James Engineering, Inc. 125 Great Rock Road, Hanover, Ma 02339

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Rev 07/08/21

Drainage Calculations
For
220 Summer Street

Prepared for;
City Point Capital
300 A Street
Boston, MA 02210

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Purpose

The purpose of this report is to review the proposed development at 220 Summer Street and determine the impact of the proposed development on the abutting lot and the system on Route 3A and treat the runoff from the proposed impervious surfaces on the lot in accordance with the stormwater standards.

Method

The calculation will be based upon the SCS TR-20 Model using HYDRO-CAD 10.0 software to conduct the calculations.

Assumptions

Minimum Tc 6 minutes

CN Assumptions	A	B	D
Impervious	98		
Meadow grass	30	58	80
Woodland-grass mix	32	58	79
Lawn/shoulder	39	61	

Project Description

The proposed development of the lot at 220 Summer Street will be a single-family dwelling which will be accessed from an existing cart path opening in the stonewall along Kilby Street. Overall, the proposed development will be:

- 3,681 sq. ft. dwelling
- 2,280 sq. ft. driveway,
- 1282 sq. ft. existing barn
- 1,367 sq. ft. existing driveway
- 500 sq. ft. brick patio area.

The primary goal of the design will be to reduce the surface water runoff towards the abutter to the north to the maximum extent possible and redirect these flows towards the existing municipal storm water collection system in Kilby Street. In order to assist with this goal, we are proposing to extend the municipal storm water collection system in Kilby Street up to the proposed driveway entrance.

The lot at 220 Summer Street is 54,648± square feet in size. The lot has frontage on both Summer Street and Kilby Street. There is a masonry retaining wall which ranges in height from 4-5 feet along the entirety of the frontage along Summer Street which maintains the grades on Summer Street. A stonewall also exists along the frontage along Kilby Street but does not retain grades in the right of way. Access onto the lot currently comes from Kilby Street at an opening in the stonewall at the northerly limits of the Kilby Street frontage. This opening is the start of a cart path that runs across the lot to the abutting residence at 156 East Street. The site is primarily an open field with a 15-20’ wide wooded edge along Kilby Street and a wooded area at the rear northerly corner of the parcel. The lot is dominated by a stone filled subdrain that runs down the middle of the lot. This drain discharges at the northerly property line and flows primarily into a catch basin on Kilby Street. This subdrain intercepts both runoff and groundwater flow across the lot. The grades on the lot are well below the surrounding grades on Kilby Street and Summer

Street. As previously noted, there is a 4-5' high retaining wall supporting Summer Street. The elevation along the swale, is 5' below Summer Street at the start and runs generally 4-5' lower than the grades along Kilby Street. Soils on the parcel are unique. All soils east of the swale are an HSG A sandy soil with a percolation rate less than 2 minutes per inch. In and around the swale, groundwater levels are so high that the soils are being considered HSG D. Between the swale and Kilby Street, NRCS WSS results indicate that these soils are shallow to bedrock and are HSG B. Tests in this area confirmed these results and revealed bedrock at 2-6'. A second sub drain is located along the westerly edge of the parcel and directs groundwater flow to the swale near the rear of the lot. However, this subdrain has been so severely damaged during construction that we are assuming it no longer functions.

The proposed development will be a 4-bedroom single-family dwelling which will be located close to the 50' front yard setback along Summer Street. The top of the foundation of the proposed dwelling will be set at Elevation 47.0 along the front of the house and Elevation 44.0 around the remainder of the dwelling. Almost all the area between the house and the masonry retaining wall along Summer Street will be filled and graded to drain west towards Kilby Street except at the southeast corner of the lot where 2 significant trees will be maintained. The driveway access to the garage will be 2,530 square feet of pavement which starts at the cart path opening on Kilby Street and runs straight into the garage which is faced perpendicular to Kilby Street. The driveway will be graded to flow towards a catch basin on the southerly edge of the driveway. A second catch basin will be placed at the entrance which will collect runoff from the Kilby Street Right of way and directs these flows down to an existing catch basin 150' north of the entrance.

Proposed drainage improvements will be designed specifically to reduce flows to the abutting parcel to the north. Runoff from the proposed impervious surfaces will be directed to an infiltration basin. The basin will be located to the left of the barn behind the house. The site will be graded so that runoff from a portion of the existing house, the westerly half of the barn and a portion of the existing driveway will flow overland into the basin.

In order to save the existing trees along Summer Street, a depression along the stonewall in front of the proposed house will be maintained. In order to drain this depression, a 6" outlet will be provided to pass whatever flows from Summer Street and from the lot into the depression created by the stonewall. Testing of surface water collected in the area just below the stonewall indicates that there is residual chlorine and fluorides in the water. Accordingly, the source has to be the municipal water supply system. Based upon the traffic noise and the amount of water moving past this point in the distribution system we were unable to locate the leak. The proposed 6" drain will effectively pass whatever flows from Summer Street and the lot area around the house across the lot.

The Kilby Street improvements will be made to assist the abutting parcel and eliminate the flow onto the lot from the pavement at the corner of Kilby and Summer Streets. The proposed grading of the lot will direct some of the runoff from the lot onto the shoulder of Kilby Street. A catch basin will be provided on the south side of the driveway entrance. The rim will be set lower than the Kilby Street Pavement to accept flow from the pavement as well as the flows in the shoulder. The outlet from this basin will connect with an existing catch basin in Kilby street 148' north of the entrance. The flow from this basin enters the State system on the opposite side of Kilby Street where it flows through a culvert beneath Route 3A. In order to assess the capability o the existing stormwater collection system in Kilby Street we will analyze the entire watershed tributary to the catch basin. Based upon satellite imagery, there is a pool in the backyard of the abutter to the east

which acts as a watershed divide. Accordingly, we will have analyzed the entire watershed tributary to the catch basin in Kilby Street just north of the site.

Existing Conditions

Existing conditions analysis will match the proposed development watershed area and include all of the watershed on site that flows towards the existing catch basins on Kilby Street. The drainage area on the lots will be divided into two parts. The edge of the lawn for the existing dwelling will act as the divide between the two watersheds

1S Development Area

Drainage Area- 54,931 sq. ft.
2.21 acres

	Land Use Use	Area (s.f.)	CN
	House roof	1,340	98
Abutter	House roof	528	98
	Barn	1,280	98
	Driveway	2,625	98
	Cart path	980	92
HSG A	Lawn	32,367	39
	Woods-grass combo	6,090	32

Tc

Sheet flow	50’ s=0.018 grass, dense
Shallow concentrated flow	30’ s=0.020 paved
Shallow Concentrated Flow	70’, s=0.10 grass
Shallow Concentrated flow	66, s=0.0850 grass
Shallow Concentrated flow	105’,s=0.01 pipe

2S west side of development Area

Drainage Area- 39,517 sq. ft.
2.21 acres

	Land Use Use	Area (s.f.)	CN
	Existing Kilby street pavement	2,912	98
	Cart path	1,335	92
HSG B	Woods-grass	3;109	58

	Meadow	7,213	61
	Shoulder	2,467	61
HSG D	Meadow	19,696	80
	Woods-grass	2,785	79

Tc

Sheet flow	50’ s=0.02 grass, dense
Shallow concentrated flow	98’ s=0.033 grass
Shallow Concentrated Flow	257’, s=0.012 pipe

6S CB No. 2 off lot

Drainage Area- 13,730 sq. ft.
1.28 acres

Land Use

Use	Area (s.f.)	CN
Pavement	3,587	98
Shoulder-HSG B	3,568	61
Woods-HSG D	6,575	77

Tc

Sheet flow	50’ s=0.05 woods dense
Shallow Concentrated Flow	75’ s=0.05 woods dense

7S CB No. 3

Drainage Area- 3,064 sq. ft.
1.28 acres

Land Use

Use	Area (s.f.)	CN
Pavement	1,730	98
Shoulder-HSG B	1,334	61

Tc

Use 6 minutes as a minimum

Total watershed area

1S	54,931
2S	39,517
6S	13,730
7S	3,064
Total	111,242 sq. ft.

Proposed Conditions

To Summer Street depression (2S)

Drainage Area- 14,800 sq. ft.

Weighted CN

Use	Area (s.f.)	CN
Roof	1,002	98
Lawn HSG A	9,320	39
Lawn HSG B	1,106	61
Lawn HSG D	3,372	80

Tc

Sheet flow	50’ s=0.028 grass, dense
Shallow Concentrated Flow	85’ s=0.06 grass dense

Depression remaining

Storage

El.	Area	Volume
38.0	815	
39.0	1109	962
40.0	1480	2257
41.0	1750	3872

Outlet

6” Culvert l=40’ s=0.01 Inv. = 38.00

Overland Flow To the Basin (3S)

Drainage Area- 28,909 sq. ft.

Weighted CN

	Use	Area (s.f.)	CN
	Barn	644	98
	Ex. House	550	98
	Ex. Patio	1,750	98
	Ex. Driveway	1,378	98
HSG A	Lawn	17,866	39
HSG D	Lawn	4,751	80

Tc

Sheet flow	50’ s=0.018 grass, dense
Shallow Concentrated Flow	41’ s=0.03 grass dense

Proposed impervious To the Basin (8S)

Drainage Area- 5,735 sq. ft.

Weighted CN

Use	Area (s.f.)	CN
Pavement	1,837	98
House	3,681	98
Porch	217	98

Tc

Use 6 minutes as a minimum

Size stone at outlet end using Bur. Rec Method

From calculations, 100-year peak flow rate is 0.90 cfs
Velocity in 8” culvert = 2.49 ft/sec
Where: $D_{50} = 0.01222\ V^{2.06}$
$= 0.01222\ (2.49^{2.06})$
$= 0.01222(9.22) = 0.08’ = 1.0”$
Rip rap used is 4” stone-ok

Basin (Pond 4P)

Storage

El.	Area	Volume
36.8	114	0
37.0	1468	158
38.0	2540	2162
39.0	4920	5892

Outlet

8” Culvert	Inv. El. 37.20
	Length = 38’ s=0.018
Spillway	length = 10’
	Crest El. 38.20

DMH 3 (Pond 3P)

Manhole has no storage. Qin = Qout
Outlet
8" culvert Inv. El. 34.18
Length = 34.0', s= 0.02

Stone sizing calculations:
For 8" outlet from the basin,
100 yr. peak flow 1.47 cfs
Peak vel. = 4.22 ft/sec
Size stone at outlet end using Bur. Rec Method
Where: $D_{50} = 0.01222\ V^{2.06}$
$= 0.01222\ (4.22^{2.06})$
$= 0.01222(19.4) = 0.237' = 2.84"$
Rip-rap used is 4" stone-ok

To Kilby Street inlet (4S)

Drainage Area- 13,941 sq. ft.

Weighted CN

	Use	Area (s.f.)	CN
	Ex. pavement	2912	98
HSG B	Woods-grass	2671	58
	Lawn	4393	61
	Shoulder	1228	61
HSG D	Lawn	2043	80

Tc

Sheet flow	50' s=0.025 grass, dense
Shallow Concentrated Flow	98' s=0.023 grass dense

Direct to CB No. 2 from lot area (5S)

Drainage Area-35,179 sq. ft.

Weighted CN

	Use	Area (s.f.)	CN
	Pavement	1,118	98
	Roof	640	98
Abutter	Roof	528	98
HSG A	woods-grass	10060	32

	Lawn	6448	39
Abutter	Lawn	6521	39
HSG B	Lawn	1885	61
	Woods	1008	55
HSG D	Woods	2173	61
	Lawn	4798	80

Tc

Sheet flow	50’ s=0.03 grass, dense
Shallow concentrated flow	130’ s=0.030 grass
Shallow Concentrated Flow	135’, s=0.047 wooded

6S CB No. 2 off lot

Drainage Area- 13,730 sq. ft.
1.28 acres

Land Use

Use	Area (s.f.)	CN
Pavement	3,587	98
Shoulder-HSG B	3,568	61
Woods-HSG D	6,575	77

Tc

Sheet flow	50’ s=0.05 woods dense
Shallow Concentrated Flow	76’ s=0.05 woods dense

7S CB No. 3

Drainage Area- 3,064 sq. ft.
1.28 acres

Land Use

Use	Area (s.f.)	CN
Pavement	1,730	98
Shoulder-HSG B	1,334	61

Tc

Use 6 minutes as a minimum

Total watershed area

2S	14,800	
3S	28,909	
8S	5,735	
4S	14,267	
5S	30,734	
6S	13,730	
7S	3,064	
Total	111,229 sq. ft.	ok areas within 13 sq. ft. existing

Storm Water Standards

Standard No. 1, Untreated Discharges

The proposed storm water system will collect and treat the runoff from nearly all the proposed impervious surfaces in the development. Approximately 694 square feet of the driveway pavement is too close to the existing pavement in Kilby Street to be collected and routed to the basin. This area will be partially treated by the new catch basin. 190 square feet of the new driveway pavement to this catch basin is in the right of way. We are collecting runoff from a portion of the existing driveway. The pavement will be removed and at this time it will not be reset. In addition, we are collecting the runoff from 640 square feet of roof from the barn in the basin. Either of these existing impervious surfaces will offset the issue with the 504 square feet of proposed driveway especially since the driveway runoff will be treated to a greater degree than the existing impervious surfaces.

Standard No. 2, Peak Discharge Rates

The development of the lot did not modify the land use of the lot significantly enough to change the peak flow rates emanating from the site. The specific intent of the design was to reduce the flow on to the abutting lot and route the runoff from the lot into the municipal system as quickly as possible. Accordingly, the peak flow rates off the entire lot into the municipal system are as follows:

Site Total	Existing	Proposed	Difference
2 Year Storm	1.64 cfs	1.01 cfs	-39.4%
10 Year Storm	3.06 cfs	2.33 cfs	-23.8%
25 Year storm	4.25 cfs	3.37 cfs	-20.7%
100 Year Storm	6.82 cfs	5.44 cfs	-20.2%

By directing the flows towards the municipal system, the abutter to the north benefits significantly. The watershed at the headwall beneath route 3A is approximately 14.5 acres and has a flow path well in excess of 2,200 linear feet which originates from the houses at the top of Windjammer Way. The peak flow rate at this headwall will lag well behind the contribution from this lot. Although we are reducing the peak flow rates off this lot area, peak flow rates at the

headwall will remain unaffected by this reduction. The only significant pipe issue will be the connection from the first basin north of the entrance across the street. In the model, this structure is identified as CB 3 and based upon the calculations, the pipe as sized and sloped will adequately pass the peak of the 10-year storm. Therefore, if we look only at the more significant issue of flows onto the abutting lot to the north, the results are:

Site Total	Existing	Proposed	Difference
2 Year Storm	1.08 cfs	0.27 cfs	-75.0%
10 Year Storm	2.09 cfs	0.91 cfs	-56.5%
25 Year Storm	3.01 cfs	1.41 cfs	-53.2%
100 Year Storm	5.07 cfs	2.49 cfs	-50.8%

Thus, as can be seen, in comparing the proposed conditions with existing conditions peak flow rates on to the abutting lot have been reduced by 75% for the 2-year storm and over 50 % for the 100-year storm.

Standard No. 3, Recharge

The static storage provided in the basin will be enough to meet the requirements of this standard. Since the site is a combination of HSG A, B & D, we will use a recharge volume equal to the water quality volume of 0.5". This will nearly match the requirements for HSG A although all of the impervious surfaces for the proposed development are in HSG B & D areas. Accordingly, this volume is:

Static Storage Provided	473 cu. ft.	
Required infiltration	0.5"	
Impervious area		
Proposed	6,212 sq. ft.	
Existing	2,572 sq. ft.	
Total	8,784 sq. ft.	
Infiltration volume required		366.0 cu. ft.
Directed to the basin	8,090 sq. ft.	
Weighted volume	8784/8090 (366.0)	
		397.4 cu. ft. ok< 473

Standard No. 4, Water Quality

Into the basin, the driveway will be pre-treated by a deep sump catch basin and sediment trap which will provide the 44% TSS pretreatment required for the proposed driveway. All runoff will be directed through the basin so all will receive 80% treatment.

Pretreatment

BMP	TSS Removal Rate	Actual Rate	Remainder
Deep sump catch basin	25%	25%	75%
Sediment trap	25%	18.75%	56.25 %
Total		43.75%	

BMP	TSS removal rate	Actual removal rate	Remainder
Forebay	25%	25%	75%
Infiltration basin	80%	60%	15%
Total		85%	

The only bypass of new impervious surfaces will be 694 square feet of driveway pavement which will be directed through the new inlet on Kilby Street. In accordance with DEP Guidelines, this surface area will be considered de minimus.

Infiltration Basin	5,518 sq. ft. (85%)
Inlet	694 sq. ft. (25%)
Weighted average	$\frac{4690.3 + 173.5}{6212} = 80.3\%$

Standard No. 5, Land Use with Higher Potential Pollution Loads

This standard is not applicable to a residential lot

Standard No. 6, Critical Areas

This standard is not applicable to this site

Standard No. 7, Redevelopment

This standard is applicable to this site. 2,572 square feet of existing impervious surfaces will be collected and treated by the proposed infiltration basin. Runoff from the pavement area will flow over a minimum of 100’ of grass prior to entering the basin. Which will provide the pretreatment required.

Standard No. 8, Construction Period Pollution Control

The site does not qualify under the NPDES CGP. Accordingly, a Storm Water Pollution Prevention Plan is not required. 12" mulch logs will be placed along the lower edge of the development area to prevent sediment transport on to the abutting lot.

Standard No. 9, Operation and Maintenance

The O & M manual for the lot is attached hereto

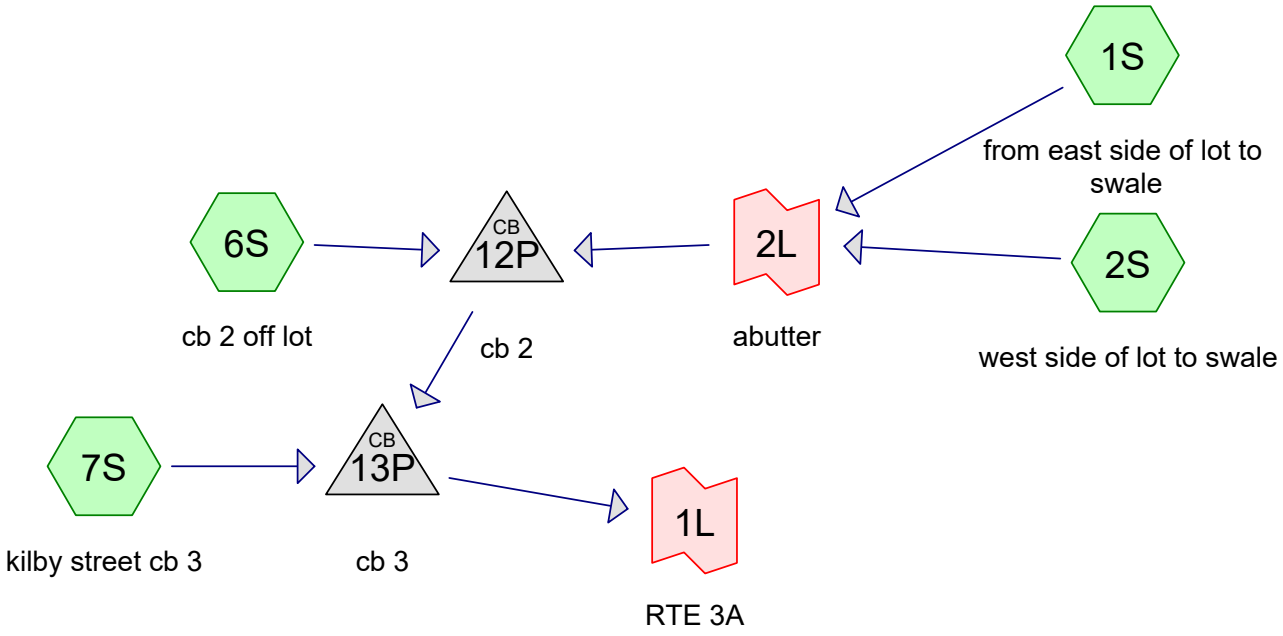
Standard No. 10, Illicit Discharge statement

I do hereby certify that there are no illicit discharges proposed on site.

_____

Gary D. James, P.E.

Existing Conditions
Hydro-Cad Printout



Subcat Reach Pond Link

Routing Diagram for 220 Summer Street - Existing Conditions
Prepared by James Engineering, Inc., Printed 7/13/2021

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.926	39	>75% Grass cover, Good, HSG A (1S)
0.253	61	>75% Grass cover, Good, HSG B (2S, 7S)
0.082	61	>75% Grass cover, Good, HSG B shoulder (6S)
0.452	80	>75% Grass cover, Good, HSG D (2S)
0.060	98	Paved parking, HSG A (1S)
0.082	98	Paved parking, HSG B (6S)
0.040	98	Paved parking, HSG C (7S)
0.012	98	Roofs, HSG A (1S)
0.040	98	Unconnected pavement, HSG A brick (1S)
0.151	77	Woods, Good, HSG D (6S)
0.140	32	Woods/grass comb., Good, HSG A (1S)
0.071	58	Woods/grass comb., Good, HSG B (2S)
0.064	79	Woods/grass comb., Good, HSG D (2S)
0.029	98	barn (1S)
0.053	92	cart path (1S, 2S)
0.031	98	ex house, HSG A (1S)
0.067	98	kilby street (2S)
2.554	**62**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
1.209	HSG A	1S
0.488	HSG B	2S, 6S, 7S
0.040	HSG C	7S
0.667	HSG D	2S, 6S
0.149	Other	1S, 2S
2.554		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.926	0.335	0.000	0.452	0.000	1.713	>75% Grass cover, Good	1S, 2S, 6S, 7S
0.060	0.082	0.040	0.000	0.000	0.182	Paved parking	1S, 6S, 7S
0.012	0.000	0.000	0.000	0.000	0.012	Roofs	1S
0.040	0.000	0.000	0.000	0.000	0.040	Unconnected pavement	1S
0.000	0.000	0.000	0.151	0.000	0.151	Woods, Good	6S
0.140	0.071	0.000	0.064	0.000	0.275	Woods/grass comb., Good	1S, 2S
0.000	0.000	0.000	0.000	0.029	0.029	barn	1S
0.000	0.000	0.000	0.000	0.053	0.053	cart path	1S, 2S
0.031	0.000	0.000	0.000	0.000	0.031	ex house	1S
0.000	0.000	0.000	0.000	0.067	0.067	kilby street	2S
1.209	**0.488**	**0.040**	**0.667**	**0.149**	**2.554**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	1S	0.00	0.00	105.0	0.0100	0.010	4.0	0.0	0.0
2	2S	0.00	0.00	257.0	0.0120	0.010	4.0	0.0	0.0
3	12P	29.95	29.23	23.0	0.0313	0.015	12.0	0.0	0.0
4	13P	26.89	25.05	68.0	0.0271	0.015	12.0	0.0	0.0

Time span=3.00-30.00 hrs, dt=0.01 hrs, 2701 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: from east side of lot to Runoff Area=54,931 sf 13.70% Impervious Runoff Depth=0.09"
Flow Length=321' Tc=10.1 min UI Adjusted CN=46 Runoff=0.01 cfs 0.009 af

Subcatchment 2S: west side of lot to swale Runoff Area=39,517 sf 7.37% Impervious Runoff Depth=1.23"
Flow Length=405' Tc=10.7 min CN=75 Runoff=1.08 cfs 0.093 af

Subcatchment 6S: cb 2 off lot Runoff Area=13,730 sf 26.13% Impervious Runoff Depth=1.42"
Flow Length=125' Slope=0.0500 '/' Tc=9.4 min CN=78 Runoff=0.46 cfs 0.037 af

Subcatchment 7S: kilby street cb 3 Runoff Area=3,064 sf 56.46% Impervious Runoff Depth=1.70"
Tc=6.0 min CN=82 Runoff=0.14 cfs 0.010 af

Pond 12P: cb 2 Peak Elev=30.61' Inflow=1.53 cfs 0.140 af
12.0" Round Culvert n=0.015 L=23.0' S=0.0313 '/' Outflow=1.53 cfs 0.140 af

Pond 13P: cb 3 Peak Elev=27.58' Inflow=1.64 cfs 0.150 af
12.0" Round Culvert n=0.015 L=68.0' S=0.0271 '/' Outflow=1.64 cfs 0.150 af

Link 1L: RTE 3A Inflow=1.64 cfs 0.150 af
Primary=1.64 cfs 0.150 af

Link 2L: abutter Inflow=1.08 cfs 0.102 af
Primary=1.08 cfs 0.102 af

Total Runoff Area = 2.554 ac Runoff Volume = 0.150 af Average Runoff Depth = 0.70"
85.84% Pervious = 2.192 ac 14.16% Impervious = 0.362 ac

Summary for Subcatchment 1S: from east side of lot to swale

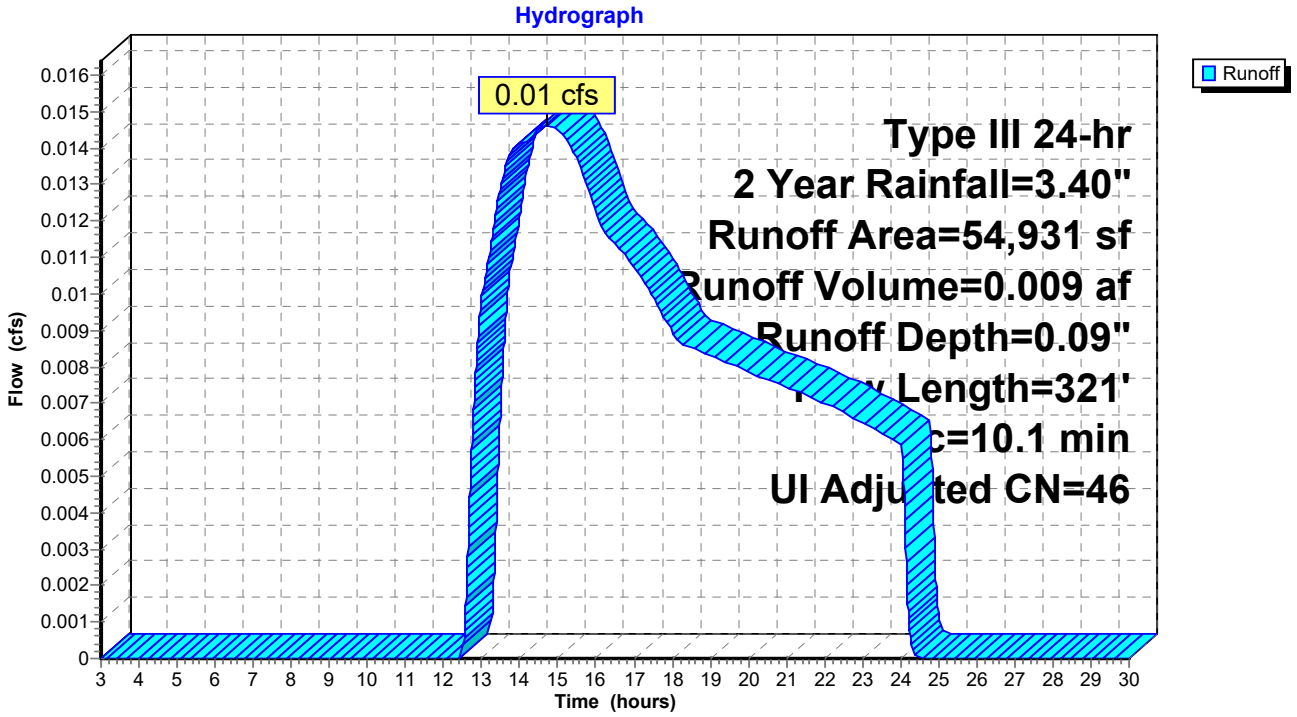
Runoff = 0.01 cfs @ 14.71 hrs, Volume= 0.009 af, Depth= 0.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Rainfall=3.40"

	Area (sf)	CN	Adj	Description
	7,971	39		>75% Grass cover, Good, HSG A
	6,090	32		Woods/grass comb., Good, HSG A
	32,367	39		>75% Grass cover, Good, HSG A
*	980	92		cart path
*	1,280	98		barn
	2,625	98		Paved parking, HSG A
*	1,750	98		Unconnected pavement, HSG A brick
*	1,340	98		ex house, HSG A
	528	98		Roofs, HSG A
	54,931	47	46	Weighted Average, UI Adjusted
	47,408			86.30% Pervious Area
	7,523			13.70% Impervious Area
	1,750			23.26% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	50	0.0180	0.10		**Sheet Flow, a** Grass: Dense n= 0.240 P2= 3.40"
0.2	30	0.0200	2.87		**Shallow Concentrated Flow, b** Paved Kv= 20.3 fps
0.5	70	0.1000	2.21		**Shallow Concentrated Flow, c** Short Grass Pasture Kv= 7.0 fps
0.5	66	0.0850	2.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	105	0.0100	2.84	0.25	**Pipe Channel,** 4.0" Round Area= 0.1 sf Perim= 1.0' r= 0.08' n= 0.010
10.1	321	Total			

Subcatchment 1S: from east side of lot to swale



Summary for Subcatchment 2S: west side of lot to swale

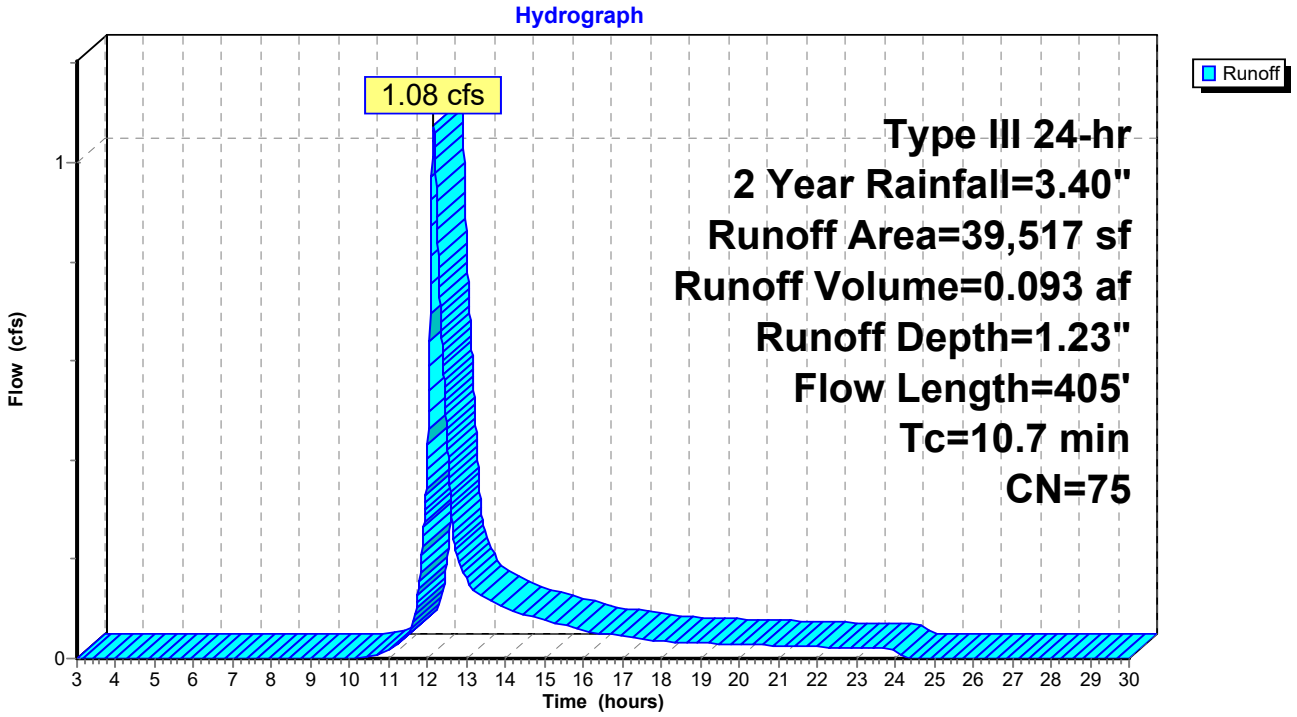
Runoff = 1.08 cfs @ 12.16 hrs, Volume= 0.093 af, Depth= 1.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Rainfall=3.40"

	Area (sf)	CN	Description
*	2,912	98	kilby street
*	1,335	92	cart path
	3,109	58	Woods/grass comb., Good, HSG B
	9,680	61	>75% Grass cover, Good, HSG B
	19,696	80	>75% Grass cover, Good, HSG D
	2,785	79	Woods/grass comb., Good, HSG D
	39,517	75	Weighted Average
	36,605		92.63% Pervious Area
	2,912		7.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	50	0.0200	0.10		**Sheet Flow, a** Grass: Dense n= 0.240 P2= 3.40"
1.3	98	0.0330	1.27		**Shallow Concentrated Flow, b** Short Grass Pasture Kv= 7.0 fps
1.4	257	0.0120	3.11	0.27	**Pipe Channel, subdrain** 4.0" Round Area= 0.1 sf Perim= 1.0' r= 0.08' n= 0.010
10.7	405	Total			

Subcatchment 2S: west side of lot to swale



Summary for Subcatchment 6S: cb 2 off lot

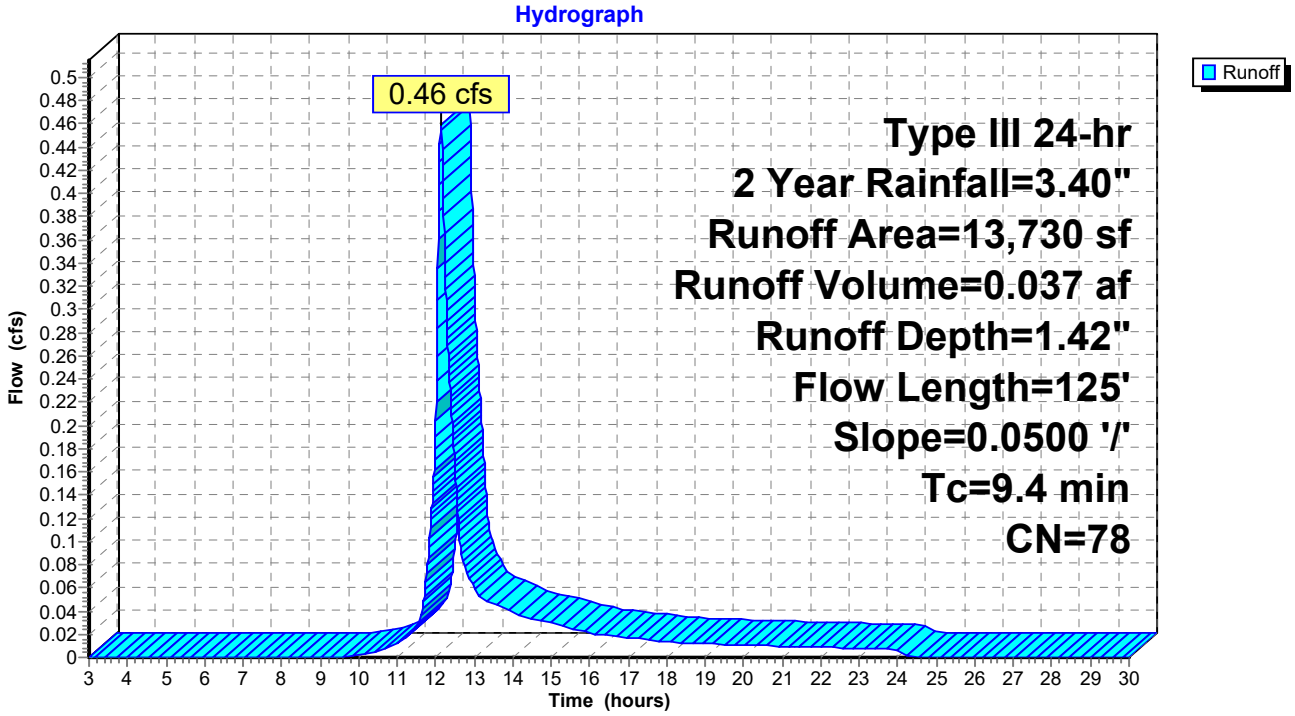
Runoff = 0.46 cfs @ 12.14 hrs, Volume= 0.037 af, Depth= 1.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Rainfall=3.40"

	Area (sf)	CN	Description
	3,587	98	Paved parking, HSG B
	6,575	77	Woods, Good, HSG D
*	3,568	61	>75% Grass cover, Good, HSG B shoulder
	13,730	78	Weighted Average
	10,143		73.87% Pervious Area
	3,587		26.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	50	0.0500	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
1.1	75	0.0500	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
9.4	125	Total			

Subcatchment 6S: cb 2 off lot



Summary for Subcatchment 7S: kilby street cb 3

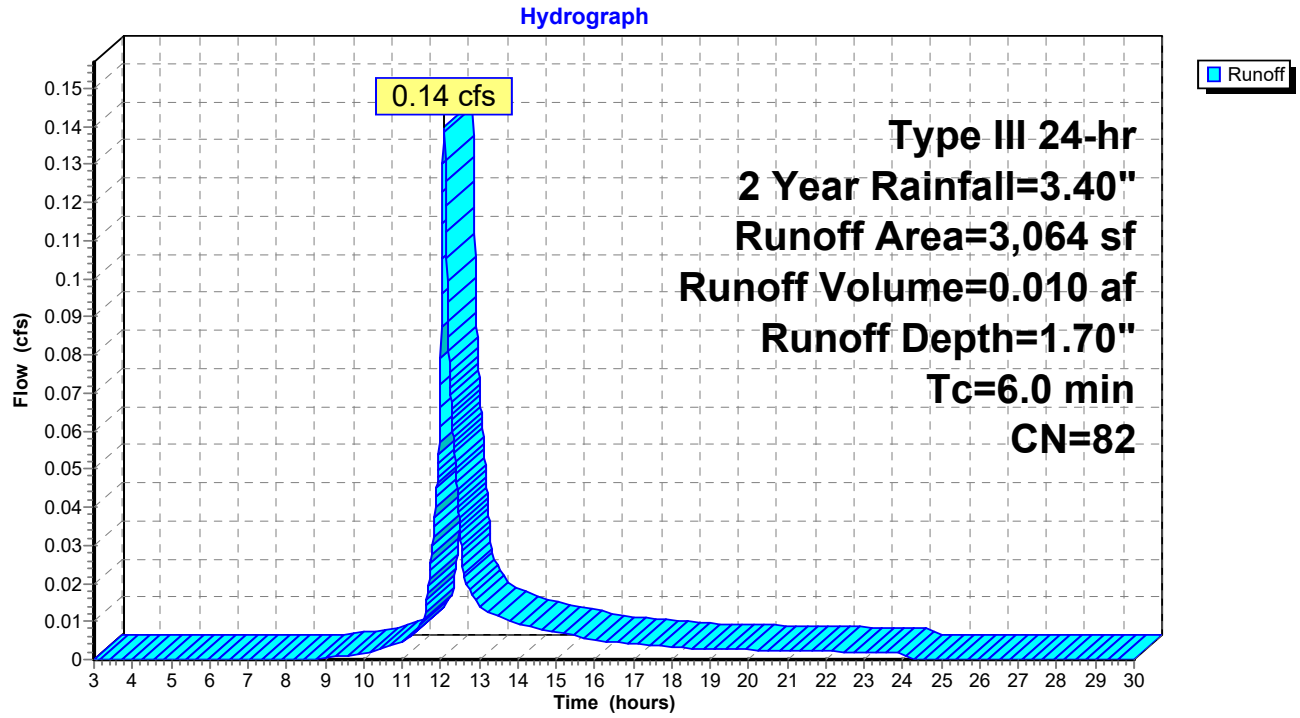
Runoff = 0.14 cfs @ 12.09 hrs, Volume= 0.010 af, Depth= 1.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Rainfall=3.40"

Area (sf)	CN	Description
1,730	98	Paved parking, HSG C
1,334	61	>75% Grass cover, Good, HSG B
3,064	82	Weighted Average
1,334		43.54% Pervious Area
1,730		56.46% Impervious Area

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

Subcatchment 7S: kilby street cb 3



Summary for Pond 12P: cb 2

[57] Hint: Peaked at 30.61' (Flood elevation advised)

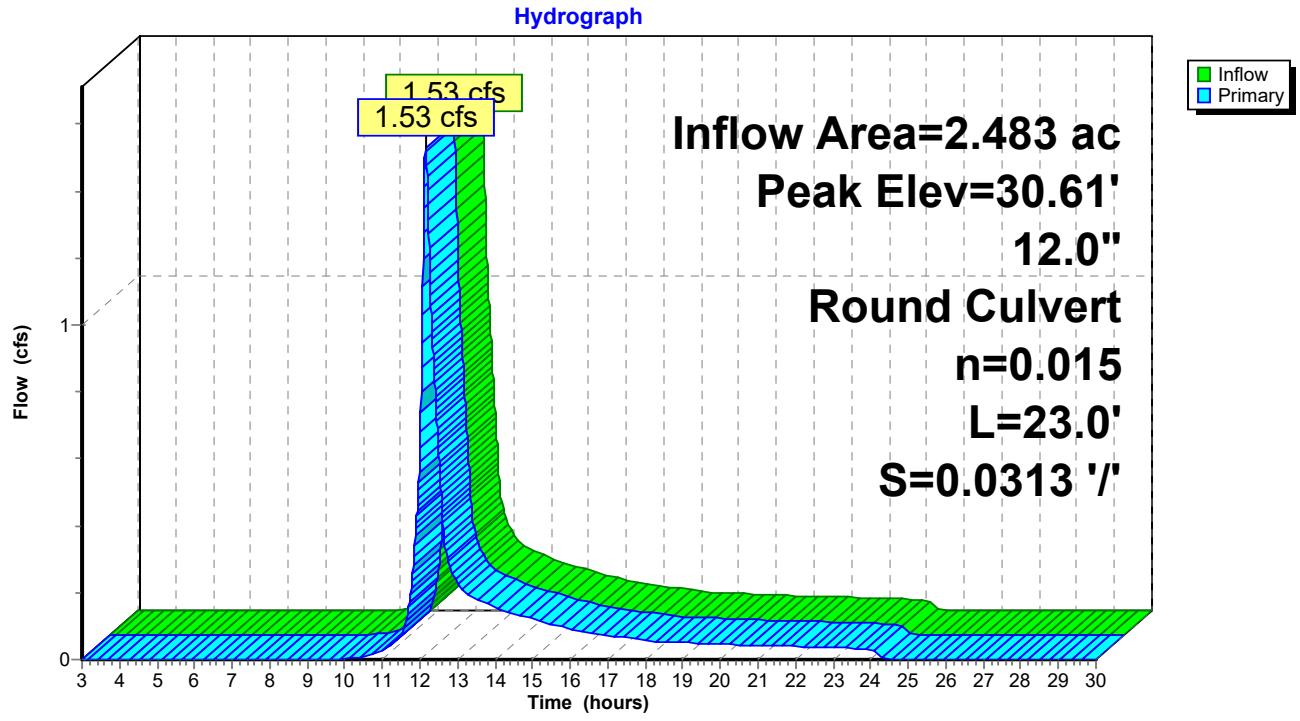
Inflow Area = 2.483 ac, 12.96% Impervious, Inflow Depth = 0.67" for 2 Year event
Inflow = 1.53 cfs @ 12.15 hrs, Volume= 0.140 af
Outflow = 1.53 cfs @ 12.15 hrs, Volume= 0.140 af, Atten= 0%, Lag= 0.0 min
Primary = 1.53 cfs @ 12.15 hrs, Volume= 0.140 af

Routing by Stor-Ind method, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 30.61' @ 12.15 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	29.95'	**12.0" Round Culvert** L= 23.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 29.95' / 29.23' S= 0.0313 '/' Cc= 0.900 n= 0.015, Flow Area= 0.79 sf

Primary OutFlow Max=1.53 cfs @ 12.15 hrs HW=30.61' (Free Discharge)
1=Culvert (Inlet Controls 1.53 cfs @ 2.77 fps)

Pond 12P: cb 2



Summary for Pond 13P: cb 3

[57] Hint: Peaked at 27.58' (Flood elevation advised)

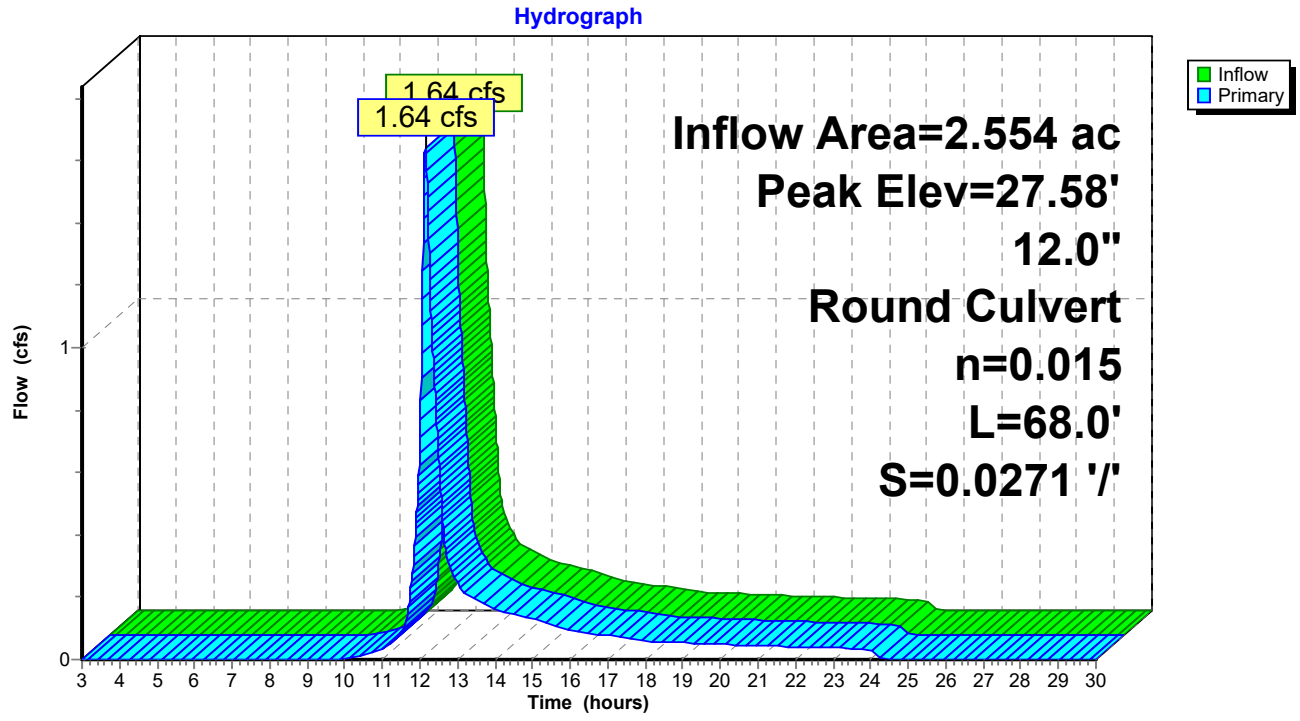
Inflow Area = 2.554 ac, 14.16% Impervious, Inflow Depth = 0.70" for 2 Year event
Inflow = 1.64 cfs @ 12.14 hrs, Volume= 0.150 af
Outflow = 1.64 cfs @ 12.14 hrs, Volume= 0.150 af, Atten= 0%, Lag= 0.0 min
Primary = 1.64 cfs @ 12.14 hrs, Volume= 0.150 af

Routing by Stor-Ind method, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 27.58' @ 12.14 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	26.89'	**12.0" Round Culvert** L= 68.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 26.89' / 25.05' S= 0.0271 '/' Cc= 0.900 n= 0.015, Flow Area= 0.79 sf

Primary OutFlow Max=1.64 cfs @ 12.14 hrs HW=27.58' (Free Discharge)
1=Culvert (Inlet Controls 1.64 cfs @ 2.83 fps)

Pond 13P: cb 3

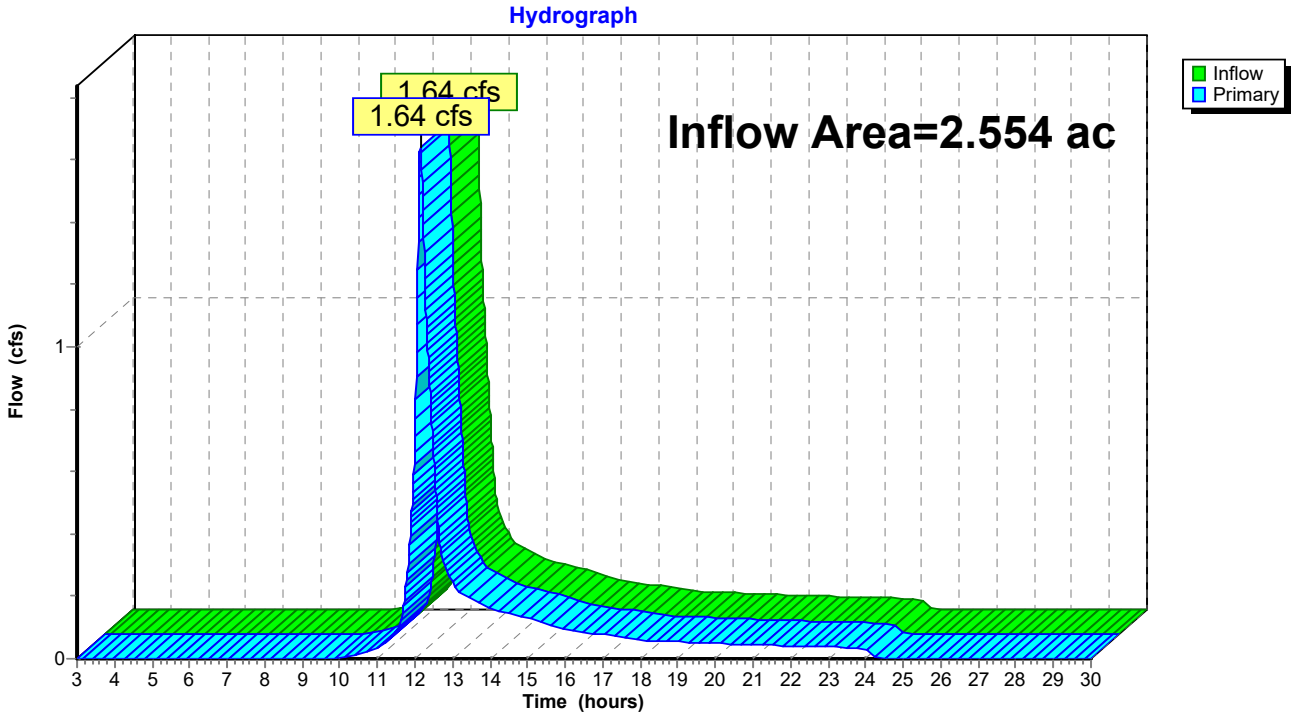


Summary for Link 1L: RTE 3A

Inflow Area = 2.554 ac, 14.16% Impervious, Inflow Depth = 0.70" for 2 Year event
Inflow = 1.64 cfs @ 12.14 hrs, Volume= 0.150 af
Primary = 1.64 cfs @ 12.14 hrs, Volume= 0.150 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs

Link 1L: RTE 3A

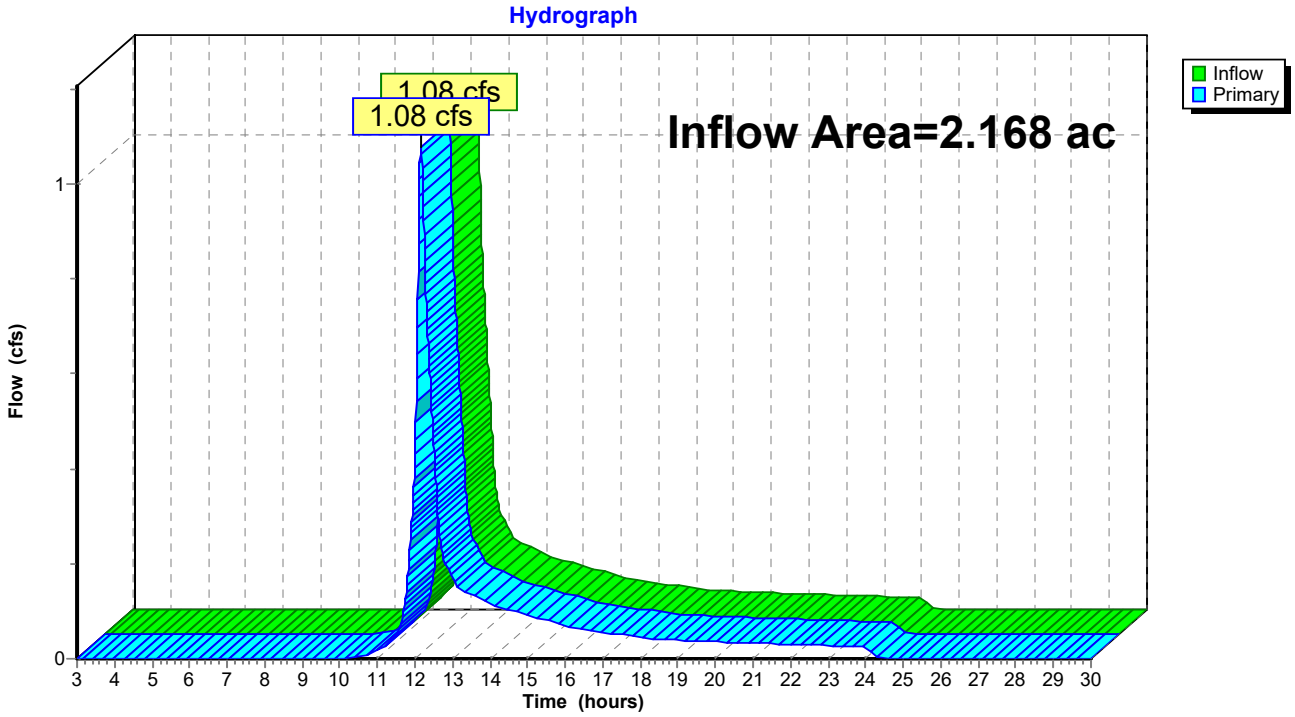


Summary for Link 2L: abutter

Inflow Area = 2.168 ac, 11.05% Impervious, Inflow Depth = 0.57" for 2 Year event
Inflow = 1.08 cfs @ 12.16 hrs, Volume= 0.102 af
Primary = 1.08 cfs @ 12.16 hrs, Volume= 0.102 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs

Link 2L: abutter



Time span=3.00-30.00 hrs, dt=0.01 hrs, 2701 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: from east side of lot to Runoff Area=54,931 sf 13.70% Impervious Runoff Depth=0.39"
Flow Length=321' Tc=10.1 min UI Adjusted CN=46 Runoff=0.21 cfs 0.041 af

Subcatchment 2S: west side of lot to swale Runoff Area=39,517 sf 7.37% Impervious Runoff Depth=2.21"
Flow Length=405' Tc=10.7 min CN=75 Runoff=1.99 cfs 0.167 af

Subcatchment 6S: cb 2 off lot Runoff Area=13,730 sf 26.13% Impervious Runoff Depth=2.46"
Flow Length=125' Slope=0.0500 '/' Tc=9.4 min CN=78 Runoff=0.81 cfs 0.065 af

Subcatchment 7S: kilby street cb 3 Runoff Area=3,064 sf 56.46% Impervious Runoff Depth=2.81"
Tc=6.0 min CN=82 Runoff=0.23 cfs 0.016 af

Pond 12P: cb 2 Peak Elev=31.03' Inflow=2.88 cfs 0.273 af
12.0" Round Culvert n=0.015 L=23.0' S=0.0313 '/' Outflow=2.88 cfs 0.273 af

Pond 13P: cb 3 Peak Elev=28.04' Inflow=3.06 cfs 0.289 af
12.0" Round Culvert n=0.015 L=68.0' S=0.0271 '/' Outflow=3.06 cfs 0.289 af

Link 1L: RTE 3A Inflow=3.06 cfs 0.289 af
Primary=3.06 cfs 0.289 af

Link 2L: abutter Inflow=2.09 cfs 0.208 af
Primary=2.09 cfs 0.208 af

Total Runoff Area = 2.554 ac Runoff Volume = 0.289 af Average Runoff Depth = 1.36"
85.84% Pervious = 2.192 ac 14.16% Impervious = 0.362 ac

Summary for Subcatchment 1S: from east side of lot to swale

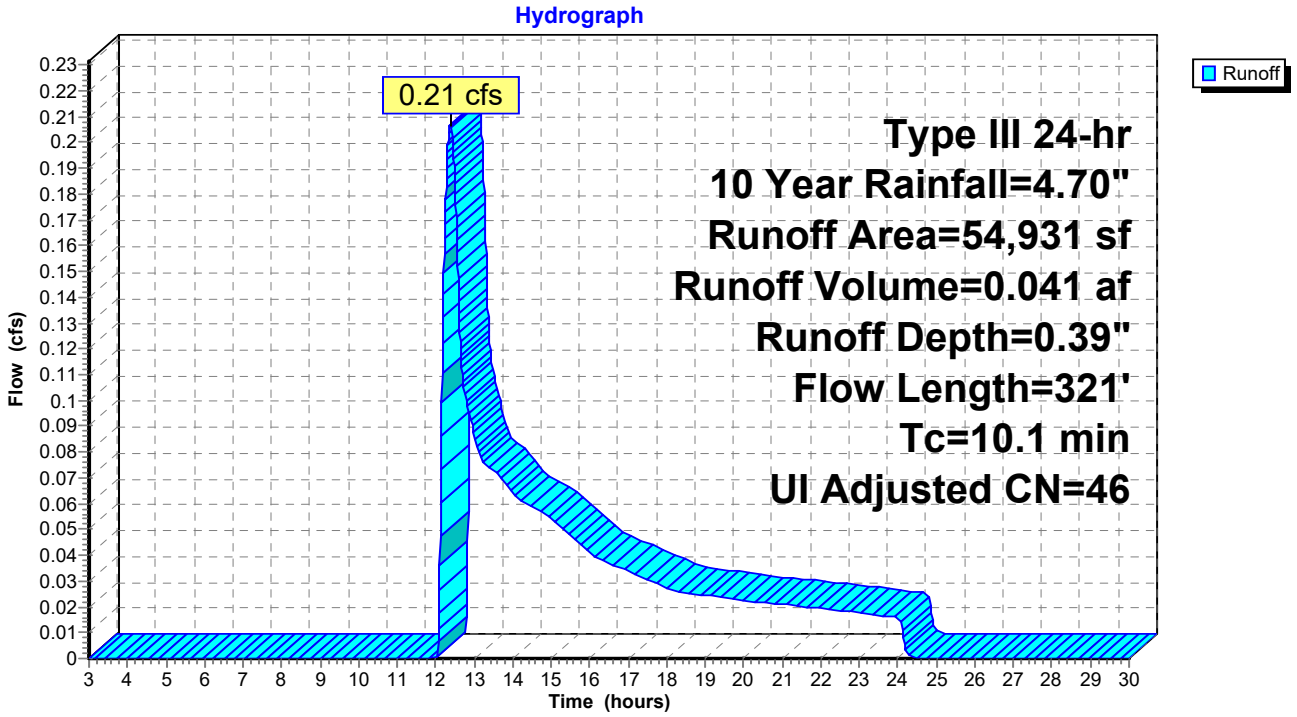
Runoff = 0.21 cfs @ 12.38 hrs, Volume= 0.041 af, Depth= 0.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Rainfall=4.70"

	Area (sf)	CN	Adj	Description
	7,971	39		>75% Grass cover, Good, HSG A
	6,090	32		Woods/grass comb., Good, HSG A
	32,367	39		>75% Grass cover, Good, HSG A
*	980	92		cart path
*	1,280	98		barn
	2,625	98		Paved parking, HSG A
*	1,750	98		Unconnected pavement, HSG A brick
*	1,340	98		ex house, HSG A
	528	98		Roofs, HSG A
	54,931	47	46	Weighted Average, UI Adjusted
	47,408			86.30% Pervious Area
	7,523			13.70% Impervious Area
	1,750			23.26% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	50	0.0180	0.10		**Sheet Flow, a** Grass: Dense n= 0.240 P2= 3.40"
0.2	30	0.0200	2.87		**Shallow Concentrated Flow, b** Paved Kv= 20.3 fps
0.5	70	0.1000	2.21		**Shallow Concentrated Flow, c** Short Grass Pasture Kv= 7.0 fps
0.5	66	0.0850	2.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	105	0.0100	2.84	0.25	**Pipe Channel,** 4.0" Round Area= 0.1 sf Perim= 1.0' r= 0.08' n= 0.010
10.1	321	Total			

Subcatchment 1S: from east side of lot to swale



Summary for Subcatchment 2S: west side of lot to swale

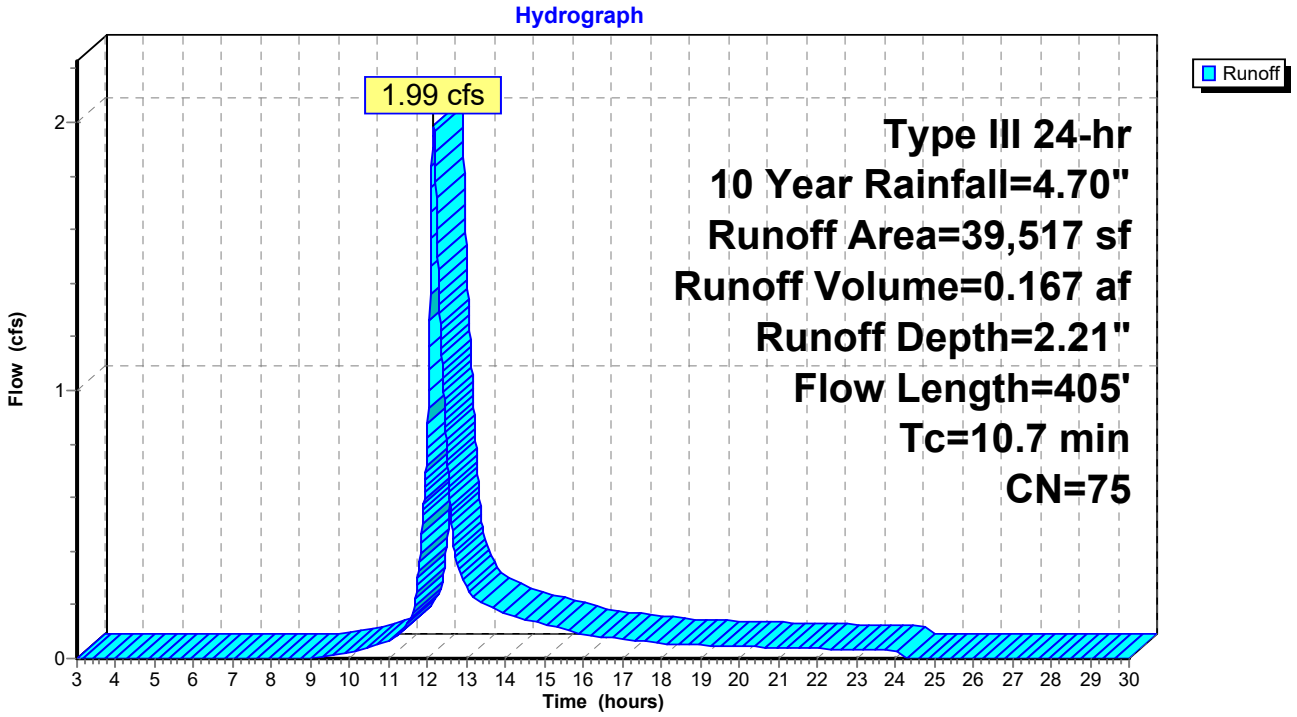
Runoff = 1.99 cfs @ 12.15 hrs, Volume= 0.167 af, Depth= 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Rainfall=4.70"

	Area (sf)	CN	Description
*	2,912	98	kilby street
*	1,335	92	cart path
	3,109	58	Woods/grass comb., Good, HSG B
	9,680	61	>75% Grass cover, Good, HSG B
	19,696	80	>75% Grass cover, Good, HSG D
	2,785	79	Woods/grass comb., Good, HSG D
	39,517	75	Weighted Average
	36,605		92.63% Pervious Area
	2,912		7.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	50	0.0200	0.10		**Sheet Flow, a** Grass: Dense n= 0.240 P2= 3.40"
1.3	98	0.0330	1.27		**Shallow Concentrated Flow, b** Short Grass Pasture Kv= 7.0 fps
1.4	257	0.0120	3.11	0.27	**Pipe Channel, subdrain** 4.0" Round Area= 0.1 sf Perim= 1.0' r= 0.08' n= 0.010
10.7	405	Total			

Subcatchment 2S: west side of lot to swale



Summary for Subcatchment 6S: cb 2 off lot

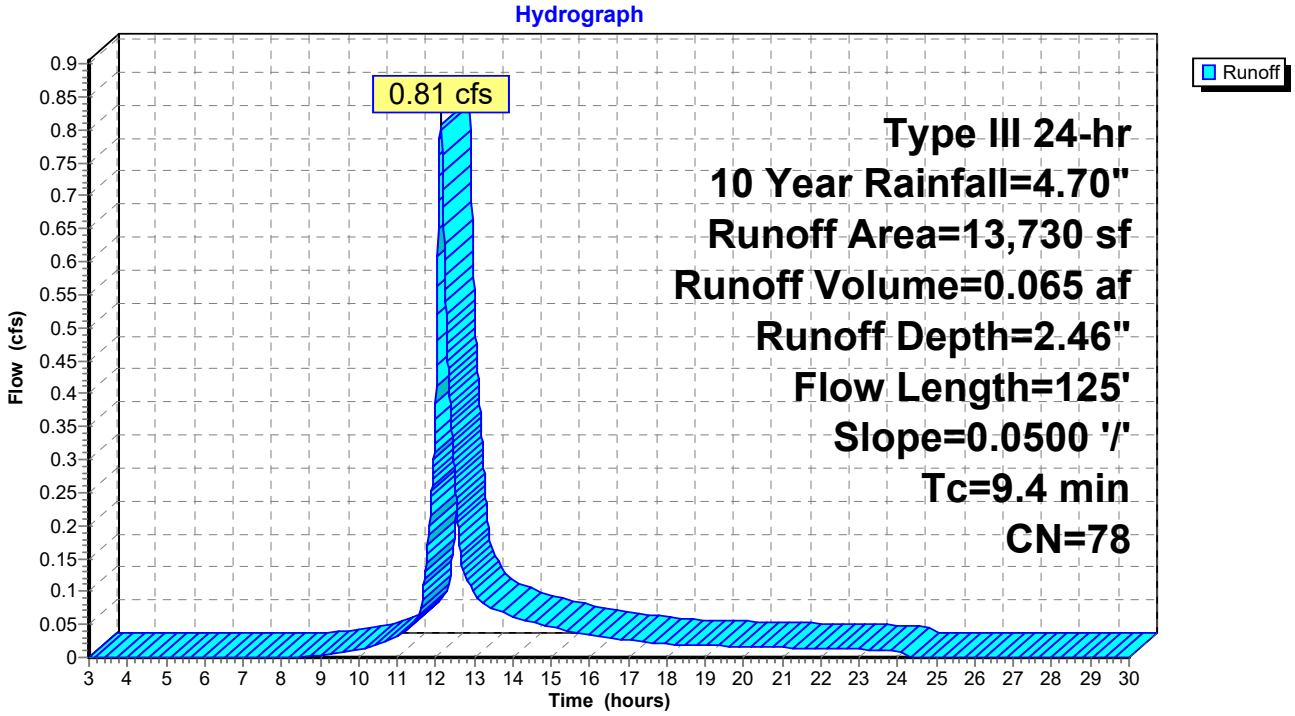
Runoff = 0.81 cfs @ 12.13 hrs, Volume= 0.065 af, Depth= 2.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Rainfall=4.70"

	Area (sf)	CN	Description
	3,587	98	Paved parking, HSG B
	6,575	77	Woods, Good, HSG D
*	3,568	61	>75% Grass cover, Good, HSG B shoulder
	13,730	78	Weighted Average
	10,143		73.87% Pervious Area
	3,587		26.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	50	0.0500	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
1.1	75	0.0500	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
9.4	125	Total			

Subcatchment 6S: cb 2 off lot



Summary for Subcatchment 7S: kilby street cb 3

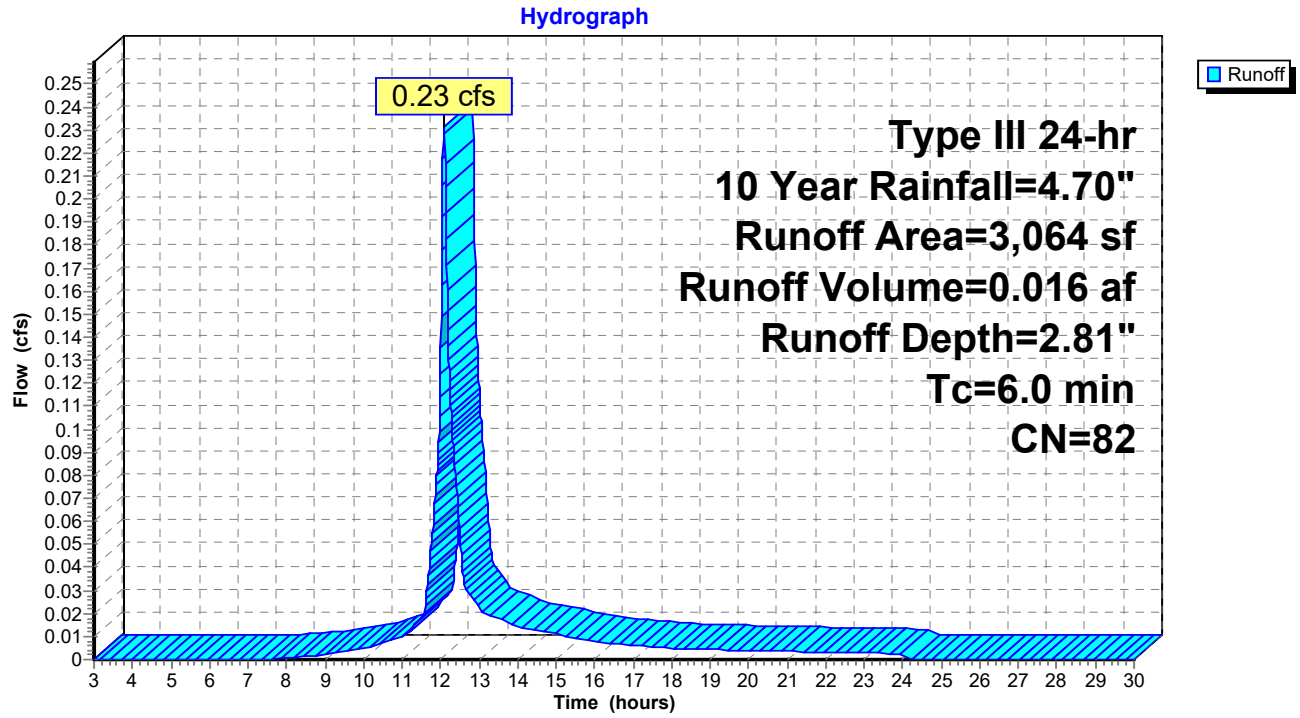
Runoff = 0.23 cfs @ 12.09 hrs, Volume= 0.016 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Rainfall=4.70"

Area (sf)	CN	Description
1,730	98	Paved parking, HSG C
1,334	61	>75% Grass cover, Good, HSG B
3,064	82	Weighted Average
1,334		43.54% Pervious Area
1,730		56.46% Impervious Area

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

Subcatchment 7S: kilby street cb 3



Summary for Pond 12P: cb 2

[57] Hint: Peaked at 31.03' (Flood elevation advised)

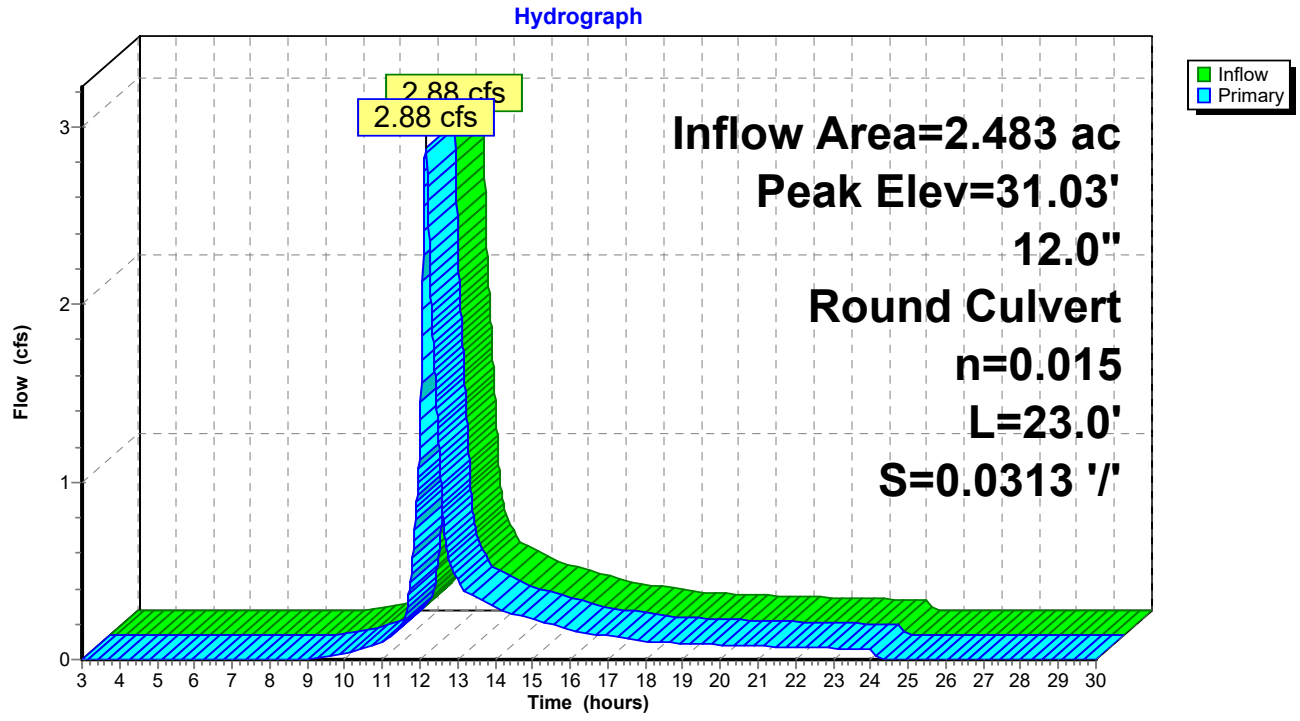
Inflow Area = 2.483 ac, 12.96% Impervious, Inflow Depth = 1.32" for 10 Year event
Inflow = 2.88 cfs @ 12.15 hrs, Volume= 0.273 af
Outflow = 2.88 cfs @ 12.15 hrs, Volume= 0.273 af, Atten= 0%, Lag= 0.0 min
Primary = 2.88 cfs @ 12.15 hrs, Volume= 0.273 af

Routing by Stor-Ind method, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 31.03' @ 12.15 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	29.95'	**12.0" Round Culvert** L= 23.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 29.95' / 29.23' S= 0.0313 '/' Cc= 0.900 n= 0.015, Flow Area= 0.79 sf

Primary OutFlow Max=2.87 cfs @ 12.15 hrs HW=31.03' (Free Discharge)
1=Culvert (Inlet Controls 2.87 cfs @ 3.66 fps)

Pond 12P: cb 2



Summary for Pond 13P: cb 3

[57] Hint: Peaked at 28.04' (Flood elevation advised)

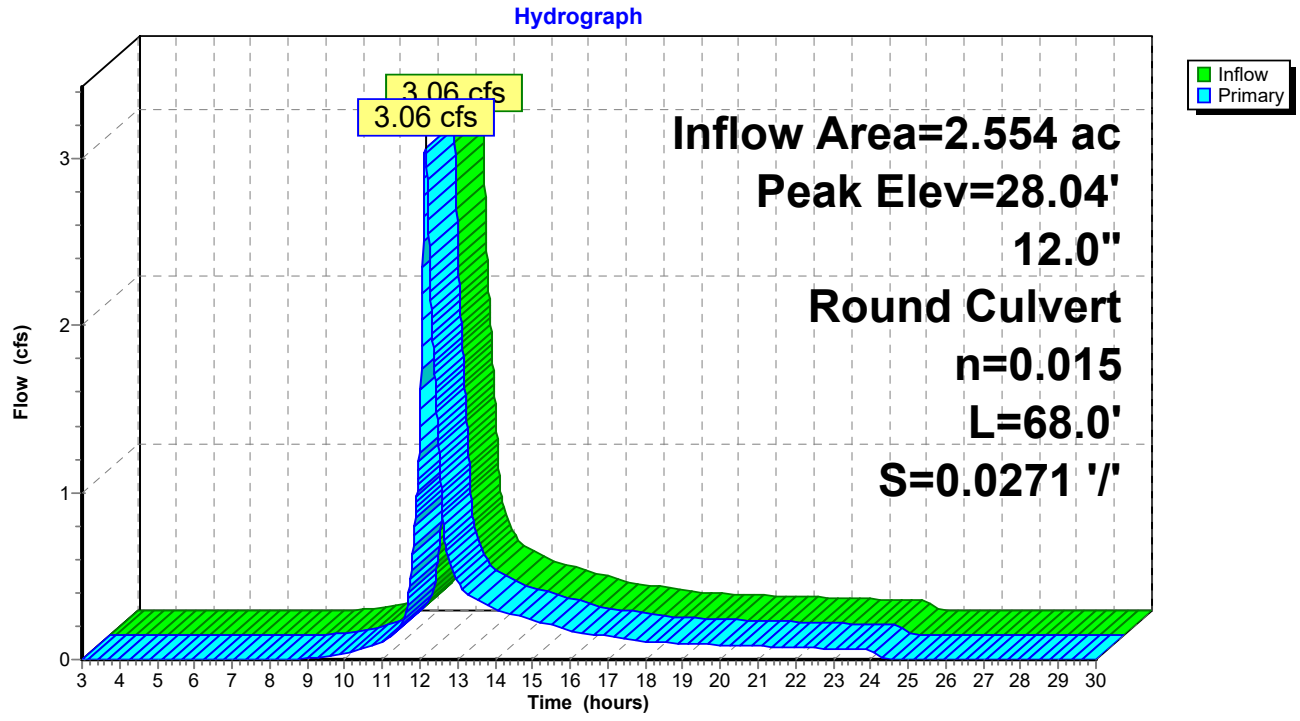
Inflow Area = 2.554 ac, 14.16% Impervious, Inflow Depth = 1.36" for 10 Year event
Inflow = 3.06 cfs @ 12.15 hrs, Volume= 0.289 af
Outflow = 3.06 cfs @ 12.15 hrs, Volume= 0.289 af, Atten= 0%, Lag= 0.0 min
Primary = 3.06 cfs @ 12.15 hrs, Volume= 0.289 af

Routing by Stor-Ind method, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 28.04' @ 12.15 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	26.89'	**12.0" Round Culvert** L= 68.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 26.89' / 25.05' S= 0.0271 '/' Cc= 0.900 n= 0.015, Flow Area= 0.79 sf

Primary OutFlow Max=3.06 cfs @ 12.15 hrs HW=28.04' (Free Discharge)
1=Culvert (Inlet Controls 3.06 cfs @ 3.89 fps)

Pond 13P: cb 3

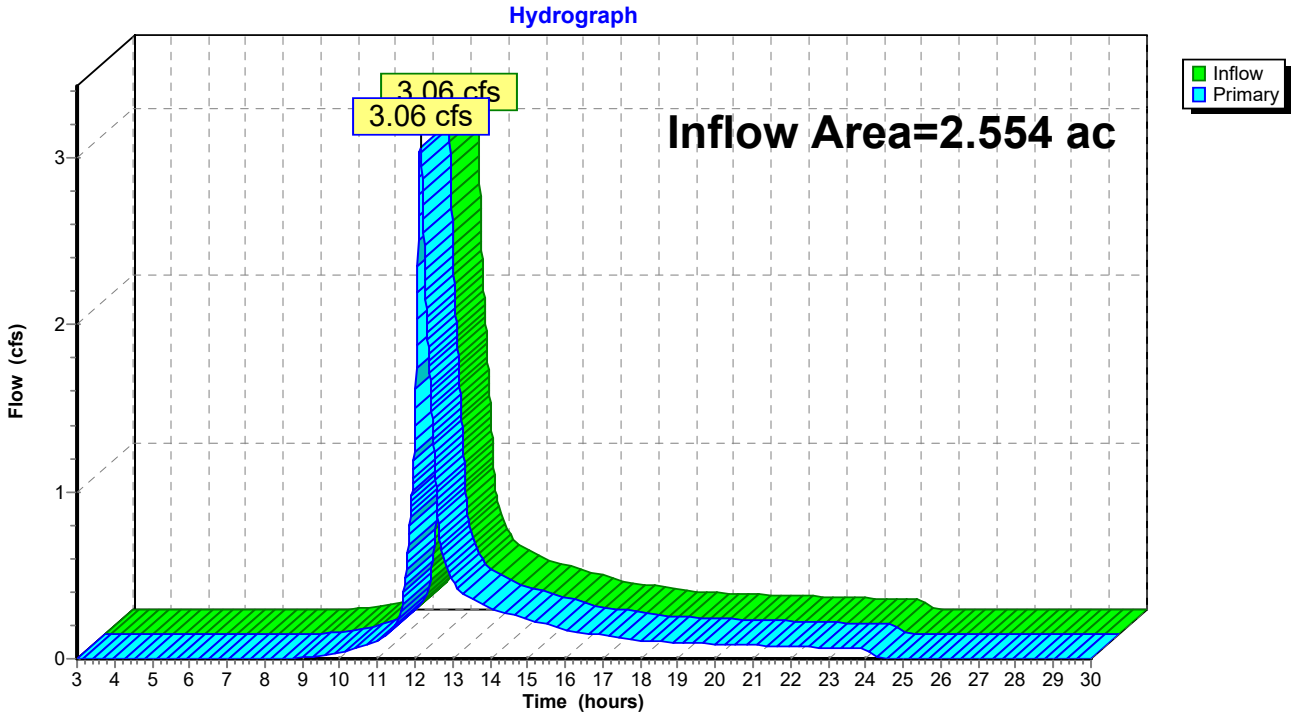


Summary for Link 1L: RTE 3A

Inflow Area = 2.554 ac, 14.16% Impervious, Inflow Depth = 1.36" for 10 Year event
Inflow = 3.06 cfs @ 12.15 hrs, Volume= 0.289 af
Primary = 3.06 cfs @ 12.15 hrs, Volume= 0.289 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs

Link 1L: RTE 3A

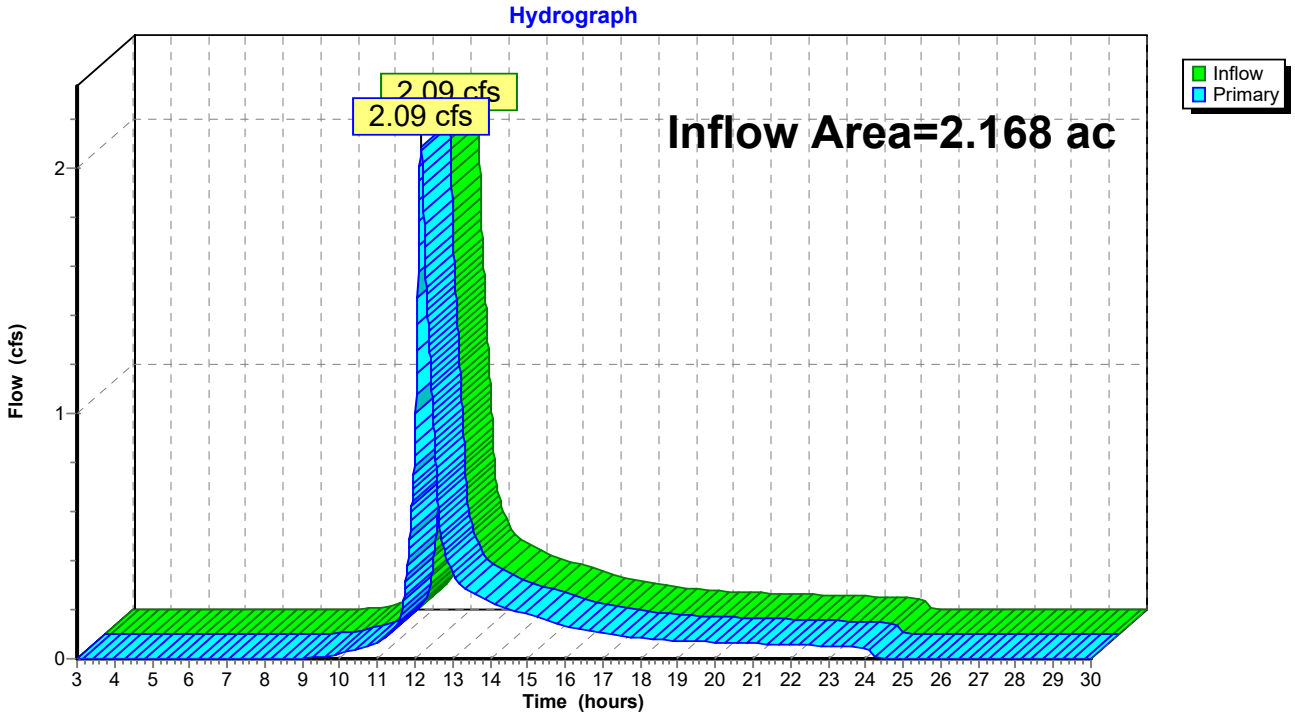


Summary for Link 2L: abutter

Inflow Area = 2.168 ac, 11.05% Impervious, Inflow Depth = 1.15" for 10 Year event
Inflow = 2.09 cfs @ 12.16 hrs, Volume= 0.208 af
Primary = 2.09 cfs @ 12.16 hrs, Volume= 0.208 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs

Link 2L: abutter



Time span=3.00-30.00 hrs, dt=0.01 hrs, 2701 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: from east side of lot to Runoff Area=54,931 sf 13.70% Impervious Runoff Depth=0.67"
Flow Length=321' Tc=10.1 min UI Adjusted CN=46 Runoff=0.46 cfs 0.070 af

Subcatchment 2S: west side of lot to swale Runoff Area=39,517 sf 7.37% Impervious Runoff Depth=2.86"
Flow Length=405' Tc=10.7 min CN=75 Runoff=2.59 cfs 0.216 af

Subcatchment 6S: cb 2 off lot Runoff Area=13,730 sf 26.13% Impervious Runoff Depth=3.14"
Flow Length=125' Slope=0.0500 '/' Tc=9.4 min CN=78 Runoff=1.03 cfs 0.083 af

Subcatchment 7S: kilby street cb 3 Runoff Area=3,064 sf 56.46% Impervious Runoff Depth=3.53"
Tc=6.0 min CN=82 Runoff=0.29 cfs 0.021 af

Pond 12P: cb 2 Peak Elev=31.58' Inflow=4.02 cfs 0.369 af
12.0" Round Culvert n=0.015 L=23.0' S=0.0313 '/' Outflow=4.02 cfs 0.369 af

Pond 13P: cb 3 Peak Elev=28.65' Inflow=4.25 cfs 0.390 af
12.0" Round Culvert n=0.015 L=68.0' S=0.0271 '/' Outflow=4.25 cfs 0.390 af

Link 1L: RTE 3A Inflow=4.25 cfs 0.390 af
Primary=4.25 cfs 0.390 af

Link 2L: abutter Inflow=3.01 cfs 0.286 af
Primary=3.01 cfs 0.286 af

Total Runoff Area = 2.554 ac Runoff Volume = 0.390 af Average Runoff Depth = 1.83"
85.84% Pervious = 2.192 ac 14.16% Impervious = 0.362 ac

Summary for Subcatchment 1S: from east side of lot to swale

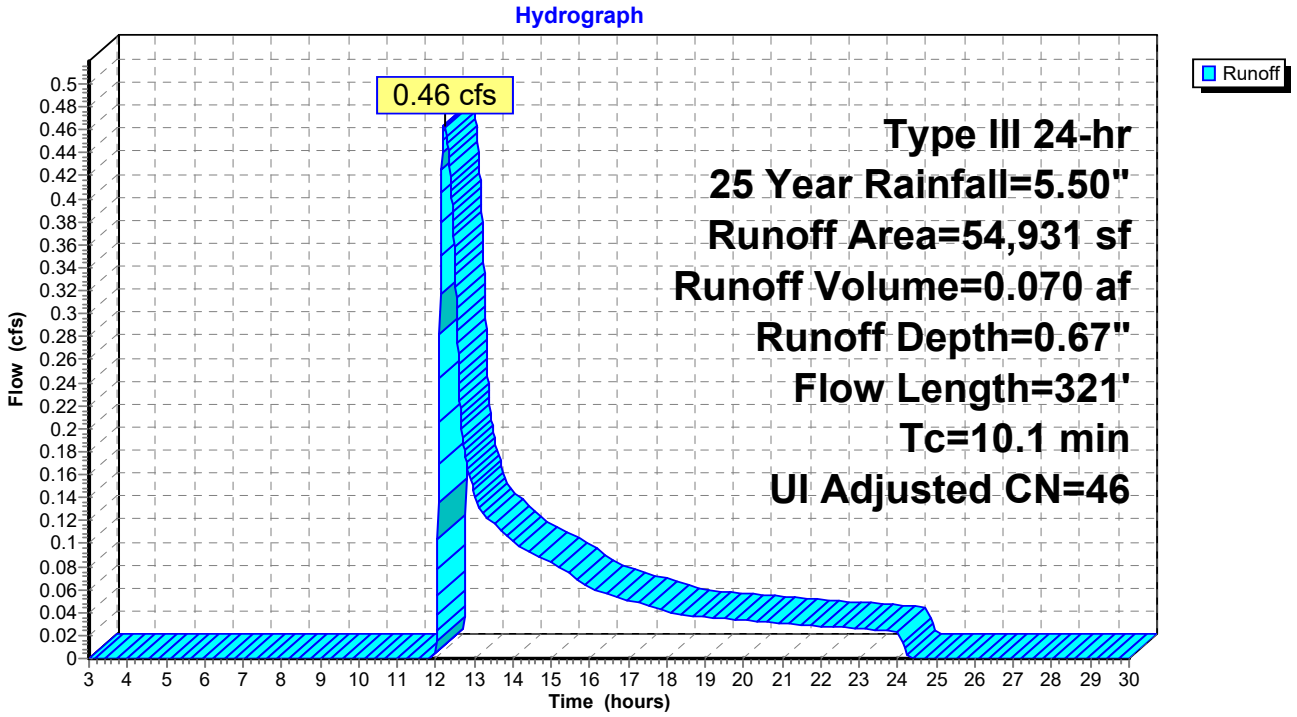
Runoff = 0.46 cfs @ 12.22 hrs, Volume= 0.070 af, Depth= 0.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 Year Rainfall=5.50"

	Area (sf)	CN	Adj	Description
	7,971	39		>75% Grass cover, Good, HSG A
	6,090	32		Woods/grass comb., Good, HSG A
	32,367	39		>75% Grass cover, Good, HSG A
*	980	92		cart path
*	1,280	98		barn
	2,625	98		Paved parking, HSG A
*	1,750	98		Unconnected pavement, HSG A brick
*	1,340	98		ex house, HSG A
	528	98		Roofs, HSG A
	54,931	47	46	Weighted Average, UI Adjusted
	47,408			86.30% Pervious Area
	7,523			13.70% Impervious Area
	1,750			23.26% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	50	0.0180	0.10		**Sheet Flow, a** Grass: Dense n= 0.240 P2= 3.40"
0.2	30	0.0200	2.87		**Shallow Concentrated Flow, b** Paved Kv= 20.3 fps
0.5	70	0.1000	2.21		**Shallow Concentrated Flow, c** Short Grass Pasture Kv= 7.0 fps
0.5	66	0.0850	2.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	105	0.0100	2.84	0.25	**Pipe Channel,** 4.0" Round Area= 0.1 sf Perim= 1.0' r= 0.08' n= 0.010
10.1	321	Total			

Subcatchment 1S: from east side of lot to swale



Summary for Subcatchment 2S: west side of lot to swale

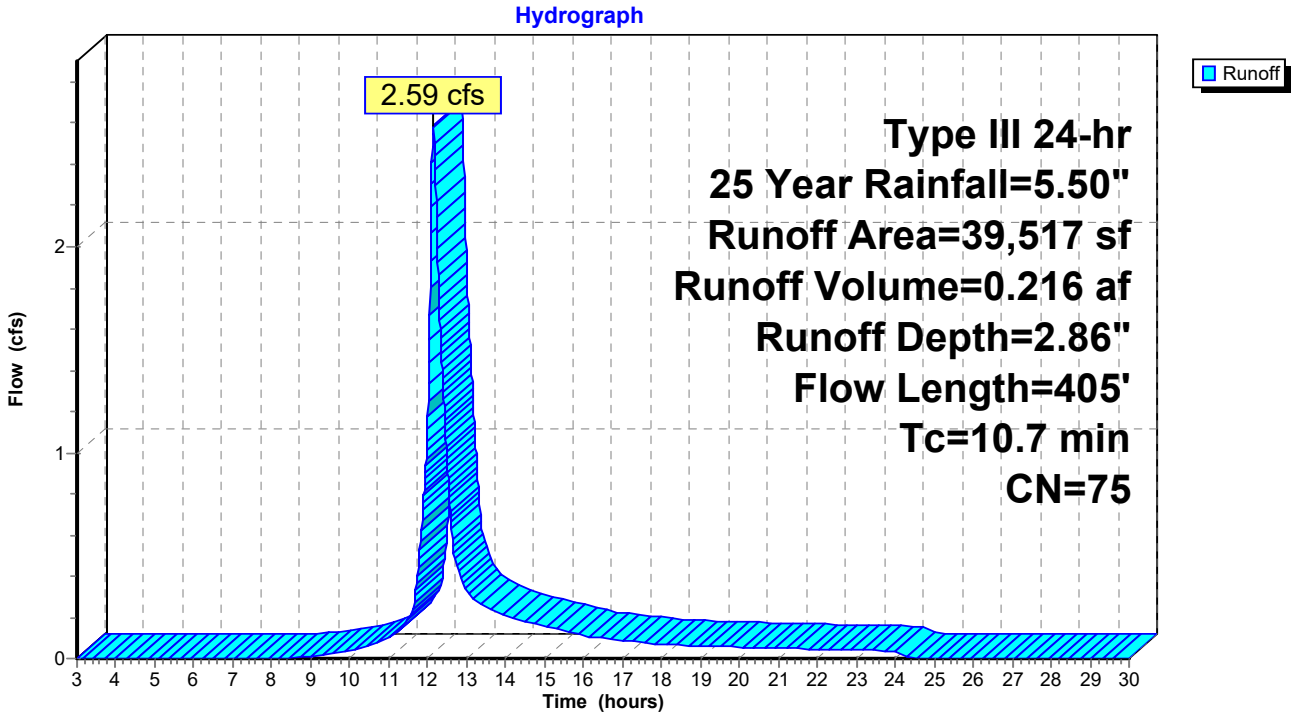
Runoff = 2.59 cfs @ 12.15 hrs, Volume= 0.216 af, Depth= 2.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 Year Rainfall=5.50"

	Area (sf)	CN	Description
*	2,912	98	kilby street
*	1,335	92	cart path
	3,109	58	Woods/grass comb., Good, HSG B
	9,680	61	>75% Grass cover, Good, HSG B
	19,696	80	>75% Grass cover, Good, HSG D
	2,785	79	Woods/grass comb., Good, HSG D
	39,517	75	Weighted Average
	36,605		92.63% Pervious Area
	2,912		7.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	50	0.0200	0.10		**Sheet Flow, a** Grass: Dense n= 0.240 P2= 3.40"
1.3	98	0.0330	1.27		**Shallow Concentrated Flow, b** Short Grass Pasture Kv= 7.0 fps
1.4	257	0.0120	3.11	0.27	**Pipe Channel, subdrain** 4.0" Round Area= 0.1 sf Perim= 1.0' r= 0.08' n= 0.010
10.7	405	Total			

Subcatchment 2S: west side of lot to swale



Summary for Subcatchment 6S: cb 2 off lot

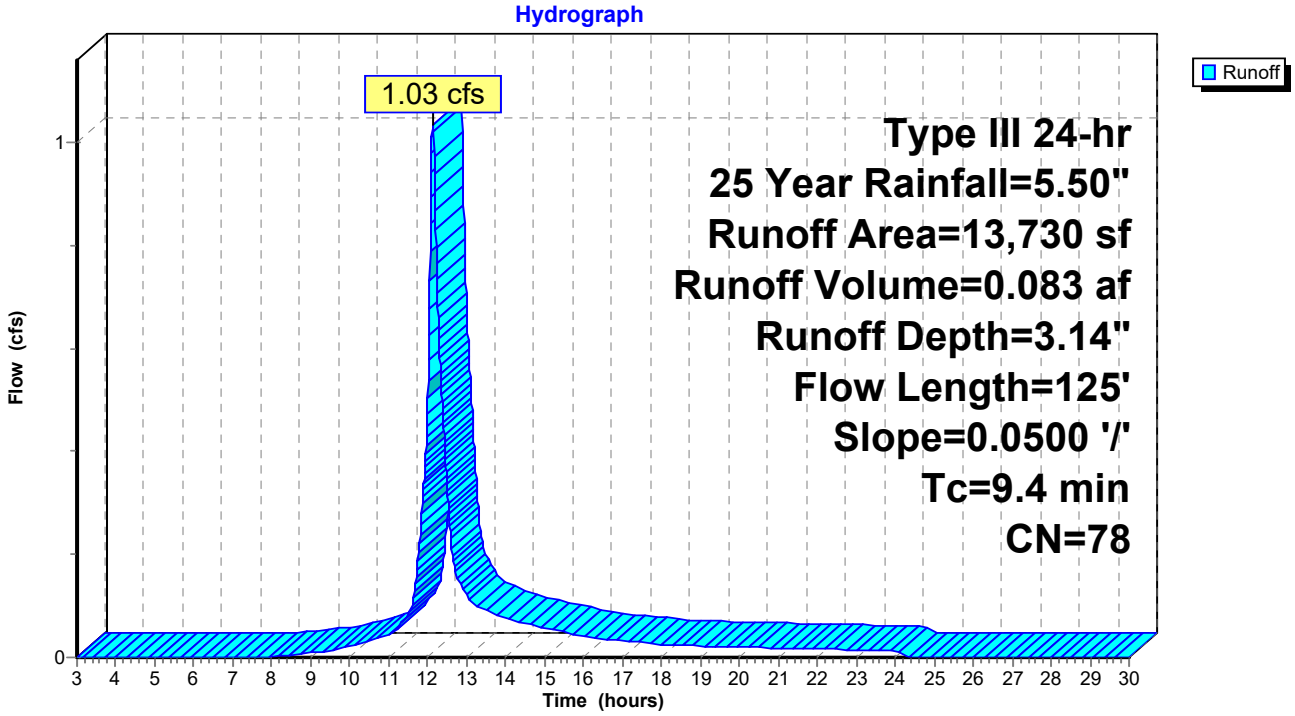
Runoff = 1.03 cfs @ 12.13 hrs, Volume= 0.083 af, Depth= 3.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 Year Rainfall=5.50"

	Area (sf)	CN	Description
	3,587	98	Paved parking, HSG B
	6,575	77	Woods, Good, HSG D
*	3,568	61	>75% Grass cover, Good, HSG B shoulder
	13,730	78	Weighted Average
	10,143		73.87% Pervious Area
	3,587		26.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	50	0.0500	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
1.1	75	0.0500	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
9.4	125	Total			

Subcatchment 6S: cb 2 off lot



Summary for Subcatchment 7S: kilby street cb 3

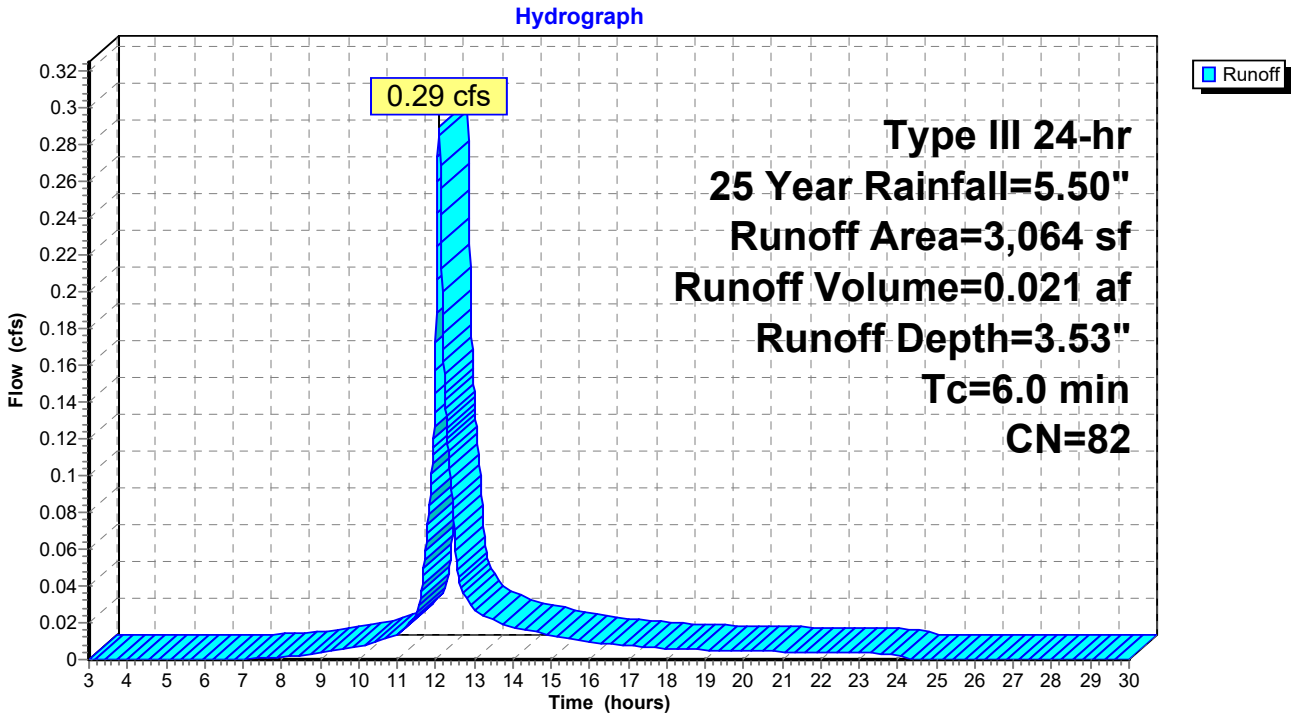
Runoff = 0.29 cfs @ 12.09 hrs, Volume= 0.021 af, Depth= 3.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 Year Rainfall=5.50"

Area (sf)	CN	Description
1,730	98	Paved parking, HSG C
1,334	61	>75% Grass cover, Good, HSG B
3,064	82	Weighted Average
1,334		43.54% Pervious Area
1,730		56.46% Impervious Area

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

Subcatchment 7S: kilby street cb 3



Summary for Pond 12P: cb 2

[57] Hint: Peaked at 31.58' (Flood elevation advised)

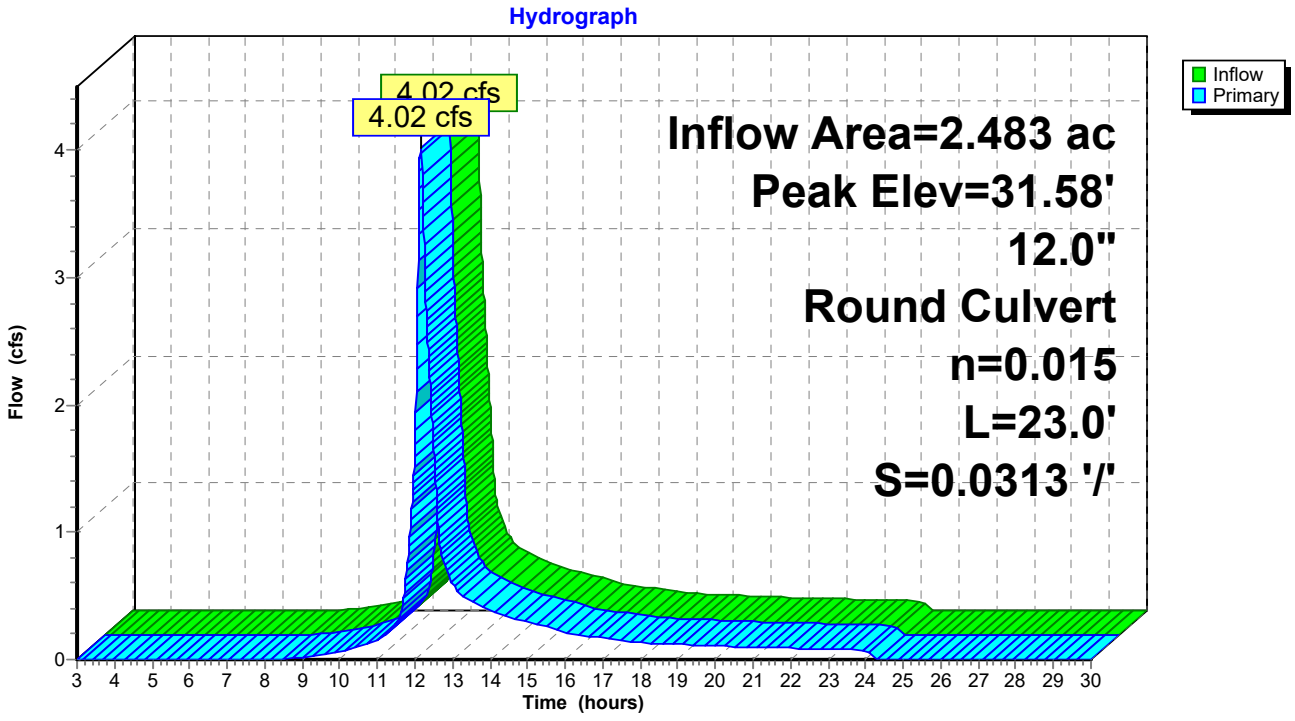
Inflow Area = 2.483 ac, 12.96% Impervious, Inflow Depth = 1.78" for 25 Year event
Inflow = 4.02 cfs @ 12.15 hrs, Volume= 0.369 af
Outflow = 4.02 cfs @ 12.15 hrs, Volume= 0.369 af, Atten= 0%, Lag= 0.0 min
Primary = 4.02 cfs @ 12.15 hrs, Volume= 0.369 af

Routing by Stor-Ind method, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 31.58' @ 12.15 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	29.95'	**12.0" Round Culvert** L= 23.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 29.95' / 29.23' S= 0.0313 '/' Cc= 0.900 n= 0.015, Flow Area= 0.79 sf

Primary OutFlow Max=4.02 cfs @ 12.15 hrs HW=31.58' (Free Discharge)
1=Culvert (Inlet Controls 4.02 cfs @ 5.11 fps)

Pond 12P: cb 2



Summary for Pond 13P: cb 3

[57] Hint: Peaked at 28.65' (Flood elevation advised)

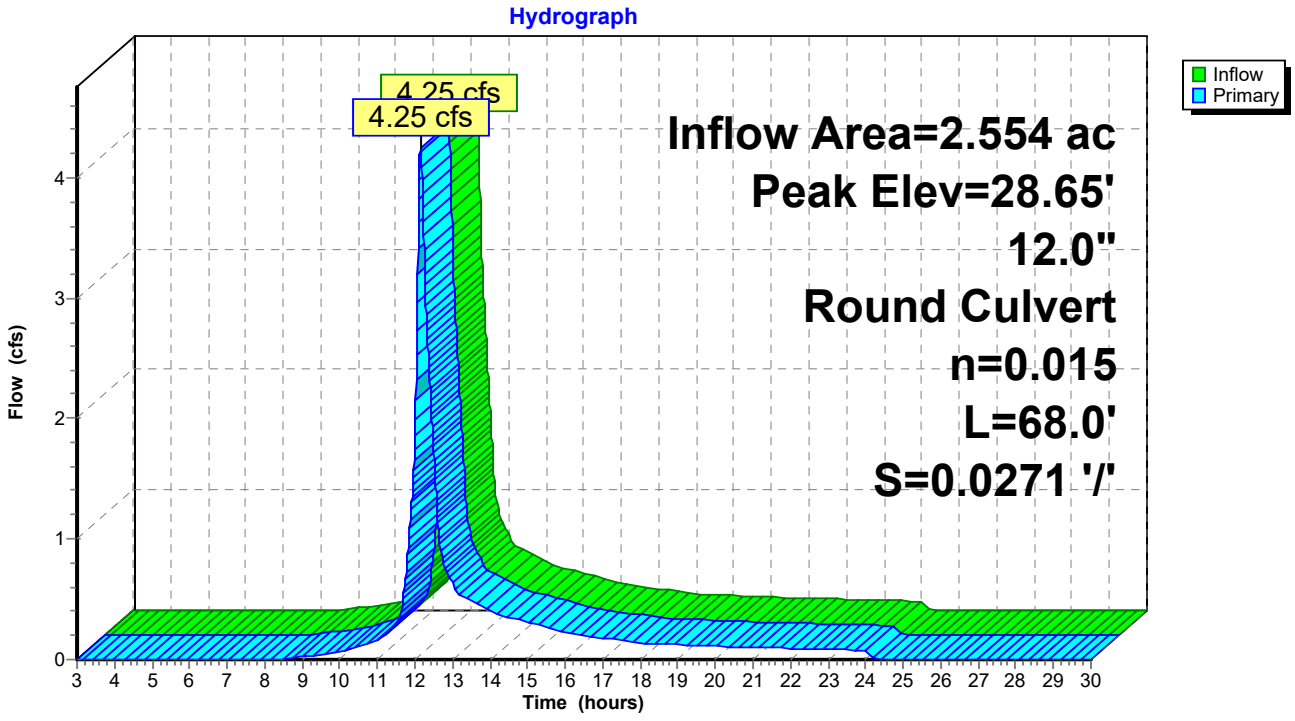
Inflow Area = 2.554 ac, 14.16% Impervious, Inflow Depth = 1.83" for 25 Year event
Inflow = 4.25 cfs @ 12.15 hrs, Volume= 0.390 af
Outflow = 4.25 cfs @ 12.15 hrs, Volume= 0.390 af, Atten= 0%, Lag= 0.0 min
Primary = 4.25 cfs @ 12.15 hrs, Volume= 0.390 af

Routing by Stor-Ind method, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 28.65' @ 12.15 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	26.89'	**12.0" Round Culvert** L= 68.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 26.89' / 25.05' S= 0.0271 '/' Cc= 0.900 n= 0.015, Flow Area= 0.79 sf

Primary OutFlow Max=4.24 cfs @ 12.15 hrs HW=28.65' (Free Discharge)
1=Culvert (Inlet Controls 4.24 cfs @ 5.40 fps)

Pond 13P: cb 3

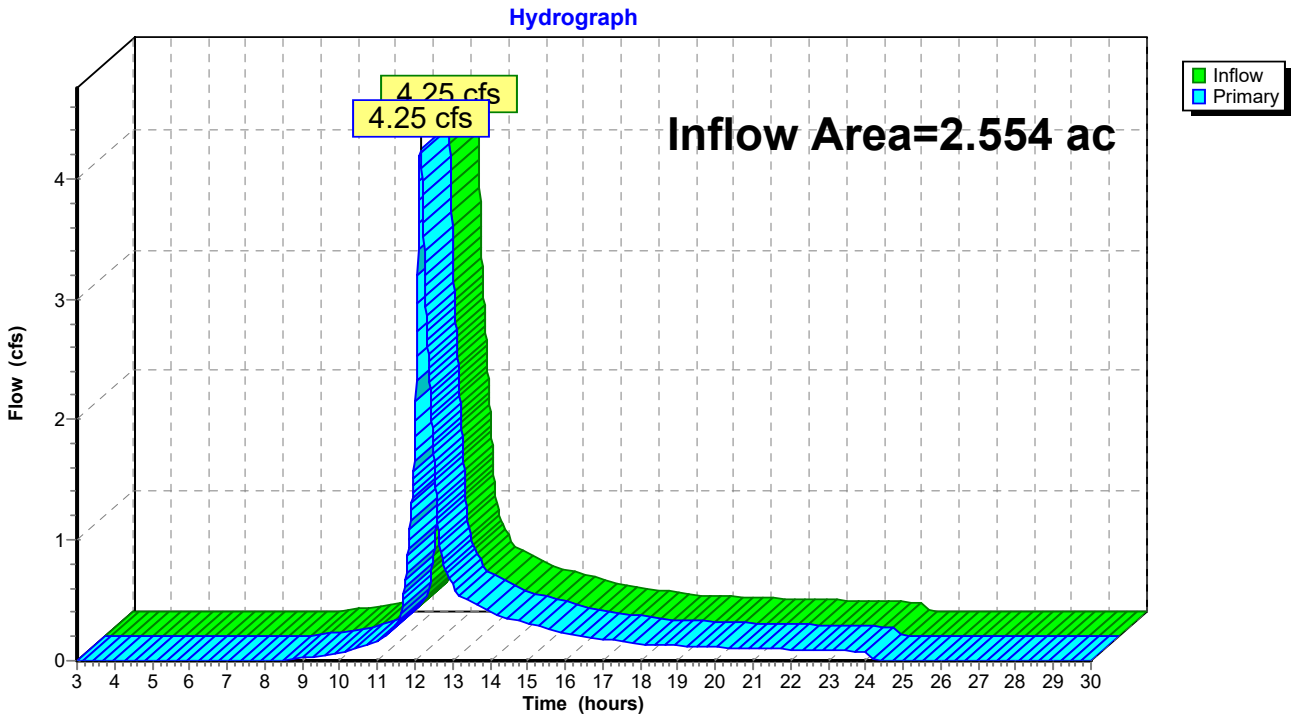


Summary for Link 1L: RTE 3A

Inflow Area = 2.554 ac, 14.16% Impervious, Inflow Depth = 1.83" for 25 Year event
Inflow = 4.25 cfs @ 12.15 hrs, Volume= 0.390 af
Primary = 4.25 cfs @ 12.15 hrs, Volume= 0.390 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs

Link 1L: RTE 3A

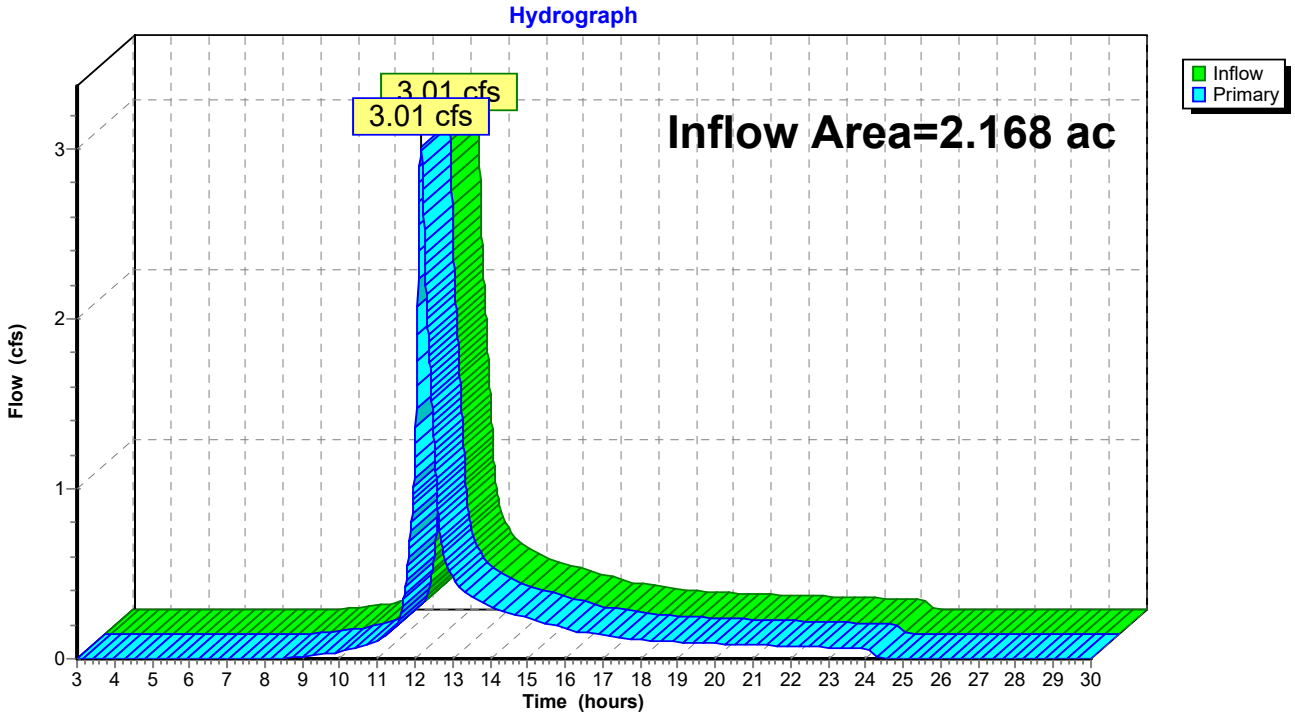


Summary for Link 2L: abutter

Inflow Area = 2.168 ac, 11.05% Impervious, Inflow Depth = 1.58" for 25 Year event
Inflow = 3.01 cfs @ 12.16 hrs, Volume= 0.286 af
Primary = 3.01 cfs @ 12.16 hrs, Volume= 0.286 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs

Link 2L: abutter



Time span=3.00-30.00 hrs, dt=0.01 hrs, 2701 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: from east side of lot to Runoff Area=54,931 sf 13.70% Impervious Runoff Depth=1.32"
Flow Length=321' Tc=10.1 min UI Adjusted CN=46 Runoff=1.31 cfs 0.139 af

Subcatchment 2S: west side of lot to swale Runoff Area=39,517 sf 7.37% Impervious Runoff Depth=4.15"
Flow Length=405' Tc=10.7 min CN=75 Runoff=3.77 cfs 0.314 af

Subcatchment 6S: cb 2 off lot Runoff Area=13,730 sf 26.13% Impervious Runoff Depth=4.47"
Flow Length=125' Slope=0.0500 '/' Tc=9.4 min CN=78 Runoff=1.47 cfs 0.118 af

Subcatchment 7S: kilby street cb 3 Runoff Area=3,064 sf 56.46% Impervious Runoff Depth=4.92"
Tc=6.0 min CN=82 Runoff=0.40 cfs 0.029 af

Pond 12P: cb 2 Peak Elev=33.41' Inflow=6.50 cfs 0.570 af
12.0" Round Culvert n=0.015 L=23.0' S=0.0313 '/' Outflow=6.50 cfs 0.570 af

Pond 13P: cb 3 Peak Elev=31.14' Inflow=6.82 cfs 0.599 af
12.0" Round Culvert n=0.015 L=68.0' S=0.0271 '/' Outflow=6.82 cfs 0.599 af

Link 1L: RTE 3A Inflow=6.82 cfs 0.599 af
Primary=6.82 cfs 0.599 af

Link 2L: abutter Inflow=5.07 cfs 0.452 af
Primary=5.07 cfs 0.452 af

Total Runoff Area = 2.554 ac Runoff Volume = 0.599 af Average Runoff Depth = 2.81"
85.84% Pervious = 2.192 ac 14.16% Impervious = 0.362 ac

Summary for Subcatchment 1S: from east side of lot to swale

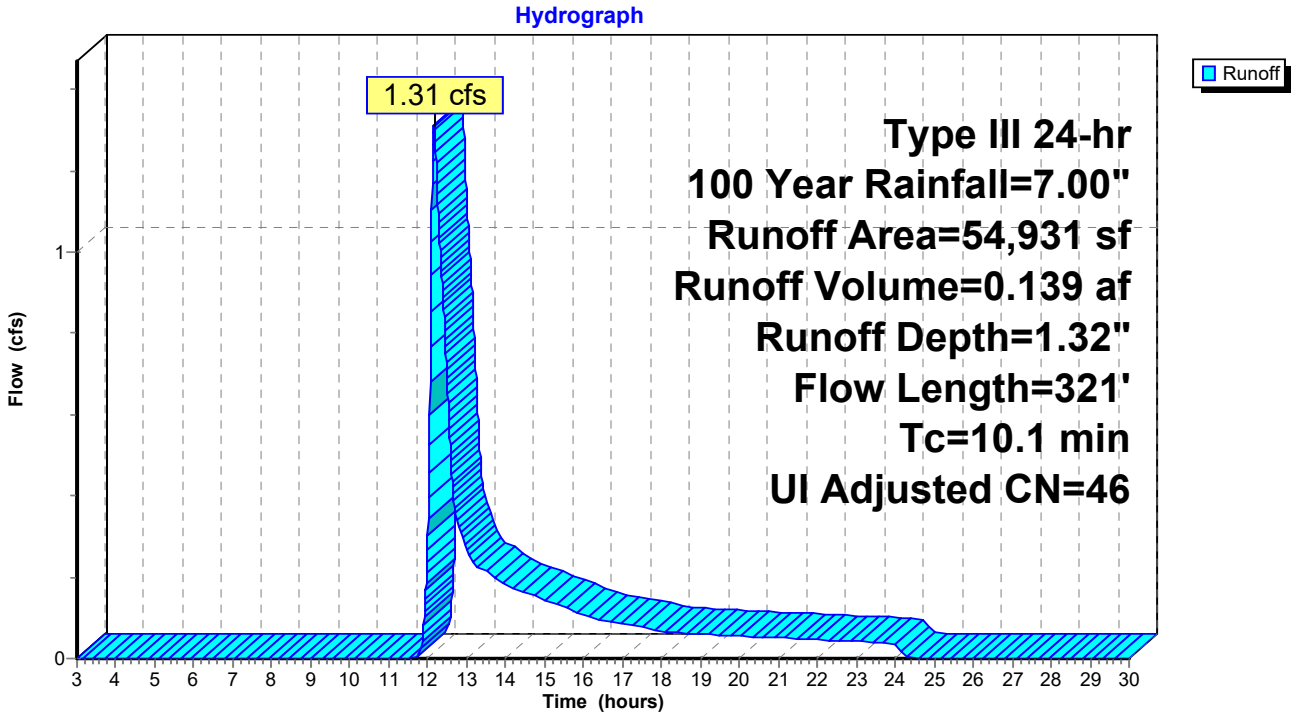
Runoff = 1.31 cfs @ 12.17 hrs, Volume= 0.139 af, Depth= 1.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Rainfall=7.00"

	Area (sf)	CN	Adj	Description
	7,971	39		>75% Grass cover, Good, HSG A
	6,090	32		Woods/grass comb., Good, HSG A
	32,367	39		>75% Grass cover, Good, HSG A
*	980	92		cart path
*	1,280	98		barn
	2,625	98		Paved parking, HSG A
*	1,750	98		Unconnected pavement, HSG A brick
*	1,340	98		ex house, HSG A
	528	98		Roofs, HSG A
	54,931	47	46	Weighted Average, UI Adjusted
	47,408			86.30% Pervious Area
	7,523			13.70% Impervious Area
	1,750			23.26% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	50	0.0180	0.10		**Sheet Flow, a** Grass: Dense n= 0.240 P2= 3.40"
0.2	30	0.0200	2.87		**Shallow Concentrated Flow, b** Paved Kv= 20.3 fps
0.5	70	0.1000	2.21		**Shallow Concentrated Flow, c** Short Grass Pasture Kv= 7.0 fps
0.5	66	0.0850	2.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	105	0.0100	2.84	0.25	**Pipe Channel,** 4.0" Round Area= 0.1 sf Perim= 1.0' r= 0.08' n= 0.010
10.1	321	Total			

Subcatchment 1S: from east side of lot to swale



Summary for Subcatchment 2S: west side of lot to swale

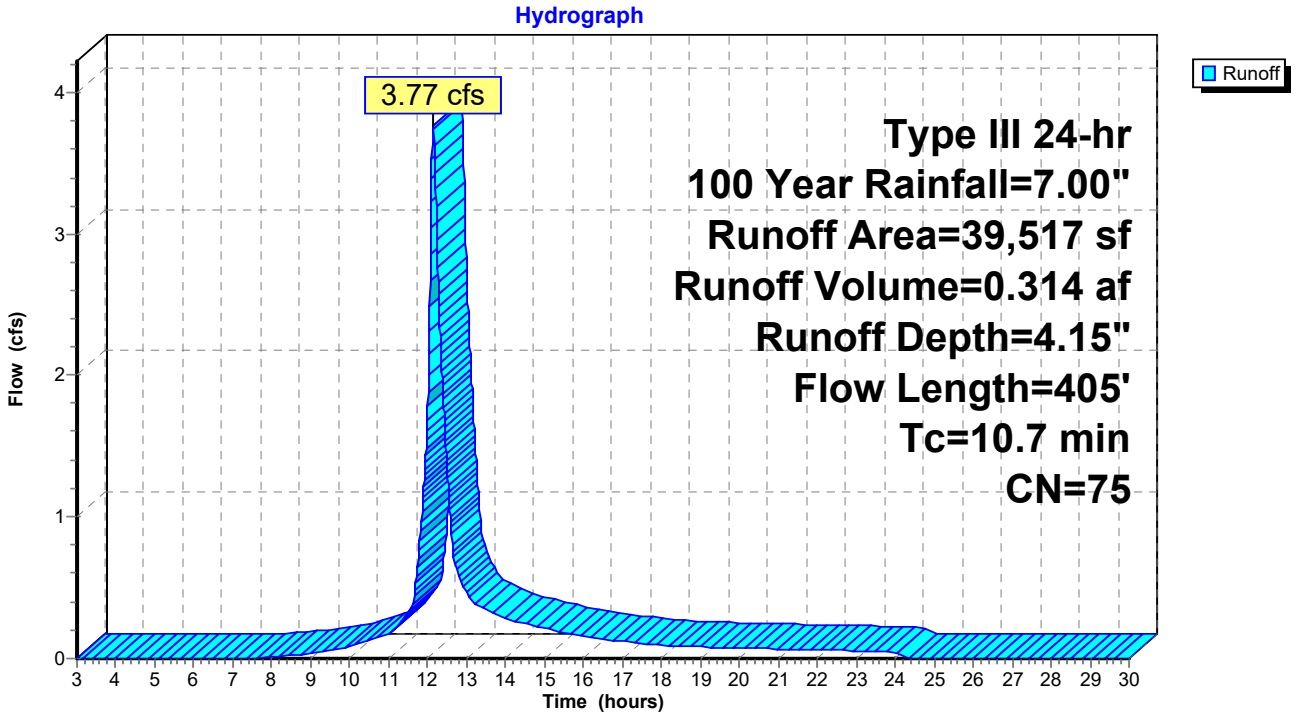
Runoff = 3.77 cfs @ 12.15 hrs, Volume= 0.314 af, Depth= 4.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Rainfall=7.00"

	Area (sf)	CN	Description
*	2,912	98	kilby street
*	1,335	92	cart path
	3,109	58	Woods/grass comb., Good, HSG B
	9,680	61	>75% Grass cover, Good, HSG B
	19,696	80	>75% Grass cover, Good, HSG D
	2,785	79	Woods/grass comb., Good, HSG D
	39,517	75	Weighted Average
	36,605		92.63% Pervious Area
	2,912		7.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	50	0.0200	0.10		**Sheet Flow, a** Grass: Dense n= 0.240 P2= 3.40"
1.3	98	0.0330	1.27		**Shallow Concentrated Flow, b** Short Grass Pasture Kv= 7.0 fps
1.4	257	0.0120	3.11	0.27	**Pipe Channel, subdrain** 4.0" Round Area= 0.1 sf Perim= 1.0' r= 0.08' n= 0.010
10.7	405	Total			

Subcatchment 2S: west side of lot to swale



Summary for Subcatchment 6S: cb 2 off lot

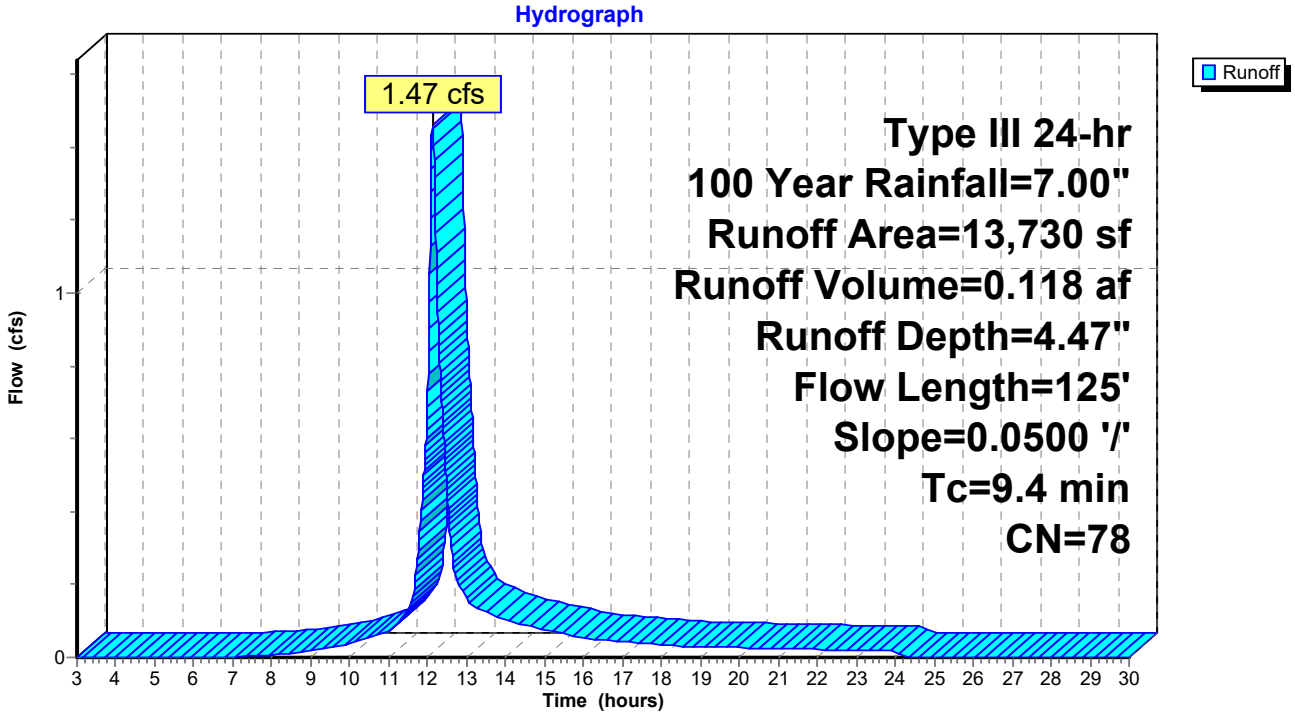
Runoff = 1.47 cfs @ 12.13 hrs, Volume= 0.118 af, Depth= 4.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Rainfall=7.00"

	Area (sf)	CN	Description
	3,587	98	Paved parking, HSG B
	6,575	77	Woods, Good, HSG D
*	3,568	61	>75% Grass cover, Good, HSG B shoulder
	13,730	78	Weighted Average
	10,143		73.87% Pervious Area
	3,587		26.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	50	0.0500	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
1.1	75	0.0500	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
9.4	125	Total			

Subcatchment 6S: cb 2 off lot



Summary for Subcatchment 7S: kilby street cb 3

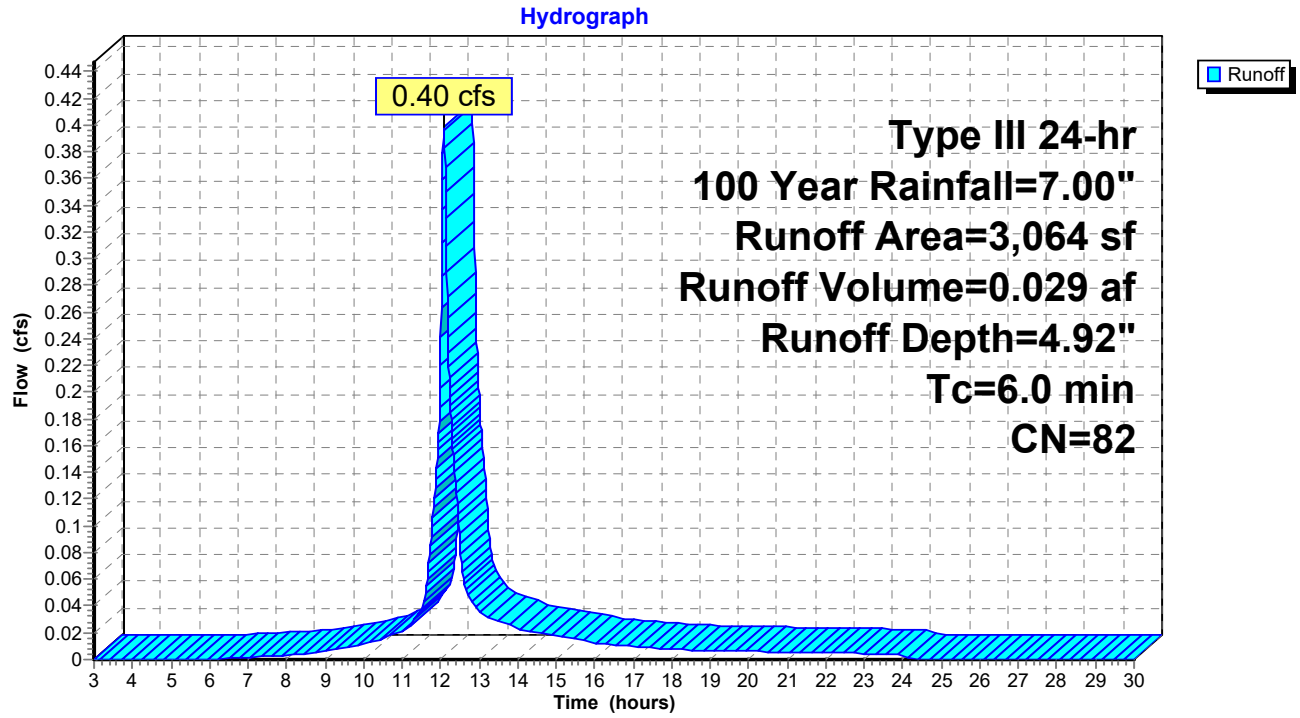
Runoff = 0.40 cfs @ 12.09 hrs, Volume= 0.029 af, Depth= 4.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Rainfall=7.00"

Area (sf)	CN	Description
1,730	98	Paved parking, HSG C
1,334	61	>75% Grass cover, Good, HSG B
3,064	82	Weighted Average
1,334		43.54% Pervious Area
1,730		56.46% Impervious Area

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

Subcatchment 7S: kilby street cb 3



Summary for Pond 12P: cb 2

[57] Hint: Peaked at 33.41' (Flood elevation advised)

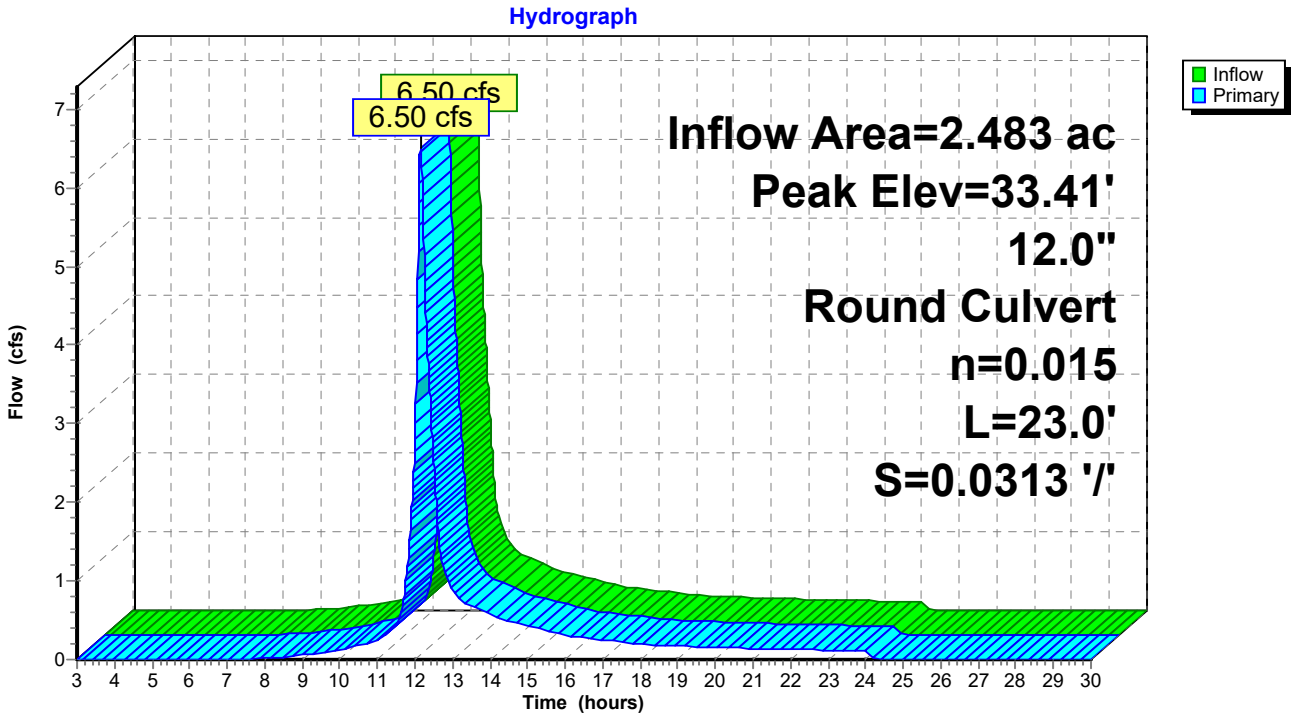
Inflow Area = 2.483 ac, 12.96% Impervious, Inflow Depth = 2.75" for 100 Year event
Inflow = 6.50 cfs @ 12.15 hrs, Volume= 0.570 af
Outflow = 6.50 cfs @ 12.15 hrs, Volume= 0.570 af, Atten= 0%, Lag= 0.0 min
Primary = 6.50 cfs @ 12.15 hrs, Volume= 0.570 af

Routing by Stor-Ind method, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 33.41' @ 12.15 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	29.95'	**12.0" Round Culvert** L= 23.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 29.95' / 29.23' S= 0.0313 '/' Cc= 0.900 n= 0.015, Flow Area= 0.79 sf

Primary OutFlow Max=6.50 cfs @ 12.15 hrs HW=33.40' (Free Discharge)
1=Culvert (Inlet Controls 6.50 cfs @ 8.28 fps)

Pond 12P: cb 2



Summary for Pond 13P: cb 3

[57] Hint: Peaked at 31.14' (Flood elevation advised)
[79] Warning: Submerged Pond 12P Primary device # 1 INLET by 1.18'

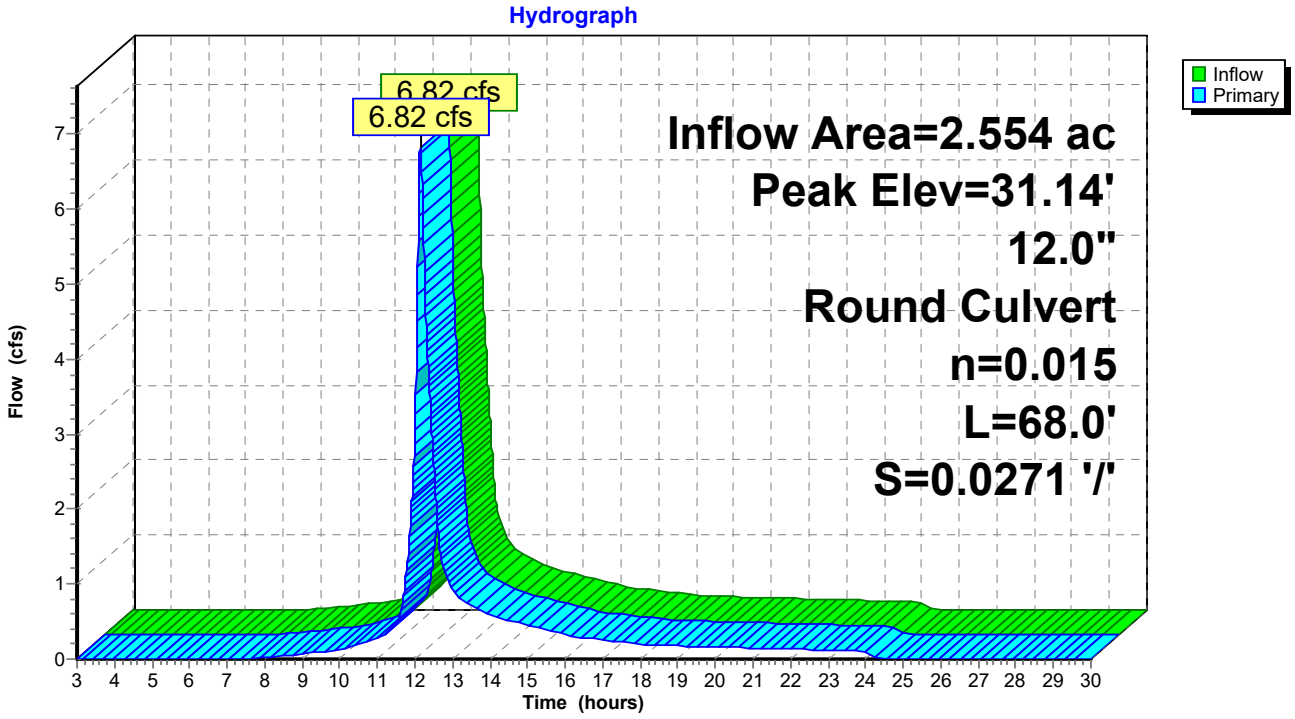
Inflow Area = 2.554 ac, 14.16% Impervious, Inflow Depth = 2.81" for 100 Year event
Inflow = 6.82 cfs @ 12.14 hrs, Volume= 0.599 af
Outflow = 6.82 cfs @ 12.14 hrs, Volume= 0.599 af, Atten= 0%, Lag= 0.0 min
Primary = 6.82 cfs @ 12.14 hrs, Volume= 0.599 af

Routing by Stor-Ind method, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 31.14' @ 12.14 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	26.89'	**12.0" Round Culvert** L= 68.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 26.89' / 25.05' S= 0.0271 '/' Cc= 0.900 n= 0.015, Flow Area= 0.79 sf

Primary OutFlow Max=6.81 cfs @ 12.14 hrs HW=31.13' (Free Discharge)
1=Culvert (Barrel Controls 6.81 cfs @ 8.68 fps)

Pond 13P: cb 3

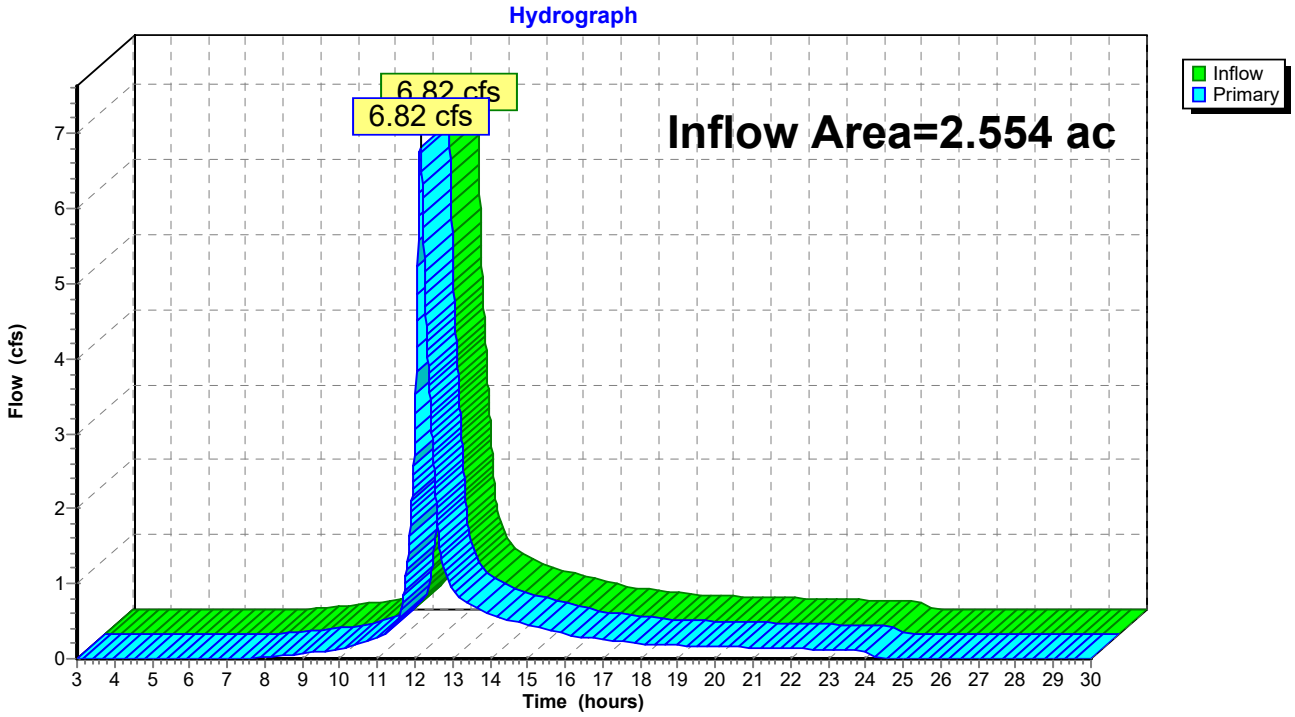


Summary for Link 1L: RTE 3A

Inflow Area = 2.554 ac, 14.16% Impervious, Inflow Depth = 2.81" for 100 Year event
Inflow = 6.82 cfs @ 12.14 hrs, Volume= 0.599 af
Primary = 6.82 cfs @ 12.14 hrs, Volume= 0.599 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs

Link 1L: RTE 3A

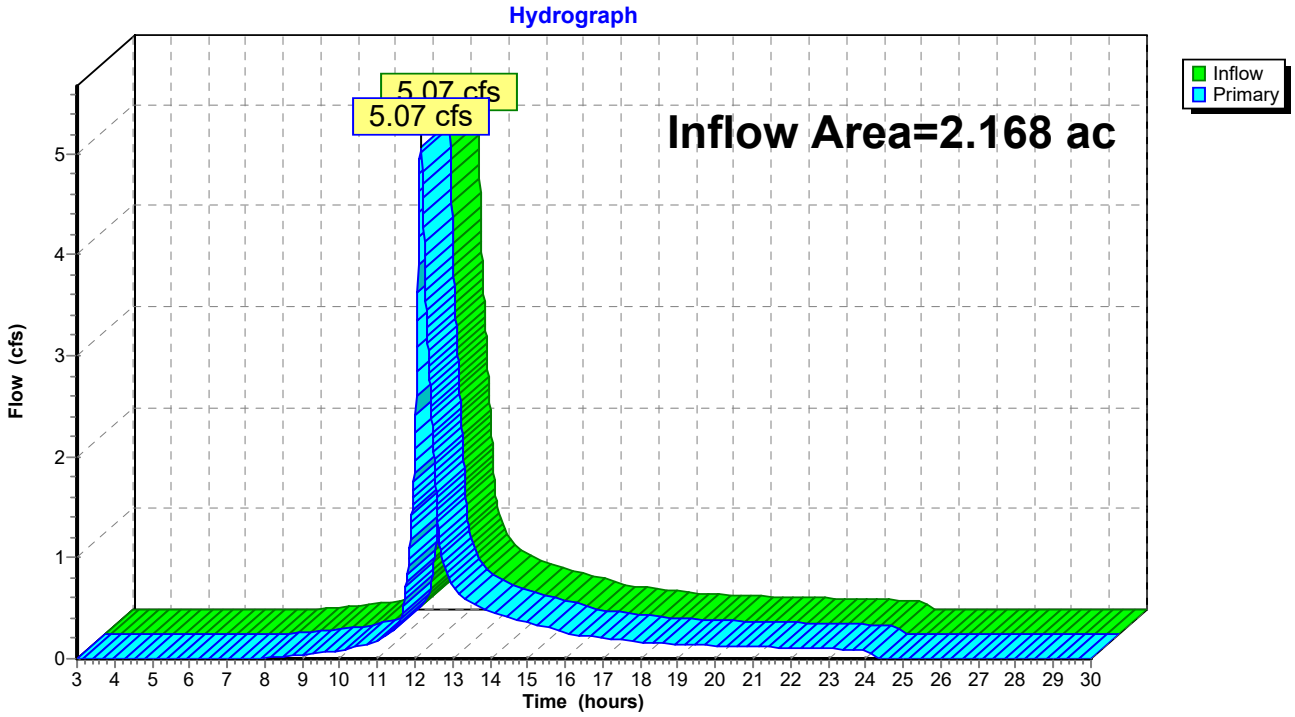


Summary for Link 2L: abutter

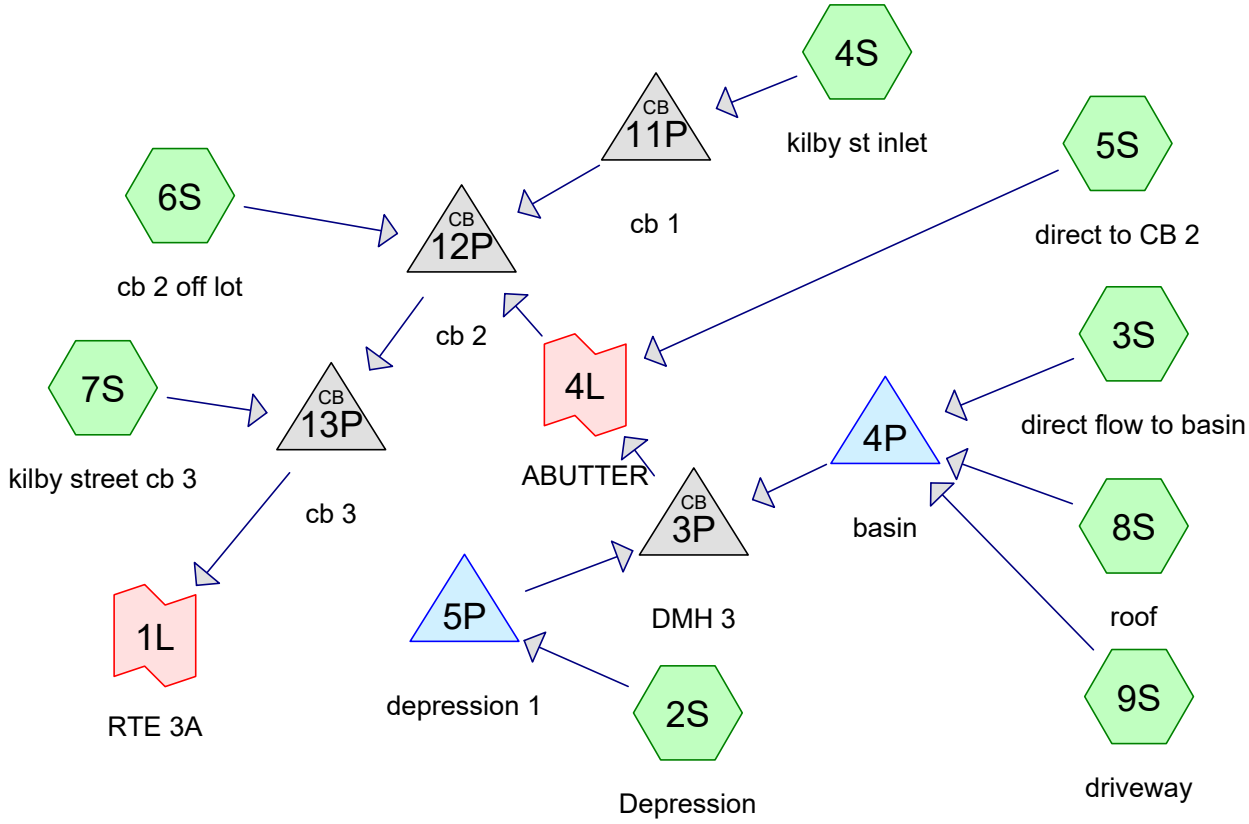
Inflow Area = 2.168 ac, 11.05% Impervious, Inflow Depth = 2.50" for 100 Year event
Inflow = 5.07 cfs @ 12.15 hrs, Volume= 0.452 af
Primary = 5.07 cfs @ 12.15 hrs, Volume= 0.452 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs

Link 2L: abutter



Proposed Conditions
Hydro-CAD printout



Subcat Reach Pond Link

Routing Diagram for city capital-pc
Prepared by James Engineering, Inc., Printed 7/13/2021

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.911	39	>75% Grass cover, Good, HSG A (2S, 3S, 5S)
0.200	61	>75% Grass cover, Good, HSG B (2S, 4S, 5S, 7S)
0.110	61	>75% Grass cover, Good, HSG B shoulder (4S, 6S)
0.344	80	>75% Grass cover, Good, HSG D (2S, 3S, 4S, 5S)
0.005	98	PORCH (8S)
0.026	98	Paved parking, HSG A (5S)
0.207	98	Paved parking, HSG B (4S, 6S, 9S)
0.040	98	Paved parking, HSG C (7S)
0.023	98	Roofs, HSG A (2S)
0.015	98	Roofs, HSG A barn (3S)
0.085	98	Roofs, HSG B (8S)
0.015	98	Unconnected roofs, HSG A barn (5S)
0.034	98	Water Surface, 0% imp, HSG A (3S)
0.023	55	Woods, Good, HSG B (5S)
0.201	77	Woods, Good, HSG D (5S, 6S)
0.140	32	Woods/grass comb., Good, HSG A (5S)
0.069	58	Woods/grass comb., Good, HSG B (4S)
0.012	98	abutters roof HSG A (5S)
0.040	98	brick patio, HSG A (3S)
0.032	98	ex drive HSG A (3S)
0.013	98	ex house, HSG A (3S)
0.011	96	patio (3S)
2.554	**63**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
1.259	HSG A	2S, 3S, 5S
0.694	HSG B	2S, 4S, 5S, 6S, 7S, 8S, 9S
0.040	HSG C	7S
0.544	HSG D	2S, 3S, 4S, 5S, 6S
0.016	Other	3S, 8S
2.554		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.911	0.310	0.000	0.344	0.000	1.565	>75% Grass cover, Good	2S, 3S, 4S, 5S, 6S, 7S
0.000	0.000	0.000	0.000	0.005	0.005	PORCH	8S
0.026	0.207	0.040	0.000	0.000	0.273	Paved parking	4S, 5S, 6S, 7S, 9S
0.038	0.085	0.000	0.000	0.000	0.122	Roofs	2S, 3S, 8S
0.015	0.000	0.000	0.000	0.000	0.015	Unconnected roofs	5S
0.034	0.000	0.000	0.000	0.000	0.034	Water Surface, 0% imp	3S
0.000	0.023	0.000	0.201	0.000	0.224	Woods, Good	5S, 6S
0.140	0.069	0.000	0.000	0.000	0.209	Woods/grass comb., Good	4S, 5S
0.012	0.000	0.000	0.000	0.000	0.012	abutters roof	5S
0.040	0.000	0.000	0.000	0.000	0.040	brick patio	3S
0.032	0.000	0.000	0.000	0.000	0.032	ex drive	3S
0.013	0.000	0.000	0.000	0.000	0.013	ex house	3S
0.000	0.000	0.000	0.000	0.011	0.011	patio	3S
1.259	**0.694**	**0.040**	**0.544**	**0.016**	**2.554**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	3P	34.18	33.50	34.0	0.0200	0.010	8.0	0.0	0.0
2	4P	37.20	36.50	38.0	0.0184	0.010	8.0	0.0	0.0
3	5P	38.00	37.60	40.0	0.0100	0.010	6.0	0.0	0.0
4	11P	35.00	29.79	167.0	0.0312	0.010	12.0	0.0	0.0
5	12P	29.95	29.23	23.0	0.0313	0.015	12.0	0.0	0.0
6	13P	26.89	25.05	68.0	0.0271	0.015	12.0	0.0	0.0

Time span=3.00-30.00 hrs, dt=0.01 hrs, 2701 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 2S: Depression Runoff Area=14,800 sf 6.77% Impervious Runoff Depth=0.28"
Flow Length=135' Tc=8.0 min CN=54 Runoff=0.04 cfs 0.008 af

Subcatchment 3S: direct flow to basin Runoff Area=28,909 sf 14.95% Impervious Runoff Depth=0.45"
Flow Length=91' Tc=9.1 min CN=59 Runoff=0.19 cfs 0.025 af

Subcatchment 4S: kilby st inlet Runoff Area=14,267 sf 25.28% Impervious Runoff Depth=1.06"
Flow Length=148' Tc=9.0 min CN=72 Runoff=0.34 cfs 0.029 af

Subcatchment 5S: direct to CB 2 Runoff Area=30,734 sf 7.44% Impervious Runoff Depth=0.22"
Flow Length=298' Tc=10.6 min UI Adjusted CN=52 Runoff=0.05 cfs 0.013 af

Subcatchment 6S: cb 2 off lot Runoff Area=13,730 sf 26.13% Impervious Runoff Depth=1.42"
Flow Length=126' Slope=0.0500 '/' Tc=9.6 min CN=78 Runoff=0.46 cfs 0.037 af

Subcatchment 7S: kilby street cb 3 Runoff Area=3,064 sf 56.46% Impervious Runoff Depth=1.70"
Tc=6.0 min CN=82 Runoff=0.14 cfs 0.010 af

Subcatchment 8S: roof Runoff Area=3,898 sf 100.00% Impervious Runoff Depth>3.15"
Tc=6.0 min CN=98 Runoff=0.30 cfs 0.024 af

Subcatchment 9S: driveway Runoff Area=1,837 sf 100.00% Impervious Runoff Depth>3.15"
Tc=6.0 min CN=98 Runoff=0.14 cfs 0.011 af

Pond 3P: DMH 3 Peak Elev=34.48' Inflow=0.22 cfs 0.056 af
8.0" Round Culvert n=0.010 L=34.0' S=0.0200 '/' Outflow=0.22 cfs 0.056 af

Pond 4P: basin Peak Elev=37.49' Storage=1,006 cf Inflow=0.56 cfs 0.060 af
Outflow=0.21 cfs 0.048 af

Pond 5P: depression 1 Peak Elev=38.07' Storage=58 cf Inflow=0.04 cfs 0.008 af
6.0" Round Culvert n=0.010 L=40.0' S=0.0100 '/' Outflow=0.02 cfs 0.008 af

Pond 11P: cb 1 Peak Elev=35.29' Inflow=0.34 cfs 0.029 af
12.0" Round Culvert n=0.010 L=167.0' S=0.0312 '/' Outflow=0.34 cfs 0.029 af

Pond 12P: cb 2 Peak Elev=30.43' Inflow=0.89 cfs 0.135 af
12.0" Round Culvert n=0.015 L=23.0' S=0.0313 '/' Outflow=0.89 cfs 0.135 af

Pond 13P: cb 3 Peak Elev=27.41' Inflow=1.01 cfs 0.145 af
12.0" Round Culvert n=0.015 L=68.0' S=0.0271 '/' Outflow=1.01 cfs 0.145 af

Link 1L: RTE 3A Inflow=1.01 cfs 0.145 af
Primary=1.01 cfs 0.145 af

Link 4L: ABUTTER Inflow=0.27 cfs 0.069 af
Primary=0.27 cfs 0.069 af

Total Runoff Area = 2.554 ac Runoff Volume = 0.157 af Average Runoff Depth = 0.74"
79.98% Pervious = 2.042 ac 20.02% Impervious = 0.511 ac

Summary for Subcatchment 2S: Depression

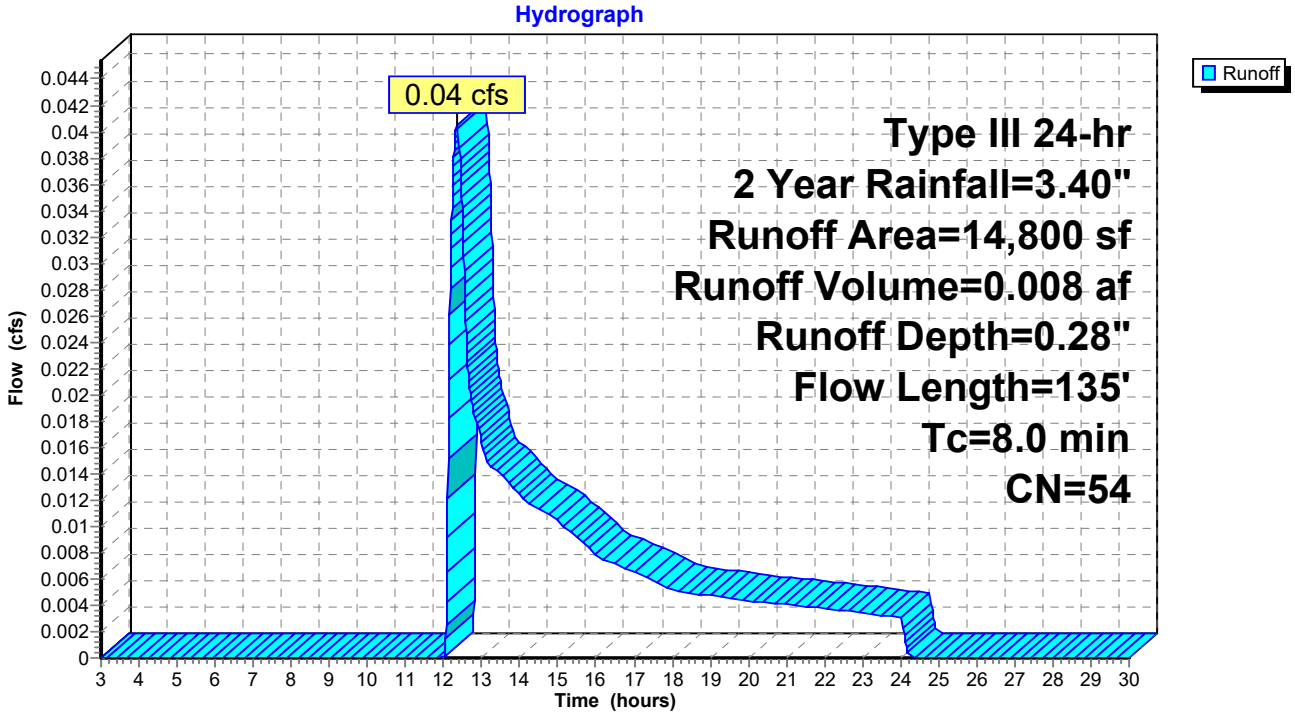
Runoff = 0.04 cfs @ 12.35 hrs, Volume= 0.008 af, Depth= 0.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Rainfall=3.40"

Area (sf)	CN	Description
9,320	39	>75% Grass cover, Good, HSG A
1,106	61	>75% Grass cover, Good, HSG B
1,002	98	Roofs, HSG A
3,372	80	>75% Grass cover, Good, HSG D
14,800	54	Weighted Average
13,798		93.23% Pervious Area
1,002		6.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	50	0.0280	0.12		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
0.8	85	0.0600	1.71		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.0	135	Total			

Subcatchment 2S: Depression



Summary for Subcatchment 3S: direct flow to basin

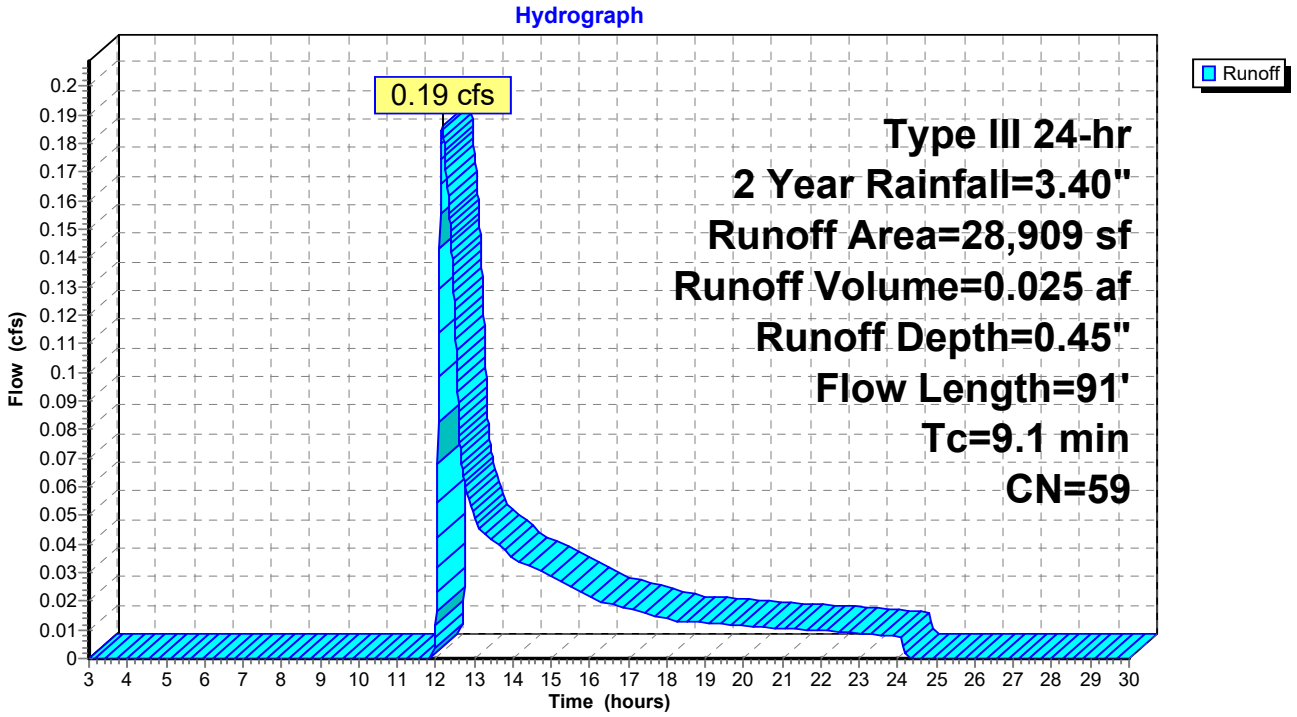
Runoff = 0.19 cfs @ 12.18 hrs, Volume= 0.025 af, Depth= 0.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Rainfall=3.40"

	Area (sf)	CN	Description
*	500	96	patio
	1,470	98	Water Surface, 0% imp, HSG A
*	644	98	Roofs, HSG A barn
	17,866	39	>75% Grass cover, Good, HSG A
	4,751	80	>75% Grass cover, Good, HSG D
*	1,750	98	brick patio, HSG A
*	550	98	ex house, HSG A
*	1,378	98	ex drive HSG A
	28,909	59	Weighted Average
	24,587		85.05% Pervious Area
	4,322		14.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0180	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
0.6	41	0.0300	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.1	91	Total			

Subcatchment 3S: direct flow to basin



Summary for Subcatchment 4S: kilby st inlet

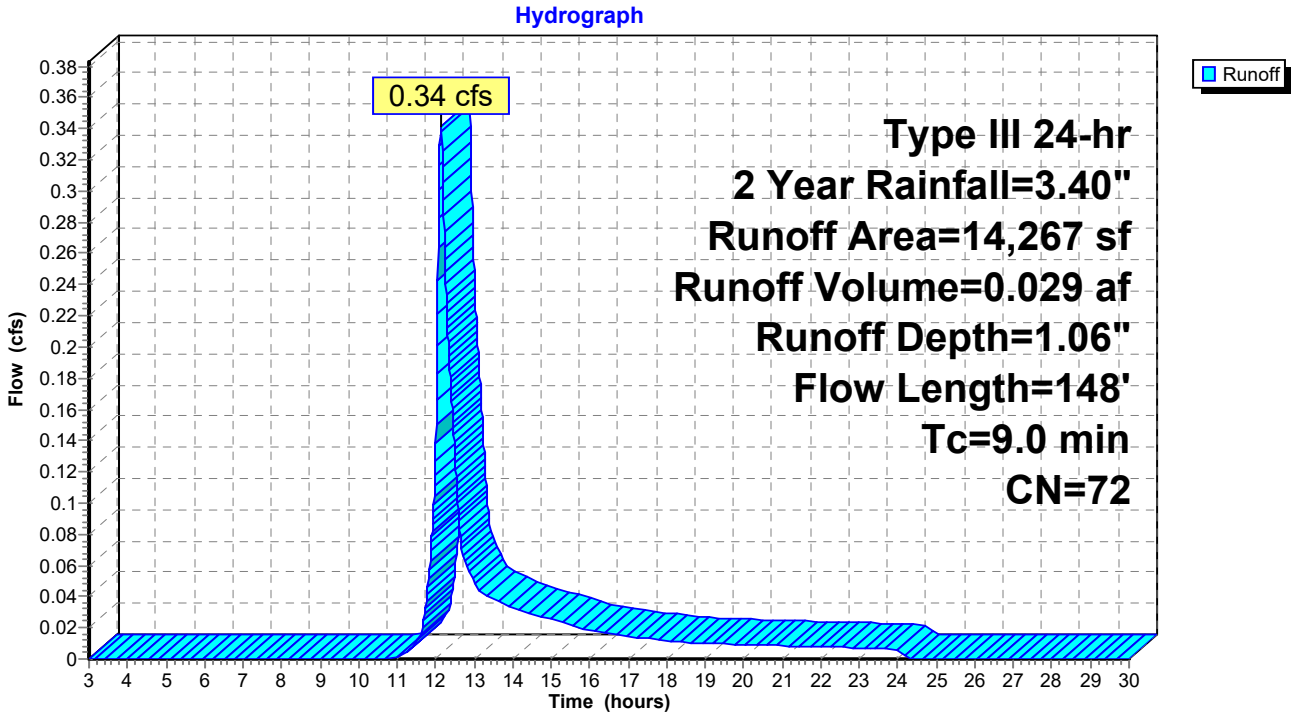
Runoff = 0.34 cfs @ 12.14 hrs, Volume= 0.029 af, Depth= 1.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Rainfall=3.40"

	Area (sf)	CN	Description
	2,912	98	Paved parking, HSG B
	2,997	58	Woods/grass comb., Good, HSG B
	4,393	61	>75% Grass cover, Good, HSG B
	2,043	80	>75% Grass cover, Good, HSG D
	694	98	Paved parking, HSG B
*	1,228	61	>75% Grass cover, Good, HSG B shoulder
	14,267	72	Weighted Average
	10,661		74.72% Pervious Area
	3,606		25.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	50	0.0250	0.11		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
1.5	98	0.0230	1.06		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.0	148	Total			

Subcatchment 4S: kilby st inlet



Summary for Subcatchment 5S: direct to CB 2

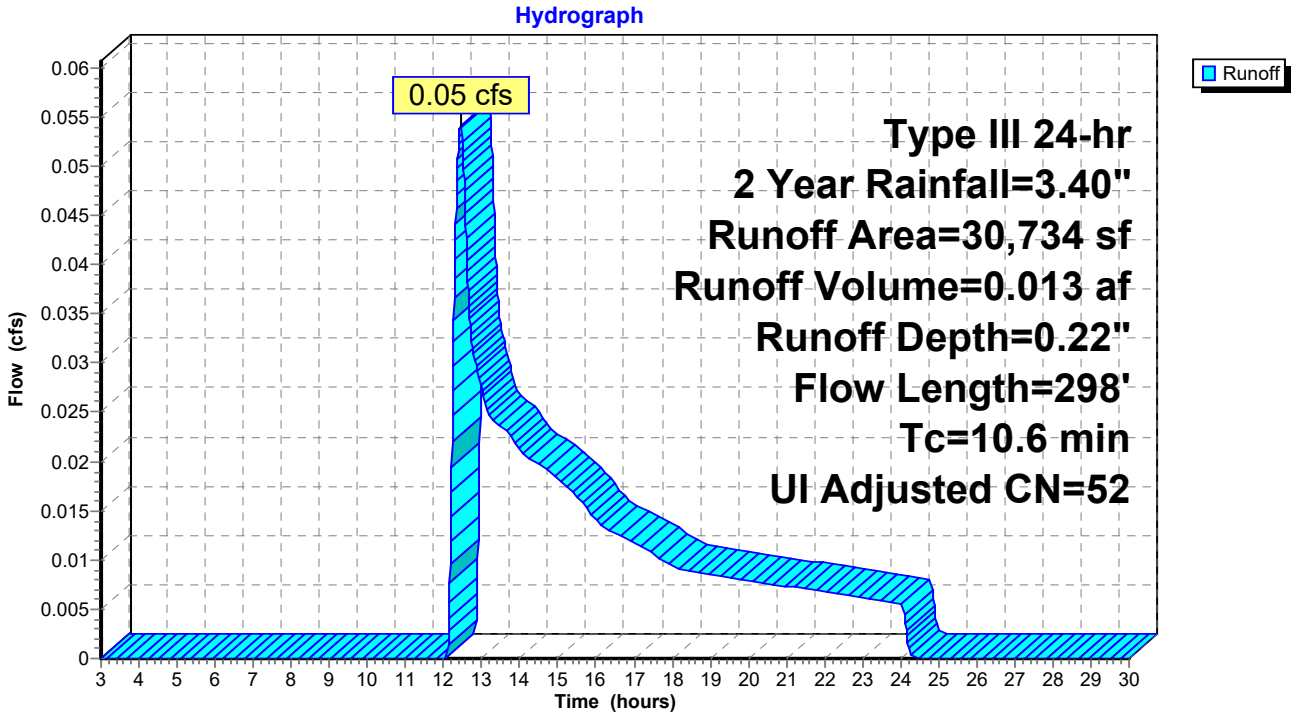
Runoff = 0.05 cfs @ 12.45 hrs, Volume= 0.013 af, Depth= 0.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Rainfall=3.40"

	Area (sf)	CN	Adj	Description
	4,798	80		>75% Grass cover, Good, HSG D
	1,885	61		>75% Grass cover, Good, HSG B
	2,173	77		Woods, Good, HSG D
	1,008	55		Woods, Good, HSG B
*	640	98		Unconnected roofs, HSG A barn
	1,118	98		Paved parking, HSG A
	5,973	39		>75% Grass cover, Good, HSG A
	6,090	32		Woods/grass comb., Good, HSG A
*	528	98		abutters roof HSG A
	6,521	39		>75% Grass cover, Good, HSG A
	30,734	53	52	Weighted Average, UI Adjusted
	28,448			92.56% Pervious Area
	2,286			7.44% Impervious Area
	640			28.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	50	0.0300	0.12		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
1.9	140	0.0300	1.21		**Shallow Concentrated Flow, b** Short Grass Pasture Kv= 7.0 fps
1.7	108	0.0470	1.08		**Shallow Concentrated Flow, c** Woodland Kv= 5.0 fps
10.6	298	Total			

Subcatchment 5S: direct to CB 2



Summary for Subcatchment 6S: cb 2 off lot

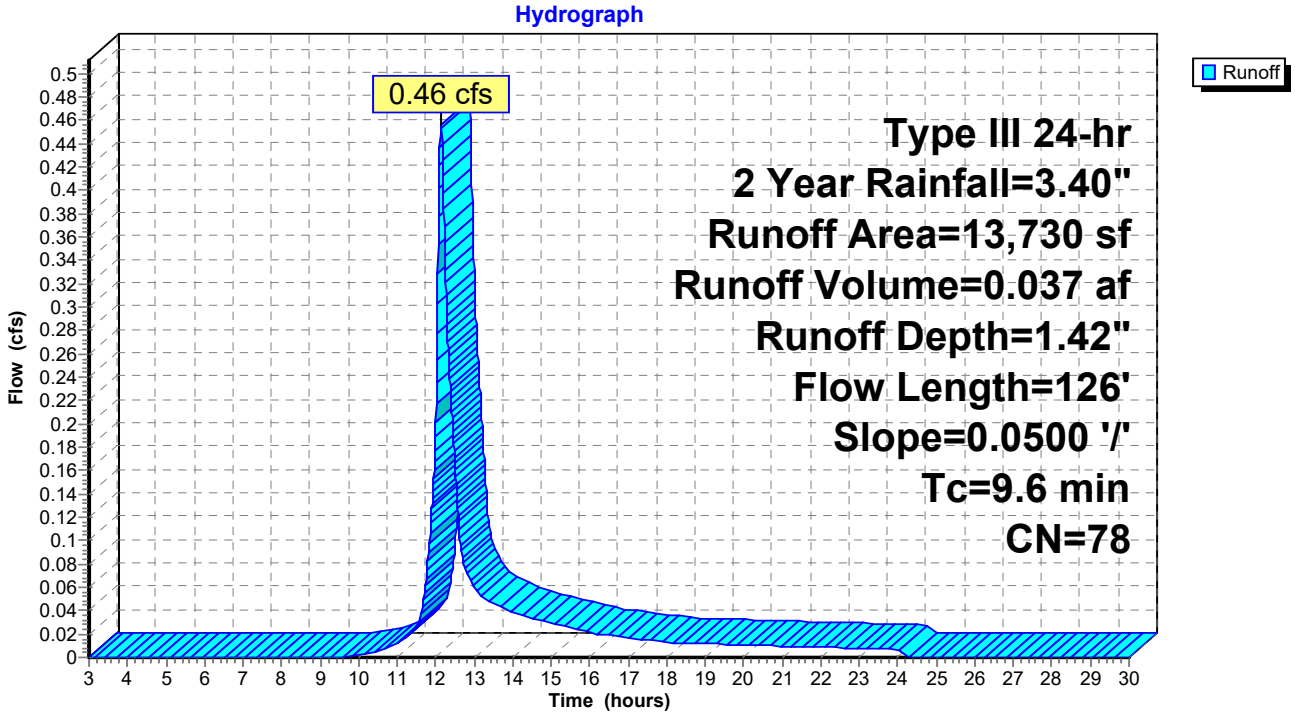
Runoff = 0.46 cfs @ 12.14 hrs, Volume= 0.037 af, Depth= 1.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Rainfall=3.40"

	Area (sf)	CN	Description
	3,587	98	Paved parking, HSG B
	6,575	77	Woods, Good, HSG D
*	3,568	61	>75% Grass cover, Good, HSG B shoulder
	13,730	78	Weighted Average
	10,143		73.87% Pervious Area
	3,587		26.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0500	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
1.1	76	0.0500	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
9.6	126	Total			

Subcatchment 6S: cb 2 off lot



Summary for Subcatchment 7S: kilby street cb 3

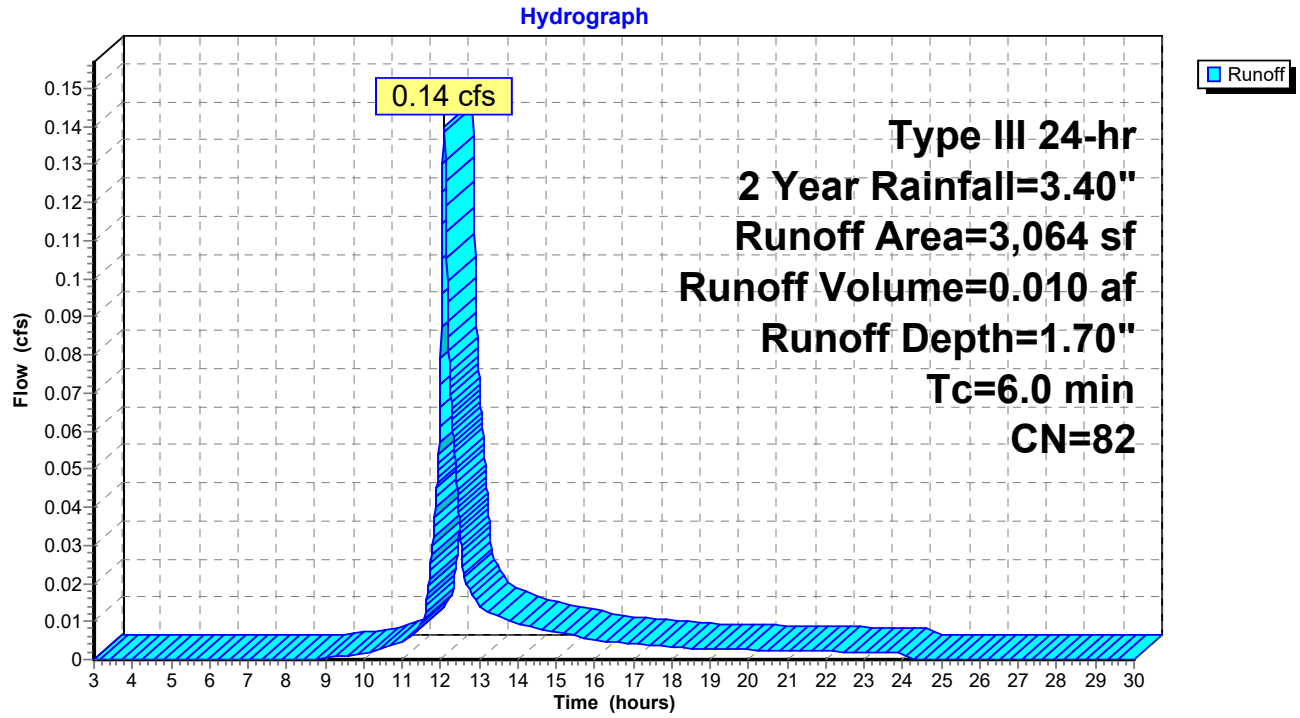
Runoff = 0.14 cfs @ 12.09 hrs, Volume= 0.010 af, Depth= 1.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Rainfall=3.40"

Area (sf)	CN	Description
1,730	98	Paved parking, HSG C
1,334	61	>75% Grass cover, Good, HSG B
3,064	82	Weighted Average
1,334		43.54% Pervious Area
1,730		56.46% Impervious Area

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

Subcatchment 7S: kilby street cb 3



Summary for Subcatchment 8S: roof

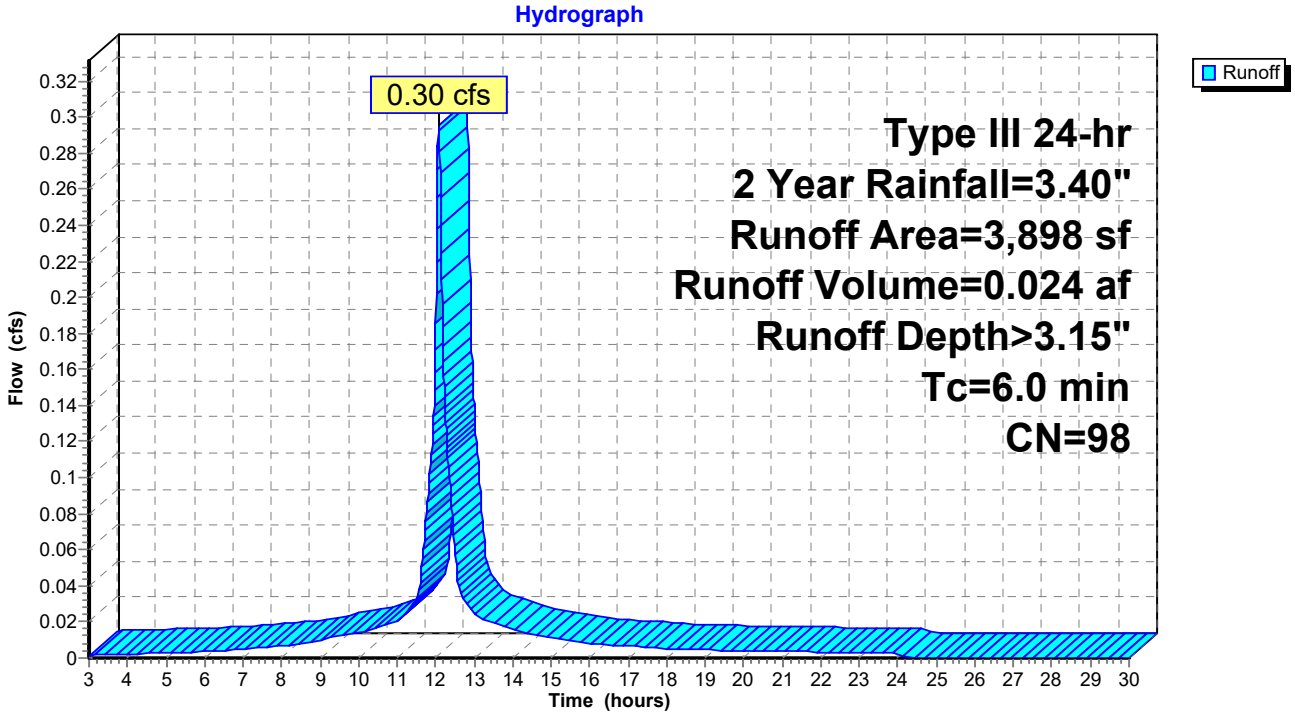
Runoff = 0.30 cfs @ 12.08 hrs, Volume= 0.024 af, Depth> 3.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Rainfall=3.40"

	Area (sf)	CN	Description
	3,681	98	Roofs, HSG B
*	217	98	PORCH
	3,898	98	Weighted Average
	3,898		100.00% Impervious Area

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

Subcatchment 8S: roof



Summary for Subcatchment 9S: driveway

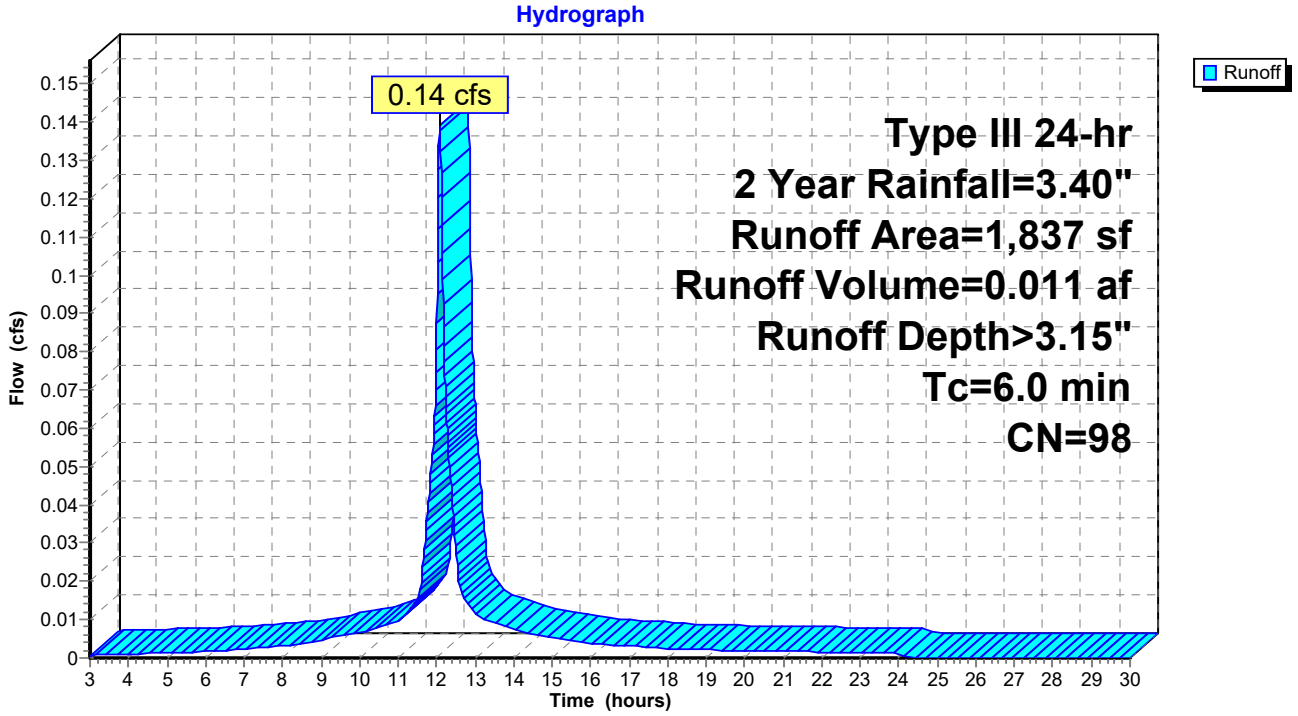
Runoff = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af, Depth> 3.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Rainfall=3.40"

Area (sf)	CN	Description
1,837	98	Paved parking, HSG B
1,837		100.00% Impervious Area

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

Subcatchment 9S: driveway



Summary for Pond 3P: DMH 3

[57] Hint: Peaked at 34.48' (Flood elevation advised)

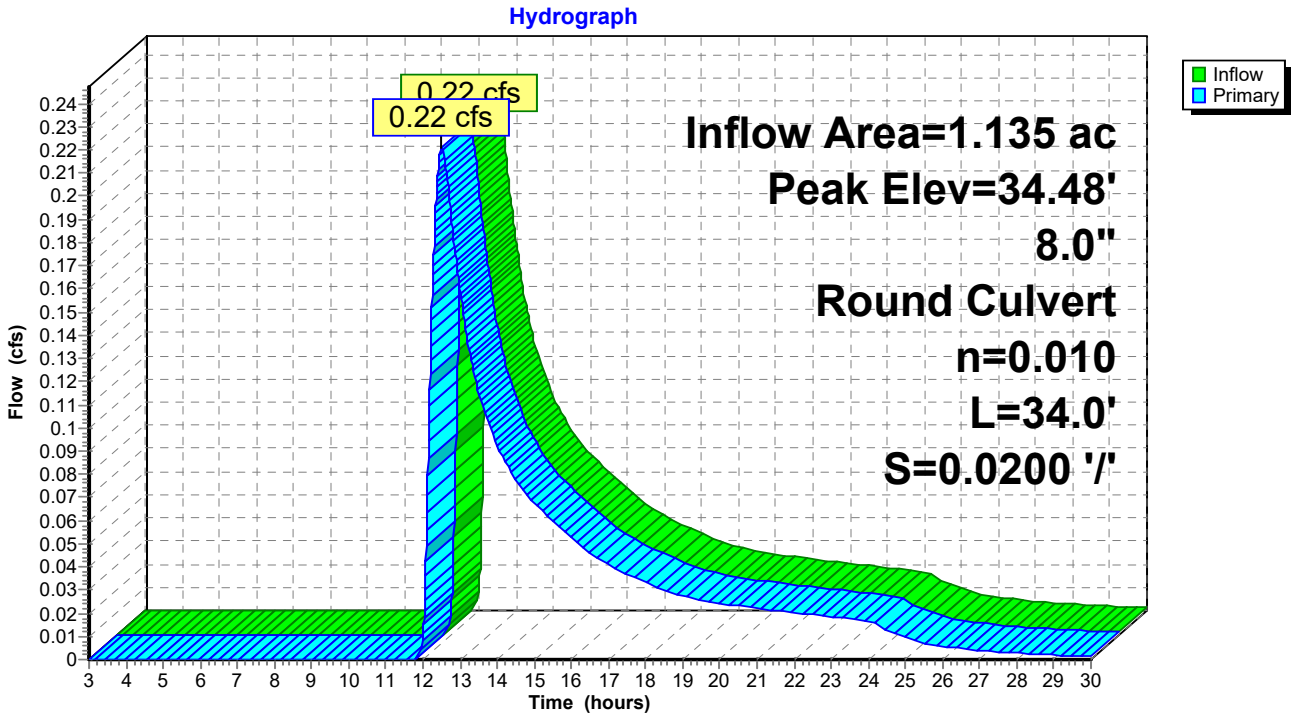
Inflow Area = 1.135 ac, 22.37% Impervious, Inflow Depth > 0.59" for 2 Year event
Inflow = 0.22 cfs @ 12.51 hrs, Volume= 0.056 af
Outflow = 0.22 cfs @ 12.51 hrs, Volume= 0.056 af, Atten= 0%, Lag= 0.0 min
Primary = 0.22 cfs @ 12.51 hrs, Volume= 0.056 af

Routing by Stor-Ind method, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 34.48' @ 12.51 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	34.18'	**8.0" Round Culvert** L= 34.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.18' / 33.50' S= 0.0200 '/' Cc= 0.900 n= 0.010, Flow Area= 0.35 sf

Primary OutFlow Max=0.22 cfs @ 12.51 hrs HW=34.48' (Free Discharge)
1=Culvert (Inlet Controls 0.22 cfs @ 1.47 fps)

Pond 3P: DMH 3



Summary for Pond 4P: basin

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.795 ac, 29.03% Impervious, Inflow Depth > 0.90" for 2 Year event
Inflow = 0.56 cfs @ 12.11 hrs, Volume= 0.060 af
Outflow = 0.21 cfs @ 12.50 hrs, Volume= 0.048 af, Atten= 62%, Lag= 23.4 min
Primary = 0.21 cfs @ 12.50 hrs, Volume= 0.048 af

Routing by Stor-Ind method, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 37.49' @ 12.50 hrs Surf.Area= 1,993 sf Storage= 1,006 cf

Plug-Flow detention time= 208.4 min calculated for 0.048 af (81% of inflow)
Center-of-Mass det. time= 122.9 min (948.9 - 826.0)

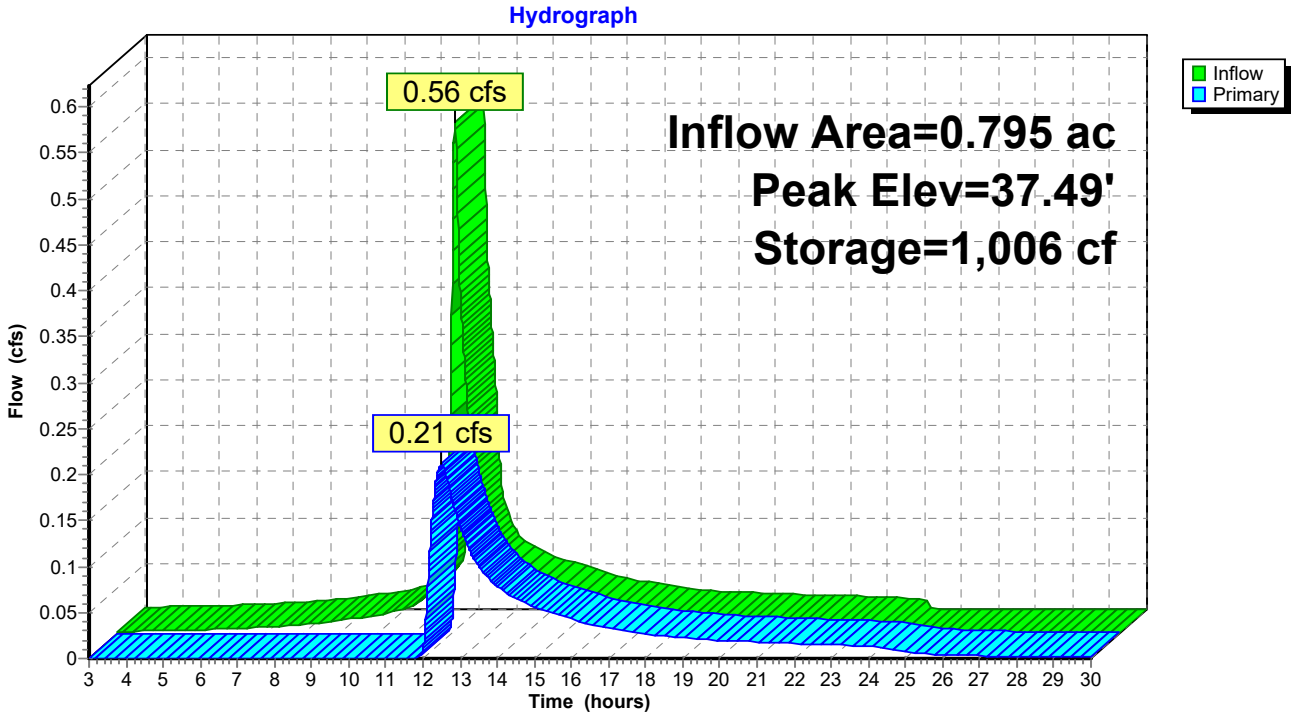
Volume	Invert	Avail.Storage	Storage Description
#1	36.80'	5,892 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
36.80	114	0	0
37.00	1,468	158	158
38.00	2,540	2,004	2,162
39.00	4,920	3,730	5,892

Device	Routing	Invert	Outlet Devices
#1	Primary	37.20'	**8.0" Round Culvert** L= 38.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 37.20' / 36.50' S= 0.0184 '/' Cc= 0.900 n= 0.010, Flow Area= 0.35 sf
#2	Primary	38.20'	**8.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.21 cfs @ 12.50 hrs HW=37.49' (Free Discharge)
1=Culvert (Inlet Controls 0.21 cfs @ 1.45 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 4P: basin



Summary for Pond 5P: depression 1

Inflow Area = 0.340 ac, 6.77% Impervious, Inflow Depth = 0.28" for 2 Year event
Inflow = 0.04 cfs @ 12.35 hrs, Volume= 0.008 af
Outflow = 0.02 cfs @ 13.06 hrs, Volume= 0.008 af, Atten= 62%, Lag= 42.4 min
Primary = 0.02 cfs @ 13.06 hrs, Volume= 0.008 af

Routing by Stor-Ind method, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 38.07' @ 13.06 hrs Surf.Area= 836 sf Storage= 58 cf

Plug-Flow detention time= 86.4 min calculated for 0.008 af (99% of inflow)
Center-of-Mass det. time= 83.0 min (1,036.0 - 953.1)

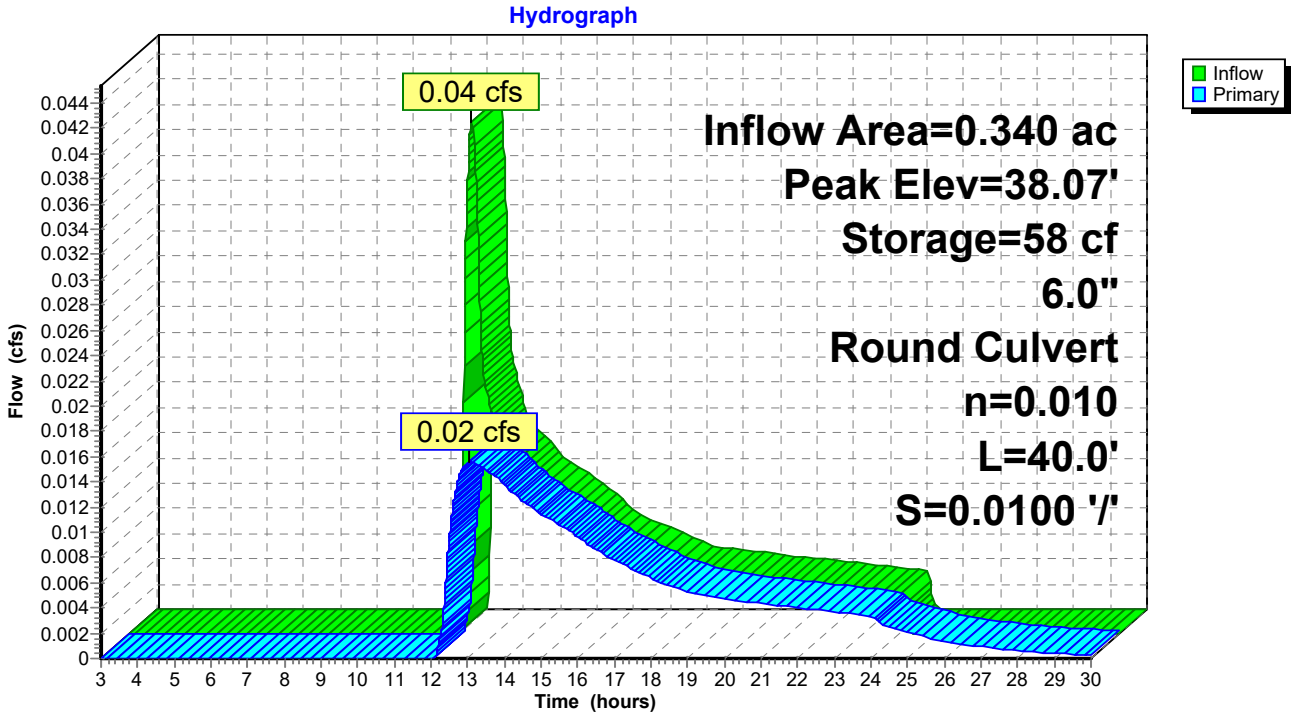
Volume	Invert	Avail.Storage	Storage Description
#1	38.00'	3,872 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
38.00	815	0	0
39.00	1,109	962	962
40.00	1,480	1,295	2,257
41.00	1,750	1,615	3,872

Device	Routing	Invert	Outlet Devices
#1	Primary	38.00'	**6.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 38.00' / 37.60' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf

Primary OutFlow Max=0.02 cfs @ 13.06 hrs HW=38.07' (Free Discharge)
1=Culvert (Inlet Controls 0.02 cfs @ 0.90 fps)

Pond 5P: depression 1



Summary for Pond 11P: cb 1

[57] Hint: Peaked at 35.29' (Flood elevation advised)

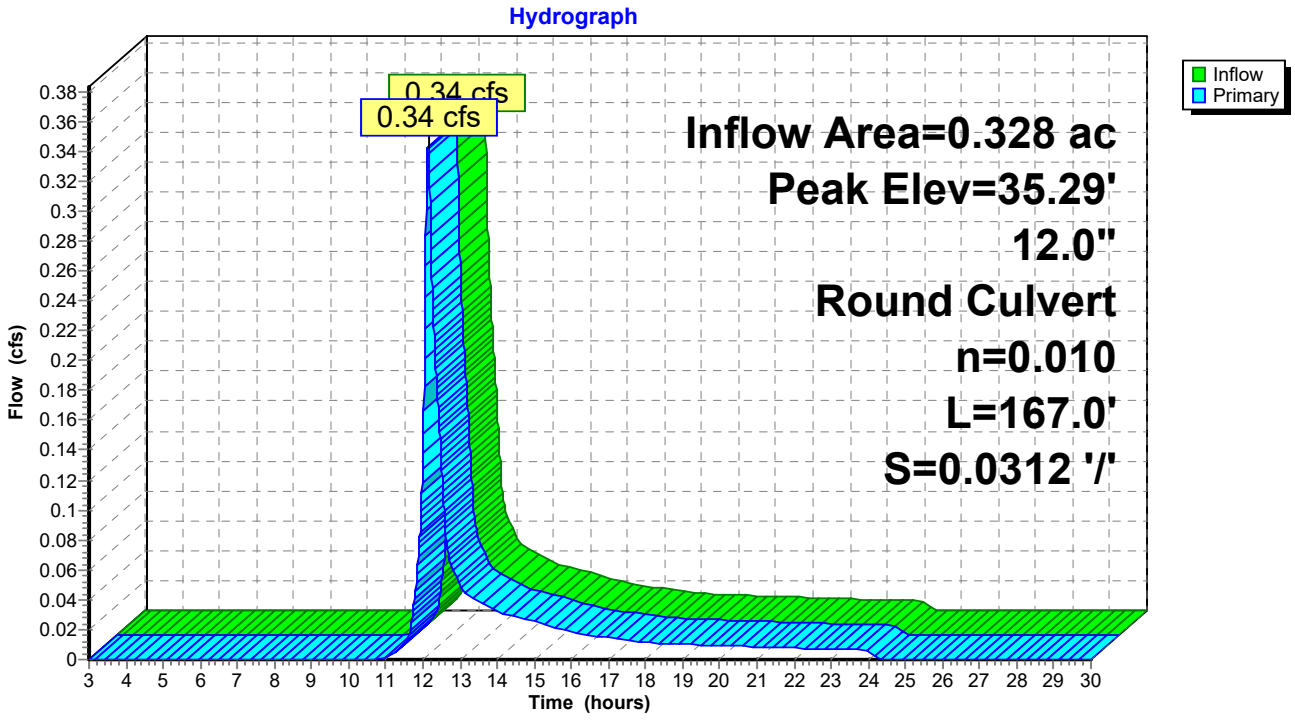
Inflow Area = 0.328 ac, 25.28% Impervious, Inflow Depth = 1.06" for 2 Year event
Inflow = 0.34 cfs @ 12.14 hrs, Volume= 0.029 af
Outflow = 0.34 cfs @ 12.14 hrs, Volume= 0.029 af, Atten= 0%, Lag= 0.0 min
Primary = 0.34 cfs @ 12.14 hrs, Volume= 0.029 af

Routing by Stor-Ind method, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 35.29' @ 12.14 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	35.00'	**12.0" Round Culvert** L= 167.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 35.00' / 29.79' S= 0.0312 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=0.34 cfs @ 12.14 hrs HW=35.29' (Free Discharge)
1=Culvert (Inlet Controls 0.34 cfs @ 1.83 fps)

Pond 11P: cb 1



Summary for Pond 12P: cb 2

[57] Hint: Peaked at 30.43' (Flood elevation advised)
[79] Warning: Submerged Pond 11P Primary device # 1 OUTLET by 0.64'

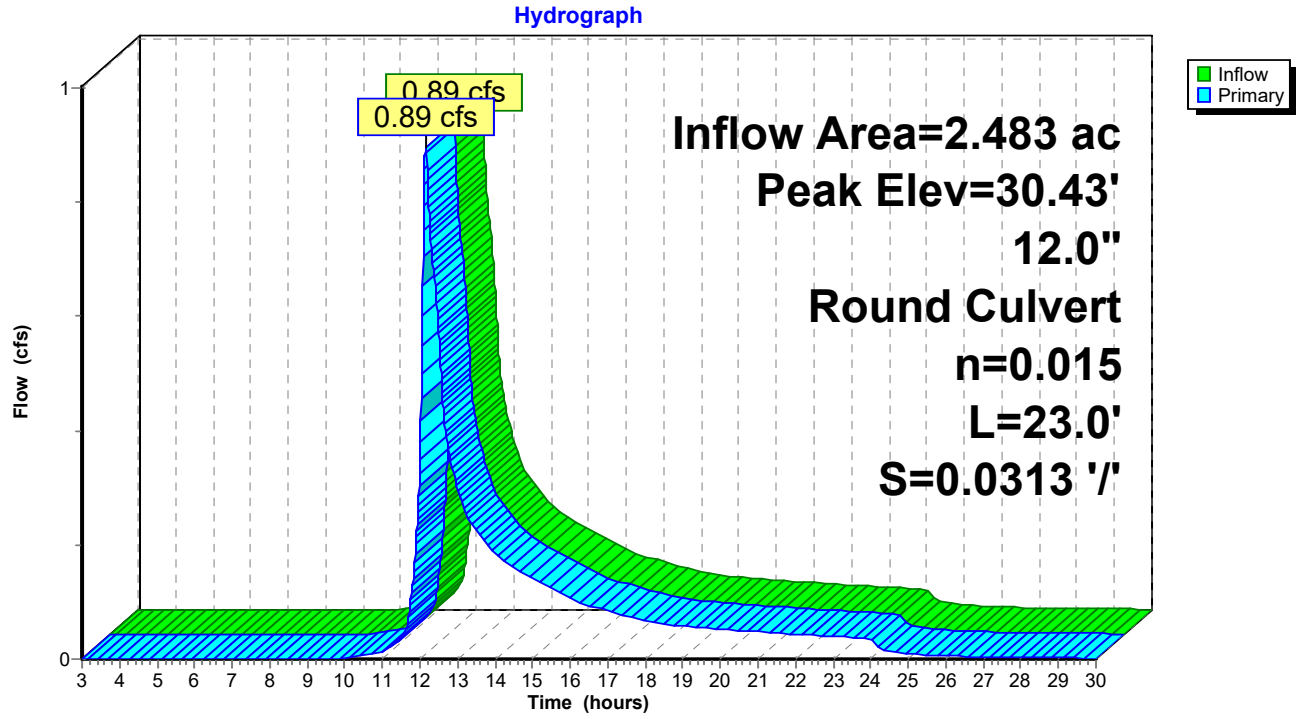
Inflow Area = 2.483 ac, 18.99% Impervious, Inflow Depth > 0.65" for 2 Year event
Inflow = 0.89 cfs @ 12.15 hrs, Volume= 0.135 af
Outflow = 0.89 cfs @ 12.15 hrs, Volume= 0.135 af, Atten= 0%, Lag= 0.0 min
Primary = 0.89 cfs @ 12.15 hrs, Volume= 0.135 af

Routing by Stor-Ind method, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 30.43' @ 12.15 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	29.95'	**12.0" Round Culvert** L= 23.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 29.95' / 29.23' S= 0.0313 '/' Cc= 0.900 n= 0.015, Flow Area= 0.79 sf

Primary OutFlow Max=0.89 cfs @ 12.15 hrs HW=30.43' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.89 cfs @ 2.37 fps)

Pond 12P: cb 2



Summary for Pond 13P: cb 3

[57] Hint: Peaked at 27.41' (Flood elevation advised)

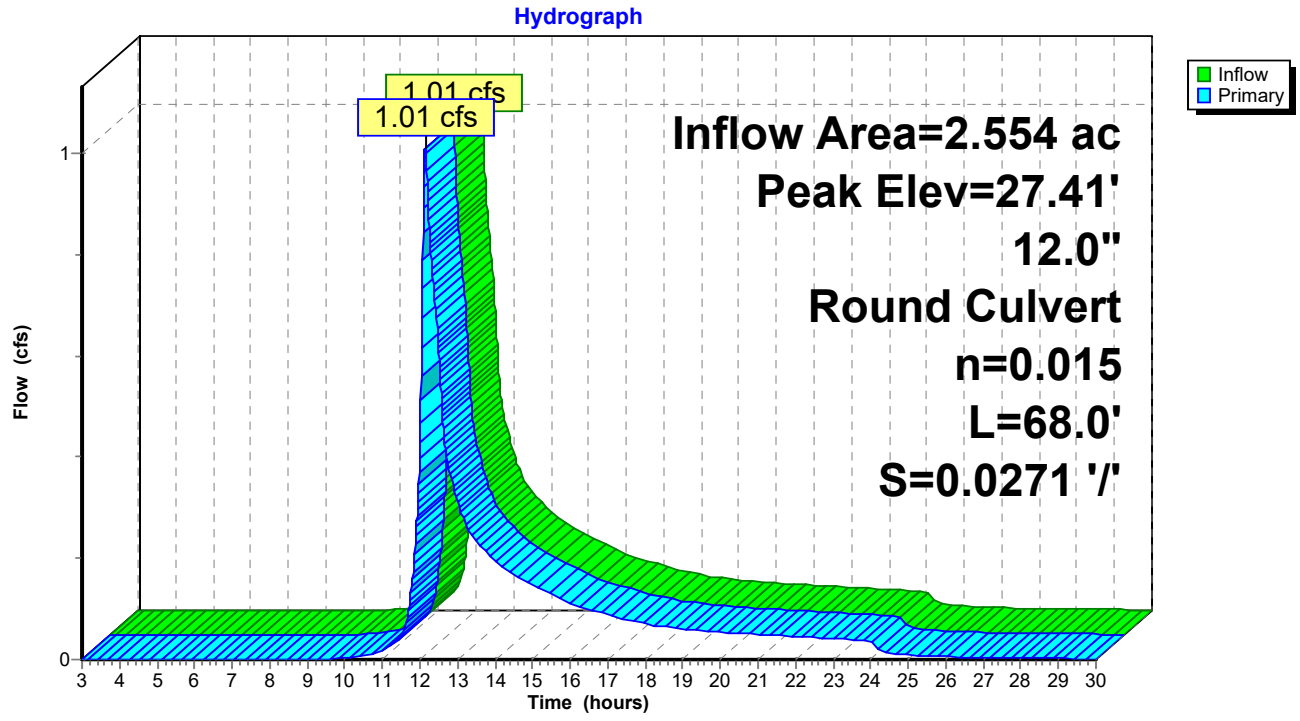
Inflow Area = 2.554 ac, 20.02% Impervious, Inflow Depth > 0.68" for 2 Year event
Inflow = 1.01 cfs @ 12.14 hrs, Volume= 0.145 af
Outflow = 1.01 cfs @ 12.14 hrs, Volume= 0.145 af, Atten= 0%, Lag= 0.0 min
Primary = 1.01 cfs @ 12.14 hrs, Volume= 0.145 af

Routing by Stor-Ind method, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 27.41' @ 12.14 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	26.89'	**12.0" Round Culvert** L= 68.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 26.89' / 25.05' S= 0.0271 '/' Cc= 0.900 n= 0.015, Flow Area= 0.79 sf

Primary OutFlow Max=1.01 cfs @ 12.14 hrs HW=27.41' (Free Discharge)
1=Culvert (Inlet Controls 1.01 cfs @ 2.45 fps)

Pond 13P: cb 3

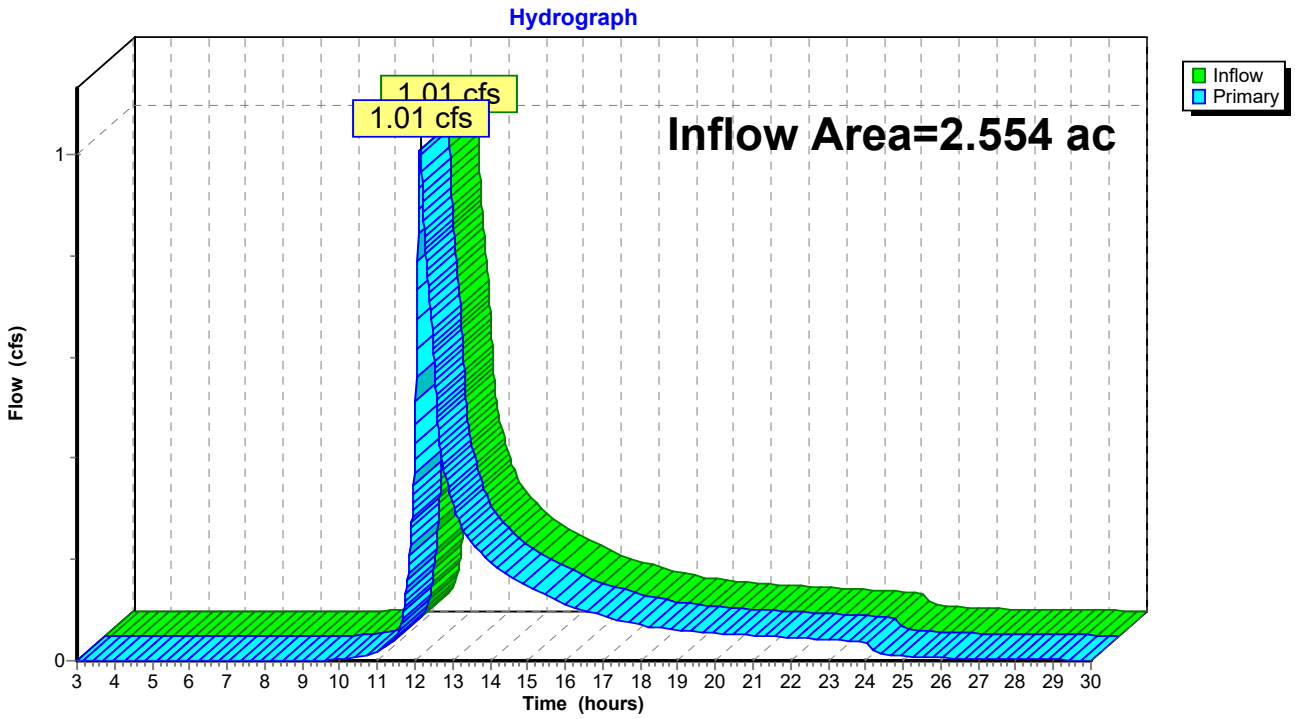


Summary for Link 1L: RTE 3A

Inflow Area = 2.554 ac, 20.02% Impervious, Inflow Depth > 0.68" for 2 Year event
Inflow = 1.01 cfs @ 12.14 hrs, Volume= 0.145 af
Primary = 1.01 cfs @ 12.14 hrs, Volume= 0.145 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs

Link 1L: RTE 3A

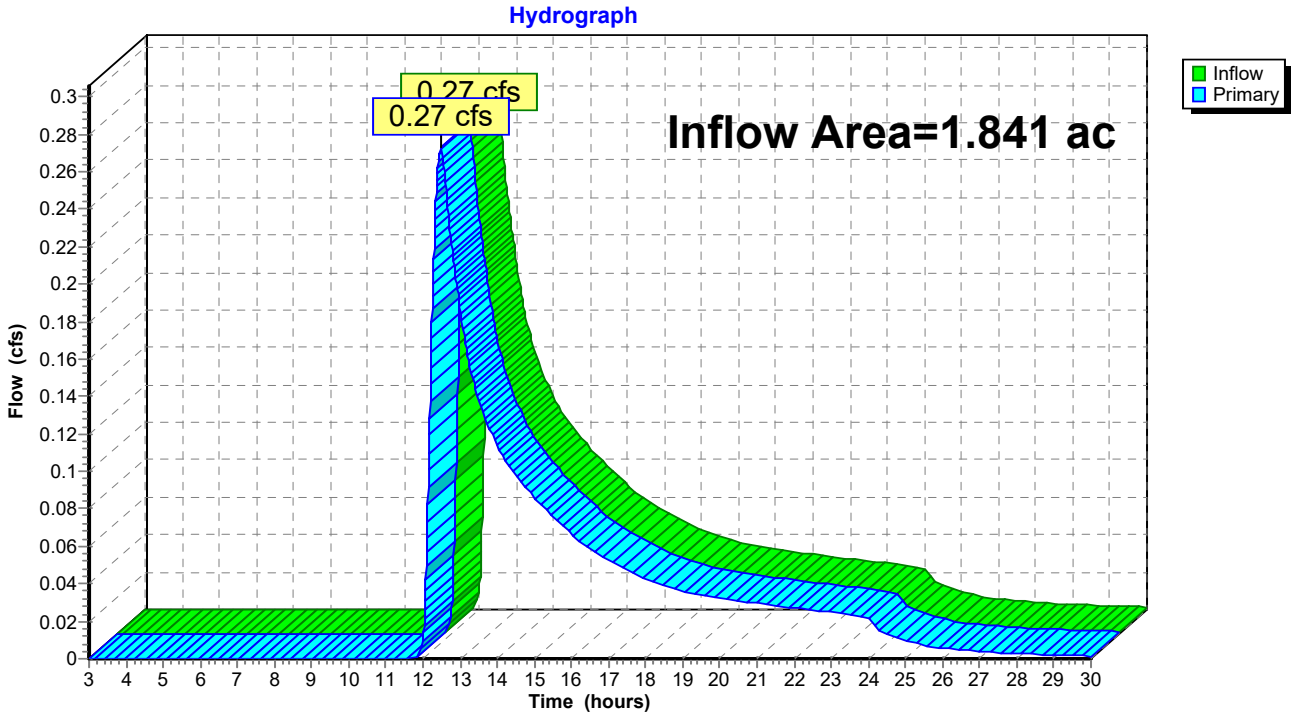


Summary for Link 4L: ABUTTER

Inflow Area = 1.841 ac, 16.64% Impervious, Inflow Depth > 0.45" for 2 Year event
Inflow = 0.27 cfs @ 12.48 hrs, Volume= 0.069 af
Primary = 0.27 cfs @ 12.48 hrs, Volume= 0.069 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs

Link 4L: ABUTTER



Time span=3.00-30.00 hrs, dt=0.01 hrs, 2701 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 2S: Depression Runoff Area=14,800 sf 6.77% Impervious Runoff Depth=0.78"
Flow Length=135' Tc=8.0 min CN=54 Runoff=0.21 cfs 0.022 af

Subcatchment 3S: direct flow to basin Runoff Area=28,909 sf 14.95% Impervious Runoff Depth=1.07"
Flow Length=91' Tc=9.1 min CN=59 Runoff=0.63 cfs 0.059 af

Subcatchment 4S: kilby st inlet Runoff Area=14,267 sf 25.28% Impervious Runoff Depth=1.97"
Flow Length=148' Tc=9.0 min CN=72 Runoff=0.67 cfs 0.054 af

Subcatchment 5S: direct to CB 2 Runoff Area=30,734 sf 7.44% Impervious Runoff Depth=0.67"
Flow Length=298' Tc=10.6 min UI Adjusted CN=52 Runoff=0.30 cfs 0.040 af

Subcatchment 6S: cb 2 off lot Runoff Area=13,730 sf 26.13% Impervious Runoff Depth=2.46"
Flow Length=126' Slope=0.0500 '/' Tc=9.6 min CN=78 Runoff=0.80 cfs 0.065 af

Subcatchment 7S: kilby street cb 3 Runoff Area=3,064 sf 56.46% Impervious Runoff Depth=2.81"
Tc=6.0 min CN=82 Runoff=0.23 cfs 0.016 af

Subcatchment 8S: roof Runoff Area=3,898 sf 100.00% Impervious Runoff Depth>4.43"
Tc=6.0 min CN=98 Runoff=0.41 cfs 0.033 af

Subcatchment 9S: driveway Runoff Area=1,837 sf 100.00% Impervious Runoff Depth>4.43"
Tc=6.0 min CN=98 Runoff=0.19 cfs 0.016 af

Pond 3P: DMH 3 Peak Elev=34.76' Inflow=0.66 cfs 0.118 af
8.0" Round Culvert n=0.010 L=34.0' S=0.0200 '/' Outflow=0.66 cfs 0.118 af

Pond 4P: basin Peak Elev=37.71' Storage=1,476 cf Inflow=1.16 cfs 0.108 af
Outflow=0.55 cfs 0.096 af

Pond 5P: depression 1 Peak Elev=38.20' Storage=165 cf Inflow=0.21 cfs 0.022 af
6.0" Round Culvert n=0.010 L=40.0' S=0.0100 '/' Outflow=0.11 cfs 0.022 af

Pond 11P: cb 1 Peak Elev=35.41' Inflow=0.67 cfs 0.054 af
12.0" Round Culvert n=0.010 L=167.0' S=0.0312 '/' Outflow=0.67 cfs 0.054 af

Pond 12P: cb 2 Peak Elev=30.78' Inflow=2.16 cfs 0.276 af
12.0" Round Culvert n=0.015 L=23.0' S=0.0313 '/' Outflow=2.16 cfs 0.276 af

Pond 13P: cb 3 Peak Elev=27.77' Inflow=2.33 cfs 0.292 af
12.0" Round Culvert n=0.015 L=68.0' S=0.0271 '/' Outflow=2.33 cfs 0.292 af

Link 1L: RTE 3A Inflow=2.33 cfs 0.292 af
Primary=2.33 cfs 0.292 af

Link 4L: ABUTTER Inflow=0.91 cfs 0.158 af
Primary=0.91 cfs 0.158 af

Total Runoff Area = 2.554 ac Runoff Volume = 0.304 af Average Runoff Depth = 1.43"
79.98% Pervious = 2.042 ac 20.02% Impervious = 0.511 ac

Summary for Subcatchment 2S: Depression

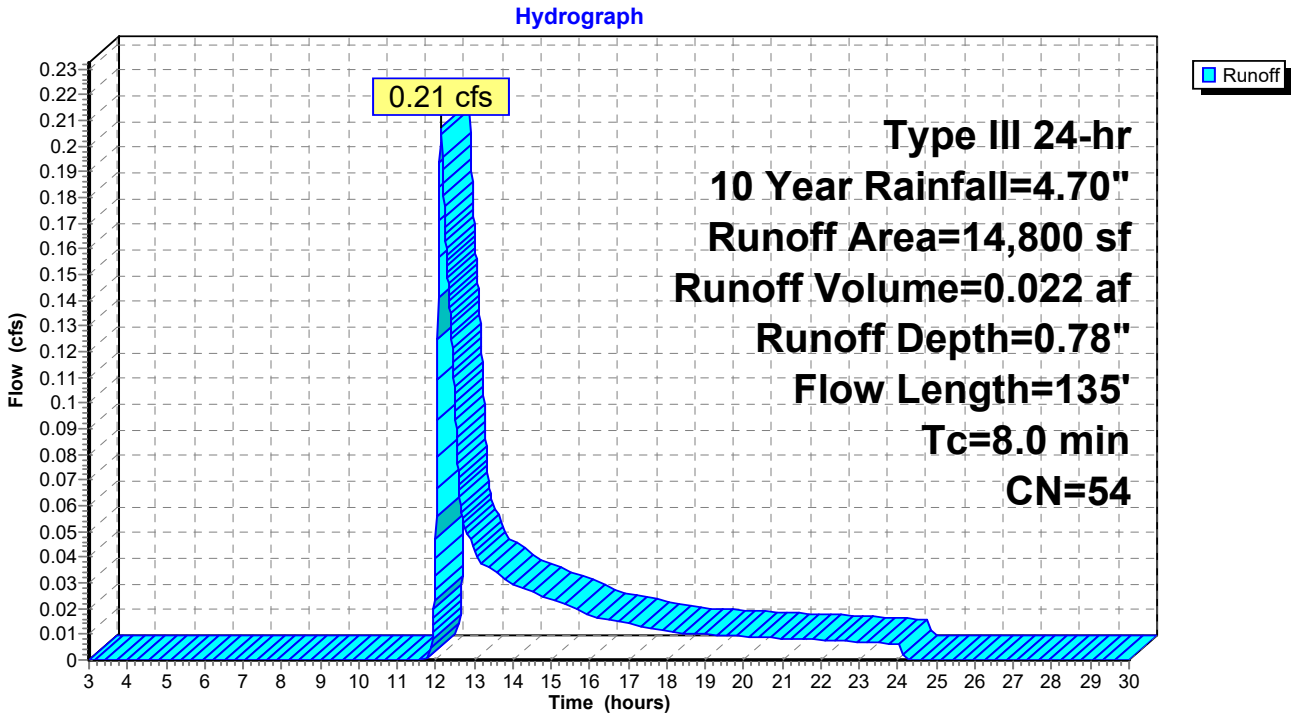
Runoff = 0.21 cfs @ 12.14 hrs, Volume= 0.022 af, Depth= 0.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Rainfall=4.70"

Area (sf)	CN	Description
9,320	39	>75% Grass cover, Good, HSG A
1,106	61	>75% Grass cover, Good, HSG B
1,002	98	Roofs, HSG A
3,372	80	>75% Grass cover, Good, HSG D
14,800	54	Weighted Average
13,798		93.23% Pervious Area
1,002		6.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	50	0.0280	0.12		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
0.8	85	0.0600	1.71		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.0	135	Total			

Subcatchment 2S: Depression



Summary for Subcatchment 3S: direct flow to basin

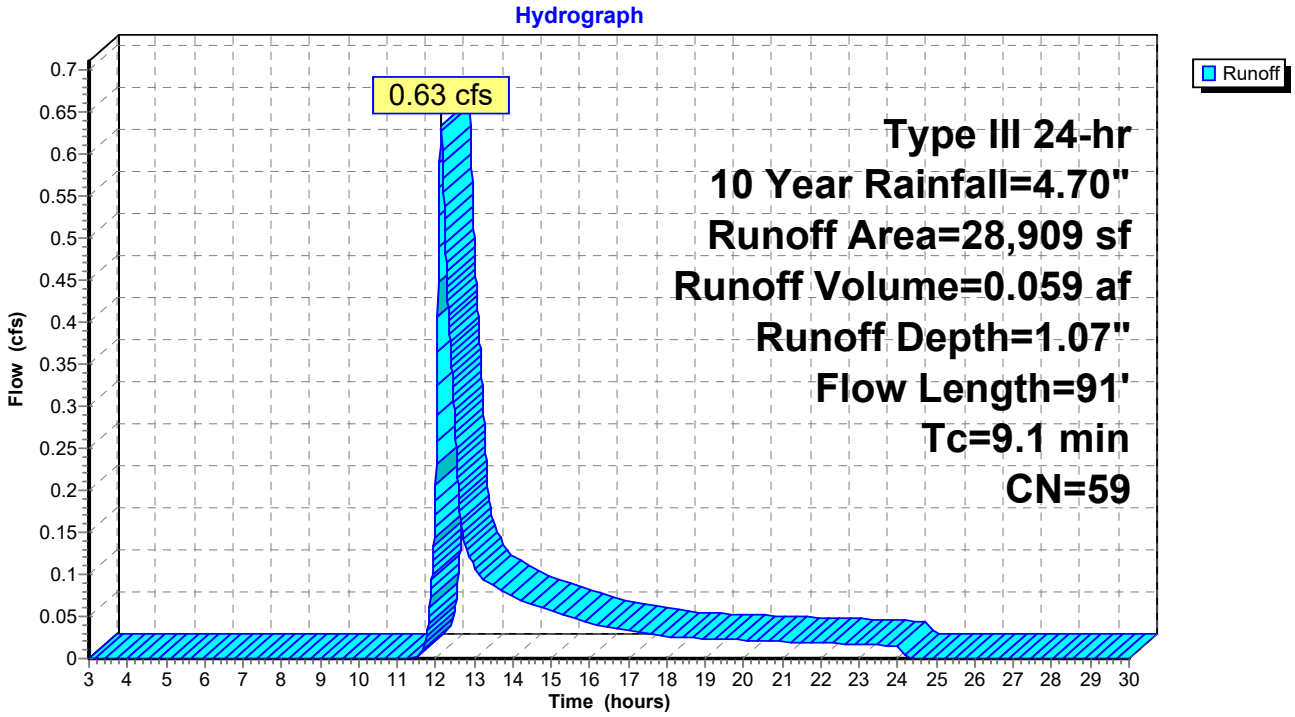
Runoff = 0.63 cfs @ 12.15 hrs, Volume= 0.059 af, Depth= 1.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Rainfall=4.70"

	Area (sf)	CN	Description
*	500	96	patio
	1,470	98	Water Surface, 0% imp, HSG A
*	644	98	Roofs, HSG A barn
	17,866	39	>75% Grass cover, Good, HSG A
	4,751	80	>75% Grass cover, Good, HSG D
*	1,750	98	brick patio, HSG A
*	550	98	ex house, HSG A
*	1,378	98	ex drive HSG A
	28,909	59	Weighted Average
	24,587		85.05% Pervious Area
	4,322		14.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0180	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
0.6	41	0.0300	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.1	91	Total			

Subcatchment 3S: direct flow to basin



Summary for Subcatchment 4S: kilby st inlet

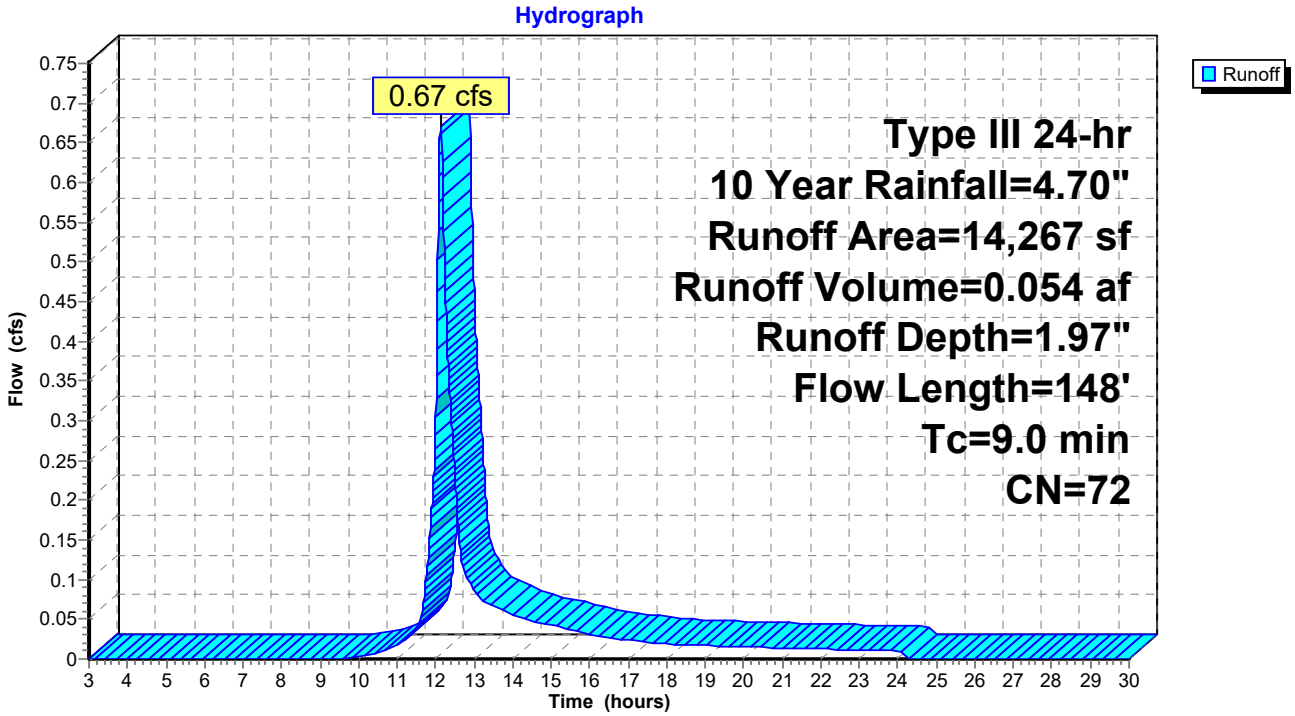
Runoff = 0.67 cfs @ 12.13 hrs, Volume= 0.054 af, Depth= 1.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Rainfall=4.70"

	Area (sf)	CN	Description
	2,912	98	Paved parking, HSG B
	2,997	58	Woods/grass comb., Good, HSG B
	4,393	61	>75% Grass cover, Good, HSG B
	2,043	80	>75% Grass cover, Good, HSG D
	694	98	Paved parking, HSG B
*	1,228	61	>75% Grass cover, Good, HSG B shoulder
	14,267	72	Weighted Average
	10,661		74.72% Pervious Area
	3,606		25.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	50	0.0250	0.11		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
1.5	98	0.0230	1.06		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.0	148	Total			

Subcatchment 4S: kilby st inlet



Summary for Subcatchment 5S: direct to CB 2

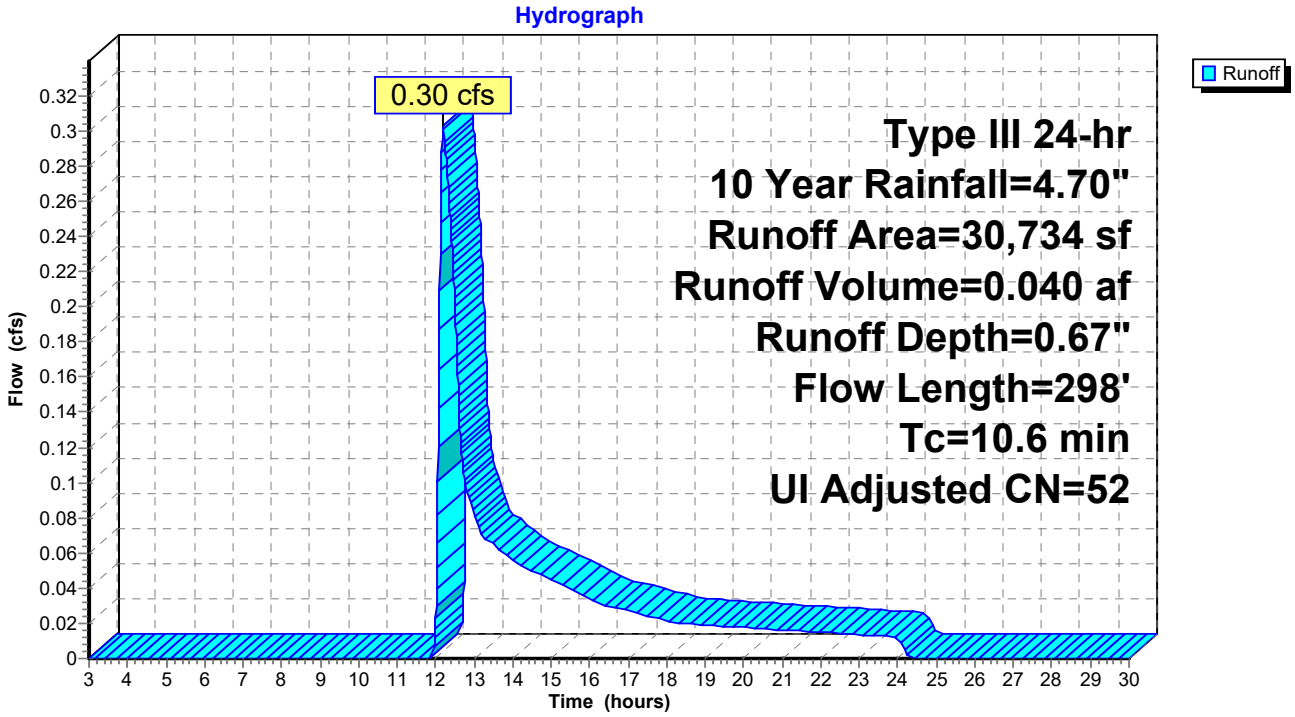
Runoff = 0.30 cfs @ 12.20 hrs, Volume= 0.040 af, Depth= 0.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Rainfall=4.70"

	Area (sf)	CN	Adj	Description
	4,798	80		>75% Grass cover, Good, HSG D
	1,885	61		>75% Grass cover, Good, HSG B
	2,173	77		Woods, Good, HSG D
	1,008	55		Woods, Good, HSG B
*	640	98		Unconnected roofs, HSG A barn
	1,118	98		Paved parking, HSG A
	5,973	39		>75% Grass cover, Good, HSG A
	6,090	32		Woods/grass comb., Good, HSG A
*	528	98		abutters roof HSG A
	6,521	39		>75% Grass cover, Good, HSG A
	30,734	53	52	Weighted Average, UI Adjusted
	28,448			92.56% Pervious Area
	2,286			7.44% Impervious Area
	640			28.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	50	0.0300	0.12		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
1.9	140	0.0300	1.21		**Shallow Concentrated Flow, b** Short Grass Pasture Kv= 7.0 fps
1.7	108	0.0470	1.08		**Shallow Concentrated Flow, c** Woodland Kv= 5.0 fps
10.6	298	Total			

Subcatchment 5S: direct to CB 2



Summary for Subcatchment 6S: cb 2 off lot

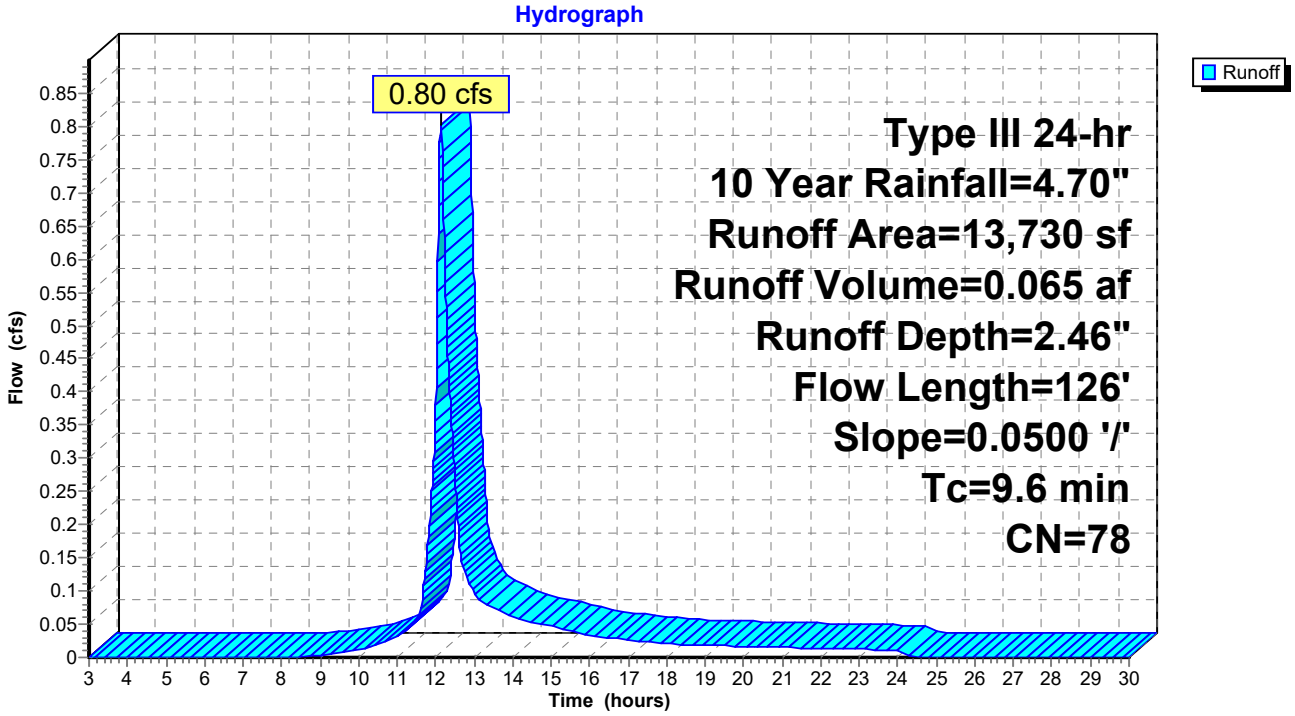
Runoff = 0.80 cfs @ 12.13 hrs, Volume= 0.065 af, Depth= 2.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Rainfall=4.70"

	Area (sf)	CN	Description
	3,587	98	Paved parking, HSG B
	6,575	77	Woods, Good, HSG D
*	3,568	61	>75% Grass cover, Good, HSG B shoulder
	13,730	78	Weighted Average
	10,143		73.87% Pervious Area
	3,587		26.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0500	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
1.1	76	0.0500	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
9.6	126	Total			

Subcatchment 6S: cb 2 off lot



Summary for Subcatchment 7S: kilby street cb 3

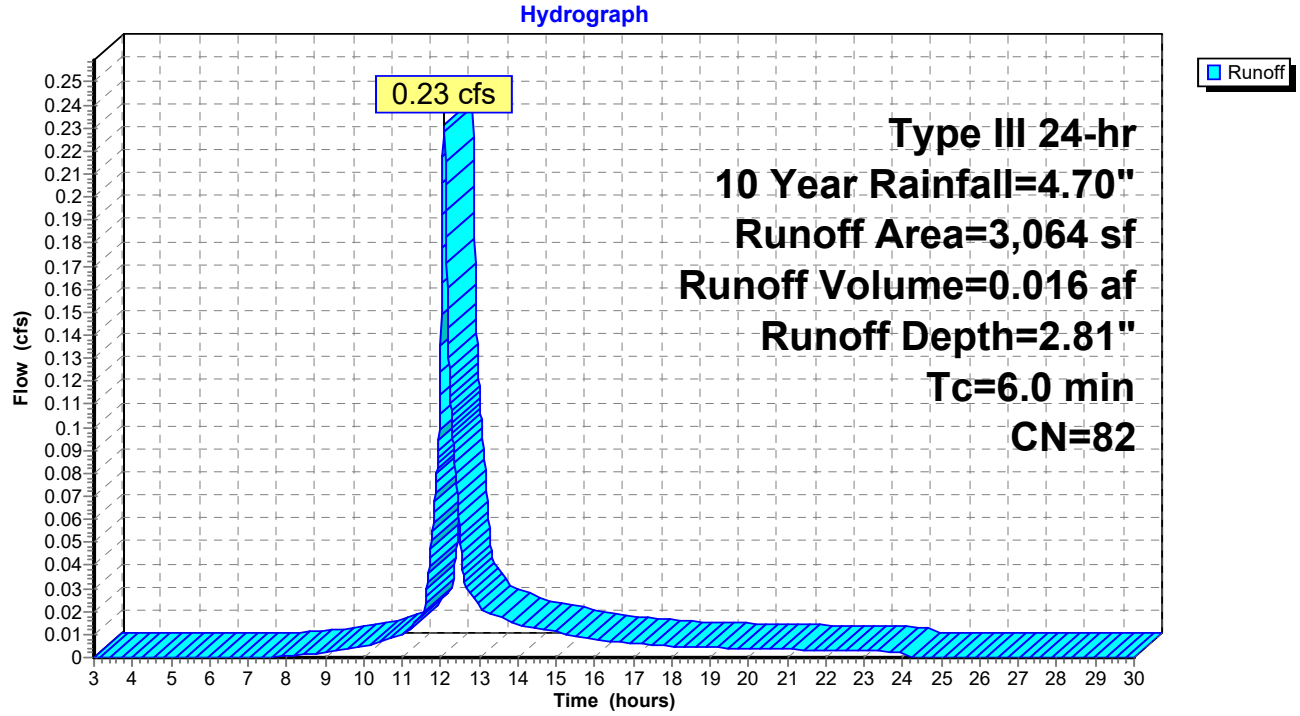
Runoff = 0.23 cfs @ 12.09 hrs, Volume= 0.016 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Rainfall=4.70"

Area (sf)	CN	Description
1,730	98	Paved parking, HSG C
1,334	61	>75% Grass cover, Good, HSG B
3,064	82	Weighted Average
1,334		43.54% Pervious Area
1,730		56.46% Impervious Area

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

Subcatchment 7S: kilby street cb 3



Summary for Subcatchment 8S: roof

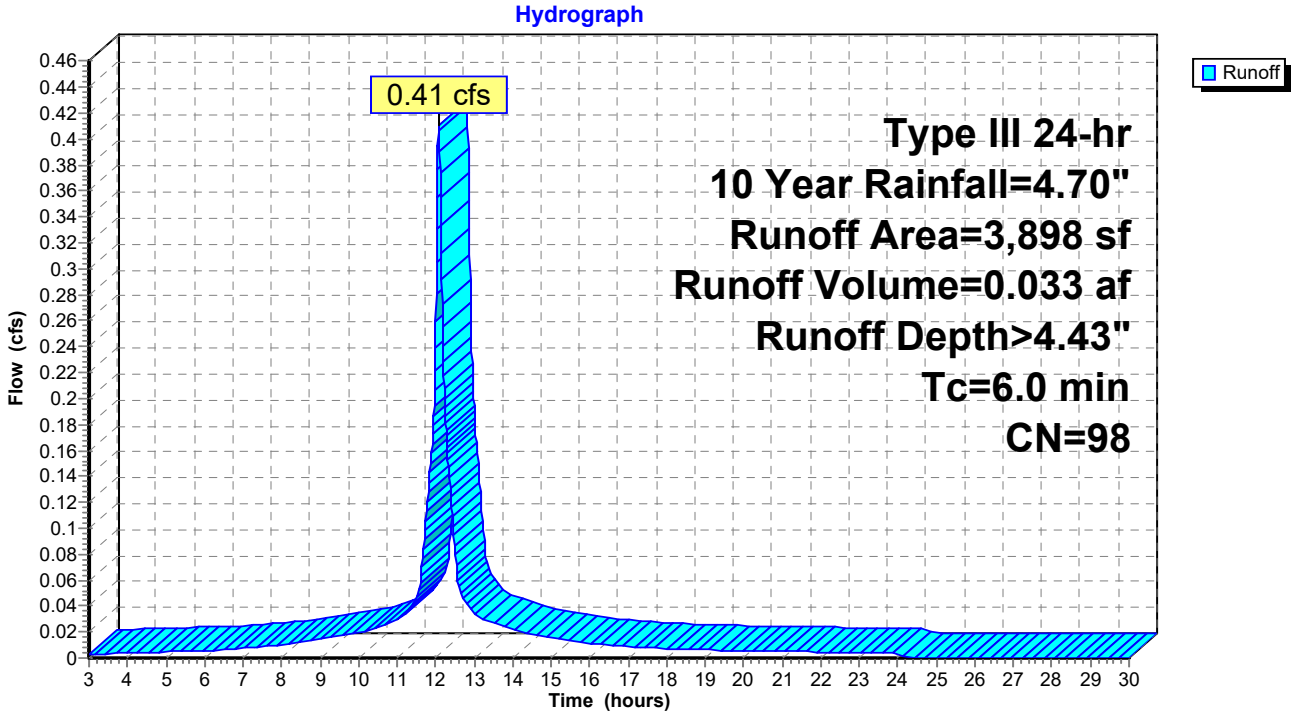
Runoff = 0.41 cfs @ 12.08 hrs, Volume= 0.033 af, Depth> 4.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Rainfall=4.70"

	Area (sf)	CN	Description
	3,681	98	Roofs, HSG B
*	217	98	PORCH
	3,898	98	Weighted Average
	3,898		100.00% Impervious Area

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

Subcatchment 8S: roof



Summary for Subcatchment 9S: driveway

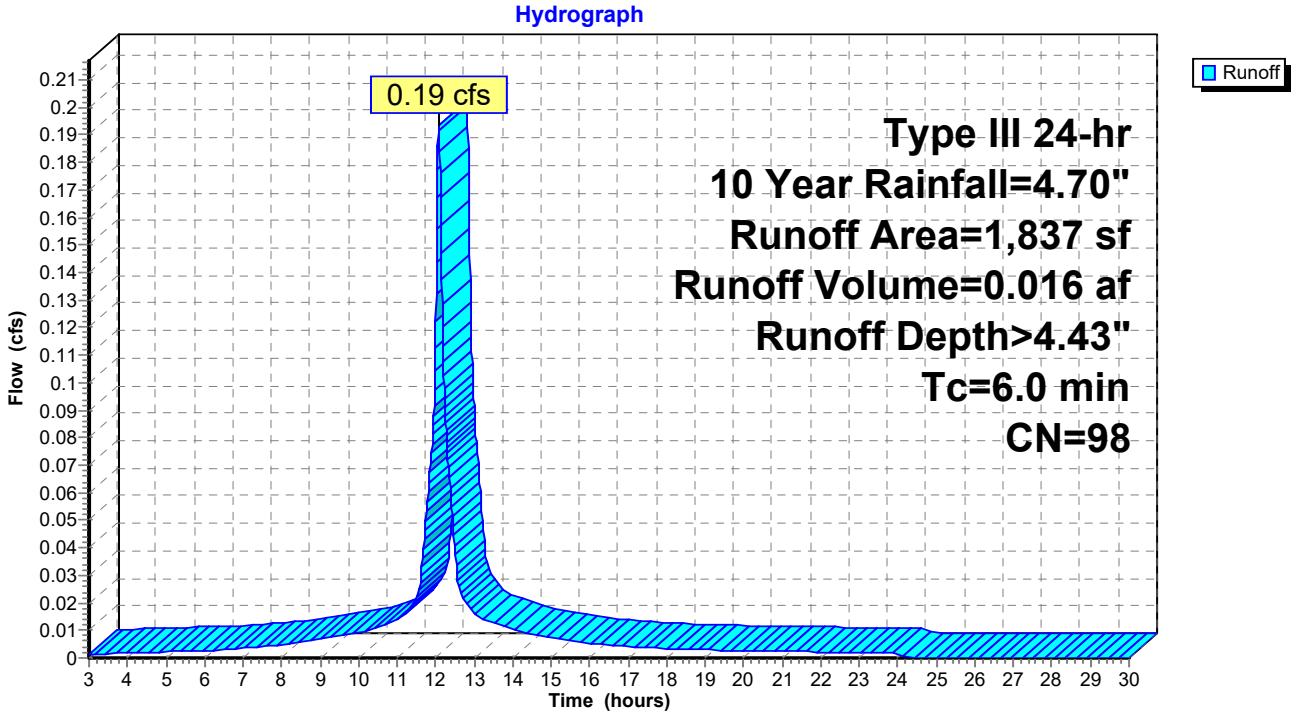
Runoff = 0.19 cfs @ 12.08 hrs, Volume= 0.016 af, Depth> 4.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Rainfall=4.70"

Area (sf)	CN	Description
1,837	98	Paved parking, HSG B
1,837		100.00% Impervious Area

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

Subcatchment 9S: driveway



Summary for Pond 3P: DMH 3

[57] Hint: Peaked at 34.76' (Flood elevation advised)

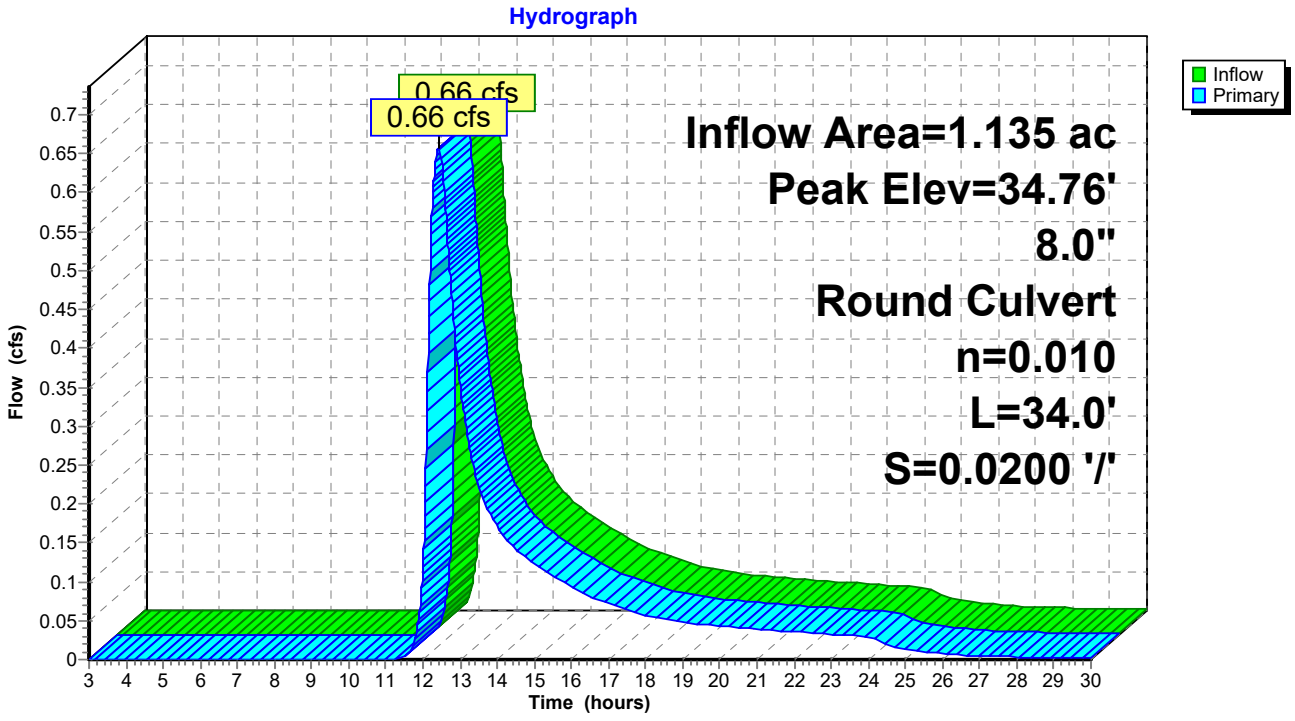
Inflow Area = 1.135 ac, 22.37% Impervious, Inflow Depth > 1.25" for 10 Year event
Inflow = 0.66 cfs @ 12.42 hrs, Volume= 0.118 af
Outflow = 0.66 cfs @ 12.42 hrs, Volume= 0.118 af, Atten= 0%, Lag= 0.0 min
Primary = 0.66 cfs @ 12.42 hrs, Volume= 0.118 af

Routing by Stor-Ind method, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 34.76' @ 12.42 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	34.18'	**8.0" Round Culvert** L= 34.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.18' / 33.50' S= 0.0200 '/' Cc= 0.900 n= 0.010, Flow Area= 0.35 sf

Primary OutFlow Max=0.66 cfs @ 12.42 hrs HW=34.76' (Free Discharge)
1=Culvert (Inlet Controls 0.66 cfs @ 2.04 fps)

Pond 3P: DMH 3



Summary for Pond 4P: basin

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.795 ac, 29.03% Impervious, Inflow Depth > 1.62" for 10 Year event
Inflow = 1.16 cfs @ 12.11 hrs, Volume= 0.108 af
Outflow = 0.55 cfs @ 12.39 hrs, Volume= 0.096 af, Atten= 52%, Lag= 16.7 min
Primary = 0.55 cfs @ 12.39 hrs, Volume= 0.096 af

Routing by Stor-Ind method, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 37.71' @ 12.39 hrs Surf.Area= 2,232 sf Storage= 1,476 cf

Plug-Flow detention time= 139.7 min calculated for 0.096 af (89% of inflow)
Center-of-Mass det. time= 85.4 min (911.8 - 826.4)

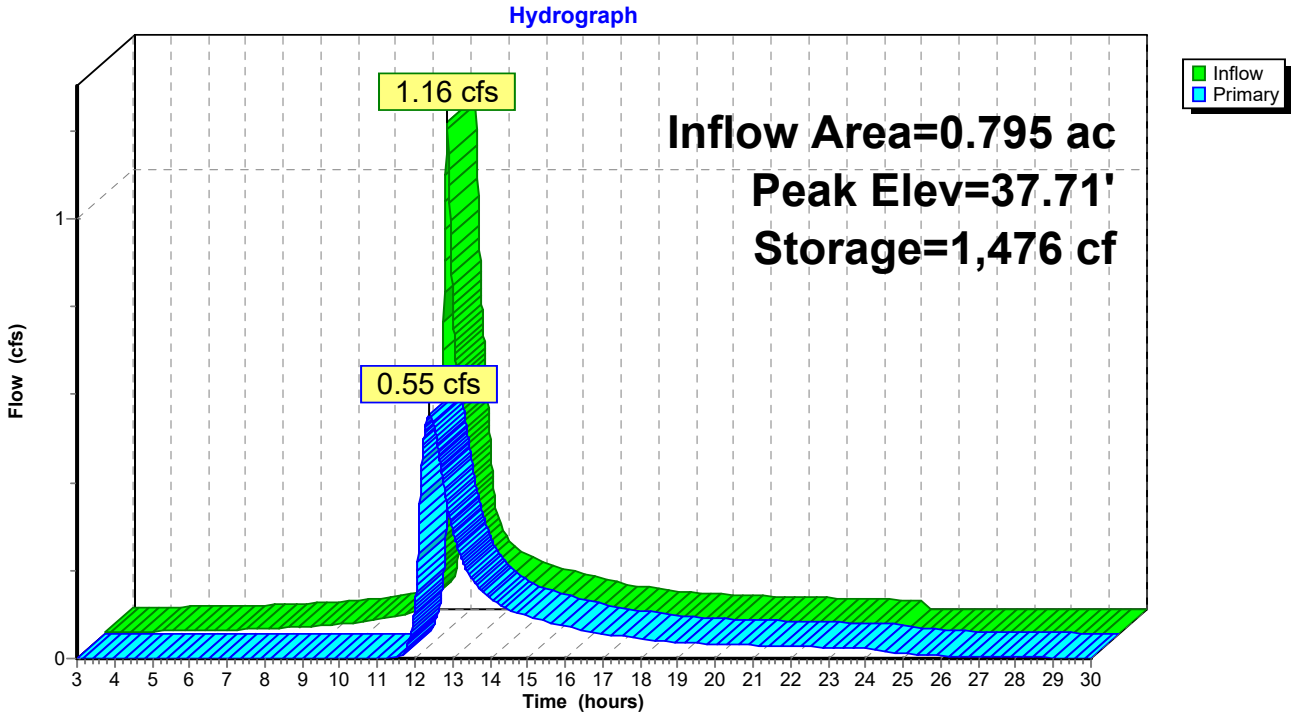
Volume	Invert	Avail.Storage	Storage Description
#1	36.80'	5,892 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
36.80	114	0	0
37.00	1,468	158	158
38.00	2,540	2,004	2,162
39.00	4,920	3,730	5,892

Device	Routing	Invert	Outlet Devices
#1	Primary	37.20'	**8.0" Round Culvert** L= 38.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 37.20' / 36.50' S= 0.0184 '/' Cc= 0.900 n= 0.010, Flow Area= 0.35 sf
#2	Primary	38.20'	**8.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.55 cfs @ 12.39 hrs HW=37.71' (Free Discharge)
1=Culvert (Inlet Controls 0.55 cfs @ 1.92 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 4P: basin



Summary for Pond 5P: depression 1

Inflow Area = 0.340 ac, 6.77% Impervious, Inflow Depth = 0.78" for 10 Year event
Inflow = 0.21 cfs @ 12.14 hrs, Volume= 0.022 af
Outflow = 0.11 cfs @ 12.48 hrs, Volume= 0.022 af, Atten= 48%, Lag= 20.1 min
Primary = 0.11 cfs @ 12.48 hrs, Volume= 0.022 af

Routing by Stor-Ind method, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 38.20' @ 12.48 hrs Surf.Area= 872 sf Storage= 165 cf

Plug-Flow detention time= 51.4 min calculated for 0.022 af (100% of inflow)
Center-of-Mass det. time= 49.7 min (954.7 - 905.0)

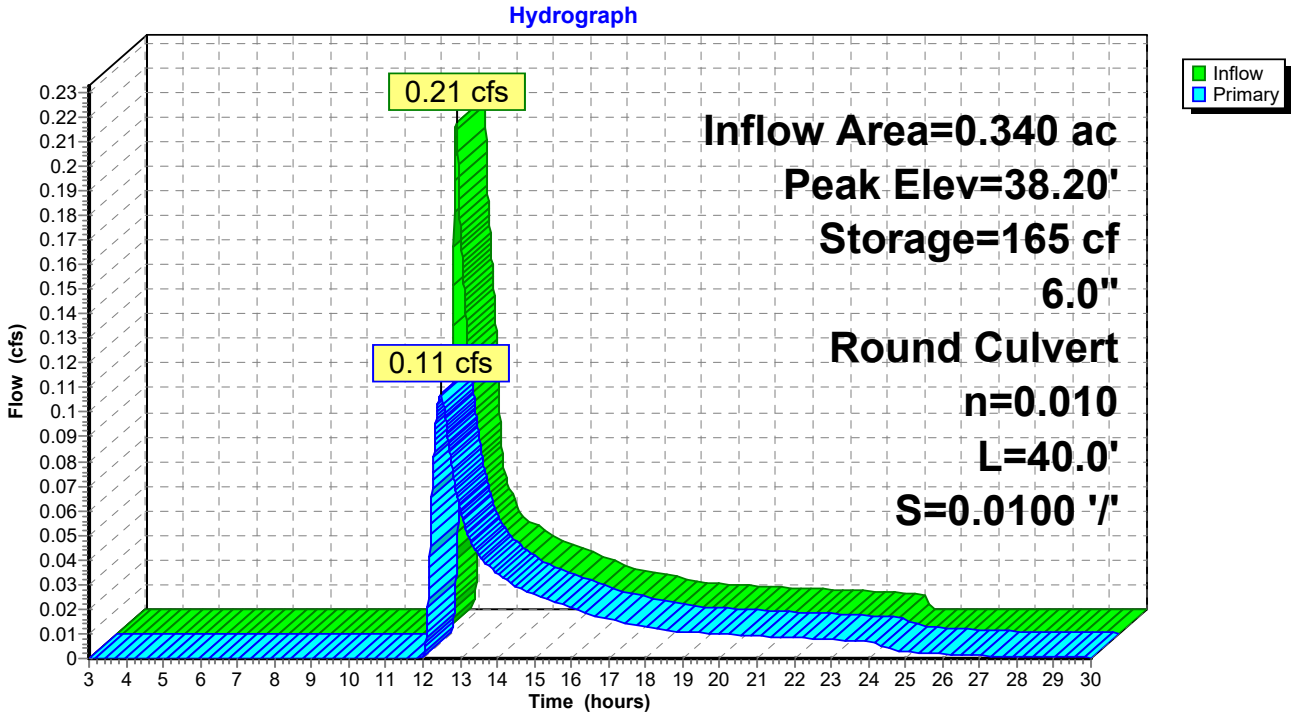
Volume	Invert	Avail.Storage	Storage Description
#1	38.00'	3,872 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
38.00	815	0	0
39.00	1,109	962	962
40.00	1,480	1,295	2,257
41.00	1,750	1,615	3,872

Device	Routing	Invert	Outlet Devices
#1	Primary	38.00'	**6.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 38.00' / 37.60' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf

Primary OutFlow Max=0.11 cfs @ 12.48 hrs HW=38.20' (Free Discharge)
1=Culvert (Inlet Controls 0.11 cfs @ 1.50 fps)

Pond 5P: depression 1



Summary for Pond 11P: cb 1

[57] Hint: Peaked at 35.41' (Flood elevation advised)

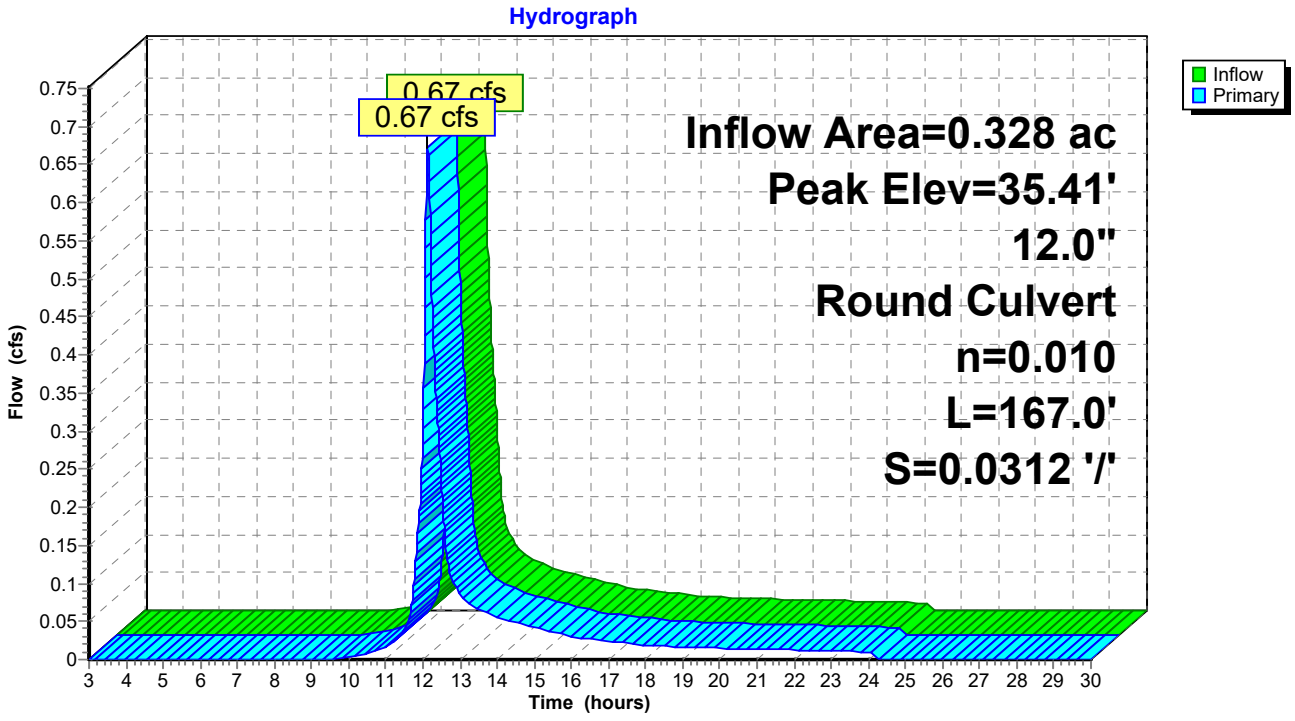
Inflow Area = 0.328 ac, 25.28% Impervious, Inflow Depth = 1.97" for 10 Year event
Inflow = 0.67 cfs @ 12.13 hrs, Volume= 0.054 af
Outflow = 0.67 cfs @ 12.13 hrs, Volume= 0.054 af, Atten= 0%, Lag= 0.0 min
Primary = 0.67 cfs @ 12.13 hrs, Volume= 0.054 af

Routing by Stor-Ind method, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 35.41' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	35.00'	**12.0" Round Culvert** L= 167.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 35.00' / 29.79' S= 0.0312 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=0.67 cfs @ 12.13 hrs HW=35.41' (Free Discharge)
1=Culvert (Inlet Controls 0.67 cfs @ 2.19 fps)

Pond 11P: cb 1



Summary for Pond 12P: cb 2

[57] Hint: Peaked at 30.78' (Flood elevation advised)
[79] Warning: Submerged Pond 11P Primary device # 1 OUTLET by 0.99'

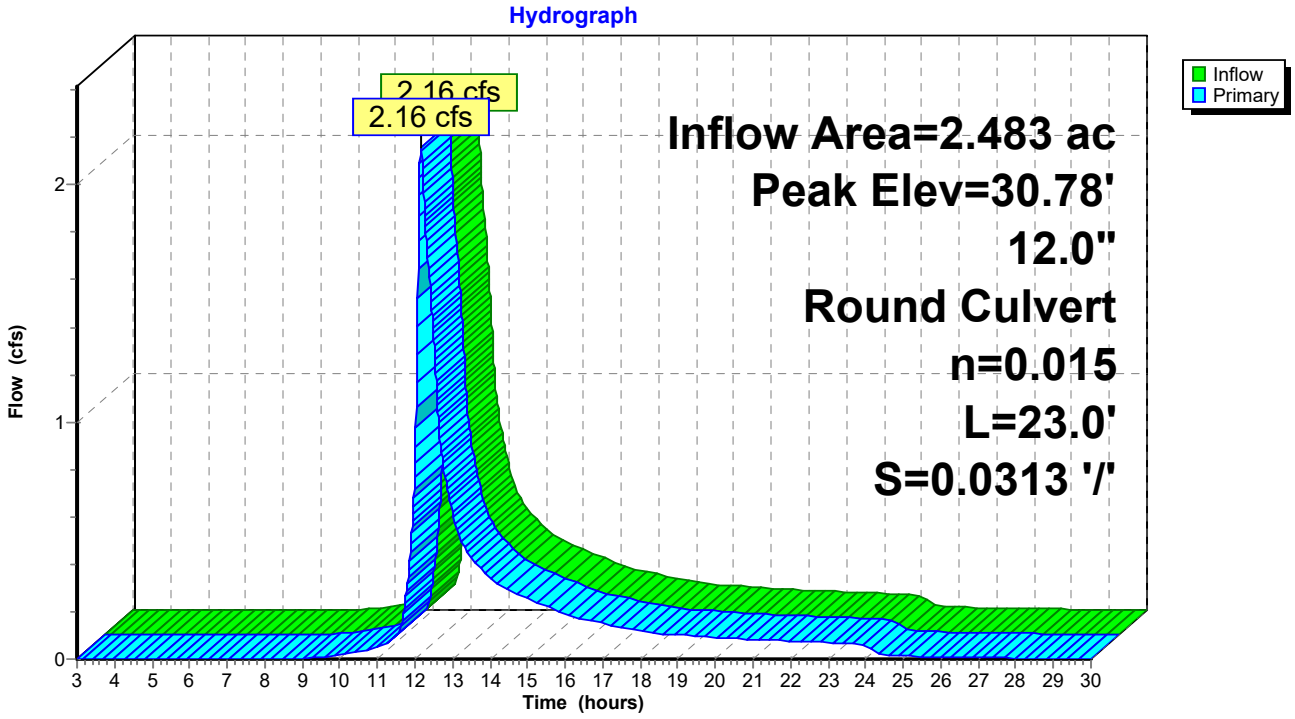
Inflow Area = 2.483 ac, 18.99% Impervious, Inflow Depth > 1.33" for 10 Year event
Inflow = 2.16 cfs @ 12.16 hrs, Volume= 0.276 af
Outflow = 2.16 cfs @ 12.16 hrs, Volume= 0.276 af, Atten= 0%, Lag= 0.0 min
Primary = 2.16 cfs @ 12.16 hrs, Volume= 0.276 af

Routing by Stor-Ind method, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 30.78' @ 12.16 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	29.95'	**12.0" Round Culvert** L= 23.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 29.95' / 29.23' S= 0.0313 '/' Cc= 0.900 n= 0.015, Flow Area= 0.79 sf

Primary OutFlow Max=2.16 cfs @ 12.16 hrs HW=30.78' (Free Discharge)
1=Culvert (Inlet Controls 2.16 cfs @ 3.10 fps)

Pond 12P: cb 2



Summary for Pond 13P: cb 3

[57] Hint: Peaked at 27.77' (Flood elevation advised)

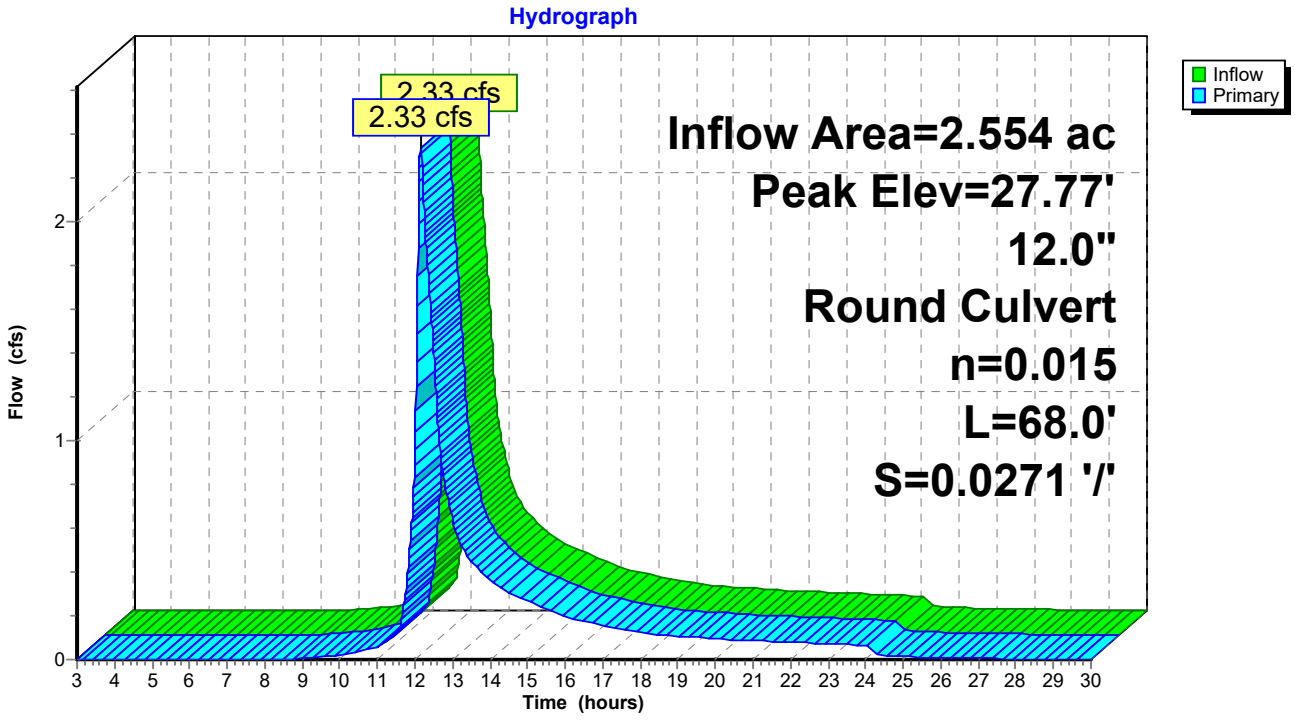
Inflow Area = 2.554 ac, 20.02% Impervious, Inflow Depth > 1.37" for 10 Year event
Inflow = 2.33 cfs @ 12.15 hrs, Volume= 0.292 af
Outflow = 2.33 cfs @ 12.15 hrs, Volume= 0.292 af, Atten= 0%, Lag= 0.0 min
Primary = 2.33 cfs @ 12.15 hrs, Volume= 0.292 af

Routing by Stor-Ind method, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 27.77' @ 12.15 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	26.89'	**12.0" Round Culvert** L= 68.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 26.89' / 25.05' S= 0.0271 '/' Cc= 0.900 n= 0.015, Flow Area= 0.79 sf

Primary OutFlow Max=2.33 cfs @ 12.15 hrs HW=27.77' (Free Discharge)
1=Culvert (Inlet Controls 2.33 cfs @ 3.19 fps)

Pond 13P: cb 3

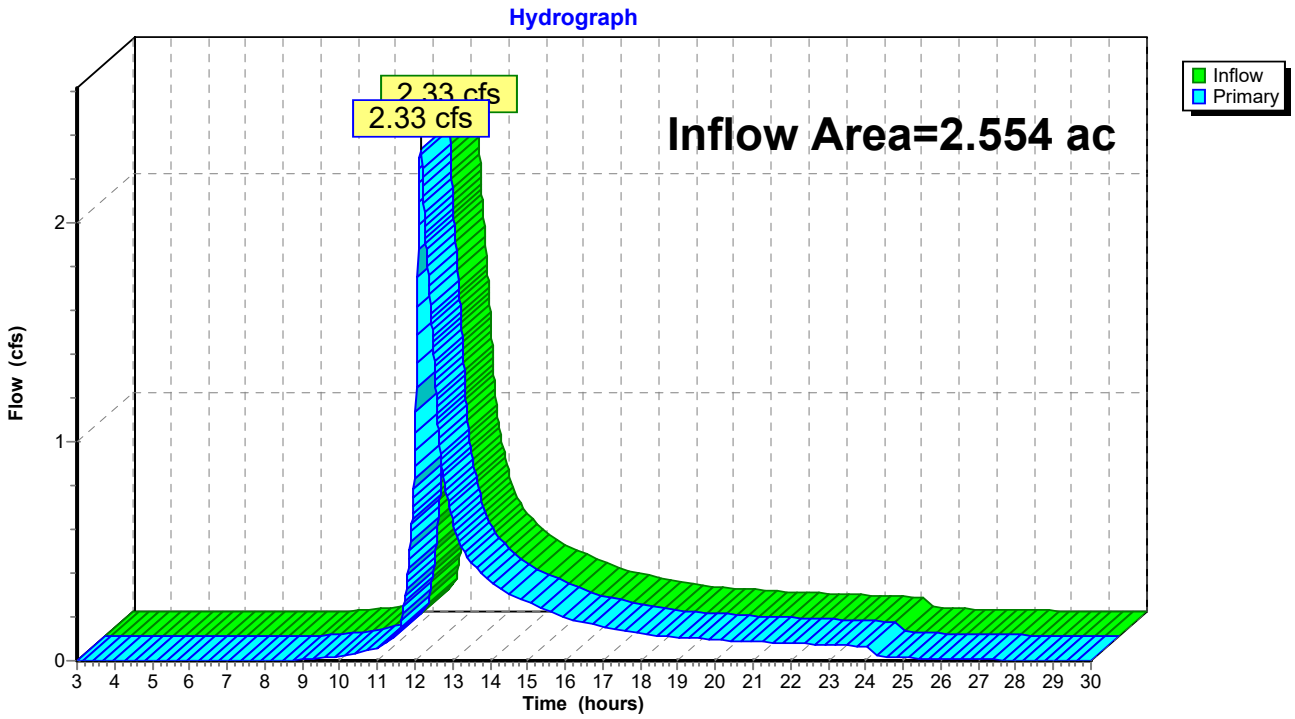


Summary for Link 1L: RTE 3A

Inflow Area = 2.554 ac, 20.02% Impervious, Inflow Depth > 1.37" for 10 Year event
Inflow = 2.33 cfs @ 12.15 hrs, Volume= 0.292 af
Primary = 2.33 cfs @ 12.15 hrs, Volume= 0.292 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs

Link 1L: RTE 3A

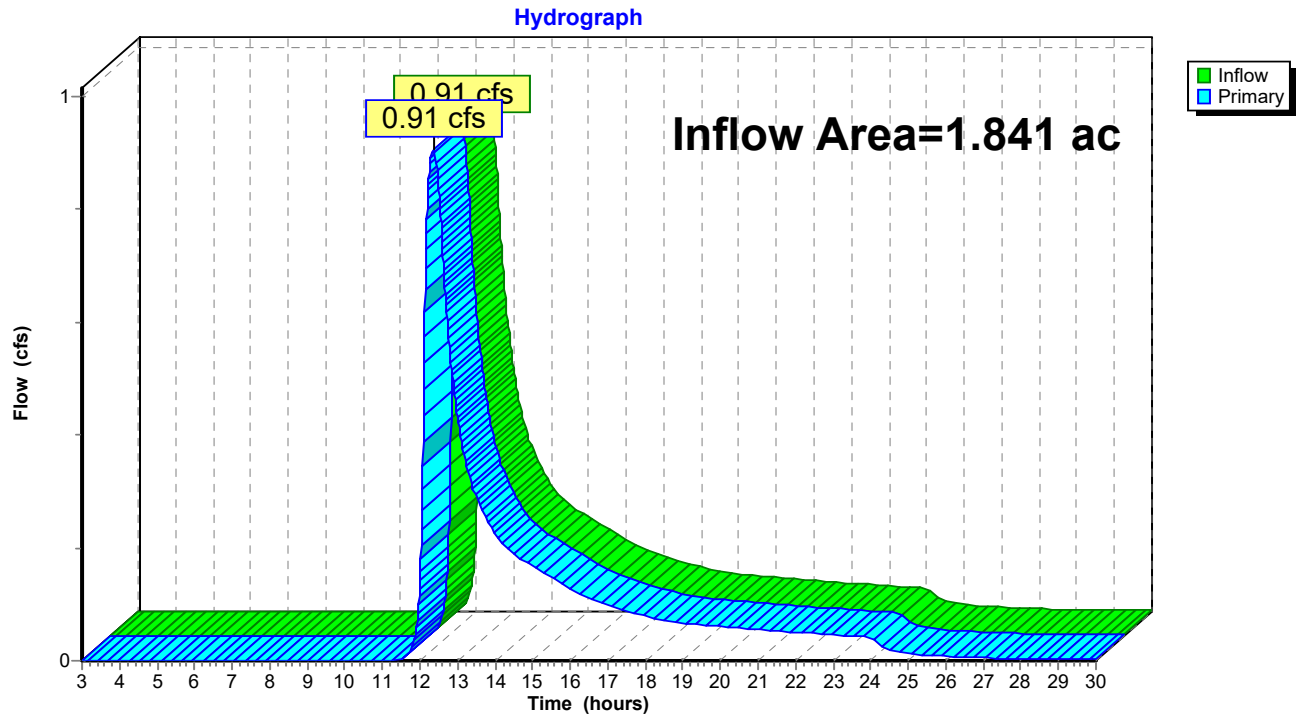


Summary for Link 4L: ABUTTER

Inflow Area = 1.841 ac, 16.64% Impervious, Inflow Depth > 1.03" for 10 Year event
Inflow = 0.91 cfs @ 12.36 hrs, Volume= 0.158 af
Primary = 0.91 cfs @ 12.36 hrs, Volume= 0.158 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs

Link 4L: ABUTTER



Time span=3.00-30.00 hrs, dt=0.01 hrs, 2701 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 2S: Depression Runoff Area=14,800 sf 6.77% Impervious Runoff Depth=1.17"
Flow Length=135' Tc=8.0 min CN=54 Runoff=0.36 cfs 0.033 af

Subcatchment 3S: direct flow to basin Runoff Area=28,909 sf 14.95% Impervious Runoff Depth=1.53"
Flow Length=91' Tc=9.1 min CN=59 Runoff=0.97 cfs 0.084 af

Subcatchment 4S: kilby st inlet Runoff Area=14,267 sf 25.28% Impervious Runoff Depth=2.59"
Flow Length=148' Tc=9.0 min CN=72 Runoff=0.89 cfs 0.071 af

Subcatchment 5S: direct to CB 2 Runoff Area=30,734 sf 7.44% Impervious Runoff Depth=1.04"
Flow Length=298' Tc=10.6 min UI Adjusted CN=52 Runoff=0.57 cfs 0.061 af

Subcatchment 6S: cb 2 off lot Runoff Area=13,730 sf 26.13% Impervious Runoff Depth=3.14"
Flow Length=126' Slope=0.0500 '/' Tc=9.6 min CN=78 Runoff=1.03 cfs 0.083 af

Subcatchment 7S: kilby street cb 3 Runoff Area=3,064 sf 56.46% Impervious Runoff Depth=3.53"
Tc=6.0 min CN=82 Runoff=0.29 cfs 0.021 af

Subcatchment 8S: roof Runoff Area=3,898 sf 100.00% Impervious Runoff Depth>5.22"
Tc=6.0 min CN=98 Runoff=0.48 cfs 0.039 af

Subcatchment 9S: driveway Runoff Area=1,837 sf 100.00% Impervious Runoff Depth>5.22"
Tc=6.0 min CN=98 Runoff=0.23 cfs 0.018 af

Pond 3P: DMH 3 Peak Elev=35.04' Inflow=0.96 cfs 0.163 af
8.0" Round Culvert n=0.010 L=34.0' S=0.0200 '/' Outflow=0.96 cfs 0.163 af

Pond 4P: basin Peak Elev=37.86' Storage=1,816 cf Inflow=1.60 cfs 0.142 af
Outflow=0.76 cfs 0.130 af

Pond 5P: depression 1 Peak Elev=38.28' Storage=238 cf Inflow=0.36 cfs 0.033 af
6.0" Round Culvert n=0.010 L=40.0' S=0.0100 '/' Outflow=0.20 cfs 0.033 af

Pond 11P: cb 1 Peak Elev=35.48' Inflow=0.89 cfs 0.071 af
12.0" Round Culvert n=0.010 L=167.0' S=0.0312 '/' Outflow=0.89 cfs 0.071 af

Pond 12P: cb 2 Peak Elev=31.14' Inflow=3.15 cfs 0.377 af
12.0" Round Culvert n=0.015 L=23.0' S=0.0313 '/' Outflow=3.15 cfs 0.377 af

Pond 13P: cb 3 Peak Elev=28.19' Inflow=3.37 cfs 0.398 af
12.0" Round Culvert n=0.015 L=68.0' S=0.0271 '/' Outflow=3.37 cfs 0.398 af

Link 1L: RTE 3A Inflow=3.37 cfs 0.398 af
Primary=3.37 cfs 0.398 af

Link 4L: ABUTTER Inflow=1.41 cfs 0.224 af
Primary=1.41 cfs 0.224 af

Total Runoff Area = 2.554 ac Runoff Volume = 0.410 af Average Runoff Depth = 1.92"
79.98% Pervious = 2.042 ac 20.02% Impervious = 0.511 ac

Summary for Subcatchment 2S: Depression

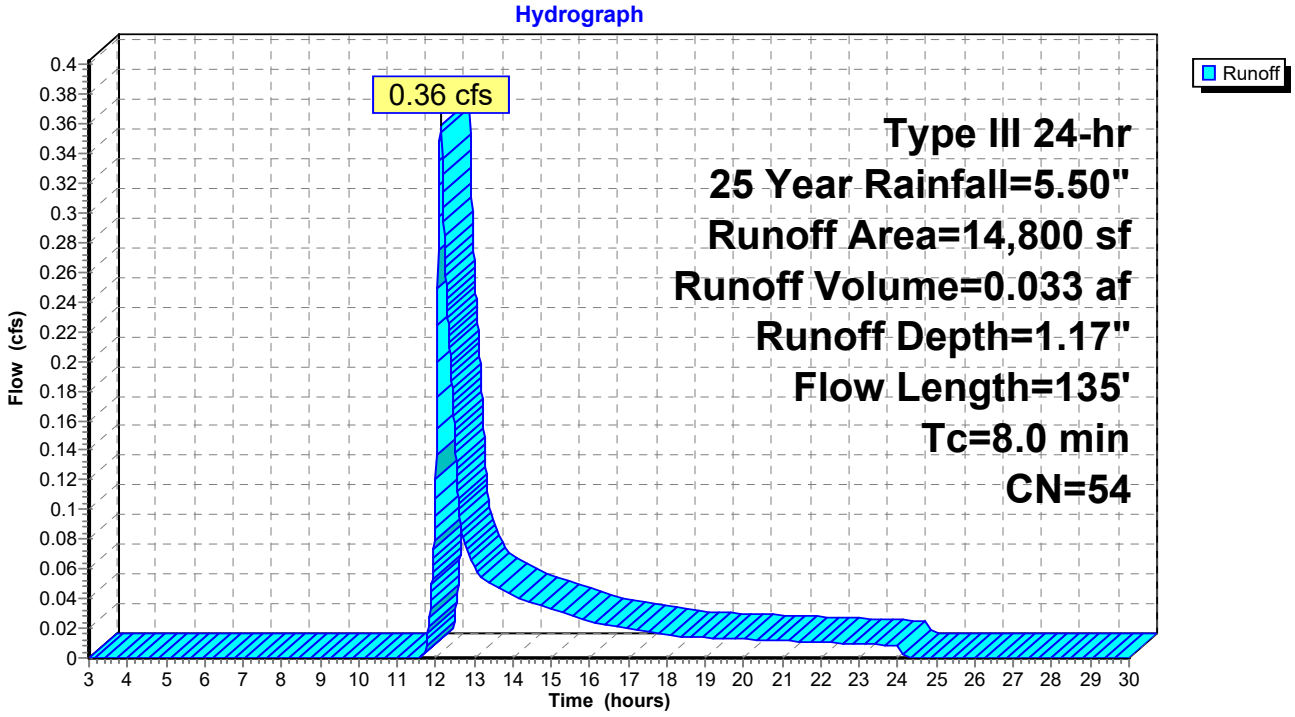
Runoff = 0.36 cfs @ 12.13 hrs, Volume= 0.033 af, Depth= 1.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 Year Rainfall=5.50"

Area (sf)	CN	Description
9,320	39	>75% Grass cover, Good, HSG A
1,106	61	>75% Grass cover, Good, HSG B
1,002	98	Roofs, HSG A
3,372	80	>75% Grass cover, Good, HSG D
14,800	54	Weighted Average
13,798		93.23% Pervious Area
1,002		6.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	50	0.0280	0.12		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
0.8	85	0.0600	1.71		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.0	135	Total			

Subcatchment 2S: Depression



Summary for Subcatchment 3S: direct flow to basin

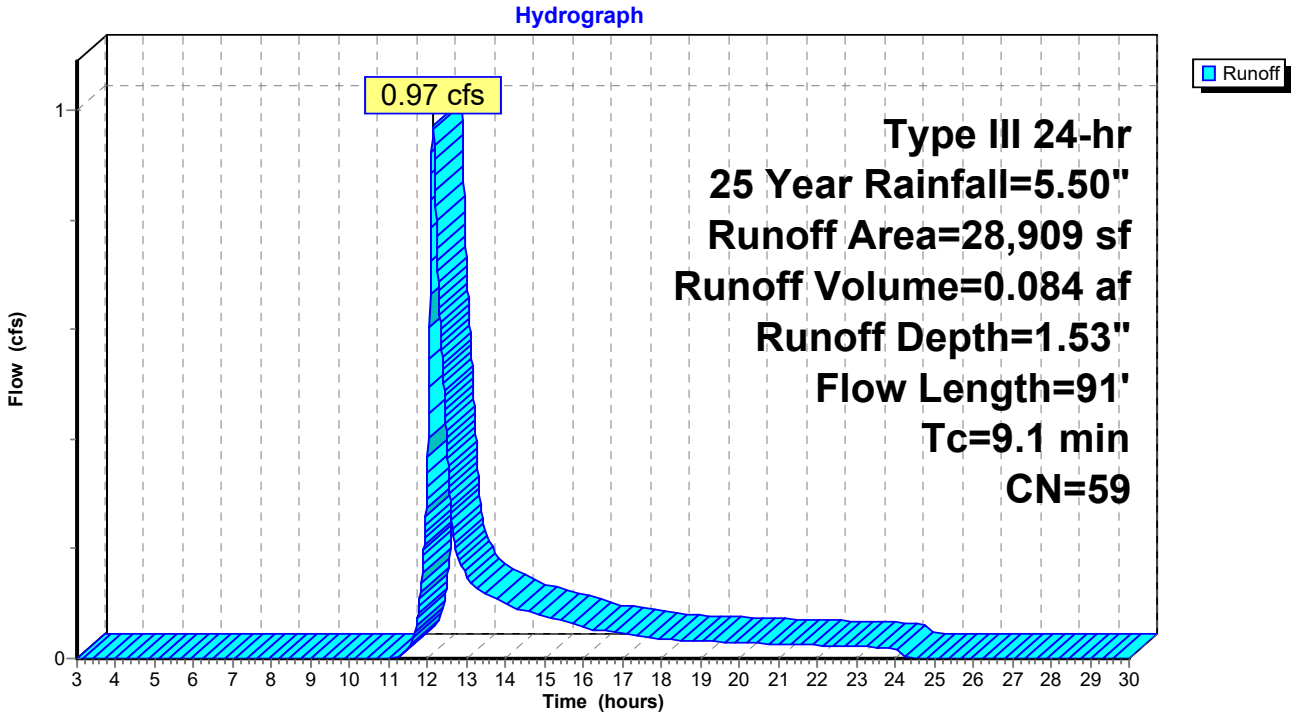
Runoff = 0.97 cfs @ 12.14 hrs, Volume= 0.084 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 Year Rainfall=5.50"

	Area (sf)	CN	Description
*	500	96	patio
	1,470	98	Water Surface, 0% imp, HSG A
*	644	98	Roofs, HSG A barn
	17,866	39	>75% Grass cover, Good, HSG A
	4,751	80	>75% Grass cover, Good, HSG D
*	1,750	98	brick patio, HSG A
*	550	98	ex house, HSG A
*	1,378	98	ex drive HSG A
	28,909	59	Weighted Average
	24,587		85.05% Pervious Area
	4,322		14.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0180	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
0.6	41	0.0300	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.1	91	Total			

Subcatchment 3S: direct flow to basin



Summary for Subcatchment 4S: kilby st inlet

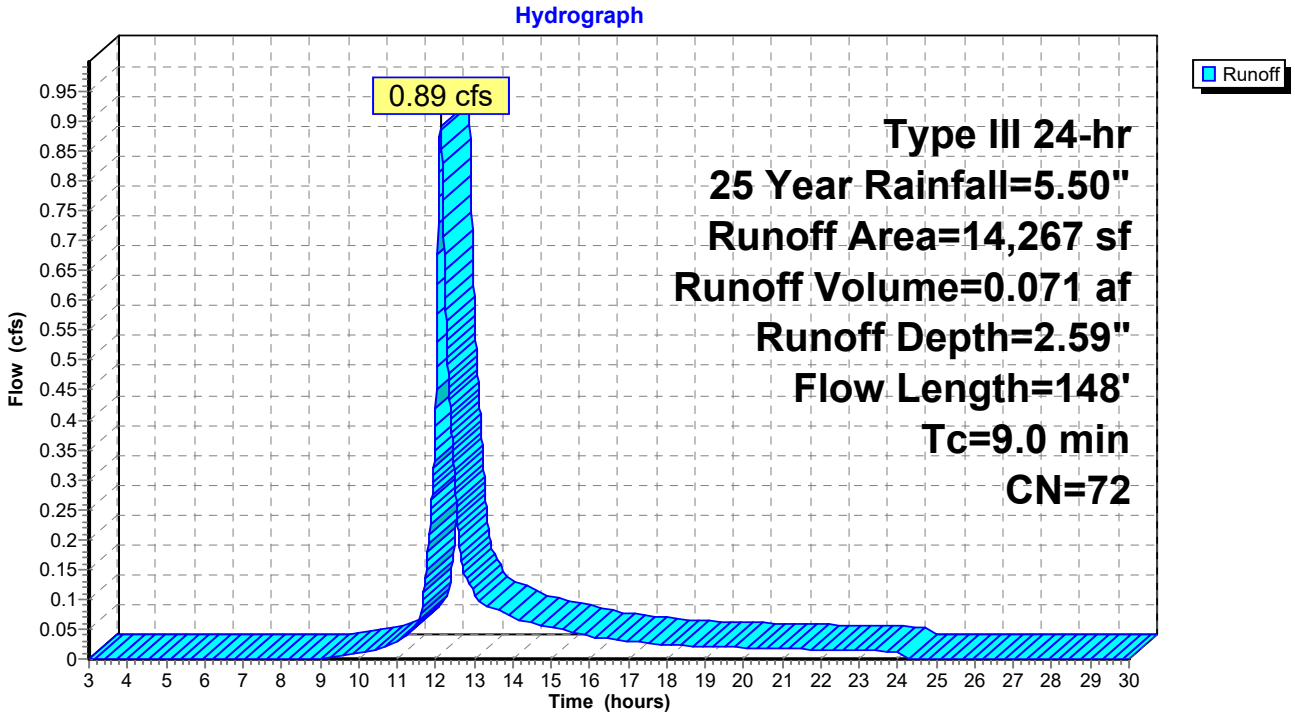
Runoff = 0.89 cfs @ 12.13 hrs, Volume= 0.071 af, Depth= 2.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 Year Rainfall=5.50"

	Area (sf)	CN	Description
	2,912	98	Paved parking, HSG B
	2,997	58	Woods/grass comb., Good, HSG B
	4,393	61	>75% Grass cover, Good, HSG B
	2,043	80	>75% Grass cover, Good, HSG D
	694	98	Paved parking, HSG B
*	1,228	61	>75% Grass cover, Good, HSG B shoulder
	14,267	72	Weighted Average
	10,661		74.72% Pervious Area
	3,606		25.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	50	0.0250	0.11		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
1.5	98	0.0230	1.06		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.0	148	Total			

Subcatchment 4S: kilby st inlet



Summary for Subcatchment 5S: direct to CB 2

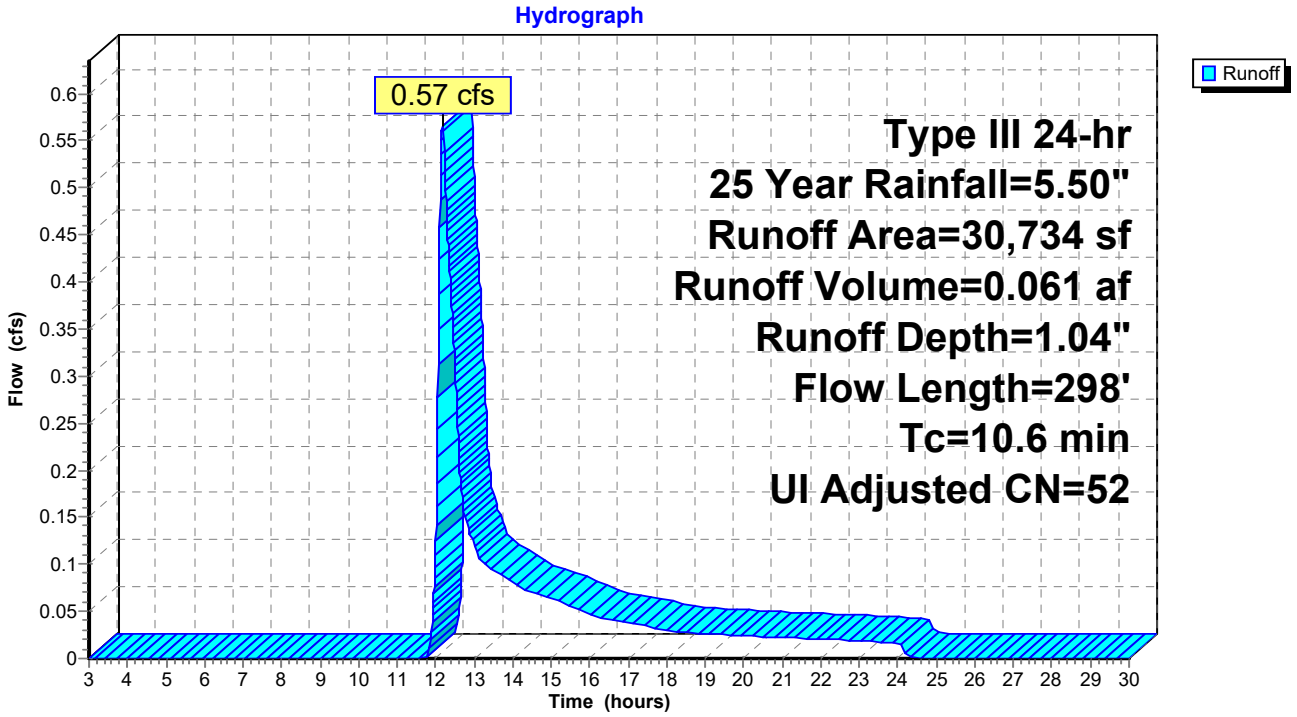
Runoff = 0.57 cfs @ 12.18 hrs, Volume= 0.061 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 Year Rainfall=5.50"

	Area (sf)	CN	Adj	Description
	4,798	80		>75% Grass cover, Good, HSG D
	1,885	61		>75% Grass cover, Good, HSG B
	2,173	77		Woods, Good, HSG D
	1,008	55		Woods, Good, HSG B
*	640	98		Unconnected roofs, HSG A barn
	1,118	98		Paved parking, HSG A
	5,973	39		>75% Grass cover, Good, HSG A
	6,090	32		Woods/grass comb., Good, HSG A
*	528	98		abutters roof HSG A
	6,521	39		>75% Grass cover, Good, HSG A
	30,734	53	52	Weighted Average, UI Adjusted
	28,448			92.56% Pervious Area
	2,286			7.44% Impervious Area
	640			28.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	50	0.0300	0.12		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
1.9	140	0.0300	1.21		**Shallow Concentrated Flow, b** Short Grass Pasture Kv= 7.0 fps
1.7	108	0.0470	1.08		**Shallow Concentrated Flow, c** Woodland Kv= 5.0 fps
10.6	298	Total			

Subcatchment 5S: direct to CB 2



Summary for Subcatchment 6S: cb 2 off lot

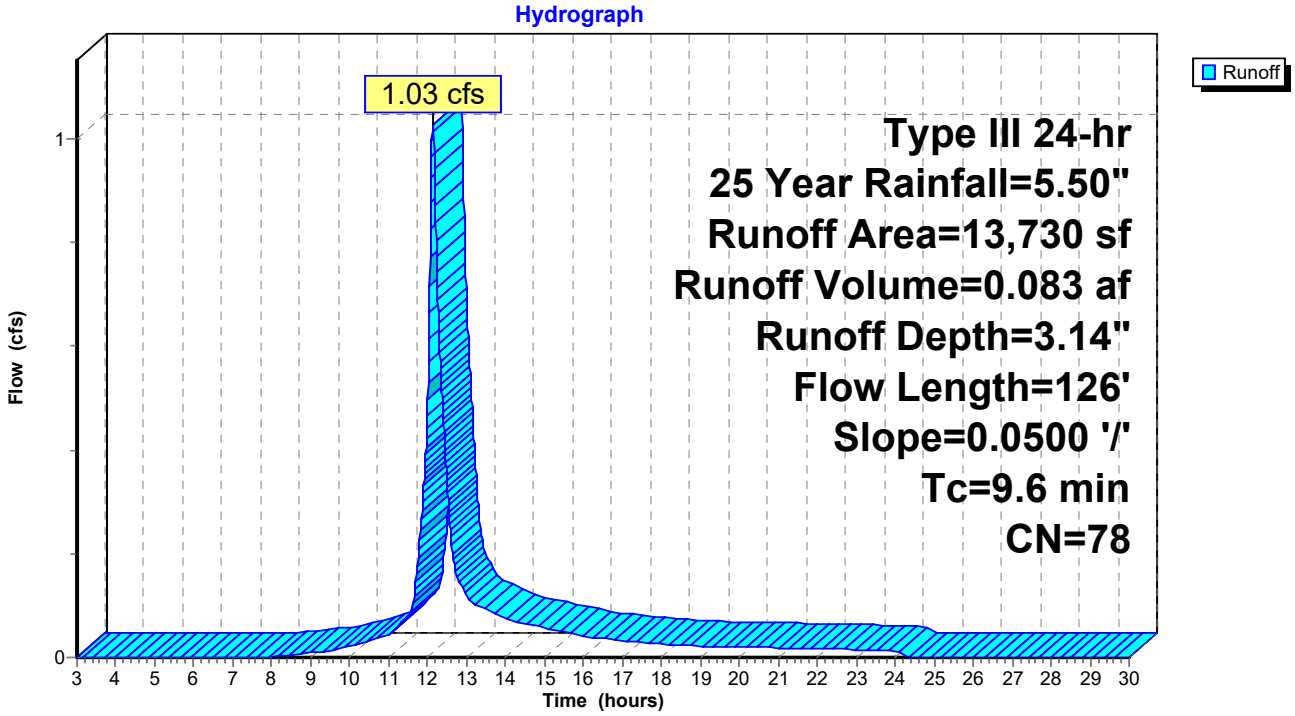
Runoff = 1.03 cfs @ 12.13 hrs, Volume= 0.083 af, Depth= 3.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 Year Rainfall=5.50"

	Area (sf)	CN	Description
	3,587	98	Paved parking, HSG B
	6,575	77	Woods, Good, HSG D
*	3,568	61	>75% Grass cover, Good, HSG B shoulder
	13,730	78	Weighted Average
	10,143		73.87% Pervious Area
	3,587		26.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0500	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
1.1	76	0.0500	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
9.6	126	Total			

Subcatchment 6S: cb 2 off lot



Summary for Subcatchment 7S: kilby street cb 3

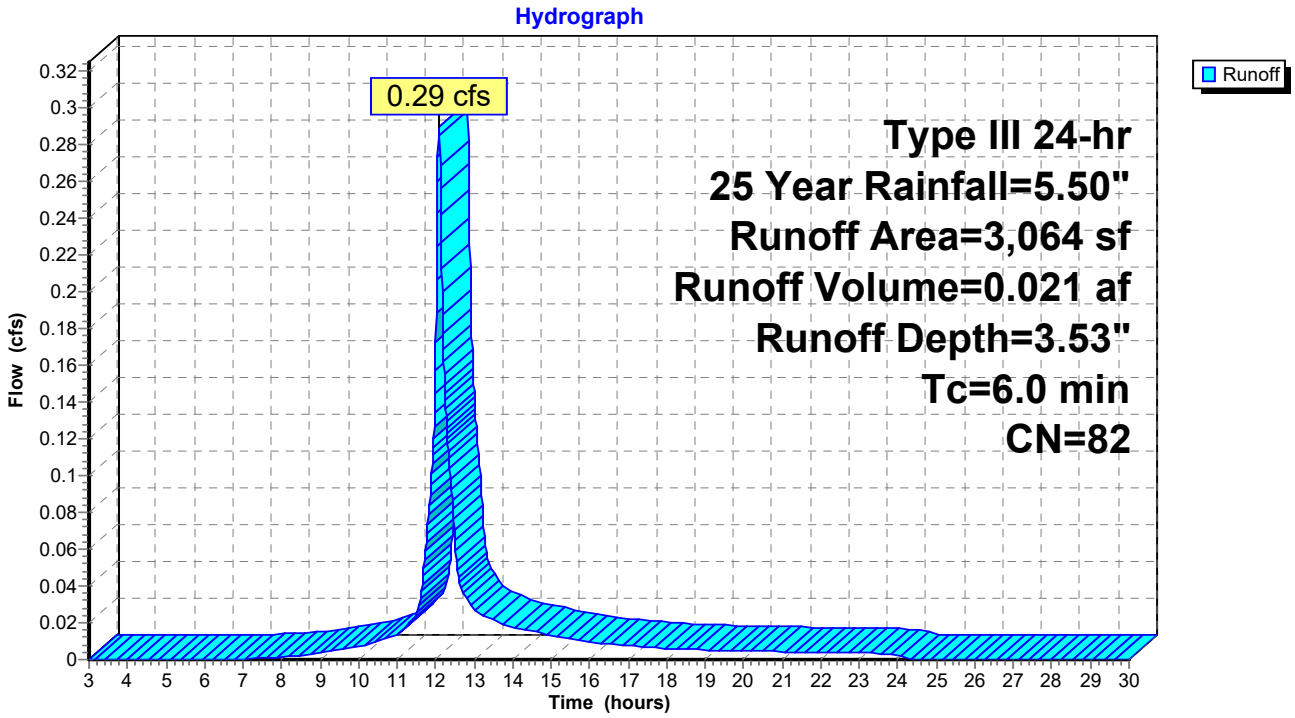
Runoff = 0.29 cfs @ 12.09 hrs, Volume= 0.021 af, Depth= 3.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 Year Rainfall=5.50"

Area (sf)	CN	Description
1,730	98	Paved parking, HSG C
1,334	61	>75% Grass cover, Good, HSG B
3,064	82	Weighted Average
1,334		43.54% Pervious Area
1,730		56.46% Impervious Area

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

Subcatchment 7S: kilby street cb 3



Summary for Subcatchment 8S: roof

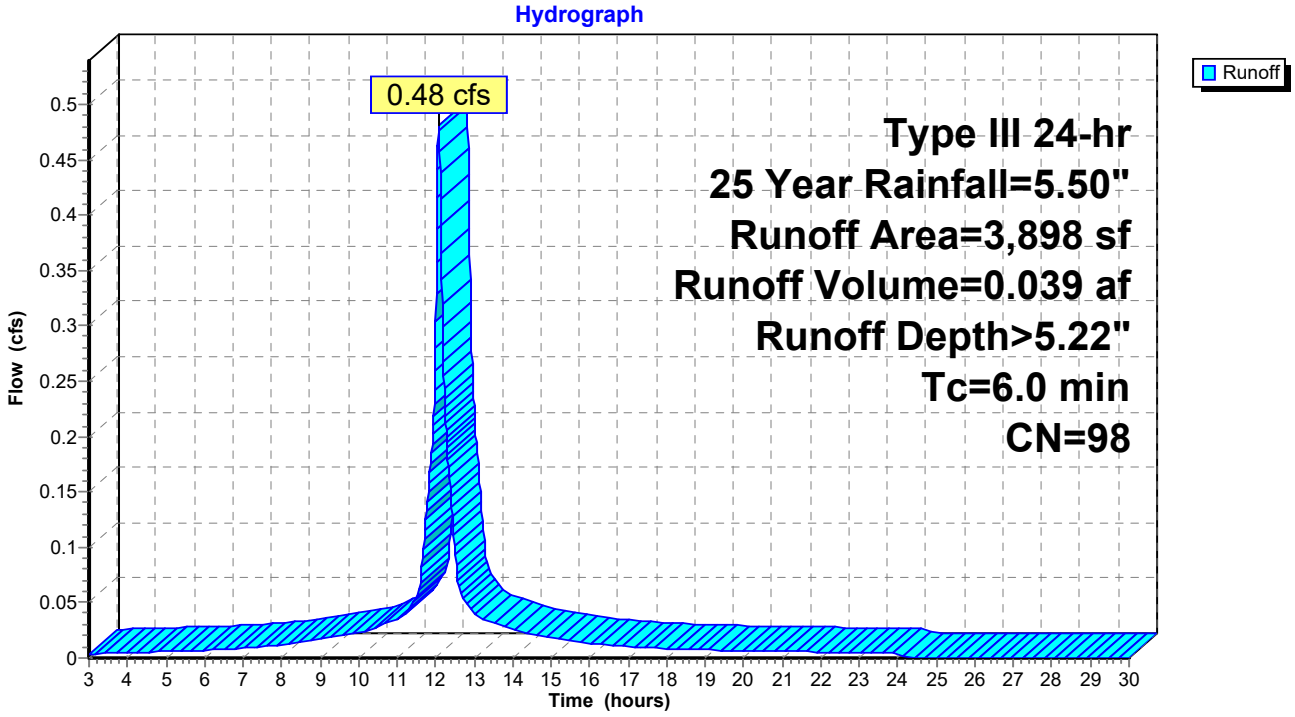
Runoff = 0.48 cfs @ 12.08 hrs, Volume= 0.039 af, Depth> 5.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 Year Rainfall=5.50"

	Area (sf)	CN	Description
	3,681	98	Roofs, HSG B
*	217	98	PORCH
	3,898	98	Weighted Average
	3,898		100.00% Impervious Area

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

Subcatchment 8S: roof



Summary for Subcatchment 9S: driveway

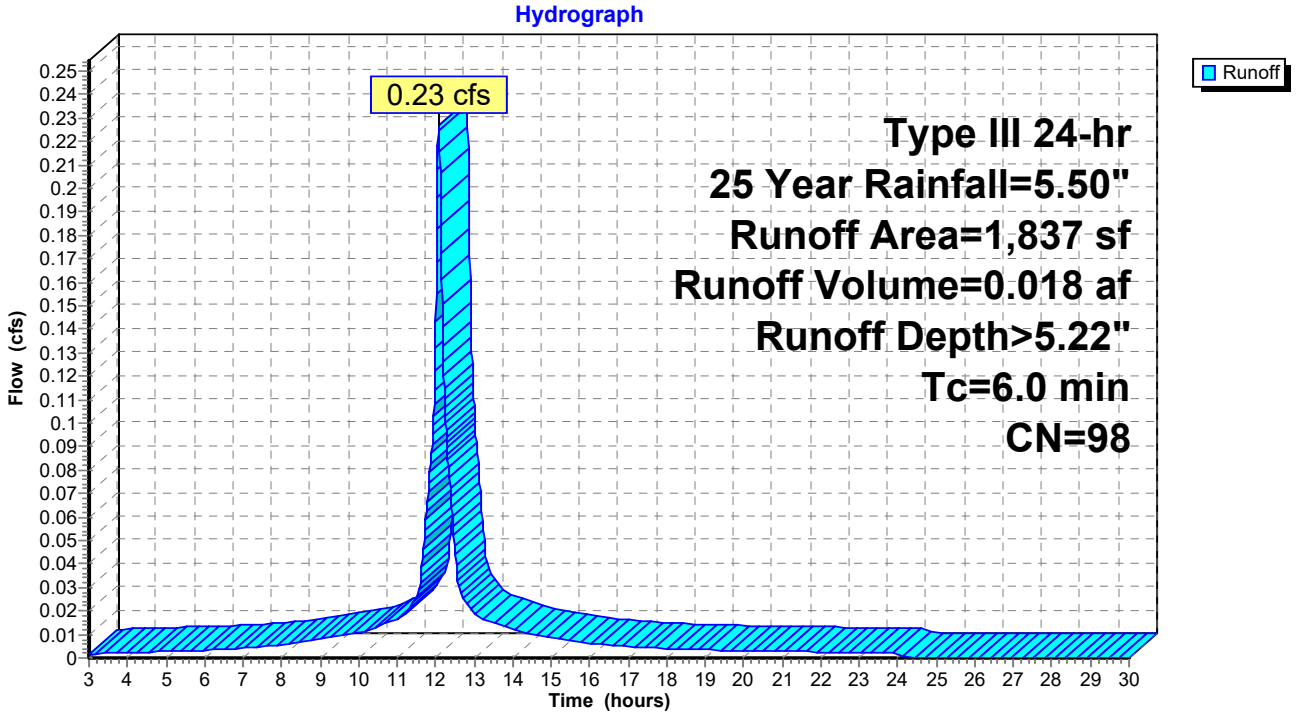
Runoff = 0.23 cfs @ 12.08 hrs, Volume= 0.018 af, Depth> 5.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 Year Rainfall=5.50"

Area (sf)	CN	Description
1,837	98	Paved parking, HSG B
1,837		100.00% Impervious Area

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

Subcatchment 9S: driveway



Summary for Pond 3P: DMH 3

[57] Hint: Peaked at 35.04' (Flood elevation advised)

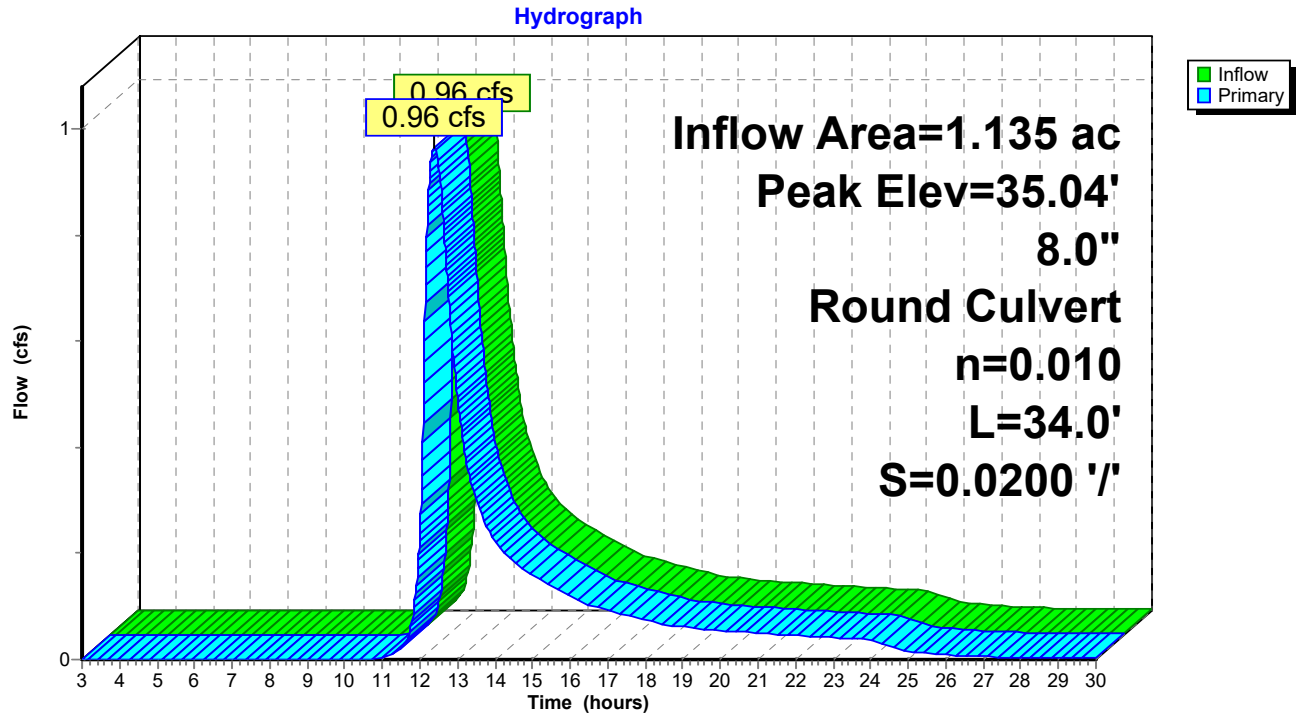
Inflow Area = 1.135 ac, 22.37% Impervious, Inflow Depth > 1.72" for 25 Year event
Inflow = 0.96 cfs @ 12.38 hrs, Volume= 0.163 af
Outflow = 0.96 cfs @ 12.38 hrs, Volume= 0.163 af, Atten= 0%, Lag= 0.0 min
Primary = 0.96 cfs @ 12.38 hrs, Volume= 0.163 af

Routing by Stor-Ind method, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 35.04' @ 12.38 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	34.18'	**8.0" Round Culvert** L= 34.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.18' / 33.50' S= 0.0200 '/' Cc= 0.900 n= 0.010, Flow Area= 0.35 sf

Primary OutFlow Max=0.96 cfs @ 12.38 hrs HW=35.04' (Free Discharge)
1=Culvert (Inlet Controls 0.96 cfs @ 2.76 fps)

Pond 3P: DMH 3



Summary for Pond 4P: basin

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.795 ac, 29.03% Impervious, Inflow Depth > 2.14" for 25 Year event
Inflow = 1.60 cfs @ 12.11 hrs, Volume= 0.142 af
Outflow = 0.76 cfs @ 12.38 hrs, Volume= 0.130 af, Atten= 52%, Lag= 15.9 min
Primary = 0.76 cfs @ 12.38 hrs, Volume= 0.130 af

Routing by Stor-Ind method, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 37.86' @ 12.38 hrs Surf.Area= 2,390 sf Storage= 1,816 cf

Plug-Flow detention time= 117.0 min calculated for 0.130 af (92% of inflow)
Center-of-Mass det. time= 73.8 min (898.7 - 824.9)

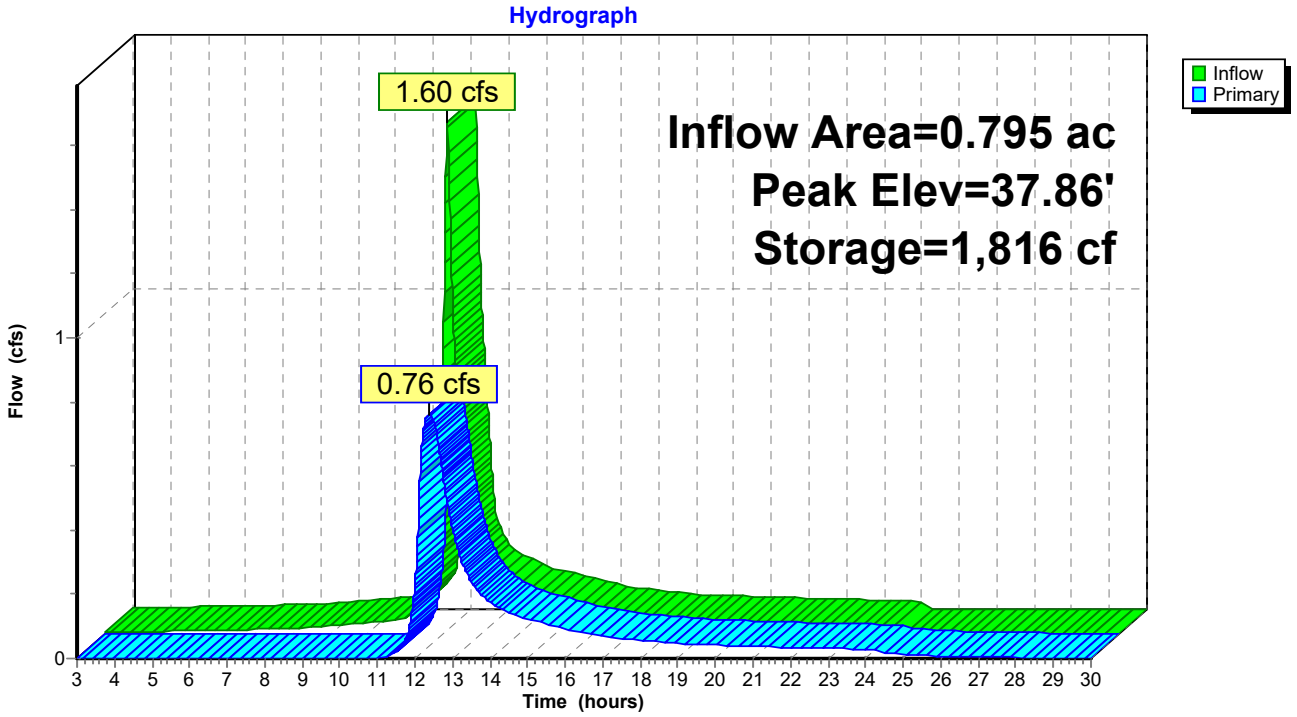
Volume	Invert	Avail.Storage	Storage Description
#1	36.80'	5,892 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
36.80	114	0	0
37.00	1,468	158	158
38.00	2,540	2,004	2,162
39.00	4,920	3,730	5,892

Device	Routing	Invert	Outlet Devices
#1	Primary	37.20'	**8.0" Round Culvert** L= 38.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 37.20' / 36.50' S= 0.0184 '/' Cc= 0.900 n= 0.010, Flow Area= 0.35 sf
#2	Primary	38.20'	**8.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.76 cfs @ 12.38 hrs HW=37.86' (Free Discharge)
1=Culvert (Inlet Controls 0.76 cfs @ 2.18 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 4P: basin



Summary for Pond 5P: depression 1

Inflow Area = 0.340 ac, 6.77% Impervious, Inflow Depth = 1.17" for 25 Year event
Inflow = 0.36 cfs @ 12.13 hrs, Volume= 0.033 af
Outflow = 0.20 cfs @ 12.39 hrs, Volume= 0.033 af, Atten= 44%, Lag= 15.2 min
Primary = 0.20 cfs @ 12.39 hrs, Volume= 0.033 af

Routing by Stor-Ind method, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 38.28' @ 12.39 hrs Surf.Area= 897 sf Storage= 238 cf

Plug-Flow detention time= 42.0 min calculated for 0.033 af (100% of inflow)
Center-of-Mass det. time= 40.6 min (930.1 - 889.4)

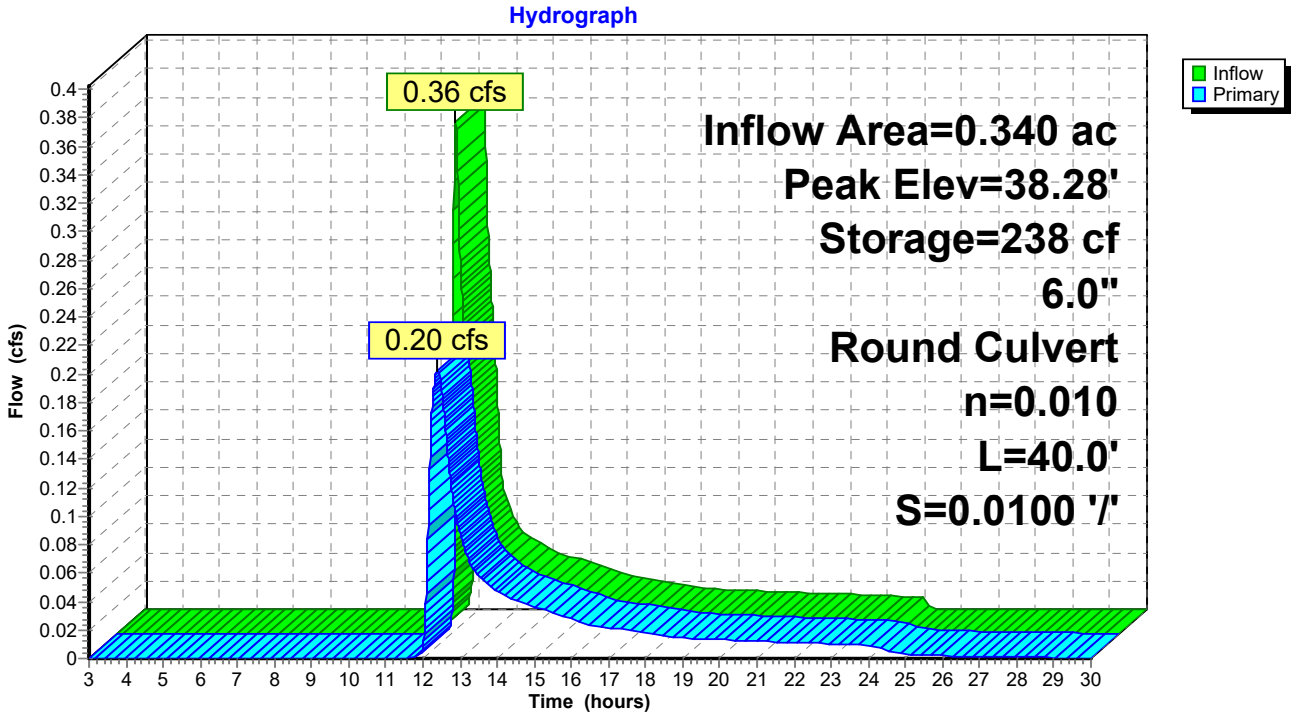
Volume	Invert	Avail.Storage	Storage Description
#1	38.00'	3,872 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
38.00	815	0	0
39.00	1,109	962	962
40.00	1,480	1,295	2,257
41.00	1,750	1,615	3,872

Device	Routing	Invert	Outlet Devices
#1	Primary	38.00'	**6.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 38.00' / 37.60' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf

Primary OutFlow Max=0.20 cfs @ 12.39 hrs HW=38.28' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 0.20 cfs @ 1.80 fps)

Pond 5P: depression 1



Summary for Pond 11P: cb 1

[57] Hint: Peaked at 35.48' (Flood elevation advised)

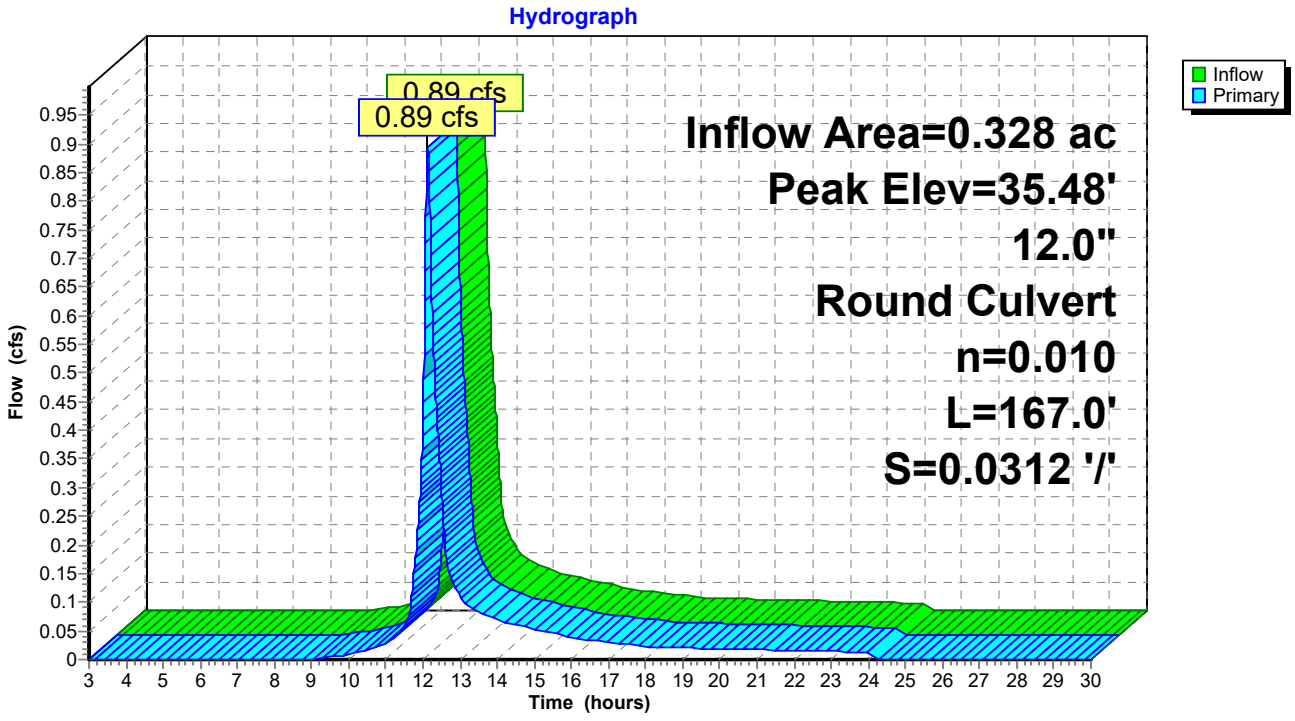
Inflow Area = 0.328 ac, 25.28% Impervious, Inflow Depth = 2.59" for 25 Year event
Inflow = 0.89 cfs @ 12.13 hrs, Volume= 0.071 af
Outflow = 0.89 cfs @ 12.13 hrs, Volume= 0.071 af, Atten= 0%, Lag= 0.0 min
Primary = 0.89 cfs @ 12.13 hrs, Volume= 0.071 af

Routing by Stor-Ind method, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 35.48' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	35.00'	**12.0" Round Culvert** L= 167.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 35.00' / 29.79' S= 0.0312 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=0.89 cfs @ 12.13 hrs HW=35.48' (Free Discharge)
1=Culvert (Inlet Controls 0.89 cfs @ 2.37 fps)

Pond 11P: cb 1



Summary for Pond 12P: cb 2

[57] Hint: Peaked at 31.14' (Flood elevation advised)
[79] Warning: Submerged Pond 11P Primary device # 1 OUTLET by 1.35'

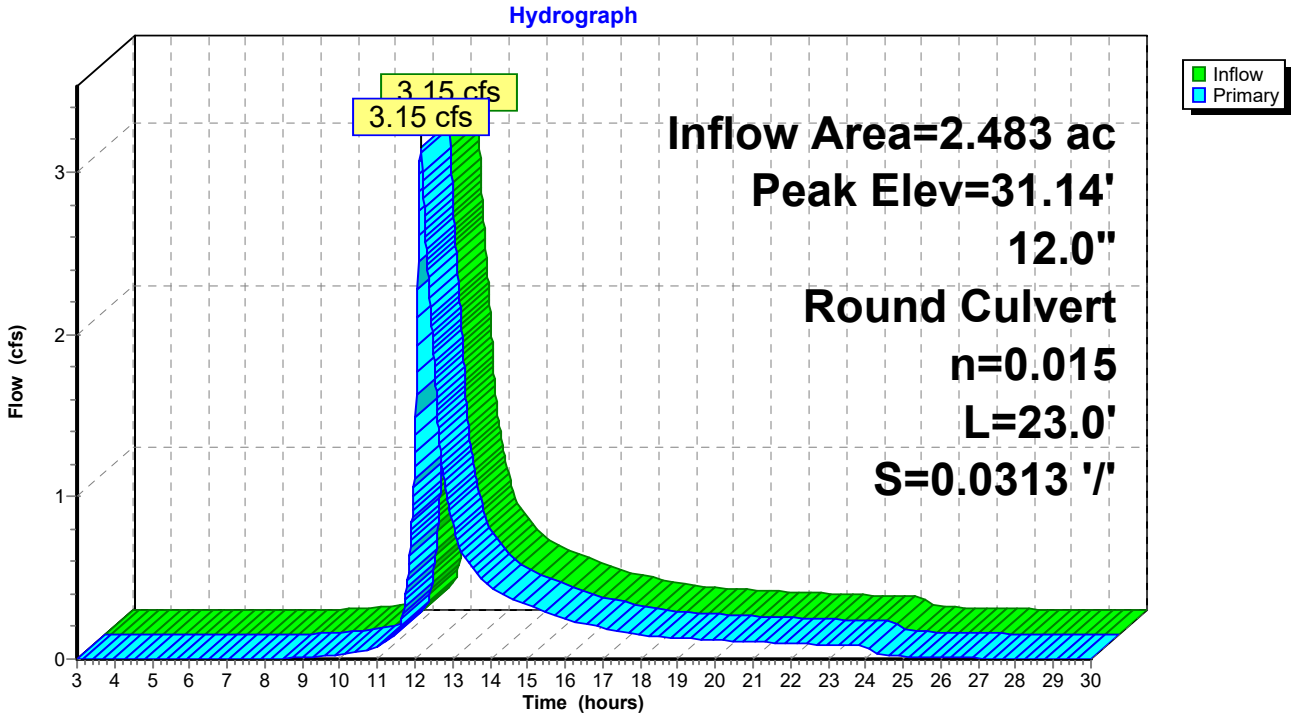
Inflow Area = 2.483 ac, 18.99% Impervious, Inflow Depth > 1.82" for 25 Year event
Inflow = 3.15 cfs @ 12.16 hrs, Volume= 0.377 af
Outflow = 3.15 cfs @ 12.16 hrs, Volume= 0.377 af, Atten= 0%, Lag= 0.0 min
Primary = 3.15 cfs @ 12.16 hrs, Volume= 0.377 af

Routing by Stor-Ind method, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 31.14' @ 12.16 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	29.95'	**12.0" Round Culvert** L= 23.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 29.95' / 29.23' S= 0.0313 '/' Cc= 0.900 n= 0.015, Flow Area= 0.79 sf

Primary OutFlow Max=3.15 cfs @ 12.16 hrs HW=31.14' (Free Discharge)
1=Culvert (Inlet Controls 3.15 cfs @ 4.01 fps)

Pond 12P: cb 2



Summary for Pond 13P: cb 3

[57] Hint: Peaked at 28.19' (Flood elevation advised)

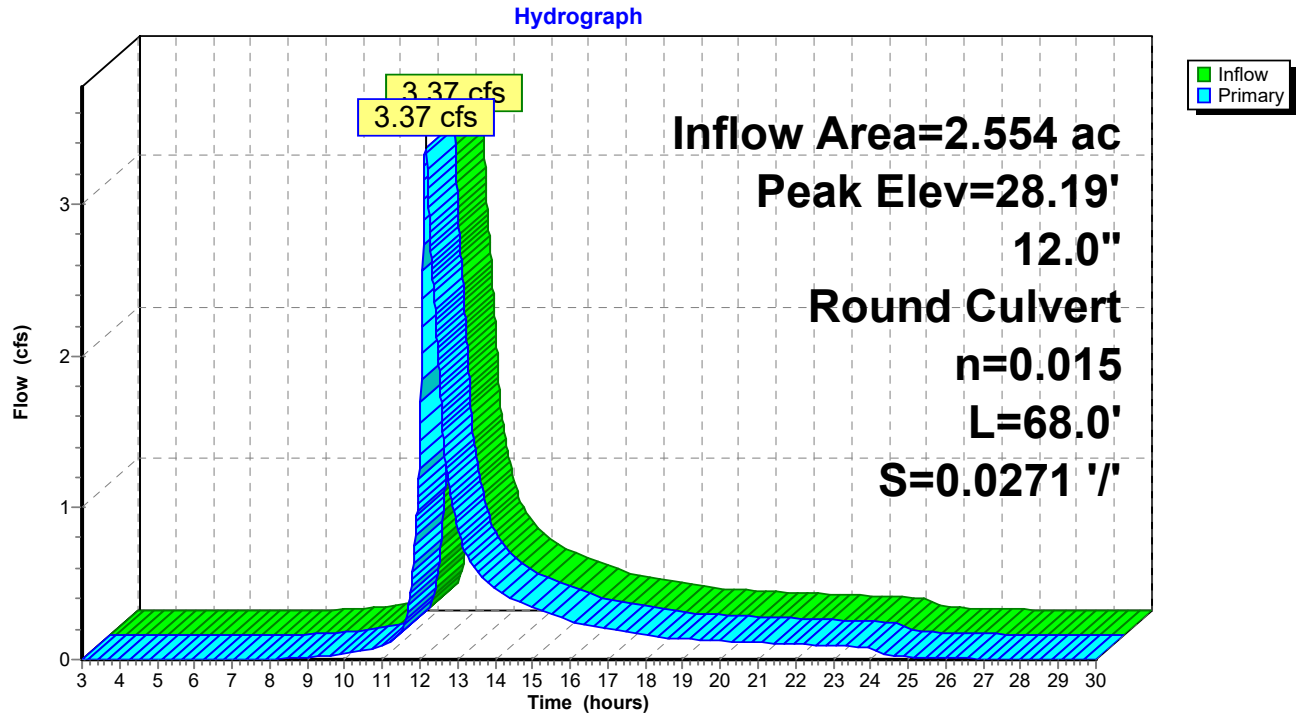
Inflow Area = 2.554 ac, 20.02% Impervious, Inflow Depth > 1.87" for 25 Year event
Inflow = 3.37 cfs @ 12.15 hrs, Volume= 0.398 af
Outflow = 3.37 cfs @ 12.15 hrs, Volume= 0.398 af, Atten= 0%, Lag= 0.0 min
Primary = 3.37 cfs @ 12.15 hrs, Volume= 0.398 af

Routing by Stor-Ind method, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 28.19' @ 12.15 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	26.89'	**12.0" Round Culvert** L= 68.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 26.89' / 25.05' S= 0.0271 '/' Cc= 0.900 n= 0.015, Flow Area= 0.79 sf

Primary OutFlow Max=3.37 cfs @ 12.15 hrs HW=28.19' (Free Discharge)
1=Culvert (Inlet Controls 3.37 cfs @ 4.30 fps)

Pond 13P: cb 3

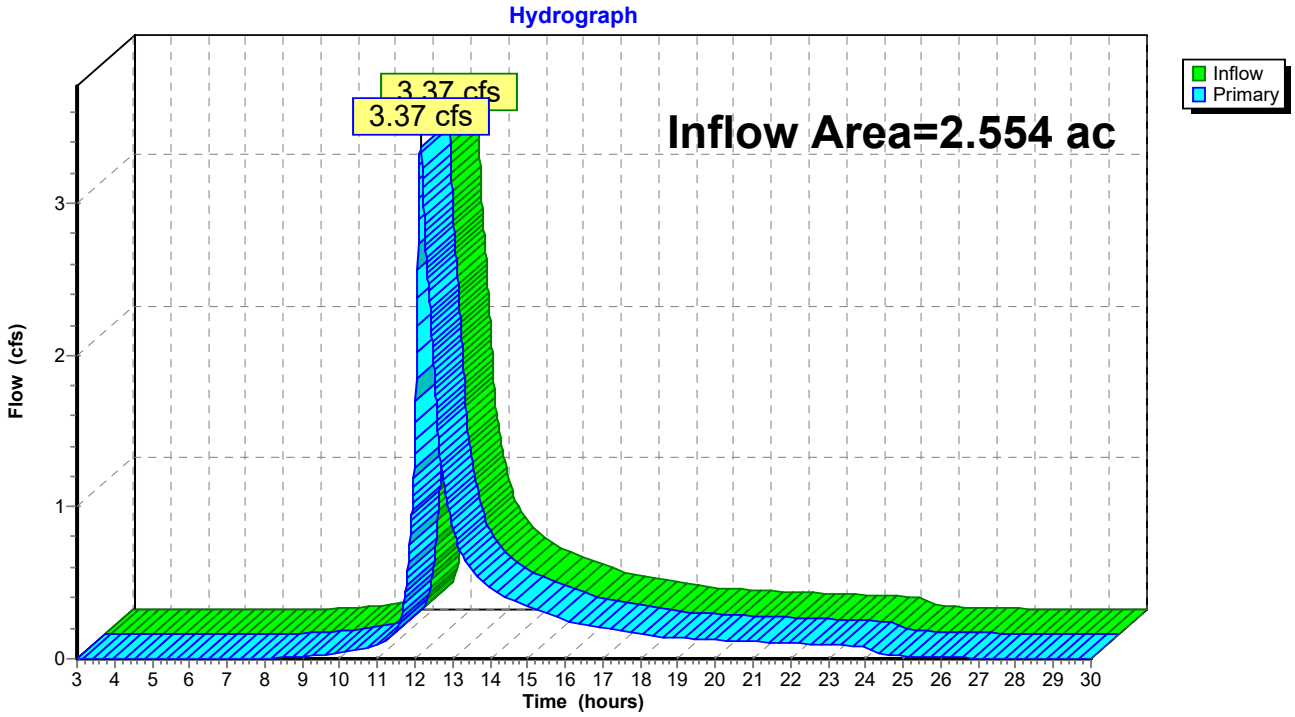


Summary for Link 1L: RTE 3A

Inflow Area = 2.554 ac, 20.02% Impervious, Inflow Depth > 1.87" for 25 Year event
Inflow = 3.37 cfs @ 12.15 hrs, Volume= 0.398 af
Primary = 3.37 cfs @ 12.15 hrs, Volume= 0.398 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs

Link 1L: RTE 3A

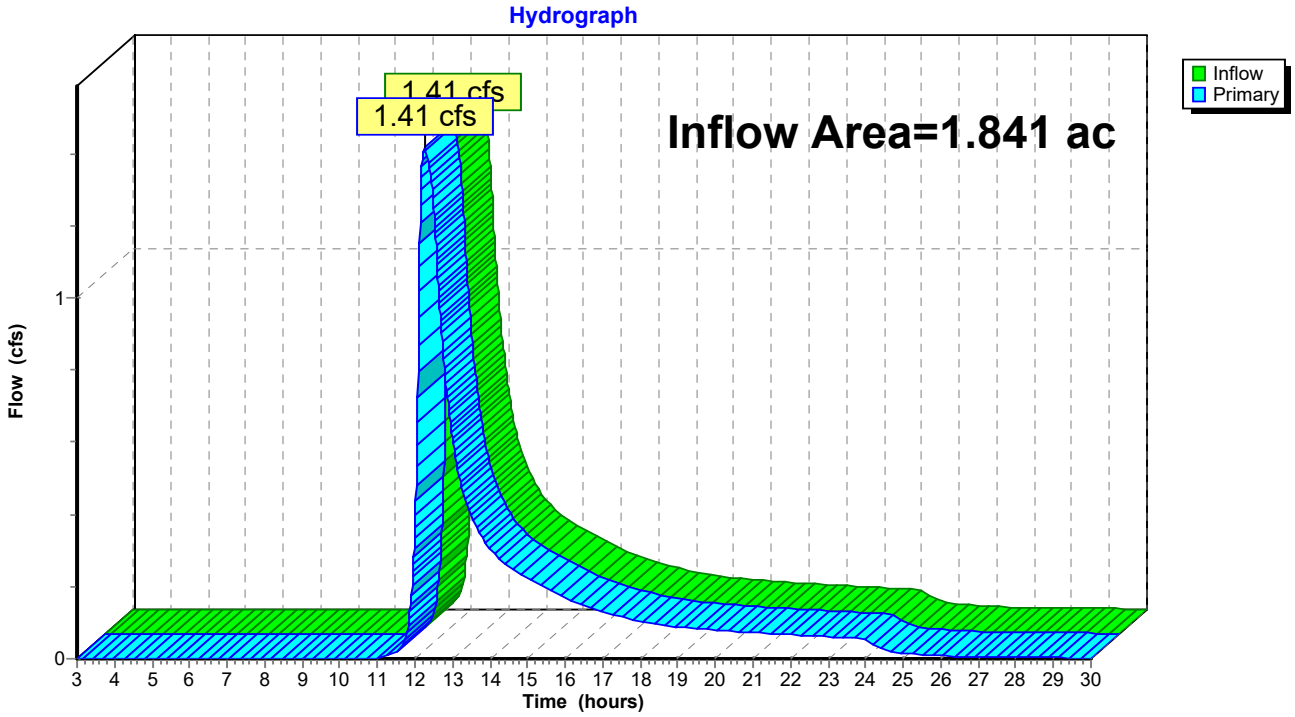


Summary for Link 4L: ABUTTER

Inflow Area = 1.841 ac, 16.64% Impervious, Inflow Depth > 1.46" for 25 Year event
Inflow = 1.41 cfs @ 12.24 hrs, Volume= 0.224 af
Primary = 1.41 cfs @ 12.24 hrs, Volume= 0.224 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs

Link 4L: ABUTTER



Time span=3.00-30.00 hrs, dt=0.01 hrs, 2701 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 2S: Depression Runoff Area=14,800 sf 6.77% Impervious Runoff Depth=2.03"
Flow Length=135' Tc=8.0 min CN=54 Runoff=0.70 cfs 0.057 af

Subcatchment 3S: direct flow to basin Runoff Area=28,909 sf 14.95% Impervious Runoff Depth=2.51"
Flow Length=91' Tc=9.1 min CN=59 Runoff=1.69 cfs 0.139 af

Subcatchment 4S: kilby st inlet Runoff Area=14,267 sf 25.28% Impervious Runoff Depth=3.83"
Flow Length=148' Tc=9.0 min CN=72 Runoff=1.33 cfs 0.105 af

Subcatchment 5S: direct to CB 2 Runoff Area=30,734 sf 7.44% Impervious Runoff Depth=1.85"
Flow Length=298' Tc=10.6 min UI Adjusted CN=52 Runoff=1.17 cfs 0.109 af

Subcatchment 6S: cb 2 off lot Runoff Area=13,730 sf 26.13% Impervious Runoff Depth=4.47"
Flow Length=126' Slope=0.0500 '/' Tc=9.6 min CN=78 Runoff=1.46 cfs 0.118 af

Subcatchment 7S: kilby street cb 3 Runoff Area=3,064 sf 56.46% Impervious Runoff Depth=4.92"
Tc=6.0 min CN=82 Runoff=0.40 cfs 0.029 af

Subcatchment 8S: roof Runoff Area=3,898 sf 100.00% Impervious Runoff Depth>6.69"
Tc=6.0 min CN=98 Runoff=0.61 cfs 0.050 af

Subcatchment 9S: driveway Runoff Area=1,837 sf 100.00% Impervious Runoff Depth>6.69"
Tc=6.0 min CN=98 Runoff=0.29 cfs 0.023 af

Pond 3P: DMH 3 Peak Elev=35.75' Inflow=1.47 cfs 0.258 af
8.0" Round Culvert n=0.010 L=34.0' S=0.0200 '/' Outflow=1.47 cfs 0.258 af

Pond 4P: basin Peak Elev=38.17' Storage=2,631 cf Inflow=2.49 cfs 0.212 af
Outflow=1.06 cfs 0.200 af

Pond 5P: depression 1 Peak Elev=38.45' Storage=398 cf Inflow=0.70 cfs 0.057 af
6.0" Round Culvert n=0.010 L=40.0' S=0.0100 '/' Outflow=0.43 cfs 0.057 af

Pond 11P: cb 1 Peak Elev=35.61' Inflow=1.33 cfs 0.105 af
12.0" Round Culvert n=0.010 L=167.0' S=0.0312 '/' Outflow=1.33 cfs 0.105 af

Pond 12P: cb 2 Peak Elev=32.28' Inflow=5.12 cfs 0.588 af
12.0" Round Culvert n=0.015 L=23.0' S=0.0313 '/' Outflow=5.12 cfs 0.588 af

Pond 13P: cb 3 Peak Elev=29.46' Inflow=5.44 cfs 0.617 af
12.0" Round Culvert n=0.015 L=68.0' S=0.0271 '/' Outflow=5.44 cfs 0.617 af

Link 1L: RTE 3A Inflow=5.44 cfs 0.617 af
Primary=5.44 cfs 0.617 af

Link 4L: ABUTTER Inflow=2.49 cfs 0.366 af
Primary=2.49 cfs 0.366 af

Total Runoff Area = 2.554 ac Runoff Volume = 0.629 af Average Runoff Depth = 2.96"
79.98% Pervious = 2.042 ac 20.02% Impervious = 0.511 ac

Summary for Subcatchment 2S: Depression

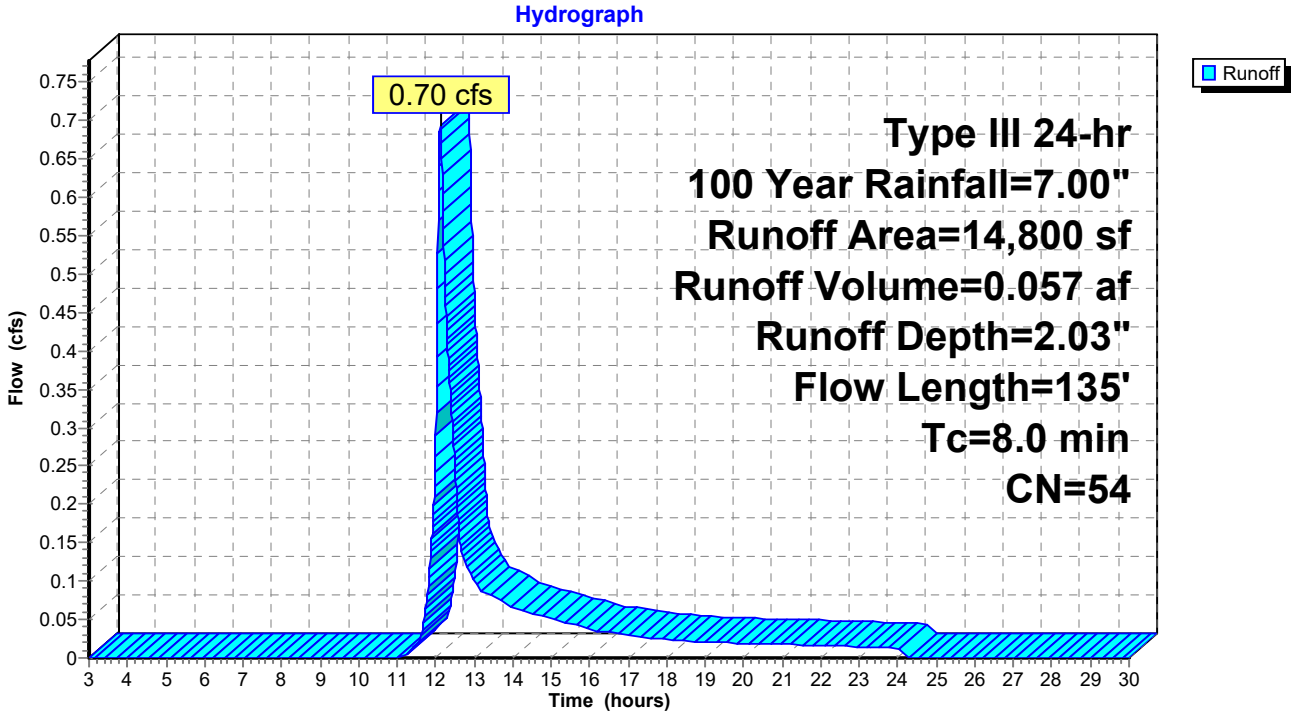
Runoff = 0.70 cfs @ 12.12 hrs, Volume= 0.057 af, Depth= 2.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Rainfall=7.00"

Area (sf)	CN	Description
9,320	39	>75% Grass cover, Good, HSG A
1,106	61	>75% Grass cover, Good, HSG B
1,002	98	Roofs, HSG A
3,372	80	>75% Grass cover, Good, HSG D
14,800	54	Weighted Average
13,798		93.23% Pervious Area
1,002		6.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	50	0.0280	0.12		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
0.8	85	0.0600	1.71		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.0	135	Total			

Subcatchment 2S: Depression



Summary for Subcatchment 3S: direct flow to basin

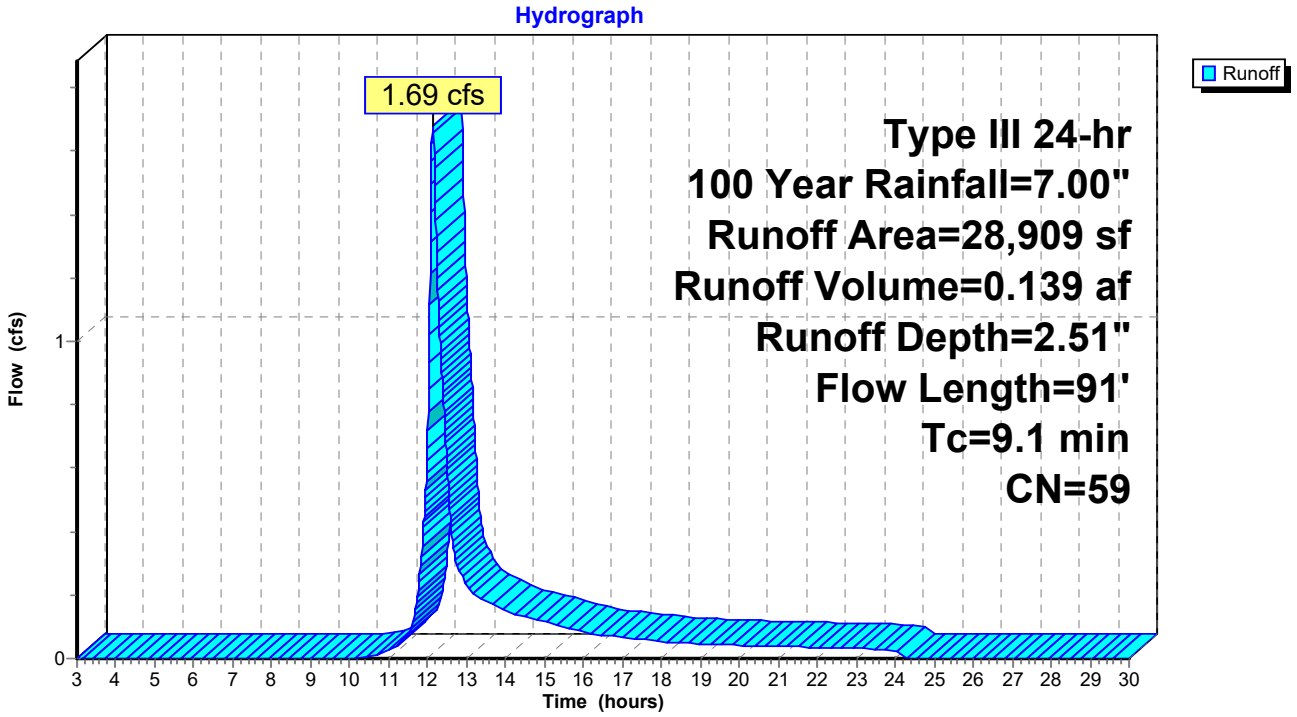
Runoff = 1.69 cfs @ 12.14 hrs, Volume= 0.139 af, Depth= 2.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Rainfall=7.00"

	Area (sf)	CN	Description
*	500	96	patio
	1,470	98	Water Surface, 0% imp, HSG A
*	644	98	Roofs, HSG A barn
	17,866	39	>75% Grass cover, Good, HSG A
	4,751	80	>75% Grass cover, Good, HSG D
*	1,750	98	brick patio, HSG A
*	550	98	ex house, HSG A
*	1,378	98	ex drive HSG A
	28,909	59	Weighted Average
	24,587		85.05% Pervious Area
	4,322		14.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0180	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
0.6	41	0.0300	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.1	91	Total			

Subcatchment 3S: direct flow to basin



Summary for Subcatchment 4S: kilby st inlet

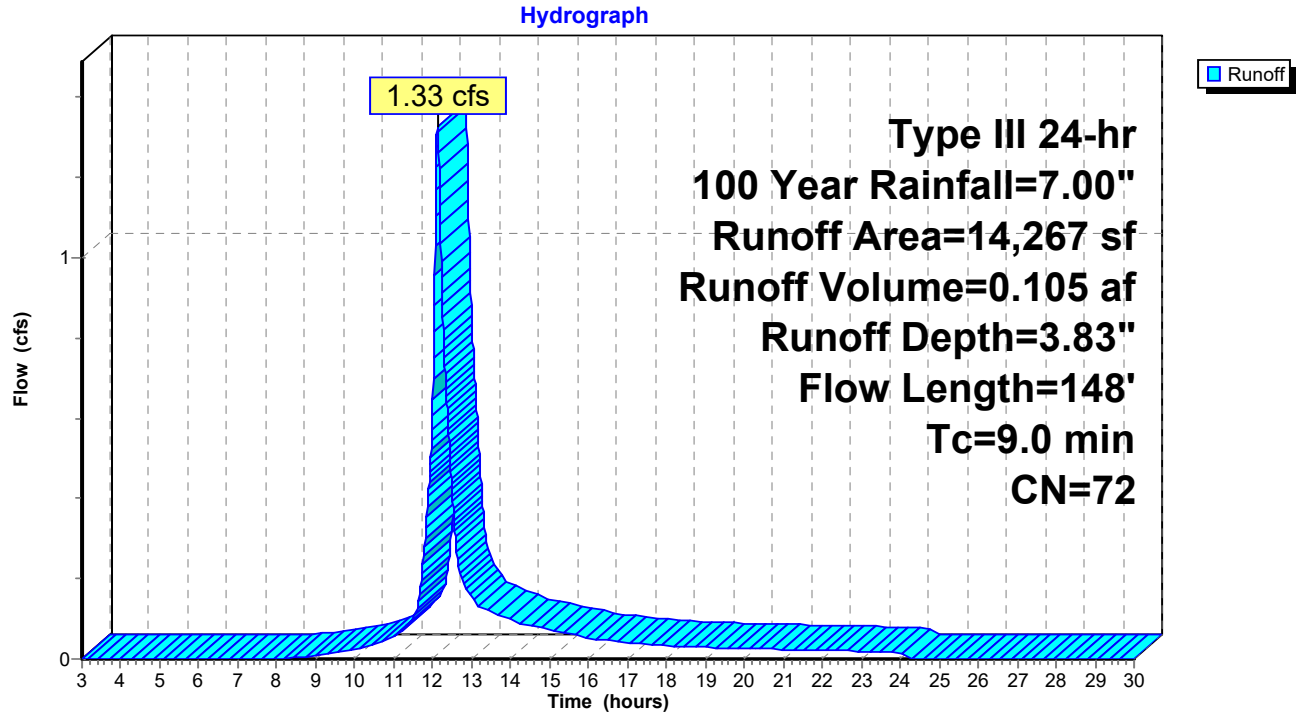
Runoff = 1.33 cfs @ 12.13 hrs, Volume= 0.105 af, Depth= 3.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Rainfall=7.00"

	Area (sf)	CN	Description
	2,912	98	Paved parking, HSG B
	2,997	58	Woods/grass comb., Good, HSG B
	4,393	61	>75% Grass cover, Good, HSG B
	2,043	80	>75% Grass cover, Good, HSG D
	694	98	Paved parking, HSG B
*	1,228	61	>75% Grass cover, Good, HSG B shoulder
	14,267	72	Weighted Average
	10,661		74.72% Pervious Area
	3,606		25.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	50	0.0250	0.11		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
1.5	98	0.0230	1.06		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.0	148	Total			

Subcatchment 4S: kilby st inlet



Summary for Subcatchment 5S: direct to CB 2

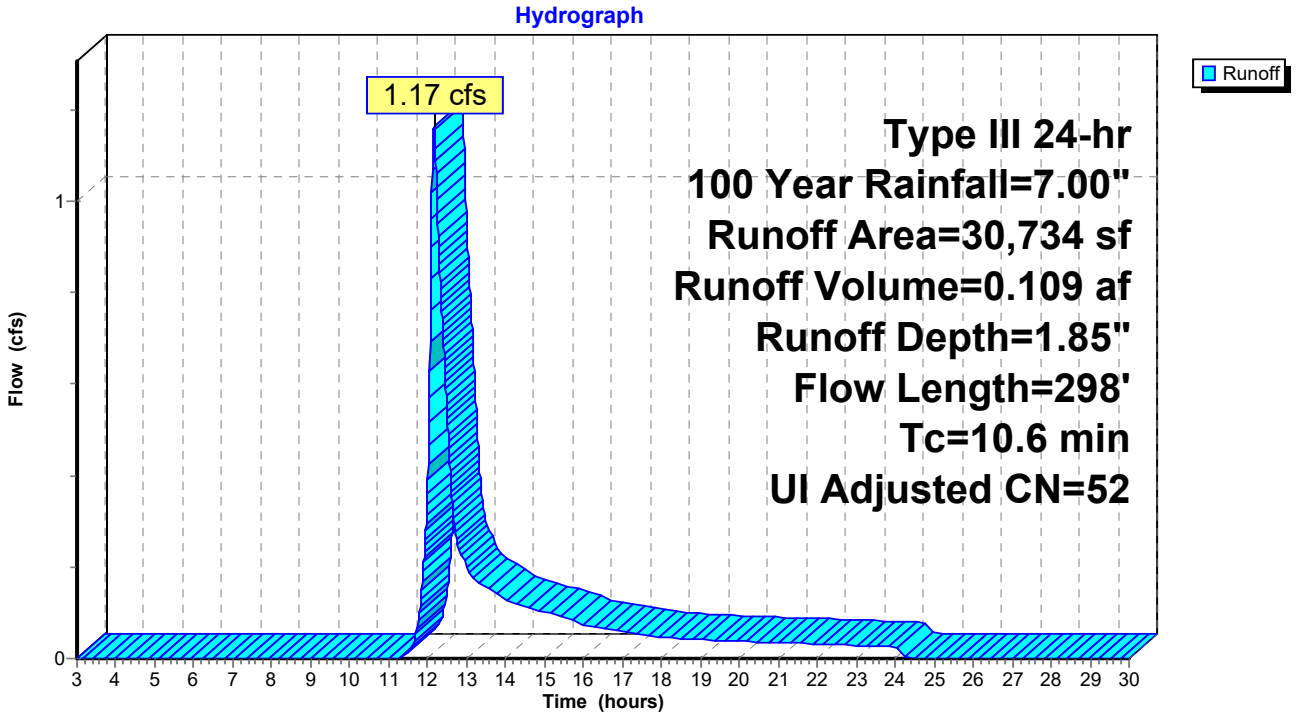
Runoff = 1.17 cfs @ 12.16 hrs, Volume= 0.109 af, Depth= 1.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Rainfall=7.00"

	Area (sf)	CN	Adj	Description
	4,798	80		>75% Grass cover, Good, HSG D
	1,885	61		>75% Grass cover, Good, HSG B
	2,173	77		Woods, Good, HSG D
	1,008	55		Woods, Good, HSG B
*	640	98		Unconnected roofs, HSG A barn
	1,118	98		Paved parking, HSG A
	5,973	39		>75% Grass cover, Good, HSG A
	6,090	32		Woods/grass comb., Good, HSG A
*	528	98		abutters roof HSG A
	6,521	39		>75% Grass cover, Good, HSG A
	30,734	53	52	Weighted Average, UI Adjusted
	28,448			92.56% Pervious Area
	2,286			7.44% Impervious Area
	640			28.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	50	0.0300	0.12		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
1.9	140	0.0300	1.21		**Shallow Concentrated Flow, b** Short Grass Pasture Kv= 7.0 fps
1.7	108	0.0470	1.08		**Shallow Concentrated Flow, c** Woodland Kv= 5.0 fps
10.6	298	Total			

Subcatchment 5S: direct to CB 2



Summary for Subcatchment 6S: cb 2 off lot

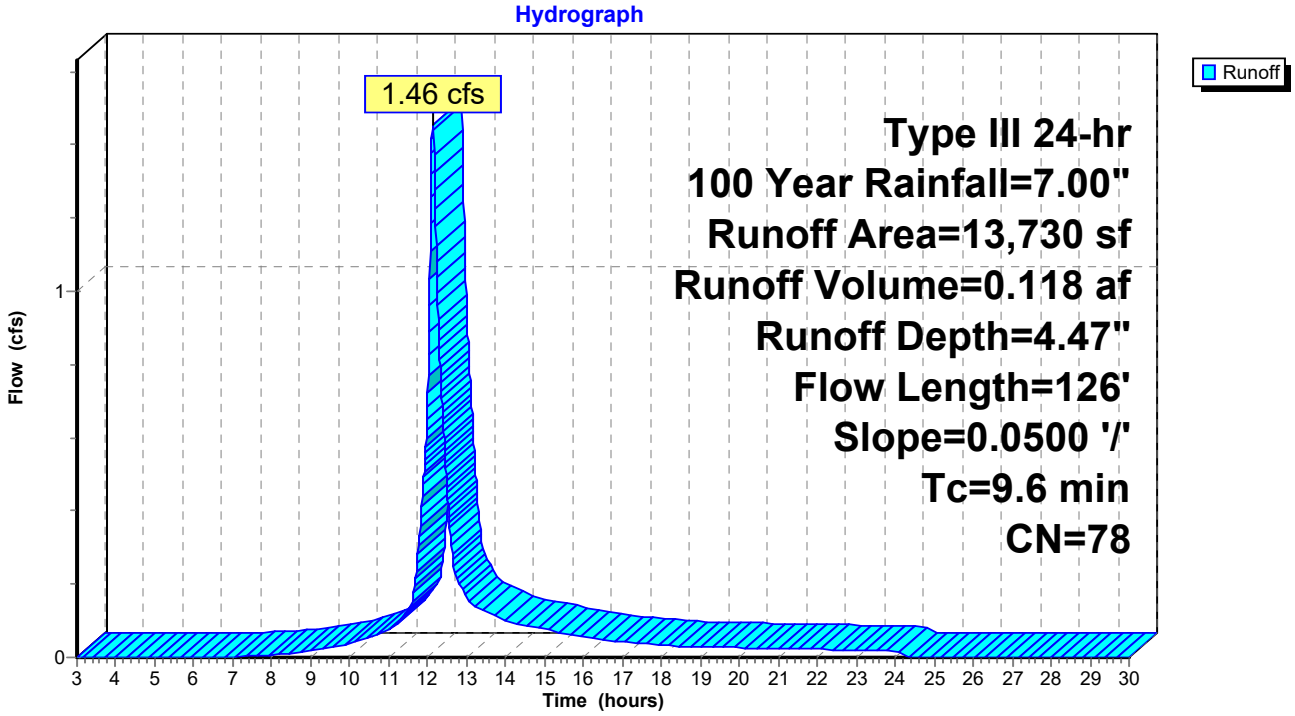
Runoff = 1.46 cfs @ 12.13 hrs, Volume= 0.118 af, Depth= 4.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Rainfall=7.00"

	Area (sf)	CN	Description
	3,587	98	Paved parking, HSG B
	6,575	77	Woods, Good, HSG D
*	3,568	61	>75% Grass cover, Good, HSG B shoulder
	13,730	78	Weighted Average
	10,143		73.87% Pervious Area
	3,587		26.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0500	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
1.1	76	0.0500	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
9.6	126	Total			

Subcatchment 6S: cb 2 off lot



Summary for Subcatchment 7S: kilby street cb 3

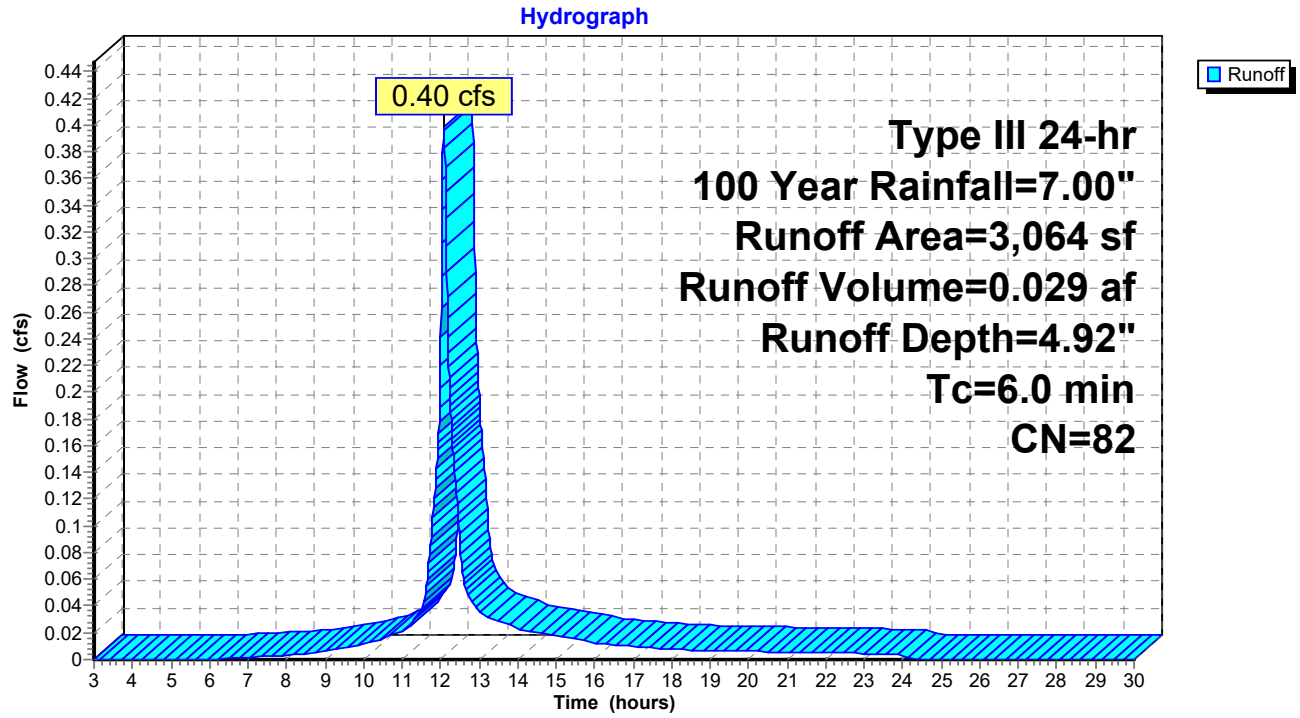
Runoff = 0.40 cfs @ 12.09 hrs, Volume= 0.029 af, Depth= 4.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Rainfall=7.00"

Area (sf)	CN	Description
1,730	98	Paved parking, HSG C
1,334	61	>75% Grass cover, Good, HSG B
3,064	82	Weighted Average
1,334		43.54% Pervious Area
1,730		56.46% Impervious Area

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

Subcatchment 7S: kilby street cb 3



Summary for Subcatchment 8S: roof

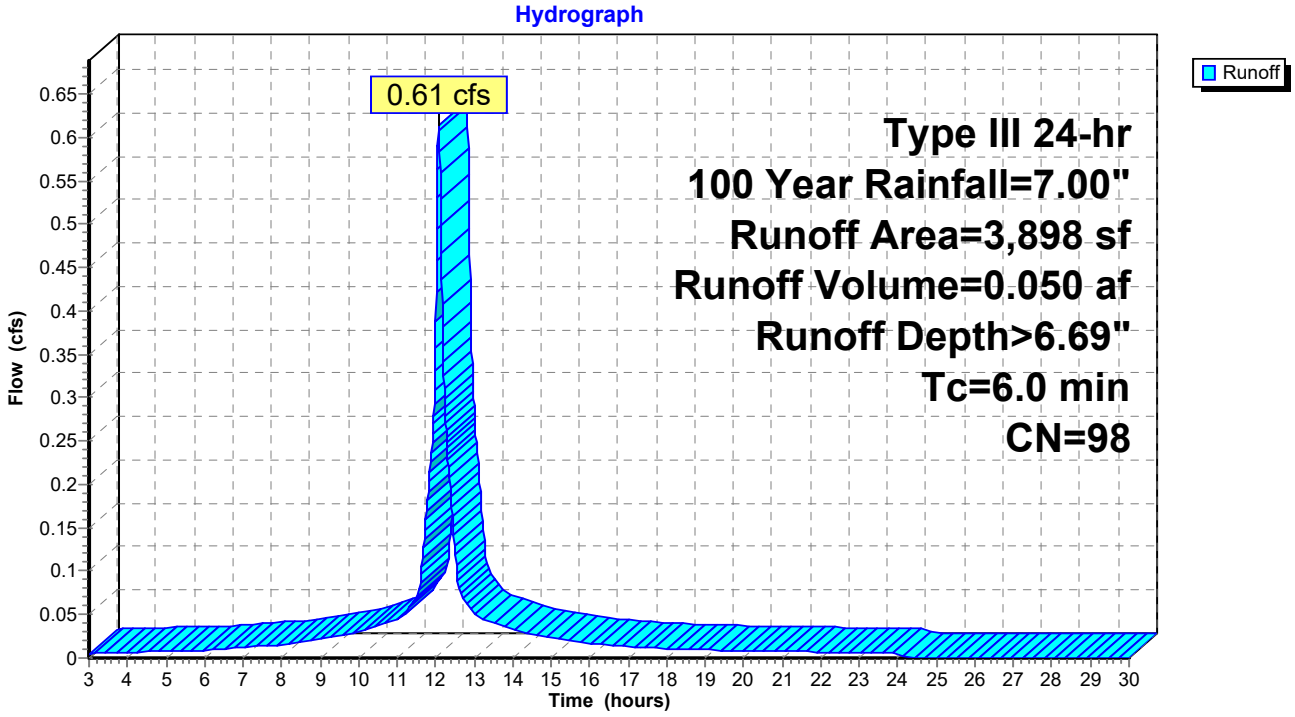
Runoff = 0.61 cfs @ 12.08 hrs, Volume= 0.050 af, Depth> 6.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Rainfall=7.00"

	Area (sf)	CN	Description
	3,681	98	Roofs, HSG B
*	217	98	PORCH
	3,898	98	Weighted Average
	3,898		100.00% Impervious Area

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

Subcatchment 8S: roof



Summary for Subcatchment 9S: driveway

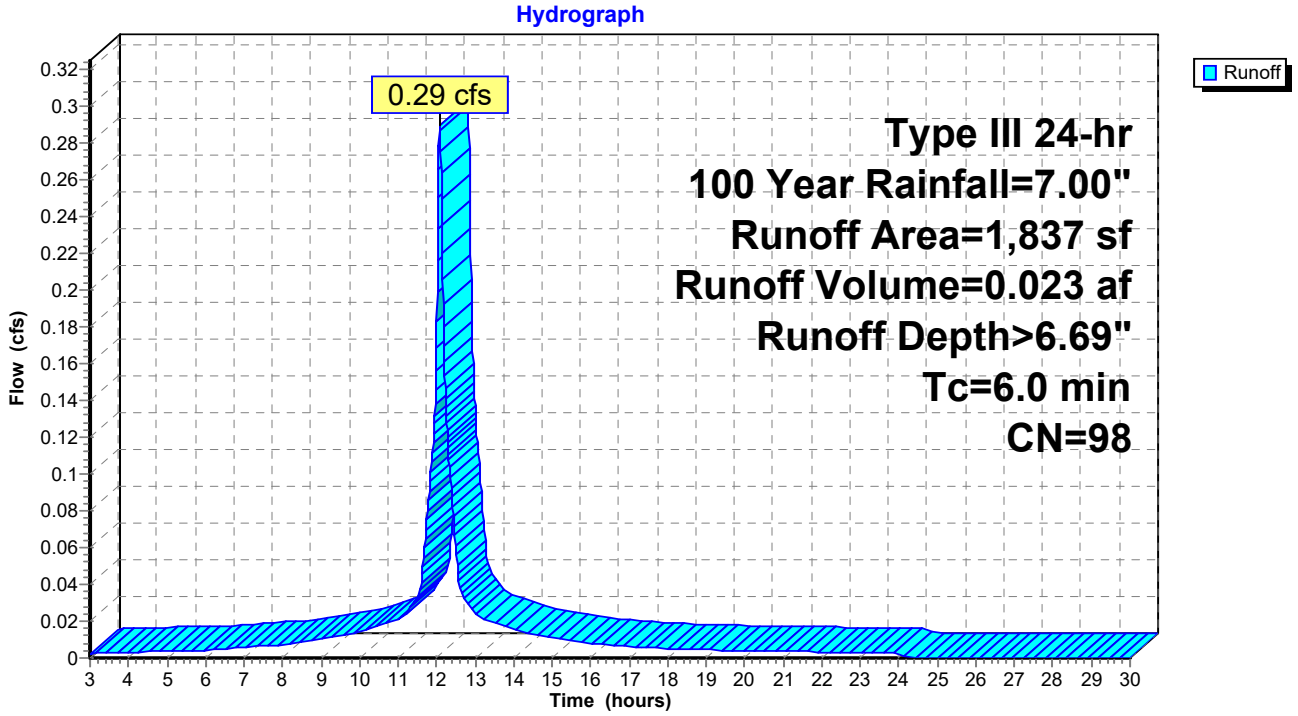
Runoff = 0.29 cfs @ 12.08 hrs, Volume= 0.023 af, Depth> 6.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Rainfall=7.00"

Area (sf)	CN	Description
1,837	98	Paved parking, HSG B
1,837		100.00% Impervious Area

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

Subcatchment 9S: driveway



Summary for Pond 3P: DMH 3

[57] Hint: Peaked at 35.75' (Flood elevation advised)

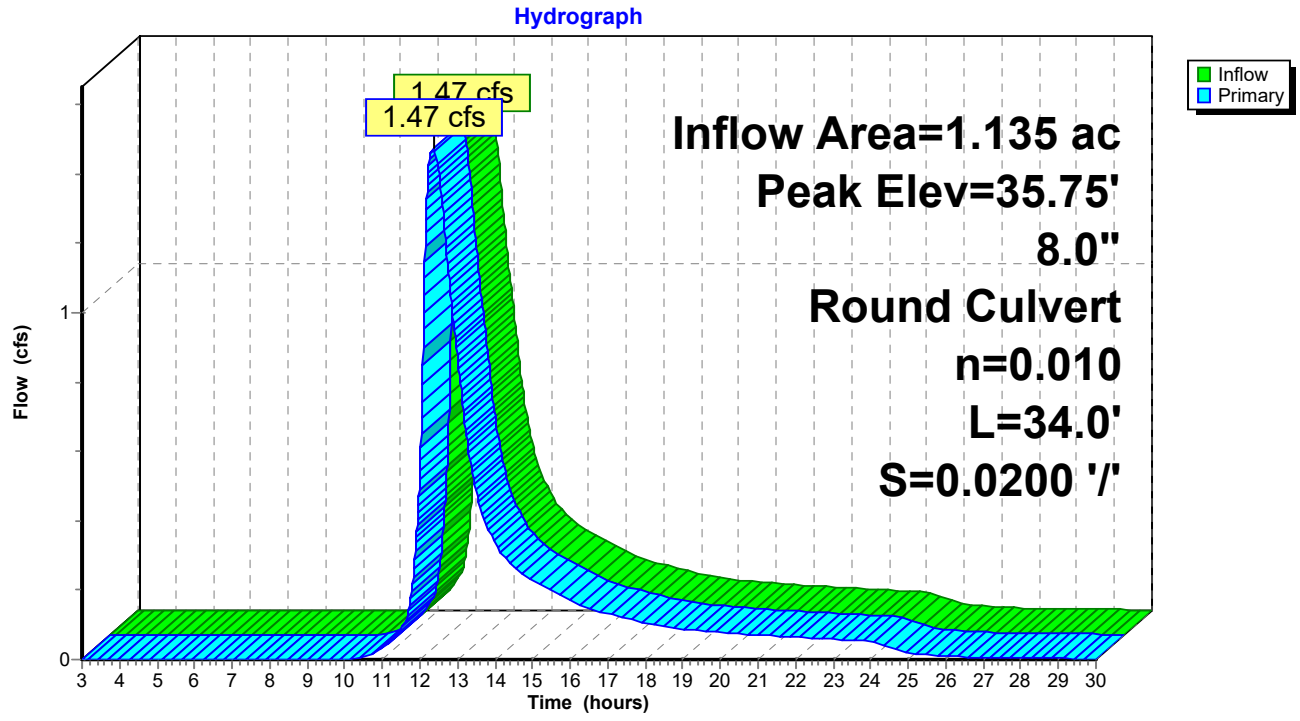
Inflow Area = 1.135 ac, 22.37% Impervious, Inflow Depth > 2.72" for 100 Year event
Inflow = 1.47 cfs @ 12.35 hrs, Volume= 0.258 af
Outflow = 1.47 cfs @ 12.35 hrs, Volume= 0.258 af, Atten= 0%, Lag= 0.0 min
Primary = 1.47 cfs @ 12.35 hrs, Volume= 0.258 af

Routing by Stor-Ind method, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 35.75' @ 12.35 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	34.18'	**8.0" Round Culvert** L= 34.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.18' / 33.50' S= 0.0200 '/' Cc= 0.900 n= 0.010, Flow Area= 0.35 sf

Primary OutFlow Max=1.47 cfs @ 12.35 hrs HW=35.75' (Free Discharge)
1=Culvert (Inlet Controls 1.47 cfs @ 4.22 fps)

Pond 3P: DMH 3



Summary for Pond 4P: basin

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.795 ac, 29.03% Impervious, Inflow Depth > 3.20" for 100 Year event
Inflow = 2.49 cfs @ 12.12 hrs, Volume= 0.212 af
Outflow = 1.06 cfs @ 12.41 hrs, Volume= 0.200 af, Atten= 57%, Lag= 17.7 min
Primary = 1.06 cfs @ 12.41 hrs, Volume= 0.200 af

Routing by Stor-Ind method, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 38.17' @ 12.41 hrs Surf.Area= 2,947 sf Storage= 2,631 cf

Plug-Flow detention time= 92.7 min calculated for 0.200 af (94% of inflow)
Center-of-Mass det. time= 62.1 min (883.2 - 821.1)

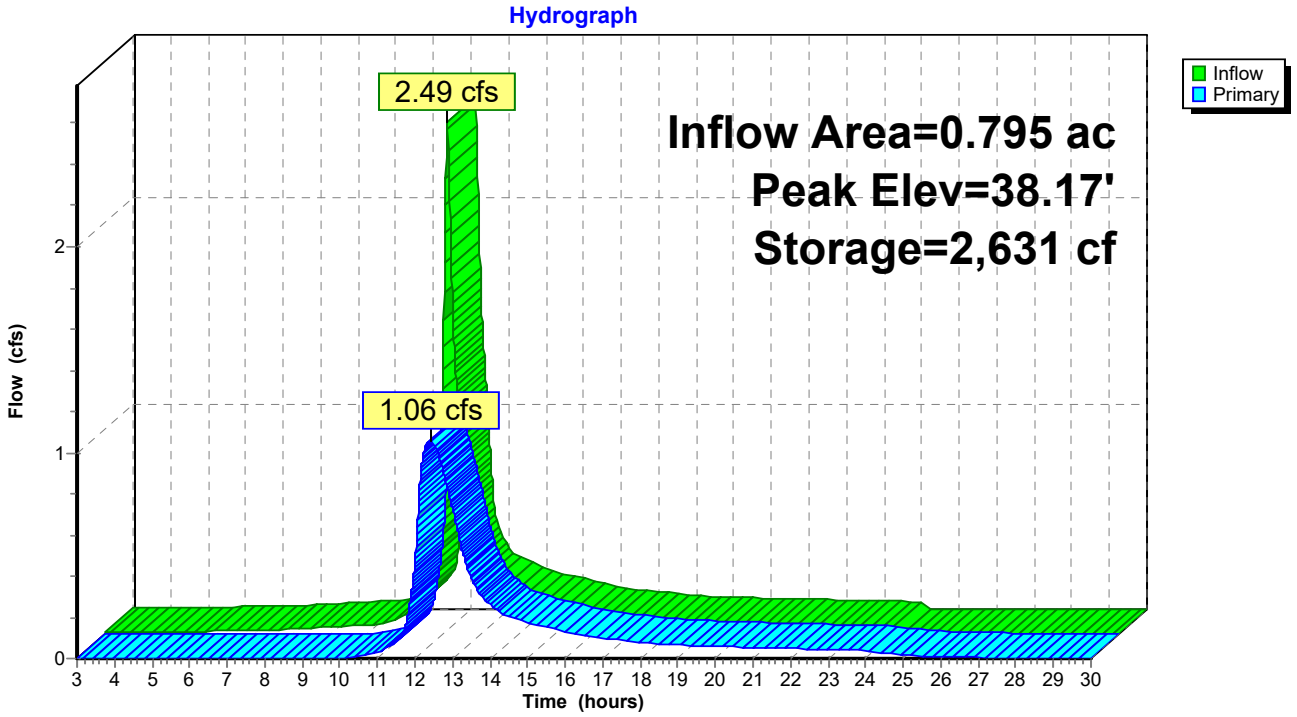
Volume	Invert	Avail.Storage	Storage Description
#1	36.80'	5,892 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
36.80	114	0	0
37.00	1,468	158	158
38.00	2,540	2,004	2,162
39.00	4,920	3,730	5,892

Device	Routing	Invert	Outlet Devices
#1	Primary	37.20'	**8.0" Round Culvert** L= 38.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 37.20' / 36.50' S= 0.0184 '/' Cc= 0.900 n= 0.010, Flow Area= 0.35 sf
#2	Primary	38.20'	**8.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=1.06 cfs @ 12.41 hrs HW=38.17' (Free Discharge)
1=Culvert (Inlet Controls 1.06 cfs @ 3.04 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 4P: basin



Summary for Pond 5P: depression 1

Inflow Area = 0.340 ac, 6.77% Impervious, Inflow Depth = 2.03" for 100 Year event
Inflow = 0.70 cfs @ 12.12 hrs, Volume= 0.057 af
Outflow = 0.43 cfs @ 12.29 hrs, Volume= 0.057 af, Atten= 39%, Lag= 9.9 min
Primary = 0.43 cfs @ 12.29 hrs, Volume= 0.057 af

Routing by Stor-Ind method, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 38.45' @ 12.29 hrs Surf.Area= 948 sf Storage= 398 cf

Plug-Flow detention time= 32.1 min calculated for 0.057 af (100% of inflow)
Center-of-Mass det. time= 31.3 min (902.0 - 870.7)

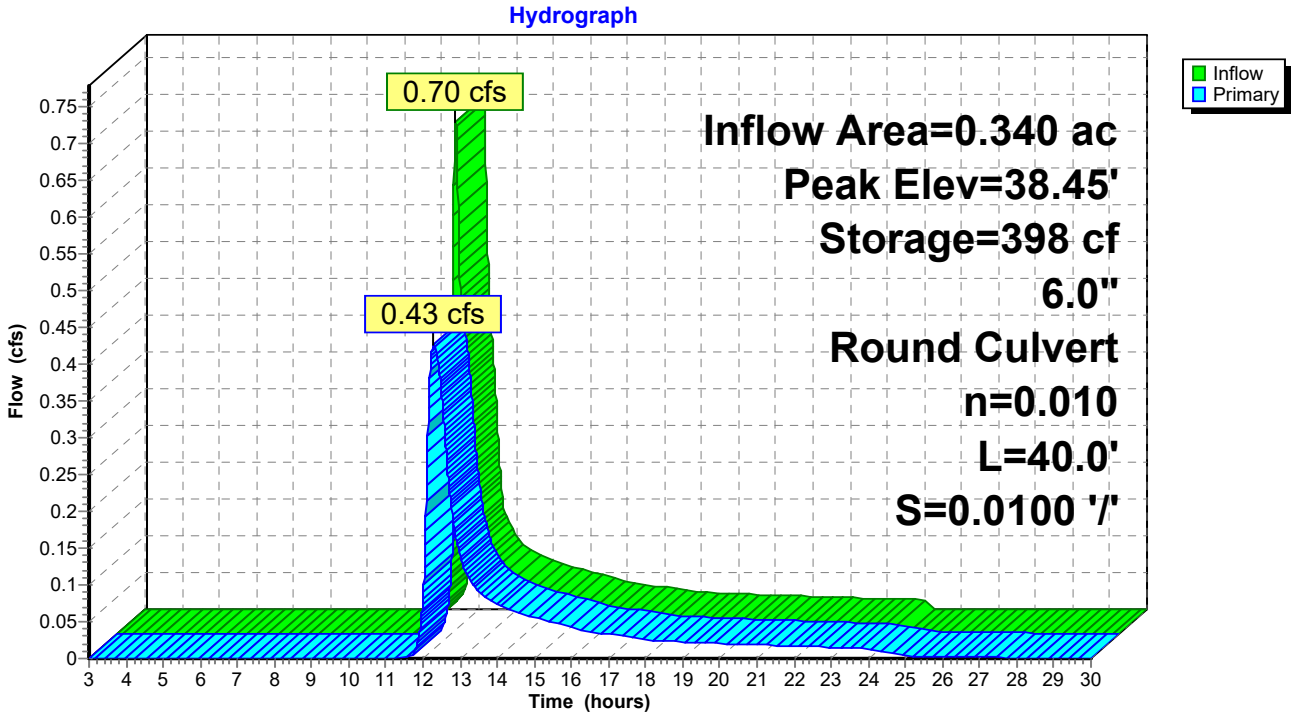
Volume	Invert	Avail.Storage	Storage Description
#1	38.00'	3,872 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
38.00	815	0	0
39.00	1,109	962	962
40.00	1,480	1,295	2,257
41.00	1,750	1,615	3,872

Device	Routing	Invert	Outlet Devices
#1	Primary	38.00'	**6.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 38.00' / 37.60' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf

Primary OutFlow Max=0.43 cfs @ 12.29 hrs HW=38.45' (Free Discharge)
1=Culvert (Inlet Controls 0.43 cfs @ 2.29 fps)

Pond 5P: depression 1



Summary for Pond 11P: cb 1

[57] Hint: Peaked at 35.61' (Flood elevation advised)

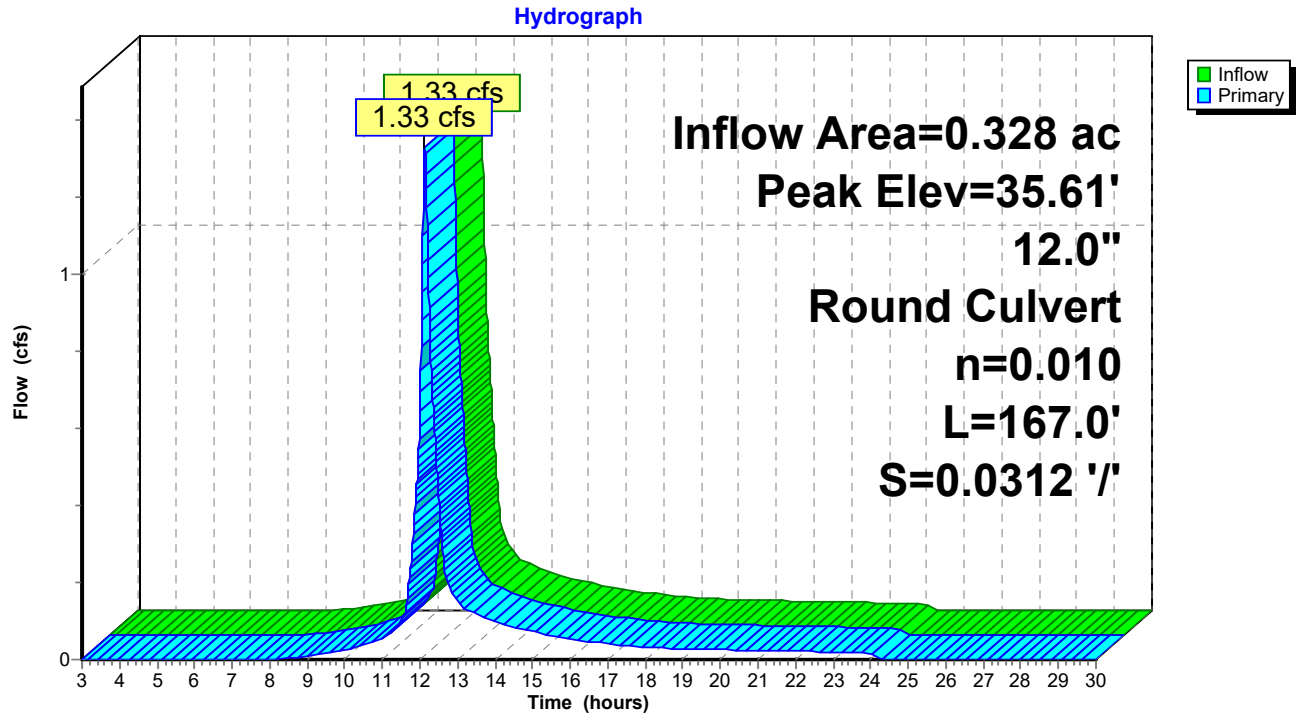
Inflow Area = 0.328 ac, 25.28% Impervious, Inflow Depth = 3.83" for 100 Year event
Inflow = 1.33 cfs @ 12.13 hrs, Volume= 0.105 af
Outflow = 1.33 cfs @ 12.13 hrs, Volume= 0.105 af, Atten= 0%, Lag= 0.0 min
Primary = 1.33 cfs @ 12.13 hrs, Volume= 0.105 af

Routing by Stor-Ind method, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 35.61' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	35.00'	**12.0" Round Culvert** L= 167.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 35.00' / 29.79' S= 0.0312 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=1.33 cfs @ 12.13 hrs HW=35.61' (Free Discharge)
1=Culvert (Inlet Controls 1.33 cfs @ 2.65 fps)

Pond 11P: cb 1



Summary for Pond 12P: cb 2

[57] Hint: Peaked at 32.28' (Flood elevation advised)
[79] Warning: Submerged Pond 11P Primary device # 1 OUTLET by 2.49'

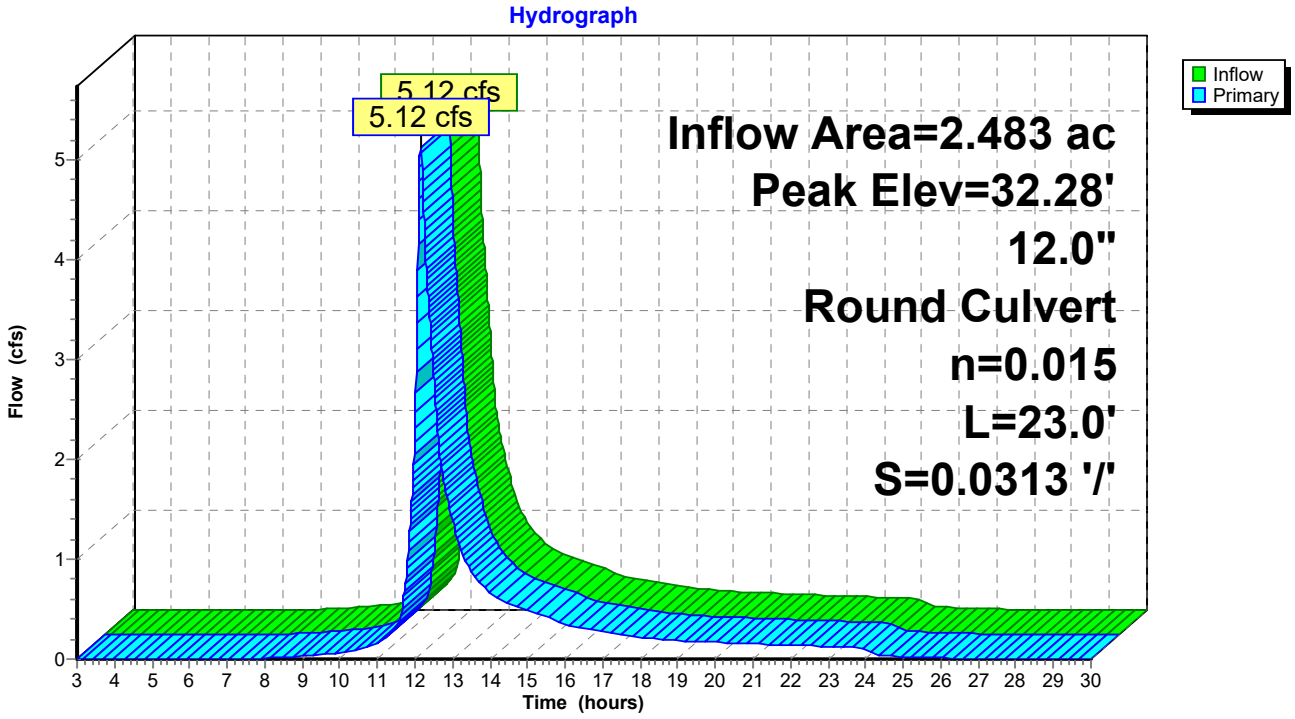
Inflow Area = 2.483 ac, 18.99% Impervious, Inflow Depth > 2.84" for 100 Year event
Inflow = 5.12 cfs @ 12.15 hrs, Volume= 0.588 af
Outflow = 5.12 cfs @ 12.15 hrs, Volume= 0.588 af, Atten= 0%, Lag= 0.0 min
Primary = 5.12 cfs @ 12.15 hrs, Volume= 0.588 af

Routing by Stor-Ind method, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 32.28' @ 12.15 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	29.95'	**12.0" Round Culvert** L= 23.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 29.95' / 29.23' S= 0.0313 '/' Cc= 0.900 n= 0.015, Flow Area= 0.79 sf

Primary OutFlow Max=5.12 cfs @ 12.15 hrs HW=32.28' (Free Discharge)
1=Culvert (Inlet Controls 5.12 cfs @ 6.52 fps)

Pond 12P: cb 2



Summary for Pond 13P: cb 3

[57] Hint: Peaked at 29.46' (Flood elevation advised)
[79] Warning: Submerged Pond 12P Primary device # 1 OUTLET by 0.22'

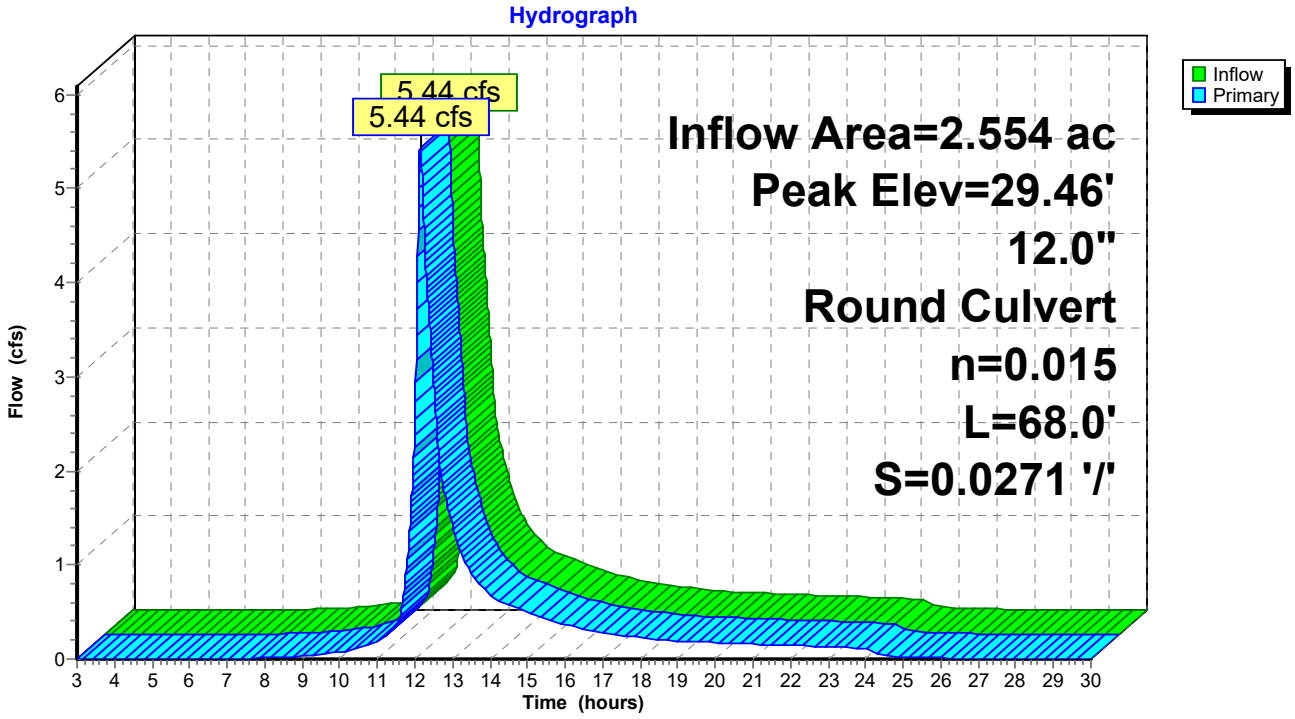
Inflow Area = 2.554 ac, 20.02% Impervious, Inflow Depth > 2.90" for 100 Year event
Inflow = 5.44 cfs @ 12.15 hrs, Volume= 0.617 af
Outflow = 5.44 cfs @ 12.15 hrs, Volume= 0.617 af, Atten= 0%, Lag= 0.0 min
Primary = 5.44 cfs @ 12.15 hrs, Volume= 0.617 af

Routing by Stor-Ind method, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 29.46' @ 12.15 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	26.89'	**12.0" Round Culvert** L= 68.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 26.89' / 25.05' S= 0.0271 '/' Cc= 0.900 n= 0.015, Flow Area= 0.79 sf

Primary OutFlow Max=5.43 cfs @ 12.15 hrs HW=29.45' (Free Discharge)
1=Culvert (Inlet Controls 5.43 cfs @ 6.92 fps)

Pond 13P: cb 3

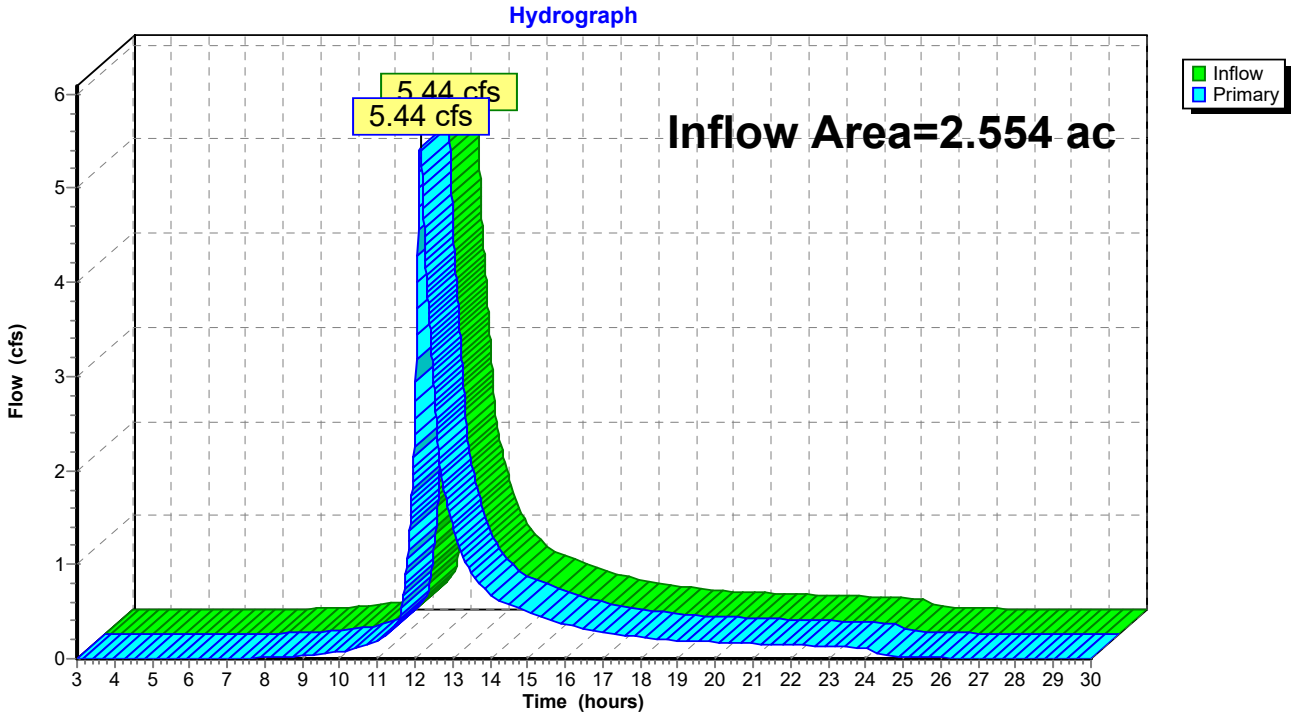


Summary for Link 1L: RTE 3A

Inflow Area = 2.554 ac, 20.02% Impervious, Inflow Depth > 2.90" for 100 Year event
Inflow = 5.44 cfs @ 12.15 hrs, Volume= 0.617 af
Primary = 5.44 cfs @ 12.15 hrs, Volume= 0.617 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs

Link 1L: RTE 3A



Summary for Link 4L: ABUTTER

Inflow Area = 1.841 ac, 16.64% Impervious, Inflow Depth > 2.39" for 100 Year event
Inflow = 2.49 cfs @ 12.19 hrs, Volume= 0.366 af
Primary = 2.49 cfs @ 12.19 hrs, Volume= 0.366 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 3.00-30.00 hrs, dt= 0.01 hrs

Link 4L: ABUTTER