



Site Planning
Civil Engineering
Landscape Architecture
Land Surveying
Transportation Engineering

Environmental Studies
Entitlements
Construction Services
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MEMORANDUM

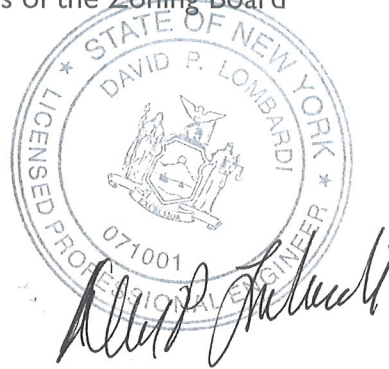
DATE: 12/19/2017

TO: Honorable Chairman William Rice and Members of the Zoning Board

FROM: Mr. David P. Lombardi, PE, JMC
Mr. James Caris, JMC

RE: JMC Project 16237
Homeland Towers Nelsonville (NY170)
15 Rockledge Road
Village of Nelsonville, NY

SUBJECT: **Stormwater Management Memorandum**



This memorandum is provided in response to a Town Consulting Engineer Review letter dated October 30, 2017.

Project Description

The proposed project consists of a wireless telecommunications facility consisting of a 110' monopine located within a 3,250 square foot fenced compound located at 15 Rockledge Road, Nelsonville, NY. The 9.6 acre property is currently undeveloped, and has access via a gravel drive through an easement and right of way known as Rockledge Road. The entirety of the property is wooded with several rock outcroppings and an existing gravel driveway in the northeastern portion of the property. Access to the proposed wireless facility is proposed to be provided by an approximately 400' long, 20' wide gravel driveway connecting to the existing gravel drive within the Rockledge Road easement. Total land disturbance of approximately 28,300 square feet is proposed with a total of $\pm 16,200$ SF of new impervious area. According to the New York State Department of Environmental Conservation, gravel surfaces are considered impervious cover even though some infiltration is provided. The majority of the new impervious area consists of gravel surfaces associated with the proposed wireless telecommunications compound, access driveway, and Rockledge Road/easement widening.

Existing Site Conditions

Under existing conditions, storm water runoff from the property flows generally in a westerly direction through the woods in the location of the proposed wireless facility where it continues to the Cold Spring Cemetery property and eventually meets the Foundry Brook on the cemetery property.

For the purposes of this analysis, the analyzed drainage area consists of the portion of the property proposed to be developed and off-site area that contributes to this area. This includes the wireless telecommunications compound, access drive, and uphill contributing area which will be intercepted

under proposed conditions. Refer to JMC Drawing DA-1, “Existing Drainage Area Map”, which depicts the analyzed drainage area.

Proposed Site Conditions

Under proposed conditions, the gravel access drive will be located on the side of a gradually sloping hill that is currently wooded. A grassed swale is proposed to intercept stormwater runoff from both the access drive and the uphill contributing area which totals ± 1.51 acres. This stormwater is proposed to be collected by two drain inlets and conveyed via a series of pipes to a level spreader. The level spreader will then distribute the stormwater uniformly over the ground surface as sheet flow in order to prevent concentrated, erosive flows and promote infiltration. Stormwater will then flow to the west and ultimately to the Foundry Brook. Hydraulic calculations of the proposed drainage pipes were performed for the 25-year recurrence interval storm. Refer to JMC Drawing DA-2, “Proposed Drainage Area Map”, which depicts the analyzed drainage area.

The 1, 10, 25 and 100-year recurrence interval storms were analyzed for the subject drainage area utilizing the Type III distribution design storm for a 24-hour duration. The table below summarizes the peak rates of runoff in proposed conditions when compared to existing conditions.

Summary of Peak Rates of Runoff

Storm Recurrence Interval	Existing Peak Rates of Runoff (Cubic Feet per Second)	Proposed Peak Rates of Runoff (Cubic Feet per Second)
1 Year	0.06	0.24
10 Year	1.13	1.73
25 Year	2.16	2.87
100 Year	4.64	5.50

Compliance with Applicable NYSDEC Stormwater Regulations

Based on the New York State Department of Environmental Conservation criteria, only land development activities with greater than one acre of land disturbance require coverage under the SPDES General Permit for Stormwater Discharges from Construction Activity. Accordingly, the proposed wireless facility and associated 0.65 acre disturbance area do not require the preparation of a formal Stormwater Pollution Prevention Plan. However, a detailed Erosion and Sediment Control plan has been developed in accordance with the requirements of the NYSDEC for site stabilization during and after construction activities. Based on the foregoing, it is our professional opinion that in conjunction with the stormwater improvements, the proposed facility will not have adverse impacts to the site or surrounding areas.

APPENDICES

APPENDIX DESCRIPTION

- A. Time of Concentration Calculations
- B. Hydrologic and Hydraulic Calculations
- C. Drawings
 - DA-1 "Existing Drainage Area Map" (Full Size)
 - DA-2 "Proposed Drainage Area Map" (Full Size)

APPENDIX A

TIME OF CONCENTRATION CALCULATIONS

Table of Contents

***** TC CALCULATIONS *****

EDA-1..... Tc Calcs	1.01
PDA-1A..... Tc Calcs	1.04
PDA-1B..... Tc Calcs	1.06
PDA-1C..... Tc Calcs	1.10

.....
TIME OF CONCENTRATION CALCULATOR
.....

Segment #1: Tc: TR-55 Sheet

Mannings n .4000
Hydraulic Length 75.00 ft
2yr, 24hr P 3.2300 in
Slope .160000 ft/ft

Avg.Velocity .17 ft/sec

Segment #1 Time: .1232 hrs

Segment #2: Tc: TR-55 Sheet

Mannings n .0110
Hydraulic Length 15.00 ft
2yr, 24hr P 3.2300 in
Slope .033333 ft/ft

Avg.Velocity 1.16 ft/sec

Segment #2 Time: .0036 hrs

Segment #3: Tc: TR-55 Sheet

Mannings n .4000
Hydraulic Length 60.00 ft
2yr, 24hr P 3.2300 in
Slope .266667 ft/ft

Avg.Velocity .20 ft/sec

Segment #3 Time: .0840 hrs

Type.... Tc Calcs
Name.... EDA-1

Page 1.02

File.... S:\2016\16237\2017-12-12_PD (Pondpack)\HLT Nelsonville (NY170).ppw

Segment #4: Tc: TR-55 Shallow

Hydraulic Length 110.00 ft
Slope .200000 ft/ft
Unpaved

Avg.Velocity 7.22 ft/sec

Segment #4 Time: .0042 hrs

=====
Total Tc: .2150 hrs
=====

Tc Equations used...

==== SCS TR-55 Sheet Flow =====

$$Tc = (.007 * ((n * Lf)^{.8})) / ((P^{.5}) * (Sf^{.4}))$$

Where: Tc = Time of concentration, hrs
n = Mannings n
Lf = Flow length, ft
P = 2yr, 24hr Rain depth, inches
Sf = Slope, %

==== SCS TR-55 Shallow Concentrated Flow =====

Unpaved surface:

$$V = 16.1345 * (Sf^{.5})$$

Paved surface:

$$V = 20.3282 * (Sf^{.5})$$

$$Tc = (Lf / V) / (3600\text{sec/hr})$$

Where: V = Velocity, ft/sec
Sf = Slope, ft/ft
Tc = Time of concentration, hrs
Lf = Flow length, ft

Type.... Tc Calcs
Name.... PDA-1A

Page 1.04

File.... S:\2016\16237\2017-12-12_PD (Pondpack)\HLT Nelsonville (NY170).ppw

.....
TIME OF CONCENTRATION CALCULATOR
.....

Segment #1: Tc: User Defined

Segment #1 Time: .0833 hrs

=====
Total Tc: .0833 hrs
=====

Type.... Tc Calcs
Name.... PDA-1A

Page 1.05

File.... S:\2016\16237\2017-12-12_PD (Pondpack)\HLT Nelsonville (NY170).ppw

Tc Equations used...

==== User Defined =====

Tc = Value entered by user

Where: Tc = Time of concentration

.....
TIME OF CONCENTRATION CALCULATOR
.....

Segment #1: Tc: TR-55 Sheet

Mannings n .4000
Hydraulic Length 75.00 ft
2yr, 24hr P 3.2300 in
Slope .160000 ft/ft

Avg.Velocity .17 ft/sec

Segment #1 Time: .1232 hrs

Segment #2: Tc: TR-55 Sheet

Mannings n .0110
Hydraulic Length 15.00 ft
2yr, 24hr P 3.2300 in
Slope .033333 ft/ft

Avg.Velocity 1.16 ft/sec

Segment #2 Time: .0036 hrs

Segment #3: Tc: TR-55 Sheet

Mannings n .4000
Hydraulic Length 60.00 ft
2yr, 24hr P 3.2300 in
Slope .266667 ft/ft

Avg.Velocity .20 ft/sec

Segment #3 Time: .0840 hrs

Type.... Tc Calcs
Name.... PDA-1B

Page 1.07

File.... S:\2016\16237\2017-12-12_PD (Pondpack)\HLT Nelsonville (NY170).ppw

Segment #4: Tc: TR-55 Shallow

Hydraulic Length 82.00 ft
Slope .200000 ft/ft
Unpaved

Avg.Velocity 7.22 ft/sec

Segment #4 Time: .0032 hrs

Segment #5: Tc: TR-55 Channel

Flow Area 2.0000 sq.ft
Wetted Perimeter 4.00 ft
Hydraulic Radius .50 ft
Slope .138000 ft/ft
Mannings n .0110
Hydraulic Length 192.00 ft

Avg.Velocity 31.70 ft/sec

Segment #5 Time: .0017 hrs

=====
Total Tc: .2156 hrs
=====

Tc Equations used...

==== SCS TR-55 Sheet Flow =====

$$Tc = (.007 * ((n * Lf)^{.8})) / ((P^{.5}) * (Sf^{.4}))$$

Where: Tc = Time of concentration, hrs
n = Mannings n
Lf = Flow length, ft
P = 2yr, 24hr Rain depth, inches
Sf = Slope, %

==== SCS TR-55 Shallow Concentrated Flow =====

Unpaved surface:

$$V = 16.1345 * (Sf^{.5})$$

Paved surface:

$$V = 20.3282 * (Sf^{.5})$$

$$Tc = (Lf / V) / (3600\text{sec/hr})$$

Where: V = Velocity, ft/sec
Sf = Slope, ft/ft
Tc = Time of concentration, hrs
Lf = Flow length, ft

Type.... Tc Calcs
Name.... PDA-1B

Page 1.09

File.... S:\2016\16237\2017-12-12_PD (Pondpack)\HLT Nelsonville (NY170).ppw

==== SCS Channel Flow =====

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

$$Tc = (Lf / V) / (3600\text{sec/hr})$$

Where: R = Hydraulic radius
Aq = Flow area, sq.ft.
Wp = Wetted perimeter, ft
V = Velocity, ft/sec
Sf = Slope, ft/ft
n = Mannings n
Tc = Time of concentration, hrs
Lf = Flow length, ft

.....
TIME OF CONCENTRATION CALCULATOR
.....

Segment #1: Tc: TR-55 Sheet

Mannings n .4000
Hydraulic Length 41.00 ft
2yr, 24hr P 3.2300 in
Slope .097560 ft/ft

Avg.Velocity .12 ft/sec

Segment #1 Time: .0926 hrs

Segment #2: Tc: TR-55 Sheet

Mannings n .0110
Hydraulic Length 14.00 ft
2yr, 24hr P 3.2230 in
Slope .071400 ft/ft

Avg.Velocity 1.55 ft/sec

Segment #2 Time: .0025 hrs

Segment #3: Tc: TR-55 Sheet

Mannings n .4000
Hydraulic Length 95.00 ft
2yr, 24hr P 3.2300 in
Slope .315000 ft/ft

Avg.Velocity .23 ft/sec

Segment #3 Time: .1135 hrs

Type.... Tc Calcs
Name.... PDA-1C

Page 1.11

File.... S:\2016\16237\2017-12-12_PD (Pondpack)\HLT Nelsonville (NY170).ppw

Segment #4: Tc: TR-55 Shallow

Hydraulic Length 17.00 ft
Slope .020000 ft/ft
Paved

Avg.Velocity 2.87 ft/sec

Segment #4 Time: .0016 hrs

=====
Total Tc: .2103 hrs
=====

Type.... Tc Calcs
Name.... PDA-1C

Page 1.12

File.... S:\2016\16237\2017-12-12_PD (Pondpack)\HLT Nelsonville (NY170).ppw

Tc Equations used...

==== SCS TR-55 Sheet Flow =====

$$Tc = (.007 * ((n * Lf)^{.8})) / ((P^{.5}) * (Sf^{.4}))$$

Where: Tc = Time of concentration, hrs
n = Mannings n
Lf = Flow length, ft
P = 2yr, 24hr Rain depth, inches
Sf = Slope, %

==== SCS TR-55 Shallow Concentrated Flow =====

Unpaved surface:
 $V = 16.1345 * (Sf^{.5})$

Paved surface:
 $V = 20.3282 * (Sf^{.5})$

$$Tc = (Lf / V) / (3600\text{sec/hr})$$

Where: V = Velocity, ft/sec
Sf = Slope, ft/ft
Tc = Time of concentration, hrs
Lf = Flow length, ft

Index of Starting Page Numbers for ID Names

----- E -----
EDA-1... 1.01

----- P -----
PDA-1A... 1.04
PDA-1B... 1.06
PDA-1C... 1.10

APPENDIX B

HYDROLOGIC AND HYDRAULIC CALCULATIONS

Project Description

File Name 16237-SSA-12-14-17.SPF

Project Options

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

Analysis Options

Start Analysis On Dec 14, 2017 00:00:00
End Analysis On Dec 15, 2017 00:00:00
Start Reporting On Dec 14, 2017 00:00:00
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 00:05:00 days hh:mm:ss
Routing Time Step 30 seconds

Number of Elements

Qty
Rain Gages 4
Subbasins..... 4
Nodes..... 4
 Junctions 2
 Outfalls 2
 Flow Diversions 0
 Inlets 0
 Storage Nodes 0
Links..... 2
 Channels 0
 Pipes 2
 Pumps 0
 Orifices 0
 Weirs 0
 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
1	100-year storm	Time Series	TS-04	Cumulative	inches	None	None	100	8.65	SCS Type III 24-hr
2	10-year storm	Time Series	TS-02	Cumulative	inches	None	None	10	4.83	SCS Type III 24-hr
3	1-year storm	Time Series	TS-01	Cumulative	inches	None	None	1	2.65	SCS Type III 24-hr
4	25-year storm	Time Series	TS-03	Cumulative	inches	None	None	25	6.09	SCS Type III 24-hr

Subbasin Summary

SN	Subbasin ID	Area	Weighted Curve Number	Total Rainfall	Total Runoff	Total Runoff Volume	Peak Runoff	Time of Concentration
		(ac)		(in)	(in)	(ac-in)	(cfs)	(days hh:mm:ss)
1	Existing	1.51	56.84	2.65	0.15	0.22	0.06	0 00:12:54
2	PDA-1A	0.17	85.00	2.65	1.30	0.22	0.24	0 00:05:00
3	PDA-1B	1.16	60.01	2.65	0.22	0.25	0.10	0 00:12:54
4	PDA-1C	0.18	63.71	2.65	0.32	0.06	0.03	0 00:12:36

Node Summary

SN	Element ID	Element Type	Invert Elevation	Ground/Rim (Max) Elevation	Initial Water Elevation	Surcharge Elevation	Ponded Area	Peak Inflow	Max HGL Elevation Attained	Max Surcharge Depth Attained	Min Freeboard Attained	Time of Peak Flooding Occurrence	Total Flooded Volume	Total Time Flooded
			(ft)	(ft)	(ft)	(ft)	(ft²)	(cfs)	(ft)	(ft)	(ft)	(days hh:mm)	(ac-in)	(min)
1	DI-A-2	Junction	259.75	267.25	259.75	267.25	10.00	0.23	264.11	0.00	3.14	0 00:00	0.00	0.00
2	DI-A-3	Junction	264.25	267.50	264.25	267.50	10.00	0.10	264.36	0.00	3.14	0 00:00	0.00	0.00
3	EXIST-OUT	Outfall	249.00					0.06	249.00					
4	PROP-OUT	Outfall	249.00					0.24	249.08					

Link Summary

SN Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Invert Elevation (ft)	Outlet Average Invert Elevation (ft)	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 Condition (min)
1 Pipe - (147)	Pipe	DI-A-3	DI-A-2	34.68	264.25	264.00	0.7200	15.000	0.0120	0.10	5.94	0.02	1.82	0.11	0.09	0.00 Calculated
2 Pipe - (148)	Pipe	DI-A-2	PROP-OUT	76.22	259.75	249.00	14.1000	15.000	0.0120	0.23	26.28	0.01	6.61	0.08	0.07	0.00 Calculated

Subbasin Hydrology

Subbasin : Existing

Input Data

Area (ac) 1.51
Weighted Curve Number 56.84
Rain Gage ID 1-year storm

Composite Curve Number

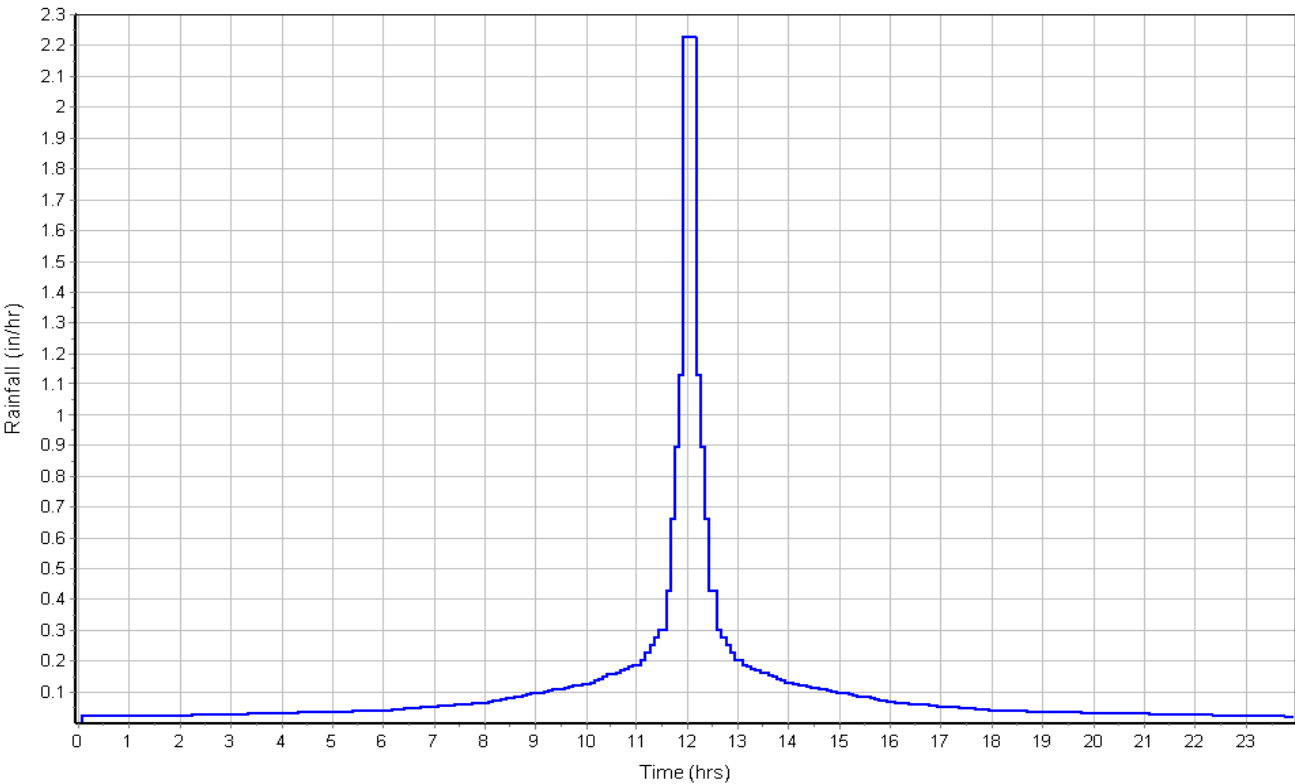
Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Gravel roads	0.02	B	85.00
Woods, Good	1.44	B	55.00
Paved roads with curbs & sewers	0.05	B	98.00
Composite Area & Weighted CN	1.51		56.84

Subbasin Runoff Results

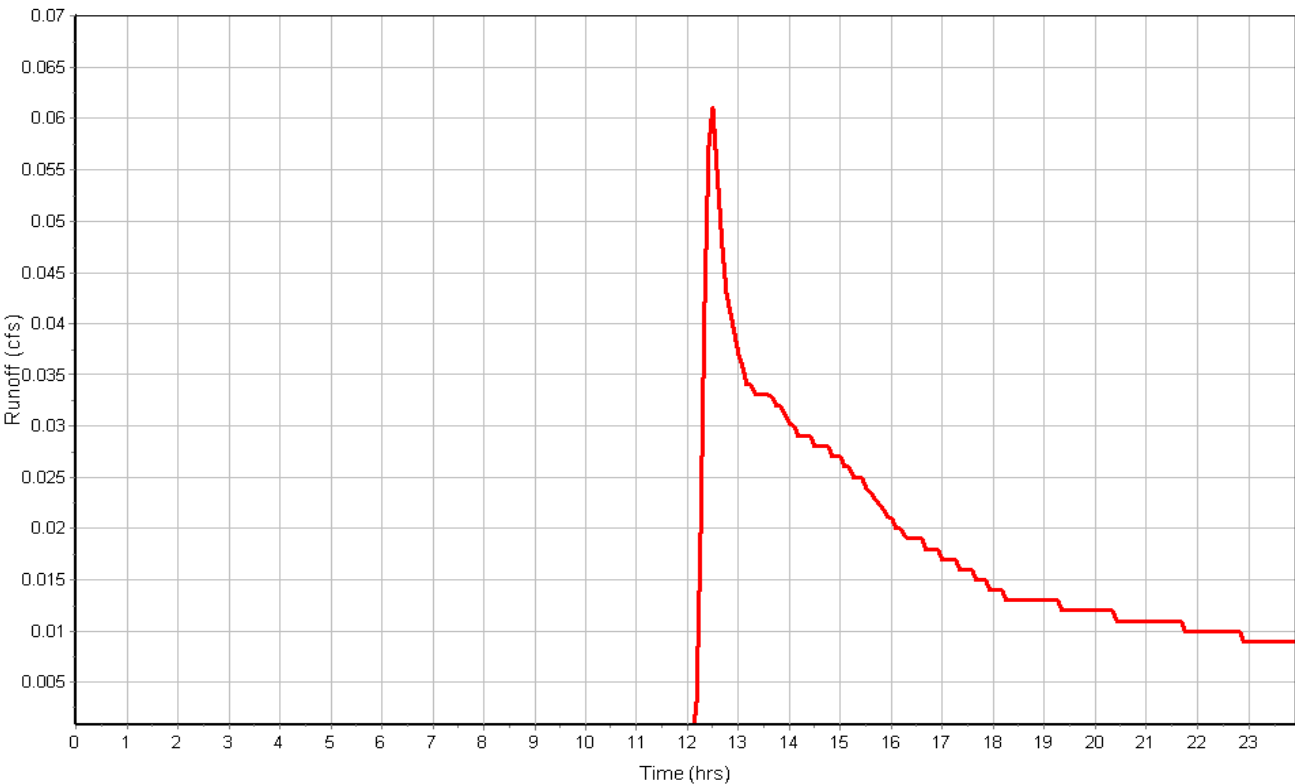
Total Rainfall (in) 2.65
Total Runoff (in) 0.15
Peak Runoff (cfs) 0.06
Weighted Curve Number 56.84
Time of Concentration (days hh:mm:ss) 0 00:12:54

Subbasin : Existing

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PDA-1A

Input Data

Area (ac) 0.17
Weighted Curve Number 85.00
Rain Gage ID 1-year storm

Composite Curve Number

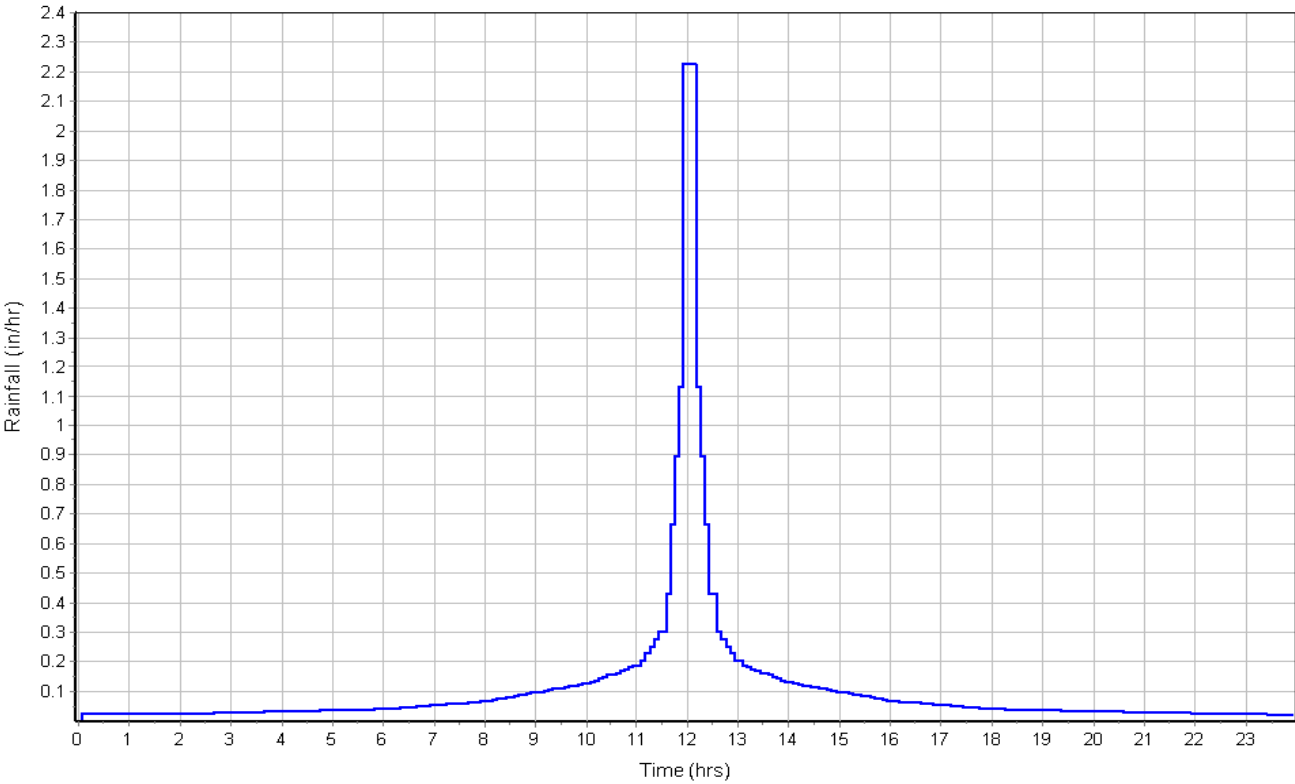
Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Gravel roads	0.17	B	85.00
Composite Area & Weighted CN	0.17		85.00

Subbasin Runoff Results

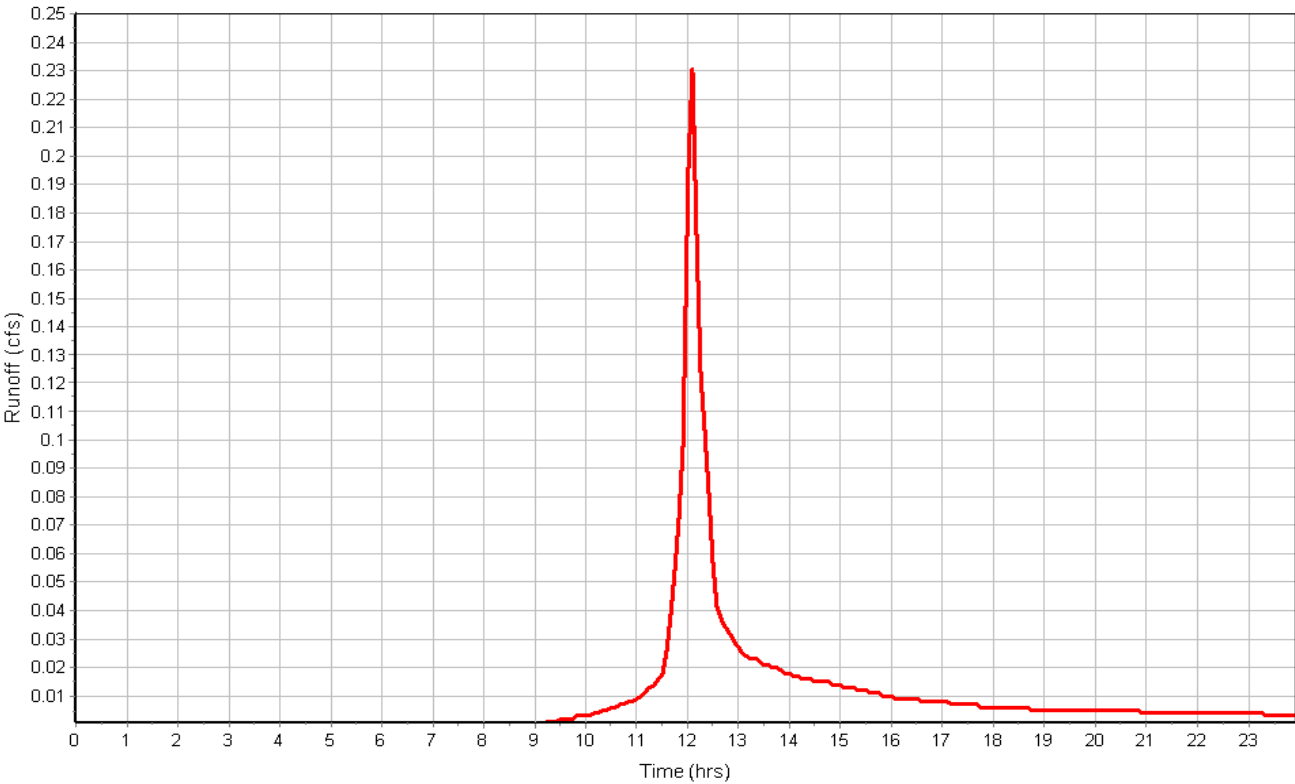
Total Rainfall (in) 2.65
Total Runoff (in) 1.30
Peak Runoff (cfs) 0.24
Weighted Curve Number 85.00
Time of Concentration (days hh:mm:ss) 0 00:05:00

Subbasin : PDA-1A

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PDA-1B

Input Data

Area (ac) 1.16
Weighted Curve Number 60.01
Rain Gage ID 1-year storm

Composite Curve Number

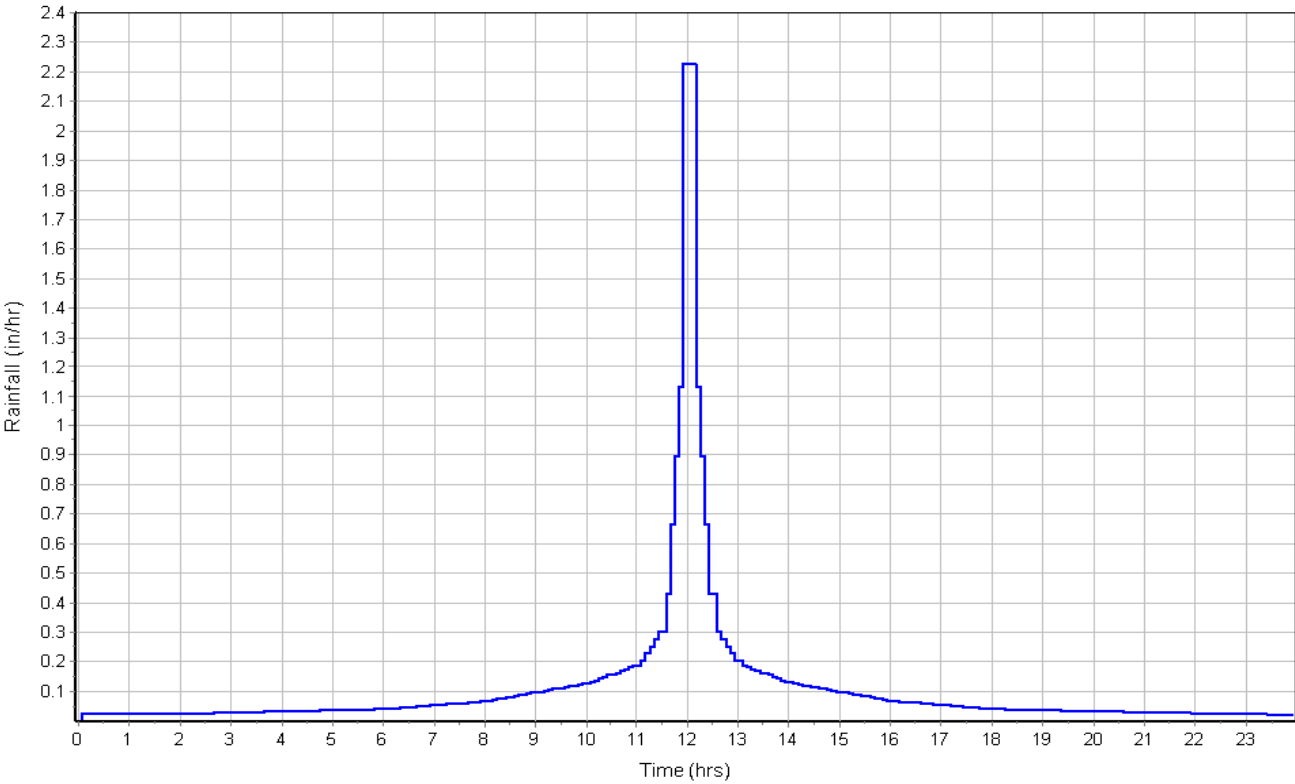
Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.04	B	98.00
Gravel roads	0.12	B	85.00
> 75% grass cover, Good	0.07	B	61.00
Woods, Good	0.92	B	55.00
Composite Area & Weighted CN	1.15		60.01

Subbasin Runoff Results

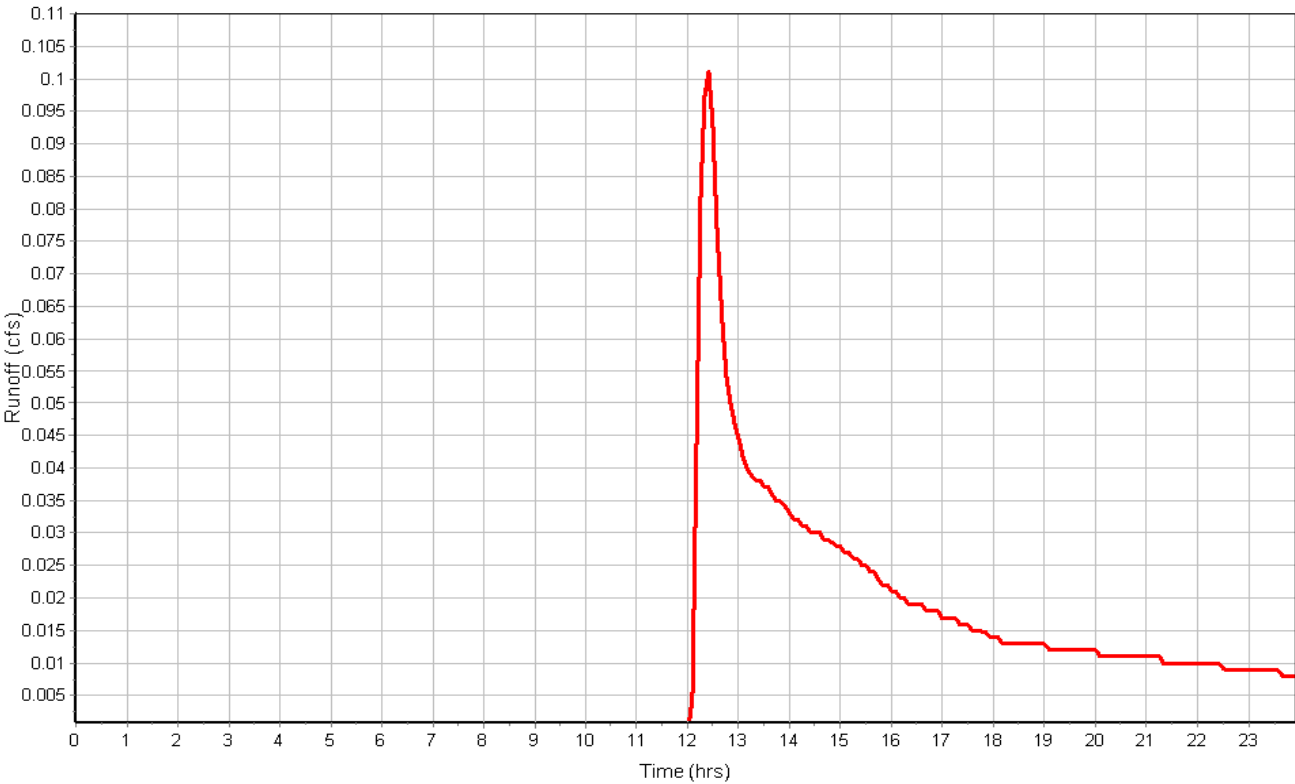
Total Rainfall (in) 2.65
Total Runoff (in) 0.22
Peak Runoff (cfs) 0.10
Weighted Curve Number 60.01
Time of Concentration (days hh:mm:ss) 0 00:12:54

Subbasin : PDA-1B

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PDA-1C

Input Data

Area (ac) 0.18
Weighted Curve Number 63.71
Rain Gage ID 1-year storm

Composite Curve Number

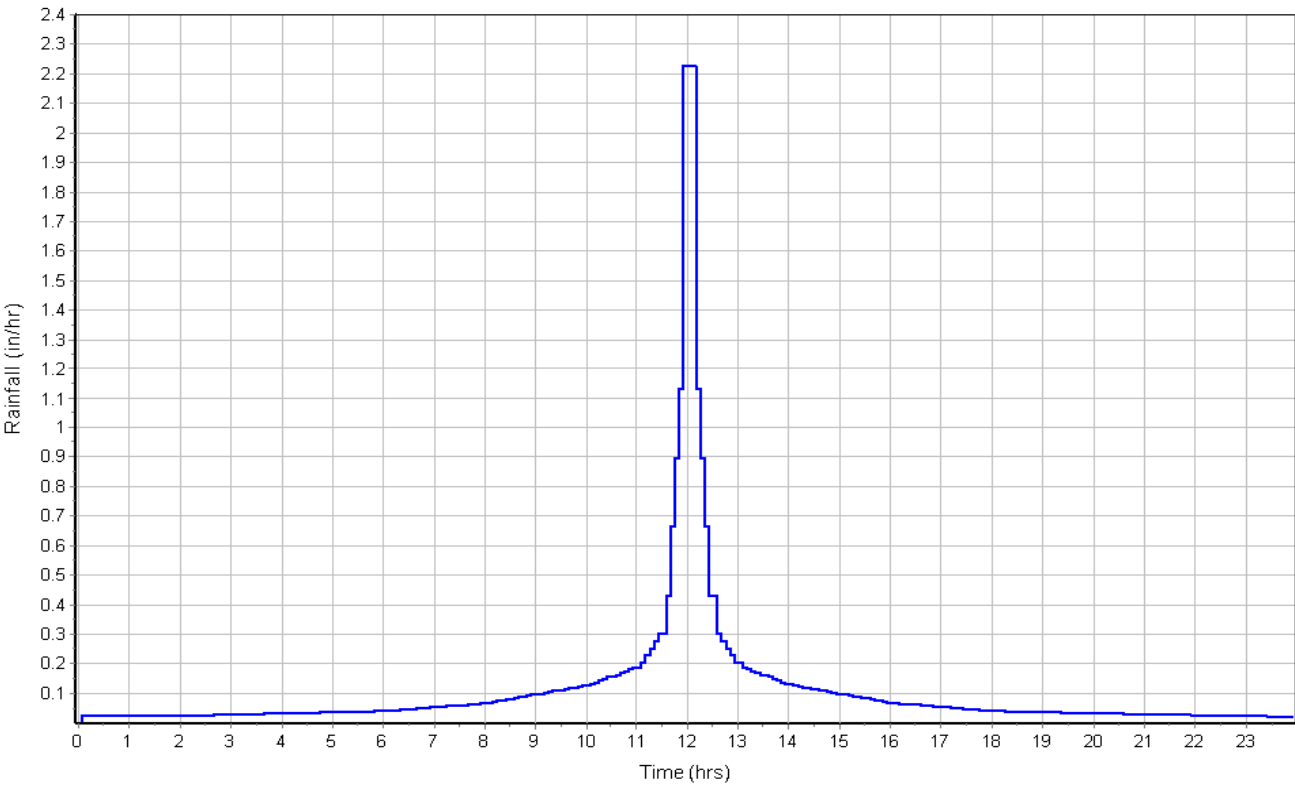
Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.01	B	98.00
Gravel roads	0.03	B	85.00
> 75% grass cover, Good	0.00	B	61.00
Woods, Good	0.13	B	55.00
Composite Area & Weighted CN	0.17		63.71

Subbasin Runoff Results

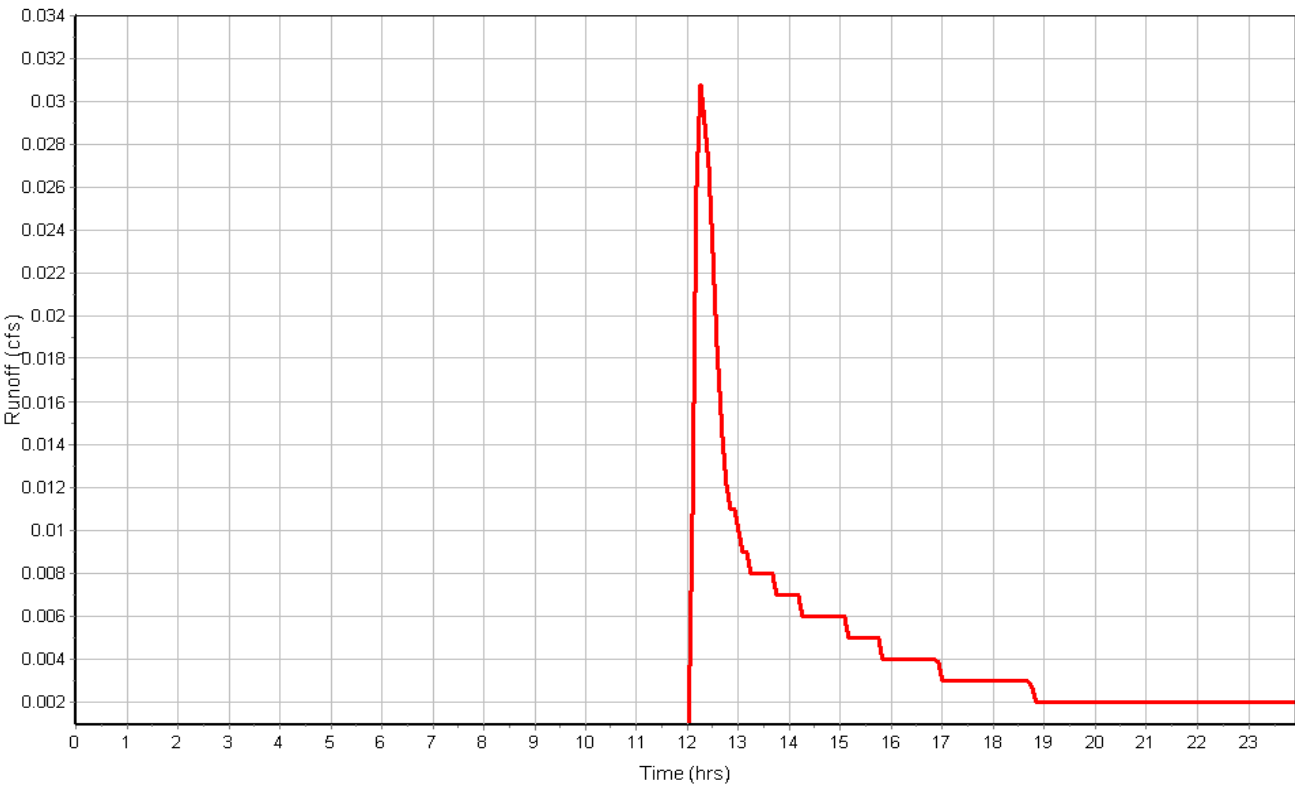
Total Rainfall (in) 2.65
Total Runoff (in) 0.32
Peak Runoff (cfs) 0.03
Weighted Curve Number 63.71
Time of Concentration (days hh:mm:ss) 0 00:12:36

Subbasin : PDA-1C

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin Summary

SN	Subbasin ID	Area	Weighted Curve Number	Total Rainfall	Total Runoff	Total Runoff Volume	Peak Runoff	Time of Concentration
		(ac)		(in)	(in)	(ac-in)	(cfs)	(days hh:mm:ss)
1	Existing	1.51	56.84	4.83	1.01	1.52	1.16	0 00:12:54
2	PDA-1A	0.17	85.00	4.83	3.21	0.55	0.57	0 00:05:00
3	PDA-1B	1.16	60.01	4.83	1.20	1.40	1.13	0 00:12:54
4	PDA-1C	0.18	63.71	4.83	1.45	0.26	0.22	0 00:12:36

Node Summary

SN	Element ID	Element Type	Invert Elevation	Ground/Rim (Max) Elevation	Initial Water Elevation	Surcharge Elevation	Ponded Area	Peak Inflow	Max HGL Elevation Attained	Max Surcharge Depth Attained	Min Freeboard Attained	Time of Peak Flooding Occurrence	Total Flooded Volume	Total Time Flooded
			(ft)	(ft)	(ft)	(ft)	(ft²)	(cfs)	(ft)	(ft)	(ft)	(days hh:mm)	(ac-in)	(min)
1	DI-A-2	Junction	259.75	267.25	259.75	267.25	10.00	1.52	264.37	0.00	2.88	0 00:00	0.00	0.00
2	DI-A-3	Junction	264.25	267.50	264.25	267.50	10.00	1.11	264.62	0.00	2.88	0 00:00	0.00	0.00
3	EXIST-OUT	Outfall	249.00					1.13	249.00					
4	PROP-OUT	Outfall	249.00					1.73	249.20					

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 (min)
1 Pipe - (147)	Pipe	DI-A-3	DI-A-2	34.68	264.25	264.00	0.7200	15.000	0.0120	1.11	5.94	0.19	3.71	0.37	0.29	0.00 Calculated
2 Pipe - (148)	Pipe	DI-A-2	PROP-OUT	76.22	259.75	249.00	14.1000	15.000	0.0120	1.51	26.28	0.06	11.64	0.20	0.16	0.00 Calculated

Subbasin Hydrology

Subbasin : Existing

Input Data

Area (ac) 1.51
Weighted Curve Number 56.84
Rain Gage ID 10-year storm

Composite Curve Number

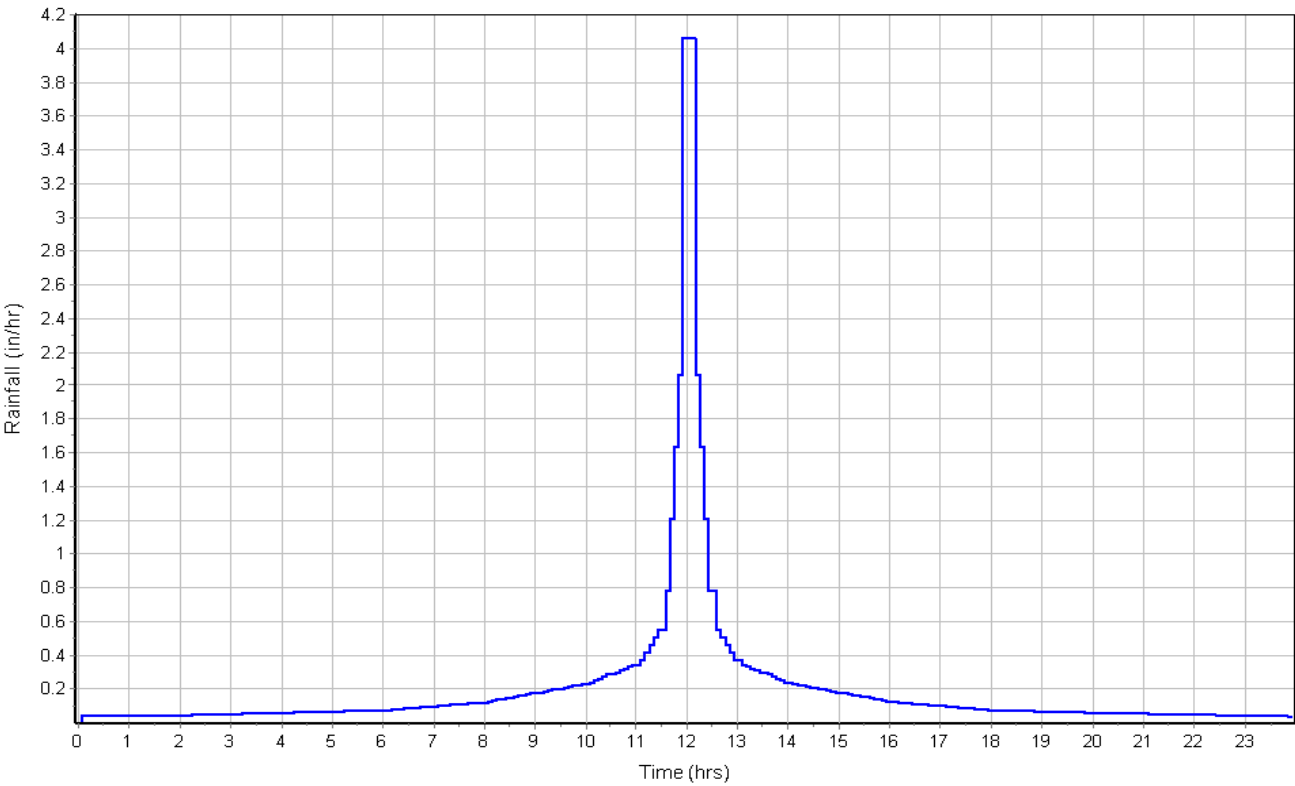
Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Gravel roads	0.02	B	85.00
Woods, Good	1.44	B	55.00
Paved roads with curbs & sewers	0.05	B	98.00
Composite Area & Weighted CN	1.51		56.84

Subbasin Runoff Results

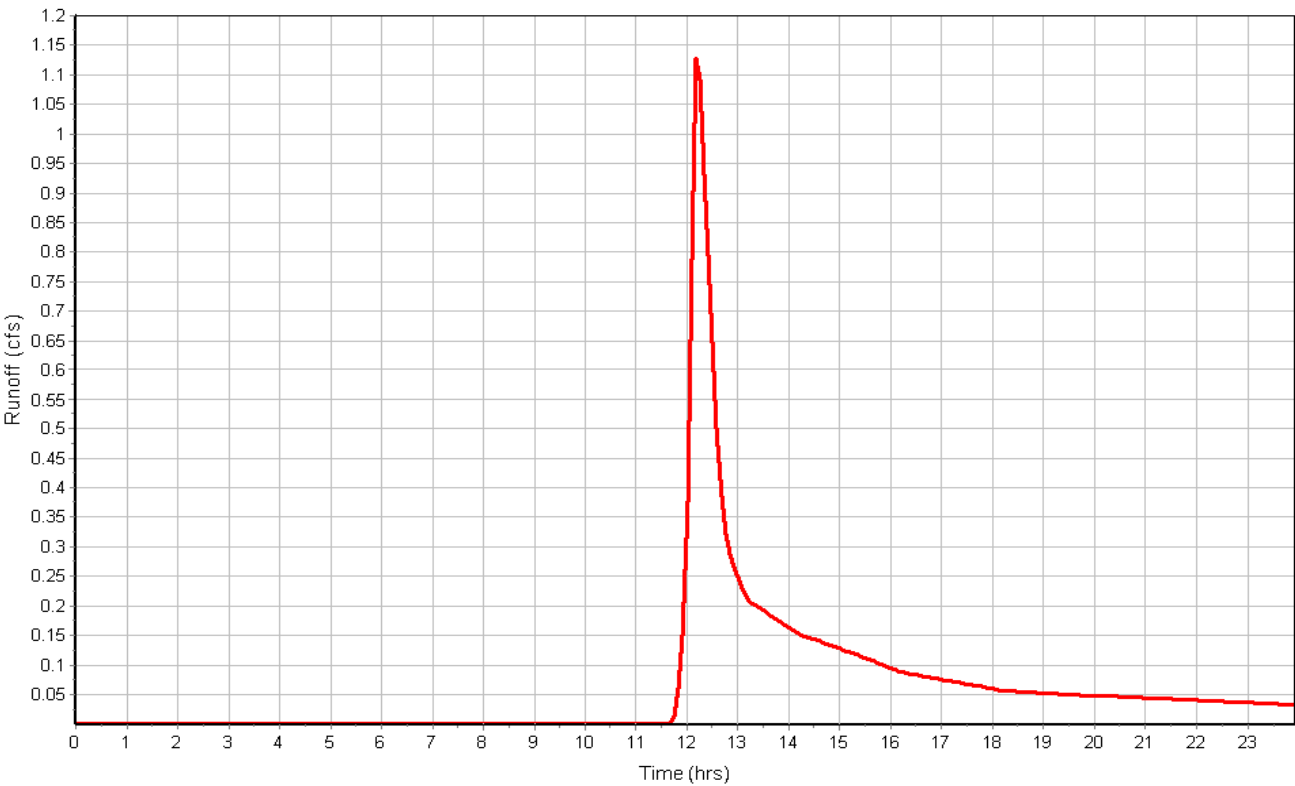
Total Rainfall (in) 4.83
Total Runoff (in) 1.01
Peak Runoff (cfs) 1.16
Weighted Curve Number 56.84
Time of Concentration (days hh:mm:ss) 0 00:12:54

Subbasin : Existing

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PDA-1A

Input Data

Area (ac) 0.17
Weighted Curve Number 85.00
Rain Gage ID 10-year storm

Composite Curve Number

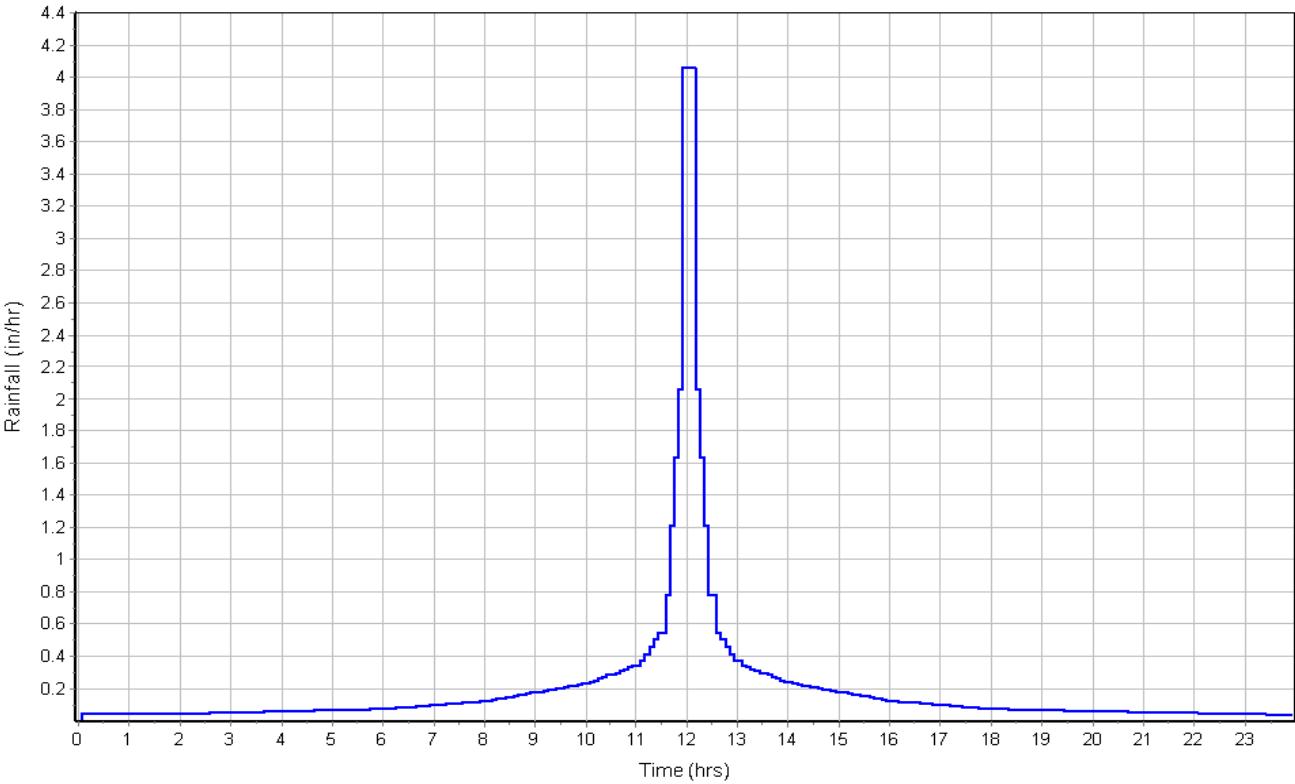
Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Gravel roads	0.17	B	85.00
Composite Area & Weighted CN	0.17		85.00

Subbasin Runoff Results

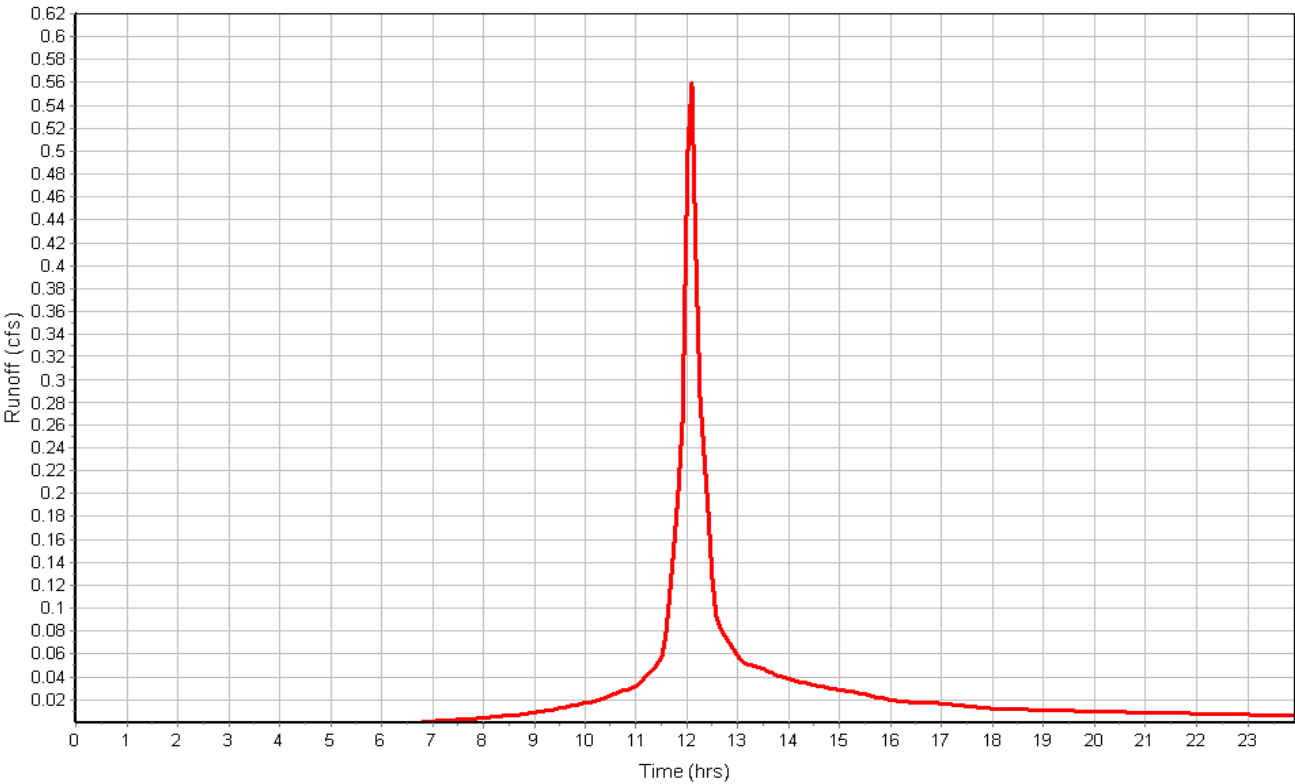
Total Rainfall (in) 4.83
Total Runoff (in) 3.21
Peak Runoff (cfs) 0.57
Weighted Curve Number 85.00
Time of Concentration (days hh:mm:ss) 0 00:05:00

Subbasin : PDA-1A

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PDA-1B

Input Data

Area (ac) 1.16
Weighted Curve Number 60.01
Rain Gage ID 10-year storm

Composite Curve Number

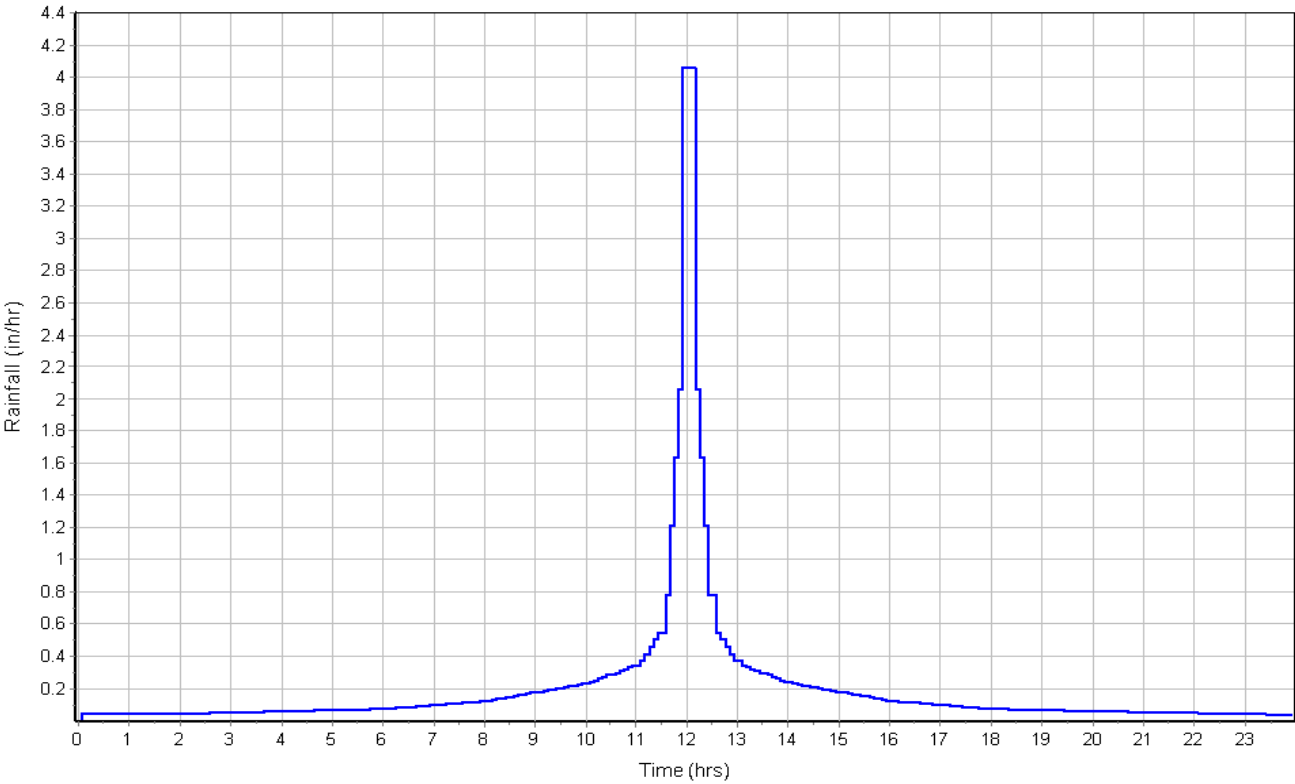
Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.04	B	98.00
Gravel roads	0.12	B	85.00
> 75% grass cover, Good	0.07	B	61.00
Woods, Good	0.92	B	55.00
Composite Area & Weighted CN	1.15		60.01

Subbasin Runoff Results

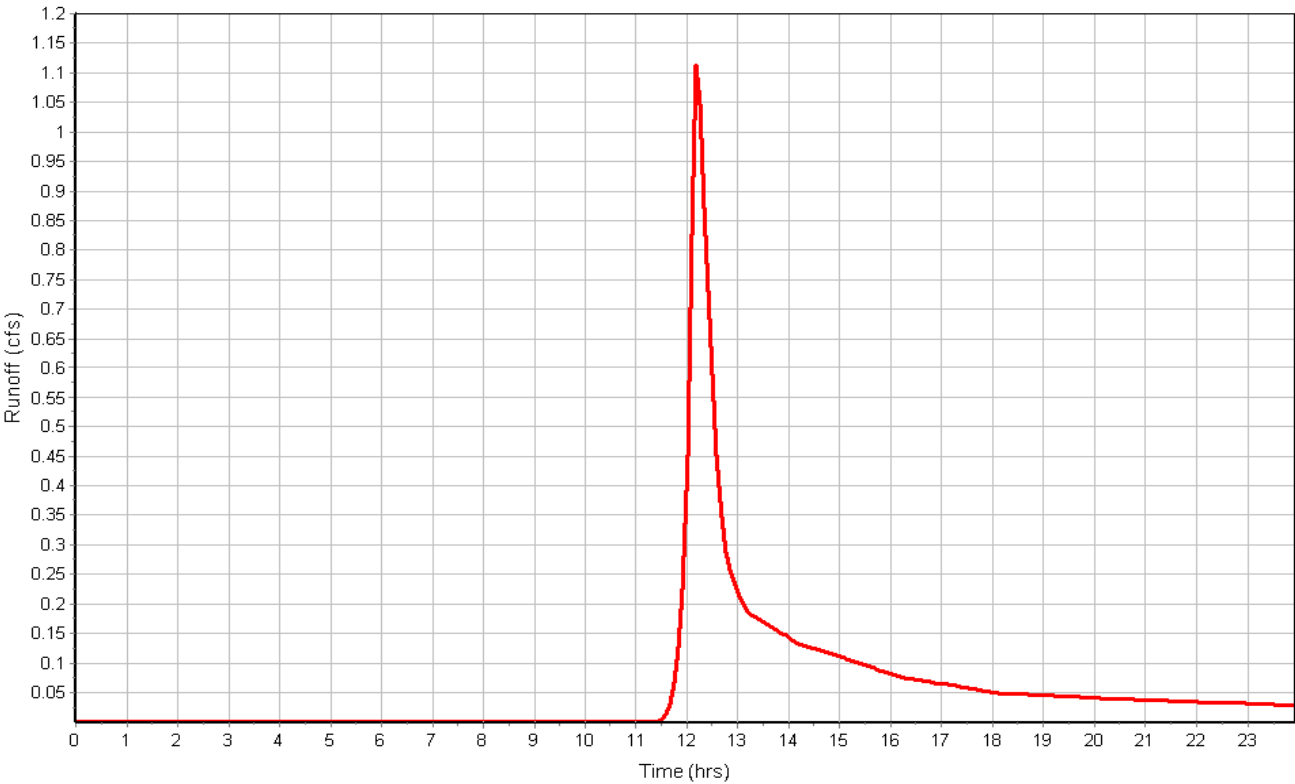
Total Rainfall (in) 4.83
Total Runoff (in) 1.20
Peak Runoff (cfs) 1.13
Weighted Curve Number 60.01
Time of Concentration (days hh:mm:ss) 0 00:12:54

Subbasin : PDA-1B

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PDA-1C

Input Data

Area (ac) 0.18
Weighted Curve Number 63.71
Rain Gage ID 10-year storm

Composite Curve Number

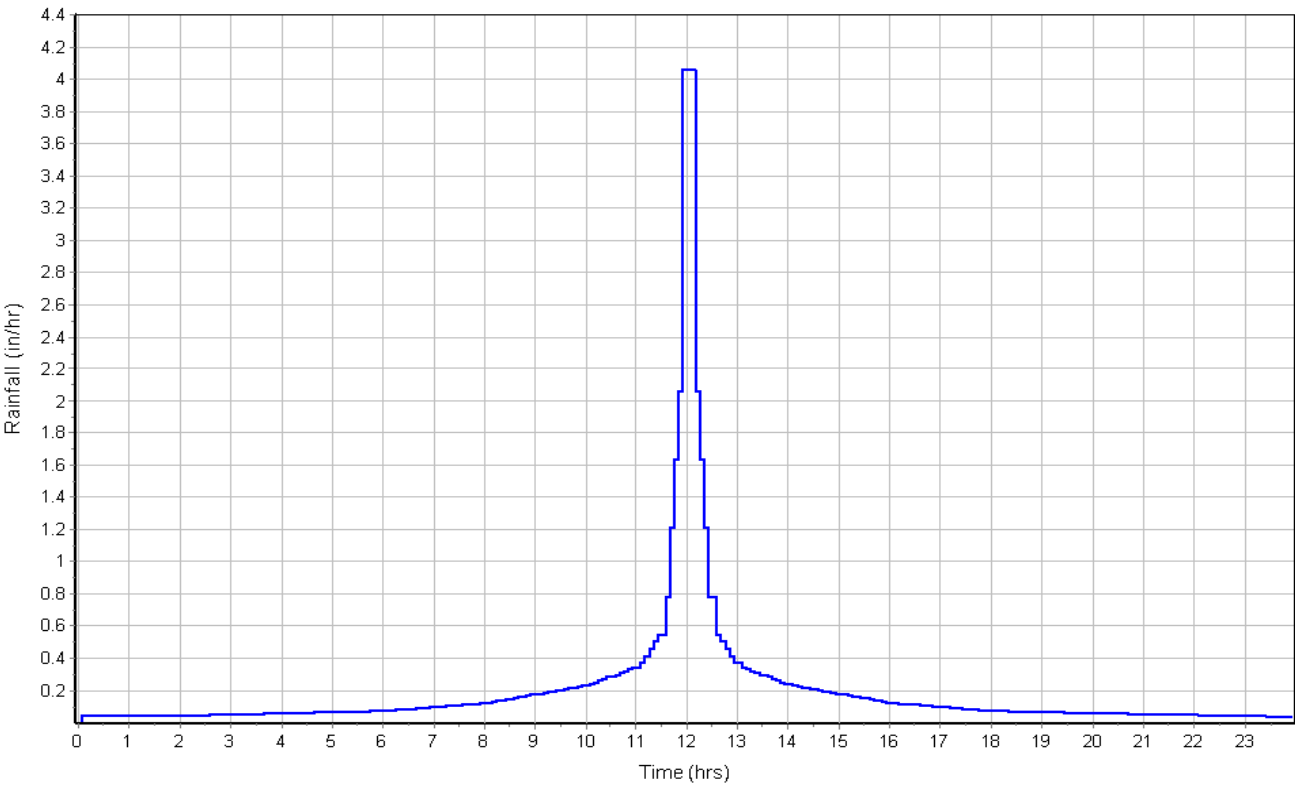
Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.01	B	98.00
Gravel roads	0.03	B	85.00
> 75% grass cover, Good	0.00	B	61.00
Woods, Good	0.13	B	55.00
Composite Area & Weighted CN	0.17		63.71

Subbasin Runoff Results

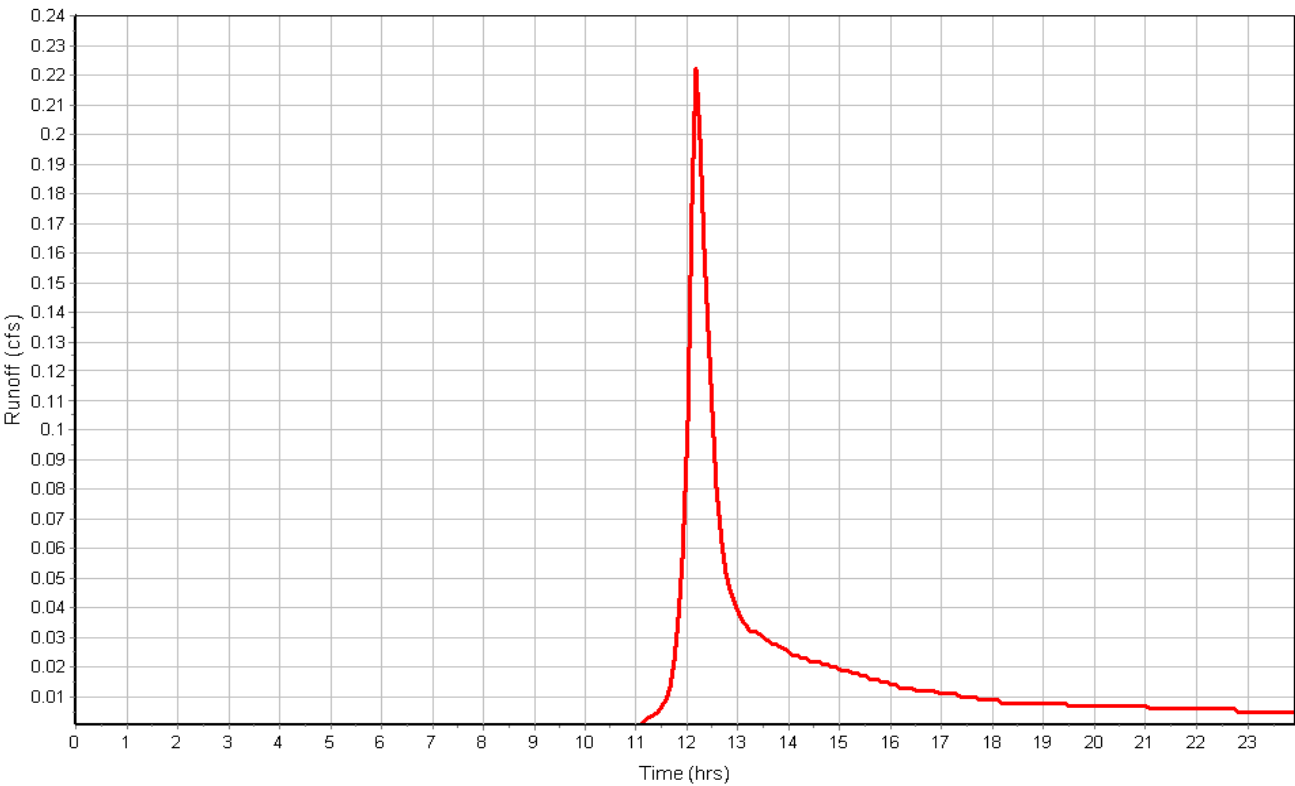
Total Rainfall (in) 4.83
Total Runoff (in) 1.45
Peak Runoff (cfs) 0.22
Weighted Curve Number 63.71
Time of Concentration (days hh:mm:ss) 0 00:12:36

Subbasin : PDA-1C

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin Summary

SN	Subbasin ID	Area	Weighted Curve Number	Total Rainfall	Total Runoff	Total Runoff Volume	Peak Runoff	Time of Concentration
		(ac)		(in)	(in)	(ac-in)	(cfs)	(days hh:mm:ss)
1	Existing	1.51	56.84	6.09	1.72	2.59	2.18	0 00:12:54
2	PDA-1A	0.17	85.00	6.09	4.39	0.75	0.76	0 00:05:00
3	PDA-1B	1.16	60.01	6.09	1.98	2.30	1.99	0 00:12:54
4	PDA-1C	0.18	63.71	6.09	2.30	0.41	0.37	0 00:12:36

Node Summary

SN	Element ID	Element Type	Invert Elevation	Ground/Rim (Max) Elevation	Initial Water Elevation	Surcharge Elevation	Ponded Area	Peak Inflow	Max HGL Elevation Attained	Max Surcharge Depth Attained	Min Freeboard Attained	Time of Peak Flooding Occurrence	Total Flooded Volume	Total Time Flooded
			(ft)	(ft)	(ft)	(ft)	(ft²)	(cfs)	(ft)	(ft)	(ft)	(days hh:mm)	(ac-in)	(min)
1	DI-A-2	Junction	259.75	267.25	259.75	267.25	10.00	2.51	264.50	0.00	2.75	0 00:00	0.00	0.00
2	DI-A-3	Junction	264.25	267.50	264.25	267.50	10.00	1.98	264.75	0.00	2.75	0 00:00	0.00	0.00
3	EXIST-OUT	Outfall	249.00					2.16	249.00					
4	PROP-OUT	Outfall	249.00					2.87	249.26					

Link Summary

SN Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Invert Elevation	Outlet Invert Elevation	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 Condition (min)
1 Pipe - (147)	Pipe	DI-A-3	DI-A-2	34.68	264.25	264.00	0.7200	15.000	0.0120	1.97	5.94	0.33	4.35	0.50	0.40	0.00 Calculated
2 Pipe - (148)	Pipe	DI-A-2	PROP-OUT	76.22	259.75	249.00	14.1000	15.000	0.0120	2.50	26.28	0.10	13.51	0.26	0.21	0.00 Calculated

Subbasin Hydrology

Subbasin : Existing

Input Data

Area (ac) 1.51
Weighted Curve Number 56.84
Rain Gage ID 25-year storm

Composite Curve Number

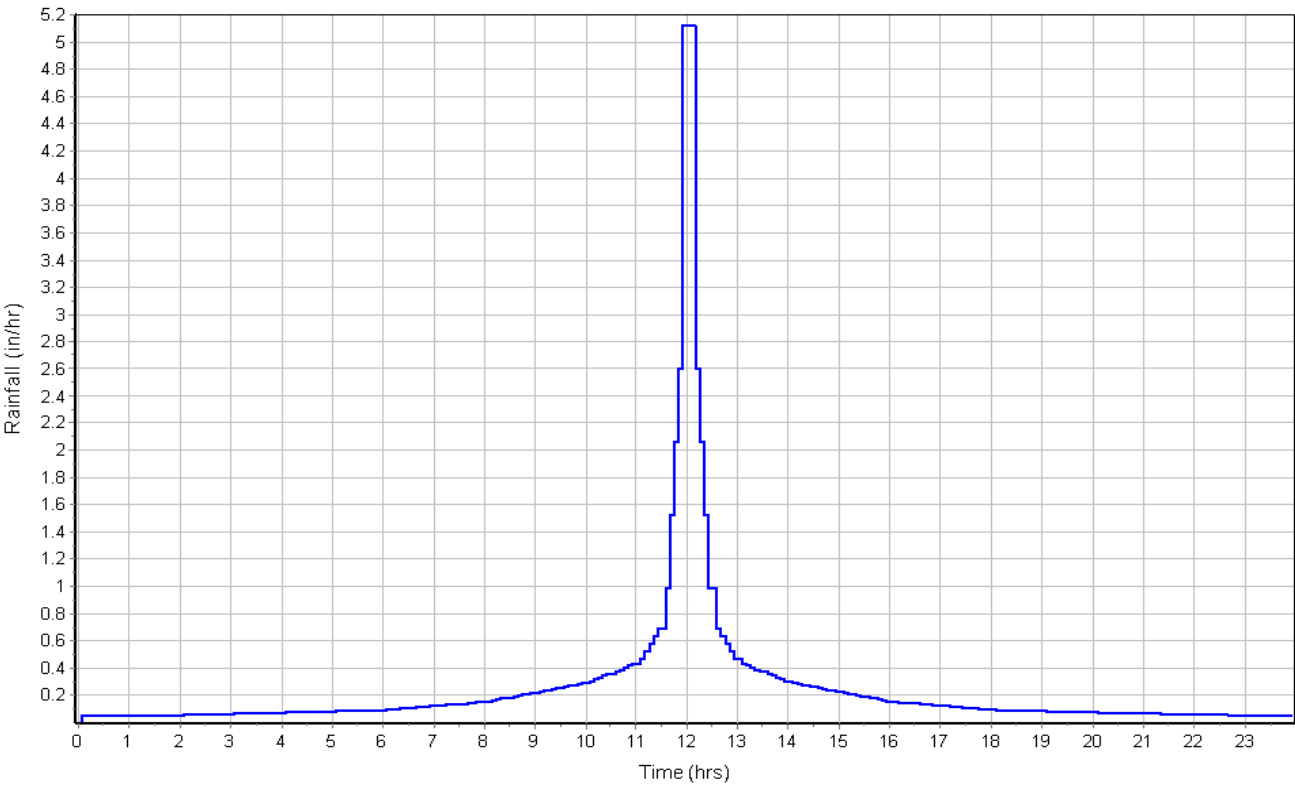
Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Gravel roads	0.02	B	85.00
Woods, Good	1.44	B	55.00
Paved roads with curbs & sewers	0.05	B	98.00
Composite Area & Weighted CN	1.51		56.84

Subbasin Runoff Results

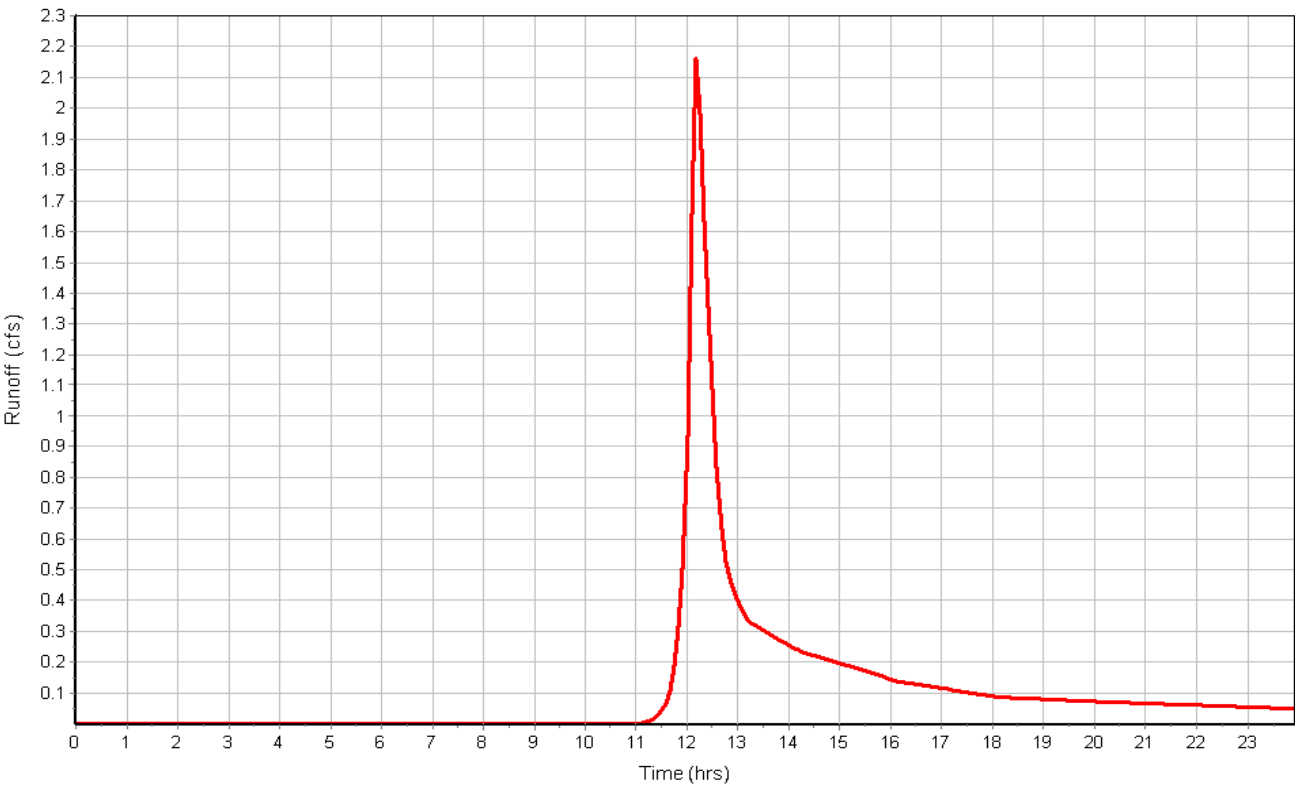
Total Rainfall (in) 6.09
Total Runoff (in) 1.72
Peak Runoff (cfs) 2.18
Weighted Curve Number 56.84
Time of Concentration (days hh:mm:ss) 0 00:12:54

Subbasin : Existing

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PDA-1A

Input Data

Area (ac) 0.17
Weighted Curve Number 85.00
Rain Gage ID 25-year storm

Composite Curve Number

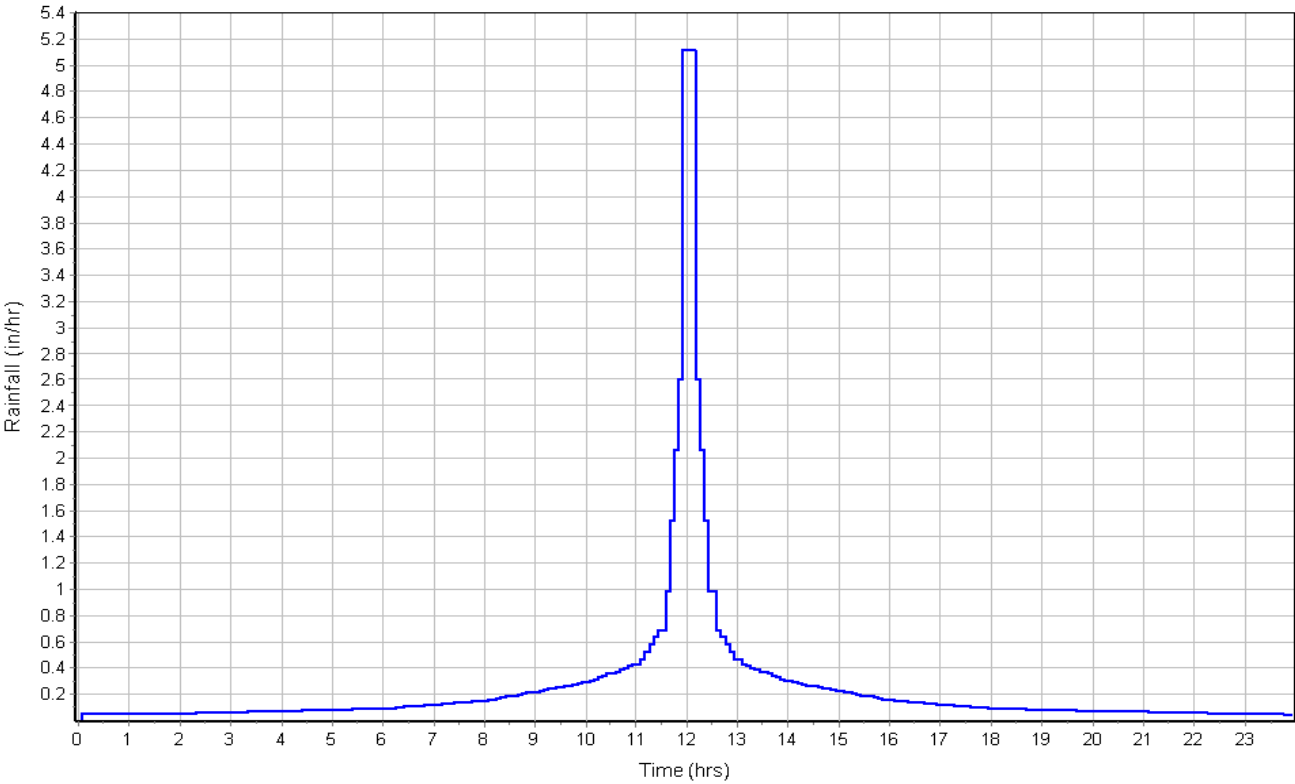
Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Gravel roads	0.17	B	85.00
Composite Area & Weighted CN	0.17		85.00

Subbasin Runoff Results

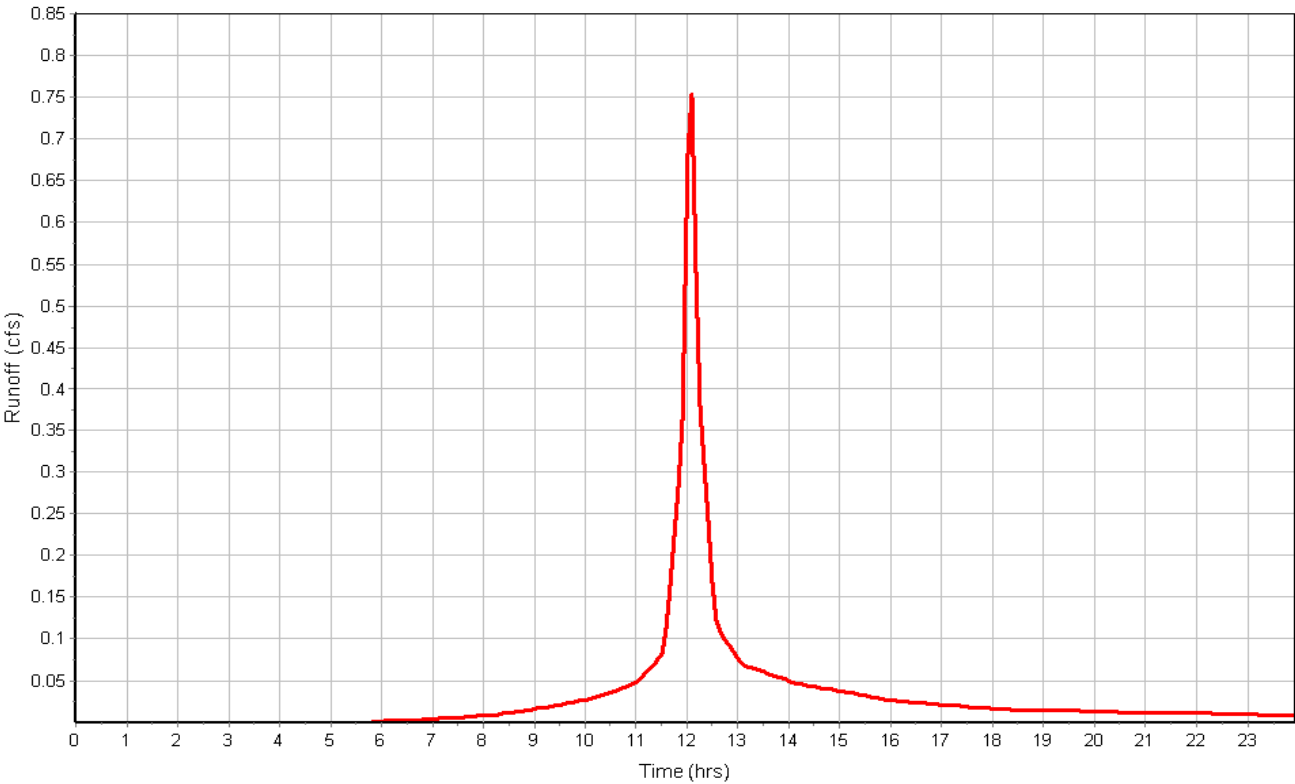
Total Rainfall (in) 6.09
Total Runoff (in) 4.39
Peak Runoff (cfs) 0.76
Weighted Curve Number 85.00
Time of Concentration (days hh:mm:ss) 0 00:05:00

Subbasin : PDA-1A

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PDA-1B

Input Data

Area (ac) 1.16
Weighted Curve Number 60.01
Rain Gage ID 25-year storm

Composite Curve Number

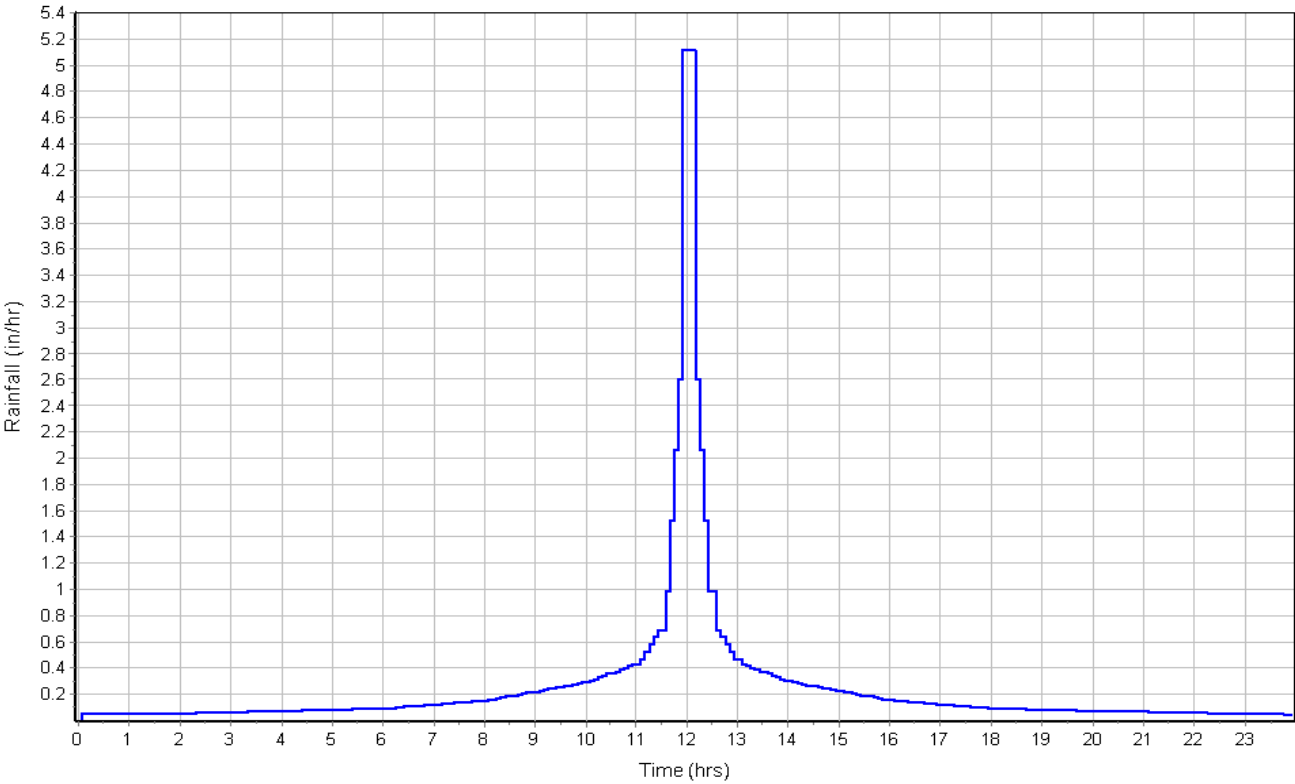
Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.04	B	98.00
Gravel roads	0.12	B	85.00
> 75% grass cover, Good	0.07	B	61.00
Woods, Good	0.92	B	55.00
Composite Area & Weighted CN	1.15		60.01

Subbasin Runoff Results

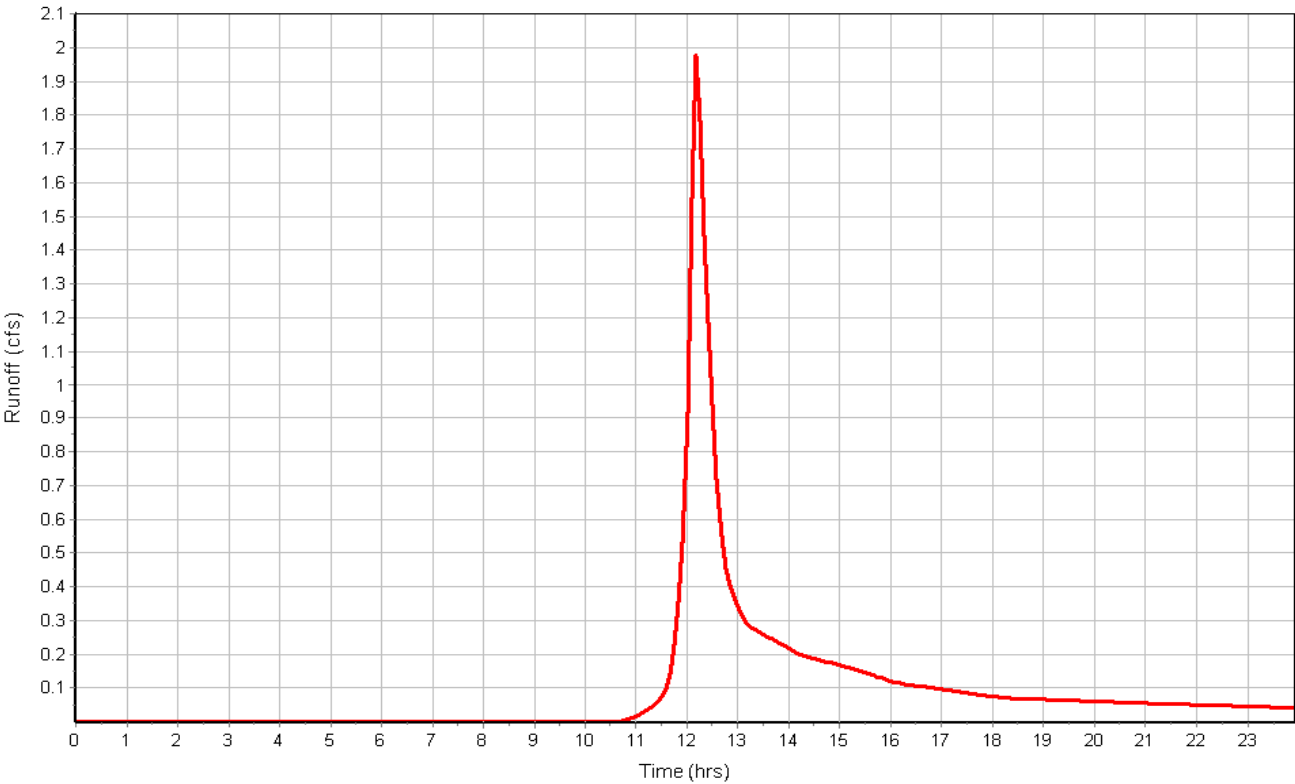
Total Rainfall (in) 6.09
Total Runoff (in) 1.98
Peak Runoff (cfs) 1.99
Weighted Curve Number 60.01
Time of Concentration (days hh:mm:ss) 0 00:12:54

Subbasin : PDA-1B

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PDA-1C

Input Data

Area (ac) 0.18
Weighted Curve Number 63.71
Rain Gage ID 25-year storm

Composite Curve Number

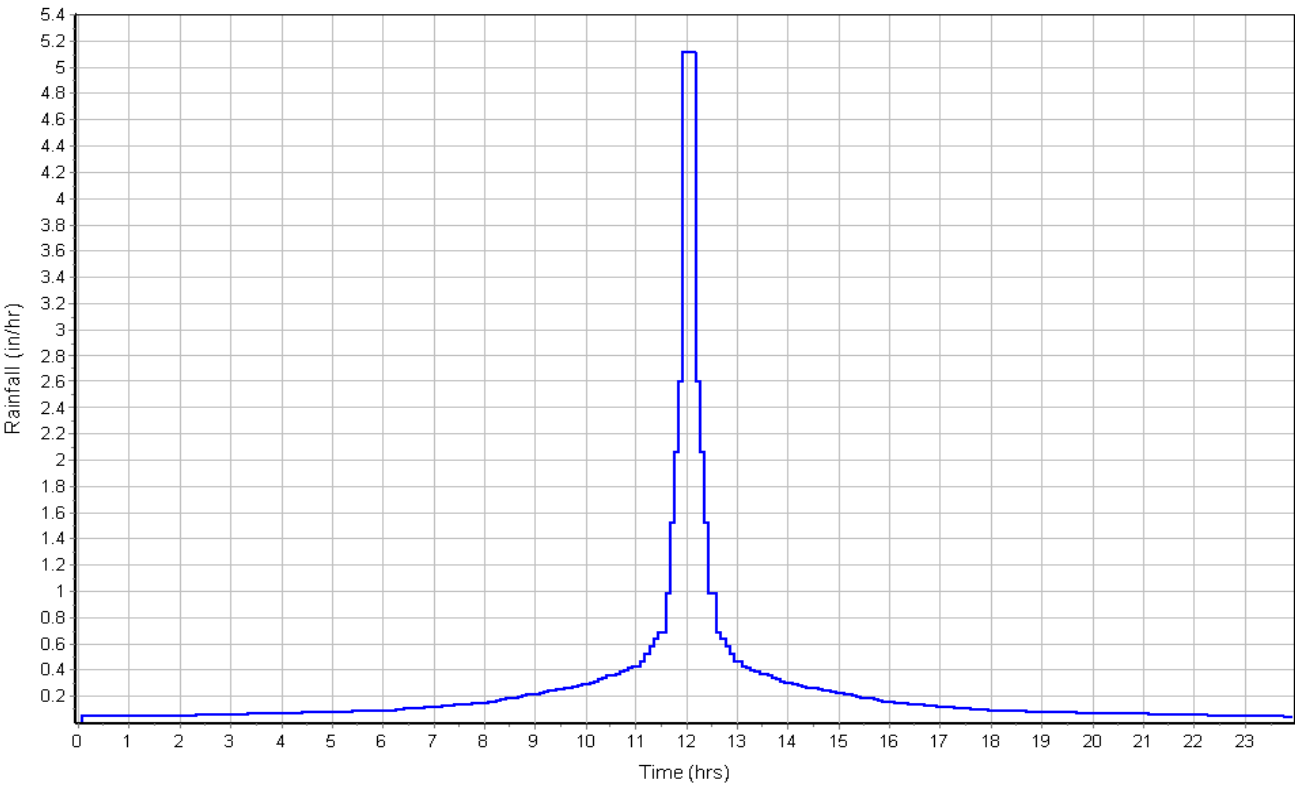
Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.01	B	98.00
Gravel roads	0.03	B	85.00
> 75% grass cover, Good	0.00	B	61.00
Woods, Good	0.13	B	55.00
Composite Area & Weighted CN	0.17		63.71

Subbasin Runoff Results

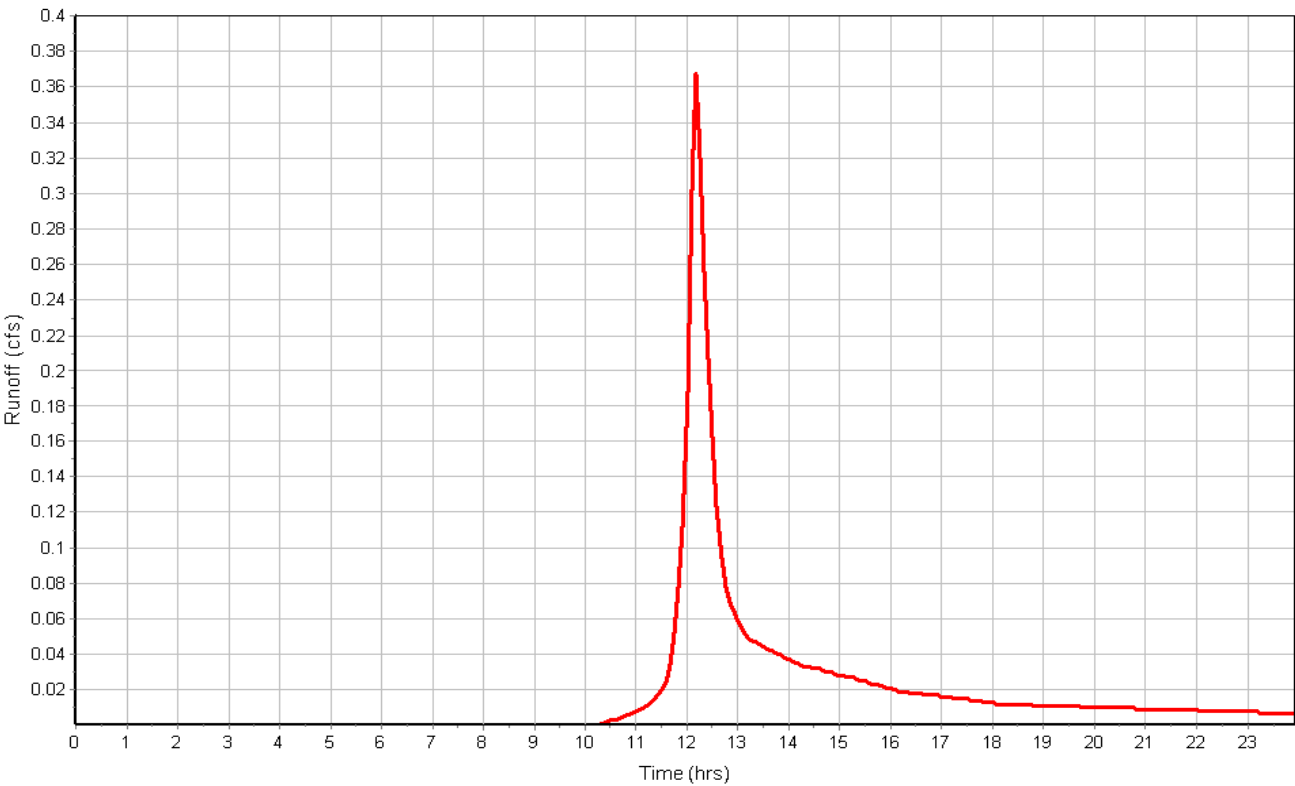
Total Rainfall (in) 6.09
Total Runoff (in) 2.30
Peak Runoff (cfs) 0.37
Weighted Curve Number 63.71
Time of Concentration (days hh:mm:ss) 0 00:12:36

Subbasin : PDA-1C

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin Summary

SN	Subbasin ID	Area	Weighted Curve Number	Total Rainfall	Total Runoff	Total Runoff Volume	Peak Runoff	Time of Concentration
		(ac)		(in)	(in)	(ac-in)	(cfs)	(days hh:mm:ss)
1	Existing	1.51	56.84	8.65	3.45	5.22	4.65	0 00:12:54
2	PDA-1A	0.17	85.00	8.65	6.84	1.16	1.15	0 00:05:00
3	PDA-1B	1.16	60.01	8.65	3.83	4.44	3.99	0 00:12:54
4	PDA-1C	0.18	63.71	8.65	4.27	0.77	0.70	0 00:12:36

Node Summary

SN	Element ID	Element Type	Invert Elevation	Ground/Rim (Max) Elevation	Initial Water Elevation	Surcharge Elevation	Ponded Area	Peak Inflow	Max HGL Elevation Attained	Max Surcharge Depth Attained	Min Freeboard Attained	Time of Peak Flooding Occurrence	Total Flooded Volume	Total Time Flooded
			(ft)	(ft)	(ft)	(ft)	(ft²)	(cfs)	(ft)	(ft)	(ft)	(days hh:mm)	(ac-in)	(min)
1	DI-A-2	Junction	259.75	267.25	259.75	267.25	10.00	4.79	264.75	0.00	2.50	0 00:00	0.00	0.00
2	DI-A-3	Junction	264.25	267.50	264.25	267.50	10.00	3.99	265.00	0.00	2.50	0 00:00	0.00	0.00
3	EXIST-OUT	Outfall	249.00					4.64	249.00					
4	PROP-OUT	Outfall	249.00					5.50	249.36					

Link Summary

SN Element ID	Element Type	From Element (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Elevation	Outlet Invert Slope	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 Condition (min)
1 Pipe - (147)	Pipe	DI-A-3	DI-A-2	34.68	264.25	264.00	0.7200	15.000	0.0120	3.97	5.94	0.67	5.19	0.75	0.60	0.00 Calculated
2 Pipe - (148)	Pipe	DI-A-2	PROP-OUT	76.22	259.75	249.00	14.1000	15.000	0.0120	4.80	26.28	0.18	16.26	0.36	0.29	0.00 Calculated

Subbasin Hydrology

Subbasin : Existing

Input Data

Area (ac) 1.51
Weighted Curve Number 56.84
Rain Gage ID 100-year storm

Composite Curve Number

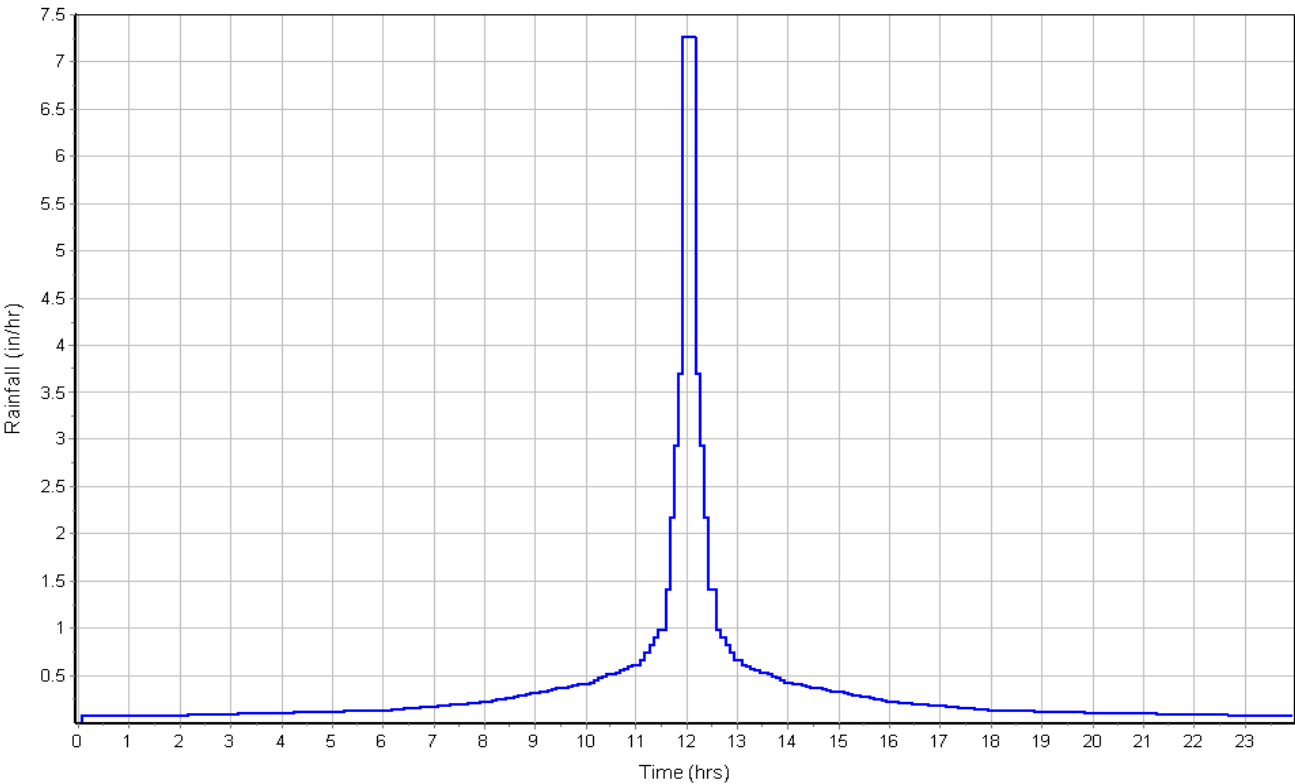
Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Gravel roads	0.02	B	85.00
Woods, Good	1.44	B	55.00
Paved roads with curbs & sewers	0.05	B	98.00
Composite Area & Weighted CN	1.51		56.84

Subbasin Runoff Results

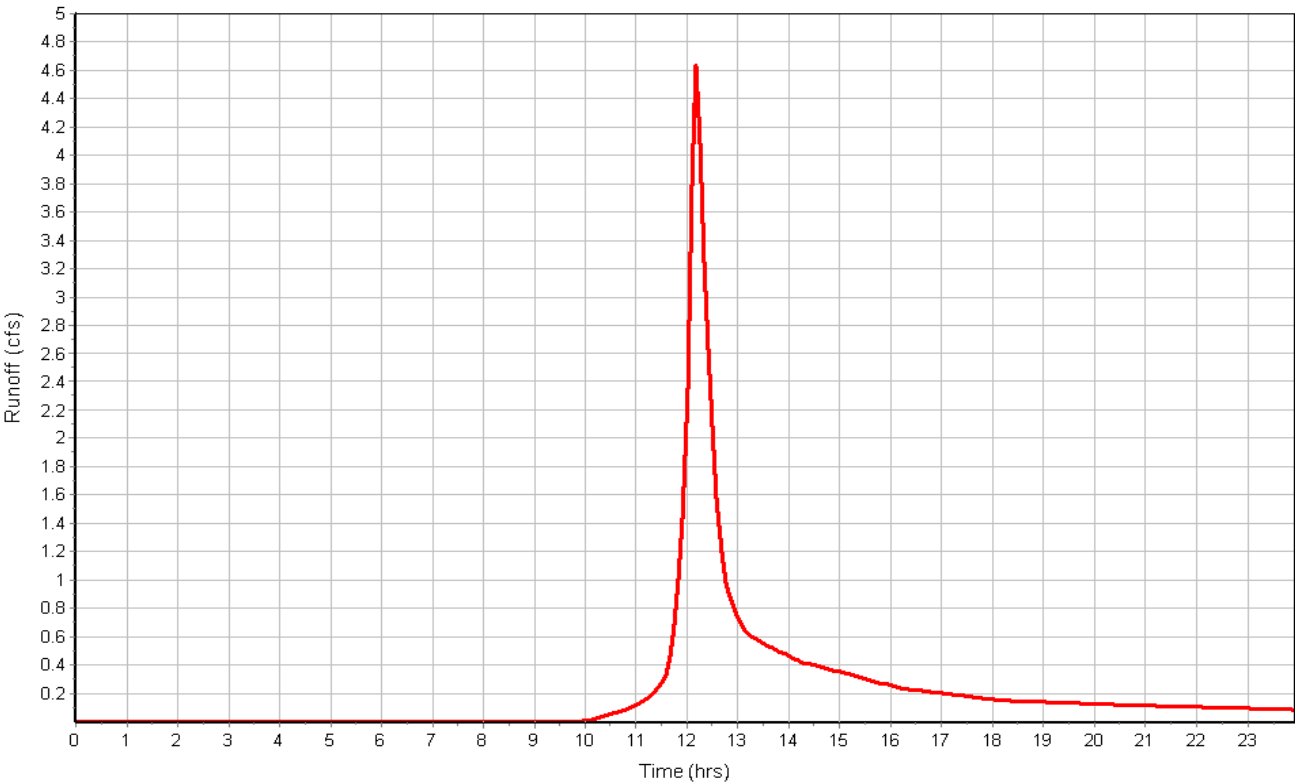
Total Rainfall (in) 8.65
Total Runoff (in) 3.45
Peak Runoff (cfs) 4.65
Weighted Curve Number 56.84
Time of Concentration (days hh:mm:ss) 0 00:12:54

Subbasin : Existing

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PDA-1A

Input Data

Area (ac) 0.17
Weighted Curve Number 85.00
Rain Gage ID 100-year storm

Composite Curve Number

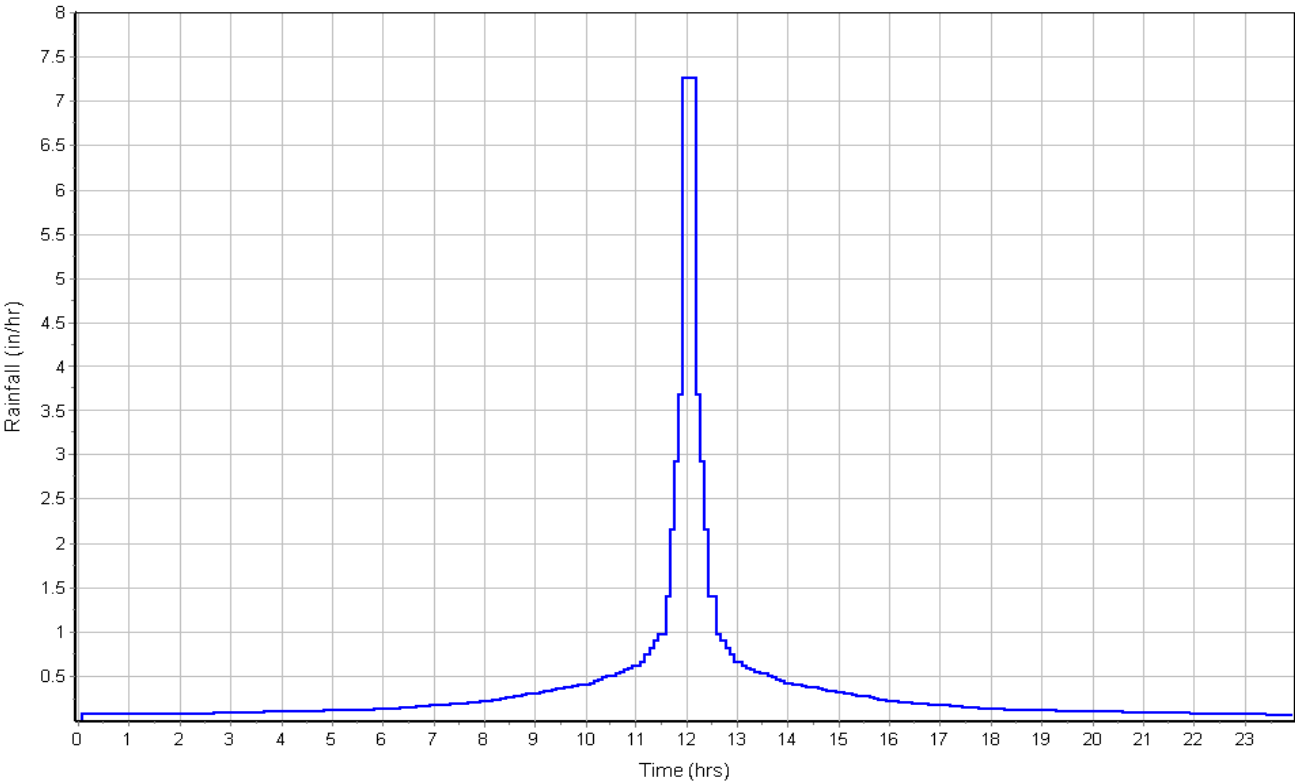
Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Gravel roads	0.17	B	85.00
Composite Area & Weighted CN	0.17		85.00

Subbasin Runoff Results

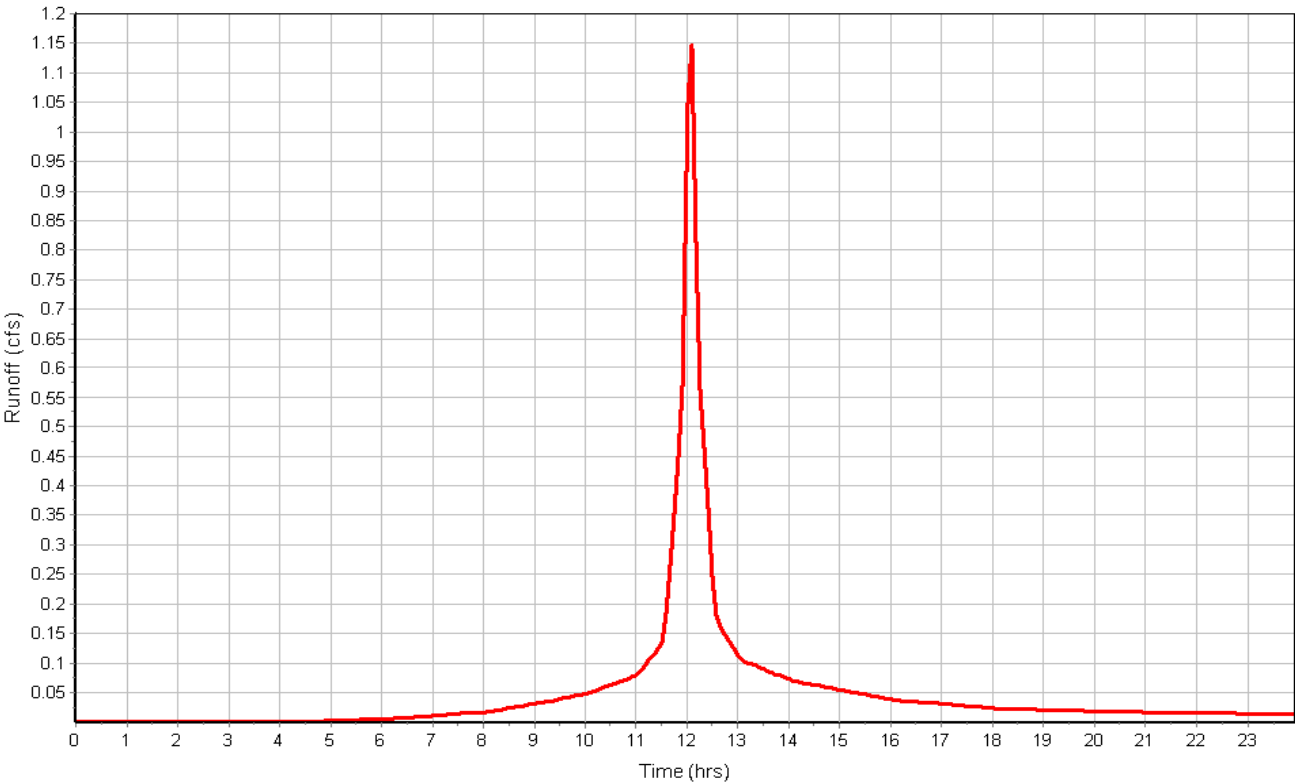
Total Rainfall (in) 8.65
Total Runoff (in) 6.84
Peak Runoff (cfs) 1.15
Weighted Curve Number 85.00
Time of Concentration (days hh:mm:ss) 0 00:05:00

Subbasin : PDA-1A

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PDA-1B

Input Data

Area (ac) 1.16
Weighted Curve Number 60.01
Rain Gage ID 100-year storm

Composite Curve Number

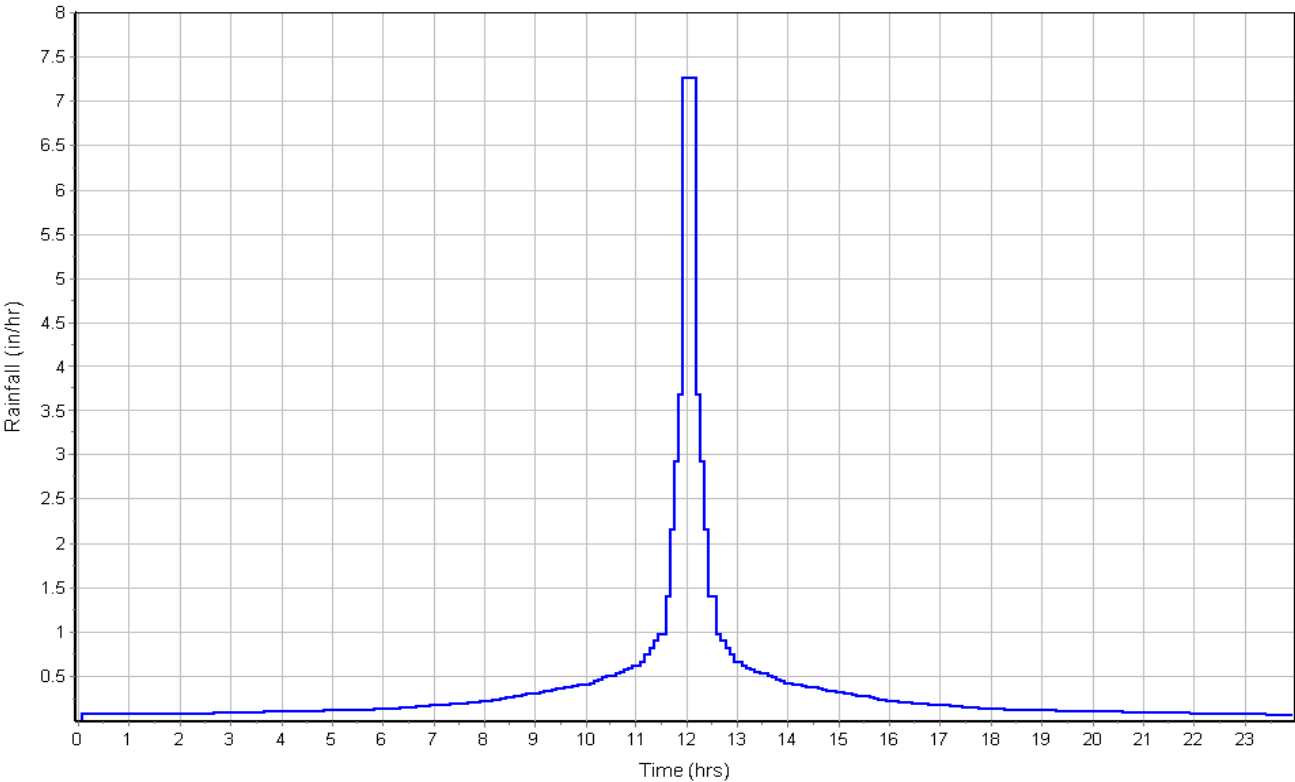
Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.04	B	98.00
Gravel roads	0.12	B	85.00
> 75% grass cover, Good	0.07	B	61.00
Woods, Good	0.92	B	55.00
Composite Area & Weighted CN	1.15		60.01

Subbasin Runoff Results

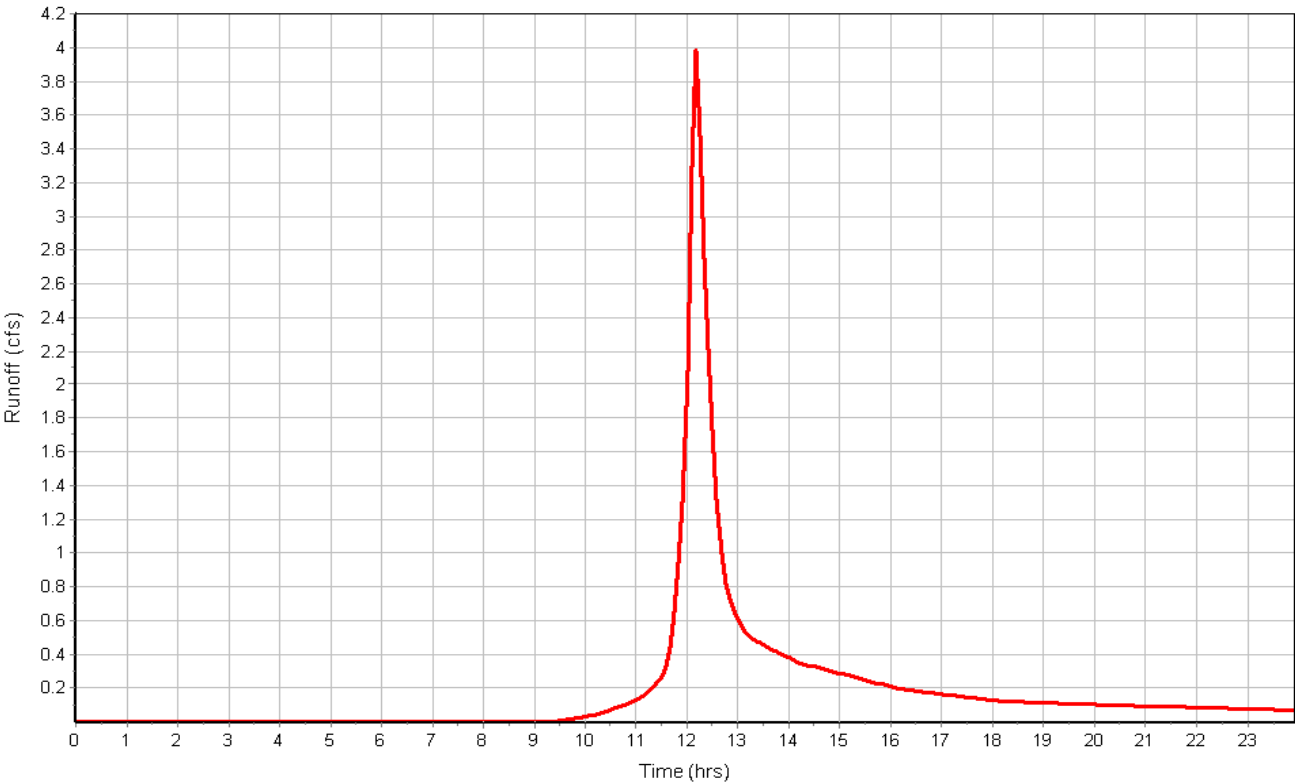
Total Rainfall (in) 8.65
Total Runoff (in) 3.83
Peak Runoff (cfs) 3.99
Weighted Curve Number 60.01
Time of Concentration (days hh:mm:ss) 0 00:12:54

Subbasin : PDA-1B

Rainfall Intensity Graph



Runoff Hydrograph



Subbasin : PDA-1C

Input Data

Area (ac) 0.18
Weighted Curve Number 63.71
Rain Gage ID 100-year storm

Composite Curve Number

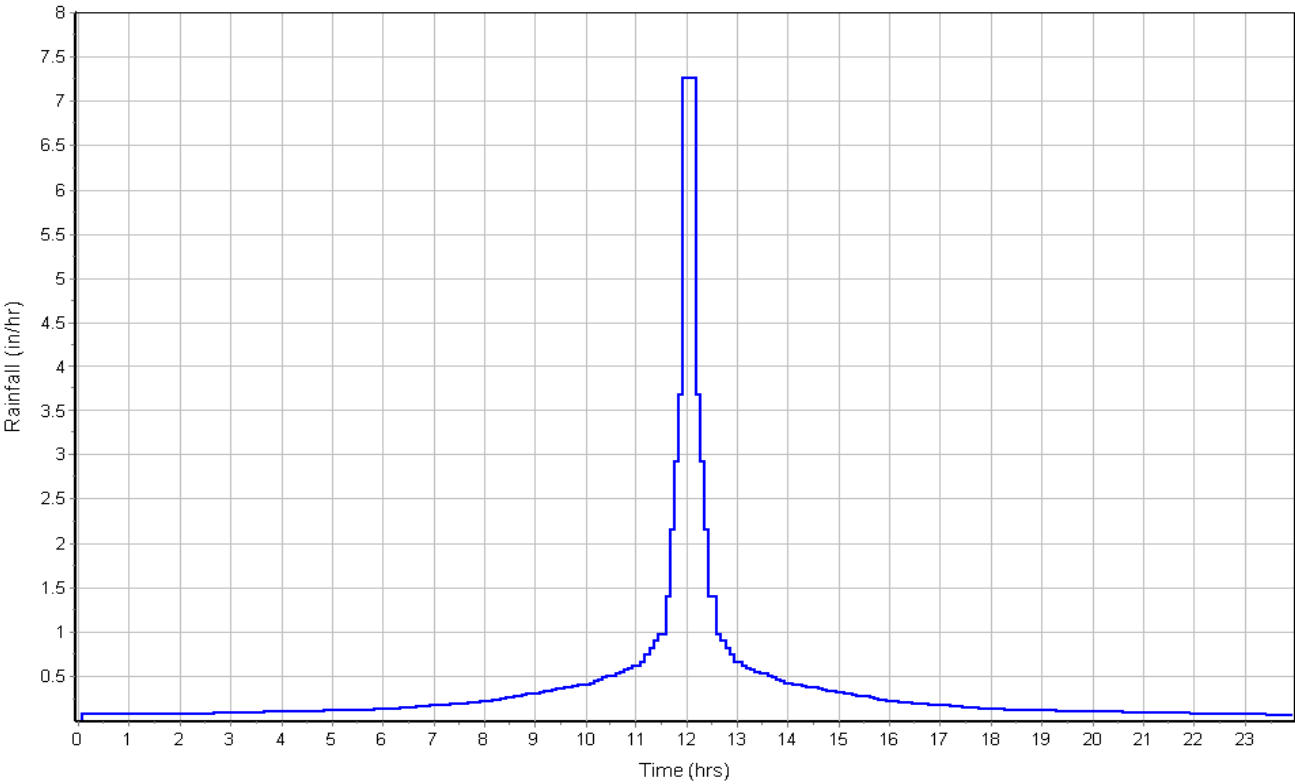
Soil/Surface Description	Area (acres)	Soil Group	Curve Number
Paved parking & roofs	0.01	B	98.00
Gravel roads	0.03	B	85.00
> 75% grass cover, Good	0.00	B	61.00
Woods, Good	0.13	B	55.00
Composite Area & Weighted CN	0.17		63.71

Subbasin Runoff Results

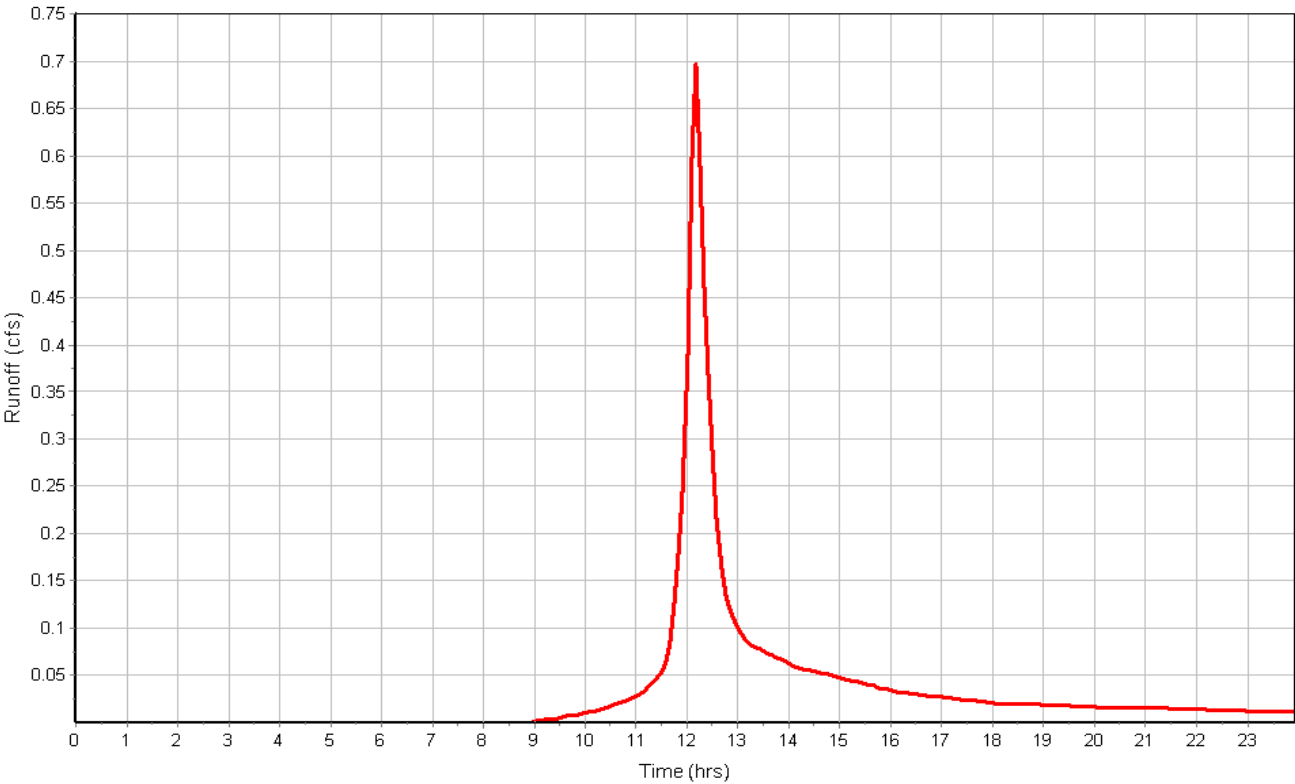
Total Rainfall (in) 8.65
Total Runoff (in) 4.27
Peak Runoff (cfs) 0.70
Weighted Curve Number 63.71
Time of Concentration (days hh:mm:ss) 0 00:12:36

Subbasin : PDA-1C

Rainfall Intensity Graph



Runoff Hydrograph



APPENDIX C

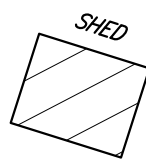
DRAWINGS

NOT FOR CONSTRUCTION

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FORMERLY O'NEIL
SEE MAP ENTITLED "SUBDIVISION PLAT OF THE
MOFFATT ROAD PROPERTY PREPARED FOR
MICHAEL & PATRICIA QUINN," FILED IN THE
PUTNAM COUNTY CLERK'S OFFICE ON
OCTOBER 7, 1985 AS MAP NO. 2085.



PDA-1B
1.16 AC.

PDA-1C
0.18 AC.

PDA-1A
0.17 AC.

PROPOSED DRAINAGE AREA MAP LEGEND

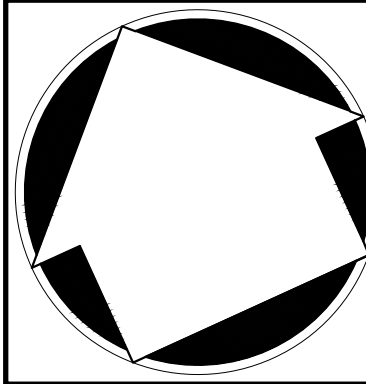
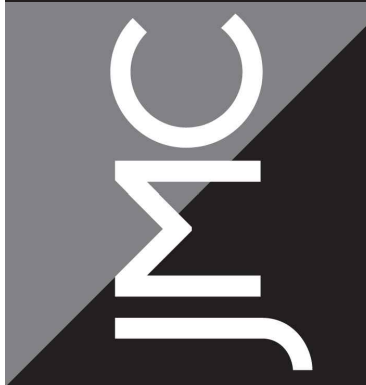
	EXISTING CONTOUR
	EXISTING INDEX CONTOUR
	EXISTING CONTOUR FROM COUNTY GIS
	EXISTING INDEX CONTOUR FROM COUNTY GIS
	PROPOSED DRAINAGE DIVIDE
	LIMIT OF SOIL GROUPS LINE
	FLOW PATH LINE
	SOIL DESIGNATION AND HYDROLOGIC SOIL GROUP

SOIL TYPE TABLE

DESIGNATION	HYDROLOGIC GROUP	DESCRIPTION
CtC	B	CHATFIELD-HOLLIS-ROCK OUTCROP COMPLEX, 0 TO 15 PERCENT SLOPES
CsD	B	CHATFIELD-CHARLTON COMPLEX, 15 TO 35 PERCENT SLOPES, VERY ROCKY

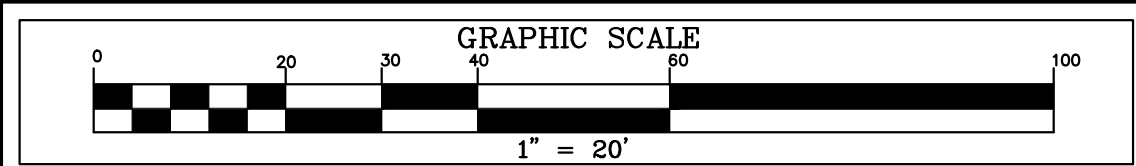
APPENDIX

JMC Planning, Engineering, Landscape
Architecture & Land Surveying, PLLC
JMC Site Development Consultants, LLC
Join Meyer Consulting, Inc.
120 BEDFORD ROAD - ARMONK, NY 10504
voice 914.273.6225 • fax 914.273.2102
www.jmcpllc.com



**PROPOSED DRAINAGE
AREA MAP**
HOMELAND TOWERS
NELSONVILLE (NY170)
15 ROCKLEDGE ROAD
VILLAGE OF NELSONVILLE, NY

ANY ALTERATION OF PLANS,
SPECIFICATIONS, PLATS AND
REPORTS BEARING THE SEAL
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SECTION 7209 OF THE NEW
YORK STATE EDUCATION LAW,
EXCEPT AS PROVIDED FOR BY
SECTION 7209, SUBSECTION 2.



SITE NAME: NELSONVILLE
SITE NUMBER: NY170
TAX PARCEL: 49.6-1-7

NO.	REVISION	DATE	BY

Previous Editions Obsolete

DRAWN	PD	APPROVED	JS
SCALE:	1" = 20'		
DATE:	12/19/2017		
PROJECT NO:	16237		
DWG:	16237-DRAINAGE	PDA	PDA
DRAWING NO:	DA-2		