Stormwater Management Report

SOLAR PANEL FACILITY
Becton, Dickinson, & Co.
North Canaan, Connecticut

7 Grace Way
North Canaan, Connecticut

Prepared for Submission to:
The Connecticut Siting Council

Submission Date: February 2016
Revision Date: April 2016
June 2016

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Existing Site Conditions

General Site Information

SolarCity is proposing to develop a new Solar Panel Facility on property owned by Becton, Dickinson, & CO. at 7 Grace Way in North Canaan, Connecticut (see Appendix A). The existing 77.13± acre site consists of a 361,340± S.F. manufacturing facility with associated parking areas. The remainder of the site consists of wooded and wetland areas. The zoning designation of the lot is I-Zone (Industrial Zone). The existing lot abuts a warehouse facility to the north, South Canaan Street (Route 7) to the east, a CTDOT owned railroad to the west, and a private sportsman club to the south. An electrical transmission line right of way is located to the south of the property. The subject site is located within Zone X and Zone A designated flood rate area (see Appendix B).

The proposed site consists of two development areas, one in the southwest corner of the property and the other is in the southeast corner of the property. The southwestern development area is approximately 8.07± acres and the southeastern development area is approximately 1.30± acres. Both areas are currently woodland areas. A third Solar Panel Array is proposed on the roof of the existing building, however this area will have no effect on the stormwater management of the site, is being designed by others, and is omitted from this report.

There are multiple existing wetland systems located throughout the site. There is a large wetland system located to the west and north of the southwestern development area, an off-site existing pond located between the two development areas, and a wetland system located to the east the southeastern development area.

Existing Soils

The two site development areas are underlain by two soil types: Deerfield Loamy fine sand, 0-3 percent slopes; and Hinckley loamy sand, 0-3 percent slopes. Both soils are classified as Hydrological Soil Group A (HSG ”A”). See the NRCS Soil Survey located in Appendix C.

Existing Drainage

The site is broken up into 4 drainage areas. The southwestern development area consists of Existing Drainage Area #1 (EDA-1), Existing Drainage Area (EDA-2), and Existing Drainage Area #3 (EDA-3). The southeastern development area consists of Existing Drainage Area #4 (EDA-4). EDA-1 consists of woodland area and drains overland to the existing wetland area to the west of the site. EDA-2 consists of woodland area which drains to the south. EDA-3 consists of woodland, grass, and dirt and paved parking areas. EDA- 3 drains overland to an existing grass swale and discharges to the north through a 27”x40” elliptical RCP into an existing wetland system. EDA-4 consists of woodland, grass, dirt and paved parking areas and drains overland towards the southeastern property line.

A small portion of the western edge of the property (1.34± acres) resides within a FEMA Flood Zone A, per Flood Insurance Rate Map, # 0901490014C, Panel 14, however the proposed development area does not reside within a FEMA Flood Zone. (See Appendix B).

The four existing drainage areas drain to four separate points of analysis. These four points of analysis are identified in the computations as AP-1 through AP-4. See Appendix D for the Existing Drainage Area Map (EDA-1) and the existing hydrology computations.

Proposed Site Conditions

General Development Information
The proposed development includes the installation of 7,160 ground mounted solar panels with associated equipment and gravel access drives, 6,404 solar panels in the southwestern portion of the property, and 756 solar panels in the southeastern portion of the site. Both areas to be developed are currently woodland areas and are proposed to be cleared to accommodate the solar panel arrays. All cleared areas will be loamed, seeded, and mulched. A proposed chain link fence is proposed around the perimeter of each solar panel array. A 12' wide gravel access drive is proposed to each concrete equipment pad. Access to each solar panel site is from the existing dirt and paved parking area located just south of the existing building.

Proposed Drainage
The proposed development activities have been designed to mimic the existing drainage patterns and to reduce pre-development peak discharge rates. To offset the increase in peak discharge rates associated with clearing of the existing wooded areas, infiltration basins are proposed at each drainage area. The intent of the basins are to capture and infiltrate the runoff. The proposed drainage areas will discharge to the four points of analysis as they do in existing conditions. See Appendix E for the Proposed Drainage Area Map (PDA-1) and hydrologic computations.

The proposed development activity splits EDA-1 into 2 sub-drainage areas, PDA-1A and PDA-1B. PDA-1A is the undeveloped wooded area which will remain undisturbed. PDA-1B consists of the southwestern development area with the proposed solar panels and associated equipment. PDA-1B drains to a 5' wide by 1' deep grass lined infiltration basin which runs along the western and southern perimeter of the proposed development.

The proposed development activity splits EDA-2 into 2 sub-drainage areas, PDA-2A and PDA-2B. PDA-2A includes a portion of the southwestern development area and the undeveloped wooded area which will remain undisturbed. PDA-2B consists of a portion of the proposed southwestern development area and drains to a 5' wide by 1' deep grass lined infiltration basin which runs along the eastern and southern perimeter of the proposed southwestern development area.

PDA-3 consists of the area that connects the two proposed development areas. A portion of this drainage area resides within the southwestern development area. The proposed development area drains overland to a proposed infiltration basin located in the area of an existing grass swale. The basin will primarily discharge via an existing 27”x40” elliptical concrete pipe.

EDA-4 has been renamed PDA-4 for the proposed conditions. PDA-4 consists of existing undisturbed upland area and the proposed southeastern development area. PDA-4 drains to an infiltration basin located in the southwest corner of the drainage area.

The four proposed drainage areas drain to the same four points of analysis discussed previously (AP-1 – AP-4). See Appendix E for the Proposed Drainage Area Map (PDA-1).

Stormwater Management

With the exception of PDA-3, each of the infiltration basins have been designed to allow for infiltration of runoff as the primary source of discharge. Utilizing the proposed Best Management Practices (BMPs) for infiltration purposes allows for reductions in both peak flow rates and volume at each analysis point for all major storm events analyzed.

Peak runoff rates and runoff volumes have been computed using the HydroCAD computer program by HydroCAD Software Solutions, LLC. This program uses TR-55 and TR-20 methodology to compute stormwater runoff. Rainfall data utilized in the modeling and analysis was taken from the 2004 Connecticut Stormwater Quality Manual. See Appendix E for the Proposed Drainage Area Map (PDA-1) and the proposed hydrology computations.

The NRCS soil survey indicates that the site is underlain soils classified as HSG “A”. An infiltration rate of 3 in/hr was used in the calculations based on prior experience with similar soils to those located within the project area.

The following tables outline the existing and proposed peak flow rates at each analysis point for all major storm events:

Storm Event	AP-1			AP-2		
	Peak Rate (CFS)		Change (CFS)	Peak Rate (CFS)		Change (CFS)
	Existing	Proposed		Existing	Proposed	
2-Year	0.00	0.00	0.00	0.00	0.00	0.00
10-Year	0.13	0.12	-0.01	0.06	0.05	-0.01
25-Year	0.37	0.31	-0.06	0.16	0.13	-0.03
50-Year	0.74	0.65	-0.09	0.32	0.26	-0.06
100-Year	1.41	1.22	-0.19	0.62	0.49	-0.13

Storm Event	AP-3			AP-4		
	Peak Rate (CFS)		Change (CFS)	Peak Rate (CFS)		Change (CFS)
	Existing	Proposed		Existing	Proposed	
2-Year	1.53	1.05	-0.48	0.04	0.00	-0.04
10-Year	4.59	4.50	-0.09	0.52	0.00	-0.52
25-Year	6.54	6.50	-0.04	1.01	0.00	-1.01
50-Year	8.37	8.33	-0.04	1.54	0.00	-1.54
100-Year	10.56	10.51	-0.05	2.23	0.00	-2.23

As shown above, the proposed stormwater BMPs will match or reduce peak runoff rates at all points of analysis.

Water Quality

The 2004 Connecticut Stormwater Quality Manual recommends treating the Water Quality Volume (WQv) or Water Quality Flow (WQF) associated with the runoff from paved surfaces and other surfaces likely to transport sediment and other materials. The WQv is defined as the volume of runoff generated by the initial inch of rain during storm events, while the WQF is the peak flow associated with the water quality volume.

As noted above, the proposed method of treatment for the WQv is the implementation of infiltration basins to remove the sediments from the runoff while allowing for groundwater infiltration. The proposed infiltration basins have been designed to treat over three times the required WQv for the site and allow the majority of the runoff to infiltrate into the ground and filter out sediments. See Appendix F for the WQv calculations.

Conclusion

As shown herein, the proposed SolarCity solar field development has been designed per the 2004 Connecticut Water Quality Manual requirements. The proposed infiltration basins will reduce peak runoff flow rates for all major storm events and also treat the runoff. As a result, the proposed development will not have any adverse conditions to the surrounding areas and properties.

APPENDIX A

USGS Quadrangle Map

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APT FILING NUMBER: CT-478-120	
USGS QUADRANGLE MAP	
SCALE: AS NOTED	DRAWN BY: CSH
DATE: 06/10/16	CHECKED BY: BJP

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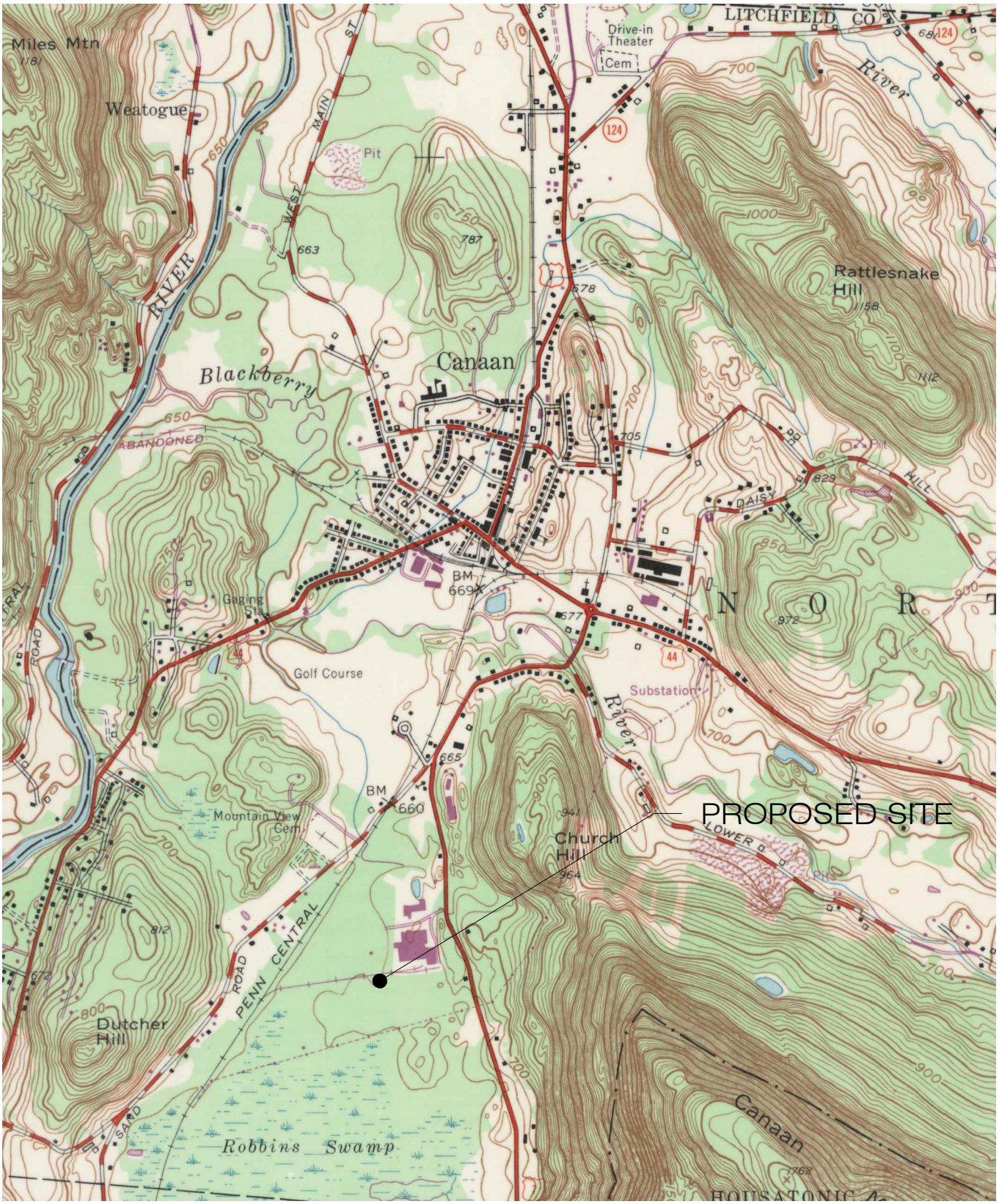
PROPOSED SOLAR PANEL FACILITY

7 GRACE WAY
NORTH CANAAN, CT 06018



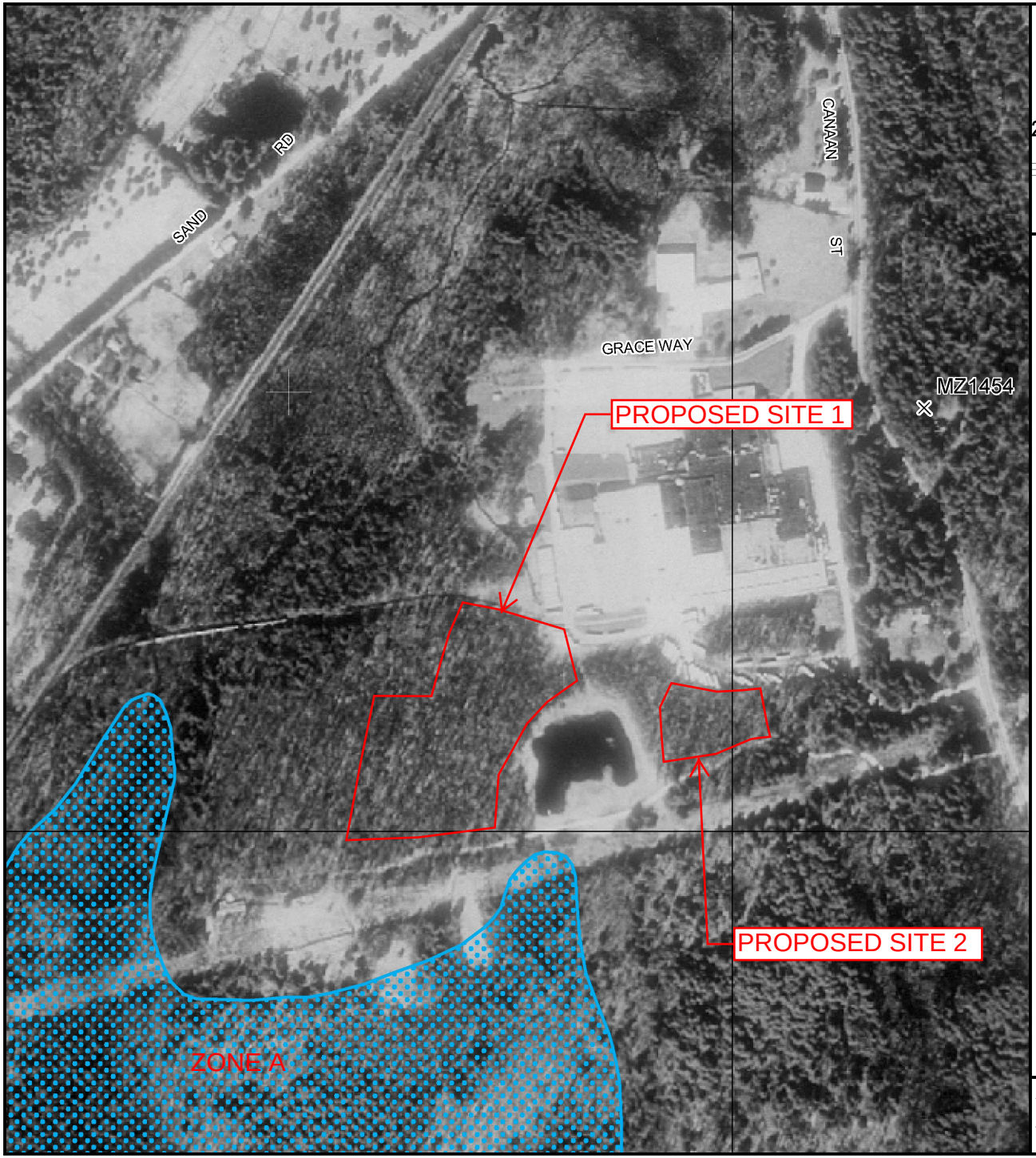
TRUE NORTH

USGS QUADRANGLE MAP

SCALE : 1" = 2000'-0"

APPENDIX B

FEMA FIRM Map



MAP SCALE 1" = 500'

250 0 500 1000 FEET

0 150 200 METE

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0014C

FIRM

FLOOD INSURANCE RATE MAP

TOWN OF

NORTH CANAAN, CONNECTICUT

LITCHFIELD COUNTY

PANEL 14 OF 100

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
NORTH CANAAN, TOWN OF	090149	0014	C

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
0901490014C

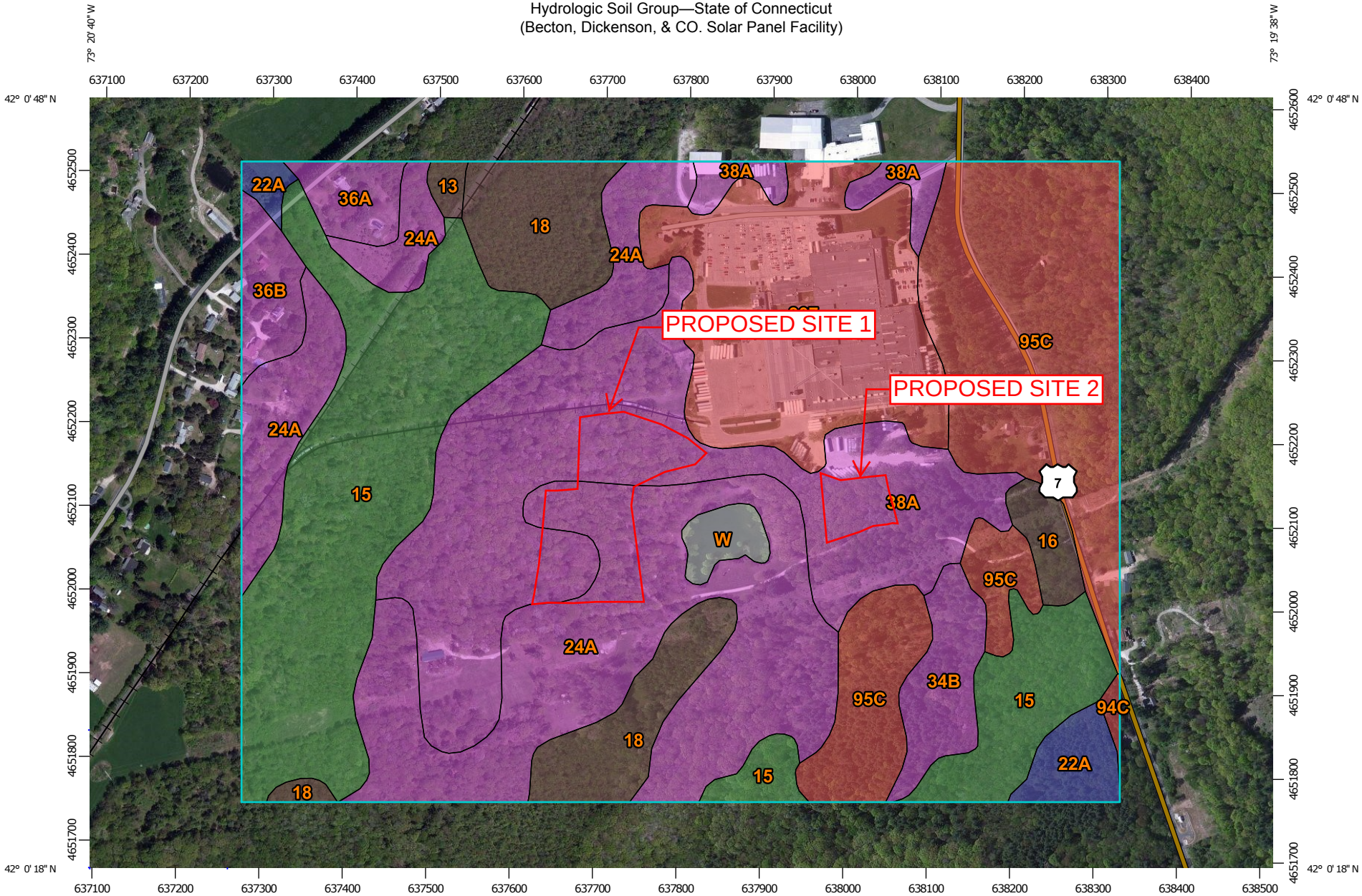
MAP REVISED
JANUARY 2, 2008

Federal Emergency Management Agency

APPENDIX C

NRCS Soil Survey

Hydrologic Soil Group—State of Connecticut
(Becton, Dickenson, & CO. Solar Panel Facility)



Map Scale: 1:6,480 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 50 100 200 300

Feet
0 300 600 1200 1800

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

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

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
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: State of Connecticut
Survey Area Data: Version 14, Sep 22, 2015

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

Date(s) aerial images were photographed: Jun 19, 2010—May 12, 2011

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

Hydrologic Soil Group— Summary by Map Unit — State of Connecticut (CT600)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
13	Walpole sandy loam, 0 to 3 percent slopes	B/D	0.6	0.3%
15	Scarboro muck, 0 to 3 percent slopes	A/D	36.4	18.2%
16	Halsey silt loam	B/D	2.1	1.0%
18	Catden and Freetown soils, 0 to 2 percent slopes	B/D	12.6	6.3%
22A	Hero gravelly loam, 0 to 3 percent slopes	B	3.3	1.7%
24A	Deerfield loamy fine sand, 0 to 3 percent slopes	A	41.7	20.9%
34B	Merrimac fine sandy loam, 3 to 8 percent slopes	A	4.4	2.2%
36A	Windsor loamy sand, 0 to 3 percent slopes	A	2.6	1.3%
36B	Windsor loamy sand, 3 to 8 percent slopes	A	3.1	1.6%
38A	Hinckley loamy sand, 0 to 3 percent slopes	A	36.7	18.3%
94C	Farmington-Nellis complex, 3 to 15 percent slopes, very rocky	D	0.3	0.2%
95C	Farmington-Rock outcrop complex, 3 to 15 percent slopes	D	31.5	15.7%
307	Urban land	D	22.9	11.5%
W	Water		1.7	0.8%
Totals for Area of Interest			**200.0**	**100.0%**

Description

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

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

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

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

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

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

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

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: *None Specified*

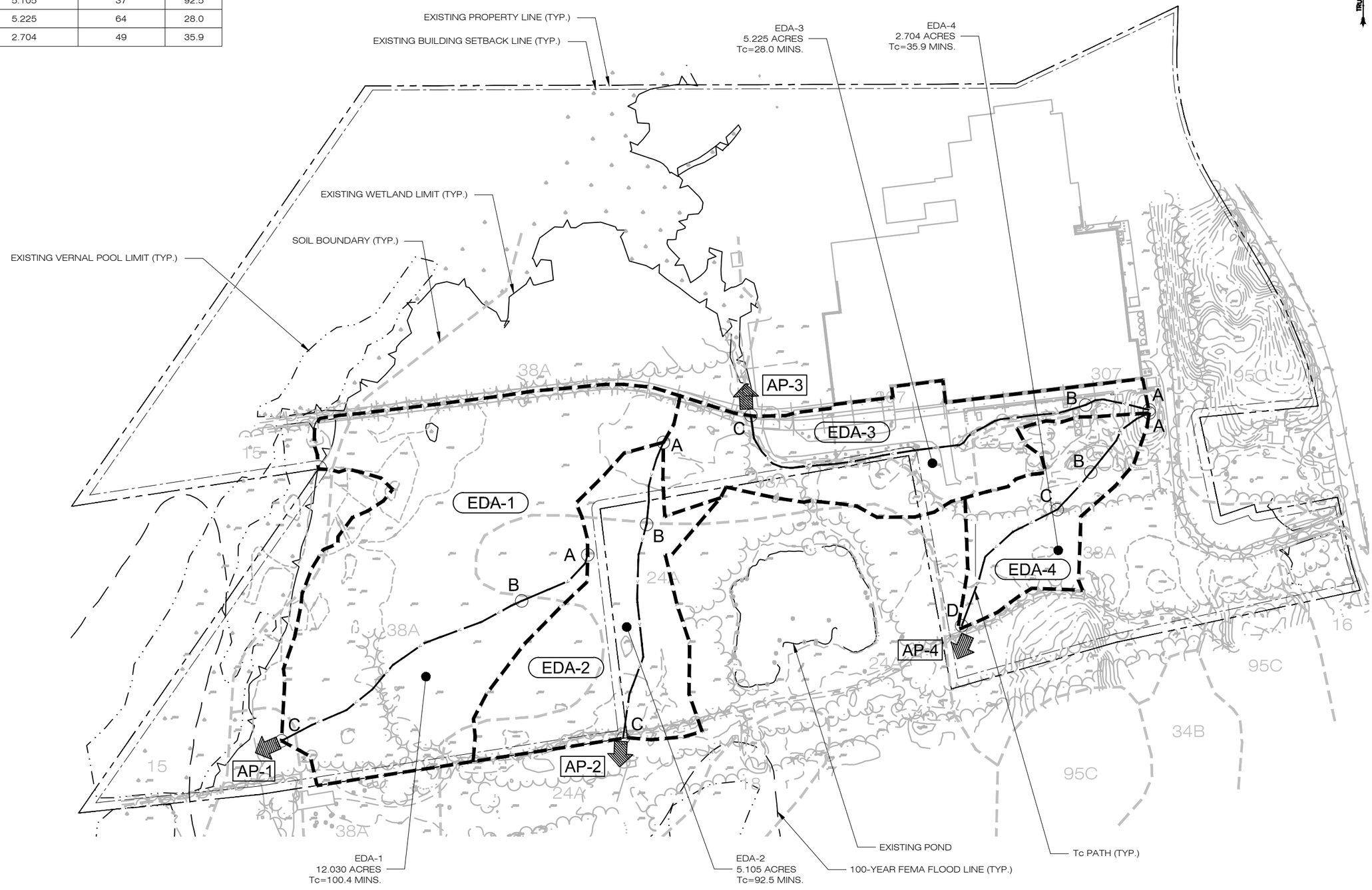
Tie-break Rule: Higher

APPENDIX D

Existing Drainage Area Map (EDA-1) &
Hydrologic Computations (HydroCAD)

EXISTING DRAINAGE AREAS

	TOTAL AREA (ACRES)	COMPOSITE CN	TC (MINS.)
EDA-1	12.030	37	100.4
EDA-2	5.105	37	92.5
EDA-3	5.225	64	28.0
EDA-4	2.704	49	35.9



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CONSTRUCTION DOCUMENTS

NO	DATE	REVISION
0	02/24/16	FOR REVIEW: EEL
1	04/22/16	FOR REVIEW: BJP
2	06/10/16	CLIENT COMMENTS: BJP
3		
4		
5		
6		

DESIGN PROFESSIONALS OF RECORD

PROF: SCOTT M. CHASSE P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION
ADD: 3 SADDLEBROOK DRIVE KILLINGWORTH, CT 06419

OWNER: BECTON, DICKINSON & COMPANY
ADDRESS: 1 BECTON DRIVE FRANKLIN LAKES, NJ 07417 (201) 847-6800

SITE ADDRESS: 7 GRACE WAY NORTH CANAAN, CT 06018

APT FILING NUMBER: CT-478-120

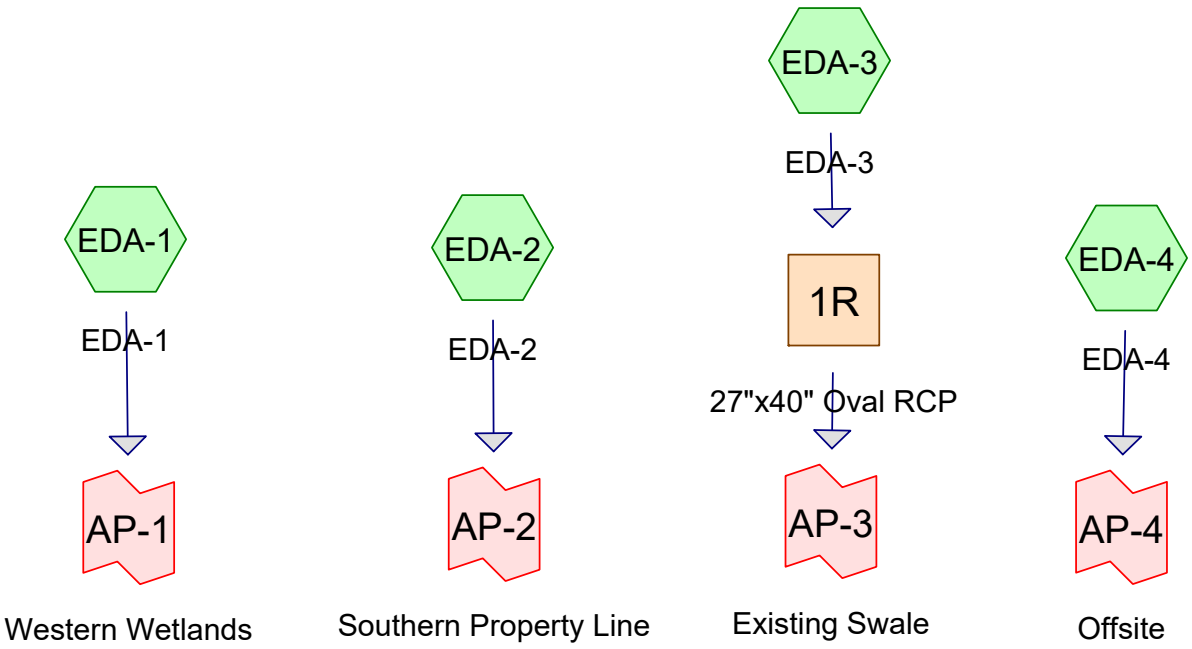
DRAWN BY: CSH
DATE: 02/24/16 CHECKED BY: EEL

SHEET TITLE:

EXISTING DRAINAGE AREA MAP

SHEET NUMBER:

EDA-1



Subcat Reach Pond Link

Routing Diagram for North Canaan Solar City - Existing Rev1 04-22-16
Prepared by Microsoft, Printed 6/10/2016

Summary for Subcatchment EDA-1: EDA-1

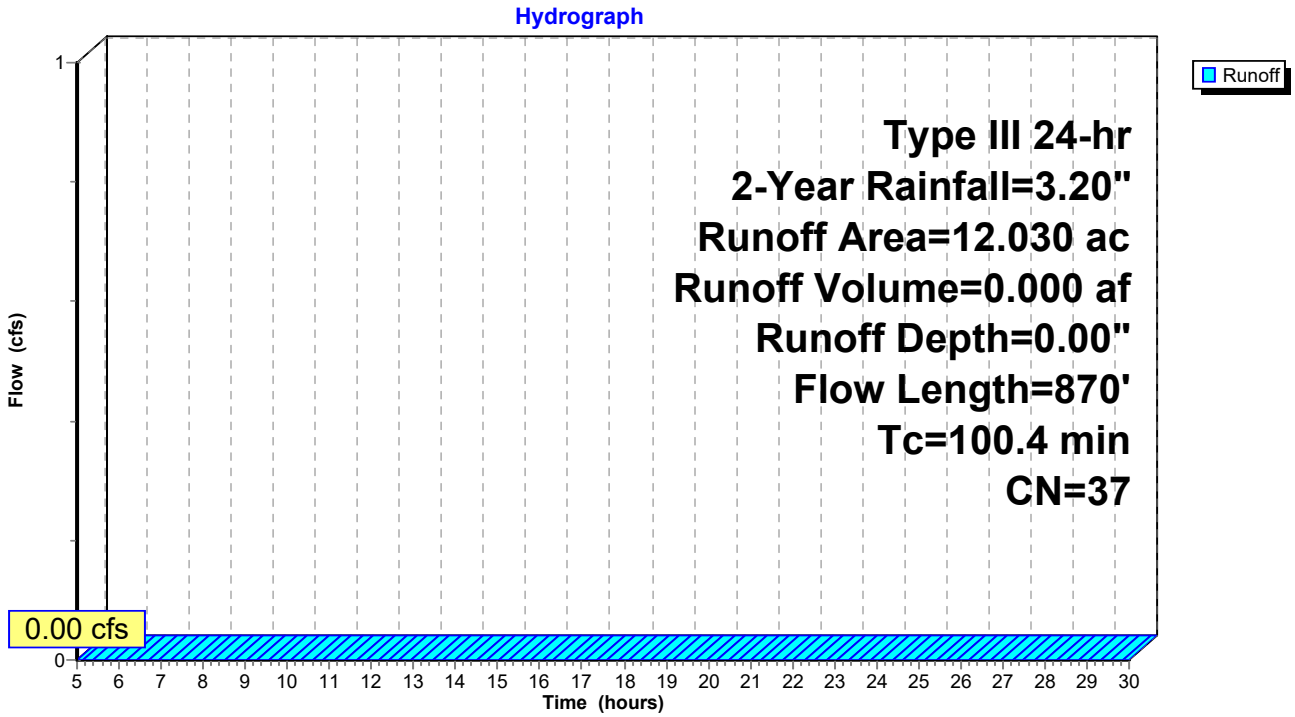
Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (ac)	CN	Description
0.775	39	>75% Grass cover, Good, HSG A
0.023	80	>75% Grass cover, Good, HSG D
11.000	36	Woods, Fair, HSG A
0.179	79	Woods, Fair, HSG D
0.053	72	Dirt roads, HSG A
12.030	37	Weighted Average
12.030		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
65.1	200	0.0050	0.05		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.20"
35.3	670	0.0040	0.32		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
100.4	870	Total			

Subcatchment EDA-1: EDA-1



Summary for Subcatchment EDA-2: EDA-2

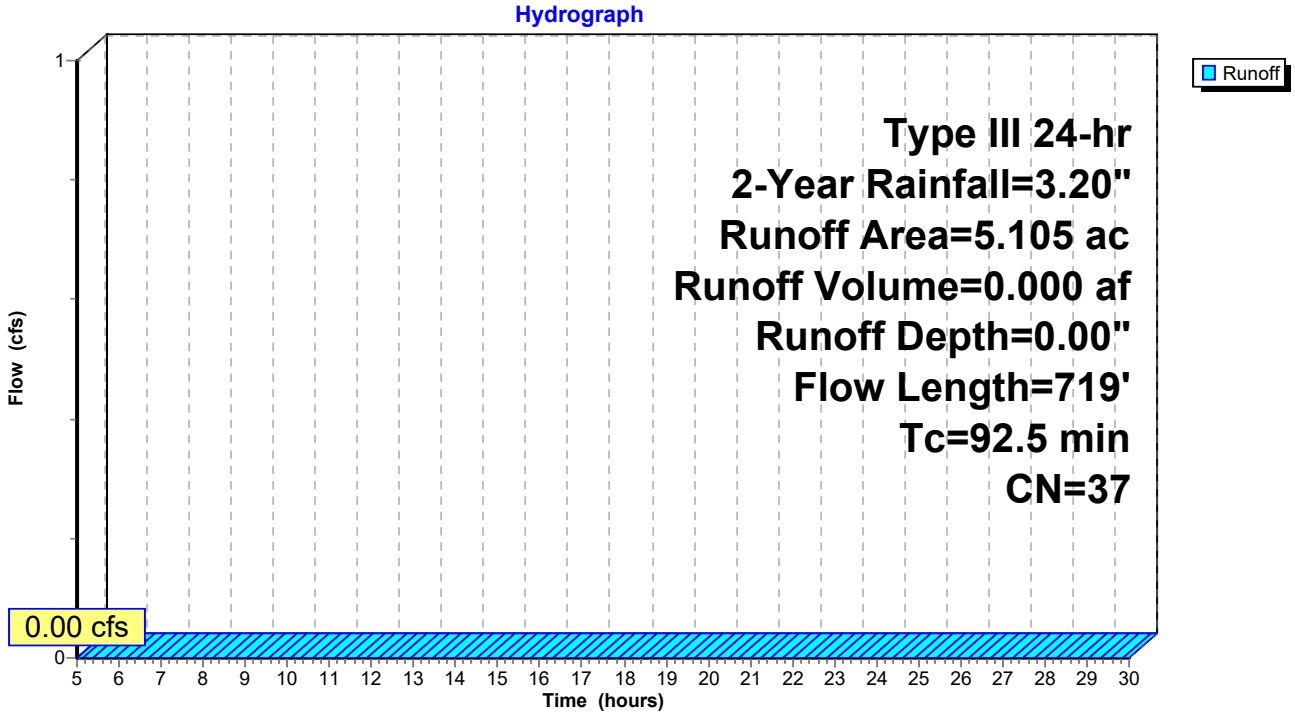
Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (ac)	CN	Description
4.900	36	Woods, Fair, HSG A
0.108	39	>75% Grass cover, Good, HSG A
0.097	72	Dirt roads, HSG A
5.105	37	Weighted Average
5.105		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
65.1	200	0.0050	0.05		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.20"
27.4	519	0.0040	0.32		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
92.5	719	Total			

Subcatchment EDA-2: EDA-2



Summary for Subcatchment EDA-3: EDA-3

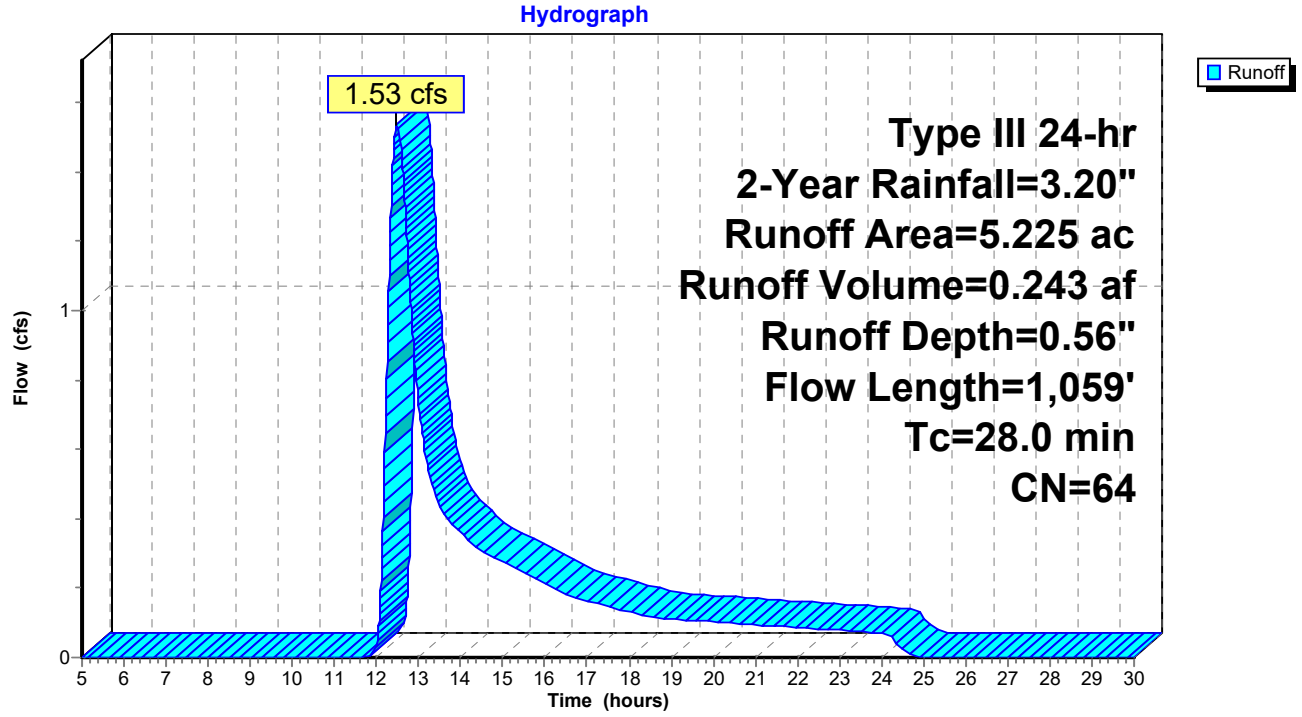
Runoff = 1.53 cfs @ 12.48 hrs, Volume= 0.243 af, Depth= 0.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (ac)	CN	Description
0.542	39	>75% Grass cover, Good, HSG A
1.463	80	>75% Grass cover, Good, HSG D
1.750	36	Woods, Fair, HSG A
0.051	79	Woods, Fair, HSG D
0.269	72	Dirt roads, HSG A
0.378	89	Dirt roads, HSG D
0.772	98	Paved parking, HSG D
5.225	64	Weighted Average
4.453		85.22% Pervious Area
0.772		14.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	156	0.0841	0.33		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.20"
20.1	903	0.0025	0.75		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
28.0	1,059	Total			

Subcatchment EDA-3: EDA-3



Summary for Subcatchment EDA-4: EDA-4

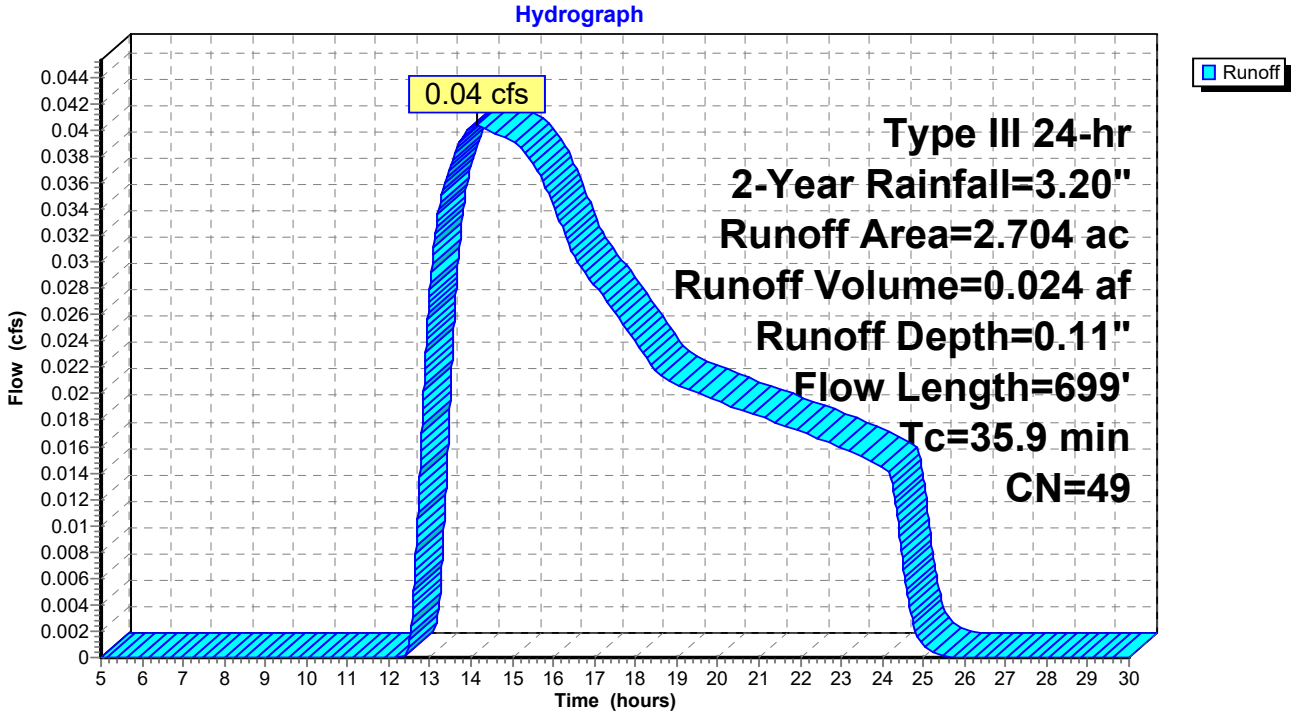
Runoff = 0.04 cfs @ 14.16 hrs, Volume= 0.024 af, Depth= 0.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (ac)	CN	Description
0.336	39	>75% Grass cover, Good, HSG A
0.133	80	>75% Grass cover, Good, HSG D
1.464	36	Woods, Fair, HSG A
0.032	79	Woods, Fair, HSG D
0.717	72	Dirt roads, HSG A
0.022	89	Dirt roads, HSG D
2.704	49	Weighted Average
2.704		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	200	0.0550	0.29		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.20"
1.4	120	0.0080	1.44		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
23.1	379	0.0030	0.27		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
35.9	699	Total			

Subcatchment EDA-4: EDA-4



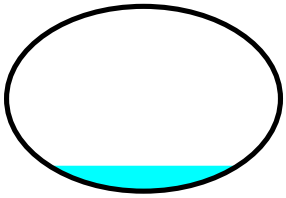
Summary for Reach 1R: 27"x40" Oval RCP

Inflow Area = 5.225 ac, 14.78% Impervious, Inflow Depth = 0.56" for 2-Year event
Inflow = 1.53 cfs @ 12.48 hrs, Volume= 0.243 af
Outflow = 1.53 cfs @ 12.50 hrs, Volume= 0.243 af, Atten= 0%, Lag= 1.0 min

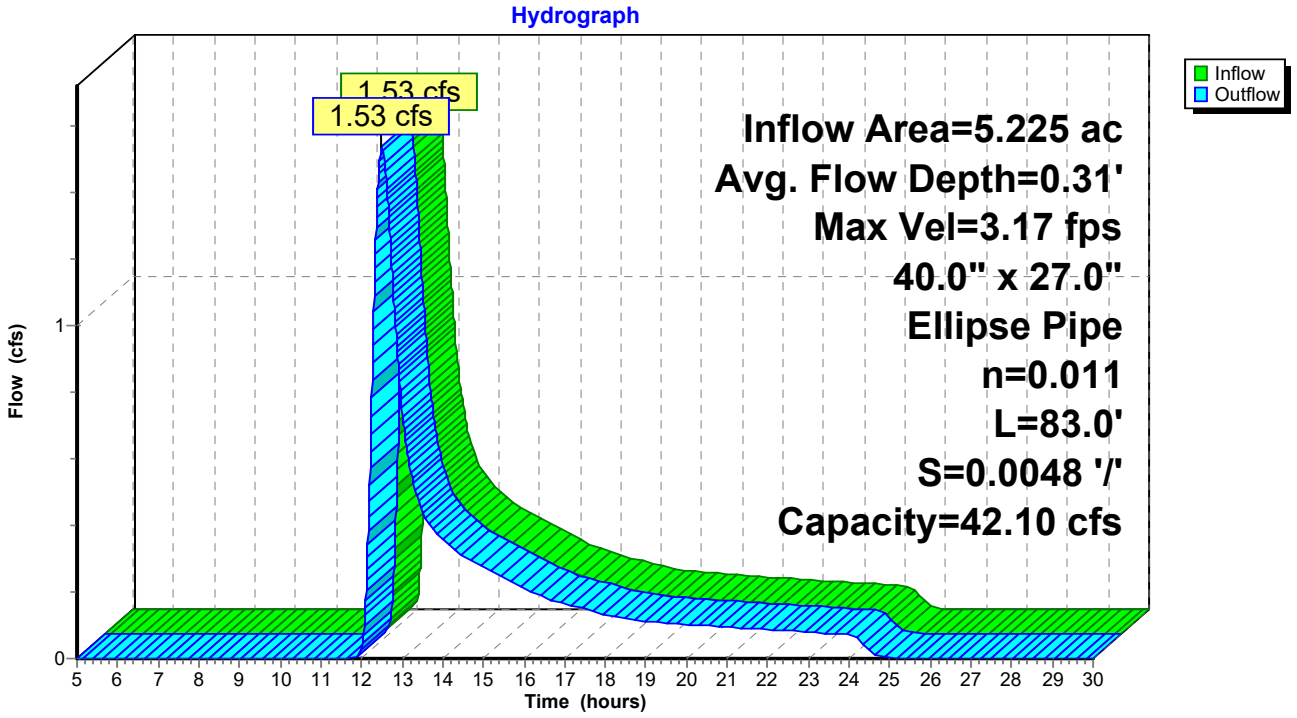
Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.17 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.53 fps, Avg. Travel Time= 0.9 min

Peak Storage= 40 cf @ 12.49 hrs
Average Depth at Peak Storage= 0.31'
Bank-Full Depth= 2.25' Flow Area= 5.9 sf, Capacity= 42.10 cfs

40.0" W x 27.0" H Ellipse Pipe
n= 0.011 Concrete pipe, straight & clean
Length= 83.0' Slope= 0.0048 '/'
Inlet Invert= 660.10', Outlet Invert= 659.70'



Reach 1R: 27"x40" Oval RCP

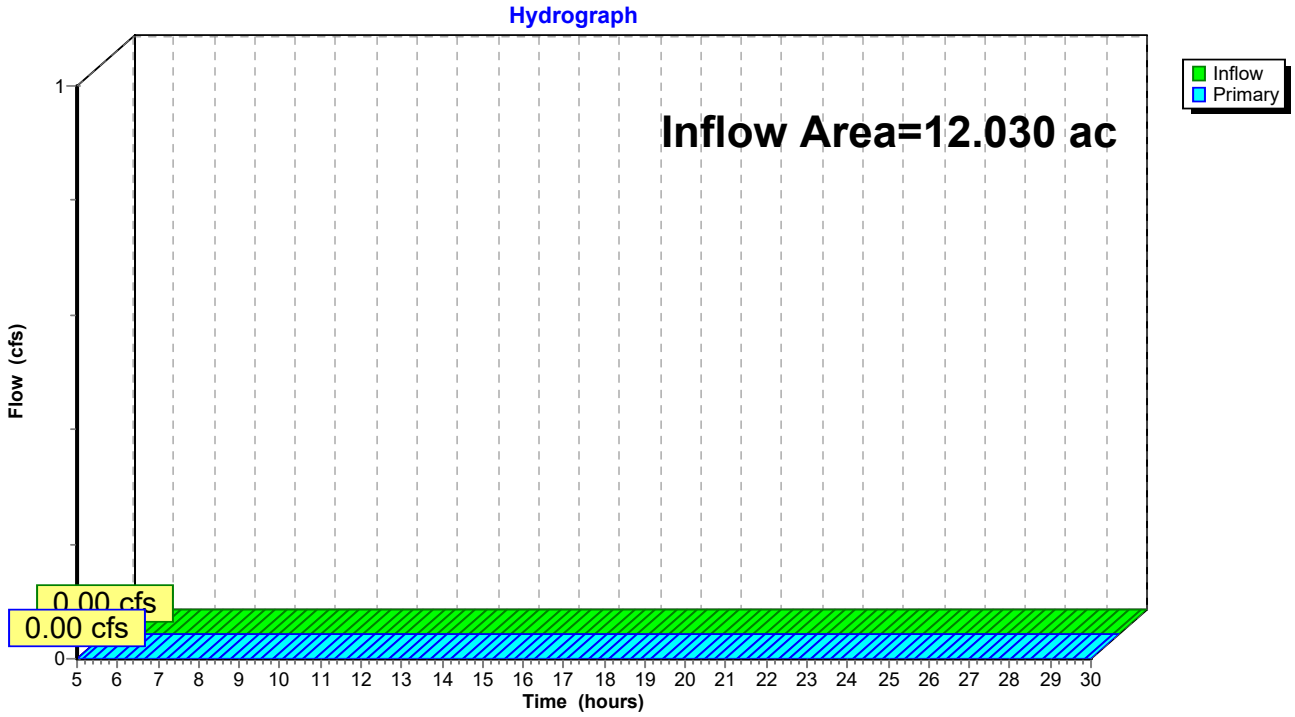


Summary for Link AP-1: Western Wetlands

Inflow Area = 12.030 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-Year event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Link AP-1: Western Wetlands

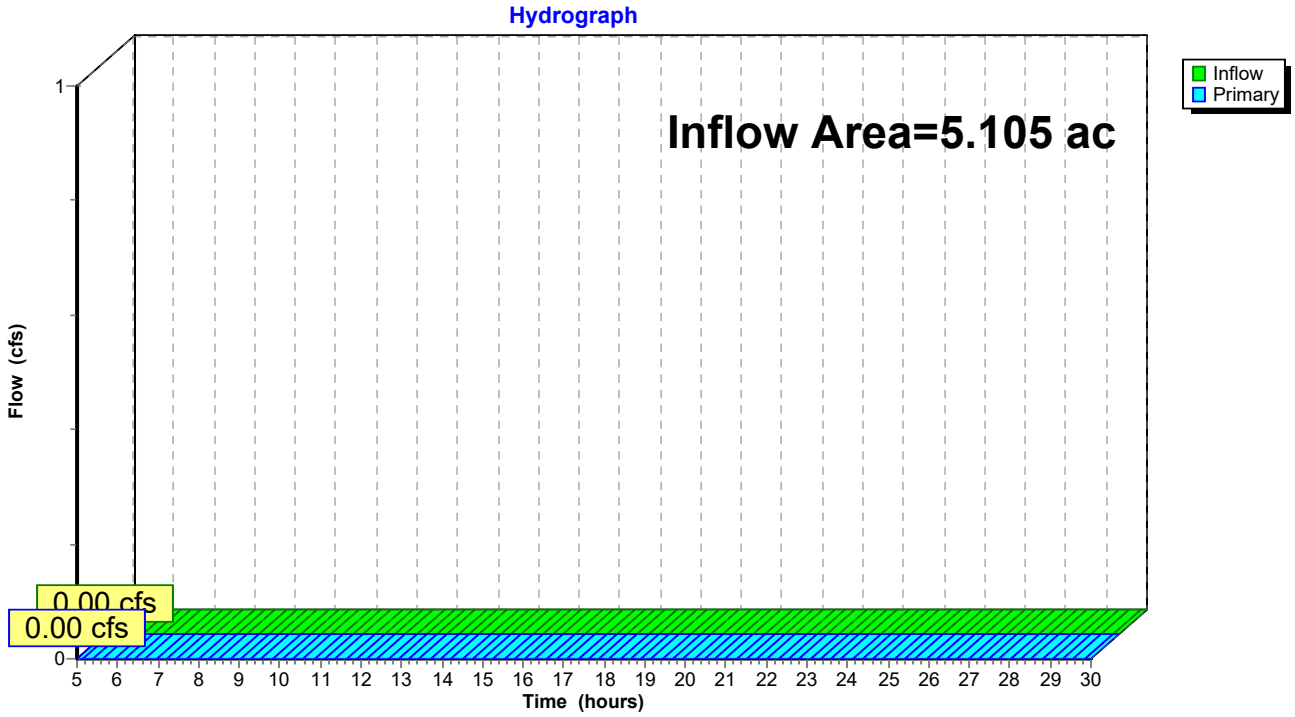


Summary for Link AP-2: Southern Property Line

Inflow Area = 5.105 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-Year event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Link AP-2: Southern Property Line

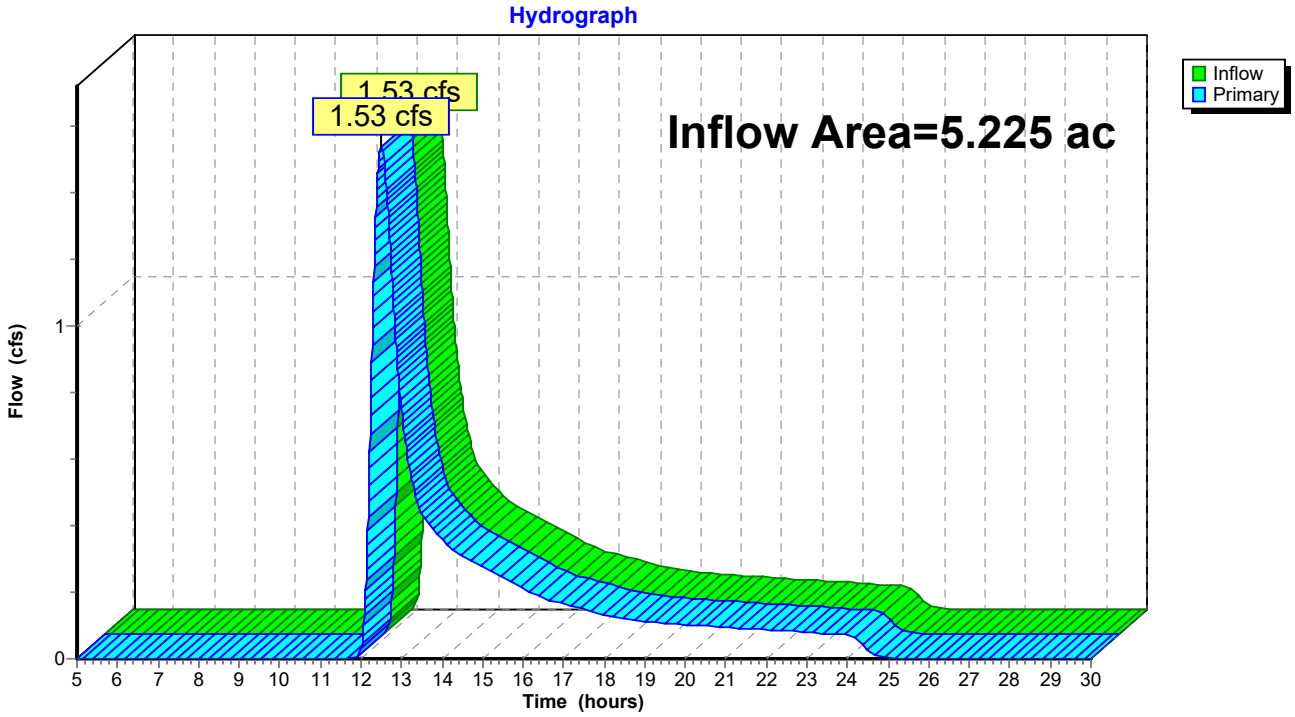


Summary for Link AP-3: Existing Swale

Inflow Area = 5.225 ac, 14.78% Impervious, Inflow Depth = 0.56" for 2-Year event
Inflow = 1.53 cfs @ 12.50 hrs, Volume= 0.243 af
Primary = 1.53 cfs @ 12.50 hrs, Volume= 0.243 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Link AP-3: Existing Swale

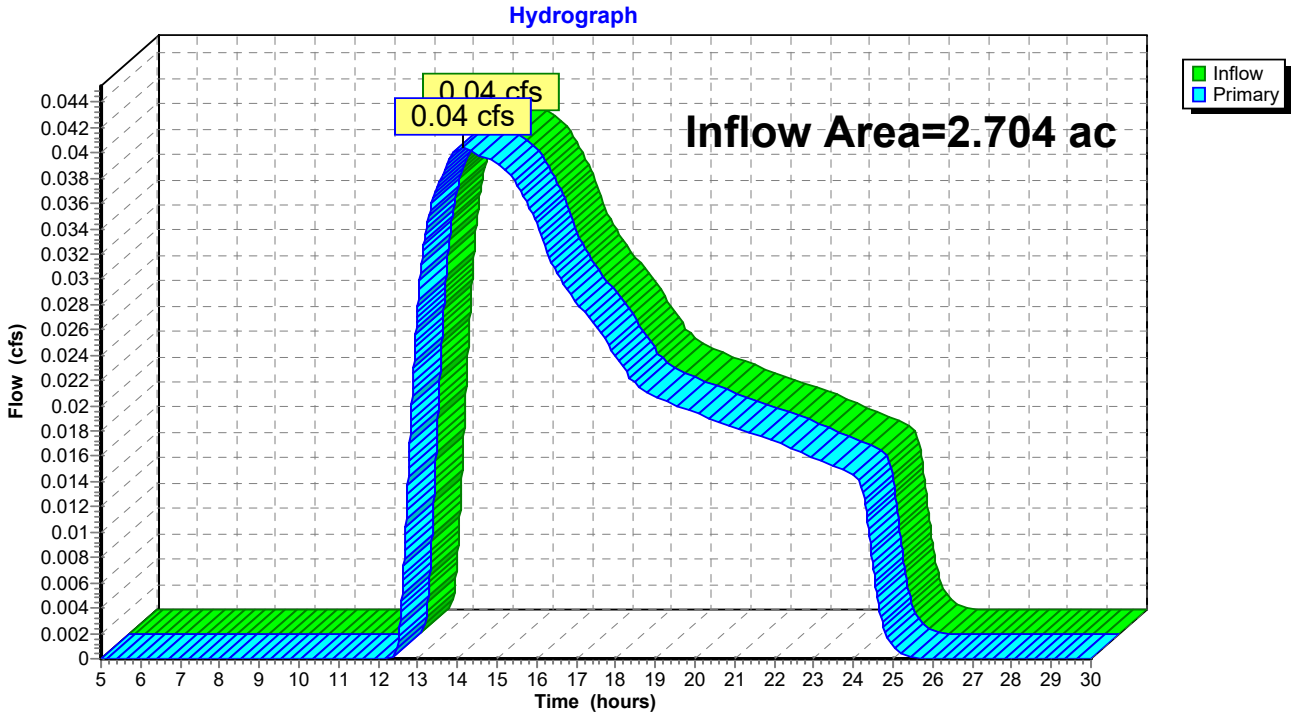


Summary for Link AP-4: Offsite

Inflow Area = 2.704 ac, 0.00% Impervious, Inflow Depth = 0.11" for 2-Year event
Inflow = 0.04 cfs @ 14.16 hrs, Volume= 0.024 af
Primary = 0.04 cfs @ 14.16 hrs, Volume= 0.024 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Link AP-4: Offsite



Summary for Subcatchment EDA-1: EDA-1

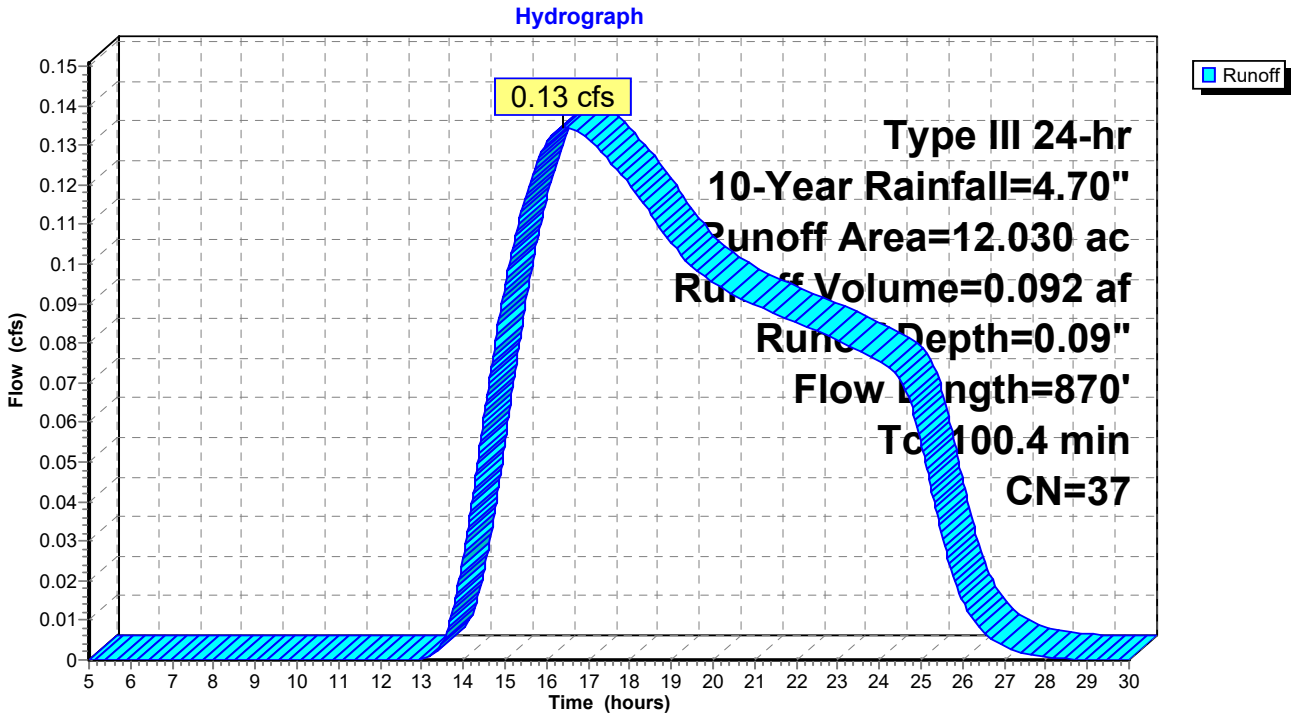
Runoff = 0.13 cfs @ 16.40 hrs, Volume= 0.092 af, Depth= 0.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.70"

Area (ac)	CN	Description
0.775	39	>75% Grass cover, Good, HSG A
0.023	80	>75% Grass cover, Good, HSG D
11.000	36	Woods, Fair, HSG A
0.179	79	Woods, Fair, HSG D
0.053	72	Dirt roads, HSG A
12.030	37	Weighted Average
12.030		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
65.1	200	0.0050	0.05		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.20"
35.3	670	0.0040	0.32		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
100.4	870	Total			

Subcatchment EDA-1: EDA-1



Summary for Subcatchment EDA-2: EDA-2

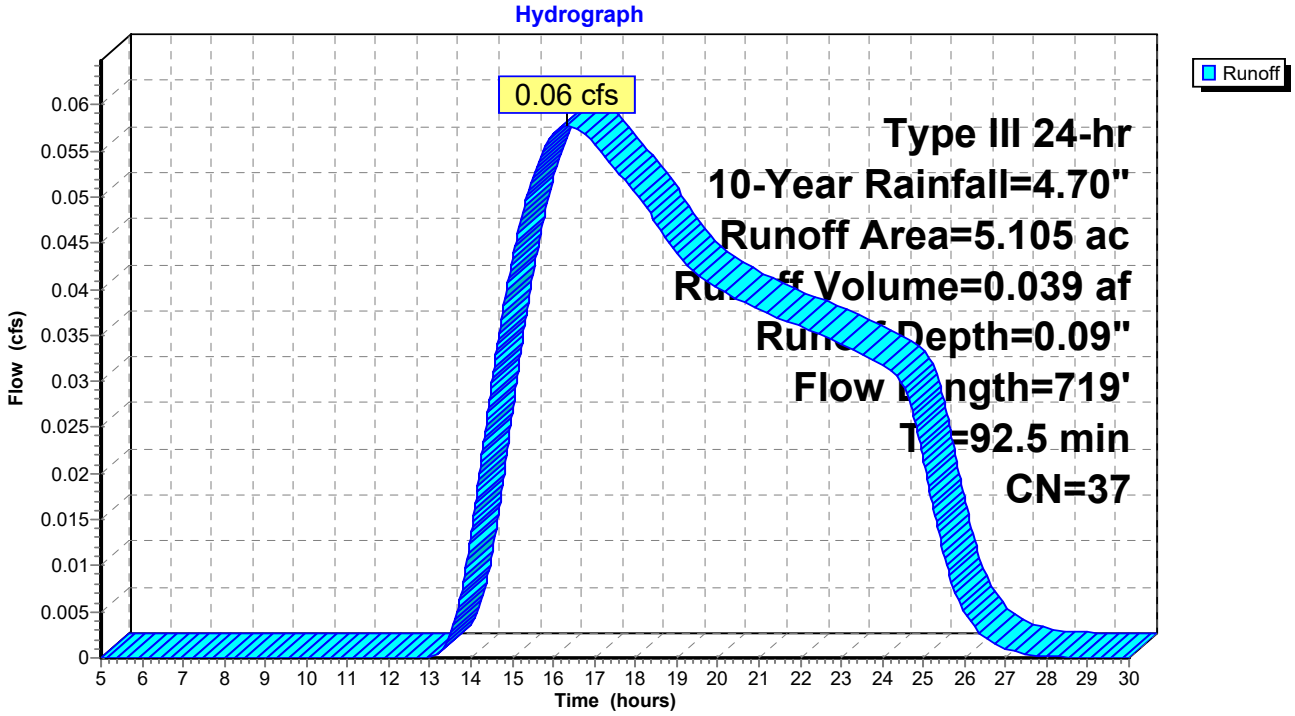
Runoff = 0.06 cfs @ 16.34 hrs, Volume= 0.039 af, Depth= 0.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.70"

Area (ac)	CN	Description
4.900	36	Woods, Fair, HSG A
0.108	39	>75% Grass cover, Good, HSG A
0.097	72	Dirt roads, HSG A
5.105	37	Weighted Average
5.105		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
65.1	200	0.0050	0.05		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.20"
27.4	519	0.0040	0.32		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
92.5	719	Total			

Subcatchment EDA-2: EDA-2



Summary for Subcatchment EDA-3: EDA-3

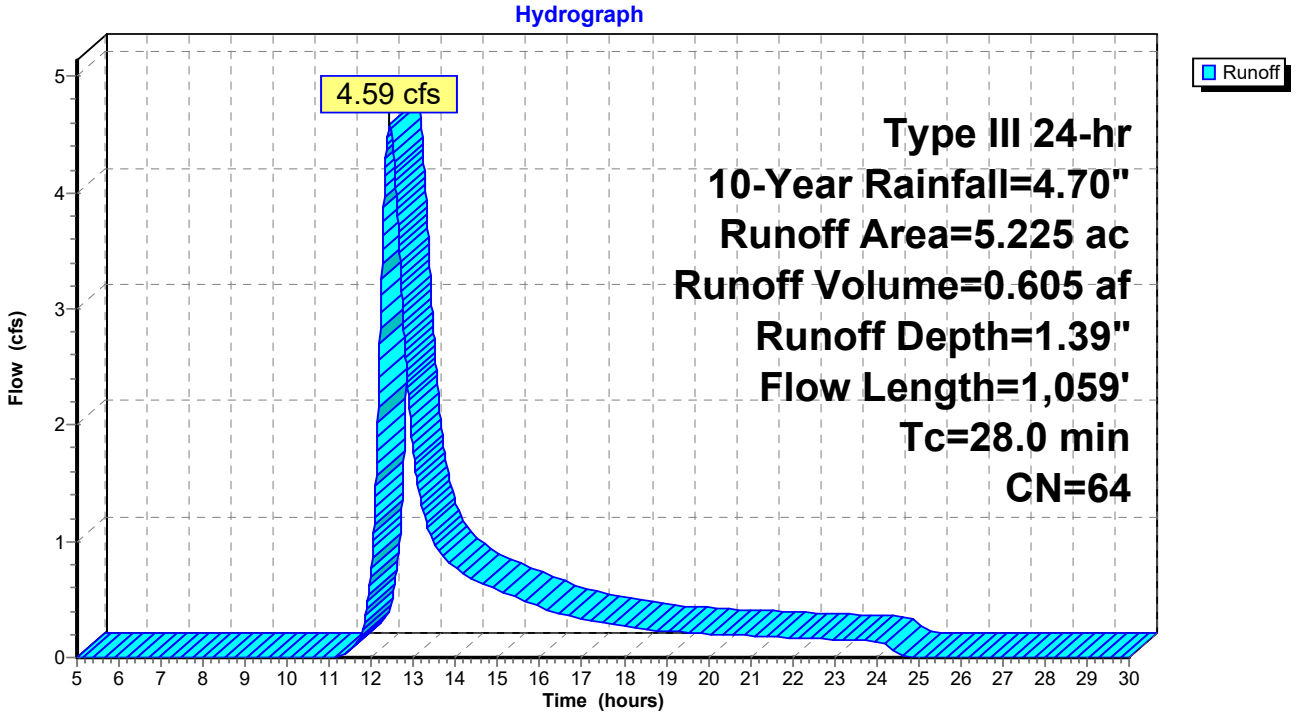
Runoff = 4.59 cfs @ 12.42 hrs, Volume= 0.605 af, Depth= 1.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.70"

Area (ac)	CN	Description
0.542	39	>75% Grass cover, Good, HSG A
1.463	80	>75% Grass cover, Good, HSG D
1.750	36	Woods, Fair, HSG A
0.051	79	Woods, Fair, HSG D
0.269	72	Dirt roads, HSG A
0.378	89	Dirt roads, HSG D
0.772	98	Paved parking, HSG D
5.225	64	Weighted Average
4.453		85.22% Pervious Area
0.772		14.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	156	0.0841	0.33		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.20"
20.1	903	0.0025	0.75		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
28.0	1,059	Total			

Subcatchment EDA-3: EDA-3



Summary for Subcatchment EDA-4: EDA-4

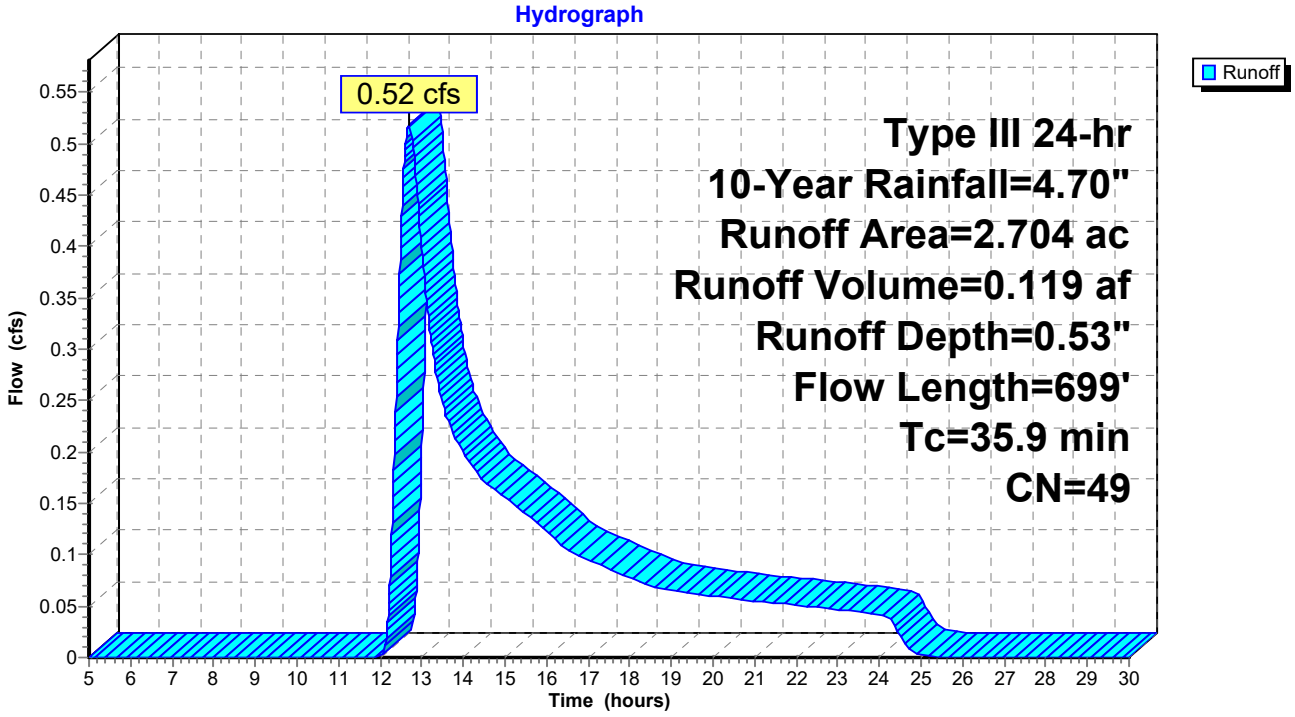
Runoff = 0.52 cfs @ 12.69 hrs, Volume= 0.119 af, Depth= 0.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.70"

Area (ac)	CN	Description
0.336	39	>75% Grass cover, Good, HSG A
0.133	80	>75% Grass cover, Good, HSG D
1.464	36	Woods, Fair, HSG A
0.032	79	Woods, Fair, HSG D
0.717	72	Dirt roads, HSG A
0.022	89	Dirt roads, HSG D
2.704	49	Weighted Average
2.704		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	200	0.0550	0.29		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.20"
1.4	120	0.0080	1.44		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
23.1	379	0.0030	0.27		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
35.9	699	Total			

Subcatchment EDA-4: EDA-4



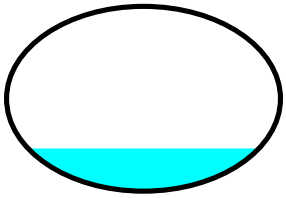
Summary for Reach 1R: 27"x40" Oval RCP

Inflow Area = 5.225 ac, 14.78% Impervious, Inflow Depth = 1.39" for 10-Year event
Inflow = 4.59 cfs @ 12.42 hrs, Volume= 0.605 af
Outflow = 4.59 cfs @ 12.43 hrs, Volume= 0.605 af, Atten= 0%, Lag= 0.7 min

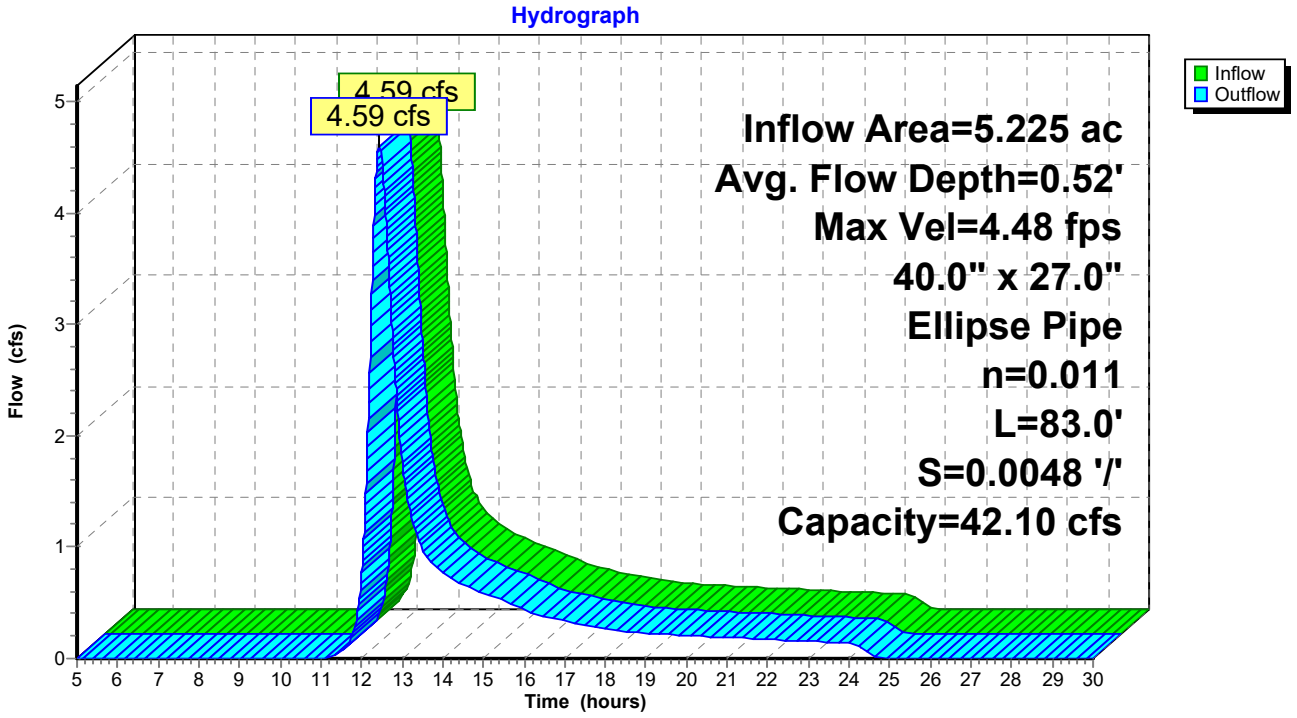
Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.48 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.91 fps, Avg. Travel Time= 0.7 min

Peak Storage= 85 cf @ 12.43 hrs
Average Depth at Peak Storage= 0.52'
Bank-Full Depth= 2.25' Flow Area= 5.9 sf, Capacity= 42.10 cfs

40.0" W x 27.0" H Ellipse Pipe
n= 0.011 Concrete pipe, straight & clean
Length= 83.0' Slope= 0.0048 '/'
Inlet Invert= 660.10', Outlet Invert= 659.70'



Reach 1R: 27"x40" Oval RCP

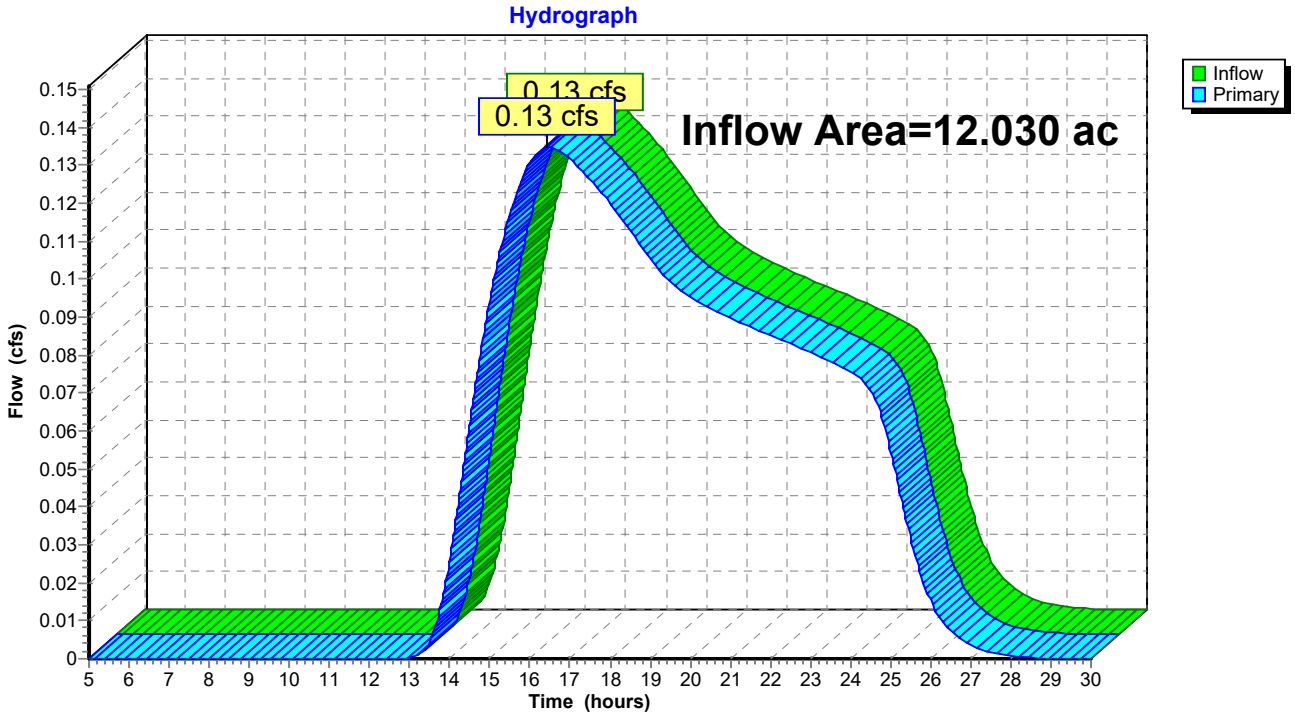


Summary for Link AP-1: Western Wetlands

Inflow Area = 12.030 ac, 0.00% Impervious, Inflow Depth = 0.09" for 10-Year event
Inflow = 0.13 cfs @ 16.40 hrs, Volume= 0.092 af
Primary = 0.13 cfs @ 16.40 hrs, Volume= 0.092 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Link AP-1: Western Wetlands

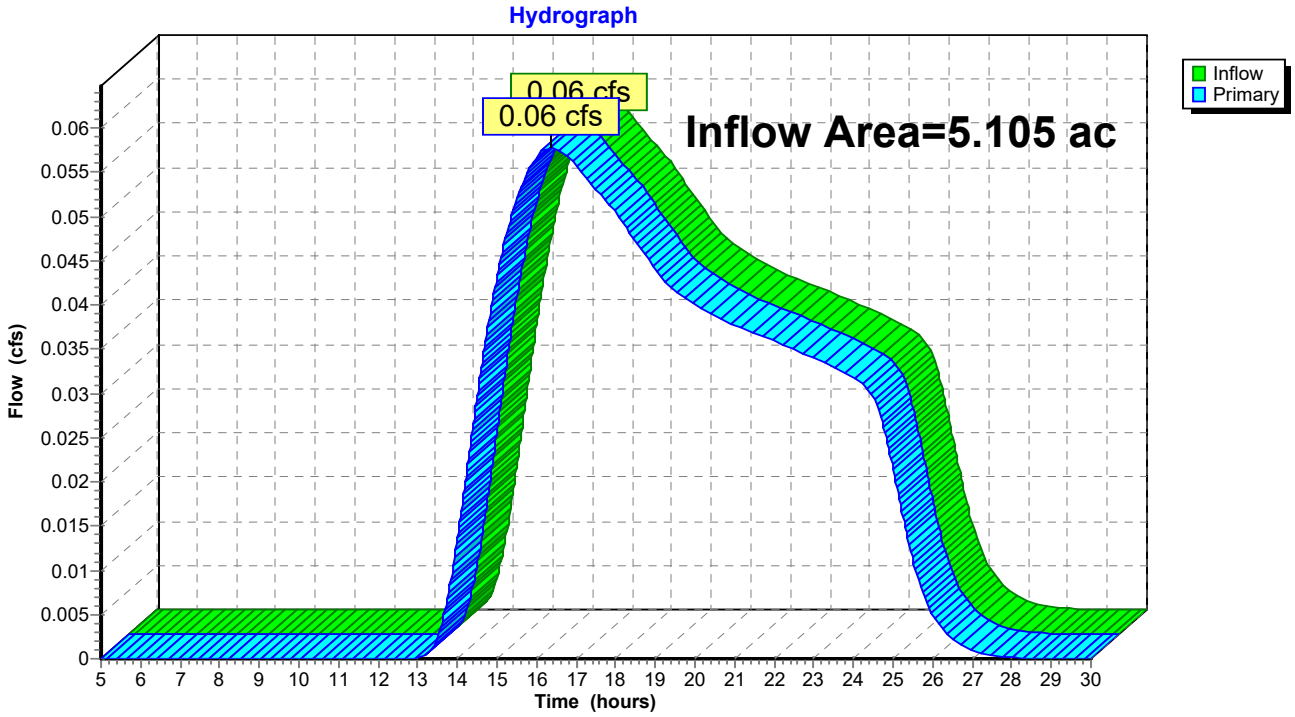


Summary for Link AP-2: Southern Property Line

Inflow Area = 5.105 ac, 0.00% Impervious, Inflow Depth = 0.09" for 10-Year event
Inflow = 0.06 cfs @ 16.34 hrs, Volume= 0.039 af
Primary = 0.06 cfs @ 16.34 hrs, Volume= 0.039 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Link AP-2: Southern Property Line

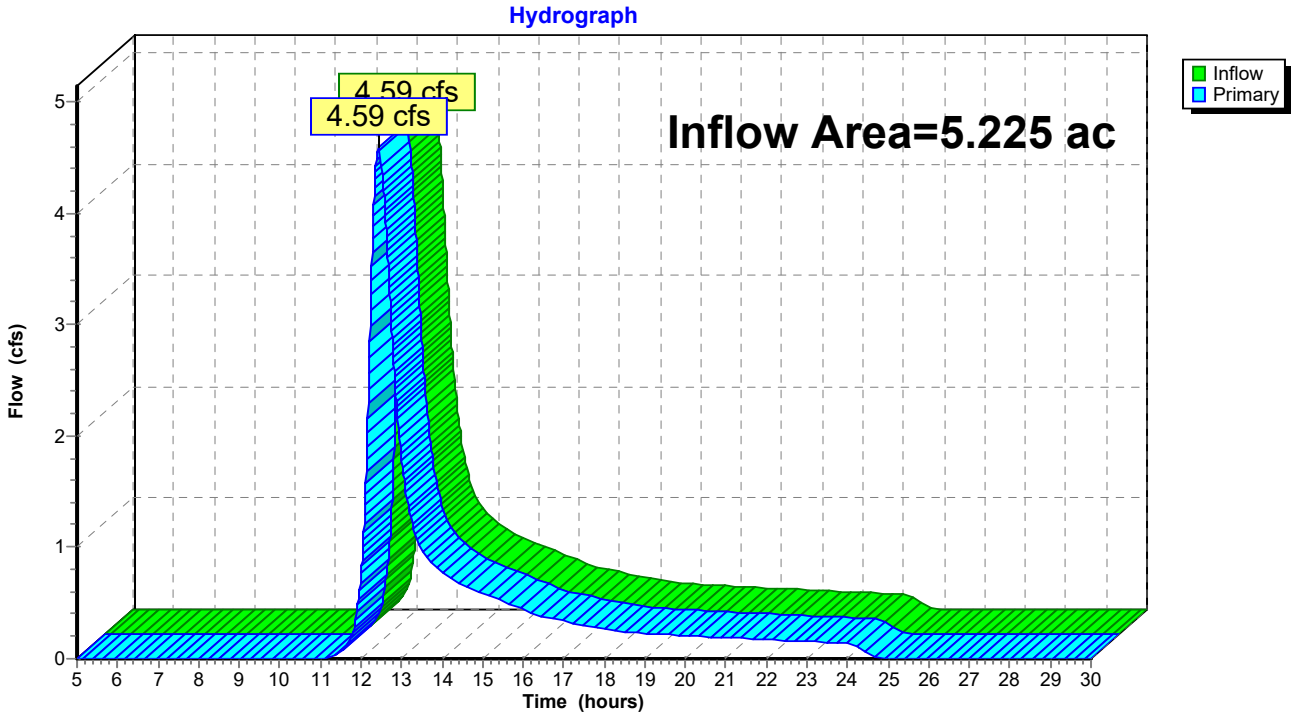


Summary for Link AP-3: Existing Swale

Inflow Area = 5.225 ac, 14.78% Impervious, Inflow Depth = 1.39" for 10-Year event
Inflow = 4.59 cfs @ 12.43 hrs, Volume= 0.605 af
Primary = 4.59 cfs @ 12.43 hrs, Volume= 0.605 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Link AP-3: Existing Swale

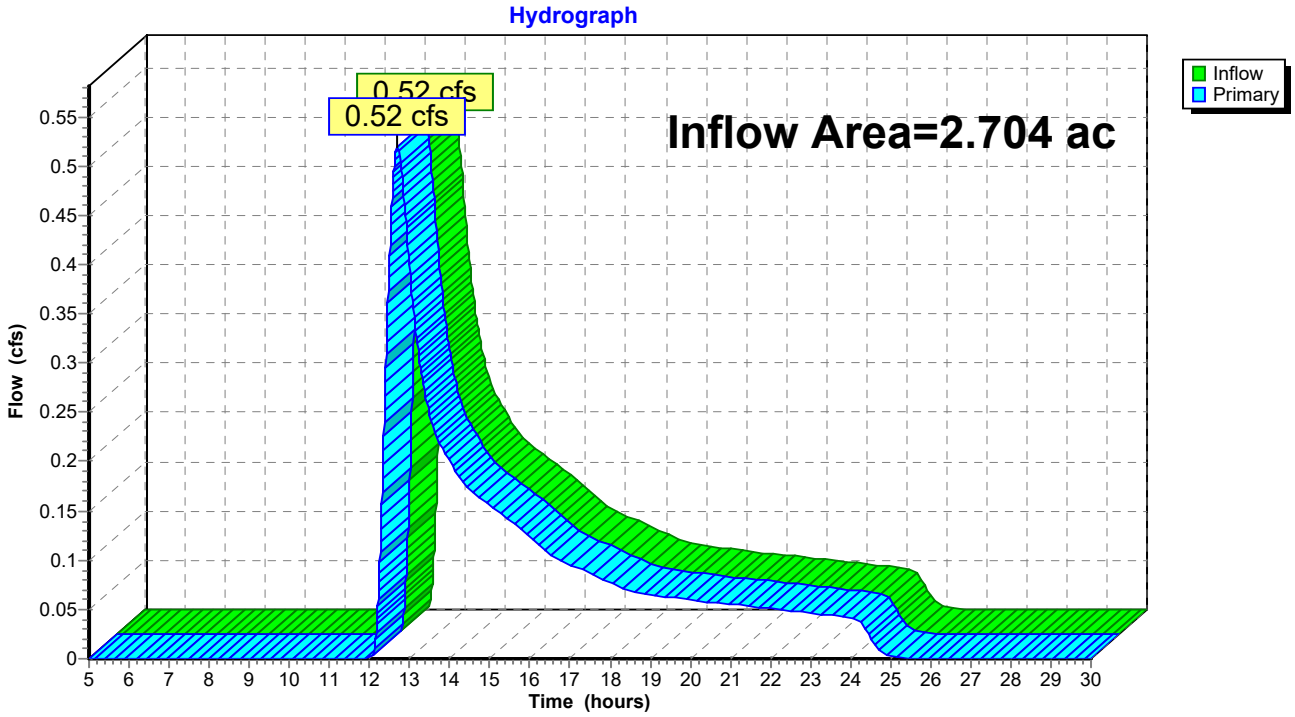


Summary for Link AP-4: Offsite

Inflow Area = 2.704 ac, 0.00% Impervious, Inflow Depth = 0.53" for 10-Year event
Inflow = 0.52 cfs @ 12.69 hrs, Volume= 0.119 af
Primary = 0.52 cfs @ 12.69 hrs, Volume= 0.119 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Link AP-4: Offsite



Summary for Subcatchment EDA-1: EDA-1

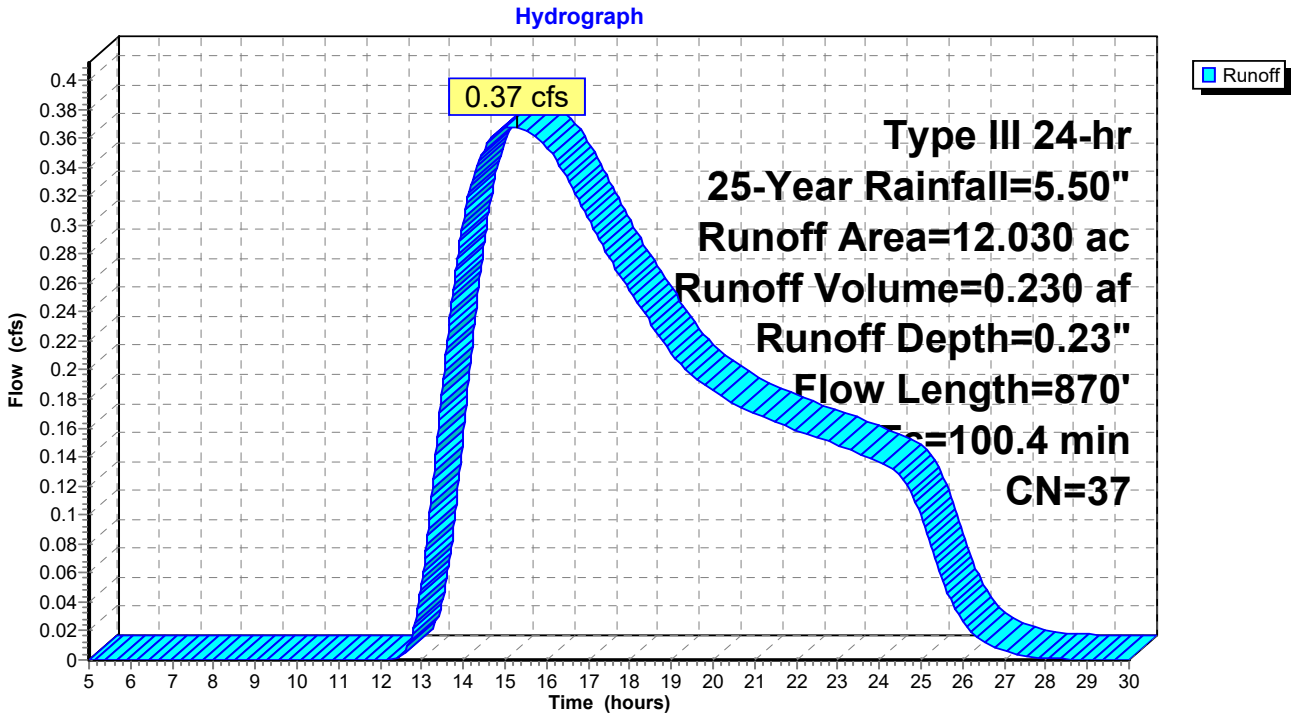
Runoff = 0.37 cfs @ 15.28 hrs, Volume= 0.230 af, Depth= 0.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.50"

Area (ac)	CN	Description
0.775	39	>75% Grass cover, Good, HSG A
0.023	80	>75% Grass cover, Good, HSG D
11.000	36	Woods, Fair, HSG A
0.179	79	Woods, Fair, HSG D
0.053	72	Dirt roads, HSG A
12.030	37	Weighted Average
12.030		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
65.1	200	0.0050	0.05		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.20"
35.3	670	0.0040	0.32		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
100.4	870	Total			

Subcatchment EDA-1: EDA-1



Summary for Subcatchment EDA-2: EDA-2

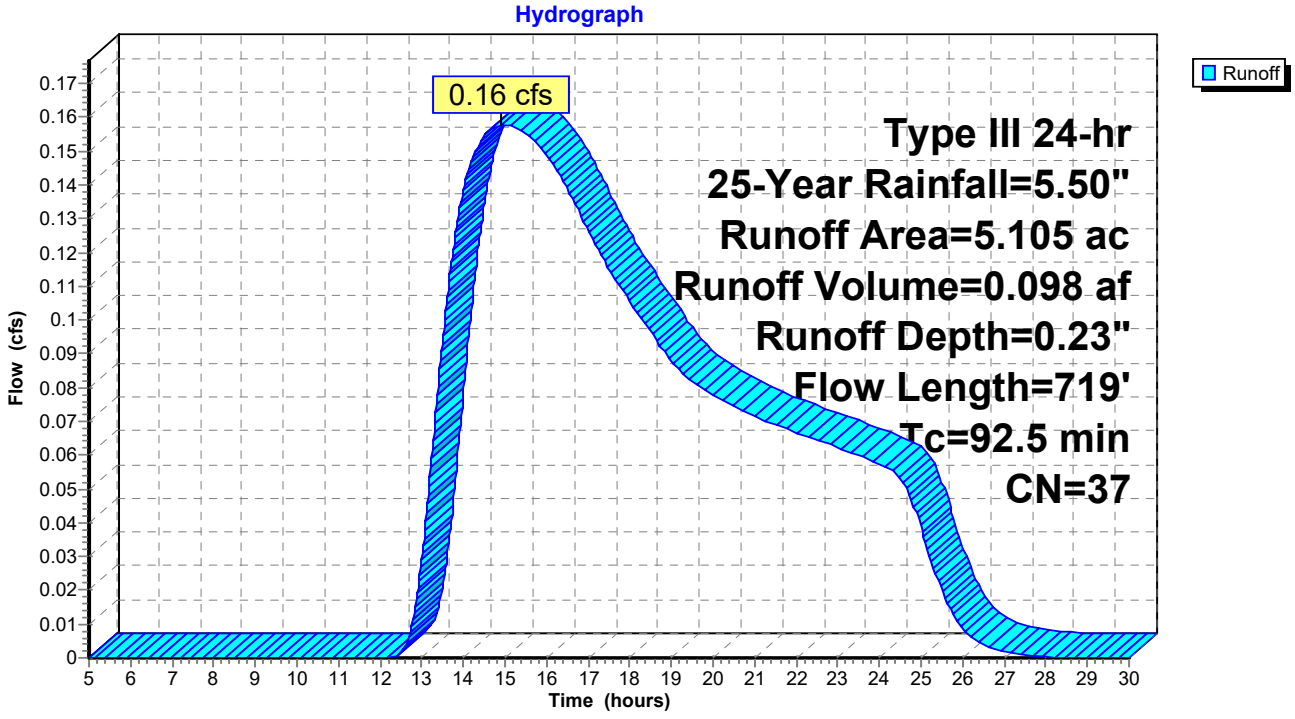
Runoff = 0.16 cfs @ 14.91 hrs, Volume= 0.098 af, Depth= 0.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.50"

Area (ac)	CN	Description
4.900	36	Woods, Fair, HSG A
0.108	39	>75% Grass cover, Good, HSG A
0.097	72	Dirt roads, HSG A
5.105	37	Weighted Average
5.105		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
65.1	200	0.0050	0.05		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.20"
27.4	519	0.0040	0.32		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
92.5	719	Total			

Subcatchment EDA-2: EDA-2



Summary for Subcatchment EDA-3: EDA-3

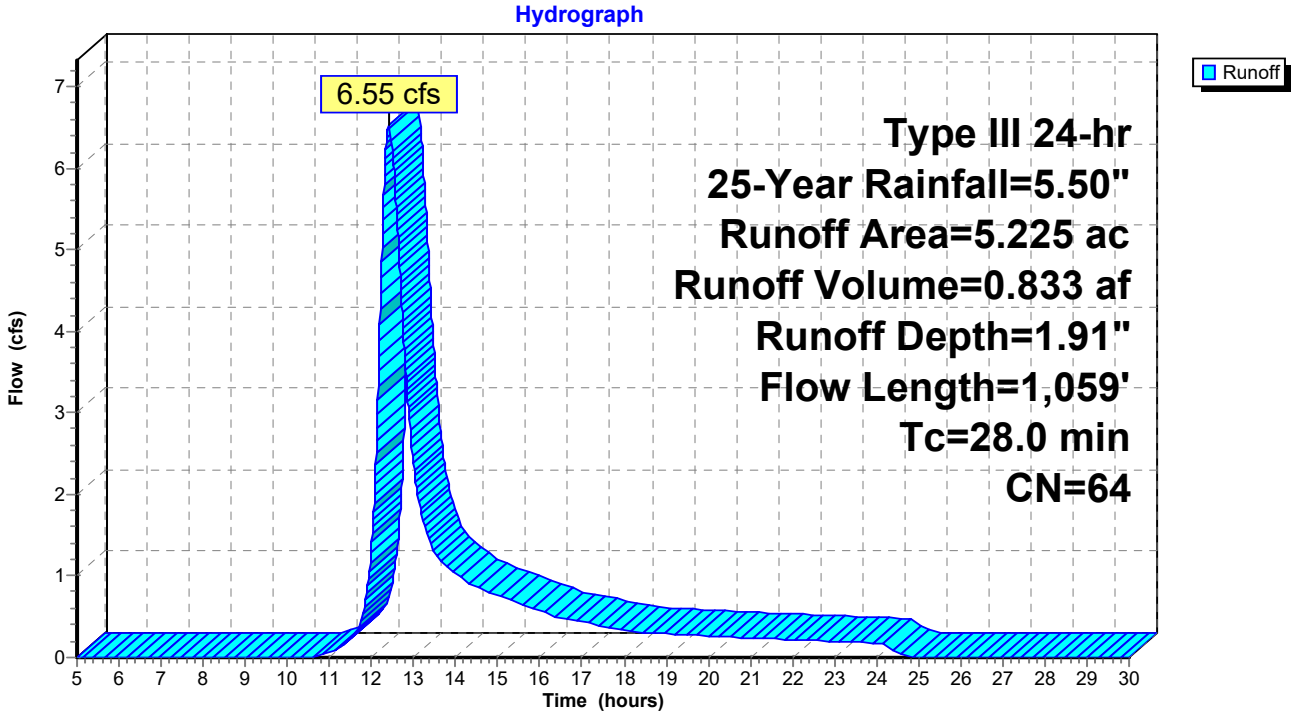
Runoff = 6.55 cfs @ 12.41 hrs, Volume= 0.833 af, Depth= 1.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.50"

Area (ac)	CN	Description
0.542	39	>75% Grass cover, Good, HSG A
1.463	80	>75% Grass cover, Good, HSG D
1.750	36	Woods, Fair, HSG A
0.051	79	Woods, Fair, HSG D
0.269	72	Dirt roads, HSG A
0.378	89	Dirt roads, HSG D
0.772	98	Paved parking, HSG D
5.225	64	Weighted Average
4.453		85.22% Pervious Area
0.772		14.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	156	0.0841	0.33		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.20"
20.1	903	0.0025	0.75		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
28.0	1,059	Total			

Subcatchment EDA-3: EDA-3



Summary for Subcatchment EDA-4: EDA-4

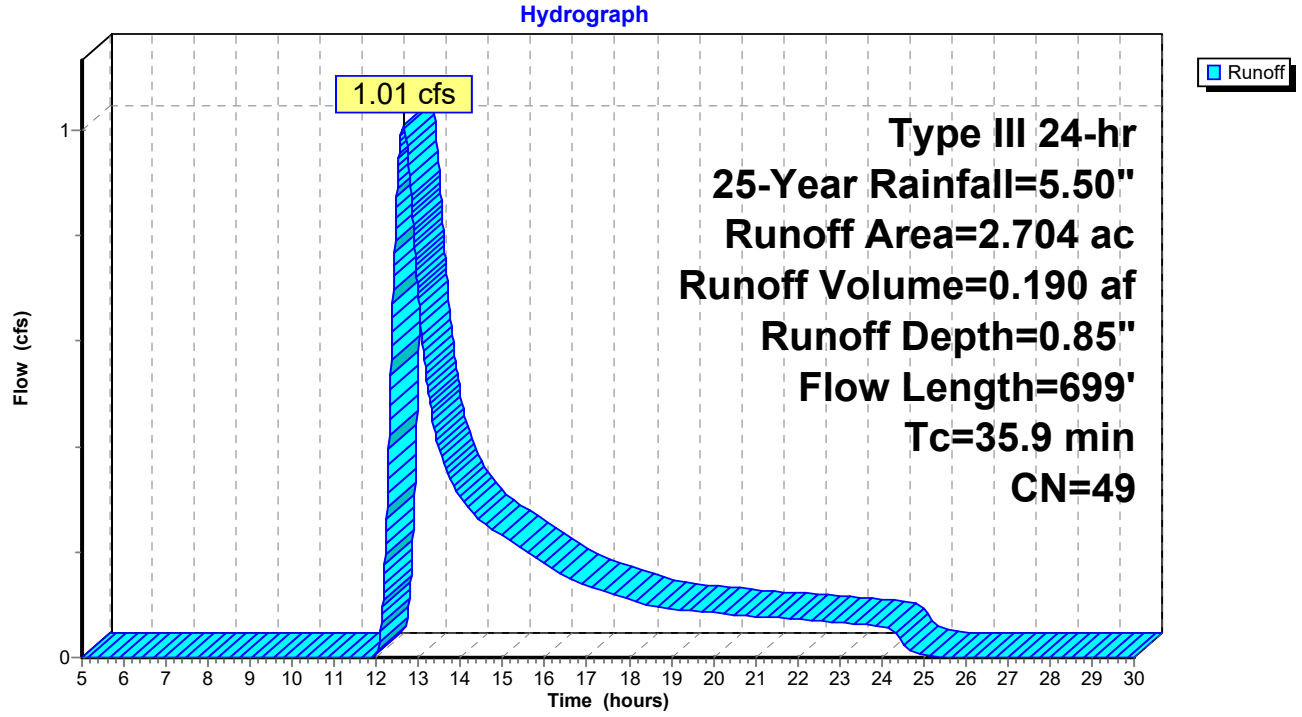
Runoff = 1.01 cfs @ 12.64 hrs, Volume= 0.190 af, Depth= 0.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.50"

Area (ac)	CN	Description
0.336	39	>75% Grass cover, Good, HSG A
0.133	80	>75% Grass cover, Good, HSG D
1.464	36	Woods, Fair, HSG A
0.032	79	Woods, Fair, HSG D
0.717	72	Dirt roads, HSG A
0.022	89	Dirt roads, HSG D
2.704	49	Weighted Average
2.704		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	200	0.0550	0.29		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.20"
1.4	120	0.0080	1.44		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
23.1	379	0.0030	0.27		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
35.9	699	Total			

Subcatchment EDA-4: EDA-4



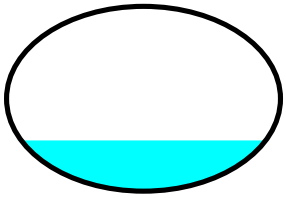
Summary for Reach 1R: 27"x40" Oval RCP

Inflow Area = 5.225 ac, 14.78% Impervious, Inflow Depth = 1.91" for 25-Year event
Inflow = 6.55 cfs @ 12.41 hrs, Volume= 0.833 af
Outflow = 6.54 cfs @ 12.42 hrs, Volume= 0.833 af, Atten= 0%, Lag= 0.6 min

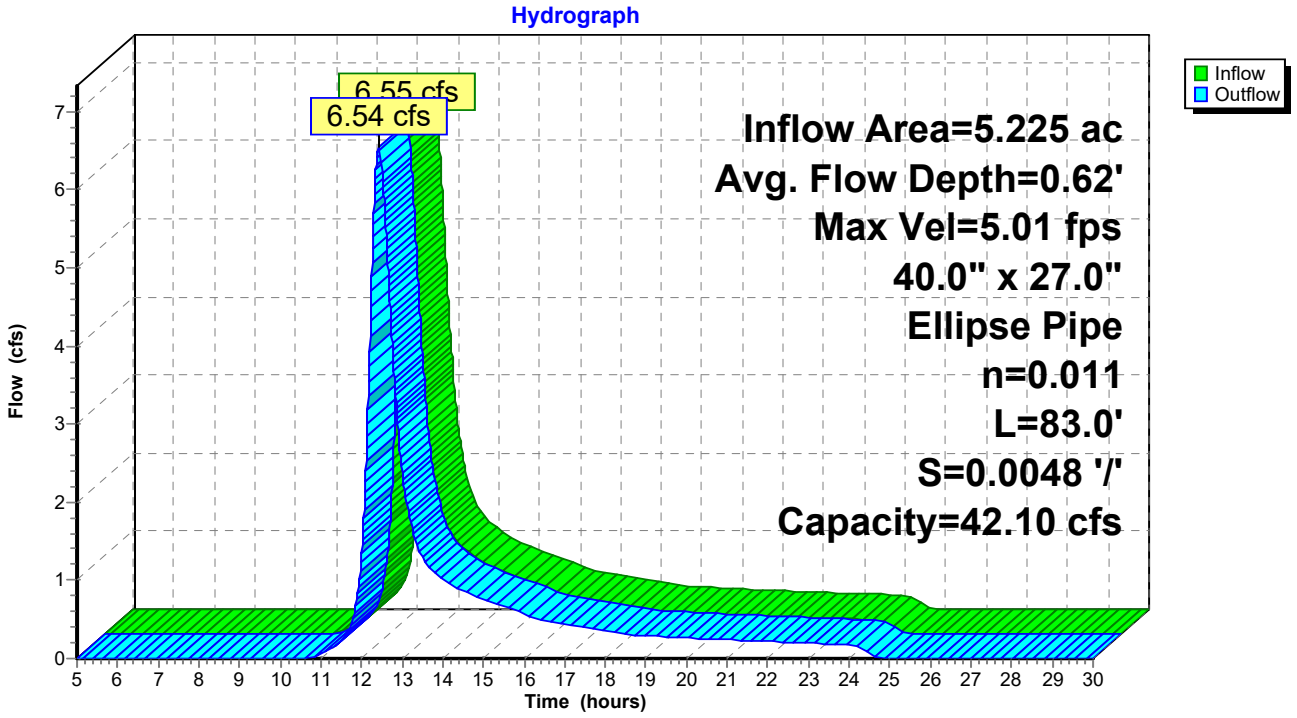
Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.01 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.06 fps, Avg. Travel Time= 0.7 min

Peak Storage= 109 cf @ 12.42 hrs
Average Depth at Peak Storage= 0.62'
Bank-Full Depth= 2.25' Flow Area= 5.9 sf, Capacity= 42.10 cfs

40.0" W x 27.0" H Ellipse Pipe
n= 0.011 Concrete pipe, straight & clean
Length= 83.0' Slope= 0.0048 '/'
Inlet Invert= 660.10', Outlet Invert= 659.70'



Reach 1R: 27"x40" Oval RCP

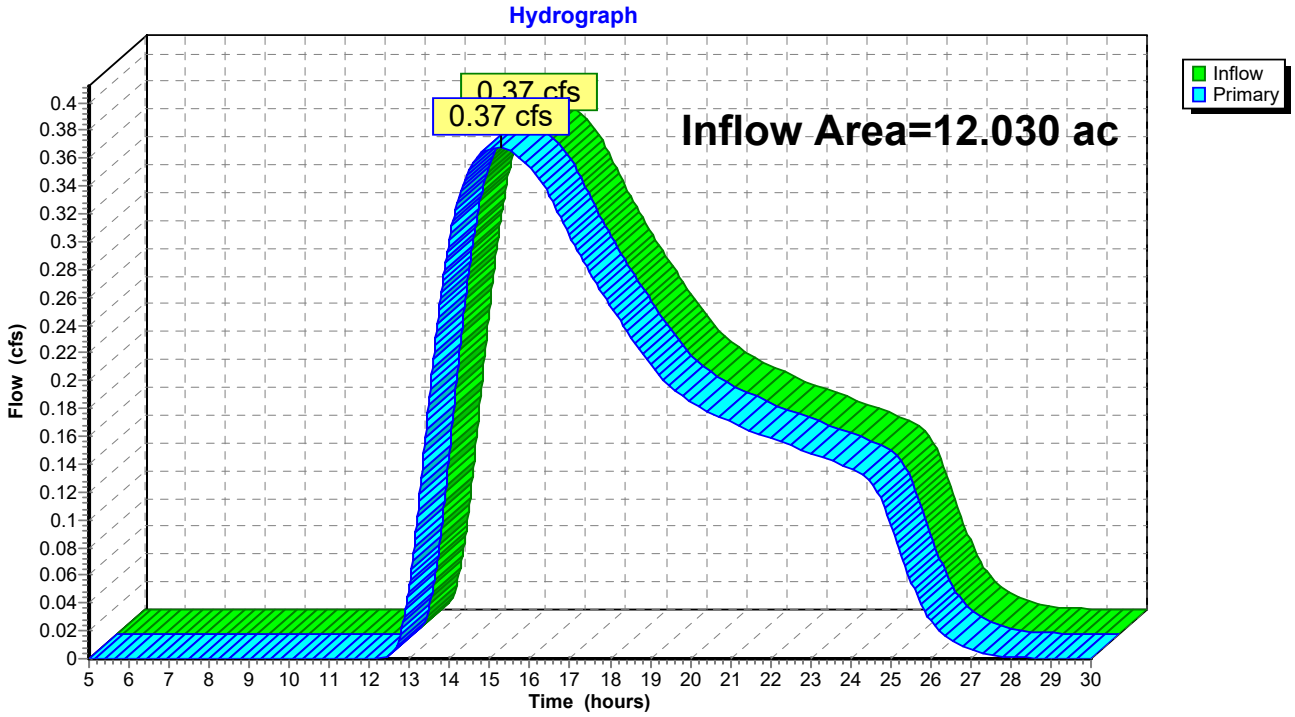


Summary for Link AP-1: Western Wetlands

Inflow Area = 12.030 ac, 0.00% Impervious, Inflow Depth = 0.23" for 25-Year event
Inflow = 0.37 cfs @ 15.28 hrs, Volume= 0.230 af
Primary = 0.37 cfs @ 15.28 hrs, Volume= 0.230 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Link AP-1: Western Wetlands

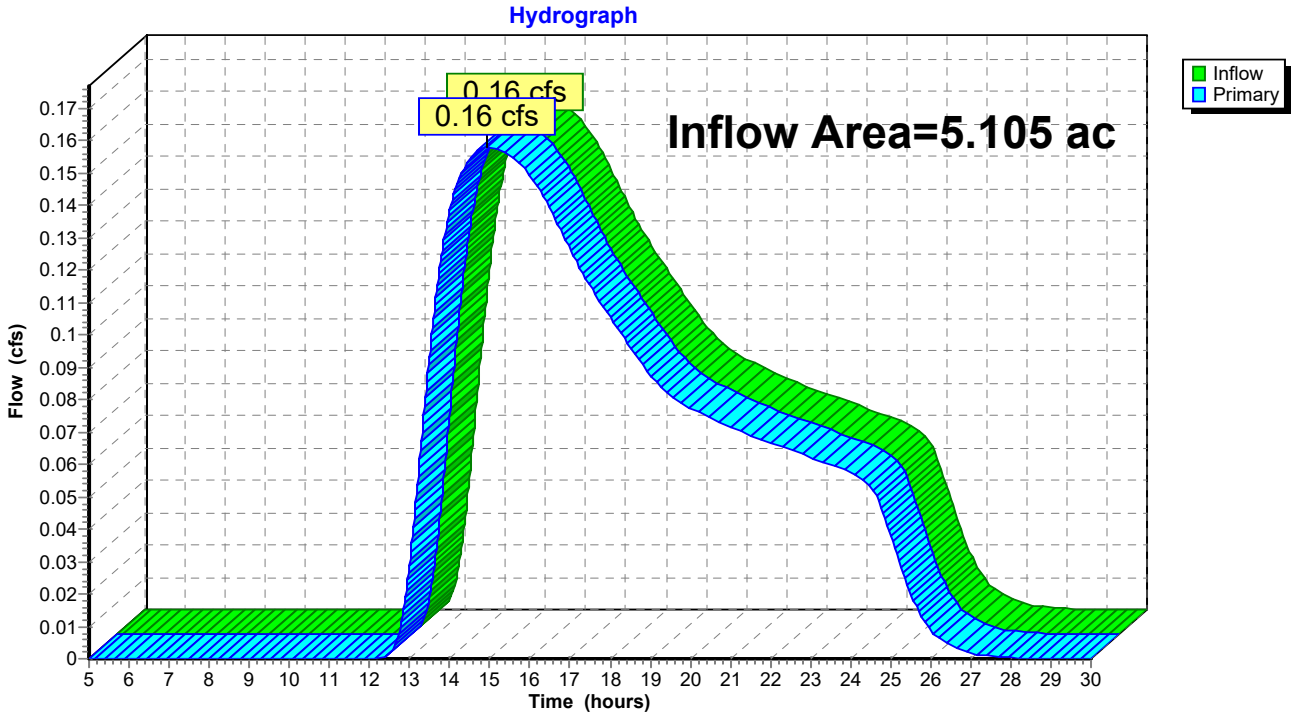


Summary for Link AP-2: Southern Property Line

Inflow Area = 5.105 ac, 0.00% Impervious, Inflow Depth = 0.23" for 25-Year event
Inflow = 0.16 cfs @ 14.91 hrs, Volume= 0.098 af
Primary = 0.16 cfs @ 14.91 hrs, Volume= 0.098 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Link AP-2: Southern Property Line

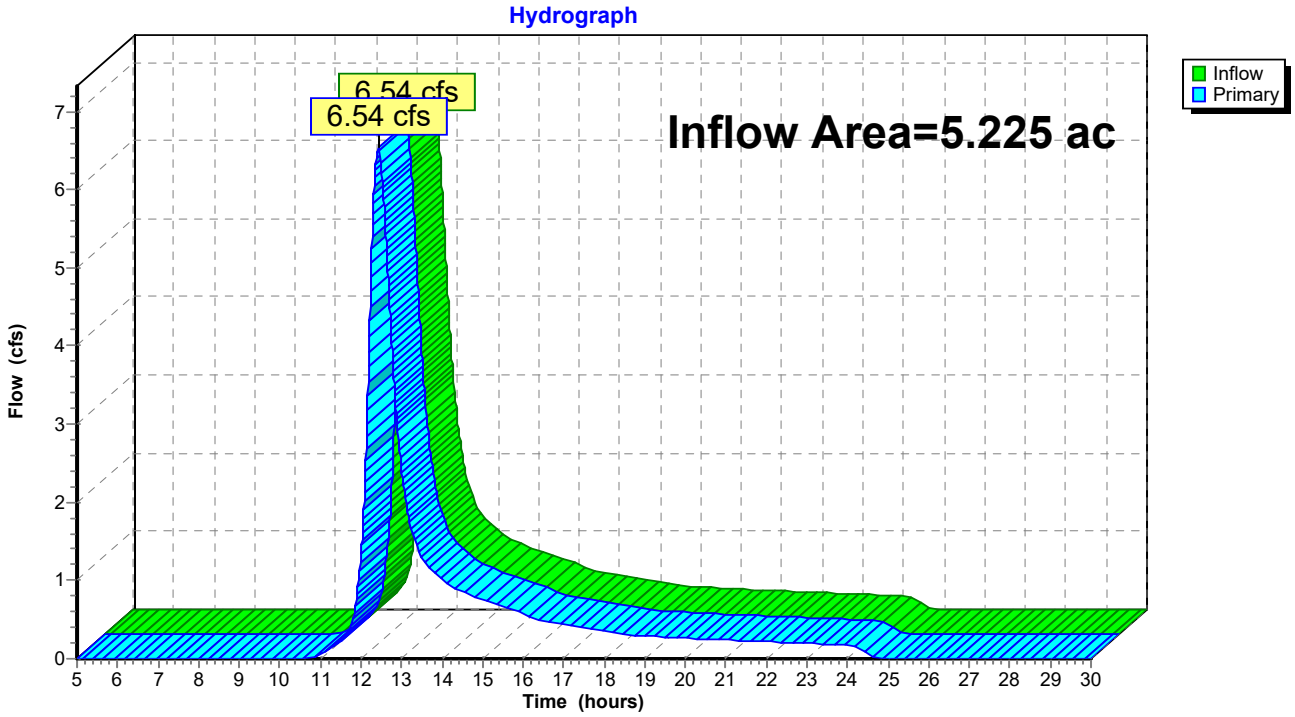


Summary for Link AP-3: Existing Swale

Inflow Area = 5.225 ac, 14.78% Impervious, Inflow Depth = 1.91" for 25-Year event
Inflow = 6.54 cfs @ 12.42 hrs, Volume= 0.833 af
Primary = 6.54 cfs @ 12.42 hrs, Volume= 0.833 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Link AP-3: Existing Swale

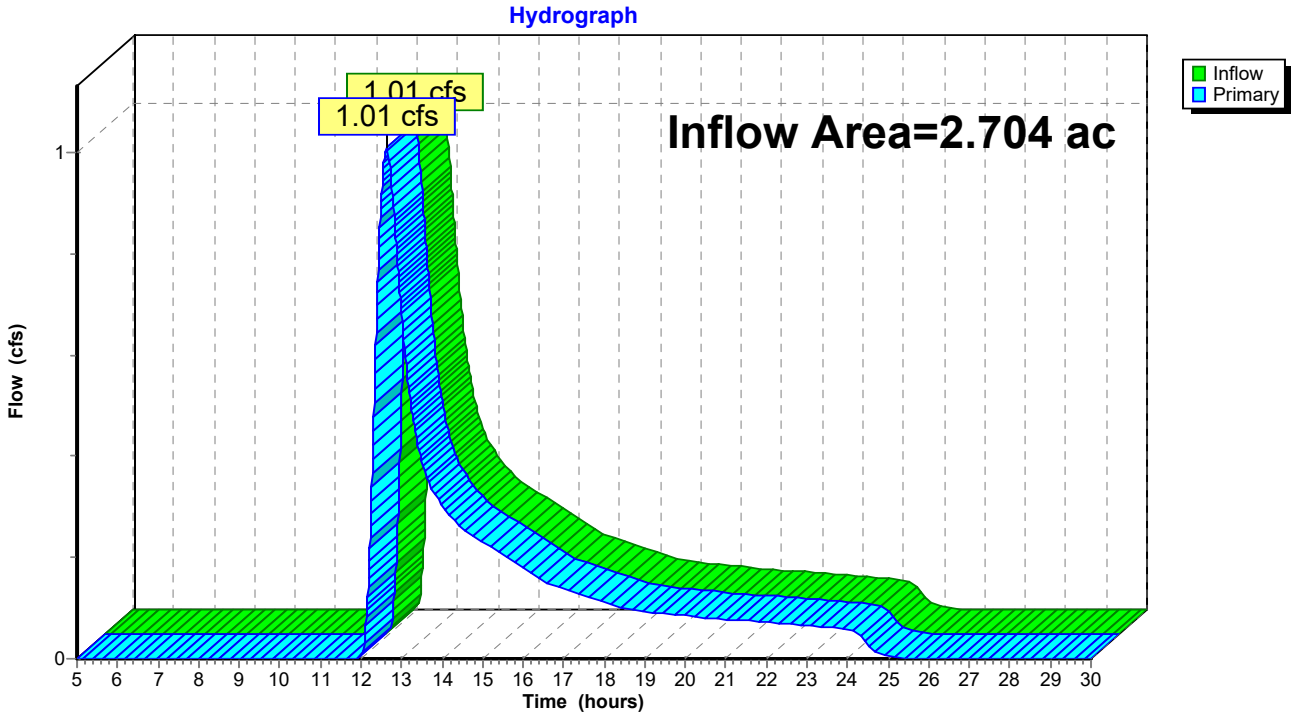


Summary for Link AP-4: Offsite

Inflow Area = 2.704 ac, 0.00% Impervious, Inflow Depth = 0.85" for 25-Year event
Inflow = 1.01 cfs @ 12.64 hrs, Volume= 0.190 af
Primary = 1.01 cfs @ 12.64 hrs, Volume= 0.190 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Link AP-4: Offsite



Summary for Subcatchment EDA-1: EDA-1

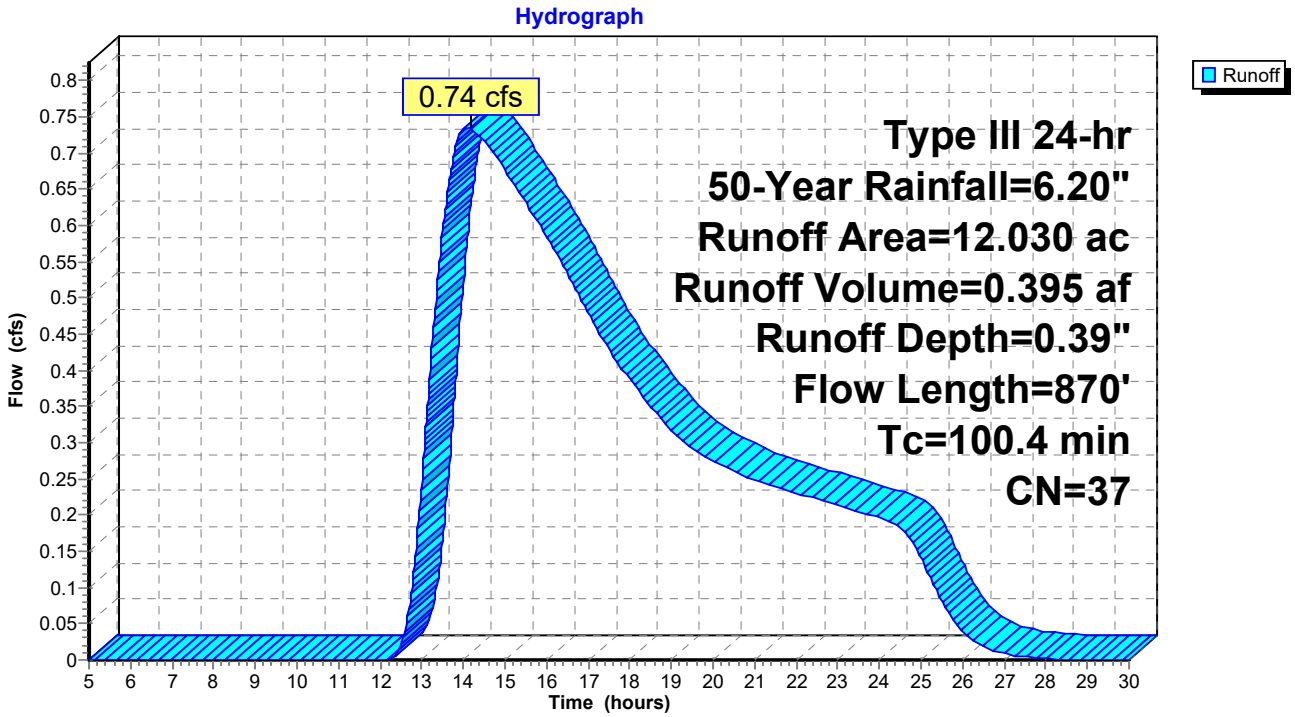
Runoff = 0.74 cfs @ 14.16 hrs, Volume= 0.395 af, Depth= 0.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=6.20"

Area (ac)	CN	Description
0.775	39	>75% Grass cover, Good, HSG A
0.023	80	>75% Grass cover, Good, HSG D
11.000	36	Woods, Fair, HSG A
0.179	79	Woods, Fair, HSG D
0.053	72	Dirt roads, HSG A
12.030	37	Weighted Average
12.030		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
65.1	200	0.0050	0.05		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.20"
35.3	670	0.0040	0.32		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
100.4	870	Total			

Subcatchment EDA-1: EDA-1



Summary for Subcatchment EDA-2: EDA-2

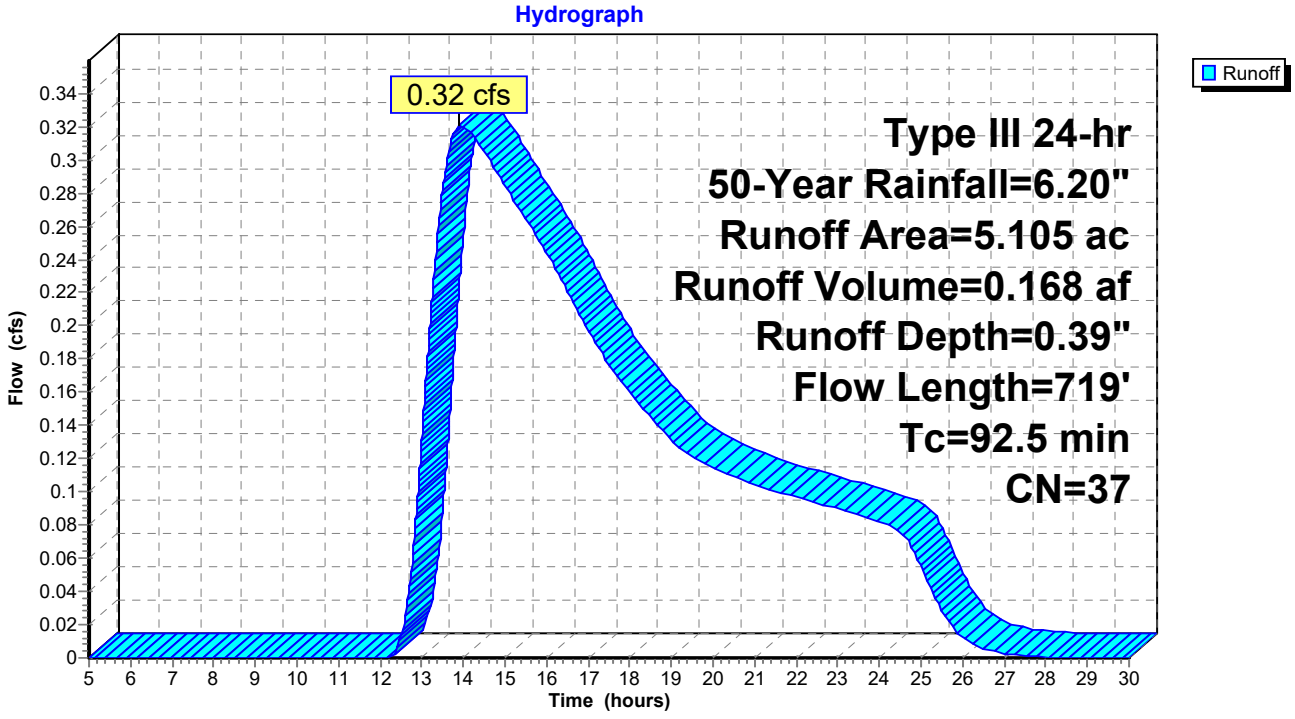
Runoff = 0.32 cfs @ 13.88 hrs, Volume= 0.168 af, Depth= 0.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=6.20"

Area (ac)	CN	Description
4.900	36	Woods, Fair, HSG A
0.108	39	>75% Grass cover, Good, HSG A
0.097	72	Dirt roads, HSG A
5.105	37	Weighted Average
5.105		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
65.1	200	0.0050	0.05		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.20"
27.4	519	0.0040	0.32		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
92.5	719	Total			

Subcatchment EDA-2: EDA-2



Summary for Subcatchment EDA-3: EDA-3

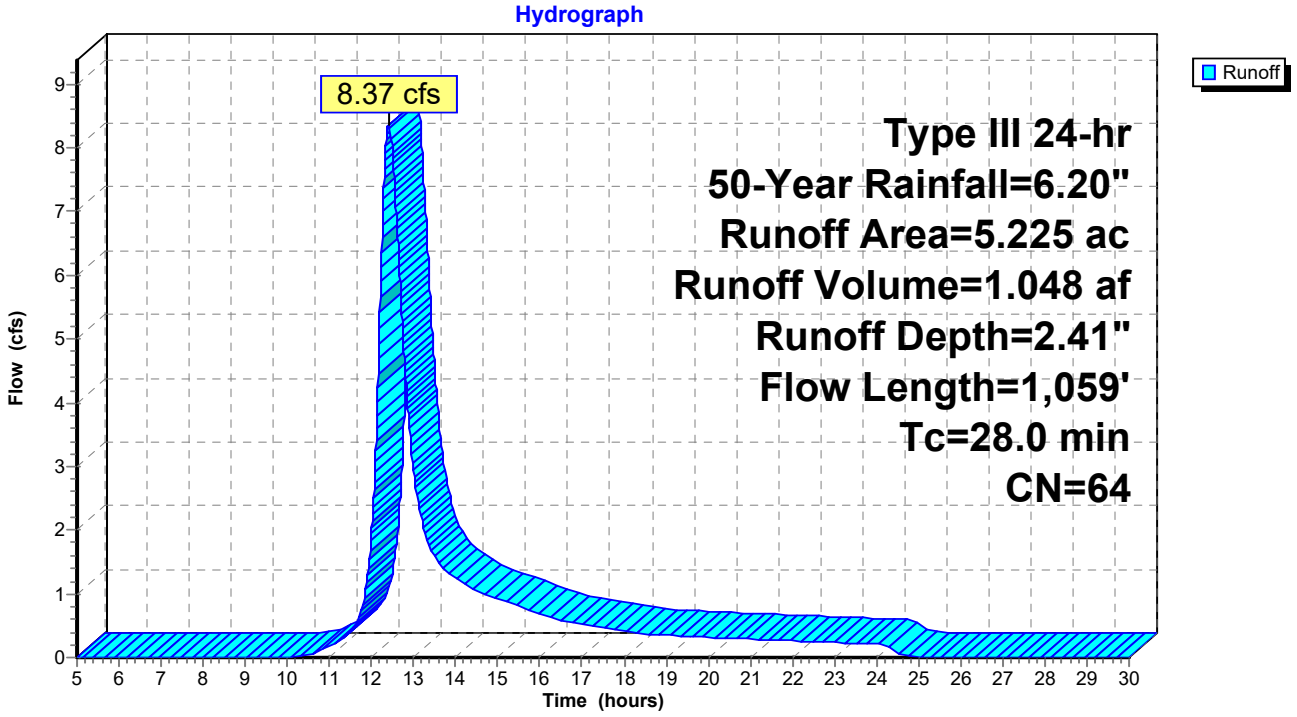
Runoff = 8.37 cfs @ 12.41 hrs, Volume= 1.048 af, Depth= 2.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=6.20"

Area (ac)	CN	Description
0.542	39	>75% Grass cover, Good, HSG A
1.463	80	>75% Grass cover, Good, HSG D
1.750	36	Woods, Fair, HSG A
0.051	79	Woods, Fair, HSG D
0.269	72	Dirt roads, HSG A
0.378	89	Dirt roads, HSG D
0.772	98	Paved parking, HSG D
5.225	64	Weighted Average
4.453		85.22% Pervious Area
0.772		14.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	156	0.0841	0.33		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.20"
20.1	903	0.0025	0.75		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
28.0	1,059	Total			

Subcatchment EDA-3: EDA-3



Summary for Subcatchment EDA-4: EDA-4

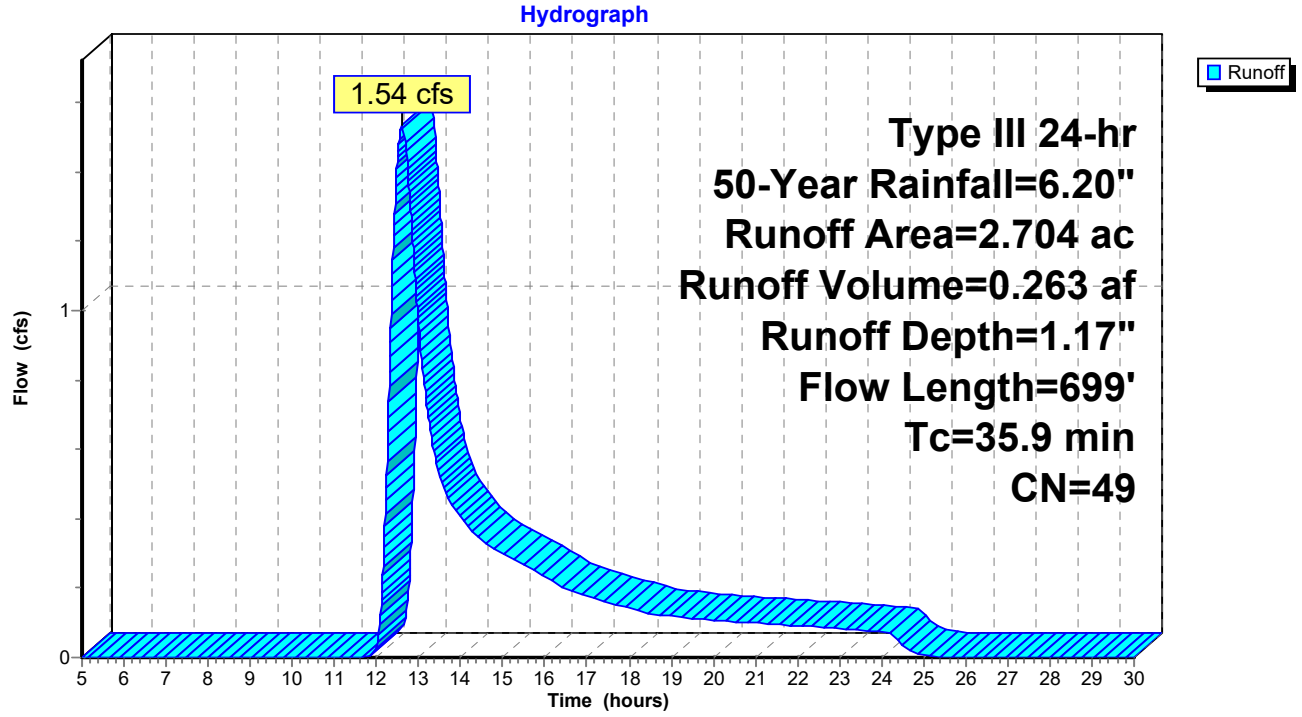
Runoff = 1.54 cfs @ 12.60 hrs, Volume= 0.263 af, Depth= 1.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=6.20"

Area (ac)	CN	Description
0.336	39	>75% Grass cover, Good, HSG A
0.133	80	>75% Grass cover, Good, HSG D
1.464	36	Woods, Fair, HSG A
0.032	79	Woods, Fair, HSG D
0.717	72	Dirt roads, HSG A
0.022	89	Dirt roads, HSG D
2.704	49	Weighted Average
2.704		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	200	0.0550	0.29		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.20"
1.4	120	0.0080	1.44		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
23.1	379	0.0030	0.27		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
35.9	699	Total			

Subcatchment EDA-4: EDA-4



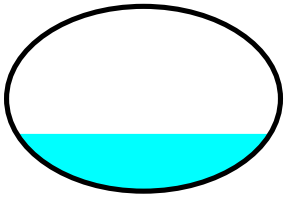
Summary for Reach 1R: 27"x40" Oval RCP

Inflow Area = 5.225 ac, 14.78% Impervious, Inflow Depth = 2.41" for 50-Year event
Inflow = 8.37 cfs @ 12.41 hrs, Volume= 1.048 af
Outflow = 8.37 cfs @ 12.42 hrs, Volume= 1.048 af, Atten= 0%, Lag= 0.5 min

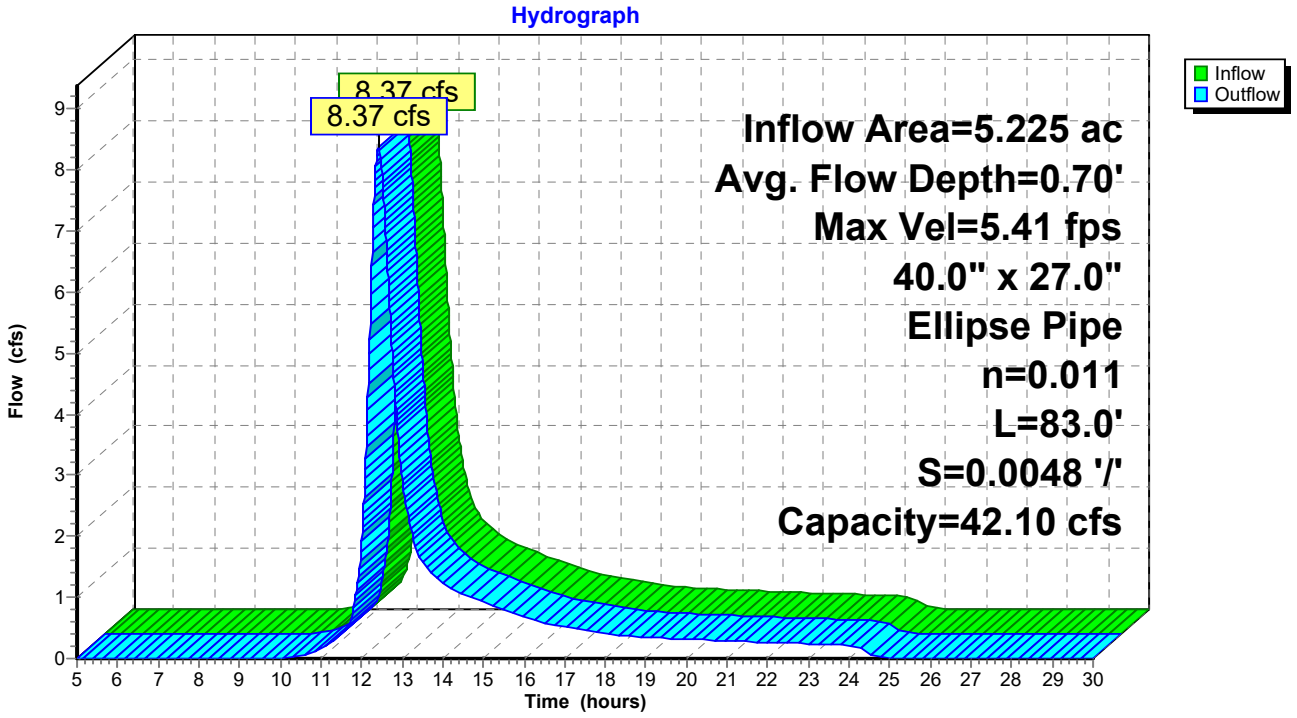
Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.41 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.18 fps, Avg. Travel Time= 0.6 min

Peak Storage= 128 cf @ 12.42 hrs
Average Depth at Peak Storage= 0.70'
Bank-Full Depth= 2.25' Flow Area= 5.9 sf, Capacity= 42.10 cfs

40.0" W x 27.0" H Ellipse Pipe
n= 0.011 Concrete pipe, straight & clean
Length= 83.0' Slope= 0.0048 '/'
Inlet Invert= 660.10', Outlet Invert= 659.70'



Reach 1R: 27"x40" Oval RCP

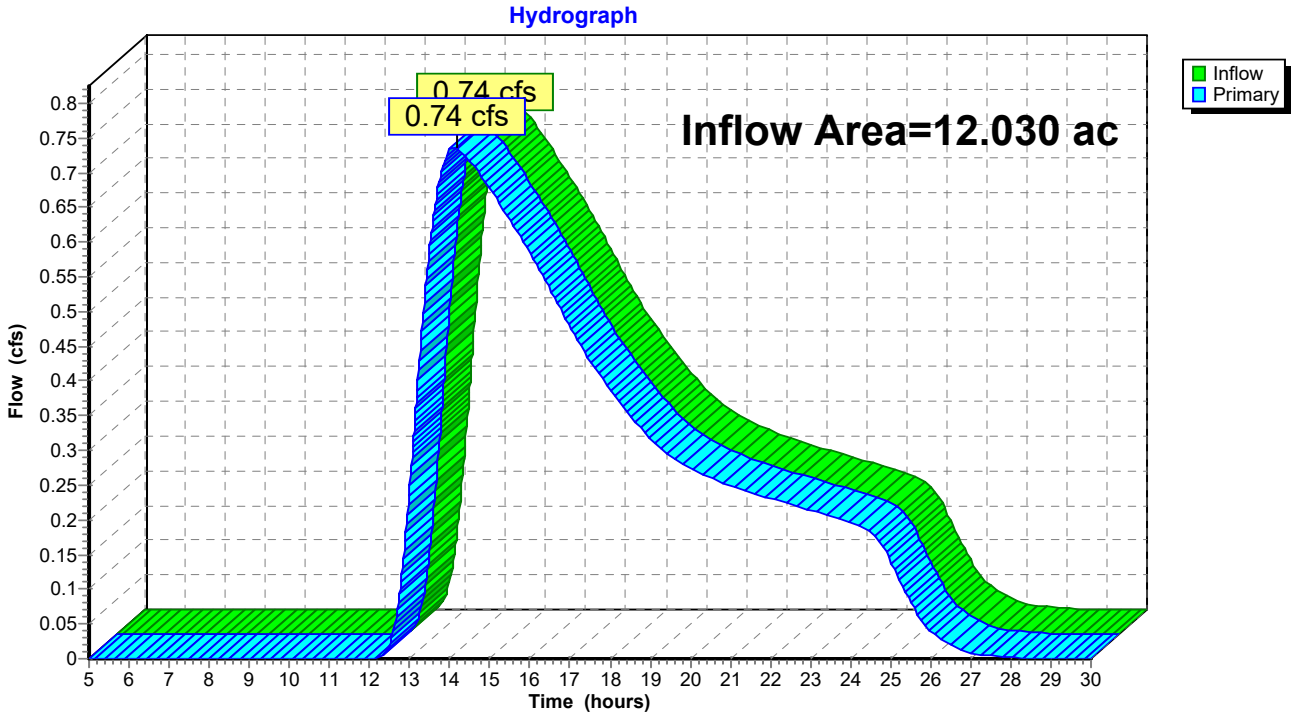


Summary for Link AP-1: Western Wetlands

Inflow Area = 12.030 ac, 0.00% Impervious, Inflow Depth = 0.39" for 50-Year event
Inflow = 0.74 cfs @ 14.16 hrs, Volume= 0.395 af
Primary = 0.74 cfs @ 14.16 hrs, Volume= 0.395 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Link AP-1: Western Wetlands

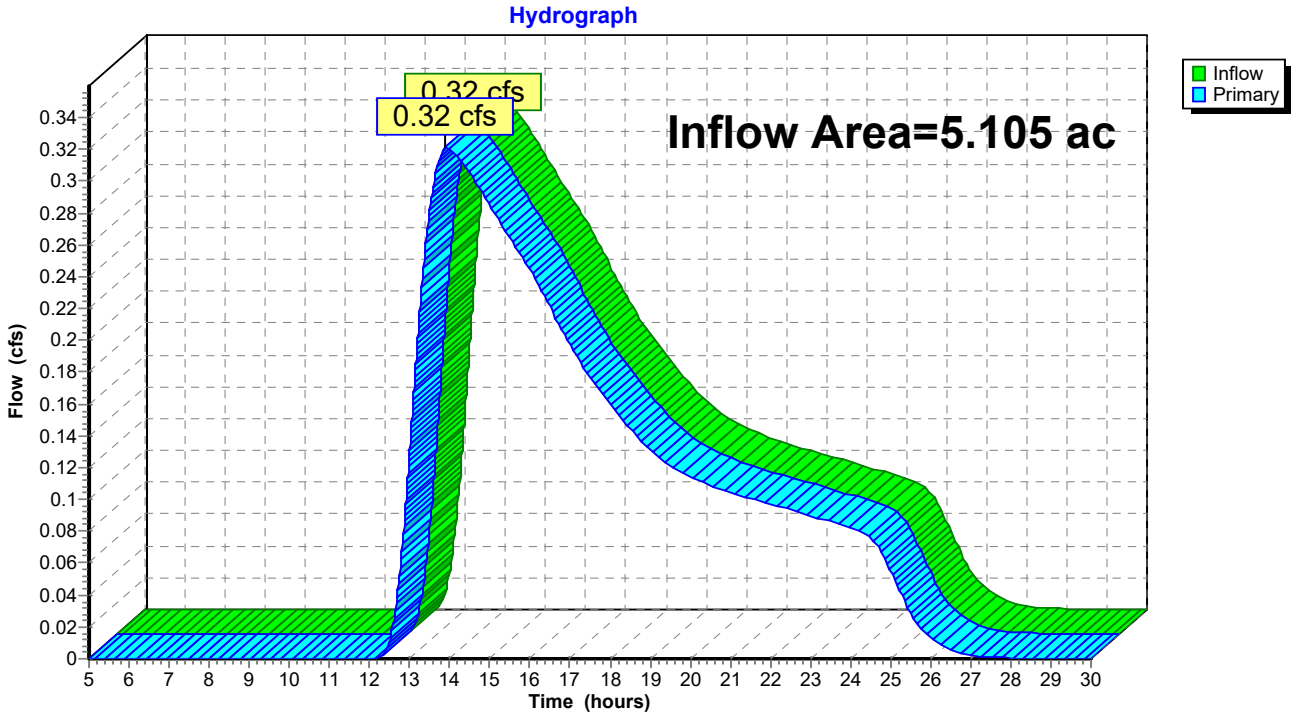


Summary for Link AP-2: Southern Property Line

Inflow Area = 5.105 ac, 0.00% Impervious, Inflow Depth = 0.39" for 50-Year event
Inflow = 0.32 cfs @ 13.88 hrs, Volume= 0.168 af
Primary = 0.32 cfs @ 13.88 hrs, Volume= 0.168 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Link AP-2: Southern Property Line

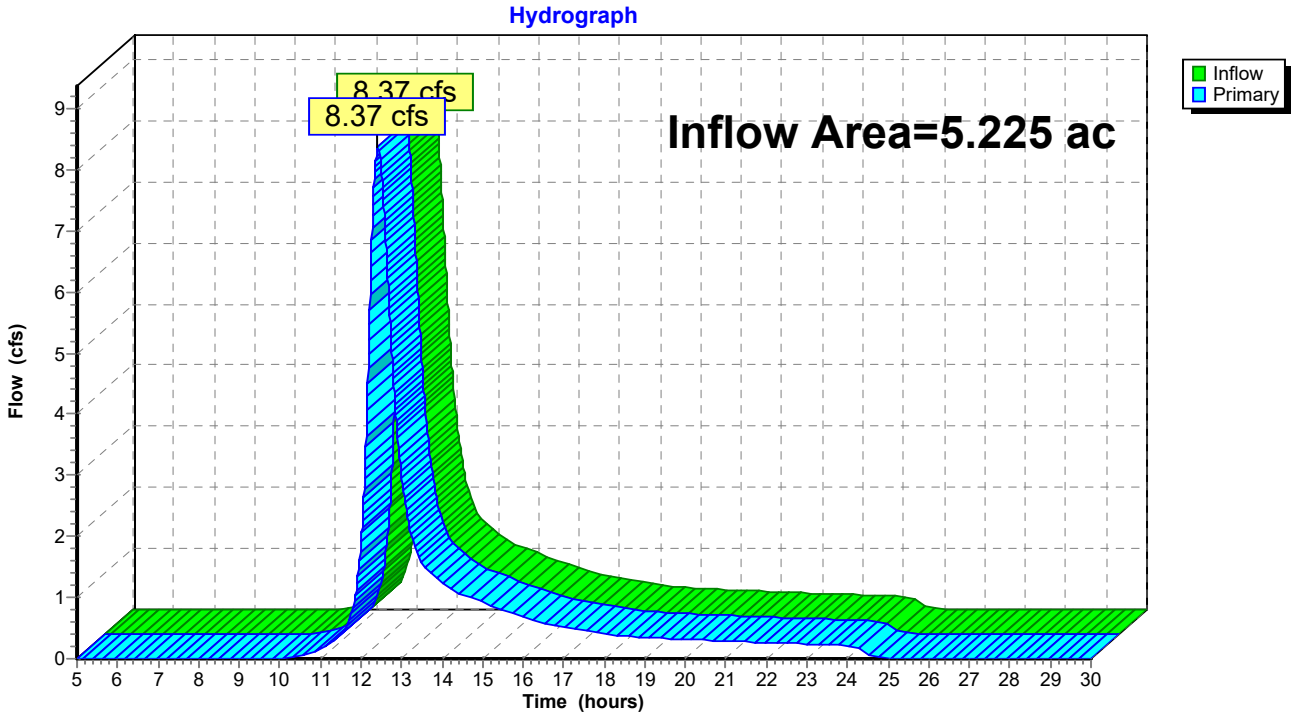


Summary for Link AP-3: Existing Swale

Inflow Area = 5.225 ac, 14.78% Impervious, Inflow Depth = 2.41" for 50-Year event
Inflow = 8.37 cfs @ 12.42 hrs, Volume= 1.048 af
Primary = 8.37 cfs @ 12.42 hrs, Volume= 1.048 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Link AP-3: Existing Swale

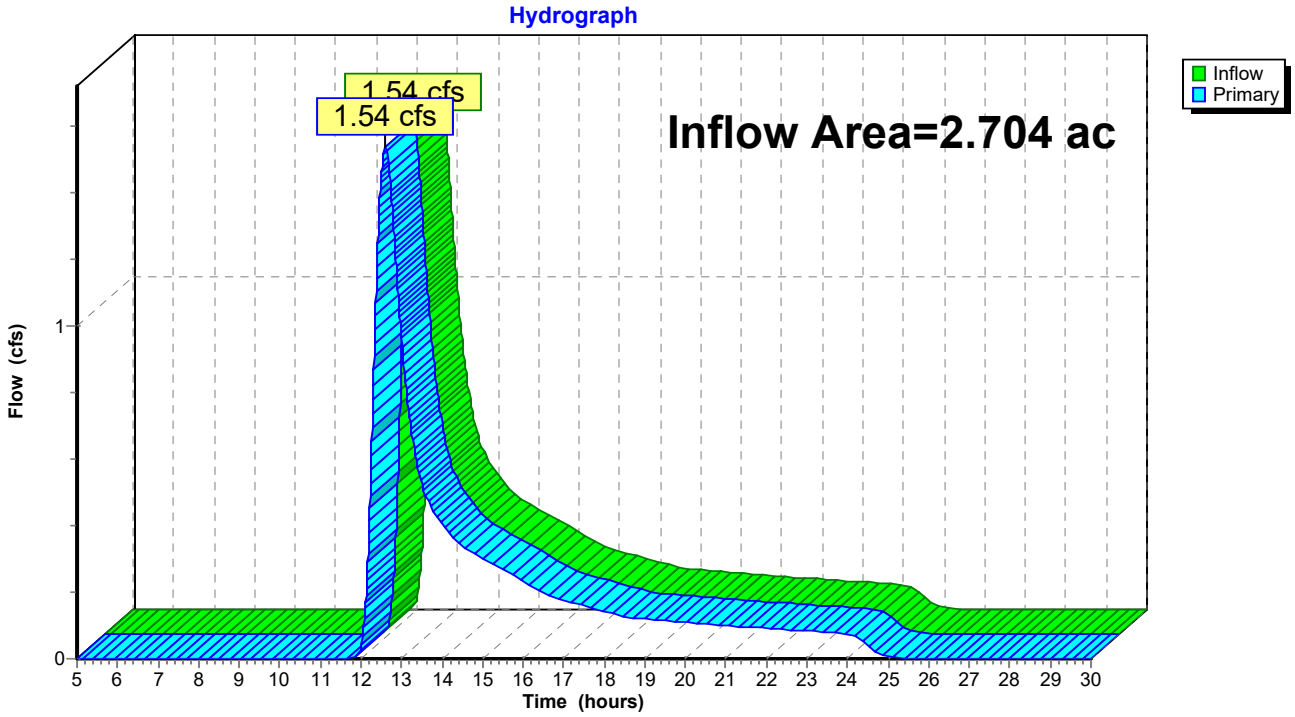


Summary for Link AP-4: Offsite

Inflow Area = 2.704 ac, 0.00% Impervious, Inflow Depth = 1.17" for 50-Year event
Inflow = 1.54 cfs @ 12.60 hrs, Volume= 0.263 af
Primary = 1.54 cfs @ 12.60 hrs, Volume= 0.263 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Link AP-4: Offsite



Summary for Subcatchment EDA-1: EDA-1

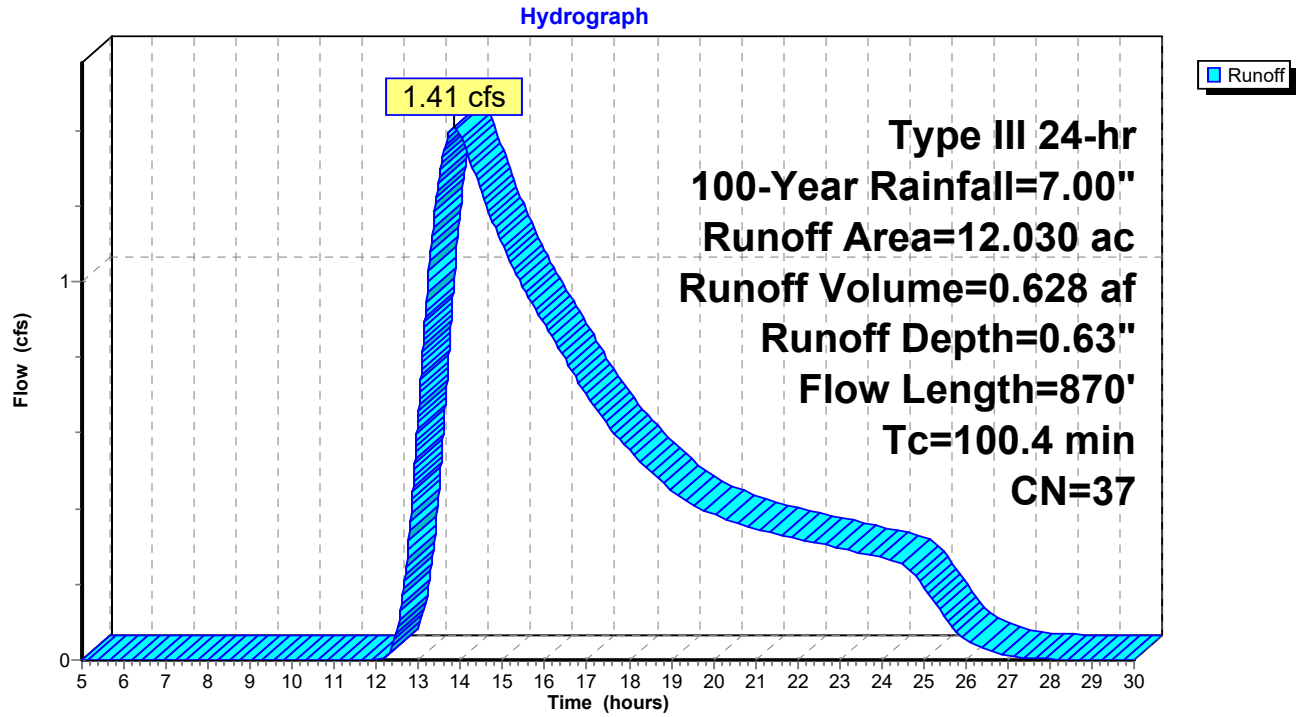
Runoff = 1.41 cfs @ 13.84 hrs, Volume= 0.628 af, Depth= 0.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (ac)	CN	Description
0.775	39	>75% Grass cover, Good, HSG A
0.023	80	>75% Grass cover, Good, HSG D
11.000	36	Woods, Fair, HSG A
0.179	79	Woods, Fair, HSG D
0.053	72	Dirt roads, HSG A
12.030	37	Weighted Average
12.030		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
65.1	200	0.0050	0.05		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.20"
35.3	670	0.0040	0.32		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
100.4	870	Total			

Subcatchment EDA-1: EDA-1



Summary for Subcatchment EDA-2: EDA-2

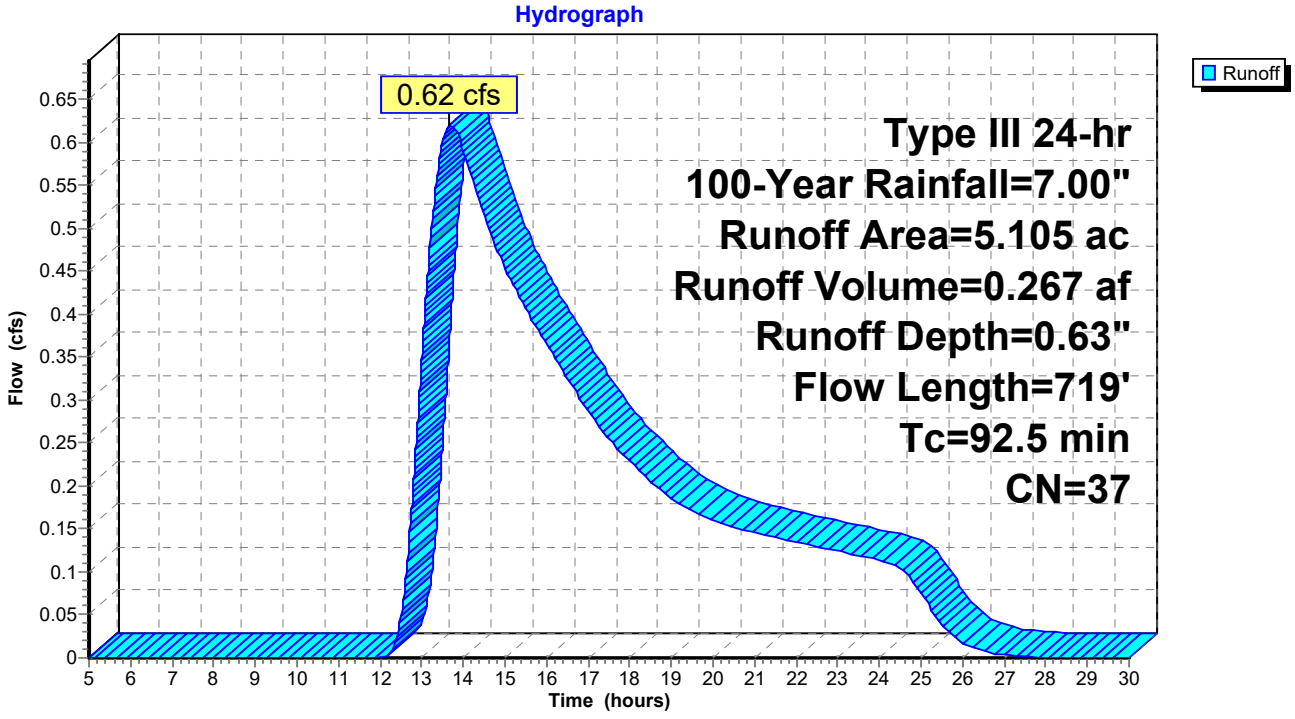
Runoff = 0.62 cfs @ 13.67 hrs, Volume= 0.267 af, Depth= 0.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (ac)	CN	Description
4.900	36	Woods, Fair, HSG A
0.108	39	>75% Grass cover, Good, HSG A
0.097	72	Dirt roads, HSG A
5.105	37	Weighted Average
5.105		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
65.1	200	0.0050	0.05		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.20"
27.4	519	0.0040	0.32		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
92.5	719	Total			

Subcatchment EDA-2: EDA-2



Summary for Subcatchment EDA-3: EDA-3

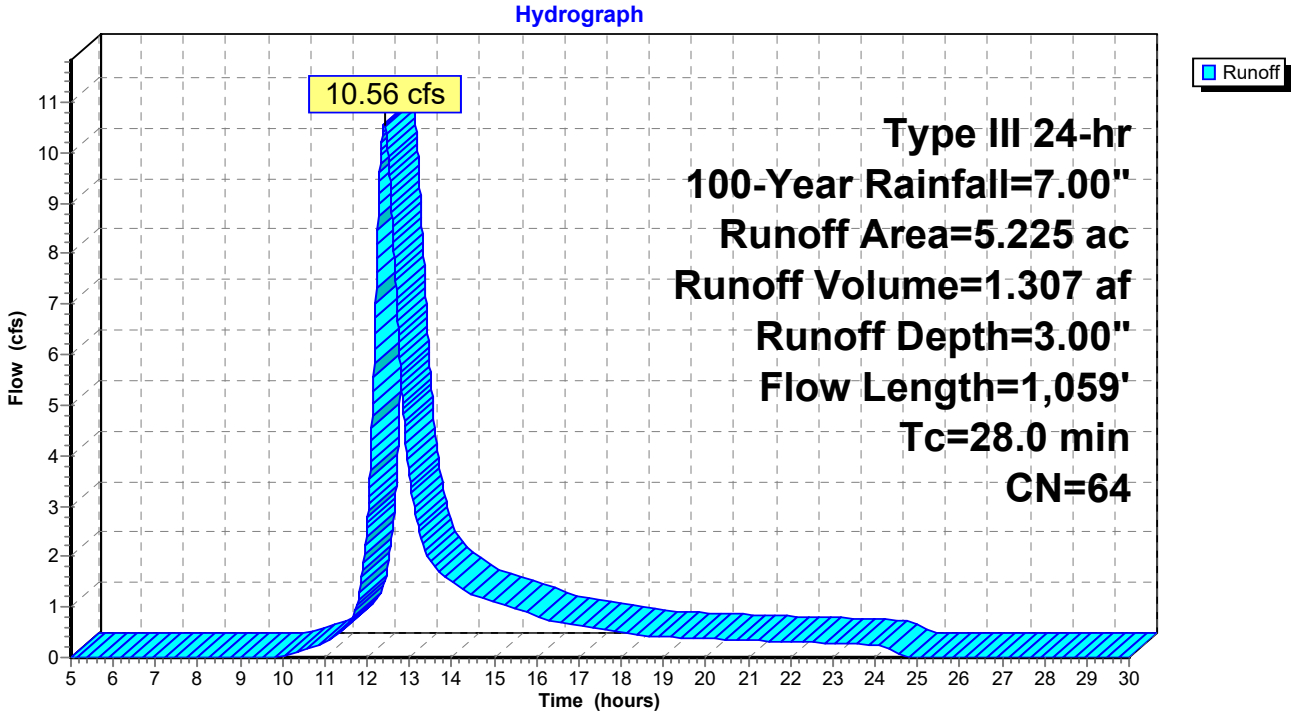
Runoff = 10.56 cfs @ 12.41 hrs, Volume= 1.307 af, Depth= 3.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (ac)	CN	Description
0.542	39	>75% Grass cover, Good, HSG A
1.463	80	>75% Grass cover, Good, HSG D
1.750	36	Woods, Fair, HSG A
0.051	79	Woods, Fair, HSG D
0.269	72	Dirt roads, HSG A
0.378	89	Dirt roads, HSG D
0.772	98	Paved parking, HSG D
5.225	64	Weighted Average
4.453		85.22% Pervious Area
0.772		14.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	156	0.0841	0.33		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.20"
20.1	903	0.0025	0.75		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
28.0	1,059	Total			

Subcatchment EDA-3: EDA-3



Summary for Subcatchment EDA-4: EDA-4

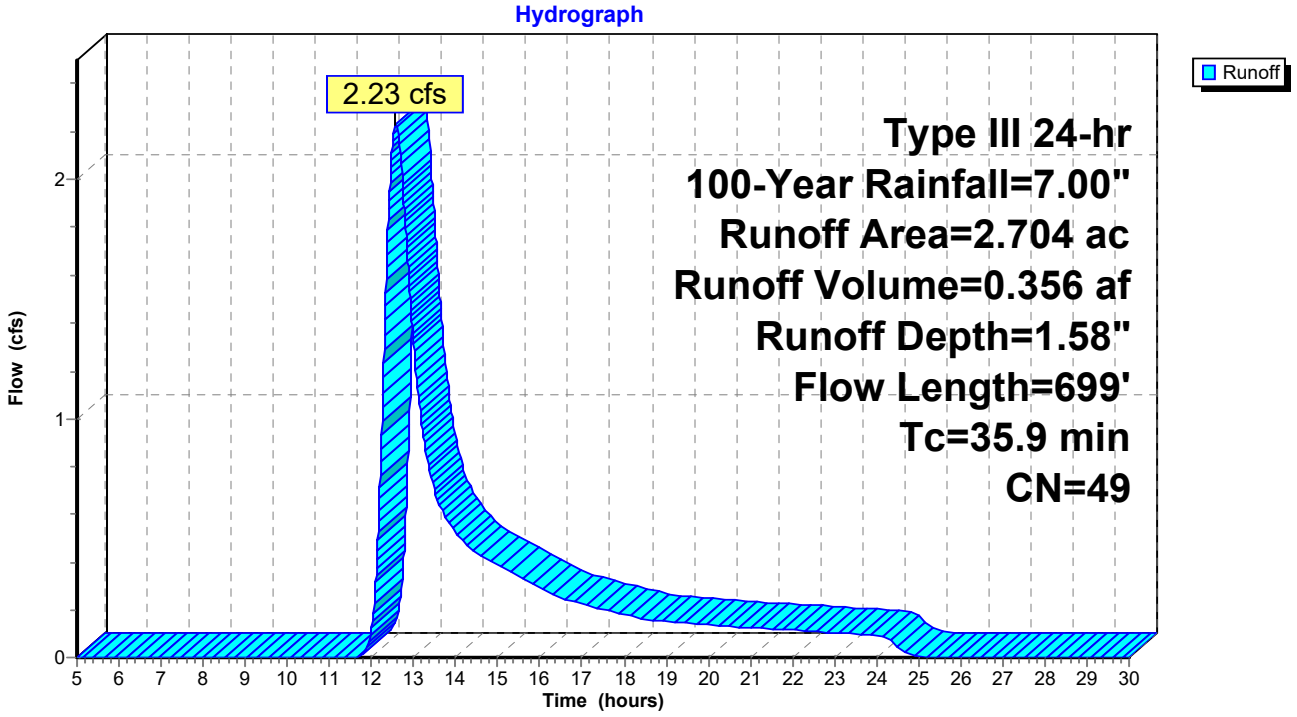
Runoff = 2.23 cfs @ 12.57 hrs, Volume= 0.356 af, Depth= 1.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (ac)	CN	Description
0.336	39	>75% Grass cover, Good, HSG A
0.133	80	>75% Grass cover, Good, HSG D
1.464	36	Woods, Fair, HSG A
0.032	79	Woods, Fair, HSG D
0.717	72	Dirt roads, HSG A
0.022	89	Dirt roads, HSG D
2.704	49	Weighted Average
2.704		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	200	0.0550	0.29		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.20"
1.4	120	0.0080	1.44		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
23.1	379	0.0030	0.27		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
35.9	699	Total			

Subcatchment EDA-4: EDA-4



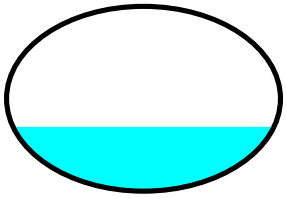
Summary for Reach 1R: 27"x40" Oval RCP

Inflow Area = 5.225 ac, 14.78% Impervious, Inflow Depth = 3.00" for 100-Year event
Inflow = 10.56 cfs @ 12.41 hrs, Volume= 1.307 af
Outflow = 10.56 cfs @ 12.42 hrs, Volume= 1.307 af, Atten= 0%, Lag= 0.4 min

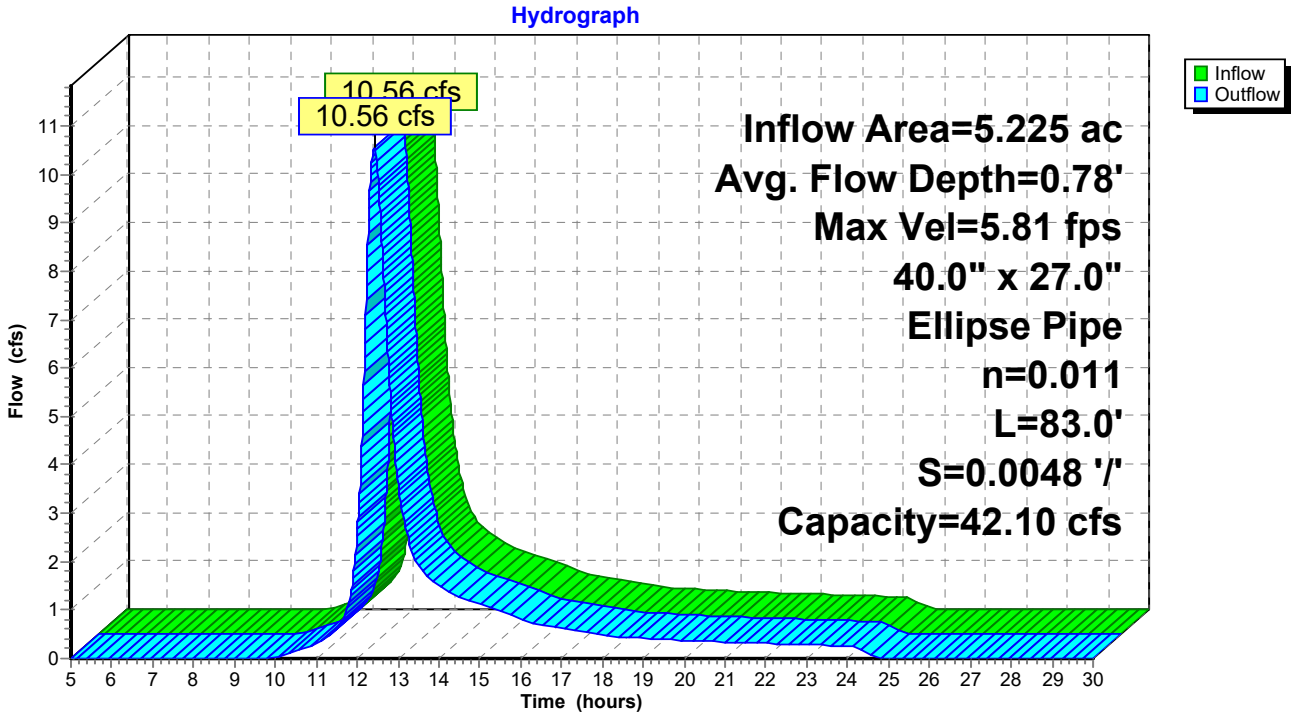
Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.81 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.29 fps, Avg. Travel Time= 0.6 min

Peak Storage= 151 cf @ 12.41 hrs
Average Depth at Peak Storage= 0.78'
Bank-Full Depth= 2.25' Flow Area= 5.9 sf, Capacity= 42.10 cfs

40.0" W x 27.0" H Ellipse Pipe
n= 0.011 Concrete pipe, straight & clean
Length= 83.0' Slope= 0.0048 '/'
Inlet Invert= 660.10', Outlet Invert= 659.70'



Reach 1R: 27"x40" Oval RCP

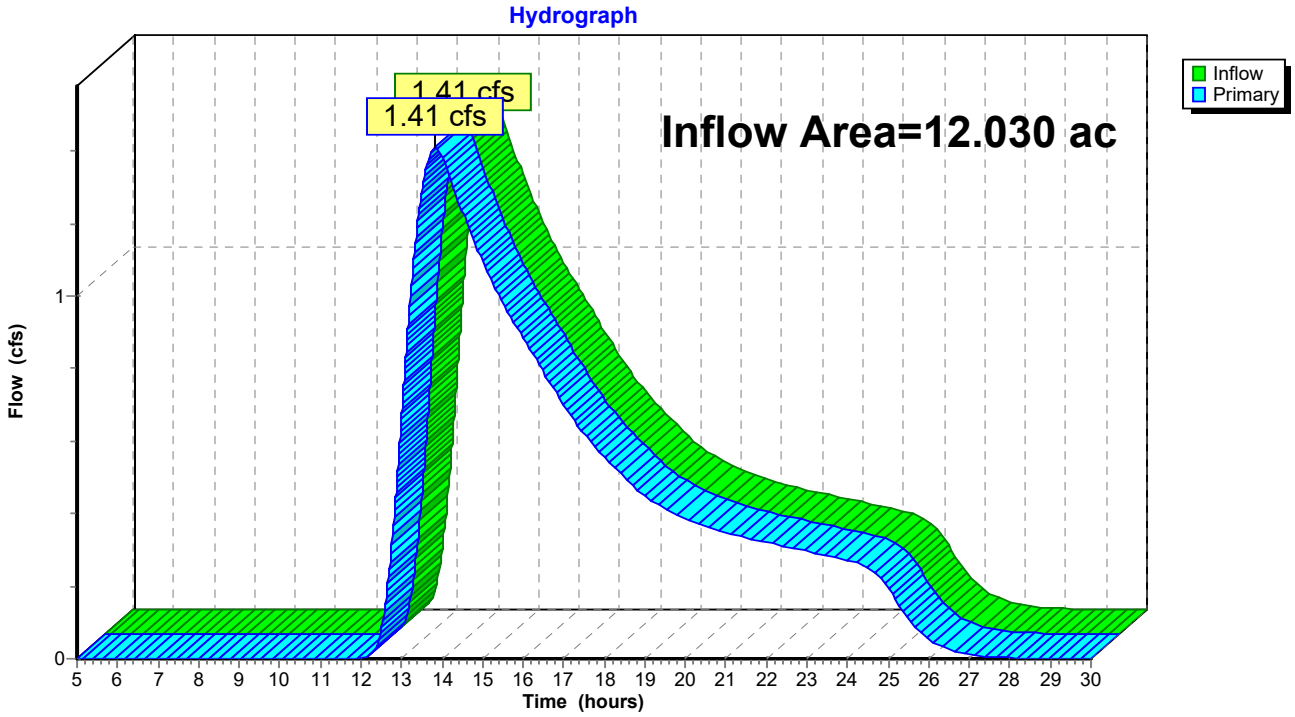


Summary for Link AP-1: Western Wetlands

Inflow Area = 12.030 ac, 0.00% Impervious, Inflow Depth = 0.63" for 100-Year event
Inflow = 1.41 cfs @ 13.84 hrs, Volume= 0.628 af
Primary = 1.41 cfs @ 13.84 hrs, Volume= 0.628 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Link AP-1: Western Wetlands

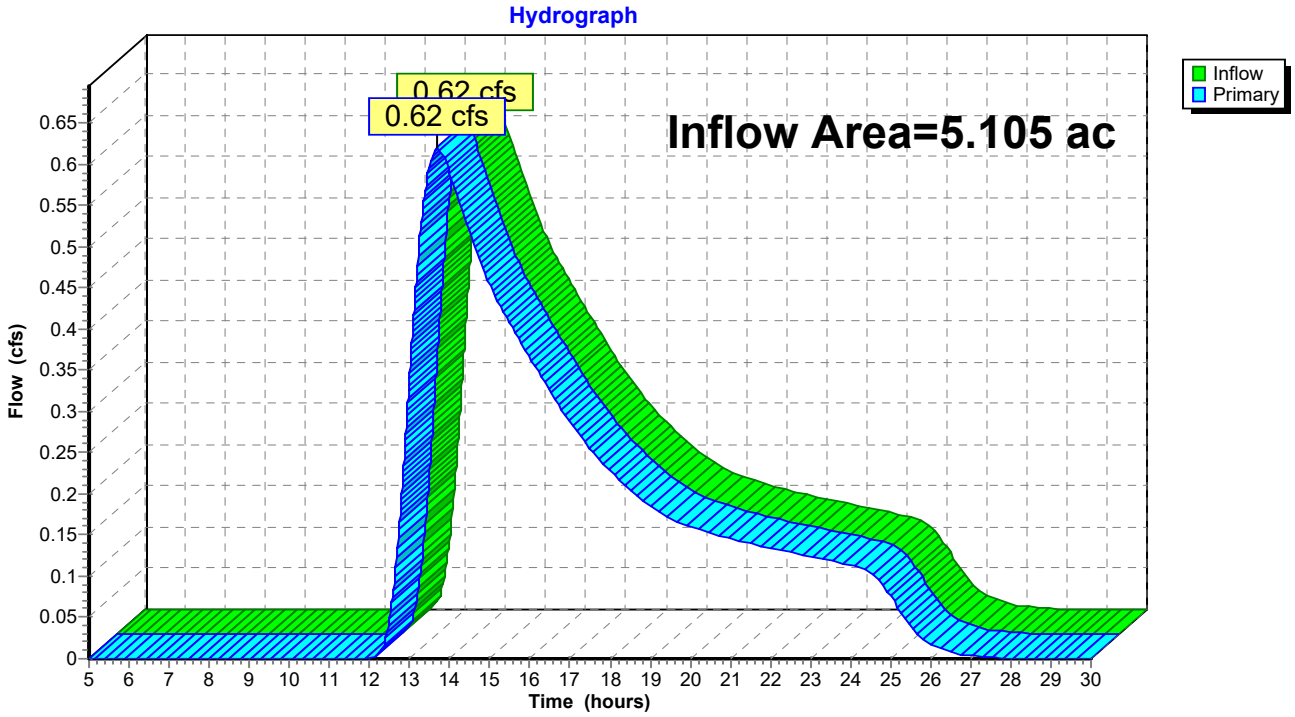


Summary for Link AP-2: Southern Property Line

Inflow Area = 5.105 ac, 0.00% Impervious, Inflow Depth = 0.63" for 100-Year event
Inflow = 0.62 cfs @ 13.67 hrs, Volume= 0.267 af
Primary = 0.62 cfs @ 13.67 hrs, Volume= 0.267 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Link AP-2: Southern Property Line

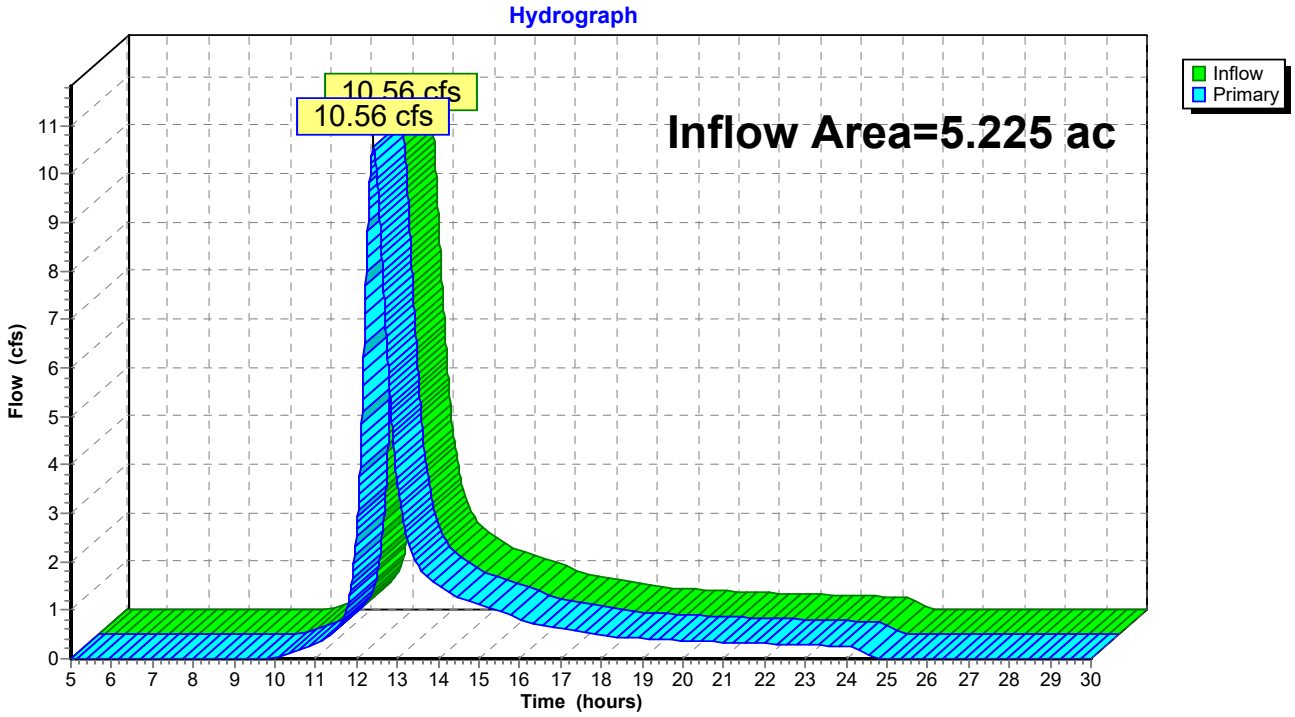


Summary for Link AP-3: Existing Swale

Inflow Area = 5.225 ac, 14.78% Impervious, Inflow Depth = 3.00" for 100-Year event
Inflow = 10.56 cfs @ 12.42 hrs, Volume= 1.307 af
Primary = 10.56 cfs @ 12.42 hrs, Volume= 1.307 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Link AP-3: Existing Swale

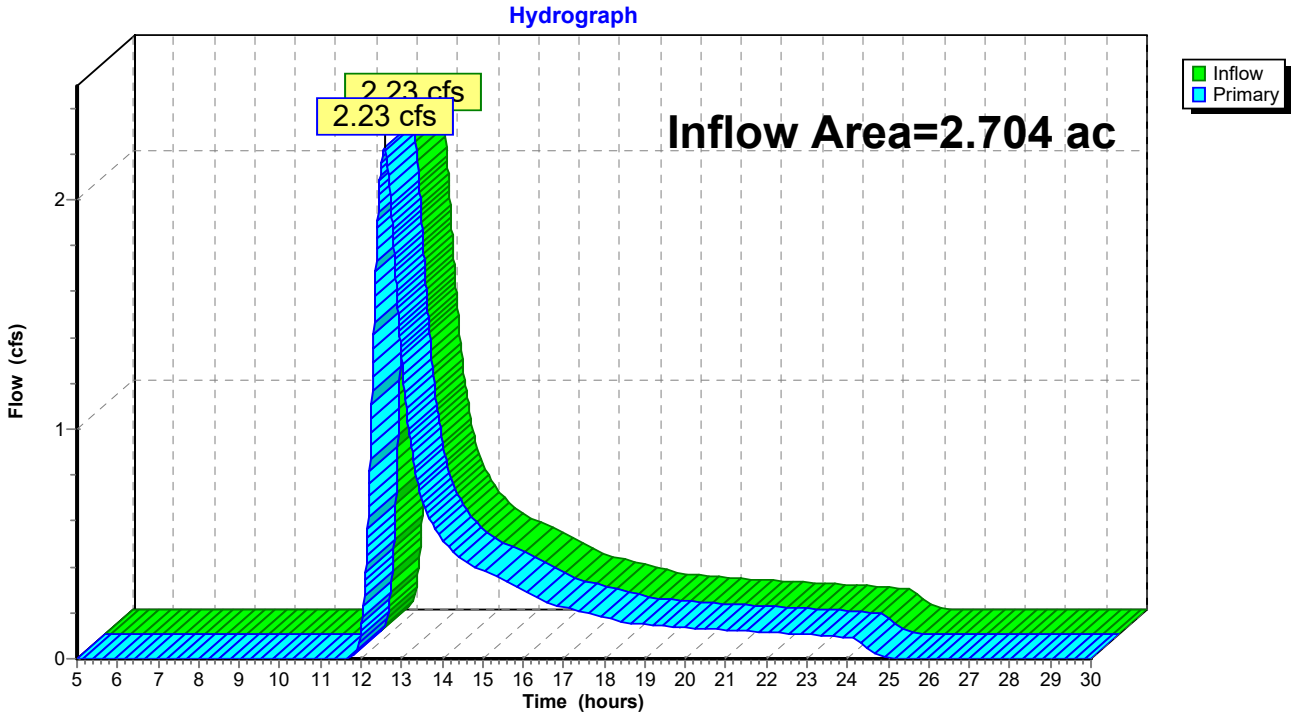


Summary for Link AP-4: Offsite

Inflow Area = 2.704 ac, 0.00% Impervious, Inflow Depth = 1.58" for 100-Year event
Inflow = 2.23 cfs @ 12.57 hrs, Volume= 0.356 af
Primary = 2.23 cfs @ 12.57 hrs, Volume= 0.356 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Link AP-4: Offsite

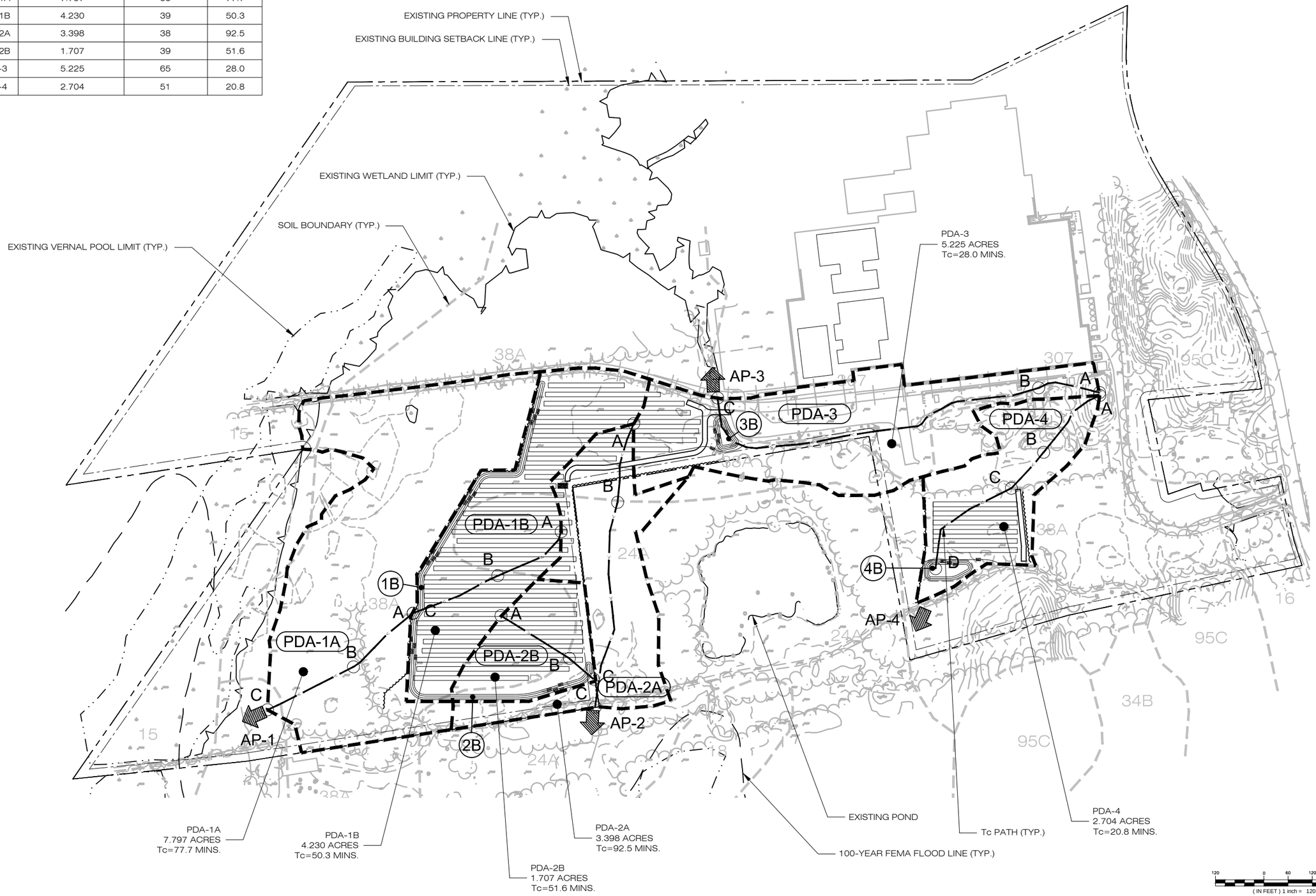


APPENDIX E

Proposed Drainage Area Map (PDA-1) &
Hydrologic Computations (HydroCAD)

PROPOSED DRAINAGE AREAS

	TOTAL AREA (ACRES)	COMPOSITE CN	TC (MINS.)
PDA-1A	7.797	38	77.7
PDA-1B	4.230	39	50.3
PDA-2A	3.398	38	92.5
PDA-2B	1.707	39	51.6
PDA-3	5.225	65	28.0
PDA-4	2.704	51	20.8



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ALL-POINTS TECHNOLOGY CORPORATION

3 SADDLEBROOK DRIVE PHONE: (860)-663-1697
KILLINGWORTH, CT 06419 FAX: (860)-663-0935
WWW.ALLPOINTSTECH.COM

CONSTRUCTION DOCUMENTS

NO	DATE	REVISION
0	02/24/16	FOR REVIEW: EEL
1	04/22/16	FOR REVIEW: BJP
2	06/10/16	CLIENT COMMENTS: BJP
3		
4		
5		
6		

DESIGN PROFESSIONALS OF RECORD

PROF: SCOTT M. CHASSE P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION
ADD: 3 SADDLEBROOK DRIVE KILLINGWORTH, CT 06419

OWNER: BECTON, DICKINSON & COMPANY
ADDRESS: 1 BECTON DRIVE FRANKLIN LAKES, NJ 07417 (201) 847-6800

SITE ADDRESS: 7 GRACE WAY NORTH CANAAN, CT 06018

APT FILING NUMBER: CT-478-120

DRAWN BY: CSH

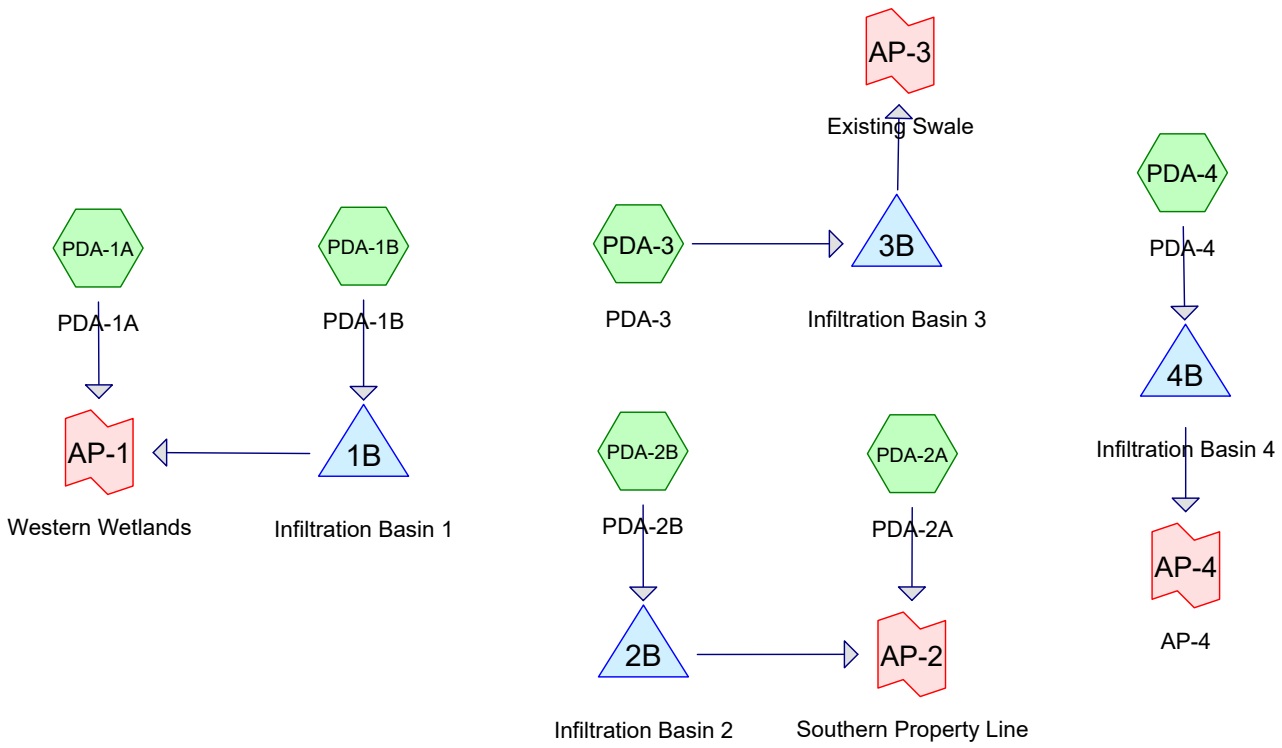
DATE: 02/24/16 CHECKED BY: EEL

SHEET TITLE:

PROPOSED DRAINAGE AREA MAP

SHEET NUMBER:

PDA-1



Subcat Reach Pond Link

Routing Diagram for North Canaan Solar City - Proposed Rev1 04-22-16

Prepared by Microsoft, Printed 6/10/2016

Summary for Subcatchment PDA-1A: PDA-1A

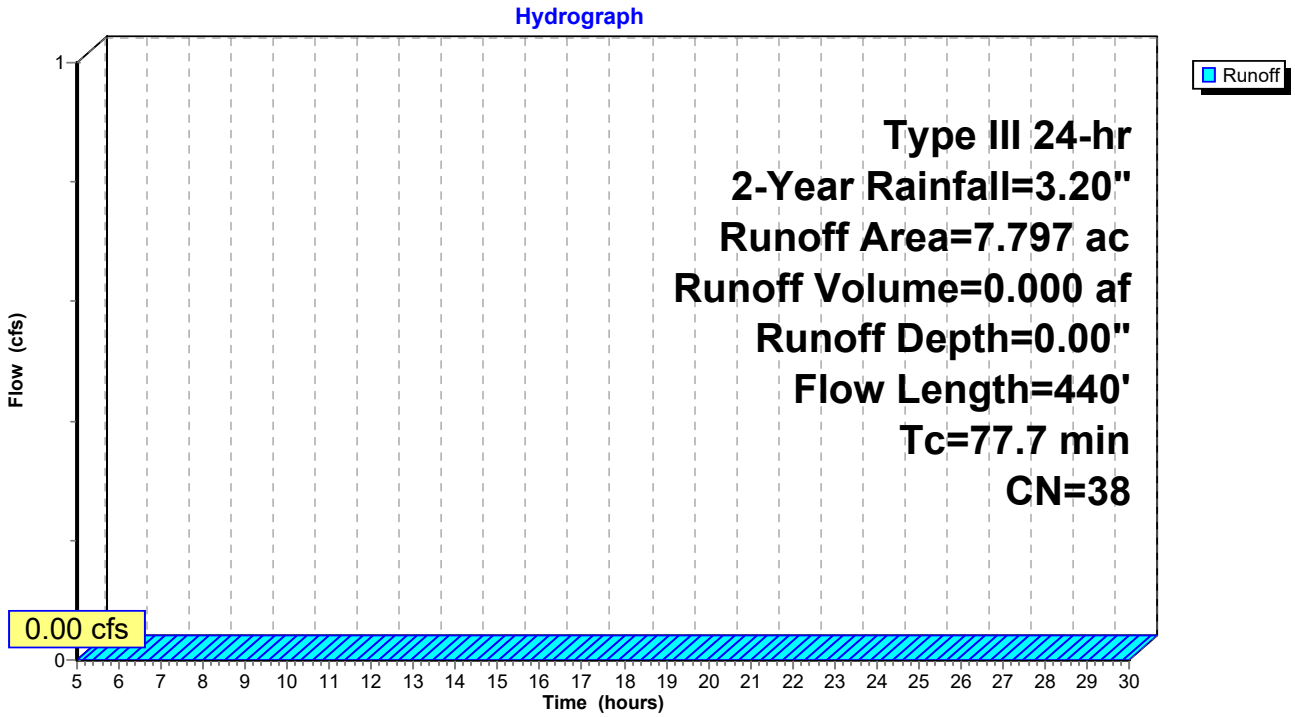
Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (ac)	CN	Description
6.705	36	Woods, Fair, HSG A
0.179	79	Woods, Fair, HSG D
0.053	72	Dirt roads, HSG A
0.837	39	>75% Grass cover, Good, HSG A
0.023	80	>75% Grass cover, Good, HSG D
7.797	38	Weighted Average
7.797		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
65.1	200	0.0050	0.05		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.20"
12.6	240	0.0040	0.32		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
77.7	440	Total			

Subcatchment PDA-1A: PDA-1A



Summary for Subcatchment PDA-1B: PDA-1B

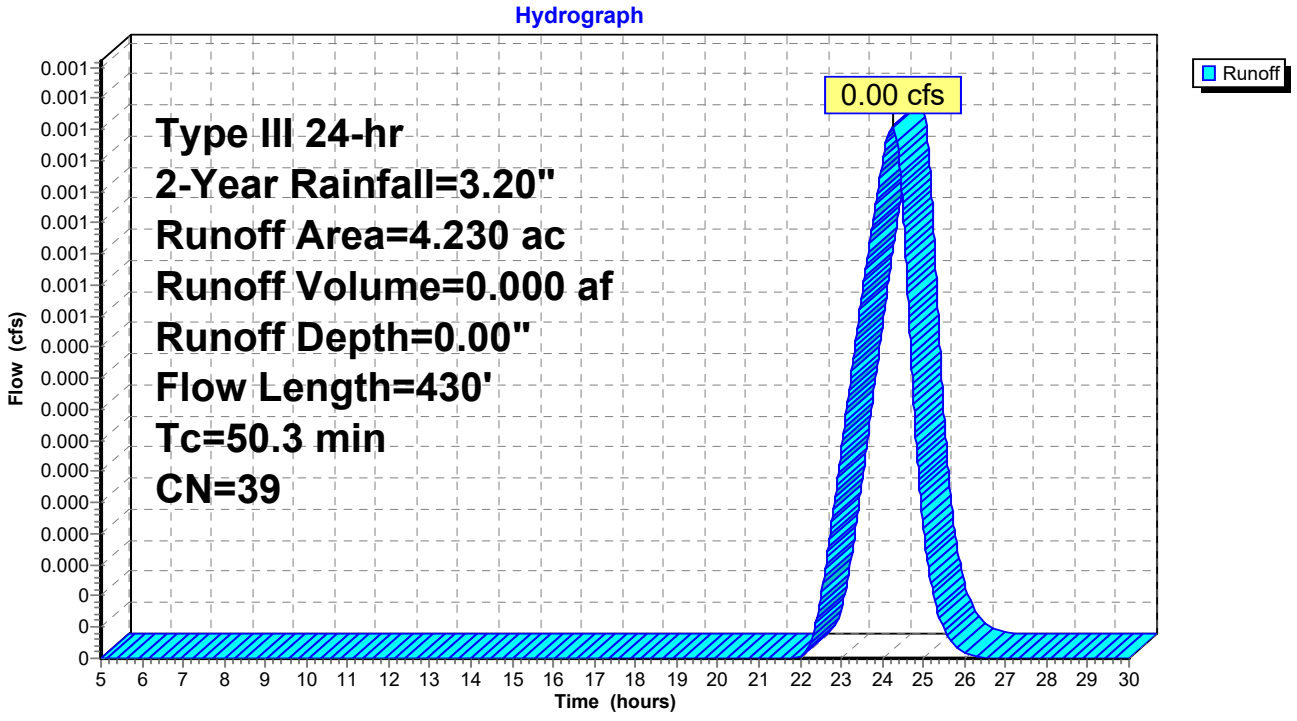
Runoff = 0.00 cfs @ 24.25 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (ac)	CN	Description
4.230	39	>75% Grass cover, Good, HSG A
4.230		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
41.6	200	0.0055	0.08		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.20"
8.7	230	0.0040	0.44		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
50.3	430	Total			

Subcatchment PDA-1B: PDA-1B



Summary for Subcatchment PDA-2A: PDA-2A

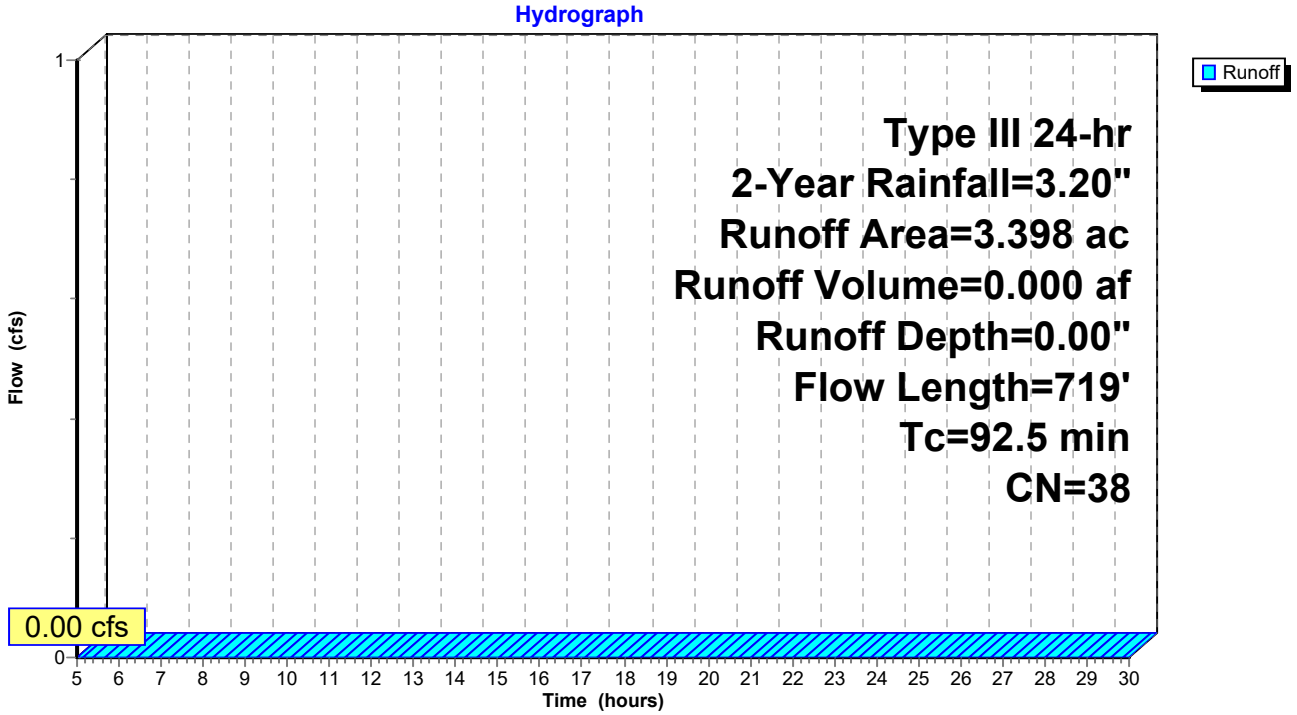
Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (ac)	CN	Description
2.232	36	Woods, Fair, HSG A
1.029	39	>75% Grass cover, Good, HSG A
0.097	72	Dirt roads, HSG A
0.033	76	Gravel roads, HSG A
0.007	98	Paved parking, HSG A
3.398	38	Weighted Average
3.391		99.79% Pervious Area
0.007		0.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
65.1	200	0.0050	0.05		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.20"
27.4	519	0.0040	0.32		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
92.5	719	Total			

Subcatchment PDA-2A: PDA-2A



Summary for Subcatchment PDA-2B: PDA-2B

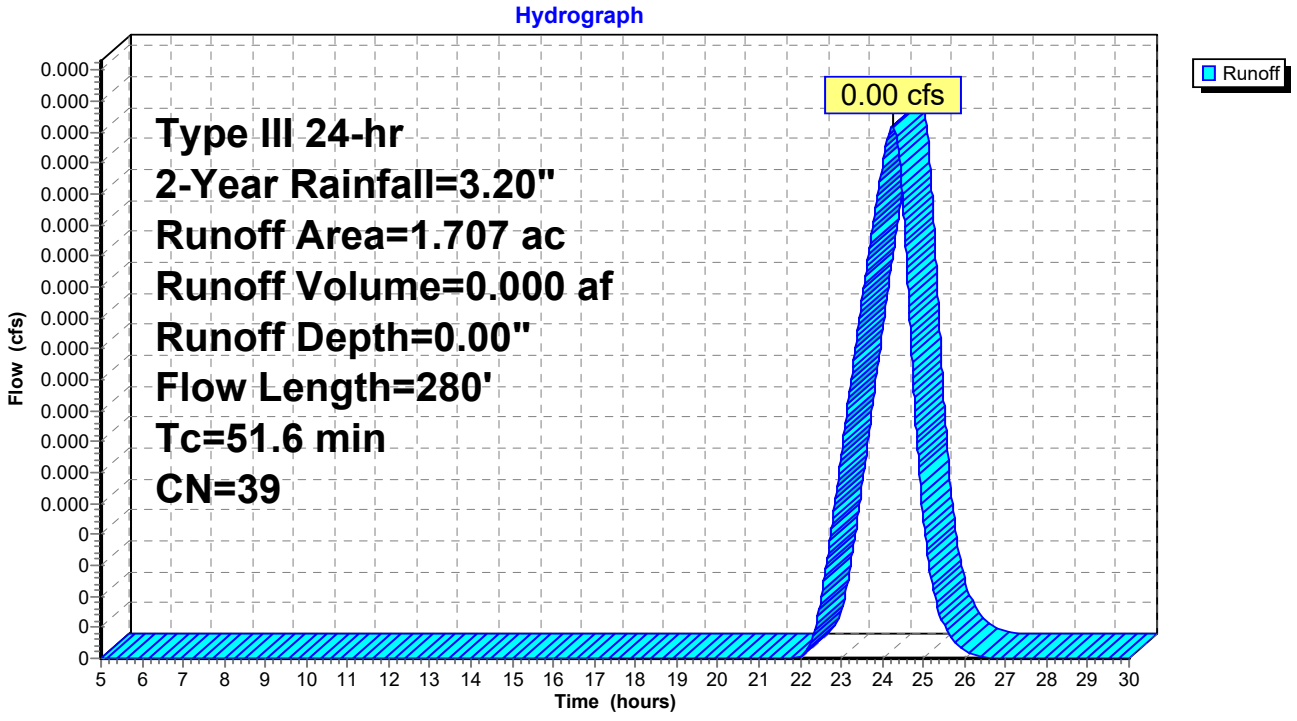
Runoff = 0.00 cfs @ 24.25 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (ac)	CN	Description
1.707	39	>75% Grass cover, Good, HSG A
1.707		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
49.9	200	0.0035	0.07		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.20"
1.7	80	0.0129	0.80		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
51.6	280	Total			

Subcatchment PDA-2B: PDA-2B



Summary for Subcatchment PDA-3: PDA-3

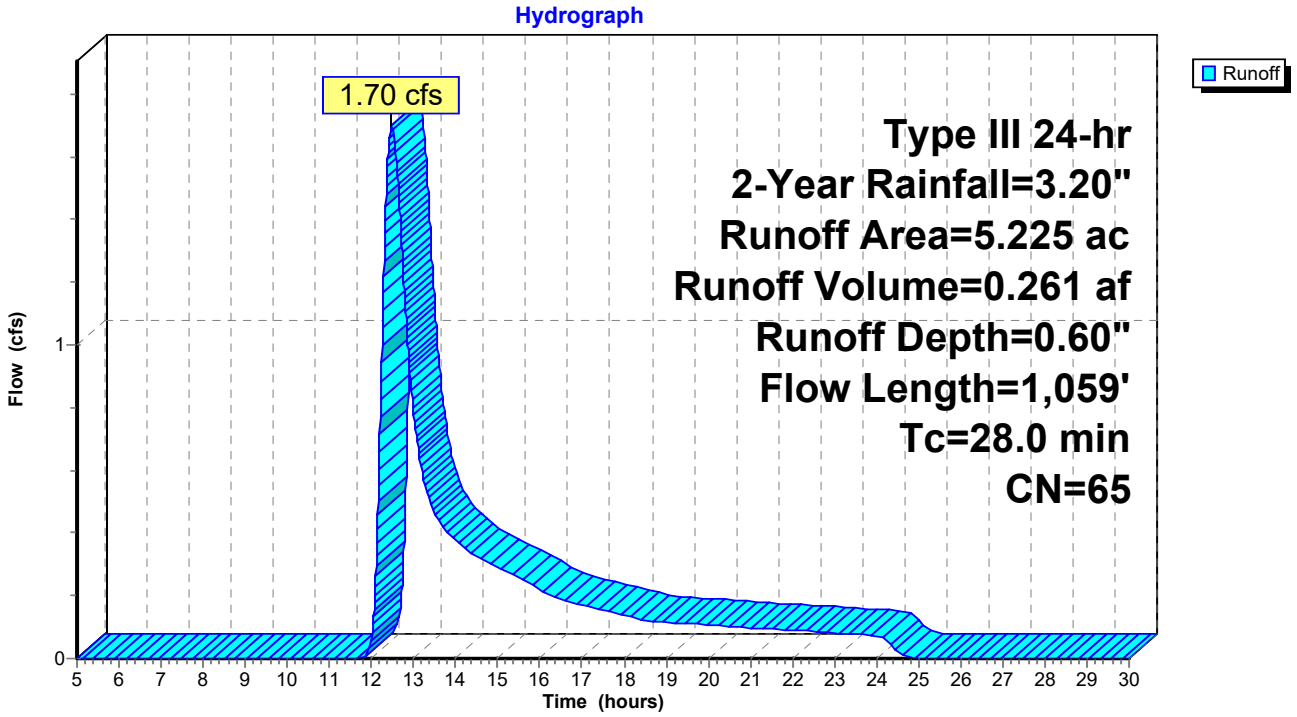
Runoff = 1.70 cfs @ 12.48 hrs, Volume= 0.261 af, Depth= 0.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (ac)	CN	Description
1.059	39	>75% Grass cover, Good, HSG A
1.453	80	>75% Grass cover, Good, HSG D
1.129	36	Woods, Fair, HSG A
0.051	79	Woods, Fair, HSG D
0.269	72	Dirt roads, HSG A
0.378	89	Dirt roads, HSG D
0.007	98	Paved parking, HSG A
0.772	98	Paved parking, HSG D
0.095	76	Gravel roads, HSG A
0.012	91	Gravel roads, HSG D
5.225	65	Weighted Average
4.446		85.09% Pervious Area
0.779		14.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	156	0.0841	0.33		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.20"
20.1	903	0.0025	0.75		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
28.0	1,059	Total			

Subcatchment PDA-3: PDA-3



Summary for Subcatchment PDA-4: PDA-4

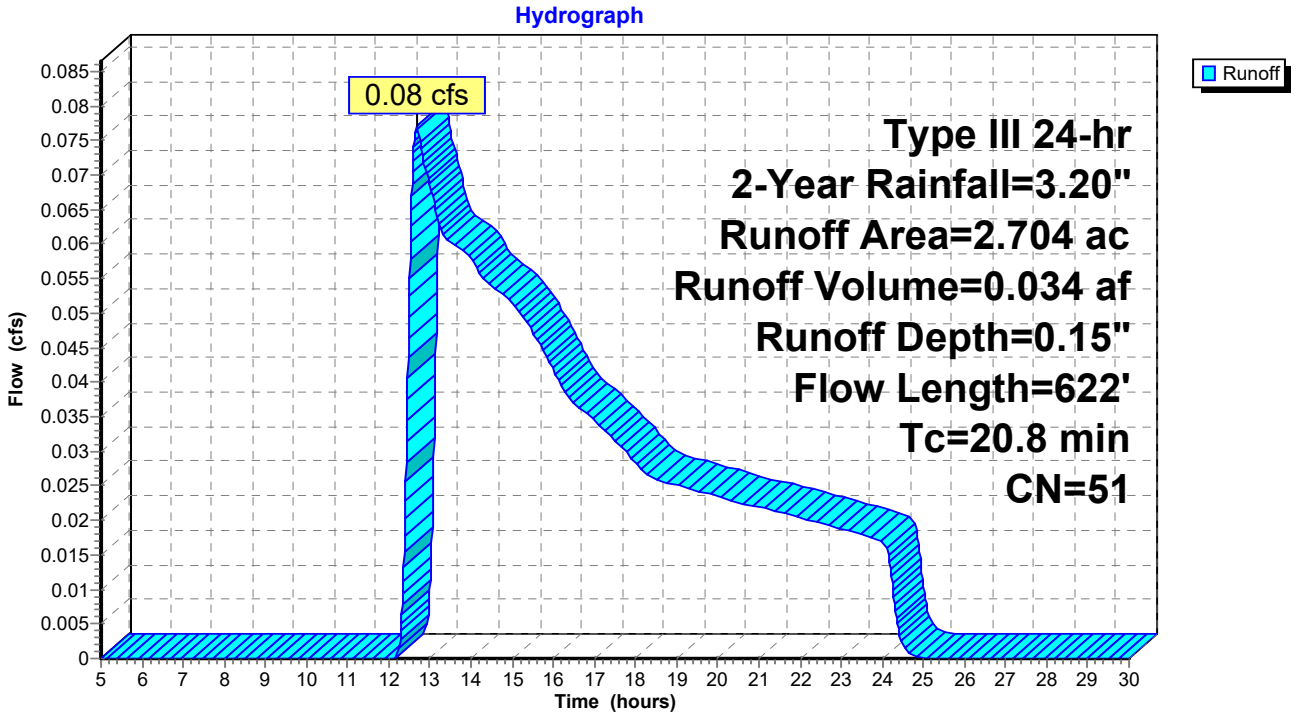
Runoff = 0.08 cfs @ 12.68 hrs, Volume= 0.034 af, Depth= 0.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (ac)	CN	Description
1.451	39	>75% Grass cover, Good, HSG A
0.130	80	>75% Grass cover, Good, HSG D
0.274	36	Woods, Fair, HSG A
0.032	79	Woods, Fair, HSG D
0.717	72	Dirt roads, HSG A
0.021	89	Dirt roads, HSG D
0.079	76	Gravel roads, HSG A
2.704	51	Weighted Average
2.704		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	200	0.0550	0.29		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.20"
1.4	120	0.0080	1.44		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
8.0	302	0.0080	0.63		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
20.8	622	Total			

Subcatchment PDA-4: PDA-4



Summary for Pond 1B: Infiltration Basin 1

Inflow Area = 4.230 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-Year event
Inflow = 0.00 cfs @ 24.25 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 24.28 hrs, Volume= 0.000 af, Atten= 0%, Lag= 1.7 min
Discarded = 0.00 cfs @ 24.28 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 659.00' @ 24.28 hrs Surf.Area= 5,000 sf Storage= 0 cf

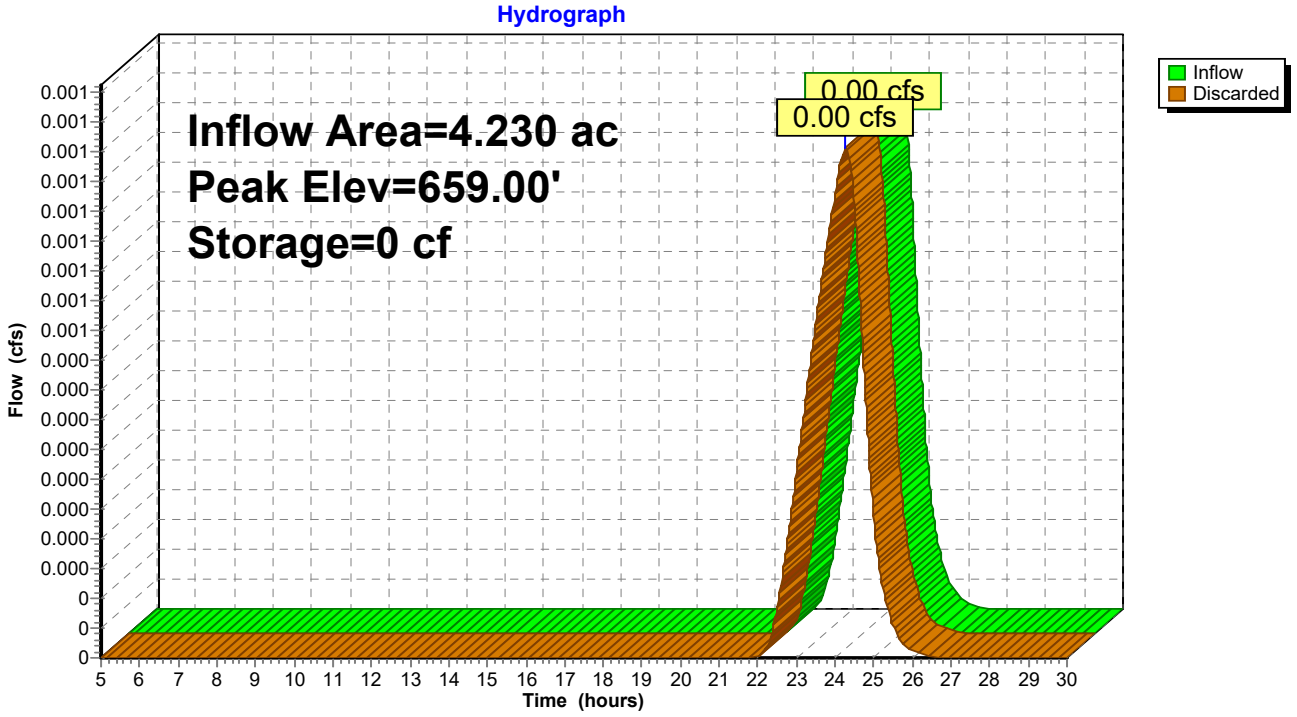
Plug-Flow detention time= 2.4 min calculated for 0.000 af (100% of inflow)
Center-of-Mass det. time= 2.4 min (1,440.0 - 1,437.7)

Volume	Invert	Avail.Storage	Storage Description
#1	659.00'	9,041 cf	**5.00'W x 1,000.00'L x 1.00'H Prismatoid Z=4.0**

Device	Routing	Invert	Outlet Devices
#1	Discarded	659.00'	**3.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'

Discarded OutFlow Max=0.35 cfs @ 24.28 hrs HW=659.00' (Free Discharge)
1=Exfiltration (Controls 0.35 cfs)

Pond 1B: Infiltration Basin 1



Summary for Pond 2B: Infiltration Basin 2

Inflow Area = 1.707 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-Year event
Inflow = 0.00 cfs @ 24.25 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 24.29 hrs, Volume= 0.000 af, Atten= 0%, Lag= 2.0 min
Discarded = 0.00 cfs @ 24.29 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 659.00' @ 24.29 hrs Surf.Area= 1,875 sf Storage= 0 cf

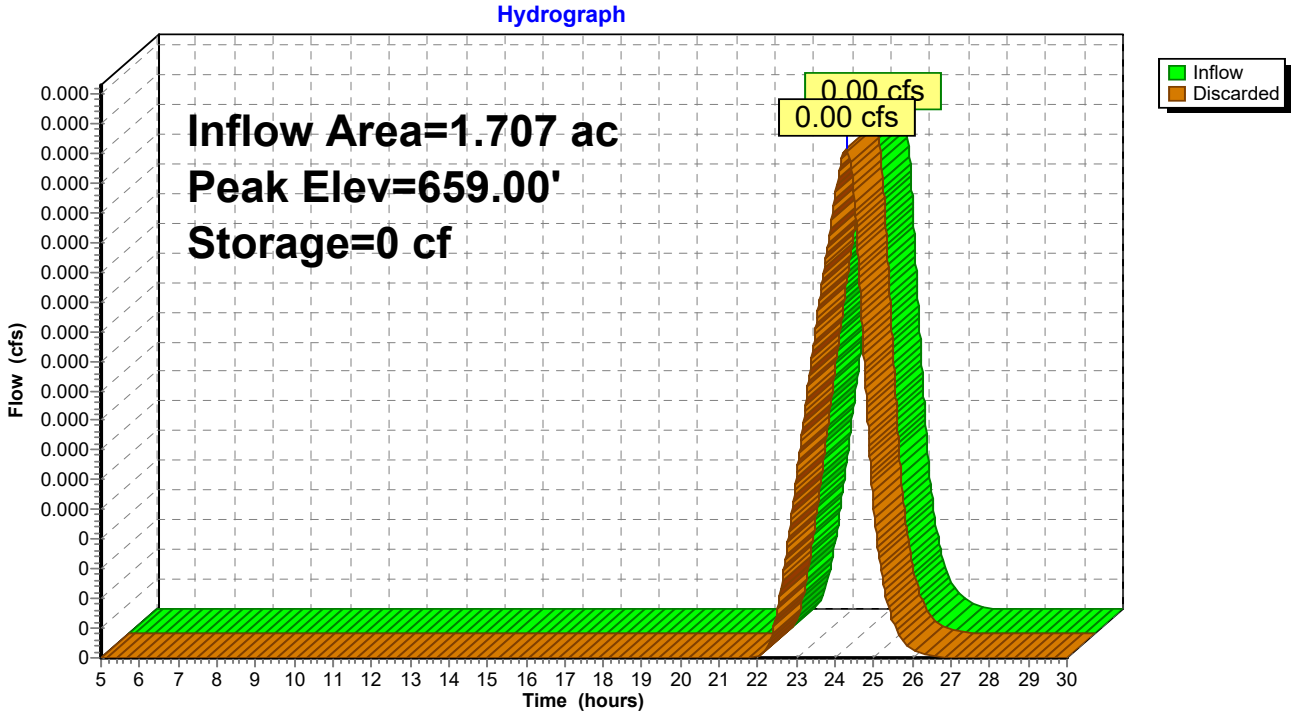
Plug-Flow detention time= 2.4 min calculated for 0.000 af (100% of inflow)
Center-of-Mass det. time= 2.4 min (1,441.3 - 1,438.9)

Volume	Invert	Avail.Storage	Storage Description
#1	659.00'	3,416 cf	**5.00'W x 375.00'L x 1.00'H Prismatoid Z=4.0**

Device	Routing	Invert	Outlet Devices
#1	Discarded	659.00'	**3.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'

Discarded OutFlow Max=0.13 cfs @ 24.29 hrs HW=659.00' (Free Discharge)
1=Exfiltration (Controls 0.13 cfs)

Pond 2B: Infiltration Basin 2



Summary for Pond 3B: Infiltration Basin 3

Inflow Area = 5.225 ac, 14.91% Impervious, Inflow Depth = 0.60" for 2-Year event
Inflow = 1.70 cfs @ 12.48 hrs, Volume= 0.261 af
Outflow = 1.20 cfs @ 12.77 hrs, Volume= 0.261 af, Atten= 30%, Lag= 17.6 min
Discarded = 0.15 cfs @ 12.77 hrs, Volume= 0.154 af
Primary = 1.05 cfs @ 12.77 hrs, Volume= 0.108 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 660.46' @ 12.77 hrs Surf.Area= 2,098 sf Storage= 2,273 cf

Plug-Flow detention time= 111.7 min calculated for 0.261 af (100% of inflow)
Center-of-Mass det. time= 111.7 min (1,027.5 - 915.8)

Volume	Invert	Avail.Storage	Storage Description
#1	659.00'	6,489 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

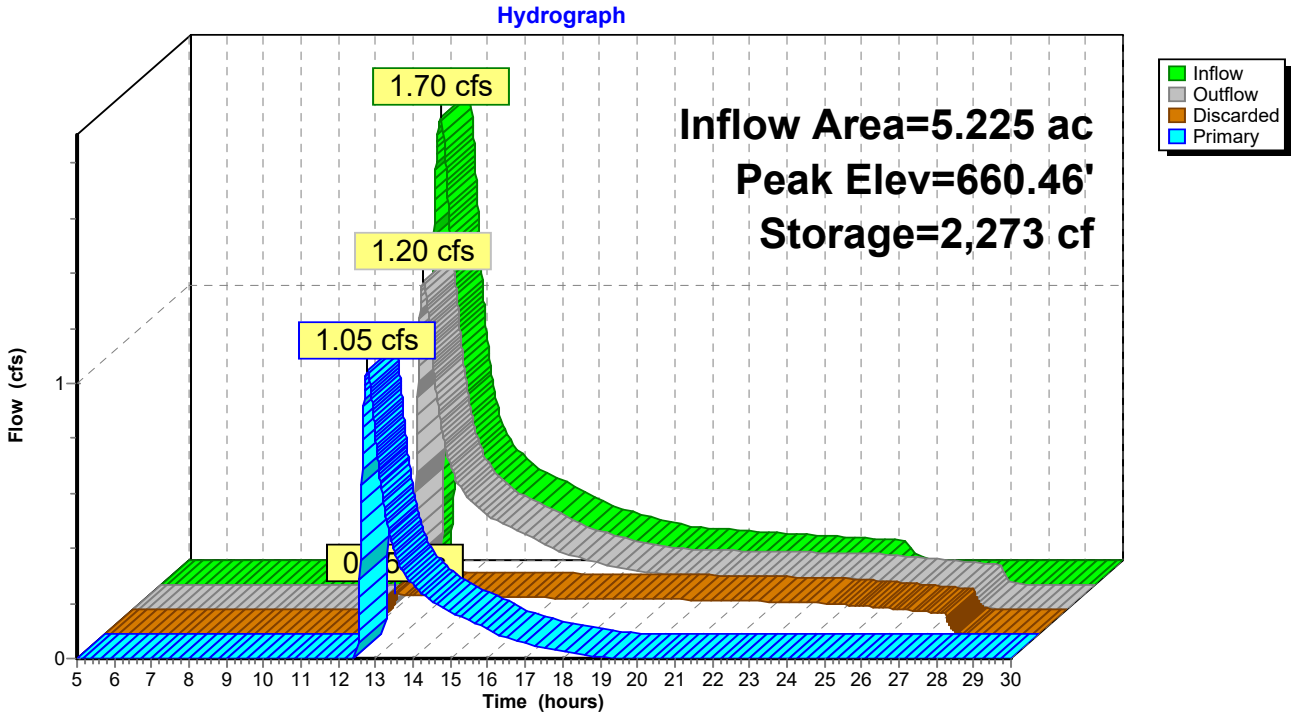
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
659.00	1,047	0	0
660.00	1,735	1,391	1,391
661.00	2,524	2,130	3,521
662.00	3,413	2,969	6,489

Device	Routing	Invert	Outlet Devices
#1	Primary	660.10'	**40.0" W x 27.0" H Ellipse Culvert** L= 83.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 660.10' / 659.70' S= 0.0048 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 5.89 sf
#2	Discarded	659.00'	**3.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'

Discarded OutFlow Max=0.15 cfs @ 12.77 hrs HW=660.46' (Free Discharge)
↑**2=Exfiltration** (Controls 0.15 cfs)

Primary OutFlow Max=1.05 cfs @ 12.77 hrs HW=660.46' (Free Discharge)
↑**1=Culvert** (Inlet Controls 1.05 cfs @ 1.72 fps)

Pond 3B: Infiltration Basin 3



Summary for Pond 4B: Infiltration Basin 4

Inflow Area = 2.704 ac, 0.00% Impervious, Inflow Depth = 0.15" for 2-Year event
Inflow = 0.08 cfs @ 12.68 hrs, Volume= 0.034 af
Outflow = 0.07 cfs @ 12.85 hrs, Volume= 0.034 af, Atten= 7%, Lag= 9.9 min
Discarded = 0.07 cfs @ 12.85 hrs, Volume= 0.034 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 659.01' @ 12.85 hrs Surf.Area= 2,628 sf Storage= 28 cf

Plug-Flow detention time= 6.6 min calculated for 0.034 af (100% of inflow)
Center-of-Mass det. time= 6.6 min (1,017.0 - 1,010.4)

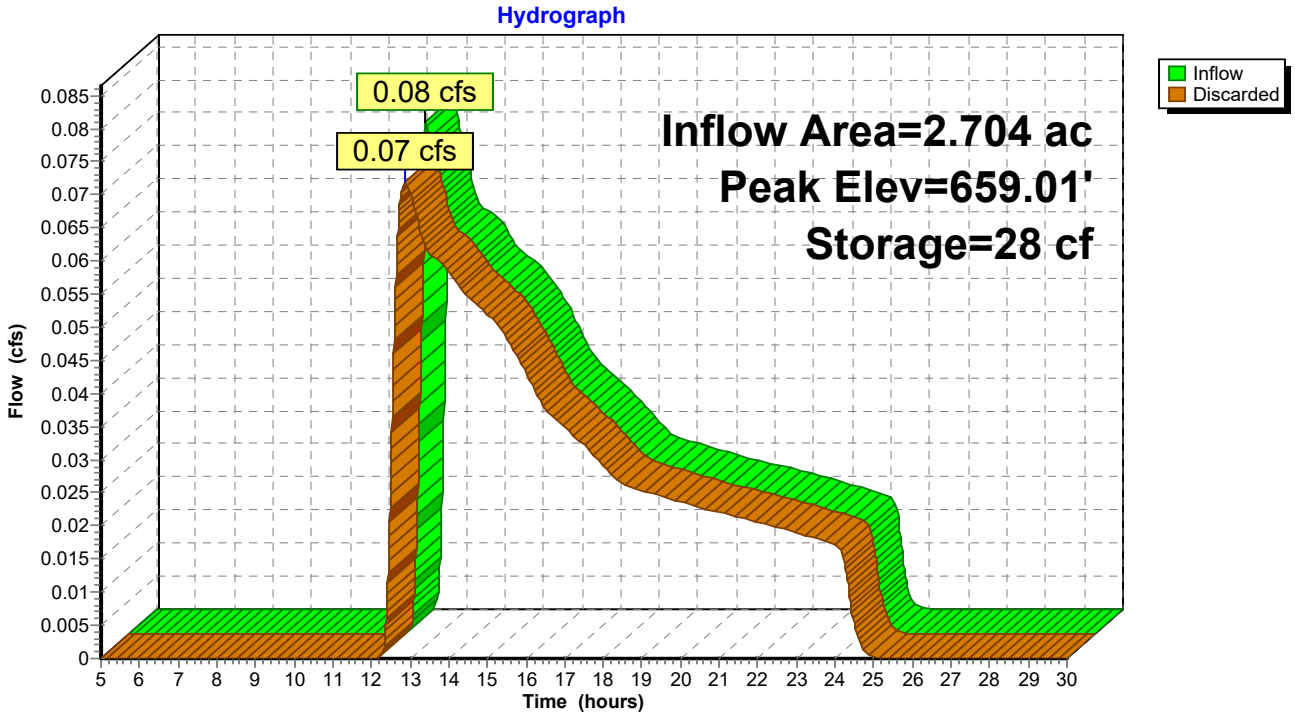
Volume	Invert	Avail.Storage	Storage Description
#1	659.00'	11,072 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
659.00	2,618	0	0	2,618
660.00	3,603	3,097	3,097	3,623
661.00	4,688	4,134	7,231	4,731
661.75	5,568	3,841	11,072	5,631

Device	Routing	Invert	Outlet Devices
#1	Discarded	659.00'	**3.000 in/hr Exfiltration over Wetted area**

Discarded OutFlow Max=0.18 cfs @ 12.85 hrs HW=659.01' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.18 cfs)

Pond 4B: Infiltration Basin 4

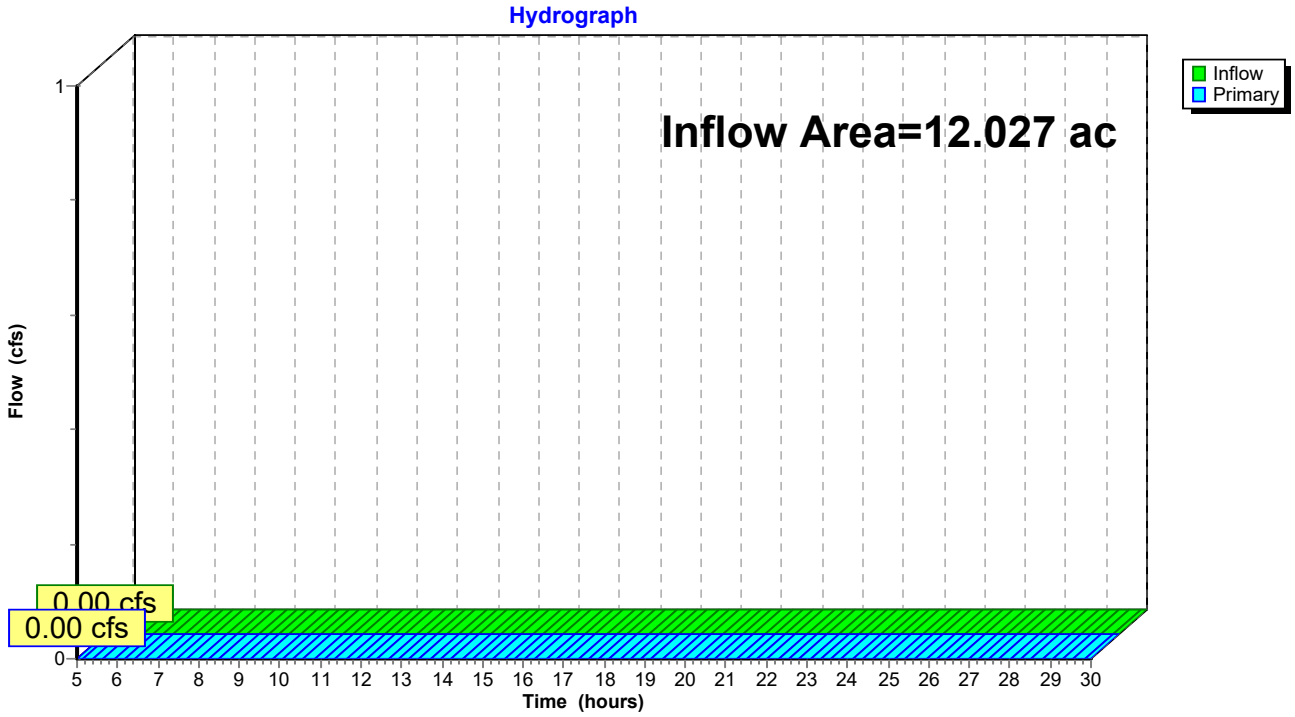


Summary for Link AP-1: Western Wetlands

Inflow Area = 12.027 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-Year event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Link AP-1: Western Wetlands

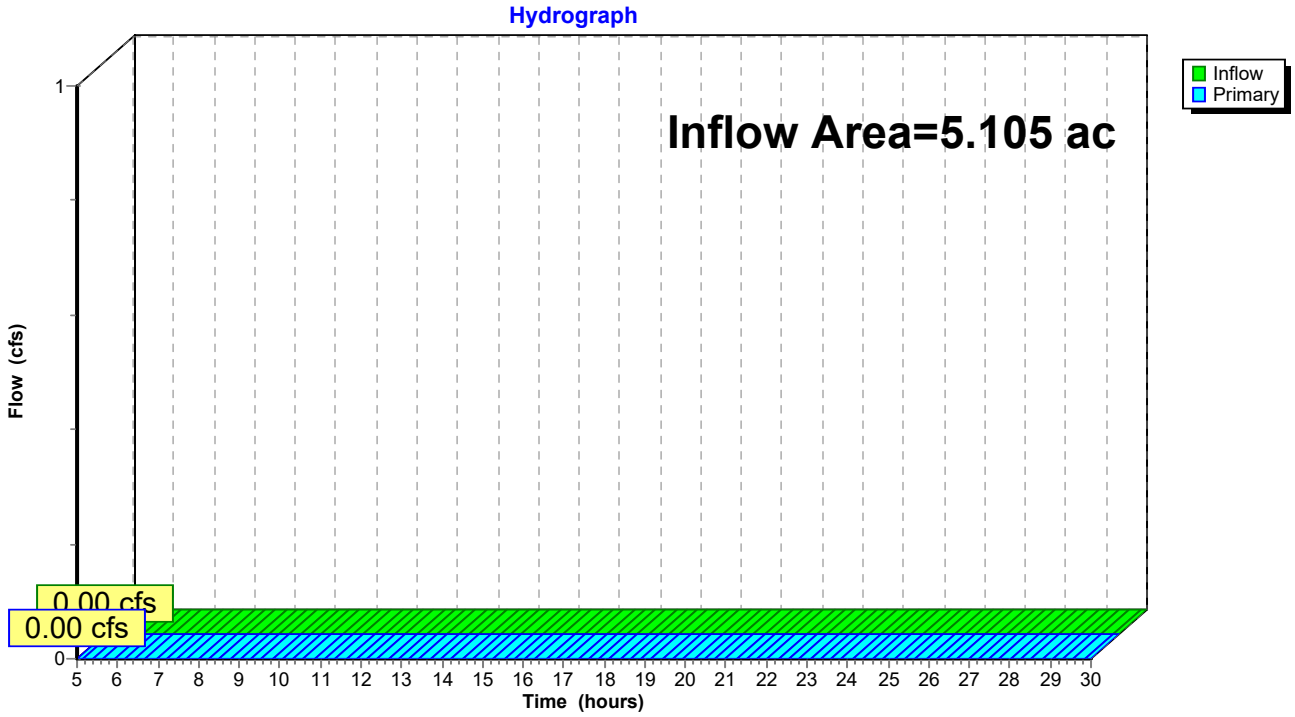


Summary for Link AP-2: Southern Property Line

Inflow Area = 5.105 ac, 0.14% Impervious, Inflow Depth = 0.00" for 2-Year event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Link AP-2: Southern Property Line

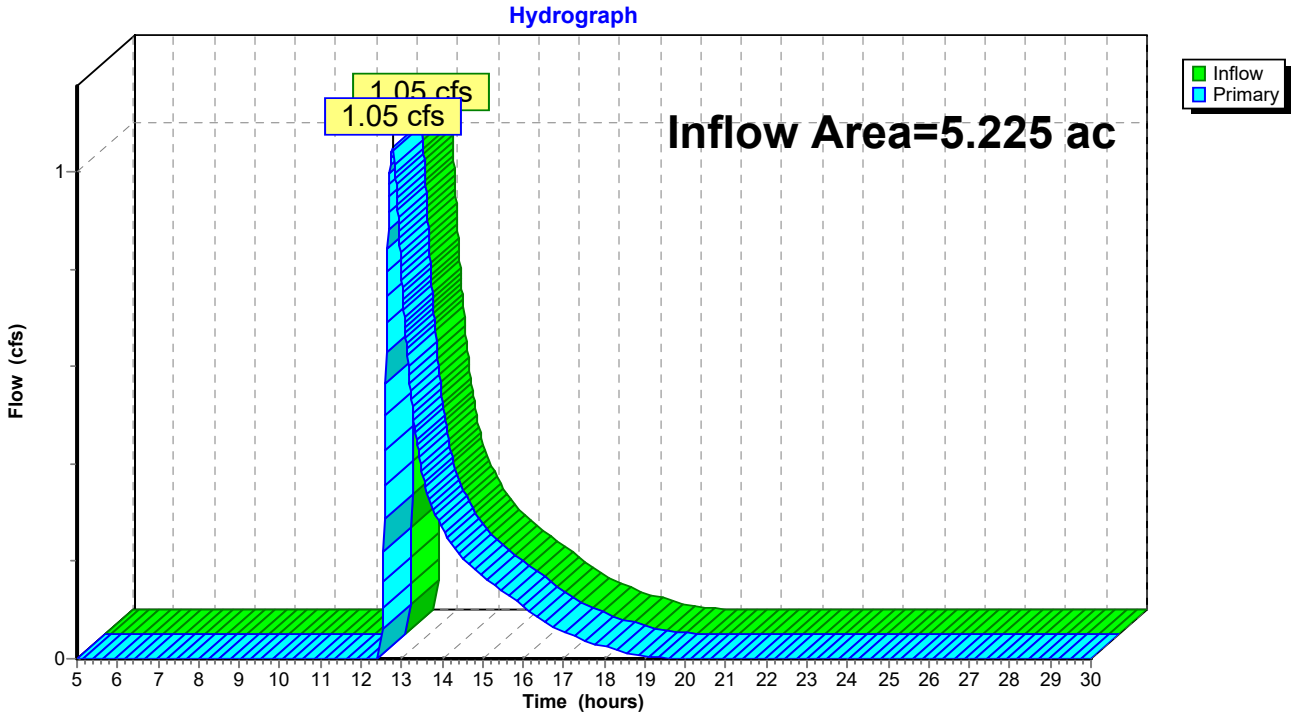


Summary for Link AP-3: Existing Swale

Inflow Area = 5.225 ac, 14.91% Impervious, Inflow Depth = 0.25" for 2-Year event
Inflow = 1.05 cfs @ 12.77 hrs, Volume= 0.108 af
Primary = 1.05 cfs @ 12.77 hrs, Volume= 0.108 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Link AP-3: Existing Swale

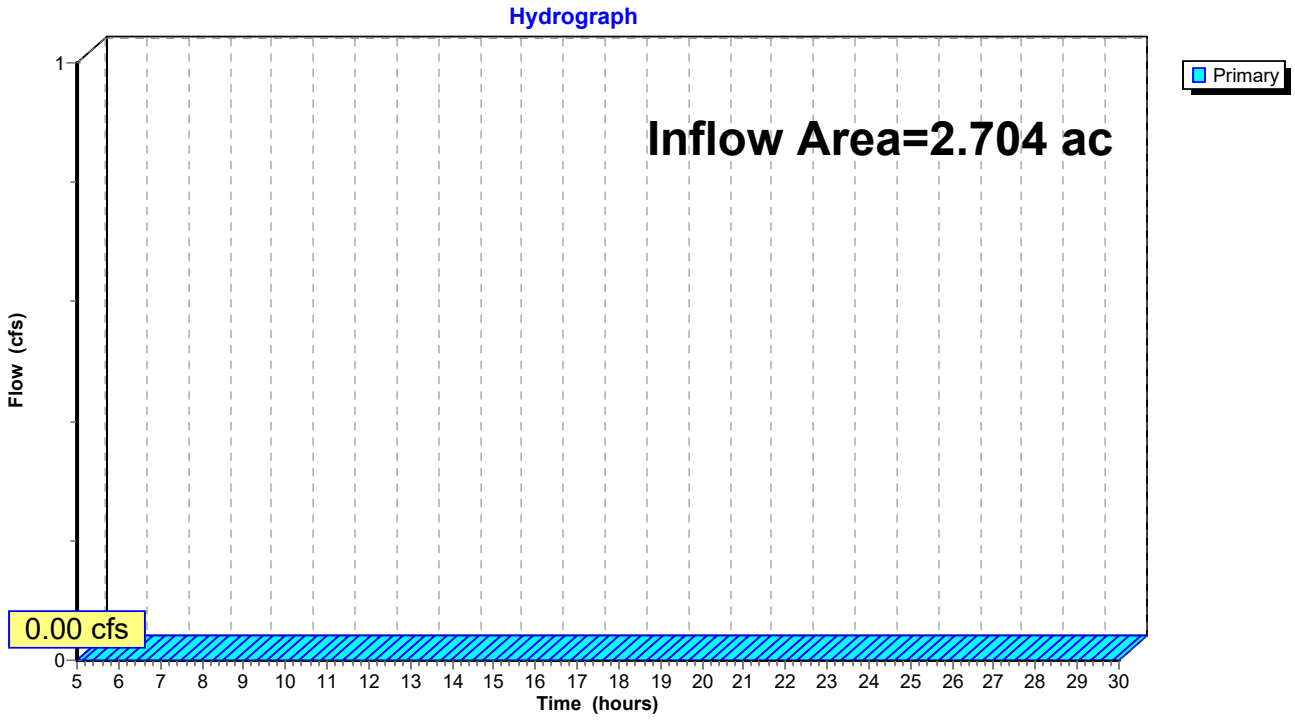


Summary for Link AP-4: AP-4

Inflow Area = 2.704 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-Year event
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Link AP-4: AP-4



Summary for Subcatchment PDA-1A: PDA-1A

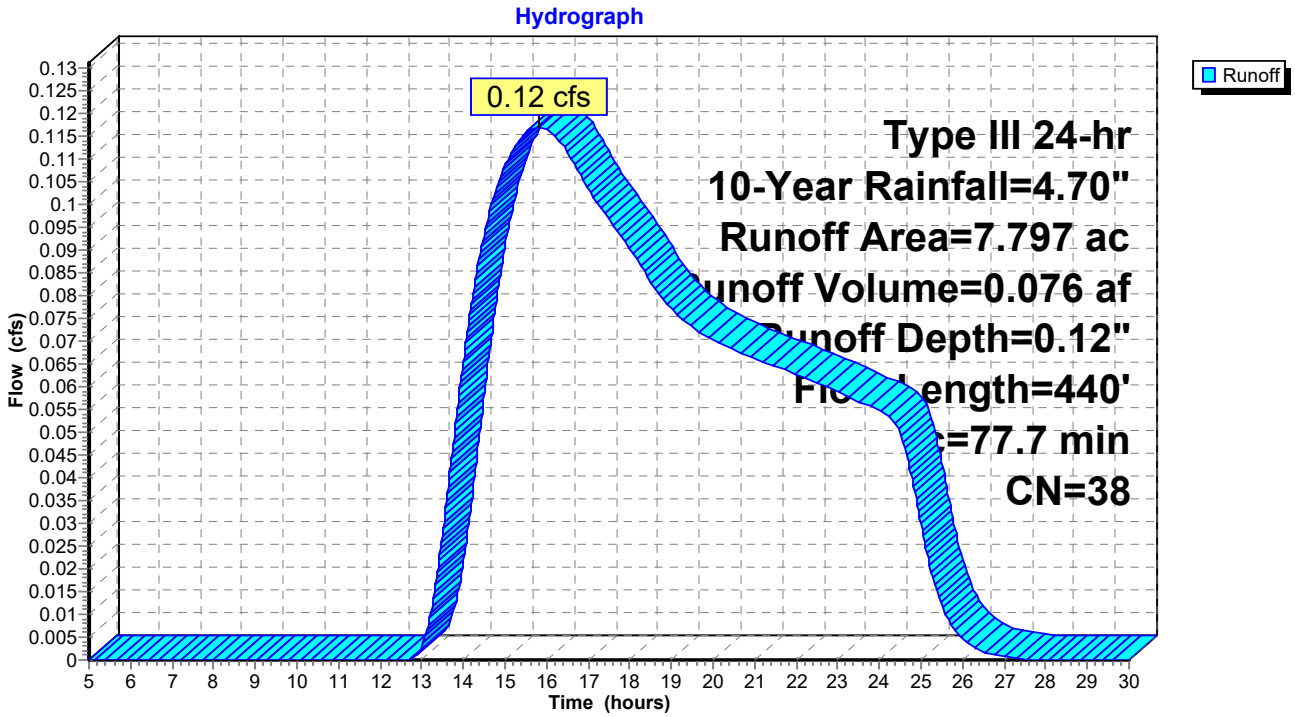
Runoff = 0.12 cfs @ 15.80 hrs, Volume= 0.076 af, Depth= 0.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.70"

Area (ac)	CN	Description
6.705	36	Woods, Fair, HSG A
0.179	79	Woods, Fair, HSG D
0.053	72	Dirt roads, HSG A
0.837	39	>75% Grass cover, Good, HSG A
0.023	80	>75% Grass cover, Good, HSG D
7.797	38	Weighted Average
7.797		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
65.1	200	0.0050	0.05		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.20"
12.6	240	0.0040	0.32		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
77.7	440	Total			

Subcatchment PDA-1A: PDA-1A



Summary for Subcatchment PDA-1B: PDA-1B

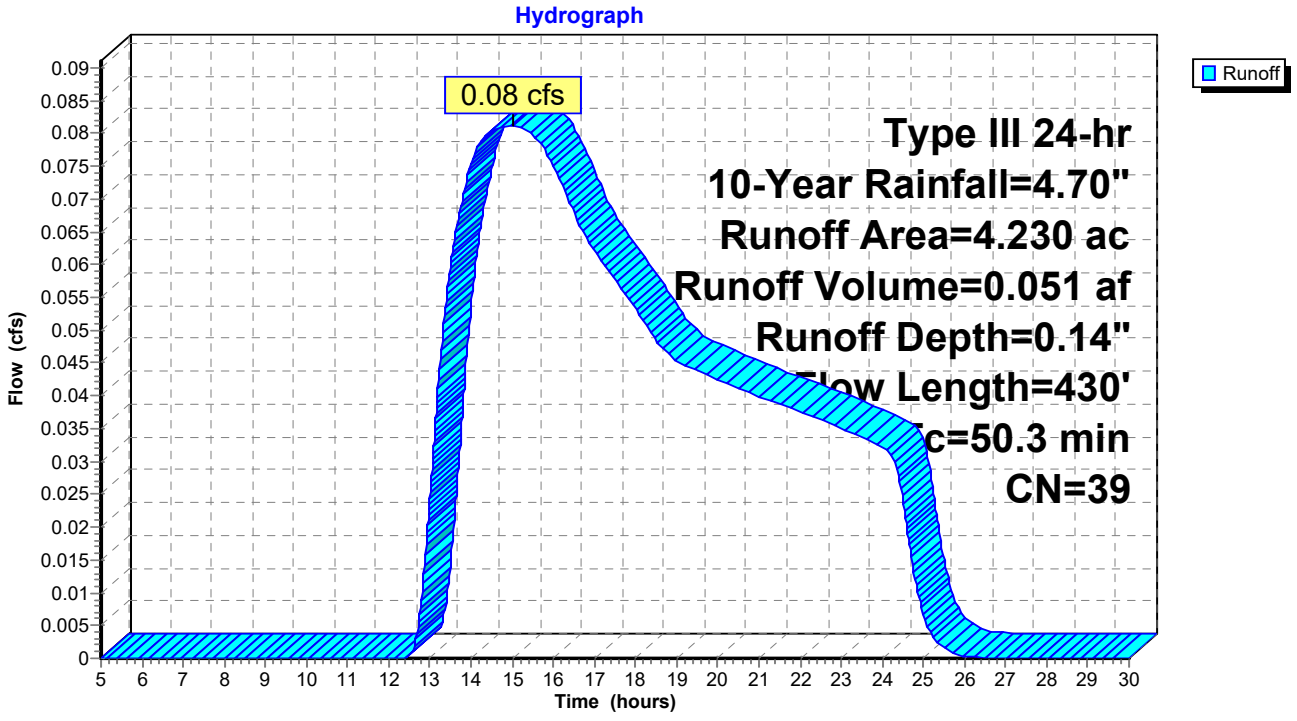
Runoff = 0.08 cfs @ 15.03 hrs, Volume= 0.051 af, Depth= 0.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.70"

Area (ac)	CN	Description
4.230	39	>75% Grass cover, Good, HSG A
4.230		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
41.6	200	0.0055	0.08		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.20"
8.7	230	0.0040	0.44		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
50.3	430	Total			

Subcatchment PDA-1B: PDA-1B



Summary for Subcatchment PDA-2A: PDA-2A

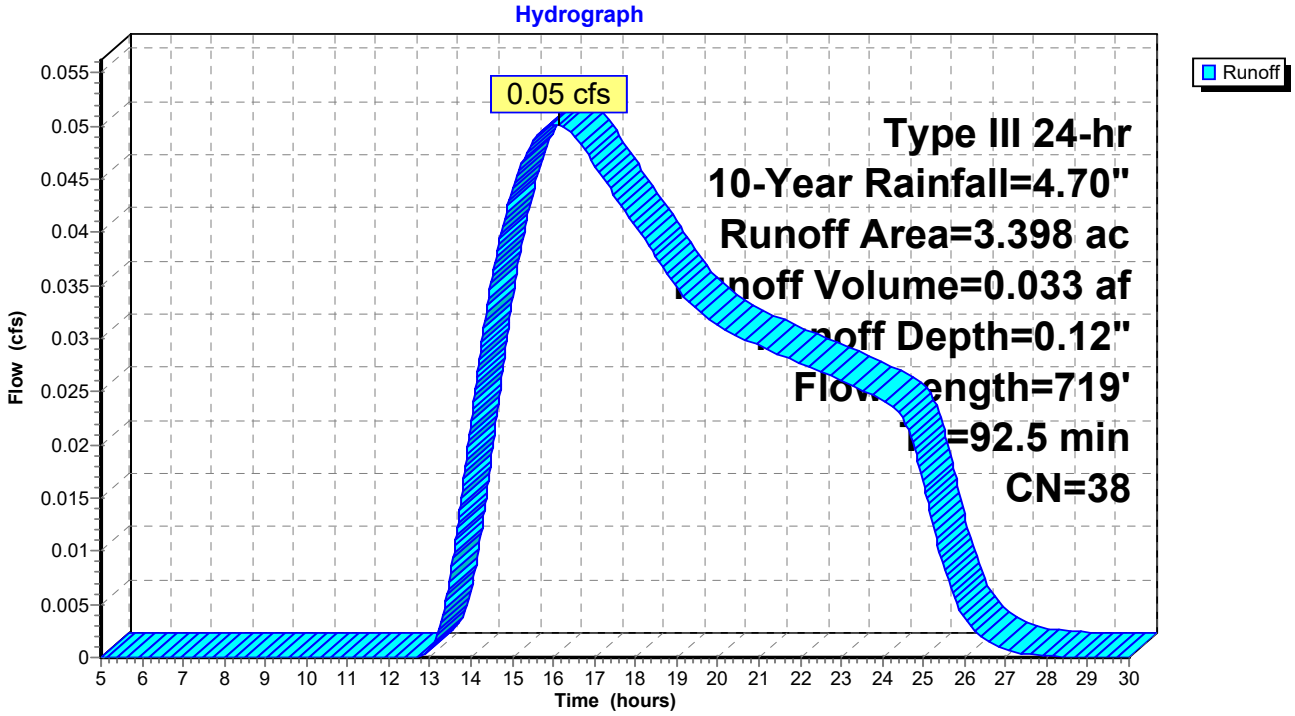
Runoff = 0.05 cfs @ 16.13 hrs, Volume= 0.033 af, Depth= 0.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.70"

Area (ac)	CN	Description
2.232	36	Woods, Fair, HSG A
1.029	39	>75% Grass cover, Good, HSG A
0.097	72	Dirt roads, HSG A
0.033	76	Gravel roads, HSG A
0.007	98	Paved parking, HSG A
3.398	38	Weighted Average
3.391		99.79% Pervious Area
0.007		0.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
65.1	200	0.0050	0.05		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.20"
27.4	519	0.0040	0.32		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
92.5	719	Total			

Subcatchment PDA-2A: PDA-2A



Summary for Subcatchment PDA-2B: PDA-2B

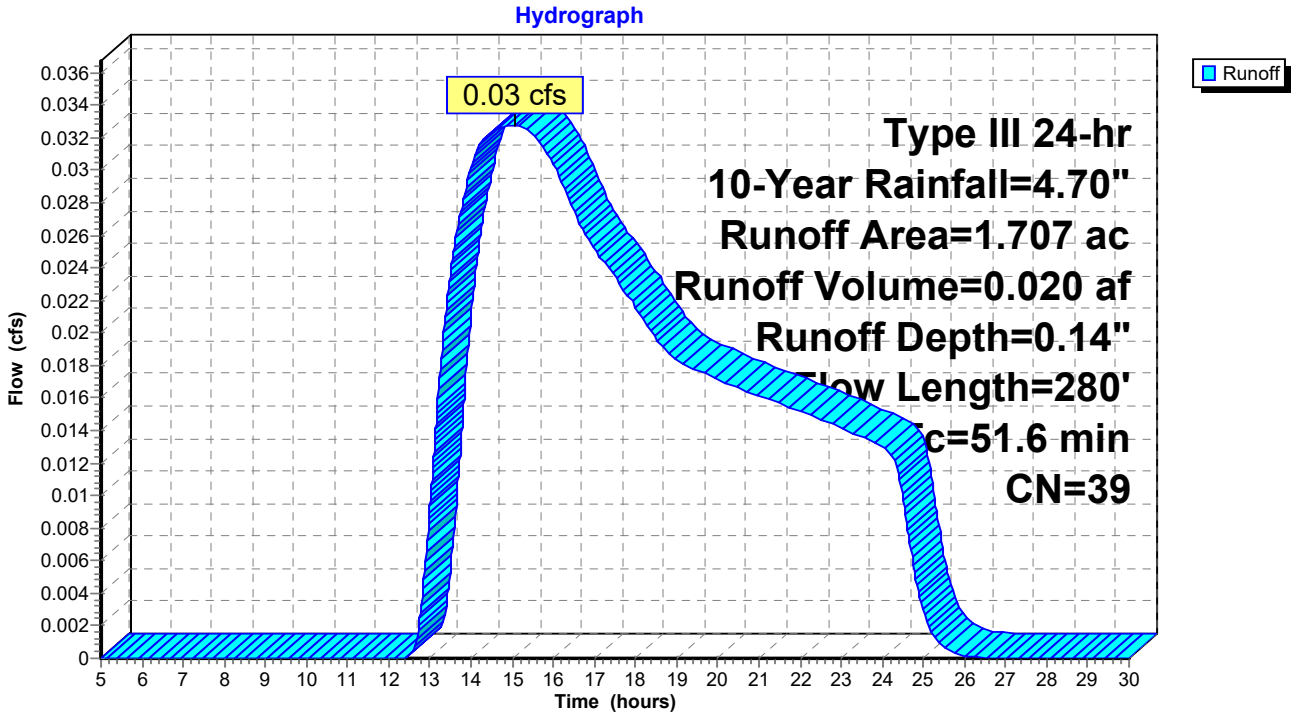
Runoff = 0.03 cfs @ 15.08 hrs, Volume= 0.020 af, Depth= 0.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.70"

Area (ac)	CN	Description
1.707	39	>75% Grass cover, Good, HSG A
1.707		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
49.9	200	0.0035	0.07		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.20"
1.7	80	0.0129	0.80		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
51.6	280	Total			

Subcatchment PDA-2B: PDA-2B



Summary for Subcatchment PDA-3: PDA-3

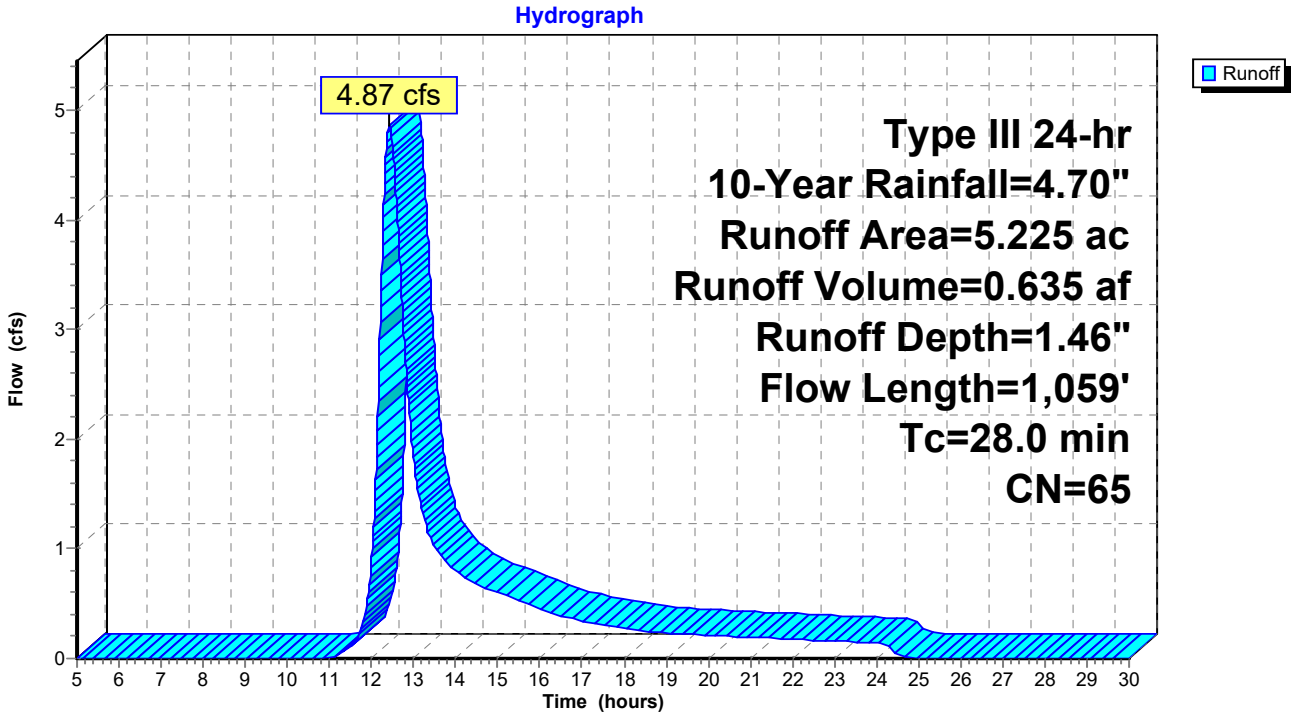
Runoff = 4.87 cfs @ 12.42 hrs, Volume= 0.635 af, Depth= 1.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.70"

Area (ac)	CN	Description
1.059	39	>75% Grass cover, Good, HSG A
1.453	80	>75% Grass cover, Good, HSG D
1.129	36	Woods, Fair, HSG A
0.051	79	Woods, Fair, HSG D
0.269	72	Dirt roads, HSG A
0.378	89	Dirt roads, HSG D
0.007	98	Paved parking, HSG A
0.772	98	Paved parking, HSG D
0.095	76	Gravel roads, HSG A
0.012	91	Gravel roads, HSG D
5.225	65	Weighted Average
4.446		85.09% Pervious Area
0.779		14.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	156	0.0841	0.33		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.20"
20.1	903	0.0025	0.75		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
28.0	1,059	Total			

Subcatchment PDA-3: PDA-3



Summary for Subcatchment PDA-4: PDA-4

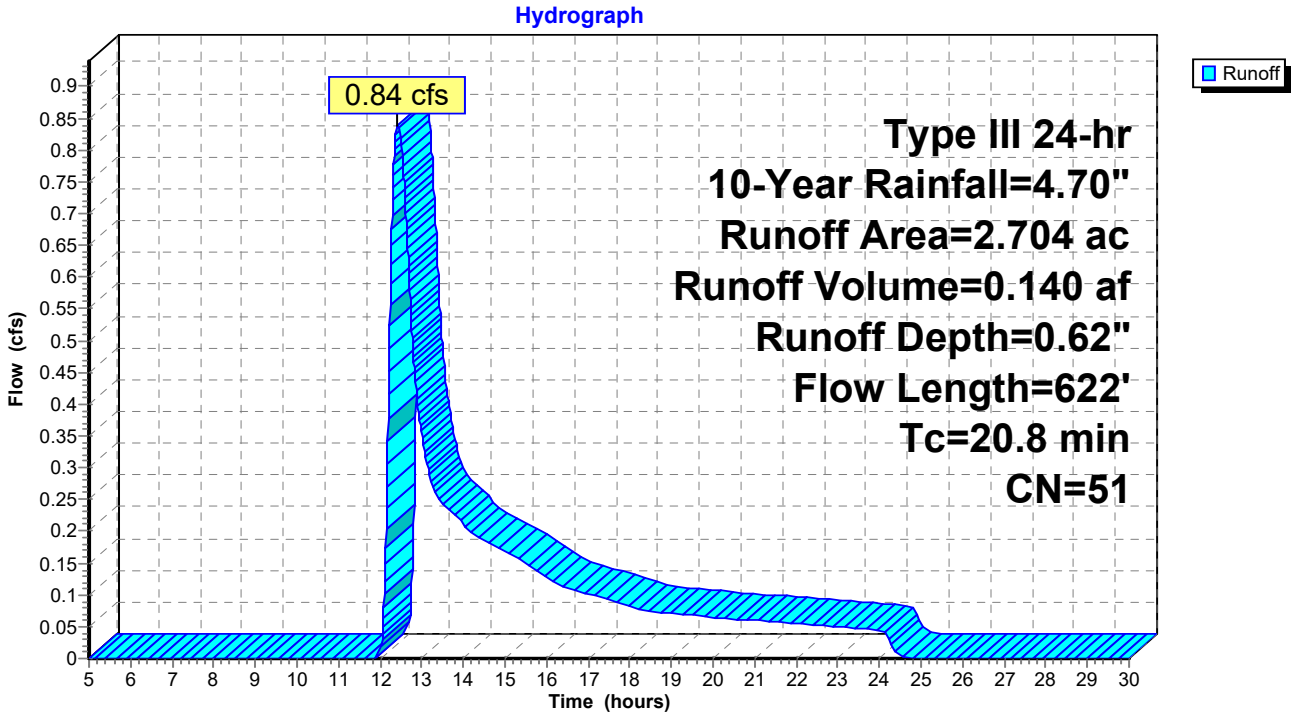
Runoff = 0.84 cfs @ 12.42 hrs, Volume= 0.140 af, Depth= 0.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.70"

Area (ac)	CN	Description
1.451	39	>75% Grass cover, Good, HSG A
0.130	80	>75% Grass cover, Good, HSG D
0.274	36	Woods, Fair, HSG A
0.032	79	Woods, Fair, HSG D
0.717	72	Dirt roads, HSG A
0.021	89	Dirt roads, HSG D
0.079	76	Gravel roads, HSG A
2.704	51	Weighted Average
2.704		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	200	0.0550	0.29		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.20"
1.4	120	0.0080	1.44		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
8.0	302	0.0080	0.63		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
20.8	622	Total			

Subcatchment PDA-4: PDA-4



Summary for Pond 1B: Infiltration Basin 1

Inflow Area = 4.230 ac, 0.00% Impervious, Inflow Depth = 0.14" for 10-Year event
Inflow = 0.08 cfs @ 15.03 hrs, Volume= 0.051 af
Outflow = 0.08 cfs @ 15.05 hrs, Volume= 0.051 af, Atten= 0%, Lag= 1.2 min
Discarded = 0.08 cfs @ 15.05 hrs, Volume= 0.051 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 659.00' @ 15.05 hrs Surf.Area= 5,019 sf Storage= 12 cf

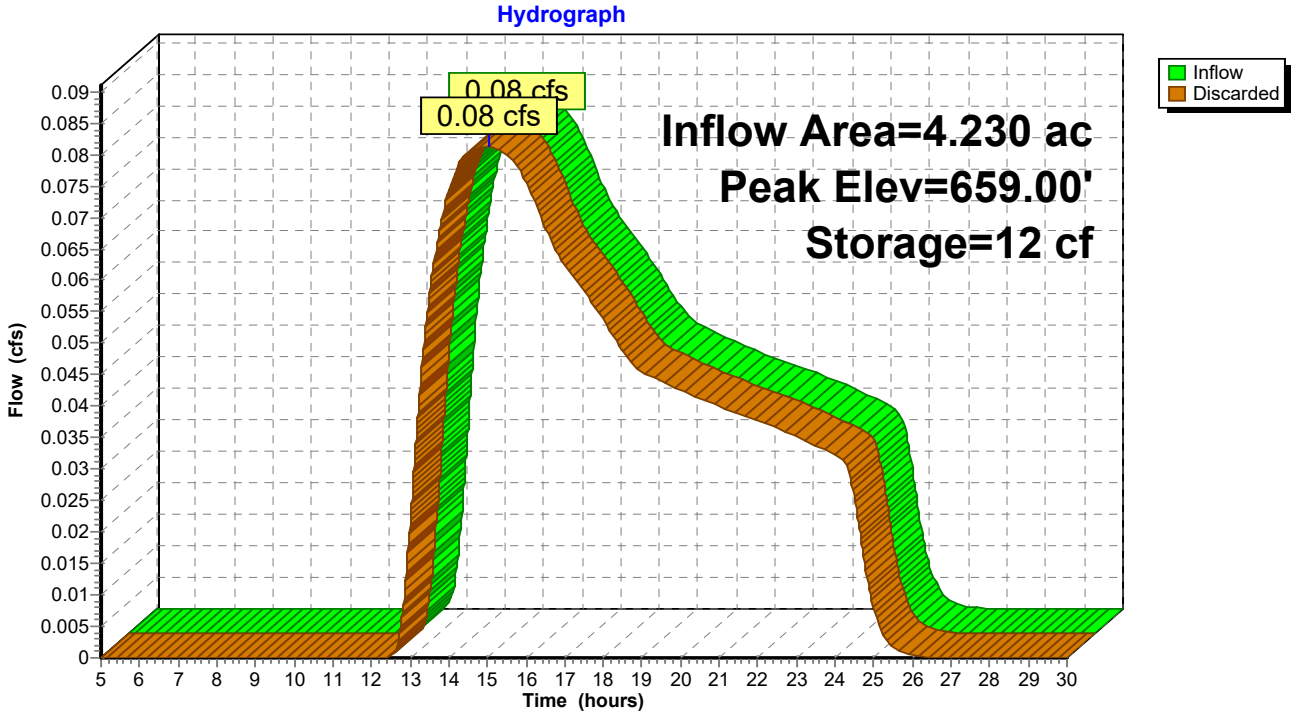
Plug-Flow detention time= 2.4 min calculated for 0.051 af (100% of inflow)
Center-of-Mass det. time= 2.4 min (1,077.6 - 1,075.3)

Volume	Invert	Avail.Storage	Storage Description
#1	659.00'	9,041 cf	**5.00'W x 1,000.00'L x 1.00'H Prismatoid Z=4.0**

Device	Routing	Invert	Outlet Devices
#1	Discarded	659.00'	**3.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'

Discarded OutFlow Max=0.35 cfs @ 15.05 hrs HW=659.00' (Free Discharge)
1=Exfiltration (Controls 0.35 cfs)

Pond 1B: Infiltration Basin 1



Summary for Pond 2B: Infiltration Basin 2

Inflow Area = 1.707 ac, 0.00% Impervious, Inflow Depth = 0.14" for 10-Year event
Inflow = 0.03 cfs @ 15.08 hrs, Volume= 0.020 af
Outflow = 0.03 cfs @ 15.09 hrs, Volume= 0.020 af, Atten= 0%, Lag= 1.0 min
Discarded = 0.03 cfs @ 15.09 hrs, Volume= 0.020 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 659.00' @ 15.09 hrs Surf.Area= 1,883 sf Storage= 5 cf

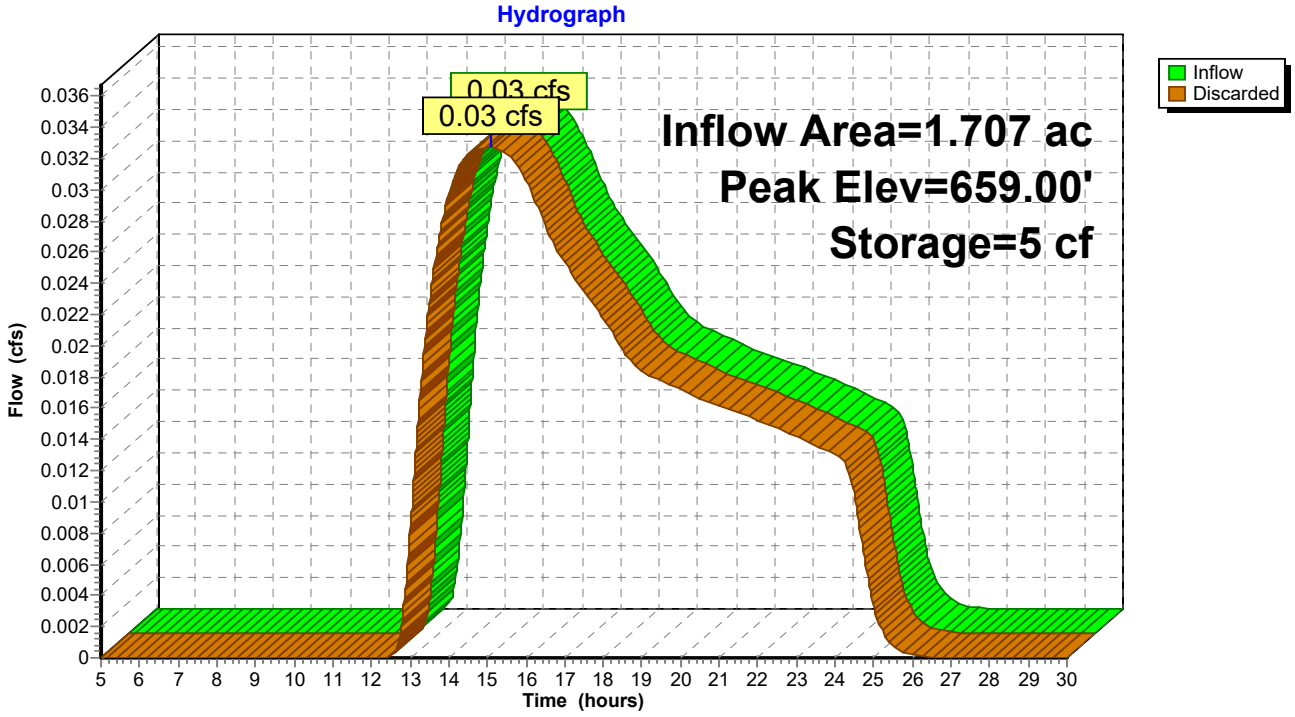
Plug-Flow detention time= 2.4 min calculated for 0.020 af (100% of inflow)
Center-of-Mass det. time= 2.4 min (1,078.8 - 1,076.5)

Volume	Invert	Avail.Storage	Storage Description
#1	659.00'	3,416 cf	**5.00'W x 375.00'L x 1.00'H Prismatoid Z=4.0**

Device	Routing	Invert	Outlet Devices
#1	Discarded	659.00'	**3.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'

Discarded OutFlow Max=0.13 cfs @ 15.09 hrs HW=659.00' (Free Discharge)
1=Exfiltration (Controls 0.13 cfs)

Pond 2B: Infiltration Basin 2



Summary for Pond 3B: Infiltration Basin 3

Inflow Area = 5.225 ac, 14.91% Impervious, Inflow Depth = 1.46" for 10-Year event
Inflow = 4.87 cfs @ 12.42 hrs, Volume= 0.635 af
Outflow = 4.67 cfs @ 12.51 hrs, Volume= 0.635 af, Atten= 4%, Lag= 5.1 min
Discarded = 0.17 cfs @ 12.51 hrs, Volume= 0.182 af
Primary = 4.50 cfs @ 12.51 hrs, Volume= 0.453 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 660.87' @ 12.51 hrs Surf.Area= 2,419 sf Storage= 3,192 cf

Plug-Flow detention time= 59.4 min calculated for 0.635 af (100% of inflow)
Center-of-Mass det. time= 59.3 min (944.6 - 885.2)

Volume	Invert	Avail.Storage	Storage Description
#1	659.00'	6,489 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

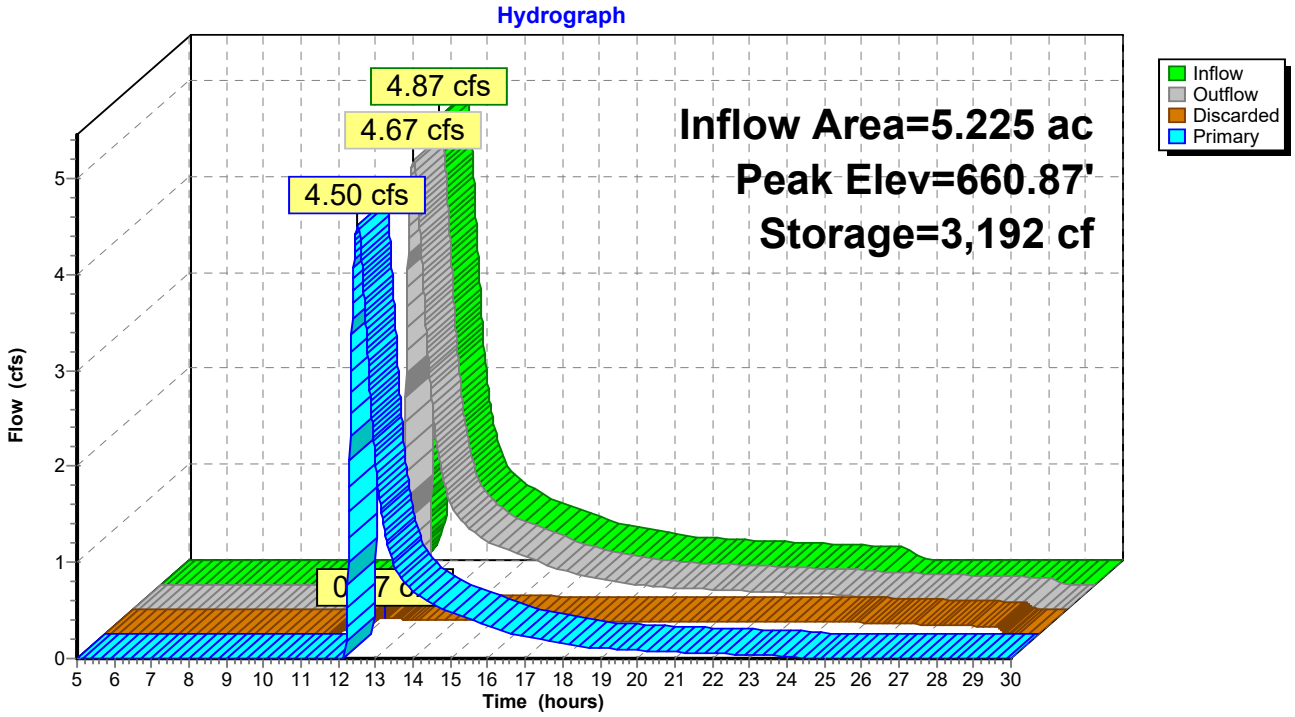
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
659.00	1,047	0	0
660.00	1,735	1,391	1,391
661.00	2,524	2,130	3,521
662.00	3,413	2,969	6,489

Device	Routing	Invert	Outlet Devices
#1	Primary	660.10'	**40.0" W x 27.0" H Ellipse Culvert** L= 83.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 660.10' / 659.70' S= 0.0048 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 5.89 sf
#2	Discarded	659.00'	**3.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'

Discarded OutFlow Max=0.17 cfs @ 12.51 hrs HW=660.87' (Free Discharge)
↑**2=Exfiltration** (Controls 0.17 cfs)

Primary OutFlow Max=4.50 cfs @ 12.51 hrs HW=660.87' (Free Discharge)
↑**1=Culvert** (Inlet Controls 4.50 cfs @ 2.54 fps)

Pond 3B: Infiltration Basin 3



Summary for Pond 4B: Infiltration Basin 4

Inflow Area = 2.704 ac, 0.00% Impervious, Inflow Depth = 0.62" for 10-Year event
Inflow = 0.84 cfs @ 12.42 hrs, Volume= 0.140 af
Outflow = 0.22 cfs @ 13.95 hrs, Volume= 0.140 af, Atten= 74%, Lag= 91.7 min
Discarded = 0.22 cfs @ 13.95 hrs, Volume= 0.140 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 659.50' @ 13.95 hrs Surf.Area= 3,093 sf Storage= 1,431 cf

Plug-Flow detention time= 63.9 min calculated for 0.140 af (100% of inflow)
Center-of-Mass det. time= 63.9 min (995.4 - 931.5)

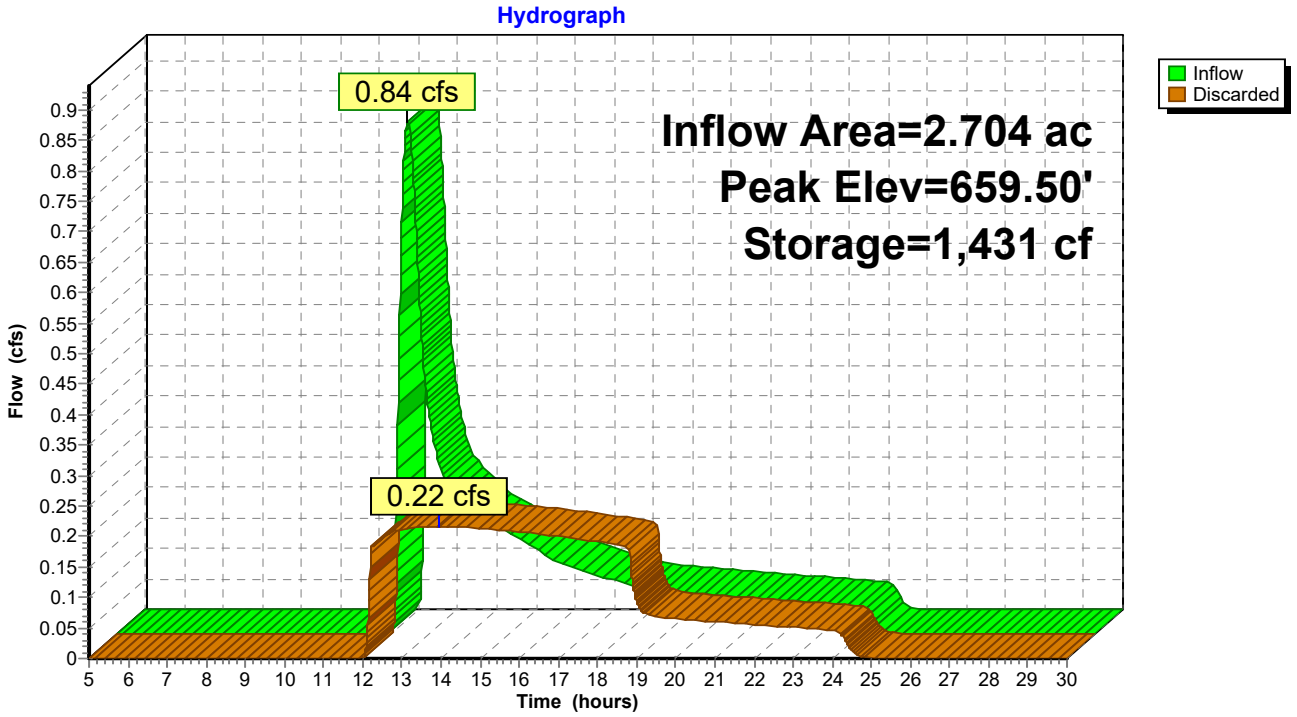
Volume	Invert	Avail.Storage	Storage Description
#1	659.00'	11,072 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
659.00	2,618	0	0	2,618
660.00	3,603	3,097	3,097	3,623
661.00	4,688	4,134	7,231	4,731
661.75	5,568	3,841	11,072	5,631

Device	Routing	Invert	Outlet Devices
#1	Discarded	659.00'	**3.000 in/hr Exfiltration over Wetted area**

Discarded OutFlow Max=0.22 cfs @ 13.95 hrs HW=659.50' (Free Discharge)
↳**1=Exfiltration** (Exfiltration Controls 0.22 cfs)

Pond 4B: Infiltration Basin 4

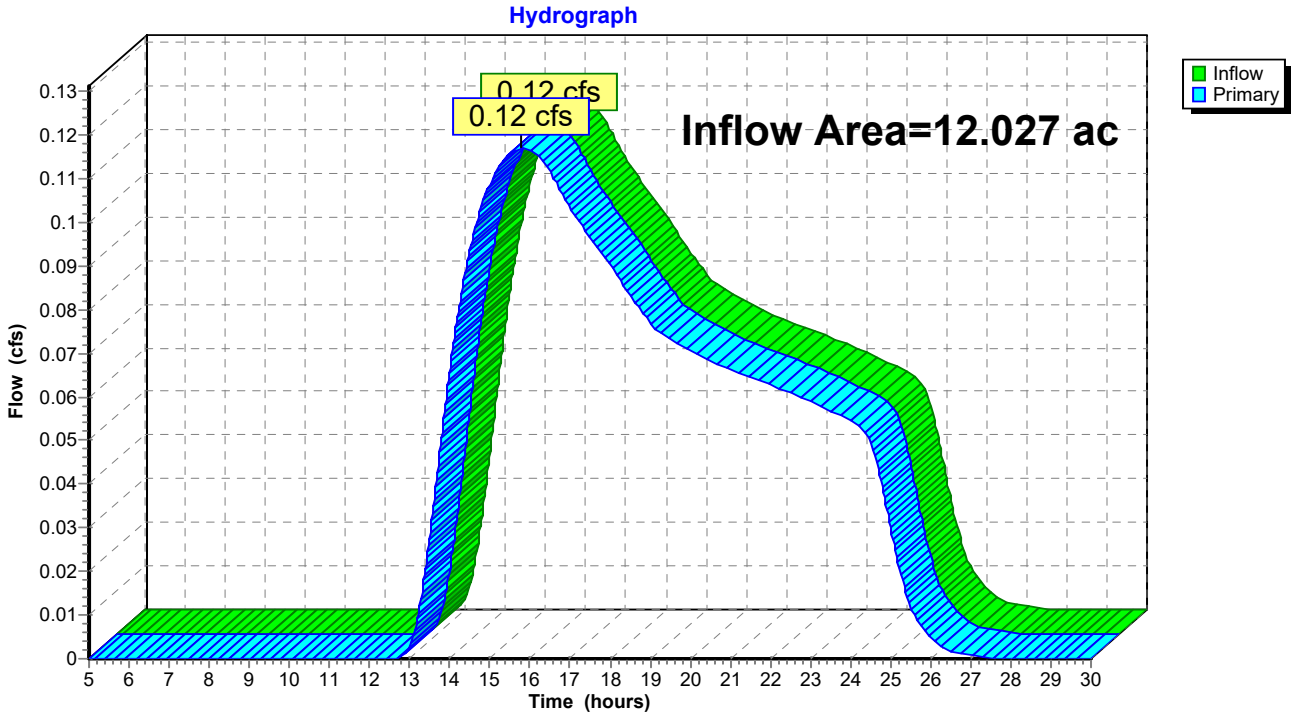


Summary for Link AP-1: Western Wetlands

Inflow Area = 12.027 ac, 0.00% Impervious, Inflow Depth = 0.08" for 10-Year event
Inflow = 0.12 cfs @ 15.80 hrs, Volume= 0.076 af
Primary = 0.12 cfs @ 15.80 hrs, Volume= 0.076 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Link AP-1: Western Wetlands

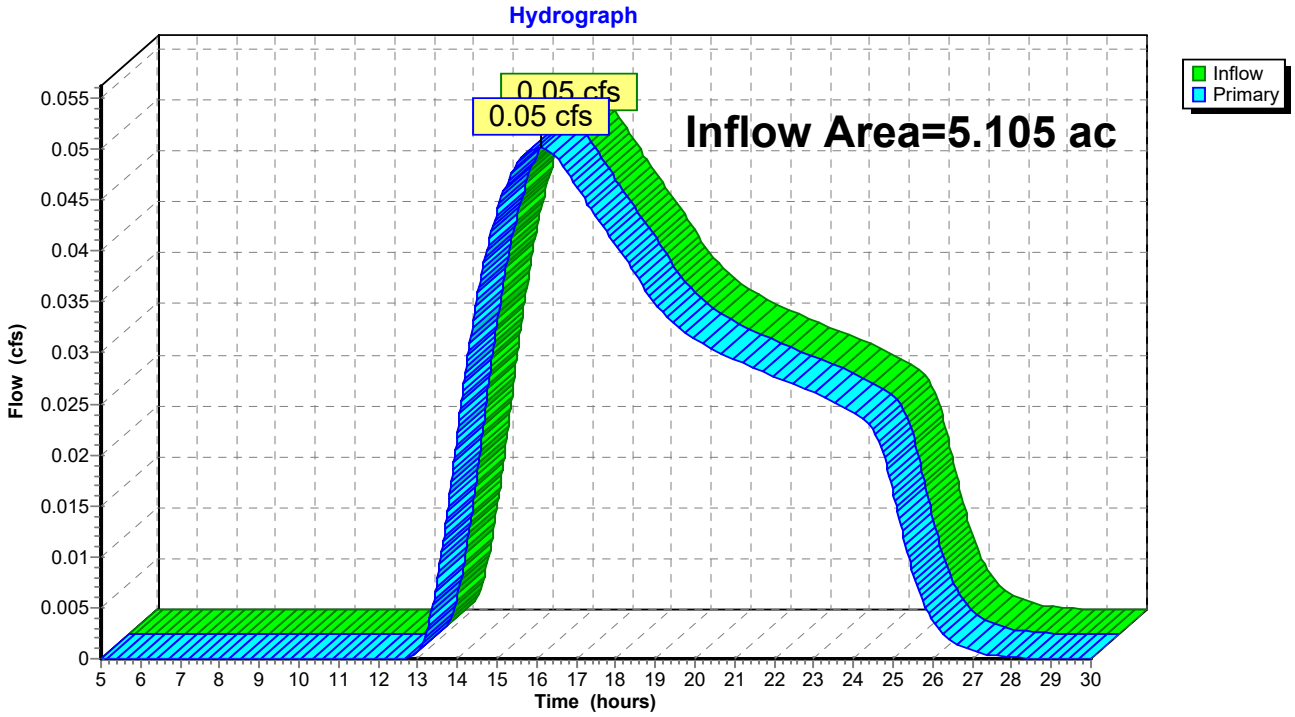


Summary for Link AP-2: Southern Property Line

Inflow Area = 5.105 ac, 0.14% Impervious, Inflow Depth = 0.08" for 10-Year event
Inflow = 0.05 cfs @ 16.13 hrs, Volume= 0.033 af
Primary = 0.05 cfs @ 16.13 hrs, Volume= 0.033 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Link AP-2: Southern Property Line

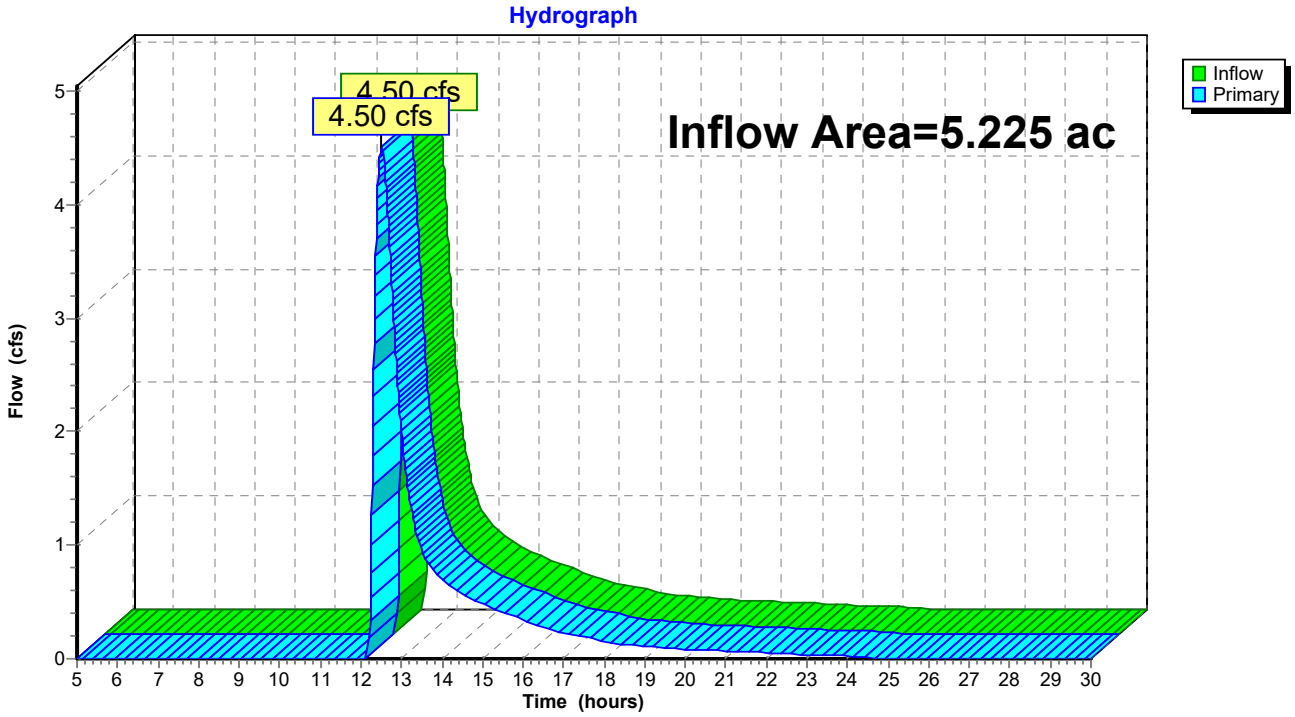


Summary for Link AP-3: Existing Swale

Inflow Area = 5.225 ac, 14.91% Impervious, Inflow Depth = 1.04" for 10-Year event
Inflow = 4.50 cfs @ 12.51 hrs, Volume= 0.453 af
Primary = 4.50 cfs @ 12.51 hrs, Volume= 0.453 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Link AP-3: Existing Swale

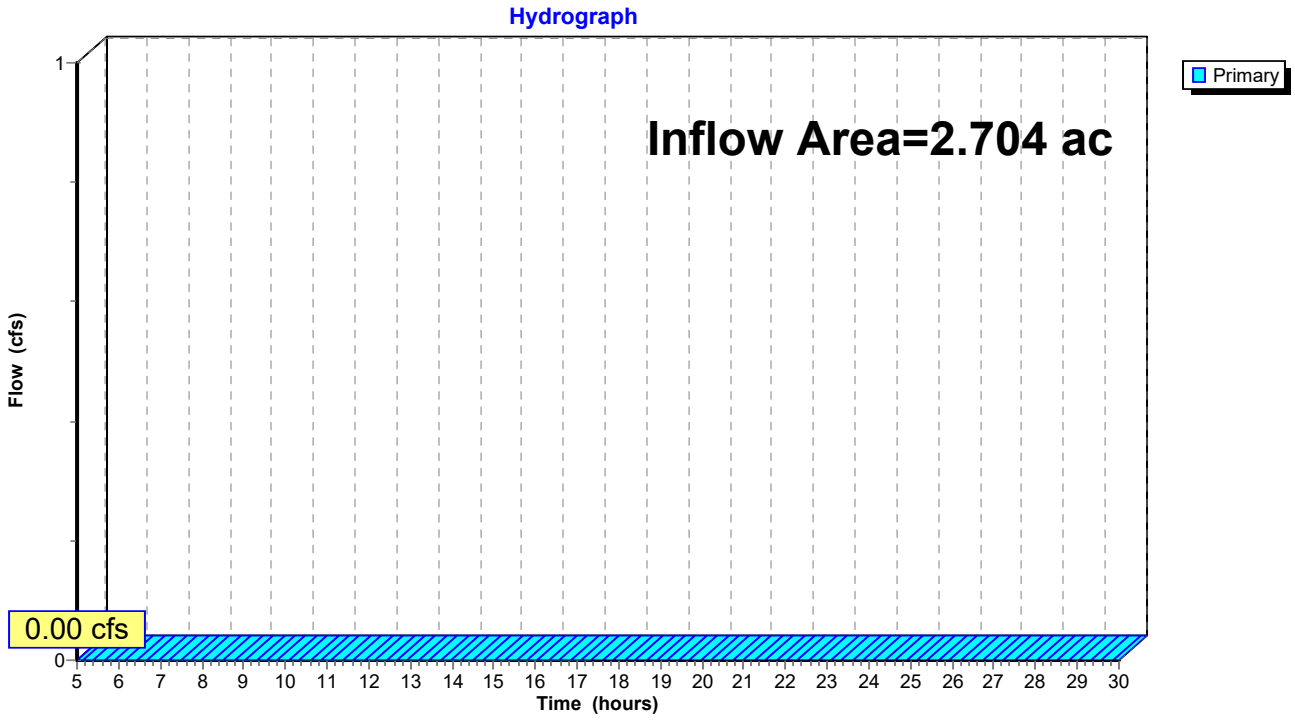


Summary for Link AP-4: AP-4

Inflow Area = 2.704 ac, 0.00% Impervious, Inflow Depth = 0.00" for 10-Year event
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Link AP-4: AP-4



Summary for Subcatchment PDA-1A: PDA-1A

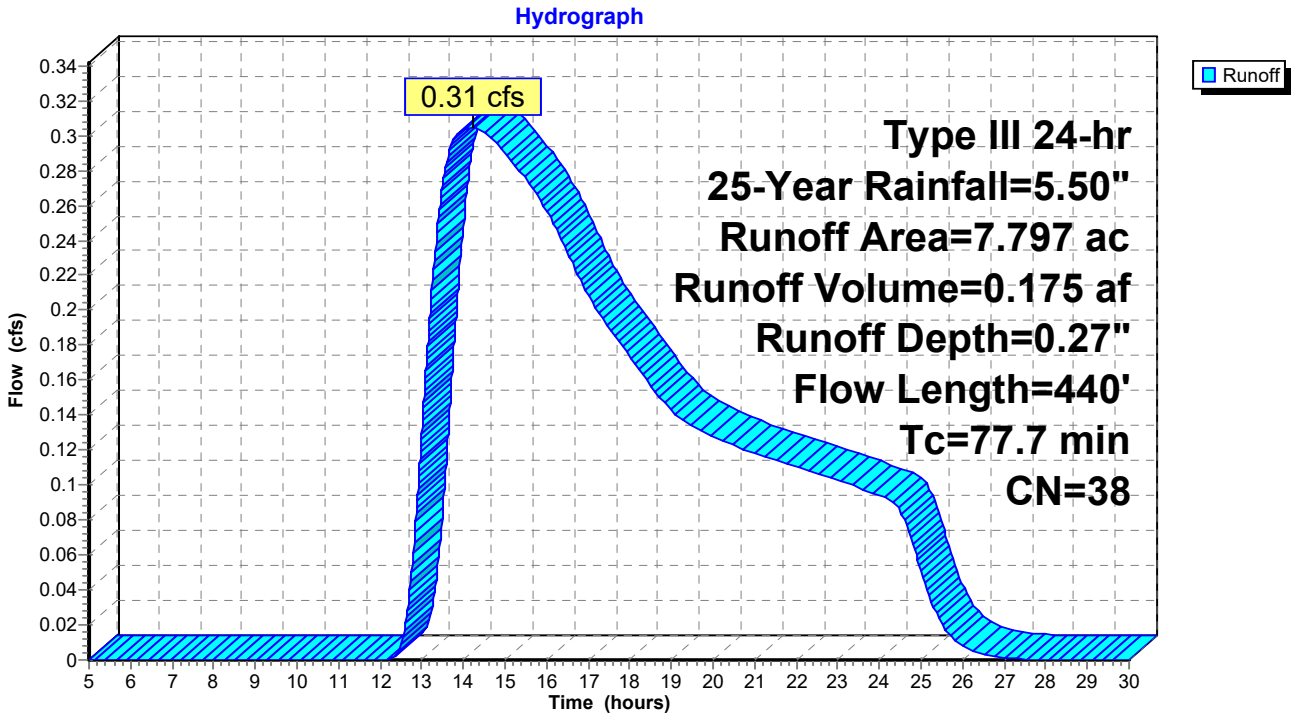
Runoff = 0.31 cfs @ 14.24 hrs, Volume= 0.175 af, Depth= 0.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.50"

Area (ac)	CN	Description
6.705	36	Woods, Fair, HSG A
0.179	79	Woods, Fair, HSG D
0.053	72	Dirt roads, HSG A
0.837	39	>75% Grass cover, Good, HSG A
0.023	80	>75% Grass cover, Good, HSG D
7.797	38	Weighted Average
7.797		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
65.1	200	0.0050	0.05		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.20"
12.6	240	0.0040	0.32		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
77.7	440	Total			

Subcatchment PDA-1A: PDA-1A



Summary for Subcatchment PDA-1B: PDA-1B

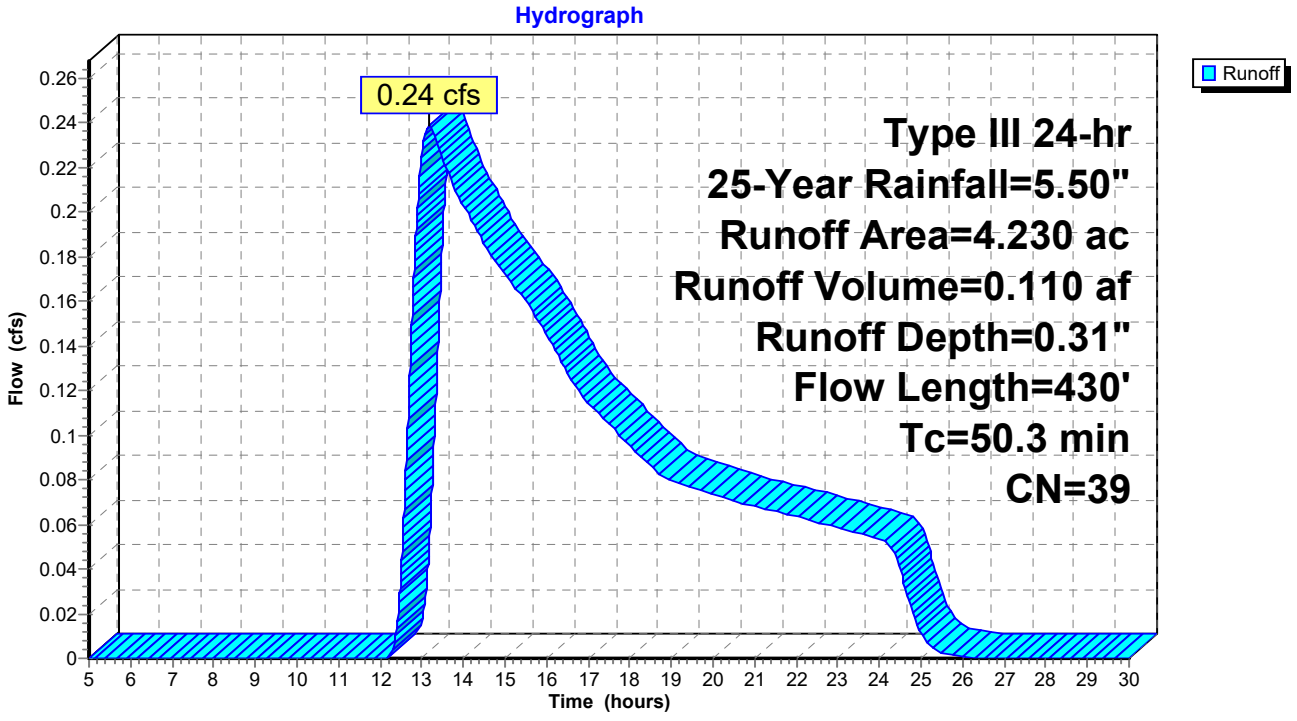
Runoff = 0.24 cfs @ 13.18 hrs, Volume= 0.110 af, Depth= 0.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.50"

Area (ac)	CN	Description
4.230	39	>75% Grass cover, Good, HSG A
4.230		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
41.6	200	0.0055	0.08		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.20"
8.7	230	0.0040	0.44		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
50.3	430	Total			

Subcatchment PDA-1B: PDA-1B



Summary for Subcatchment PDA-2A: PDA-2A

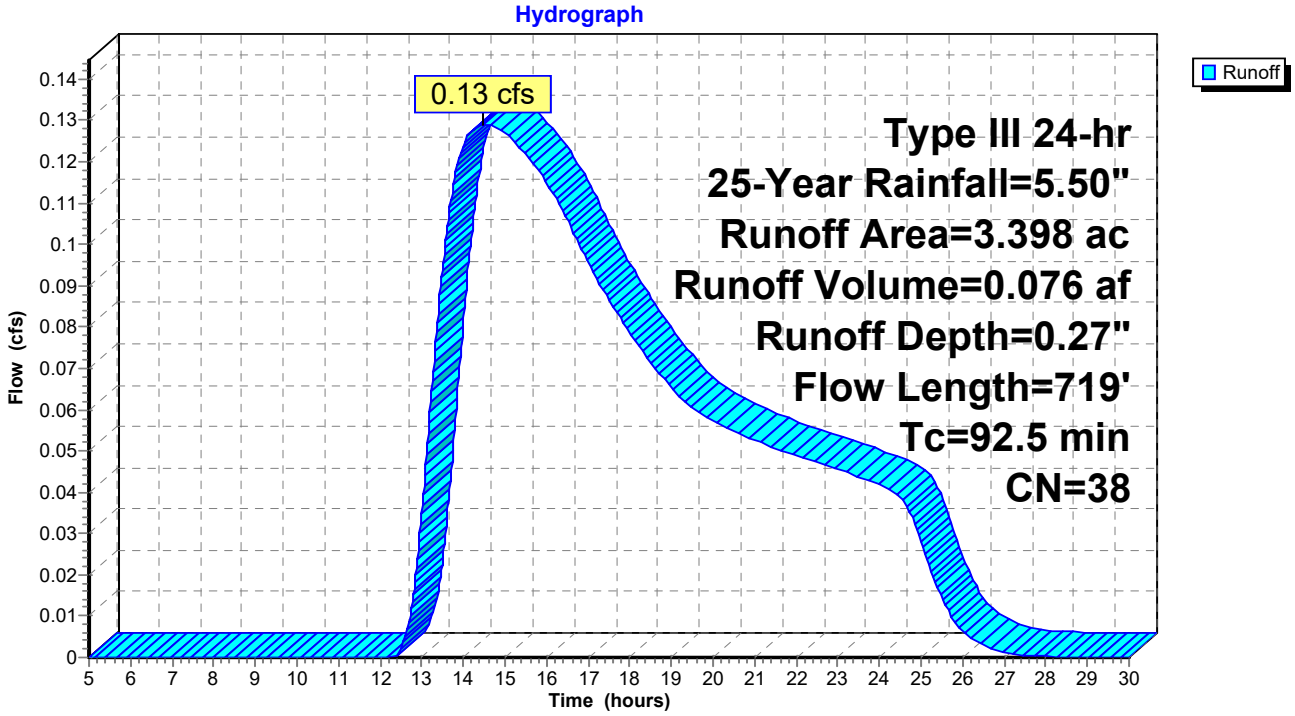
Runoff = 0.13 cfs @ 14.49 hrs, Volume= 0.076 af, Depth= 0.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.50"

Area (ac)	CN	Description
2.232	36	Woods, Fair, HSG A
1.029	39	>75% Grass cover, Good, HSG A
0.097	72	Dirt roads, HSG A
0.033	76	Gravel roads, HSG A
0.007	98	Paved parking, HSG A
3.398	38	Weighted Average
3.391		99.79% Pervious Area
0.007		0.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
65.1	200	0.0050	0.05		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.20"
27.4	519	0.0040	0.32		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
92.5	719	Total			

Subcatchment PDA-2A: PDA-2A



Summary for Subcatchment PDA-2B: PDA-2B

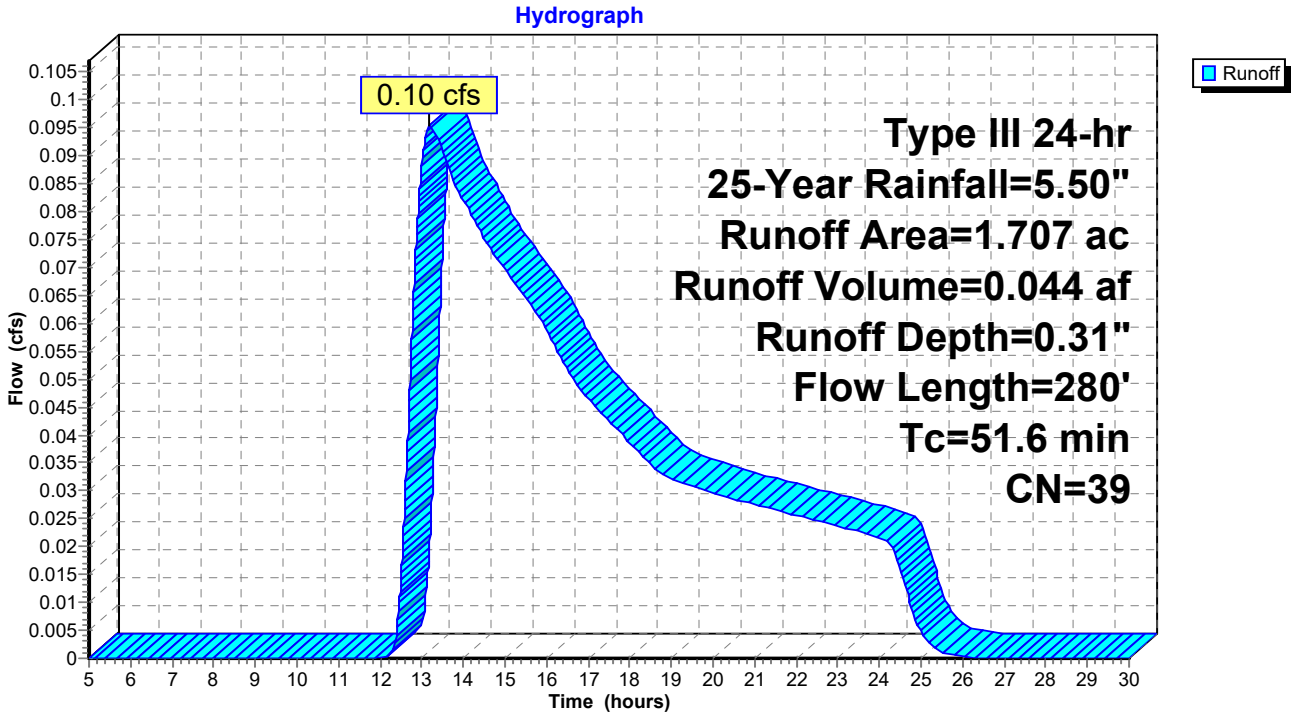
Runoff = 0.10 cfs @ 13.19 hrs, Volume= 0.044 af, Depth= 0.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.50"

Area (ac)	CN	Description
1.707	39	>75% Grass cover, Good, HSG A
1.707		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
49.9	200	0.0035	0.07		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.20"
1.7	80	0.0129	0.80		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
51.6	280	Total			

Subcatchment PDA-2B: PDA-2B



Summary for Subcatchment PDA-3: PDA-3

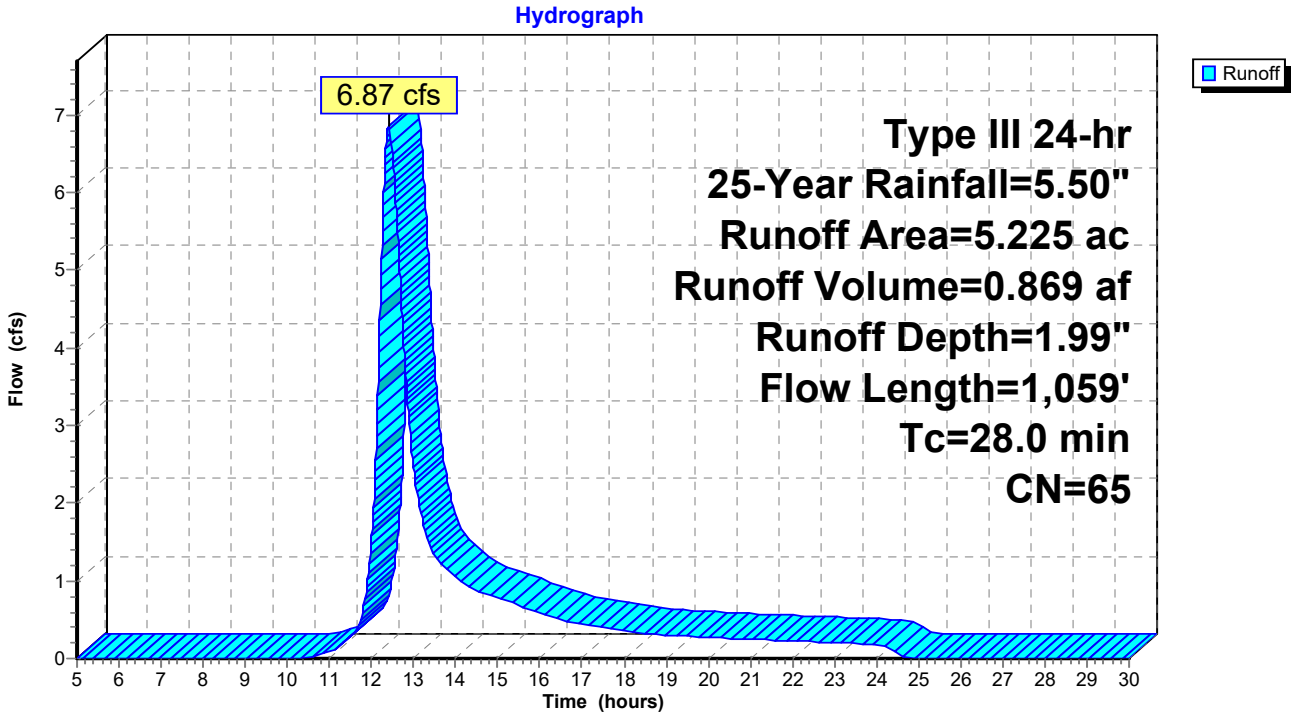
Runoff = 6.87 cfs @ 12.41 hrs, Volume= 0.869 af, Depth= 1.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.50"

Area (ac)	CN	Description
1.059	39	>75% Grass cover, Good, HSG A
1.453	80	>75% Grass cover, Good, HSG D
1.129	36	Woods, Fair, HSG A
0.051	79	Woods, Fair, HSG D
0.269	72	Dirt roads, HSG A
0.378	89	Dirt roads, HSG D
0.007	98	Paved parking, HSG A
0.772	98	Paved parking, HSG D
0.095	76	Gravel roads, HSG A
0.012	91	Gravel roads, HSG D
5.225	65	Weighted Average
4.446		85.09% Pervious Area
0.779		14.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	156	0.0841	0.33		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.20"
20.1	903	0.0025	0.75		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
28.0	1,059	Total			

Subcatchment PDA-3: PDA-3



Summary for Subcatchment PDA-4: PDA-4

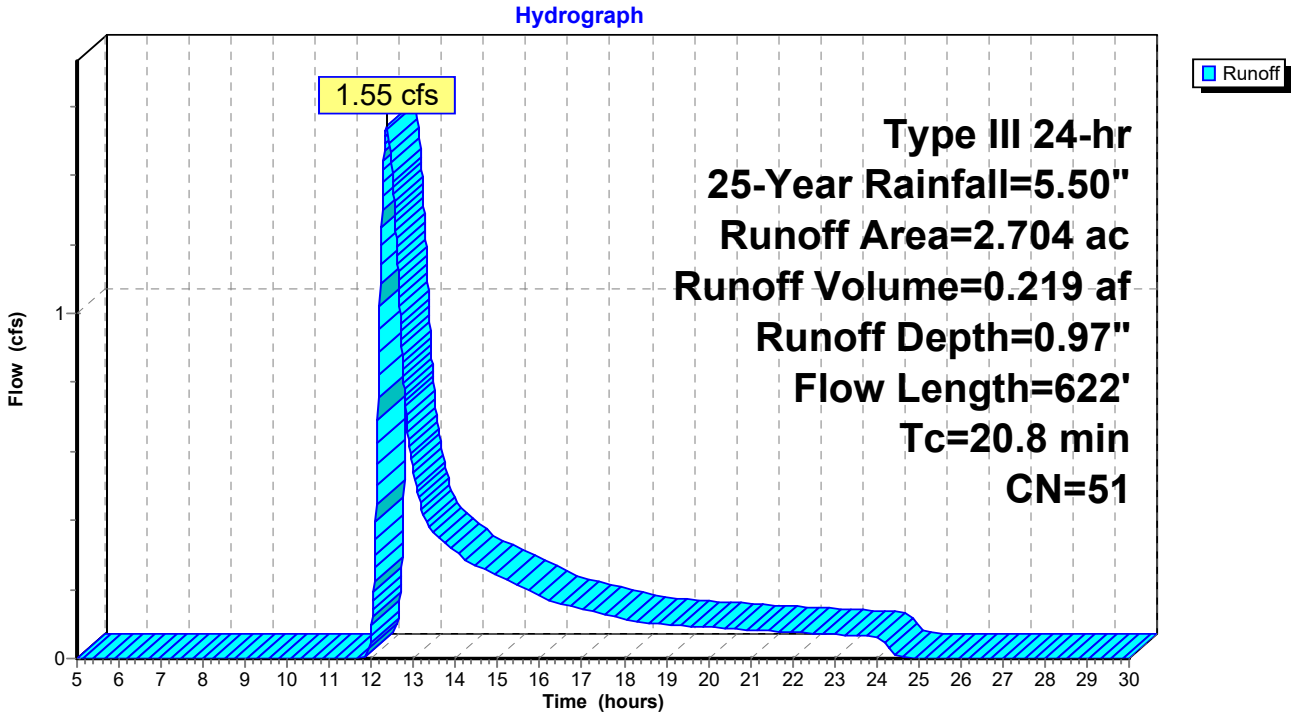
Runoff = 1.55 cfs @ 12.37 hrs, Volume= 0.219 af, Depth= 0.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.50"

Area (ac)	CN	Description
1.451	39	>75% Grass cover, Good, HSG A
0.130	80	>75% Grass cover, Good, HSG D
0.274	36	Woods, Fair, HSG A
0.032	79	Woods, Fair, HSG D
0.717	72	Dirt roads, HSG A
0.021	89	Dirt roads, HSG D
0.079	76	Gravel roads, HSG A
2.704	51	Weighted Average
2.704		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	200	0.0550	0.29		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.20"
1.4	120	0.0080	1.44		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
8.0	302	0.0080	0.63		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
20.8	622	Total			

Subcatchment PDA-4: PDA-4



Summary for Pond 1B: Infiltration Basin 1

Inflow Area = 4.230 ac, 0.00% Impervious, Inflow Depth = 0.31" for 25-Year event
Inflow = 0.24 cfs @ 13.18 hrs, Volume= 0.110 af
Outflow = 0.24 cfs @ 13.22 hrs, Volume= 0.110 af, Atten= 0%, Lag= 2.6 min
Discarded = 0.24 cfs @ 13.22 hrs, Volume= 0.110 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 659.01' @ 13.22 hrs Surf.Area= 5,054 sf Storage= 34 cf

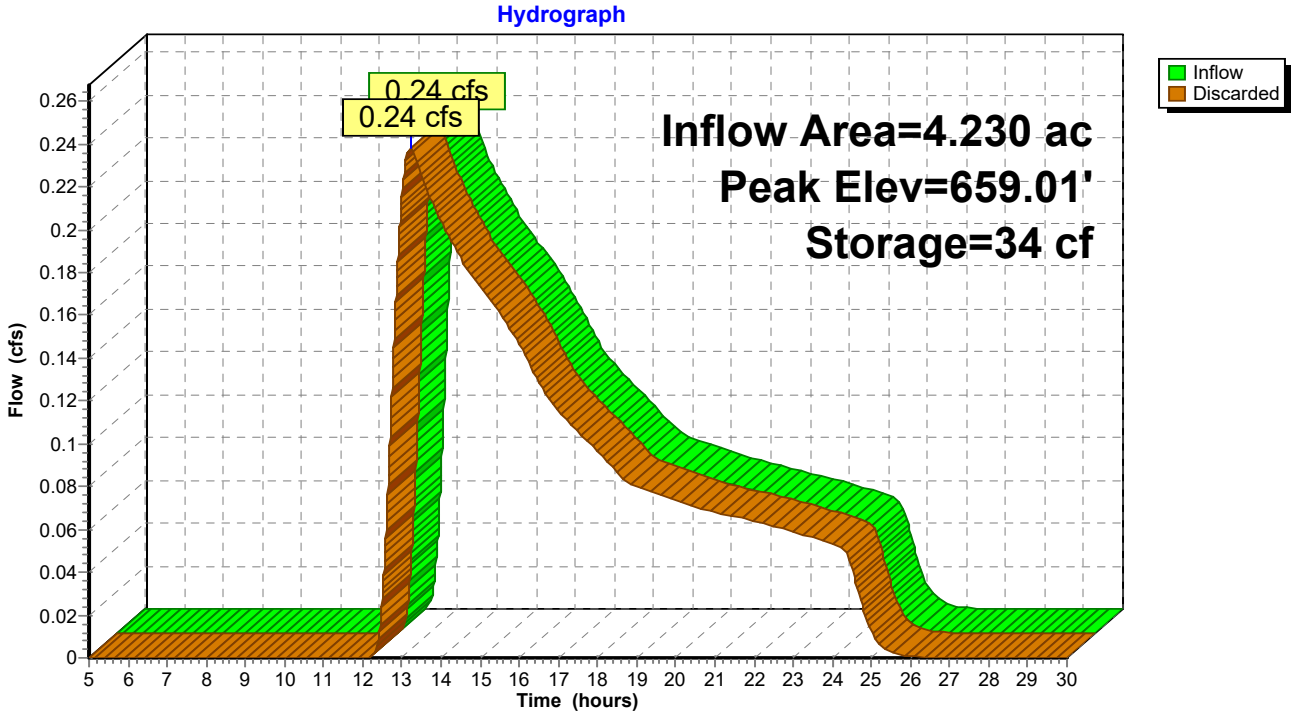
Plug-Flow detention time= 2.4 min calculated for 0.110 af (100% of inflow)
Center-of-Mass det. time= 2.4 min (1,024.3 - 1,021.9)

Volume	Invert	Avail.Storage	Storage Description
#1	659.00'	9,041 cf	**5.00'W x 1,000.00'L x 1.00'H Prismatoid Z=4.0**

Device	Routing	Invert	Outlet Devices
#1	Discarded	659.00'	**3.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'

Discarded OutFlow Max=0.35 cfs @ 13.22 hrs HW=659.01' (Free Discharge)
1=Exfiltration (Controls 0.35 cfs)

Pond 1B: Infiltration Basin 1



Summary for Pond 2B: Infiltration Basin 2

Inflow Area = 1.707 ac, 0.00% Impervious, Inflow Depth = 0.31" for 25-Year event
Inflow = 0.10 cfs @ 13.19 hrs, Volume= 0.044 af
Outflow = 0.10 cfs @ 13.25 hrs, Volume= 0.044 af, Atten= 0%, Lag= 3.8 min
Discarded = 0.10 cfs @ 13.25 hrs, Volume= 0.044 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 659.01' @ 13.25 hrs Surf.Area= 1,897 sf Storage= 14 cf

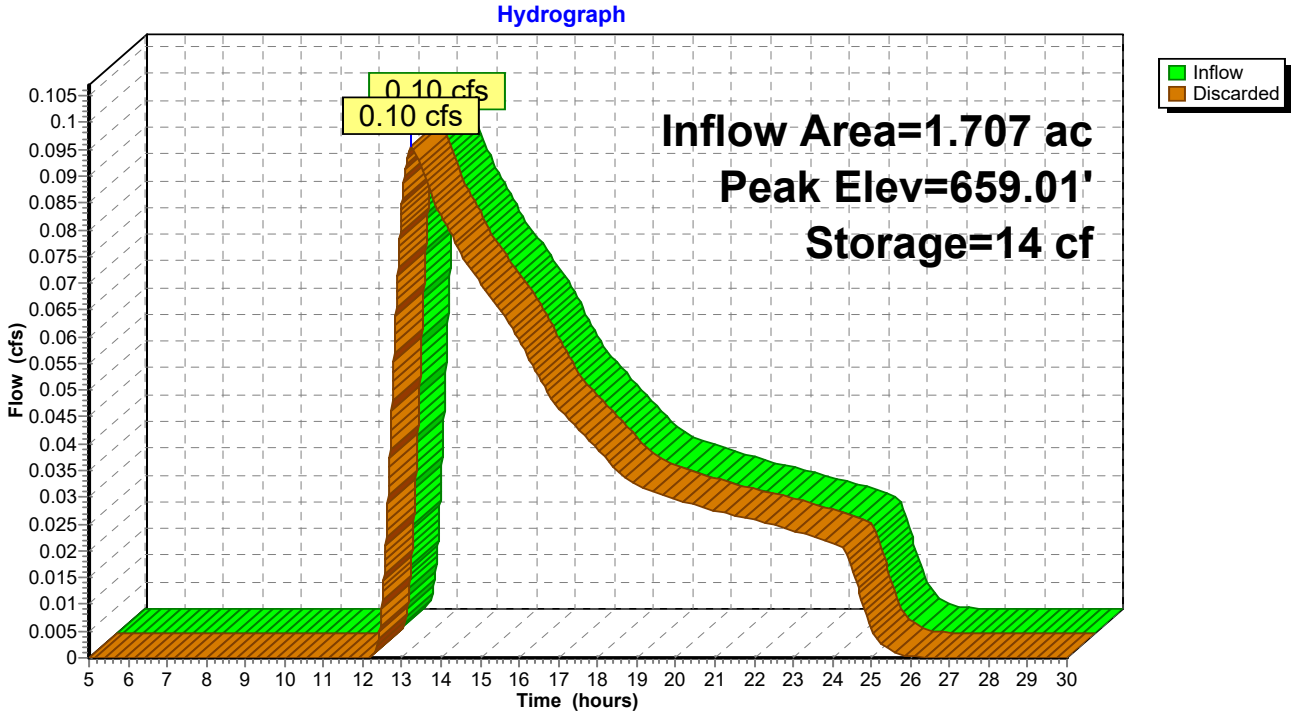
Plug-Flow detention time= 2.4 min calculated for 0.044 af (100% of inflow)
Center-of-Mass det. time= 2.4 min (1,025.5 - 1,023.1)

Volume	Invert	Avail.Storage	Storage Description
#1	659.00'	3,416 cf	**5.00'W x 375.00'L x 1.00'H Prismatoid Z=4.0**

Device	Routing	Invert	Outlet Devices
#1	Discarded	659.00'	**3.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'

Discarded OutFlow Max=0.13 cfs @ 13.25 hrs HW=659.01' (Free Discharge)
1=Exfiltration (Controls 0.13 cfs)

Pond 2B: Infiltration Basin 2



Summary for Pond 3B: Infiltration Basin 3

Inflow Area = 5.225 ac, 14.91% Impervious, Inflow Depth = 1.99" for 25-Year event
Inflow = 6.87 cfs @ 12.41 hrs, Volume= 0.869 af
Outflow = 6.68 cfs @ 12.48 hrs, Volume= 0.869 af, Atten= 3%, Lag= 3.9 min
Discarded = 0.18 cfs @ 12.48 hrs, Volume= 0.190 af
Primary = 6.50 cfs @ 12.48 hrs, Volume= 0.678 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 661.04' @ 12.48 hrs Surf.Area= 2,556 sf Storage= 3,611 cf

Plug-Flow detention time= 46.1 min calculated for 0.868 af (100% of inflow)
Center-of-Mass det. time= 46.1 min (921.7 - 875.5)

Volume	Invert	Avail.Storage	Storage Description
#1	659.00'	6,489 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

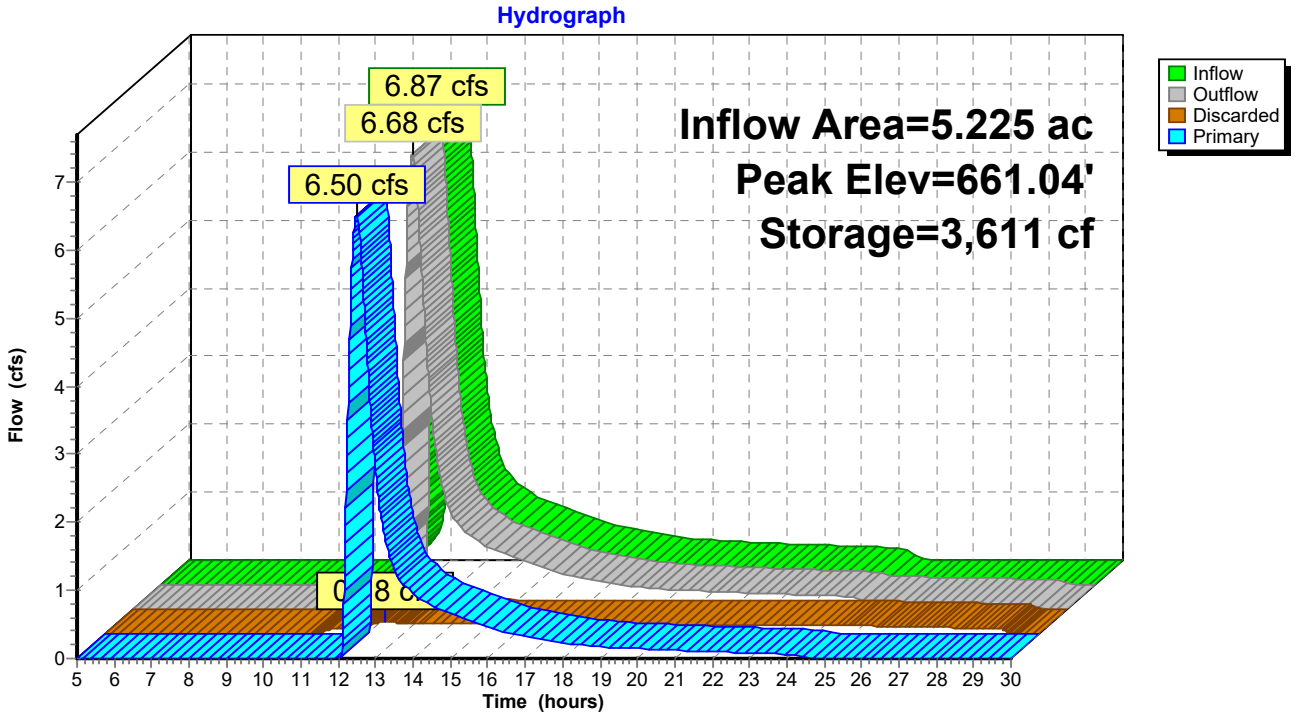
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
659.00	1,047	0	0
660.00	1,735	1,391	1,391
661.00	2,524	2,130	3,521
662.00	3,413	2,969	6,489

Device	Routing	Invert	Outlet Devices
#1	Primary	660.10'	**40.0" W x 27.0" H Ellipse Culvert** L= 83.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 660.10' / 659.70' S= 0.0048 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 5.89 sf
#2	Discarded	659.00'	**3.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'

Discarded OutFlow Max=0.18 cfs @ 12.48 hrs HW=661.04' (Free Discharge)
↑**2=Exfiltration** (Controls 0.18 cfs)

Primary OutFlow Max=6.50 cfs @ 12.48 hrs HW=661.04' (Free Discharge)
↑**1=Culvert** (Barrel Controls 6.50 cfs @ 4.15 fps)

Pond 3B: Infiltration Basin 3



Summary for Pond 4B: Infiltration Basin 4

Inflow Area = 2.704 ac, 0.00% Impervious, Inflow Depth = 0.97" for 25-Year event
Inflow = 1.55 cfs @ 12.37 hrs, Volume= 0.219 af
Outflow = 0.26 cfs @ 14.74 hrs, Volume= 0.219 af, Atten= 84%, Lag= 142.4 min
Discarded = 0.26 cfs @ 14.74 hrs, Volume= 0.219 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 660.05' @ 14.74 hrs Surf.Area= 3,656 sf Storage= 3,287 cf

Plug-Flow detention time= 144.8 min calculated for 0.219 af (100% of inflow)
Center-of-Mass det. time= 144.8 min (1,057.7 - 912.9)

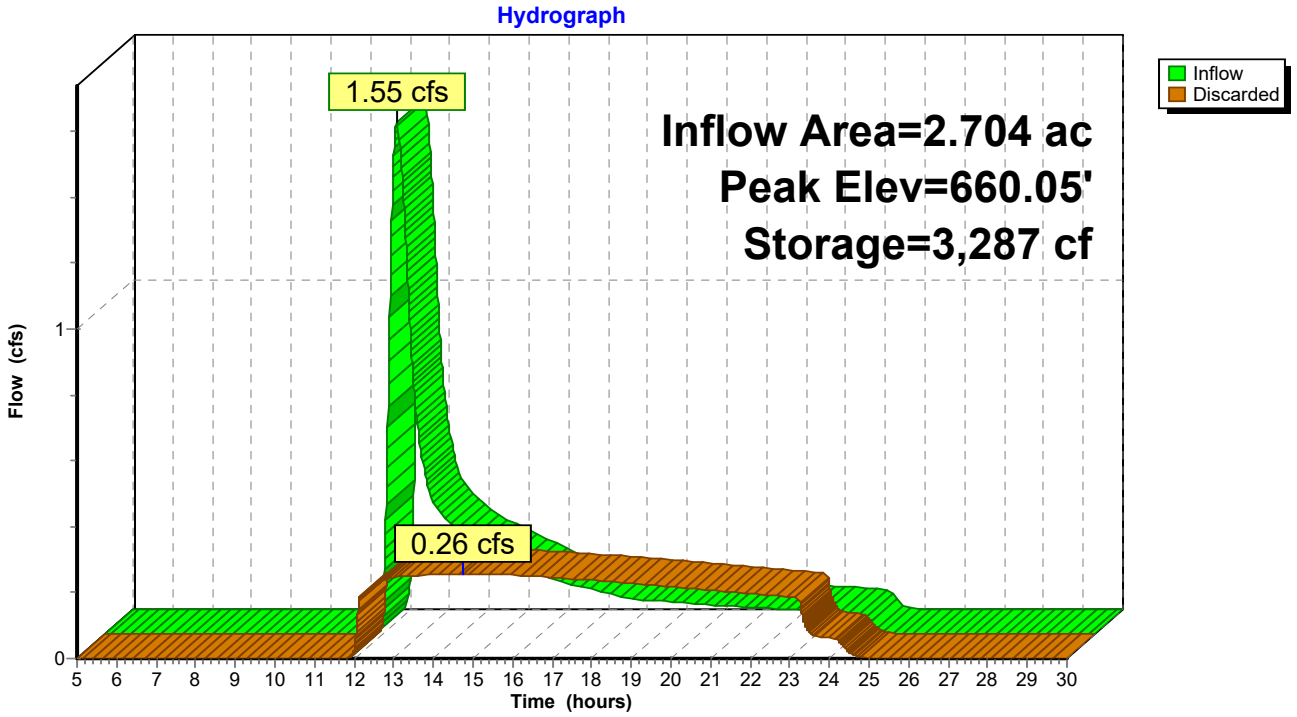
Volume	Invert	Avail.Storage	Storage Description
#1	659.00'	11,072 cf	**Custom Stage Data (Conic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
659.00	2,618	0	0	2,618
660.00	3,603	3,097	3,097	3,623
661.00	4,688	4,134	7,231	4,731
661.75	5,568	3,841	11,072	5,631

Device	Routing	Invert	Outlet Devices
#1	Discarded	659.00'	**3.000 in/hr Exfiltration over Wetted area**

Discarded OutFlow Max=0.26 cfs @ 14.74 hrs HW=660.05' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.26 cfs)

Pond 4B: Infiltration Basin 4

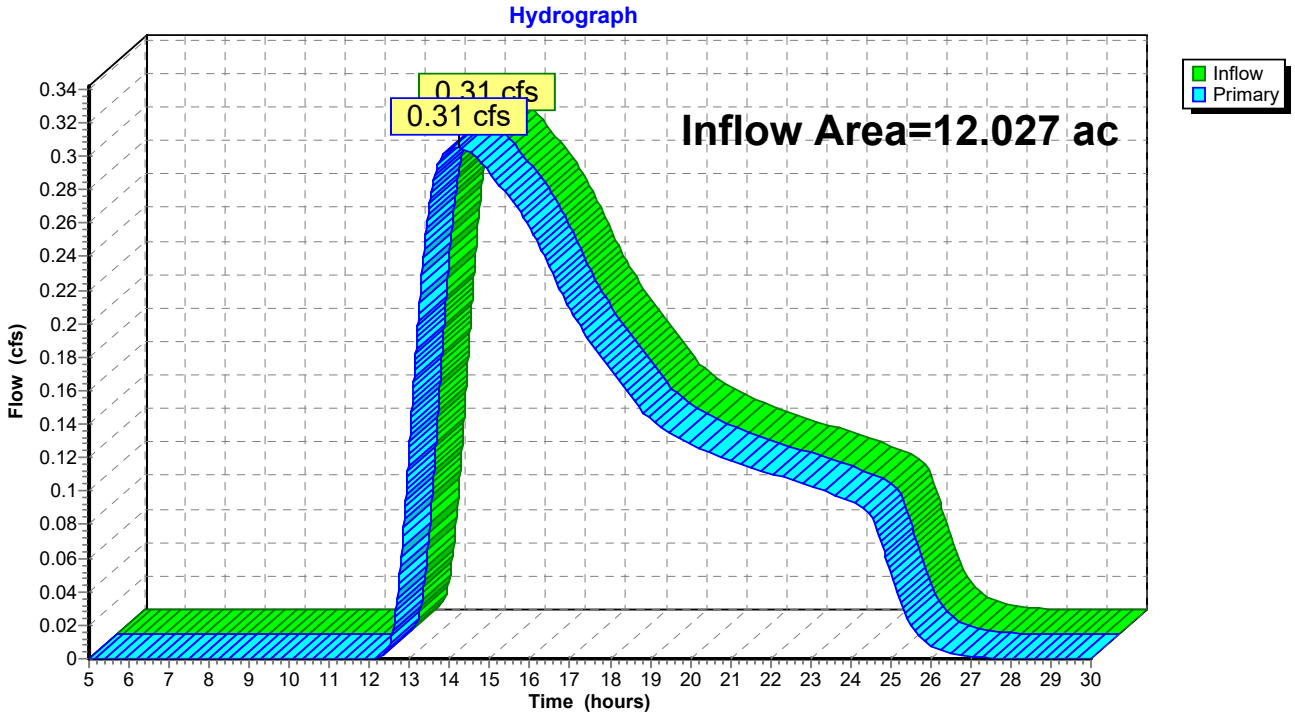


Summary for Link AP-1: Western Wetlands

Inflow Area = 12.027 ac, 0.00% Impervious, Inflow Depth = 0.17" for 25-Year event
Inflow = 0.31 cfs @ 14.24 hrs, Volume= 0.175 af
Primary = 0.31 cfs @ 14.24 hrs, Volume= 0.175 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Link AP-1: Western Wetlands

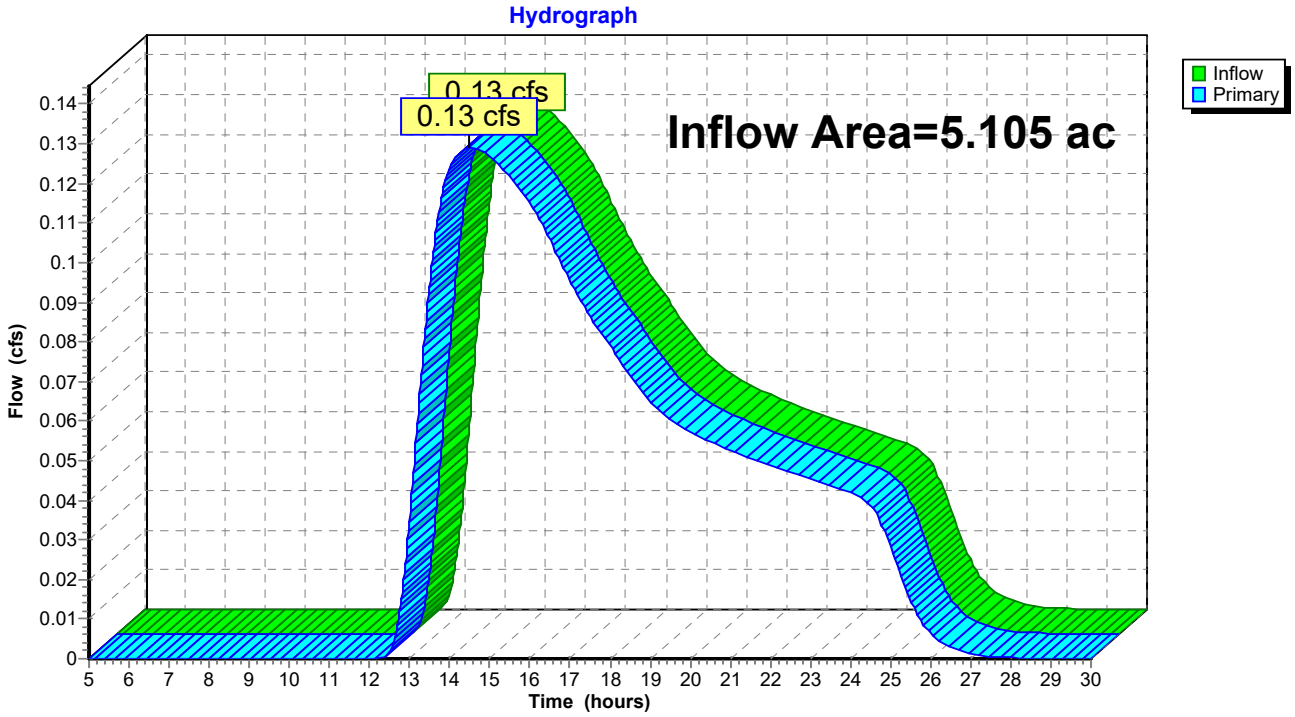


Summary for Link AP-2: Southern Property Line

Inflow Area = 5.105 ac, 0.14% Impervious, Inflow Depth = 0.18" for 25-Year event
Inflow = 0.13 cfs @ 14.49 hrs, Volume= 0.076 af
Primary = 0.13 cfs @ 14.49 hrs, Volume= 0.076 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Link AP-2: Southern Property Line

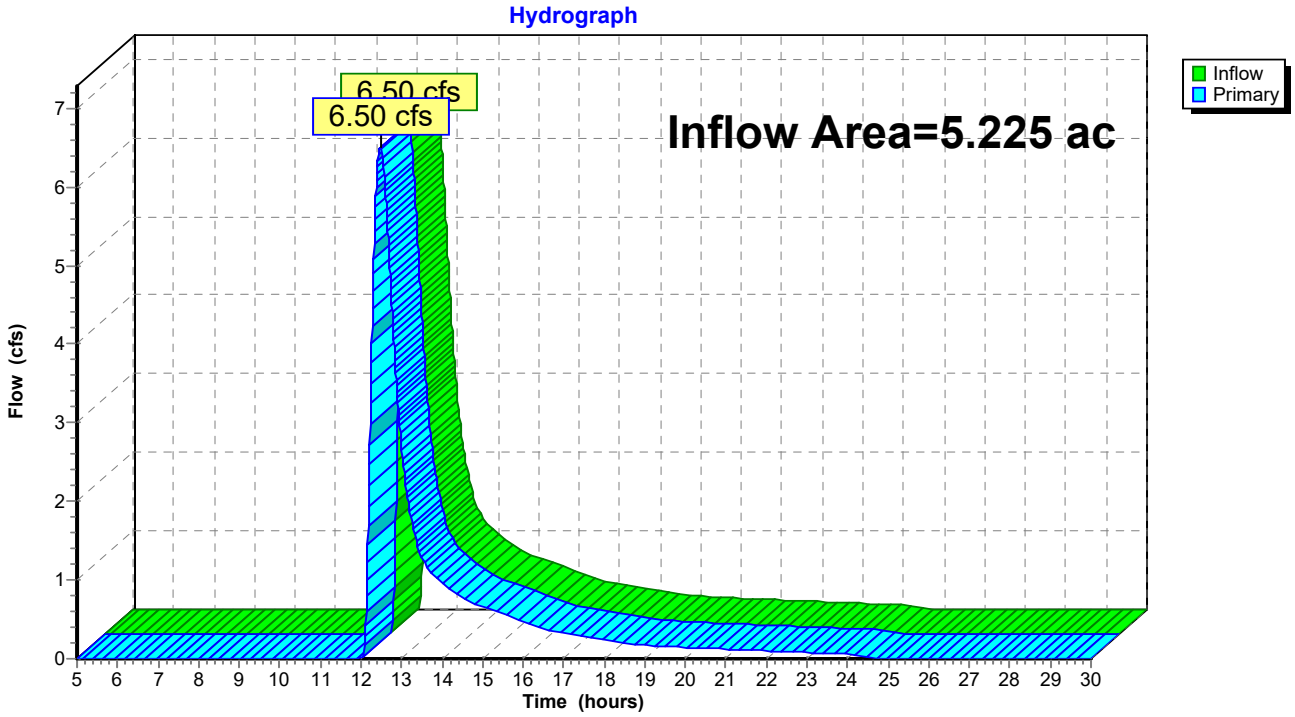


Summary for Link AP-3: Existing Swale

Inflow Area = 5.225 ac, 14.91% Impervious, Inflow Depth = 1.56" for 25-Year event
Inflow = 6.50 cfs @ 12.48 hrs, Volume= 0.678 af
Primary = 6.50 cfs @ 12.48 hrs, Volume= 0.678 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Link AP-3: Existing Swale

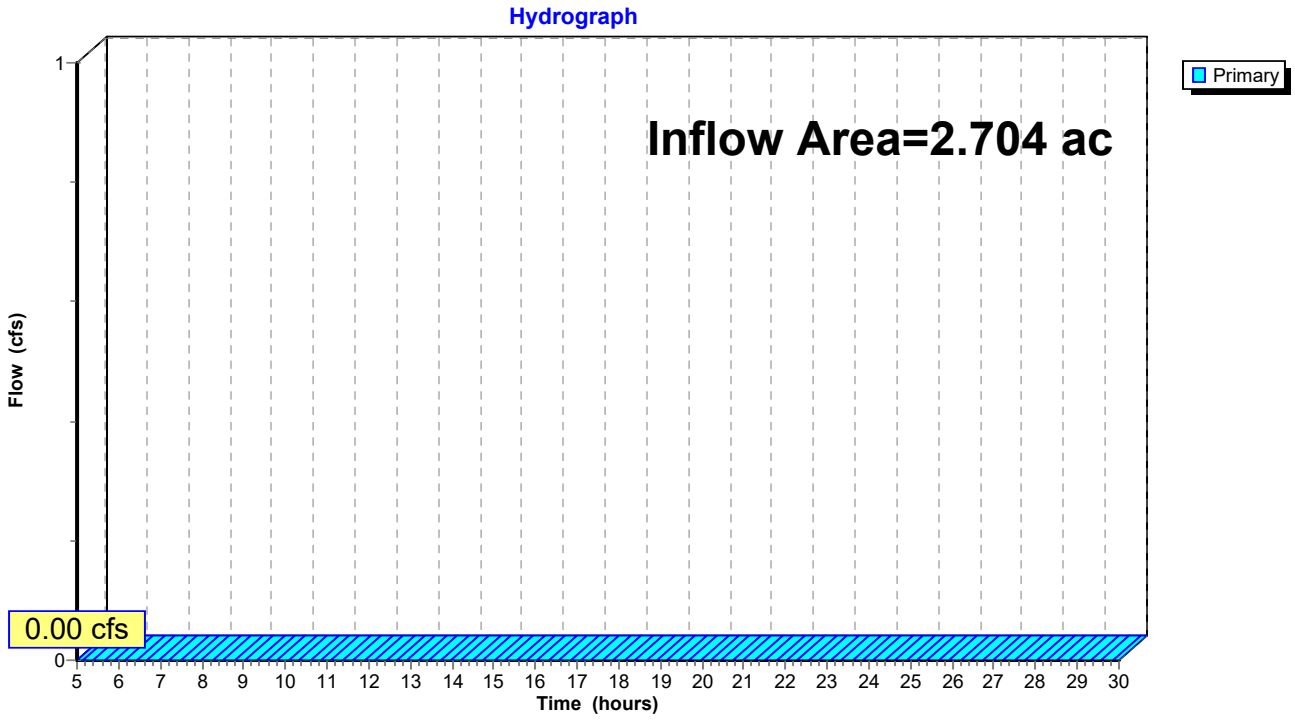


Summary for Link AP-4: AP-4

Inflow Area = 2.704 ac, 0.00% Impervious, Inflow Depth = 0.00" for 25-Year event
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Link AP-4: AP-4



Summary for Subcatchment PDA-1A: PDA-1A

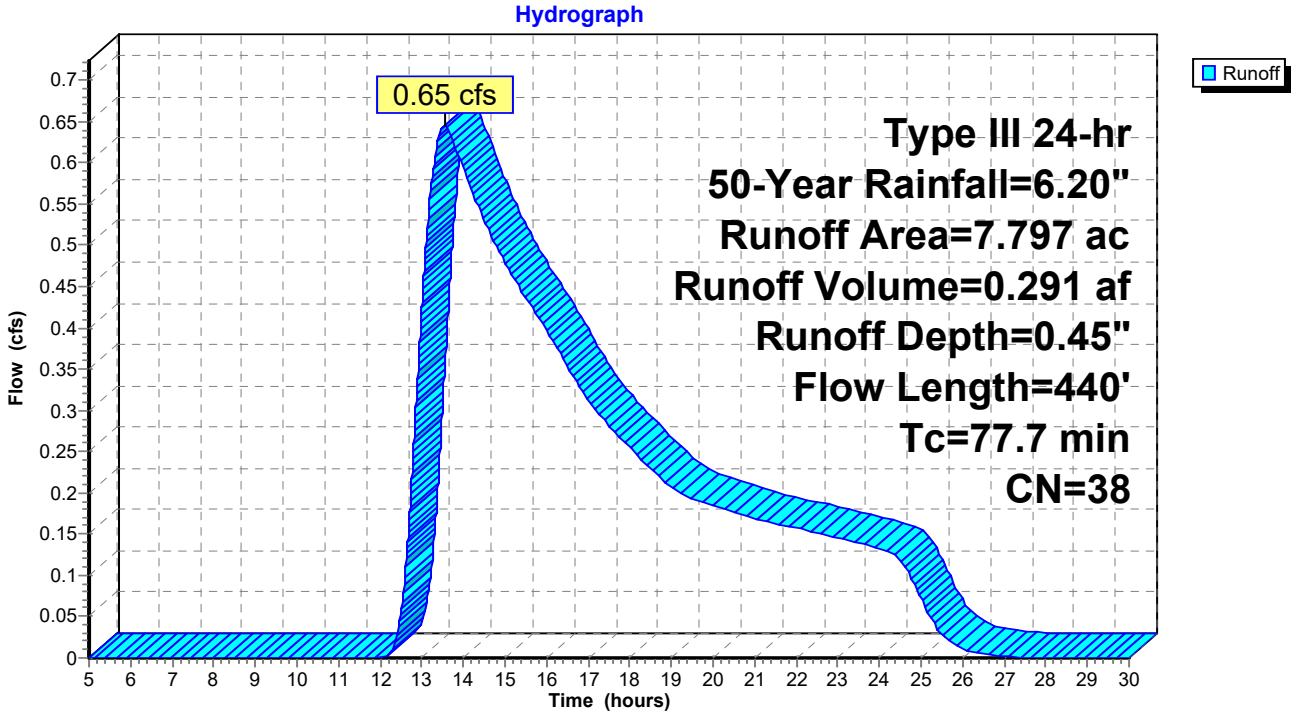
Runoff = 0.65 cfs @ 13.55 hrs, Volume= 0.291 af, Depth= 0.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=6.20"

Area (ac)	CN	Description
6.705	36	Woods, Fair, HSG A
0.179	79	Woods, Fair, HSG D
0.053	72	Dirt roads, HSG A
0.837	39	>75% Grass cover, Good, HSG A
0.023	80	>75% Grass cover, Good, HSG D
7.797	38	Weighted Average
7.797		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
65.1	200	0.0050	0.05		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.20"
12.6	240	0.0040	0.32		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
77.7	440	Total			

Subcatchment PDA-1A: PDA-1A



Summary for Subcatchment PDA-1B: PDA-1B

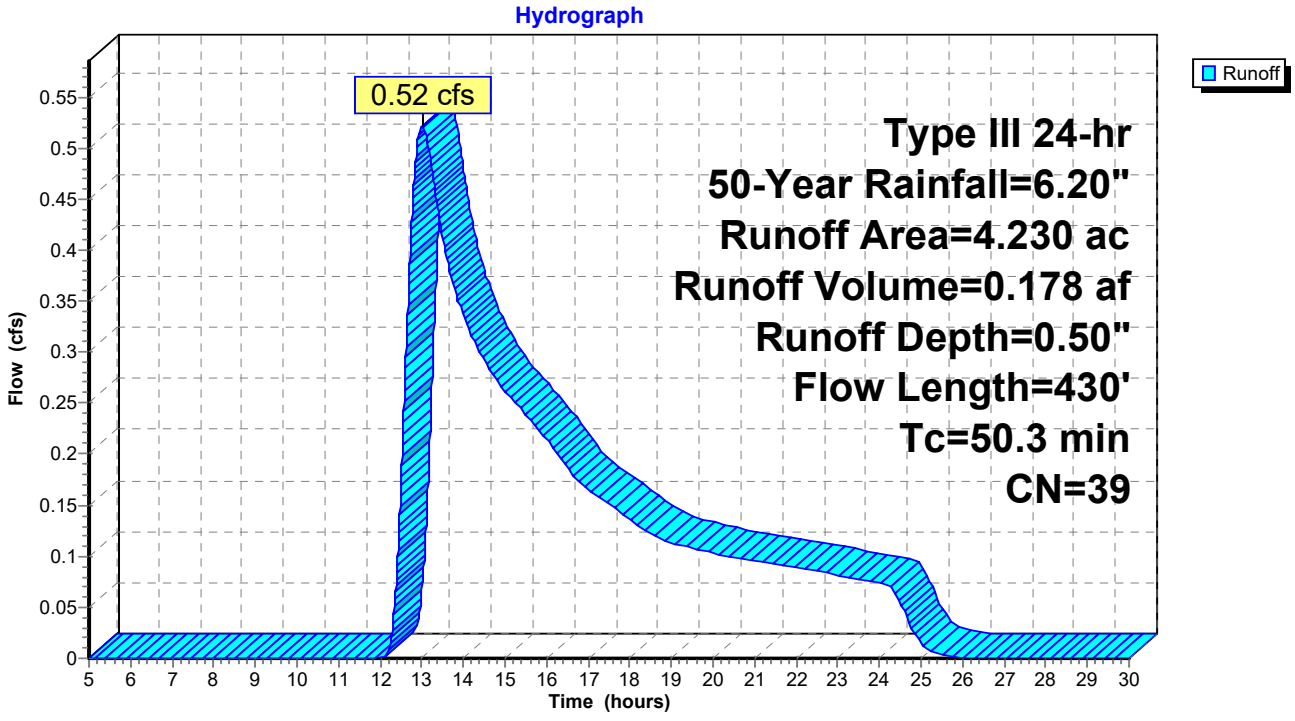
Runoff = 0.52 cfs @ 13.02 hrs, Volume= 0.178 af, Depth= 0.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=6.20"

Area (ac)	CN	Description
4.230	39	>75% Grass cover, Good, HSG A
4.230		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
41.6	200	0.0055	0.08		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.20"
8.7	230	0.0040	0.44		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
50.3	430	Total			

Subcatchment PDA-1B: PDA-1B



Summary for Subcatchment PDA-2A: PDA-2A

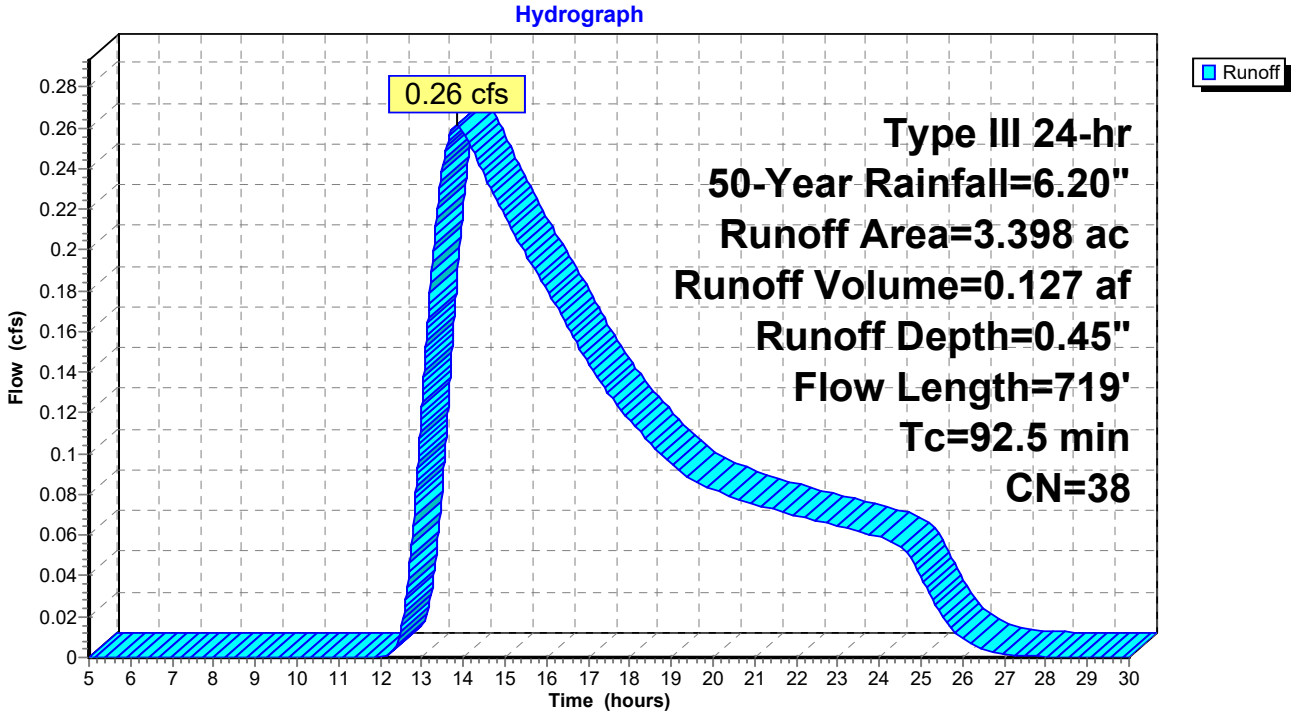
Runoff = 0.26 cfs @ 13.87 hrs, Volume= 0.127 af, Depth= 0.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=6.20"

Area (ac)	CN	Description
2.232	36	Woods, Fair, HSG A
1.029	39	>75% Grass cover, Good, HSG A
0.097	72	Dirt roads, HSG A
0.033	76	Gravel roads, HSG A
0.007	98	Paved parking, HSG A
3.398	38	Weighted Average
3.391		99.79% Pervious Area
0.007		0.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
65.1	200	0.0050	0.05		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.20"
27.4	519	0.0040	0.32		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
92.5	719	Total			

Subcatchment PDA-2A: PDA-2A



Summary for Subcatchment PDA-2B: PDA-2B

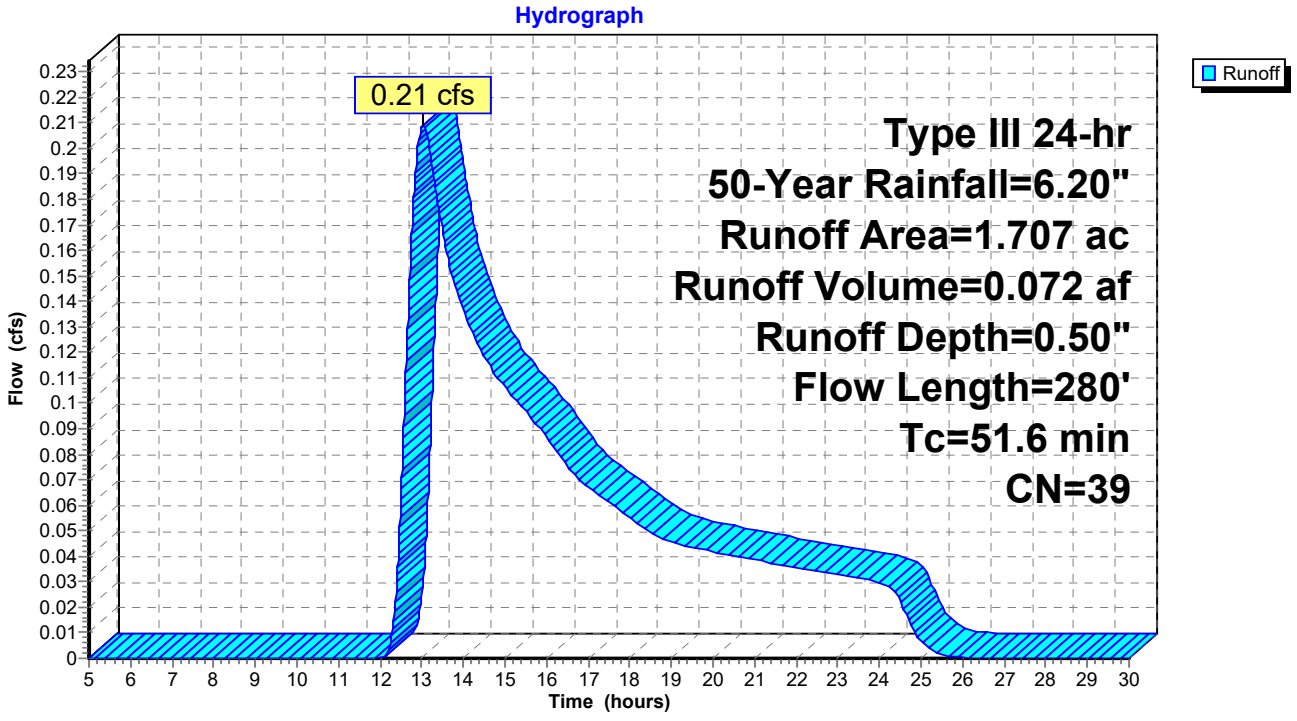
Runoff = 0.21 cfs @ 13.02 hrs, Volume= 0.072 af, Depth= 0.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=6.20"

Area (ac)	CN	Description
1.707	39	>75% Grass cover, Good, HSG A
1.707		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
49.9	200	0.0035	0.07		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.20"
1.7	80	0.0129	0.80		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
51.6	280	Total			

Subcatchment PDA-2B: PDA-2B



Summary for Subcatchment PDA-3: PDA-3

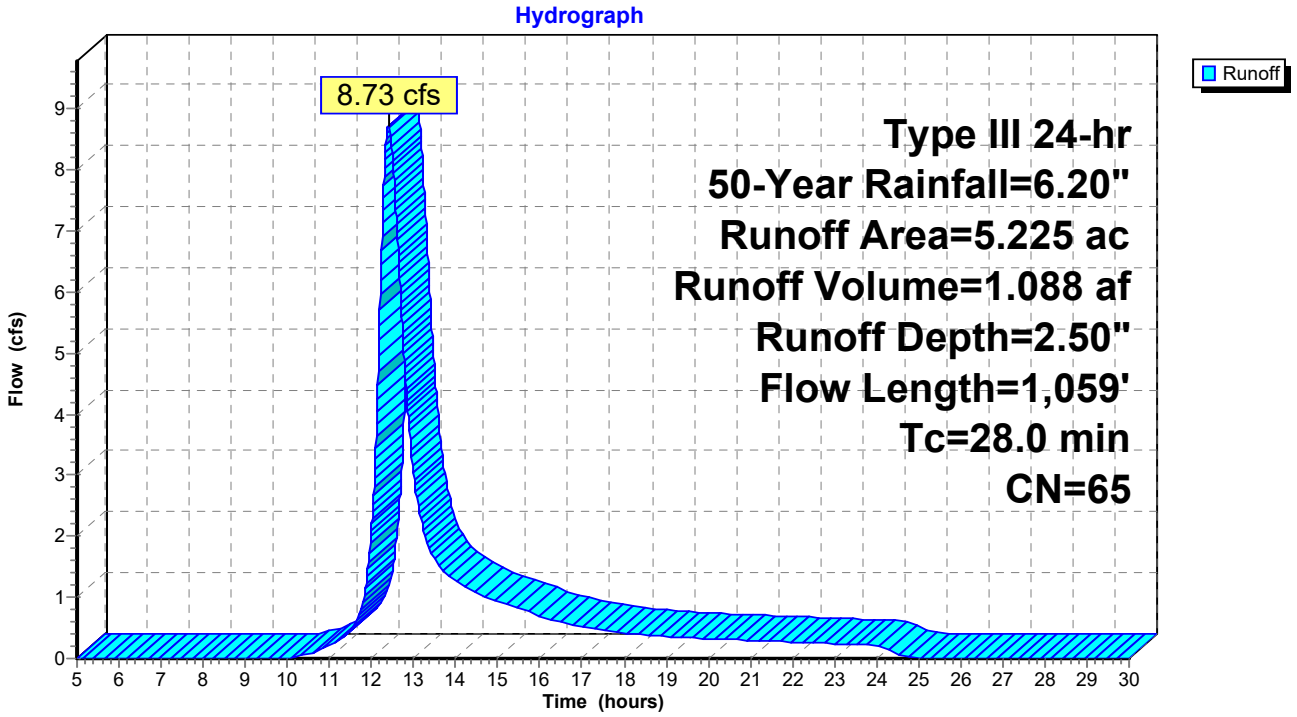
Runoff = 8.73 cfs @ 12.41 hrs, Volume= 1.088 af, Depth= 2.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=6.20"

Area (ac)	CN	Description
1.059	39	>75% Grass cover, Good, HSG A
1.453	80	>75% Grass cover, Good, HSG D
1.129	36	Woods, Fair, HSG A
0.051	79	Woods, Fair, HSG D
0.269	72	Dirt roads, HSG A
0.378	89	Dirt roads, HSG D
0.007	98	Paved parking, HSG A
0.772	98	Paved parking, HSG D
0.095	76	Gravel roads, HSG A
0.012	91	Gravel roads, HSG D
5.225	65	Weighted Average
4.446		85.09% Pervious Area
0.779		14.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	156	0.0841	0.33		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.20"
20.1	903	0.0025	0.75		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
28.0	1,059	Total			

Subcatchment PDA-3: PDA-3



Summary for Subcatchment PDA-4: PDA-4

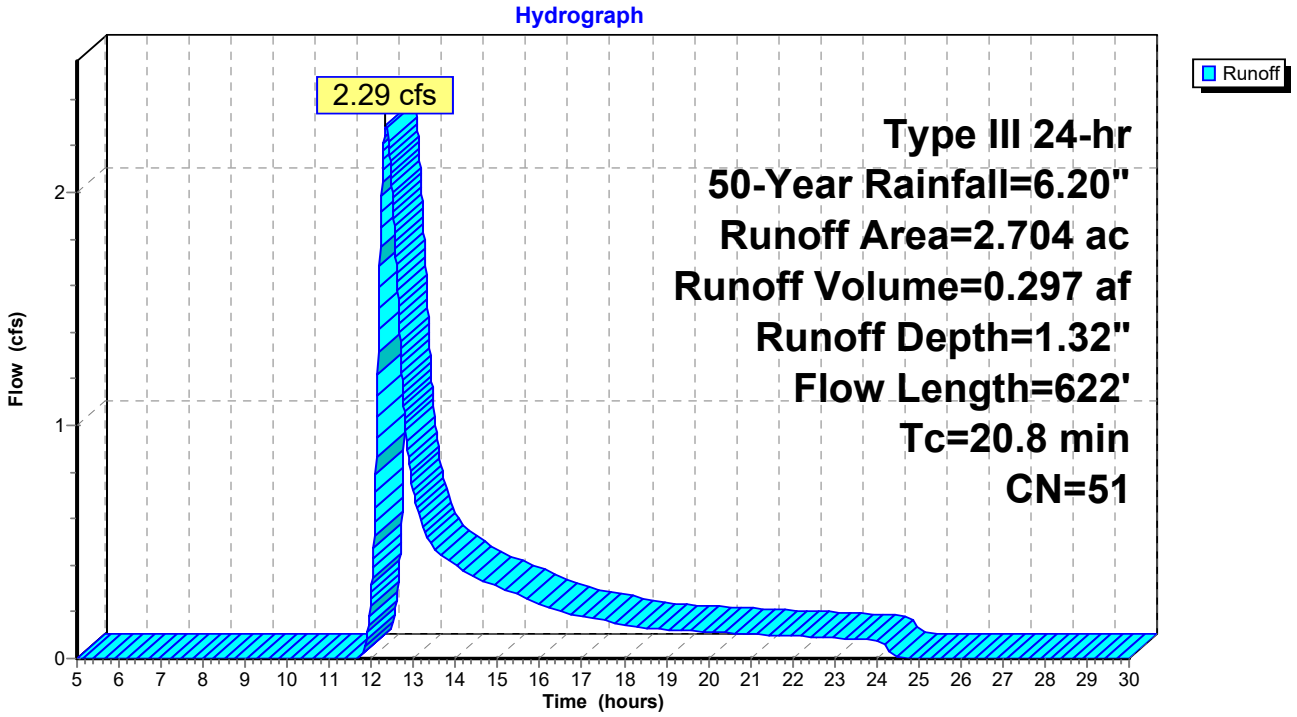
Runoff = 2.29 cfs @ 12.34 hrs, Volume= 0.297 af, Depth= 1.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=6.20"

Area (ac)	CN	Description
1.451	39	>75% Grass cover, Good, HSG A
0.130	80	>75% Grass cover, Good, HSG D
0.274	36	Woods, Fair, HSG A
0.032	79	Woods, Fair, HSG D
0.717	72	Dirt roads, HSG A
0.021	89	Dirt roads, HSG D
0.079	76	Gravel roads, HSG A
2.704	51	Weighted Average
2.704		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	200	0.0550	0.29		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.20"
1.4	120	0.0080	1.44		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
8.0	302	0.0080	0.63		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
20.8	622	Total			

Subcatchment PDA-4: PDA-4



Summary for Pond 1B: Infiltration Basin 1

Inflow Area = 4.230 ac, 0.00% Impervious, Inflow Depth = 0.50" for 50-Year event
Inflow = 0.52 cfs @ 13.02 hrs, Volume= 0.178 af
Outflow = 0.38 cfs @ 13.64 hrs, Volume= 0.178 af, Atten= 26%, Lag= 37.1 min
Discarded = 0.38 cfs @ 13.64 hrs, Volume= 0.178 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 659.07' @ 13.64 hrs Surf.Area= 5,540 sf Storage= 354 cf

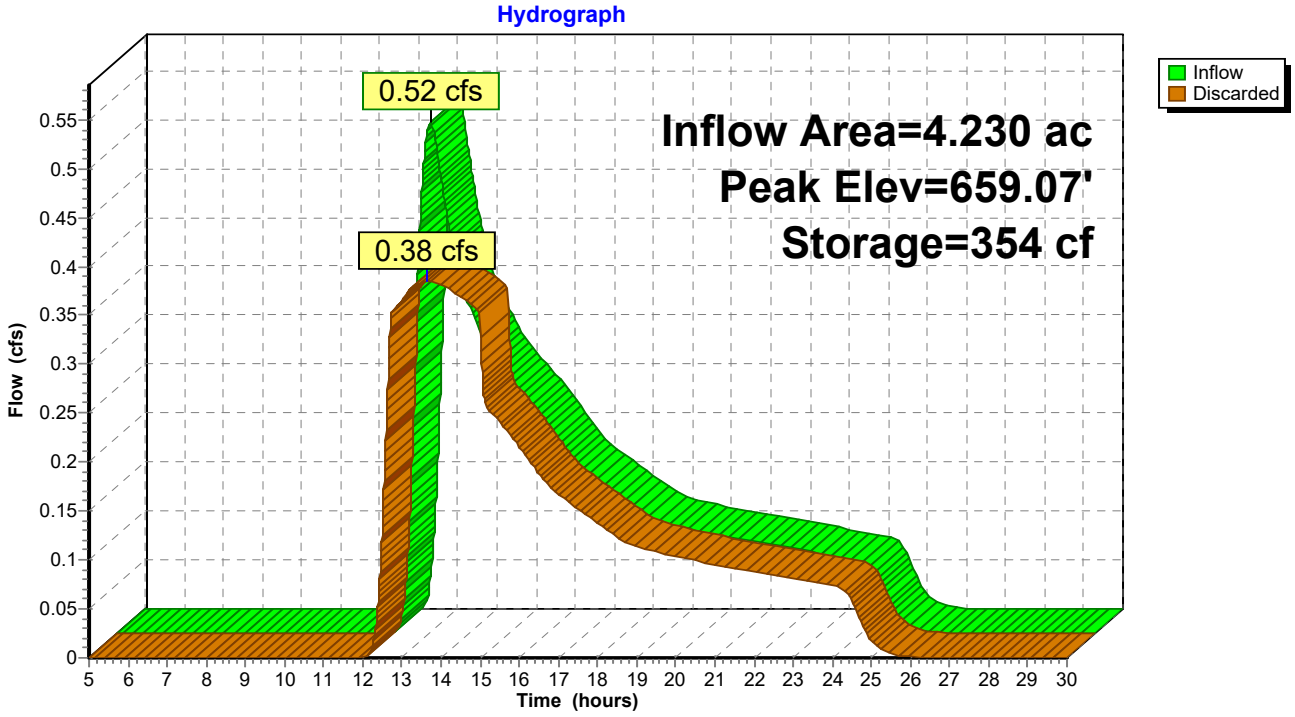
Plug-Flow detention time= 5.6 min calculated for 0.178 af (100% of inflow)
Center-of-Mass det. time= 5.6 min (999.3 - 993.7)

Volume	Invert	Avail.Storage	Storage Description
#1	659.00'	9,041 cf	**5.00'W x 1,000.00'L x 1.00'H Prismatoid Z=4.0**

Device	Routing	Invert	Outlet Devices
#1	Discarded	659.00'	**3.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'

Discarded OutFlow Max=0.38 cfs @ 13.64 hrs HW=659.07' (Free Discharge)
1=Exfiltration (Controls 0.38 cfs)

Pond 1B: Infiltration Basin 1



Summary for Pond 2B: Infiltration Basin 2

Inflow Area = 1.707 ac, 0.00% Impervious, Inflow Depth = 0.50" for 50-Year event
Inflow = 0.21 cfs @ 13.02 hrs, Volume= 0.072 af
Outflow = 0.15 cfs @ 13.76 hrs, Volume= 0.072 af, Atten= 29%, Lag= 44.8 min
Discarded = 0.15 cfs @ 13.76 hrs, Volume= 0.072 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 659.08' @ 13.76 hrs Surf.Area= 2,132 sf Storage= 169 cf

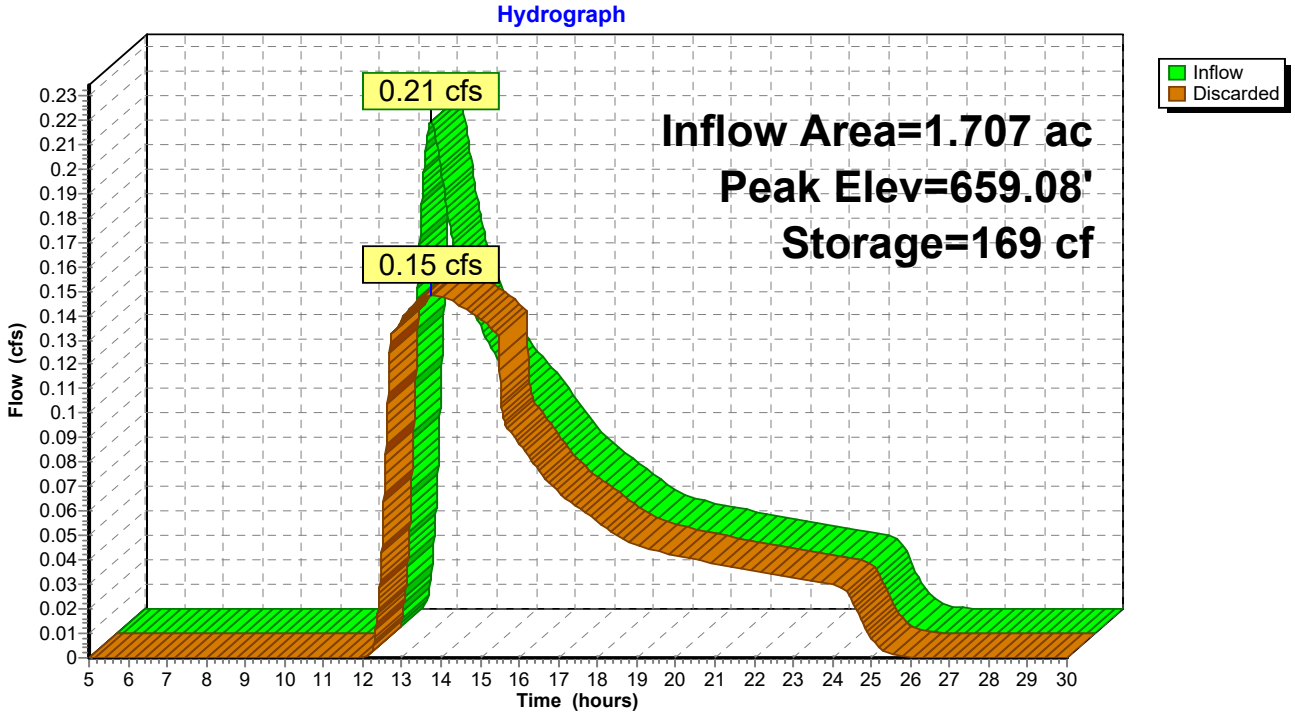
Plug-Flow detention time= 7.2 min calculated for 0.072 af (100% of inflow)
Center-of-Mass det. time= 7.2 min (1,002.1 - 994.9)

Volume	Invert	Avail.Storage	Storage Description
#1	659.00'	3,416 cf	**5.00'W x 375.00'L x 1.00'H Prismatoid Z=4.0**

Device	Routing	Invert	Outlet Devices
#1	Discarded	659.00'	**3.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'

Discarded OutFlow Max=0.15 cfs @ 13.76 hrs HW=659.08' (Free Discharge)
1=Exfiltration (Controls 0.15 cfs)

Pond 2B: Infiltration Basin 2



Summary for Pond 3B: Infiltration Basin 3

Inflow Area = 5.225 ac, 14.91% Impervious, Inflow Depth = 2.50" for 50-Year event
Inflow = 8.73 cfs @ 12.41 hrs, Volume= 1.088 af
Outflow = 8.52 cfs @ 12.47 hrs, Volume= 1.088 af, Atten= 2%, Lag= 3.4 min
Discarded = 0.19 cfs @ 12.47 hrs, Volume= 0.197 af
Primary = 8.33 cfs @ 12.47 hrs, Volume= 0.891 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 661.18' @ 12.47 hrs Surf.Area= 2,680 sf Storage= 3,977 cf

Plug-Flow detention time= 38.8 min calculated for 1.088 af (100% of inflow)
Center-of-Mass det. time= 38.8 min (907.5 - 868.8)

Volume	Invert	Avail.Storage	Storage Description
#1	659.00'	6,489 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

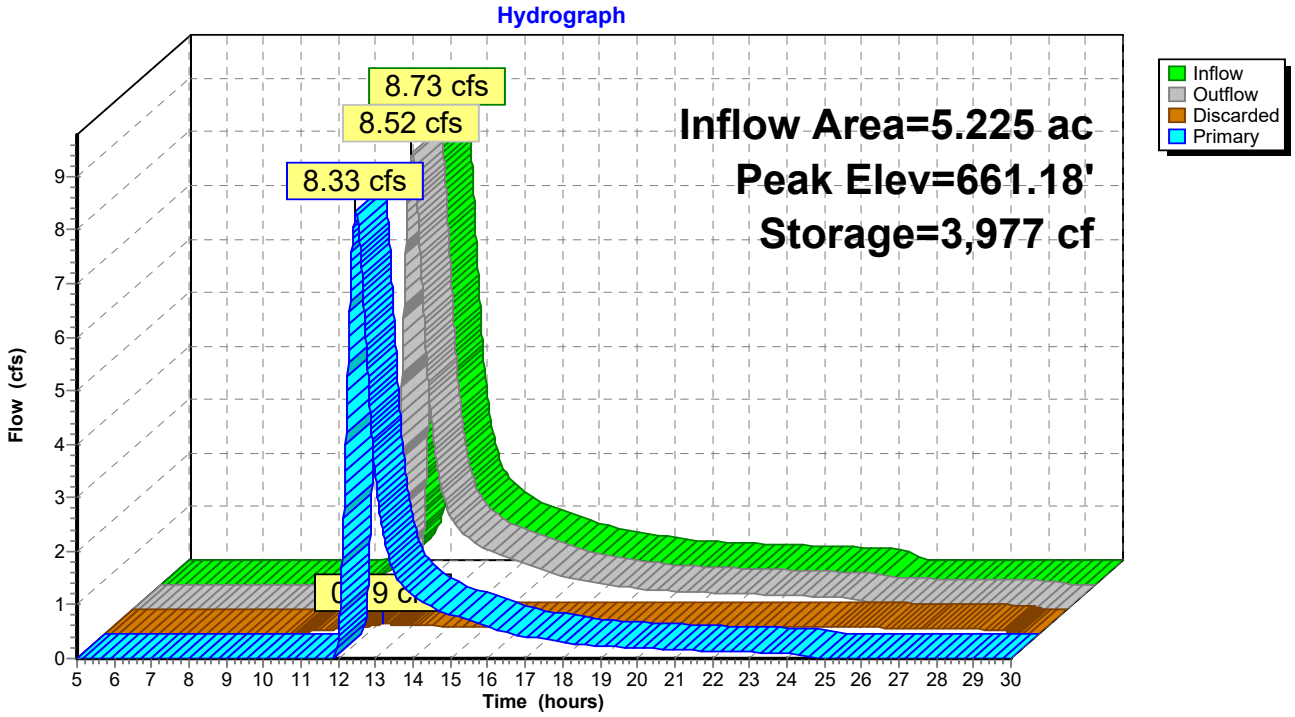
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
659.00	1,047	0	0
660.00	1,735	1,391	1,391
661.00	2,524	2,130	3,521
662.00	3,413	2,969	6,489

Device	Routing	Invert	Outlet Devices
#1	Primary	660.10'	**40.0" W x 27.0" H Ellipse Culvert** L= 83.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 660.10' / 659.70' S= 0.0048 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 5.89 sf
#2	Discarded	659.00'	**3.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'

Discarded OutFlow Max=0.19 cfs @ 12.47 hrs HW=661.18' (Free Discharge)
↑**2=Exfiltration** (Controls 0.19 cfs)

Primary OutFlow Max=8.33 cfs @ 12.47 hrs HW=661.18' (Free Discharge)
↑**1=Culvert** (Barrel Controls 8.33 cfs @ 4.39 fps)

Pond 3B: Infiltration Basin 3



Summary for Pond 4B: Infiltration Basin 4

Inflow Area = 2.704 ac, 0.00% Impervious, Inflow Depth = 1.32" for 50-Year event
Inflow = 2.29 cfs @ 12.34 hrs, Volume= 0.297 af
Outflow = 0.29 cfs @ 15.22 hrs, Volume= 0.297 af, Atten= 87%, Lag= 172.7 min
Discarded = 0.29 cfs @ 15.22 hrs, Volume= 0.297 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 660.57' @ 15.22 hrs Surf.Area= 4,203 sf Storage= 5,316 cf

Plug-Flow detention time= 216.7 min calculated for 0.297 af (100% of inflow)
Center-of-Mass det. time= 216.7 min (1,118.0 - 901.4)

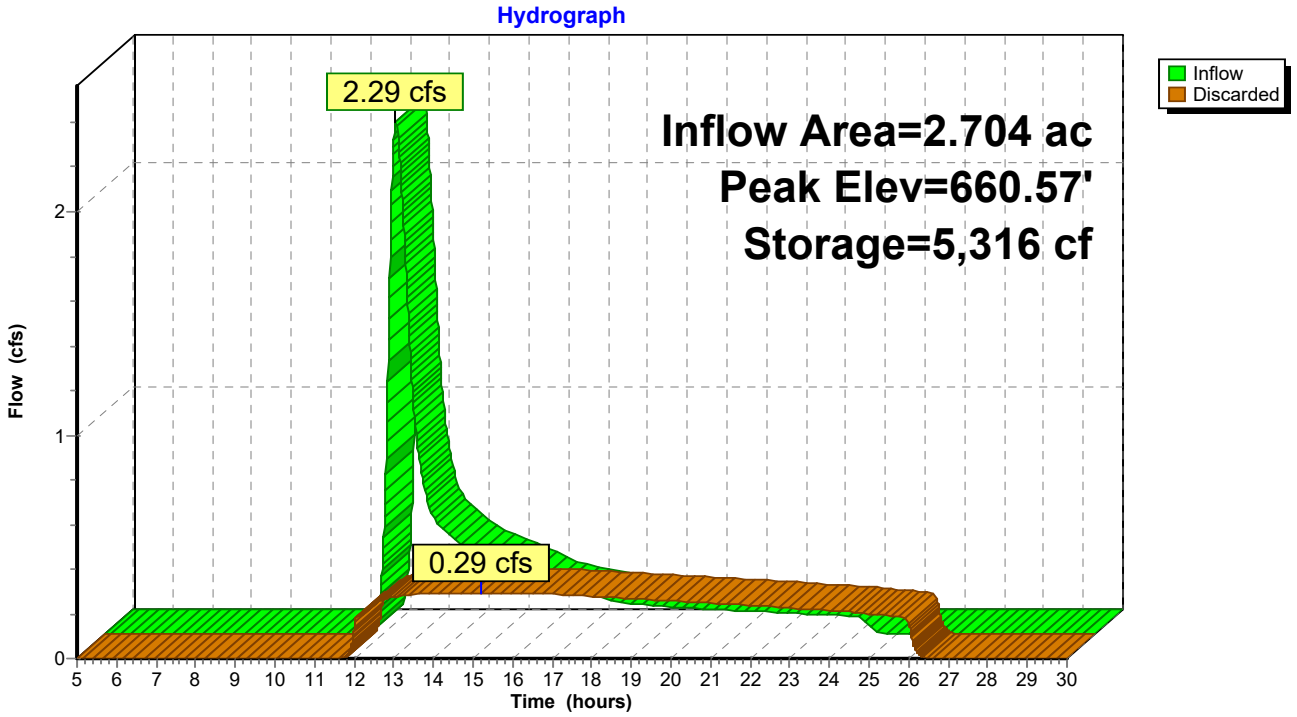
Volume	Invert	Avail.Storage	Storage Description
#1	659.00'	11,072 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
659.00	2,618	0	0	2,618
660.00	3,603	3,097	3,097	3,623
661.00	4,688	4,134	7,231	4,731
661.75	5,568	3,841	11,072	5,631

Device	Routing	Invert	Outlet Devices
#1	Discarded	659.00'	**3.000 in/hr Exfiltration over Wetted area**

Discarded OutFlow Max=0.29 cfs @ 15.22 hrs HW=660.57' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.29 cfs)

Pond 4B: Infiltration Basin 4

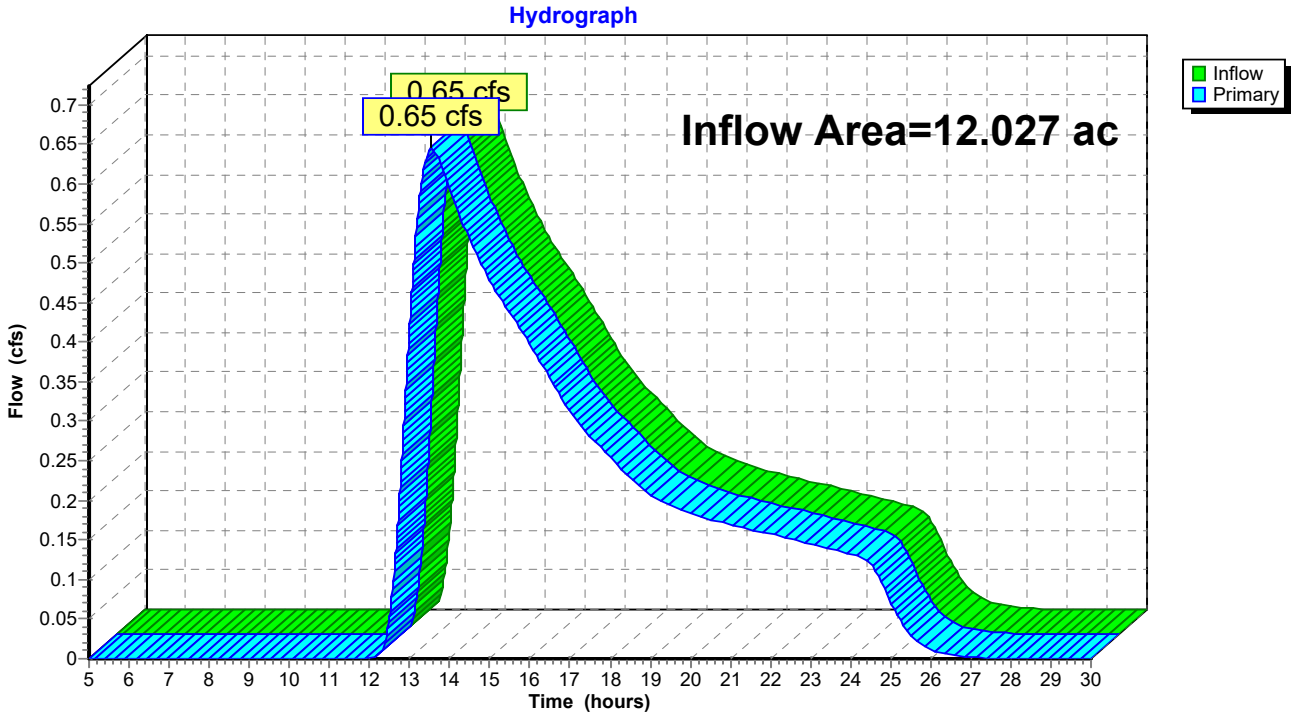


Summary for Link AP-1: Western Wetlands

Inflow Area = 12.027 ac, 0.00% Impervious, Inflow Depth = 0.29" for 50-Year event
Inflow = 0.65 cfs @ 13.55 hrs, Volume= 0.291 af
Primary = 0.65 cfs @ 13.55 hrs, Volume= 0.291 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Link AP-1: Western Wetlands

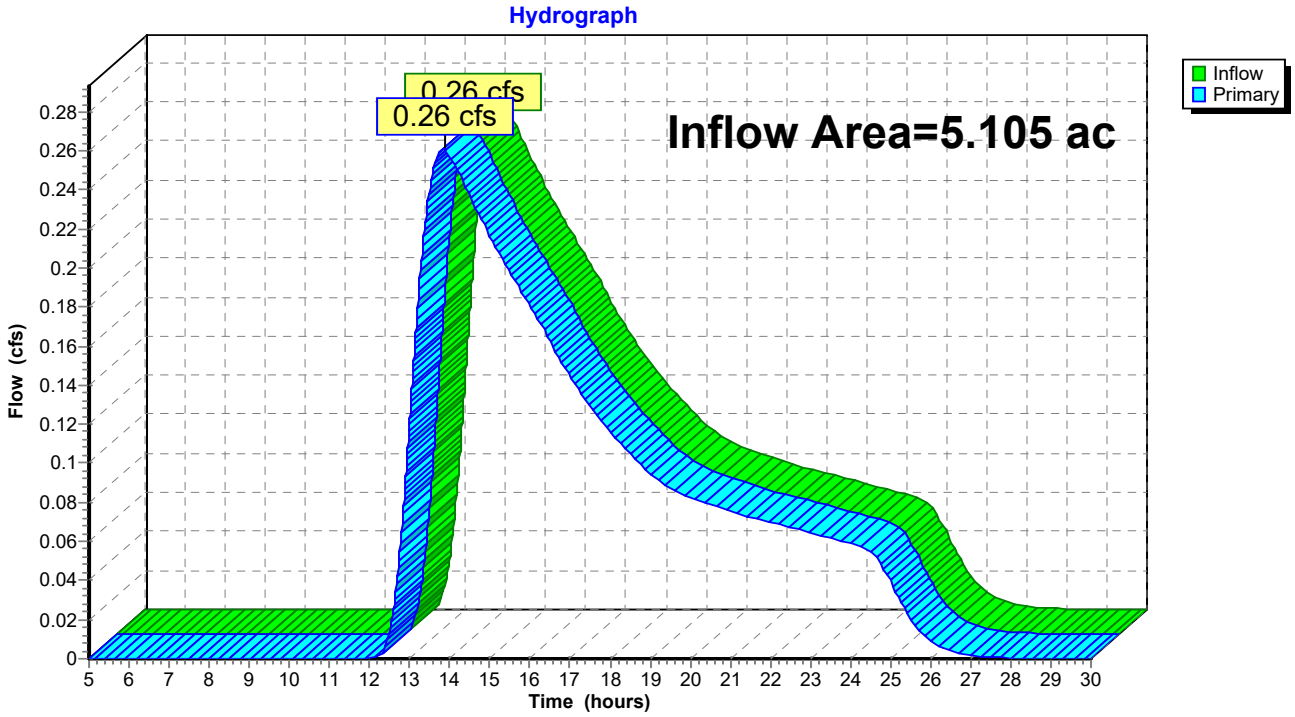


Summary for Link AP-2: Southern Property Line

Inflow Area = 5.105 ac, 0.14% Impervious, Inflow Depth = 0.30" for 50-Year event
Inflow = 0.26 cfs @ 13.87 hrs, Volume= 0.127 af
Primary = 0.26 cfs @ 13.87 hrs, Volume= 0.127 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Link AP-2: Southern Property Line

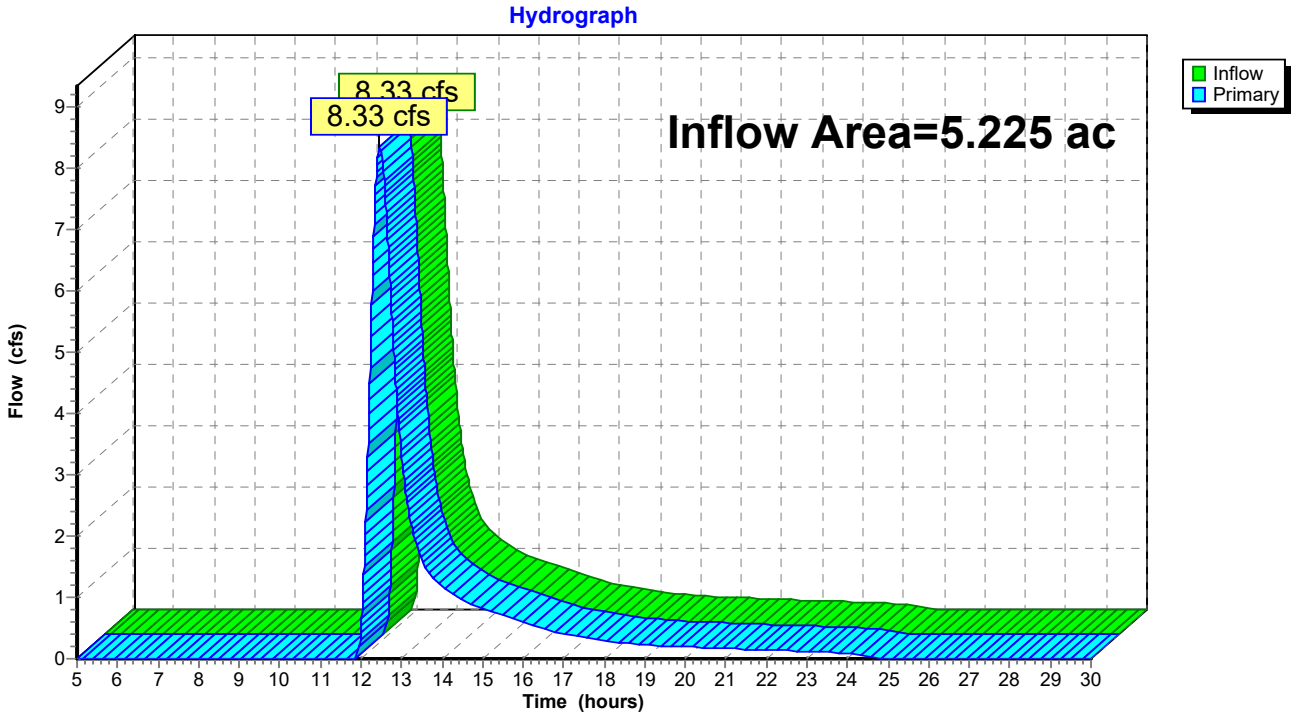


Summary for Link AP-3: Existing Swale

Inflow Area = 5.225 ac, 14.91% Impervious, Inflow Depth = 2.05" for 50-Year event
Inflow = 8.33 cfs @ 12.47 hrs, Volume= 0.891 af
Primary = 8.33 cfs @ 12.47 hrs, Volume= 0.891 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Link AP-3: Existing Swale

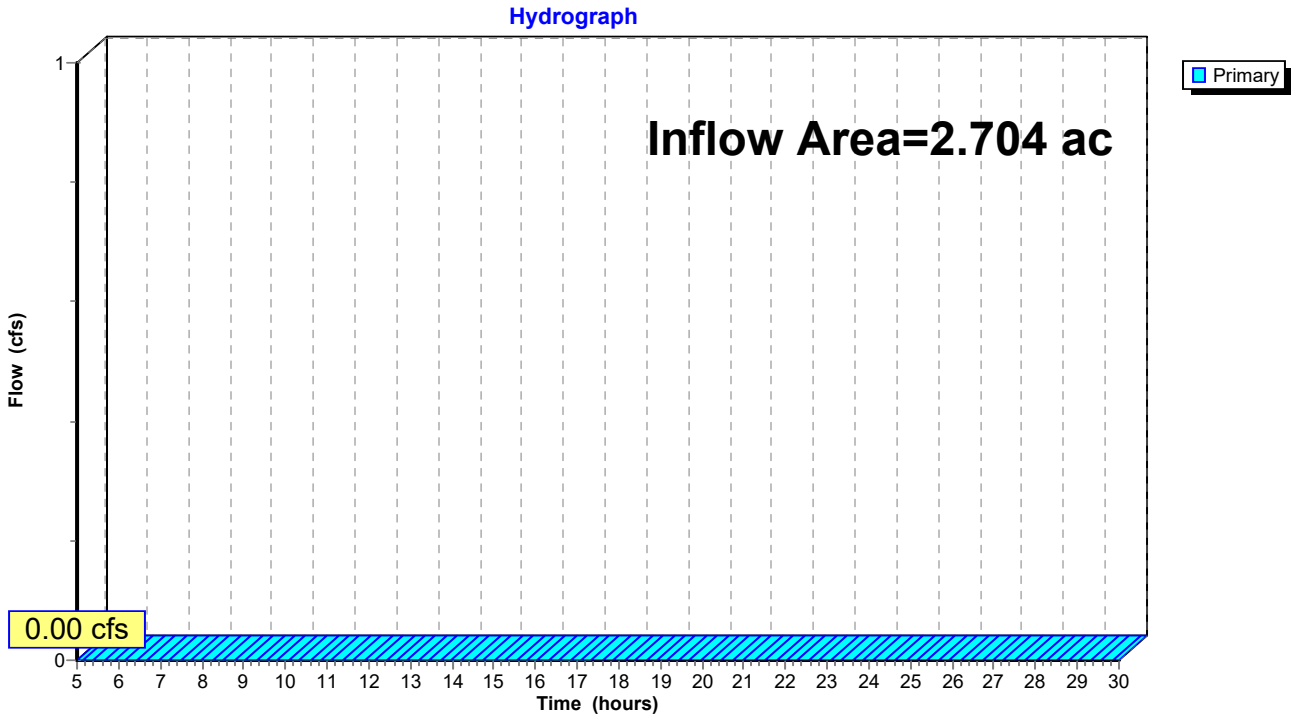


Summary for Link AP-4: AP-4

Inflow Area = 2.704 ac, 0.00% Impervious, Inflow Depth = 0.00" for 50-Year event
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Link AP-4: AP-4



Summary for Subcatchment PDA-1A: PDA-1A

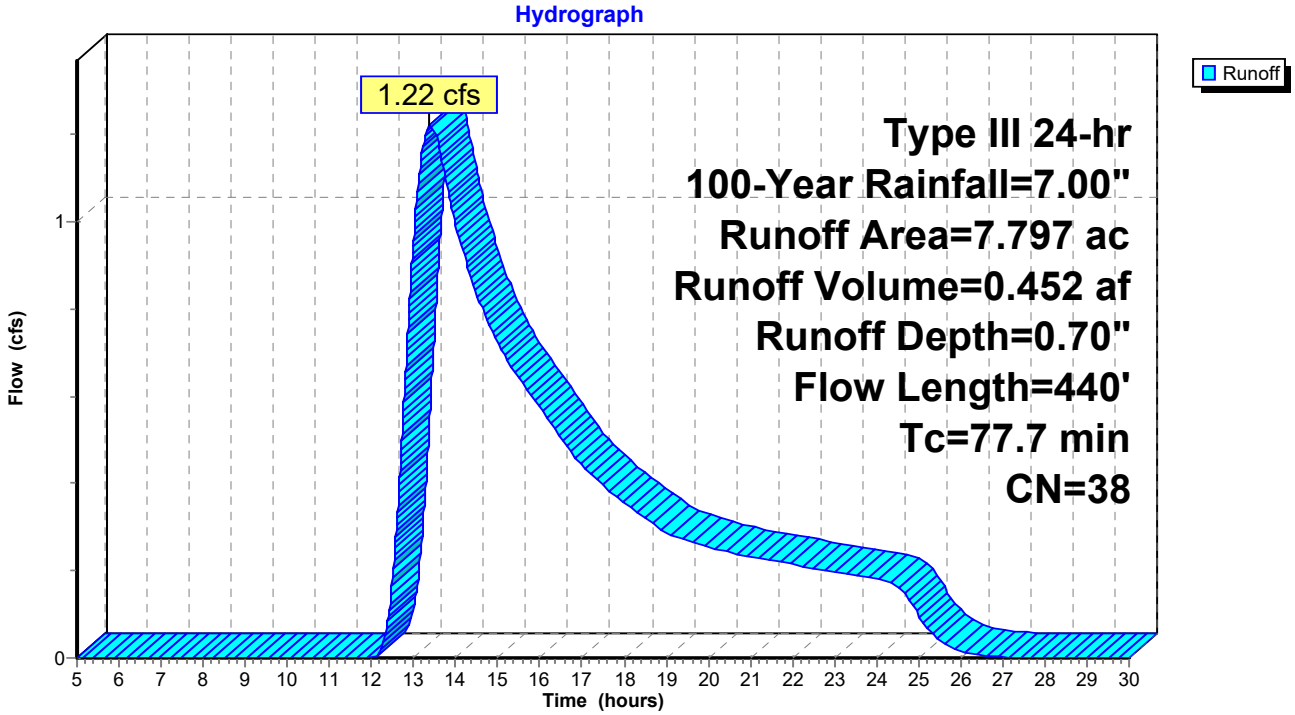
Runoff = 1.22 cfs @ 13.38 hrs, Volume= 0.452 af, Depth= 0.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (ac)	CN	Description
6.705	36	Woods, Fair, HSG A
0.179	79	Woods, Fair, HSG D
0.053	72	Dirt roads, HSG A
0.837	39	>75% Grass cover, Good, HSG A
0.023	80	>75% Grass cover, Good, HSG D
7.797	38	Weighted Average
7.797		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
65.1	200	0.0050	0.05		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.20"
12.6	240	0.0040	0.32		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
77.7	440	Total			

Subcatchment PDA-1A: PDA-1A



Summary for Subcatchment PDA-1B: PDA-1B

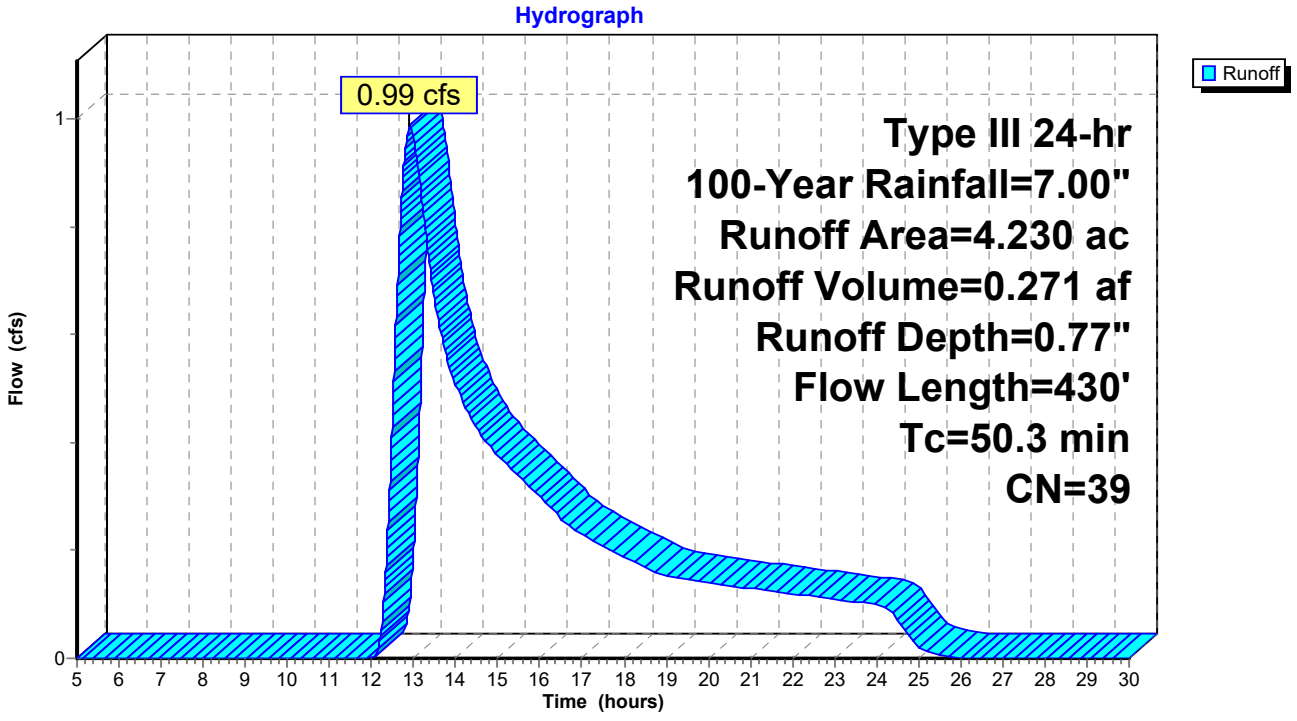
Runoff = 0.99 cfs @ 12.91 hrs, Volume= 0.271 af, Depth= 0.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (ac)	CN	Description
4.230	39	>75% Grass cover, Good, HSG A
4.230		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
41.6	200	0.0055	0.08		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.20"
8.7	230	0.0040	0.44		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
50.3	430	Total			

Subcatchment PDA-1B: PDA-1B



Summary for Subcatchment PDA-2A: PDA-2A

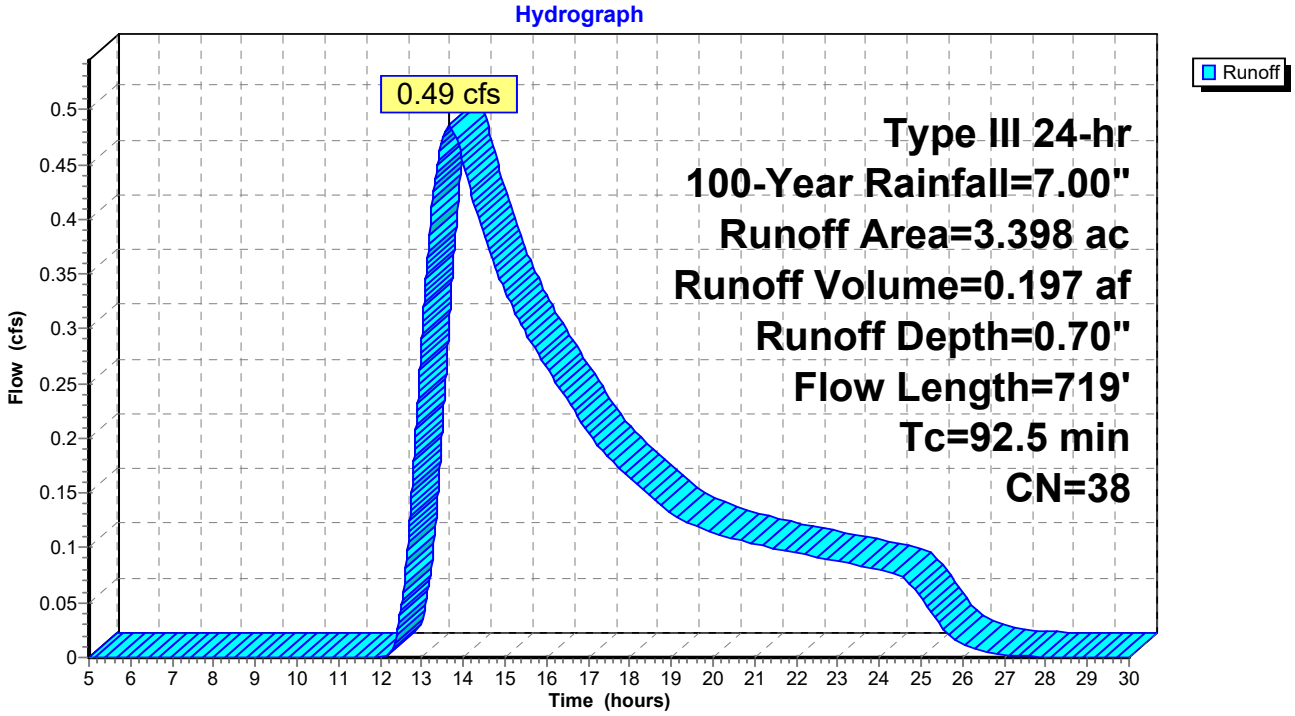
Runoff = 0.49 cfs @ 13.67 hrs, Volume= 0.197 af, Depth= 0.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (ac)	CN	Description
2.232	36	Woods, Fair, HSG A
1.029	39	>75% Grass cover, Good, HSG A
0.097	72	Dirt roads, HSG A
0.033	76	Gravel roads, HSG A
0.007	98	Paved parking, HSG A
3.398	38	Weighted Average
3.391		99.79% Pervious Area
0.007		0.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
65.1	200	0.0050	0.05		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.20"
27.4	519	0.0040	0.32		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
92.5	719	Total			

Subcatchment PDA-2A: PDA-2A



Summary for Subcatchment PDA-2B: PDA-2B

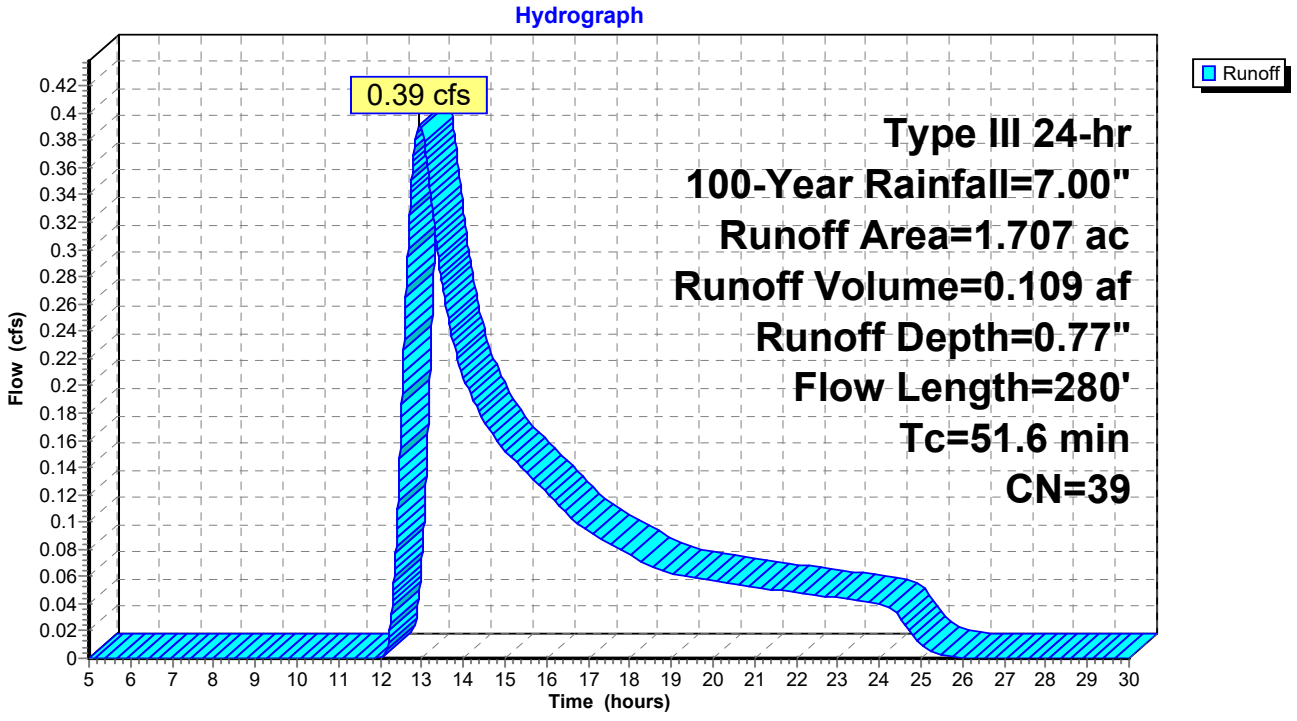
Runoff = 0.39 cfs @ 12.95 hrs, Volume= 0.109 af, Depth= 0.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (ac)	CN	Description
1.707	39	>75% Grass cover, Good, HSG A
1.707		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
49.9	200	0.0035	0.07		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.20"
1.7	80	0.0129	0.80		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
51.6	280	Total			

Subcatchment PDA-2B: PDA-2B



Summary for Subcatchment PDA-3: PDA-3

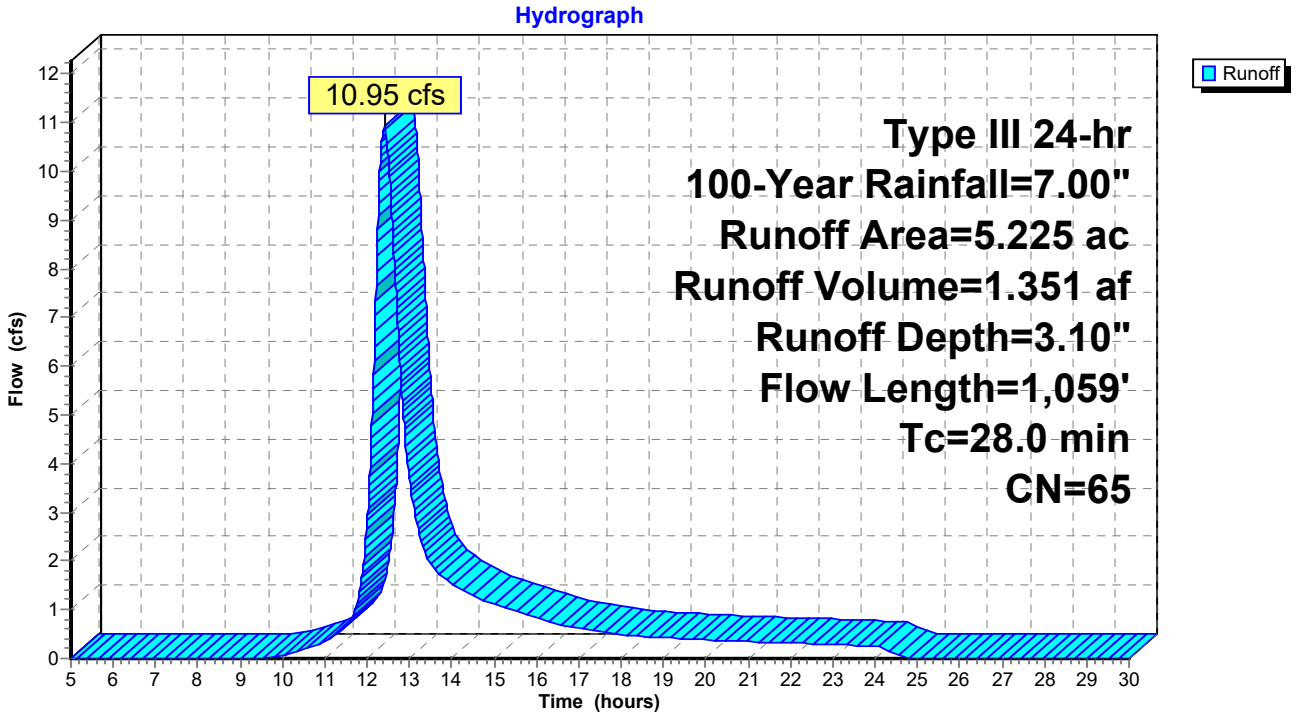
Runoff = 10.95 cfs @ 12.41 hrs, Volume= 1.351 af, Depth= 3.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (ac)	CN	Description
1.059	39	>75% Grass cover, Good, HSG A
1.453	80	>75% Grass cover, Good, HSG D
1.129	36	Woods, Fair, HSG A
0.051	79	Woods, Fair, HSG D
0.269	72	Dirt roads, HSG A
0.378	89	Dirt roads, HSG D
0.007	98	Paved parking, HSG A
0.772	98	Paved parking, HSG D
0.095	76	Gravel roads, HSG A
0.012	91	Gravel roads, HSG D
5.225	65	Weighted Average
4.446		85.09% Pervious Area
0.779		14.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	156	0.0841	0.33		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.20"
20.1	903	0.0025	0.75		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
28.0	1,059	Total			

Subcatchment PDA-3: PDA-3



Summary for Subcatchment PDA-4: PDA-4

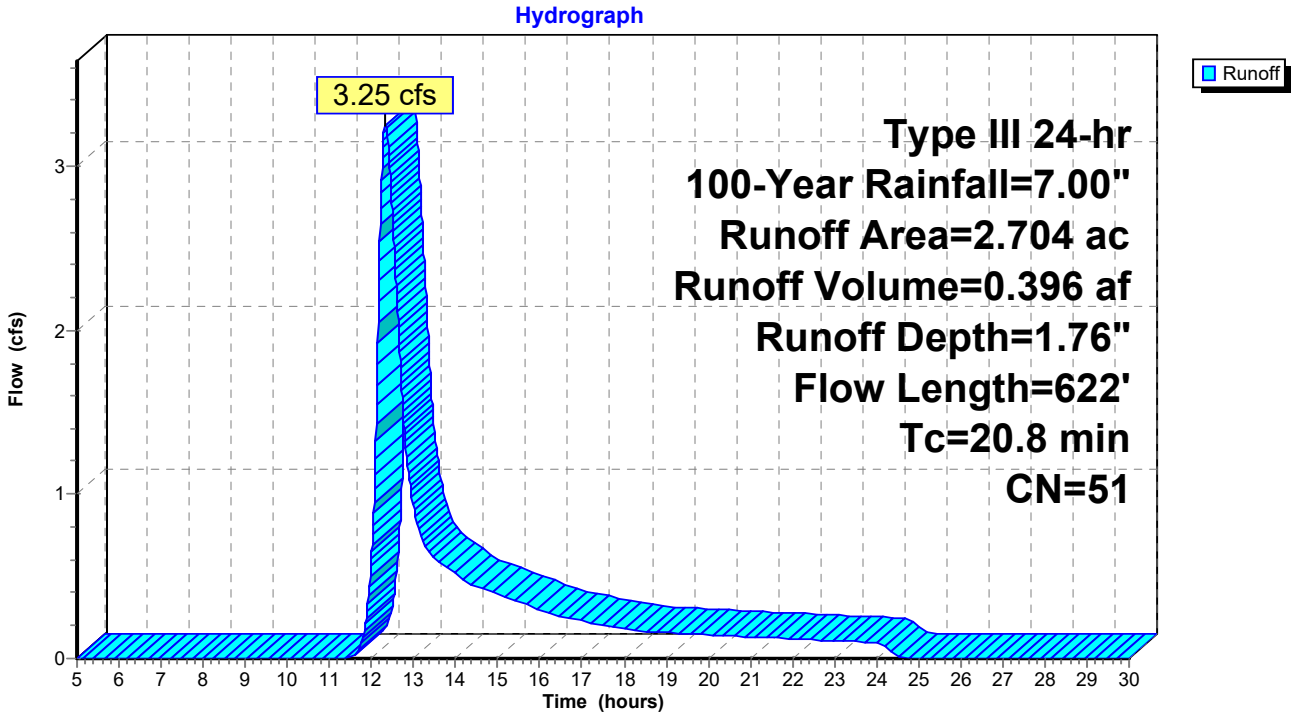
Runoff = 3.25 cfs @ 12.32 hrs, Volume= 0.396 af, Depth= 1.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (ac)	CN	Description
1.451	39	>75% Grass cover, Good, HSG A
0.130	80	>75% Grass cover, Good, HSG D
0.274	36	Woods, Fair, HSG A
0.032	79	Woods, Fair, HSG D
0.717	72	Dirt roads, HSG A
0.021	89	Dirt roads, HSG D
0.079	76	Gravel roads, HSG A
2.704	51	Weighted Average
2.704		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	200	0.0550	0.29		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.20"
1.4	120	0.0080	1.44		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
8.0	302	0.0080	0.63		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
20.8	622	Total			

Subcatchment PDA-4: PDA-4



Summary for Pond 1B: Infiltration Basin 1

Inflow Area = 4.230 ac, 0.00% Impervious, Inflow Depth = 0.77" for 100-Year event
Inflow = 0.99 cfs @ 12.91 hrs, Volume= 0.271 af
Outflow = 0.50 cfs @ 14.05 hrs, Volume= 0.271 af, Atten= 50%, Lag= 68.6 min
Discarded = 0.50 cfs @ 14.05 hrs, Volume= 0.271 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 659.27' @ 14.05 hrs Surf.Area= 7,157 sf Storage= 1,627 cf

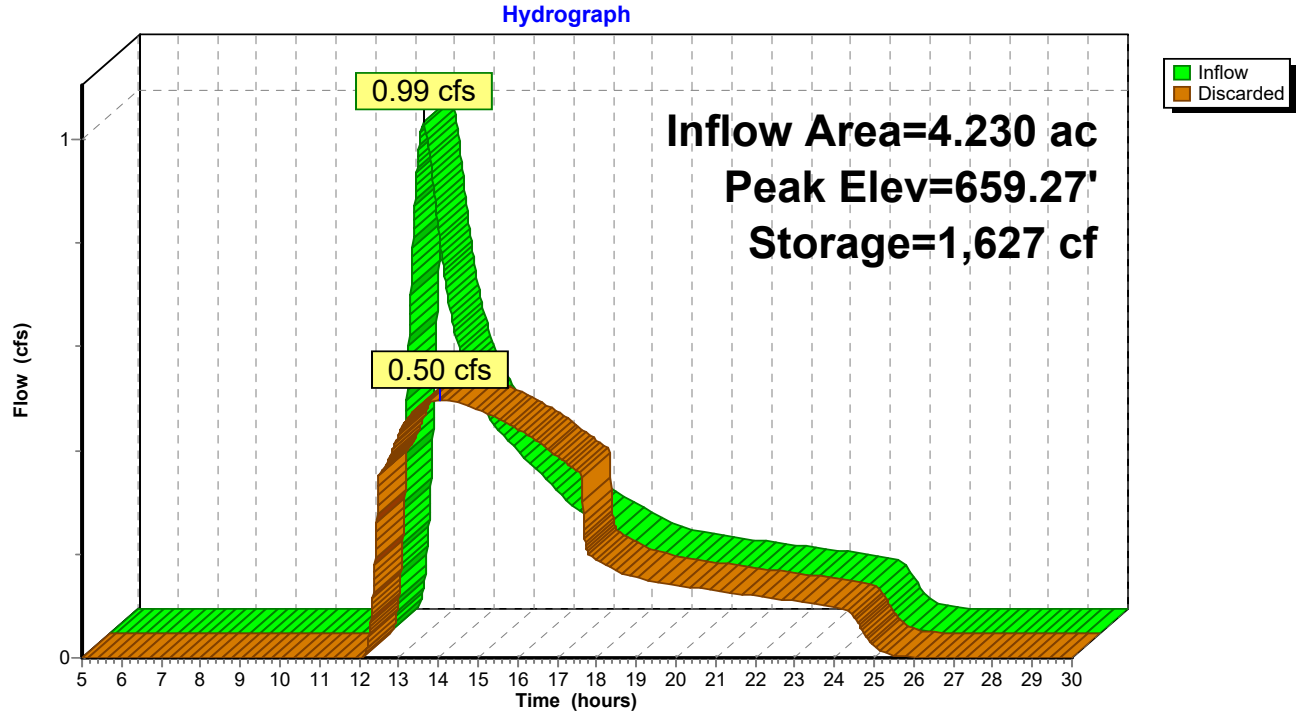
Plug-Flow detention time= 27.0 min calculated for 0.271 af (100% of inflow)
Center-of-Mass det. time= 27.0 min (998.9 - 971.8)

Volume	Invert	Avail.Storage	Storage Description
#1	659.00'	9,041 cf	**5.00'W x 1,000.00'L x 1.00'H Prismatoid Z=4.0**

Device	Routing	Invert	Outlet Devices
#1	Discarded	659.00'	**3.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'

Discarded OutFlow Max=0.50 cfs @ 14.05 hrs HW=659.27' (Free Discharge)
1=Exfiltration (Controls 0.50 cfs)

Pond 1B: Infiltration Basin 1



Summary for Pond 2B: Infiltration Basin 2

Inflow Area = 1.707 ac, 0.00% Impervious, Inflow Depth = 0.77" for 100-Year event
Inflow = 0.39 cfs @ 12.95 hrs, Volume= 0.109 af
Outflow = 0.19 cfs @ 14.17 hrs, Volume= 0.109 af, Atten= 50%, Lag= 73.4 min
Discarded = 0.19 cfs @ 14.17 hrs, Volume= 0.109 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 659.30' @ 14.17 hrs Surf.Area= 2,789 sf Storage= 697 cf

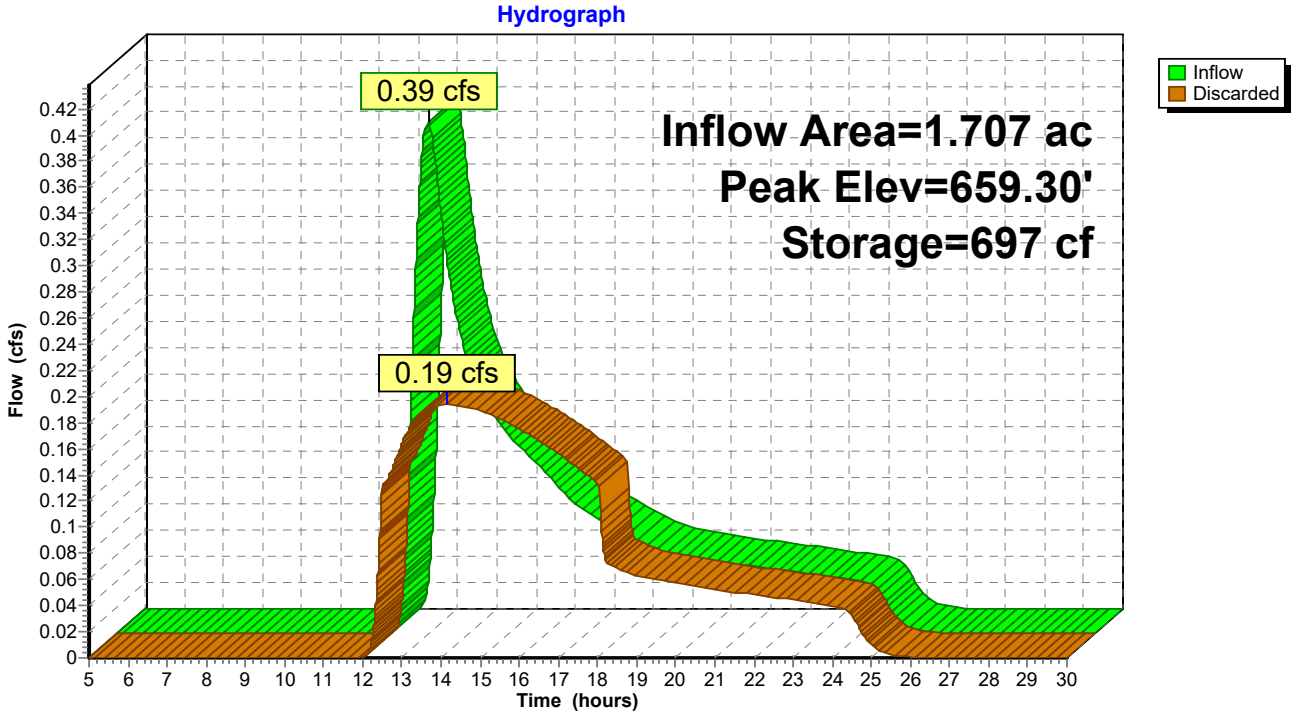
Plug-Flow detention time= 30.9 min calculated for 0.109 af (100% of inflow)
Center-of-Mass det. time= 30.9 min (1,003.9 - 973.0)

Volume	Invert	Avail.Storage	Storage Description
#1	659.00'	3,416 cf	**5.00'W x 375.00'L x 1.00'H Prismatoid Z=4.0**

Device	Routing	Invert	Outlet Devices
#1	Discarded	659.00'	**3.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'

Discarded OutFlow Max=0.19 cfs @ 14.17 hrs HW=659.30' (Free Discharge)
1=Exfiltration (Controls 0.19 cfs)

Pond 2B: Infiltration Basin 2



Summary for Pond 3B: Infiltration Basin 3

Inflow Area = 5.225 ac, 14.91% Impervious, Inflow Depth = 3.10" for 100-Year event
Inflow = 10.95 cfs @ 12.41 hrs, Volume= 1.351 af
Outflow = 10.70 cfs @ 12.46 hrs, Volume= 1.351 af, Atten= 2%, Lag= 3.0 min
Discarded = 0.20 cfs @ 12.46 hrs, Volume= 0.204 af
Primary = 10.51 cfs @ 12.46 hrs, Volume= 1.147 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 661.33' @ 12.46 hrs Surf.Area= 2,817 sf Storage= 4,399 cf

Plug-Flow detention time= 32.9 min calculated for 1.350 af (100% of inflow)
Center-of-Mass det. time= 33.0 min (895.4 - 862.4)

Volume	Invert	Avail.Storage	Storage Description
#1	659.00'	6,489 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

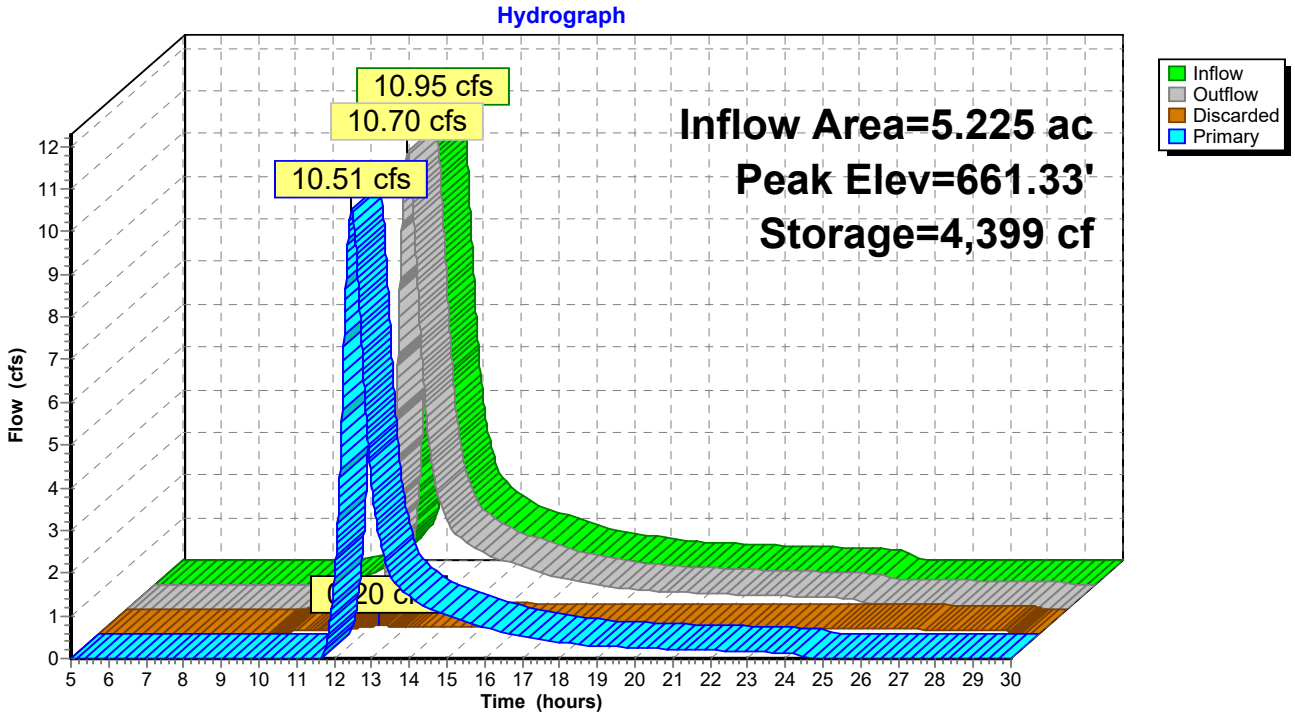
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
659.00	1,047	0	0
660.00	1,735	1,391	1,391
661.00	2,524	2,130	3,521
662.00	3,413	2,969	6,489

Device	Routing	Invert	Outlet Devices
#1	Primary	660.10'	**40.0" W x 27.0" H Ellipse Culvert** L= 83.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 660.10' / 659.70' S= 0.0048 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 5.89 sf
#2	Discarded	659.00'	**3.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'

Discarded OutFlow Max=0.20 cfs @ 12.46 hrs HW=661.33' (Free Discharge)
↑**2=Exfiltration** (Controls 0.20 cfs)

Primary OutFlow Max=10.51 cfs @ 12.46 hrs HW=661.33' (Free Discharge)
↑**1=Culvert** (Barrel Controls 10.51 cfs @ 4.63 fps)

Pond 3B: Infiltration Basin 3



Summary for Pond 4B: Infiltration Basin 4

Inflow Area = 2.704 ac, 0.00% Impervious, Inflow Depth = 1.76" for 100-Year event
Inflow = 3.25 cfs @ 12.32 hrs, Volume= 0.396 af
Outflow = 0.34 cfs @ 15.53 hrs, Volume= 0.396 af, Atten= 89%, Lag= 192.3 min
Discarded = 0.34 cfs @ 15.53 hrs, Volume= 0.396 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 661.16' @ 15.53 hrs Surf.Area= 4,868 sf Storage= 7,989 cf

Plug-Flow detention time= 287.5 min calculated for 0.396 af (100% of inflow)
Center-of-Mass det. time= 287.5 min (1,178.8 - 891.3)

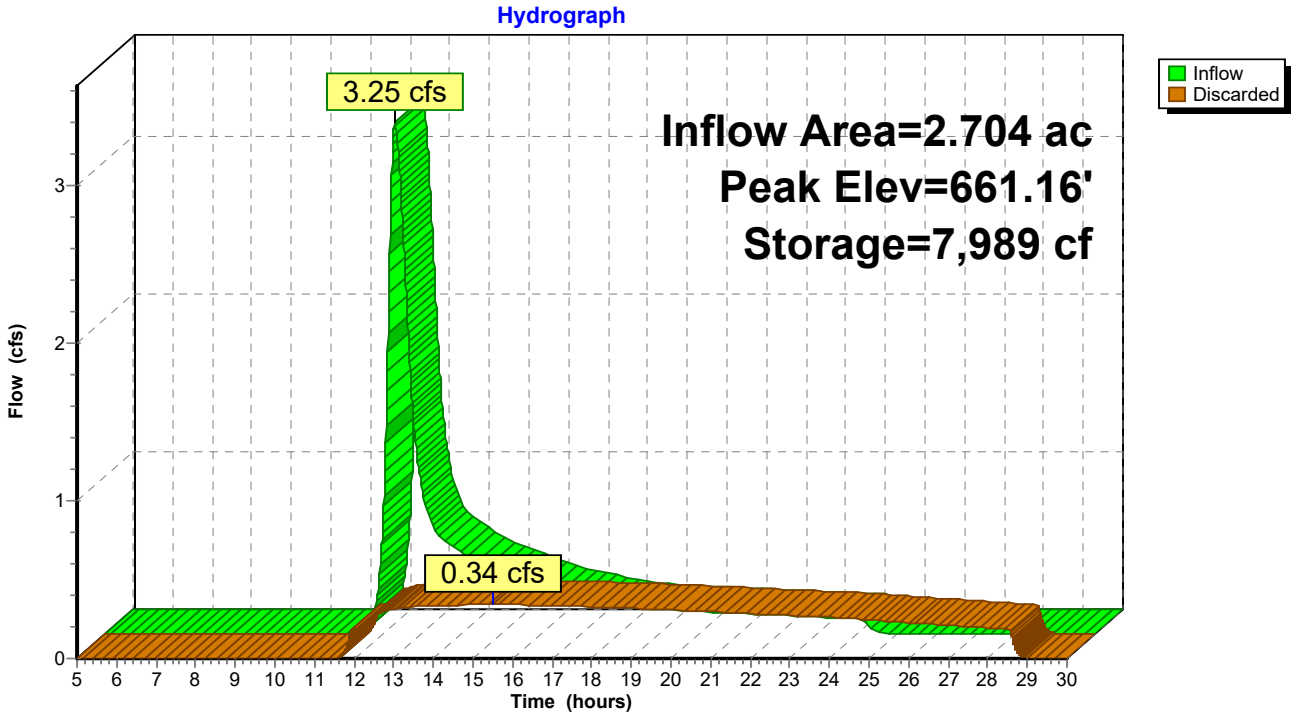
Volume	Invert	Avail.Storage	Storage Description
#1	659.00'	11,072 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
659.00	2,618	0	0	2,618
660.00	3,603	3,097	3,097	3,623
661.00	4,688	4,134	7,231	4,731
661.75	5,568	3,841	11,072	5,631

Device	Routing	Invert	Outlet Devices
#1	Discarded	659.00'	**3.000 in/hr Exfiltration over Wetted area**

Discarded OutFlow Max=0.34 cfs @ 15.53 hrs HW=661.16' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.34 cfs)

Pond 4B: Infiltration Basin 4

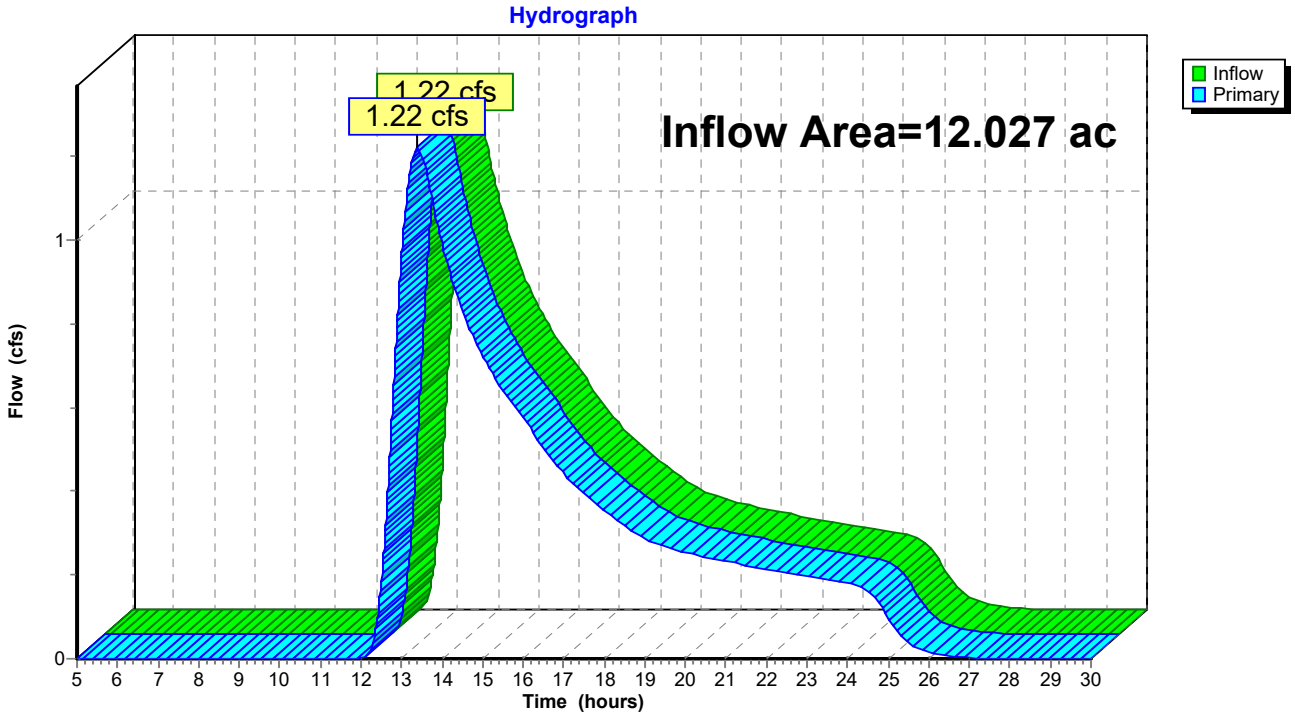


Summary for Link AP-1: Western Wetlands

Inflow Area = 12.027 ac, 0.00% Impervious, Inflow Depth = 0.45" for 100-Year event
Inflow = 1.22 cfs @ 13.38 hrs, Volume= 0.452 af
Primary = 1.22 cfs @ 13.38 hrs, Volume= 0.452 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Link AP-1: Western Wetlands

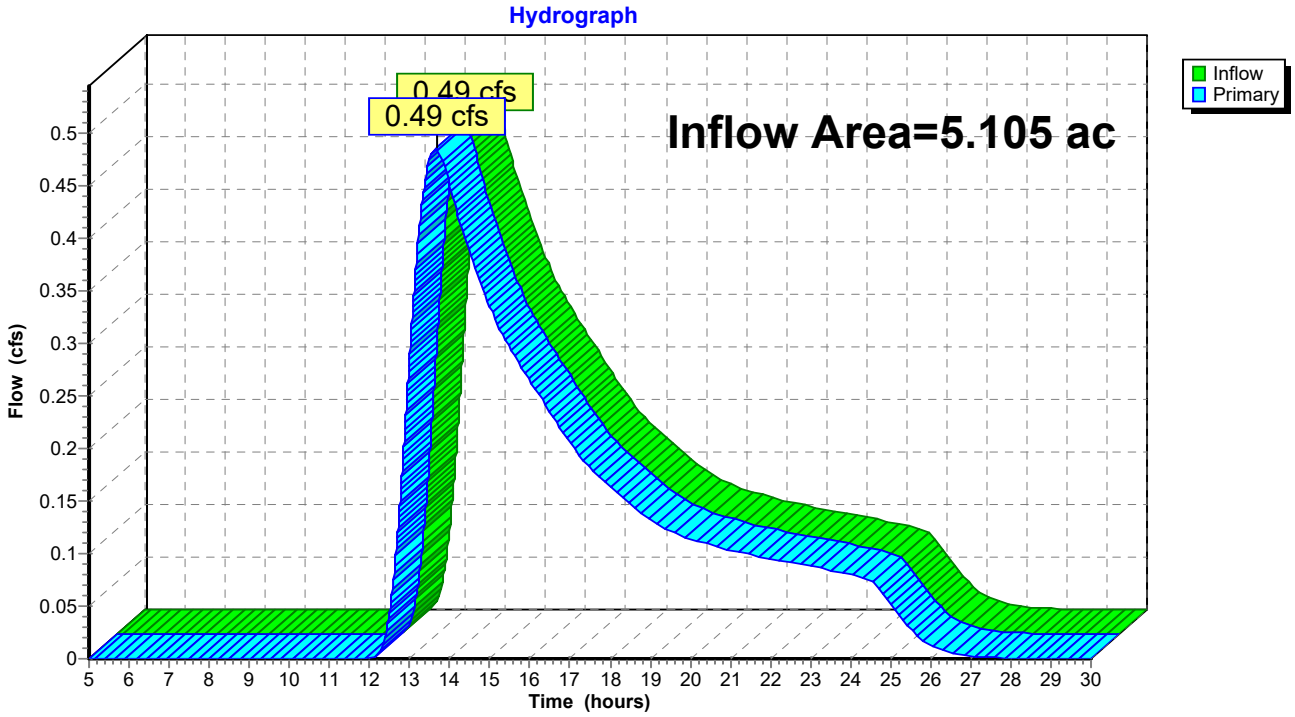


Summary for Link AP-2: Southern Property Line

Inflow Area = 5.105 ac, 0.14% Impervious, Inflow Depth = 0.46" for 100-Year event
Inflow = 0.49 cfs @ 13.67 hrs, Volume= 0.197 af
Primary = 0.49 cfs @ 13.67 hrs, Volume= 0.197 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Link AP-2: Southern Property Line

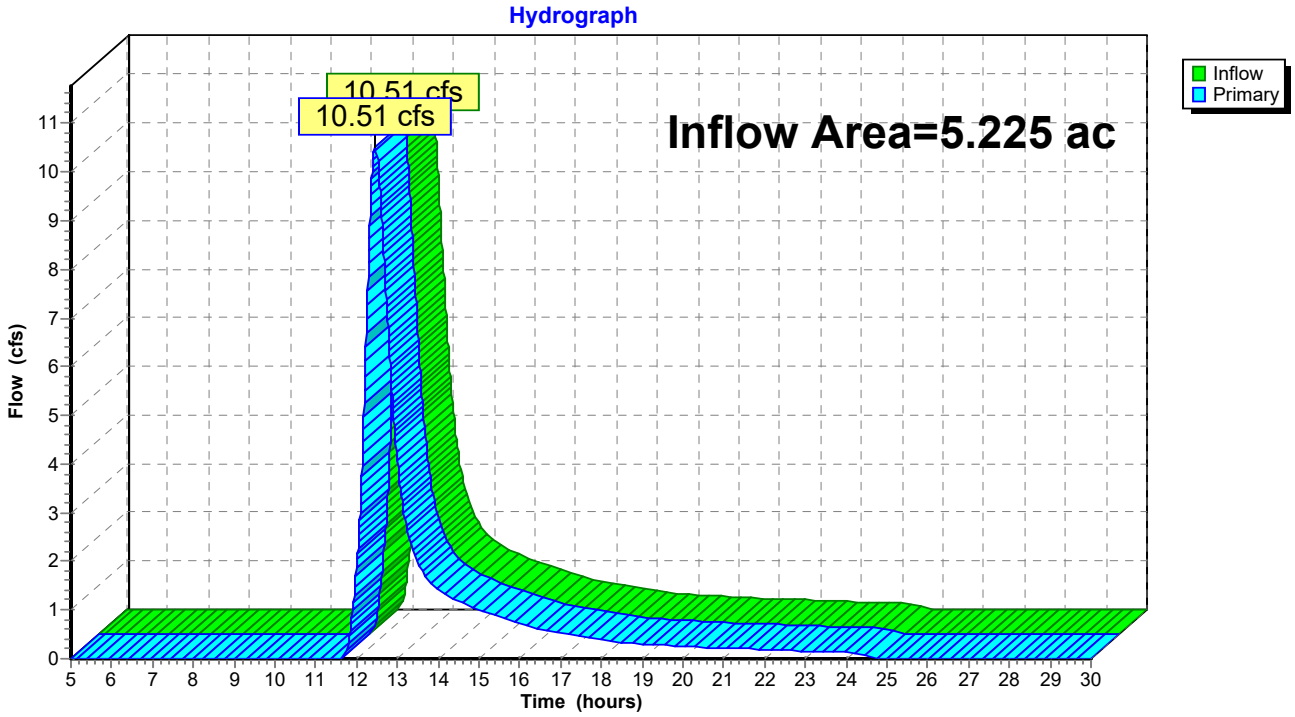


Summary for Link AP-3: Existing Swale

Inflow Area = 5.225 ac, 14.91% Impervious, Inflow Depth = 2.63" for 100-Year event
Inflow = 10.51 cfs @ 12.46 hrs, Volume= 1.147 af
Primary = 10.51 cfs @ 12.46 hrs, Volume= 1.147 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Link AP-3: Existing Swale

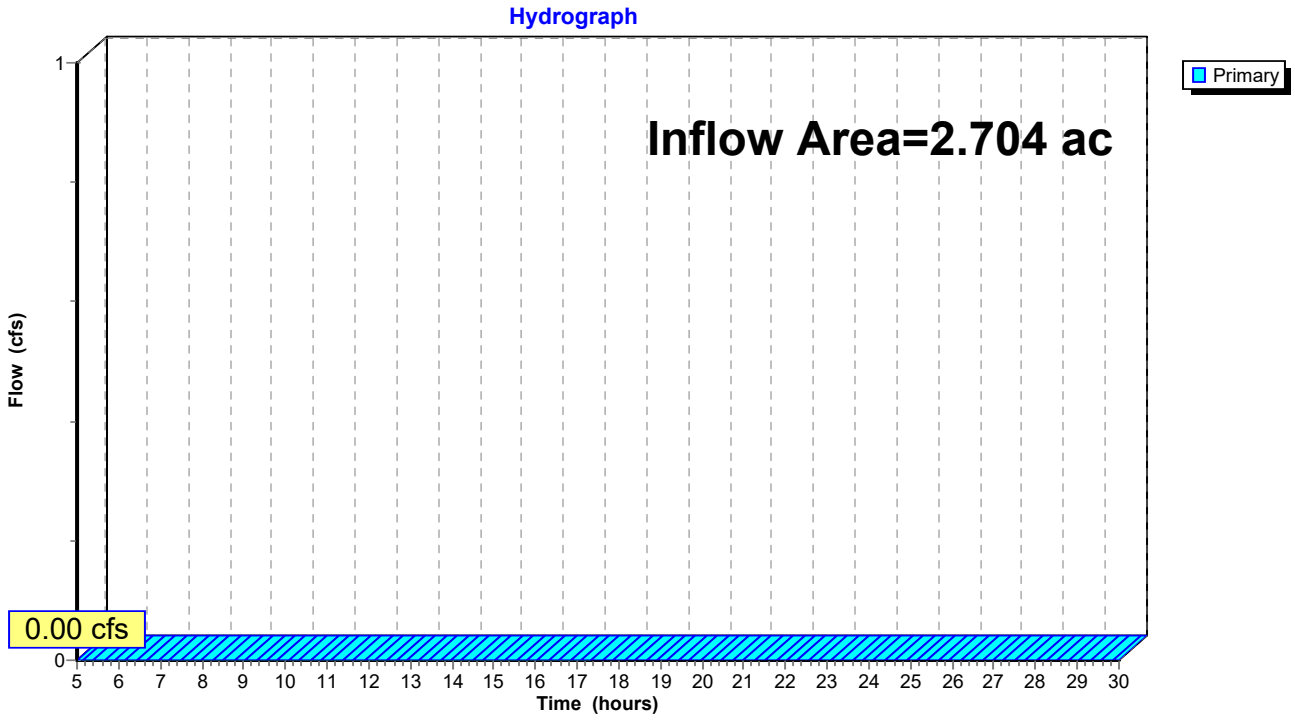


Summary for Link AP-4: AP-4

Inflow Area = 2.704 ac, 0.00% Impervious, Inflow Depth = 0.00" for 100-Year event
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Link AP-4: AP-4



APPENDIX F

Water Quality Volume (WQV) Computations

Water Quality Calculations

Determine Water Quality Volume

From CT 2004 Stormwater Quality Manual:

$$WQV = \frac{(1")(R)(A)}{12}$$

WQV = water quality volume (ac-ft)
R = volumetric runoff coefficient
I = percent impervious cover
A = site area in acres

$$R = 0.05 + 0.009(I)$$

Area		Total Area		Impervious Area		Impervious Cover	Volumetric Runoff Coefficient	Required Water Quality Volume (WQv)		Available Water Quality Volume (WQv)
ID		ac	ft^2	ac	ft^2	%	R	acre-feet	ft^3	ft^3
PDA-1B		7.155	290284	0.000	0	0.00	0.050	0.030	1,307	9,041
PDA-2B		1.460	154377	0.000	0	0.00	0.050	0.006	261	3,416
PDA-3		5.225	224378	1.533	66777	29.34	0.314	0.137	5,968	1,391
PDA-4		2.704	117786	0.817	35588	30.21	0.322	0.073	3,180	11,072
							Total:	0.246	10,716	24,920