

# **STORM WATER REPORT**

**for**  
**MQJ9 – PROPOSED DEVELOPMENT**  
**120 JIM BLACK ROAD**  
**CITY OF FRANKLIN ~ JOHNSON COUNTY, INDIANA**

**SEPTEMBER 9, 2021**

***Prepared By:***  
BL Companies  
3755 Boettler Oaks Drive, Suite G  
Uniontown, Ohio 44902  
(234) 294-6345

***Prepared For:***  
David DiCarlo  
399 Fairview Ave N  
Seattle, WA 98109



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## I. PURPOSE:

This report is to summarize the stormwater management plan for the proposed re-development and expansion of the existing warehouse development at 120 Jim Black Road complies with the City of Franklins design standards. The total site area is approximately 53 acres which includes the additional 15.9 acres added from the property to the north.

## II. EXISTING CONDITIONS:

The site located at 120 Jim Black Road was developed in 2020 as a warehouse facility and is currently vacate. The additional 15.9 acres to the north is undeveloped and is an agricultural field. For purposes of calculating the pre-developed runoff, the pre-developed condition defined in the Stormwater Drainage Technical Report Appendix A dated March 8, 2020 prepared by Studio A was used in addition to the runoff generated from the undeveloped north lot. For reference, the Stormwater Drainage Technical Report dated March 8, 2020 prepared by Studio A is included in Appendix I of this report.

## III. PROPOSED CONDITIONS:

The work to be done on site includes the addition of truck docks along the west side of the building, expansion of the associate parking lot on the east side of the building and various site upgrades to suit the clients needs for the existing warehouse property. The site development to the additional 15.9 acres to the north includes the addition of trailer parking spaces and a new entry drive and guardhouse.

### Site Runoff Requirements

In accordance with Article 6.19 of the City's Subdivision Control Ordinance dated April 11, 2005, the 1, 2, 3, 6, 12 and 24 hour storm durations were analyzed to determine the critical peak (**shown in bold in the Pre-developed table**).

Pre-developed	
Storm Duration	Discharge (CFS)
<b>2-YR 1HR</b>	<b>25.92</b>
2-YR 2HR	19.57
2-YR 3HR	15.58
2-YR 6HR	13.58
2-YR 12HR	10.27
2-YR 24HR	7.23
<b>10-YR 1HR</b>	<b>50.60</b>
10-YR 2HR	38.19
10-YR 3HR	33.79
10-YR 6HR	28.00
10-YR 12HR	19.46
10-YR 24HR	12.65
<b>100-YR 1HR</b>	<b>93.91</b>
100-YR 2HR	80.01
100-YR 3HR	71.12
100-YR 6HR	57.45
100-YR 12HR	36.95
100-YR 24HR	21.82



The proposed detention system is composed of 48" CMP underground detention interconnected with a pond to the north of the property by a 36" equalization pipe. The existing 24" culvert that drains the current site to the storm sewer system in Jim Black Road is utilized as the primary discharge point for the proposed site and is referred to as Point of Interest A (POI A) on the drainage map. A secondary outlet is provided between the 48" CMP detention and the pond to allow for additional discharge from the 100-yr storm event. The secondary outlet (POI B) is the discharge point for the existing runoff from the north 15.90 acres. Please note that ultimately, all runoff goes to POI A. Below is a table of the various post-developed storm events.

Post-developed					
Storm Duration	POI A Discharge (CFS)	POI B Discharge (CFS)	Detention System Water Elevation	Undetained Area Discharge (CFS)	Total Post-Developed Discharge (CFS)
2-YR 1HR	11.15	0	729.30	2.38	13.20
2-YR 2HR	12.09	0	729.41	1.74	13.44
2-YR 3HR	11.61	0	729.35	1.40	12.61
2-YR 6HR	10.29	0	729.20	1.08	11.08
2-YR 12HR	8.81	0	729.10	0.79	9.41
2-YR 24HR	7.56	0	729.04	0.56	8.07
10-YR 1HR	15.53	0	730.03	5.22	19.87
<b>10-YR 2HR</b>	<b>16.75</b>	<b>0</b>	<b>730.22</b>	<b>4.21</b>	<b>19.17</b>
10-YR 3HR	16.11	0	730.14	3.31	17.88
10-YR 6HR	15.23	0	729.87	2.40	16.62
10-YR 12HR	13.50	0	729.59	1.58	14.64
10-YR 24HR	11.56	0	729.35	1.02	12.48
100-YR 1HR	23.37	4.62	731.24	11.86	34.69
<b>100-YR 2HR</b>	<b>25.34</b>	<b>7.86</b>	<b>731.61</b>	<b>9.52</b>	<b>37.51</b>
100-YR 3HR	24.60	6.56	731.47	7.45	34.33
100-YR 6HR	22.65	3.65	731.11	5.25	28.82
100-YR 12HR	19.62	0.82	730.62	3.18	22.38
100-YR 24HR	15.53	0	730.07	1.85	17.20

As shown in the table above, the 2HR storm event produces the highest outflow and water elevation in the detention system. The highlighted flows correspond to the pre-developed requirements and show that the system meets the City's discharge requirements.

#### **Water Quality Requirements (See Appendix C):**

To meet the Water Quality requirement, a low flow orifice was placed in the outlet structure at POI A to drain 20% of the 1.25 inch rainfall event in 24 hours.

#### **Emergency Spillway Requirement (See Appendix D):**

The Emergency spillway is required to pass  $1.25 \times 100 \text{ yr} = 1.25 \times 153.48 \text{ cfs} = 191.85 \text{ cfs}$  with a minimum freeboard of 2'.

#### **Storm Sewer Calculations (See Appendix E):**

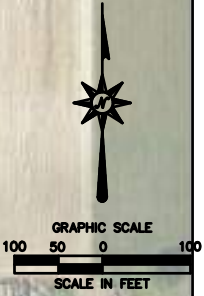
A separate 48" CMP detention system is proposed to detained runoff from the trench drain system along the west side of the building. The detention system is designed to limit the discharge to the north and south existing sewer systems to prevent exceeding their capacity.



## **Appendix A**







EX. NORTH LOT  
DA=23.47 AC

DA EX=34.069 AC  
(PER PERVIOUS DRAINAGE REPORT)

POI B

POI A

MATCHLINE SEE SHEET EX-2

SITE PLAN IMPROVEMENTS FOR I-65 SOUTH  
COMMERCE BUILDINGS PHASE 1  
120 JIM BLACK ROAD  
FRANKLIN, JOHNSON COUNTY, INDIANA

REVISIONS		No.	Date	Desc.
Designed	H.F.T.			
Drawn	H.F.T.			
Reviewed	A.J.B.			
Scale	AS SHOWN			
Project No.	2100696			
Date	09/08/2021			
CAD File:	PD210069601			

Title  
PER DEVELOPED  
DRAINAGE MAP

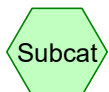
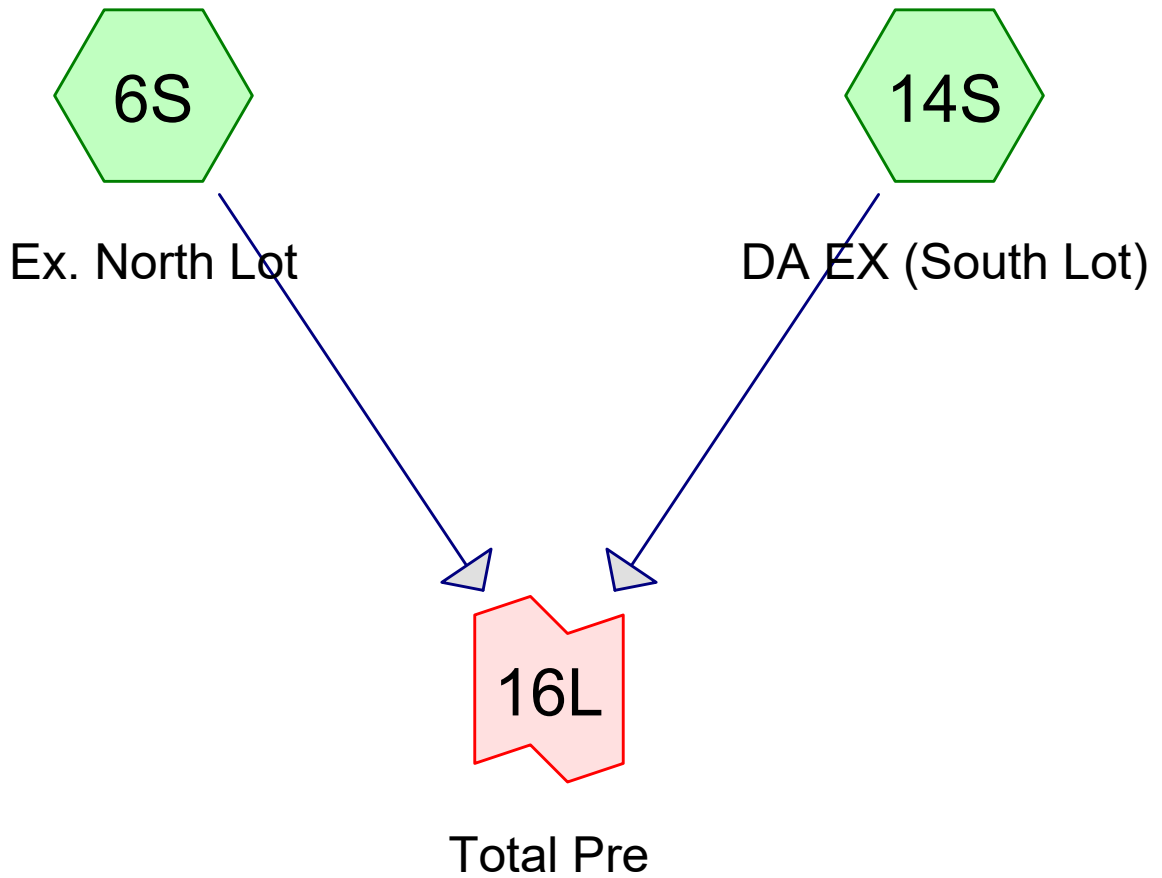
Sheet No.

PD-01

No. of 43



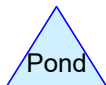




Subcat



Reach



Pond



Link

**Routing Diagram for 2100696 MQJ9**

Prepared by {enter your company name here}, Printed 9/7/2021  
HydroCAD® 10.00-26 s/n 01334 © 2020 HydroCAD Software Solutions LLC

**Summary for Subcatchment 6S: Ex. North Lot**

Runoff = 9.92 cfs @ 1.25 hrs, Volume= 35,852 cf, Depth= 0.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 1.00 hrs 2-yr1HR Rainfall=1.39"

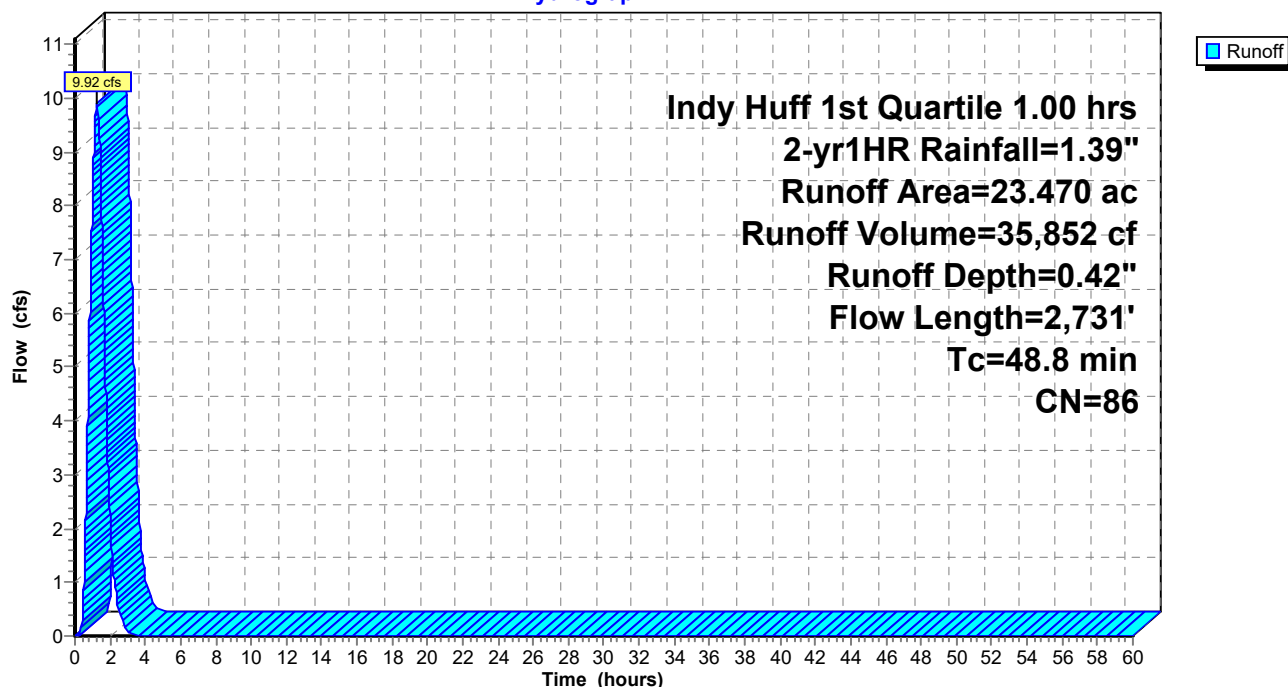
Area (ac)	CN	Description
* 2.510	98	
1.060	70	Woods, Good, HSG C
1.660	77	Woods, Good, HSG D
10.720	89	Row crops, straight row, Good, HSG D
4.540	85	Row crops, straight row, Good, HSG C
1.360	80	>75% Grass cover, Good, HSG D
1.620	74	>75% Grass cover, Good, HSG C
23.470	86	Weighted Average
20.960		89.31% Pervious Area
2.510		10.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0100	0.12		<b>Sheet Flow,</b>
					Grass: Short n= 0.150 P2= 2.91"
35.2	2,631	0.0060	1.25		<b>Shallow Concentrated Flow,</b>
					Unpaved Kv= 16.1 fps
48.8	2,731	Total			

**Subcatchment 6S: Ex. North Lot**

Hydrograph





**Summary for Subcatchment 14S: DA EX (South Lot)**

Runoff = 16.38 cfs @ 1.13 hrs, Volume= 52,043 cf, Depth= 0.42"

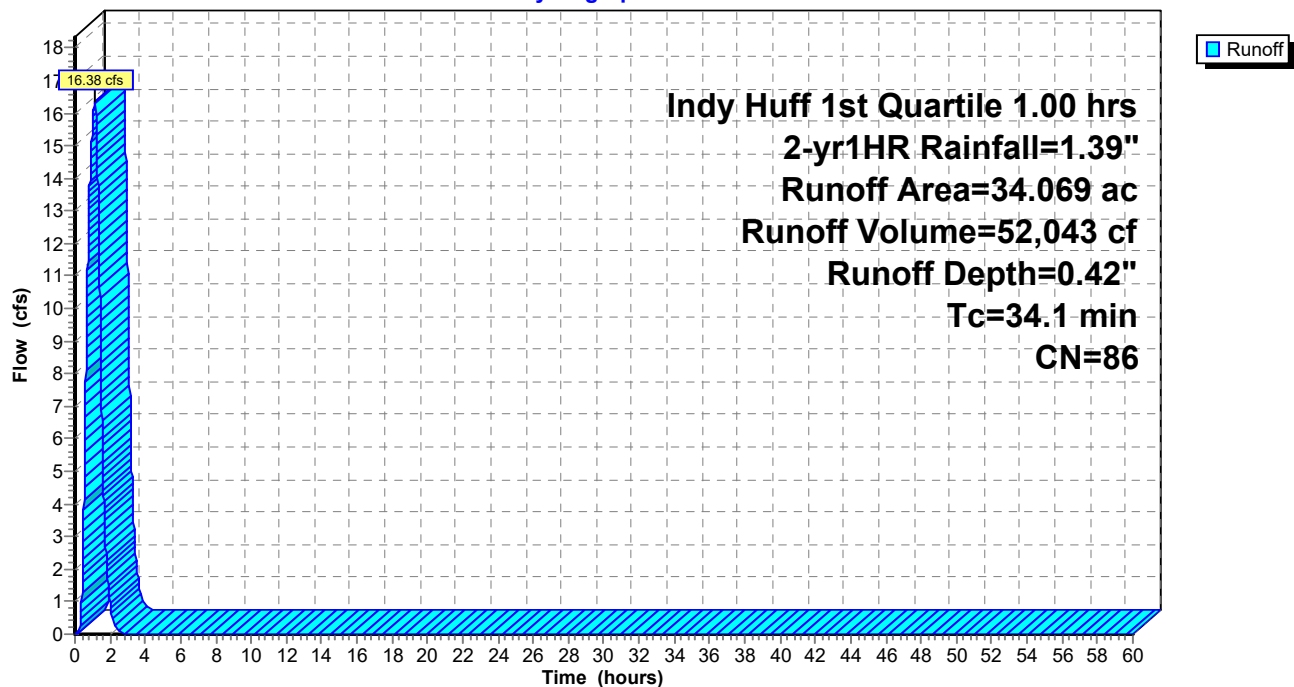
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 1.00 hrs 2-yr1HR Rainfall=1.39"

Area (ac)	CN	Description
* 34.069	86	
34.069		100.00% Pervious Area

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

**Subcatchment 14S: DA EX (South Lot)**

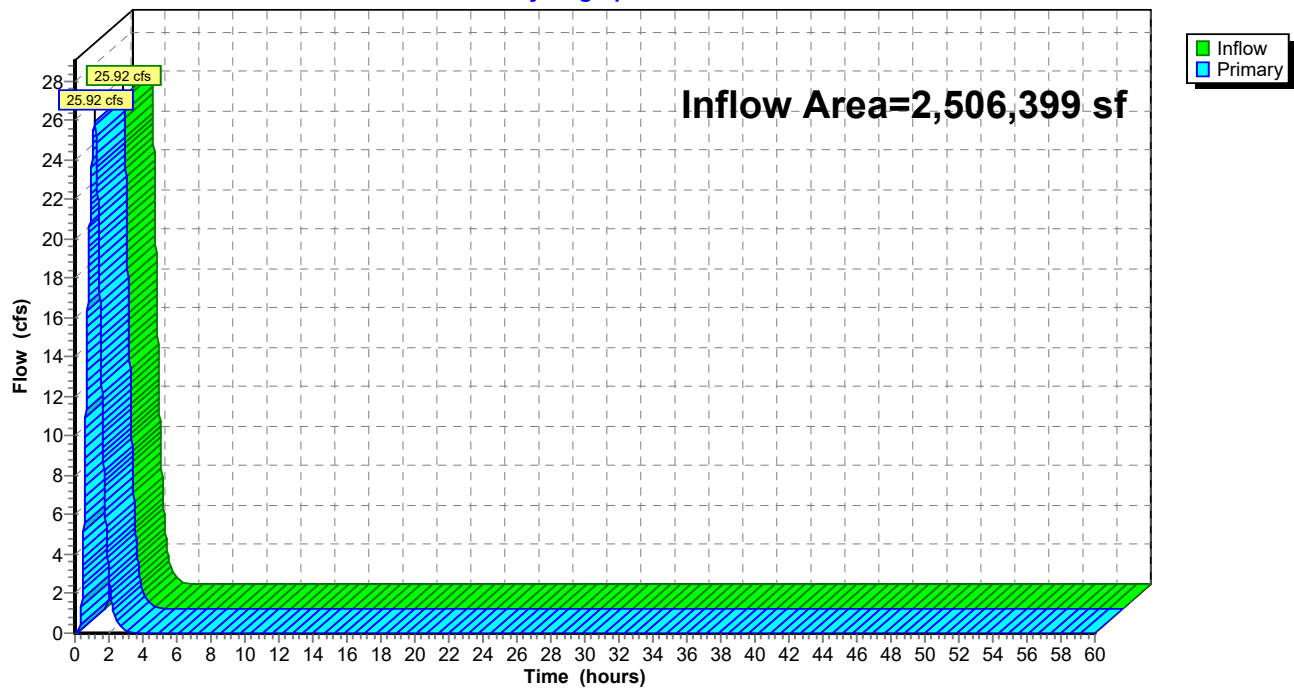
Hydrograph



**Summary for Link 16L: Total Pre**

Inflow Area = 2,506,399 sf, 4.36% Impervious, Inflow Depth = 0.42" for 2-yr1HR event  
Inflow = 25.92 cfs @ 1.17 hrs, Volume= 87,895 cf  
Primary = 25.92 cfs @ 1.17 hrs, Volume= 87,895 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

**Link 16L: Total Pre****Hydrograph**

**Summary for Subcatchment 6S: Ex. North Lot**

Runoff = 19.57 cfs @ 1.20 hrs, Volume= 73,624 cf, Depth= 0.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 1.00 hrs 10-yr1HR Rainfall=2.02"

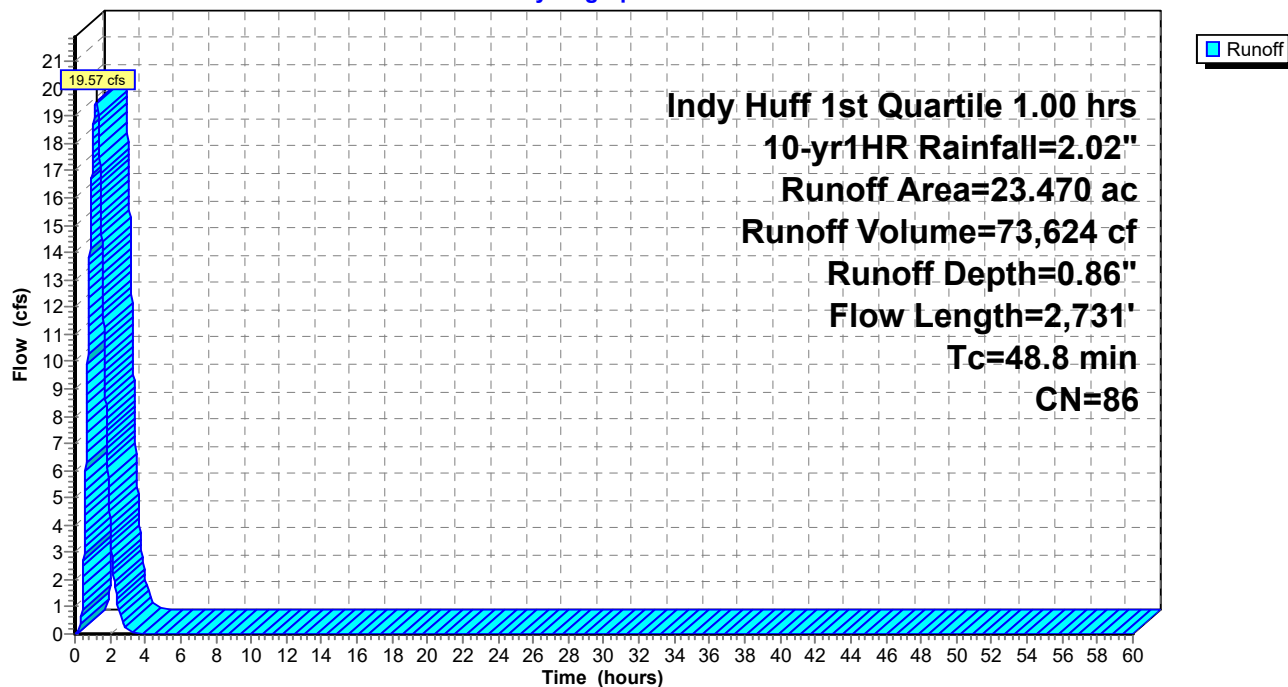
Area (ac)	CN	Description
* 2.510	98	
1.060	70	Woods, Good, HSG C
1.660	77	Woods, Good, HSG D
10.720	89	Row crops, straight row, Good, HSG D
4.540	85	Row crops, straight row, Good, HSG C
1.360	80	>75% Grass cover, Good, HSG D
1.620	74	>75% Grass cover, Good, HSG C
23.470	86	Weighted Average
20.960		89.31% Pervious Area
2.510		10.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0100	0.12		Sheet Flow, Grass: Short n= 0.150 P2= 2.91"
35.2	2,631	0.0060	1.25		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
48.8	2,731	Total			

**Subcatchment 6S: Ex. North Lot**

Hydrograph



**Summary for Subcatchment 14S: DA EX (South Lot)**

Runoff = 31.54 cfs @ 1.09 hrs, Volume= 106,872 cf, Depth= 0.86"

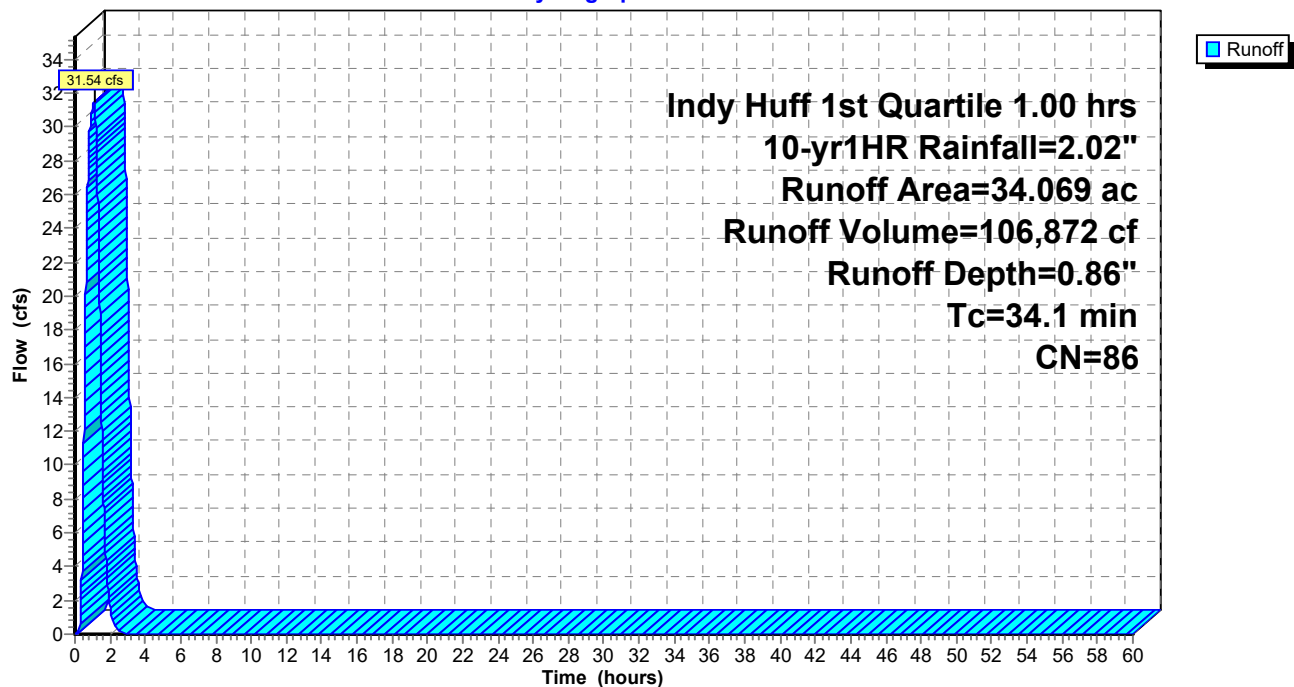
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 1.00 hrs 10-yr1HR Rainfall=2.02"

Area (ac)	CN	Description
* 34.069	86	
34.069		100.00% Pervious Area

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

**Subcatchment 14S: DA EX (South Lot)**

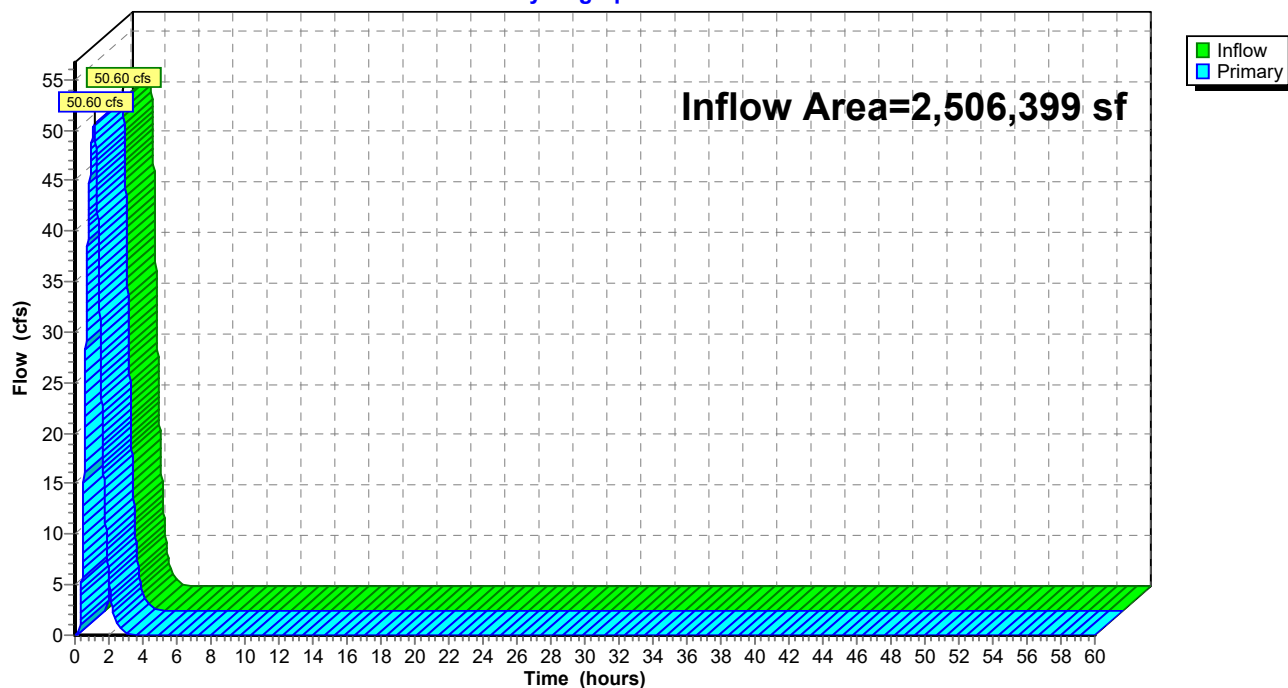
Hydrograph



**Summary for Link 16L: Total Pre**

Inflow Area = 2,506,399 sf, 4.36% Impervious, Inflow Depth = 0.86" for 10-yr1HR event  
Inflow = 50.60 cfs @ 1.13 hrs, Volume= 180,496 cf  
Primary = 50.60 cfs @ 1.13 hrs, Volume= 180,496 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

**Link 16L: Total Pre****Hydrograph**

**Summary for Subcatchment 6S: Ex. North Lot**

Runoff = 36.89 cfs @ 1.14 hrs, Volume= 141,637 cf, Depth= 1.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 1.00 hrs 100-yr1HR Rainfall=3.00"

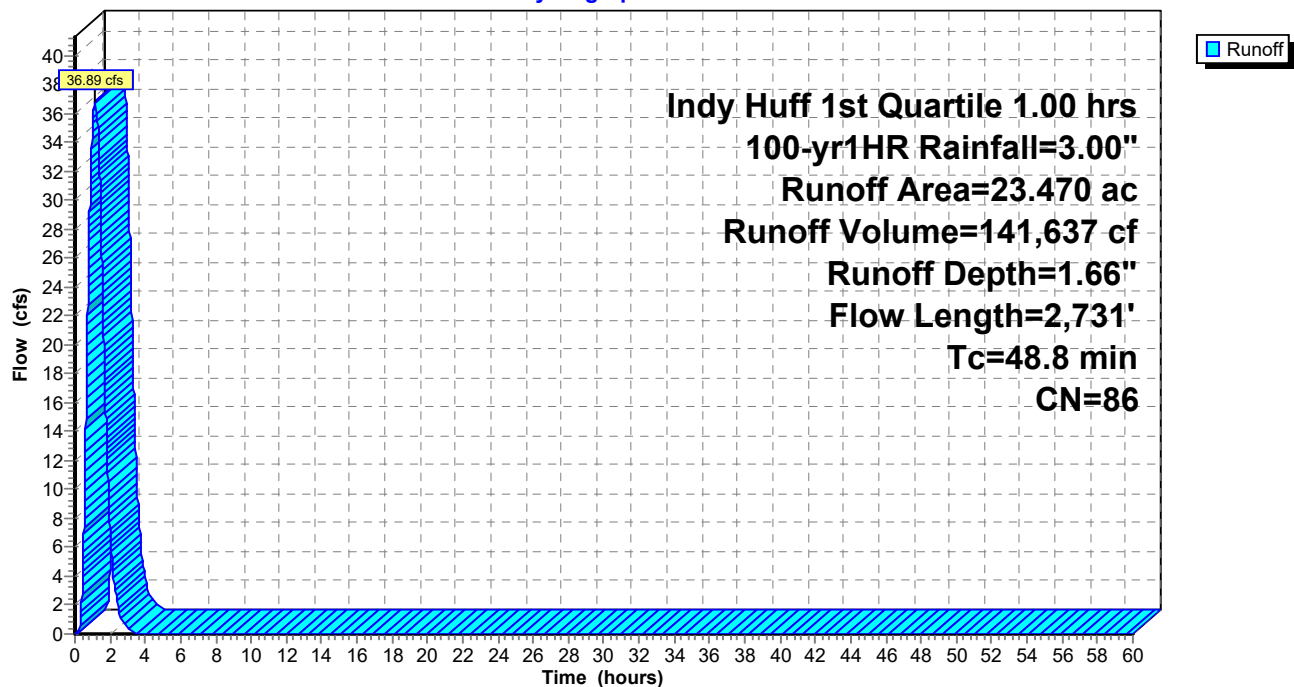
Area (ac)	CN	Description
* 2.510	98	
1.060	70	Woods, Good, HSG C
1.660	77	Woods, Good, HSG D
10.720	89	Row crops, straight row, Good, HSG D
4.540	85	Row crops, straight row, Good, HSG C
1.360	80	>75% Grass cover, Good, HSG D
1.620	74	>75% Grass cover, Good, HSG C
23.470	86	Weighted Average
20.960		89.31% Pervious Area
2.510		10.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0100	0.12		<b>Sheet Flow,</b>
					Grass: Short n= 0.150 P2= 2.91"
35.2	2,631	0.0060	1.25		<b>Shallow Concentrated Flow,</b>
					Unpaved Kv= 16.1 fps
48.8	2,731	Total			

**Subcatchment 6S: Ex. North Lot**

Hydrograph



**Summary for Subcatchment 14S: DA EX (South Lot)**

Runoff = 58.85 cfs @ 0.87 hrs, Volume= 205,599 cf, Depth= 1.66"

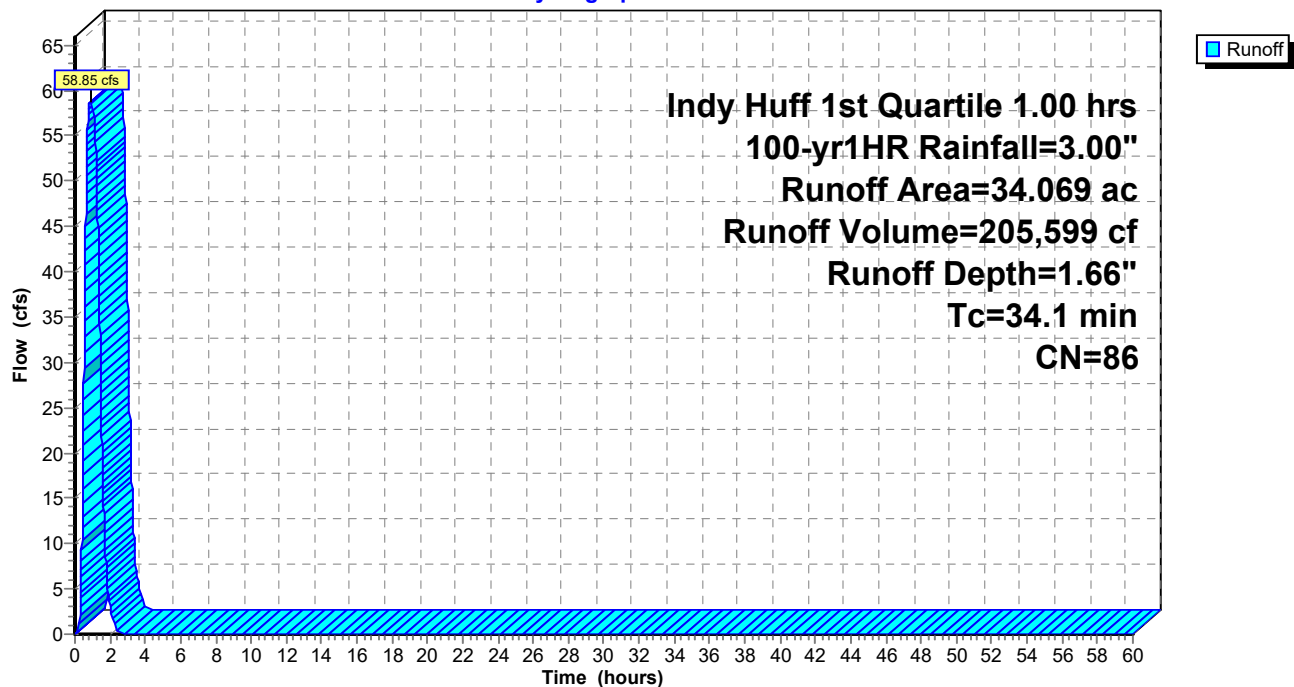
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 1.00 hrs 100-yr1HR Rainfall=3.00"

Area (ac)	CN	Description
* 34.069	86	
34.069		100.00% Pervious Area

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

**Subcatchment 14S: DA EX (South Lot)**

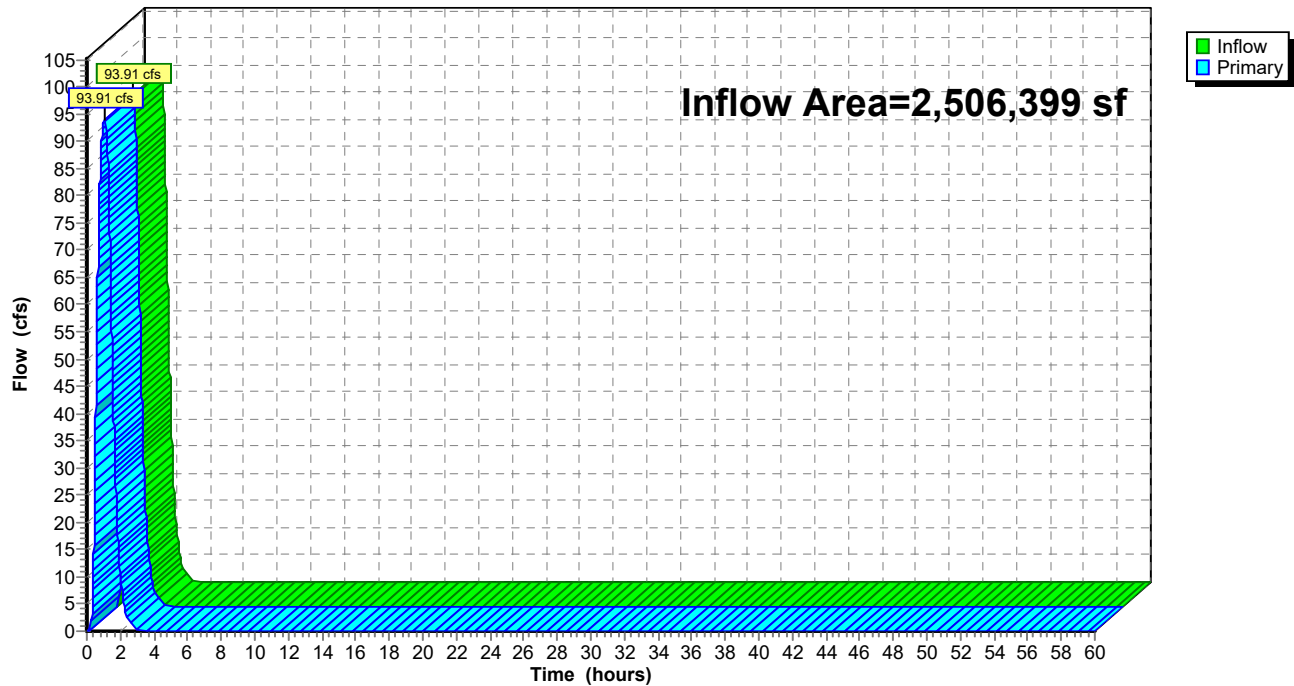
Hydrograph



**Summary for Link 16L: Total Pre**

Inflow Area = 2,506,399 sf, 4.36% Impervious, Inflow Depth = 1.66" for 100-yr1HR event  
Inflow = 93.91 cfs @ 1.08 hrs, Volume= 347,236 cf  
Primary = 93.91 cfs @ 1.08 hrs, Volume= 347,236 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

**Link 16L: Total Pre****Hydrograph**



## **Appendix B**

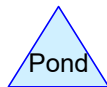
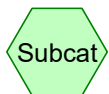
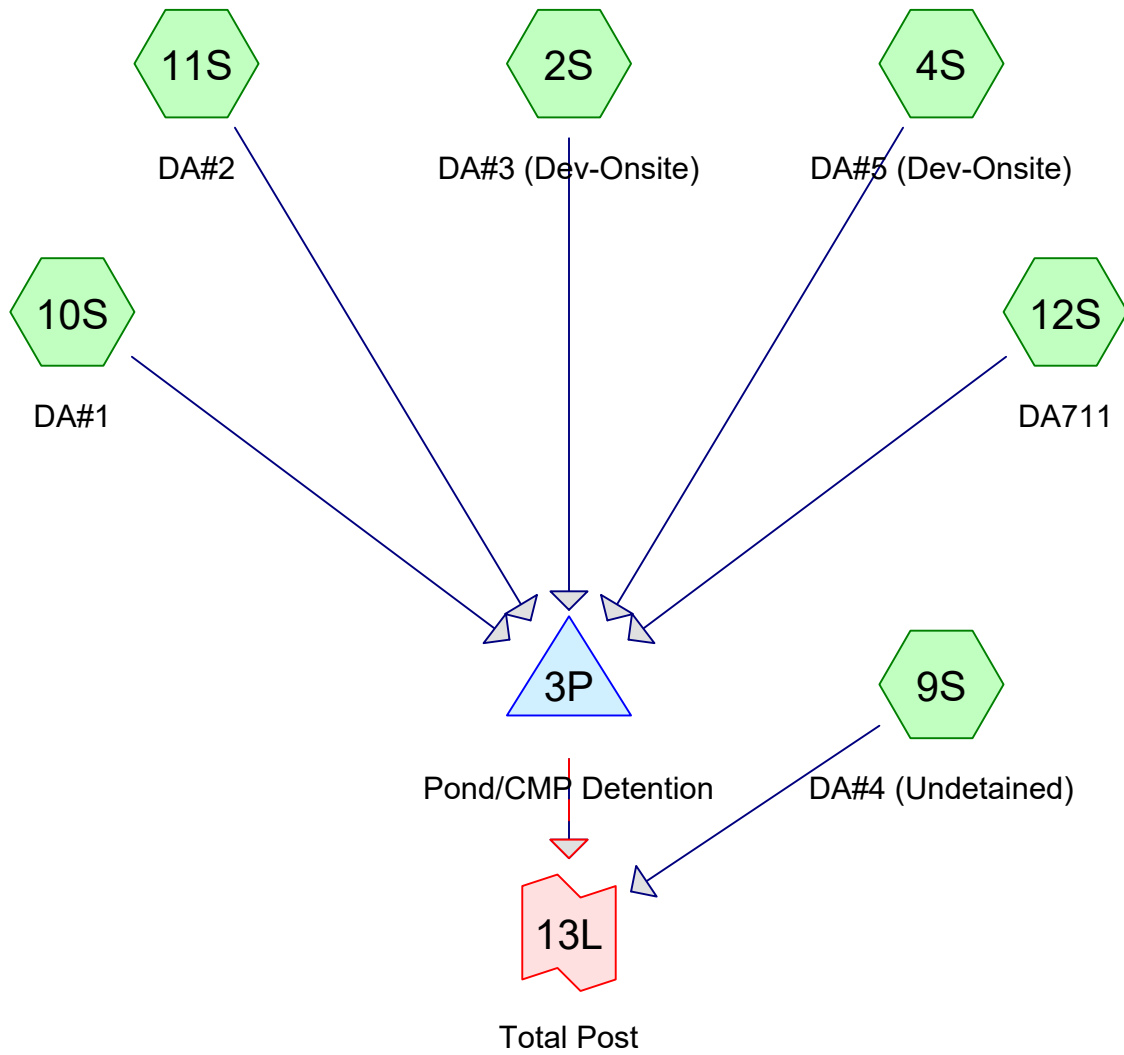












#### Routing Diagram for 2100696 MQJ9

Prepared by {enter your company name here}, Printed 9/7/2021  
HydroCAD® 10.00-26 s/n 01334 © 2020 HydroCAD Software Solutions LLC

**Summary for Subcatchment 2S: DA#3 (Dev-Onsite)**

Runoff = 12.11 cfs @ 0.47 hrs, Volume= 40,002 cf, Depth= 1.40"

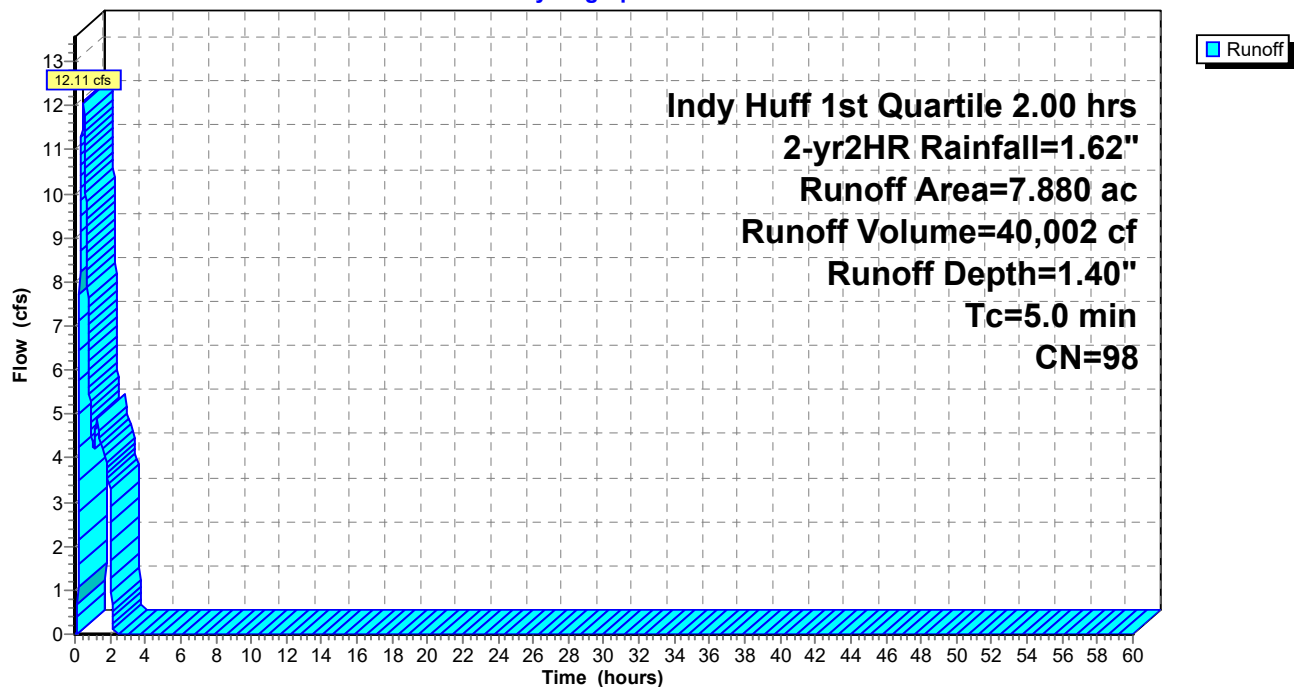
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 2.00 hrs 2-yr2HR Rainfall=1.62"

Area (ac)	CN	Description
* 7.880	98	
7.880		100.00% Impervious Area

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

**Subcatchment 2S: DA#3 (Dev-Onsite)**

Hydrograph



**Summary for Subcatchment 4S: DA#5 (Dev-Onsite)**

Runoff = 44.33 cfs @ 0.48 hrs, Volume= 149,083 cf, Depth= 1.30"

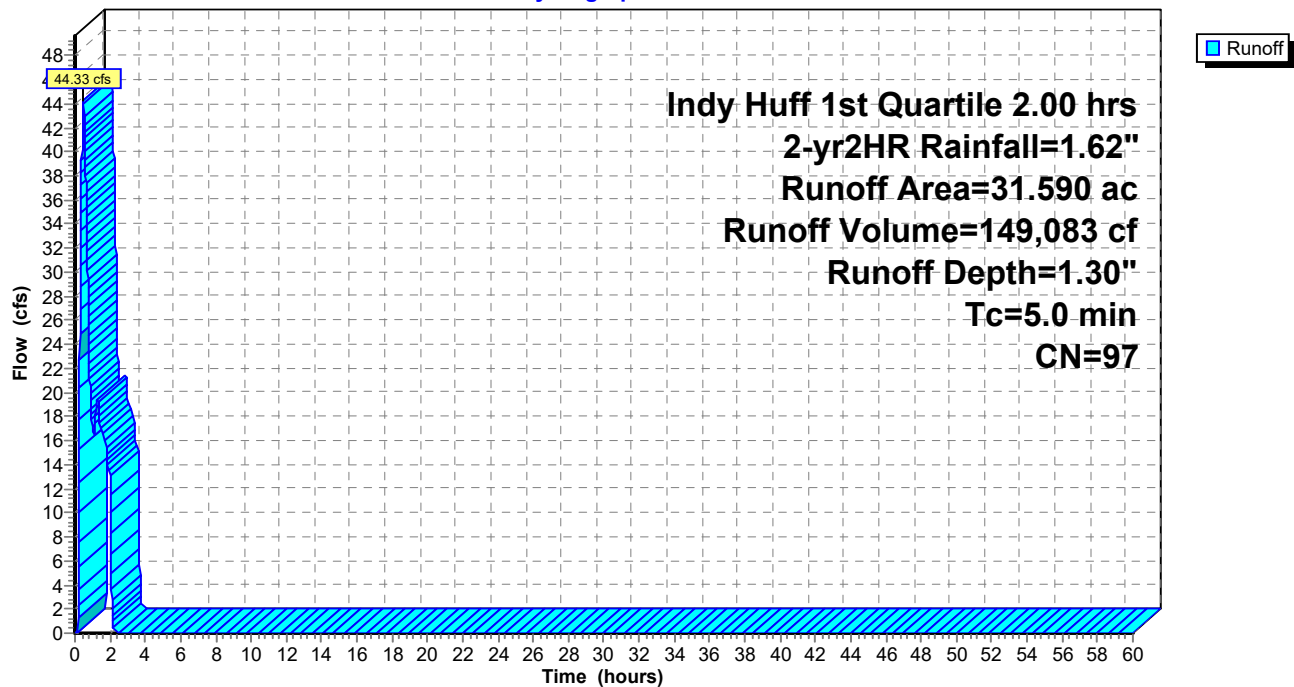
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 2.00 hrs 2-yr2HR Rainfall=1.62"

Area (ac)	CN	Description
* 29.300	98	
0.510	74	>75% Grass cover, Good, HSG C
1.780	80	>75% Grass cover, Good, HSG D
31.590	97	Weighted Average
2.290		7.25% Pervious Area
29.300		92.75% Impervious Area

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

**Subcatchment 4S: DA#5 (Dev-Onsite)**

Hydrograph



**Summary for Subcatchment 9S: DA#4 (Undetained)**

Runoff = 1.74 cfs @ 0.77 hrs, Volume= 8,715 cf, Depth= 0.45"

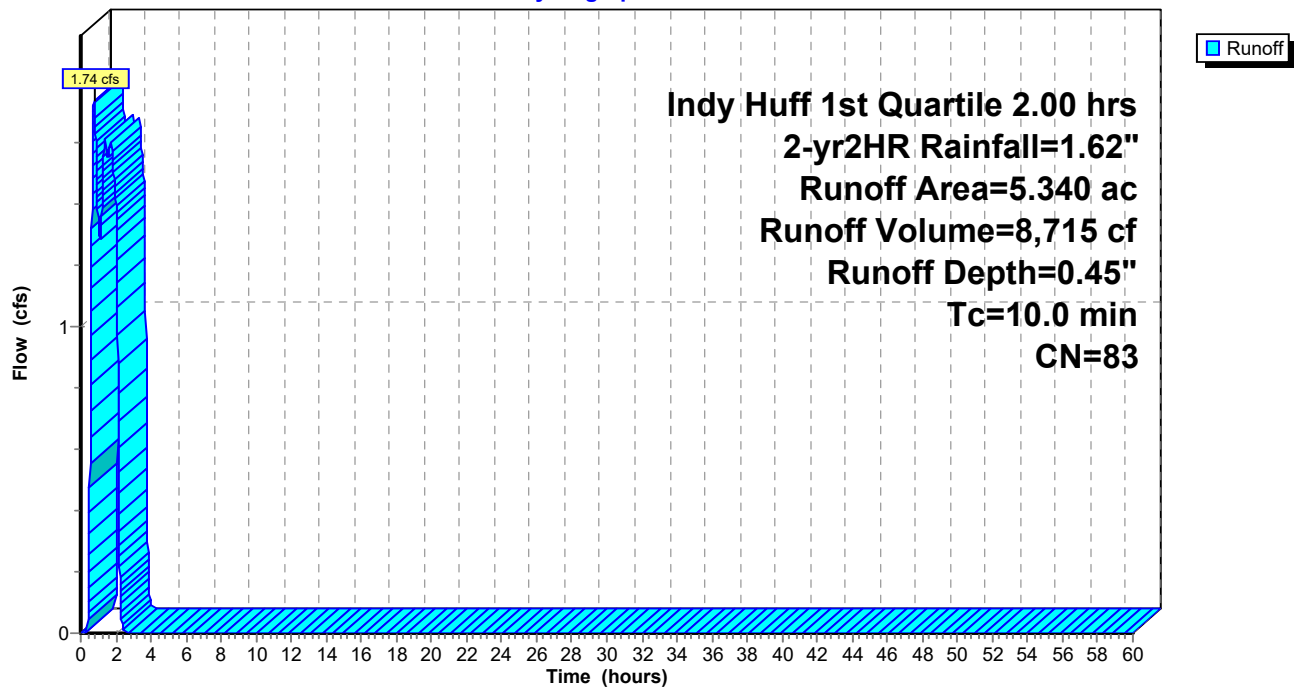
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 2.00 hrs 2-yr2HR Rainfall=1.62"

Area (ac)	CN	Description
* 1.130	98	
0.350	74	>75% Grass cover, Good, HSG C
3.860	80	>75% Grass cover, Good, HSG D
5.340	83	Weighted Average
4.210		78.84% Pervious Area
1.130		21.16% Impervious Area

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

**Subcatchment 9S: DA#4 (Undetained)**

Hydrograph





**Summary for Subcatchment 10S: DA#1**

Runoff = 1.37 cfs @ 1.98 hrs, Volume= 6,703 cf, Depth= 0.29"

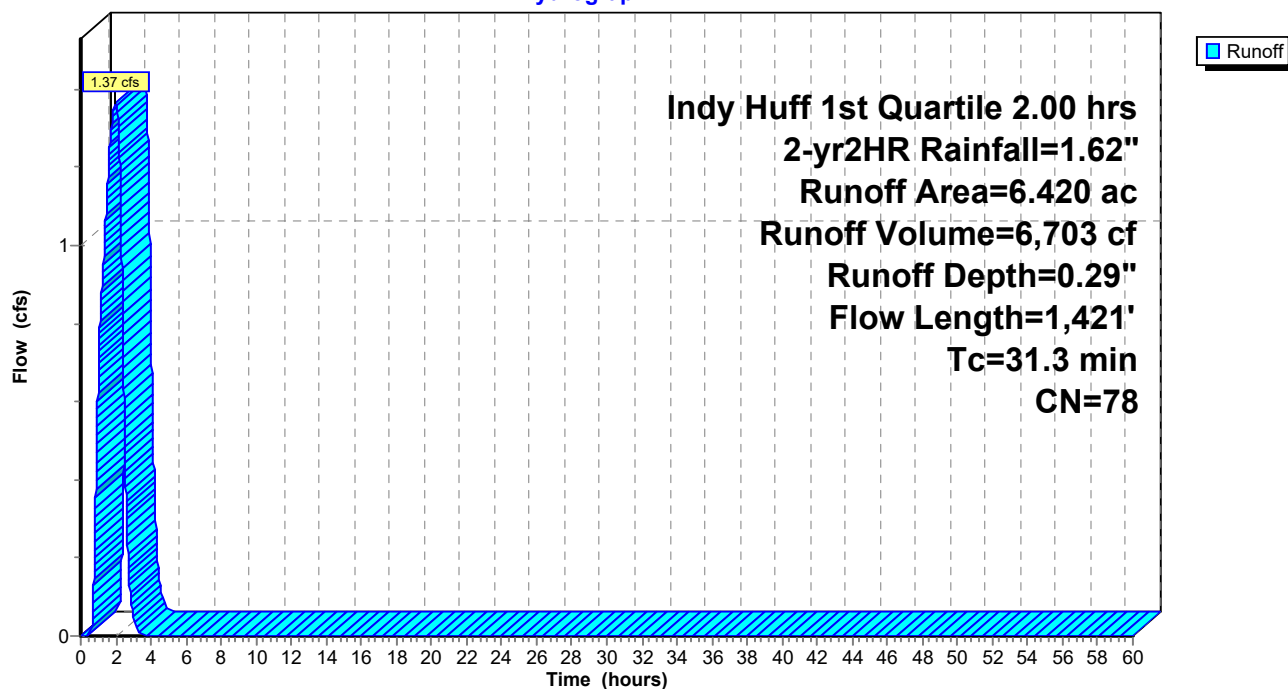
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 2.00 hrs 2-yr2HR Rainfall=1.62"

Area (ac)	CN	Description
* 0.640	98	
0.890	70	Woods, Good, HSG C
1.630	77	Woods, Good, HSG D
0.150	89	Row crops, straight row, Good, HSG D
0.130	85	Row crops, straight row, Good, HSG C
1.360	80	>75% Grass cover, Good, HSG D
1.620	74	>75% Grass cover, Good, HSG C
6.420	78	Weighted Average
5.780		90.03% Pervious Area
0.640		9.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0100	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
17.7	1,321	0.0060	1.25		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
31.3	1,421	Total			

**Subcatchment 10S: DA#1**

Hydrograph



**Summary for Subcatchment 11S: DA#2**

Runoff = 2.98 cfs @ 0.72 hrs, Volume= 13,174 cf, Depth= 0.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 2.00 hrs 2-yr2HR Rainfall=1.62"

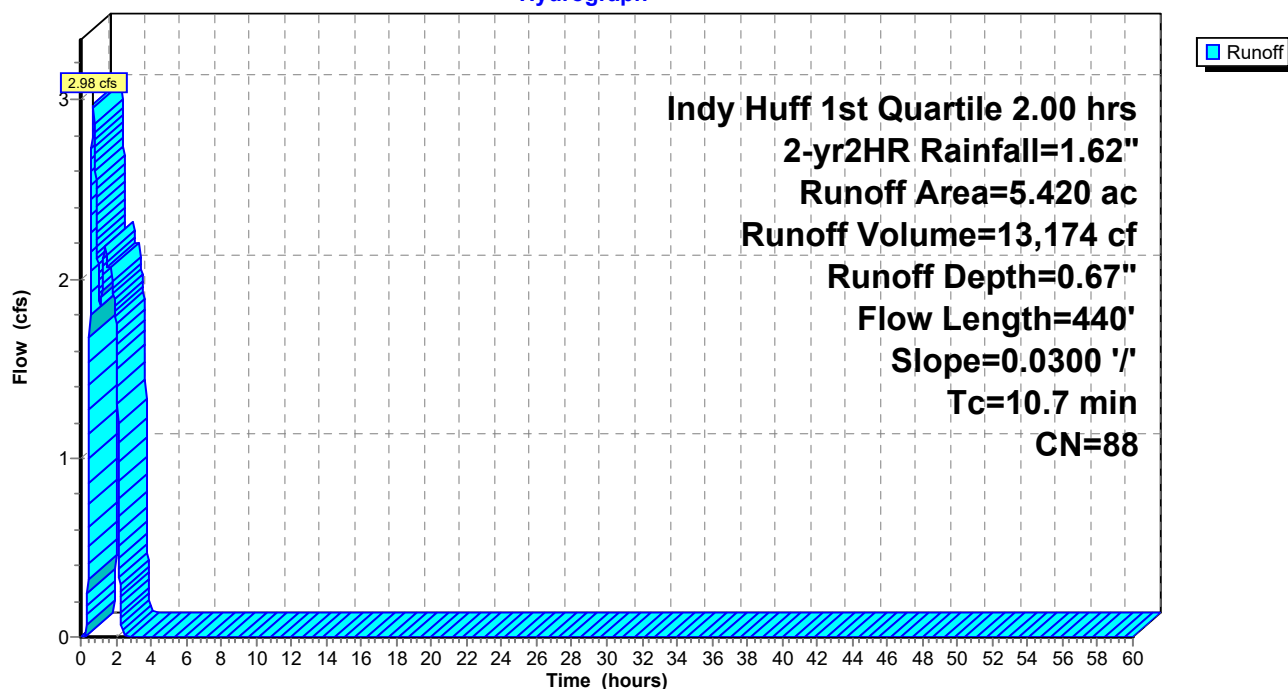
Area (ac)	CN	Description
* 2.710	98	
0.170	70	Woods, Good, HSG C
0.010	77	Woods, Good, HSG D
1.680	80	>75% Grass cover, Good, HSG D
0.850	74	>75% Grass cover, Good, HSG C
5.420	88	Weighted Average
2.710		50.00% Pervious Area
2.710		50.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.0300	0.19		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
2.0	340	0.0300	2.79		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
10.7	440	Total			

**Subcatchment 11S: DA#2**

Hydrograph



**Summary for Subcatchment 12S: DA711**

Runoff = 0.23 cfs @ 2.26 hrs, Volume= 1,172 cf, Depth= 0.19"

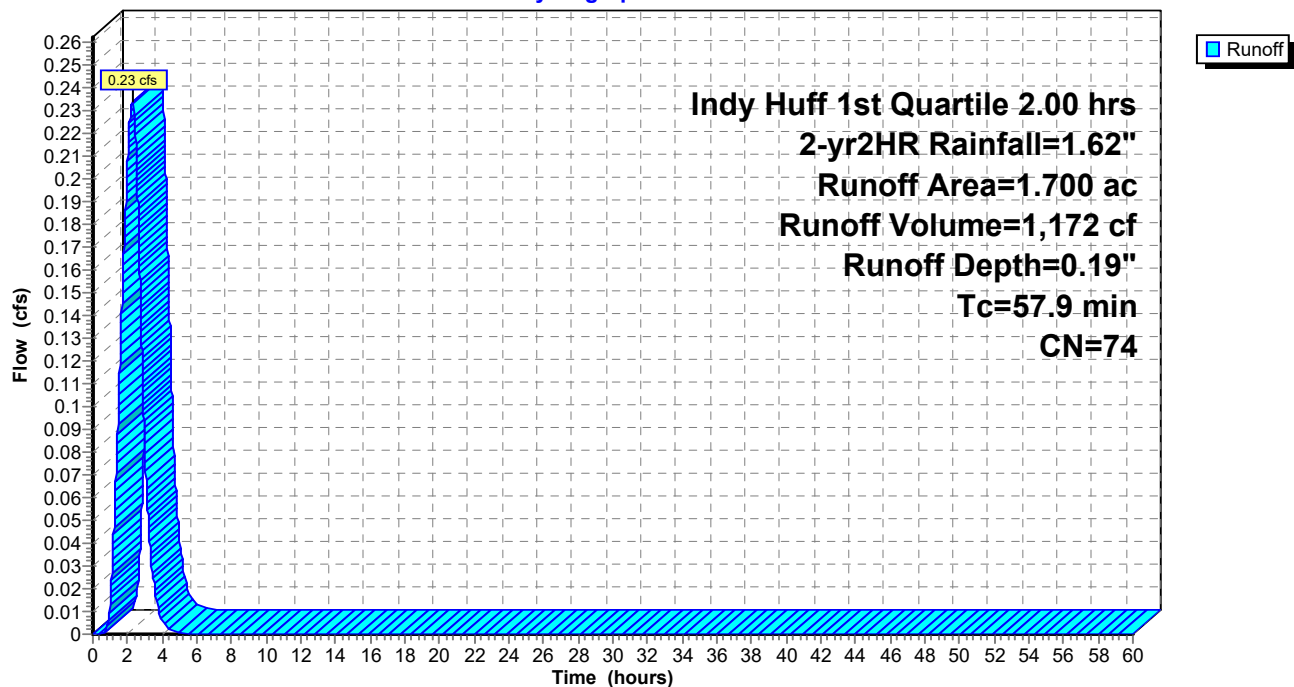
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 2.00 hrs 2-yr2HR Rainfall=1.62"

Area (ac)	CN	Description
* 1.700	74	
1.700		100.00% Pervious Area

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

**Subcatchment 12S: DA711**

Hydrograph



**Summary for Pond 3P: Pond/CMP Detention**

[44] Hint: Outlet device #2 is below defined storage

Inflow Area = 2,309,116 sf, 76.46% Impervious, Inflow Depth = 1.09" for 2-yr2HR event  
 Inflow = 57.70 cfs @ 0.49 hrs, Volume= 210,134 cf  
 Outflow = 12.09 cfs @ 2.07 hrs, Volume= 210,134 cf, Atten= 79%, Lag= 94.9 min  
 Primary = 12.09 cfs @ 2.07 hrs, Volume= 210,134 cf  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
 Peak Elev= 729.41' @ 2.07 hrs Surf.Area= 112,456 sf Storage= 162,963 cf

Plug-Flow detention time= 696.2 min calculated for 210,134 cf (100% of inflow)  
 Center-of-Mass det. time= 696.2 min ( 757.2 - 61.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	727.40'	87,965 cf	<b>48.0" Round Pipe Storage</b> x 10 L= 700.0' S= 0.0010 '/'
#2	727.80'	586,912 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		674,876 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.80	74,675	0	0
728.00	75,945	15,062	15,062
729.00	82,354	79,150	94,212
730.00	88,864	85,609	179,821
731.00	95,474	92,169	271,990
732.00	102,185	98,830	370,819
733.00	110,000	106,093	476,912
734.00	110,000	110,000	586,912

Device	Routing	Invert	Outlet Devices
#1	Primary	727.37'	<b>24.0" Round POI A</b> L= 75.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 727.37' / 727.14' S= 0.0031 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 3.14 sf
#2	Device 1	727.37'	<b>4.6" Vert. Orifice/Grate</b> C= 0.600
#3	Device 1	728.54'	<b>6.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)
#4	Secondary	730.21'	<b>24.0" Round POI B</b> L= 27.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 730.21' / 730.00' S= 0.0078 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 3.14 sf

**Primary OutFlow** Max=12.09 cfs @ 2.07 hrs HW=729.41' (Free Discharge)

1=POI A (Barrel Controls 12.09 cfs @ 4.69 fps)

2=Orifice/Grate (Passes < 0.76 cfs potential flow)

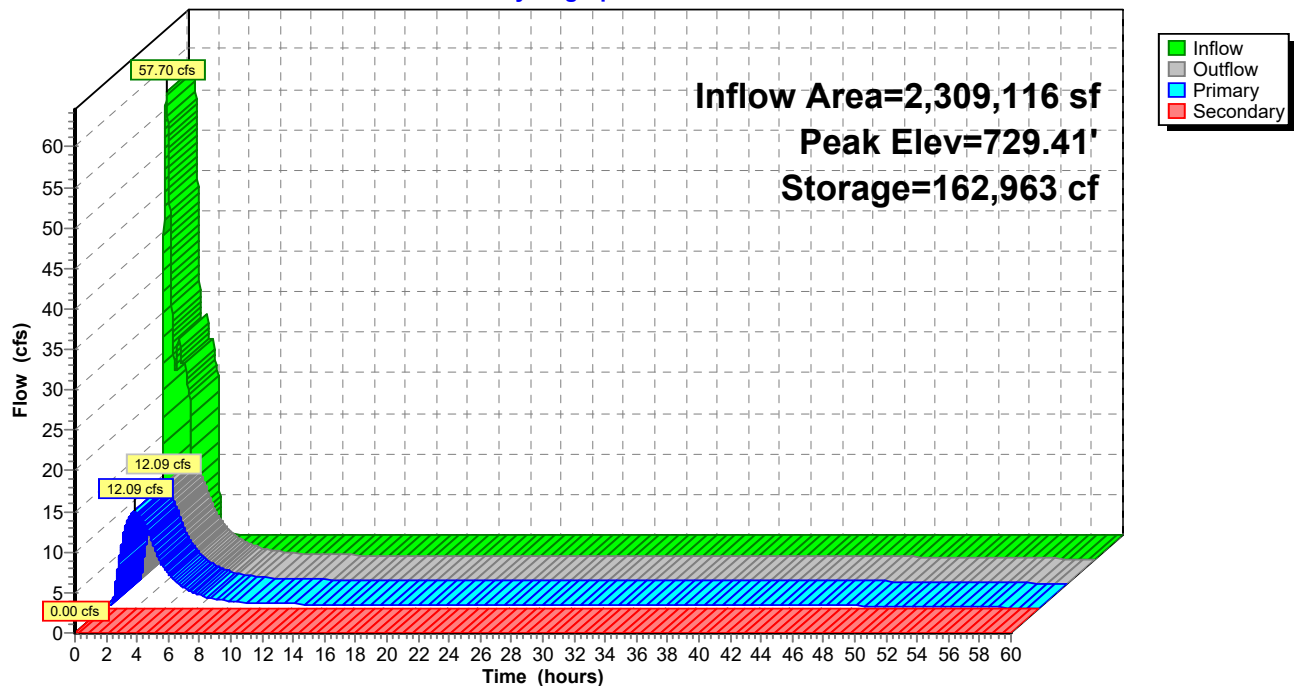
3=Sharp-Crested Rectangular Weir (Passes < 15.43 cfs potential flow)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=727.40' (Free Discharge)

4=POI B ( Controls 0.00 cfs)

### Pond 3P: Pond/CMP Detention

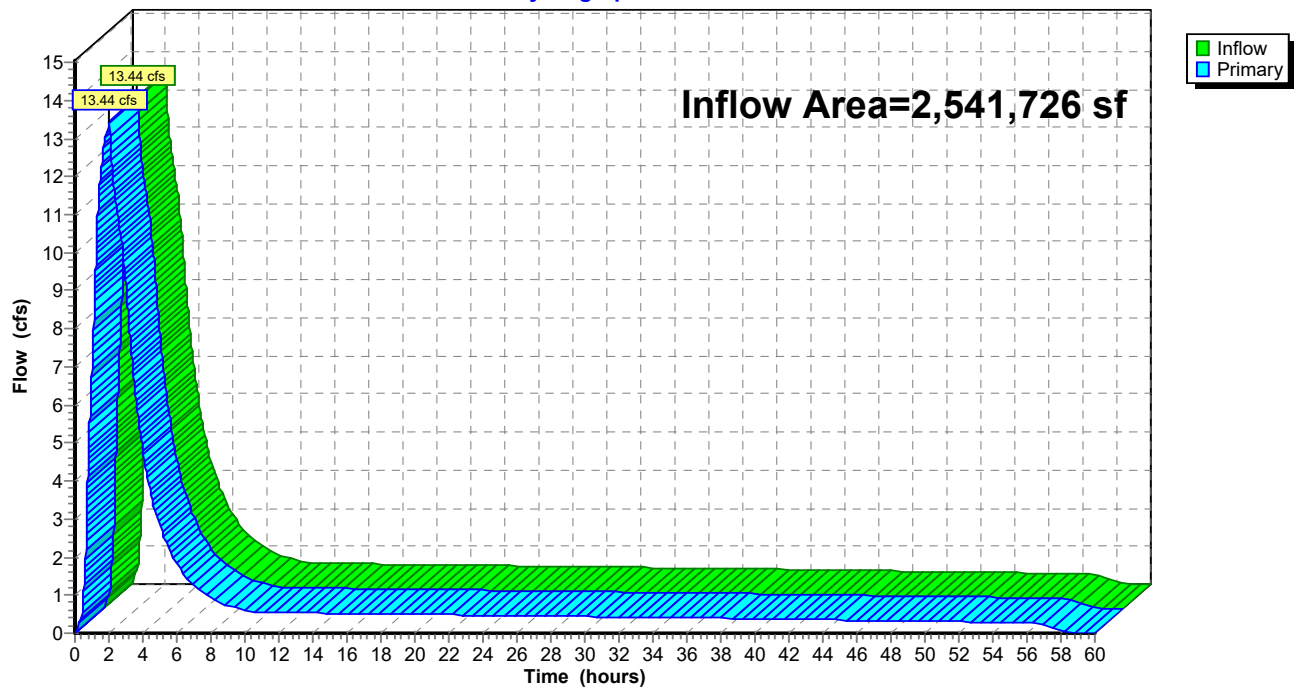
#### Hydrograph



**Summary for Link 13L: Total Post**

Inflow Area = 2,541,726 sf, 71.40% Impervious, Inflow Depth = 1.03" for 2-yr2HR event  
Inflow = 13.44 cfs @ 2.04 hrs, Volume= 218,848 cf  
Primary = 13.44 cfs @ 2.04 hrs, Volume= 218,848 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

**Link 13L: Total Post****Hydrograph**

**Summary for Subcatchment 2S: DA#3 (Dev-Onsite)**

Runoff = 18.64 cfs @ 0.46 hrs, Volume= 61,258 cf, Depth= 2.14"

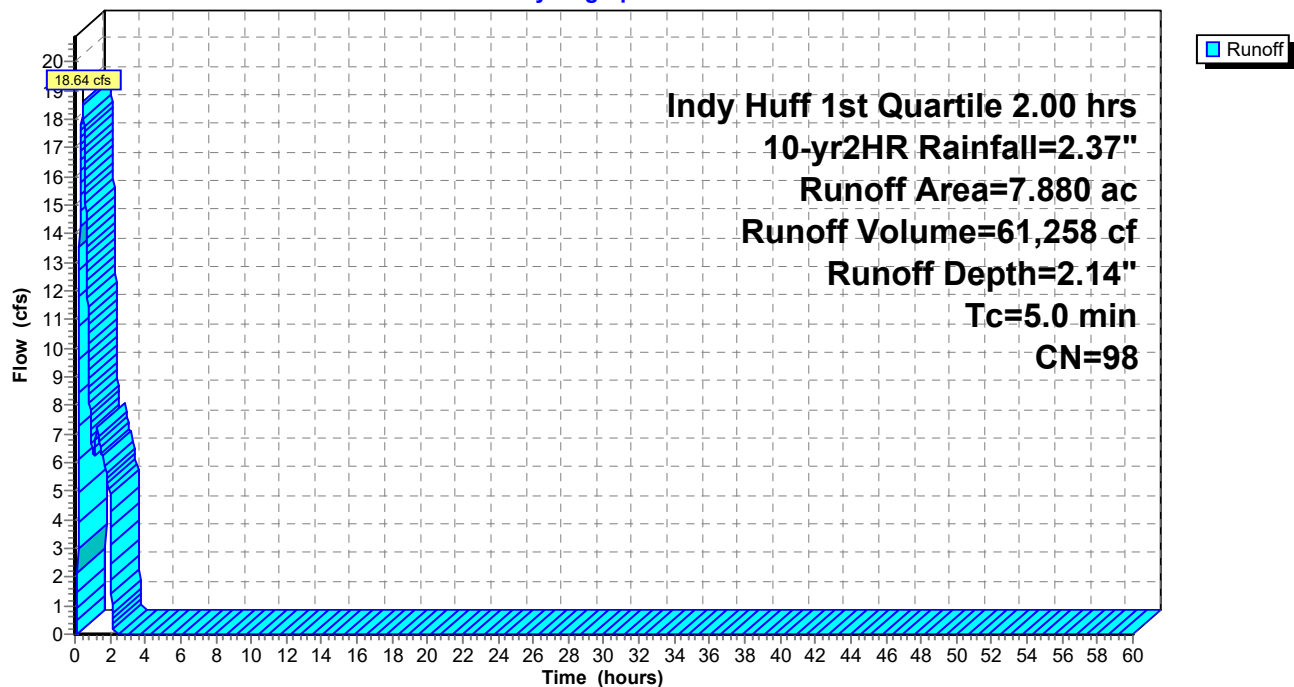
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 2.00 hrs 10-yr2HR Rainfall=2.37"

Area (ac)	CN	Description
* 7.880	98	
7.880		100.00% Impervious Area

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

**Subcatchment 2S: DA#3 (Dev-Onsite)**

Hydrograph



**Summary for Subcatchment 4S: DA#5 (Dev-Onsite)**

Runoff = 70.60 cfs @ 0.47 hrs, Volume= 233,404 cf, Depth= 2.04"

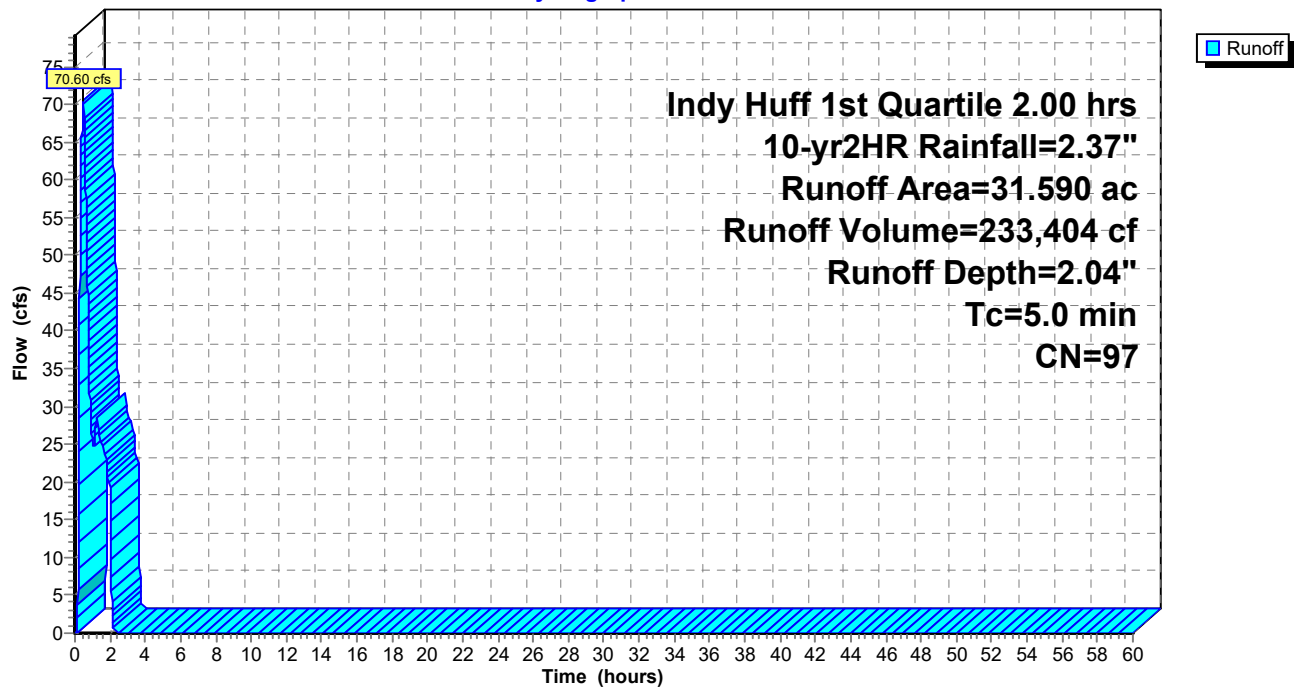
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 2.00 hrs 10-yr2HR Rainfall=2.37"

Area (ac)	CN	Description
* 29.300	98	
0.510	74	>75% Grass cover, Good, HSG C
1.780	80	>75% Grass cover, Good, HSG D
31.590	97	Weighted Average
2.290		7.25% Pervious Area
29.300		92.75% Impervious Area

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

**Subcatchment 4S: DA#5 (Dev-Onsite)**

Hydrograph





**Summary for Subcatchment 9S: DA#4 (Undetained)**

Runoff = 4.21 cfs @ 0.70 hrs, Volume= 18,584 cf, Depth= 0.96"

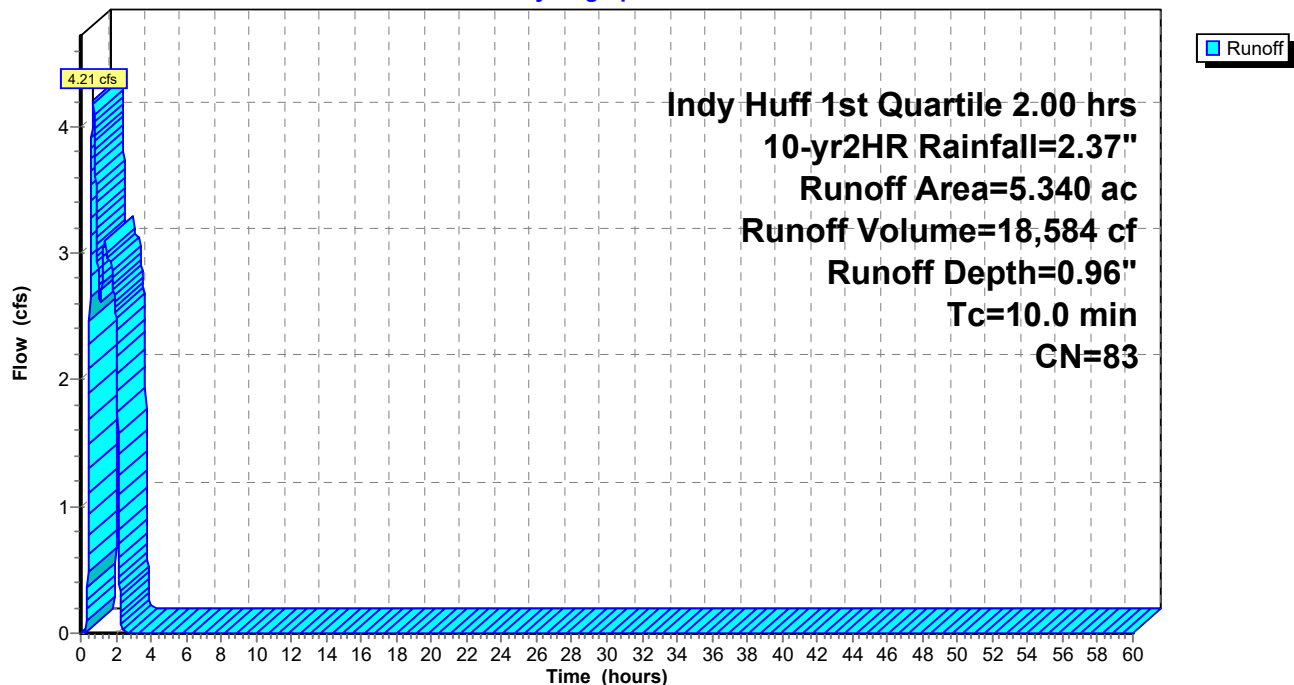
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 2.00 hrs 10-yr2HR Rainfall=2.37"

Area (ac)	CN	Description
* 1.130	98	
0.350	74	>75% Grass cover, Good, HSG C
3.860	80	>75% Grass cover, Good, HSG D
5.340	83	Weighted Average
4.210		78.84% Pervious Area
1.130		21.16% Impervious Area

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

**Subcatchment 9S: DA#4 (Undetained)**

Hydrograph



**Summary for Subcatchment 10S: DA#1**

Runoff = 2.87 cfs @ 1.91 hrs, Volume= 16,428 cf, Depth= 0.70"

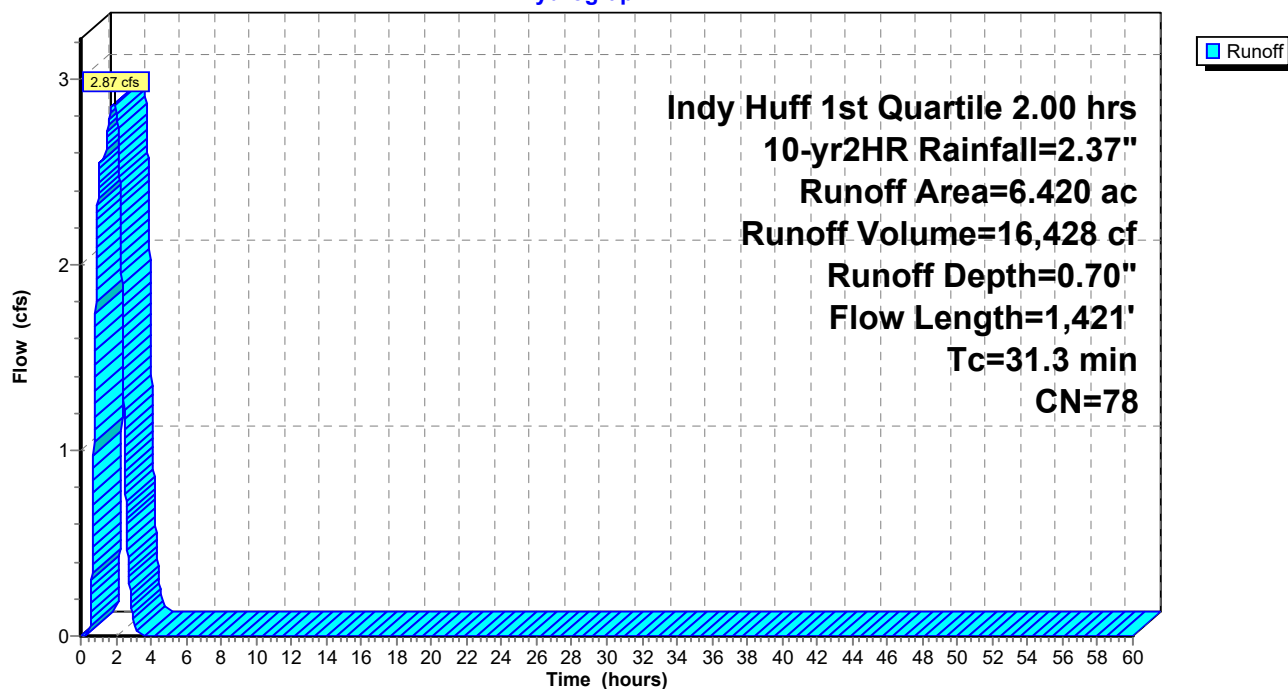
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 2.00 hrs 10-yr2HR Rainfall=2.37"

Area (ac)	CN	Description
* 0.640	98	
0.890	70	Woods, Good, HSG C
1.630	77	Woods, Good, HSG D
0.150	89	Row crops, straight row, Good, HSG D
0.130	85	Row crops, straight row, Good, HSG C
1.360	80	>75% Grass cover, Good, HSG D
1.620	74	>75% Grass cover, Good, HSG C
6.420	78	Weighted Average
5.780		90.03% Pervious Area
0.640		9.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0100	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
17.7	1,321	0.0060	1.25		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
31.3	1,421	Total			

**Subcatchment 10S: DA#1**

Hydrograph



**Summary for Subcatchment 11S: DA#2**

Runoff = 6.14 cfs @ 0.67 hrs, Volume= 25,005 cf, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 2.00 hrs 10-yr2HR Rainfall=2.37"

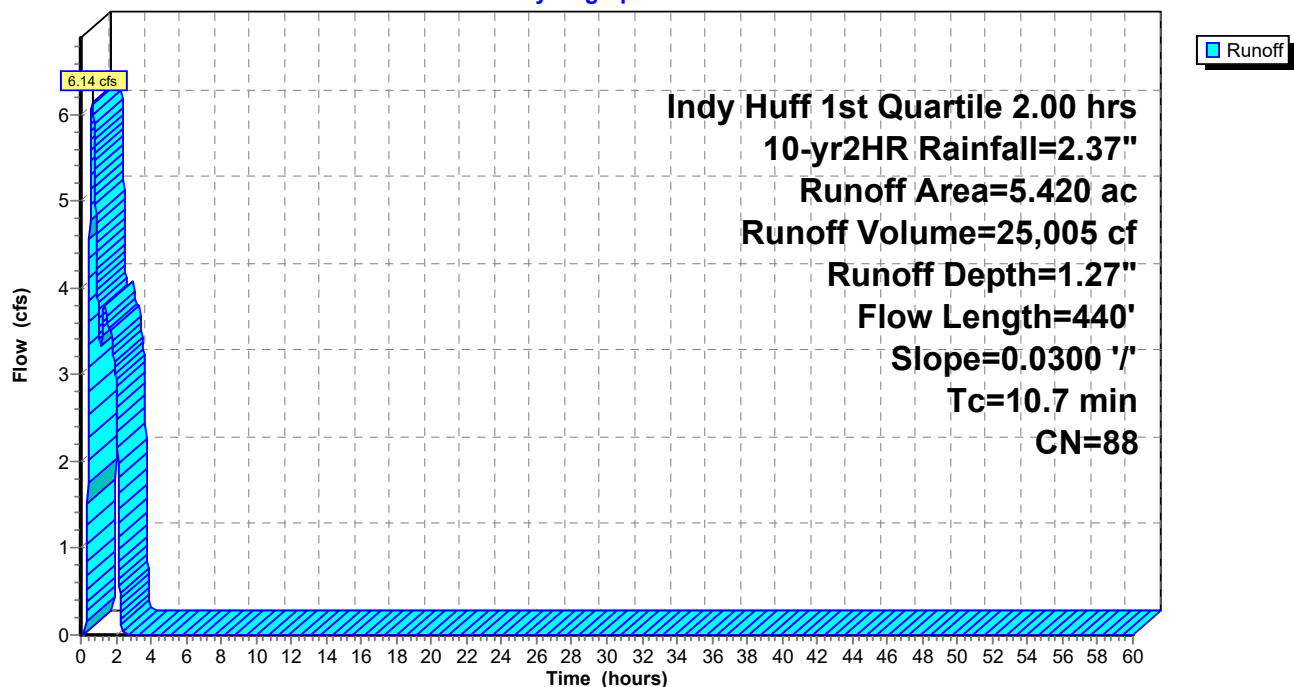
Area (ac)	CN	Description
* 2.710	98	
0.170	70	Woods, Good, HSG C
0.010	77	Woods, Good, HSG D
1.680	80	>75% Grass cover, Good, HSG D
0.850	74	>75% Grass cover, Good, HSG C
5.420	88	Weighted Average
2.710		50.00% Pervious Area
2.710		50.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.0300	0.19		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
2.0	340	0.0300	2.79		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
10.7	440	Total			

**Subcatchment 11S: DA#2**

Hydrograph



**Summary for Subcatchment 12S: DA711**

Runoff = 0.58 cfs @ 2.19 hrs, Volume= 3,311 cf, Depth= 0.54"

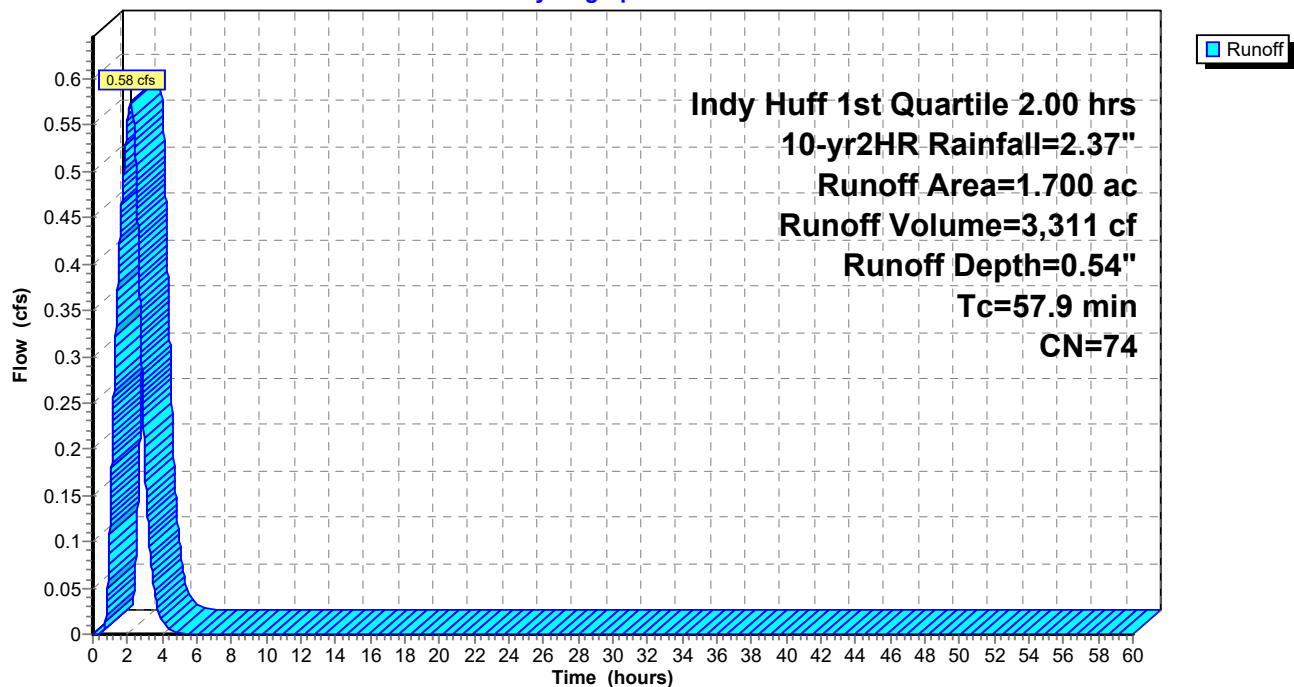
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 2.00 hrs 10-yr2HR Rainfall=2.37"

Area (ac)	CN	Description
* 1.700	74	
1.700		100.00% Pervious Area

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

**Subcatchment 12S: DA711**

Hydrograph



**Summary for Pond 3P: Pond/CMP Detention**

[44] Hint: Outlet device #2 is below defined storage

Inflow Area = 2,309,116 sf, 76.46% Impervious, Inflow Depth = 1.76" for 10-yr2HR event  
 Inflow = 92.84 cfs @ 0.48 hrs, Volume= 339,406 cf  
 Outflow = 16.75 cfs @ 2.08 hrs, Volume= 339,370 cf, Atten= 82%, Lag= 96.0 min  
 Primary = 16.75 cfs @ 2.08 hrs, Volume= 339,370 cf  
 Secondary = 0.00 cfs @ 2.08 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
 Peak Elev= 730.22' @ 2.08 hrs Surf.Area= 117,376 sf Storage= 256,428 cf

Plug-Flow detention time= 519.6 min calculated for 339,370 cf (100% of inflow)  
 Center-of-Mass det. time= 519.6 min ( 579.9 - 60.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	727.40'	87,965 cf	<b>48.0" Round Pipe Storage</b> x 10 L= 700.0' S= 0.0010 '/'
#2	727.80'	586,912 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		674,876 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.80	74,675	0	0
728.00	75,945	15,062	15,062
729.00	82,354	79,150	94,212
730.00	88,864	85,609	179,821
731.00	95,474	92,169	271,990
732.00	102,185	98,830	370,819
733.00	110,000	106,093	476,912
734.00	110,000	110,000	586,912

Device	Routing	Invert	Outlet Devices
#1	Primary	727.37'	<b>24.0" Round POI A</b> L= 75.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 727.37' / 727.14' S= 0.0031 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 3.14 sf
#2	Device 1	727.37'	<b>4.6" Vert. Orifice/Grate</b> C= 0.600
#3	Device 1	728.54'	<b>6.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)
#4	Secondary	730.21'	<b>24.0" Round POI B</b> L= 27.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 730.21' / 730.00' S= 0.0078 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 3.14 sf

**Primary OutFlow** Max=16.75 cfs @ 2.08 hrs HW=730.22' (Free Discharge)

↑ **1=POI A** (Barrel Controls 16.75 cfs @ 5.33 fps)

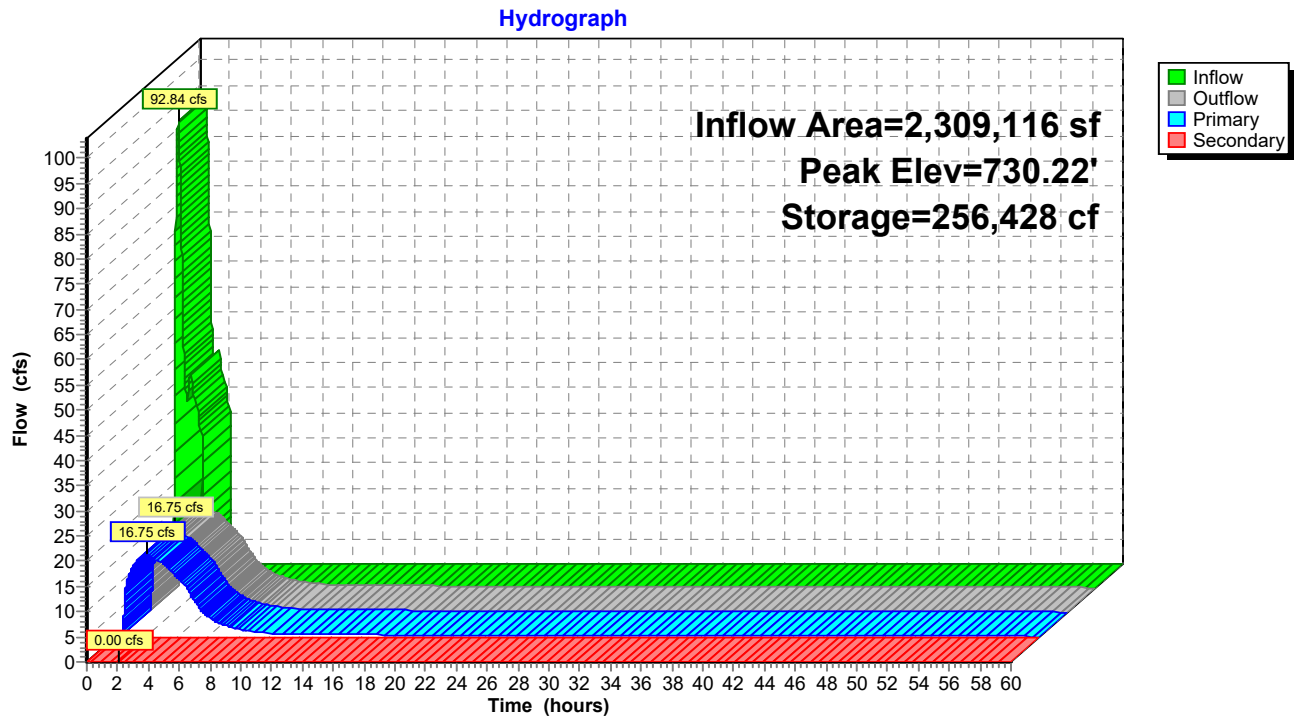
↑ **2=Orifice/Grate** (Passes < 0.91 cfs potential flow)

↑ **3=Sharp-Crested Rectangular Weir** (Passes < 40.31 cfs potential flow)

**Secondary OutFlow** Max=0.00 cfs @ 2.08 hrs HW=730.22' (Free Discharge)

↑ **4=POI B** (Barrel Controls 0.00 cfs @ 0.25 fps)

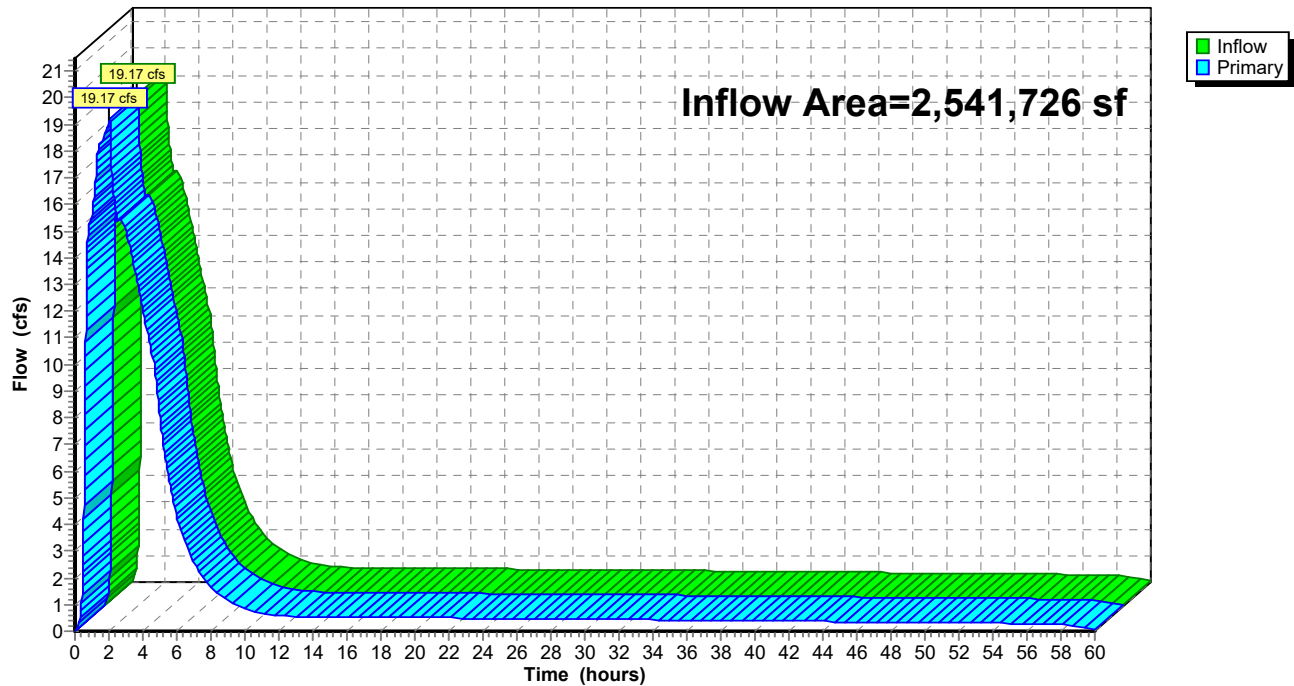
### Pond 3P: Pond/CMP Detention



**Summary for Link 13L: Total Post**

Inflow Area = 2,541,726 sf, 71.40% Impervious, Inflow Depth > 1.69" for 10-yr2HR event  
Inflow = 19.17 cfs @ 2.04 hrs, Volume= 357,954 cf  
Primary = 19.17 cfs @ 2.04 hrs, Volume= 357,954 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

**Link 13L: Total Post****Hydrograph**

**Summary for Subcatchment 2S: DA#3 (Dev-Onsite)**

Runoff = 29.58 cfs @ 0.45 hrs, Volume= 97,428 cf, Depth= 3.41"

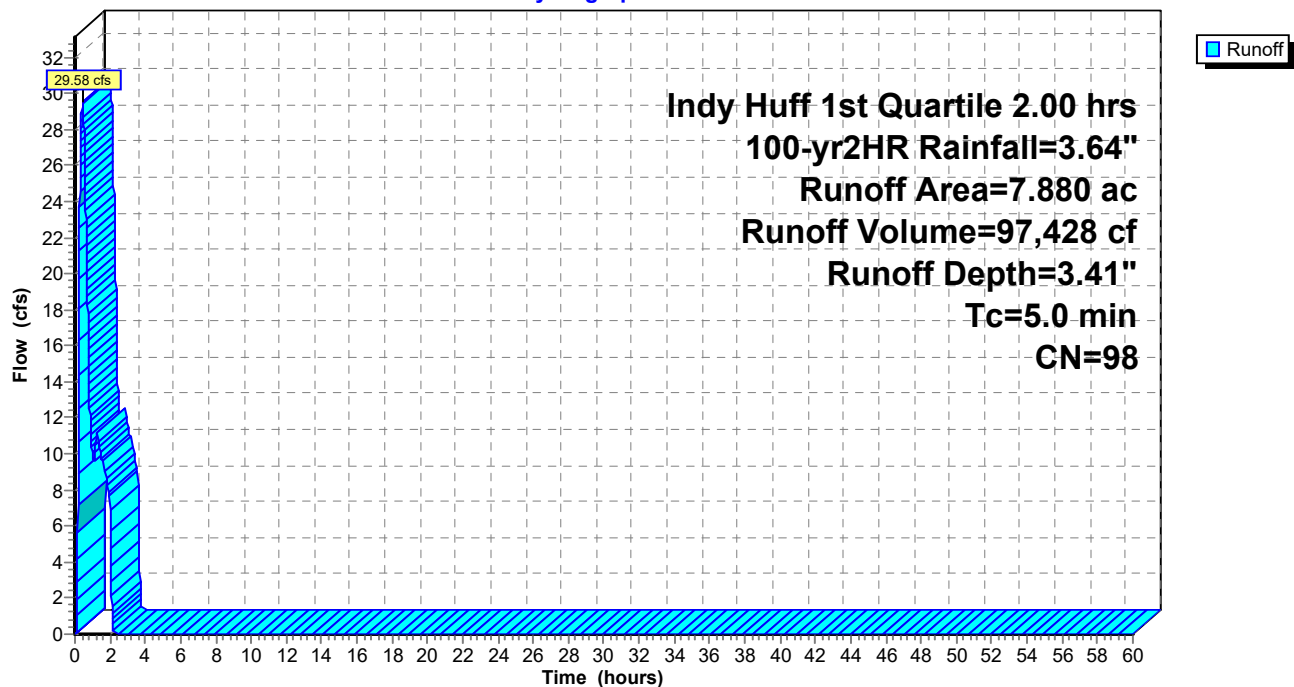
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 2.00 hrs 100-yr2HR Rainfall=3.64"

Area (ac)	CN	Description
* 7.880	98	
7.880		100.00% Impervious Area

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

**Subcatchment 2S: DA#3 (Dev-Onsite)**

Hydrograph





**Summary for Subcatchment 4S: DA#5 (Dev-Onsite)**

Runoff = 114.92 cfs @ 0.46 hrs, Volume= 377,668 cf, Depth= 3.29"

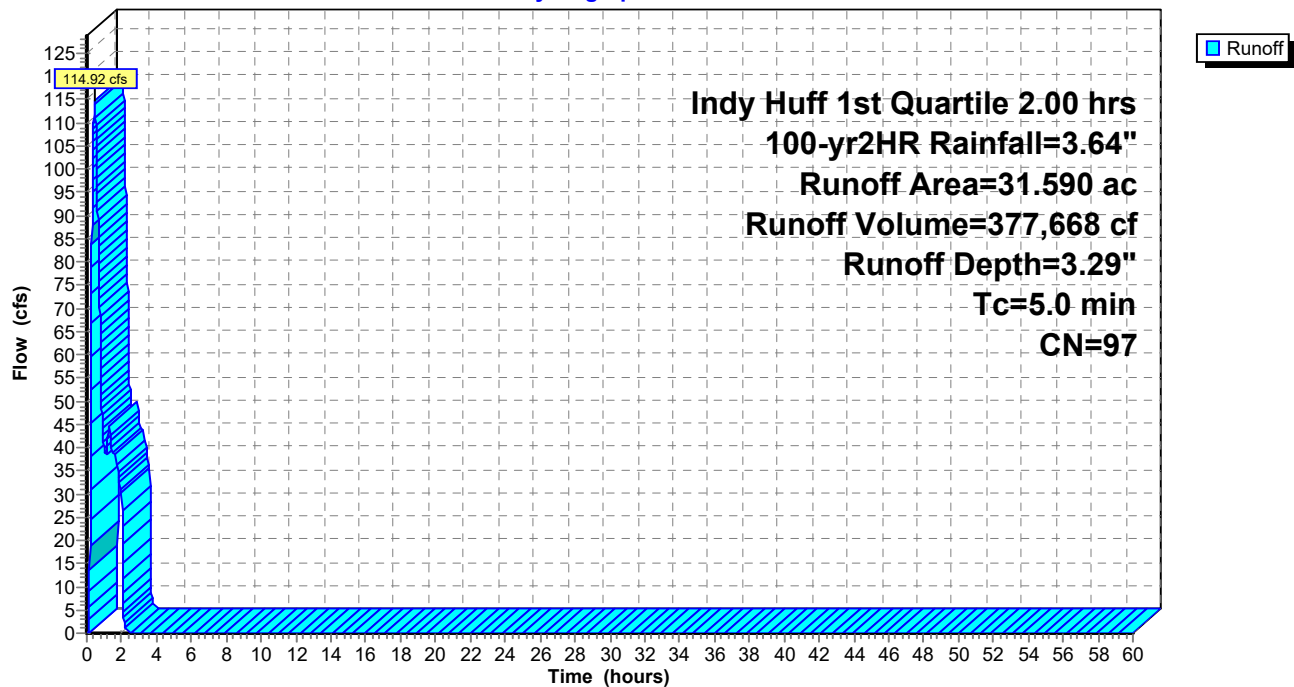
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 2.00 hrs 100-yr2HR Rainfall=3.64"

Area (ac)	CN	Description
* 29.300	98	
0.510	74	>75% Grass cover, Good, HSG C
1.780	80	>75% Grass cover, Good, HSG D
31.590	97	Weighted Average
2.290		7.25% Pervious Area
29.300		92.75% Impervious Area

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

**Subcatchment 4S: DA#5 (Dev-Onsite)**

Hydrograph



**Summary for Subcatchment 9S: DA#4 (Undetained)**

Runoff = 9.52 cfs @ 0.65 hrs, Volume= 38,321 cf, Depth= 1.98"

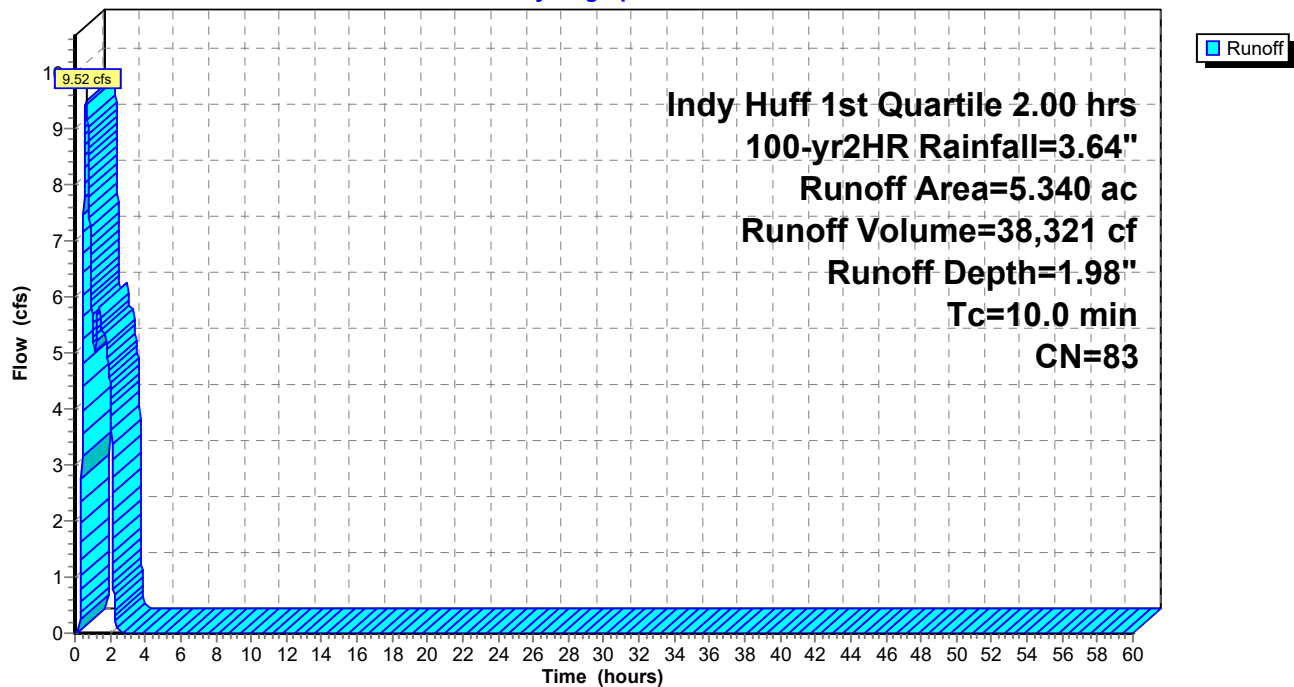
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 2.00 hrs 100-yr2HR Rainfall=3.64"

Area (ac)	CN	Description
* 1.130	98	
0.350	74	>75% Grass cover, Good, HSG C
3.860	80	>75% Grass cover, Good, HSG D
5.340	83	Weighted Average
4.210		78.84% Pervious Area
1.130		21.16% Impervious Area

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

**Subcatchment 9S: DA#4 (Undetained)**

Hydrograph



**Summary for Subcatchment 10S: DA#1**

Runoff = 6.65 cfs @ 1.01 hrs, Volume= 37,394 cf, Depth= 1.60"

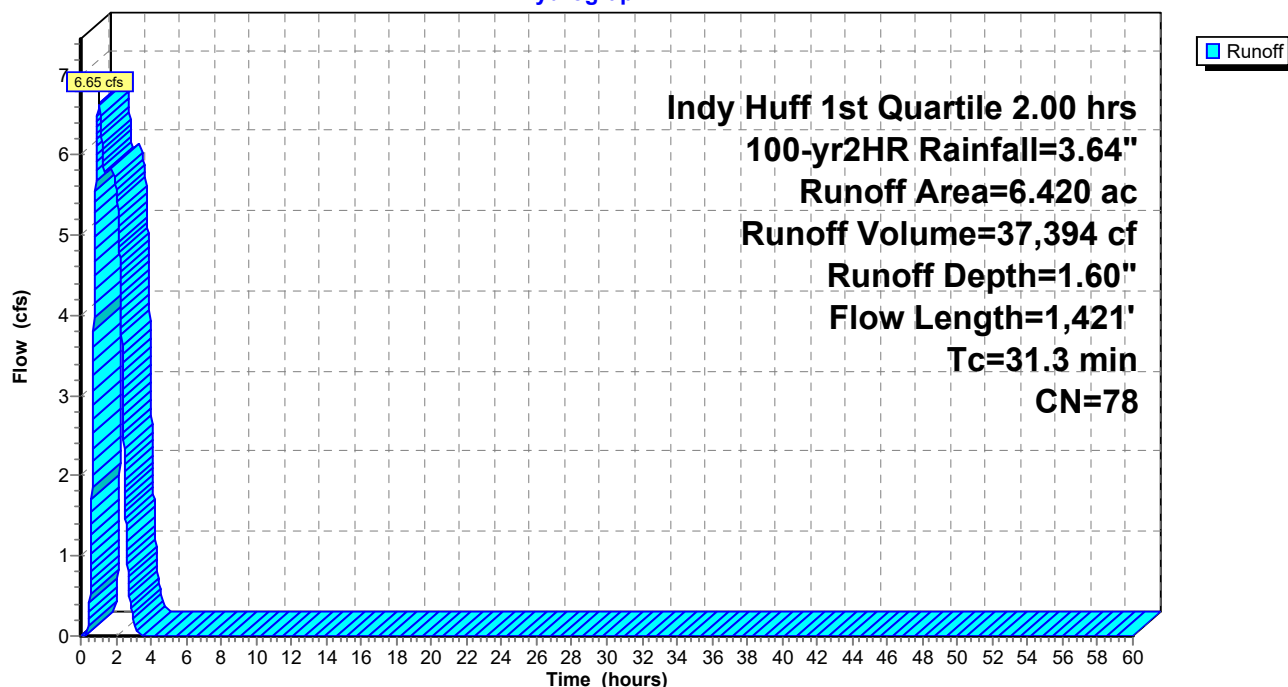
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 2.00 hrs 100-yr2HR Rainfall=3.64"

Area (ac)	CN	Description
* 0.640	98	
0.890	70	Woods, Good, HSG C
1.630	77	Woods, Good, HSG D
0.150	89	Row crops, straight row, Good, HSG D
0.130	85	Row crops, straight row, Good, HSG C
1.360	80	>75% Grass cover, Good, HSG D
1.620	74	>75% Grass cover, Good, HSG C
6.420	78	Weighted Average
5.780		90.03% Pervious Area
0.640		9.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0100	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
17.7	1,321	0.0060	1.25		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
31.3	1,421	Total			

**Subcatchment 10S: DA#1**

Hydrograph



**Summary for Subcatchment 11S: DA#2**

Runoff = 12.39 cfs @ 0.63 hrs, Volume= 47,154 cf, Depth= 2.40"

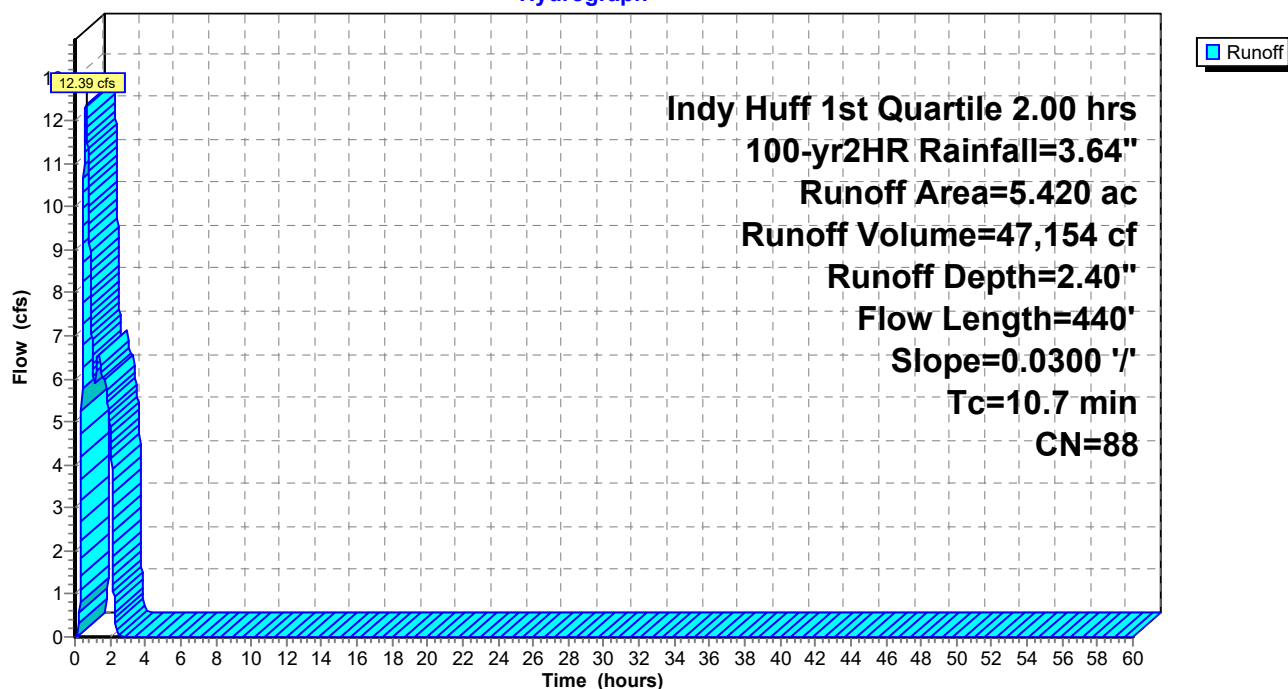
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 2.00 hrs 100-yr2HR Rainfall=3.64"

Area (ac)	CN	Description
* 2.710	98	
0.170	70	Woods, Good, HSG C
0.010	77	Woods, Good, HSG D
1.680	80	>75% Grass cover, Good, HSG D
0.850	74	>75% Grass cover, Good, HSG C
5.420	88	Weighted Average
2.710		50.00% Pervious Area
2.710		50.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.0300	0.19		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
2.0	340	0.0300	2.79		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
10.7	440	Total			

**Subcatchment 11S: DA#2**

Hydrograph



**Summary for Subcatchment 12S: DA711**

Runoff = 1.29 cfs @ 2.12 hrs, Volume= 8,253 cf, Depth= 1.34"

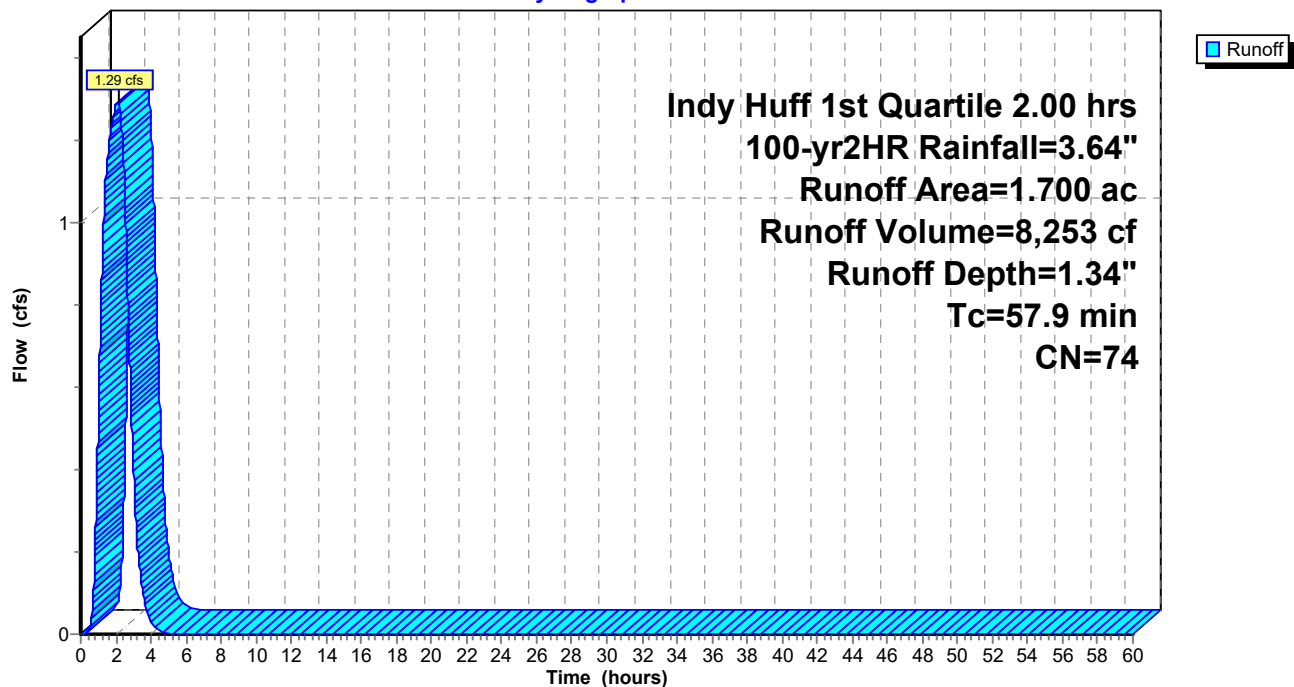
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 2.00 hrs 100-yr2HR Rainfall=3.64"

Area (ac)	CN	Description
* 1.700	74	
1.700		100.00% Pervious Area

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

**Subcatchment 12S: DA711**

Hydrograph



**Summary for Pond 3P: Pond/CMP Detention**

[44] Hint: Outlet device #2 is below defined storage

Inflow Area = 2,309,116 sf, 76.46% Impervious, Inflow Depth = 2.95" for 100-yr2HR event  
 Inflow = 153.48 cfs @ 0.47 hrs, Volume= 567,897 cf  
 Outflow = 33.21 cfs @ 2.06 hrs, Volume= 566,655 cf, Atten= 78%, Lag= 95.8 min  
 Primary = 25.34 cfs @ 2.06 hrs, Volume= 530,723 cf  
 Secondary = 7.86 cfs @ 2.06 hrs, Volume= 35,932 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
 Peak Elev= 731.61' @ 2.06 hrs Surf.Area= 108,361 sf Storage= 417,756 cf

Plug-Flow detention time= 395.2 min calculated for 566,560 cf (100% of inflow)  
 Center-of-Mass det. time= 395.4 min ( 455.0 - 59.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	727.40'	87,965 cf	<b>48.0" Round Pipe Storage</b> x 10 L= 700.0' S= 0.0010 '/'
#2	727.80'	586,912 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		674,876 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.80	74,675	0	0
728.00	75,945	15,062	15,062
729.00	82,354	79,150	94,212
730.00	88,864	85,609	179,821
731.00	95,474	92,169	271,990
732.00	102,185	98,830	370,819
733.00	110,000	106,093	476,912
734.00	110,000	110,000	586,912

Device	Routing	Invert	Outlet Devices
#1	Primary	727.37'	<b>24.0" Round POI A</b> L= 75.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 727.37' / 727.14' S= 0.0031 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 3.14 sf
#2	Device 1	727.37'	<b>4.6" Vert. Orifice/Grate</b> C= 0.600
#3	Device 1	728.54'	<b>6.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)
#4	Secondary	730.21'	<b>24.0" Round POI B</b> L= 27.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 730.21' / 730.00' S= 0.0078 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 3.14 sf

**Primary OutFlow** Max=25.34 cfs @ 2.06 hrs HW=731.61' (Free Discharge)

↑ **1=POI A** (Barrel Controls 25.34 cfs @ 8.07 fps)

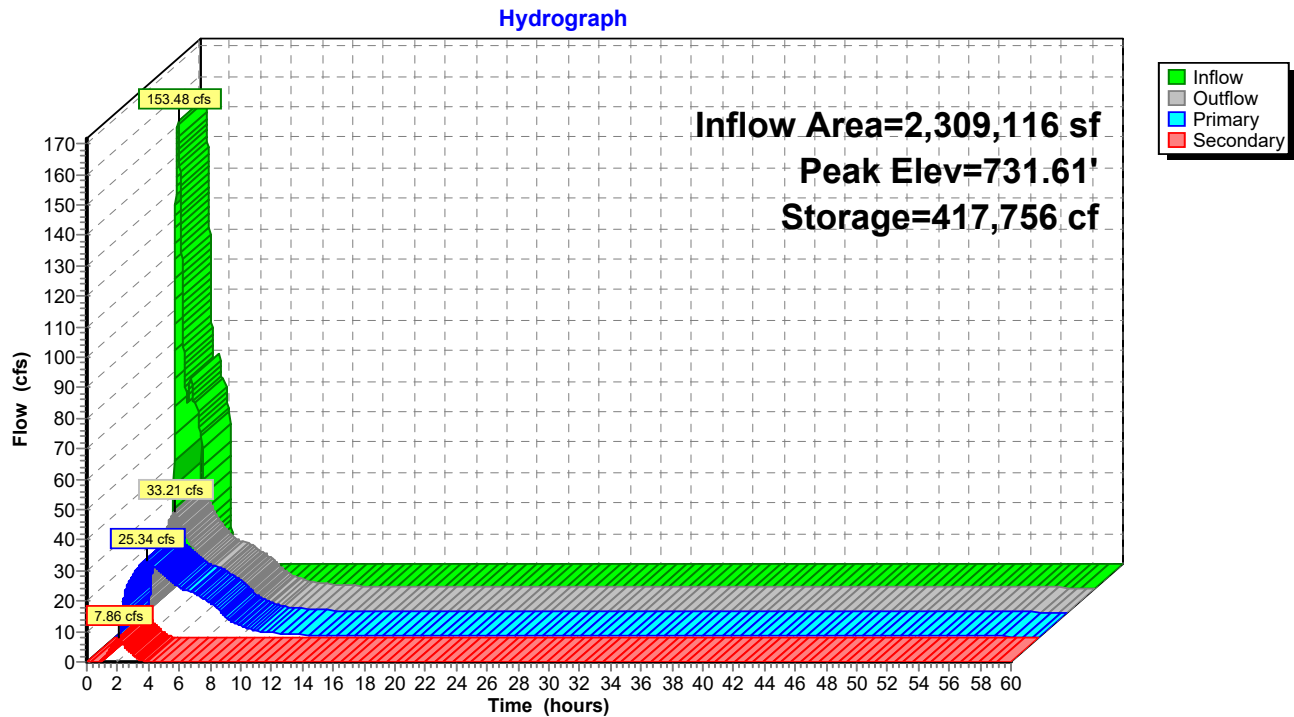
↑ **2=Orifice/Grate** (Passes < 1.12 cfs potential flow)

↑ **3=Sharp-Crested Rectangular Weir** (Passes < 94.75 cfs potential flow)

**Secondary OutFlow** Max=7.86 cfs @ 2.06 hrs HW=731.61' (Free Discharge)

↑ **4=POI B** (Barrel Controls 7.86 cfs @ 4.70 fps)

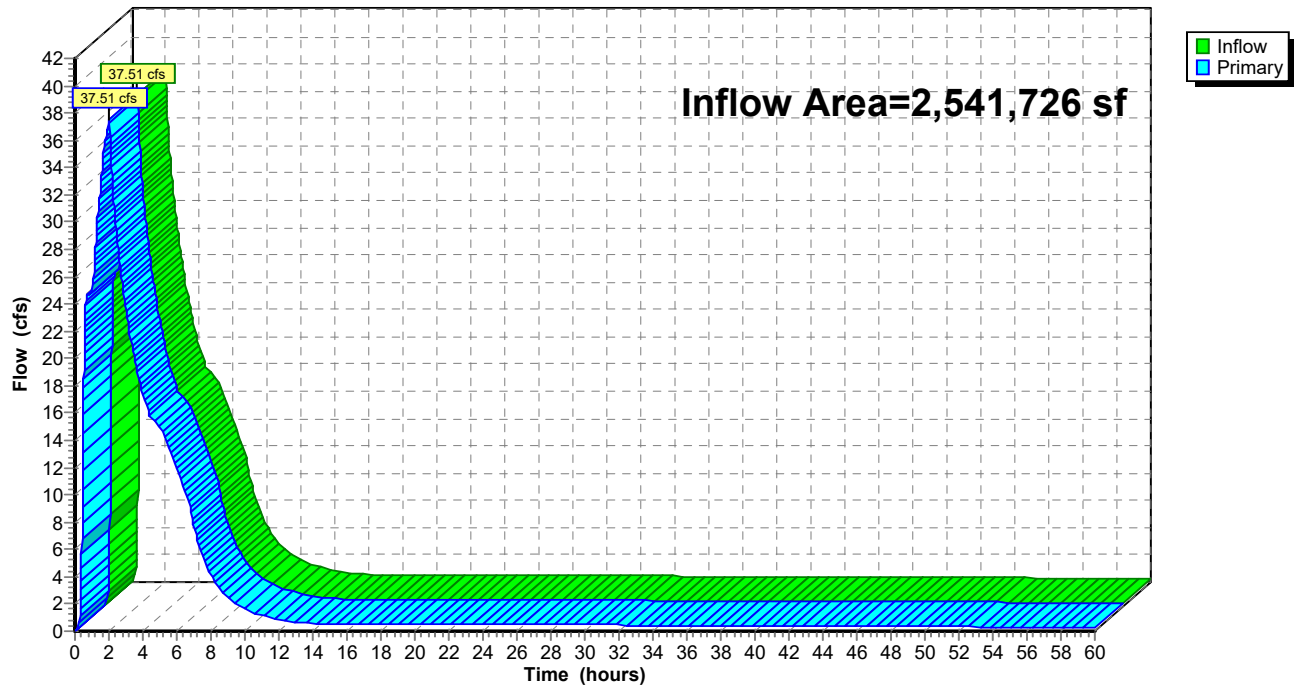
### Pond 3P: Pond/CMP Detention



**Summary for Link 13L: Total Post**

Inflow Area = 2,541,726 sf, 71.40% Impervious, Inflow Depth > 2.86" for 100-yr2HR event  
Inflow = 37.51 cfs @ 2.04 hrs, Volume= 604,975 cf  
Primary = 37.51 cfs @ 2.04 hrs, Volume= 604,975 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

**Link 13L: Total Post****Hydrograph**



## **Appendix C**



### MQJ9

#### Water Quality Basin Calculation

\*\*Required WQv= 149,308 cf \* 20%

Required WQv= 29,861 cf.

Required Orifice Size:

ED Basin orifice elevation=

727.37

WQv elevation=

728.14

(see storage table)

Average Head=

0.385

Required Average flow over 24 hours=

0.35 cfs

(WQV/86,400 sec)

Required orifice area=

0.1157 sf

Required orifice diameter=

4.6 in

Note: Cells in yellow are input areas and are site specific.

\*\*WQv is a summary of the 1.25" rainfall event into the detention system

**2100696 MQJ9**

Type II 24-hr WQV Rainfall=1.25"

Prepared by {enter your company name here}

Printed 9/7/2021

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**Stage-Area-Storage for Pond 3P: Pond/CMP Detention**

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
727.40	0	728.44	59,477	729.48	170,976
727.42	1	728.46	61,472	729.50	173,239
727.44	3	728.48	63,475	729.52	175,505
727.46	9	728.50	65,485	729.54	177,775
727.48	19	728.52	67,503	729.56	180,048
727.50	34	728.54	69,527	729.58	182,324
727.52	53	728.56	71,559	729.60	184,604
727.54	78	728.58	73,597	729.62	186,886
727.56	108	728.60	75,643	729.64	189,171
727.58	145	728.62	77,695	729.66	191,459
727.60	189	728.64	79,753	729.68	193,750
727.62	239	728.66	81,818	729.70	196,044
727.64	297	728.68	83,889	729.72	198,340
727.66	362	728.70	85,967	729.74	200,640
727.68	436	728.72	88,050	729.76	202,941
727.70	517	728.74	90,140	729.78	205,246
727.72	607	728.76	92,235	729.80	207,553
727.74	706	728.78	94,337	729.82	209,862
727.76	813	728.80	96,444	729.84	212,174
727.78	930	728.82	98,557	729.86	214,488
727.80	1,056	728.84	100,675	729.88	216,805
727.82	2,686	728.86	102,799	729.90	219,123
727.84	4,329	728.88	104,928	729.92	221,444
727.86	5,984	728.90	107,063	729.94	223,767
727.88	7,652	728.92	109,203	729.96	226,092
727.90	9,333	728.94	111,348	729.98	228,419
727.92	11,028	728.96	113,498	730.00	230,748
727.94	12,735	728.98	115,653	730.02	233,079
727.96	14,456	729.00	117,813	730.04	235,412
727.98	16,190	729.02	119,978	730.06	237,747
728.00	17,939	729.04	122,148	730.08	240,083
728.02	19,701	729.06	124,323	730.10	242,421
728.04	21,477	729.08	126,502	730.12	244,761
728.06	23,268	729.10	128,686	730.14	247,102
728.08	25,073	729.12	130,875	730.16	249,445
728.10	26,893	729.14	133,068	730.18	251,789
728.12	28,727	729.16	135,265	730.20	254,134
728.14	30,574	729.18	137,467	730.22	256,481
728.16	32,432	729.20	139,673	730.24	258,829
728.18	34,302	729.22	141,884	730.26	261,179
728.20	36,182	729.24	144,098	730.28	263,529
728.22	38,073	729.26	146,317	730.30	265,881
728.24	39,974	729.28	148,540	730.32	268,233
728.26	41,884	729.30	150,766	730.34	270,587
728.28	43,804	729.32	152,997	730.36	272,941
728.30	45,733	729.34	155,232	730.38	275,297
728.32	47,671	729.36	157,470	730.40	277,653
728.34	49,618	729.38	159,712	730.42	280,009
728.36	51,573	729.40	161,958	730.44	282,367
728.38	53,537	729.42	164,207	730.46	284,725
728.40	55,509	729.44	166,460	730.48	287,083
728.42	57,489	729.46	168,716	730.50	289,442

WQV

**2100696 MQJ9***Type II 24-hr WQV Rainfall=1.25"*

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Printed 9/7/2021

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**Stage-Area-Storage for Pond 3P: Pond/CMP Detention (continued)**

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
730.52	291,801	731.56	412,254	732.60	521,501
730.54	294,160	731.58	414,437	732.62	523,640
730.56	296,519	731.60	416,612	732.64	525,783
730.58	298,879	731.62	418,780	732.66	527,928
730.60	301,239	731.64	420,939	732.68	530,076
730.62	303,598	731.66	423,092	732.70	532,228
730.64	305,958	731.68	425,236	732.72	534,382
730.66	308,317	731.70	427,374	732.74	536,540
730.68	310,676	731.72	429,505	732.76	538,701
730.70	313,034	731.74	431,629	732.78	540,865
730.72	315,392	731.76	433,747	732.80	543,032
730.74	317,750	731.78	435,858	732.82	545,203
730.76	320,107	731.80	437,964	732.84	547,376
730.78	322,463	731.82	440,063	732.86	549,553
730.80	324,819	731.84	442,157	732.88	551,732
730.82	327,173	731.86	444,246	732.90	553,915
730.84	329,526	731.88	446,330	732.92	556,101
730.86	331,879	731.90	448,410	732.94	558,290
730.88	334,230	731.92	450,485	732.96	560,482
730.90	336,580	731.94	452,556	732.98	562,678
730.92	338,928	731.96	454,624	733.00	564,876
730.94	341,275	731.98	456,688	733.02	567,076
730.96	343,620	732.00	458,750	733.04	569,276
730.98	345,963	732.02	460,810	733.06	571,476
731.00	348,305	732.04	462,868	733.08	573,676
731.02	350,644	732.06	464,925	733.10	575,876
731.04	352,981	732.08	466,983	733.12	578,076
731.06	355,316	732.10	469,041	733.14	580,276
731.08	357,649	732.12	471,102	733.16	582,476
731.10	359,979	732.14	473,166	733.18	584,676
731.12	362,306	732.16	475,233	733.20	586,876
731.14	364,630	732.18	477,303	733.22	589,076
731.16	366,951	732.20	479,377	733.24	591,276
731.18	369,269	732.22	481,453	733.26	593,476
731.20	371,584	732.24	483,533	733.28	595,676
731.22	373,895	732.26	485,616	733.30	597,876
731.24	376,201	732.28	487,702	733.32	600,076
731.26	378,504	732.30	489,791	733.34	602,276
731.28	380,802	732.32	491,883	733.36	604,476
731.30	383,095	732.34	493,978	733.38	606,676
731.32	385,384	732.36	496,077	733.40	608,876
731.34	387,666	732.38	498,178	733.42	611,076
731.36	389,943	732.40	500,283	733.44	613,276
731.38	392,213	732.42	502,391	733.46	615,476
731.40	394,476	732.44	504,501	733.48	617,676
731.42	396,730	732.46	506,616	733.50	619,876
731.44	398,974	732.48	508,733	733.52	622,076
731.46	401,210	732.50	510,853	733.54	624,276
731.48	403,436	732.52	512,976	733.56	626,476
731.50	405,653	732.54	515,103	733.58	628,676
731.52	407,862	732.56	517,233	733.60	630,876
731.54	410,062	732.58	519,365	733.62	633,076

**2100696 MQJ9**

*Type II 24-hr WQV Rainfall=1.25"*

Prepared by {enter your company name here}

Printed 9/7/2021

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**Stage-Area-Storage for Pond 3P: Pond/CMP Detention (continued)**

Elevation (feet)	Storage (cubic-feet)
733.64	635,276
733.66	637,476
733.68	639,676
733.70	641,876
733.72	644,076
733.74	646,276
733.76	648,476
733.78	650,676
733.80	652,876
733.82	655,076
733.84	657,276
733.86	659,476
733.88	661,676
733.90	663,876
733.92	666,076
733.94	668,276
733.96	670,476
733.98	672,676
734.00	<b>674,876</b>

## **Appendix D**





# Weir Report

## Basin Emergency Overflow

### Trapezoidal Weir

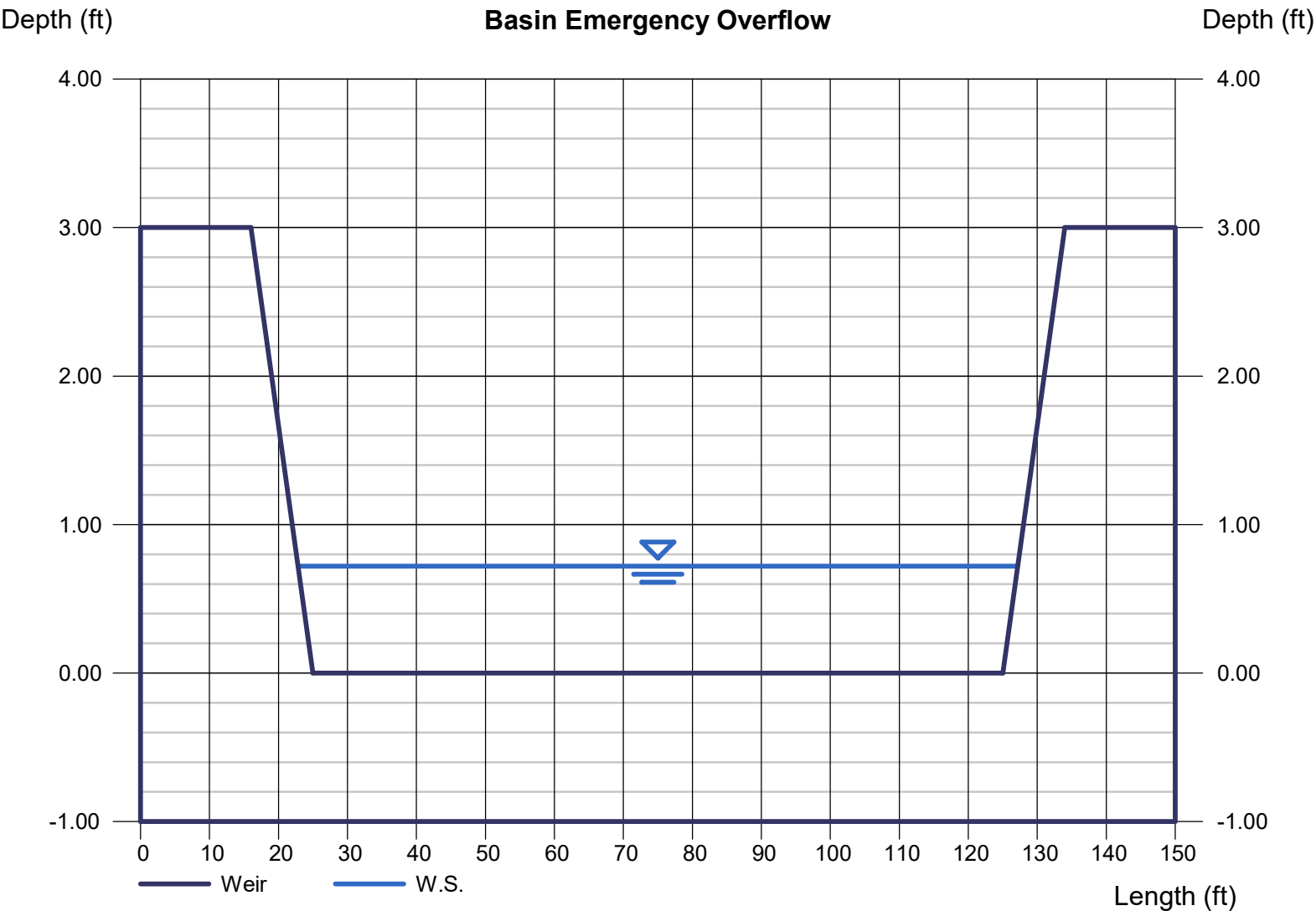
Crest = Sharp  
Bottom Length (ft) = 100.00  
Total Depth (ft) = 3.00  
Side Slope (z:1) = 3.00

### Highlighted

Depth (ft) = 0.72  
Q (cfs) = 192.00  
Area (sqft) = 73.56  
Velocity (ft/s) = 2.61  
Top Width (ft) = 104.32

### Calculations

Weir Coeff. Cw = 3.10  
Compute by: Known Q  
Known Q (cfs) = 192.00

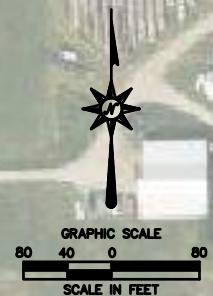
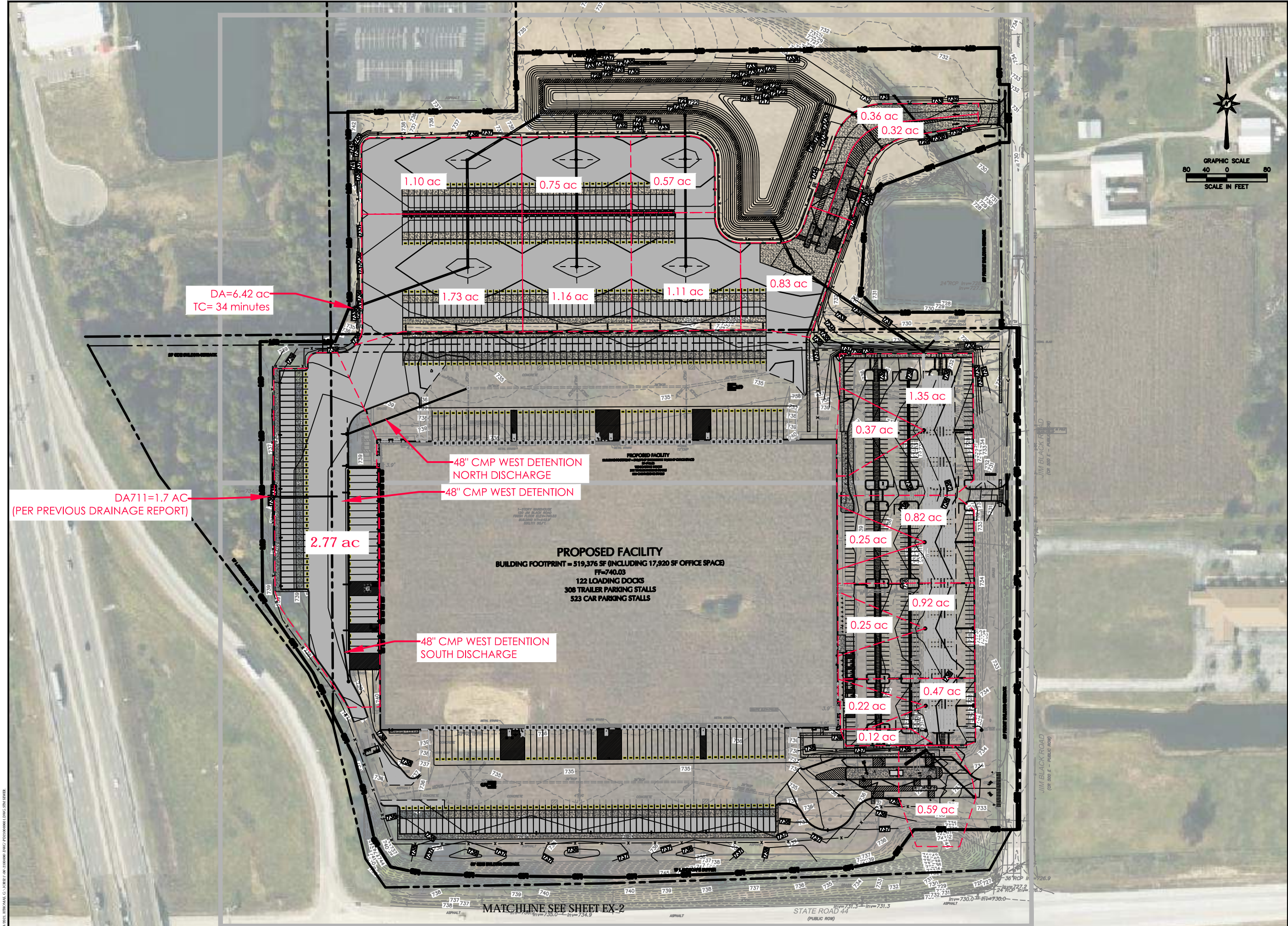




## **Appendix E**







3755 Boettler Oaks Drive  
Suite G  
Uniontown, Ohio 44685  
(234) 294-6340

**SITE PLAN IMPROVEMENTS FOR I-65 SOUTH  
COMMERCE BUILDINGS PHASE I**  
120 JIM BLACK ROAD  
FRANKLIN, JOHNSON COUNTY, INDIANA

REVISIONS		Drawn	Date
No.			
Designed		H.F.T.	
Drawn		A.J.B.	
Reviewed		A.J.B.	
Scale		AS SHOWN	
Project No.		2100696	
Date		09/08/2021	
CAD File:		PD210069601	

Title  
**STORM SEWER  
DRAINAGE MAP**

Sheet No.

**PD-03**

No. of 43



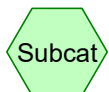
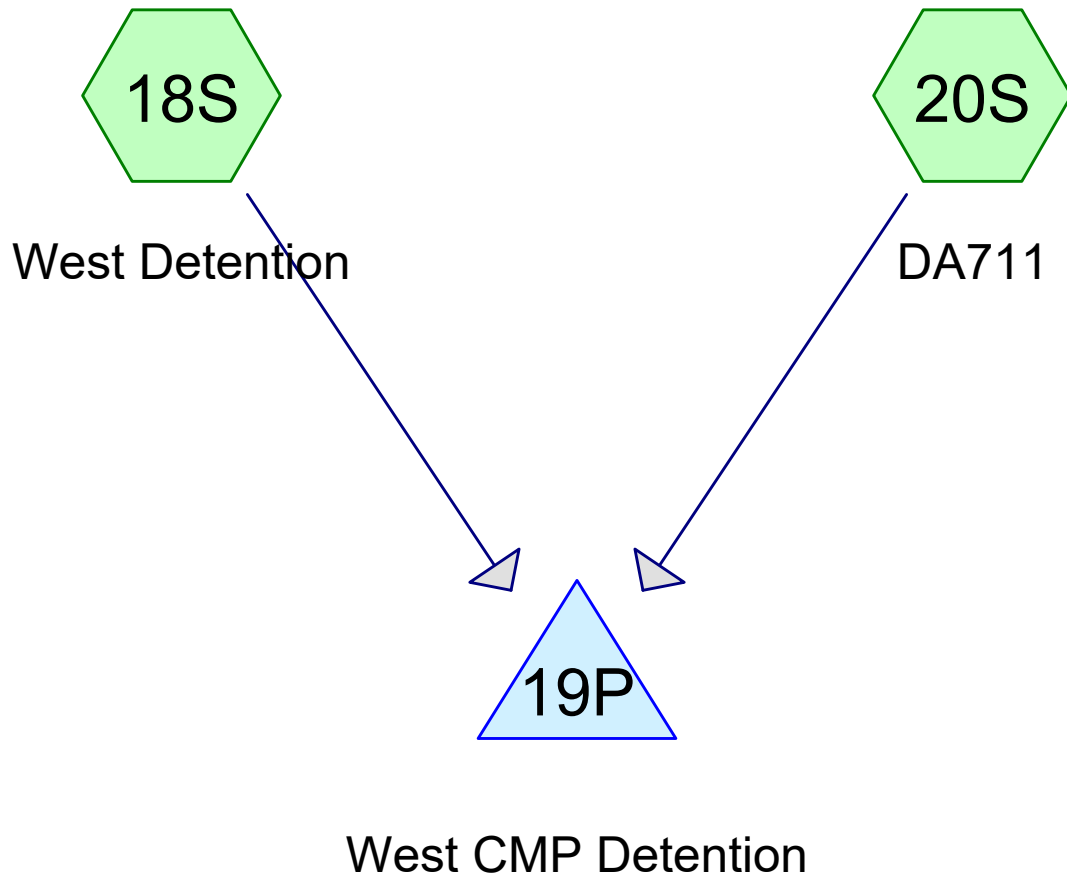




# Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (l)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line		Incr	Total		Incr	Total	Inlet	Syst					Size	Slope	Dn	Up	Dn	Up	Dn	Up	
		(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
1	End	84.300	0.75	1.91	0.90	0.68	1.72	5.0	6.5	6.6	11.40	15.96	3.63	24	0.50	727.80	728.22	730.76	730.97	0.00	733.57	MH-3.5 TO FES-4
2	1	212.000	1.16	1.16	0.90	1.04	1.04	5.0	5.0	7.2	7.51	16.07	2.39	24	0.50	728.22	729.29	731.08	731.29	733.57	733.57	MH-3.4 TO MH-3.
3	End	162.490	1.10	9.25	0.90	0.99	6.40	5.0	35.5	2.9	18.26	28.96	5.80	30	0.50	727.80	728.61	729.43	730.06	0.00	733.57	MH-3.3 TO FES-5
4	3	212.000	1.73	8.15	0.90	1.56	5.41	5.0	34.8	2.9	15.64	22.36	4.92	30	0.30	728.61	729.24	730.15	730.78	733.57	733.57	MH-3.2 TO MH-3.
5	4	243.110	6.42	6.42	0.60	3.85	3.85	34.0	34.0	2.9	11.30	19.62	4.97	24	0.75	729.67	731.50	731.26	732.71	733.57	0.00	FES-1.7 TO MH-3
6	End	84.300	0.57	1.68	0.90	0.51	1.51	5.0	6.5	6.6	10.00	15.96	3.18	24	0.50	727.80	728.22	731.59	731.75	0.00	733.57	MH-3.7 TO FES-3
7	6	212.000	1.11	1.11	0.90	1.00	1.00	5.0	5.0	7.2	7.19	15.99	2.29	24	0.50	728.22	729.28	731.83	732.05	733.57	733.57	MH-3.6 TO MH-3.
8	End	57.000	0.36	0.68	0.90	0.32	0.61	5.0	5.4	7.0	4.30	7.49	3.34	18	0.51	727.80	728.09	728.95	729.02	0.00	731.90	CB-7 TO FES-2
9	8	92.000	0.32	0.32	0.90	0.29	0.29	5.0	5.0	7.2	2.07	2.52	3.58	12	0.50	728.59	729.05	729.28	729.74	731.90	731.90	CB-6 TO CB-7
10	End	47.688	1.35	1.35	0.90	1.22	1.22	5.0	5.0	7.2	8.74	9.12	5.91	18	0.75	729.14	729.50	730.28	730.70	0.00	733.04	CB TO CMP DET
11	End	134.020	0.59	0.59	0.90	0.53	0.53	5.0	5.0	7.2	3.82	5.60	4.55	15	1.00	727.44	728.78	728.27	729.57	735.80	732.12	I-1.2 TO MH-1.2
2100696 MQJ9 StormSewer																Number of lines: 11				Run Date: 9/8/2021		
NOTES:Intensity = 55.09 / (Inlet time + 8.50) ^ 0.78; Return period =Yrs. 10 ; c = cir e = ellip b = box																						

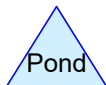




Subcat



Reach



Pond



Link

**Routing Diagram for 2100696 MQJ9**

Prepared by {enter your company name here}, Printed 9/7/2021  
HydroCAD® 10.00-26 s/n 01334 © 2020 HydroCAD Software Solutions LLC

**Summary for Subcatchment 18S: West Detention**

Runoff = 10.49 cfs @ 0.27 hrs, Volume= 18,041 cf, Depth= 1.79"

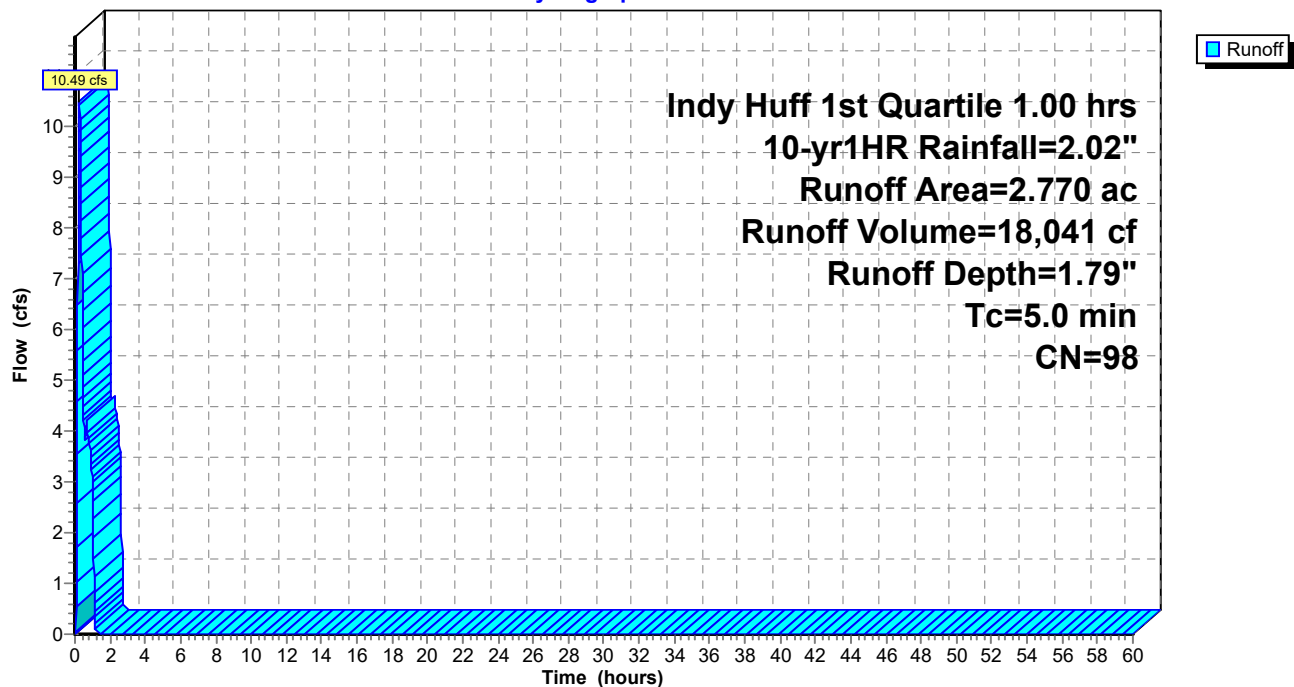
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 1.00 hrs 10-yr1HR Rainfall=2.02"

Area (ac)	CN	Description
* 2.770	98	
2.770		100.00% Impervious Area

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

**Subcatchment 18S: West Detention**

Hydrograph



**Summary for Subcatchment 20S: DA711**

Runoff = 0.59 cfs @ 1.41 hrs, Volume= 2,217 cf, Depth= 0.36"

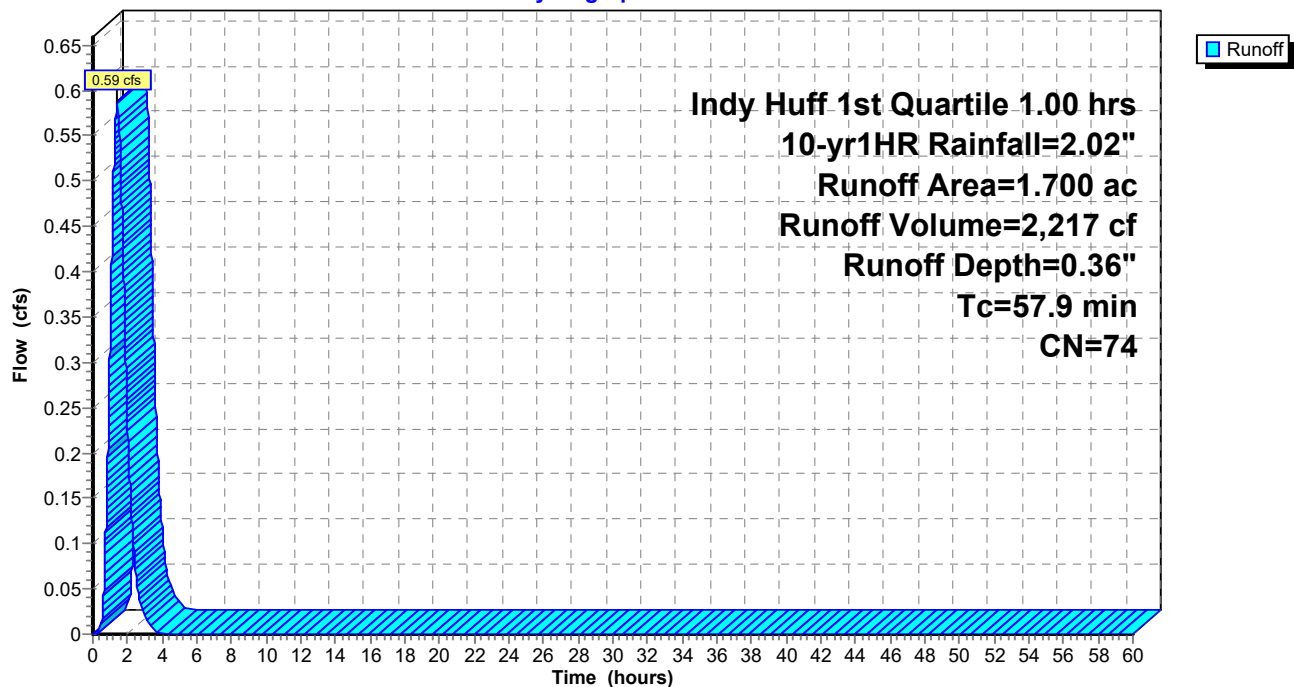
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 1.00 hrs 10-yr1HR Rainfall=2.02"

Area (ac)	CN	Description
* 1.700	74	
1.700		100.00% Pervious Area

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

**Subcatchment 20S: DA711**

Hydrograph



**Summary for Pond 19P: West CMP Detention**

Inflow Area = 194,713 sf, 61.97% Impervious, Inflow Depth = 1.25" for 10-yr1HR event  
 Inflow = 10.49 cfs @ 0.27 hrs, Volume= 20,257 cf  
 Outflow = 5.01 cfs @ 0.46 hrs, Volume= 20,257 cf, Atten= 52%, Lag= 11.7 min  
 Primary = 5.01 cfs @ 0.46 hrs, Volume= 20,257 cf  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
 Peak Elev= 731.78' @ 0.46 hrs Surf.Area= 3,166 sf Storage= 5,931 cf

Plug-Flow detention time= 19.4 min calculated for 20,257 cf (100% of inflow)  
 Center-of-Mass det. time= 19.4 min ( 56.4 - 37.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	729.40'	10,053 cf	<b>48.0" Round Pipe Storage</b> x 4 L= 200.0' S= 0.0010 '/'

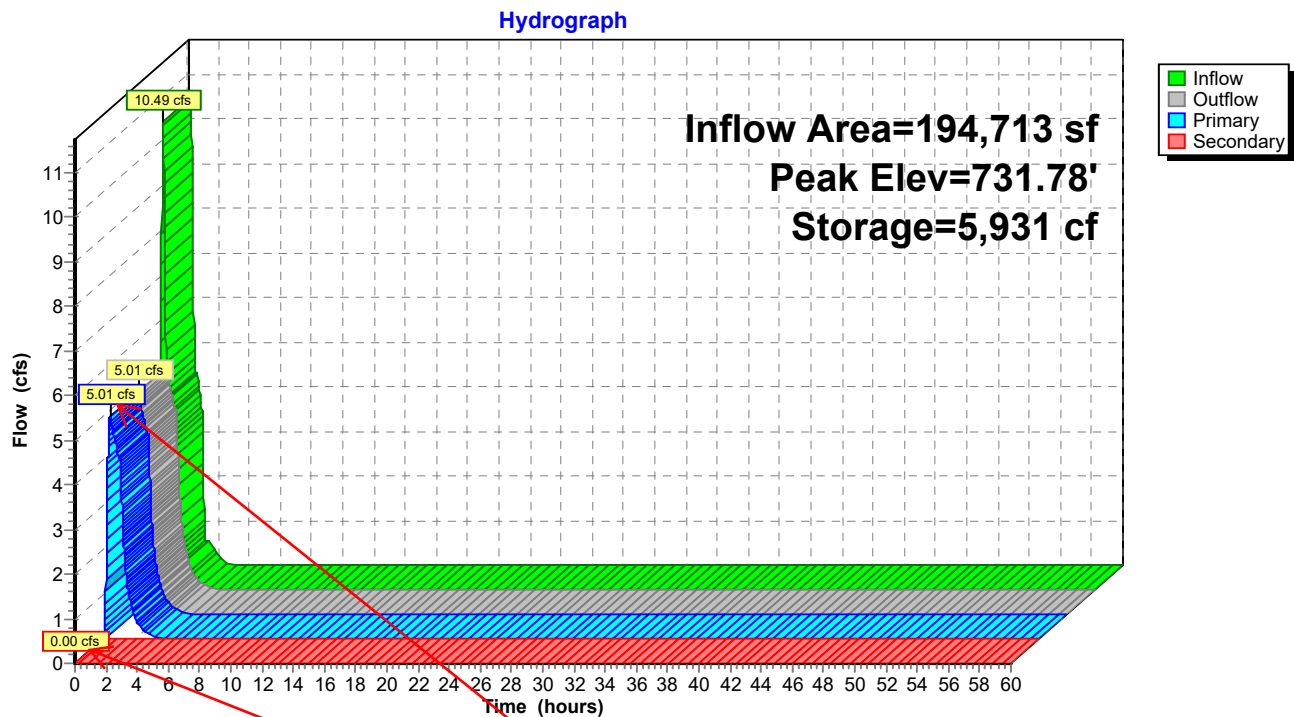
Device	Routing	Invert	Outlet Devices
#1	Primary	729.40'	<b>18.0" Round Culvert</b> L= 256.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 729.40' / 729.27' S= 0.0005 '/ Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 1.77 sf
#2	Secondary	732.89'	<b>18.0" Vert. Orifice/Grate</b> C= 0.600

**Primary OutFlow** Max=5.01 cfs @ 0.46 hrs HW=731.78' (Free Discharge)  
 ↑ **1=Culvert** (Barrel Controls 5.01 cfs @ 2.83 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=729.40' (Free Discharge)  
 ↑ **2=Orifice/Grate** ( Controls 0.00 cfs)

Primary outlet discharges to the north.

Secondary outlet discharges to the south.

**Pond 19P: West CMP Detention**

Per Stormwater Drainage Report dated March 8, 2020 and prepared by Studio A, allowable flow north is 13 cfs and 4.5 cfs south to prevent exceeding capacity of the existing sewer system.

**Summary for Subcatchment 18S: West Detention**

Runoff = 16.27 cfs @ 0.26 hrs, Volume= 27,835 cf, Depth= 2.77"

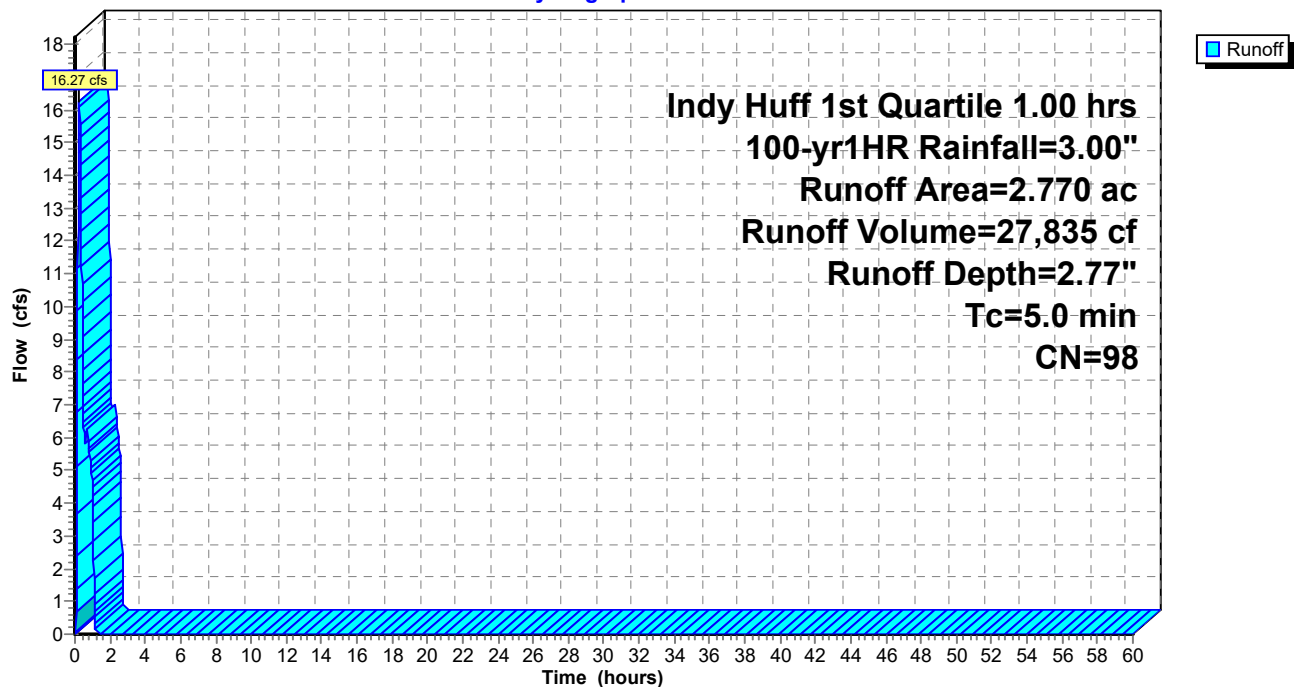
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 1.00 hrs 100-yr1HR Rainfall=3.00"

Area (ac)	CN	Description
* 2.770	98	
2.770		100.00% Impervious Area

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

**Subcatchment 18S: West Detention**

Hydrograph





**Summary for Subcatchment 20S: DA711**

Runoff = 1.42 cfs @ 1.35 hrs, Volume= 5,605 cf, Depth= 0.91"

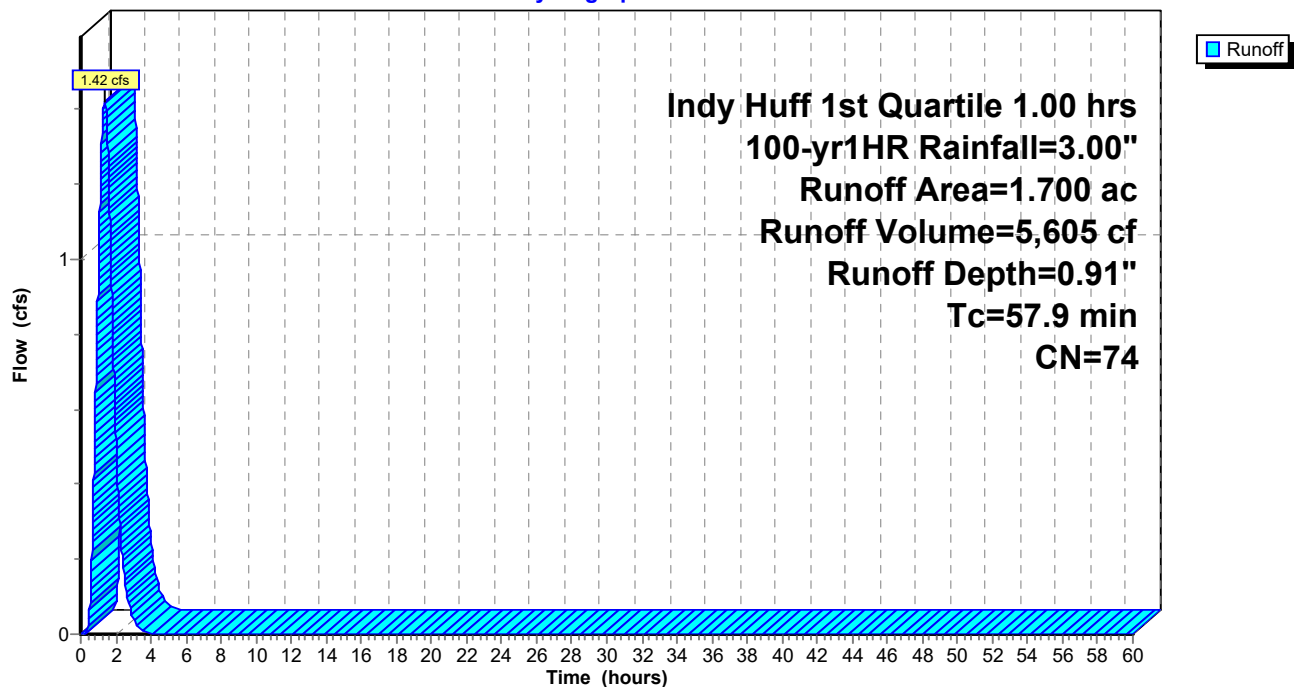
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 1.00 hrs 100-yr1HR Rainfall=3.00"

Area (ac)	CN	Description
* 1.700	74	
1.700		100.00% Pervious Area

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

**Subcatchment 20S: DA711**

Hydrograph



**Summary for Pond 19P: West CMP Detention**

Inflow Area = 194,713 sf, 61.97% Impervious, Inflow Depth = 2.06" for 100-yr1HR event  
 Inflow = 16.27 cfs @ 0.26 hrs, Volume= 33,440 cf  
 Outflow = 7.79 cfs @ 0.46 hrs, Volume= 33,440 cf, Atten= 52%, Lag= 11.8 min  
 Primary = 7.57 cfs @ 0.46 hrs, Volume= 33,374 cf  
 Secondary = 0.21 cfs @ 0.46 hrs, Volume= 66 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
 Peak Elev= 733.09' @ 0.46 hrs Surf.Area= 1,937 sf Storage= 9,506 cf

Plug-Flow detention time= 20.1 min calculated for 33,440 cf (100% of inflow)  
 Center-of-Mass det. time= 20.0 min ( 59.6 - 39.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	729.40'	10,053 cf	<b>48.0" Round Pipe Storage</b> x 4 L= 200.0' S= 0.0010 '/'

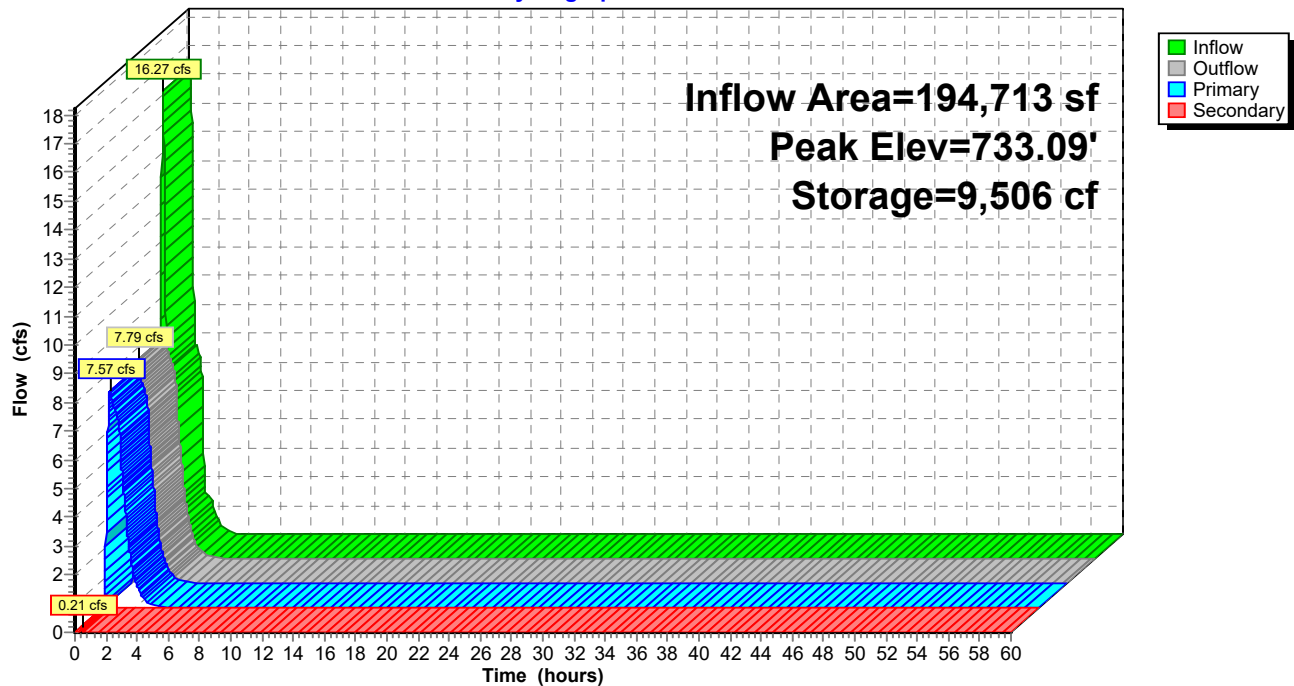
Device	Routing	Invert	Outlet Devices
#1	Primary	729.40'	<b>18.0" Round Culvert</b> L= 256.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 729.40' / 729.27' S= 0.0005 '/ Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 1.77 sf
#2	Secondary	732.89'	<b>18.0" Vert. Orifice/Grate</b> C= 0.600

**Primary OutFlow** Max=7.57 cfs @ 0.46 hrs HW=733.09' (Free Discharge)  
 ↑**1=Culvert** (Barrel Controls 7.57 cfs @ 4.28 fps)

**Secondary OutFlow** Max=0.21 cfs @ 0.46 hrs HW=733.09' (Free Discharge)  
 ↑**2=Orifice/Grate** (Orifice Controls 0.21 cfs @ 1.52 fps)

**Pond 19P: West CMP Detention**

Hydrograph





## **Appendix F**



# Custom Soil Resource Report Soil Map






## Custom Soil Resource Report

### MAP LEGEND




















#### Area of Interest (AOI)







Area of Interest (AOI)

#### Soils


-  Soil Map Unit Polygons
-  Soil Map Unit Lines
-  Soil Map Unit Points

#### Special Point Features






-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features


#### Water Features

-  Streams and Canals

#### Transportation

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

#### Background

-  Aerial Photography

### MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Johnson County, Indiana  
Survey Area Data: Version 28, Jun 4, 2020

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

Date(s) aerial images were photographed: Oct 17, 2019—Oct 20, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.



## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Br	Brookston silty clay loam, 0 to 2 percent slopes	57.3	32.1%
CrA	Crosby silt loam, fine-loamy subsoil, 0 to 2 percent slopes	83.0	46.6%
MnB2	Miami silt loam, 2 to 6 percent slopes, eroded	25.6	14.4%
MnC2	Miami silt loam, 6 to 12 percent slopes, eroded	6.8	3.8%
W	Water	5.5	3.1%
<b>Totals for Area of Interest</b>		<b>178.2</b>	<b>100.0%</b>

## Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

## Custom Soil Resource Report

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

## Johnson County, Indiana

### Br—Brookston silty clay loam, 0 to 2 percent slopes

#### Map Unit Setting

*National map unit symbol:* 2t98n  
*Elevation:* 600 to 1,260 feet  
*Mean annual precipitation:* 37 to 46 inches  
*Mean annual air temperature:* 48 to 55 degrees F  
*Frost-free period:* 145 to 180 days  
*Farmland classification:* Prime farmland if drained

#### Map Unit Composition

*Brookston and similar soils:* 95 percent  
*Minor components:* 5 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Brookston

##### Setting

*Landform:* Depressions, till plains  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Dip  
*Down-slope shape:* Concave, linear  
*Across-slope shape:* Concave  
*Parent material:* Loess over loamy till

##### Typical profile

*Ap - 0 to 16 inches:* silty clay loam  
*Btg1 - 16 to 32 inches:* silty clay loam  
*Btg2 - 32 to 44 inches:* loam  
*C - 44 to 60 inches:* loam

##### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Poorly drained  
*Runoff class:* Negligible  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.60 in/hr)  
*Depth to water table:* About 0 to 12 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* Frequent  
*Calcium carbonate, maximum content:* 40 percent  
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water supply, 0 to 60 inches:* Moderate (about 8.9 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 2w  
*Hydrologic Soil Group:* B/D  
*Ecological site:* F111AY007IN - Till Depression Flatwood  
*Hydric soil rating:* Yes

## Minor Components

### Crosby

*Percent of map unit:* 5 percent  
*Landform:* Till plains  
*Landform position (two-dimensional):* Footslope, summit  
*Landform position (three-dimensional):* Talf  
*Down-slope shape:* Concave  
*Across-slope shape:* Linear  
*Ecological site:* F111AY008IN - Wet Till Ridge  
*Hydric soil rating:* No

## CrA—Crosby silt loam, fine-loamy subsoil, 0 to 2 percent slopes

### Map Unit Setting

*National map unit symbol:* 2thy4  
*Elevation:* 600 to 1,000 feet  
*Mean annual precipitation:* 36 to 44 inches  
*Mean annual air temperature:* 49 to 54 degrees F  
*Frost-free period:* 145 to 180 days  
*Farmland classification:* Prime farmland if drained

### Map Unit Composition

*Crosby and similar soils:* 93 percent  
*Minor components:* 7 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Crosby

#### Setting

*Landform:* Ground moraines, recessional moraines, water-lain moraines  
*Landform position (two-dimensional):* Summit, backslope, footslope  
*Landform position (three-dimensional):* Interfluve, rise  
*Down-slope shape:* Convex, linear  
*Across-slope shape:* Linear, convex  
*Parent material:* Silty material or loess over loamy till

#### Typical profile

*Ap - 0 to 10 inches:* silt loam  
*Btg - 10 to 17 inches:* silty clay loam  
*2Bt - 17 to 29 inches:* clay loam  
*2BCt - 29 to 36 inches:* loam  
*2Cd - 36 to 79 inches:* loam

#### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* 24 to 40 inches to densic material  
*Drainage class:* Somewhat poorly drained  
*Runoff class:* Medium

## Custom Soil Resource Report

*Capacity of the most limiting layer to transmit water (Ksat):* Low to moderately high  
(0.01 to 0.20 in/hr)

*Depth to water table:* About 6 to 24 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum content:* 55 percent

*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water supply, 0 to 60 inches:* Moderate (about 6.5 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 2w

*Hydrologic Soil Group:* C/D

*Ecological site:* F111AY008IN - Wet Till Ridge

*Hydric soil rating:* No

### Minor Components

#### Williamstown, eroded

*Percent of map unit:* 5 percent

*Landform:* Water-lain moraines, ground moraines, recessional moraines

*Landform position (two-dimensional):* Backslope, shoulder, summit

*Landform position (three-dimensional):* Side slope, crest, head slope, nose slope, rise

*Down-slope shape:* Convex, linear

*Across-slope shape:* Linear, convex

*Ecological site:* F111AY009IN - Till Ridge

*Hydric soil rating:* No

#### Treaty, drained

*Percent of map unit:* 2 percent

*Landform:* Depressions, water-lain moraines, swales

*Landform position (two-dimensional):* Toeslope, footslope

*Landform position (three-dimensional):* Base slope, dip

*Down-slope shape:* Linear

*Across-slope shape:* Concave

*Ecological site:* F111AY007IN - Till Depression Flatwood

*Hydric soil rating:* Yes

## MnB2—Miami silt loam, 2 to 6 percent slopes, eroded

### Map Unit Setting

*National map unit symbol:* 2rkb2

*Elevation:* 180 to 370 feet

*Mean annual precipitation:* 37 to 46 inches

*Mean annual air temperature:* 48 to 55 degrees F

*Frost-free period:* 145 to 180 days

*Farmland classification:* All areas are prime farmland

### Map Unit Composition

*Miami, eroded, and similar soils: 85 percent*

*Minor components: 15 percent*

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Miami, Eroded

#### Setting

*Landform: Till plains*

*Landform position (two-dimensional): Backslope, shoulder, footslope*

*Landform position (three-dimensional): Side slope*

*Down-slope shape: Convex*

*Across-slope shape: Linear*

*Parent material: Loess over loamy till*

#### Typical profile

*Ap - 0 to 8 inches: silt loam*

*Bt - 8 to 13 inches: silty clay loam*

*2Bt - 13 to 31 inches: clay loam*

*2BCt - 31 to 36 inches: loam*

*2Cd - 36 to 79 inches: loam*

#### Properties and qualities

*Slope: 2 to 6 percent*

*Depth to restrictive feature: 24 to 40 inches to densic material*

*Drainage class: Moderately well drained*

*Runoff class: High*

*Capacity of the most limiting layer to transmit water (Ksat): Low to moderately high  
(0.01 to 0.20 in/hr)*

*Depth to water table: About 24 to 36 inches*

*Frequency of flooding: None*

*Frequency of ponding: None*

*Calcium carbonate, maximum content: 45 percent*

*Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)*

*Available water supply, 0 to 60 inches: Low (about 5.8 inches)*

#### Interpretive groups

*Land capability classification (irrigated): None specified*

*Land capability classification (nonirrigated): 2e*

*Hydrologic Soil Group: C*

*Ecological site: F111AY009IN - Till Ridge*

*Other vegetative classification: Trees/Timber (Woody Vegetation)*

*Hydric soil rating: No*

### Minor Components

#### Crosby

*Percent of map unit: 5 percent*

*Landform: Till plains*

*Landform position (two-dimensional): Summit*

*Landform position (three-dimensional): Interfluve*

*Down-slope shape: Linear*

*Across-slope shape: Convex*

*Ecological site: F111AY008IN - Wet Till Ridge*

*Other vegetative classification: Trees/Timber (Woody Vegetation)*

*Hydric soil rating: No*

**Treaty**

*Percent of map unit:* 5 percent  
*Landform:* Till plains  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Dip  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Ecological site:* F111AY007IN - Till Depression Flatwood  
*Other vegetative classification:* Mixed/Transitional (Mixed Native Vegetation)  
*Hydric soil rating:* Yes

**Williamstown**

*Percent of map unit:* 5 percent  
*Landform:* Till plains  
*Landform position (two-dimensional):* Backslope, shoulder  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Convex  
*Across-slope shape:* Linear  
*Ecological site:* F111AY009IN - Till Ridge  
*Other vegetative classification:* Trees/Timber (Woody Vegetation)  
*Hydric soil rating:* No

**MnC2—Miami silt loam, 6 to 12 percent slopes, eroded**

**Map Unit Setting**

*National map unit symbol:* 2rkb5  
*Elevation:* 600 to 1,200 feet  
*Mean annual precipitation:* 37 to 46 inches  
*Mean annual air temperature:* 48 to 55 degrees F  
*Frost-free period:* 145 to 180 days  
*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Miami, eroded, and similar soils:* 85 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Miami, Eroded**

**Setting**

*Landform:* — error in exists on —  
*Landform position (two-dimensional):* Shoulder, backslope  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Convex  
*Across-slope shape:* Linear  
*Parent material:* Loess over loamy till

**Typical profile**

*Ap - 0 to 7 inches:* silt loam  
*Bt - 7 to 13 inches:* silty clay loam

## Custom Soil Resource Report

*2Bt - 13 to 31 inches:* clay loam

*2BCt - 31 to 36 inches:* loam

*2Cd - 36 to 79 inches:* loam

### Properties and qualities

*Slope:* 6 to 12 percent

*Depth to restrictive feature:* 31 to 47 inches to densic material

*Drainage class:* Moderately well drained

*Runoff class:* High

*Capacity of the most limiting layer to transmit water (Ksat):* Low to moderately high  
(0.01 to 0.20 in/hr)

*Depth to water table:* About 24 to 36 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum content:* 45 percent

*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water supply, 0 to 60 inches:* Low (about 5.7 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 3e

*Hydrologic Soil Group:* C

*Ecological site:* F111AY009IN - Till Ridge

*Hydric soil rating:* No

### Minor Components

#### Rainsville, eroded

*Percent of map unit:* 5 percent

*Landform:* Till plains

*Landform position (two-dimensional):* Shoulder, backslope

*Landform position (three-dimensional):* Side slope

*Down-slope shape:* Convex

*Across-slope shape:* Linear

*Ecological site:* F111AY009IN - Till Ridge

*Hydric soil rating:* No

#### Crosby

*Percent of map unit:* 5 percent

*Landform:* Ground moraines

*Landform position (two-dimensional):* Footslope

*Landform position (three-dimensional):* Base slope

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* F111AY008IN - Wet Till Ridge

*Hydric soil rating:* No

#### Treaty

*Percent of map unit:* 5 percent

*Landform:* Till plains

*Landform position (two-dimensional):* Toeslope

*Landform position (three-dimensional):* Dip

*Down-slope shape:* Concave

*Across-slope shape:* Concave

*Ecological site:* F111AY007IN - Till Depression Flatwood

*Hydric soil rating:* Yes



## **W—Water**

### **Map Unit Composition**

*Water:* 100 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Water**

#### **Interpretive groups**

*Land capability classification (irrigated):* None specified

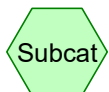
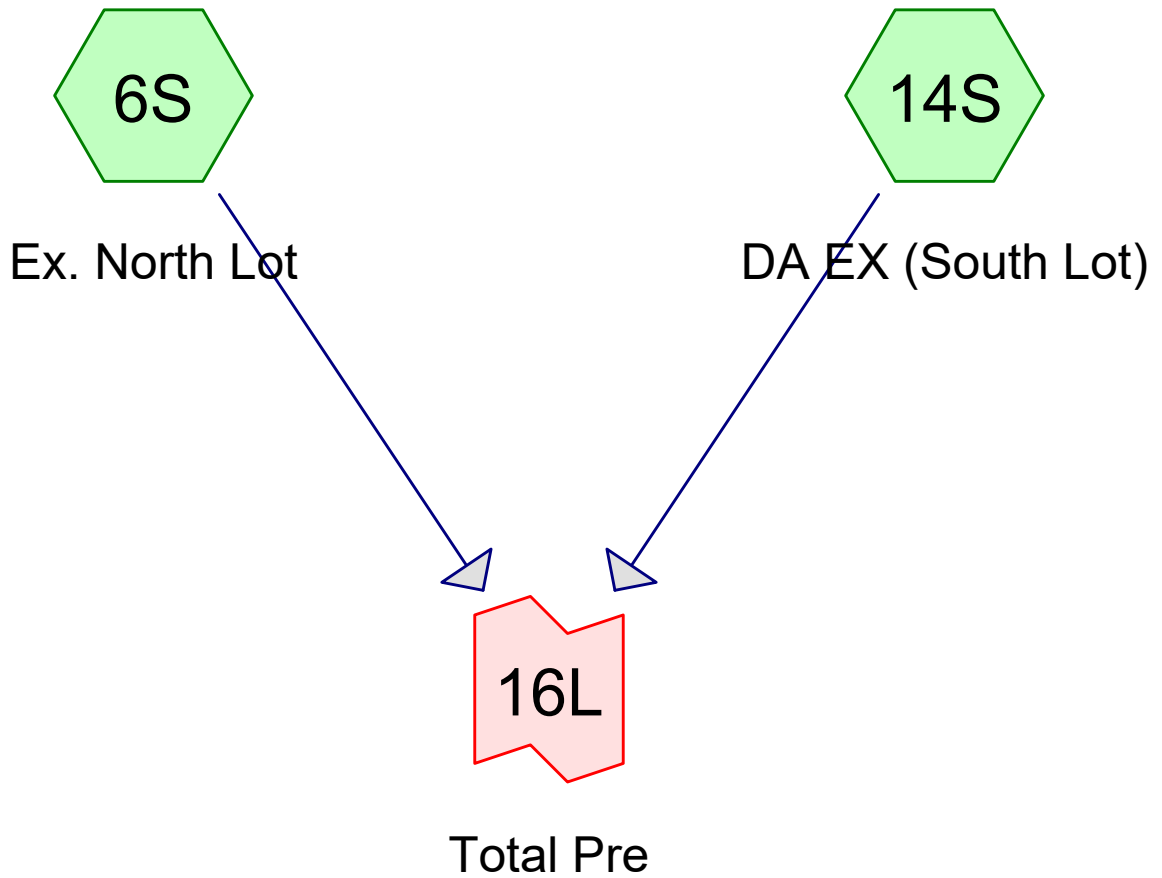
*Other vegetative classification:* Trees/Timber (Woody Vegetation)

*Hydric soil rating:* No



## **Appendix G**

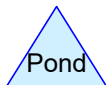




Subcat



Reach



Pond



Link

**Routing Diagram for 2100696 MQJ9**

Prepared by {enter your company name here}, Printed 9/7/2021  
HydroCAD® 10.00-26 s/n 01334 © 2020 HydroCAD Software Solutions LLC

**Summary for Subcatchment 6S: Ex. North Lot**

Runoff = 9.92 cfs @ 1.25 hrs, Volume= 35,852 cf, Depth= 0.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 1.00 hrs 2-yr1HR Rainfall=1.39"

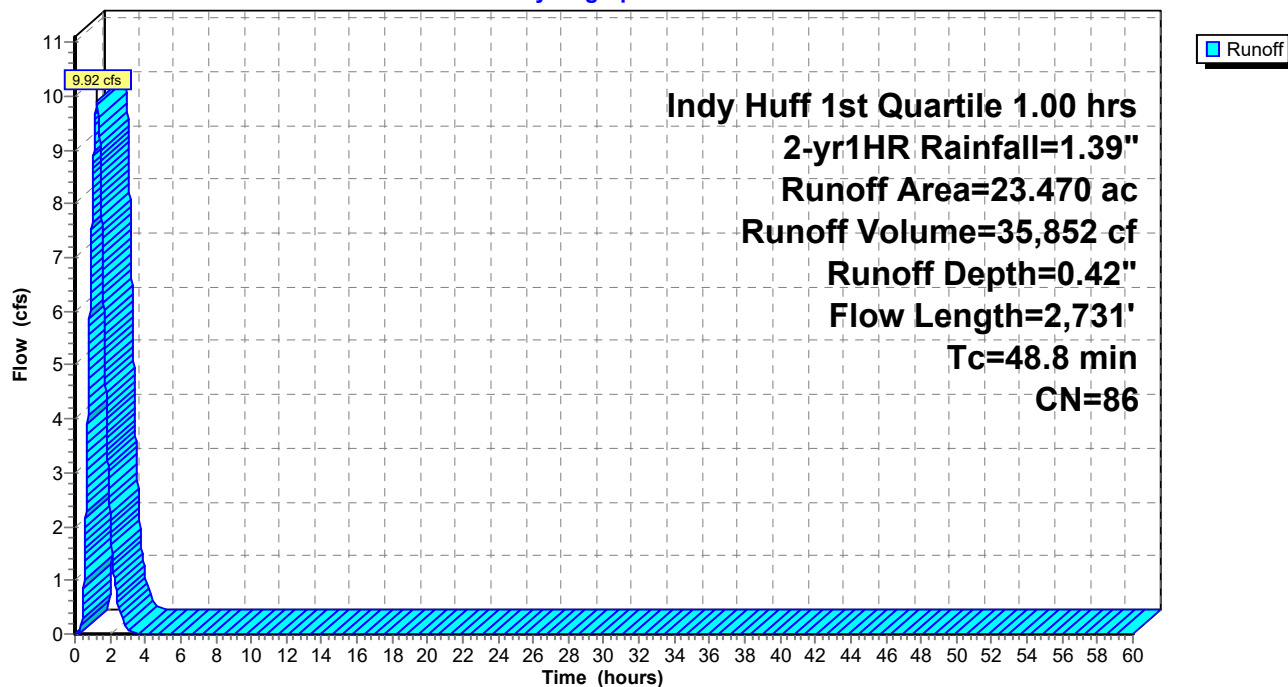
Area (ac)	CN	Description
* 2.510	98	
1.060	70	Woods, Good, HSG C
1.660	77	Woods, Good, HSG D
10.720	89	Row crops, straight row, Good, HSG D
4.540	85	Row crops, straight row, Good, HSG C
1.360	80	>75% Grass cover, Good, HSG D
1.620	74	>75% Grass cover, Good, HSG C
23.470	86	Weighted Average
20.960		89.31% Pervious Area
2.510		10.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0100	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
35.2	2,631	0.0060	1.25		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
48.8	2,731	Total			

**Subcatchment 6S: Ex. North Lot**

Hydrograph



**Summary for Subcatchment 14S: DA EX (South Lot)**

Runoff = 16.38 cfs @ 1.13 hrs, Volume= 52,043 cf, Depth= 0.42"

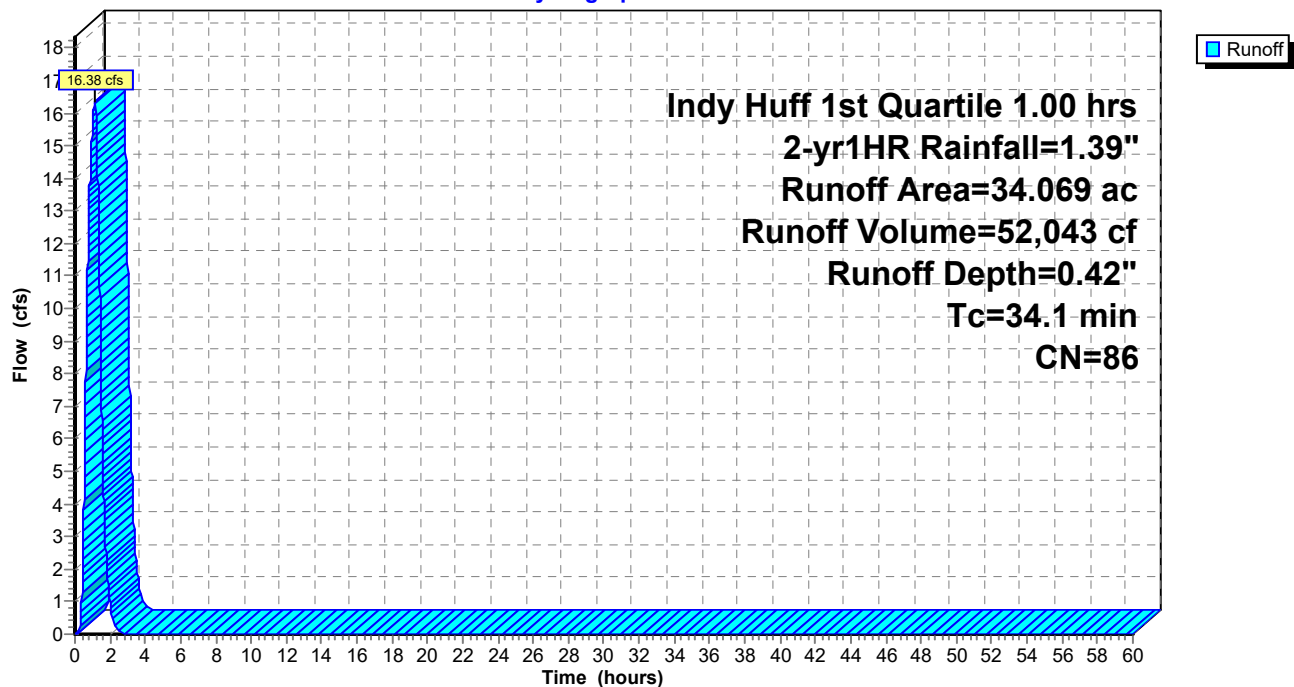
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 1.00 hrs 2-yr1HR Rainfall=1.39"

Area (ac)	CN	Description
* 34.069	86	
34.069		100.00% Pervious Area

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

**Subcatchment 14S: DA EX (South Lot)**

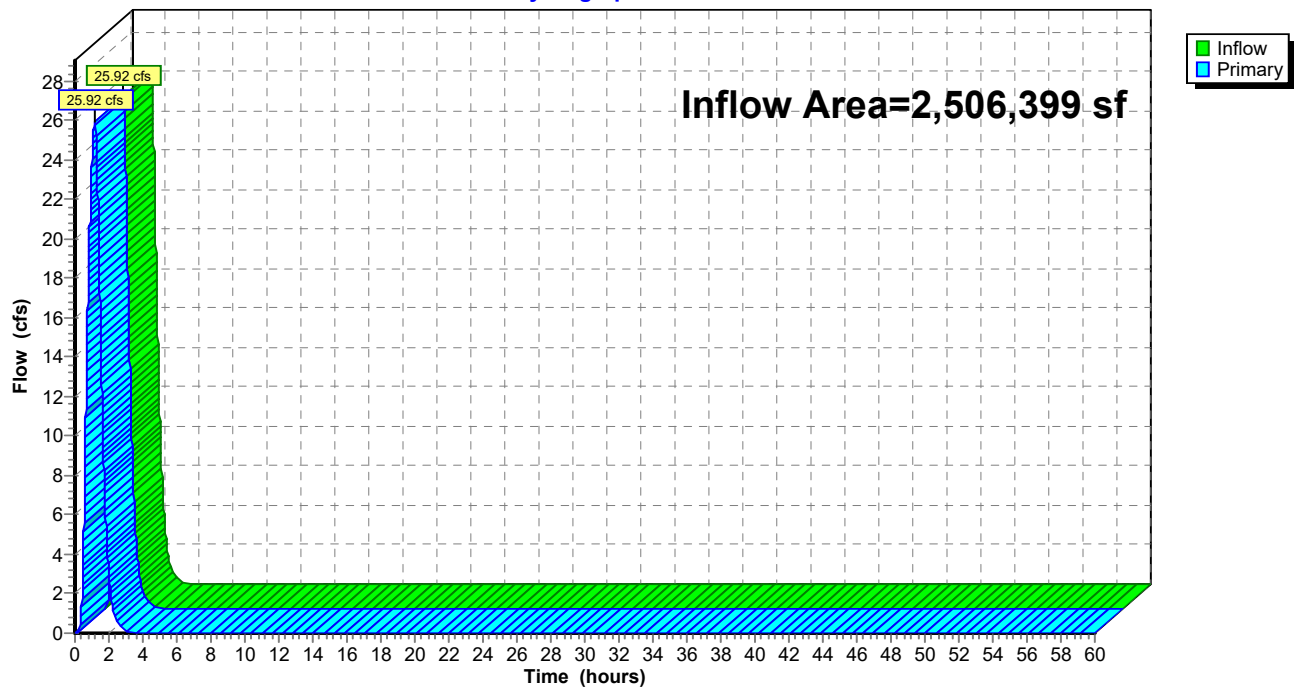
Hydrograph



**Summary for Link 16L: Total Pre**

Inflow Area = 2,506,399 sf, 4.36% Impervious, Inflow Depth = 0.42" for 2-yr1HR event  
Inflow = 25.92 cfs @ 1.17 hrs, Volume= 87,895 cf  
Primary = 25.92 cfs @ 1.17 hrs, Volume= 87,895 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

**Link 16L: Total Pre****Hydrograph**



**Summary for Subcatchment 6S: Ex. North Lot**

Runoff = 7.91 cfs @ 2.01 hrs, Volume= 48,847 cf, Depth= 0.57"

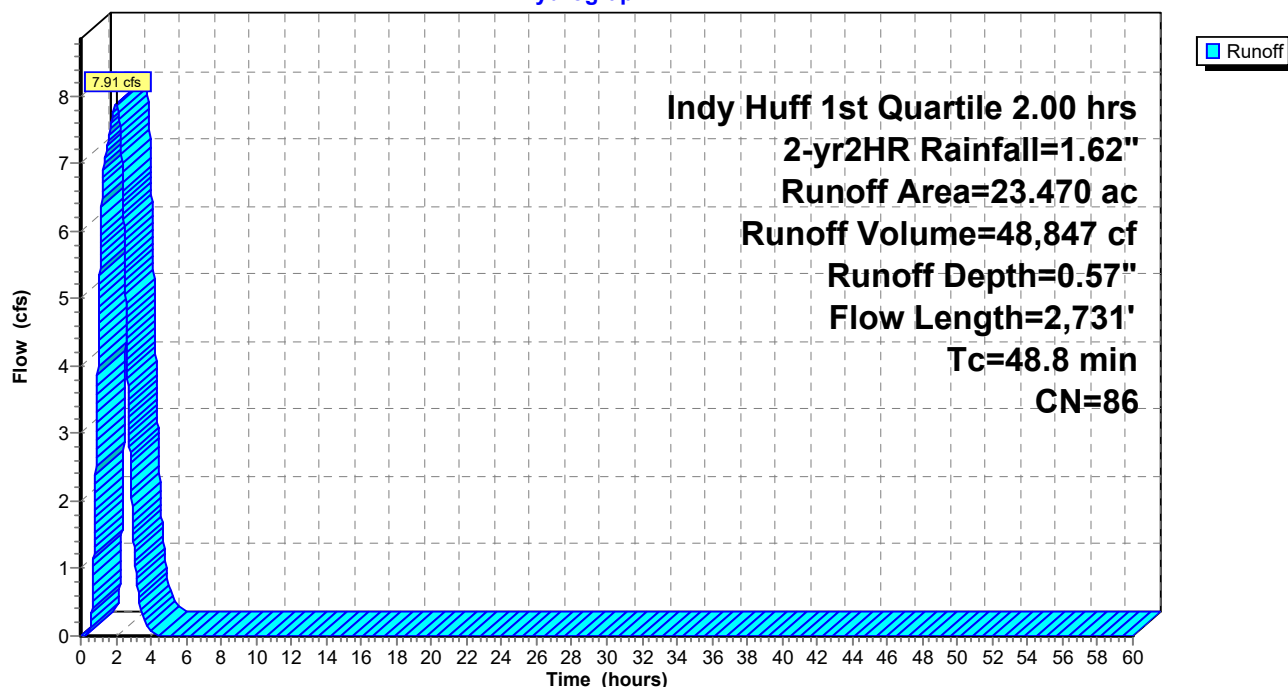
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 2.00 hrs 2-yr2HR Rainfall=1.62"

Area (ac)	CN	Description
* 2.510	98	
1.060	70	Woods, Good, HSG C
1.660	77	Woods, Good, HSG D
10.720	89	Row crops, straight row, Good, HSG D
4.540	85	Row crops, straight row, Good, HSG C
1.360	80	>75% Grass cover, Good, HSG D
1.620	74	>75% Grass cover, Good, HSG C
23.470	86	Weighted Average
20.960		89.31% Pervious Area
2.510		10.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0100	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
35.2	2,631	0.0060	1.25		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
48.8	2,731	Total			

**Subcatchment 6S: Ex. North Lot**

Hydrograph



**Summary for Subcatchment 14S: DA EX (South Lot)**

Runoff = 11.74 cfs @ 1.85 hrs, Volume= 70,907 cf, Depth= 0.57"

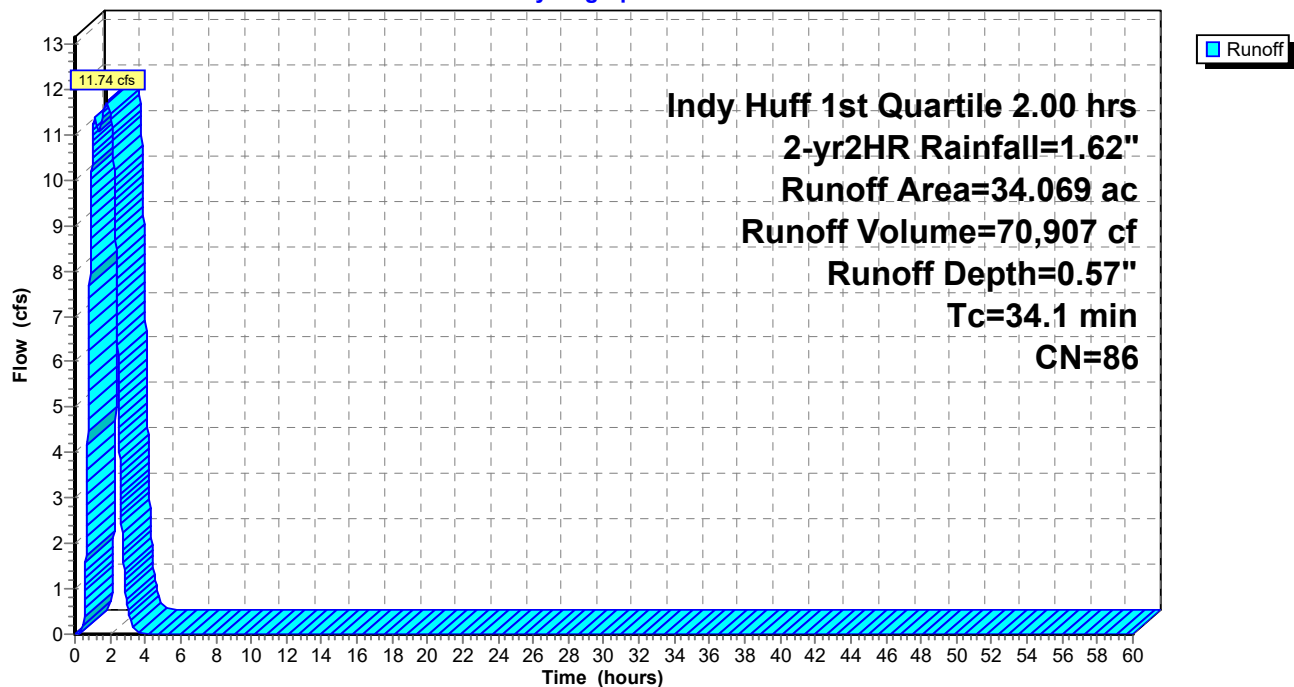
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 2.00 hrs 2-yr2HR Rainfall=1.62"

Area (ac)	CN	Description
* 34.069	86	
34.069		100.00% Pervious Area

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

**Subcatchment 14S: DA EX (South Lot)**

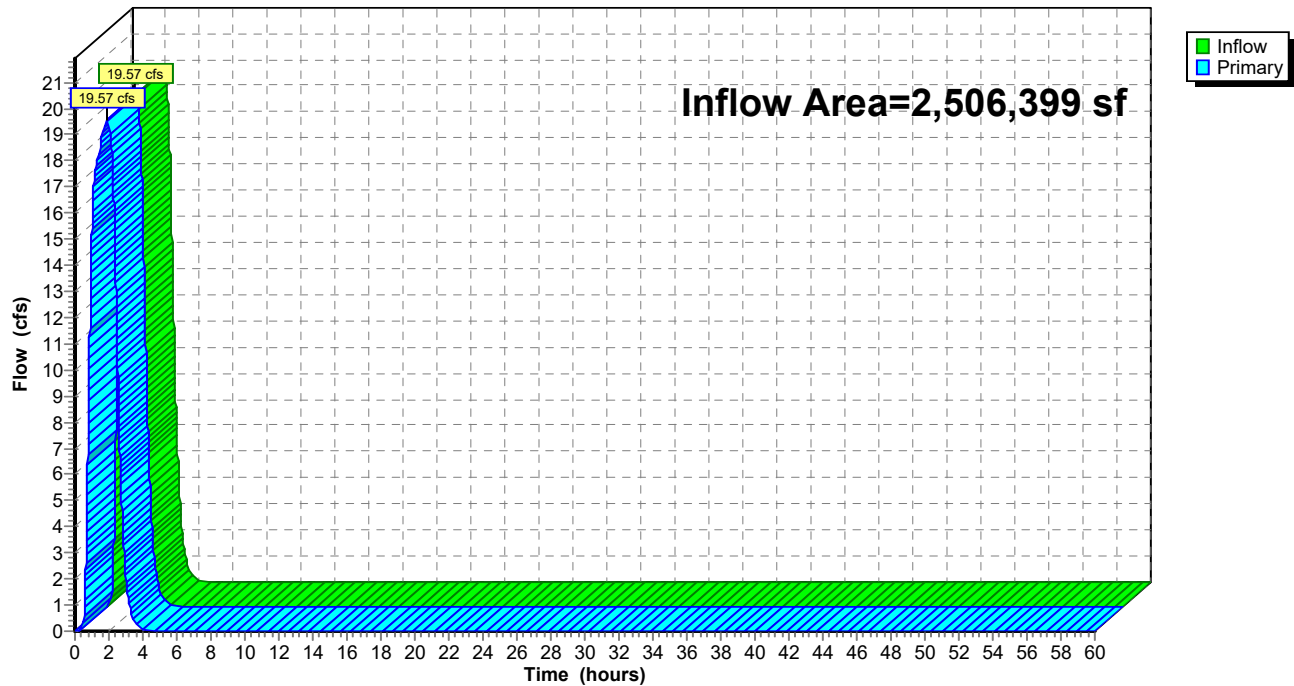
Hydrograph



**Summary for Link 16L: Total Pre**

Inflow Area = 2,506,399 sf, 4.36% Impervious, Inflow Depth = 0.57" for 2-yr2HR event  
Inflow = 19.57 cfs @ 1.93 hrs, Volume= 119,754 cf  
Primary = 19.57 cfs @ 1.93 hrs, Volume= 119,754 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

**Link 16L: Total Pre****Hydrograph**

**Summary for Subcatchment 6S: Ex. North Lot**

Runoff = 6.08 cfs @ 1.63 hrs, Volume= 54,811 cf, Depth= 0.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 3.00 hrs 2-yr3HR Rainfall=1.72"

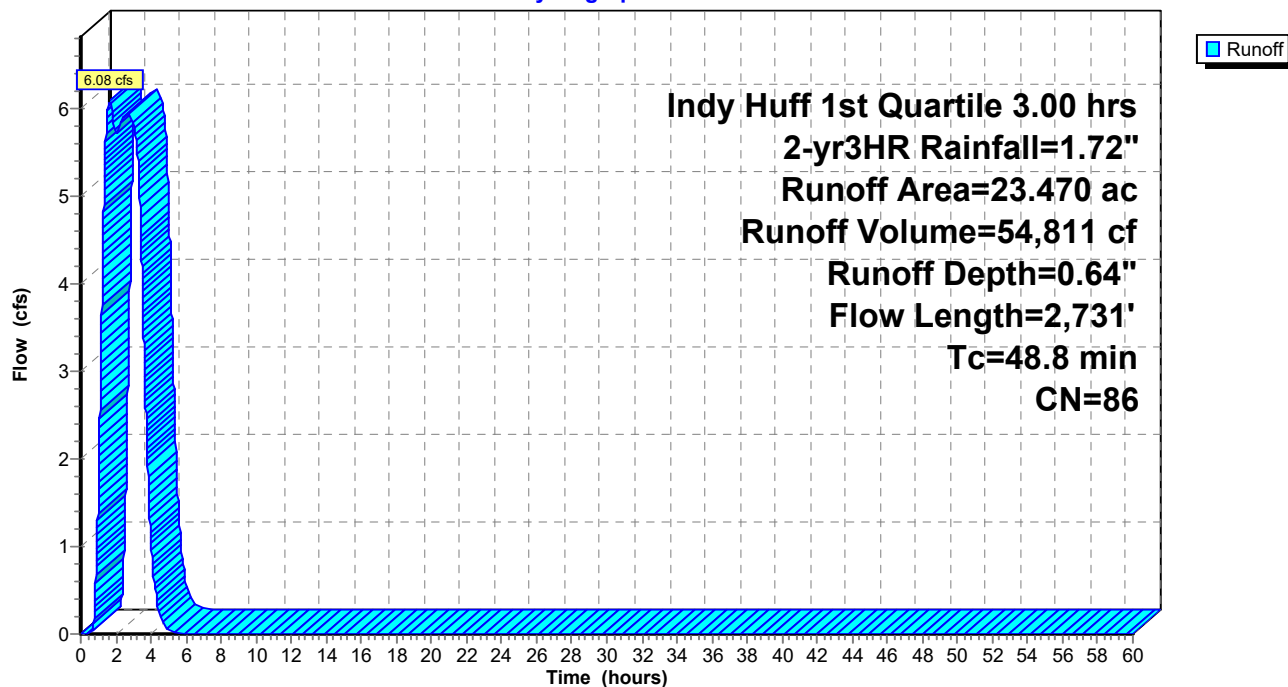
Area (ac)	CN	Description
* 2.510	98	
1.060	70	Woods, Good, HSG C
1.660	77	Woods, Good, HSG D
10.720	89	Row crops, straight row, Good, HSG D
4.540	85	Row crops, straight row, Good, HSG C
1.360	80	>75% Grass cover, Good, HSG D
1.620	74	>75% Grass cover, Good, HSG C
23.470	86	Weighted Average
20.960		89.31% Pervious Area
2.510		10.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0100	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
35.2	2,631	0.0060	1.25		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
48.8	2,731	Total			

**Subcatchment 6S: Ex. North Lot**

Hydrograph



**Summary for Subcatchment 14S: DA EX (South Lot)**

Runoff = 9.94 cfs @ 1.40 hrs, Volume= 79,563 cf, Depth= 0.64"

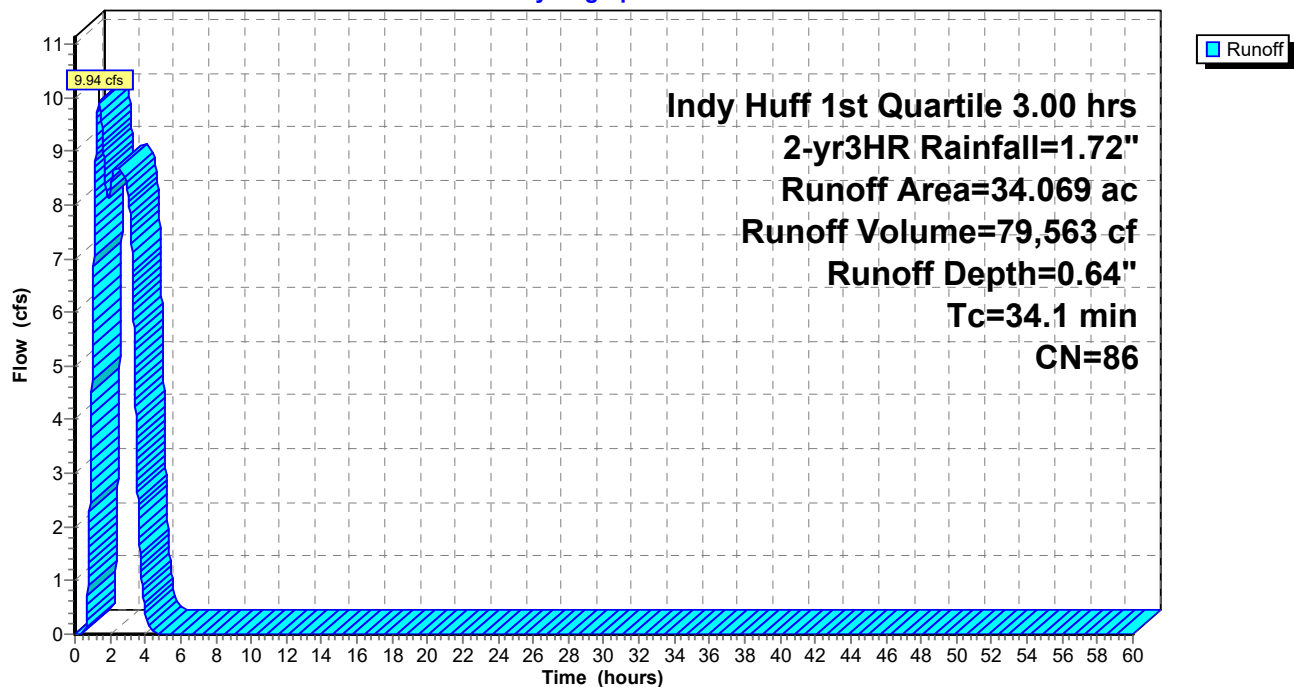
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 3.00 hrs 2-yr3HR Rainfall=1.72"

Area (ac)	CN	Description
* 34.069	86	
34.069		100.00% Pervious Area

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

**Subcatchment 14S: DA EX (South Lot)**

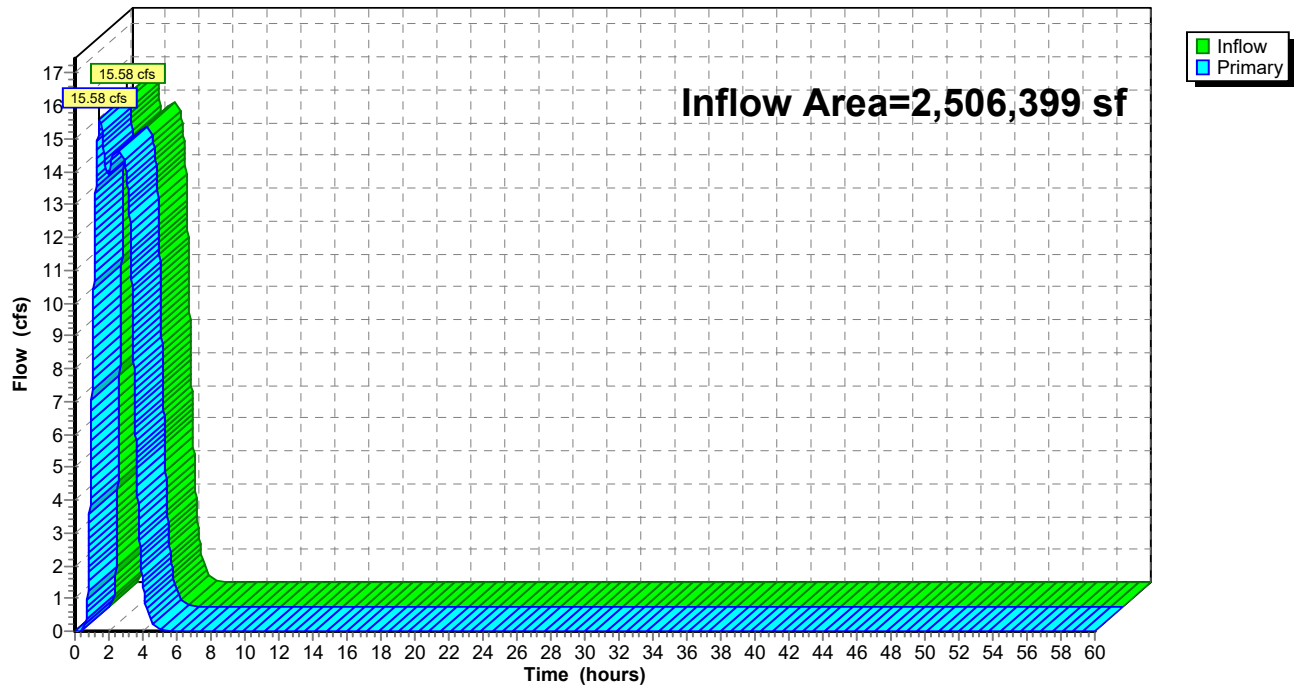
Hydrograph



**Summary for Link 16L: Total Pre**

Inflow Area = 2,506,399 sf, 4.36% Impervious, Inflow Depth = 0.64" for 2-yr3HR event  
Inflow = 15.58 cfs @ 1.47 hrs, Volume= 134,374 cf  
Primary = 15.58 cfs @ 1.47 hrs, Volume= 134,374 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

**Link 16L: Total Pre****Hydrograph**

**Summary for Subcatchment 6S: Ex. North Lot**

Runoff = 5.40 cfs @ 2.39 hrs, Volume= 75,572 cf, Depth= 0.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 6.00 hrs 2-yr6HR Rainfall=2.05"

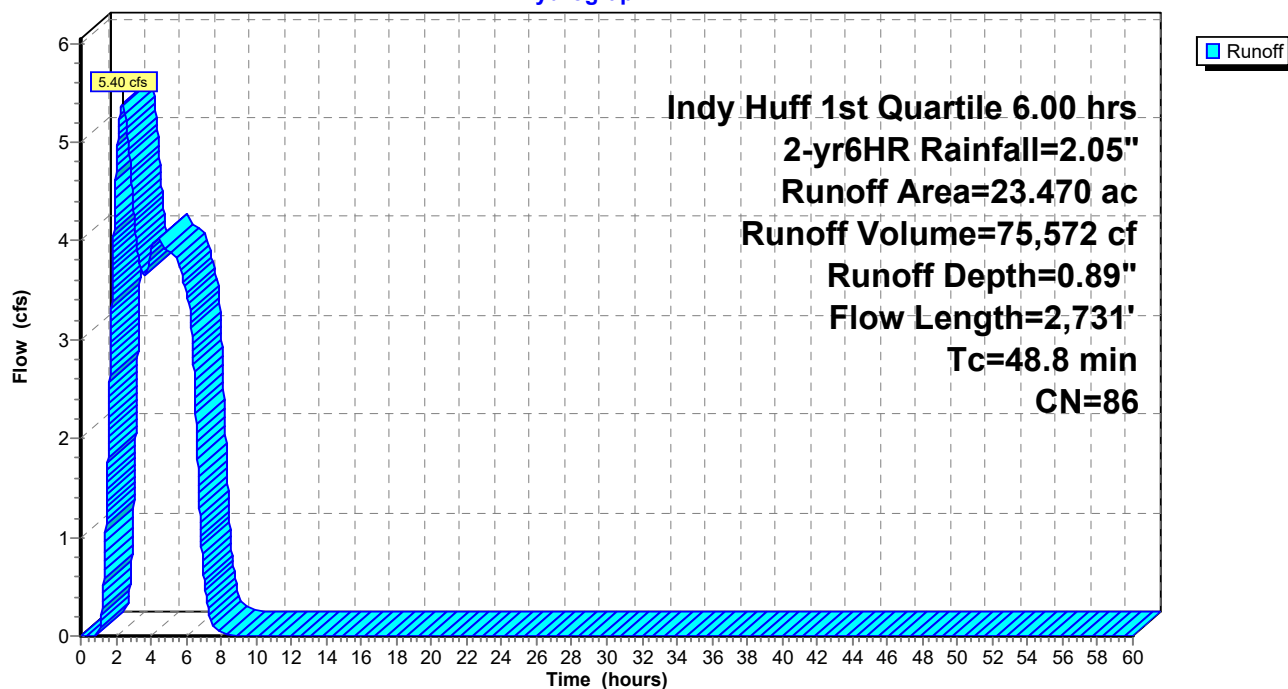
Area (ac)	CN	Description
* 2.510	98	
1.060	70	Woods, Good, HSG C
1.660	77	Woods, Good, HSG D
10.720	89	Row crops, straight row, Good, HSG D
4.540	85	Row crops, straight row, Good, HSG C
1.360	80	>75% Grass cover, Good, HSG D
1.620	74	>75% Grass cover, Good, HSG C
23.470	86	Weighted Average
20.960		89.31% Pervious Area
2.510		10.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0100	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
35.2	2,631	0.0060	1.25		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
48.8	2,731	Total			

**Subcatchment 6S: Ex. North Lot**

Hydrograph



**Summary for Subcatchment 14S: DA EX (South Lot)**

Runoff = 8.34 cfs @ 2.16 hrs, Volume= 109,700 cf, Depth= 0.89"

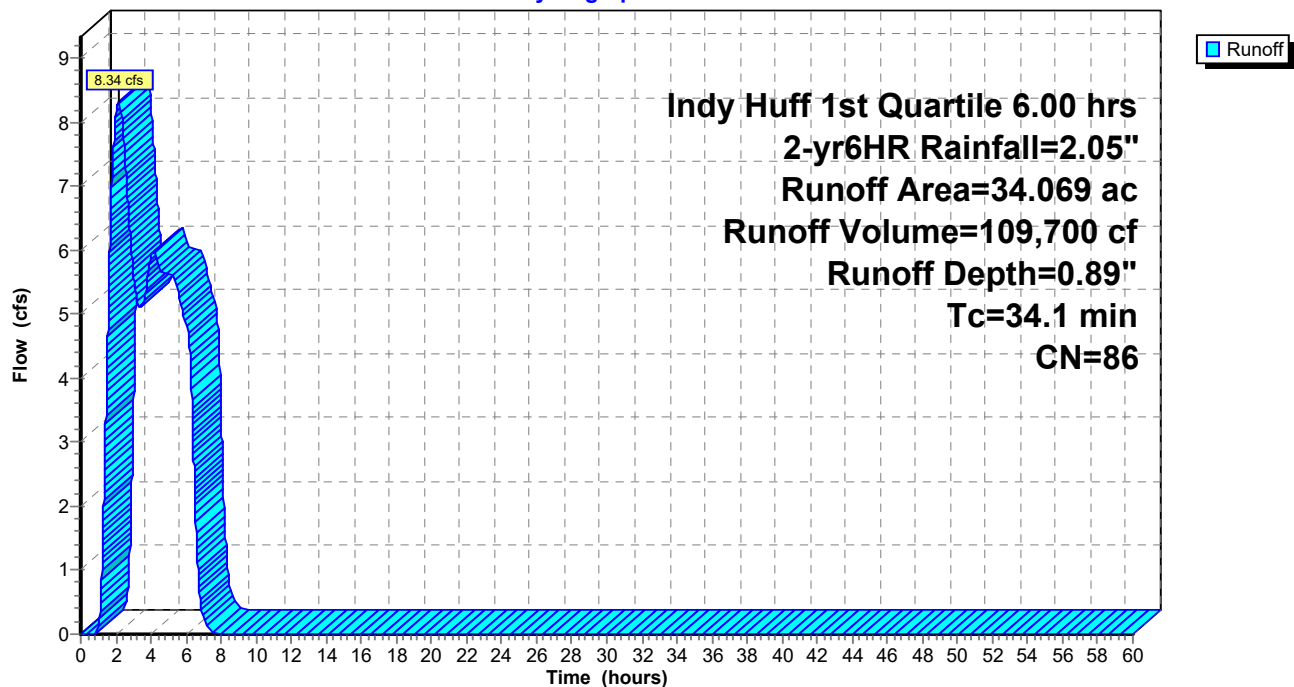
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 6.00 hrs 2-yr6HR Rainfall=2.05"

Area (ac)	CN	Description
* 34.069	86	
34.069		100.00% Pervious Area

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

**Subcatchment 14S: DA EX (South Lot)**

Hydrograph

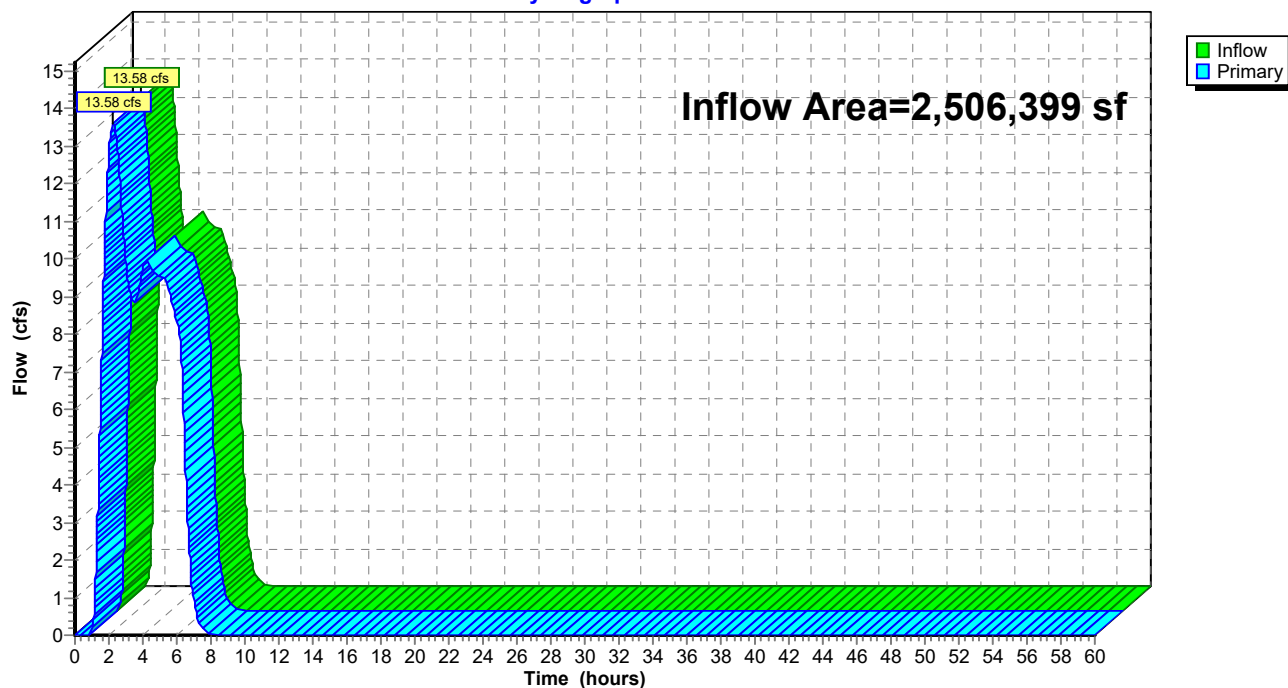




**Summary for Link 16L: Total Pre**

Inflow Area = 2,506,399 sf, 4.36% Impervious, Inflow Depth = 0.89" for 2-yr6HR event  
Inflow = 13.58 cfs @ 2.24 hrs, Volume= 185,271 cf  
Primary = 13.58 cfs @ 2.24 hrs, Volume= 185,271 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

**Link 16L: Total Pre****Hydrograph**

**Summary for Subcatchment 6S: Ex. North Lot**

Runoff = 4.16 cfs @ 3.85 hrs, Volume= 101,779 cf, Depth= 1.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 12.00 hrs 2-yr12HR Rainfall=2.44"

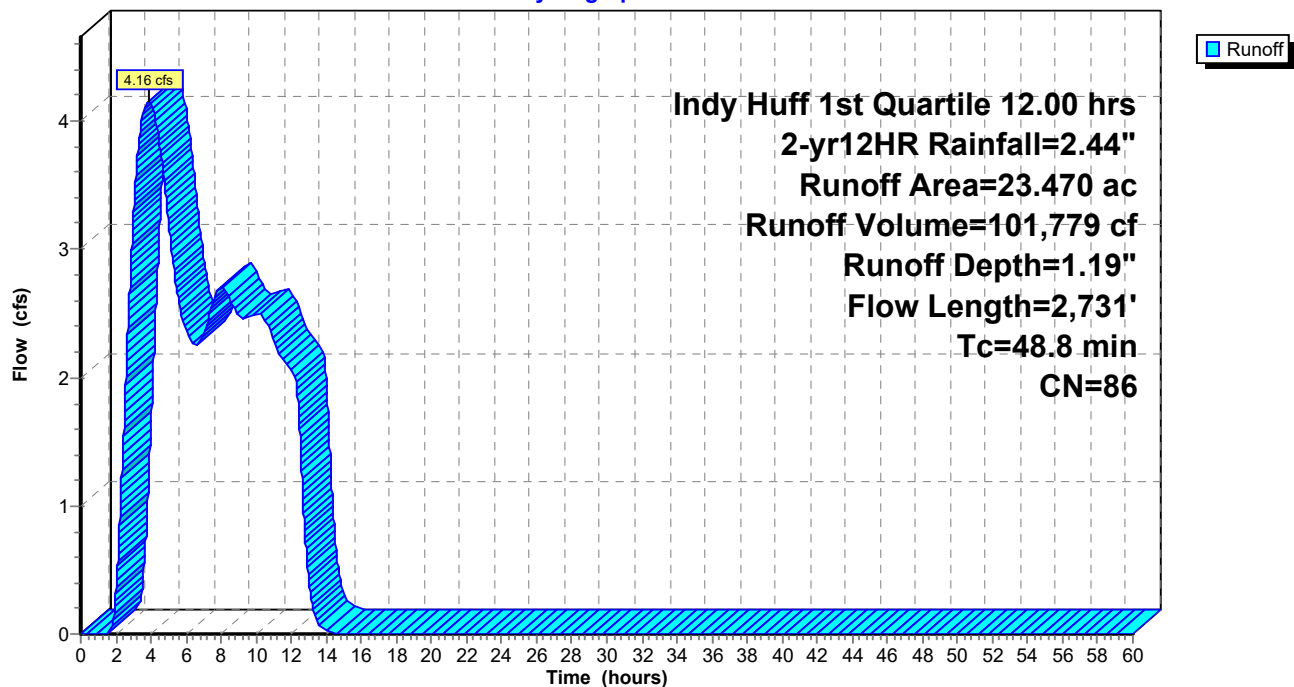
Area (ac)	CN	Description
* 2.510	98	
1.060	70	Woods, Good, HSG C
1.660	77	Woods, Good, HSG D
10.720	89	Row crops, straight row, Good, HSG D
4.540	85	Row crops, straight row, Good, HSG C
1.360	80	>75% Grass cover, Good, HSG D
1.620	74	>75% Grass cover, Good, HSG C
23.470	86	Weighted Average
20.960		89.31% Pervious Area
2.510		10.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0100	0.12		<b>Sheet Flow,</b>
					Grass: Short n= 0.150 P2= 2.91"
35.2	2,631	0.0060	1.25		<b>Shallow Concentrated Flow,</b>
					Unpaved Kv= 16.1 fps
48.8	2,731	Total			

**Subcatchment 6S: Ex. North Lot**

Hydrograph



**Summary for Subcatchment 14S: DA EX (South Lot)**

Runoff = 6.16 cfs @ 3.60 hrs, Volume= 147,743 cf, Depth= 1.19"

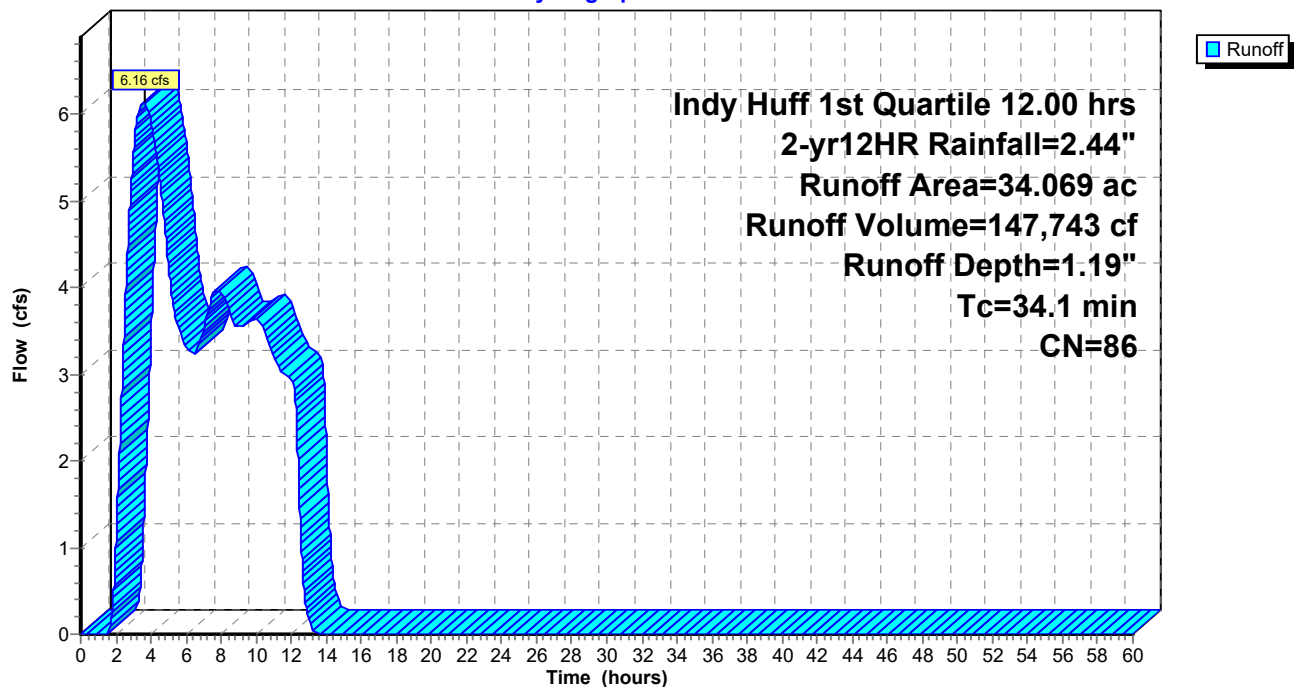
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 12.00 hrs 2-yr12HR Rainfall=2.44"

Area (ac)	CN	Description
* 34.069	86	
34.069		100.00% Pervious Area

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

**Subcatchment 14S: DA EX (South Lot)**

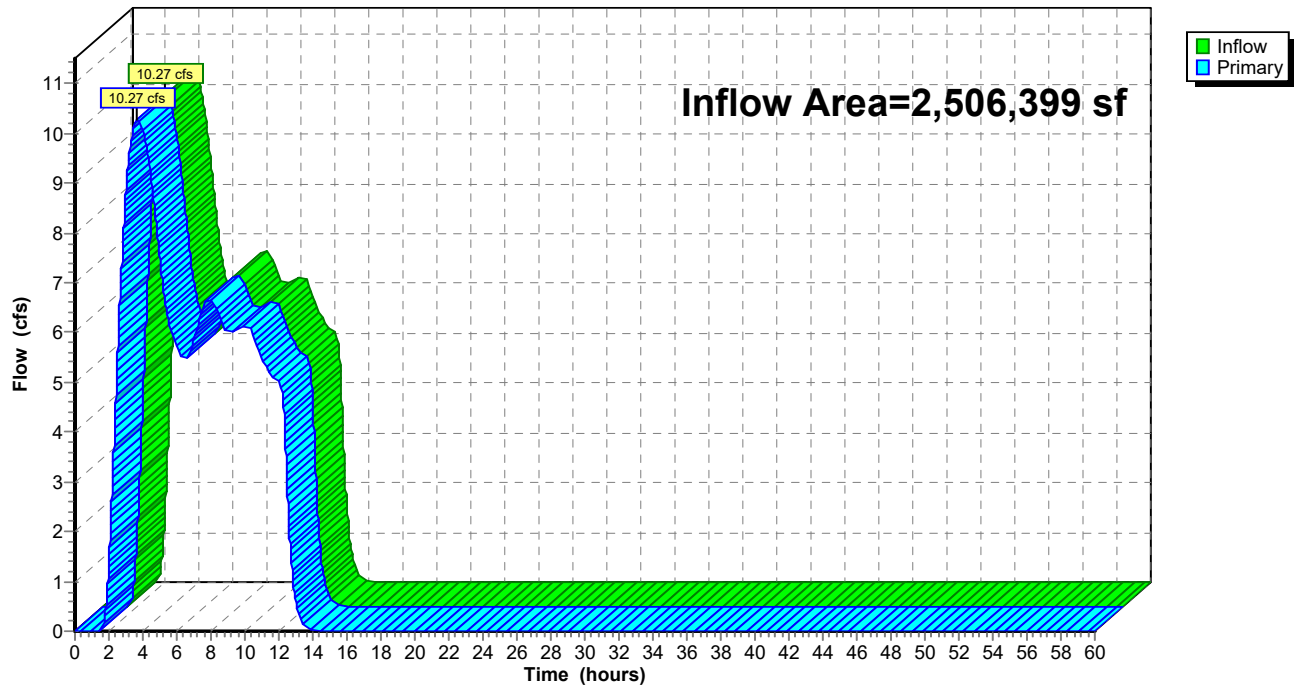
Hydrograph



**Summary for Link 16L: Total Pre**

Inflow Area = 2,506,399 sf, 4.36% Impervious, Inflow Depth = 1.19" for 2-yr12HR event  
Inflow = 10.27 cfs @ 3.67 hrs, Volume= 249,522 cf  
Primary = 10.27 cfs @ 3.67 hrs, Volume= 249,522 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

**Link 16L: Total Pre****Hydrograph**

**Summary for Subcatchment 6S: Ex. North Lot**

Runoff = 2.94 cfs @ 6.56 hrs, Volume= 135,090 cf, Depth= 1.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 24.00 hrs 2-yr24HR Rainfall=2.91"

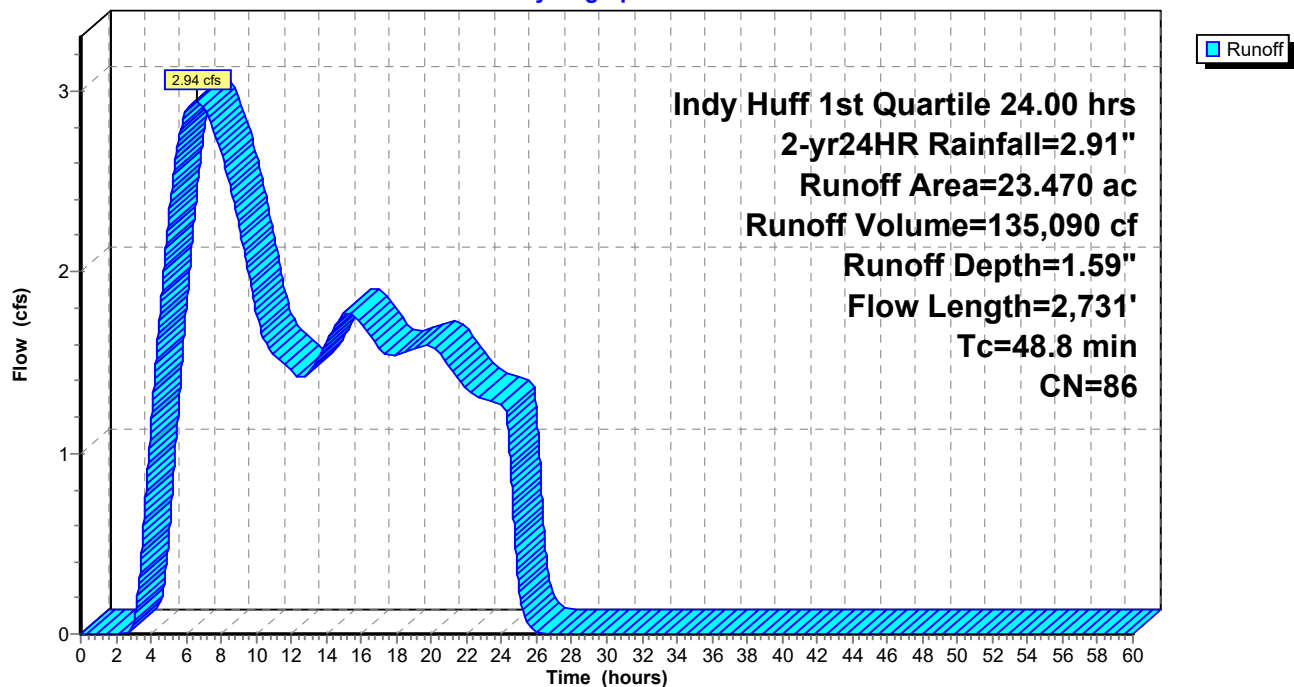
Area (ac)	CN	Description
* 2.510	98	
1.060	70	Woods, Good, HSG C
1.660	77	Woods, Good, HSG D
10.720	89	Row crops, straight row, Good, HSG D
4.540	85	Row crops, straight row, Good, HSG C
1.360	80	>75% Grass cover, Good, HSG D
1.620	74	>75% Grass cover, Good, HSG C
23.470	86	Weighted Average
20.960		89.31% Pervious Area
2.510		10.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0100	0.12		<b>Sheet Flow,</b>
					Grass: Short n= 0.150 P2= 2.91"
35.2	2,631	0.0060	1.25		<b>Shallow Concentrated Flow,</b>
					Unpaved Kv= 16.1 fps
48.8	2,731	Total			

**Subcatchment 6S: Ex. North Lot**

Hydrograph



**Summary for Subcatchment 14S: DA EX (South Lot)**

Runoff = 4.29 cfs @ 6.25 hrs, Volume= 196,096 cf, Depth= 1.59"

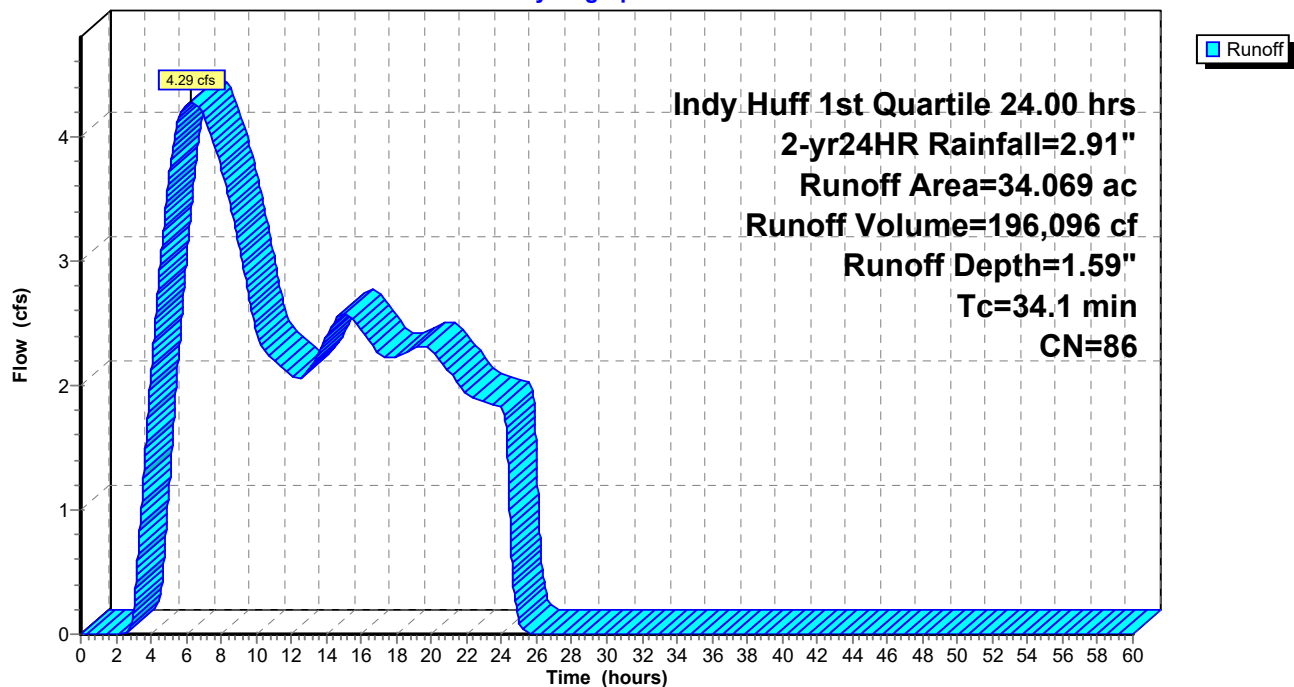
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 24.00 hrs 2-yr24HR Rainfall=2.91"

Area (ac)	CN	Description
* 34.069	86	
34.069		100.00% Pervious Area

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

**Subcatchment 14S: DA EX (South Lot)**

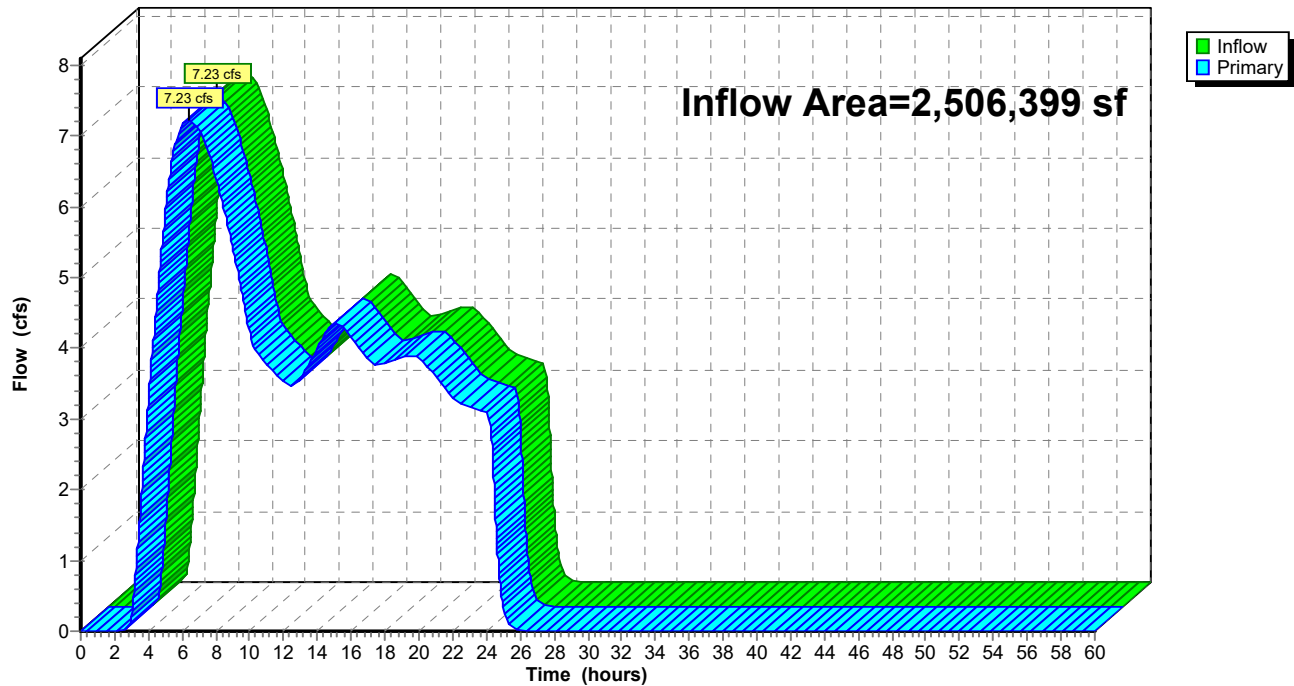
Hydrograph



**Summary for Link 16L: Total Pre**

Inflow Area = 2,506,399 sf, 4.36% Impervious, Inflow Depth = 1.59" for 2-yr24HR event  
Inflow = 7.23 cfs @ 6.33 hrs, Volume= 331,187 cf  
Primary = 7.23 cfs @ 6.33 hrs, Volume= 331,187 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

**Link 16L: Total Pre****Hydrograph**

**Summary for Subcatchment 6S: Ex. North Lot**

Runoff = 19.57 cfs @ 1.20 hrs, Volume= 73,624 cf, Depth= 0.86"

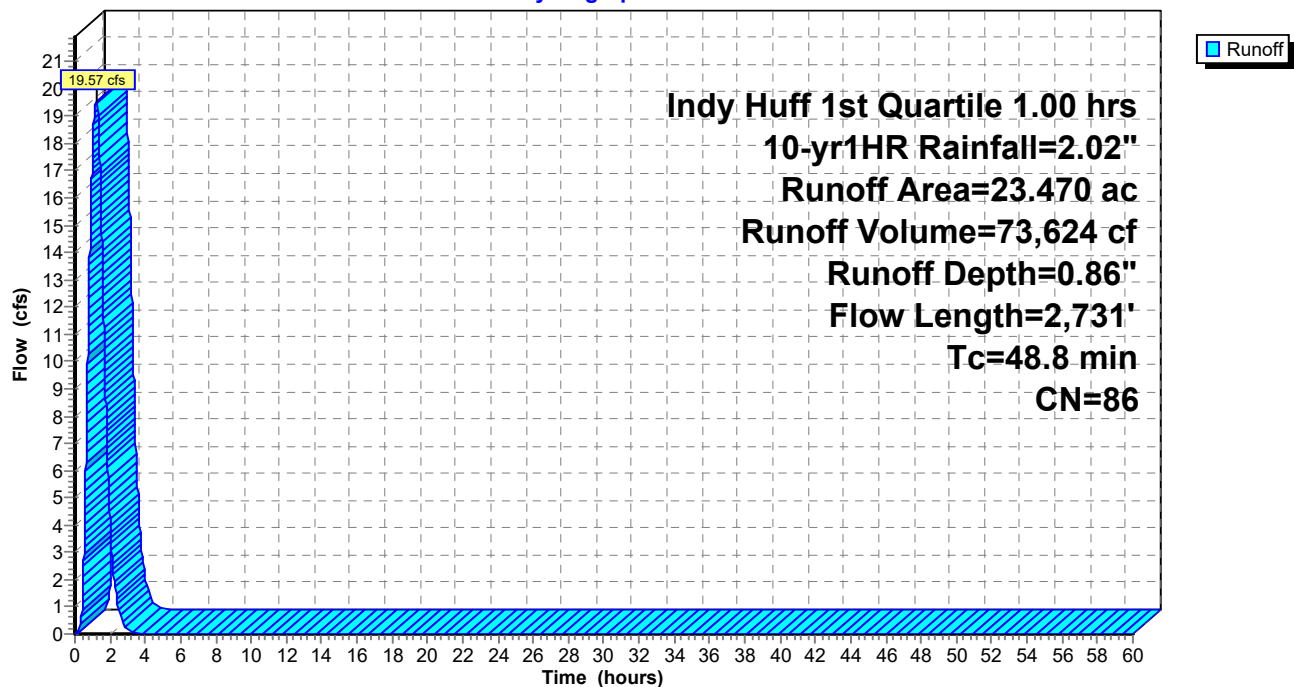
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 1.00 hrs 10-yr1HR Rainfall=2.02"

Area (ac)	CN	Description
* 2.510	98	
1.060	70	Woods, Good, HSG C
1.660	77	Woods, Good, HSG D
10.720	89	Row crops, straight row, Good, HSG D
4.540	85	Row crops, straight row, Good, HSG C
1.360	80	>75% Grass cover, Good, HSG D
1.620	74	>75% Grass cover, Good, HSG C
23.470	86	Weighted Average
20.960		89.31% Pervious Area
2.510		10.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0100	0.12		Sheet Flow, Grass: Short n= 0.150 P2= 2.91"
35.2	2,631	0.0060	1.25		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
48.8	2,731	Total			

**Subcatchment 6S: Ex. North Lot**

Hydrograph





**Summary for Subcatchment 14S: DA EX (South Lot)**

Runoff = 31.54 cfs @ 1.09 hrs, Volume= 106,872 cf, Depth= 0.86"

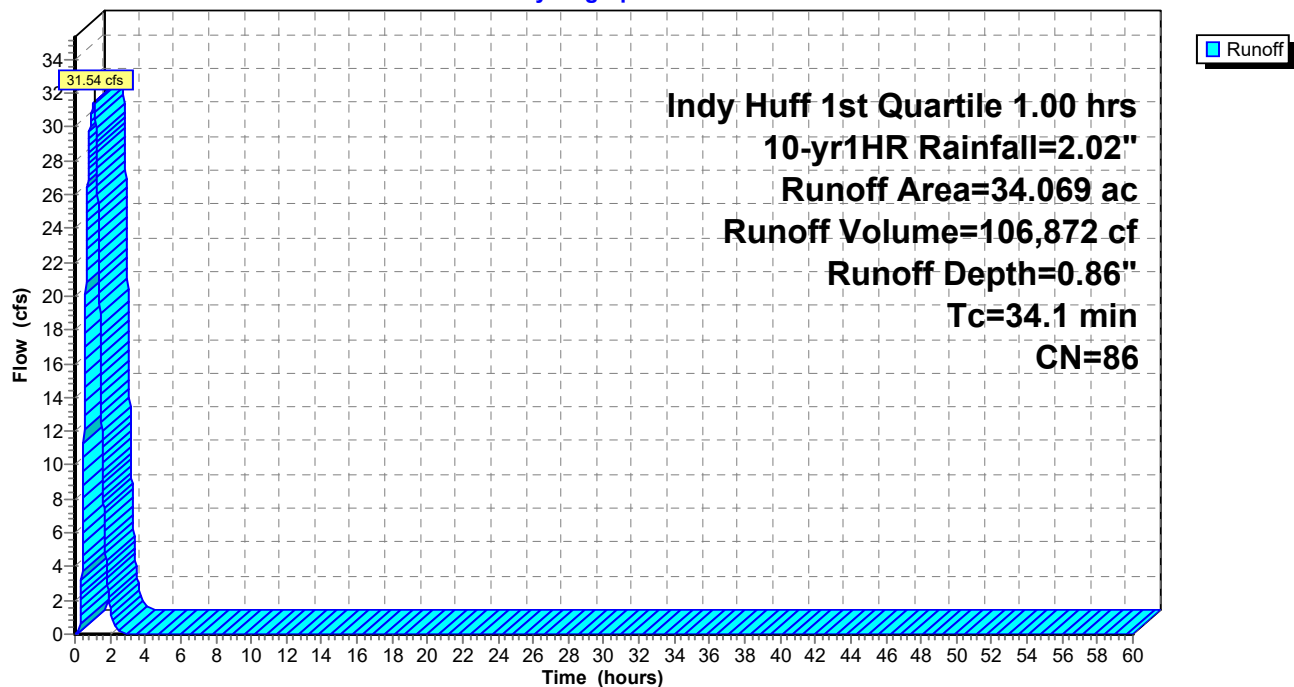
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 1.00 hrs 10-yr1HR Rainfall=2.02"

Area (ac)	CN	Description
* 34.069	86	
34.069		100.00% Pervious Area

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

**Subcatchment 14S: DA EX (South Lot)**

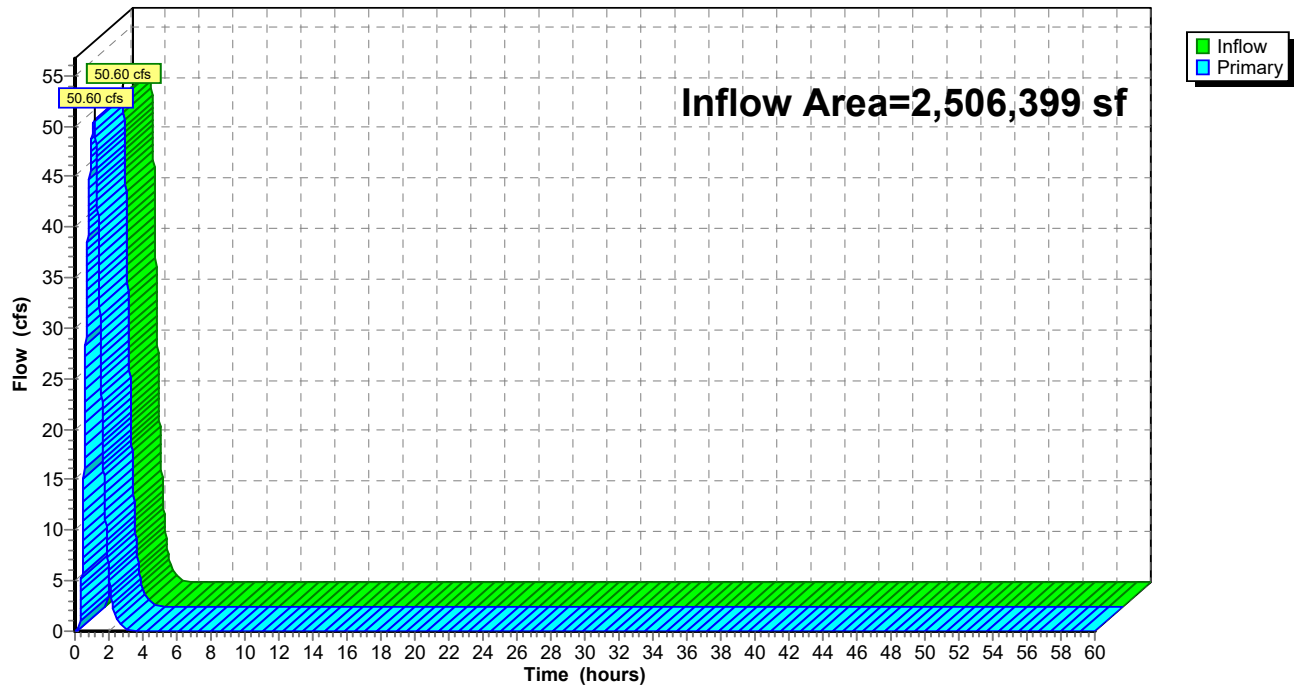
Hydrograph



**Summary for Link 16L: Total Pre**

Inflow Area = 2,506,399 sf, 4.36% Impervious, Inflow Depth = 0.86" for 10-yr1HR event  
Inflow = 50.60 cfs @ 1.13 hrs, Volume= 180,496 cf  
Primary = 50.60 cfs @ 1.13 hrs, Volume= 180,496 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

**Link 16L: Total Pre****Hydrograph**

**Summary for Subcatchment 6S: Ex. North Lot**

Runoff = 14.98 cfs @ 1.35 hrs, Volume= 96,966 cf, Depth= 1.14"

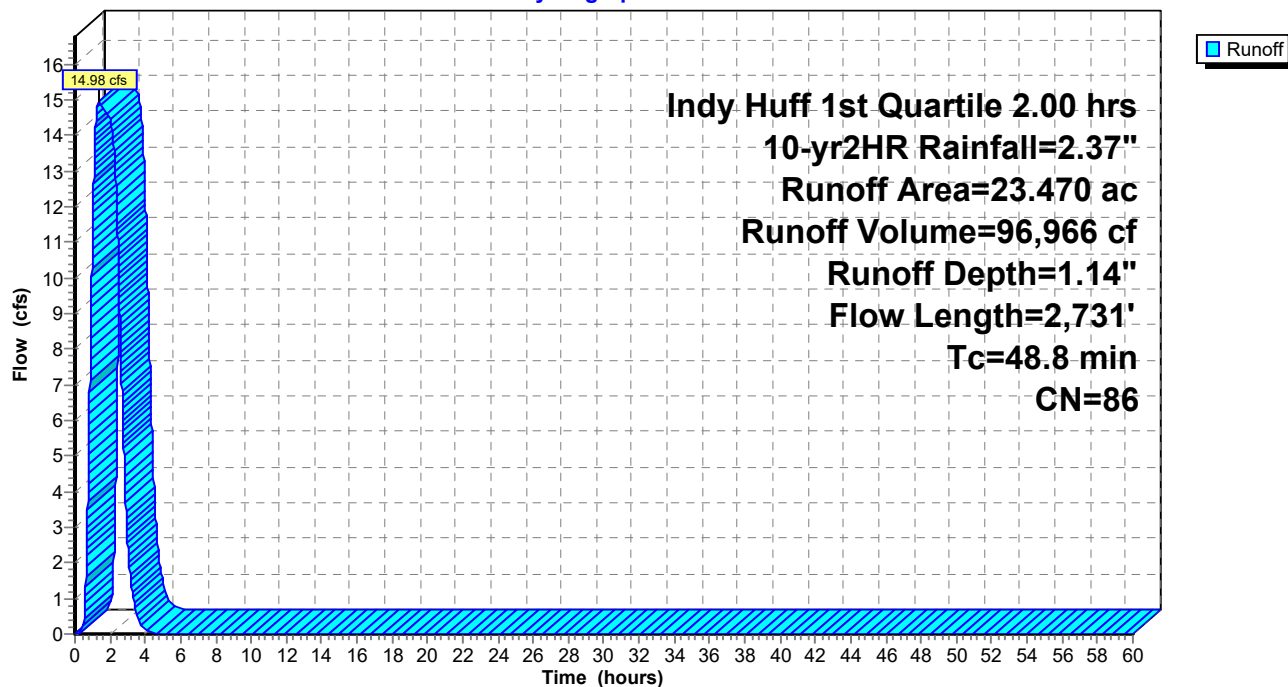
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 2.00 hrs 10-yr2HR Rainfall=2.37"

Area (ac)	CN	Description
* 2.510	98	
1.060	70	Woods, Good, HSG C
1.660	77	Woods, Good, HSG D
10.720	89	Row crops, straight row, Good, HSG D
4.540	85	Row crops, straight row, Good, HSG C
1.360	80	>75% Grass cover, Good, HSG D
1.620	74	>75% Grass cover, Good, HSG C
23.470	86	Weighted Average
20.960		89.31% Pervious Area
2.510		10.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0100	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
35.2	2,631	0.0060	1.25		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
48.8	2,731	Total			

**Subcatchment 6S: Ex. North Lot**

Hydrograph



**Summary for Subcatchment 14S: DA EX (South Lot)**

Runoff = 24.88 cfs @ 1.06 hrs, Volume= 140,755 cf, Depth= 1.14"

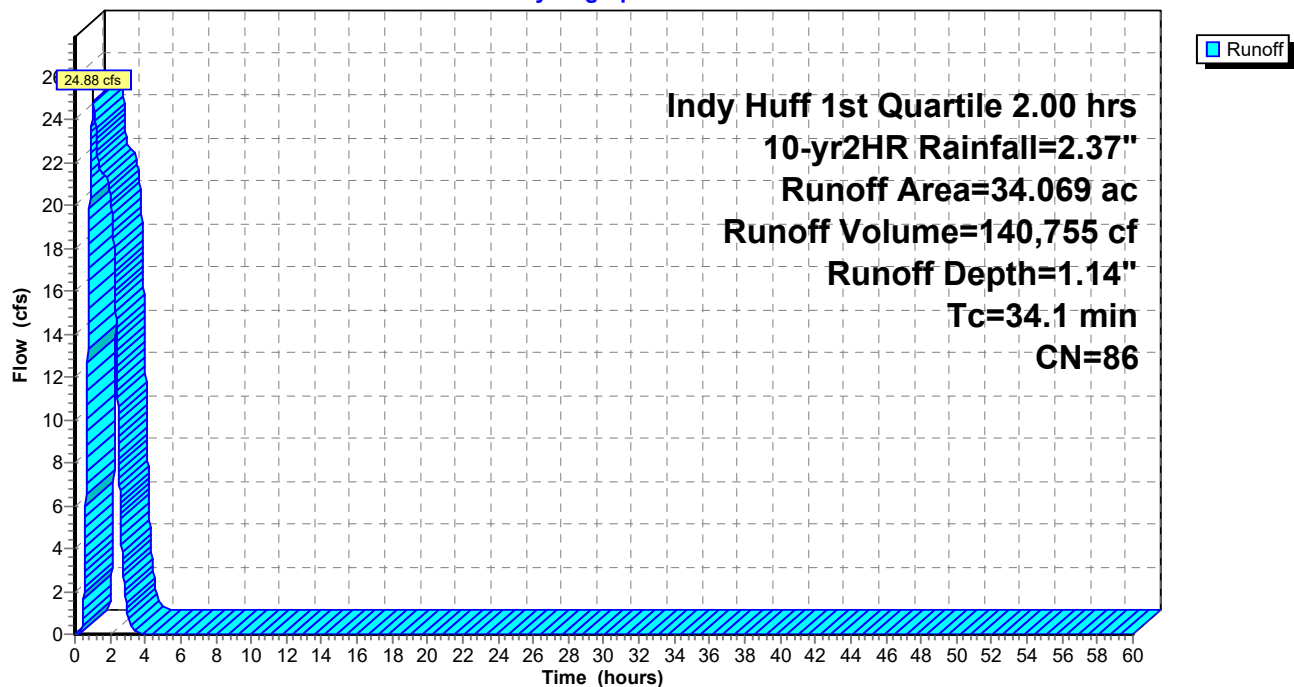
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 2.00 hrs 10-yr2HR Rainfall=2.37"

Area (ac)	CN	Description
* 34.069	86	
34.069		100.00% Pervious Area

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

**Subcatchment 14S: DA EX (South Lot)**

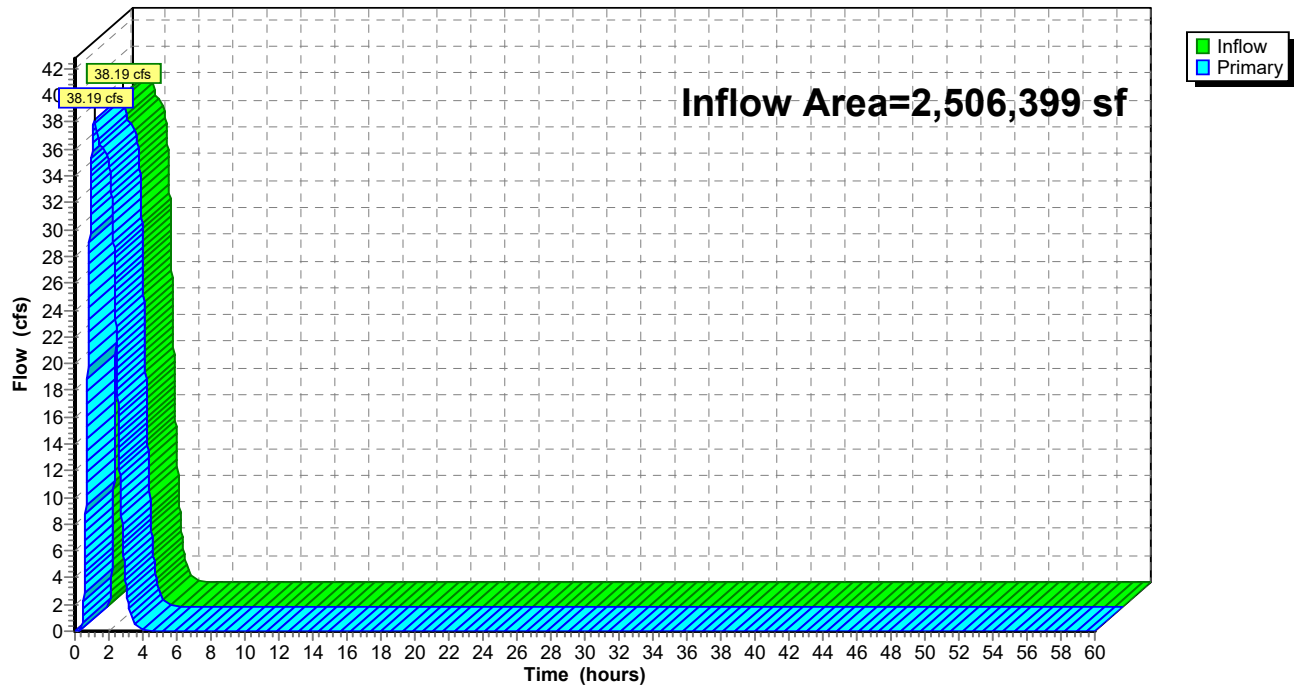
Hydrograph



**Summary for Link 16L: Total Pre**

Inflow Area = 2,506,399 sf, 4.36% Impervious, Inflow Depth = 1.14" for 10-yr2HR event  
Inflow = 38.19 cfs @ 1.14 hrs, Volume= 237,721 cf  
Primary = 38.19 cfs @ 1.14 hrs, Volume= 237,721 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

**Link 16L: Total Pre****Hydrograph**

**Summary for Subcatchment 6S: Ex. North Lot**

Runoff = 13.14 cfs @ 1.52 hrs, Volume= 108,030 cf, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 3.00 hrs 10-yr3HR Rainfall=2.53"

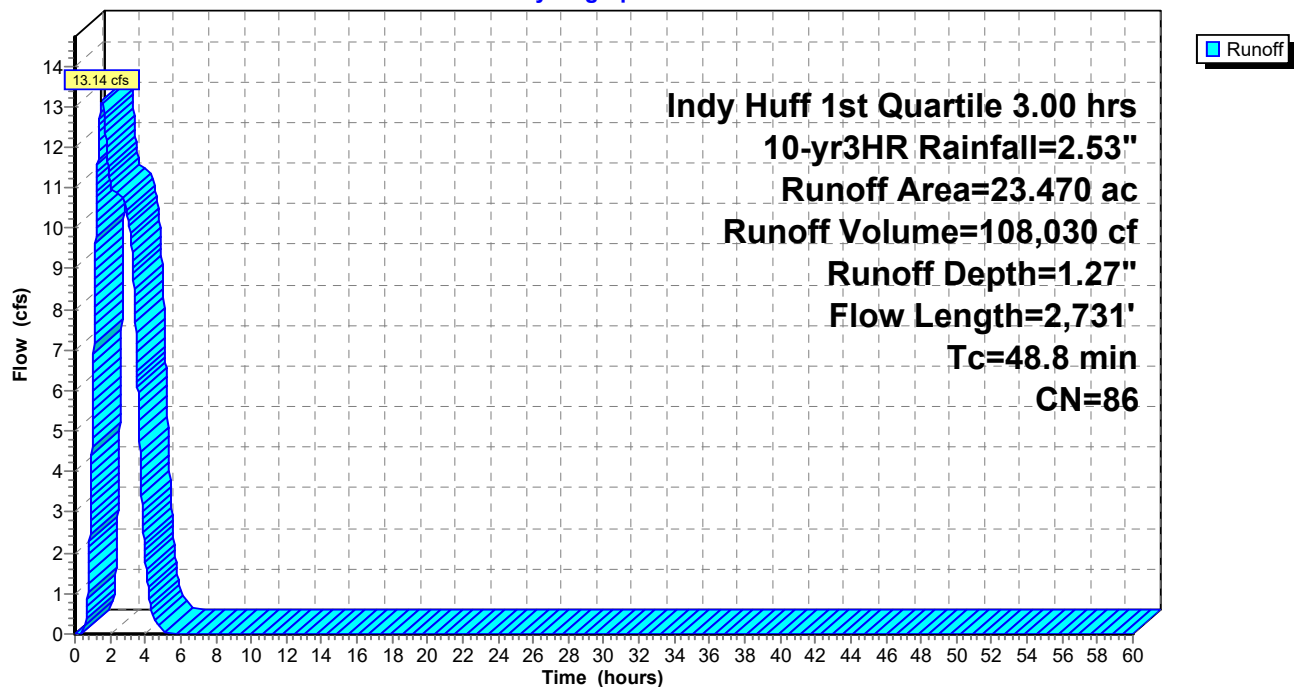
Area (ac)	CN	Description
* 2.510	98	
1.060	70	Woods, Good, HSG C
1.660	77	Woods, Good, HSG D
10.720	89	Row crops, straight row, Good, HSG D
4.540	85	Row crops, straight row, Good, HSG C
1.360	80	>75% Grass cover, Good, HSG D
1.620	74	>75% Grass cover, Good, HSG C
23.470	86	Weighted Average
20.960		89.31% Pervious Area
2.510		10.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0100	0.12		<b>Sheet Flow,</b>
					Grass: Short n= 0.150 P2= 2.91"
35.2	2,631	0.0060	1.25		<b>Shallow Concentrated Flow,</b>
					Unpaved Kv= 16.1 fps
48.8	2,731	Total			

**Subcatchment 6S: Ex. North Lot**

Hydrograph



**Summary for Subcatchment 14S: DA EX (South Lot)**

Runoff = 21.60 cfs @ 1.32 hrs, Volume= 156,816 cf, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 3.00 hrs 10-yr3HR Rainfall=2.53"

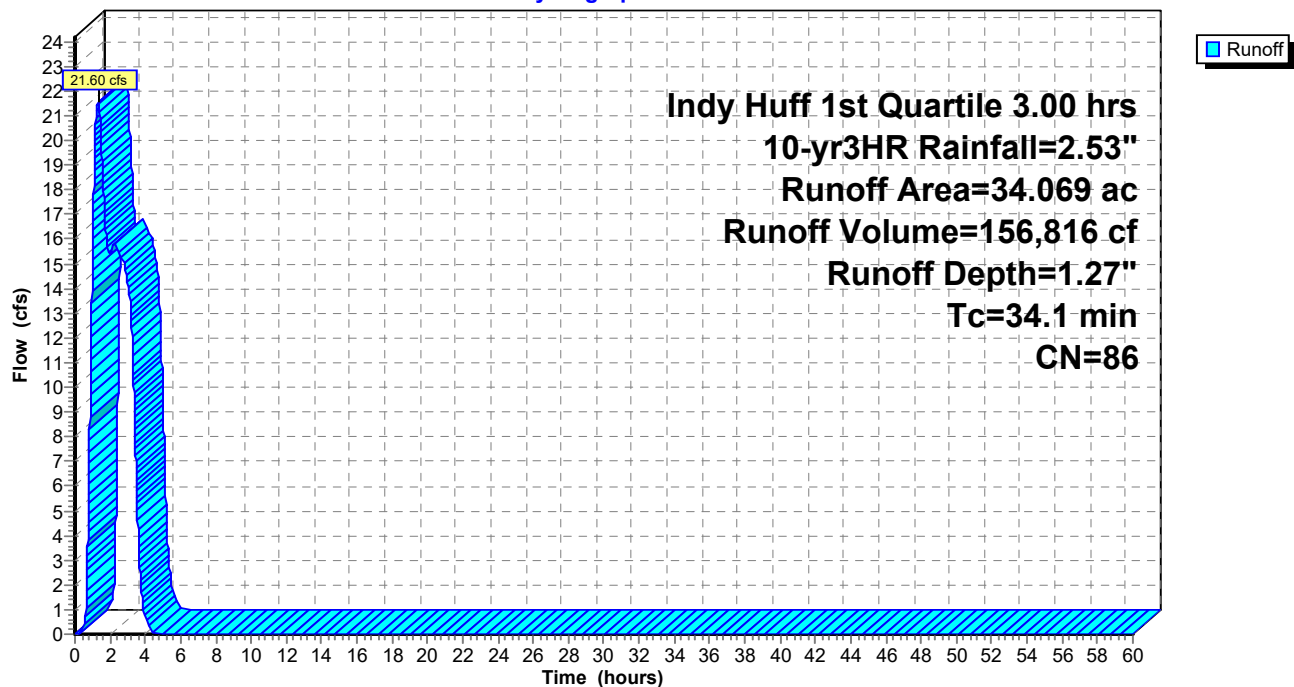
Area (ac)	CN	Description
* 34.069	86	
34.069		100.00% Pervious Area

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

**Subcatchment 14S: DA EX (South Lot)**

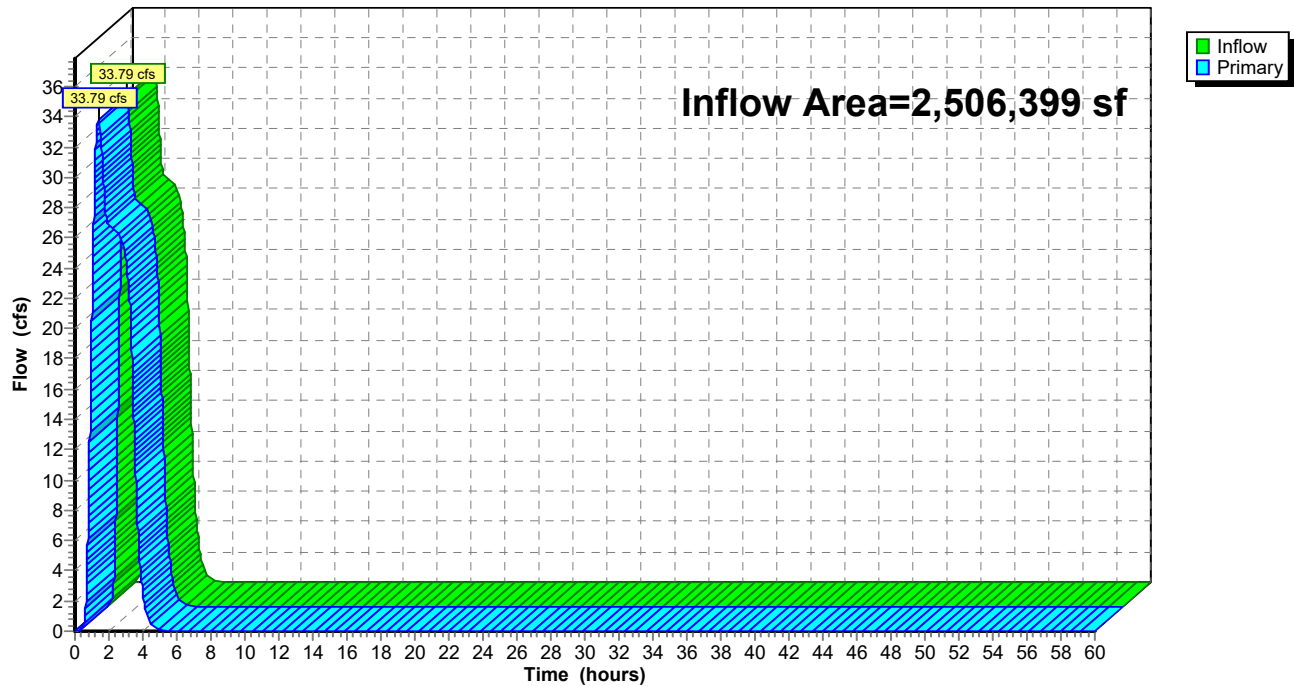
Hydrograph



**Summary for Link 16L: Total Pre**

Inflow Area = 2,506,399 sf, 4.36% Impervious, Inflow Depth = 1.27" for 10-yr3HR event  
Inflow = 33.79 cfs @ 1.40 hrs, Volume= 264,847 cf  
Primary = 33.79 cfs @ 1.40 hrs, Volume= 264,847 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

**Link 16L: Total Pre****Hydrograph**



**Summary for Subcatchment 6S: Ex. North Lot**

Runoff = 11.15 cfs @ 2.23 hrs, Volume= 143,829 cf, Depth= 1.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 6.00 hrs 10-yr6HR Rainfall=3.03"

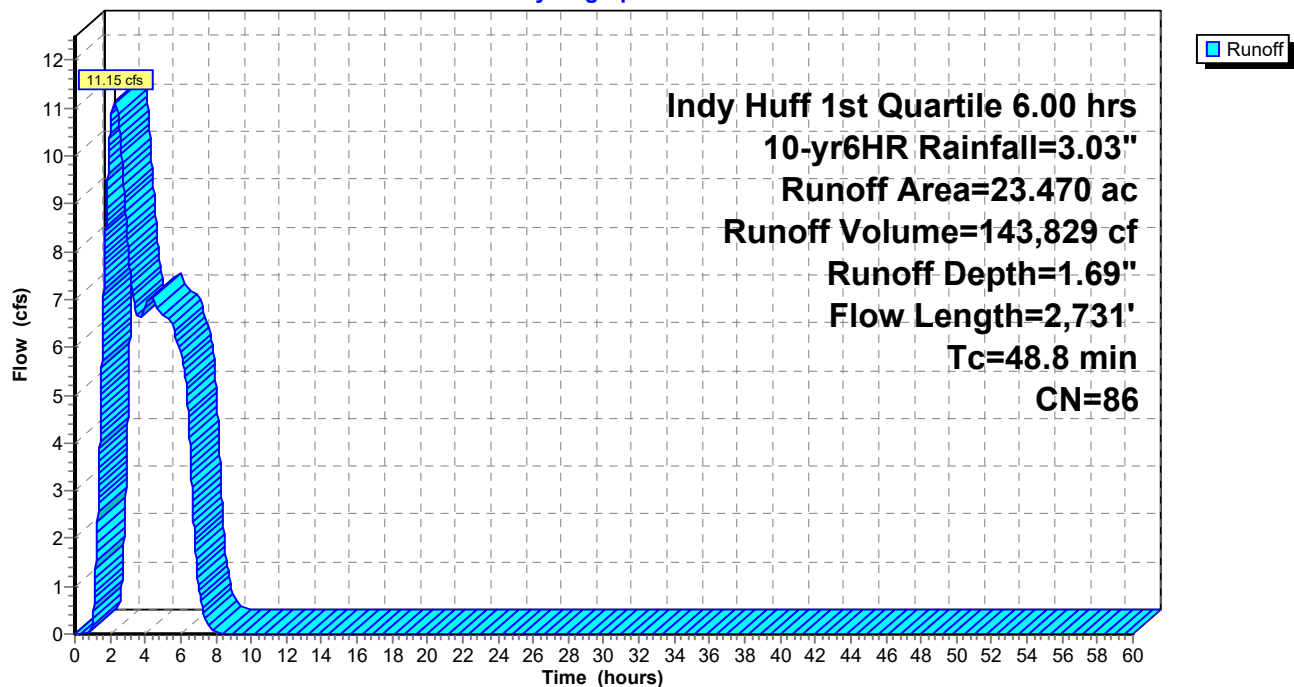
Area (ac)	CN	Description
* 2.510	98	
1.060	70	Woods, Good, HSG C
1.660	77	Woods, Good, HSG D
10.720	89	Row crops, straight row, Good, HSG D
4.540	85	Row crops, straight row, Good, HSG C
1.360	80	>75% Grass cover, Good, HSG D
1.620	74	>75% Grass cover, Good, HSG C
23.470	86	Weighted Average
20.960		89.31% Pervious Area
2.510		10.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0100	0.12		<b>Sheet Flow,</b>
					Grass: Short n= 0.150 P2= 2.91"
35.2	2,631	0.0060	1.25		<b>Shallow Concentrated Flow,</b>
					Unpaved Kv= 16.1 fps
48.8	2,731	Total			

**Subcatchment 6S: Ex. North Lot**

Hydrograph



**Summary for Subcatchment 14S: DA EX (South Lot)**

Runoff = 17.19 cfs @ 2.01 hrs, Volume= 208,782 cf, Depth= 1.69"

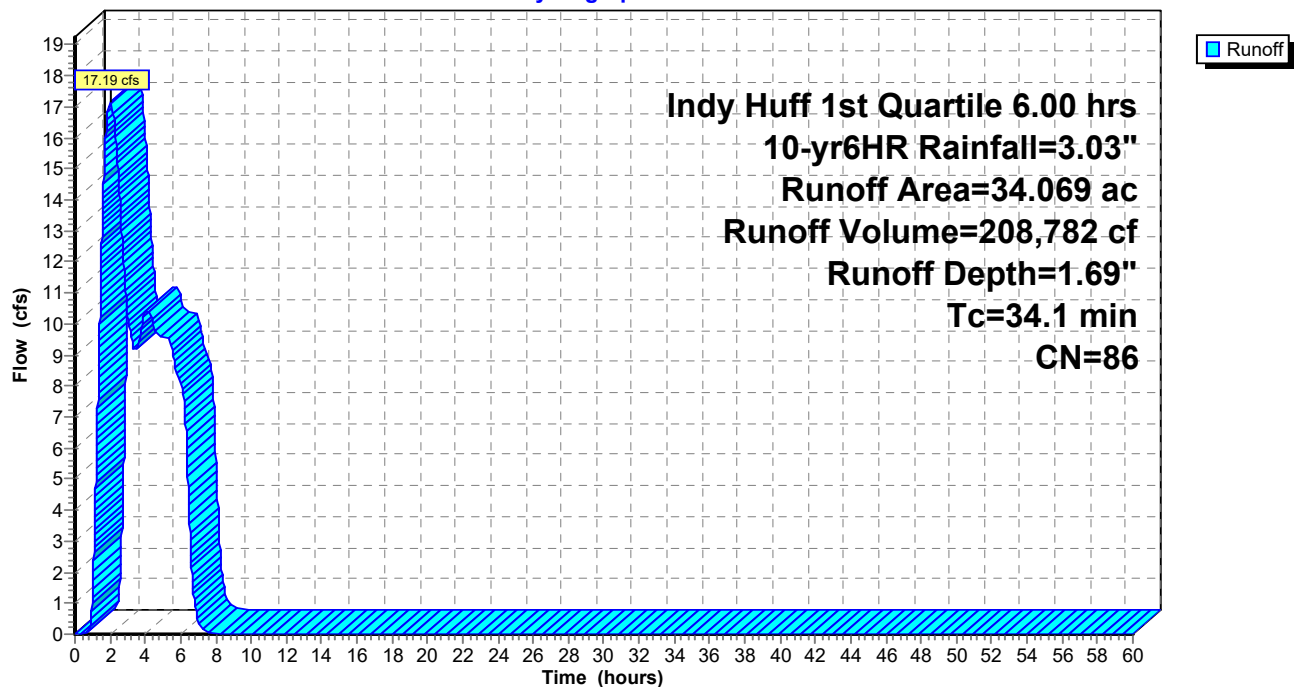
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 6.00 hrs 10-yr6HR Rainfall=3.03"

Area (ac)	CN	Description
* 34.069	86	
34.069		100.00% Pervious Area

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

**Subcatchment 14S: DA EX (South Lot)**

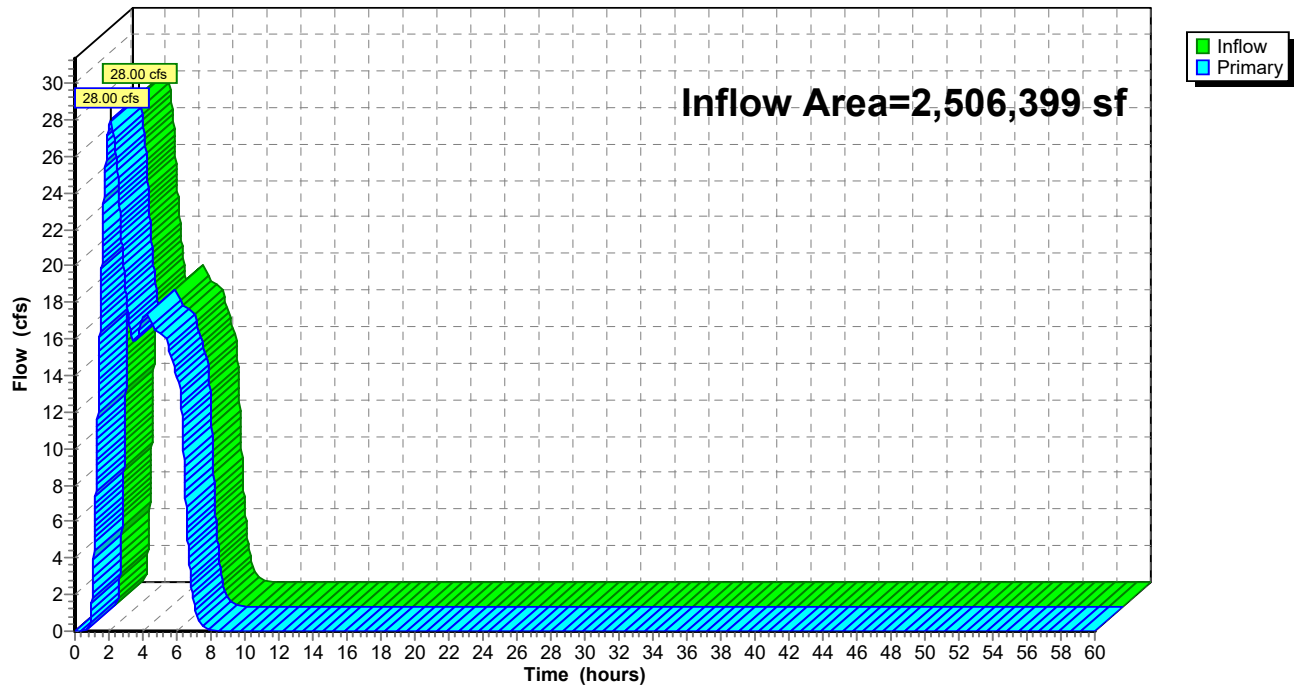
Hydrograph



**Summary for Link 16L: Total Pre**

Inflow Area = 2,506,399 sf, 4.36% Impervious, Inflow Depth = 1.69" for 10-yr6HR event  
Inflow = 28.00 cfs @ 2.11 hrs, Volume= 352,611 cf  
Primary = 28.00 cfs @ 2.11 hrs, Volume= 352,611 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

**Link 16L: Total Pre****Hydrograph**

**Summary for Subcatchment 6S: Ex. North Lot**

Runoff = 7.87 cfs @ 3.63 hrs, Volume= 180,280 cf, Depth= 2.12"

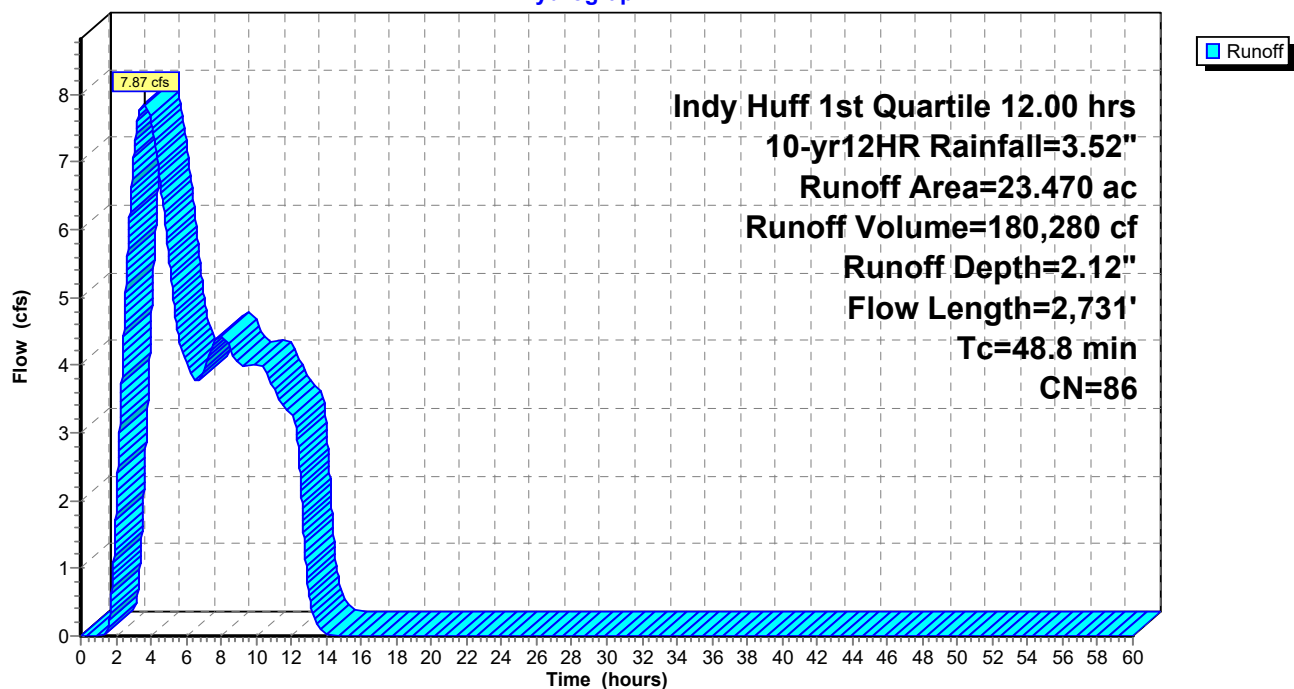
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 12.00 hrs 10-yr12HR Rainfall=3.52"

Area (ac)	CN	Description
* 2.510	98	
1.060	70	Woods, Good, HSG C
1.660	77	Woods, Good, HSG D
10.720	89	Row crops, straight row, Good, HSG D
4.540	85	Row crops, straight row, Good, HSG C
1.360	80	>75% Grass cover, Good, HSG D
1.620	74	>75% Grass cover, Good, HSG C
23.470	86	Weighted Average
20.960		89.31% Pervious Area
2.510		10.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0100	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
35.2	2,631	0.0060	1.25		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
48.8	2,731	Total			

**Subcatchment 6S: Ex. North Lot**

Hydrograph



**Summary for Subcatchment 14S: DA EX (South Lot)**

Runoff = 11.67 cfs @ 3.30 hrs, Volume= 261,694 cf, Depth= 2.12"

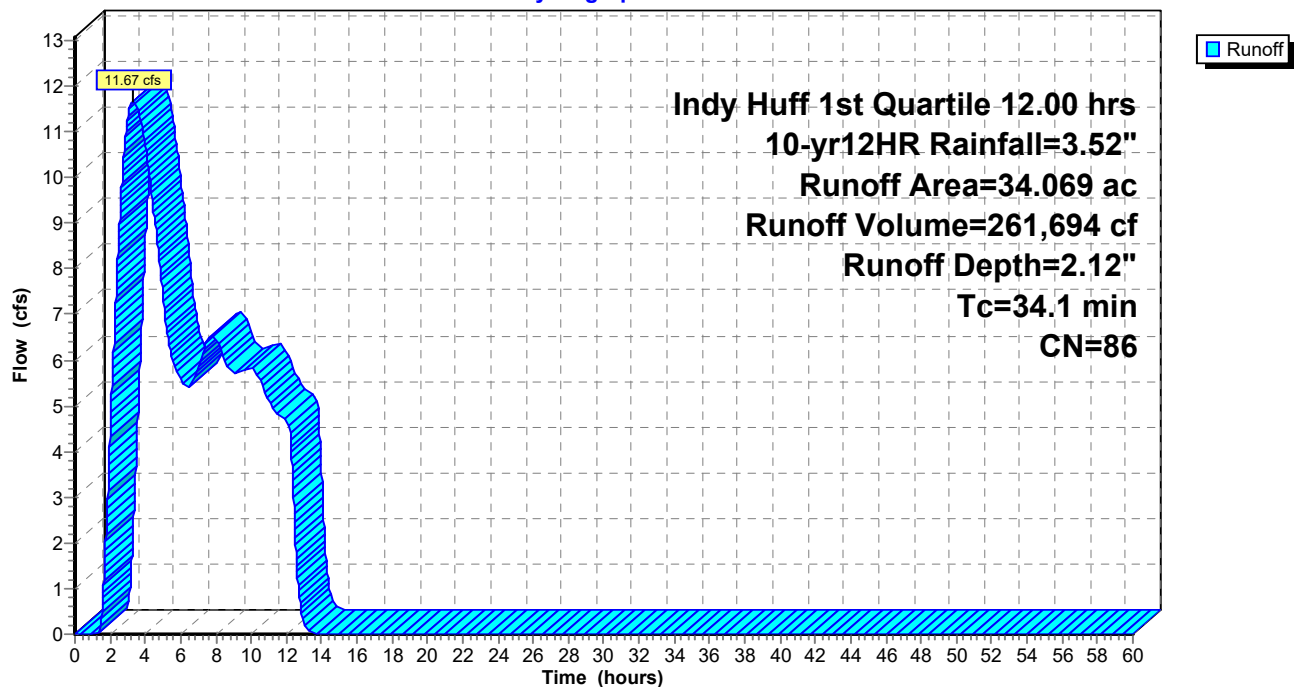
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 12.00 hrs 10-yr12HR Rainfall=3.52"

Area (ac)	CN	Description
* 34.069	86	
34.069		100.00% Pervious Area

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

**Subcatchment 14S: DA EX (South Lot)**

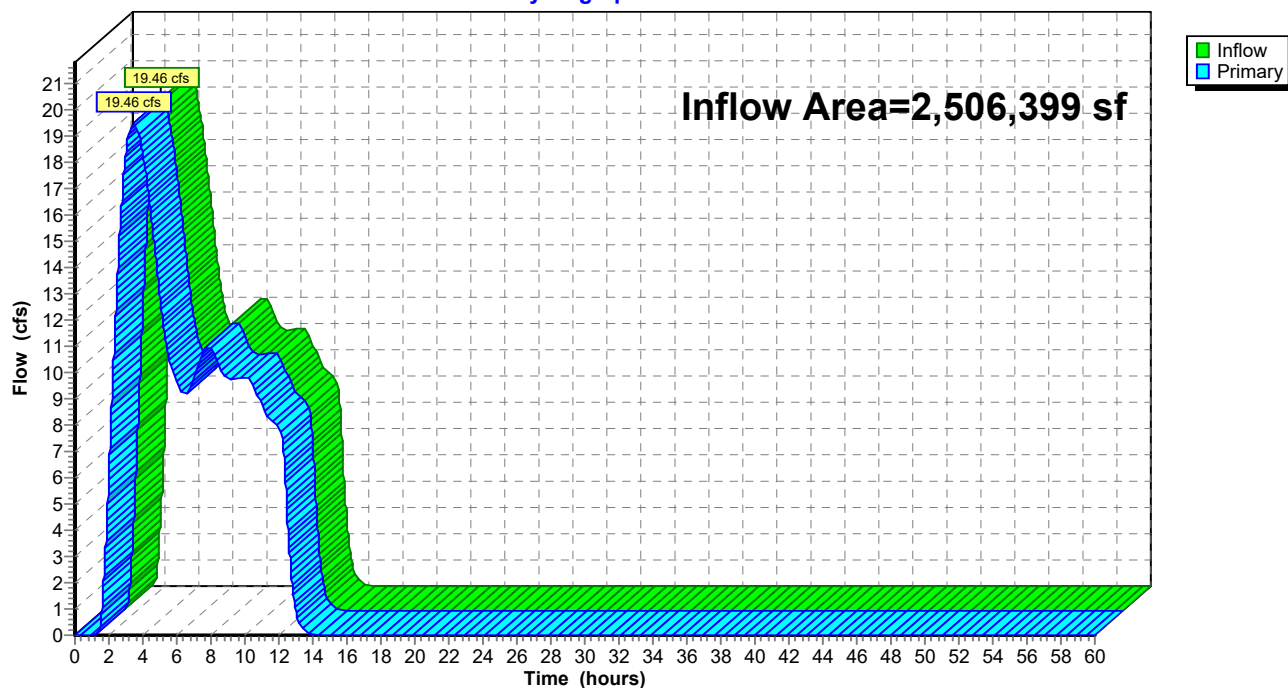
Hydrograph



**Summary for Link 16L: Total Pre**

Inflow Area = 2,506,399 sf, 4.36% Impervious, Inflow Depth = 2.12" for 10-yr12HR event  
Inflow = 19.46 cfs @ 3.44 hrs, Volume= 441,973 cf  
Primary = 19.46 cfs @ 3.44 hrs, Volume= 441,973 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

**Link 16L: Total Pre****Hydrograph**

**Summary for Subcatchment 6S: Ex. North Lot**

Runoff = 5.15 cfs @ 6.13 hrs, Volume= 223,118 cf, Depth= 2.62"

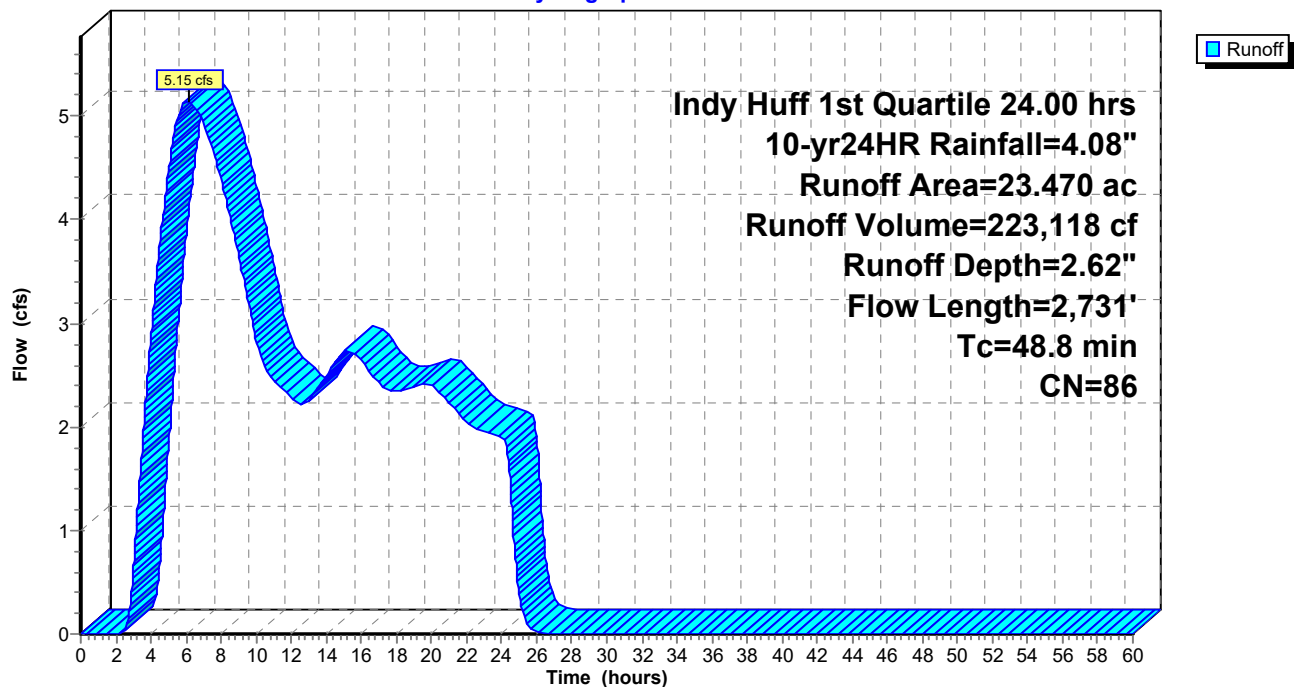
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 24.00 hrs 10-yr24HR Rainfall=4.08"

Area (ac)	CN	Description
* 2.510	98	
1.060	70	Woods, Good, HSG C
1.660	77	Woods, Good, HSG D
10.720	89	Row crops, straight row, Good, HSG D
4.540	85	Row crops, straight row, Good, HSG C
1.360	80	>75% Grass cover, Good, HSG D
1.620	74	>75% Grass cover, Good, HSG C
23.470	86	Weighted Average
20.960		89.31% Pervious Area
2.510		10.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0100	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
35.2	2,631	0.0060	1.25		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
48.8	2,731	Total			

**Subcatchment 6S: Ex. North Lot**

Hydrograph



**Summary for Subcatchment 14S: DA EX (South Lot)**

Runoff = 7.52 cfs @ 5.80 hrs, Volume= 323,878 cf, Depth= 2.62"

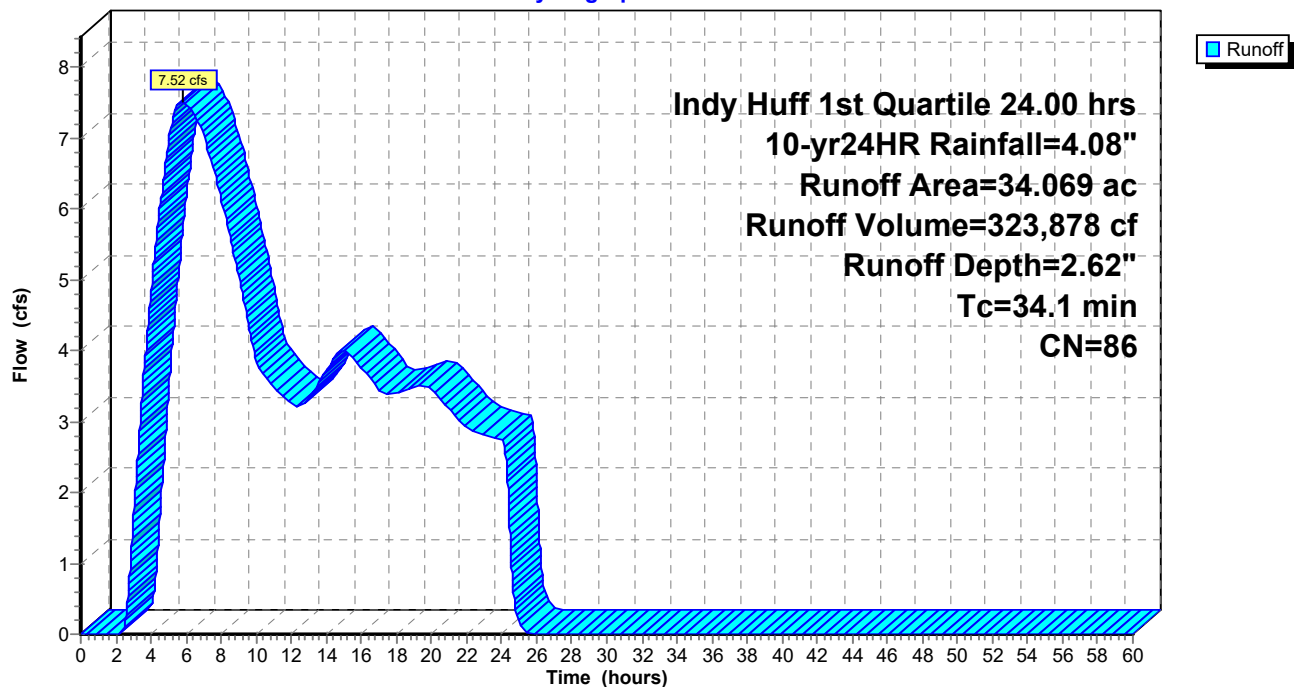
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 24.00 hrs 10-yr24HR Rainfall=4.08"

Area (ac)	CN	Description
* 34.069	86	
34.069		100.00% Pervious Area

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

**Subcatchment 14S: DA EX (South Lot)**

Hydrograph

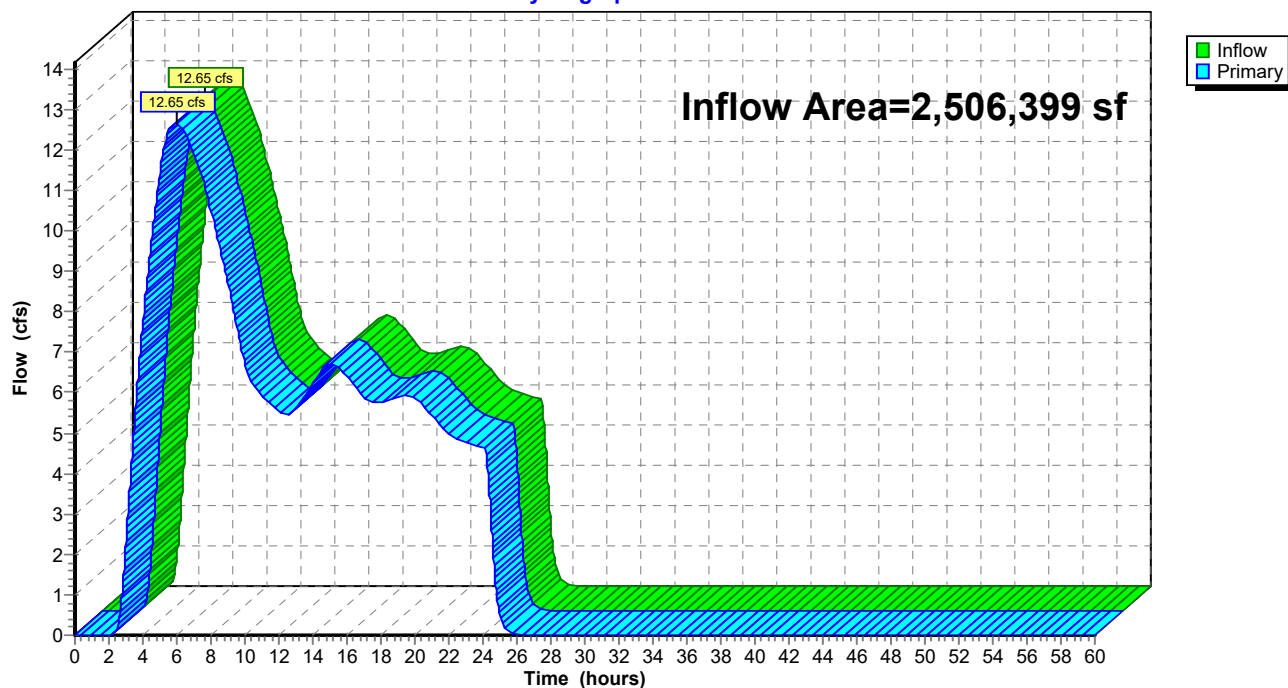




**Summary for Link 16L: Total Pre**

Inflow Area = 2,506,399 sf, 4.36% Impervious, Inflow Depth = 2.62" for 10-yr24HR event  
Inflow = 12.65 cfs @ 6.02 hrs, Volume= 546,996 cf  
Primary = 12.65 cfs @ 6.02 hrs, Volume= 546,996 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

**Link 16L: Total Pre****Hydrograph**

**Summary for Subcatchment 6S: Ex. North Lot**

Runoff = 8.88 cfs @ 5.80 hrs, Volume= 366,767 cf, Depth= 4.30"

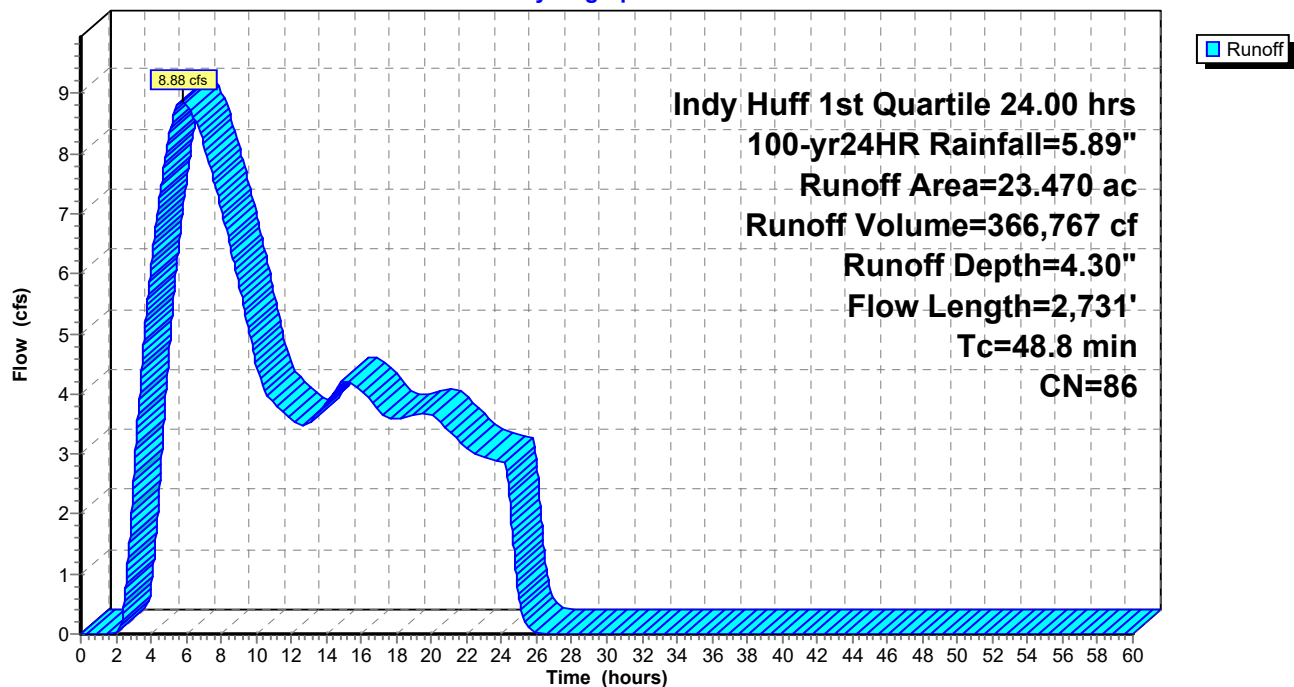
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 24.00 hrs 100-yr24HR Rainfall=5.89"

Area (ac)	CN	Description
* 2.510	98	
1.060	70	Woods, Good, HSG C
1.660	77	Woods, Good, HSG D
10.720	89	Row crops, straight row, Good, HSG D
4.540	85	Row crops, straight row, Good, HSG C
1.360	80	>75% Grass cover, Good, HSG D
1.620	74	>75% Grass cover, Good, HSG C
23.470	86	Weighted Average
20.960		89.31% Pervious Area
2.510		10.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0100	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
35.2	2,631	0.0060	1.25		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
48.8	2,731	Total			

**Subcatchment 6S: Ex. North Lot**

Hydrograph



**Summary for Subcatchment 14S: DA EX (South Lot)**

Runoff = 12.99 cfs @ 5.49 hrs, Volume= 532,398 cf, Depth= 4.30"

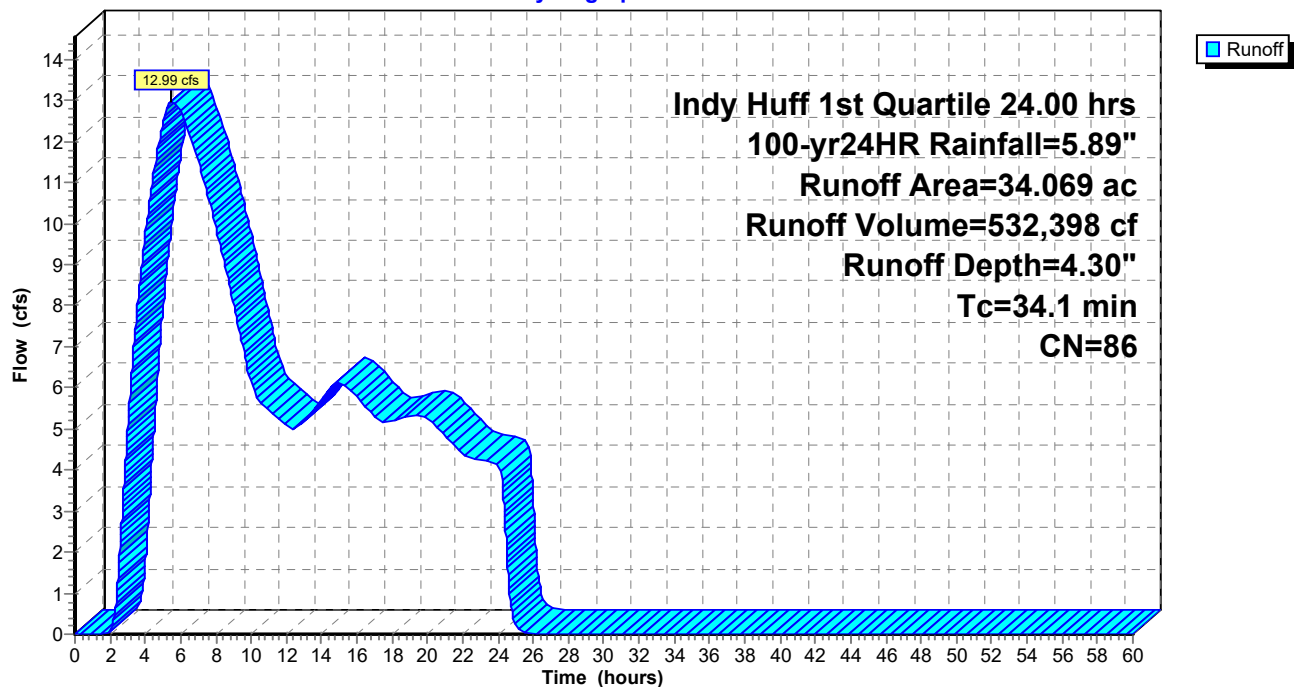
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 24.00 hrs 100-yr24HR Rainfall=5.89"

Area (ac)	CN	Description
* 34.069	86	
34.069		100.00% Pervious Area

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

**Subcatchment 14S: DA EX (South Lot)**

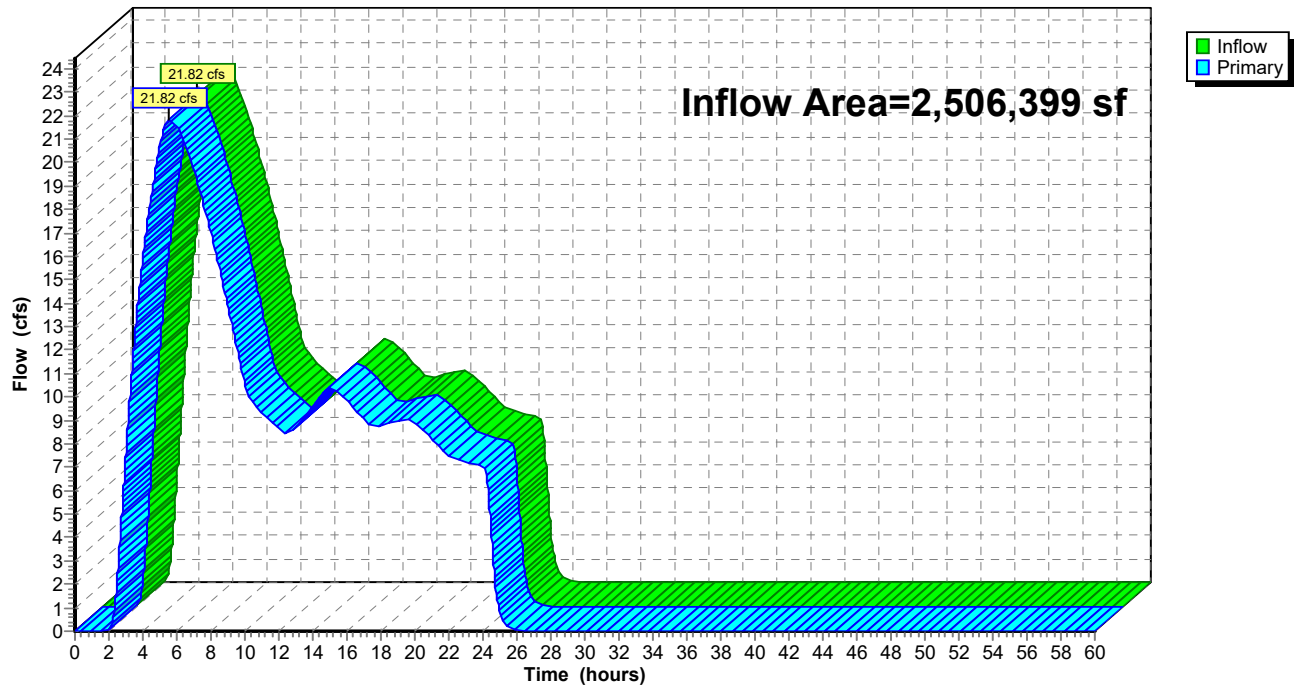
Hydrograph



**Summary for Link 16L: Total Pre**

Inflow Area = 2,506,399 sf, 4.36% Impervious, Inflow Depth = 4.30" for 100-yr24HR event  
Inflow = 21.82 cfs @ 5.58 hrs, Volume= 899,165 cf  
Primary = 21.82 cfs @ 5.58 hrs, Volume= 899,165 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

**Link 16L: Total Pre****Hydrograph**

**Summary for Subcatchment 6S: Ex. North Lot**

Runoff = 14.94 cfs @ 3.41 hrs, Volume= 323,309 cf, Depth= 3.79"

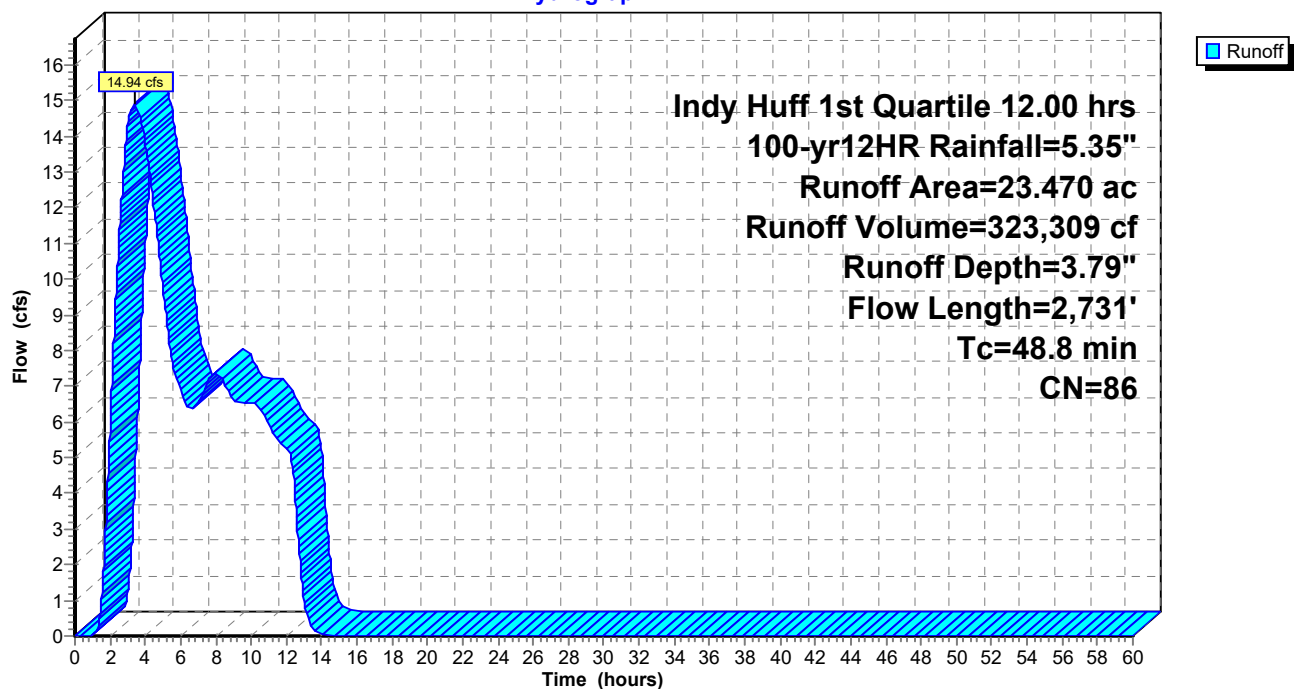
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 12.00 hrs 100-yr12HR Rainfall=5.35"

Area (ac)	CN	Description
* 2.510	98	
1.060	70	Woods, Good, HSG C
1.660	77	Woods, Good, HSG D
10.720	89	Row crops, straight row, Good, HSG D
4.540	85	Row crops, straight row, Good, HSG C
1.360	80	>75% Grass cover, Good, HSG D
1.620	74	>75% Grass cover, Good, HSG C
23.470	86	Weighted Average
20.960		89.31% Pervious Area
2.510		10.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0100	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
35.2	2,631	0.0060	1.25		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
48.8	2,731	Total			

**Subcatchment 6S: Ex. North Lot**

Hydrograph



**Summary for Subcatchment 14S: DA EX (South Lot)**

Runoff = 22.19 cfs @ 3.07 hrs, Volume= 469,315 cf, Depth= 3.79"

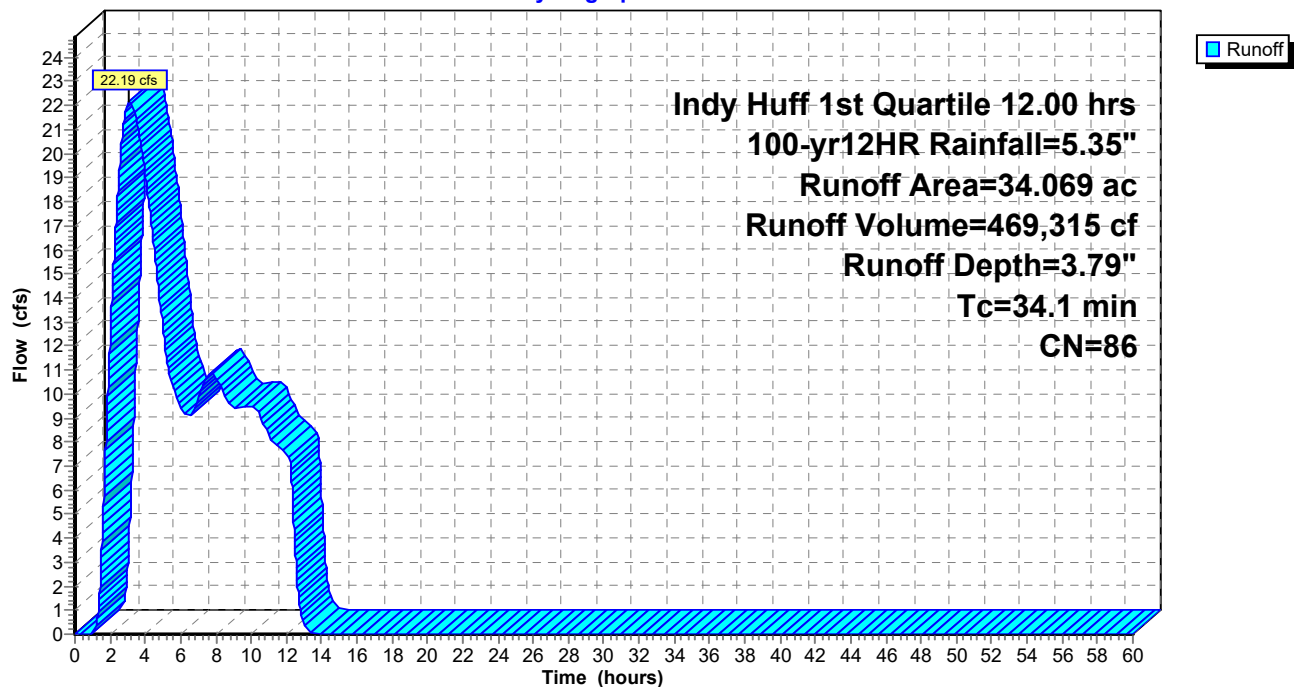
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
 Indy Huff 1st Quartile 12.00 hrs 100-yr12HR Rainfall=5.35"

Area (ac)	CN	Description
* 34.069	86	
34.069		100.00% Pervious Area

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

**Subcatchment 14S: DA EX (South Lot)**

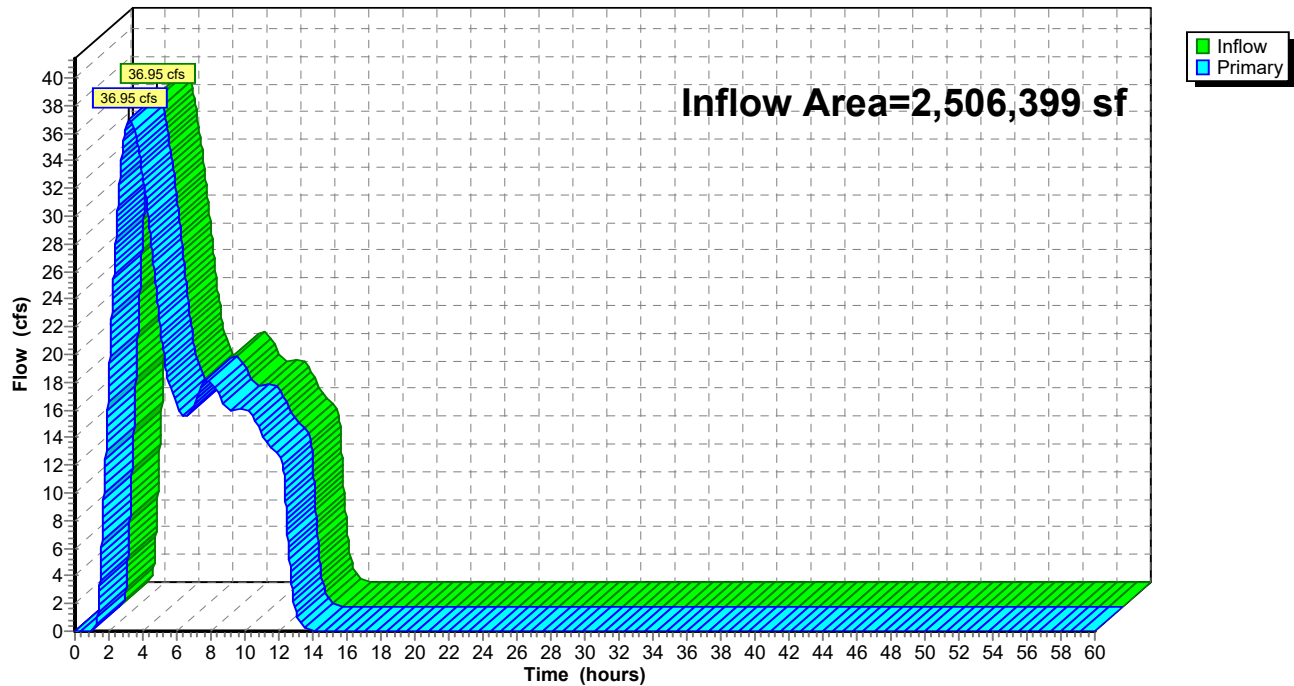
Hydrograph



**Summary for Link 16L: Total Pre**

Inflow Area = 2,506,399 sf, 4.36% Impervious, Inflow Depth = 3.79" for 100-yr12HR event  
Inflow = 36.95 cfs @ 3.22 hrs, Volume= 792,624 cf  
Primary = 36.95 cfs @ 3.22 hrs, Volume= 792,624 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

**Link 16L: Total Pre****Hydrograph**

**Summary for Subcatchment 6S: Ex. North Lot**

Runoff = 22.89 cfs @ 2.12 hrs, Volume= 276,346 cf, Depth= 3.24"

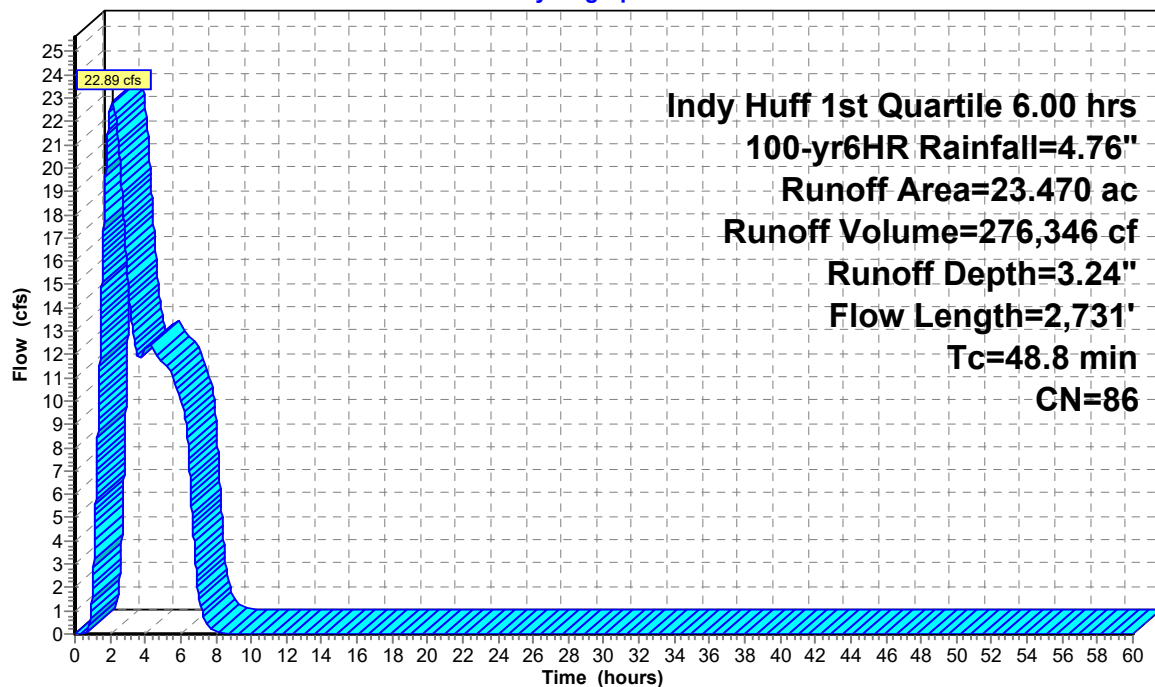
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 6.00 hrs 100-yr6HR Rainfall=4.76"

Area (ac)	CN	Description
* 2.510	98	
1.060	70	Woods, Good, HSG C
1.660	77	Woods, Good, HSG D
10.720	89	Row crops, straight row, Good, HSG D
4.540	85	Row crops, straight row, Good, HSG C
1.360	80	>75% Grass cover, Good, HSG D
1.620	74	>75% Grass cover, Good, HSG C
23.470	86	Weighted Average
20.960		89.31% Pervious Area
2.510		10.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0100	0.12		<b>Sheet Flow,</b>
					Grass: Short n= 0.150 P2= 2.91"
35.2	2,631	0.0060	1.25		<b>Shallow Concentrated Flow,</b>
					Unpaved Kv= 16.1 fps
48.8	2,731	Total			

**Subcatchment 6S: Ex. North Lot**

Hydrograph





**Summary for Subcatchment 14S: DA EX (South Lot)**

Runoff = 35.27 cfs @ 1.86 hrs, Volume= 401,144 cf, Depth= 3.24"

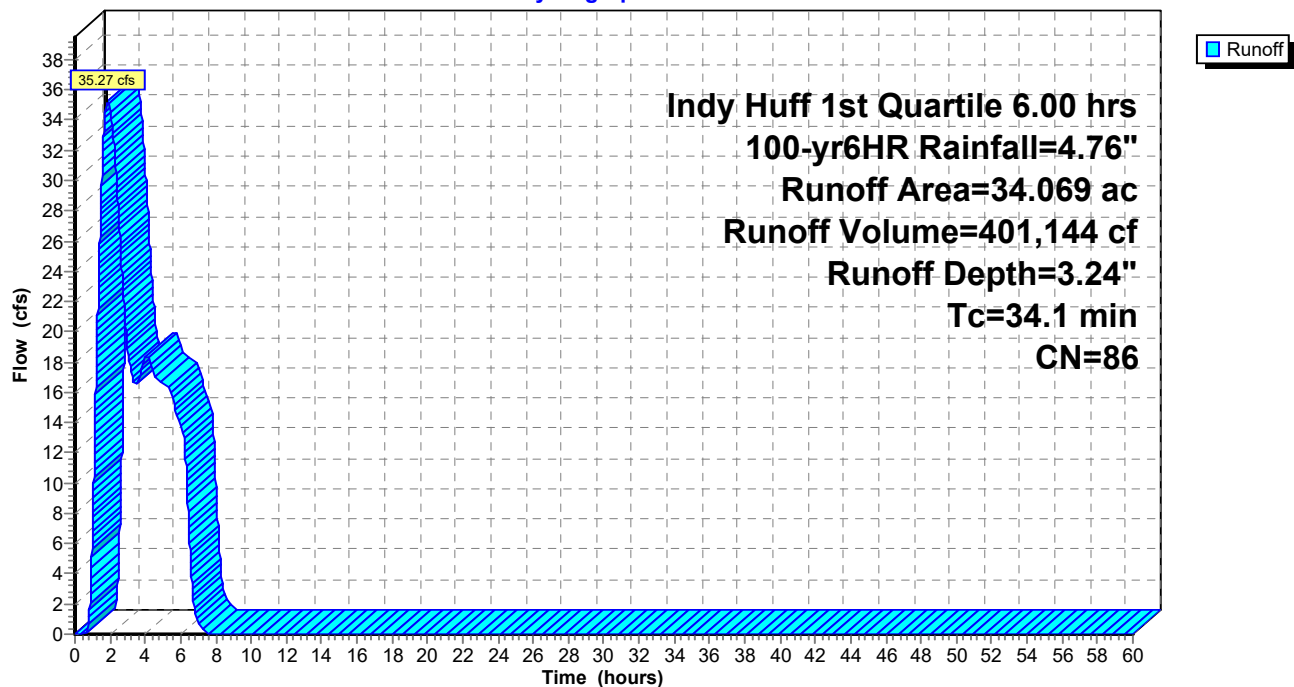
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 6.00 hrs 100-yr6HR Rainfall=4.76"

Area (ac)	CN	Description
* 34.069	86	
34.069		100.00% Pervious Area

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

**Subcatchment 14S: DA EX (South Lot)**

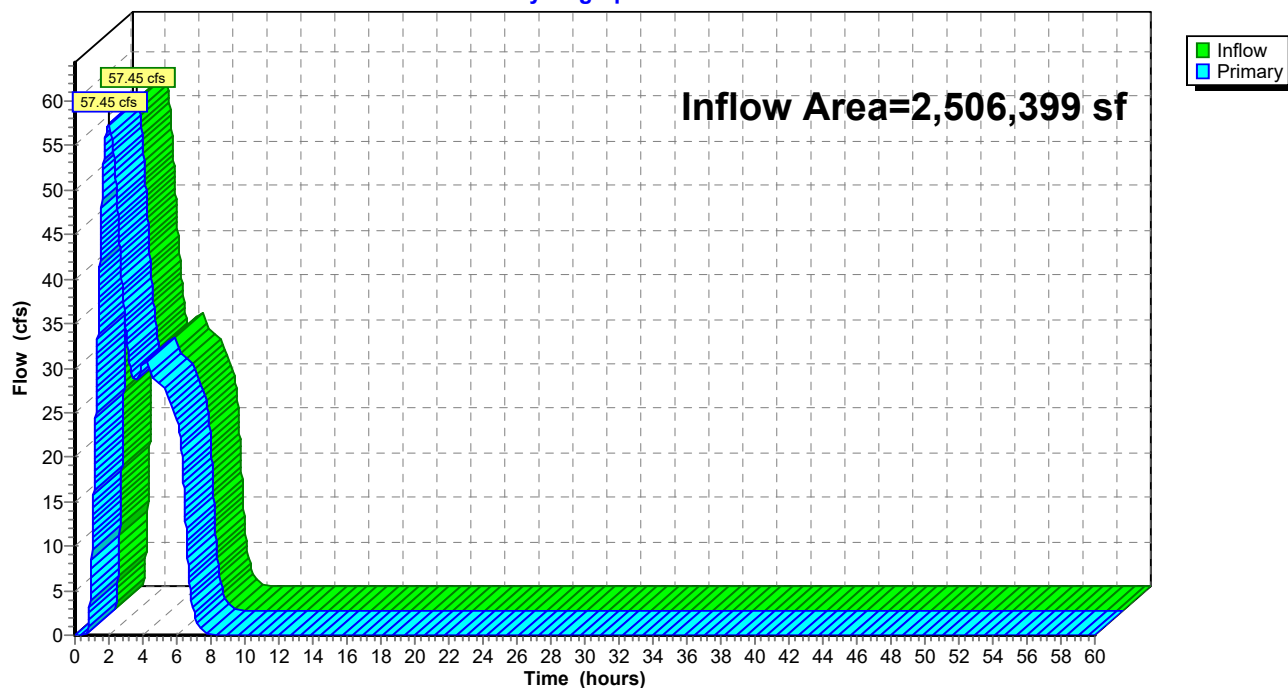
Hydrograph



**Summary for Link 16L: Total Pre**

Inflow Area = 2,506,399 sf, 4.36% Impervious, Inflow Depth = 3.24" for 100-yr6HR event  
Inflow = 57.45 cfs @ 2.00 hrs, Volume= 677,490 cf  
Primary = 57.45 cfs @ 2.00 hrs, Volume= 677,490 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

**Link 16L: Total Pre****Hydrograph**

**Summary for Subcatchment 6S: Ex. North Lot**

Runoff = 27.66 cfs @ 1.46 hrs, Volume= 210,772 cf, Depth= 2.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 3.00 hrs 100-yr3HR Rainfall=3.92"

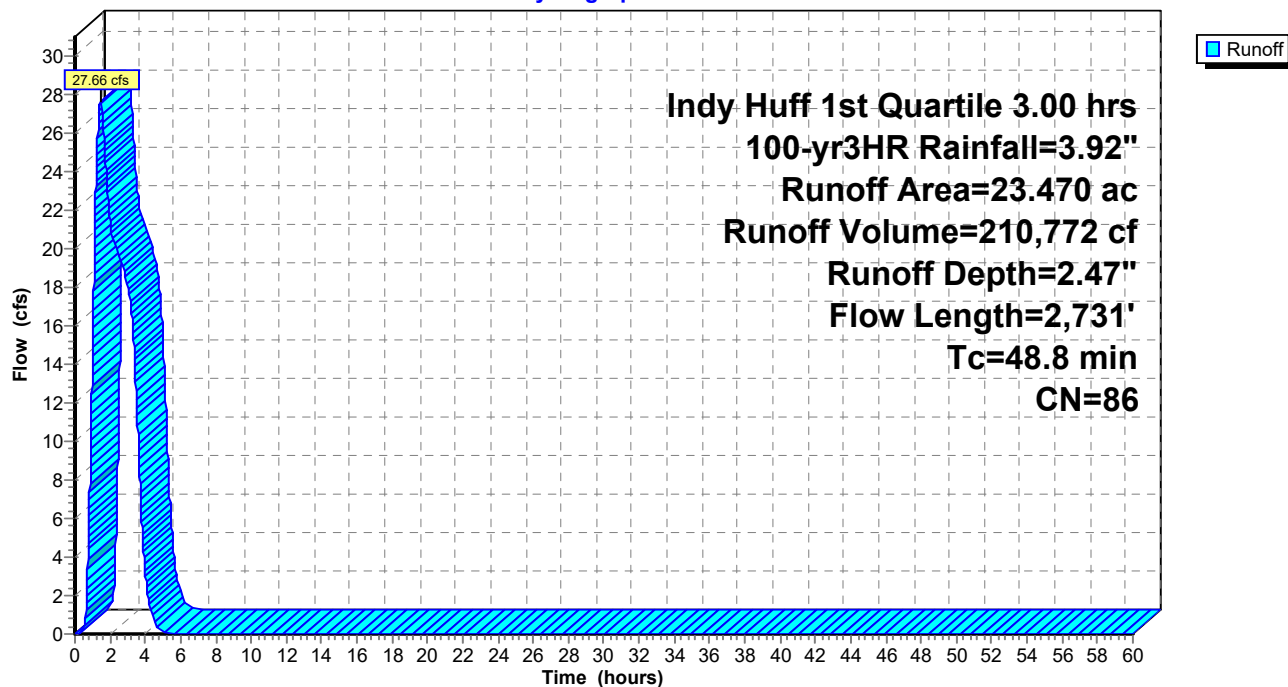
Area (ac)	CN	Description
* 2.510	98	
1.060	70	Woods, Good, HSG C
1.660	77	Woods, Good, HSG D
10.720	89	Row crops, straight row, Good, HSG D
4.540	85	Row crops, straight row, Good, HSG C
1.360	80	>75% Grass cover, Good, HSG D
1.620	74	>75% Grass cover, Good, HSG C
23.470	86	Weighted Average
20.960		89.31% Pervious Area
2.510		10.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0100	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
35.2	2,631	0.0060	1.25		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
48.8	2,731	Total			

**Subcatchment 6S: Ex. North Lot**

Hydrograph



**Summary for Subcatchment 14S: DA EX (South Lot)**

Runoff = 45.47 cfs @ 1.25 hrs, Volume= 305,956 cf, Depth= 2.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 3.00 hrs 100-yr3HR Rainfall=3.92"

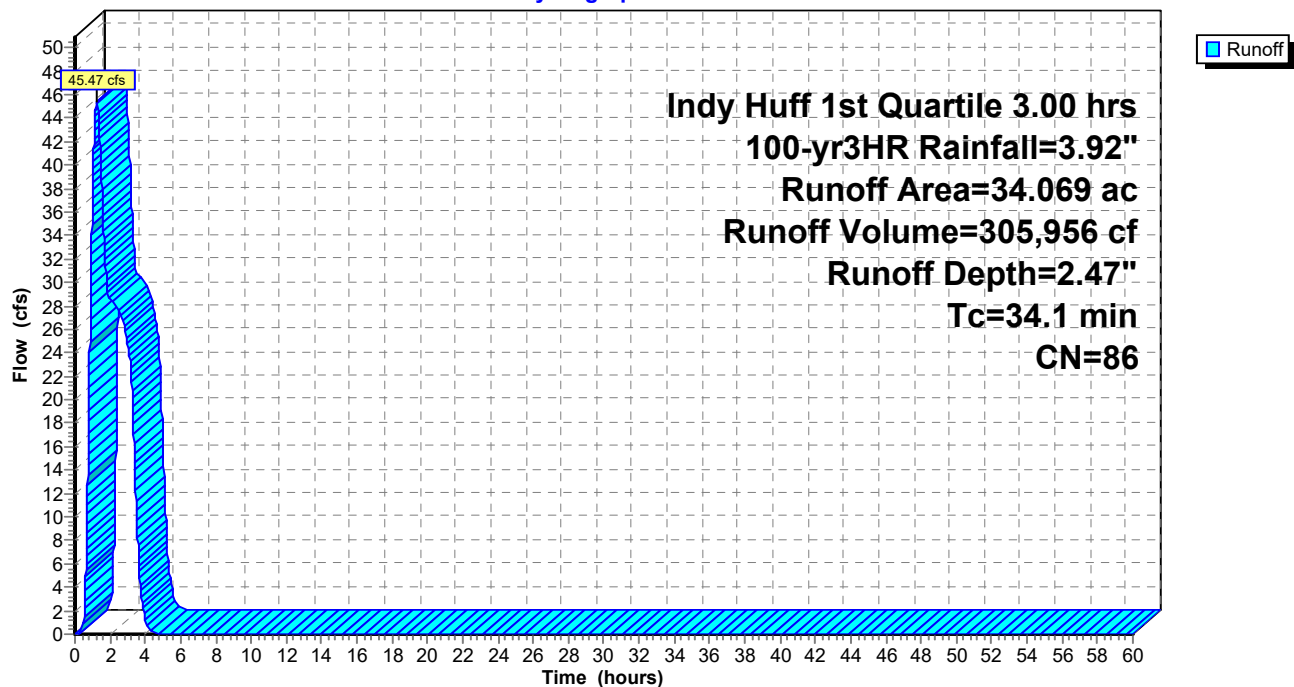
Area (ac)	CN	Description
* 34.069	86	
34.069		100.00% Pervious Area

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

**Subcatchment 14S: DA EX (South Lot)**

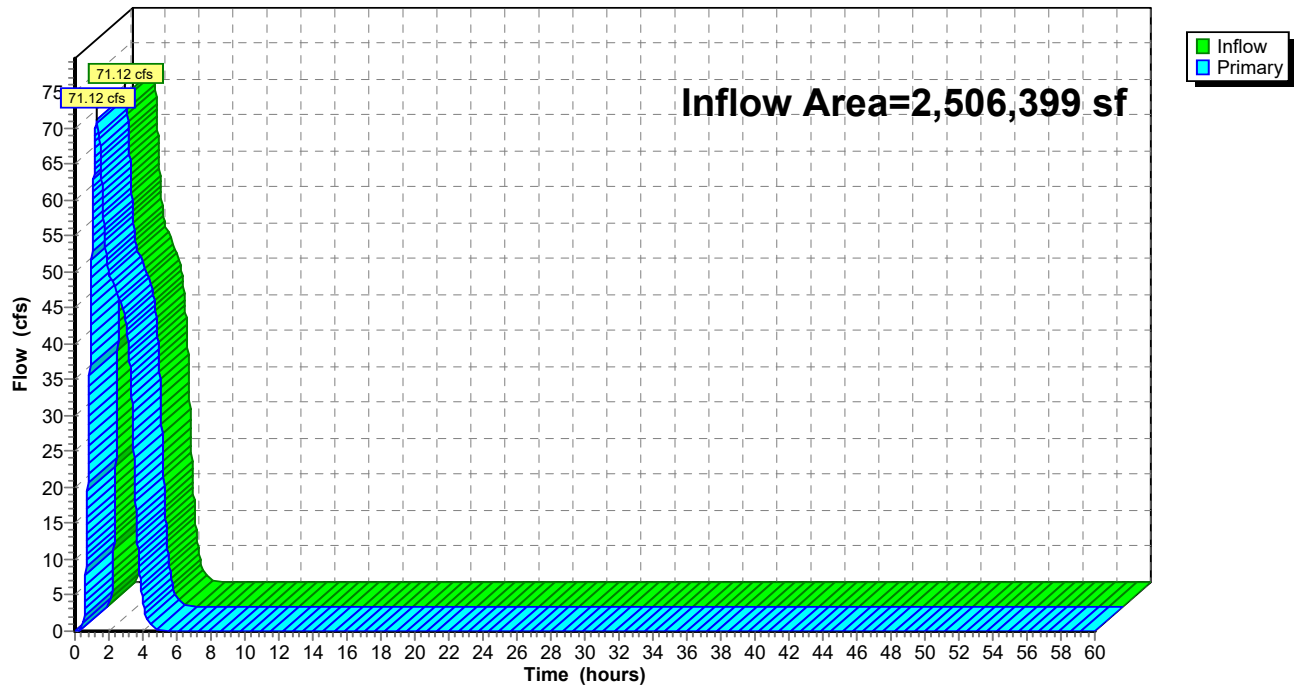
Hydrograph



**Summary for Link 16L: Total Pre**

Inflow Area = 2,506,399 sf, 4.36% Impervious, Inflow Depth = 2.47" for 100-yr3HR event  
Inflow = 71.12 cfs @ 1.33 hrs, Volume= 516,728 cf  
Primary = 71.12 cfs @ 1.33 hrs, Volume= 516,728 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

**Link 16L: Total Pre****Hydrograph**

**Summary for Subcatchment 6S: Ex. North Lot**

Runoff = 31.02 cfs @ 1.25 hrs, Volume= 189,366 cf, Depth= 2.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 2.00 hrs 100-yr2HR Rainfall=3.64"

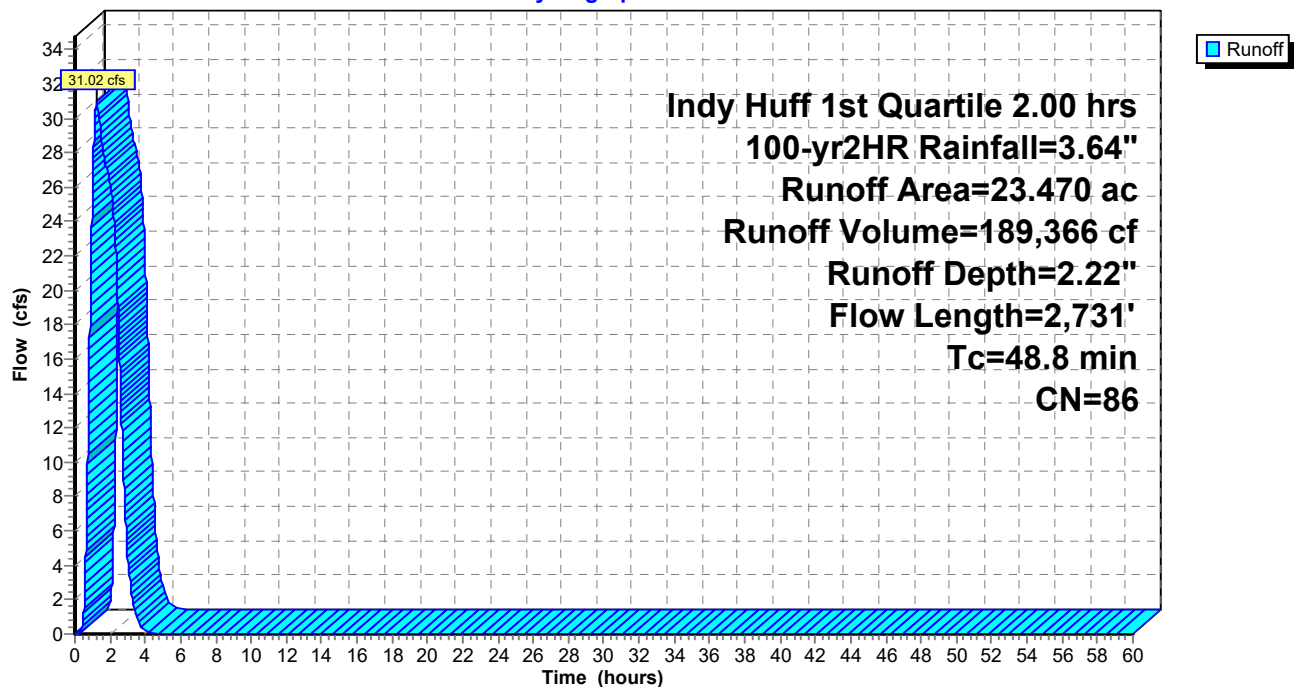
Area (ac)	CN	Description
* 2.510	98	
1.060	70	Woods, Good, HSG C
1.660	77	Woods, Good, HSG D
10.720	89	Row crops, straight row, Good, HSG D
4.540	85	Row crops, straight row, Good, HSG C
1.360	80	>75% Grass cover, Good, HSG D
1.620	74	>75% Grass cover, Good, HSG C
23.470	86	Weighted Average
20.960		89.31% Pervious Area
2.510		10.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0100	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
35.2	2,631	0.0060	1.25		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
48.8	2,731	Total			

**Subcatchment 6S: Ex. North Lot**

Hydrograph



**Summary for Subcatchment 14S: DA EX (South Lot)**

Runoff = 52.47 cfs @ 1.02 hrs, Volume= 274,884 cf, Depth= 2.22"

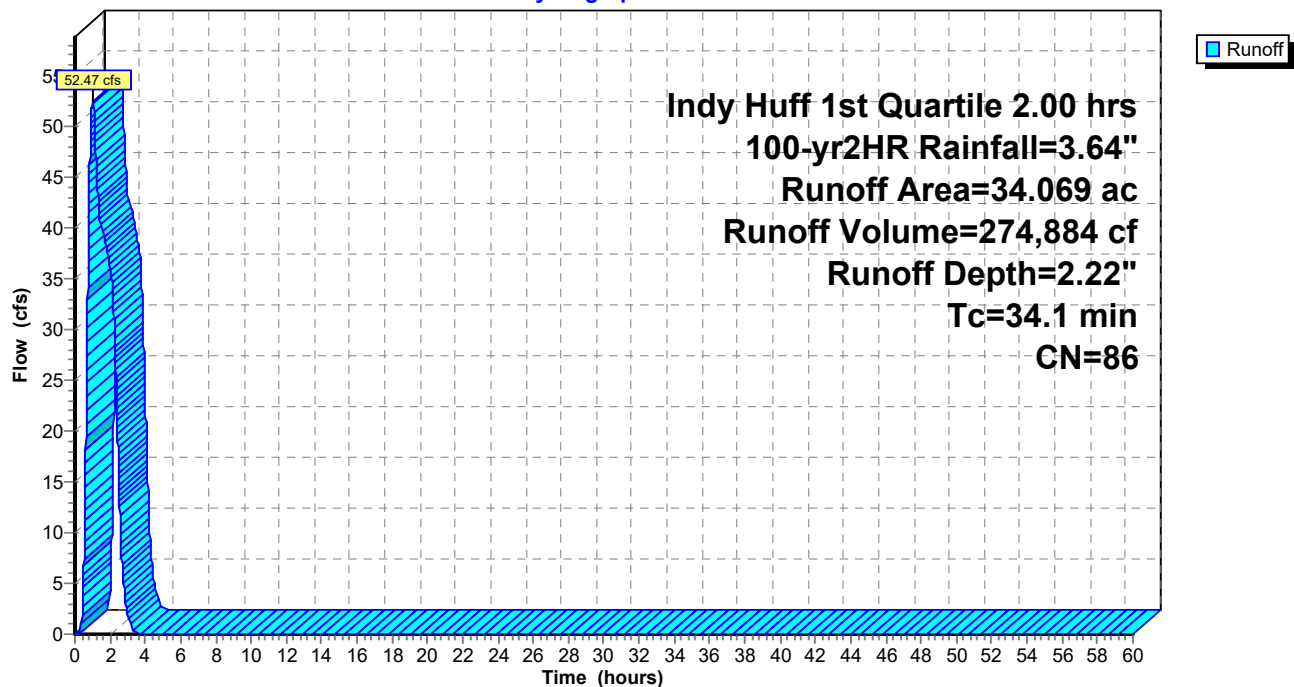
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 2.00 hrs 100-yr2HR Rainfall=3.64"

Area (ac)	CN	Description
* 34.069	86	
34.069		100.00% Pervious Area

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

**Subcatchment 14S: DA EX (South Lot)**

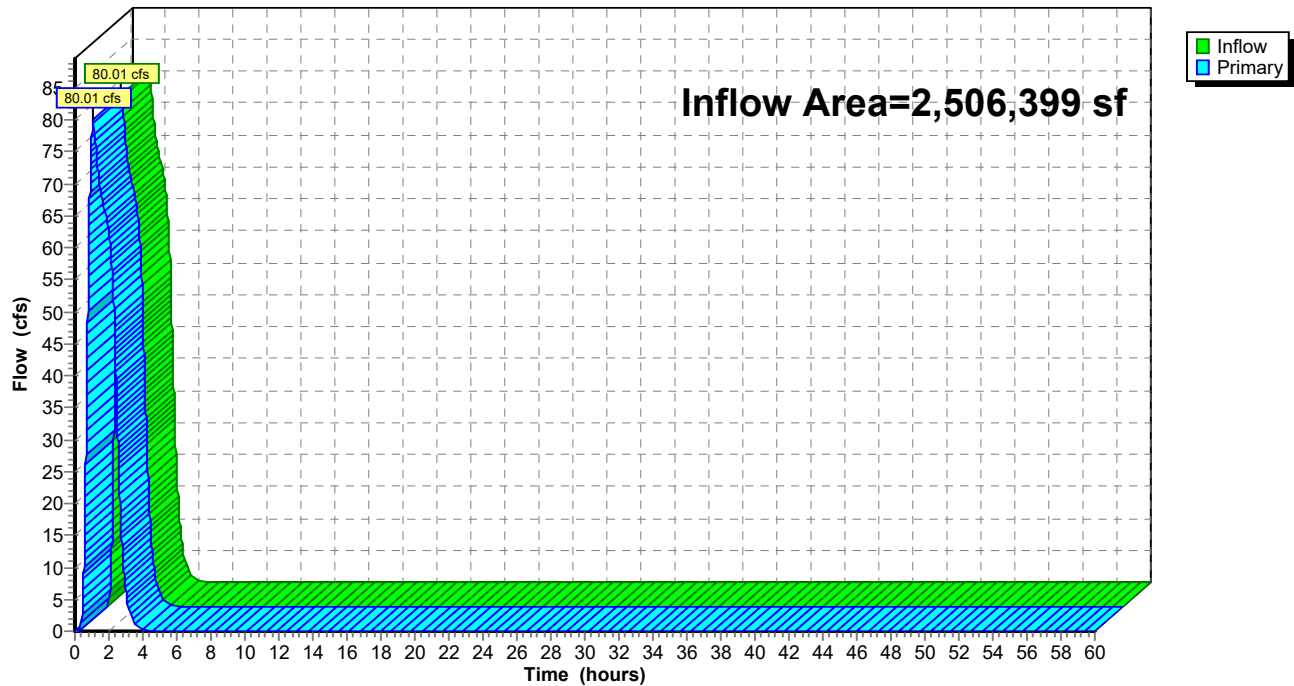
Hydrograph



**Summary for Link 16L: Total Pre**

Inflow Area = 2,506,399 sf, 4.36% Impervious, Inflow Depth = 2.22" for 100-yr2HR event  
Inflow = 80.01 cfs @ 1.09 hrs, Volume= 464,250 cf  
Primary = 80.01 cfs @ 1.09 hrs, Volume= 464,250 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

**Link 16L: Total Pre****Hydrograph**



**Summary for Subcatchment 6S: Ex. North Lot**

Runoff = 36.89 cfs @ 1.14 hrs, Volume= 141,637 cf, Depth= 1.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 1.00 hrs 100-yr1HR Rainfall=3.00"

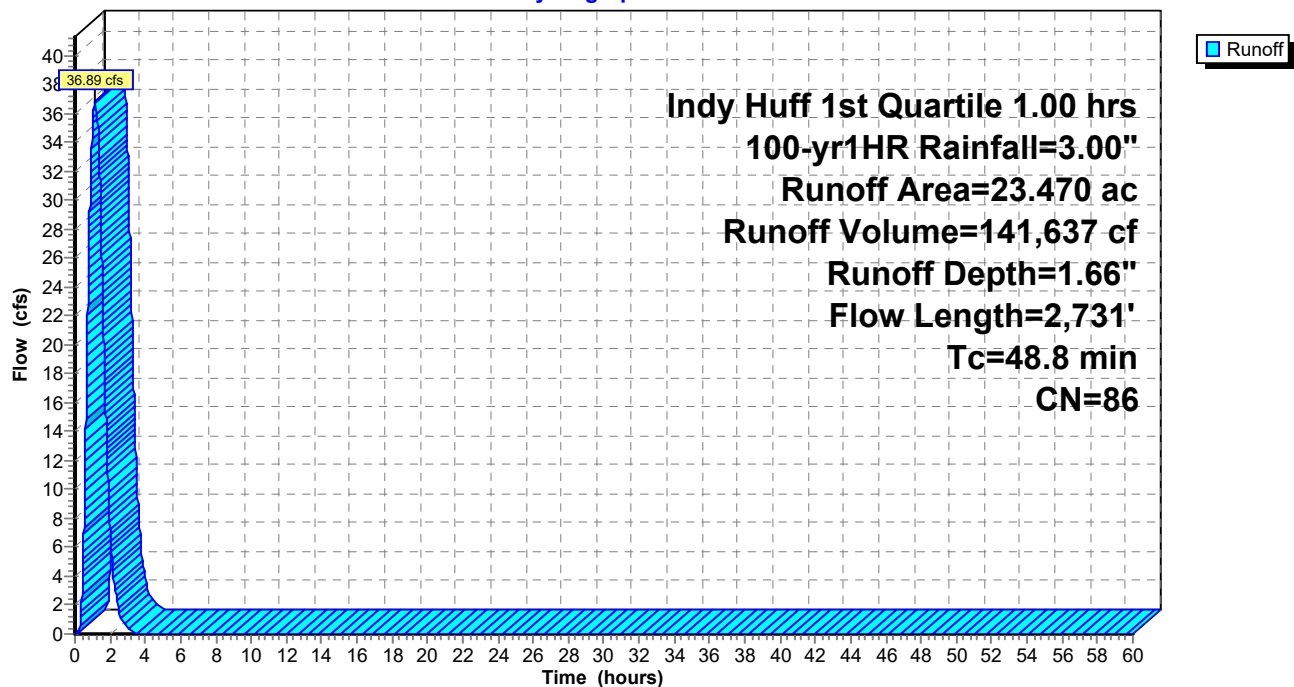
Area (ac)	CN	Description
* 2.510	98	
1.060	70	Woods, Good, HSG C
1.660	77	Woods, Good, HSG D
10.720	89	Row crops, straight row, Good, HSG D
4.540	85	Row crops, straight row, Good, HSG C
1.360	80	>75% Grass cover, Good, HSG D
1.620	74	>75% Grass cover, Good, HSG C
23.470	86	Weighted Average
20.960		89.31% Pervious Area
2.510		10.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0100	0.12		<b>Sheet Flow,</b>
					Grass: Short n= 0.150 P2= 2.91"
35.2	2,631	0.0060	1.25		<b>Shallow Concentrated Flow,</b>
					Unpaved Kv= 16.1 fps
48.8	2,731	Total			

**Subcatchment 6S: Ex. North Lot**

Hydrograph



**Summary for Subcatchment 14S: DA EX (South Lot)**

Runoff = 58.85 cfs @ 0.87 hrs, Volume= 205,599 cf, Depth= 1.66"

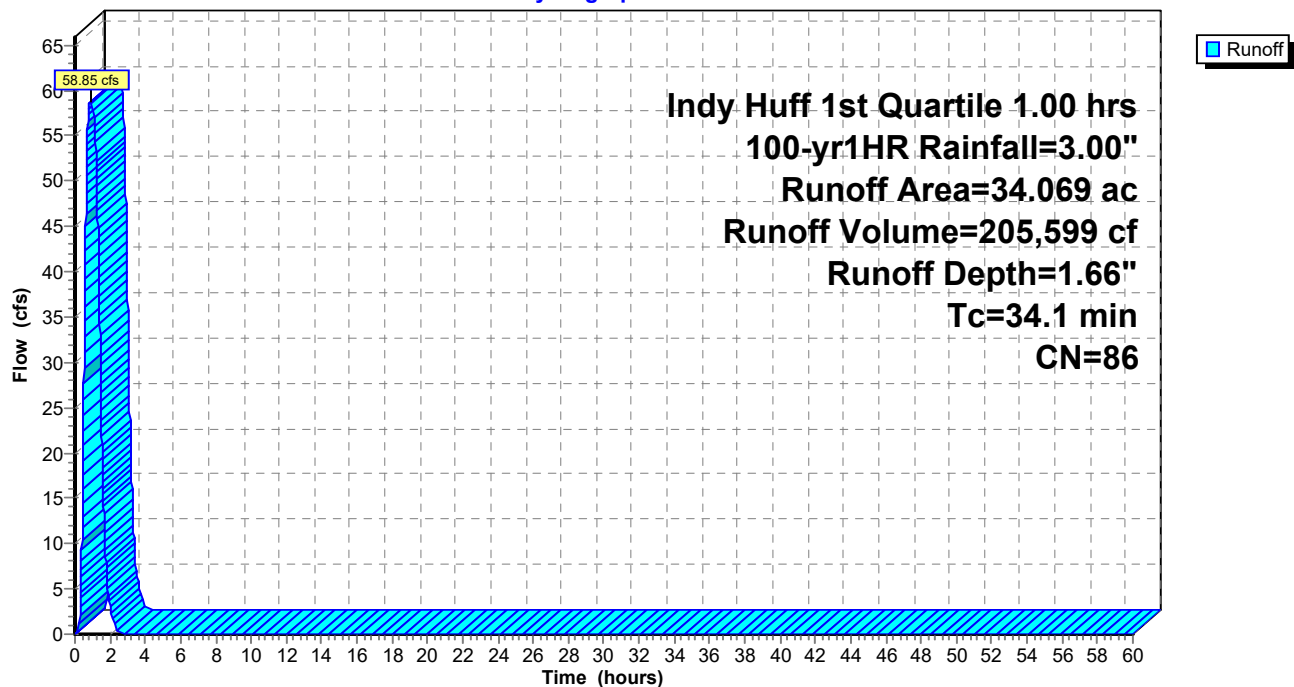
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 1.00 hrs 100-yr1HR Rainfall=3.00"

Area (ac)	CN	Description
* 34.069	86	
34.069		100.00% Pervious Area

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

**Subcatchment 14S: DA EX (South Lot)**

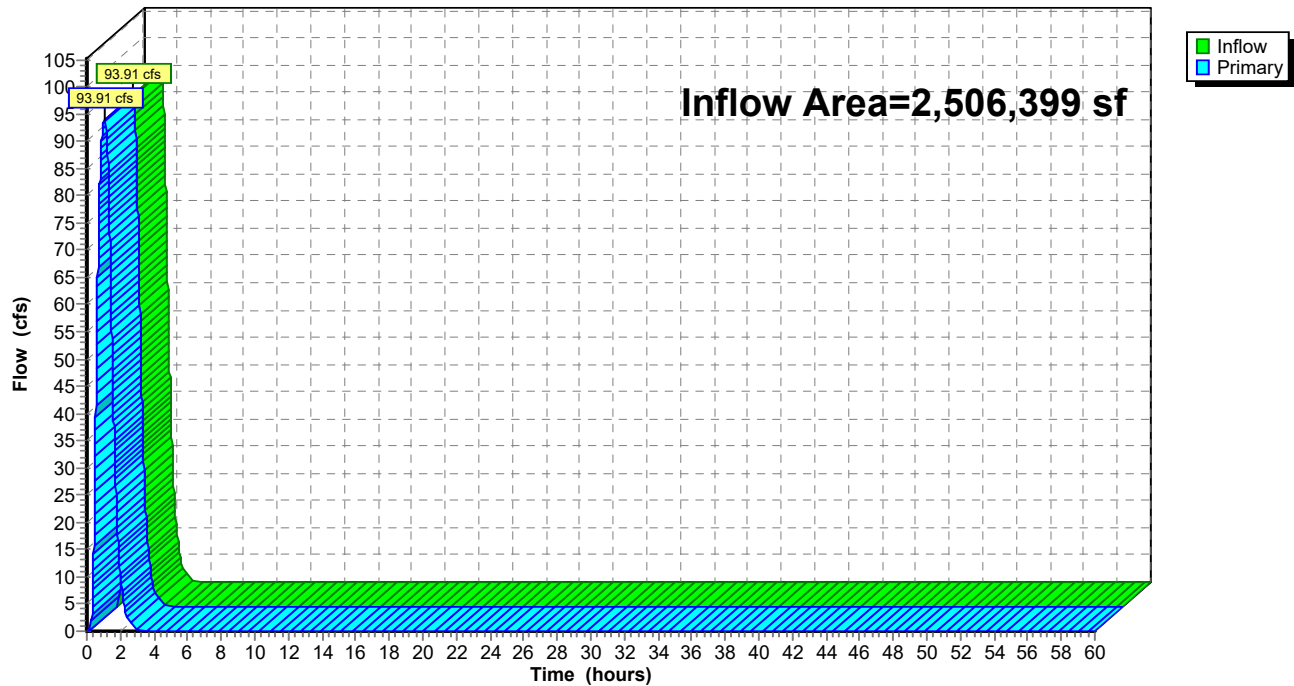
Hydrograph



**Summary for Link 16L: Total Pre**

Inflow Area = 2,506,399 sf, 4.36% Impervious, Inflow Depth = 1.66" for 100-yr1HR event  
Inflow = 93.91 cfs @ 1.08 hrs, Volume= 347,236 cf  
Primary = 93.91 cfs @ 1.08 hrs, Volume= 347,236 cf, Atten= 0%, Lag= 0.0 min

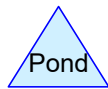
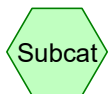
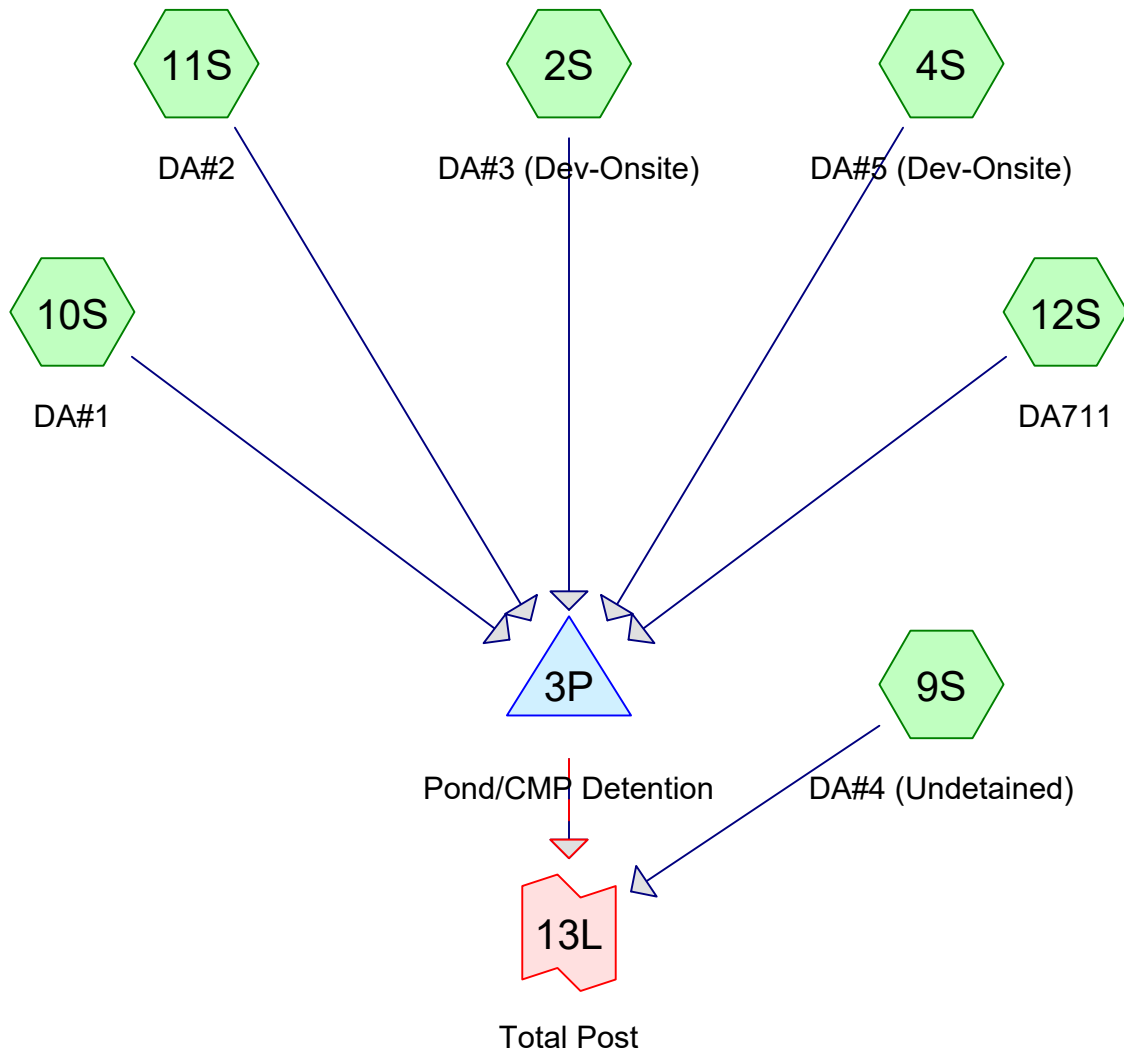
Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

**Link 16L: Total Pre****Hydrograph**



## **Appendix H**





#### Routing Diagram for 2100696 MQJ9

Prepared by {enter your company name here}, Printed 9/7/2021  
HydroCAD® 10.00-26 s/n 01334 © 2020 HydroCAD Software Solutions LLC

**Summary for Subcatchment 2S: DA#3 (Dev-Onsite)**

Runoff = 19.25 cfs @ 0.28 hrs, Volume= 33,522 cf, Depth= 1.17"

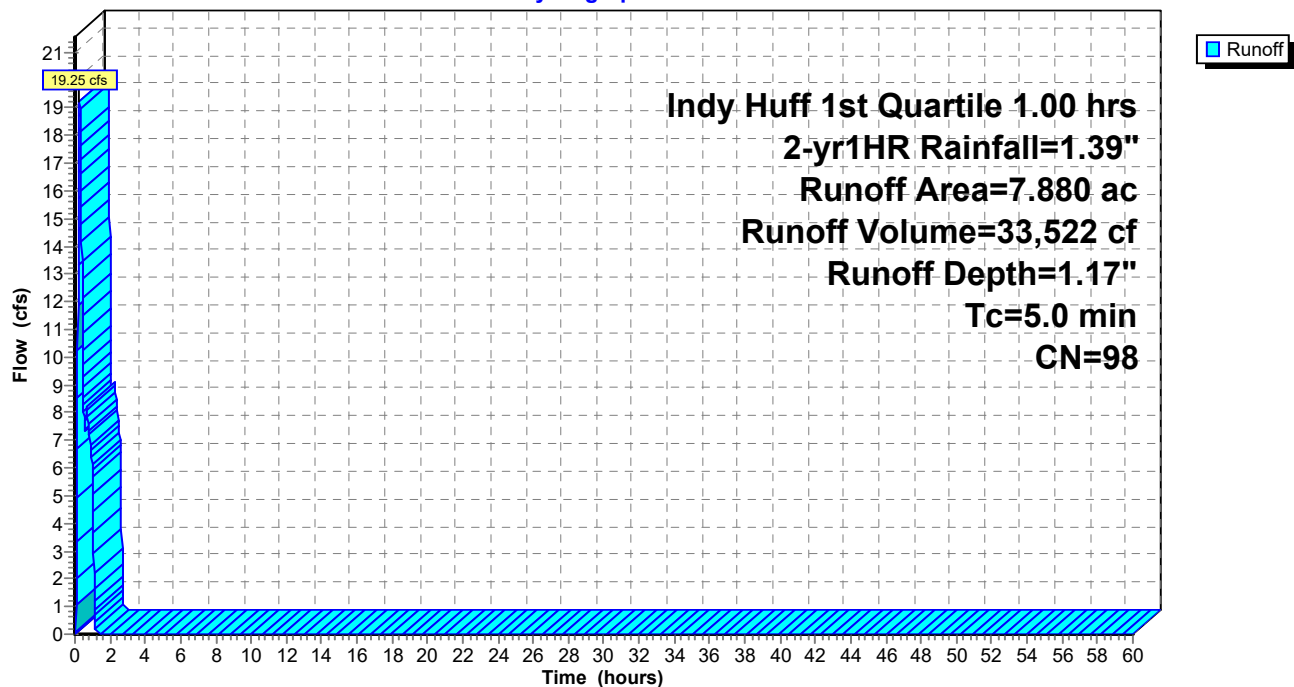
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 1.00 hrs 2-yr1HR Rainfall=1.39"

Area (ac)	CN	Description
* 7.880	98	
7.880		100.00% Impervious Area

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

**Subcatchment 2S: DA#3 (Dev-Onsite)**

Hydrograph





**Summary for Subcatchment 4S: DA#5 (Dev-Onsite)**

Runoff = 69.10 cfs @ 0.29 hrs, Volume= 123,534 cf, Depth= 1.08"

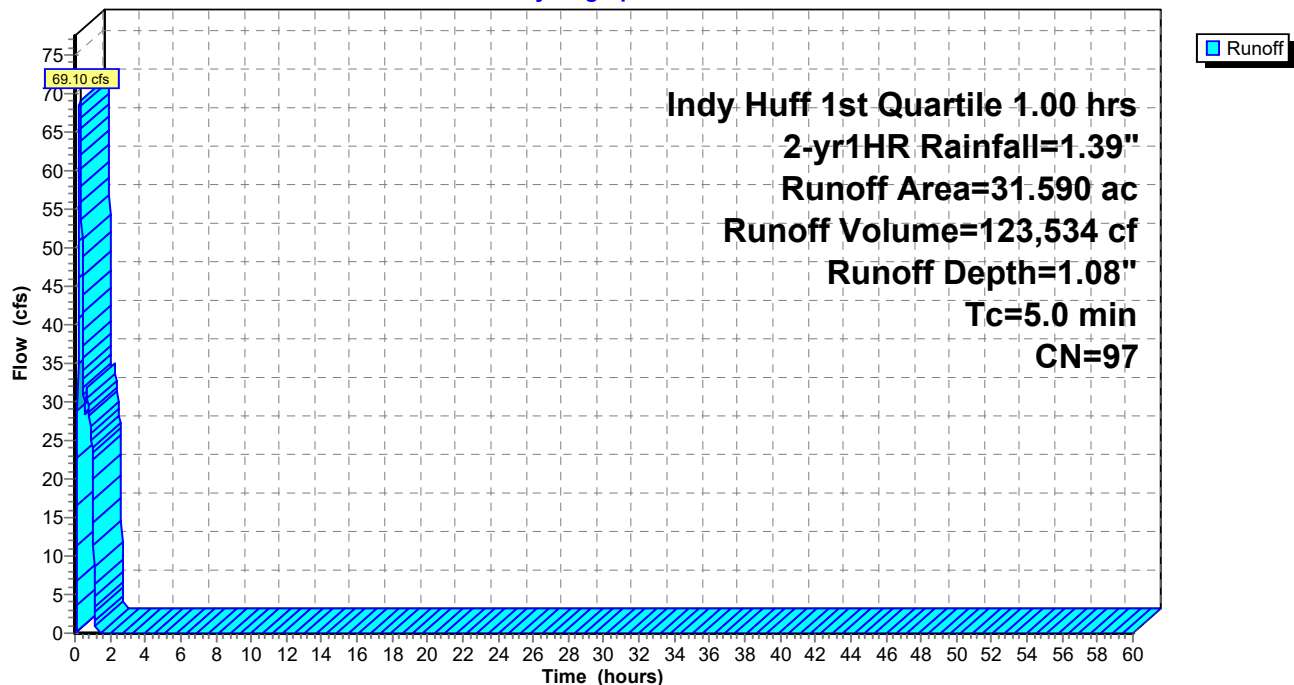
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 1.00 hrs 2-yr1HR Rainfall=1.39"

Area (ac)	CN	Description
* 29.300	98	
0.510	74	>75% Grass cover, Good, HSG C
1.780	80	>75% Grass cover, Good, HSG D
31.590	97	Weighted Average
2.290		7.25% Pervious Area
29.300		92.75% Impervious Area

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

**Subcatchment 4S: DA#5 (Dev-Onsite)**

Hydrograph



**Summary for Subcatchment 9S: DA#4 (Undetained)**

Runoff = 2.38 cfs @ 0.92 hrs, Volume= 6,152 cf, Depth= 0.32"

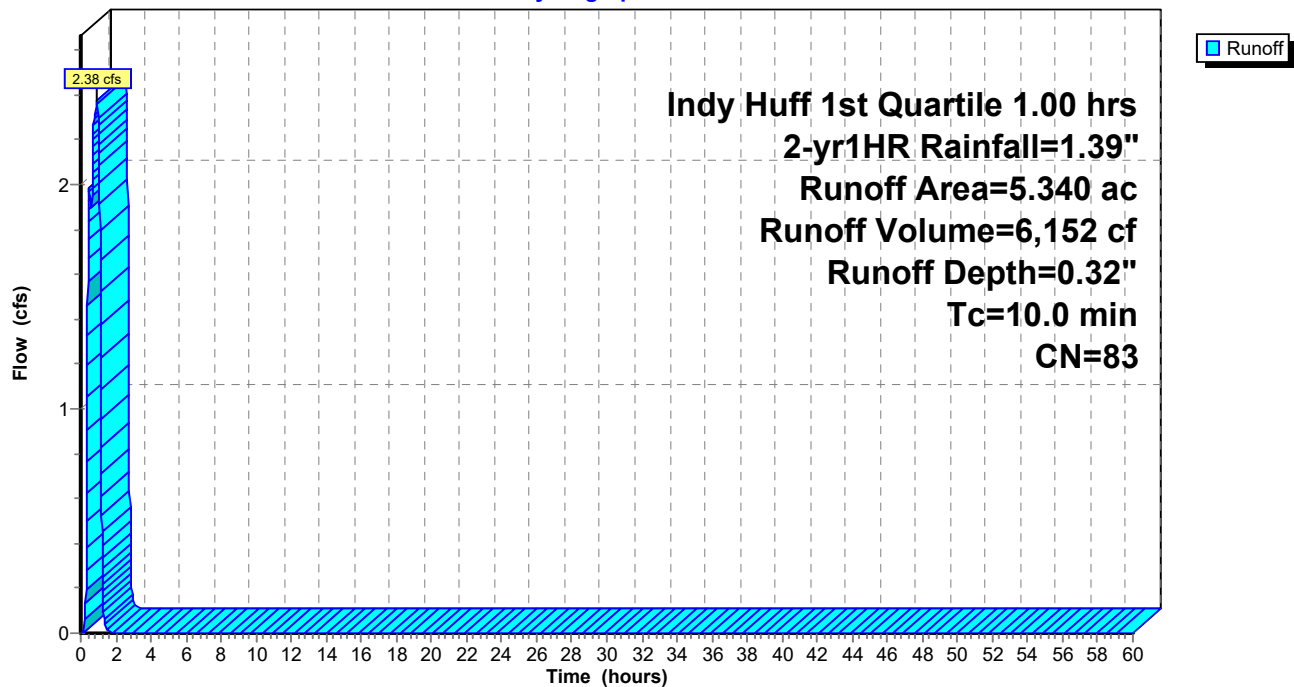
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 1.00 hrs 2-yr1HR Rainfall=1.39"

Area (ac)	CN	Description
* 1.130	98	
0.350	74	>75% Grass cover, Good, HSG C
3.860	80	>75% Grass cover, Good, HSG D
5.340	83	Weighted Average
4.210		78.84% Pervious Area
1.130		21.16% Impervious Area

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

**Subcatchment 9S: DA#4 (Undetained)**

Hydrograph



**Summary for Subcatchment 10S: DA#1**

Runoff = 1.65 cfs @ 1.15 hrs, Volume= 4,359 cf, Depth= 0.19"

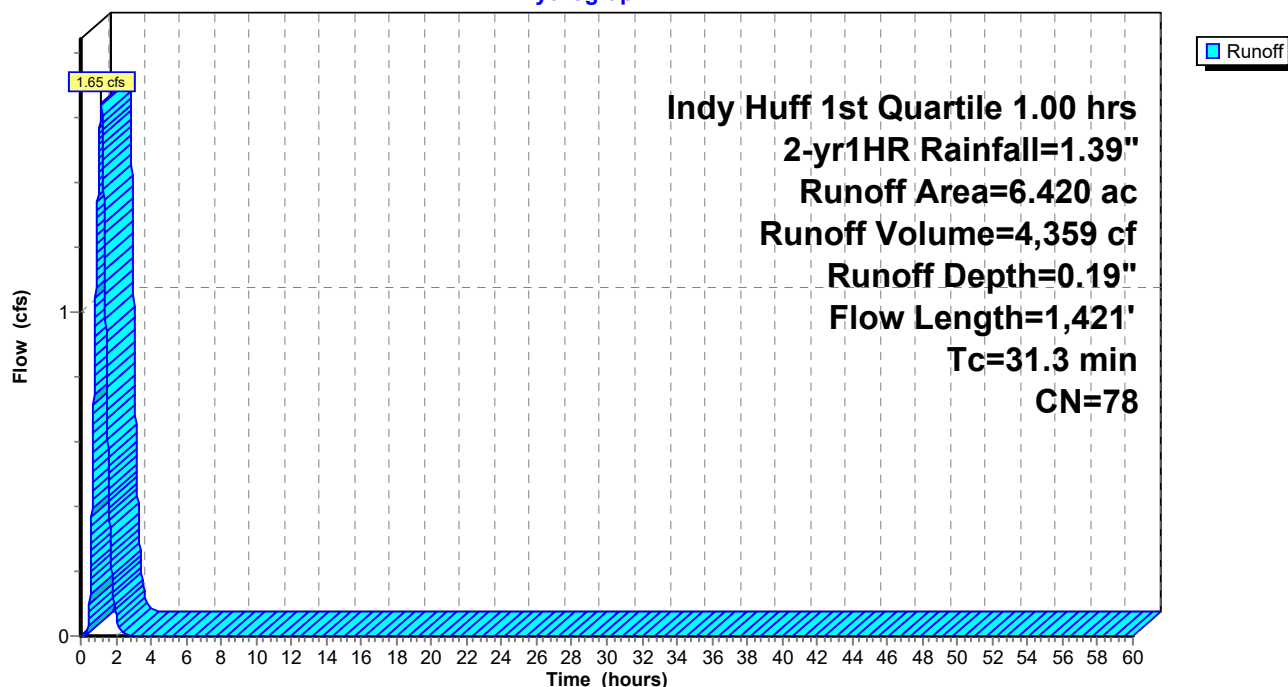
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 1.00 hrs 2-yr1HR Rainfall=1.39"

Area (ac)	CN	Description
* 0.640	98	
0.890	70	Woods, Good, HSG C
1.630	77	Woods, Good, HSG D
0.150	89	Row crops, straight row, Good, HSG D
0.130	85	Row crops, straight row, Good, HSG C
1.360	80	>75% Grass cover, Good, HSG D
1.620	74	>75% Grass cover, Good, HSG C
6.420	78	Weighted Average
5.780		90.03% Pervious Area
0.640		9.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0100	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
17.7	1,321	0.0060	1.25		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
31.3	1,421	Total			

**Subcatchment 10S: DA#1**

Hydrograph



**Summary for Subcatchment 11S: DA#2**

Runoff = 3.73 cfs @ 0.45 hrs, Volume= 9,900 cf, Depth= 0.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 1.00 hrs 2-yr1HR Rainfall=1.39"

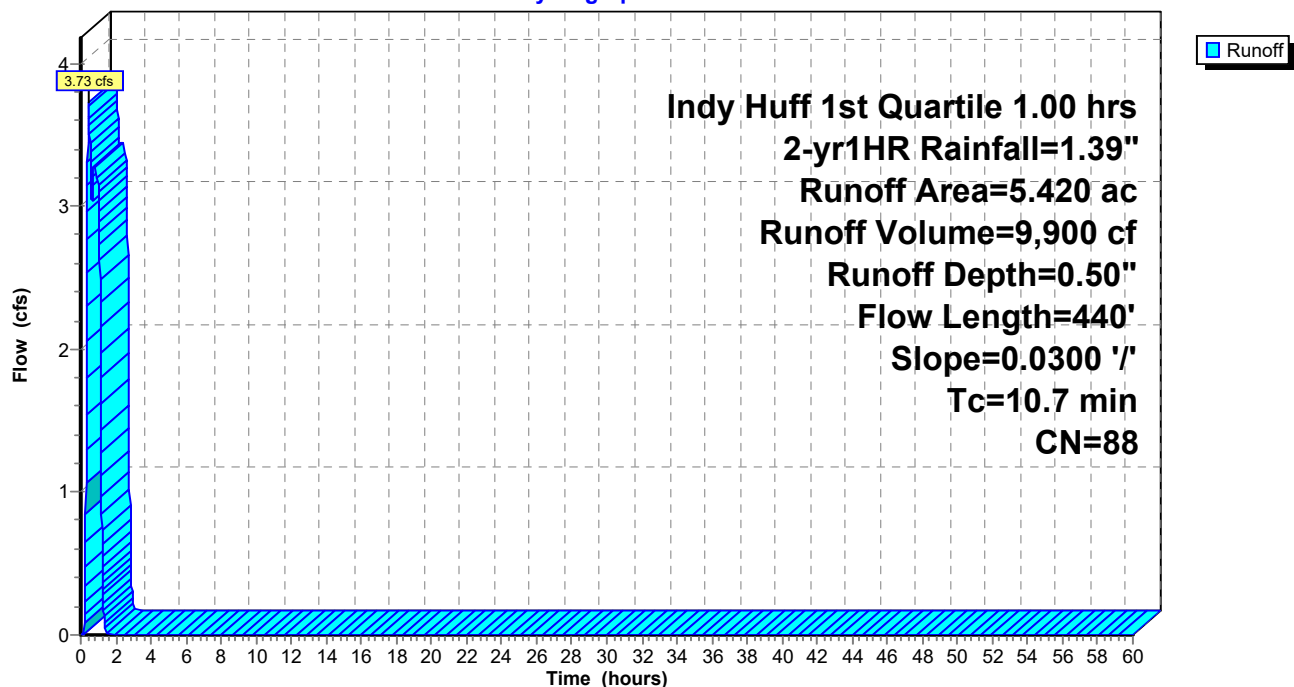
Area (ac)	CN	Description
* 2.710	98	
0.170	70	Woods, Good, HSG C
0.010	77	Woods, Good, HSG D
1.680	80	>75% Grass cover, Good, HSG D
0.850	74	>75% Grass cover, Good, HSG C
5.420	88	Weighted Average
2.710		50.00% Pervious Area
2.710		50.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.0300	0.19		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
2.0	340	0.0300	2.79		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
10.7	440	Total			

**Subcatchment 11S: DA#2**

Hydrograph



**Summary for Subcatchment 12S: DA711**

Runoff = 0.20 cfs @ 1.48 hrs, Volume= 694 cf, Depth= 0.11"

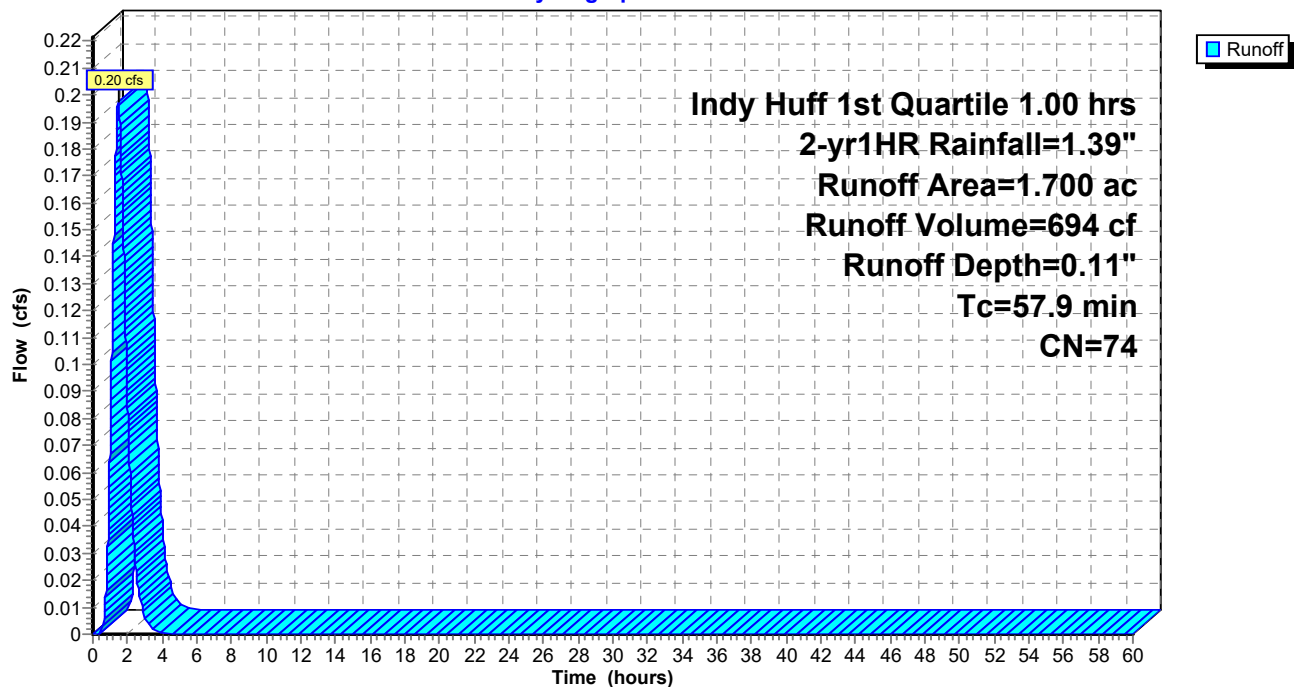
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 1.00 hrs 2-yr1HR Rainfall=1.39"

Area (ac)	CN	Description
* 1.700	74	
1.700		100.00% Pervious Area

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

**Subcatchment 12S: DA711**

Hydrograph



**Summary for Pond 3P: Pond/CMP Detention**

[44] Hint: Outlet device #2 is below defined storage

Inflow Area = 2,309,116 sf, 76.46% Impervious, Inflow Depth = 0.89" for 2-yr1HR event  
 Inflow = 89.25 cfs @ 0.29 hrs, Volume= 172,009 cf  
 Outflow = 11.15 cfs @ 1.09 hrs, Volume= 172,009 cf, Atten= 88%, Lag= 48.4 min  
 Primary = 11.15 cfs @ 1.09 hrs, Volume= 172,009 cf  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
 Peak Elev= 729.30' @ 1.09 hrs Surf.Area= 111,409 sf Storage= 150,492 cf

Plug-Flow detention time= 796.2 min calculated for 171,980 cf (100% of inflow)  
 Center-of-Mass det. time= 796.6 min ( 830.2 - 33.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	727.40'	87,965 cf	<b>48.0" Round Pipe Storage</b> x 10 L= 700.0' S= 0.0010 '/'
#2	727.80'	586,912 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		674,876 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.80	74,675	0	0
728.00	75,945	15,062	15,062
729.00	82,354	79,150	94,212
730.00	88,864	85,609	179,821
731.00	95,474	92,169	271,990
732.00	102,185	98,830	370,819
733.00	110,000	106,093	476,912
734.00	110,000	110,000	586,912

Device	Routing	Invert	Outlet Devices
#1	Primary	727.37'	<b>24.0" Round POI A</b> L= 75.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 727.37' / 727.14' S= 0.0031 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 3.14 sf
#2	Device 1	727.37'	<b>4.6" Vert. Orifice/Grate</b> C= 0.600
#3	Device 1	728.54'	<b>6.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)
#4	Secondary	730.21'	<b>24.0" Round POI B</b> L= 27.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 730.21' / 730.00' S= 0.0078 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 3.14 sf

**Primary OutFlow** Max=11.15 cfs @ 1.09 hrs HW=729.30' (Free Discharge)

1=POI A (Barrel Controls 11.15 cfs @ 4.59 fps)

2=Orifice/Grate (Passes < 0.73 cfs potential flow)

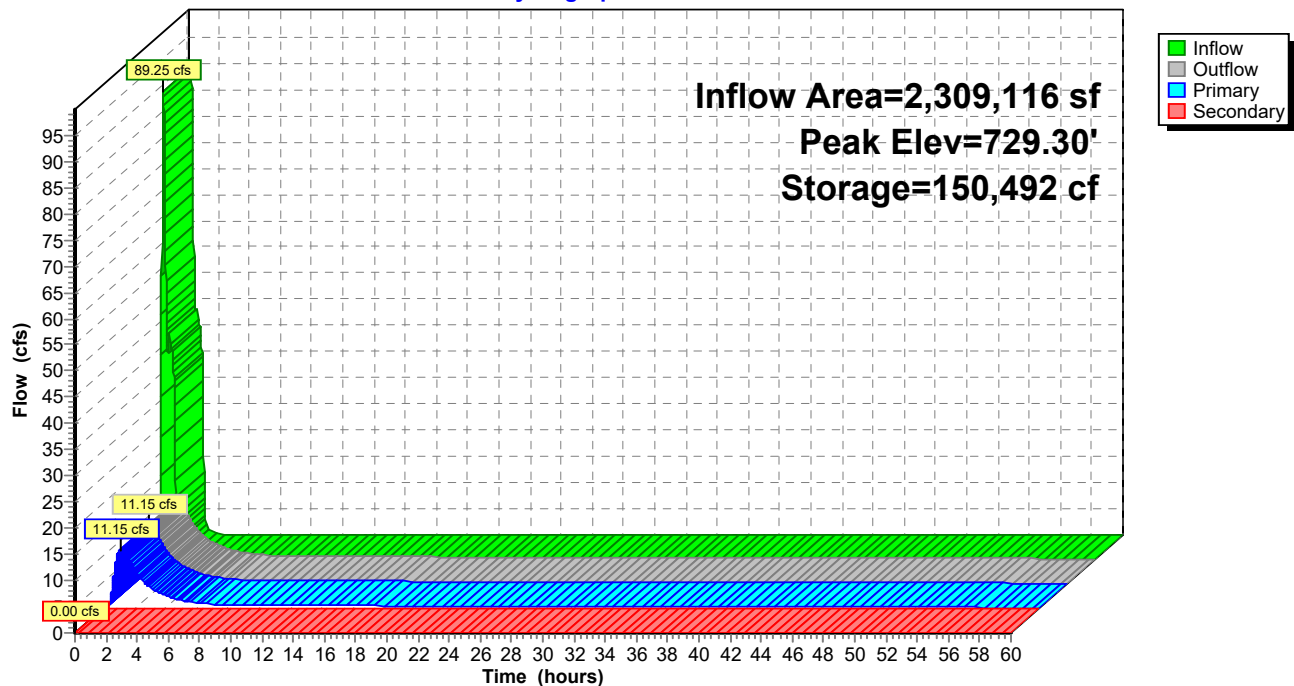
3=Sharp-Crested Rectangular Weir (Passes < 12.61 cfs potential flow)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=727.40' (Free Discharge)

4=POI B ( Controls 0.00 cfs)

### Pond 3P: Pond/CMP Detention

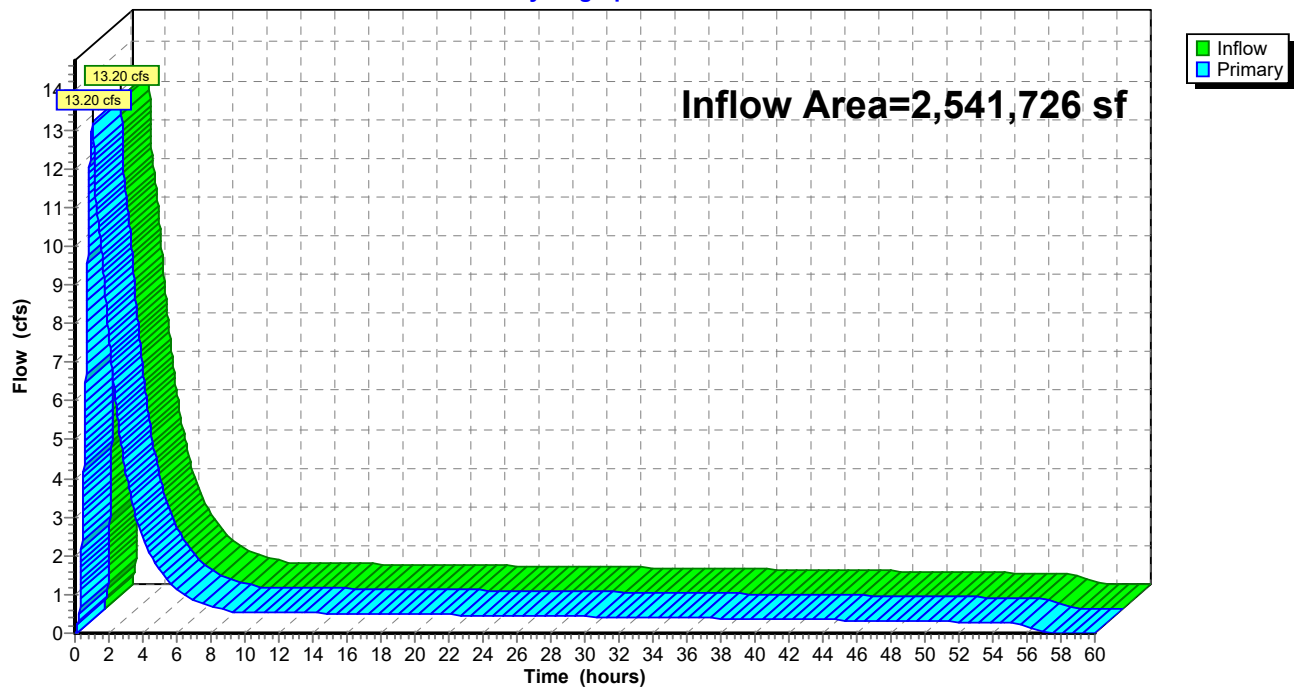
#### Hydrograph



**Summary for Link 13L: Total Post**

Inflow Area = 2,541,726 sf, 71.40% Impervious, Inflow Depth = 0.84" for 2-yr1HR event  
Inflow = 13.20 cfs @ 1.05 hrs, Volume= 178,160 cf  
Primary = 13.20 cfs @ 1.05 hrs, Volume= 178,160 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

**Link 13L: Total Post****Hydrograph**



**Summary for Subcatchment 2S: DA#3 (Dev-Onsite)**

Runoff = 12.11 cfs @ 0.47 hrs, Volume= 40,002 cf, Depth= 1.40"

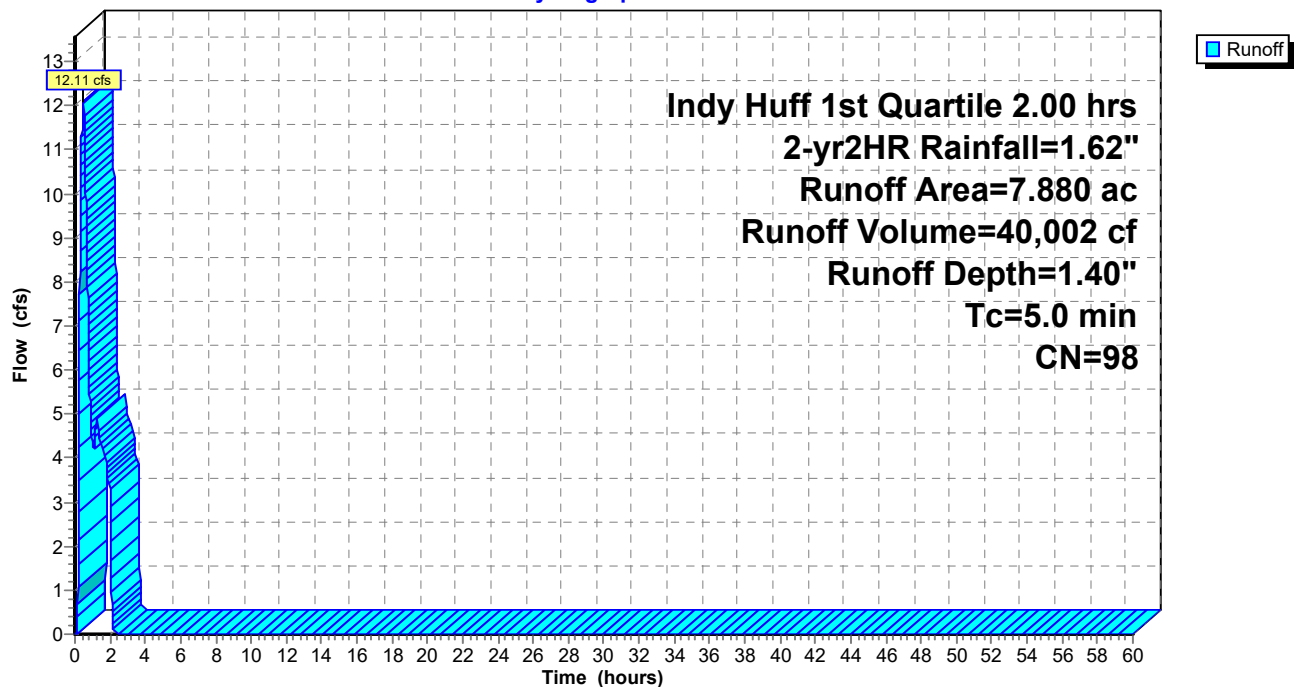
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 2.00 hrs 2-yr2HR Rainfall=1.62"

Area (ac)	CN	Description
* 7.880	98	
7.880		100.00% Impervious Area

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

**Subcatchment 2S: DA#3 (Dev-Onsite)**

Hydrograph



**Summary for Subcatchment 4S: DA#5 (Dev-Onsite)**

Runoff = 44.33 cfs @ 0.48 hrs, Volume= 149,083 cf, Depth= 1.30"

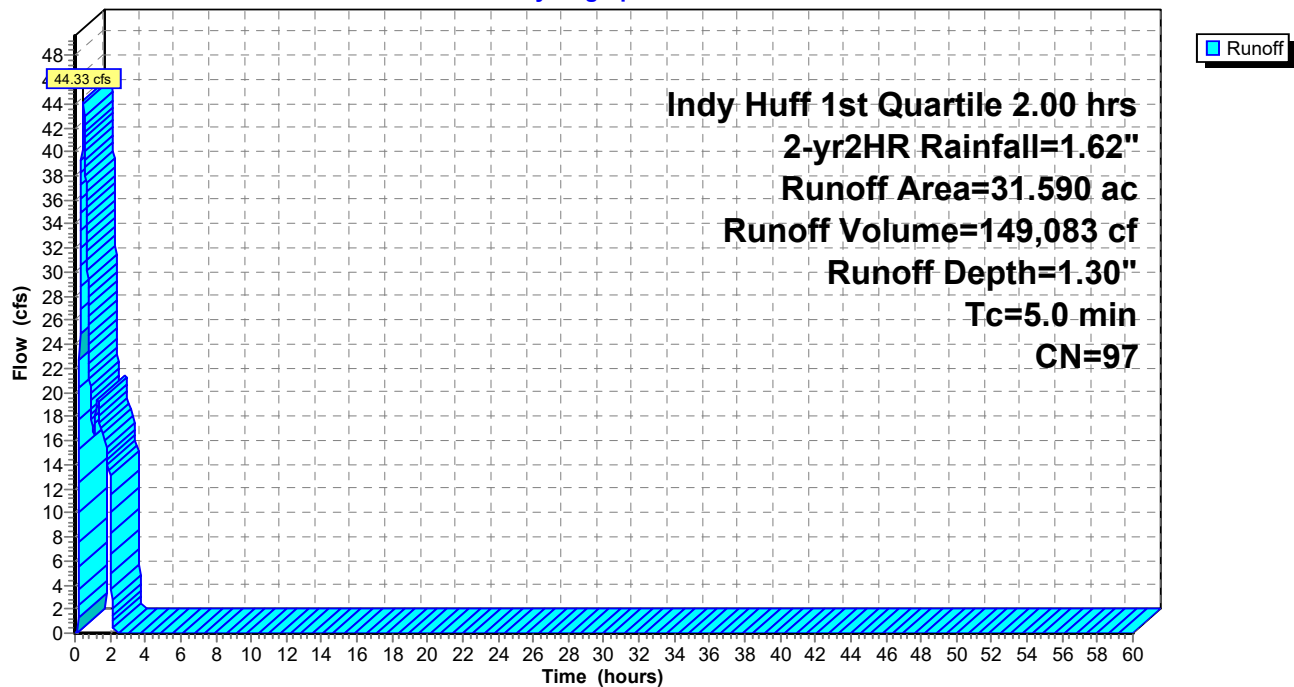
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 2.00 hrs 2-yr2HR Rainfall=1.62"

Area (ac)	CN	Description
* 29.300	98	
0.510	74	>75% Grass cover, Good, HSG C
1.780	80	>75% Grass cover, Good, HSG D
31.590	97	Weighted Average
2.290		7.25% Pervious Area
29.300		92.75% Impervious Area

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

**Subcatchment 4S: DA#5 (Dev-Onsite)**

Hydrograph



**Summary for Subcatchment 9S: DA#4 (Undetained)**

Runoff = 1.74 cfs @ 0.77 hrs, Volume= 8,715 cf, Depth= 0.45"

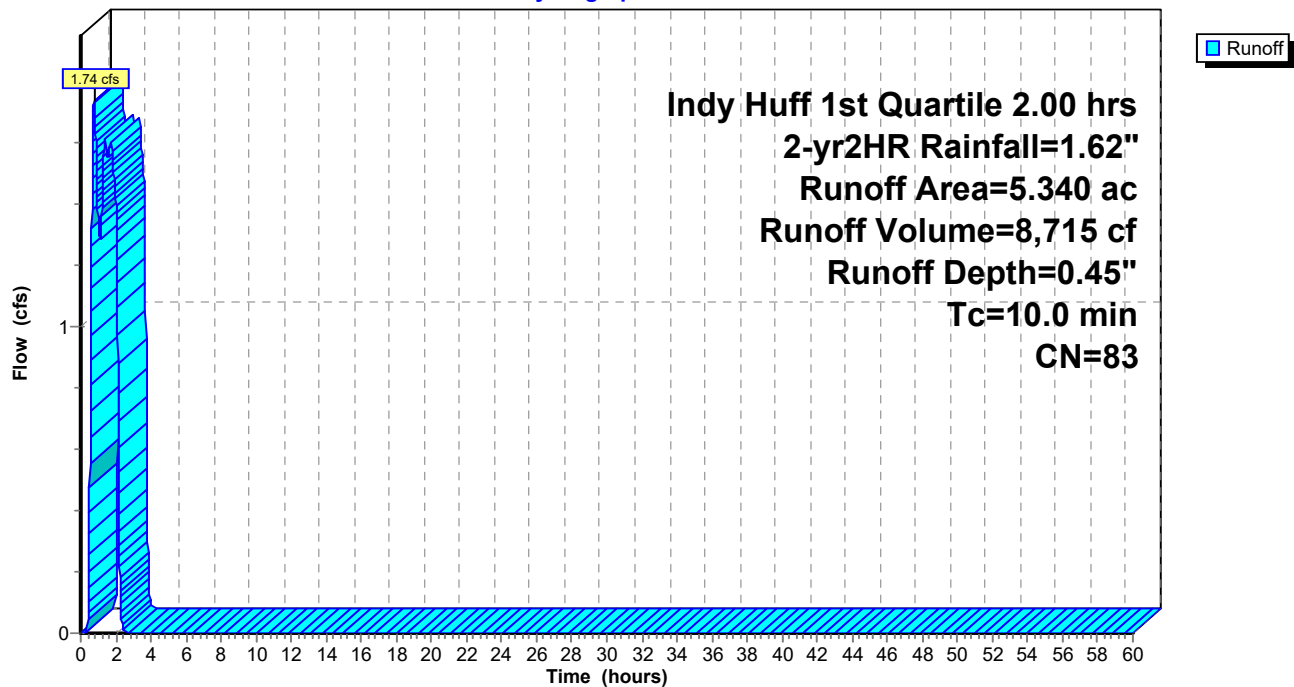
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 2.00 hrs 2-yr2HR Rainfall=1.62"

Area (ac)	CN	Description
* 1.130	98	
0.350	74	>75% Grass cover, Good, HSG C
3.860	80	>75% Grass cover, Good, HSG D
5.340	83	Weighted Average
4.210		78.84% Pervious Area
1.130		21.16% Impervious Area

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

**Subcatchment 9S: DA#4 (Undetained)**

Hydrograph



**Summary for Subcatchment 10S: DA#1**

Runoff = 1.37 cfs @ 1.98 hrs, Volume= 6,703 cf, Depth= 0.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 2.00 hrs 2-yr2HR Rainfall=1.62"

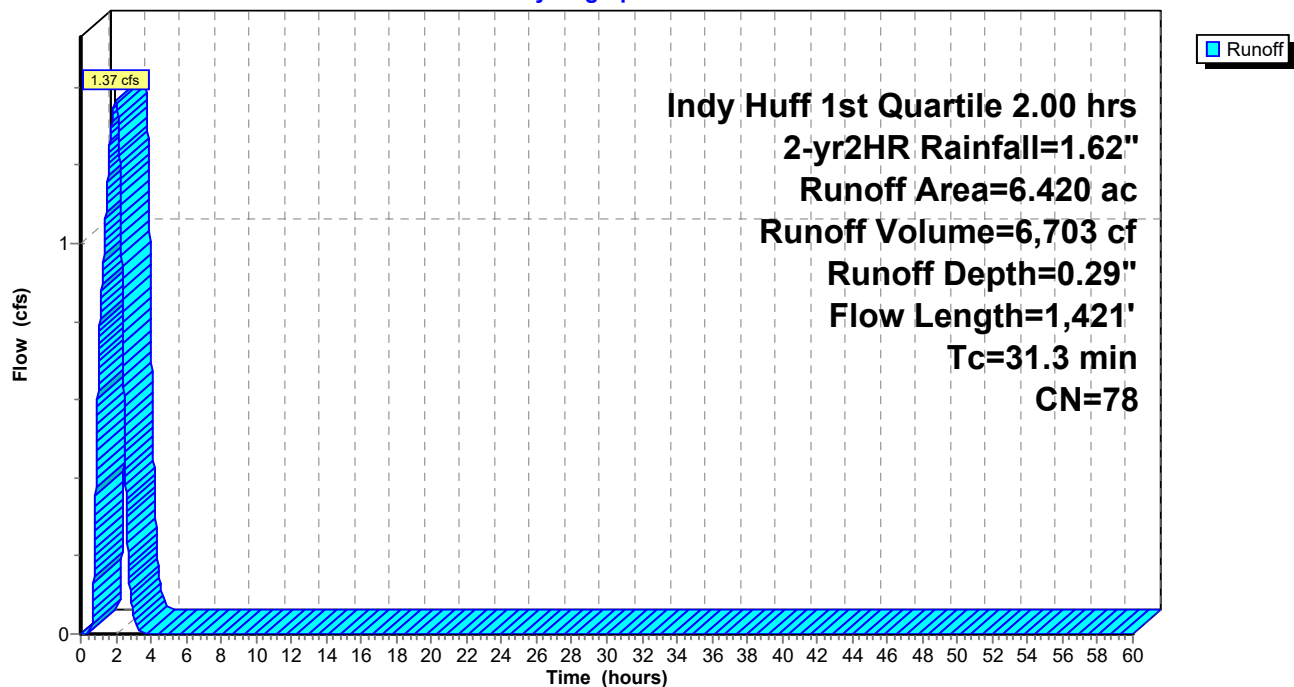
Area (ac)	CN	Description
* 0.640	98	
0.890	70	Woods, Good, HSG C
1.630	77	Woods, Good, HSG D
0.150	89	Row crops, straight row, Good, HSG D
0.130	85	Row crops, straight row, Good, HSG C
1.360	80	>75% Grass cover, Good, HSG D
1.620	74	>75% Grass cover, Good, HSG C
6.420	78	Weighted Average
5.780		90.03% Pervious Area
0.640		9.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0100	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
17.7	1,321	0.0060	1.25		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
31.3	1,421	Total			

**Subcatchment 10S: DA#1**

Hydrograph



**Summary for Subcatchment 11S: DA#2**

Runoff = 2.98 cfs @ 0.72 hrs, Volume= 13,174 cf, Depth= 0.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 2.00 hrs 2-yr2HR Rainfall=1.62"

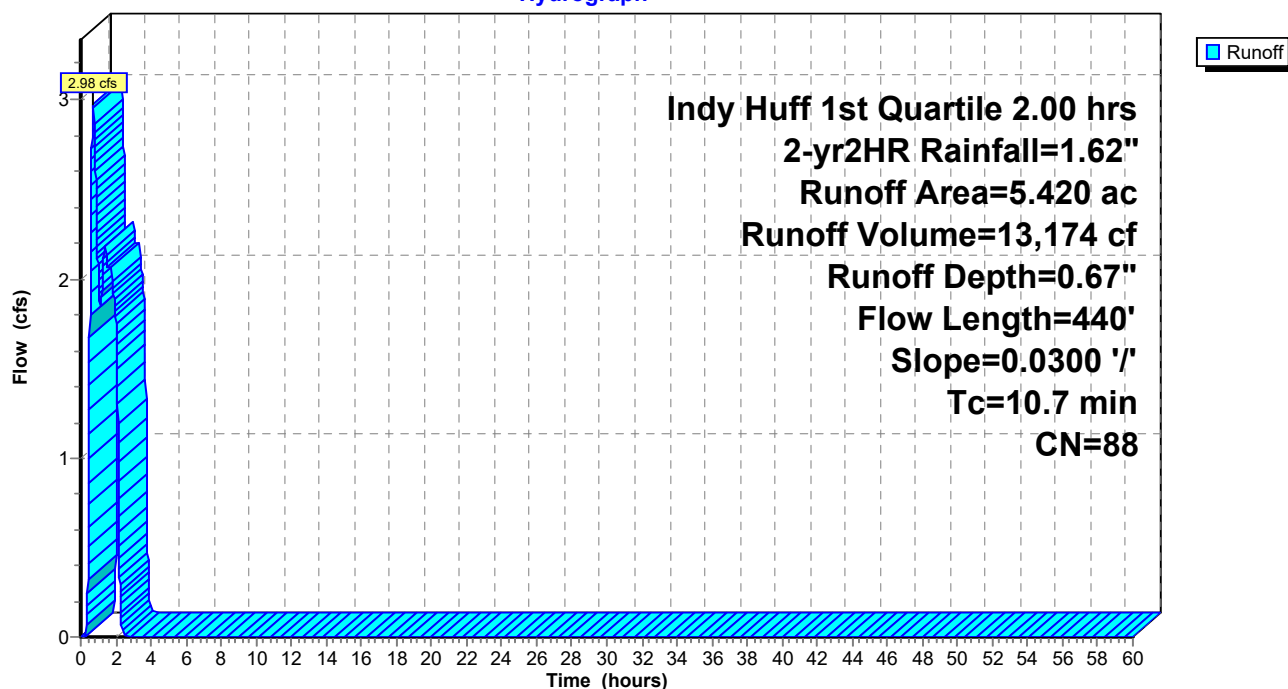
Area (ac)	CN	Description
* 2.710	98	
0.170	70	Woods, Good, HSG C
0.010	77	Woods, Good, HSG D
1.680	80	>75% Grass cover, Good, HSG D
0.850	74	>75% Grass cover, Good, HSG C
5.420	88	Weighted Average
2.710		50.00% Pervious Area
2.710		50.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.0300	0.19		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
2.0	340	0.0300	2.79		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
10.7	440	Total			

**Subcatchment 11S: DA#2**

Hydrograph



**Summary for Subcatchment 12S: DA711**

Runoff = 0.23 cfs @ 2.26 hrs, Volume= 1,172 cf, Depth= 0.19"

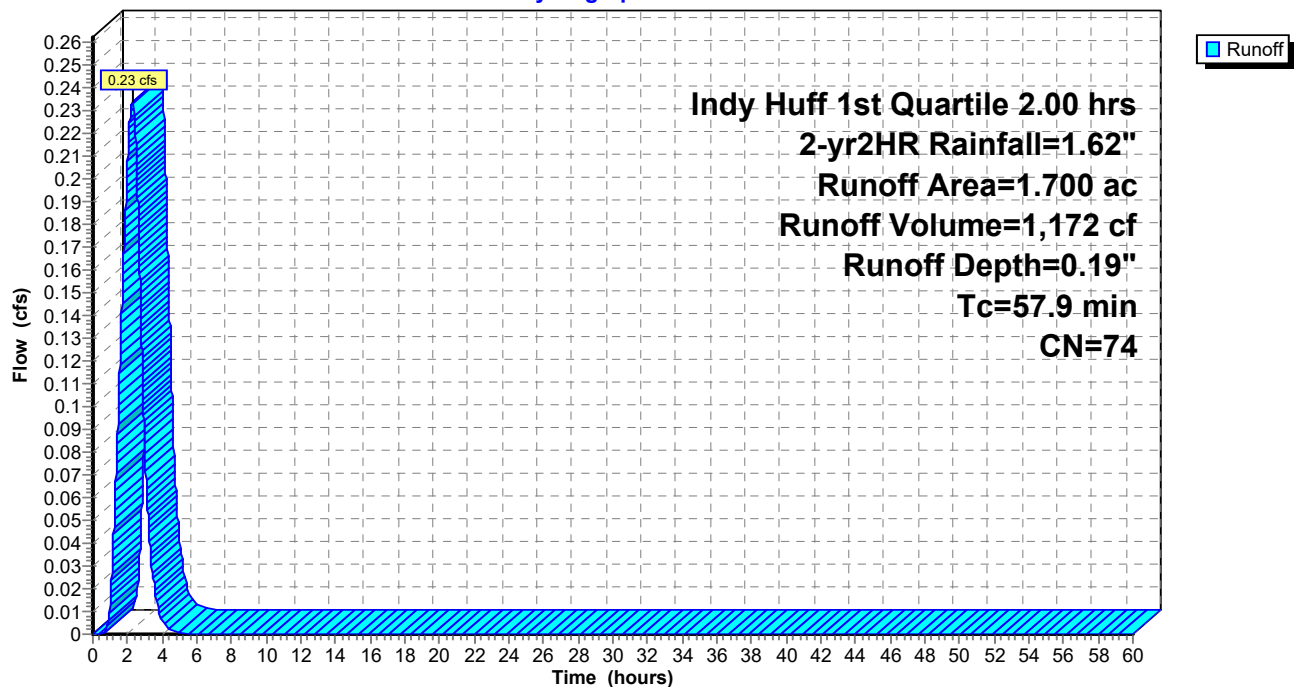
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 2.00 hrs 2-yr2HR Rainfall=1.62"

Area (ac)	CN	Description
* 1.700	74	
1.700		100.00% Pervious Area

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

**Subcatchment 12S: DA711**

Hydrograph



**Summary for Pond 3P: Pond/CMP Detention**

[44] Hint: Outlet device #2 is below defined storage

Inflow Area = 2,309,116 sf, 76.46% Impervious, Inflow Depth = 1.09" for 2-yr2HR event  
 Inflow = 57.70 cfs @ 0.49 hrs, Volume= 210,134 cf  
 Outflow = 12.09 cfs @ 2.07 hrs, Volume= 210,134 cf, Atten= 79%, Lag= 94.9 min  
 Primary = 12.09 cfs @ 2.07 hrs, Volume= 210,134 cf  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
 Peak Elev= 729.41' @ 2.07 hrs Surf.Area= 112,456 sf Storage= 162,963 cf

Plug-Flow detention time= 696.2 min calculated for 210,134 cf (100% of inflow)  
 Center-of-Mass det. time= 696.2 min ( 757.2 - 61.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	727.40'	87,965 cf	<b>48.0" Round Pipe Storage</b> x 10 L= 700.0' S= 0.0010 '/'
#2	727.80'	586,912 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		674,876 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.80	74,675	0	0
728.00	75,945	15,062	15,062
729.00	82,354	79,150	94,212
730.00	88,864	85,609	179,821
731.00	95,474	92,169	271,990
732.00	102,185	98,830	370,819
733.00	110,000	106,093	476,912
734.00	110,000	110,000	586,912

Device	Routing	Invert	Outlet Devices
#1	Primary	727.37'	<b>24.0" Round POI A</b> L= 75.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 727.37' / 727.14' S= 0.0031 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 3.14 sf
#2	Device 1	727.37'	<b>4.6" Vert. Orifice/Grate</b> C= 0.600
#3	Device 1	728.54'	<b>6.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)
#4	Secondary	730.21'	<b>24.0" Round POI B</b> L= 27.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 730.21' / 730.00' S= 0.0078 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 3.14 sf

**Primary OutFlow** Max=12.09 cfs @ 2.07 hrs HW=729.41' (Free Discharge)

1=POI A (Barrel Controls 12.09 cfs @ 4.69 fps)

2=Orifice/Grate (Passes < 0.76 cfs potential flow)

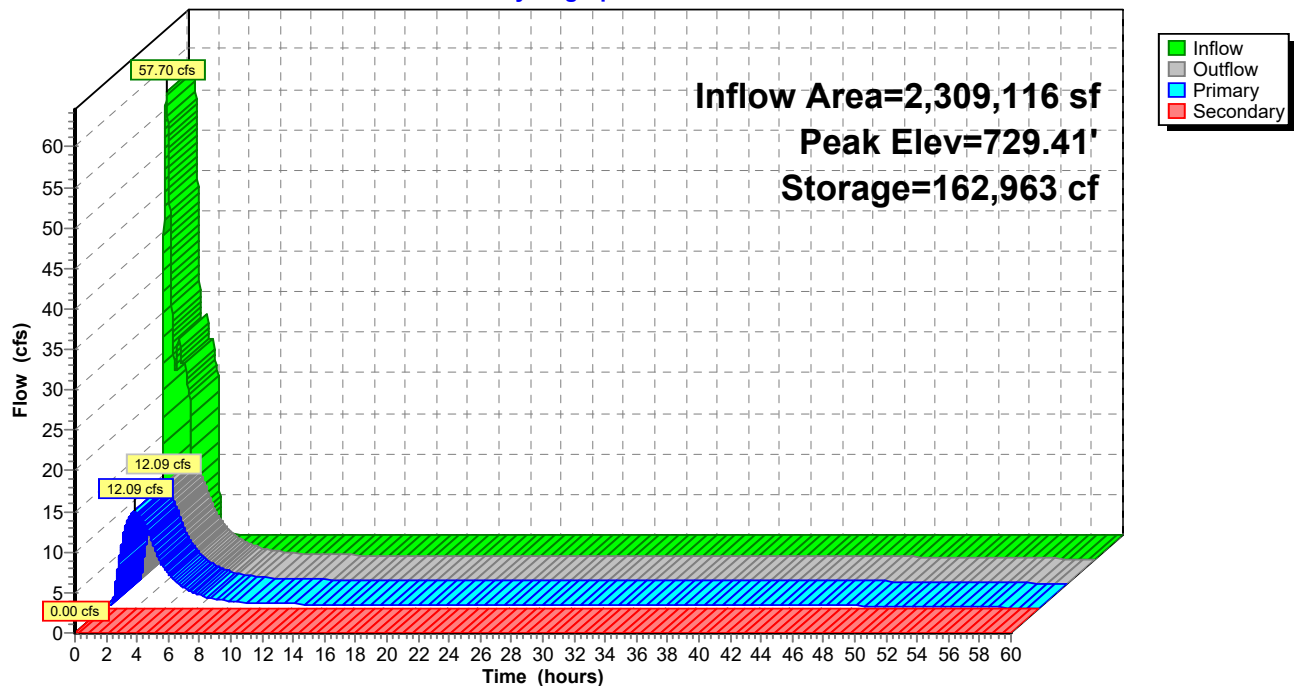
3=Sharp-Crested Rectangular Weir (Passes < 15.43 cfs potential flow)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=727.40' (Free Discharge)

4=POI B ( Controls 0.00 cfs)

### Pond 3P: Pond/CMP Detention

#### Hydrograph

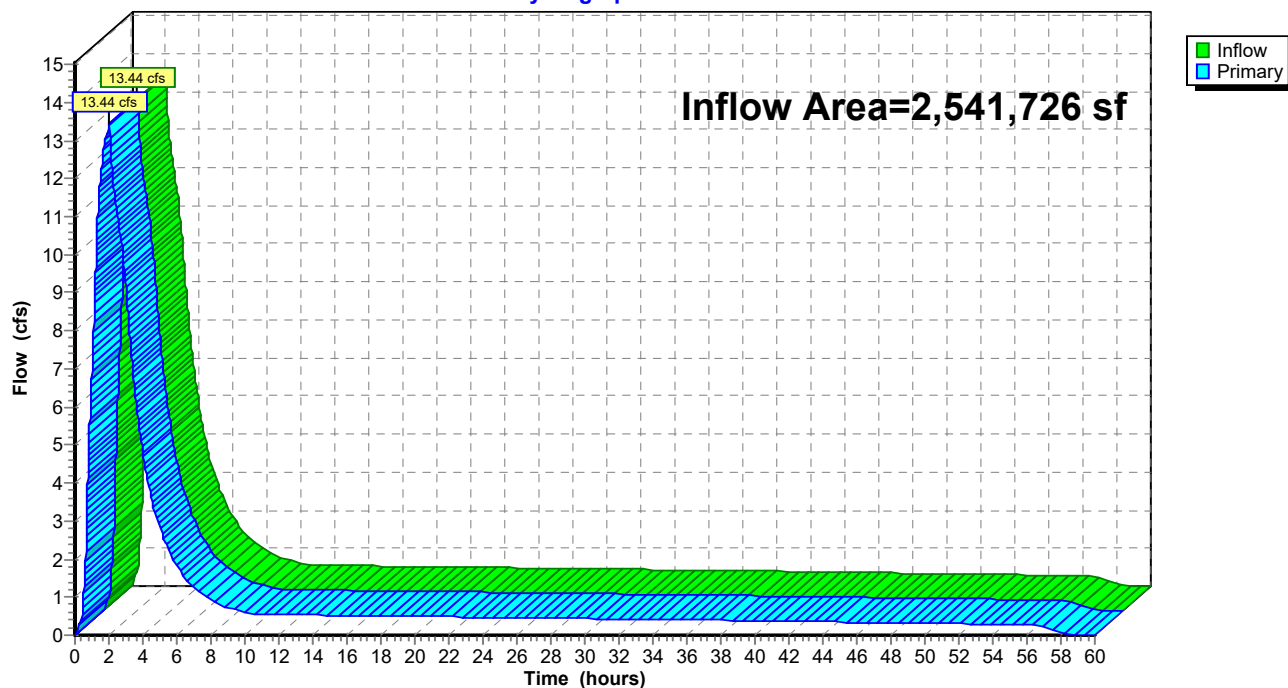




**Summary for Link 13L: Total Post**

Inflow Area = 2,541,726 sf, 71.40% Impervious, Inflow Depth = 1.03" for 2-yr2HR event  
Inflow = 13.44 cfs @ 2.04 hrs, Volume= 218,848 cf  
Primary = 13.44 cfs @ 2.04 hrs, Volume= 218,848 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

**Link 13L: Total Post****Hydrograph**

**Summary for Subcatchment 2S: DA#3 (Dev-Onsite)**

Runoff = 8.75 cfs @ 0.66 hrs, Volume= 42,827 cf, Depth= 1.50"

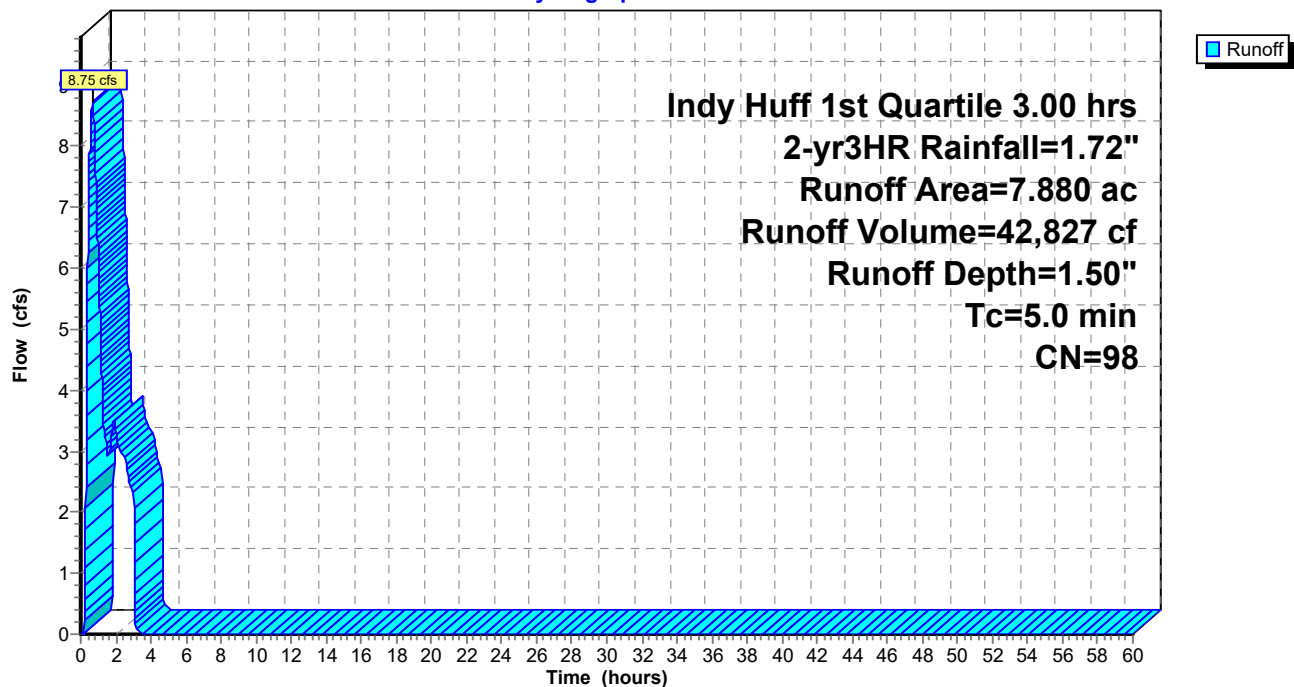
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 3.00 hrs 2-yr3HR Rainfall=1.72"

Area (ac)	CN	Description
* 7.880	98	
7.880		100.00% Impervious Area

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

**Subcatchment 2S: DA#3 (Dev-Onsite)**

Hydrograph



**Summary for Subcatchment 4S: DA#5 (Dev-Onsite)**

Runoff = 32.26 cfs @ 0.68 hrs, Volume= 160,252 cf, Depth= 1.40"

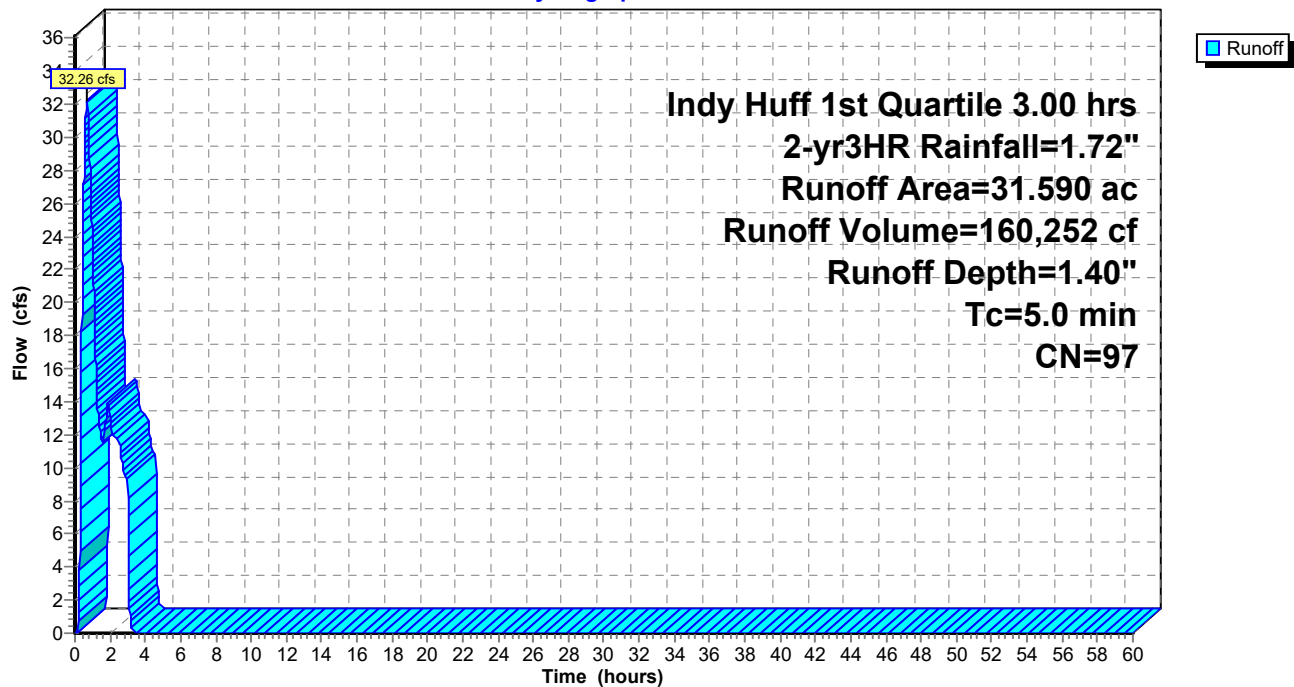
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 3.00 hrs 2-yr3HR Rainfall=1.72"

Area (ac)	CN	Description
* 29.300	98	
0.510	74	>75% Grass cover, Good, HSG C
1.780	80	>75% Grass cover, Good, HSG D
31.590	97	Weighted Average
2.290		7.25% Pervious Area
29.300		92.75% Impervious Area

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

**Subcatchment 4S: DA#5 (Dev-Onsite)**

Hydrograph



**Summary for Subcatchment 9S: DA#4 (Undetained)**

Runoff = 1.40 cfs @ 1.05 hrs, Volume= 9,910 cf, Depth= 0.51"

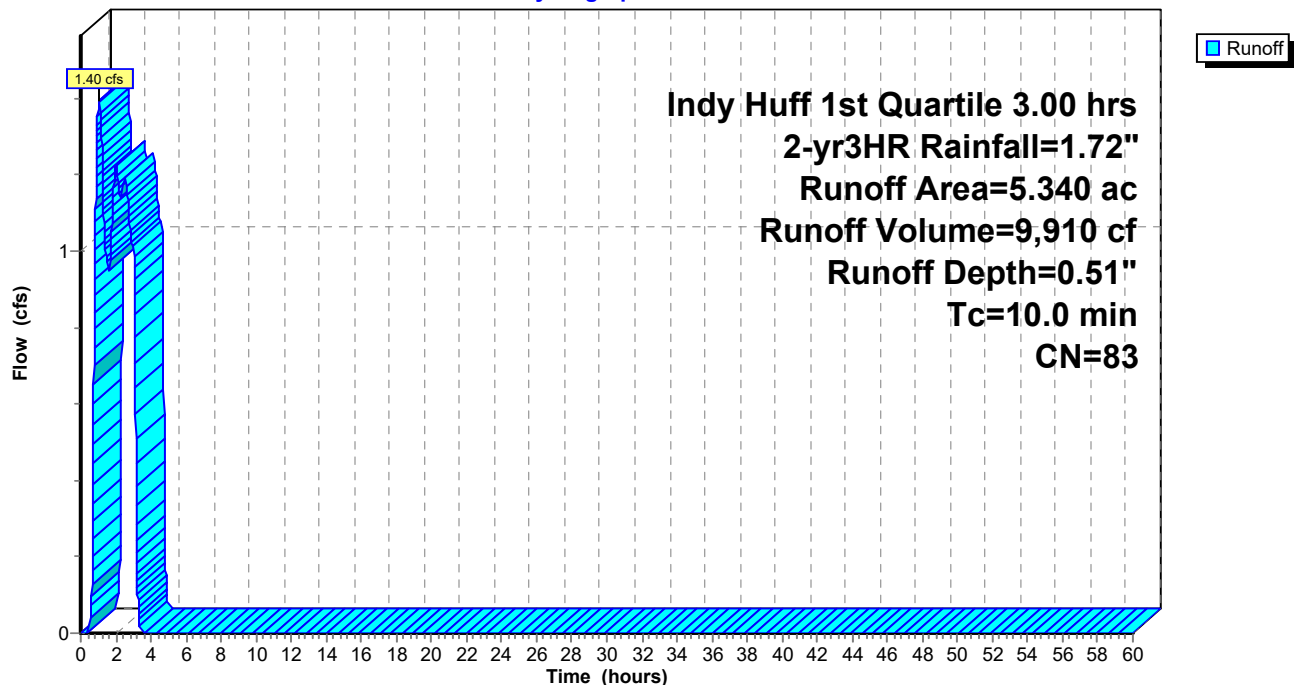
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 3.00 hrs 2-yr3HR Rainfall=1.72"

Area (ac)	CN	Description
* 1.130	98	
0.350	74	>75% Grass cover, Good, HSG C
3.860	80	>75% Grass cover, Good, HSG D
5.340	83	Weighted Average
4.210		78.84% Pervious Area
1.130		21.16% Impervious Area

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

**Subcatchment 9S: DA#4 (Undetained)**

Hydrograph



**Summary for Subcatchment 10S: DA#1**

Runoff = 1.06 cfs @ 2.75 hrs, Volume= 7,830 cf, Depth= 0.34"

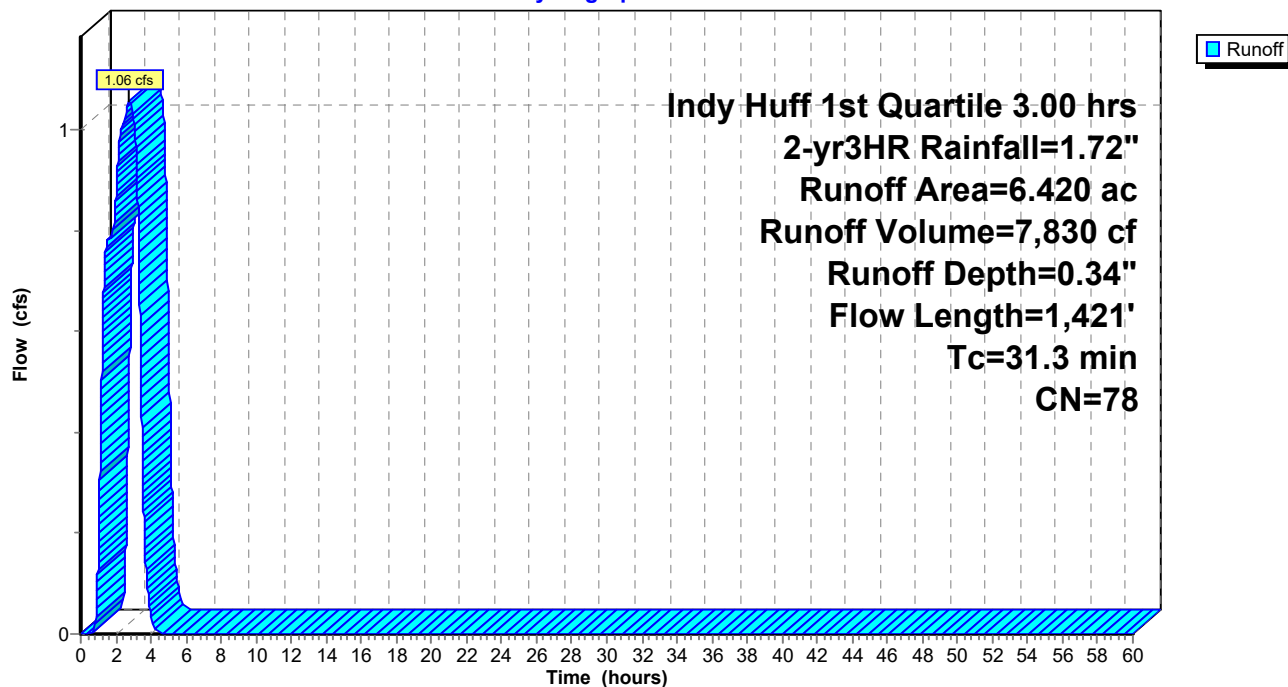
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 3.00 hrs 2-yr3HR Rainfall=1.72"

Area (ac)	CN	Description
* 0.640	98	
0.890	70	Woods, Good, HSG C
1.630	77	Woods, Good, HSG D
0.150	89	Row crops, straight row, Good, HSG D
0.130	85	Row crops, straight row, Good, HSG C
1.360	80	>75% Grass cover, Good, HSG D
1.620	74	>75% Grass cover, Good, HSG C
6.420	78	Weighted Average
5.780		90.03% Pervious Area
0.640		9.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0100	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
17.7	1,321	0.0060	1.25		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
31.3	1,421	Total			

**Subcatchment 10S: DA#1**

Hydrograph



**Summary for Subcatchment 11S: DA#2**

Runoff = 2.33 cfs @ 0.96 hrs, Volume= 14,661 cf, Depth= 0.75"

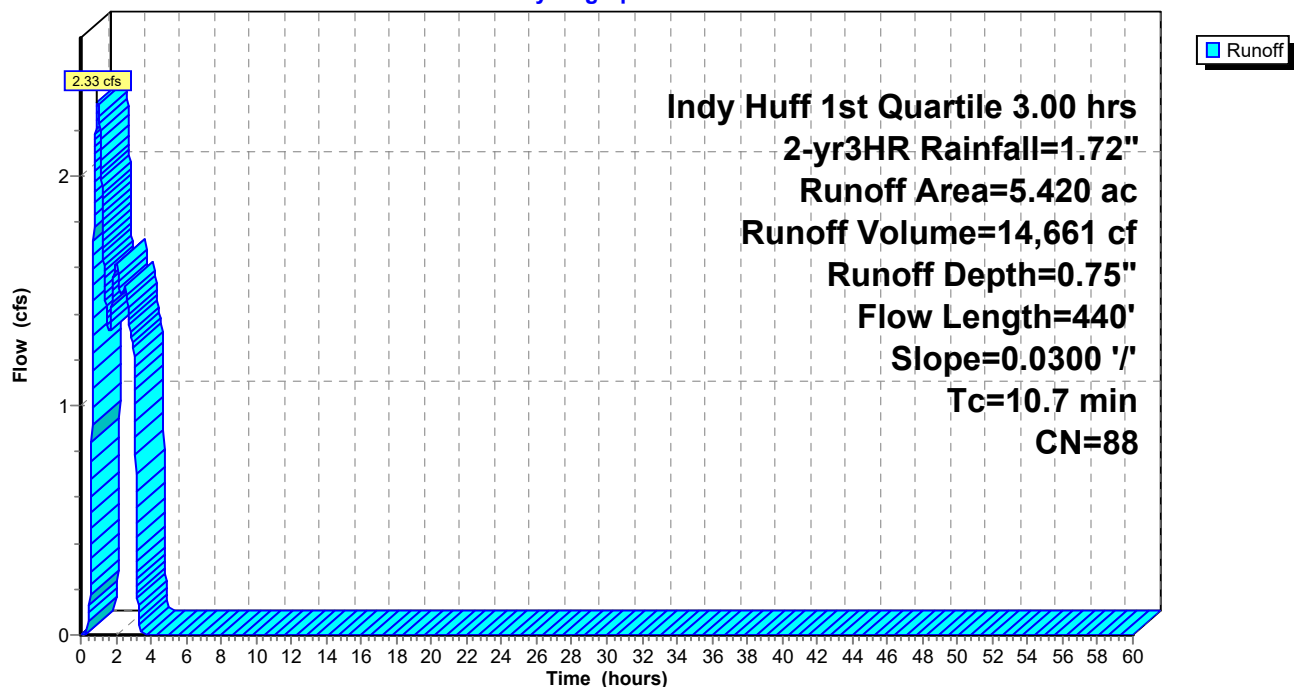
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 3.00 hrs 2-yr3HR Rainfall=1.72"

Area (ac)	CN	Description
* 2.710	98	
0.170	70	Woods, Good, HSG C
0.010	77	Woods, Good, HSG D
1.680	80	>75% Grass cover, Good, HSG D
0.850	74	>75% Grass cover, Good, HSG C
5.420	88	Weighted Average
2.710		50.00% Pervious Area
2.710		50.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.0300	0.19		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
2.0	340	0.0300	2.79		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
10.7	440	Total			

**Subcatchment 11S: DA#2**

Hydrograph



**Summary for Subcatchment 12S: DA711**

Runoff = 0.20 cfs @ 3.15 hrs, Volume= 1,410 cf, Depth= 0.23"

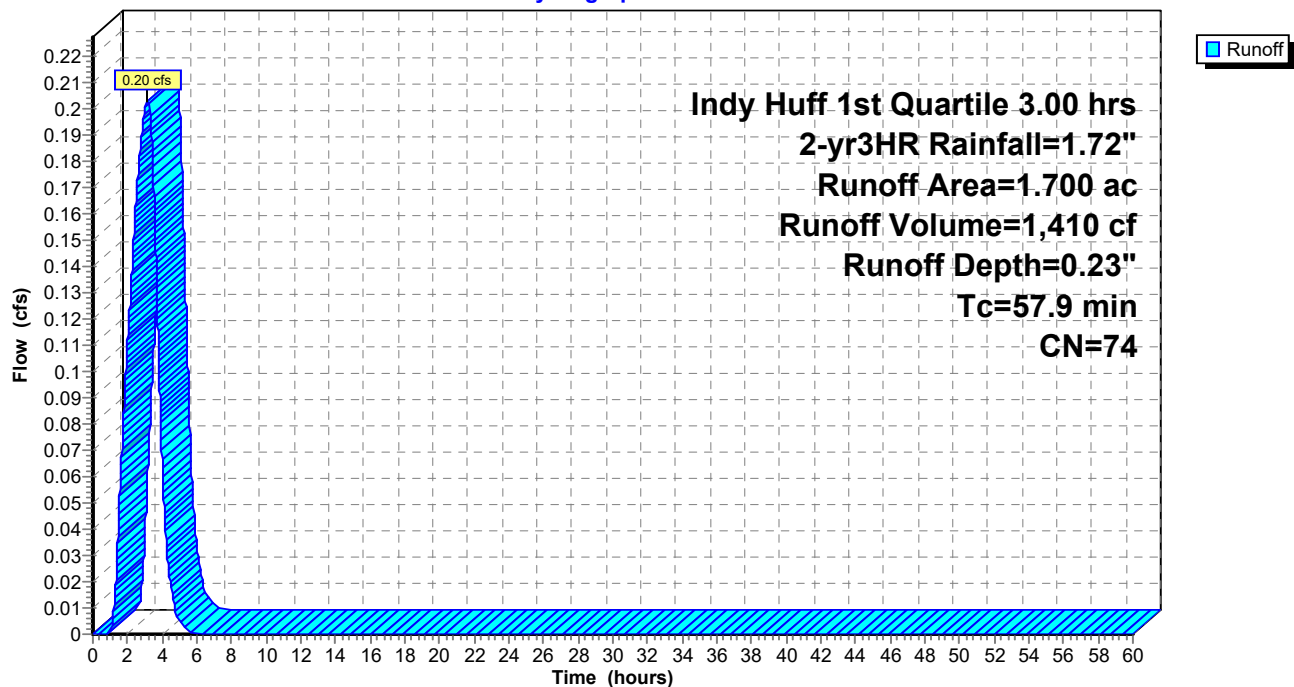
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 3.00 hrs 2-yr3HR Rainfall=1.72"

Area (ac)	CN	Description
* 1.700	74	
1.700		100.00% Pervious Area

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

**Subcatchment 12S: DA711**

Hydrograph



**Summary for Pond 3P: Pond/CMP Detention**

[44] Hint: Outlet device #2 is below defined storage

Inflow Area = 2,309,116 sf, 76.46% Impervious, Inflow Depth = 1.18" for 2-yr3HR event  
 Inflow = 42.30 cfs @ 0.68 hrs, Volume= 226,980 cf  
 Outflow = 11.61 cfs @ 3.05 hrs, Volume= 226,980 cf, Atten= 73%, Lag= 141.8 min  
 Primary = 11.61 cfs @ 3.05 hrs, Volume= 226,980 cf  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
 Peak Elev= 729.35' @ 3.05 hrs Surf.Area= 111,932 sf Storage= 156,563 cf

Plug-Flow detention time= 664.4 min calculated for 226,942 cf (100% of inflow)  
 Center-of-Mass det. time= 664.8 min ( 753.1 - 88.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	727.40'	87,965 cf	<b>48.0" Round Pipe Storage</b> x 10 L= 700.0' S= 0.0010 '/'
#2	727.80'	586,912 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		674,876 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.80	74,675	0	0
728.00	75,945	15,062	15,062
729.00	82,354	79,150	94,212
730.00	88,864	85,609	179,821
731.00	95,474	92,169	271,990
732.00	102,185	98,830	370,819
733.00	110,000	106,093	476,912
734.00	110,000	110,000	586,912

Device	Routing	Invert	Outlet Devices
#1	Primary	727.37'	<b>24.0" Round POI A</b> L= 75.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 727.37' / 727.14' S= 0.0031 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 3.14 sf
#2	Device 1	727.37'	<b>4.6" Vert. Orifice/Grate</b> C= 0.600
#3	Device 1	728.54'	<b>6.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)
#4	Secondary	730.21'	<b>24.0" Round POI B</b> L= 27.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 730.21' / 730.00' S= 0.0078 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 3.14 sf



**Primary OutFlow** Max=11.61 cfs @ 3.05 hrs HW=729.35' (Free Discharge)

1=POI A (Barrel Controls 11.61 cfs @ 4.64 fps)

2=Orifice/Grate (Passes < 0.74 cfs potential flow)

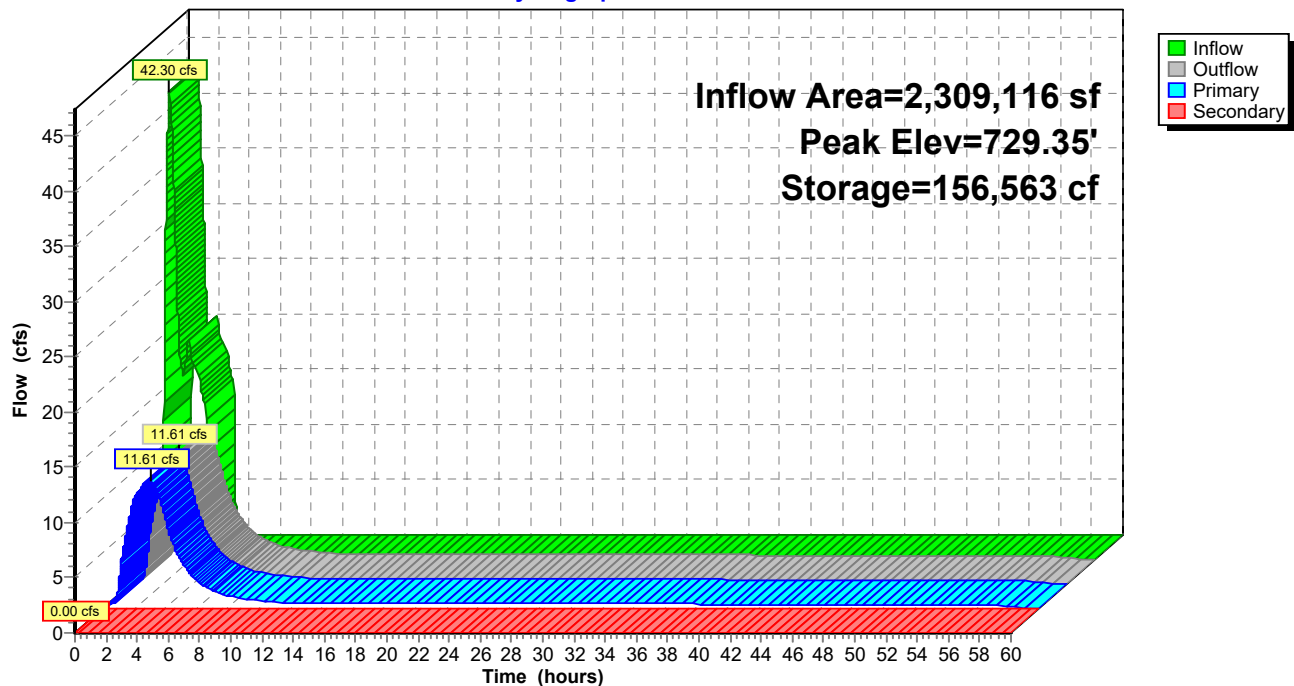
3=Sharp-Crested Rectangular Weir (Passes < 13.96 cfs potential flow)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=727.40' (Free Discharge)

4=POI B ( Controls 0.00 cfs)

### Pond 3P: Pond/CMP Detention

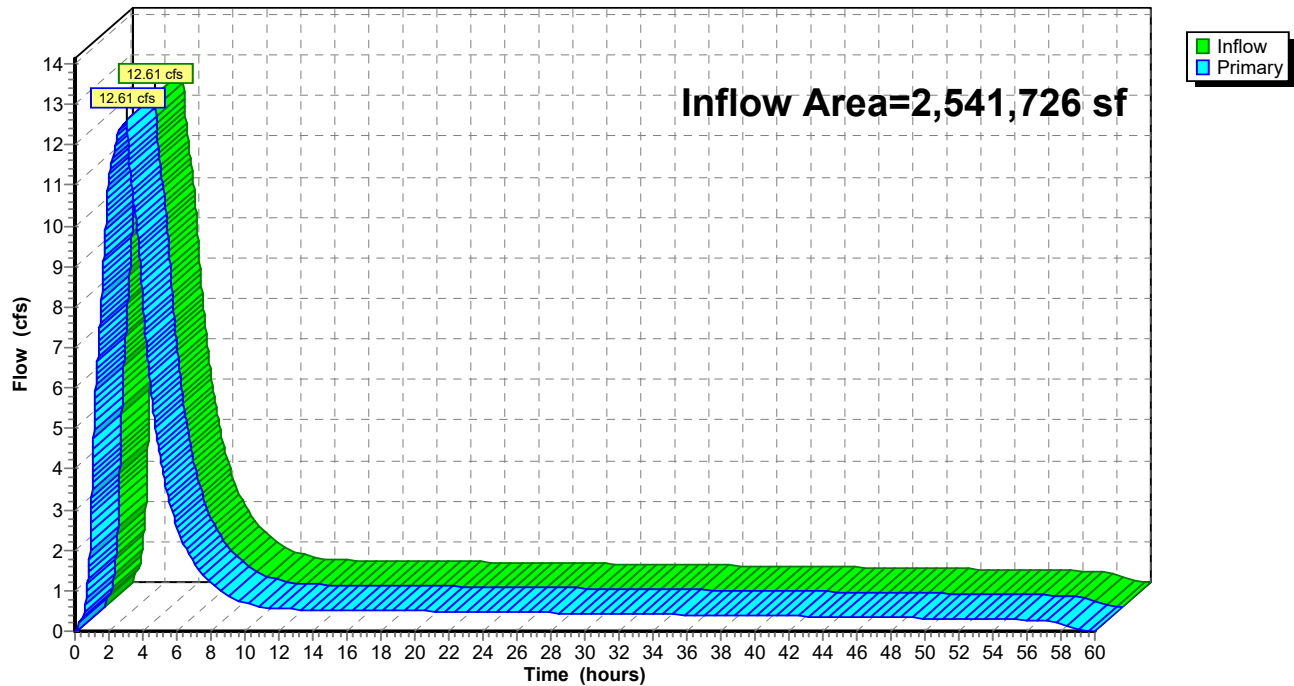
#### Hydrograph



**Summary for Link 13L: Total Post**

Inflow Area = 2,541,726 sf, 71.40% Impervious, Inflow Depth = 1.12" for 2-yr3HR event  
Inflow = 12.61 cfs @ 3.03 hrs, Volume= 236,890 cf  
Primary = 12.61 cfs @ 3.03 hrs, Volume= 236,890 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

**Link 13L: Total Post****Hydrograph**

**Summary for Subcatchment 2S: DA#3 (Dev-Onsite)**

Runoff = 5.38 cfs @ 1.26 hrs, Volume= 52,172 cf, Depth= 1.82"

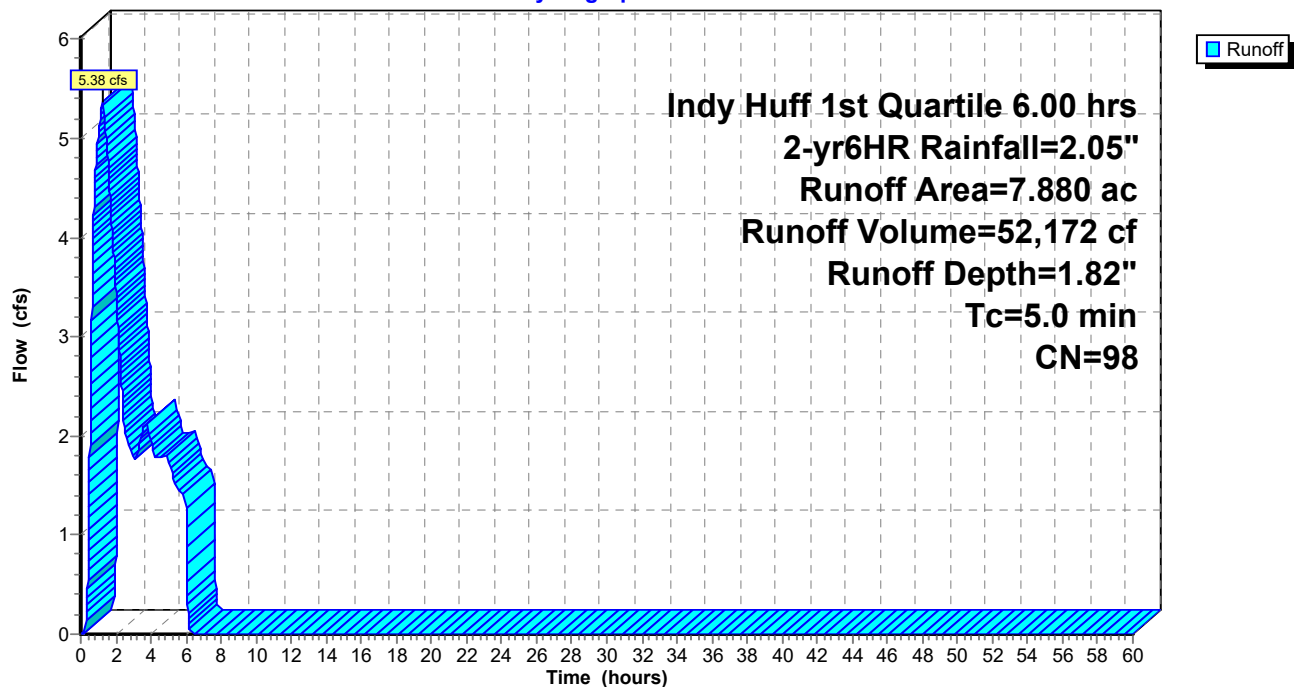
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 6.00 hrs 2-yr6HR Rainfall=2.05"

Area (ac)	CN	Description
* 7.880	98	
7.880		100.00% Impervious Area

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

**Subcatchment 2S: DA#3 (Dev-Onsite)**

Hydrograph



**Summary for Subcatchment 4S: DA#5 (Dev-Onsite)**

Runoff = 20.22 cfs @ 1.27 hrs, Volume= 197,293 cf, Depth= 1.72"

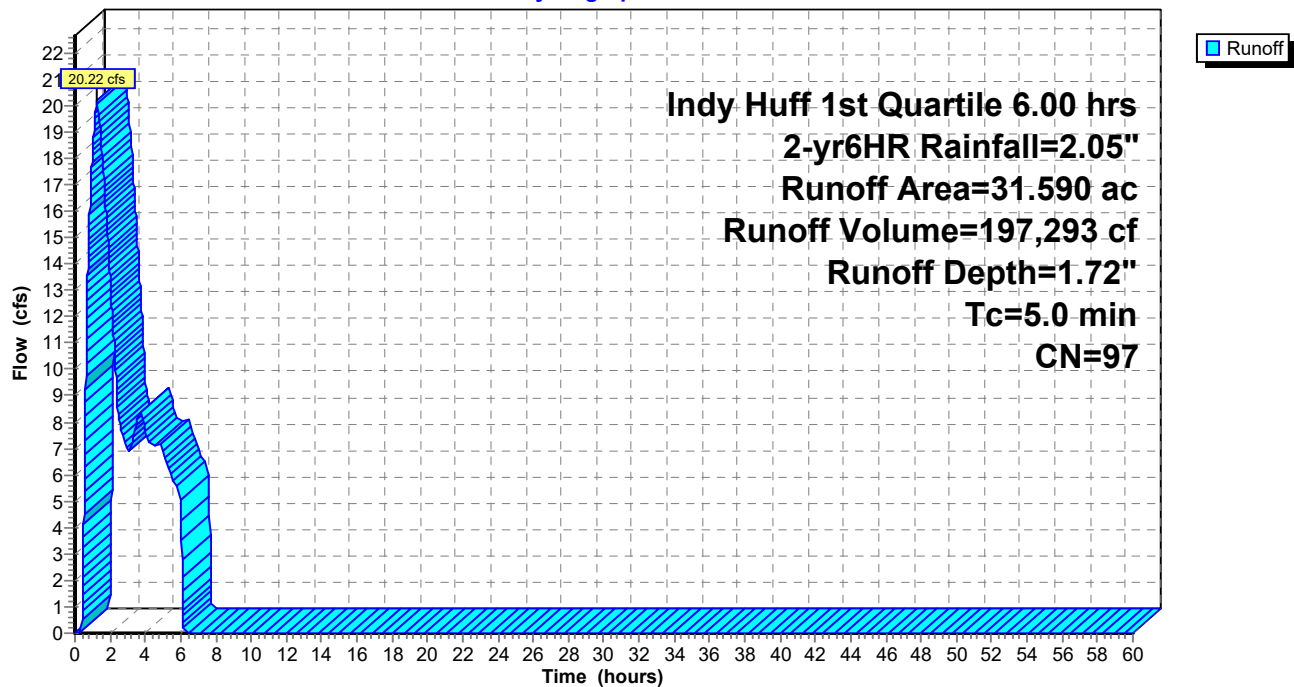
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 6.00 hrs 2-yr6HR Rainfall=2.05"

Area (ac)	CN	Description
* 29.300	98	
0.510	74	>75% Grass cover, Good, HSG C
1.780	80	>75% Grass cover, Good, HSG D
31.590	97	Weighted Average
2.290		7.25% Pervious Area
29.300		92.75% Impervious Area

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

**Subcatchment 4S: DA#5 (Dev-Onsite)**

Hydrograph



**Summary for Subcatchment 9S: DA#4 (Undetained)**

Runoff = 1.08 cfs @ 1.83 hrs, Volume= 14,141 cf, Depth= 0.73"

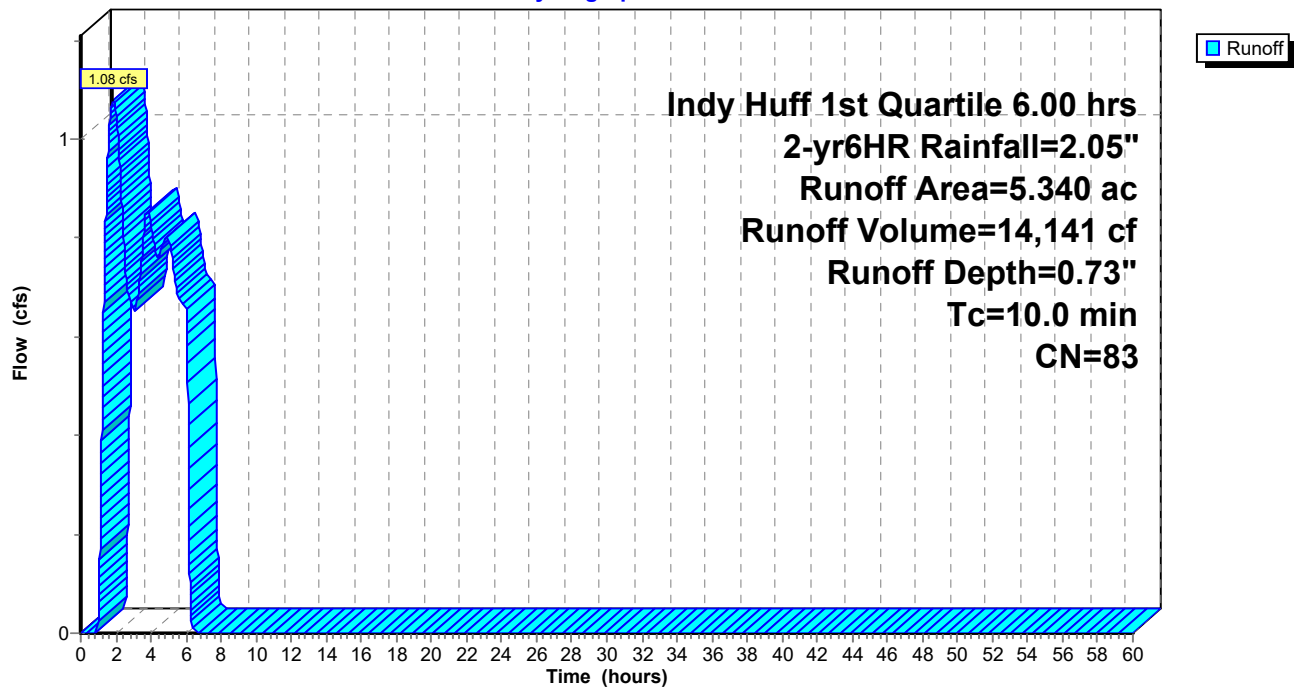
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 6.00 hrs 2-yr6HR Rainfall=2.05"

Area (ac)	CN	Description
* 1.130	98	
0.350	74	>75% Grass cover, Good, HSG C
3.860	80	>75% Grass cover, Good, HSG D
5.340	83	Weighted Average
4.210		78.84% Pervious Area
1.130		21.16% Impervious Area

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

**Subcatchment 9S: DA#4 (Undetained)**

Hydrograph



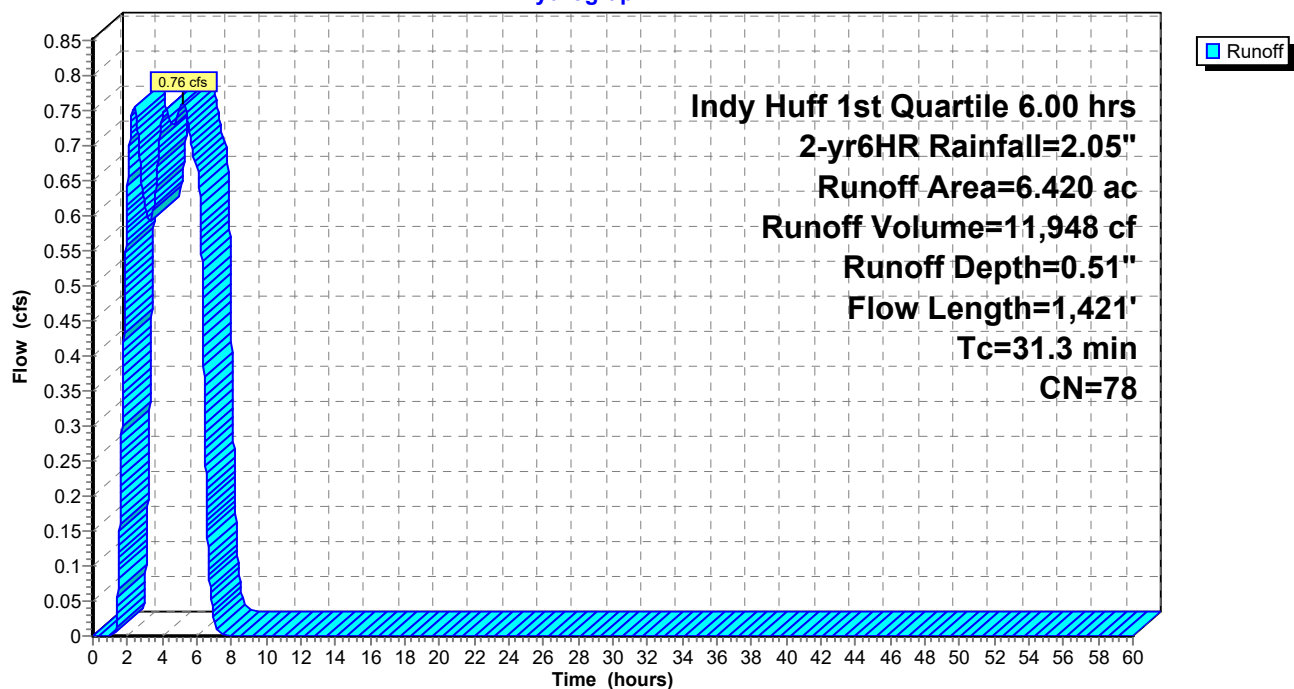
**Summary for Subcatchment 10S: DA#1**

Runoff = 0.76 cfs @ 5.18 hrs, Volume= 11,948 cf, Depth= 0.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 6.00 hrs 2-yr6HR Rainfall=2.05"

Area (ac)	CN	Description
* 0.640	98	
0.890	70	Woods, Good, HSG C
1.630	77	Woods, Good, HSG D
0.150	89	Row crops, straight row, Good, HSG D
0.130	85	Row crops, straight row, Good, HSG C
1.360	80	>75% Grass cover, Good, HSG D
1.620	74	>75% Grass cover, Good, HSG C
6.420	78	Weighted Average
5.780		90.03% Pervious Area
0.640		9.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0100	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
17.7	1,321	0.0060	1.25		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
31.3	1,421	Total			

**Subcatchment 10S: DA#1****Hydrograph**

**Summary for Subcatchment 11S: DA#2**

Runoff = 1.67 cfs @ 1.68 hrs, Volume= 19,786 cf, Depth= 1.01"

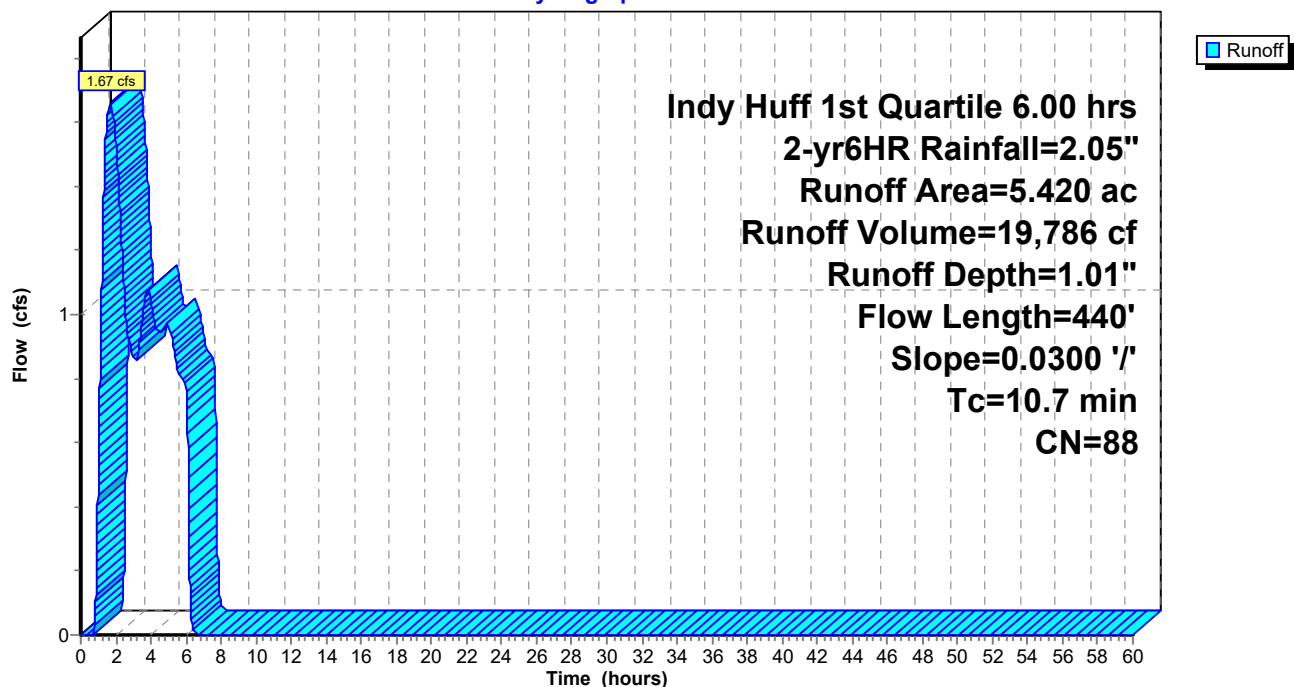
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 6.00 hrs 2-yr6HR Rainfall=2.05"

Area (ac)	CN	Description
* 2.710	98	
0.170	70	Woods, Good, HSG C
0.010	77	Woods, Good, HSG D
1.680	80	>75% Grass cover, Good, HSG D
0.850	74	>75% Grass cover, Good, HSG C
5.420	88	Weighted Average
2.710		50.00% Pervious Area
2.710		50.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.0300	0.19		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
2.0	340	0.0300	2.79		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
10.7	440	Total			

**Subcatchment 11S: DA#2**

Hydrograph



**Summary for Subcatchment 12S: DA711**

Runoff = 0.16 cfs @ 5.47 hrs, Volume= 2,304 cf, Depth= 0.37"

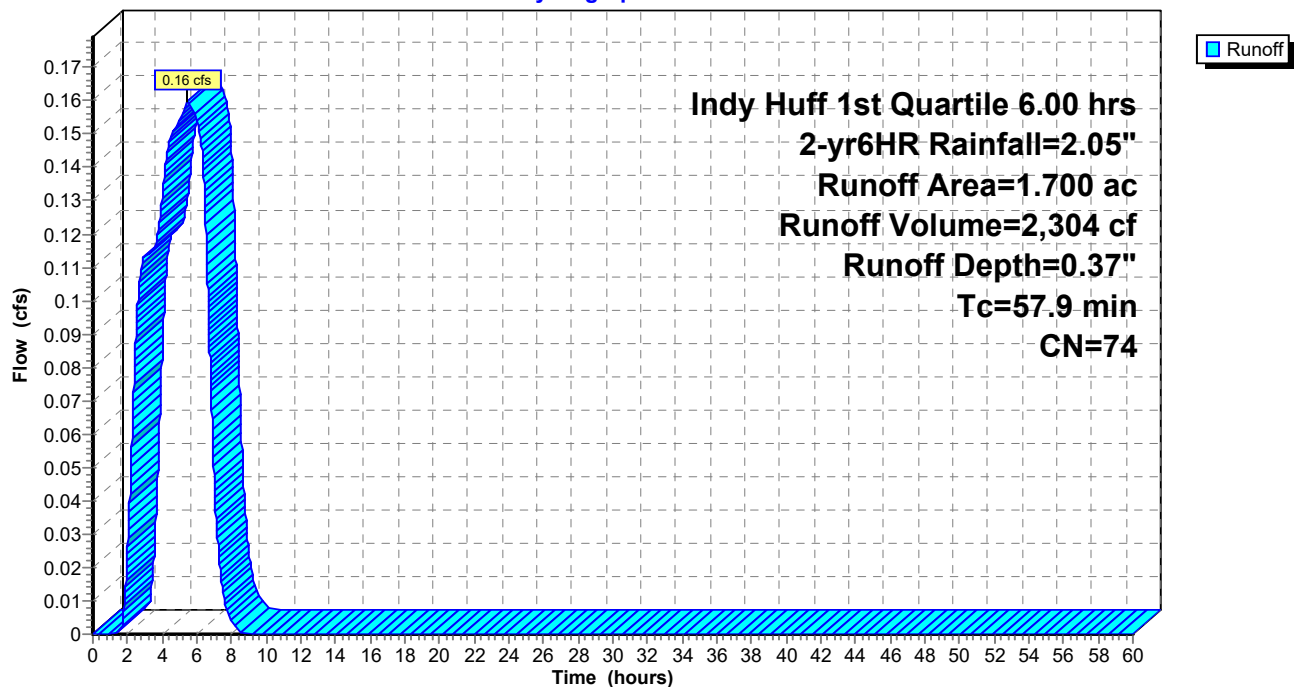
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 6.00 hrs 2-yr6HR Rainfall=2.05"

Area (ac)	CN	Description
* 1.700	74	
1.700		100.00% Pervious Area

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

**Subcatchment 12S: DA711**

Hydrograph





**Summary for Pond 3P: Pond/CMP Detention**

[44] Hint: Outlet device #2 is below defined storage

Inflow Area = 2,309,116 sf, 76.46% Impervious, Inflow Depth = 1.47" for 2-yr6HR event  
 Inflow = 26.88 cfs @ 1.28 hrs, Volume= 283,504 cf  
 Outflow = 10.29 cfs @ 5.10 hrs, Volume= 282,721 cf, Atten= 62%, Lag= 229.1 min  
 Primary = 10.29 cfs @ 5.10 hrs, Volume= 282,721 cf  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
 Peak Elev= 729.20' @ 5.10 hrs Surf.Area= 110,391 sf Storage= 139,424 cf

Plug-Flow detention time= 575.5 min calculated for 282,721 cf (100% of inflow)  
 Center-of-Mass det. time= 574.8 min ( 743.6 - 168.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	727.40'	87,965 cf	<b>48.0" Round Pipe Storage</b> x 10 L= 700.0' S= 0.0010 '/'
#2	727.80'	586,912 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		674,876 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.80	74,675	0	0
728.00	75,945	15,062	15,062
729.00	82,354	79,150	94,212
730.00	88,864	85,609	179,821
731.00	95,474	92,169	271,990
732.00	102,185	98,830	370,819
733.00	110,000	106,093	476,912
734.00	110,000	110,000	586,912

Device	Routing	Invert	Outlet Devices
#1	Primary	727.37'	<b>24.0" Round POI A</b> L= 75.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 727.37' / 727.14' S= 0.0031 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 3.14 sf
#2	Device 1	727.37'	<b>4.6" Vert. Orifice/Grate</b> C= 0.600
#3	Device 1	728.54'	<b>6.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)
#4	Secondary	730.21'	<b>24.0" Round POI B</b> L= 27.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 730.21' / 730.00' S= 0.0078 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 3.14 sf

**Primary OutFlow** Max=10.29 cfs @ 5.10 hrs HW=729.20' (Free Discharge)

1=POI A (Barrel Controls 10.29 cfs @ 4.48 fps)

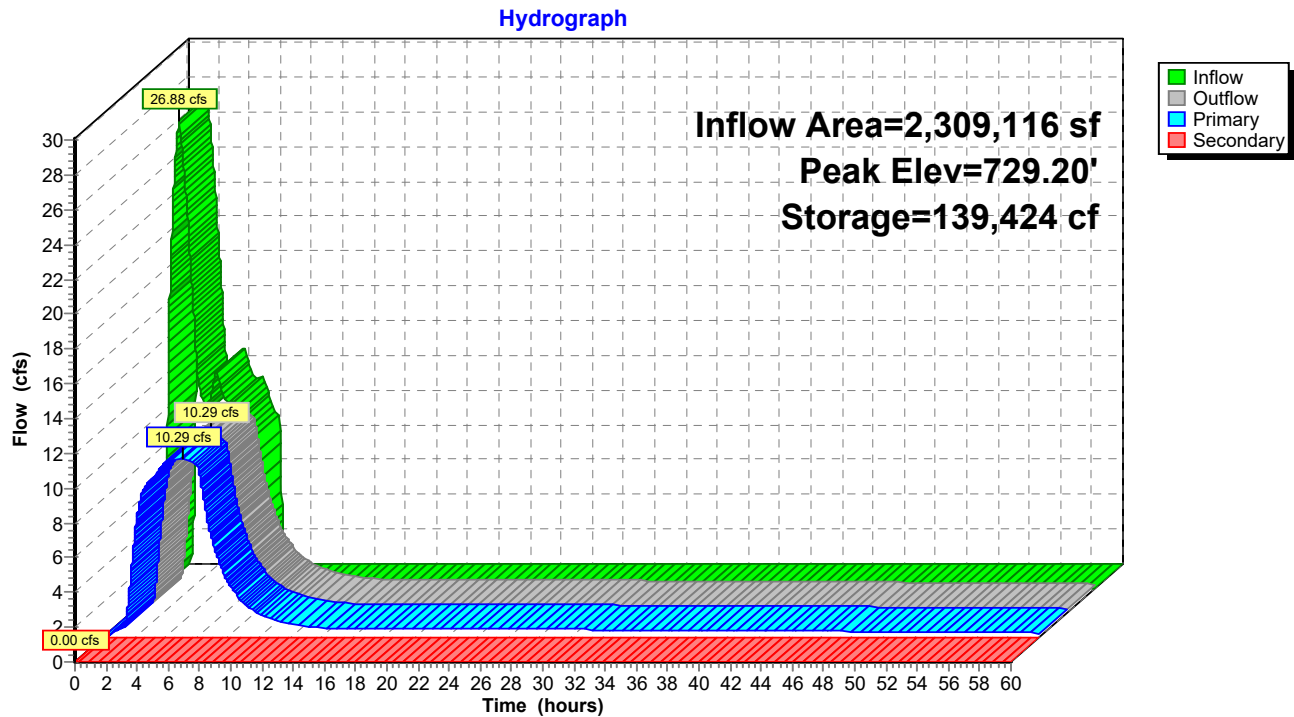
2=Orifice/Grate (Passes < 0.71 cfs potential flow)

3=Sharp-Crested Rectangular Weir (Passes < 10.24 cfs potential flow)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=727.40' (Free Discharge)

4=POI B ( Controls 0.00 cfs)

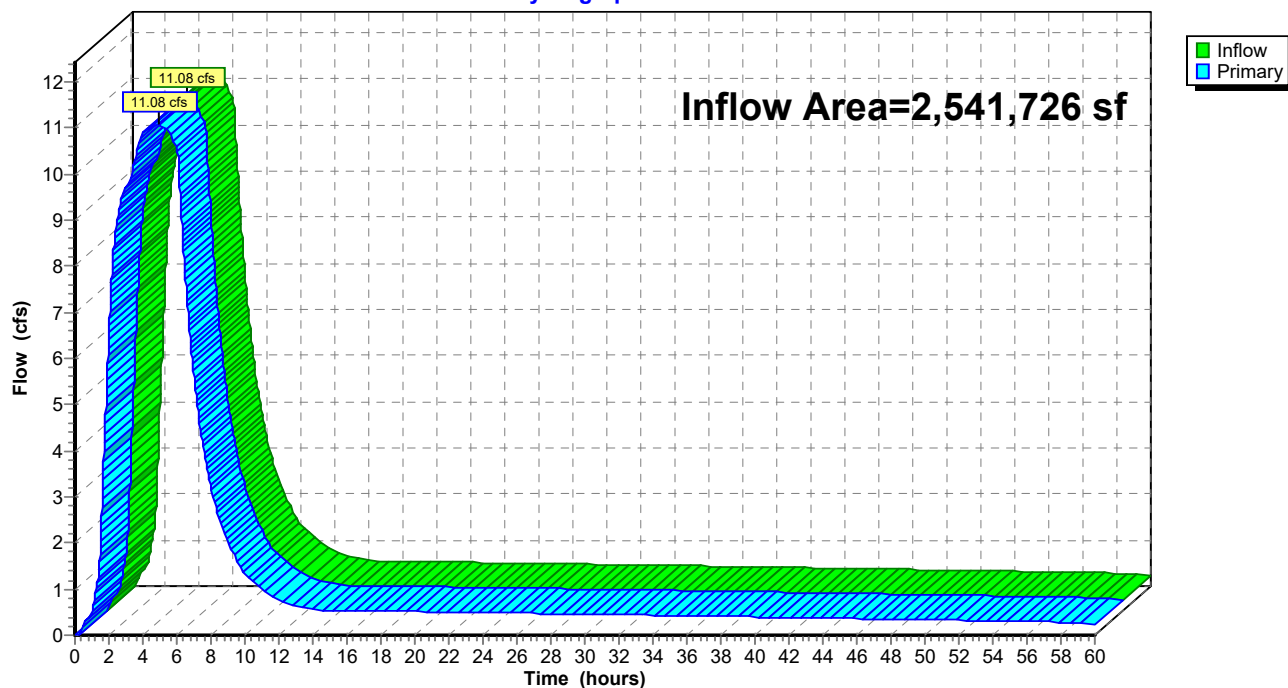
### Pond 3P: Pond/CMP Detention



**Summary for Link 13L: Total Post**

Inflow Area = 2,541,726 sf, 71.40% Impervious, Inflow Depth > 1.40" for 2-yr6HR event  
Inflow = 11.08 cfs @ 4.97 hrs, Volume= 296,862 cf  
Primary = 11.08 cfs @ 4.97 hrs, Volume= 296,862 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

**Link 13L: Total Post****Hydrograph**

**Summary for Subcatchment 2S: DA#3 (Dev-Onsite)**

Runoff = 3.27 cfs @ 2.45 hrs, Volume= 63,247 cf, Depth= 2.21"

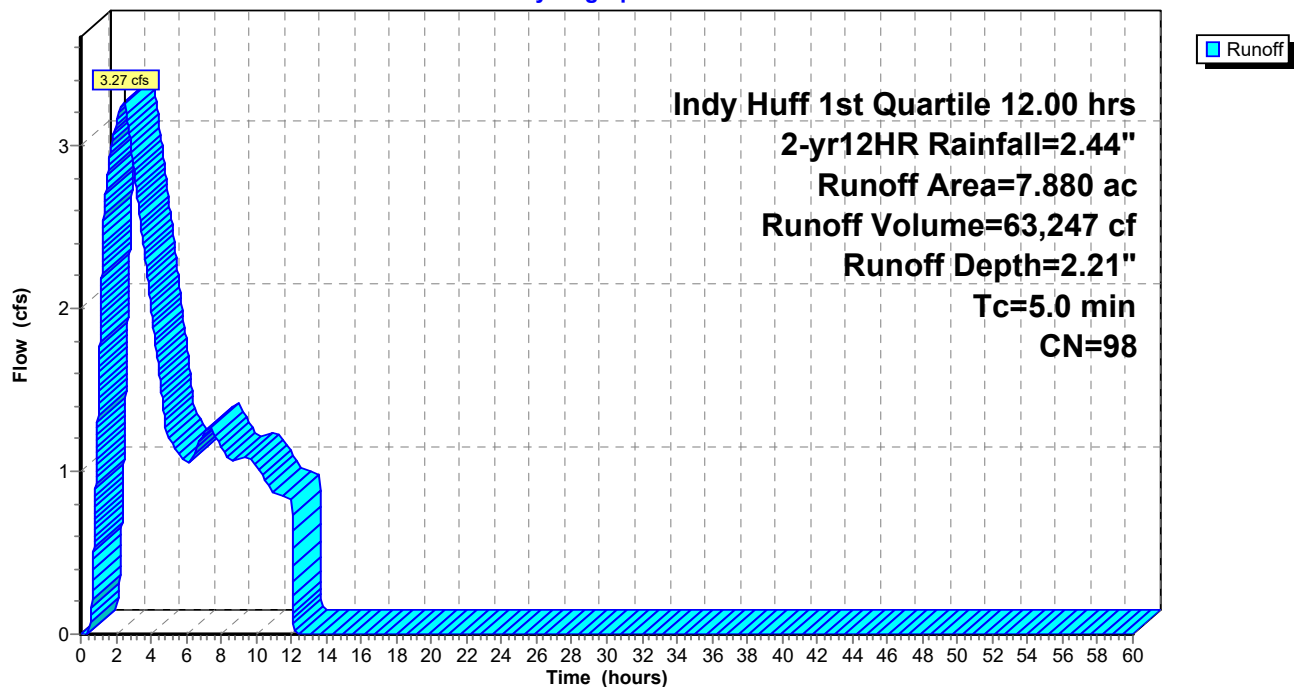
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 12.00 hrs 2-yr12HR Rainfall=2.44"

Area (ac)	CN	Description
* 7.880	98	
7.880		100.00% Impervious Area

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

**Subcatchment 2S: DA#3 (Dev-Onsite)**

Hydrograph



**Summary for Subcatchment 4S: DA#5 (Dev-Onsite)**

Runoff = 12.47 cfs @ 2.46 hrs, Volume= 241,322 cf, Depth= 2.10"

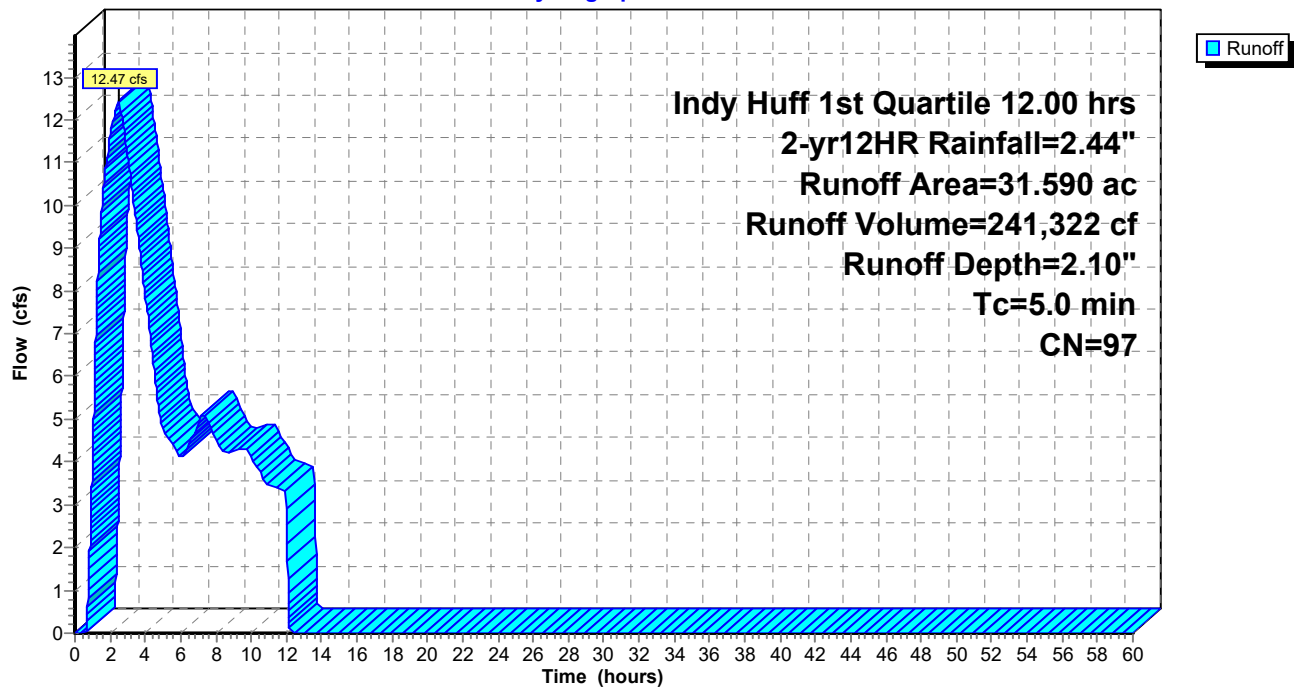
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 12.00 hrs 2-yr12HR Rainfall=2.44"

Area (ac)	CN	Description
* 29.300	98	
0.510	74	>75% Grass cover, Good, HSG C
1.780	80	>75% Grass cover, Good, HSG D
31.590	97	Weighted Average
2.290		7.25% Pervious Area
29.300		92.75% Impervious Area

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

**Subcatchment 4S: DA#5 (Dev-Onsite)**

Hydrograph



**Summary for Subcatchment 9S: DA#4 (Undetained)**

Runoff = 0.79 cfs @ 3.37 hrs, Volume= 19,592 cf, Depth= 1.01"

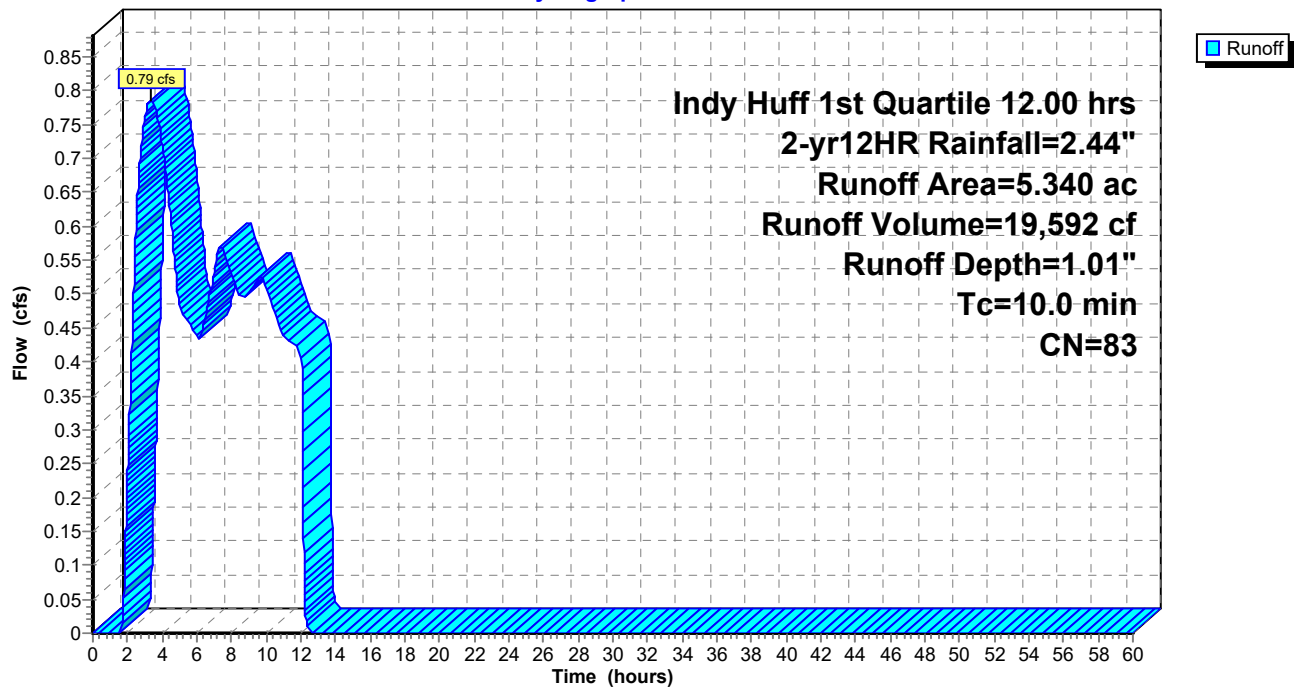
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 12.00 hrs 2-yr12HR Rainfall=2.44"

Area (ac)	CN	Description
* 1.130	98	
0.350	74	>75% Grass cover, Good, HSG C
3.860	80	>75% Grass cover, Good, HSG D
5.340	83	Weighted Average
4.210		78.84% Pervious Area
1.130		21.16% Impervious Area

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

**Subcatchment 9S: DA#4 (Undetained)**

Hydrograph



**Summary for Subcatchment 10S: DA#1**

Runoff = 0.63 cfs @ 4.00 hrs, Volume= 17,462 cf, Depth= 0.75"

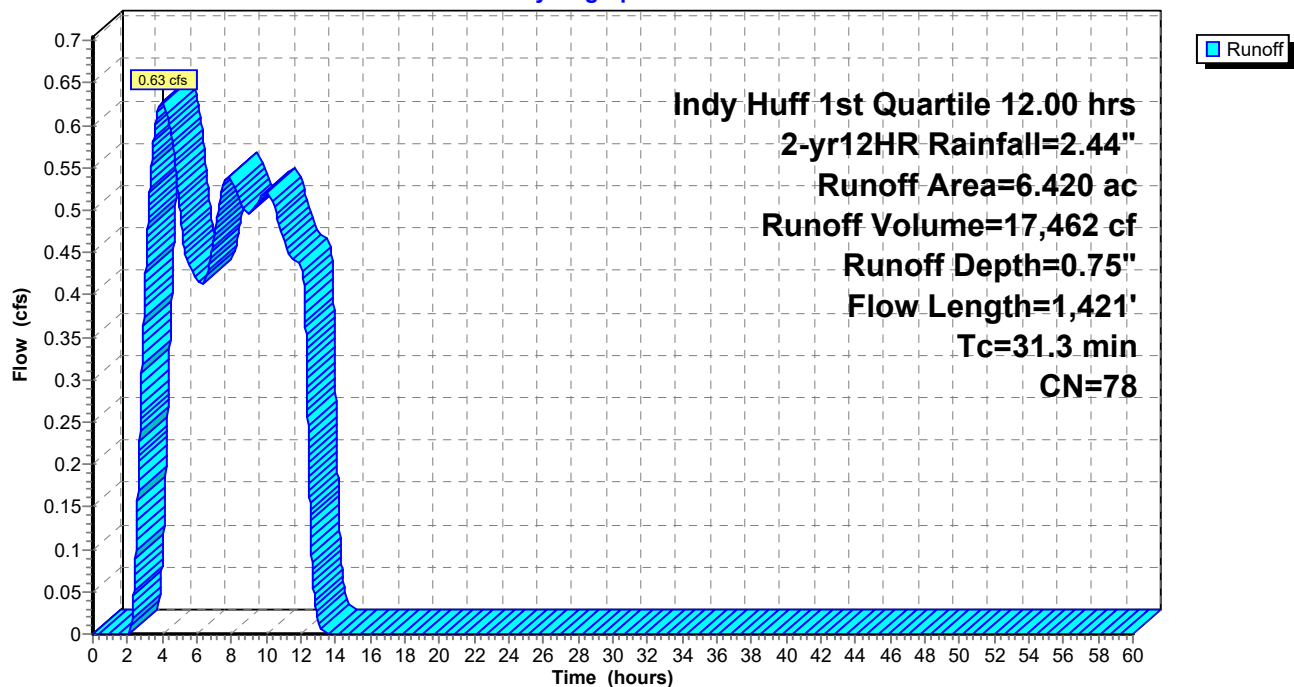
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 12.00 hrs 2-yr12HR Rainfall=2.44"

Area (ac)	CN	Description
* 0.640	98	
0.890	70	Woods, Good, HSG C
1.630	77	Woods, Good, HSG D
0.150	89	Row crops, straight row, Good, HSG D
0.130	85	Row crops, straight row, Good, HSG C
1.360	80	>75% Grass cover, Good, HSG D
1.620	74	>75% Grass cover, Good, HSG C
6.420	78	Weighted Average
5.780		90.03% Pervious Area
0.640		9.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0100	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
17.7	1,321	0.0060	1.25		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
31.3	1,421	Total			

**Subcatchment 10S: DA#1**

Hydrograph



**Summary for Subcatchment 11S: DA#2**

Runoff = 1.15 cfs @ 3.03 hrs, Volume= 26,173 cf, Depth= 1.33"

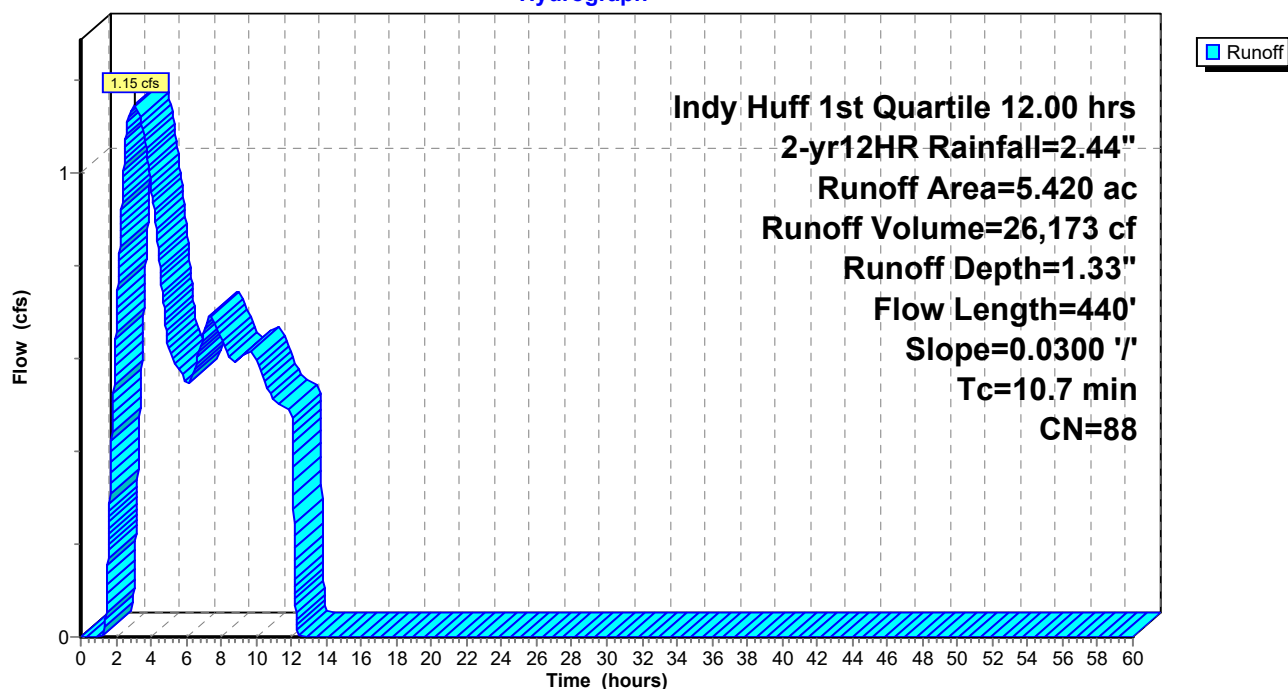
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 12.00 hrs 2-yr12HR Rainfall=2.44"

Area (ac)	CN	Description
* 2.710	98	
0.170	70	Woods, Good, HSG C
0.010	77	Woods, Good, HSG D
1.680	80	>75% Grass cover, Good, HSG D
0.850	74	>75% Grass cover, Good, HSG C
5.420	88	Weighted Average
2.710		50.00% Pervious Area
2.710		50.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.0300	0.19		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
2.0	340	0.0300	2.79		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
10.7	440	Total			

**Subcatchment 11S: DA#2**

Hydrograph





**Summary for Subcatchment 12S: DA711**

Runoff = 0.12 cfs @ 10.36 hrs, Volume= 3,547 cf, Depth= 0.57"

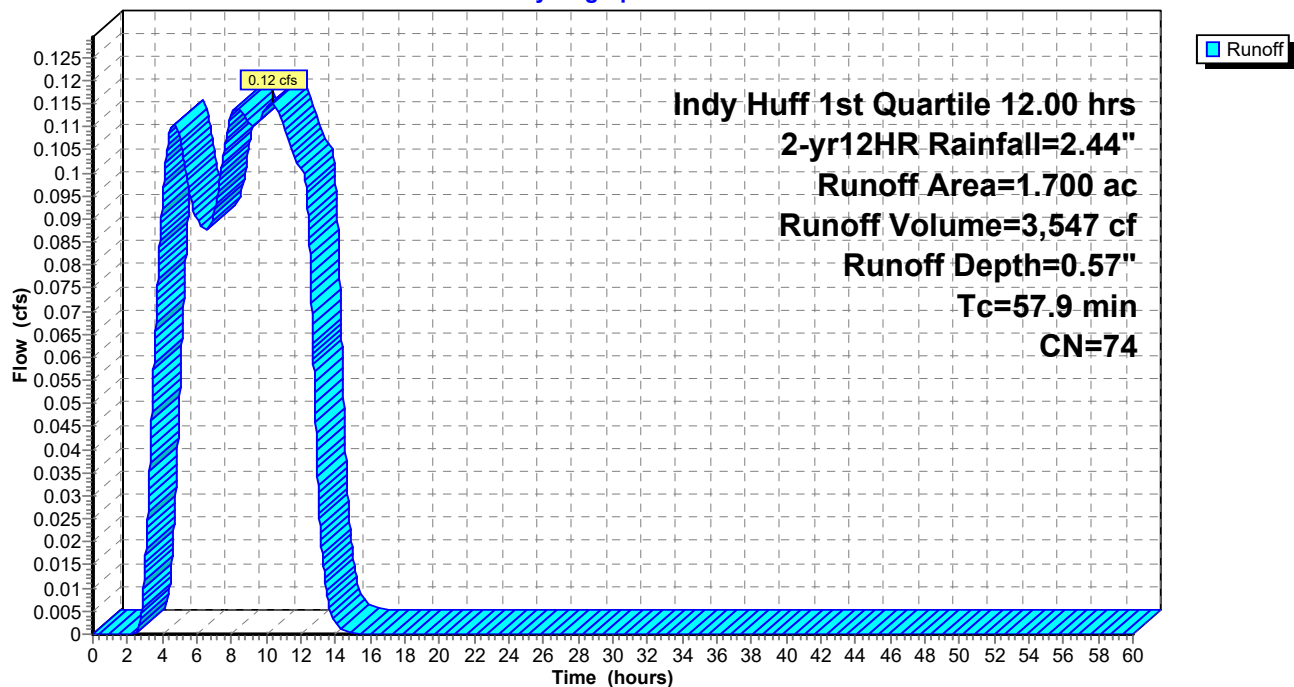
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 12.00 hrs 2-yr12HR Rainfall=2.44"

Area (ac)	CN	Description
* 1.700	74	
1.700		100.00% Pervious Area

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

**Subcatchment 12S: DA711**

Hydrograph



**Summary for Pond 3P: Pond/CMP Detention**

[44] Hint: Outlet device #2 is below defined storage

Inflow Area = 2,309,116 sf, 76.46% Impervious, Inflow Depth = 1.83" for 2-yr12HR event  
 Inflow = 16.85 cfs @ 2.48 hrs, Volume= 351,751 cf  
 Outflow = 8.81 cfs @ 4.59 hrs, Volume= 345,647 cf, Atten= 48%, Lag= 126.5 min  
 Primary = 8.81 cfs @ 4.59 hrs, Volume= 345,647 cf  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
 Peak Elev= 729.10' @ 4.59 hrs Surf.Area= 109,339 sf Storage= 128,923 cf

Plug-Flow detention time= 502.8 min calculated for 345,647 cf (98% of inflow)  
 Center-of-Mass det. time= 495.8 min ( 823.3 - 327.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	727.40'	87,965 cf	<b>48.0" Round Pipe Storage</b> x 10 L= 700.0' S= 0.0010 '/'
#2	727.80'	586,912 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		674,876 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.80	74,675	0	0
728.00	75,945	15,062	15,062
729.00	82,354	79,150	94,212
730.00	88,864	85,609	179,821
731.00	95,474	92,169	271,990
732.00	102,185	98,830	370,819
733.00	110,000	106,093	476,912
734.00	110,000	110,000	586,912

Device	Routing	Invert	Outlet Devices
#1	Primary	727.37'	<b>24.0" Round POI A</b> L= 75.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 727.37' / 727.14' S= 0.0031 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 3.14 sf
#2	Device 1	727.37'	<b>4.6" Vert. Orifice/Grate</b> C= 0.600
#3	Device 1	728.54'	<b>6.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)
#4	Secondary	730.21'	<b>24.0" Round POI B</b> L= 27.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 730.21' / 730.00' S= 0.0078 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 3.14 sf

**Primary OutFlow** Max=8.80 cfs @ 4.59 hrs HW=729.10' (Free Discharge)

1=POI A (Passes 8.80 cfs of 9.45 cfs potential flow)

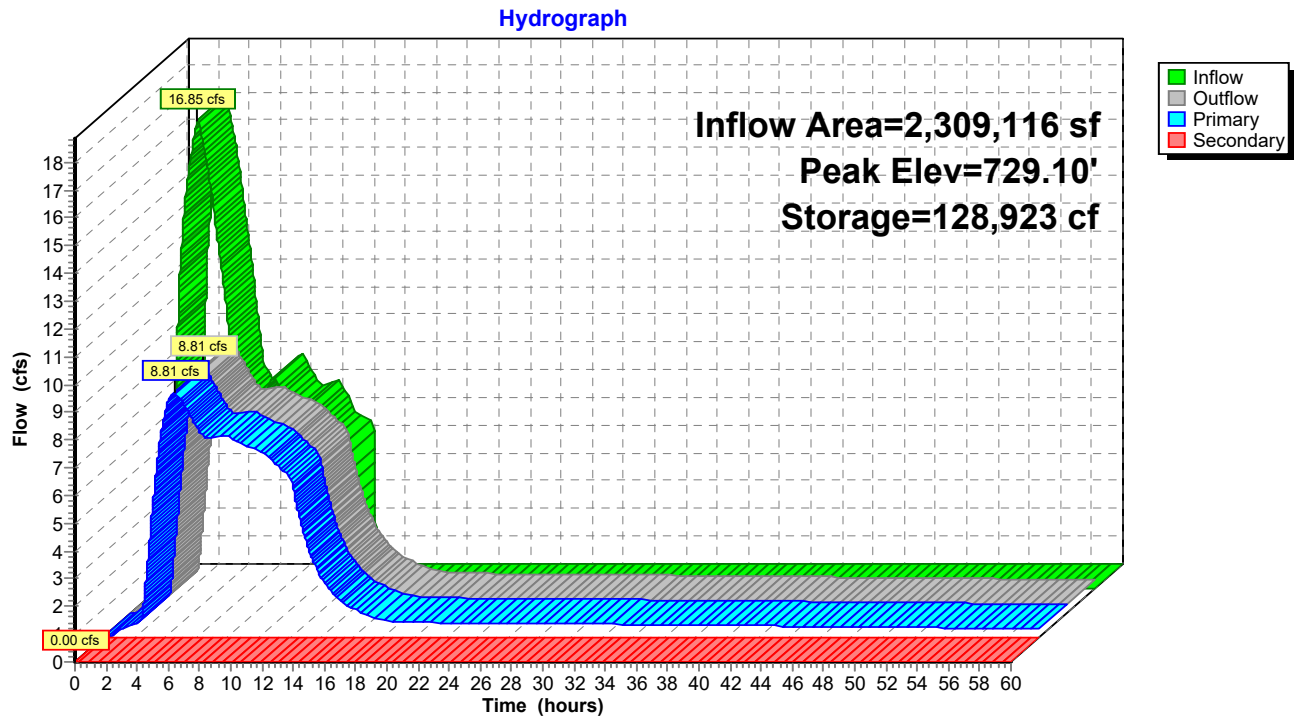
2=Orifice/Grate (Orifice Controls 0.69 cfs @ 5.98 fps)

3=Sharp-Crested Rectangular Weir (Weir Controls 8.11 cfs @ 2.45 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=727.40' (Free Discharge)

4=POI B ( Controls 0.00 cfs)

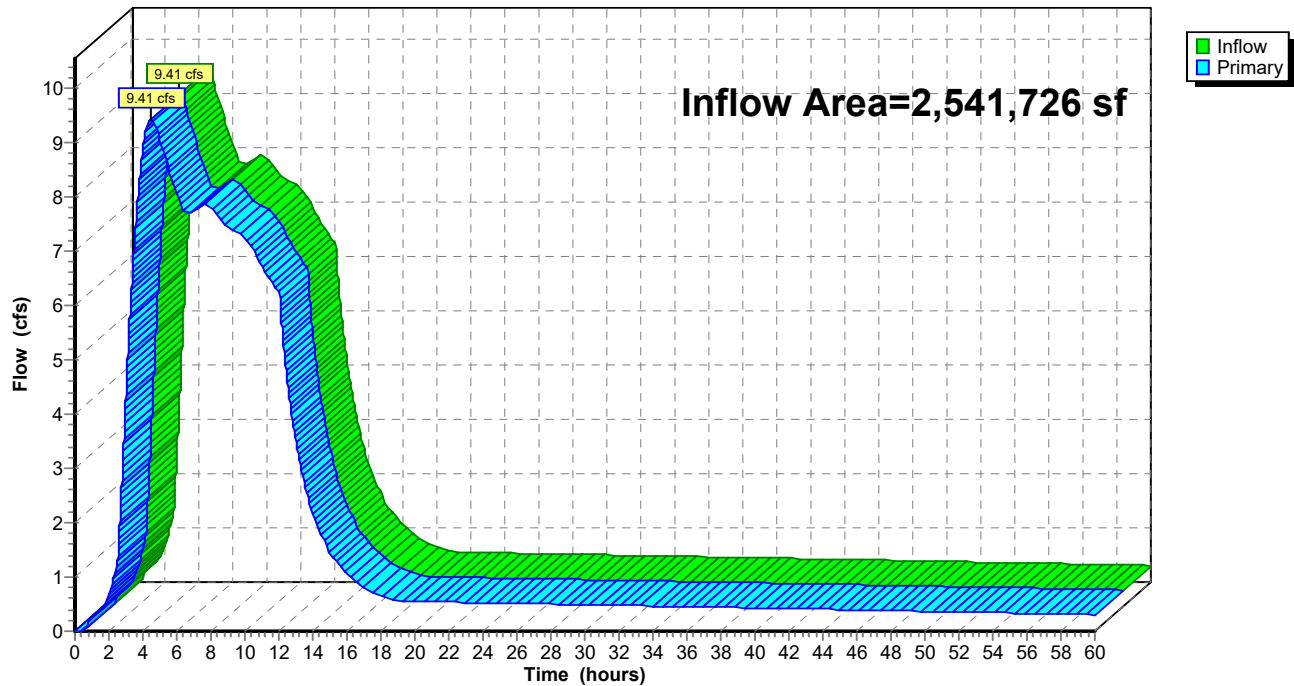
### Pond 3P: Pond/CMP Detention



**Summary for Link 13L: Total Post**

Inflow Area = 2,541,726 sf, 71.40% Impervious, Inflow Depth > 1.72" for 2-yr12HR event  
Inflow = 9.41 cfs @ 4.52 hrs, Volume= 365,239 cf  
Primary = 9.41 cfs @ 4.52 hrs, Volume= 365,239 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

**Link 13L: Total Post****Hydrograph**

**Summary for Subcatchment 2S: DA#3 (Dev-Onsite)**

Runoff = 1.98 cfs @ 4.85 hrs, Volume= 76,621 cf, Depth= 2.68"

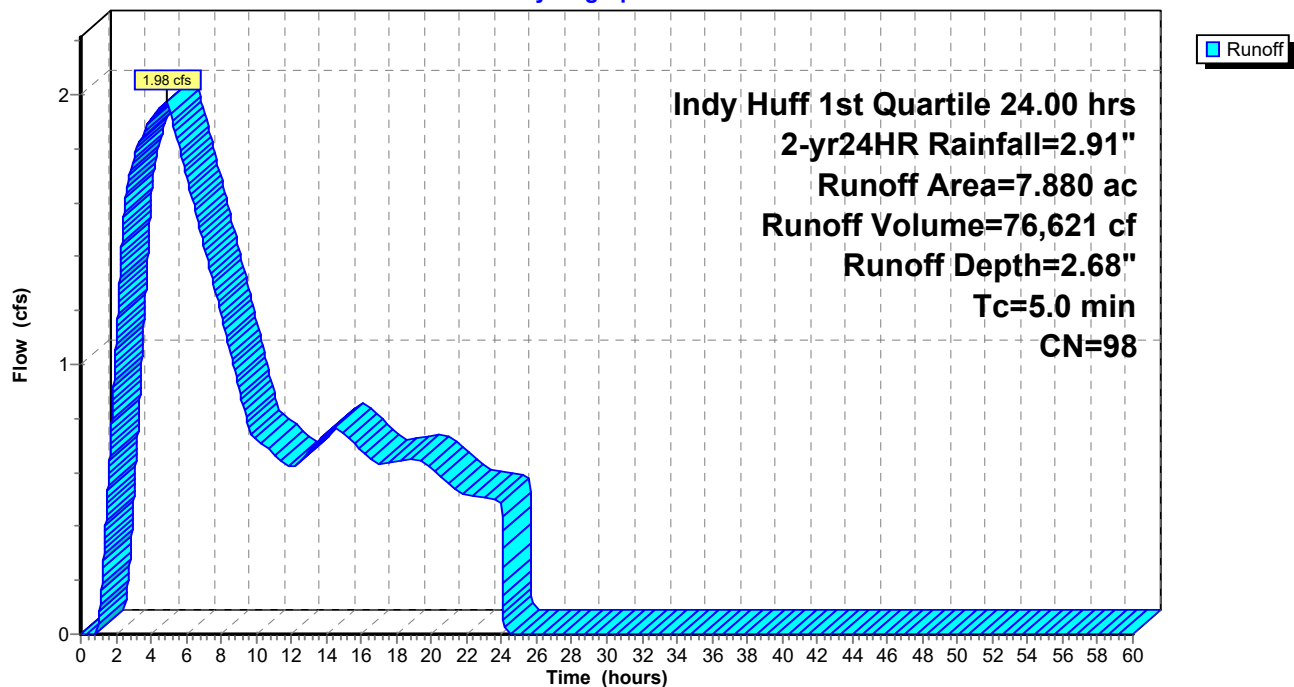
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 24.00 hrs 2-yr24HR Rainfall=2.91"

Area (ac)	CN	Description
* 7.880	98	
7.880		100.00% Impervious Area

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

**Subcatchment 2S: DA#3 (Dev-Onsite)**

Hydrograph



**Summary for Subcatchment 4S: DA#5 (Dev-Onsite)**

Runoff = 7.64 cfs @ 4.86 hrs, Volume= 294,610 cf, Depth= 2.57"

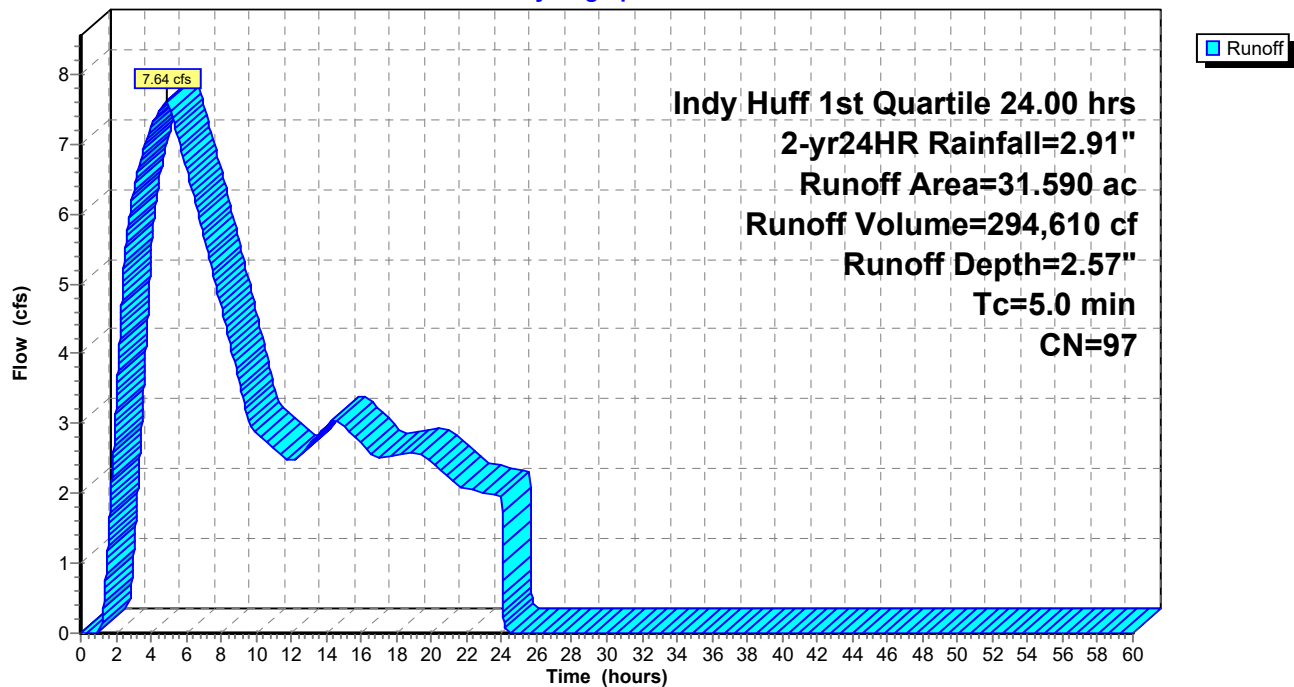
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 24.00 hrs 2-yr24HR Rainfall=2.91"

Area (ac)	CN	Description
* 29.300	98	
0.510	74	>75% Grass cover, Good, HSG C
1.780	80	>75% Grass cover, Good, HSG D
31.590	97	Weighted Average
2.290		7.25% Pervious Area
29.300		92.75% Impervious Area

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

**Subcatchment 4S: DA#5 (Dev-Onsite)**

Hydrograph



**Summary for Subcatchment 9S: DA#4 (Undetained)**

Runoff = 0.56 cfs @ 6.21 hrs, Volume= 26,643 cf, Depth= 1.37"

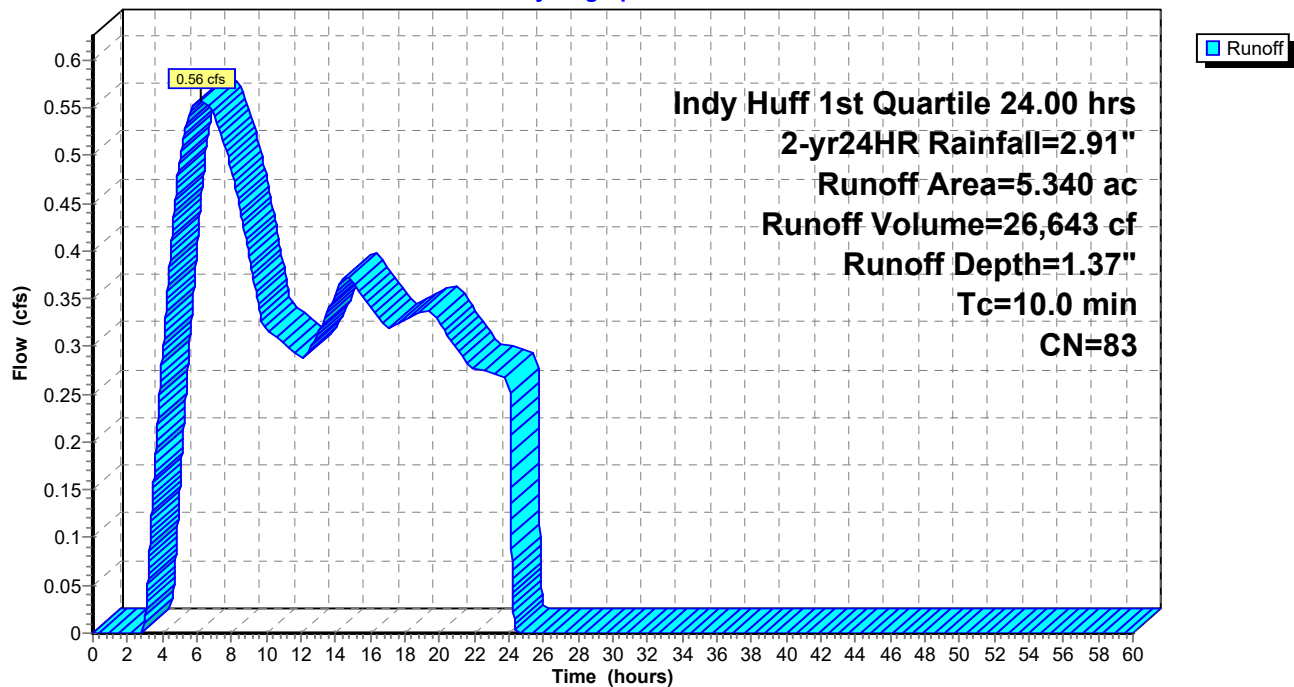
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 24.00 hrs 2-yr24HR Rainfall=2.91"

Area (ac)	CN	Description
* 1.130	98	
0.350	74	>75% Grass cover, Good, HSG C
3.860	80	>75% Grass cover, Good, HSG D
5.340	83	Weighted Average
4.210		78.84% Pervious Area
1.130		21.16% Impervious Area

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

**Subcatchment 9S: DA#4 (Undetained)**

Hydrograph



**Summary for Subcatchment 10S: DA#1**

Runoff = 0.48 cfs @ 7.13 hrs, Volume= 24,824 cf, Depth= 1.07"

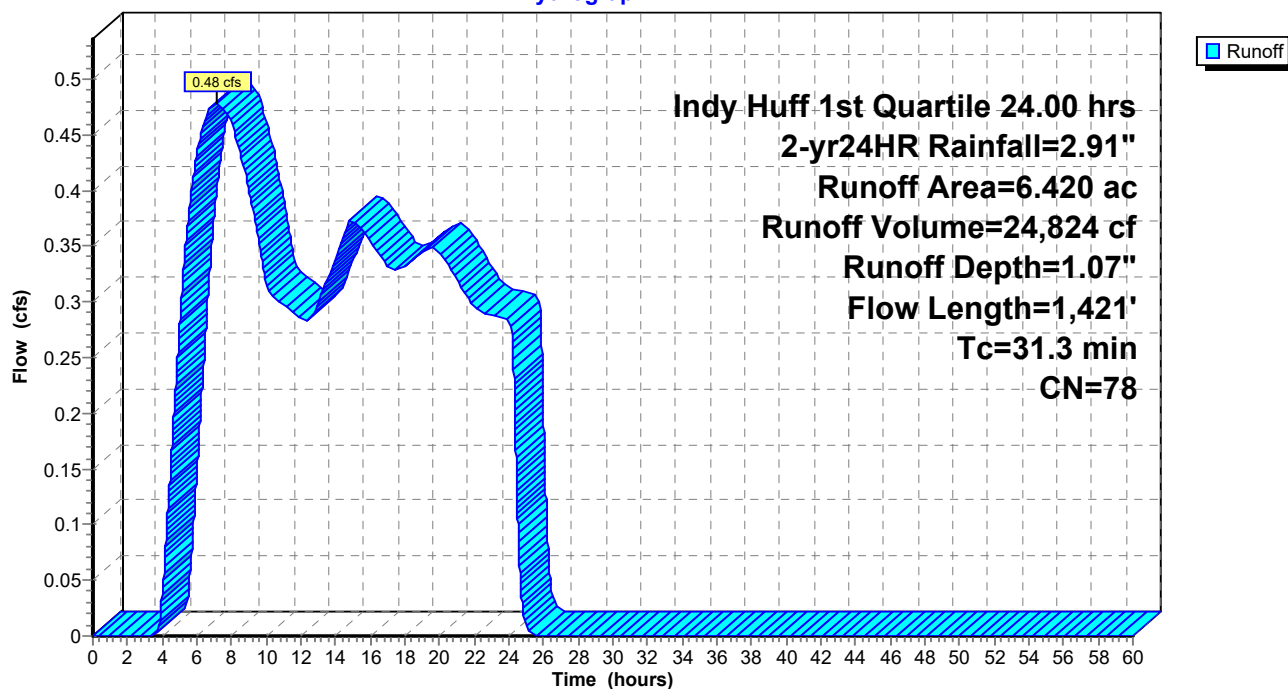
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 24.00 hrs 2-yr24HR Rainfall=2.91"

Area (ac)	CN	Description
* 0.640	98	
0.890	70	Woods, Good, HSG C
1.630	77	Woods, Good, HSG D
0.150	89	Row crops, straight row, Good, HSG D
0.130	85	Row crops, straight row, Good, HSG C
1.360	80	>75% Grass cover, Good, HSG D
1.620	74	>75% Grass cover, Good, HSG C
6.420	78	Weighted Average
5.780		90.03% Pervious Area
0.640		9.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0100	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
17.7	1,321	0.0060	1.25		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
31.3	1,421	Total			

**Subcatchment 10S: DA#1**

Hydrograph





**Summary for Subcatchment 11S: DA#2**

Runoff = 0.78 cfs @ 5.60 hrs, Volume= 34,202 cf, Depth= 1.74"

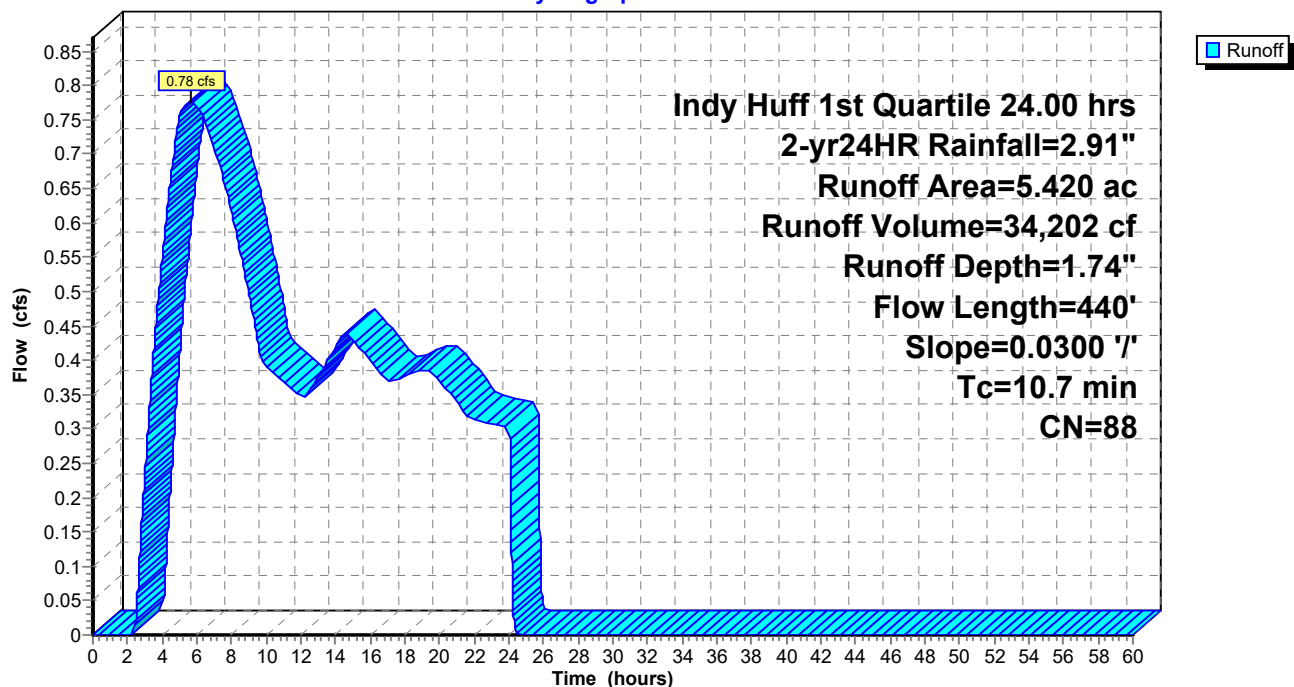
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 24.00 hrs 2-yr24HR Rainfall=2.91"

Area (ac)	CN	Description
* 2.710	98	
0.170	70	Woods, Good, HSG C
0.010	77	Woods, Good, HSG D
1.680	80	>75% Grass cover, Good, HSG D
0.850	74	>75% Grass cover, Good, HSG C
5.420	88	Weighted Average
2.710		50.00% Pervious Area
2.710		50.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.0300	0.19		<b>Sheet Flow,</b>
					Grass: Short n= 0.150 P2= 2.91"
2.0	340	0.0300	2.79		<b>Shallow Concentrated Flow,</b>
					Unpaved Kv= 16.1 fps
10.7	440	Total			

**Subcatchment 11S: DA#2**

Hydrograph



**Summary for Subcatchment 12S: DA711**

Runoff = 0.09 cfs @ 8.04 hrs, Volume= 5,256 cf, Depth= 0.85"

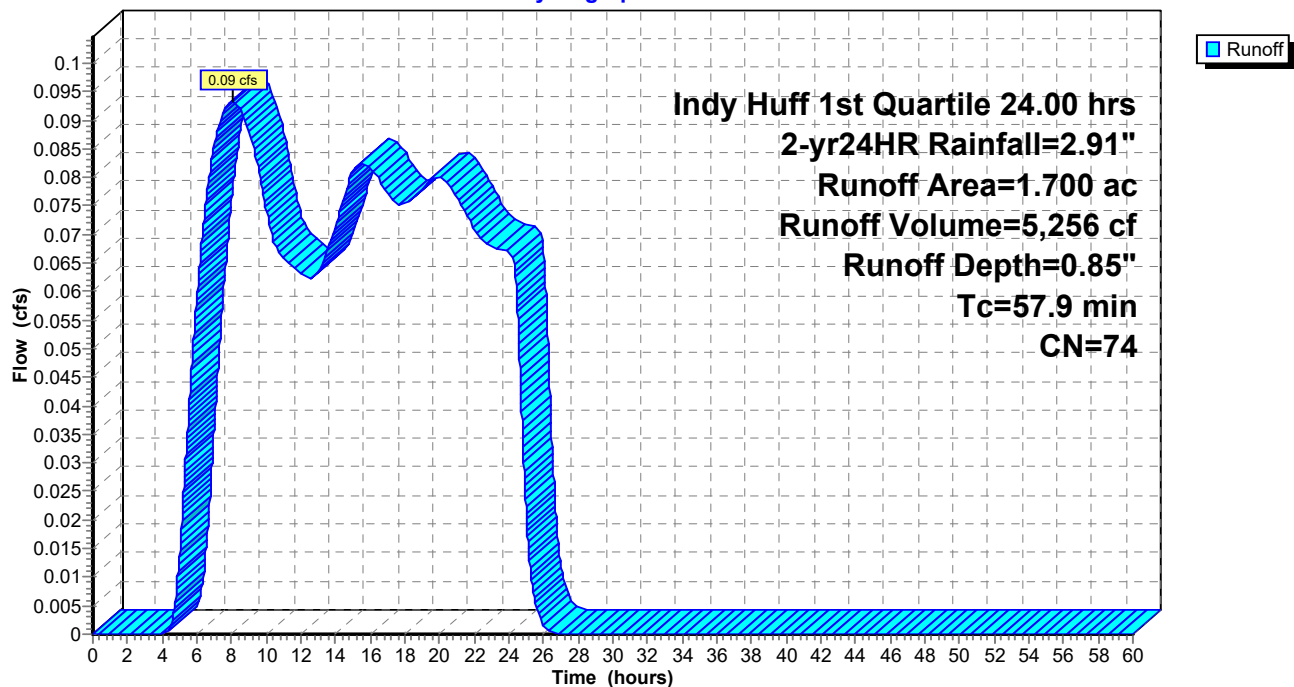
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 24.00 hrs 2-yr24HR Rainfall=2.91"

Area (ac)	CN	Description
* 1.700	74	
1.700		100.00% Pervious Area

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

**Subcatchment 12S: DA711**

Hydrograph



### Summary for Pond 3P: Pond/CMP Detention

[44] Hint: Outlet device #2 is below defined storage

Inflow Area = 2,309,116 sf, 76.46% Impervious, Inflow Depth = 2.26" for 2-yr24HR event  
 Inflow = 10.60 cfs @ 4.88 hrs, Volume= 435,513 cf  
 Outflow = 7.56 cfs @ 7.63 hrs, Volume= 415,891 cf, Atten= 29%, Lag= 164.9 min  
 Primary = 7.56 cfs @ 7.63 hrs, Volume= 415,891 cf  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
 Peak Elev= 729.04' @ 7.63 hrs Surf.Area= 108,647 sf Storage= 122,445 cf

Plug-Flow detention time= 464.0 min calculated for 415,891 cf (95% of inflow)  
 Center-of-Mass det. time= 428.3 min ( 1,069.7 - 641.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	727.40'	87,965 cf	<b>48.0" Round Pipe Storage</b> x 10 L= 700.0' S= 0.0010 '/'
#2	727.80'	586,912 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		674,876 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.80	74,675	0	0
728.00	75,945	15,062	15,062
729.00	82,354	79,150	94,212
730.00	88,864	85,609	179,821
731.00	95,474	92,169	271,990
732.00	102,185	98,830	370,819
733.00	110,000	106,093	476,912
734.00	110,000	110,000	586,912

Device	Routing	Invert	Outlet Devices
#1	Primary	727.37'	<b>24.0" Round POI A</b> L= 75.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 727.37' / 727.14' S= 0.0031 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 3.14 sf
#2	Device 1	727.37'	<b>4.6" Vert. Orifice/Grate</b> C= 0.600
#3	Device 1	728.54'	<b>6.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)
#4	Secondary	730.21'	<b>24.0" Round POI B</b> L= 27.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 730.21' / 730.00' S= 0.0078 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 3.14 sf

**Primary OutFlow** Max=7.55 cfs @ 7.63 hrs HW=729.04' (Free Discharge)

1=POI A (Passes 7.55 cfs of 8.93 cfs potential flow)

2=Orifice/Grate (Orifice Controls 0.68 cfs @ 5.86 fps)

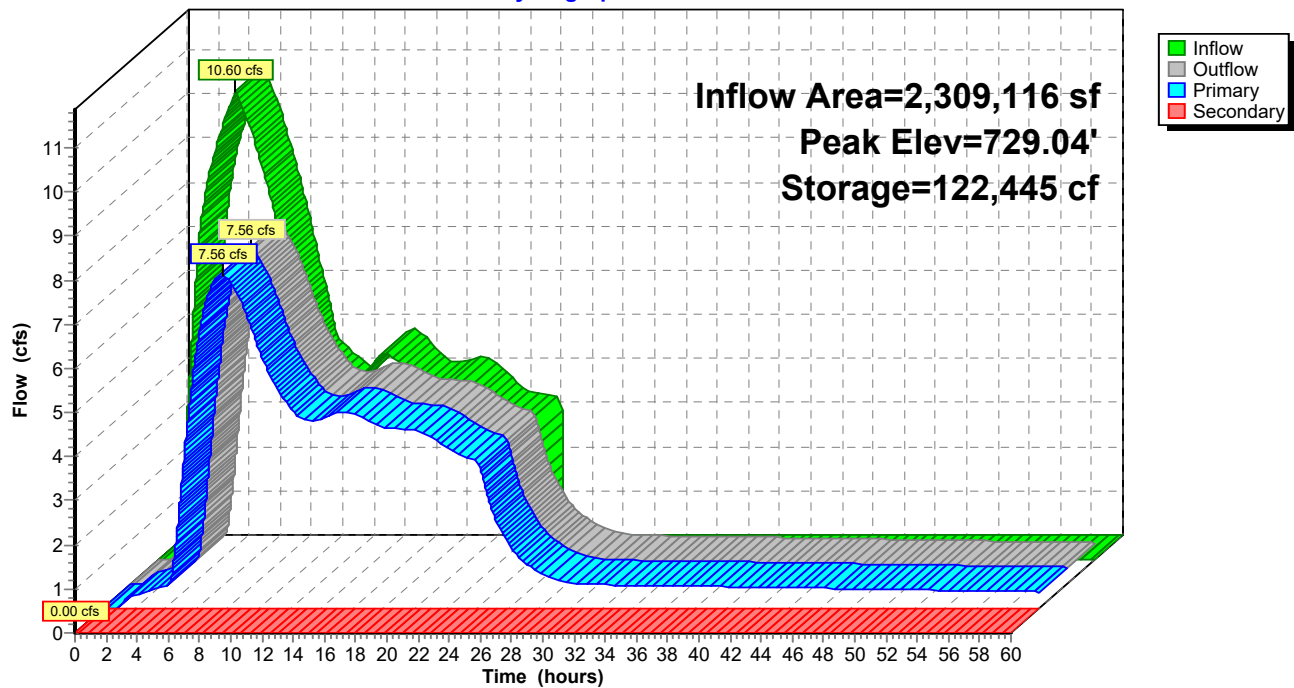
3=Sharp-Crested Rectangular Weir (Weir Controls 6.88 cfs @ 2.32 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=727.40' (Free Discharge)

4=POI B ( Controls 0.00 cfs)

### Pond 3P: Pond/CMP Detention

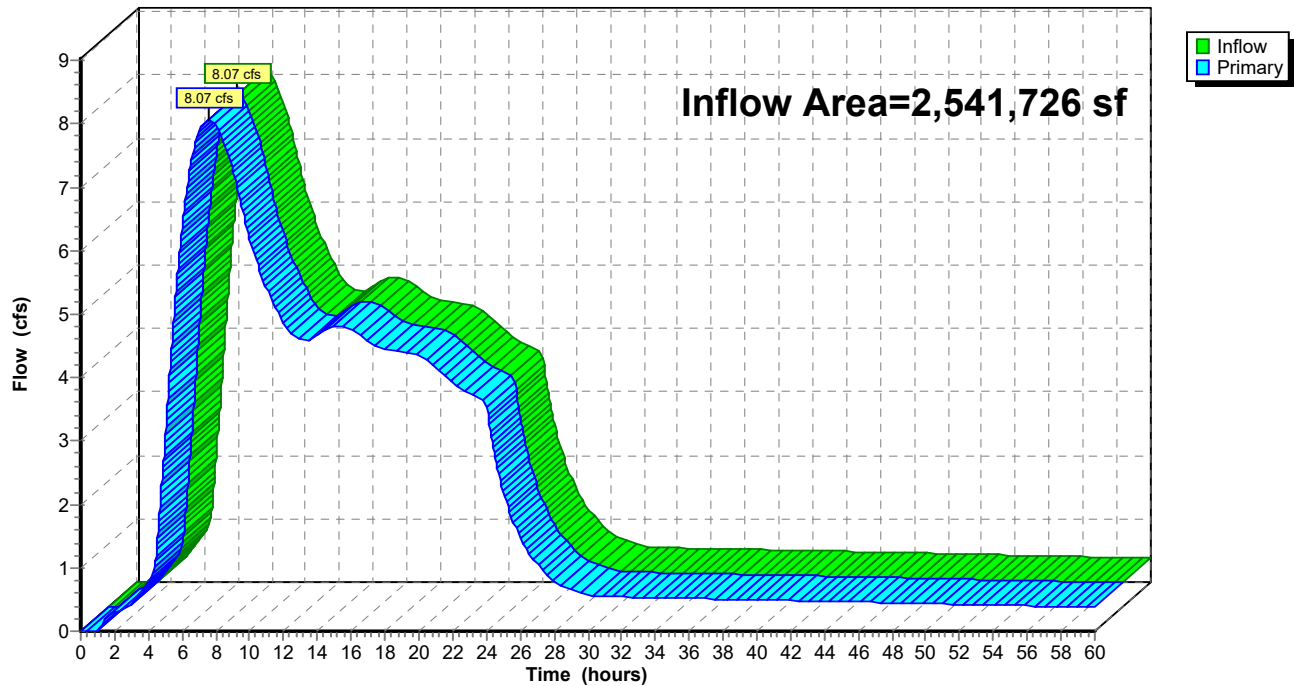
#### Hydrograph



**Summary for Link 13L: Total Post**

Inflow Area = 2,541,726 sf, 71.40% Impervious, Inflow Depth > 2.09" for 2-yr24HR event  
Inflow = 8.07 cfs @ 7.57 hrs, Volume= 442,534 cf  
Primary = 8.07 cfs @ 7.57 hrs, Volume= 442,534 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

**Link 13L: Total Post****Hydrograph**

**Summary for Subcatchment 2S: DA#3 (Dev-Onsite)**

Runoff = 29.84 cfs @ 0.27 hrs, Volume= 51,321 cf, Depth= 1.79"

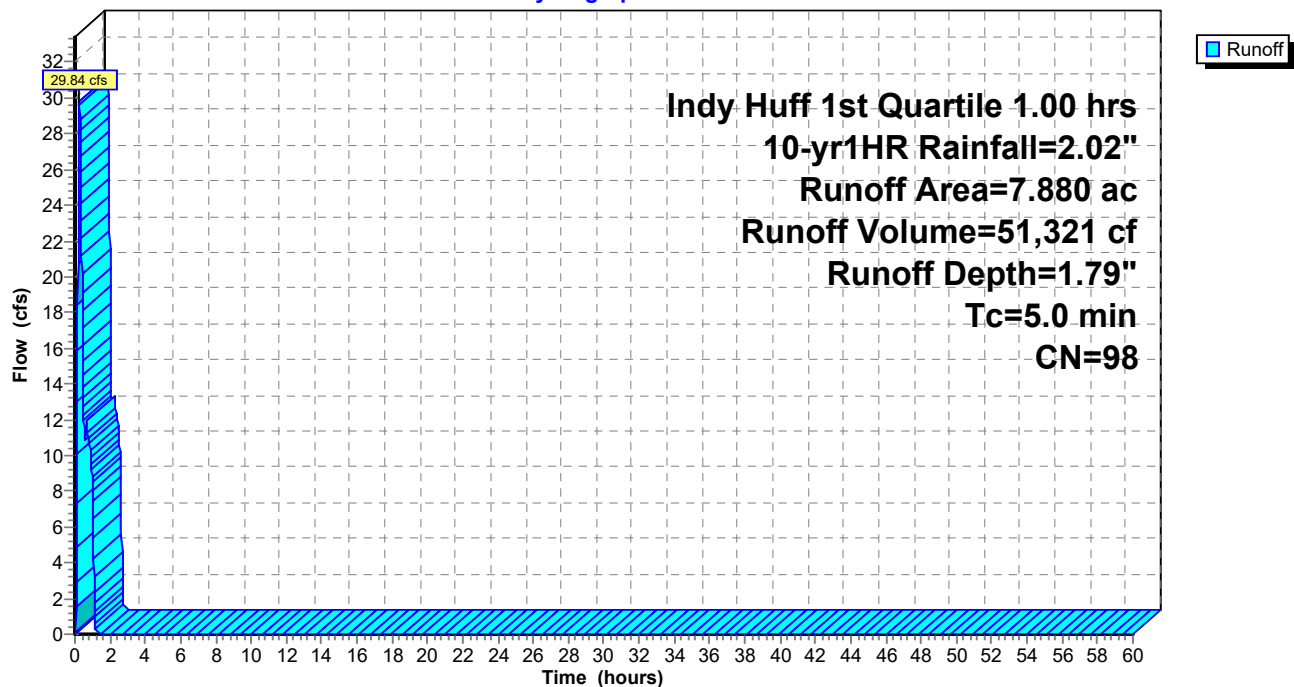
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 1.00 hrs 10-yr1HR Rainfall=2.02"

Area (ac)	CN	Description
* 7.880	98	
7.880		100.00% Impervious Area

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

**Subcatchment 2S: DA#3 (Dev-Onsite)**

Hydrograph



**Summary for Subcatchment 4S: DA#5 (Dev-Onsite)**

Runoff = 111.11 cfs @ 0.28 hrs, Volume= 193,916 cf, Depth= 1.69"

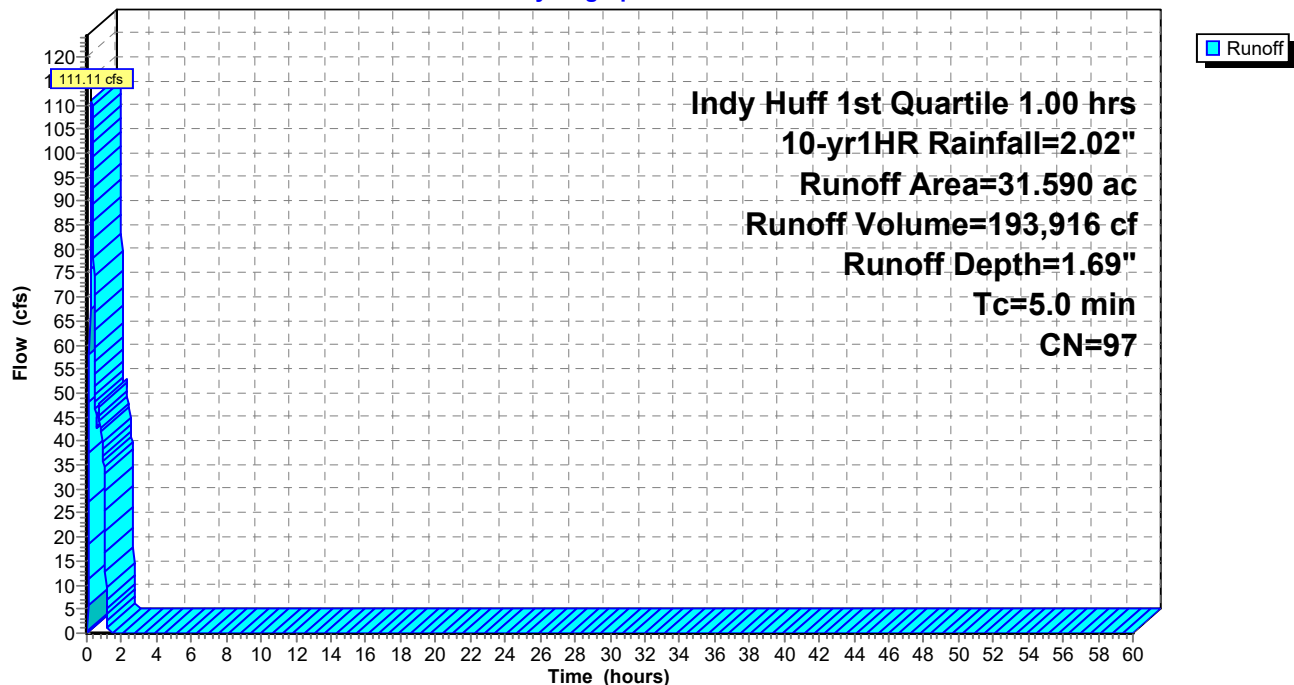
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 1.00 hrs 10-yr1HR Rainfall=2.02"

Area (ac)	CN	Description
* 29.300	98	
0.510	74	>75% Grass cover, Good, HSG C
1.780	80	>75% Grass cover, Good, HSG D
31.590	97	Weighted Average
2.290		7.25% Pervious Area
29.300		92.75% Impervious Area

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

**Subcatchment 4S: DA#5 (Dev-Onsite)**

Hydrograph



**Summary for Subcatchment 9S: DA#4 (Undetained)**

Runoff = 5.22 cfs @ 0.44 hrs, Volume= 13,740 cf, Depth= 0.71"

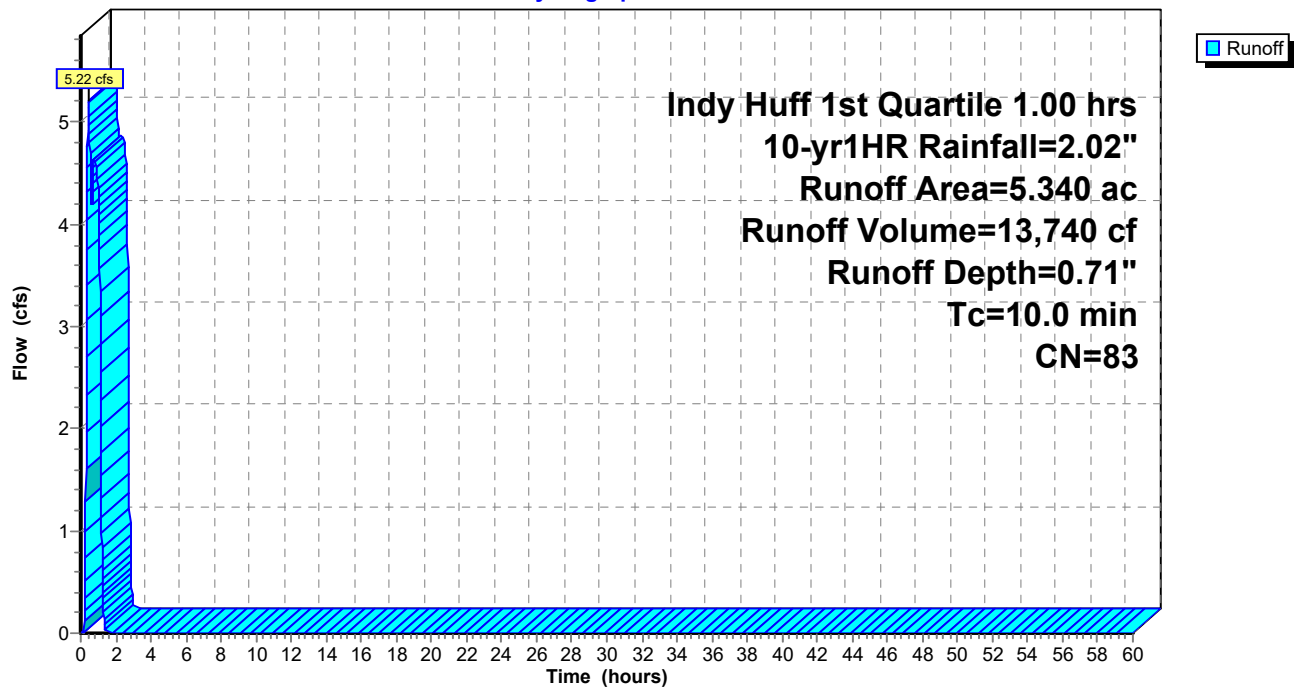
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 1.00 hrs 10-yr1HR Rainfall=2.02"

Area (ac)	CN	Description
* 1.130	98	
0.350	74	>75% Grass cover, Good, HSG C
3.860	80	>75% Grass cover, Good, HSG D
5.340	83	Weighted Average
4.210		78.84% Pervious Area
1.130		21.16% Impervious Area

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

**Subcatchment 9S: DA#4 (Undetained)**

Hydrograph





**Summary for Subcatchment 10S: DA#1**

Runoff = 3.88 cfs @ 1.11 hrs, Volume= 11,551 cf, Depth= 0.50"

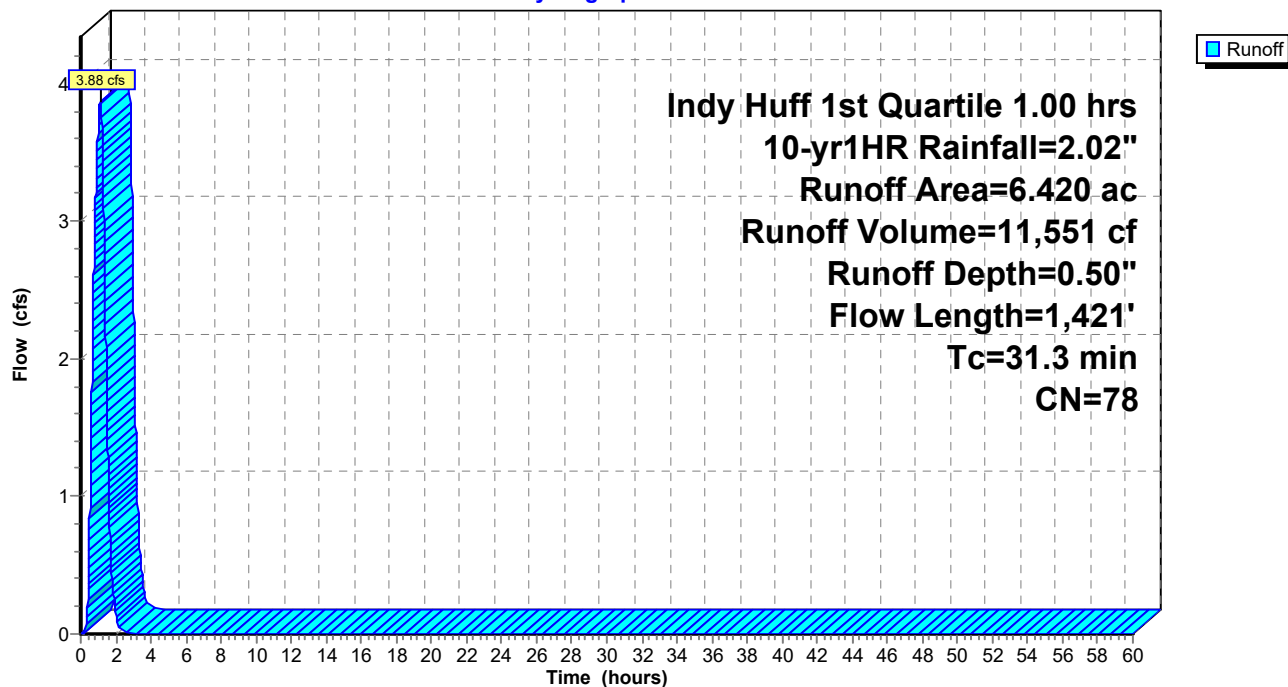
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 1.00 hrs 10-yr1HR Rainfall=2.02"

Area (ac)	CN	Description
* 0.640	98	
0.890	70	Woods, Good, HSG C
1.630	77	Woods, Good, HSG D
0.150	89	Row crops, straight row, Good, HSG D
0.130	85	Row crops, straight row, Good, HSG C
1.360	80	>75% Grass cover, Good, HSG D
1.620	74	>75% Grass cover, Good, HSG C
6.420	78	Weighted Average
5.780		90.03% Pervious Area
0.640		9.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0100	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
17.7	1,321	0.0060	1.25		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
31.3	1,421	Total			

**Subcatchment 10S: DA#1**

Hydrograph



**Summary for Subcatchment 11S: DA#2**

Runoff = 8.03 cfs @ 0.43 hrs, Volume= 19,308 cf, Depth= 0.98"

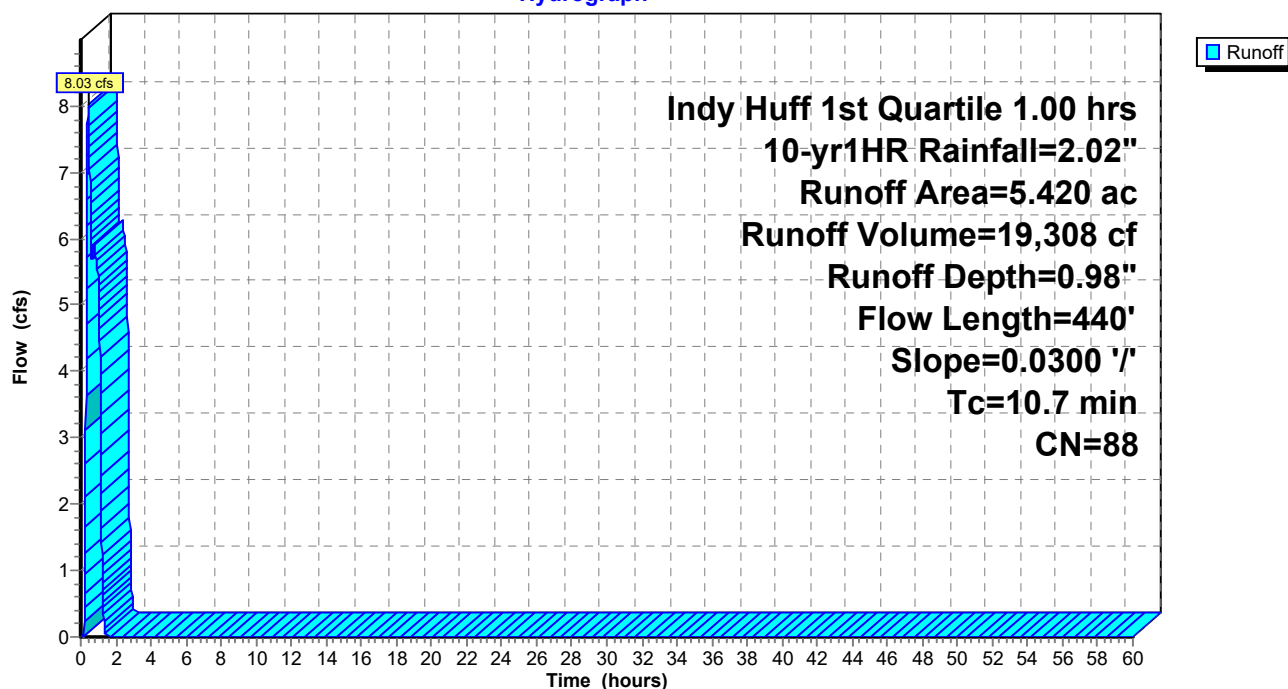
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 1.00 hrs 10-yr1HR Rainfall=2.02"

Area (ac)	CN	Description
* 2.710	98	
0.170	70	Woods, Good, HSG C
0.010	77	Woods, Good, HSG D
1.680	80	>75% Grass cover, Good, HSG D
0.850	74	>75% Grass cover, Good, HSG C
5.420	88	Weighted Average
2.710		50.00% Pervious Area
2.710		50.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.0300	0.19		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
2.0	340	0.0300	2.79		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
10.7	440	Total			

**Subcatchment 11S: DA#2**

Hydrograph



**Summary for Subcatchment 12S: DA711**

Runoff = 0.59 cfs @ 1.41 hrs, Volume= 2,217 cf, Depth= 0.36"

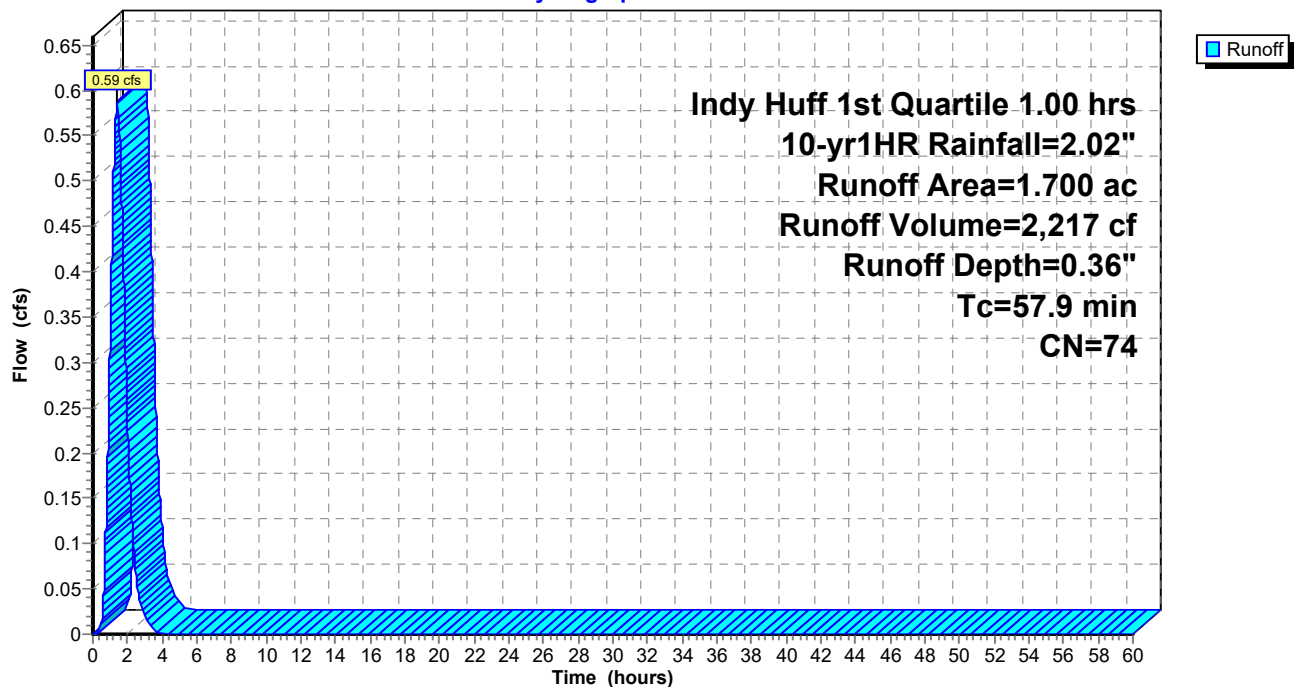
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 1.00 hrs 10-yr1HR Rainfall=2.02"

Area (ac)	CN	Description
* 1.700	74	
1.700		100.00% Pervious Area

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

**Subcatchment 12S: DA711**

Hydrograph



**Summary for Pond 3P: Pond/CMP Detention**

[44] Hint: Outlet device #2 is below defined storage

Inflow Area = 2,309,116 sf, 76.46% Impervious, Inflow Depth = 1.45" for 10-yr1HR event  
 Inflow = 143.87 cfs @ 0.28 hrs, Volume= 278,313 cf  
 Outflow = 15.53 cfs @ 1.01 hrs, Volume= 278,313 cf, Atten= 89%, Lag= 43.8 min  
 Primary = 15.53 cfs @ 1.01 hrs, Volume= 278,313 cf  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
 Peak Elev= 730.03' @ 1.11 hrs Surf.Area= 116,660 sf Storage= 234,782 cf

Plug-Flow detention time= 578.4 min calculated for 278,313 cf (100% of inflow)  
 Center-of-Mass det. time= 578.4 min ( 611.9 - 33.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	727.40'	87,965 cf	<b>48.0" Round Pipe Storage</b> x 10 L= 700.0' S= 0.0010 '/'
#2	727.80'	586,912 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		674,876 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.80	74,675	0	0
728.00	75,945	15,062	15,062
729.00	82,354	79,150	94,212
730.00	88,864	85,609	179,821
731.00	95,474	92,169	271,990
732.00	102,185	98,830	370,819
733.00	110,000	106,093	476,912
734.00	110,000	110,000	586,912

Device	Routing	Invert	Outlet Devices
#1	Primary	727.37'	<b>24.0" Round POI A</b> L= 75.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 727.37' / 727.14' S= 0.0031 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 3.14 sf
#2	Device 1	727.37'	<b>4.6" Vert. Orifice/Grate</b> C= 0.600
#3	Device 1	728.54'	<b>6.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)
#4	Secondary	730.21'	<b>24.0" Round POI B</b> L= 27.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 730.21' / 730.00' S= 0.0078 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 3.14 sf

**Primary OutFlow** Max=15.53 cfs @ 1.01 hrs HW=729.97' (Free Discharge)

1=POI A (Barrel Controls 15.53 cfs @ 4.97 fps)

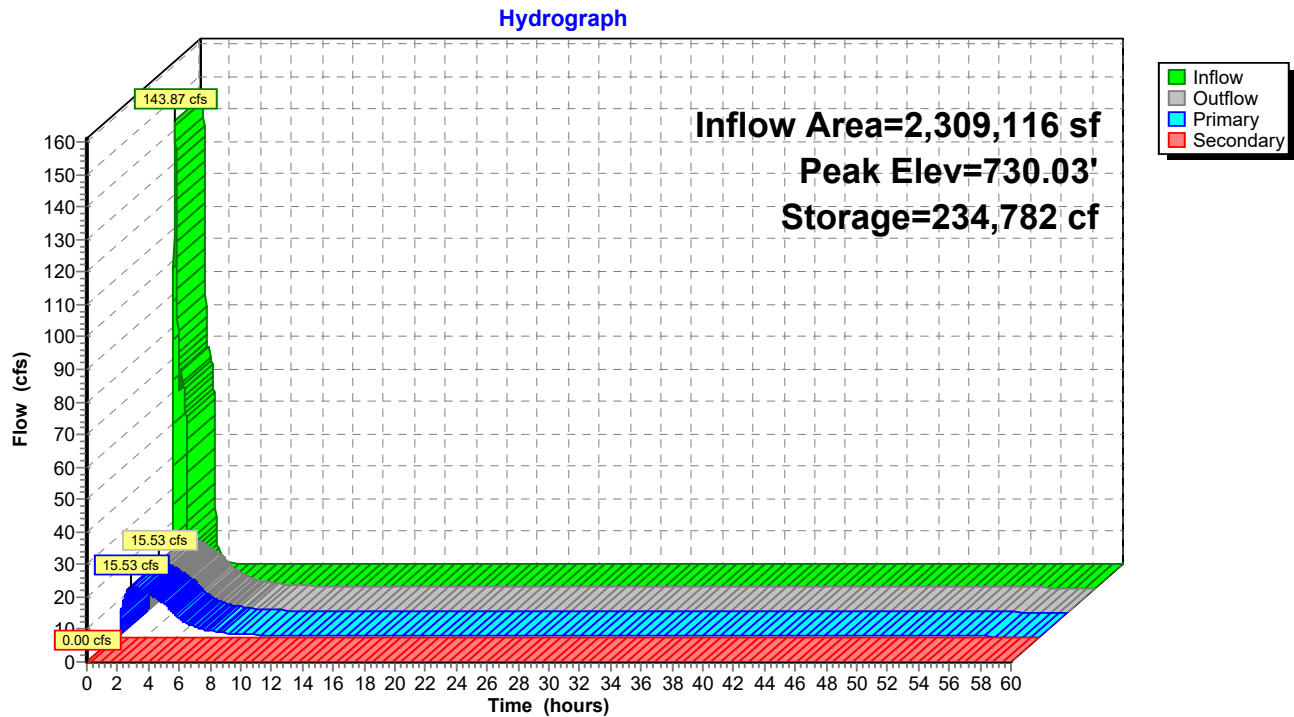
2=Orifice/Grate (Passes < 0.86 cfs potential flow)

3=Sharp-Crested Rectangular Weir (Passes < 32.10 cfs potential flow)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=727.40' (Free Discharge)

4=POI B ( Controls 0.00 cfs)

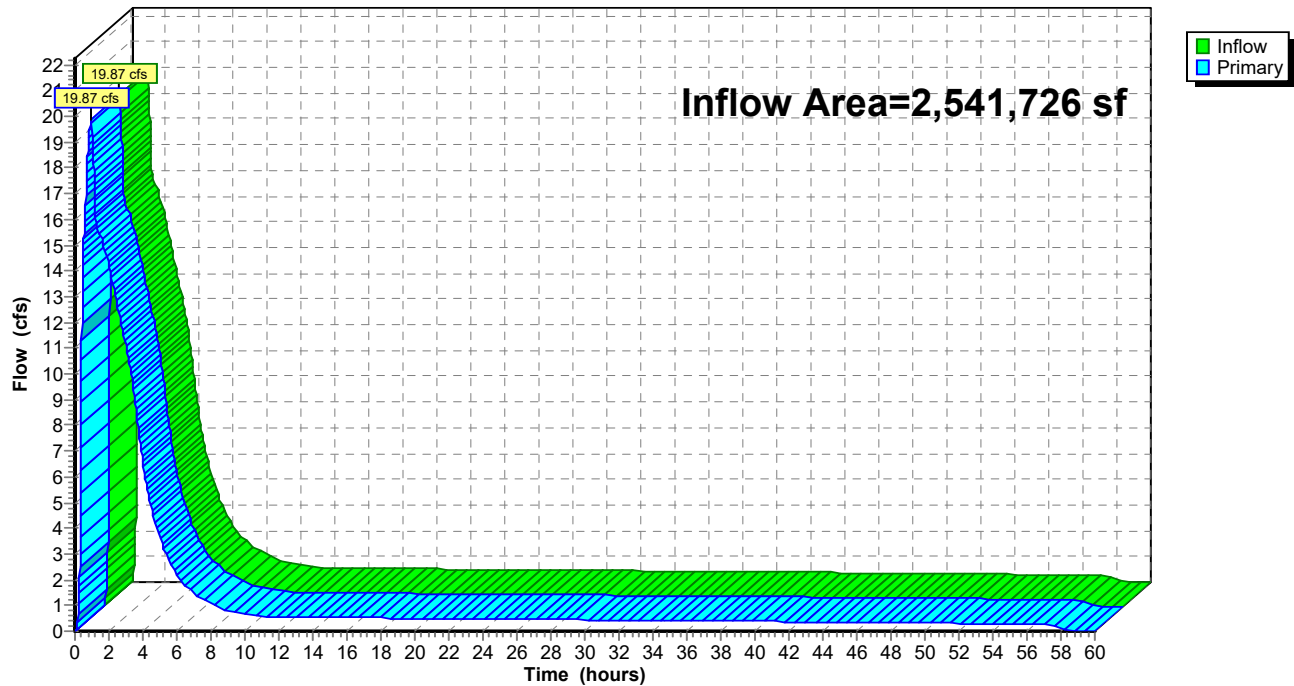
### Pond 3P: Pond/CMP Detention



**Summary for Link 13L: Total Post**

Inflow Area = 2,541,726 sf, 71.40% Impervious, Inflow Depth = 1.38" for 10-yr1HR event  
Inflow = 19.87 cfs @ 0.95 hrs, Volume= 292,053 cf  
Primary = 19.87 cfs @ 0.95 hrs, Volume= 292,053 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

**Link 13L: Total Post****Hydrograph**

**Summary for Subcatchment 2S: DA#3 (Dev-Onsite)**

Runoff = 18.64 cfs @ 0.46 hrs, Volume= 61,258 cf, Depth= 2.14"

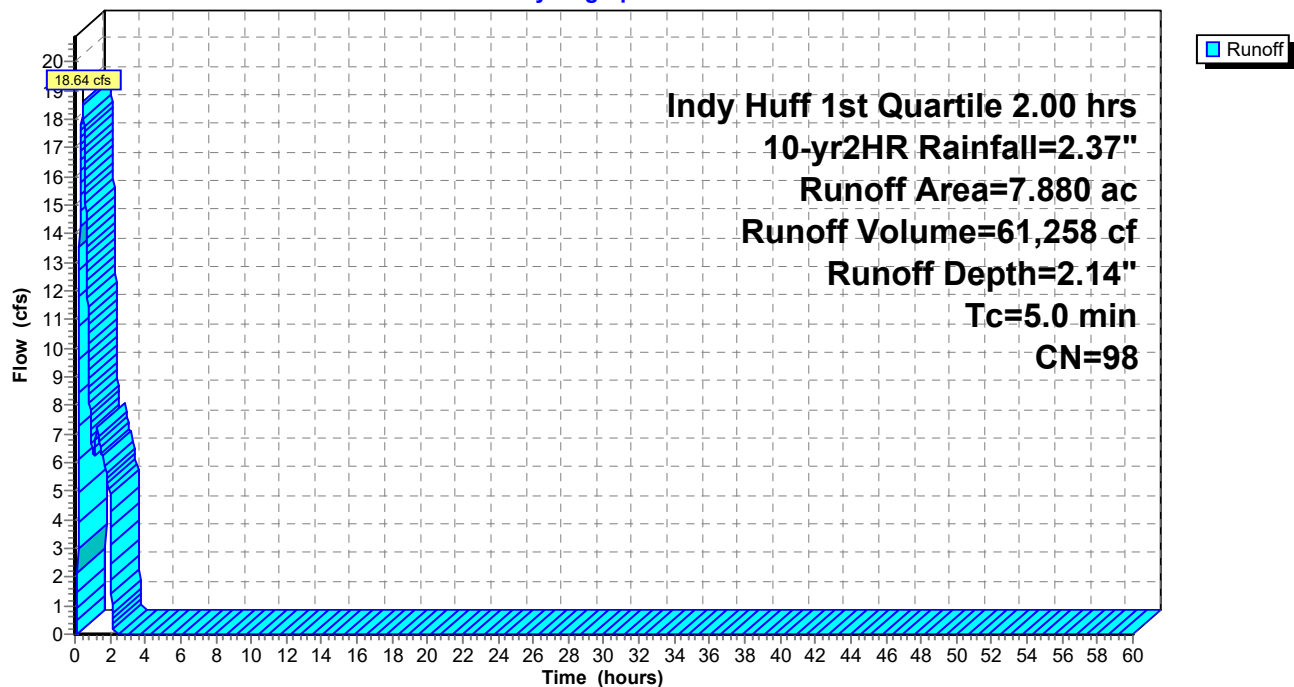
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 2.00 hrs 10-yr2HR Rainfall=2.37"

Area (ac)	CN	Description
* 7.880	98	
7.880		100.00% Impervious Area

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

**Subcatchment 2S: DA#3 (Dev-Onsite)**

Hydrograph



**Summary for Subcatchment 4S: DA#5 (Dev-Onsite)**

Runoff = 70.60 cfs @ 0.47 hrs, Volume= 233,404 cf, Depth= 2.04"

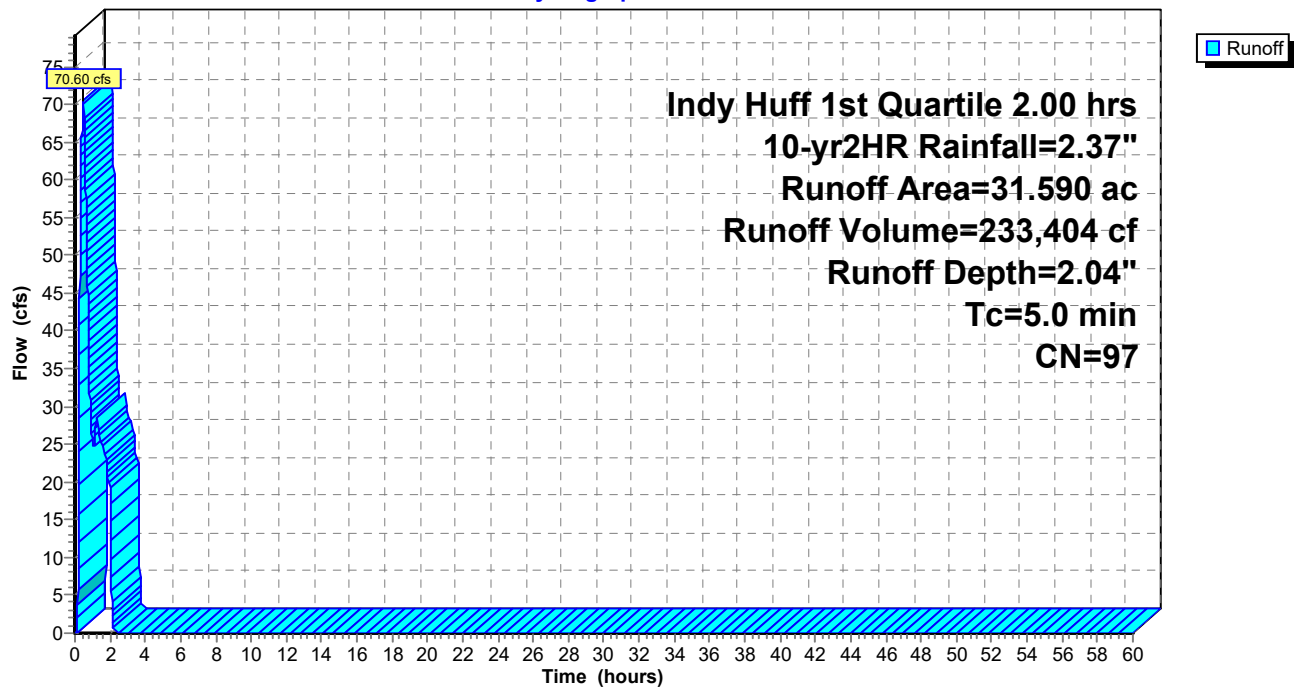
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 2.00 hrs 10-yr2HR Rainfall=2.37"

Area (ac)	CN	Description
* 29.300	98	
0.510	74	>75% Grass cover, Good, HSG C
1.780	80	>75% Grass cover, Good, HSG D
31.590	97	Weighted Average
2.290		7.25% Pervious Area
29.300		92.75% Impervious Area

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

**Subcatchment 4S: DA#5 (Dev-Onsite)**

Hydrograph





**Summary for Subcatchment 9S: DA#4 (Undetained)**

Runoff = 4.21 cfs @ 0.70 hrs, Volume= 18,584 cf, Depth= 0.96"

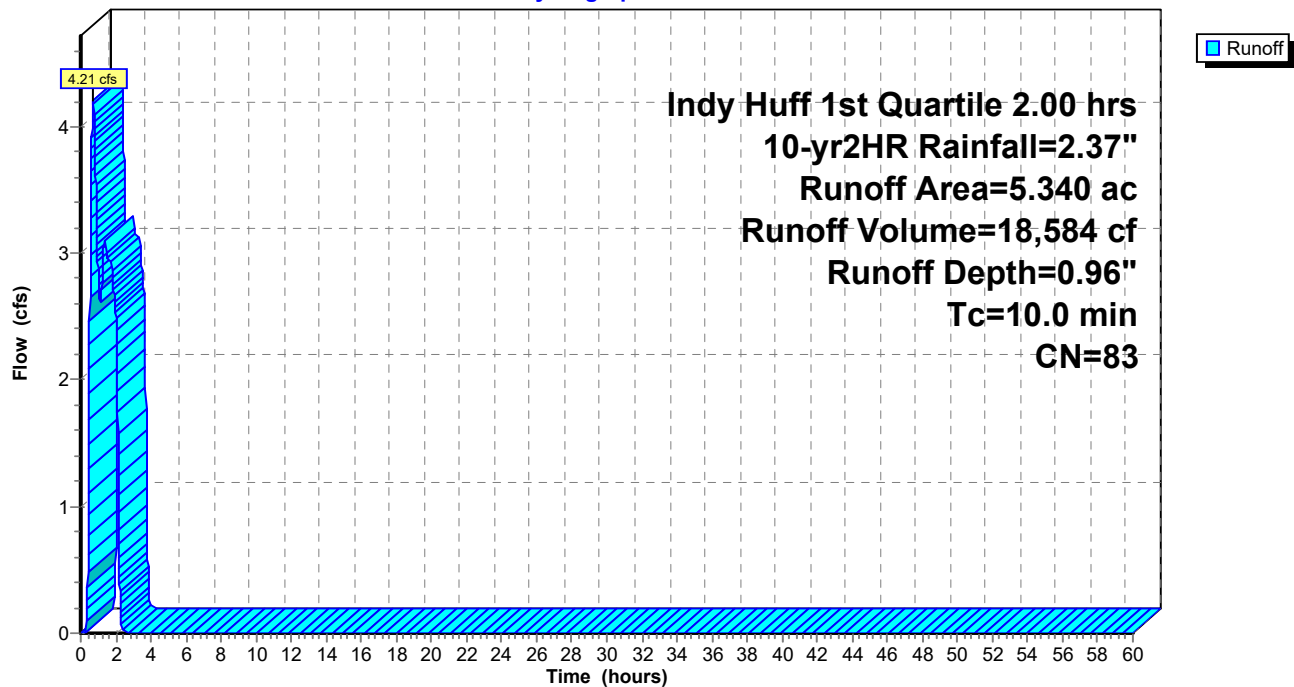
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 2.00 hrs 10-yr2HR Rainfall=2.37"

Area (ac)	CN	Description
* 1.130	98	
0.350	74	>75% Grass cover, Good, HSG C
3.860	80	>75% Grass cover, Good, HSG D
5.340	83	Weighted Average
4.210		78.84% Pervious Area
1.130		21.16% Impervious Area

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

**Subcatchment 9S: DA#4 (Undetained)**

Hydrograph



**Summary for Subcatchment 10S: DA#1**

Runoff = 2.87 cfs @ 1.91 hrs, Volume= 16,428 cf, Depth= 0.70"

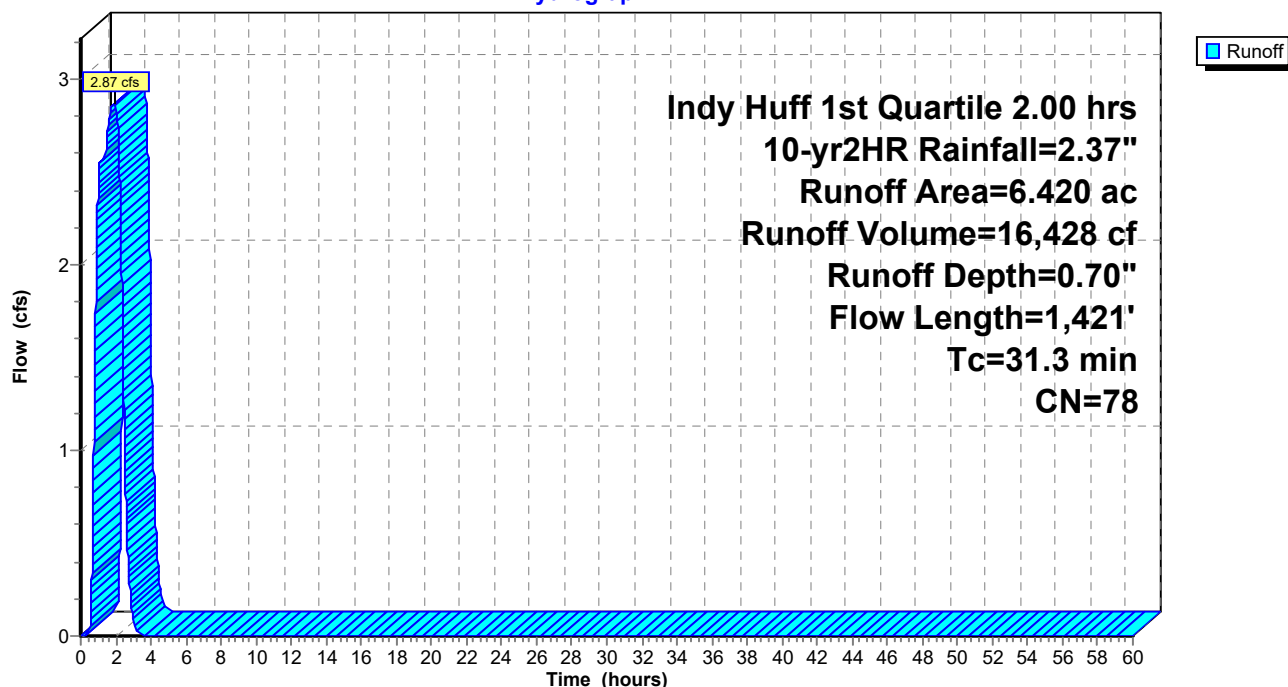
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 2.00 hrs 10-yr2HR Rainfall=2.37"

Area (ac)	CN	Description
* 0.640	98	
0.890	70	Woods, Good, HSG C
1.630	77	Woods, Good, HSG D
0.150	89	Row crops, straight row, Good, HSG D
0.130	85	Row crops, straight row, Good, HSG C
1.360	80	>75% Grass cover, Good, HSG D
1.620	74	>75% Grass cover, Good, HSG C
6.420	78	Weighted Average
5.780		90.03% Pervious Area
0.640		9.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0100	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
17.7	1,321	0.0060	1.25		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
31.3	1,421	Total			

**Subcatchment 10S: DA#1**

Hydrograph



**Summary for Subcatchment 11S: DA#2**

Runoff = 6.14 cfs @ 0.67 hrs, Volume= 25,005 cf, Depth= 1.27"

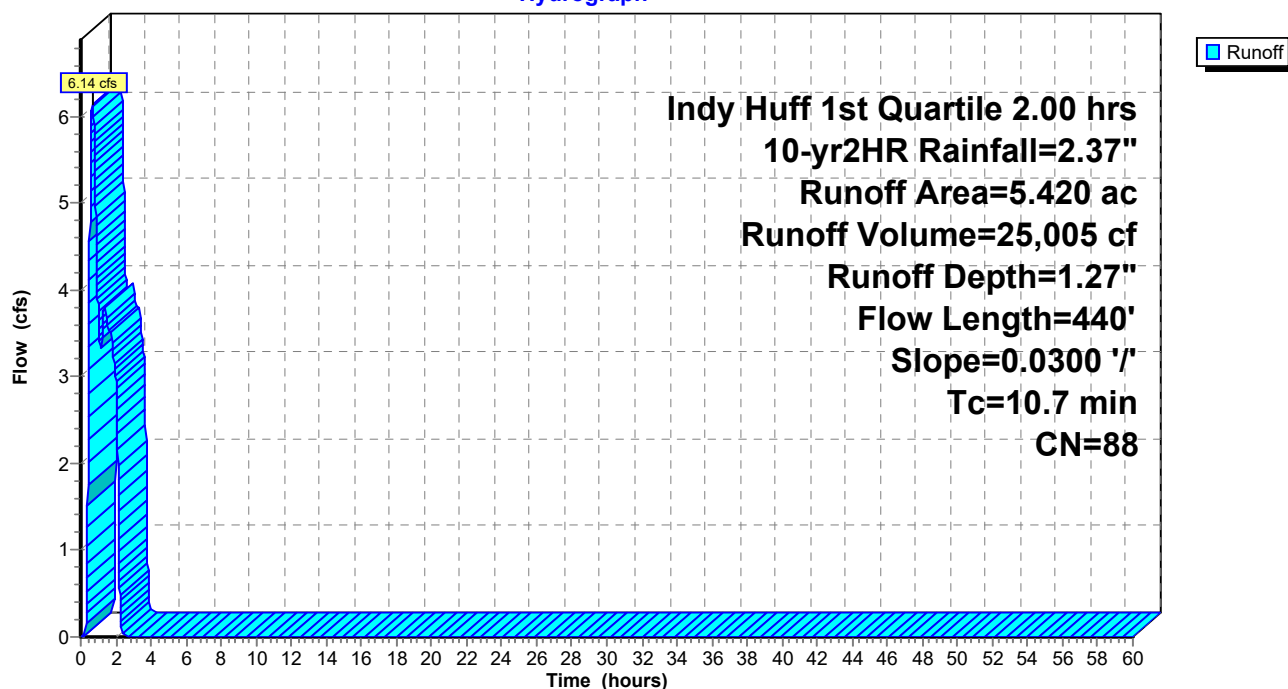
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 2.00 hrs 10-yr2HR Rainfall=2.37"

Area (ac)	CN	Description
* 2.710	98	
0.170	70	Woods, Good, HSG C
0.010	77	Woods, Good, HSG D
1.680	80	>75% Grass cover, Good, HSG D
0.850	74	>75% Grass cover, Good, HSG C
5.420	88	Weighted Average
2.710		50.00% Pervious Area
2.710		50.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.0300	0.19		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
2.0	340	0.0300	2.79		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
10.7	440	Total			

**Subcatchment 11S: DA#2**

Hydrograph



**Summary for Subcatchment 12S: DA711**

Runoff = 0.58 cfs @ 2.19 hrs, Volume= 3,311 cf, Depth= 0.54"

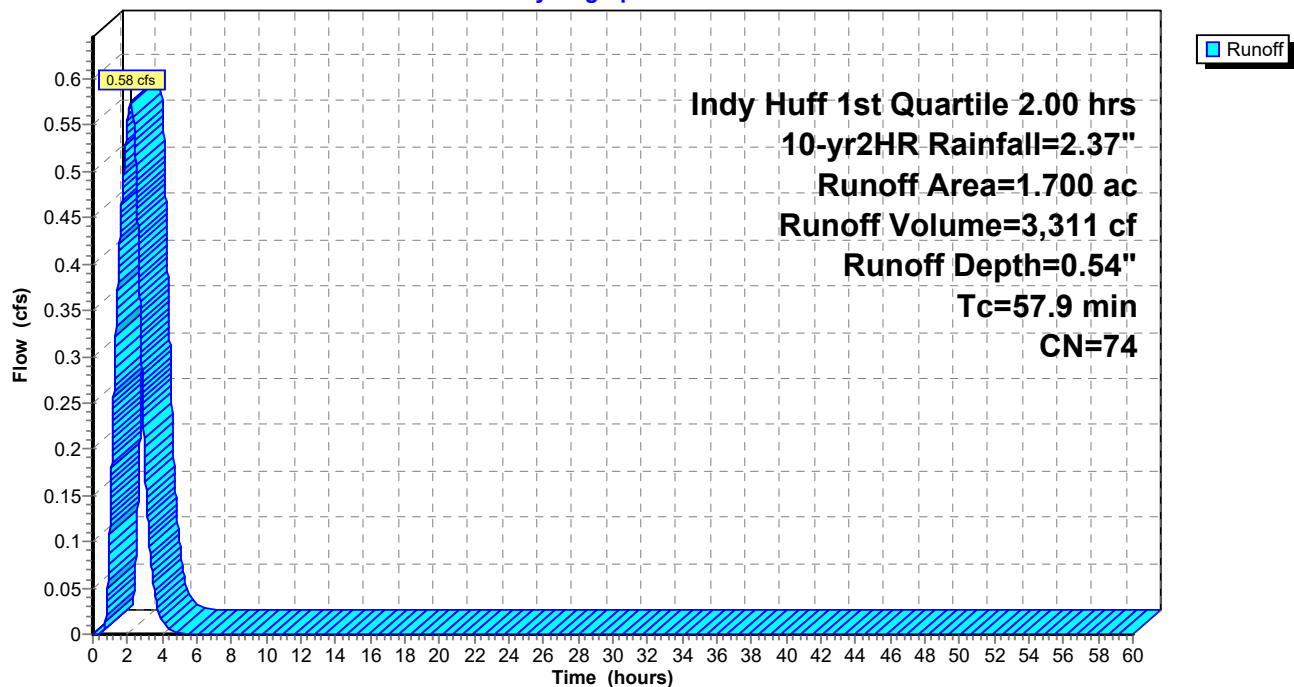
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 2.00 hrs 10-yr2HR Rainfall=2.37"

Area (ac)	CN	Description
* 1.700	74	
1.700		100.00% Pervious Area

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

**Subcatchment 12S: DA711**

Hydrograph



**Summary for Pond 3P: Pond/CMP Detention**

[44] Hint: Outlet device #2 is below defined storage

Inflow Area = 2,309,116 sf, 76.46% Impervious, Inflow Depth = 1.76" for 10-yr2HR event  
 Inflow = 92.84 cfs @ 0.48 hrs, Volume= 339,406 cf  
 Outflow = 16.75 cfs @ 2.08 hrs, Volume= 339,370 cf, Atten= 82%, Lag= 96.0 min  
 Primary = 16.75 cfs @ 2.08 hrs, Volume= 339,370 cf  
 Secondary = 0.00 cfs @ 2.08 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
 Peak Elev= 730.22' @ 2.08 hrs Surf.Area= 117,376 sf Storage= 256,428 cf

Plug-Flow detention time= 519.6 min calculated for 339,370 cf (100% of inflow)  
 Center-of-Mass det. time= 519.6 min ( 579.9 - 60.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	727.40'	87,965 cf	<b>48.0" Round Pipe Storage</b> x 10 L= 700.0' S= 0.0010 '/'
#2	727.80'	586,912 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		674,876 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.80	74,675	0	0
728.00	75,945	15,062	15,062
729.00	82,354	79,150	94,212
730.00	88,864	85,609	179,821
731.00	95,474	92,169	271,990
732.00	102,185	98,830	370,819
733.00	110,000	106,093	476,912
734.00	110,000	110,000	586,912

Device	Routing	Invert	Outlet Devices
#1	Primary	727.37'	<b>24.0" Round POI A</b> L= 75.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 727.37' / 727.14' S= 0.0031 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 3.14 sf
#2	Device 1	727.37'	<b>4.6" Vert. Orifice/Grate</b> C= 0.600
#3	Device 1	728.54'	<b>6.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)
#4	Secondary	730.21'	<b>24.0" Round POI B</b> L= 27.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 730.21' / 730.00' S= 0.0078 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 3.14 sf

**Primary OutFlow** Max=16.75 cfs @ 2.08 hrs HW=730.22' (Free Discharge)

↑ **1=POI A** (Barrel Controls 16.75 cfs @ 5.33 fps)

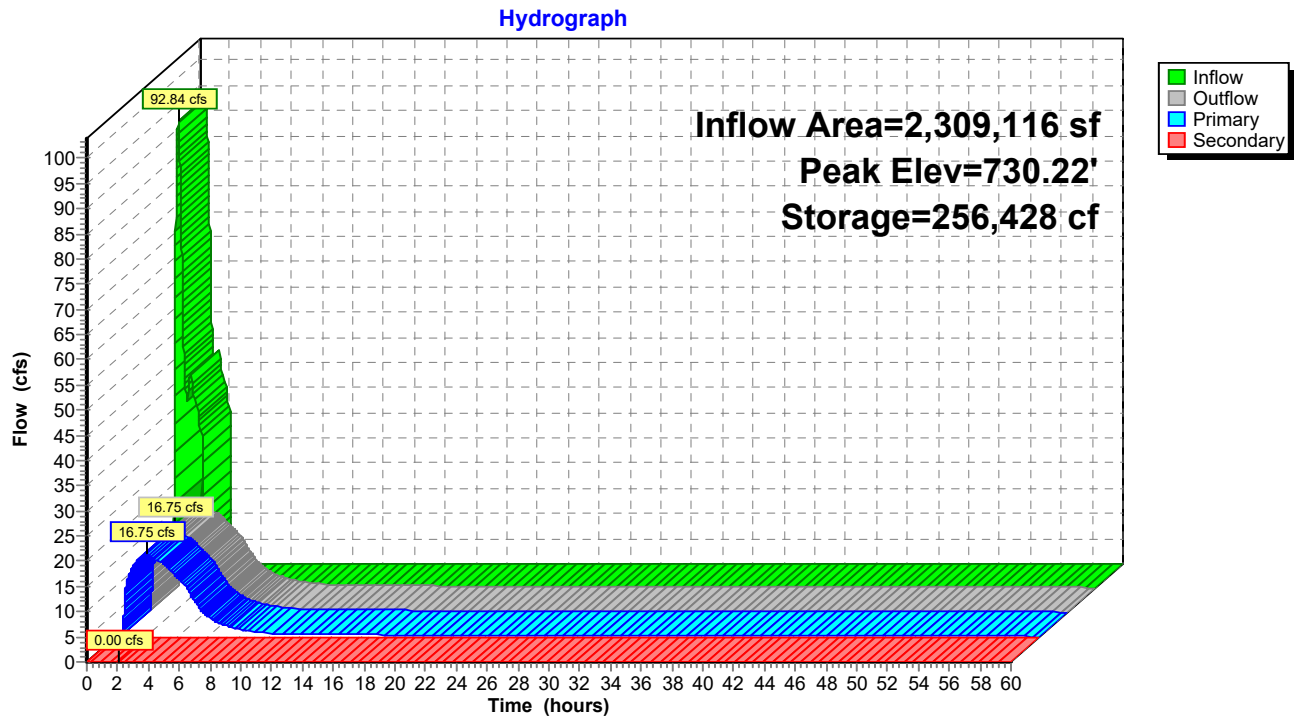
↑ **2=Orifice/Grate** (Passes < 0.91 cfs potential flow)

↑ **3=Sharp-Crested Rectangular Weir** (Passes < 40.31 cfs potential flow)

**Secondary OutFlow** Max=0.00 cfs @ 2.08 hrs HW=730.22' (Free Discharge)

↑ **4=POI B** (Barrel Controls 0.00 cfs @ 0.25 fps)

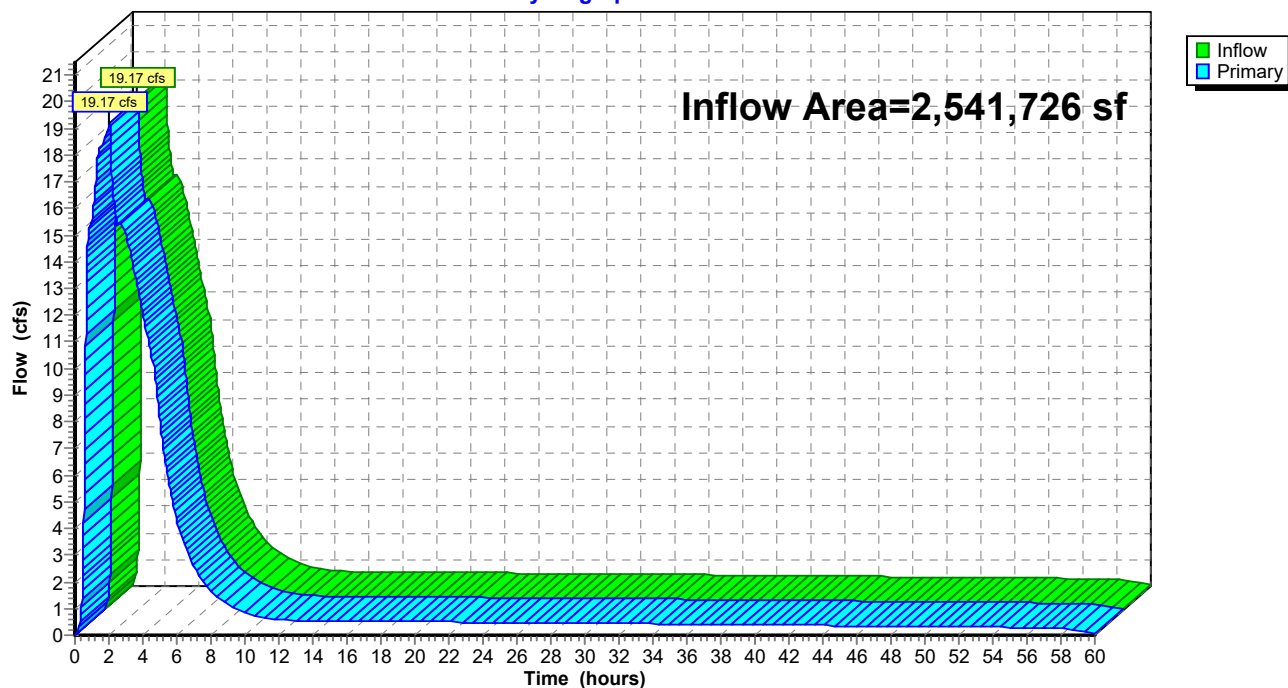
### Pond 3P: Pond/CMP Detention



**Summary for Link 13L: Total Post**

Inflow Area = 2,541,726 sf, 71.40% Impervious, Inflow Depth > 1.69" for 10-yr2HR event  
Inflow = 19.17 cfs @ 2.04 hrs, Volume= 357,954 cf  
Primary = 19.17 cfs @ 2.04 hrs, Volume= 357,954 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

**Link 13L: Total Post****Hydrograph**

**Summary for Subcatchment 2S: DA#3 (Dev-Onsite)**

Runoff = 13.46 cfs @ 0.65 hrs, Volume= 65,806 cf, Depth= 2.30"

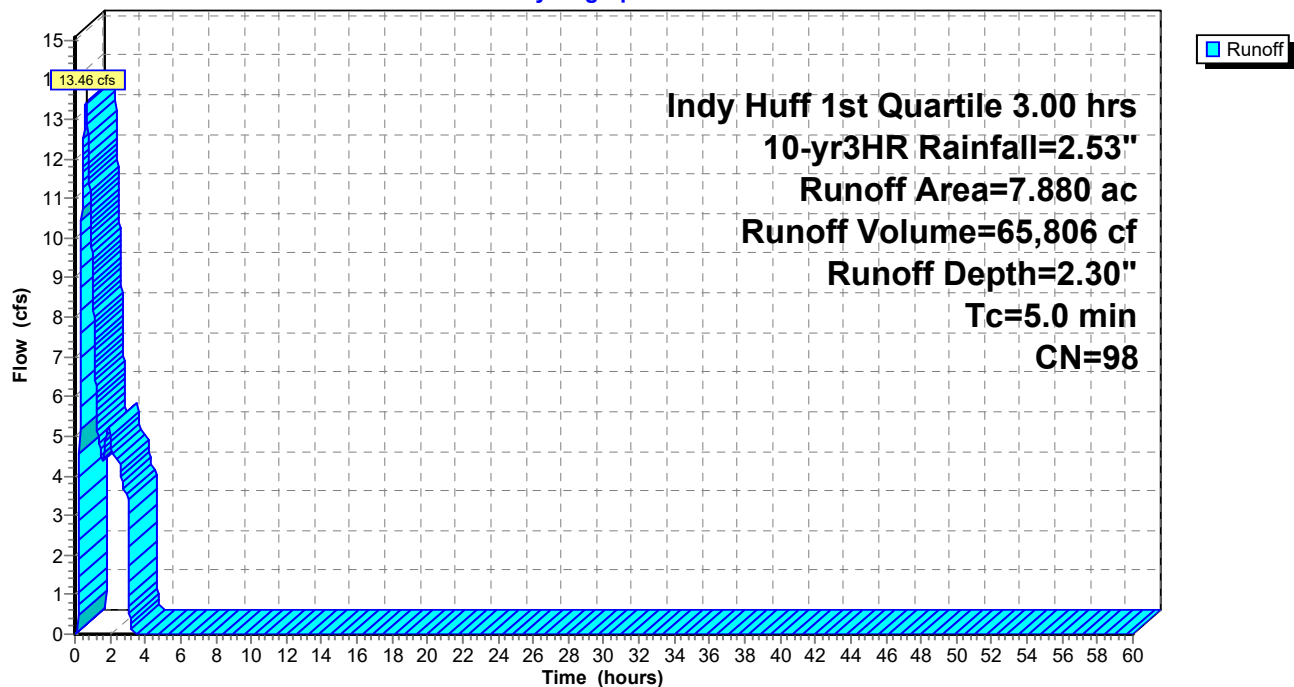
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 3.00 hrs 10-yr3HR Rainfall=2.53"

Area (ac)	CN	Description
* 7.880	98	
7.880		100.00% Impervious Area

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

**Subcatchment 2S: DA#3 (Dev-Onsite)**

Hydrograph





**Summary for Subcatchment 4S: DA#5 (Dev-Onsite)**

Runoff = 51.33 cfs @ 0.66 hrs, Volume= 251,510 cf, Depth= 2.19"

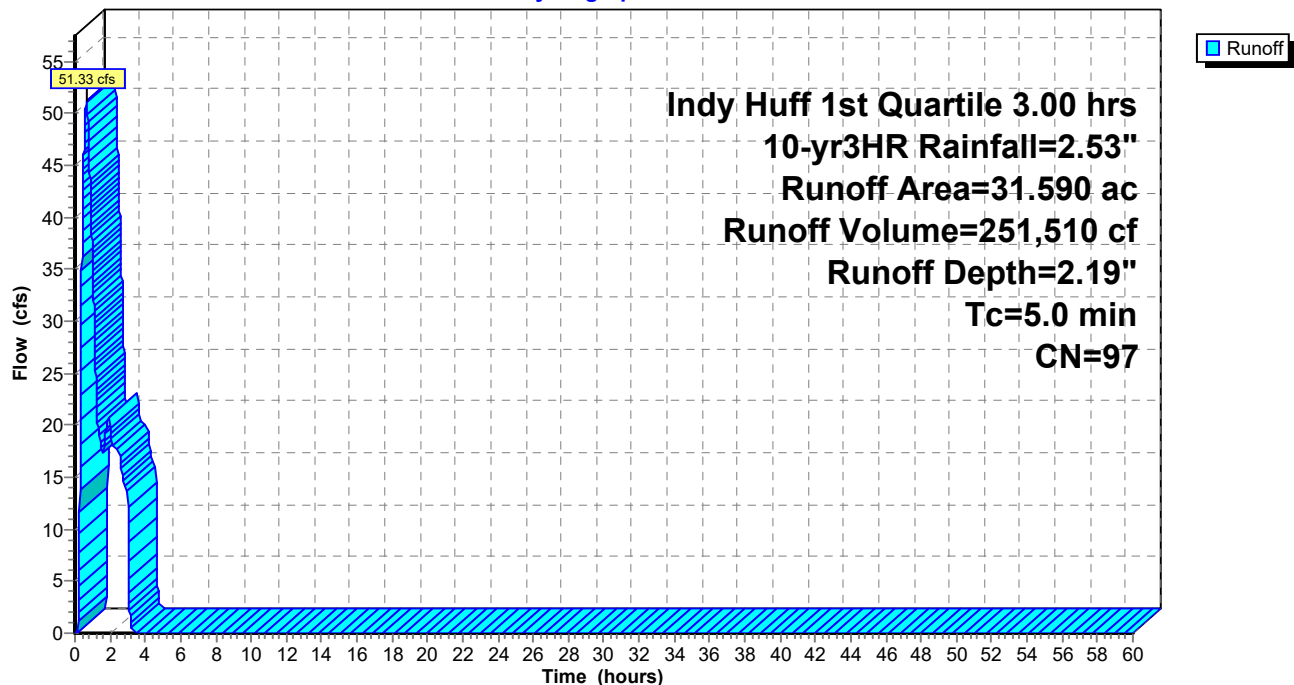
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 3.00 hrs 10-yr3HR Rainfall=2.53"

Area (ac)	CN	Description
* 29.300	98	
0.510	74	>75% Grass cover, Good, HSG C
1.780	80	>75% Grass cover, Good, HSG D
31.590	97	Weighted Average
2.290		7.25% Pervious Area
29.300		92.75% Impervious Area

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

**Subcatchment 4S: DA#5 (Dev-Onsite)**

Hydrograph



**Summary for Subcatchment 9S: DA#4 (Undetained)**

Runoff = 3.31 cfs @ 0.96 hrs, Volume= 20,907 cf, Depth= 1.08"

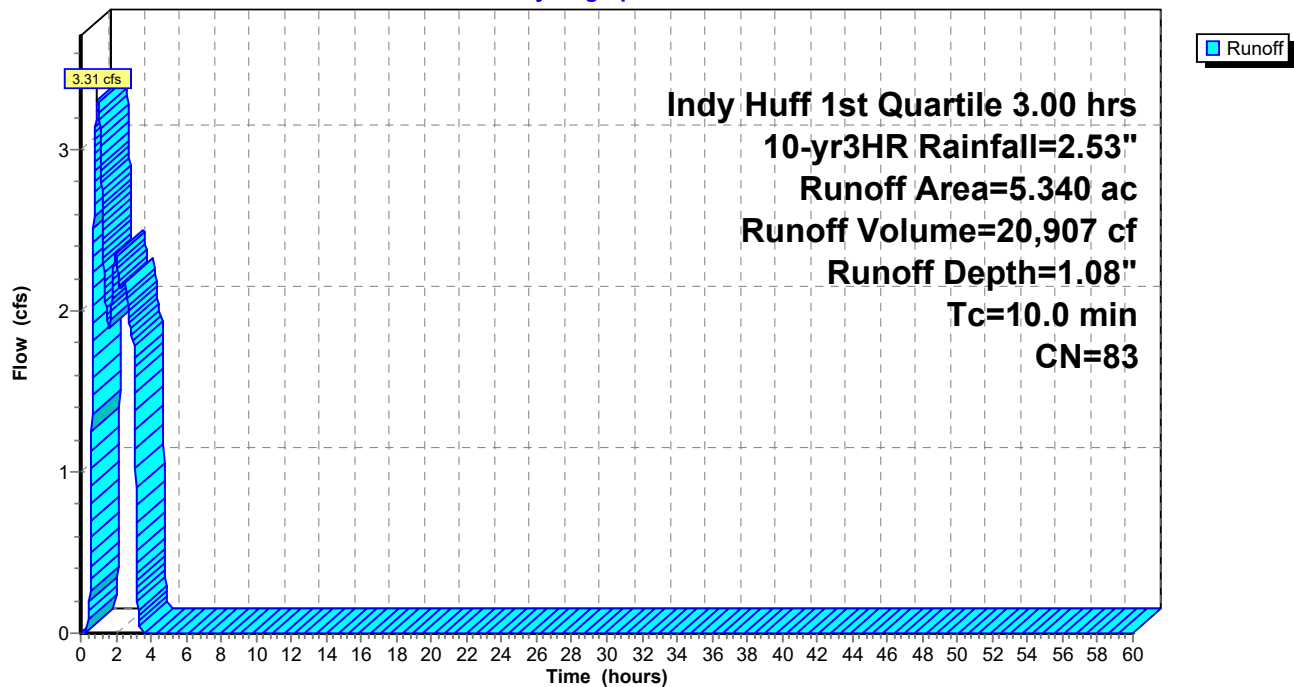
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 3.00 hrs 10-yr3HR Rainfall=2.53"

Area (ac)	CN	Description
* 1.130	98	
0.350	74	>75% Grass cover, Good, HSG C
3.860	80	>75% Grass cover, Good, HSG D
5.340	83	Weighted Average
4.210		78.84% Pervious Area
1.130		21.16% Impervious Area

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

**Subcatchment 9S: DA#4 (Undetained)**

Hydrograph



**Summary for Subcatchment 10S: DA#1**

Runoff = 2.28 cfs @ 1.36 hrs, Volume= 18,817 cf, Depth= 0.81"

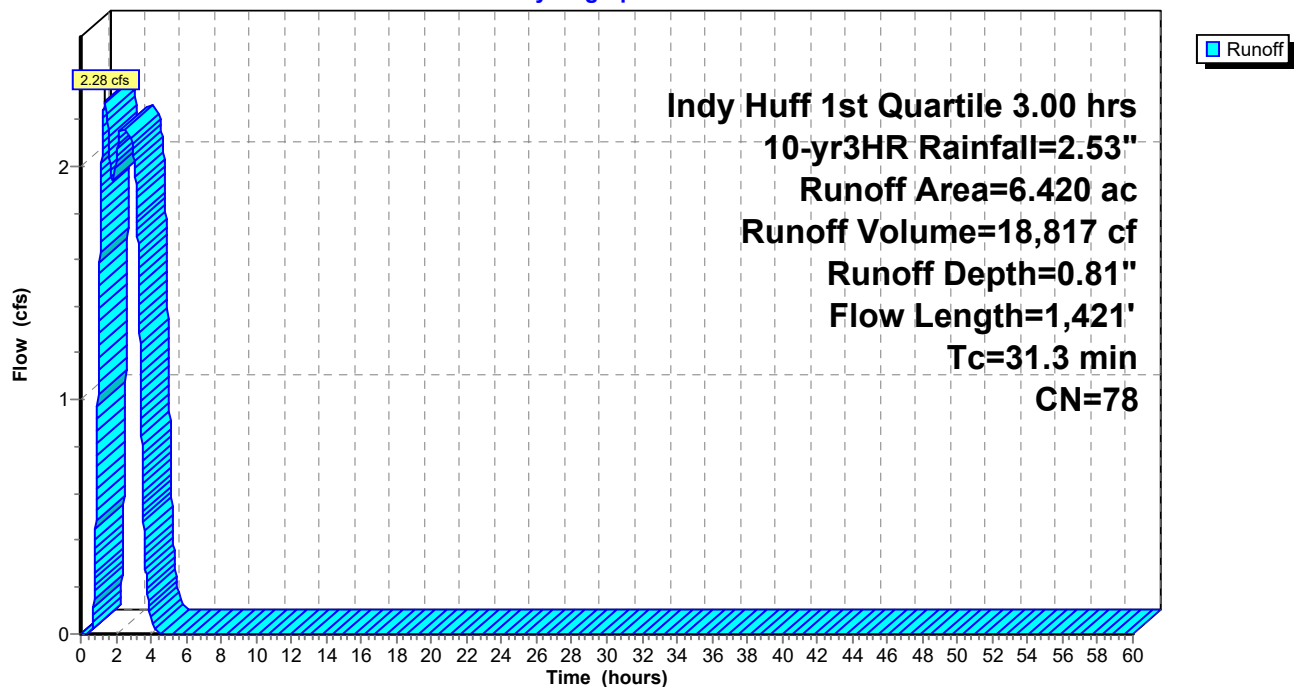
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 3.00 hrs 10-yr3HR Rainfall=2.53"

Area (ac)	CN	Description
* 0.640	98	
0.890	70	Woods, Good, HSG C
1.630	77	Woods, Good, HSG D
0.150	89	Row crops, straight row, Good, HSG D
0.130	85	Row crops, straight row, Good, HSG C
1.360	80	>75% Grass cover, Good, HSG D
1.620	74	>75% Grass cover, Good, HSG C
6.420	78	Weighted Average
5.780		90.03% Pervious Area
0.640		9.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0100	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
17.7	1,321	0.0060	1.25		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
31.3	1,421	Total			

**Subcatchment 10S: DA#1**

Hydrograph



**Summary for Subcatchment 11S: DA#2**

Runoff = 4.76 cfs @ 0.89 hrs, Volume= 27,686 cf, Depth= 1.41"

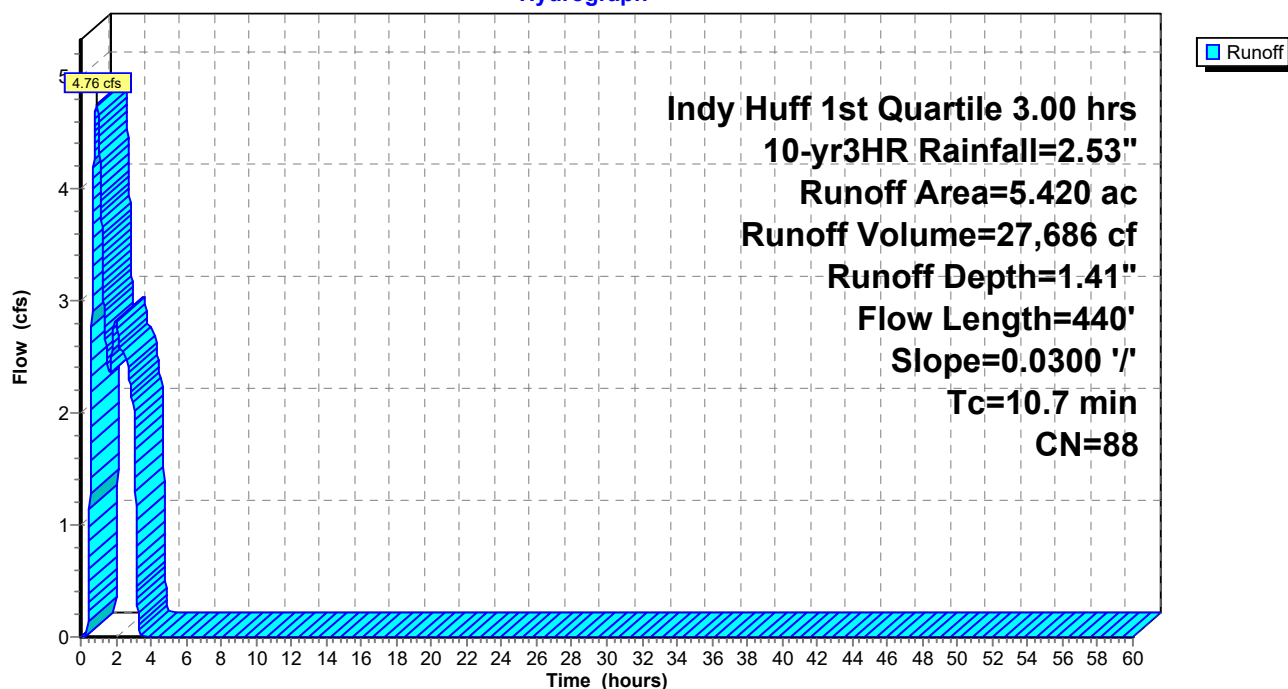
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 3.00 hrs 10-yr3HR Rainfall=2.53"

Area (ac)	CN	Description
* 2.710	98	
0.170	70	Woods, Good, HSG C
0.010	77	Woods, Good, HSG D
1.680	80	>75% Grass cover, Good, HSG D
0.850	74	>75% Grass cover, Good, HSG C
5.420	88	Weighted Average
2.710		50.00% Pervious Area
2.710		50.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.0300	0.19		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
2.0	340	0.0300	2.79		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
10.7	440	Total			

**Subcatchment 11S: DA#2**

Hydrograph



**Summary for Subcatchment 12S: DA711**

Runoff = 0.47 cfs @ 3.02 hrs, Volume= 3,858 cf, Depth= 0.63"

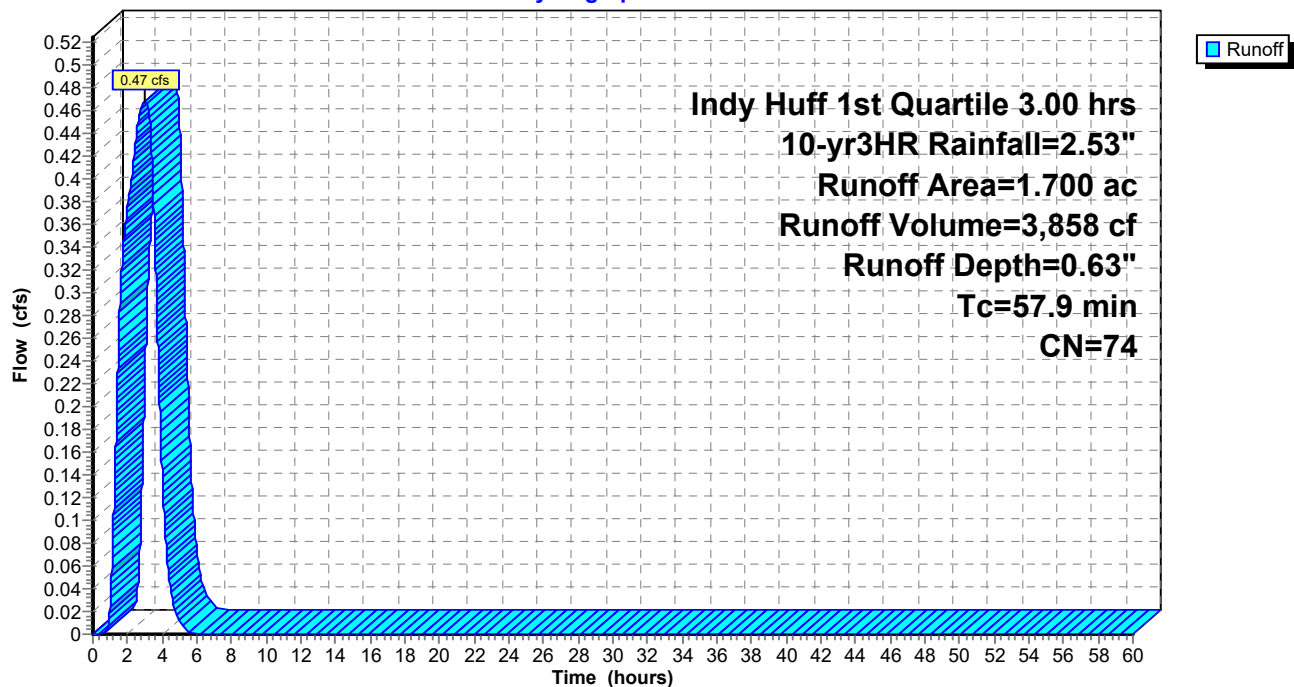
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 3.00 hrs 10-yr3HR Rainfall=2.53"

Area (ac)	CN	Description
* 1.700	74	
1.700		100.00% Pervious Area

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

**Subcatchment 12S: DA711**

Hydrograph



**Summary for Pond 3P: Pond/CMP Detention**

[44] Hint: Outlet device #2 is below defined storage

Inflow Area = 2,309,116 sf, 76.46% Impervious, Inflow Depth = 1.91" for 10-yr3HR event  
 Inflow = 68.23 cfs @ 0.67 hrs, Volume= 367,677 cf  
 Outflow = 16.11 cfs @ 3.06 hrs, Volume= 367,368 cf, Atten= 76%, Lag= 143.0 min  
 Primary = 16.11 cfs @ 3.06 hrs, Volume= 367,368 cf  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
 Peak Elev= 730.14' @ 3.06 hrs Surf.Area= 117,093 sf Storage= 246,888 cf

Plug-Flow detention time= 496.1 min calculated for 367,368 cf (100% of inflow)  
 Center-of-Mass det. time= 495.9 min ( 582.7 - 86.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	727.40'	87,965 cf	<b>48.0" Round Pipe Storage</b> x 10 L= 700.0' S= 0.0010 '/'
#2	727.80'	586,912 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		674,876 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.80	74,675	0	0
728.00	75,945	15,062	15,062
729.00	82,354	79,150	94,212
730.00	88,864	85,609	179,821
731.00	95,474	92,169	271,990
732.00	102,185	98,830	370,819
733.00	110,000	106,093	476,912
734.00	110,000	110,000	586,912

Device	Routing	Invert	Outlet Devices
#1	Primary	727.37'	<b>24.0" Round POI A</b> L= 75.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 727.37' / 727.14' S= 0.0031 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 3.14 sf
#2	Device 1	727.37'	<b>4.6" Vert. Orifice/Grate</b> C= 0.600
#3	Device 1	728.54'	<b>6.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)
#4	Secondary	730.21'	<b>24.0" Round POI B</b> L= 27.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 730.21' / 730.00' S= 0.0078 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 3.14 sf

**Primary OutFlow** Max=16.11 cfs @ 3.06 hrs HW=730.14' (Free Discharge)

1=POI A (Barrel Controls 16.11 cfs @ 5.13 fps)

2=Orifice/Grate (Passes < 0.89 cfs potential flow)

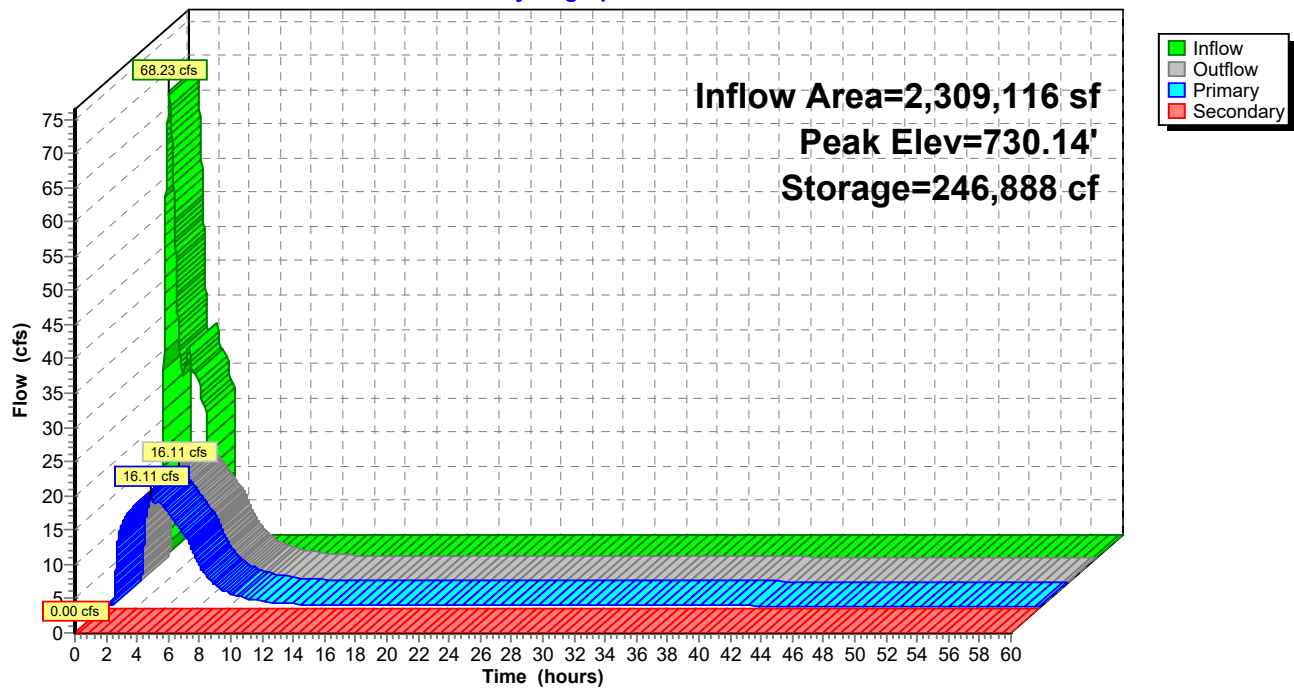
3=Sharp-Crested Rectangular Weir (Passes < 37.53 cfs potential flow)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=727.40' (Free Discharge)

4=POI B ( Controls 0.00 cfs)

### Pond 3P: Pond/CMP Detention

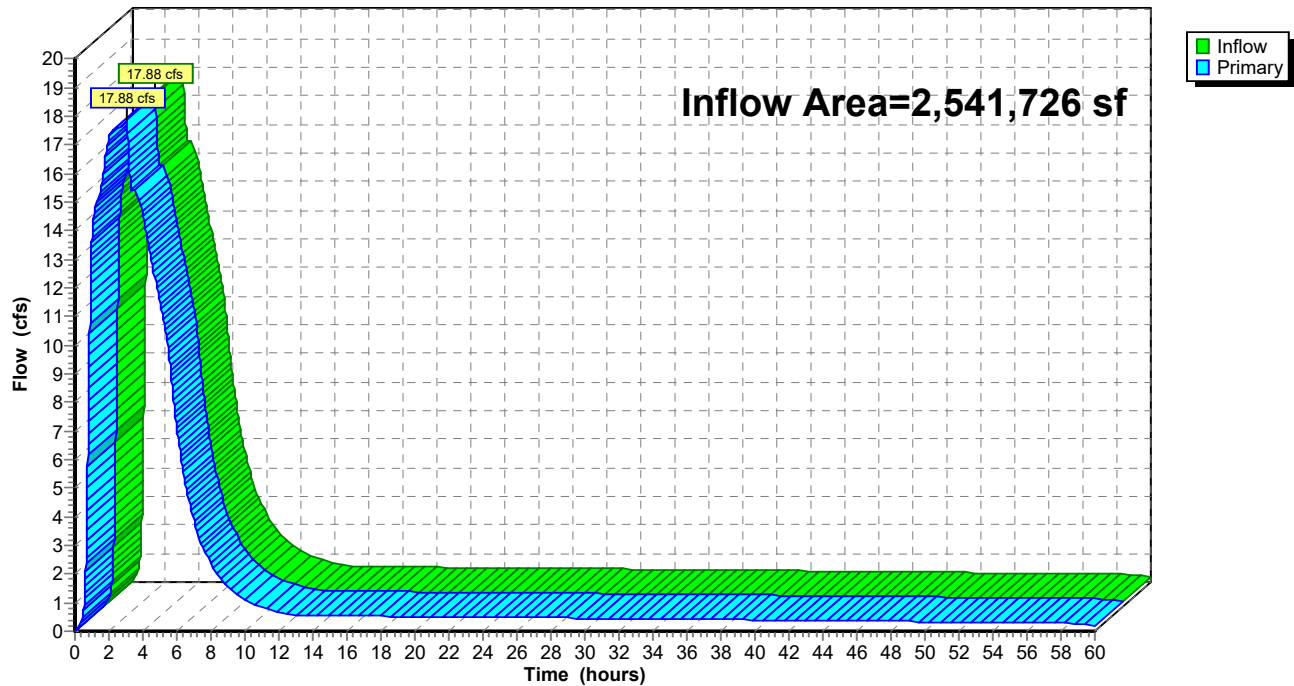
Hydrograph



**Summary for Link 13L: Total Post**

Inflow Area = 2,541,726 sf, 71.40% Impervious, Inflow Depth > 1.83" for 10-yr3HR event  
Inflow = 17.88 cfs @ 3.03 hrs, Volume= 388,274 cf  
Primary = 17.88 cfs @ 3.03 hrs, Volume= 388,274 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

**Link 13L: Total Post****Hydrograph**



**Summary for Subcatchment 2S: DA#3 (Dev-Onsite)**

Runoff = 8.22 cfs @ 1.25 hrs, Volume= 80,039 cf, Depth= 2.80"

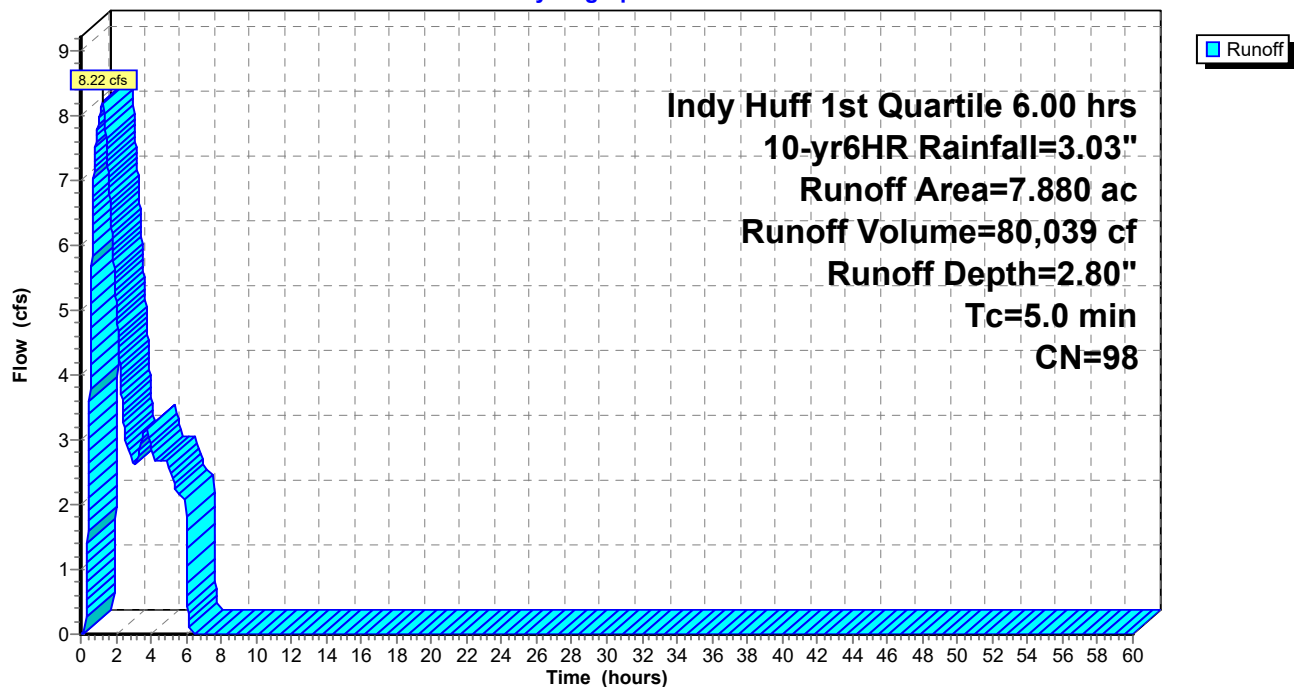
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 6.00 hrs 10-yr6HR Rainfall=3.03"

Area (ac)	CN	Description
* 7.880	98	
7.880		100.00% Impervious Area

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

**Subcatchment 2S: DA#3 (Dev-Onsite)**

Hydrograph



**Summary for Subcatchment 4S: DA#5 (Dev-Onsite)**

Runoff = 31.78 cfs @ 1.26 hrs, Volume= 308,243 cf, Depth= 2.69"

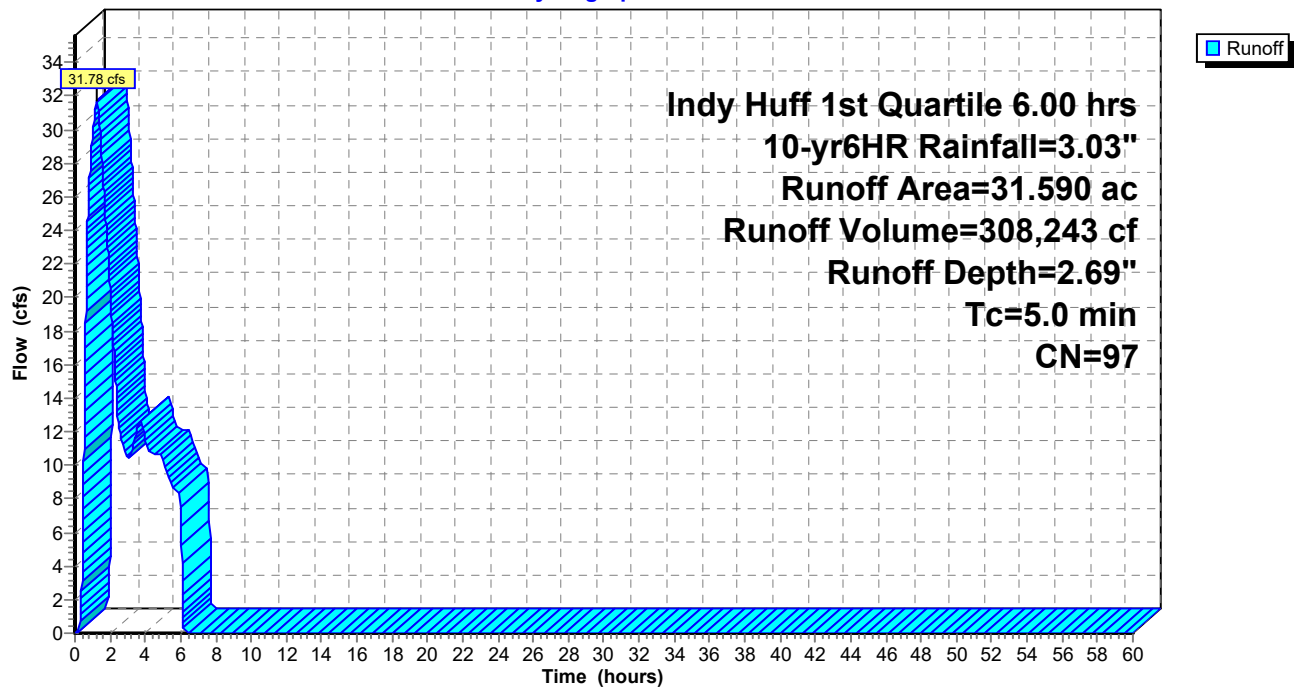
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 6.00 hrs 10-yr6HR Rainfall=3.03"

Area (ac)	CN	Description
* 29.300	98	
0.510	74	>75% Grass cover, Good, HSG C
1.780	80	>75% Grass cover, Good, HSG D
31.590	97	Weighted Average
2.290		7.25% Pervious Area
29.300		92.75% Impervious Area

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

**Subcatchment 4S: DA#5 (Dev-Onsite)**

Hydrograph



**Summary for Subcatchment 9S: DA#4 (Undetained)**

Runoff = 2.40 cfs @ 1.68 hrs, Volume= 28,509 cf, Depth= 1.47"

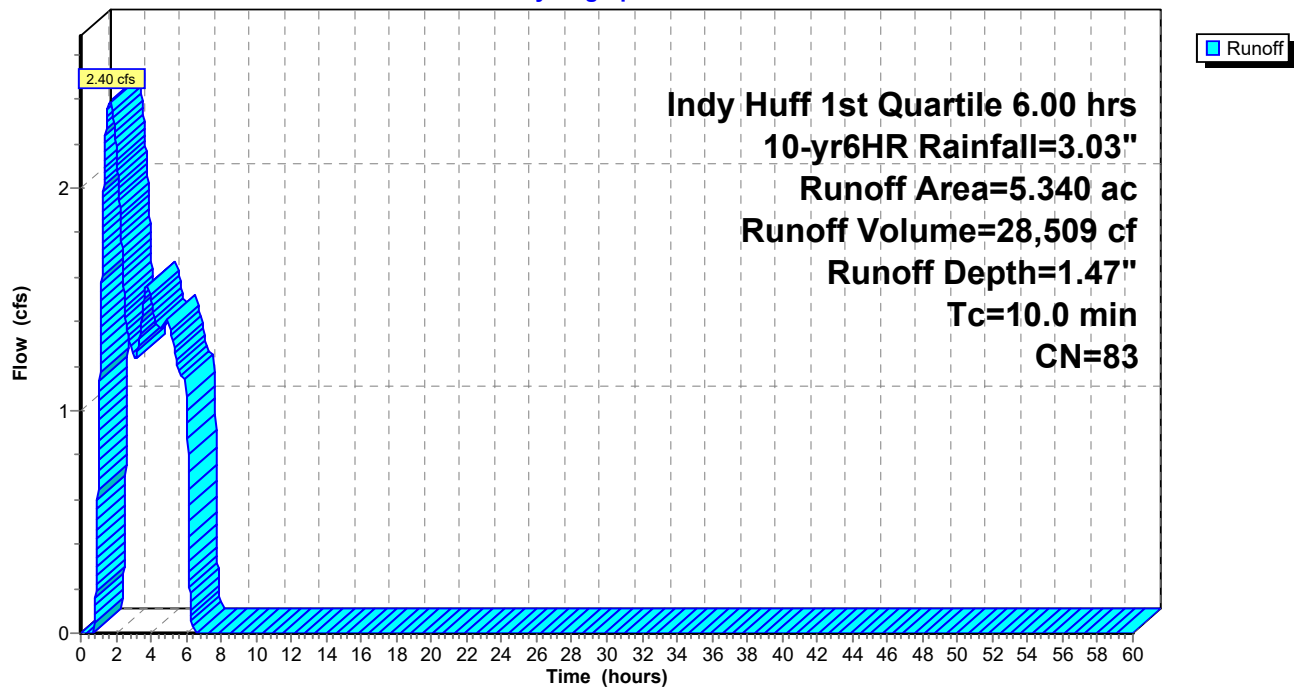
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 6.00 hrs 10-yr6HR Rainfall=3.03"

Area (ac)	CN	Description
* 1.130	98	
0.350	74	>75% Grass cover, Good, HSG C
3.860	80	>75% Grass cover, Good, HSG D
5.340	83	Weighted Average
4.210		78.84% Pervious Area
1.130		21.16% Impervious Area

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

**Subcatchment 9S: DA#4 (Undetained)**

Hydrograph



**Summary for Subcatchment 10S: DA#1**

Runoff = 1.97 cfs @ 2.19 hrs, Volume= 26,806 cf, Depth= 1.15"

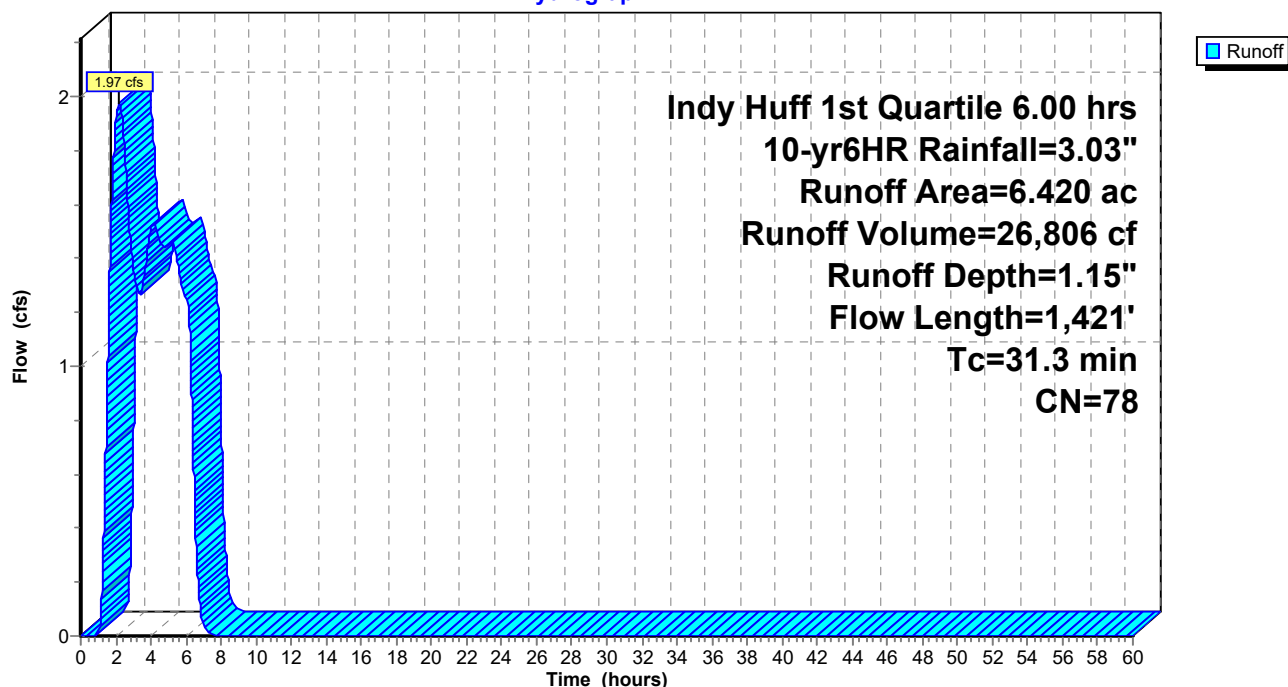
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 6.00 hrs 10-yr6HR Rainfall=3.03"

Area (ac)	CN	Description
* 0.640	98	
0.890	70	Woods, Good, HSG C
1.630	77	Woods, Good, HSG D
0.150	89	Row crops, straight row, Good, HSG D
0.130	85	Row crops, straight row, Good, HSG C
1.360	80	>75% Grass cover, Good, HSG D
1.620	74	>75% Grass cover, Good, HSG C
6.420	78	Weighted Average
5.780		90.03% Pervious Area
0.640		9.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0100	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
17.7	1,321	0.0060	1.25		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
31.3	1,421	Total			

**Subcatchment 10S: DA#1**

Hydrograph



**Summary for Subcatchment 11S: DA#2**

Runoff = 3.29 cfs @ 1.53 hrs, Volume= 36,297 cf, Depth= 1.84"

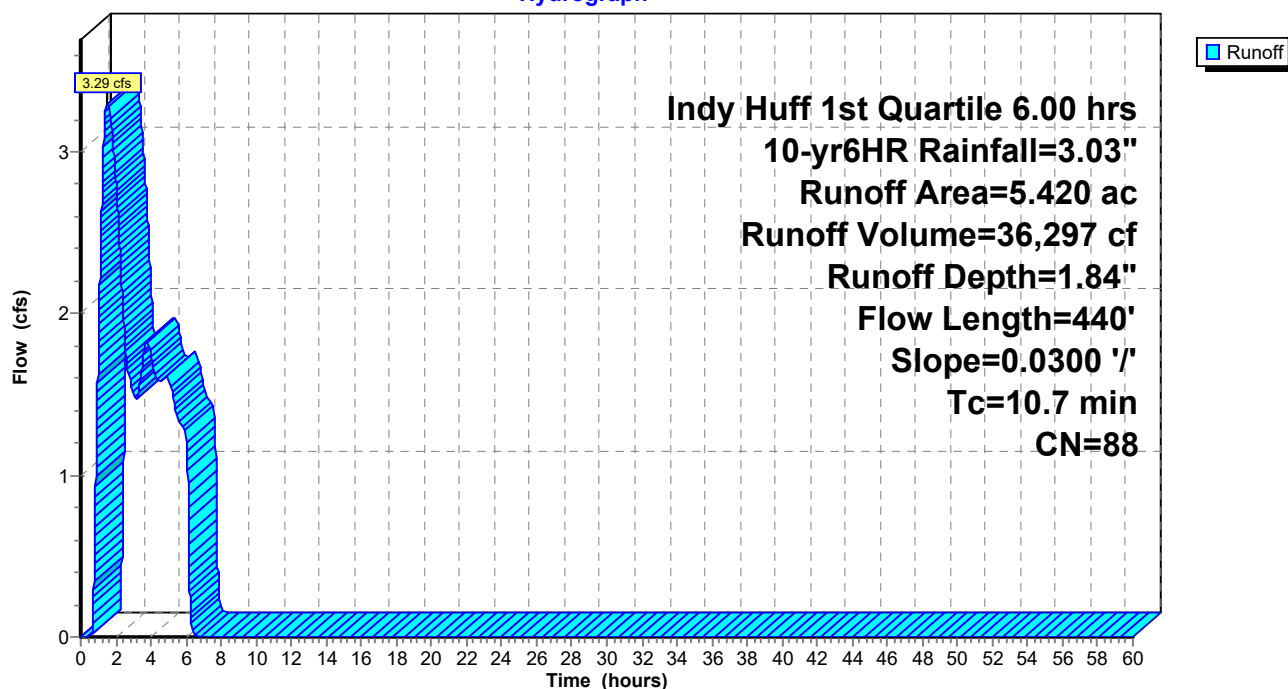
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 6.00 hrs 10-yr6HR Rainfall=3.03"

Area (ac)	CN	Description
* 2.710	98	
0.170	70	Woods, Good, HSG C
0.010	77	Woods, Good, HSG D
1.680	80	>75% Grass cover, Good, HSG D
0.850	74	>75% Grass cover, Good, HSG C
5.420	88	Weighted Average
2.710		50.00% Pervious Area
2.710		50.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.0300	0.19		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
2.0	340	0.0300	2.79		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
10.7	440	Total			

**Subcatchment 11S: DA#2**

Hydrograph



**Summary for Subcatchment 12S: DA711**

Runoff = 0.35 cfs @ 2.70 hrs, Volume= 5,723 cf, Depth= 0.93"

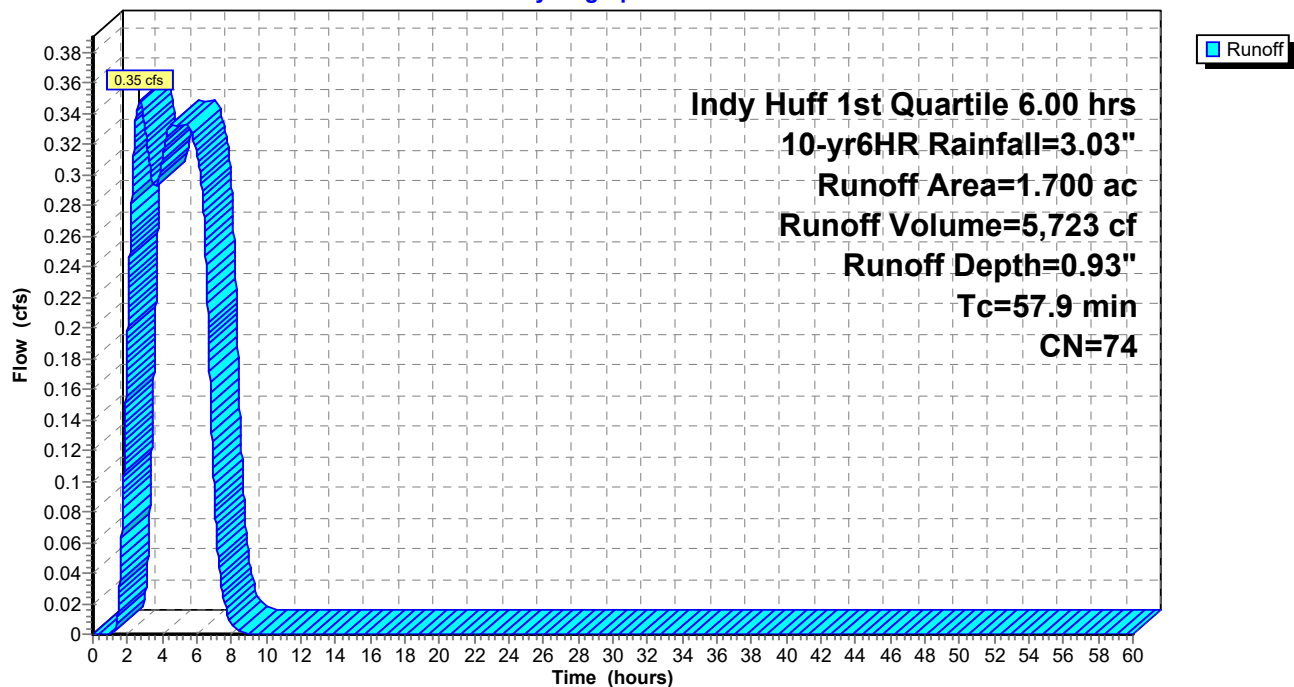
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 6.00 hrs 10-yr6HR Rainfall=3.03"

Area (ac)	CN	Description
* 1.700	74	
1.700		100.00% Pervious Area

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

**Subcatchment 12S: DA711**

Hydrograph



**Summary for Pond 3P: Pond/CMP Detention**

[44] Hint: Outlet device #2 is below defined storage

Inflow Area = 2,309,116 sf, 76.46% Impervious, Inflow Depth = 2.38" for 10-yr6HR event  
 Inflow = 43.17 cfs @ 1.27 hrs, Volume= 457,108 cf  
 Outflow = 15.23 cfs @ 5.24 hrs, Volume= 454,678 cf, Atten= 65%, Lag= 237.7 min  
 Primary = 15.23 cfs @ 5.24 hrs, Volume= 454,678 cf  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
 Peak Elev= 729.87' @ 5.24 hrs Surf.Area= 115,824 sf Storage= 215,674 cf

Plug-Flow detention time= 429.2 min calculated for 454,602 cf (99% of inflow)  
 Center-of-Mass det. time= 428.5 min ( 593.8 - 165.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	727.40'	87,965 cf	<b>48.0" Round Pipe Storage</b> x 10 L= 700.0' S= 0.0010 '/'
#2	727.80'	586,912 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		674,876 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.80	74,675	0	0
728.00	75,945	15,062	15,062
729.00	82,354	79,150	94,212
730.00	88,864	85,609	179,821
731.00	95,474	92,169	271,990
732.00	102,185	98,830	370,819
733.00	110,000	106,093	476,912
734.00	110,000	110,000	586,912

Device	Routing	Invert	Outlet Devices
#1	Primary	727.37'	<b>24.0" Round POI A</b> L= 75.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 727.37' / 727.14' S= 0.0031 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 3.14 sf
#2	Device 1	727.37'	<b>4.6" Vert. Orifice/Grate</b> C= 0.600
#3	Device 1	728.54'	<b>6.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)
#4	Secondary	730.21'	<b>24.0" Round POI B</b> L= 27.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 730.21' / 730.00' S= 0.0078 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 3.14 sf

**Primary OutFlow** Max=15.24 cfs @ 5.24 hrs HW=729.87' (Free Discharge)

1=POI A (Barrel Controls 15.24 cfs @ 4.98 fps)

2=Orifice/Grate (Passes < 0.84 cfs potential flow)

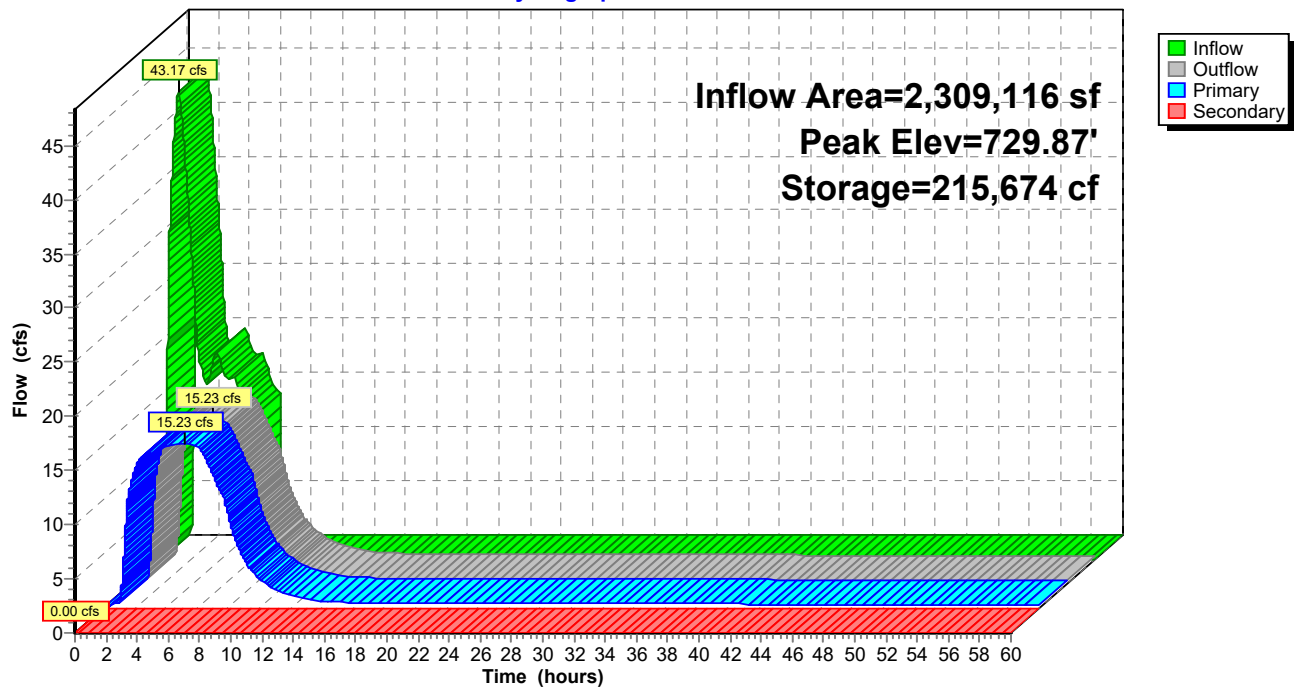
3=Sharp-Crested Rectangular Weir (Passes < 28.77 cfs potential flow)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=727.40' (Free Discharge)

4=POI B ( Controls 0.00 cfs)

### Pond 3P: Pond/CMP Detention

Hydrograph

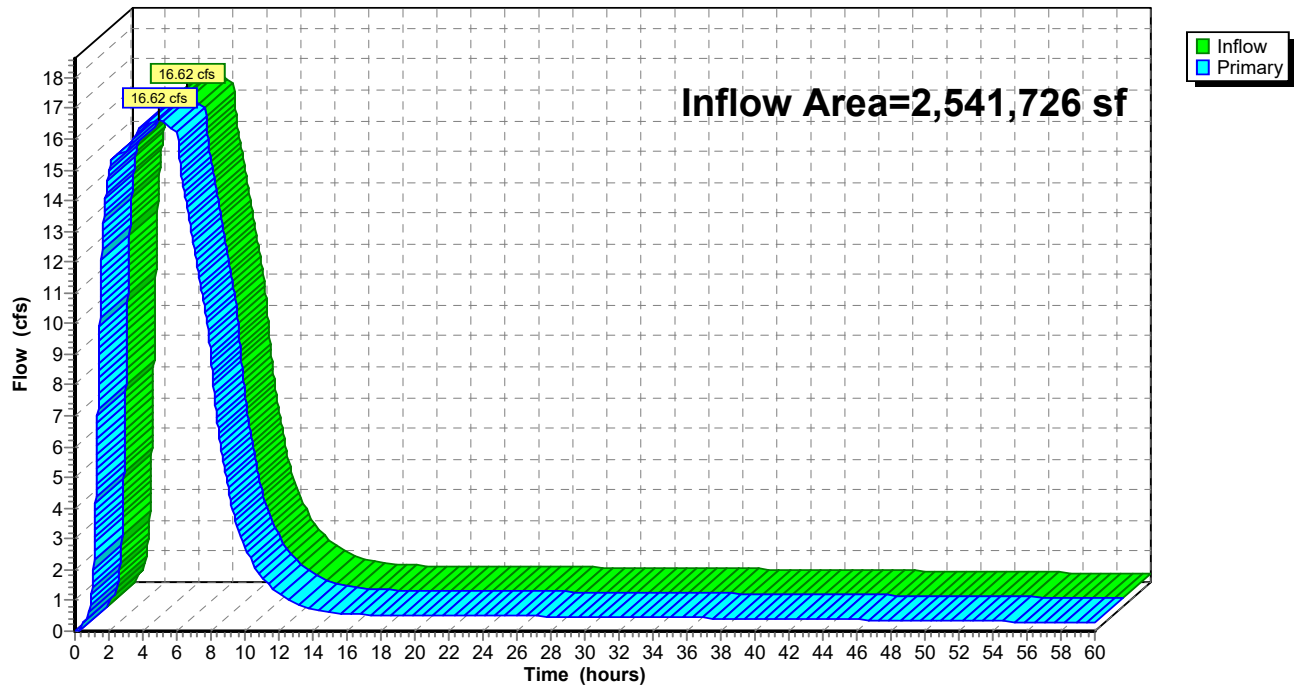




**Summary for Link 13L: Total Post**

Inflow Area = 2,541,726 sf, 71.40% Impervious, Inflow Depth > 2.28" for 10-yr6HR event  
Inflow = 16.62 cfs @ 4.97 hrs, Volume= 483,187 cf  
Primary = 16.62 cfs @ 4.97 hrs, Volume= 483,187 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

**Link 13L: Total Post****Hydrograph**

**Summary for Subcatchment 2S: DA#3 (Dev-Onsite)**

Runoff = 4.83 cfs @ 2.45 hrs, Volume= 94,006 cf, Depth= 3.29"

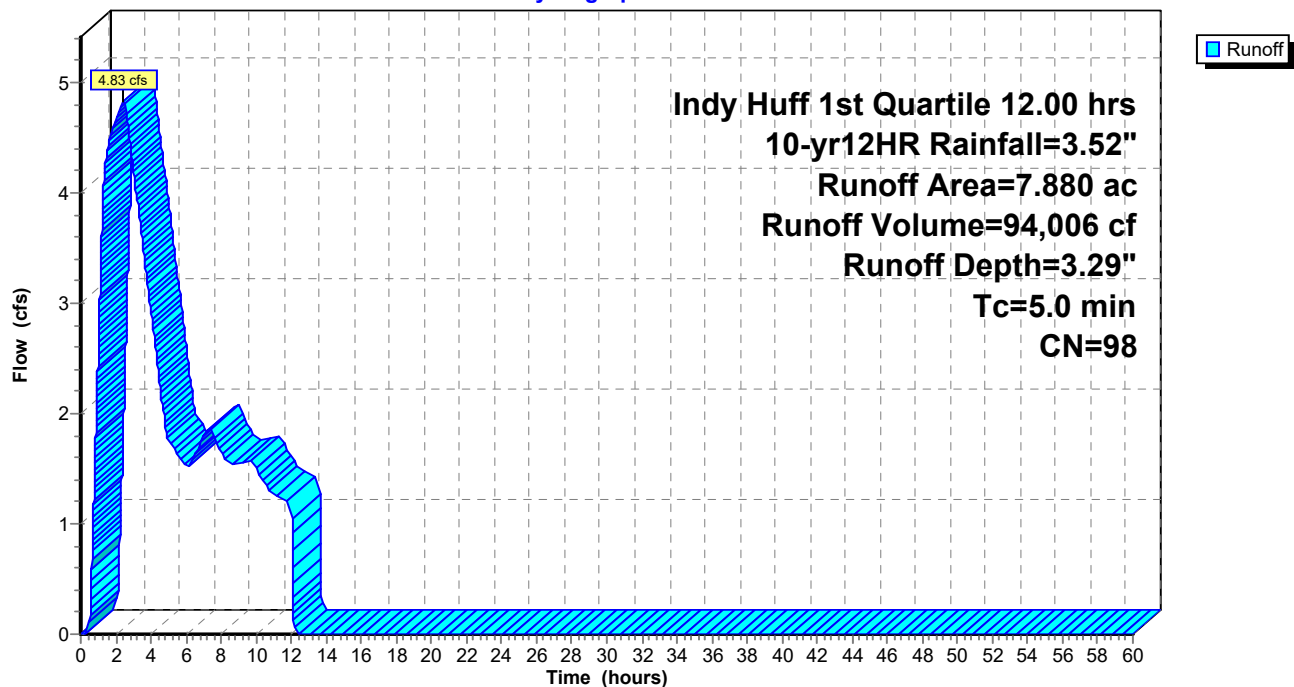
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 12.00 hrs 10-yr12HR Rainfall=3.52"

Area (ac)	CN	Description
* 7.880	98	
7.880		100.00% Impervious Area

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

**Subcatchment 2S: DA#3 (Dev-Onsite)**

Hydrograph



**Summary for Subcatchment 4S: DA#5 (Dev-Onsite)**

Runoff = 18.82 cfs @ 2.45 hrs, Volume= 363,997 cf, Depth= 3.17"

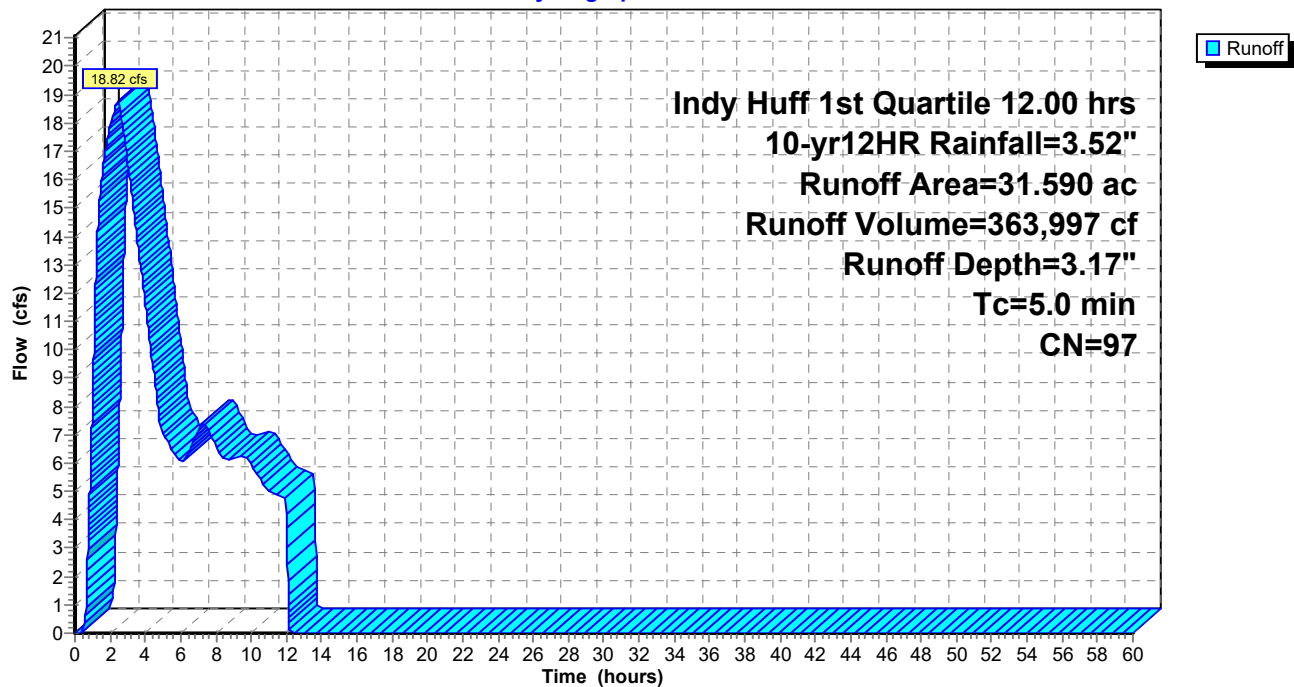
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 12.00 hrs 10-yr12HR Rainfall=3.52"

Area (ac)	CN	Description
* 29.300	98	
0.510	74	>75% Grass cover, Good, HSG C
1.780	80	>75% Grass cover, Good, HSG D
31.590	97	Weighted Average
2.290		7.25% Pervious Area
29.300		92.75% Impervious Area

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

**Subcatchment 4S: DA#5 (Dev-Onsite)**

Hydrograph



**Summary for Subcatchment 9S: DA#4 (Undetained)**

Runoff = 1.58 cfs @ 3.03 hrs, Volume= 36,353 cf, Depth= 1.88"

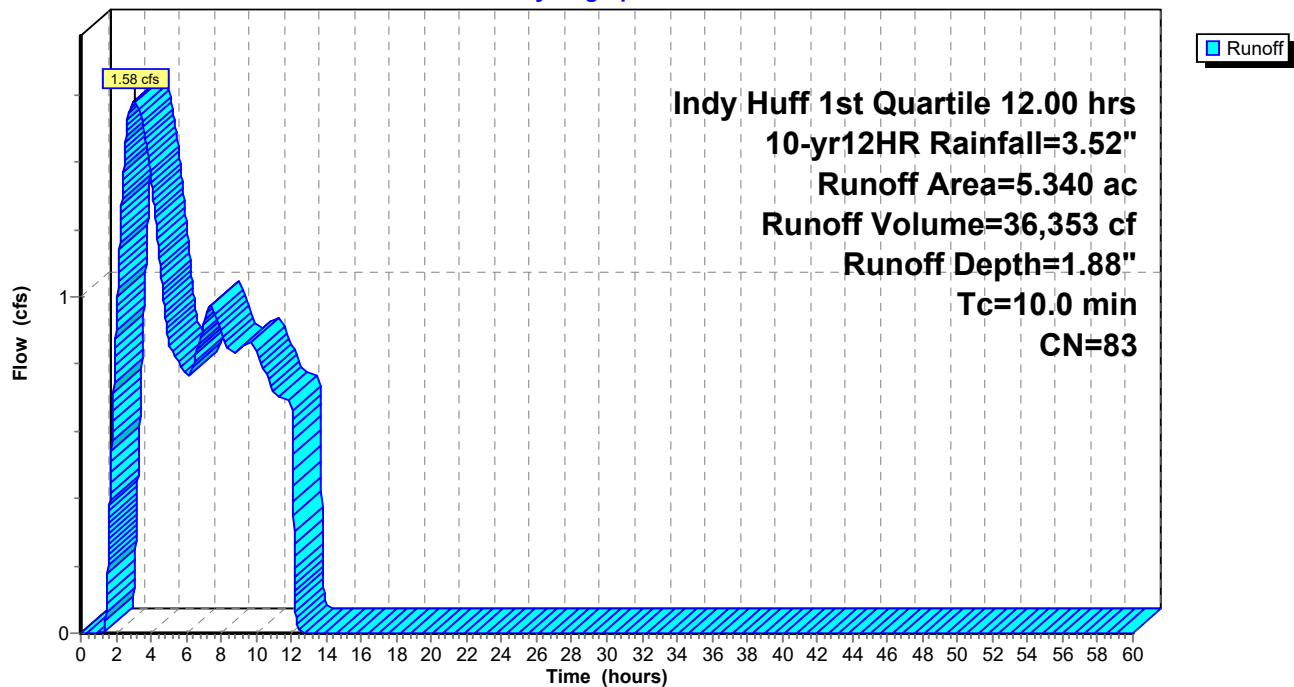
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 12.00 hrs 10-yr12HR Rainfall=3.52"

Area (ac)	CN	Description
* 1.130	98	
0.350	74	>75% Grass cover, Good, HSG C
3.860	80	>75% Grass cover, Good, HSG D
5.340	83	Weighted Average
4.210		78.84% Pervious Area
1.130		21.16% Impervious Area

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

**Subcatchment 9S: DA#4 (Undetained)**

Hydrograph



**Summary for Subcatchment 10S: DA#1**

Runoff = 1.41 cfs @ 3.65 hrs, Volume= 35,250 cf, Depth= 1.51"

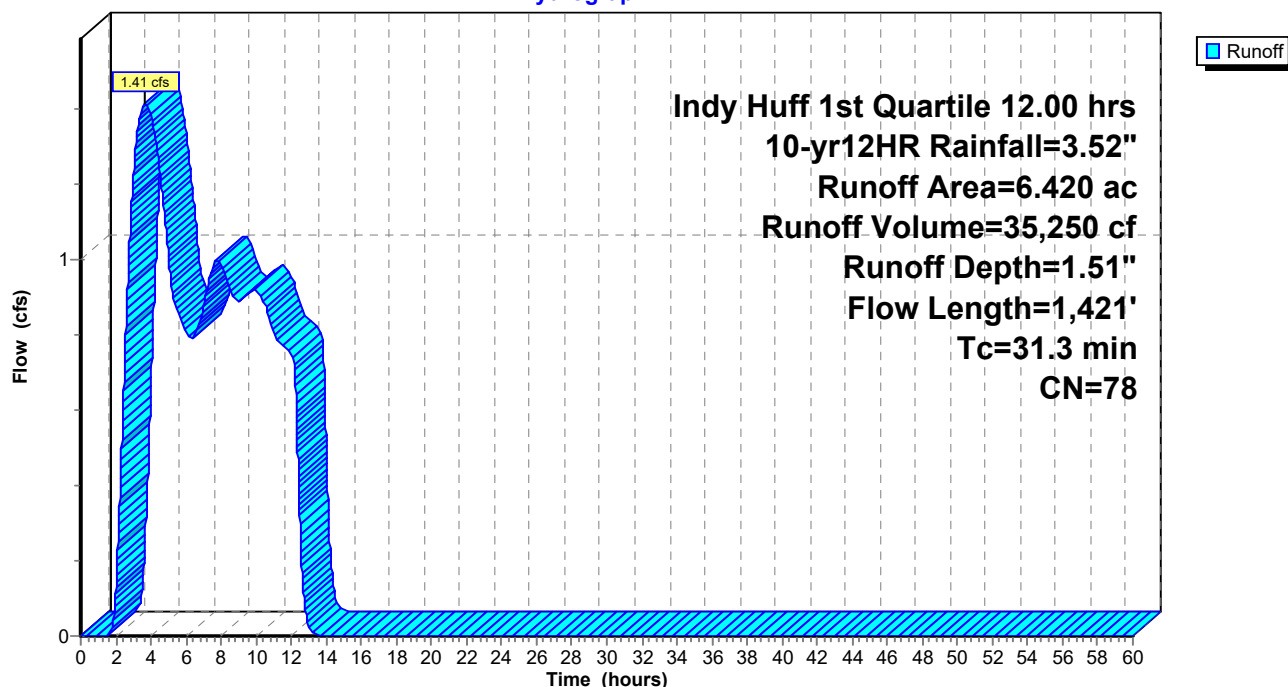
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 12.00 hrs 10-yr12HR Rainfall=3.52"

Area (ac)	CN	Description
* 0.640	98	
0.890	70	Woods, Good, HSG C
1.630	77	Woods, Good, HSG D
0.150	89	Row crops, straight row, Good, HSG D
0.130	85	Row crops, straight row, Good, HSG C
1.360	80	>75% Grass cover, Good, HSG D
1.620	74	>75% Grass cover, Good, HSG C
6.420	78	Weighted Average
5.780		90.03% Pervious Area
0.640		9.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0100	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
17.7	1,321	0.0060	1.25		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
31.3	1,421	Total			

**Subcatchment 10S: DA#1**

Hydrograph



**Summary for Subcatchment 11S: DA#2**

Runoff = 2.11 cfs @ 2.77 hrs, Volume= 44,994 cf, Depth= 2.29"

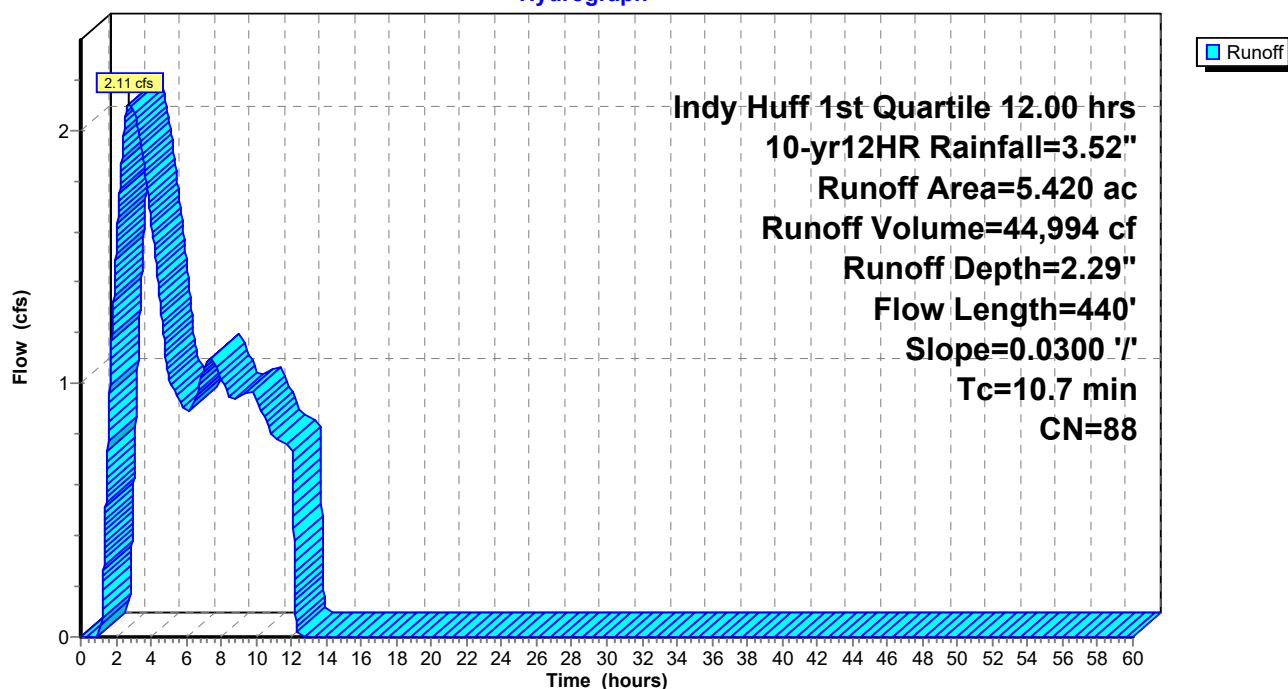
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 12.00 hrs 10-yr12HR Rainfall=3.52"

Area (ac)	CN	Description
* 2.710	98	
0.170	70	Woods, Good, HSG C
0.010	77	Woods, Good, HSG D
1.680	80	>75% Grass cover, Good, HSG D
0.850	74	>75% Grass cover, Good, HSG C
5.420	88	Weighted Average
2.710		50.00% Pervious Area
2.710		50.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.0300	0.19		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
2.0	340	0.0300	2.79		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
10.7	440	Total			

**Subcatchment 11S: DA#2**

Hydrograph



**Summary for Subcatchment 12S: DA711**

Runoff = 0.28 cfs @ 4.31 hrs, Volume= 7,737 cf, Depth= 1.25"

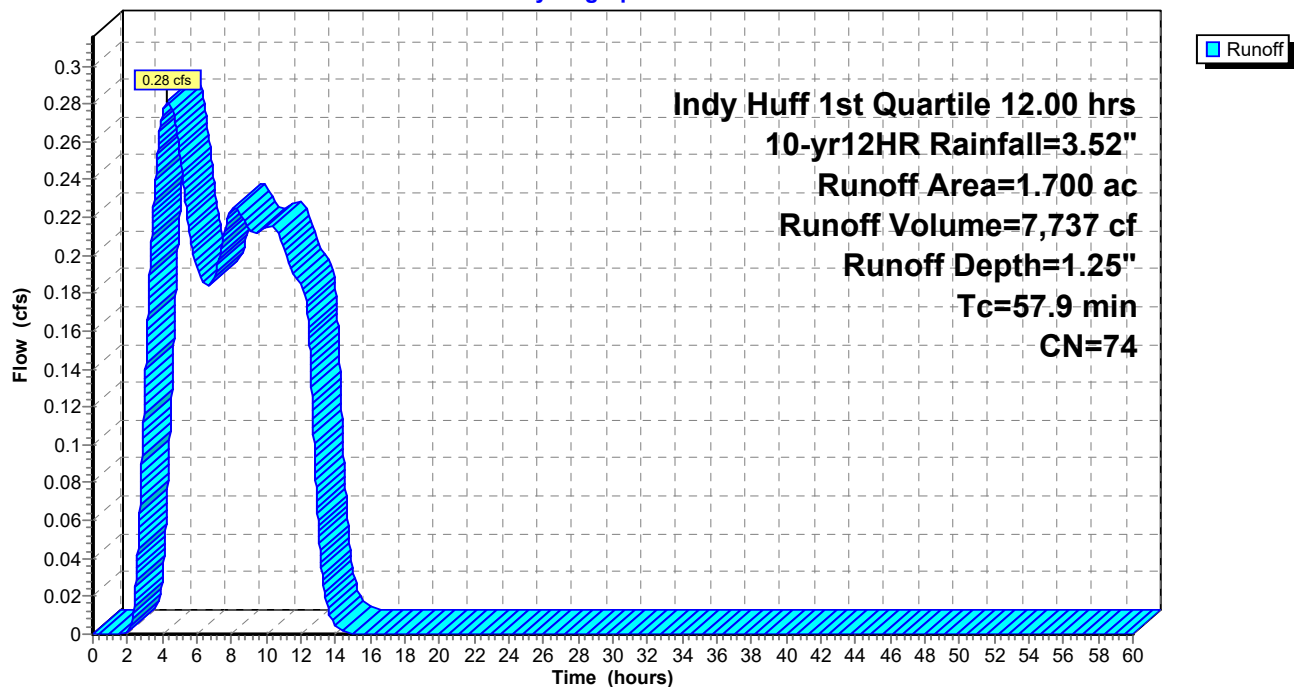
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
 Indy Huff 1st Quartile 12.00 hrs 10-yr12HR Rainfall=3.52"

Area (ac)	CN	Description
* 1.700	74	
1.700		100.00% Pervious Area

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

**Subcatchment 12S: DA711**

Hydrograph



**Summary for Pond 3P: Pond/CMP Detention**

[44] Hint: Outlet device #2 is below defined storage

Inflow Area = 2,309,116 sf, 76.46% Impervious, Inflow Depth = 2.84" for 10-yr12HR event  
 Inflow = 26.35 cfs @ 2.48 hrs, Volume= 545,984 cf  
 Outflow = 13.50 cfs @ 4.59 hrs, Volume= 539,038 cf, Atten= 49%, Lag= 126.8 min  
 Primary = 13.50 cfs @ 4.59 hrs, Volume= 539,038 cf  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
 Peak Elev= 729.59' @ 4.59 hrs Surf.Area= 113,934 sf Storage= 183,069 cf

Plug-Flow detention time= 375.0 min calculated for 539,038 cf (99% of inflow)  
 Center-of-Mass det. time= 369.8 min ( 690.8 - 321.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	727.40'	87,965 cf	<b>48.0" Round Pipe Storage</b> x 10 L= 700.0' S= 0.0010 '/'
#2	727.80'	586,912 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		674,876 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.80	74,675	0	0
728.00	75,945	15,062	15,062
729.00	82,354	79,150	94,212
730.00	88,864	85,609	179,821
731.00	95,474	92,169	271,990
732.00	102,185	98,830	370,819
733.00	110,000	106,093	476,912
734.00	110,000	110,000	586,912

Device	Routing	Invert	Outlet Devices
#1	Primary	727.37'	<b>24.0" Round POI A</b> L= 75.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 727.37' / 727.14' S= 0.0031 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 3.14 sf
#2	Device 1	727.37'	<b>4.6" Vert. Orifice/Grate</b> C= 0.600
#3	Device 1	728.54'	<b>6.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)
#4	Secondary	730.21'	<b>24.0" Round POI B</b> L= 27.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 730.21' / 730.00' S= 0.0078 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 3.14 sf



**Primary OutFlow** Max=13.50 cfs @ 4.59 hrs HW=729.59' (Free Discharge)

1=POI A (Barrel Controls 13.50 cfs @ 4.84 fps)

2=Orifice/Grate (Passes < 0.79 cfs potential flow)

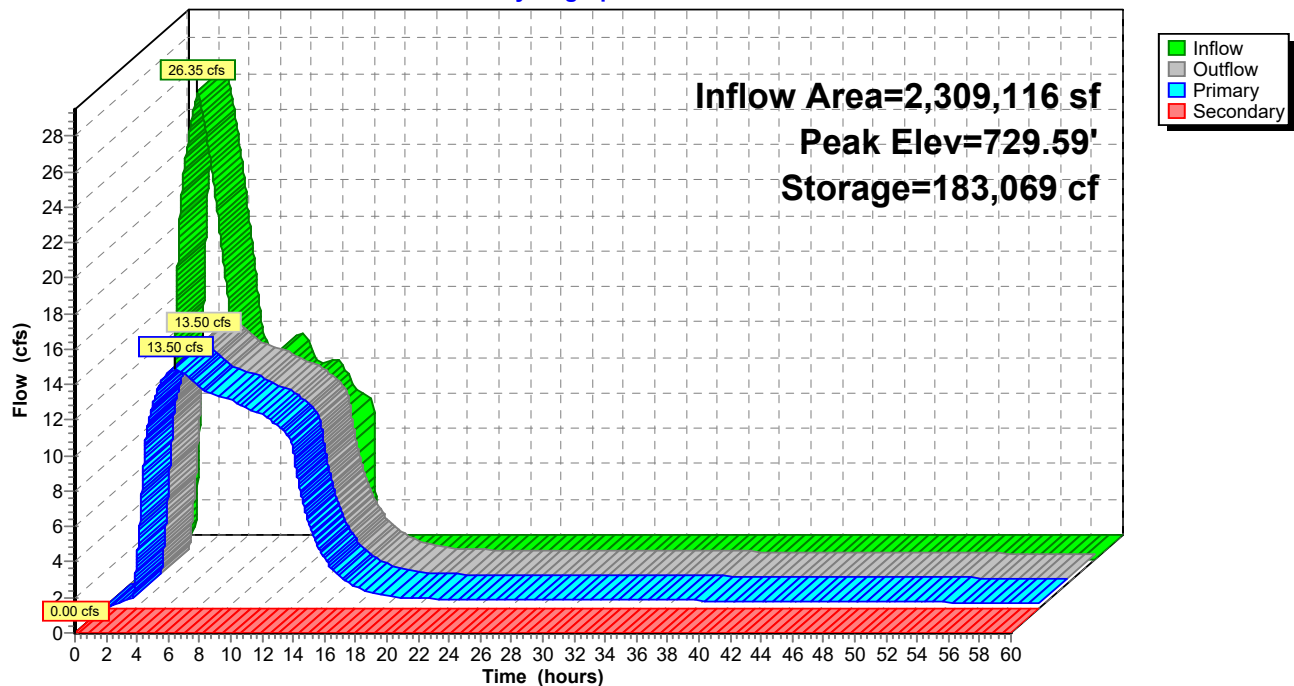
3=Sharp-Crested Rectangular Weir (Passes < 20.27 cfs potential flow)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=727.40' (Free Discharge)

4=POI B ( Controls 0.00 cfs)

### Pond 3P: Pond/CMP Detention

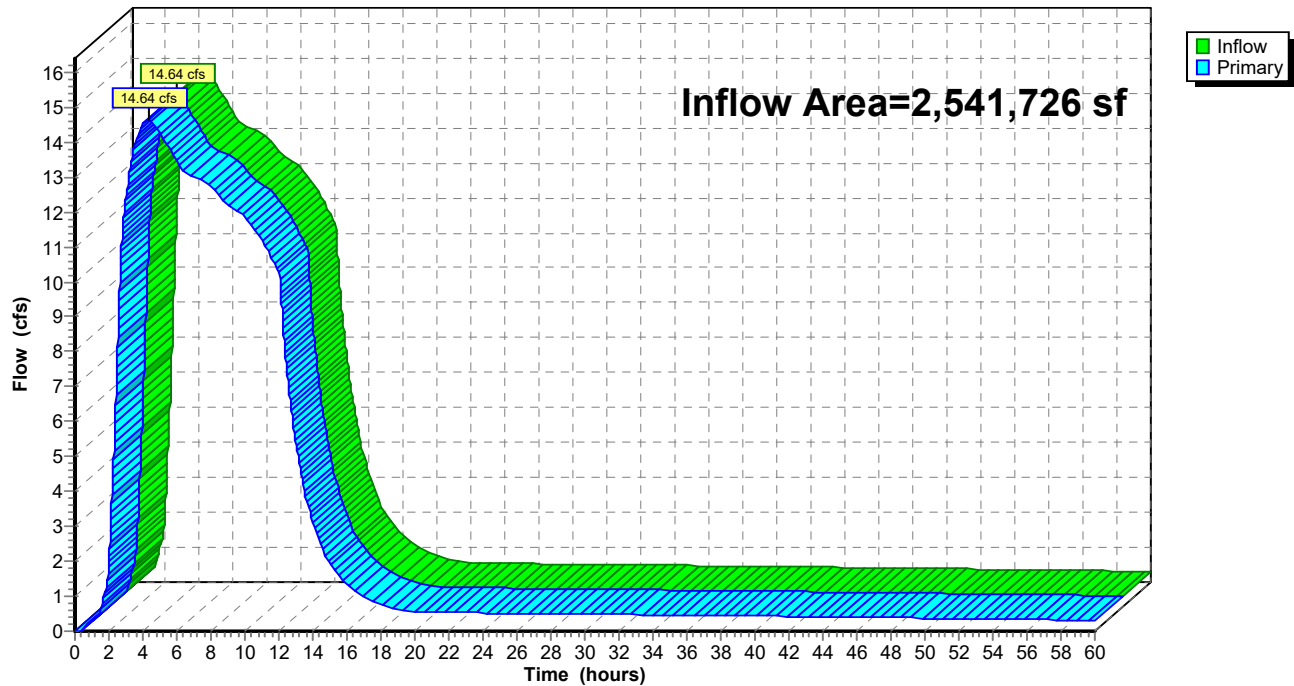
#### Hydrograph



**Summary for Link 13L: Total Post**

Inflow Area = 2,541,726 sf, 71.40% Impervious, Inflow Depth > 2.72" for 10-yr12HR event  
Inflow = 14.64 cfs @ 4.32 hrs, Volume= 575,391 cf  
Primary = 14.64 cfs @ 4.32 hrs, Volume= 575,391 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

**Link 13L: Total Post****Hydrograph**

**Summary for Subcatchment 2S: DA#3 (Dev-Onsite)**

Runoff = 2.82 cfs @ 4.85 hrs, Volume= 109,982 cf, Depth= 3.84"

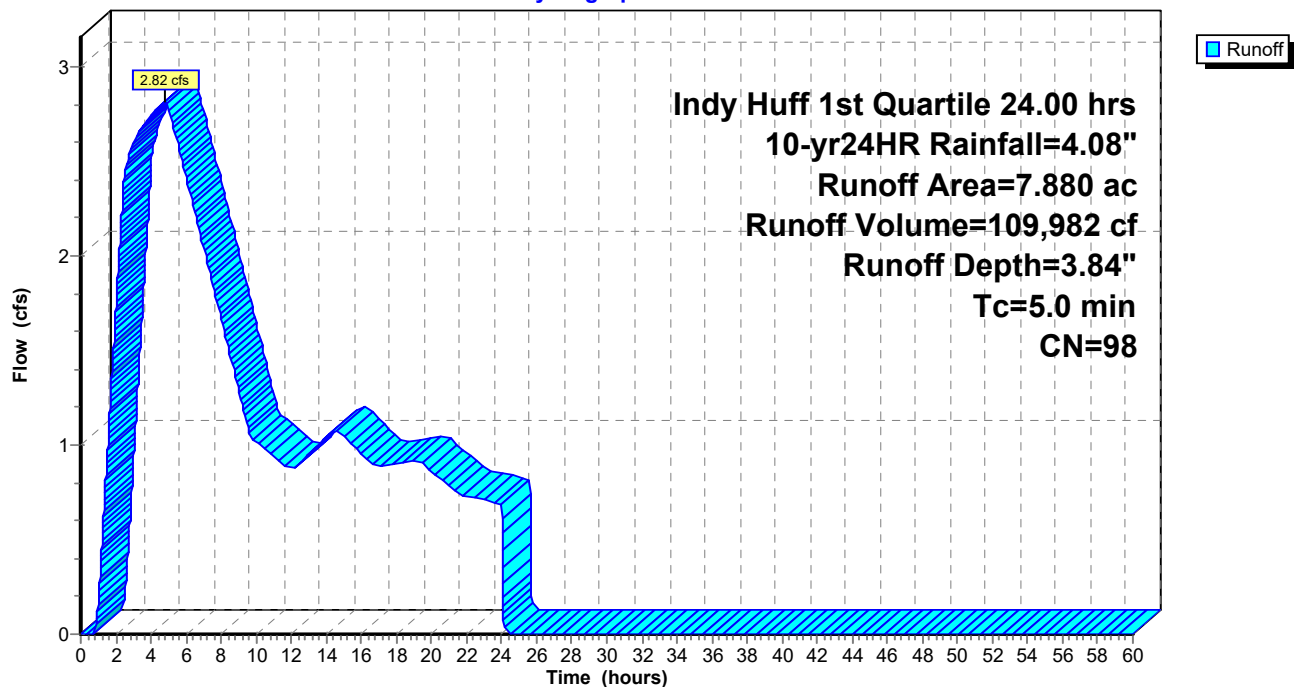
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 24.00 hrs 10-yr24HR Rainfall=4.08"

Area (ac)	CN	Description
* 7.880	98	
7.880		100.00% Impervious Area

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

**Subcatchment 2S: DA#3 (Dev-Onsite)**

Hydrograph



**Summary for Subcatchment 4S: DA#5 (Dev-Onsite)**

Runoff = 11.06 cfs @ 4.85 hrs, Volume= 427,837 cf, Depth= 3.73"

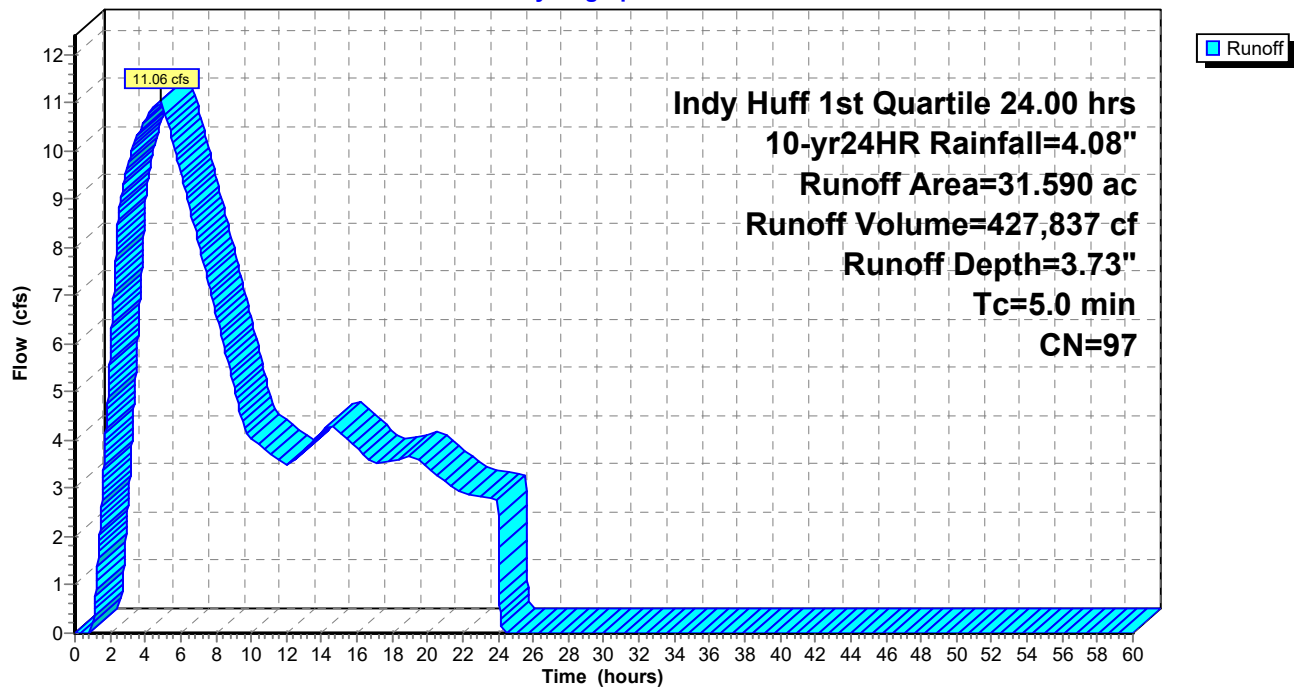
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 24.00 hrs 10-yr24HR Rainfall=4.08"

Area (ac)	CN	Description
* 29.300	98	
0.510	74	>75% Grass cover, Good, HSG C
1.780	80	>75% Grass cover, Good, HSG D
31.590	97	Weighted Average
2.290		7.25% Pervious Area
29.300		92.75% Impervious Area

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

**Subcatchment 4S: DA#5 (Dev-Onsite)**

Hydrograph



**Summary for Subcatchment 9S: DA#4 (Undetained)**

Runoff = 1.02 cfs @ 5.70 hrs, Volume= 45,665 cf, Depth= 2.36"

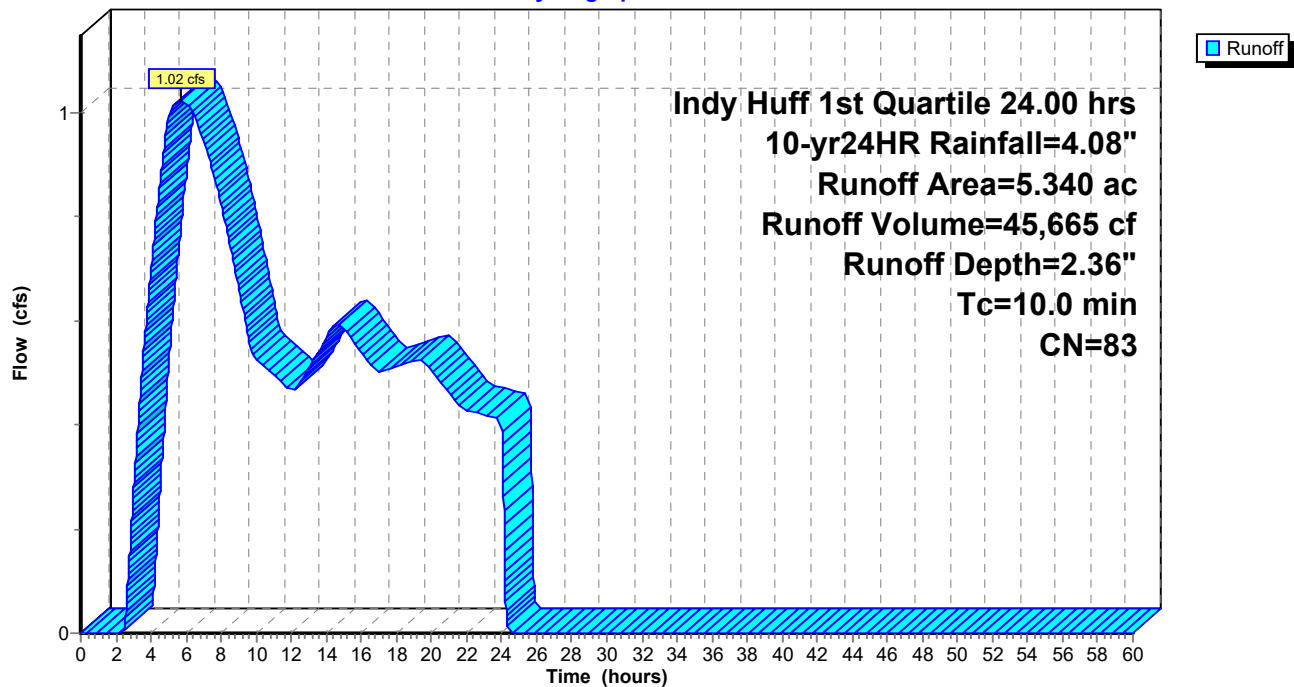
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 24.00 hrs 10-yr24HR Rainfall=4.08"

Area (ac)	CN	Description
* 1.130	98	
0.350	74	>75% Grass cover, Good, HSG C
3.860	80	>75% Grass cover, Good, HSG D
5.340	83	Weighted Average
4.210		78.84% Pervious Area
1.130		21.16% Impervious Area

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

**Subcatchment 9S: DA#4 (Undetained)**

Hydrograph



**Summary for Subcatchment 10S: DA#1**

Runoff = 0.95 cfs @ 6.57 hrs, Volume= 45,464 cf, Depth= 1.95"

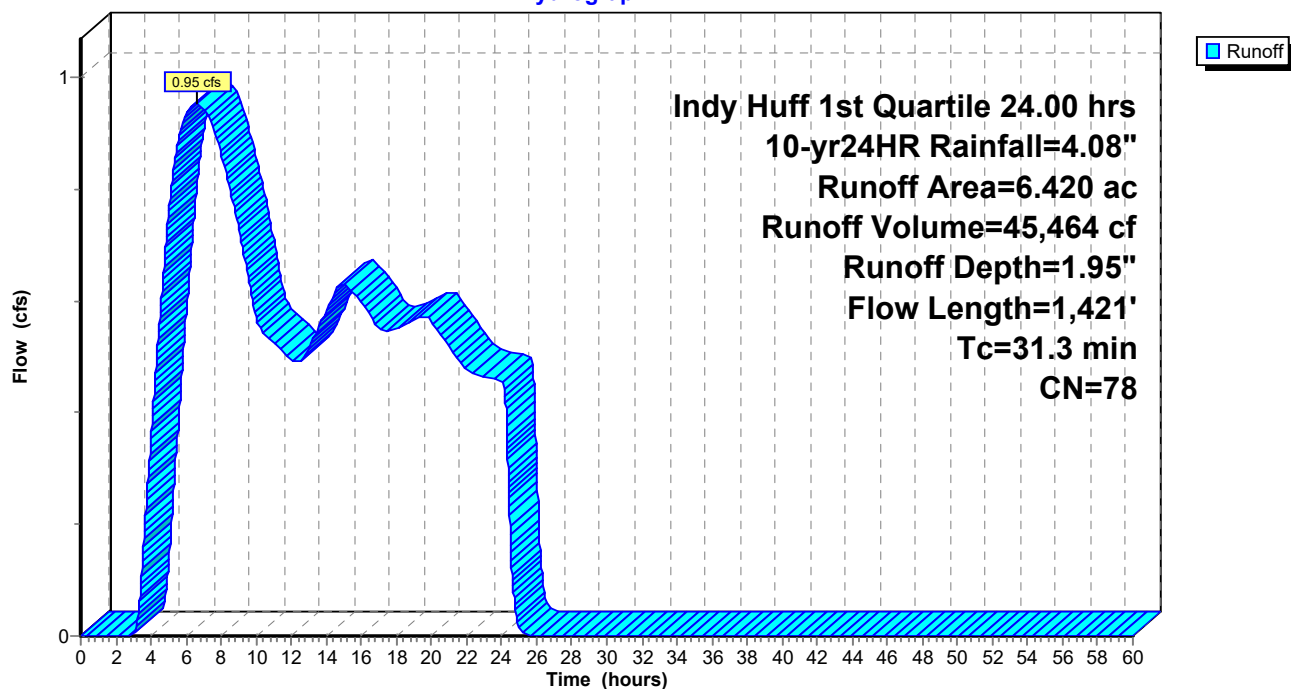
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 24.00 hrs 10-yr24HR Rainfall=4.08"

Area (ac)	CN	Description
* 0.640	98	
0.890	70	Woods, Good, HSG C
1.630	77	Woods, Good, HSG D
0.150	89	Row crops, straight row, Good, HSG D
0.130	85	Row crops, straight row, Good, HSG C
1.360	80	>75% Grass cover, Good, HSG D
1.620	74	>75% Grass cover, Good, HSG C
6.420	78	Weighted Average
5.780		90.03% Pervious Area
0.640		9.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0100	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
17.7	1,321	0.0060	1.25		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
31.3	1,421	Total			

**Subcatchment 10S: DA#1**

Hydrograph



**Summary for Subcatchment 11S: DA#2**

Runoff = 1.32 cfs @ 5.17 hrs, Volume= 55,153 cf, Depth= 2.80"

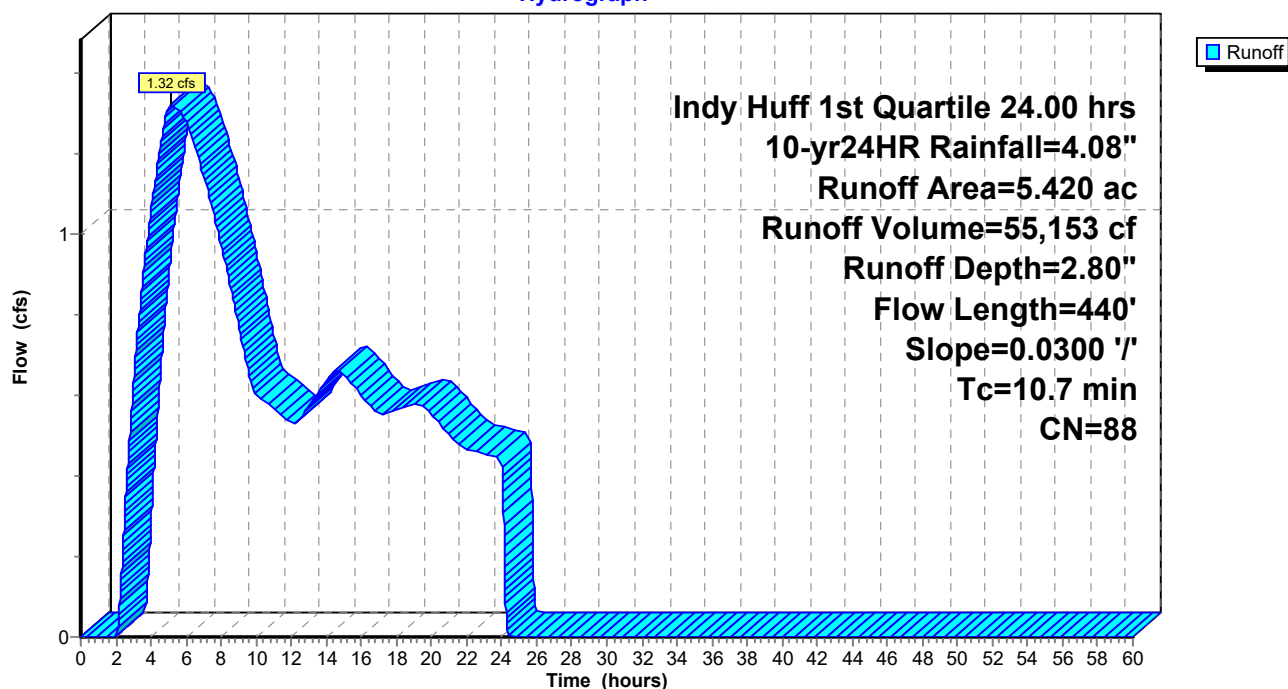
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 24.00 hrs 10-yr24HR Rainfall=4.08"

Area (ac)	CN	Description
* 2.710	98	
0.170	70	Woods, Good, HSG C
0.010	77	Woods, Good, HSG D
1.680	80	>75% Grass cover, Good, HSG D
0.850	74	>75% Grass cover, Good, HSG C
5.420	88	Weighted Average
2.710		50.00% Pervious Area
2.710		50.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.0300	0.19		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
2.0	340	0.0300	2.79		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
10.7	440	Total			

**Subcatchment 11S: DA#2**

Hydrograph



**Summary for Subcatchment 12S: DA711**

Runoff = 0.20 cfs @ 7.40 hrs, Volume= 10,215 cf, Depth= 1.66"

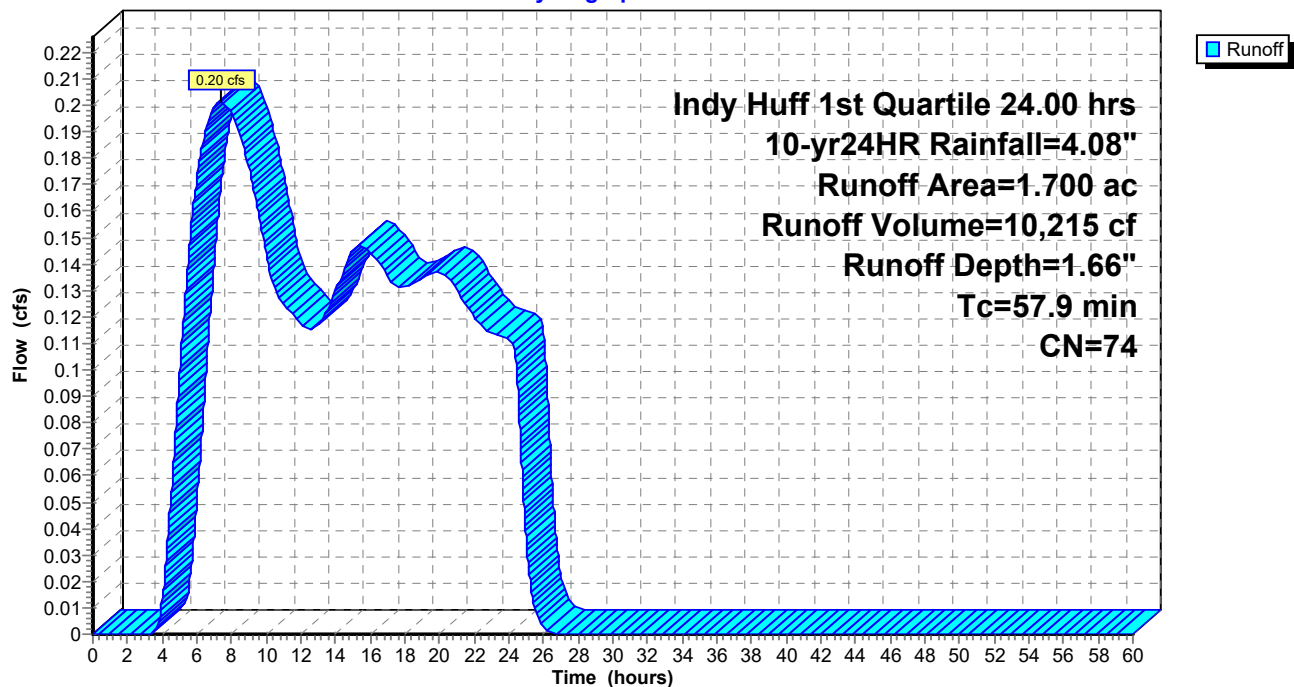
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 24.00 hrs 10-yr24HR Rainfall=4.08"

Area (ac)	CN	Description
* 1.700	74	
1.700		100.00% Pervious Area

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

**Subcatchment 12S: DA711**

Hydrograph





**Summary for Pond 3P: Pond/CMP Detention**

[44] Hint: Outlet device #2 is below defined storage

Inflow Area = 2,309,116 sf, 76.46% Impervious, Inflow Depth = 3.37" for 10-yr24HR event  
 Inflow = 15.96 cfs @ 4.87 hrs, Volume= 648,650 cf  
 Outflow = 11.56 cfs @ 7.43 hrs, Volume= 628,140 cf, Atten= 28%, Lag= 153.4 min  
 Primary = 11.56 cfs @ 7.43 hrs, Volume= 628,140 cf  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
 Peak Elev= 729.35' @ 7.43 hrs Surf.Area= 111,878 sf Storage= 155,919 cf

Plug-Flow detention time= 349.0 min calculated for 628,140 cf (97% of inflow)  
 Center-of-Mass det. time= 323.4 min ( 953.0 - 629.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	727.40'	87,965 cf	<b>48.0" Round Pipe Storage</b> x 10 L= 700.0' S= 0.0010 '/'
#2	727.80'	586,912 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		674,876 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.80	74,675	0	0
728.00	75,945	15,062	15,062
729.00	82,354	79,150	94,212
730.00	88,864	85,609	179,821
731.00	95,474	92,169	271,990
732.00	102,185	98,830	370,819
733.00	110,000	106,093	476,912
734.00	110,000	110,000	586,912

Device	Routing	Invert	Outlet Devices
#1	Primary	727.37'	<b>24.0" Round POI A</b> L= 75.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 727.37' / 727.14' S= 0.0031 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 3.14 sf
#2	Device 1	727.37'	<b>4.6" Vert. Orifice/Grate</b> C= 0.600
#3	Device 1	728.54'	<b>6.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)
#4	Secondary	730.21'	<b>24.0" Round POI B</b> L= 27.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 730.21' / 730.00' S= 0.0078 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 3.14 sf

**Primary OutFlow** Max=11.57 cfs @ 7.43 hrs HW=729.35' (Free Discharge)

1=POI A (Barrel Controls 11.57 cfs @ 4.63 fps)

2=Orifice/Grate (Passes < 0.74 cfs potential flow)

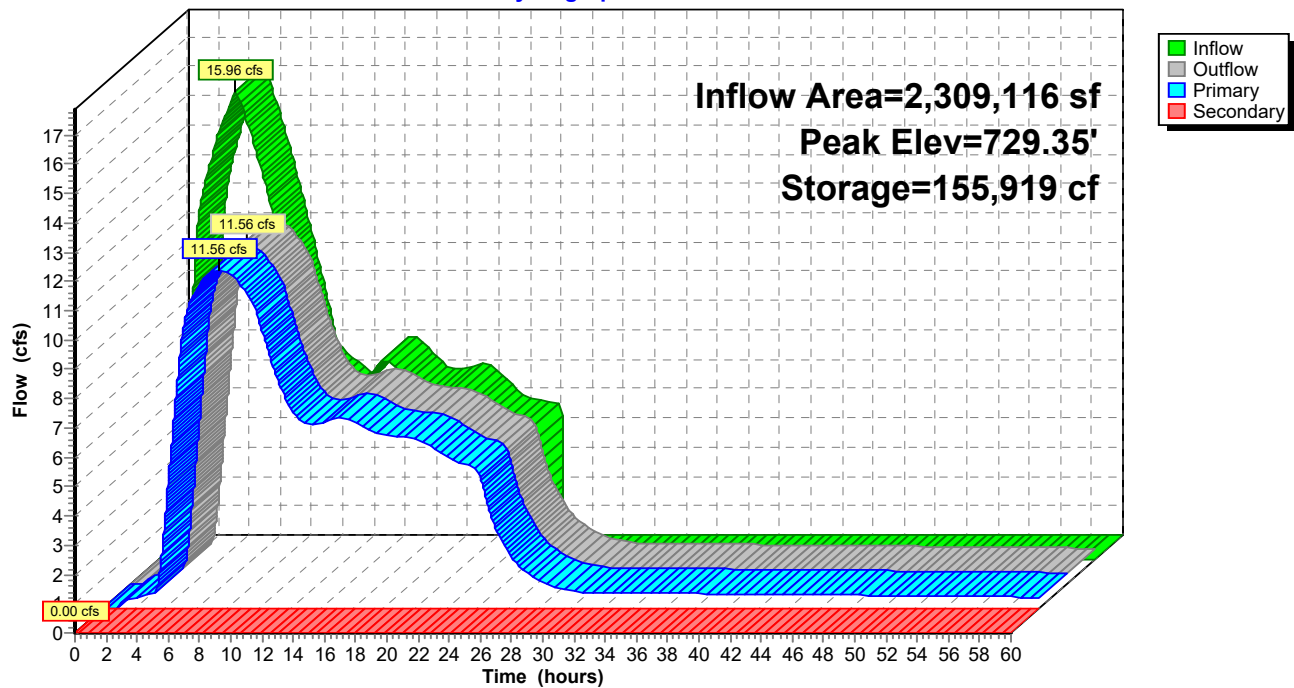
3=Sharp-Crested Rectangular Weir (Passes < 13.82 cfs potential flow)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=727.40' (Free Discharge)

4=POI B ( Controls 0.00 cfs)

### Pond 3P: Pond/CMP Detention

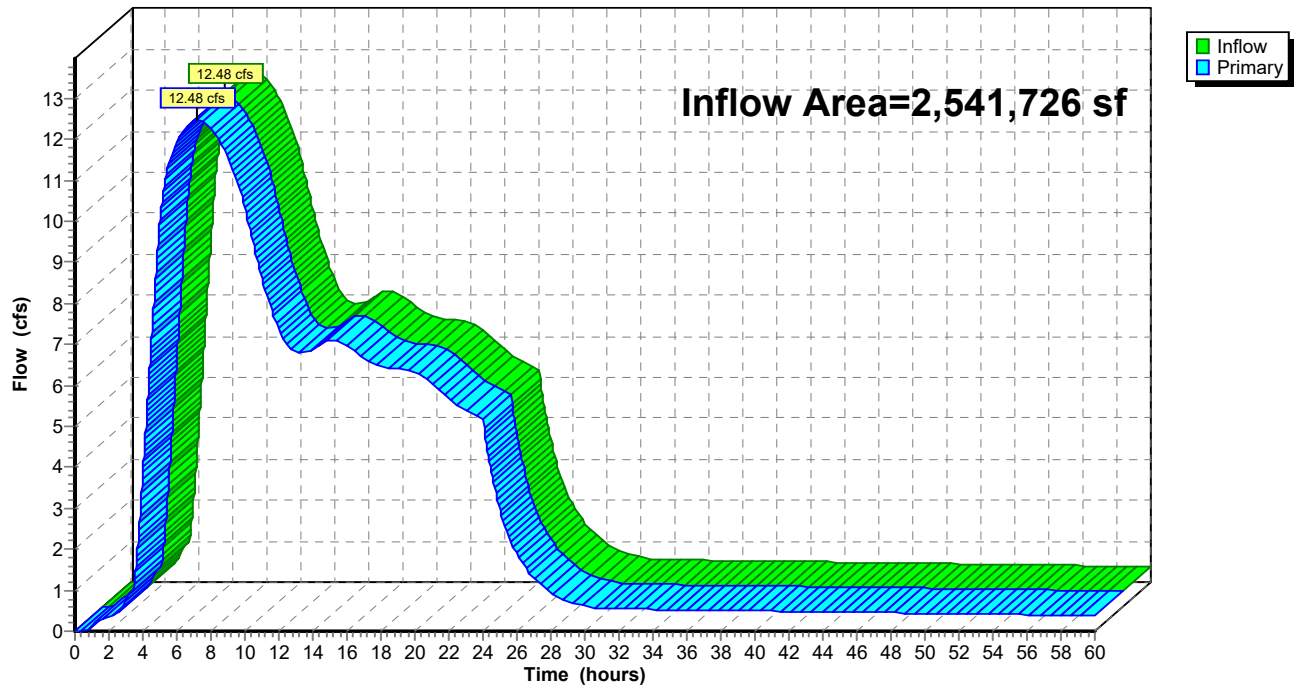
Hydrograph



**Summary for Link 13L: Total Post**

Inflow Area = 2,541,726 sf, 71.40% Impervious, Inflow Depth > 3.18" for 10-yr24HR event  
Inflow = 12.48 cfs @ 7.23 hrs, Volume= 673,804 cf  
Primary = 12.48 cfs @ 7.23 hrs, Volume= 673,804 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

**Link 13L: Total Post****Hydrograph**

**Summary for Subcatchment 2S: DA#3 (Dev-Onsite)**

Runoff = 4.11 cfs @ 4.84 hrs, Volume= 161,672 cf, Depth= 5.65"

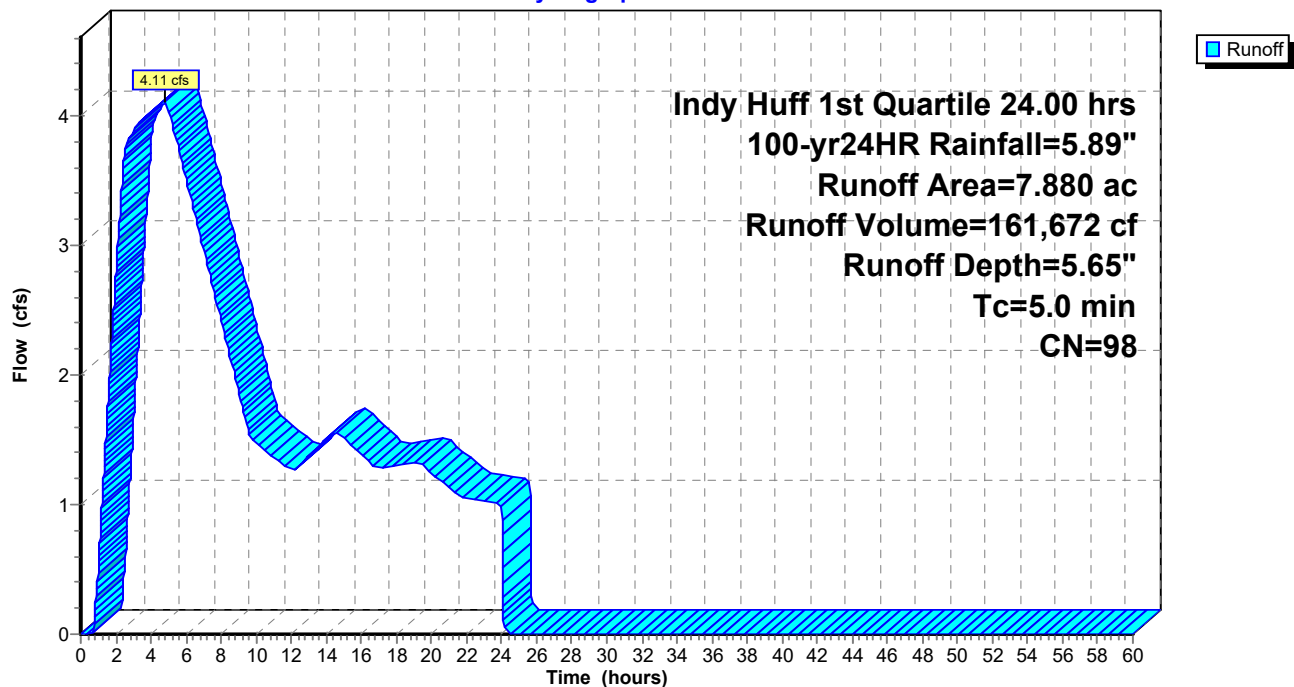
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
 Indy Huff 1st Quartile 24.00 hrs 100-yr24HR Rainfall=5.89"

Area (ac)	CN	Description
* 7.880	98	
7.880		100.00% Impervious Area

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

**Subcatchment 2S: DA#3 (Dev-Onsite)**

Hydrograph



**Summary for Subcatchment 4S: DA#5 (Dev-Onsite)**

Runoff = 16.29 cfs @ 4.85 hrs, Volume= 634,645 cf, Depth= 5.53"

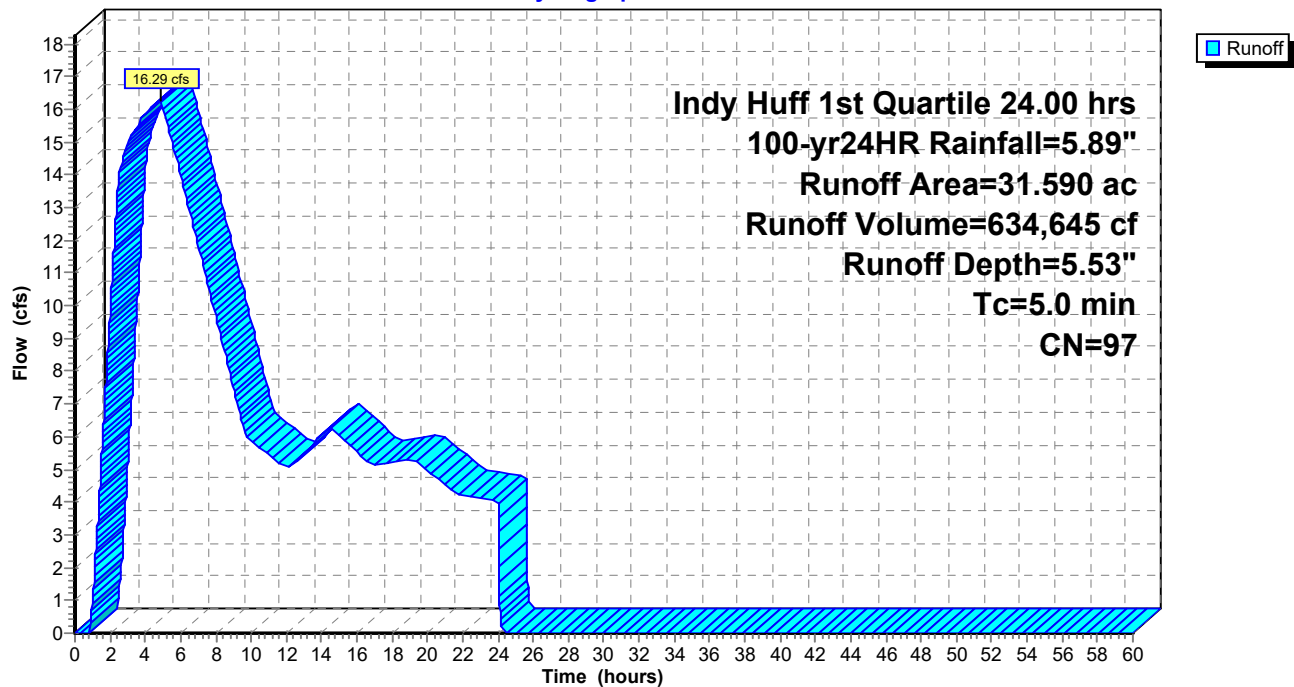
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
 Indy Huff 1st Quartile 24.00 hrs 100-yr24HR Rainfall=5.89"

Area (ac)	CN	Description
* 29.300	98	
0.510	74	>75% Grass cover, Good, HSG C
1.780	80	>75% Grass cover, Good, HSG D
31.590	97	Weighted Average
2.290		7.25% Pervious Area
29.300		92.75% Impervious Area

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

**Subcatchment 4S: DA#5 (Dev-Onsite)**

Hydrograph



**Summary for Subcatchment 9S: DA#4 (Undetained)**

Runoff = 1.85 cfs @ 5.19 hrs, Volume= 77,331 cf, Depth= 3.99"

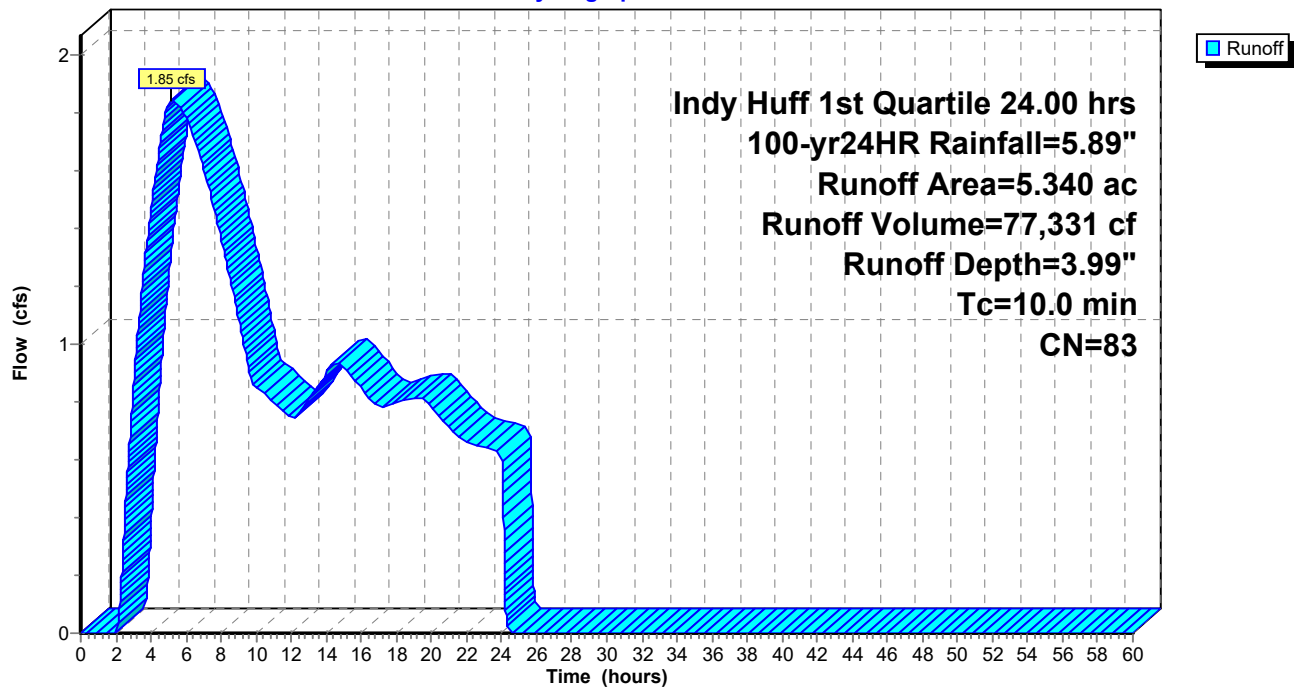
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 24.00 hrs 100-yr24HR Rainfall=5.89"

Area (ac)	CN	Description
* 1.130	98	
0.350	74	>75% Grass cover, Good, HSG C
3.860	80	>75% Grass cover, Good, HSG D
5.340	83	Weighted Average
4.210		78.84% Pervious Area
1.130		21.16% Impervious Area

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

**Subcatchment 9S: DA#4 (Undetained)**

Hydrograph



**Summary for Subcatchment 10S: DA#1**

Runoff = 1.83 cfs @ 6.02 hrs, Volume= 81,145 cf, Depth= 3.48"

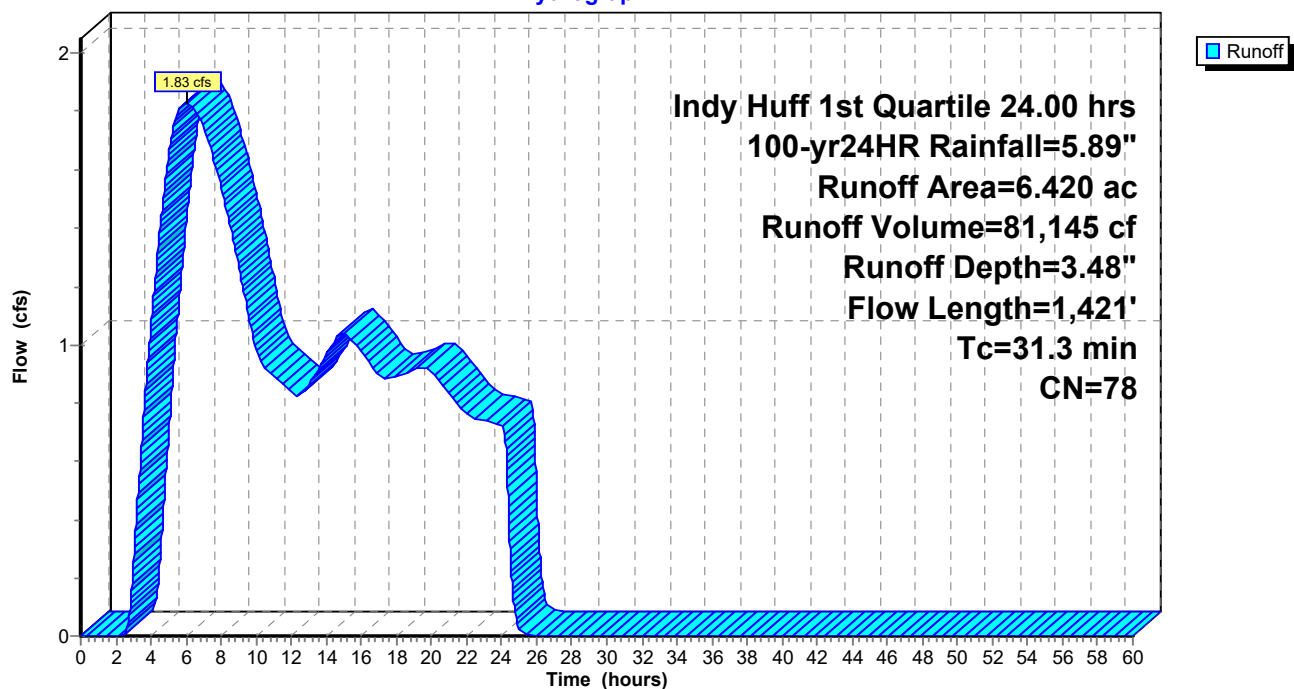
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 24.00 hrs 100-yr24HR Rainfall=5.89"

Area (ac)	CN	Description
* 0.640	98	
0.890	70	Woods, Good, HSG C
1.630	77	Woods, Good, HSG D
0.150	89	Row crops, straight row, Good, HSG D
0.130	85	Row crops, straight row, Good, HSG C
1.360	80	>75% Grass cover, Good, HSG D
1.620	74	>75% Grass cover, Good, HSG C
6.420	78	Weighted Average
5.780		90.03% Pervious Area
0.640		9.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0100	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
17.7	1,321	0.0060	1.25		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
31.3	1,421	Total			

**Subcatchment 10S: DA#1**

Hydrograph



**Summary for Subcatchment 11S: DA#2**

Runoff = 2.23 cfs @ 4.98 hrs, Volume= 88,929 cf, Depth= 4.52"

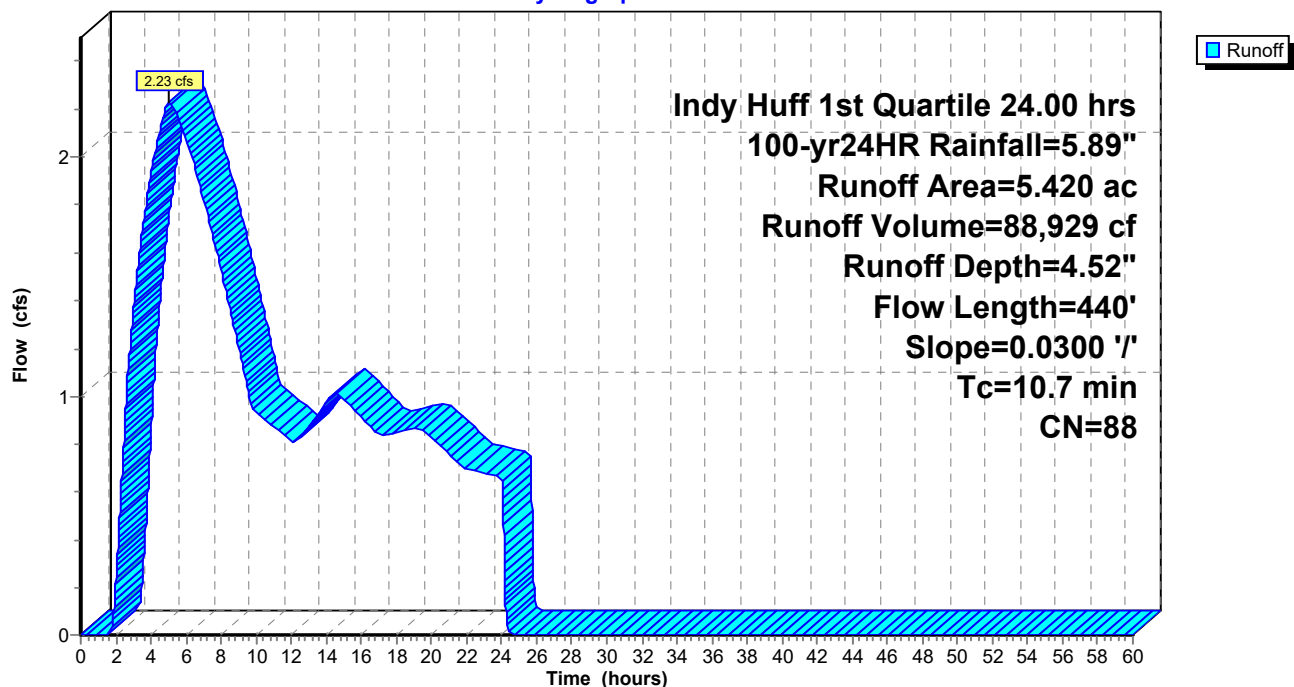
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 24.00 hrs 100-yr24HR Rainfall=5.89"

Area (ac)	CN	Description
* 2.710	98	
0.170	70	Woods, Good, HSG C
0.010	77	Woods, Good, HSG D
1.680	80	>75% Grass cover, Good, HSG D
0.850	74	>75% Grass cover, Good, HSG C
5.420	88	Weighted Average
2.710		50.00% Pervious Area
2.710		50.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.0300	0.19		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
2.0	340	0.0300	2.79		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
10.7	440	Total			

**Subcatchment 11S: DA#2**

Hydrograph





**Summary for Subcatchment 12S: DA711**

Runoff = 0.41 cfs @ 6.76 hrs, Volume= 19,084 cf, Depth= 3.09"

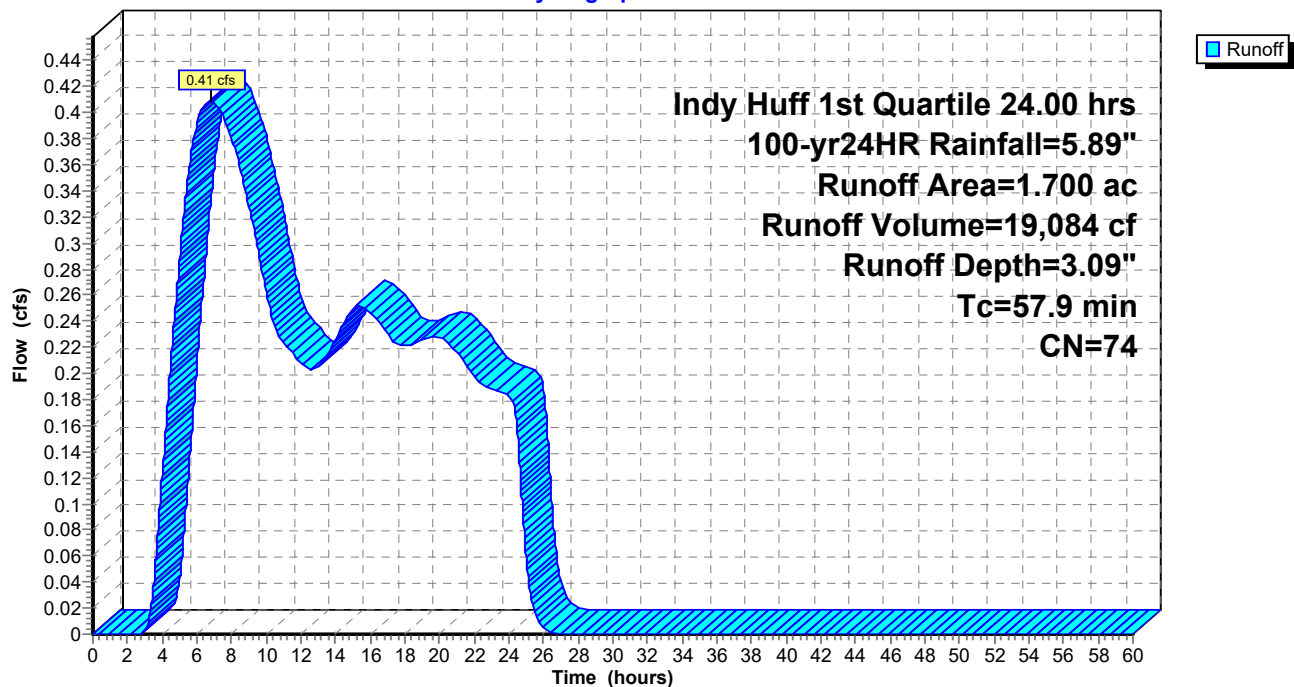
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 24.00 hrs 100-yr24HR Rainfall=5.89"

Area (ac)	CN	Description
* 1.700	74	
1.700		100.00% Pervious Area

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

**Subcatchment 12S: DA711**

Hydrograph



**Summary for Pond 3P: Pond/CMP Detention**

[44] Hint: Outlet device #2 is below defined storage

Inflow Area = 2,309,116 sf, 76.46% Impervious, Inflow Depth = 5.12" for 100-yr24HR event  
 Inflow = 24.45 cfs @ 4.86 hrs, Volume= 985,475 cf  
 Outflow = 15.53 cfs @ 9.36 hrs, Volume= 964,116 cf, Atten= 36%, Lag= 269.8 min  
 Primary = 15.53 cfs @ 9.36 hrs, Volume= 964,116 cf  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
 Peak Elev= 730.07' @ 8.01 hrs Surf.Area= 116,800 sf Storage= 238,477 cf

Plug-Flow detention time= 287.2 min calculated for 963,955 cf (98% of inflow)  
 Center-of-Mass det. time= 269.7 min ( 888.2 - 618.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	727.40'	87,965 cf	<b>48.0" Round Pipe Storage</b> x 10 L= 700.0' S= 0.0010 '/'
#2	727.80'	586,912 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		674,876 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.80	74,675	0	0
728.00	75,945	15,062	15,062
729.00	82,354	79,150	94,212
730.00	88,864	85,609	179,821
731.00	95,474	92,169	271,990
732.00	102,185	98,830	370,819
733.00	110,000	106,093	476,912
734.00	110,000	110,000	586,912

Device	Routing	Invert	Outlet Devices
#1	Primary	727.37'	<b>24.0" Round POI A</b> L= 75.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 727.37' / 727.14' S= 0.0031 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 3.14 sf
#2	Device 1	727.37'	<b>4.6" Vert. Orifice/Grate</b> C= 0.600
#3	Device 1	728.54'	<b>6.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)
#4	Secondary	730.21'	<b>24.0" Round POI B</b> L= 27.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 730.21' / 730.00' S= 0.0078 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 3.14 sf

**Primary OutFlow** Max=15.53 cfs @ 9.36 hrs HW=729.97' (Free Discharge)

1=POI A (Barrel Controls 15.53 cfs @ 4.97 fps)

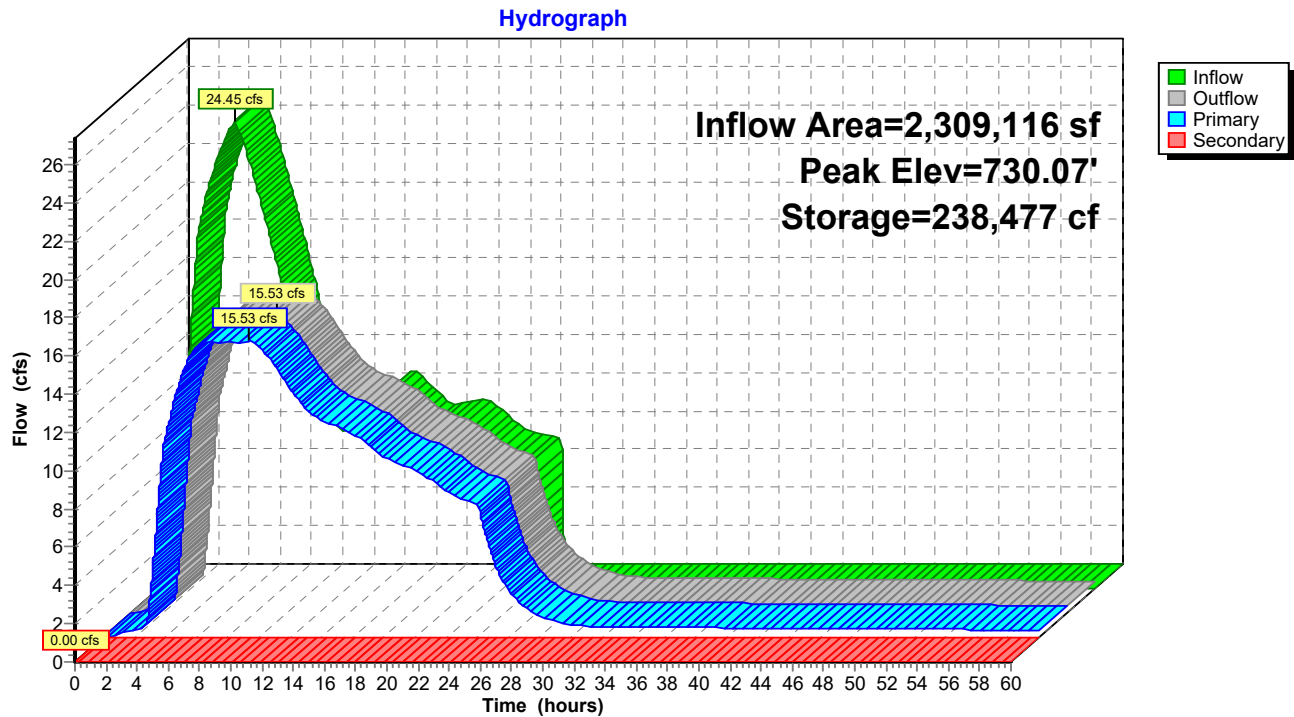
2=Orifice/Grate (Passes < 0.86 cfs potential flow)

3=Sharp-Crested Rectangular Weir (Passes < 32.09 cfs potential flow)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=727.40' (Free Discharge)

4=POI B ( Controls 0.00 cfs)

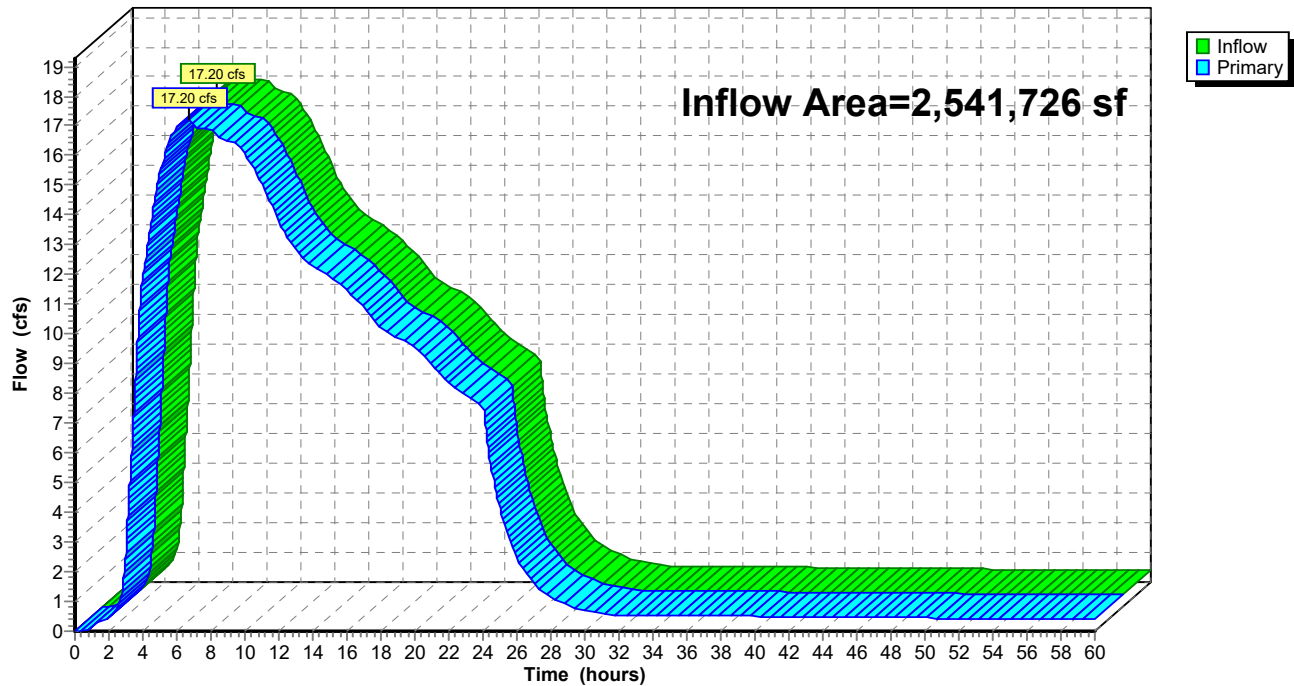
### Pond 3P: Pond/CMP Detention



**Summary for Link 13L: Total Post**

Inflow Area = 2,541,726 sf, 71.40% Impervious, Inflow Depth > 4.92" for 100-yr24HR event  
Inflow = 17.20 cfs @ 6.67 hrs, Volume= 1,041,447 cf  
Primary = 17.20 cfs @ 6.67 hrs, Volume= 1,041,447 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

**Link 13L: Total Post****Hydrograph**

**Summary for Subcatchment 2S: DA#3 (Dev-Onsite)**

Runoff = 7.45 cfs @ 2.44 hrs, Volume= 146,244 cf, Depth= 5.11"

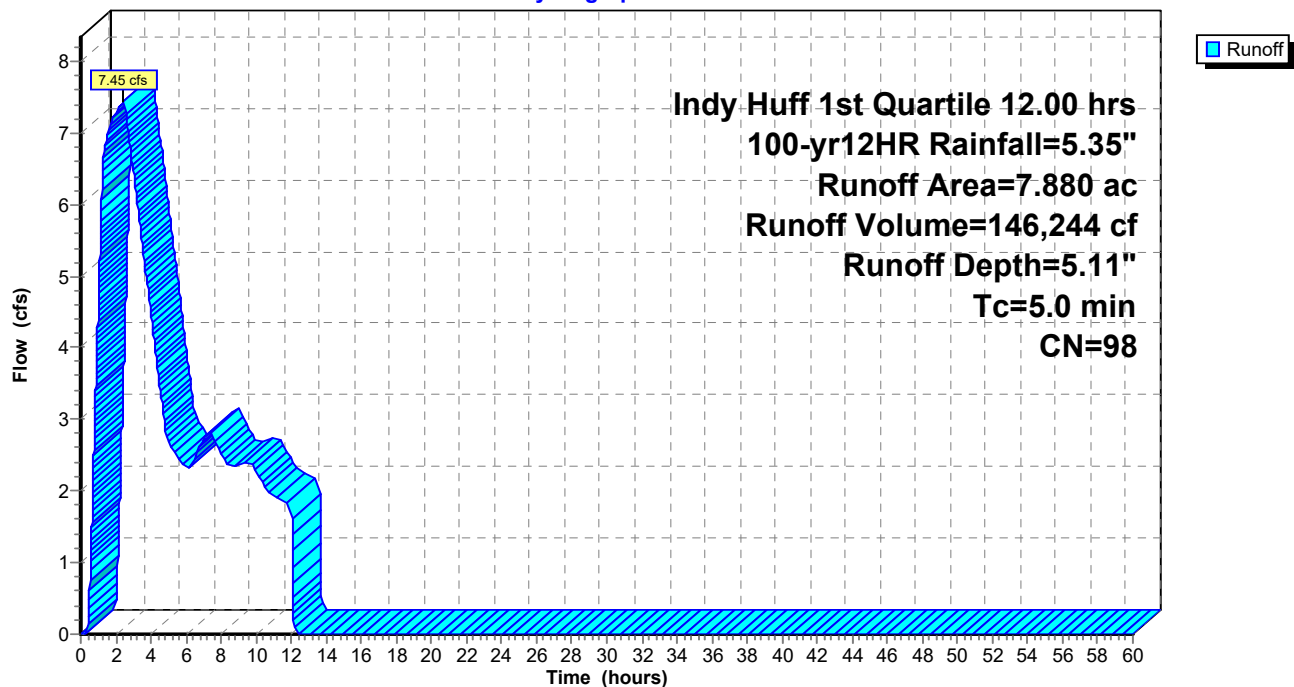
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 12.00 hrs 100-yr12HR Rainfall=5.35"

Area (ac)	CN	Description
* 7.880	98	
7.880		100.00% Impervious Area

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

**Subcatchment 2S: DA#3 (Dev-Onsite)**

Hydrograph



**Summary for Subcatchment 4S: DA#5 (Dev-Onsite)**

Runoff = 29.43 cfs @ 2.45 hrs, Volume= 572,895 cf, Depth= 5.00"

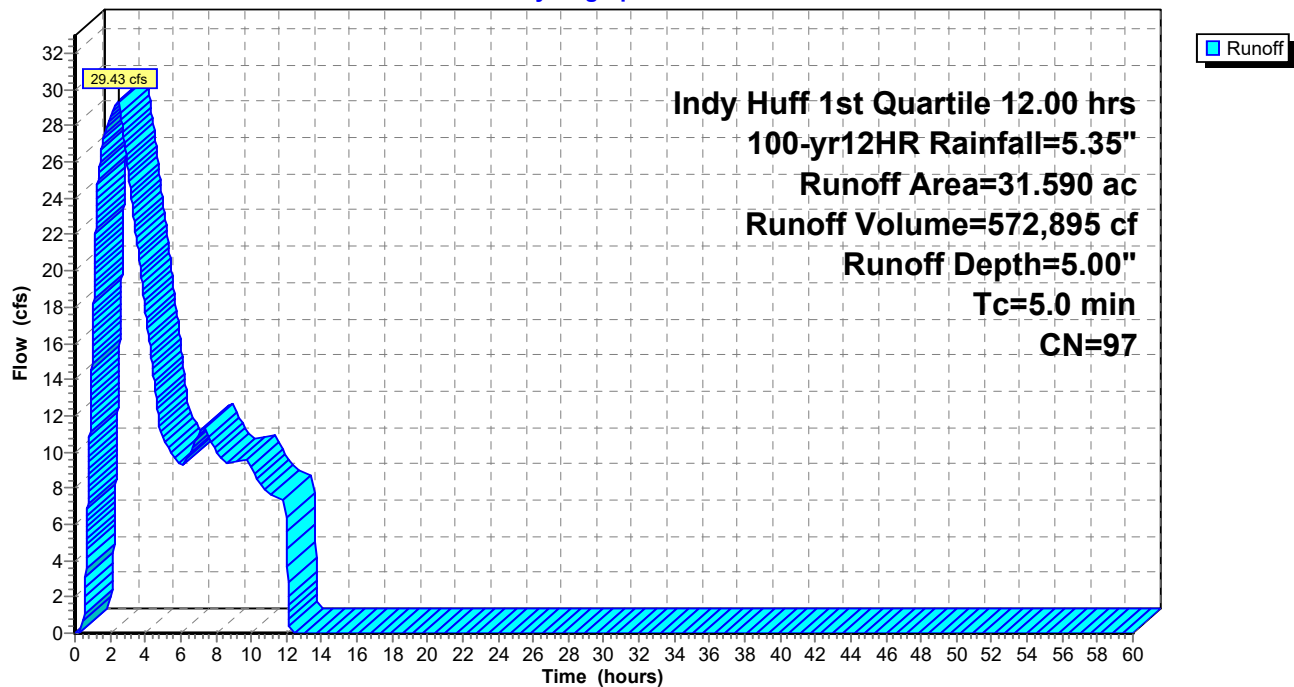
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 12.00 hrs 100-yr12HR Rainfall=5.35"

Area (ac)	CN	Description
* 29.300	98	
0.510	74	>75% Grass cover, Good, HSG C
1.780	80	>75% Grass cover, Good, HSG D
31.590	97	Weighted Average
2.290		7.25% Pervious Area
29.300		92.75% Impervious Area

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

**Subcatchment 4S: DA#5 (Dev-Onsite)**

Hydrograph



**Summary for Subcatchment 9S: DA#4 (Undetained)**

Runoff = 3.18 cfs @ 2.77 hrs, Volume= 67,698 cf, Depth= 3.49"

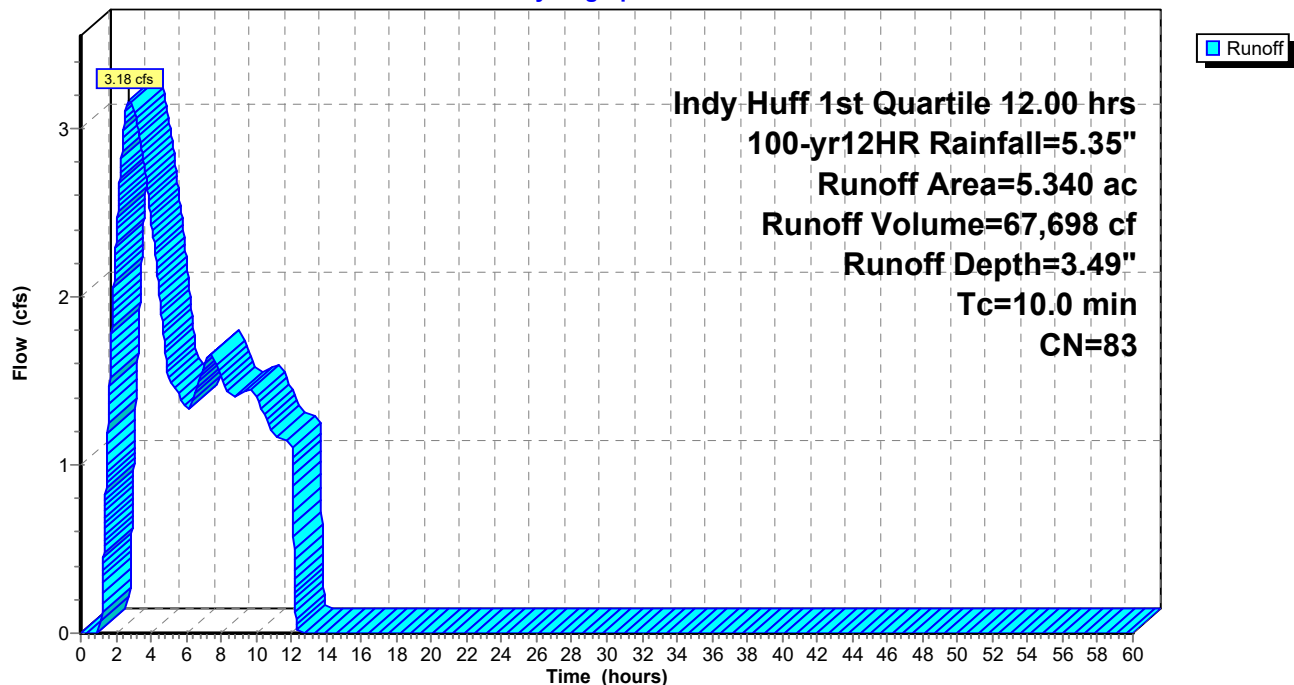
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
 Indy Huff 1st Quartile 12.00 hrs 100-yr12HR Rainfall=5.35"

Area (ac)	CN	Description
* 1.130	98	
0.350	74	>75% Grass cover, Good, HSG C
3.860	80	>75% Grass cover, Good, HSG D
5.340	83	Weighted Average
4.210		78.84% Pervious Area
1.130		21.16% Impervious Area

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

**Subcatchment 9S: DA#4 (Undetained)**

Hydrograph



**Summary for Subcatchment 10S: DA#1**

Runoff = 3.07 cfs @ 3.37 hrs, Volume= 70,176 cf, Depth= 3.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 12.00 hrs 100-yr12HR Rainfall=5.35"

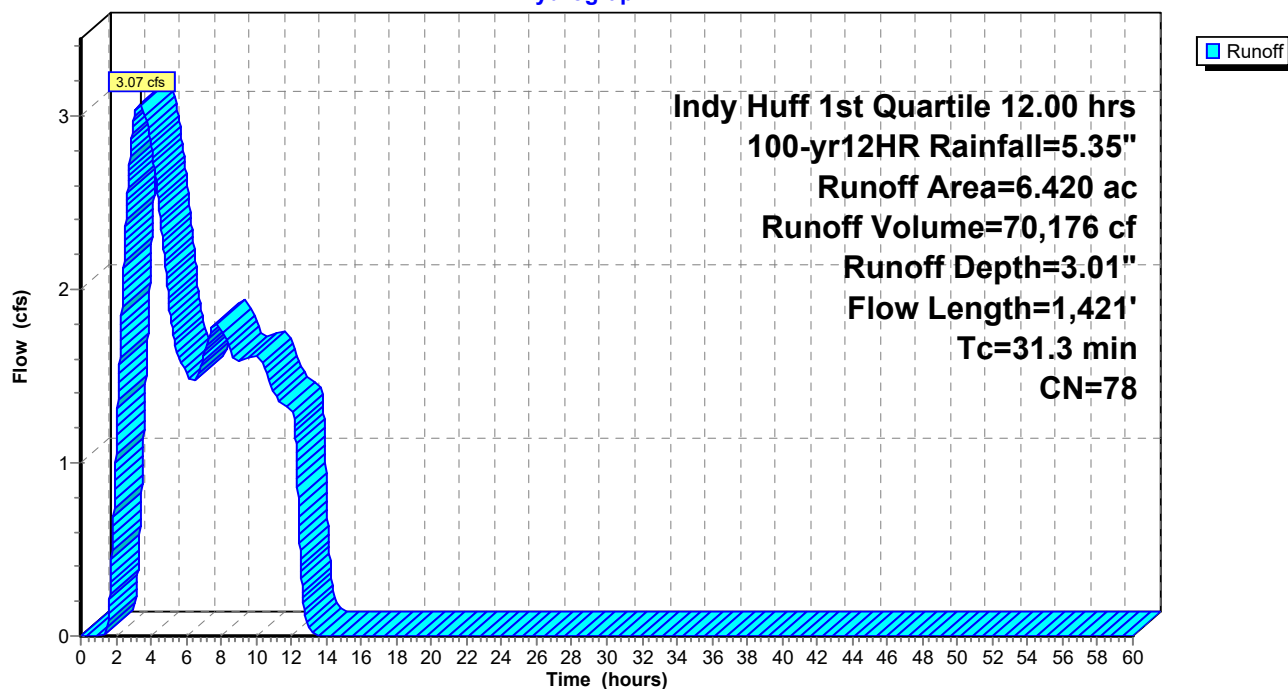
Area (ac)	CN	Description
* 0.640	98	
0.890	70	Woods, Good, HSG C
1.630	77	Woods, Good, HSG D
0.150	89	Row crops, straight row, Good, HSG D
0.130	85	Row crops, straight row, Good, HSG C
1.360	80	>75% Grass cover, Good, HSG D
1.620	74	>75% Grass cover, Good, HSG C
6.420	78	Weighted Average
5.780		90.03% Pervious Area
0.640		9.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0100	0.12		<b>Sheet Flow,</b>
					Grass: Short n= 0.150 P2= 2.91"
17.7	1,321	0.0060	1.25		<b>Shallow Concentrated Flow,</b>
					Unpaved Kv= 16.1 fps
31.3	1,421	Total			

**Subcatchment 10S: DA#1**

Hydrograph





**Summary for Subcatchment 11S: DA#2**

Runoff = 3.90 cfs @ 2.63 hrs, Volume= 78,744 cf, Depth= 4.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 12.00 hrs 100-yr12HR Rainfall=5.35"

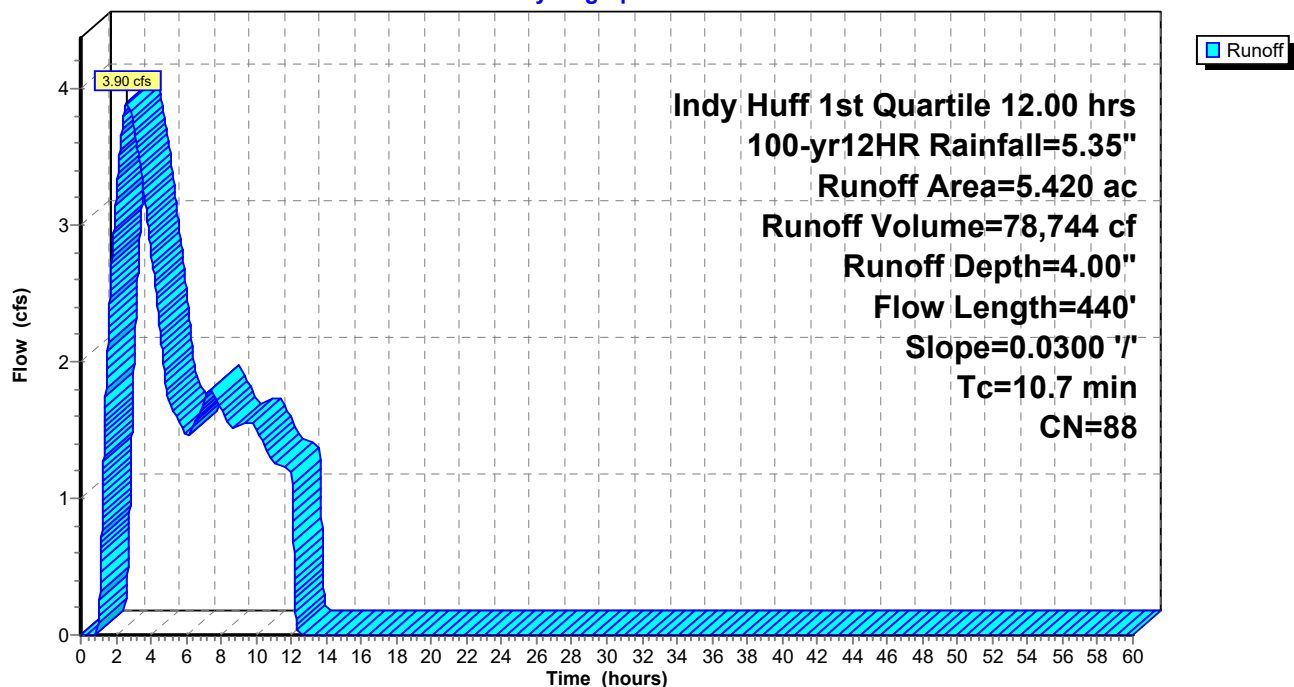
Area (ac)	CN	Description
* 2.710	98	
0.170	70	Woods, Good, HSG C
0.010	77	Woods, Good, HSG D
1.680	80	>75% Grass cover, Good, HSG D
0.850	74	>75% Grass cover, Good, HSG C
5.420	88	Weighted Average
2.710		50.00% Pervious Area
2.710		50.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.0300	0.19		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
2.0	340	0.0300	2.79		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
10.7	440	Total			

**Subcatchment 11S: DA#2**

Hydrograph



**Summary for Subcatchment 12S: DA711**

Runoff = 0.66 cfs @ 3.93 hrs, Volume= 16,331 cf, Depth= 2.65"

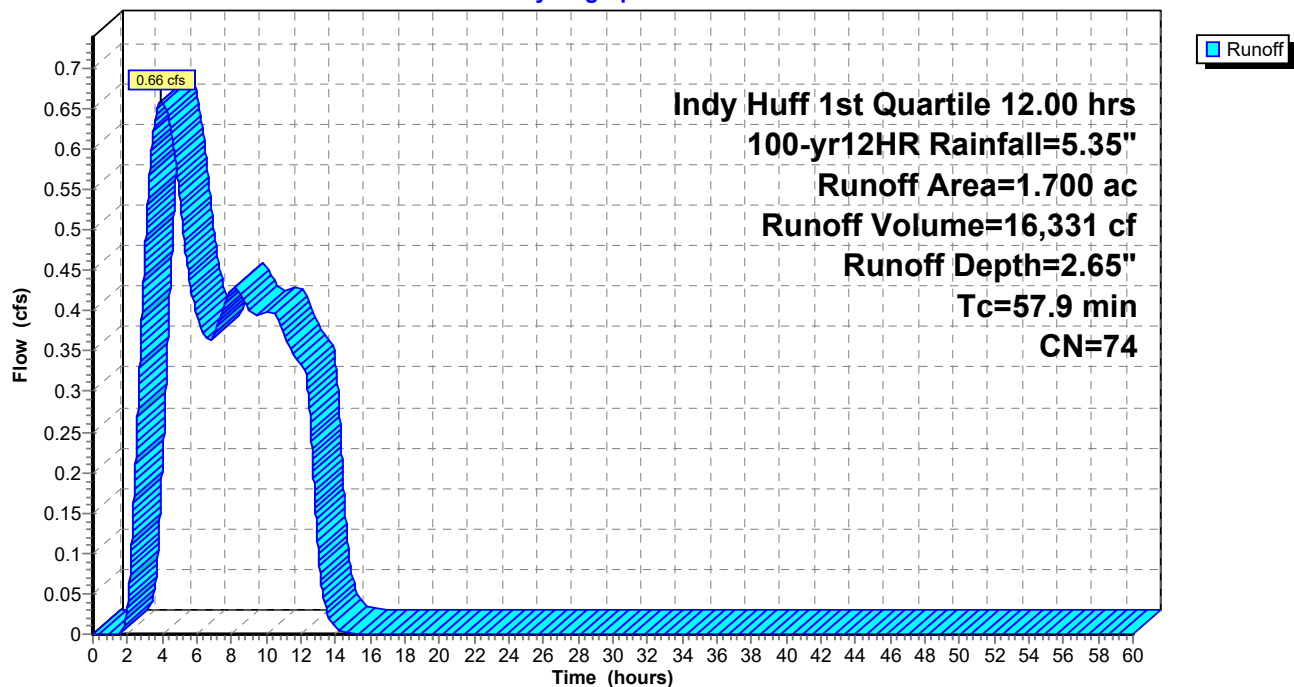
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 12.00 hrs 100-yr12HR Rainfall=5.35"

Area (ac)	CN	Description
* 1.700	74	
1.700		100.00% Pervious Area

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

**Subcatchment 12S: DA711**

Hydrograph



**Summary for Pond 3P: Pond/CMP Detention**

[44] Hint: Outlet device #2 is below defined storage

Inflow Area = 2,309,116 sf, 76.46% Impervious, Inflow Depth = 4.60" for 100-yr12HR event  
 Inflow = 43.05 cfs @ 2.47 hrs, Volume= 884,391 cf  
 Outflow = 20.44 cfs @ 4.69 hrs, Volume= 874,957 cf, Atten= 53%, Lag= 132.9 min  
 Primary = 19.62 cfs @ 4.69 hrs, Volume= 867,620 cf  
 Secondary = 0.82 cfs @ 4.69 hrs, Volume= 7,337 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
 Peak Elev= 730.62' @ 4.69 hrs Surf.Area= 117,976 sf Storage= 303,650 cf

Plug-Flow detention time= 326.8 min calculated for 874,957 cf (99% of inflow)  
 Center-of-Mass det. time= 322.3 min ( 636.9 - 314.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	727.40'	87,965 cf	<b>48.0" Round Pipe Storage</b> x 10 L= 700.0' S= 0.0010 '/'
#2	727.80'	586,912 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		674,876 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.80	74,675	0	0
728.00	75,945	15,062	15,062
729.00	82,354	79,150	94,212
730.00	88,864	85,609	179,821
731.00	95,474	92,169	271,990
732.00	102,185	98,830	370,819
733.00	110,000	106,093	476,912
734.00	110,000	110,000	586,912

Device	Routing	Invert	Outlet Devices
#1	Primary	727.37'	<b>24.0" Round POI A</b> L= 75.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 727.37' / 727.14' S= 0.0031 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 3.14 sf
#2	Device 1	727.37'	<b>4.6" Vert. Orifice/Grate</b> C= 0.600
#3	Device 1	728.54'	<b>6.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)
#4	Secondary	730.21'	<b>24.0" Round POI B</b> L= 27.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 730.21' / 730.00' S= 0.0078 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 3.14 sf

**Primary OutFlow** Max=19.62 cfs @ 4.69 hrs HW=730.62' (Free Discharge)

1=POI A (Barrel Controls 19.62 cfs @ 6.25 fps)

2=Orifice/Grate (Passes < 0.97 cfs potential flow)

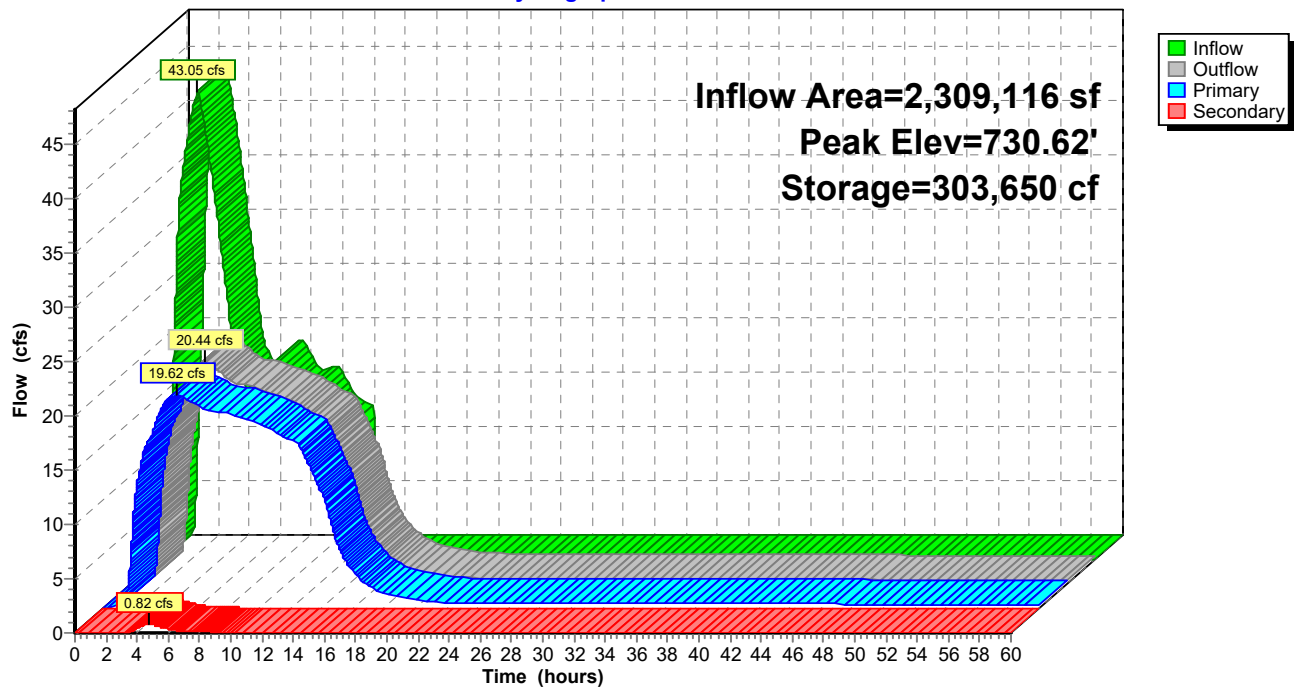
3=Sharp-Crested Rectangular Weir (Passes < 54.79 cfs potential flow)

**Secondary OutFlow** Max=0.82 cfs @ 4.69 hrs HW=730.62' (Free Discharge)

4=POI B (Barrel Controls 0.82 cfs @ 2.67 fps)

### Pond 3P: Pond/CMP Detention

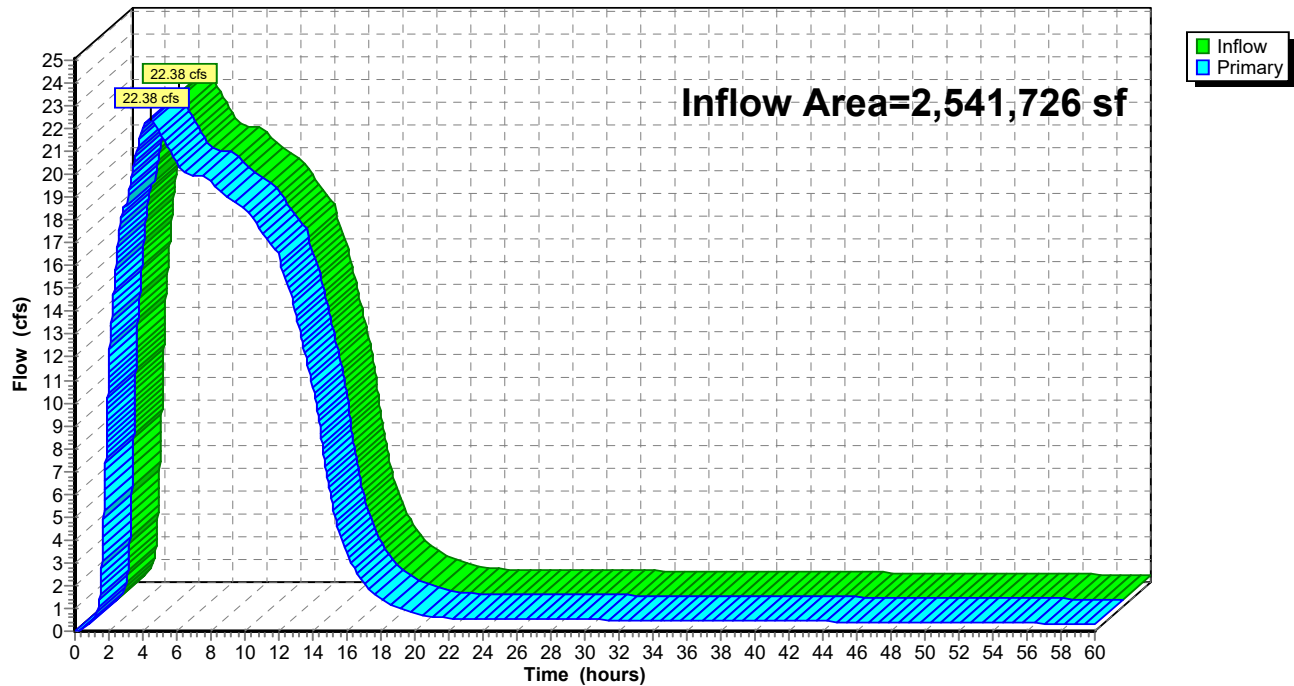
Hydrograph



**Summary for Link 13L: Total Post**

Inflow Area = 2,541,726 sf, 71.40% Impervious, Inflow Depth > 4.45" for 100-yr12HR event  
Inflow = 22.38 cfs @ 4.43 hrs, Volume= 942,656 cf  
Primary = 22.38 cfs @ 4.43 hrs, Volume= 942,656 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

**Link 13L: Total Post****Hydrograph**

**Summary for Subcatchment 2S: DA#3 (Dev-Onsite)**

Runoff = 13.18 cfs @ 1.24 hrs, Volume= 129,394 cf, Depth= 4.52"

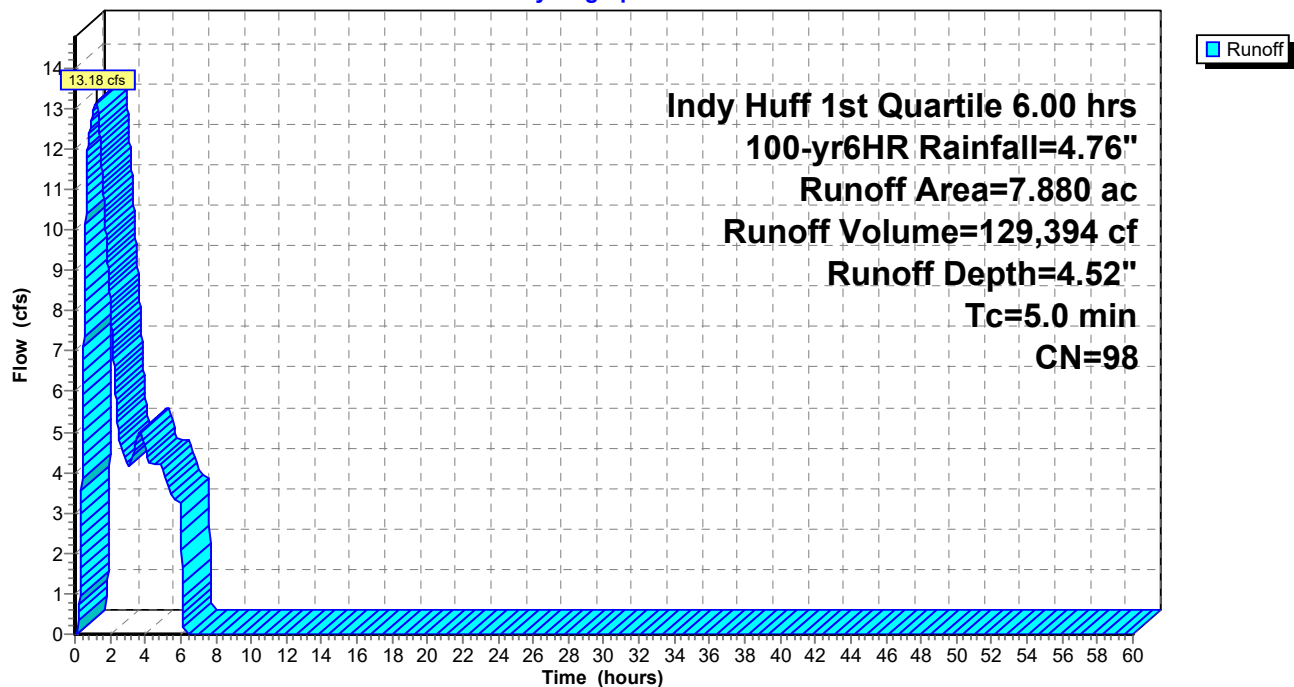
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 6.00 hrs 100-yr6HR Rainfall=4.76"

Area (ac)	CN	Description
* 7.880	98	
7.880		100.00% Impervious Area

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

**Subcatchment 2S: DA#3 (Dev-Onsite)**

Hydrograph



**Summary for Subcatchment 4S: DA#5 (Dev-Onsite)**

Runoff = 51.91 cfs @ 1.25 hrs, Volume= 505,469 cf, Depth= 4.41"

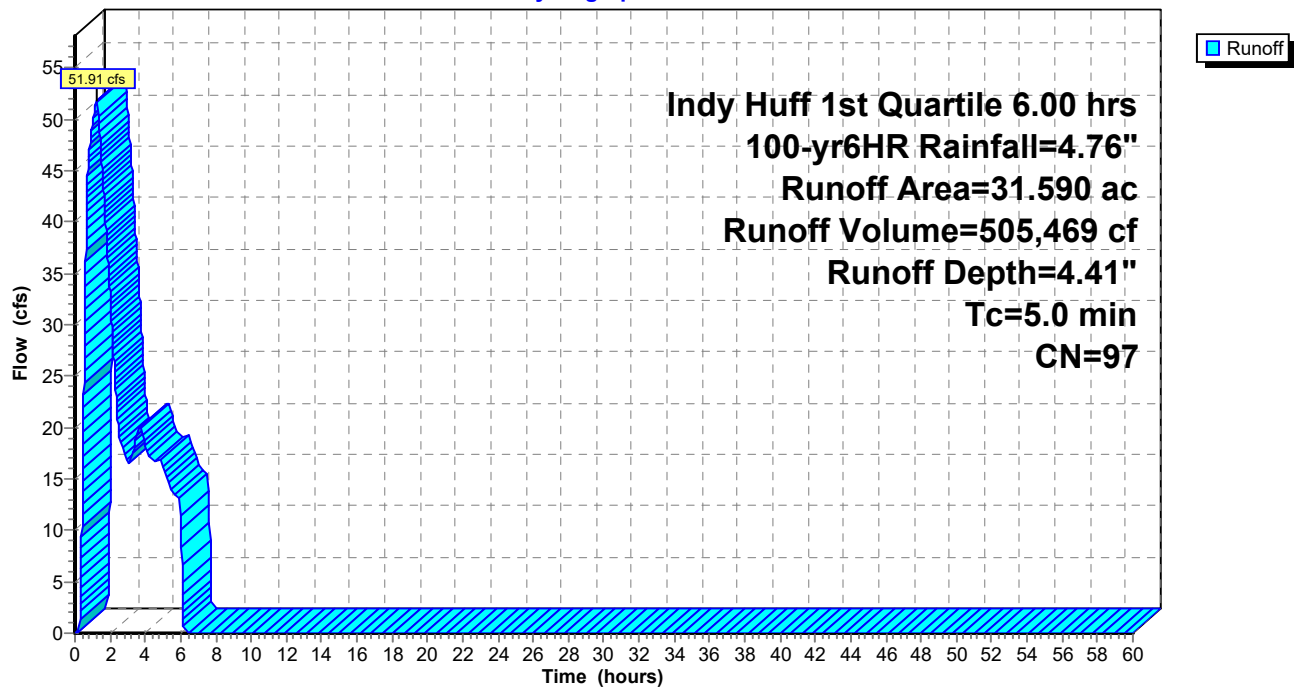
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 6.00 hrs 100-yr6HR Rainfall=4.76"

Area (ac)	CN	Description
* 29.300	98	
0.510	74	>75% Grass cover, Good, HSG C
1.780	80	>75% Grass cover, Good, HSG D
31.590	97	Weighted Average
2.290		7.25% Pervious Area
29.300		92.75% Impervious Area

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

**Subcatchment 4S: DA#5 (Dev-Onsite)**

Hydrograph



**Summary for Subcatchment 9S: DA#4 (Undetained)**

Runoff = 5.25 cfs @ 1.50 hrs, Volume= 57,335 cf, Depth= 2.96"

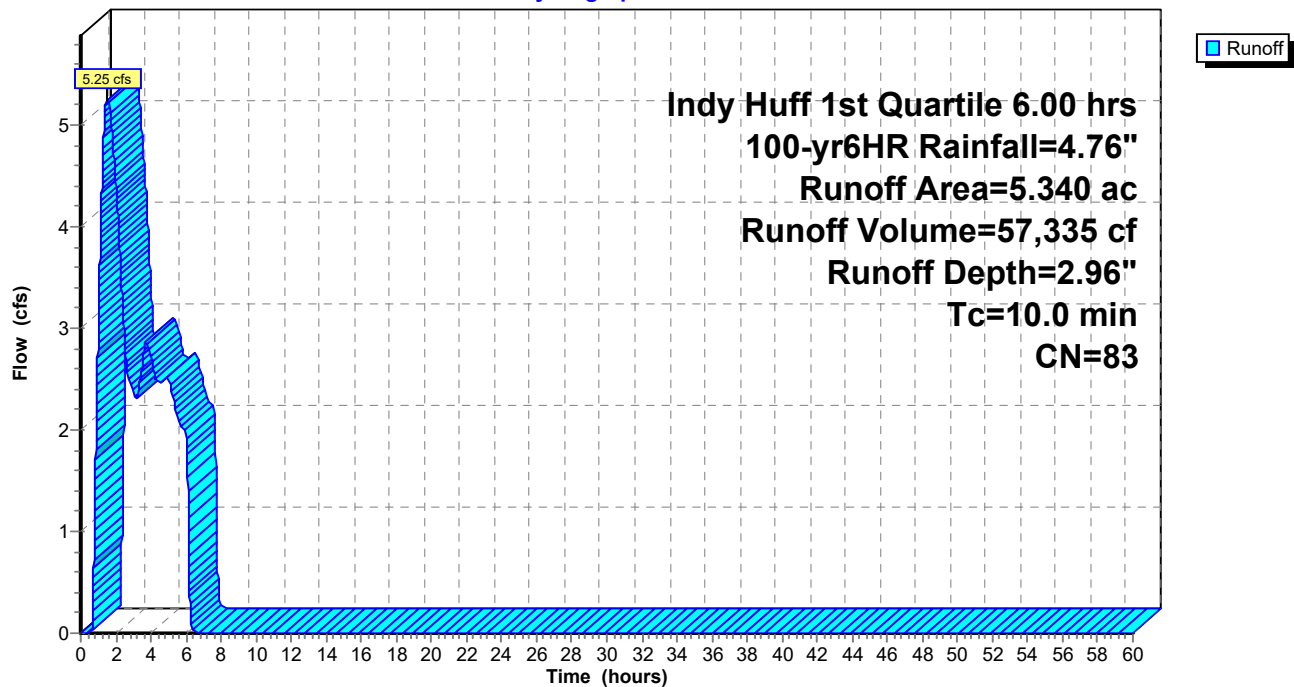
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 6.00 hrs 100-yr6HR Rainfall=4.76"

Area (ac)	CN	Description
* 1.130	98	
0.350	74	>75% Grass cover, Good, HSG C
3.860	80	>75% Grass cover, Good, HSG D
5.340	83	Weighted Average
4.210		78.84% Pervious Area
1.130		21.16% Impervious Area

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

**Subcatchment 9S: DA#4 (Undetained)**

Hydrograph





**Summary for Subcatchment 10S: DA#1**

Runoff = 4.78 cfs @ 1.98 hrs, Volume= 58,476 cf, Depth= 2.51"

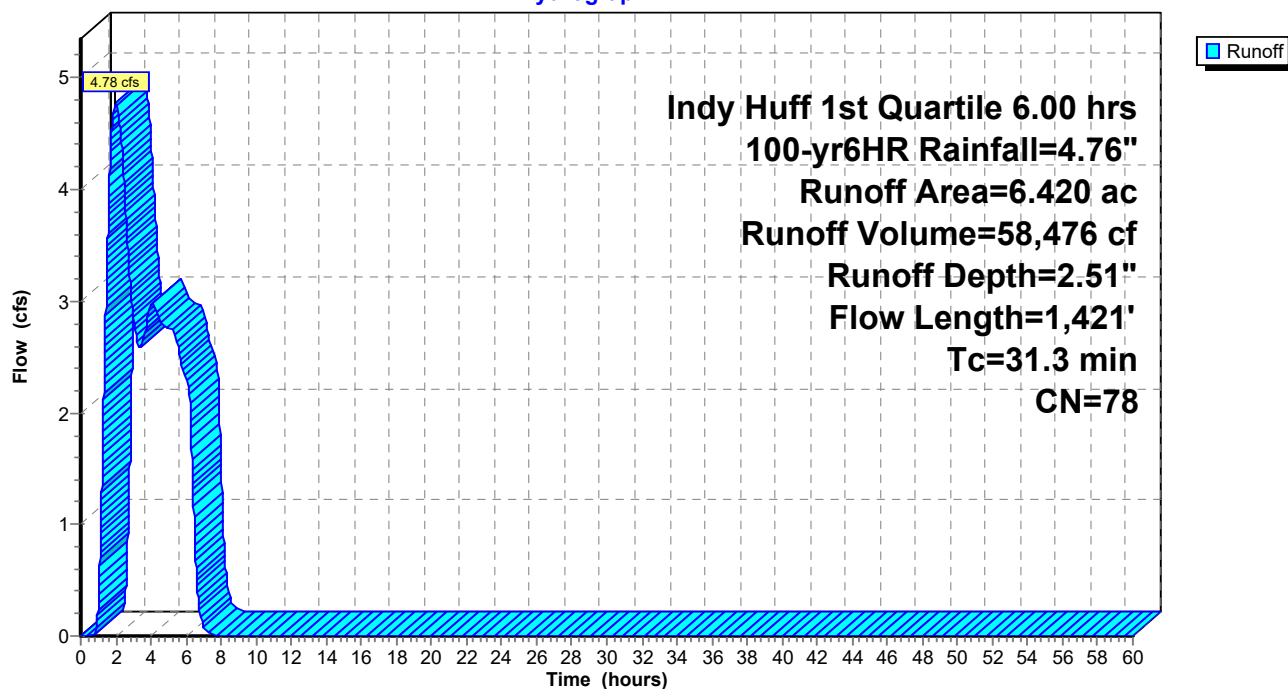
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 6.00 hrs 100-yr6HR Rainfall=4.76"

Area (ac)	CN	Description
* 0.640	98	
0.890	70	Woods, Good, HSG C
1.630	77	Woods, Good, HSG D
0.150	89	Row crops, straight row, Good, HSG D
0.130	85	Row crops, straight row, Good, HSG C
1.360	80	>75% Grass cover, Good, HSG D
1.620	74	>75% Grass cover, Good, HSG C
6.420	78	Weighted Average
5.780		90.03% Pervious Area
0.640		9.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0100	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
17.7	1,321	0.0060	1.25		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
31.3	1,421	Total			

**Subcatchment 10S: DA#1**

Hydrograph



**Summary for Subcatchment 11S: DA#2**

Runoff = 6.55 cfs @ 1.42 hrs, Volume= 67,709 cf, Depth= 3.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 6.00 hrs 100-yr6HR Rainfall=4.76"

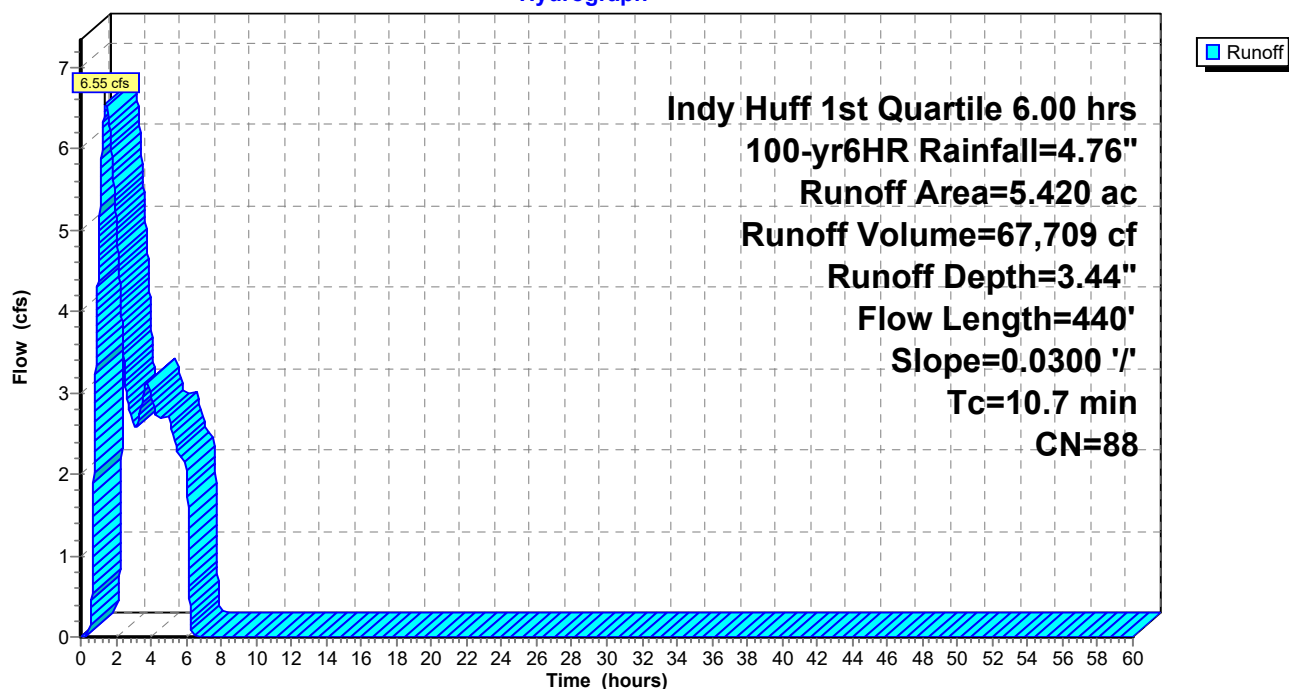
Area (ac)	CN	Description
* 2.710	98	
0.170	70	Woods, Good, HSG C
0.010	77	Woods, Good, HSG D
1.680	80	>75% Grass cover, Good, HSG D
0.850	74	>75% Grass cover, Good, HSG C
5.420	88	Weighted Average
2.710		50.00% Pervious Area
2.710		50.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.0300	0.19		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
2.0	340	0.0300	2.79		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
10.7	440	Total			

**Subcatchment 11S: DA#2**

Hydrograph



**Summary for Subcatchment 12S: DA711**

Runoff = 0.94 cfs @ 2.51 hrs, Volume= 13,418 cf, Depth= 2.17"

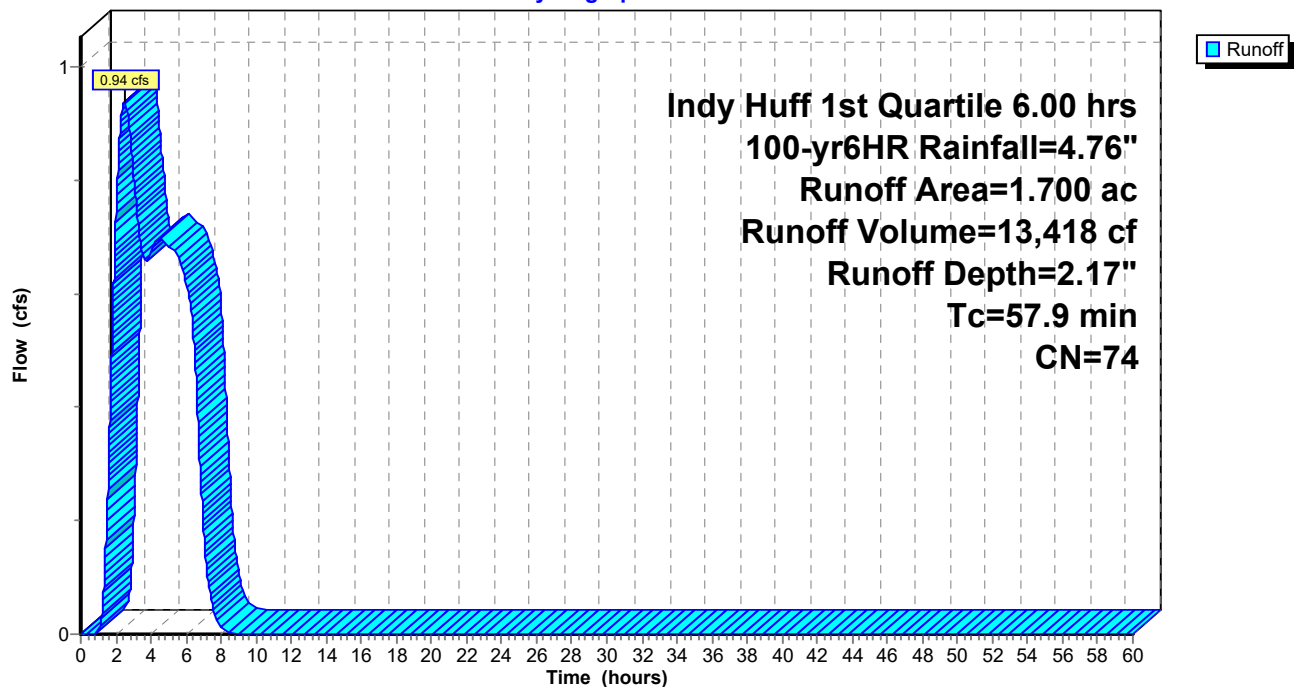
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 6.00 hrs 100-yr6HR Rainfall=4.76"

Area (ac)	CN	Description
* 1.700	74	
1.700		100.00% Pervious Area

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

**Subcatchment 12S: DA711**

Hydrograph



**Summary for Pond 3P: Pond/CMP Detention**

[44] Hint: Outlet device #2 is below defined storage

Inflow Area = 2,309,116 sf, 76.46% Impervious, Inflow Depth = 4.02" for 100-yr6HR event  
 Inflow = 73.09 cfs @ 1.27 hrs, Volume= 774,466 cf  
 Outflow = 26.31 cfs @ 5.05 hrs, Volume= 769,865 cf, Atten= 64%, Lag= 226.9 min  
 Primary = 22.65 cfs @ 5.05 hrs, Volume= 722,648 cf  
 Secondary = 3.65 cfs @ 5.05 hrs, Volume= 47,217 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
 Peak Elev= 731.11' @ 5.05 hrs Surf.Area= 116,334 sf Storage= 361,589 cf

Plug-Flow detention time= 343.1 min calculated for 769,865 cf (99% of inflow)  
 Center-of-Mass det. time= 341.8 min ( 503.8 - 162.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	727.40'	87,965 cf	<b>48.0" Round Pipe Storage</b> x 10 L= 700.0' S= 0.0010 '/'
#2	727.80'	586,912 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		674,876 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.80	74,675	0	0
728.00	75,945	15,062	15,062
729.00	82,354	79,150	94,212
730.00	88,864	85,609	179,821
731.00	95,474	92,169	271,990
732.00	102,185	98,830	370,819
733.00	110,000	106,093	476,912
734.00	110,000	110,000	586,912

Device	Routing	Invert	Outlet Devices
#1	Primary	727.37'	<b>24.0" Round POI A</b> L= 75.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 727.37' / 727.14' S= 0.0031 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 3.14 sf
#2	Device 1	727.37'	<b>4.6" Vert. Orifice/Grate</b> C= 0.600
#3	Device 1	728.54'	<b>6.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)
#4	Secondary	730.21'	<b>24.0" Round POI B</b> L= 27.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 730.21' / 730.00' S= 0.0078 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 3.14 sf

**Primary OutFlow** Max=22.65 cfs @ 5.05 hrs HW=731.11' (Free Discharge)

↑ **1=POI A** (Barrel Controls 22.65 cfs @ 7.21 fps)

↑ **2=Orifice/Grate** (Passes < 1.05 cfs potential flow)

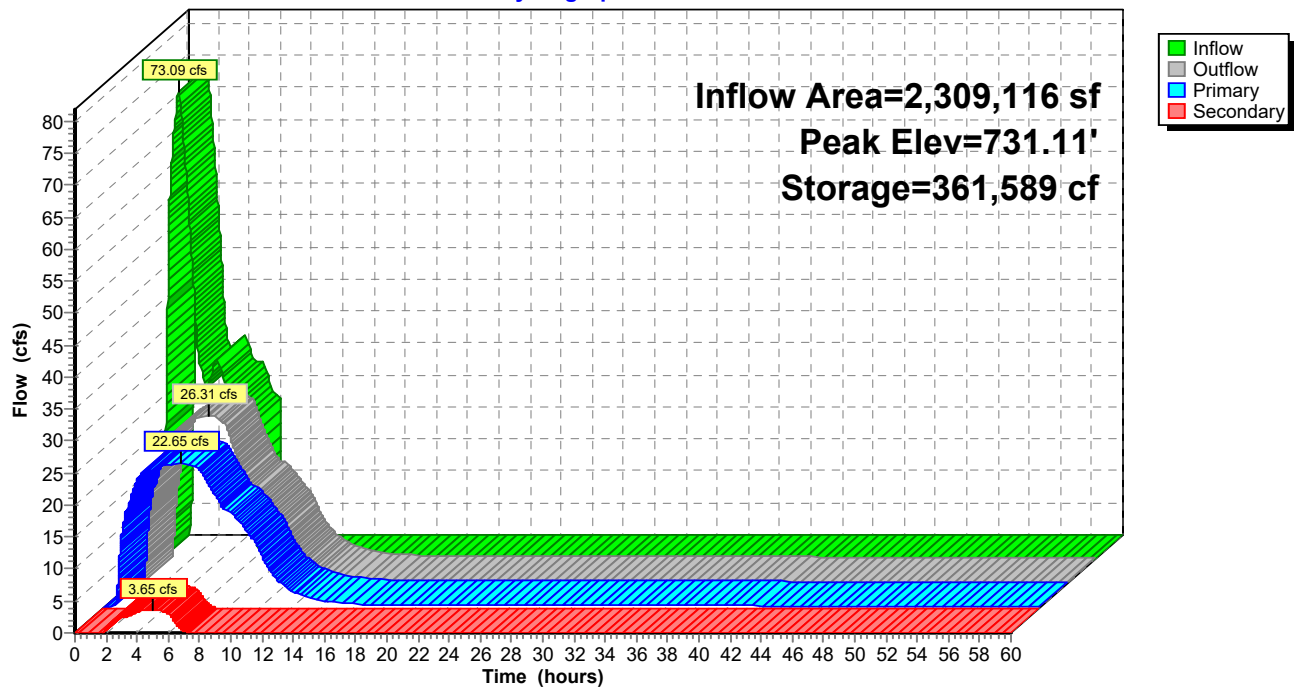
↑ **3=Sharp-Crested Rectangular Weir** (Passes < 74.06 cfs potential flow)

**Secondary OutFlow** Max=3.65 cfs @ 5.05 hrs HW=731.11' (Free Discharge)

↑ **4=POI B** (Barrel Controls 3.65 cfs @ 3.89 fps)

### Pond 3P: Pond/CMP Detention

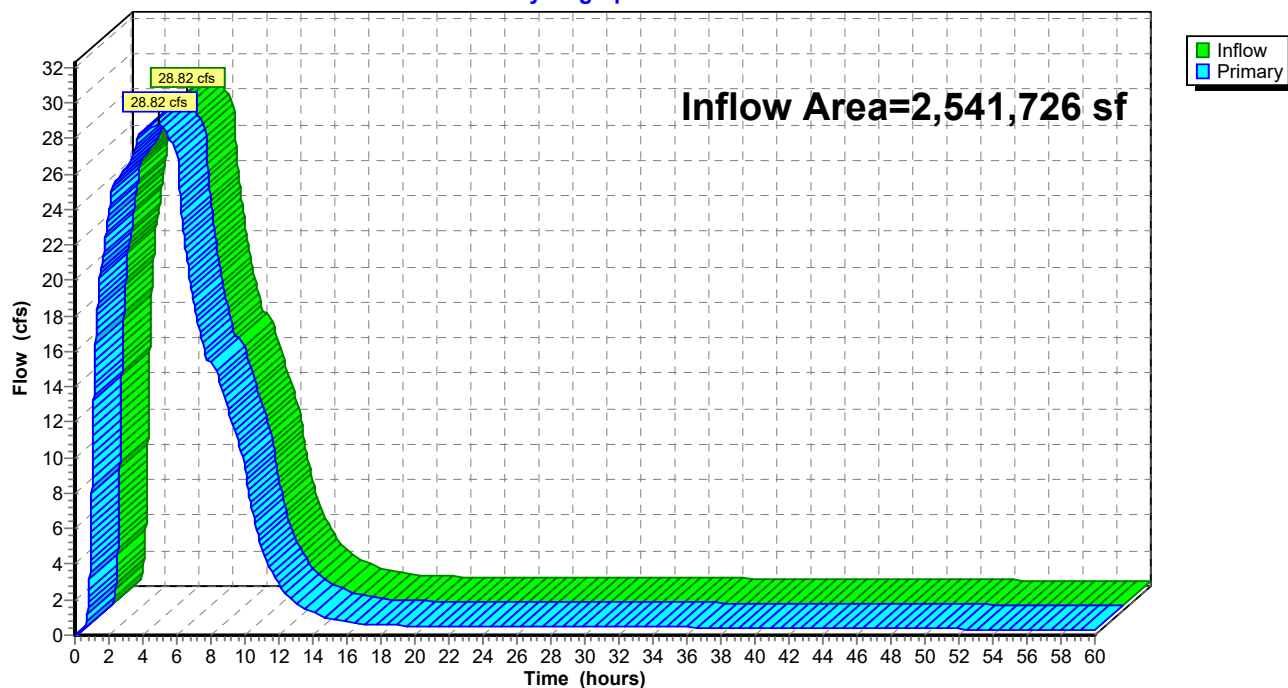
Hydrograph



**Summary for Link 13L: Total Post**

Inflow Area = 2,541,726 sf, 71.40% Impervious, Inflow Depth > 3.91" for 100-yr6HR event  
Inflow = 28.82 cfs @ 4.94 hrs, Volume= 827,199 cf  
Primary = 28.82 cfs @ 4.94 hrs, Volume= 827,199 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

**Link 13L: Total Post****Hydrograph**

**Summary for Subcatchment 2S: DA#3 (Dev-Onsite)**

Runoff = 21.45 cfs @ 0.65 hrs, Volume= 105,416 cf, Depth= 3.69"

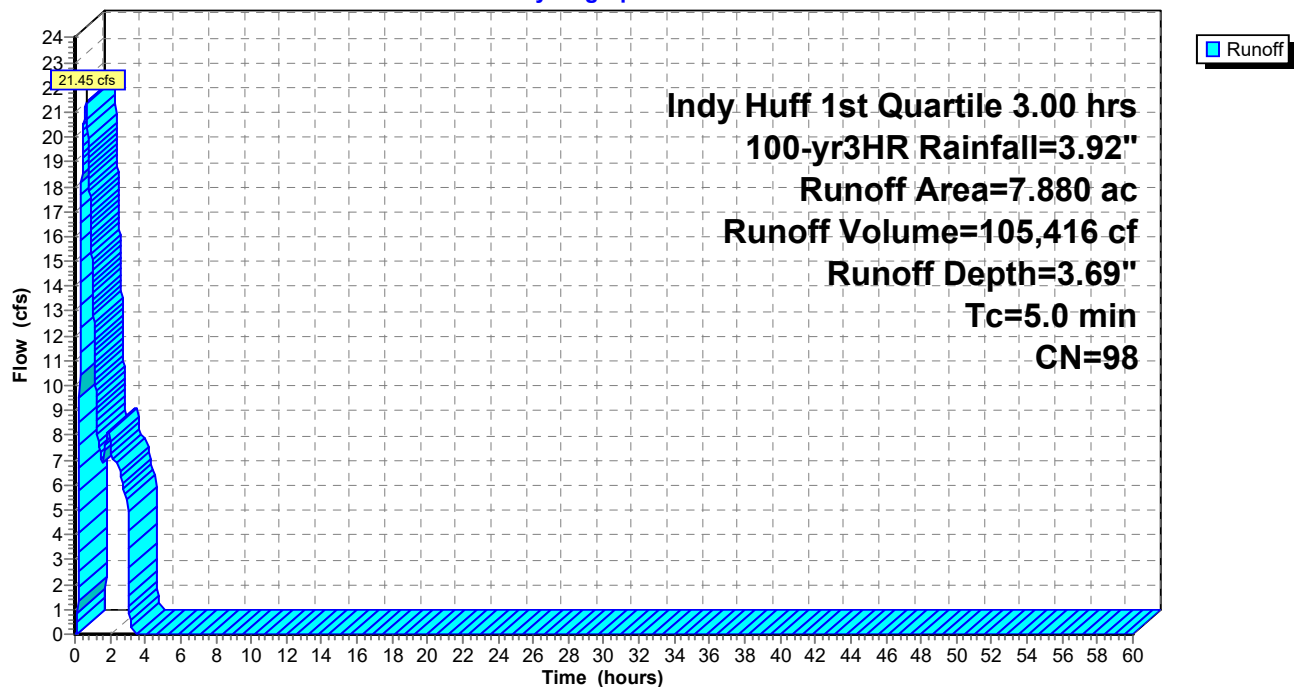
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 3.00 hrs 100-yr3HR Rainfall=3.92"

Area (ac)	CN	Description
* 7.880	98	
7.880		100.00% Impervious Area

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

**Subcatchment 2S: DA#3 (Dev-Onsite)**

Hydrograph



**Summary for Subcatchment 4S: DA#5 (Dev-Onsite)**

Runoff = 83.77 cfs @ 0.65 hrs, Volume= 409,587 cf, Depth= 3.57"

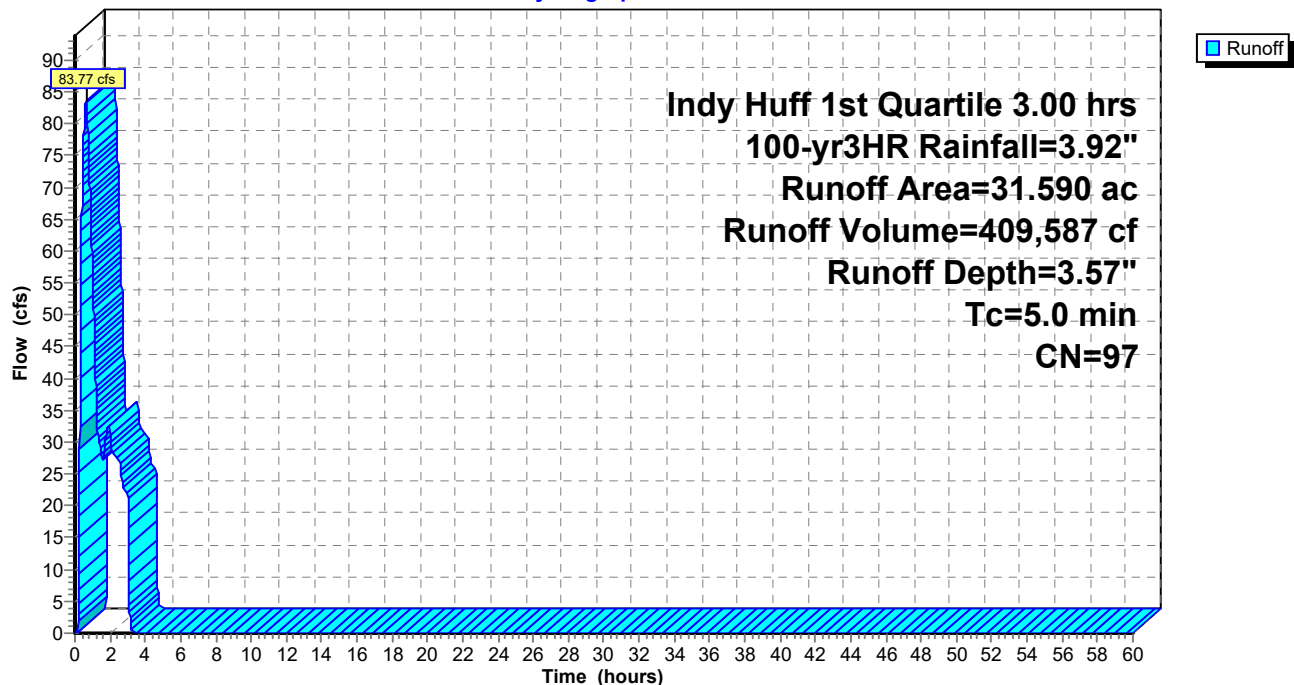
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 3.00 hrs 100-yr3HR Rainfall=3.92"

Area (ac)	CN	Description
* 29.300	98	
0.510	74	>75% Grass cover, Good, HSG C
1.780	80	>75% Grass cover, Good, HSG D
31.590	97	Weighted Average
2.290		7.25% Pervious Area
29.300		92.75% Impervious Area

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

**Subcatchment 4S: DA#5 (Dev-Onsite)**

Hydrograph





**Summary for Subcatchment 9S: DA#4 (Undetained)**

Runoff = 7.45 cfs @ 0.88 hrs, Volume= 42,972 cf, Depth= 2.22"

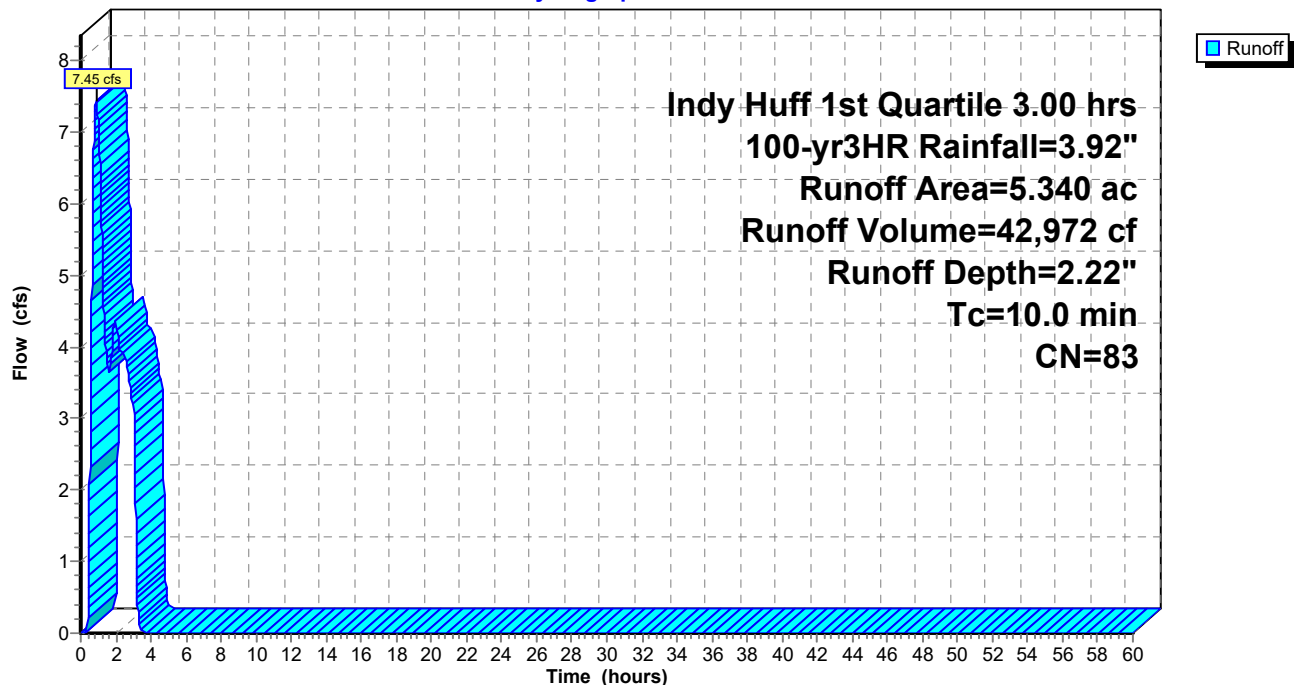
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 3.00 hrs 100-yr3HR Rainfall=3.92"

Area (ac)	CN	Description
* 1.130	98	
0.350	74	>75% Grass cover, Good, HSG C
3.860	80	>75% Grass cover, Good, HSG D
5.340	83	Weighted Average
4.210		78.84% Pervious Area
1.130		21.16% Impervious Area

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

**Subcatchment 9S: DA#4 (Undetained)**

Hydrograph



**Summary for Subcatchment 10S: DA#1**

Runoff = 5.86 cfs @ 1.29 hrs, Volume= 42,494 cf, Depth= 1.82"

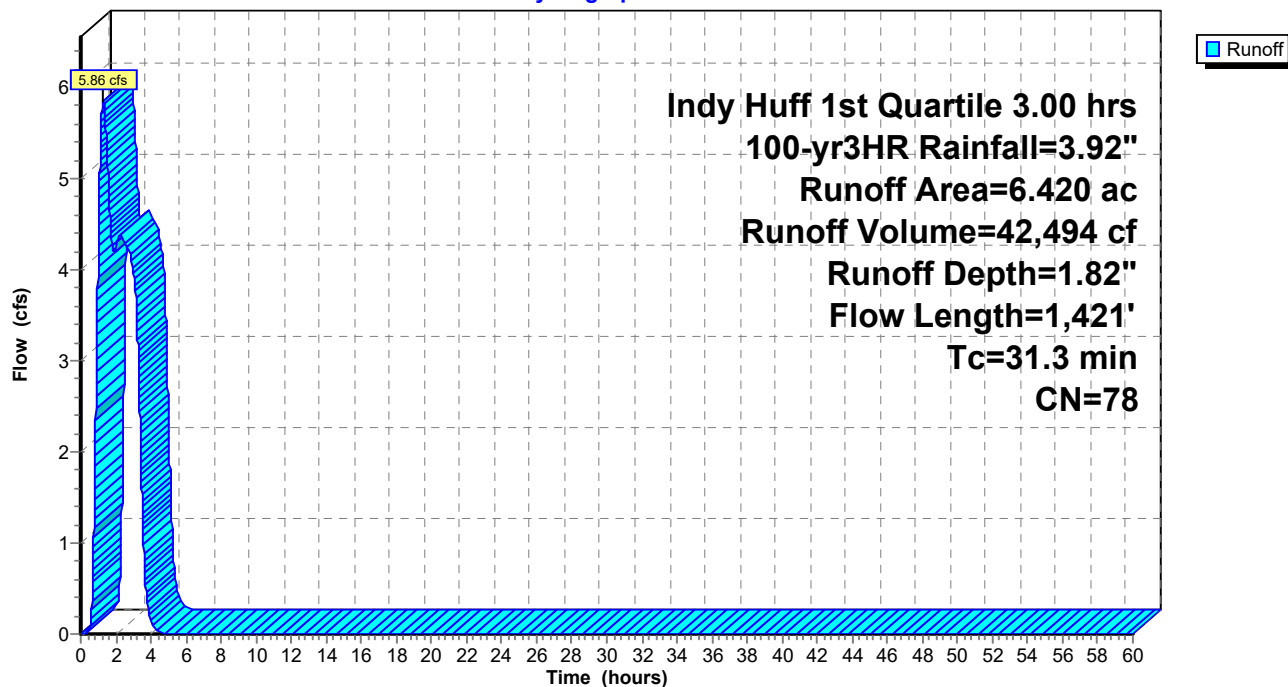
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 3.00 hrs 100-yr3HR Rainfall=3.92"

Area (ac)	CN	Description
* 0.640	98	
0.890	70	Woods, Good, HSG C
1.630	77	Woods, Good, HSG D
0.150	89	Row crops, straight row, Good, HSG D
0.130	85	Row crops, straight row, Good, HSG C
1.360	80	>75% Grass cover, Good, HSG D
1.620	74	>75% Grass cover, Good, HSG C
6.420	78	Weighted Average
5.780		90.03% Pervious Area
0.640		9.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0100	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
17.7	1,321	0.0060	1.25		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
31.3	1,421	Total			

**Subcatchment 10S: DA#1**

Hydrograph



**Summary for Subcatchment 11S: DA#2**

Runoff = 9.59 cfs @ 0.82 hrs, Volume= 52,231 cf, Depth= 2.65"

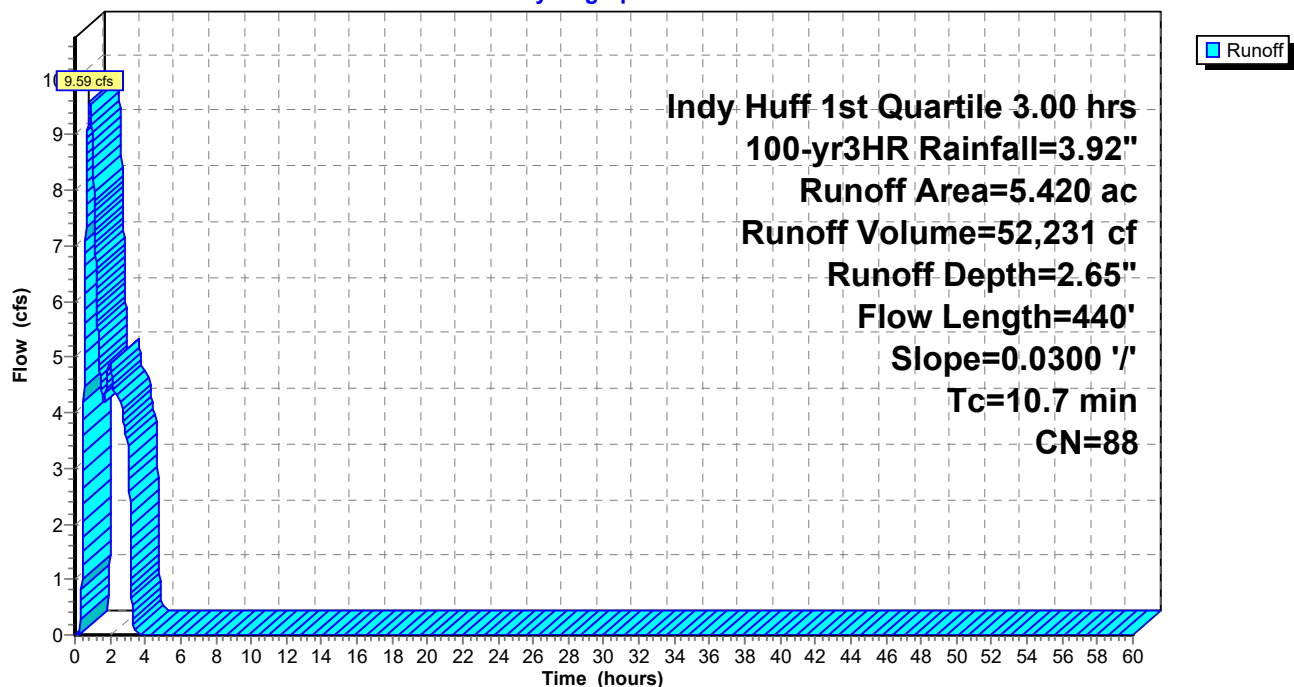
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 3.00 hrs 100-yr3HR Rainfall=3.92"

Area (ac)	CN	Description
* 2.710	98	
0.170	70	Woods, Good, HSG C
0.010	77	Woods, Good, HSG D
1.680	80	>75% Grass cover, Good, HSG D
0.850	74	>75% Grass cover, Good, HSG C
5.420	88	Weighted Average
2.710		50.00% Pervious Area
2.710		50.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.0300	0.19		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
2.0	340	0.0300	2.79		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
10.7	440	Total			

**Subcatchment 11S: DA#2**

Hydrograph



**Summary for Subcatchment 12S: DA711**

Runoff = 1.01 cfs @ 2.77 hrs, Volume= 9,490 cf, Depth= 1.54"

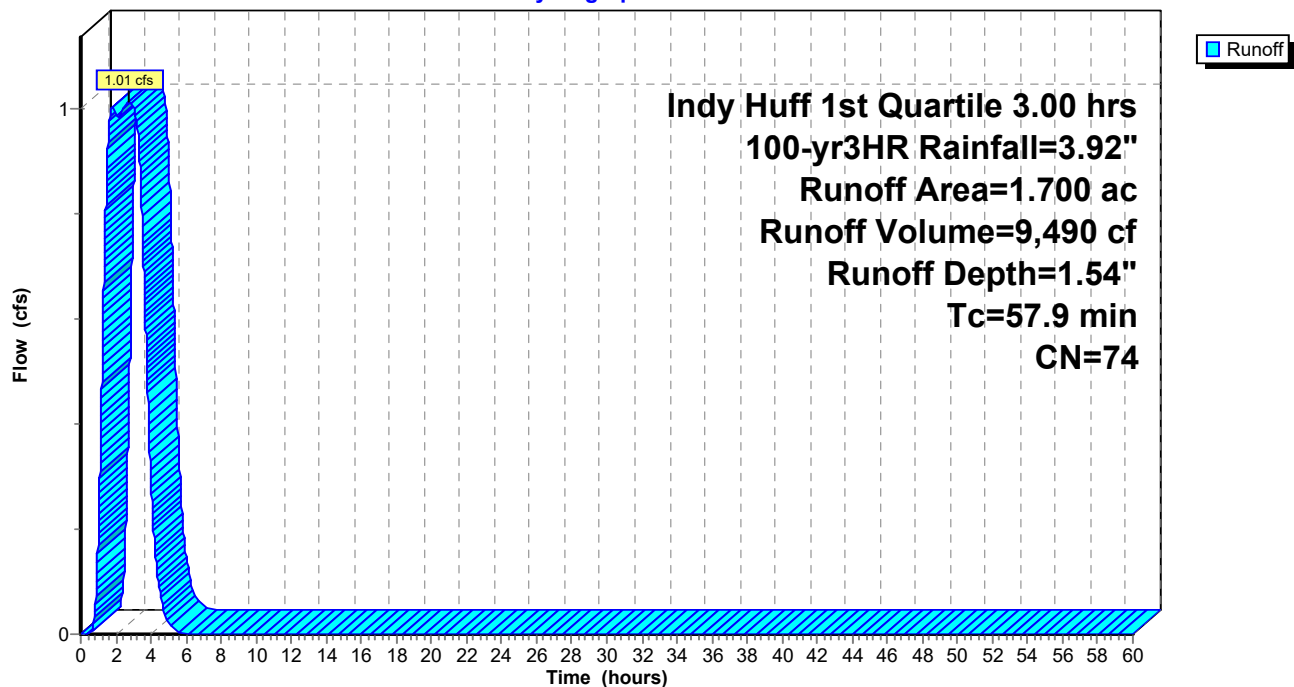
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 3.00 hrs 100-yr3HR Rainfall=3.92"

Area (ac)	CN	Description
* 1.700	74	
1.700		100.00% Pervious Area

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

**Subcatchment 12S: DA711**

Hydrograph



### Summary for Pond 3P: Pond/CMP Detention

[44] Hint: Outlet device #2 is below defined storage

Inflow Area = 2,309,116 sf, 76.46% Impervious, Inflow Depth = 3.22" for 100-yr3HR event  
 Inflow = 113.60 cfs @ 0.67 hrs, Volume= 619,217 cf  
 Outflow = 31.16 cfs @ 3.04 hrs, Volume= 617,153 cf, Atten= 73%, Lag= 142.5 min  
 Primary = 24.60 cfs @ 3.04 hrs, Volume= 577,724 cf  
 Secondary = 6.56 cfs @ 3.04 hrs, Volume= 39,429 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
 Peak Elev= 731.47' @ 3.04 hrs Surf.Area= 111,350 sf Storage= 402,149 cf

Plug-Flow detention time= 379.2 min calculated for 617,153 cf (100% of inflow)  
 Center-of-Mass det. time= 378.7 min ( 464.1 - 85.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	727.40'	87,965 cf	<b>48.0" Round Pipe Storage</b> x 10 L= 700.0' S= 0.0010 '/'
#2	727.80'	586,912 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		674,876 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.80	74,675	0	0
728.00	75,945	15,062	15,062
729.00	82,354	79,150	94,212
730.00	88,864	85,609	179,821
731.00	95,474	92,169	271,990
732.00	102,185	98,830	370,819
733.00	110,000	106,093	476,912
734.00	110,000	110,000	586,912

Device	Routing	Invert	Outlet Devices
#1	Primary	727.37'	<b>24.0" Round POI A</b> L= 75.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 727.37' / 727.14' S= 0.0031 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 3.14 sf
#2	Device 1	727.37'	<b>4.6" Vert. Orifice/Grate</b> C= 0.600
#3	Device 1	728.54'	<b>6.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)
#4	Secondary	730.21'	<b>24.0" Round POI B</b> L= 27.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 730.21' / 730.00' S= 0.0078 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 3.14 sf

**Primary OutFlow** Max=24.61 cfs @ 3.04 hrs HW=731.47' (Free Discharge)

↑ **1=POI A** (Barrel Controls 24.61 cfs @ 7.83 fps)

↑ **2=Orifice/Grate** (Passes < 1.10 cfs potential flow)

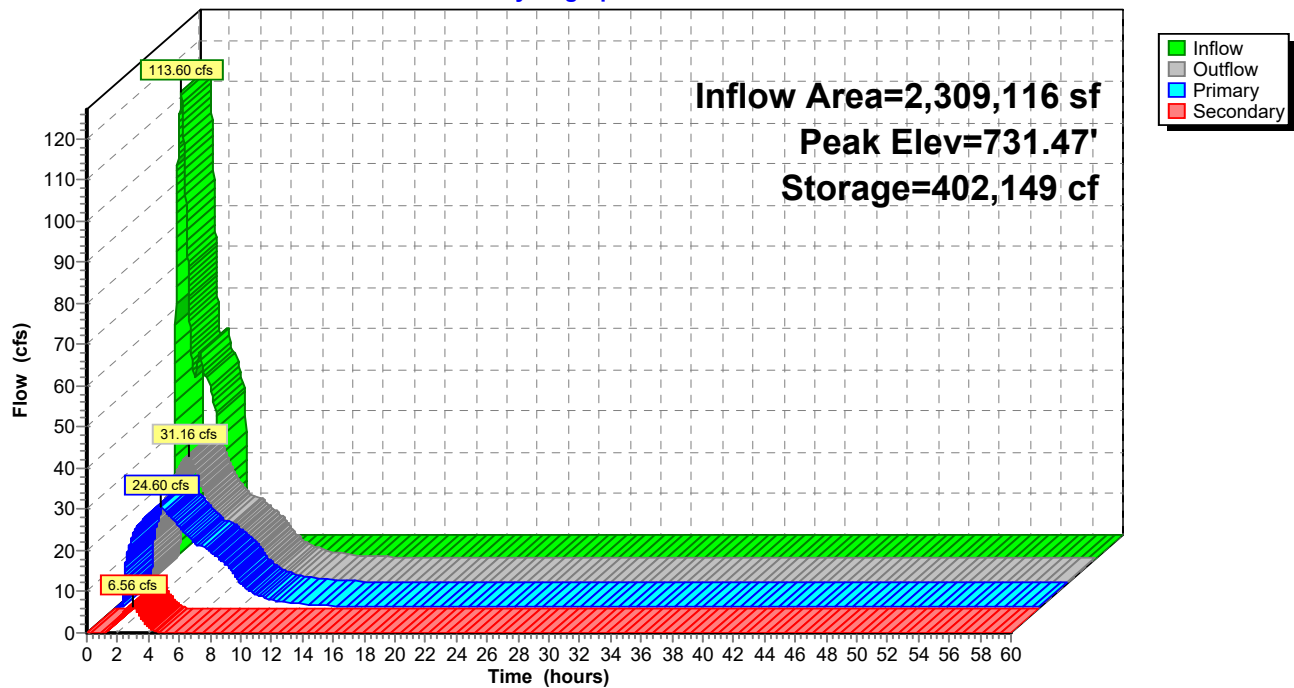
↑ **3=Sharp-Crested Rectangular Weir** (Passes < 88.72 cfs potential flow)

**Secondary OutFlow** Max=6.56 cfs @ 3.04 hrs HW=731.47' (Free Discharge)

↑ **4=POI B** (Barrel Controls 6.56 cfs @ 4.50 fps)

### Pond 3P: Pond/CMP Detention

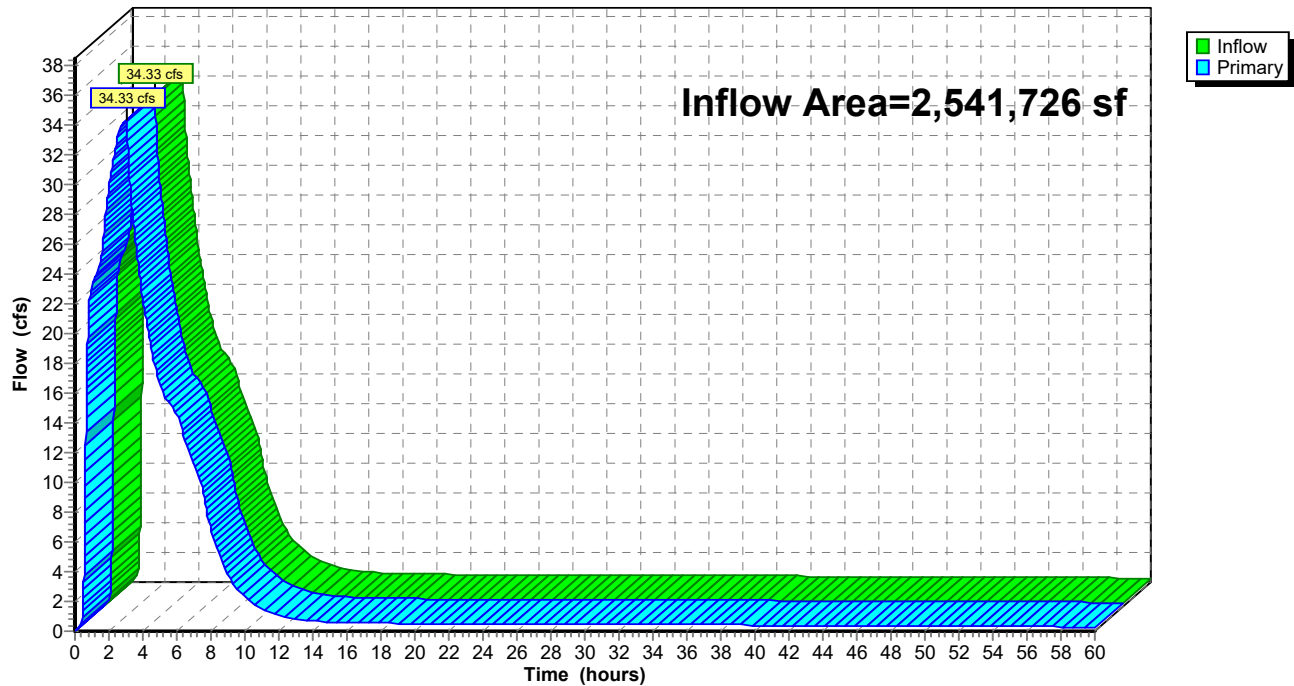
Hydrograph



**Summary for Link 13L: Total Post**

Inflow Area = 2,541,726 sf, 71.40% Impervious, Inflow Depth > 3.12" for 100-yr3HR event  
Inflow = 34.33 cfs @ 3.03 hrs, Volume= 660,126 cf  
Primary = 34.33 cfs @ 3.03 hrs, Volume= 660,126 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

**Link 13L: Total Post****Hydrograph**

**Summary for Subcatchment 2S: DA#3 (Dev-Onsite)**

Runoff = 29.58 cfs @ 0.45 hrs, Volume= 97,428 cf, Depth= 3.41"

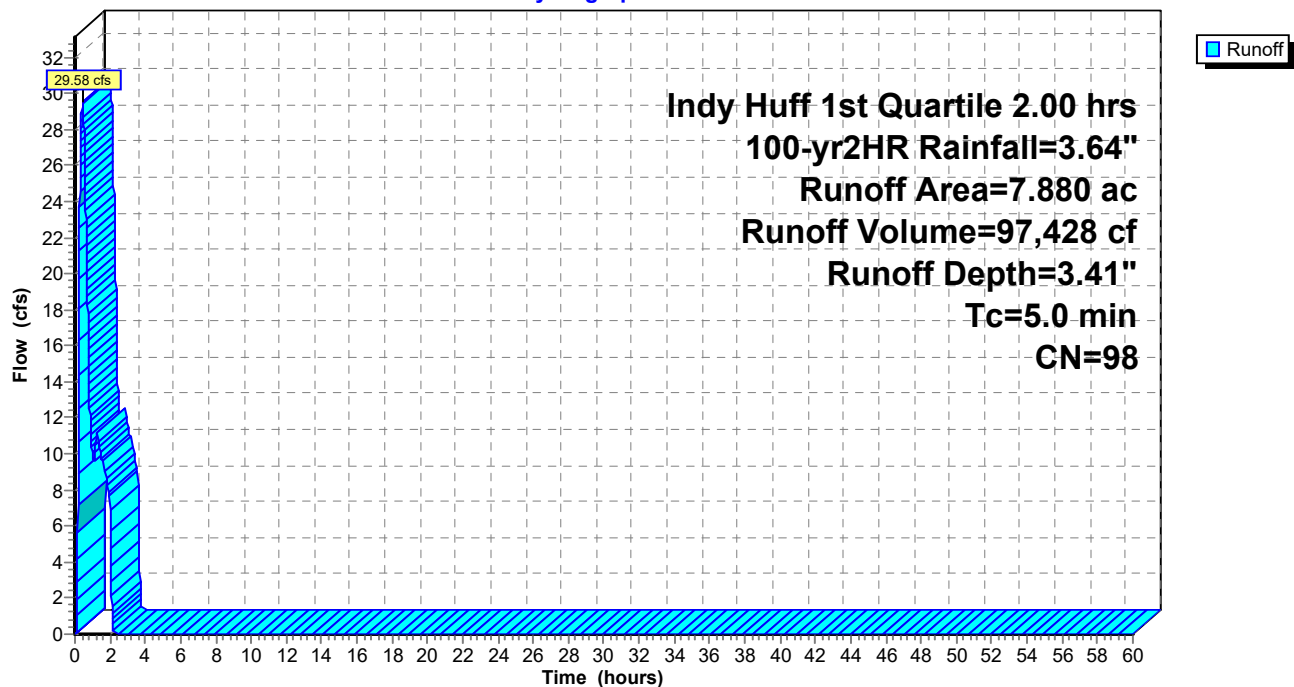
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 2.00 hrs 100-yr2HR Rainfall=3.64"

Area (ac)	CN	Description
* 7.880	98	
7.880		100.00% Impervious Area

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

**Subcatchment 2S: DA#3 (Dev-Onsite)**

Hydrograph





**Summary for Subcatchment 4S: DA#5 (Dev-Onsite)**

Runoff = 114.92 cfs @ 0.46 hrs, Volume= 377,668 cf, Depth= 3.29"

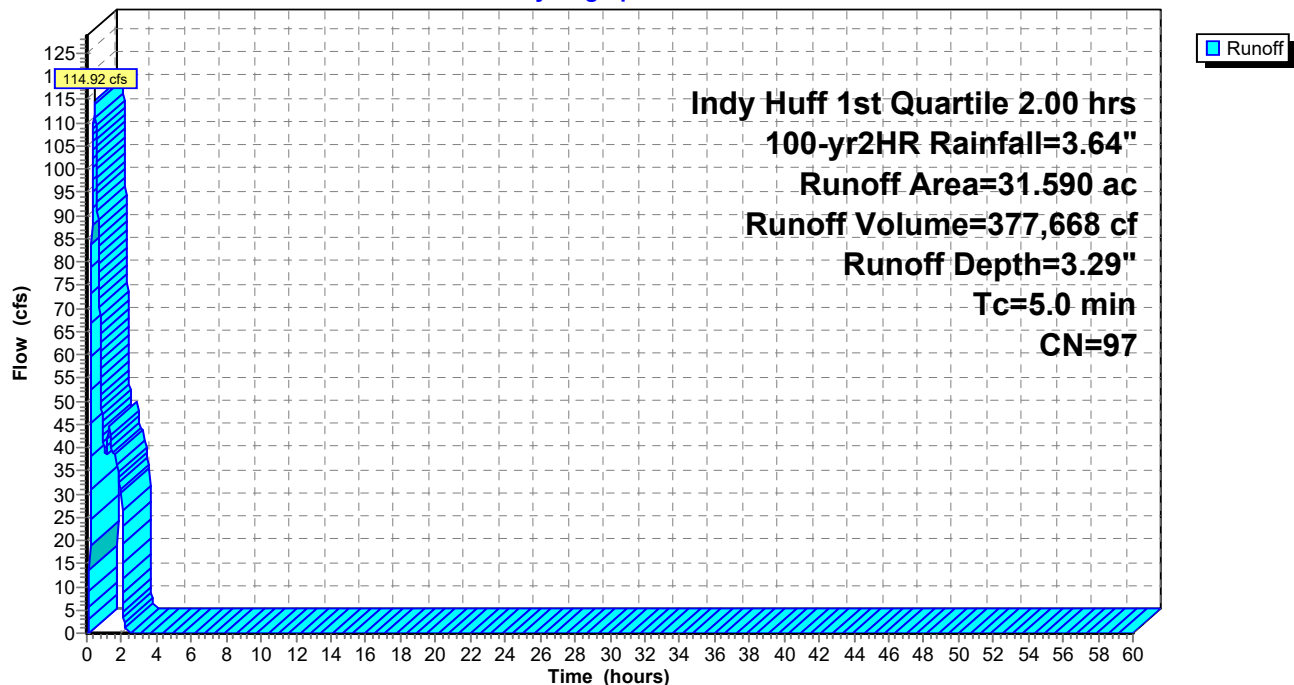
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 2.00 hrs 100-yr2HR Rainfall=3.64"

Area (ac)	CN	Description
* 29.300	98	
0.510	74	>75% Grass cover, Good, HSG C
1.780	80	>75% Grass cover, Good, HSG D
31.590	97	Weighted Average
2.290		7.25% Pervious Area
29.300		92.75% Impervious Area

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

**Subcatchment 4S: DA#5 (Dev-Onsite)**

Hydrograph



**Summary for Subcatchment 9S: DA#4 (Undetained)**

Runoff = 9.52 cfs @ 0.65 hrs, Volume= 38,321 cf, Depth= 1.98"

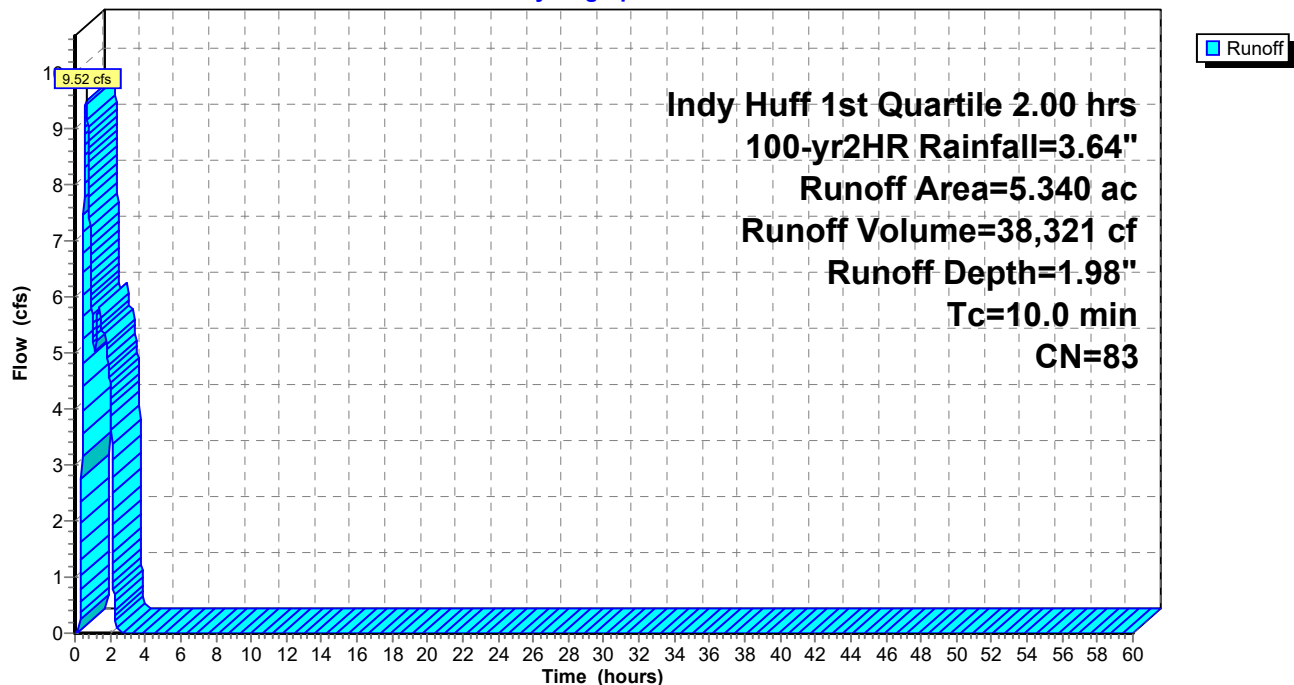
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 2.00 hrs 100-yr2HR Rainfall=3.64"

Area (ac)	CN	Description
* 1.130	98	
0.350	74	>75% Grass cover, Good, HSG C
3.860	80	>75% Grass cover, Good, HSG D
5.340	83	Weighted Average
4.210		78.84% Pervious Area
1.130		21.16% Impervious Area

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

**Subcatchment 9S: DA#4 (Undetained)**

Hydrograph



**Summary for Subcatchment 10S: DA#1**

Runoff = 6.65 cfs @ 1.01 hrs, Volume= 37,394 cf, Depth= 1.60"

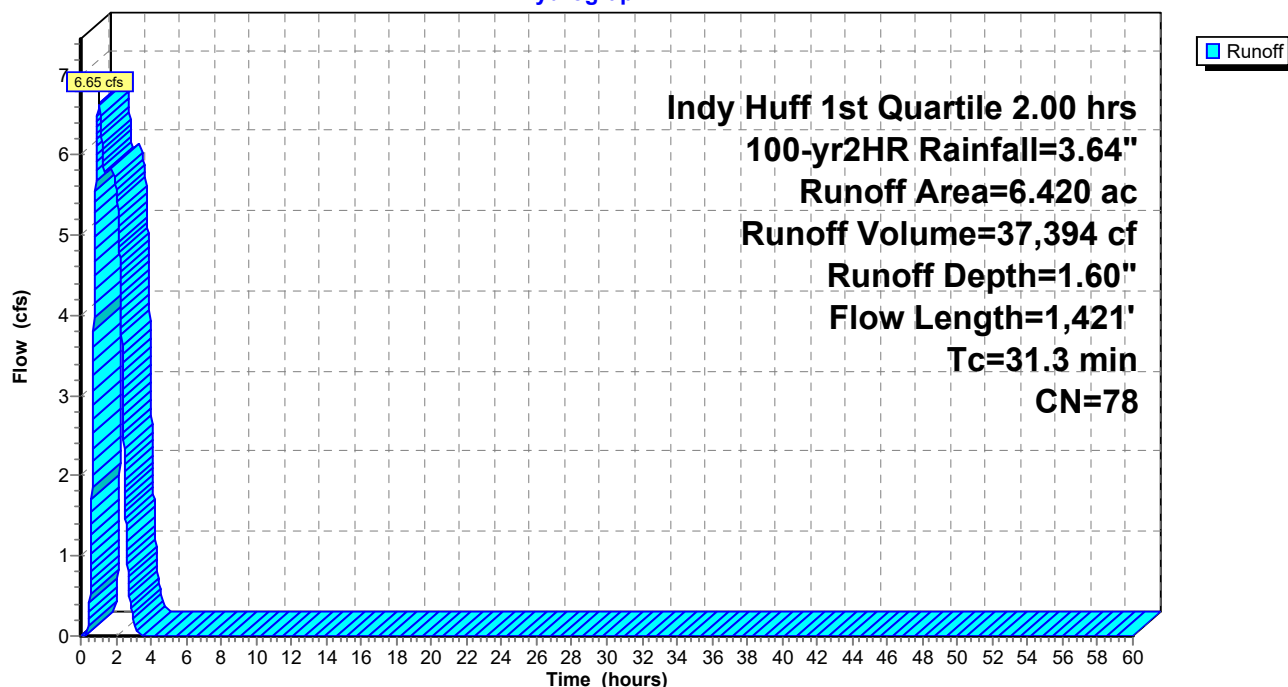
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 2.00 hrs 100-yr2HR Rainfall=3.64"

Area (ac)	CN	Description
* 0.640	98	
0.890	70	Woods, Good, HSG C
1.630	77	Woods, Good, HSG D
0.150	89	Row crops, straight row, Good, HSG D
0.130	85	Row crops, straight row, Good, HSG C
1.360	80	>75% Grass cover, Good, HSG D
1.620	74	>75% Grass cover, Good, HSG C
6.420	78	Weighted Average
5.780		90.03% Pervious Area
0.640		9.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0100	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
17.7	1,321	0.0060	1.25		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
31.3	1,421	Total			

**Subcatchment 10S: DA#1**

Hydrograph



**Summary for Subcatchment 11S: DA#2**

Runoff = 12.39 cfs @ 0.63 hrs, Volume= 47,154 cf, Depth= 2.40"

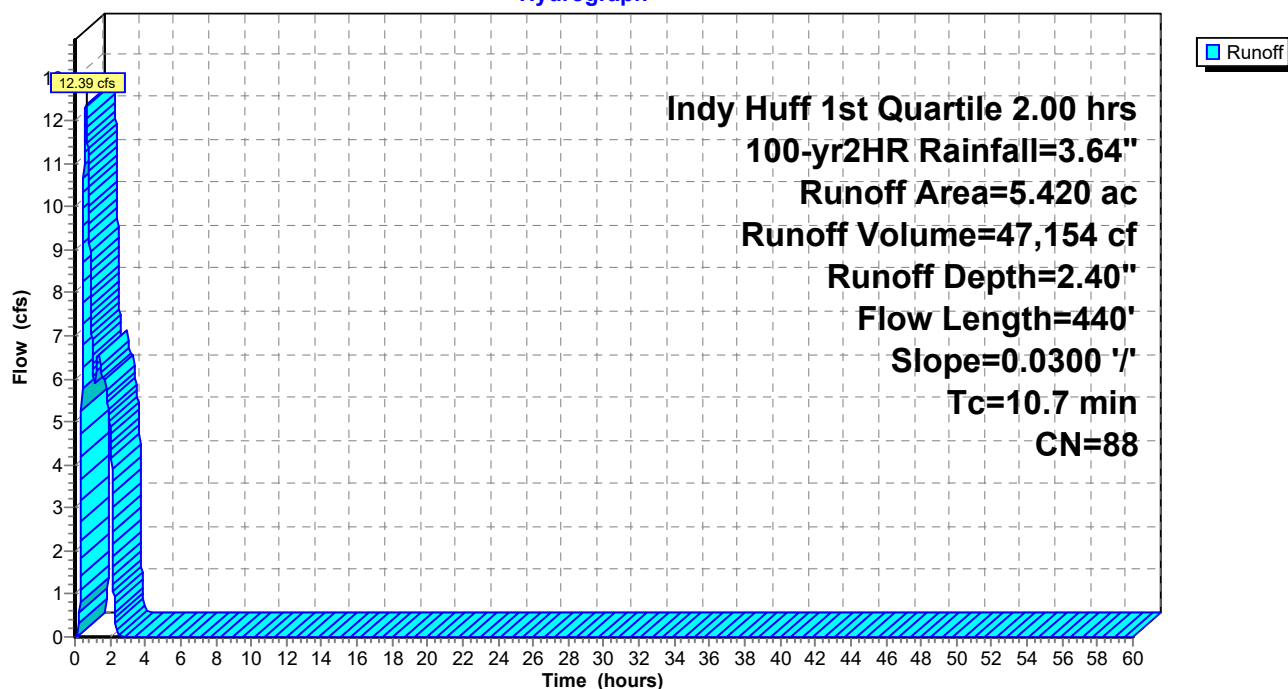
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 2.00 hrs 100-yr2HR Rainfall=3.64"

Area (ac)	CN	Description
* 2.710	98	
0.170	70	Woods, Good, HSG C
0.010	77	Woods, Good, HSG D
1.680	80	>75% Grass cover, Good, HSG D
0.850	74	>75% Grass cover, Good, HSG C
5.420	88	Weighted Average
2.710		50.00% Pervious Area
2.710		50.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.0300	0.19		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
2.0	340	0.0300	2.79		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
10.7	440	Total			

**Subcatchment 11S: DA#2**

Hydrograph



**Summary for Subcatchment 12S: DA711**

Runoff = 1.29 cfs @ 2.12 hrs, Volume= 8,253 cf, Depth= 1.34"

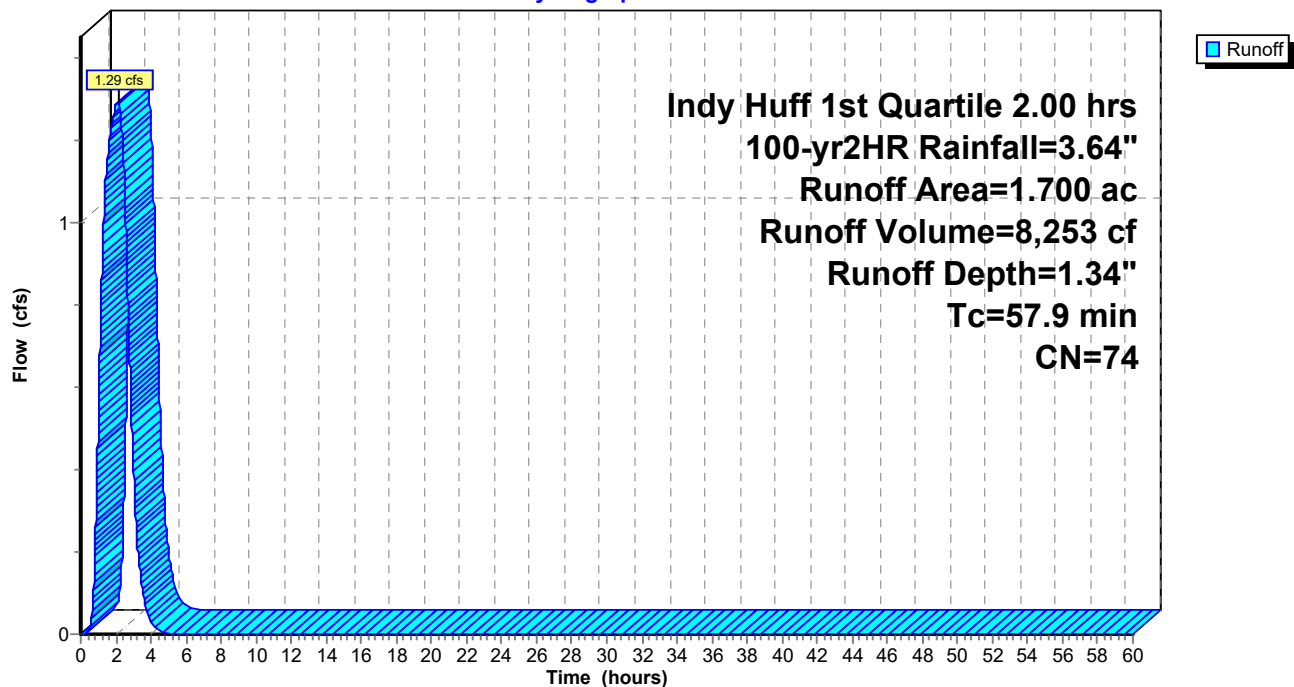
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 2.00 hrs 100-yr2HR Rainfall=3.64"

Area (ac)	CN	Description
* 1.700	74	
1.700		100.00% Pervious Area

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

**Subcatchment 12S: DA711**

Hydrograph



**Summary for Pond 3P: Pond/CMP Detention**

[44] Hint: Outlet device #2 is below defined storage

Inflow Area = 2,309,116 sf, 76.46% Impervious, Inflow Depth = 2.95" for 100-yr2HR event  
 Inflow = 153.48 cfs @ 0.47 hrs, Volume= 567,897 cf  
 Outflow = 33.21 cfs @ 2.06 hrs, Volume= 566,655 cf, Atten= 78%, Lag= 95.8 min  
 Primary = 25.34 cfs @ 2.06 hrs, Volume= 530,723 cf  
 Secondary = 7.86 cfs @ 2.06 hrs, Volume= 35,932 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
 Peak Elev= 731.61' @ 2.06 hrs Surf.Area= 108,361 sf Storage= 417,756 cf

Plug-Flow detention time= 395.2 min calculated for 566,560 cf (100% of inflow)  
 Center-of-Mass det. time= 395.4 min ( 455.0 - 59.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	727.40'	87,965 cf	<b>48.0" Round Pipe Storage</b> x 10 L= 700.0' S= 0.0010 '/'
#2	727.80'	586,912 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		674,876 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.80	74,675	0	0
728.00	75,945	15,062	15,062
729.00	82,354	79,150	94,212
730.00	88,864	85,609	179,821
731.00	95,474	92,169	271,990
732.00	102,185	98,830	370,819
733.00	110,000	106,093	476,912
734.00	110,000	110,000	586,912

Device	Routing	Invert	Outlet Devices
#1	Primary	727.37'	<b>24.0" Round POI A</b> L= 75.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 727.37' / 727.14' S= 0.0031 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 3.14 sf
#2	Device 1	727.37'	<b>4.6" Vert. Orifice/Grate</b> C= 0.600
#3	Device 1	728.54'	<b>6.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)
#4	Secondary	730.21'	<b>24.0" Round POI B</b> L= 27.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 730.21' / 730.00' S= 0.0078 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 3.14 sf

**Primary OutFlow** Max=25.34 cfs @ 2.06 hrs HW=731.61' (Free Discharge)

↑ **1=POI A** (Barrel Controls 25.34 cfs @ 8.07 fps)

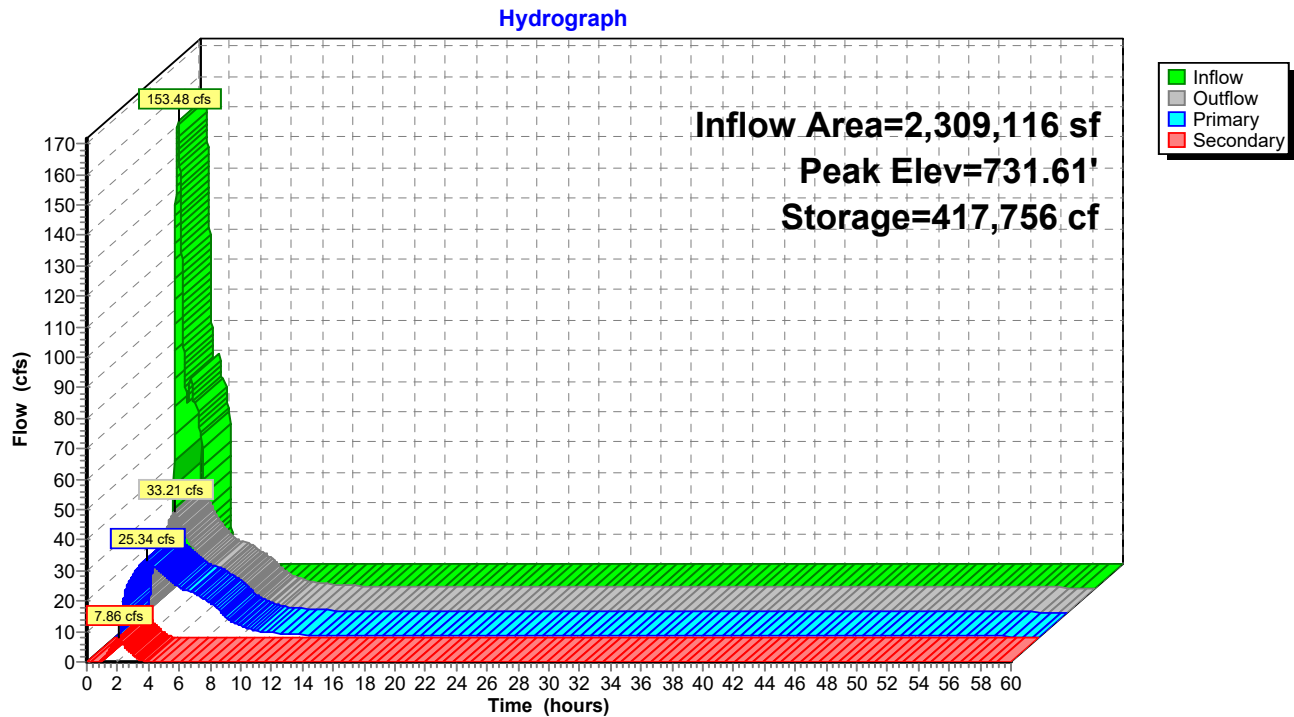
↑ **2=Orifice/Grate** (Passes < 1.12 cfs potential flow)

↑ **3=Sharp-Crested Rectangular Weir** (Passes < 94.75 cfs potential flow)

**Secondary OutFlow** Max=7.86 cfs @ 2.06 hrs HW=731.61' (Free Discharge)

↑ **4=POI B** (Barrel Controls 7.86 cfs @ 4.70 fps)

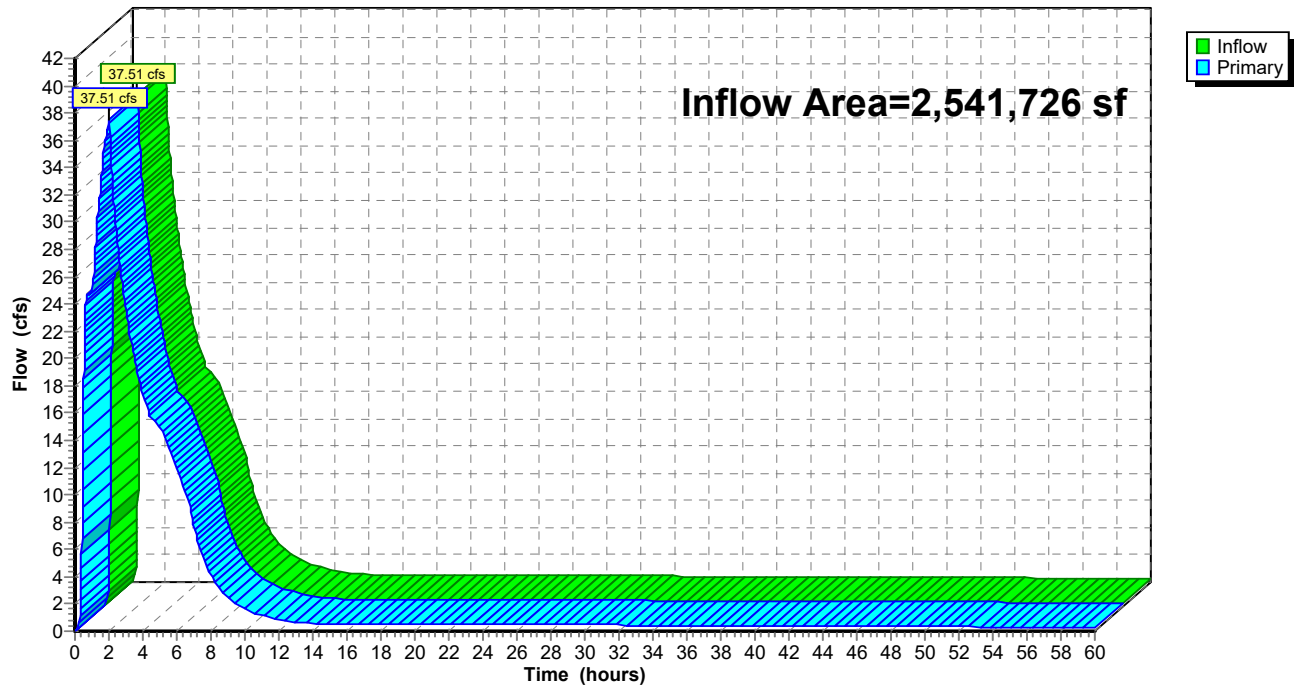
### Pond 3P: Pond/CMP Detention



**Summary for Link 13L: Total Post**

Inflow Area = 2,541,726 sf, 71.40% Impervious, Inflow Depth > 2.86" for 100-yr2HR event  
Inflow = 37.51 cfs @ 2.04 hrs, Volume= 604,975 cf  
Primary = 37.51 cfs @ 2.04 hrs, Volume= 604,975 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

**Link 13L: Total Post****Hydrograph**



**Summary for Subcatchment 2S: DA#3 (Dev-Onsite)**

Runoff = 46.28 cfs @ 0.26 hrs, Volume= 79,185 cf, Depth= 2.77"

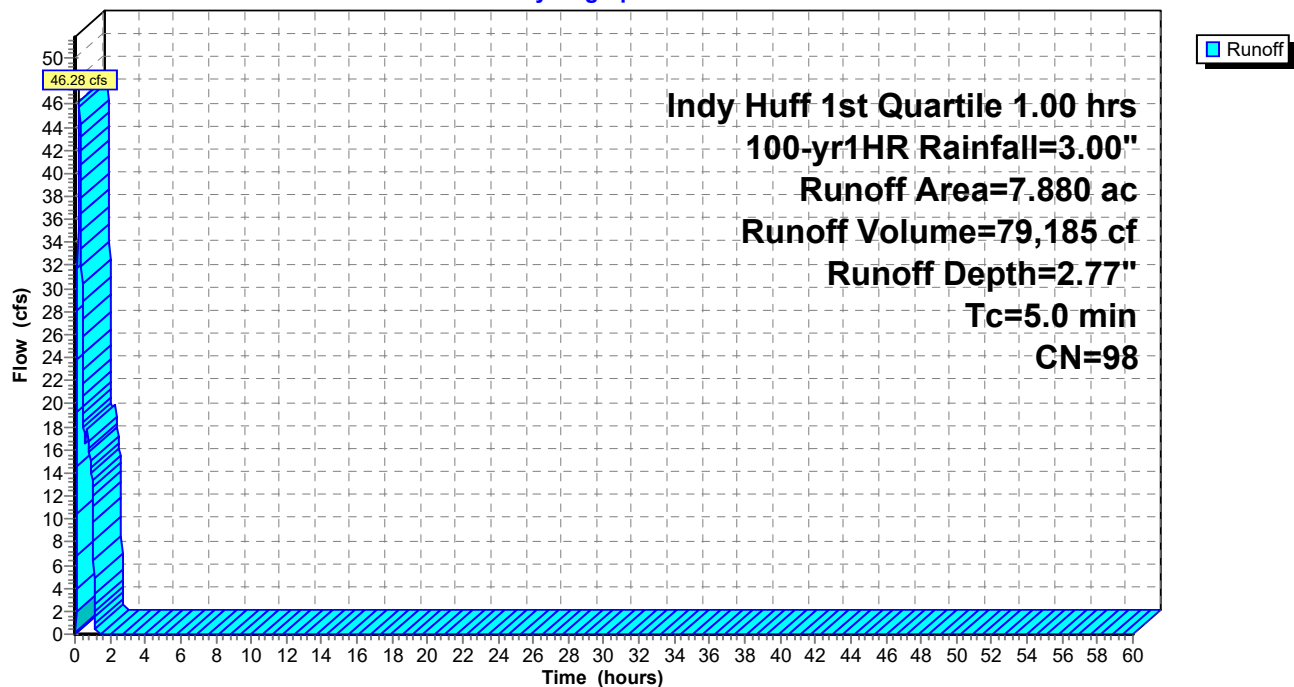
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 1.00 hrs 100-yr1HR Rainfall=3.00"

Area (ac)	CN	Description
* 7.880	98	
7.880		100.00% Impervious Area

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

**Subcatchment 2S: DA#3 (Dev-Onsite)**

Hydrograph



**Summary for Subcatchment 4S: DA#5 (Dev-Onsite)**

Runoff = 177.15 cfs @ 0.27 hrs, Volume= 304,834 cf, Depth= 2.66"

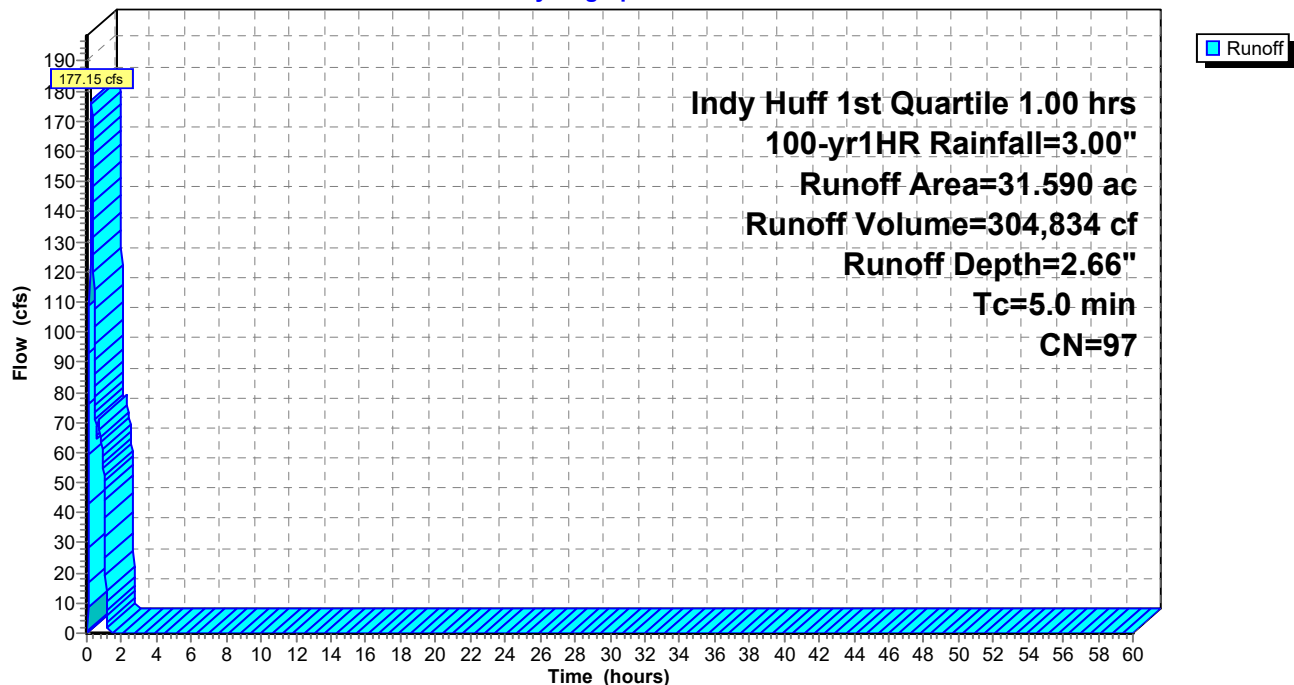
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 1.00 hrs 100-yr1HR Rainfall=3.00"

Area (ac)	CN	Description
* 29.300	98	
0.510	74	>75% Grass cover, Good, HSG C
1.780	80	>75% Grass cover, Good, HSG D
31.590	97	Weighted Average
2.290		7.25% Pervious Area
29.300		92.75% Impervious Area

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

**Subcatchment 4S: DA#5 (Dev-Onsite)**

Hydrograph



**Summary for Subcatchment 9S: DA#4 (Undetained)**

Runoff = 11.86 cfs @ 0.42 hrs, Volume= 28,041 cf, Depth= 1.45"

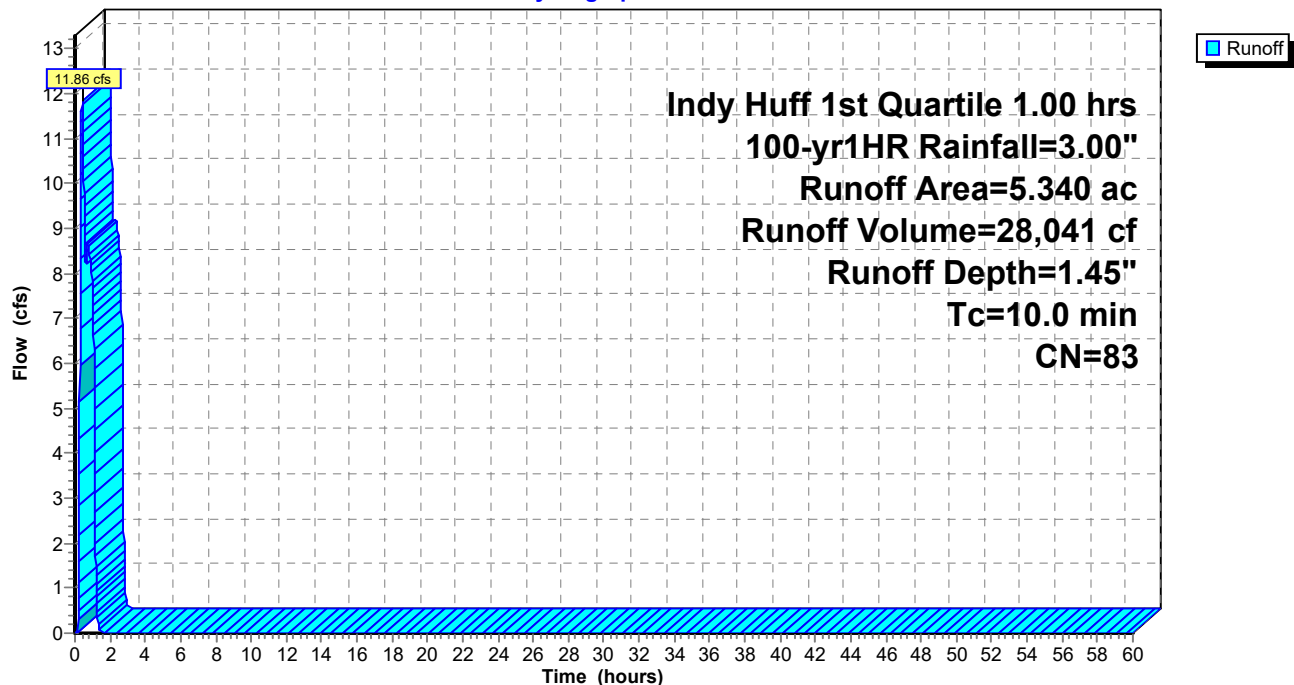
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 1.00 hrs 100-yr1HR Rainfall=3.00"

Area (ac)	CN	Description
* 1.130	98	
0.350	74	>75% Grass cover, Good, HSG C
3.860	80	>75% Grass cover, Good, HSG D
5.340	83	Weighted Average
4.210		78.84% Pervious Area
1.130		21.16% Impervious Area

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

**Subcatchment 9S: DA#4 (Undetained)**

Hydrograph



**Summary for Subcatchment 10S: DA#1**

Runoff = 8.10 cfs @ 1.08 hrs, Volume= 26,307 cf, Depth= 1.13"

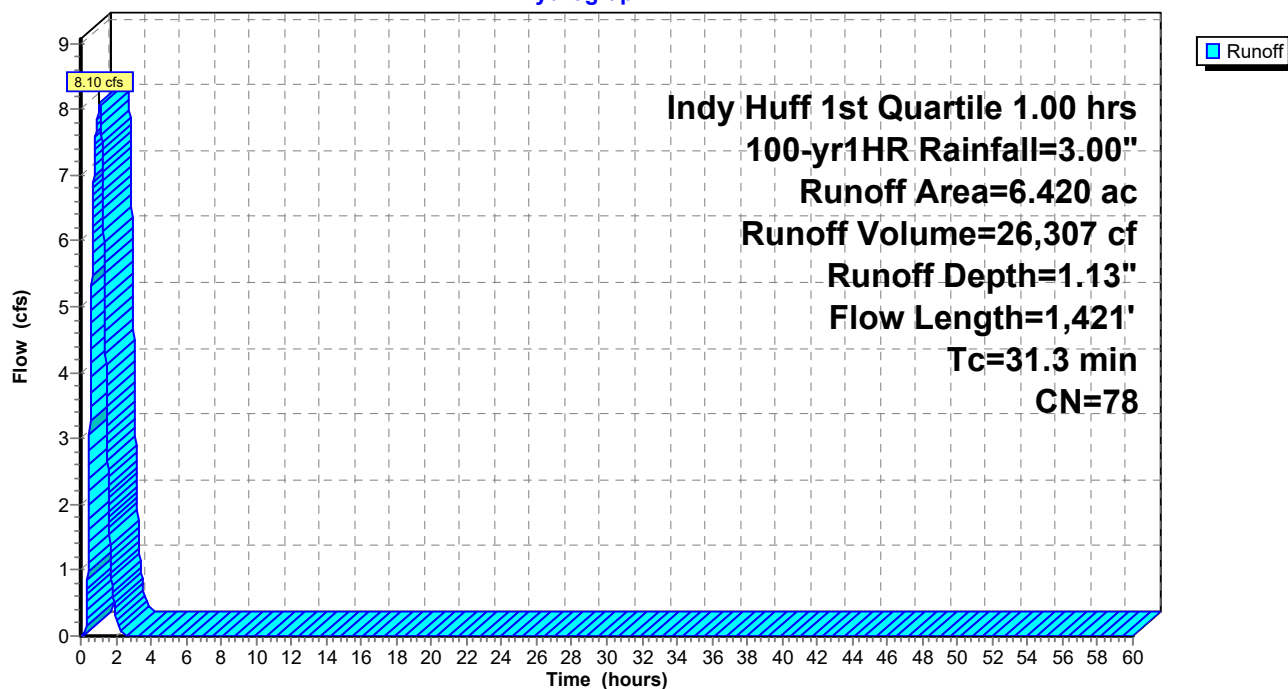
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 1.00 hrs 100-yr1HR Rainfall=3.00"

Area (ac)	CN	Description
* 0.640	98	
0.890	70	Woods, Good, HSG C
1.630	77	Woods, Good, HSG D
0.150	89	Row crops, straight row, Good, HSG D
0.130	85	Row crops, straight row, Good, HSG C
1.360	80	>75% Grass cover, Good, HSG D
1.620	74	>75% Grass cover, Good, HSG C
6.420	78	Weighted Average
5.780		90.03% Pervious Area
0.640		9.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0100	0.12		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
17.7	1,321	0.0060	1.25		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
31.3	1,421	Total			

**Subcatchment 10S: DA#1**

Hydrograph



**Summary for Subcatchment 11S: DA#2**

Runoff = 16.00 cfs @ 0.41 hrs, Volume= 35,772 cf, Depth= 1.82"

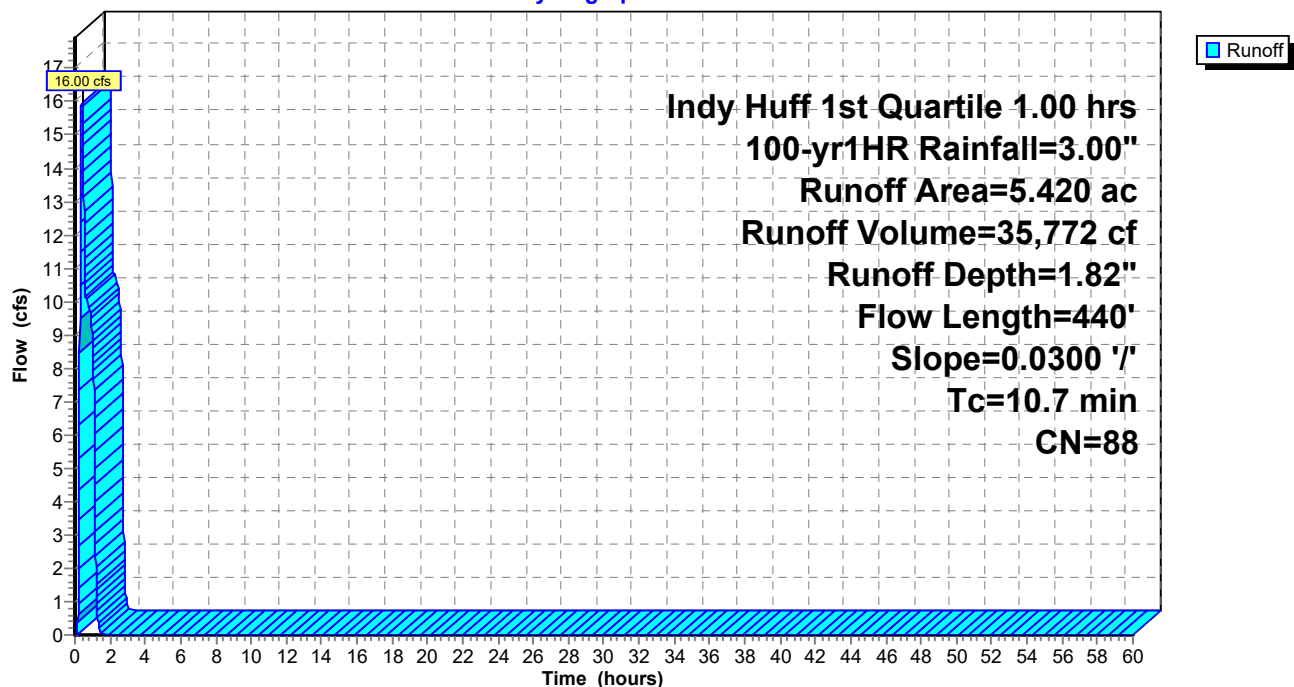
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 1.00 hrs 100-yr1HR Rainfall=3.00"

Area (ac)	CN	Description
* 2.710	98	
0.170	70	Woods, Good, HSG C
0.010	77	Woods, Good, HSG D
1.680	80	>75% Grass cover, Good, HSG D
0.850	74	>75% Grass cover, Good, HSG C
5.420	88	Weighted Average
2.710		50.00% Pervious Area
2.710		50.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.0300	0.19		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.91"
2.0	340	0.0300	2.79		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
10.7	440	Total			

**Subcatchment 11S: DA#2**

Hydrograph



**Summary for Subcatchment 12S: DA711**

Runoff = 1.42 cfs @ 1.35 hrs, Volume= 5,605 cf, Depth= 0.91"

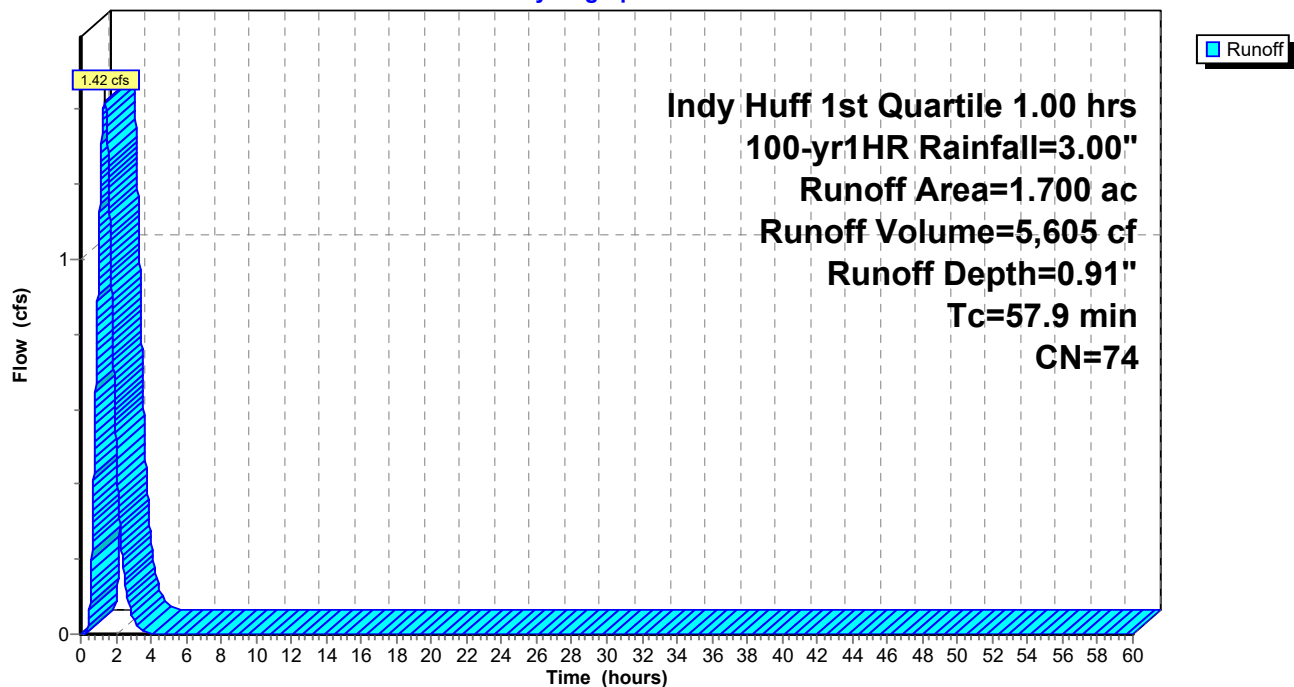
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Indy Huff 1st Quartile 1.00 hrs 100-yr1HR Rainfall=3.00"

Area (ac)	CN	Description
* 1.700	74	
1.700		100.00% Pervious Area

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

**Subcatchment 12S: DA711**

Hydrograph



**Summary for Pond 3P: Pond/CMP Detention**

[44] Hint: Outlet device #2 is below defined storage

Inflow Area = 2,309,116 sf, 76.46% Impervious, Inflow Depth = 2.35" for 100-yr1HR event  
 Inflow = 230.88 cfs @ 0.27 hrs, Volume= 451,703 cf  
 Outflow = 27.98 cfs @ 1.10 hrs, Volume= 451,472 cf, Atten= 88%, Lag= 49.7 min  
 Primary = 23.37 cfs @ 1.10 hrs, Volume= 437,245 cf  
 Secondary = 4.62 cfs @ 1.10 hrs, Volume= 14,227 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
 Peak Elev= 731.24' @ 1.10 hrs Surf.Area= 115,240 sf Storage= 376,169 cf

Plug-Flow detention time= 447.6 min calculated for 451,472 cf (100% of inflow)  
 Center-of-Mass det. time= 447.5 min ( 481.0 - 33.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	727.40'	87,965 cf	<b>48.0" Round Pipe Storage</b> x 10 L= 700.0' S= 0.0010 '/'
#2	727.80'	586,912 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		674,876 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.80	74,675	0	0
728.00	75,945	15,062	15,062
729.00	82,354	79,150	94,212
730.00	88,864	85,609	179,821
731.00	95,474	92,169	271,990
732.00	102,185	98,830	370,819
733.00	110,000	106,093	476,912
734.00	110,000	110,000	586,912

Device	Routing	Invert	Outlet Devices
#1	Primary	727.37'	<b>24.0" Round POI A</b> L= 75.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 727.37' / 727.14' S= 0.0031 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 3.14 sf
#2	Device 1	727.37'	<b>4.6" Vert. Orifice/Grate</b> C= 0.600
#3	Device 1	728.54'	<b>6.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)
#4	Secondary	730.21'	<b>24.0" Round POI B</b> L= 27.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 730.21' / 730.00' S= 0.0078 '/' Cc= 0.900 n= 0.015 Concrete sewer w/manholes & inlets, Flow Area= 3.14 sf

**Primary OutFlow** Max=23.37 cfs @ 1.10 hrs HW=731.24' (Free Discharge)

1=POI A (Barrel Controls 23.37 cfs @ 7.44 fps)

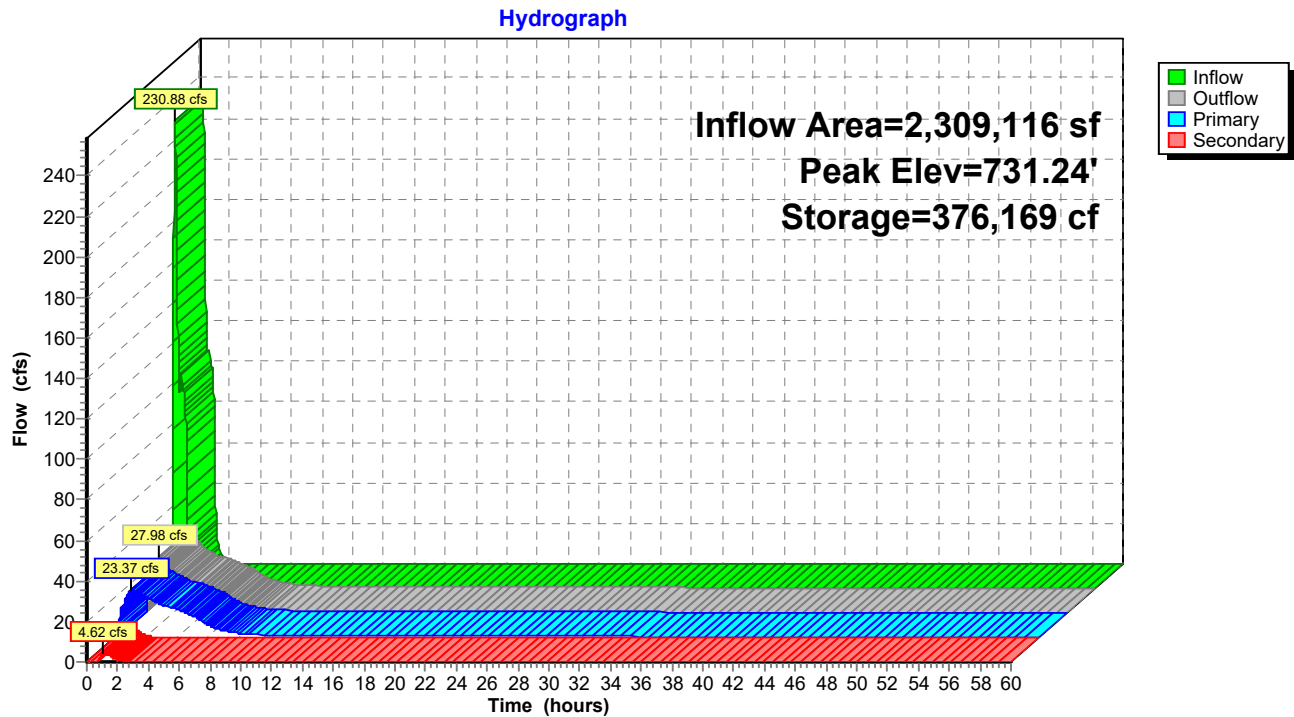
2=Orifice/Grate (Passes < 1.07 cfs potential flow)

3=Sharp-Crested Rectangular Weir (Passes < 79.19 cfs potential flow)

**Secondary OutFlow** Max=4.61 cfs @ 1.10 hrs HW=731.24' (Free Discharge)

4=POI B (Barrel Controls 4.61 cfs @ 4.12 fps)

### Pond 3P: Pond/CMP Detention

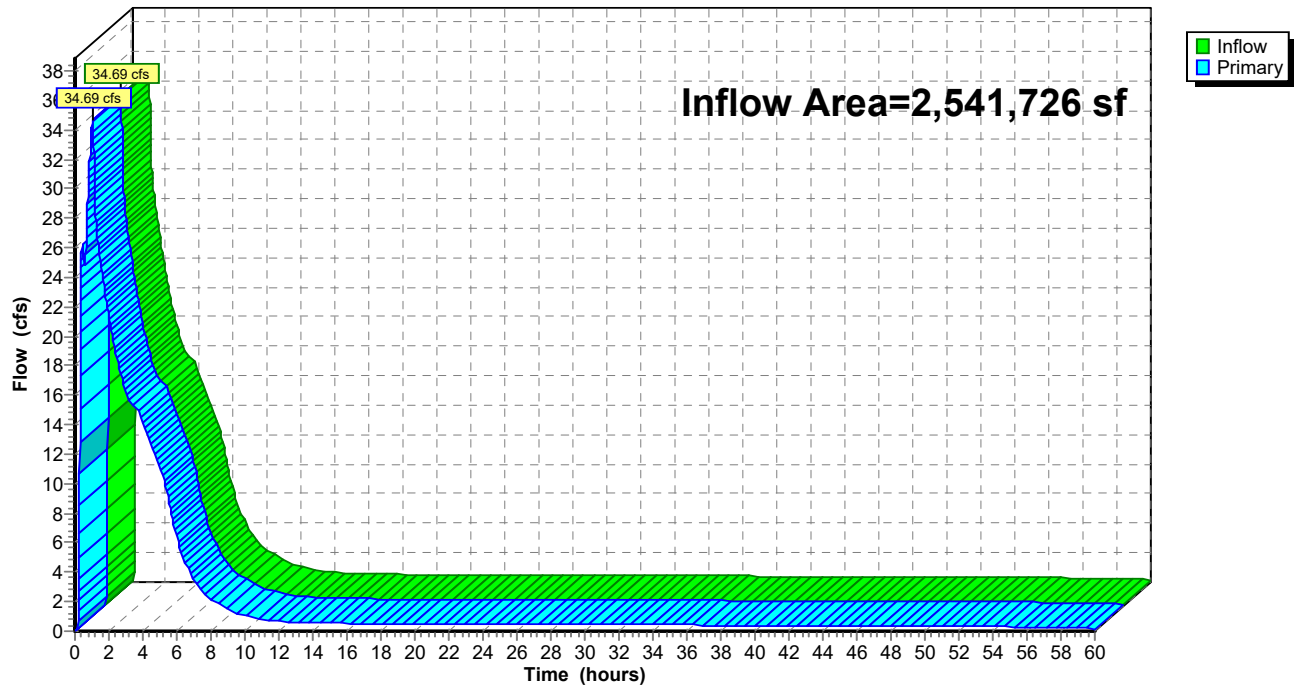




**Summary for Link 13L: Total Post**

Inflow Area = 2,541,726 sf, 71.40% Impervious, Inflow Depth > 2.26" for 100-yr1HR event  
Inflow = 34.69 cfs @ 1.05 hrs, Volume= 479,513 cf  
Primary = 34.69 cfs @ 1.05 hrs, Volume= 479,513 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

**Link 13L: Total Post****Hydrograph**



## **Appendix I**

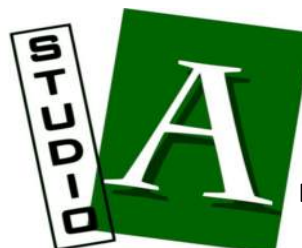


# Stormwater Drainage Technical Report

*Marlores*

*March 8, 2020*

*Prepared by:*  
Studio A of Indianapolis, Inc.  
9511 East 96th Street  
Indianapolis, IN 46256



Site Development  
Landscape Architecture  
Environmental Documents

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## FIGURES

Figure 1 – Overall Site Location

Figure 2 – USDA Soil Mapping

Figure 3 – Proposed Delineation and Routing

Appendix A: 10 YR and 100 YR Existing Condition - Release Rate Analysis

Appendix B: 10 YR and 100 YR Proposed Condition Modeling

## **1.0. INTRODUCTION**

Studio A of Indianapolis, Inc. has completed a development plan and drainage design to support the construction of a 519,376 square foot warehouse and associated infrastructure on an approximate 38.0 acre lot (SITE) immediately north and east of the intersection of Interstate 65 and S.R. 44, and west of Jim Black Road within the City of Franklin in Johnson County, Indiana.

The purpose of this reporting is to demonstrate that the development plan for the SITE is in compliance with the General Drainage Standards for the City of Franklin. The aerial photograph shown on Figure 1 illustrates the SITE location of the 38 acre site, and provides land use and context for the development.

Existing conditions are discussed in Section 2.0, while a discussion of the proposed conditions and stormwater design are discussed in Section 3.0. Water quality requirements are discussed in Section 4.0 with conclusions thereafter.

## 2.0. EXISTING CONDITIONS

The existing site covers 38 acres as depicted on Figure 1. As shown on the Figure, the SITE consists largely of a completely pervious row crops which drain generally from west to east. A small portion of the western extent is wooded and contains some wetland areas as shown on Plan Sheet C-101. These areas generally overflow east as well towards an existing concrete ditch flowing north to south within the right-of-way of Jim Black Road. The site watershed drains along a flow path approximately 1,800 feet in length at an average slope of about 0.7% resulting in an existing time of concentration of a little over a half hour. Details of the existing hydrology are provided in Appendix 'A'.

### 2.1 Offsite Watersheds

There are no measurable offsite flows which impact the existing site directly. As provided on Figure 1, the property to the north flows east to an existing pond prior to discharge in an existing 18"RCP to the right-of-way of Jim Black Road, bypassing the subject site. Similarly, drainage from both I-65 and SR-44 remain in the right-of-way of said infrastructures within roadside ditches, bypassing the site to the southeast corner of the site prior to pipe discharge beneath SR-44.

### 2.2 USDA Soils

According to the USDA Web Soil Survey (Figure 2), the site consists of approximately 1/4 part Brookston silty clay loam, 3/5 parts Crosby silt loam, and 1/6 part Miami silt loam. In the current condition, these soils range from Hydrologic Soil Grouping (HSG) of 'B' to 'D' and are reflected in hydrologic computations in Appendix 'A'. FEMA does not associate the area with any Special Flood Hazard Zones, and no known 'hot spots' are associated with the SITE.

Appendix 'A' provides an unabridged account of all hydrologic and hydraulic input and output data associated with the existing condition and routing data. The appropriate Huff distribution is applied to rainfall depths obtained from Technical Reference 20 for the City of Franklin. Table 1 provides a summary of existing discharges with the total representing the total discharge routed to the east of Bartram Parkway.

**Table 1: Existing Peak Flow Matrix**

EX	Runoff (cfs)
<b>2YR1HR</b>	<b>13.33</b>
2YR2HR	10.53
2YR30MIN	11.16
<b>10YR1HR</b>	<b>30.02</b>
10YR2HR	25.47
10YR30MIN	29.47
<b>100YR1HR</b>	<b>55.17</b>
100YR2HR	49.20
100YR30MIN	57.61



### 3.0. PROPOSED SYSTEM DESIGN

Figure 3 provides the overall proposed hydrologic condition of all enumerated onsite watersheds and their respective inlet structure. These all serve to route proposed site stormwater to the primary wet pond detention BMP. The only exception to this are Structures 745 – 741 at the northeast corner of the site used to bypass the offsite pond discharge under the proposed entryway at a location of maximum cover. Percent impervious of the proposed development, along with the soils established in Section 2 were input to determine appropriate curve numbers for volumetric runoff values and ‘C’ values for pipe flow design discharges. These are summarized in Table 2.

**Table 2: Proposed Hydrology**

	Total (ac)	Impervious	Grass 'B'	Grass 'C'	Woods 'C'	Woods 'D'	CN	C
Proposed SITE Area	38.000	27.387	1.921	6.323	0.417	1.952		
DA701	3.663	0.852	0.655	2.157	0.000	0.000	77	0.39
DA703	0.531	0.485	0.011	0.035	0.000	0.000	96	0.80
DA704	0.704	0.490	0.050	0.164	0.000	0.000	90	0.67
DA705	0.992	0.992	0.000	0.000	0.000	0.000	98	0.85
DA706	1.048	1.048	0.000	0.000	0.000	0.000	98	0.85
DA707	0.495	0.495	0.000	0.000	0.000	0.000	98	0.85
DA708	0.972	0.671	0.070	0.231	0.000	0.000	90	0.66
DA709	0.663	0.554	0.025	0.084	0.000	0.000	94	0.75
DA710	0.646	0.481	0.039	0.127	0.000	0.000	91	0.70
DA711	1.700	0.000	0.082	0.271	0.314	1.033	74	0.17
DA712	2.233	2.233	0.000	0.000	0.000	0.000	98	0.90
DA713	1.497	1.497	0.000	0.000	0.000	0.000	98	0.90
DA714	2.232	2.232	0.000	0.000	0.000	0.000	98	0.90
DA716	0.505	0.450	0.013	0.042	0.000	0.000	95	0.78
DA717	0.849	0.470	0.088	0.291	0.000	0.000	86	0.58
DA718	1.042	0.987	0.013	0.042	0.000	0.000	97	0.82
DA719	1.099	1.043	0.013	0.043	0.000	0.000	97	0.82
DA720	1.079	0.910	0.039	0.130	0.000	0.000	94	0.76
DA721	0.410	0.237	0.040	0.133	0.000	0.000	87	0.60
DA722	0.374	0.197	0.041	0.136	0.000	0.000	85	0.57
DA723	0.243	0.150	0.022	0.071	0.000	0.000	88	0.62
DA724	0.704	0.525	0.042	0.138	0.000	0.000	91	0.70
DA725	0.722	0.332	0.091	0.299	0.000	0.000	83	0.53
DA726	2.233	2.233	0.000	0.000	0.000	0.000	98	0.90
DA727	0.545	0.206	0.079	0.260	0.000	0.000	81	0.48
DA728	1.497	1.497	0.000	0.000	0.000	0.000	98	0.90
DA729	0.418	0.153	0.062	0.203	0.000	0.000	81	0.47
DA730	2.232	2.232	0.000	0.000	0.000	0.000	98	0.90
DA731	0.453	0.185	0.062	0.205	0.000	0.000	82	0.50
DA733	0.539	0.212	0.076	0.251	0.000	0.000	82	0.49
DA735	0.580	0.495	0.020	0.066	0.000	0.000	94	0.76
DA737	0.608	0.540	0.016	0.052	0.000	0.000	95	0.78
DA739	0.229	0.229	0.000	0.000	0.000	0.000	98	0.85
DA740	0.334	0.000	0.078	0.256	0.000	0.000	71	0.25

### **3.1 Site Routing**

Overall, as detailed above, 34.07 acres of the site are routed east to the Wet Pond by either direct inflow or pipe network.

The reporting which follows is considered in the following order:

3.2: Ensure SITE conveyance infrastructure shown on Figure 3 and in the construction plans is adequate to route stormwater runoff to the Wet Pond.

3.3: Ensure the overall outlet rate for the SITE is detained to rates less than those allowable under the masterplan at acceptable staging levels.

### **3.2 Storm Sewer Design**

All onsite watersheds routed to the storm system are less than 5 acres. As such the rational method was used to compute peak inflows to the storm system. All pipes were sized and sloped such that:

- a) The 10-year event peak inflows are less than the Mannings' capacity of the pipe run.
- b) The 10-year event pipe flow results in a flow velocity greater than 2.5 feet/second.
- c) The 100-year event Hydraulic Gradeline (HGL) is below the top of casting of each respective structure.
- d) The inlet casting has capacity to pass the 10-year design event under 50% clogged conditions.

Table 3 on the following page provides a pipe chart illustrating compliance with design criteria (a), (b), and (c) for all new infrastructure. Table 4 provides the inlet capacities regarding item (d). The intensity used in Table 4 assumes a 5 minute time of concentration for all site watersheds.

**Table 3: Conveyance Design**

PIPE NO.	AREA INC. ac	AREA TOT. ac	RUNOFF COEFF. INC.	RUNOFF COEFF. TOT.	SUM C * A	TIME CONC. min	I 10 YR. in/hr	I 100 YR in/hr	Q 10 YR cfs	Q 100 YR cfs	PIPE SIZE in	PIPE LENGTH ft	PIPE SLOPE ft/ft	VEL. 10 YR fps	CASTING ELEV UP ft	INV ELEV UP ft	INV ELEV DOWN ft	HW 10 YR ft	HW 100 YR ft	PIPE CAPACITY cfs
711-710	1.700	1.70	0.17	0.17	0.29	60.00	1.96	2.88	0.6	0.8	12	21	0.0505	6.29	-	735.00	733.54	735.21	735.52	8.7
710-709	0.646	2.35	0.70	0.32	0.74	5.00	6.99	9.69	5.2	7.2	18	137	0.0030	3.95	736.92	733.54	733.13	734.59	735.22	6.2
709-708	0.663	3.01	0.75	0.41	1.24	5.00	6.99	9.69	8.7	12.0	18	267	0.0140	8.04	736.74	733.13	729.39	734.00	735.95	13.5
740-708	0.334	0.33	0.25	0.25	0.08	15.00	4.55	6.53	0.4	0.5	12	15	0.0100	3.19	734.00	729.54	729.39	729.76	729.93	3.9
708-707	0.972	4.32	0.66	0.46	1.96	5.00	6.99	9.69	13.7	19.0	24	77	0.0032	5.03	733.67	729.39	729.15	731.03	732.18	13.9
714-707	2.232	2.23	0.90	0.90	2.01	5.00	6.99	9.69	14.0	19.5	18	98	0.0219	10.66	735.95	731.30	729.15	732.34	737.14	16.8
707-706	0.495	7.04	0.85	0.62	4.39	5.00	6.99	9.69	30.7	42.6	36	212	0.0020	5.19	734.23	729.15	728.72	731.48	732.62	32.3
713-706	1.497	1.50	0.90	0.90	1.35	5.00	6.99	9.69	9.4	13.1	18	98	0.0263	10.48	735.95	731.30	728.72	732.06	734.47	18.5
706-705	1.048	9.59	0.85	0.69	6.63	5.00	6.99	9.69	46.4	64.3	42	212	0.0020	5.76	734.23	728.72	728.30	731.45	732.86	48.7
712-705	2.232	2.23	0.90	0.90	2.01	5.00	6.99	9.69	14.0	19.5	18	98	0.0306	12.17	735.95	731.30	728.30	732.22	737.14	19.9
705-704	0.992	12.81	0.85	0.74	9.48	5.00	6.99	9.69	66.3	91.9	48	200	0.0020	6.29	734.32	728.30	727.90	731.42	733.12	69.6
704-703	0.704	13.52	0.67	0.74	9.95	5.00	6.99	9.69	69.6	96.5	48	237	0.0022	6.60	734.12	727.90	727.38	731.03	732.93	73.0
703-702	0.531	14.05	0.80	0.74	10.38	5.00	6.99	9.69	72.6	100.6	48	80	0.0022	6.62	736.04	727.38	727.20	730.70	732.61	73.0
724-723	0.704	0.70	0.70	0.70	0.49	5.00	6.99	9.69	3.4	4.8	18	163	0.0016	2.82	736.81	733.10	732.84	734.06	734.37	4.6
723-722	0.243	0.95	0.62	0.68	0.64	5.00	6.99	9.69	4.5	6.2	18	171	0.0016	2.94	737.98	732.84	732.56	734.04	734.34	4.6
722-721	0.374	1.32	0.57	0.65	0.86	5.00	6.99	9.69	6.0	8.3	18	151	0.0075	5.80	736.61	732.56	731.43	733.41	734.45	9.9
721-720	0.410	1.73	0.60	0.64	1.10	5.00	6.99	9.69	7.7	10.7	18	180	0.0070	6.00	735.50	731.43	730.17	732.45	733.88	9.5
730-720	2.232	2.23	0.90	0.90	2.01	5.00	6.99	9.69	14.0	19.5	24	98	0.0117	8.53	735.95	731.32	730.17	732.35	734.18	26.5
731-720	0.453	0.45	0.50	0.50	0.23	5.00	6.99	9.69	1.6	2.2	12	146	0.0100	4.65	735.00	731.63	730.17	732.07	732.61	3.9
720-719	1.079	5.50	0.76	0.76	4.16	5.00	6.99	9.69	29.1	40.3	30	212	0.0044	6.85	734.23	730.17	729.24	732.21	734.50	29.5
728-719	1.497	1.50	0.90	0.90	1.35	5.00	6.99	9.69	9.4	13.1	18	98	0.0098	7.13	735.95	730.20	729.24	731.24	733.37	11.3
729-719	0.418	0.42	0.47	0.47	0.20	5.00	6.99	9.69	1.4	1.9	12	144	0.0160	5.32	735.00	731.54	729.24	731.90	732.43	4.9
719-718	1.099	8.51	0.82	0.78	6.60	5.00	6.99	9.69	46.2	64.0	36	224	0.0042	7.55	734.23	729.24	728.30	731.69	734.48	46.8
726-718	2.233	2.23	0.90	0.90	2.01	5.00	6.99	9.69	14.0	19.5	18	98	0.0308	12.20	735.95	731.32	728.30	732.24	737.16	20.0
727-718	0.545	0.55	0.48	0.48	0.26	5.00	6.99	9.69	1.8	2.5	12	144	0.0200	6.22	735.00	731.18	728.30	731.57	732.26	5.5
718-717	1.042	12.33	0.82	0.79	9.73	5.00	6.99	9.69	68.0	94.3	48	188	0.0020	6.31	734.32	728.30	727.92	731.51	733.23	69.6
717-716	0.849	13.18	0.58	0.78	10.22	5.00	6.99	9.69	71.4	99.0	48	238	0.0022	6.62	734.12	727.92	727.40	731.15	733.08	73.0
725-716	0.722	0.72	0.53	0.53	0.38	5.00	6.99	9.69	2.7	3.7	12	66	0.0400	8.90	734.06	730.04	727.40	730.44	731.58	7.7
716-715	0.505	14.41	0.78	0.76	11.00	5.00	6.99	9.69	76.9	106.6	48	79	0.0025	7.06	736.13	727.40	727.20	730.68	732.93	77.8
733-732	0.539	0.54	0.49	0.49	0.26	5.00	6.99	9.69	1.8	2.6	12	99	0.0050	3.73	732.00	727.70	727.20	728.30	728.81	2.7
735-734	0.580	0.58	0.76	0.76	0.44	5.00	6.99	9.69	3.1	4.3	12	56	0.0400	9.25	736.91	729.44	727.20	729.88	731.29	7.7
737-736	0.608	0.61	0.78	0.78	0.47	5.00	6.99	9.69	3.3	4.6	12	60	0.0400	9.45	736.77	729.60	727.20	730.06	731.62	7.7
739-738	0.229	0.23	0.85	0.85	0.19	5.00	6.99	9.69	1.4	1.9	12	58	0.0060	3.71	731.72	727.55	727.20	728.02	728.44	3.0
745-744	0.900	1.00	0.50	0.50	0.50	5.00	6.99	9.69	3.5	4.8	18	96	0.0010	2.32	729.65	728.00	727.91	729.20	729.27	3.6
743-742	0.900	1.00	0.50	0.50	0.50	5.00	6.99	9.69	3.5	4.8	18	75	0.0010	2.32	-	727.91	727.83	729.10	729.17	3.6
742-741	0.900	1.00	0.50	0.50	0.50	5.00	6.99	9.69	3.5	4.8	18	130	0.0010	2.32	733.60	727.83	727.70	729.02	729.10	3.6

As indicated above, all pipes attain a minimum slope of 2.5% except for bypass pipes 745-741 which propose to convey offsite flows under the proposed entrance drive at a location with adequate cover. This 18" bypass route is proposed at 0.10% which can only flow at 2.3 ft/s at their manning's capacity. However, the slope cannot be increased given unchangeable flow elevations at the northeast and southeast corners of the site. In fact, the entire east line of the site only falls at 0.12% from corner to corner. As such, the proposed bypass route does little to decrease existing drainage efficiencies.

**Table 4: Inlet Capacity Analysis**

STR ID	Area (ac)	I (in/hr)	C	Q10 (cfs)	To Inlet	Casting	Weir Perimeter (ft)	50% Clogged Perimeter (ft)	Orifice Area (sf)	50% Clogged Area (sf)	Stage Under Weir Flow (ft)	Stage Under Orifice Flow (ft)
DA703	0.531	6.99	0.8	2.97	703	R-3010-A	4.6	2.30	1.0	0.50	0.33	0.31
DA704	0.704	6.99	0.67	3.30	704	R-3010-A	4.6	2.30	1.0	0.50	0.36	0.39
DA705	0.992	6.99	0.85	5.89	705	R-3455-C	10.0	5.00	2.6	1.30	0.32	0.18
DA706	1.048	6.99	0.85	6.23	706	R-3455-C	10.0	5.00	2.6	1.30	0.33	0.20
DA707	0.495	6.99	0.85	2.94	707	R-3455-C	10.0	5.00	2.6	1.30	0.20	0.05
DA708	0.972	6.99	0.66	4.48	708	R-3010-A	4.6	2.30	1.0	0.50	0.44	0.72
DA709	0.663	6.99	0.75	3.48	709	R-3287-15	7.5	3.75	3.2	1.60	0.27	0.04
DA710	0.646	6.99	0.7	3.16	710	R-3287-15	7.5	3.75	3.2	1.60	0.25	0.03
DA716	0.505	6.99	0.78	2.76	716	R-3010-A	4.6	2.30	1.0	0.50	0.32	0.27
DA717	0.849	6.99	0.58	3.44	717	R-3010-A	4.6	2.30	1.0	0.50	0.37	0.42
DA718	1.042	6.99	0.82	5.97	718	R-3455-C	10.0	5.00	2.6	1.30	0.32	0.19
DA719	1.099	6.99	0.82	6.30	719	R-3455-C	10.0	5.00	2.6	1.30	0.33	0.21
DA720	1.079	6.99	0.76	5.73	720	R-3455-C	10.0	5.00	2.6	1.30	0.31	0.17
DA721	0.410	6.99	0.6	1.72	721	R-3286-8V	4.4	2.20	0.7	0.35	0.24	0.22
DA722	0.374	6.99	0.57	1.49	722	R-3286-8V	4.4	2.20	0.7	0.35	0.22	0.16
DA723	0.243	6.99	0.62	1.05	723	R-3286-8V	4.4	2.20	0.7	0.35	0.17	0.08
DA724	0.704	6.99	0.7	3.44	724	R-3286-8V	4.4	2.20	0.7	0.35	0.38	0.86
DA725	0.722	6.99	0.72	3.63	725	R-3286-8V	4.4	2.20	0.7	0.35	0.39	0.96
DA727	0.545	6.99	0.55	2.09	727	R-3286-8V	4.4	2.20	0.7	0.35	0.27	0.32
DA729	0.418	6.99	0.42	1.23	729	R-3286-8V	4.4	2.20	0.7	0.35	0.19	0.11
DA731	0.453	6.99	0.45	1.43	731	R-3286-8V	4.4	2.20	0.7	0.35	0.21	0.15
DA733	0.539	6.99	0.54	2.03	733	R-3286-8V	4.4	2.20	0.7	0.35	0.27	0.30
DA735	0.580	6.99	0.58	2.35	735	R-3286-8V	4.4	2.20	0.7	0.35	0.30	0.40
DA737	0.608	6.99	0.61	2.59	737	R-3286-8V	4.4	2.20	0.7	0.35	0.32	0.49
DA739	0.229	6.99	0.85	1.36	739	R-3286-8V	4.4	2.20	0.7	0.35	0.20	0.13
DA740	0.334	6.99	0.25	0.58	740	R-4215-C	11.3	5.65	3.3	1.65	0.06	0.00

### **3.3 Detention Design**

In order to design the stormwater detention system for the subject site, it is first necessary to determine the allowable release rate for the site. Per the City of Franklin, the 10 year allowable discharge shall be held to 2 year existing peak flow, while the 100 year allowable discharge shall be held to the 10 year existing peak flow. Per Section 2.0 reporting, the allowable release rates will be those in Table 5, below:

**Table 5: Allowable Release Rates**

10 YR	13.33 cfs
100 YR	30.02 cfs

The largest demands on the stormwater system is associated with the 2-hour event as this produces the highest staging values and therefore, highest release rates. Appendix 'B' provides an unabridged account of all hydrologic and hydraulic input and output data associated with the proposed condition and routing data. The 1st quartile Huff distribution is applied to the rainfall depth obtained from Technical Reference 20 for the City of Franklin. Table 6 provides a summary of proposed discharges from the stormwater system.

**Table 6: Wet Pond Staging and Release Summary**

	Wet Pond
Normal Pool	727.2
10 YR Stage	730.3
10 YR Release	12.92
100 YR Stage	731.7
100 YR Release	19.77

### **3.4 Emergency Overflow Design**

As provided in Appendix 'B', the maximum inflow to the wet pond under the 100 year design condition is **90.72 cfs**. Per Standards, the emergency overflow weir should be capable of passing  $1.25 \times Q_{100}$  inflow given a total clogging of the proposed RCP outlets. Thus, the weir must pass  $(1.25 \times 60.89)$  **113.4 cfs**.

As provided in Table 6, the expected stage due to a 100 year design event is 732.0 ft. Therefore, specifying the 100 overflow elevation at 732.0 will not alter the regulatory release rate calculations. Table 7 provides the computed length of weir to limit the overflow to 1' in depth utilizing the common weir equation. The construction plans provide a 40' weir to ensure safe passage of emergency flows to design goals.

**Table 7: Emergency Overflow Design Summary**

$1.25 \times Q_{100}$	113.4 cfs
C	3.0
L	37.8 ft
H	1.0 ft

## 4.0. WATER QUALITY DESIGN

To demonstrate the adequacy of the water quality provided by the eastern wet pond BMP, the overall water quality volume (WQv) of the proposed site must first be computed. This is summarized in Table 8, below:

**Table 8: WQv Computation Summary**

	Total (ac)	Impervious	P (in)	Rv	WQv (ac-ft)
DA701	3.663	0.852	1	0.259	0.079
DA703	0.531	0.485	1	0.872	0.039
DA704	0.704	0.490	1	0.677	0.040
DA705	0.992	0.992	1	0.950	0.079
DA706	1.048	1.048	1	0.950	0.083
DA707	0.495	0.495	1	0.950	0.039
DA708	0.972	0.671	1	0.671	0.054
DA709	0.663	0.554	1	0.801	0.044
DA710	0.646	0.481	1	0.719	0.039
DA711	1.700	0.000	1	0.050	0.007
DA712	2.233	2.233	1	0.950	0.177
DA713	1.497	1.497	1	0.950	0.118
DA714	2.232	2.232	1	0.950	0.177
DA716	0.505	0.450	1	0.852	0.036
DA717	0.849	0.470	1	0.548	0.039
DA718	1.042	0.987	1	0.902	0.078
DA719	1.099	1.043	1	0.904	0.083
DA720	1.079	0.910	1	0.809	0.073
DA721	0.410	0.237	1	0.569	0.019
DA722	0.374	0.197	1	0.523	0.016
DA723	0.243	0.150	1	0.606	0.012
DA724	0.704	0.525	1	0.721	0.042
DA725	0.722	0.332	1	0.464	0.028
DA726	2.233	2.233	1	0.950	0.177
DA727	0.545	0.206	1	0.390	0.018
DA728	1.497	1.497	1	0.950	0.118
DA729	0.418	0.153	1	0.379	0.013
DA730	2.232	2.232	1	0.950	0.177
DA731	0.453	0.185	1	0.418	0.016
DA733	0.539	0.212	1	0.405	0.018
DA735	0.580	0.495	1	0.817	0.040
DA737	0.608	0.540	1	0.849	0.043
DA739	0.229	0.229	1	0.950	0.018
DA740	0.334	0.000	1	0.050	0.001
<b>Total WQv</b>					<b>2.040</b>

For a watershed and pond of this scale, the primary concern for the water quality design is to ensure that the ratio of WQv to normal pool volume is at least 3.0 to ensure an adequate volume for which to settle out suspended sediment. Given the Table 8 results, the Eastern Pond should be designed with at least 6 ac-ft of storage below normal pool to ensure adequate settling capacity for the proposed inflow. The volume below NP is provided in Table 9, below:

**Table 9: NP Volume Wet Pond BMP**

Elevation	Area (sf)	Cum. Vol. (cf)	Cum. Vol. (ac-ft)
727.2	39754	0	0.0
727.01	37094	22738	0.5
727	28986	23069	0.5
726	26333	50728	1.2
719	8470	172539	4.0

As seen above, the proposed wet pond twice the volume in its permanent pool versus the expected WQ inflow volume to allow for long term settlement of suspended sediments.





# OVERALL SITE LOCATION

I-65 South Commerce Park - Building 1  
Aerial Mapping and Property Boundary  
HANCOCK COUNTY, INDIANA

Figure 1





Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Br	Brookston silty clay loam, 0 to 2 percent slopes	B/D	9.6	23.3%
CrA	Crosby silt loam, fine-loamy subsoil, 0 to 2 percent slopes	C/D	24.4	59.1%
MnB2	Miami silt loam, 2 to 6 percent slopes, eroded	C	4.5	11.0%
MnC2	Miami silt loam, 6 to 12 percent slopes, eroded	C	2.7	6.6%
Totals for Area of Interest			41.3	100.0%

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D



Prepared by:

Studio A of Indianapolis, Inc.

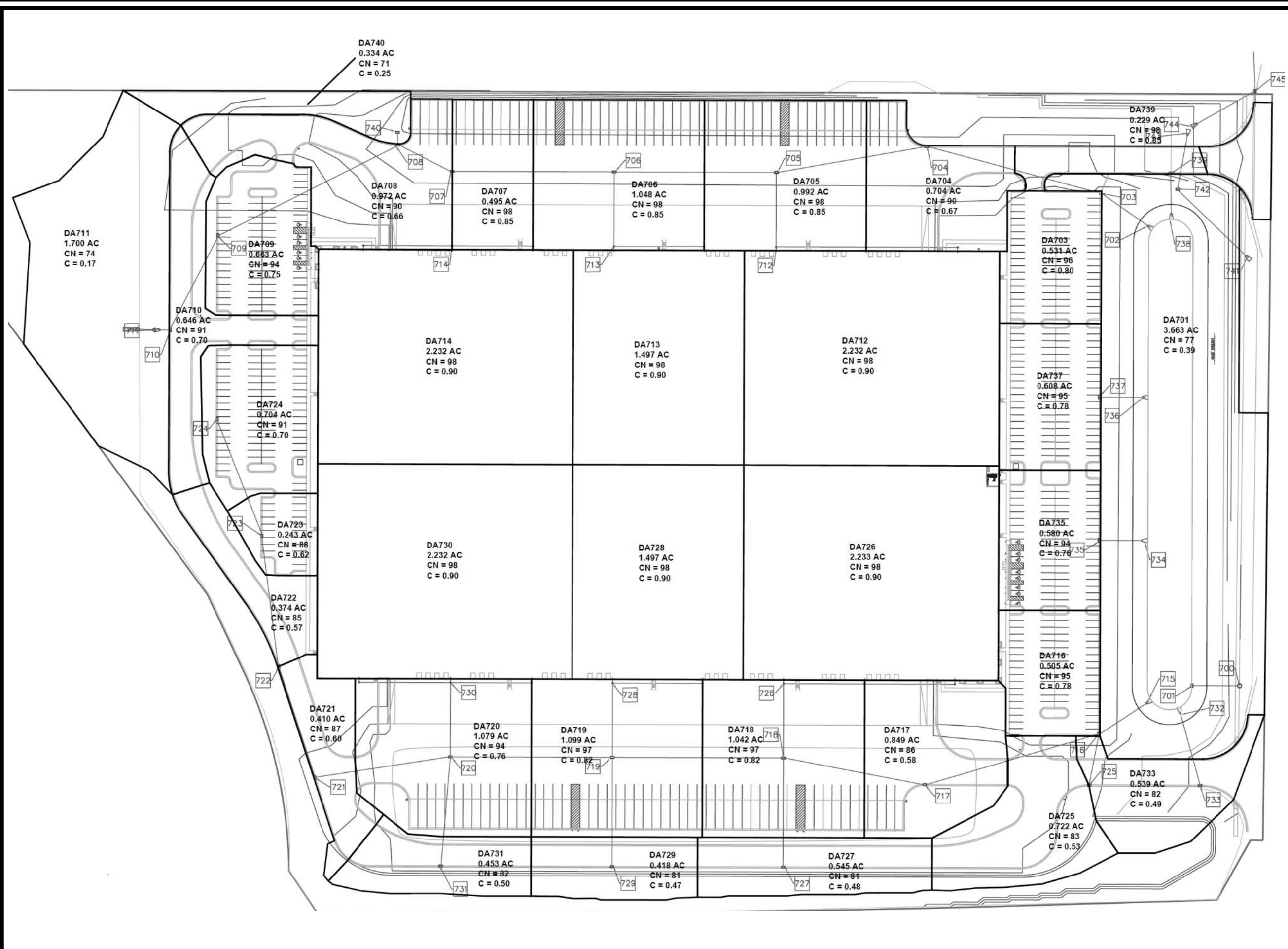


# USDA Soil Mapping

I-65 South Commerce Park - Building 1  
Aerial Mapping and Property Boundary  
HAMILTON COUNTY, INDIANA


Figure 2





Prepared by:

Studio A of Indianapolis, Inc.



# Proposed Delineation and Routing

## I-65 South Commerce Park - Building 1

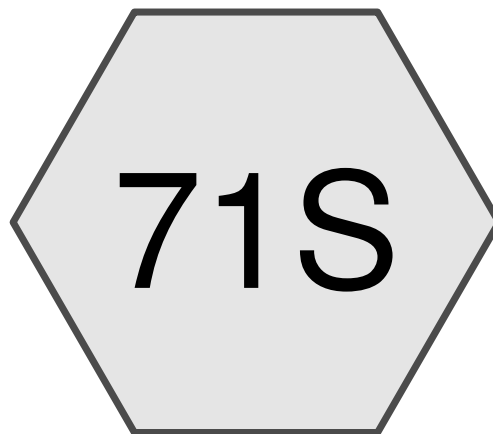
HAMILTON COUNTY, INDIANA

# Figure 3

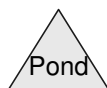
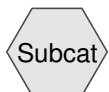
# APPENDIX ‘A’

10YR and 100YR Existing Condition Modeling

Release Rate Analysis



DA EX



**Routing Diagram for Marlores**

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**Marlores**

Prepared by Studio A

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Existing Condition Modeling

Indy Huff 1st Quartile 1.00 hrs 2YR1HR Rainfall=1.25"

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Page 2

**Summary for Subcatchment 71S: DA EX**

Runoff = 13.33 cfs @ 1.13 hrs, Volume= 0.951 af, Depth= 0.33"

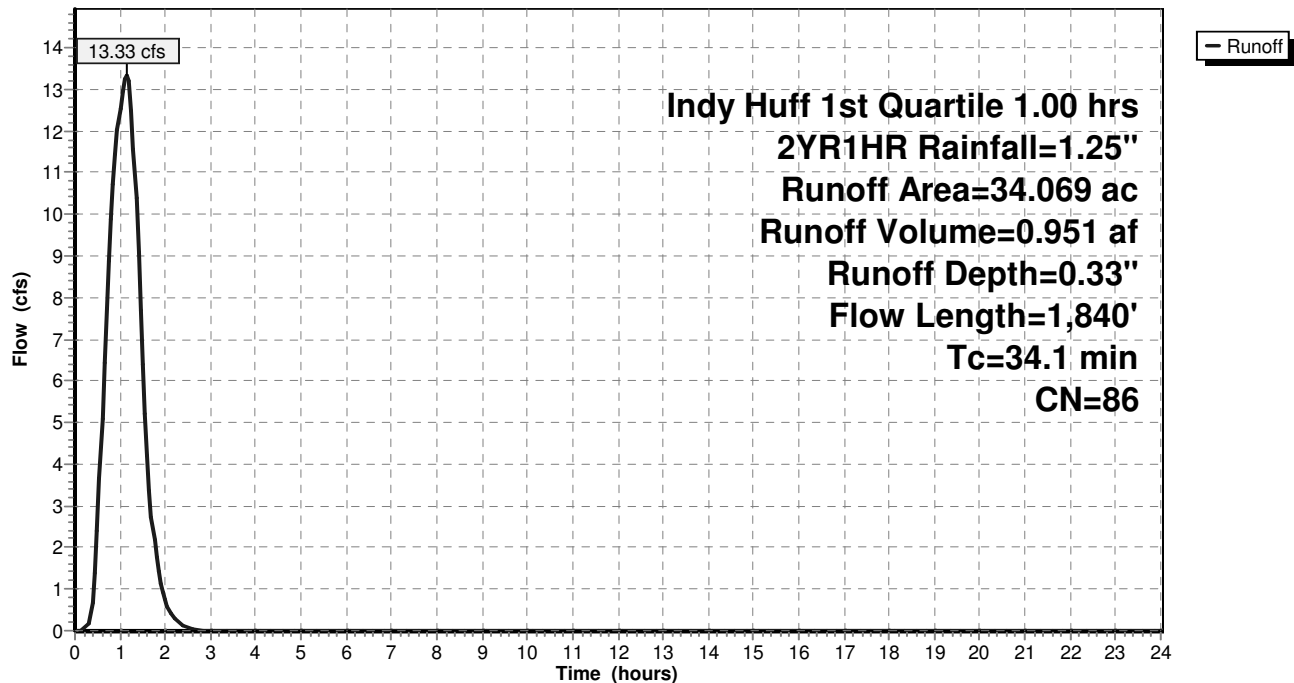
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 1.00 hrs 2YR1HR Rainfall=1.25"

Area (ac)	CN	Description
0.960	70	Woods, Good, HSG C
4.492	77	Woods, Good, HSG D
5.341	85	Row crops, straight row, Good, HSG C
23.276	89	Row crops, straight row, Good, HSG D
34.069	86	Weighted Average
34.069		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	100	0.0140	0.13		<b>Sheet Flow, Sheet Component</b>
					Grass: Short n= 0.150 P2= 2.64"
21.7	1,740	0.0069	1.34		<b>Shallow Concentrated Flow,</b>
					Unpaved Kv= 16.1 fps
34.1	1,840	Total			

**Subcatchment 71S: DA EX****Hydrograph**

**Marlores**

Prepared by Studio A

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Existing Condition Modeling

Indy Huff 1st Quartile 2.00 hrs 2YR2HR Rainfall=1.52"

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Page 3

**Summary for Subcatchment 71S: DA EX**

Runoff = 10.53 cfs @ 1.86 hrs, Volume= 1.435 af, Depth= 0.51"

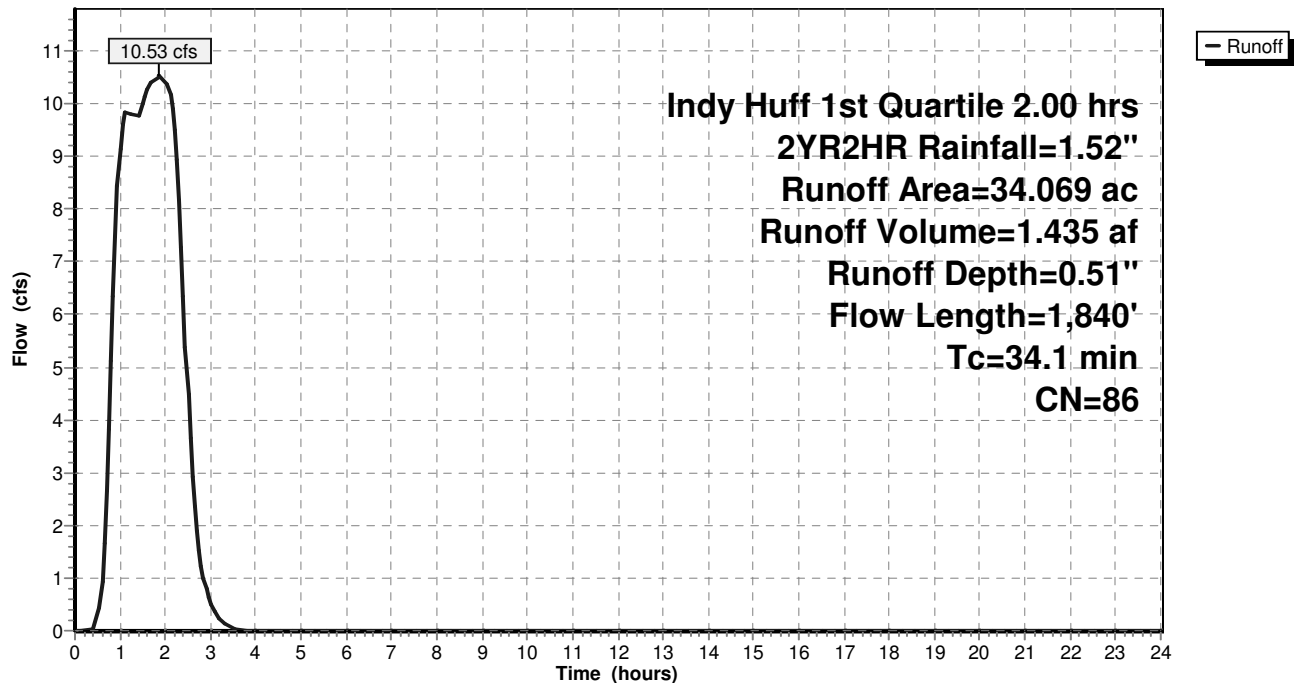
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 2YR2HR Rainfall=1.52"

Area (ac)	CN	Description
0.960	70	Woods, Good, HSG C
4.492	77	Woods, Good, HSG D
5.341	85	Row crops, straight row, Good, HSG C
23.276	89	Row crops, straight row, Good, HSG D
34.069	86	Weighted Average
34.069		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	100	0.0140	0.13		<b>Sheet Flow, Sheet Component</b>
					Grass: Short n= 0.150 P2= 2.64"
21.7	1,740	0.0069	1.34		<b>Shallow Concentrated Flow,</b>
					Unpaved Kv= 16.1 fps
34.1	1,840	Total			

**Subcatchment 71S: DA EX****Hydrograph**

**Marlores**

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Existing Condition Modeling

Indy Huff 1st Quartile 0.50 hrs 2YR30MIN Rainfall=0.99"

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**Summary for Subcatchment 71S: DA EX**

Runoff = 11.16 cfs @ 0.76 hrs, Volume= 0.547 af, Depth= 0.19"

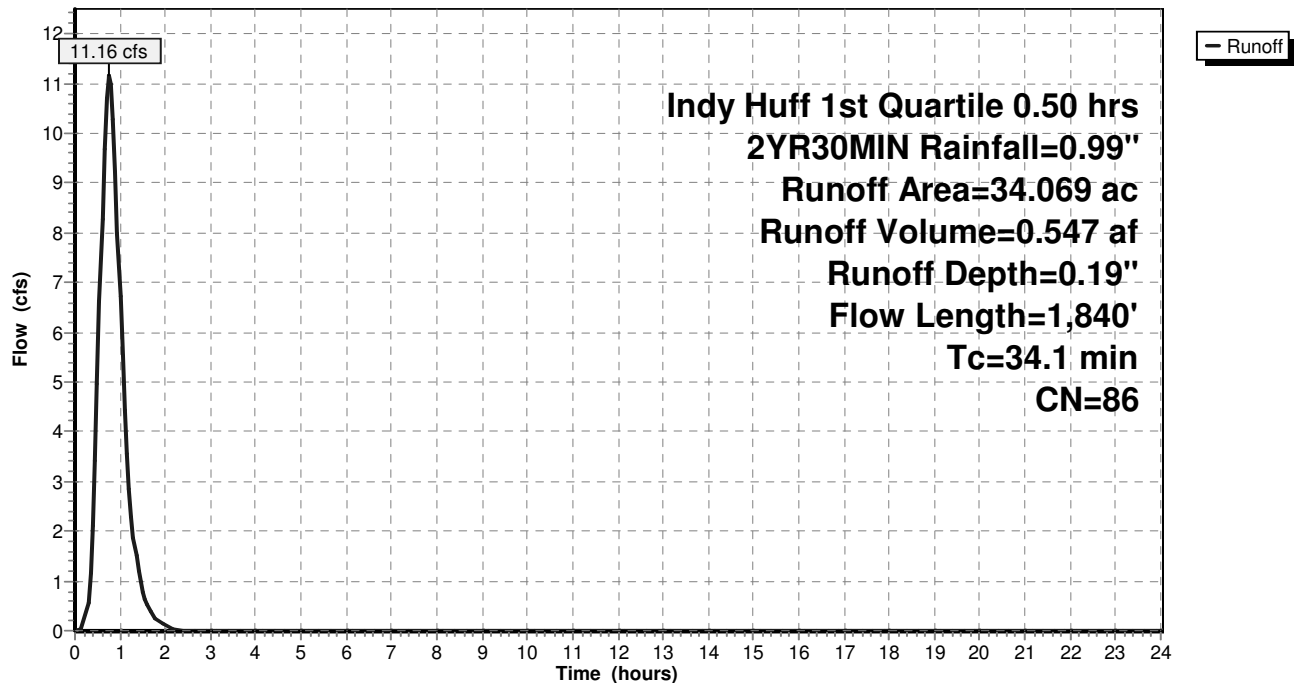
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 0.50 hrs 2YR30MIN Rainfall=0.99"

Area (ac)	CN	Description
0.960	70	Woods, Good, HSG C
4.492	77	Woods, Good, HSG D
5.341	85	Row crops, straight row, Good, HSG C
23.276	89	Row crops, straight row, Good, HSG D
34.069	86	Weighted Average
34.069		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	100	0.0140	0.13		<b>Sheet Flow, Sheet Component</b>
					Grass: Short n= 0.150 P2= 2.64"
21.7	1,740	0.0069	1.34		<b>Shallow Concentrated Flow,</b>
					Unpaved Kv= 16.1 fps
34.1	1,840	Total			

**Subcatchment 71S: DA EX****Hydrograph**

**Marlores**

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Existing Condition Modeling

Indy Huff 1st Quartile 1.00 hrs 10YR1HR Rainfall=1.96"

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**Summary for Subcatchment 71S: DA EX**

Runoff = 30.02 cfs @ 1.08 hrs, Volume= 2.325 af, Depth= 0.82"

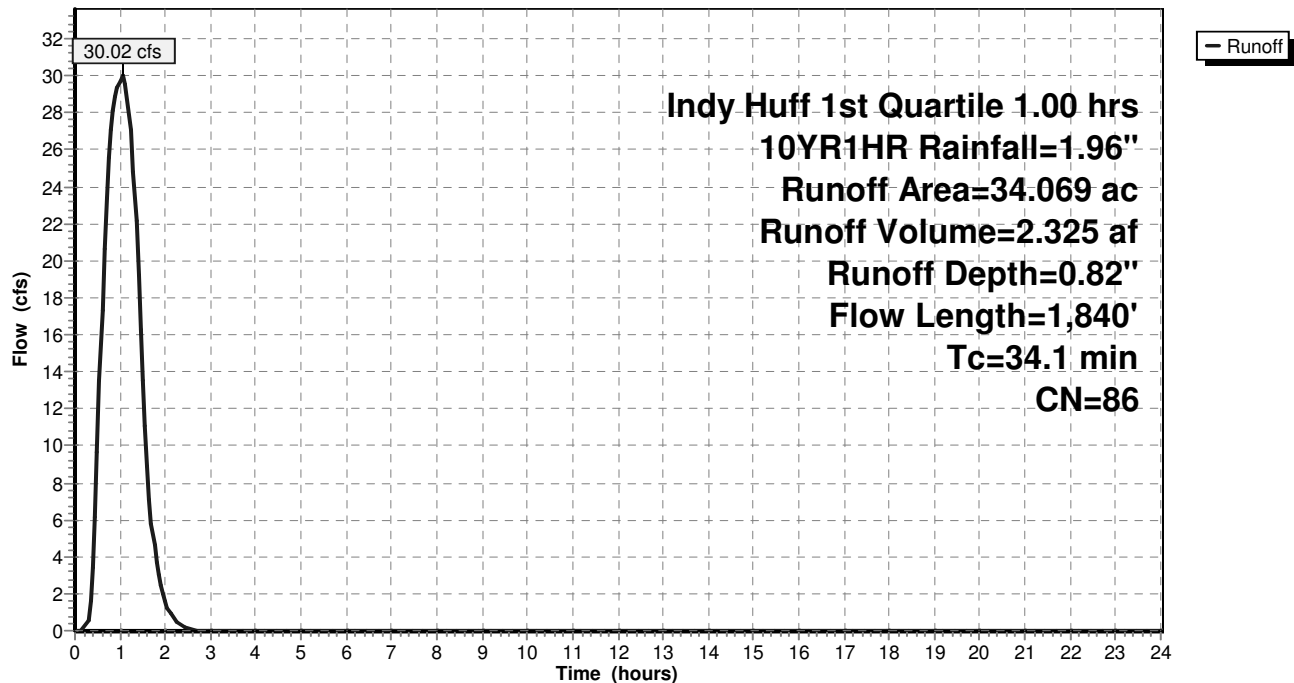
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 1.00 hrs 10YR1HR Rainfall=1.96"

Area (ac)	CN	Description
0.960	70	Woods, Good, HSG C
4.492	77	Woods, Good, HSG D
5.341	85	Row crops, straight row, Good, HSG C
23.276	89	Row crops, straight row, Good, HSG D
34.069	86	Weighted Average
34.069		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	100	0.0140	0.13		<b>Sheet Flow, Sheet Component</b> Grass: Short n= 0.150 P2= 2.64"
21.7	1,740	0.0069	1.34		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
34.1	1,840	Total			

**Subcatchment 71S: DA EX****Hydrograph**



**Summary for Subcatchment 71S: DA EX**

Runoff = 25.47 cfs @ 1.06 hrs, Volume= 3.300 af, Depth= 1.16"

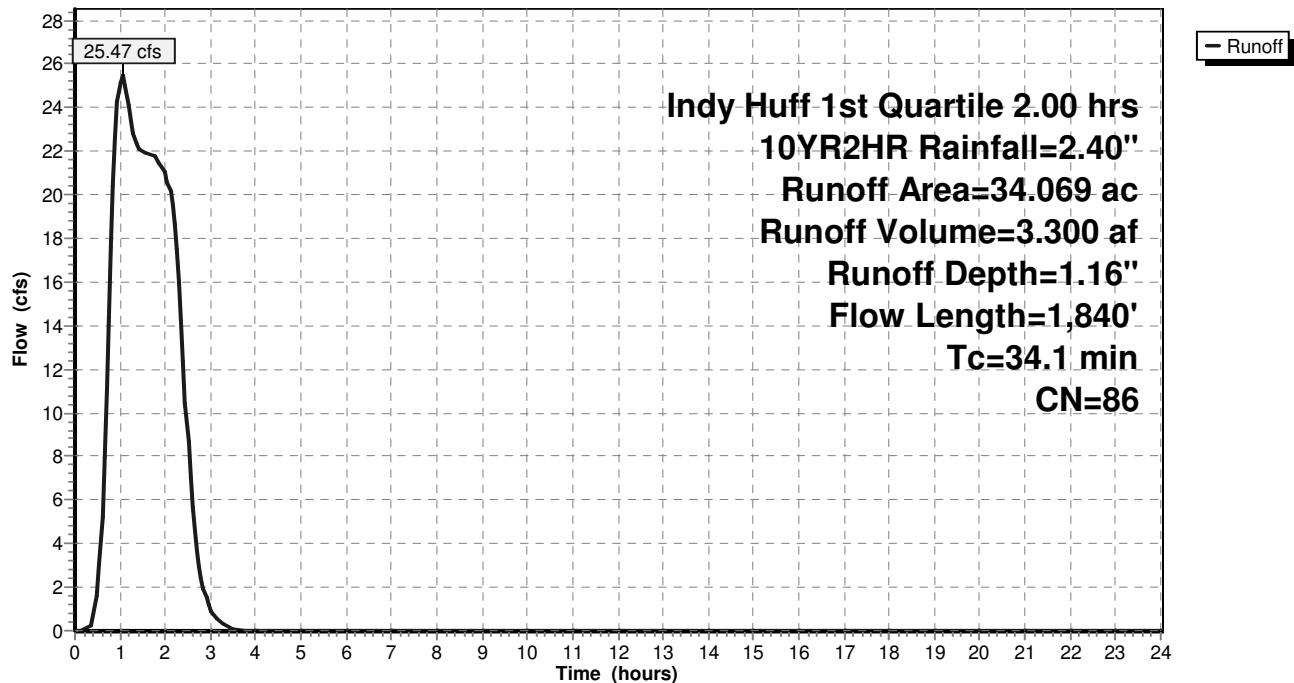
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

Area (ac)	CN	Description
0.960	70	Woods, Good, HSG C
4.492	77	Woods, Good, HSG D
5.341	85	Row crops, straight row, Good, HSG C
23.276	89	Row crops, straight row, Good, HSG D
34.069	86	Weighted Average
34.069		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	100	0.0140	0.13		<b>Sheet Flow, Sheet Component</b>
					Grass: Short n= 0.150 P2= 2.64"
21.7	1,740	0.0069	1.34		<b>Shallow Concentrated Flow,</b>
					Unpaved Kv= 16.1 fps
34.1	1,840	Total			

**Subcatchment 71S: DA EX****Hydrograph**

**Marlores**

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Existing Condition Modeling

Indy Huff 1st Quartile 0.50 hrs 10YR30MIN Rainfall=1.55"

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**Summary for Subcatchment 71S: DA EX**

Runoff = 29.47 cfs @ 0.73 hrs, Volume= 1.492 af, Depth= 0.53"

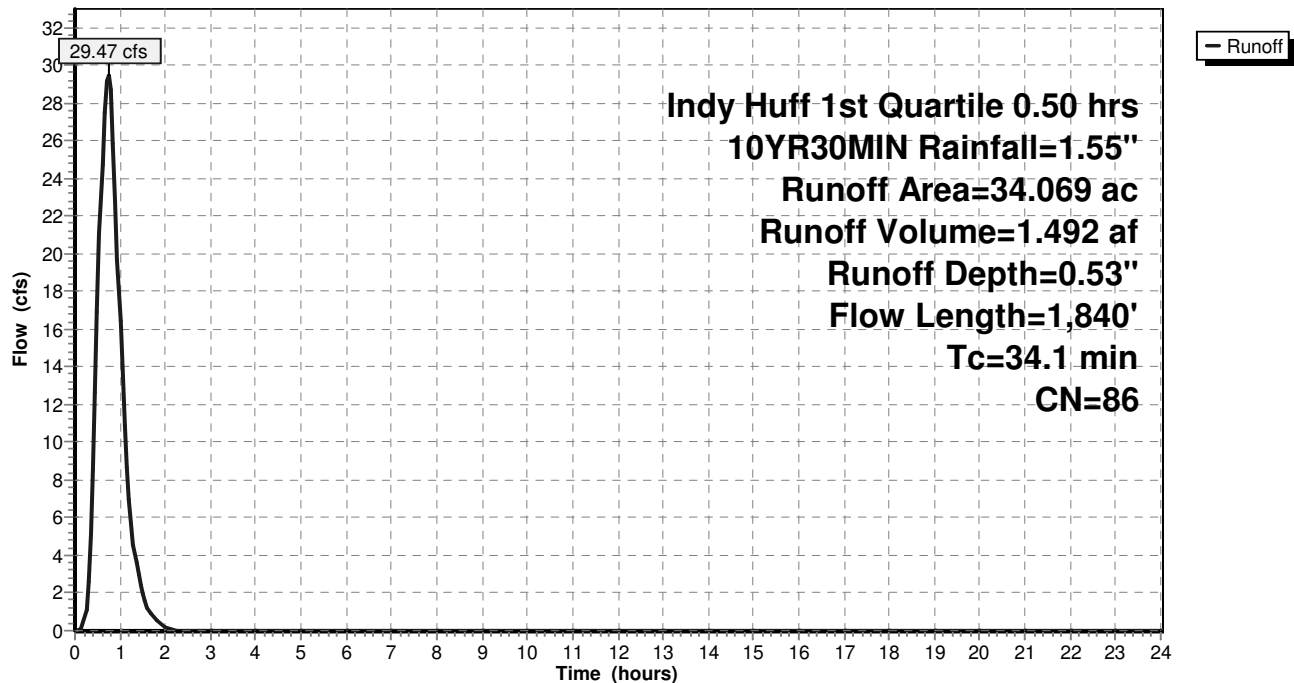
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 0.50 hrs 10YR30MIN Rainfall=1.55"

Area (ac)	CN	Description
0.960	70	Woods, Good, HSG C
4.492	77	Woods, Good, HSG D
5.341	85	Row crops, straight row, Good, HSG C
23.276	89	Row crops, straight row, Good, HSG D
34.069	86	Weighted Average
34.069		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	100	0.0140	0.13		<b>Sheet Flow, Sheet Component</b>
					Grass: Short n= 0.150 P2= 2.64"
21.7	1,740	0.0069	1.34		<b>Shallow Concentrated Flow,</b>
					Unpaved Kv= 16.1 fps
34.1	1,840	Total			

**Subcatchment 71S: DA EX****Hydrograph**

**Marlores**

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Existing Condition Modeling

Indy Huff 1st Quartile 1.00 hrs 100YR1HR Rainfall=2.88"

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**Summary for Subcatchment 71S: DA EX**

Runoff = 55.17 cfs @ 0.91 hrs, Volume= 4.429 af, Depth= 1.56"

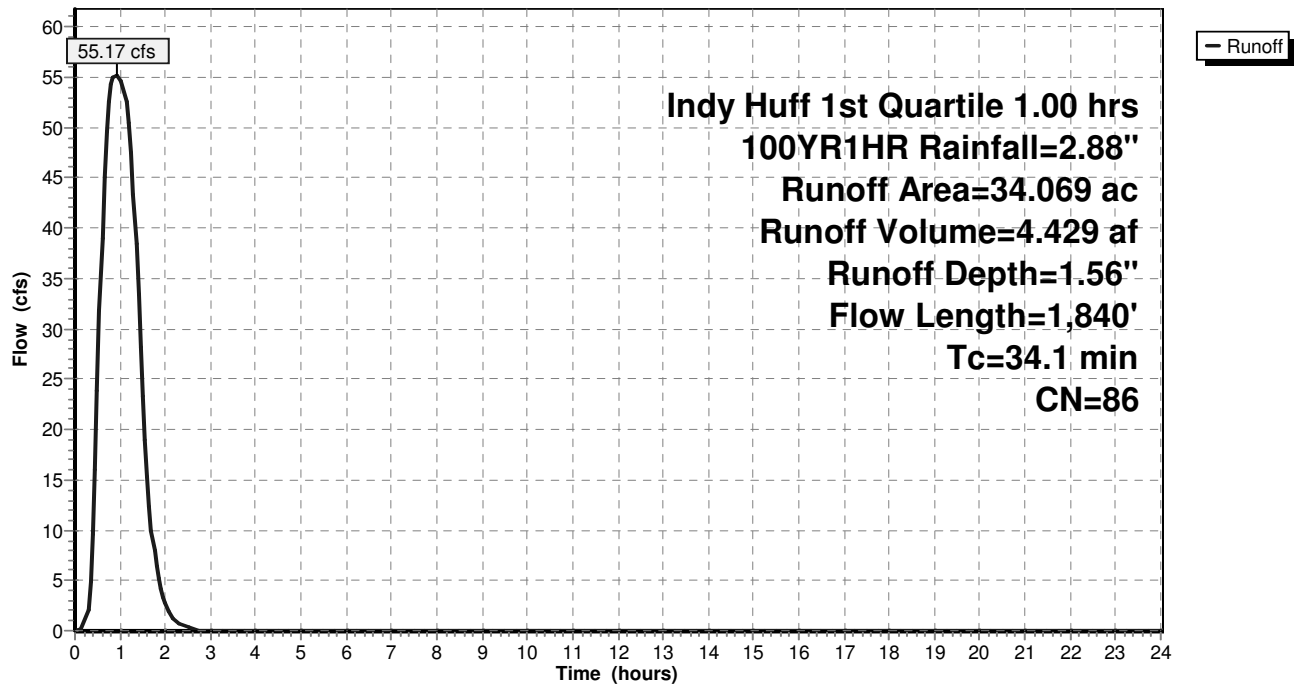
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 1.00 hrs 100YR1HR Rainfall=2.88"

Area (ac)	CN	Description
0.960	70	Woods, Good, HSG C
4.492	77	Woods, Good, HSG D
5.341	85	Row crops, straight row, Good, HSG C
23.276	89	Row crops, straight row, Good, HSG D
34.069	86	Weighted Average
34.069		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	100	0.0140	0.13		<b>Sheet Flow, Sheet Component</b>
					Grass: Short n= 0.150 P2= 2.64"
21.7	1,740	0.0069	1.34		<b>Shallow Concentrated Flow,</b>
					Unpaved Kv= 16.1 fps
34.1	1,840	Total			

**Subcatchment 71S: DA EX****Hydrograph**

**Marlores**

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Existing Condition Modeling

Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

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**Summary for Subcatchment 71S: DA EX**

Runoff = 49.20 cfs @ 1.01 hrs, Volume= 5.957 af, Depth= 2.10"

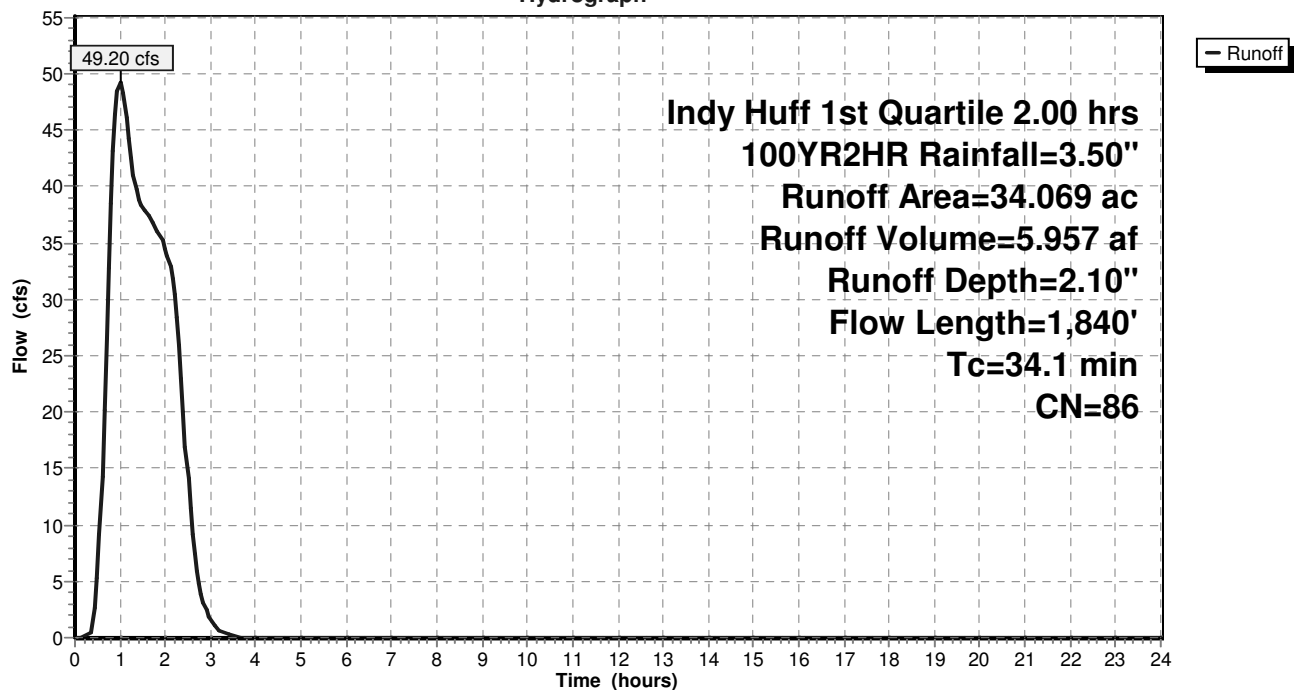
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

Area (ac)	CN	Description
0.960	70	Woods, Good, HSG C
4.492	77	Woods, Good, HSG D
5.341	85	Row crops, straight row, Good, HSG C
23.276	89	Row crops, straight row, Good, HSG D
34.069	86	Weighted Average
34.069		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	100	0.0140	0.13		<b>Sheet Flow, Sheet Component</b>
					Grass: Short n= 0.150 P2= 2.64"
21.7	1,740	0.0069	1.34		<b>Shallow Concentrated Flow,</b>
					Unpaved Kv= 16.1 fps
34.1	1,840	Total			

**Subcatchment 71S: DA EX****Hydrograph**

**Marlores**

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Existing Condition Modeling

Indy Huff 1st Quartile 0.50 hrs 100YR30MIN Rainfall=2.25"

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**Summary for Subcatchment 71S: DA EX**

Runoff = 57.61 cfs @ 0.71 hrs, Volume= 2.960 af, Depth= 1.04"

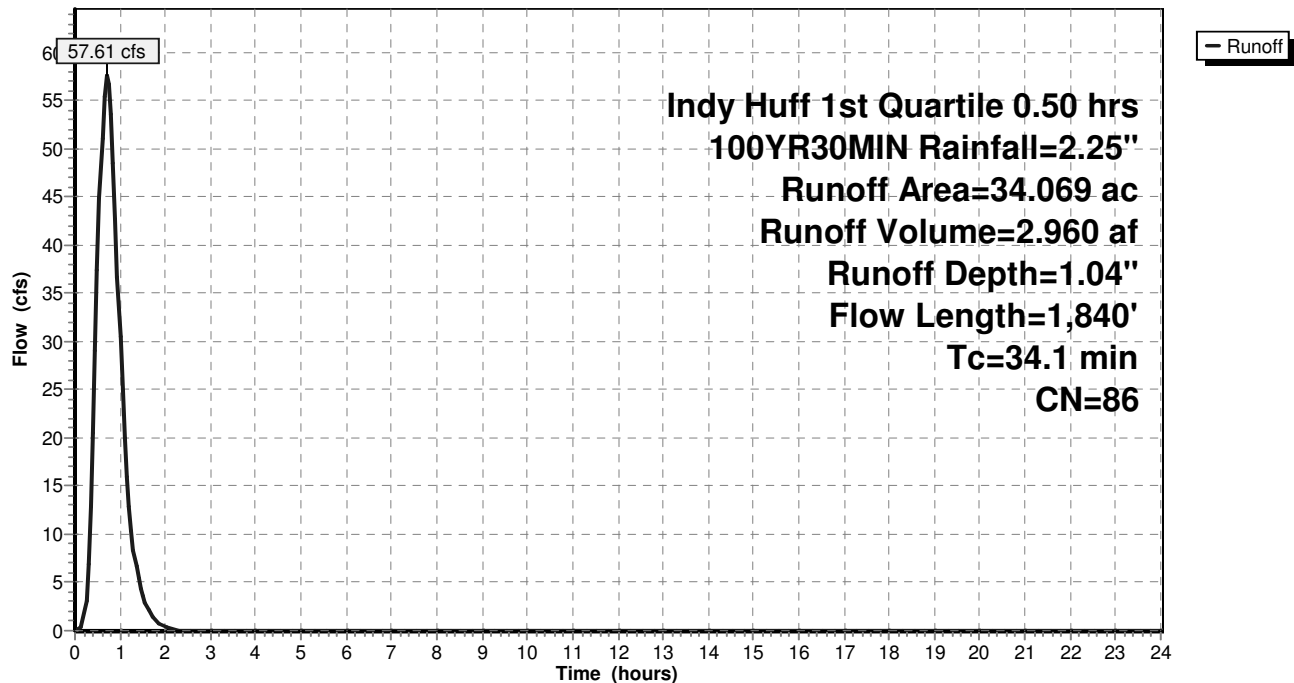
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 0.50 hrs 100YR30MIN Rainfall=2.25"

Area (ac)	CN	Description
0.960	70	Woods, Good, HSG C
4.492	77	Woods, Good, HSG D
5.341	85	Row crops, straight row, Good, HSG C
23.276	89	Row crops, straight row, Good, HSG D
34.069	86	Weighted Average
34.069		100.00% Pervious Area

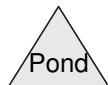
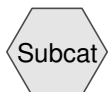
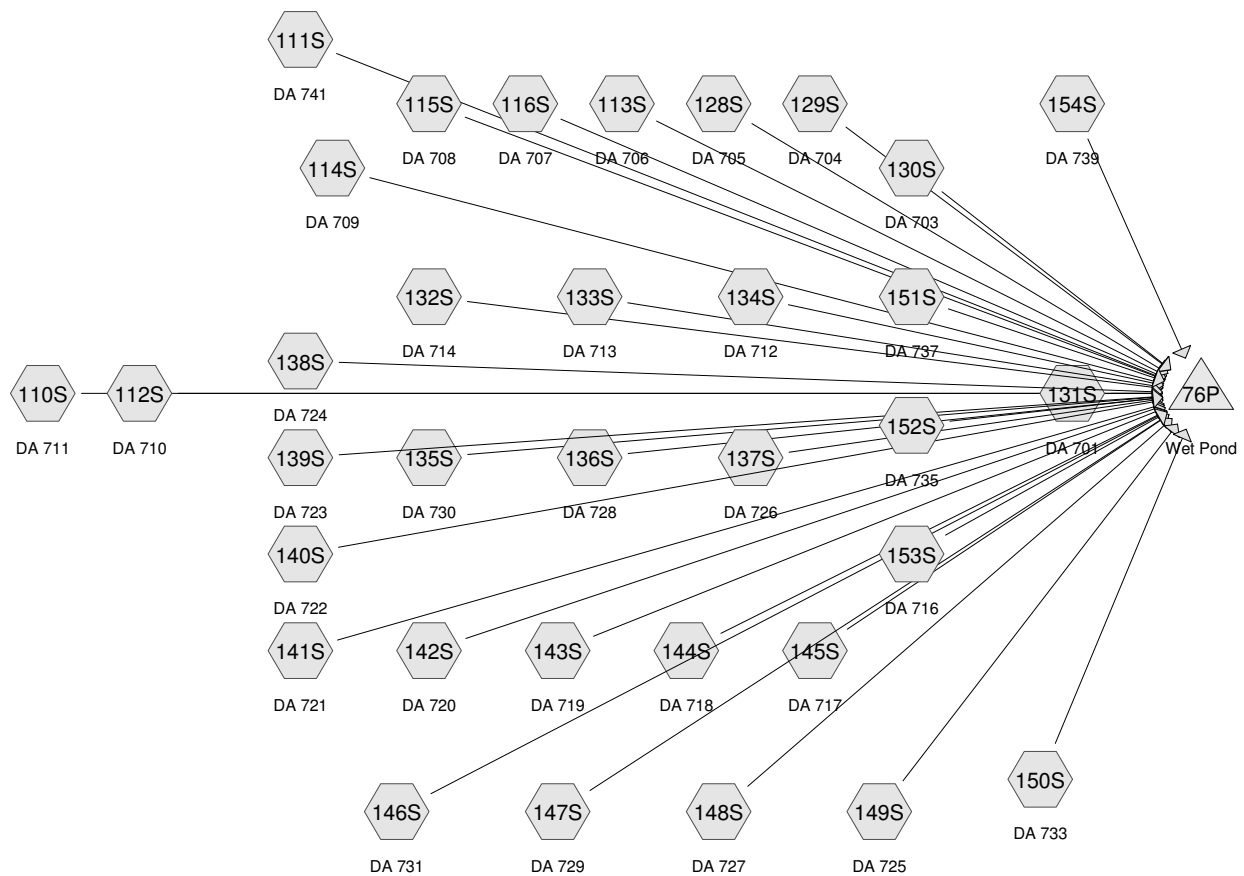
  

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	100	0.0140	0.13		<b>Sheet Flow, Sheet Component</b>
					Grass: Short n= 0.150 P2= 2.64"
21.7	1,740	0.0069	1.34		<b>Shallow Concentrated Flow,</b>
					Unpaved Kv= 16.1 fps
34.1	1,840	Total			

**Subcatchment 71S: DA EX****Hydrograph**

# APPENDIX ‘B’

10YR and 100YR Proposed Condition  
Modeling



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**Area Listing (selected nodes)**

Area (acres)	CN	Description (subcatchment-numbers)
1.727	61	>75% Grass cover, Good, HSG B (110S, 111S, 112S, 114S, 115S, 129S, 130S, 131S, 138S, 139S, 140S, 141S, 142S, 143S, 144S, 145S, 146S, 147S, 148S, 149S, 150S, 151S, 152S, 153S)
5.687	74	>75% Grass cover, Good, HSG C (110S, 111S, 112S, 114S, 115S, 129S, 130S, 131S, 138S, 139S, 140S, 141S, 142S, 143S, 144S, 145S, 146S, 147S, 148S, 149S, 150S, 151S, 152S, 153S)
25.313	98	Paved parking, Impervious (112S, 113S, 114S, 115S, 116S, 128S, 129S, 130S, 131S, 132S, 133S, 134S, 135S, 136S, 137S, 138S, 139S, 140S, 141S, 142S, 143S, 144S, 145S, 146S, 147S, 148S, 149S, 150S, 151S, 152S, 153S, 154S)
0.314	70	Woods, Good, HSG C (110S)
1.033	77	Woods, Good, HSG D (110S)



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Proposed Condition Modeling

Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

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**Summary for Subcatchment 110S: DA 711**

Runoff = 0.59 cfs @ 2.20 hrs, Volume= 0.078 af, Depth= 0.55"

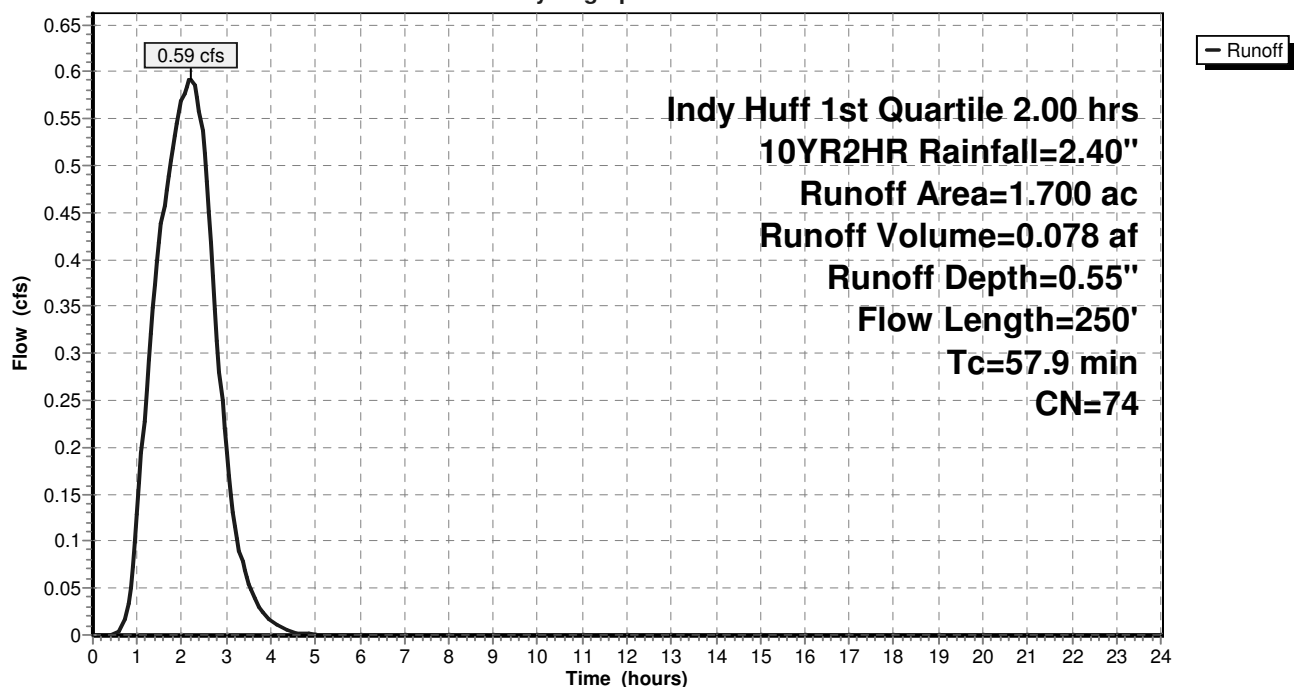
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

Area (ac)	CN	Description
* 0.000	98	Paved parking, Impervious
0.082	61	>75% Grass cover, Good, HSG B
0.271	74	>75% Grass cover, Good, HSG C
0.314	70	Woods, Good, HSG C
1.033	77	Woods, Good, HSG D
1.700	74	Weighted Average
1.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
45.0	100	0.0040	0.04		<b>Sheet Flow, Sheet</b>
					Woods: Light underbrush n= 0.400 P2= 2.64"
12.9	150	0.0060	0.19		<b>Shallow Concentrated Flow, Shallow</b>
					Forest w/Heavy Litter Kv= 2.5 fps
57.9	250	Total			

**Subcatchment 110S: DA 711****Hydrograph**

**Summary for Subcatchment 111S: DA 741**

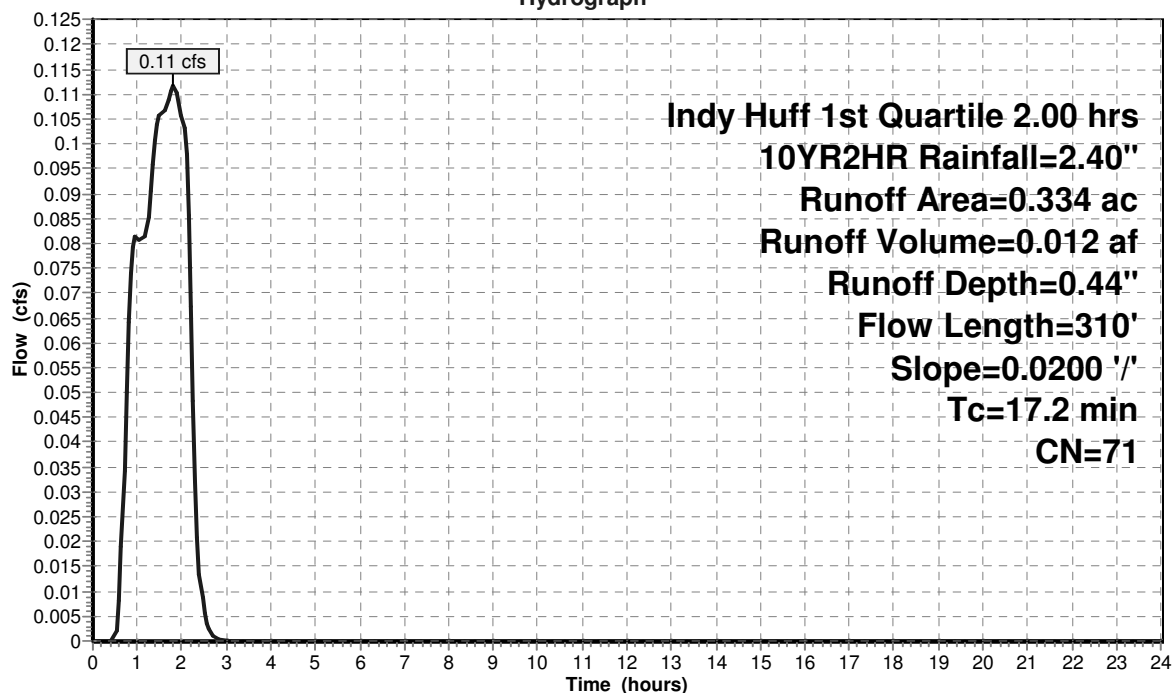
Runoff = 0.11 cfs @ 1.81 hrs, Volume= 0.012 af, Depth= 0.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

Area (ac)	CN	Description
* 0.000	98	Paved parking, Impervious
0.078	61	>75% Grass cover, Good, HSG B
0.256	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
0.334	71	Weighted Average
0.334		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.7	100	0.0200	0.11		<b>Sheet Flow, Sheet</b>
					Grass: Dense n= 0.240 P2= 2.64"
1.5	210	0.0200	2.28		<b>Shallow Concentrated Flow, Shallow</b>
					Unpaved Kv= 16.1 fps
17.2	310	Total			

**Subcatchment 111S: DA 741****Hydrograph**

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Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

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**Summary for Subcatchment 112S: DA 710**

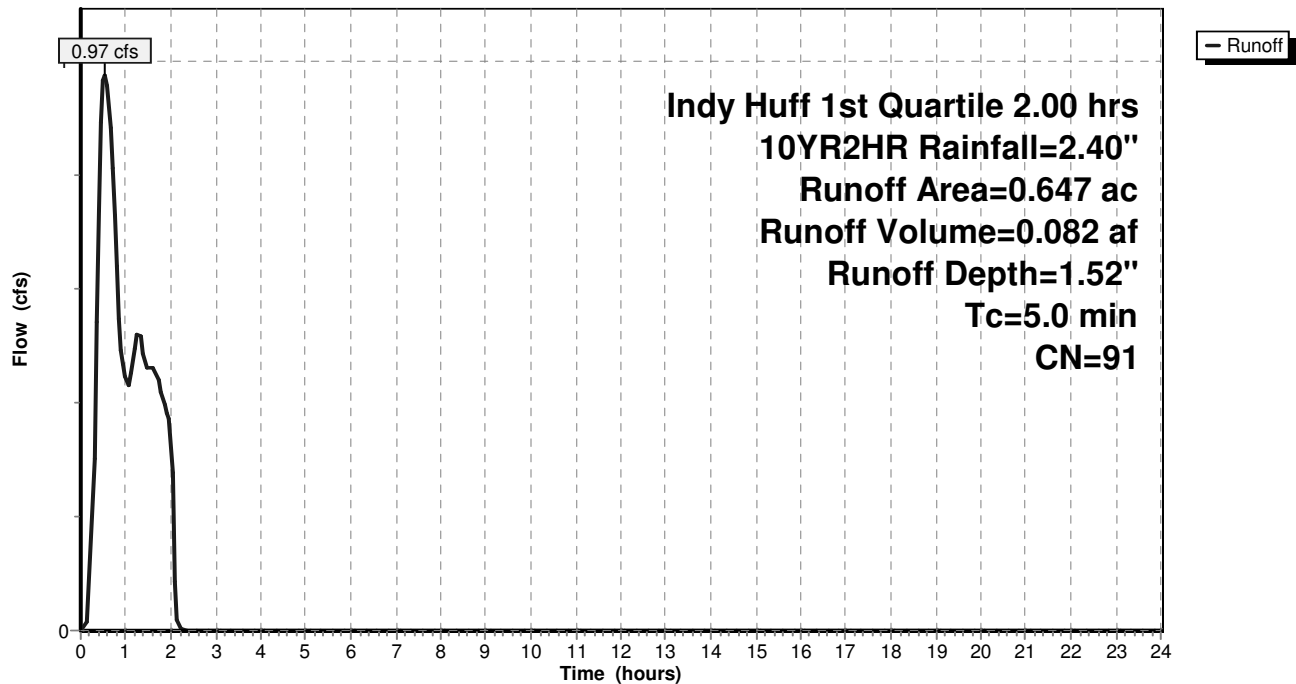
Runoff = 0.97 cfs @ 0.53 hrs, Volume= 0.082 af, Depth= 1.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

Area (ac)	CN	Description
* 0.481	98	Paved parking, Impervious
0.039	61	>75% Grass cover, Good, HSG B
0.127	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
0.647	91	Weighted Average
0.166		25.66% Pervious Area
0.481		74.34% Impervious Area

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

**Subcatchment 112S: DA 710****Hydrograph**

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Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

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**Summary for Subcatchment 113S: DA 706**

Runoff = 2.51 cfs @ 0.45 hrs, Volume= 0.190 af, Depth= 2.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

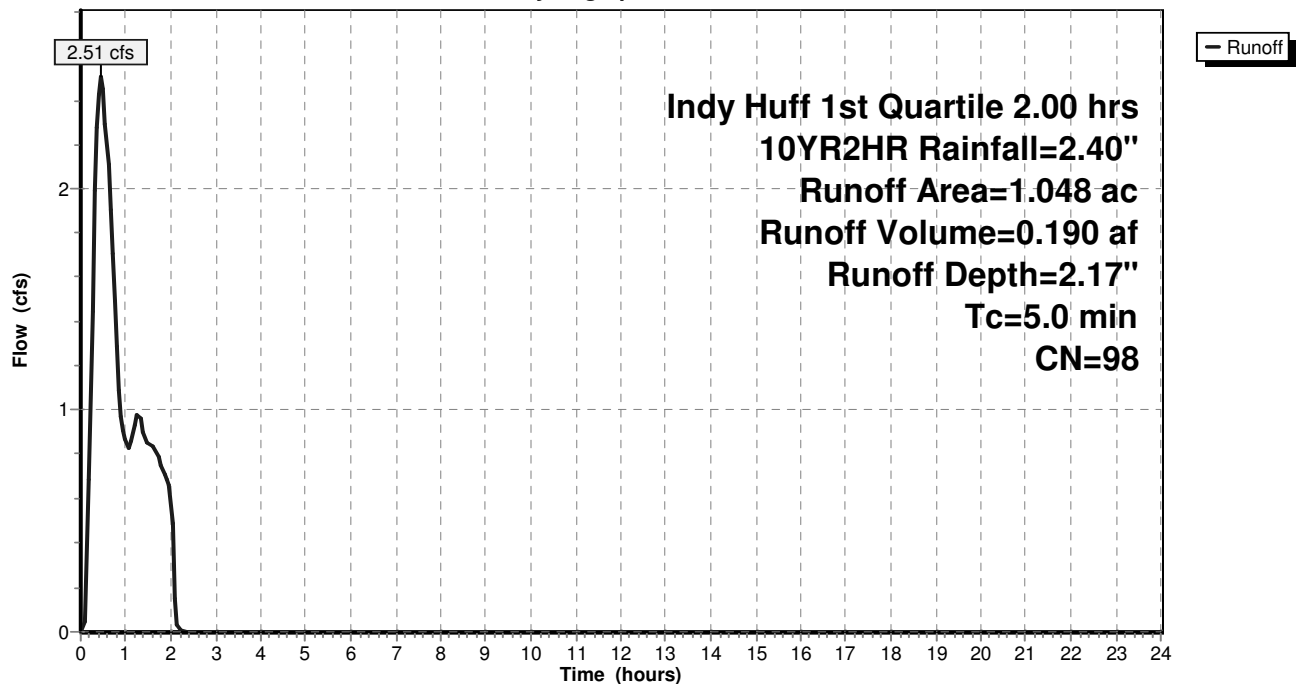
Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

	Area (ac)	CN	Description
*	1.048	98	Paved parking, Impervious
	0.000	61	>75% Grass cover, Good, HSG B
	0.000	74	>75% Grass cover, Good, HSG C
	0.000	70	Woods, Good, HSG C
	0.000	77	Woods, Good, HSG D
	1.048	98	Weighted Average
	1.048		100.00% Impervious Area

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

**Subcatchment 113S: DA 706**

Hydrograph



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Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

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**Summary for Subcatchment 114S: DA 709**

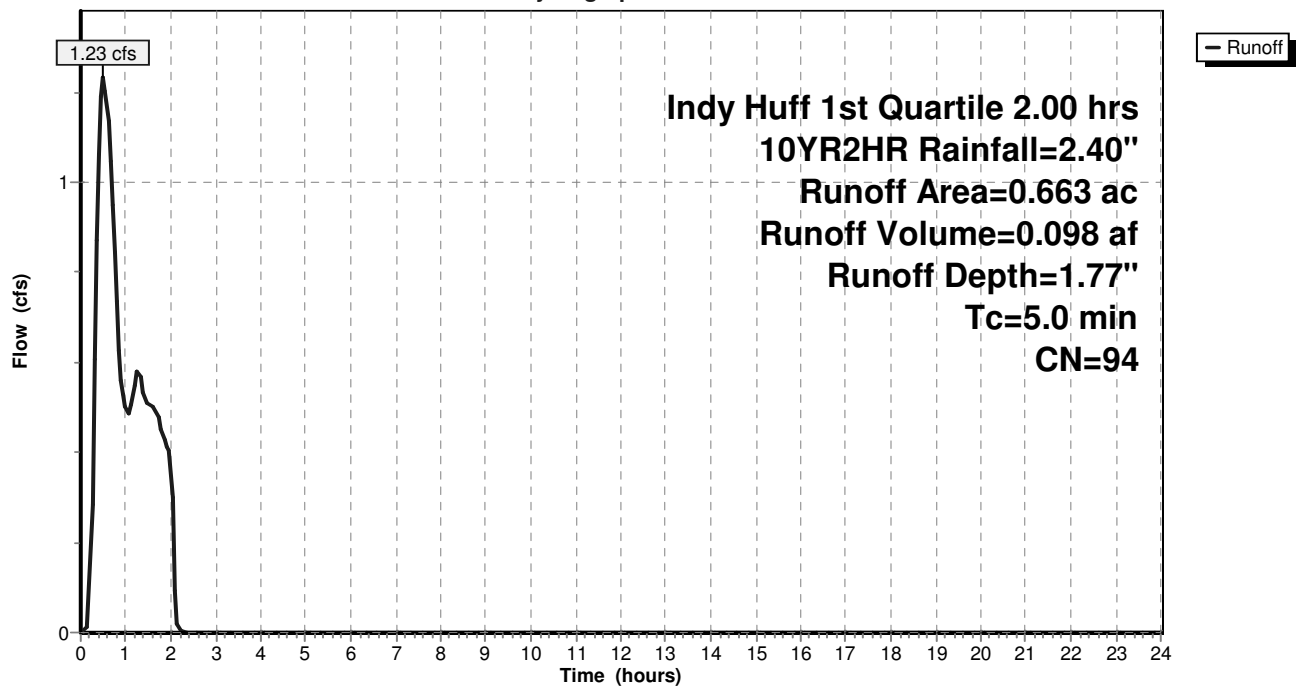
Runoff = 1.23 cfs @ 0.50 hrs, Volume= 0.098 af, Depth= 1.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

Area (ac)	CN	Description
* 0.554	98	Paved parking, Impervious
0.025	61	>75% Grass cover, Good, HSG B
0.084	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
0.663	94	Weighted Average
0.109		16.44% Pervious Area
0.554		83.56% Impervious Area

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

**Subcatchment 114S: DA 709****Hydrograph**

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Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

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**Summary for Subcatchment 115S: DA 708**

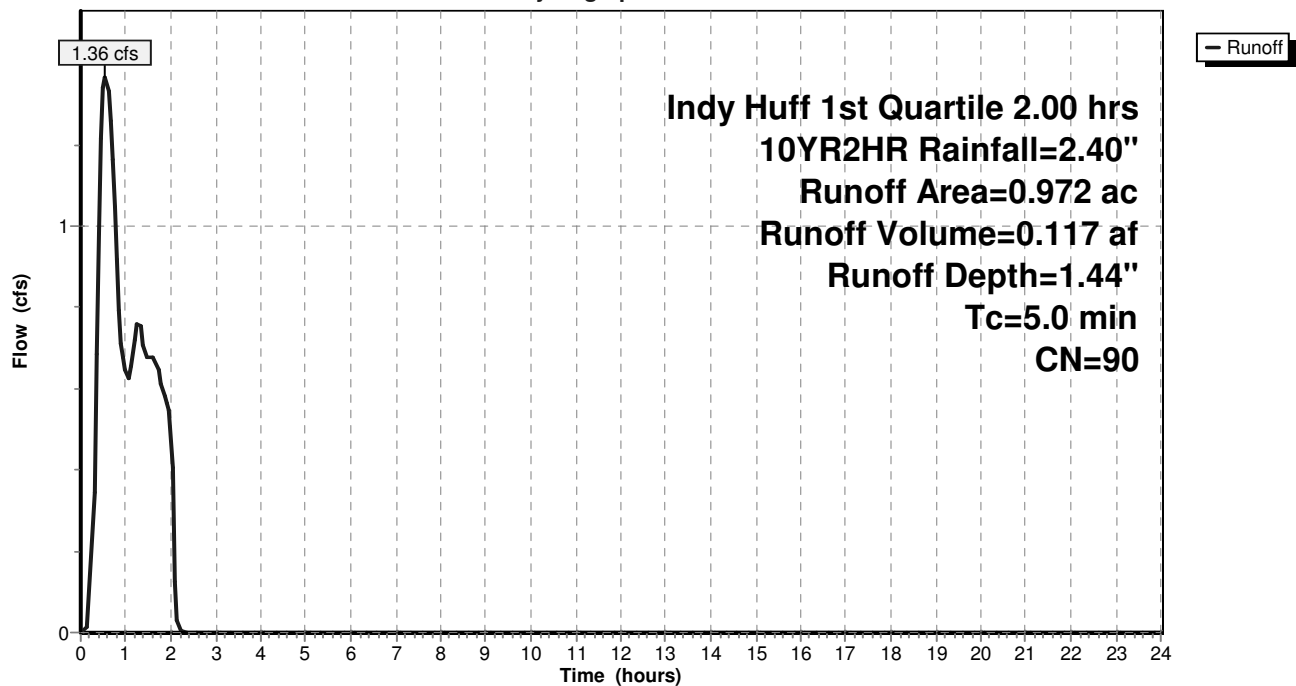
Runoff = 1.36 cfs @ 0.55 hrs, Volume= 0.117 af, Depth= 1.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

Area (ac)	CN	Description
* 0.671	98	Paved parking, Impervious
0.070	61	>75% Grass cover, Good, HSG B
0.231	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
0.972	90	Weighted Average
0.301		30.97% Pervious Area
0.671		69.03% Impervious Area

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

**Subcatchment 115S: DA 708****Hydrograph**

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Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

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**Summary for Subcatchment 116S: DA 707**

Runoff = 1.18 cfs @ 0.45 hrs, Volume= 0.090 af, Depth= 2.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

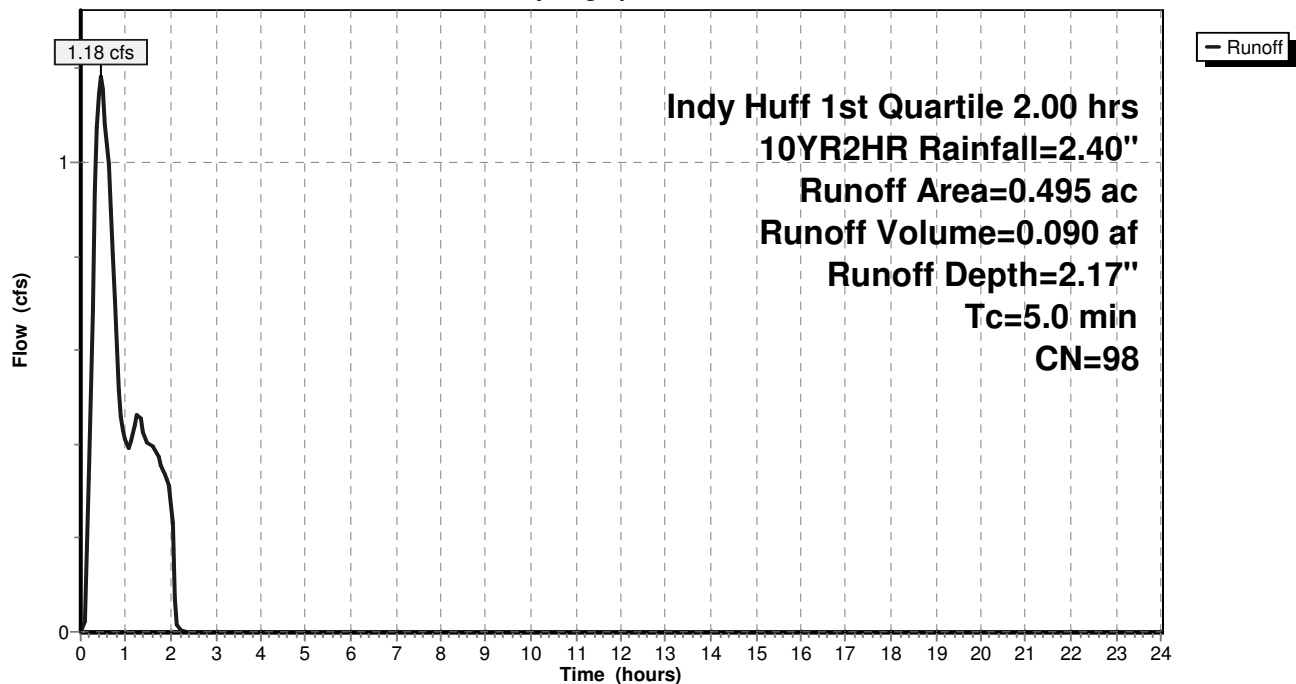
Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

	Area (ac)	CN	Description
*	0.495	98	Paved parking, Impervious
	0.000	61	>75% Grass cover, Good, HSG B
	0.000	74	>75% Grass cover, Good, HSG C
	0.000	70	Woods, Good, HSG C
	0.000	77	Woods, Good, HSG D
	0.495	98	Weighted Average
	0.495		100.00% Impervious Area

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

**Subcatchment 116S: DA 707**

Hydrograph



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Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

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**Summary for Subcatchment 128S: DA 705**

Runoff = 2.37 cfs @ 0.45 hrs, Volume= 0.179 af, Depth= 2.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

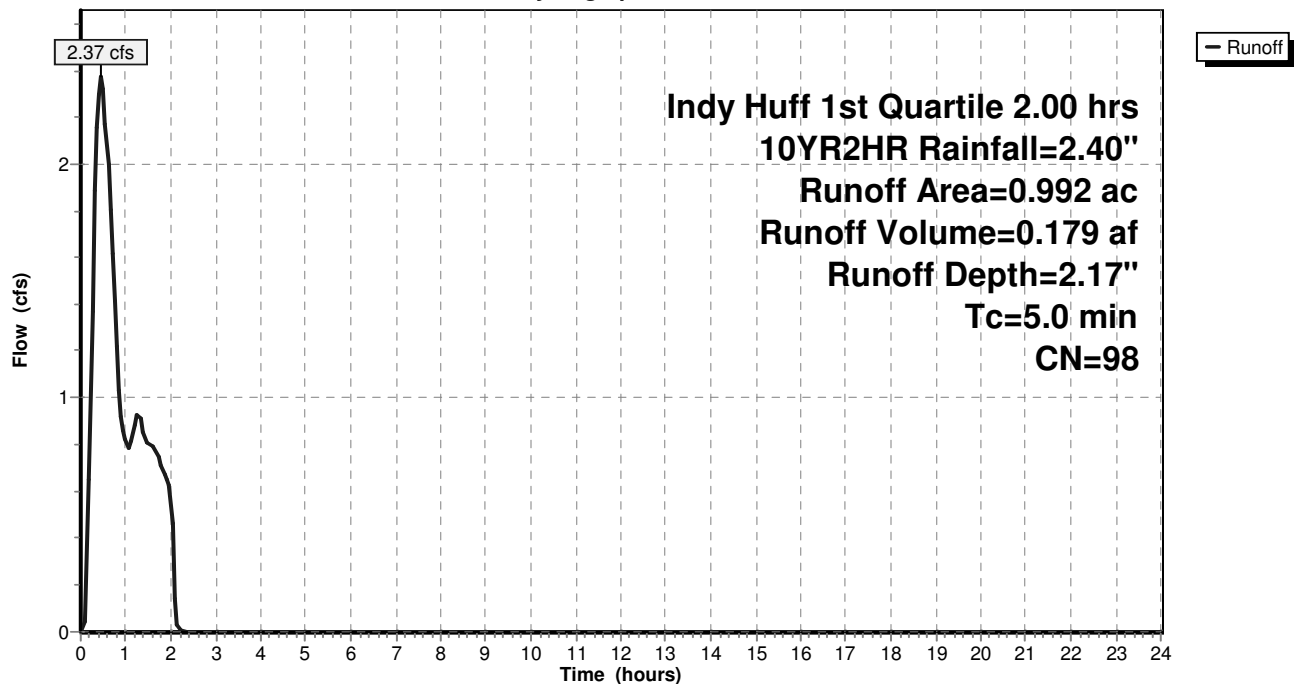
Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

	Area (ac)	CN	Description
*	0.992	98	Paved parking, Impervious
	0.000	61	>75% Grass cover, Good, HSG B
	0.000	74	>75% Grass cover, Good, HSG C
	0.000	70	Woods, Good, HSG C
	0.000	77	Woods, Good, HSG D
	0.992	98	Weighted Average
	0.992		100.00% Impervious Area

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

**Subcatchment 128S: DA 705**

Hydrograph





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Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

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**Summary for Subcatchment 129S: DA 704**

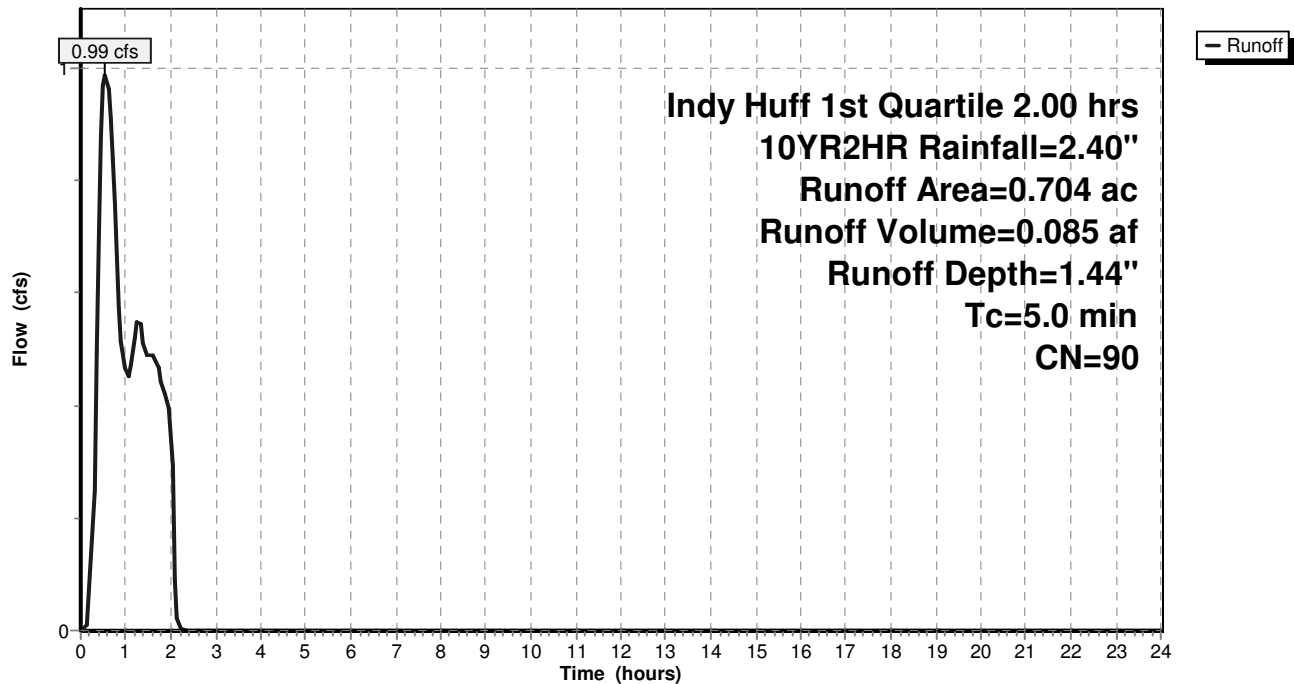
Runoff = 0.99 cfs @ 0.55 hrs, Volume= 0.085 af, Depth= 1.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

Area (ac)	CN	Description
* 0.490	98	Paved parking, Impervious
0.050	61	>75% Grass cover, Good, HSG B
0.164	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
0.704	90	Weighted Average
0.214		30.40% Pervious Area
0.490		69.60% Impervious Area

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

**Subcatchment 129S: DA 704****Hydrograph**

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Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

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**Summary for Subcatchment 130S: DA 703**

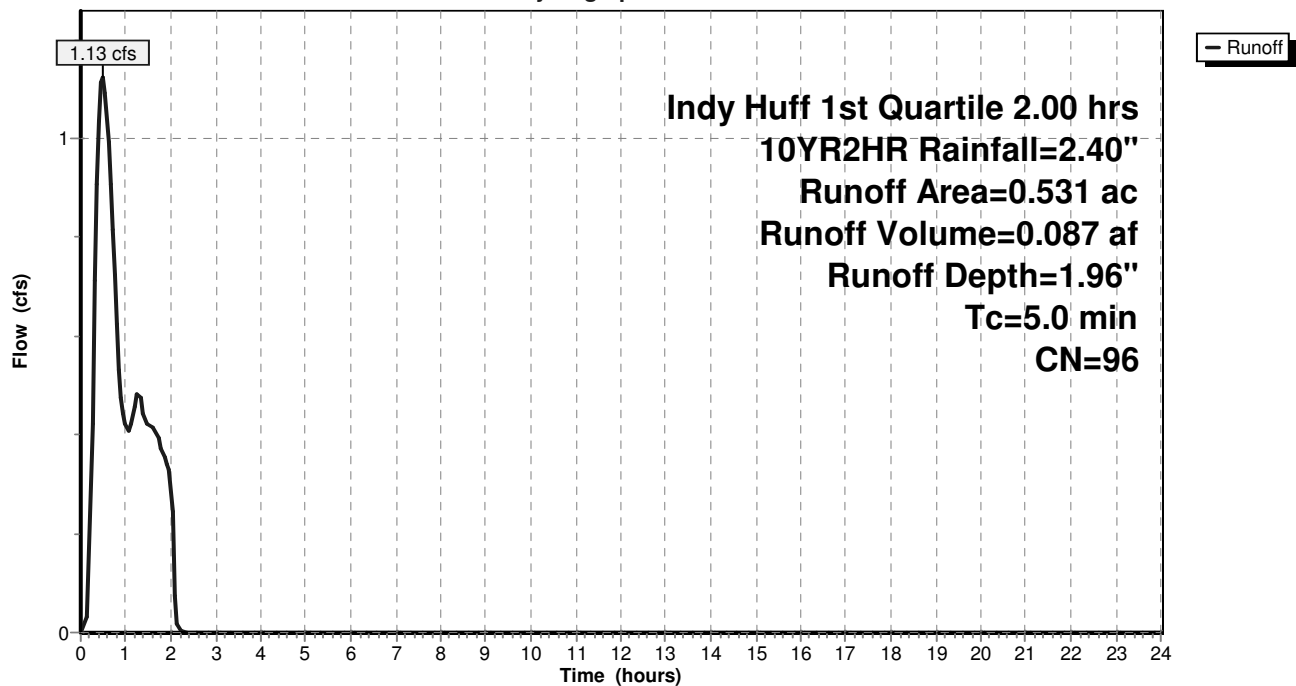
Runoff = 1.13 cfs @ 0.48 hrs, Volume= 0.087 af, Depth= 1.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

Area (ac)	CN	Description
* 0.485	98	Paved parking, Impervious
0.011	61	>75% Grass cover, Good, HSG B
0.035	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
0.531	96	Weighted Average
0.046		8.66% Pervious Area
0.485		91.34% Impervious Area

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

**Subcatchment 130S: DA 703****Hydrograph**

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Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

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**Summary for Subcatchment 131S: DA 701**

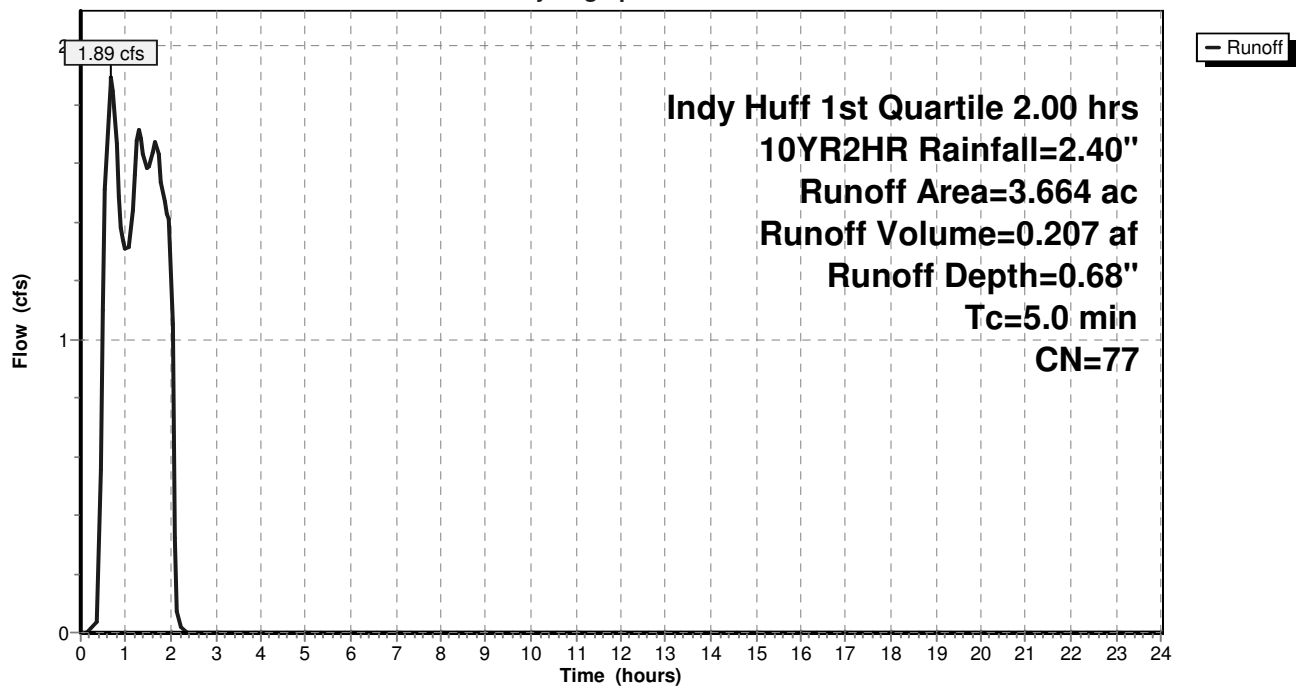
Runoff = 1.89 cfs @ 0.68 hrs, Volume= 0.207 af, Depth= 0.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

Area (ac)	CN	Description
* 0.852	98	Paved parking, Impervious
0.655	61	>75% Grass cover, Good, HSG B
2.157	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
3.664	77	Weighted Average
2.812		76.75% Pervious Area
0.852		23.25% Impervious Area

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

**Subcatchment 131S: DA 701****Hydrograph**

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Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

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**Summary for Subcatchment 132S: DA 714**

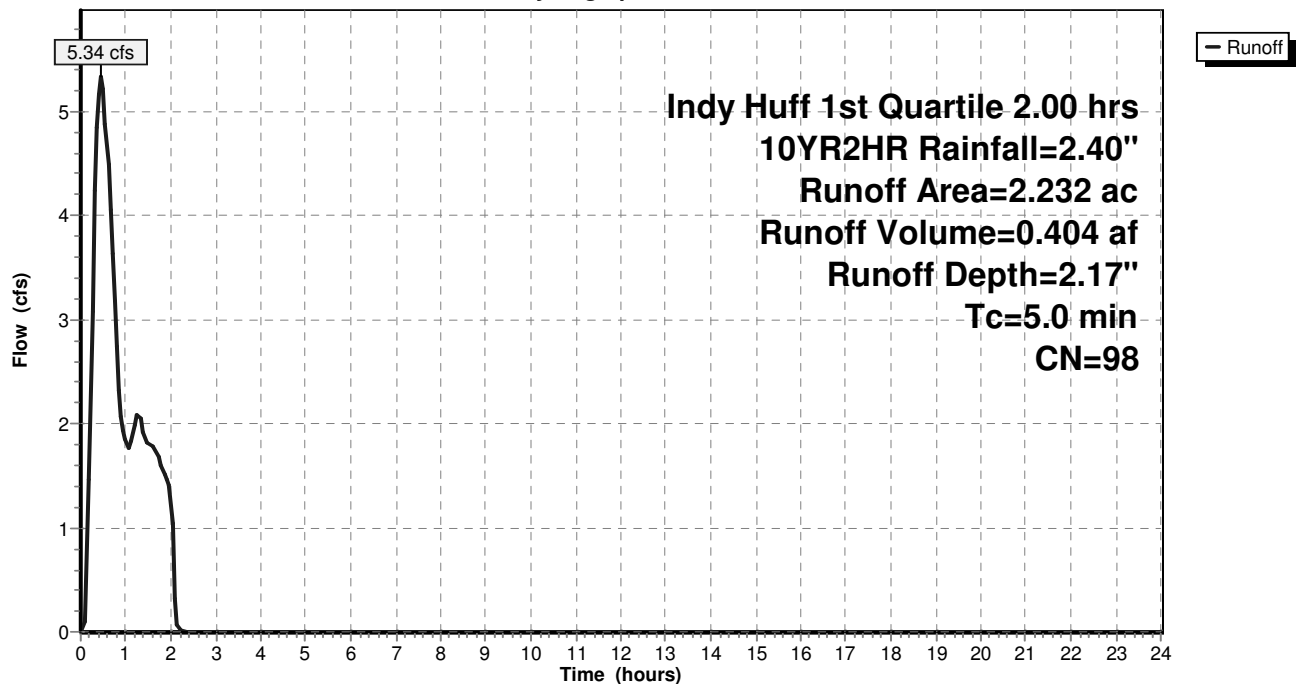
Runoff = 5.34 cfs @ 0.45 hrs, Volume= 0.404 af, Depth= 2.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

Area (ac)	CN	Description
* 2.232	98	Paved parking, Impervious
0.000	61	>75% Grass cover, Good, HSG B
0.000	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
2.232	98	Weighted Average
2.232		100.00% Impervious Area

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

**Subcatchment 132S: DA 714****Hydrograph**

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Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

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**Summary for Subcatchment 133S: DA 713**

Runoff = 3.58 cfs @ 0.45 hrs, Volume= 0.271 af, Depth= 2.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

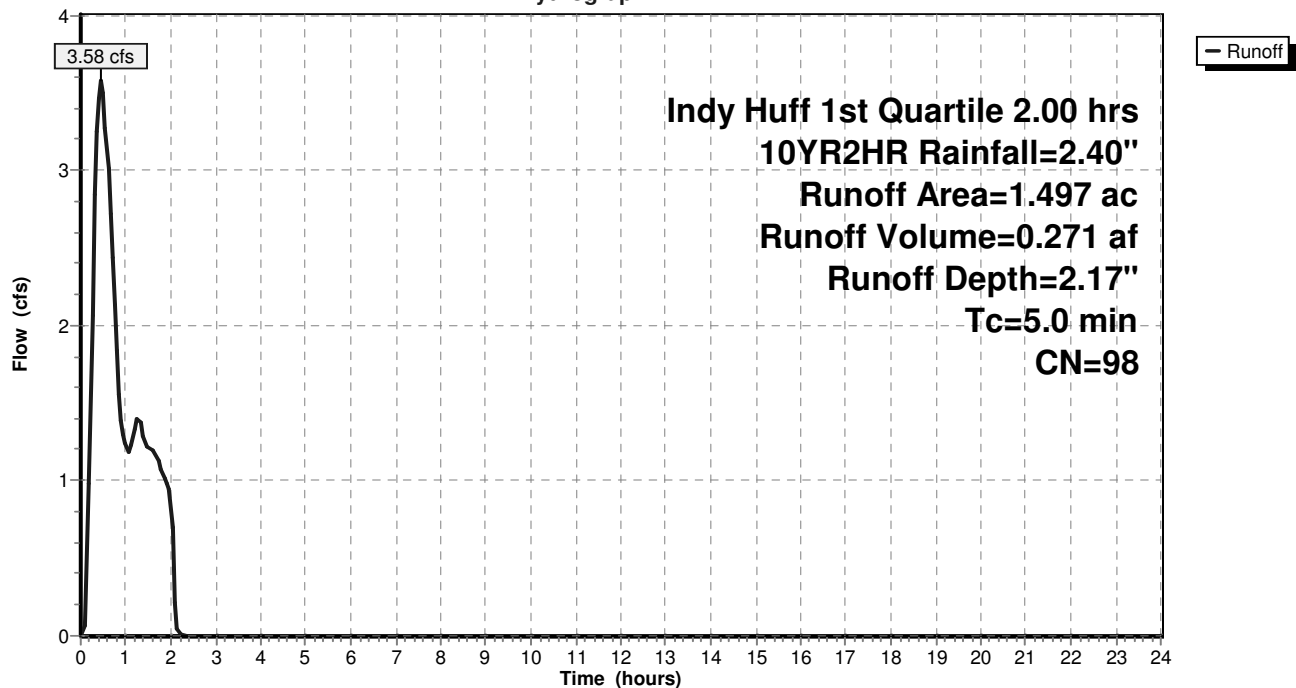
Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

	Area (ac)	CN	Description
*	1.497	98	Paved parking, Impervious
	0.000	61	>75% Grass cover, Good, HSG B
	0.000	74	>75% Grass cover, Good, HSG C
	0.000	70	Woods, Good, HSG C
	0.000	77	Woods, Good, HSG D
	1.497	98	Weighted Average
	1.497		100.00% Impervious Area

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

**Subcatchment 133S: DA 713**

Hydrograph



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Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

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**Summary for Subcatchment 134S: DA 712**

Runoff = 5.34 cfs @ 0.45 hrs, Volume= 0.404 af, Depth= 2.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

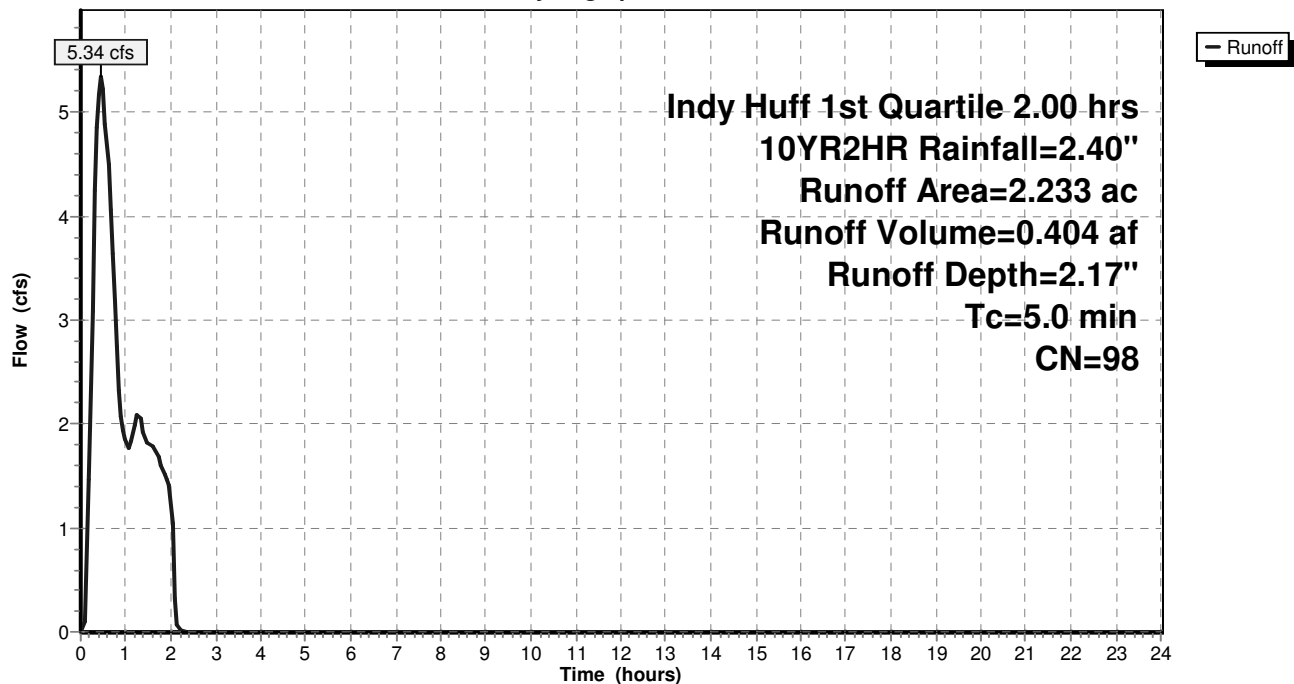
Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

	Area (ac)	CN	Description
*	2.233	98	Paved parking, Impervious
	0.000	61	>75% Grass cover, Good, HSG B
	0.000	74	>75% Grass cover, Good, HSG C
	0.000	70	Woods, Good, HSG C
	0.000	77	Woods, Good, HSG D
	2.233	98	Weighted Average
	2.233		100.00% Impervious Area

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

**Subcatchment 134S: DA 712**

Hydrograph



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Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

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**Summary for Subcatchment 135S: DA 730**

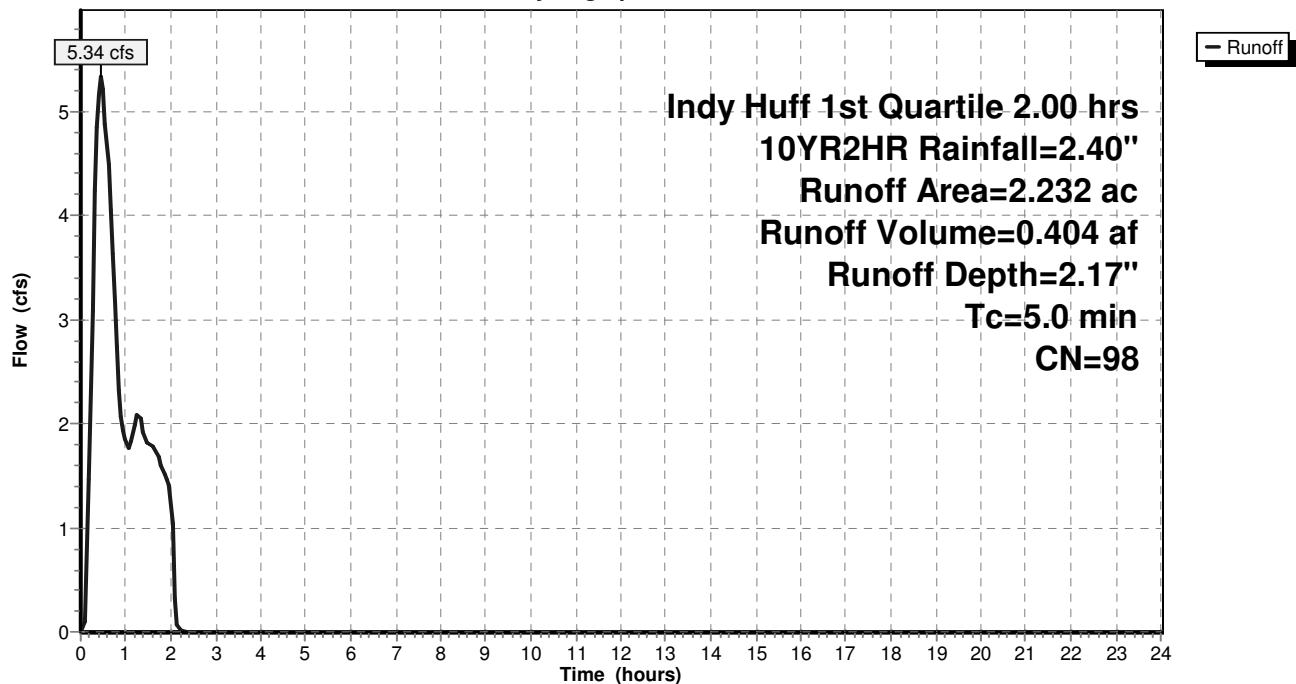
Runoff = 5.34 cfs @ 0.45 hrs, Volume= 0.404 af, Depth= 2.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

Area (ac)	CN	Description
* 2.232	98	Paved parking, Impervious
0.000	61	>75% Grass cover, Good, HSG B
0.000	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
2.232	98	Weighted Average
2.232		100.00% Impervious Area

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

**Subcatchment 135S: DA 730****Hydrograph**

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Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

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**Summary for Subcatchment 136S: DA 728**

Runoff = 3.58 cfs @ 0.45 hrs, Volume= 0.271 af, Depth= 2.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

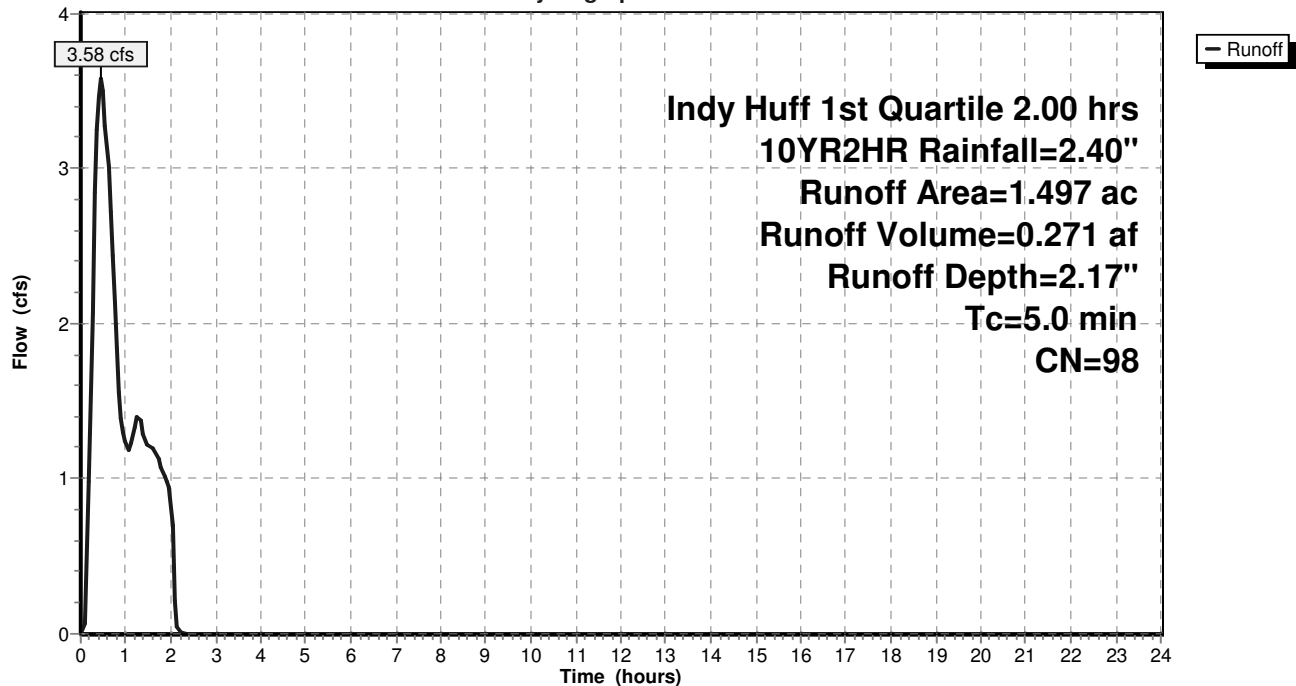
Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

	Area (ac)	CN	Description
*	1.497	98	Paved parking, Impervious
	0.000	61	>75% Grass cover, Good, HSG B
	0.000	74	>75% Grass cover, Good, HSG C
	0.000	70	Woods, Good, HSG C
	0.000	77	Woods, Good, HSG D
	1.497	98	Weighted Average
	1.497		100.00% Impervious Area

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

**Subcatchment 136S: DA 728**

Hydrograph





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Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

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**Summary for Subcatchment 137S: DA 726**

Runoff = 5.34 cfs @ 0.45 hrs, Volume= 0.404 af, Depth= 2.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

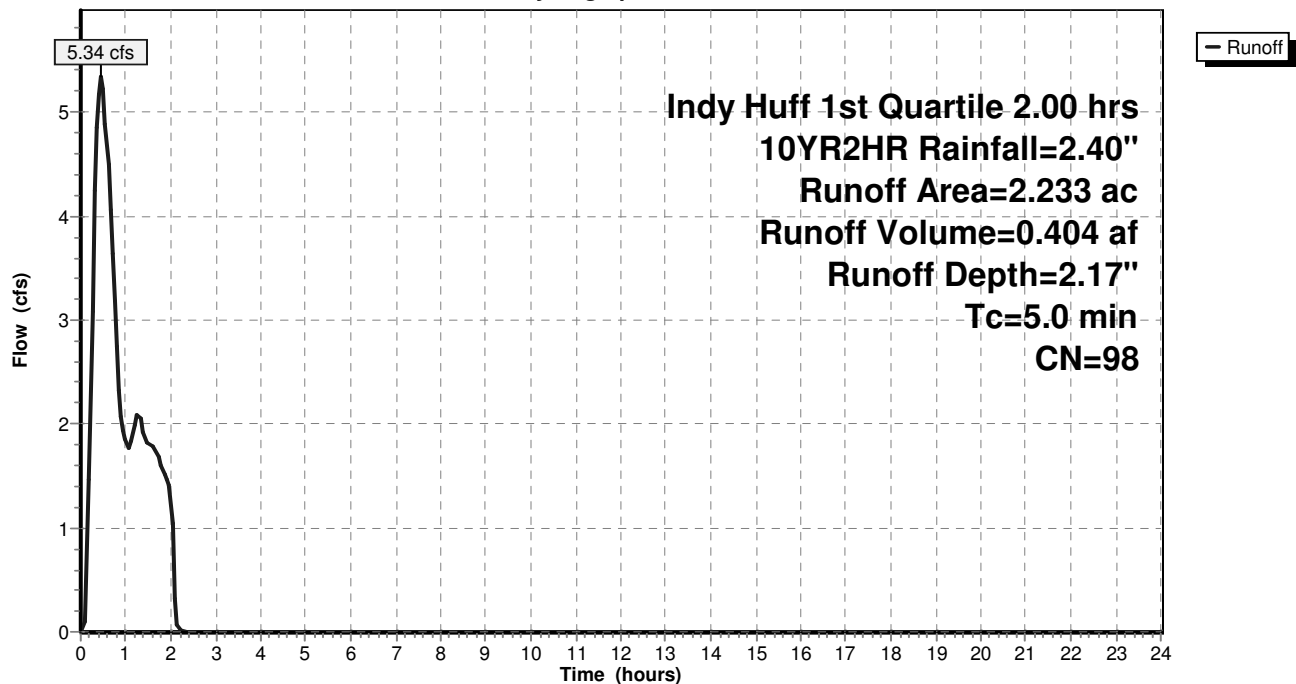
Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

Area (ac)	CN	Description
* 2.233	98	Paved parking, Impervious
0.000	61	>75% Grass cover, Good, HSG B
0.000	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
2.233	98	Weighted Average
2.233		100.00% Impervious Area

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

**Subcatchment 137S: DA 726**

Hydrograph



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Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

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**Summary for Subcatchment 138S: DA 724**

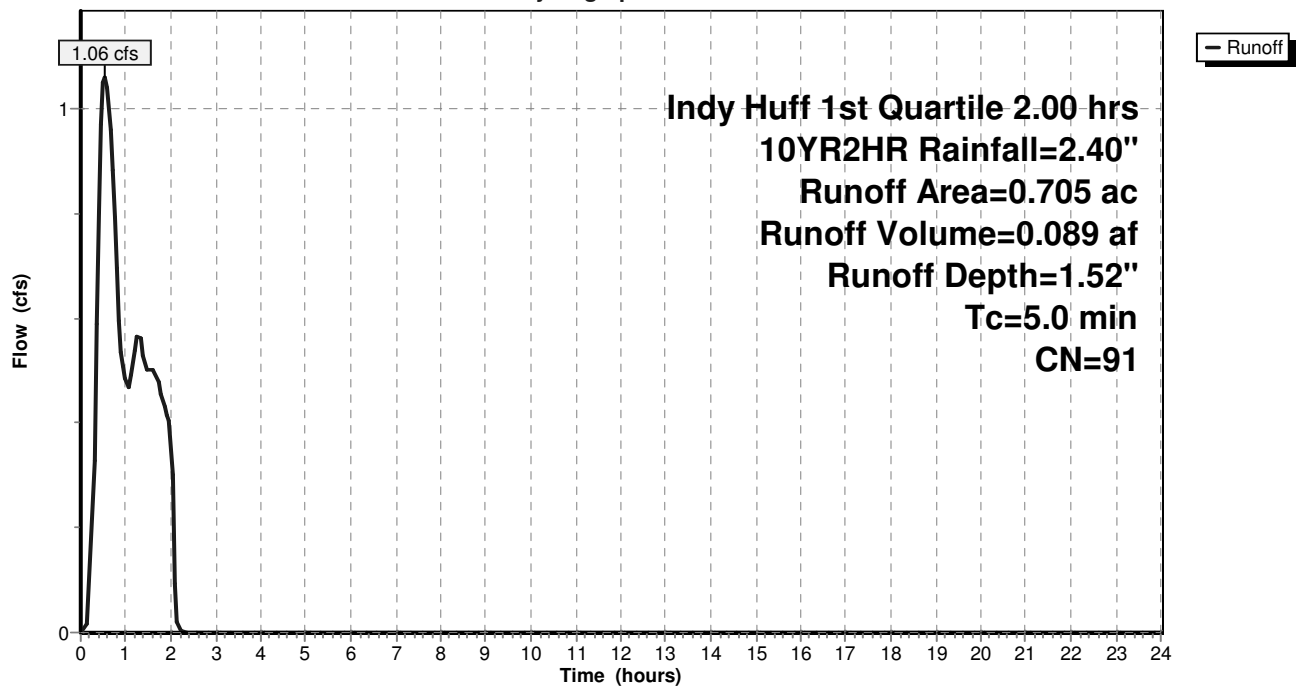
Runoff = 1.06 cfs @ 0.53 hrs, Volume= 0.089 af, Depth= 1.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

Area (ac)	CN	Description
* 0.525	98	Paved parking, Impervious
0.042	61	>75% Grass cover, Good, HSG B
0.138	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
0.705	91	Weighted Average
0.180		25.53% Pervious Area
0.525		74.47% Impervious Area

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

**Subcatchment 138S: DA 724****Hydrograph**

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Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

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**Summary for Subcatchment 139S: DA 723**

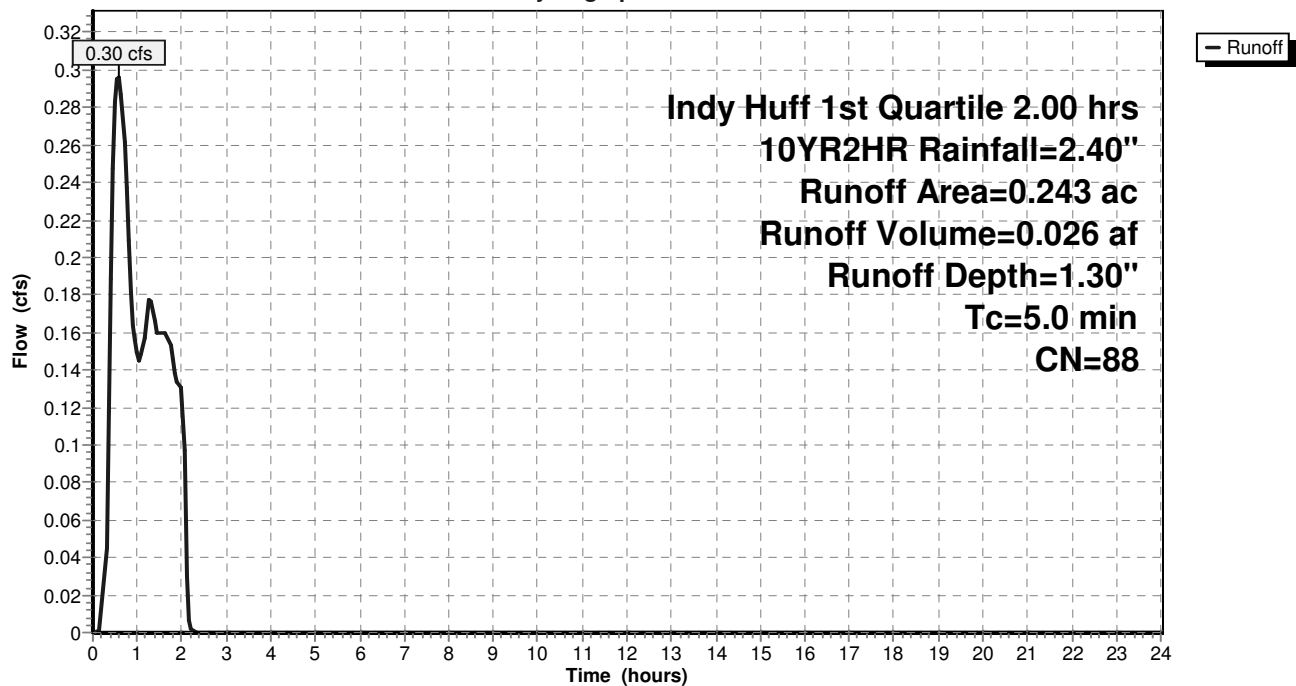
Runoff = 0.30 cfs @ 0.57 hrs, Volume= 0.026 af, Depth= 1.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

Area (ac)	CN	Description
* 0.150	98	Paved parking, Impervious
0.022	61	>75% Grass cover, Good, HSG B
0.071	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
0.243	88	Weighted Average
0.093		38.27% Pervious Area
0.150		61.73% Impervious Area

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

**Subcatchment 139S: DA 723****Hydrograph**

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Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

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**Summary for Subcatchment 140S: DA 722**

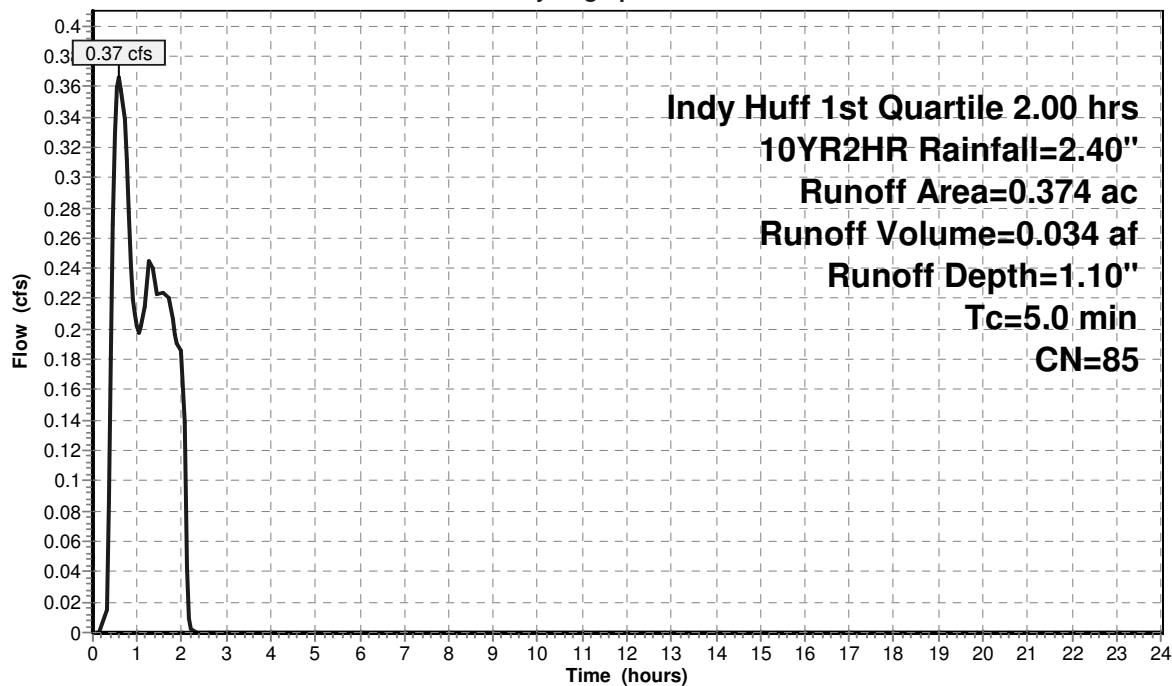
Runoff = 0.37 cfs @ 0.60 hrs, Volume= 0.034 af, Depth= 1.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

	Area (ac)	CN	Description
*	0.197	98	Paved parking, Impervious
	0.041	61	>75% Grass cover, Good, HSG B
	0.136	74	>75% Grass cover, Good, HSG C
	0.000	70	Woods, Good, HSG C
	0.000	77	Woods, Good, HSG D
	0.374	85	Weighted Average
	0.177		47.33% Pervious Area
	0.197		52.67% Impervious Area

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

**Subcatchment 140S: DA 722****Hydrograph**

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Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

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**Summary for Subcatchment 141S: DA 721**

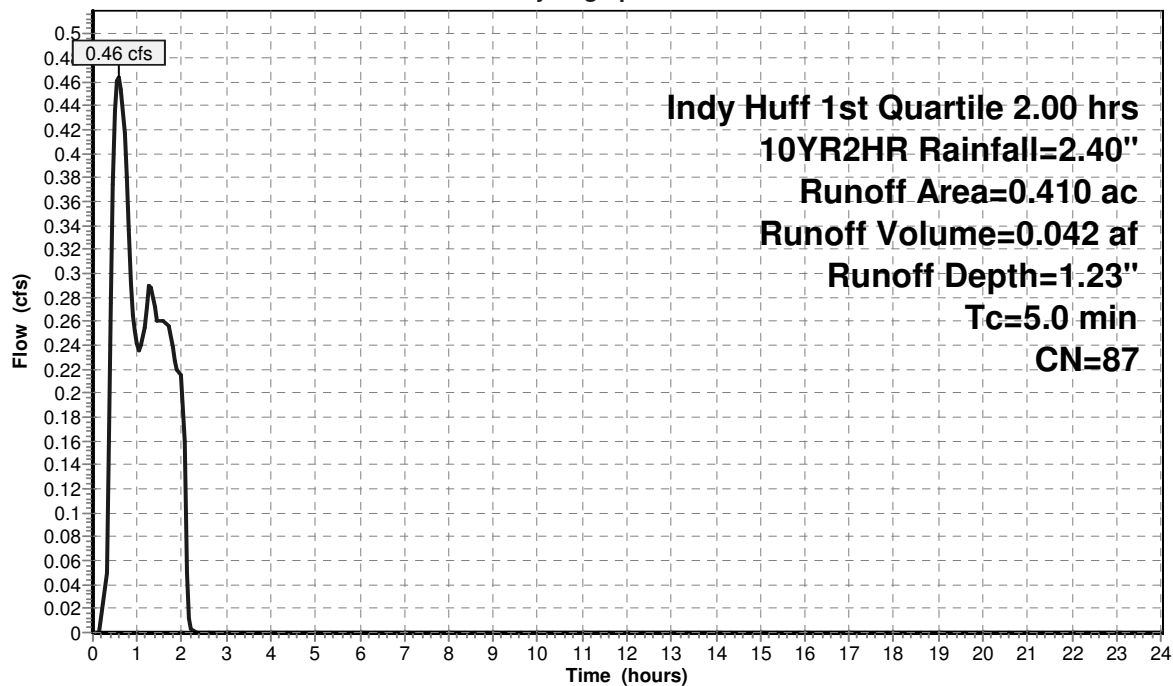
Runoff = 0.46 cfs @ 0.58 hrs, Volume= 0.042 af, Depth= 1.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

Area (ac)	CN	Description
* 0.237	98	Paved parking, Impervious
0.040	61	>75% Grass cover, Good, HSG B
0.133	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
0.410	87	Weighted Average
0.173		42.20% Pervious Area
0.237		57.80% Impervious Area

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

**Subcatchment 141S: DA 721****Hydrograph**

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Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

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**Summary for Subcatchment 142S: DA 720**

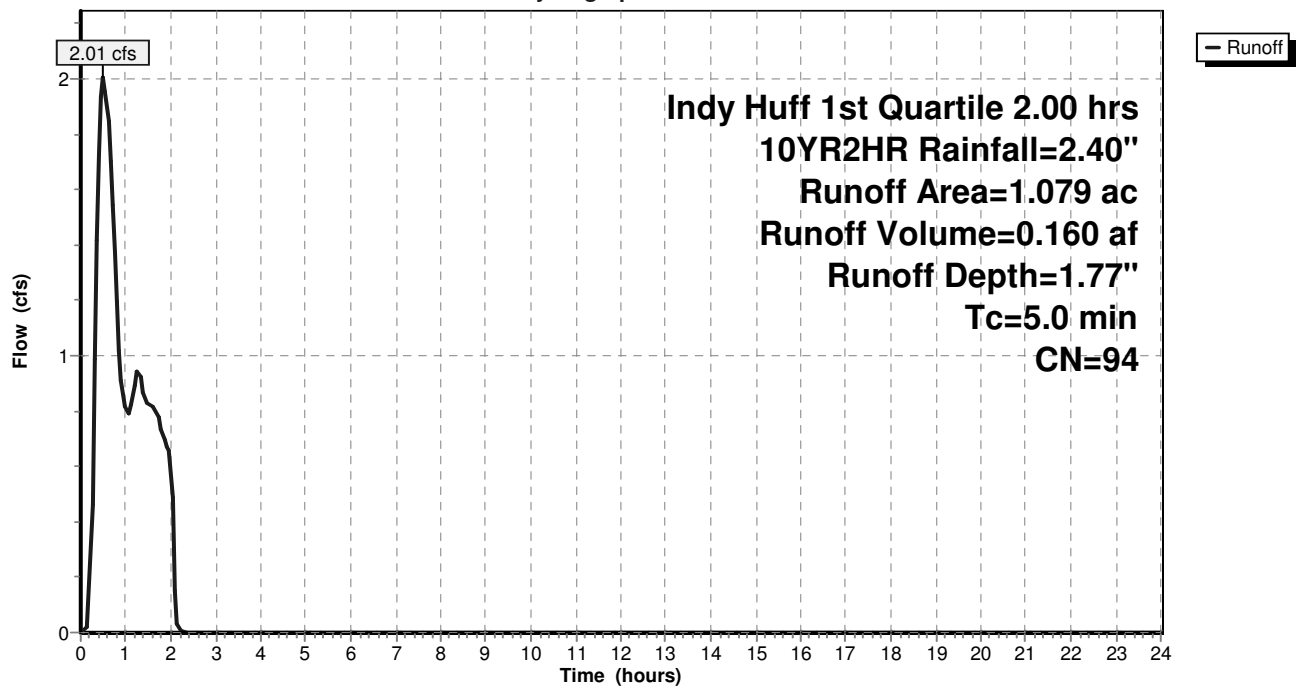
Runoff = 2.01 cfs @ 0.50 hrs, Volume= 0.160 af, Depth= 1.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

Area (ac)	CN	Description
* 0.910	98	Paved parking, Impervious
0.039	61	>75% Grass cover, Good, HSG B
0.130	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
1.079	94	Weighted Average
0.169		15.66% Pervious Area
0.910		84.34% Impervious Area

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

**Subcatchment 142S: DA 720****Hydrograph**

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Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

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**Summary for Subcatchment 143S: DA 719**

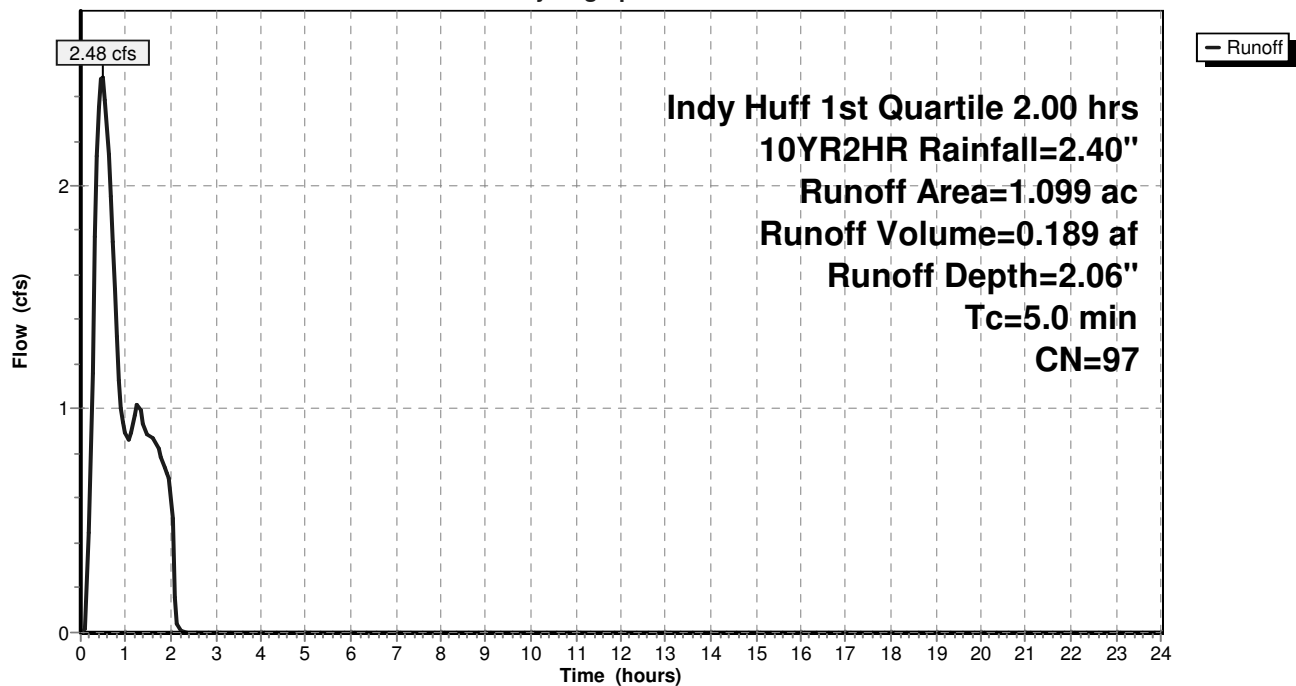
Runoff = 2.48 cfs @ 0.47 hrs, Volume= 0.189 af, Depth= 2.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

Area (ac)	CN	Description
* 1.043	98	Paved parking, Impervious
0.013	61	>75% Grass cover, Good, HSG B
0.043	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
1.099	97	Weighted Average
0.056		5.10% Pervious Area
1.043		94.90% Impervious Area

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

**Subcatchment 143S: DA 719****Hydrograph**

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Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

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**Summary for Subcatchment 144S: DA 718**

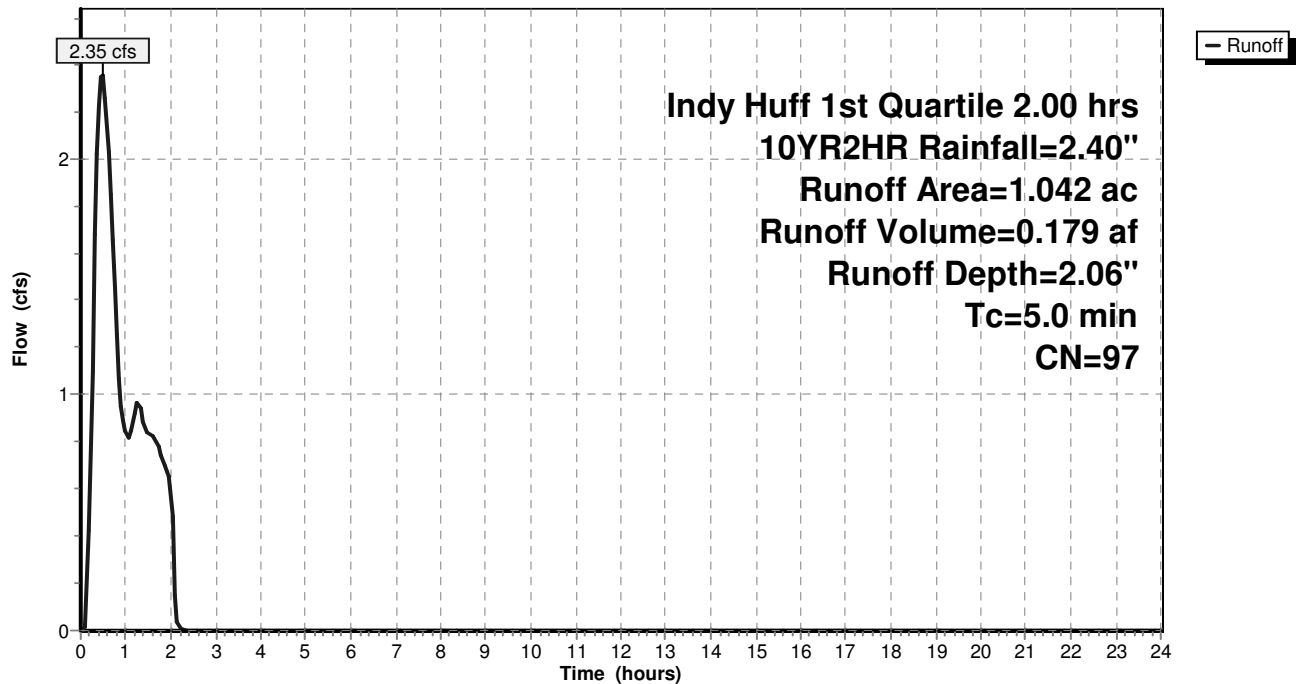
Runoff = 2.35 cfs @ 0.47 hrs, Volume= 0.179 af, Depth= 2.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

Area (ac)	CN	Description
* 0.987	98	Paved parking, Impervious
0.013	61	>75% Grass cover, Good, HSG B
0.042	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
1.042	97	Weighted Average
0.055		5.28% Pervious Area
0.987		94.72% Impervious Area

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

**Subcatchment 144S: DA 718****Hydrograph**



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Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

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**Summary for Subcatchment 145S: DA 717**

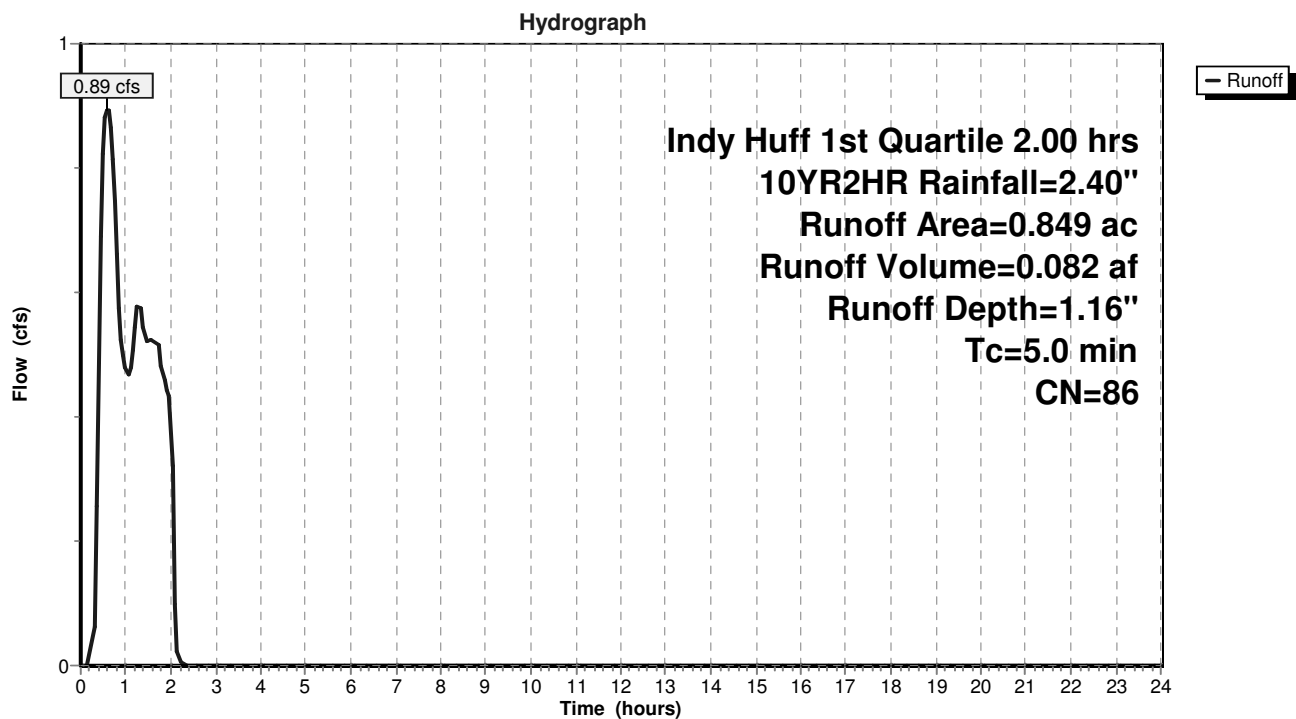
Runoff = 0.89 cfs @ 0.59 hrs, Volume= 0.082 af, Depth= 1.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

	Area (ac)	CN	Description
*	0.470	98	Paved parking, Impervious
	0.088	61	>75% Grass cover, Good, HSG B
	0.291	74	>75% Grass cover, Good, HSG C
	0.000	70	Woods, Good, HSG C
	0.000	77	Woods, Good, HSG D
	0.849	86	Weighted Average
	0.379		44.64% Pervious Area
	0.470		55.36% Impervious Area

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

**Subcatchment 145S: DA 717**

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Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

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**Summary for Subcatchment 146S: DA 731**

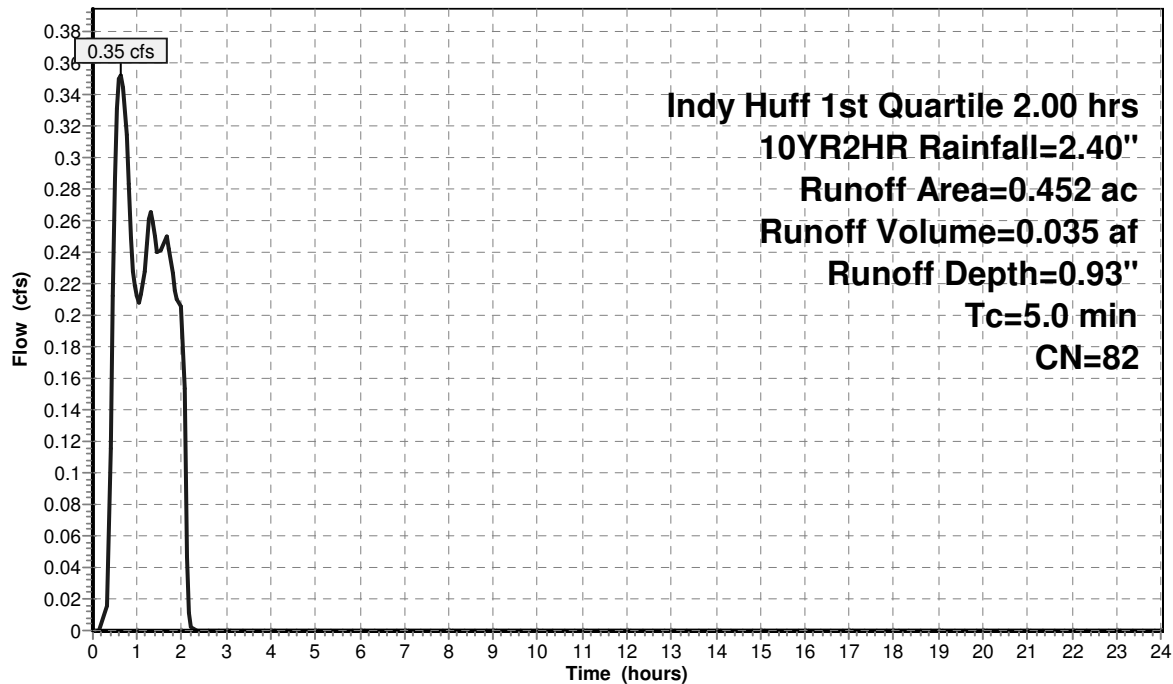
Runoff = 0.35 cfs @ 0.63 hrs, Volume= 0.035 af, Depth= 0.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

Area (ac)	CN	Description
* 0.185	98	Paved parking, Impervious
0.062	61	>75% Grass cover, Good, HSG B
0.205	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
0.452	82	Weighted Average
0.267		59.07% Pervious Area
0.185		40.93% Impervious Area

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

**Subcatchment 146S: DA 731****Hydrograph**

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Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

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**Summary for Subcatchment 147S: DA 729**

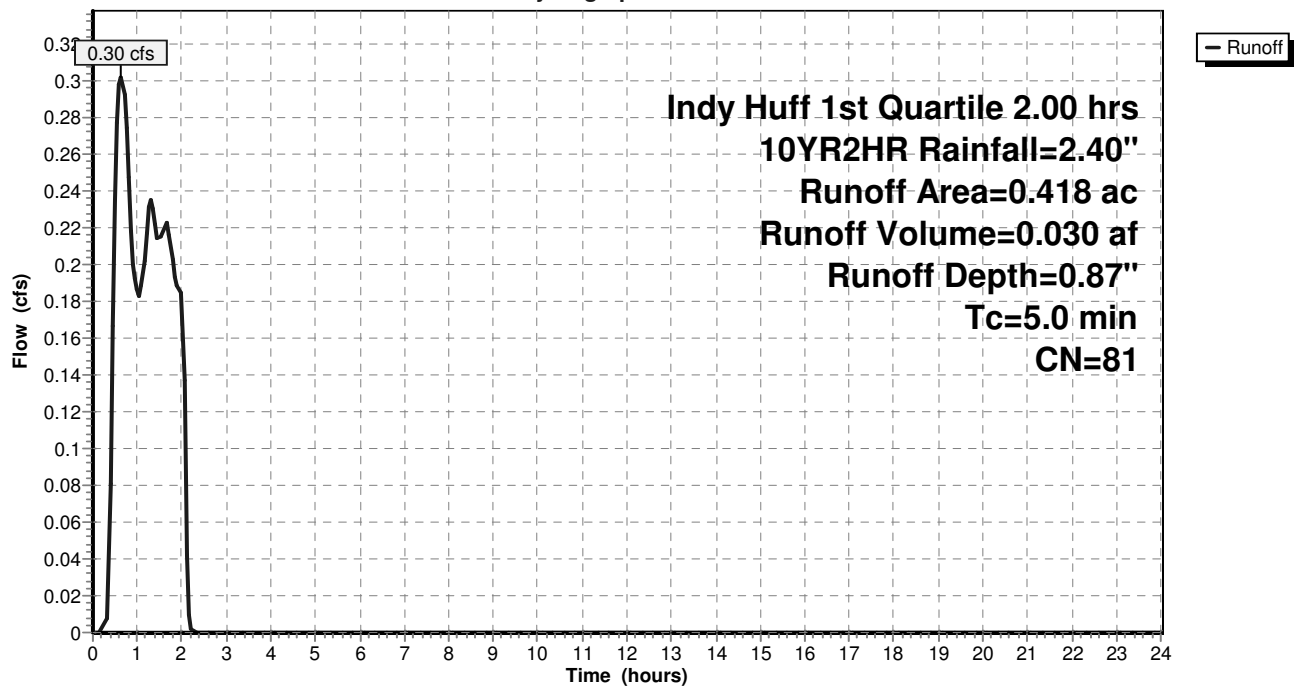
Runoff = 0.30 cfs @ 0.64 hrs, Volume= 0.030 af, Depth= 0.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

Area (ac)	CN	Description
* 0.153	98	Paved parking, Impervious
0.062	61	>75% Grass cover, Good, HSG B
0.203	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
0.418	81	Weighted Average
0.265		63.40% Pervious Area
0.153		36.60% Impervious Area

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

**Subcatchment 147S: DA 729****Hydrograph**

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Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

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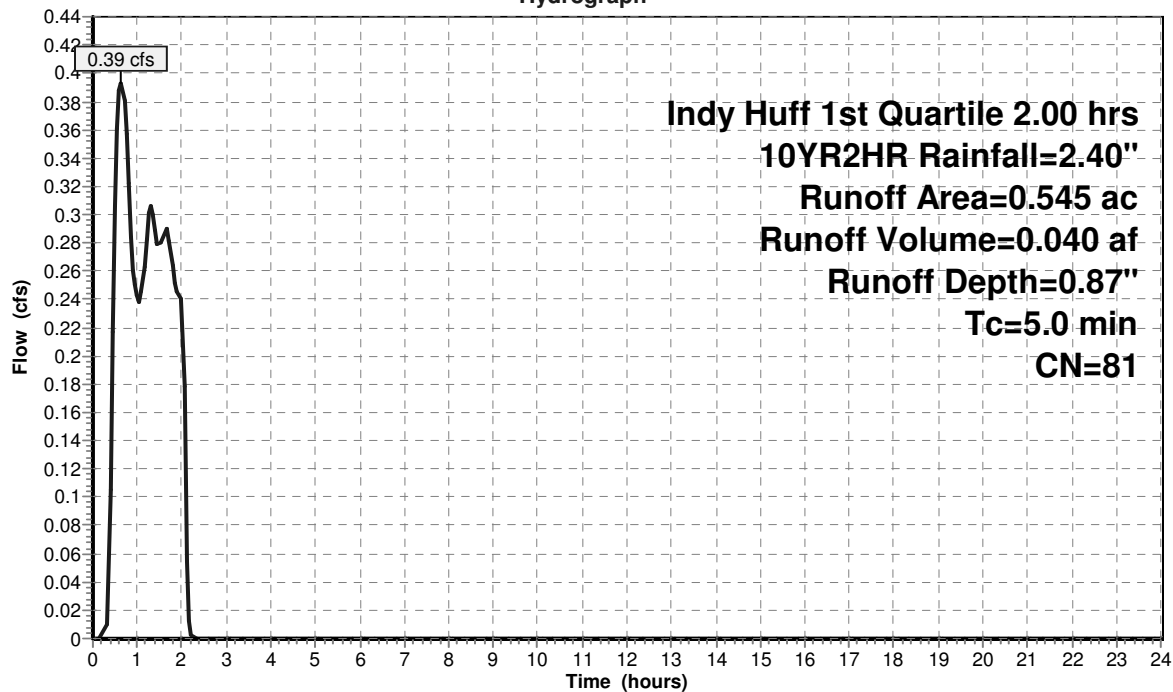
**Summary for Subcatchment 148S: DA 727**

Runoff = 0.39 cfs @ 0.64 hrs, Volume= 0.040 af, Depth= 0.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

Area (ac)	CN	Description
* 0.206	98	Paved parking, Impervious
0.079	61	>75% Grass cover, Good, HSG B
0.260	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
0.545	81	Weighted Average
0.339		62.20% Pervious Area
0.206		37.80% Impervious Area

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

**Subcatchment 148S: DA 727****Hydrograph**

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Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

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**Summary for Subcatchment 149S: DA 725**

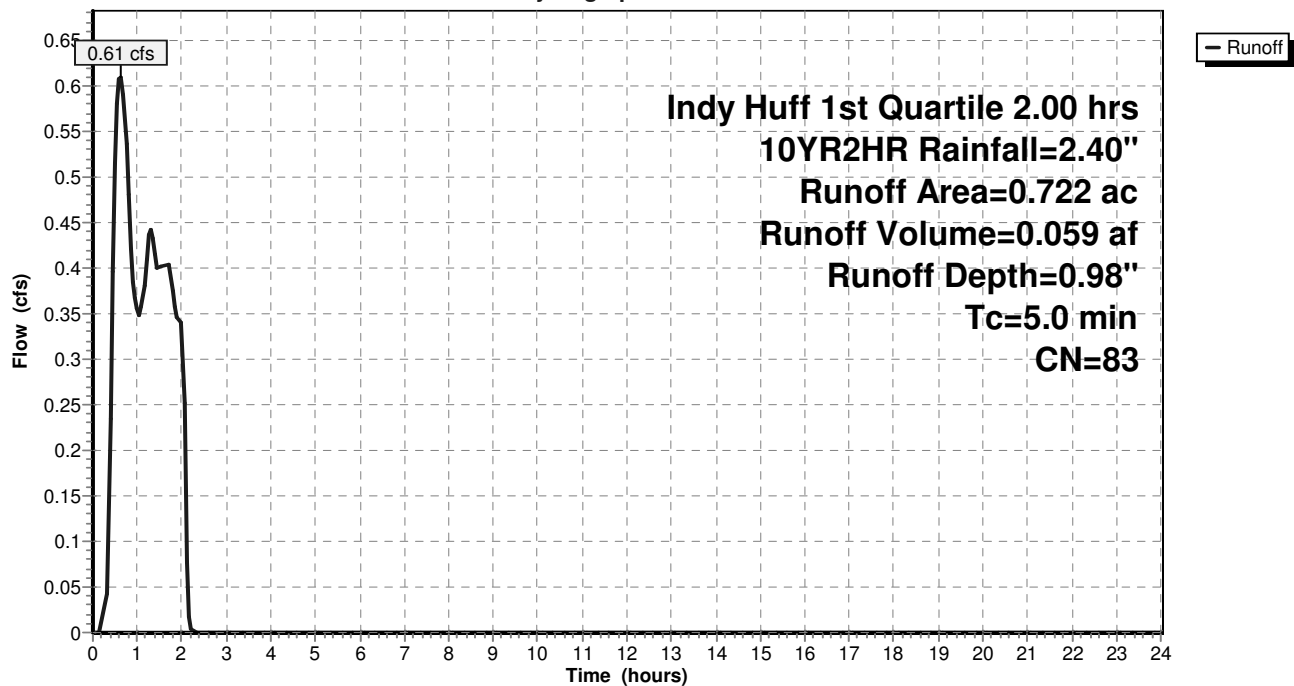
Runoff = 0.61 cfs @ 0.62 hrs, Volume= 0.059 af, Depth= 0.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

Area (ac)	CN	Description
* 0.332	98	Paved parking, Impervious
0.091	61	>75% Grass cover, Good, HSG B
0.299	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
0.722	83	Weighted Average
0.390		54.02% Pervious Area
0.332		45.98% Impervious Area

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

**Subcatchment 149S: DA 725****Hydrograph**

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Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

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**Summary for Subcatchment 150S: DA 733**

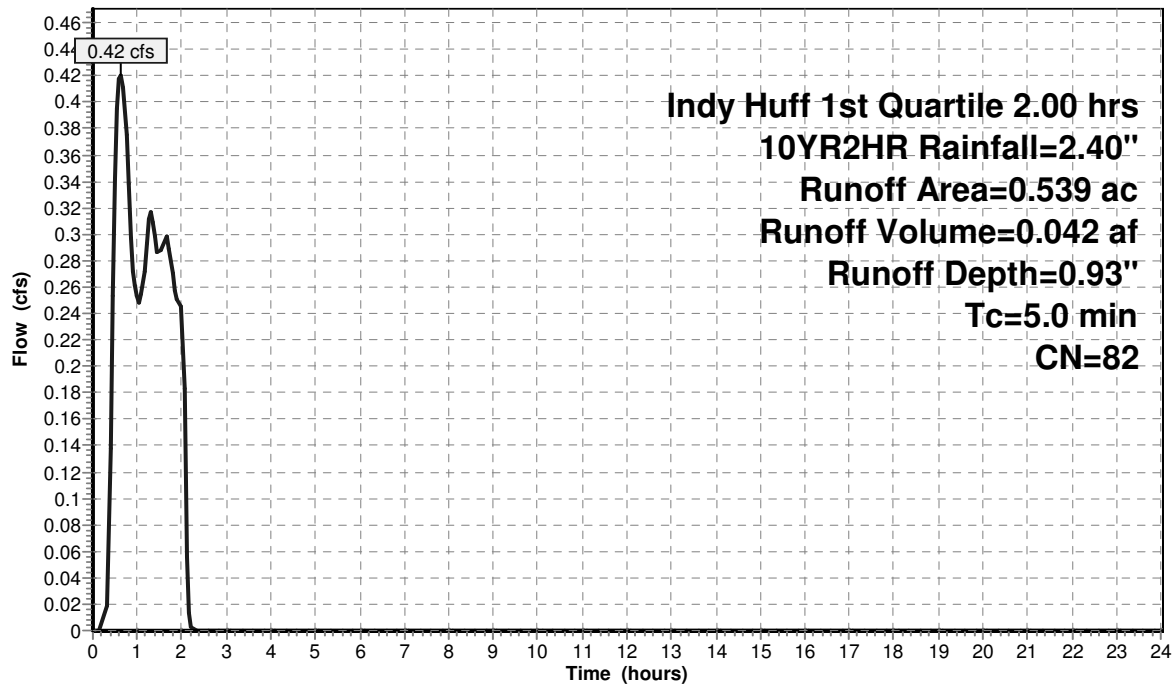
Runoff = 0.42 cfs @ 0.63 hrs, Volume= 0.042 af, Depth= 0.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

Area (ac)	CN	Description
* 0.212	98	Paved parking, Impervious
0.076	61	>75% Grass cover, Good, HSG B
0.251	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
0.539	82	Weighted Average
0.327		60.67% Pervious Area
0.212		39.33% Impervious Area

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

**Subcatchment 150S: DA 733****Hydrograph**

— Runoff

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Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

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**Summary for Subcatchment 151S: DA 737**

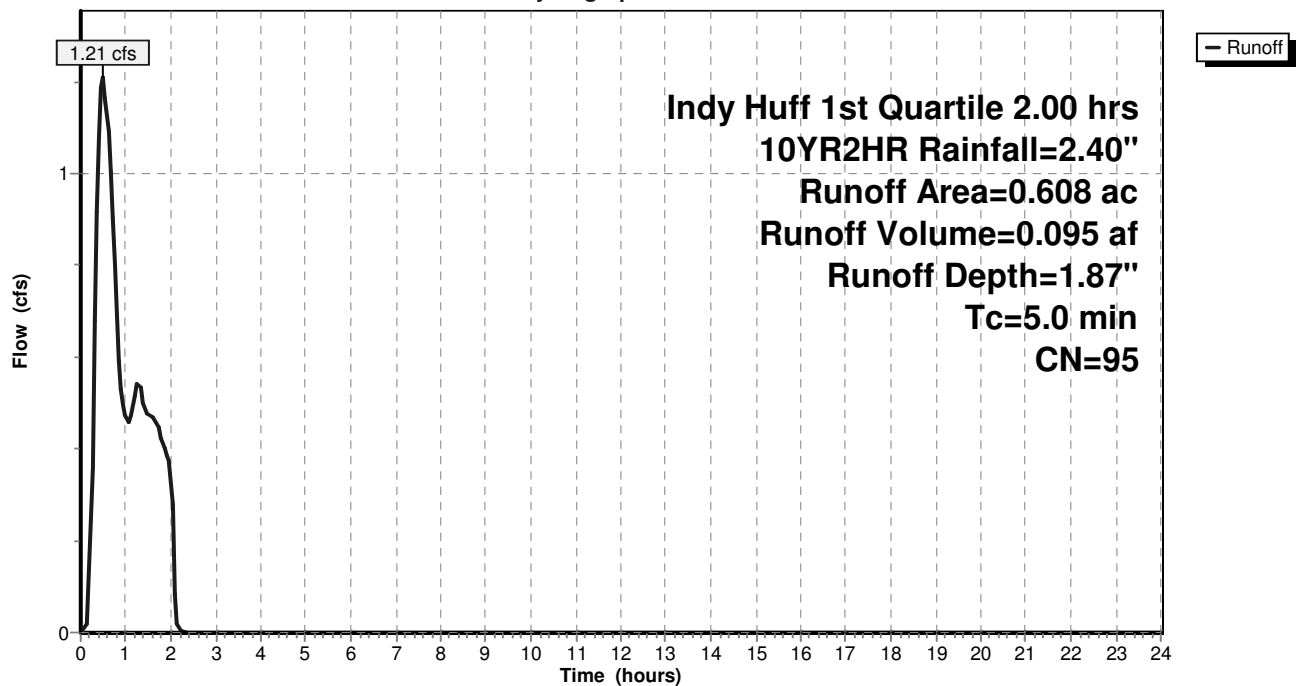
Runoff = 1.21 cfs @ 0.49 hrs, Volume= 0.095 af, Depth= 1.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

Area (ac)	CN	Description
* 0.540	98	Paved parking, Impervious
0.016	61	>75% Grass cover, Good, HSG B
0.052	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
0.608	95	Weighted Average
0.068		11.18% Pervious Area
0.540		88.82% Impervious Area

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

**Subcatchment 151S: DA 737****Hydrograph**

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Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

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**Summary for Subcatchment 152S: DA 735**

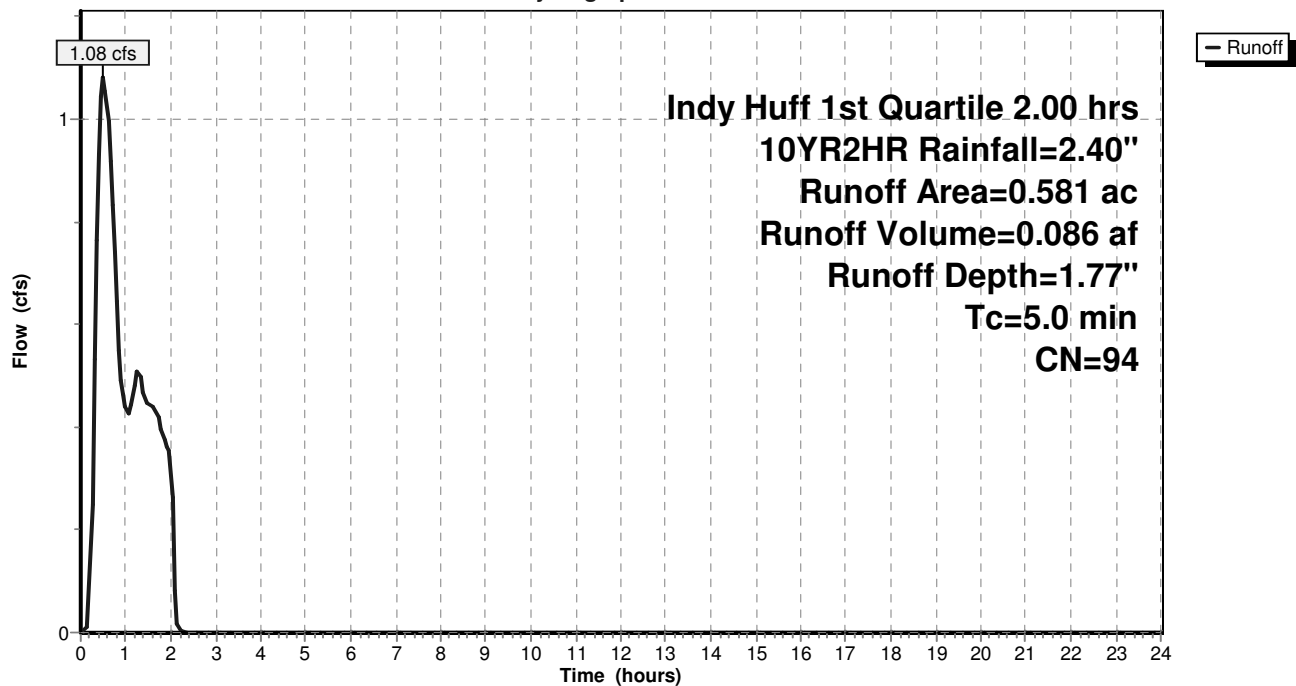
Runoff = 1.08 cfs @ 0.50 hrs, Volume= 0.086 af, Depth= 1.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

Area (ac)	CN	Description
* 0.495	98	Paved parking, Impervious
0.020	61	>75% Grass cover, Good, HSG B
0.066	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
0.581	94	Weighted Average
0.086		14.80% Pervious Area
0.495		85.20% Impervious Area

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

**Subcatchment 152S: DA 735****Hydrograph**



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Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

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**Summary for Subcatchment 153S: DA 716**

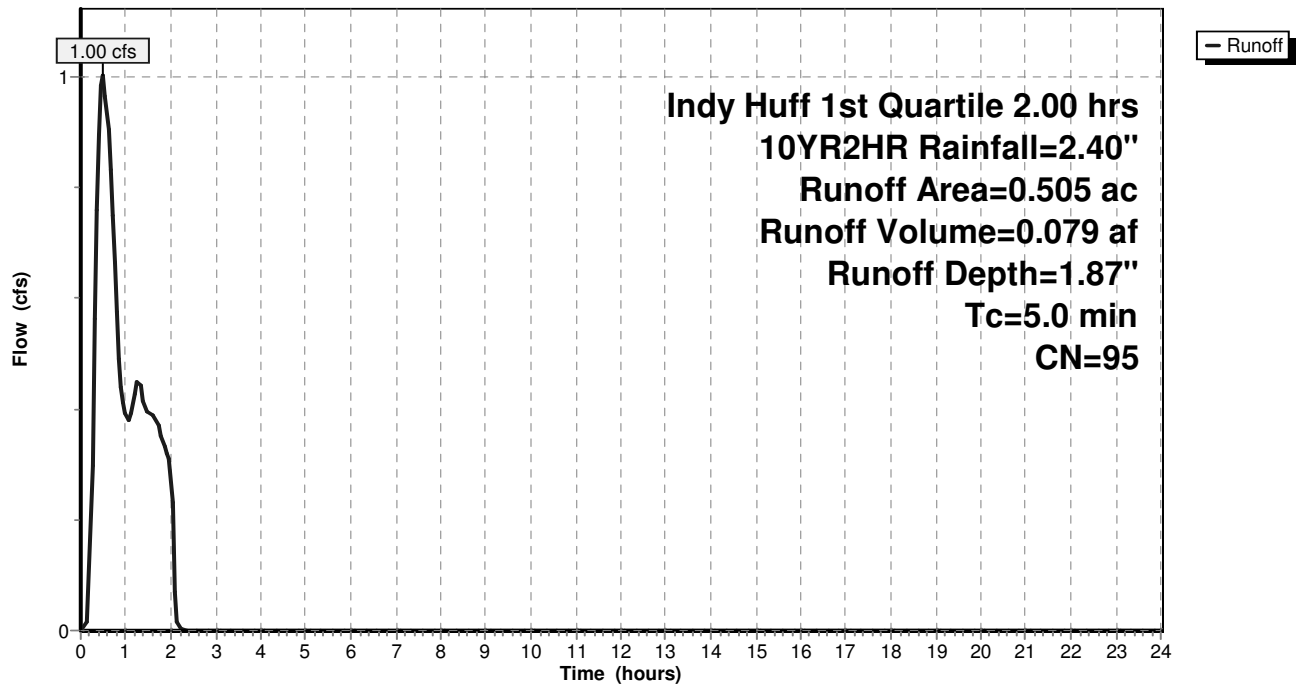
Runoff = 1.00 cfs @ 0.49 hrs, Volume= 0.079 af, Depth= 1.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

Area (ac)	CN	Description
* 0.450	98	Paved parking, Impervious
0.013	61	>75% Grass cover, Good, HSG B
0.042	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
0.505	95	Weighted Average
0.055		10.89% Pervious Area
0.450		89.11% Impervious Area

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

**Subcatchment 153S: DA 716****Hydrograph**

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Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

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**Summary for Subcatchment 154S: DA 739**

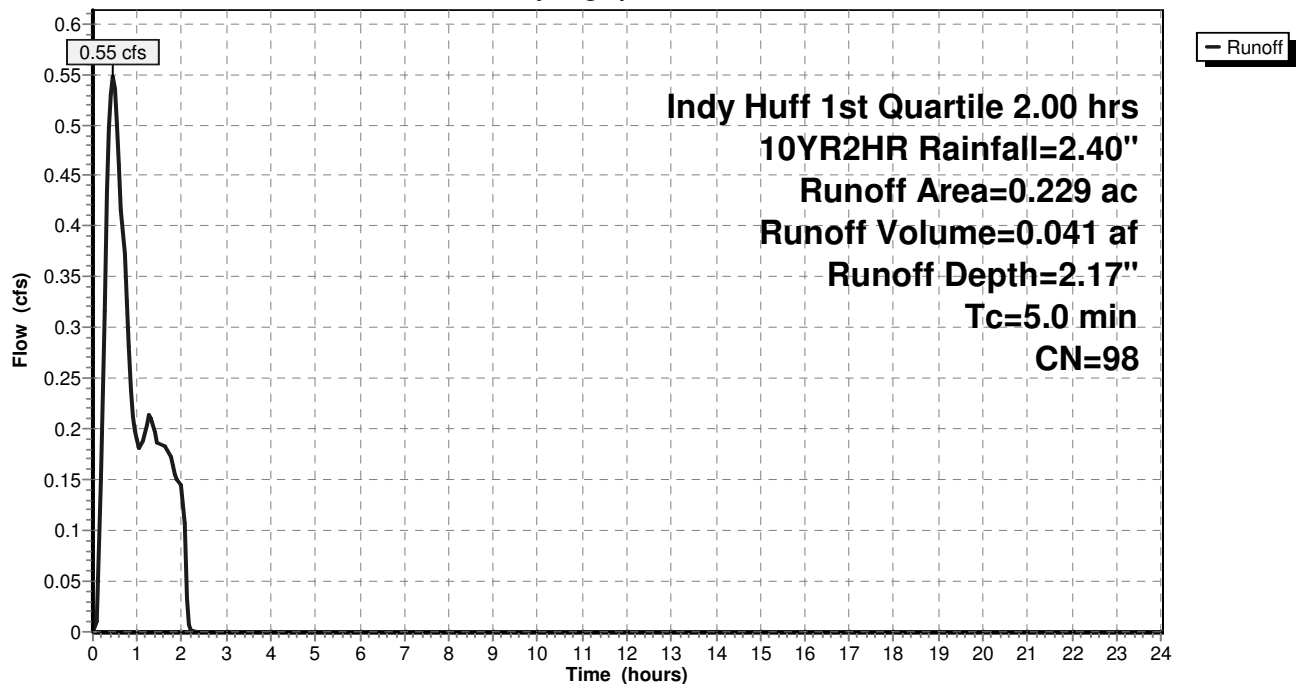
Runoff = 0.55 cfs @ 0.45 hrs, Volume= 0.041 af, Depth= 2.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 10YR2HR Rainfall=2.40"

	Area (ac)	CN	Description
*	0.229	98	Paved parking, Impervious
	0.000	61	>75% Grass cover, Good, HSG B
	0.000	74	>75% Grass cover, Good, HSG C
	0.000	70	Woods, Good, HSG C
	0.000	77	Woods, Good, HSG D
	0.229	98	Weighted Average
	0.229		100.00% Impervious Area

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

**Subcatchment 154S: DA 739****Hydrograph**

**Summary for Pond 76P: Wet Pond**

Inflow Area = 34.074 ac, 74.29% Impervious, Inflow Depth = 1.65" for 10YR2HR event  
 Inflow = 55.77 cfs @ 0.49 hrs, Volume= 4.690 af  
 Outflow = 12.92 cfs @ 2.05 hrs, Volume= 4.482 af, Atten= 77%, Lag= 93.5 min  
 Primary = 12.92 cfs @ 2.05 hrs, Volume= 4.482 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
 Peak Elev= 730.26' @ 2.05 hrs Surf.Area= 55,489 sf Storage= 142,512 cf

Plug-Flow detention time= 190.8 min calculated for 4.482 af (96% of inflow)  
 Center-of-Mass det. time= 187.6 min ( 247.6 - 60.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	727.20'	560,390 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.20	37,220	0	0
728.00	42,625	31,938	31,938
730.00	53,989	96,614	128,552
732.00	65,755	119,744	248,296
734.00	77,923	143,678	391,974
736.00	90,493	168,416	560,390

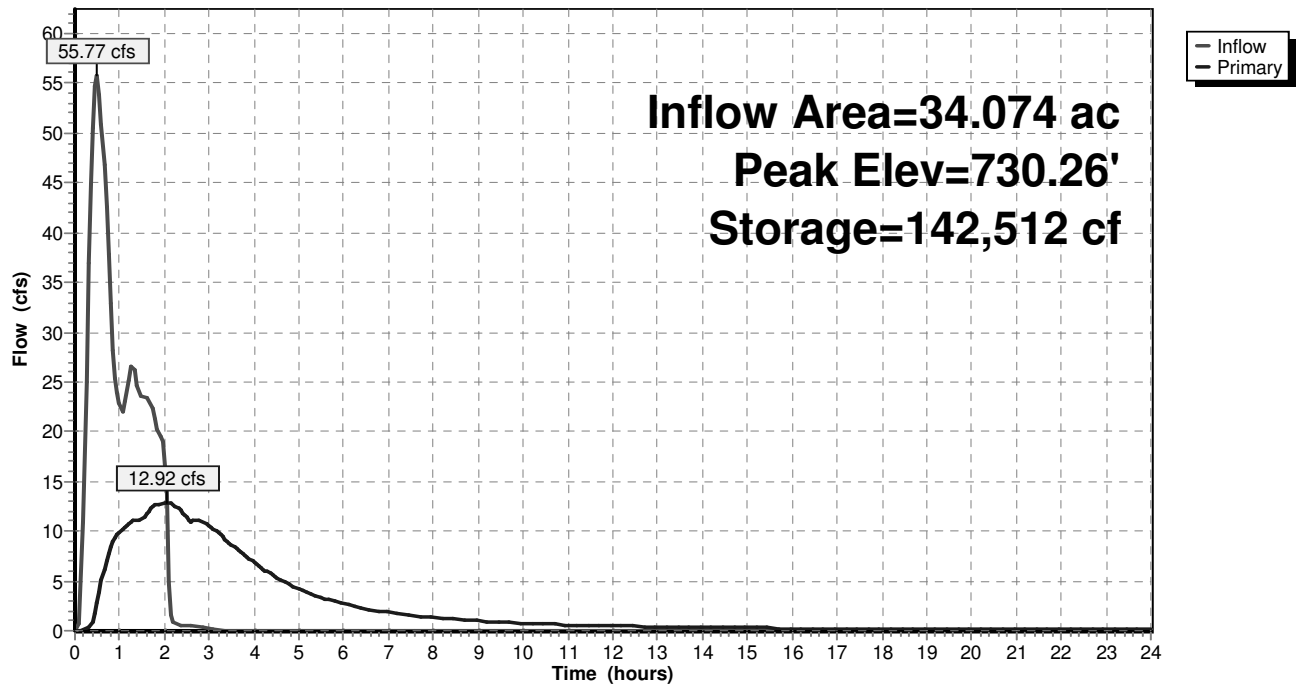
Device	Routing	Invert	Outlet Devices
#1	Primary	727.20'	<b>24.0" Round Culvert</b> L= 60.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 727.20' / 727.08' S= 0.0020 '/ Cc= 0.900 n= 0.025, Flow Area= 3.14 sf
#2	Device 1	727.20'	<b>18.0" Vert. Orifice/Grate</b> C= 0.600
#3	Device 1	730.50'	<b>18.0" x 12.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads

**Primary OutFlow** Max=12.92 cfs @ 2.05 hrs HW=730.25' (Free Discharge)

- 1=Culvert (Passes 12.92 cfs of 13.23 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 12.92 cfs @ 7.31 fps)
- 3=Orifice/Grate ( Controls 0.00 cfs)

Pond 76P: Wet Pond

Hydrograph



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Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

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**Summary for Subcatchment 110S: DA 711**

Runoff = 1.21 cfs @ 2.11 hrs, Volume= 0.176 af, Depth= 1.24"

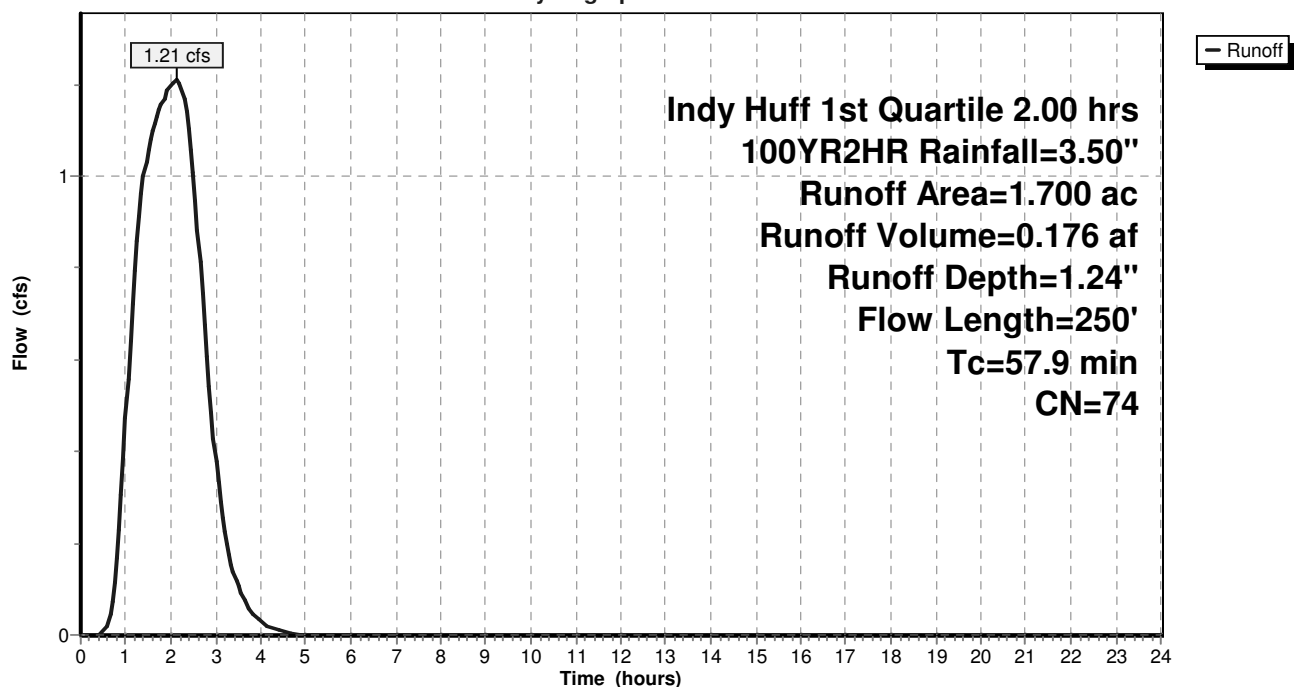
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

Area (ac)	CN	Description
* 0.000	98	Paved parking, Impervious
0.082	61	>75% Grass cover, Good, HSG B
0.271	74	>75% Grass cover, Good, HSG C
0.314	70	Woods, Good, HSG C
1.033	77	Woods, Good, HSG D
1.700	74	Weighted Average
1.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
45.0	100	0.0040	0.04		<b>Sheet Flow, Sheet</b>
					Woods: Light underbrush n= 0.400 P2= 2.64"
12.9	150	0.0060	0.19		<b>Shallow Concentrated Flow, Shallow</b>
					Forest w/Heavy Litter Kv= 2.5 fps
57.9	250	Total			

**Subcatchment 110S: DA 711****Hydrograph**

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Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

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**Summary for Subcatchment 111S: DA 741**

Runoff = 0.24 cfs @ 0.87 hrs, Volume= 0.030 af, Depth= 1.06"

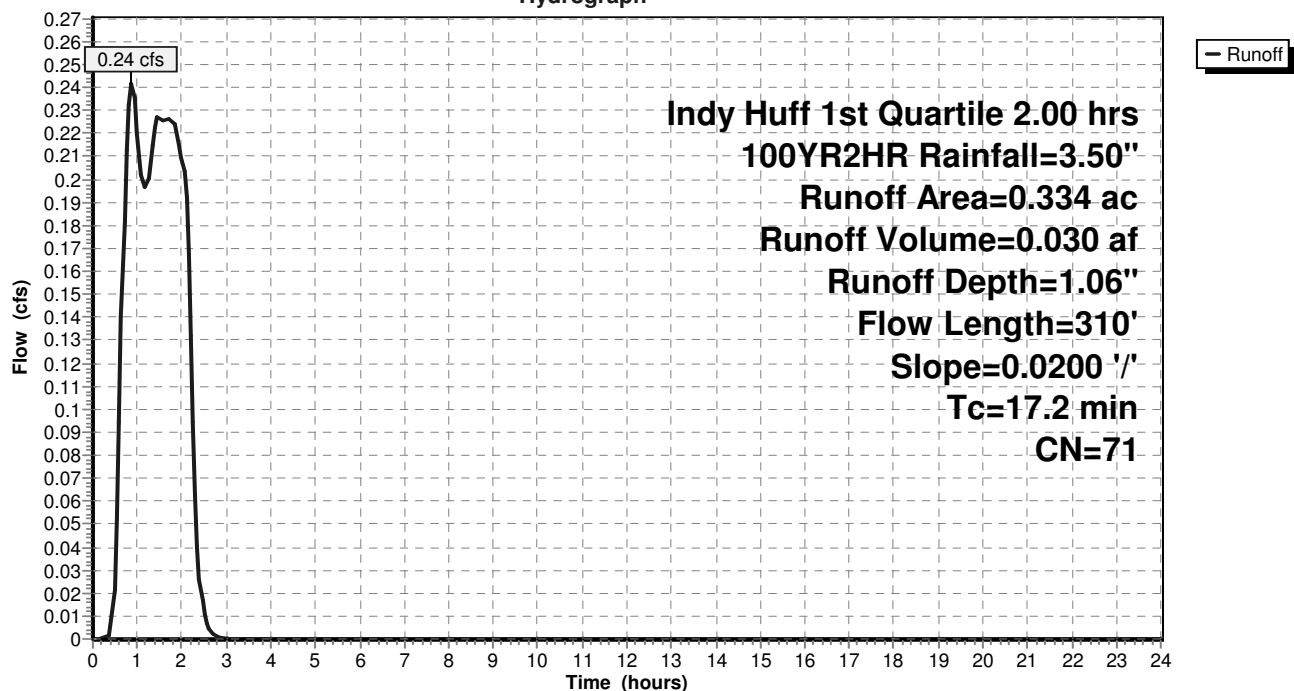
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

Area (ac)	CN	Description
* 0.000	98	Paved parking, Impervious
0.078	61	>75% Grass cover, Good, HSG B
0.256	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
0.334	71	Weighted Average
0.334		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.7	100	0.0200	0.11		<b>Sheet Flow, Sheet</b>
					Grass: Dense n= 0.240 P2= 2.64"
1.5	210	0.0200	2.28		<b>Shallow Concentrated Flow, Shallow</b>
					Unpaved Kv= 16.1 fps
17.2	310	Total			

**Subcatchment 111S: DA 741****Hydrograph**

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Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

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**Summary for Subcatchment 112S: DA 710**

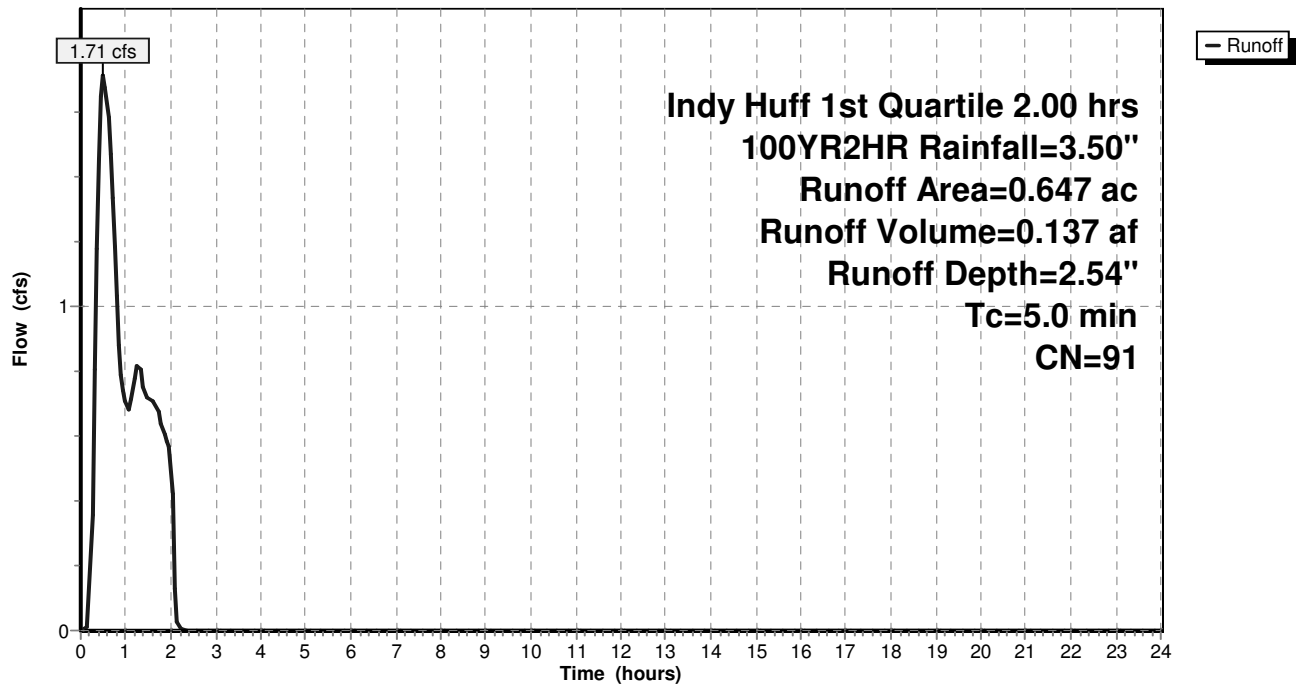
Runoff = 1.71 cfs @ 0.51 hrs, Volume= 0.137 af, Depth= 2.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

Area (ac)	CN	Description
* 0.481	98	Paved parking, Impervious
0.039	61	>75% Grass cover, Good, HSG B
0.127	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
0.647	91	Weighted Average
0.166		25.66% Pervious Area
0.481		74.34% Impervious Area

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

**Subcatchment 112S: DA 710****Hydrograph**

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Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

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**Summary for Subcatchment 113S: DA 706**

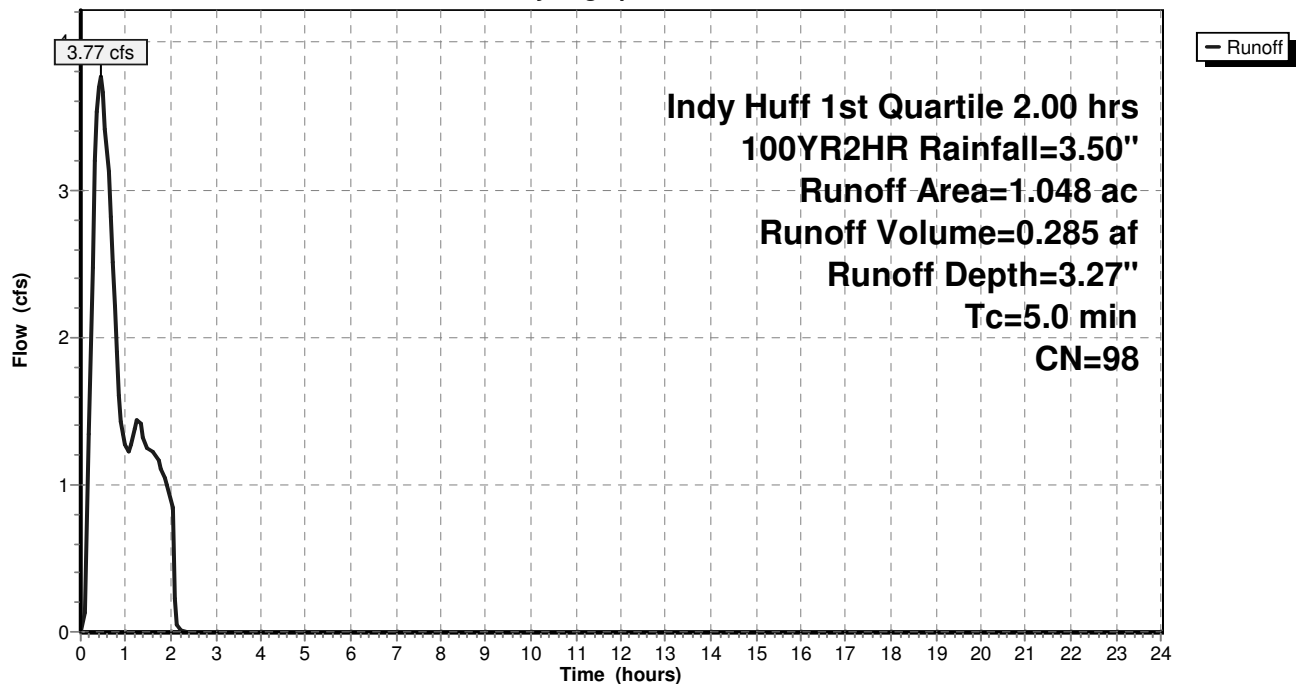
Runoff = 3.77 cfs @ 0.44 hrs, Volume= 0.285 af, Depth= 3.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

	Area (ac)	CN	Description
*	1.048	98	Paved parking, Impervious
	0.000	61	>75% Grass cover, Good, HSG B
	0.000	74	>75% Grass cover, Good, HSG C
	0.000	70	Woods, Good, HSG C
	0.000	77	Woods, Good, HSG D
	1.048	98	Weighted Average
	1.048		100.00% Impervious Area

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

**Subcatchment 113S: DA 706****Hydrograph**



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Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

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**Summary for Subcatchment 114S: DA 709**

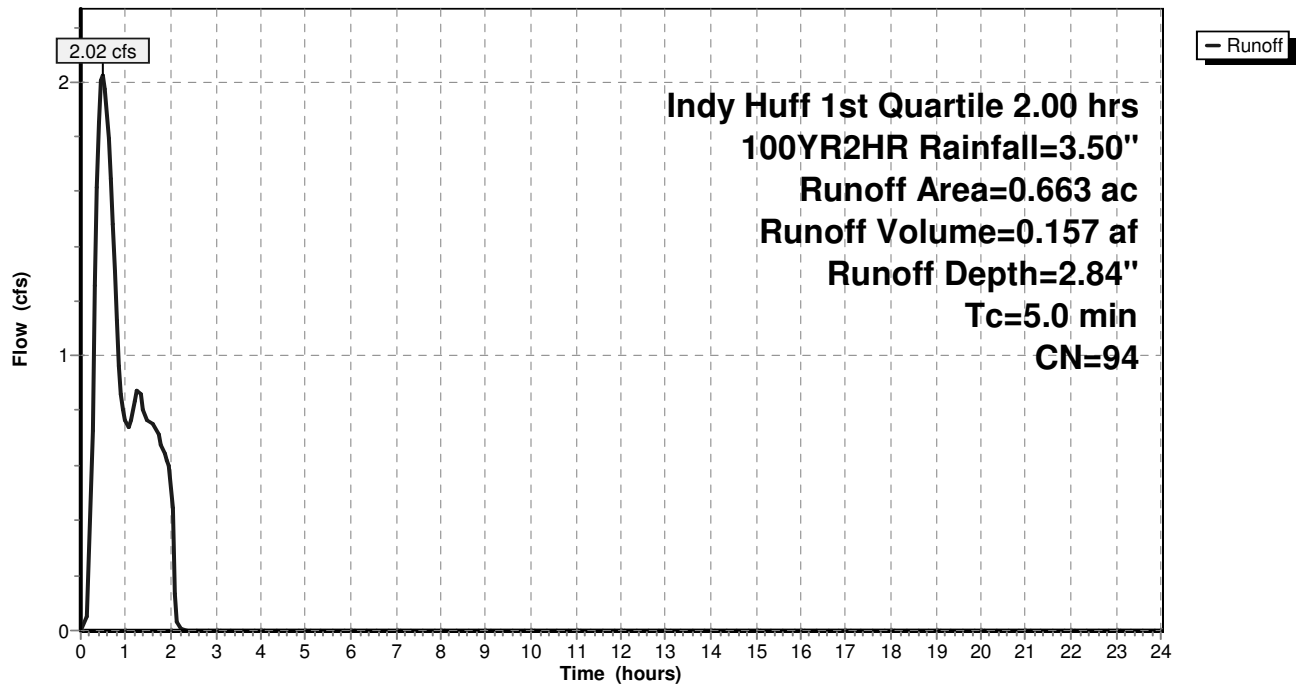
Runoff = 2.02 cfs @ 0.48 hrs, Volume= 0.157 af, Depth= 2.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

Area (ac)	CN	Description
* 0.554	98	Paved parking, Impervious
0.025	61	>75% Grass cover, Good, HSG B
0.084	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
0.663	94	Weighted Average
0.109		16.44% Pervious Area
0.554		83.56% Impervious Area

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

**Subcatchment 114S: DA 709****Hydrograph**

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Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

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**Summary for Subcatchment 115S: DA 708**

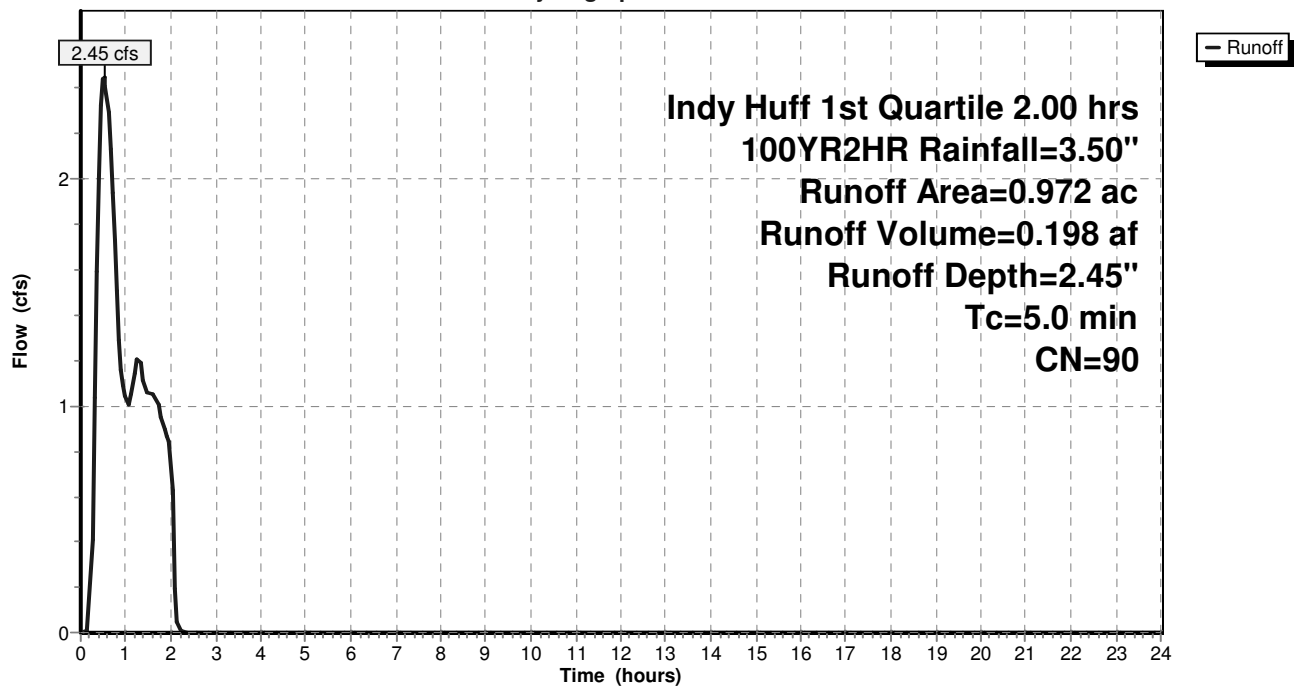
Runoff = 2.45 cfs @ 0.51 hrs, Volume= 0.198 af, Depth= 2.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

Area (ac)	CN	Description
* 0.671	98	Paved parking, Impervious
0.070	61	>75% Grass cover, Good, HSG B
0.231	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
0.972	90	Weighted Average
0.301		30.97% Pervious Area
0.671		69.03% Impervious Area

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

**Subcatchment 115S: DA 708****Hydrograph**

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Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

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**Summary for Subcatchment 116S: DA 707**

Runoff = 1.78 cfs @ 0.44 hrs, Volume= 0.135 af, Depth= 3.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

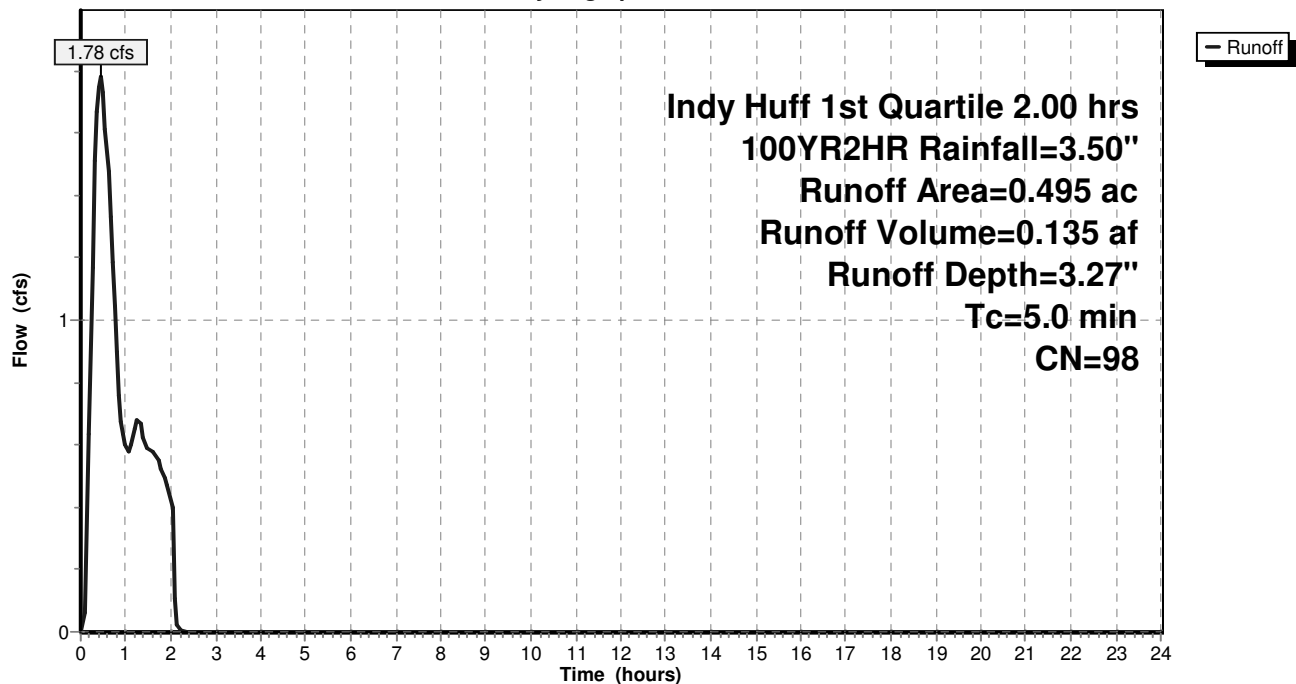
Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

	Area (ac)	CN	Description
*	0.495	98	Paved parking, Impervious
	0.000	61	>75% Grass cover, Good, HSG B
	0.000	74	>75% Grass cover, Good, HSG C
	0.000	70	Woods, Good, HSG C
	0.000	77	Woods, Good, HSG D
	0.495	98	Weighted Average
	0.495		100.00% Impervious Area

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

**Subcatchment 116S: DA 707**

Hydrograph



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Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

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**Summary for Subcatchment 128S: DA 705**

Runoff = 3.56 cfs @ 0.44 hrs, Volume= 0.270 af, Depth= 3.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

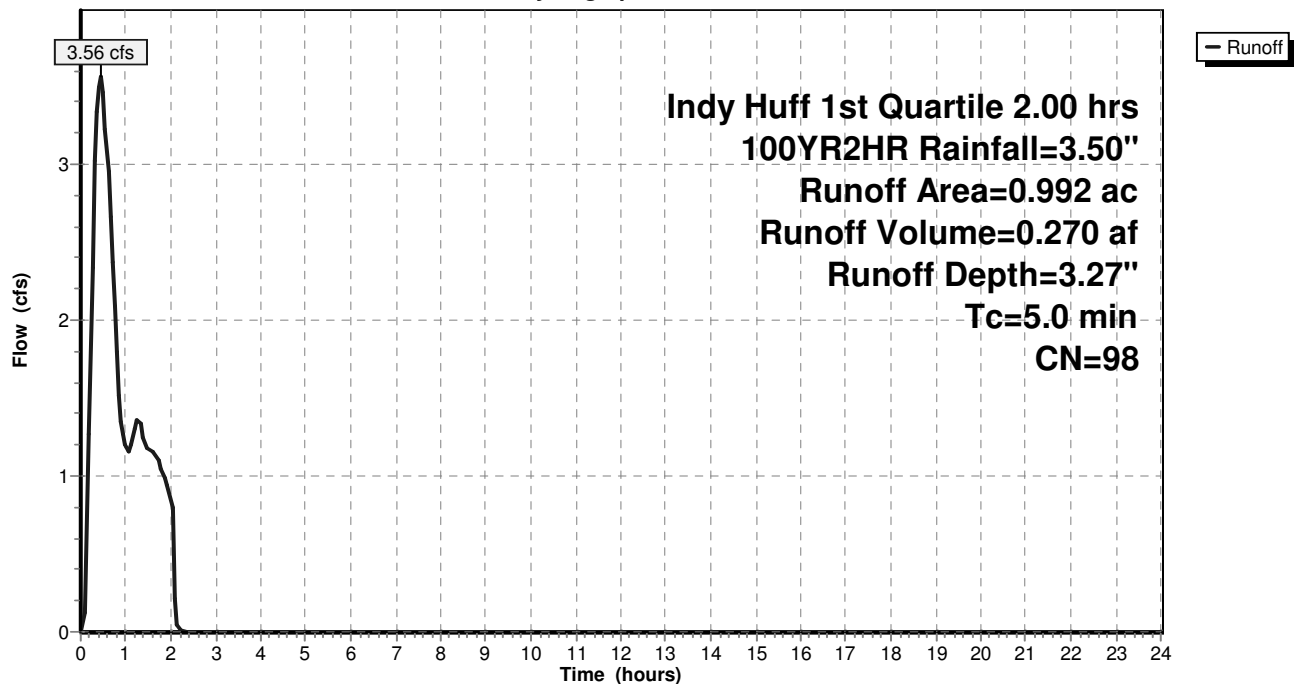
Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

	Area (ac)	CN	Description
*	0.992	98	Paved parking, Impervious
	0.000	61	>75% Grass cover, Good, HSG B
	0.000	74	>75% Grass cover, Good, HSG C
	0.000	70	Woods, Good, HSG C
	0.000	77	Woods, Good, HSG D
	0.992	98	Weighted Average
	0.992		100.00% Impervious Area

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

**Subcatchment 128S: DA 705**

Hydrograph



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Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

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**Summary for Subcatchment 129S: DA 704**

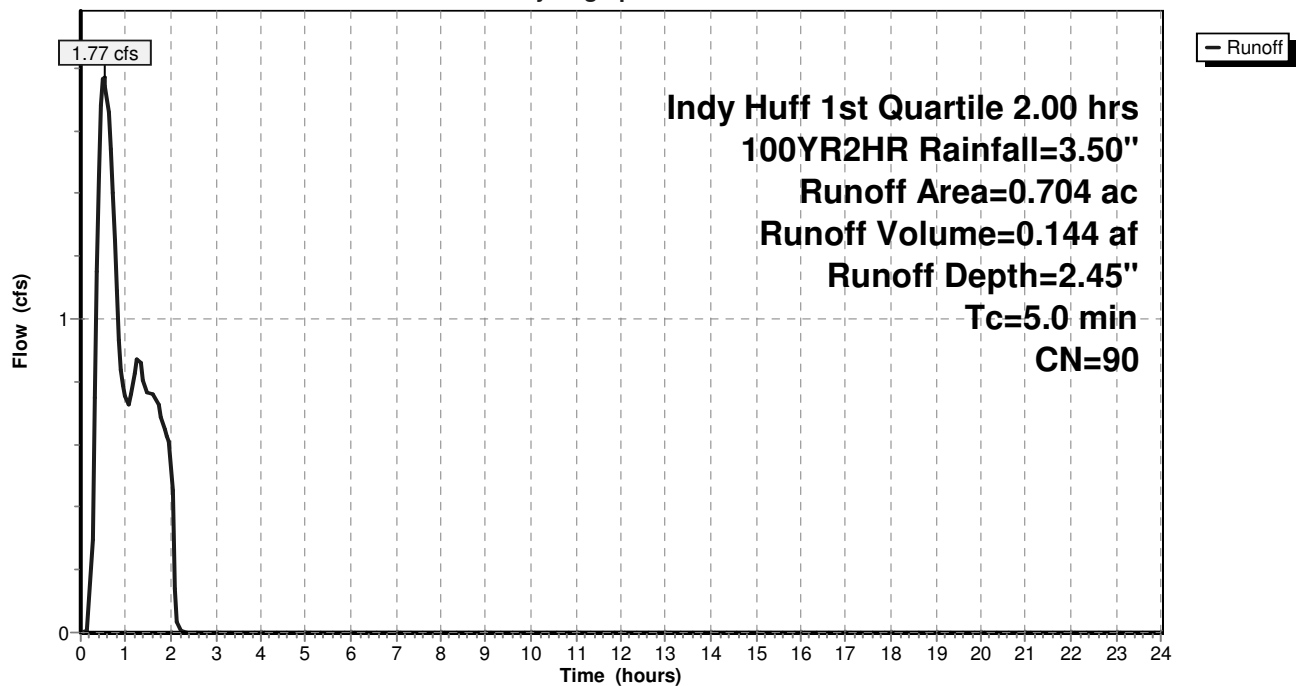
Runoff = 1.77 cfs @ 0.51 hrs, Volume= 0.144 af, Depth= 2.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

Area (ac)	CN	Description
* 0.490	98	Paved parking, Impervious
0.050	61	>75% Grass cover, Good, HSG B
0.164	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
0.704	90	Weighted Average
0.214		30.40% Pervious Area
0.490		69.60% Impervious Area

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

**Subcatchment 129S: DA 704****Hydrograph**

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Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

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**Summary for Subcatchment 130S: DA 703**

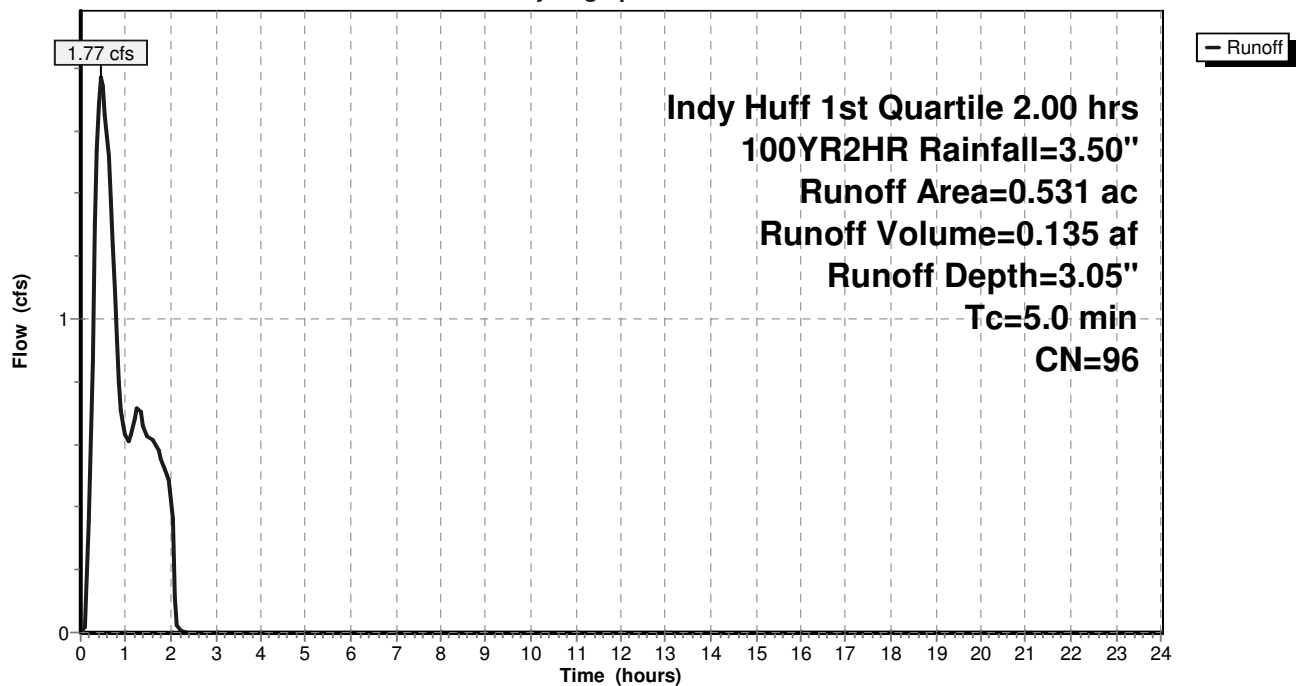
Runoff = 1.77 cfs @ 0.46 hrs, Volume= 0.135 af, Depth= 3.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

Area (ac)	CN	Description
* 0.485	98	Paved parking, Impervious
0.011	61	>75% Grass cover, Good, HSG B
0.035	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
0.531	96	Weighted Average
0.046		8.66% Pervious Area
0.485		91.34% Impervious Area

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

**Subcatchment 130S: DA 703****Hydrograph**

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Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

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**Summary for Subcatchment 131S: DA 701**

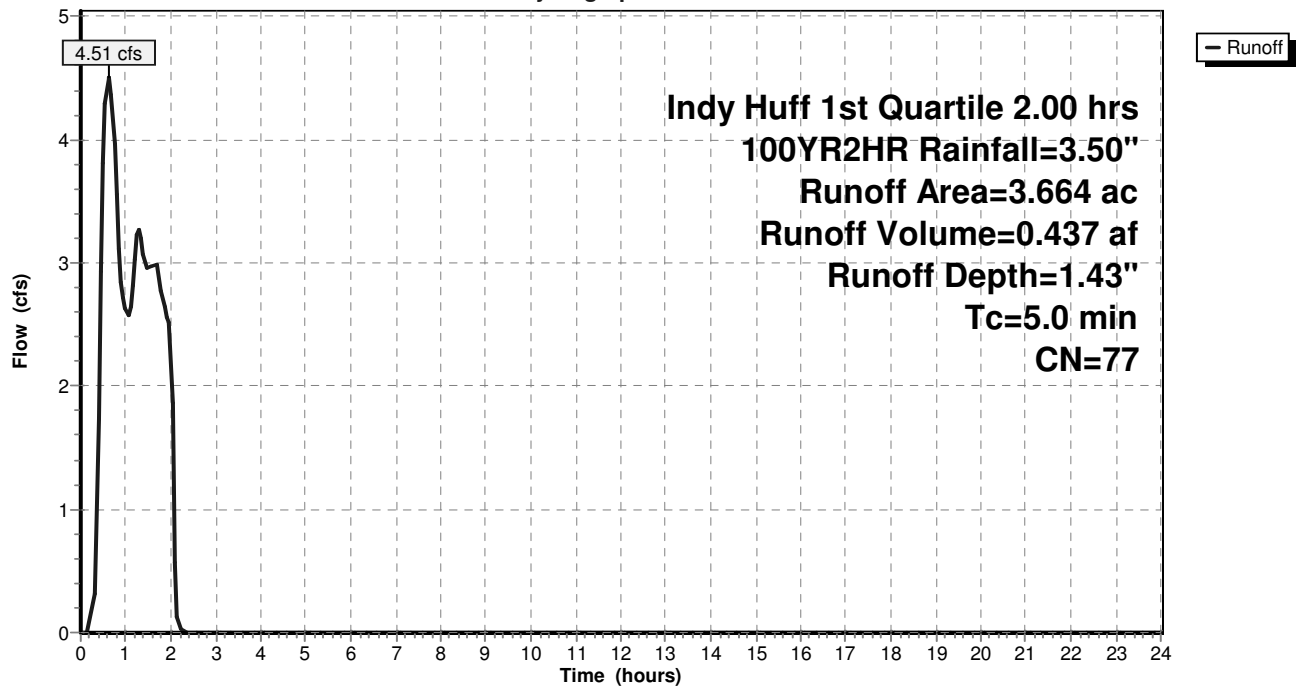
Runoff = 4.51 cfs @ 0.62 hrs, Volume= 0.437 af, Depth= 1.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

Area (ac)	CN	Description
* 0.852	98	Paved parking, Impervious
0.655	61	>75% Grass cover, Good, HSG B
2.157	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
<hr/>		
3.664	77	Weighted Average
2.812		76.75% Pervious Area
0.852		23.25% Impervious Area

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

**Subcatchment 131S: DA 701****Hydrograph**

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Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

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**Summary for Subcatchment 132S: DA 714**

Runoff = 8.02 cfs @ 0.44 hrs, Volume= 0.608 af, Depth= 3.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

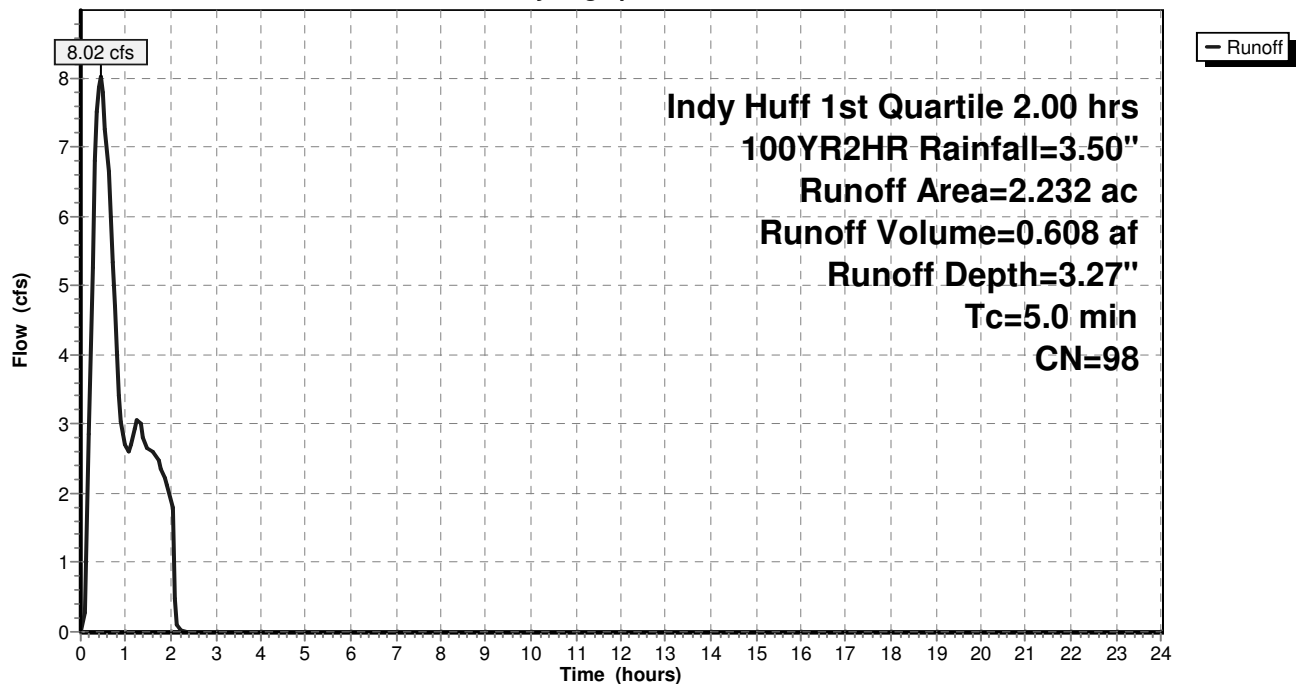
Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

Area (ac)	CN	Description
* 2.232	98	Paved parking, Impervious
0.000	61	>75% Grass cover, Good, HSG B
0.000	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
2.232	98	Weighted Average
2.232		100.00% Impervious Area

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

**Subcatchment 132S: DA 714**

Hydrograph





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Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

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**Summary for Subcatchment 133S: DA 713**

Runoff = 5.38 cfs @ 0.44 hrs, Volume= 0.407 af, Depth= 3.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

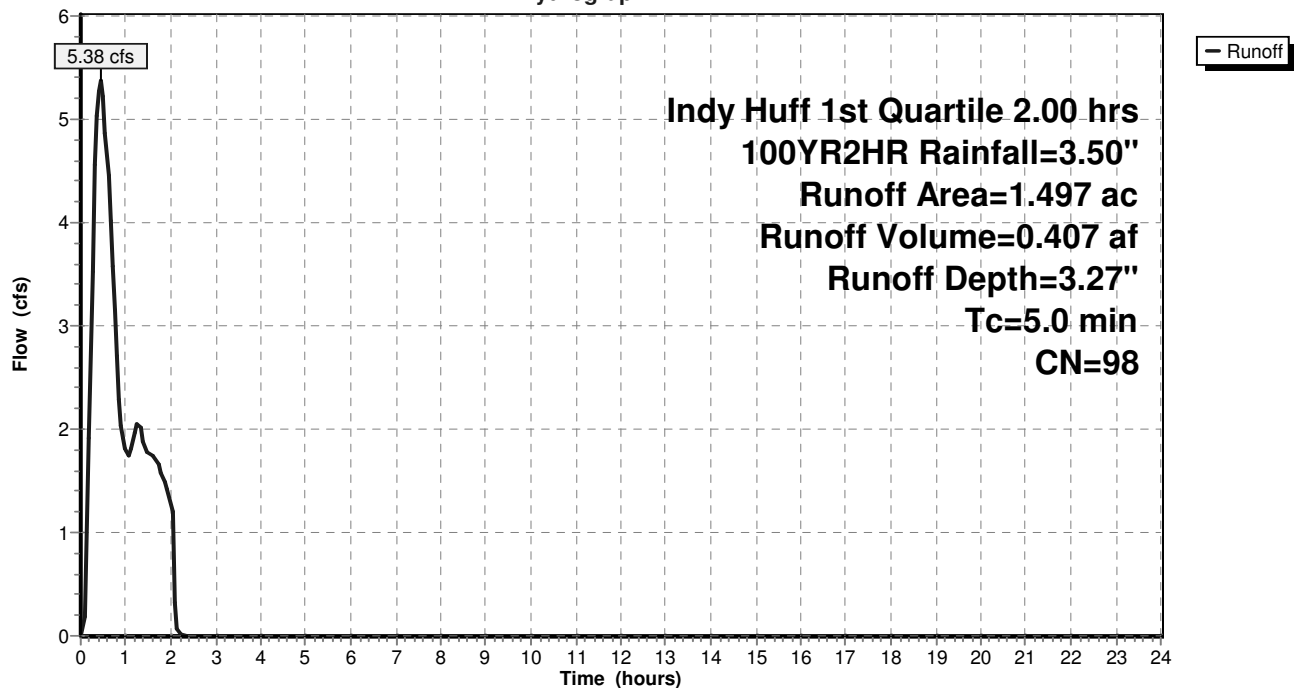
Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

	Area (ac)	CN	Description
*	1.497	98	Paved parking, Impervious
	0.000	61	>75% Grass cover, Good, HSG B
	0.000	74	>75% Grass cover, Good, HSG C
	0.000	70	Woods, Good, HSG C
	0.000	77	Woods, Good, HSG D
	1.497	98	Weighted Average
	1.497		100.00% Impervious Area

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

**Subcatchment 133S: DA 713**

Hydrograph



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Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

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**Summary for Subcatchment 134S: DA 712**

Runoff = 8.02 cfs @ 0.44 hrs, Volume= 0.608 af, Depth= 3.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

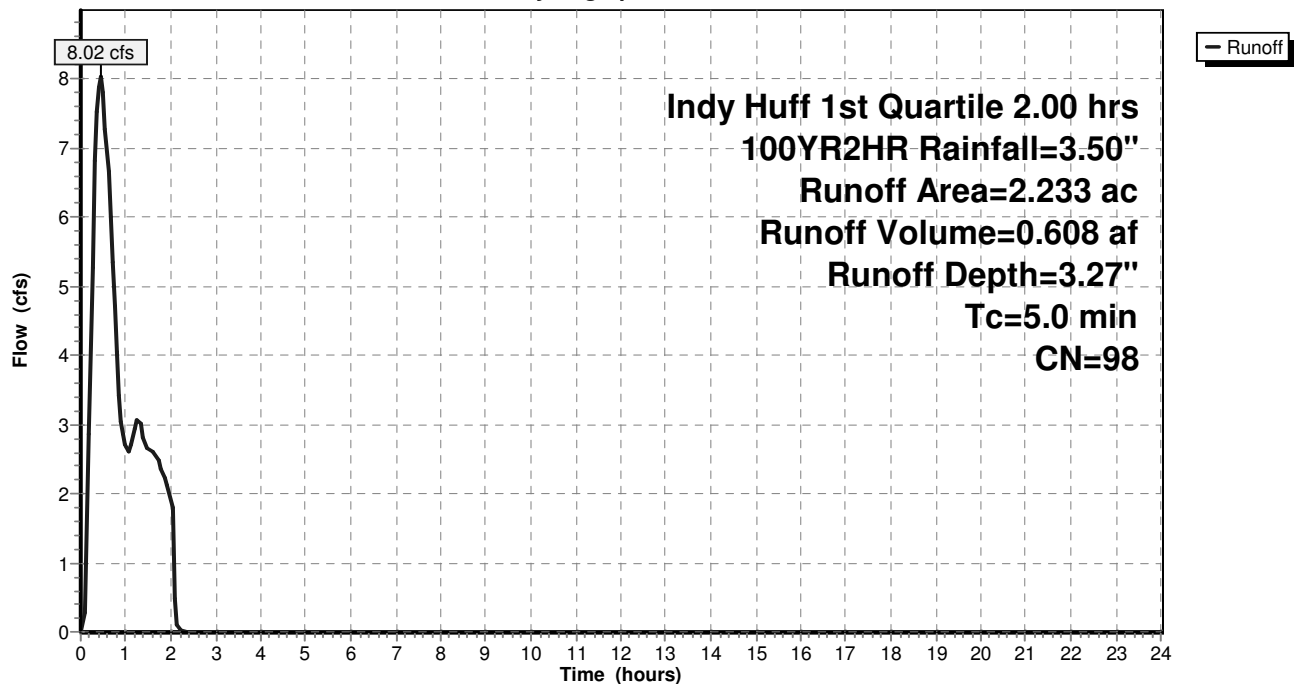
Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

	Area (ac)	CN	Description
*	2.233	98	Paved parking, Impervious
	0.000	61	>75% Grass cover, Good, HSG B
	0.000	74	>75% Grass cover, Good, HSG C
	0.000	70	Woods, Good, HSG C
	0.000	77	Woods, Good, HSG D
	2.233	98	Weighted Average
	2.233		100.00% Impervious Area

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

**Subcatchment 134S: DA 712**

Hydrograph



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Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

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**Summary for Subcatchment 135S: DA 730**

Runoff = 8.02 cfs @ 0.44 hrs, Volume= 0.608 af, Depth= 3.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

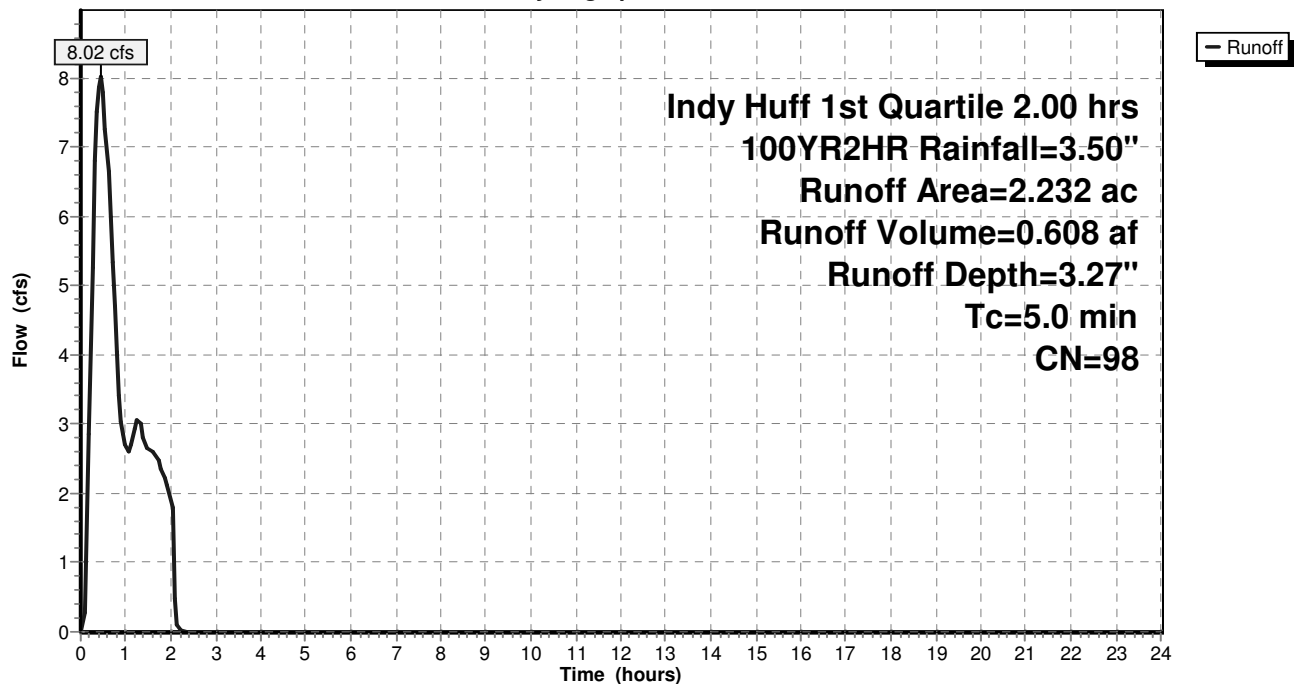
Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

	Area (ac)	CN	Description
*	2.232	98	Paved parking, Impervious
	0.000	61	>75% Grass cover, Good, HSG B
	0.000	74	>75% Grass cover, Good, HSG C
	0.000	70	Woods, Good, HSG C
	0.000	77	Woods, Good, HSG D
	2.232	98	Weighted Average
	2.232		100.00% Impervious Area

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

**Subcatchment 135S: DA 730**

Hydrograph



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Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

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**Summary for Subcatchment 136S: DA 728**

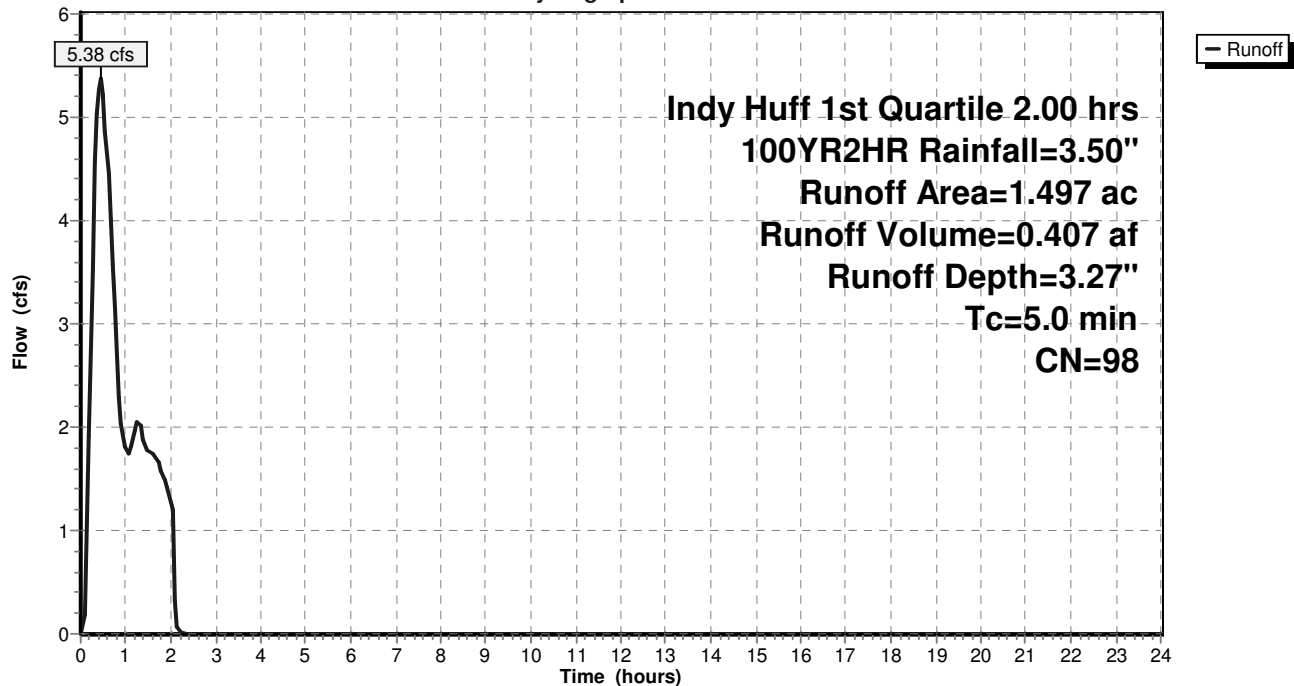
Runoff = 5.38 cfs @ 0.44 hrs, Volume= 0.407 af, Depth= 3.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

	Area (ac)	CN	Description
*	1.497	98	Paved parking, Impervious
	0.000	61	>75% Grass cover, Good, HSG B
	0.000	74	>75% Grass cover, Good, HSG C
	0.000	70	Woods, Good, HSG C
	0.000	77	Woods, Good, HSG D
	1.497	98	Weighted Average
	1.497		100.00% Impervious Area

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

**Subcatchment 136S: DA 728****Hydrograph**

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Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

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**Summary for Subcatchment 137S: DA 726**

Runoff = 8.02 cfs @ 0.44 hrs, Volume= 0.608 af, Depth= 3.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

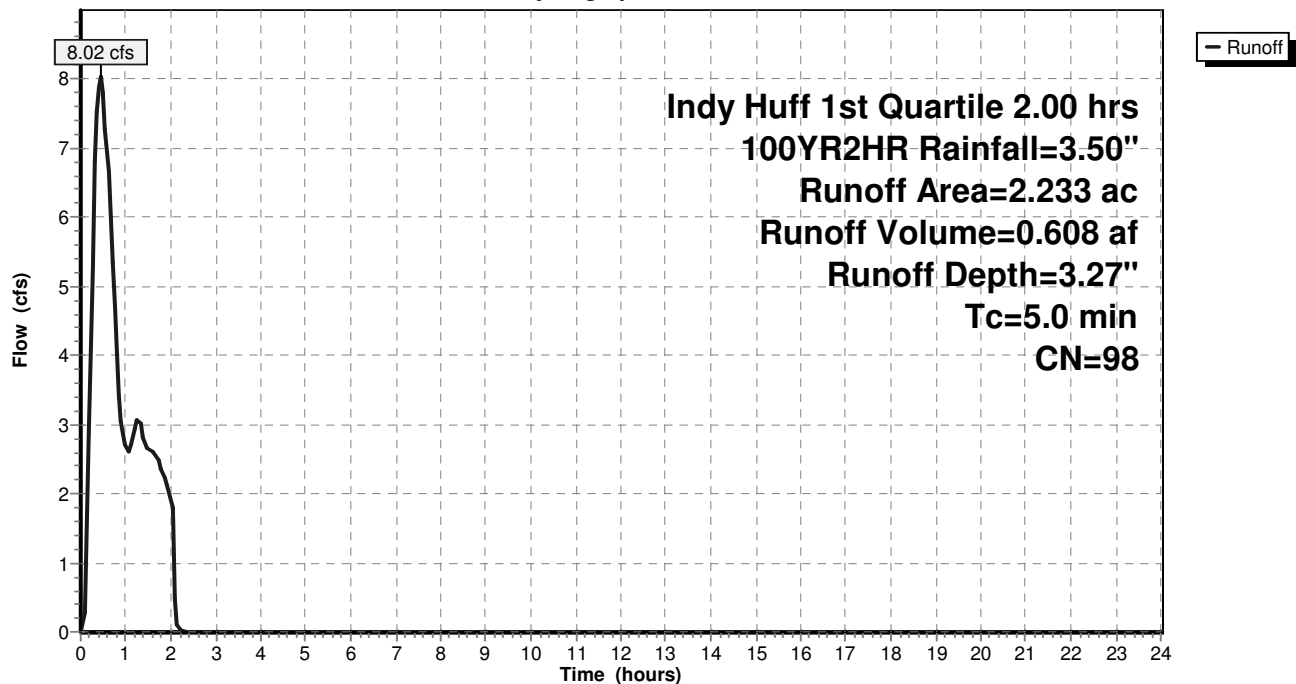
Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

Area (ac)	CN	Description
* 2.233	98	Paved parking, Impervious
0.000	61	>75% Grass cover, Good, HSG B
0.000	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
2.233	98	Weighted Average
2.233		100.00% Impervious Area

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

**Subcatchment 137S: DA 726**

Hydrograph



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Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

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**Summary for Subcatchment 138S: DA 724**

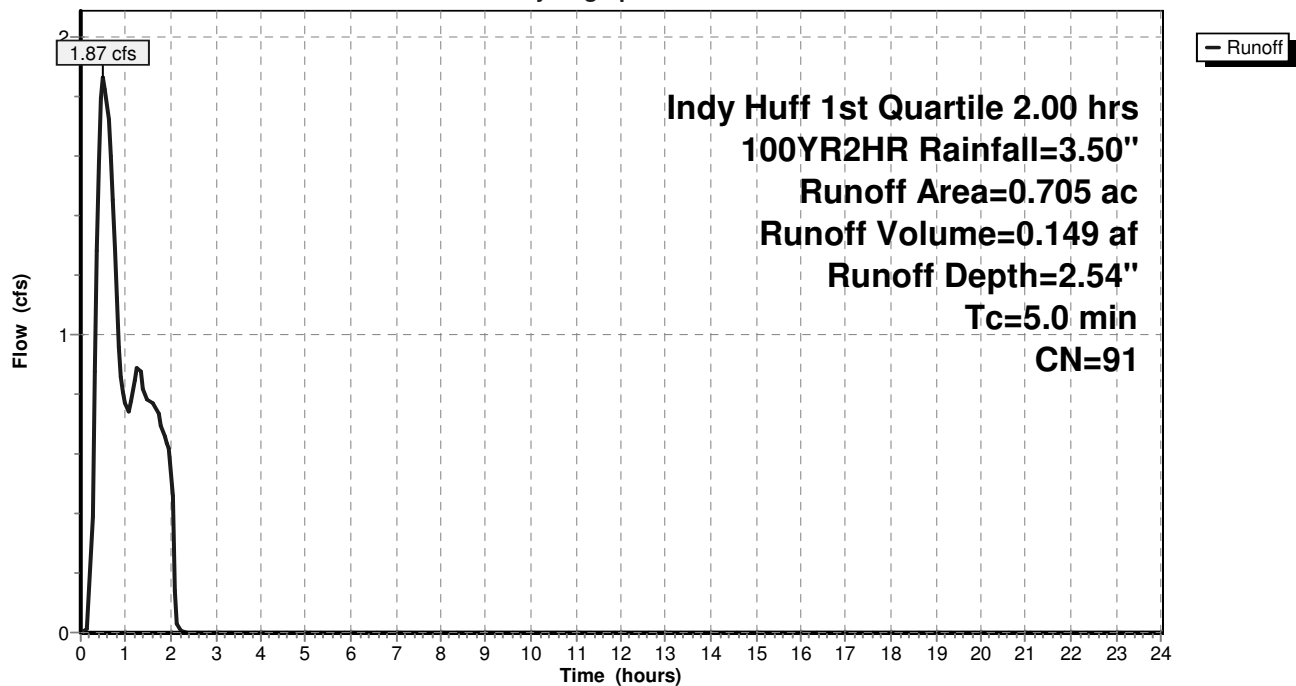
Runoff = 1.87 cfs @ 0.51 hrs, Volume= 0.149 af, Depth= 2.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

Area (ac)	CN	Description
* 0.525	98	Paved parking, Impervious
0.042	61	>75% Grass cover, Good, HSG B
0.138	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
0.705	91	Weighted Average
0.180		25.53% Pervious Area
0.525		74.47% Impervious Area

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

**Subcatchment 138S: DA 724****Hydrograph**

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Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

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**Summary for Subcatchment 139S: DA 723**

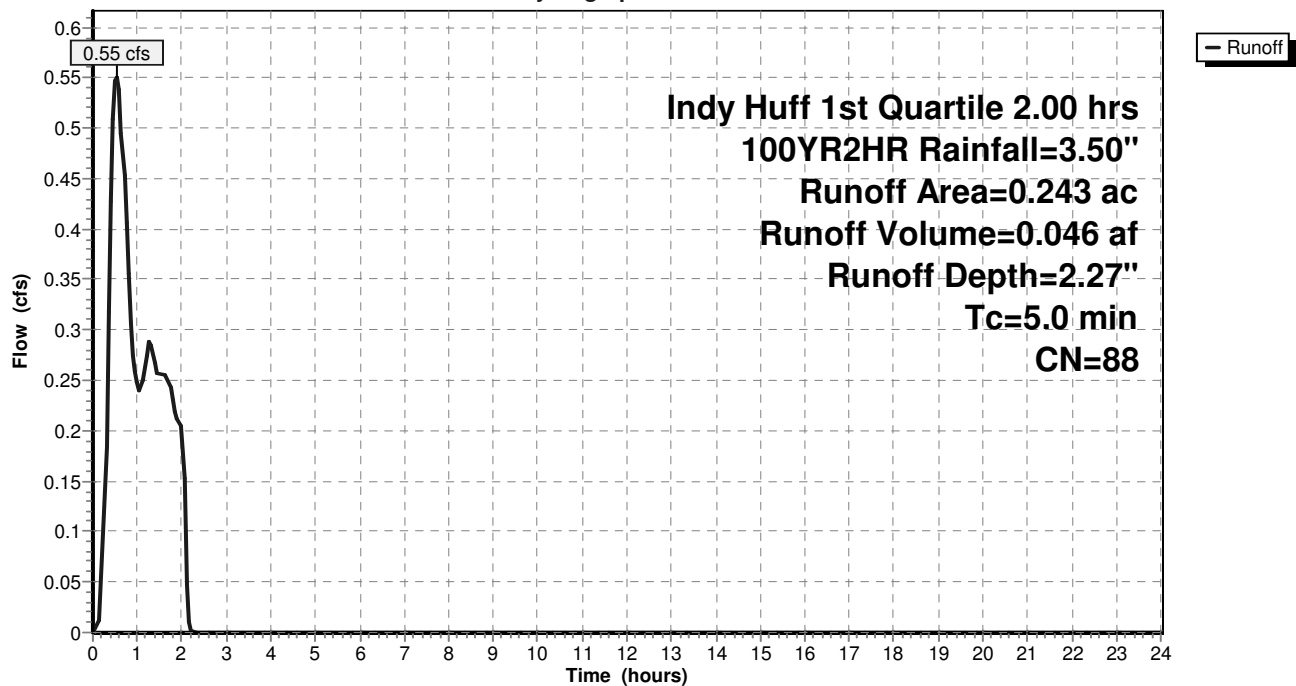
Runoff = 0.55 cfs @ 0.53 hrs, Volume= 0.046 af, Depth= 2.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

Area (ac)	CN	Description
* 0.150	98	Paved parking, Impervious
0.022	61	>75% Grass cover, Good, HSG B
0.071	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
0.243	88	Weighted Average
0.093		38.27% Pervious Area
0.150		61.73% Impervious Area

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

**Subcatchment 139S: DA 723****Hydrograph**

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Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

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**Summary for Subcatchment 140S: DA 722**

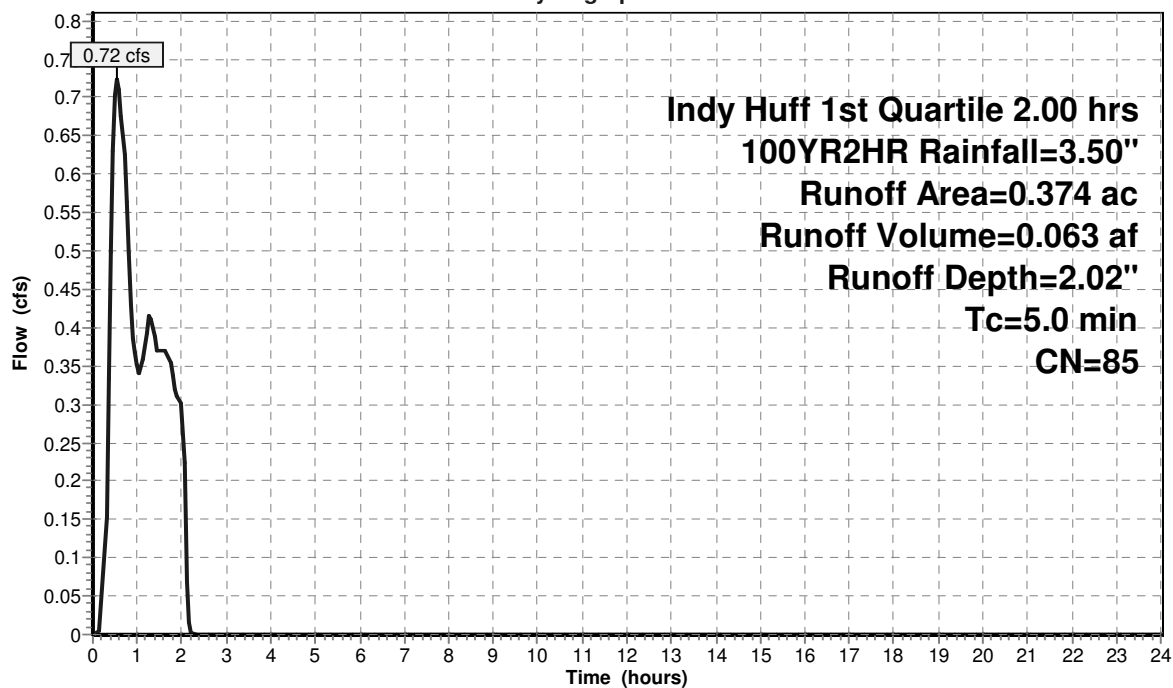
Runoff = 0.72 cfs @ 0.55 hrs, Volume= 0.063 af, Depth= 2.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

Area (ac)	CN	Description
* 0.197	98	Paved parking, Impervious
0.041	61	>75% Grass cover, Good, HSG B
0.136	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
0.374	85	Weighted Average
0.177		47.33% Pervious Area
0.197		52.67% Impervious Area

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

**Subcatchment 140S: DA 722****Hydrograph**



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Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

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**Summary for Subcatchment 141S: DA 721**

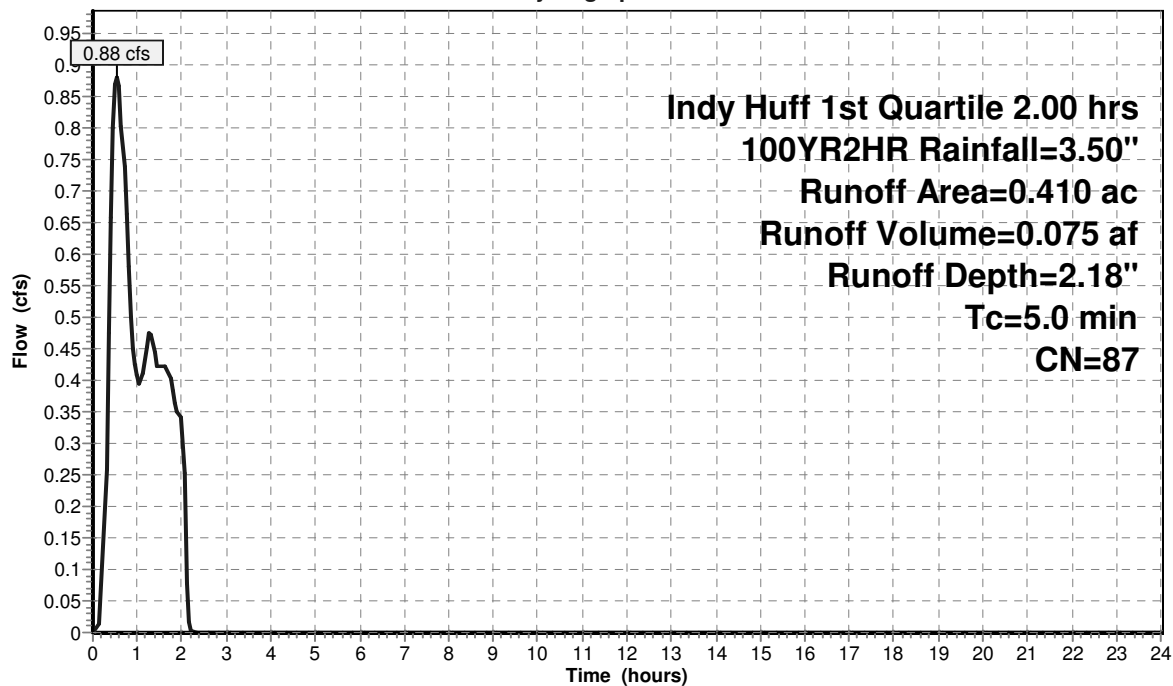
Runoff = 0.88 cfs @ 0.54 hrs, Volume= 0.075 af, Depth= 2.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

Area (ac)	CN	Description
* 0.237	98	Paved parking, Impervious
0.040	61	>75% Grass cover, Good, HSG B
0.133	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
0.410	87	Weighted Average
0.173		42.20% Pervious Area
0.237		57.80% Impervious Area

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

**Subcatchment 141S: DA 721****Hydrograph**

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Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

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**Summary for Subcatchment 142S: DA 720**

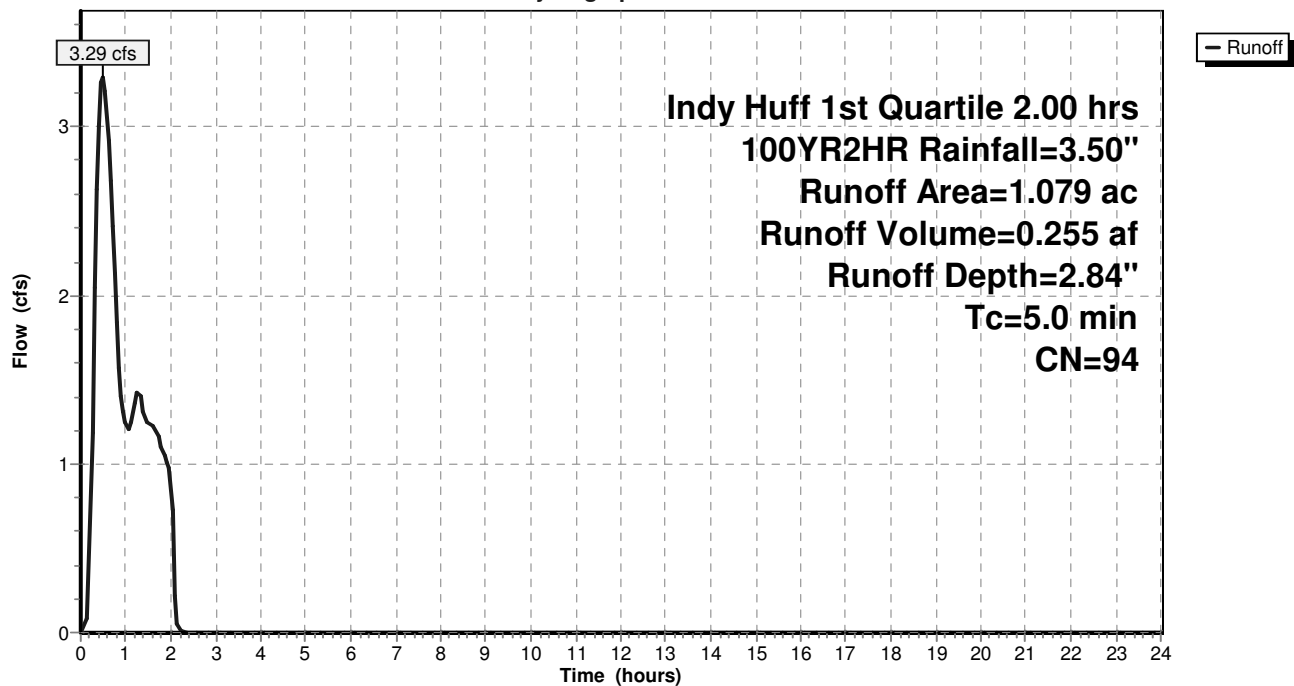
Runoff = 3.29 cfs @ 0.48 hrs, Volume= 0.255 af, Depth= 2.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

Area (ac)	CN	Description
* 0.910	98	Paved parking, Impervious
0.039	61	>75% Grass cover, Good, HSG B
0.130	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
1.079	94	Weighted Average
0.169		15.66% Pervious Area
0.910		84.34% Impervious Area

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

**Subcatchment 142S: DA 720****Hydrograph**

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Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

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**Summary for Subcatchment 143S: DA 719**

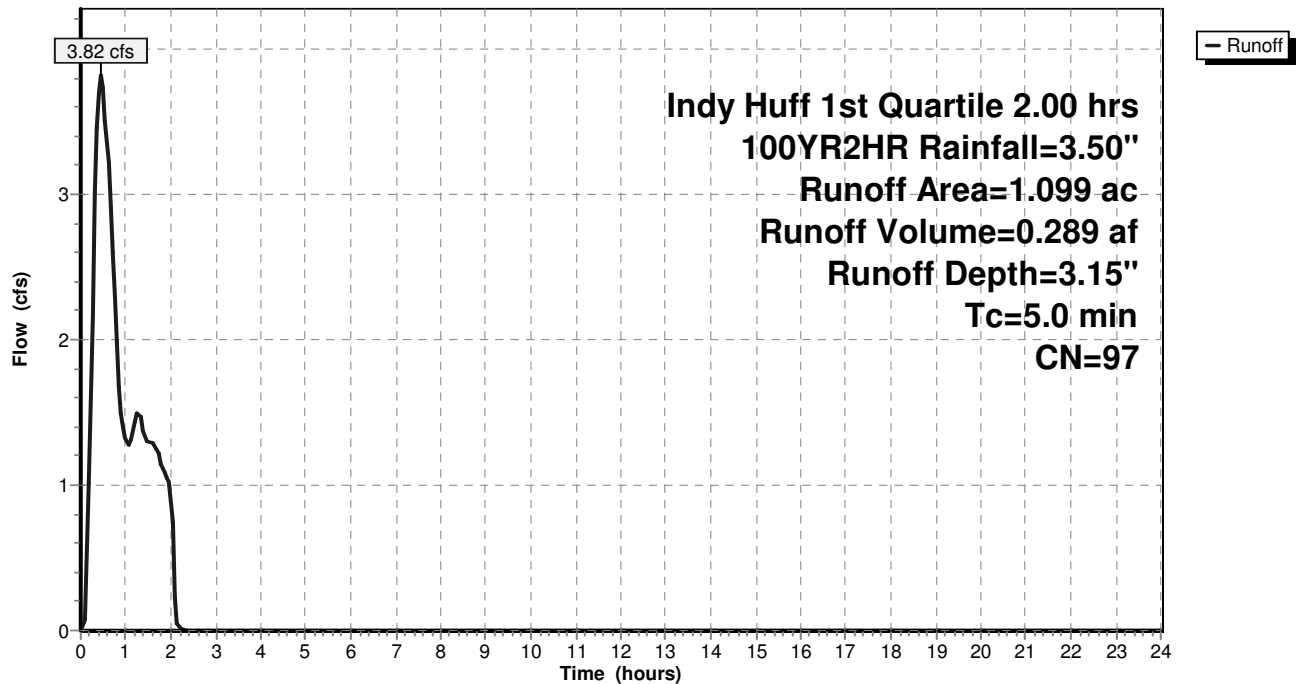
Runoff = 3.82 cfs @ 0.46 hrs, Volume= 0.289 af, Depth= 3.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

Area (ac)	CN	Description
* 1.043	98	Paved parking, Impervious
0.013	61	>75% Grass cover, Good, HSG B
0.043	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
1.099	97	Weighted Average
0.056		5.10% Pervious Area
1.043		94.90% Impervious Area

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

**Subcatchment 143S: DA 719****Hydrograph**

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Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

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**Summary for Subcatchment 144S: DA 718**

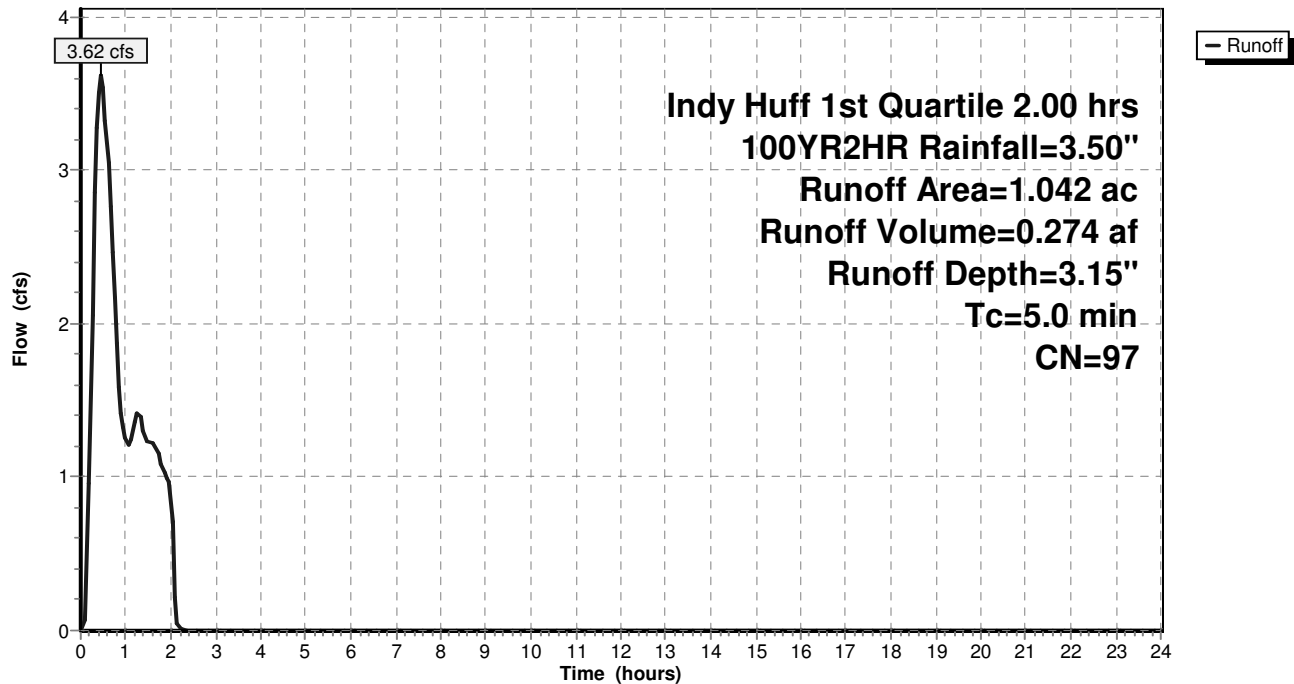
Runoff = 3.62 cfs @ 0.46 hrs, Volume= 0.274 af, Depth= 3.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

Area (ac)	CN	Description
* 0.987	98	Paved parking, Impervious
0.013	61	>75% Grass cover, Good, HSG B
0.042	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
1.042	97	Weighted Average
0.055		5.28% Pervious Area
0.987		94.72% Impervious Area

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

**Subcatchment 144S: DA 718****Hydrograph**

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Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

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**Summary for Subcatchment 145S: DA 717**

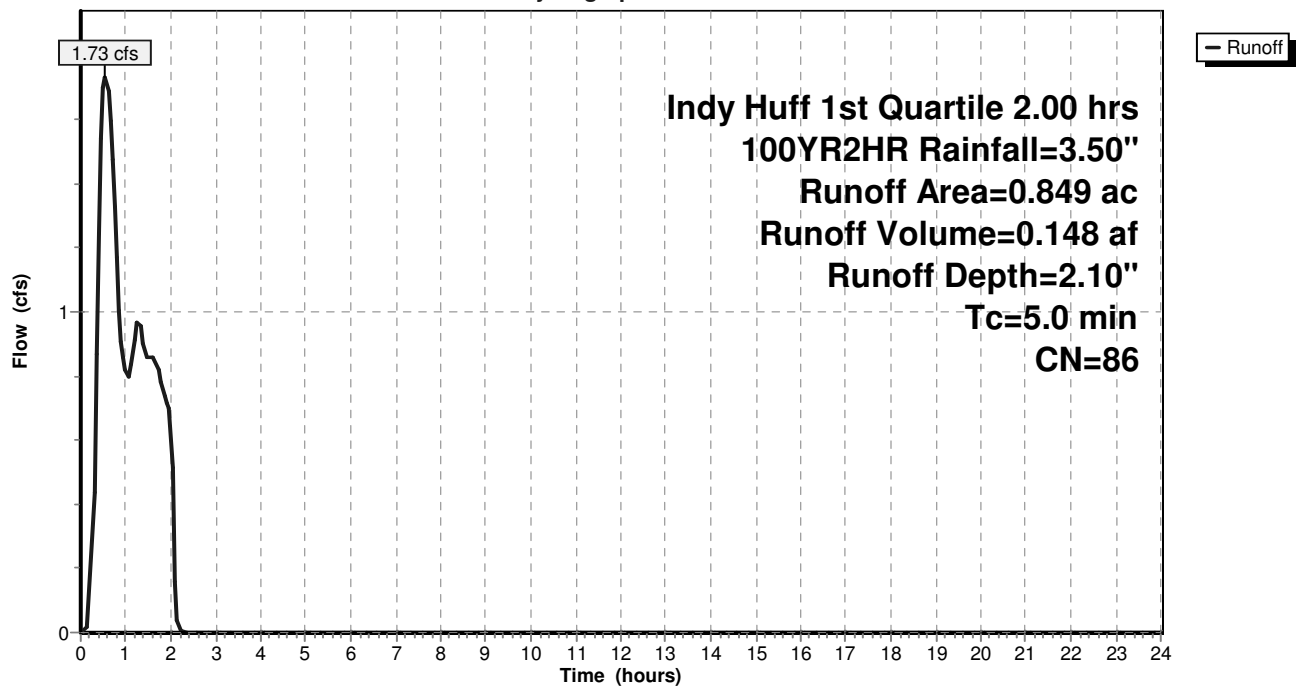
Runoff = 1.73 cfs @ 0.55 hrs, Volume= 0.148 af, Depth= 2.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

Area (ac)	CN	Description
* 0.470	98	Paved parking, Impervious
0.088	61	>75% Grass cover, Good, HSG B
0.291	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
0.849	86	Weighted Average
0.379		44.64% Pervious Area
0.470		55.36% Impervious Area

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

**Subcatchment 145S: DA 717****Hydrograph**

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Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

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**Summary for Subcatchment 146S: DA 731**

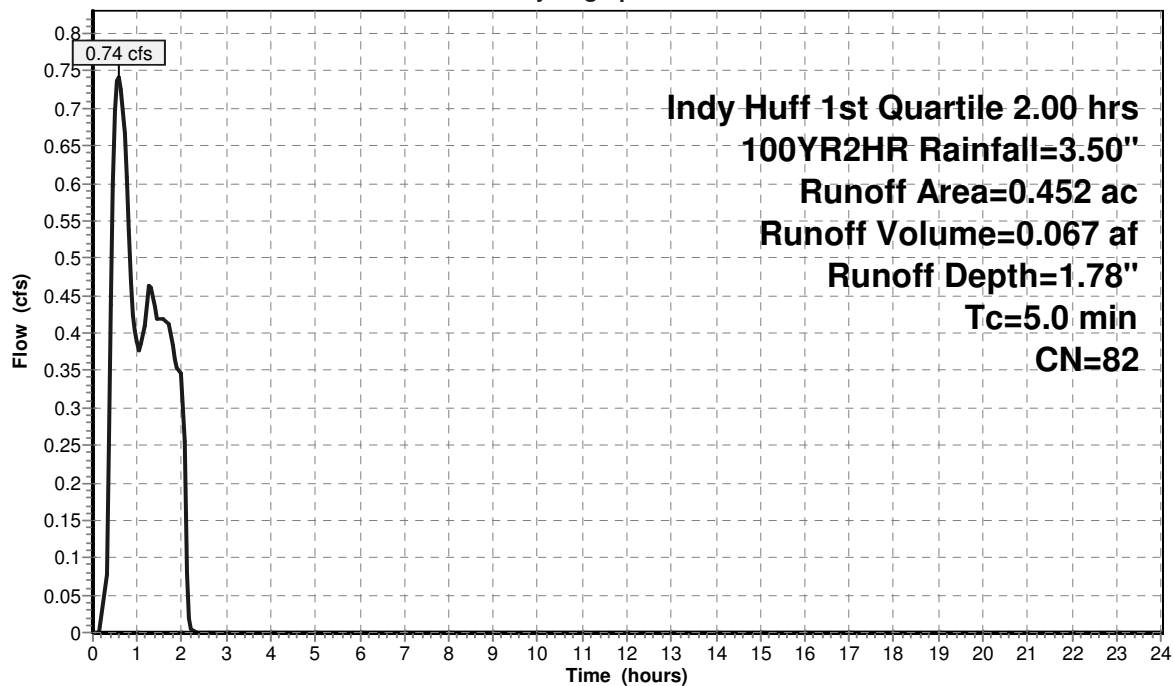
Runoff = 0.74 cfs @ 0.58 hrs, Volume= 0.067 af, Depth= 1.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

Area (ac)	CN	Description
* 0.185	98	Paved parking, Impervious
0.062	61	>75% Grass cover, Good, HSG B
0.205	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
0.452	82	Weighted Average
0.267		59.07% Pervious Area
0.185		40.93% Impervious Area

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

**Subcatchment 146S: DA 731****Hydrograph**

— Runoff

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Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

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**Summary for Subcatchment 147S: DA 729**

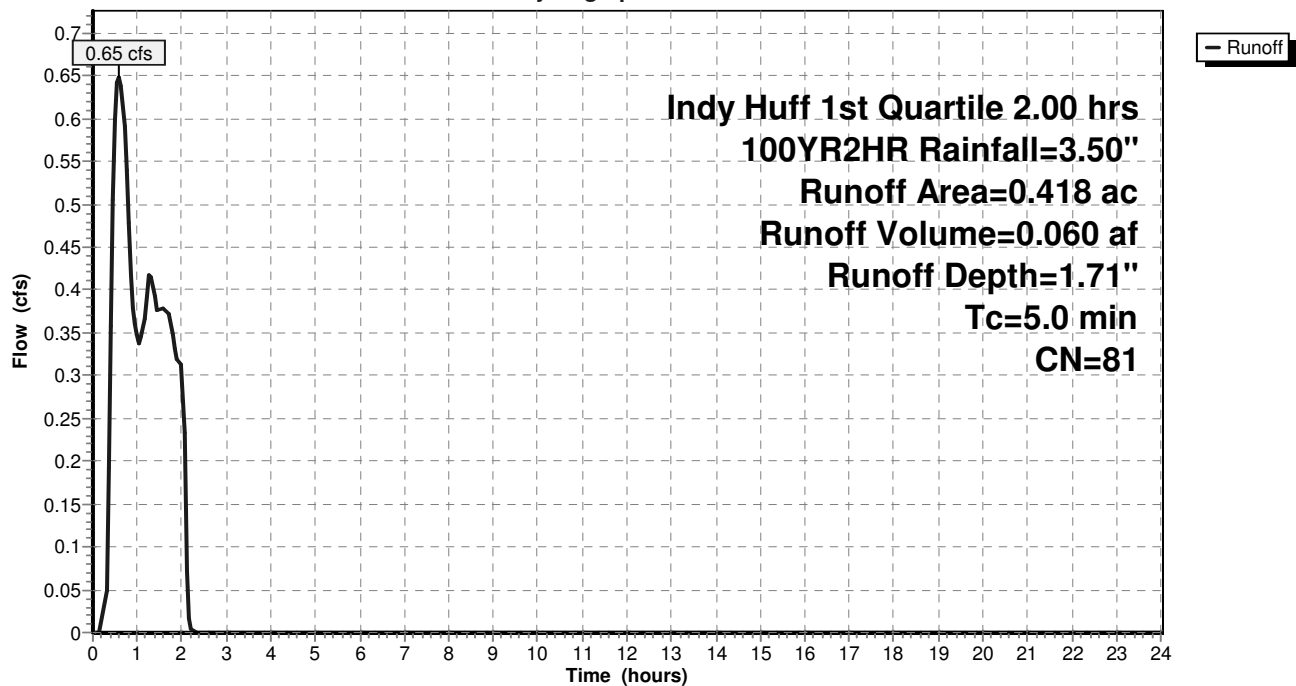
Runoff = 0.65 cfs @ 0.59 hrs, Volume= 0.060 af, Depth= 1.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

Area (ac)	CN	Description
* 0.153	98	Paved parking, Impervious
0.062	61	>75% Grass cover, Good, HSG B
0.203	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
0.418	81	Weighted Average
0.265		63.40% Pervious Area
0.153		36.60% Impervious Area

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

**Subcatchment 147S: DA 729****Hydrograph**

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**Summary for Subcatchment 148S: DA 727**

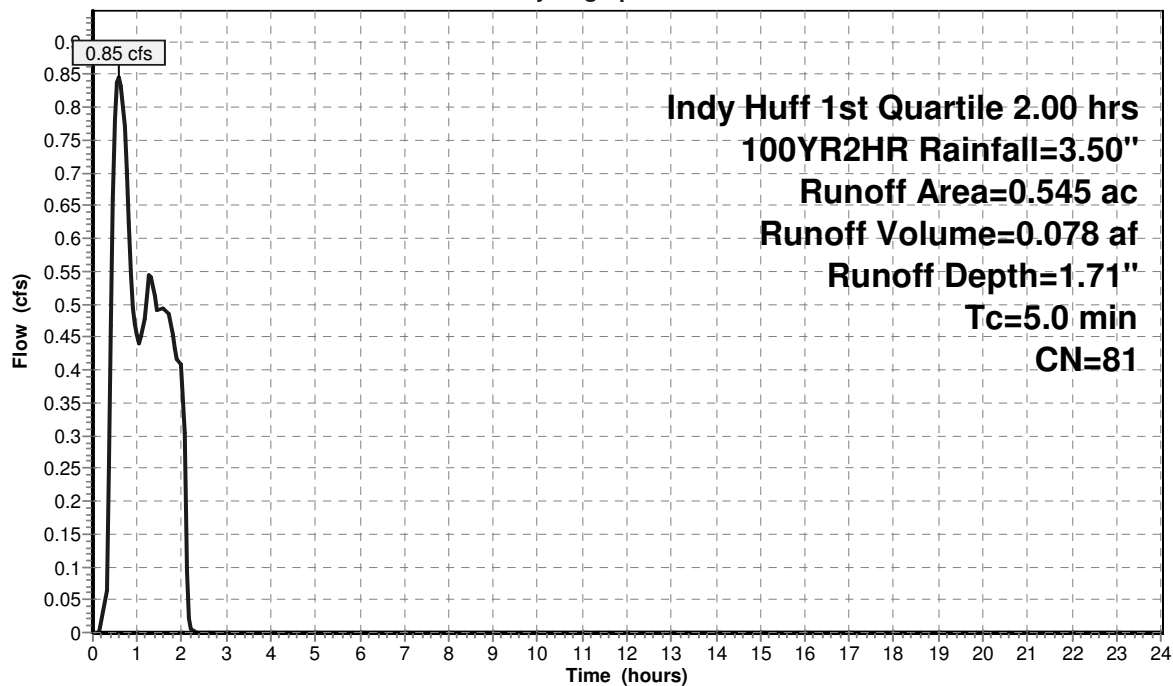
Runoff = 0.85 cfs @ 0.59 hrs, Volume= 0.078 af, Depth= 1.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

Area (ac)	CN	Description
* 0.206	98	Paved parking, Impervious
0.079	61	>75% Grass cover, Good, HSG B
0.260	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
0.545	81	Weighted Average
0.339		62.20% Pervious Area
0.206		37.80% Impervious Area

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

**Subcatchment 148S: DA 727****Hydrograph**



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Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

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**Summary for Subcatchment 149S: DA 725**

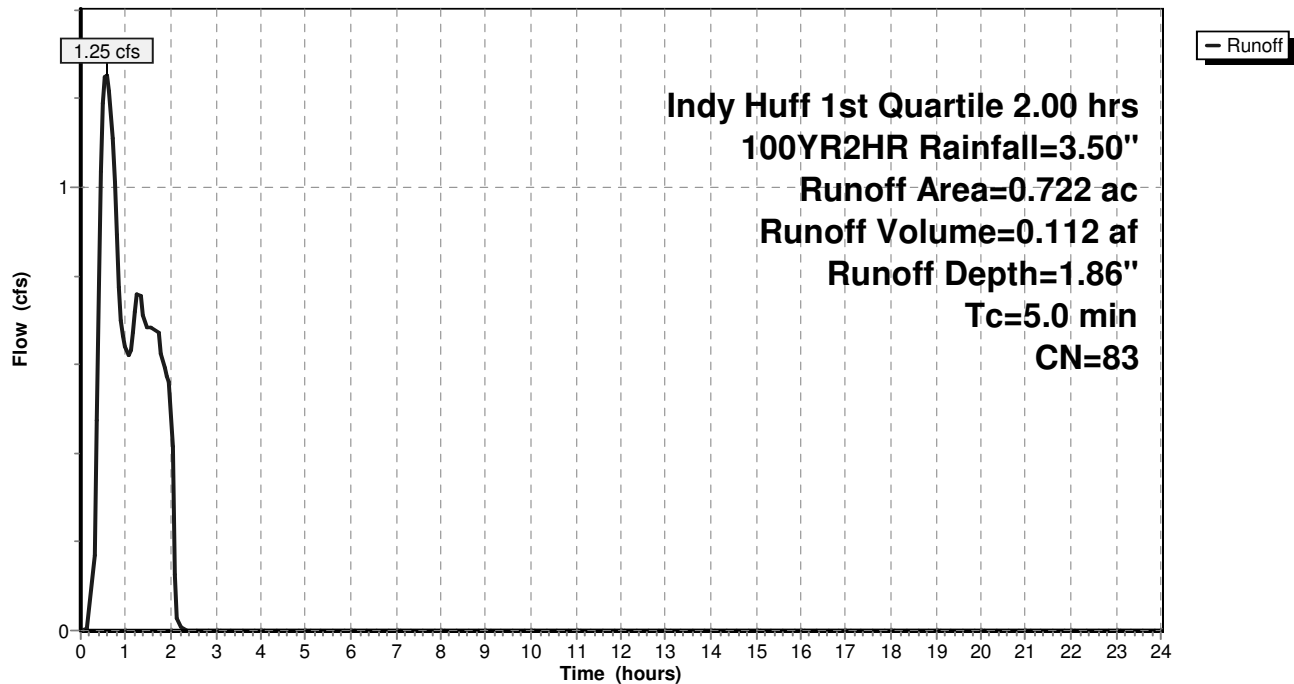
Runoff = 1.25 cfs @ 0.57 hrs, Volume= 0.112 af, Depth= 1.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

Area (ac)	CN	Description
* 0.332	98	Paved parking, Impervious
0.091	61	>75% Grass cover, Good, HSG B
0.299	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
0.722	83	Weighted Average
0.390		54.02% Pervious Area
0.332		45.98% Impervious Area

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

**Subcatchment 149S: DA 725****Hydrograph**

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Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

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**Summary for Subcatchment 150S: DA 733**

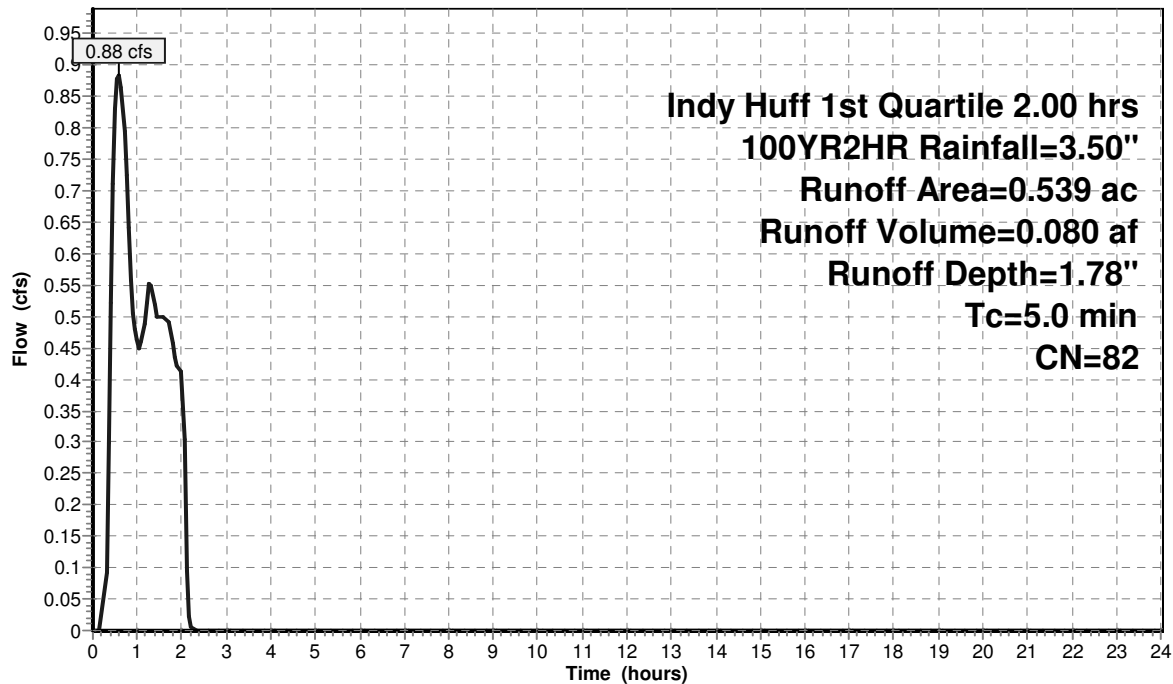
Runoff = 0.88 cfs @ 0.58 hrs, Volume= 0.080 af, Depth= 1.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

Area (ac)	CN	Description
* 0.212	98	Paved parking, Impervious
0.076	61	>75% Grass cover, Good, HSG B
0.251	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
0.539	82	Weighted Average
0.327		60.67% Pervious Area
0.212		39.33% Impervious Area

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

**Subcatchment 150S: DA 733****Hydrograph**

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Proposed Condition Modeling

Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

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**Summary for Subcatchment 151S: DA 737**

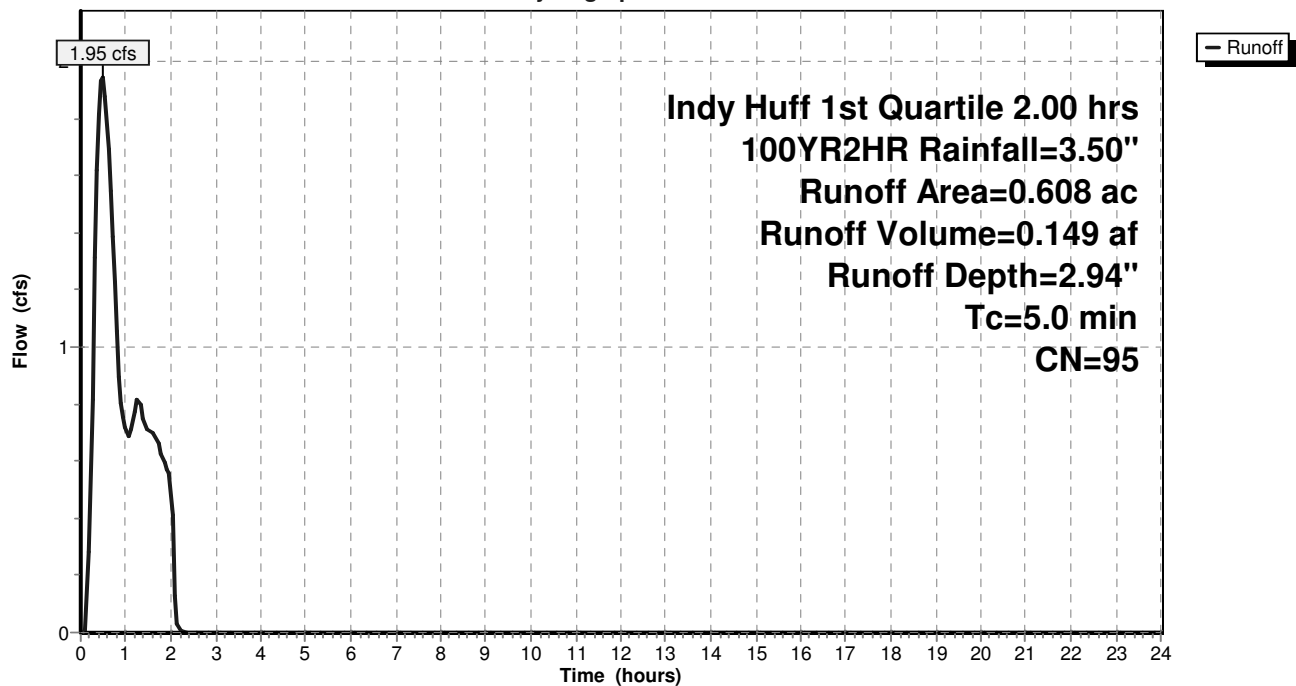
Runoff = 1.95 cfs @ 0.47 hrs, Volume= 0.149 af, Depth= 2.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

Area (ac)	CN	Description
* 0.540	98	Paved parking, Impervious
0.016	61	>75% Grass cover, Good, HSG B
0.052	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
0.608	95	Weighted Average
0.068		11.18% Pervious Area
0.540		88.82% Impervious Area

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

**Subcatchment 151S: DA 737****Hydrograph**

**Marlores**

Prepared by Studio A

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Proposed Condition Modeling

Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

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**Summary for Subcatchment 152S: DA 735**

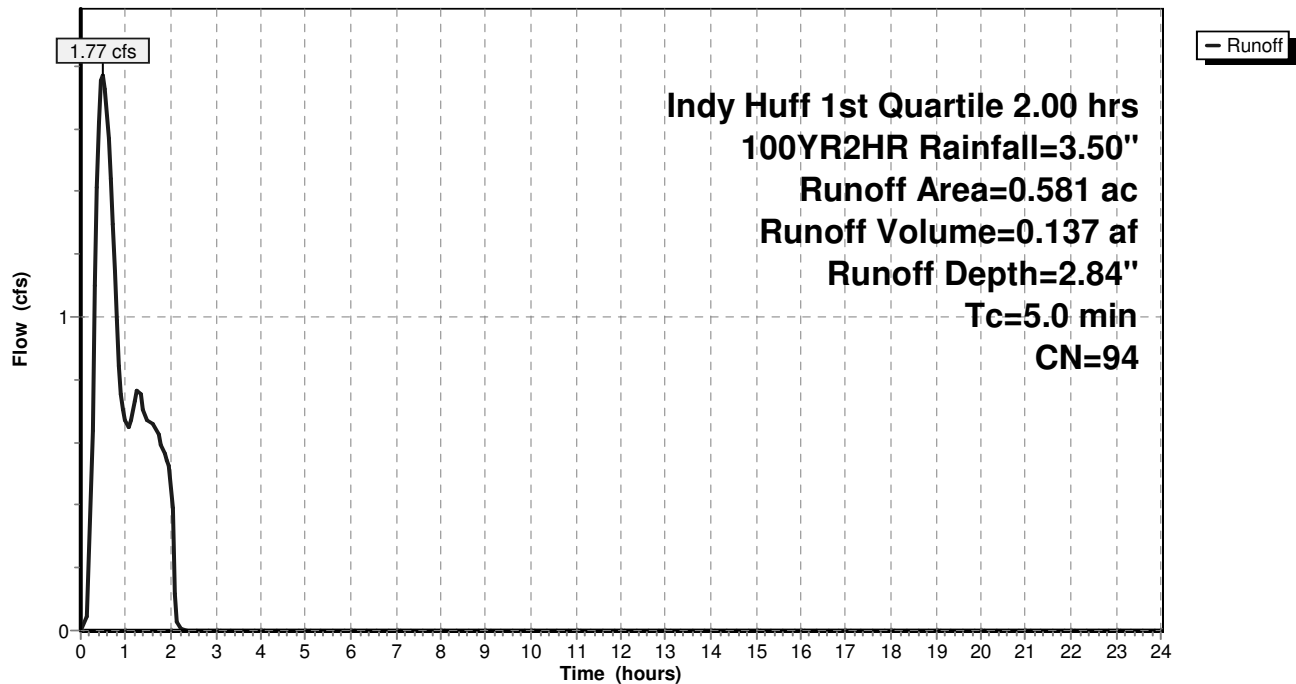
Runoff = 1.77 cfs @ 0.48 hrs, Volume= 0.137 af, Depth= 2.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

Area (ac)	CN	Description
* 0.495	98	Paved parking, Impervious
0.020	61	>75% Grass cover, Good, HSG B
0.066	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
0.581	94	Weighted Average
0.086		14.80% Pervious Area
0.495		85.20% Impervious Area

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

**Subcatchment 152S: DA 735****Hydrograph**

**Marlores**

Prepared by Studio A

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Proposed Condition Modeling

Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

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**Summary for Subcatchment 153S: DA 716**

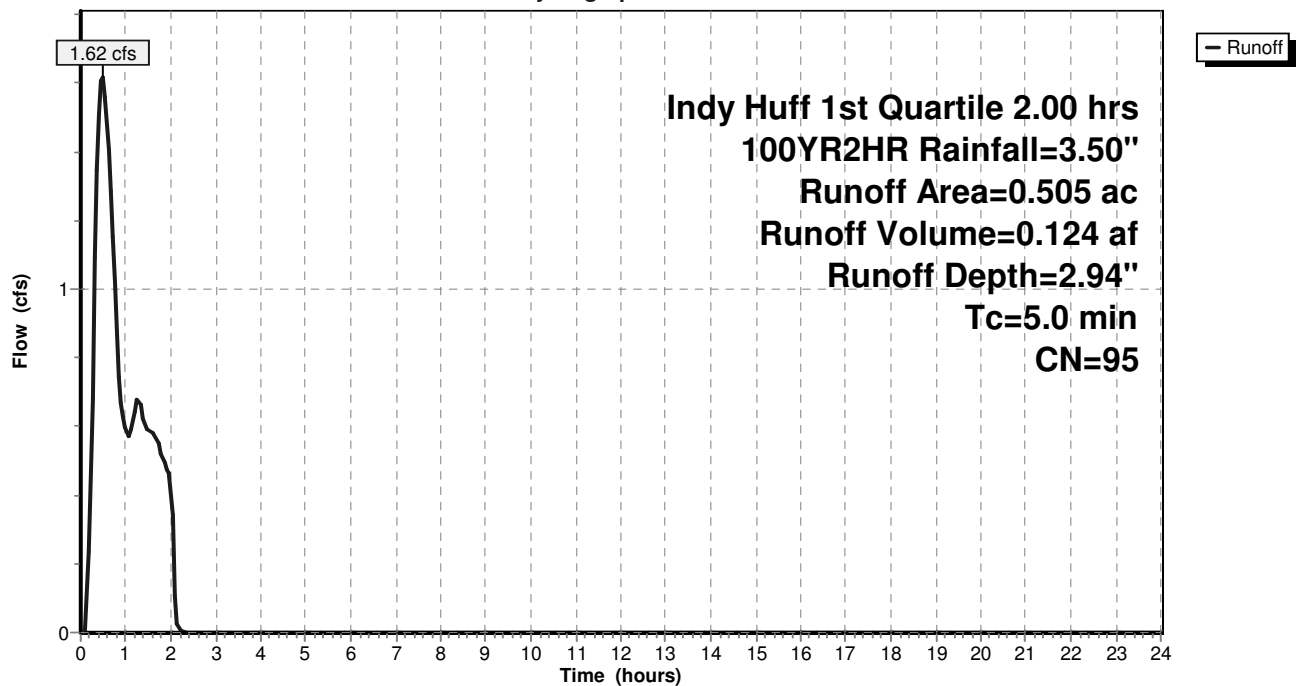
Runoff = 1.62 cfs @ 0.47 hrs, Volume= 0.124 af, Depth= 2.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

Area (ac)	CN	Description
* 0.450	98	Paved parking, Impervious
0.013	61	>75% Grass cover, Good, HSG B
0.042	74	>75% Grass cover, Good, HSG C
0.000	70	Woods, Good, HSG C
0.000	77	Woods, Good, HSG D
0.505	95	Weighted Average
0.055		10.89% Pervious Area
0.450		89.11% Impervious Area

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

**Subcatchment 153S: DA 716****Hydrograph**

**Marlores**

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Proposed Condition Modeling

Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

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**Summary for Subcatchment 154S: DA 739**

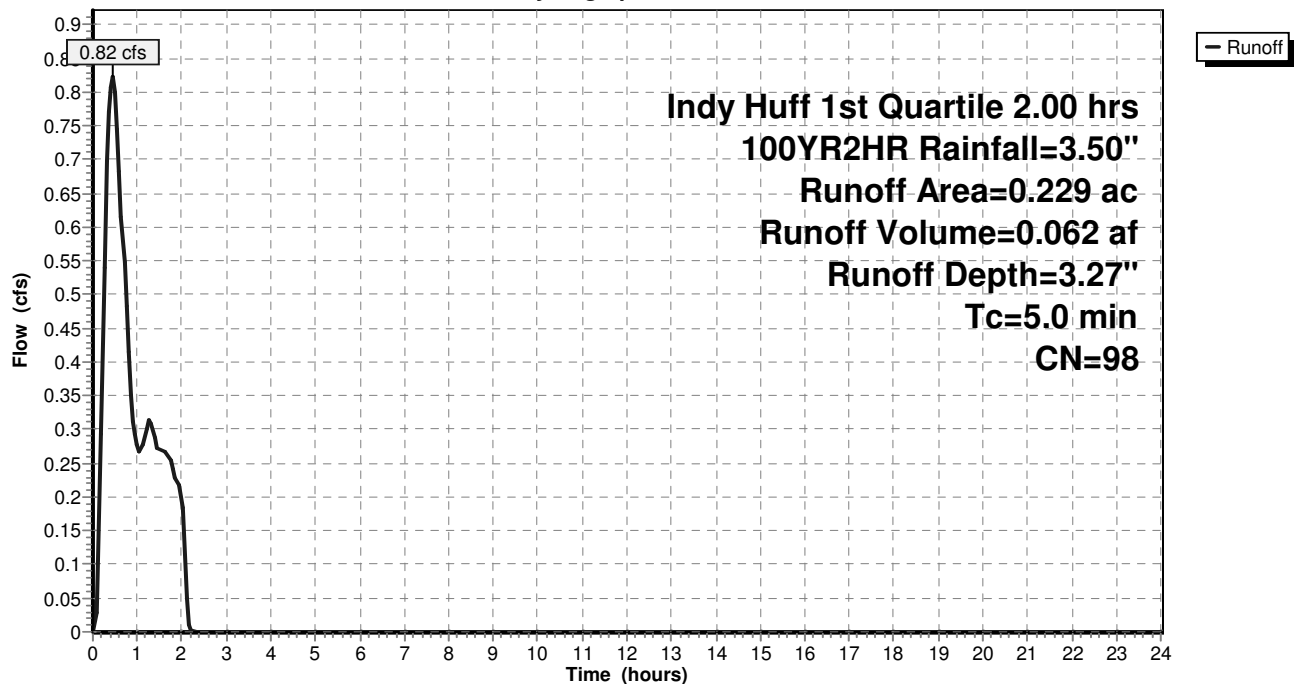
Runoff = 0.82 cfs @ 0.44 hrs, Volume= 0.062 af, Depth= 3.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

	Area (ac)	CN	Description
*	0.229	98	Paved parking, Impervious
	0.000	61	>75% Grass cover, Good, HSG B
	0.000	74	>75% Grass cover, Good, HSG C
	0.000	70	Woods, Good, HSG C
	0.000	77	Woods, Good, HSG D
	0.229	98	Weighted Average
	0.229		100.00% Impervious Area

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

**Subcatchment 154S: DA 739****Hydrograph**

**Marlores**

Prepared by Studio A

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Proposed Condition Modeling

Indy Huff 1st Quartile 2.00 hrs 100YR2HR Rainfall=3.50"

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**Summary for Pond 76P: Wet Pond**

Inflow Area = 34.074 ac, 74.29% Impervious, Inflow Depth = 2.65" for 100YR2HR event  
 Inflow = 90.72 cfs @ 0.48 hrs, Volume= 7.515 af  
 Outflow = 19.77 cfs @ 2.05 hrs, Volume= 7.293 af, Atten= 78%, Lag= 94.3 min  
 Primary = 19.77 cfs @ 2.05 hrs, Volume= 7.293 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
 Peak Elev= 731.70' @ 2.05 hrs Surf.Area= 64,005 sf Storage= 228,998 cf

Plug-Flow detention time= 185.8 min calculated for 7.293 af (97% of inflow)  
 Center-of-Mass det. time= 183.5 min ( 242.5 - 59.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	727.20'	560,390 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
727.20	37,220	0	0
728.00	42,625	31,938	31,938
730.00	53,989	96,614	128,552
732.00	65,755	119,744	248,296
734.00	77,923	143,678	391,974
736.00	90,493	168,416	560,390

Device	Routing	Invert	Outlet Devices
#1	Primary	727.20'	<b>24.0" Round Culvert</b> L= 60.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 727.20' / 727.08' S= 0.0020 '/ Cc= 0.900 n= 0.025, Flow Area= 3.14 sf
#2	Device 1	727.20'	<b>18.0" Vert. Orifice/Grate</b> C= 0.600
#3	Device 1	730.50'	<b>18.0" x 12.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads

**Primary OutFlow** Max=19.77 cfs @ 2.05 hrs HW=731.70' (Free Discharge)

↑ **1=Culvert** (Barrel Controls 19.77 cfs @ 6.29 fps)  
 ↑ **2=Orifice/Grate** (Passes < 16.48 cfs potential flow)  
 ↑ **3=Orifice/Grate** (Passes < 7.92 cfs potential flow)

Pond 76P: Wet Pond

Hydrograph

