.64	1.0500	12.000	0.0130	0.51	3.66	0.14	2.71	0.45	0.45	0.00	Calculated
11	Link-13	Pipe	13017	13011/3	48.41	776.14	775.94	0.4100	18.000	0.0130	4.86	6.75	0.72	4.22	0.93	0.62	0.00	Calculated
12	Link-14	Pipe	13011/3	13021/3	82.97	771.22	766.00	6.2900	48.000	0.0130	40.84	310.16	0.13	15.12	0.90	0.23	0.00	Calculated
13	Link-15	Pipe	13008	13011/3	56.74	780.03	779.61	0.7400	36.000	0.0130	29.74	57.38	0.52	7.35	1.67	0.56	0.00	Calculated
14	Link-16	Pipe	D22690	1607	132.76	815.71	809.64	4.5700	12.000	0.0130	1.65	7.62	0.22	6.45	0.36	0.36	0.00	Calculated
15	Link-17	Pipe	1607	1570	148.78	809.65	800.57	6.1000	12.000	0.0130	2.91	8.80	0.33	7.49	0.64	0.64	0.00	Calculated
16	Link-18	Pipe	1570	D22686	85.84	800.57	797.40	3.6900	12.000	0.0130	4.27	6.85	0.62	7.38	0.94	0.95	0.00	Calculated
17	Link-19	Pipe	1533	D22686	9.27	798.65	797.40	13.4800	12.000	0.0130	1.92	13.08	0.15	4.84	1.00	1.00	4.00	SURCHARGED
18	Link-20	Pipe	D22686	1511	72.00	797.40	794.08	4.6100	12.000	0.0130	6.07	7.65	0.79	7.72	1.00	1.00	7.00	SURCHARGED
19	Link-21	Pipe	1511	1453	55.99	794.03	793.73	0.5400	15.000	0.0130	6.88	4.73	1.46	5.61	1.25	1.00	14.00	SURCHARGED
20	Link-22	Pipe	1451	1453	40.69	796.16	793.81	5.7800	12.000	0.0130	1.84	8.56	0.22	4.64	1.00	1.00	3.00	SURCHARGED
21	Link-23	Pipe	1453	13006	77.33	793.40	793.24	0.2100	15.000	0.0130	8.68	2.94	2.95	7.07	1.25	1.00	14.00	SURCHARGED
22	Link-24	Pipe	13006	13011/3	41.11	793.19	793.00	0.4600	15.000	0.0130	9.74	4.39	2.22	8.02	1.21	0.97	0.00	> CAPACITY
23	Link-37	Pipe	302	301	136.92	802.50	801.95	0.4000	12.000	0.0130	0.40	2.26	0.18	2.25	0.28	0.28	0.00	Calculated
24	Link-38	Pipe	301	1570	24.56	801.85	800.75	4.4800	12.000	0.0130	0.40	7.54	0.05	4.90	0.37	0.37	0.00	Calculated
25	Link-39	Pipe	HDS-101	UGD-01	10.00	802.00	801.82	1.8000	24.000	0.0130	21.76	30.35	0.72	8.54	1.51	0.76	0.00	Calculated
26	Link-41	Pipe	HDS-201	UGD-01	47.26	802.89	801.95	1.9900	24.000	0.0130	32.39	31.90	1.02	10.66	1.94	0.97	0.00	> CAPACITY
27	Link-42	Pipe	2	1	30.50	790.00	789.83	0.5600	36.000	0.0130	29.54	49.80	0.59	6.57	1.82	0.61	0.00	Calculated
28	Link-44	Pipe	1	13001	214.52	789.73	788.55	0.5500	36.000	0.0130	29.54	49.47	0.60	7.11	1.71	0.57	0.00	Calculated
29	UGD-01 -2ndStage	Orifice	UGD-01	2		790.00	789.90		8.000		28.76							
30	UGD-01-WQ	Orifice	UGD-01	2		790.00	789.90		3.000		0.78							
31	UGD-02-MANIFOLD	Orifice	UGD-02	302		802.50	800.50		12.000		0.40							
32	UGD-02-WQ	Orifice	UGD-02	302		802.50	800.50		0.500		0.01							
33	UGD-03-Orifice	Orifice	UGD-03	HDS-101		813.62	801.90		10.000		6.01							
34	UGD-01-Weir	Weir	UGD-01	2		790.00	789.90				0.00							

**Subbasin Hydrology**

**Subbasin : FUTURE-01**

**Input Data**

Area (ac) ..... 3.25  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 95  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	3.25	-	95
Composite Area & Weighted CN	3.25		95

**Time of Concentration**

TOC Method : SCS TR-55

Sheet Flow Equation :

$$T_c = (0.007 * ((n * L_f)^{0.8})) / ((P^{0.5}) * (S_f^{0.4}))$$

Where :

- T<sub>c</sub> = Time of Concentration (hr)
- n = Manning's roughness
- L<sub>f</sub> = Flow Length (ft)
- P = 2 yr, 24 hr Rainfall (inches)
- S<sub>f</sub> = Slope (ft/ft)

Shallow Concentrated Flow Equation :

- V = 16.1345 \* (S<sub>f</sub><sup>0.5</sup>) (unpaved surface)
- V = 20.3282 \* (S<sub>f</sub><sup>0.5</sup>) (paved surface)
- V = 15.0 \* (S<sub>f</sub><sup>0.5</sup>) (grassed waterway surface)
- V = 10.0 \* (S<sub>f</sub><sup>0.5</sup>) (nearly bare & untilled surface)
- V = 9.0 \* (S<sub>f</sub><sup>0.5</sup>) (cultivated straight rows surface)
- V = 7.0 \* (S<sub>f</sub><sup>0.5</sup>) (short grass pasture surface)
- V = 5.0 \* (S<sub>f</sub><sup>0.5</sup>) (woodland surface)
- V = 2.5 \* (S<sub>f</sub><sup>0.5</sup>) (forest w/heavy litter surface)
- T<sub>c</sub> = (L<sub>f</sub> / V) / (3600 sec/hr)

Where:

- T<sub>c</sub> = Time of Concentration (hr)
- L<sub>f</sub> = Flow Length (ft)
- V = Velocity (ft/sec)
- S<sub>f</sub> = Slope (ft/ft)

Channel Flow Equation :

$$V = (1.49 * (R^{2/3})) * (S_f^{0.5}) / n$$

$$R = A_q / W_p$$

$$T_c = (L_f / V) / (3600 \text{ sec/hr})$$

Where :

- T<sub>c</sub> = Time of Concentration (hr)
- L<sub>f</sub> = Flow Length (ft)
- R = Hydraulic Radius (ft)
- A<sub>q</sub> = Flow Area (ft<sup>2</sup>)
- W<sub>p</sub> = Wetted Perimeter (ft)
- V = Velocity (ft/sec)
- S<sub>f</sub> = Slope (ft/ft)
- n = Manning's roughness

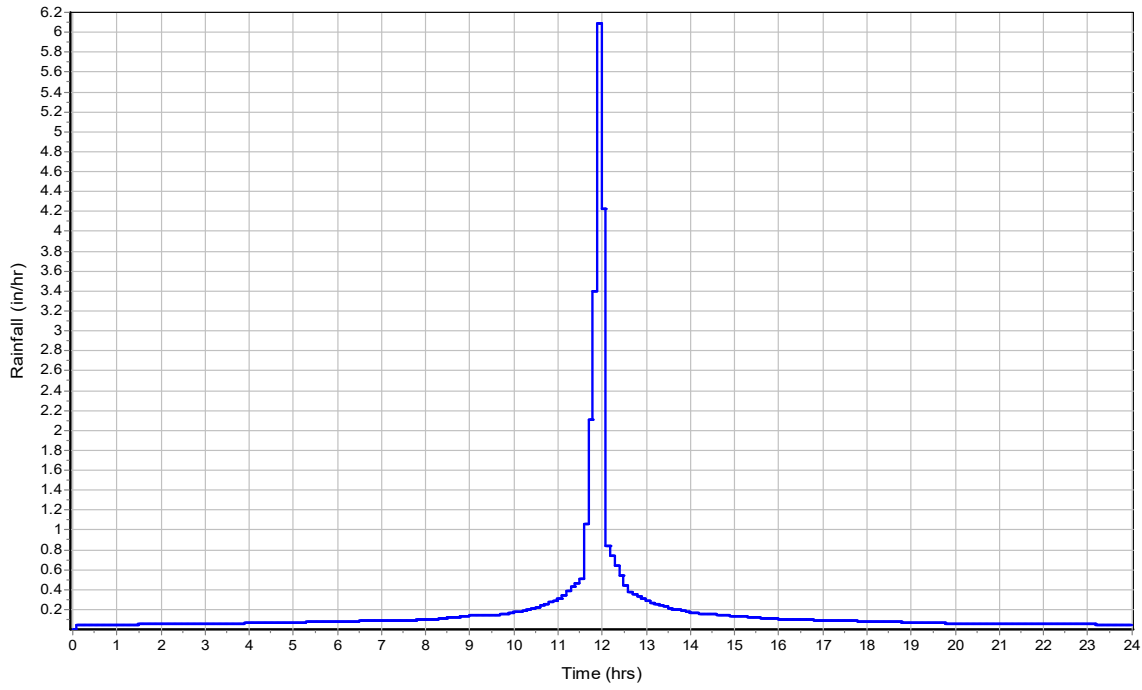
User-Defined TOC override (minutes): 10

**Subbasin Runoff Results**

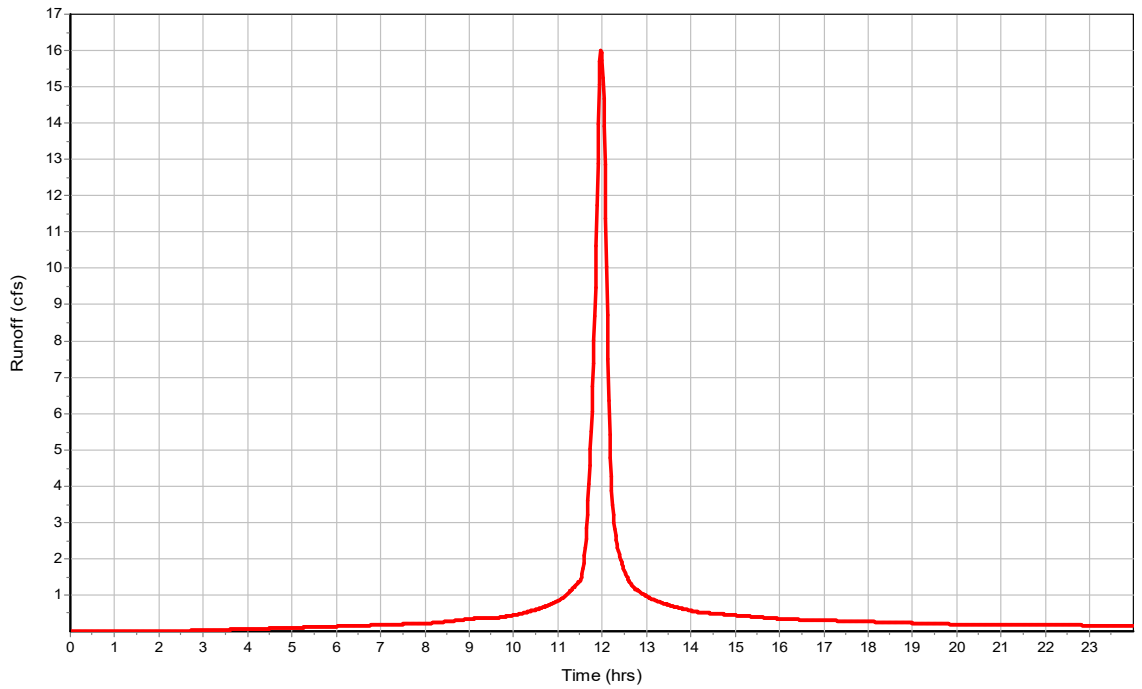
Total Rainfall (in) ..... 4.44  
 Total Runoff (in) ..... 3.87  
 Peak Runoff (cfs) ..... 16.01  
 Weighted Curve Number ..... 95  
 Time of Concentration (days hh:mm:ss) ..... 0 00:10:00

Subbasin : FUTURE-01

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : FUTURE-02**

**Input Data**

Area (ac) ..... 5.53  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 93  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	5.53	-	93
Composite Area & Weighted CN	5.53		93

**Time of Concentration**

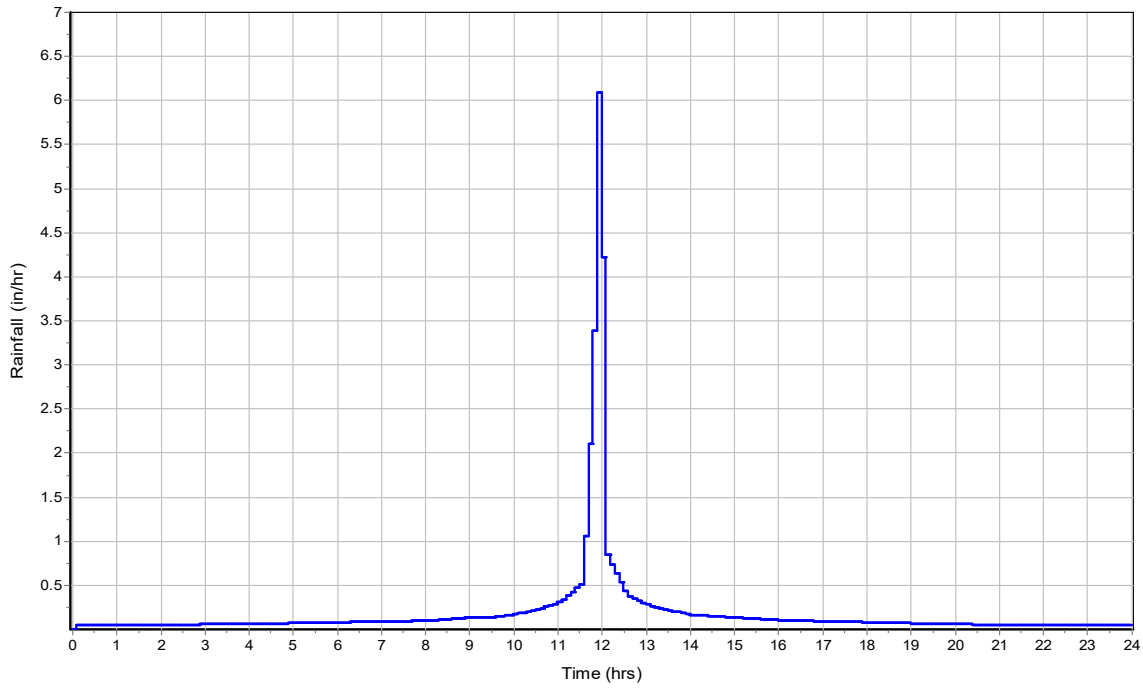
User-Defined TOC override (minutes): 10

**Subbasin Runoff Results**

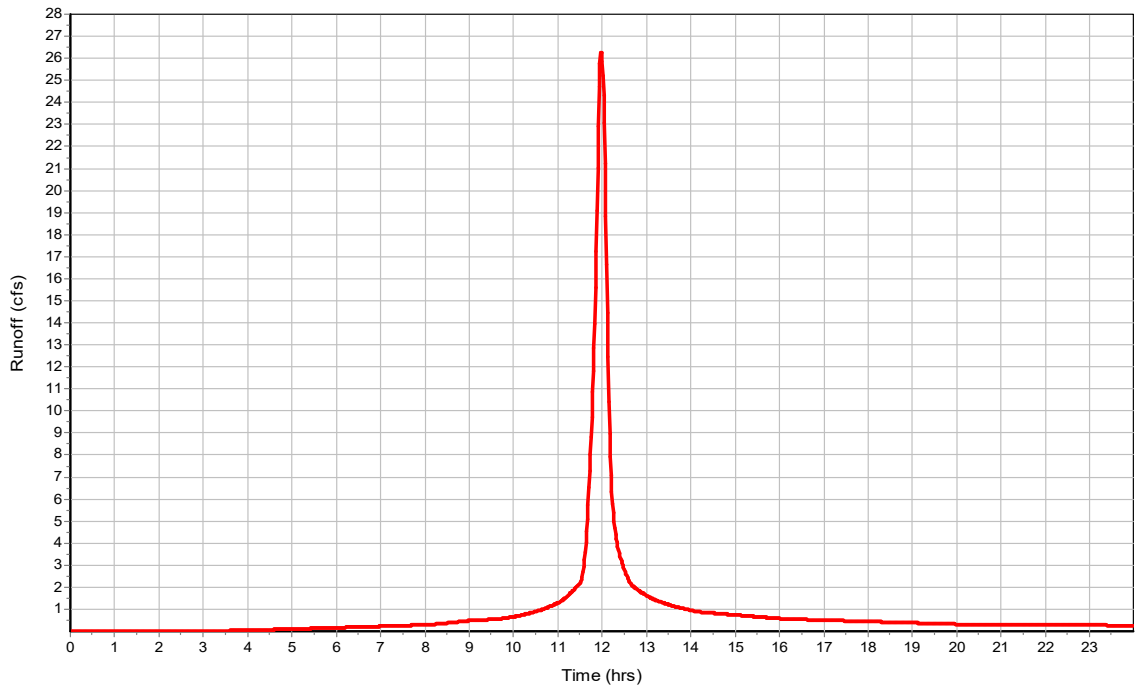
Total Rainfall (in) ..... 4.44  
 Total Runoff (in) ..... 3.65  
 Peak Runoff (cfs) ..... 26.31  
 Weighted Curve Number ..... 93  
 Time of Concentration (days hh:mm:ss) ..... 0 00:10:00

Subbasin : FUTURE-02

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : FUTURE-03**

**Input Data**

Area (ac) ..... 0.78  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 95  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	0.78	-	95
Composite Area & Weighted CN	0.78		95

**Time of Concentration**

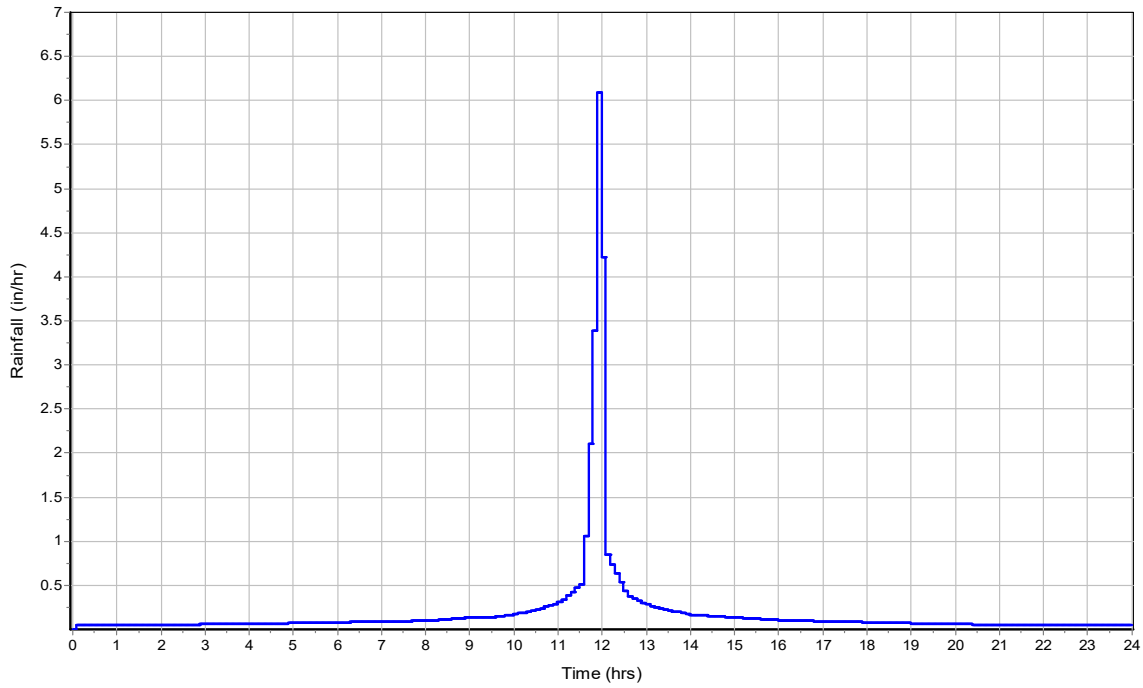
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

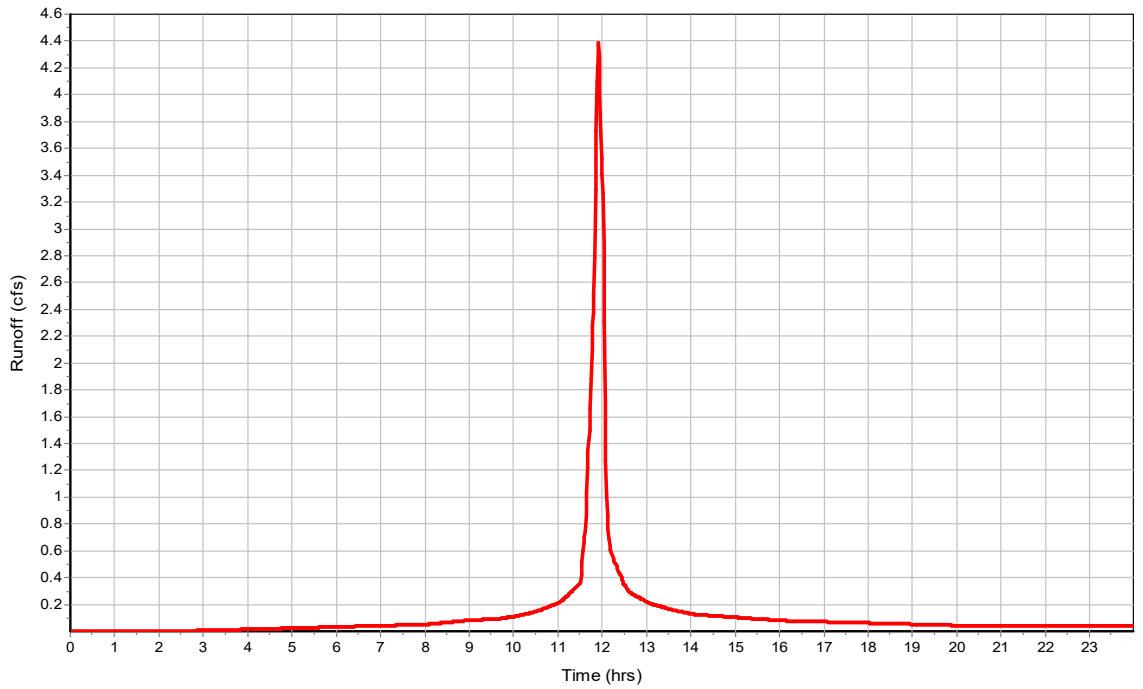
Total Rainfall (in) ..... 4.44  
 Total Runoff (in) ..... 3.87  
 Peak Runoff (cfs) ..... 4.39  
 Weighted Curve Number ..... 95  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : FUTURE-03

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : POST-01**

**Input Data**

Area (ac) ..... 3.47  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 94  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	3.47	-	94
Composite Area & Weighted CN	3.47		94

**Time of Concentration**

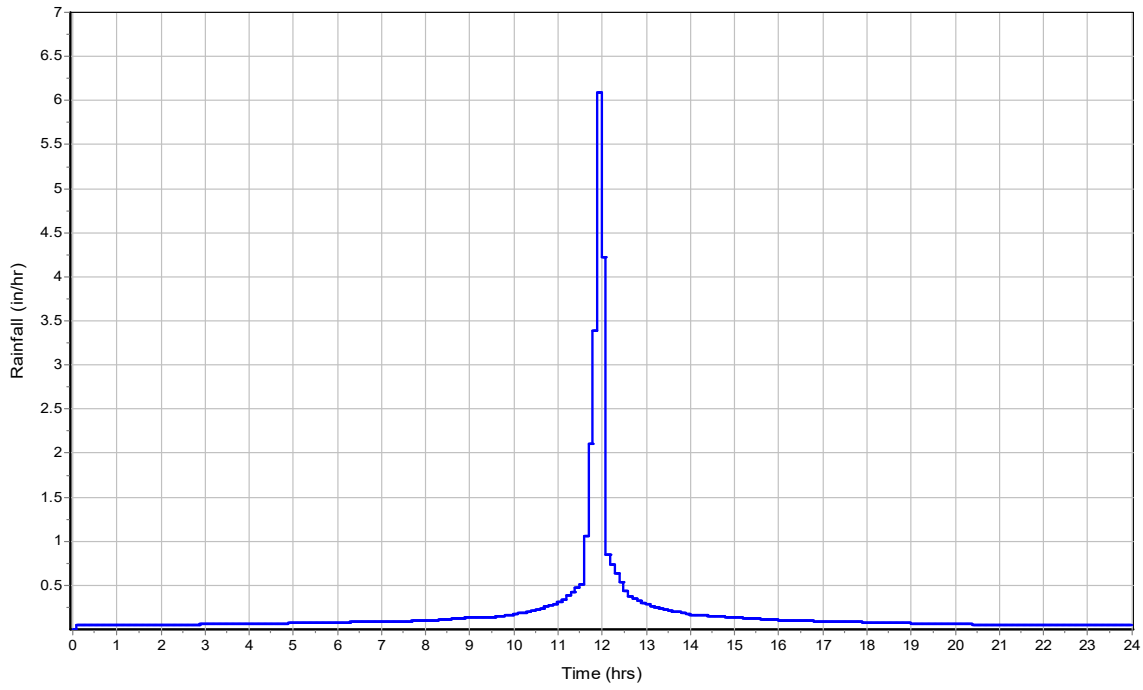
User-Defined TOC override (minutes): 10

**Subbasin Runoff Results**

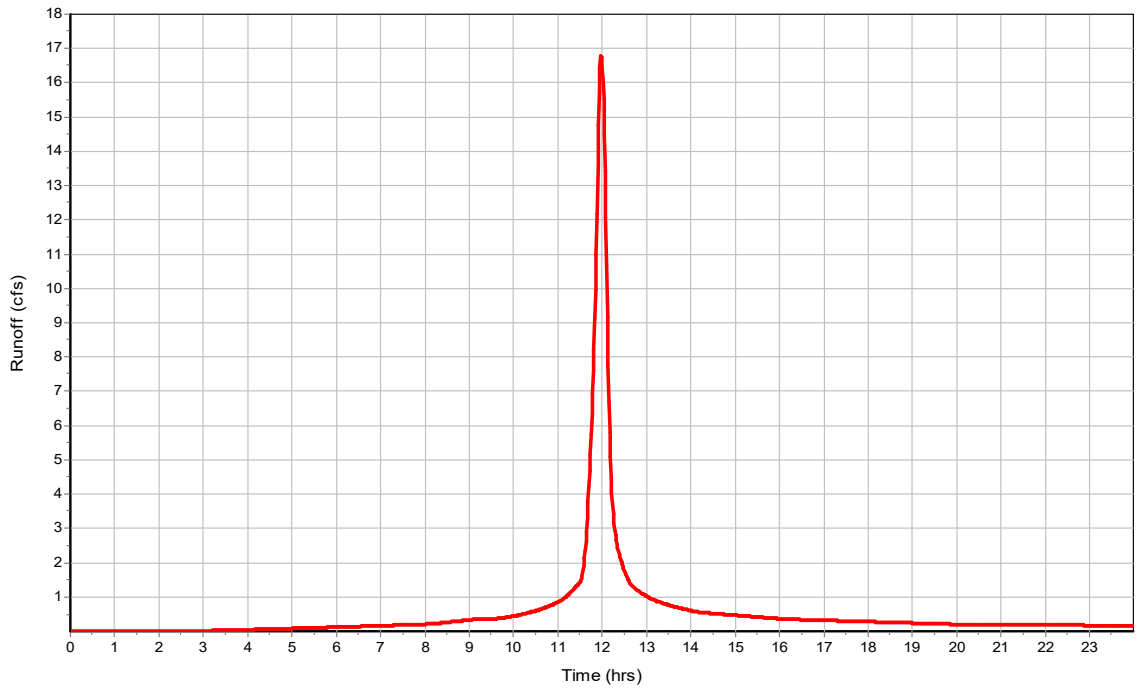
Total Rainfall (in) ..... 4.44  
 Total Runoff (in) ..... 3.76  
 Peak Runoff (cfs) ..... 16.82  
 Weighted Curve Number ..... 94  
 Time of Concentration (days hh:mm:ss) ..... 0 00:10:00

Subbasin : POST-01

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : POST-02**

**Input Data**

Area (ac) ..... 1.34  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 91  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	1.34	-	91
Composite Area & Weighted CN	1.34		91

**Time of Concentration**

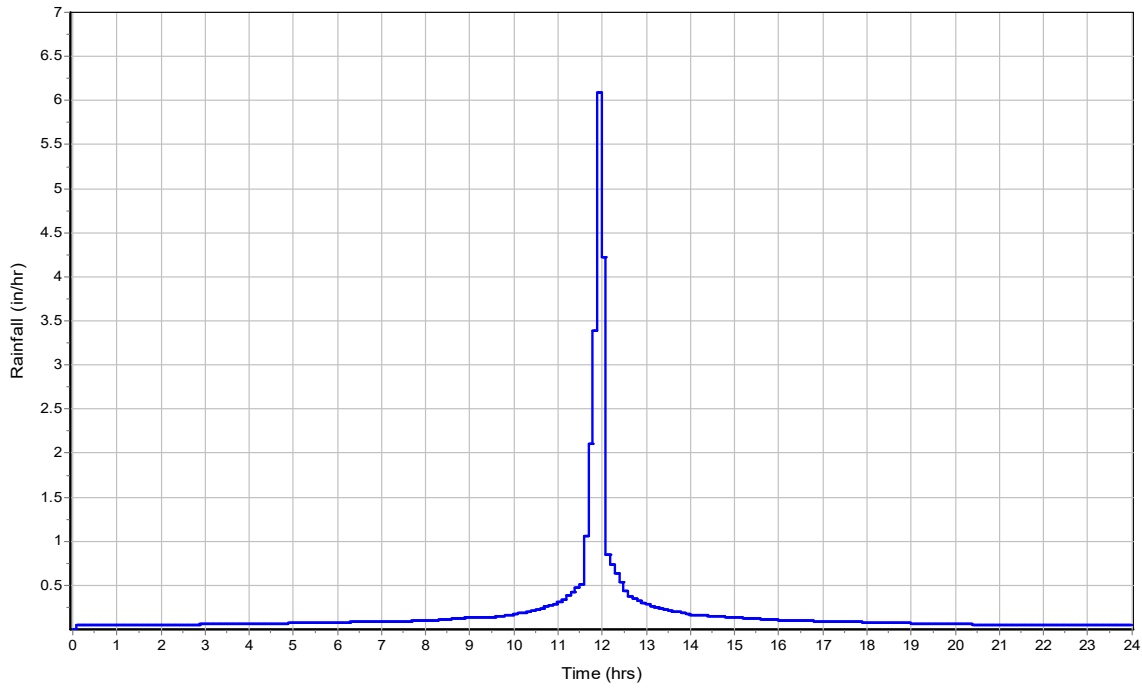
User-Defined TOC override (minutes): 10

**Subbasin Runoff Results**

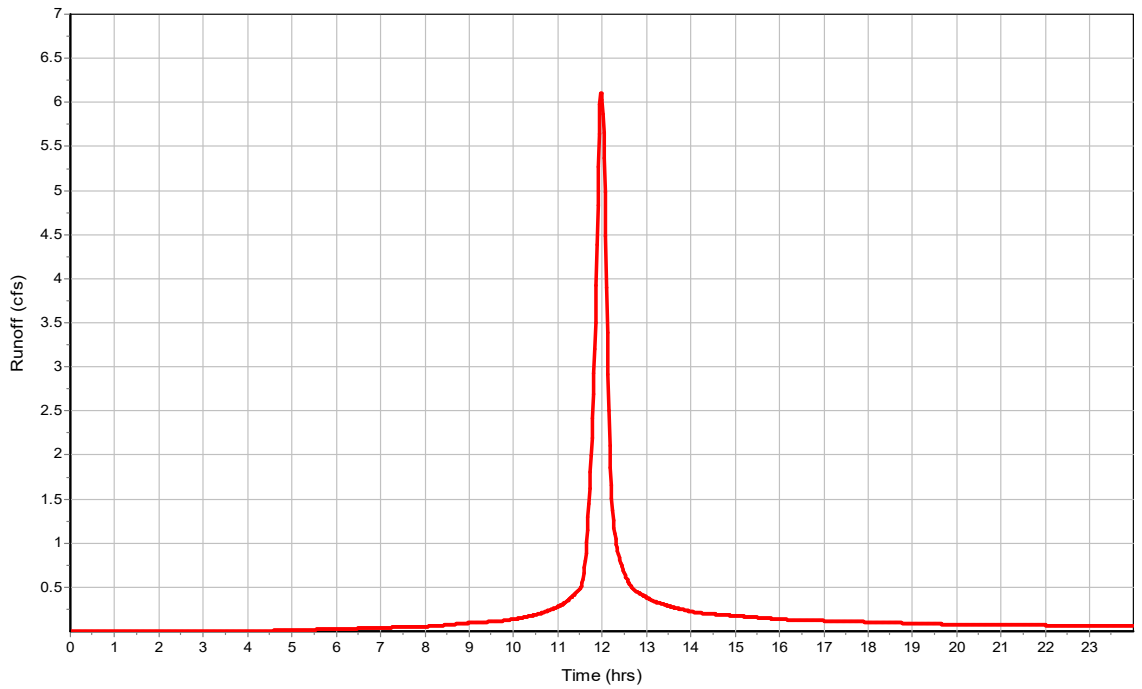
Total Rainfall (in) ..... 4.44  
 Total Runoff (in) ..... 3.44  
 Peak Runoff (cfs) ..... 6.12  
 Weighted Curve Number ..... 91  
 Time of Concentration (days hh:mm:ss) ..... 0 00:10:00

Subbasin : POST-02

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : POST-03**

**Input Data**

Area (ac) ..... 0.28  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 85  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	0.28	-	85
Composite Area & Weighted CN	0.28		85

**Time of Concentration**

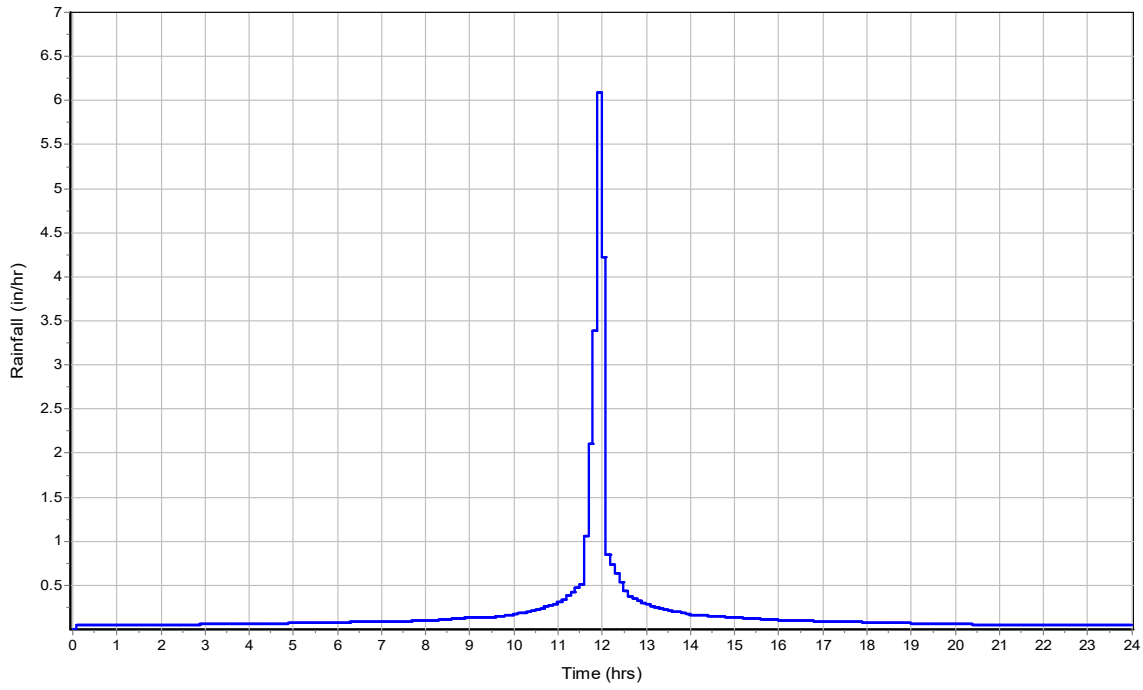
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

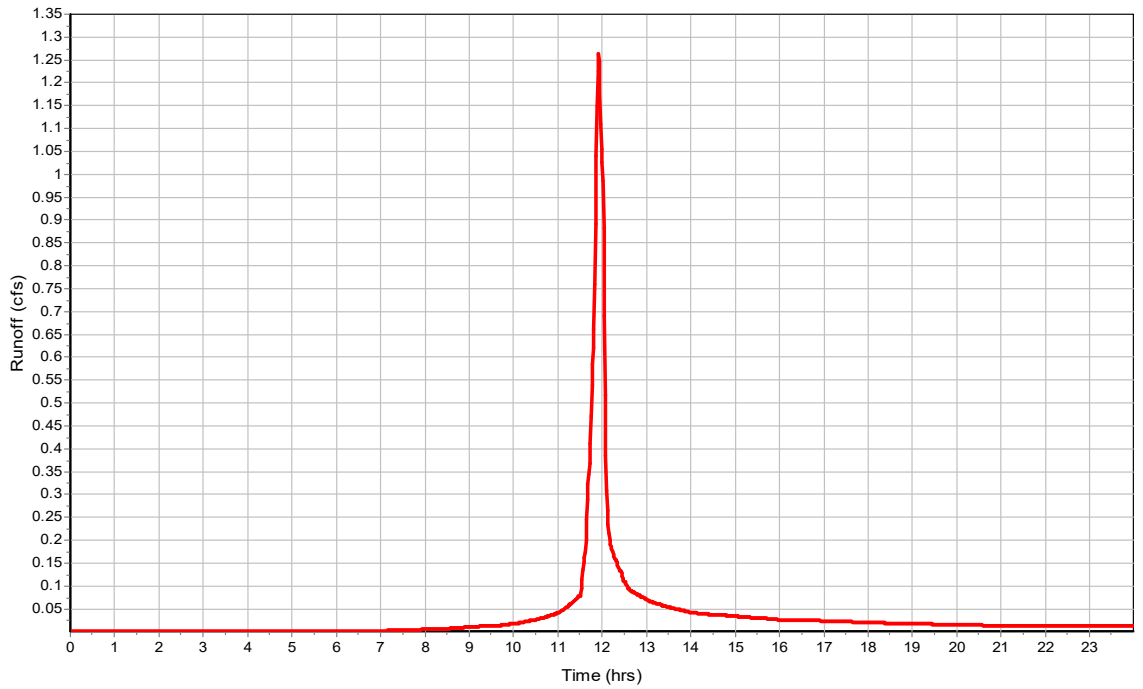
Total Rainfall (in) ..... 4.44  
 Total Runoff (in) ..... 2.85  
 Peak Runoff (cfs) ..... 1.27  
 Weighted Curve Number ..... 85  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : POST-03

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-13003**

**Input Data**

Area (ac) ..... 0.09  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 97.81  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
32	0.09	-	97.81
Composite Area & Weighted CN	0.09		97.81

**Time of Concentration**

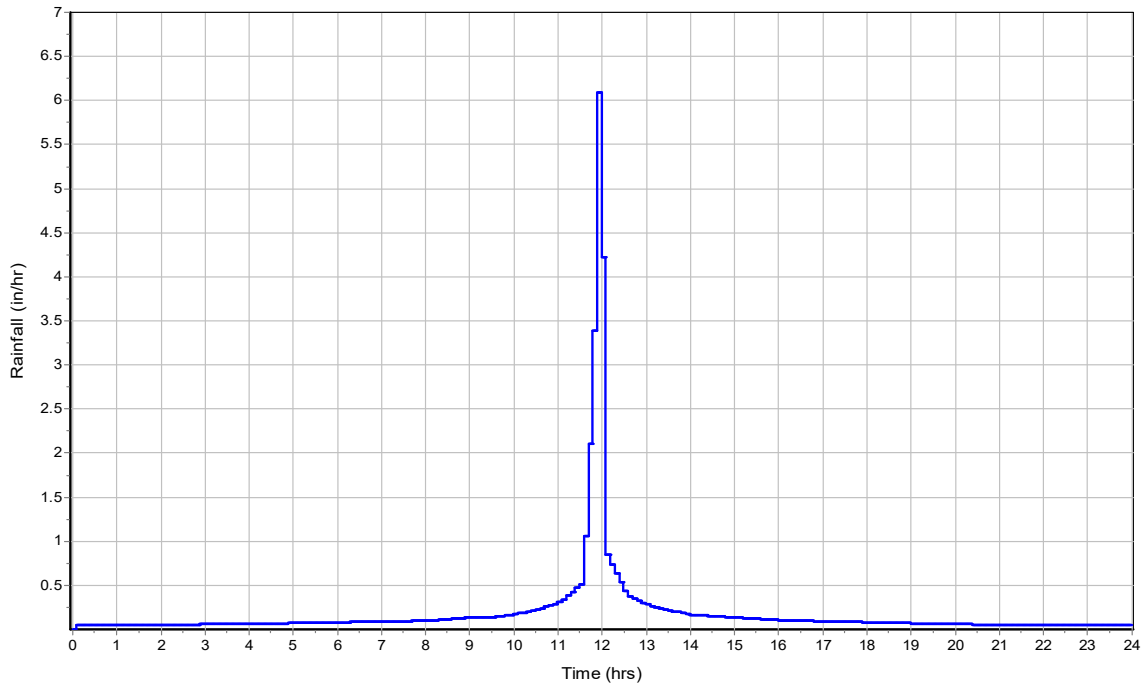
User-Defined TOC override (minutes): 5.00

**Subbasin Runoff Results**

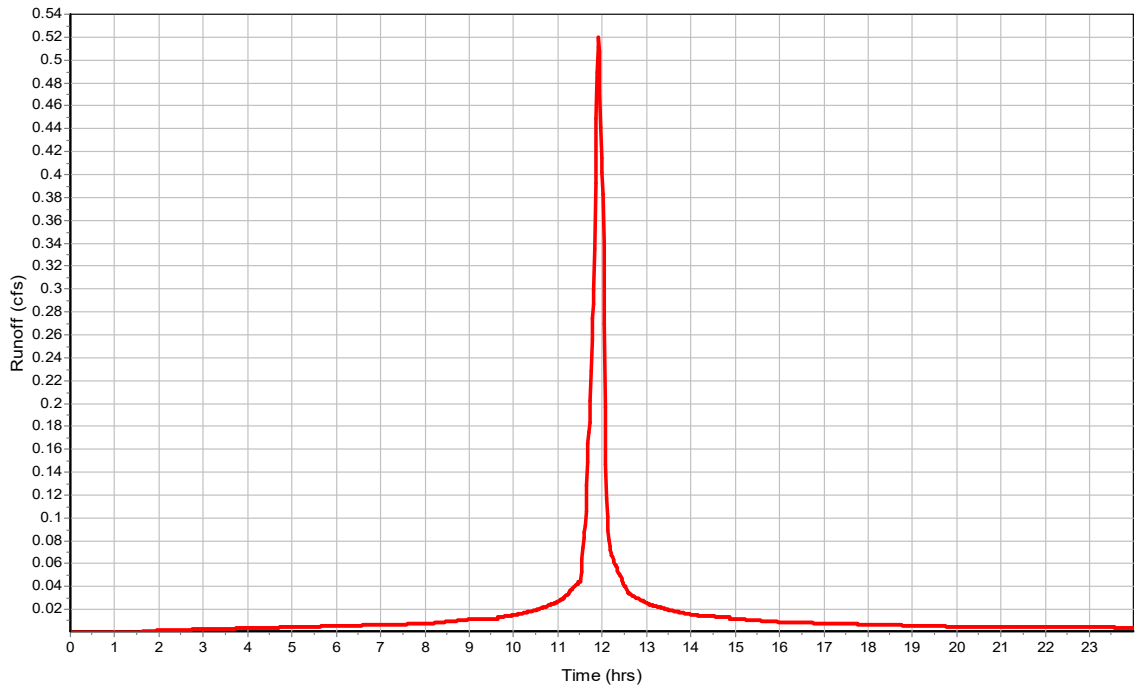
Total Rainfall (in) ..... 4.44  
 Total Runoff (in) ..... 4.18  
 Peak Runoff (cfs) ..... 0.52  
 Weighted Curve Number ..... 97.81  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-13003

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-13006**

**Input Data**

Area (ac) ..... 0.21  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 90.17  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.21	-	90.17
Composite Area & Weighted CN	0.21		90.17

**Time of Concentration**

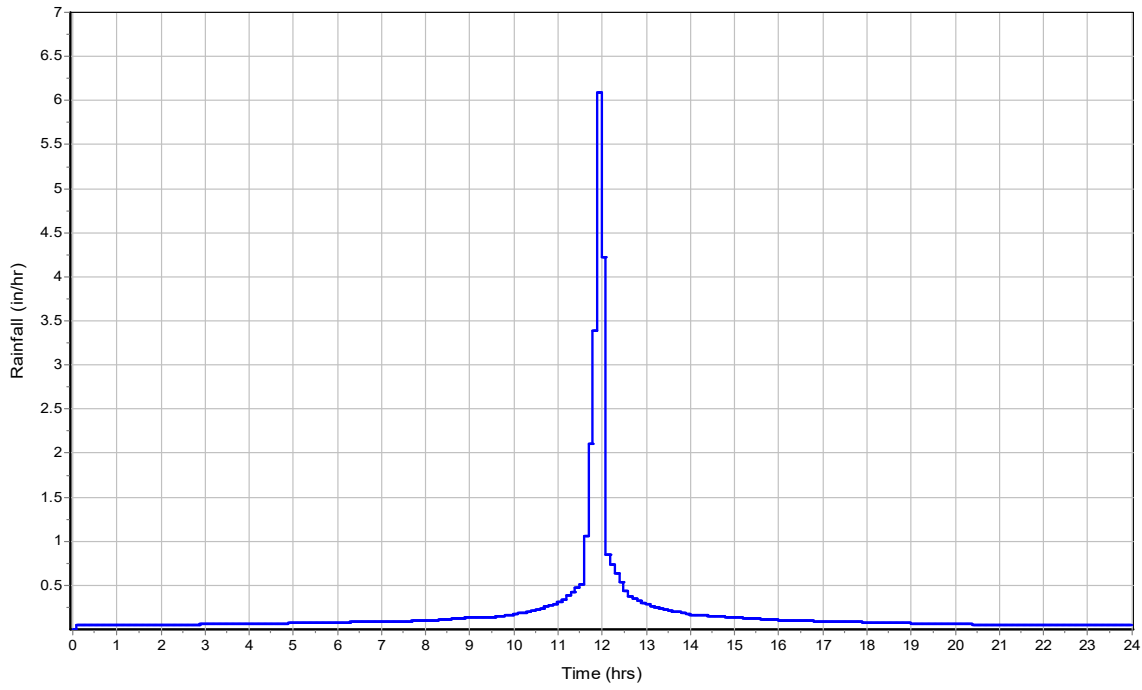
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

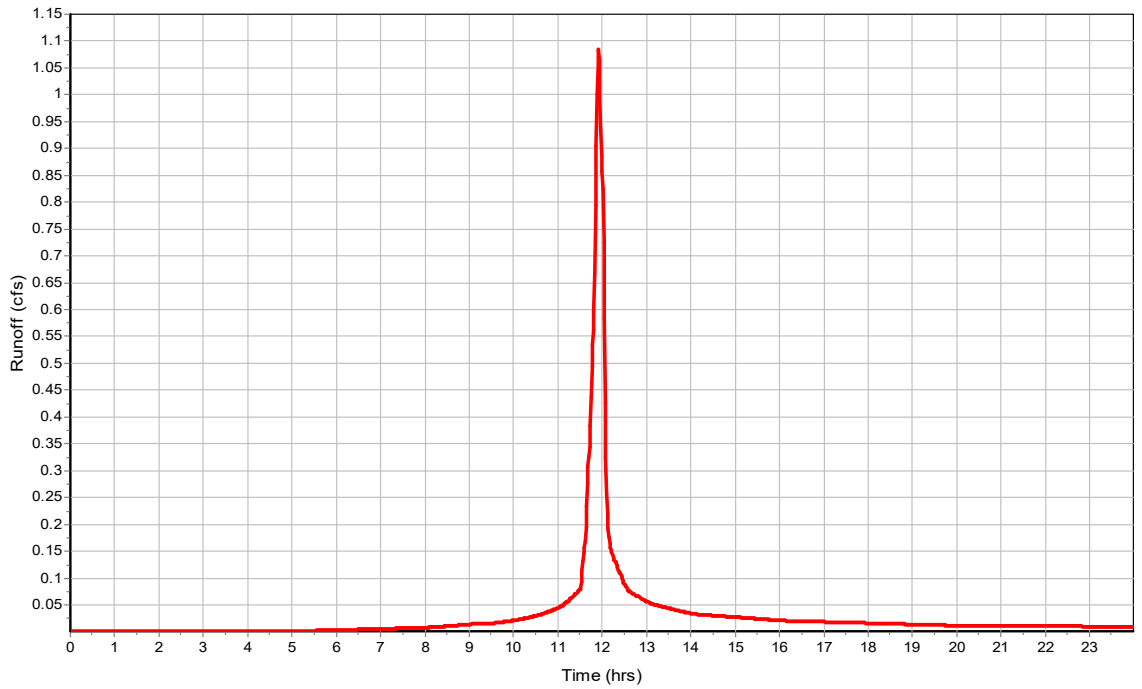
Total Rainfall (in) ..... 4.44  
 Total Runoff (in) ..... 3.35  
 Peak Runoff (cfs) ..... 1.08  
 Weighted Curve Number ..... 90.17  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-13006

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-13009**

**Input Data**

Area (ac) ..... 0.11  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 95.27  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	0.11	-	95.27
Composite Area & Weighted CN	0.11		95.27

**Time of Concentration**

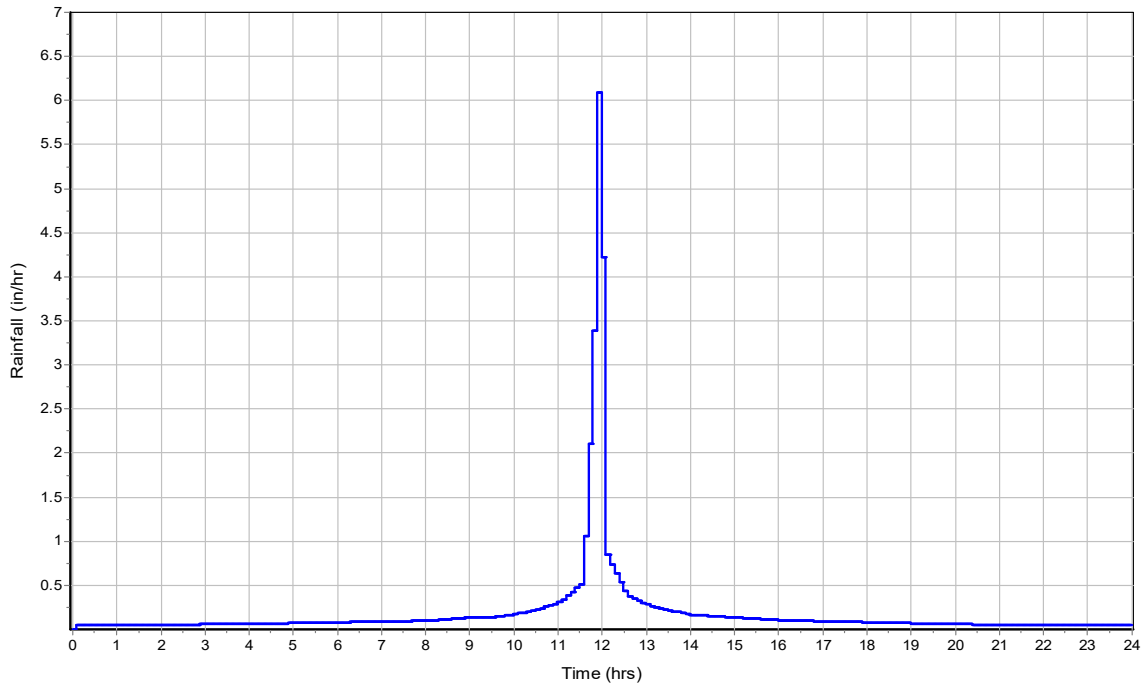
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

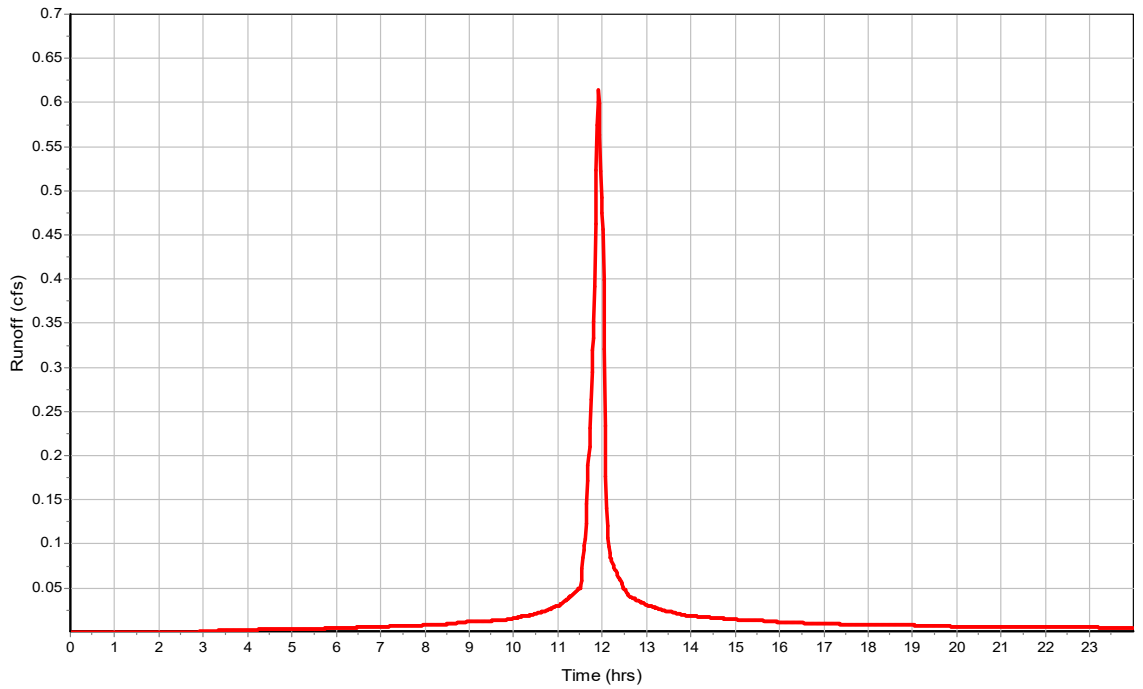
Total Rainfall (in) ..... 4.44  
 Total Runoff (in) ..... 3.89  
 Peak Runoff (cfs) ..... 0.61  
 Weighted Curve Number ..... 95.27  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-13009

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-13011/3**

**Input Data**

Area (ac) ..... 1.18  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 74.32  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	1.18	-	74.32
Composite Area & Weighted CN	1.18		74.32

**Time of Concentration**

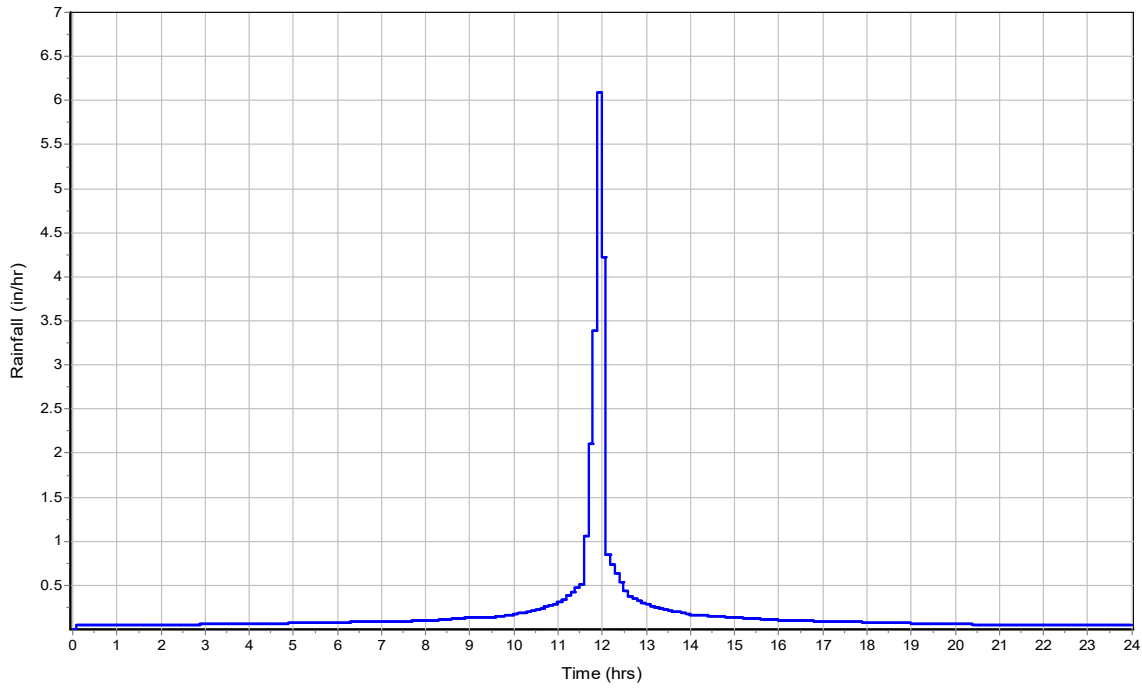
User-Defined TOC override (minutes): 10

**Subbasin Runoff Results**

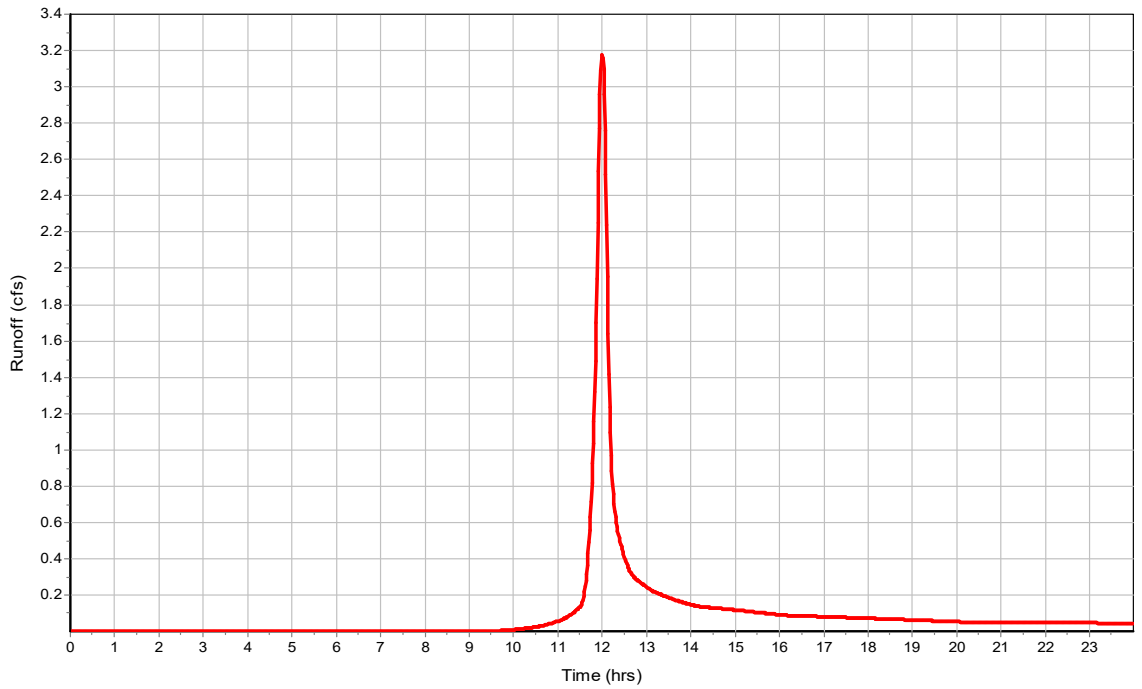
Total Rainfall (in) ..... 4.44  
 Total Runoff (in) ..... 1.95  
 Peak Runoff (cfs) ..... 3.18  
 Weighted Curve Number ..... 74.32  
 Time of Concentration (days hh:mm:ss) ..... 0 00:10:00

Subbasin : SUB-13011/3

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-13016**

**Input Data**

Area (ac) ..... 0.09  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 97.34  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.09	-	97.34
Composite Area & Weighted CN		0.09		97.34

**Time of Concentration**

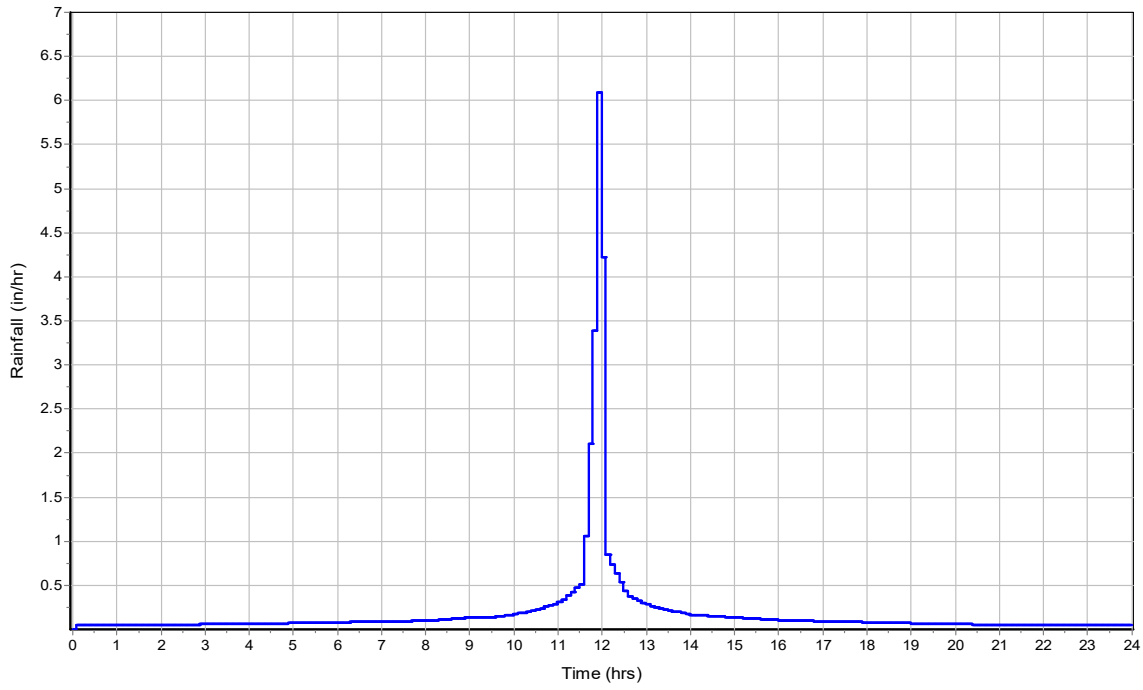
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

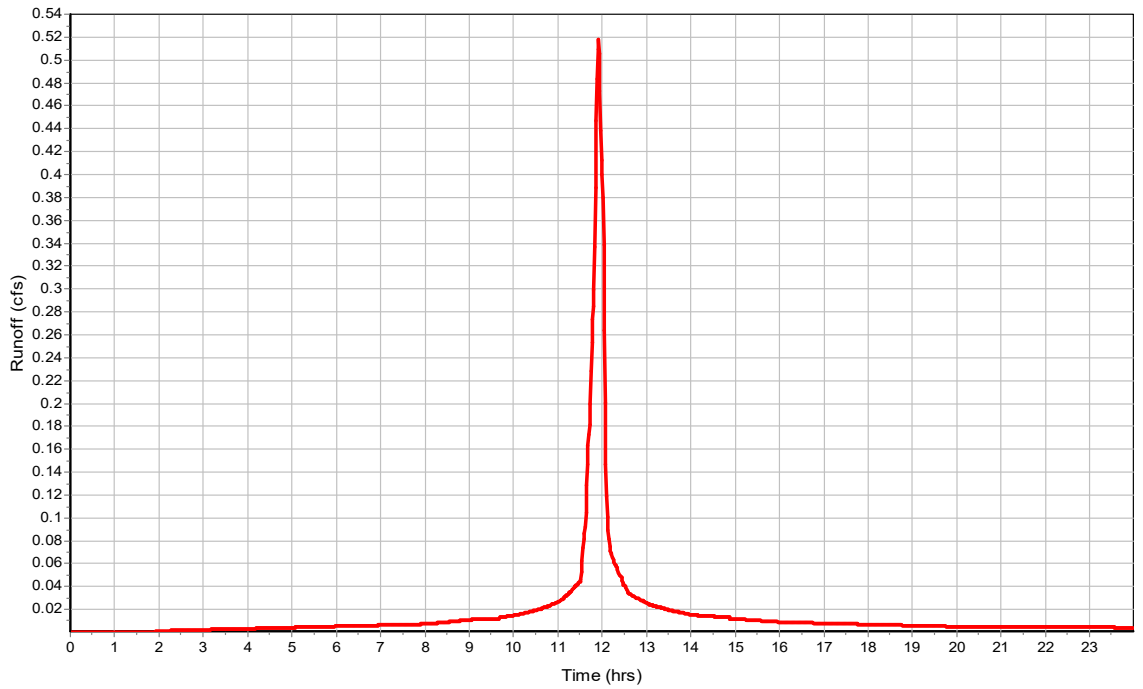
Total Rainfall (in) ..... 4.44  
 Total Runoff (in) ..... 4.12  
 Peak Runoff (cfs) ..... 0.52  
 Weighted Curve Number ..... 97.34  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-13016

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-13018**

**Input Data**

Area (ac) ..... 0.22  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 87.75  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.22	-	87.75
Composite Area & Weighted CN		0.22		87.75

**Time of Concentration**

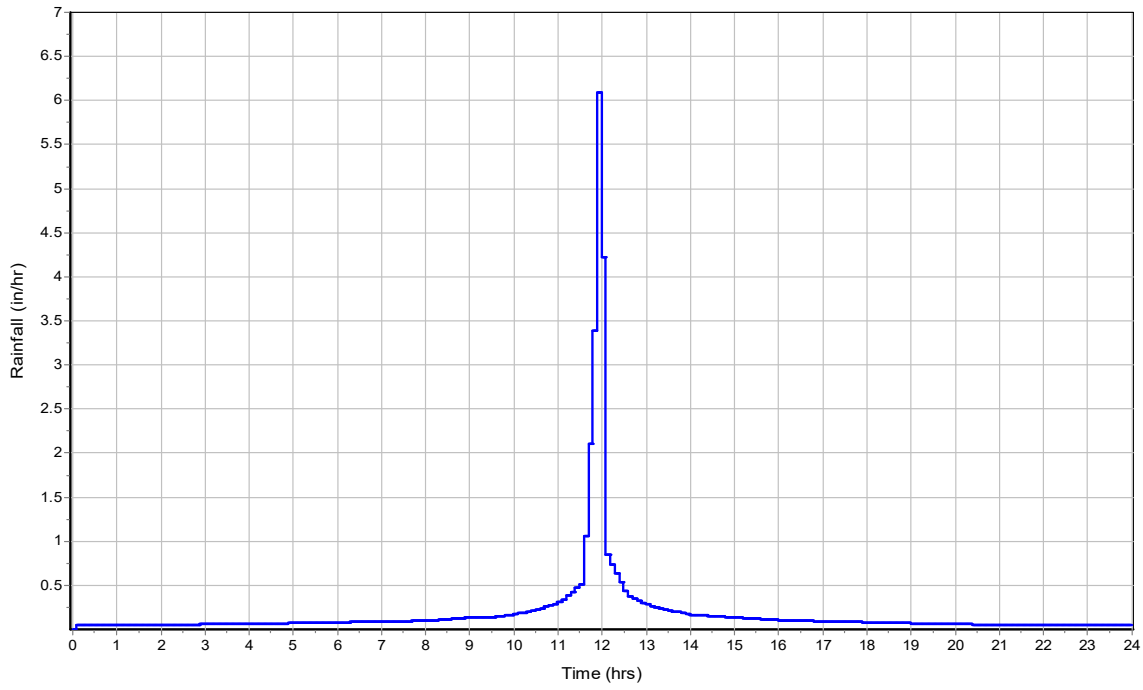
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

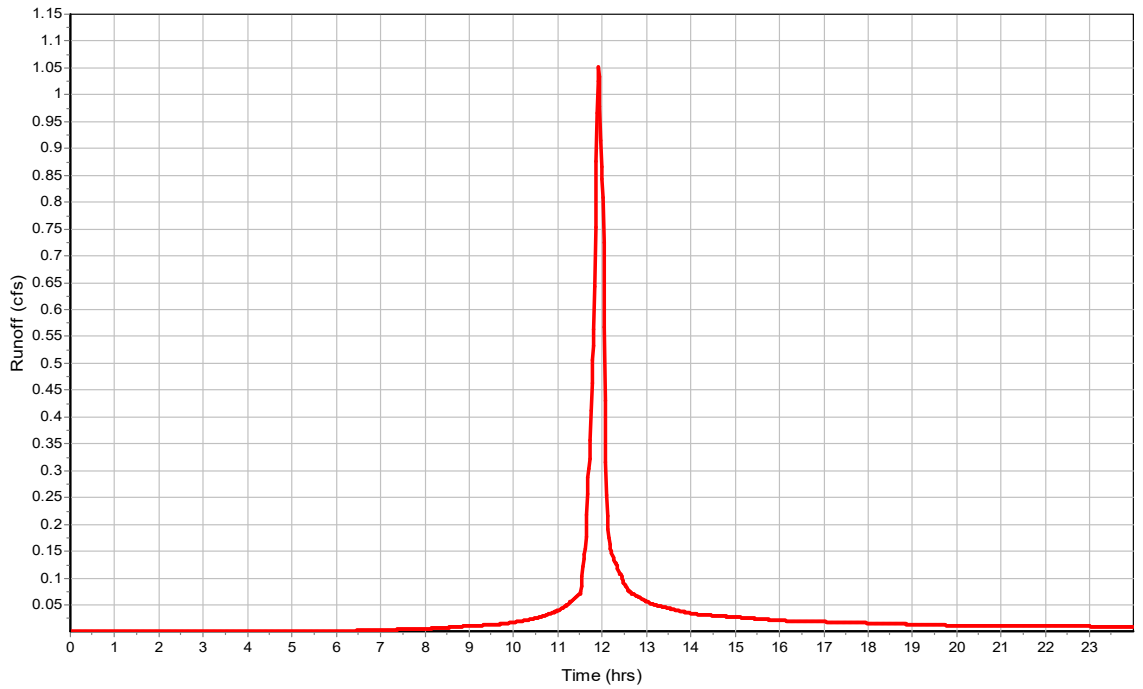
Total Rainfall (in) ..... 4.44  
 Total Runoff (in) ..... 3.11  
 Peak Runoff (cfs) ..... 1.05  
 Weighted Curve Number ..... 87.75  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-13018

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-1451**

**Input Data**

Area (ac) ..... 0.37  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 88.41  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.37	-	88.41
Composite Area & Weighted CN		0.37		88.41

**Time of Concentration**

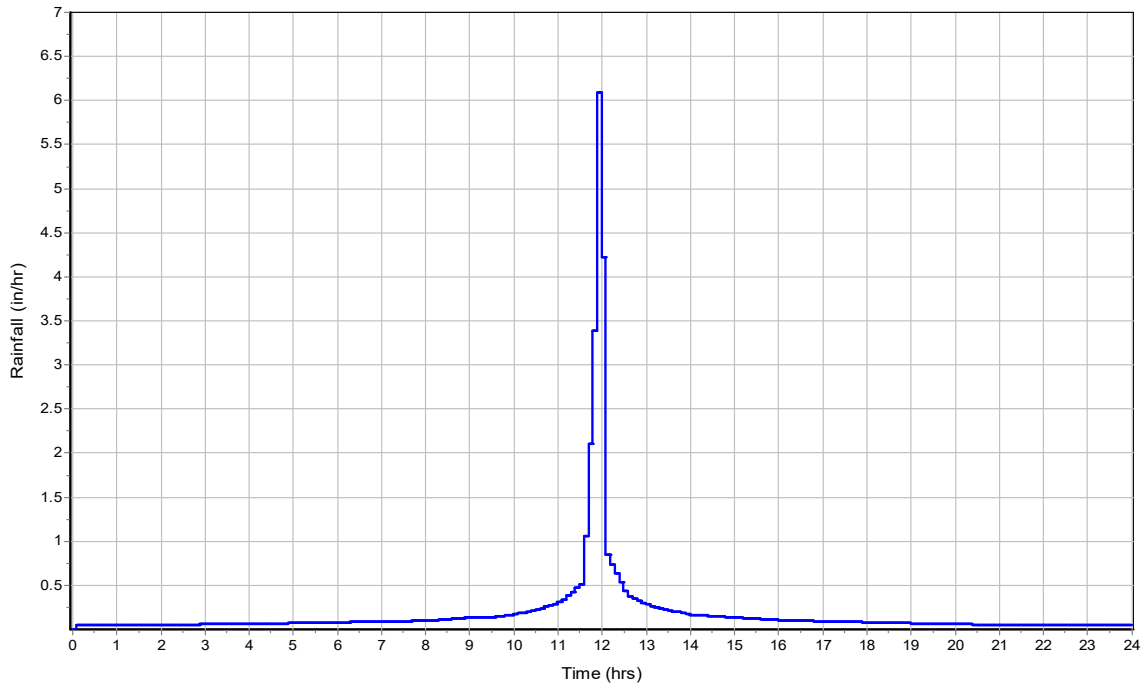
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

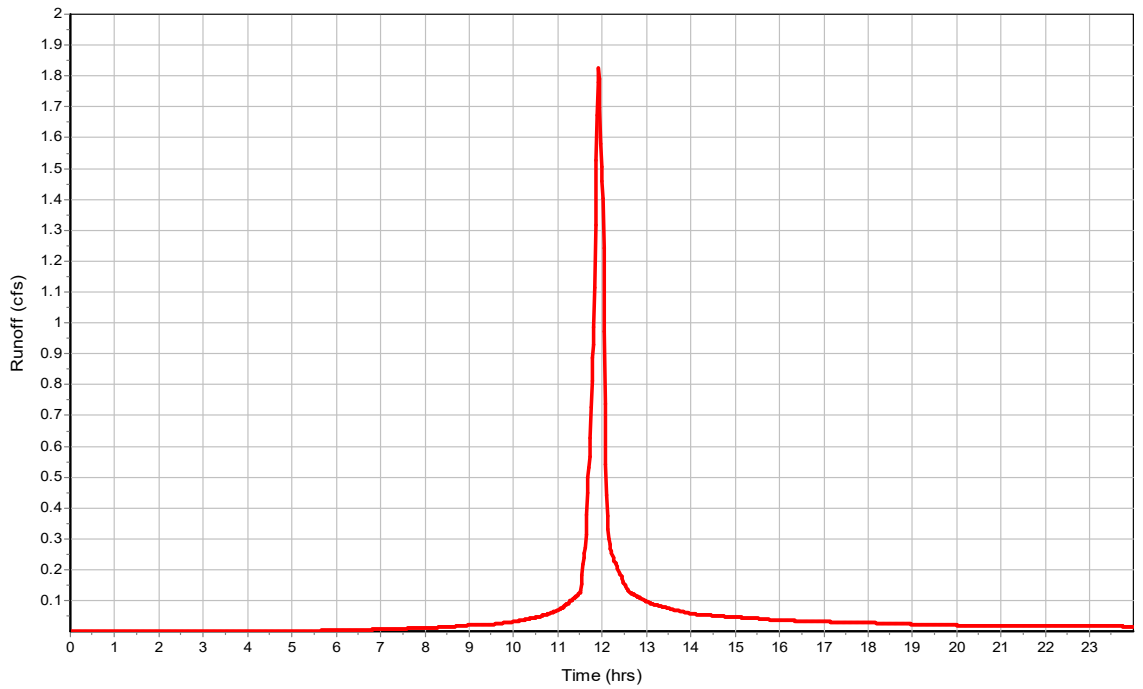
Total Rainfall (in) ..... 4.44  
 Total Runoff (in) ..... 3.18  
 Peak Runoff (cfs) ..... 1.83  
 Weighted Curve Number ..... 88.41  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-1451

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-1511**

**Input Data**

Area (ac) ..... 0.16  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 92.08  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.16	-	92.08
Composite Area & Weighted CN		0.16		92.08

**Time of Concentration**

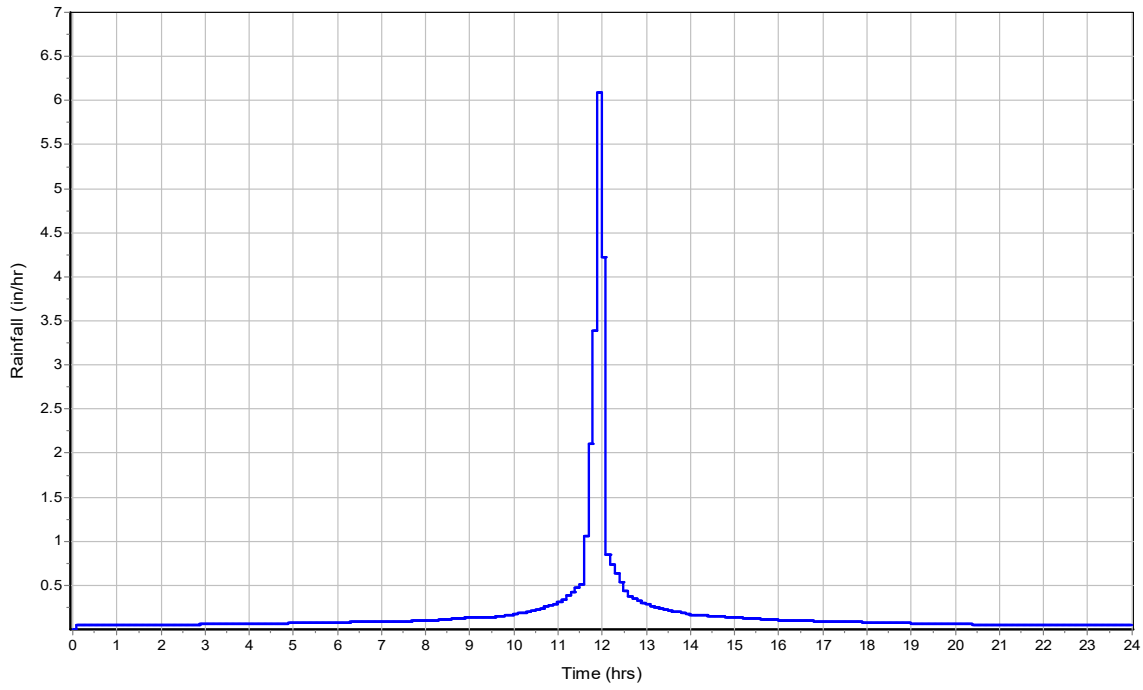
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

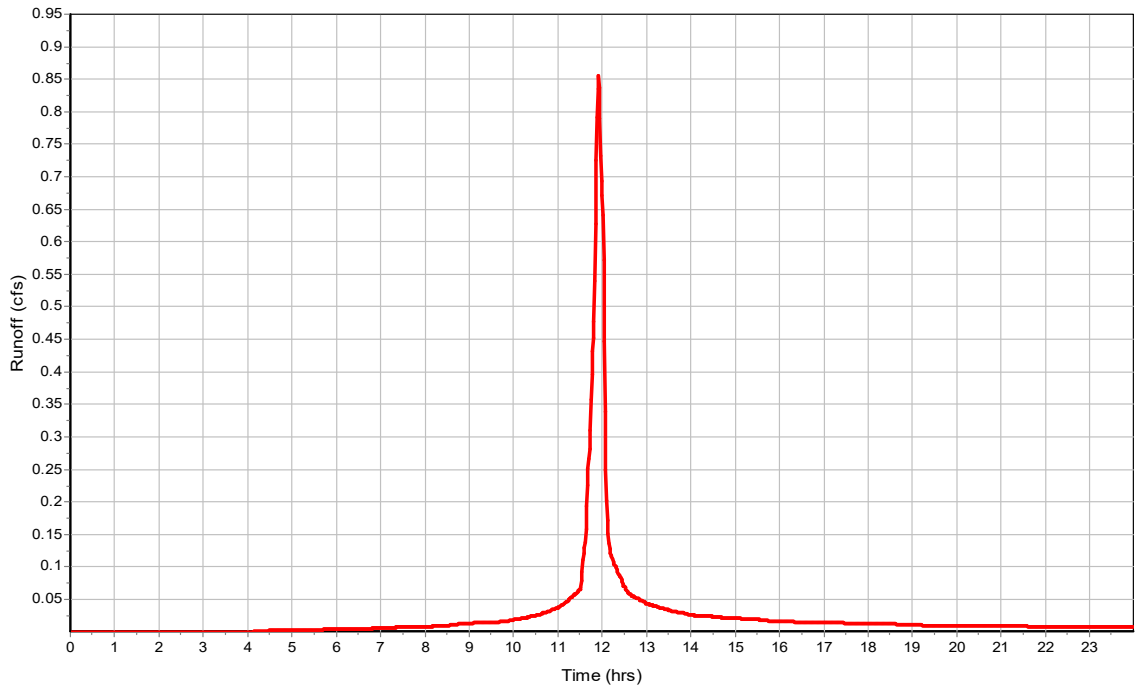
Total Rainfall (in) ..... 4.44  
 Total Runoff (in) ..... 3.55  
 Peak Runoff (cfs) ..... 0.86  
 Weighted Curve Number ..... 92.08  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-1511

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-1533**

**Input Data**

Area (ac) ..... 0.15  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 89.88  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.15	-	89.88
Composite Area & Weighted CN		0.15		89.88

**Time of Concentration**

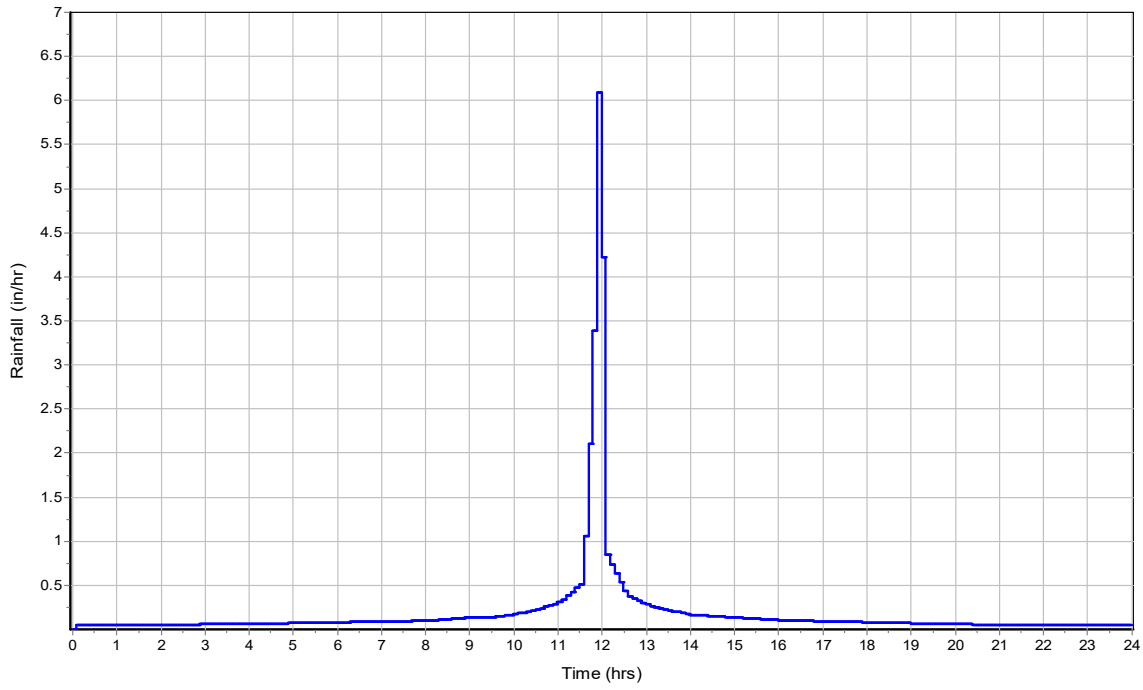
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

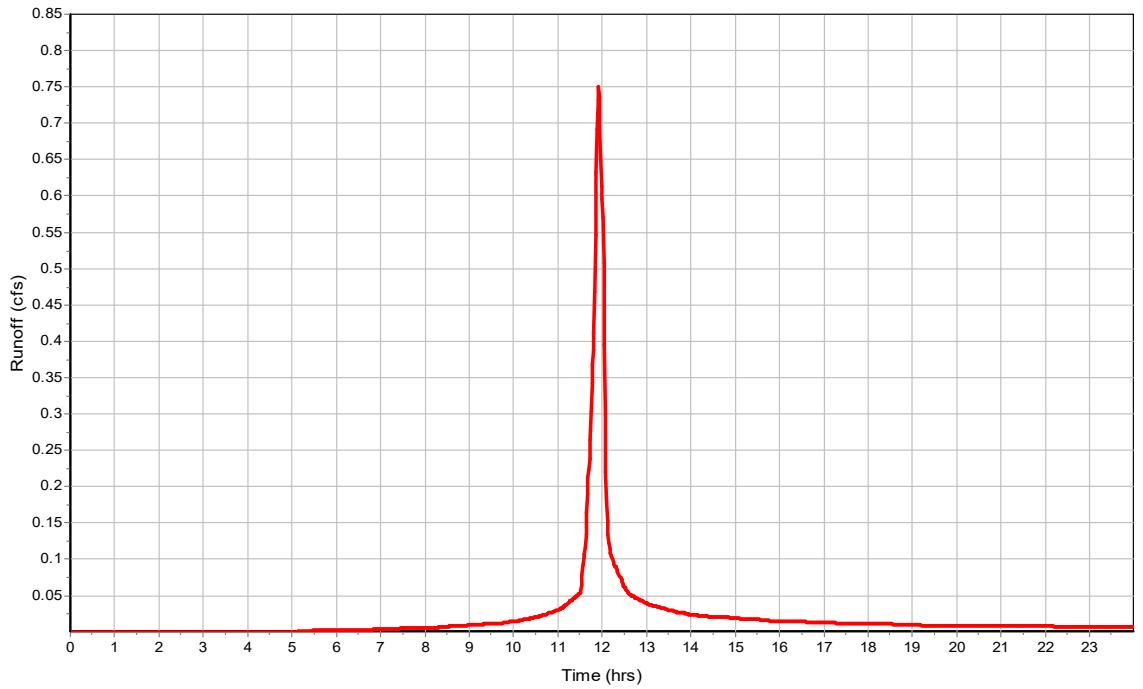
Total Rainfall (in) ..... 4.44  
 Total Runoff (in) ..... 3.32  
 Peak Runoff (cfs) ..... 0.75  
 Weighted Curve Number ..... 89.88  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-1533

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-1570**

**Input Data**

Area (ac) ..... 0.26  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 92.05  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.26	-	92.05
Composite Area & Weighted CN		0.26		92.05

**Time of Concentration**

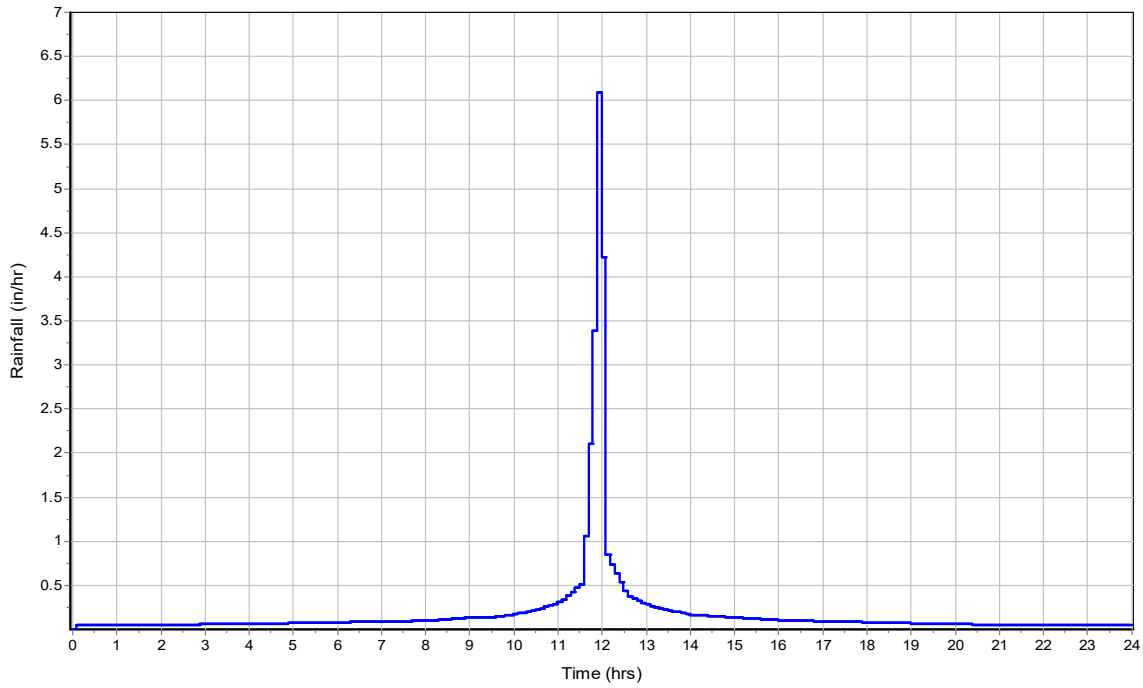
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

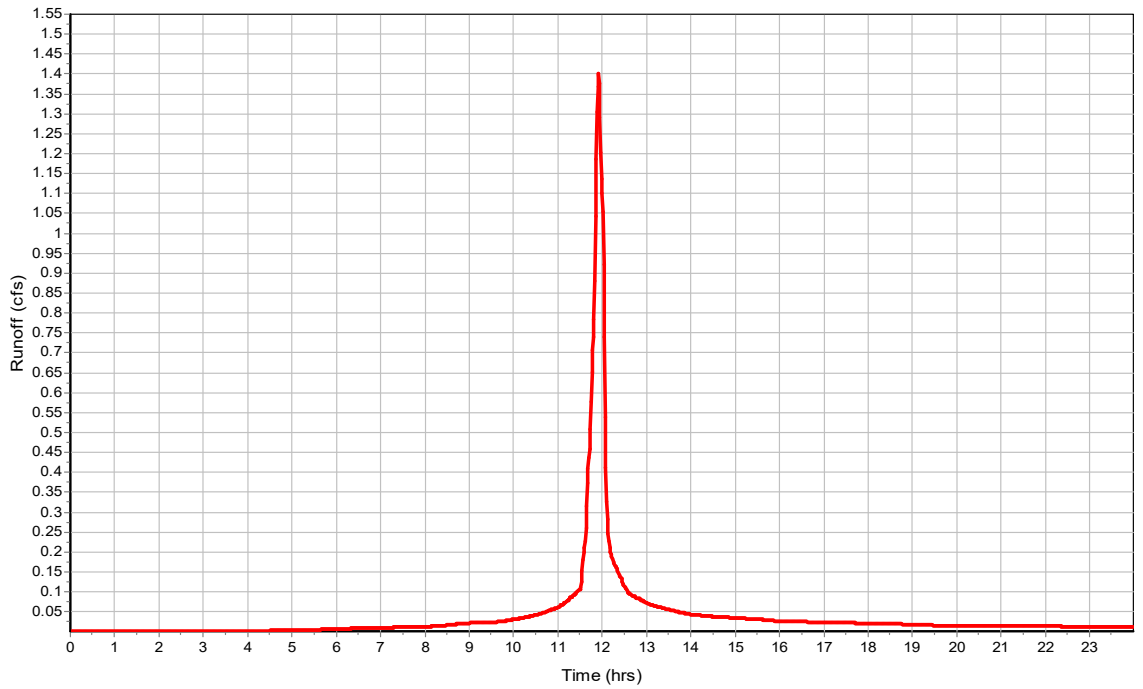
Total Rainfall (in) ..... 4.44  
 Total Runoff (in) ..... 3.55  
 Peak Runoff (cfs) ..... 1.4  
 Weighted Curve Number ..... 92.05  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-1570

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-1607**

**Input Data**

Area (ac) ..... 0.24  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 90.83  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.24	-	90.83
Composite Area & Weighted CN		0.24		90.83

**Time of Concentration**

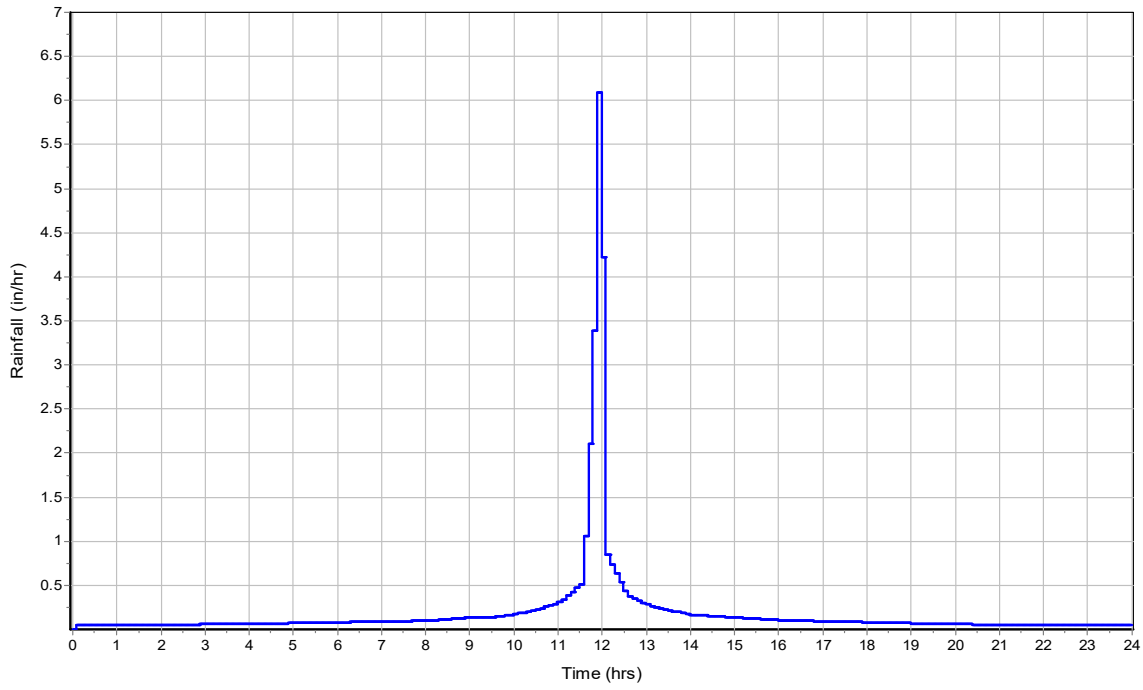
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

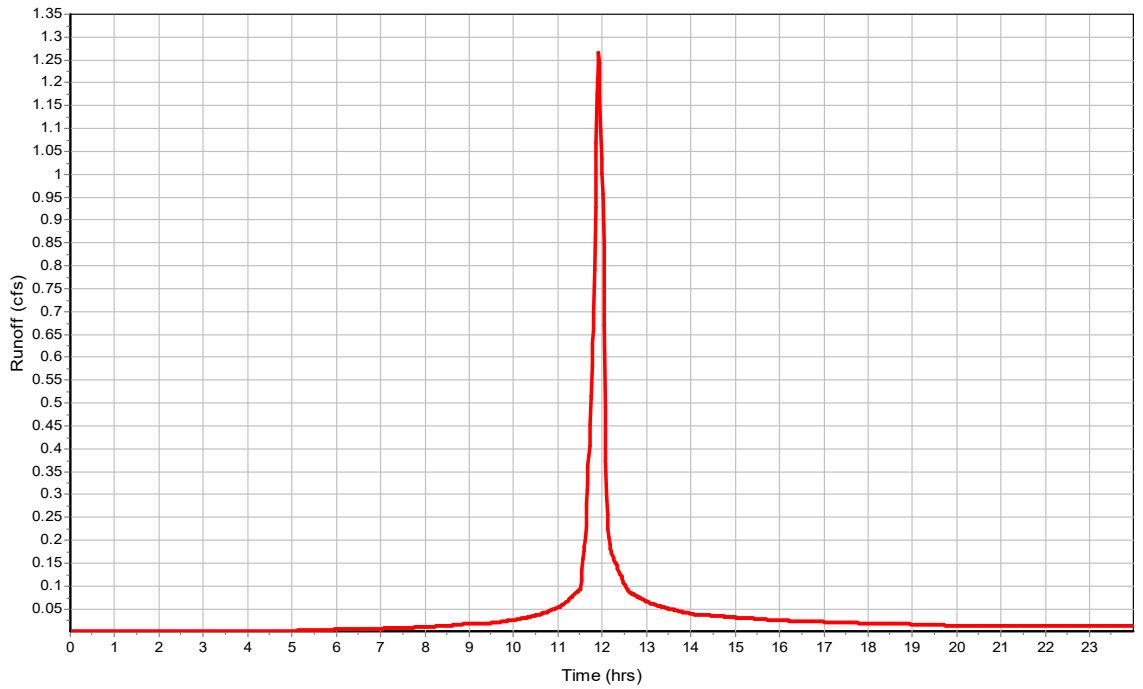
Total Rainfall (in) ..... 4.44  
 Total Runoff (in) ..... 3.42  
 Peak Runoff (cfs) ..... 1.27  
 Weighted Curve Number ..... 90.83  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-1607

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-D22690**

**Input Data**

Area (ac) ..... 0.31  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 92.3  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.31	-	92.3
Composite Area & Weighted CN		0.31		92.3

**Time of Concentration**

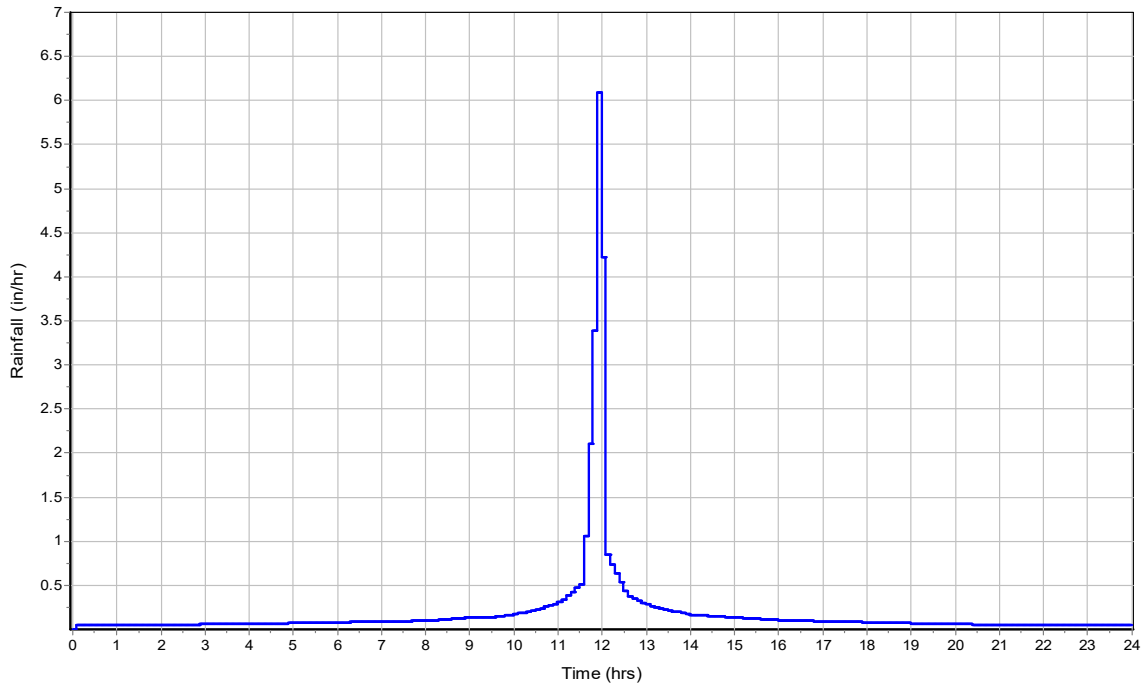
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

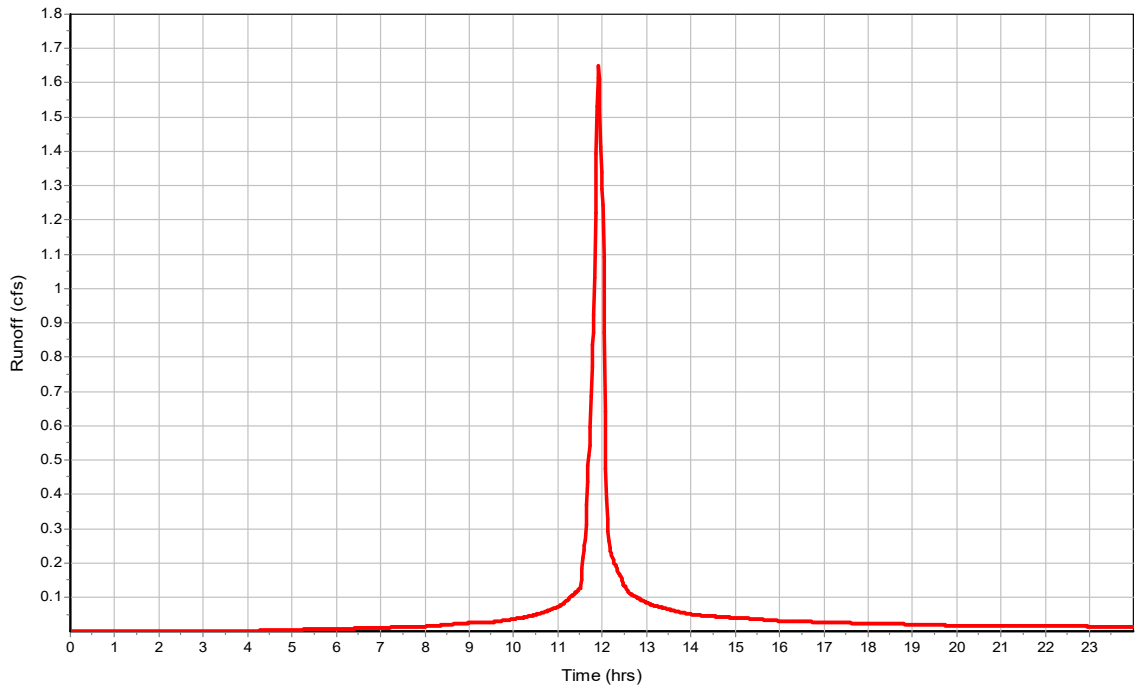
Total Rainfall (in) ..... 4.44  
 Total Runoff (in) ..... 3.57  
 Peak Runoff (cfs) ..... 1.65  
 Weighted Curve Number ..... 92.3  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-D22690

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-D22725**

**Input Data**

Area (ac) ..... 0.9  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 79  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.9	-	79
Composite Area & Weighted CN		0.9		79

**Time of Concentration**

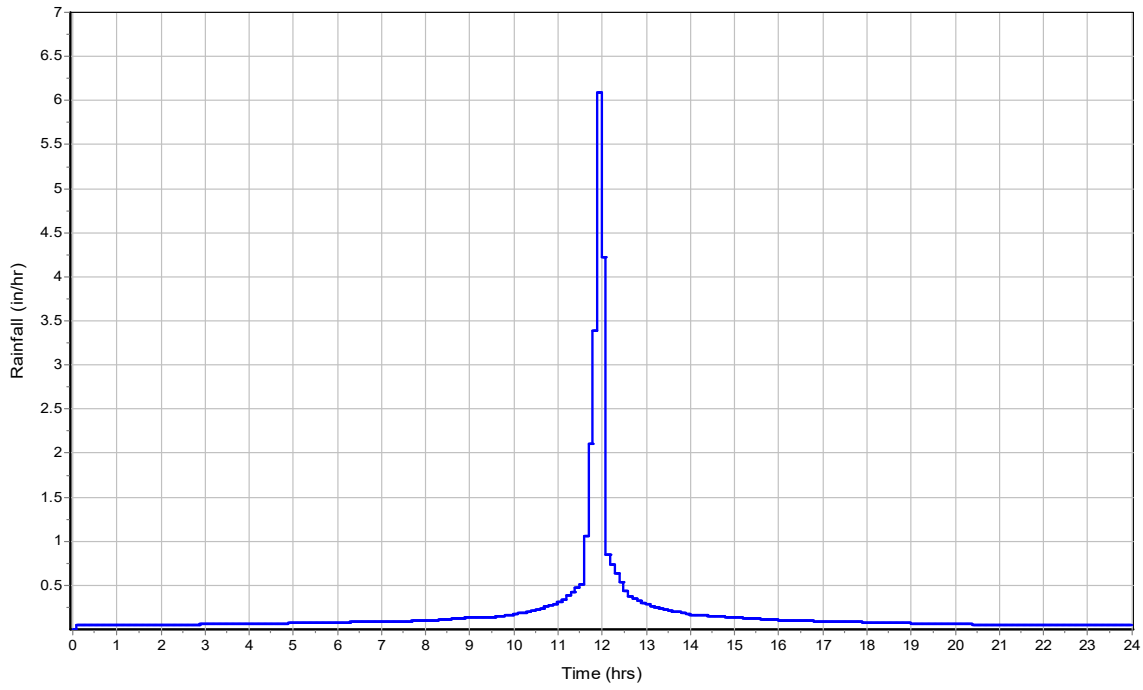
User-Defined TOC override (minutes): 5.00

**Subbasin Runoff Results**

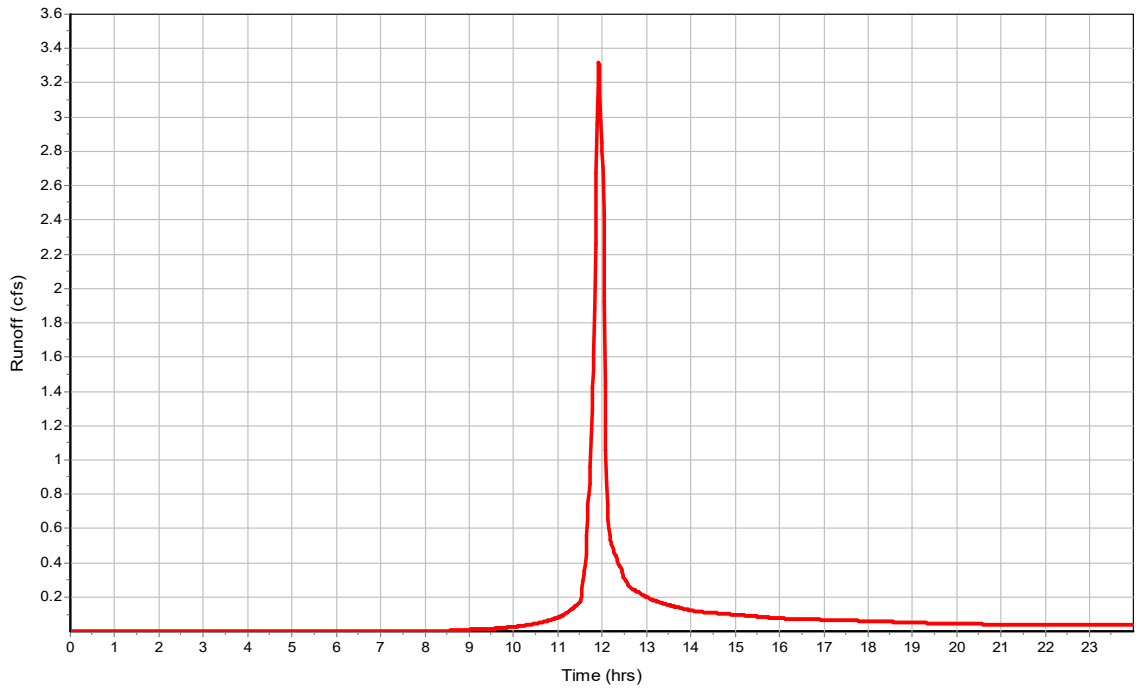
Total Rainfall (in) ..... 4.44  
 Total Runoff (in) ..... 2.33  
 Peak Runoff (cfs) ..... 3.34  
 Weighted Curve Number ..... 79  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-D22725

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : UNDETAINED-01**

**Input Data**

Area (ac) ..... 0.27  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 84  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.27	-	84
Composite Area & Weighted CN		0.27		84

**Time of Concentration**

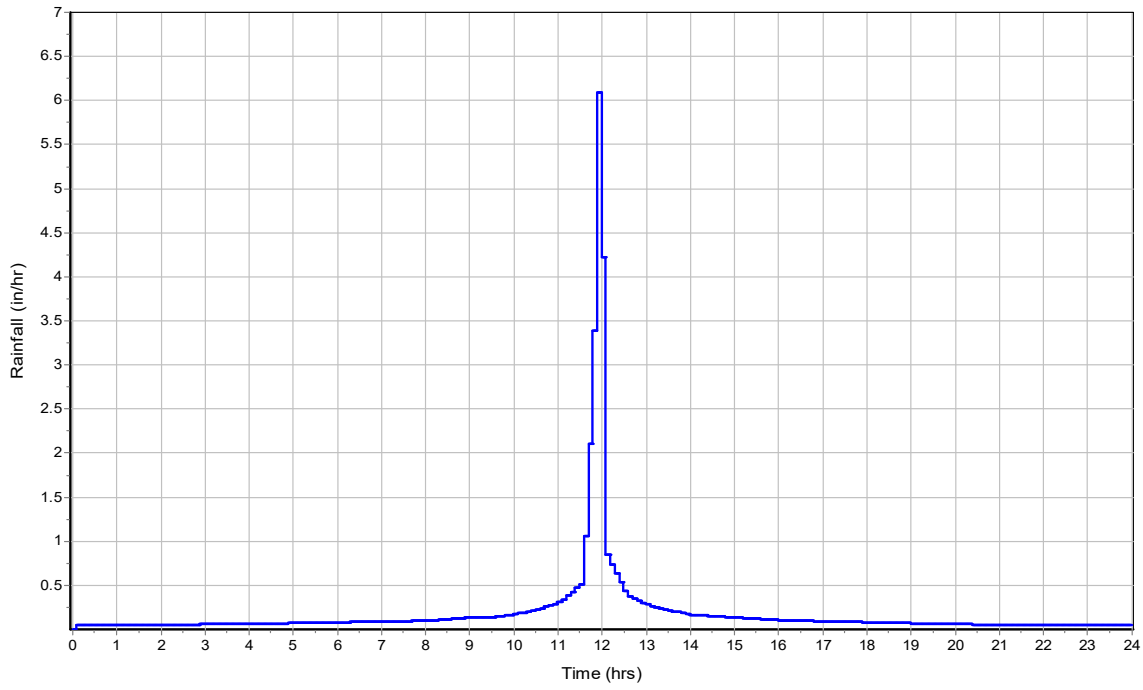
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

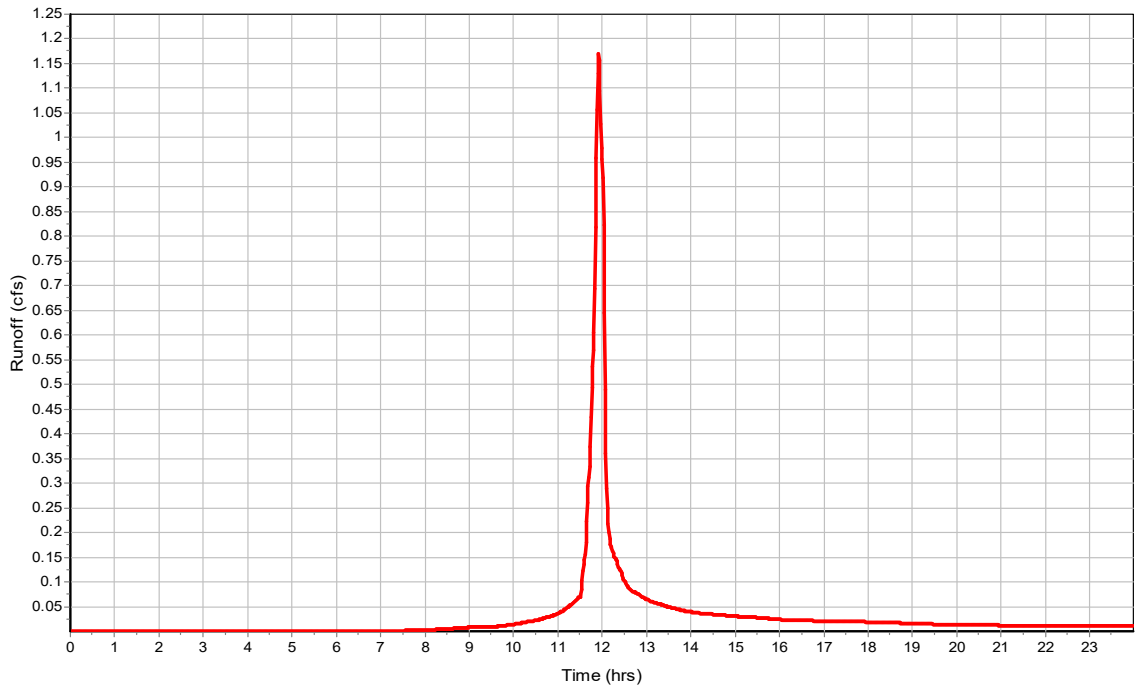
Total Rainfall (in) ..... 4.44  
 Total Runoff (in) ..... 2.76  
 Peak Runoff (cfs) ..... 1.17  
 Weighted Curve Number ..... 84  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : UNDETAINED-01

Rainfall Intensity Graph



Runoff Hydrograph



## Junction Input

SN Element ID	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Ground/Rim (Max) Offset (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)	Surcharge Elevation (ft)	Surcharge Depth (ft)	Ponded Area (ft <sup>2</sup> )	Minimum Pipe Cover (in)
1 1	789.63	800.72	11.09	789.63	0.00	800.72	0.00	10.00	94.68
2 2	789.90	810.97	21.07	789.90	0.00	810.97	0.00	0.00	0.00
3 301	801.75	810.70	8.95	801.75	0.00	810.70	0.00	10.00	93.00
4 302	800.50	814.72	14.22	800.50	0.00	814.72	0.00	10.00	0.00
5 1312	795.14	801.14	6.00	795.14	0.00	801.14	0.00	10.00	57.00
6 1451	796.16	801.58	5.42	796.16	0.00	801.58	0.00	10.00	53.04
7 1453	793.40	803.00	9.60	793.40	0.00	803.00	0.00	10.00	96.24
8 1511	794.03	805.54	11.51	794.03	0.00	805.54	0.00	10.00	123.12
9 1533	798.65	807.61	8.96	798.65	0.00	807.61	0.00	10.00	95.52
10 1570	800.57	809.15	8.58	800.57	0.00	809.15	0.00	10.00	88.80
11 1607	809.64	815.19	5.55	809.64	0.00	815.19	0.00	10.00	54.48
12 13001	783.95	800.74	16.79	783.95	0.00	800.74	0.00	10.00	110.28
13 13002	782.33	798.46	16.13	782.33	0.00	798.46	0.00	10.00	27.72
14 13003	787.40	796.61	9.21	787.40	0.00	796.61	0.00	10.00	98.52
15 13005	781.16	791.08	9.92	781.16	0.00	791.08	0.00	10.00	69.60
16 13006	793.19	802.62	9.43	793.19	0.00	802.62	0.00	10.00	97.56
17 13008	780.03	787.03	7.00	780.03	0.00	787.03	0.00	10.00	44.88
18 13009	782.93	787.81	4.88	782.93	0.00	787.81	0.00	10.00	46.56
19 13016	776.77	780.79	4.02	776.77	0.00	780.79	0.00	10.00	36.24
20 13017	776.14	780.49	4.35	776.14	0.00	780.49	0.00	10.00	34.20
21 13018	776.48	780.24	3.76	776.48	0.00	780.24	0.00	10.00	33.12
22 13019	776.36	779.72	3.36	776.36	0.00	779.72	0.00	10.00	22.32
23 D22686	797.40	807.27	9.87	797.40	0.00	807.27	0.00	10.00	106.44
24 D22690	815.71	820.04	4.33	815.71	0.00	820.04	0.00	10.00	39.96
25 D22725	776.89	781.00	4.11	776.89	0.00	781.00	0.00	10.00	34.32
26 HDS-101	801.90	814.15	12.25	801.90	0.00	814.15	0.00	10.00	0.00
27 HDS-201	802.79	815.53	12.74	802.79	0.00	815.53	0.00	10.00	127.68

**Junction Results**

SN Element ID	Peak Inflow (cfs)	Peak Lateral Inflow (cfs)	Max HGL Elevation (ft)	Max HGL Depth (ft)	Max Surcharge Depth (ft)	Min Freeboard (ft)	Average HGL Elevation (ft)	Average HGL Depth (ft)	Time of Max HGL Occurrence (days hh:mm)	Time of Peak Flooding Occurrence (days hh:mm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
1 1	29.54	0.00	791.47	1.84	0.00	9.25	790.02	0.39	0 12:09	0 00:00	0.00	0.00
2 2	29.54	0.00	791.98	2.08	0.00	18.99	790.32	0.42	0 12:08	0 00:00	0.00	0.00
3 301	0.40	0.00	802.01	0.26	0.00	8.69	801.83	0.08	0 12:07	0 00:00	0.00	0.00
4 302	0.42	0.00	802.80	2.30	0.00	11.92	801.81	1.31	0 12:06	0 00:00	0.00	0.00
5 1312	0.00	0.00	795.14	0.00	0.00	6.00	795.14	0.00	0 00:00	0 00:00	0.00	0.00
6 1451	1.83	1.83	797.58	1.42	0.00	4.00	796.21	0.05	0 11:55	0 00:00	0.00	0.00
7 1453	8.68	0.00	797.30	3.90	0.00	5.70	793.64	0.24	0 11:55	0 00:00	0.00	0.00
8 1511	6.88	0.85	798.11	4.08	0.00	7.43	794.22	0.19	0 11:55	0 00:00	0.00	0.00
9 1533	1.92	1.92	800.44	1.79	0.00	7.17	798.69	0.04	0 11:57	0 00:00	0.00	0.00
10 1570	4.31	1.40	801.47	0.90	0.00	7.68	800.65	0.08	0 11:57	0 00:00	0.00	0.00
11 1607	2.91	1.27	810.05	0.41	0.00	5.14	809.70	0.06	0 11:56	0 00:00	0.00	0.00
12 13001	29.54	0.00	785.67	1.72	0.00	15.07	784.21	0.26	0 12:09	0 00:00	0.00	0.00
13 13002	29.54	0.00	783.87	1.54	0.00	14.59	782.60	0.27	0 12:09	0 00:00	0.00	0.00
14 13003	0.52	0.52	787.61	0.21	0.00	9.00	787.43	0.03	0 11:56	0 00:00	0.00	0.00
15 13005	29.63	0.00	782.66	1.50	0.00	8.42	781.42	0.26	0 12:09	0 00:00	0.00	0.00
16 13006	9.74	1.08	795.63	2.44	0.00	6.99	793.39	0.20	0 11:55	0 00:00	0.00	0.00
17 13008	29.74	0.00	781.84	1.81	0.00	5.19	780.34	0.31	0 12:09	0 00:00	0.00	0.00
18 13009	0.61	0.61	783.19	0.26	0.00	4.62	782.97	0.04	0 11:56	0 00:00	0.00	0.00
19 13016	0.52	0.52	777.16	0.39	0.00	3.63	776.81	0.04	0 11:56	0 00:00	0.00	0.00
20 13017	4.86	0.00	777.15	1.01	0.00	3.34	776.26	0.12	0 11:56	0 00:00	0.00	0.00
21 13018	1.05	1.05	777.43	0.95	0.00	2.81	776.54	0.06	0 11:56	0 00:00	0.00	0.00
22 13019	4.36	0.00	777.41	1.05	0.00	2.31	776.48	0.12	0 11:56	0 00:00	0.00	0.00
23 D22686	6.07	0.00	800.37	2.97	0.00	6.90	797.50	0.10	0 11:57	0 00:00	0.00	0.00
24 D22690	1.65	1.65	816.03	0.32	0.00	4.01	815.75	0.04	0 11:56	0 00:00	0.00	0.00
25 D22725	3.32	3.32	777.77	0.88	0.00	3.23	776.99	0.10	0 11:56	0 00:00	0.00	0.00
26 HDS-101	21.76	16.78	803.77	1.87	0.00	10.38	802.27	0.37	0 12:00	0 00:00	0.00	0.00
27 HDS-201	32.37	32.37	805.98	3.19	0.00	9.55	803.11	0.32	0 11:58	0 00:00	0.00	0.00

Pipe Input

SN Element ID	Length	Inlet	Inlet	Outlet	Outlet	Total Drop	Average Pipe		Pipe Diameter or Height	Pipe Width	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Additional Losses	Initial Flow	Flap Gate	No. of Barrels
		Invert	Invert	Invert	Invert		Slope	Shape									
	(ft)	Elevation (ft)	Offset (ft)	Elevation (ft)	Offset (ft)	(ft)	(%)		(in)	(in)							(cfs)
1 Link-02	56.93	783.95	0.00	782.75	0.42	1.20	2.1100	CIRCULAR	24.000	24.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
2 Link-03	47.69	795.14	0.00	794.90	12.57	0.24	0.5000	CIRCULAR	15.000	15.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
3 Link-04	108.25	782.33	0.00	781.35	0.19	0.98	0.9100	CIRCULAR	36.000	36.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
4 Link-05	149.97	787.40	0.00	784.28	3.12	3.12	2.0800	CIRCULAR	12.000	12.000	0.0130	0.0000	0.1000	0.0000	0.00	No	1
5 Link-06	36.78	782.93	0.00	782.29	2.26	0.64	1.7400	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
6 Link-07	104.48	781.16	0.00	780.08	0.05	1.08	1.0300	CIRCULAR	36.000	36.000	0.0130	0.0000	0.1000	0.0000	0.00	No	1
7 Link-08	78.09	776.89	0.00	776.61	0.25	0.28	0.3600	CIRCULAR	15.000	15.000	0.0130	0.0000	0.1000	0.0000	0.00	No	1
8 Link-10	7.77	776.48	0.00	776.36	0.00	0.12	1.5400	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
9 Link-11	78.97	776.36	0.00	776.14	0.00	0.22	0.2800	CIRCULAR	18.000	18.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
10 Link-12	12.35	776.77	0.00	776.64	0.50	0.13	1.0500	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
11 Link-13	48.41	776.14	0.00	775.94	4.79	0.20	0.4100	CIRCULAR	18.000	18.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
12 Link-14	82.97	771.22	0.07	766.00	-0.01	5.22	6.2900	Rectangular	48.000	36.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
13 Link-15	56.74	780.03	0.00	779.61	8.46	0.42	0.7400	CIRCULAR	36.000	36.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
14 Link-16	132.76	815.71	0.00	809.64	0.00	6.07	4.5700	CIRCULAR	12.000	12.000	0.0130	0.0000	0.1000	0.0000	0.00	No	1
15 Link-17	148.78	809.65	0.01	800.57	0.00	9.08	6.1000	CIRCULAR	12.000	12.000	0.0130	0.0000	0.1000	0.0000	0.00	No	1
16 Link-18	85.84	800.57	0.00	797.40	0.00	3.17	3.6900	CIRCULAR	12.000	12.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
17 Link-19	9.27	798.65	0.00	797.40	0.00	1.25	13.4800	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
18 Link-20	72.00	797.40	0.00	794.08	0.05	3.32	4.6100	CIRCULAR	12.000	12.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
19 Link-21	55.99	794.03	0.00	793.73	0.33	0.30	0.5400	CIRCULAR	15.000	15.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
20 Link-22	40.69	796.16	0.00	793.81	0.41	2.35	5.7800	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
21 Link-23	77.33	793.40	0.00	793.24	0.05	0.16	0.2100	CIRCULAR	15.000	15.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
22 Link-24	41.11	793.19	0.00	793.00	21.85	0.19	0.4600	CIRCULAR	15.000	15.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
23 Link-37	136.92	802.50	2.00	801.95	0.20	0.55	0.4000	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
24 Link-38	24.56	801.85	0.10	800.75	0.18	1.10	4.4800	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
25 Link-39	10.00	802.00	0.10	801.82	11.82	0.18	1.8000	CIRCULAR	24.000	24.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
26 Link-41	47.26	802.89	0.10	801.95	11.95	0.94	1.9900	CIRCULAR	24.000	24.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
27 Link-42	30.50	790.00	0.10	789.83	0.20	0.17	0.5600	CIRCULAR	36.000	36.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
28 Link-44	214.52	789.73	0.10	788.55	4.60	1.18	0.5500	CIRCULAR	36.000	36.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1

Pipe Results

SN Element ID	Peak Flow (cfs)	Time of Peak Flow Occurrence (days hh:mm)	Design Flow Capacity (cfs)	Peak Flow/Design Flow Ratio	Peak Flow Velocity (ft/sec)	Travel Time (min)	Peak Flow Depth (ft)	Peak Flow Depth/Total Depth Ratio	Total Time Surcharged (min)	Froude Number	Reported Condition
1 Link-02	29.54	0 12:09	32.84	0.90	10.96	0.09	1.60	0.80	0.00		Calculated
2 Link-03	0.00	0 00:00	4.58	0.00	0.00		0.00	0.00	0.00		Calculated
3 Link-04	29.54	0 12:09	63.46	0.47	8.42	0.21	1.49	0.50	0.00		Calculated
4 Link-05	0.52	0 11:56	5.14	0.10	4.18	0.60	0.21	0.21	0.00		Calculated
5 Link-06	0.61	0 11:56	4.70	0.13	3.97	0.15	0.25	0.25	0.00		Calculated
6 Link-07	29.64	0 12:09	67.81	0.44	7.54	0.23	1.63	0.54	0.00		Calculated
7 Link-08	3.32	0 11:56	3.87	0.86	3.80	0.34	0.84	0.67	0.00		Calculated
8 Link-10	1.05	0 11:56	4.43	0.24	1.58	0.08	0.97	0.97	0.00		Calculated
9 Link-11	4.35	0 11:56	5.54	0.79	3.36	0.39	1.03	0.69	0.00		Calculated
10 Link-12	0.51	0 11:56	3.66	0.14	2.71	0.08	0.45	0.45	0.00		Calculated
11 Link-13	4.86	0 11:57	6.75	0.72	4.22	0.19	0.93	0.62	0.00		Calculated
12 Link-14	40.84	0 12:02	310.16	0.13	15.12	0.09	0.90	0.23	0.00		Calculated
13 Link-15	29.74	0 12:09	57.38	0.52	7.35	0.13	1.67	0.56	0.00		Calculated
14 Link-16	1.65	0 11:56	7.62	0.22	6.45	0.34	0.36	0.36	0.00		Calculated
15 Link-17	2.91	0 11:56	8.80	0.33	7.49	0.33	0.64	0.64	0.00		Calculated
16 Link-18	4.27	0 11:58	6.85	0.62	7.38	0.19	0.94	0.95	0.00		Calculated
17 Link-19	1.92	0 11:55	13.08	0.15	4.84	0.03	1.00	1.00	4.00		SURCHARGED
18 Link-20	6.07	0 11:57	7.65	0.79	7.72	0.16	1.00	1.00	7.00		SURCHARGED
19 Link-21	6.88	0 11:57	4.73	1.46	5.61	0.17	1.25	1.00	14.00		SURCHARGED
20 Link-22	1.84	0 11:55	8.56	0.22	4.64	0.15	1.00	1.00	3.00		SURCHARGED
21 Link-23	8.68	0 11:56	2.94	2.95	7.07	0.18	1.25	1.00	14.00		SURCHARGED
22 Link-24	9.74	0 11:56	4.39	2.22	8.02	0.09	1.21	0.97	0.00		> CAPACITY
23 Link-37	0.40	0 12:06	2.26	0.18	2.25	1.01	0.28	0.28	0.00		Calculated
24 Link-38	0.40	0 12:07	7.54	0.05	4.90	0.08	0.37	0.37	0.00		Calculated
25 Link-39	21.76	0 12:00	30.35	0.72	8.54	0.02	1.51	0.76	0.00		Calculated
26 Link-41	32.39	0 11:58	31.90	1.02	10.66	0.07	1.94	0.97	0.00		> CAPACITY
27 Link-42	29.54	0 12:09	49.80	0.59	6.57	0.08	1.82	0.61	0.00		Calculated
28 Link-44	29.54	0 12:09	49.47	0.60	7.11	0.50	1.71	0.57	0.00		Calculated

**Storage Nodes**

**Storage Node : 13011/3**

**Input Data**

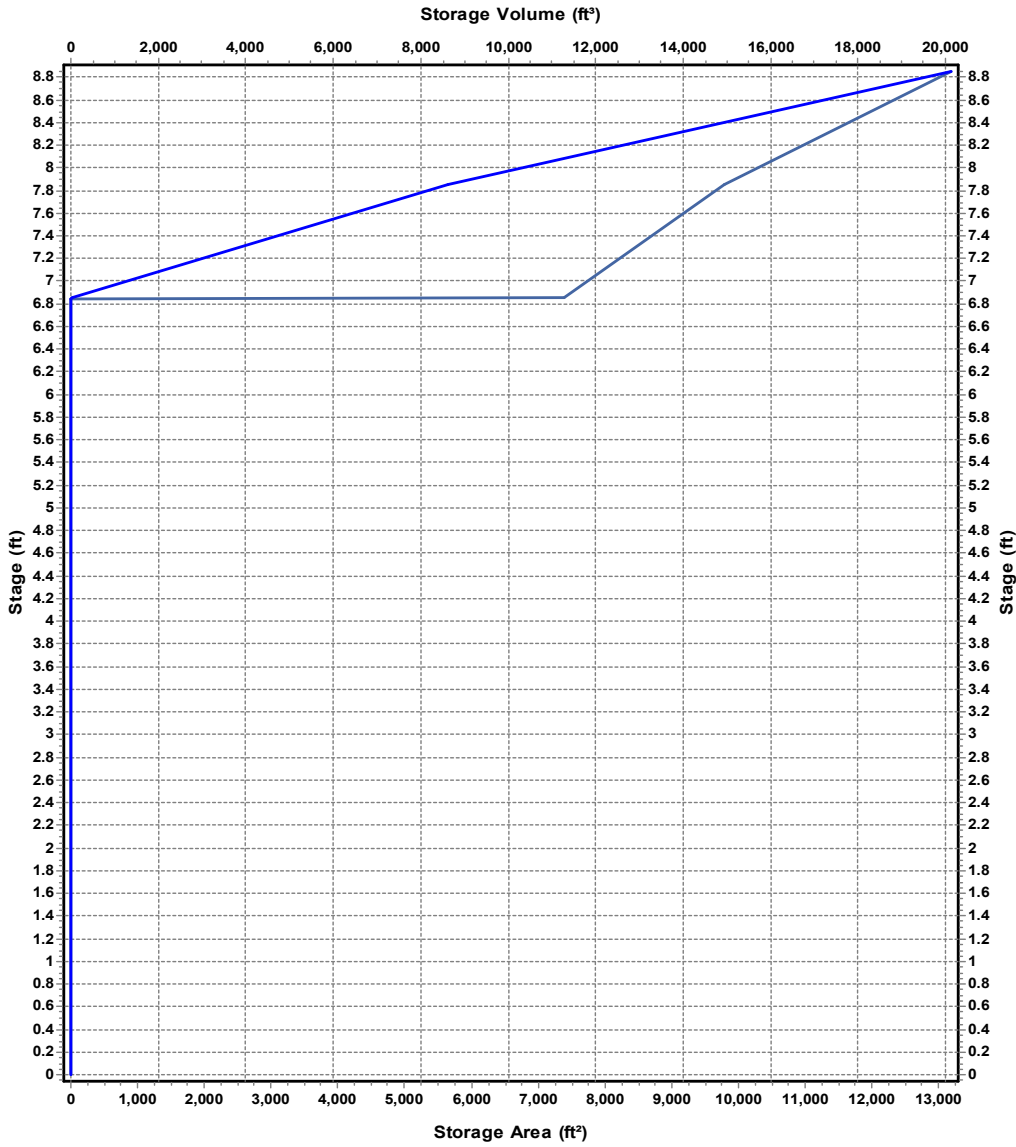
Invert Elevation (ft) .....	771.15
Max (Rim) Elevation (ft) .....	780.00
Max (Rim) Offset (ft) .....	8.85
Initial Water Elevation (ft) .....	771.15
Initial Water Depth (ft) .....	0.00
Ponded Area (ft <sup>2</sup> ) .....	0.00
Evaporation Loss .....	0.00

**Storage Area Volume Curves**

Storage Curve : Existing 02

Stage	Storage Area	Storage Volume
(ft)	(ft <sup>2</sup> )	(ft <sup>3</sup> )
0	0	0
6.84	1	3.42
6.85	7389	40.37
7.85	9796	8632.87
8.85	13187	20124.37

### Storage Area Volume Curves



Storage Area Storage Volume

**Storage Node : 13011/3 (continued)**

**Output Summary Results**

Peak Inflow (cfs) .....	40.84
Peak Lateral Inflow (cfs) .....	3.18
Peak Outflow (cfs) .....	40.84
Peak Exfiltration Flow Rate (cfm) .....	0
Max HGL Elevation Attained (ft) .....	772.27
Max HGL Depth Attained (ft) .....	1.12
Average HGL Elevation Attained (ft) .....	771.33
Average HGL Depth Attained (ft) .....	0.18
Time of Max HGL Occurrence (days hh:mm) .....	0 12:02
Total Exfiltration Volume (1000-ft <sup>3</sup> ) .....	0
Total Flooded Volume (ac-in) .....	0
Total Time Flooded (min) .....	0
Total Retention Time (sec) .....	0

**Storage Node : UGD-01**

**Input Data**

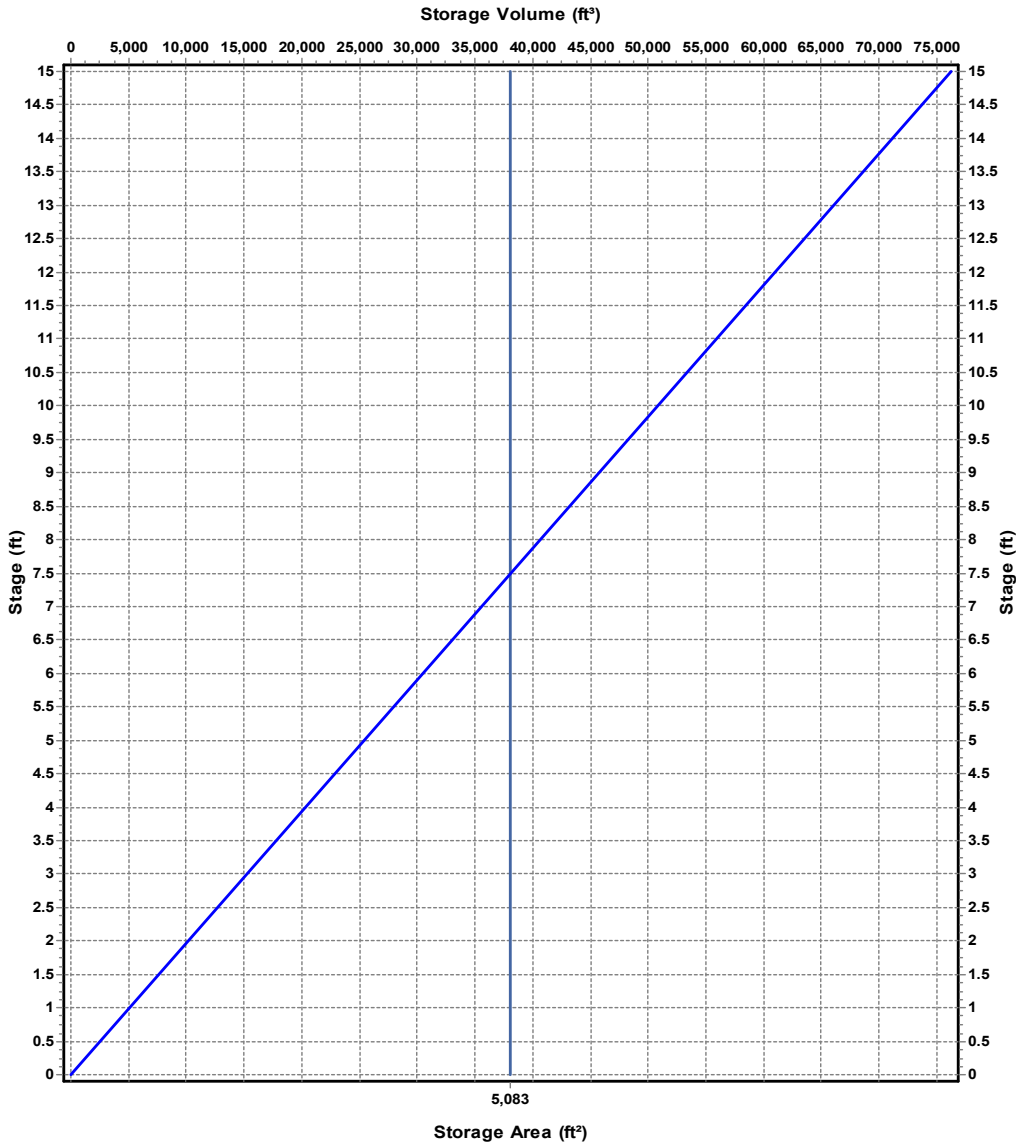
Invert Elevation (ft) .....	790.00
Max (Rim) Elevation (ft) .....	805.00
Max (Rim) Offset (ft) .....	15.00
Initial Water Elevation (ft) .....	790.00
Initial Water Depth (ft) .....	0.00
Ponded Area (ft <sup>2</sup> ) .....	0.00
Evaporation Loss .....	0.00

**Storage Area Volume Curves**

Storage Curve : UGD-01

Stage	Storage Area	Storage Volume
(ft)	(ft <sup>2</sup> )	(ft <sup>3</sup> )
0	5083	0
15	5083	76245

### Storage Area Volume Curves



Storage Area    Storage Volume

**Storage Node : UGD-01 (continued)**

**Outflow Weirs**

SN Element ID	Weir Type	Flap Gate	Crest Elevation (ft)	Crest Offset (ft)	Length (ft)	Weir Total Height (ft)	Discharge Coefficient
1 UGD-01-Weir	Rectangular	No	803.75	13.75	6.00	1.25	2.62

**Outflow Orifices**

SN Element ID	Orifice Type	Orifice Shape	Flap Gate	Circular Orifice Diameter (in)	Rectangular Orifice Height (in)	Rectangular Orifice Width (in)	Orifice Invert Elevation (ft)	Orifice Coefficient
1 UGD-01-2ndStage	Side	Rectangular	No		8.00	48.00	797.50	0.60
2 UGD-01-WQ	Side	CIRCULAR	No	3.00			790.00	0.60

**Output Summary Results**

Peak Inflow (cfs) .....	54.11
Peak Lateral Inflow (cfs) .....	0
Peak Outflow (cfs) .....	29.54
Peak Exfiltration Flow Rate (cfm) .....	0
Max HGL Elevation Attained (ft) .....	802.85
Max HGL Depth Attained (ft) .....	12.85
Average HGL Elevation Attained (ft) .....	794.69
Average HGL Depth Attained (ft) .....	4.69
Time of Max HGL Occurrence (days hh:mm) .....	0 12:08
Total Exfiltration Volume (1000-ft <sup>3</sup> ) .....	0
Total Flooded Volume (ac-in) .....	0
Total Time Flooded (min) .....	0
Total Retention Time (sec) .....	0

**Storage Node : UGD-02**

**Input Data**

Invert Elevation (ft) .....	802.50
Max (Rim) Elevation (ft) .....	809.25
Max (Rim) Offset (ft) .....	6.75
Initial Water Elevation (ft) .....	802.50
Initial Water Depth (ft) .....	0.00
Ponded Area (ft <sup>2</sup> ) .....	0.00
Evaporation Loss .....	0.00

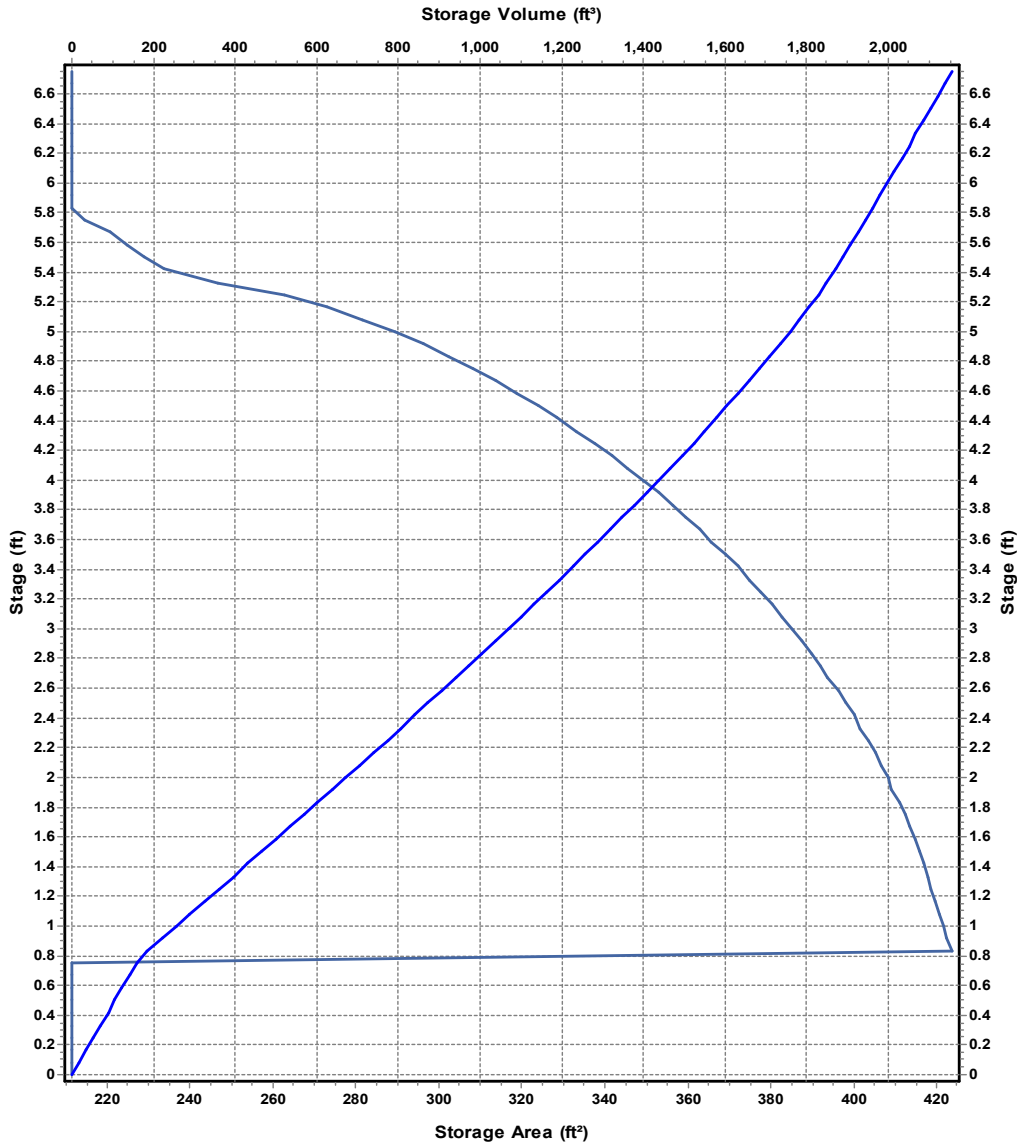
**Storage Area Volume Curves**

Storage Curve : UGD-MC7200

Stage (ft)	Storage Area (ft <sup>2</sup> )	Storage Volume (ft <sup>3</sup> )
0	211.6	0
0.08	211.6	16.93
0.17	211.6	35.97
0.25	211.6	52.9
0.33	211.6	69.83
0.42	211.6	88.87
0.5	211.6	105.8
0.58	211.6	122.73
0.67	211.6	141.77
0.75	211.6	158.7
0.83	423.65	184.11
0.92	422.22	222.17
1	421.48	255.92
1.08	420.65	289.61
1.17	419.44	327.41
1.25	418.56	360.93
1.33	417.93	394.39
1.42	416.93	431.96
1.5	415.88	465.27
1.58	414.76	498.5
1.67	413.55	535.77
1.75	412.31	568.8
1.83	411.06	601.73
1.92	409.06	638.64
2	408.23	671.33
2.08	406.69	703.93
2.17	405.1	740.46
2.25	403.45	772.8
2.33	401.43	805
2.42	399.96	841.06
2.5	398.13	872.98
2.58	396.19	904.75
2.67	393.75	940.3
2.75	391.88	971.73
2.83	389.81	1003
2.92	387.51	1037.98
3	385.18	1068.89
3.08	382.78	1099.61
3.17	380.2	1133.94
3.25	377.55	1164.25
3.33	374.81	1194.34
3.42	371.94	1227.94
3.5	368.99	1257.58
3.58	365.61	1286.96
3.67	362.8	1319.74
3.75	359.58	1348.64
3.83	356.26	1377.27
3.92	352.83	1409.18
4	349.25	1437.26
4.08	345.51	1465.05
4.17	341.57	1495.97
4.25	337.45	1523.13
4.33	333.12	1549.95
4.42	328.51	1579.72
4.5	323.87	1605.82
4.58	318.91	1631.53
4.67	313.71	1660
4.75	308.31	1684.88
4.83	302.46	1709.31
4.92	296.21	1736.25
5	289.37	1759.67

5.08	281.76	1782.52
5.17	273.2	1807.49
5.25	262.78	1828.93
5.33	246.67	1849.31
5.42	233.8	1870.93
5.5	228.93	1889.44
5.58	224.98	1907.6
5.67	220.79	1927.66
5.75	214.54	1945.07
5.83	211.6	1962.12
5.92	211.6	1981.16
6	211.6	1998.09
6.08	211.6	2015.02
6.17	211.6	2034.06
6.25	211.6	2050.99
6.33	211.6	2067.92
6.42	211.6	2086.96
6.5	211.6	2103.89
6.58	211.6	2120.82
6.67	211.6	2139.86
6.75	211.6	2156.79

### Storage Area Volume Curves



— Storage Area — Storage Volume

**Storage Node : UGD-02 (continued)**

**Outflow Orifices**

SN Element ID	Orifice Type	Orifice Shape	Flap Gate	Circular Orifice Diameter (in)	Rectangular Orifice Height (in)	Rectangular Orifice Width (in)	Orifice Invert Elevation (ft)	Orifice Coefficient
1 UGD-02-MANIFOLD	Side	CIRCULAR	No	12.00			806.22	0.60
2 UGD-02-WQ	Side	CIRCULAR	No	0.50			802.50	0.60

**Output Summary Results**

Peak Inflow (cfs) .....	1.26
Peak Lateral Inflow (cfs) .....	1.26
Peak Outflow (cfs) .....	0.42
Peak Exfiltration Flow Rate (cfm) .....	0
Max HGL Elevation Attained (ft) .....	806.5
Max HGL Depth Attained (ft) .....	4
Average HGL Elevation Attained (ft) .....	804.51
Average HGL Depth Attained (ft) .....	2.01
Time of Max HGL Occurrence (days hh:mm) .....	0 12:05
Total Exfiltration Volume (1000-ft <sup>3</sup> ) .....	0
Total Flooded Volume (ac-in) .....	0
Total Time Flooded (min) .....	0
Total Retention Time (sec) .....	0

**Storage Node : UGD-03**

**Input Data**

Invert Elevation (ft) ..... 813.62  
 Max (Rim) Elevation (ft) ..... 821.50  
 Max (Rim) Offset (ft) ..... 7.88  
 Initial Water Elevation (ft) ..... 0.00  
 Initial Water Depth (ft) ..... -813.62  
 Poned Area (ft<sup>2</sup>) ..... 0.00  
 Evaporation Loss ..... 0.00

**Outflow Orifices**

SN Element ID	Orifice Type	Orifice Shape	Flap Gate	Circular Orifice Diameter (in)	Rectangular Orifice Height (in)	Rectangular Orifice Width (in)	Orifice Invert Elevation (ft)	Orifice Coefficient
1 UGD-03-Orifice	Side	CIRCULAR	No	10.00			813.62	0.60

**Output Summary Results**

Peak Inflow (cfs) ..... 19.72  
 Peak Lateral Inflow (cfs) ..... 19.72  
 Peak Outflow (cfs) ..... 6.01  
 Peak Exfiltration Flow Rate (cfm) ..... 0  
 Max HGL Elevation Attained (ft) ..... 819.27  
 Max HGL Depth Attained (ft) ..... 5.65  
 Average HGL Elevation Attained (ft) ..... 814.22  
 Average HGL Depth Attained (ft) ..... 0.6  
 Time of Max HGL Occurrence (days hh:mm) ..... 0 12:11  
 Total Exfiltration Volume (1000-ft<sup>3</sup>) ..... 0  
 Total Flooded Volume (ac-in) ..... 0  
 Total Time Flooded (min) ..... 0  
 Total Retention Time (sec) ..... 0



## Subbasin Summary

SN	Subbasin ID	Area (ac)	Peak Rate Factor	Weighted Curve Number	Total Rainfall (in)	Total Runoff (in)	Total Runoff Volume (ac-in)	Peak Runoff (cfs)	Time of Concentration (days hh:mm:ss)
1	FUTURE-01	3.25	484.00	95.00	5.02	4.44	14.43	18.25	0 00:10:00
2	FUTURE-02	5.53	484.00	93.00	5.02	4.22	23.33	30.16	0 00:10:00
3	FUTURE-03	0.78	484.00	95.00	5.02	4.44	3.46	5.00	0 00:05:00
4	POST-01	3.47	484.00	94.00	5.02	4.33	15.02	19.22	0 00:10:00
5	POST-02	1.34	484.00	91.00	5.02	4.00	5.36	7.06	0 00:10:00
6	POST-03	0.28	484.00	85.00	5.02	3.39	0.95	1.49	0 00:05:00
7	SUB-13003	0.09	484.00	97.81	5.02	4.76	0.43	0.59	0 00:05:00
8	SUB-13006	0.21	484.00	90.17	5.02	3.91	0.82	1.25	0 00:05:00
9	SUB-13009	0.11	484.00	95.27	5.02	4.47	0.49	0.70	0 00:05:00
10	SUB-13011/3	1.18	484.00	74.32	5.02	2.41	2.84	3.93	0 00:10:00
11	SUB-13016	0.09	484.00	97.34	5.02	4.70	0.42	0.59	0 00:05:00
12	SUB-13018	0.22	484.00	87.75	5.02	3.66	0.81	1.23	0 00:05:00
13	SUB-1451	0.37	484.00	88.41	5.02	3.73	1.38	2.13	0 00:05:00
14	SUB-1511	0.16	484.00	92.08	5.02	4.12	0.66	0.98	0 00:05:00
15	SUB-1533	0.15	484.00	89.88	5.02	3.88	0.58	0.87	0 00:05:00
16	SUB-1570	0.26	484.00	92.05	5.02	4.11	1.07	1.61	0 00:05:00
17	SUB-1607	0.24	484.00	90.83	5.02	3.98	0.96	1.46	0 00:05:00
18	SUB-D22690	0.31	484.00	92.30	5.02	4.14	1.28	1.89	0 00:05:00
19	SUB-D22725	0.90	484.00	79.00	5.02	2.82	2.54	4.04	0 00:05:00
20	UNDETAINED-01	0.27	484.00	84.00	5.02	3.29	0.89	1.39	0 00:05:00

**Node Summary**

SN	Element ID	Element Type	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Initial Water Elevation (ft)	Surcharge Elevation (ft)	Ponded Area (ft <sup>2</sup> )	Peak Inflow (cfs)	Max HGL Elevation Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)	Time of Peak Flooding Occurrence (days hhmm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
1	1	Junction	789.63	800.72	789.63	800.72	10.00	36.65	791.75	0.00	8.97	0 00:00	0.00	0.00
2	2	Junction	789.90	810.97	789.90	810.97	0.00	36.65	792.32	0.00	18.65	0 00:00	0.00	0.00
3	301	Junction	801.75	810.70	801.75	810.70	10.00	1.01	803.17	0.00	7.53	0 00:00	0.00	0.00
4	302	Junction	800.50	814.72	800.50	814.72	10.00	1.00	803.20	0.00	11.52	0 00:00	0.00	0.00
5	1312	Junction	795.14	801.14	795.14	801.14	10.00	0.00	795.14	0.00	6.00	0 00:00	0.00	0.00
6	1451	Junction	796.16	801.58	796.16	801.58	10.00	2.13	798.97	0.00	2.61	0 00:00	0.00	0.00
7	1453	Junction	793.40	803.00	793.40	803.00	10.00	9.56	798.01	0.00	4.99	0 00:00	0.00	0.00
8	1511	Junction	794.03	805.54	794.03	805.54	10.00	7.54	798.92	0.00	6.62	0 00:00	0.00	0.00
9	1533	Junction	798.65	807.61	798.65	807.61	10.00	2.25	801.72	0.00	5.89	0 00:00	0.00	0.00
10	1570	Junction	800.57	809.15	800.57	809.15	10.00	5.01	803.16	0.00	5.99	0 00:00	0.00	0.00
11	1607	Junction	809.64	815.19	809.64	815.19	10.00	3.35	810.08	0.00	5.11	0 00:00	0.00	0.00
12	13001	Junction	783.95	800.74	783.95	800.74	10.00	36.66	786.77	0.00	13.97	0 00:00	0.00	0.00
13	13002	Junction	782.33	798.46	782.33	798.46	10.00	36.67	784.10	0.00	14.36	0 00:00	0.00	0.00
14	13003	Junction	787.40	796.61	787.40	796.61	10.00	0.59	787.63	0.00	8.98	0 00:00	0.00	0.00
15	13005	Junction	781.16	791.08	781.16	791.08	10.00	36.79	782.91	0.00	8.17	0 00:00	0.00	0.00
16	13006	Junction	793.19	802.62	793.19	802.62	10.00	10.80	795.95	0.00	6.67	0 00:00	0.00	0.00
17	13008	Junction	780.03	787.03	780.03	787.03	10.00	36.93	782.11	0.00	4.92	0 00:00	0.00	0.00
18	13009	Junction	782.93	787.81	782.93	787.81	10.00	0.70	783.21	0.00	4.60	0 00:00	0.00	0.00
19	13016	Junction	776.77	780.79	776.77	780.79	10.00	0.59	777.29	0.00	3.50	0 00:00	0.00	0.00
20	13017	Junction	776.14	780.49	776.14	780.49	10.00	5.81	777.28	0.00	3.21	0 00:00	0.00	0.00
21	13018	Junction	776.48	780.24	776.48	780.24	10.00	1.23	777.59	0.00	2.65	0 00:00	0.00	0.00
22	13019	Junction	776.36	779.72	776.36	779.72	10.00	5.24	777.56	0.00	2.16	0 00:00	0.00	0.00
23	D22686	Junction	797.40	807.27	797.40	807.27	10.00	6.65	801.63	0.00	5.64	0 00:00	0.00	0.00
24	D22690	Junction	815.71	820.04	815.71	820.04	10.00	1.89	816.05	0.00	3.99	0 00:00	0.00	0.00
25	D22725	Junction	776.89	781.00	776.89	781.00	10.00	4.03	777.92	0.00	3.08	0 00:00	0.00	0.00
26	HDS-101	Junction	801.90	814.15	801.90	814.15	10.00	24.57	804.42	0.00	9.73	0 00:00	0.00	0.00
27	HDS-201	Junction	802.79	815.53	802.79	815.53	10.00	37.15	806.32	0.00	9.21	0 00:00	0.00	0.00
28	13021/3	Outfall	766.01					48.20	766.86					
29	13011/3	Storage Node	771.15	780.00	771.15		0.00	48.20	772.43				0.00	0.00
30	UGD-01	Storage Node	790.00	805.00	790.00		0.00	61.65	804.13				0.00	0.00
31	UGD-02	Storage Node	802.50	809.25	802.50		0.00	1.49	806.73				0.00	0.00
32	UGD-03	Storage Node	813.62	821.50	0.00		0.00	22.48	820.18				0.00	0.00

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Diameter or Height (in)	Manning's Roughness	Peak Flow (cfs)	Design Flow Capacity (cfs)	Peak Flow/Design Flow Ratio	Peak Flow Velocity (ft/sec)	Peak Flow Depth (ft)	Peak Flow Depth/Total Depth Ratio	Total Time Reported Surcharged (min)	Reported Condition
1	Link-02	Pipe	13001	13002	56.93	783.95	782.75	2.1100	24.000	0.0130	36.67	32.84	1.12	11.67	2.00	1.00	4.00	SURCHARGED
2	Link-03	Pipe	1312	13002	47.69	795.14	794.90	0.5000	15.000	0.0130	0.00	4.58	0.00	0.00	0.00	0.00	0.00	Calculated
3	Link-04	Pipe	13002	13005	108.25	782.33	781.35	0.9100	36.000	0.0130	36.68	63.46	0.58	8.87	1.70	0.57	0.00	Calculated
4	Link-05	Pipe	13003	13005	149.97	787.40	784.28	2.0800	12.000	0.0130	0.59	5.14	0.11	4.33	0.23	0.23	0.00	Calculated
5	Link-06	Pipe	13009	13008	36.78	782.93	782.29	1.7400	12.000	0.0130	0.70	4.70	0.15	4.11	0.27	0.27	0.00	Calculated
6	Link-07	Pipe	13005	13008	104.48	781.16	780.08	1.0300	36.000	0.0130	36.80	67.81	0.54	7.84	1.89	0.63	0.00	Calculated
7	Link-08	Pipe	D22725	13019	78.09	776.89	776.61	0.3600	15.000	0.0130	4.02	3.87	1.04	3.85	0.99	0.79	0.00	> CAPACITY
8	Link-10	Pipe	13018	13019	7.77	776.48	776.36	1.5400	12.000	0.0130	1.23	4.43	0.28	1.60	1.00	1.00	5.00	SURCHARGED
9	Link-11	Pipe	13019	13017	78.97	776.36	776.14	0.2800	18.000	0.0130	5.23	5.54	0.94	3.53	1.17	0.78	0.00	Calculated
10	Link-12	Pipe	13016	13017	12.35	776.77	776.64	1.0500	12.000	0.0130	0.58	3.66	0.16	2.65	0.58	0.58	0.00	Calculated
11	Link-13	Pipe	13017	13011/3	48.41	776.14	775.94	0.4100	18.000	0.0130	5.80	6.75	0.86	4.46	1.04	0.69	0.00	Calculated
12	Link-14	Pipe	13011/3	13021/3	82.97	771.22	766.00	6.2900	48.000	0.0130	48.20	310.16	0.16	15.63	1.03	0.26	0.00	Calculated
13	Link-15	Pipe	13008	13011/3	56.74	780.03	779.61	0.7400	36.000	0.0130	36.92	57.38	0.64	7.74	1.92	0.64	0.00	Calculated
14	Link-16	Pipe	D22690	1607	132.76	815.71	809.64	4.5700	12.000	0.0130	1.89	7.62	0.25	6.70	0.39	0.39	0.00	Calculated
15	Link-17	Pipe	1607	1570	148.78	809.65	800.57	6.1000	12.000	0.0130	3.34	8.80	0.38	7.54	0.71	0.71	0.00	Calculated
16	Link-18	Pipe	1570	D22686	85.84	800.57	797.40	3.6900	12.000	0.0130	5.01	6.85	0.73	7.74	1.00	1.00	9.00	SURCHARGED
17	Link-19	Pipe	1533	D22686	9.27	798.65	797.40	13.4800	12.000	0.0130	2.25	13.08	0.17	4.79	1.00	1.00	11.00	SURCHARGED
18	Link-20	Pipe	D22686	1511	72.00	797.40	794.08	4.6100	12.000	0.0130	6.65	7.65	0.87	8.47	1.00	1.00	12.00	SURCHARGED
19	Link-21	Pipe	1511	1453	55.99	794.03	793.73	0.5400	15.000	0.0130	7.54	4.73	1.59	6.14	1.25	1.00	17.00	SURCHARGED
20	Link-22	Pipe	1451	1453	40.69	796.16	793.81	5.7800	12.000	0.0130	2.13	8.56	0.25	4.72	1.00	1.00	9.00	SURCHARGED
21	Link-23	Pipe	1453	13006	77.33	793.40	793.24	0.2100	15.000	0.0130	9.57	2.94	3.26	7.80	1.25	1.00	17.00	SURCHARGED
22	Link-24	Pipe	13006	13011/3	41.11	793.19	793.00	0.4600	15.000	0.0130	10.80	4.39	2.46	8.84	1.22	0.98	0.00	> CAPACITY
23	Link-37	Pipe	302	301	136.92	802.50	801.95	0.4000	12.000	0.0130	1.01	2.26	0.45	2.86	0.85	0.85	0.00	Calculated
24	Link-38	Pipe	301	1570	24.56	801.85	800.75	4.4800	12.000	0.0130	1.88	7.54	0.25	5.87	1.00	1.00	5.00	SURCHARGED
25	Link-39	Pipe	HDS-101	UGD-01	10.00	802.00	801.82	1.8000	24.000	0.0130	24.57	30.35	0.81	8.80	2.00	1.00	7.00	SURCHARGED
26	Link-41	Pipe	HDS-201	UGD-01	47.26	802.89	801.95	1.9900	24.000	0.0130	37.15	31.90	1.16	11.83	2.00	1.00	7.00	SURCHARGED
27	Link-42	Pipe	2	1	30.50	790.00	789.83	0.5600	36.000	0.0130	36.65	49.80	0.74	6.87	2.12	0.71	0.00	Calculated
28	Link-44	Pipe	1	13001	214.52	789.73	788.55	0.5500	36.000	0.0130	36.66	49.47	0.74	7.46	1.97	0.66	0.00	Calculated
29	UGD-01-2ndStage	Orifice	UGD-01	2		790.00	789.90		8.000		32.21							
30	UGD-01-WQ	Orifice	UGD-01	2		790.00	789.90		3.000		0.81							
31	UGD-02-MANIFOLD	Orifice	UGD-02	302		802.50	800.50		12.000		0.98							
32	UGD-02-WQ	Orifice	UGD-02	302		802.50	800.50		0.500		0.01							
33	UGD-03-Orifice	Orifice	UGD-03	HDS-101		813.62	801.90		10.000		6.51							
34	UGD-01-Weir	Weir	UGD-01	2		790.00	789.90				3.63							

**Subbasin Hydrology**

**Subbasin : FUTURE-01**

**Input Data**

Area (ac) ..... 3.25  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 95  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	3.25	-	95
Composite Area & Weighted CN	3.25		95

**Time of Concentration**

TOC Method : SCS TR-55

Sheet Flow Equation :

$$T_c = (0.007 * ((n * L_f)^{0.8})) / ((P^{0.5}) * (S_f^{0.4}))$$

Where :

- Tc = Time of Concentration (hr)
- n = Manning's roughness
- Lf = Flow Length (ft)
- P = 2 yr, 24 hr Rainfall (inches)
- Sf = Slope (ft/ft)

Shallow Concentrated Flow Equation :

- V = 16.1345 \* (Sf<sup>0.5</sup>) (unpaved surface)
- V = 20.3282 \* (Sf<sup>0.5</sup>) (paved surface)
- V = 15.0 \* (Sf<sup>0.5</sup>) (grassed waterway surface)
- V = 10.0 \* (Sf<sup>0.5</sup>) (nearly bare & untilled surface)
- V = 9.0 \* (Sf<sup>0.5</sup>) (cultivated straight rows surface)
- V = 7.0 \* (Sf<sup>0.5</sup>) (short grass pasture surface)
- V = 5.0 \* (Sf<sup>0.5</sup>) (woodland surface)
- V = 2.5 \* (Sf<sup>0.5</sup>) (forest w/heavy litter surface)
- Tc = (Lf / V) / (3600 sec/hr)

Where:

- Tc = Time of Concentration (hr)
- Lf = Flow Length (ft)
- V = Velocity (ft/sec)
- Sf = Slope (ft/ft)

Channel Flow Equation :

$$V = (1.49 * (R^{2/3}) * (S_f^{0.5})) / n$$

$$R = A_q / W_p$$

$$T_c = (L_f / V) / (3600 \text{ sec/hr})$$

Where :

- Tc = Time of Concentration (hr)
- Lf = Flow Length (ft)
- R = Hydraulic Radius (ft)
- Aq = Flow Area (ft<sup>2</sup>)
- Wp = Wetted Perimeter (ft)
- V = Velocity (ft/sec)
- Sf = Slope (ft/ft)
- n = Manning's roughness

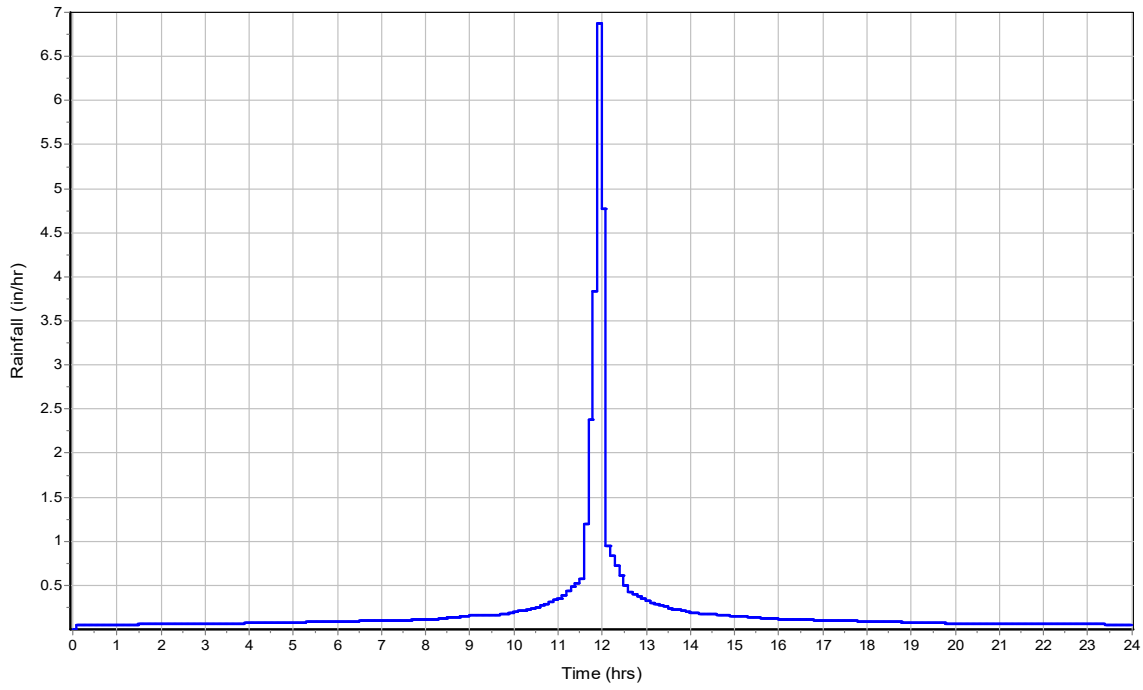
User-Defined TOC override (minutes): 10

**Subbasin Runoff Results**

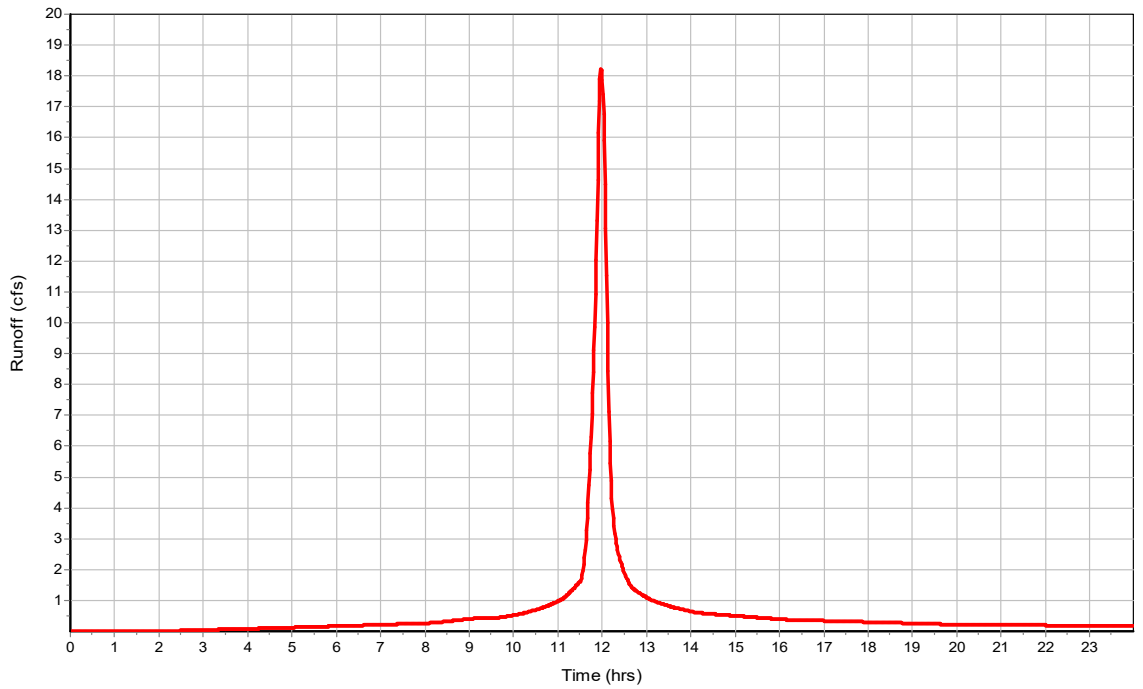
Total Rainfall (in) ..... 5.02  
 Total Runoff (in) ..... 4.44  
 Peak Runoff (cfs) ..... 18.25  
 Weighted Curve Number ..... 95  
 Time of Concentration (days hh:mm:ss) ..... 0 00:10:00

Subbasin : FUTURE-01

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : FUTURE-02**

**Input Data**

Area (ac) ..... 5.53  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 93  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	5.53	-	93
Composite Area & Weighted CN	5.53		93

**Time of Concentration**

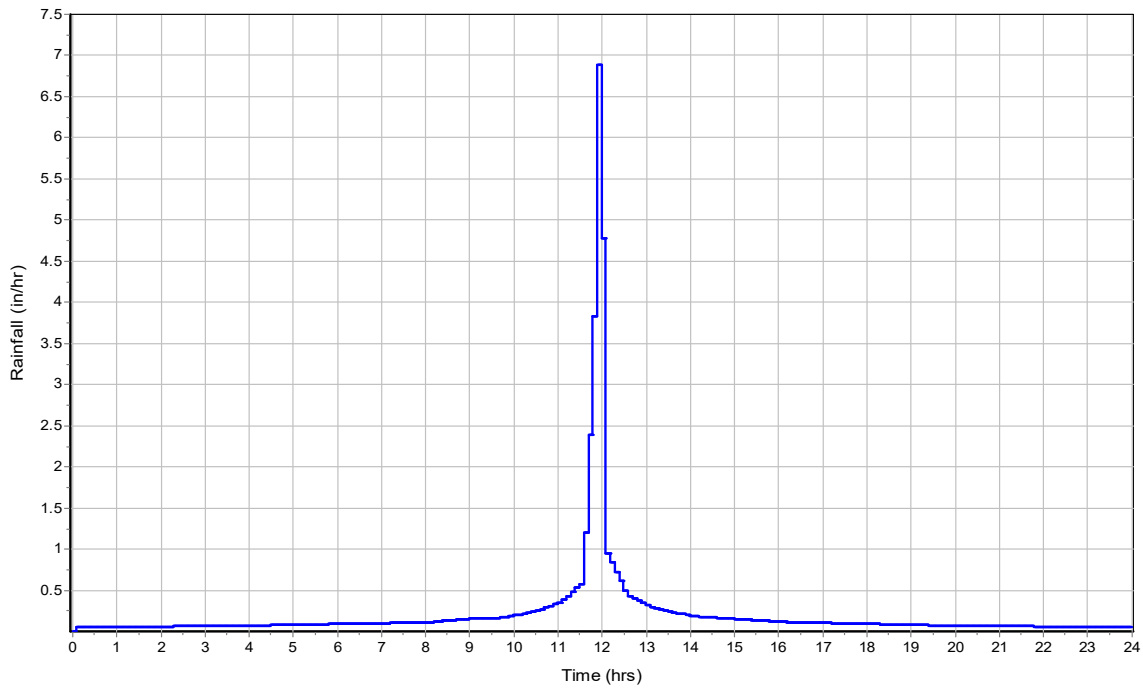
User-Defined TOC override (minutes): 10

**Subbasin Runoff Results**

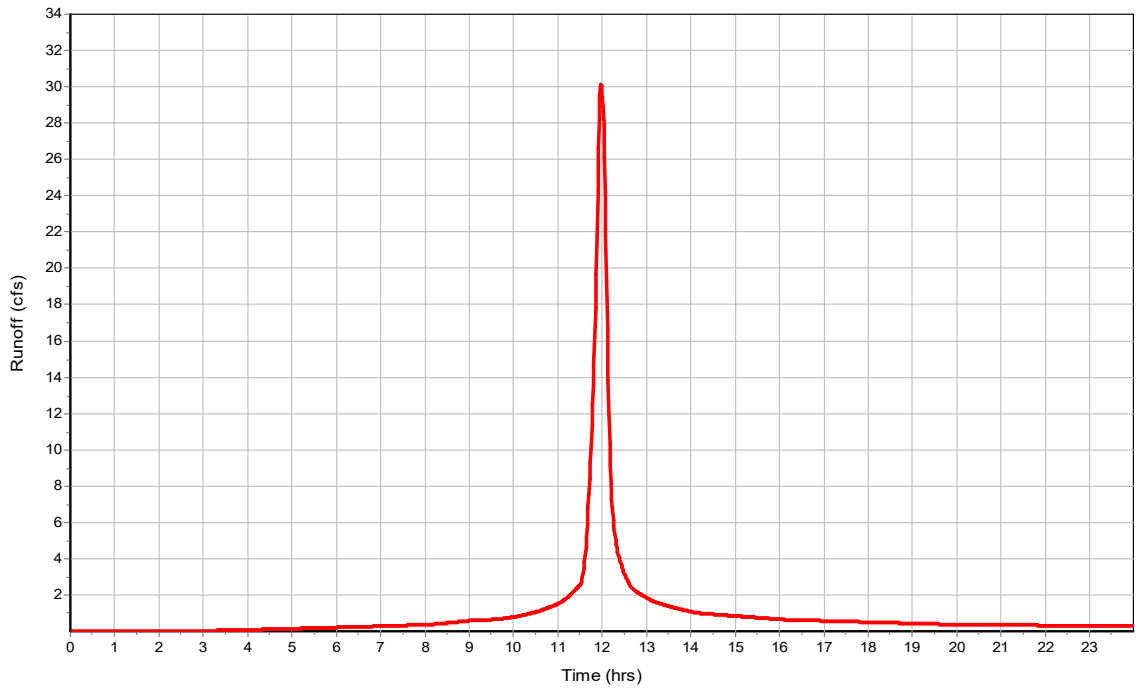
Total Rainfall (in) ..... 5.02  
 Total Runoff (in) ..... 4.22  
 Peak Runoff (cfs) ..... 30.16  
 Weighted Curve Number ..... 93  
 Time of Concentration (days hh:mm:ss) ..... 0 00:10:00

Subbasin : FUTURE-02

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : FUTURE-03**

**Input Data**

Area (ac) ..... 0.78  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 95  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
32	0.78	-	95
Composite Area & Weighted CN	0.78		95

**Time of Concentration**

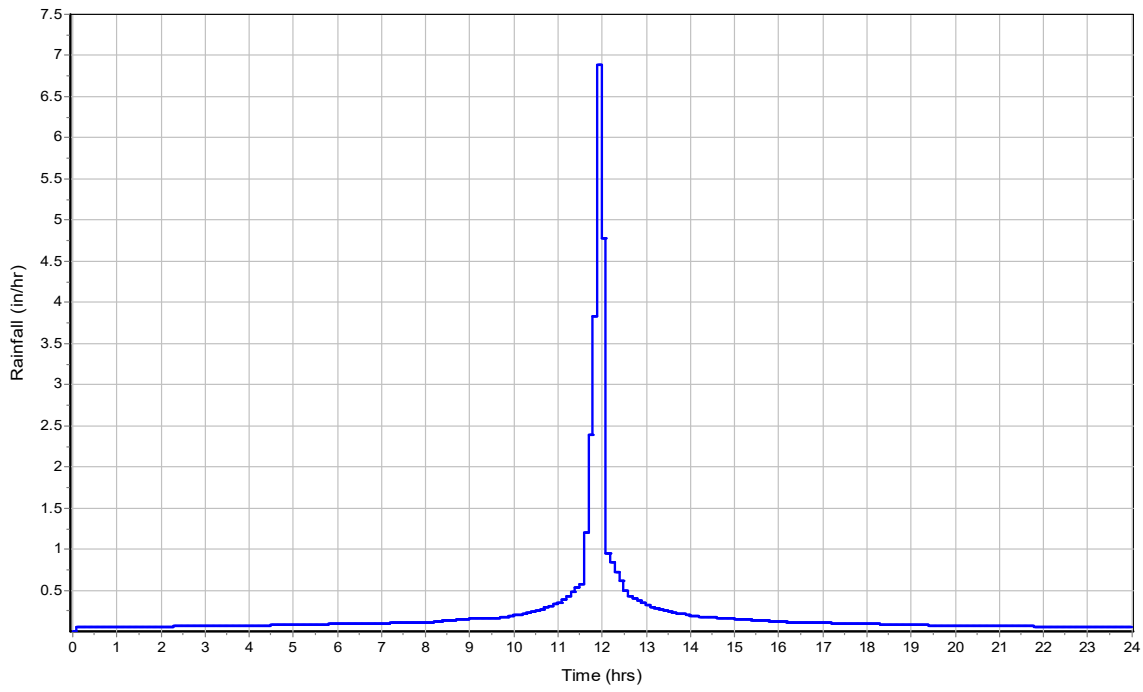
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

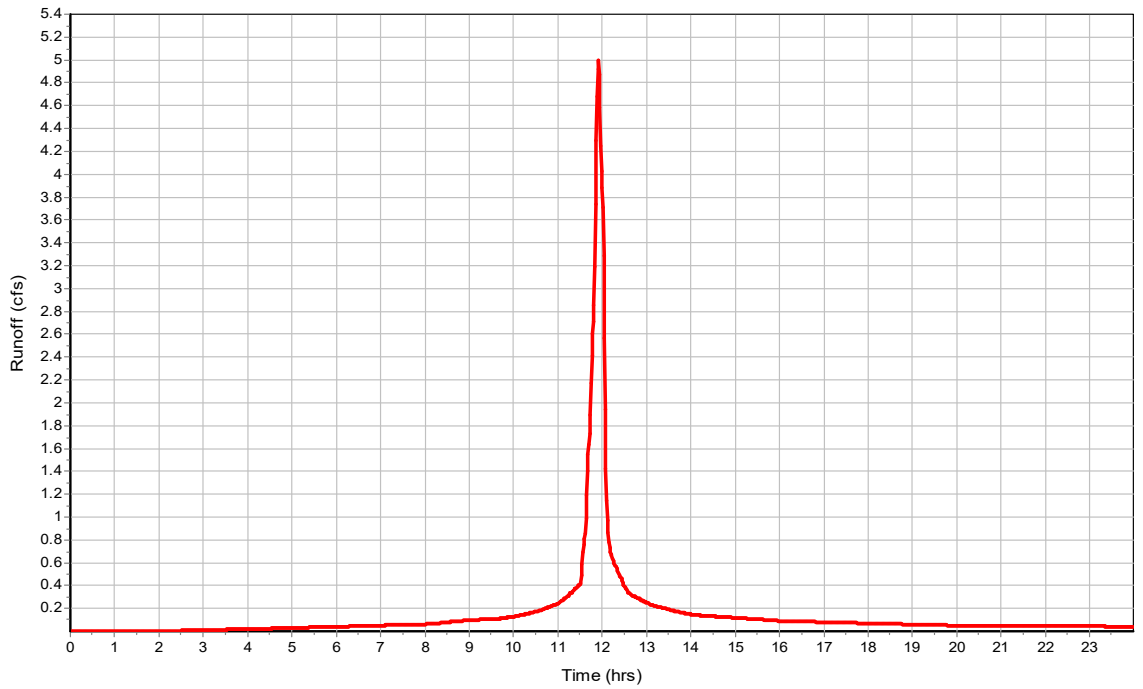
Total Rainfall (in) ..... 5.02  
 Total Runoff (in) ..... 4.44  
 Peak Runoff (cfs) ..... 5  
 Weighted Curve Number ..... 95  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : FUTURE-03

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : POST-01**

**Input Data**

Area (ac) ..... 3.47  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 94  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
32			
-	3.47	-	94
Composite Area & Weighted CN	3.47		94

**Time of Concentration**

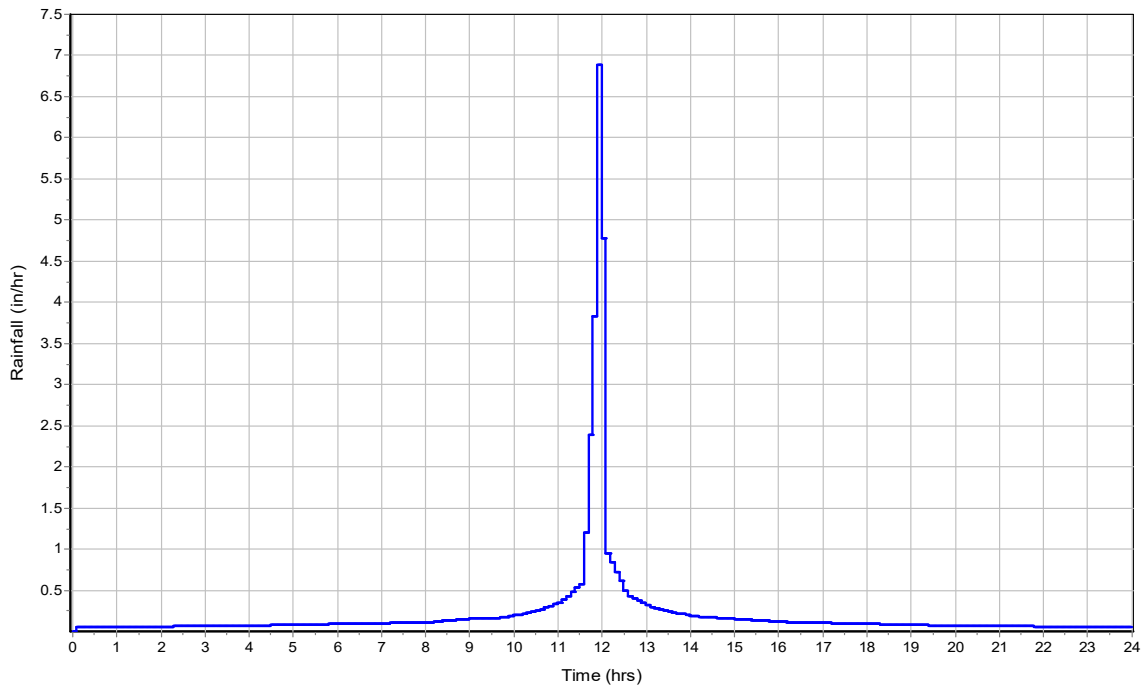
User-Defined TOC override (minutes): 10

**Subbasin Runoff Results**

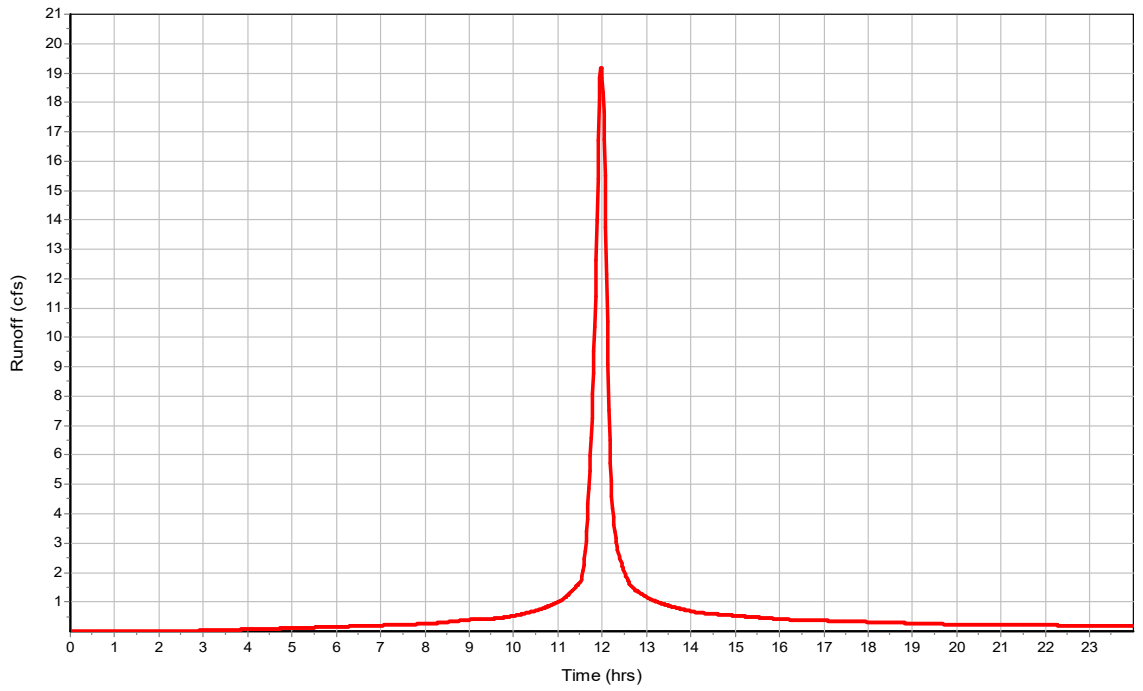
Total Rainfall (in) ..... 5.02  
 Total Runoff (in) ..... 4.33  
 Peak Runoff (cfs) ..... 19.22  
 Weighted Curve Number ..... 94  
 Time of Concentration (days hh:mm:ss) ..... 0 00:10:00

Subbasin : POST-01

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : POST-02**

**Input Data**

Area (ac) ..... 1.34  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 91  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	1.34	-	91
Composite Area & Weighted CN	1.34		91

**Time of Concentration**

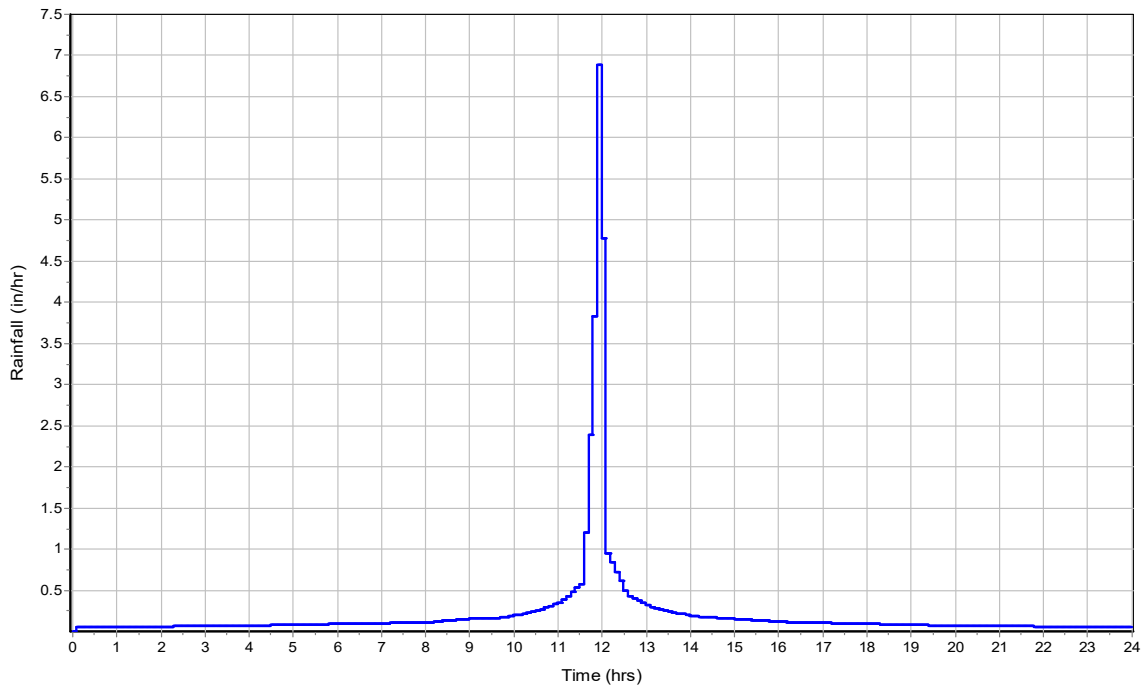
User-Defined TOC override (minutes): 10

**Subbasin Runoff Results**

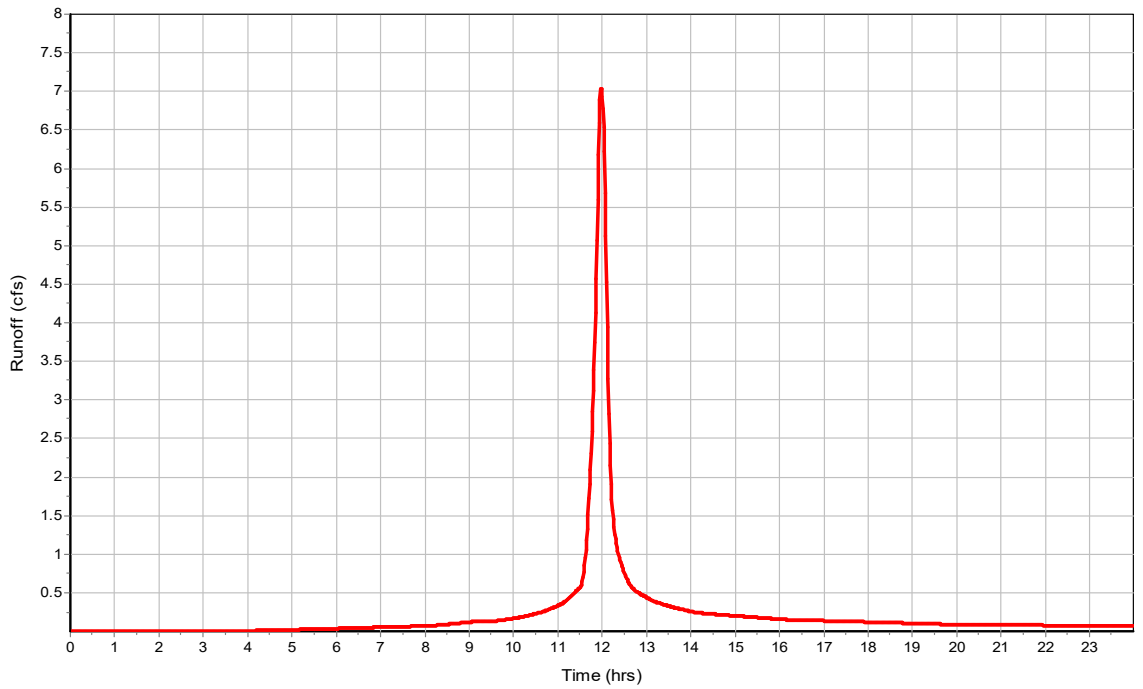
Total Rainfall (in) ..... 5.02  
 Total Runoff (in) ..... 4  
 Peak Runoff (cfs) ..... 7.06  
 Weighted Curve Number ..... 91  
 Time of Concentration (days hh:mm:ss) ..... 0 00:10:00

Subbasin : POST-02

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : POST-03**

**Input Data**

Area (ac) ..... 0.28  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 85  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	0.28	-	85
Composite Area & Weighted CN	0.28		85

**Time of Concentration**

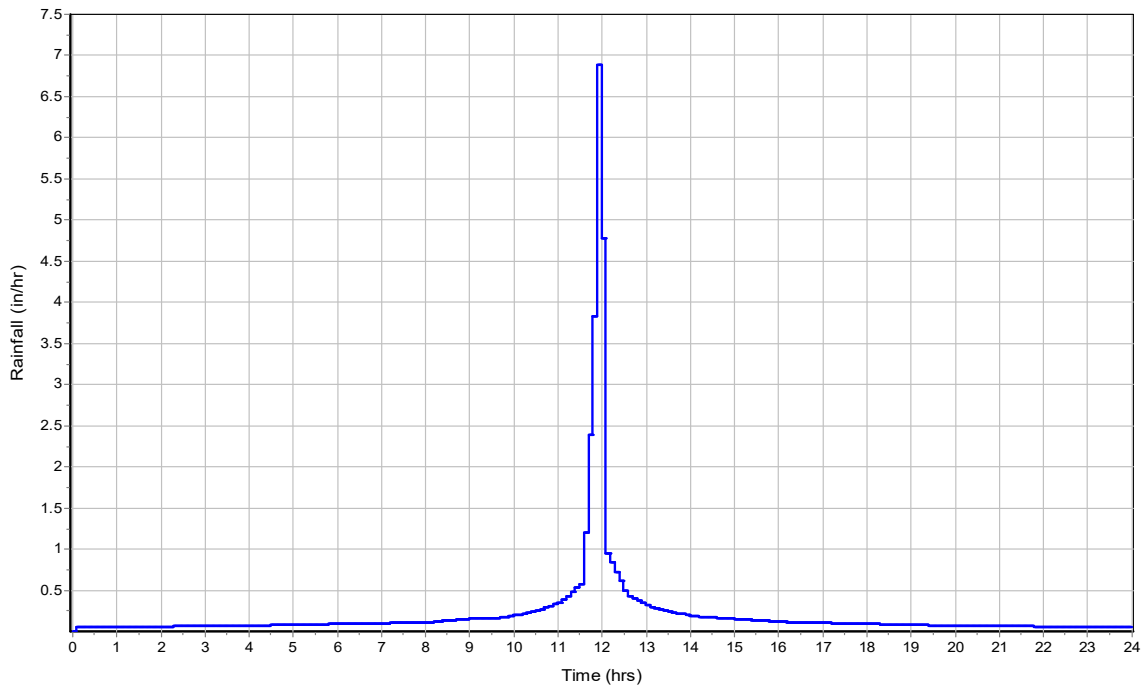
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

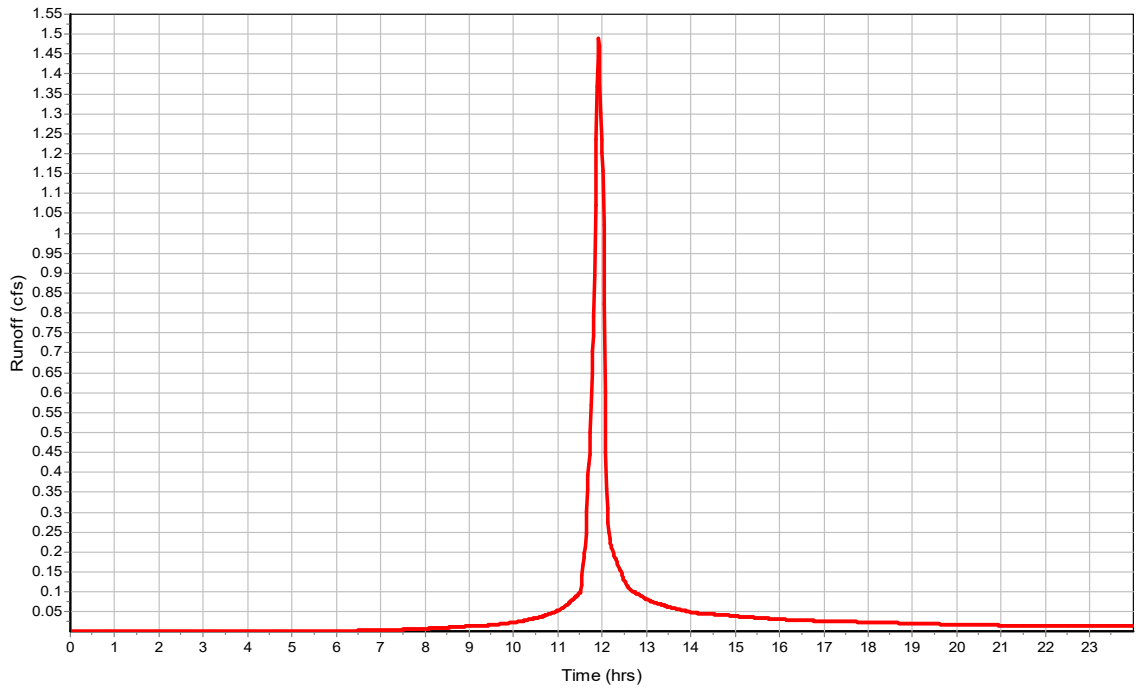
Total Rainfall (in) ..... 5.02  
 Total Runoff (in) ..... 3.39  
 Peak Runoff (cfs) ..... 1.49  
 Weighted Curve Number ..... 85  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : POST-03

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-13003**

**Input Data**

Area (ac) ..... 0.09  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 97.81  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	0.09	-	97.81
Composite Area & Weighted CN	0.09		97.81

**Time of Concentration**

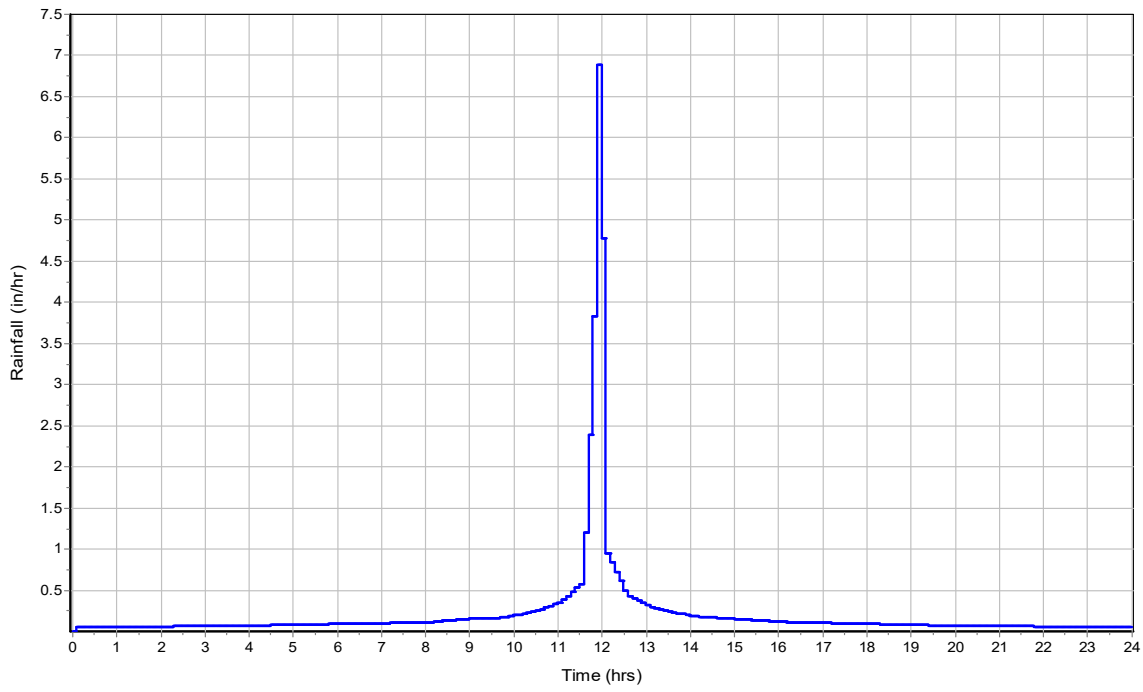
User-Defined TOC override (minutes): 5.00

**Subbasin Runoff Results**

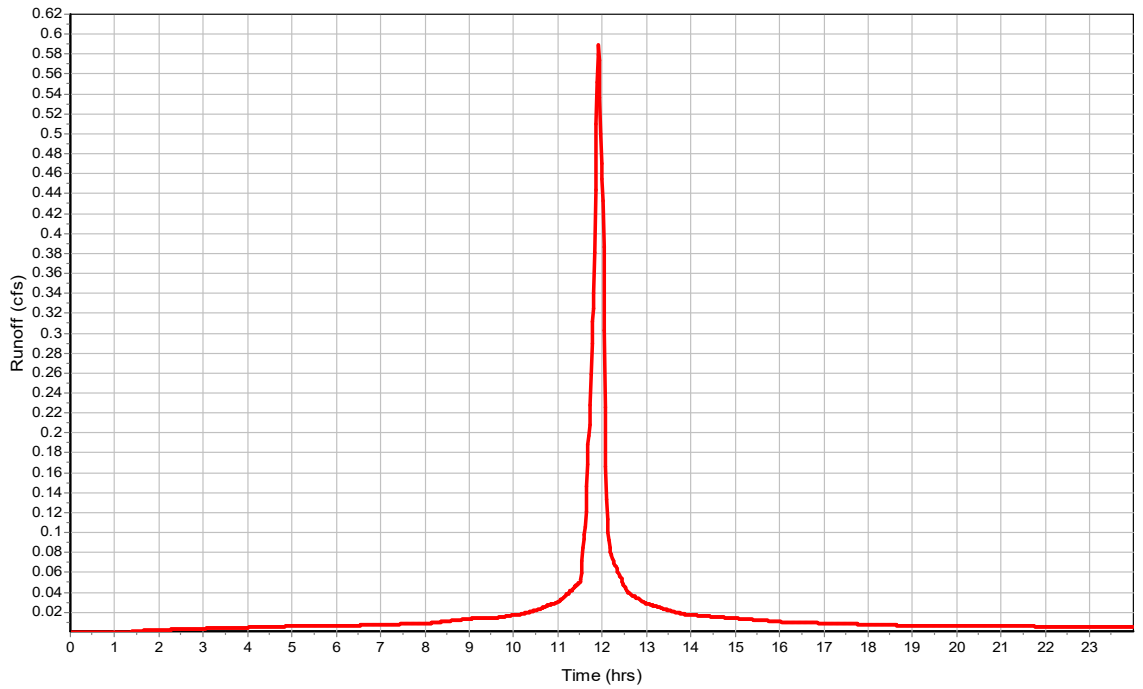
Total Rainfall (in) ..... 5.02  
 Total Runoff (in) ..... 4.76  
 Peak Runoff (cfs) ..... 0.59  
 Weighted Curve Number ..... 97.81  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-13003

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-13006**

**Input Data**

Area (ac) ..... 0.21  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 90.17  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	0.21	-	90.17
Composite Area & Weighted CN	0.21		90.17

**Time of Concentration**

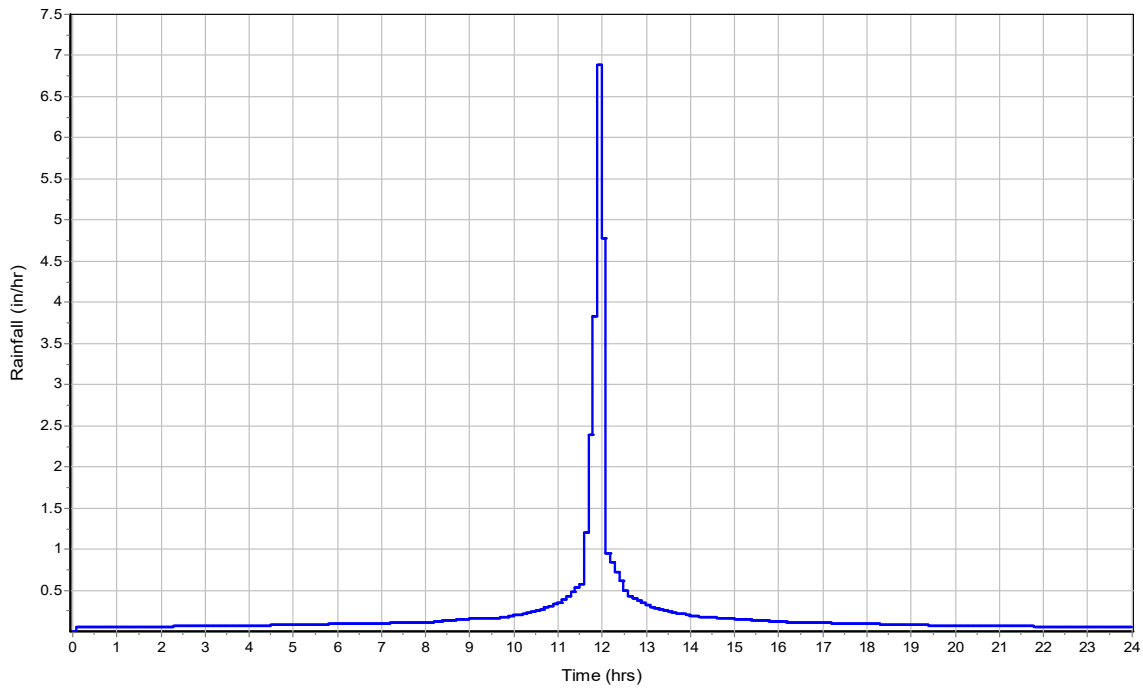
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

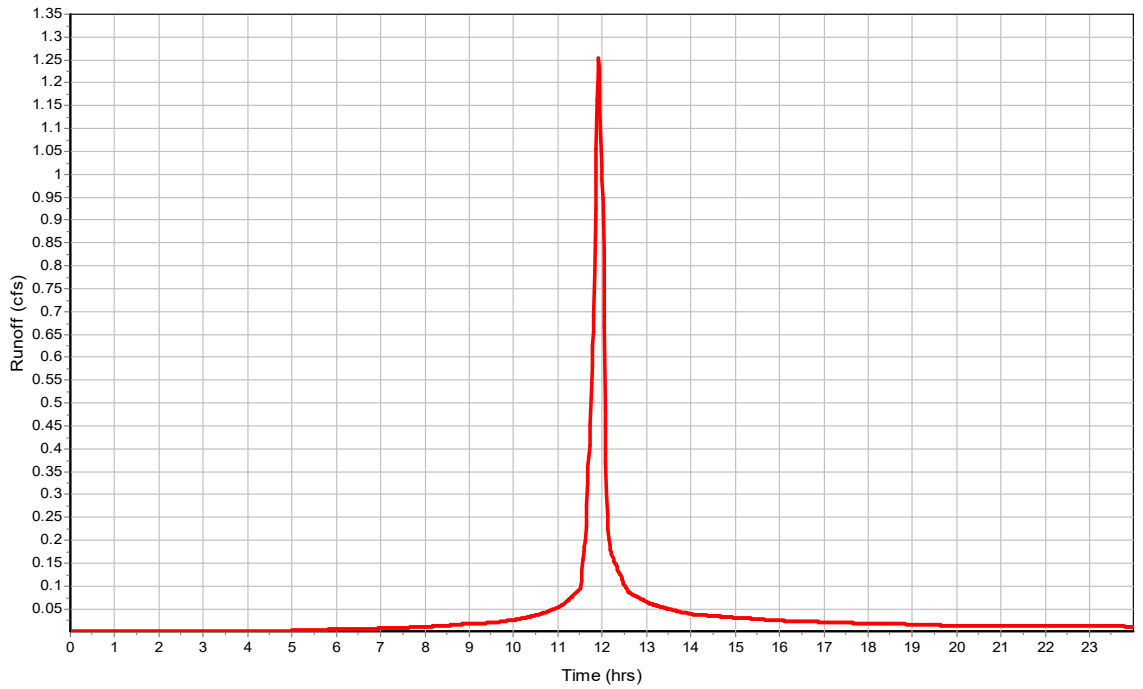
Total Rainfall (in) ..... 5.02  
 Total Runoff (in) ..... 3.91  
 Peak Runoff (cfs) ..... 1.25  
 Weighted Curve Number ..... 90.17  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-13006

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-13009**

**Input Data**

Area (ac) ..... 0.11  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 95.27  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	0.11	-	95.27
Composite Area & Weighted CN	0.11		95.27

**Time of Concentration**

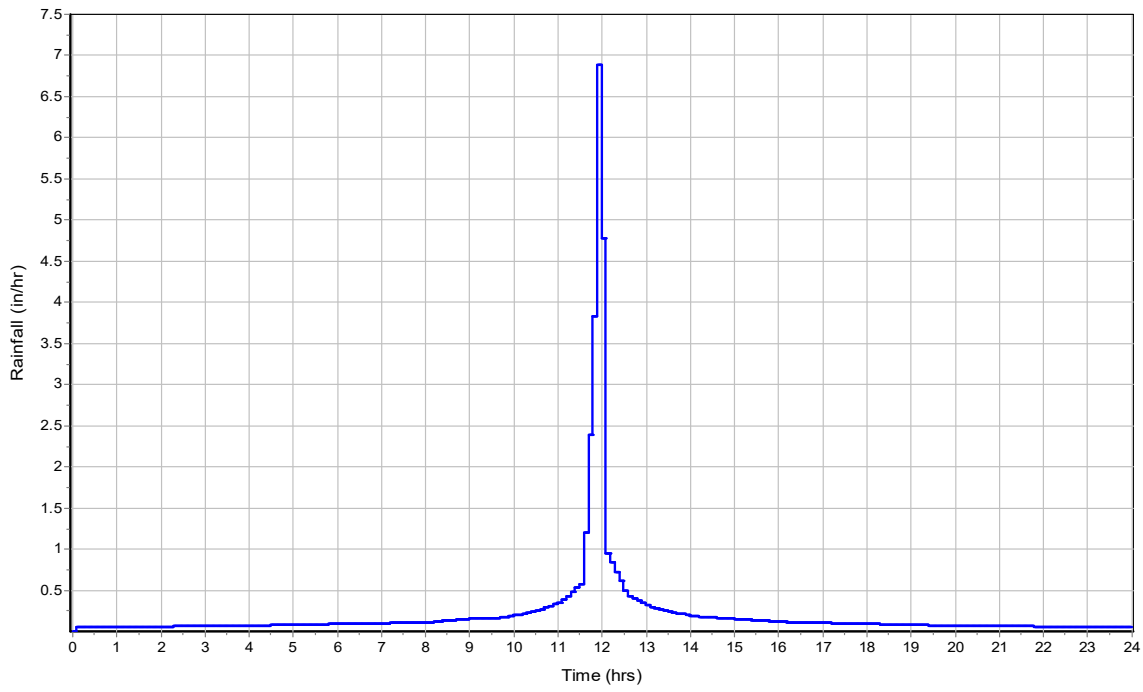
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

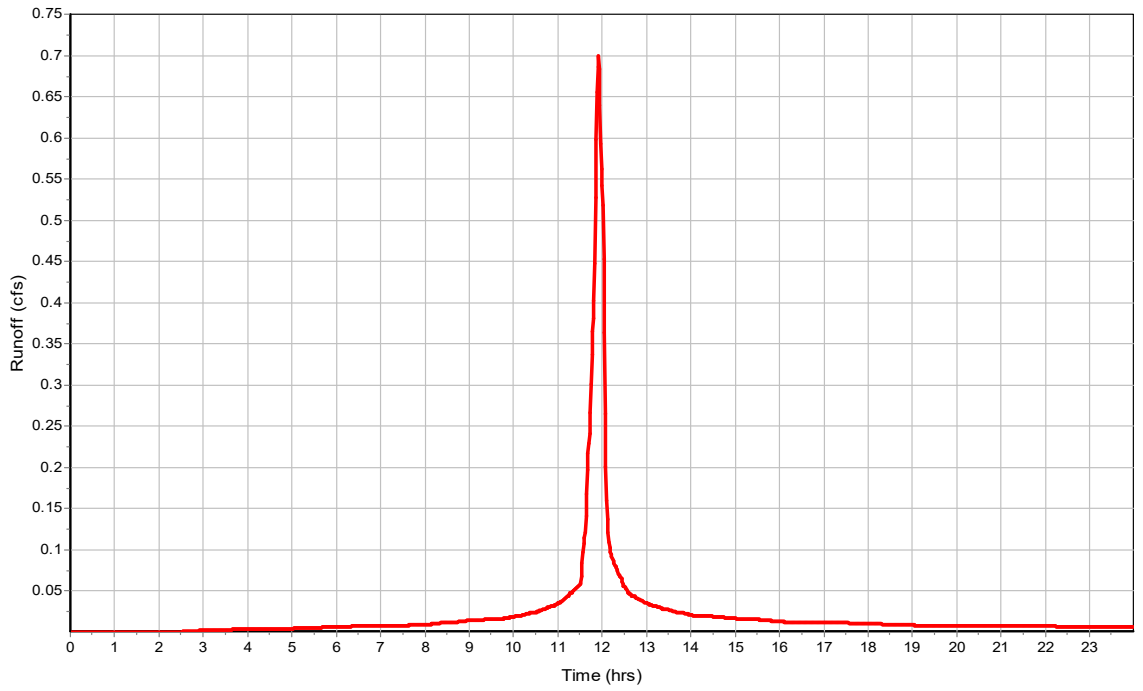
Total Rainfall (in) ..... 5.02  
 Total Runoff (in) ..... 4.47  
 Peak Runoff (cfs) ..... 0.7  
 Weighted Curve Number ..... 95.27  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-13009

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-13011/3**

**Input Data**

Area (ac) ..... 1.18  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 74.32  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	1.18	-	74.32
Composite Area & Weighted CN	1.18		74.32

**Time of Concentration**

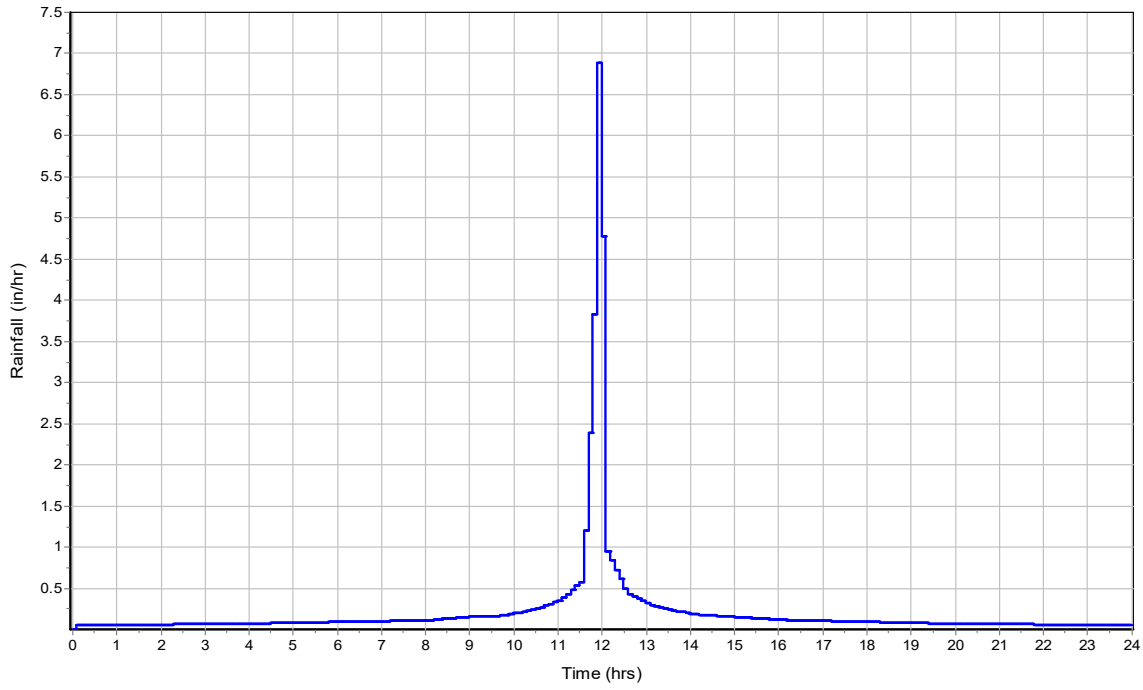
User-Defined TOC override (minutes): 10

**Subbasin Runoff Results**

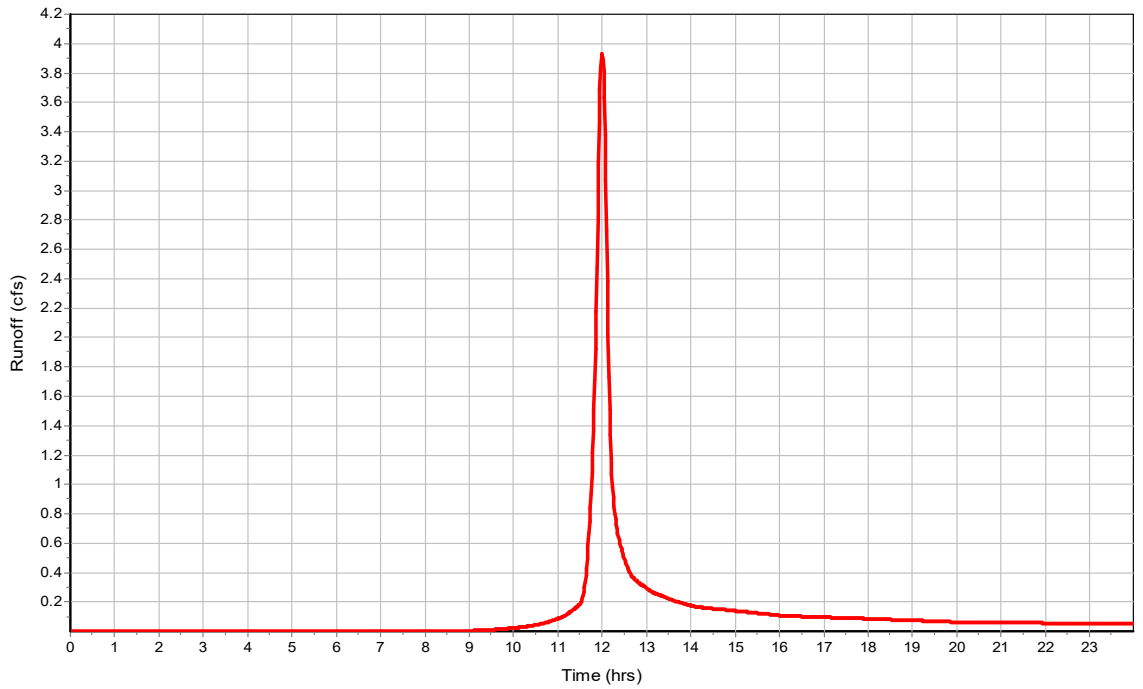
Total Rainfall (in) ..... 5.02  
 Total Runoff (in) ..... 2.41  
 Peak Runoff (cfs) ..... 3.93  
 Weighted Curve Number ..... 74.32  
 Time of Concentration (days hh:mm:ss) ..... 0 00:10:00

Subbasin : SUB-13011/3

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-13016**

**Input Data**

Area (ac) ..... 0.09  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 97.34  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.09	-	97.34
Composite Area & Weighted CN		0.09		97.34

**Time of Concentration**

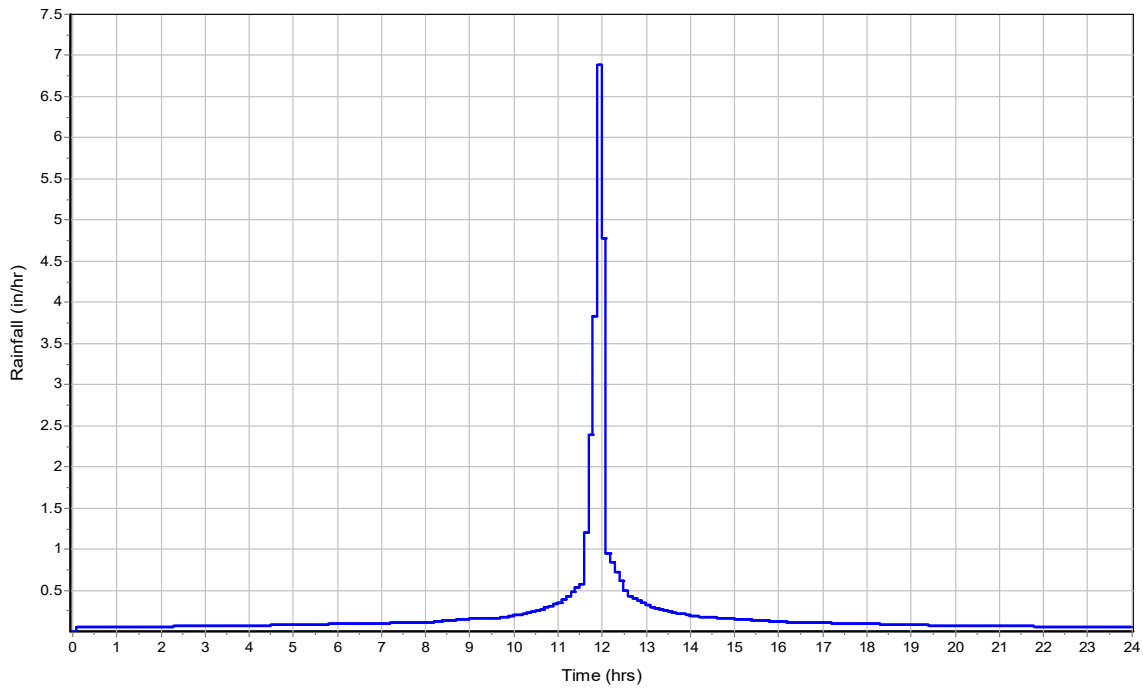
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

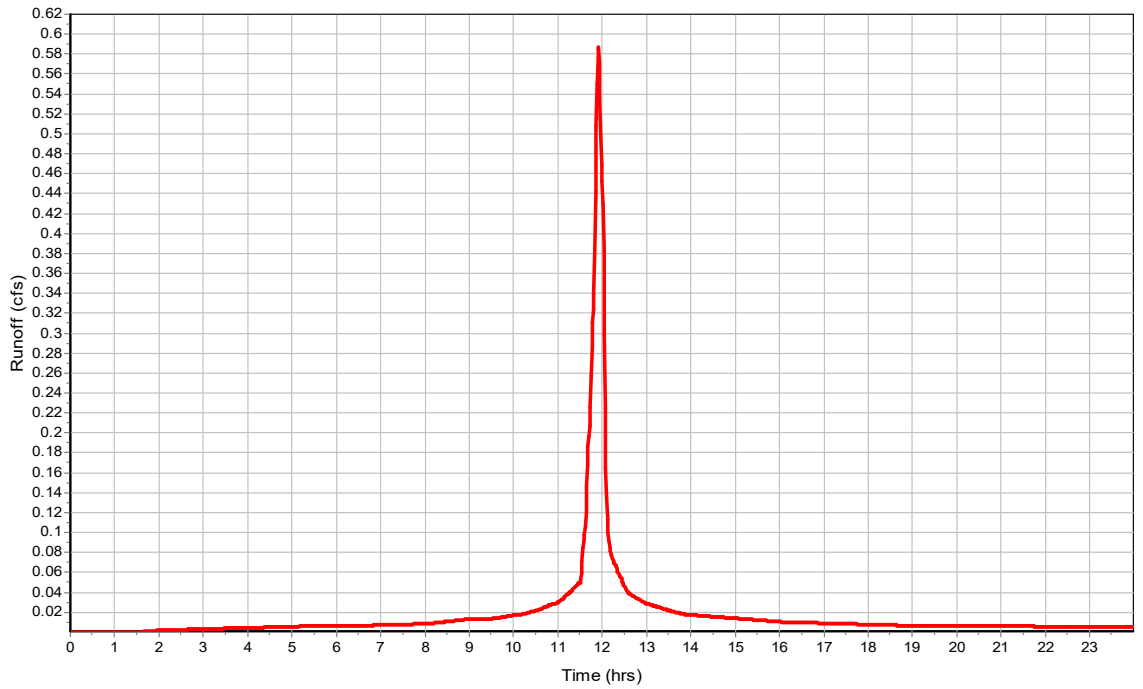
Total Rainfall (in) ..... 5.02  
 Total Runoff (in) ..... 4.7  
 Peak Runoff (cfs) ..... 0.59  
 Weighted Curve Number ..... 97.34  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-13016

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-13018**

**Input Data**

Area (ac) ..... 0.22  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 87.75  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.22	-	87.75
Composite Area & Weighted CN		0.22		87.75

**Time of Concentration**

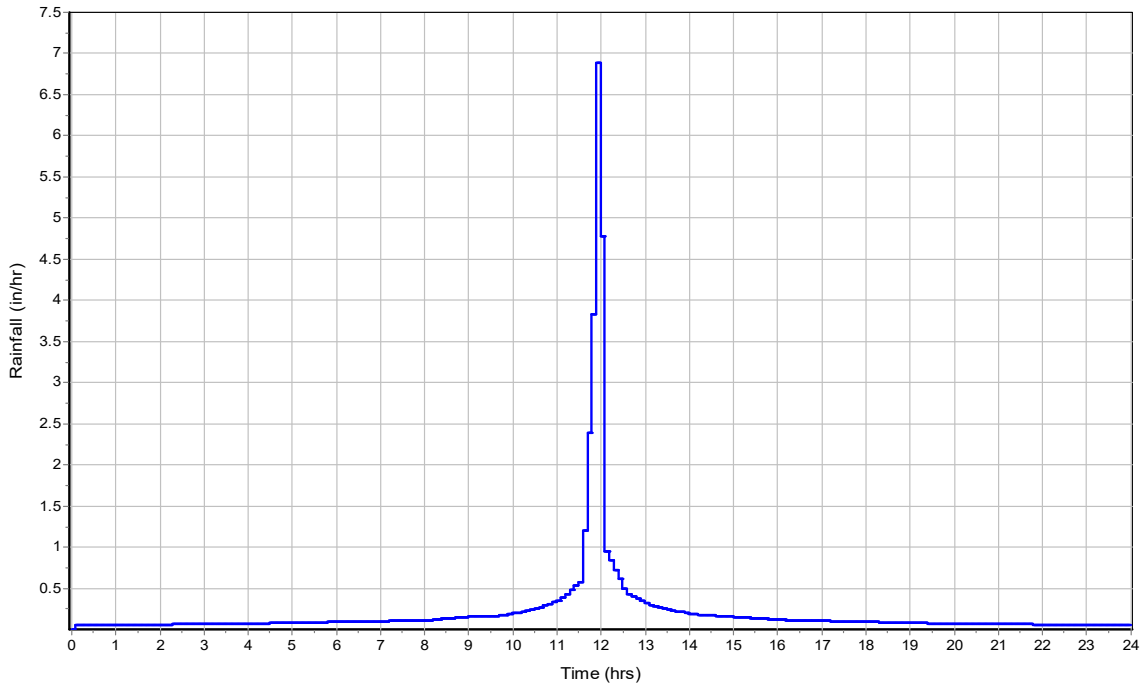
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

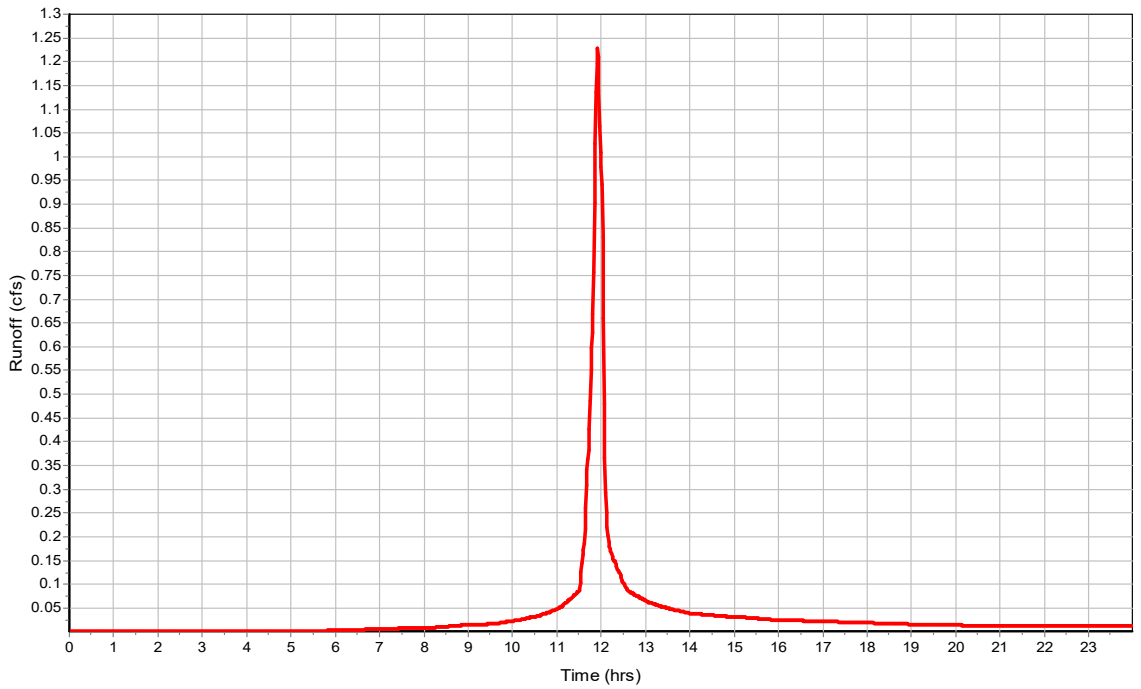
Total Rainfall (in) ..... 5.02  
 Total Runoff (in) ..... 3.66  
 Peak Runoff (cfs) ..... 1.23  
 Weighted Curve Number ..... 87.75  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-13018

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-1451**

**Input Data**

Area (ac) ..... 0.37  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 88.41  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.37	-	88.41
Composite Area & Weighted CN		0.37		88.41

**Time of Concentration**

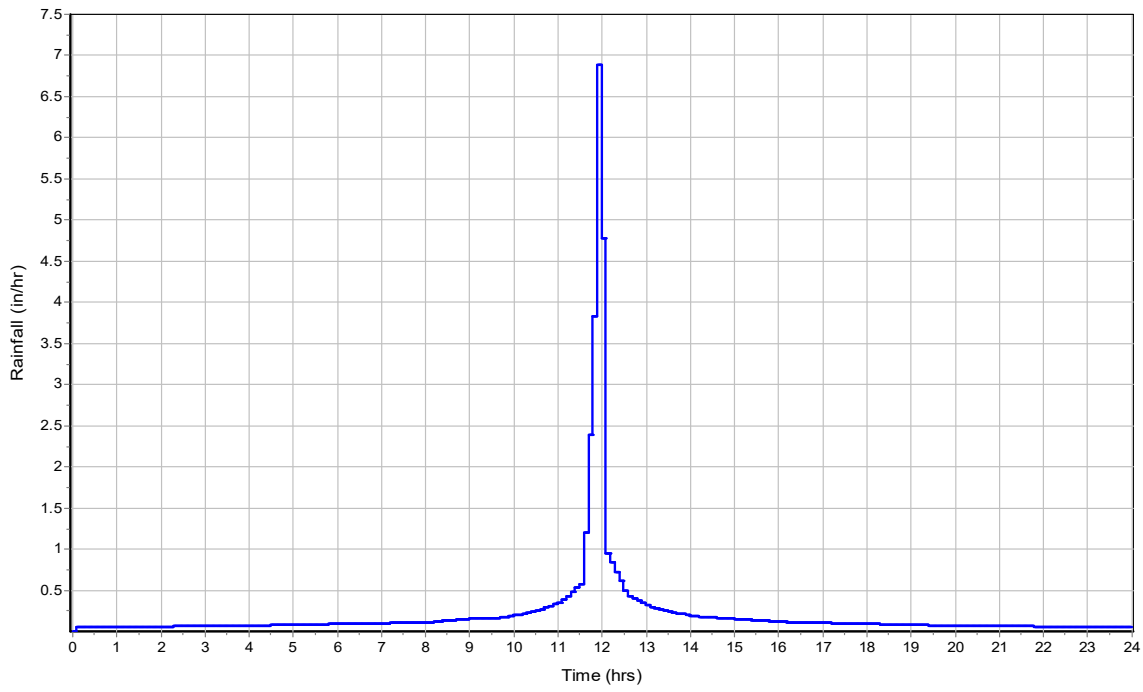
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

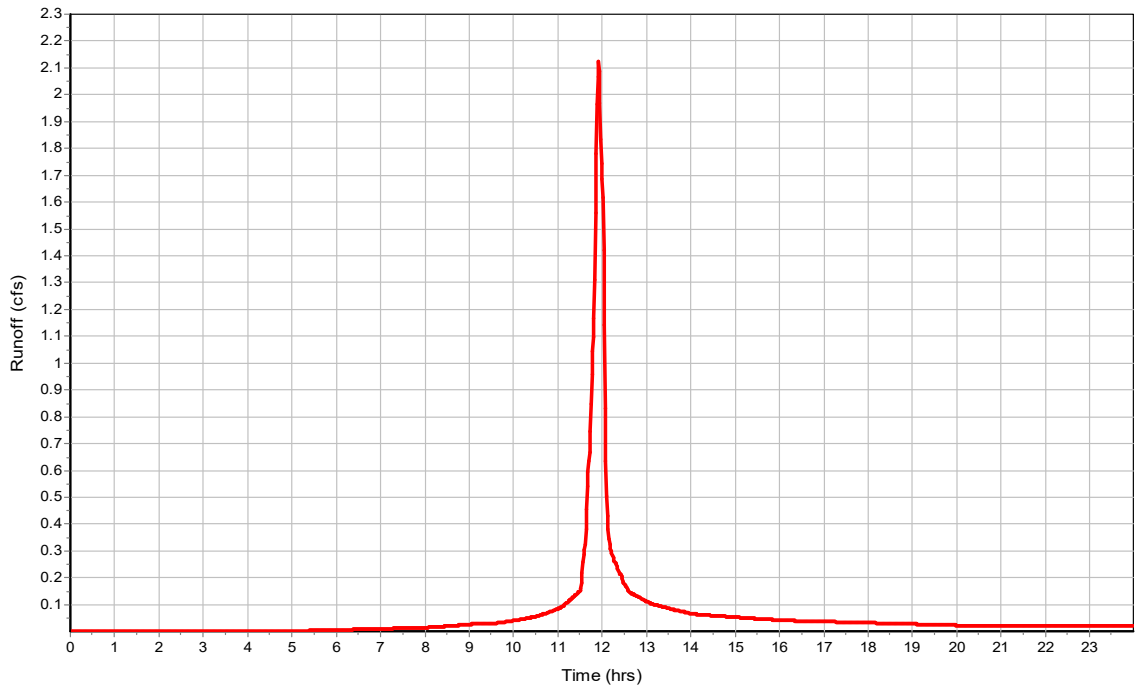
Total Rainfall (in) ..... 5.02  
 Total Runoff (in) ..... 3.73  
 Peak Runoff (cfs) ..... 2.13  
 Weighted Curve Number ..... 88.41  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-1451

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-1511**

**Input Data**

Area (ac) ..... 0.16  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 92.08  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.16	-	92.08
Composite Area & Weighted CN		0.16		92.08

**Time of Concentration**

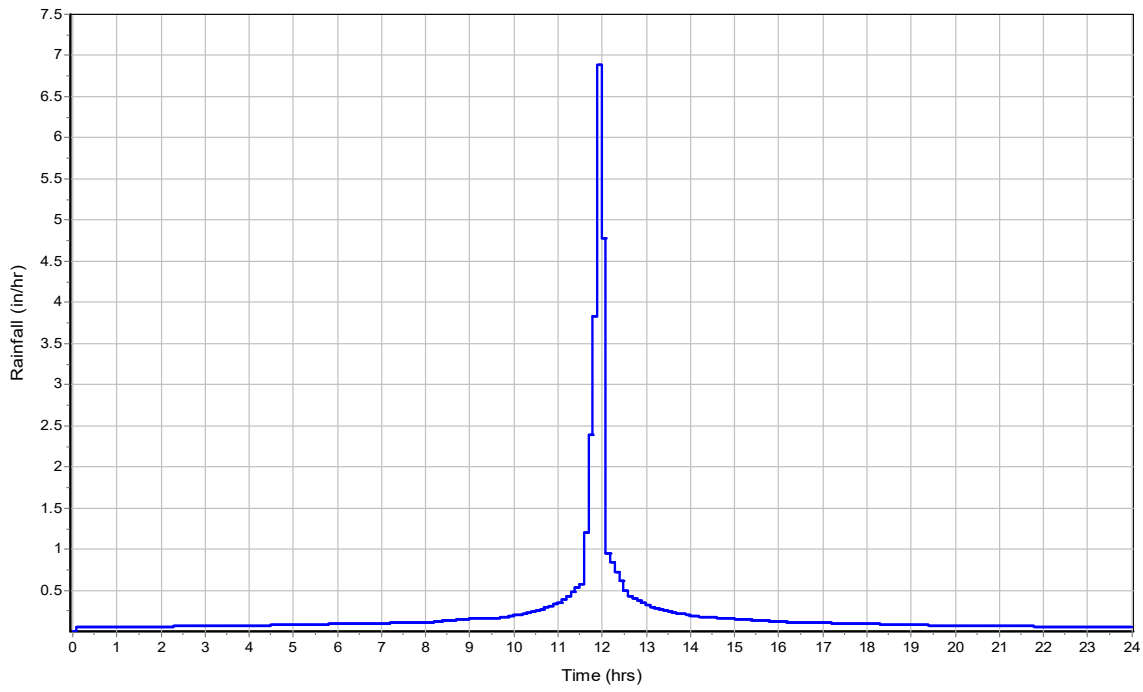
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

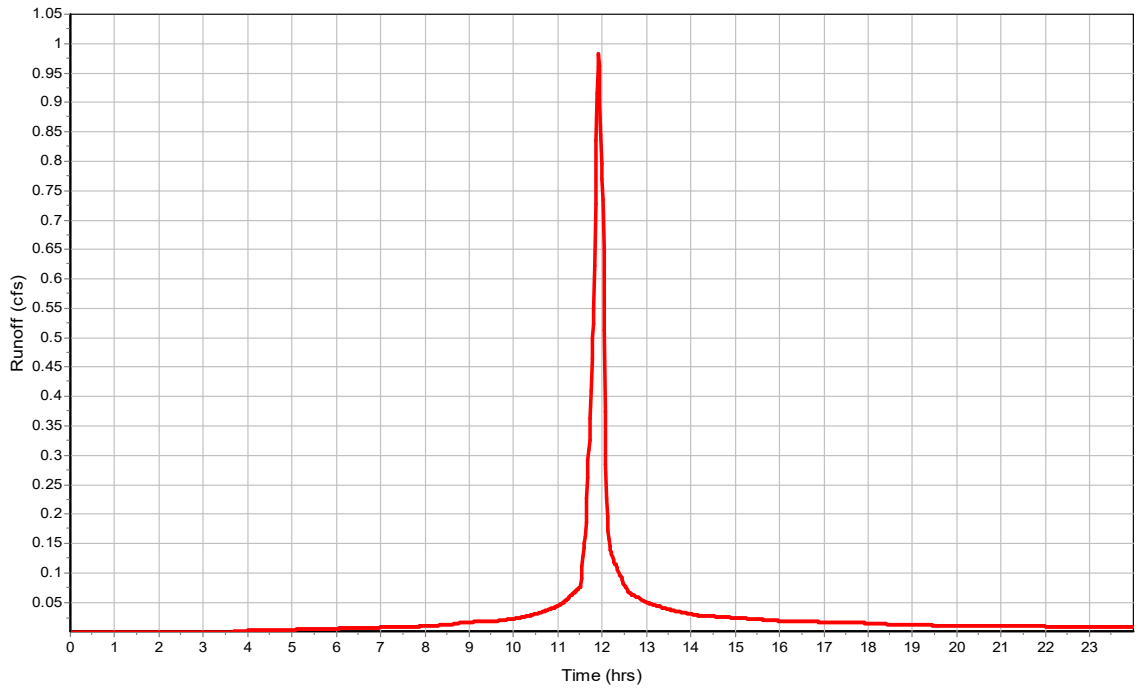
Total Rainfall (in) ..... 5.02  
 Total Runoff (in) ..... 4.12  
 Peak Runoff (cfs) ..... 0.98  
 Weighted Curve Number ..... 92.08  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-1511

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-1533**

**Input Data**

Area (ac) ..... 0.15  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 89.88  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.15	-	89.88
Composite Area & Weighted CN		0.15		89.88

**Time of Concentration**

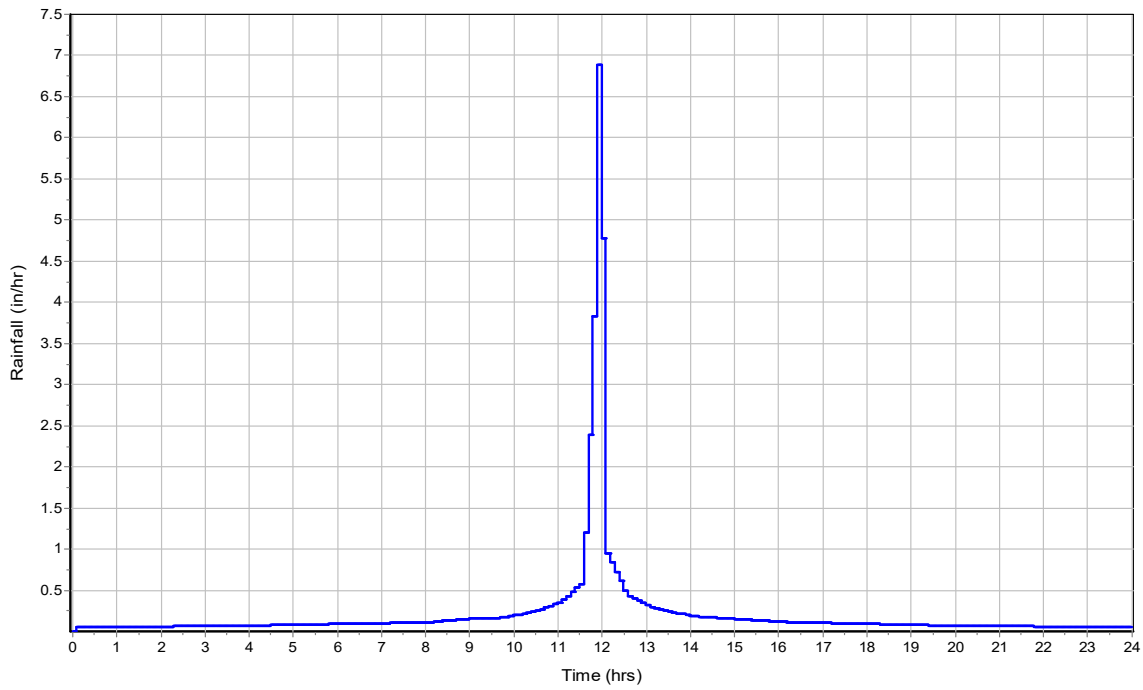
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

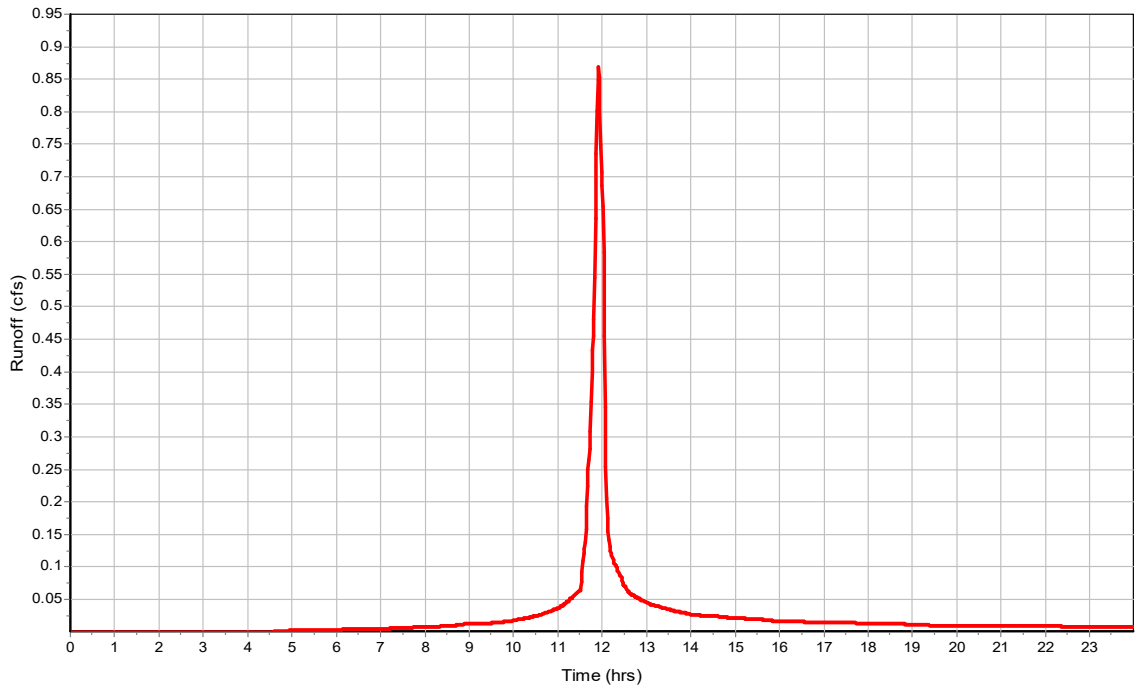
Total Rainfall (in) ..... 5.02  
 Total Runoff (in) ..... 3.88  
 Peak Runoff (cfs) ..... 0.87  
 Weighted Curve Number ..... 89.88  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-1533

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-1570**

**Input Data**

Area (ac) ..... 0.26  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 92.05  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.26	-	92.05
Composite Area & Weighted CN		0.26		92.05

**Time of Concentration**

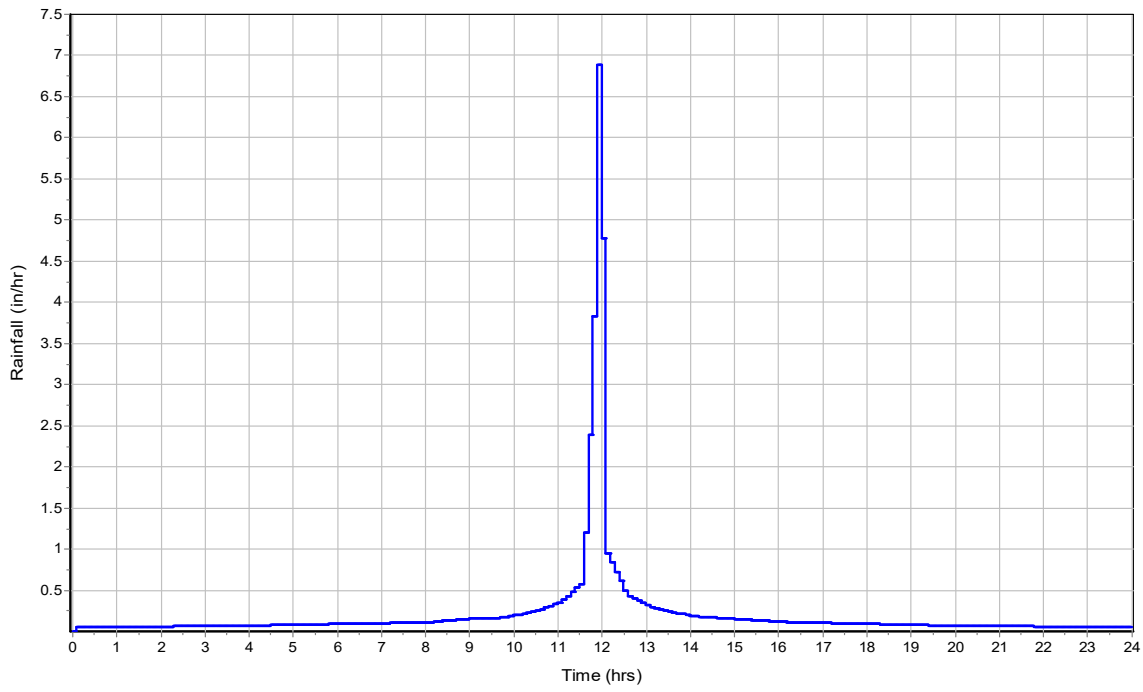
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

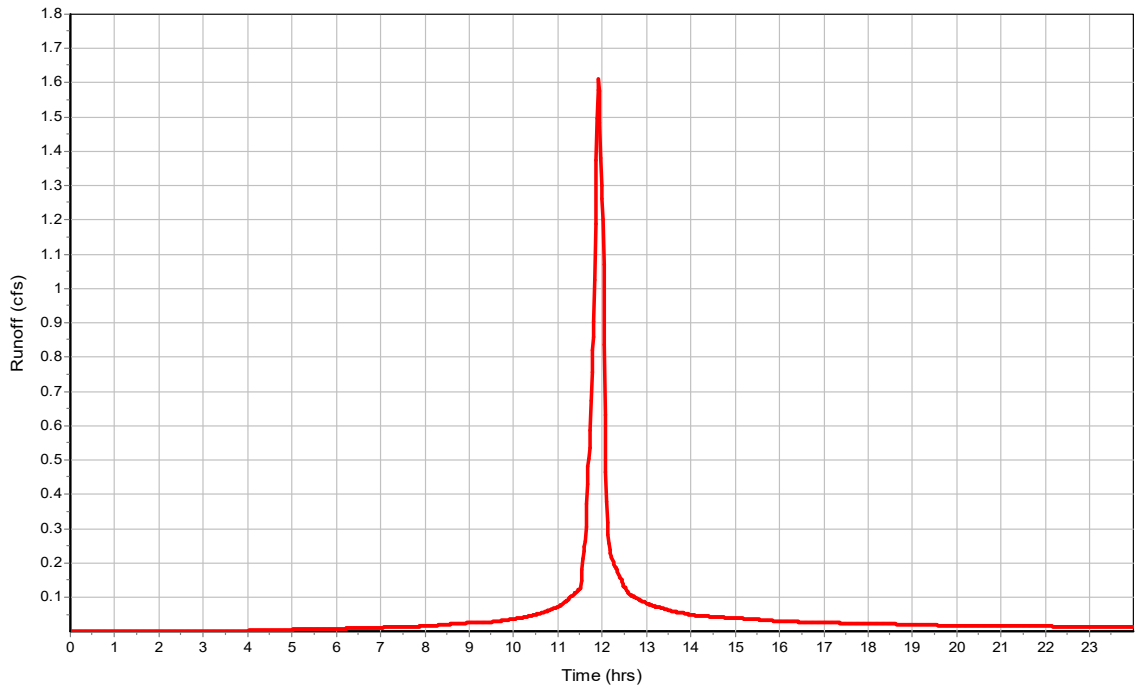
Total Rainfall (in) ..... 5.02  
 Total Runoff (in) ..... 4.11  
 Peak Runoff (cfs) ..... 1.61  
 Weighted Curve Number ..... 92.05  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-1570

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-1607**

**Input Data**

Area (ac) ..... 0.24  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 90.83  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.24	-	90.83
Composite Area & Weighted CN		0.24		90.83

**Time of Concentration**

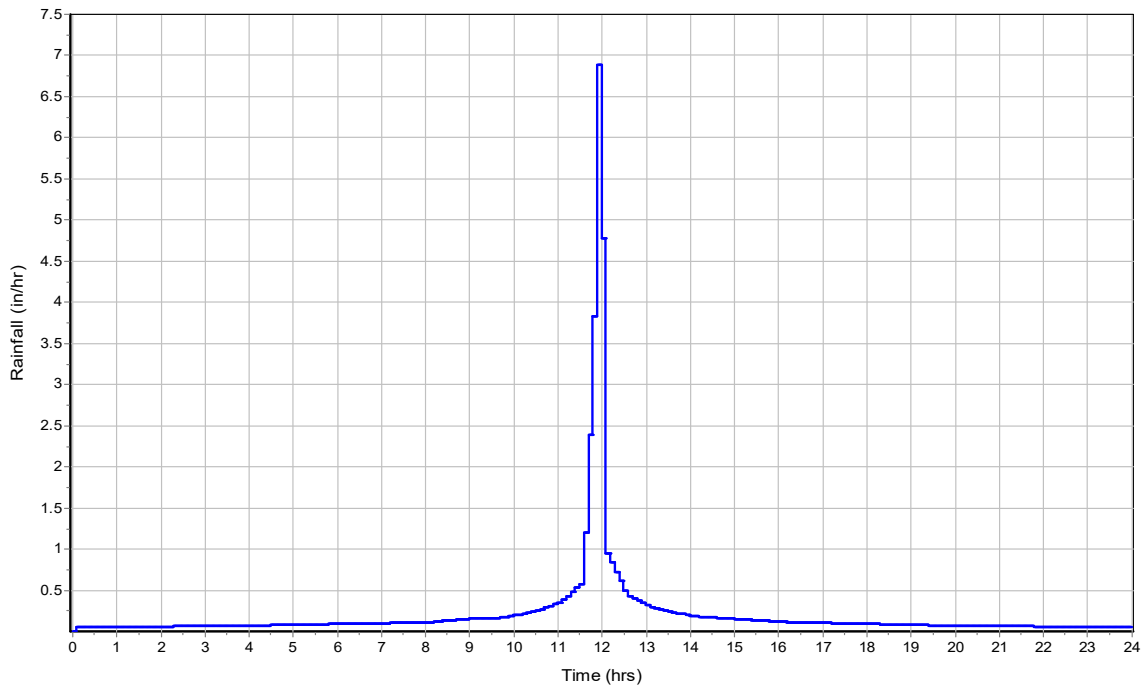
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

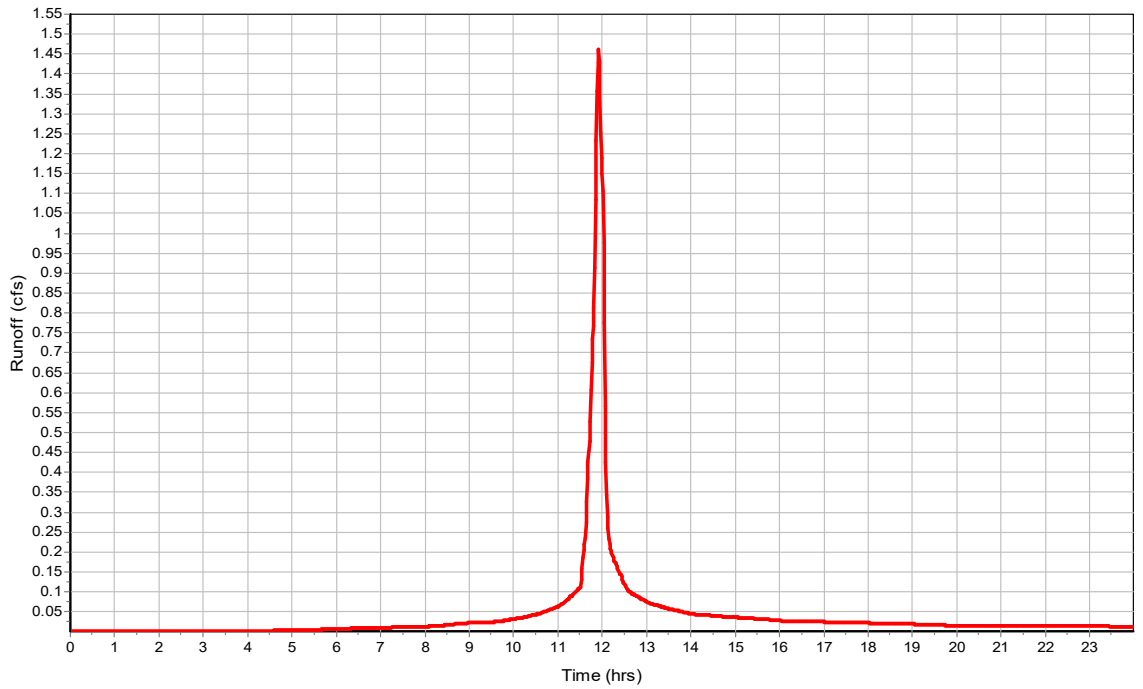
Total Rainfall (in) ..... 5.02  
 Total Runoff (in) ..... 3.98  
 Peak Runoff (cfs) ..... 1.46  
 Weighted Curve Number ..... 90.83  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-1607

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-D22690**

**Input Data**

Area (ac) ..... 0.31  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 92.3  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.31	-	92.3
Composite Area & Weighted CN		0.31		92.3

**Time of Concentration**

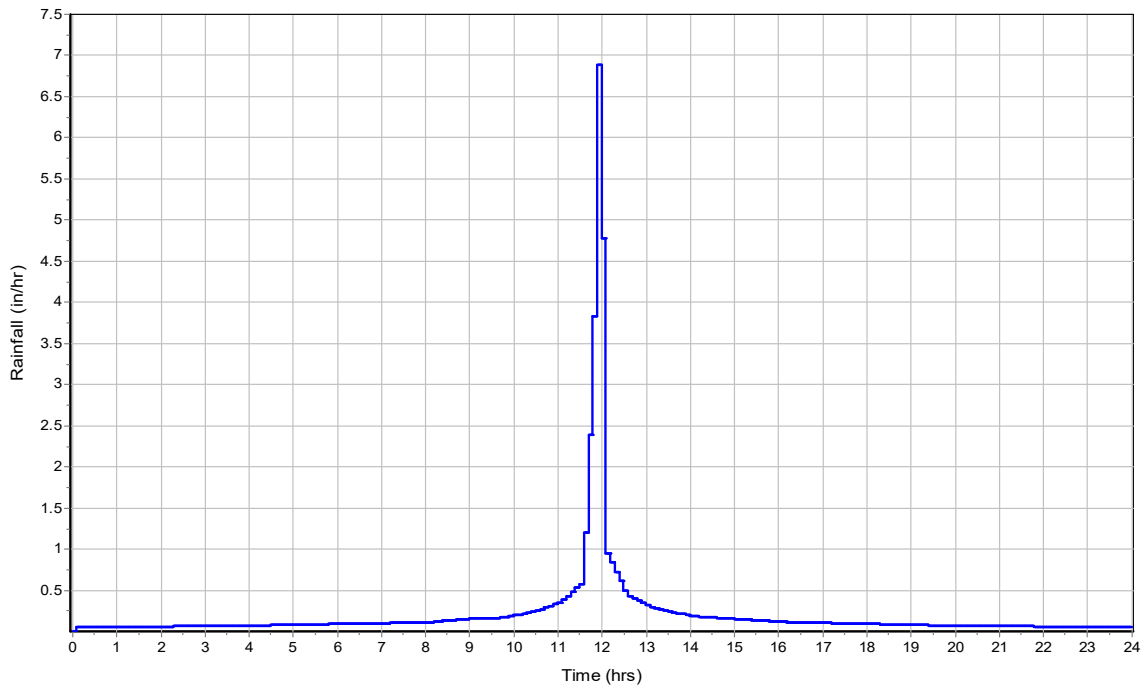
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

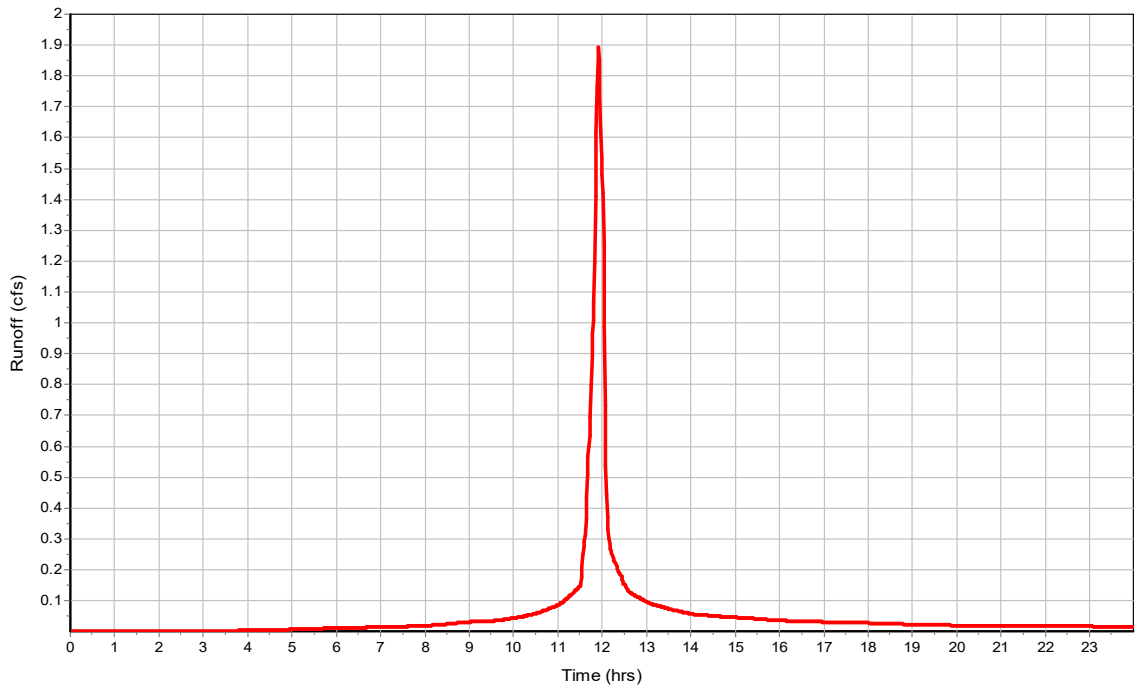
Total Rainfall (in) ..... 5.02  
 Total Runoff (in) ..... 4.14  
 Peak Runoff (cfs) ..... 1.89  
 Weighted Curve Number ..... 92.3  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-D22690

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-D22725**

**Input Data**

Area (ac) ..... 0.9  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 79  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.9	-	79
Composite Area & Weighted CN		0.9		79

**Time of Concentration**

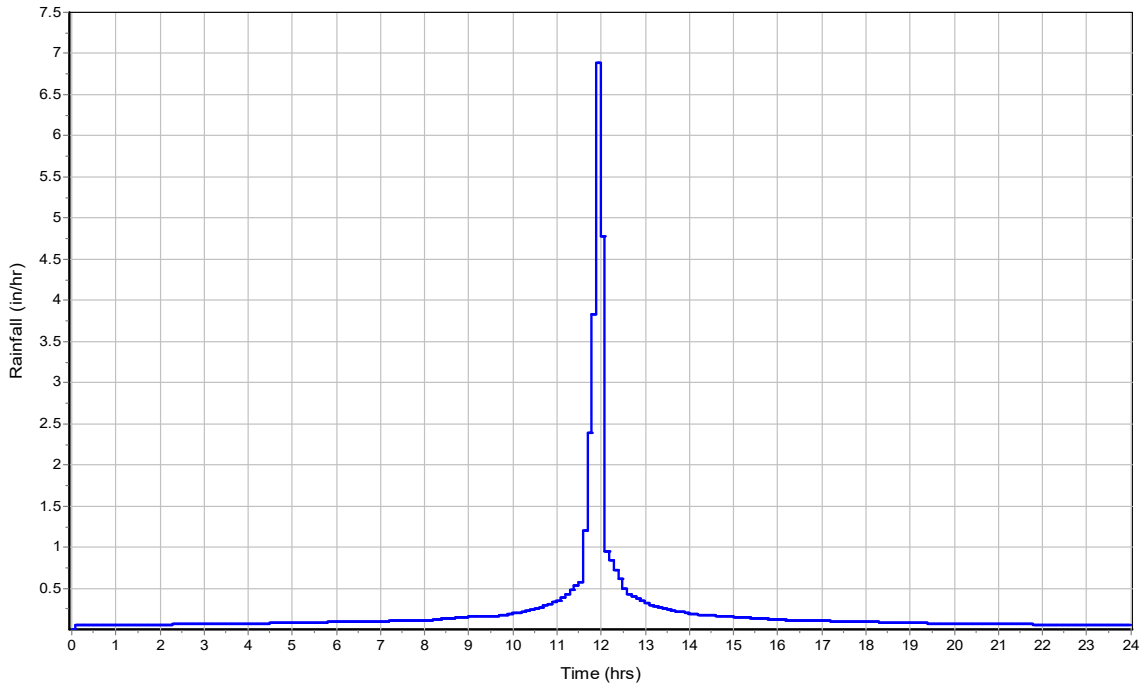
User-Defined TOC override (minutes): 5.00

**Subbasin Runoff Results**

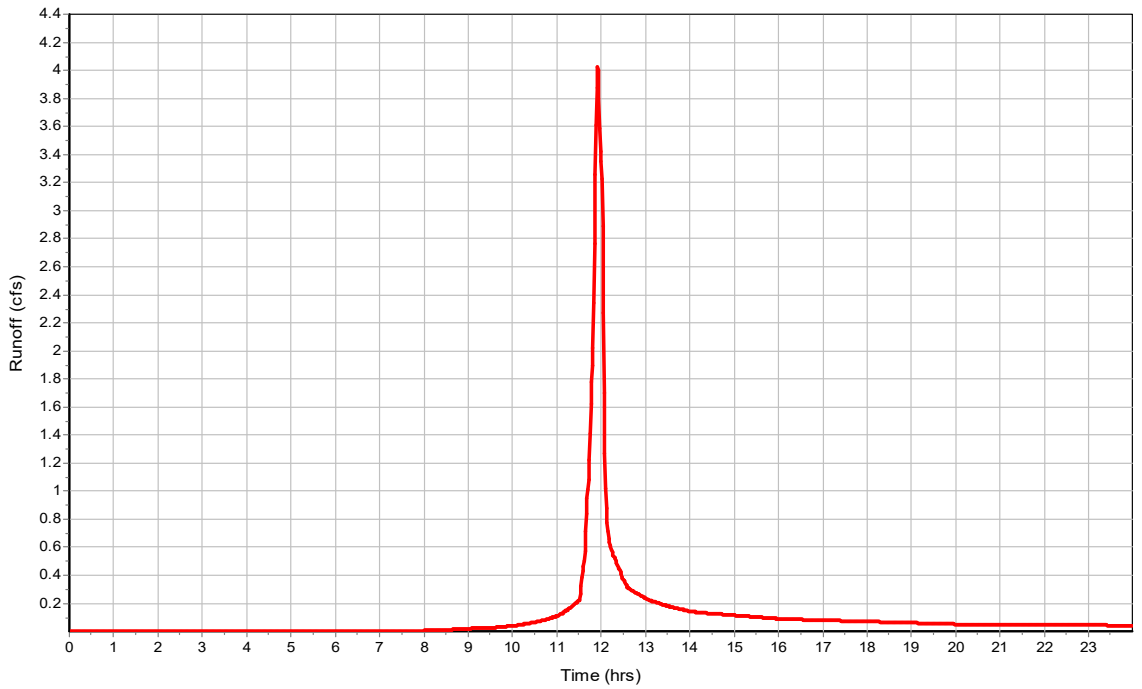
Total Rainfall (in) ..... 5.02  
 Total Runoff (in) ..... 2.82  
 Peak Runoff (cfs) ..... 4.04  
 Weighted Curve Number ..... 79  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-D22725

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : UNDETAINED-01**

**Input Data**

Area (ac) ..... 0.27  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 84  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.27	-	84
Composite Area & Weighted CN		0.27		84

**Time of Concentration**

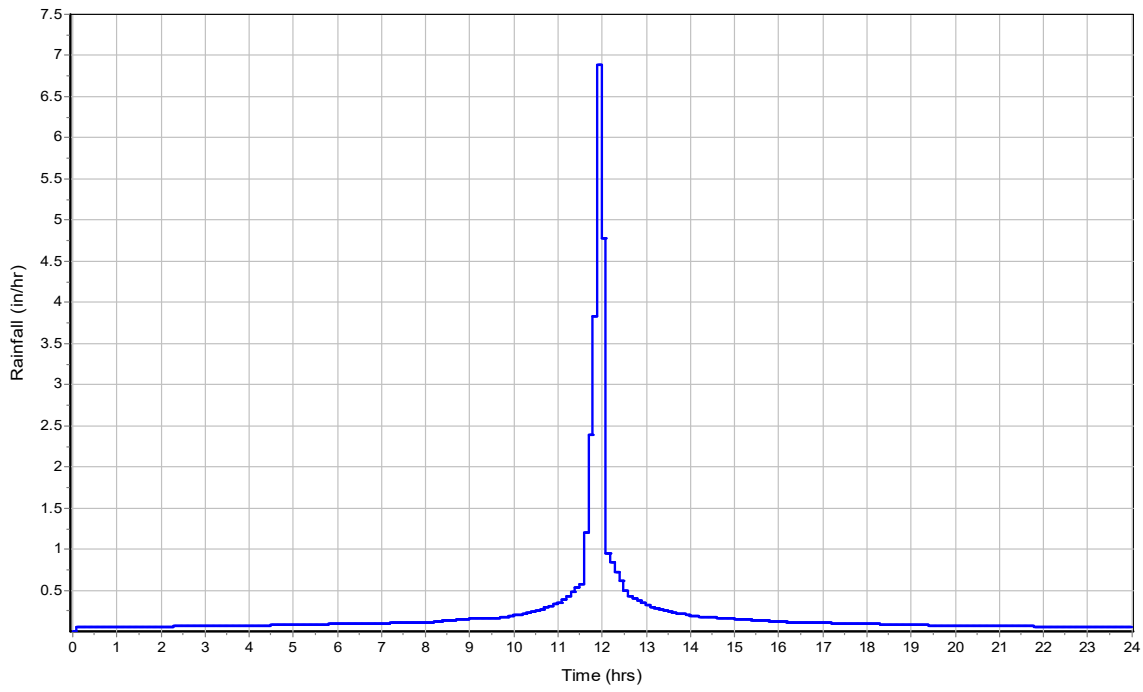
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

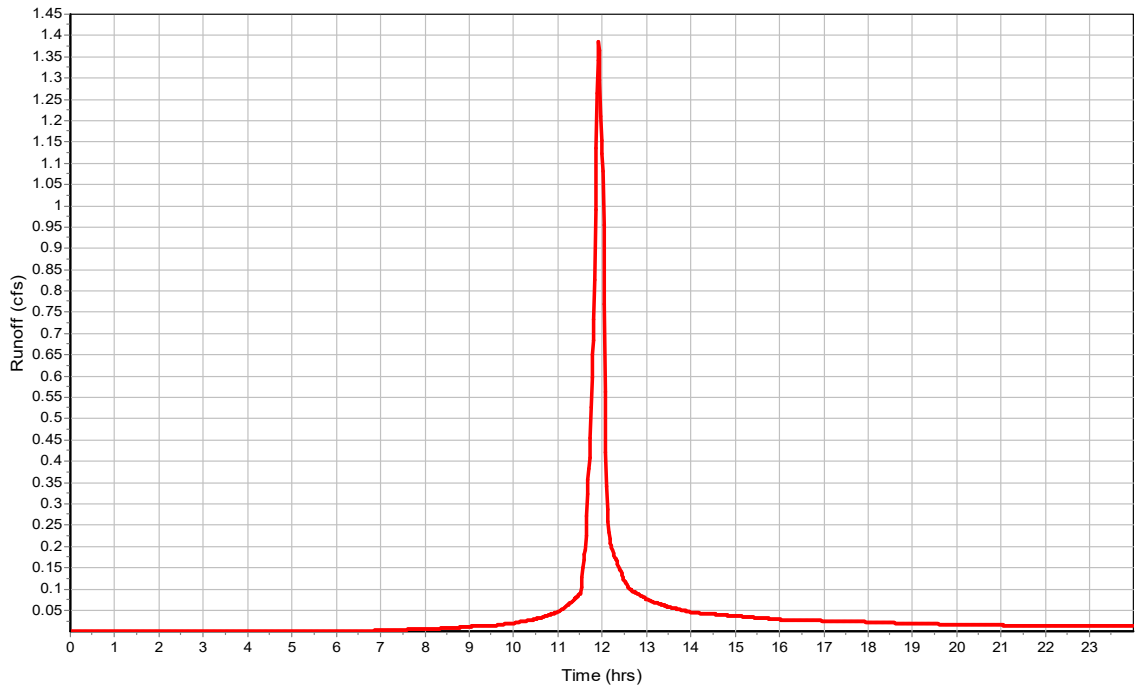
Total Rainfall (in) ..... 5.02  
 Total Runoff (in) ..... 3.29  
 Peak Runoff (cfs) ..... 1.39  
 Weighted Curve Number ..... 84  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : UNDETAINED-01

Rainfall Intensity Graph



Runoff Hydrograph



## Junction Input

SN Element ID	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Ground/Rim (Max) Offset (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)	Surcharge Elevation (ft)	Surcharge Depth (ft)	Ponded Area (ft <sup>2</sup> )	Minimum Pipe Cover (in)
1 1	789.63	800.72	11.09	789.63	0.00	800.72	0.00	10.00	94.68
2 2	789.90	810.97	21.07	789.90	0.00	810.97	0.00	0.00	0.00
3 301	801.75	810.70	8.95	801.75	0.00	810.70	0.00	10.00	93.00
4 302	800.50	814.72	14.22	800.50	0.00	814.72	0.00	10.00	0.00
5 1312	795.14	801.14	6.00	795.14	0.00	801.14	0.00	10.00	57.00
6 1451	796.16	801.58	5.42	796.16	0.00	801.58	0.00	10.00	53.04
7 1453	793.40	803.00	9.60	793.40	0.00	803.00	0.00	10.00	96.24
8 1511	794.03	805.54	11.51	794.03	0.00	805.54	0.00	10.00	123.12
9 1533	798.65	807.61	8.96	798.65	0.00	807.61	0.00	10.00	95.52
10 1570	800.57	809.15	8.58	800.57	0.00	809.15	0.00	10.00	88.80
11 1607	809.64	815.19	5.55	809.64	0.00	815.19	0.00	10.00	54.48
12 13001	783.95	800.74	16.79	783.95	0.00	800.74	0.00	10.00	110.28
13 13002	782.33	798.46	16.13	782.33	0.00	798.46	0.00	10.00	27.72
14 13003	787.40	796.61	9.21	787.40	0.00	796.61	0.00	10.00	98.52
15 13005	781.16	791.08	9.92	781.16	0.00	791.08	0.00	10.00	69.60
16 13006	793.19	802.62	9.43	793.19	0.00	802.62	0.00	10.00	97.56
17 13008	780.03	787.03	7.00	780.03	0.00	787.03	0.00	10.00	44.88
18 13009	782.93	787.81	4.88	782.93	0.00	787.81	0.00	10.00	46.56
19 13016	776.77	780.79	4.02	776.77	0.00	780.79	0.00	10.00	36.24
20 13017	776.14	780.49	4.35	776.14	0.00	780.49	0.00	10.00	34.20
21 13018	776.48	780.24	3.76	776.48	0.00	780.24	0.00	10.00	33.12
22 13019	776.36	779.72	3.36	776.36	0.00	779.72	0.00	10.00	22.32
23 D22686	797.40	807.27	9.87	797.40	0.00	807.27	0.00	10.00	106.44
24 D22690	815.71	820.04	4.33	815.71	0.00	820.04	0.00	10.00	39.96
25 D22725	776.89	781.00	4.11	776.89	0.00	781.00	0.00	10.00	34.32
26 HDS-101	801.90	814.15	12.25	801.90	0.00	814.15	0.00	10.00	0.00
27 HDS-201	802.79	815.53	12.74	802.79	0.00	815.53	0.00	10.00	127.68

**Junction Results**

SN Element ID	Peak Inflow (cfs)	Peak Lateral Inflow (cfs)	Max HGL Elevation (ft)	Max HGL Depth (ft)	Max Surcharge Depth (ft)	Min Freeboard (ft)	Average HGL Elevation (ft)	Average HGL Depth (ft)	Time of Max HGL Occurrence (days hh:mm)	Time of Peak Flooding Occurrence (days hh:mm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
1 1	36.65	0.00	791.75	2.12	0.00	8.97	790.05	0.42	0 12:08	0 00:00	0.00	0.00
2 2	36.65	0.00	792.32	2.42	0.00	18.65	790.35	0.45	0 12:08	0 00:00	0.00	0.00
3 301	1.01	0.00	803.17	1.42	0.00	7.53	801.85	0.10	0 11:58	0 00:00	0.00	0.00
4 302	1.00	0.00	803.20	2.70	0.00	11.52	801.87	1.37	0 11:58	0 00:00	0.00	0.00
5 1312	0.00	0.00	795.14	0.00	0.00	6.00	795.14	0.00	0 00:00	0 00:00	0.00	0.00
6 1451	2.13	2.13	798.97	2.81	0.00	2.61	796.22	0.06	0 11:53	0 00:00	0.00	0.00
7 1453	9.56	0.00	798.01	4.61	0.00	4.99	793.68	0.28	0 11:53	0 00:00	0.00	0.00
8 1511	7.54	0.98	798.92	4.89	0.00	6.62	794.25	0.22	0 11:56	0 00:00	0.00	0.00
9 1533	2.25	2.25	801.72	3.07	0.00	5.89	798.72	0.07	0 11:57	0 00:00	0.00	0.00
10 1570	5.01	1.61	803.16	2.59	0.00	5.99	800.68	0.11	0 11:58	0 00:00	0.00	0.00
11 1607	3.35	1.46	810.08	0.44	0.00	5.11	809.71	0.07	0 11:56	0 00:00	0.00	0.00
12 13001	36.66	0.00	786.77	2.82	0.00	13.97	784.24	0.29	0 12:08	0 00:00	0.00	0.00
13 13002	36.67	0.00	784.10	1.77	0.00	14.36	782.63	0.30	0 12:08	0 00:00	0.00	0.00
14 13003	0.59	0.59	787.63	0.23	0.00	8.98	787.44	0.04	0 11:56	0 00:00	0.00	0.00
15 13005	36.79	0.00	782.91	1.75	0.00	8.17	781.45	0.29	0 12:08	0 00:00	0.00	0.00
16 13006	10.80	1.25	795.95	2.76	0.00	6.67	793.41	0.22	0 11:56	0 00:00	0.00	0.00
17 13008	36.93	0.00	782.11	2.08	0.00	4.92	780.37	0.34	0 12:09	0 00:00	0.00	0.00
18 13009	0.70	0.70	783.21	0.28	0.00	4.60	782.97	0.04	0 11:56	0 00:00	0.00	0.00
19 13016	0.59	0.59	777.29	0.52	0.00	3.50	776.82	0.05	0 11:56	0 00:00	0.00	0.00
20 13017	5.81	0.00	777.28	1.14	0.00	3.21	776.27	0.13	0 11:56	0 00:00	0.00	0.00
21 13018	1.23	1.23	777.59	1.11	0.00	2.65	776.55	0.07	0 11:56	0 00:00	0.00	0.00
22 13019	5.24	0.00	777.56	1.20	0.00	2.16	776.49	0.13	0 11:56	0 00:00	0.00	0.00
23 D22686	6.65	0.00	801.63	4.23	0.00	5.64	797.54	0.14	0 11:57	0 00:00	0.00	0.00
24 D22690	1.89	1.89	816.05	0.34	0.00	3.99	815.76	0.05	0 11:56	0 00:00	0.00	0.00
25 D22725	4.03	4.03	777.92	1.03	0.00	3.08	777.00	0.11	0 11:56	0 00:00	0.00	0.00
26 HDS-101	24.57	19.18	804.42	2.52	0.00	9.73	802.30	0.40	0 12:07	0 00:00	0.00	0.00
27 HDS-201	37.15	37.15	806.32	3.53	0.00	9.21	803.13	0.34	0 11:59	0 00:00	0.00	0.00

Pipe Input

SN Element ID	Length	Inlet	Inlet	Outlet	Outlet	Total Drop	Average Pipe		Pipe Diameter or Height	Pipe Width	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Additional Losses	Initial Flow	Flap Gate	No. of Barrels
		Invert	Invert	Invert	Invert		Slope	Shape									
		Elevation (ft)	Offset (ft)	Elevation (ft)	Offset (ft)		(%)										
1 Link-02	56.93	783.95	0.00	782.75	0.42	1.20	2.1100	CIRCULAR	24.000	24.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
2 Link-03	47.69	795.14	0.00	794.90	12.57	0.24	0.5000	CIRCULAR	15.000	15.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
3 Link-04	108.25	782.33	0.00	781.35	0.19	0.98	0.9100	CIRCULAR	36.000	36.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
4 Link-05	149.97	787.40	0.00	784.28	3.12	3.12	2.0800	CIRCULAR	12.000	12.000	0.0130	0.0000	0.1000	0.0000	0.00	No	1
5 Link-06	36.78	782.93	0.00	782.29	2.26	0.64	1.7400	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
6 Link-07	104.48	781.16	0.00	780.08	0.05	1.08	1.0300	CIRCULAR	36.000	36.000	0.0130	0.0000	0.1000	0.0000	0.00	No	1
7 Link-08	78.09	776.89	0.00	776.61	0.25	0.28	0.3600	CIRCULAR	15.000	15.000	0.0130	0.0000	0.1000	0.0000	0.00	No	1
8 Link-10	7.77	776.48	0.00	776.36	0.00	0.12	1.5400	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
9 Link-11	78.97	776.36	0.00	776.14	0.00	0.22	0.2800	CIRCULAR	18.000	18.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
10 Link-12	12.35	776.77	0.00	776.64	0.50	0.13	1.0500	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
11 Link-13	48.41	776.14	0.00	775.94	4.79	0.20	0.4100	CIRCULAR	18.000	18.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
12 Link-14	82.97	771.22	0.07	766.00	-0.01	5.22	6.2900	Rectangular	48.000	36.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
13 Link-15	56.74	780.03	0.00	779.61	8.46	0.42	0.7400	CIRCULAR	36.000	36.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
14 Link-16	132.76	815.71	0.00	809.64	0.00	6.07	4.5700	CIRCULAR	12.000	12.000	0.0130	0.0000	0.1000	0.0000	0.00	No	1
15 Link-17	148.78	809.65	0.01	800.57	0.00	9.08	6.1000	CIRCULAR	12.000	12.000	0.0130	0.0000	0.1000	0.0000	0.00	No	1
16 Link-18	85.84	800.57	0.00	797.40	0.00	3.17	3.6900	CIRCULAR	12.000	12.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
17 Link-19	9.27	798.65	0.00	797.40	0.00	1.25	13.4800	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
18 Link-20	72.00	797.40	0.00	794.08	0.05	3.32	4.6100	CIRCULAR	12.000	12.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
19 Link-21	55.99	794.03	0.00	793.73	0.33	0.30	0.5400	CIRCULAR	15.000	15.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
20 Link-22	40.69	796.16	0.00	793.81	0.41	2.35	5.7800	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
21 Link-23	77.33	793.40	0.00	793.24	0.05	0.16	0.2100	CIRCULAR	15.000	15.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
22 Link-24	41.11	793.19	0.00	793.00	21.85	0.19	0.4600	CIRCULAR	15.000	15.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
23 Link-37	136.92	802.50	2.00	801.95	0.20	0.55	0.4000	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
24 Link-38	24.56	801.85	0.10	800.75	0.18	1.10	4.4800	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
25 Link-39	10.00	802.00	0.10	801.82	11.82	0.18	1.8000	CIRCULAR	24.000	24.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
26 Link-41	47.26	802.89	0.10	801.95	11.95	0.94	1.9900	CIRCULAR	24.000	24.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
27 Link-42	30.50	790.00	0.10	789.83	0.20	0.17	0.5600	CIRCULAR	36.000	36.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
28 Link-44	214.52	789.73	0.10	788.55	4.60	1.18	0.5500	CIRCULAR	36.000	36.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1

## Pipe Results

SN Element ID	Peak Flow	Time of Peak Flow Occurrence	Design Flow Capacity	Peak Flow/Design Flow Ratio	Peak Flow Velocity	Travel Time	Peak Flow Depth	Peak Flow Depth/Total Depth Ratio	Total Time Surcharged	Froude Number	Reported Condition
	(cfs)	(days hh:mm)	(cfs)		(ft/sec)	(min)	(ft)		(min)		
1 Link-02	36.67	0 12:08	32.84	1.12	11.67	0.08	2.00	1.00	4.00		SURCHARGED
2 Link-03	0.00	0 00:00	4.58	0.00	0.00		0.00	0.00	0.00		Calculated
3 Link-04	36.68	0 12:09	63.46	0.58	8.87	0.20	1.70	0.57	0.00		Calculated
4 Link-05	0.59	0 11:56	5.14	0.11	4.33	0.58	0.23	0.23	0.00		Calculated
5 Link-06	0.70	0 11:56	4.70	0.15	4.11	0.15	0.27	0.27	0.00		Calculated
6 Link-07	36.80	0 12:09	67.81	0.54	7.84	0.22	1.89	0.63	0.00		Calculated
7 Link-08	4.02	0 11:56	3.87	1.04	3.85	0.34	0.99	0.79	0.00		> CAPACITY
8 Link-10	1.23	0 11:56	4.43	0.28	1.60	0.08	1.00	1.00	5.00		SURCHARGED
9 Link-11	5.23	0 11:56	5.54	0.94	3.53	0.37	1.17	0.78	0.00		Calculated
10 Link-12	0.58	0 11:56	3.66	0.16	2.65	0.08	0.58	0.58	0.00		Calculated
11 Link-13	5.80	0 11:56	6.75	0.86	4.46	0.18	1.04	0.69	0.00		Calculated
12 Link-14	48.20	0 12:03	310.16	0.16	15.63	0.09	1.03	0.26	0.00		Calculated
13 Link-15	36.92	0 12:09	57.38	0.64	7.74	0.12	1.92	0.64	0.00		Calculated
14 Link-16	1.89	0 11:56	7.62	0.25	6.70	0.33	0.39	0.39	0.00		Calculated
15 Link-17	3.34	0 11:56	8.80	0.38	7.54	0.33	0.71	0.71	0.00		Calculated
16 Link-18	5.01	0 12:03	6.85	0.73	7.74	0.18	1.00	1.00	9.00		SURCHARGED
17 Link-19	2.25	0 11:56	13.08	0.17	4.79	0.03	1.00	1.00	11.00		SURCHARGED
18 Link-20	6.65	0 11:58	7.65	0.87	8.47	0.14	1.00	1.00	12.00		SURCHARGED
19 Link-21	7.54	0 11:58	4.73	1.59	6.14	0.15	1.25	1.00	17.00		SURCHARGED
20 Link-22	2.13	0 11:56	8.56	0.25	4.72	0.14	1.00	1.00	9.00		SURCHARGED
21 Link-23	9.57	0 11:57	2.94	3.26	7.80	0.17	1.25	1.00	17.00		SURCHARGED
22 Link-24	10.80	0 11:56	4.39	2.46	8.84	0.08	1.22	0.98	0.00		> CAPACITY
23 Link-37	1.01	0 12:02	2.26	0.45	2.86	0.80	0.85	0.85	0.00		Calculated
24 Link-38	1.88	0 12:03	7.54	0.25	5.87	0.07	1.00	1.00	5.00		SURCHARGED
25 Link-39	24.57	0 12:00	30.35	0.81	8.80	0.02	2.00	1.00	7.00		SURCHARGED
26 Link-41	37.15	0 11:59	31.90	1.16	11.83	0.07	2.00	1.00	7.00		SURCHARGED
27 Link-42	36.65	0 12:08	49.80	0.74	6.87	0.07	2.12	0.71	0.00		Calculated
28 Link-44	36.66	0 12:08	49.47	0.74	7.46	0.48	1.97	0.66	0.00		Calculated

**Storage Nodes**

**Storage Node : 13011/3**

**Input Data**

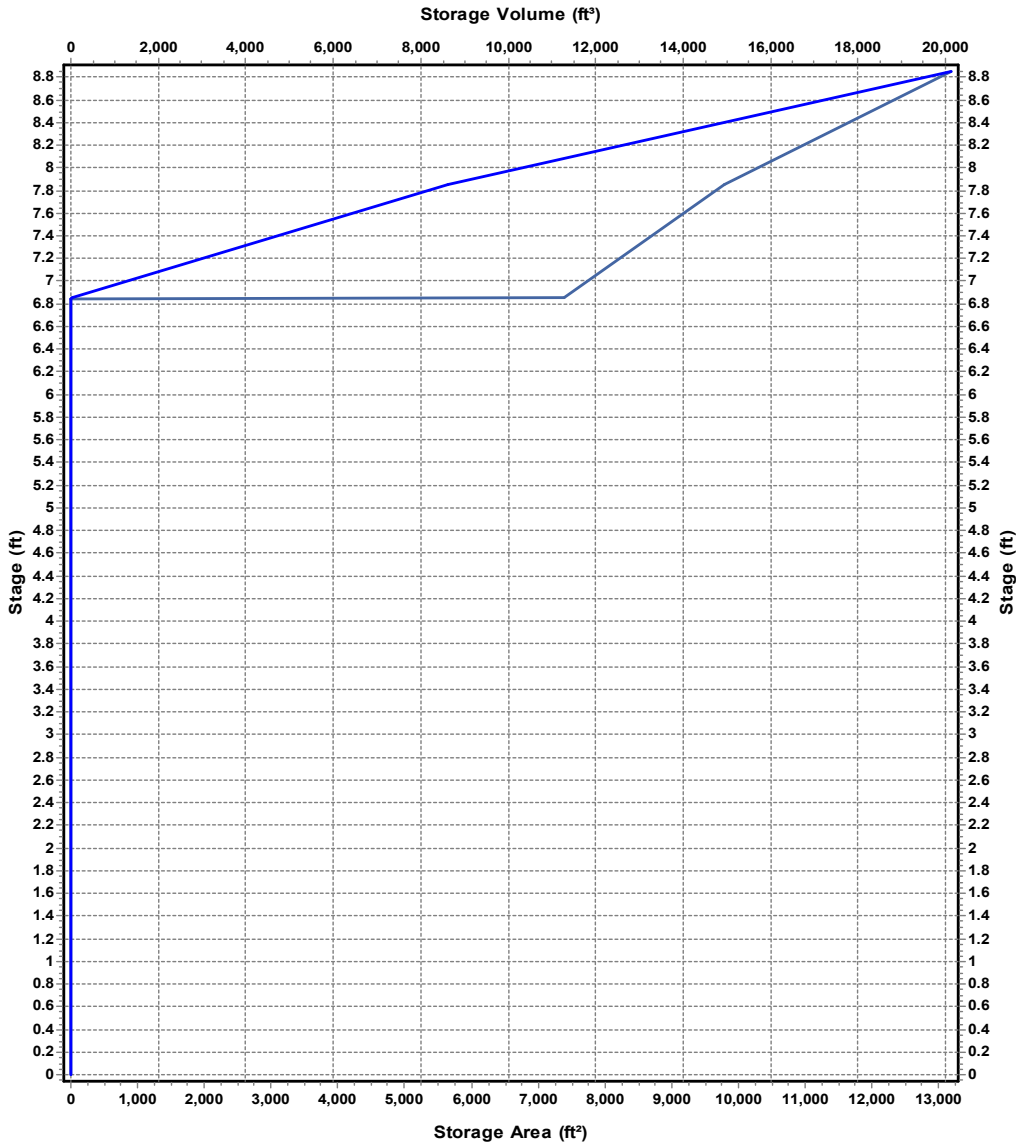
Invert Elevation (ft) .....	771.15
Max (Rim) Elevation (ft) .....	780.00
Max (Rim) Offset (ft) .....	8.85
Initial Water Elevation (ft) .....	771.15
Initial Water Depth (ft) .....	0.00
Ponded Area (ft <sup>2</sup> ) .....	0.00
Evaporation Loss .....	0.00

**Storage Area Volume Curves**

Storage Curve : Existing 02

Stage	Storage Area	Storage Volume
(ft)	(ft <sup>2</sup> )	(ft <sup>3</sup> )
0	0	0
6.84	1	3.42
6.85	7389	40.37
7.85	9796	8632.87
8.85	13187	20124.37

### Storage Area Volume Curves



— Storage Area — Storage Volume

**Storage Node : 13011/3 (continued)**

**Output Summary Results**

Peak Inflow (cfs) .....	48.2
Peak Lateral Inflow (cfs) .....	3.93
Peak Outflow (cfs) .....	48.2
Peak Exfiltration Flow Rate (cfm) .....	0
Max HGL Elevation Attained (ft) .....	772.43
Max HGL Depth Attained (ft) .....	1.28
Average HGL Elevation Attained (ft) .....	771.35
Average HGL Depth Attained (ft) .....	0.2
Time of Max HGL Occurrence (days hh:mm) .....	0 12:02
Total Exfiltration Volume (1000-ft <sup>3</sup> ) .....	0
Total Flooded Volume (ac-in) .....	0
Total Time Flooded (min) .....	0
Total Retention Time (sec) .....	0

**Storage Node : UGD-01**

**Input Data**

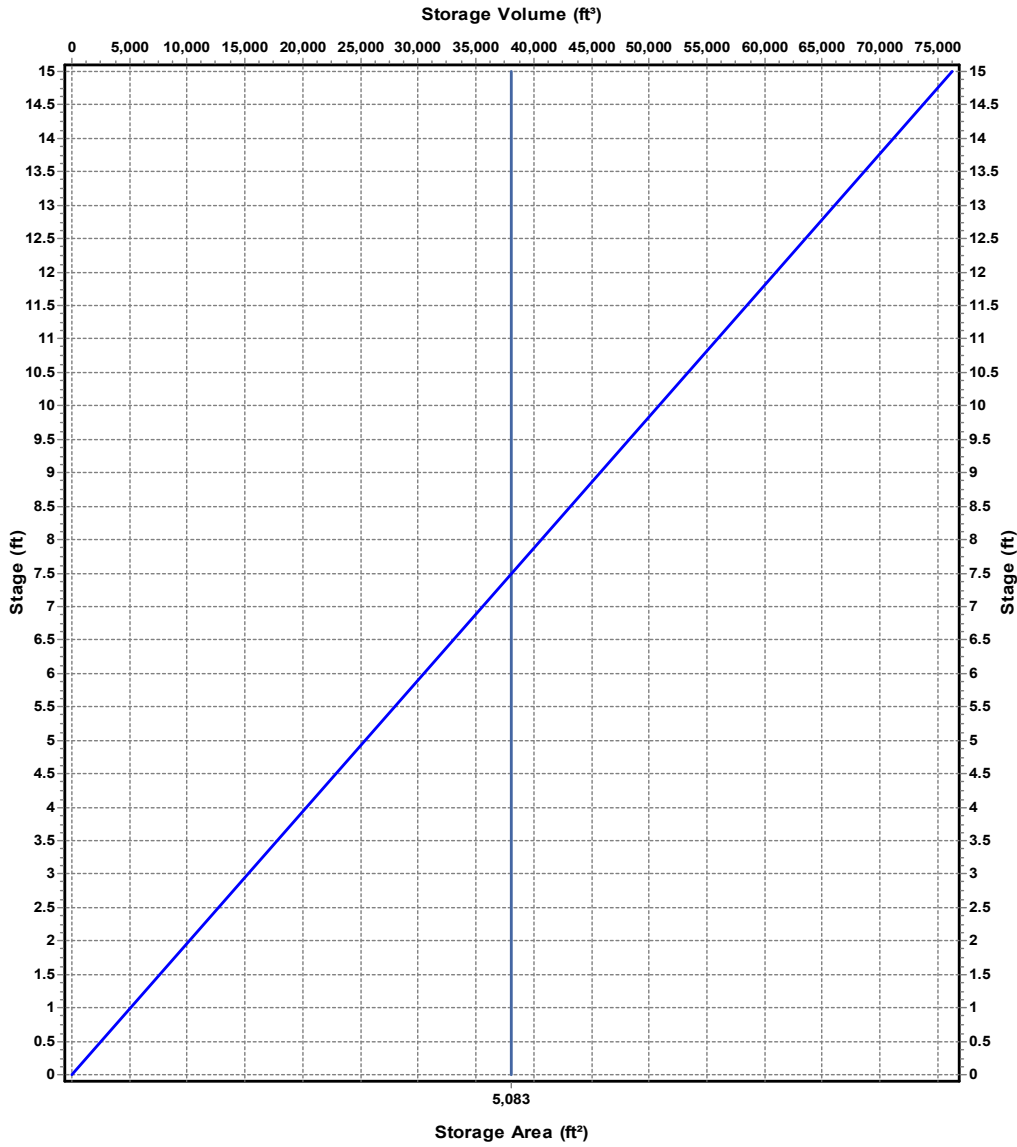
Invert Elevation (ft) .....	790.00
Max (Rim) Elevation (ft) .....	805.00
Max (Rim) Offset (ft) .....	15.00
Initial Water Elevation (ft) .....	790.00
Initial Water Depth (ft) .....	0.00
Ponded Area (ft <sup>2</sup> ) .....	0.00
Evaporation Loss .....	0.00

**Storage Area Volume Curves**

Storage Curve : UGD-01

Stage	Storage Area	Storage Volume
(ft)	(ft <sup>2</sup> )	(ft <sup>3</sup> )
0	5083	0
15	5083	76245

### Storage Area Volume Curves



— Storage Area — Storage Volume

**Storage Node : UGD-01 (continued)**

**Outflow Weirs**

SN Element ID	Weir Type	Flap Gate	Crest Elevation (ft)	Crest Offset (ft)	Length (ft)	Weir Total Height (ft)	Discharge Coefficient
1 UGD-01-Weir	Rectangular	No	803.75	13.75	6.00	1.25	2.62

**Outflow Orifices**

SN Element ID	Orifice Type	Orifice Shape	Flap Gate	Circular Orifice Diameter (in)	Rectangular Orifice Height (in)	Rectangular Orifice Width (in)	Orifice Invert Elevation (ft)	Orifice Coefficient
1 UGD-01-2ndStage	Side	Rectangular	No		8.00	48.00	797.50	0.60
2 UGD-01-WQ	Side	CIRCULAR	No	3.00			790.00	0.60

**Output Summary Results**

Peak Inflow (cfs)	61.65
Peak Lateral Inflow (cfs)	0
Peak Outflow (cfs)	36.65
Peak Exfiltration Flow Rate (cfm)	0
Max HGL Elevation Attained (ft)	804.13
Max HGL Depth Attained (ft)	14.13
Average HGL Elevation Attained (ft)	794.89
Average HGL Depth Attained (ft)	4.89
Time of Max HGL Occurrence (days hh:mm)	0 12:08
Total Exfiltration Volume (1000-ft <sup>3</sup> )	0
Total Flooded Volume (ac-in)	0
Total Time Flooded (min)	0
Total Retention Time (sec)	0

**Storage Node : UGD-02**

**Input Data**

Invert Elevation (ft) .....	802.50
Max (Rim) Elevation (ft) .....	809.25
Max (Rim) Offset (ft) .....	6.75
Initial Water Elevation (ft) .....	802.50
Initial Water Depth (ft) .....	0.00
Ponded Area (ft <sup>2</sup> ) .....	0.00
Evaporation Loss .....	0.00

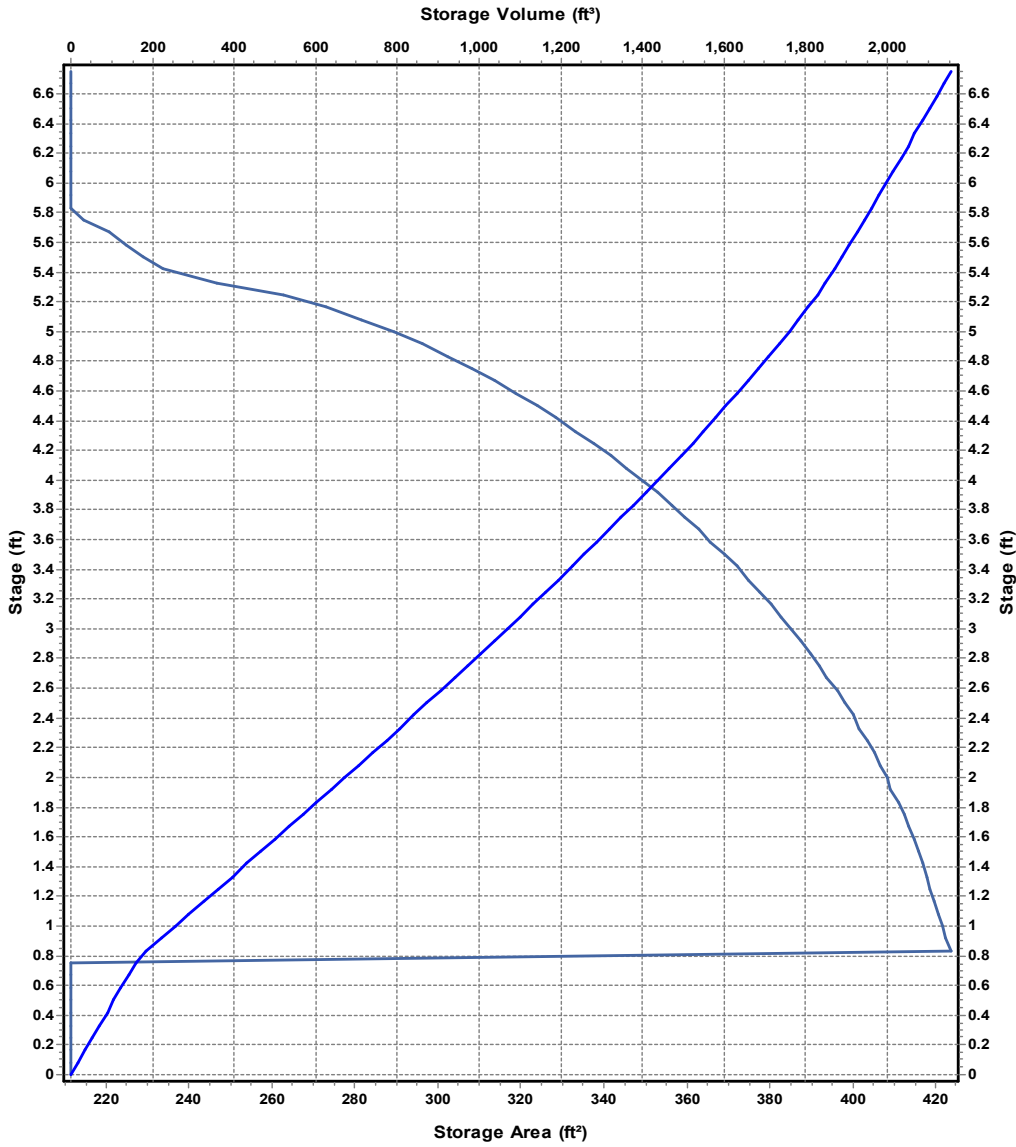
**Storage Area Volume Curves**

Storage Curve : UGD-MC7200

Stage (ft)	Storage Area (ft <sup>2</sup> )	Storage Volume (ft <sup>3</sup> )
0	211.6	0
0.08	211.6	16.93
0.17	211.6	35.97
0.25	211.6	52.9
0.33	211.6	69.83
0.42	211.6	88.87
0.5	211.6	105.8
0.58	211.6	122.73
0.67	211.6	141.77
0.75	211.6	158.7
0.83	423.65	184.11
0.92	422.22	222.17
1	421.48	255.92
1.08	420.65	289.61
1.17	419.44	327.41
1.25	418.56	360.93
1.33	417.93	394.39
1.42	416.93	431.96
1.5	415.88	465.27
1.58	414.76	498.5
1.67	413.55	535.77
1.75	412.31	568.8
1.83	411.06	601.73
1.92	409.06	638.64
2	408.23	671.33
2.08	406.69	703.93
2.17	405.1	740.46
2.25	403.45	772.8
2.33	401.43	805
2.42	399.96	841.06
2.5	398.13	872.98
2.58	396.19	904.75
2.67	393.75	940.3
2.75	391.88	971.73
2.83	389.81	1003
2.92	387.51	1037.98
3	385.18	1068.89
3.08	382.78	1099.61
3.17	380.2	1133.94
3.25	377.55	1164.25
3.33	374.81	1194.34
3.42	371.94	1227.94
3.5	368.99	1257.58
3.58	365.61	1286.96
3.67	362.8	1319.74
3.75	359.58	1348.64
3.83	356.26	1377.27
3.92	352.83	1409.18
4	349.25	1437.26
4.08	345.51	1465.05
4.17	341.57	1495.97
4.25	337.45	1523.13
4.33	333.12	1549.95
4.42	328.51	1579.72
4.5	323.87	1605.82
4.58	318.91	1631.53
4.67	313.71	1660
4.75	308.31	1684.88
4.83	302.46	1709.31
4.92	296.21	1736.25
5	289.37	1759.67

5.08	281.76	1782.52
5.17	273.2	1807.49
5.25	262.78	1828.93
5.33	246.67	1849.31
5.42	233.8	1870.93
5.5	228.93	1889.44
5.58	224.98	1907.6
5.67	220.79	1927.66
5.75	214.54	1945.07
5.83	211.6	1962.12
5.92	211.6	1981.16
6	211.6	1998.09
6.08	211.6	2015.02
6.17	211.6	2034.06
6.25	211.6	2050.99
6.33	211.6	2067.92
6.42	211.6	2086.96
6.5	211.6	2103.89
6.58	211.6	2120.82
6.67	211.6	2139.86
6.75	211.6	2156.79

### Storage Area Volume Curves



— Storage Area — Storage Volume

**Storage Node : UGD-02 (continued)**

**Outflow Orifices**

SN Element ID	Orifice Type	Orifice Shape	Flap Gate	Circular Orifice Diameter (in)	Rectangular Orifice Height (in)	Rectangular Orifice Width (in)	Orifice Invert Elevation (ft)	Orifice Coefficient
1 UGD-02-MANIFOLD	Side	CIRCULAR	No	12.00			806.22	0.60
2 UGD-02-WQ	Side	CIRCULAR	No	0.50			802.50	0.60

**Output Summary Results**

Peak Inflow (cfs) .....	1.49
Peak Lateral Inflow (cfs) .....	1.49
Peak Outflow (cfs) .....	1
Peak Exfiltration Flow Rate (cfm) .....	0
Max HGL Elevation Attained (ft) .....	806.73
Max HGL Depth Attained (ft) .....	4.23
Average HGL Elevation Attained (ft) .....	804.55
Average HGL Depth Attained (ft) .....	2.05
Time of Max HGL Occurrence (days hh:mm) .....	0 12:03
Total Exfiltration Volume (1000-ft <sup>3</sup> ) .....	0
Total Flooded Volume (ac-in) .....	0
Total Time Flooded (min) .....	0
Total Retention Time (sec) .....	0

**Storage Node : UGD-03**

**Input Data**

Invert Elevation (ft) ..... 813.62  
 Max (Rim) Elevation (ft) ..... 821.50  
 Max (Rim) Offset (ft) ..... 7.88  
 Initial Water Elevation (ft) ..... 0.00  
 Initial Water Depth (ft) ..... -813.62  
 Poned Area (ft<sup>2</sup>) ..... 0.00  
 Evaporation Loss ..... 0.00

**Outflow Orifices**

SN Element ID	Orifice Type	Orifice Shape	Flap Gate	Circular Orifice Diameter (in)	Rectangular Orifice Height (in)	Rectangular Orifice Width (in)	Orifice Invert Elevation (ft)	Orifice Coefficient
1 UGD-03-Orifice	Side	CIRCULAR	No	10.00			813.62	0.60

**Output Summary Results**

Peak Inflow (cfs) ..... 22.48  
 Peak Lateral Inflow (cfs) ..... 22.48  
 Peak Outflow (cfs) ..... 6.51  
 Peak Exfiltration Flow Rate (cfm) ..... 0  
 Max HGL Elevation Attained (ft) ..... 820.18  
 Max HGL Depth Attained (ft) ..... 6.56  
 Average HGL Elevation Attained (ft) ..... 814.32  
 Average HGL Depth Attained (ft) ..... 0.7  
 Time of Max HGL Occurrence (days hh:mm) ..... 0 12:11  
 Total Exfiltration Volume (1000-ft<sup>3</sup>) ..... 0  
 Total Flooded Volume (ac-in) ..... 0  
 Total Time Flooded (min) ..... 0  
 Total Retention Time (sec) ..... 0



## Subbasin Summary

SN	Subbasin ID	Area (ac)	Peak Rate Factor	Weighted Curve Number	Total Rainfall (in)	Total Runoff (in)	Total Runoff Volume (ac-in)	Peak Runoff (cfs)	Time of Concentration (days hh:mm:ss)
1	FUTURE-01	3.25	484.00	95.00	5.63	5.04	16.39	20.58	0 00:10:00
2	FUTURE-02	5.53	484.00	93.00	5.63	4.82	26.64	34.22	0 00:10:00
3	FUTURE-03	0.78	484.00	95.00	5.63	5.04	3.93	5.64	0 00:05:00
4	POST-01	3.47	484.00	94.00	5.63	4.93	17.11	21.73	0 00:10:00
5	POST-02	1.34	484.00	91.00	5.63	4.60	6.16	8.04	0 00:10:00
6	POST-03	0.28	484.00	85.00	5.63	3.95	1.11	1.73	0 00:05:00
7	SUB-13003	0.09	484.00	97.81	5.63	5.37	0.48	0.66	0 00:05:00
8	SUB-13006	0.21	484.00	90.17	5.63	4.50	0.95	1.43	0 00:05:00
9	SUB-13009	0.11	484.00	95.27	5.63	5.07	0.56	0.79	0 00:05:00
10	SUB-13011/3	1.18	484.00	74.32	5.63	2.91	3.43	4.74	0 00:10:00
11	SUB-13016	0.09	484.00	97.34	5.63	5.31	0.48	0.66	0 00:05:00
12	SUB-13018	0.22	484.00	87.75	5.63	4.24	0.93	1.41	0 00:05:00
13	SUB-1451	0.37	484.00	88.41	5.63	4.31	1.60	2.44	0 00:05:00
14	SUB-1511	0.16	484.00	92.08	5.63	4.71	0.75	1.12	0 00:05:00
15	SUB-1533	0.15	484.00	89.88	5.63	4.47	0.67	0.99	0 00:05:00
16	SUB-1570	0.26	484.00	92.05	5.63	4.71	1.22	1.83	0 00:05:00
17	SUB-1607	0.24	484.00	90.83	5.63	4.58	1.10	1.67	0 00:05:00
18	SUB-D22690	0.31	484.00	92.30	5.63	4.74	1.47	2.15	0 00:05:00
19	SUB-D22725	0.90	484.00	79.00	5.63	3.35	3.02	4.79	0 00:05:00
20	UNDETAINED-01	0.27	484.00	84.00	5.63	3.85	1.04	1.62	0 00:05:00

**Node Summary**

SN	Element ID	Element Type	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Initial Water Elevation (ft)	Surcharge Elevation (ft)	Ponded Area (ft <sup>2</sup> )	Peak Inflow (cfs)	Max HGL Elevation Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)	Time of Peak Flooding Occurrence (days hhmm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
1	1	Junction	789.63	800.72	789.63	800.72	10.00	51.21	792.41	0.00	8.31	0 00:00	0.00	0.00
2	2	Junction	789.90	810.97	789.90	810.97	0.00	51.22	793.14	0.00	17.83	0 00:00	0.00	0.00
3	301	Junction	801.75	810.70	801.75	810.70	10.00	2.78	807.08	0.00	3.62	0 00:00	0.00	0.00
4	302	Junction	800.50	814.72	800.50	814.72	10.00	2.29	807.22	0.00	7.50	0 00:00	0.00	0.00
5	1312	Junction	795.14	801.14	795.14	801.14	10.00	0.00	795.14	0.00	6.00	0 00:00	0.00	0.00
6	1451	Junction	796.16	801.58	796.16	801.58	10.00	2.44	799.63	0.00	1.95	0 00:00	0.00	0.00
7	1453	Junction	793.40	803.00	793.40	803.00	10.00	11.29	799.37	0.00	3.63	0 00:00	0.00	0.00
8	1511	Junction	794.03	805.54	794.03	805.54	10.00	8.96	800.84	0.00	4.70	0 00:00	0.00	0.00
9	1533	Junction	798.65	807.61	798.65	807.61	10.00	2.61	804.87	0.00	2.74	0 00:00	0.00	0.00
10	1570	Junction	800.57	809.15	800.57	809.15	10.00	6.03	807.05	0.00	2.10	0 00:00	0.00	0.00
11	1607	Junction	809.64	815.19	809.64	815.19	10.00	3.81	810.19	0.00	5.00	0 00:00	0.00	0.00
12	13001	Junction	783.95	800.74	783.95	800.74	10.00	51.20	788.70	0.00	12.04	0 00:00	0.00	0.00
13	13002	Junction	782.33	798.46	782.33	798.46	10.00	51.20	784.58	0.00	13.88	0 00:00	0.00	0.00
14	13003	Junction	787.40	796.61	787.40	796.61	10.00	0.66	787.64	0.00	8.97	0 00:00	0.00	0.00
15	13005	Junction	781.16	791.08	781.16	791.08	10.00	51.38	783.45	0.00	7.63	0 00:00	0.00	0.00
16	13006	Junction	793.19	802.62	793.19	802.62	10.00	12.70	796.68	0.00	5.94	0 00:00	0.00	0.00
17	13008	Junction	780.03	787.03	780.03	787.03	10.00	51.54	782.81	0.00	4.22	0 00:00	0.00	0.00
18	13009	Junction	782.93	787.81	782.93	787.81	10.00	0.79	783.23	0.00	4.58	0 00:00	0.00	0.00
19	13016	Junction	776.77	780.79	776.77	780.79	10.00	0.66	777.43	0.00	3.36	0 00:00	0.00	0.00
20	13017	Junction	776.14	780.49	776.14	780.49	10.00	6.82	777.42	0.00	3.07	0 00:00	0.00	0.00
21	13018	Junction	776.48	780.24	776.48	780.24	10.00	1.41	777.78	0.00	2.46	0 00:00	0.00	0.00
22	13019	Junction	776.36	779.72	776.36	779.72	10.00	6.21	777.74	0.00	1.98	0 00:00	0.00	0.00
23	D22686	Junction	797.40	807.27	797.40	807.27	10.00	8.00	804.75	0.00	2.52	0 00:00	0.00	0.00
24	D22690	Junction	815.71	820.04	815.71	820.04	10.00	2.15	816.07	0.00	3.97	0 00:00	0.00	0.00
25	D22725	Junction	776.89	781.00	776.89	781.00	10.00	4.78	778.17	0.00	2.83	0 00:00	0.00	0.00
26	HDS-101	Junction	801.90	814.15	801.90	814.15	10.00	27.45	805.31	0.00	8.84	0 00:00	0.00	0.00
27	HDS-201	Junction	802.79	815.53	802.79	815.53	10.00	42.17	807.00	0.00	8.53	0 00:00	0.00	0.00
28	13021/3	Outfall	766.01					63.75	767.04					
29	13011/3	Storage Node	771.15	780.00	771.15		0.00	63.74	772.77				0.00	0.00
30	UGD-01	Storage Node	790.00	805.00	790.00		0.00	69.56	804.79				0.00	0.00
31	UGD-02	Storage Node	802.50	809.25	802.50		0.00	2.77	807.34				0.00	0.00
32	UGD-03	Storage Node	813.62	821.50	0.00		0.00	25.39	821.15				0.00	0.00

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Diameter or Height (in)	Manning's Roughness	Peak Flow (cfs)	Design Flow Capacity (cfs)	Peak Flow/Design Flow Ratio	Peak Flow Velocity (ft/sec)	Peak Flow Depth (ft)	Peak Flow Depth/Total Depth Ratio	Total Time Reported Surcharged (min)	Reported Condition
1	Link-02	Pipe	13001	13002	56.93	783.95	782.75	2.1100	24.000	0.0130	51.20	32.84	1.56	16.30	2.00	1.00	11.00	SURCHARGED
2	Link-03	Pipe	1312	13002	47.69	795.14	794.90	0.5000	15.000	0.0130	0.00	4.58	0.00	0.00	0.00	0.00	0.00	Calculated
3	Link-04	Pipe	13002	13005	108.25	782.33	781.35	0.9100	36.000	0.0130	51.21	63.46	0.81	9.34	2.17	0.72	0.00	Calculated
4	Link-05	Pipe	13003	13005	149.97	787.40	784.28	2.0800	12.000	0.0130	0.66	5.14	0.13	4.49	0.24	0.24	0.00	Calculated
5	Link-06	Pipe	13009	13008	36.78	782.93	782.29	1.7400	12.000	0.0130	0.79	4.70	0.17	4.24	0.32	0.33	0.00	Calculated
6	Link-07	Pipe	13005	13008	104.48	781.16	780.08	1.0300	36.000	0.0130	51.36	67.81	0.76	8.16	2.51	0.84	0.00	Calculated
7	Link-08	Pipe	D22725	13019	78.09	776.89	776.61	0.3600	15.000	0.0130	4.80	3.87	1.24	3.98	1.19	0.95	0.00	> CAPACITY
8	Link-10	Pipe	13018	13019	7.77	776.48	776.36	1.5400	12.000	0.0130	1.41	4.43	0.32	1.80	1.00	1.00	10.00	SURCHARGED
9	Link-11	Pipe	13019	13017	78.97	776.36	776.14	0.2800	18.000	0.0130	6.17	5.54	1.11	3.72	1.33	0.89	0.00	> CAPACITY
10	Link-12	Pipe	13016	13017	12.35	776.77	776.64	1.0500	12.000	0.0130	0.65	3.66	0.18	2.65	0.72	0.72	0.00	Calculated
11	Link-13	Pipe	13017	13011/3	48.41	776.14	775.94	0.4100	18.000	0.0130	6.80	6.75	1.01	4.70	1.14	0.76	0.00	> CAPACITY
12	Link-14	Pipe	13011/3	13021/3	82.97	771.22	766.00	6.2900	48.000	0.0130	63.75	310.16	0.21	16.49	1.29	0.32	0.00	Calculated
13	Link-15	Pipe	13008	13011/3	56.74	780.03	779.61	0.7400	36.000	0.0130	51.51	57.38	0.90	8.19	2.49	0.83	0.00	Calculated
14	Link-16	Pipe	D22690	1607	132.76	815.71	809.64	4.5700	12.000	0.0130	2.15	7.62	0.28	6.93	0.45	0.45	0.00	Calculated
15	Link-17	Pipe	1607	1570	148.78	809.65	800.57	6.1000	12.000	0.0130	3.77	8.80	0.43	7.52	0.77	0.77	0.00	Calculated
16	Link-18	Pipe	1570	D22686	85.84	800.57	797.40	3.6900	12.000	0.0130	6.03	6.85	0.88	7.71	1.00	1.00	12.00	SURCHARGED
17	Link-19	Pipe	1533	D22686	9.27	798.65	797.40	13.4800	12.000	0.0130	2.62	13.08	0.20	4.85	1.00	1.00	13.00	SURCHARGED
18	Link-20	Pipe	D22686	1511	72.00	797.40	794.08	4.6100	12.000	0.0130	8.00	7.65	1.05	10.19	1.00	1.00	14.00	SURCHARGED
19	Link-21	Pipe	1511	1453	55.99	794.03	793.73	0.5400	15.000	0.0130	8.96	4.73	1.89	7.30	1.25	1.00	19.00	SURCHARGED
20	Link-22	Pipe	1451	1453	40.69	796.16	793.81	5.7800	12.000	0.0130	2.44	8.56	0.28	4.73	1.00	1.00	12.00	SURCHARGED
21	Link-23	Pipe	1453	13006	77.33	793.40	793.24	0.2100	15.000	0.0130	11.29	2.94	3.84	9.20	1.25	1.00	20.00	SURCHARGED
22	Link-24	Pipe	13006	13011/3	41.11	793.19	793.00	0.4600	15.000	0.0130	12.70	4.39	2.89	10.35	1.25	1.00	9.00	SURCHARGED
23	Link-37	Pipe	302	301	136.92	802.50	801.95	0.4000	12.000	0.0130	2.78	2.26	1.23	3.54	1.00	1.00	10.00	SURCHARGED
24	Link-38	Pipe	301	1570	24.56	801.85	800.75	4.4800	12.000	0.0130	3.20	7.54	0.42	6.40	1.00	1.00	10.00	SURCHARGED
25	Link-39	Pipe	HDS-101	UGD-01	10.00	802.00	801.82	1.8000	24.000	0.0130	27.45	30.35	0.90	9.44	2.00	1.00	13.00	SURCHARGED
26	Link-41	Pipe	HDS-201	UGD-01	47.26	802.89	801.95	1.9900	24.000	0.0130	42.17	31.90	1.32	13.42	2.00	1.00	15.00	SURCHARGED
27	Link-42	Pipe	2	1	30.50	790.00	789.83	0.5600	36.000	0.0130	51.21	49.80	1.03	7.48	2.79	0.93	0.00	> CAPACITY
28	Link-44	Pipe	1	13001	214.52	789.73	788.55	0.5500	36.000	0.0130	51.20	49.47	1.04	8.13	2.50	0.83	0.00	> CAPACITY
29	UGD-01 -2ndStage	Orifice	UGD-01	2		790.00	789.90		8.000		33.85							
30	UGD-01-WQ	Orifice	UGD-01	2		790.00	789.90		3.000		0.81							
31	UGD-02-MANIFOLD	Orifice	UGD-02	302		802.50	800.50		12.000		2.28							
32	UGD-02-WQ	Orifice	UGD-02	302		802.50	800.50		0.500		0.01							
33	UGD-03-Orifice	Orifice	UGD-03	HDS-101		813.62	801.90		10.000		7.00							
34	UGD-01-Weir	Weir	UGD-01	2		790.00	789.90				16.56							

**Subbasin Hydrology**

**Subbasin : FUTURE-01**

**Input Data**

Area (ac) ..... 3.25  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 95  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	Area (acres)	Soil Group	Curve Number
-	3.25	-	95
Composite Area & Weighted CN	3.25		95

**Time of Concentration**

TOC Method : SCS TR-55

Sheet Flow Equation :

$$T_c = (0.007 * ((n * L_f)^{0.8})) / ((P^{0.5}) * (S_f^{0.4}))$$

Where :

- T<sub>c</sub> = Time of Concentration (hr)
- n = Manning's roughness
- L<sub>f</sub> = Flow Length (ft)
- P = 2 yr, 24 hr Rainfall (inches)
- S<sub>f</sub> = Slope (ft/ft)

Shallow Concentrated Flow Equation :

- V = 16.1345 \* (S<sub>f</sub><sup>0.5</sup>) (unpaved surface)
- V = 20.3282 \* (S<sub>f</sub><sup>0.5</sup>) (paved surface)
- V = 15.0 \* (S<sub>f</sub><sup>0.5</sup>) (grassed waterway surface)
- V = 10.0 \* (S<sub>f</sub><sup>0.5</sup>) (nearly bare & untilled surface)
- V = 9.0 \* (S<sub>f</sub><sup>0.5</sup>) (cultivated straight rows surface)
- V = 7.0 \* (S<sub>f</sub><sup>0.5</sup>) (short grass pasture surface)
- V = 5.0 \* (S<sub>f</sub><sup>0.5</sup>) (woodland surface)
- V = 2.5 \* (S<sub>f</sub><sup>0.5</sup>) (forest w/heavy litter surface)
- T<sub>c</sub> = (L<sub>f</sub> / V) / (3600 sec/hr)

Where:

- T<sub>c</sub> = Time of Concentration (hr)
- L<sub>f</sub> = Flow Length (ft)
- V = Velocity (ft/sec)
- S<sub>f</sub> = Slope (ft/ft)

Channel Flow Equation :

$$V = (1.49 * (R^{2/3})) * (S_f^{0.5}) / n$$

$$R = A_q / W_p$$

$$T_c = (L_f / V) / (3600 \text{ sec/hr})$$

Where :

- T<sub>c</sub> = Time of Concentration (hr)
- L<sub>f</sub> = Flow Length (ft)
- R = Hydraulic Radius (ft)
- A<sub>q</sub> = Flow Area (ft<sup>2</sup>)
- W<sub>p</sub> = Wetted Perimeter (ft)
- V = Velocity (ft/sec)
- S<sub>f</sub> = Slope (ft/ft)
- n = Manning's roughness

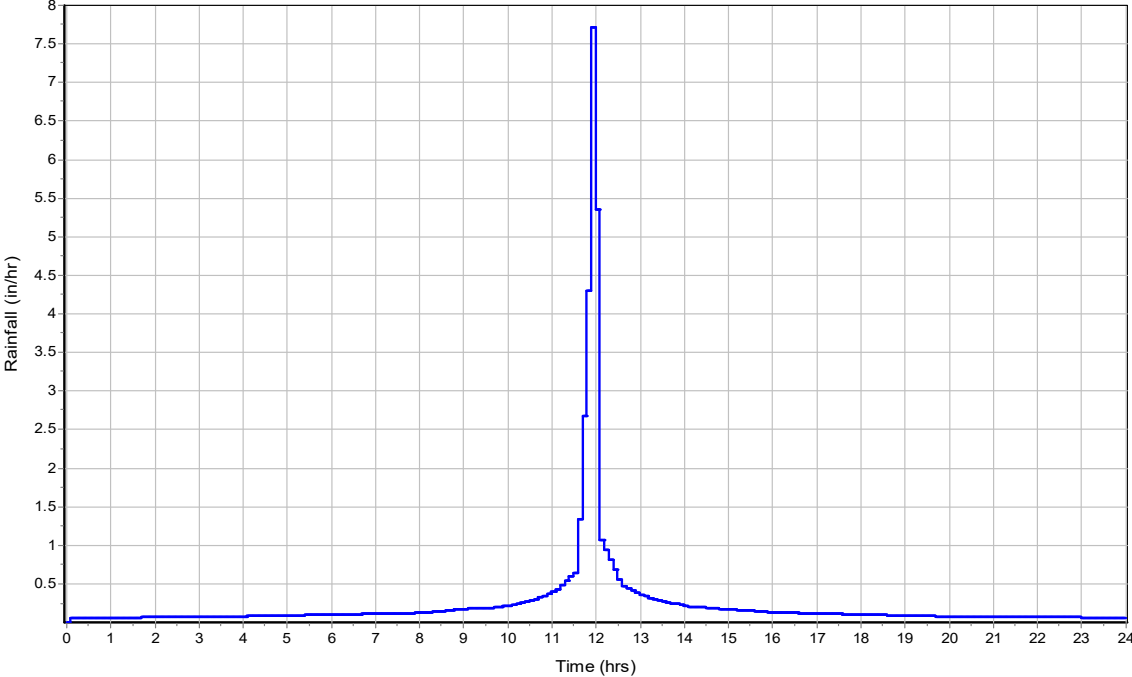
User-Defined TOC override (minutes): 10

**Subbasin Runoff Results**

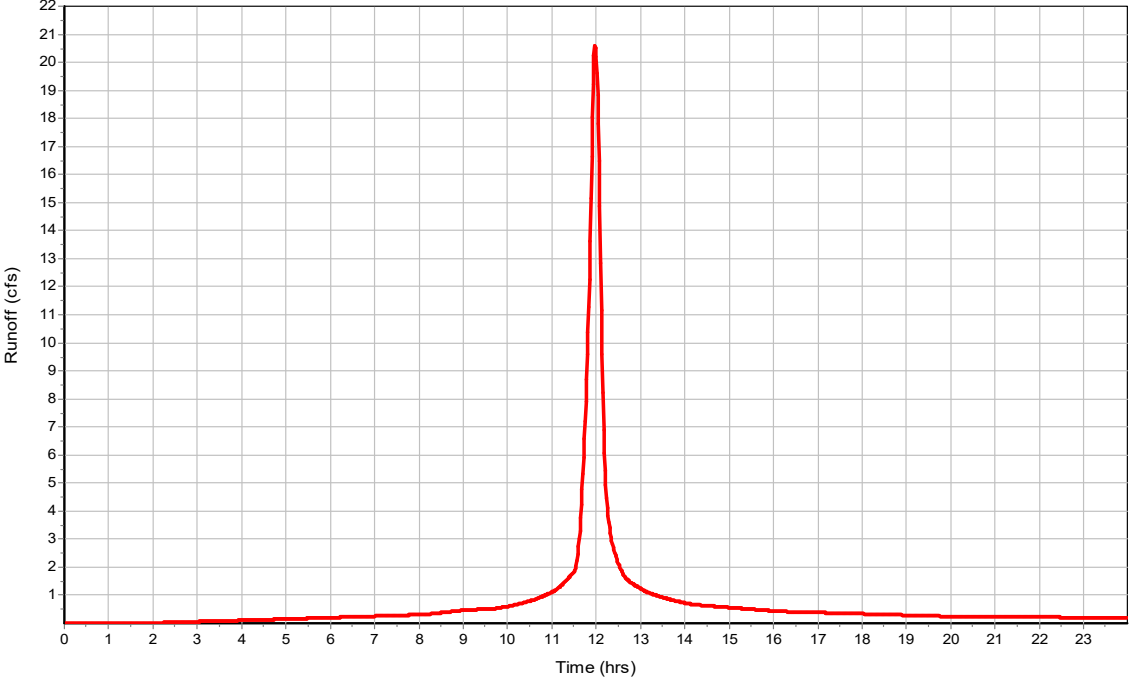
Total Rainfall (in) ..... 5.63  
 Total Runoff (in) ..... 5.04  
 Peak Runoff (cfs) ..... 20.58  
 Weighted Curve Number ..... 95  
 Time of Concentration (days hh:mm:ss) ..... 0 00:10:00

Subbasin : FUTURE-01

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : FUTURE-02**

**Input Data**

Area (ac) ..... 5.53  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 93  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	5.53	-	93
Composite Area & Weighted CN	5.53		93

**Time of Concentration**

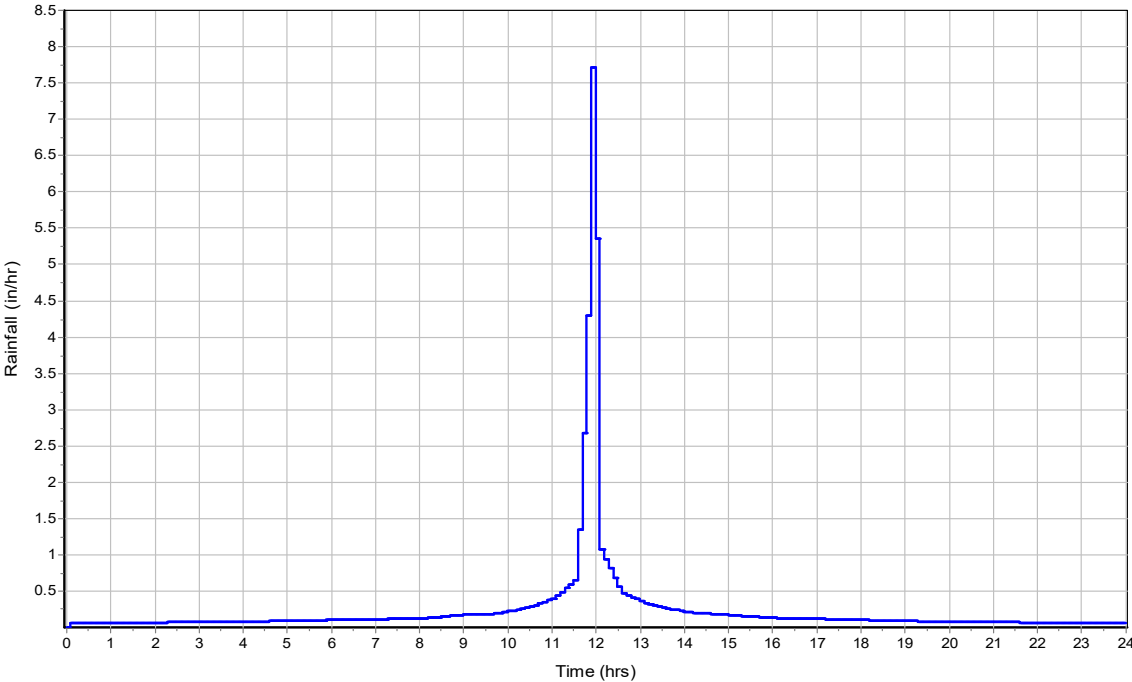
User-Defined TOC override (minutes): 10

**Subbasin Runoff Results**

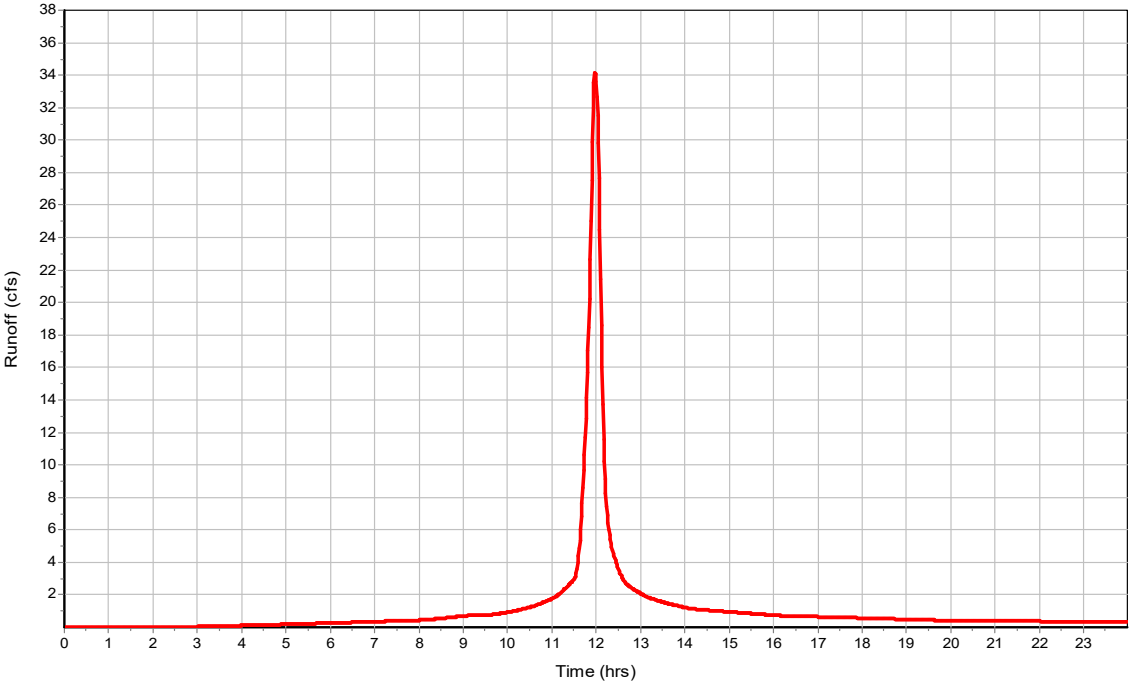
Total Rainfall (in) ..... 5.63  
 Total Runoff (in) ..... 4.82  
 Peak Runoff (cfs) ..... 34.22  
 Weighted Curve Number ..... 93  
 Time of Concentration (days hh:mm:ss) ..... 0 00:10:00

Subbasin : FUTURE-02

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : FUTURE-03**

**Input Data**

Area (ac) ..... 0.78  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 95  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	0.78	-	95
Composite Area & Weighted CN	0.78		95

**Time of Concentration**

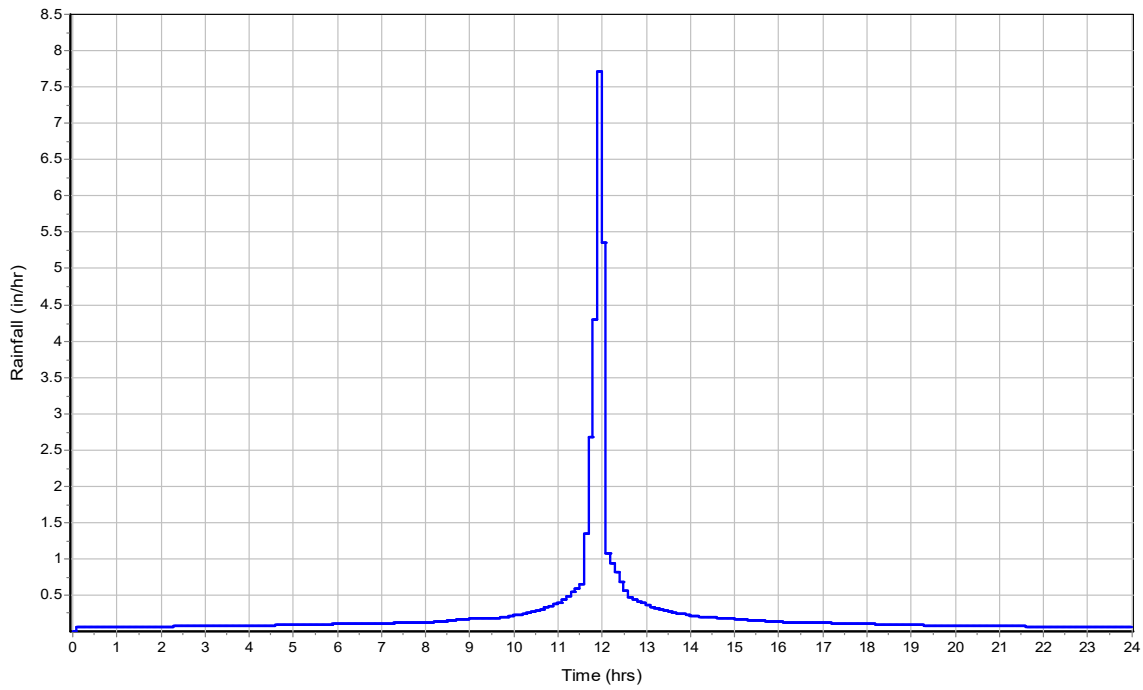
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

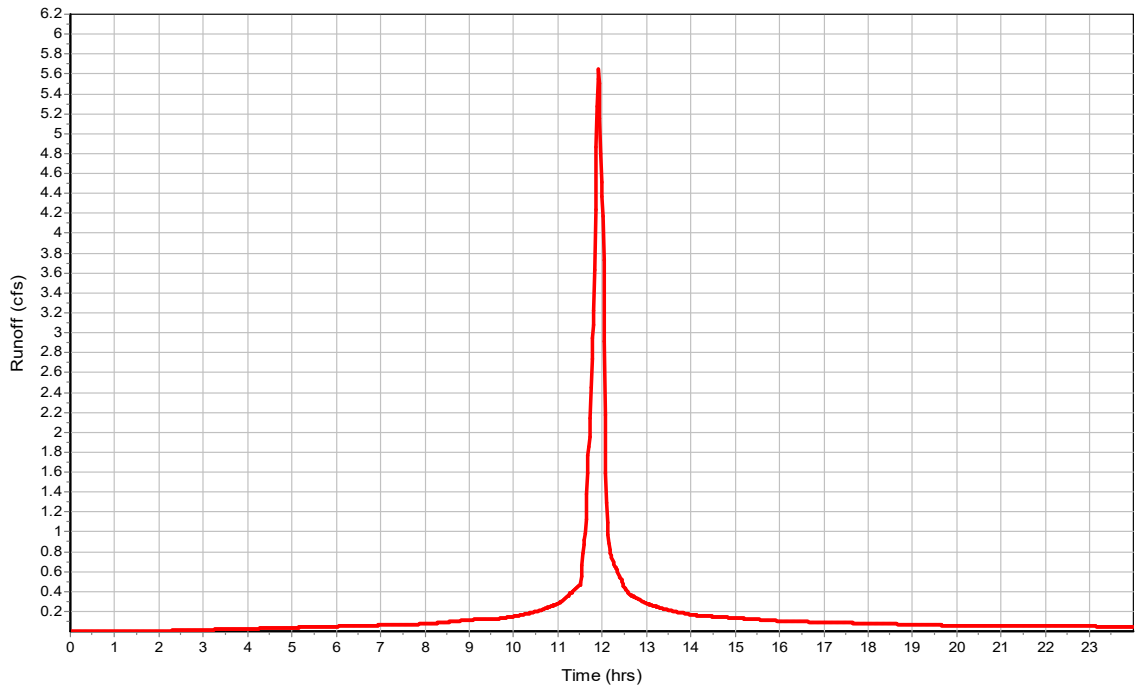
Total Rainfall (in) ..... 5.63  
 Total Runoff (in) ..... 5.04  
 Peak Runoff (cfs) ..... 5.64  
 Weighted Curve Number ..... 95  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : FUTURE-03

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : POST-01**

**Input Data**

Area (ac) ..... 3.47  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 94  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	3.47	-	94
Composite Area & Weighted CN	3.47		94

**Time of Concentration**

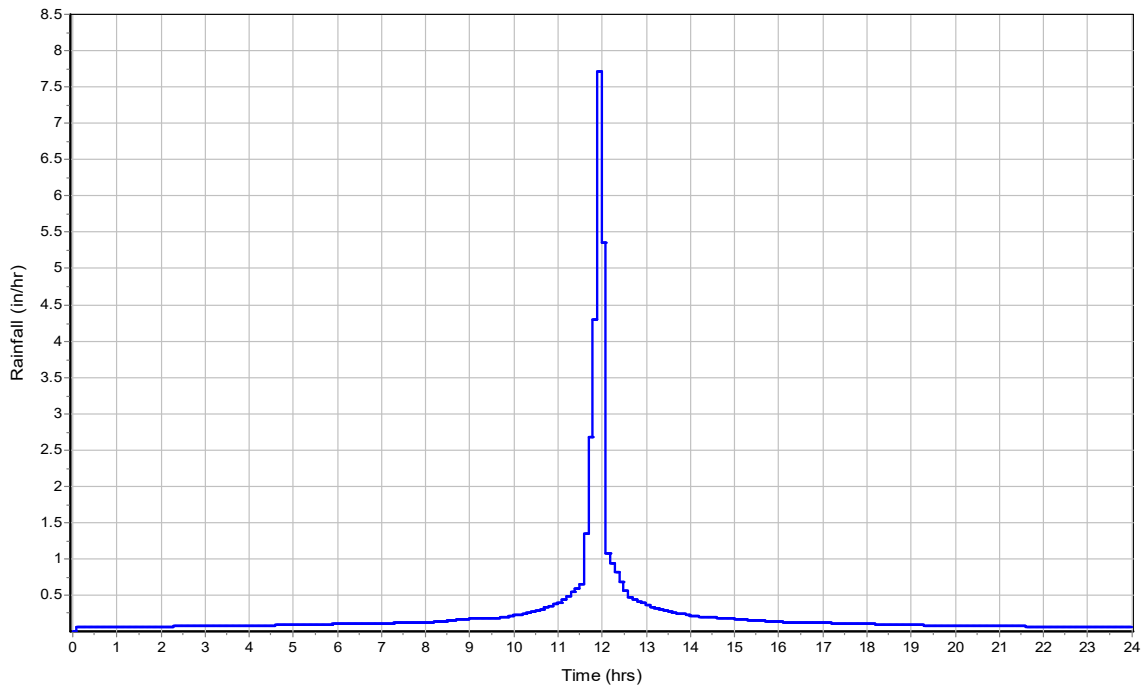
User-Defined TOC override (minutes): 10

**Subbasin Runoff Results**

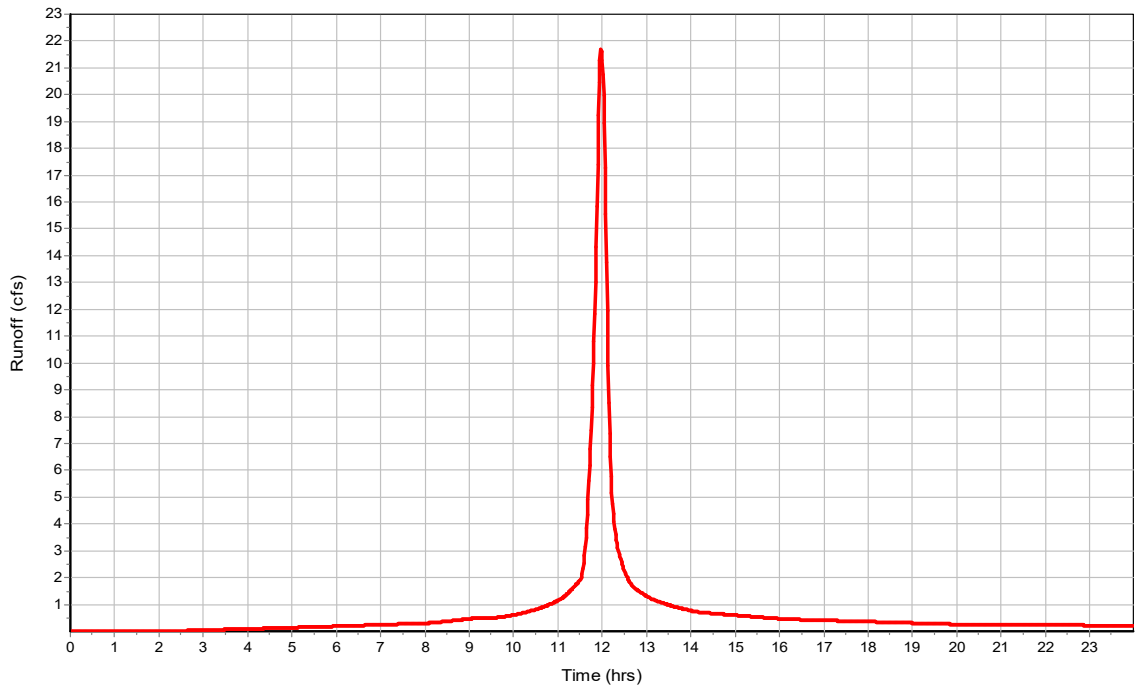
Total Rainfall (in) ..... 5.63  
 Total Runoff (in) ..... 4.93  
 Peak Runoff (cfs) ..... 21.73  
 Weighted Curve Number ..... 94  
 Time of Concentration (days hh:mm:ss) ..... 0 00:10:00

Subbasin : POST-01

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : POST-02**

**Input Data**

Area (ac) ..... 1.34  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 91  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	1.34	-	91
Composite Area & Weighted CN	1.34		91

**Time of Concentration**

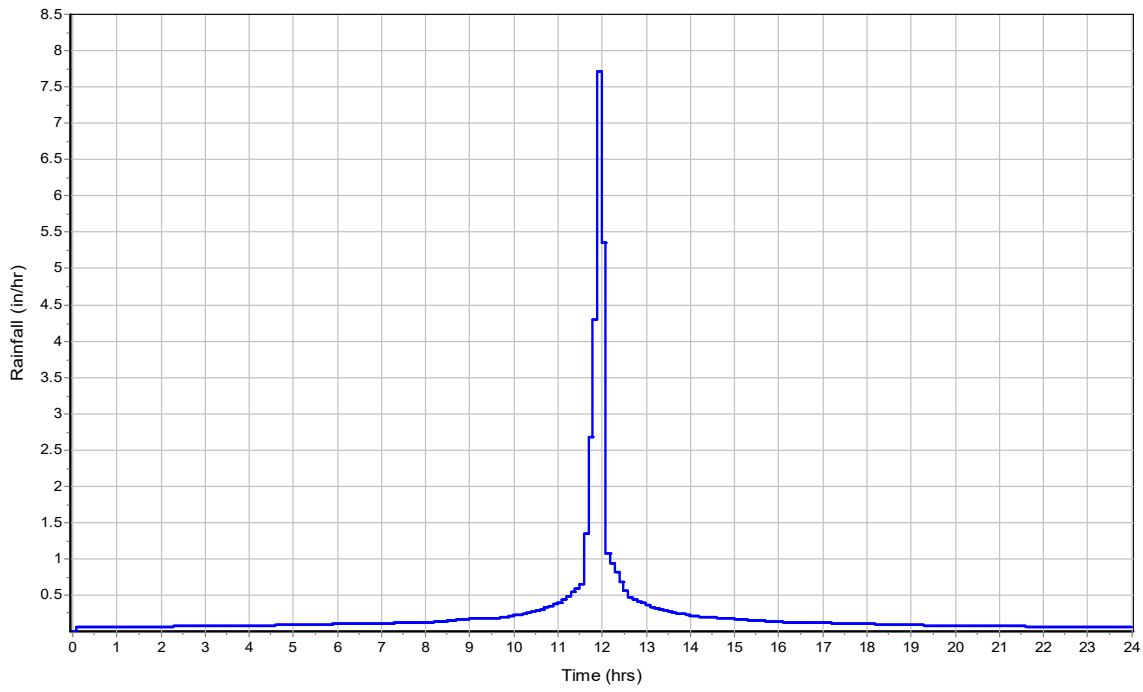
User-Defined TOC override (minutes): 10

**Subbasin Runoff Results**

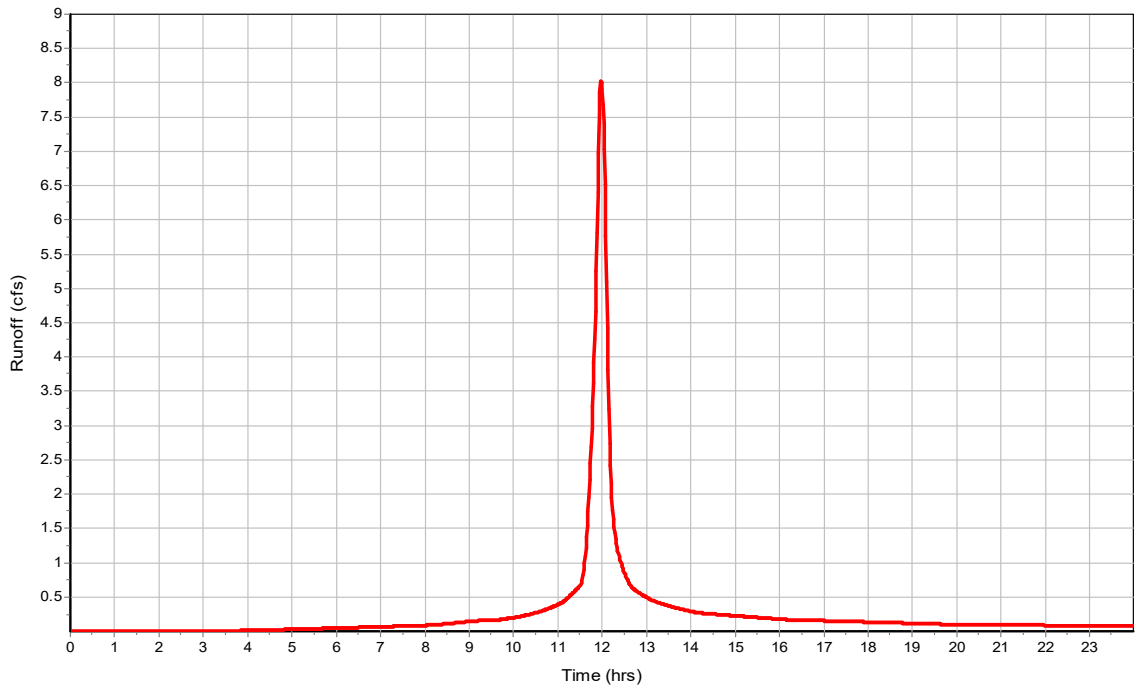
Total Rainfall (in) ..... 5.63  
 Total Runoff (in) ..... 4.6  
 Peak Runoff (cfs) ..... 8.04  
 Weighted Curve Number ..... 91  
 Time of Concentration (days hh:mm:ss) ..... 0 00:10:00

Subbasin : POST-02

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : POST-03**

**Input Data**

Area (ac) ..... 0.28  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 85  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	0.28	-	85
Composite Area & Weighted CN	0.28		85

**Time of Concentration**

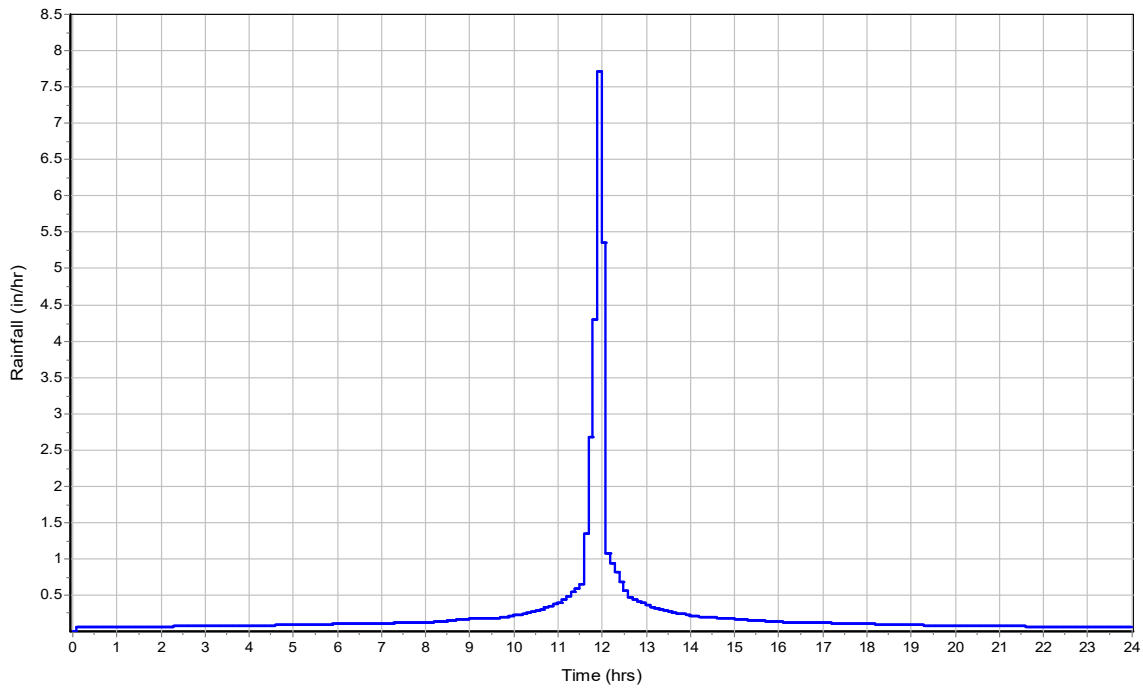
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

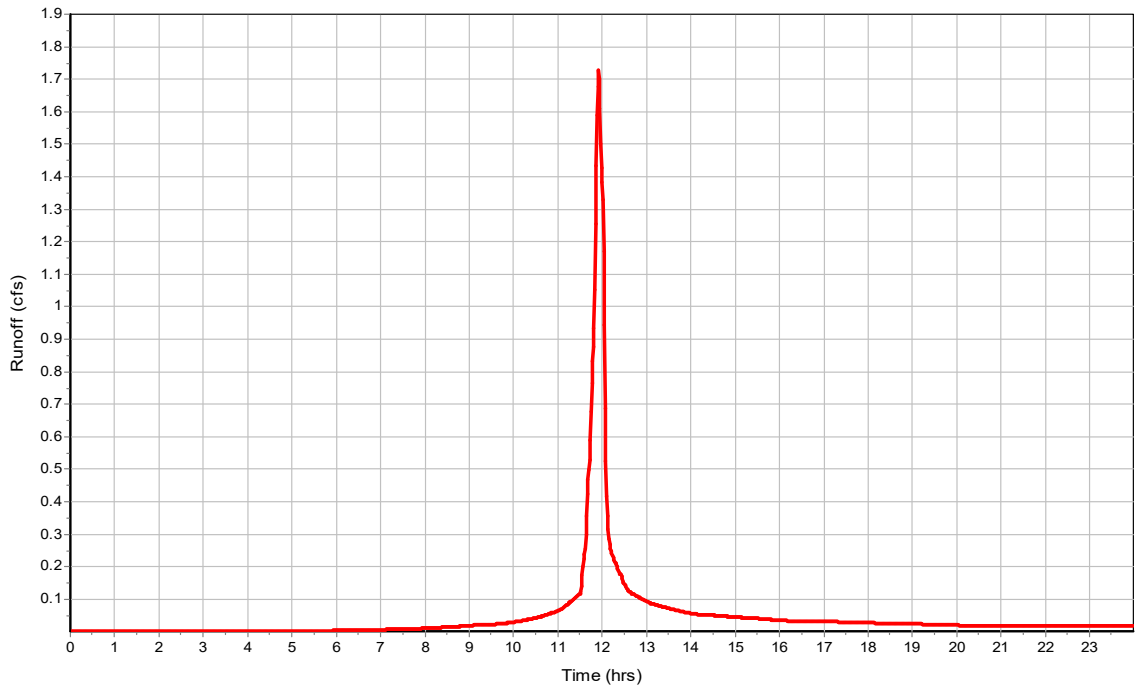
Total Rainfall (in) ..... 5.63  
 Total Runoff (in) ..... 3.95  
 Peak Runoff (cfs) ..... 1.73  
 Weighted Curve Number ..... 85  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : POST-03

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-13003**

**Input Data**

Area (ac) ..... 0.09  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 97.81  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	0.09	-	97.81
Composite Area & Weighted CN	0.09		97.81

**Time of Concentration**

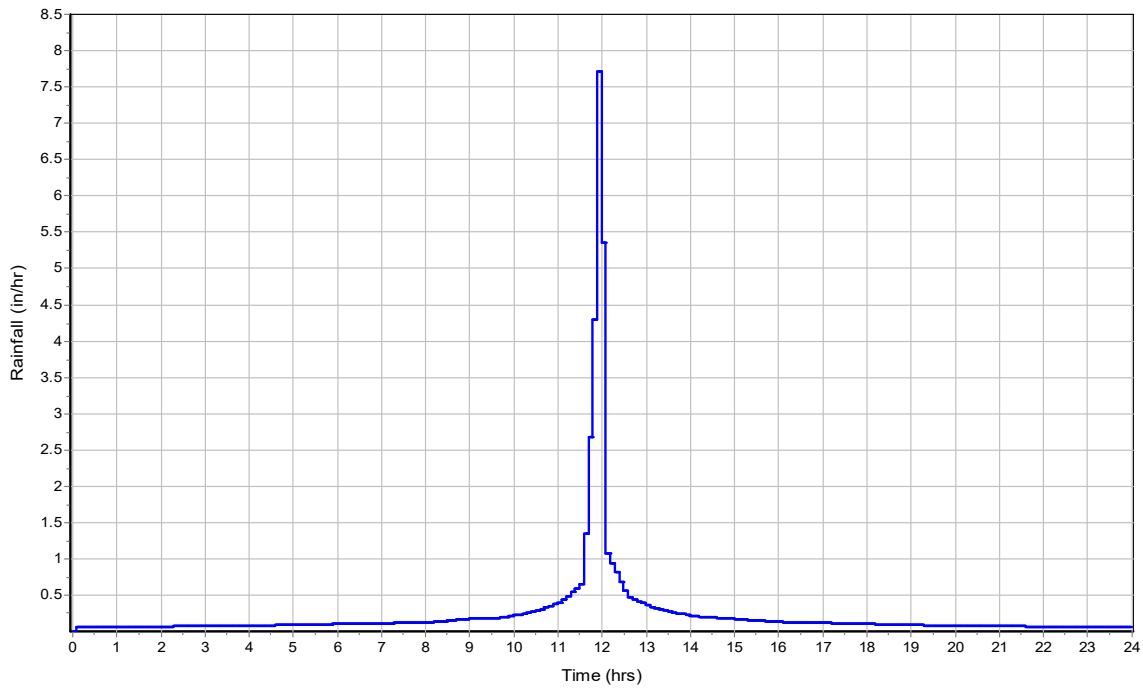
User-Defined TOC override (minutes): 5.00

**Subbasin Runoff Results**

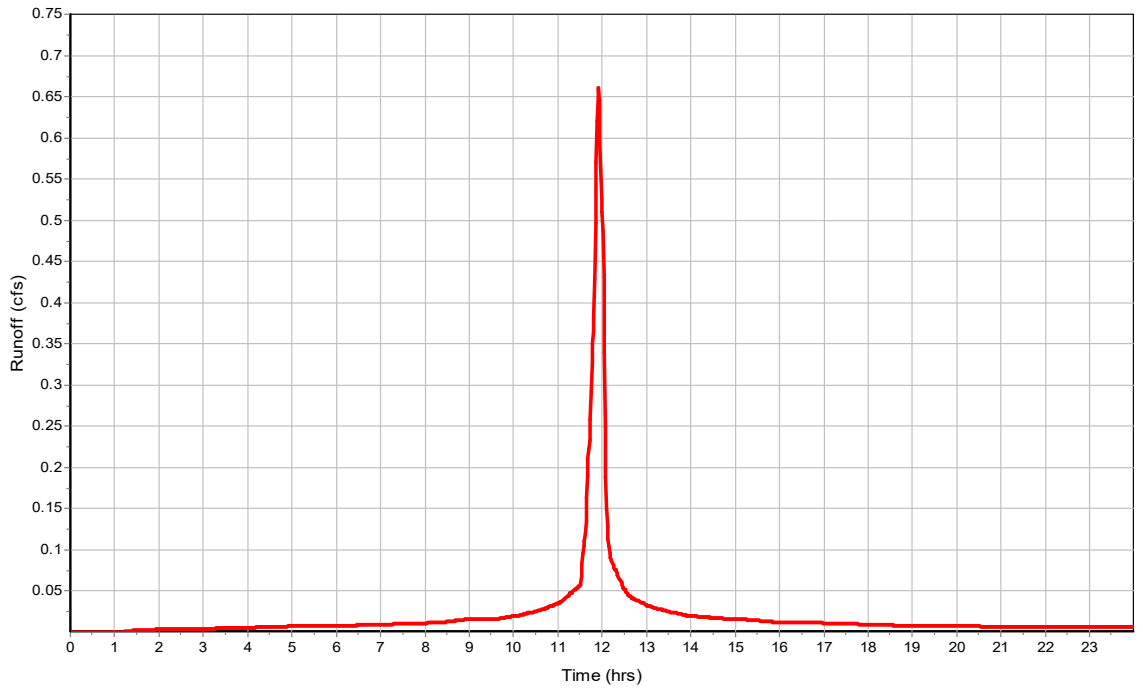
Total Rainfall (in) ..... 5.63  
 Total Runoff (in) ..... 5.37  
 Peak Runoff (cfs) ..... 0.66  
 Weighted Curve Number ..... 97.81  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-13003

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-13006**

**Input Data**

Area (ac) ..... 0.21  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 90.17  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	0.21	-	90.17
Composite Area & Weighted CN	0.21		90.17

**Time of Concentration**

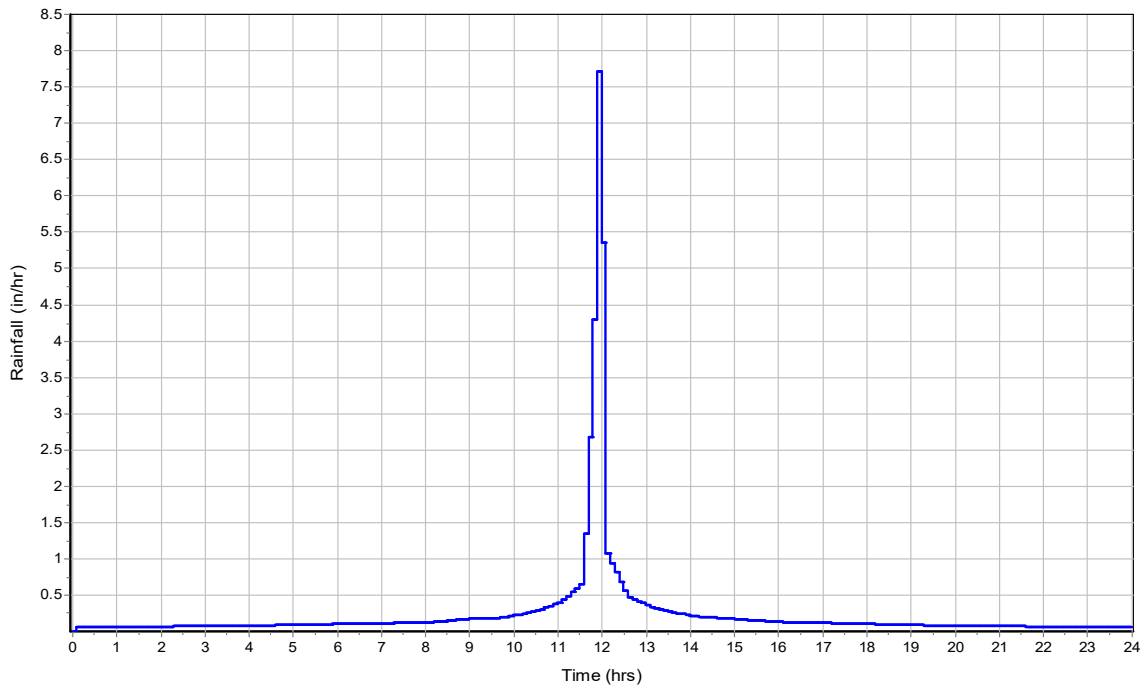
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

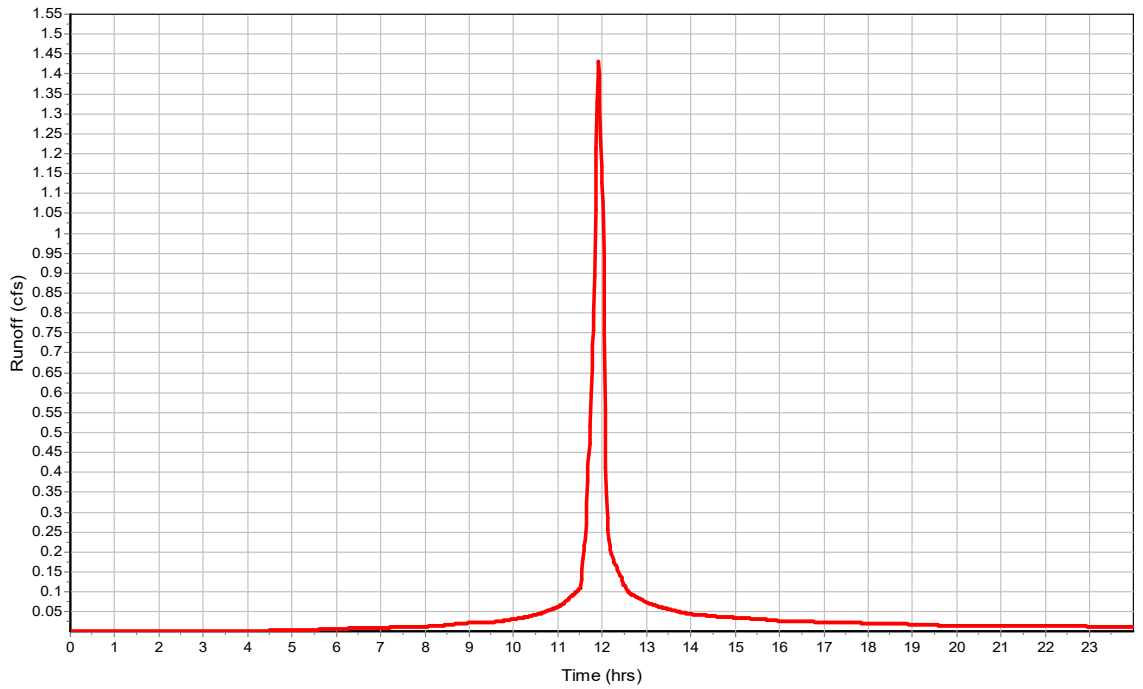
Total Rainfall (in) ..... 5.63  
 Total Runoff (in) ..... 4.5  
 Peak Runoff (cfs) ..... 1.43  
 Weighted Curve Number ..... 90.17  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-13006

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-13009**

**Input Data**

Area (ac) ..... 0.11  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 95.27  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	0.11	-	95.27
Composite Area & Weighted CN	0.11		95.27

**Time of Concentration**

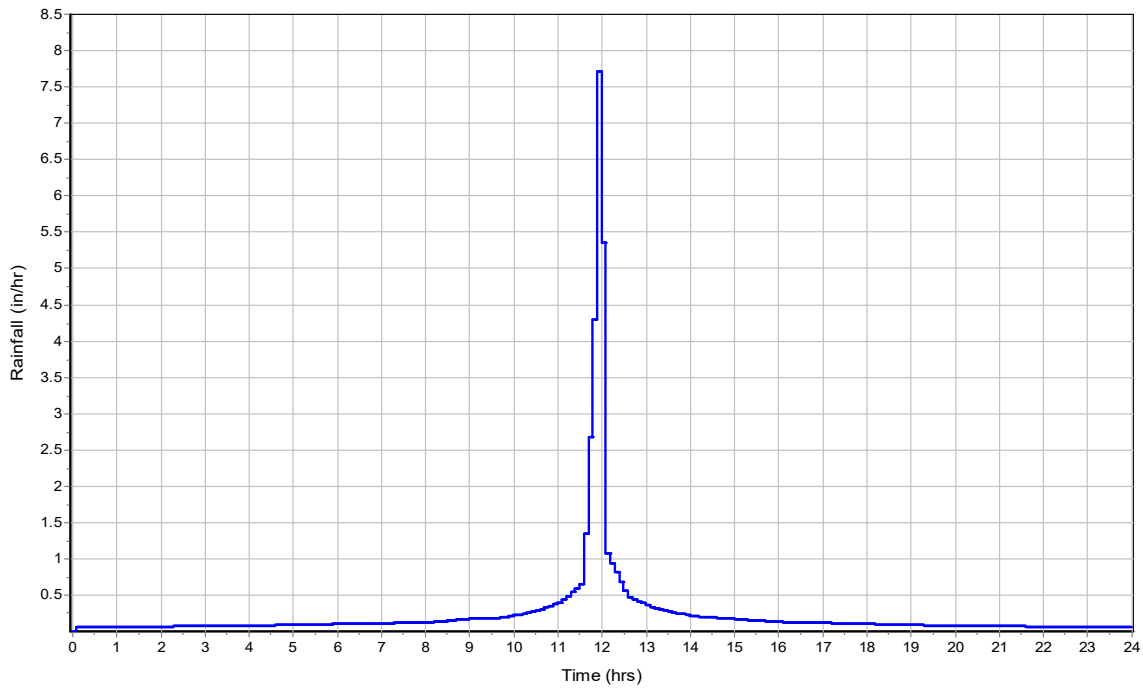
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

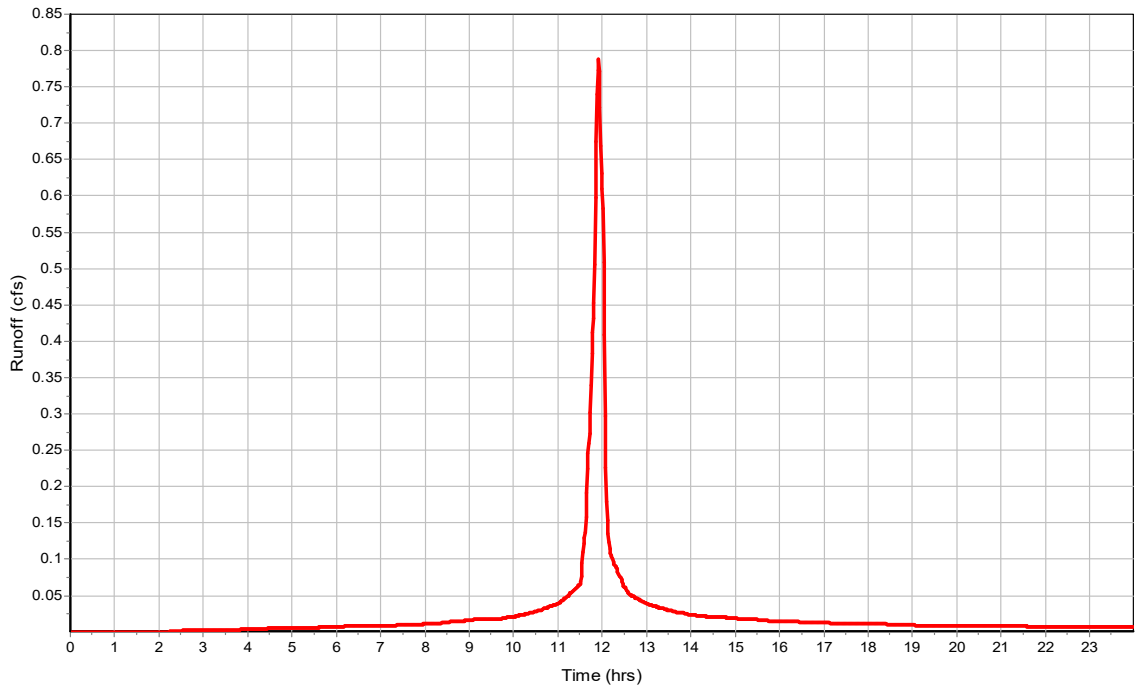
Total Rainfall (in) ..... 5.63  
 Total Runoff (in) ..... 5.07  
 Peak Runoff (cfs) ..... 0.79  
 Weighted Curve Number ..... 95.27  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-13009

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-13011/3**

**Input Data**

Area (ac) ..... 1.18  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 74.32  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
-	1.18	-	74.32
Composite Area & Weighted CN	1.18		74.32

**Time of Concentration**

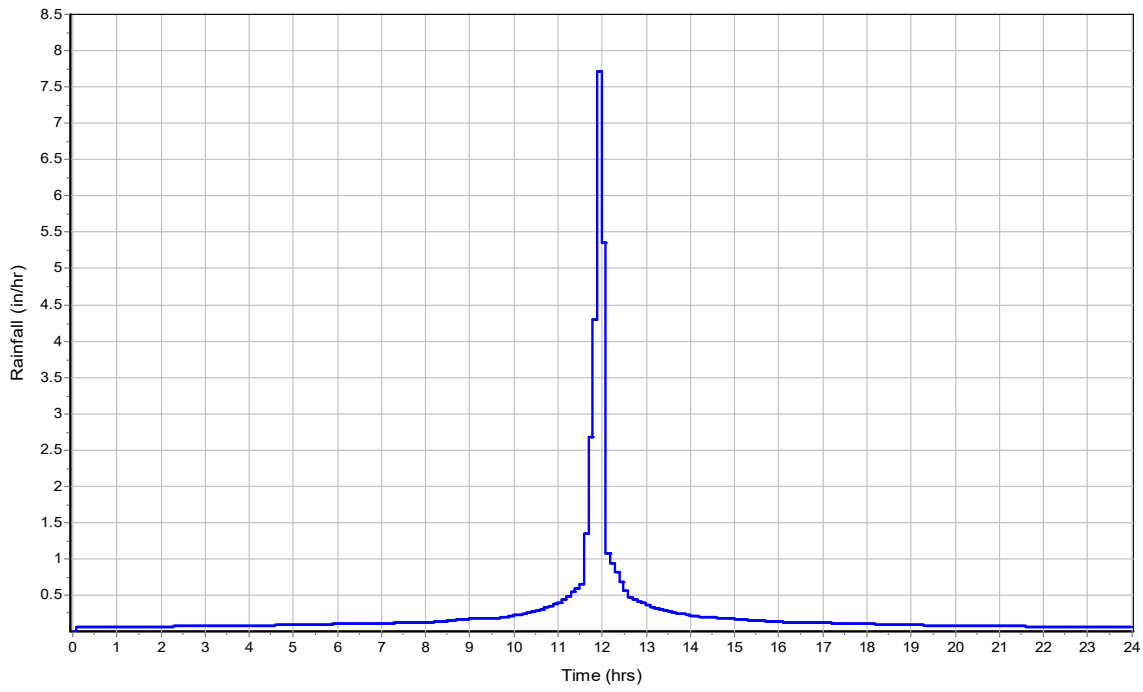
User-Defined TOC override (minutes): 10

**Subbasin Runoff Results**

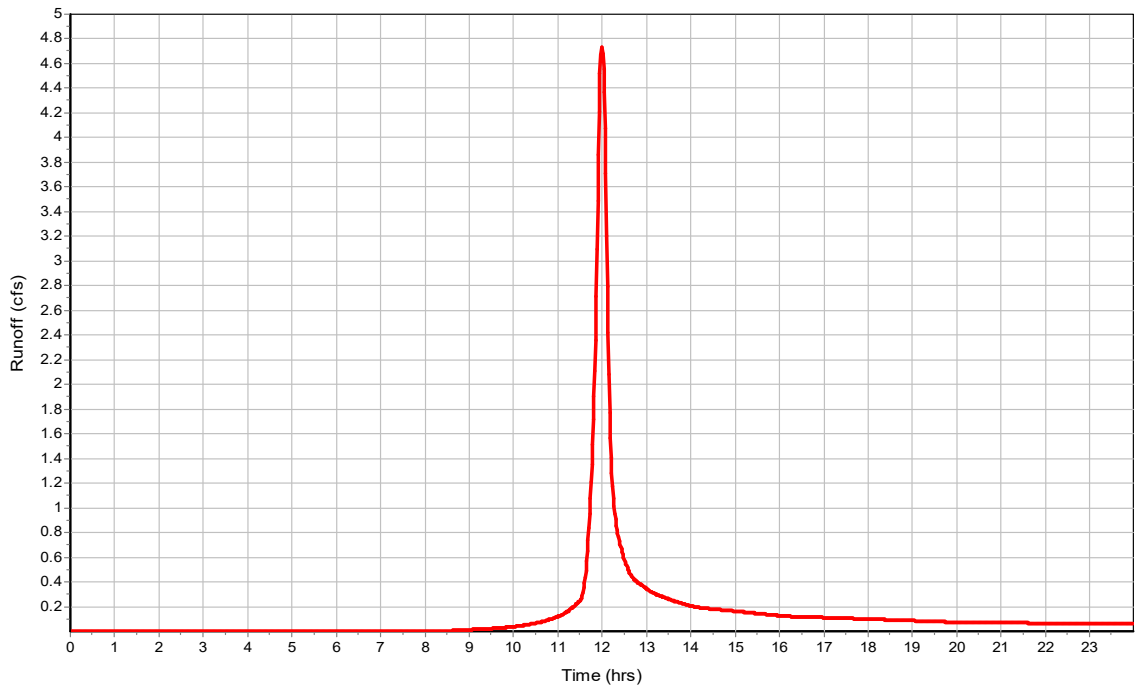
Total Rainfall (in) ..... 5.63  
 Total Runoff (in) ..... 2.91  
 Peak Runoff (cfs) ..... 4.74  
 Weighted Curve Number ..... 74.32  
 Time of Concentration (days hh:mm:ss) ..... 0 00:10:00

Subbasin : SUB-13011/3

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-13016**

**Input Data**

Area (ac) ..... 0.09  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 97.34  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.09	-	97.34
Composite Area & Weighted CN		0.09		97.34

**Time of Concentration**

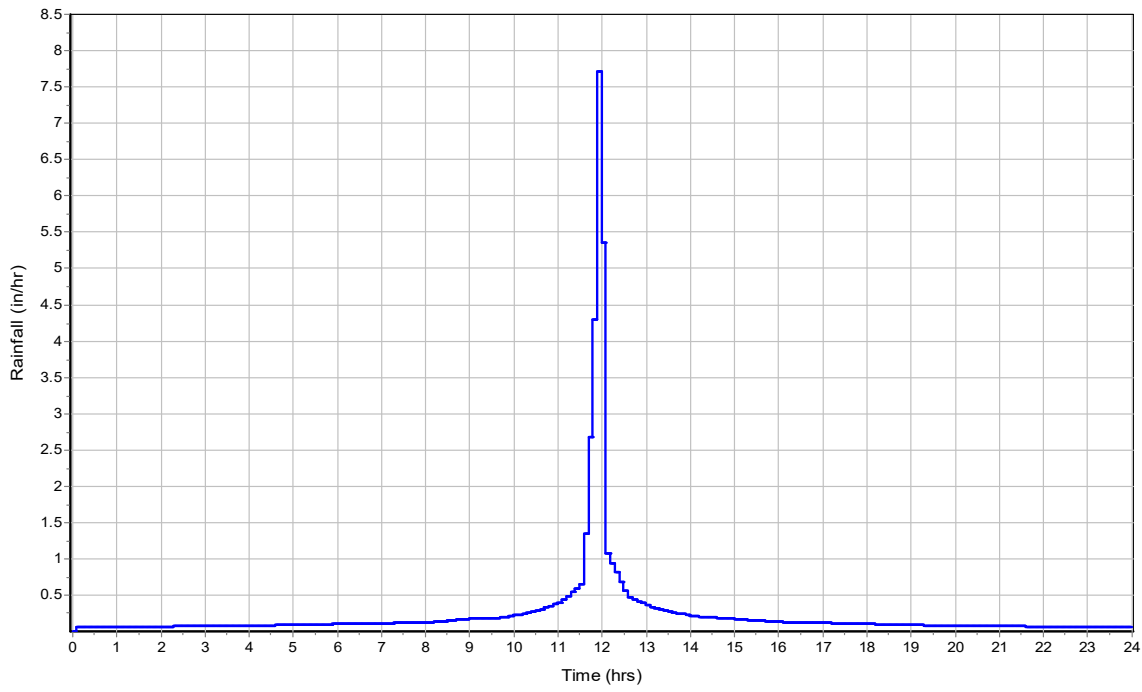
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

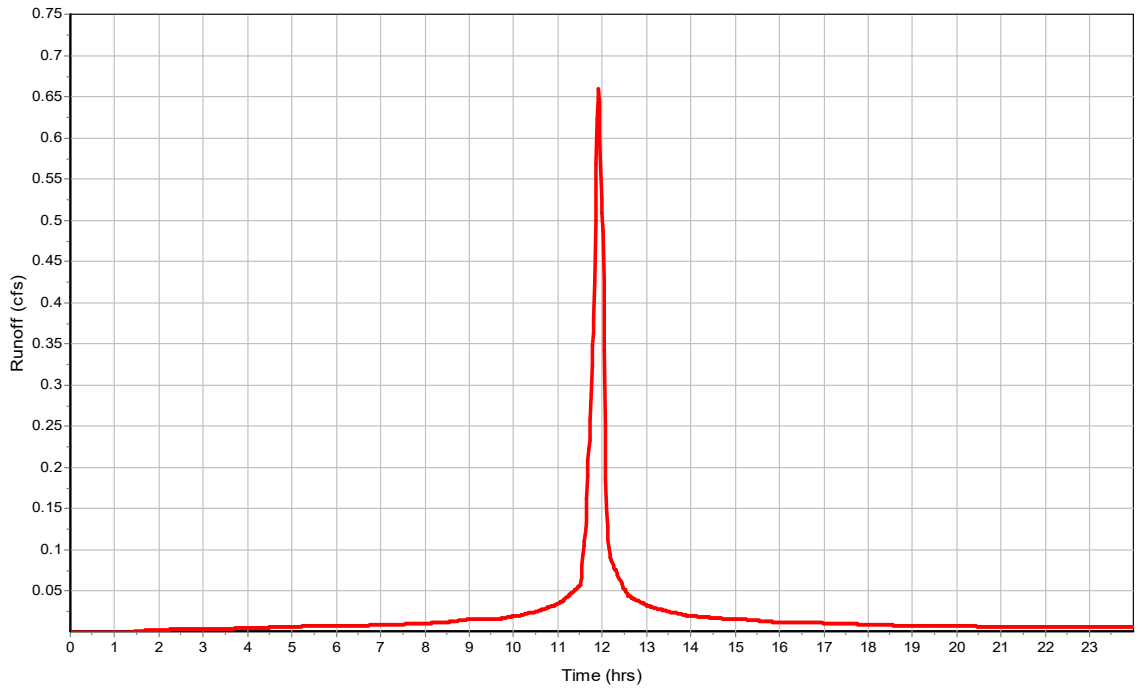
Total Rainfall (in) ..... 5.63  
 Total Runoff (in) ..... 5.31  
 Peak Runoff (cfs) ..... 0.66  
 Weighted Curve Number ..... 97.34  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-13016

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-13018**

**Input Data**

Area (ac) ..... 0.22  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 87.75  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.22	-	87.75
Composite Area & Weighted CN		0.22		87.75

**Time of Concentration**

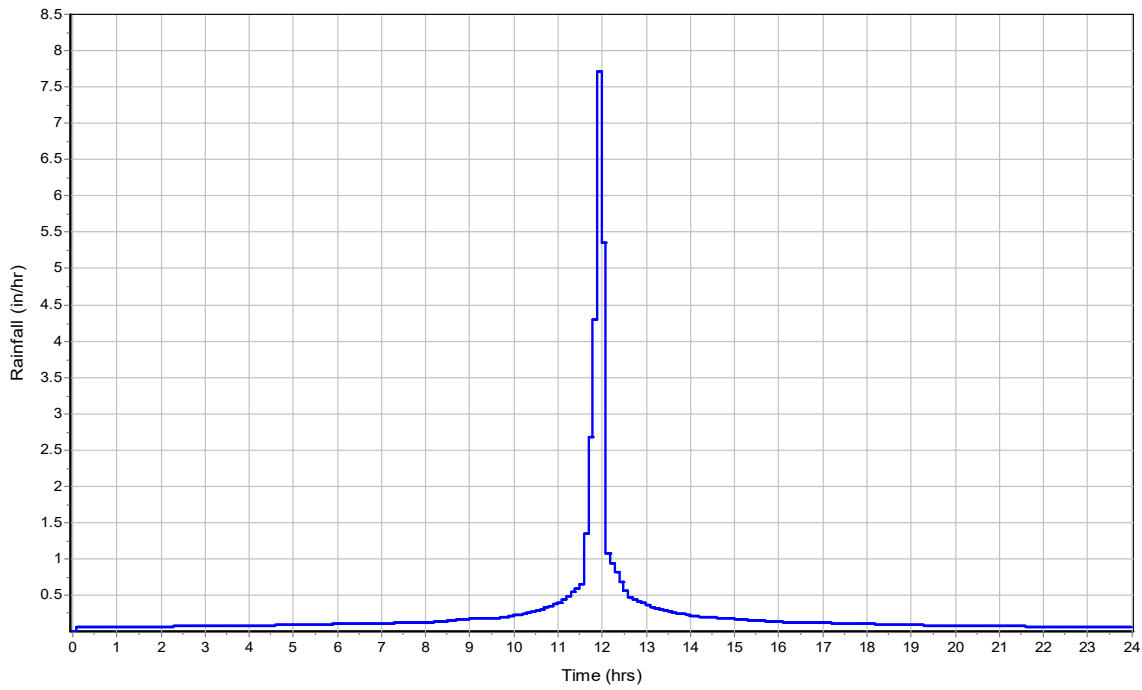
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

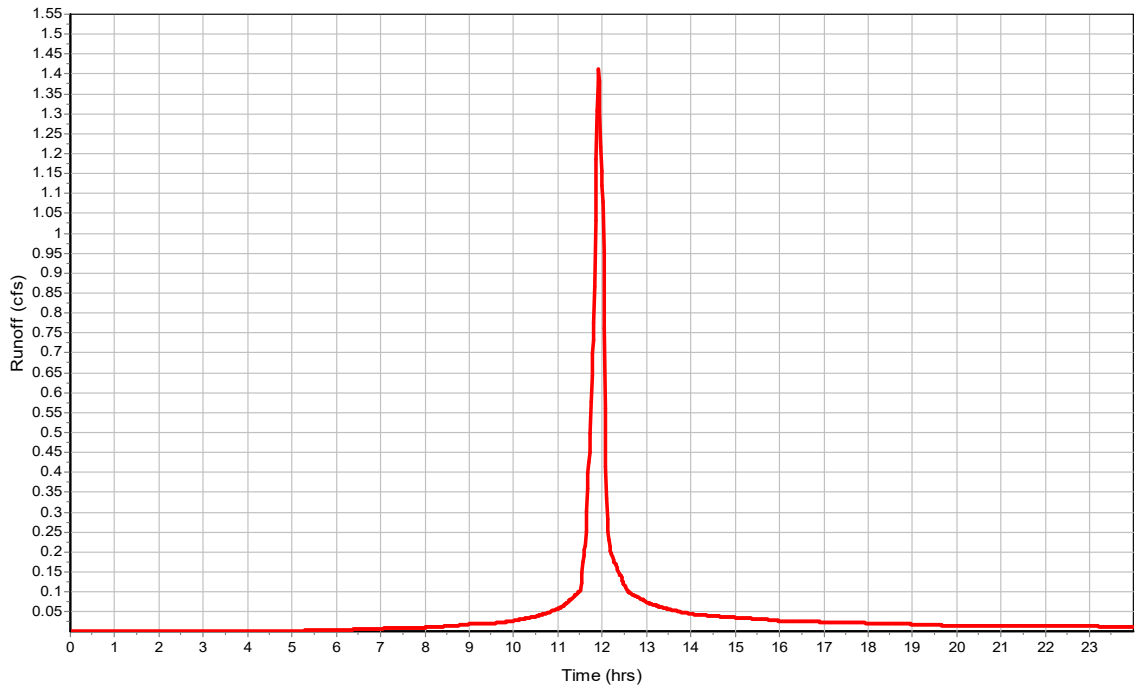
Total Rainfall (in) ..... 5.63  
 Total Runoff (in) ..... 4.24  
 Peak Runoff (cfs) ..... 1.41  
 Weighted Curve Number ..... 87.75  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-13018

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-1451**

**Input Data**

Area (ac) ..... 0.37  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 88.41  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.37	-	88.41
Composite Area & Weighted CN		0.37		88.41

**Time of Concentration**

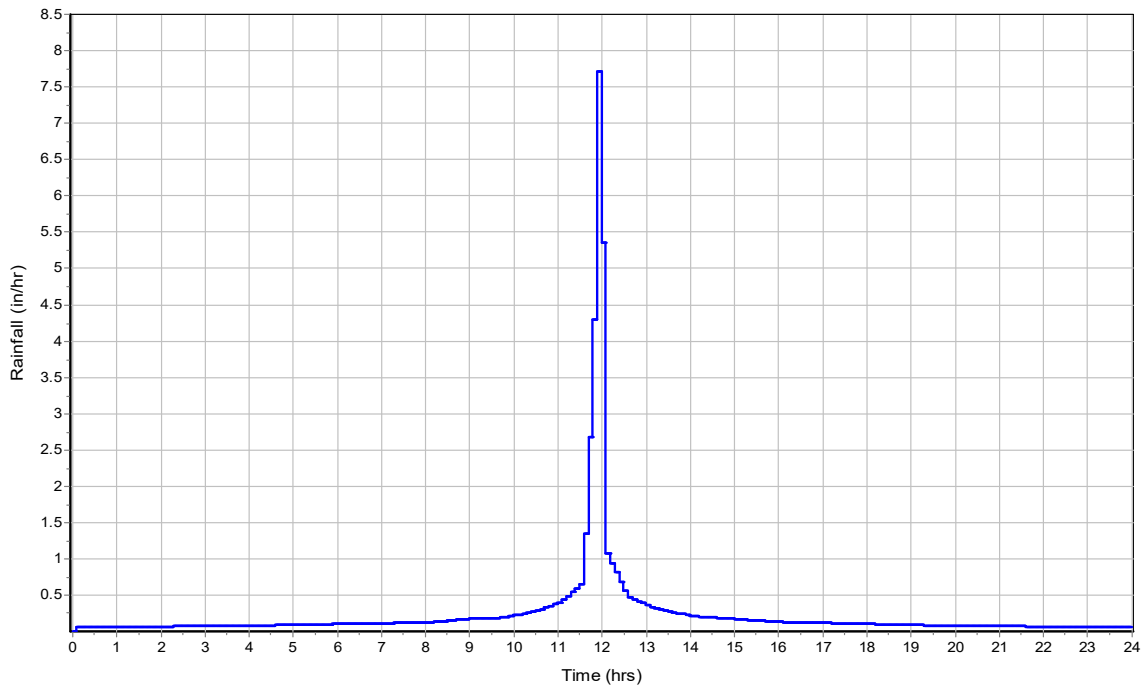
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

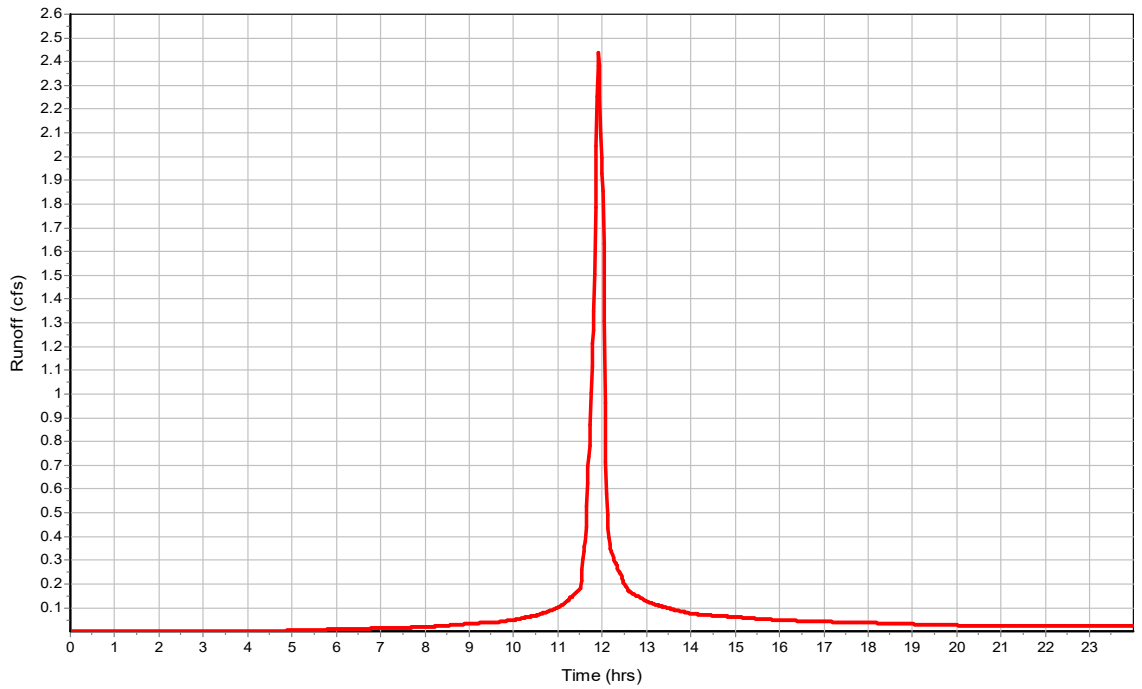
Total Rainfall (in) ..... 5.63  
 Total Runoff (in) ..... 4.31  
 Peak Runoff (cfs) ..... 2.44  
 Weighted Curve Number ..... 88.41  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-1451

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-1511**

**Input Data**

Area (ac) ..... 0.16  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 92.08  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.16	-	92.08
Composite Area & Weighted CN		0.16		92.08

**Time of Concentration**

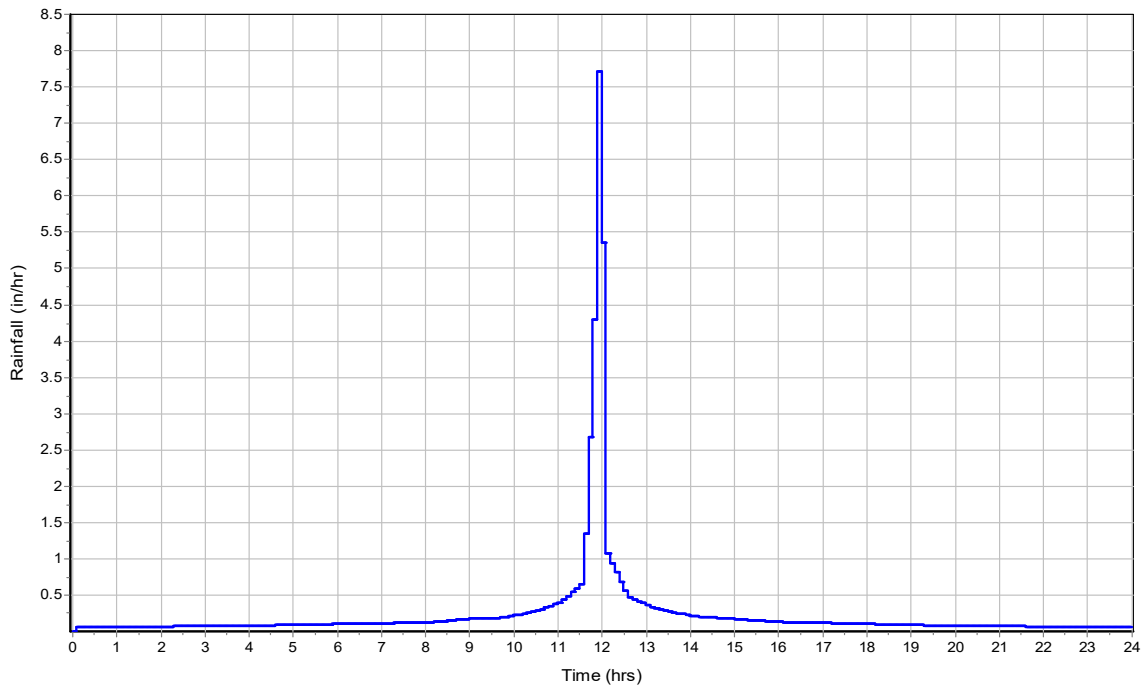
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

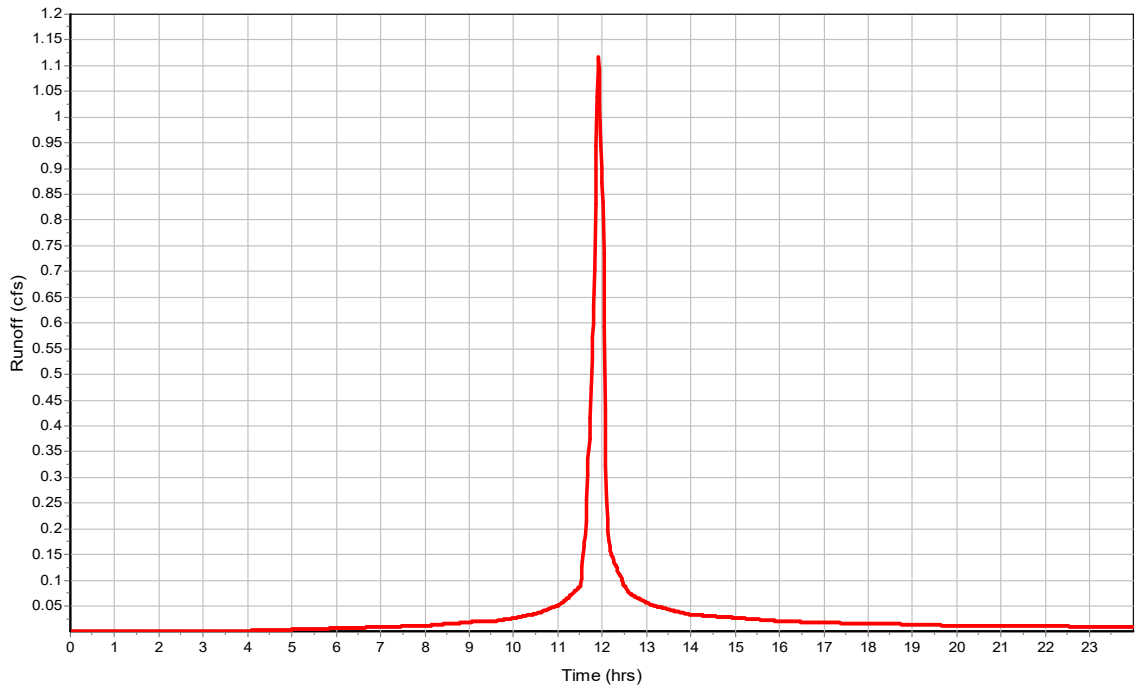
Total Rainfall (in) ..... 5.63  
 Total Runoff (in) ..... 4.71  
 Peak Runoff (cfs) ..... 1.12  
 Weighted Curve Number ..... 92.08  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-1511

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-1533**

**Input Data**

Area (ac) ..... 0.15  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 89.88  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.15	-	89.88
Composite Area & Weighted CN		0.15		89.88

**Time of Concentration**

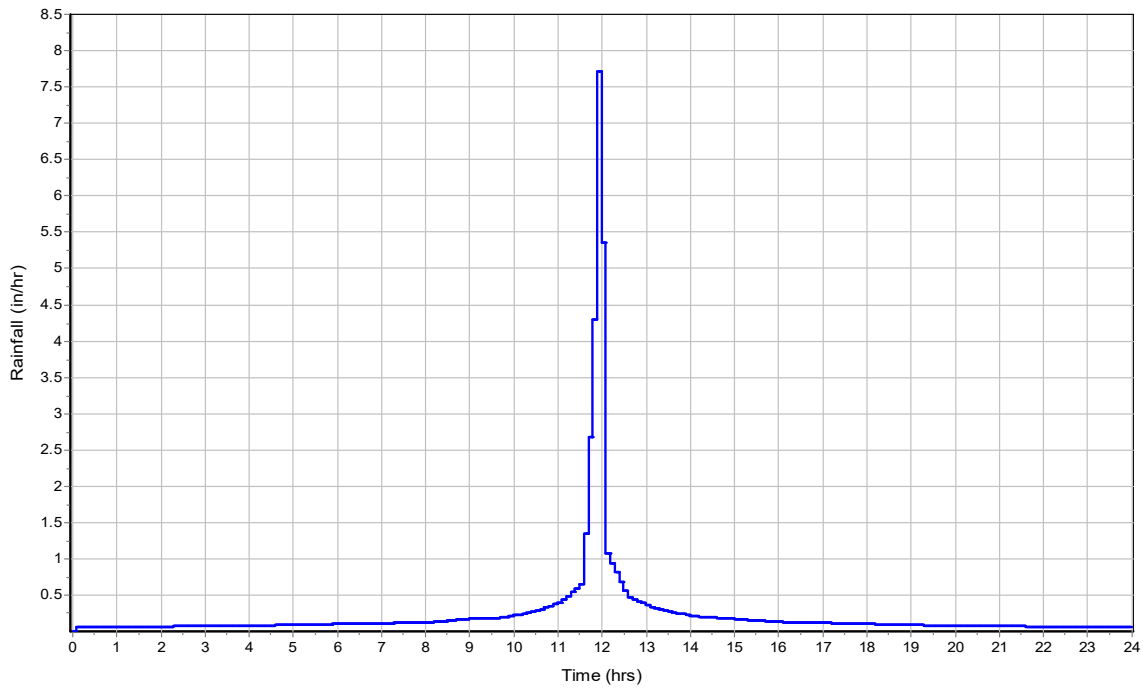
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

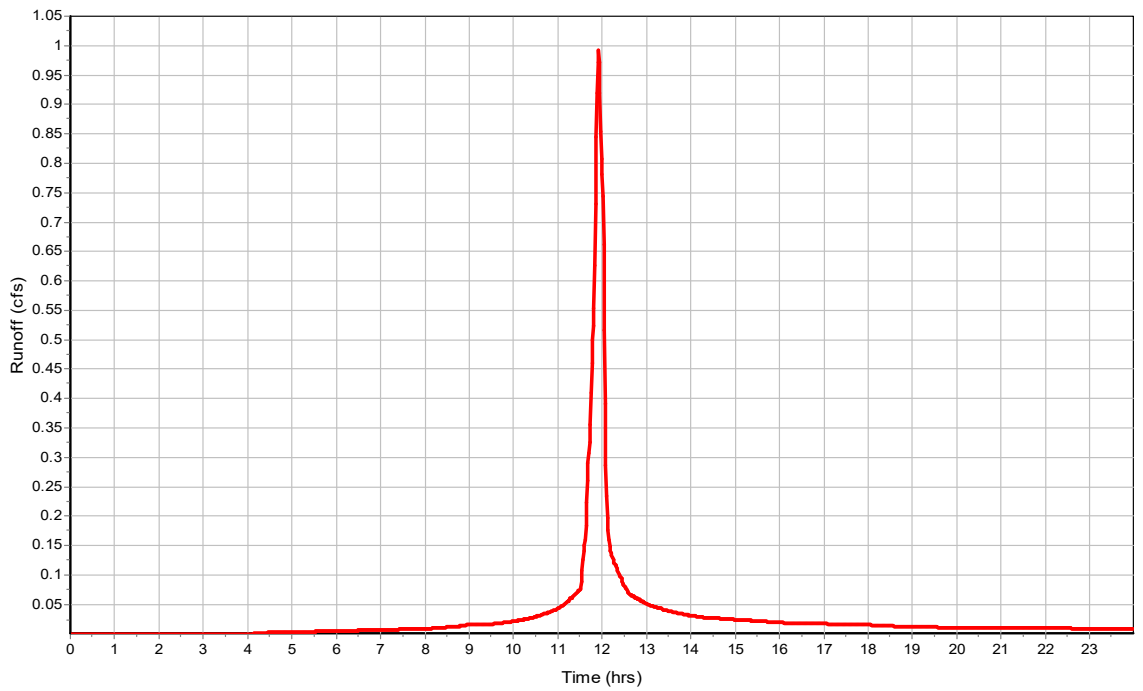
Total Rainfall (in) ..... 5.63  
 Total Runoff (in) ..... 4.47  
 Peak Runoff (cfs) ..... 0.99  
 Weighted Curve Number ..... 89.88  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-1533

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-1570**

**Input Data**

Area (ac) ..... 0.26  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 92.05  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.26	-	92.05
Composite Area & Weighted CN		0.26		92.05

**Time of Concentration**

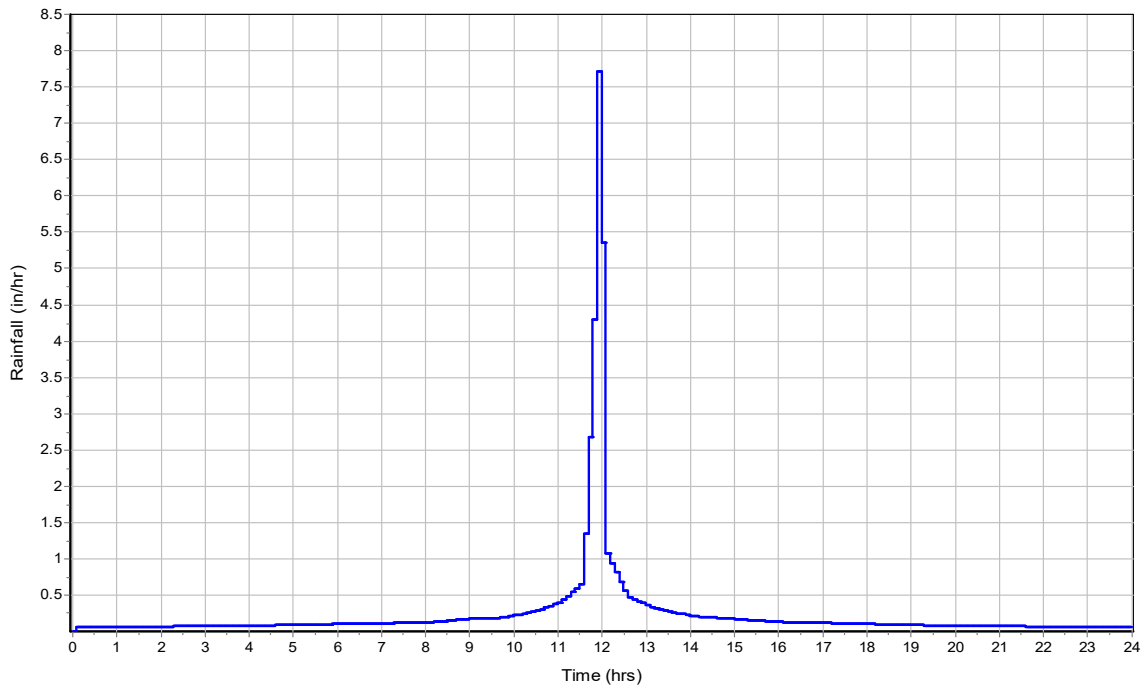
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

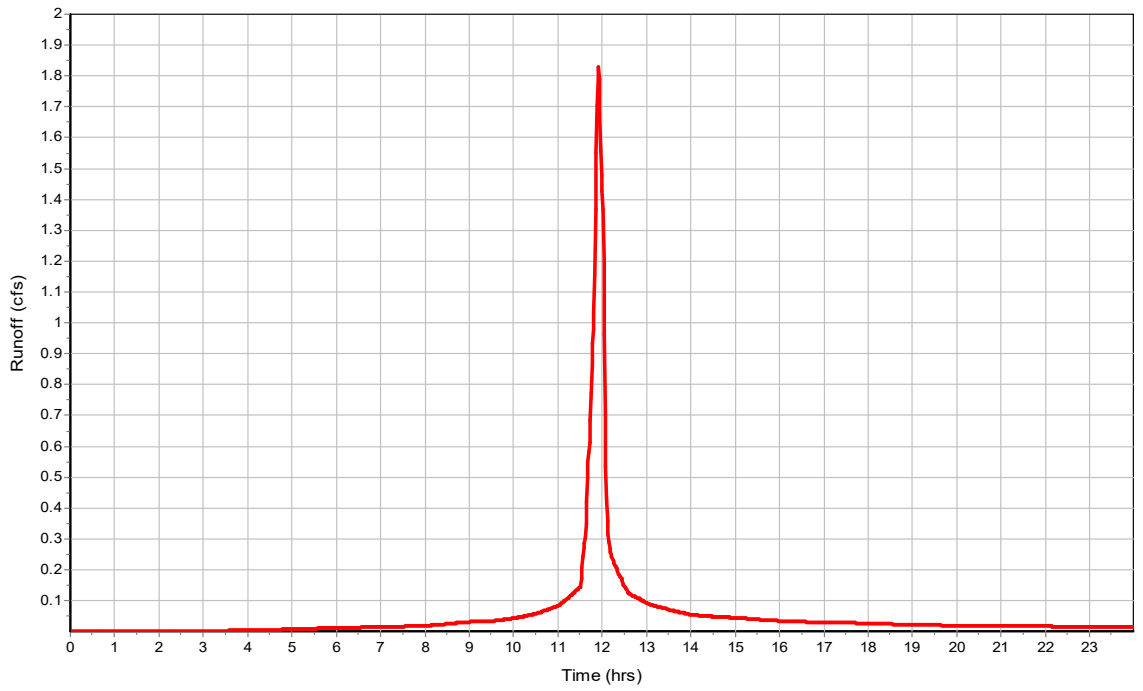
Total Rainfall (in) ..... 5.63  
 Total Runoff (in) ..... 4.71  
 Peak Runoff (cfs) ..... 1.83  
 Weighted Curve Number ..... 92.05  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-1570

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-1607**

**Input Data**

Area (ac) ..... 0.24  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 90.83  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.24	-	90.83
Composite Area & Weighted CN		0.24		90.83

**Time of Concentration**

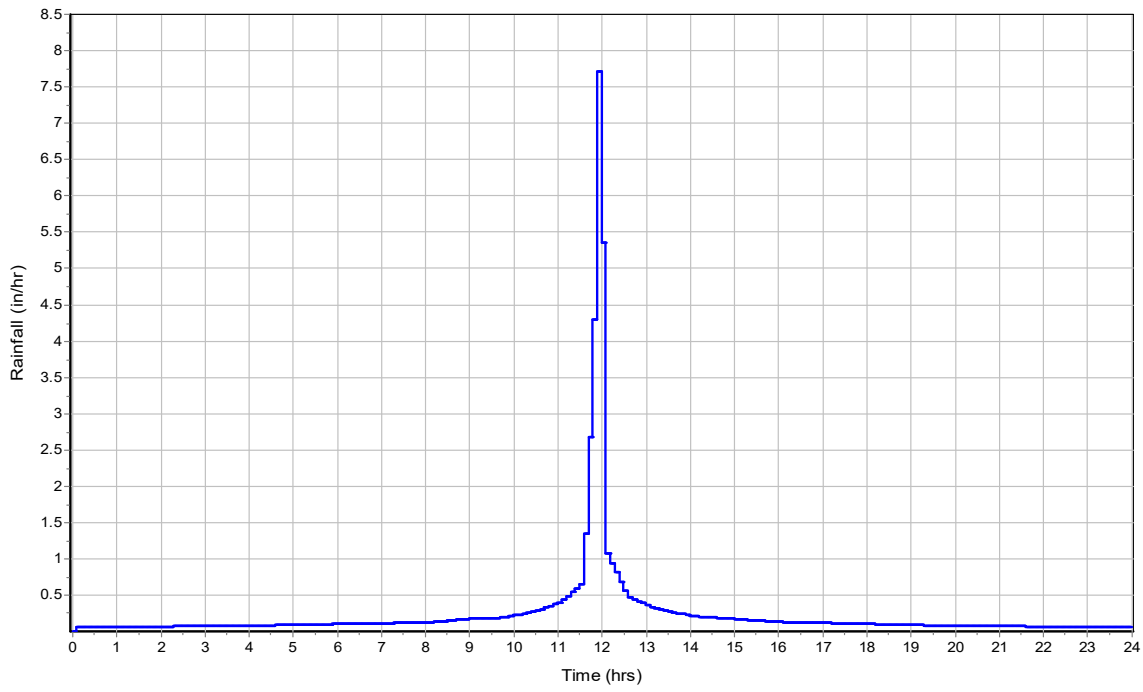
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

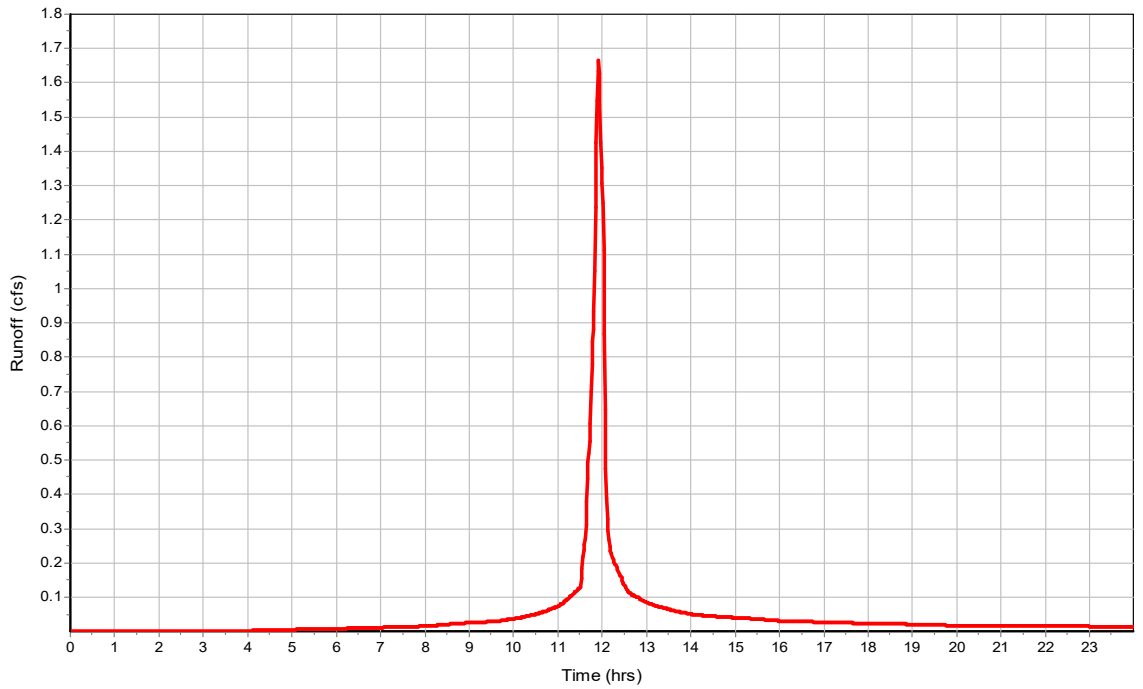
Total Rainfall (in) ..... 5.63  
 Total Runoff (in) ..... 4.58  
 Peak Runoff (cfs) ..... 1.67  
 Weighted Curve Number ..... 90.83  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-1607

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-D22690**

**Input Data**

Area (ac) ..... 0.31  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 92.3  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.31	-	92.3
Composite Area & Weighted CN		0.31		92.3

**Time of Concentration**

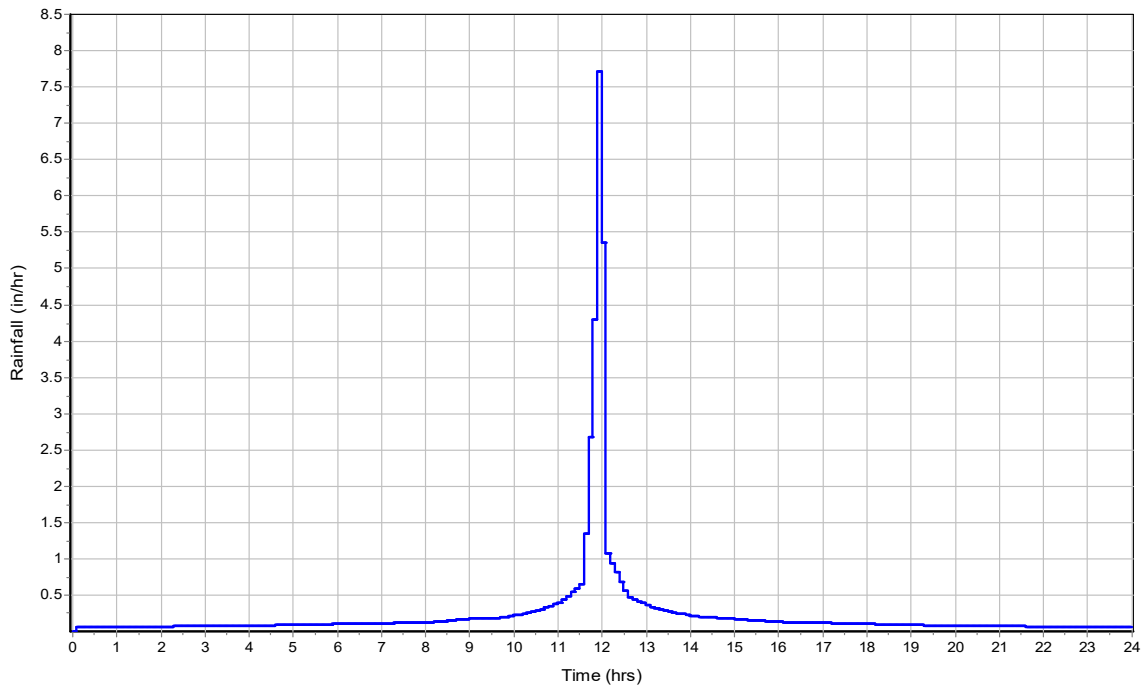
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

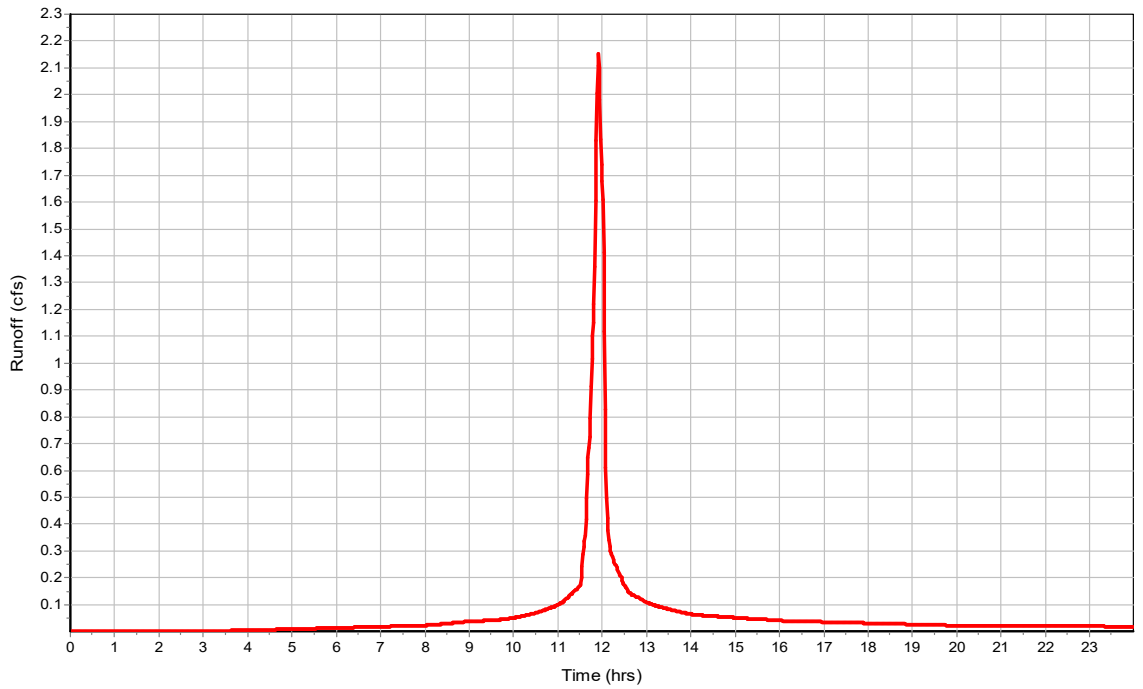
Total Rainfall (in) ..... 5.63  
 Total Runoff (in) ..... 4.74  
 Peak Runoff (cfs) ..... 2.15  
 Weighted Curve Number ..... 92.3  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-D22690

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : SUB-D22725**

**Input Data**

Area (ac) ..... 0.9  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 79  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.9	-	79
Composite Area & Weighted CN		0.9		79

**Time of Concentration**

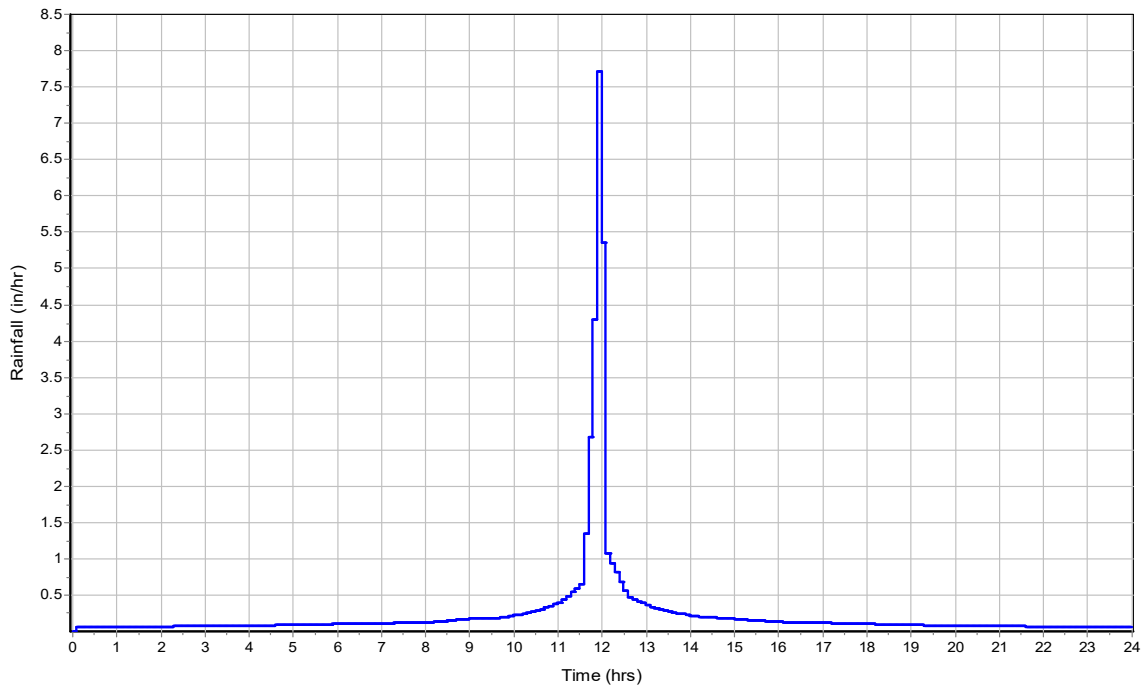
User-Defined TOC override (minutes): 5.00

**Subbasin Runoff Results**

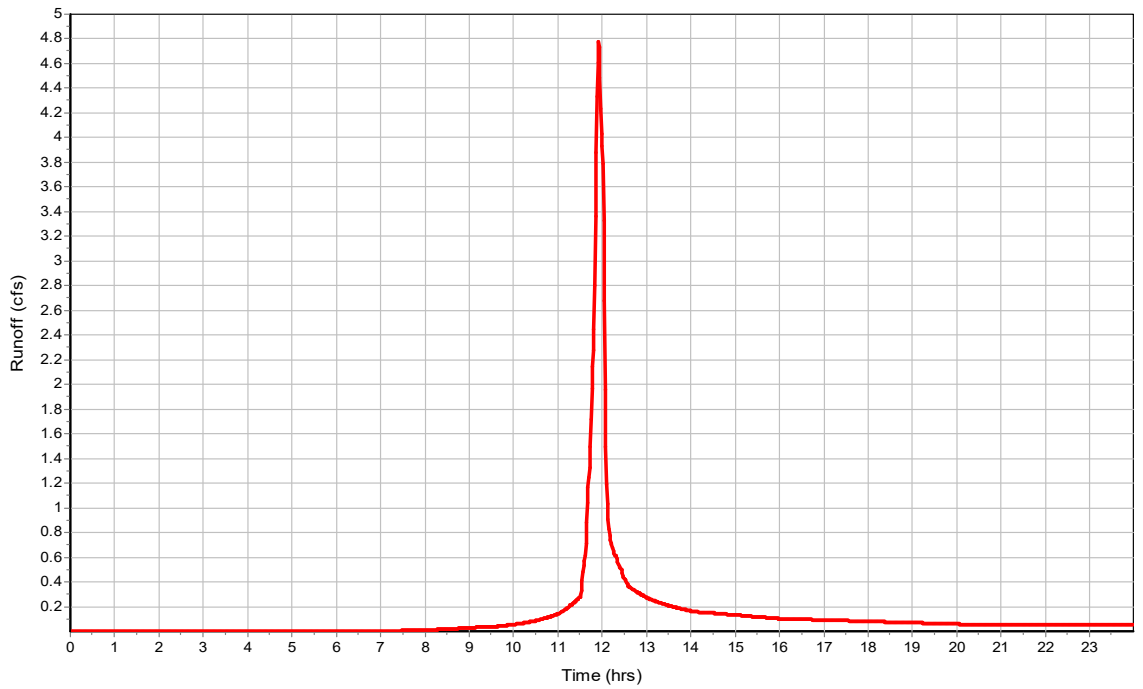
Total Rainfall (in) ..... 5.63  
 Total Runoff (in) ..... 3.35  
 Peak Runoff (cfs) ..... 4.79  
 Weighted Curve Number ..... 79  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : SUB-D22725

Rainfall Intensity Graph



Runoff Hydrograph



**Subbasin : UNDETAINED-01**

**Input Data**

Area (ac) ..... 0.27  
 Peak Rate Factor ..... 484  
 Weighted Curve Number ..... 84  
 Rain Gage ID ..... Rain Gage-01

**Composite Curve Number**

Soil/Surface Description	32	Area (acres)	Soil Group	Curve Number
-		0.27	-	84
Composite Area & Weighted CN		0.27		84

**Time of Concentration**

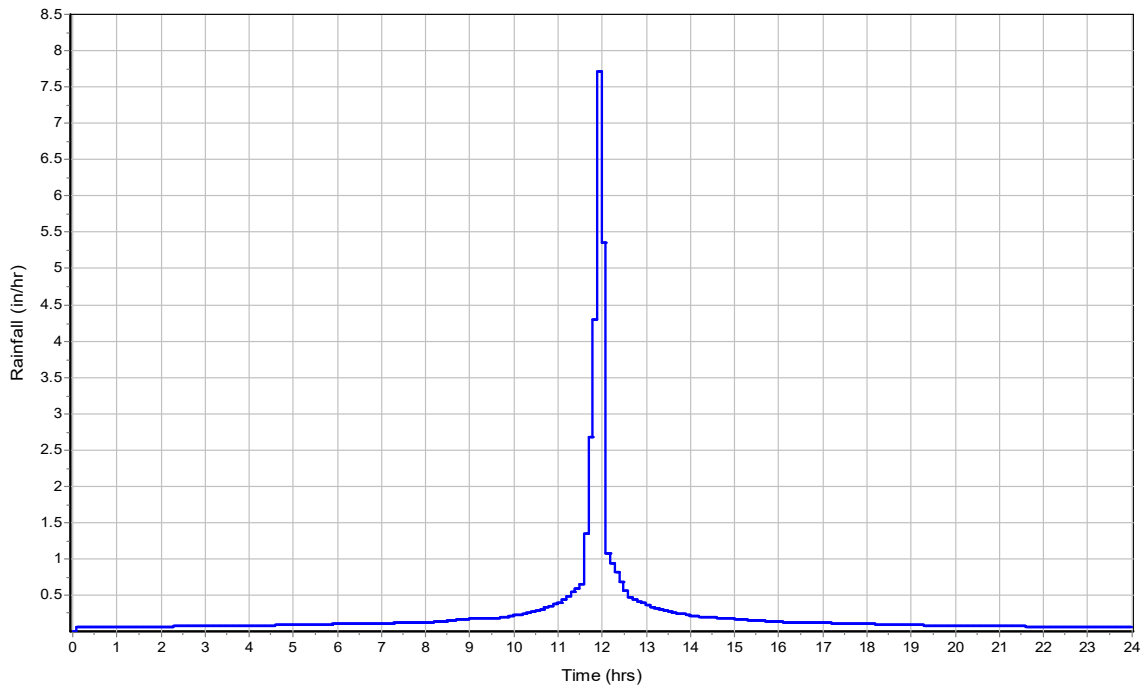
User-Defined TOC override (minutes): 5

**Subbasin Runoff Results**

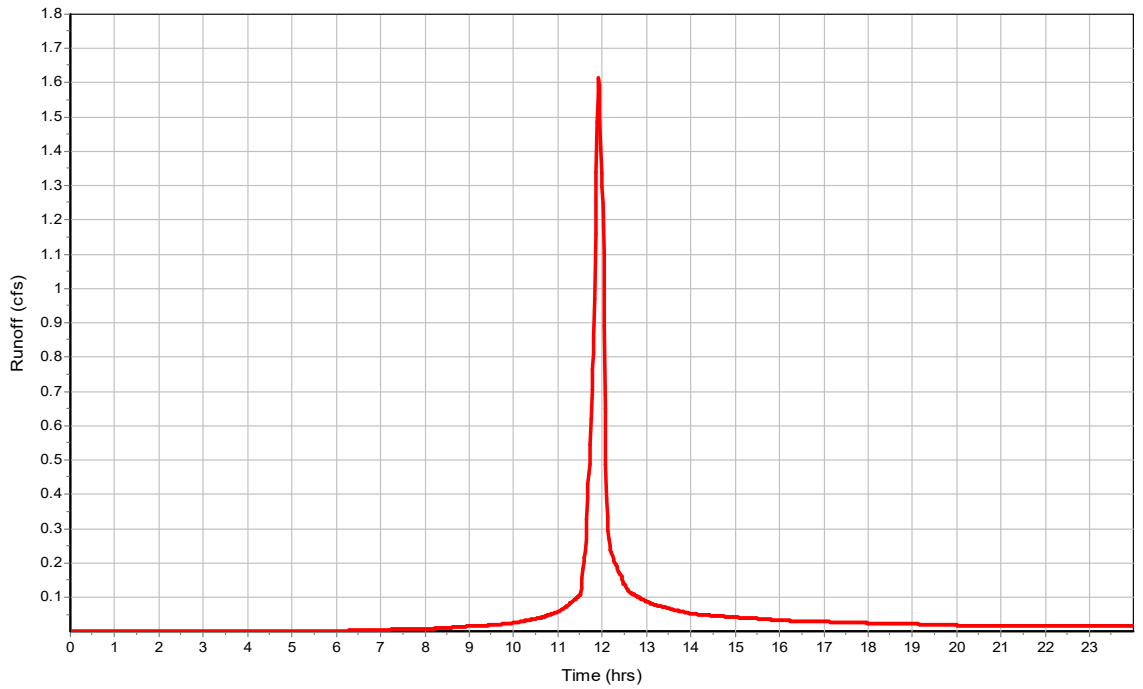
Total Rainfall (in) ..... 5.63  
 Total Runoff (in) ..... 3.85  
 Peak Runoff (cfs) ..... 1.62  
 Weighted Curve Number ..... 84  
 Time of Concentration (days hh:mm:ss) ..... 0 00:05:00

Subbasin : UNDETAINED-01

Rainfall Intensity Graph



Runoff Hydrograph



## Junction Input

SN Element ID	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Ground/Rim (Max) Offset (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)	Surcharge Elevation (ft)	Surcharge Depth (ft)	Ponded Area (ft <sup>2</sup> )	Minimum Pipe Cover (in)
1 1	789.63	800.72	11.09	789.63	0.00	800.72	0.00	10.00	94.68
2 2	789.90	810.97	21.07	789.90	0.00	810.97	0.00	0.00	0.00
3 301	801.75	810.70	8.95	801.75	0.00	810.70	0.00	10.00	93.00
4 302	800.50	814.72	14.22	800.50	0.00	814.72	0.00	10.00	0.00
5 1312	795.14	801.14	6.00	795.14	0.00	801.14	0.00	10.00	57.00
6 1451	796.16	801.58	5.42	796.16	0.00	801.58	0.00	10.00	53.04
7 1453	793.40	803.00	9.60	793.40	0.00	803.00	0.00	10.00	96.24
8 1511	794.03	805.54	11.51	794.03	0.00	805.54	0.00	10.00	123.12
9 1533	798.65	807.61	8.96	798.65	0.00	807.61	0.00	10.00	95.52
10 1570	800.57	809.15	8.58	800.57	0.00	809.15	0.00	10.00	88.80
11 1607	809.64	815.19	5.55	809.64	0.00	815.19	0.00	10.00	54.48
12 13001	783.95	800.74	16.79	783.95	0.00	800.74	0.00	10.00	110.28
13 13002	782.33	798.46	16.13	782.33	0.00	798.46	0.00	10.00	27.72
14 13003	787.40	796.61	9.21	787.40	0.00	796.61	0.00	10.00	98.52
15 13005	781.16	791.08	9.92	781.16	0.00	791.08	0.00	10.00	69.60
16 13006	793.19	802.62	9.43	793.19	0.00	802.62	0.00	10.00	97.56
17 13008	780.03	787.03	7.00	780.03	0.00	787.03	0.00	10.00	44.88
18 13009	782.93	787.81	4.88	782.93	0.00	787.81	0.00	10.00	46.56
19 13016	776.77	780.79	4.02	776.77	0.00	780.79	0.00	10.00	36.24
20 13017	776.14	780.49	4.35	776.14	0.00	780.49	0.00	10.00	34.20
21 13018	776.48	780.24	3.76	776.48	0.00	780.24	0.00	10.00	33.12
22 13019	776.36	779.72	3.36	776.36	0.00	779.72	0.00	10.00	22.32
23 D22686	797.40	807.27	9.87	797.40	0.00	807.27	0.00	10.00	106.44
24 D22690	815.71	820.04	4.33	815.71	0.00	820.04	0.00	10.00	39.96
25 D22725	776.89	781.00	4.11	776.89	0.00	781.00	0.00	10.00	34.32
26 HDS-101	801.90	814.15	12.25	801.90	0.00	814.15	0.00	10.00	0.00
27 HDS-201	802.79	815.53	12.74	802.79	0.00	815.53	0.00	10.00	127.68

**Junction Results**

SN Element ID	Peak Inflow (cfs)	Peak Lateral Inflow (cfs)	Max HGL Elevation (ft)	Max HGL Depth (ft)	Max Surcharge Depth (ft)	Min Freeboard (ft)	Average HGL Elevation (ft)	Average HGL Depth (ft)	Time of Max HGL Occurrence (days hh:mm)	Time of Peak Flooding Occurrence (days hh:mm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
1 1	51.21	0.00	792.41	2.78	0.00	8.31	790.08	0.45	0 12:06	0 00:00	0.00	0.00
2 2	51.22	0.00	793.14	3.24	0.00	17.83	790.39	0.49	0 12:06	0 00:00	0.00	0.00
3 301	2.78	0.00	807.08	5.33	0.00	3.62	801.89	0.14	0 11:58	0 00:00	0.00	0.00
4 302	2.29	0.00	807.22	6.72	0.00	7.50	801.96	1.46	0 11:59	0 00:00	0.00	0.00
5 1312	0.00	0.00	795.14	0.00	0.00	6.00	795.14	0.00	0 00:00	0 00:00	0.00	0.00
6 1451	2.44	2.44	799.63	3.47	0.00	1.95	796.24	0.08	0 11:56	0 00:00	0.00	0.00
7 1453	11.29	0.00	799.37	5.97	0.00	3.63	793.71	0.31	0 11:57	0 00:00	0.00	0.00
8 1511	8.96	1.12	800.84	6.81	0.00	4.70	794.29	0.26	0 11:57	0 00:00	0.00	0.00
9 1533	2.61	2.61	804.87	6.22	0.00	2.74	798.76	0.11	0 11:57	0 00:00	0.00	0.00
10 1570	6.03	1.83	807.05	6.48	0.00	2.10	800.72	0.15	0 11:58	0 00:00	0.00	0.00
11 1607	3.81	1.67	810.19	0.55	0.00	5.00	809.71	0.07	0 11:57	0 00:00	0.00	0.00
12 13001	51.20	0.00	788.70	4.75	0.00	12.04	784.28	0.33	0 12:06	0 00:00	0.00	0.00
13 13002	51.20	0.00	784.58	2.25	0.00	13.88	782.65	0.32	0 12:06	0 00:00	0.00	0.00
14 13003	0.66	0.66	787.64	0.24	0.00	8.97	787.44	0.04	0 11:56	0 00:00	0.00	0.00
15 13005	51.38	0.00	783.45	2.29	0.00	7.63	781.47	0.31	0 12:07	0 00:00	0.00	0.00
16 13006	12.70	1.43	796.68	3.49	0.00	5.94	793.43	0.24	0 11:57	0 00:00	0.00	0.00
17 13008	51.54	0.00	782.81	2.78	0.00	4.22	780.40	0.37	0 12:07	0 00:00	0.00	0.00
18 13009	0.79	0.79	783.23	0.30	0.00	4.58	782.97	0.04	0 11:56	0 00:00	0.00	0.00
19 13016	0.66	0.66	777.43	0.66	0.00	3.36	776.82	0.05	0 11:56	0 00:00	0.00	0.00
20 13017	6.82	0.00	777.42	1.28	0.00	3.07	776.28	0.14	0 11:56	0 00:00	0.00	0.00
21 13018	1.41	1.41	777.78	1.30	0.00	2.46	776.56	0.08	0 11:57	0 00:00	0.00	0.00
22 13019	6.21	0.00	777.74	1.38	0.00	1.98	776.50	0.14	0 11:56	0 00:00	0.00	0.00
23 D22686	8.00	0.00	804.75	7.35	0.00	2.52	797.58	0.18	0 11:57	0 00:00	0.00	0.00
24 D22690	2.15	2.15	816.07	0.36	0.00	3.97	815.76	0.05	0 11:56	0 00:00	0.00	0.00
25 D22725	4.78	4.78	778.17	1.28	0.00	2.83	777.01	0.12	0 11:56	0 00:00	0.00	0.00
26 HDS-101	27.45	21.70	805.31	3.41	0.00	8.84	802.33	0.43	0 12:05	0 00:00	0.00	0.00
27 HDS-201	42.17	42.17	807.00	4.21	0.00	8.53	803.16	0.37	0 11:59	0 00:00	0.00	0.00

Pipe Input

SN Element ID	Length	Inlet	Inlet	Outlet	Outlet	Total Drop	Average Pipe		Pipe Diameter or Height	Pipe Width	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Additional Losses	Initial Flow	Flap Gate	No. of Barrels
		Invert	Invert	Invert	Invert		Slope	Shape									
		Elevation (ft)	Offset (ft)	Elevation (ft)	Offset (ft)		(%)										
1 Link-02	56.93	783.95	0.00	782.75	0.42	1.20	2.1100	CIRCULAR	24.000	24.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
2 Link-03	47.69	795.14	0.00	794.90	12.57	0.24	0.5000	CIRCULAR	15.000	15.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
3 Link-04	108.25	782.33	0.00	781.35	0.19	0.98	0.9100	CIRCULAR	36.000	36.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
4 Link-05	149.97	787.40	0.00	784.28	3.12	3.12	2.0800	CIRCULAR	12.000	12.000	0.0130	0.0000	0.1000	0.0000	0.00	No	1
5 Link-06	36.78	782.93	0.00	782.29	2.26	0.64	1.7400	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
6 Link-07	104.48	781.16	0.00	780.08	0.05	1.08	1.0300	CIRCULAR	36.000	36.000	0.0130	0.0000	0.1000	0.0000	0.00	No	1
7 Link-08	78.09	776.89	0.00	776.61	0.25	0.28	0.3600	CIRCULAR	15.000	15.000	0.0130	0.0000	0.1000	0.0000	0.00	No	1
8 Link-10	7.77	776.48	0.00	776.36	0.00	0.12	1.5400	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
9 Link-11	78.97	776.36	0.00	776.14	0.00	0.22	0.2800	CIRCULAR	18.000	18.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
10 Link-12	12.35	776.77	0.00	776.64	0.50	0.13	1.0500	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
11 Link-13	48.41	776.14	0.00	775.94	4.79	0.20	0.4100	CIRCULAR	18.000	18.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
12 Link-14	82.97	771.22	0.07	766.00	-0.01	5.22	6.2900	Rectangular	48.000	36.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
13 Link-15	56.74	780.03	0.00	779.61	8.46	0.42	0.7400	CIRCULAR	36.000	36.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
14 Link-16	132.76	815.71	0.00	809.64	0.00	6.07	4.5700	CIRCULAR	12.000	12.000	0.0130	0.0000	0.1000	0.0000	0.00	No	1
15 Link-17	148.78	809.65	0.01	800.57	0.00	9.08	6.1000	CIRCULAR	12.000	12.000	0.0130	0.0000	0.1000	0.0000	0.00	No	1
16 Link-18	85.84	800.57	0.00	797.40	0.00	3.17	3.6900	CIRCULAR	12.000	12.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
17 Link-19	9.27	798.65	0.00	797.40	0.00	1.25	13.4800	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
18 Link-20	72.00	797.40	0.00	794.08	0.05	3.32	4.6100	CIRCULAR	12.000	12.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
19 Link-21	55.99	794.03	0.00	793.73	0.33	0.30	0.5400	CIRCULAR	15.000	15.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
20 Link-22	40.69	796.16	0.00	793.81	0.41	2.35	5.7800	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
21 Link-23	77.33	793.40	0.00	793.24	0.05	0.16	0.2100	CIRCULAR	15.000	15.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1
22 Link-24	41.11	793.19	0.00	793.00	21.85	0.19	0.4600	CIRCULAR	15.000	15.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
23 Link-37	136.92	802.50	2.00	801.95	0.20	0.55	0.4000	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
24 Link-38	24.56	801.85	0.10	800.75	0.18	1.10	4.4800	CIRCULAR	12.000	12.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
25 Link-39	10.00	802.00	0.10	801.82	11.82	0.18	1.8000	CIRCULAR	24.000	24.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
26 Link-41	47.26	802.89	0.10	801.95	11.95	0.94	1.9900	CIRCULAR	24.000	24.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
27 Link-42	30.50	790.00	0.10	789.83	0.20	0.17	0.5600	CIRCULAR	36.000	36.000	0.0130	0.0000	0.5000	0.0000	0.00	No	1
28 Link-44	214.52	789.73	0.10	788.55	4.60	1.18	0.5500	CIRCULAR	36.000	36.000	0.0130	0.0000	0.2500	0.0000	0.00	No	1

Pipe Results

SN Element ID	Peak Flow (cfs)	Time of Peak Flow Occurrence (days hh:mm)	Design Flow Capacity (cfs)	Peak Flow/Design Flow Ratio	Peak Flow Velocity (ft/sec)	Travel Time (min)	Peak Flow Depth (ft)	Peak Flow Depth/Total Depth Ratio	Total Time Surcharged (min)	Froude Number	Reported Condition
1 Link-02	51.20	0 12:06	32.84	1.56	16.30	0.06	2.00	1.00	11.00		SURCHARGED
2 Link-03	0.00	0 00:00	4.58	0.00	0.00		0.00	0.00	0.00		Calculated
3 Link-04	51.21	0 12:07	63.46	0.81	9.34	0.19	2.17	0.72	0.00		Calculated
4 Link-05	0.66	0 11:56	5.14	0.13	4.49	0.56	0.24	0.24	0.00		Calculated
5 Link-06	0.79	0 11:56	4.70	0.17	4.24	0.14	0.32	0.33	0.00		Calculated
6 Link-07	51.36	0 12:07	67.81	0.76	8.16	0.21	2.51	0.84	0.00		Calculated
7 Link-08	4.80	0 11:56	3.87	1.24	3.98	0.33	1.19	0.95	0.00		> CAPACITY
8 Link-10	1.41	0 11:56	4.43	0.32	1.80	0.07	1.00	1.00	10.00		SURCHARGED
9 Link-11	6.17	0 11:56	5.54	1.11	3.72	0.35	1.33	0.89	0.00		> CAPACITY
10 Link-12	0.65	0 11:56	3.66	0.18	2.65	0.08	0.72	0.72	0.00		Calculated
11 Link-13	6.80	0 11:56	6.75	1.01	4.70	0.17	1.14	0.76	0.00		> CAPACITY
12 Link-14	63.75	0 12:05	310.16	0.21	16.49	0.08	1.29	0.32	0.00		Calculated
13 Link-15	51.51	0 12:07	57.38	0.90	8.19	0.12	2.49	0.83	0.00		Calculated
14 Link-16	2.15	0 11:56	7.62	0.28	6.93	0.32	0.45	0.45	0.00		Calculated
15 Link-17	3.77	0 11:55	8.80	0.43	7.52	0.33	0.77	0.77	0.00		Calculated
16 Link-18	6.03	0 12:02	6.85	0.88	7.71	0.19	1.00	1.00	12.00		SURCHARGED
17 Link-19	2.62	0 11:56	13.08	0.20	4.85	0.03	1.00	1.00	13.00		SURCHARGED
18 Link-20	8.00	0 11:59	7.65	1.05	10.19	0.12	1.00	1.00	14.00		SURCHARGED
19 Link-21	8.96	0 11:58	4.73	1.89	7.30	0.13	1.25	1.00	19.00		SURCHARGED
20 Link-22	2.44	0 11:56	8.56	0.28	4.73	0.14	1.00	1.00	12.00		SURCHARGED
21 Link-23	11.29	0 11:57	2.94	3.84	9.20	0.14	1.25	1.00	20.00		SURCHARGED
22 Link-24	12.70	0 11:56	4.39	2.89	10.35	0.07	1.25	1.00	9.00		SURCHARGED
23 Link-37	2.78	0 12:04	2.26	1.23	3.54	0.64	1.00	1.00	10.00		SURCHARGED
24 Link-38	3.20	0 12:05	7.54	0.42	6.40	0.06	1.00	1.00	10.00		SURCHARGED
25 Link-39	27.45	0 12:00	30.35	0.90	9.44	0.02	2.00	1.00	13.00		SURCHARGED
26 Link-41	42.17	0 11:59	31.90	1.32	13.42	0.06	2.00	1.00	15.00		SURCHARGED
27 Link-42	51.21	0 12:06	49.80	1.03	7.48	0.07	2.79	0.93	0.00		> CAPACITY
28 Link-44	51.20	0 12:06	49.47	1.04	8.13	0.44	2.50	0.83	0.00		> CAPACITY

**Storage Nodes**

**Storage Node : 13011/3**

**Input Data**

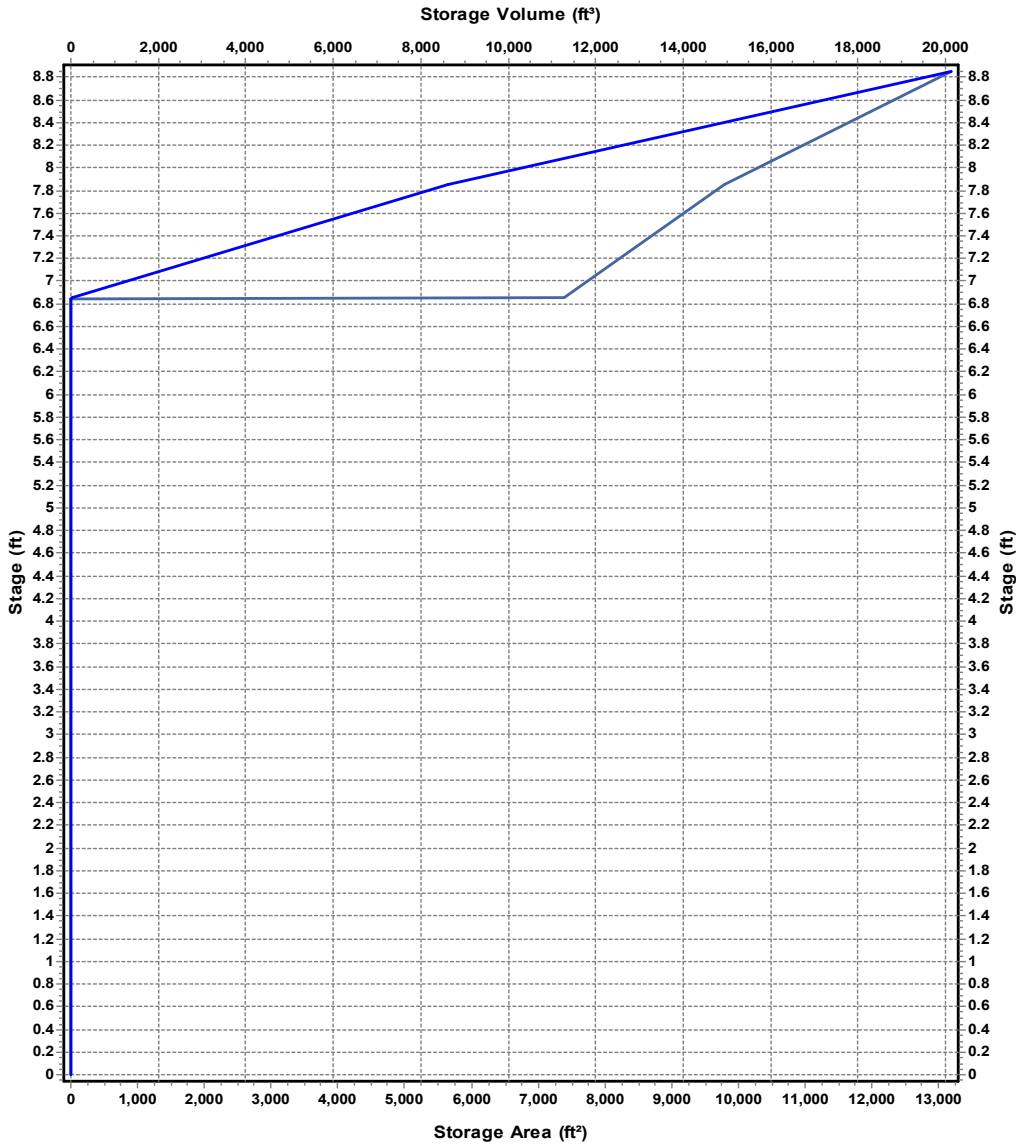
Invert Elevation (ft) ..... 771.15  
 Max (Rim) Elevation (ft) ..... 780.00  
 Max (Rim) Offset (ft) ..... 8.85  
 Initial Water Elevation (ft) ..... 771.15  
 Initial Water Depth (ft) ..... 0.00  
 Ponded Area (ft<sup>2</sup>) ..... 0.00  
 Evaporation Loss ..... 0.00

**Storage Area Volume Curves**

Storage Curve : Existing 02

Stage (ft)	Storage Area (ft <sup>2</sup> )	Storage Volume (ft <sup>3</sup> )
0	0	0
6.84	1	3.42
6.85	7389	40.37
7.85	9796	8632.87
8.85	13187	20124.37

### Storage Area Volume Curves



— Storage Area — Storage Volume

**Storage Node : 13011/3 (continued)**

**Output Summary Results**

Peak Inflow (cfs) .....	63.74
Peak Lateral Inflow (cfs) .....	4.74
Peak Outflow (cfs) .....	63.75
Peak Exfiltration Flow Rate (cfm) .....	0
Max HGL Elevation Attained (ft) .....	772.77
Max HGL Depth Attained (ft) .....	1.62
Average HGL Elevation Attained (ft) .....	771.36
Average HGL Depth Attained (ft) .....	0.21
Time of Max HGL Occurrence (days hh:mm) .....	0 12:05
Total Exfiltration Volume (1000-ft <sup>3</sup> ) .....	0
Total Flooded Volume (ac-in) .....	0
Total Time Flooded (min) .....	0
Total Retention Time (sec) .....	0

**Storage Node : UGD-01**

**Input Data**

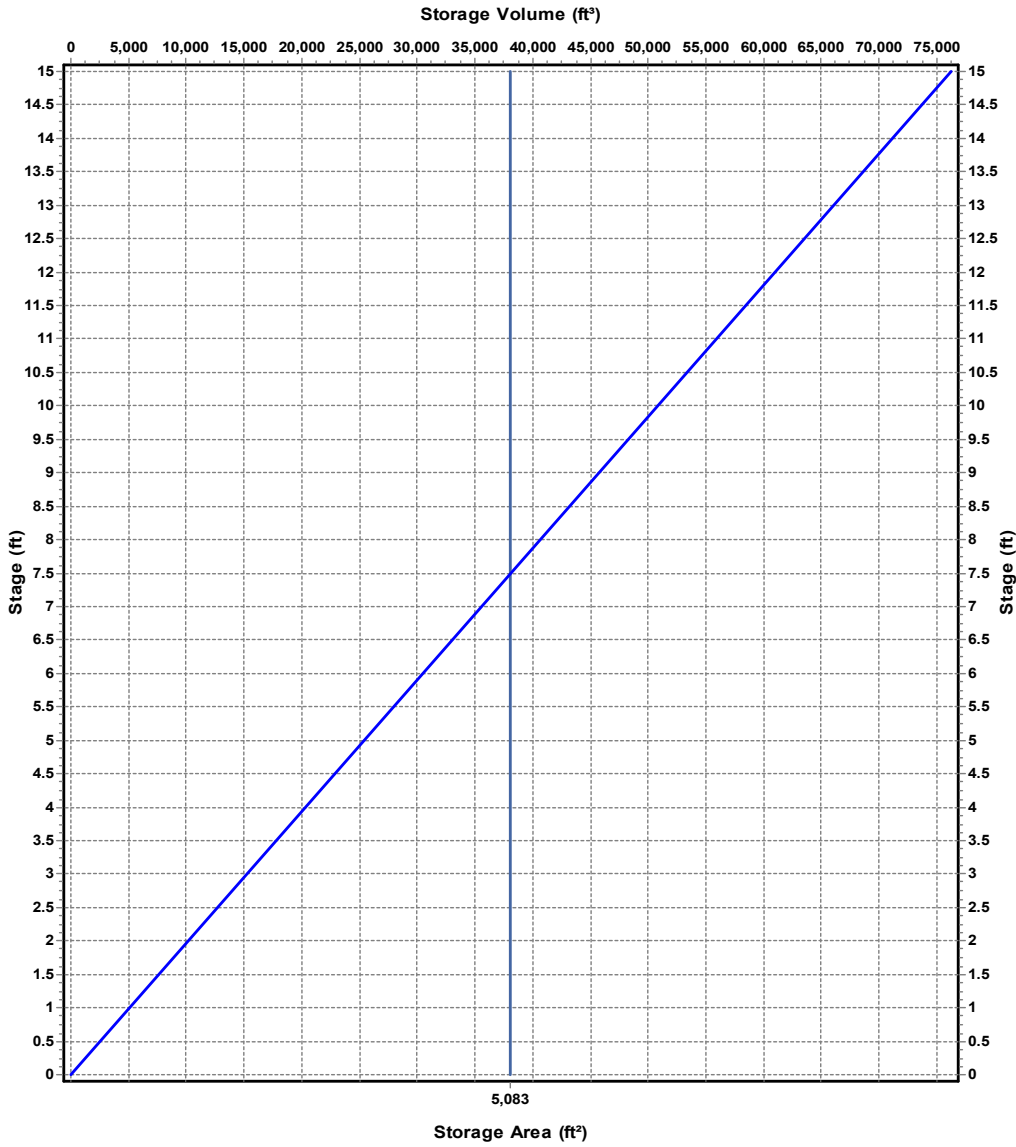
Invert Elevation (ft) ..... 790.00  
 Max (Rim) Elevation (ft) ..... 805.00  
 Max (Rim) Offset (ft) ..... 15.00  
 Initial Water Elevation (ft) ..... 790.00  
 Initial Water Depth (ft) ..... 0.00  
 Poned Area (ft<sup>2</sup>) ..... 0.00  
 Evaporation Loss ..... 0.00

**Storage Area Volume Curves**

Storage Curve : UGD-01

Stage (ft)	Storage Area (ft <sup>2</sup> )	Storage Volume (ft <sup>3</sup> )
0	5083	0
15	5083	76245

### Storage Area Volume Curves



Storage Area Storage Volume

**Storage Node : UGD-01 (continued)**

**Outflow Weirs**

SN Element ID	Weir Type	Flap Gate	Crest Elevation (ft)	Crest Offset (ft)	Length (ft)	Weir Total Height (ft)	Discharge Coefficient
1 UGD-01-Weir	Rectangular	No	803.75	13.75	6.00	1.25	2.62

**Outflow Orifices**

SN Element ID	Orifice Type	Orifice Shape	Flap Gate	Circular Orifice Diameter (in)	Rectangular Orifice Height (in)	Rectangular Orifice Width (in)	Orifice Invert Elevation (ft)	Orifice Coefficient
1 UGD-01-2ndStage	Side	Rectangular	No		8.00	48.00	797.50	0.60
2 UGD-01-WQ	Side	CIRCULAR	No	3.00			790.00	0.60

**Output Summary Results**

Peak Inflow (cfs) .....	69.56
Peak Lateral Inflow (cfs) .....	0
Peak Outflow (cfs) .....	51.22
Peak Exfiltration Flow Rate (cfm) .....	0
Max HGL Elevation Attained (ft) .....	804.79
Max HGL Depth Attained (ft) .....	14.79
Average HGL Elevation Attained (ft) .....	795.08
Average HGL Depth Attained (ft) .....	5.08
Time of Max HGL Occurrence (days hh:mm) .....	0 12:06
Total Exfiltration Volume (1000-ft <sup>3</sup> ) .....	0
Total Flooded Volume (ac-in) .....	0
Total Time Flooded (min) .....	0
Total Retention Time (sec) .....	0

**Storage Node : UGD-02**

**Input Data**

Invert Elevation (ft) .....	802.50
Max (Rim) Elevation (ft) .....	809.25
Max (Rim) Offset (ft) .....	6.75
Initial Water Elevation (ft) .....	802.50
Initial Water Depth (ft) .....	0.00
Ponded Area (ft <sup>2</sup> ) .....	0.00
Evaporation Loss .....	0.00

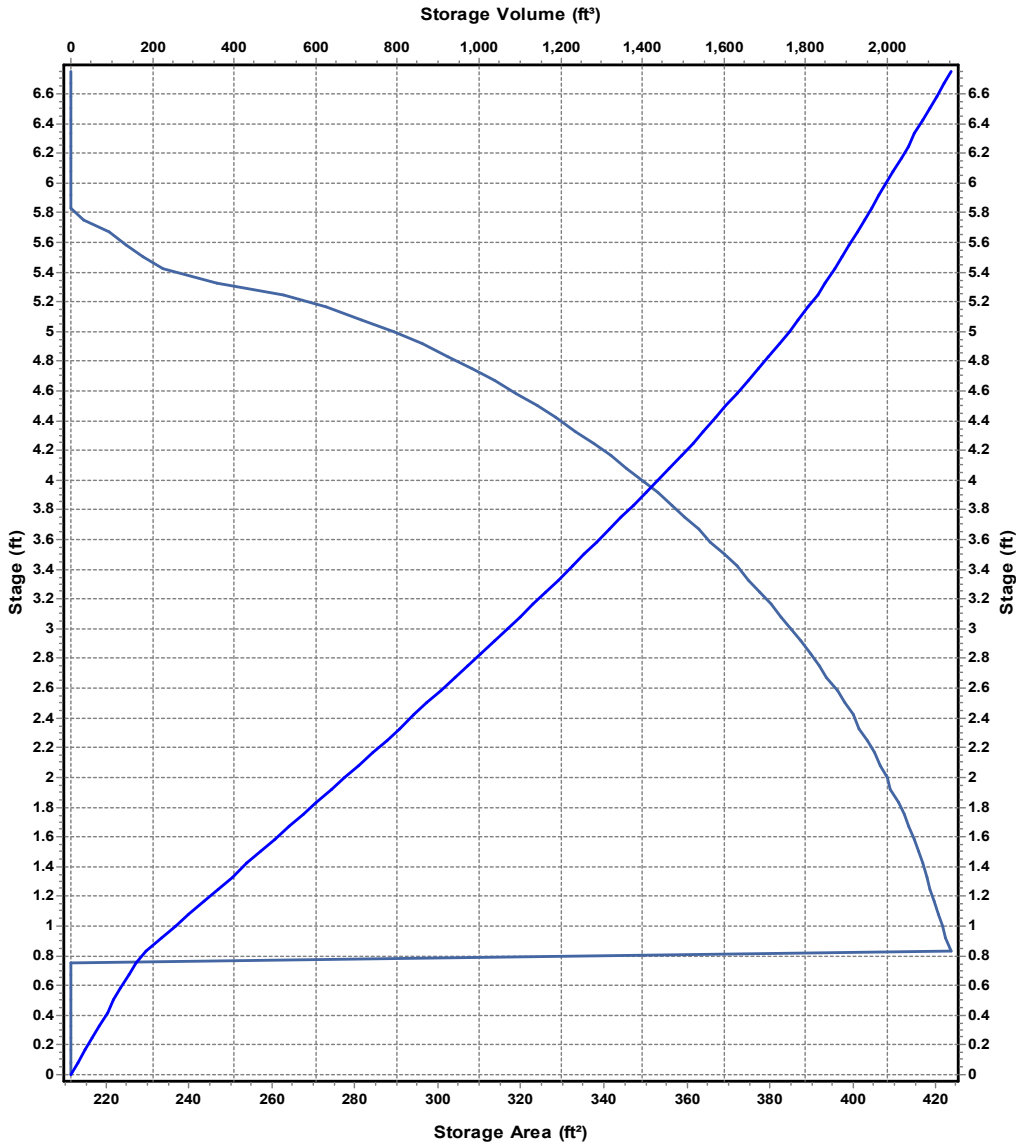
**Storage Area Volume Curves**

Storage Curve : UGD-MC7200

Stage (ft)	Storage Area (ft <sup>2</sup> )	Storage Volume (ft <sup>3</sup> )
0	211.6	0
0.08	211.6	16.93
0.17	211.6	35.97
0.25	211.6	52.9
0.33	211.6	69.83
0.42	211.6	88.87
0.5	211.6	105.8
0.58	211.6	122.73
0.67	211.6	141.77
0.75	211.6	158.7
0.83	423.65	184.11
0.92	422.22	222.17
1	421.48	255.92
1.08	420.65	289.61
1.17	419.44	327.41
1.25	418.56	360.93
1.33	417.93	394.39
1.42	416.93	431.96
1.5	415.88	465.27
1.58	414.76	498.5
1.67	413.55	535.77
1.75	412.31	568.8
1.83	411.06	601.73
1.92	409.06	638.64
2	408.23	671.33
2.08	406.69	703.93
2.17	405.1	740.46
2.25	403.45	772.8
2.33	401.43	805
2.42	399.96	841.06
2.5	398.13	872.98
2.58	396.19	904.75
2.67	393.75	940.3
2.75	391.88	971.73
2.83	389.81	1003
2.92	387.51	1037.98
3	385.18	1068.89
3.08	382.78	1099.61
3.17	380.2	1133.94
3.25	377.55	1164.25
3.33	374.81	1194.34
3.42	371.94	1227.94
3.5	368.99	1257.58
3.58	365.61	1286.96
3.67	362.8	1319.74
3.75	359.58	1348.64
3.83	356.26	1377.27
3.92	352.83	1409.18
4	349.25	1437.26
4.08	345.51	1465.05
4.17	341.57	1495.97
4.25	337.45	1523.13
4.33	333.12	1549.95
4.42	328.51	1579.72
4.5	323.87	1605.82
4.58	318.91	1631.53
4.67	313.71	1660
4.75	308.31	1684.88
4.83	302.46	1709.31
4.92	296.21	1736.25
5	289.37	1759.67

5.08	281.76	1782.52
5.17	273.2	1807.49
5.25	262.78	1828.93
5.33	246.67	1849.31
5.42	233.8	1870.93
5.5	228.93	1889.44
5.58	224.98	1907.6
5.67	220.79	1927.66
5.75	214.54	1945.07
5.83	211.6	1962.12
5.92	211.6	1981.16
6	211.6	1998.09
6.08	211.6	2015.02
6.17	211.6	2034.06
6.25	211.6	2050.99
6.33	211.6	2067.92
6.42	211.6	2086.96
6.5	211.6	2103.89
6.58	211.6	2120.82
6.67	211.6	2139.86
6.75	211.6	2156.79

### Storage Area Volume Curves



— Storage Area — Storage Volume

**Storage Node : UGD-02 (continued)**

**Outflow Orifices**

SN Element ID	Orifice Type	Orifice Shape	Flap Gate	Circular Orifice Diameter (in)	Rectangular Orifice Height (in)	Rectangular Orifice Width (in)	Orifice Invert Elevation (ft)	Orifice Coefficient
1 UGD-02-MANIFOLD	Side	CIRCULAR	No	12.00			806.22	0.60
2 UGD-02-WQ	Side	CIRCULAR	No	0.50			802.50	0.60

**Output Summary Results**

Peak Inflow (cfs) .....	2.77
Peak Lateral Inflow (cfs) .....	1.73
Peak Outflow (cfs) .....	2.29
Peak Exfiltration Flow Rate (cfm) .....	0
Max HGL Elevation Attained (ft) .....	807.34
Max HGL Depth Attained (ft) .....	4.84
Average HGL Elevation Attained (ft) .....	804.6
Average HGL Depth Attained (ft) .....	2.1
Time of Max HGL Occurrence (days hh:mm) .....	0 12:00
Total Exfiltration Volume (1000-ft <sup>3</sup> ) .....	0
Total Flooded Volume (ac-in) .....	0
Total Time Flooded (min) .....	0
Total Retention Time (sec) .....	0

**Storage Node : UGD-03**

**Input Data**

Invert Elevation (ft) ..... 813.62  
 Max (Rim) Elevation (ft) ..... 821.50  
 Max (Rim) Offset (ft) ..... 7.88  
 Initial Water Elevation (ft) ..... 0.00  
 Initial Water Depth (ft) ..... -813.62  
 Poned Area (ft<sup>2</sup>) ..... 0.00  
 Evaporation Loss ..... 0.00

**Outflow Orifices**

SN Element ID	Orifice Type	Orifice Shape	Flap Gate	Circular Orifice Diameter (in)	Rectangular Orifice Height (in)	Rectangular Orifice Width (in)	Orifice Invert Elevation (ft)	Orifice Coefficient
1 UGD-03-Orifice	Side	CIRCULAR	No	10.00			813.62	0.60

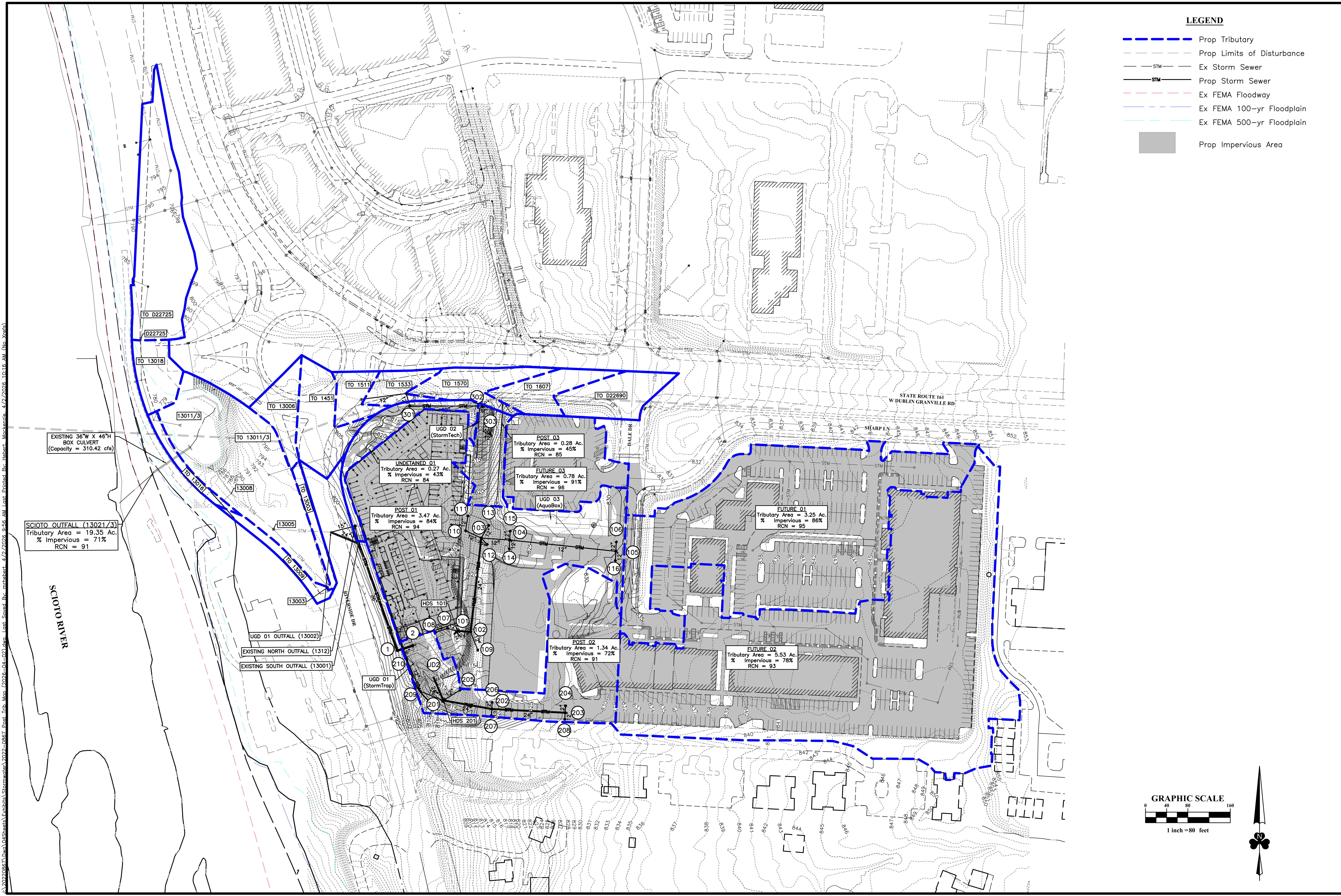
**Output Summary Results**

Peak Inflow (cfs) ..... 25.39  
 Peak Lateral Inflow (cfs) ..... 25.39  
 Peak Outflow (cfs) ..... 7  
 Peak Exfiltration Flow Rate (cfm) ..... 0  
 Max HGL Elevation Attained (ft) ..... 821.15  
 Max HGL Depth Attained (ft) ..... 7.53  
 Average HGL Elevation Attained (ft) ..... 814.43  
 Average HGL Depth Attained (ft) ..... 0.81  
 Time of Max HGL Occurrence (days hh:mm) ..... 0 12:11  
 Total Exfiltration Volume (1000-ft<sup>3</sup>) ..... 0  
 Total Flooded Volume (ac-in) ..... 0  
 Total Time Flooded (min) ..... 0  
 Total Retention Time (sec) ..... 0

APPENDIX F:

Exhibits





**LEGEND**

- Prop Tributary
- Prop Limits of Disturbance
- Ex Storm Sewer
- STM Prop Storm Sewer
- Ex FEMA Floodway
- Ex FEMA 100-yr Floodplain
- Ex FEMA 500-yr Floodplain
- Prop Impervious Area

I:\2022\06\07\Drawings\Exhibits\Stormwater\022-0867\_Plan\_Sheet.dwg - Last Saved By: mshahar - 4/2/2026 9:56 AM - Last Printed By: Hebert - Mackenzie - 4/2/2026 10:16 AM (No Xrefs)

EXISTING 36" X 46" H BOX CULVERT (Capacity = 310.42 cfs)

SCIOTO OUTFALL (13021/3)  
 Tributary Area = 19.35 Ac.  
 % Impervious = 71%  
 RCN = 91

UGD 01 OUTFALL (13002)  
 EXISTING NORTH OUTFALL (1312)  
 EXISTING SOUTH OUTFALL (13001)

UNDETAILED 01  
 Tributary Area = 0.27 Ac.  
 % Impervious = 43%  
 RCN = 84

POST 01  
 Tributary Area = 3.47 Ac.  
 % Impervious = 84%  
 RCN = 94

UGD 02 (StormTech)

POST 03  
 Tributary Area = 0.28 Ac.  
 % Impervious = 45%  
 RCN = 85

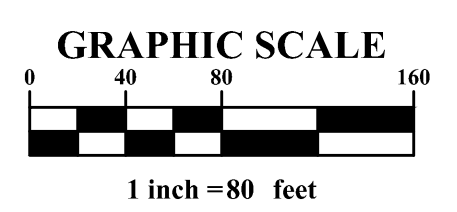
FUTURE 03  
 Tributary Area = 0.78 Ac.  
 % Impervious = 91%  
 RCN = 96

UGD 03 (AquaBox)

POST 02  
 Tributary Area = 1.34 Ac.  
 % Impervious = 72%  
 RCN = 91

FUTURE 01  
 Tributary Area = 3.25 Ac.  
 % Impervious = 86%  
 RCN = 95

FUTURE 02  
 Tributary Area = 5.53 Ac.  
 % Impervious = 78%  
 RCN = 93



MARK	DATE	DESCRIPTION

CITY OF DUBLIN, FRANKLIN COUNTY, OHIO

**EXHIBIT  
 BRIDGE PARK  
 BLOCK Y**

POST-DEVELOPED TRIBUTARY MAP

**EMHT**  
 Survey, Mapping, Hydrology & Design, Inc.  
 Engineers • Surveyors • Planners • Scientists  
 5500 New Albany Road, Columbus, OH 43254  
 Phone: 614.775.5500 Fax: 614.775.3666  
 emht.com

DATE	April 2, 2026
SCALE	1" = 80'
JOB NO.	2022-0867

SHEET  
**Exhibit 2**